



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1208066
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: _____

1208066

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <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> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Potthoff 1-4
Doc ID	1208066

All Electric Logs Run

Dual Induction
Dual Compensated
Microresistivity
Borehole Compensated

ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST
 MPO Co. Ltd. 6824
 2214 S. 231st St. W. Grandview, MO 64038 - 8240 (913) 794 - 8222

DRILLING TIME AND SAMPLE LOGS

OPERATOR: **Murfin Drilling Co., Inc.**
 LEASE: **Bethoff** WELL NO.: **1-4**
 FIELD: **Jones Canyon**
 LOCATION: **2100'FNL, 500'FWL**
 SEC.: **4** TWP: **15** RANGE: **37W**
 COUNTY: **Cherokee** STATE: **KS**
 API NO.: **15-023-21381-00-00**

CONTRACTOR: **Murfin Drilling Co., Rig #20**
 DRAINED: **Feb. 19, 2014** COMPLETED: **3/3/14**
 ROTARY TOTAL DEPTH: **4660'** LOG TOTAL DEPTH: **4660'**
 GEOLOGICAL SUPERVISION FROM: **3440'** TO: **T.D.**
 MUD-UP DEPTH: **3308'** MUD TYPE: **Chemical Polymer**

FORMATION	DEPTH	LOG	THICKNESS
Stone Corns/Anhy.	3096 (+26')	3094 (+38)	-7'
Base of Anhydrite	3127 (-5')	3126 (-4)	-5'
New Ls.	3546 (-424)	3544 (-422)	-3'
Red Eagle Ls.	3610 (-488)	3609 (-487)	-3'
Forker Ls.	3658 (-536)	3656 (-534)	-4'
Storler Ls.	3800 (-678)	3799 (-677)	+2'
Toparkg. fm.	3875 (-753)	3875 (-753)	-5'
Oread Ls.	4005 (-883)	4008 (-886)	-3'
Lensing group	4088 (-966)	4086 (-964)	-3'
Stark shale	4304 (-1182)	4304 (-1182)	-2'
Base of Claygp.	4362 (-1240)	4364 (-1242)	-5'
Rawlnee Ls.	4476 (-1354)	4478 (-1356)	-3'
Cherokee Sh.	4567 (-1445)	4566 (-1444)	-2'
Total Depth	4660	4660	

ELEVATIONS
 KB **3122'**
 GL **3111'**
 Measurements are all from KB

CASING RECORD
 SERVICE: **8 5/8", 23#**
@ 223' w/215 SK. PVC.
 PRODUCTION: **11 1/4", 5 1/2"**
15.50# @ 4652' w/1
500 SK. PVC.

WIRELINE SERVICES
 Pioneer Energy
 Services: BHC Sonic,
 Micro-sis, Turbidity, Dual
 Compensated Porosity
 and Dual Induction logs
 Ward Run.

LOCATION MAP

Location	
0 MDC Bethoff	
4 #1-4	

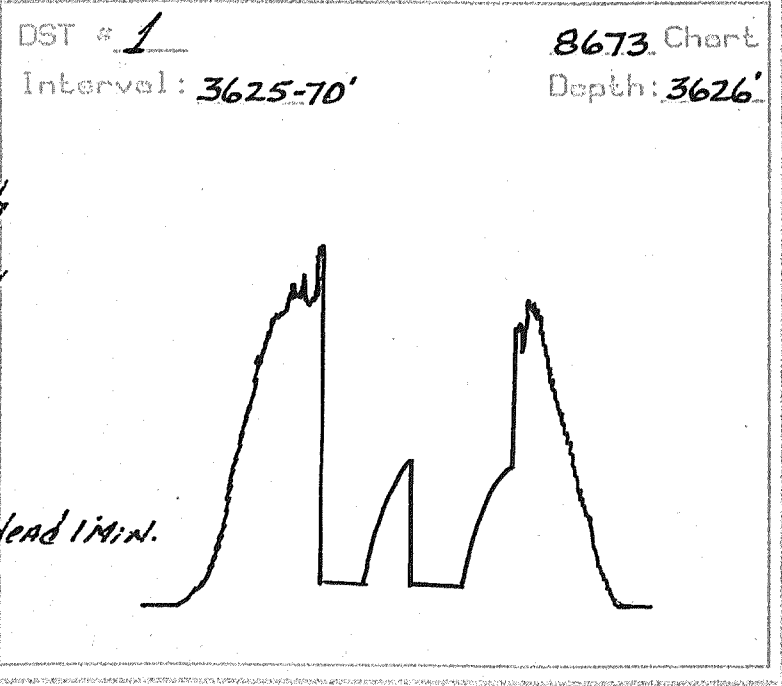
Reference Well for Structural Comparison: **MDC Shores Well #1-5, Exp. E4/E2 5-15-37W**
 Comments and Recommendations: **Recommended LRE J' Zone completion.**

DST # 1 ZONE: Forker Ls.
 INTERVAL: 3625'-3670'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2079 psi	180' Mud with
2. Initial Flow: Start	0	106 psi	Dil specks
3. Initial Flow: End	30	107 psi	Note: Tool slid
4. Initial Shut-in: End	30	818 psi	12' to bottom,
5. Final Flow: Start	0	107 psi	opened last
6. Final Flow: End	30	107 psi	2'.
7. Final Shut-in: End	30	797 psi	Blow Desc:
8. Final Hydrostatic		1714 psi	I.F. - Surf. blow - dead 1 Min.

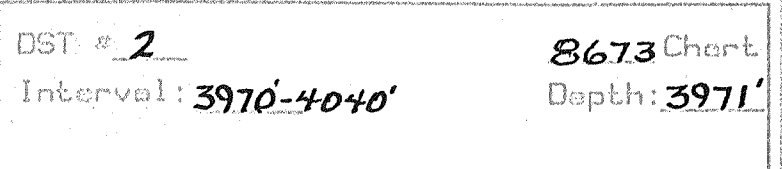
BHT: 118°F
 Rv: _____

I.S.I. - No blow
 F.F. - No blow
 F.S.I. - No blow



DST # 2 ZONE: Oread Ls.
 INTERVAL: 3970'-4040'

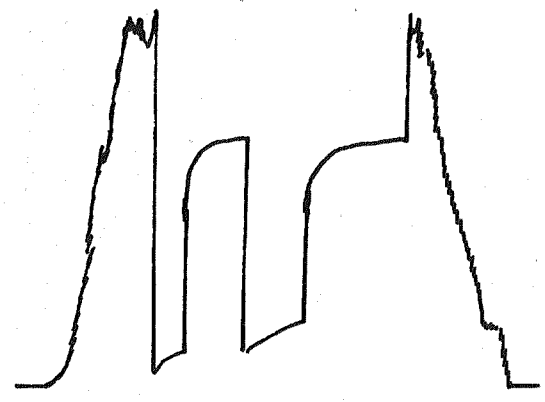
Pressures:	Time	Press.	RECOVERY
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1. Initial Hydrostatic		2064	psi	156' Mud
2. Initial Flow: Start	0	55	psi	189' water cut Mud
3. Initial Flow: End	30	190	psi	(25% water)
4. Initial Shut-in: End	60	1352	psi	255' Mud cut water
5. Final Flow: Start	0	198	psi	(25% Mud)
6. Final Flow: End	60	372	psi	184' Mud cut water
7. Final Shut-in: End	90	1345	psi	(5% Mud)
8. Final Hydrostatic		2021	psi	Blow Desc.

BHT: 136°F
 Rv: Chlorides 19,000 ppm
 (titrated by Morgan Mud)

I.F. - BOB 18 Min.
 I.S.I. - No blow
 F.F. - BOB 15 Min.
 F.S.I. - No Blow

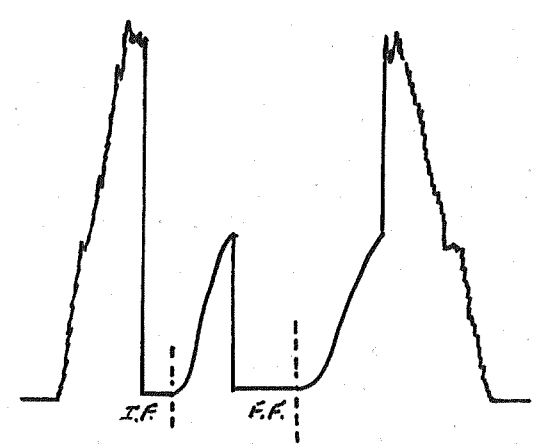


DST # 3 ZONE: Lansing 'A' and 'D' Zones
 INTERVAL: 4043'-4165'

Pressures:	Time	Press.	RECOVERY	
1. Initial Hydrostatic		2041	psi	68' Gas + Oil Cut Mud
2. Initial Flow: Start	0	19	psi	(5% gas, 15% oil)
3. Initial Flow: End	30	27	psi	
4. Initial Shut-in: End	60	927	psi	Blow Desc:
5. Final Flow: Start	0	34	psi	I.F. - built to 2"
6. Final Flow: End	60	43	psi	I.S.I. - No blow
7. Final Shut-in: End	90	936	psi	F.F. - built to 1/2"
8. Final Hydrostatic			psi	F.S.I. - No blow

BHT: 127°F
 Rv: _____

DST # 3 8673 Chart
 Interval: 4043'-4165' Depth: 4044'

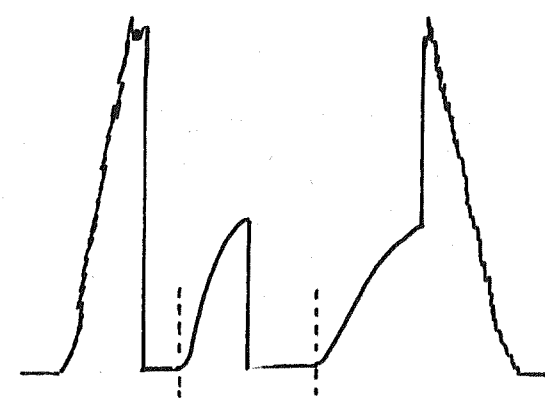


DST # 4 ZONE: L-KC 'G' Zone
 INTERVAL: 4157'-4235'

Pressures:	Time	Press.	RECOVERY	
1. Initial Hydrostatic		2081	psi	75' Oil Cut Mud
2. Initial Flow: Start	0	19	psi	(10% Oil)
3. Initial Flow: End	30	37	psi	
4. Initial Shut-in: End	60	922	psi	Blow Desc:
5. Final Flow: Start	0	43	psi	I.F. - built to 1 1/2"
6. Final Flow: End	60	60	psi	I.S.I. - No blow
7. Final Shut-in: End	90	890	psi	F.F. - built to 1"
8. Final Hydrostatic		2055	psi	F.S.I. - No blow

BHT: 128°F
 Rv: _____

DST # 4 8673 Chart
 Interval: 4157'-4235' Depth: 4158'

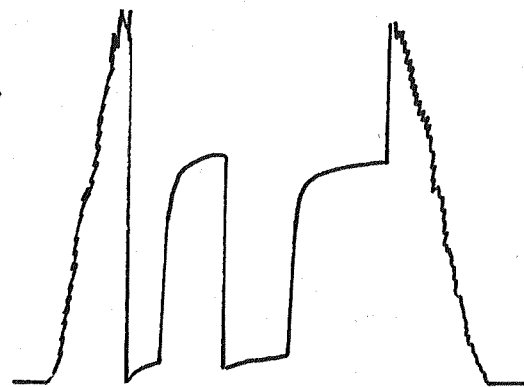


DST # 5 ZONE: K.S. City 'H', 'I' & 'J' Zones
 INTERVAL: 4214'-4309'

Pressures:	Time	Press.	RECOVERY
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DST # 5 8673 Chart
 Interval: 4214'-4309' Depth: 4215'

1. Initial Hydrostatic _____ 2157 psi 642' Gas
 2. Initial Flow: Start 0 30 psi 40' clean Oil
 3. Initial Flow: End 30 108 psi (1% gas)
 4. Initial Shut-in: End 60 1326 psi 308' Gas + Oil cut Mud
 5. Final Flow: Start 0 109 psi (20% gas, 28% oil)
 6. Final Flow: End 60 155 psi 38° gravity oil
 7. Final Shut-in: End 90 1287 psi Blow Desc:
 8. Final Hydrostatic _____ 2121 psi I.F. - BOB 23 min.
 I.S.I. - 1/2" blow
 F.F. - BOB - 15 min.
 F.S.I. - built to 2"



DST # 6 ZONE: UPPER Pawnee Ls.
 INTERVAL: 4455'-4510'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2298 psi	2' Drilling Mud
2. Initial Flow: Start	0	18 psi	
3. Initial Flow: End	30	19 psi	
4. Initial Shut-in: End	60	104 psi	Blow Desc:
5. Final Flow: Start	0	20 psi	I.F. - 1/8"
6. Final Flow: End	30	21 psi	I.S.I. - No blow
7. Final Shut-in: End	60	56 psi	F.F. - No blow
8. Final Hydrostatic		2265 psi	F.S.I. - No blow

BHT: 132°F
 Rv: _____

DST # 6 8673 Chert.
 Interval: 4455'-4510' Depth: 4456'



ABBREVIATIONS USED

ROCK TYPES:

La - Limestone
 Sh - Shale
 Sp - Sandstone
 Slt - Siltstone
 Co - Conglomerate
 Ch - Chert
 Qtz - Quartzite
 Grn - Granite
 Dol - Dolomite
 Chk - chalky

COLOR:

Wh - White
 Crm - Cream
 Clr - Clear
 Rd - Red
 Grn - Green
 Bru - Brown
 Blk - Black
 Mst - Mottled

HARDNESS:

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

FAERIC:

Fn.grn - Finegrained
 VFG - Very fine grained
 Med - Medium
 Co - Coarse
 Det - Detrital
 Foss - Fossiliferous
 Cr - Crystalline
 Mln - Microcrystalline
 Gal - Galitic
 Op - Opaloid
 Mat - Matrix

OTHER TERMS:

Fl - Fluorescence (of oil)
 min fl - mineral fluorescence
 pyr - pyritic
 glau - glauconitic
 carb - carbonaceous
 stn - stain (of oil)
 cut - oil cut
 AA - as above
 sp - sparsity
 NEFOC - no stain, fluorescence, odor, or cut (of oil)
 nopl - 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 - wall
 tr - trace
 occ - occasional
 vis - visible
 N - no
 gran - granular
 Intgran - intergranular
 pp - pinpoint
 dd - dead
 gey - gassy

OIL SHOWS

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

TEXTURE:

Dns - Dense
 Gly - Gummy
 Fri - Friable
 Earth - Earthy
 Bkck - Blocky
 Fib - Fibrous
 Vit - Vitreous
 Vug - Vugular
 Mic - Micritic

ROCK TYPE SYMBOLS

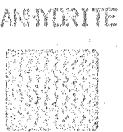
SHALE

CARBONACEOUS

QUARTZITE

SANDSTONE

LIMESTONE



LITHOLOGY

DRILLING TIME



GAS SHOWS



Oil Shows

SAMPLE DESCRIPTIONS

REMARKS

3050

3100

3150

Drilling with PDC bit.

Stone Corral Anhydrite (+26')

Base of Anhydrite (-5')

Mudcheck @ 3400' M.w. 8.9 lb. / gal.

Vis. 77 sec. 19².
 W.L. 5.2 cc/30 min.
 Chl. 700 ppm
 Solids 4.3%
 LCM 4 lb/166l.

Displace. Native Mud @ 3308'

Start 10' Wet and dry samples
 and 1' drilling time at 3400'

Bit trip for button bit @ 3400'

Pipe strap
 - 89' long
 Deviation 1/2°

3400

Sh: rd-gry. grn.-grn., m. sft., sft., dns.,
 occ. sandy.-silty, earthy
 Ss: gry.-wh., sh. stnd., tan-vfg., w. cmtd.
 tr. fr. in., w. ind. tr. pr. ϕ NSFOC

Sh: rd. brn.-tr. dk. gry., m. sft., dns.,
 sandy.-v. sandy., earthy, tr.
 ls. pebbles

Sh: sfts. rd. brn., tr. gry. grn.-gry.
 sandy.-v. sandy., earthy
 tr. Ss: rd. brn.-gry., m. hrd., vfg.-
 w. cmtd., w. ind. N ϕ NSFOC

Sh: v. sandy., A.A. tr. ls. & ch.
 pebbles

tr. Ss: gry.-tan, m. hrd., dns., vfg.-
 sub. ang., w. cmtd. N ϕ NSFOC

Sh: rd. brn., m. sft., sandy., earthy
 Ss: gry.-rd. brn., m. sft., m. hrd.,
 dns., tan-vfg., sub. ind., v. w.
 cmtd. calc. N ϕ NSFOC

Sh: rd. brn., m. sft., v. sandy., earthy
 occ. ls. & ch. pebbles

tr. Ss: A.A., tan-vfg., sub. ind., w.
 cmtd., 1-2 pr. pr. ϕ NSFOC

Ss: crm., m. sft., tan-vfg., mod. sand,
 sub. ind., ang., w. cmtd., v. pr. vis. ϕ

tr. Ss: dd. oil stn., occ. brn. stn.,
 tr. cut. sft., no F.O., no odor, ? perm

tr. Ss: A.A. occ. blk. stn., N ϕ

Sh: sfts.-Ss: rd., m. sft., dns.,
 v. pr. sftd., clay matrix,
 earthy

Sh: sfts: rd.-rd. brn., m. hrd.-
 m. sft., dns., sandy.-v. sandy.
 earthy

Sh: rd.-rd. brn., m. hrd.-m. sft.,
 sandy.-v. sandy., tr. ls. pebb.
 occ. silty., earthy

Sh: A.A., v. sandy, tr. ch. & ls. pebb.

tr. Ss: gry.-gry. grn., sft., tan, vfg.
 sh. matrix. N ϕ NSFOC

Sh: rd. brn., m. hrd.-sft., dns.,
 sandy.-v. sandy., tr. gry. grn.-
 dk. gry. sandy., earthy, occ.
 ls. & ch. pebbles

Sh: A.A., occ. v. sft. clayey, rare
 sandy., earthy-clayey

Sh: sfts: rd.-rd. brn., m. sft.-
 sft. clayey, sandy, occ.
 ls. pebb., earthy

Sh: sfts: A.A.

Ss: gry., sft., tan, vfg., pr. sftd.,
 ang., sub. ind., w. cmtd., no vis.
 ϕ occ. mica. N ϕ NSFOC.

sandy Sh: A.A.,
 ls: crm., hrd., dns., vfg.-mx ln.,
 foss-v. foss. N ϕ NSFOC

ls: crm., hrd., dns., vfg.-mx ln.
 foss. & occ. ool., tr. sandy.
 N ϕ NSFOC

Sh: rd., sandy., earthy
 Sh: A.A., m. sft.

tr. Ss: gry., hrd., dns., vfg., N ϕ NSFOC

ls: crm., hrd., dns., vfg.-mx ln.,
 mic., occ. foss., tr. sandy. N ϕ NSFOC

tr. ls: A.A., N ϕ NSFOC

Sh: rd.-rd. brn., sft. clay.-m.
 hrd., dns., sandy.-v. sandy.
 earthy

Sh: Ss: rd. brn., m. hrd.-hrd.,
 dns., v. sandy.-ch. ls. Ss:

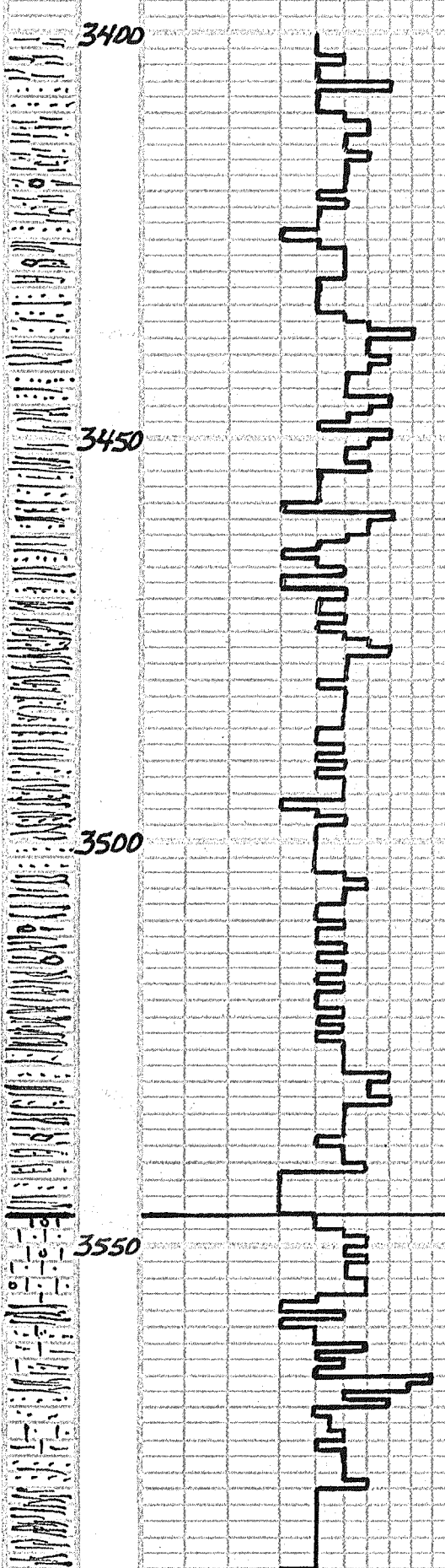
Very weak show

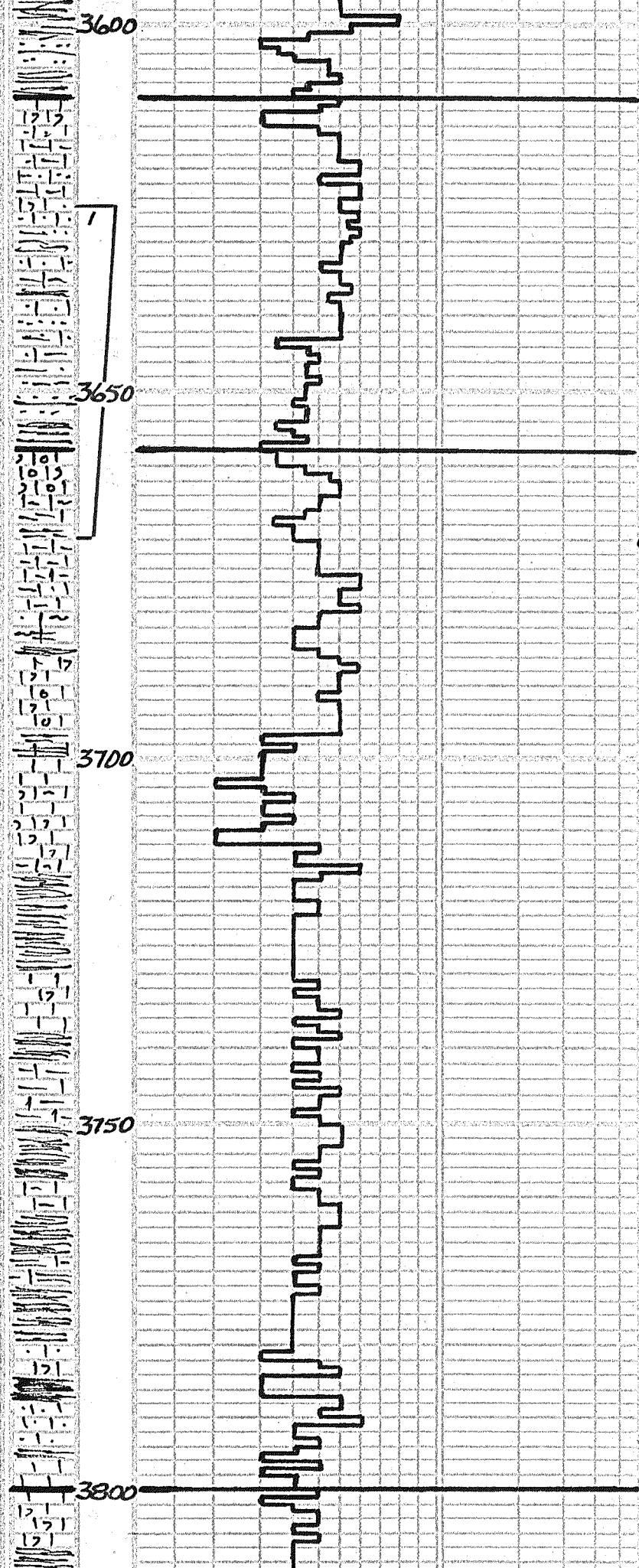
Neve ls.
 (-424')

3450

3500

3550





Sh: rd. brn., sft. clayey - hrd.,
 dns., sndy - v. sndy, earthy
 Sh: A.A.
 Ls: crm - lt. gry., hrd, dns., VFG -
 mxln., occ. sndy., occ. foss.
 NØNSFOC
 Ls: crm - lt. gry., hrd., dns., VFG -
 mxln., foss. + ool., sndy - v.
 sndy - calc. ss: gry., hrd., VFG
 v. w. cm to. NØNSFOC
 Ls: A.A., sh. stnd. NØNSFOC
 Sh: rd. brn. - mar., m. hrd - sft.,
 sndy., earthy
 Sh: A.A.
 Ls: crm - lt. gry., hrd., dns., VFG -
 mxln., sndy - v. sndy., occ.
 foss. NØNSFOC
 Sh: rd. brn., sft. clay. - m. sft. +
 earthy., occ. sndy - sly.
 Ls: crm - wh., hrd., dns., VFG, mxln.
 foss. + ool. w/ pr. fr. int. part. var.
 Ø, tr. lgr. open vms perm. grns.
 dk. brn. stn., wk. odor, wk. sp. show
 lt. brn. F.O. 1 qd. - ex. cut + fl.
 Ls: gry., hrd., dns., VFG, mxln.,
 foss., abun. sh. stnd. NØNSFOC
 Sh: gry. - dk. gry., m. hrd - m. sft.
 tr. ch. pebb. earthy - hackly
 Ls: gry - dk. gry., hrd., dns., VFG -
 mxln., mic., tr. foss., abun.
 sh. stnd. NØNSFOC
 Sh: dk. gry., m. sft., dns., hack.
 Sh: A.A.
 Ls: crm - gry., hrd - m. hrd., dns.,
 VFG - mxln., foss. + ool. w/ dd. oil
 stn. around grns., No F.O. No odor
 Ls: crm - m. sft. - m. hrd., dns.,
 VFG, mxln., occ. foss., tr. sh. stnd.
 NØNSFOC
 Ls: A.A., tr. dd. stn. around
 foss. grns., No odor, No F.O.
 No live oil, v. ? perm.
 Ls: A.A., tr. dd. oil A.A.
 Sh: dk. gry - gry., m. hrd., dns.,
 hackly.
 Sh: A.A. w/ sh. sft. rd. brn.,
 sly., clayey
 Ls: crm., hrd., dns., mxln., mic.
 tr. foss. NØNSFOC
 Ls: A.A., occ. sndy. NØNSFOC
 Sh: gry. - mar., m. sft. - m. hrd. dns.
 hackly. - earthy
 Ls: crm - lt. gry., hrd - m. hrd., dns.,
 VFG - mxln., occ. sndy., tr. foss.
 tr. sh. stnd. NØNSFOC
 Sh: rd. brn., sly., earthy, sly.
 Ls: A.A., occ. rd. sh. stnd. NØNSFOC
 Sh: rd. brn. - dk. gry., m. sft.,
 occ. sndy., earthy
 Sh: rd. brn., sft., occ. sndy. +
 m. sft., earthy.
 Ls: crm - rd. sh. stnd. VFG, mxln.
 rare foss., show NØNSFOC
 Ls: crm - rd. brn., hrd - m. hrd.,
 VFG, mxln., rare foss., occ. sndy.
 NØNSFOC
 Sh: rd. brn. - dk. gry., m. sft., earthy
 Ls: crm, hrd., dns., VFG - mxln.,
 tr. foss., occ. sndy. NØNSFOC
 Sh: rd. brn. m. sft., sndy., earthy
 Sh: gry. - gry. grn., m. sft., hackly
 Sh: A.A.
 Ls: crm., hrd., dns., VFG - mxln., mic.
 occ. foss. w/ pr. pp. var. Ø, dd. oil
 stn., v. wk. cut., No odor, No F.O.
 Ls: A.A. w/ dd. oil stn. A.A. 1-2 pc.
 sly. better Ø, occ. sndy

Red Eagle Ls.
(-408')

DST #1
3625'-3670'
Rec. 180° DSM
(Tool slid 12' to
bottom, open last
2')

Foraker Ls.
(-536')
Falt Show

Mudcheck @ 3670'
M.W. 8.9
W.L. 5.6
Vis. 57
chl. 700PPM
Solids 4.3%
LCM 4#

Stotler Ls.
(-678')
V. Very weak show

sh: d. brn. - gry., sft., earthy,
hackly, tr. sandy.
sh: A.A.
Ls: crm., hrd., dns., VEG-mxln.,
mic., rare foss., NΦ NSFOC

sh: A.A.
Ls: crm-wh., hrd., dns., VEG-mxln., mic.
occ. foss. w/ pr. pp. w/ pp. around gn's
bik. stn., No odor, No F.O. wk. cut + fl. Very weak show
Ls: crm., hrd., dns., VEG-mxln.,
mic., occ. sandy, tr. foss. tool.
NΦ NSFOC

Ls: A.A., tr. w/ pp. vug. φ, dk. dk.
oil stn., wk. cut + fl., No odor
No. F.O., v. perm.
sh: rd. brn., sft.-m. sft., earthy
tr. Ls: A.A. NΦ NSFOC
sh: rd. brn., tr. gry., m. sft., dns.
sandy - v. sandy, earthy

sh: rd. brn. - lt. dk. gry., m. sft.,
dns., sandy - slty., earthy
Ls: crm.-tan, hrd., dns., occ. sft. +
chiky, occ. foss. + sandy, NΦ NSFOC
Ls: crm.-tan - lt. gry., hrd., dns.,
VEG-mxln., mic., tr. chiky, tr.
foss., occ. sandy + sh. stn. NΦ NSFOC

**Topeka Fm.
(-753')**

sh: rd. brn., m. sft., earthy, sandy
sh: A.A., tr. gry.-dk. gry.
Ls: crm.-lt. gry., hrd., dns., VEG-mxln.,
mic., tr. foss., tr. sh. stn., occ.
sandy NΦ NSFOC
tr. sh: A.A.
Ls: crm.-lt. gry., hrd., dns., VEG-
mxln., mlf., tr. chiky, a bun. rd.
sh. stn., tr. sandy, tr. foss. NΦ NSFOC
Ls: crm., hrd., dns., VEG-mxln., mic.
tr. chiky, rare foss., tr. pp.
vug. moldic φ NSFOC

Mud Check @ 3966'
M.W. 9.3
Vis. 70
W.L. 6.0
CHI 700
Solids 7.1 %
LCM 4#

Ls: crm. sft.-hrd., dns., VEG-mxln.
occ. chik., foss., sandy - v. sandy -
calc., ss. wh. itn. grade. NΦ NSFOC
sh: rd. brn. - gry., sft., earthy, sandy
sh: rd. brn. - tr. gry., sft. - v. sft. +
clayey, tr. sandy, earthy

Deviation @ 3928'
1°

sh: A.A. more sandy
Ls: crm., hrd., dns., mxln., mic.
occ. foss. NΦ NSFOC

Ls: crm.-lt. gry., hrd., dns., VEG-
mxln., mic., foss., tr. sh.
stn. NΦ NSFOC

Ls: A.A., more gry. NΦ NSFOC
sh: rd. brn. - may., m. sft. - m. hrd.
dns., occ. slty., earthy

sh: rd. brn., m. sft. - m. hrd., dns.,
occ. slty., earthy

DST #2
3970'-4040'
Rec. 784'
Mud + MCW

sh: A.A., tr. gry., earthy
tr. Ls: crm., hrd., dns., foss.,
mxln., pass casing NΦ NSFOC

Ls: A.A., occ. tan, foss. dns., VEG-
mxln. NΦ NSFOC
sh: rd. brn., m. sft., dns., earthy
sandy

Dread Ls. (-883')

Ls: crm.-tan, hrd., dns., VEG-mxln.
mic., foss. w/ pr. pp. w/ part φ
tr. pp. vug. moldic φ, dk. brn. stn.,
No F.O., No. wk. odor, qd. cut + fl. ? perm. Very weak show
Ls: wh.-crm., m. sft. - m. hrd., VEG-mxln.
foss. tool. w/ pr. tr. moldic vug φ
occ. lgr. vugs, bik. brn. stn., No odor
tr. pr. sft., qd. cut + fl., ? perm.

Fair-weak show

Ls: A.A., tr. sft., chiky, dk. bik. gil
stn. w/ brn. stn., tr. F.O., No odor
tr. cut + fl., occ. lgr. vugs, tr.
pr. VEG-mxln. perm.

Weak show

Ls: crm.-gry., hrd.-m. sft., VEG-mxln.,
occ. foss. w/ VEG, pp φ. Around gn's
Haebner Sh. (-914')



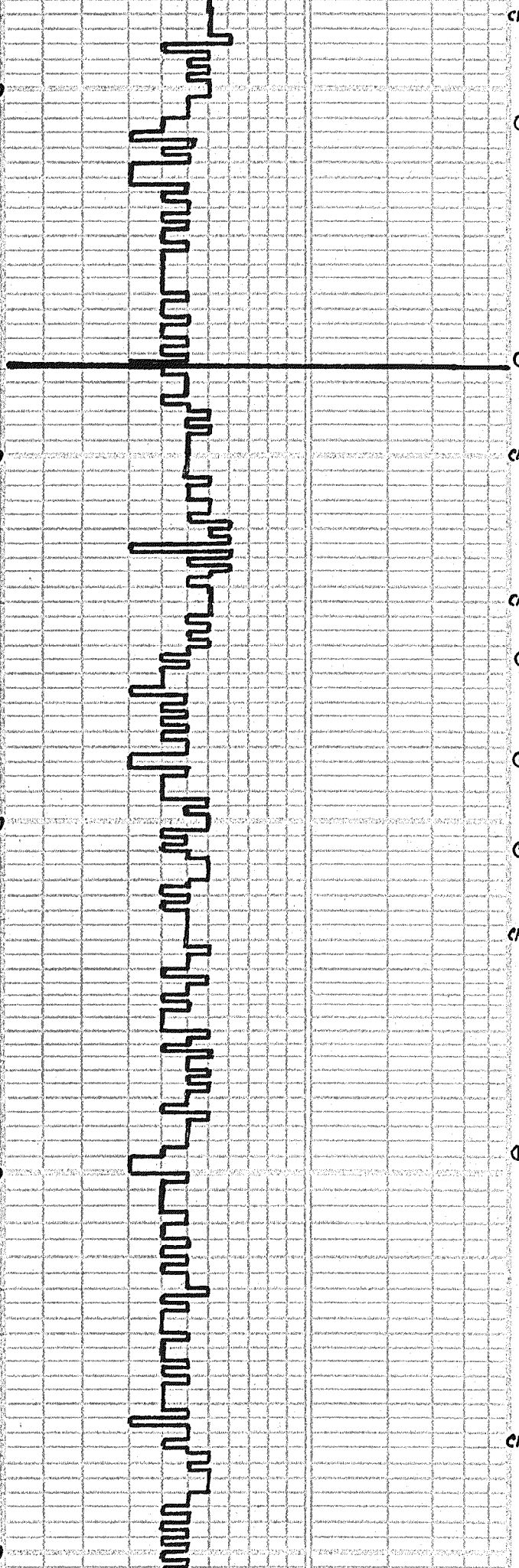
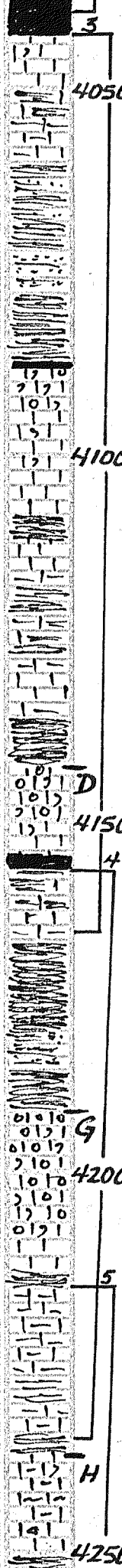
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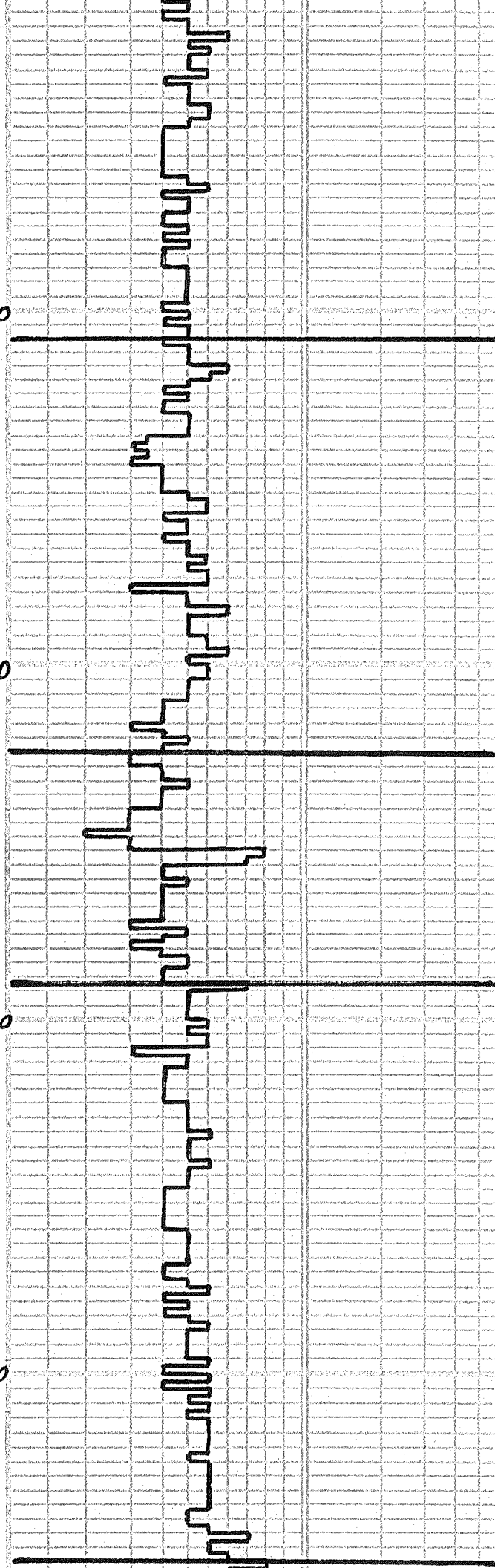
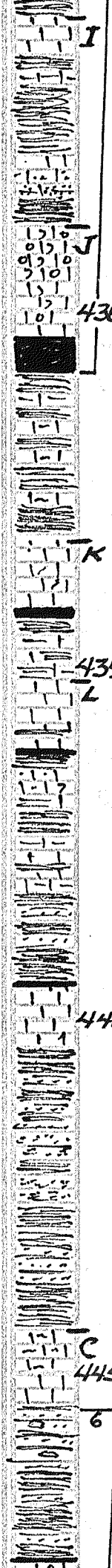
4000

2



occ. 1/2 in. Vug. moldic. ϕ . dk. oil stn.
 No odor, No F.O. iff. cut + fl.
 CFS Ls: erm. gry., hrd., dns., VFGXIN,
 mic., rare foss. N ϕ NSFOC
 Sh: dk. gry. - blk., m. stf., carb.
 earthy
 Ls: crm. - tan, hrd., dns., VFGXIN, foss.
 w/ pr. - fr. pp. Vug. ϕ , th. pp. Vugs,
 dk. brn. stn., moldic. ϕ , stn. th. blk. oil
 wk. SFO, tr. odor, qd. cut + fl., perm.
 Ls: A.A., tr. moldic. ϕ w/ stn. AA
 ? perm., V. wk. show
 Sh: gry. - rd. brn., m. stf., dns.,
 earthy - hackly
 Ss: crm. - blk., m. stf., VFG, w. cm. th.
 calc., blk. dd. oil stn., wk. cut +
 fl., No odor., No F.O. No live oil
 Sh: A.A. rd. brn. - gry. qn., stf. clayey
 Sh: A.A.
 Ls: crm. - wh., hrd., VFGXIN, foss. + ool.
 w/ pr. - fr. Vug. ϕ , moldic. ϕ around qns.
 dk. brn. stn., qd. cut + fl., wk. odor, tr. F.O.
 Ls: wh. - tan. A.A., occ. tn. VFG pp.
 Vug. ϕ , th. qd. pp. Vug. ϕ , dk. pr. oil
 stn., blk. oil stn., V. wk. odor, No F.O.
 qd. cut + fl., V. perm.
 CFS Ls: tan, hrd., dns., mxln., mic.,
 rare foss., rare pc. moldic. Vug. ϕ
 dk. brn. stn., No odor, wk. cut + fl.
 No F.O., No perm., V. Very wk. show
 Ls: tan - gry., hrd., dns., mic., tr. pr.
 - V. pr. Vug. ϕ , blk. fatty stn., tr.
 cut + fl., No perm., No F.O., No odor.
 V. Very wk. show
 CFS Sh: gry. - rd. brn. stf., earthy - clayey
 Ls: wh. - m. hrd., VFGXIN, V. foss. w/ qd.
 int. part. Vug. ϕ , blk. live stn., wk.
 odor, SFO, ex. cut + fl., V. thin zone
 Sh: A.A.
 Ls: A.A., qd. Vug. ϕ , qd. blk. live stn.
 blk. oil, wk. odor, SFO, ex.
 cut + fl., thin zone
 Ls: A.A., SFO, sh. better ϕ
 tr. dd. oil stn.
 Sh: rd. brn., m. stf., earthy
 Fair - weak show
 Fair show
 Fair show
 weak show
 Mud Check @ 4165'
 M.W. 9.4 Solids 7.8
 V.S. 54 Chl. 600
 W.L. 5.2 LCM 4
 DST #4
 4157' - 4235'
 REC. 75' DCM
 Ls: wh., hrd., VFGXIN, foss. + ool. w/
 tn. Vug. ϕ around foss. qns., tr.
 pp. Vugs, blk. stn., blk. dk. gry.
 oil, SFO, wk. odor, ex. cut + fl.
 Ls: tr. ϕ + show. A.A., No F.O., No odor
 CFS Sh: gry. - rd. brn., m. hrd., hack - earthy
 Sh: rd. brn. - dk. gry., m. hrd. - stf.
 + clay, occ. snod., earthy - hackly
 Sh: rd. brn. - gry. qn. - dk. gry.,
 tr. nlw., occ. snod., V. snod.
 stf. - m. hrd., dns., earthy -
 hackly
 Sh: rd. - rd. brn., qn., qn., matt.,
 m. hrd. - stf. + clayey, hackly -
 earthy
 Ls: crm. - wh., hrd. - m. stf. + sh. chiky
 VFG - mxln., foss. + ool. - occ. qn. stn.
 qd. int. part. Vug. ϕ w/ dk. - brn. stn.,
 SFO, wk. odor, ex. cut + fl.
 Ls: crm. - lt. gry., VFG - mxln., tr. mic.,
 tr. chik., rare foss. w/ ϕ + show
 A.A., tr. F.O. shen., No odor. poss.
 earnings or v. thin zone
 V. Very weak show
 Ls: crm. - lt. gry., hrd. dns., VFG - mxln.
 mic., tr. chiky, rare pc. - poss.
 earnings, w/ pr. - fr. moldic. Vug. ϕ ,
 dk. brn. - blk. stn., No odor, No F.O.
 Ls: A.A., rare pc. w/ pr. Vug.
 moldic. ϕ , blk. oil stn., No
 odor, No F.O., V. thin zone, perm.
 Mud Check @ 4235'
 M.W. 9.3
 V.S. 65
 W.L. 6.0
 Chl. 1000
 Solids 7.1
 LCM 4.0
 CFS Ls: A.A. w/ 1/2 pc. w/ ϕ + show. A.A.
 Sh: rd. brn. - gry. qn., m. stf., earthy
 Sh: rd. brn. - gry. - dk. gry., m. stf.
 m. hrd., dns., occ. snod., earthy
 Ls: crm. - tan - lt. gry., hrd. dns.,
 VFG - mxln., mic. Abun., sh. stn.
 - rd. sh. - rare foss., tr. pebble
 surface. N ϕ NSFOC
 Ls: A.A., 1 pc. w/ fr. pp. Vug. int. part. ϕ .
 blk. fatty stn., No odor, No F.O.
 CFS Sh: rd. brn. - gry. qn., m. stf., earthy
 V. Very weak show

Weak show
 Weak show
 Mud Check @ 4100'
 M.W. 9.4 Chl. 400
 V.S. 80 Solids 7.9%
 W.L. 4.8 LCM 4#
 Weak show
 Lansing Group
 (-966')
 Very weak show
 DST #3
 REC. 68' G + DCM
 4043' - 4165'
 Weak show
 Fair - weak show
 Fair show
 Fair show
 weak show
 Mud Check @ 4165'
 M.W. 9.4 Solids 7.8
 V.S. 54 Chl. 600
 W.L. 5.2 LCM 4
 DST #4
 4157' - 4235'
 REC. 75' DCM
 Good show
 Very weak show
 V. Very weak show
 Mud Check @ 4235'
 M.W. 9.3
 V.S. 65
 W.L. 6.0
 Chl. 1000
 Solids 7.1
 LCM 4.0
 V. Very weak show



Sh: rd. brn. - gry., m. sft., dns., occ. sandy, earthy - hackly
 Ls: wh. - crm., hrd. dns., vfg - mxln, tr. chiky., occ. foss. topl. w/ pr. vfg. pp. ϕ bet. w. foss. grns., tr. vfg. moldic ϕ dk brn. - blk. tarry stn., no f.o., no odor.
 Ls: A.A., 1-2 pc. w/ ϕ show A.A. Very weak show

Sh: rd. brn. - gry., sft. - m. sft., dns., earthy - clayey, occ. sandy
 Sh: A.A., occ. ls. pebble
 Tr. ss: gry. - tan, m. hrd., dns., fr. vfg. w. emtd., no vis. ϕ . NSFOC DST #5
4214' - 4309'
Rec: 642' GIP
40' CO
308' G + OCM

Ls: tan, hrd., dns., mxln, mic., occ. vfg. xln, foss. dool. w/ pr. - fr. vfg. ϕ , occ. moldic, dk. brn. stn., wk. odor, if sfo ex. cut fl., blq. oil.
 Ls: A.A. w/ vfg pp. ϕ . dk. stn., no odor, no f.o., wk. cut fl., Abun. chiky. Fair show
Very weak show

Sh: dk. gry. - blk., m. hrd., dns., hackly
 Sh: A.A., occ. carb., earthy - hackly
 Sh: rd. brn., m. sft., sandy, earthy
 Ls: wh. - crm., hrd., dns., N ϕ NSFOC Stark shale
(-1182')

Sh: rd. brn. - lt. dk. gry., m. sft. - sft. clay.
 Tr. sandy, tr. Ls: pebb., earthy
 Ls: crm. - lt. gry., hrd., dns., mxln, mic., rare foss. N ϕ NSFOC Mud Check @ 4344'
M.W. 9.4
Vis. 70
W.L. 6.2
Chl. 800
Solids 7.8
LCM 2.0

Ls: crm. - gry., hrd., dns., vfg - mxln, mic., occ. foss., sh. stnd. N ϕ NSFOC
 Sh: rd. brn. - dk. gry., m. sft., earthy, occ. ls. pebbles
 Sh: A.A.
 Ls: lt. gry., hrd., dns., fr. xln - mxln, mic. tr. fac. ϕ w/ lt. brn. stn. in traps. wk. cut fl., no odor, no f.o. (2-3 pc.)
 Ls: crm., hrd., dns., vfg xln, occ. foss., tr. v. pr. pp. moldic ϕ NSFOC V. Very weak show

Sh: rd. brn. - dk. gry., m. sft., dns., occ. sandy, tr. Ls: pebb., earthy
 Ls: crm. - gry., hrd., dns., vfg - mxln, occ. chiky., sandy, tr. foss. N ϕ NSFOC Base of
Kansas City
Group (-1240')

occ. Sh: A.A.
 Ls: crm. - gry., hrd., dns., vfg - mxln, tr. chik., occ. sandy, rare foss. N ϕ NSFOC
 Ls: A.A. N ϕ NSFOC
 Sh: rd. - rd. brn. - dk. gry., sft. clayey - m. hrd., dns., hackly, occ. sandy
 Sh: A.A., Abun. Ls. pebbles, earthy

Tr. Ls: crm. - gry., hrd., dns., sh. stnd. mxln. - poss. pebb. N ϕ NSFOC Marmaton
Group (-1273')

Ls: crm. - gry., hrd., dns., vfg - mxln, mic., occ. sandy, sh. stnd. N ϕ NSFOC
 Sh: rd. brn. - gry. - mar., m. sft. - m. hrd. sandy - st. y., earthy - hackly
 occ. Ls: A.A. N ϕ NSFOC
 Sh: rd. brn. - gry., m. hrd. - sft., sandy - y. sandy, tr. ss: tan, hrd., dns., vfg., w. crtd., no vis. ϕ NSFOC

Sh: rd. brn., sft. clayey - m. hrd., sandy, earthy, occ. ls. pebble,
 Tr. ss: A.A. N ϕ NSFOC

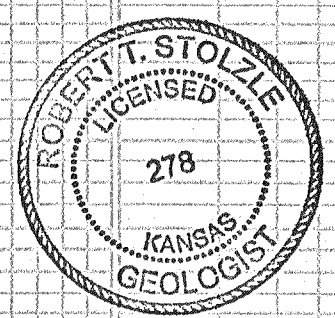
Sh: - sft. rd. brn., sft. clayey - m. hrd., earthy, sandy - v. sandy

Sh: A.A.
 Ls: crm. - gry., hrd., dns., med xln - Abun. foss. tr. sh. stnd. N ϕ NSFOC

Ls: A.A., Abun. sh. stnd., 1 pc. w/ pr. pp. ϕ , lt. stn., wk. cut fl., no odor no f.o. V. Very weak show
 Sh: rd. brn. - mar. sandy, earthy DST #6
4455' - 4510'
Rec. 2' Mud
Deviation 1/4°

Sh: rd. brn. - mar. - gry., m. sft., dns., earthy, sandy, occ. ls. pebb., tr. ss: tan, hrd., dns., vfg., v. w. crtd., N ϕ
 Sh: A.A., occ. sandy, earthy - hackly
 Ls: crm. - gry., hrd., dns., mxln, mic. tr. foss. occ. sh. stnd. N ϕ NSFOC

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○ Ls: wh.-crm., hrd.-m. hrd., VFg xln., foss.
ool. w/ fr. -gd. int part. φ, occ. Yug. φ
dk brn. stn. 1gd. cut. x fl., wk. SF. O.
wk. odor

○ Ls: A. A., occ. ph.-fr. int. ool φ w/
fr.-gd. stn. A. A., occ. int part. Yug
φ, No F. O., No odor, fr. cut fl.
? perm. Sh. gry., hrd. dns. hack.
Sh. gry.-dk gry., m. sft.-m. hrd., hack.
Ls: crm.-gry., hrd. dns., VFg-mxn.,
mic., occ. foss. Nφ NSFOC

CFS Ls: crm.-gry., hrd., dns., VFg xln., foss.-
V. foss. Nφ NSFOC
Sh. gry.-rd. brn. m. sft.-m. hrd., dns.
hack. x. -earthy

Ls: crm.-ft. gry. tr. mar., hrd., dns.,
VFg xln., occ. sandy, rare foss.
Nφ NSFOC

Ls: gry.-lt. gry.-fan, hrd., dns., VFg
xln., occ. sandy. Nφ NSFOC

Sh: dk gry.-blk., m. hrd., carb., earthy

Ls: gry.-fan, hrd., dns., VFg-mxn.,
occ. foss., occ. sandy. Nφ NSFOC

Ls: crm.-fan-gry., hrd., dns., VFg-
mxn., tr. chky., occ. sandy.-V. sandy
occ. foss. Nφ NSFOC
Sh: dk gry., m. hrd., dns., earthy

Ls: crm.-gry., hrd., dns., VFg-mxn.,
mic., occ. V. foss., tr. sh. stnd.
Nφ NSFOC

Ls: A. A. Nφ NSFOC

Sh: dk gry.-blk., m. hrd.-hrd., dns.
carb., earthy-hackly

Sh: A. A., occ. m. sft., occ. gry. qn.

Ls: fan, hrd., dns., VFg-mxn., mic
tr. chky., rare foss., tr. sandy,
tr. sh. stnd. Nφ NSFOC

Ls: crm.-fan, hrd., dns., VFg-mxn.,
mic., occ. sft. chky., foss.,
rd. + qn. sh. stnd. Nφ NSFOC

tr. calc. ss: wh.-crm. ft. qn. in emtd. No

Ls: A. A. Nφ NSFOC, occ. ss: gry.-rd.
qn. sh. stnd., fan qn. med.-w. stnd.
w. rd., w. emtd. No vis φ NSFOC

Cg: lsh: varicolored, sft., earthy

Cg: lsh: rd. brn.-gry. qn.-mar.-ylw., sft.
m. sft.-m. hrd., dns., earthy

tr. ss: A. A., tr. Ls: A. A. Nφ NSFOC

Cg: lsh: A. A., abun. lg. sd. qns.

ss: fn. crs. wh.-cl. med.-tr. sftd.,
w. rd.-subrd., w. emtd. No vis φ
NSFOC

Cg: lsh: A. A.

ss: A. A., occ. ang. Nφ NSFOC

Ls: crm., hrd., dns., mxn., mic.
occ. foss., tr. sh. stnd. Nφ NSFOC

Cg: sh: + ss: dk gry.-qn.-rd. brn.
med.-VFg, pr. sftd., w. emtd.,
ang.-subrd. No vis φ NSFOC

tr. dk. gry. sh.

Cg: lsh: rd. brn.-qn.-dk. gry., sft.
sftay.-m. sft., earthy, sandy

ss: wh.-varic. lsh. stnd., m. sft.-
hrd., pr. sftd., w. emtd., Nφ NSFOC

CFS

Pawnee Ls.
(-1354')

Fair Show

Weak Show

Mud Chack @ 4510'
M. W. 9.3 lb. 1 gal.
V. s. 65 sec. 19t.
W. L. 5.6 ml. 130 min.
chl. 900 ppm.
Solids 7.190
L.C.M. 6.0 lb. / bbl.

Ft. Scott Ls.
(-1435')

Cherokee Shale
(-1445')

Verdigris Ls.
(-1454')

D.T.D. 4660'
L.T.D. 4660'

Robert Stolze
3/2/14





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolzle

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.02.23 @ 10:40:00

End Date: 2014.02.23 @ 17:17:00

Job Ticket #: 56795 DST #: 1

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

Printed: 2014.03.04 @ 14:03:09



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

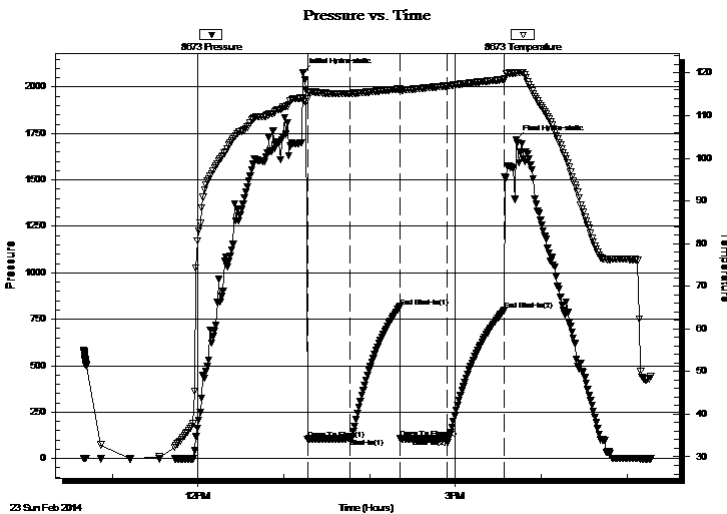
4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56795 **DST#: 1**
Test Start: 2014.02.23 @ 10:40:00

GENERAL INFORMATION:

Formation: **Foraker**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:16:30
Time Test Ended: 17:17:00
Interval: **3625.00 ft (KB) To 3670.00 ft (KB) (TVD)**
Total Depth: 3670.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good
Test Type: Conventional Bottom Hole (Initial)
Tester: Chuck Kreuzer Jr.
Unit No: 46
Reference Elevations: 3122.00 ft (KB)
3110.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8673 **Inside**
Press@RunDepth: 106.64 psig @ 3626.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.23 End Date: 2014.02.23 Last Calib.: 2014.02.23
Start Time: 10:40:01 End Time: 17:17:00 Time On Btm: 2014.02.23 @ 13:13:30
Time Off Btm: 2014.02.23 @ 15:42:30

TEST COMMENT: IF: Had 12 ft. of fill. Slid 10 Ft. then tool opened on last 2. Weak blow , Died in 1 min.
IS: No blow back
FF: No blow
FS: NO blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2078.99	114.11	Initial Hydro-static
3	105.57	113.99	Open To Flow (1)
33	107.39	115.17	Shut-In(1)
68	817.89	116.24	End Shut-In(1)
68	106.63	115.99	Open To Flow (2)
101	106.64	116.96	Shut-In(2)
141	796.90	118.45	End Shut-In(2)
149	1714.24	120.09	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
180.00	mud w ith oil specs	0.89

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

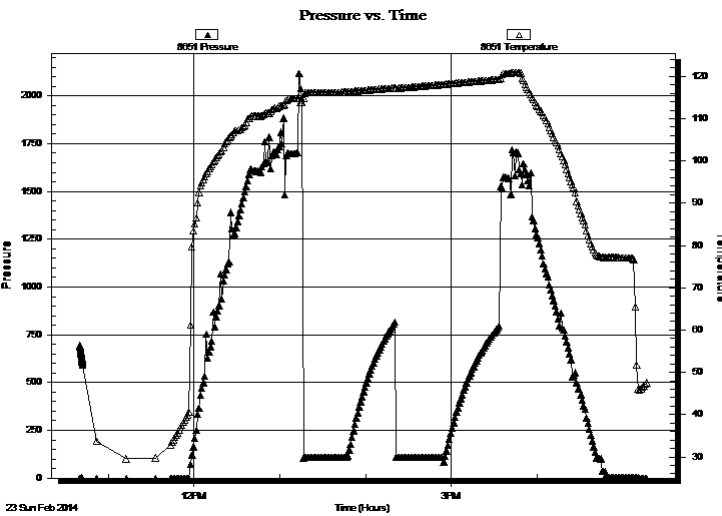
4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56795 **DST#: 1**
Test Start: 2014.02.23 @ 10:40:00

GENERAL INFORMATION:

Formation: **Foraker**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 13:16:30 Tester: Chuck Kreutzer Jr.
Time Test Ended: 17:17:00 Unit No: 46
Interval: 3625.00 ft (KB) To 3670.00 ft (KB) (TVD) Reference Elevations: 3122.00 ft (KB)
Total Depth: 3670.00 ft (KB) (TVD) 3110.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 12.00 ft

Serial #: 8651 Outside
Press@RunDepth: psig @ 3626.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.23 End Date: 2014.02.23 Last Calib.: 2014.02.23
Start Time: 10:40:01 End Time: 17:17:00 Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Had 12 ft. of fill. Slid 10 Ft. then tool opened on last 2. Weak blow , Died in 1 min.
IS: No blow back
FF: No blow
FS: NO blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
180.00	mud w ith oil specs	0.89

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56795 **DST#: 1**
Test Start: 2014.02.23 @ 10:40:00

Tool Information

Drill Pipe:	Length: 3438.00 ft	Diameter: 3.80 inches	Volume: 48.23 bbl	Tool Weight: 2600.00 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: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 49.13 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3625.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	73.00 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			3602.00	
Hydraulic tool	5.00			3607.00	
Jars	5.00			3612.00	
Safety Joint	3.00			3615.00	
Packer	5.00			3620.00	28.00 Bottom Of Top Packer
Packer	5.00			3625.00	
Stubb	1.00			3626.00	
Recorder	0.00	8673	Inside	3626.00	
Recorder	0.00	8651	Outside	3626.00	
Perforations	3.00			3629.00	
change Over Sub	1.00			3630.00	
Blank Spacing	31.00			3661.00	
Change Over Sub	1.00			3662.00	
Perforations	5.00			3667.00	
Bullnose	3.00			3670.00	45.00 Bottom Packers & Anchor

Total Tool Length: 73.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling

4 1s 37w Cheyenne,KS

250 N. Water Ste. 300
Wichita KS 67202

Potthoff #1-4

Job Ticket: 56795

DST#: 1

ATTN: Bob Stolzle

Test Start: 2014.02.23 @ 10:40:00

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: 57.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.58 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
180.00	mud w ith oil specs	0.885

Total Length: 180.00 ft Total Volume: 0.885 bbf

Num Fluid Samples: 0

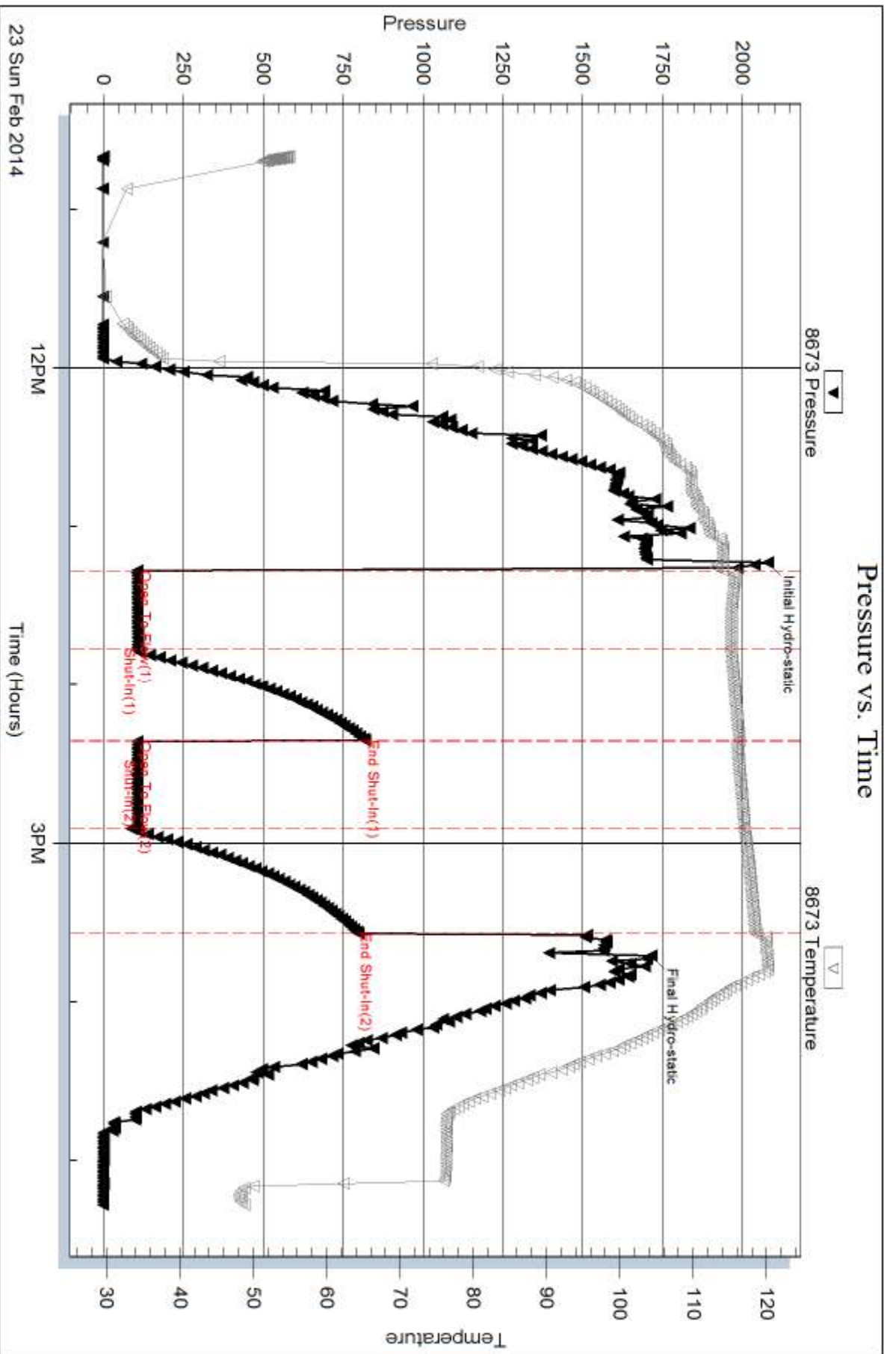
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

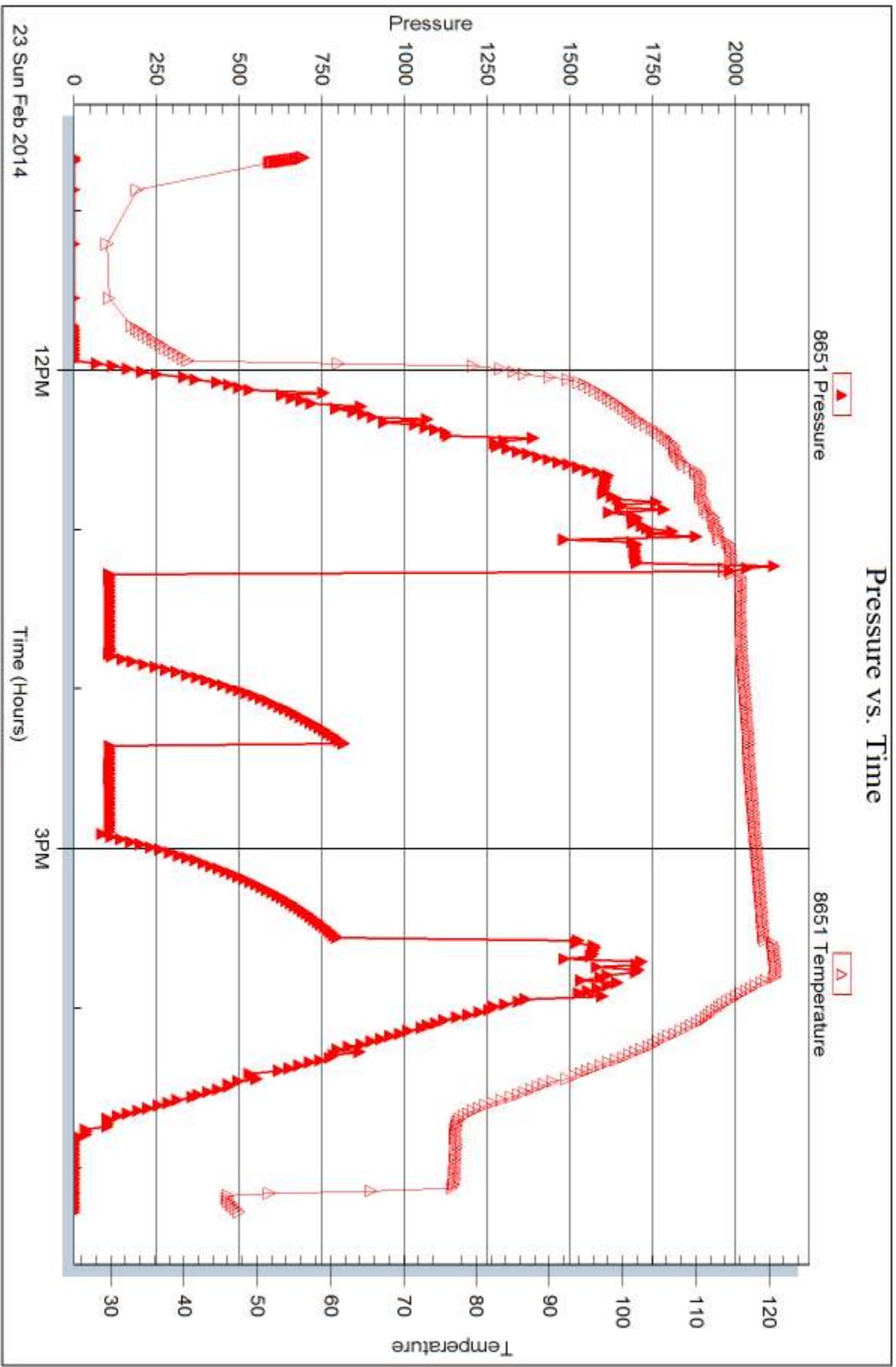


Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolze

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.02.24 @ 23:40:00

End Date: 2014.02.25 @ 08:48:13

Job Ticket #: 56796 DST #: 2

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

Printed: 2014.03.04 @ 14:02:46



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

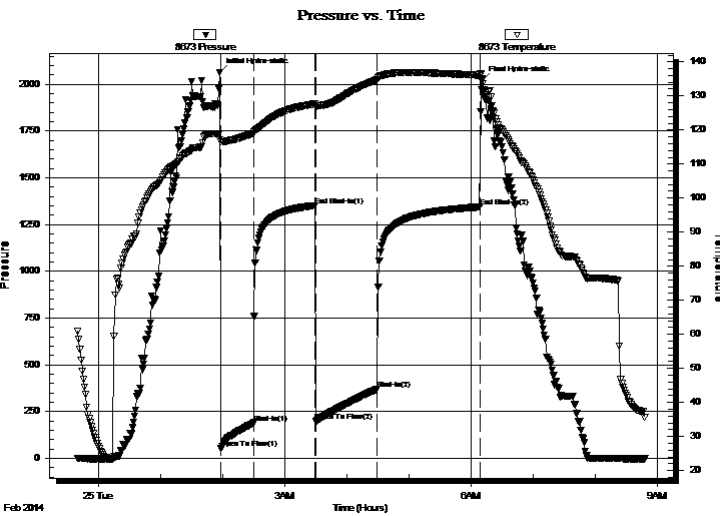
4 1s 37w Cheyenne, KS
Potthoff #1-4
Job Ticket: 56796 **DST#: 2**
Test Start: 2014.02.24 @ 23:40:00

GENERAL INFORMATION:

Formation: **Oread**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 01:58:37
Time Test Ended: 08:48:13
Interval: **3970.00 ft (KB) To 4040.00 ft (KB) (TVD)**
Total Depth: 4040.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good
Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Kreuzer Jr.
Unit No: 46
Reference Elevations: 3122.00 ft (KB)
3110.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8673 Inside
Press@RunDepth: 372.43 psig @ 3971.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.24 End Date: 2014.02.25 Last Calib.: 2014.02.25
Start Time: 23:40:01 End Time: 08:48:13 Time On Btm: 2014.02.25 @ 01:57:31
Time Off Btm: 2014.02.25 @ 06:10:16

TEST COMMENT: IF: Strong blow , Built to B.O.B in 18 mins.
IS: No blow back
FF: Strong blow , Built to B.O.B in 15 mins.
FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2063.96	117.21	Initial Hydro-static
2	54.54	116.58	Open To Flow (1)
33	190.03	119.03	Shut-In(1)
92	1351.87	127.61	End Shut-In(1)
93	198.33	127.08	Open To Flow (2)
153	372.43	134.81	Shut-In(2)
252	1344.83	136.08	End Shut-In(2)
253	2021.42	135.00	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
184.00	mcw -5% m95%w	0.90
255.00	mcw -25% m75%w	3.58
189.00	w cm-25%w 75%m	2.65
156.00	mud-100%	2.19

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

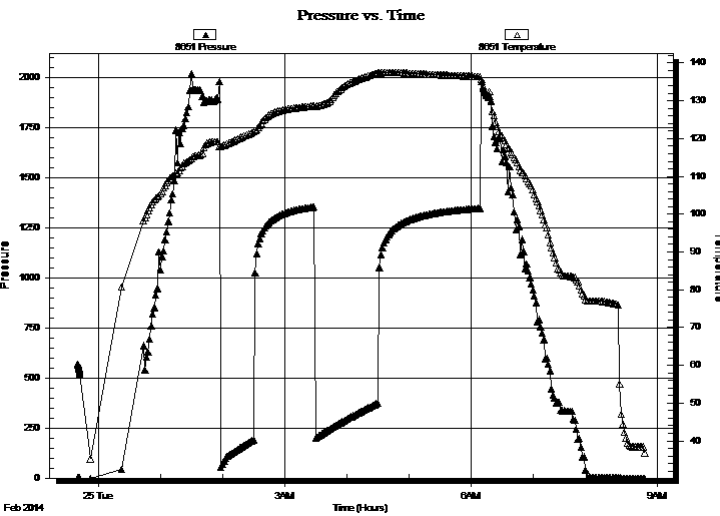
4 1s 37w Cheyenne, KS
Potthoff #1-4
Job Ticket: 56796 **DST#: 2**
Test Start: 2014.02.24 @ 23:40:00

GENERAL INFORMATION:

Formation: Oread			
Deviated: No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Reset)	
Time Tool Opened: 01:58:37		Tester: Chuck Kreutzer Jr.	
Time Test Ended: 08:48:13		Unit No: 46	
Interval: 3970.00 ft (KB) To 4040.00 ft (KB) (TVD)		Reference Elevations: 3122.00 ft (KB)	
Total Depth: 4040.00 ft (KB) (TVD)		3110.00 ft (CF)	
Hole Diameter: 7.88 inches	Hole Condition: Good	KB to GR/CF: 12.00 ft	

Serial #: 8651	Outside				
Press@RunDepth:	psig @	3971.00 ft (KB)	Capacity:	8000.00 psig	
Start Date:	2014.02.24	End Date:	2014.02.25	Last Calib.:	2014.02.25
Start Time:	23:40:01	End Time:	08:48:00	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: IF: Strong blow , Built to B.O.B in 18 mins.
IS: No blow back
FF: Strong blow , Built to B.O.B in 15 mins.
FS: No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
184.00	mcw -5% m95%w	0.90
255.00	mcw -25% m75%w	3.58
189.00	w cm-25%w 75%m	2.65
156.00	mud-100%	2.19

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56796 **DST#: 2**
Test Start: 2014.02.24 @ 23:40:00

Tool Information

Drill Pipe:	Length: 3788.00 ft	Diameter: 3.80 inches	Volume: 53.14 bbl	Tool Weight: 2600.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 54.04 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3970.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	70.00 ft			
Tool Length:	98.00 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			3947.00	
Hydraulic tool	5.00			3952.00	
Jars	5.00			3957.00	
Safety Joint	3.00			3960.00	
Packer	5.00			3965.00	28.00 Bottom Of Top Packer
Packer	5.00			3970.00	
Stubb	1.00			3971.00	
Recorder	0.00	8673	Inside	3971.00	
Recorder	0.00	8651	Outside	3971.00	
Perforations	2.00			3973.00	
change Over Sub	1.00			3974.00	
Blank Spacing	62.00			4036.00	
Change Over Sub	1.00			4037.00	
Bullnose	3.00			4040.00	70.00 Bottom Packers & Anchor

Total Tool Length: 98.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56796 **DST#: 2**
Test Start: 2014.02.24 @ 23:40:00

Mud and Cushion Information

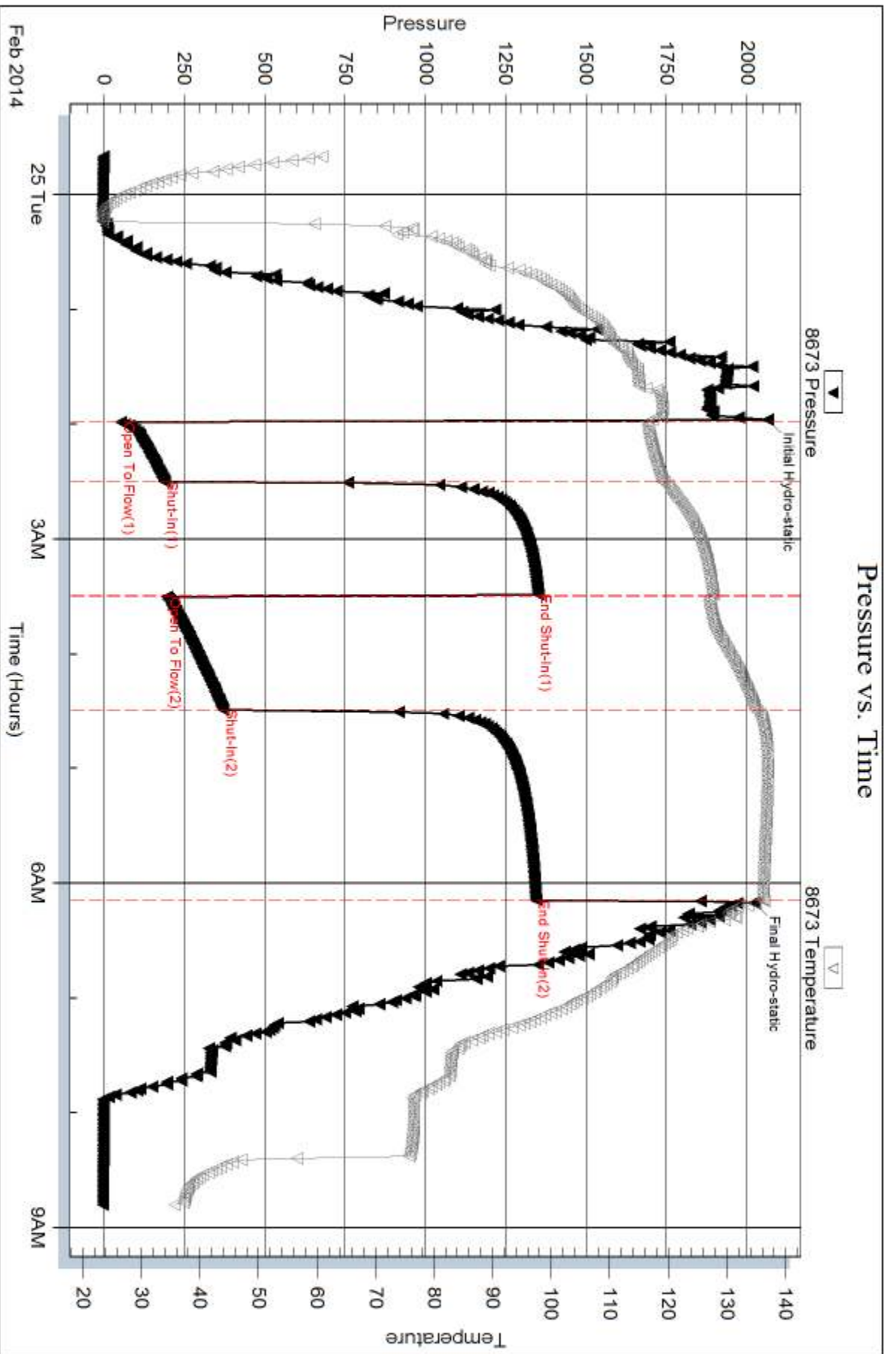
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 70.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.58 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 700.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
184.00	mcw -5% m 95% w	0.905
255.00	mcw -25% m 75% w	3.577
189.00	w cm-25% w 75% m	2.651
156.00	mud-100%	2.188

Total Length: 784.00 ft Total Volume: 9.321 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

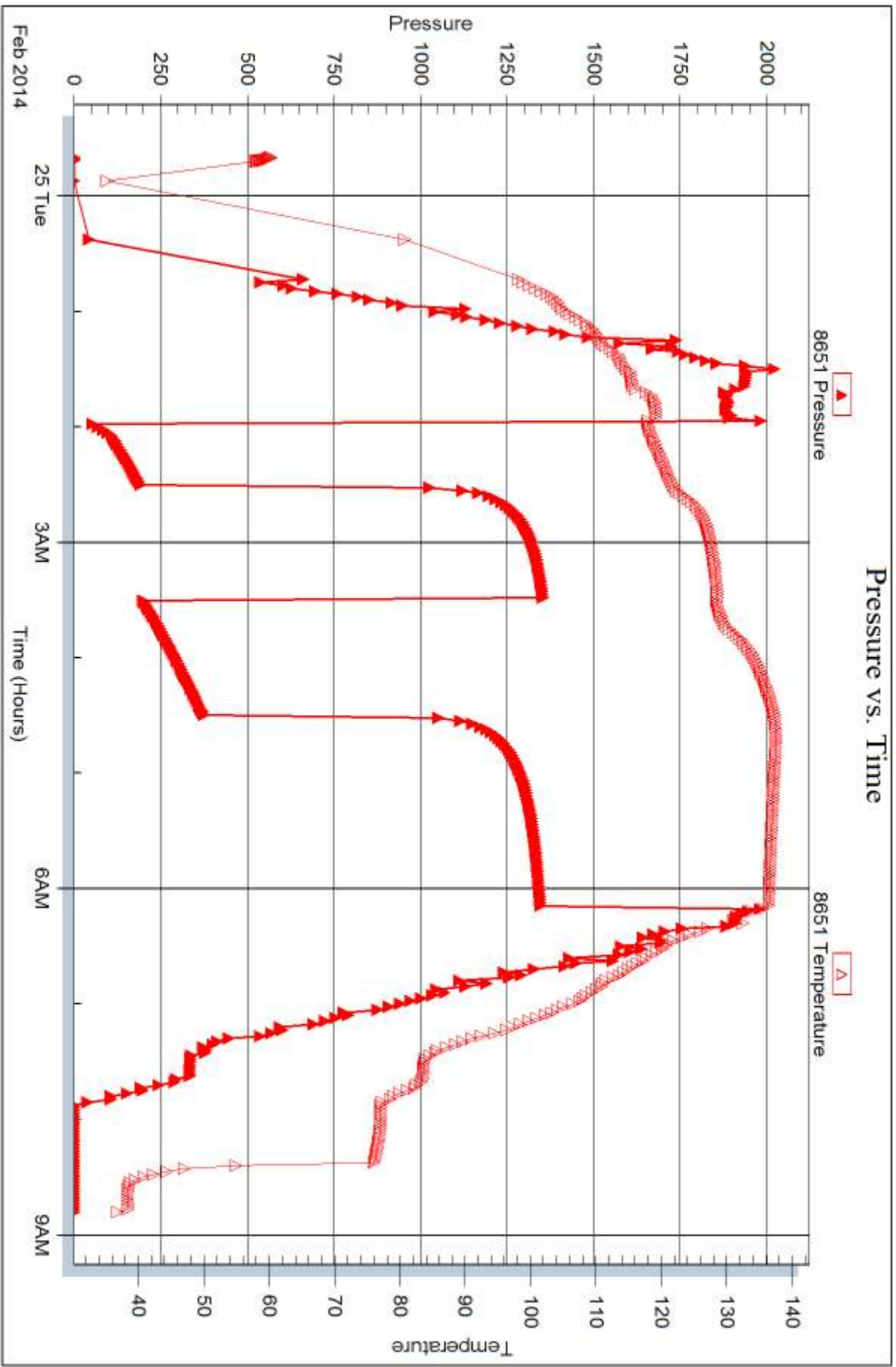


Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 56796

Printed: 2014.03.04 @ 14:02:48



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolze

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.02.26 @ 00:58:00

End Date: 2014.02.26 @ 10:10:30

Job Ticket #: 56759 DST #: 3

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

Printed: 2014.03.04 @ 14:02:22

Murfin Drilling
4 1s 37w Cheyenne,KS
Potthoff #1-4
DST # 3
LKC "A-D"
2014.02.26



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling
 250 N. Water Ste. 300
 Wichita KS 67202
 ATTN: Bob Stolzle

4 1s 37w Cheyenne, KS
Potthoff #1-4
 Job Ticket: 56759 **DST#: 3**
 Test Start: 2014.02.26 @ 00:58:00

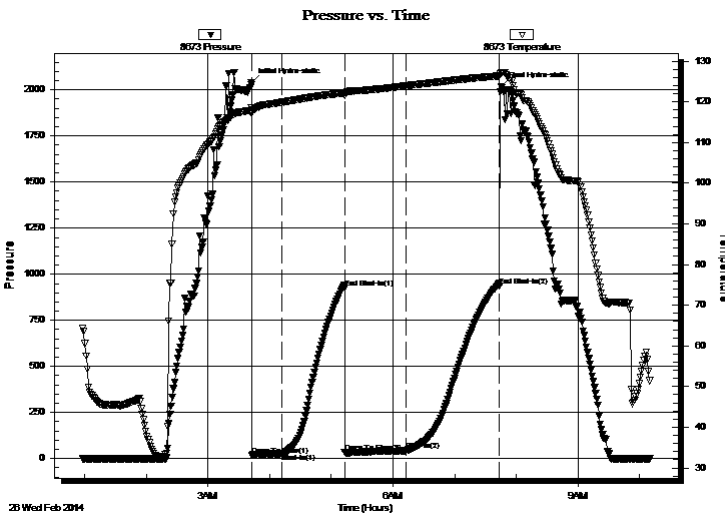
GENERAL INFORMATION:

Formation: **LKC "A--D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:42:17
 Time Test Ended: 10:10:30
 Interval: **4043.00 ft (KB) To 4165.00 ft (KB) (TVD)**
 Total Depth: 4165.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Robert Zodrow
 Unit No: 46
 Reference Elevations: 3122.00 ft (KB)
 3110.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 8673 Inside
 Press@RunDepth: 42.82 psig @ 4044.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.02.26 End Date: 2014.02.26 Last Calib.: 2014.02.26
 Start Time: 00:58:01 End Time: 10:10:30 Time On Btm: 2014.02.26 @ 03:42:14
 Time Off Btm: 2014.02.26 @ 07:45:07

TEST COMMENT: 30-IS- Blow Built To 2"
 60-IS- No Return
 60-FF- Blow Built To 1/2"
 90-FS- No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2040.85	118.57	Initial Hydro-static
1	18.77	117.16	Open To Flow (1)
30	27.03	119.90	Shut-In(1)
91	927.12	122.17	End Shut-In(1)
91	33.68	121.51	Open To Flow (2)
151	42.82	123.94	Shut-In(2)
242	936.41	126.37	End Shut-In(2)
243	2018.63	127.09	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
68.00	gocm 5%g 15%o 80%w	0.33

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling
 250 N. Water Ste. 300
 Wichita KS 67202
 ATTN: Bob Stolzle

4 1s 37w Cheyenne, KS

Potthoff #1-4

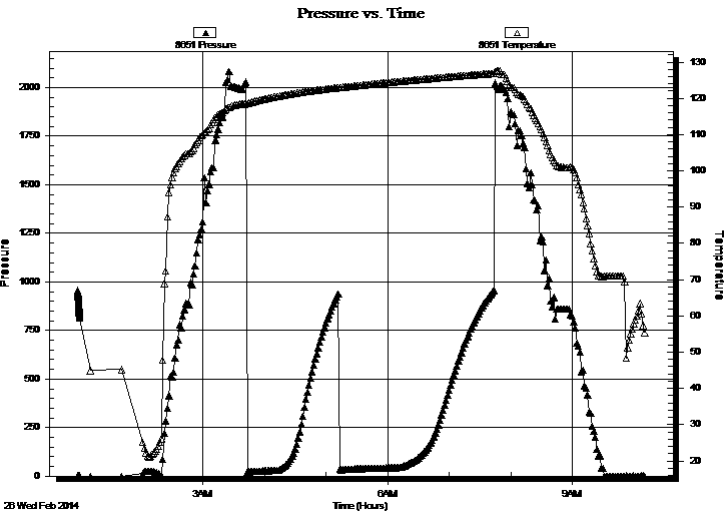
Job Ticket: 56759 **DST#: 3**
 Test Start: 2014.02.26 @ 00:58:00

GENERAL INFORMATION:

Formation: **LKC "A--D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:42:17
 Time Test Ended: 10:10:30
 Interval: **4043.00 ft (KB) To 4165.00 ft (KB) (TVD)**
 Total Depth: 4165.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Robert Zodrow
 Unit No: 46
 Reference Elevations: 3122.00 ft (KB)
 3110.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 8651 Outside
 Press@RunDepth: psig @ 4044.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.02.26 End Date: 2014.02.26 Last Calib.: 2014.02.26
 Start Time: 00:58:01 End Time: 10:10:30 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IF- Blow Built To 2"
 60-ISI- No Return
 60-FF- Blow Built To 1/2"
 90-FSI- No Return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
68.00	gocm 5%g 15%o 80% m	0.33

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56759 **DST#: 3**
Test Start: 2014.02.26 @ 00:58:00

Tool Information

Drill Pipe:	Length: 3853.00 ft	Diameter: 3.80 inches	Volume: 54.05 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: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 61000.00 lb
			<u>Total Volume: 54.95 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4043.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	122.00 ft			
Tool Length:	150.00 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			4020.00	
Hydraulic tool	5.00			4025.00	
Jars	5.00			4030.00	
Safety Joint	3.00			4033.00	
Packer	5.00			4038.00	28.00 Bottom Of Top Packer
Packer	5.00			4043.00	
Stubb	1.00			4044.00	
Recorder	0.00	8673	Inside	4044.00	
Recorder	0.00	8651	Outside	4044.00	
Perforations	20.00			4064.00	
change Over Sub	1.00			4065.00	
Blank Spacing	93.00			4158.00	
Change Over Sub	1.00			4159.00	
Perforations	3.00			4162.00	
Bullnose	3.00			4165.00	122.00 Bottom Packers & Anchor

Total Tool Length: 150.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56759 **DST#: 3**
Test Start: 2014.02.26 @ 00:58:00

Mud and Cushion Information

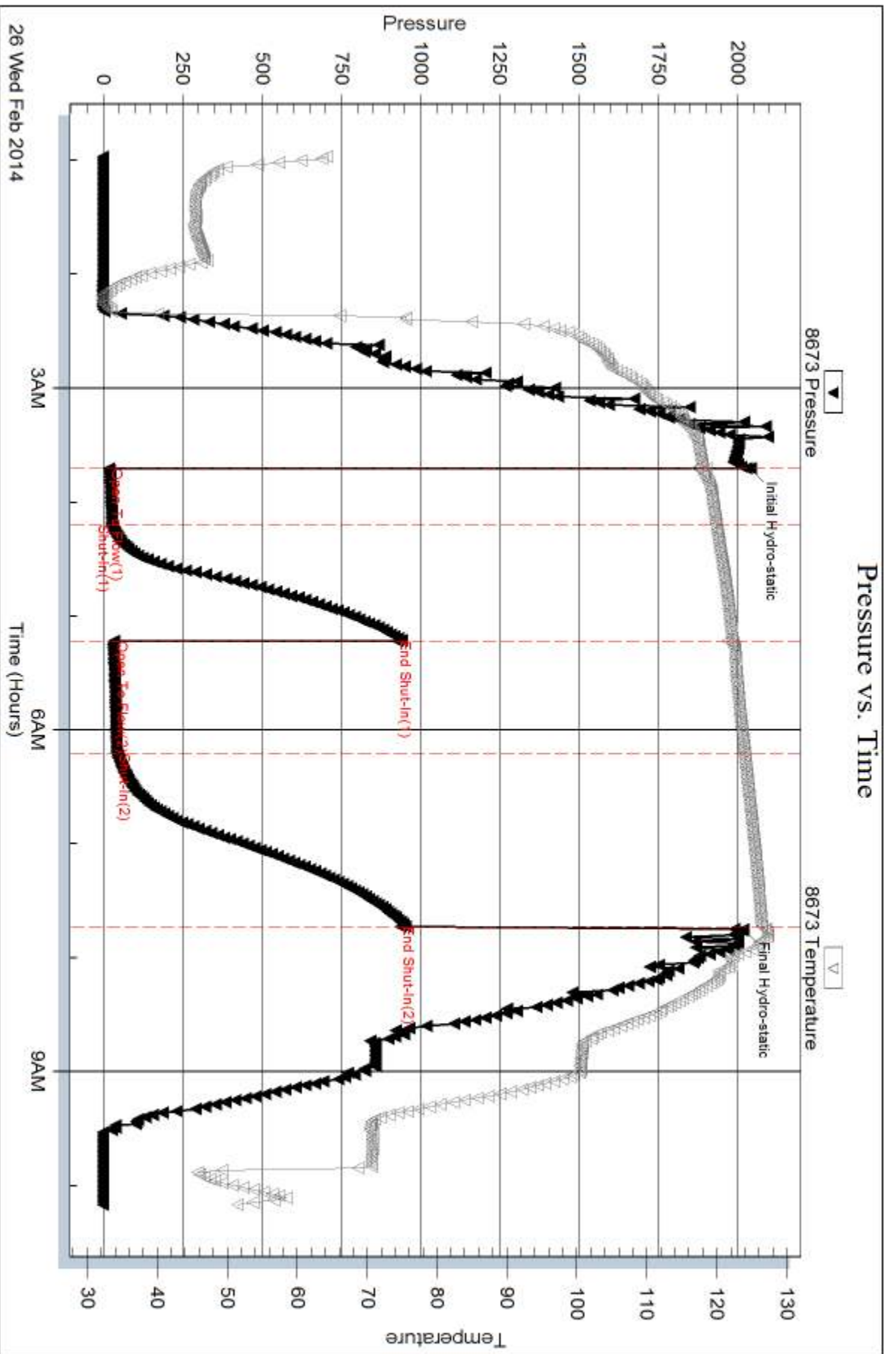
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 80.00 sec/qt	Cushion Volume: bbl		
Water Loss: 4.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 400.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
68.00	gocm 5%g 15%o 80%m	0.334

Total Length: 68.00 ft Total Volume: 0.334 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

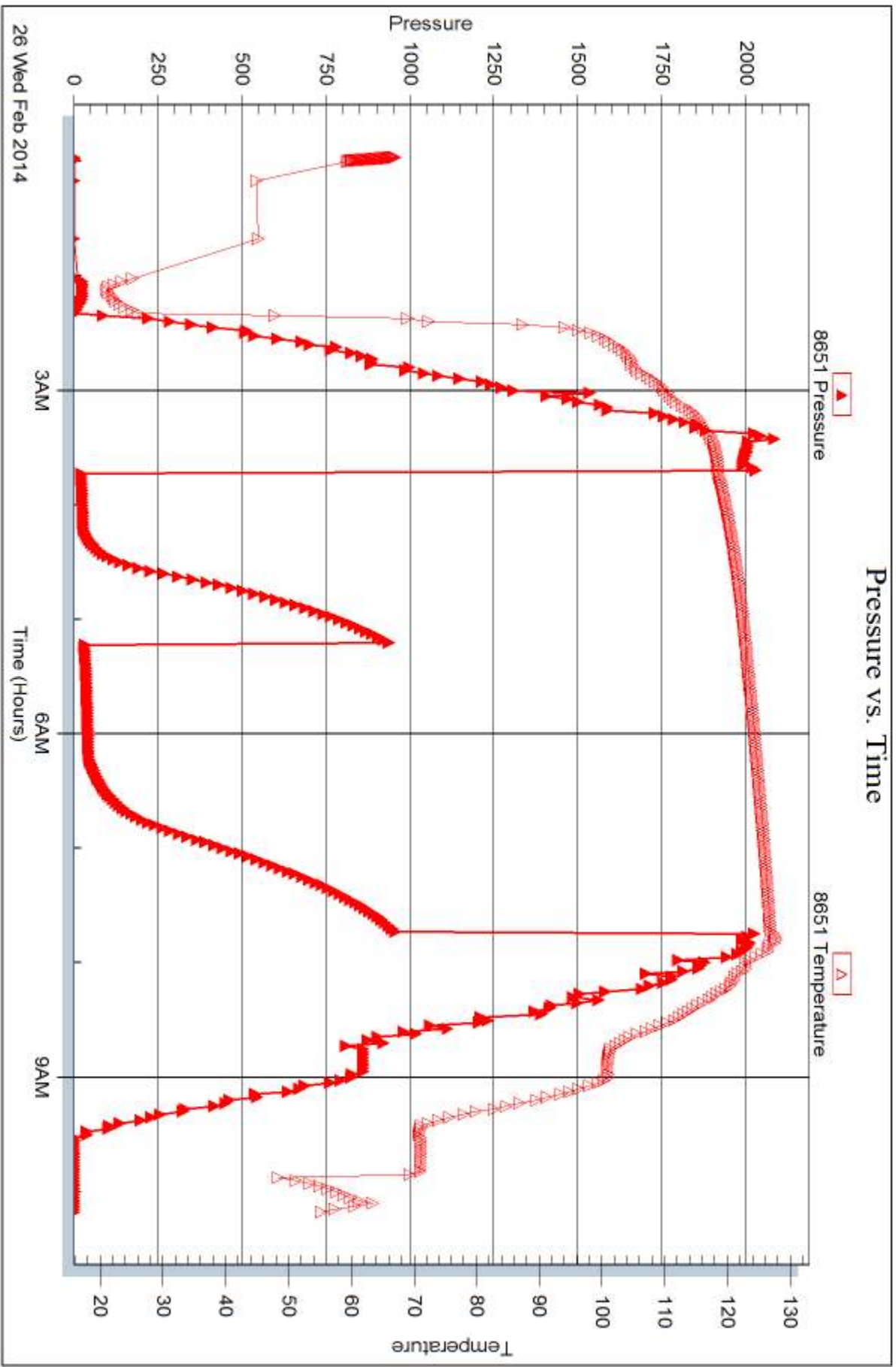


Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 56759

Printed: 2014.03.04 @ 14:02:24



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolzle

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.02.26 @ 20:26:00

End Date: 2014.02.27 @ 04:30:00

Job Ticket #: 56761 DST #: 4

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

Printed: 2014.03.04 @ 14:01:52



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling
 250 N. Water Ste. 300
 Wichita KS 67202
 ATTN: Bob Stolzle

4 1s 37w Cheyenne, KS
Potthoff #1-4
 Job Ticket: 56761 **DST#: 4**
 Test Start: 2014.02.26 @ 20:26:00

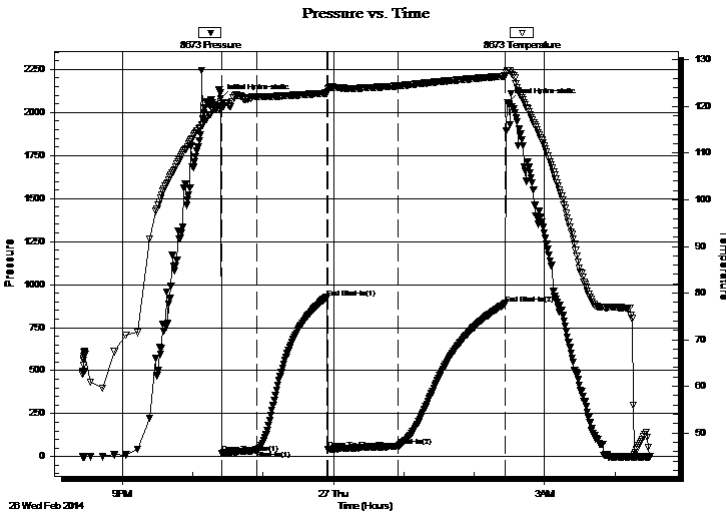
GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:24:30
 Time Test Ended: 04:30:00
 Interval: **4157.00 ft (KB) To 4235.00 ft (KB) (TVD)**
 Total Depth: 4235.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Robert Zodrow
 Unit No: 46
 Reference Elevations: 3122.00 ft (KB)
 3110.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 8673 Inside
 Press@RunDepth: 60.17 psig @ 4158.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.02.26 End Date: 2014.02.27 Last Calib.: 2014.02.27
 Start Time: 20:26:05 End Time: 04:29:59 Time On Btm: 2014.02.26 @ 22:24:00
 Time Off Btm: 2014.02.27 @ 02:28:30

TEST COMMENT: 30-IS- Blow Built To 1 1/2"
 60-IS- No Return
 60-FF- Blow Built To 1"
 90-FS- No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2080.80	120.59	Initial Hydro-static
1	18.82	120.06	Open To Flow (1)
31	36.58	122.11	Shut-In(1)
91	921.87	122.89	End Shut-In(1)
91	42.61	123.17	Open To Flow (2)
151	60.17	124.42	Shut-In(2)
243	889.78	126.52	End Shut-In(2)
245	2054.99	127.75	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
75.00	OCM 10%o 90%m	0.37

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

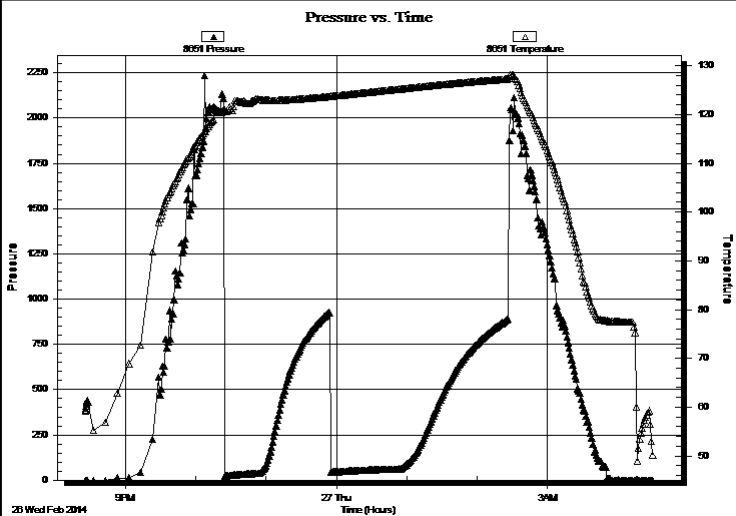
4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 4**
Test Start: 2014.02.26 @ 20:26:00

GENERAL INFORMATION:

Formation: **LKC "G"**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 22:24:30 Tester: Robert Zodrow
Time Test Ended: 04:30:00 Unit No: 46
Interval: 4157.00 ft (KB) To 4235.00 ft (KB) (TVD) Reference Elevations: 3122.00 ft (KB)
Total Depth: 4235.00 ft (KB) (TVD) 3110.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 12.00 ft

Serial #: 8651 Outside
Press@RunDepth: psig @ 4158.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.26 End Date: 2014.02.27 Last Calib.: 2014.02.27
Start Time: 20:26:05 End Time: 04:29:59 Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IF- Blow Built To 1 1/2"
60-ISI- No Return
60-FF- Blow Built To 1"
90-FSI- No Return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
75.00	OCM 10%o 90% m	0.37

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 4**
Test Start: 2014.02.26 @ 20:26:00

Tool Information

Drill Pipe:	Length: 3950.00 ft	Diameter: 3.80 inches	Volume: 55.41 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: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 64000.00 lb
			<u>Total Volume: 56.31 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4157.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	78.00 ft			
Tool Length:	106.00 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			4134.00	
Hydraulic tool	5.00			4139.00	
Jars	5.00			4144.00	
Safety Joint	3.00			4147.00	
Packer	5.00			4152.00	28.00 Bottom Of Top Packer
Packer	5.00			4157.00	
Stubb	1.00			4158.00	
Recorder	0.00	8673	Inside	4158.00	
Recorder	0.00	8651	Outside	4158.00	
Perforations	10.00			4168.00	
change Over Sub	1.00			4169.00	
Blank Spacing	62.00			4231.00	
Change Over Sub	1.00			4232.00	
Bullnose	3.00			4235.00	78.00 Bottom Packers & Anchor

Total Tool Length: 106.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 4**
Test Start: 2014.02.26 @ 20:26:00

Mud and Cushion Information

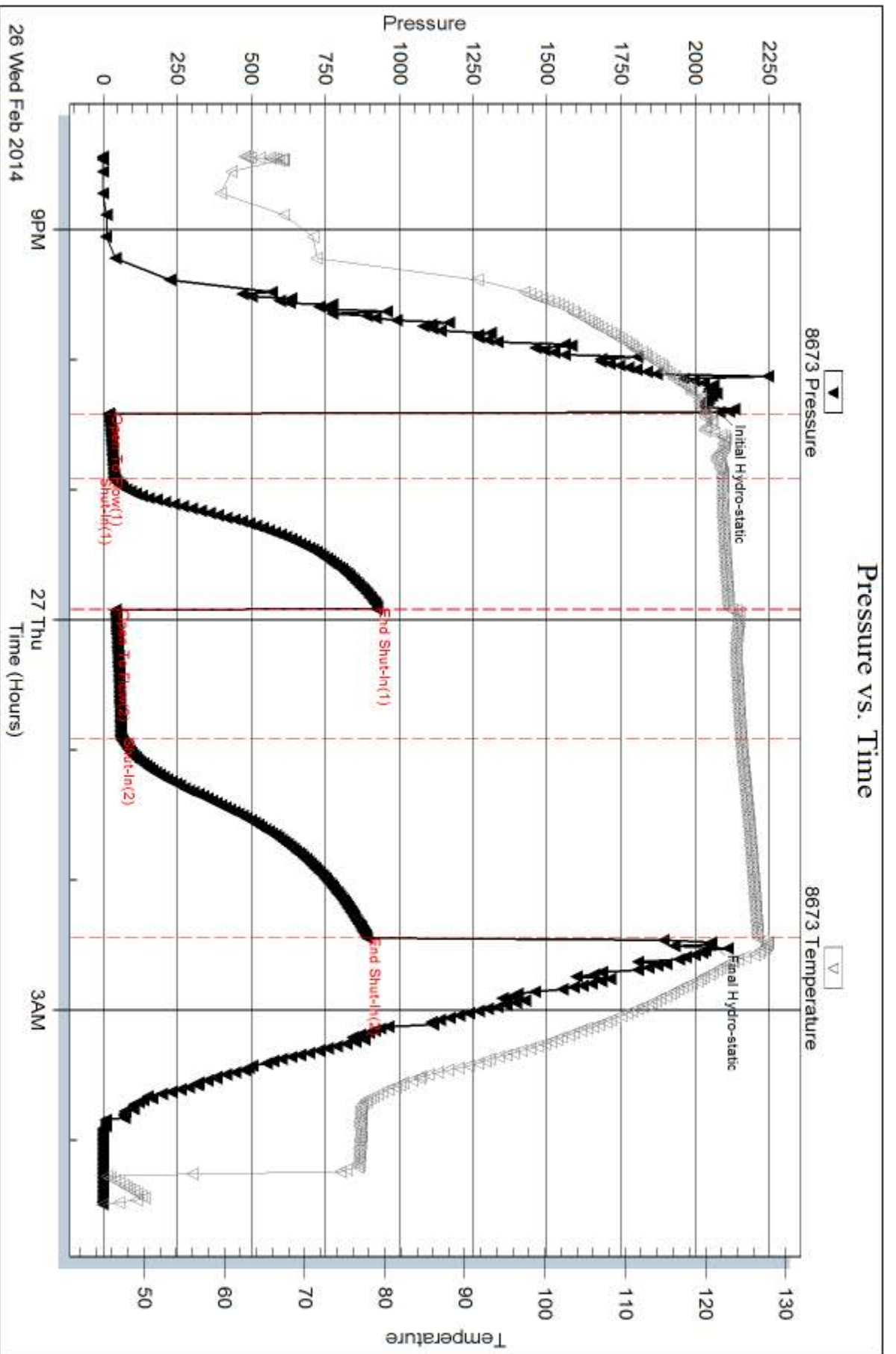
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 80.00 sec/qt	Cushion Volume: bbl		
Water Loss: 4.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 400.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
75.00	OCM 10%o 90%m	0.369

Total Length: 75.00 ft Total Volume: 0.369 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

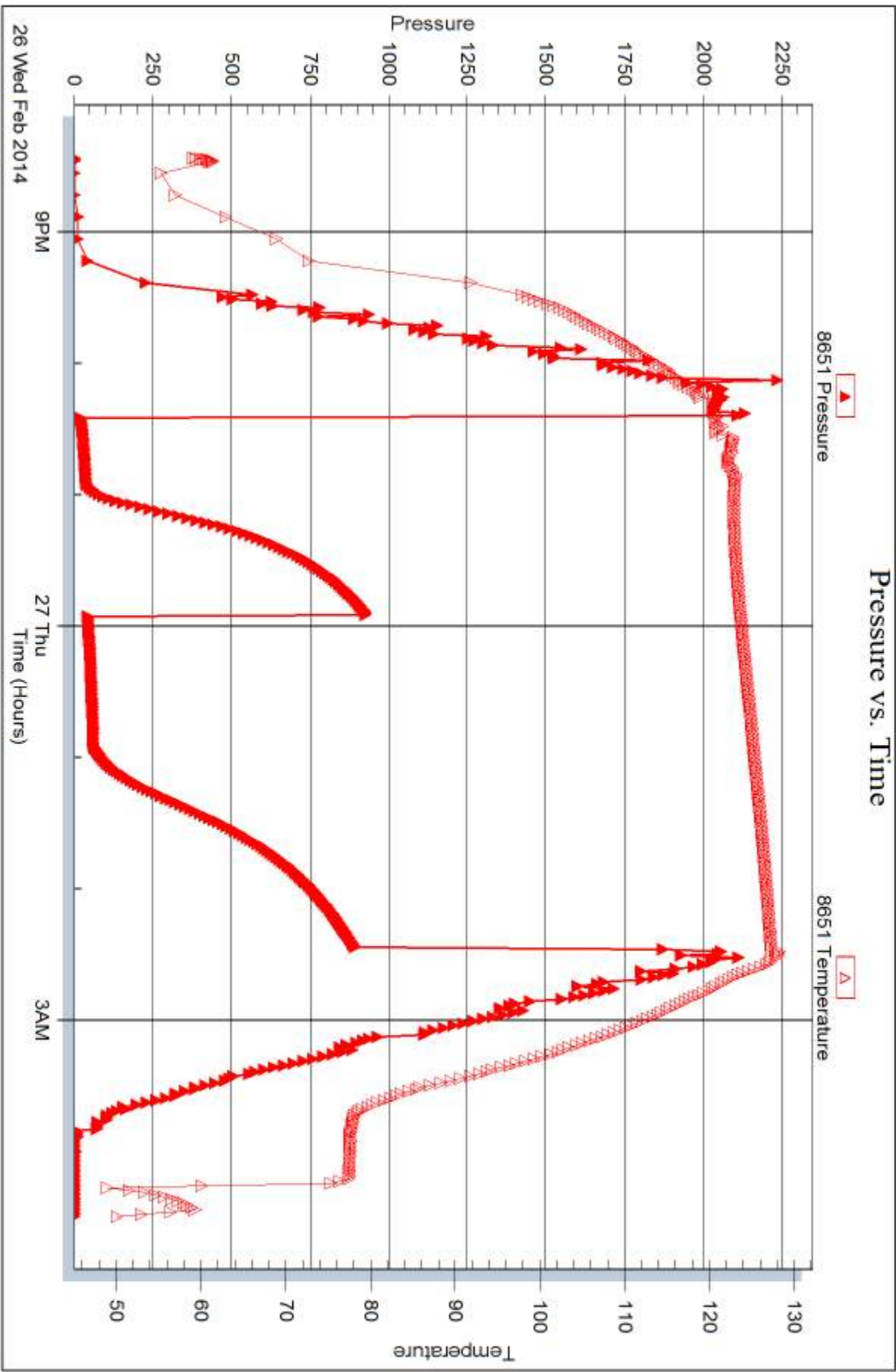


Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 56761

Printed: 2014.03.04 @ 14:01:55



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolze

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.02.27 @ 17:15:00

End Date: 2014.02.28 @ 01:53:30

Job Ticket #: 56761 DST #: 5

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

Printed: 2014.03.04 @ 14:01:30

Murfin Drilling
4 1s 37w Cheyenne,KS
Potthoff #1-4
DST # 5
LKC "H+J"
2014.02.27



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne, KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 5**
Test Start: 2014.02.27 @ 17:15:00

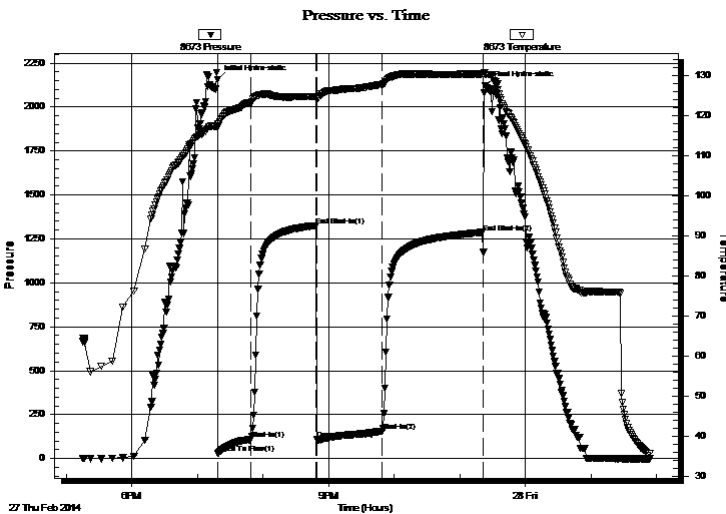
GENERAL INFORMATION:

Formation: **LKC "H-I-J"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:19:00
Time Test Ended: 01:53:30
Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Kreuzer Jr.
Unit No: 46
Interval: **4214.00 ft (KB) To 4309.00 ft (KB) (TVD)**
Reference Elevations: 3122.00 ft (KB)
Total Depth: 4309.00 ft (KB) (TVD) 3110.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 12.00 ft

Serial #: 8673 Inside
Press@RunDepth: 154.70 psig @ 4215.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.27 End Date: 2014.02.28 Last Calib.: 2014.02.28
Start Time: 17:15:05 End Time: 01:53:30 Time On Btm: 2014.02.27 @ 19:18:30
Time Off Btm: 2014.02.27 @ 23:23:30

TEST COMMENT: 30-IF- BOB In 23 mins.
60-ISI- Blow back Built To 1/2"
60-FF- BOB In 15 mins
90-FSI- Blow back built to 2".

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2156.85	117.84	Initial Hydro-static
1	29.91	117.34	Open To Flow (1)
31	107.95	123.24	Shut-In(1)
90	1326.12	124.77	End Shut-In(1)
91	109.34	124.23	Open To Flow (2)
151	154.70	127.76	Shut-In(2)
243	1287.18	130.36	End Shut-In(2)
245	2120.81	130.17	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
308.00	gocm 20%g 28%o 52%m	2.64
40.00	clean oil 1%g 99%o	0.56
0.00	gip 642'	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 5**
Test Start: 2014.02.27 @ 17:15:00

GENERAL INFORMATION:

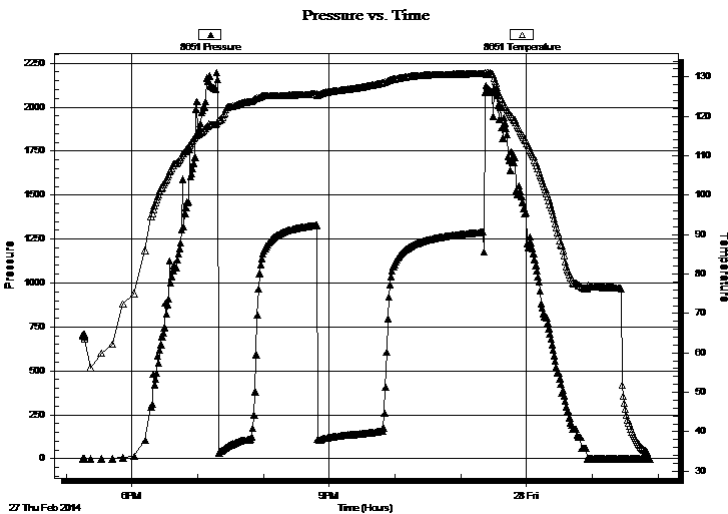
Formation: **LKC "H-I-J"**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 19:19:00 Tester: Chuck Kreutzer Jr.
Time Test Ended: 01:53:30 Unit No: 46

Interval: 4214.00 ft (KB) To 4309.00 ft (KB) (TVD) Reference Elevations: 3122.00 ft (KB)
Total Depth: 4309.00 ft (KB) (TVD) 3110.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 12.00 ft

Serial #: 8651 Outside
Press@RunDepth: psig @ 4215.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.02.27 End Date: 2014.02.28 Last Calib.: 2014.02.28
Start Time: 17:15:05 End Time: 01:53:00 Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IF- BOB In 23 mins.
60-IS- Blow back Built To 1/2"
60-FF- BOB In 15 mins
90-FS- Blow back built to 2".

PRESSURE SUMMARY



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

Recovery

Gas Rates

Length (ft)	Description	Volume (bbl)
308.00	gocm 20%g 28%o 52%m	2.64
40.00	clean oil 1%g 99%o	0.56
0.00	gip 642'	0.00

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 5**
Test Start: 2014.02.27 @ 17:15:00

Tool Information

Drill Pipe:	Length: 4011.00 ft	Diameter: 3.80 inches	Volume: 56.26 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: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 57.16 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4214.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	95.00 ft			
Tool Length:	123.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4191.00	
Hydraulic tool	5.00			4196.00	
Jars	5.00			4201.00	
Safety Joint	3.00			4204.00	
Packer	5.00			4209.00	28.00 Bottom Of Top Packer
Packer	5.00			4214.00	
Stubb	1.00			4215.00	
Recorder	0.00	8673	Inside	4215.00	
Recorder	0.00	8651	Outside	4215.00	
Perforations	27.00			4242.00	
change Over Sub	1.00			4243.00	
Blank Spacing	62.00			4305.00	
Change Over Sub	1.00			4306.00	
Bullnose	3.00			4309.00	95.00 Bottom Packers & Anchor

Total Tool Length: 123.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56761 **DST#: 5**
Test Start: 2014.02.27 @ 17:15:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 38 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 65.00 sec/qt	Cushion Volume: bbl	
Water Loss: 5.98 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 1000.00 ppm		
Filter Cake: 2.00 inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
308.00	gocm 20%g 28%o 52%m	2.644
40.00	clean oil 1%g 99%o	0.561
0.00	gip 642'	0.000

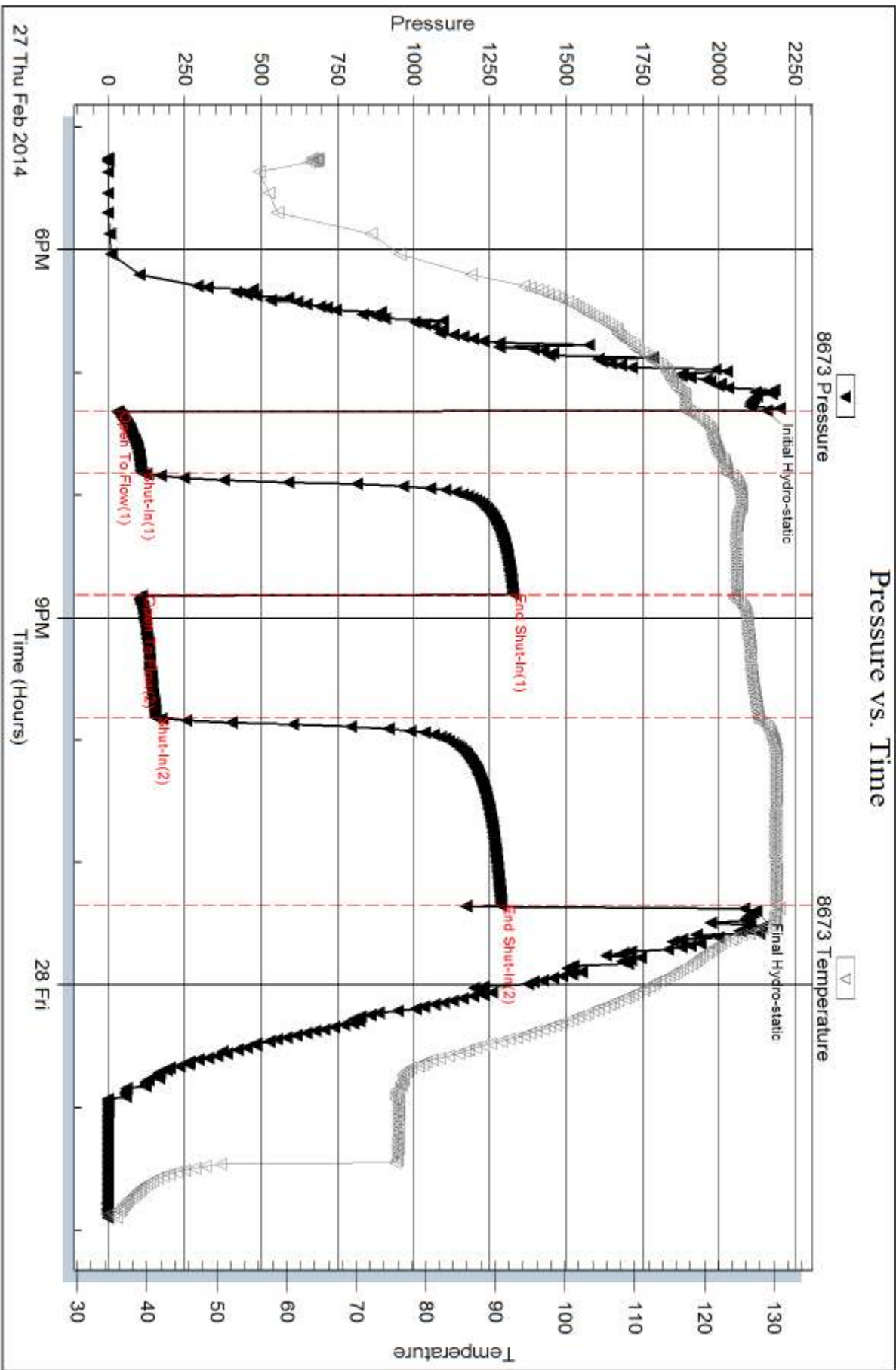
Total Length: 348.00 ft Total Volume: 3.205 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

Serial #: 8673

Inside Marfin Drilling

Pothoff #1-4

DST Test Number: 5

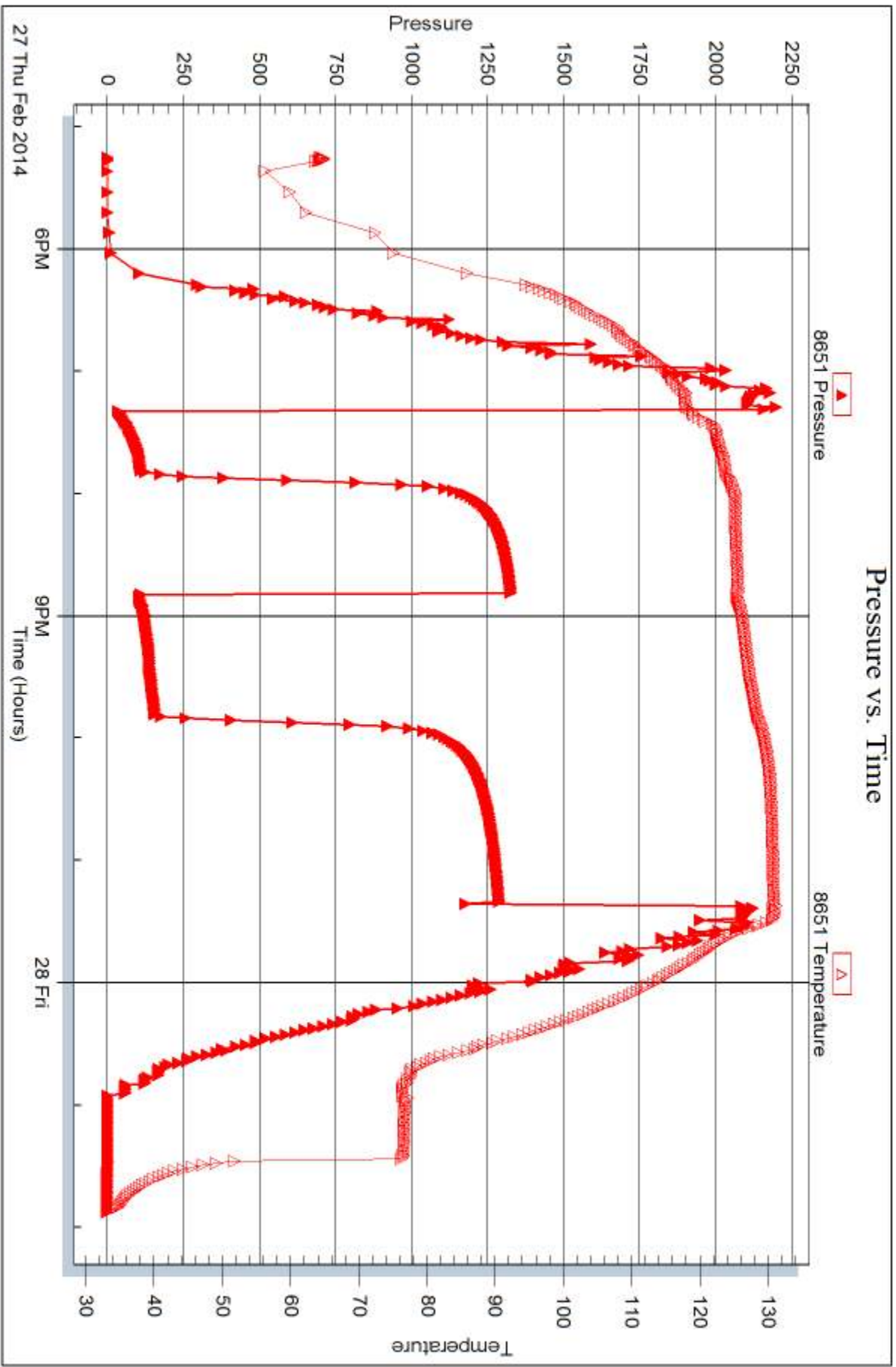


Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling**

250 N. Water Ste. 300
Wichita KS 67202

ATTN: Bob Stolze

Potthoff #1-4

4 1s 37w Cheyenne,KS

Start Date: 2014.03.01 @ 00:21:00

End Date: 2014.03.01 @ 08:32:00

Job Ticket #: 56762 DST #: 6

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

Printed: 2014.03.04 @ 14:00:53



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling
 250 N. Water Ste. 300
 Wichita KS 67202
 ATTN: Bob Stolzle

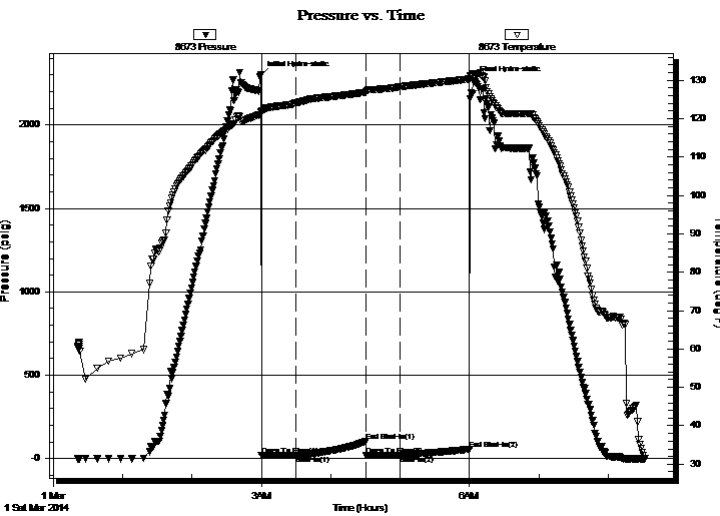
4 1s 37w Cheyenne, KS
Potthoff #1-4
 Job Ticket: 56762 **DST#: 6**
 Test Start: 2014.03.01 @ 00:21:00

GENERAL INFORMATION:

Formation: **Upper Pawnee LS**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:00:00
 Time Test Ended: 08:32:00
 Interval: **4455.00 ft (KB) To 4510.00 ft (KB) (TVD)**
 Total Depth: 4510.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Robert Zodrow
 Unit No: 46
 Reference Elevations: 3122.00 ft (KB)
 3110.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 8673 Inside
 Press@RunDepth: 20.93 psig @ 4456.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.03.01 End Date: 2014.03.01 Last Calib.: 2014.03.01
 Start Time: 00:21:05 End Time: 08:31:59 Time On Btm: 2014.03.01 @ 02:59:30
 Time Off Btm: 2014.03.01 @ 06:03:30

TEST COMMENT: 30-IF-Blow Built To 1/8"
 60-ISI-No Return
 30-FF-No Blow
 60-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2298.33	121.70	Initial Hydro-static
1	17.69	121.68	Open To Flow (1)
31	19.38	124.07	Shut-In(1)
91	104.15	126.83	End Shut-In(1)
91	20.15	126.95	Open To Flow (2)
121	20.93	128.23	Shut-In(2)
181	55.61	130.26	End Shut-In(2)
184	2264.83	131.67	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud 100%m	0.01

* Recovery from multiple tests

Gas Rates

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



DRILL STEM TEST REPORT

Murfin Drilling
 250 N. Water Ste. 300
 Wichita KS 67202
 ATTN: Bob Stolzle

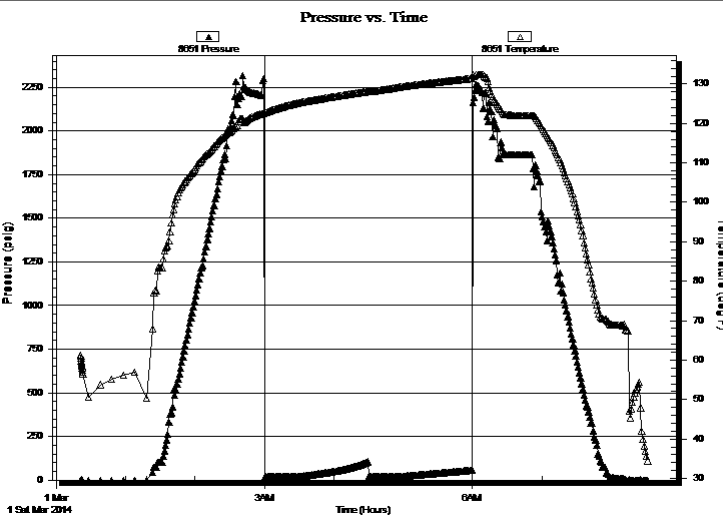
4 1s 37w Cheyenne,KS
Potthoff #1-4
 Job Ticket: 56762 **DST#: 6**
 Test Start: 2014.03.01 @ 00:21:00

GENERAL INFORMATION:

Formation: **Upper Pawnee LS**
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 03:00:00 Tester: Robert Zodrow
 Time Test Ended: 08:32:00 Unit No: 46
Interval: 4455.00 ft (KB) To 4510.00 ft (KB) (TVD) Reference Elevations: 3122.00 ft (KB)
 Total Depth: 4510.00 ft (KB) (TVD) 3110.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 12.00 ft

Serial #: 8651 Outside
 Press@RunDepth: psig @ 4456.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.03.01 End Date: 2014.03.01 Last Calib.: 2014.03.01
 Start Time: 00:21:05 End Time: 08:31:59 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IF-Blow Built To 1/8"
 60-ISI-No Return
 30-FF-No Blow
 60-FSI-No Return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud 100%m	0.01

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling
250 N. Water Ste. 300
Wichita KS 67202
ATTN: Bob Stolzle

4 1s 37w Cheyenne,KS
Potthoff #1-4
Job Ticket: 56762 **DST#: 6**
Test Start: 2014.03.01 @ 00:21:00

Tool Information

Drill Pipe:	Length: 4263.00 ft	Diameter: 3.80 inches	Volume: 59.80 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: 184.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 60.70 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4455.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.00 ft			
Tool Length:	83.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4432.00	
Hydraulic tool	5.00			4437.00	
Jars	5.00			4442.00	
Safety Joint	3.00			4445.00	
Packer	5.00			4450.00	28.00 Bottom Of Top Packer
Packer	5.00			4455.00	
Stubb	1.00			4456.00	
Recorder	0.00	8673	Inside	4456.00	
Recorder	0.00	8651	Outside	4456.00	
Perforations	18.00			4474.00	
change Over Sub	1.00			4475.00	
Blank Spacing	31.00			4506.00	
Change Over Sub	1.00			4507.00	
Bullnose	3.00			4510.00	55.00 Bottom Packers & Anchor

Total Tool Length: 83.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling

4 1s 37w Cheyenne,KS

250 N. Water Ste. 300
Wichita KS 67202

Potthoff #1-4

Job Ticket: 56762

DST#: 6

ATTN: Bob Stolzle

Test Start: 2014.03.01 @ 00:21:00

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: 70.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud 100%m	0.010

Total Length: 2.00 ft Total Volume: 0.010 bbl

Num Fluid Samples: 0

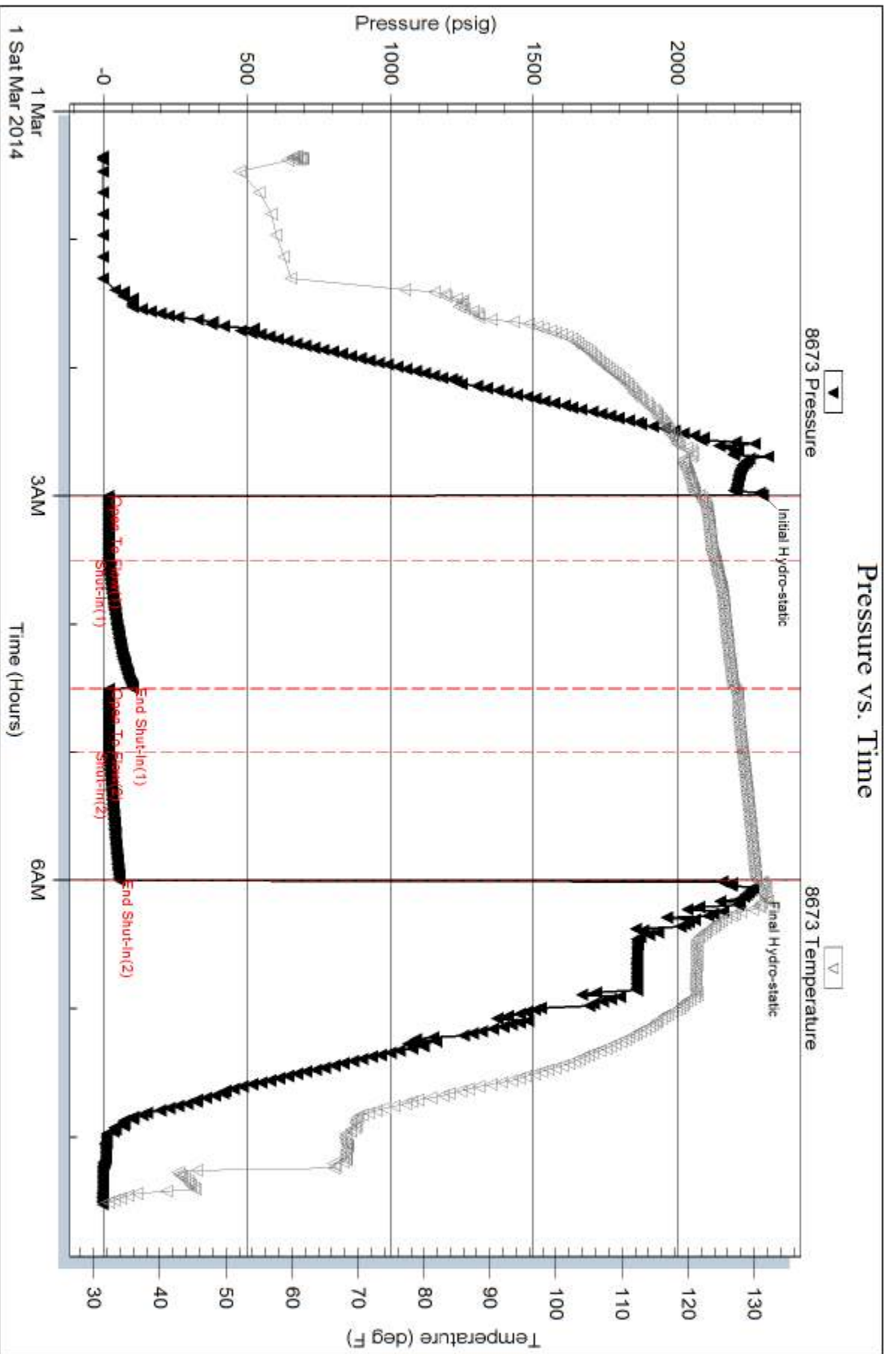
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

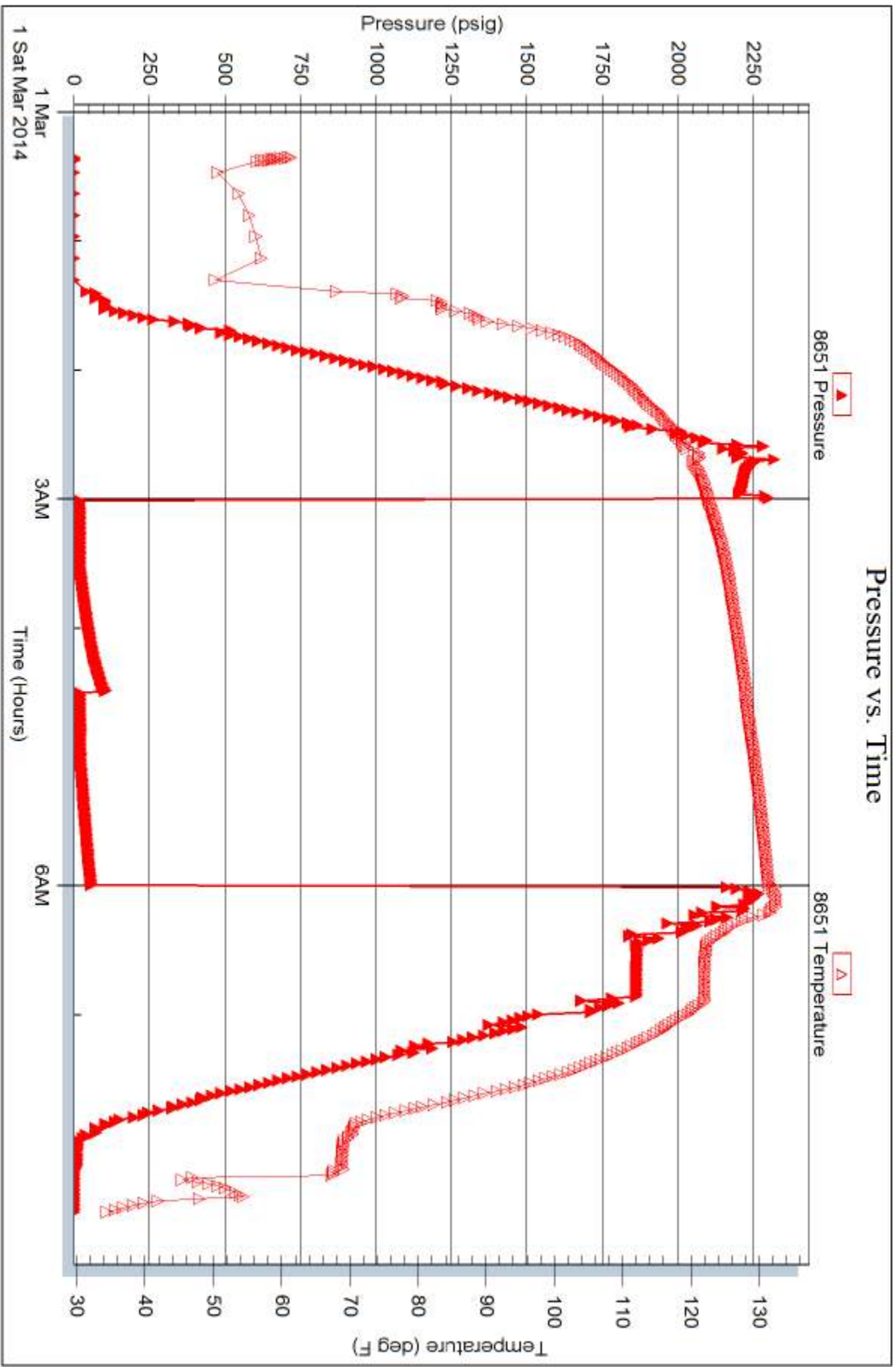


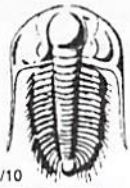
Serial #: 8651

Outside Murfin Drilling

Pothoff #1-4

DST Test Number: 6





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56795

Well Name & No. Potthoff # 1-4 Test No. 1 Date 2-23-2014
 Company Murfin Drilling Co. Elevation 3122 KB 3110 GL
 Address 250 N. Water ste. 300 Wichita Ks. 67202
 Co. Rep / Geo. Bob stolzle Rig Murfin #20
 Location: Sec. sw 4 Twp. 1s Rge. 37w Co. Cherokee State Ks

Interval Tested 3625 3870 Zone Tested FORAKER
 Anchor Length 45 Drill Pipe Run 3438 Mud Wt. 8.4
 Top Packer Depth 3620 Drill Collars Run 184 Vis 57
 Bottom Packer Depth 3625 Wt. Pipe Run 0 WL 5.6
 Total Depth 3670 Chlorides 700 ppm System LCM 4#

Blow Description IF: Had 12ft of fill ~~was~~ sid 10ft and opened last two. weak blow dead in limits.

ISI: No blow back

FF: No blow

FSI: No blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>180</u>	<u>Mud with oil specs</u>				

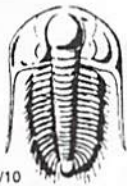
Rec Total 180 BHT 117 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2079</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>9:30</u>
(B) First Initial Flow <u>106</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>10:40</u>
(C) First Final Flow <u>107</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>13:16</u>
(D) Initial Shut-In <u>818</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>15:30</u>
(E) Second Initial Flow <u>107</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>17:17</u>
(F) Second Final Flow <u>107</u>	<input checked="" type="checkbox"/> Mileage <u>70x1.55 = 140x1.55</u> 217	Comments _____
(G) Final Shut-In <u>797</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1714</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Open <u>300</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby _____	Total <u>1692</u>
Final Shut-In <u>30</u>	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1692</u>	

Approved By _____

Our Representative Chuck Hager

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. 56796

Well Name & No. Potthoff # 1-4 Test No. 2 Date 2-24-14
 Company Murfin Drilling Co. Elevation 3122 KB 3110 GL
 Address 250N. Water Ste. 300 Wichita Ks. 67202
 Co. Rep / Geo. Bob Stolze Rig Murfin #20
 Location: Sec. sw 4 Twp. 15 Rge. 37w Co. cheyenne State Ks.

Interval Tested 3970 4040 Zone Tested Oread
 Anchor Length 70 Drill Pipe Run 3788 Mud Wt. 9.3
 Top Packer Depth 3965 Drill Collars Run 184 Vis 70
 Bottom Packer Depth 3970 Wt. Pipe Run 0 WL 6.0
 Total Depth 4040 Chlorides 700 ppm System LCM 4#

Blow Description FF: Strong blow, Built to B.O.B in 13 mins
TSE: No blow back over 60
FF: Strong blow, Built to B.O.B in 15 mins.
FSF: No blow back over 90 mins.

Rec	Feet of	%gas	%oil	%water	%mud
<u>156</u>	<u>mud</u>				<u>100%</u>
<u>189</u>	<u>wcm</u>			<u>25%</u>	<u>75%</u>
<u>255</u>	<u>mcw</u>			<u>75%</u>	<u>25%</u>
<u>184</u>	<u>mcw</u>			<u>95%</u>	<u>5%</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 784 BHT 135 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2064</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>2-24</u> <u>2060</u>
(B) First Initial Flow <u>54</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started _____ <u>23:40</u>
(C) First Final Flow <u>190</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open _____ <u>1:58</u>
(D) Initial Shut-In <u>1352</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>2-25</u> <u>5:00</u>
(E) Second Initial Flow <u>198</u>	<input type="checkbox"/> Hourly Standby _____	T-Out _____ <u>8:48</u>
(F) Second Final Flow <u>372</u>	<input checked="" type="checkbox"/> Mileage <u>70x2 = 140x1.55 =</u>	Comments _____
(G) Final Shut-In <u>1345</u>	<input type="checkbox"/> Sampler _____ <u>217</u>	
(H) Final Hydrostatic <u>2021</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____

Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 60 Extra Recorder _____
 Final Shut-In 90 Day Standby 1 DAY 5 hours
 Accessibility _____
 Sub Total 1792

Approved By _____ Our Representative Chuck Kuyler Jr

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.

Robert 785-639-5242



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56759

Well Name & No. Pott Hoff # 1-4 Test No. 3 Date 2-26-2014
 Company Murfin Drilling Inc. Elevation 3122 KB 3110 GL
 Address 250 N Water Ste 300 Wichita KS, 67202
 Co. Rep / Geo. Bob Stolze Rig Murfin #20
 Location: Sec. SW 4 Twp. 1 S Rge. 37 W Co. Cheyenne State KS

Interval Tested 4043 - 4165 Zone Tested LKC "A-D"
 Anchor Length 122 Drill Pipe Run 3853 Mud Wt. 9.4
 Top Packer Depth 4038 Drill Collars Run 184 Vis 80
 Bottom Packer Depth 4043 Wt. Pipe Run 0 WL 4.8
 Total Depth 4165 Chlorides 400 ppm System LCM 4
 Blow Description IF - blow built to 2"
ISI - no return
FF - blow built to 1/2"
FSI - no return

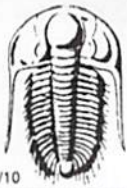
Rec	Feet of	%gas	%oil	%water	%mud
<u>68</u>	<u>90cm</u>	<u>5</u>	<u>15</u>	<u>80</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 68 BHT 126 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2041 Test 1250 T-On Location 12:00 AM 2-26
 (B) First Initial Flow 19 Jars 250 T-Started 12:58 AM
 (C) First Final Flow 27 Safety Joint 75 T-Open 3:42 AM
 (D) Initial Shut-In 927 Circ Sub _____ T-Pulled 7:43 AM
 (E) Second Initial Flow 34 Hourly Standby NC T-Out 10:00 AM 2-26
 (F) Second Final Flow 43 Mileage 140 RT 217 Comments _____
 (G) Final Shut-In 936 Sampler _____
 (H) Final Hydrostatic 2019 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1792
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1792

Approved By _____ Our Representative Robert Zolnow

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. 56760

Well Name & No. Potthoff #1-4 Test No. 4 Date 2-26-2014
 Company Murfin Drilling Inc. Elevation 3122 KB 3110 GL
 Address 250 N Water Ste. 300 Wichita KS, 67202
 Co. Rep / Geo. Bob Stolze Rig Murfin #20
 Location: Sec. SW 4 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4157 - 4235 Zone Tested LKC "H"
 Anchor Length 78 Drill Pipe Run 3950 Mud Wt. 9.4
 Top Packer Depth 4152 Drill Collars Run 184 Vis 80
 Bottom Packer Depth 4157 Wt. Pipe Run 0 WL 4.8
 Total Depth 4235 Chlorides 400 ppm System LCM 4
 Blow Description IF - blow built to 1 1/2"
ISI - no return
FF - blow built to 1"
FSI - no return

Rec	Feet of	%gas	%oil	%water	%mud
<u>75</u>	<u>0cm</u>	<u>10</u>		<u>90</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 75 BHT 126 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2081 Test 1250 T-On Location 9:00 pm 2-26
 (B) First Initial Flow 19 Jars 250 T-Started 9:26 pm 2-26
 (C) First Final Flow 37 Safety Joint 75 T-Open 10:24 pm 2-26
 (D) Initial Shut-In 922 Circ Sub _____ T-Pulled 2:26 am 2-27
 (E) Second Initial Flow 43 Hourly Standby _____ T-Out 4:20 am 2-27
 (F) Second Final Flow 60 Mileage 140 217 Comments _____
 (G) Final Shut-In 890 Sampler _____
 (H) Final Hydrostatic 2054 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Sub Total 1792 Total 1792 MP/DST Disc't _____

Approved By _____ Our Representative Robert Zedner

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. 56761

Well Name & No. Potthoff # 1-4 Test No. 5 Date 2-27-2024
 Company Murfin Drilling Inc. Elevation 3122 KB 3110 GL
 Address 250 N Water Stc 300 Wichita KS, 67202
 Co. Rep / Geo. Bob Stolzie Rig Murfin #20
 Location: Sec. SW 4 Twp. 1 S Rge. 37 W Co. Cheyenne State KS

Interval Tested 4214 - 4309 Zone Tested LKC "H, F, J"
 Anchor Length 95 Drill Pipe Run 4011 Mud Wt. 9.3
 Top Packer Depth 4209 Drill Collars Run 184 Vis 65
 Bottom Packer Depth ~~4209~~ 4214 Wt. Pipe Run 0 WL 6
 Total Depth 4309 Chlorides 1000 ppm System LCM 4
 Blow Description IF - BOB in 23 mins.
ISF - blow back built to 1/2"
FF - BOB in 15 mins.
FSI - blow back built to 2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>642</u>	<u>DEP</u>				
<u>40</u>	<u>Clean oil</u>	<u>1</u>	<u>99</u>		
<u>308</u>	<u>90CM</u>	<u>20</u>	<u>28</u>	<u>52</u>	

Rec Total 348 BHT 130 Gravity 38 API RW @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2157 Test 1250 T-On Location 4:30 PM 2-27
 (B) First Initial Flow 30 Jars 250 T-Started 5:15 PM 2-27
 (C) First Final Flow 108 Safety Joint 75 T-Open 7:19 PM 2-27
 (D) Initial Shut-In 1326 Circ Sub T-Pulled 11:21 PM 2-27
 (E) Second Initial Flow 109 Hourly Standby T-Out 1:30 AM 2-28
 (F) Second Final Flow 155 Mileage 140 RT 217 Comments _____
 (G) Final Shut-In 1287 Sampler _____
 (H) Final Hydrostatic 2120 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1792
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1792

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Approved By _____ Our Representative Robert Zolnow

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. 56762

Well Name & No. Potthoff #1-4 Test No. 6 Date 2-28-2014
 Company Murfin Drilling Inc. Elevation 3122 KB 3110 GL
 Address 250 N water stE 300 Wichita KS, 67202
 Co. Rep / Geo. Bob Stolzie Rig MURFIN #20
 Location: Sec. SW 4 Twp. LS Rge. 37W Co. Cheyenne State KS

Interval Tested 4455-4510 Zone Tested Upper Pawnee LS
 Anchor Length 55 Drill Pipe Run 4263 Mud Wt. 9.4
 Top Packer Depth 4450 Drill Collars Run 184 Vis 70
 Bottom Packer Depth 4455 Wt. Pipe Run 0 WL 6.2
 Total Depth 4510 Chlorides 800 ppm System LCM 2.0
 Blow Description IF - blow built to 1/8"
ISE - no return
FF - no blow
FSI - no return

Rec	Feet of	%gas	%oil	%water	%mud
2	mud			100	

Rec Total 2 BHT 130 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2298 Test 1250 T-On Location 11:30 AM 2-28
 (B) First Initial Flow 18 Jars 250 T-Started 12:21 AM 3-1
 (C) First Final Flow 19 Safety Joint 75 T-Open 3:00 AM 3-1
 (D) Initial Shut-In 104 Circ Sub _____ T-Pulled 6:00 AM 3-1
 (E) Second Initial Flow 20 Hourly Standby _____ T-Out 8:15 AM 3-1
 (F) Second Final Flow 21 Mileage 140 RT 217 Comments _____
 (G) Final Shut-In 56 Sampler _____
 (H) Final Hydrostatic 2264 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60

Sub Total 1792 Total 1792 MP/DST Disc't _____

Approved By _____

Our Representative Robert Zachow



CONSOLIDATED
Oil Well Services, LLC

REMIT TO
FINV
Consolidated Oil Well Services, LLC
Dept. 970
P.O. Box 4346
Houston, TX 77210-4346

Heck
UH/Proed
MAIN OFFICE
P.O. Box 884
Chanute, KS 66720
620/431-9210 • 1-800/467-8676
Fax 620/431-0012

INVOICE

Invoice # 266076

Invoice Date: 02/21/2014 Terms: 10/10/30,n/30

Page 1

MURFIN DRILLING
P.O. BOX 288
RUSSELL KS 67665
() -

OPERATOR PAY MDC
LEASE: Pothoff 1-4
an

POTT HOFF 1-4
43134
4-1-37
02-19-2014
KS

USED FOR _____

APPROVED _____

Part Number	Description	Qty	Unit Price	Total
1104S	CLASS "A" CEMENT (SALE)	215.00	18.5500	3988.25
1102	CALCIUM CHLORIDE (50#)	606.00	.9400	569.64
1111	SODIUM CHLORIDE (GRANULA)	200.00	.0000	.00

Sublet Performed	Description	Total
9996-130	CEMENT MATERIAL DISCOUNT	-455.79
9995-130	CEMENT EQUIPMENT DISCOUNT	-332.83

Description	Hours	Unit Price	Total
399 CEMENT PUMP (SURFACE)	1.00	1150.00	1150.00
399 EQUIPMENT MILEAGE (ONE WAY)	95.00	5.25	498.75
460 TON MILEAGE DELIVERY	1.00	1679.60	1679.60

Amount Due 8257.71 if paid after 03/23/2014

Parts:	4557.89	Freight:	.00	Tax:	334.32	AR	7431.94
Labor:	.00	Misc:	.00	Total:	7431.94		
Sublt:	-788.62	Supplies:	.00	Change:	.00		

Signed _____

Date _____

BARTLESVILLE, OK 918/338-0808 EL DORADO, KS 316/322-7022 EUREKA, KS 620/583-7664 PONCA CITY, OK 580/762-2303 OAKLEY, KS 785/672-8822 OTTAWA, KS 785/242-4044 THAYER, KS 620/839-5269 GILLETTE, WY 307/686-4914 CUSHING, OK 918/225-2650



CONSOLIDATED
Oil Well Services, LLC

266076

TICKET NUMBER 43134

LOCATION OAKLEY KS.

FOREMAN DAMON M.

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY	
2-19-14	5406	POTTHOFF #1-4	4	1	37	CHEYENNE	
CUSTOMER MURFIN DRILG CO.		BIRD CTR W SIDE N TO STATE LINE		TRUCK #	DRIVER	TRUCK #	DRIVER
MAILING ADDRESS 250 N WATER STE. 300		3E		399	TIM W		
CITY WICHITA		STATE KS.	ZIP CODE 67202	460	MIKER.		
		15 E INTO					

JOB TYPE SURFACE HOLE SIZE 12 1/4 HOLE DEPTH 223 CASING SIZE & WEIGHT 8 5/8 #23
 CASING DEPTH 223 DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 14.8 SLURRY VOL _____ WATER gal/sk _____ CEMENT LEFT IN CASING 20'
 DISPLACEMENT 13.0 DISPLACEMENT PSI _____ MIX PSI _____ RATE _____

REMARKS: Safety meeting RIG UP ON MURFIN #20 CIRC. CASING ON BOTTOM
MIX 215 SKS Com 3% CC SHUT DOWN DROPPED PLUG PUMPED 13 BBL OF H2O
SHUT IN WASHED UP TRUCK AND LINES AND RIGGED DOWN.

CEMENT DID CIRCULATE
APPROX 4 BBL TO THE PIT.

THANK YOU DAMON & CREW

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
54015	1	PUMP CHARGE	1150.00	1150.00 ✓
5406	95	MILEAGE	5.25	498.75 ✓
5407A	10.1	LOW MILEAGE DELIVERY	1.75	1679.60 ✓
11045	215 SKS	COM CLASS A	18.55	3988.25 ✓
1102	606#	CALCIUM CHLORIDE	1.94	569.64 ✓
1111	200#	SALT	N/C	N/C ✓
			SUBTOTAL	7886.24 ✓
			LESS 1090	7886.24 ✓
			SUBTOTAL	7097.62 ✓
			8.15	334.32 ✓
			SALES TAX	334.32 ✓
			ESTIMATED TOTAL	7431.94 ✓

completed

Ravin 3737

AUTHORIZATION Dave Cochran TITLE Toolpusher

DATE 2-19-14

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.



CONSOLIDATED
Oil Well Services, LLC

REMIT TO
FINV
Consolidated Oil Well Services, LLC
Dept. 970
P.O. Box 4346
Houston, TX 77210-4346

MAIN OFFICE
P.O. Box 884
Chanute, KS 66720
620/431-9210 • 1-800/467-8676
Fax 620/431-0012

INVOICE

Invoice # 266356

Invoice Date: 03/10/2014 Terms: 10/10/30,n/30

Page 1

MURFIN DRILLING
P.O. BOX 288
RUSSELL KS 67665
() -

POTT HOFF
43089
4-1S-37W
03-03-2014
KS

USED FOR IC-103
APPROVED [Signature]
FH

Part Number	Description	Qty	Unit Price	Total
1104D	CLASS "A" CEMENT CMD	300.00	27.9200	8376.00
1107	FLO-SEAL (25#)	150.00	2.9700	445.50
1110A	KOL SEAL (50# BAG)	1000.00	.5600	560.00
1126	OIL WELL CEMENT	200.00	23.7000	4740.00
1142A	KCL SUB MB6875 CC3107 (1	2.00	41.1000	82.20
1144G	MUD FLUSH (SALE)	500.00	1.0000	500.00
4104	CEMENT BASKET 5 1/2"	3.00	290.0000	870.00
4136	TURBOLIZER 5 1/2"	15.00	75.7500	1136.25
4159	FLOAT SHOE AFU 5 1/2"	1.00	433.7500	433.75
4310	ROTATING HEAD	1.00	200.0000	200.00
4315	ROTATING SCRATCHERS	5.00	94.5000	472.50
4454	5 1/2" LATCH DOWN PLUG	1.00	567.0000	567.00

Sublet Performed	Description	Total
9996-130	CEMENT MATERIAL DISCOUNT	-1838.32
9995-130	CEMENT EQUIPMENT DISCOUNT	-711.73

Description	Hours	Unit Price	Total
397 TON MILEAGE DELIVERY	1.00	1748.02	1748.02
405 SINGLE PUMP	1.00	3175.00	3175.00
405 EQUIPMENT MILEAGE (ONE WAY)	85.00	5.25	446.25
T-127 TON MILEAGE DELIVERY	1.00	1748.03	1748.03

Amount Due 26998.73 if paid after 04/09/2014

Parts:	18383.20	Freight:	.00	Tax:	1348.41	AR	24298.86
Labor:	.00	Misc:	.00	Total:	24298.86		
Sublt:	-2550.05	Supplies:	.00	Change:	.00		

Signed _____

Date _____

BARTLESVILLE, OK 918/338-0808 EL DORADO, KS 316/322-7022 EUREKA, KS 620/583-7664 PONCA CITY, OK 580/762-2303 OAKLEY, KS 785/672-8822 OTTAWA, KS 785/242-4044 THAYER, KS 620/839-5269 GILLETTE, WY 307/686-4914 CUSHING, OK 918/225-2650



266356

TICKET NUMBER 43089
 LOCATION Oakley, KS
 FOREMAN Mike Shaw
Walt Dink

PO Box 884, Chanute, KS 66720
 620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
CEMENT

US

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
3-3-14	5406	Pott Hoff	4	15	37W	Cherokee
CUSTOMER <u>Martin Drilling</u>			3 inches by 6 inches No. 10 Stud Line SW 1/4 S. E. 1/4			
MAILING ADDRESS			TRUCK #	DRIVER	TRUCK #	DRIVER
CITY			405	Jordan L		
STATE			528727	Carly R		
ZIP CODE			397	Steve O		

JOB TYPE Long String HOLE SIZE 7 7/8" HOLE DEPTH 4660 CASING SIZE & WEIGHT 5 1/2" 15.5#
 CASING DEPTH 4652.34 DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 10.7/13.8 SLURRY VOL. 3.01/142 WATER gal/sk _____ CEMENT LEFT IN CASING 21'
 DISPLACEMENT 1104 bbls DISPLACEMENT PSI 1500 MIX PSI 2200 psi RATE _____

REMARKS: Safety meeting and rig upon Martin drilling rig #200 float equipment
Turbulizers on rats #1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 18, 24, 37, 51, 56 Baskets on rats # 13, 38, 57
25' of Rotating Scratchers Circulate casing on rat #12. Run casing to bottom
Circulate casing thr. Pump mud flush mix 250 sacks CMD with 40# Plaseal tailed
in with 200 SWS OWC with 5# Nolsal Shnt down clear pump lines release
plug displace 1104 bbls with 1500 psi. 1.14 plug landed & held @ 2200 psi.
Cement did circulate 10 bbls to pit

mix 30sks RH 20sks MH

Thanks Mike & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
3401C	1	PUMP CHARGE	3175.00	3175.00
5406	85	MILEAGE	5.25	446.25
5407A	23.5 tons	Ton M. trass delivery	1.75	3496.05
1104D	300 SWS	CMD Cement	27.92	8376.00
1107	150 #	Plaseal	2.97	445.50
1110A	1000 #	Nolsal	.56	560.00
1120	200 SWS	OWC Cement	23.70	4740.00
1142A	2 gal	KCI	41.10	82.20
1144G	500 gal	Mud Flush	1.00	500.00
4104	3	5 1/2" Baskets	290.00	870.00
4136	15	5 1/2" Turbulizers	75.75	1136.25
4159	1	5 1/2" Float Shoe AFU	433.75	433.75
4310	1	Rotating head	200.00	200.00
4315	5	5 1/2" Rotating Scratchers	94.50	472.50
4454	1	5 1/2" Latch down plug	567.00	567.00
Subtotal	25500.50	loss 10% discount 2550.05	Subtotal	22950.45
			SALES TAX 8.15	1348.41
			ESTIMATED TOTAL	24298.86

completed

Ravin 3737

AUTHORIZATION [Signature] TITLE _____ DATE _____

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

Potthoff #1-4
 Daily Drilling Report
 Page Two
 2/26/14

Depth 4165'. Cut 125'. DT: None. CT: 15½ hrs. Dev.: None. **LKC A:** Ls crm-wh, pr-fr inter xln por, pr-fr bug por, drk brn stn, tr FO, gd cut & fluor. **LKC D:** Ls, moldic & vug por, fr SFO, odor, GD cut & fluor. **DST #3 4043-4165 (LKC A-D):** 30-60-60-90. IF: wk blw built to 2". FF: ½" steady blw throughout. Rec.: 68'GOCM (5%G, 15%O, 80%M) HP: 2041-2019. FP: 19/27, 34/43. SIP: 927-936. BHT: 126°.

2/27/14 Depth 4235'. Cut 70'. DT: None. CT: 19½ hrs. Dev.: None. **LKC G:** Ls, crm-wh, hrd-mod soft chky, V fn grn, micro xln, foss & oolitic, occasional grainstones w/gd inter part & vug por, drk brn stn, GSFO wk odor, excellent cut & fluor. **DST #4 4157-4235 (LKC G):** 30-60-60-90. IF: blw built to 1½". FF: blw built to 1". Rec.: 75'OCM (10%O, 90%M). HP: 2081-2055. FP: 19/37, 43/60. SIP: 922-890. BHT: 127°. **LKC H:** NS. **LKC I:** Ls, pp por, hv blk tarry oil stn no odor. **LKC J:** Ls, tn, hrd dns, foss, oolitic, pr-fr vug por, drk brn fr SFO, bleeding oil, excellent cut & fluor. **DST #5 4214-4309 (LKC H-J):**

2/28/14 Depth 4345'. Cut 110'. DT: None. CT: 17 hrs. Dev.: None. **DST #5 4214-4309 (LKC H-J):** 30-60-60-90. IF: BOB in 23 min. ISI: blw back built to ½". FF: BOB in 15 mins. Rec.: 308'GOCM (20%G, 28%O, 25 M), 40'CO (1%G, 99%O), 642'GIP. HP: 2157-2121. FP: 30/108, 109/155. SIP: 1326-1287. BHT 130°.

3/1/14 Depth 4510'. Cut 165'. DT: None. CT: 11½ hrs. Dev.: ¼° @ 4510'. **Pawnee:** Ls, wh-crm, v fn grn, xln, foss, oolitic, fr-gd xln por, occasional vug porosity, drk brn stn, fair SFO, wk odor. **DST #6 4455-4510 (Pawnee):** 30-60-30-60. IF: 1/8" blw. FF: no blw. Rec.: 2' M. HP: 2298-265. FP: 18/19, 20/21. SIP: 104-56. BHT: 132°.

3/2/14 RTD 4660'. Cut 150'. DT: None. CT: 12 hrs. Dev.: None. HC 1:00 AM 3/2/2014. Pioneer began logging @ 5:00 AM. Plan to run 5 ½" production casing.

3/3/14 RTD: 4660'. CT: 24hrs. Pioneer finished logging @ 10:00AM 3/2. Ran 111jts of 15.5# 5½" prod csg, set @ 4652'. C.O.W.S. cmt w/300sxs CMD, 200sxs OWC. PD @ 2:00AM 3/3. Circ 10BBLs. RR @ 6:00AM 3/3/14 FINAL REPORT

Formation	MDCI Potthoff #1-4 2100' FNL 500' FWL Sec. 4-T1S-R37W 3122' KB						MDCI Shones Unit #1-5 2600' FSL 660' FEL Sec. 5-T1S-R37W 3177' KB	
	Sample top	Datum	Ref	Log Top	Datum	Ref	Log Top	Datum
Anhydrite	3085	+37	+2	3094	+28	-7	3142	+35
B/Anhydrite	3125	-3	-4	3126	-4	-5	3176	+1
Neva	3546	-424	-5	3544	-422	-3	3596	-419
Red Eagle	3614	-492	-8	3609	-487	-3	3661	-484
Foraker	3658	-536	-6	3656	-534	-4	3707	-530
Stotler	3806	-684	-5	3804	-682	-3	3856	-679
Topeka	3875	-753	-5	3874	-752	-4	3925	-748
Oread	4013	-891	-8	4008	-886	-3	4060	-883
Lansing	4088	-966	-5	4086	-964	-3	4138	-961
Stark	4308	-1186	-6	4305	-1183	-3	4357	-1180
BKC	4362	-1240	-3	4360	-1238	-1	4414	-1237
Pawnee	4478	-1356	-3	4478	-1356	-3	4530	-1353
Cherokee	4567	-1445	-3	4566	-1444	-2	4619	-1442
Mississippi	NR			NR			4870	-1693
RTD	4660	-1538					4955	
LTD				4660	-1538		4960	