

Confidentiality Requested:

Yes No

**KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION**

Form ACO-1

January 2018

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

Gas DH EOR

OG GSW

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 EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

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 Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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 Geologist Report / Mud Logs <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				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
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)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
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) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Wellsite Services, LLC

John Goldsmith
(316) 640-0236

427 Roosevelt St.
Cheney, KS 67025

Scale 1:240 (5"=100') Imperial Measured Depth Log

Well Name: #1 Martin 4D
API: 15-203-20324
Location: 2265' FSL & 1895' FEL, N2 NW SE, 4-16S-36W
License Number: #4767
Spud Date: 10/14/2017
Surface Coordinates: LAT 38.6914863
LONG -101.3002921
Bottom Hole Vertical hole
Coordinates: 1 Degree Deviation
Ground Elevation (ft): 3287'
Logged Interval (ft): 3700' To: RTD
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical

Region: Wichita County
Drilling Completed: 10/26/2017
K.B. Elevation (ft): 3300'
Total Depth (ft): 4880'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Ritchie Exploration, Inc.
Address: 8100 E. 22nd St. N. #700
Wichita, KS 67226
(316) 691-9500

GEOLOGIST

Name: John Goldsmith
Company: Wellsite Services, LLC
Address: 427 Roosevelt St.
Cheney, KS 67025
(316) 640-0236

RIG RECORDS

Contractor: Sterling Drilling Rig #5
Pusher: Alan Loftis

Collar Tally: 651'

Pump: Continental-Emsco D-375
Stroke and Liner: 6.5" x 14"

BIT RECORDS

Size:	Type:	Footage:	Condition:	Hours:	Serial #:
12 1/4"	Sm-tooth	0-272'	New	1.75	I706873
7 7/8"	Sm-tooth	272'-4779'	New	134.75	1611002
7 7/8"	Sm-tooth	4779'-4880'	RR	7	1426611002

COMMENTS

Surface Casing: 6 joints of 8 5/8" set at 272'
Production Casing: No Production Casing was installed.
Mud by: MudCo
DST's by: Diamond Testing
Logs by: Pioneer Wireline Services (DIL, CN-CD, ML)
RTD=4880' LTD=4881'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3632'	-332	3632'	-332
Heebner Shale	3996'	-696	3995'	-695
Toronto	4010'	-710	4010'	-710
Lansing	4048'	-748	4048'	-748
Muncie Creek Shale	4214'	-914	4214'	-914
Stark Shale	4304'	-1004	4304'	-1004
Hushpuckney Shale	4347'	-1047	4347'	-1047
Base of KC	4384'	-1084	4385'	-1085
Marmaton	4428'	-1128	4428'	-1128
Altamont	4452'	-1152	4452'	-1152
Pawnee	4516'	-1216	4516'	-1216
Myrick Station	4558'	-1258	4558'	-1258
Ft Scott	4574'	-1274	4574'	-1274
Cherokee Shale	4603'	-1303	4603'	-1303
Johnson Zone	4694'	-1394	4694'	-1394
Morrow	4756'	-1456	4756'	-1456
Mississippian	4805'	-1505	4806'	-1506
RTD	4880'	-1580		
LTD			4881'	-1581

DSTs

DST #1 "LKC I/J" 4247'-4312' 10/21/17 30-45-45-60

1st Blw: Blw blt to BOB in 18min (No BB)

2nd Blw: Blw blt to BOB in 22min (No BB)

IFP: 33-119# ISIP: 1208# FFP: 1377-236# FSIP: 1193#

Hyd: 2159-2139#

Rec: 500' MCW w/ oil spots in tool (85%Wtr).

DST #2 "Altamont A" 4430'-4460' 10/22/17 30-45-30-30

1st Blw: 1/4" blw fell to surf (No BB)

2nd Blw: No blw (No BB)

IFP: 23-21# ISIP: 1233# FFP: 24-26# FSIP: 1150#

Hyd: 2268-2241#

Rec: 5' Oil, 5' OCM (30%Oil).

DST #3 "Altamont B" 4460'-4477' 10/22/17 30-30-30-30

1st Blw: 1/4" blw dead @ 27min (No BB)

2nd Blw: No blw (No BB)

IFP: 22-39# ISIP: 1088# FFP: 45-59# FSIP: 1023#

Hyd: 2264-2233#

Rec: 30' Oil, 55' WOCM (20%WTR, 20%Oil).

DST #4 "Pawnee" 4508'-4546' 10/23/17 30-30-30-30

1st Blw: Surf blw dead @ 20min (No BB)

2nd Blw: No blw (No BB)

IFP: 23-20# ISIP: 57# FFP: 20-21# FSIP: 40#

Hyd: 2365-2276#

Rec: 5' Mud with oil spots.

DST #5 "Morrow" 4733'-4779' 10/25/17 30-45-45-60

1st Blw: 1/2" blw fell to 1/4" (No BB)


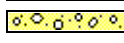
2nd Blw: No blw after intial bubble (No BB)

IFP: 22-23# ISIP: 44# FFP: 23-25# FSIP: 34#




Hyd: 2437-2425#




Rec: 15' Mud with oil spots.

ROCK TYPES

-  Anhy
-  Cht
-  Congl



-  Dol
-  Lmst
-  Shale

-  Sltst
-  Ss
-  Carb sh







-  Gry sh
-  Sandylms
-  Shaly ls





ACCESSORIES

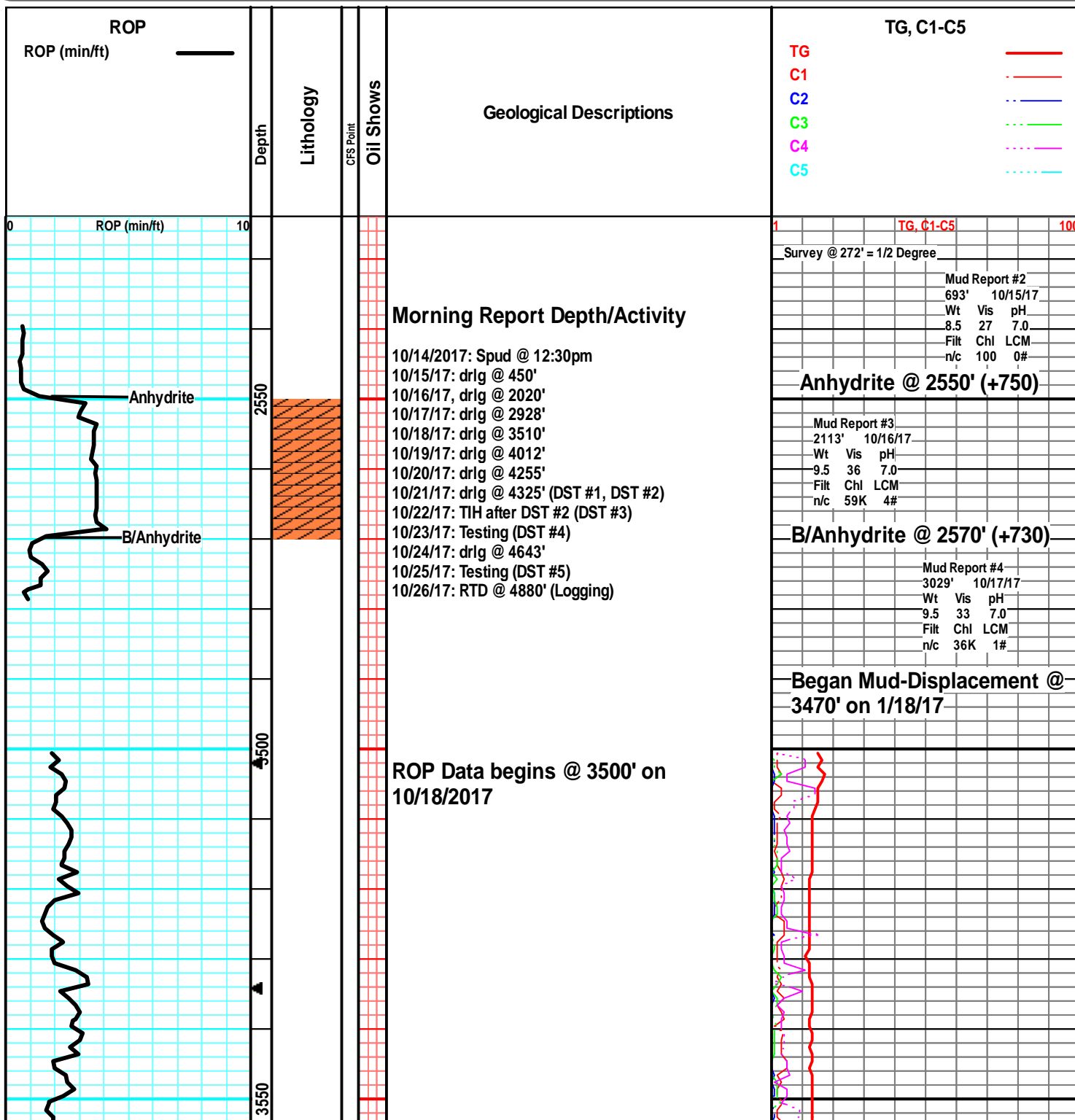
- EVENTS**
-  Circ
 -  Conn

- FOSSIL**
-  Brach
 -  Bryozoa
 -  Crin

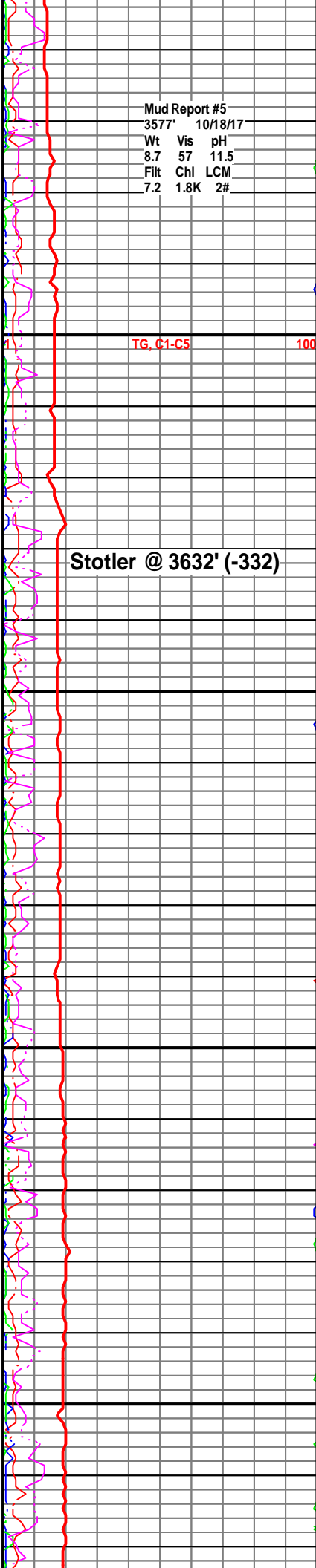
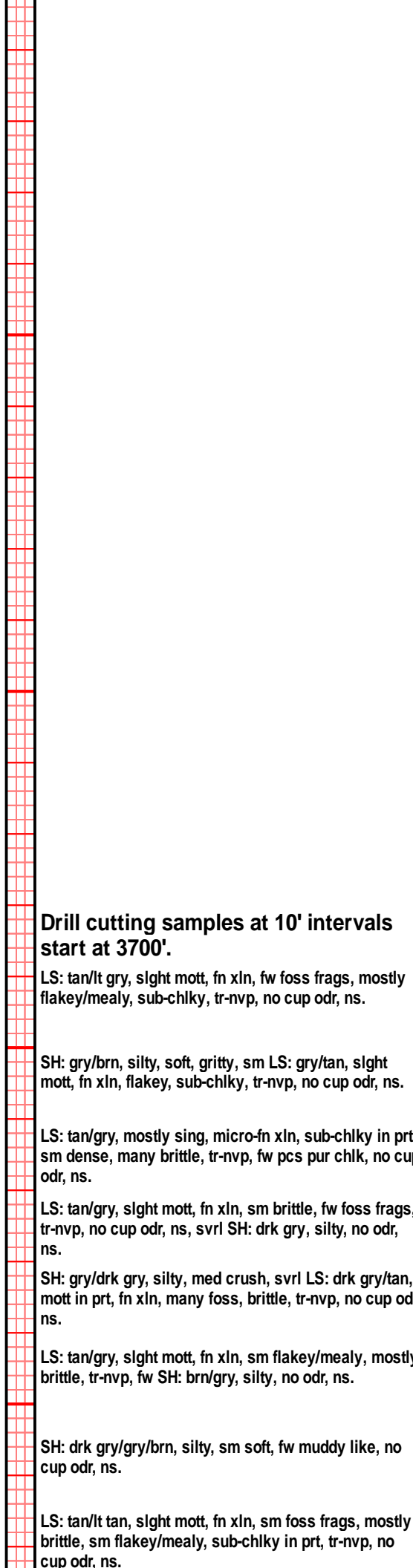
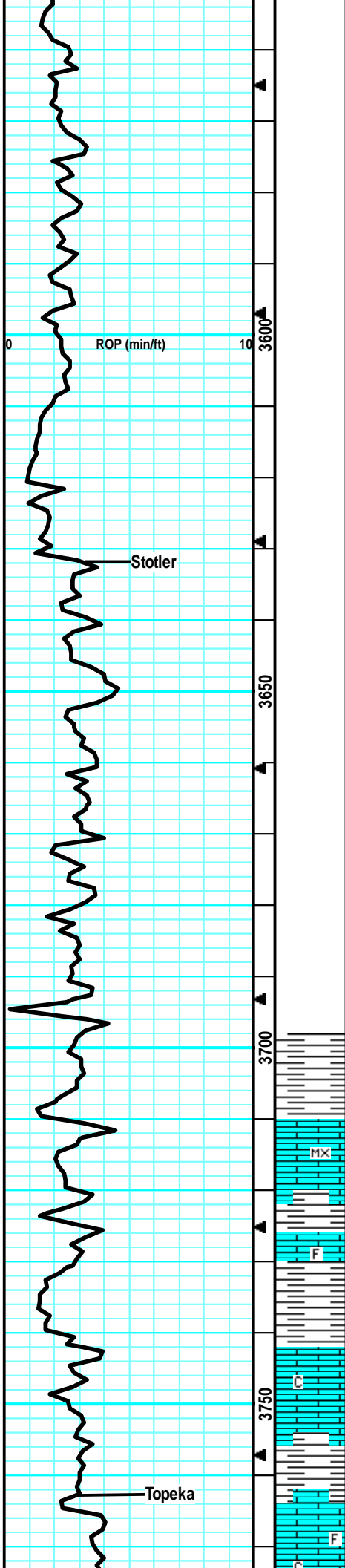
-  Foram
-  Fossil
-  Gastro
-  Oolite
-  Plant
-  Fuss
-  Oolcast

- MINERAL**
-  Calc
 -  Chtdk
 -  Chtlt
 -  Glau
 -  Pyr
 -  Sil

- TEXTURE**
-  Chalky
 -  Crxsln
 -  Finexln
 -  Microxln



Mud Report #5
 3577' 10/18/17
 Wt Vis pH
 8.7 57 11.5
 Filt Chl LCM
 7.2 1.8K 2#



TG, C1-C5 100

Stotler @ 3632' (-332)

Drill cutting samples at 10' intervals start at 3700'.

LS: tan/lt gry, slight mott, fn xln, fw foss frags, mostly flakey/mealy, sub-chlky, tr-nvp, no cup odr, ns.

SH: gry/brn, silty, soft, gritty, sm LS: gry/tan, slight mott, fn xln, flakey, sub-chlky, tr-nvp, no cup odr, ns.

LS: tan/gry, mostly sing, micro-fn xln, sub-chlky in prt, sm dense, many brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, sm brittle, fw foss frags, tr-nvp, no cup odr, ns, svrl SH: drk gry, silty, no odr, ns.

SH: gry/drk gry, silty, med crush, svrl LS: drk gry/tan, mott in prt, fn xln, many foss, brittle, tr-nvp, no cup odr, ns.

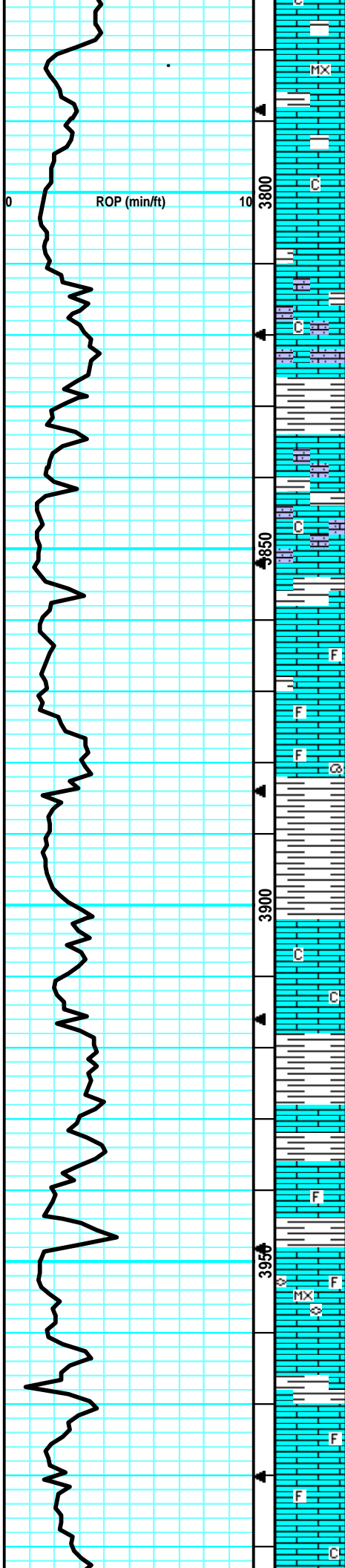
LS: tan/gry, slight mott, fn xln, sm flakey/mealy, mostly brittle, tr-nvp, fw SH: brn/gry, silty, no odr, ns.

SH: drk gry/gry/brn, silty, sm soft, fw muddy like, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, sm foss frags, mostly brittle, sm flakey/mealy, sub-chlky in prt, tr-nvp, no cup odr, ns.



Topeka



LS: crm/lt tan, mostly sing, micro-fn xln, brittle, chlky in prt, tr-nvp, svrl pcs pur chlk, fw pcs w/ drk sptd min stns, no fluor/cut, nsfo.

LS: gry/tan, slight mott, fn xln, many brittle, sm flakey, fw grainy, sub-chlky, tr-nvp, no cup odr, ns.

LS: crm/lt tan, mostly sing, fn xln, sub-chlky, brittle, tr-nvp, no cup odr, ns.

LS: tan, mostly sing, fn xln, sm dense, sm brittle, sub-chlky in prt, fw sandy/gritty, tr-nvp, no cup odr, ns.

LS: tan/gry, fn xln, many sandy/gritty, brittle in prt, tr-pr intxln por in sm, fw SH: drk gry/blk, silty, fw carb, no cup odr, ns.

LS: tan, sing, fn xln, sandy/gritty, sm firm, tr-? intxln por in fw, abund pur chlk, no cup odr, ns.

Much of the same sandy/gritty LS and chlk, slight inflix of drk gry, SH, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw foss frags, many brittle, sub-chlky, tr-pr intxln por in sm, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm foss in prt, sub-chlky, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

LS: gry, mosty mott, v foss w/ gast/frags, sm firm, tr-nvp, sm SH: gry/blu, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm foss frags, sm dense, many flakey/mealy, tr-nvp, fw pcs pur chlk, sm SH: brn, silty, soft, no odr, ns.

LS: tan, slight mott, fn xln, many flakey/mealy, sub-chlky, tr-nvp, svrl SH: brn, silty, v soft, no cup odr, ns.

LS: lt gry/lt tan, slight mott, fn xln, many brittle, sub-chlky, pr intxln por in sm, svrl pcs pur chlk, no odr, ns.

LS: lt tan, sing, fn xln, mostly brittle, sub chlky, tr-nvp, 2-3 pcs w/ drk sptd surf stns, no fluor/cut, pos drk ded o, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, many dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, fw foss frags, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, foss w/ fuss/frags, mostly dense, brittle, chlky, tr-nvp, abund pur chlk, no cup odr, ns.

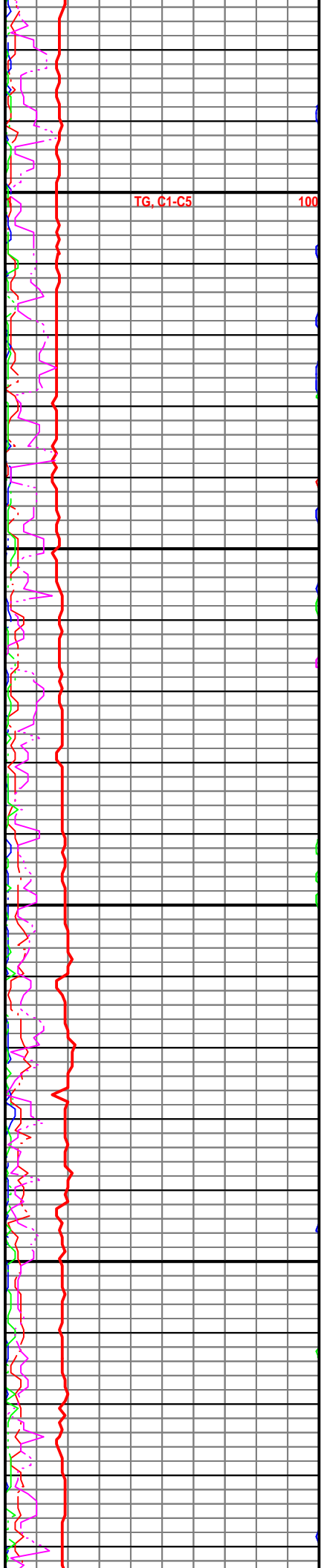
LS: tan/lt gry, slight mott, fn xln, sub-chlky in prt, sm brittle, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

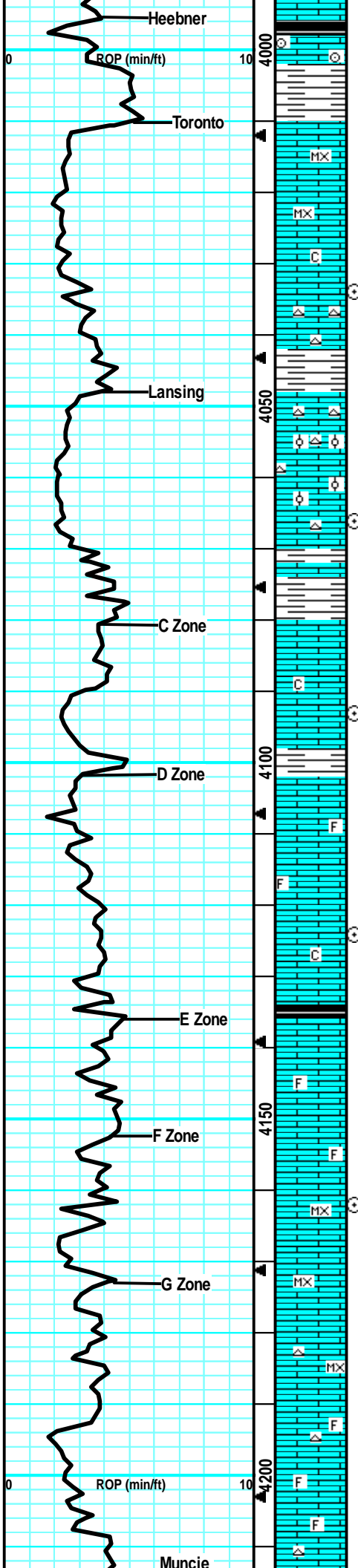
LS: lt gry/tan, mott in prt, fn xln, sm foss in prt, brittle, sub-chlky, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, mott, fn xln, foss in prt, flakey/mealy, brittle, chlky, tr-nvp, abund pur chlk, no cup odr, ns.

TG. C1-C5

100





Much of the same LS, influx of SH: blk, carb, silty, soft, no cup odr, ns.

LS: gry/tan, mott, fn xln, foss w/ crin/frags, dense, sm brittle, tr-nvp, svrl SH: gry/brn/blu, silty, soft, no cup odr, ns.

LS: tan/lt tan, sing, micro-fn xln, sm dense, many brittle, chlky, tr-nvp, abund pur chl, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, mostly brittle, chlky, tr-nvp, abund pur chl, no cup odr, ns.

60" Smpl: much of the same chlky, britty LS, no cup odr, ns.

LS: lt tan, sing, fn xln, mostly dense, sm brittle, fw firm, cherty, tr-nvp, fw pcs Chert: wht/opaq, sharp, fw SH: brn, silty, no cup odr, ns.

LS: tan, slight mott in prt, fw ool, mostly dense, sub-chlky in prt, brittle, tr-nvp, fw Chert: wht/opaq, sharp, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, fw ool in prt, mostly brittle, sm dense, sub-chlky in prt, tr-nvp, no cup odr, ns.

60" Smpl: LS: tan, sing, fn xln, dense, sub-chlky, tr-nvp, fw Chert: wht/opaq, sharp, no odr, ns.

LS: tan, mostly sing, fn xln, sm lrg rxln inclus, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, fw SH: gry, silty, no cup odr, ns.

LS: gry/lt tan, mostly sing, fn xln, sub-chlky, mostly brittle, fw flakey/mealy, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, mostly dense, sm brittle, sub-chlky in fw, tr-nvp, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, sm lrg inclus, sm flakey/mealy, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, fn xln, mostly dense, fw lrg inclus, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, fw foss frags, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

60" Smpl: Much of the same lt tan/lt gry LS, no odr, ns.

LS: lt gry, slight mott in prt, fn xln, mostly flakey, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sub-chlky in prt, tr-pr intxln por in v fw pcs, fw SH: blk, silty, carb, hint-? odr, nsfo.

LS: lt tan/lt gry, sing, fn xln, mostly brittle, fw dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: lt gry/tan, slight mott, fn xln, fw foss frags, sm brittle, sub-chlky in prt, tr-nvp, no cup odr, ns.

60" Smpl LS: lt tan, slight mott, fn xln, many brittle, sub-chlky, tr-nvp, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, dense, brittle, sub-chlky, tr-nvp, svrl pcs pur chl, tr-nvp, SH: gry/grn, silty, no cup odr, ns.

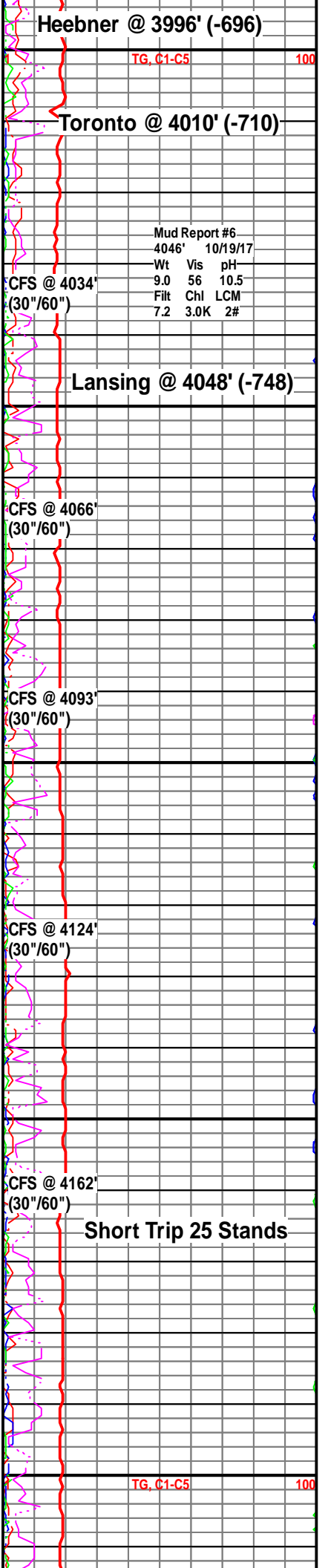
LS: crm/lt tan, mostly sing, micro-fn xln, sub-chlky, mostly dense, sm brittle, tr-nvp, fw SH: gry/grn, silty, no cup odr, ns.

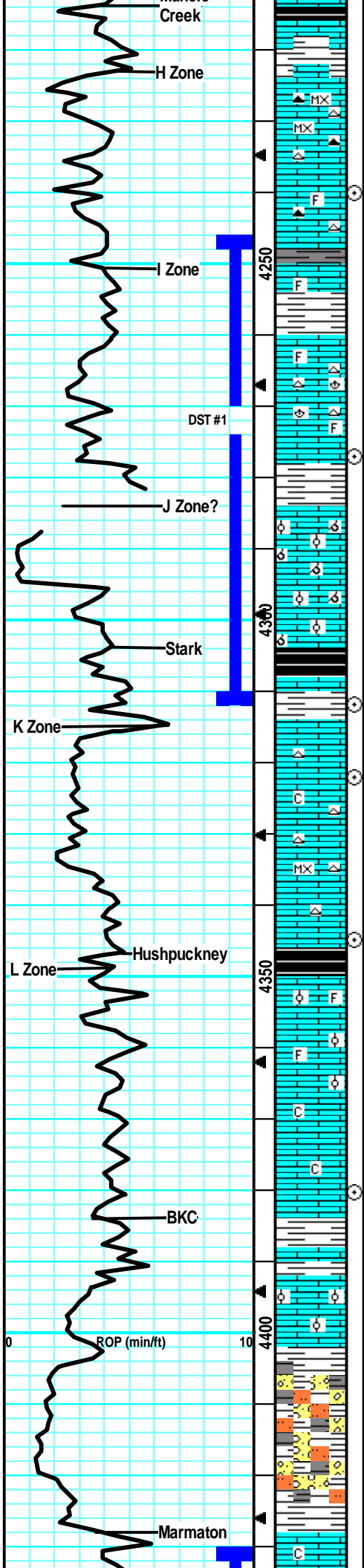
LS: crm/lt tan, mostly sing, micro-fn xln, mostly dense, many brittle, sub-chlky, sm brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, mostly brittle, sub-chlky, sm flakey/mealy, tr-nvp, fw pcs SH: gry, silty, no cup odr, ns.

LS: lt tan/gry, slight mott, fn xln, v fw foss frags, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw SH: gry/drk gry/grn, silty, no odr, ns.

LS: arv/tan, slight mott, fn xln, fw foss frags, mostly





dense, sm brittle, sub-chlky, tr-nvp, fw SH: blk, silty, carb, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, mostly dense, sm firm, v fw sub-chlky, tr-nvp, svrl Chert: gry/tan, smokey, sharp, no cup odr, ns.

LS: lt tan, mostly sing, fn xln, mostly brittle, sm dense, sub-chlky, tr-nvp, fw Chert: gry/wht, sharp, no cup odr, ns.

LS: tan/lt gry, slight mott in prt, fn xln, fw foss frags, mostly dense, sm brittle, tr-nvp, fw Chert: gry/wht, foss, sharp, no odr, ns.

LS: gjry/lt tan, mott in prt, fn xln, fw foss frags, mostly dense, sm firm, fw flakey, tr-nvp, fw SH: gry/drk gry, silty, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, fw foss/bach, sm flakey, sm firm, tr-nvp, sm Chert: gry/wht, foss, sharp, no odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw foss frags, mostly flakey, sub-chlky, tr-pr ppt por in fw, 2 pcs w/ spttd drk tarry stn on edges, wk-? fluor, no cut, pos drk dead oil, nsfo, no cup odr.

LS: tan, slight mott, fn xln, sm v ool, sm brittle, sub-chlky in prt, gd oolcast-sm vuggy por, fw pcs pur chl, no odr, ns.

LS: tan/lt tan, mott in prt, fn xln, sm foss, sm v ool, mostly brittle, gd oolcast por in svrl, 2 pcs w/ vuggy por, hvy sat stns in por, gd fluor/cut, most likely from above in "I Zone," no cup odr, ssfo.

LS: tan/lt gry, slight mott, fn xln, mostly brittle, sm v gd oolcast por, ns, no odr, fw pcs SH: blk, carb, silty.

60" Smpl: Sm of the same ool LS, more LS: gry, dense, tr-nvp, infix of SH: blk, silty, carb, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly brittle, fw sub-chlky, tr-pr intxn por in fw pcs, abund pur chl, 1 pcs w/ lght brn edge stns, wk-? fluor, pos cut resid, no cup odr, nsfo.

LS: lt gry/tan, mostly sing, fn xln, dense, sub-chlky, tr-nvp, fw pcs SH: gry/brn grn, no cup odr, ns.

LS: lt tan, sing, fn xln, mostly dense, brittle, chlky, in prt, tr-nvp, svrl pcs pur chl, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, v brittle, sm soft, chlky, tr-ppt intxn por in fw, svrl pcs pur chl, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sm hard, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw foss frags, sub-chlky in prt, flakey/mealy in prt, tr-nvp, fw SH: blk, silty, carb, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, fw ool/foss frags, sub-chlky, fw brittle, tr-nvp, fw SH: blk, carb, silty, no cu odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky, fw firm, tr-nvp, v fw pcs pur chl, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm foss/ool, mostly dense, sm brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt gry/tan, mott in prt, fn xln, many foss/ool, sm dense, many brittle, fw pcs w/ pr scat infoss por, fw SH: drk gry/grn, silty, no cup odr, ns.

LS: gry/tan, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, 2-3 pcs w/ vuggy por, lght patchy stns, in por, no cup odr, vssfo.

LS: gry/tan, mott, fn xln, sm sandy/grny, 1 pc LS: gry, dense, pr frac por on edge, lght brn stn, v sml sphr oil on brk, no cup odr.

SH: brn, soft, fw SitStn: lt gry, gritty, sm muddy like, v soft, no odr, ns.

LS: tan/lt tan, sing, fn xln, mostly dense, sm brittle, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly dense, sub-chlky in prt, fw firm, only 1 pc w/ fr vuggy por, drk stns in

Muncie Creek @ 4214' (-914)

CFS @ 4240'
(30"/60")

DST #1 "LKC I/J" 4247'-4312'
10/21/17 30-45-45-60"
1st Blw: Blw blt to BOB in 18min
(No BB)
2nd Blw: Blw blt to BOB in 22min
(No BB)
IFP: 33-119# ISIP: 1208# FFP:
1377-236# FSIP: 1193#
Hyd: 2159-2139#
Rec: 500' MCW w/ oil spots in tool
(85%Wtr).

CFS @ 4277'
(30"/60")

Footage Sensor
Failed on rig.

Mud Report #7

4310'	10/20/17	
Wt	Vis	pH
9.3	54	10.0
Flt	Chl	LCM
8.0	4.0K	2#

Stark @ 4304' (-1004)

CFS @ 4312'
(30"/60")

Survey @ 4312' = 1 1/4 Degree

CFS @ 4322'
(30"/60")

Mud Report #8

4341'	10/21/17	
Wt	Vis	pH
9.3	54	10.0
Flt	Chl	LCM
8.8	5.0K	2#

CFS @ 4345'
(30"/60")

Hushpuckney @ 4347' (-1047)

CFS @ 4380'
(30"/60")

BKC @ 4384' (-1084)

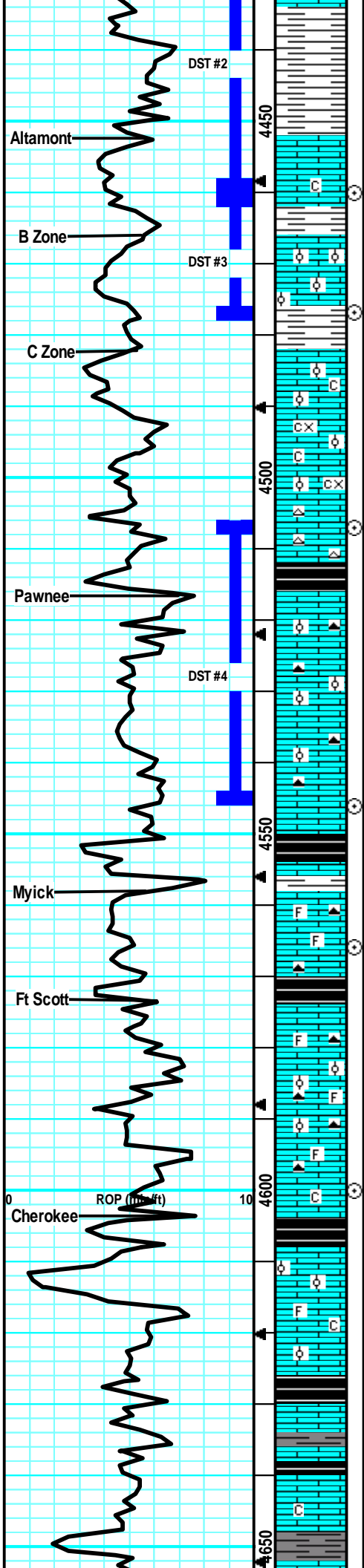
DST #2 "Altamont A"
4430'-4460' 10/22/17
30-45-30-30
1st Blw: 1/4" blw fell to surf (No BB)
2nd Blw: No blw (No BB)
IFP: 23-21# ISIP: 1233# FFP:
24-26# FSIP: 1150#
Hyd: 2268-2241#
Rec: 5' Oil, 5' OCM (30%Oil).

Marmaton @ 4428' (-1128)

Mud Report #9

4460'	10/22/17	
Wt	Vis	pH

9.5 58 10.0
Filt Chl LCM
8.8 4.5K 1#



LS: tan/gry, slight mott, fn xln, sm ool, mostly dense, sub-chlky in prt, sm brittle, tr-nvp, fw SH: gry, silty, no cup odr, ns.
LS: gry/tan, mott, fn xln, mostly brittle, sub-chlky in prt, fr intxn por in 5-6 pcs, lght brn stning, dul yel fluor, strm cut, wk cup odr, ssfo.
60 Min Smpl: had fw more pcs of LS: w/ fr intxn por, lght brn stns, w/ ssfo in 4 pcs, wk cup odr.
LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky, tr-ppt intxn por in fw, 1 pc w/ patchy lght brn stns, gd fluor, slw cut, vssfo, no cup odr.
LS: tan/lt gry, slight mott, fn xln, sm v ool, mostly dense, many brittle, tr-? intool por in fw, 1 pcs w/ drk brn stns, ? fluor, no cut, pos drk ded oil, no cup odr, nsfo.
LS: tan/lt gry, sing, fn xln, mostly dense, sub-chlky in prt, sm brittle, tr-nvp, svrl SH: brn/gry/grn, silty, soft, fw waxy, no cup odr, ns.
LS: tan/gry, mott, fn xln, fn-crs xln, mostly brittle, v flakey/mealy, sub-chlky, svrl lrg qrtz/sand grains, tr-nvp, no cup odr, ns.
LS: tan/gry, mott, fn-crs xln, mostly flakey/mealy, sm firm, tr-nvp, fw SH: gry/grn, silty, soft, no cup odr, ns.
60" Smpl: Much of the same Flakey LS, w/ influx of gry/wht ool Chert, no cup odr, ns.
LS: drk gry/lt brn, mott, crs xln, mostly firm, lrg crs flake like xls, tr-nvp, fw Chert: gry, sharp, svrl SH: drk gry/blk, silty, soft, fw carb, no odr, ns.
LS: gry/lt tan, sing, fn xln, mostly dense, sm brittle, tr-nvp, fw Chert: gry, sharp, no ucp odr, ns.
LS: gry/lt tan, slight mott, fn xln, sm ool, molsty firm, fr intxn & tght intool por in fw, 6-7 pcs wk lght brn sat stns in por, gd fluor, strm cut, ssfo on brk, fr cup odr.
LS: gry/tan, slight mott, fn xln, fw ool, mostly dense, many firm, tr-pr intool por in fw pcs, only 2 pcs of ool sho rx, fw Chert: gry, sharp, faint-? cup odr, vssfo in 2 pcs.
LS: gry/tan, slight mott, fn xln, dense, fw flakey, tr-nvp, sm SH: drk gry/blk, silty, sm carb, o cup odr, ns.
LS: gry/tan, mott, fn xln, foss in prt, many dense, fw firm, svrl flakey/mealy, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.
LS: gry/tan, mostly mott, fn xln, foss, sm firm, tr-nvp, svrl Chert: gry, foss, sharp, fw SH: drk gry/blk, silty, soft, fw carb, no cup odr, ns.
LS: gry, mott, fn xln, foss, mostly dense, many firm, fw hard, tr-nvp, fw Chert: gry, foss, sharp, fw SH: drk gry, silty, soft, no cup odr, ns.
LS: tan/gry/lt brn, mott in prt, fn xln, sm foss/ool, mostly dense, many firm, tr-v pr intool por in v fw pcs, sm Chert: lt brn/gry, foss, sharp, sm SH: gry/blk, silty, carb, no cup odr, ns.
LS: gry/lt tan, sing, fn xln, sub-chlky, tr-nvp, fw pcs pur chl, fw Chert: gry/smoke, foss, sharp, fw SH: drk gry/blk, silty, carb, no cup odr, ns.
LS: tan/gry, slight mott in prt, fn xln, mostly dense, sub-chlky in prt, sm firm/flakey, tr-nvp, svrl SH: drk gry, med crush, fw Chert: crm/gry, sharp, no odr, ns.
LS: tan/gry, slight mott, fn xln, fw foss frags, mostly dense, fw sub-chlk, tr-nvp, fw Chert: wht/gry, sharp, no odr, ns.
LS: gry/lt tan, mott, fn xln, sm foss in prt, many dense, many firm, tr-nvp, abund SH: drk gry/blk, silty, carb, no cup odr, ns.
LS: gry/tan, slight mott, fn xln, mostly dense, sm firm, sub-chlky in prt, tr-nvp, fw SH: drk gry, silty, soft, fw carb, no cup odr, ns.
LS: tan/lt gry, slight mott, fn xln, sub-chlky, many brit, tr-nvp, 2 pcs w/ pr scat vuggy por, sptd brn stns, gd fluor, strm cut on brk, no cup odr, vssfo.
LS: gry/tan, slight mott, fn xln, mostly dense, many firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.
LS: lt tan/lt gry, mostly sing, fn xln, many dense, sub-chlky in prt, fw firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.
LS: gry/lt tan, slight mott, fn xln, mostly dense, many

Altamont @ 4452' (-1152)

CFS @ 4460' (30"/60")
DST #3 "Altamont B"
4460'-4477' 10/22/17
30-30-30-30
1st Blw: 1/4" blw dead @ 27min (No BB)
2nd Blw: No blw (No BB)
IFP: 22-39# ISIP: 1088# FFP: 45-59# FSIP: 1023#
Hyd: 2264-2233#

CFS @ 4477' (30"/60")
DST #4 "Pawnee"
4508'-4546' 10/23/17
30-30-30-30
1st Blw: Surf blw dead @ 20min (No BB)
2nd Blw: No blw (No BB)
IFP: 23-20# ISIP: 57# FFP: 20-21# FSIP: 40#
Hyd: 2365-2276#
Rec: 30' Oil, 55' WOCM (20%WTR, 20%Oil).

CFS @ 4507' (30"/60")
Mud Report #10
4546' 10/23/17
Wt Vis pH
9.5 60 10.0
Filt Chl LCM
8.8 5.6K 2#

Pawnee @ 4516' (-1216)

CFS @ 4546' (30"/60")
Mud Report #10
4546' 10/23/17
Wt Vis pH
9.5 60 10.0
Filt Chl LCM
8.8 5.6K 2#

Myrick @ 4558' (-1258)

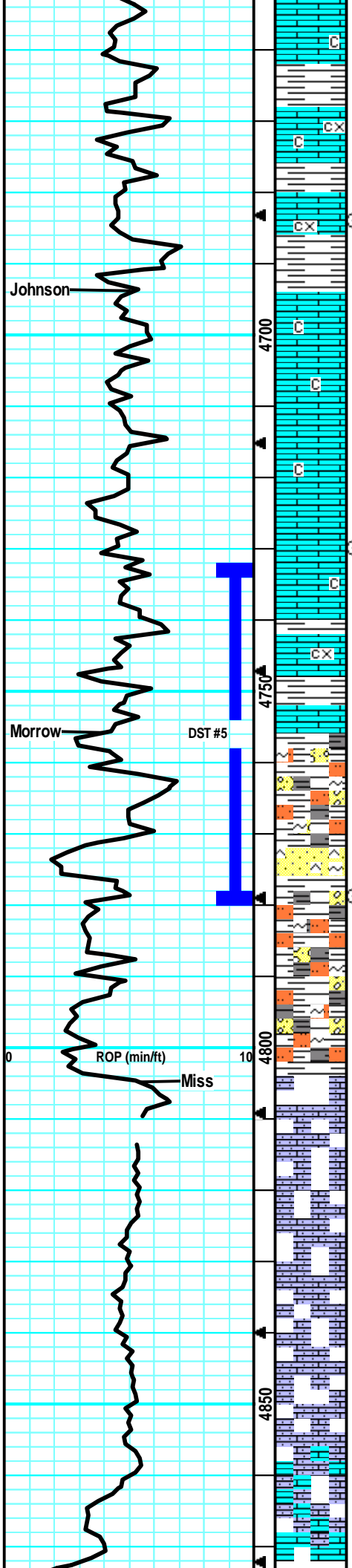
CFS @ 4566' (30"/60")

Ft Scott @ 4574' (-1274)

CFS @ 4600' (30"/60")
TQ C1-C5 100

Cherokee @ 4603' (-1303)

Mud Report #11
4638' 10/24/17
Wt Vis pH
9.4 52 10.0
Filt Chl LCM
8.8 6.3K 2#



firm, sm flakey/mealy, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, fw foss in prt, many flakey/mealy, firm, tr-nvp, svrl SH: drk gry/blk, silty, carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn-crs xln, mostly dense, many firm, flakey/mealy, tr-nvp, sm SH: drk gry/grn, med crush, no cup odr, ns.

LS: gry/tan, mott, fn-crs xln, mostly dense, flakey/mealy, many firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: tan/gry, slght mott, fn xln, mostly dense, sub-chlky in prt, sm brittl, tr-nvp, svrl SH: drk gry/blk, silty, fw carb, no cup odr, ns.

LS: gry/tan, slght mott, fn-crs xln, mostly dense, many firm, flakey/mealy, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm flakey/mealy, dense, fw firm, tr-nvp, fw SH: drk gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, slght mott, fn xln, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, sm SH: drk gry, silty, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, sm sub-chlky/britl, many flakey/mealy and firm, tr-nvp, svrl SH: drk gry/blk, silty, fw carb, no odr, ns.

LS: gry/tan, mott in prt, fn xln, svrl dense, many brittle, sub-chlky in prt, tr-nvp, svrl SH: drk gry, silty, no cup odr, ns.

LS: gry/drk gry, mott, fn-crs xln, sm flakey/mealy, tr-nvp, abund SH: gry/drk gry, silty, no cup odr, ns.

SH: gry/brn, silty, soft, fw SS: wht/blu/grn, fn grn, arg, brittle, sm firm, tr-nvp, fw LS: gry, mott, fn-crs xln, tr-nvp, no cup odr, ns.

SH: gry/brn/yel/grn, silty, soft, fw gritty, sm SS: blu/grn/wht, fn grn, mostly firm, arg, many glauc, well sort, tr-nvp, no cup odr, ns.

SS: crm/lt gry, crs grn, sub-ang, arg, sil cem, sm friab, tr-pr intgrn por, ? fluor, no stains/shows, abund SH: gry/brn, silty, soft, no cup odr, nsfo.

SH: gry/grn/yel, soft, silty, sm wthrd, fw fissile, fw StStn: gry, gritty, friabl, silty, no cup odr, ns.

SH: gry/grn/brn, silty, soft, sm wthrd, sm fissile, fw StStn: gry, gritty, silty, fw SS: grn, fn grn, sub-rnd, arg, tr-? intgrn por, sm glau, no odr, ns.

SH: gry/grn/blu, silty, soft, fw waxy, fw fissile, sm LS: crm/lt tan, sandy/gritty, chlky, many brittle, tr-nvp, no cup odr, ns.

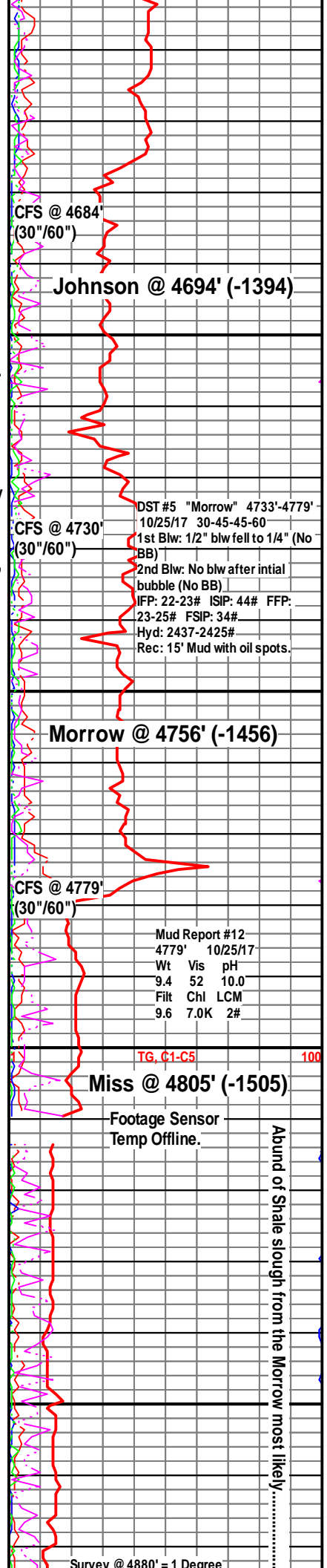
LS: crm/wht/lt tan, sing, fn xln, sandy/gritty, chlky, sm brittle, tr-nvp, svrl SH slough from above, no cup odr, ns.


LS: crm/lt tan, sing, fn xln, sandy/gritty, sm chlky, sm brittle, tr-nvp, abund SH slough, no cup odr, ns.

Much of the same sandy/gritty LS, still large amounts of slough SH from above.

Much of same sandy/gritty LS, large amount of slough SH, no cup odr, ns.

Influx of LS: lt tan, sing, fn xln, mostly dense, fw flakey/mealy, sub-chlky in prt, tr-nvp, abund of SH slough, no cup odr, ns.





RTD @ 4880' (-1580)
LTD @ 4881' (-1581)

Lost Circulation, no return samples.

CFS @ 4880'
(30"/60")

Lost Circulation on Circ
Samples. Mixed tank of
mud and got back.



DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St N #700
Wichita, KS 67278

ATTN: John Goldsmith

Martin 4D #1

4-16s-36w Wichita,KS

Start Date: 2017.10.20 @ 16:56:00

End Date: 2017.10.21 @ 01:34:30

Job Ticket #: 63690 DST #: 1

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

Printed: 2017.10.26 @ 13:17:52



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
 8100 E 22nd St N #700
 Wichita, KS 67278
 ATTN: John Goldsmith

4-16s-36w Wichita, KS

Martin 4D #1

Job Ticket: 63690

DST#: 1

Test Start: 2017.10.20 @ 16:56:00

GENERAL INFORMATION:

Formation: **LKC I - J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:25:30
 Time Test Ended: 01:34:30
 Interval: **4247.00 ft (KB) To 4312.00 ft (KB) (TVD)**
 Total Depth: 4312.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Bradley Walter
 Unit No: 78
 Reference Elevations: 3300.00 ft (KB)
 3288.00 ft (CF)
 KB to GR/CF: 12.00 ft

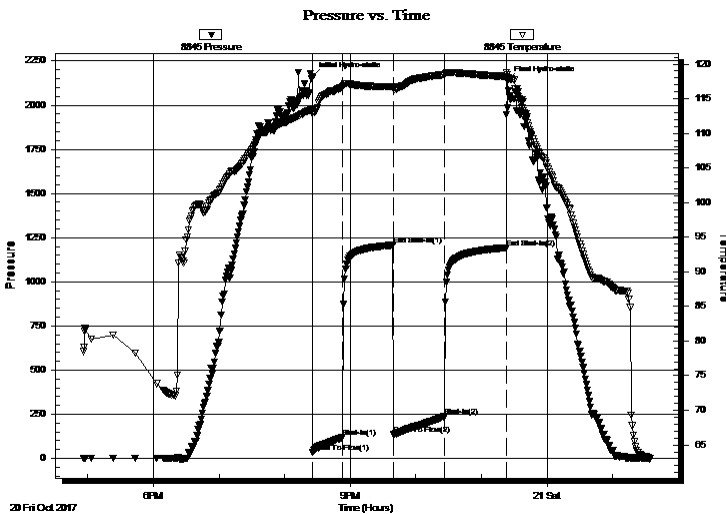
Serial #: 8845

Outside

Press@RunDepth: 236.45 psig @ 4248.00 ft (KB)
 Start Date: 2017.10.20 End Date: 2017.10.21
 Start Time: 16:56:05 End Time: 01:34:30
 Capacity: 8000.00 psig
 Last Calib.: 2017.10.21
 Time On Btm: 2017.10.20 @ 20:25:15
 Time Off Btm: 2017.10.20 @ 23:24:00

TEST COMMENT: IF: BOB @ 18 min.
 IS: No return.
 FF: BOB @ 22 min.
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2159.04	113.49	Initial Hydro-static
1	33.46	112.88	Open To Flow (1)
28	119.38	116.70	Shut-In(1)
74	1207.63	116.70	End Shut-In(1)
75	136.67	116.38	Open To Flow (2)
121	236.45	118.47	Shut-In(2)
178	1192.55	118.20	End Shut-In(2)
179	2139.20	118.44	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
500.00	mcw 15m 85w	6.20
0.00	oil specs in tool	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63690

DST#: 1

ATTN: John Goldsmith

Test Start: 2017.10.20 @ 16:56:00

Tool Information

Drill Pipe:	Length: 4145.00 ft	Diameter: 3.80 inches	Volume: 58.14 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: 89.00 ft	Diameter: 2.25 inches	Volume: 0.44 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 58.58 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4247.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	65.00 ft			
Tool Length:	92.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4221.00	
Shut In Tool	5.00			4226.00	
Hydraulic tool	5.00			4231.00	
Jars	5.00			4236.00	
Safety Joint	2.00			4238.00	
Packer	5.00			4243.00	27.00 Bottom Of Top Packer
Packer	4.00			4247.00	
Stubb	1.00			4248.00	
Recorder	0.00	8365	Inside	4248.00	
Recorder	0.00	8845	Outside	4248.00	
Perforations	28.00			4276.00	
Change Over Sub	1.00			4277.00	
Drill Pipe	31.00			4308.00	
Change Over Sub	1.00			4309.00	
Bullnose	3.00			4312.00	65.00 Bottom Packers & Anchor

Total Tool Length: 92.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63690

DST#: 1

ATTN: John Goldsmith

Test Start: 2017.10.20 @ 16:56:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

41000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
500.00	mcw 15m 85w	6.203
0.00	oil specs in tool	0.000

Total Length: 500.00 ft Total Volume: 6.203 bbl

Num Fluid Samples: 0

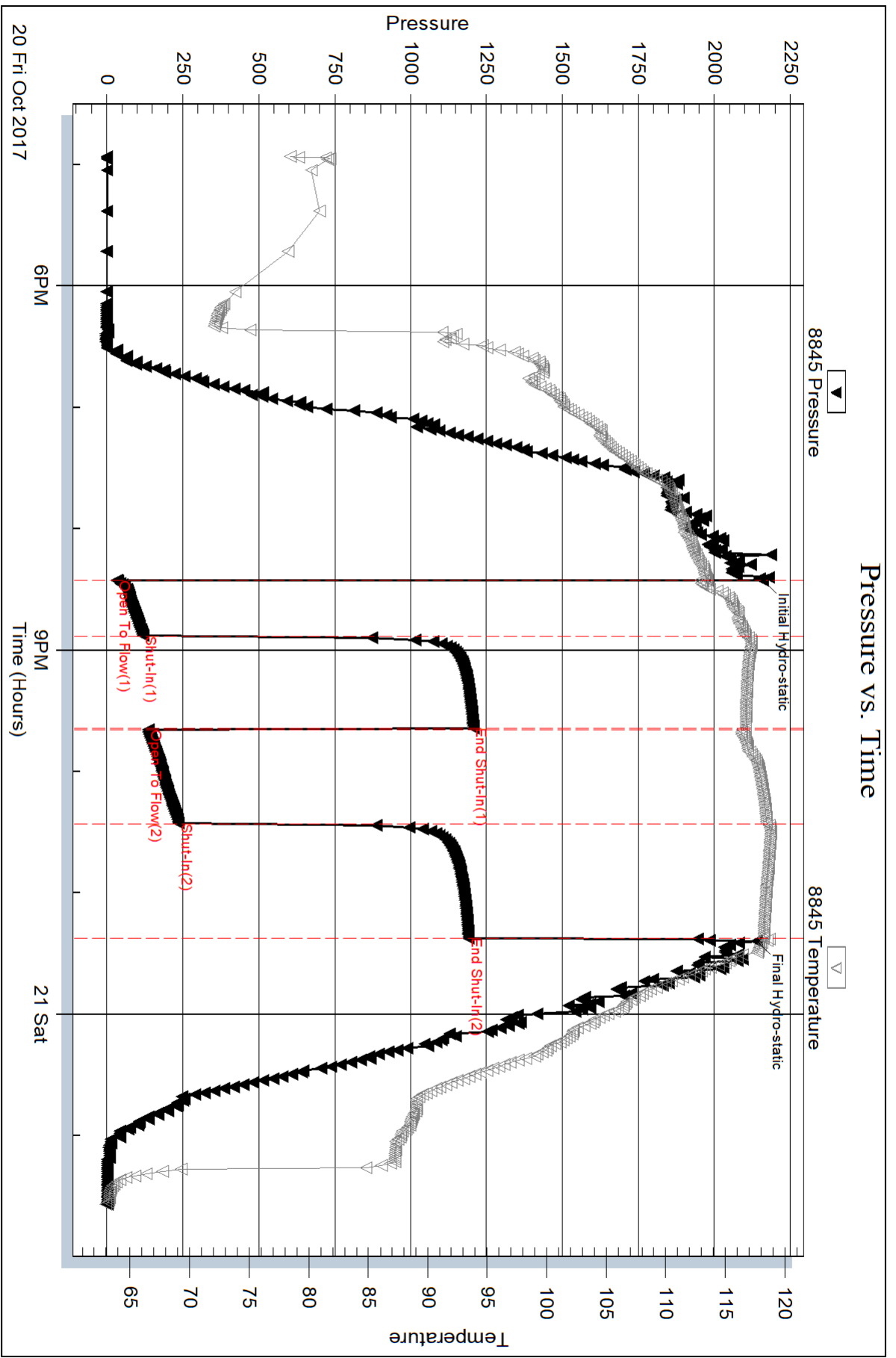
Num Gas Bombs: 0

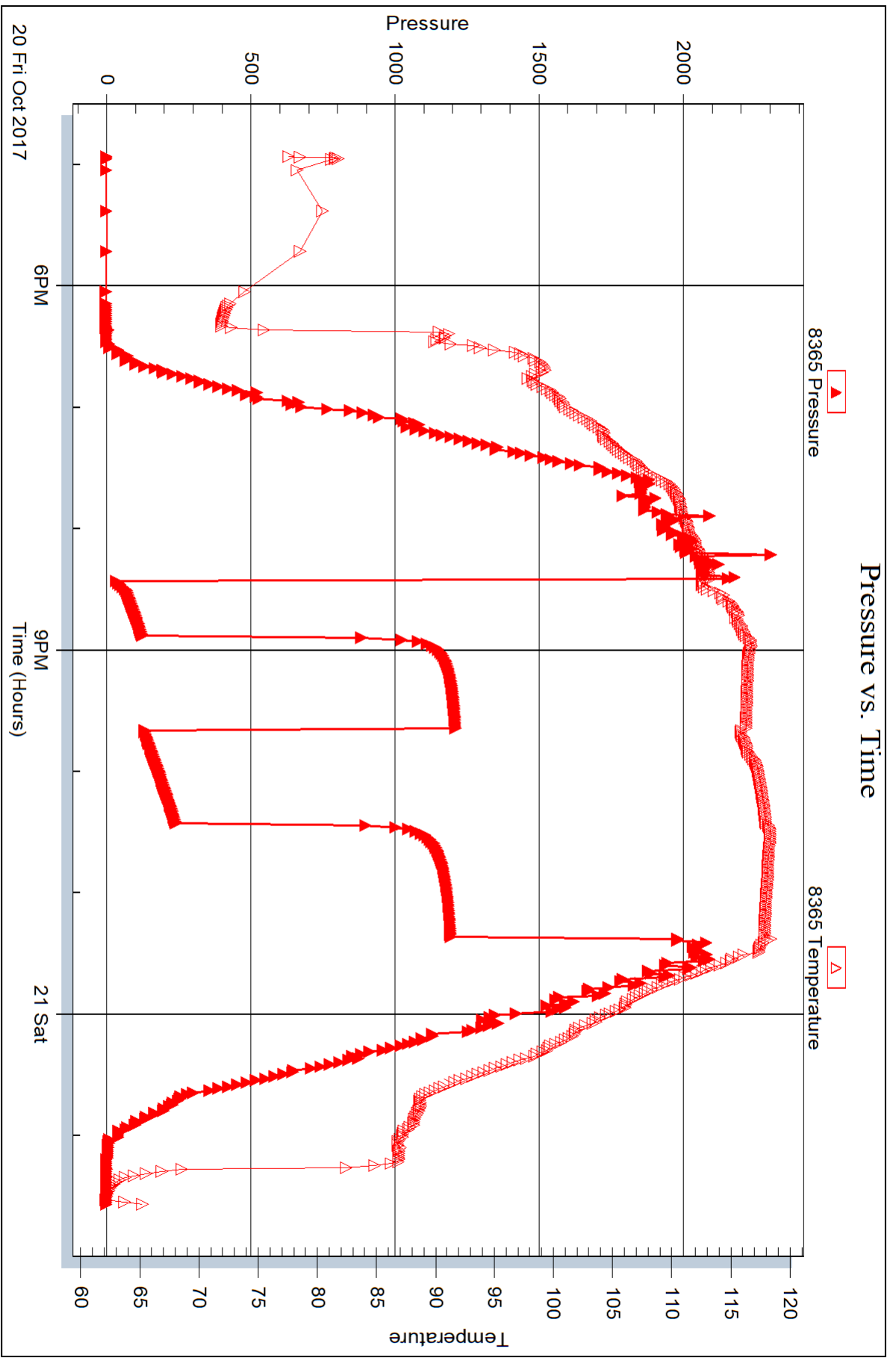
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .189 @ 67f = 41000ppm







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St N #700
Wichita, KS 67278

ATTN: John Goldsmith

Martin 4D #1

4-16s-36w Wichita,KS

Start Date: 2017.10.21 @ 22:16:00

End Date: 2017.10.22 @ 04:21:45

Job Ticket #: 63691 DST #: 2

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

Printed: 2017.10.26 @ 13:17:28



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
 8100 E 22nd St N #700
 Wichita, KS 67278
 ATTN: John Goldsmith

4-16s-36w Wichita, KS

Martin 4D #1

Job Ticket: 63691

DST#: 2

Test Start: 2017.10.21 @ 22:16:00

GENERAL INFORMATION:

Formation: **Altamont A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:12:15

Time Test Ended: 04:21:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

Interval: 4430.00 ft (KB) To 4460.00 ft (KB) (TVD)

Reference Elevations: 3300.00 ft (KB)

Total Depth: 4460.00 ft (KB) (TVD)

3288.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 12.00 ft

Serial #: 8845 Outside

Press@RunDepth: 26.05 psig @ 4431.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.10.21

End Date:

2017.10.22

Last Calib.: 2017.10.22

Start Time: 22:16:05

End Time:

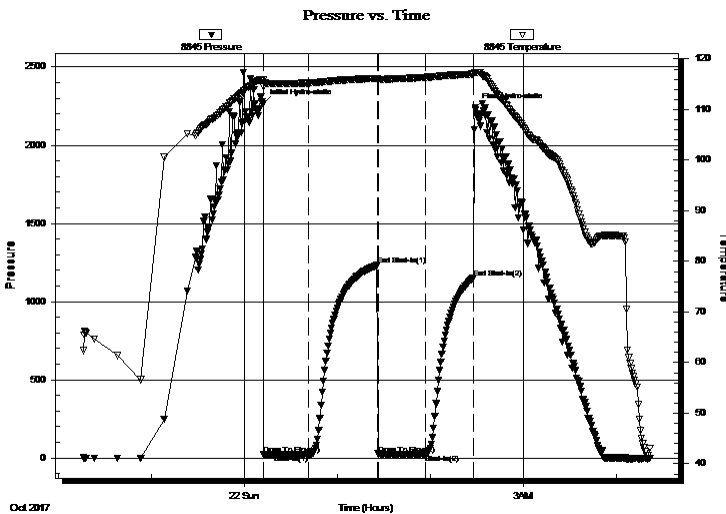
04:21:44

Time On Btm: 2017.10.22 @ 00:12:00

Time Off Btm: 2017.10.22 @ 02:29:00

TEST COMMENT: IF: 1/4" blow, receded to Surface.
 IS: No return.
 FF: No blow.
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2267.65	115.82	Initial Hydro-static
1	22.98	114.46	Open To Flow (1)
30	21.16	115.25	Shut-In(1)
74	1232.61	116.16	End Shut-In(1)
75	24.02	115.93	Open To Flow (2)
105	26.05	116.38	Shut-In(2)
136	1149.79	116.99	End Shut-In(2)
137	2241.18	117.34	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	ocm 30o 70m	0.02
5.00	oil 100o	0.02

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63691

DST#: 2

ATTN: John Goldsmith

Test Start: 2017.10.21 @ 22:16:00

Tool Information

Drill Pipe:	Length: 4336.00 ft	Diameter: 3.80 inches	Volume: 60.82 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: 89.00 ft	Diameter: 2.25 inches	Volume: 0.44 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 61.26 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4430.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	57.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4404.00	
Shut In Tool	5.00			4409.00	
Hydraulic tool	5.00			4414.00	
Jars	5.00			4419.00	
Safety Joint	2.00			4421.00	
Packer	5.00			4426.00	27.00 Bottom Of Top Packer
Packer	4.00			4430.00	
Stubb	1.00			4431.00	
Recorder	0.00	8365	Inside	4431.00	
Recorder	0.00	8845	Outside	4431.00	
Perforations	26.00			4457.00	
Bullnose	3.00			4460.00	30.00 Bottom Packers & Anchor

Total Tool Length: 57.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63691

DST#: 2

ATTN: John Goldsmith

Test Start: 2017.10.21 @ 22:16:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
5.00	ocm 30o 70m	0.025
5.00	oil 100o	0.025

Total Length: 10.00 ft Total Volume: 0.050 bbl

Num Fluid Samples: 0

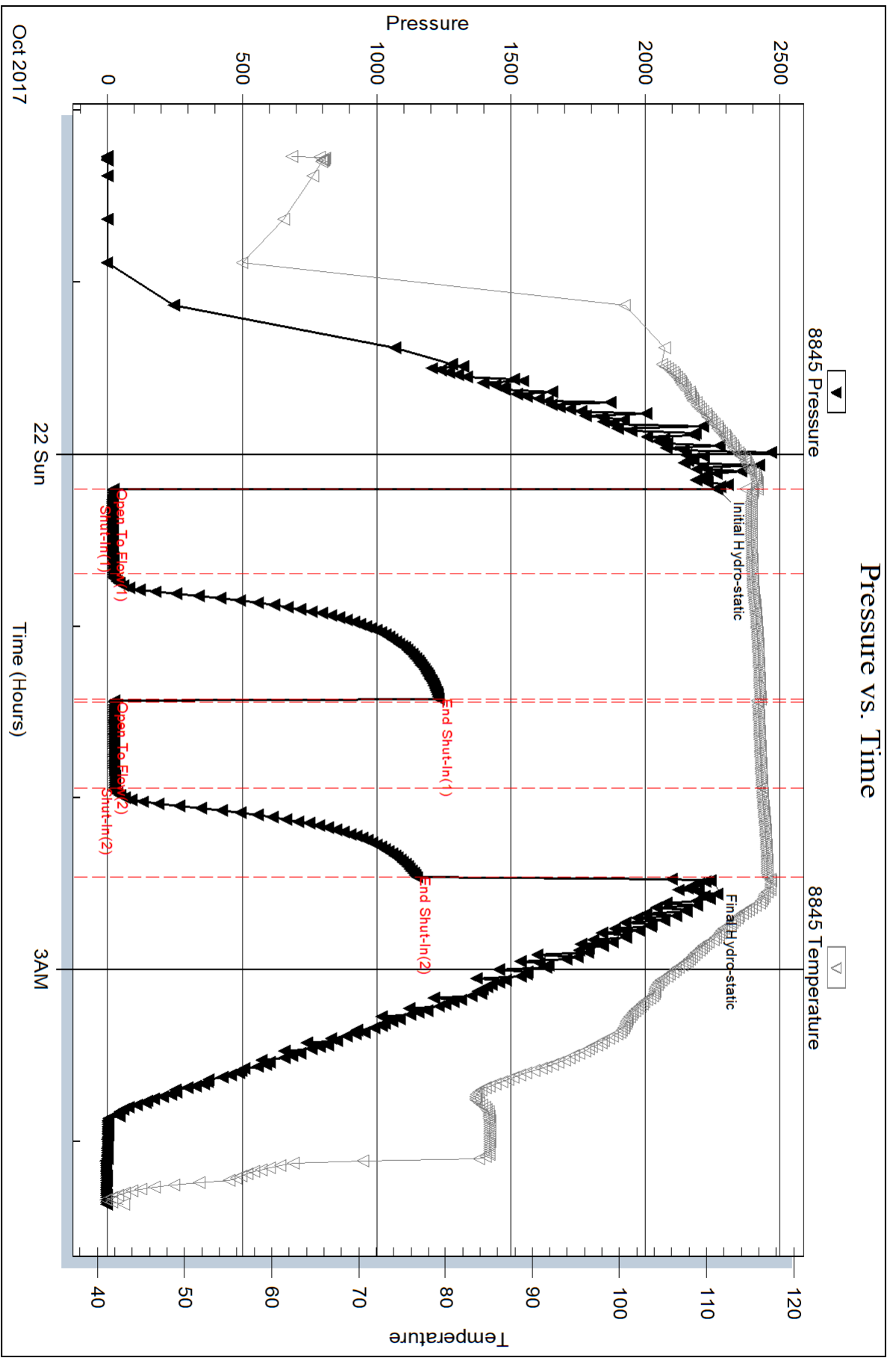
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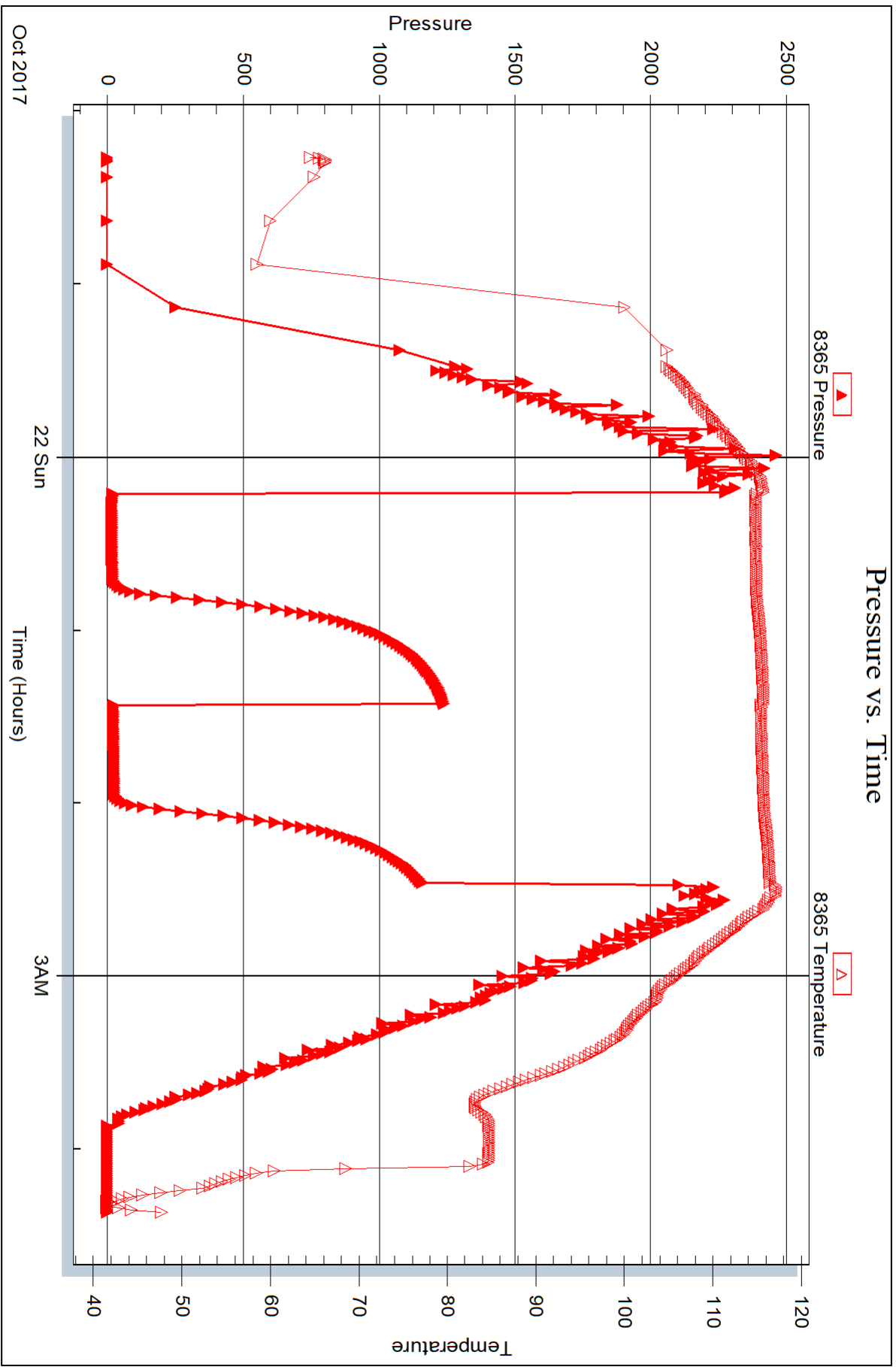
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St N #700
Wichita, KS 67278

ATTN: John Goldsmith

Martin 4D #1

4-16s-36w Wichita,KS

Start Date: 2017.10.22 @ 12:26:00

End Date: 2017.10.22 @ 18:28:00

Job Ticket #: 63692 DST #: 3

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

Printed: 2017.10.26 @ 13:16:37



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
8100 E 22nd St N #700
Wichita, KS 67278
ATTN: John Goldsmith

4-16s-36w Wichita, KS

Martin 4D #1

Job Ticket: 63692

DST#: 3

Test Start: 2017.10.22 @ 12:26:00

GENERAL INFORMATION:

Formation: **Altamont B**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:19:15
 Time Test Ended: 18:28:00
 Interval: **4460.00 ft (KB) To 4477.00 ft (KB) (TVD)**
 Total Depth: 4477.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Bradley Walter
 Unit No: 78
 Reference Elevations: 3300.00 ft (KB)
 3288.00 ft (CF)
 KB to GR/CF: 12.00 ft

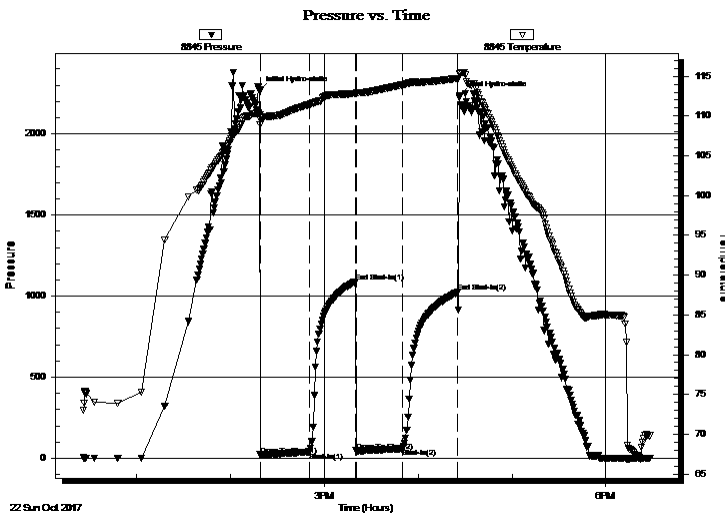
Serial #: 8845

Outside

Press@RunDepth: 58.70 psig @ 4461.00 ft (KB)
 Start Date: 2017.10.22 End Date: 2017.10.22
 Start Time: 12:26:05 End Time: 18:27:59
 Capacity: 8000.00 psig
 Last Calib.: 2017.10.22
 Time On Btm: 2017.10.22 @ 14:18:45
 Time Off Btm: 2017.10.22 @ 16:26:15

TEST COMMENT: IF: 1/4" blow, died @ 27 min.
 IS: No return.
 FF: No blow.
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2263.72	110.16	Initial Hydro-static
1	21.50	109.55	Open To Flow (1)
32	39.09	111.43	Shut-In(1)
61	1087.50	112.83	End Shut-In(1)
62	45.22	112.82	Open To Flow (2)
91	58.70	113.92	Shut-In(2)
127	1023.14	114.74	End Shut-In(2)
128	2232.86	115.32	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
55.00	w ocm 20w 20o 60m	0.27
30.00	oil 100o	0.15

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63692

DST#: 3

ATTN: John Goldsmith

Test Start: 2017.10.22 @ 12:26:00

Tool Information

Drill Pipe:	Length: 4369.00 ft	Diameter: 3.80 inches	Volume: 61.29 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: 89.00 ft	Diameter: 2.25 inches	Volume: 0.44 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 61.73 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4460.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	17.00 ft			
Tool Length:	44.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4434.00	
Shut In Tool	5.00			4439.00	
Hydraulic tool	5.00			4444.00	
Jars	5.00			4449.00	
Safety Joint	2.00			4451.00	
Packer	5.00			4456.00	27.00 Bottom Of Top Packer
Packer	4.00			4460.00	
Stubb	1.00			4461.00	
Recorder	0.00	8365	Inside	4461.00	
Recorder	0.00	8845	Outside	4461.00	
Perforations	13.00			4474.00	
Bullnose	3.00			4477.00	17.00 Bottom Packers & Anchor

Total Tool Length: 44.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63692

DST#: 3

ATTN: John Goldsmith

Test Start: 2017.10.22 @ 12:26:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

19 deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
55.00	w ocm 20w 20o 60m	0.270
30.00	oil 100o	0.148

Total Length: 85.00 ft Total Volume: 0.418 bbl

Num Fluid Samples: 0

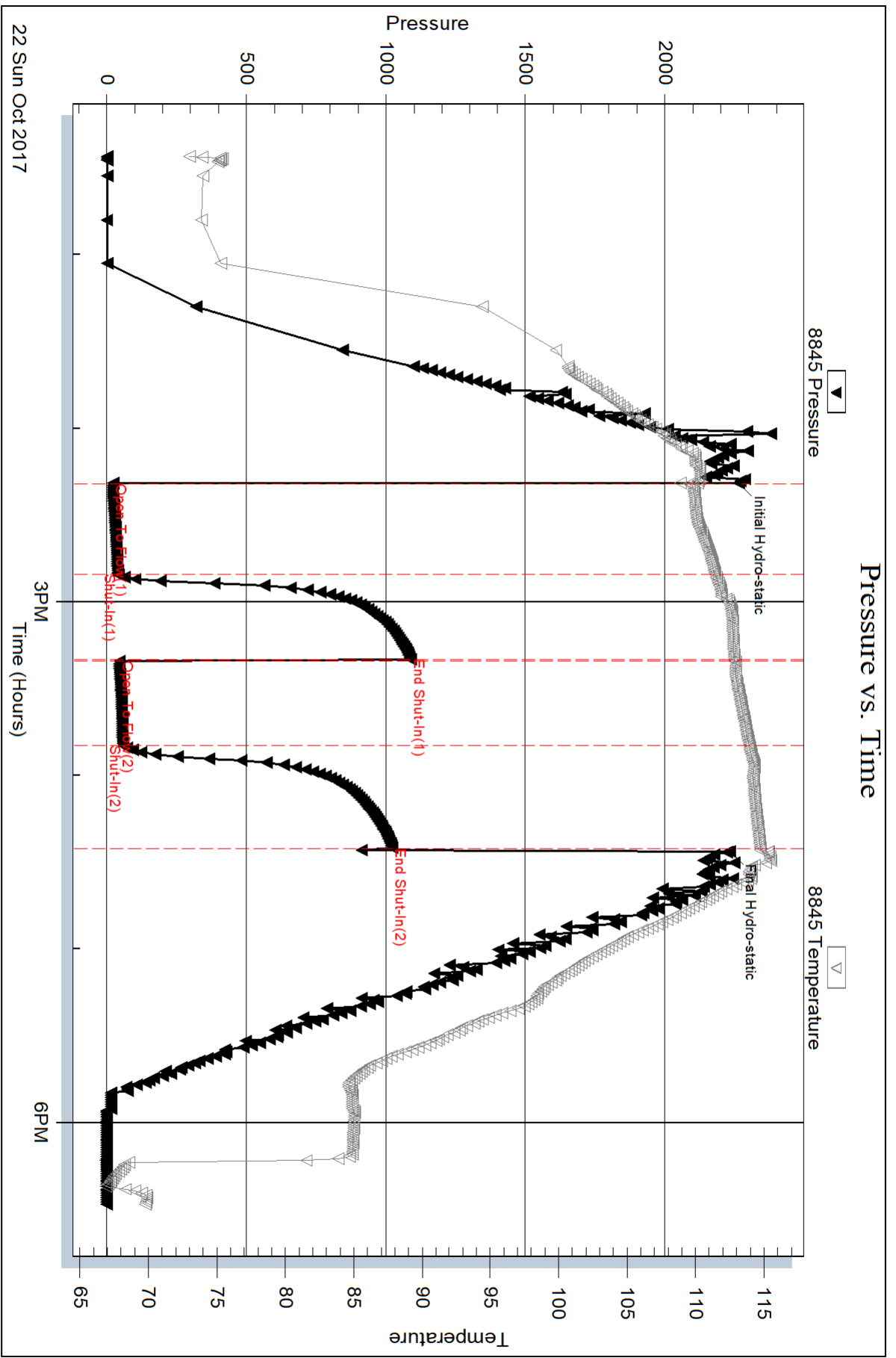
Num Gas Bombs: 0

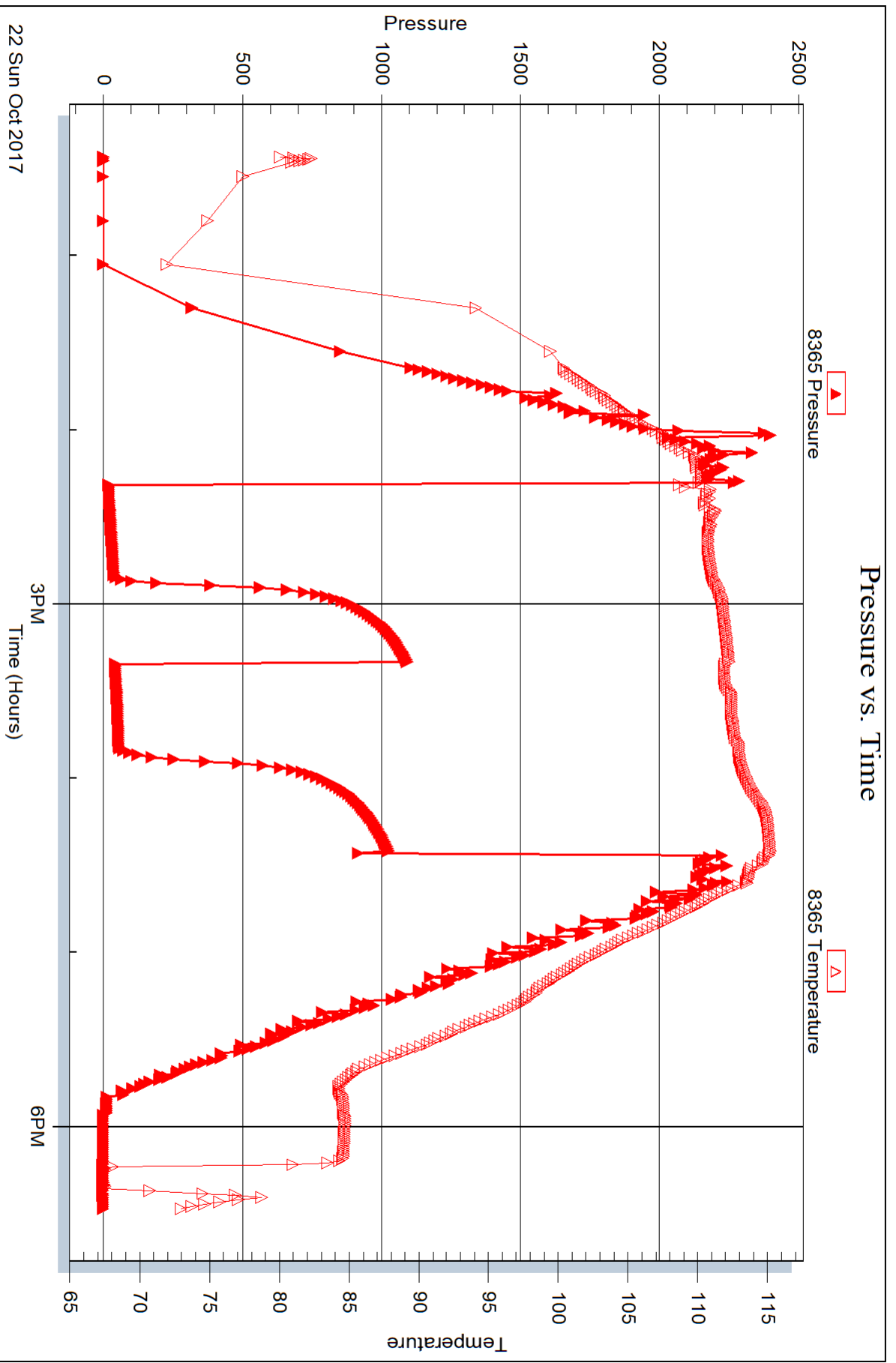
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St N #700
Wichita, KS 67278

ATTN: John Goldsmith

Martin 4D #1

4-16s-36w Wichita,KS

Start Date: 2017.10.23 @ 08:42:00

End Date: 2017.10.23 @ 15:50:00

Job Ticket #: 63693 DST #: 4

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

Printed: 2017.10.26 @ 13:15:18

Ritchie Exploration, Inc
4-16s-36w Wichita,KS
Martin 4D #1
DST # 4
Pawnee
2017.10.23



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
 8100 E 22nd St N #700
 Wichita, KS 67278
 ATTN: John Goldsmith

4-16s-36w Wichita, KS

Martin 4D #1

Job Ticket: 63693

DST#: 4

Test Start: 2017.10.23 @ 08:42:00

GENERAL INFORMATION:

Formation: **Pawnee**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:34:45
 Time Test Ended: 15:50:00
 Interval: **4508.00 ft (KB) To 4546.00 ft (KB) (TVD)**
 Total Depth: 4546.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Bradley Walter
 Unit No: 78
 Reference Elevations: 3300.00 ft (KB)
 3288.00 ft (CF)
 KB to GR/CF: 12.00 ft

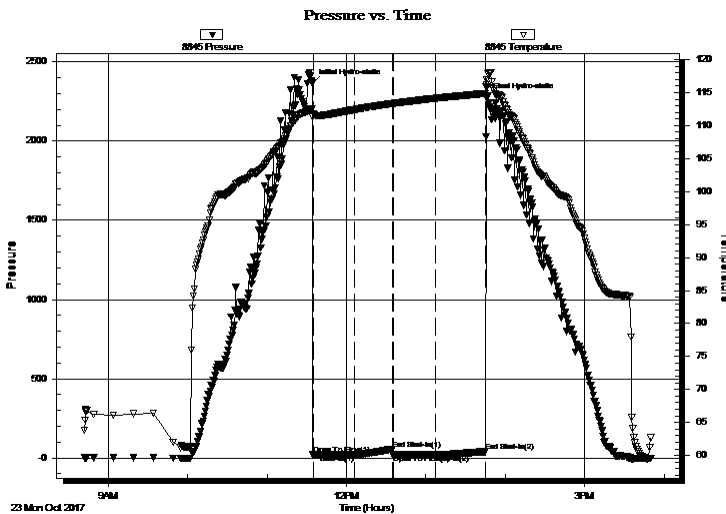
Serial #: 8845

Outside

Press@RunDepth: 21.21 psig @ 4509.00 ft (KB)
 Start Date: 2017.10.23 End Date: 2017.10.23
 Start Time: 08:42:05 End Time: 15:49:59
 Capacity: 8000.00 psig
 Last Calib.: 2017.10.23
 Time On Btm: 2017.10.23 @ 11:34:00
 Time Off Btm: 2017.10.23 @ 13:46:00

TEST COMMENT: IF: Surface blow, died @ 20 min.
 IS: No return.
 FF: No blow.
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2365.49	112.53	Initial Hydro-static
1	23.08	111.81	Open To Flow (1)
32	20.15	112.41	Shut-In(1)
61	56.60	113.34	End Shut-In(1)
62	20.34	113.35	Open To Flow (2)
94	21.21	114.13	Shut-In(2)
132	40.06	114.87	End Shut-In(2)
132	2275.97	116.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w/oil spots 100m	0.02

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
 8100 E 22nd St N #700
 Wichita, KS 67278
 ATTN: John Goldsmith

4-16s-36w Wichita,KS

Martin 4D #1

Job Ticket: 63693

DST#: 4

Test Start: 2017.10.23 @ 08:42:00

GENERAL INFORMATION:

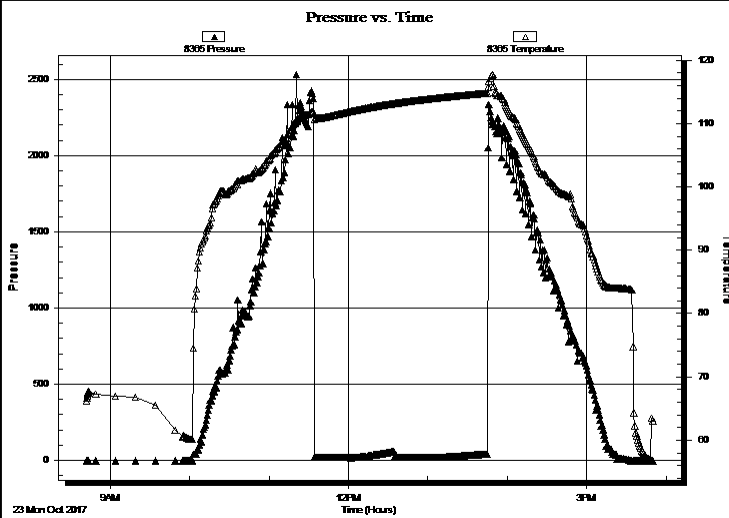
Formation: **Pawnee**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:34:45
 Time Test Ended: 15:50:00
 Interval: **4508.00 ft (KB) To 4546.00 ft (KB) (TVD)**
 Total Depth: 4546.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Bradley Walter
 Unit No: 78
 Reference Elevations: 3300.00 ft (KB)
 3288.00 ft (CF)
 KB to GR/CF: 12.00 ft

Serial #: 8365

Inside

Press@RunDepth: psig @ 4509.00 ft (KB)
 Start Date: 2017.10.23 End Date: 2017.10.23
 Start Time: 08:42:05 End Time: 15:49:59
 Capacity: 8000.00 psig
 Last Calib.: 2017.10.23
 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Surface blow, died @ 20 min.
 IS: No return.
 FF: No blow.
 FS: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w/oil spots 100m	0.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63693

DST#: 4

ATTN: John Goldsmith

Test Start: 2017.10.23 @ 08:42:00

Tool Information

Drill Pipe:	Length: 4402.00 ft	Diameter: 3.80 inches	Volume: 61.75 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: 89.00 ft	Diameter: 2.25 inches	Volume: 0.44 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 62.19 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4508.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4482.00	
Shut In Tool	5.00			4487.00	
Hydraulic tool	5.00			4492.00	
Jars	5.00			4497.00	
Safety Joint	2.00			4499.00	
Packer	5.00			4504.00	27.00 Bottom Of Top Packer
Packer	4.00			4508.00	
Stubb	1.00			4509.00	
Recorder	0.00	8365	Inside	4509.00	
Recorder	0.00	8845	Outside	4509.00	
Perforations	34.00			4543.00	
Bullnose	3.00			4546.00	38.00 Bottom Packers & Anchor

Total Tool Length: 65.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63693

DST#: 4

ATTN: John Goldsmith

Test Start: 2017.10.23 @ 08:42:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 56.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud w/oil spots 100m	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

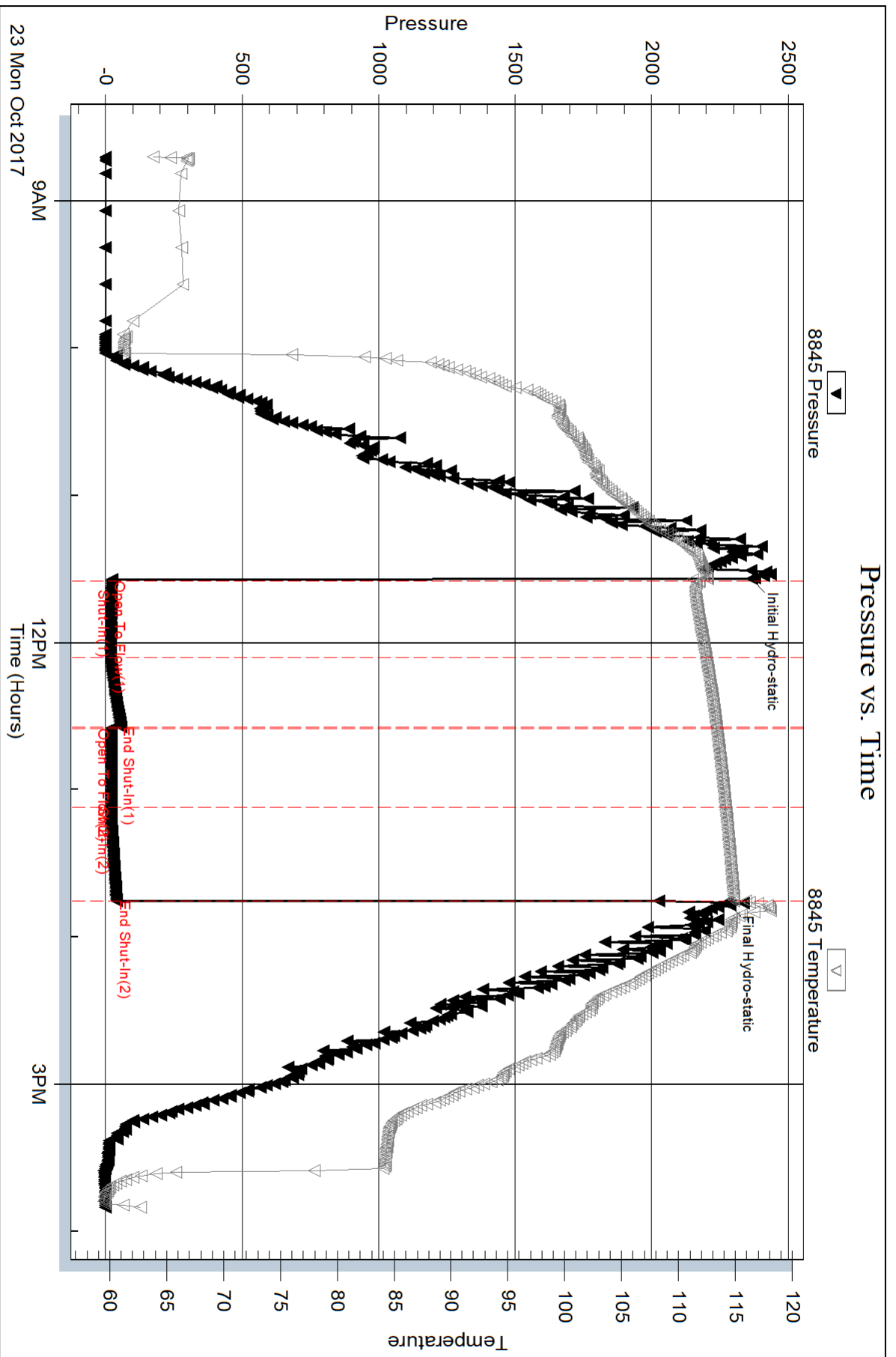
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



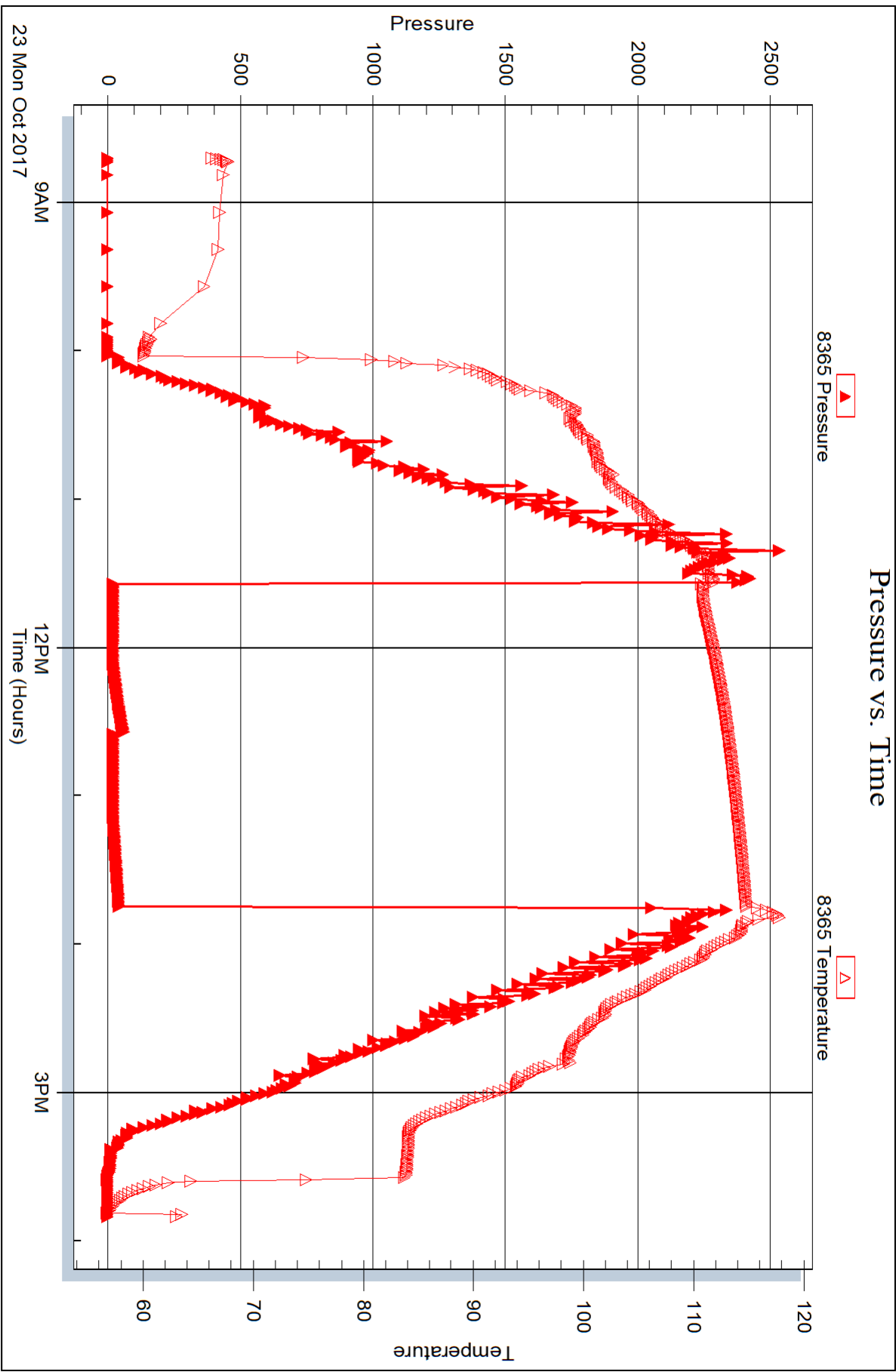
Serial #: 8365

Inside

Ritchie Exploration, Inc

Martin 4D#1

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St N #700
Wichita, KS 67278

ATTN: John Goldsmith

Martin 4D #1

4-16s-36w Wichita,KS

Start Date: 2017.10.25 @ 02:57:00

End Date: 2017.10.25 @ 10:07:45

Job Ticket #: 63694 DST #: 5

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

Printed: 2017.10.26 @ 13:13:54



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
 8100 E 22nd St N #700
 Wichita, KS 67278
 ATTN: John Goldsmith

4-16s-36w Wichita, KS

Martin 4D #1

Job Ticket: 63694

DST#: 5

Test Start: 2017.10.25 @ 02:57:00

GENERAL INFORMATION:

Formation: **Morrow**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:08:00
 Time Test Ended: 10:07:45
 Interval: **4733.00 ft (KB) To 4779.00 ft (KB) (TVD)**
 Total Depth: 4779.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Bradley Walter
 Unit No: 78
 Reference Elevations: 3300.00 ft (KB)
 3288.00 ft (CF)
 KB to GR/CF: 12.00 ft

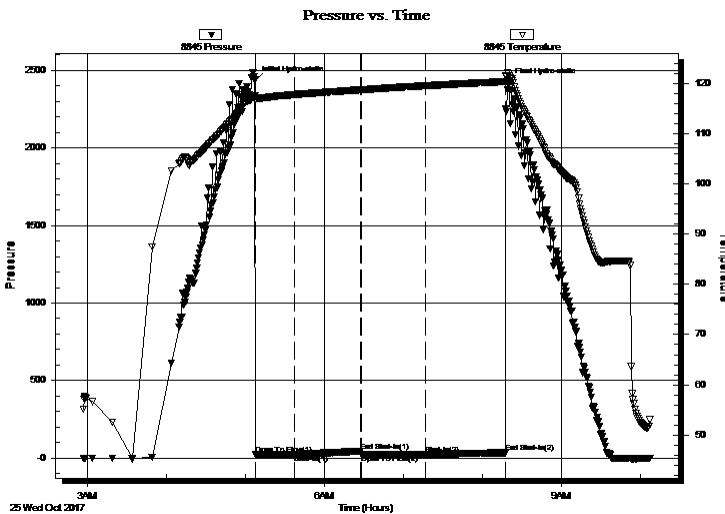
Serial #: 8845

Outside

Press@RunDepth: 24.78 psig @ 4734.00 ft (KB)
 Start Date: 2017.10.25 End Date: 2017.10.25
 Start Time: 02:57:05 End Time: 10:07:44
 Capacity: 8000.00 psig
 Last Calib.: 2017.10.25
 Time On Btm: 2017.10.25 @ 05:07:30
 Time Off Btm: 2017.10.25 @ 08:19:30

TEST COMMENT: IF: 1/2" blow, receded to 1/4".
 IS: No return
 FF: No blow after initial surge.
 FSI: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2436.90	117.44	Initial Hydro-static
1	21.93	116.97	Open To Flow (1)
30	23.46	117.73	Shut-In(1)
80	43.58	118.68	End Shut-In(1)
81	23.47	118.68	Open To Flow (2)
129	24.78	119.49	Shut-In(2)
190	33.52	120.32	End Shut-In(2)
192	2425.03	122.15	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	mud 100m (oil spots)	0.07

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63694

DST#: 5

ATTN: John Goldsmith

Test Start: 2017.10.25 @ 02:57:00

Tool Information

Drill Pipe:	Length: 4625.00 ft	Diameter: 3.80 inches	Volume: 64.88 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: 89.00 ft	Diameter: 2.25 inches	Volume: 0.44 bbl	Weight to Pull Loose:	90000.00 lb
			<u>Total Volume: 65.32 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial	65000.00 lb
Depth to Top Packer:	4733.00 ft			Final	65000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	46.00 ft				
Tool Length:	73.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4707.00	
Shut In Tool	5.00			4712.00	
Hydraulic tool	5.00			4717.00	
Jars	5.00			4722.00	
Safety Joint	2.00			4724.00	
Packer	5.00			4729.00	27.00 Bottom Of Top Packer
Packer	4.00			4733.00	
Stubb	1.00			4734.00	
Recorder	0.00	8365	Inside	4734.00	
Recorder	0.00	8845	Outside	4734.00	
Perforations	9.00			4743.00	
Change Over Sub	1.00			4744.00	
Drill Pipe	31.00			4775.00	
Change Over Sub	1.00			4776.00	
Bullnose	3.00			4779.00	46.00 Bottom Packers & Anchor

Total Tool Length: 73.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

4-16s-36w Wichita,KS

8100 E 22nd St N #700
Wichita, KS 67278

Martin 4D #1

Job Ticket: 63694

DST#: 5

ATTN: John Goldsmith

Test Start: 2017.10.25 @ 02:57:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	mud 100m (oil spots)	0.074

Total Length: 15.00 ft Total Volume: 0.074 bbl

Num Fluid Samples: 0

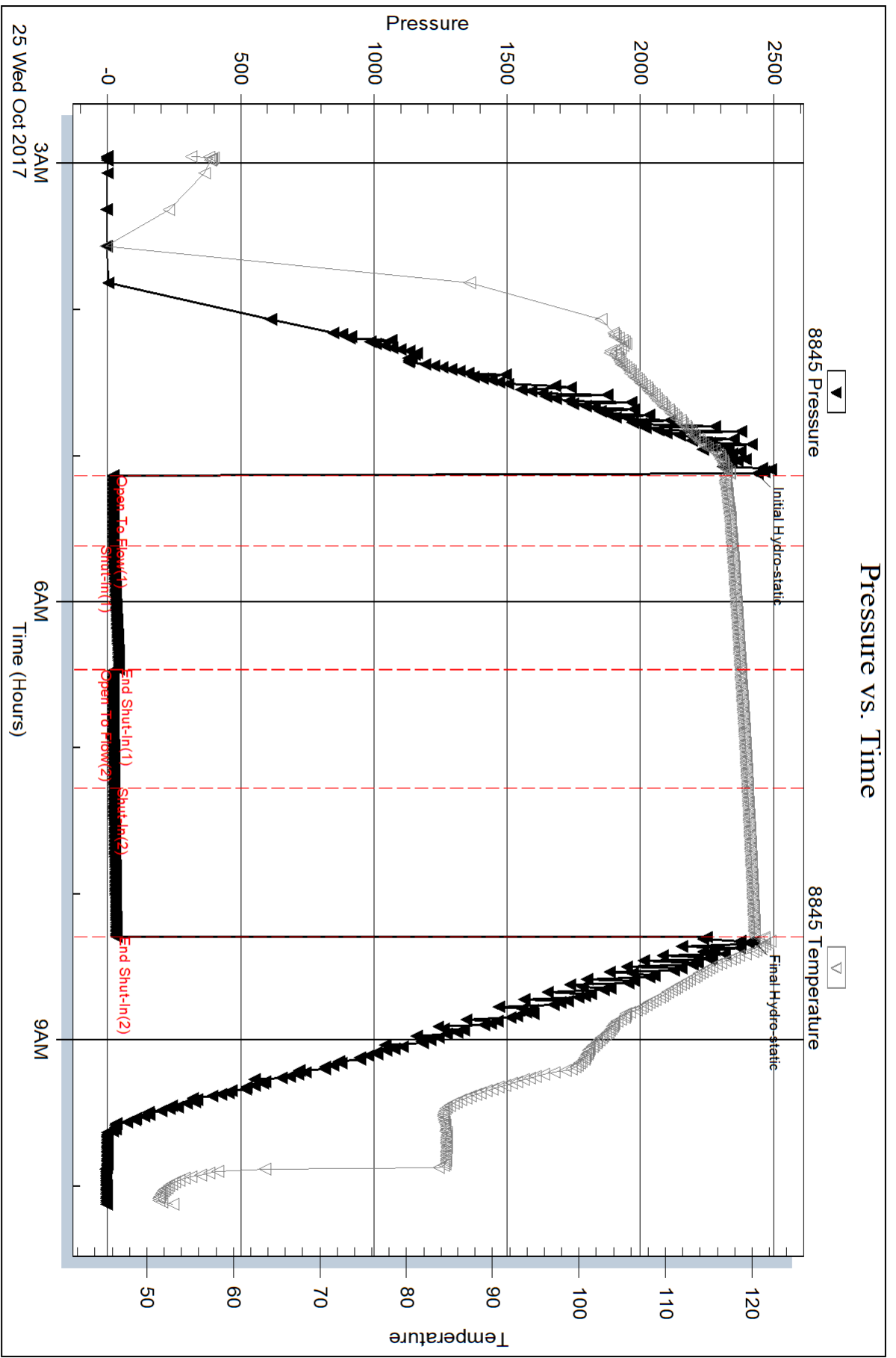
Num Gas Bombs: 0

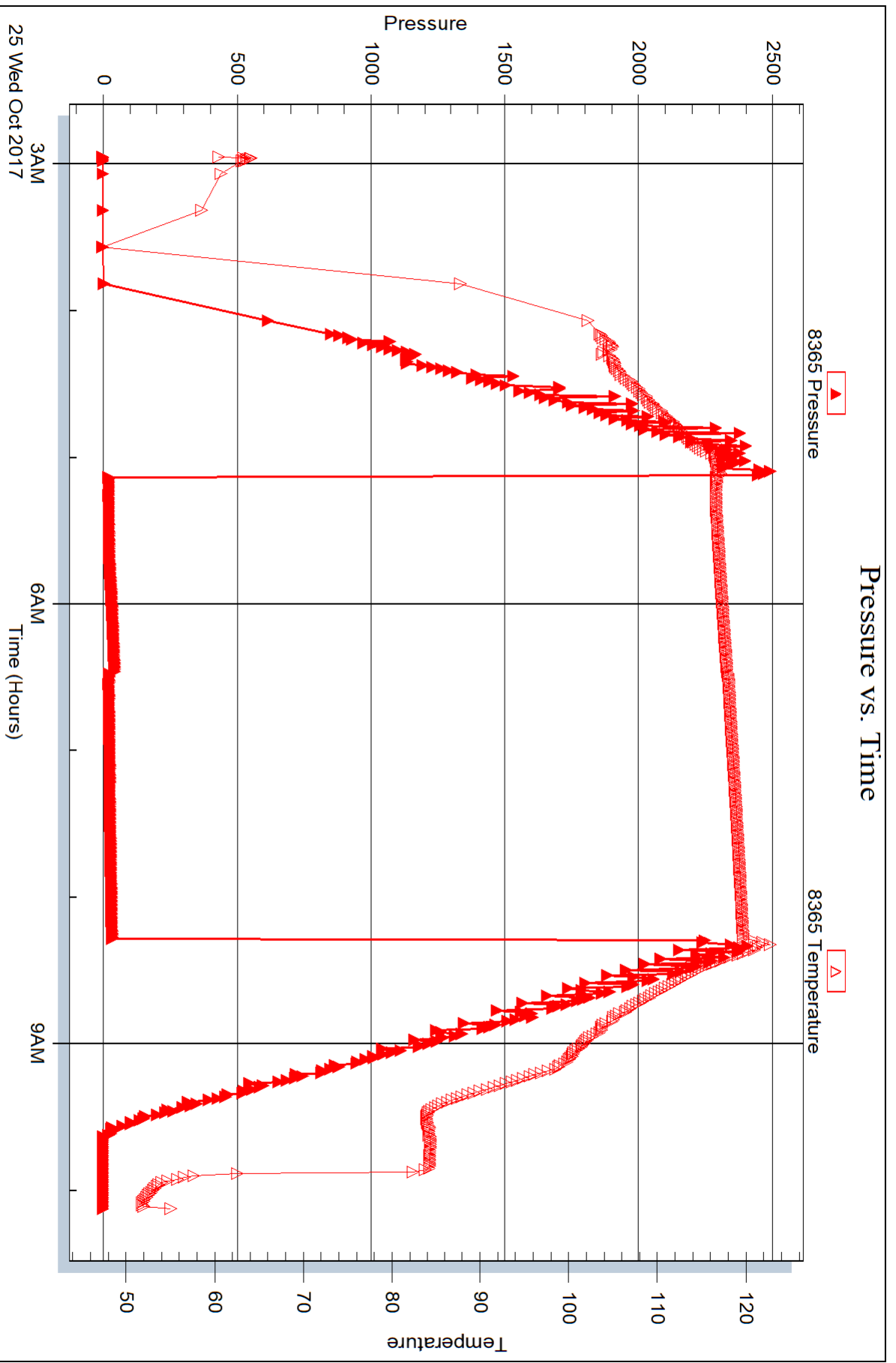
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64690**

Well Name & No. Martin 4D #1 Test No. 1 Date 10/21/2017
 Company Ritchie Exploration, Inc Elevation 5300 KB 3288 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig Sterling #5
 Location: Sec. 4 Twp. 16S Rge. 36W Co. Wichita State Ks

Interval Tested 4247-4312 Zone Tested LKC I-J
 Anchor Length 65' Drill Pipe Run 4145 Mud Wt. 9.3
 Top Packer Depth 4242 Drill Collars Run 89 Vis 54
 Bottom Packer Depth 4247 Wt. Pipe Run Ø WL 8.0
 Total Depth 4312 Chlorides 4,000 ppm System LCM 2[#]

Blow Description IF BOB@ 10 min.
ISI no return.
FF BOB@ 22 min
ISI No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>500</u>	<u>mcw</u>			<u>85</u>	<u>15</u>
Rec	Feet of <u>oil spots in tool</u>	%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 500 BHT 118 Gravity — API RW 1189 @ 67 °F Chlorides 41000 ppm

(A) Initial Hydrostatic <u>2159</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>1345</u>
(B) First Initial Flow <u>33</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1646</u>
(C) First Final Flow <u>119</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>2024</u>
(D) Initial Shut-In <u>1208</u>	<input checked="" type="checkbox"/> Circ Sub	T-Pulled <u>2324</u>
(E) Second Initial Flow <u>137</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0135 10/21</u>
(F) Second Final Flow <u>236</u>	<input checked="" type="checkbox"/> Mileage <u>99 RT</u> <u>73.50</u>	Comments
(G) Final Shut-In <u>1193</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2139</u>	<input type="checkbox"/> Straddle	
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1548.50</u>
	Sub Total <u>1548.50</u>	MP/DST Disc't

Approved By _____ Our Representative [Signature]

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64691**

Well Name & No. Martin 4D #1 Test No. 2 Date 10/22/2017
 Company Ritchie Exploration, Inc Elevation 3300 KB 3288 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig Sterling #5
 Location: Sec. 4 Twp. 16 S Rge. 36 W Co. Wichita State Ks

Interval Tested 4430 4460 Zone Tested Altamont A
 Anchor Length 30' Drill Pipe Run 4336 Mud Wt. 9.5
 Top Packer Depth 4425 Drill Collars Run 89 Vis 53
 Bottom Packer Depth 4430 Wt. Pipe Run 0 WL 8.8
 Total Depth 4460 Chlorides 5000 ppm System LCM 2#
 Blow Description IF: 1/4" blow, receded to surface.
ISF: No return.
FF: No blow
FSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Oil</u>		<u>100</u>		
<u>5</u>	<u>OCM</u>		<u>30</u>		<u>70</u>

Rec Total 10 BHT 117 Gravity 28 API RW — @ — F Chlorides — ppm

(A) Initial Hydrostatic <u>2268</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>1015</u>
(B) First Initial Flow <u>23</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1016</u>
(C) First Final Flow <u>21</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>00420012</u>
(D) Initial Shut-In <u>1233</u>	<input checked="" type="checkbox"/> Circ Sub <u>WC</u>	T-Pulled <u>0227</u>
(E) Second Initial Flow <u>24</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0422</u>
(F) Second Final Flow <u>26</u>	<input checked="" type="checkbox"/> Mileage <u>98 RT 73.50</u>	Comments
(G) Final Shut-In <u>1150</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2241</u>	<input type="checkbox"/> Straddle	
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Initial Shut-In <u>45</u>	<input type="checkbox"/> Day Standby	Total <u>1548.50</u>
Final Flow <u>30</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
Final Shut-In <u>30</u>	Sub Total <u>1548.50</u>	

Approved By _____ Our Representative [Signature]
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64692**

Well Name & No. Martin 4D #1 Test No. 3 Date 10/22/2017
 Company Ritchie Exploration, Inc Elevation 3300 KB 3288 GL
 Address 8100 E 22nd St N #700 Wichita, Ks 67278
 Co. Rep / Geo. John Goldsmith Rig Sterling #5
 Location: Sec. 4 Twp. 16s Rge. 36 W Co. Wichita State Ks

Interval Tested 4460-4477 Zone Tested Altamont B
 Anchor Length 17 Drill Pipe Run 4369 Mud Wt. 9.5
 Top Packer Depth 4455 Drill Collars Run 89 Vis 58
 Bottom Packer Depth 4460 Wt. Pipe Run 0 WL 8.0
 Total Depth 4477 Chlorides 5500 ppm System LCM 1#
 Blow Description IF: 1/4" blow, died @ 27min.
ISI: No return.
FF: No blow.
FSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>Oil</u>		<u>100</u>		
<u>55</u>	<u>WOCM</u>		<u>20</u>	<u>20</u>	<u>60</u>

Rec Total 85 BHT 115 Gravity 19 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>2264</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>1200</u>
(B) First Initial Flow <u>22</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1226</u>
(C) First Final Flow <u>39</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1416</u>
(D) Initial Shut-In <u>1088</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>1616</u>
(E) Second Initial Flow <u>45</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1828</u>
(F) Second Final Flow <u>59</u>	<input checked="" type="checkbox"/> Mileage <u>96 RT</u> <u>73.50</u>	Comments
(G) Final Shut-In <u>1023</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2233</u>	<input type="checkbox"/> Straddle	
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>30</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1548.50</u>
	Sub Total <u>1548.50</u>	MP/DST Disc't

Approved By _____ Our Representative [Signature]
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64693**

Well Name & No. Martin 4D #1 Test No. 4 Date 10/23/2017
 Company Ritchie Exploration, Inc Elevation 3300 KB 3288 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig Sterling #5
 Location: Sec. 4 Twp. 16S Rge. 36W Co. Wichita State KS

Interval Tested 4508 - 4546 Zone Tested Pawnee
 Anchor Length 38' Drill Pipe Run 4408 Mud Wt. 9.5
 Top Packer Depth 4503 Drill Collars Run 89 Vis 60
 Bottom Packer Depth 4508 Wt. Pipe Run Ø WL 8.8
 Total Depth 4546 Chlorides 5600 ppm System LCM 2#
 Blow Description IT Surface blow, died @ 20 min.
ISL No return.
FF No blow
FSL No return.

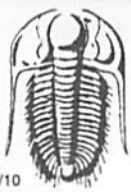
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>MOD w/oil spots</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 115 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2365</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>0740</u>
(B) First Initial Flow <u>23</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0842</u>
(C) First Final Flow <u>20</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1135</u>
(D) Initial Shut-In <u>57</u>	<input checked="" type="checkbox"/> Circ Sub <u>—</u>	T-Pulled <u>1335</u>
(E) Second Initial Flow <u>20</u>	<input type="checkbox"/> Hourly Standby <u>—</u>	T-Out <u>1550</u>
(F) Second Final Flow <u>21</u>	<input checked="" type="checkbox"/> Mileage <u>98RT</u> <u>73.50</u>	Comments <u>—</u>
(G) Final Shut-In <u>40</u>	<input type="checkbox"/> Sampler <u>—</u>	
(H) Final Hydrostatic <u>2276</u>	<input type="checkbox"/> Straddle <u>—</u>	
	<input type="checkbox"/> Shale Packer <u>—</u>	<input type="checkbox"/> Ruined Shale Packer <u>—</u>
	<input type="checkbox"/> Extra Packer <u>—</u>	<input type="checkbox"/> Ruined Packer <u>—</u>
	<input type="checkbox"/> Extra Recorder <u>—</u>	<input type="checkbox"/> Extra Copies <u>—</u>
Initial Open <u>30</u>	<input type="checkbox"/> Day Standby <u>—</u>	Sub Total <u>0</u>
Initial Shut-In <u>30</u>	<input type="checkbox"/> Accessibility <u>—</u>	Total <u>1548.50</u>
Final Flow <u>30</u>	Sub Total <u>1548.50</u>	MP/DST Disc't <u>—</u>
Final Shut-In <u>30</u>		

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64694**

Well Name & No. Martin 4D #1 Test No. 5 Date 10/25/2017
 Company Ritchie Exploration Elevation 3300 KB 3288 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig Sterling #5
 Location: Sec. 4 Twp. 16S Rge. 36W Co. Wichita State KS

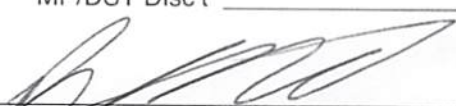
Interval Tested 4733 - 4779 Zone Tested Morrow
 Anchor Length 46' Drill Pipe Run 4625 Mud Wt. 9.4
 Top Packer Depth 4728 Drill Collars Run 89 Vis 54
 Bottom Packer Depth 4733 Wt. Pipe Run 0 WL 8.8
 Total Depth 4779 Chlorides 6300 ppm System LCM 2#

Blow Description IF 1/2" blow receded to 1/4"
ISF No return
FF No blow after initial surge
FSI No return

Rec	Feet of		%gas	%oil	%water	%mud
<u>15</u>	<u>MUD</u>	<u>(OIL SPOTS)</u>				
Rec	Feet of		%gas	%oil	%water	%mud
Rec	Feet of		%gas	%oil	%water	%mud
Rec	Feet of		%gas	%oil	%water	%mud
Rec	Feet of		%gas	%oil	%water	%mud

Rec Total 15 BHT 120 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2437</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>0245</u>
(B) First Initial Flow <u>22</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0257</u>
(C) First Final Flow <u>23</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>0507</u>
(D) Initial Shut-In <u>44</u>	<input checked="" type="checkbox"/> Circ Sub <u>N</u>	T-Pulled <u>0817</u>
(E) Second Initial Flow <u>23</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1030</u>
(F) Second Final Flow <u>25</u>	<input checked="" type="checkbox"/> Mileage <u>9500 + x2</u> <u>147</u>	Comments <u>P/O Tool @ 1030</u>
(G) Final Shut-In <u>34</u>	<input type="checkbox"/> Sampler	<u>12/26</u>
(H) Final Hydrostatic <u>2425</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>1622</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1622</u>	

Approved By _____ Our Representative 

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EXPLORATION, INC.
Wichita, Kansas

#1 Martin 4D

2265' FSL & 1895' FEL

45' S & 85' E of N/2 NW SE Section 4-16S-36W

Wichita County, Kansas

API# 15-203-20324-0000

Elevation: GL: 3287', KB: 3300'

Sample Tops			Ref. Well
Anhydrite	2550'	+750	-4
B/Anhydrite	2570'	+730	-5
Heebner	3996'	-696	-9
Toronto	4012'	-712	-5
Lansing	4048'	-748	-7
Muncie Shale	4214'	-914	+2
Stark	4304'	-1004	+7
Hush	4349'	-1049	+7
BKC	4386'	-1086	+11
Marmaton	4427'	-1127	+9
Altamont	4440'	-1140	+5
Pawnee	4516'	-1216	+19
Myrick	4557'	-1257	+24
Fort Scott	4574'	-1274	+21
Cherokee Shale	4604'	-1304	+21
Johnson	4691'	-1391	+21
Morrow Shale	4742'	-1442	+27
Mississippian	4804'	-1504	+56
RTD	4880'	-1580	



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

9319 / 9215
TICKET NUMBER 54936
LOCATION Oakley KS
FOREMAN Miles Shaw
Invoice # 811581 KS

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
10-26-17	7113	Martin 40 #1	4	16S	36W	Wichita
CUSTOMER			TRUCK #	DRIVER	TRUCK #	DRIVER
Bitchie Exploration			528/T-118	Mike In Casper		
MAILING ADDRESS			530/T-129	TRAVIS W		
P.O. BOX 783188						
CITY	STATE	ZIP CODE				
Wichita	KS	67278-3188				

JOB TYPE PTA	HOLE SIZE 7 7/8"	HOLE DEPTH	CASING SIZE & WEIGHT
CASING DEPTH	DRILL PIPE 4.5"	TUBING	OTHER
SLURRY WEIGHT 13.8	SLURRY VOL 1.4	WATER gal/sk	CEMENT LEFT In CASING
DISPLACEMENT	DISPLACEMENT PSI	MIX PSI	RATE

REMARKS: Safety meeting and Buy on Sterling drilling Rig #5 plus as ordered
 1st plus 50 sk @ 2550'
 2nd plus 80 sk @ 1600'
 3rd plus 50 sk @ 800'
 4th plus 50 sk @ 300'
 5th plus 20 sk @ 600'
 RH 30 sk m/22 sk
 300 sk 60/40 48 gal 1/4" # Flo

Thanks Miles & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0451	1	PUMP CHARGE	1900.00	1900.00
CE0607	45	MILEAGE	7.15	321.75
CE0710	13.05 TONS	Ton Mileage delivery	1.75	1027.68
CC5829	300 SK	Lite Weight bit pad	11.00	3300.00
CC6075	7.5 #	Cello Pak / Fl Seal	3.00	225.00
			Subtotal	9274.43
			less 308 discount	2492.32
			Subtotal	5792.11
			SALES TAX	298.99
			ESTIMATED TOTAL	6091.10

RAVIN 3737
 AUTHORIZATION Adam Latta 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.



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

9238
9130

TICKET NUMBER 54902
LOCATION Do Kley Ks
FOREMAN Jerry Y

FIELD TICKET & TREATMENT REPORT
CEMENT

Invoice # 811495

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
10-14-17	717.3	Martin 4D #1	4	K65	36W	Wichita
CUSTOMER			TRUCK #	DRIVER	TRUCK #	DRIVER
Ritchie Exp.			731	Travis W		
MAILING ADDRESS			806	PD W		
P.O. BOX 783188						
CITY	STATE	ZIP CODE				
Wichita	KS	67278-3188				

JOB TYPE Surf HOLE SIZE 12 1/4 HOLE DEPTH 272 CASING SIZE & WEIGHT 8 5/8 23#
 CASING DEPTH 272 DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 15.2 SLURRY VOL 1.24 WATER gal/sk _____ CEMENT LEFT In CASING 20'
 DISPLACEMENT 16661 DISPLACEMENT PSI _____ MIX PSI _____ RATE _____

REMARKS: Safety meeting & rig upon Sterling 5 circulate casing mix 180 sk
com 3% cc 2% gal wash up & disp with 16661 fresh water & surf
circulated approx 3661 to pit

Cement did
circulate

Thank you
Jerry Y

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0471	1	PUMP CHARGE	1150.00	1150.00
CE0002	45	MILEAGE	7.15	321.75
CE0710	8.46	ton mileage delivery	1.75	1480.25
CC5871	180 sks	Surfblend II	23.00	4140.00
			Subtotal	6277.98
			-30%	1883.39
			Subtotal	4394.59
			SALES TAX	246.33
			ESTIMATE TOTAL	4640.92

AUTHORIZATION Alan Loft

TITLE _____

DATE 10-14-17

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.