

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

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	Murfin Drilling Co., Inc.
Well Name	KEN 4-17
Doc ID	1417299

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Ken #4-17
 330 FNL 1970 FWL
 Sec. 17-1S-35W
 3189' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	3089	+100	-11	3084	+105	-6
B/Anhydrite	3124	+65	-11	3118	+71	-5
Foraker	3700	-511	-11	3693	-504	-4
Topeka	3907	-718	-6	3902	-713	-1
Oread	4017	-828	-8	4011	-822	-2
Lansing	4125	-936	-8	4120	-931	-3
Stark				4335	-1146	-5
Mound City	4387	-1198	-7	4388	-1199	-8
RTD	4500	-1311				
LTD				4494	-1305	

ERICKSON WELLSITE GEOLOGY



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

Well Name: Ken #4-17
Location: E2 NW NE NW Sec 17 T1S R35W
License Number: 15-153-21207
Spud Date: 4/30/2018
Surface Coordinates: 330'FNL & 1970' FWL
Region: Rawlins County, KS
Drilling Completed: 5/9/2018

Bottom Hole Coordinates: Surface casing: 8 5/8" @ 302' Production casing: 5 1/2" @ 4496'

Ground Elevation (ft): 3184
Logged Interval (ft): 3590
Formation:
Type of Drilling Fluid: Chemical Mud

K.B. Elevation (ft): 3189
To: TD
Total Depth (ft): 4500

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

OPERATOR

Company: Murfin Drilling Co., Inc.
Address: 250 N Water, Suite 300
Wichita, KS 67202

GEOLOGIST

Name: Clayton Erickson
Company: Erickson Wellsite Geology
Address: 402 Palmer Street
P.O. Box 294
Loomis, NE 68958

DSTs

- DST #1 3665-3710 30-60-30-60; Hydro: 1750-1723 IFF: 19-20 ISIP: 1070 FFP: 21-24 FSIP: 1016; Rec: 5' mud; BHT: 119 F; IF: 3/4" ISI: dead FF: dead FSI: dead
- DST #2 3825-3920 30-60-30-60; Hydro: 1874-1838 IFF: 59-62 ISIP: 825 FFP: 63-63 FSIP: 723; Rec: 70' mud; BHT: 120 F; IF: 1/4" ISI: dead FF: dead FSI: dead
- DST #3 4066-4197 30-60-30-60; Hydro: 2014-1967 IFF: 23-25 ISIP: 427 FFP: 26-27 FSIP: 295; Rec: 10' mud; BHT: 124 F; IF: 1/2" ISI: dead FF: dead FSI: dead
- DST #4 4191-4270 30-60-60-90; Hydro: 2102-2051 IFF: 24-28 ISIP: 159 FFP: 57-87 FSIP: 178; Rec: 150' 5%g 12%o 83%w; BHT: 128 F; IF: BOB 15min ISI: surface dead in 40min FF: BOB 18min FSI: surface dead in 18min
- DST #5 4267-4344 30-60-60-90; Hydro: 2181-2080 IFF: 24-26 ISIP: 241 FFP: 29-32 FSIP: 235; Rec: 10' 5%o 95%w; BHT: 128 F; IF: 1" ISI: dead FF: dead FSI: dead

COMMENTS

Based upon DST results and logs it was decided to run production casing.

FORMATION TOPS

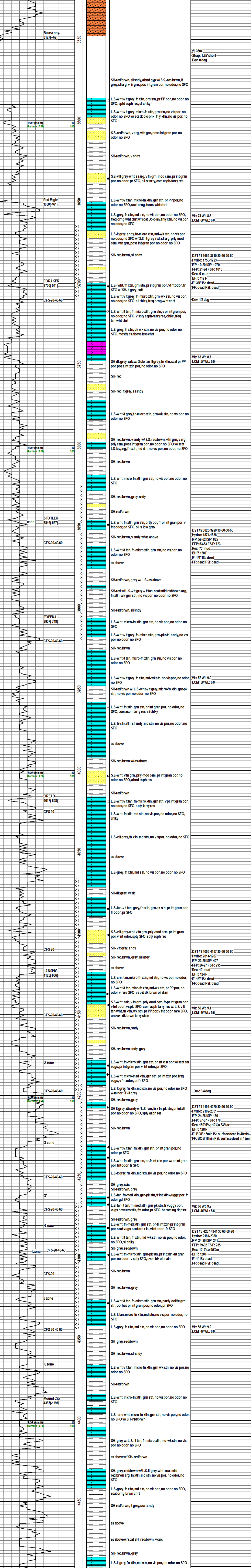
Log Tops	Sample tops
Anhydrite 3084(+105)	3089(+100)
Base Anhy 3128(+61)	3127(+62)
NEVA 3579(-390)	
RED EAGLE 3644(-455)	3650(-461)
FORAKER 3693(-504)	3700(-511)
TOPEKA 3902(-713)	3907(-718)
OREAD 4011(-822)	4017(-828)
LANSING 4120(-931)	4125(-936)
Mound City 4386(-1197)	4387(-1198)
TD 4494(-1305)	4500(-1311)

ROCK TYPES

Anhy	Clyst	Gyp	Mrlst	Shgy
Bent	Carb. shale	Igne	Salt	Silstt
Brec	Arkose	Lmst	Shale	Ss
Cht	Dol	Meta	Shcol	Till

OTHER SYMBOLS

Oil Show Even	Spotted Ques	Dead	Interval Dst
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DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

Ken #4-17

17-1S.-35W Rawlins,KS

Start Date: 2018.05.03 @ 22:22:00

End Date: 2018.05.04 @ 05:28:00

Job Ticket #: 63314 DST #: 1

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

Printed: 2018.05.08 @ 15:49:13



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63314

DST#: 1

ATTN: Clayton Erickson

Test Start: 2018.05.03 @ 22:22:00

GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:38:40

Time Test Ended: 05:28:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Martine Salinas

Unit No: 82

Interval: 3665.00 ft (KB) To 3710.00 ft (KB) (TVD)

Reference Elevations: 3189.00 ft (KB)

Total Depth: 3710.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8734 Outside

Press@RunDepth: 24.00 psig @ 3666.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.03

End Date:

2018.05.04

Last Calib.: 2018.05.04

Start Time: 22:22:01

End Time:

05:28:00

Time On Btm: 2018.05.04 @ 00:38:30

Time Off Btm: 2018.05.04 @ 03:40:50

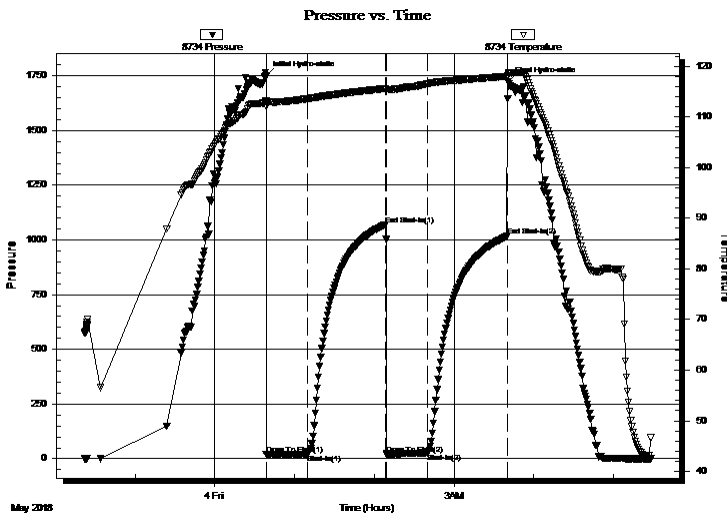
TEST COMMENT: 30-IF-Surface blow built to 3/4"

60-ISI-No blow

30-FF-No blow

60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1749.50	113.26	Initial Hydro-static
1	19.14	112.08	Open To Flow (1)
32	20.36	113.58	Shut-In(1)
90	1069.84	115.61	End Shut-In(1)
91	20.85	115.35	Open To Flow (2)
122	24.00	116.48	Shut-In(2)
182	1016.45	118.04	End Shut-In(2)
183	1723.11	118.47	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	100% Mud	0.02

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63314

DST#: 1

ATTN: Clayton Erickson

Test Start: 2018.05.03 @ 22:22:00

GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:38:40

Time Test Ended: 05:28:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Martine Salinas

Unit No: 82

Interval: 3665.00 ft (KB) To 3710.00 ft (KB) (TVD)

Reference Elevations: 3189.00 ft (KB)

Total Depth: 3710.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959 Inside

Press@RunDepth: psig @ 3666.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.04

End Date:

2018.05.04

Last Calib.:

1899.12.30

Start Time: 00:55:40

End Time:

05:27:00

Time On Btm:

Time Off Btm:

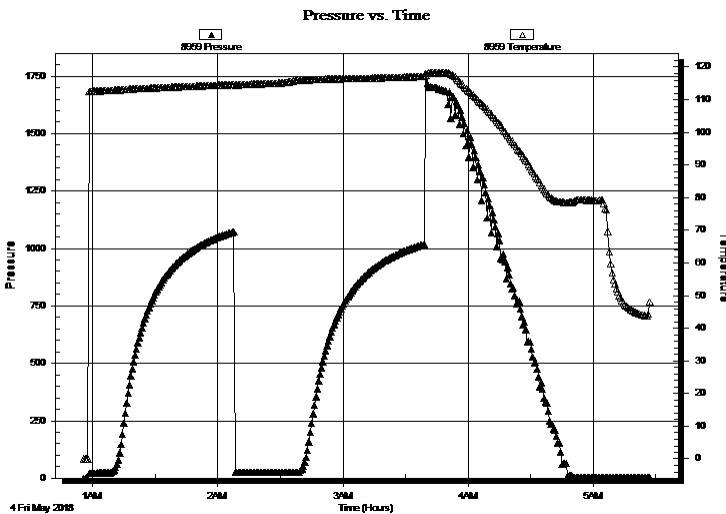
TEST COMMENT: 30-IF-Surface blow built to 3/4"

60-ISI-No blow

30-FF-No blow

60-FSI-No blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	100% Mud	0.02

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63314

DST#: 1

ATTN: Clayton Erickson

Test Start: 2018.05.03 @ 22:22:00

Tool Information

Drill Pipe:	Length: 3492.00 ft	Diameter: 3.80 inches	Volume: 48.98 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 64000.00 lb
			<u>Total Volume: 49.87 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	35.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	3665.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	73.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			3642.00	
Hydraulic tool	5.00			3647.00	
Jars	5.00			3652.00	
Safety Joint	3.00			3655.00	
Packer	5.00			3660.00	28.00 Bottom Of Top Packer
Packer	5.00			3665.00	
Packer - Shale	0.00			3665.00	
Stubb	1.00			3666.00	
Recorder	0.00	8959	Inside	3666.00	
Recorder	0.00	8734	Outside	3666.00	
Perforations	39.00			3705.00	
Bullnose	5.00			3710.00	45.00 Bottom Packers & Anchor

Total Tool Length: 73.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63314

DST#: 1

ATTN: Clayton Erickson

Test Start: 2018.05.03 @ 22:22:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.97 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	100% Mud	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

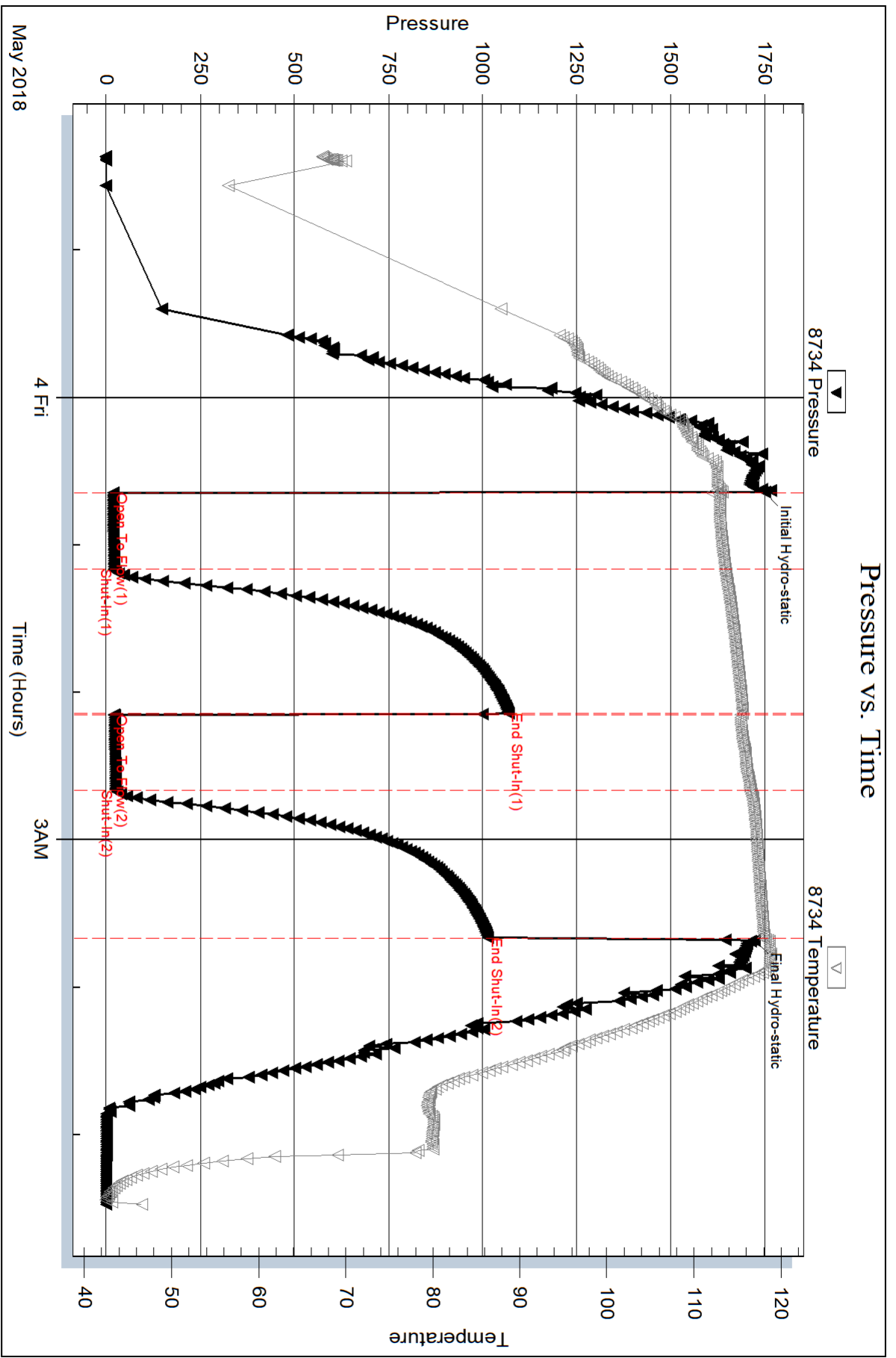
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

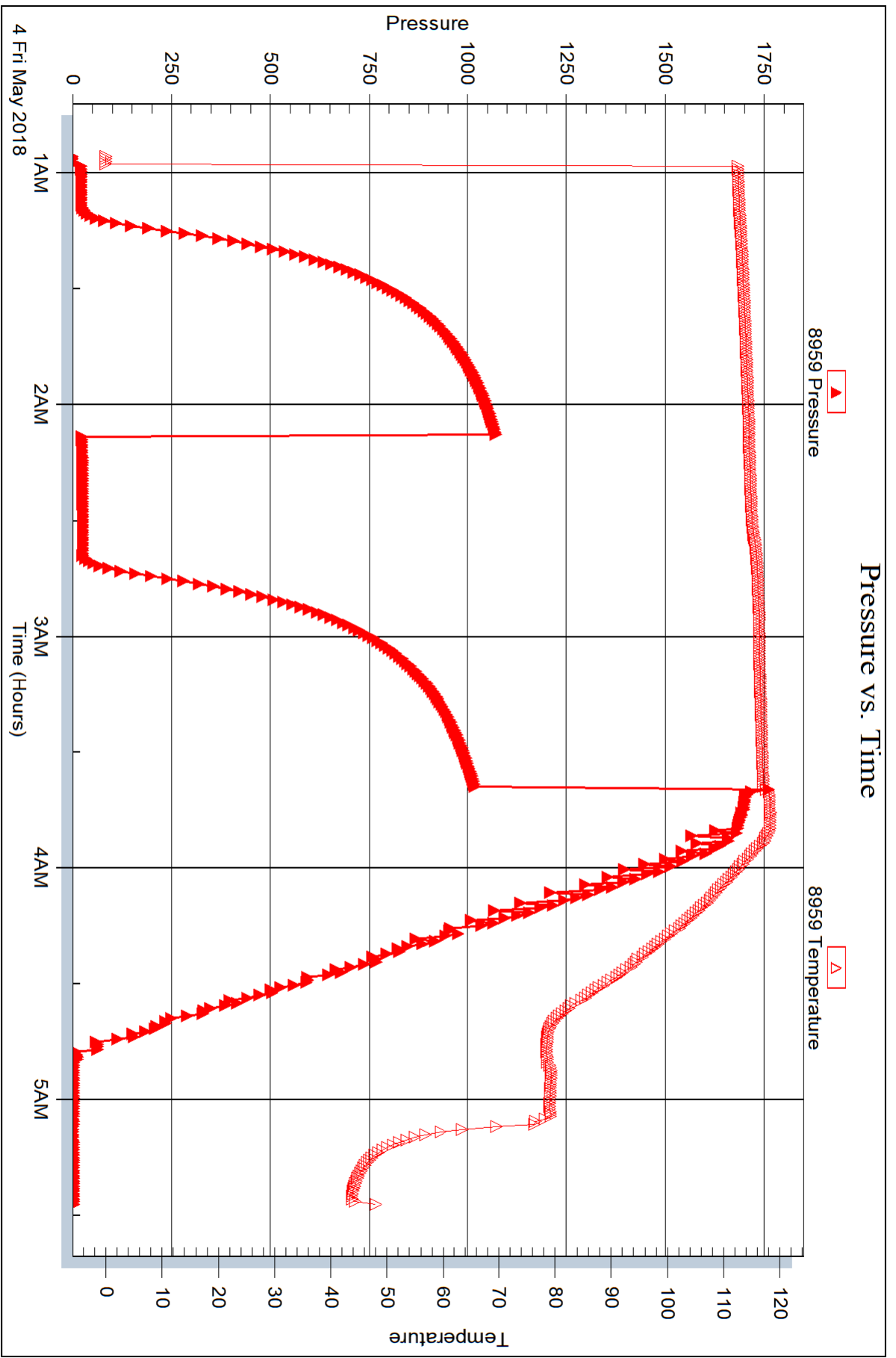


Serial #: 8959

Inside Murfin Drilling Co

Ken #4-17

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

Ken #4-17

17-1S.-35W Rawlins, KS

Start Date: 2018.05.05 @ 00:05:00

End Date: 2018.05.05 @ 06:46:50

Job Ticket #: 63315 DST #: 2

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

Printed: 2018.05.08 @ 15:48:48



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63315

DST#: 2

ATTN: Clayton Erickson

Test Start: 2018.05.05 @ 00:05:00

GENERAL INFORMATION:

Formation: **Stotler**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:08:00

Time Test Ended: 06:46:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: 3825.00 ft (KB) To 3920.00 ft (KB) (TVD)

Reference Elevations: 3189.00 ft (KB)

Total Depth: 3920.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959 Inside

Press@RunDepth: 63.30 psig @ 3826.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.05

End Date:

2018.05.05

Last Calib.: 2018.05.05

Start Time: 00:05:01

End Time:

06:46:50

Time On Btm: 2018.05.05 @ 02:07:50

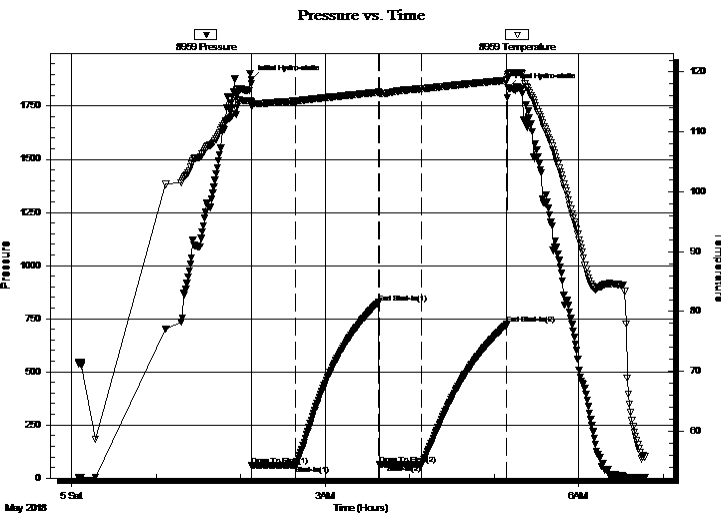
Time Off Btm: 2018.05.05 @ 05:09:50

TEST COMMENT: 30-IF Surface blow built to 1/4"

60-ISI-No blow

30-FF-No blow

60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1873.74	114.91	Initial Hydro-static
1	59.26	114.31	Open To Flow (1)
31	62.22	115.17	Shut-In(1)
91	824.80	116.64	End Shut-In(1)
91	63.19	116.40	Open To Flow (2)
121	63.30	117.20	Shut-In(2)
182	722.97	118.65	End Shut-In(2)
182	1837.68	119.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	100 % Mud	0.34

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co
250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

17-1S.-35W Rawlins, KS
Ken #4-17
Job Ticket: 63315 **DST#: 2**
Test Start: 2018.05.05 @ 00:05:00

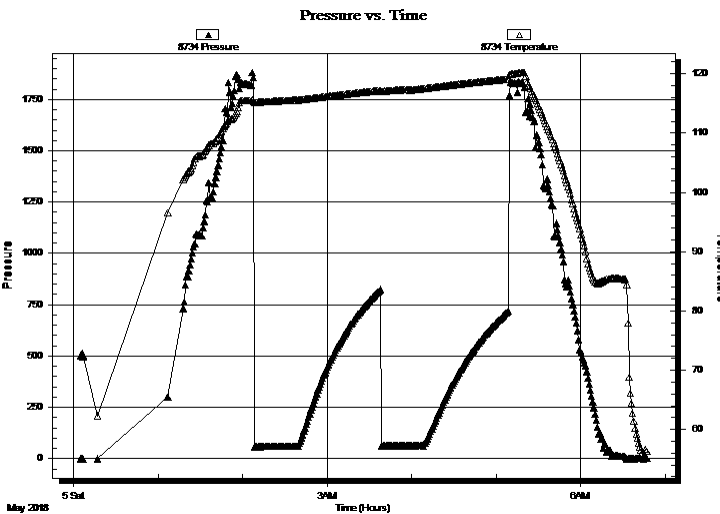
GENERAL INFORMATION:

Formation: **Stotler**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 02:08:00
 Time Test Ended: 06:46:50
Interval: 3825.00 ft (KB) To 3920.00 ft (KB) (TVD)
 Total Depth: 3920.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Martine Salinas
 Unit No: 82
 Reference Elevations: 3189.00 ft (KB)
 3184.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8734 Outside

Press@RunDepth: psig @ 3826.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.05.05 End Date: 2018.05.05 Last Calib.: 2018.05.05
 Start Time: 00:05:01 End Time: 06:46:50 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IF Surface blow built to 1/4"
 60-ISI-No blow
 30-FF-No blow
 60-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
70.00	100 % Mud	0.34

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63315

DST#: 2

ATTN: Clayton Erickson

Test Start: 2018.05.05 @ 00:05:00

Tool Information

Drill Pipe:	Length: 3649.00 ft	Diameter: 3.80 inches	Volume: 51.19 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 52.08 bbl</u>	Tool Chased 3.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3825.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	95.00 ft			
Tool Length:	123.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: Hit bridge, opened tool and slid to bottom 3'
bled off floor manifold 1 mins

Tool Description

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

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3802.00	
Hydraulic tool	5.00			3807.00	
Jars	5.00			3812.00	
Safety Joint	3.00			3815.00	
Packer	5.00			3820.00	28.00 Bottom Of Top Packer
Packer	5.00			3825.00	
Packer - Shale	0.00			3825.00	
Stubb	1.00			3826.00	
Recorder	0.00	8959	Inside	3826.00	
Recorder	0.00	8734	Outside	3826.00	
Perforations	25.00			3851.00	
Change Over Sub	1.00			3852.00	
Drill Pipe	62.00			3914.00	
Change Over Sub	1.00			3915.00	
Bullnose	5.00			3920.00	95.00 Bottom Packers & Anchor

Total Tool Length: 123.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63315

DST#: 2

ATTN: Clayton Erickson

Test Start: 2018.05.05 @ 00:05:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
70.00	100 % Mud	0.344

Total Length: 70.00 ft Total Volume: 0.344 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8959

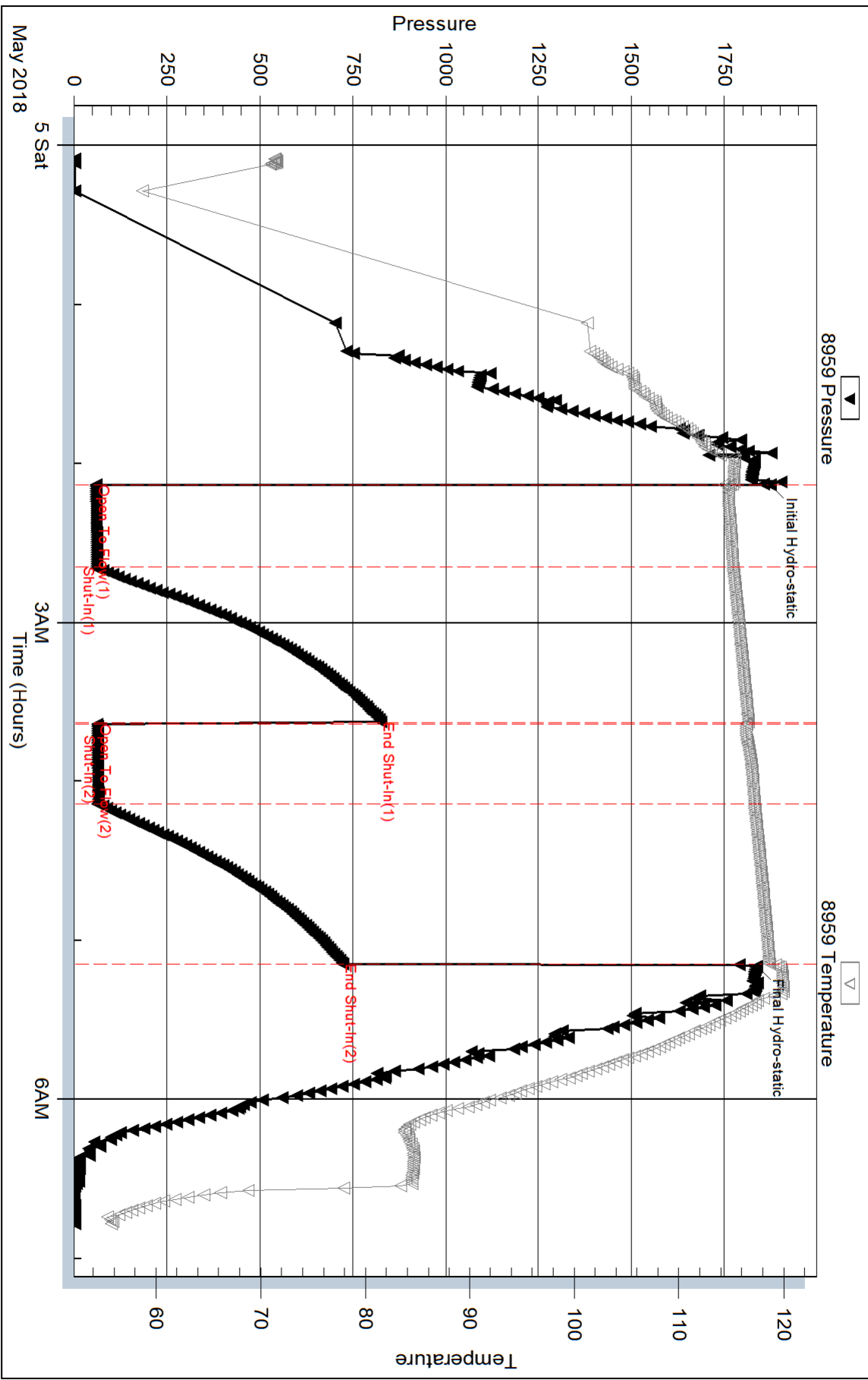
Inside

Murfin Drilling Co

Ken #4-17

DST Test Number: 2

Pressure vs. Time

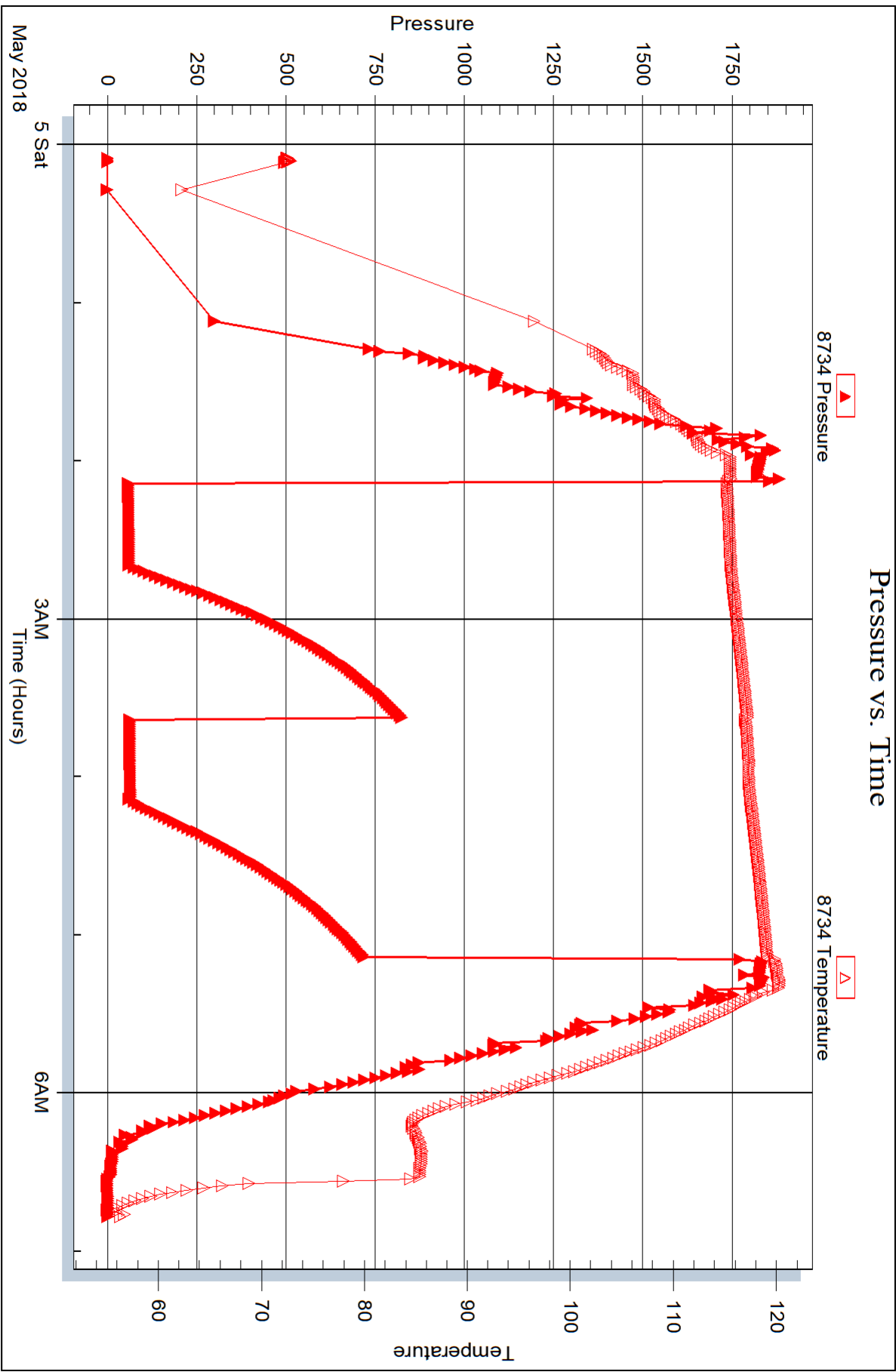


Serial #: 8734

Outside Murfin Drilling Co

Ken #4-17

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

Ken #4-17

17-1S.-35W Rawlins,KS

Start Date: 2018.05.06 @ 10:25:00

End Date: 2018.05.06 @ 16:51:50

Job Ticket #: 63316 DST #: 3

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

Printed: 2018.05.08 @ 15:46:57



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63316

DST#: 3

ATTN: Clayton Erickson

Test Start: 2018.05.06 @ 10:25:00

GENERAL INFORMATION:

Formation: **Leavenworth - LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:05:40

Time Test Ended: 16:51:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: **4066.00 ft (KB) To 4197.00 ft (KB) (TVD)**

Reference Elevations: 3189.00 ft (KB)

Total Depth: 4197.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959

Inside

Press@RunDepth: 26.94 psig @ 4067.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.06

End Date:

2018.05.06

Last Calib.: 2018.05.06

Start Time: 10:25:01

End Time:

16:51:50

Time On Btm: 2018.05.06 @ 12:05:30

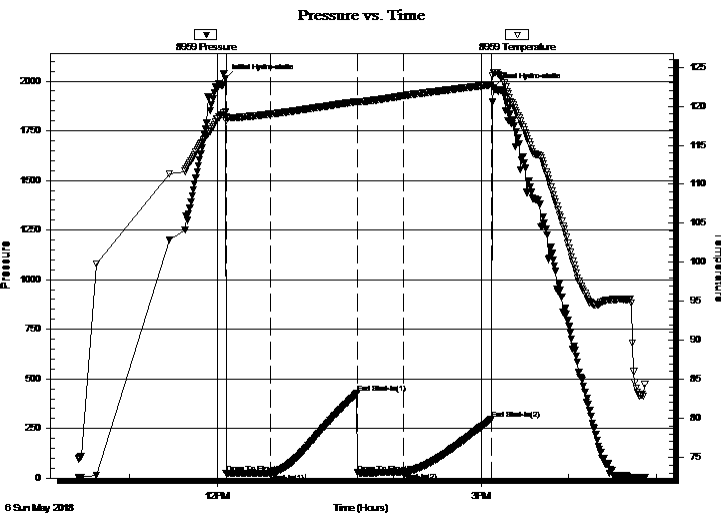
Time Off Btm: 2018.05.06 @ 15:08:20

TEST COMMENT: 30-IF-Surface blow built to 1/2"

60-ISI-No blow

30-FF-No blow

60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2014.30	119.27	Initial Hydro-static
1	23.48	118.13	Open To Flow (1)
31	24.95	119.00	Shut-In(1)
90	426.62	120.61	End Shut-In(1)
91	26.35	120.40	Open To Flow (2)
122	26.94	121.35	Shut-In(2)
182	295.43	122.77	End Shut-In(2)
183	1967.28	124.29	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	100%Mud	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63316

DST#: 3

ATTN: Clayton Erickson

Test Start: 2018.05.06 @ 10:25:00

Tool Information

Drill Pipe:	Length: 3873.00 ft	Diameter: 3.80 inches	Volume: 54.33 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 55.22 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4066.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	131.00 ft			
Tool Length:	159.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Shut In Tool	5.00			4043.00	
Hydraulic tool	5.00			4048.00	
Jars	5.00			4053.00	
Safety Joint	3.00			4056.00	
Packer	5.00			4061.00	28.00 Bottom Of Top Packer
Packer	5.00			4066.00	
Packer - Shale	0.00			4066.00	
Stubb	1.00			4067.00	
Recorder	0.00	8959	Inside	4067.00	
Recorder	0.00	8734	Outside	4067.00	
Perforations	29.00			4096.00	
Change Over Sub	1.00			4097.00	
Drill Pipe	94.00			4191.00	
Change Over Sub	1.00			4192.00	
Bullnose	5.00			4197.00	131.00 Bottom Packers & Anchor

Total Tool Length: 159.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63316

DST#: 3

ATTN: Clayton Erickson

Test Start: 2018.05.06 @ 10:25:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	100%Mud	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

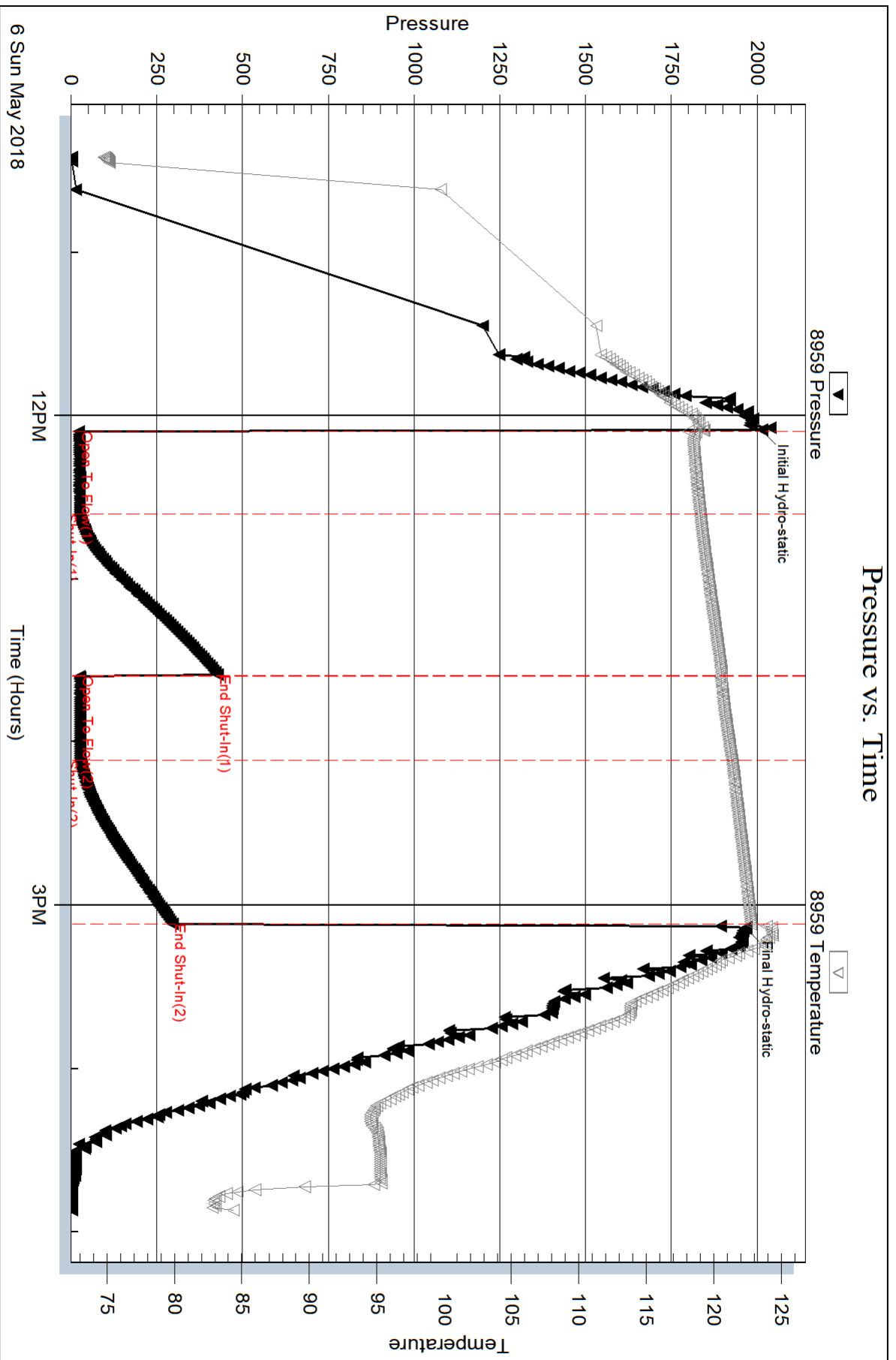
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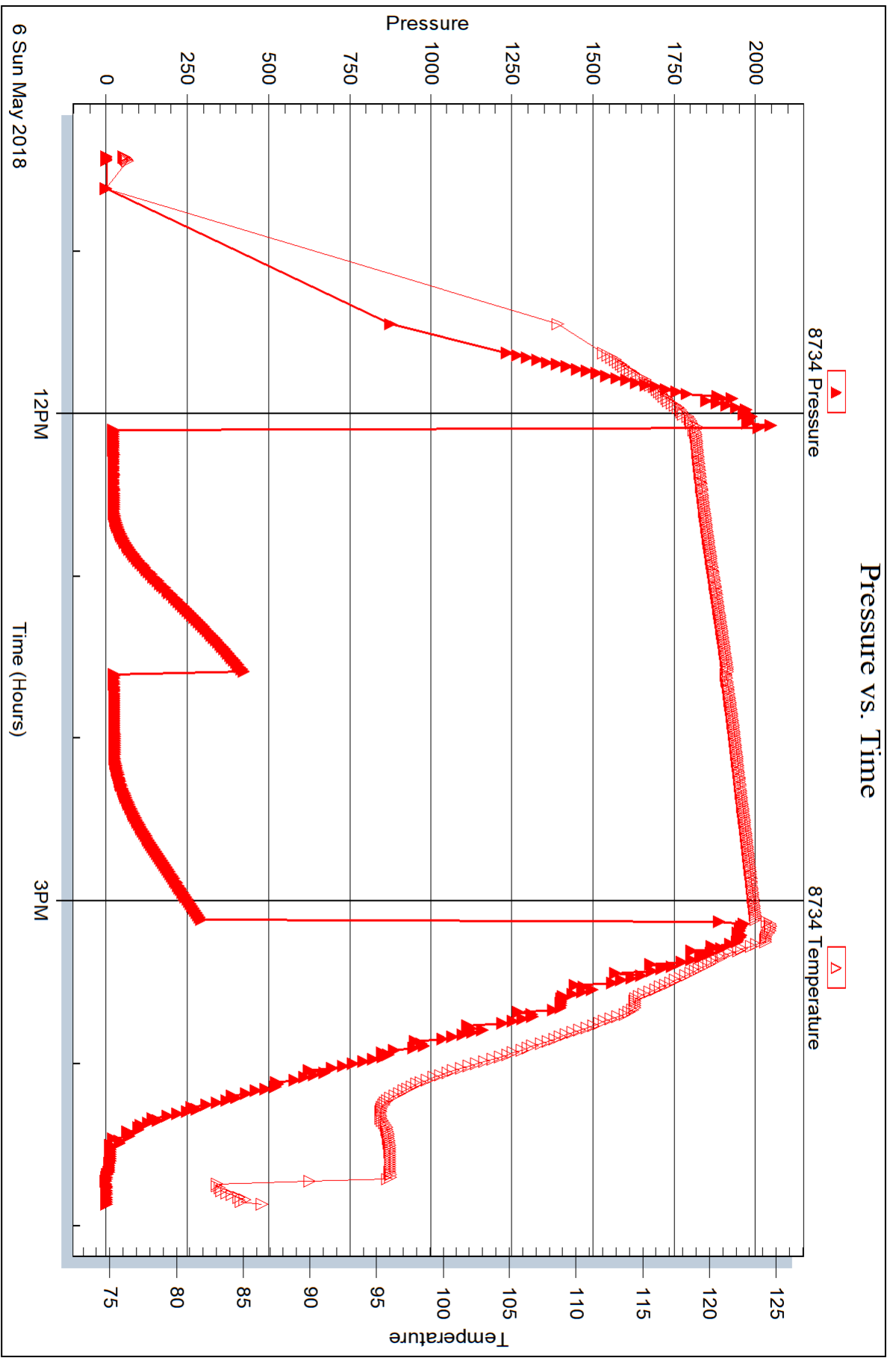
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

Ken #4-17

17-1S.-35W Rawlins,KS

Start Date: 2018.05.07 @ 05:56:00

End Date: 2018.05.07 @ 13:58:39

Job Ticket #: 63317 DST #: 4

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

Printed: 2018.05.08 @ 15:44:21

Murfin Drilling Co
17-1S.-35W Rawlins,KS
Ken #4-17
DST # 4
LKC "G"
2018.05.07



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63317

DST#: 4

ATTN: Clayton Erickson

Test Start: 2018.05.07 @ 05:56:00

GENERAL INFORMATION:

Formation: **LKC "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:51:30

Time Test Ended: 13:58:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: 4191.00 ft (KB) To 4270.00 ft (KB) (TVD)

Reference Elevations: 3189.00 ft (KB)

Total Depth: 4270.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959

Inside

Press@RunDepth: 86.85 psig @ 4192.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.07

End Date: 2018.05.07

Last Calib.: 2018.05.07

Start Time: 05:56:01

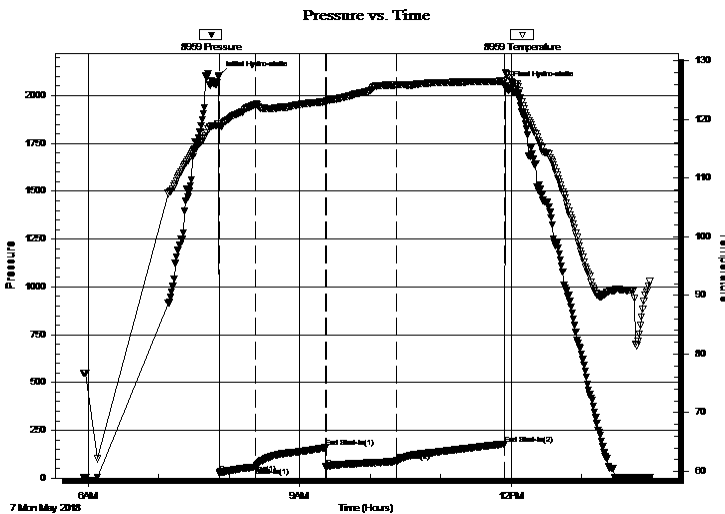
End Time: 13:58:40

Time On Btm: 2018.05.07 @ 07:51:10

Time Off Btm: 2018.05.07 @ 11:55:39

TEST COMMENT: 30-IF-Surface blow built to B.O.B (12 inches) @ 15 mins
60-ISI-Surface blow back @ 1 mins dead @ 40 mins
60-FF-Surface blow built to B.O.B (12 inches) @ 18 mins
90-FSI-Surface blow back @ 1 mins dead @ 25 mins

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2102.34	119.29	Initial Hydro-static
1	23.71	118.55	Open To Flow (1)
31	57.79	122.52	Shut-In(1)
91	158.87	123.02	End Shut-In(1)
92	56.52	123.12	Open To Flow (2)
151	86.85	125.88	Shut-In(2)
243	177.96	126.54	End Shut-In(2)
245	2050.91	127.75	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
150.00	GOCM 5%G, 12%O, 83%M	0.74

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

ATTN: Clayton Erickson

Job Ticket: 63317

DST#: 4

Test Start: 2018.05.07 @ 05:56:00

GENERAL INFORMATION:

Formation: **LKC "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:51:30

Time Test Ended: 13:58:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: **4191.00 ft (KB) To 4270.00 ft (KB) (TVD)**

Reference Elevations: 3189.00 ft (KB)

Total Depth: 4270.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8734 Outside

Press@RunDepth: psig @ 4192.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.07 End Date: 2018.05.07

Last Calib.: 2018.05.07

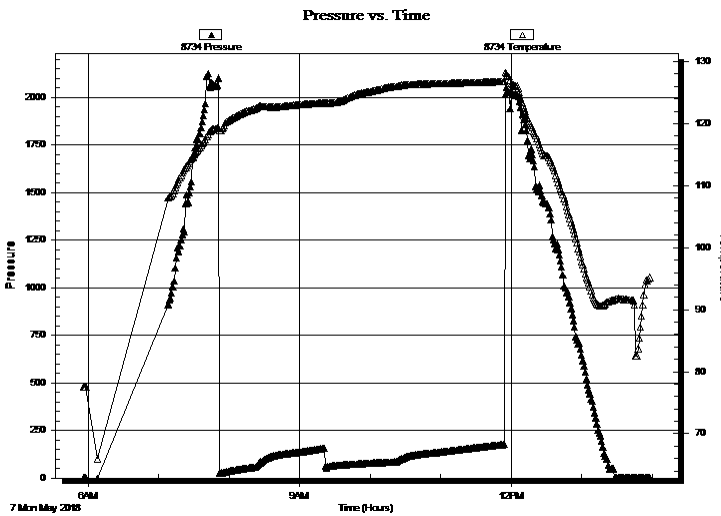
Start Time: 05:56:01 End Time: 13:58:50

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF-Surface blow built to B.O.B (12 inches) @ 15 mins
60-ISI-Surface blow back @ 1 mins dead @ 40 mins
60-FF-Surface blow built to B.O.B (12 inches) @ 18 mins
90-FSI-Surface blow back @ 1 mins dead @ 25 mins

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
150.00	GOCM 5%G, 12%O, 83%M	0.74

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63317

DST#: 4

ATTN: Clayton Erickson

Test Start: 2018.05.07 @ 05:56:00

Tool Information

Drill Pipe:	Length: 4000.00 ft	Diameter: 3.80 inches	Volume: 56.11 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 57.00 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial	62000.00 lb
Depth to Top Packer:	4191.00 ft			Final	62000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	79.00 ft				
Tool Length:	107.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

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

Shut In Tool	5.00			4168.00	
Hydraulic tool	5.00			4173.00	
Jars	5.00			4178.00	
Safety Joint	3.00			4181.00	
Packer	5.00			4186.00	28.00 Bottom Of Top Packer
Packer	5.00			4191.00	
Packer - Shale	0.00			4191.00	
Stubb	1.00			4192.00	
Recorder	0.00	8959	Inside	4192.00	
Recorder	0.00	8734	Outside	4192.00	
Perforations	9.00			4201.00	
Change Over Sub	1.00			4202.00	
Drill Pipe	62.00			4264.00	
Change Over Sub	1.00			4265.00	
Bullnose	5.00			4270.00	79.00 Bottom Packers & Anchor

Total Tool Length: 107.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63317

DST#: 4

ATTN: Clayton Erickson

Test Start: 2018.05.07 @ 05:56:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 51.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
150.00	GOCM 5%G, 12%O, 83%M	0.738

Total Length: 150.00 ft Total Volume: 0.738 bbl

Num Fluid Samples: 0

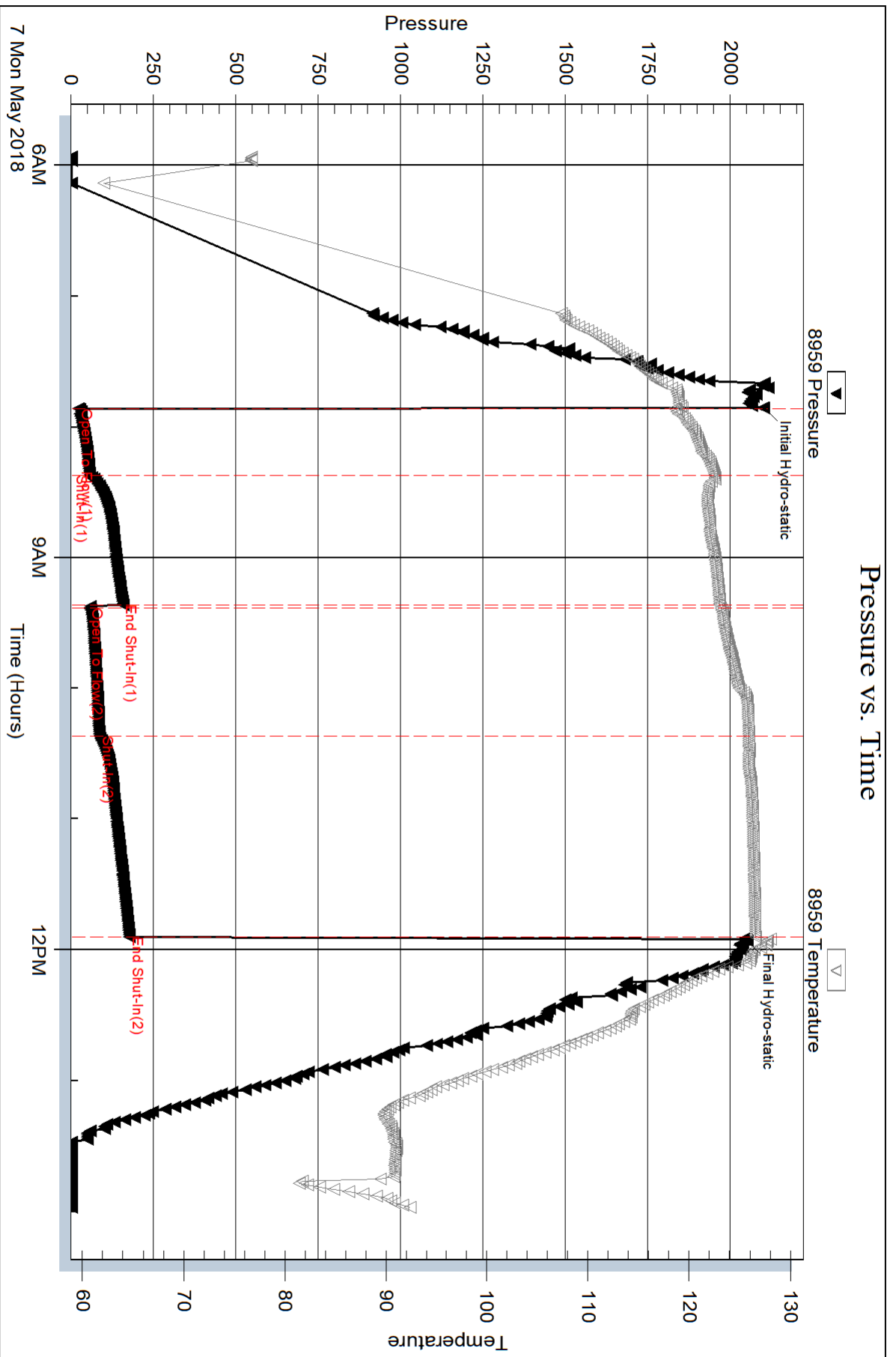
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Not enough oil to catch gravity

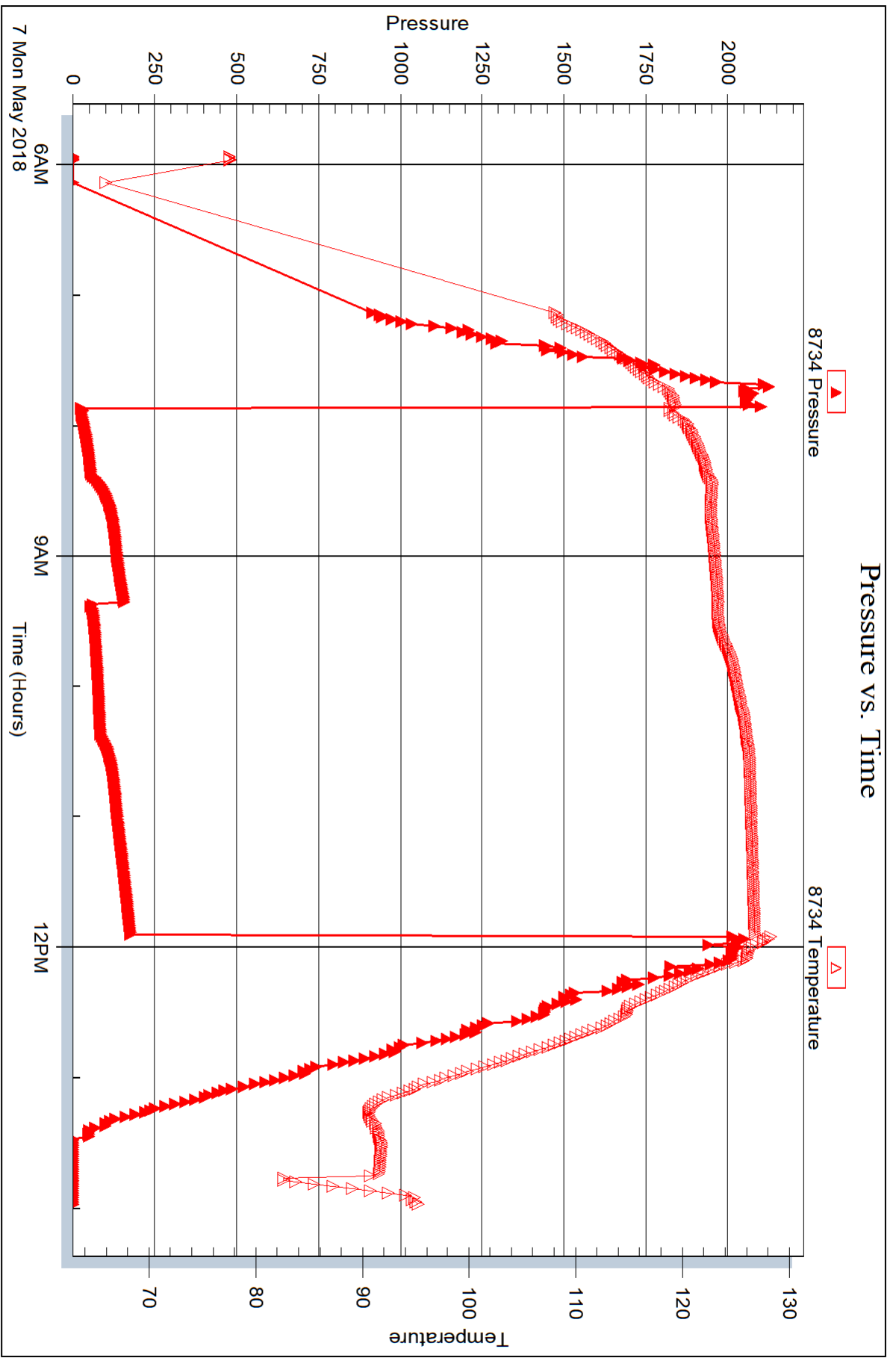


Serial #: 8734

Outside Murfin Drilling Co

Ken #4-17

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 63317

Printed: 2018.05.08 @ 15:44:22



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N. Water STE 300
Wichita, KS 67202

ATTN: Clayton Erickson

Ken #4-17

17-1S.-35W Rawlins,KS

Start Date: 2018.05.08 @ 02:22:00

End Date: 2018.05.08 @ 10:44:39

Job Ticket #: 63318 DST #: 5

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

Printed: 2018.05.08 @ 15:44:01



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63318

DST#: 5

ATTN: Clayton Erickson

Test Start: 2018.05.08 @ 02:22:00

GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:46:50

Time Test Ended: 10:44:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: 4267.00 ft (KB) To 4344.00 ft (KB) (TVD)

Reference Elevations: 3189.00 ft (KB)

Total Depth: 4344.00 ft (KB) (TVD)

3184.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8959

Inside

Press@RunDepth: 31.79 psig @ 4268.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.05.08

End Date:

2018.05.08

Last Calib.:

2018.05.08

Start Time: 02:22:01

End Time:

10:44:40

Time On Btm:

2018.05.08 @ 04:46:30

Time Off Btm:

2018.05.08 @ 08:48:39

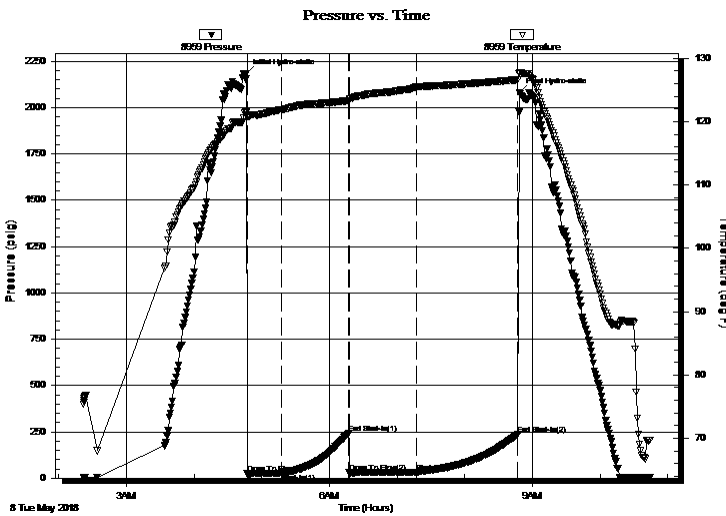
TEST COMMENT: 30-IF-Surface blow built to 1"

60-ISI-No blow

60-FF-No blow

90-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2181.15	121.50	Initial Hydro-static
1	23.63	120.82	Open To Flow (1)
31	26.17	121.87	Shut-In(1)
91	241.28	123.31	End Shut-In(1)
91	29.18	123.29	Open To Flow (2)
151	31.79	125.43	Shut-In(2)
241	235.16	126.60	End Shut-In(2)
243	2079.51	127.76	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OSM 5%O, 95%M	0.05

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63318

DST#: 5

ATTN: Clayton Erickson

Test Start: 2018.05.08 @ 02:22:00

GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:46:50

Time Test Ended: 10:44:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

Interval: **4267.00 ft (KB) To 4344.00 ft (KB) (TVD)**

Total Depth: 4344.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3189.00 ft (KB)

3184.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8734 Outside

Press@RunDepth: psig @ 4268.00 ft (KB)

Start Date: 2018.05.08

End Date: 2018.05.08

Capacity: 8000.00 psig

Last Calib.: 2018.05.08

Start Time: 02:22:01

End Time: 10:44:40

Time On Btm:

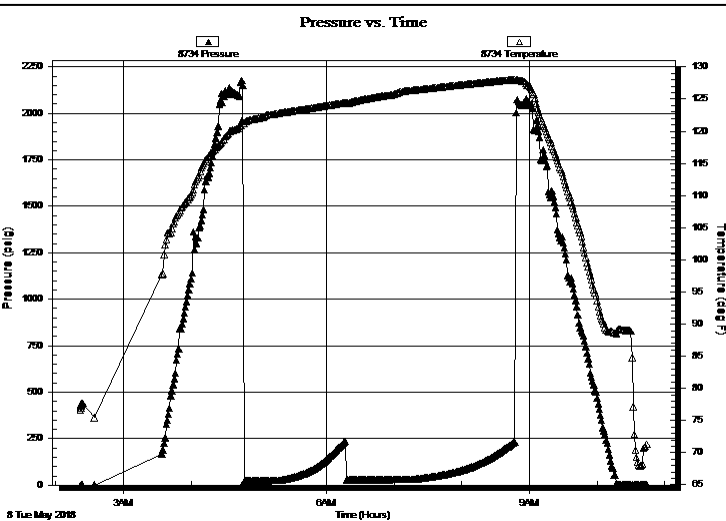
Time Off Btm:

TEST COMMENT: 30-IF-Surface blow built to 1"

60-ISI-No blow

60-FF-No blow

90-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OSM 5%O, 95%M	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63318

DST#: 5

ATTN: Clayton Erickson

Test Start: 2018.05.08 @ 02:22:00

Tool Information

Drill Pipe:	Length: 4094.00 ft	Diameter: 3.80 inches	Volume: 57.43 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume: 58.32 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	35.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4267.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	77.00 ft				
Tool Length:	105.00 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
Shut In Tool	5.00			4244.00	
Hydraulic tool	5.00			4249.00	
Jars	5.00			4254.00	
Safety Joint	3.00			4257.00	
Packer	5.00			4262.00	28.00 Bottom Of Top Packer
Packer	5.00			4267.00	
Packer - Shale	0.00			4267.00	
Stubb	1.00			4268.00	
Recorder	0.00	8959	Inside	4268.00	
Recorder	0.00	8734	Outside	4268.00	
Perforations	7.00			4275.00	
Change Over Sub	1.00			4276.00	
Drill Pipe	62.00			4338.00	
Change Over Sub	1.00			4339.00	
Bullnose	5.00			4344.00	77.00 Bottom Packers & Anchor

Total Tool Length: 105.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

17-1S.-35W Rawlins,KS

250 N. Water STE 300
Wichita,KS 67202

Ken #4-17

Job Ticket: 63318

DST#: 5

ATTN: Clayton Erickson

Test Start: 2018.05.08 @ 02:22:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	OSM 5%O, 95%M	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

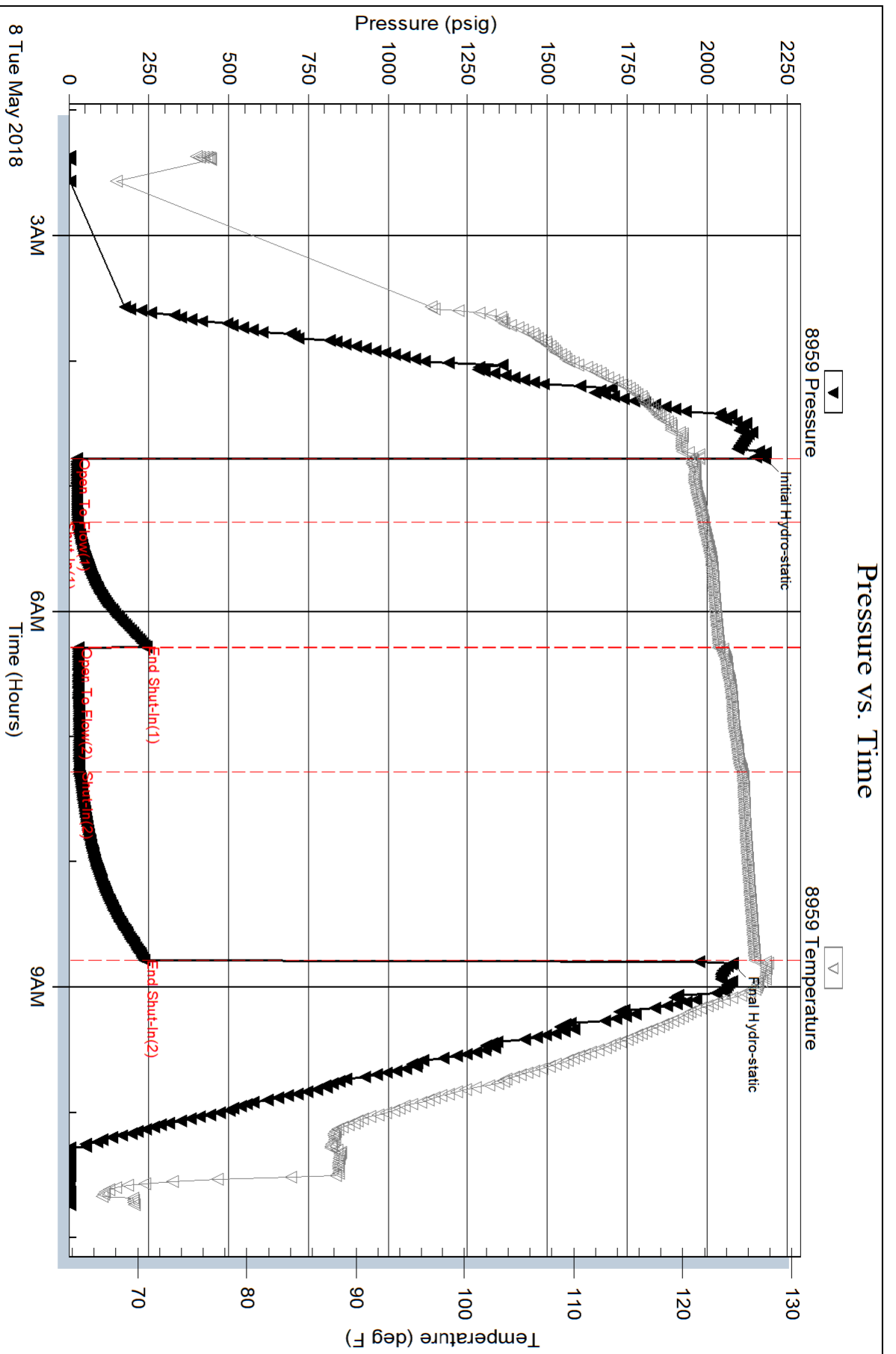
Num Gas Bombs: 0

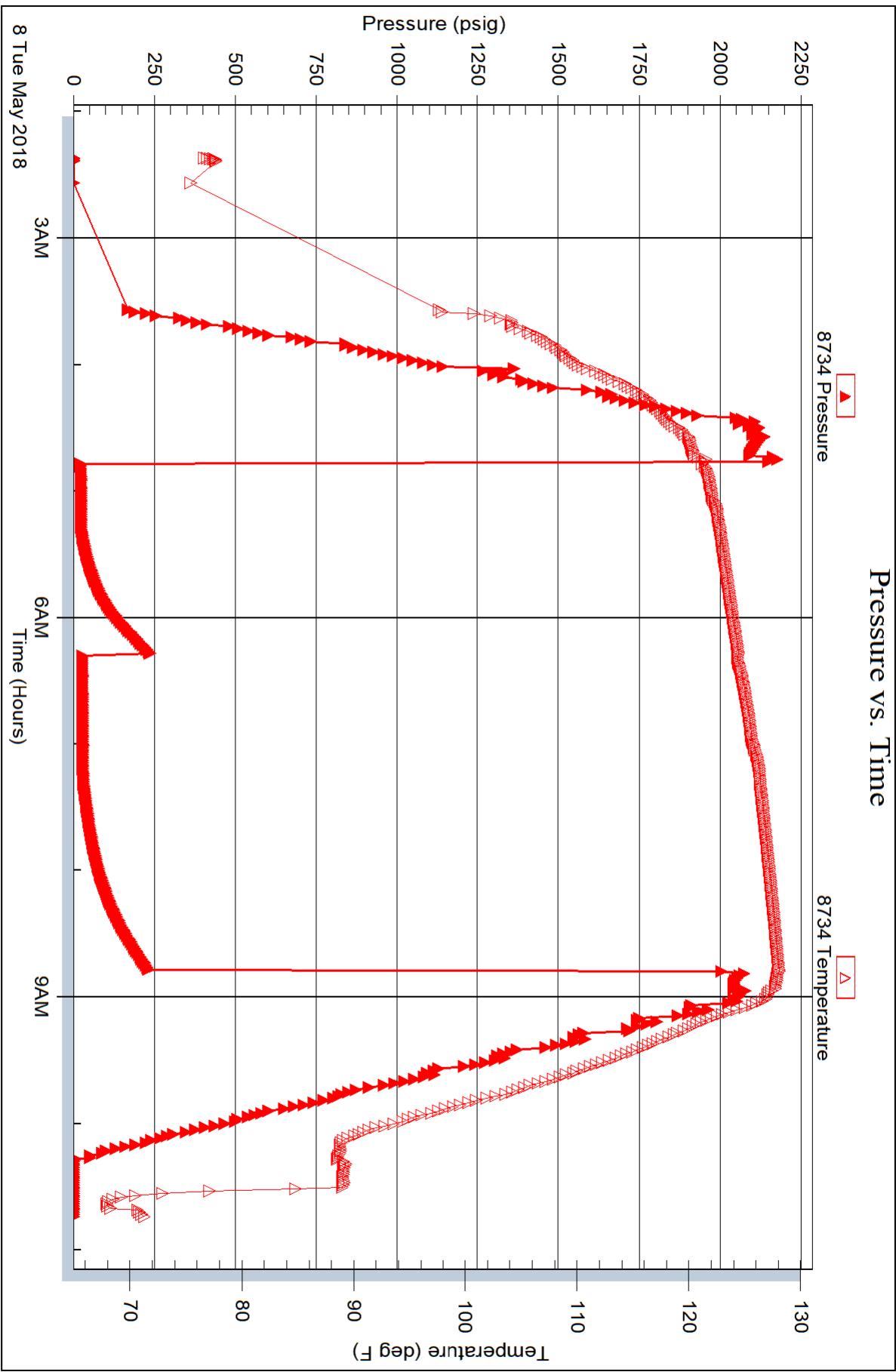
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63314

Well Name & No. Ken #4-17 Test No. 1 Date 05-03-18
 Company Murfin Drilling Co Inc Elevation 3189 KB 3184 GL
 Address 250 N. Water, STE 300, Wichita, KS 67202
 Co. Rep / Geo. Clayton Ericson Rig Murfin #3
 Location: Sec. 17 Twp 1S. Rge. 35W. Co. Rawlins State K5

Interval Tested 3665-3710 Zone Tested Foraker
 Anchor Length 45' Drill Pipe Run 3492 Mud Wt. 8.7
 Top Packer Depth 3660 Drill Collars Run 180 Vis 65
 Bottom Packer Depth 3665 (Shale) Wt. Pipe Run --- WL 6.0
 Total Depth 3710 Chlorides 700 ppm System LCM 54
 Blow Description IF - S. blow built to 3/4"
ISI - No blow
FF - No blow
FSI - No blow

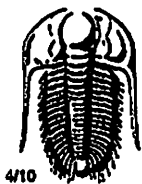
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 119 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1750 Test 1050 T-On Location 21:05
 (B) First Initial Flow 19 Jars 250 T-Started 22:22
 (C) First Final Flow 20 Safety Joint 75 T-Open 00:39
 (D) Initial Shut-In 1070 Circ Sub _____ T-Pulled 03:39
 (E) Second Initial Flow 21 Hourly Standby _____ T-Out 05:28
 (F) Second Final Flow 24 Mileage 158 RT 158 Comments _____
 (G) Final Shut-In 1016 Sampler _____
 (H) Final Hydrostatic 1723 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1783
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1783

Approved By _____ Our Representative _____

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63315

Well Name & No. Ken #4-17 Test No. 2 Date 5-4-18
 Company Murfin Drilling Co Inc Elevation 3189 KB 3184 GL
 Address 250 N. Water, STE 300, Wichita, KS 67202
 Co. Rep / Geo. Clayton Erickson Rig Murfin #3
 Location: Sec. 17 Twp 15. Rge. 35W. Co. Rawlins State KS

Interval Tested 3825 - 3920 Zone Tested Stotler
 Anchor Length 95' Drill Pipe Run 3649 Mud Wt. 8.8
 Top Packer Depth 3820 Drill Collars Run 180 Vls 56
 Bottom Packer Depth 3825 (shale) Wt. Pipe Run — WL 6.0
 Total Depth 3920 Chlorides 900 ppm System LCM 4#
 Blow Description IF - S. blow built to 1/4"

TSE - No blow
FF - No blow
FSE - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 70 BHT 120 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1874 Test 1050 T-On Location 22:20
 (B) First Initial Flow 59 Jars 250 T-Started 00:05
 (C) First Final Flow 62 Safety Joint 75 T-Open 02:09
 (D) Initial Shut-In 825 Circ Sub _____ T-Pulled 05:09
 (E) Second Initial Flow 63 Hourly Standby _____ T-Out 06:48
 (F) Second Final Flow 63 Mileage 158RT 158 Comments Hit bridge, opened tool
 (G) Final Shut-In 723 Sampler _____ floor manifold 1 min
 (H) Final Hydrostatic 1838 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1783
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1783

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

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63316

Well Name & No. Ken # 4-17 Test No. 3 Date 05-06-18
 Company Murfin Drilling Co Inc Elevation 3189 KB 3184 GL
 Address 250 N. Water, STE 300, Wichita, KS 67202
 Co. Rep / Geo. Clayton Erickson Rig Murfin #3
 Location: Sec. 17 Twp 15. Rge. 35W. Co. Rawlins State K5

Interval Tested 4066-4197 Zone Tested Leavenworth - LKC A-D
 Anchor Length 131 Drill Pipe Run 3873 Mud Wt. 9.1
 Top Packer Depth 4061 Drill Collars Run 180 Vis 55
 Bottom Packer Depth 4066 (shalc) Wt. Pipe Run _____ WL 5.6
 Total Depth 4197 Chlorides 800 ppm System LCM 4H

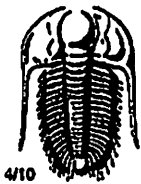
Blow Description IF - 5. blow built to 1/2"
ISI - No blow
FF - No blow
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

Rec Total 10 BHT 124 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2014 Test 1150 T-On Location 10:05
 (B) First Initial Flow 23 Jars 250 T-Started 10:25
 (C) First Final Flow 25 Safety Joint 75 T-Open 12:06
 (D) Initial Shut-In 427 Circ Sub _____ T-Pulled 15:06
 (E) Second Initial Flow 26 Hourly Standby _____ T-Out 16:52
 (F) Second Final Flow 27 Mileage 158RT 158 Comments _____
 (G) Final Shut-In 295 Sampler _____
 (H) Final Hydrostatic 1967 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1883
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1883

Approved By _____ Our Representative [Signature]
 Tribolite 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.



TRIBOLITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63317

Well Name & No. Ken #4-17 Test No. 4 Date 05-07-18
 Company Murfin Drilling Co Inc Elevation 3189 KB 3184 GL
 Address 250 N. Water, STE 300, Wichita, KS 67202
 Co. Rep / Geo. Clayton Erickson Rig Murfin #3
 Location: Sec. 17 Twp 1S. Rge. 35W. Co. Rawlins. State KS

Interval Tested 4191-4270 Zone Tested LKC "G"
 Anchor Length 79 Drill Pipe Run 4005 Mud Wt. 9.1
 Top Packer Depth 4186 Drill Collars Run 180 Vis 51
 Bottom Packer Depth 4191 (Shale) Wt. Pipe Run — WL 5.6
 Total Depth 4270 Chlorides 800 ppm System LCM 4#

Blow Description IF · S. blow built to B.O.B @ 15 mins
ISI · blow back @ 1/min. dead @ 40 mins.
FF · S. blow built to B.O.B (12 inches) @ 18 mins.
FSI · S. blow back @ 1/min dead @ 25 mins.

Rec	Feet of	%gas	%oil	%water	%mud
<u>150</u>	<u>60CM</u>	<u>5</u>	<u>12</u>	<u>83</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 150 BHT 128 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

- (A) Initial Hydrostatic 2102
- (B) First Initial Flow 24
- (C) First Final Flow 58
- (D) Initial Shut-In 159
- (E) Second Initial Flow 57
- (F) Second Final Flow 87
- (G) Final Shut-In 178
- (H) Final Hydrostatic 2051

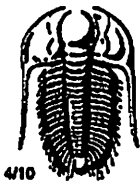
- Test 1150
- Jars 250
- Safety Joint 75
- Circ Sub _____
- Hourly Standby _____
- Mileage 158 RT 158
- Sampler _____
- Straddle _____
- Shale Packer 250
- Extra Packer _____
- Extra Recorder _____
- Day Standby _____
- Accessibility _____
- Sub Total 1883

- T-On Location 05:40
- T-Started 05:56
- T-Open 07:52
- T-Pulled 11:52
- T-Out 14:00
- Comments _____
- Ruined Shale Packer _____
- Ruined Packer _____
- Extra Copies _____
- Sub Total 0
- Total 1883
- MP/DST Disc't _____

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

Approved By _____ Our Representative Marta Johnson

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63318

Well Name & No. Ken #4-17 Test No. 5 Date 05-08-18
 Company Murfin Drilling Co Inc Elevation 3189 KB 3184 GL
 Address 250 N. Water, STE 300, Wichita, KS 67202
 Co. Rep / Geo. Clayton Erickson Rig Murfin #3
 Location: Sec. 17 Twp 1S. Rge. 35W. Co. Rawlins State KS

Interval Tested 4267-4344 Zone Tested LKC "H-5"
 Anchor Length 77' Drill Pipe Run 4094 Mud Wt. 9.0
 Top Packer Depth 4262 Drill Collars Run 180 Vis 58
 Bottom Packer Depth 4267 (Shale) Wt. Pipe Run - WL 5.6
 Total Depth 4344 Chlorides 900 ppm System LCM 4#

Blow Description IF - S. blow built to 1"
ISI - No blow
FF - No blow
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>OSM</u>	<u>5</u>		<u>95</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 128 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2181 Test 1150 T-On Location 01:58
 (B) First Initial Flow 24 Jars 250 T-Started 02:22
 (C) First Final Flow 26 Safety Joint 75 T-Open 04:47
 (D) Initial Shut-In 241 Circ Sub _____ T-Pulled 08:47
 (E) Second Initial Flow 29 Hourly Standby _____ T-Out 10:45
 (F) Second Final Flow 32 Mileage 158RT 158 Comments Tools loaded @ 11:30
 (G) Final Shut-In 235 Sampler _____
 (H) Final Hydrostatic 2080 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1883
 Accessibility _____ MP/DST Disc't _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1883

Approved By _____ Our Representative [Signature]

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TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin Drilling	Date:	4/30/2018	Ticket No.:	100912
Field Rep:	Greg Condren				
Address:	PO Box 681				
City, State:	Colby, KS				
County, Zip:	Thomas 67701				

Field Order No.:	
Well Name:	Ken #4-17
Location:	Rawlins county
Formation:	
Type of Service:	Cement
Well Type:	oil
Age of Well:	New
Packer Type:	
Packer Depth:	
Treatment Var:	

Open Hole:	305
Casing Depth:	301.87
Casing Size:	8 5/8"
Tubing Depth:	
Tubing Size:	
Liner Depth:	
Liner Size:	
Liner Top:	
Liner Bottom:	
Total Depth:	

Perf Depth (ft)		Perfs
Total Perfs		0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
1:00 PM					Depart Medicine lodge yard			
7:00 PM					Arrive on location			
7:30 PM					Safety meeting			
8:00 PM					Spot and rig up equipment			
7:30 PM					Rig starts coming out of hole			
8:19 PM					Rig starts running casing			
10:16 PM					Casing on bottom, rig circulates 15 minutes			
10:26 PM					HIS rig up to well head			
10:20 PM	3.3		60.0		Pump water ahead			16.00
10:30 PM	4.0		124.0		Mix and pump 285 sbs of class A, 2% gel, 3% CC at 14.8			60.66
10:47 PM	4.0		100.0		Start displacement with fresh water			
10:52 PM			65.0		End displacement, shut in well			16.00
11:00 PM					Rig down and wash up equipment			
11:45 PM					Depart location			
					100% circulation through out job			
					13bbls cement returned to surface			
					Thank you for calling Hurricane services			
					Glen, Joe, Dane and Daryl			
TOTAL:								99.58

SUMMARY

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
4.0	3.8	124.0	87.3

PRODUCTS USED

Treater: Glen Fisher

Customer: _____

TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin Drilling	Date:	5/9/2018	Ticket No.:	100917
Field Rep:	Nathan Witt				
Address:	PO box 661				
City, State:	Colby, KS				
County, Zip:	67701				

Field Order No.:		Open Hole:	4500	Perf Depths (ft)	Perfs
Well Name:	Ken 4-17	Casing Depth:	4496		
Location:	Rawlins	Casing Size:	5 1/2"		
Formation:		Tubing Depth:			
Type of Service:	Long string	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:	4950	Total Perfs	0

TIME	INJECTION RATE FLUID	N2/CO2	PRESSURE STP	ANNULUS	REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
11:00 AM					Depart shop in medicine lodge			
4:30 PM					Arrive on location			
					TD=4500 FS=4496 Ldinsert=4474			
					Centrilizers at joints 1-13, 34,44			
					Baskets at joints 11,35,45			
					108 total joints of casing ran			
4:45 PM					Safety meeting			
5:00 PM					Rig up equipment			
8:03 PM					Rig starts to run casing			
8:45 PM					On casing joint #58 rig circulates for 30 minutes			
9:30 PM					Casing on bottom			
9:50 PM					Drop ball for removal of auto fill			
9:50 PM			400.0		rig circulates, ball seen setting and auto fill removed			
10:38 PM	3.0		100.0		Pump water ahead			3.00
10:52 PM	3.0		200.0		Pump mud flush			12.00
11:00 PM	3.0		170.0		pump water ahead			3.00
11:15 PM	2.0		20.0		Plug mouse and rat hole with 50 sacks			23.00
11:35 PM	5.0		190.0		Mix and pump 250 sacks of lead H-con at 12ppg			114.30
						TOTAL:		315.20

Mix and Pump 200 SR

PRODUCTS USED

H-Long. [Signature]

SUMMARY

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
5.0	3.6	1,700.0	527.0

Treater: _____

Customer: _____