

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)</i> <i>(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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Form	ACO1 - Well Completion
Operator	Pickrell Drilling Company, Inc.
Well Name	DUFF A 1
Doc ID	1409488

Tops

Name	Top	Datum
Anhydrite	2100	+579
Heebner	3621	-942
Lansing	3660	-981
Stark	3920	-1241
Marmaton	4029	-1350
Pawnee	4128	-1449
Ft. Scott	4177	-1498
Cherokee	4204	-1525
Johnson Zone	4247	-1568
Mississippi	4336	-1657

Geologic Report
Aaron L. Young

Drilling Time and Sample Log

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

Well Name: Duff A #1
API: 15-109-21537
Location: Section 9 - T15S - R32W
License Number: 5123
Spud Date: 2 / 22 / 2018
Surface Coordinates: 1683' FNL and 2233' FWL
Approx. SW - NE - SE - NW
Region: Logan Co., KS
Drilling Completed: 3 / 8 / 2018

**Bottom Hole
Coordinates:**
Ground Elevation (ft): 2672' **K.B. Elevation (ft):** 2679'
Logged Interval (ft): 3450' **To:** 4380' **Total Depth (ft):** 4380'
Formation: Mississippi
Type of Drilling Fluid: Chemical - MudCo

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

OPERATOR

Company: Pickrell Drilling Co., Inc.
Address: 100 S Main Ste 505
Wichita, KS 67202

GEOLOGIST

Name: Aaron L. Young, M. S.
Company: Pickrell Drilling Co., Inc.
Address: 100 S Main Ste 505
Wichita, KS 67202

General Info

CONTRACTOR: Pickrells Drilling, Rig #10

BIT RECORD:

No.	Size	Make	Jets	Out	Feet	Hours
1	12-1/4	RR	?	265'	257'	2.75
2	7-7/8	JZ HA23	14-14-14	4380'	4115'	107.25

SURVEYS: 226'-.25, 735'-.5, 1328'-.5, 1827'-1, 2359'-1, 3736'-1.25, 4138'-1, 4380'-1

GENERAL DRILLING AND PUMP INFORMATION:

Drilling with 38,000 -40,000 lbs. on bit and approx 70 RPM.
Pumping approx 750-800 psi at standpipe.

Daily Status

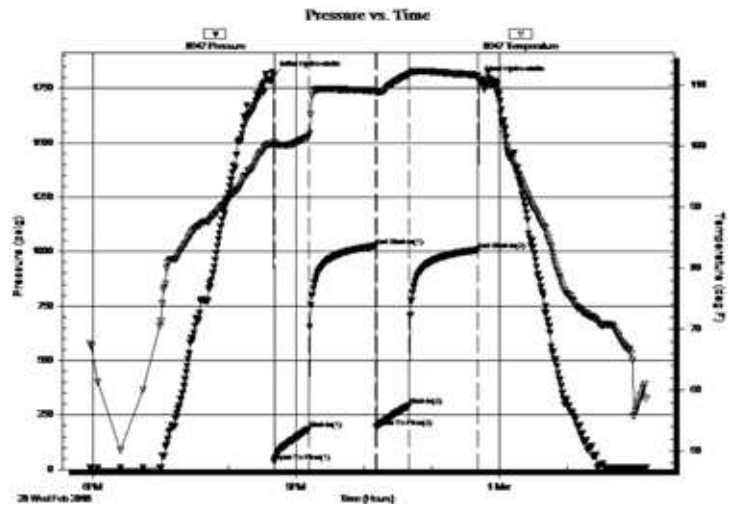
2/23/18 - Spud @ 11:30am, Drilled to 226', ran 5 jts of new 8 5/8" 23# surface casing set @ 221', cemented w/ 180 sx. Com, w/ 2% gel & 3% CC, 1/4# flocele/sx. PD @ 9:49pm WOC
 2/24/18 - Drilling, @ 226'
 2/25/18 - Drilling, @ 1385'
 2/26/18 - Drilling, @ 2452'
 2/27/18 - Drilling, @ 2859'
 2/28/18 - Drilling, @ 3612', DST #1
 3/1/18 - Prep to run DST #2 @ 3764'
 3/2/18 - Running DST #3, TD @ 3856'
 3/3/18 - TIH w/ bit @ 3886", DST #4
 3/4/18 - TD 3980', DST #5 & #6
 3/5/18 - Running DST #7, TD @ 4138'
 3/6/18 - CFS @ 4230', DST #8
 3/7/18 - Running DST #9, TD @ 4302'
 3/8/18 - RTD, 4380', LTD 4382', Ran 105 jt of 4 1/2" 10.5# csg. set @ 4379'. Cement w/ 195 sx EA-2, 1/4# flocele/sx. Plug down @ 12:30am 3/9/18.

DST #1 LKC 'C' 3694' - 3736'
 30" - 60" - 30" - 60"

IF: BOB in 10 min
 ISI: No Blow
 FF: BOB in 13 min
 FSI: No Blow

Rec'd: 154' Mud, 384' WCM (30% W, 70% M), 185' MCW (80% W, 20% M)

SIP: 1026-1008# FP: 35-186#, 194-293# HP: 1808-1788#

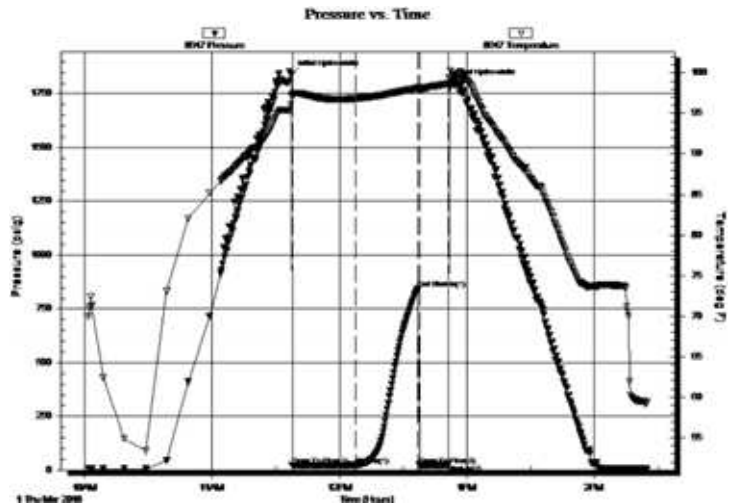


DST #2 LKC 'D' 3738' - 3764'
 30" - 30" - 10", Pull

IF: Weak surface blow
 ISI: No Blow
 FF: No blow - Pulled

Rec'd: 2' Mud

SIP: 844#
 FP: 21-23#, 23-24#
 HP: 1839-1795#

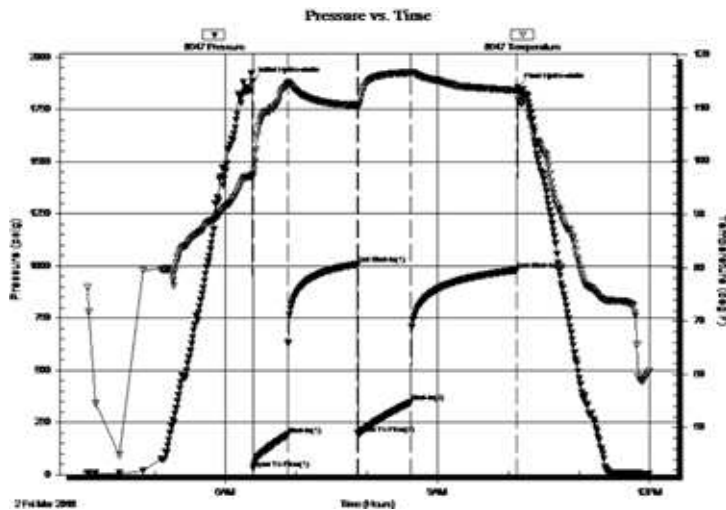


DST #3 LKC 'H' 3816' - 3856'
30" - 60" - 45" - 90"

IF: BOB in 10 min
ISI: No Blow
FF: BOB in 14 min
FSI: No Blow

Rec'd: 121' MCW (20% M, 80% W), 310' MCW (30% M, 70% W), 186' WCM (5% W, 95% M), 154' Mud

SIP: 1008-980# FP: 30-191#, 196-346# HP: 1886-1856#

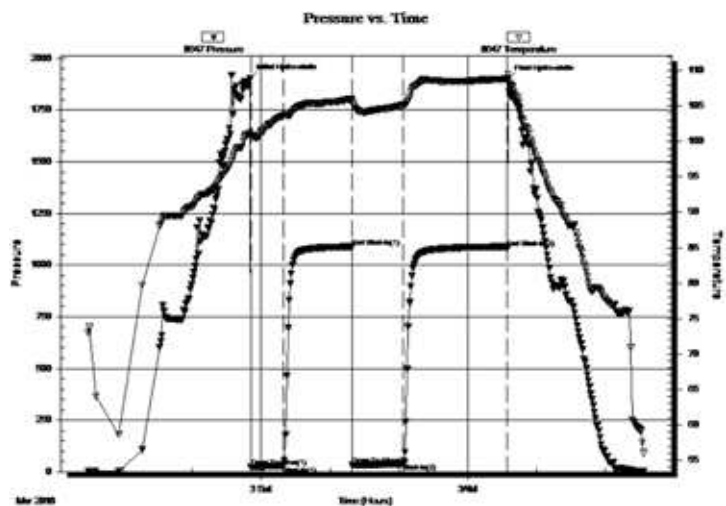


DST #4 LKC 'I' 3856' - 3886'
30" - 60" - 30" - 60"

IF: Built to 3/4" blow
ISI: No Blow
FF: Built to 1/2" blow
FSI: No Blow

Rec'd: 10' Mud w/ oil spots

SIP: 1088-1082# FP: 22-29#, 30-39# HP: 1901-1897#

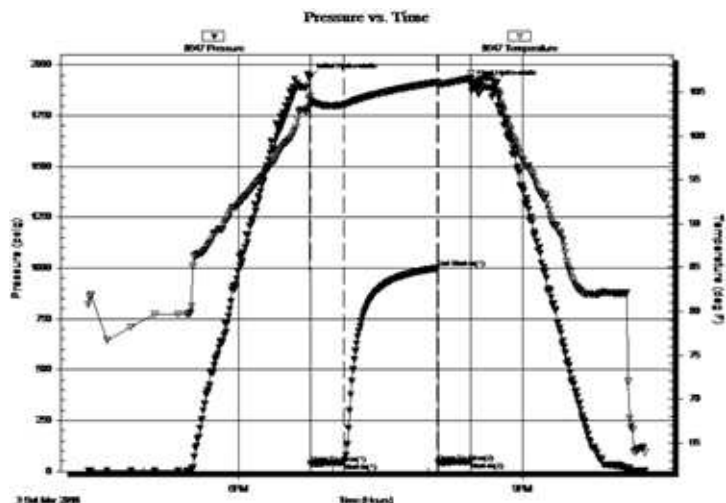


DST #5 LKC 'J' & 'K' 3886' - 3946'
30" - 60" - 15", pulled

IF: Build to weak surface blow
ISI: No Blow
FF: No blow, pulled

Rec'd: 10' Mud

SIP: 999#
FP: 37-43#, 44-44#
HP: 1937-1906#

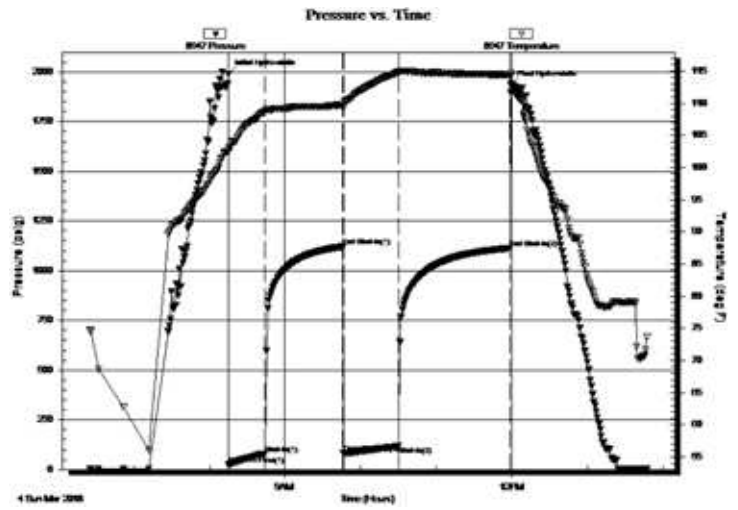


DST #6 LKC 'L' 3946' - 3980'
30" - 60" - 45" - 90"

IF: Built to 6 1/2" blow
ISI: No Blow
FF: Built to 8" blow
FSI: No Blow

Rec'd: 2' Free oil, 20' WCM (33% W, 67% M), 62' WCM
(50% W, 50% M), 121' MCW (92% W, 8% M)

SIP: 1121-1113# FP: 22-79#, 82-116# HP: 1988-1935#

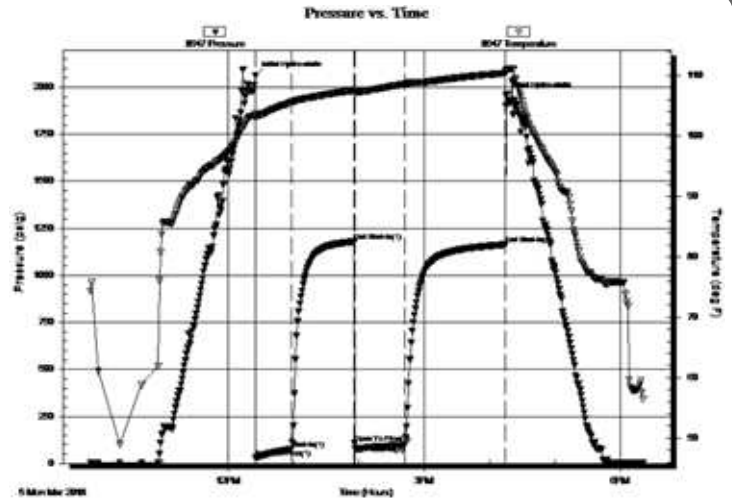


DST #7 Marmaton - Pawnee 4030' - 4138'
30" - 60" - 45" - 90"

IF: Built to 4" blow
ISI: No Blow
FF: Built to 7" blow
FSI: No Blow

Rec'd: 5' Free oil, 40' MCO (60% O, 40% M), 121' OCM
(30% O, 70% M)

SIP: 1180-1162# FP: 29-76#, 75-100# HP: 2060-1954#

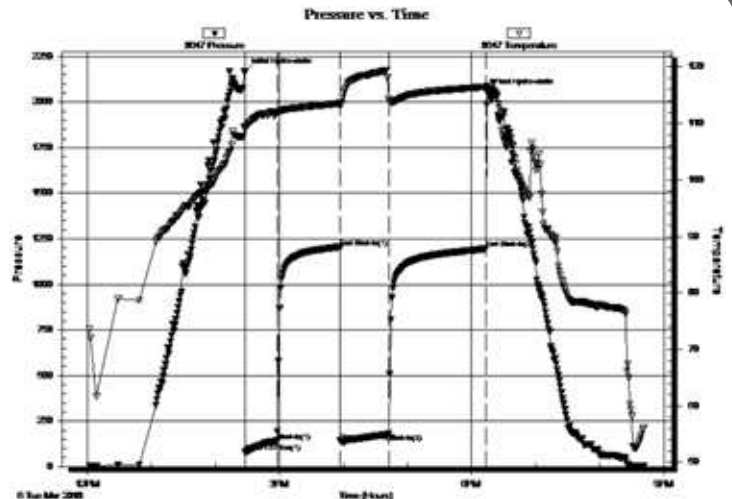


DST #8 FT SCOTT - CHEROKEE - JOHNSON
4138' - 4262'
30" - 60" - 45" - 90"

IF: Built to 8" blow
ISI: No Blow
FF: Built to 14" blow
FSI: No Blow

Rec'd: 20' Free oil, 124' OCM (50% O, 50% M), 121' OCM
(30% O, 70% M)

SIP: 1200-1196# FP: 76-140#, 140-180# HP: 2165-2053#

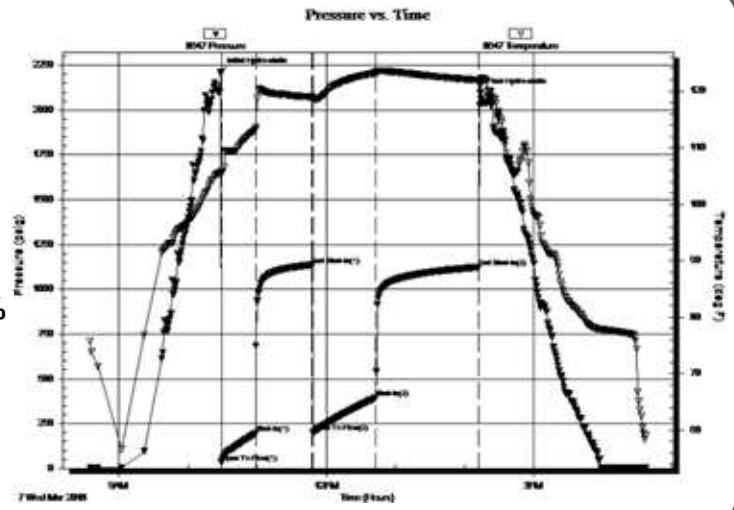


DST #9 LOWER JOHNSON - MORROW 4262' - 4302'
 30" - 60" - 45" - 90"

IF: Built to 29.5" blow (Ipro)
 ISI: No Blow
 FF: Built to 42" blow (Ipro)
 FSI: No Blow

Rec'd: 129' OCWM (10% O, 10% W, 80% M), 248' MCW, 50%
 W, 50% M), 431' MCW, 80% W, 20% M)

SIP: 1136-1122# FP: 33-196#, 200-394# HP: 2213-2094#



ROCK TYPES

	Anhy		Gyp		Shgy		Sandylms
	Bent		Igne		Sltst		Shale
	Brec		Lmst		Ss		Sltstn
	Cht		Meta		Till		Shlyslts
	Clyst		Mrlst		Carb sh		Slttysh
	Coal		Salt		Dol		Lms
	Congl		Shale		Dtd		
	Dol		Shcol		Gry sh		

ACCESSORIES

MINERAL		Salt		Fossil		Clystn	
	Anhy		Sandy		Gastro		Dol
	Arggrn		Silt		Oolite		Grysh
	Arg		Sil		Ostra		Gryst
	Bent		Sulphur		Pelec		Lms
	Bit		Tuff		Pellet		Sandylms
	Brecfrag		Chlorite		Pisolite		Sh
	Calc		Dol		Plant		Sltstn
	Carb		Sand		Strom		
	Chtdk		Silty		Fuss		
	Chtlt				Oomold		
	Dol	FOSSIL				TEXTURE	
	Feldspar		Algae	STRINGER			Boundst
	Ferrpel		Amph		Anhy		Chalky
	Ferr		Belm		Arg		Cryxln
	Glau		Bioclst		Bent		Earthy
	Gyp		Brach		Coal		Finexln
	Hvymin		Bryozoa		Dol		Grainst
	Kaol		Cephal		Gyp		Lithogr
	Marl		Coral		Ls		Microxln
	Minxl		Crin		Mrst		Mudst
	Nodule		Echin		Sltstrg		Packst
	Phos		Fish		Ssstrg		Wackest
	Pyr		Foram		Carbsh		

OTHER SYMBOLS

POROSITY TYPE

- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

SORTING

- Well
- Moderate
- Poor

ROUNDING

- Rounded
- Subrnd
- Subang
- Angular

OIL SHOWS

- Even
- Spotted
- Ques
- Dead
- Gas show

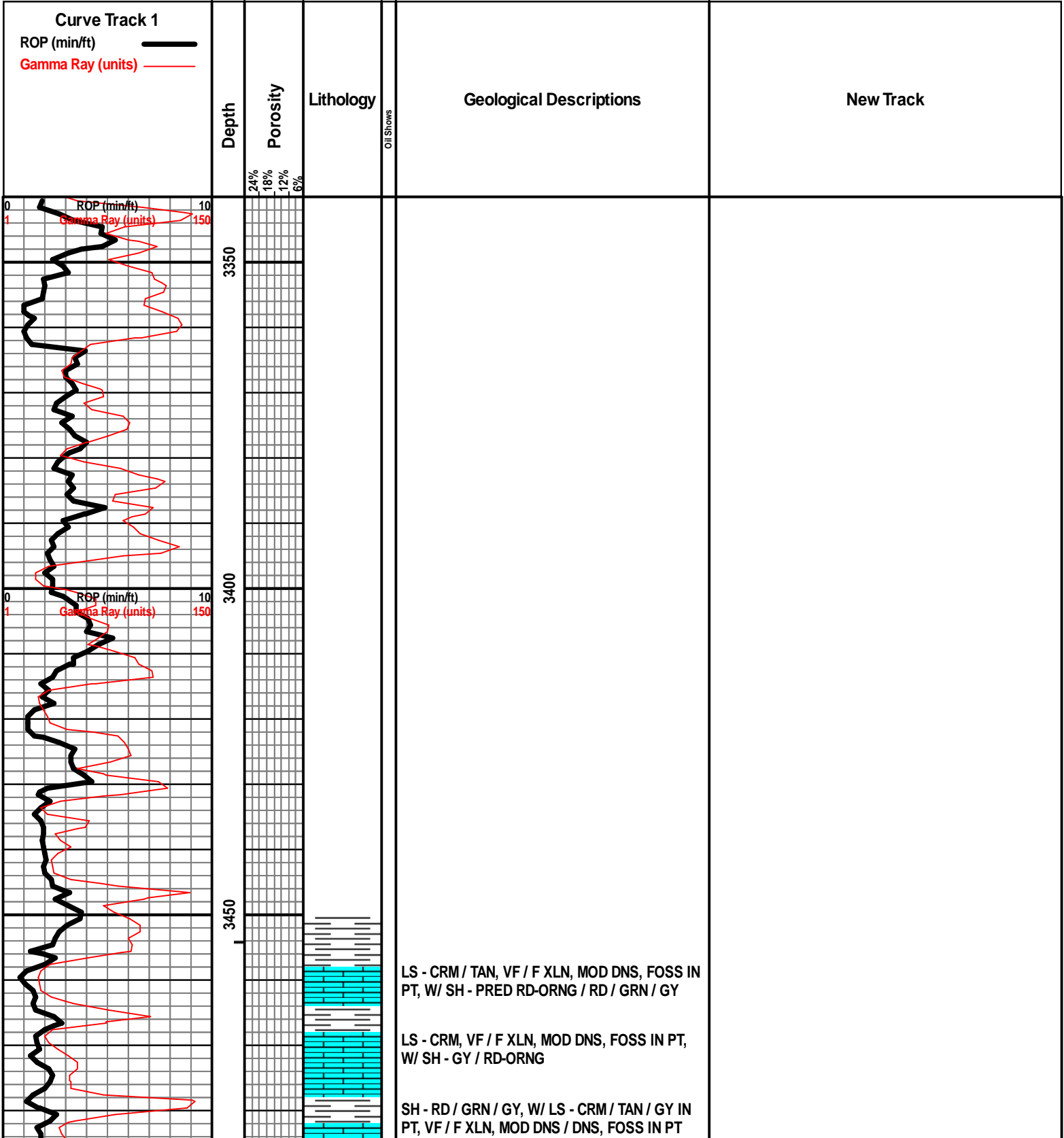
INTERVALS

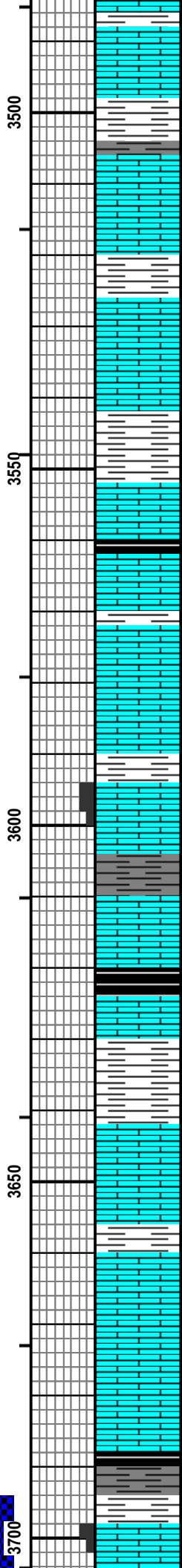
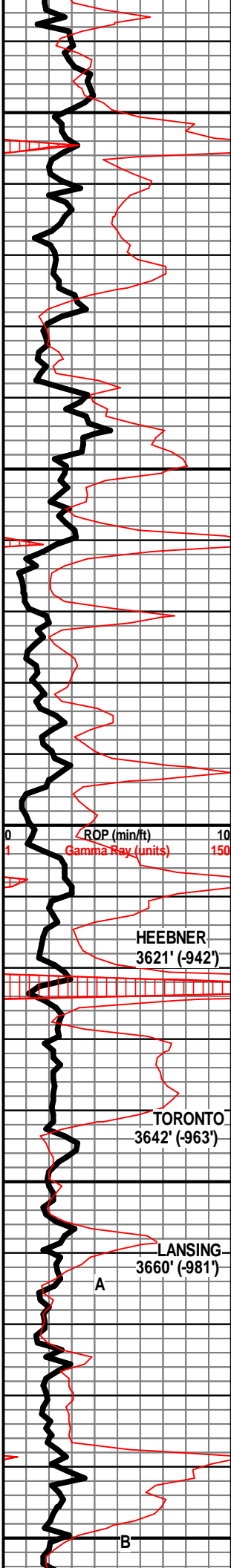
- Core
- Dst

- Dst

EVENTS

- Rft
- Sidewall
- Conn





LS - CRM / TAN / WHT IN PT, VF / F XLN, PRED SUBCHKY / MOD DNS, CHKY IN PT

SH - GY, SOFT, FISSILE AND BRITTLE IN PT

SH - DK GY, W/ LS - CRM / TAN, VF / F XLN, MOD DNS / DNS, FOSS IN PT

SH - LT BRN, V SOFT

LS - WHT / CRM, VF XLN, CHKY / V CHKY

SH - RD / GRN / GY, W/ LS - CRM / TAN, VF / F XLN, MOD DNS / DNS, ABUND FOSS

LS - CRM / TAN / GY, F XLN, MOD DNS / DNS, ABUND FOSS IN PT, W/ SH - DK MAR / MAR / RD

SH - BLK, CARB, W/ LS - CRM / TAN, F XLN, MOD DNS / DNS, FOSS, ABUND FOSS IN PT

LS - WHT, VF XLN, V CHKY, W/ SH - RDSH-BRN / BRN, F SOFT

LS - WHT, VF XLN, V CHKY

LS - TAN / GY, F XLN, MOD DNS / DNS, ABUND FOSS, W/ SH - RD / GRN / GY

LS - TAN / GY, F XLN, MOD DNS, ABUND FOSS, P / F INTXLN POR IN PT, NS, NO ODOR, NO FLUOR

SH - GY, W/ LS - CRM, VF / F XLN, SUBCHKY / CHKY

SH - BLK, CARB, W/ LS - CRM / TAN / GY, F XLN, MOD DNS / DNS, FOSS, ABUND FUSILINIDS

LS - WHT / CRM / GY, VF XLN, SUBCHKY / CHKY, W/ SH - RD / GRN / GY

SH - RD / GRN / GY, W/ LS - TAN / BRN, F / M XLN, DNS, FOSS

LS - CRM, VF / F XLN, PRED MOD DNS / DNS, SUBCHKY / CHKY IN PT, FOSS IN PT

LS - CRM / TAN, F XLN, MOD DNS / DNS, FOSS, W/ SH - RD / GRN / GY

LS - CRM, F XLN, MOD DNS / DNS, FOSS, P INTXLN POR IN PT, NS, NO ODOR, SLI MINERAL FLUOR

LS - CRM, VF / F XLN, SUBCHKY / CHKY, NS

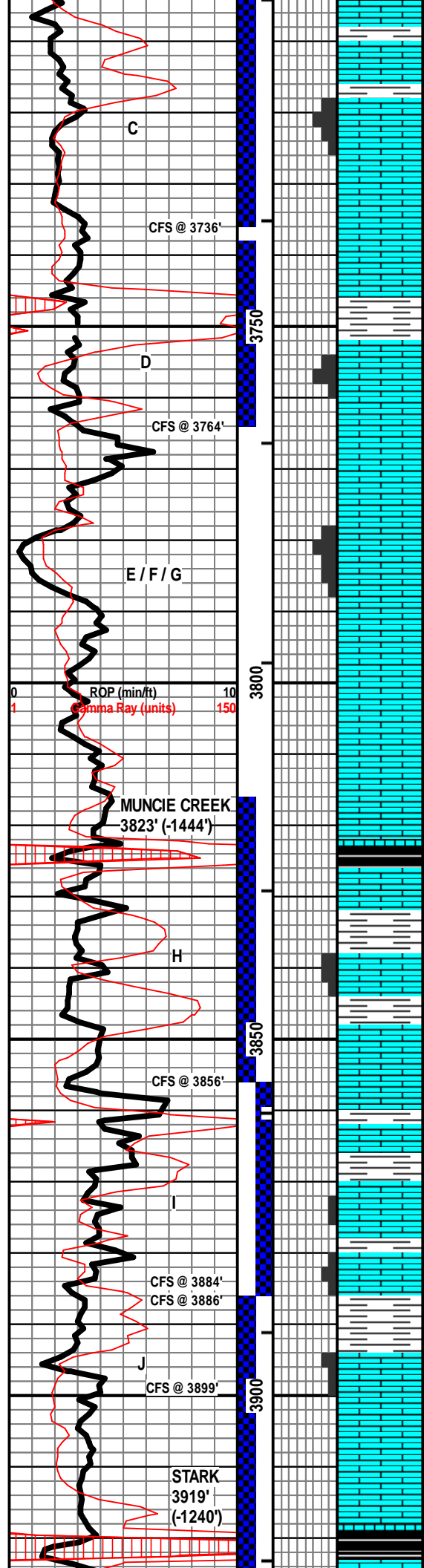
SH - BLK, CARB

SH - GY, W/ LS - CRM, VF / F XLN, MOD DNS / SUBCHKY, P INTXLN POR IN PT, NS

VIS 44
 WT 9.2
 LCM 1#

VIS 47
 WT 9.2
 LCM 1#

DST #1 LKC 'C'
 3694' - 3736'
 30" - 60" - 30" - 60"



LS - WHT / CRM, VF / F XLN, SUBCHKY / CHKY

LS - CRM / WHT, VF / F XLN, MOD DNS / SUBCHKY, ABUND FOSS IN PT, P / F INTERXLN & INTERPART POR, GSFO WHEN BROKEN, SLI ODER WHEN BROKEN, MOD YEL-GRN FLUOR

LS - CRM, VF / F XLN, MOD DNS / DNS, SUBCHKY IN PT, NS, NO ODOR

SH - GY / BRN, SLTY IN PT, W/ LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS, LRG FUSULINIDS

LS - CRM / LT BRN, VF / F XLN, P / F INTERXLN POR IN PT, FSFO, F ODOR WHEN BROKEN, G YEL-GRN FLUOR, FOSS IN PT

LS - CRM / TAN, F XLN, MOD DNS / DNS, SUBCHKY / CHKY IN PT

LS - CRM, VF / F XLN, MOD DNS / SUBCHKY

LS - CRM / TAN, F XLN, P / F OOLMOLDIC POR, NS, NO ODOR, SLI MINERAL FLUOR, W/ LS - CRM / WHT, VF XLN, SUBCHKY / CHKY, V CHKY IN PT

LS - TAN / CRM, F XLN, MOD DNS / DNS, FOSS IN PT

LS - CRM / TAN, VF / F XLN, MOD DNS / SUBCHKY, FOSS IN PT

LS - CRM, VF / F XLN, SUBCHKY / CHKY, MOD DNS IN PT, FOSS IN PT

LS - CRM / TAN / LT GY IN PT, VF / F XLN, MOD DNS / SUBCHKY, CHKY IN PT, W/ SH - BLK, SLI CARB

LS - TAN / GY / BRN IN PT, F / M XLN, MOD DNS / DNS, FOSS, W/ SH - GY

LS - TAN / LT GY, F XLN, P / F INTERXLN & VUG POR, FRACT POR IN PT, GSFO, DK BRN HVY OIL, OIL SHEEN, SLI ODOR, DULL YEL-GRN FLUOR, ABUND FOSS IN PT

LS - CRM / TAN / LT GY, F XLN, MOD DNS / DNS, FOSS IN PT

SH - GY, W/ LS - CRM, VF / F XLN, MOD DNS / SUBCHKY

SH - LT GY / LT GRN, V SOFT

LS - TAN / LT GY, F / M XLN, MOD DNS / DNS, FOSS, NS

LS - WHT / LT GY, F XLN, P / F INTERXLN & INTERPART POR, VUG POR IN PT, GSFO, F ODOR, SLI YEL-GRN FLUOR, ABUND FOSS, PYRITIC IN PT

SH - GY

LS - CRM / TAN, F XLN, MOD DNS / DNS, P OOLMOLDIC POR IN PT, NS, NO ODOR

LS - CRM / TAN, VF / F XLN, MOD DNS / DNS, SUBCHKY IN PT

LS - CRM / TAN, F XLN, MOD DNS / DNS, FOSS IN PT

SH - BLK, CARB, W/ LS - CRM, VF / F XLN, SUBCHKY

IF: BOB in 10 min
 ISI: No Blow
 FF: BOB in 13 min
 FSI: No Blow

Rec'd: 154' Mud, 384' WCM (30% W, 70% M), 185' MCW (80% W, 20% M)

SIP: 1026-1008#
 FP: 35-186#, 194-293#
 HP: 1808-1788#

DST #2 LKC 'D'
 3738' - 3764'
 30" - 30" - 10", Pull

IF: Weak surface blow
 ISI: No Blow
 FF: No blow - Pulled

Rec'd: 2' Mud

SIP: 844#
 FP: 21-23#, 23-24#
 HP: 1839-1795#

IF: VIS 44
 WT 9.2
 LCM 1#

Rec'd: 2' Mud

SIP: 844#
 FP: 21-23#, 23-24#
 HP: 1839-1795#

IF: VIS 60
 WT 9.2
 LCM 1/2#

DST #3 LKC 'H'
 3816' - 3856'
 30" - 60" - 45" - 90"

IF: BOB in 10 min
 ISI: No Blow
 FF: BOB in 14 min
 FSI: No Blow

Rec'd: 121' MCW (20% M, 80% W), 310' MCW (30% M, 70% W), 186' WCM (5% W, 95% M), 154' Mud

SIP: 1008-980#
 FP: 30-191#, 196-346#
 HP: 1886-1856#

IF: VIS 41
 WT 9.4
 LCM TR

DST #4 LKC 'I'
 3856' - 3886'
 30" - 60" - 30" - 60"

IF: Built to 3/4" blow
 ISI: No Blow
 FF: Built to 1/2" blow
 FSI: No Blow

Rec'd: 10' Mud w/ oil spots

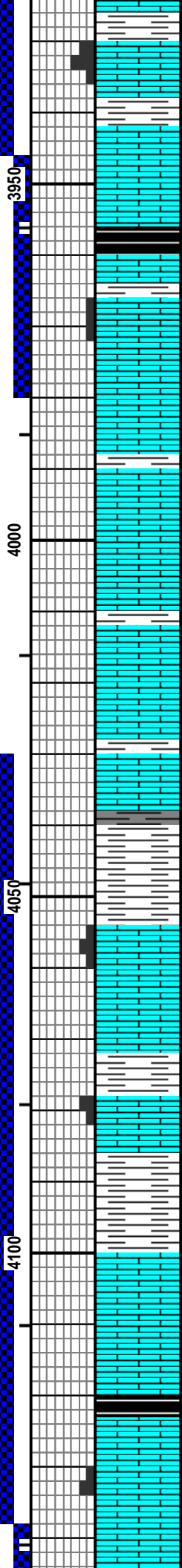
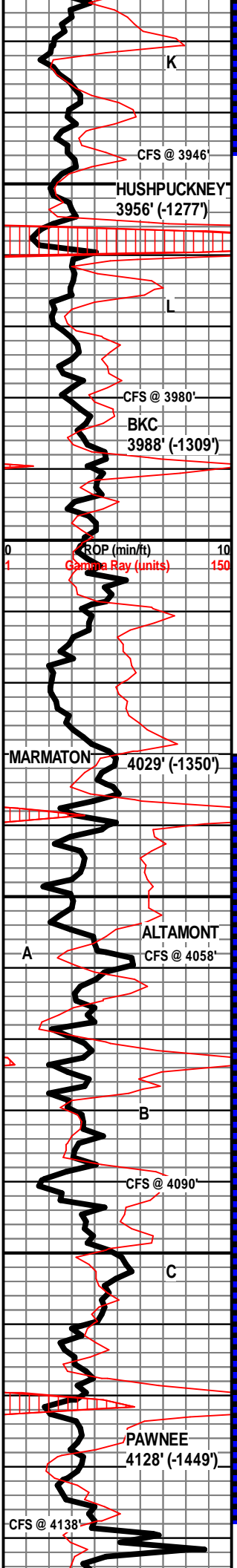
SIP: 1088-1082#
 FP: 22-29#, 30-39#
 HP: 1901-1897#

IF: VIS 46
 WT 9.3
 LCM 1#

DST #5 LKC 'J' & 'K'
 3886' - 3946'
 30" - 60" - 15", pulled

IF: Built to weak surface blow
 ISI: No Blow
 FF: No blow, pulled

IF: VIS 48
 WT 9.3
 LCM 1#



LS - CRM / TAN, F XLN, P / F INTERXLN POR, SSFO, OIL SHEEN, SLI ODOR WHEN CRUSHED, SUBCHKY IN PT, DULL FLUOR

LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS, LRG FUSULINIDS

SH - BLK, CARB, W/ LS - WHT / GY, VF / F XLN, MOD DNS / DNS, FOSS IN PT

LS - TAN / GY, F XLN, MOD DNS, PINTERXLN POR, GSFO WHEN BROKEN, F CUP ODOR, G WHEN BROKEN, DULL FLUOR, FOSS

LS - CRM / WHT, VF XLN, SUBCHKY / CHKY, W/ CHT - GY / TAN, SLI TRANSLUCNT, FRSH

LS - GY, F XLN, MOD DNS / DNS, ABUND FOSS, OOL IN PT, NO VIS POR, NS, NO ODOR

SH - GRN / GY, W/ LS - TAN / GY, F / M XLN, MOD DNS / DNS, FOSS

LS - CRM / TAN / GY, VF / F XLN, MOD DNS, SUBCHKY IN PT

LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS IN PT

SH - RDISH-BRN / RD / RD-ORNG, V SOFT IN PT, W/ LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS

LS - TAN / GY, CRM IN PT, VF / F XLN, PRED MOD DNS / DNS, SUBCHKY IN PT, FOSS IN PT, ABUND OF FOSS IN FEW PIECES

LS - CRM / TAN, VF / F XLN, PRED MOD DNS, SUBCHKY / CHKY IN PT, W/ SH - RD / GRN

SH - RD / GRN / GY

LS - CRM, VF / F XLN, MOD DNS, P INTERXLN POR IN PT, SSFO, SLI ODOR WHEN BROKEN, DULL FLUOR, SUBCHKY IN PT

LS - CRM / TAN, F XLN, MOD DNS, DNS, FOSS IN PT

SH - GY / GRN / RD, W/ LS - CRM / TAN, F XLN, MOD DSN / DSN, FOSS IN PT

LS - CRM / TAN, VF / F XLN, MOD DNS, P INTXLN POR IN PT, EDGE STN IN PT, VSSFO IN PT, SLI ODOR WHEN BROKEN, DULL FLUOR

SH - GRN / RD

SH - RD / GRN / GY

LS - CRM / TAN, F / M XLN, MOD DNS / DNS, FOSS

LS - CRM / WHT, VF / F XLN, SUBCHKY / CHKY

SH - BLK, CARB, LS - LT GY / WHT, F / VF XLN, DNS / SUBCHKY / CHKY IN PT, GY LS FOSS IN PT

LS - TAN / GY, F / M XLN, MOD DNS / DNS, FOSS IN PT

LS - WHT / GY, VF / F XLN, P INTERXLN & INTERPART POR IN PT, VSSFO, SLI CUP ODOR, OIL SHEEN, DULL FLUOR, ABUND FOSS

LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS

Rec'd: 10' Mud

SIP: 999#
FP: 37-43#, 44-44#
HP: 1937-1906#

DST #6 LKC 'L'
3946' - 3980'
30" - 60" - 45" - 90"

IF: Built to 6 1/2" blow
ISI: No Blow
FF: Built to 8" blow
FSI: No Blow

Rec'd: 2' Free oil, 20' WCM (33% W, 67% M), 62' WCM (50% W, 50% M), 121' MCW (92% W, 8% M)

SIP: 1121-1113#
FP: 22-79#, 82-116#
HP: 1988-1935#

VIS 46
WT 9.1
LCM 1#

VIS 46
WT 9.3
LCM 1#

VIS 53
WT 9.3
LCM 1#

DST #7 Marmaton - Pawnee
4030' - 4138'
30" - 60" - 45" - 90"

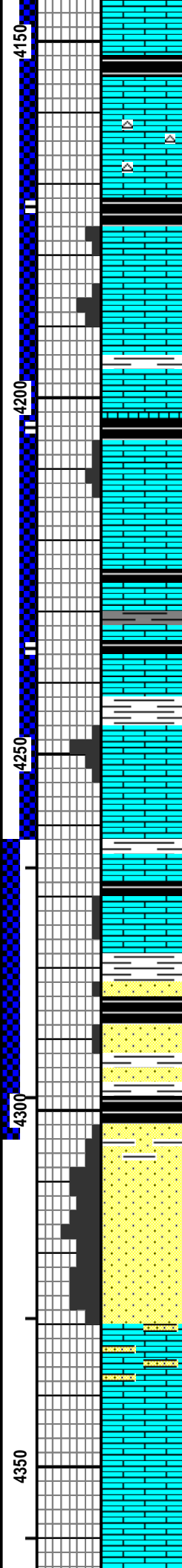
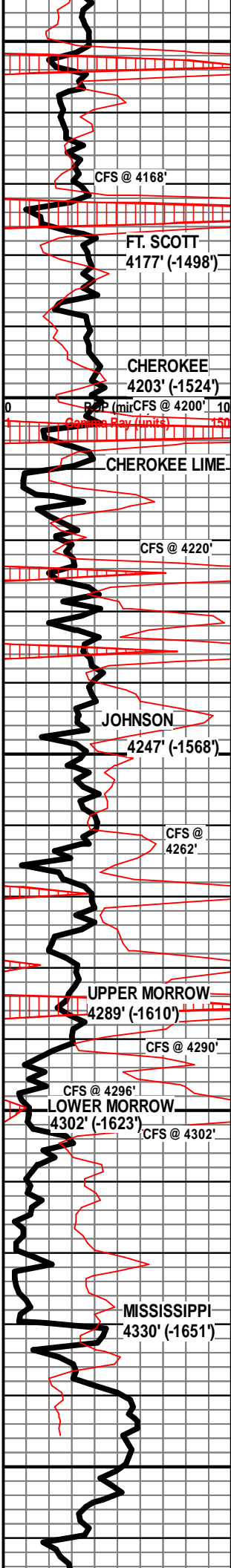
IF: Built to 4" blow
ISI: No Blow
FF: Built to 7" blow
FSI: No Blow

Rec'd: 5' Free oil, 40' MCO (60% O, 40% M), 121' OCM (30% O, 70% M)

SIP: 1180-1162#
FP: 29-76#, 75-100#
HP: 2060-1954#

VIS 56
WT 9.4
LCM 1#

VIS 52
WT 9.4
LCM 1#



SH - BLK, CARB, G SHO OF GAS, V FLAKY, PYRITIC IN PT, W/LS - CRM, V CHKY

LS - BRN / GY, F XLN, DNS, FOSS, PYRITIC IN PT

LS - TAN / GY / BRN IN PT, F XLN, DNS, FOSS, W/CHT - BRN, FRSH, SLI TRANSLUCNT, FOSS

SH - BLK, CARB, W/LS - TAN / GY, F XLN, DNS, PINTEROOL POR, SSFO WHEN BROKEN, BLEEDING OIL, SLI ODOR WHEN BROKEN, NO FLUOR

LS - CRM / TAN, F XLN, DNS, P / F INTERXLN & INTERPART POR, ABUND OF OOL & FOSS, SSFO IN FEW PIECES, SLI ODOR, DULL FLUOR

LS - TAN / GY, F XLN, MOD DNS / DNS, FOSS, W/ SH - GRN / GY

SH - BLK, CARB

LS - GY / TAN / CRM IN PT, VF / F XLN, PRED MOD DNS / SUBCHKY, P INTERXLN POR IN PT, VSSFO WHEN CRUSHED, OIL SHEEN, F YEL-GRN FLUOR, SLI ODOR

SH - BLK, CARB, W/LS - TAN / GY, VF / F XLN, MOD DNS / DNS, FOSS IN PT

SH - BLK, SLI CARB, W/LS - TAN / GY, VF / F XLN, MOD DNS / DNS, FOSS

SH - GY

LS - CRM / TAN / BRN, P / F INTERXLN & INTERPART POR, F / G VUG POR, F FOSS MOLD POR, GSFO, F ODOR, G ODOR WHEN CRUSHED, F YEL-GRN FLUOR

LS - CRM / GY, VF / F XLN, MOD DNS / SUBCHKY, NO VIS POR, NS

SH - BLK, SLI CARB, W/LS - WHT / GY, VF / F XLN, SUBCHKY / MOD DNS, BLK MINERAL SPECS

SH - GY / GRN / RD, W/LS - CRM / GY, VF / F XLN, SUBCHKY / CHKY, P INTERXLN POR IN PT, SSFO, NO ODOR, NO FLUOR

SS - CLR / GY / TAN, VF GR, SUB-RND, W SRTD, PRED DNS, P INTERGR POR, 50% BARREN, 50% OIL SAT, FSFO, F ODOR, NO FLUOR

SS - TAN / YEL, VF GR, V DSN, NO VIS POR, NS, NO FLOUR

SH - BLK, SLI CARB, W/SH - GRN / BRN, V SOFT

SS - WHT / GY, VF GR, SUB-RND, W SRTD, F / G INTERGR POR, POR APPEARS BARREN, NS, NO ODOR, NO FLUOR

SS - GRN / WHT, SHLY, VF GR

SS - WHT / GY, VF / F GR, SUB-RND, W SRTD, F / G INTERGR POR, PRED FRI, NS, NO ODOR, NO FLUOR

SS - WHT / CLR / GY, VF / F GR, SUB-RND, W SRTD, G INTGR POR, V FRI IN PT, NS, NO ODOR, NO FLUOR

LS - TAN / CRM, F XLN, MOD DNS / DNS, ABUND OF IMBEDDED SS GR, NO VIS POR, NS, NO ODOR, NO FLUOR

LS - WHT / CRM, VF / F XLN, SUBCHKY / CHKY, MOD DNS IN PT, NO VIS POR, NS

LS - WHT / GY / TAN IN PT, VF / F XLN, MOD DNS / SUBCHKY

LS - TAN / GY, VF / F XLN, MOD DNS / DNS, NO

VIS 52
WT 9.5
LCM 1#

VIS 46
WT 9.5
LCM 1#
ADDING
PREMIX

DST #8 FT SCOTT - CHEROKEE - JOHNSON
4138' - 4262'
30" - 60" - 45" - 90"

IF: Built to 8" blow
ISI: No Blow
FF: Built to 14" blow
FSI: No Blow

Rec'd: 20' Free oil, 124' OCM (50% O, 50% M),
121' OCM (30% O, 70% M)

SIP: 1200-1196#
FP: 76-140#, 140-180#
HP: 2165-2053#

VIS 50
WT 9.5
LCM 1#

DST #9 LOWER JOHNSON - MORROW
4262' - 4302'
30" - 60" - 45" - 90"

IF: Built to 29.5" blow (Ipro)
ISI: No Blow
FF: Built to 42" blow (Ipro)
FSI: No Blow

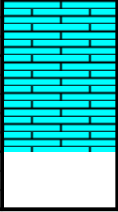
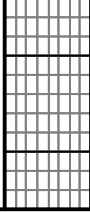
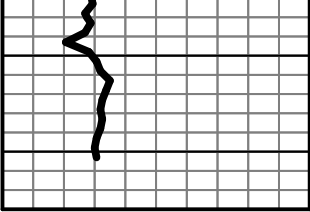
Rec'd: 129' OCWM (10% O, 10% W, 80% M), 248'
MCW, 50% W, 50% M), 431' MCW, 80% W, 20% M)

SIP: 1136-1122#
FP: 33-196#, 200-394#
HP: 2213-2094#

VIS 50
WT 9.6
LCM 1#

WT 9.7
VIS 57
LCM 1#

VIS 51
WT 9.6
LCM 1#



VIS POR, NS

LS - TAN, F XLN, MOD DNS / DNS, FOSS IN PT,
NS

RTD

4380'

VIS 52
WT 9.2
LCM 1#



TICKET 30886

CHARGE TO: *Pickrell Drilling Co*
 ADDRESS
 CITY, STATE, ZIP CODE

PAGE 1 OF

SERVICE LOCATIONS
 1. *Hays Ks*
 2. *Ness City Ks*
 3.
 4. *Oil*

WELL PROJECT NO. *A-1* LEASE *Duff* COUNTY/PARISH *Logan* STATE *Ks* CITY
 TICKET TYPE SERVICE CONTRACTOR *Co tools* RIG NAME/NO. SHIPPED VIA
 SALES
 WELL TYPE *Oil* WELL CATEGORY *Development* JOB PURPOSE *Port-Collar* DELIVERED TO *Location* ORDER NO.
 INVOICE INSTRUCTIONS WELL PERMIT NO. WELL LOCATION

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
		LOC	ACCT							
575		1			80	mi			5.00	400.00
576D		1		MILEAGE <i>Trk #111</i>	1	EA			1300.00	1300.00
290		1		<i>Pump Charge.</i>	2	Gal			42.00	84.00
288		1		<i>Sand</i>	1	SIC			22.00	22.00
105		1		<i>Port Collar tool w/ man</i>	1	EA			275.00	275.00
330		2		<i>Swift Multi Density</i>	285	SK			16.25	3656.25
276				<i>Flarele</i>	50	lbs			2.50	125.00
581		2		<i>Service Charge Cement</i>	390	SK			1.75	682.50
583		2		<i>Drayage</i>	1466	Ym			85	124615

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

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

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

X *[Signature]* TIME SIGNED A.M. P.M.

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN? YES NO
 WE UNDERSTOOD AND MET YOUR NEEDS? YES NO
 OUR SERVICE WAS PERFORMED WITHOUT DELAY? YES NO
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY? YES NO
 ARE YOU SATISFIED WITH OUR SERVICE? YES NO
 CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL 7790.85
 TAX 80.00
 TOTAL 8123.83

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

SWIFT OPERATOR

Thank You!

JOB LOG

SWIFT Services, Inc.

DATE

4-10-18

PAGE NO.

CUSTOMER

Pickrell

WELL NO.

A-1

LEASE

Duff

JOB TYPE

Port Collar

TICKET NO.

30886

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1000							On location
								Tub - 2 3/8 Csg - 4 1/2 port collar - 2129
	1100	3	35			300		Circ oil out of well
	1110	3	5			300		spot sand
						1000		Test tools - Held
	1140	2.5				400		open Port Collar
		3	80			400		pump Drilling mud
	1215	5	0			700		Start cmt @ 11.2 ppG
		5	105			1000		CMT circ - 190 sks
		5	115			1000		Raise weight to 14.0 ppG
	1240	5	6			1000		Disp cmt
	1245							Close Port collar
								Run 4 joints
	1300	3	12			300		Reverse 000
	1310							Run tubing & Circ sand off plug
	1410	3	30			600		Rev sand
								Job Complete
								Thermit's David, Zach & Isaac



TICKET 031174

PAGE 1 OF 2

CHARGE TO: Pickrell Drilling
 ADDRESS:
 CITY, STATE, ZIP CODE:

SERVICE LOCATIONS:
 1. Lawley KS

WELL/PROJECT NO. Puff A #1
 CONTRACTOR

CITY Lawley
 STATE KS
 COUNTY/PARISH Leban
 RIG NAME/NO. 10

DATE 8 MAR 18
 ORDER NO.

OWNER

TICKET TYPE
 SERVICE
 SALES

WELL TYPE oil

WELL CATEGORY Development

WELL PERMIT NO. 9-15-32

WELL LOCATION

WELL PERMIT NO. 9-15-32

WELL LOCATION

WELL LOCATION

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT							
575		1			80	lb			5.00	400.00
578		1		MILEAGE <u>TRK 114</u>	1	ea			1300.00	1300.00
403		1		<u>Pump Charge</u>	4 1/2	in	2	ea	250.00	500.00
		1		<u>Cement Basket</u>	4 1/2	in	1	ea	N/C	
406		1		<u>Port Collar</u>	4 1/2	in	1	ea	225.00	225.00
407		1		<u>Latch down pipe & buffer</u>	4 1/2	in	1	ea	300.00	300.00
409		1		<u>Insert float shoe w/ auto fill</u>	4 1/2	in	1	ea	70.00	70.00
				<u>Turbolizer</u>						

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

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

DATE SIGNED 3-8-18 TIME SIGNED 1530

[Signature]

REMIT PAYMENT TO:

SWIFT SERVICES, INC.
 P.O. BOX 466
 NESS CITY, KS 67560
 785-798-2300

SURVEY

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?
 WE UNDERSTOOD AND MET YOUR NEEDS?
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?
 ARE YOU SATISFIED WITH OUR SERVICE?

AGREE DISAGREE

YES NO

CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL #1

3425.00

6403.62

62781.62

9828.62

557.12

TOTAL 10385.94

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

SWIFT OPERATOR BURNE

APPROVAL

Thank You!



PO Box 466
Ness City, KS 67560
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 31174

DATE 8 MAR 18 PAGE 2 OF 2

WELL Duff A #

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		TIME	DESCRIPTION	QTY		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT			DF	QTY	U/M	QTY		
325		1			Standard cement (for 4-2)	220	sk			13.00	2860.00
284		1			cat seal	1000	lb	10	sk	3.50	350.00
283		1			salt	1100	lb			0.20	220.00
292		1			WATER-322	100	lb			8.00	800.00
276		1			Floccle	50	lb			2.50	125.00
281		1			mud flush	500	gal			1.50	750.00
291		1			KCL liquid	2	gal			25.00	50.00
290		1			D-AIR	2	gal			42.00	84.00
581		1			SERVICE CHARGE						
583		1			MILEAGE CHARGE						
					TOTAL WEIGHT	22930					
					LOADED MILES	80					
					CUBIC FEET	220					
					TON MILES	917.2					
										1.75	385.00
										0.85	779.62

CONTINUATION TOTAL 6278.62

640362

JOB LOG

SWIFT Services, Inc.

DATE 8 MAR 18 PAGE NO. 1

CUSTOMER Dropbell Drilling WELL NO. #1 LEASE DUFF A JOB TYPE cement / w/ string TICKET NO. 31174

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								220 sk EA-2 cement w/ 1/4" Flocels 4 1/2" x 10.5" casing 103 jts total pipe 4389.2 size jt 43' TD = 4382' part collar #53-2094' Control valves 1, 2, 5, 7, 9, 11, 13, 15, 17, 52 Boshet 3, 53
	1530							on loc TRK 114
	1830							start 4 1/2" x 10.5" casing in well
	2230							Dropbell - circulate
	2331	6	12		✓		400	Pump 600 gal mud flush
	2333	6	20		✓		400	Pump 20 bbl KCh flush
	2338		7					Plug RT - MT 30sk - 20sk
		4 1/4			✓		250	MIX EA-2 cement 170sk @ 15.3 ppw
	0001							Drop latch down plug wash out Pump & Line
	0005	6	0					Displace plug
	0018	5	69				1500	Land plug
	0020							Release pressure to truck - dried up
	0100							JOB COMPLETE
								THANK YOU WAYNE, BURDGE, FLIST, ISAAC

3613A Y Road
Madison, KS 66860
Ph: 620-437-2661
Fax: 620-437-2881



HURRICANE SERVICES INC

104 Prairie Plaza Parkway
Garnett, KS 66032
Ph: 785-448-3100
Fax: 785-448-3102

FED ID# 48-1214033
MC ID# 165290

MAR 03 2010

Remit to: Hurricane Services, Inc.
250 N. Water, Suite 200
Wichita, KS 67202

HUR 150	
VENDOR	BATCH NO

Customer:

PICKRELL DRILLING CO INC
100 S MAIN ST
SUITE 505
WICHITA, KS 67202

Invoice Date: 2/23/2018
Invoice #: 0036875
Lease Name: DUFF
Well #: A-1
County: LOGAN

Date/Description	HRS/QTY	Rate	Total
Ticket 100881 226' Surface	0.000	0.000	0.00
Heavy Eq Mileage	60.000	2.438	146.25
Light Eq Mileage	30.000	1.125	33.75
Minimum Ton Mileage chg	1.000	225.000	225.00
Pump truck 230	1.000	712.500	712.50
Cement Class A	180.000	12.188	2,193.75 T
Bentonite Gel	338.000	0.225	76.05 T
Calcium Chloride	508.000	0.750	381.00 T
Pheno Seal	45.000	1.275	57.38 T

Net Invoice 3,825.68
Sales Tax (8.00%) 216.65
Total 4,042.33

All invoices are due upon receipt. Interest at the rate of 1 1/2% per month may be charged on all invoices not paid within 30 days from date of invoice.

WE APPRECIATE YOUR BUSINESS!



250 N. Water, Ste 200 - Wichita, Ks 67202

HURRICANE SERVICES INC

104 Prairie Plaza Parkway - Garnett, Ks 66032

Customer: Pickrell Drilling Company Inc. Customer Name: Mike Kern Ticket No.: 100881
Address: 100 S.Main St,Ste 505 Contractor: Pickrell Drlg Rig # 10 Date: 2/23/2018
City, State, Zip: Wichita,Ks. 67202 Job type: 226' surface Well Type: Oil
Service District: Oakley,Ks. Well Details: Sec: 9 Twp: 15S R: 32W
Well name & No.: Duff A # 1 Well Location: County: State:
Equipment # Driver Equipment # Driver Equipment # Driver TRUCK CALLED AM PM TIME
230 Brad ARRIVED AT JOB AM PM 4:15
241 Devin START OPERATION AM PM 9:20
28 Todd FINISH OPERATION AM PM 9:45
RELEASED AM PM 10:15
MILES FROM STATION TO WELL 30

Product/Service Code Description Unit of Measure Quantity List Price/Unit Gross Amount Net Amount
C001 Heavy Equip. One Way mi 60.00 \$3.25 \$195.00 \$146.25
C002 Light Equip. One Way mi 30.00 \$1.50 \$45.00 \$33.75
C004 Minimum Ton Mile Charge ea 1.00 \$300.00 \$300.00 \$225.00
C019 Cement Pump ea 1.00 \$950.00 \$950.00 \$712.50
CP006 Regular - Class A Cement sack 180.00 \$16.25 \$2,925.00 \$2,193.75
CP016 Bentonite Gel lb 338.00 \$0.30 \$101.40 \$76.05
CP017 Calcium - Chloride lb 508.00 \$1.00 \$508.00 \$381.00
CP027 Pheno Seal lb 45.00 \$1.70 \$76.50 \$57.38

TERMS: Cash in advance unless Hurricane Services Inc. (HSI) has approved credit prior to sale. Credit terms of sale for approved accounts are total invoice due on or before the 30th day from the date of invoice. Past due accounts may pay interest on the balance past due at the rate of 1 1/4% per month or the maximum allowable by applicable state or federal laws if such laws limit interest to a lesser amount.

Gross: \$ 5,100.90 Net: \$3,825.68
Total Taxable \$ - Tax Rate:
Frac and Acid service treatments designed with intent to increase production on newly drilled or existing wells are not taxable. Sale Tax: \$ -
Total: \$ 3,825.68

Date of Service: 2/23/2018
HSI Representative: Todd Seba
Customer Comments:

DISCLAIMER NOTICE: This technical data is presented in good faith, but no warranty is given by and H.S.I. assumes no liability for advice or recommendations made concerning results to be obtained from the use of any product or service. The information presented is HSI best estimate of the actual results that may be achieved and should be used for comparison purposes and make no guarantee of future production performance.

X
CUSTOMER AUTHORIZED AGENT

TREATMENT REPORT**HURRICANE SERVICES INC**

Customer: Pickrell Drilling Company Inc.	Date: 2/23/2018	Ticket No.: 100881
Field Rep: Mike Kern		
Address:		
City, State:		
County, Zip:		

Field Order No.:	100881	Open Hole:		Perf Depths (ft)	Perfs
Well Name:	Duff A # 1	Casing Depth:	225'		
Location:	Oakley	Casing Size:	8 5/8 23 Lb		
Formation:		Tubing Depth:			
Type of Service:	Surface	Tubing Size:			
Well Type:	Oil	Liner Depth:			
Age of Well:	New	Liner Size:			
Packer Type:		Liner Top:			
Packer Depth:		Liner Bottom:			
Treatment Via:	Casing	Total Depth:	226'		
				Total Perfs	0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
12:00 PM					Called Out			
4:15 PM					On Location W/Trucks Hold Safety Meeting			
					Spot & Set Up Trucks			
					TD= 226' TP= 225' SJ= 20' Run 5 Jt's 8 5/8 23 LB			
7:45 PM					Start Casing			
8:55 AM					Casing On Bottom			
9:05 PM					Hook Up To Casing & Break Circulation			
9:20 AM	3.5			150.0	Start Pumping H2O			25.00
	3.5			200.0	Start Mix & Pump 180 Sacks Common 2% Gel 3% CC			45.20
	3.5			200.0	Start Displcae			12.50
9:45 PM					Shut Down Close Vavle On Casing			
					Good Circulation Thru Job			
					Circulate 10 Sacks To Pit			
					Wash Up Truck & Rack Up Trucks			
10:15 PM					Off Location			
					Thank You			
					Please Call Again			
					Todd Brad Devin			
					TOTAL:	-	-	82.70

SUMMARY

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
3.5	3.5	200.0	183.3

PRODUCTS USED

180 Sacks Common 2% Gel 3% CC

Treater: Todd SebaCustomer: Mike Kern



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64431

DST#: 1

Test Start: 2018.02.28 @ 17:57:15

GENERAL INFORMATION:

Formation: **C**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:40:30
 Time Test Ended: 02:11:00
 Interval: **3694.00 ft (KB) To 3736.00 ft (KB) (TVD)**
 Total Depth: 3736.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Mike Roberts
 Unit No: 81
 Reference Elevations: 2679.00 ft (KB)
 2674.00 ft (CF)
 KB to GR/CF: 5.00 ft

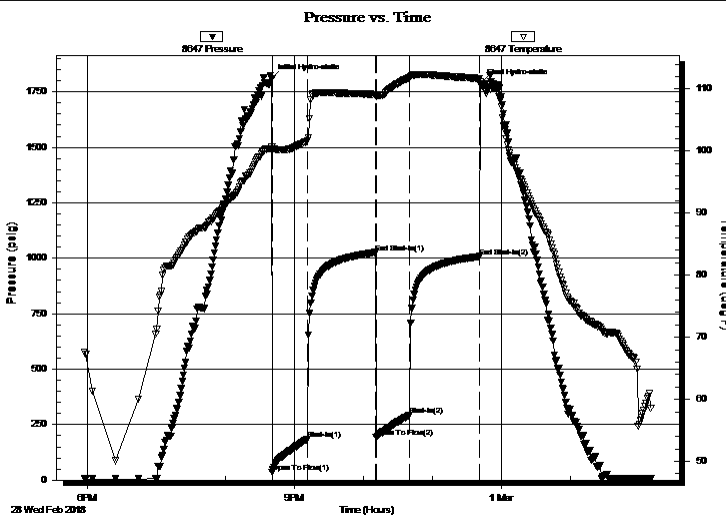
Serial #: 8647

Inside

Press@RunDepth: 293.29 psig @ 3731.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.02.28 End Date: 2018.03.01 Last Calib.: 2018.03.01
 Start Time: 17:57:15 End Time: 02:11:00 Time On Btm: 2018.02.28 @ 20:40:15
 Time Off Btm: 2018.02.28 @ 23:42:00

TEST COMMENT: IF:BOB in 10 min.
 IS:No return blow
 FF:BOB in 13 min.
 FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1808.23	100.71	Initial Hydro-static
1	35.56	100.13	Open To Flow (1)
32	186.46	101.70	Shut-In(1)
91	1026.57	109.13	End Shut-In(1)
91	194.16	108.73	Open To Flow (2)
120	293.29	111.83	Shut-In(2)
181	1008.10	111.72	End Shut-In(2)
182	1788.75	111.14	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
154.00	mud 100%m	1.06
384.00	w cm 30%w 70%m	5.39
185.00	mcw 20%m 80%w (121 ft collars)	2.60

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64431

DST#: 1

Test Start: 2018.02.28 @ 17:57:15

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:

28000 ppm

Viscosity: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
154.00	mud 100%m	1.058
384.00	w cm 30%w 70%m	5.387
185.00	mcw 20%m 80%w (121 ft collars)	2.595

Total Length: 723.00 ft Total Volume: 9.040 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

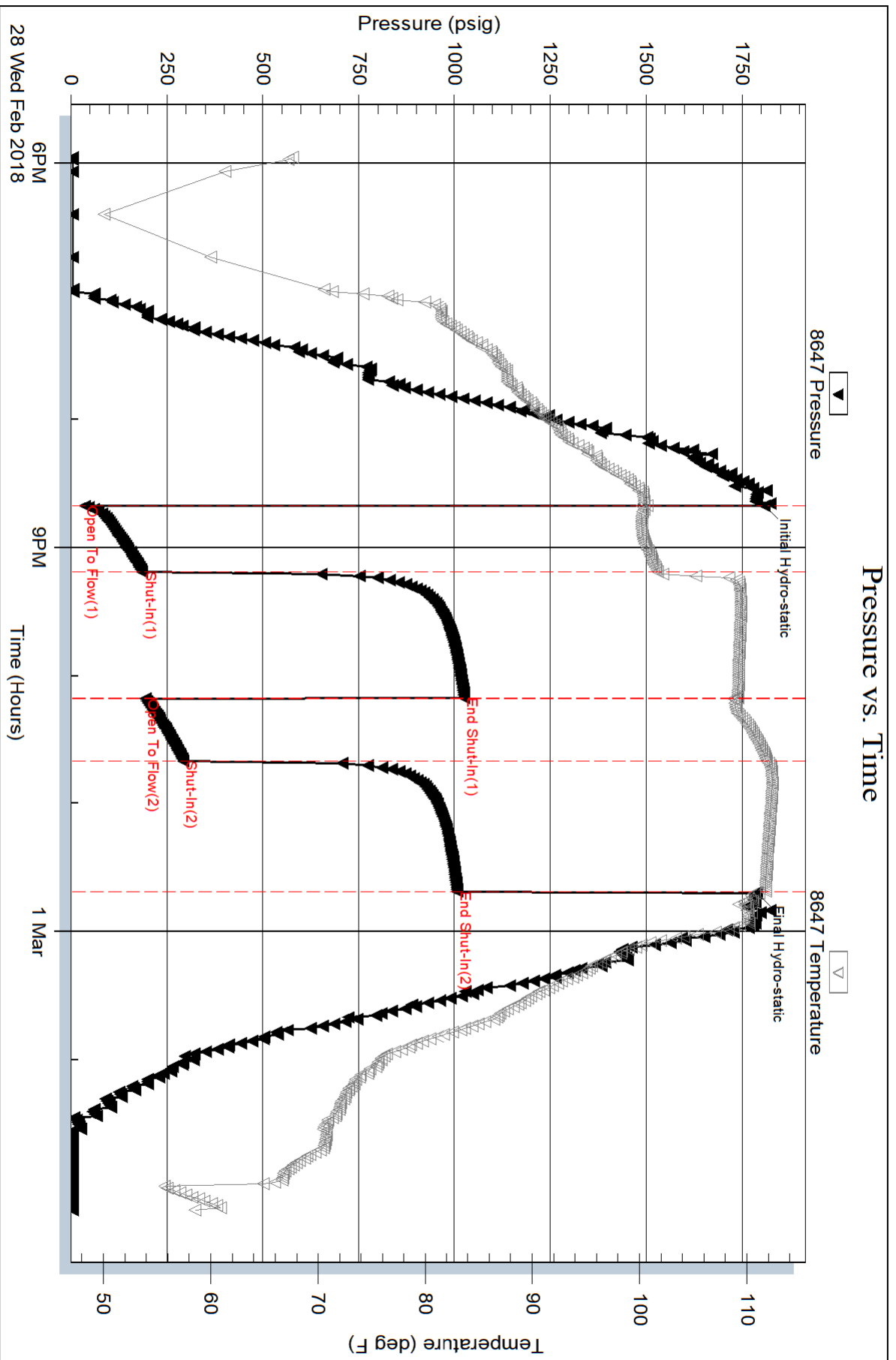
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .562@ 25.9*= 28,000 ppm

Pressure vs. Time

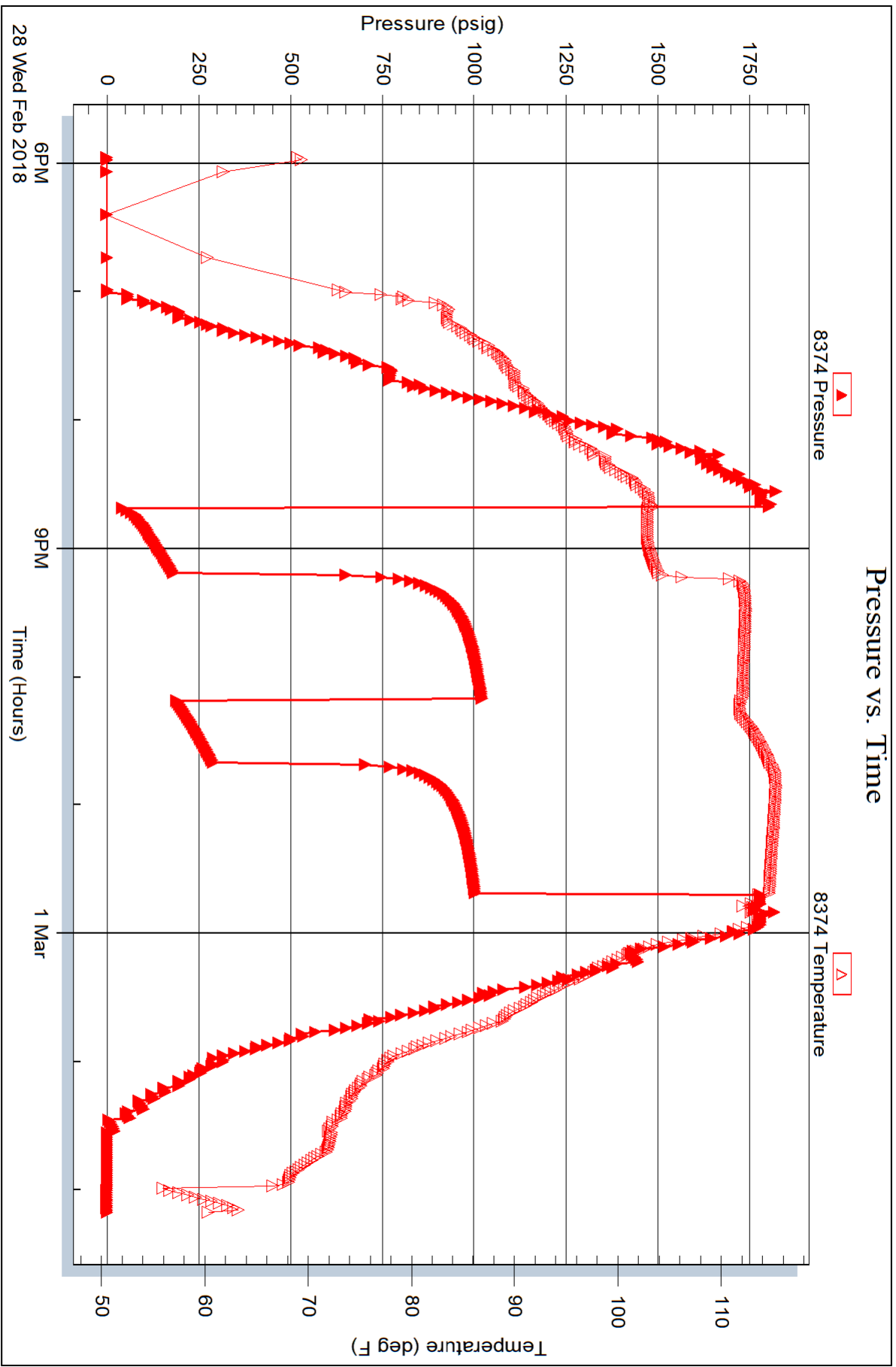


Serial #: 8374

Outside Pckrell Drilling Company Inc.

Duff A 1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 64431

Printed: 2018.03.01 @ 02:42:06



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64432

DST#: 2

Test Start: 2018.03.01 @ 11:38:15

GENERAL INFORMATION:

Formation: **D**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 13:14:00 Tester: Mike Roberts
 Time Test Ended: 16:00:45 Unit No: 81
 Interval: **3738.00 ft (KB) To 3764.00 ft (KB) (TVD)** Reference Elevations: 2679.00 ft (KB)
 Total Depth: 3764.00 ft (KB) (TVD) 2674.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

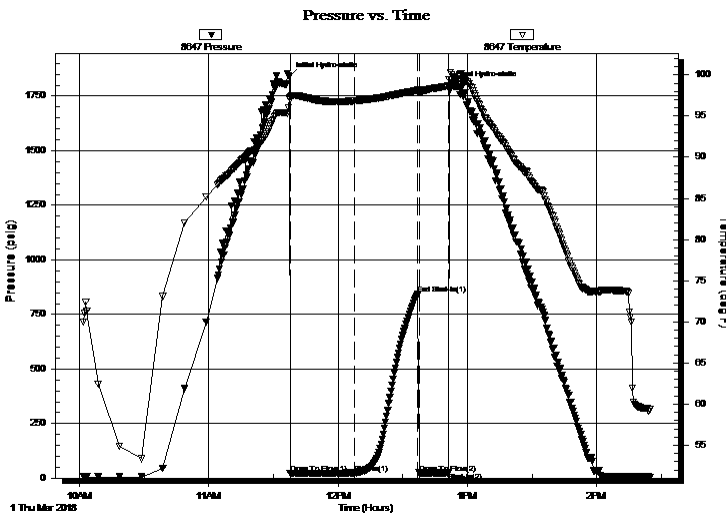
Serial #: 8647

Inside

Press@RunDepth: 23.29 psig @ 3739.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.03.01 End Date: 2018.03.01 Last Calib.: 2018.03.01
 Start Time: 10:02:00 End Time: 14:24:30 Time On Btm: 2018.03.01 @ 11:37:30
 Time Off Btm: 2018.03.01 @ 12:51:30

TEST COMMENT: IF: Built to weak surface blow
 IS: No return blow
 FF: No blow ----pulled test
 FS:

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1839.41	97.27	Initial Hydro-static
1	21.47	96.99	Open To Flow (1)
31	23.29	96.85	Shut-In(1)
60	844.70	98.13	End Shut-In(1)
60	23.98	97.92	Open To Flow (2)
74	24.79	98.64	Shut-In(2)
74	1795.97	99.40	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)



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64432

DST#: 2

Test Start: 2018.03.01 @ 11:38:15

GENERAL INFORMATION:

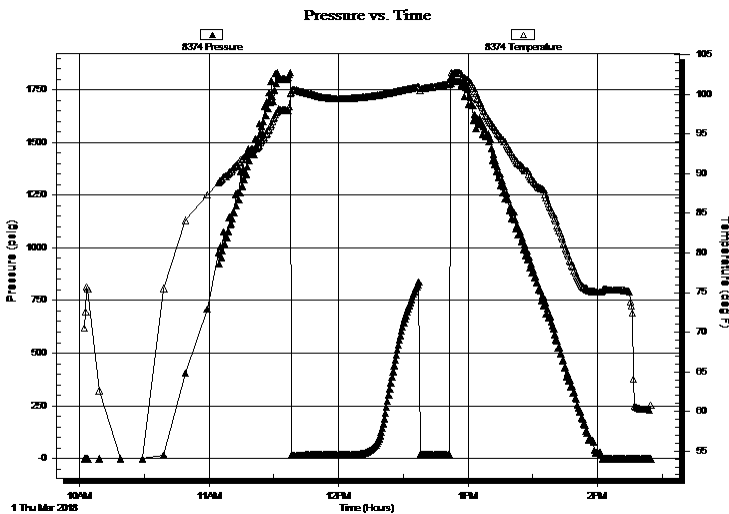
Formation: **D**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:14:00
Time Test Ended: 16:00:45
Interval: 3738.00 ft (KB) To 3764.00 ft (KB) (TVD)
Total Depth: 3764.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)
Tester: Mike Roberts
Unit No: 81
Reference Elevations: 2679.00 ft (KB)
2674.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8374 Outside

Press@RunDepth: psig @ 3739.00 ft (KB)
Start Date: 2018.03.01 End Date: 2018.03.01
Start Time: 10:02:15 End Time: 14:24:45
Capacity: 8000.00 psig
Last Calib.: 2018.03.01
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Built to weak surface blow
IS: No return blow
FF: No blow ---- pulled test
FS:



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

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64432

DST#: 2

Test Start: 2018.03.01 @ 11:38:15

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: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.40 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: 1.00 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

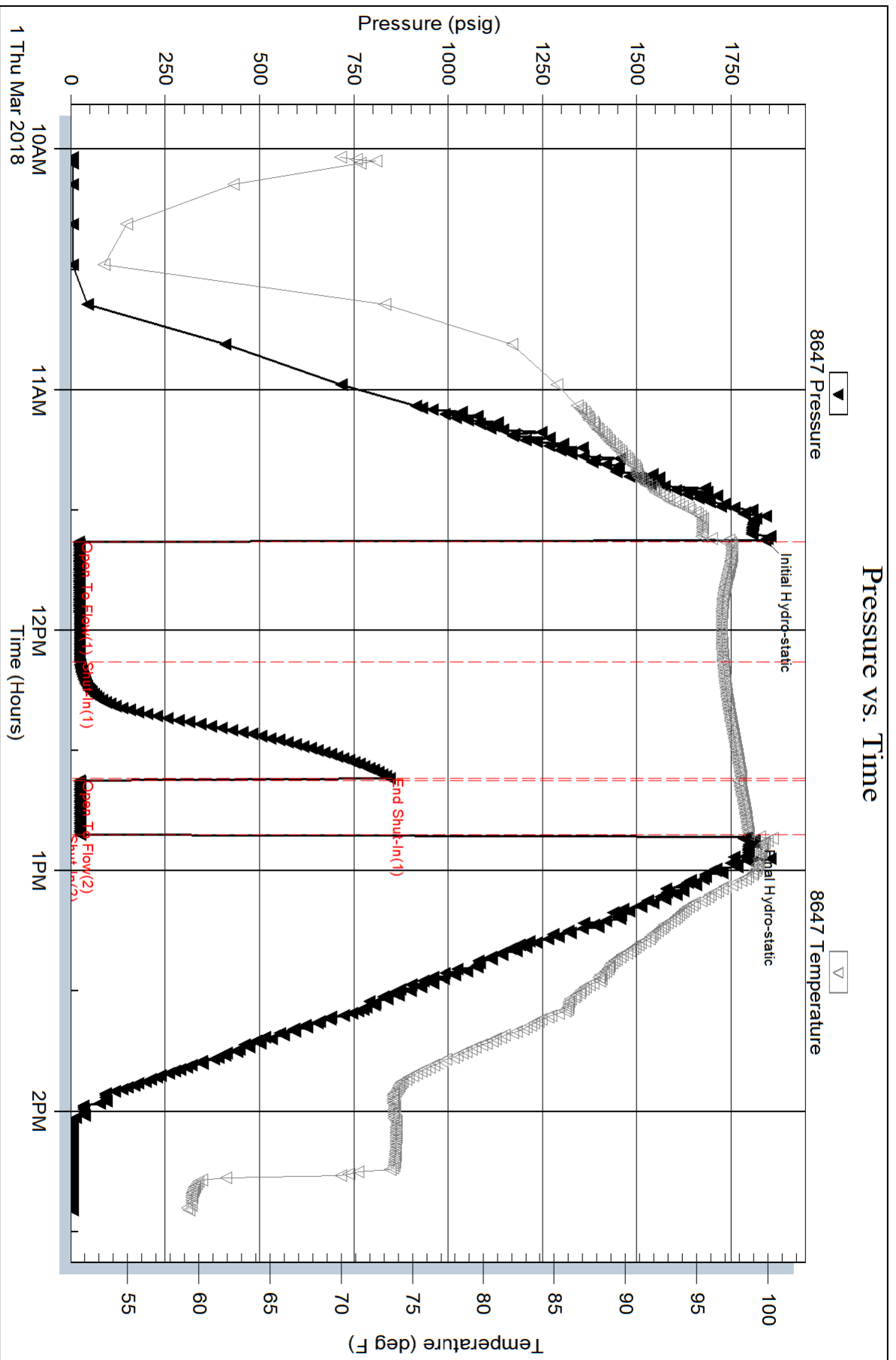
Serial #:

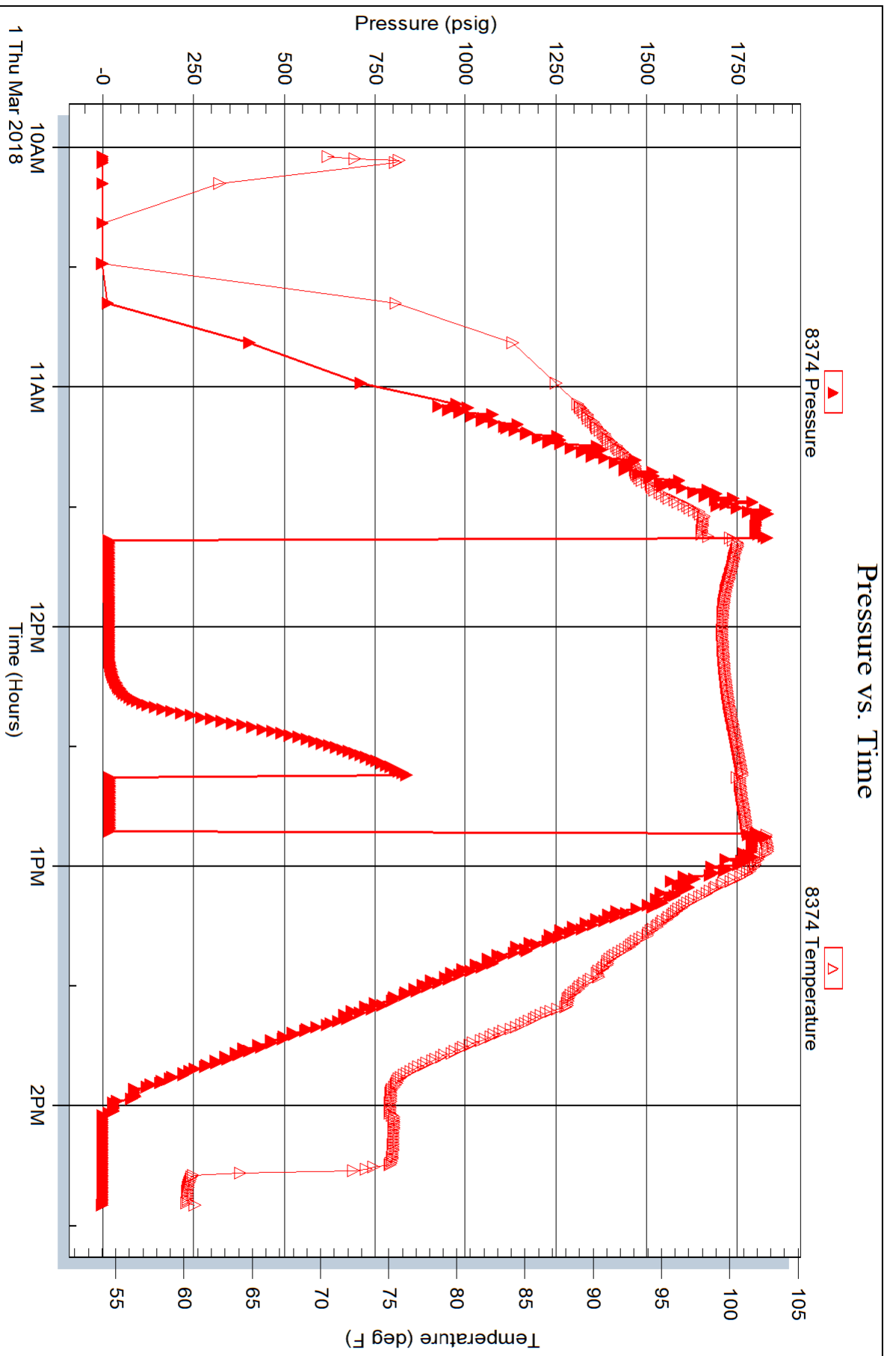
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64433

DST#: 3

Test Start: 2018.03.02 @ 04:03:15

GENERAL INFORMATION:

Formation: **H**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 06:23:15
 Tester: Mike Roberts
 Time Test Ended: 12:00:00
 Unit No: 81
Interval: 3816.00 ft (KB) To 3856.00 ft (KB) (TVD)
 Reference Elevations: 2679.00 ft (KB)
 Total Depth: 3856.00 ft (KB) (TVD)
 2674.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Fair
 KB to GR/CF: 5.00 ft

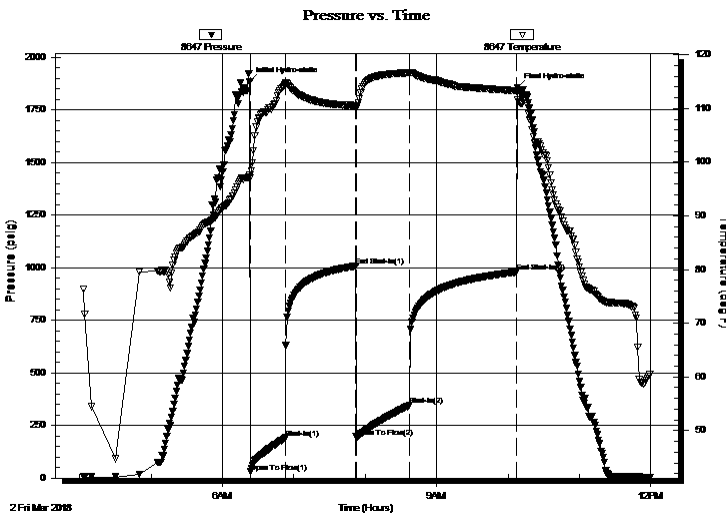
Serial #: 8647

Inside

Press@RunDepth: 345.98 psig @ 3851.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.03.02 End Date: 2018.03.02 Last Calib.: 2018.03.02
 Start Time: 04:03:15 End Time: 12:00:00 Time On Btm: 2018.03.02 @ 06:23:00
 Time Off Btm: 2018.03.02 @ 10:08:15

TEST COMMENT: IF:BOB in 10 min.
 IS:No return blow
 FF:BOB in 14 min
 FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1886.03	97.70	Initial Hydro-static
1	29.67	97.10	Open To Flow (1)
30	191.02	114.45	Shut-In(1)
89	1008.37	110.53	End Shut-In(1)
90	196.31	110.00	Open To Flow (2)
135	345.98	116.62	Shut-In(2)
225	979.82	113.30	End Shut-In(2)
226	1856.21	111.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
121.00	mcw 20%m 80%w (collars)	0.60
310.00	mcw 30%m 70%w	4.35
186.00	w cm 5%w 95%m	2.61
154.00	mud 100%m	2.16

* Recovery from multiple tests

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64433 **DST#: 3**
Test Start: 2018.03.02 @ 04:03:15

GENERAL INFORMATION:

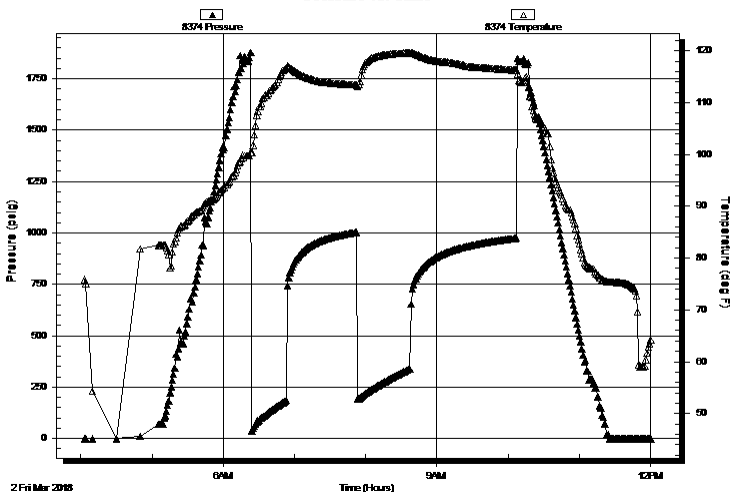
Formation: **H**
Deviated: **No** Whipstock: **ft (KB)** Test Type: **Conventional Bottom Hole (Reset)**
Time Tool Opened: **06:23:15** Tester: **Mike Roberts**
Time Test Ended: **12:00:00** Unit No: **81**
Interval: 3816.00 ft (KB) To 3856.00 ft (KB) (TVD) Reference Elevations: **2679.00 ft (KB)**
Total Depth: **3856.00 ft (KB) (TVD)** **2674.00 ft (CF)**
Hole Diameter: **7.88 inches** Hole Condition: **Fair** KB to GR/CF: **5.00 ft**

Serial #: 8374 Outside

Press@RunDepth: psig @ 3851.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2018.03.02 End Date: 2018.03.02 Last Calib.: 2018.03.02
Start Time: 04:03:15 End Time: 12:00:15 Time On Btm:
Time Off Btm:

TEST COMMENT: IF:BOB in 10 min.
IS:No return blow
FF:BOB in 14 min
FS:No return blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
121.00	mcw 20%m 80%w (collars)	0.60
310.00	mcw 30%m 70%w	4.35
186.00	w cm 5%w 95%m	2.61
154.00	mud 100%m	2.16

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64433

DST#: 3

Test Start: 2018.03.02 @ 04:03:15

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:

17000 ppm

Viscosity: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
121.00	mcw 20%m 80%w (collars)	0.595
310.00	mcw 30%m 70%w	4.348
186.00	w cm 5%w 95%m	2.609
154.00	mud 100%m	2.160

Total Length: 771.00 ft

Total Volume: 9.712 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

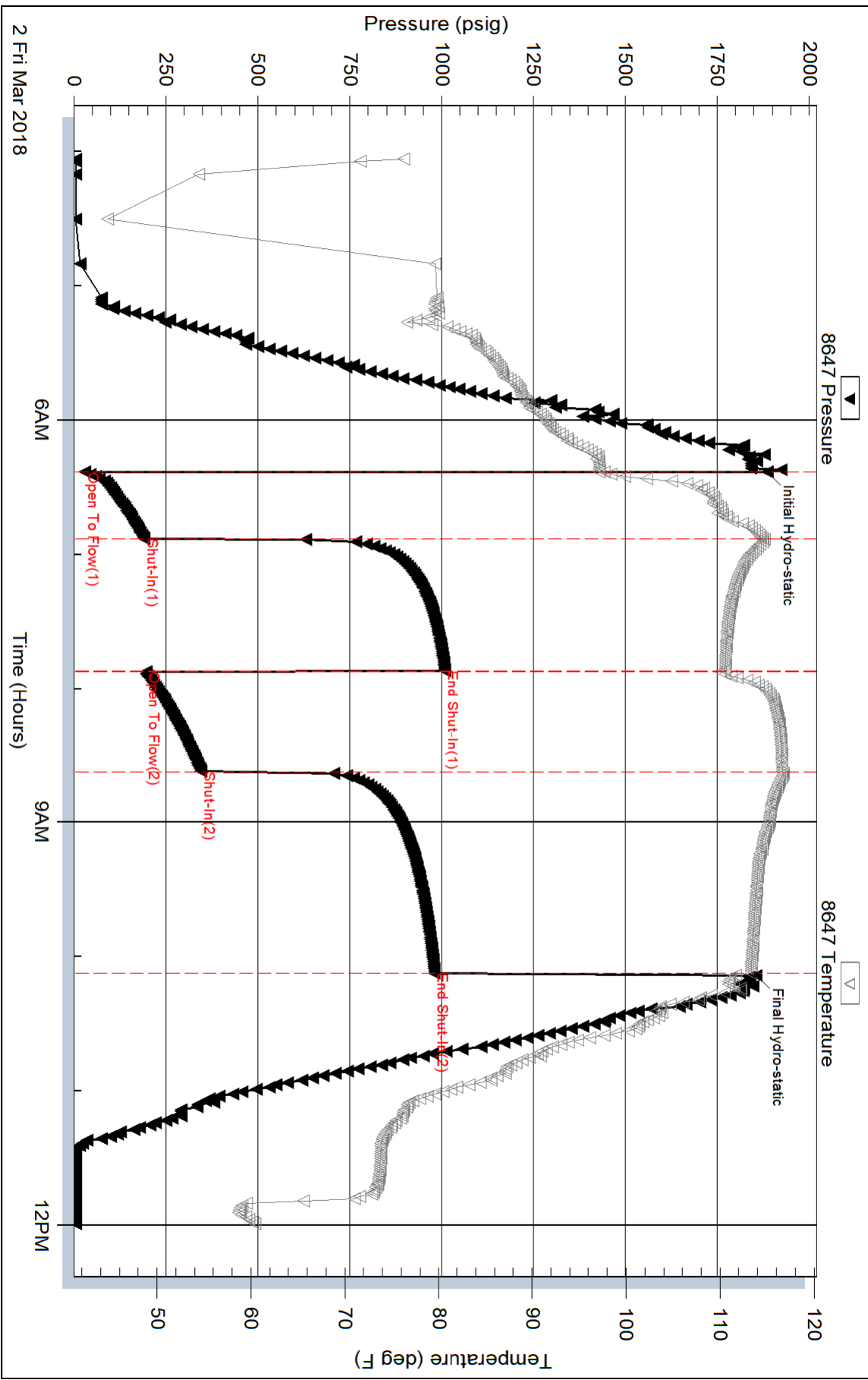
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .518@ 60.7= 17,000 ppm

Pressure vs. Time



Serial #: 8374

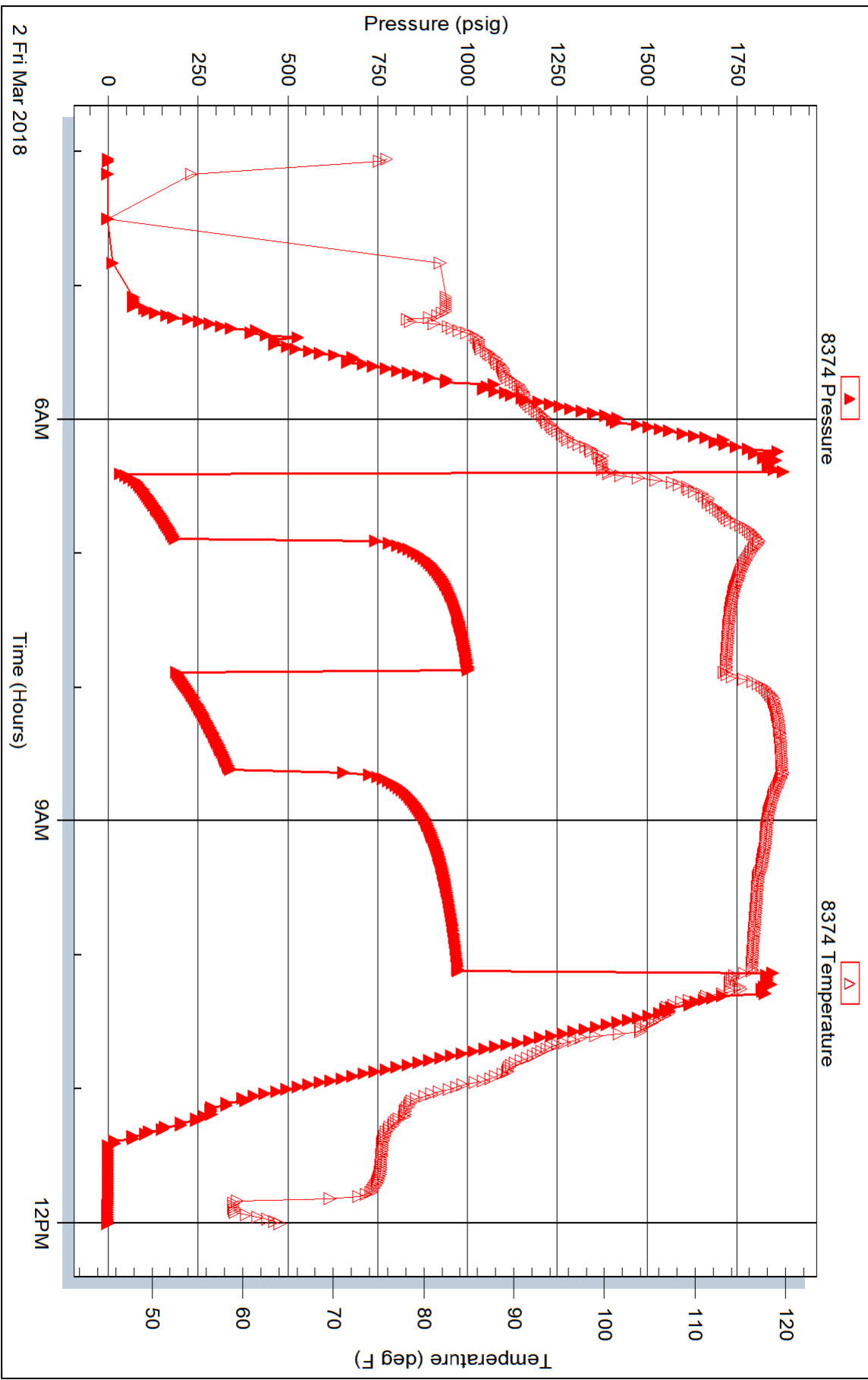
Outside

Pickrell Drilling Company Inc.

Duff A 1

DST Test Number: 3

Pressure vs. Time





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64434

DST#: 4

Test Start: 2018.03.02 @ 21:29:15

GENERAL INFORMATION:

Formation: **I**
 Deviated: **No** Whipstock: **ft (KB)** Test Type: **Conventional Bottom Hole (Reset)**
 Time Tool Opened: **23:50:45** Tester: **Mike Roberts**
 Time Test Ended: **05:33:15** Unit No: **81**
Interval: 3856.00 ft (KB) To 3886.00 ft (KB) (TVD) Reference Elevations: **2679.00 ft (KB)**
 Total Depth: **3886.00 ft (KB) (TVD)** **2674.00 ft (CF)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair** KB to GR/CF: **5.00 ft**

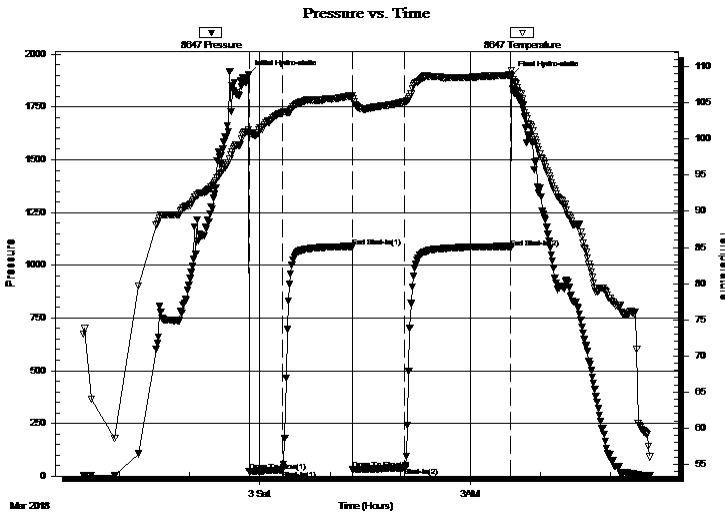
Serial #: 8647

Inside

Press@RunDepth: **39.36 psig @ 3857.00 ft (KB)** Capacity: **8000.00 psig**
 Start Date: **2018.03.02** End Date: **2018.03.03** Last Calib.: **2018.03.03**
 Start Time: **21:29:15** End Time: **05:33:15** Time On Btm: **2018.03.02 @ 23:50:30**
 Time Off Btm: **2018.03.03 @ 03:35:15**

TEST COMMENT: IF: Built to 3/4" blow
 IS: No return blow
 FF: Built to 1/2" blow
 FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1901.31	101.30	Initial Hydro-static
1	22.49	100.74	Open To Flow (1)
29	29.36	103.64	Shut-In(1)
89	1088.82	106.03	End Shut-In(1)
89	30.34	105.51	Open To Flow (2)
134	39.36	105.17	Shut-In(2)
224	1082.31	108.86	End Shut-In(2)
225	1897.28	109.49	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud w ith oil spots 100% m	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64434

DST#: 4

Test Start: 2018.03.02 @ 21:29:15

GENERAL INFORMATION:

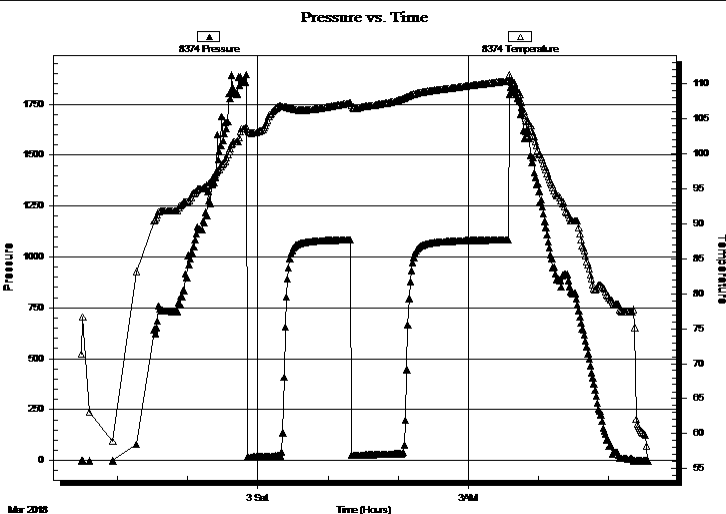
Formation: **I**
 Deviated: **No** Whipstock: **ft (KB)** Test Type: **Conventional Bottom Hole (Reset)**
 Time Tool Opened: 23:50:45 Tester: **Mike Roberts**
 Time Test Ended: 05:33:15 Unit No: **81**
Interval: 3856.00 ft (KB) To 3886.00 ft (KB) (TVD) Reference Elevations: **2679.00 ft (KB)**
 Total Depth: **3886.00 ft (KB) (TVD)** **2674.00 ft (CF)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair** KB to GR/CF: **5.00 ft**

Serial #: 8374

Outside

Press@RunDepth: **psig @ 3857.00 ft (KB)** Capacity: **8000.00 psig**
 Start Date: **2018.03.02** End Date: **2018.03.03** Last Calib.: **1899.12.30**
 Start Time: **21:29:15** End Time: **05:33:30** Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Built to 3/4" blow
 IS: No return blow
 FF: Built to 1/2" blow
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud w ith oil spots 100% m	0.05

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64434

DST#: 4

Test Start: 2018.03.02 @ 21:29:15

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: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.60 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	mud w ith oil spots 100% m	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

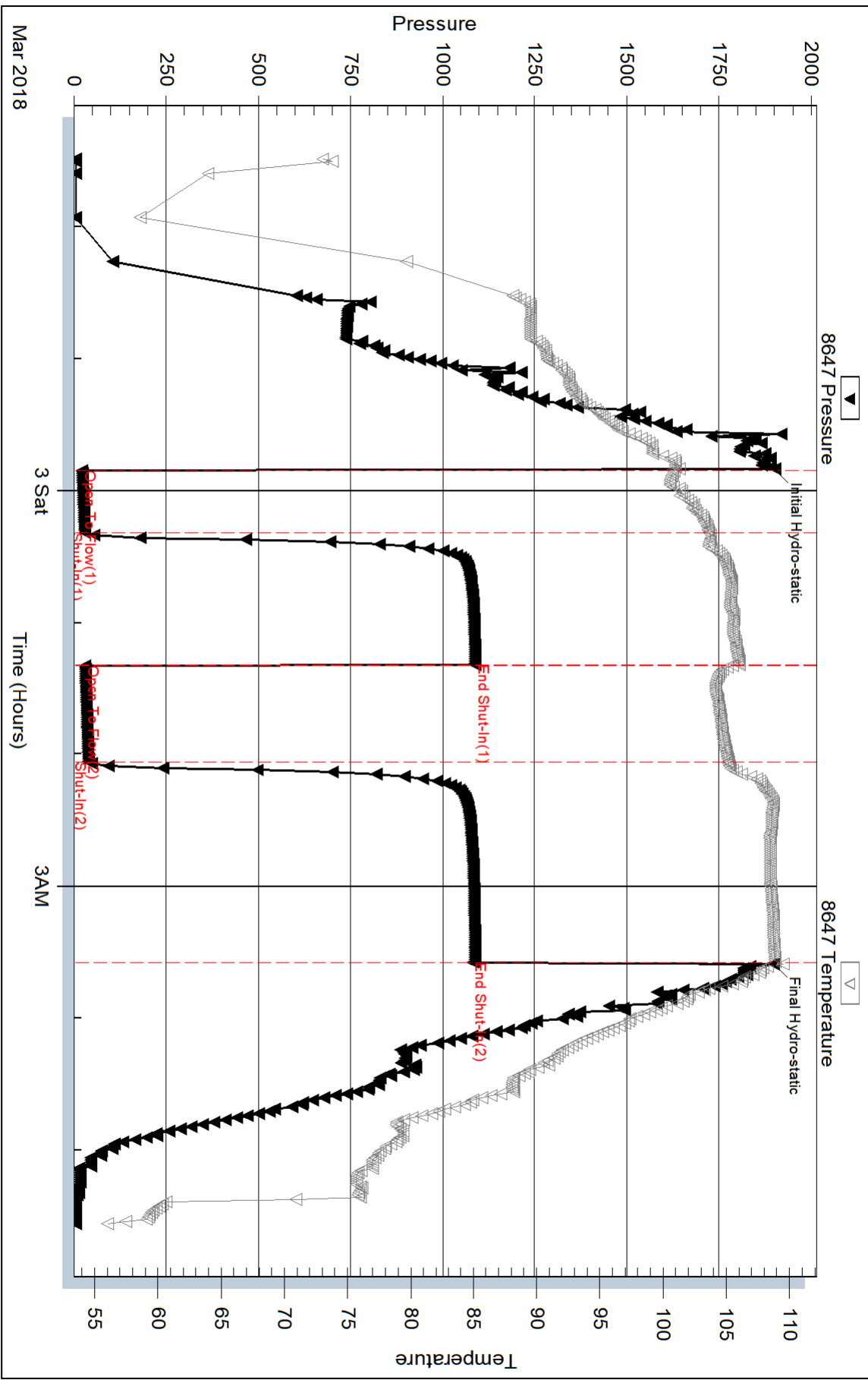
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time

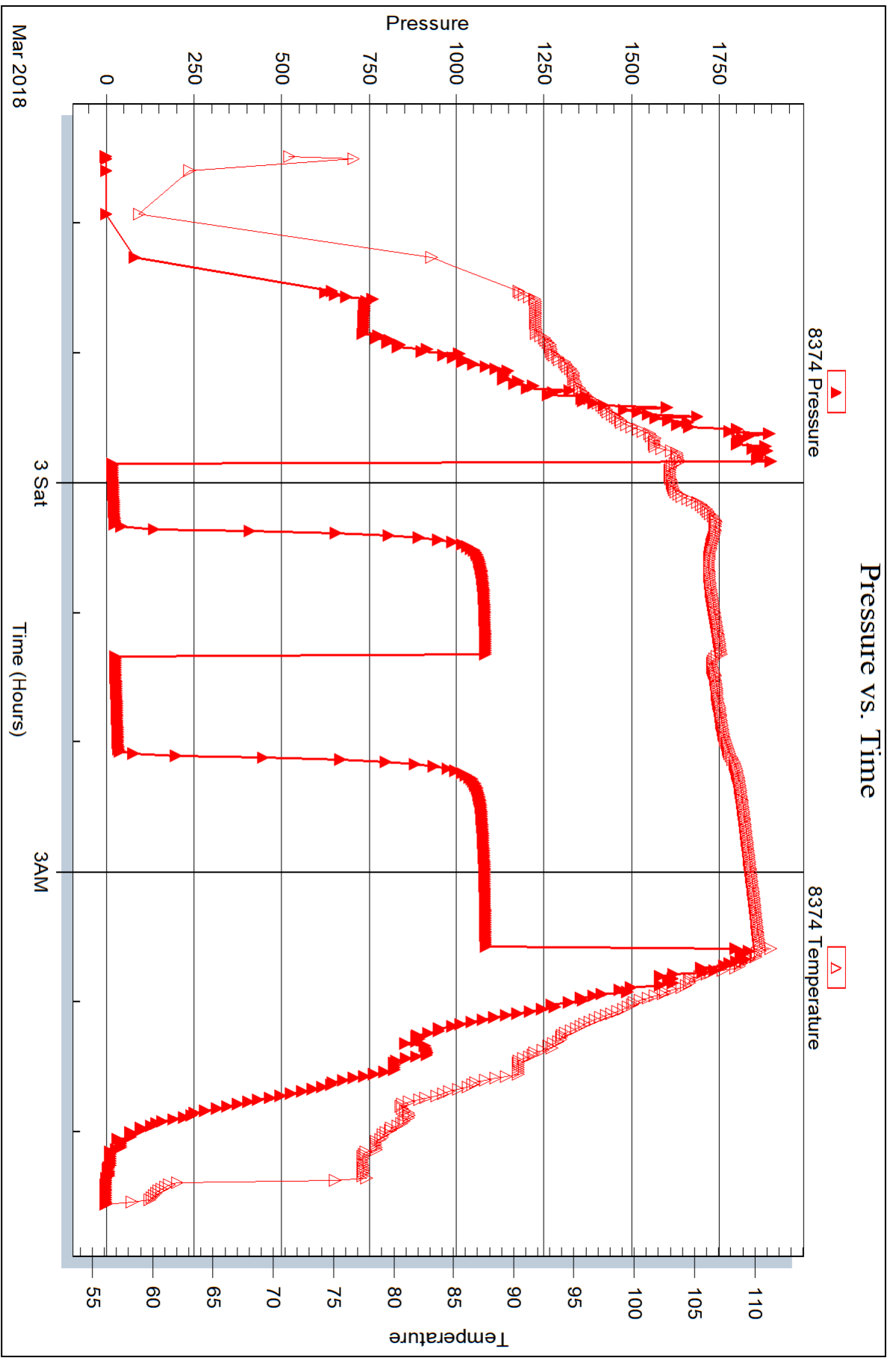


Serial #: 8374

Outside Pckrell Drilling Company Inc.

Duff A 1

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 64434

Printed: 2018.03.03 @ 07:09:51



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64435

DST#: 5

Test Start: 2018.03.03 @ 16:25:15

GENERAL INFORMATION:

Formation: **J-K**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 18:45:30
 Time Test Ended: 22:17:00
 Interval: **3886.00 ft (KB) To 3886.00 ft (KB) (TVD)**
 Total Depth: 3946.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Mike Roberts
 Unit No: 81
 Reference Elevations: 2679.00 ft (KB)
 2674.00 ft (CF)
 KB to GR/CF: 5.00 ft

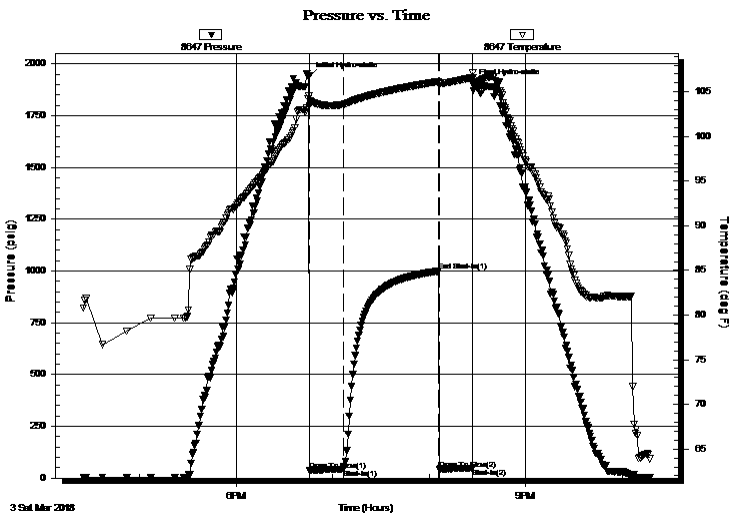
Serial #: 8647

Inside

Press@RunDepth: 43.14 psig @ 3921.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.03.03 End Date: 2018.03.03 Last Calib.: 2018.03.03
 Start Time: 16:25:15 End Time: 22:17:00 Time On Btm: 2018.03.03 @ 18:45:15
 Time Off Btm: 2018.03.03 @ 20:27:00

TEST COMMENT: IF: Built to weak surface blow
 IS: No return blow
 FF: No blow ----- Pulled test
 FS:

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1937.21	104.58	Initial Hydro-static
1	37.53	103.44	Open To Flow (1)
22	43.14	103.60	Shut-In(1)
81	999.02	106.16	End Shut-In(1)
81	44.19	105.73	Open To Flow (2)
102	46.82	106.59	Shut-In(2)
102	1906.17	107.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud 100% m	0.05

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64435

DST#: 5

Test Start: 2018.03.03 @ 16:25:15

GENERAL INFORMATION:

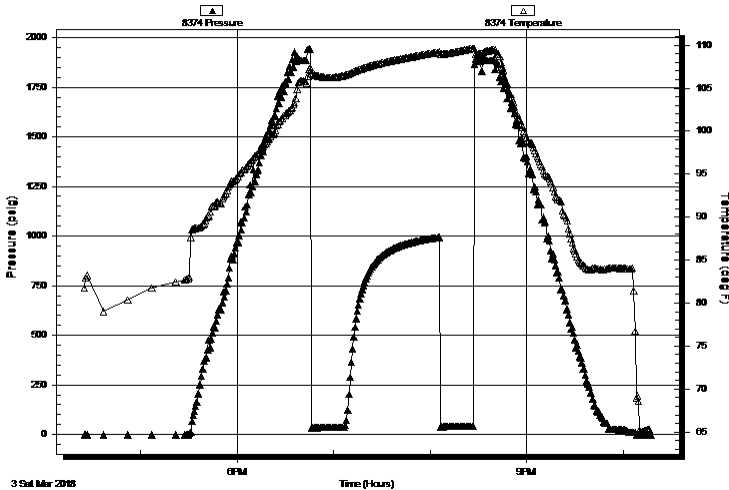
Formation: **J-K**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 18:45:30
Time Test Ended: 22:17:00
Interval: **3886.00 ft (KB) To 3886.00 ft (KB) (TVD)**
Total Depth: 3946.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Reference Elevations: 2679.00 ft (KB)
2674.00 ft (CF)
KB to GR/CF: 5.00 ft
Test Type: Conventional Bottom Hole (Initial)
Tester: Mike Roberts
Unit No: 81

Serial #: 8374 Outside

Press@RunDepth: psig @ 3921.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2018.03.03 End Date: 2018.03.03 Last Calib.: 1899.12.30
Start Time: 16:25:15 End Time: 22:17:15 Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Built to weak surface blow
IS: No return blow
FF: No blow ----- Pulled test
FS:

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud 100%m	0.05

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64435

DST#: 5

Test Start: 2018.03.03 @ 16:25:15

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	mud 100%m	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

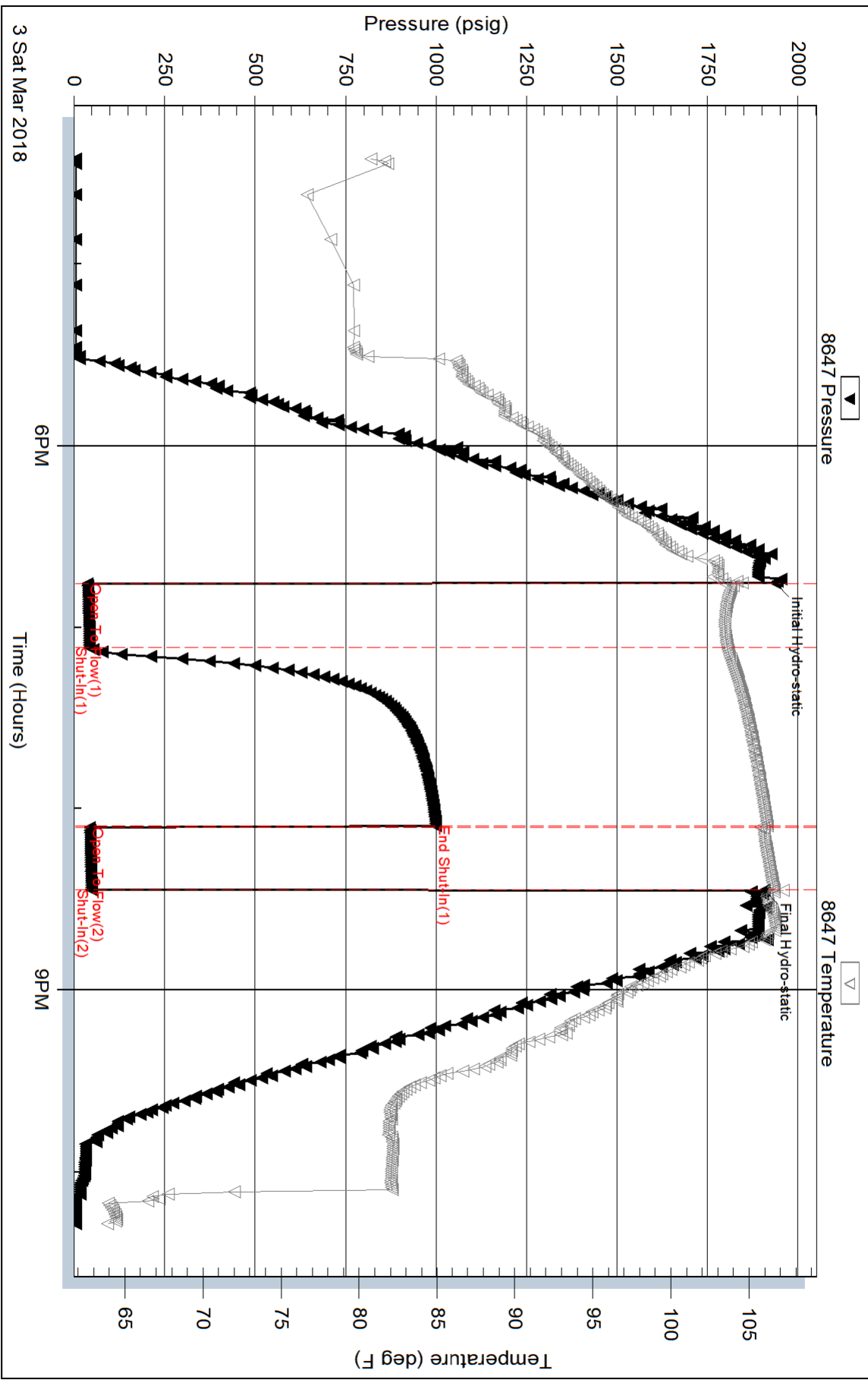
Serial #:

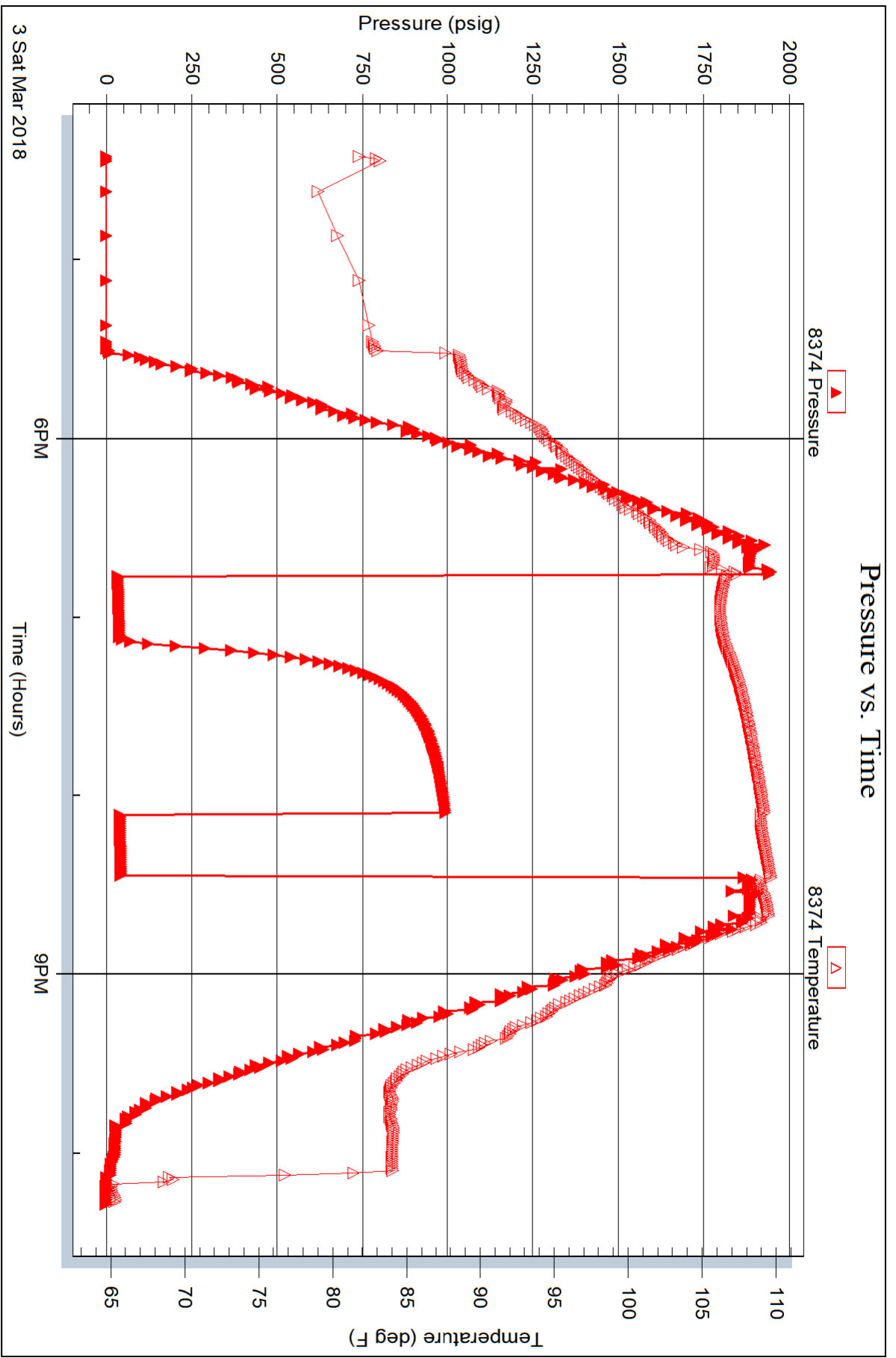
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64436

DST#: 6

Test Start: 2018.03.04 @ 06:25:15

GENERAL INFORMATION:

Formation: **LKC L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:15:30

Time Test Ended: 13:47:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: 3946.00 ft (KB) To 3980.00 ft (KB) (TVD)

Reference Elevations: 2679.00 ft (KB)

Total Depth: 3980.00 ft (KB) (TVD)

2674.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8647

Inside

Press@RunDepth: 116.99 psig @ 3947.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.04

End Date:

2018.03.04

Last Calib.: 2018.03.04

Start Time: 06:25:15

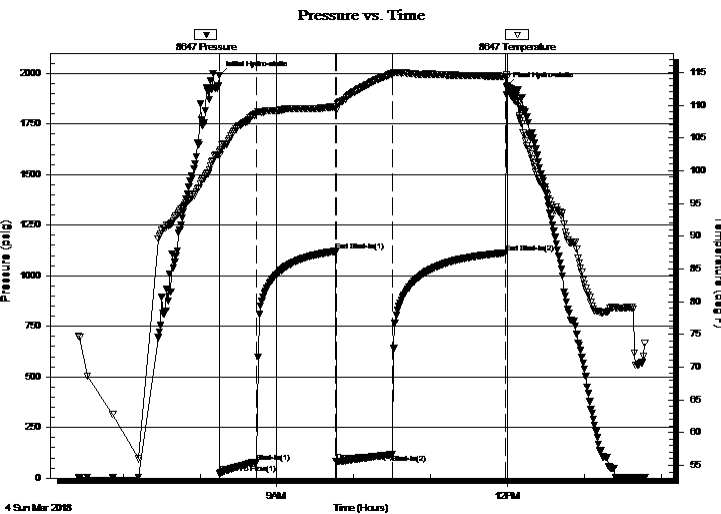
End Time:

13:47:30

Time On Btm: 2018.03.04 @ 08:15:15

Time Off Btm: 2018.03.04 @ 11:59:30

TEST COMMENT: IF: Built to 6 1/2" blow
IS: No return blow
FF: Built to 8" blow
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1988.60	102.92	Initial Hydro-static
1	22.83	102.47	Open To Flow (1)
30	79.57	108.78	Shut-In(1)
91	1121.01	109.80	End Shut-In(1)
91	82.50	109.26	Open To Flow (2)
135	116.99	114.82	Shut-In(2)
224	1113.47	114.41	End Shut-In(2)
225	1935.04	114.25	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
121.00	mcw 8% m 92% w (collars)	0.60
62.00	w cm 50% w 50% m	0.87
20.00	w cm 33% w 67% m	0.28
2.00	Free Oil	0.03

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64436

DST#: 6

Test Start: 2018.03.04 @ 06:25:15

GENERAL INFORMATION:

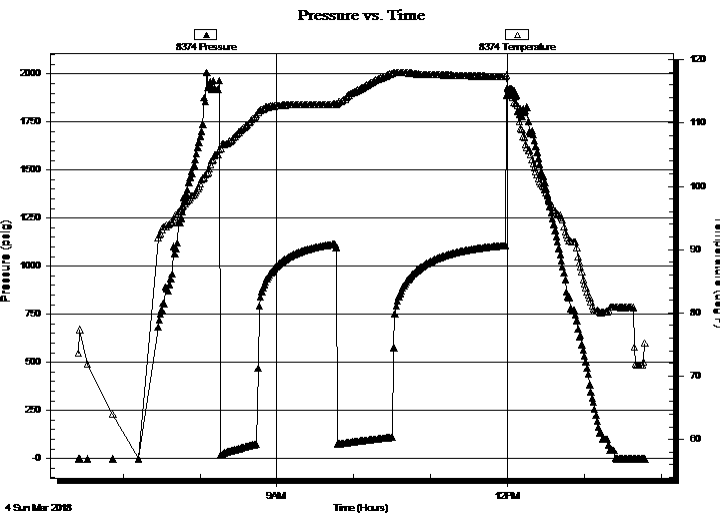
Formation: **LKC L**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 08:15:30
 Time Test Ended: 13:47:30
 Interval: **3946.00 ft (KB) To 3980.00 ft (KB) (TVD)**
 Total Depth: 3980.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 81
 Reference Elevations: 2679.00 ft (KB)
 2674.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8374

Outside

Press@RunDepth: psig @ 3947.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.03.04 End Date: 2018.03.04 Last Calib.: 2018.03.04
 Start Time: 06:25:15 End Time: 13:47:45 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Built to 6 1/2" blow
 IS: No return blow
 FF: Built to 8" blow
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
121.00	mcw 8% m 92% w (collars)	0.60
62.00	w cm 50% w 50% m	0.87
20.00	w cm 33% w 67% m	0.28
2.00	Free Oil	0.03

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64436

DST#: 6

Test Start: 2018.03.04 @ 06:25:15

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 50.00 sec/qt
Water Loss: 6.39 in³
Resistivity: 0.00 ohm.m
Salinity: 4000.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: 26 deg API
Water Salinity: 14000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
121.00	mcw 8%m 92%w (collars)	0.595
62.00	w cm 50%w 50%m	0.870
20.00	w cm 33%w 67%m	0.281
2.00	Free Oil	0.028

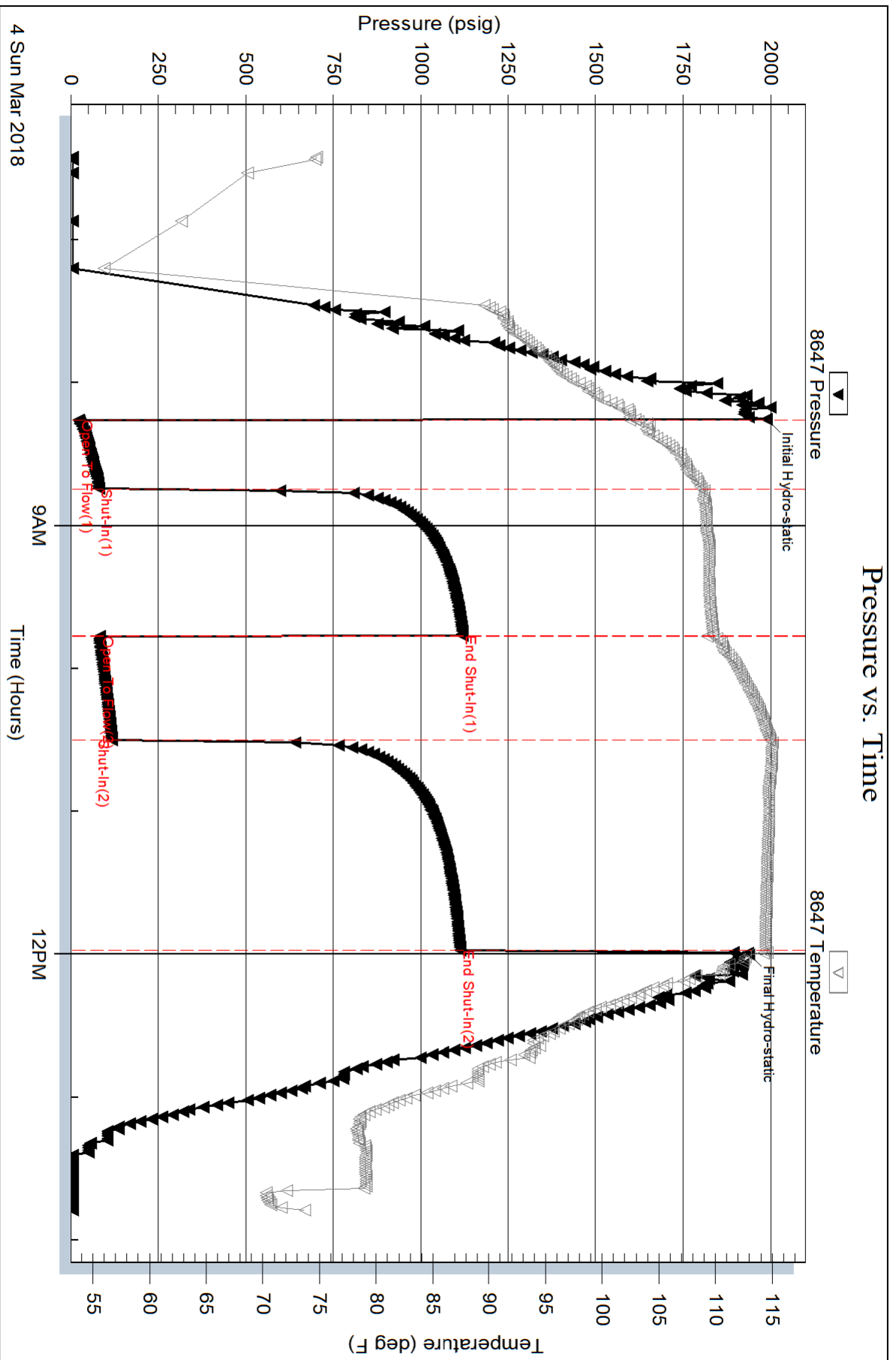
Total Length: 205.00 ft Total Volume: 1.774 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW= .445@77.8*= 14,000 ppm
API= 26@60 corrected to 26

Pressure vs. Time

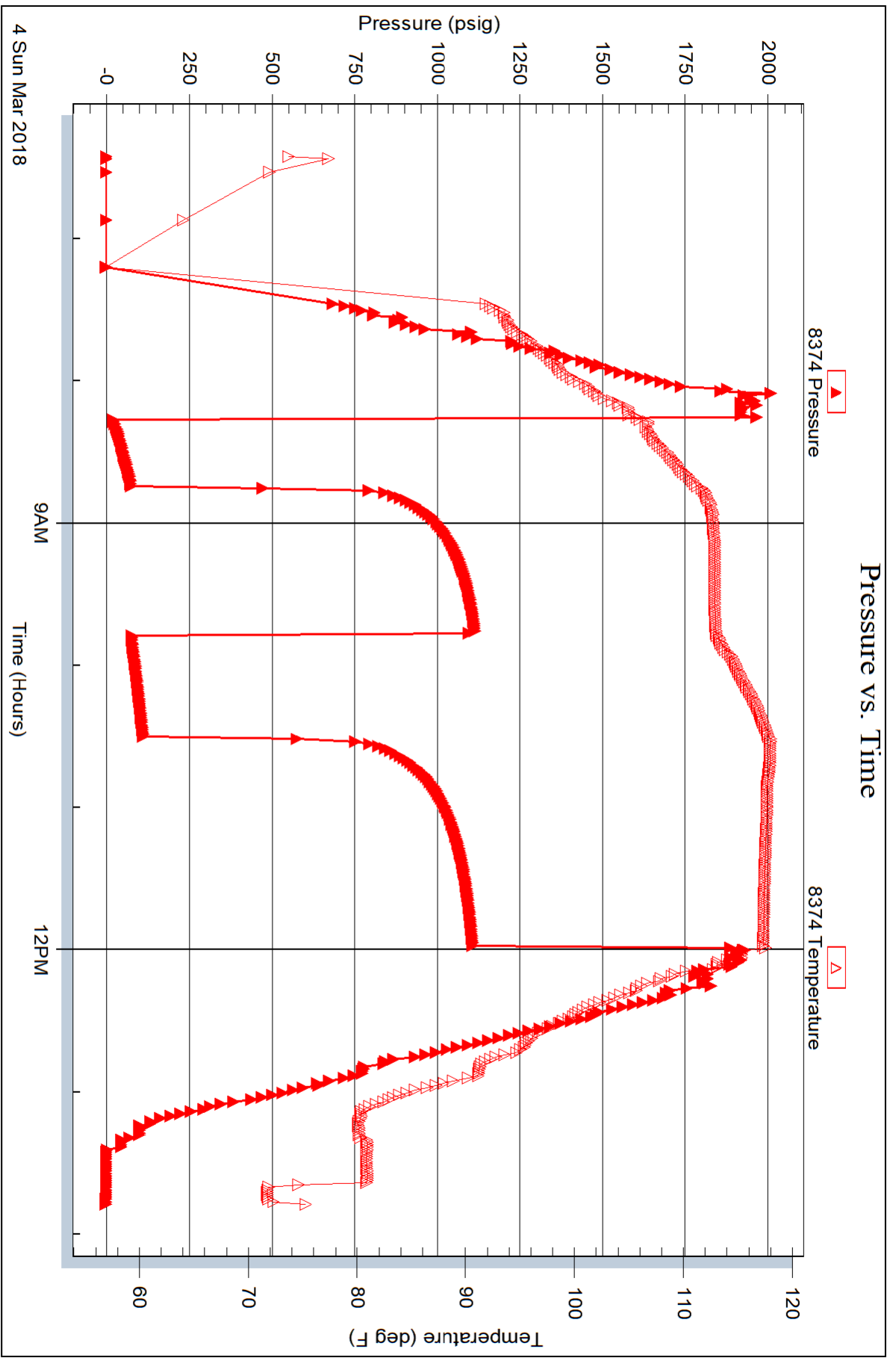


Serial #: 8374

Outside Pckrell Drilling Company Inc.

Duff A 1

DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 64436

Printed: 2018.03.04 @ 16:42:27



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64437

DST#: 7

Test Start: 2018.03.05 @ 09:54:15

GENERAL INFORMATION:

Formation: **Marmaton- Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:25:45

Time Test Ended: 18:21:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: **4030.00 ft (KB) To 4138.00 ft (KB) (TVD)**

Reference Elevations: 2679.00 ft (KB)

Total Depth: 4138.00 ft (KB) (TVD)

2674.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8647

Inside

Press@RunDepth: 99.09 psig @ 4133.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.05

End Date:

2018.03.05

Last Calib.: 2018.03.05

Start Time: 09:54:15

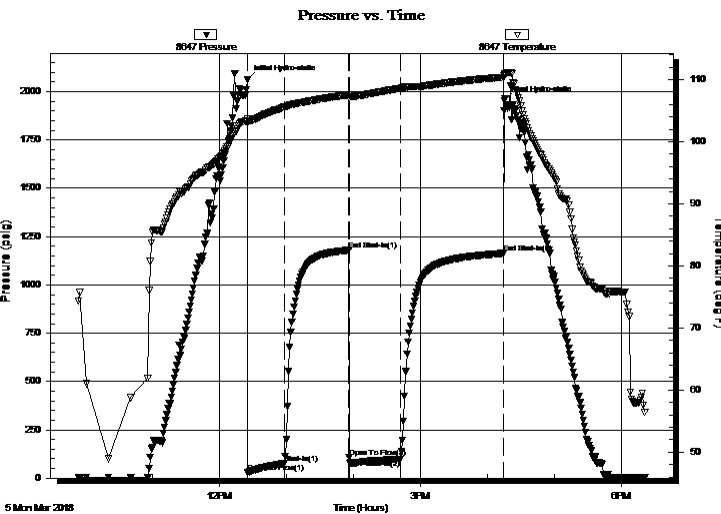
End Time:

18:21:15

Time On Btm: 2018.03.05 @ 12:25:15

Time Off Btm: 2018.03.05 @ 16:15:30

TEST COMMENT: IF: Built to 4" blow
IS: No return blow
FF: Built to 7" blow
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2060.46	103.72	Initial Hydro-static
1	29.00	103.19	Open To Flow (1)
33	76.65	105.57	Shut-In(1)
91	1180.34	107.56	End Shut-In(1)
92	106.40	106.88	Open To Flow (2)
137	99.09	108.58	Shut-In(2)
230	1162.94	110.37	End Shut-In(2)
231	1954.20	110.71	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
121.00	ocm 30%o 70%o (collars)	0.60
40.00	mco 40%o 60%o	0.56
5.00	free oil	0.07

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64437

DST#: 7

Test Start: 2018.03.05 @ 09:54:15

GENERAL INFORMATION:

Formation: **Marmaton- Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:25:45

Time Test Ended: 18:21:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: **4030.00 ft (KB) To 4138.00 ft (KB) (TVD)**

Total Depth: 4138.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2679.00 ft (KB)

2674.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8374 Outside

Press@RunDepth: psig @ 4133.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.05

End Date:

2018.03.05

Last Calib.:

2018.03.05

Start Time: 09:54:15

End Time:

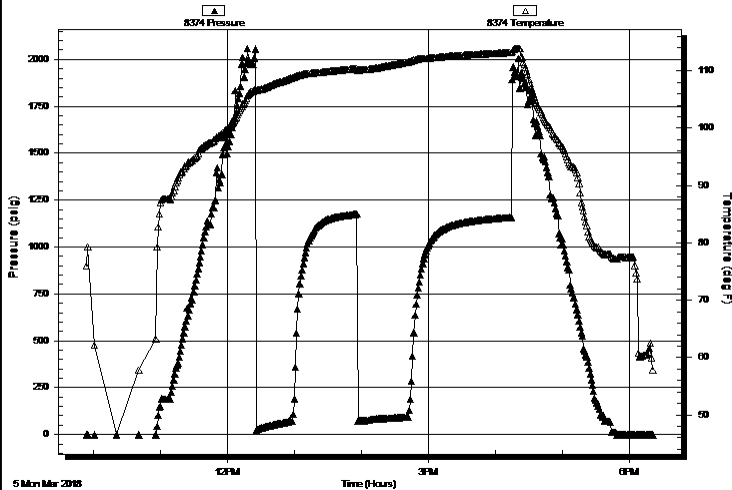
18:21:30

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 4" blow
IS: No return blow
FF: Built to 7" blow
FS: No return blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
121.00	ocm 30%o 70%m (collars)	0.60
40.00	mco 40%m 60%o	0.56
5.00	free oil	0.07

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64437

DST#: 7

Test Start: 2018.03.05 @ 09:54:15

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 47.00 sec/qt

Water Loss: 7.39 in³

Resistivity: 0.00 ohm.m

Salinity: 4400.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length: ft

Cushion Volume: bbl

Gas Cushion Type:

Gas Cushion Pressure: psig

Oil API:

26 deg API

Water Salinity: 0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
121.00	ocm 30%o 70%m (collars)	0.595
40.00	mco 40%m 60%o	0.561
5.00	free oil	0.070

Total Length: 166.00 ft Total Volume: 1.226 bbl

Num Fluid Samples: 0

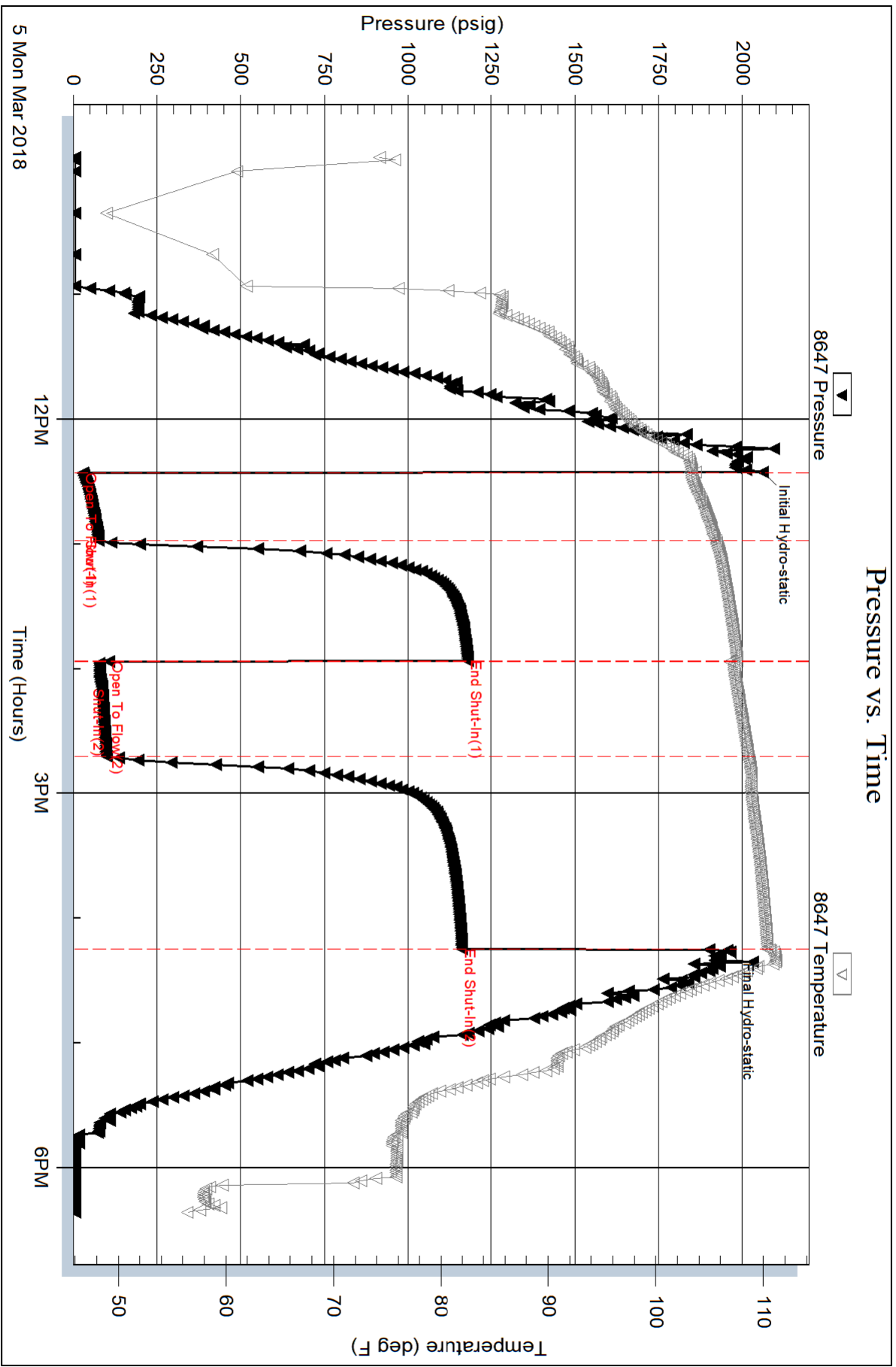
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API= 26@60

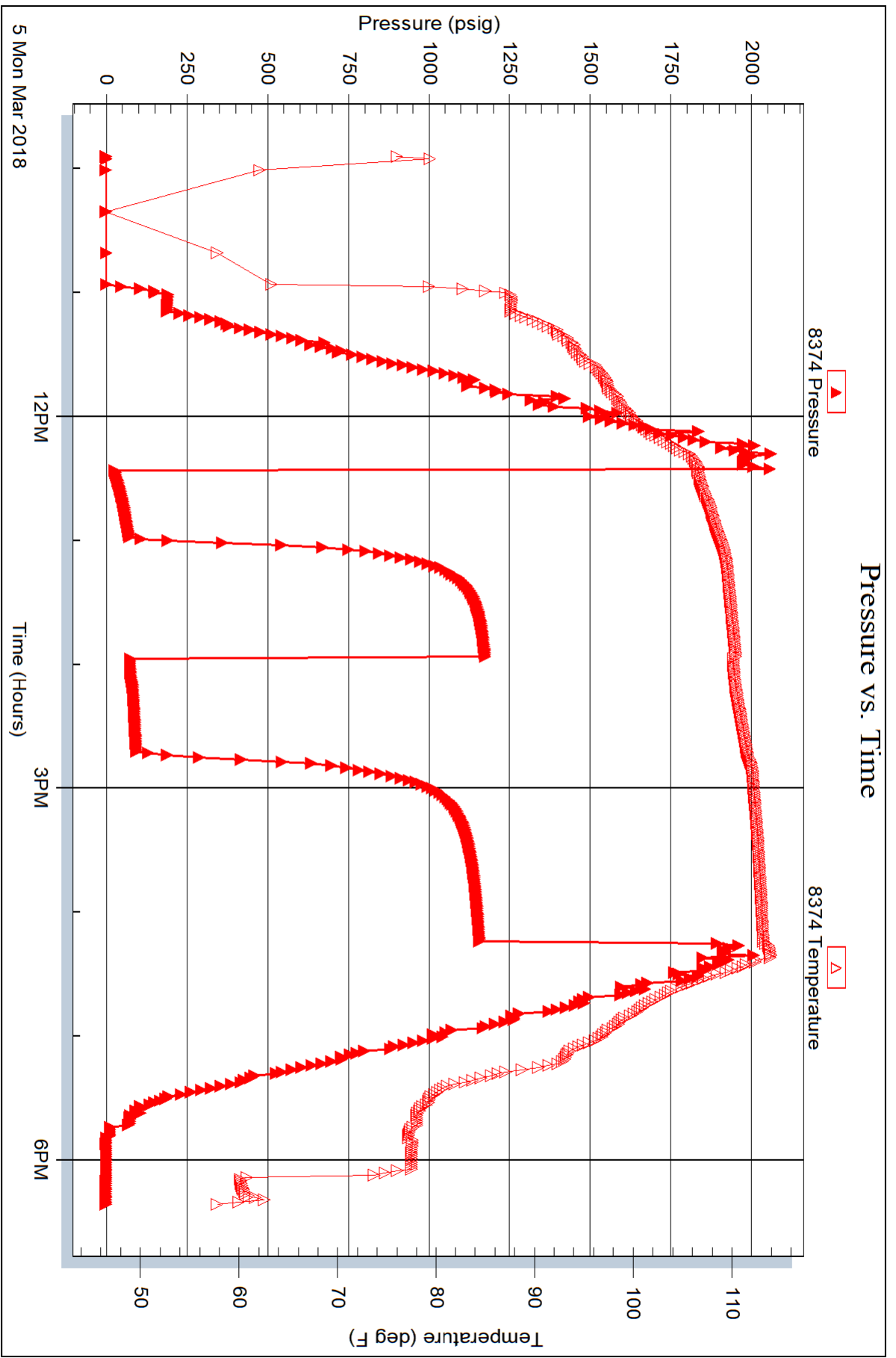


Serial #: 8374

Outside Pckrell Drilling Company Inc.

Duff A 1

DST Test Number: 7



Trilobite Testing, Inc

Ref. No: 64437

Printed: 2018.03.05 @ 22:31:33



DRILL STEM TEST REPORT

Prepared For: **Pickrell Drilling Company Inc.**

100 S. Main STE 505
Wichita KS 67202

ATTN: Aaron Young

Duff A #1

9-15s-32w Logan,KS

Start Date: 2018.03.06 @ 12:02:15

End Date: 2018.03.06 @ 20:41:30

Job Ticket #: 64438 DST #: 8

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

Printed: 2018.03.08 @ 09:15:39



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan,KS

100 S. Main STE 505
Wichita KS 67202

Duff A #1

Job Ticket: 64438

DST#: 8

ATTN: Aaron Young

Test Start: 2018.03.06 @ 12:02:15

GENERAL INFORMATION:

Formation: **Ft.Scott-Cherokee-Jo**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:28:15

Time Test Ended: 20:41:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: **4138.00 ft (KB) To 4262.00 ft (KB) (TVD)**

Reference Elevations: 2679.00 ft (KB)

Total Depth: 4262.00 ft (KB) (TVD)

2674.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8647

Inside

Press@RunDepth: 180.74 psig @ 4237.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.06

End Date:

2018.03.06

Last Calib.:

2018.03.06

Start Time:

12:02:15

End Time:

20:41:30

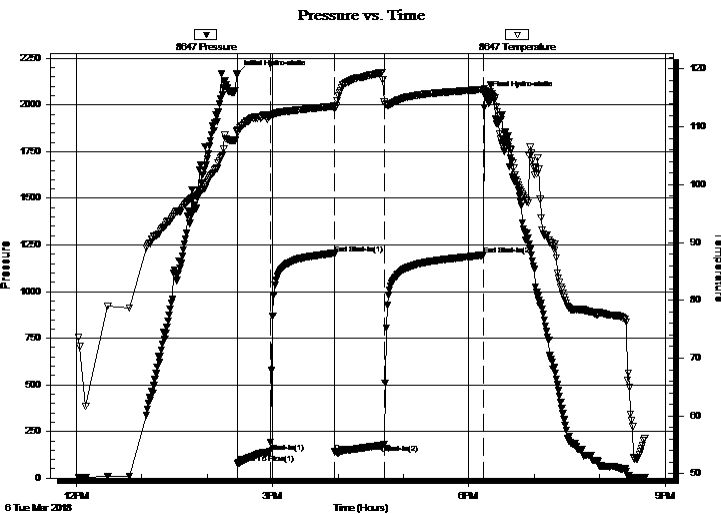
Time On Btm:

2018.03.06 @ 14:27:45

Time Off Btm:

2018.03.06 @ 18:14:45

TEST COMMENT: IF: Built to 8" blowlpro
IS: No return blow
FF: Built to 14" blowlpro
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2165.72	109.55	Initial Hydro-static
1	76.84	109.09	Open To Flow (1)
30	140.76	111.89	Shut-In(1)
89	1200.01	113.56	End Shut-In(1)
90	140.85	113.20	Open To Flow (2)
135	180.74	114.28	Shut-In(2)
226	1196.12	116.48	End Shut-In(2)
227	2053.01	116.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
121.00	ocm 30%o 70%m (collars)	0.60
124.00	ocm 50%o 50%m	1.74
20.00	free oil 100%o	0.28

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan, KS

100 S. Main STE 505
Wichita KS 67202

Duff A #1

ATTN: Aaron Young

Job Ticket: 64438

DST#: 8

Test Start: 2018.03.06 @ 12:02:15

GENERAL INFORMATION:

Formation: **Ft.Scott-Cherokee-Jo**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:28:15

Time Test Ended: 20:41:30

Interval: **4138.00 ft (KB) To 4262.00 ft (KB) (TVD)**

Total Depth: 4262.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Reference Elevations: 2679.00 ft (KB)

2674.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8374

Outside

Press@RunDepth: psig @ 4237.00 ft (KB)

Start Date: 2018.03.06

End Date: 2018.03.06

Start Time: 12:02:15

End Time: 20:41:45

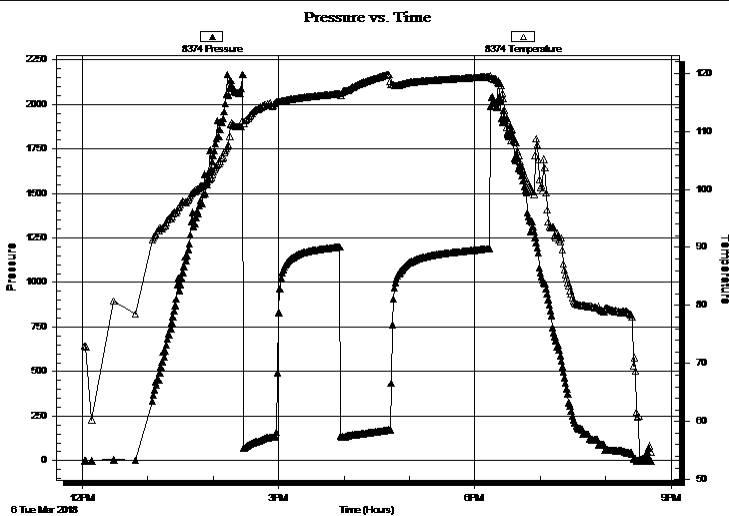
Capacity: 8000.00 psig

Last Calib.: 2018.03.06

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 8" blowlpro
IS: No return blow
FF: Built to 14" blowlpro
FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
121.00	ocm 30%o 70%m (collars)	0.60
124.00	ocm 50%o 50%m	1.74
20.00	free oil 100%o	0.28

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Pickrell Drilling Company Inc.

9-15s-32w Logan,KS

100 S. Main STE 505
Wichita KS 67202

Duff A #1

Job Ticket: 64438

DST#: 8

ATTN: Aaron Young

Test Start: 2018.03.06 @ 12:02:15

Tool Information

Drill Pipe:	Length: 4005.00 ft	Diameter: 3.80 inches	Volume: 56.18 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 121.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 56.78 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4138.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	124.00 ft			
Tool Length:	152.00 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			4111.00	
Shut In Tool	5.00			4116.00	
Hydraulic tool	5.00			4121.00	
Jars	5.00			4126.00	
Safety Joint	3.00			4129.00	
Packer	5.00			4134.00	28.00 Bottom Of Top Packer
Packer	4.00			4138.00	
Stubb	1.00			4139.00	
Perforations	2.00			4141.00	
Change Over Sub	1.00			4142.00	
Drill Pipe	94.00			4236.00	
Change Over Sub	1.00			4237.00	
Recorder	0.00	8647	Inside	4237.00	
Recorder	0.00	8374	Outside	4237.00	
Perforations	20.00			4257.00	
Bullnose	5.00			4262.00	124.00 Bottom Packers & Anchor
Total Tool Length:	152.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan,KS

100 S. Main STE 505
Wichita KS 67202

Duff A #1

Job Ticket: 64438

DST#: 8

ATTN: Aaron Young

Test Start: 2018.03.06 @ 12:02:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

33 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.15 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3300.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
121.00	ocm 30%o 70%m (collars)	0.595
124.00	ocm 50%o 50%m	1.739
20.00	free oil 100%o	0.281

Total Length: 265.00 ft Total Volume: 2.615 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API= 31@ 40 corrected to 33 @ 60

Serial #: 8647

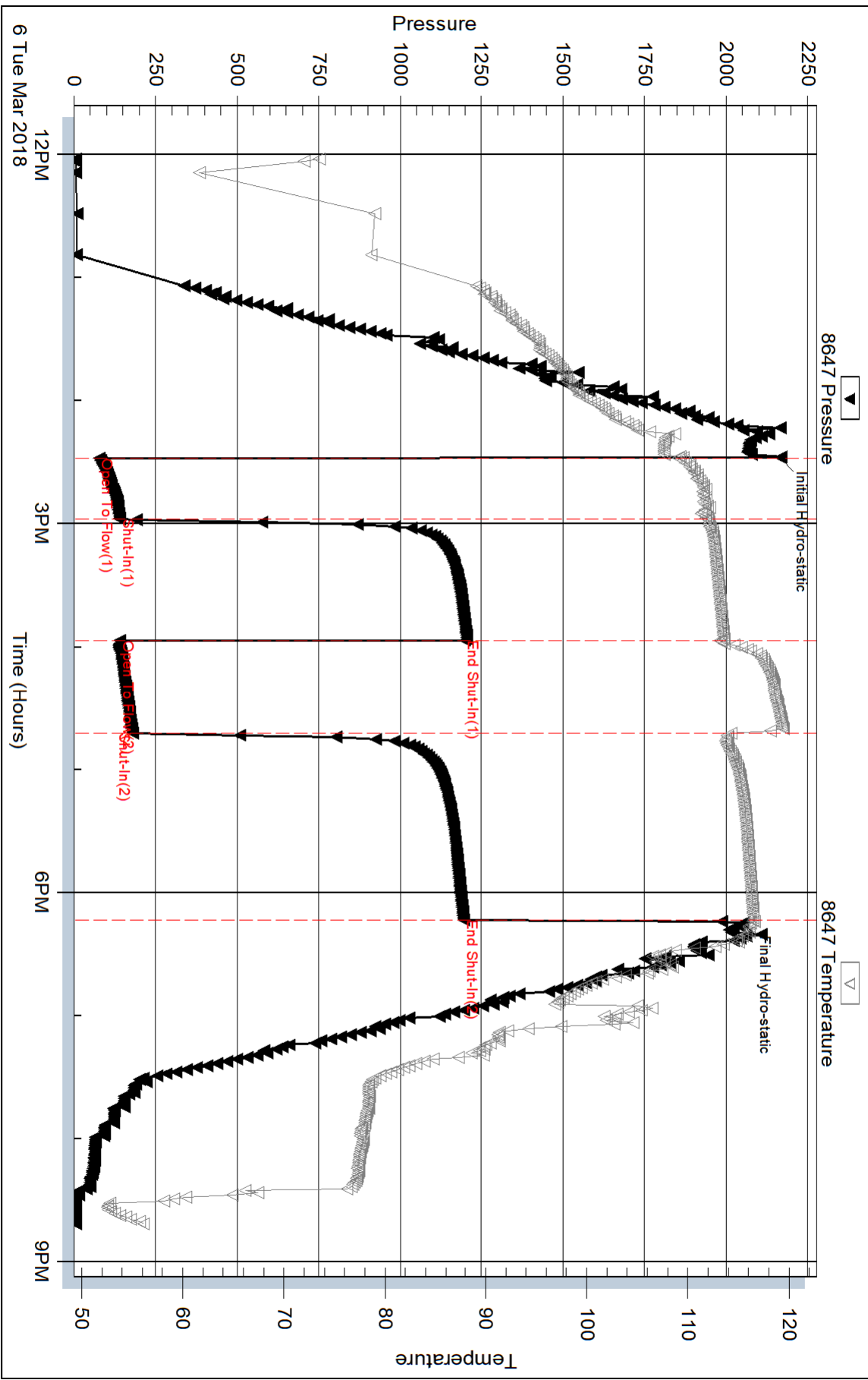
Inside

Pickrell Drilling Company Inc.

Duff A #1

DST Test Number: 8

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 64438

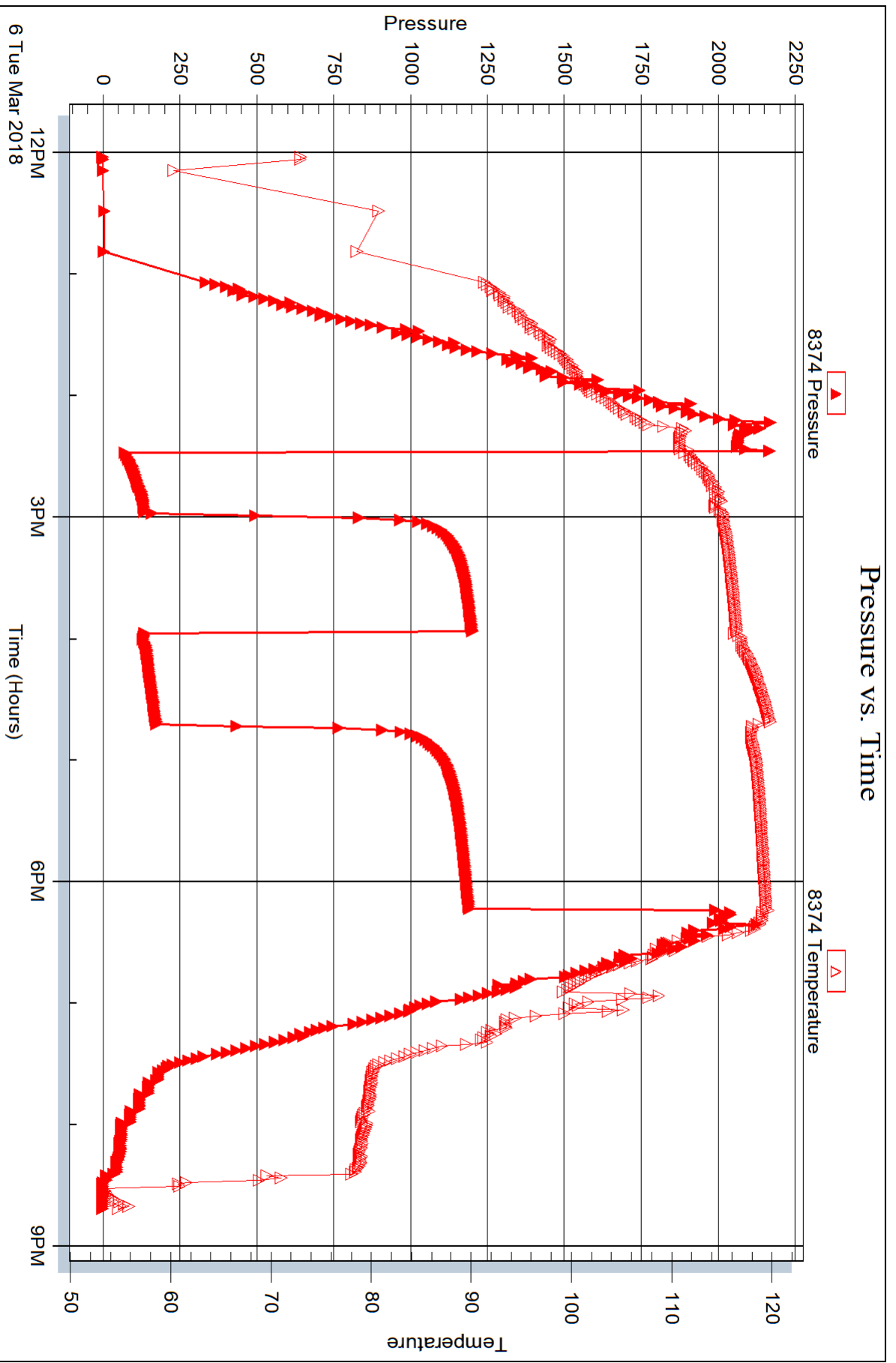
Printed: 2018.03.08 @ 09:15:40

Serial #: 8374

Outside Pckrell Drilling Company Inc.

Duff A #1

DST Test Number: 8





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64439

DST#: 9

Test Start: 2018.03.07 @ 08:35:15

GENERAL INFORMATION:

Formation: **Lower Johnson -Morro**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:29:00

Time Test Ended: 16:37:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: 4262.00 ft (KB) To 4302.00 ft (KB) (TVD)

Reference Elevations: 2679.00 ft (KB)

Total Depth: 4262.00 ft (KB) (TVD)

2674.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8647

Inside

Press@RunDepth: 394.13 psig @ 4297.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.07 End Date: 2018.03.07

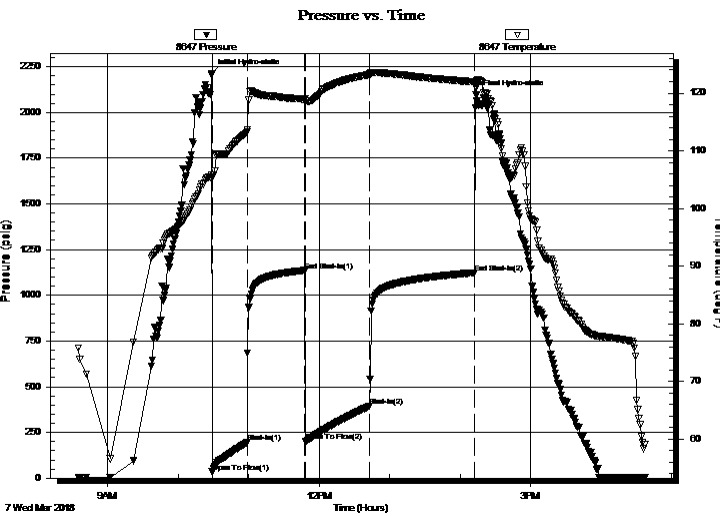
Last Calib.: 2018.03.07

Start Time: 08:35:15 End Time: 16:37:15

Time On Btm: 2018.03.07 @ 10:28:45

Time Off Btm: 2018.03.07 @ 14:13:30

TEST COMMENT: IF: Built to 29.5" ...lpro
IS: No return blow
FF: Built to 42" lpro
FS: No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2213.84	105.84	Initial Hydro-static
1	33.88	105.27	Open To Flow (1)
31	196.34	113.35	Shut-In(1)
80	1136.00	118.93	End Shut-In(1)
80	200.70	118.35	Open To Flow (2)
135	394.13	123.21	Shut-In(2)
224	1122.90	121.94	End Shut-In(2)
225	2094.80	120.91	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
431.00	mcw 20% m 80% w (collars 121 ft)	4.94
248.00	mcw 50% m 50% w	3.48
129.00	ocw m 10% o 10% w 80% m	1.81

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505
Wichita KS
67202
ATTN: Aaron Young

Duff A 1

Job Ticket: 64439

DST#: 9

Test Start: 2018.03.07 @ 08:35:15

GENERAL INFORMATION:

Formation: **Lower Johnson -Morro**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:29:00

Time Test Ended: 16:37:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 81

Interval: **4262.00 ft (KB) To 4302.00 ft (KB) (TVD)**

Total Depth: 4262.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2679.00 ft (KB)

2674.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8374 Outside

Press@RunDepth: psig @ 4297.00 ft (KB)

Start Date: 2018.03.07

End Date:

2018.03.07

Start Time: 08:35:15

End Time:

16:37:15

Capacity: 8000.00 psig

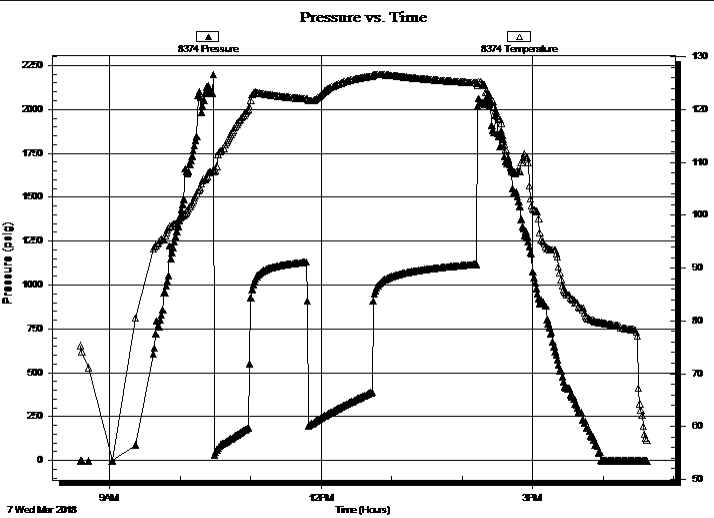
Last Calib.:

2018.03.07

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:Built to 29.5" ...lpro
IS:No return blow
FF:Built to 42" lpro
FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
431.00	mcw 20% m 80% w (collars 121 ft)	4.94
248.00	mcw 50% m 50% w	3.48
129.00	ocw m 10% o 10% w 80% m	1.81

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Company Inc.

9-15s-32w Logan Co KS

100 S. Main STE 505

Duff A 1

Wichita KS

Job Ticket: 64439

DST#: 9

67202

ATTN: Aaron Young

Test Start: 2018.03.07 @ 08:35:15

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:

25000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3300.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
431.00	mcw 20%m 80%w (collars 121 ft)	4.944
248.00	mcw 50%m 50%w	3.479
129.00	ocw m 10%o 10%w 80%m	1.810

Total Length: 808.00 ft Total Volume: 10.233 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

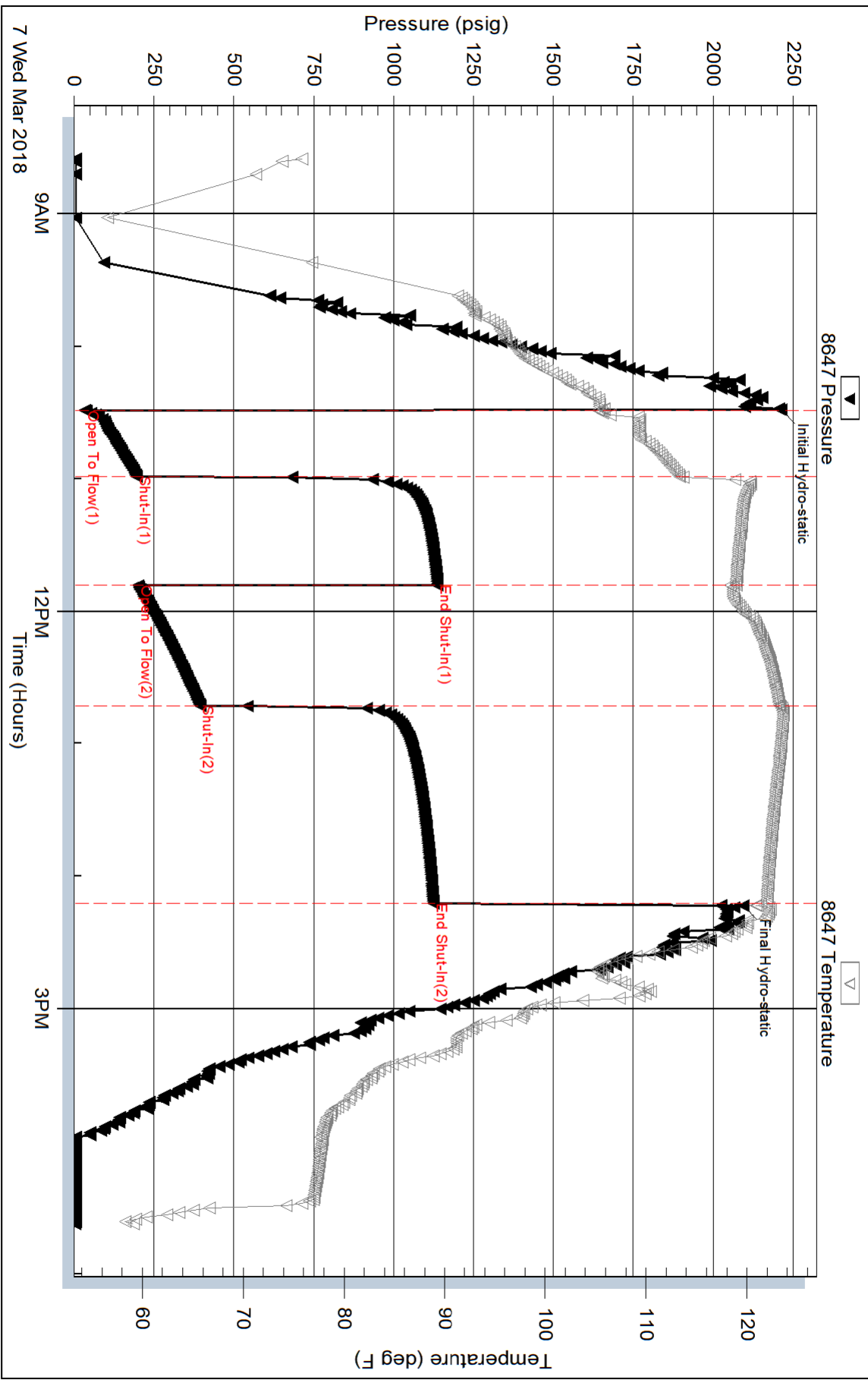
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .343@60.8*= 25,000 ppm

Pressure vs. Time



Serial #: 8374

Outside

Pickrell Drilling Company Inc.

Duff A 1

DST Test Number: 9

