

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1248542  
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: \_\_\_\_\_

1248542

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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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Engle 1-8
Doc ID	1248542

All Electric Logs Run

DIL
DUCP
MEL
BHCS



# Robert L. Milford

PETROLEUM GEOLOGIST  
Wichita, Kansas

## GEOLOGISTS REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR: **Murfin Drilling Company, Inc.**  
LEASE: **Engle #1-8**  
LOC. SPOT: **110 N & 160 W of C W2 NW**

LOC. FOOTAGE: **1,210' FNL 500' FWL**

SEC.: **8** TWPSP: **5S** RANG: **30W**

COUNTY: **Decatur** STATE: **Kansas**

API: **15-039-21210-00-00**

CONTRACTOR: **Murfin Drilling Co., Inc.** REG. NO.: **7**  
DRAILINGS STARTED: **12-13-2014** COMPLETED: **12-21-2014**  
MUD DISPLACED: **3,074** MUD TYPE: **Chemical**  
DRILLING TIME KEPT FROM: **3,668** TO: **RTD**  
SAMPLES SAVED FROM: **3,668** TO: **RTD**  
SAMPLES EXAMINED FROM: **3,668** TO: **RTD**  
GEOLOGICAL SUPERVISION FROM: **3,668** TO: **RTD**

FORMATION NAME: **TOP** LOG DATE/TIME: **TOP** SAMPLE DATE/TIME: **TOP**

Stone Corral 2,647' +270'  
Topeka 3,747' -830'  
Heebner 3,918' -1001'  
Lansing 3,964' -1047'  
Stark 4,129' -1212'  
B/KC 4,178' -1261'  
Pawnee 4,292' -1375'  
Cherokee 4,375' -1458'  
Total Depth 4,480' -1563'

MEASUREMENTS  
CASING RECORD  
Conductor

ELEVATIONS  
KB **2,917'**  
CL **2,912'**

LOGS  
Sonic Log  
Borehole Compensated-Microresistivity Log  
Porosity Log

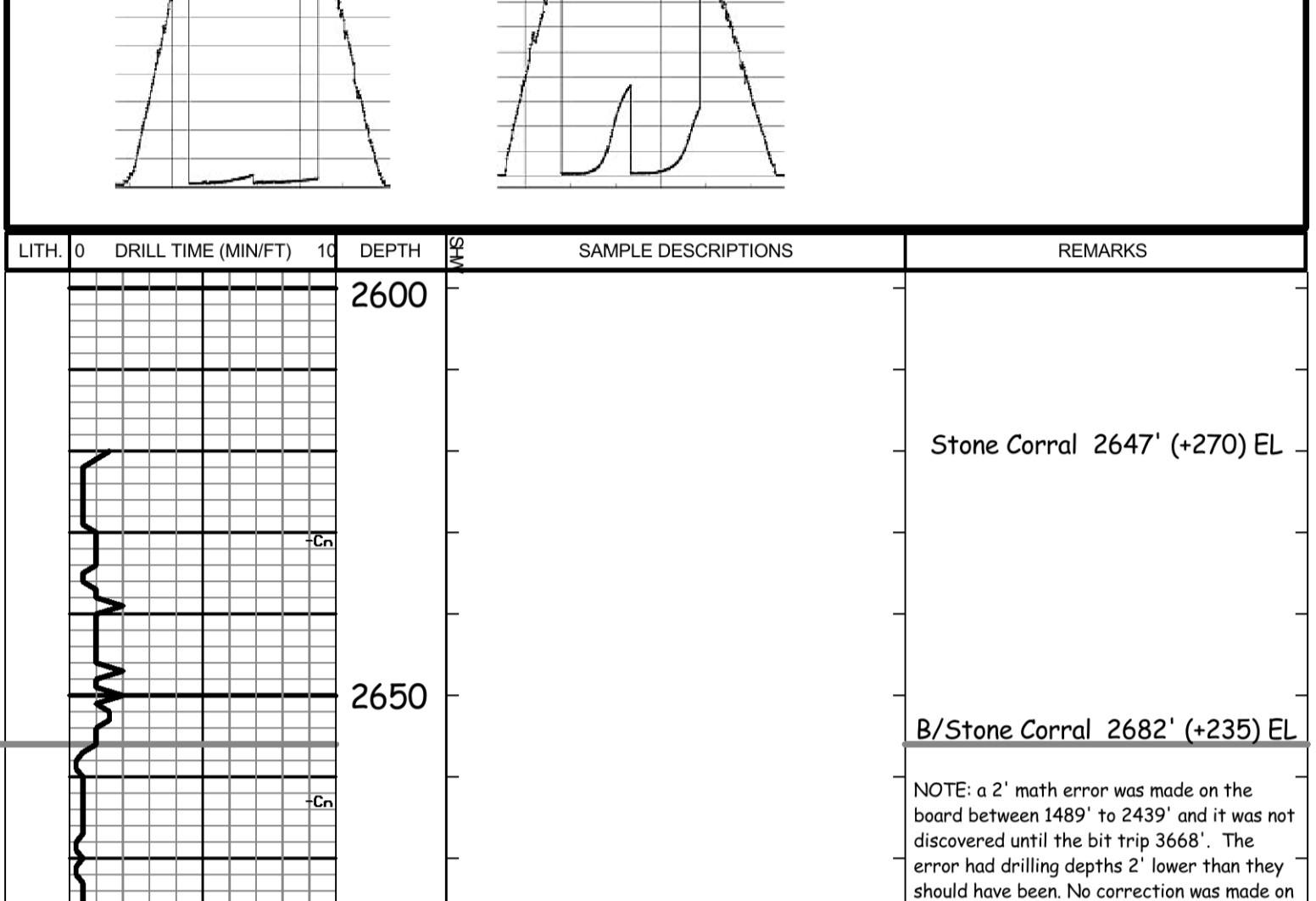
Stone Corral	2,647'	+270'
Topeka	3,747'	-830'
Heebner	3,918'	-1001'
Lansing	3,964'	-1047'
Stark	4,129'	-1212'
B/KC	4,178'	-1261'
Pawnee	4,292'	-1375'
Cherokee	4,375'	-1458'
Total Depth	4,480'	-1563'

DATE	7:00 AM DEPTH	REMARKS
12-13-14	0'	Spud @ 3:45 pm. Plug down @ 8:30 pm. Drilled out plug @ 4:30 am on 12/14 w/ PDC bit
12-14-14	360'	Cut 360' in last 24 hrs. Last circ @ 1700' (2.25 hrs). Pulled plugged bit @ 1933' (3 hrs).
12-15-14	2,250'	Cut 1,890' in last 24 hrs; 17 hrs drlg. Bit trip @ 3668' (ran button bit)
12-16-14	3,668'	Cut 1,418' in last 24 hrs; 14.75 hrs drlg. DST #1 @ 3997'
12-17-14	3,997'	Cut 329' in last 24 hrs; 13.25 hrs drlg. DST #2 @ 4052'
12-18-14	4,052'	Cut 55' in last 24 hrs; 3.25 hrs drlg. DST #3 @ 4130' (Misrun). DST #4 @ 4130'
12-19-14	4,130'	Cut 78' in last 24 hrs; 2.5 hrs drlg. DST #5 @ 4185'
12-20-14	4,185'	Cut 55' in last 24 hrs; 2 hrs drlg. DST #6 @ 4405'
12-21-14	4,405'	Cut 220' in last 24 hrs; 7.75 hrs drlg. RTD 4480' @ 9:02 pm
12-22-14	4,480'	Cut 75' in last 24 hrs; 1.25 hrs drlg (drilled w/ PDC bit). Ran casing for a SWDWD

**Remarks**  
Well is to be completed for Salt Water Disposal.  
From 3,668' to TD, the electric log measurements correlate from even to 1' higher to the drilling measurements.  
Formation tops and lithology on this report have been corrected to the electric log.  
The drilling samples were deposited at the Kansas Geological Survey office in Wichita.  
Respectfully submitted,  
Robert L. Milford

### Drill Stem Test Charts

Drill Stem Test by Trilobite Testing, Inc.



LITH	DRILL TIME (MIN/FT)	DEPTH (ft)	SAMPLE DESCRIPTIONS	REMARKS
		2600		Stone Corral 2647' (+270) EL
		2650		B/Stone Corral 2682' (+235) EL
		2700		

NOTE: a 2' math error was made on the board between 1489' to 2439' and it was not discovered until the bit trip 3668'. The error had drilling depths 2' lower than they should have been. No correction was made on the drilling time. In addition, a joint of pipe was put in the drill string but left off the board somewhere between 1933' and 3668'. After logs, it appears the error is reflected in the Anhydrite tops. No correction was made for depths above 3668'.

Call depth 3340' @ 7:42 pm on 12-15-14  
Mud displaced from 3074' to 3117'  
Depth errors found on trip to replace PDC bit with button bit. Samples and drill time were supposed to start at 3640'. Bit trip was made at 3640' per geolograph. Pipe strap was 26.52' long to board (3668.52'). Found 2' math error in board above 2439' which resulted in a corrected strap being 28.52' long to board (3668.52'). Bit trip was made with 5.65' on geolograph above Kelly down but after trip, the measured amount remaining on Kelly was only 4'. Depths have been corrected to pipe strap from 3668' and below. Depths above 3668' have not been corrected. A trip to clean the bit was made at 1933' and the joints of pipe in the hole agreed with board. A joint of pipe was put in the drill string but left off the board somewhere between 1933' and 3668'

Bit trip at 3668' (see Remarks above).  
Replaced PDC bit with button bit.  
Pipe Strap @ 3668': Strap long 26.52'  
Straight Hole Survey @ 3668': 0.5° Dev.  
Morgan Mud check @ 3668': 80 Vis, 8.7 Wt, 6.0 WL, 700 ppm Chl, 6# LCM (8:00 am during conditioning after bit trip)  
Samples start 3668' @ 8:10 am on 12-16-14

LS: crm-gry, fxl, fos in prt, some shly, sub chky-prty dns, pr por, NS  
Sh: gry, grn, red-brn  
LS: wh-gry, fxl, fos in prt, some shly, sub chky-prty dns w/ some chky-vry chky, pr por, NS  
Sh: red-brn (soft & gummy in prt) w/ gry & grn

LS: wh-lt gry, fxl, fos in prt, sub chky-prty dns w/ some chky-vry chky, pr por, NS  
Sh: lt gry (soft & gummy), red-brn, gry & grn  
LS: wh-gry, fxl, fos in prt, some shly, sub chky-prty dns w/ some chky, pr por, NS  
Sh: red-brn (some soft & gummy) w/ some gry & grn  
Sh: red-brn (mstly soft & gummy) w/ small amt gry & grn

LS: wh-tan, fxl, fos in prt, sub chky-prty dns w/ some chky-vry chky & some dns, pr por, NS  
LS: wh-lt gry, fxl, fos in prt, sub chky-prty dns w/ some chky-vry chky, pr por, NS  
Sdy LS: crm-lt gry, fxl, fn-vry fn grain sd, sub chky, pr por, NS  
Sd: crm-lt gry, fn-vry fn grain, calc in prt, semi fri-brittle, pr vis por, NS, intermixed w/ Sh: red-brn (some sdy, some soft & gummy) & small amt gry & grn  
Sh: mstly red-brn (soft & gummy in prt), w/ small amt gry & grn

LS: wh-lt gry, fxl, fos in prt, some shly (red-brn mottled), chky-prty dns w/ some vry chky, pr por, NS  
LS: wh-lt gry, fxl, fos in prt, chky-prty dns w/ some vry chky, pr por, NS  
LS: crm-lt gry, fxl, fos in prt, sub chky-prty dns, pr por, NS  
LS: A.A. w/ some chky, pr por, NS

Sh: Blk Carb  
LS: tan-brn, fxl, fos, mstly prty dns, pr por, NS  
Sh: red-brn, gry, grn  
LS: crm-tan, fxl, fos in prt, sub chky-prty dns, pr por, NS  
Sh: red-brn (some sdy), some gry & grn

LS: crm-lt gry, fxl, fos in prt, sub chky-prty dns w/ some chky, pr por, NS  
LS: crm, fxl, fos, sub chky-prty dns, pr w/ fr fos-vug por, NS  
LS: wh-crm, fxl, fos in prt, sub chky-prty dns, pr por, NS  
LS: wh-crm, fxl, fos in prt, sub chky-prty dns w/ some chky, pr por, NS

LS: tan-brn, fxl, prty dns, pr por, NS  
Sh: Blk Carb  
LS: tan-brn, fxl, sli fos, prty dns, pr por, NS  
Sh: red-brn, gry, grn

LS: crm, fxl, fos-ool in prt, sli pyr, sub chk-prty dns, pr-fr intprt por, scat blk w/ tr brn spdt-sub sat stn, VSSF0 (pin-point w/ some thk-hvy oil), fr amt live hvy oil stn, no odor, some barren por  
LS: wh-crm, fxl, fos, sub chky-prty dns w/ some chky, pr w/ tr fr-gd fos-vug por, few pcs w/ lt-med brn spdt-patchy stn, NSFO, no odor  
LS: crm, fxl, fos, sub chk-prty dns, pr-fr fos-vug por, scat lt-med brn spdt-sub stn, S-FSFO, no odor

Sh: grn, red-brn, gry, w/ some Shy Sd: grn, fn-vry fn grain, pr por, NS  
LS: crm, fxl, ool, sli pyr, sub chky-prty dns, pr w/ some fr introl por, fr amt med-drk brn patchy-sub sat stn, FSFO, no odor  
Sh: red-brn w/ gry & grn

LS: wh-lt gry, fxl, sli fos, chty (crm-org), sub chky-prty dns w/ some chky & some dns, pr-fr w/ some gd fos-vug por, scat med-drk brn w/ some blk spdt-patchy stn, S-FSFO (some thk-hvy, some bleeding), no odor  
LS: crm-tan, fxl, fos in prt, sub chky-prty dns, pr w/ tr fr fos-vug por, vry scat med-drk brn & blk spdt-patchy stn, SSFO, no odor  
Sh: red-brn, gry, grn

LS: crm-brn, fxl, fos in prt, sub chky-prty dns, pr w/ some fr fos-vug por, vry scat drk brn-bk spdt-patchy stn, SSFO (mstly small-pin point beads, some thk-hvy oil), no odor  
Sh: red-brn, gry, grn  
LS: wh-tan, fxl, fos in prt, some shly (red-brn, mottled), sub chky-prty dns, pr w/ tr fr fos-vug por, tr brn-bk spdt-patchy stn, SSFO, no odor  
LS: wh-crm, fxl, sli pyr, chty (crm-tan), sub chk-prty dns w/ some chky, pr w/ tr fr fos-vug por, tr med brn-bk mstly spdt stn, NSFO, no odor

Sh: Blk Carb  
LS: tan-brn, fxl, sli fos, prty dns, pr por, NS  
Sh: red-brn, some gry & grn  
LS: wh-lt gry, fxl, fos in prt, sub chky-prty dns w/ some chky, pr-fr w/ some gd fos-vug por, scat lt-med brn patchy-sub sat stn (some rich brn luster), SSFO, no odor

LS: tan-brn, fxl, sli fos, prty dns, pr por, NS  
Sh: red-brn, gry, grn  
LS: crm-lt gry, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr-fr w/ some gd intprtcal-vug por, scat lt-med brn patchy-sub sat stn & drk brn-bk spdt-patchy stn, S-FSFO, no odor  
Sh: red-brn w/ some gry & grn  
Sh: red-brn (some silty-sdy), w/ some gry & grn

LS: crm-lt gry, fxl, fos in prt, sub chky-prty dns, pr w/ tr sub sat stn, SSFO (some bleeding), no odor  
Sh: red-brn, gry, grn  
LS: crm-tan, fxl, sli fos, sub chky-prty dns, pr por, NS  
Sh: red-brn, gry, grn

Sh: A.A.  
LS: crm-tan, fxl, some shly (red-brn, mottled), sub chky-prty dns, pr por, NS  
Sh: red-brn & gry-grn  
Calc Sh: lt gry-lt purple  
Calc Sh: A.A. w/ some red-brn  
Sh: red-brn, gry, grn  
Sh: red-brn & gry, some dns

LS: crm-tan, fxl, fos-ool in prt, some shly (red-brn, mottled), sub chky-prty dns, pr por, NS  
Shly LS: lt-med gry, pr por, NS w/ Calc Sh: lt-med gry  
Sh: gry-grn, some red-brn  
LS: grn w/ some red-brn & grn  
LS: brn w/ some crm, fxl, fos in prt, sub chky-prty dns, pr por, NS  
LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Shly LS: gry, fxl, pr por, NS  
Sh: gry, some red-brn

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs Sd grains, clr-yell, sub rnd-sub ang, NS, & small amt Chl: yell-ang, fresh, rnd, sub ang, NS

A.A. (no Mississippian rocks in samples)  
L.T.D. 4480' (-1563)  
R.T.D. 4480' (-1563)  
Ran 10 stand short trip @ 4480' after CFS Straight Hole Survey @ 4480': 0.5° Dev.

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs Sd grains, clr-yell, sub rnd-sub ang, NS, & small amt Chl: yell-ang, fresh, rnd, sub ang, NS

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs Sd grains, clr-yell, sub rnd-sub ang, NS, & small amt Chl: yell-ang, fresh, rnd, sub ang, NS

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs Sd grains, clr-yell, sub rnd-sub ang, NS, & small amt Chl: yell-ang, fresh, rnd, sub ang, NS

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs Sd grains, clr-yell, sub rnd-sub ang, NS, & small amt Chl: yell-ang, fresh, rnd, sub ang, NS

LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
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Sh: gry, red-brn, gry, w/ small amt Blk Carb  
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LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
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LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
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LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
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LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
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LS: crm-tan, fxl, fos-ool in prt, sub chky-prty dns w/ some chky, pr por, NS  
Sh: gry, red-brn, gry, w/ small amt Blk Carb  
LS: crm-tan, fxl, fos in prt, some sdy (med grain), sub chky-prty dns, pr-fr intgron por, vry scat med-brn-bk spdt-patchy stn, NSFO, no odor  
Sh: red-brn, gry, grn, w/ some LS & Sd: A.A. w/ rare stn, NSFO, no odor (probably cavings, have been in samples not lagged to new drilling depths since DST #6)  
Sh: red-brn & gry w/ some grn & yell, some mottled red-brn & grn, & small amt Sd: chl-crm, fr-med grain, some sli shly (red-brn), semi fri-brittle, pr vis por, NS, & small amt loose crs S



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

#### **8-5s-30w Decatur,KS**

Start Date: 2014.12.17 @ 03:30:00

End Date: 2014.12.17 @ 13:12:30

Job Ticket #: 61051                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:13:46



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61051

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 03:30:00

## GENERAL INFORMATION:

Formation: **Toronto - LKC "B"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 06:59:00  
 Time Test Ended: 13:12:30  
 Interval: **3915.00 ft (KB) To 3997.00 ft (KB) (TVD)**  
 Total Depth: 3997.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Quintana  
 Unit No: 57  
 Reference Elevations: 2917.00 ft (KB)  
 2914.00 ft (CF)  
 KB to GR/CF: 3.00 ft

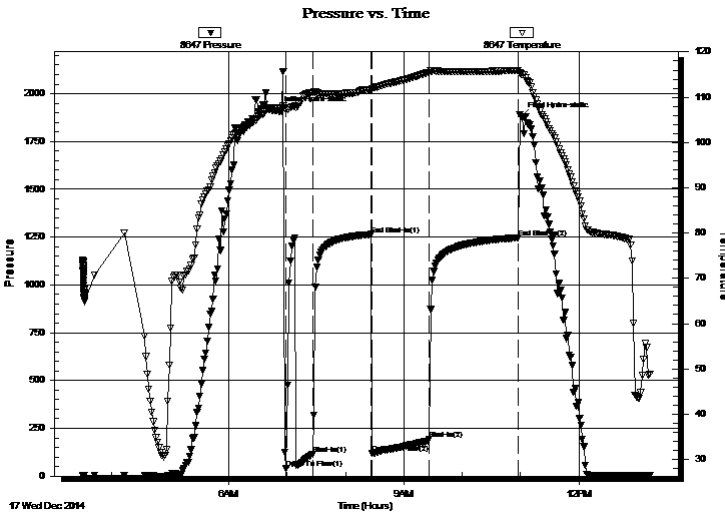
## Serial #: 8647

Inside

Press@RunDepth: 194.12 psig @ 3916.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.12.17 End Date: 2014.12.17 Last Calib.: 2014.12.17  
 Start Time: 03:30:01 End Time: 13:12:30 Time On Btm: 2014.12.17 @ 06:50:00  
 Time Off Btm: 2014.12.17 @ 11:00:30

TEST COMMENT: 30 - IF - Opened w/ surface blow , built to 6 1/4"  
 60 - ISI - No Return  
 60 - FF - Blow built to B.o.B in 45 min.  
 90 - FSI - No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1910.45	107.65	Initial Hydro-static
9	40.83	107.19	Open To Flow (1)
36	113.04	111.07	Shut-In(1)
96	1264.27	111.59	End Shut-In(1)
98	119.74	111.83	Open To Flow (2)
156	194.12	115.52	Shut-In(2)
248	1247.12	115.93	End Shut-In(2)
251	1878.37	115.10	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
183.00	MW 70%w , 30%m	0.90
63.00	MW 50%w , 50%m	0.85
93.00	WM 60%m, 40%w	1.30

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61051

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 03:30:00

## Tool Information

Drill Pipe:	Length: 3705.00 ft	Diameter: 3.80 inches	Volume: 51.97 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 187.12 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	75000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.12 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	3915.00 ft			Final	61000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	82.00 ft				
Tool Length:	110.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3892.00	
Hydraulic tool	5.00			3897.00	
Jars	5.00			3902.00	
Safety Joint	3.00			3905.00	
Packer	5.00			3910.00	28.00 Bottom Of Top Packer
Packer	5.00			3915.00	
Stubb	1.00			3916.00	
Recorder	0.00	8647	Inside	3916.00	
Recorder	0.00	8372	Outside	3916.00	
Perforations	13.00			3929.00	
Change Over Sub	1.00			3930.00	
Drill Pipe	63.00			3993.00	
Change Over Sub	1.00			3994.00	
Bullnose	3.00			3997.00	82.00 Bottom Packers & Anchor

**Total Tool Length: 110.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61051

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 03:30:00

### 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:

50000 ppm

Viscosity: 80.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
183.00	MW 70%w , 30%m	0.900
63.00	MW 50%w , 50%m	0.846
93.00	WM 60%m, 40%w	1.305

Total Length: 339.00 ft      Total Volume: 3.051 bbl

Num Fluid Samples: 0

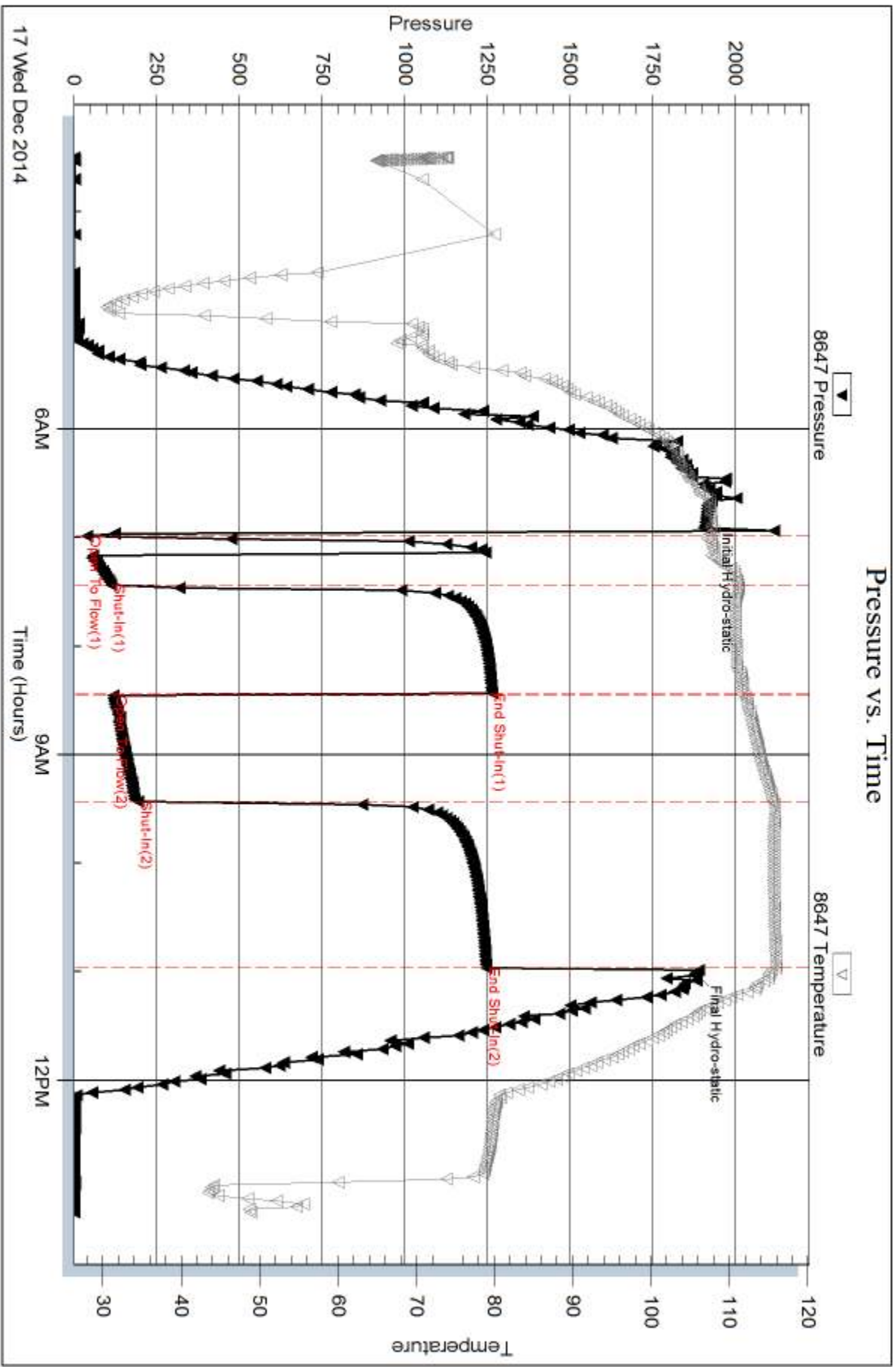
Num Gas Bombs: 0

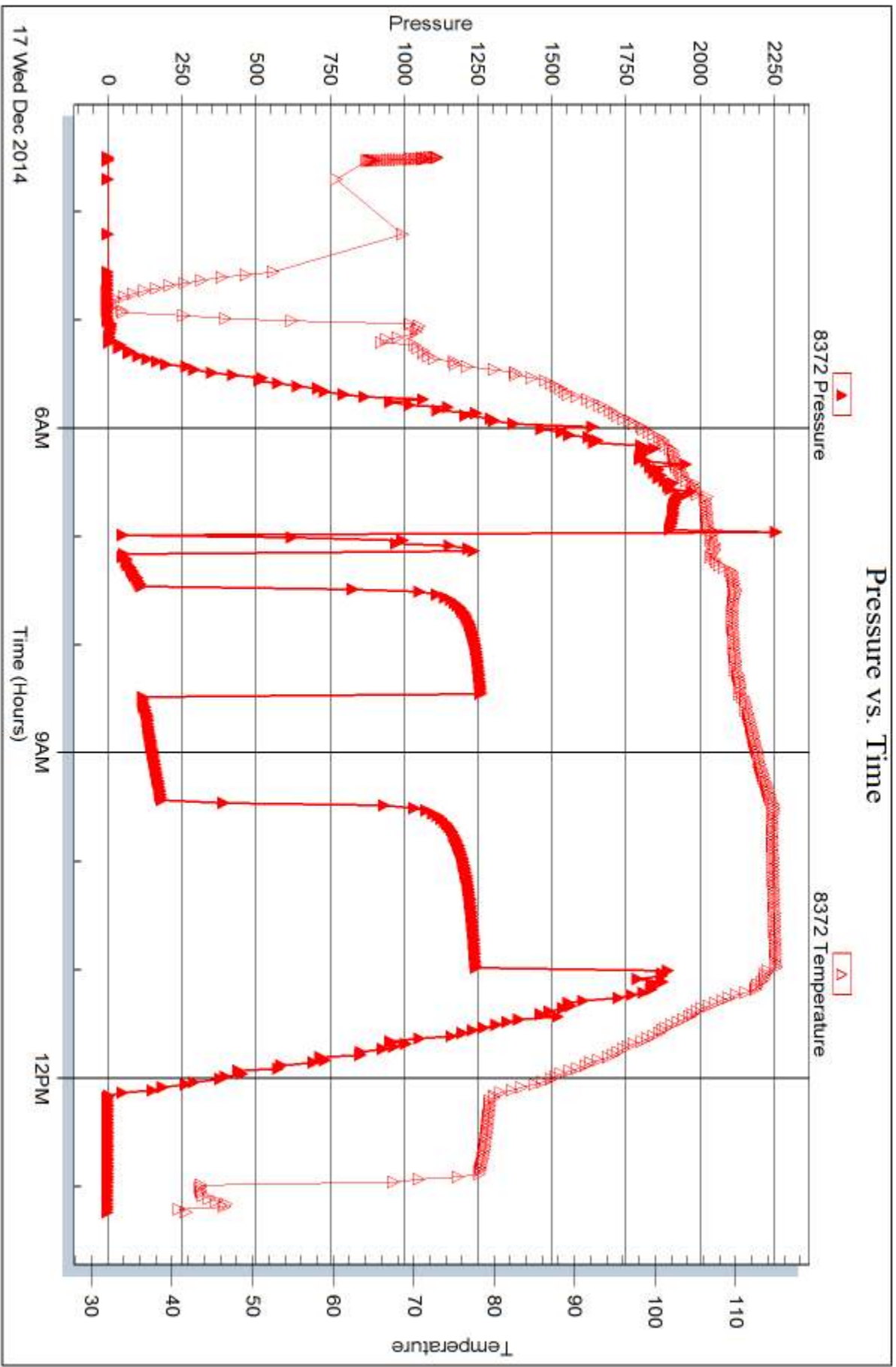
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .456 @ 23.5 Chlorides 50,000ppm







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

#### **8-5s-30w Decatur,KS**

Start Date: 2014.12.17 @ 00:18:00

End Date: 2014.12.17 @ 08:43:00

Job Ticket #: 61052                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:13:26

Murfin Drlg. Co., Inc. 8-5s-30w Decatur,KS Engle #1-8 DST # 2 LKC "D - Prime"G" 2014.12.17



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61052

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 00:18:00

## GENERAL INFORMATION:

Formation: **LKC "D - Prime "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:17:00

Time Test Ended: 08:43:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Quintana

Unit No: 57

**Interval: 4016.00 ft (KB) To 4052.00 ft (KB) (TVD)**

Reference Elevations: 2917.00 ft (KB)

Total Depth: 4052.00 ft (KB) (TVD)

2914.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 3.00 ft

**Serial #: 8647**

**Inside**

Press@RunDepth: 199.29 psig @ 4017.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.17

End Date: 2014.12.17

Last Calib.: 2014.12.18

Start Time: 00:18:01

End Time: 08:43:00

Time On Btm: 2014.12.17 @ 03:15:30

Time Off Btm: 2014.12.17 @ 06:18:30

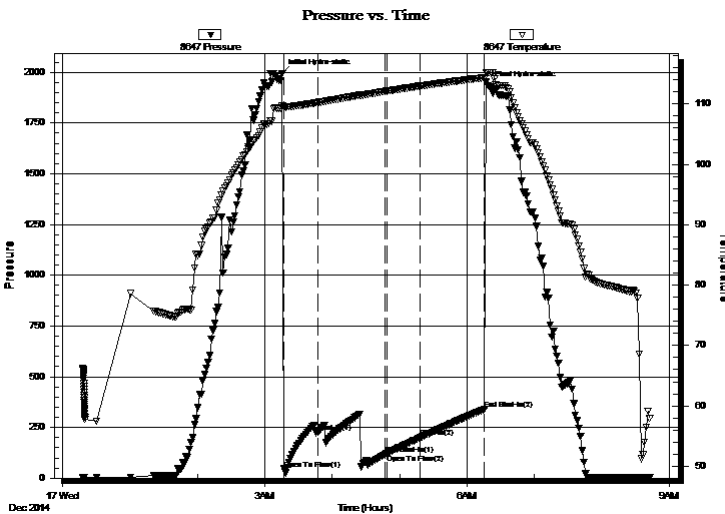
**TEST COMMENT:** 30 - IF - Opened w/ surface blow , stayed right above surface

60 - ISI - No Return

30 - FF - No Blow

60 - FSI - No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1992.87	109.62	Initial Hydro-static
2	45.38	109.49	Open To Flow (1)
32	225.67	110.23	Shut-In(1)
92	115.56	112.08	End Shut-In(1)
93	119.81	112.12	Open To Flow (2)
123	199.29	112.97	Shut-In(2)
180	339.16	114.36	End Shut-In(2)
183	1934.60	115.22	Final Hydro-static

## Recovery

## Gas Rates

Length (ft)	Description	Volume (bbl)
2.00	100% mud	0.01

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61052

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 00:18:00

## Tool Information

Drill Pipe:	Length: 3833.00 ft	Diameter: 3.80 inches	Volume: 53.77 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.12 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.12 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4016.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	36.00 ft			
Tool Length:	64.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3993.00	
Hydraulic tool	5.00			3998.00	
Jars	5.00			4003.00	
Safety Joint	3.00			4006.00	
Packer	5.00			4011.00	28.00 Bottom Of Top Packer
Packer	5.00			4016.00	
Packer - Shale	0.00			4016.00	
Stubb	1.00			4017.00	
Recorder	0.00	8647	Inside	4017.00	
Recorder	0.00	8372	Outside	4017.00	
Perforations	32.00			4049.00	
Bullnose	3.00			4052.00	36.00 Bottom Packers & Anchor

**Total Tool Length: 64.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61052

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2014.12.17 @ 00:18:00

### 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: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	100% mud	0.010

Total Length: 2.00 ft      Total Volume: 0.010 bbl

Num Fluid Samples: 0

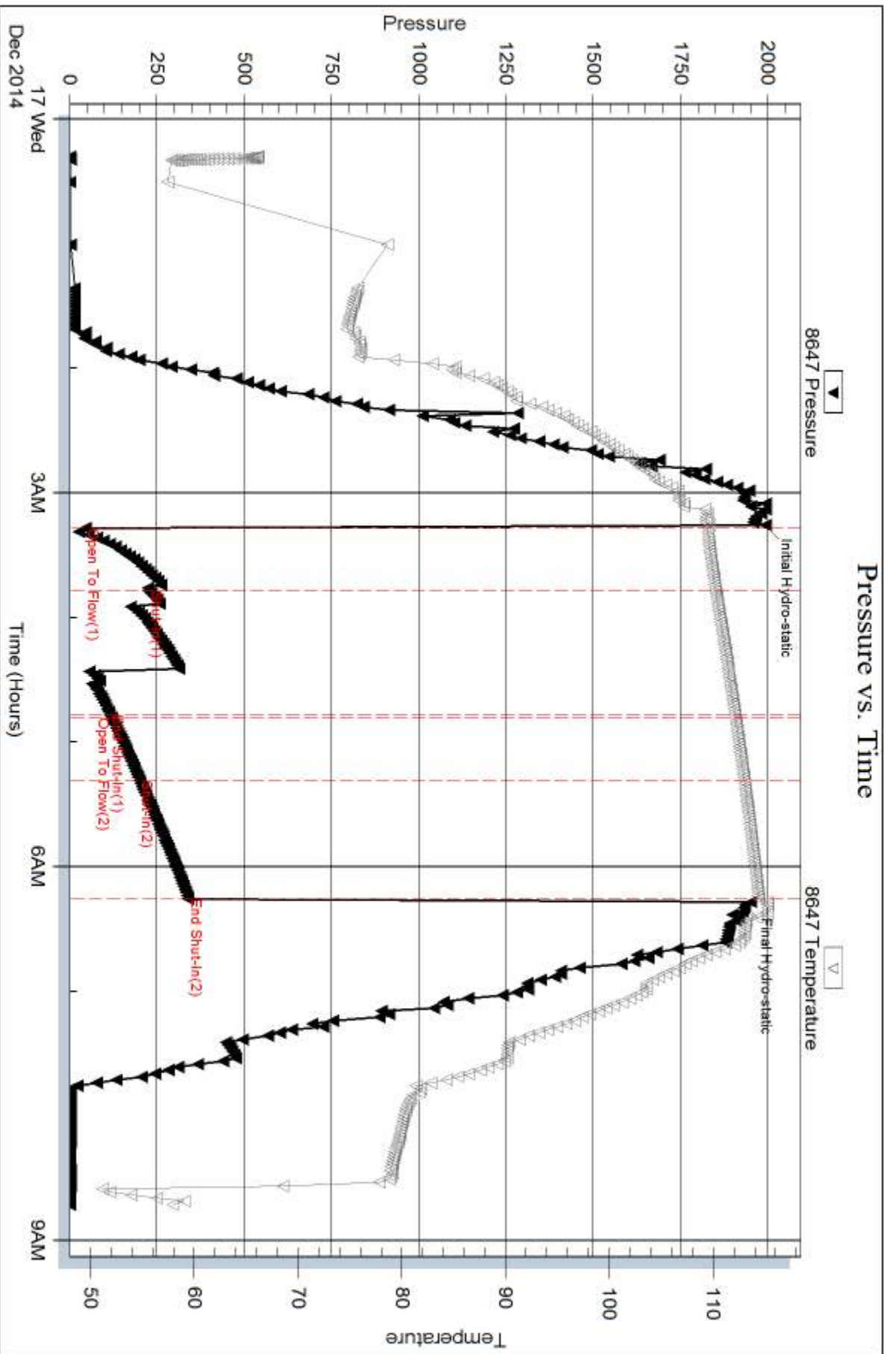
Num Gas Bombs: 0

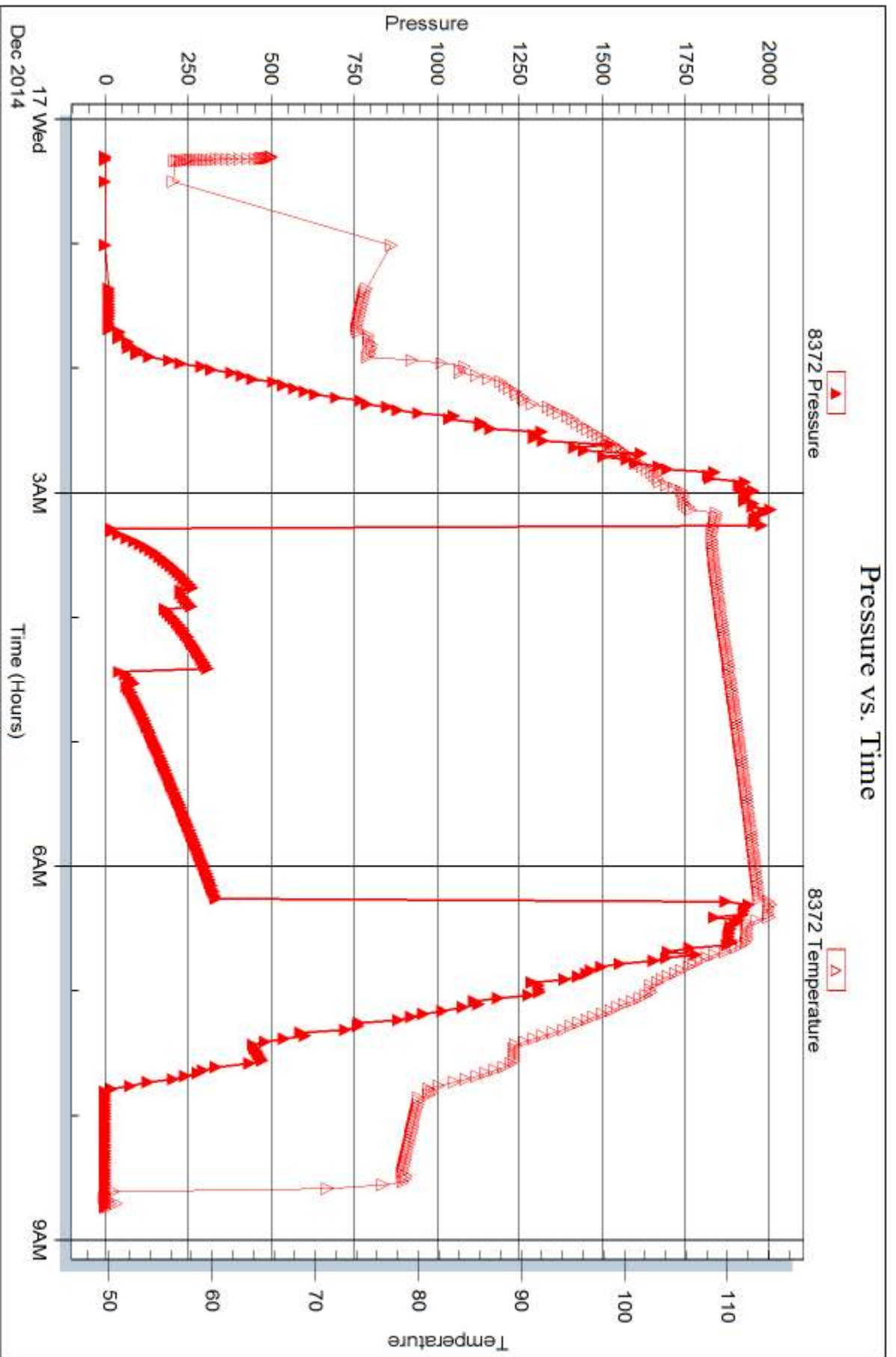
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

### **8-5s-30w Decatur,KS**

Start Date: 2014.12.18 @ 00:00:00

End Date:

Job Ticket #: 61053

DST #: 3

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:13:04







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61053

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2014.12.18 @ 00:00:00

## Tool Information

Drill Pipe:	Length: 3864.00 ft	Diameter: 3.80 inches	Volume: 54.20 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 187.12 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	lb
			<u>Total Volume:</u>	Tool Chased	ft
			- bbl	String Weight: Initial	lb
Drill Pipe Above KB:	16.12 ft			Final	lb
Depth to Top Packer:	4063.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	67.00 ft				
Tool Length:	95.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4040.00	
Hydraulic tool	5.00			4045.00	
Jars	5.00			4050.00	
Safety Joint	3.00			4053.00	
Packer	5.00			4058.00	28.00 Bottom Of Top Packer
Packer	5.00			4063.00	
Packer - Shale	0.00			4063.00	
Stubb	1.00			4064.00	
Recorder	0.00	8647	Inside	4064.00	
Recorder	0.00	8372	Outside	4064.00	
Perforations	30.00			4094.00	
Change Over Sub	1.00			4095.00	
Drill Pipe	31.00			4126.00	
Change Over Sub	1.00			4127.00	
Bullnose	3.00			4130.00	67.00 Bottom Packers & Anchor

**Total Tool Length: 95.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61053

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2014.12.18 @ 00:00:00

### 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:

ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2100.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl

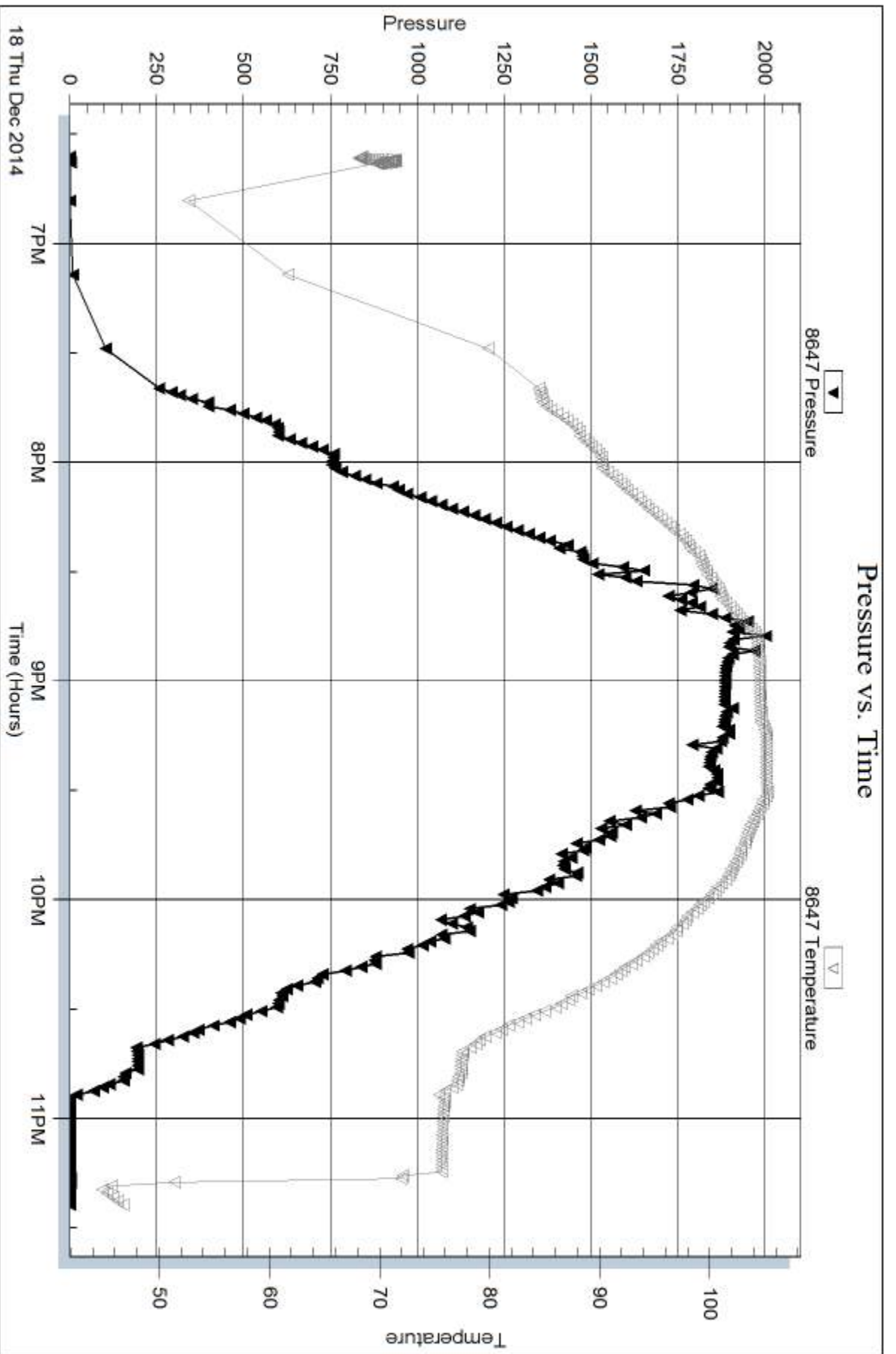
Total Length:                      ft      Total Volume:                      bbl

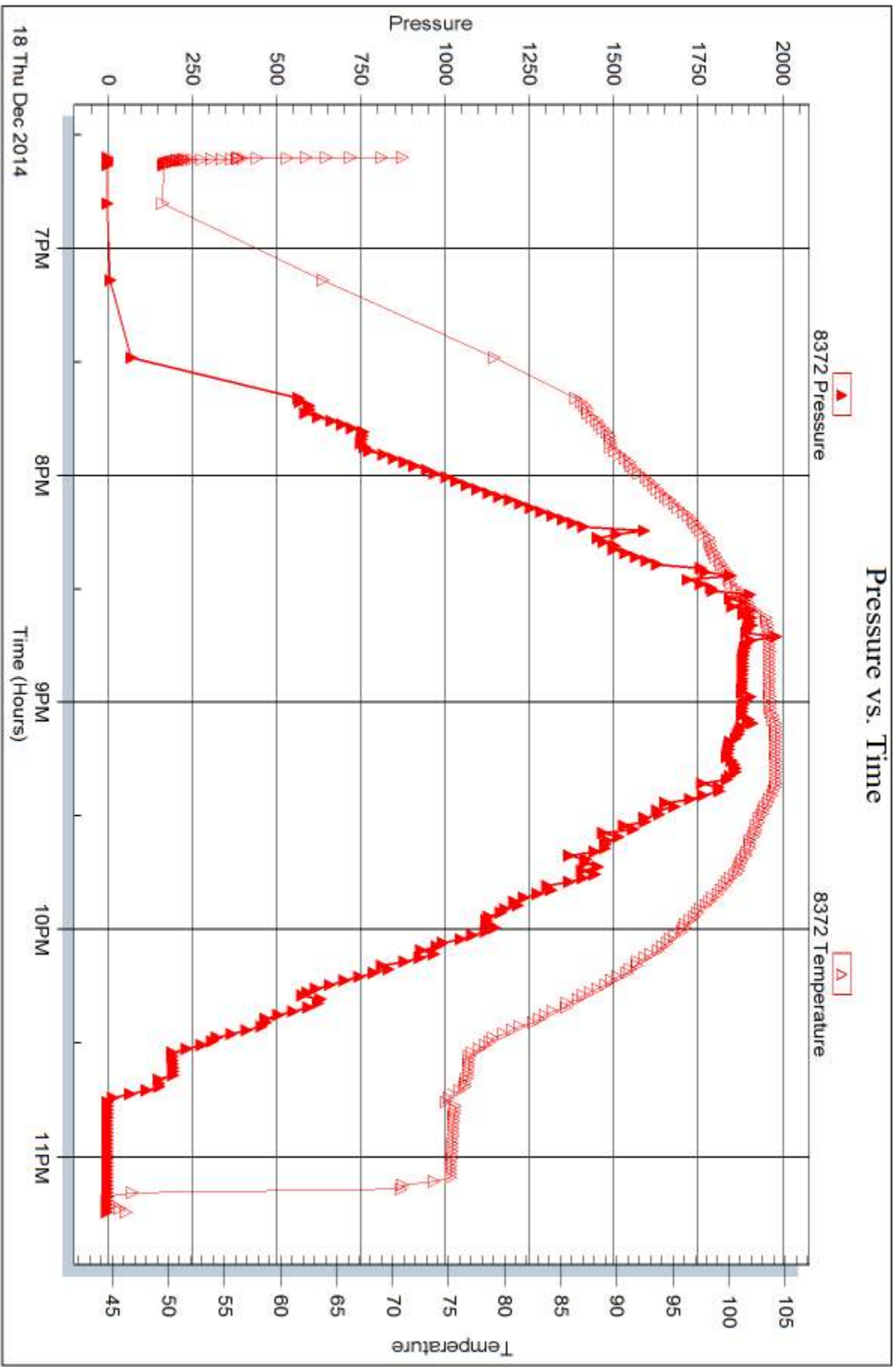
Num Fluid Samples: 0                      Num Gas Bombs:      0                      Serial #:

Laboratory Name:                      Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

#### **8-5s-30w Decatur,KS**

Start Date: 2014.12.19 @ 07:45:00

End Date: 2014.12.19 @ 15:52:30

Job Ticket #: 61054                      DST #: 4

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:12:27

Murfin Drlg. Co., Inc. 8-5s-30w Decatur,KS Engle #1-8 DST # 4 LKC "H-J" 2014.12.19



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61054

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2014.12.19 @ 07:45:00

## GENERAL INFORMATION:

Formation: **LKC "H-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:41:30

Time Test Ended: 15:52:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Quintana

Unit No: 57

**Interval: 4063.00 ft (KB) To 4130.00 ft (KB) (TVD)**

Reference Elevations: 2917.00 ft (KB)

Total Depth: 4130.00 ft (KB) (TVD)

2914.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 3.00 ft

**Serial #: 8647**

**Inside**

Press@RunDepth: 69.66 psig @ 4064.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.19

End Date:

2014.12.19

Last Calib.:

2014.12.19

Start Time: 07:45:01

End Time:

15:52:30

Time On Btm:

2014.12.19 @ 09:36:30

Time Off Btm:

2014.12.19 @ 13:42:30

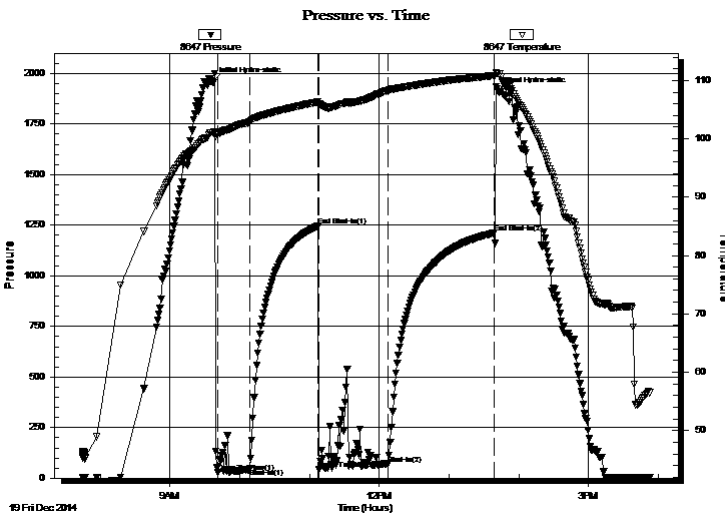
**TEST COMMENT:** 30 - IF - Opened w/ surface blow , built to 2 1/4"

60 - ISI - No Return

60 - FF - Blow built to 3"

90 - FSI - Return built to 1/2"

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1957.59	101.08	Initial Hydro-static
5	27.37	100.92	Open To Flow (1)
32	45.99	102.94	Shut-In(1)
91	1246.23	106.32	End Shut-In(1)
92	44.56	105.94	Open To Flow (2)
151	69.66	108.26	Shut-In(2)
242	1210.95	110.87	End Shut-In(2)
246	1909.62	111.14	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
91.00	100% mud	0.45

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61054

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2014.12.19 @ 07:45:00

## Tool Information

Drill Pipe:	Length: 3864.88 ft	Diameter: 3.80 inches	Volume: 54.21 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 187.12 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4063.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	67.80 ft			
Tool Length:	95.80 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			4040.00	
Hydraulic tool	5.00			4045.00	
Jars	5.00			4050.00	
Safety Joint	3.00			4053.00	
Packer	5.00			4058.00	28.00 Bottom Of Top Packer
Packer	5.00			4063.00	
Packer - Shale	0.00			4063.00	
Stubb	1.00			4064.00	
Recorder	0.00	8647	Inside	4064.00	
Recorder	0.00	8372	Outside	4064.00	
Perforations	30.00			4094.00	
Change Over Sub	1.00			4095.00	
Drill Pipe	31.80			4126.80	
Change Over Sub	1.00			4127.80	
Bullnose	3.00			4130.80	67.80 Bottom Packers & Anchor

**Total Tool Length: 95.80**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 61054

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2014.12.19 @ 07:45:00

### 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: bbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure: psig

Salinity: 2100.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
91.00	100%mud	0.448

Total Length: 91.00 ft      Total Volume: 0.448 bbl

Num Fluid Samples: 0

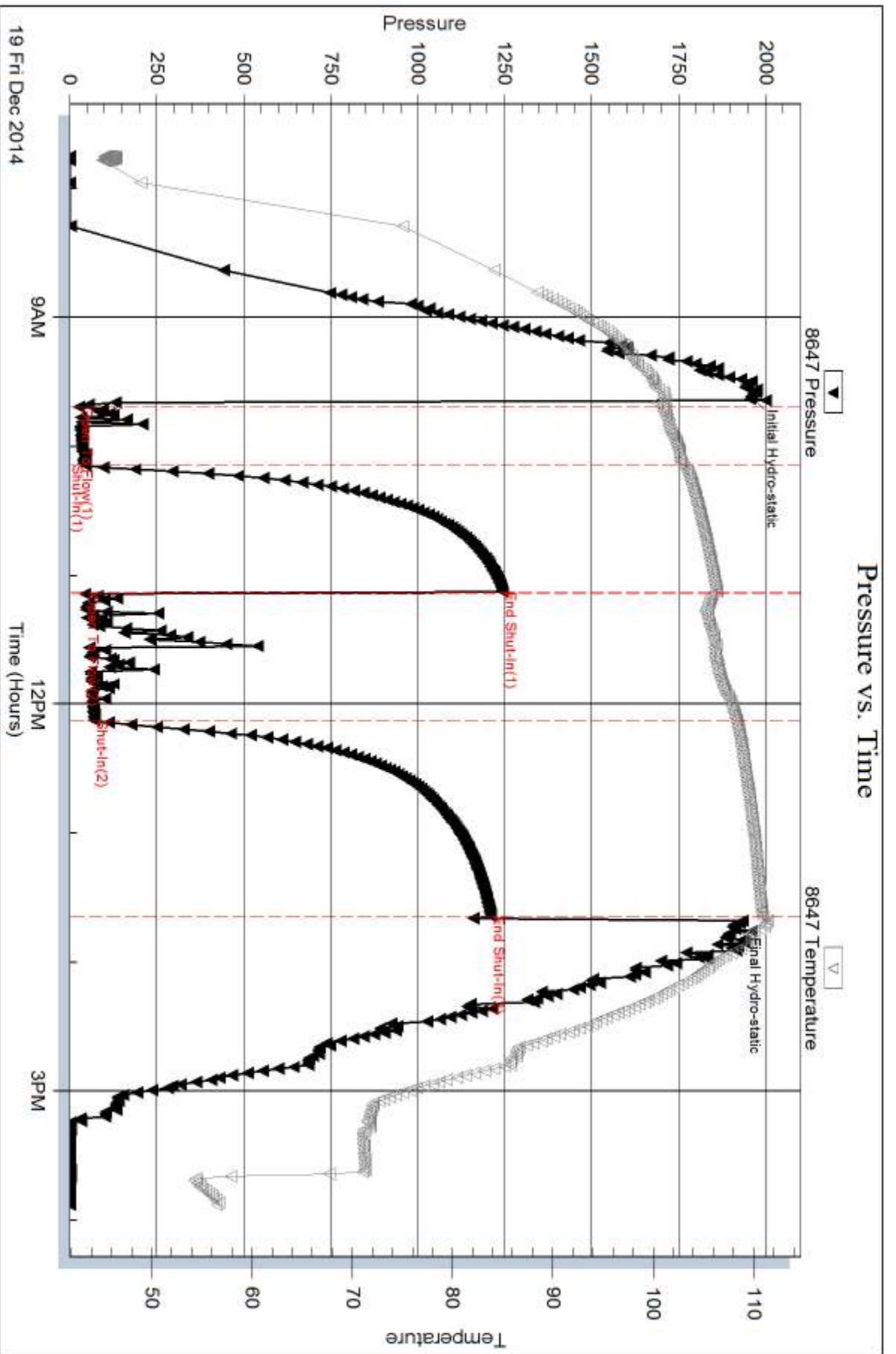
Num Gas Bombs: 0

Serial #:

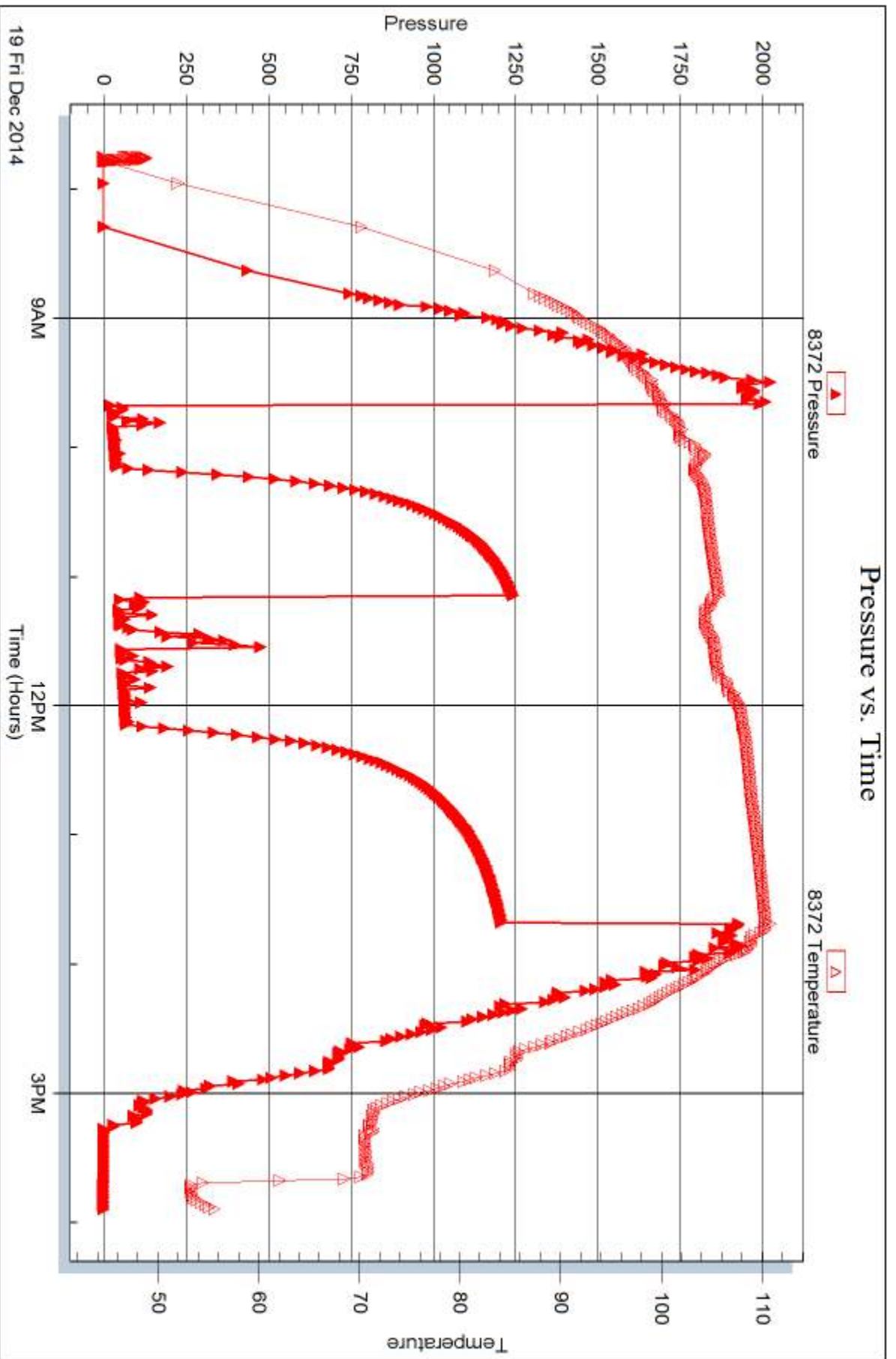
Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

#### **8-5s-30w Decatur,KS**

Start Date: 2014.12.20 @ 03:22:00

End Date: 2014.12.20 @ 11:27:30

Job Ticket #: 62137                      DST #: 5

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:11:37

Murfin Drlg. Co., Inc. 8-5s-30w Decatur,KS Engle #1-8 DST # 5 LKC "K-L" 2014.12.20



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62137

**DST#: 5**

ATTN: Rocky Milford

Test Start: 2014.12.20 @ 03:22:00

## GENERAL INFORMATION:

Formation: **LKC "K-L"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:23:30

Time Test Ended: 11:27:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Donovan Baumann

Unit No: 46

**Interval: 4127.00 ft (KB) To 4185.00 ft (KB) (TVD)**

Reference Elevations: 2917.00 ft (KB)

Total Depth: 4185.00 ft (KB) (TVD)

2914.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 3.00 ft

**Serial #: 8647**

**Inside**

Press@RunDepth: 39.68 psig @ 4128.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.20

End Date:

2014.12.20

Last Calib.:

2014.12.20

Start Time: 03:22:01

End Time:

11:27:30

Time On Btm:

2014.12.20 @ 06:23:00

Time Off Btm:

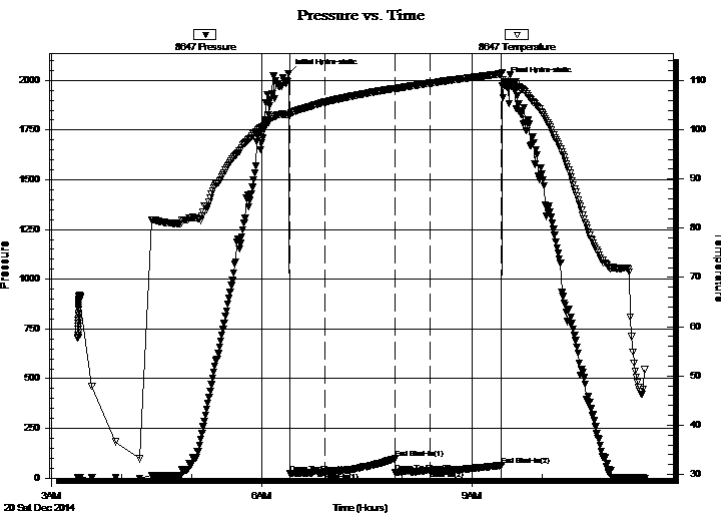
2014.12.20 @ 09:27:00

**TEST COMMENT:** 30 - IF - Weak surface blow built to 1 in. in 10 min. & stayed for the 30 min. ( In Deisel )

60 - ISI - No return

30 - FF - No surface blow

60 - FSI - No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2034.97	103.10	Initial Hydro-static
1	24.08	103.08	Open To Flow (1)
31	31.07	105.63	Shut-In(1)
91	98.04	108.40	End Shut-In(1)
91	27.47	108.39	Open To Flow (2)
121	39.68	109.48	Shut-In(2)
182	64.19	111.37	End Shut-In(2)
184	1993.46	109.30	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud - 100M	0.05

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62137

**DST#: 5**

ATTN: Rocky Milford

Test Start: 2014.12.20 @ 03:22:00

## Tool Information

Drill Pipe:	Length: 3928.00 ft	Diameter: 3.80 inches	Volume: 55.10 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 56.02 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4127.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	86.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4104.00	
Hydraulic tool	5.00			4109.00	
Jars	5.00			4114.00	
Safety Joint	3.00			4117.00	
Packer	5.00			4122.00	28.00 Bottom Of Top Packer
Packer	5.00			4127.00	
Stubb	1.00			4128.00	
Recorder	0.00	8647	Inside	4128.00	
Recorder	0.00	8372	Outside	4128.00	
Perforations	21.00			4149.00	
Change Over Sub	1.00			4150.00	
Drill Pipe	31.00			4181.00	
Change Over Sub	1.00			4182.00	
Bullnose	3.00			4185.00	58.00 Bottom Packers & Anchor

**Total Tool Length: 86.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62137

**DST#: 5**

ATTN: Rocky Milford

Test Start: 2014.12.20 @ 03:22:00

## 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: 54.00 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: 24000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud - 100M	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0

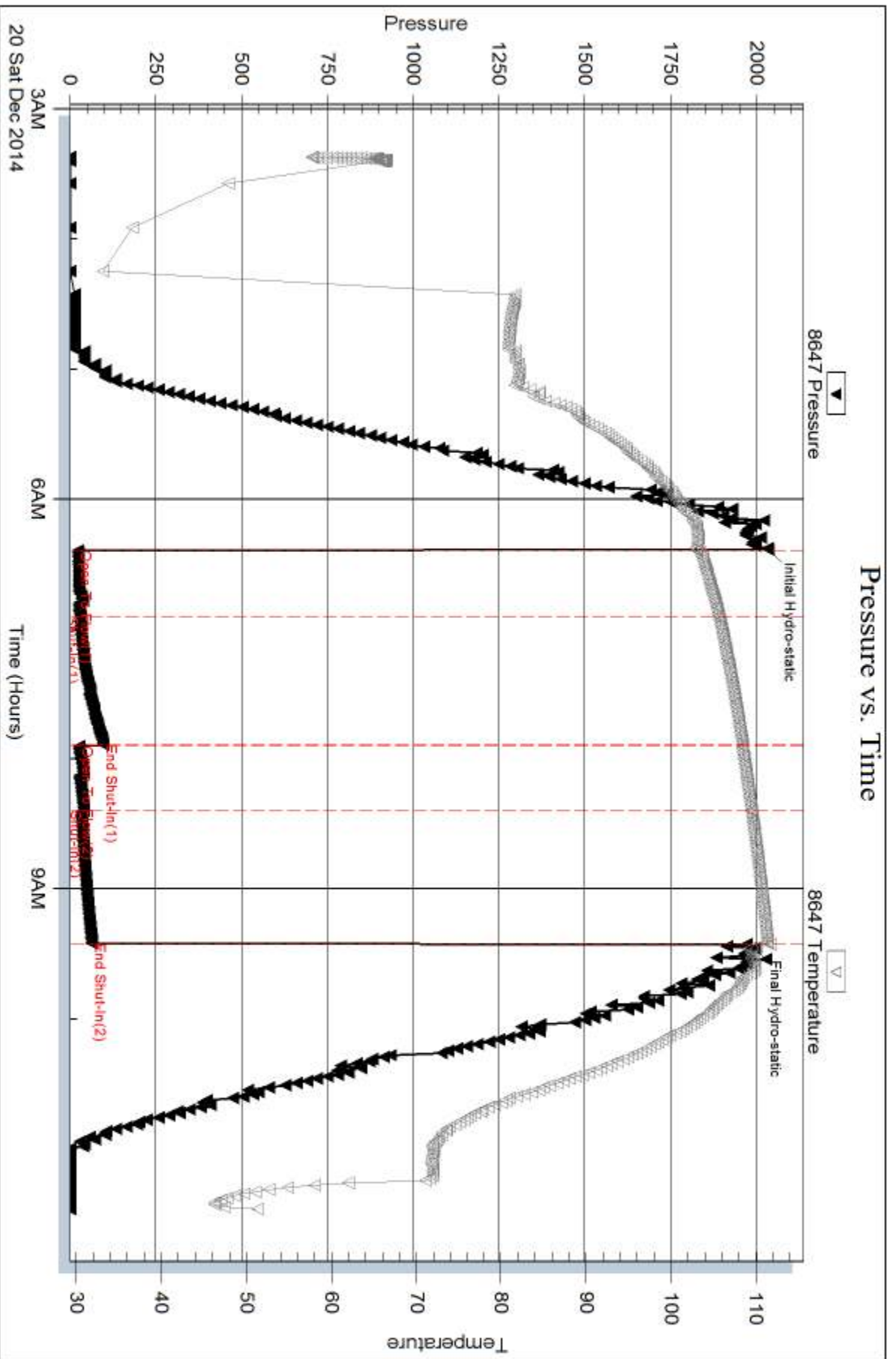
Num Gas Bombs: 0

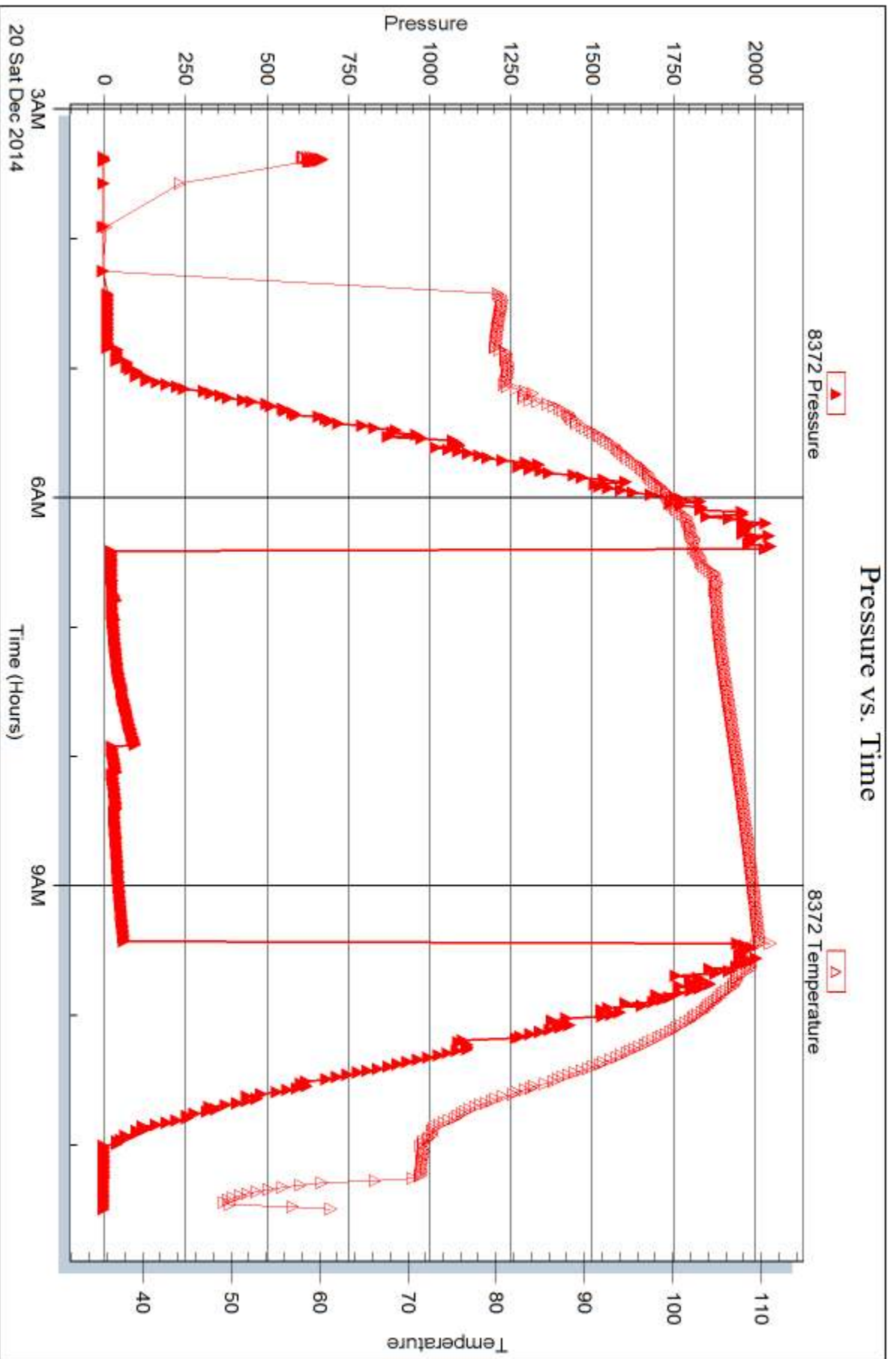
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **Murfin Drlg. Co., Inc.**

250 N. Water, Ste 300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Engle #1-8**

#### **8-5s-30w Decatur,KS**

Start Date: 2014.12.21 @ 07:22:00

End Date: 2014.12.21 @ 14:57:00

Job Ticket #: 62138                      DST #: 6

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.26 @ 10:10:15



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62138

**DST#: 6**

ATTN: Rocky Milford

Test Start: 2014.12.21 @ 07:22:00

## GENERAL INFORMATION:

Formation: **Verdigris**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:49:00

Time Test Ended: 14:57:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Donovan Baumann

Unit No: 46

**Interval: 4375.00 ft (KB) To 4405.00 ft (KB) (TVD)**

Reference Elevations: 2917.00 ft (KB)

Total Depth: 4405.00 ft (KB) (TVD)

2914.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 3.00 ft

**Serial #: 8647**

**Inside**

Press@RunDepth: 25.58 psig @ 4376.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.21

End Date:

2014.12.21

Last Calib.:

2014.12.21

Start Time: 07:22:01

End Time:

14:57:00

Time On Btm:

2014.12.21 @ 09:48:30

Time Off Btm:

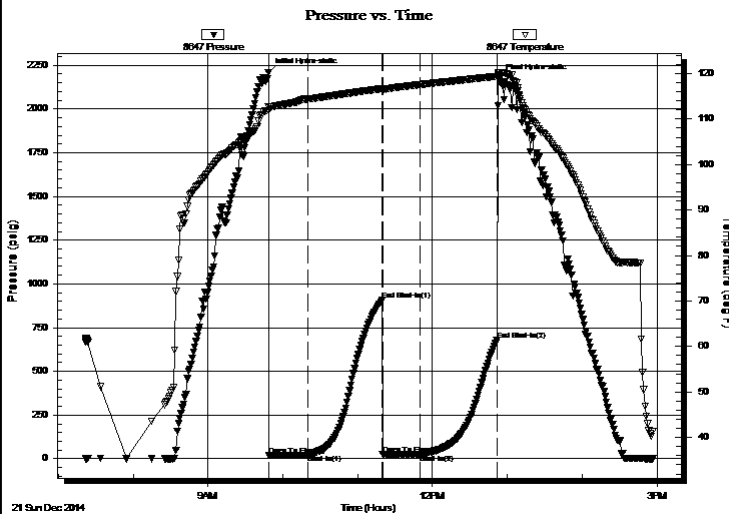
2014.12.21 @ 12:53:00

TEST COMMENT: 30 - IF - Weak surface blow built to 1 in. in 30 min. ( In Deisel )

60 - ISI - No return

30 - FF - Weak surface blow built to 1/4 in. in 15 min. and stayed for the remainder

60 - FSI - No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2209.20	112.69	Initial Hydro-static
1	19.81	111.88	Open To Flow (1)
32	22.73	114.41	Shut-In(1)
91	905.87	116.67	End Shut-In(1)
92	24.11	116.29	Open To Flow (2)
122	25.58	117.55	Shut-In(2)
183	678.43	119.38	End Shut-In(2)
185	2173.14	120.16	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	OCM - 70M - 30o	0.07

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62138

**DST#: 6**

ATTN: Rocky Milford

Test Start: 2014.12.21 @ 07:22:00

## Tool Information

Drill Pipe:	Length: 4182.00 ft	Diameter: 3.80 inches	Volume: 58.66 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 59.58 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4375.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	58.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			4352.00	
Hydraulic tool	5.00			4357.00	
Jars	5.00			4362.00	
Safety Joint	3.00			4365.00	
Packer	5.00			4370.00	28.00 Bottom Of Top Packer
Packer	5.00			4375.00	
Stubb	1.00			4376.00	
Recorder	0.00	8647	Inside	4376.00	
Recorder	0.00	8372	Outside	4376.00	
Perforations	26.00			4402.00	
Bullnose	3.00			4405.00	30.00 Bottom Packers & Anchor

**Total Tool Length: 58.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drlg. Co., Inc.

**8-5s-30w Decatur, KS**

250 N. Water, Ste 300  
Wichita, KS 67202

**Engle #1-8**

Job Ticket: 62138

**DST#: 6**

ATTN: Rocky Milford

Test Start: 2014.12.21 @ 07:22:00

### 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: 50.00 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: 2200.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	OCM - 70M - 30o	0.074

Total Length: 15.00 ft      Total Volume: 0.074 bbl

Num Fluid Samples: 0

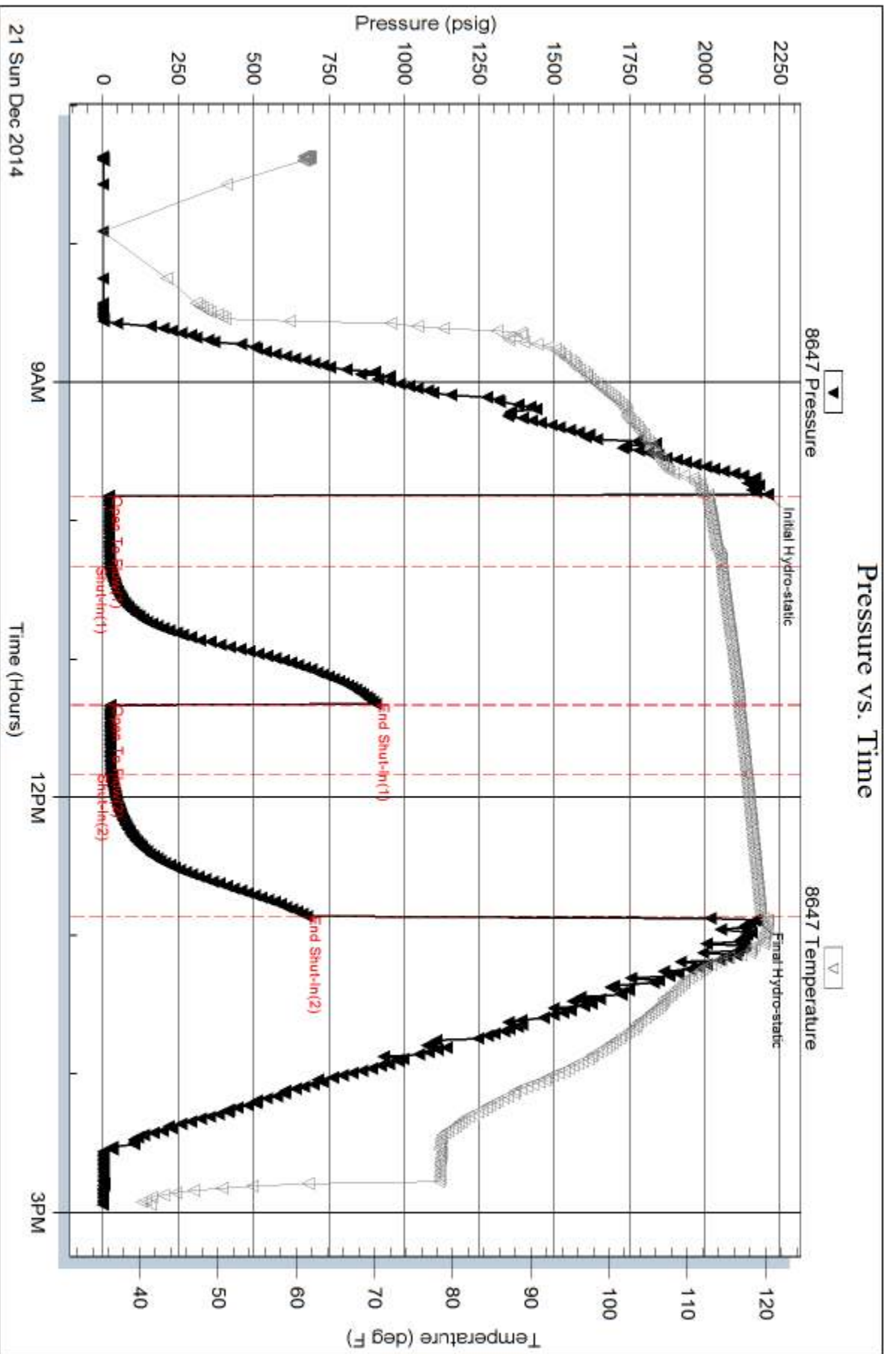
Num Gas Bombs: 0

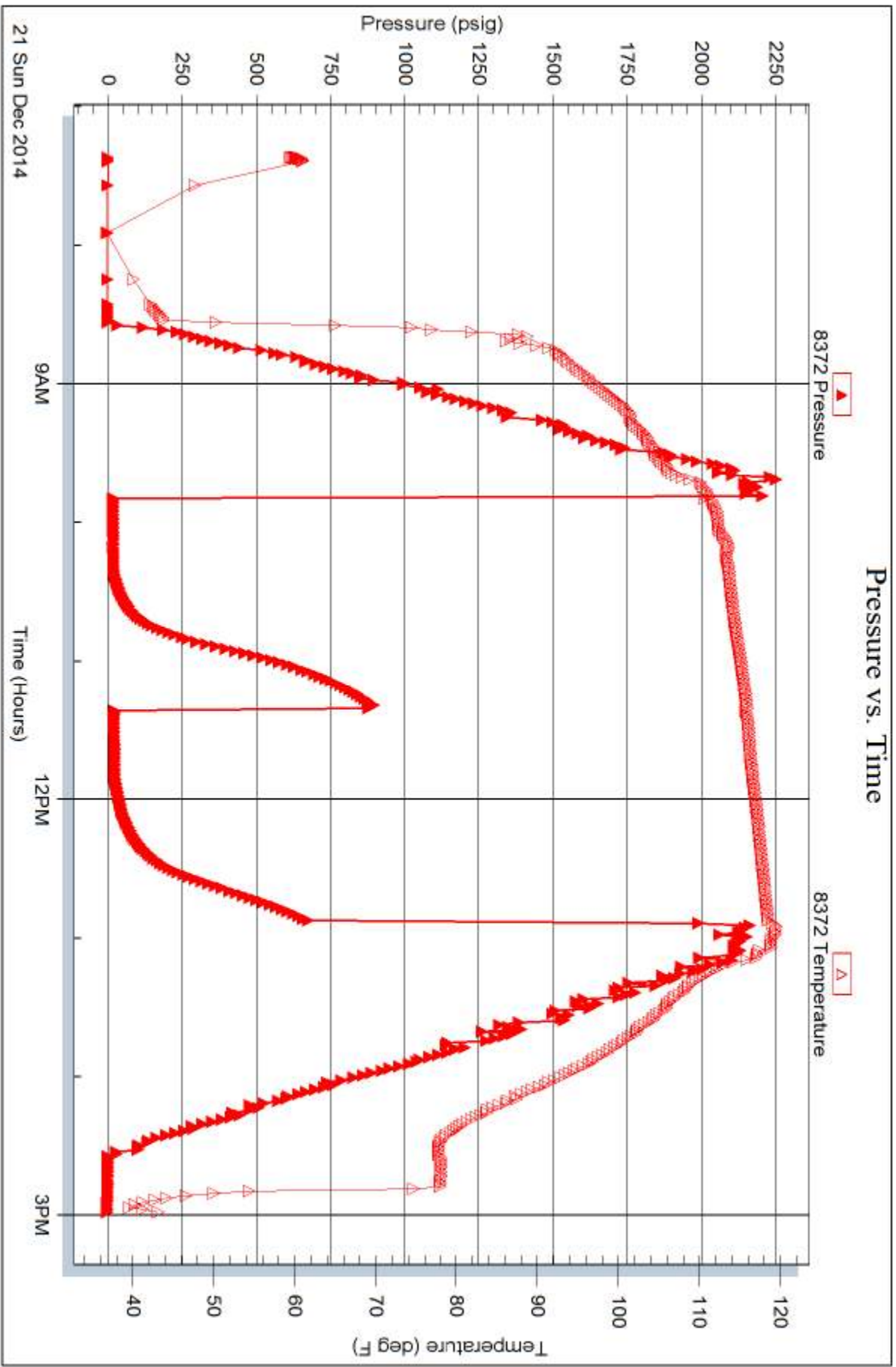
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **61051**

Well Name & No. Engle #1-8 Test No. 1 Date 12-17-14  
 Company Murfin Drlg. Co., Inc. Elevation 2917 KB 2912 GL  
 Address 250 N. Water, STE 300 Wichita KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #7  
 Location: Sec. 8 Twp. 5s Rge. 30W Co. Decatur State KS

Interval Tested 3915-3997 Zone Tested Toronto - LKC "B"  
 Anchor Length 82' Drill Pipe Run 3765 Mud Wt. 8.7  
 Top Packer Depth 3910 Drill Collars Run 187.12 Vis 80  
 Bottom Packer Depth 3915 Wt. Pipe Run — WL 6  
 Total Depth 3997 Chlorides 700 ppm System LCM 6  
 Blow Description IF- Opened w/ surface blow. built to 6 1/4"  
ISI- No Return  
FF- Blow built to B.O.B in 45 min.  
FBI- No Return

Rec	Feet of	%gas	%oil	%water	%mud
93	wm		40	60	
63	mw		50	50	
183	MW		70	30	

Rec Total 339 BHT 115 Gravity \_\_\_\_\_ API RW .456 @ 23.5 °F Chlorides 50,000 ppm

(A) Initial Hydrostatic 1910  Test 1150 T-On Location 2:16 AM  
 (B) First Initial Flow 40  Jars 250 T-Started 3:30 AM  
 (C) First Final Flow 113  Safety Joint 75 T-Open 7:02 AM  
 (D) Initial Shut-In 1264  Circ Sub \_\_\_\_\_ T-Pulled 11:02 AM  
 (E) Second Initial Flow 119  Hourly Standby X1 .75h T-Out 1:18 PM  
 (F) Second Final Flow 194  Mileage 48 R.T. 74.40 Comments \_\_\_\_\_  
 (G) Final Shut-In 1247  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1878  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1624.40  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1624.40

Approved By \_\_\_\_\_

Our Representative Burditt

Trilobite Testing Inc. shall not be liable for damaged or 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. 61052

Well Name & No. Engle #1-8 Test No. 2 Date 12-17-14  
 Company Murfin Drilg. Co., Inc. Elevation 2917 KB 2912 GL  
 Address 250 N. Water, STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Rocky M. Ford Rig Murfin #7  
 Location: Sec. 8 Twp. 5S Rge. 30W Co. Decatur State KS

Interval Tested 4016-4052 Zone Tested LKC "D Prime" - "G"  
 Anchor Length 36 Drill Pipe Run 3833 Mud Wt. 9.3  
 Top Packer Depth 4011 Drill Collars Run 187.12 Vis 55  
 Bottom Packer Depth 4016 Wt. Pipe Run — WL 6.4  
 Total Depth 4052 Chlorides 1000 ppm System LCM 6

Blow Description IF- Opened w/ surface blow, stayed right above surface  
ISI- No Return  
FF- No Blow  
FSI- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</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	Feet of	%gas	%oil	%water	%mud

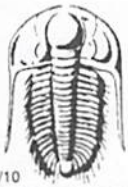
Rec Total 2 BHT 114 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>1992</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>11:36 PM</u>
(B) First Initial Flow <u>46</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:18 AM</u>
(C) First Final Flow <u>225</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>3:19 AM</u>
(D) Initial Shut-In <u>115</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>6:19 AM</u>
(E) Second Initial Flow <u>119</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>8:46 AM</u>
(F) Second Final Flow <u>199</u>	<input checked="" type="checkbox"/> Mileage <u>48 R.T.</u> 74.40	Comments _____
(G) Final Shut-In <u>339</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1934</u>	<input type="checkbox"/> Straddle _____	

Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer _____	<input checked="" type="checkbox"/> Ruined Packer <u>X1</u> 320
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby _____	Total <u>2019.40</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1699.40</u>	

Approved By \_\_\_\_\_ Our Representative Bruce O. H.

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 61053

Well Name & No. Engle #1-8 Test No. 3 Date 12-18-14  
 Company Murfin Drlg. Co., Inc Elevation 2917 KB 2912 GL  
 Address 250 N. Water. STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #7  
 Location: Sec. 8 Twp. 5S Rge. 30W Co. Decatur State KS

Interval Tested 4063-4130 Zone Tested LKC "H-3"  
 Anchor Length 67' Drill Pipe Run — Mud Wt. 9  
 Top Packer Depth 4058 Drill Collars Run 187.12 Vis 52  
 Bottom Packer Depth 4063 Wt. Pipe Run — WL 6.8  
 Total Depth 4130 Chlorides 2100 ppm System LCM 7

Blow Description IF-  
IS-  
FF-  
FSI-

MIS RUN

Rec	Feet of	%gas	%oil	%water	%mud

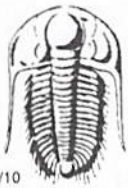
Rec Total \_\_\_\_\_ BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic _____	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>6:03 PM</u>
(B) First Initial Flow _____	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>6:36 PM</u>
(C) First Final Flow _____	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>—</u>
(D) Initial Shut-In _____	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>—</u>
(E) Second Initial Flow _____	<input type="checkbox"/> Hourly Standby _____	T-Out <u>11:25 PM</u>
(F) Second Final Flow _____	<input checked="" type="checkbox"/> Mileage <u>48 R.T.</u> <u>74.40</u>	Comments <u>Hit bridge</u>
(G) Final Shut-In _____	<input type="checkbox"/> Sampler _____	<u>going into hole</u>
(H) Final Hydrostatic _____	<input type="checkbox"/> Straddle _____	<u>about 110' from fd.</u>
Initial Open <u>30</u>	<input checked="" type="checkbox"/> Shale Packer <u>X1</u> <u>250</u>	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>—</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In <u>—</u>	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1699.40</u>
	Sub Total <u>1699.40</u>	MP/DST Disc't _____

Approved By \_\_\_\_\_ Our Representative Burd R. T.

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 61054

Well Name & No. Engle #1-8 Test No. 4 Date \_\_\_\_\_  
 Company Murfin Drlg. Co., Inc. Elevation 2917 KB 2912 GL \_\_\_\_\_  
 Address 250 N. Water, STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #7  
 Location: Sec. 8 Twp. 5S Rge. 30W Co. Decatur State KS

Interval Tested 4063 - 4130 Zone Tested LKC "H-J"  
 Anchor Length 67' Drill Pipe Run 3864.88 Mud Wt. 9  
 Top Packer Depth 4058 Drill Collars Run 187.12 Vis 52  
 Bottom Packer Depth 4063 Wt. Pipe Run — WL 6.8  
 Total Depth 4130 Chlorides 2100 ppm System LCM 7

Blow Description IF - Opened w/ surface blow, built to 2 1/4"  
ISI - No Return  
FF - Blow built to 3"  
FSI - ~~Blow~~ Return built to 1/2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>91</u>	<u>Mud w/ few oil spots in tool</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	Feet of	%gas	%oil	%water	%mud

Rec Total 91 BHT 110 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1957  Test 1250 T-On Location 7:44AM  
 (B) First Initial Flow 27  Jars 250 T-Started 7:45AM  
 (C) First Final Flow 45  Safety Joint 75 T-Open 9:41AM  
 (D) Initial Shut-In 1246  Circ Sub \_\_\_\_\_ T-Pulled 1:41PM  
 (E) Second Initial Flow 44  Hourly Standby \_\_\_\_\_ T-Out 3:55 PM  
 (F) Second Final Flow 69  Mileage 48 R.T. 74.40  
 (G) Final Shut-In 1210  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1909  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer x1 250  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Flow 60  Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Shut-In 90  Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1899.40  
 Sub Total 1899.40 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Bud Oitz

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **62137**

Well Name & No. Engle #1-8 Test No. 5 Date 12-20-14  
 Company Murfin Drilling Co., Inc Elevation 2917 KB 2912 GL  
 Address 250 N. Water St. #300 Wichita, KS, 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #7  
 Location: Sec. 8 Twp. 5S Rge. 30W Co. Decatur State KS

Interval Tested 4127' - 4185' Zone Tested LKC "K-L"  
 Anchor Length 58' Drill Pipe Run 3928 Mud Wt. 9  
 Top Packer Depth 4122' Drill Collars Run 187.12 Vis 54  
 Bottom Packer Depth 4127' Wt. Pipe Run 0 WL 6  
 Total Depth 4185' Chlorides 2400 ppm System LCM #6  
 Blow Description IF - weak surface blow built to 1 in. in 10 min. & stayed full the 30. (in diesel) ISF - NO return  
FF - NO surface blow  
FSF - NO return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</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	Feet of	%gas	%oil	%water	%mud

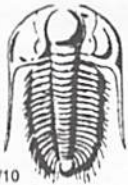
Rec Total 10 BHT 111 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2035</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>2:33 am</u>
(B) First Initial Flow <u>24</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>3:22 am</u>
(C) First Final Flow <u>31</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>6:24 am</u>
(D) Initial Shut-In <u>98</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>9:26 am</u>
(E) Second Initial Flow <u>27</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>11:29 am</u>
(F) Second Final Flow <u>40</u>	<input checked="" type="checkbox"/> Mileage <u>48 RT</u> 74.40	Comments _____
(G) Final Shut-In <u>64</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1993</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input checked="" type="checkbox"/> Ruined Packer <u>320</u>
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Total <u>1969.40</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1649.40</u>	

Approved By \_\_\_\_\_ Our Representative Gregory Baumgardner

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62138

Well Name & No. Engle # 1-8 Test No. 6 Date 12-21-14  
 Company Murfin Drilg. Co., Inc Elevation 2917 KB 2912 GL  
 Address 250 N. water STE 300 Wichita, KS, 67202  
 Co. Rep / Geo. Rocky M. Iford Rig Murfin #7  
 Location: Sec. 8 Twp. 5S Rge. 30w Co. Decatur State KS

Interval Tested 4375' - 4405' Zone Tested verdigris  
 Anchor Length 30' Drill Pipe Run 4182 Mud Wt. 9.1  
 Top Packer Depth 4370' Drill Collars Run 181.12 Vis 50  
 Bottom Packer Depth 4375' Wt. Pipe Run 0 WL 6  
 Total Depth 4405' Chlorides 2200 ppm System LCM #5

Blow Description IF- weak surface blow built to 1 in. in 30 min. (In Diesel)  
ISI- NO return  
FF- weak surface blow built to 1/4 in. in 15 min. & stayed for the remainder  
FSI- NO return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>OCM</u>		<u>30</u>		<u>70</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15 BHT 119 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2209</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>6:20am</u>
(B) First Initial Flow <u>20</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>7:22am</u>
(C) First Final Flow <u>23</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>9:50am</u>
(D) Initial Shut-In <u>906</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>12:55pm</u>
(E) Second Initial Flow <u>24</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>2:58pm</u>
(F) Second Final Flow <u>26</u>	<input checked="" type="checkbox"/> Mileage <u>48 RT</u> 74.40	Comments _____
(G) Final Shut-In <u>678</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Ruined Shale Packer _____
(H) Final Hydrostatic <u>2173</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>1649.40</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	MP/DST Disc't _____
	<input type="checkbox"/> Accessibility _____	
	Sub Total <u>1649.40</u>	

Approved By \_\_\_\_\_ Our Representative Gonarcw Baumann

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*acct  
Prod-mc*

# INVOICE

PO Box 93999  
Southlake, TX 76092

Invoice Number: 147621  
Invoice Date: Dec 13, 2014  
Page: 1

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

Federal Tax I.D.#: 20-8651475

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

Customer ID	Field Ticket #	Payment Terms	
Murfin	64861	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Oakley	Dec 13, 2014	1/12/15

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	Engle #1-8		
200.00	CEMENT MATERIALS	Class A Common	17.90	3,580.00
564.00	CEMENT MATERIALS	Chloride	1.10	620.40
210.00	CEMENT SERVICE	Cubic Feet Charge	2.48	520.80
387.20	CEMENT SERVICE	Ton Mileage Charge	2.75	1,064.80
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
40.00	CEMENT SERVICE	Pump Truck Mileage	7.70	308.00
1.00	CEMENT SERVICE	Manifold Head Rental	275.00	275.00
40.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	176.00
1.00	CEMENT SUPERVISOR	Andrew Forslund		
1.00	EQUIPMENT OPERATOR	Brandon Wilkinson		

Subtotal	8,057.25
Sales Tax	300.33
Total Invoice Amount	8,357.58
Payment/Credit Applied	
<b>TOTAL</b>	<b>8,357.58</b>

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

\$ 2,820.03 *✓*

ONLY IF PAID ON OR BEFORE

Jan 12, 2015

*- 2820.03*  
*5537.55*  
*MJR*

# ALLIED OIL & GAS SERVICES, LLC 064861

Federal Tax I.D. # 20-8651475

REMIT TO P.O. BOX 93999  
SOUTHLAKE, TEXAS 76092

SERVICE POINT:  
COKELEY

DATE <u>12-13-14</u>	SEC. <u>8</u>	TWP. <u>5</u>	RANGE <u>30</u>	CALLED OUT	ON LOCATION <u>7:00pm</u>	JOB START <u>8:00am</u>	JOB FINISH <u>8:30am</u>
LEASE <u>Englee</u>	WELL# <u>1-8</u>		LOCATION <u>Reiford 2N 1E 5N</u>		COUNTY <u>Deatur</u>	STATE <u>KS</u>	
OLD OR NEW (Circle one) <u>NEW</u>			<u>8 into</u>				

CONTRACTOR Muffin 7  
 TYPE OF JOB Surface  
 HOLE SIZE 12 1/8" T.D. 219'  
 CASING SIZE 8 5/8" DEPTH 219'  
 TUBING SIZE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 DRILL PIPE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 TOOL \_\_\_\_\_ DEPTH \_\_\_\_\_  
 PRES. MAX \_\_\_\_\_ MINIMUM \_\_\_\_\_  
 MEAS. LINE \_\_\_\_\_ SHOE JOINT \_\_\_\_\_  
 CEMENT LEFT IN CSG. 15'  
 PERFS. \_\_\_\_\_  
 DISPLACEMENT 12,99000

OWNER Same  
 CEMENT AMOUNT ORDERED 200 sks com 3%cc

EQUIPMENT \_\_\_\_\_  
 PUMP TRUCK CEMENTER Andrew Firstlund  
 # 431 HELPER Brandon Milliken  
 BULK TRUCK \_\_\_\_\_  
 # 818 DRIVER Jeff (TWS)  
 BULK TRUCK \_\_\_\_\_  
 # \_\_\_\_\_ DRIVER \_\_\_\_\_

COMMON 200 sks @ 12.90 3580.00  
 POZMIX @ \_\_\_\_\_  
 GEL @ \_\_\_\_\_  
 CHLORIDE 524# @ 1.10 620.40  
 ASC @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 Material. Water @ \_\_\_\_\_ 4200.00  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 HANDLING 210 cu ft @ 2.48 520.80  
 MILEAGE 2.25 toynlake @ 9.68 1064.80  
 TOTAL \_\_\_\_\_

REMARKS:

Cement did circulate.  
10 bbls to P.T  
  
Thank you

CHARGE TO: Muffin  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

SERVICE

DEPTH OF JOB 219'  
 PUMP TRUCK CHARGE \_\_\_\_\_ 1572.25  
 EXTRA FOOTAGE @ \_\_\_\_\_  
 MILEAGE 40 miles @ 7.20 328.00  
 MANIFOLD head @ \_\_\_\_\_ 325.00  
Light vehicle @ 4.40 124.00  
 \_\_\_\_\_ @ \_\_\_\_\_  
 TOTAL 3,256.85

PLUG & FLOAT EQUIPMENT

\_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 TOTAL \_\_\_\_\_

To: Allied Oil & Gas Services, LLC.  
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME Fred William  
 SIGNATURE [Signature]

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES 8,057.25  
 DISCOUNT 2,820.03 (35%) IF PAID IN 30 DAYS  
5,237.21 Net.



P. O. Box 466  
Ness City, KS 67560  
Off: 785-798-2300

# Invoice

DATE	INVOICE #
12/22/2014	27013

BILL TO	
Murfin Drilling Co Inc PO Box 661 Colby, KS 67701-0661	USED FOR <u>IC 103</u> APPROVED <u>JT NB</u>

- Acidizing
- Cement
- Tool Rental

TERMS	Well No.	Lease	County	Contractor	Well Type	Well Category	Job Purpose	Operator
Net 30	#1-8	Engel	Decatur	Company Rig	Oil	Development	Top To Bottom ...	Don
PRICE REF.	DESCRIPTION				QTY	UM	UNIT PRICE	AMOUNT
575D	Mileage - 1 Way				110	Miles	6.00	660.00
579D	Pump Charge - Top To Bottom LongString - 2660 Feet				1	Job	2,000.00	2,000.00
580	Additional Hours - Plug Back 2 Plugs				5	Hours	200.00	1,000.00
221	Liquid KCL (Clayfix)				2	Gallon(s)	25.00	50.00T
281	Mud Flush				500	Gallon(s)	1.25	625.00T
290	D-Air				5	Gallon(s)	42.00	210.00T
403-5	5 1/2" Cement Basket				3	Each	300.00	900.00T
406-5	5 1/2" Latch Down Plug & Baffle				1	Each	275.00	275.00T
407-5	5 1/2" Insert Float Shoe With Auto Fill				1	Each	375.00	375.00T
409-5	5 1/2" Turbolizer				12	Each	90.00	1,080.00T
330	Swift Multi-Density Standard (MIDCON II)				470	Sacks	18.50	8,695.00T
276	Flocele				118	Lb(s)	2.50	295.00T
581D	Service Charge Cement				470	Sacks	2.00	940.00
583D	Drayage				2,572.35	Ton Miles	1.00	2,572.35
Subtotal								19,677.35
Sales Tax Decatur County							7.15%	894.11
IC103 Z 2168.0001.1					20,571.46	Cement Prod Log #1-8		

**Thank You For Your Business & Best Wishes For A Wonderful Holiday Season!!** **Total** \$20,571.46





Services, Inc.

CHARGE TO: Martin Dry Co.  
 ADDRESS  
 CITY, STATE, ZIP CODE

CITY, STATE, ZIP CODE

**COPY**  
 Original in W.F.

TICKET 27013

PAGE 1 OF 2

1. <u>Hayes, Ks</u>	WELL PROJECT NO. <u>1-8</u>	LEASE <u>Engle</u>	COUNTY/PARISH <u>Decatur</u>	STATE <u>Ks</u>	CITY	DATE <u>12-22-14</u>	OWNER	
2. <u>Mess C&amp;K, Ks</u>	TICKET TYPE <input checked="" type="checkbox"/> SERVICE	CONTRACTOR <u>Q Rg</u>	RIG NAME/NO.	SHIPPED <u>W/ST</u>	DELIVERED TO <u>M/Kesler, Ks</u>	ORDER NO.		
3.	WELL TYPE <u>oil</u>	WELL CATEGORY <u>infield</u>	JOB PURPOSE <u>Out-Play Back Top To Bottom LS</u>	WELL PERMIT NO.	WELL LOCATION			
4.	REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC ACCT DF	DESCRIPTION	QTY. U/M	QTY. U/M	UNIT PRICE	AMOUNT

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC ACCT DF	DESCRIPTION	QTY. U/M	QTY. U/M	UNIT PRICE	AMOUNT
575			MILEAGE #113	110 mi	3600 ft	6000	66000
579			Cement Pump Charge - Top To Bottom	1 ea	20000 ft	20000	200000
580			Additional Hours Plug Back 2 Plugs	51 ea		20000	100000
881			Liquid KCL	2 gal		2500	5000
881			Mud Flush	500 gal		185	62500
390			D-Air	5 gal		4200	21000
463			Cement Baskets	3 ea	5 1/2 in	30000	90000
466			Lath. Down Plug 6 Bottle	1 ea	5 1/2 in	27500	27500
467			Insert Head Shoe w/ EIL-up	1 ea	5 1/2 in	37500	37500
469			Tabularizes	12 ea	5 1/2 in	9000	108000

**LEGAL TERMS:** Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY**, and **LIMITED WARRANTY** provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

DATE SIGNED 12-22-14 TIME SIGNED 14:30  A.M.  P.M.

**REMIT PAYMENT TO:**  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

**SURVEY**  
 OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?  
 WE UNDERSTOOD AND MET YOUR NEEDS?  
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?  
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?  
 ARE YOU SATISFIED WITH OUR SERVICE?  
 CUSTOMER DID NOT WISH TO RESPOND

**PAGE TOTAL** 719500  
125000  
1967735  
 Subtotal  
 Decatur TAX 89411  
 7.015%  
 TOTAL 20,571,46

SWIFT OPERATOR: Alber Lewman APPROVAL

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

Thank You!



-JOB LOG

SWIFT Services, Inc.

DATE 12-22-14 PAGE NO. 1

CUSTOMER Martin Drilling Co. WELL NO. 1-8 LEASE Engle JOB TYPE Cut Plugback L.S. TICKET NO. 27013

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1430					15.5 #/ft	5 1/2"	ON location - Float Equip + P.T. cut on loc -
	1600		10 14 3 1/2 56					Rig circ @ 4479' Hook to D.P. 4 1/2" @ 4479' 10 BBL H <sub>2</sub> O 50 SKS SMD cut @ 14 #/gal 3 1/2 BBL H <sub>2</sub> O Rig pump 56 BBL Mud
	1630							Plug Complete - Pull D.P. TO 2785'
	1710		10 7 3 1/2 34					Hook to D.P. @ 2785' 10 BBL H <sub>2</sub> O 25 SKS SMD @ 14 #/gal 3 1/2 BBL H <sub>2</sub> O Rig pump 34 BBL Mud
	1745							Plug Complete - Rig pull all D.P.
	1900							Fin L.D. D.P.
	2100							Start 5 1/2" casing - 15.5 #/ft to 2668' Insert Float Shoe w/ Fill up LD Baffle - SS - 17 1/2' @ 2650 1/2' = (63 BBL) Cent-Turbos - 1-3-5-7-9-11-13-15-17-19-21 and 23 - Cut Baskets Pin end #2-12-24 Drop fill-up ball 5 sks out
	2210							Fin running casing
	2215							Rig start circ
	2315							Fin circ
			9 6					Plug RH-30SKS SMD cut / MH-20SKS SMD cut
		5 1/2					400	500 gel Mud Flush
		6					400	20 BBL KCL Flush
		5 1/2	125	151			400	225 SKS SMD cut @ 11.2 #/gal
		5 1/2	26	1165			300	70 SKS SMD cut @ 12.7 #/gal
		5	14				300	50 SKS SMD cut @ 14 #/gal
							VAL	Fin cut - Wash out Pump Lines
		9					700	Drop Plug - Start Displ
		9 8	18				450	Caught lift press - slow rate
							800	Last circ press - (cut circ to pit 25 SKS)
	2400		63				1500	Plug Down - Hold - Release to Hold Job Complete

COPY

*Handwritten notes:*  
 1630  
 1710  
 1745  
 1900  
 2100  
 2210  
 2215  
 2315

Engle #1-8  
 1210' FNL 500' FWL  
 Sec. 8-5S-30W  
 2917' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	2629	+288	+15	2647	+270	-3
B/Anhydrite	2656	+261	+24	2682	+235	-2
Topeka	3745	-828	+1	3747	-830	-1
Heebner	3918	-1001	flat	3918	-1001	Flat
Lansing	3963	-1046	flat	3964	-1047	-1
Stark	4131	-1214	-2	4129	-1212	Flat
BKC	4180	-1263	-2	4178	-1261	Flat
Pawnee	4290	-1373	-2	4292	-1375	-4
Ft Scott	4366	-1449	Flat	4365	-1448	+1
Cherokee	4378	-1461	Flat	4376	-1459	+2
Mississippi	NR			NR		
RTD	4480					
LTD				4480		