

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	Murfin Drilling Co., Inc.
Well Name	KEN 5-17
Doc ID	1419923

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Ken #5-17
 330 FNL 990 FWL
 Sec. 17-1S-35W
 3210' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	3104	+106	-7	3106	+104	-9
B/Anhydrite	3134	+76	+1	3138	+72	-3
Foraker	3708	-498	-1	3711	-501	-4
Topeka	3918	-708	-1	3921	-711	-4
Oread	4029	-819	-2	4030	-820	-3
Lansing	4138	-928	-2	4141	-931	-5
Stark	4353	-1143	-3	4353	-1143	-3
Mound City	4403	-1193	-3	4404	-1194	-4
RTD	4500	-1290				
LTD				4500	-1290	



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Saman Sharifaie

Ken #5-17

17-1s-35w Rawlins,KS

Start Date: 2018.08.09 @ 00:15:00

End Date: 2018.08.09 @ 09:45:00

Job Ticket #: 64217 DST #: 1

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

Printed: 2018.08.13 @ 16:24:01



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64217

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 00:15:00

GENERAL INFORMATION:

Formation: **LKC "A - D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:57:45

Time Test Ended: 09:45:00

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 4076.00 ft (KB) To 4220.00 ft (KB) (TVD)

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4220.00 ft (KB) (TVD)

3205.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017

Outside

Press@RunDepth: 24.48 psig @ 4077.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.08.09

End Date:

2018.08.09

Last Calib.:

2018.08.09

Start Time:

00:15:05

End Time:

09:45:00

Time On Btm:

2018.08.09 @ 02:57:15

Time Off Btm:

2018.08.09 @ 07:04:45

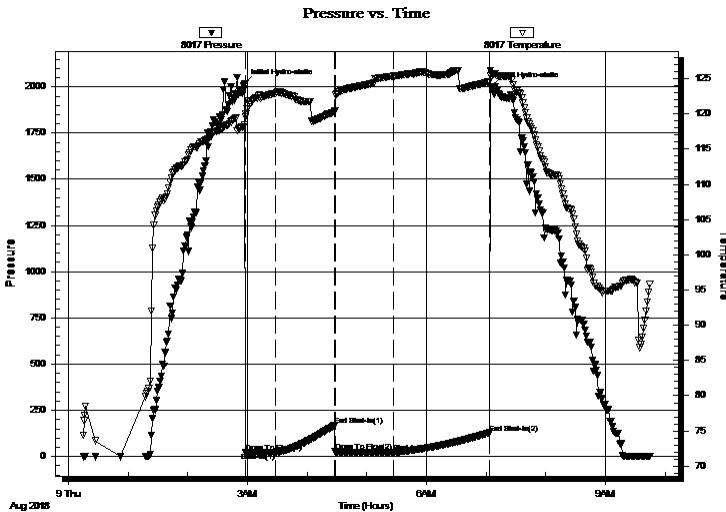
TEST COMMENT: 30 - IF: 1/2" Blow at open, built to 3/4", died back to 1/4"

60 - IS: No blow back

60 - FF: No blow

90 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2016.48	118.45	Initial Hydro-static
1	24.44	119.55	Open To Flow (1)
31	23.25	122.91	Shut-In(1)
91	167.18	120.24	End Shut-In(1)
91	25.90	120.51	Open To Flow (2)
150	24.48	125.36	Shut-In(2)
247	127.94	124.54	End Shut-In(2)
248	2002.81	125.47	Final Hydro-static

Recovery

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

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64217

DST#: 1

ATTN: Saman Sharifaie

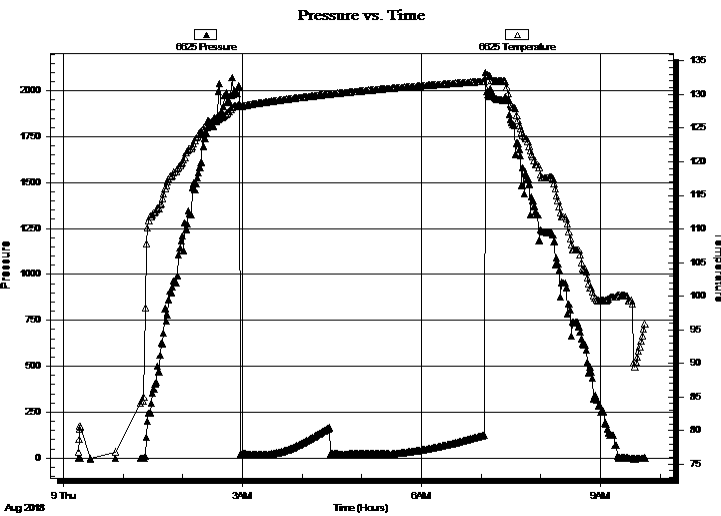
Test Start: 2018.08.09 @ 00:15:00

GENERAL INFORMATION:

Formation: **LKC "A - D"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 02:57:45
 Tester: James Winder
 Time Test Ended: 09:45:00
 Unit No: 83
 Interval: **4076.00 ft (KB) To 4220.00 ft (KB) (TVD)**
 Reference Elevations: 3210.00 ft (KB)
 Total Depth: 4220.00 ft (KB) (TVD)
 3205.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 KB to GR/CF: 5.00 ft

Serial #: 6625 Inside
 Press@RunDepth: psig @ 4077.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.08.09 End Date: 2018.08.09 Last Calib.: 2018.08.09
 Start Time: 00:15:05 End Time: 09:45:30 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF: 1/2" Blow at open, built to 3/4", died back to 1/4"
 60 - IS: No blow back
 60 - FF: No blow
 90 - FS: No blow



PRESSURE SUMMARY

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

Recovery

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

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64217

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 00:15:00

Tool Information

Drill Pipe:	Length: 3881.00 ft	Diameter: 3.80 inches	Volume: 54.44 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: 20000.00 lb
Drill Collar:	Length: 179.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 55.32 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4076.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	144.00 ft			
Tool Length:	173.00 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			4048.00	
Shut In Tool	5.00			4053.00	
Hydraulic tool	5.00			4058.00	
Jars	5.00			4063.00	
Safety Joint	3.00			4066.00	
Packer	5.00			4071.00	29.00 Bottom Of Top Packer
Packer	5.00			4076.00	
Stubb	1.00			4077.00	
Recorder	0.00	6625	Inside	4077.00	
Recorder	0.00	8017	Outside	4077.00	
Perforations	10.00			4087.00	
Blank Spacing	129.00			4216.00	
Perforations	1.00			4217.00	
Bullnose	3.00			4220.00	144.00 Bottom Packers & Anchor

Total Tool Length: 173.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64217

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 00:15:00

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: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 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	Mud 100%	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

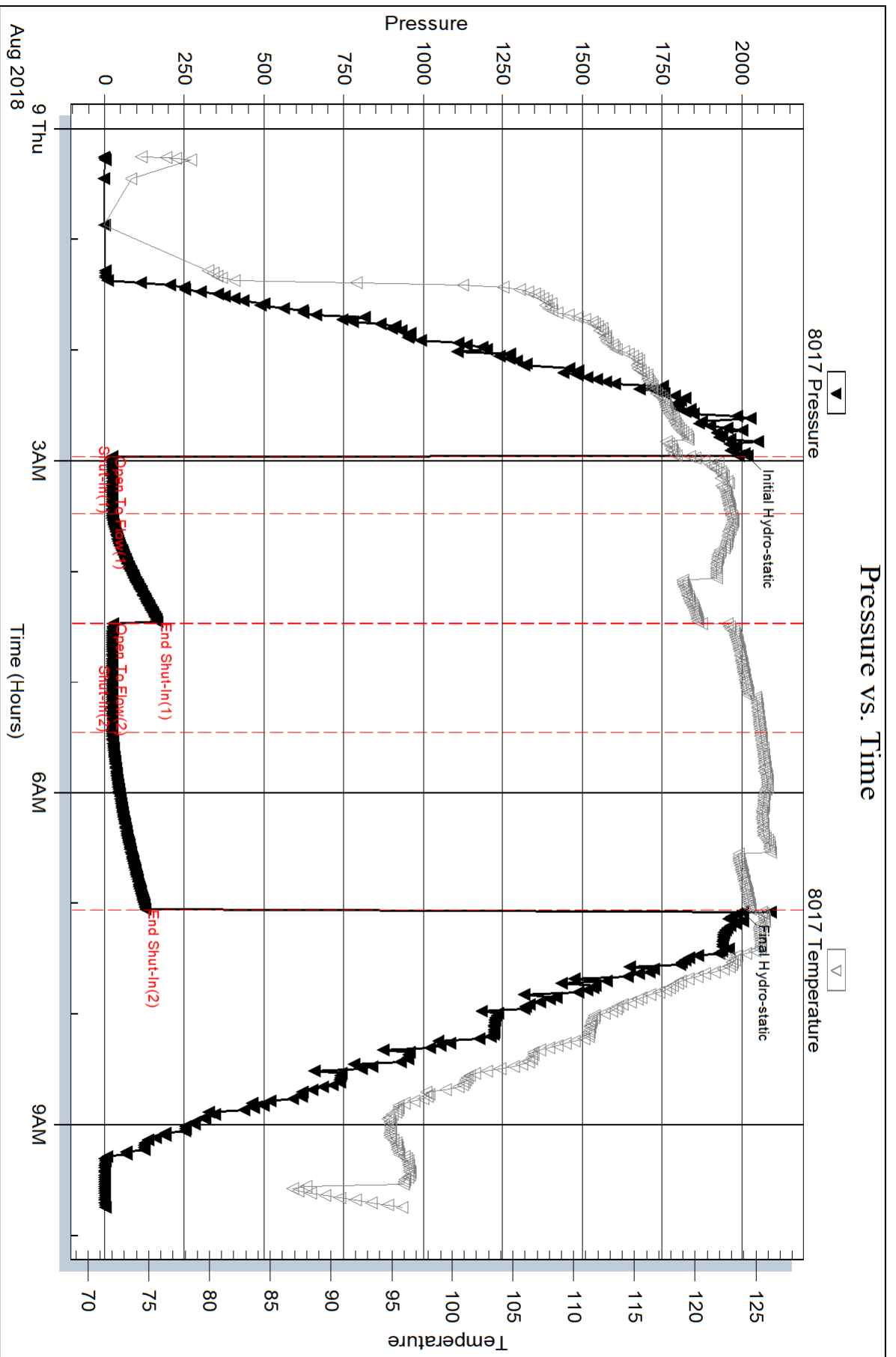
Num Gas Bombs: 0

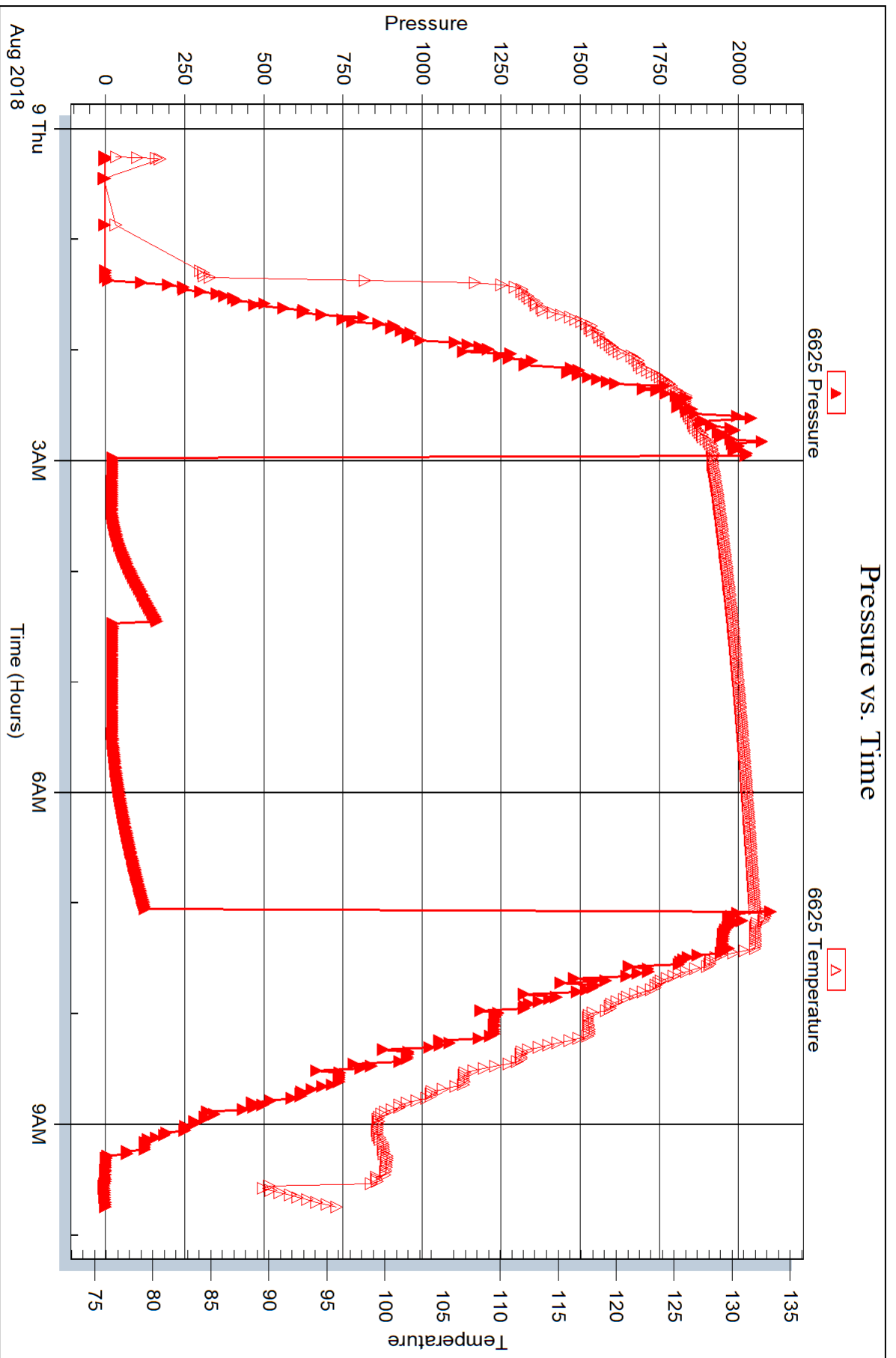
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 672020

ATTN: Saman Sharifaie

Ken #5-17

17-1s-35w Rawlins,KS

Start Date: 2018.08.09 @ 18:27:00

End Date: 2018.08.10 @ 02:48:15

Job Ticket #: 64218 DST #: 2

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

Printed: 2018.08.13 @ 16:23:39

Murfin Drilling Co., Inc.
17-1s-35w Rawlins,KS
Ken #5-17
DST # 2
LKC "G"
2018.08.09



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64218

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 18:27:00

GENERAL INFORMATION:

Formation: **LKC "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:29:45

Time Test Ended: 02:48:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4200.00 ft (KB) To 4258.00 ft (KB) (TVD)

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4258.00 ft (KB) (TVD)

3205.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 57.61 psig @ 4201.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.08.09

End Date:

2018.08.10

Last Calib.:

2018.08.10

Start Time: 18:27:05

End Time:

02:48:14

Time On Btm:

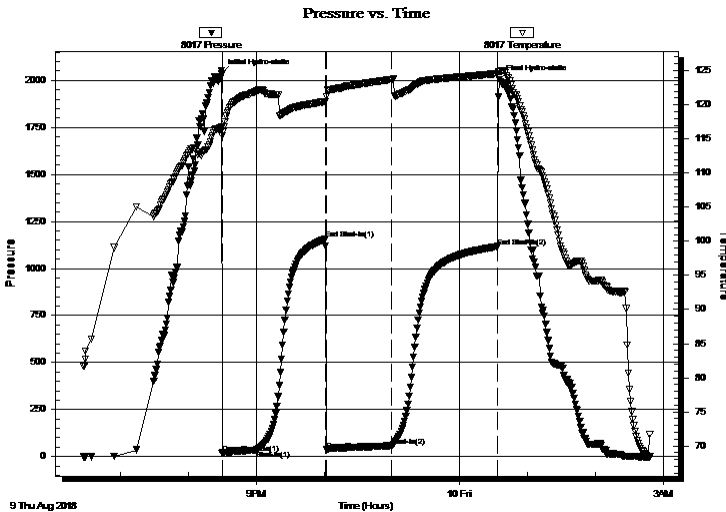
2018.08.09 @ 20:29:30

Time Off Btm:

2018.08.10 @ 00:35:15

TEST COMMENT: 30 - IF: Blow built to 4"
60 - IS: No blow back
60 - FF: Blow built to 10 1/4"
90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2034.11	116.84	Initial Hydro-static
1	19.25	115.45	Open To Flow (1)
31	34.56	121.97	Shut-In(1)
92	1155.78	120.47	End Shut-In(1)
93	35.76	121.21	Open To Flow (2)
150	57.61	123.71	Shut-In(2)
244	1116.60	124.57	End Shut-In(2)
246	2002.58	124.91	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	MCO 54%o, 38%m, 8%g	0.34
45.00	Oil 90%o, 6%m, 4%g	0.22
0.00	GIP = 65'	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64218

DST#: 2

ATTN: Saman Sharifaie

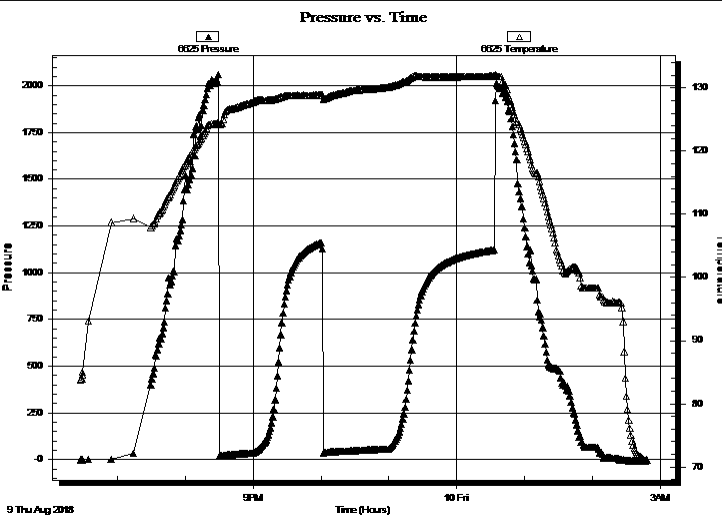
Test Start: 2018.08.09 @ 18:27:00

GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 20:29:45
 Tester: James Winder
 Time Test Ended: 02:48:15
 Unit No: 83
Interval: 4200.00 ft (KB) To 4258.00 ft (KB) (TVD)
 Reference Elevations: 3210.00 ft (KB)
 Total Depth: 4258.00 ft (KB) (TVD) 3205.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 6625 Inside
 Press@RunDepth: psig @ 4201.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.08.09 End Date: 2018.08.10 Last Calib.: 2018.08.10
 Start Time: 18:27:05 End Time: 02:48:44 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to 4"
 60 - IS: No blow back
 60 - FF: Blow built to 10 1/4"
 90 - FS: No blow back



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

Recovery		
Length (ft)	Description	Volume (bbl)
70.00	MCO 54%o, 38%m, 8%g	0.34
45.00	Oil 90%o, 6%m, 4%g	0.22
0.00	GIP = 65'	0.00

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., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64218

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 18:27:00

Tool Information

Drill Pipe:	Length: 4008.00 ft	Diameter: 3.80 inches	Volume: 56.22 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: 22000.00 lb
Drill Collar:	Length: 179.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 57.10 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4200.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	87.00 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			4172.00	
Shut In Tool	5.00			4177.00	
Hydraulic tool	5.00			4182.00	
Jars	5.00			4187.00	
Safety Joint	3.00			4190.00	
Packer	5.00			4195.00	29.00 Bottom Of Top Packer
Packer	5.00			4200.00	
Stubb	1.00			4201.00	
Recorder	0.00	6625	Inside	4201.00	
Recorder	0.00	8017	Outside	4201.00	
Perforations	20.00			4221.00	
Blank Spacing	33.00			4254.00	
Perforations	1.00			4255.00	
Bullnose	3.00			4258.00	58.00 Bottom Packers & Anchor

Total Tool Length: 87.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64218

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2018.08.09 @ 18:27:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

32.6 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 66.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
70.00	MCO 54%o, 38%m, 8%g	0.344
45.00	Oil 90%o, 6%m, 4%g	0.221
0.00	GIP = 65'	0.000

Total Length: 115.00 ft Total Volume: 0.565 bbl

Num Fluid Samples: 0

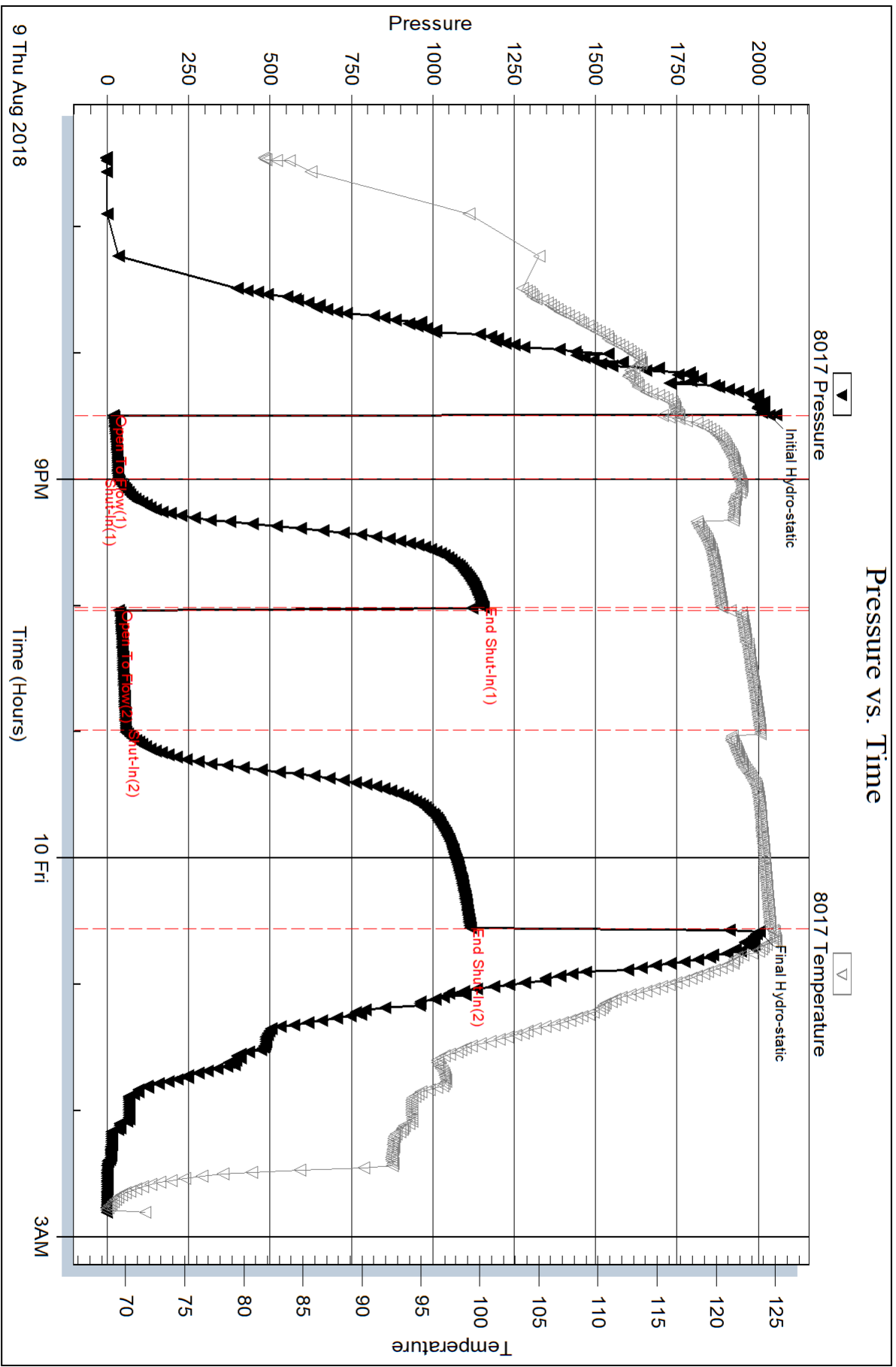
Num Gas Bombs: 0

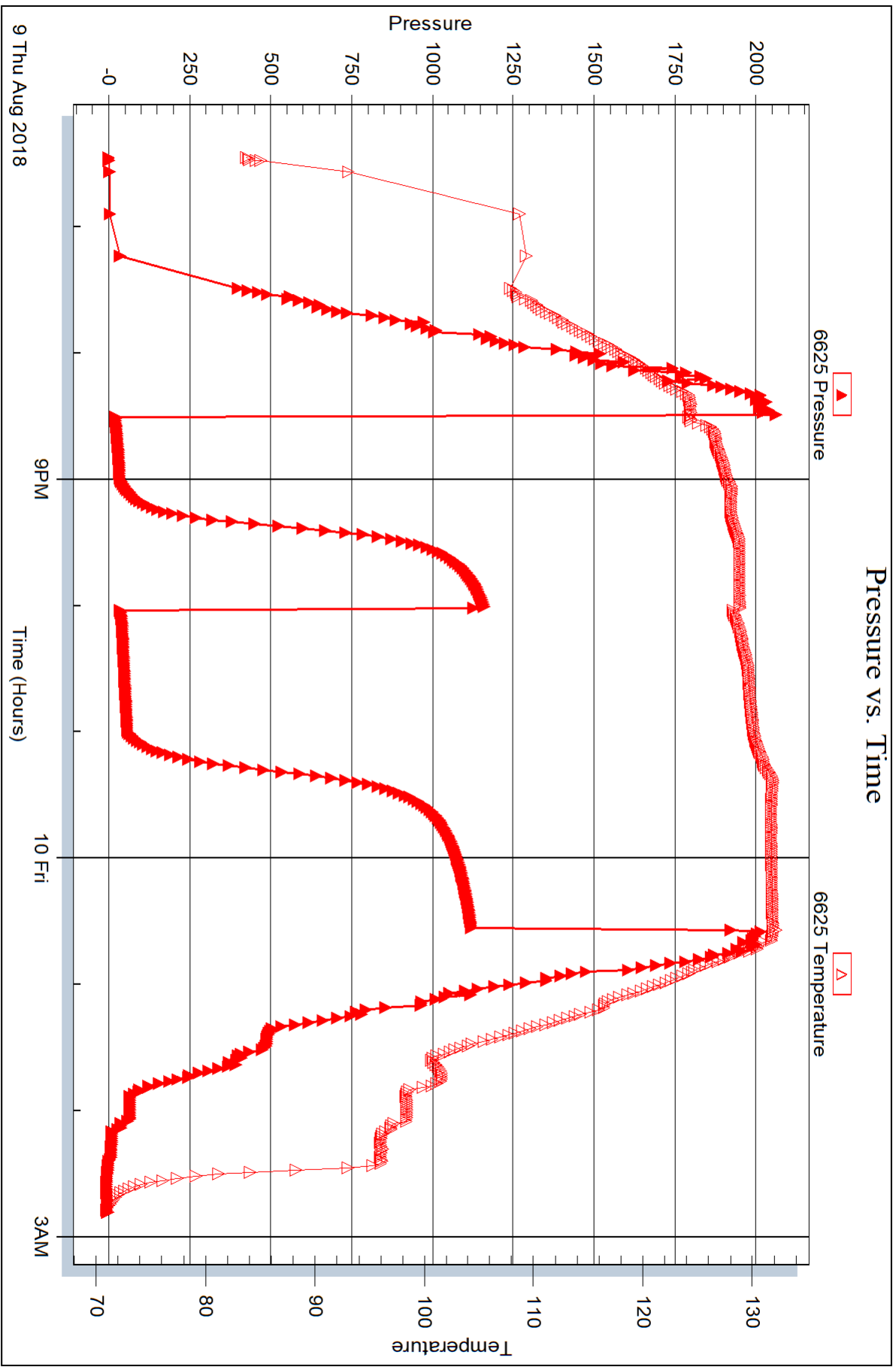
Serial #:

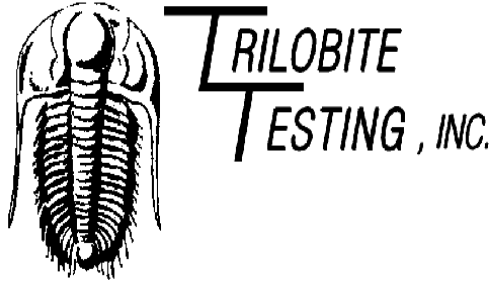
Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 34 api @ 74 deg F Corrected Gravity = 32.6 api







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 672020

ATTN: Saman Sharifaie

Ken #5-17

17-1s-35w Rawlins,KS

Start Date: 2018.08.10 @ 18:00:00

End Date: 2018.08.11 @ 02:30:45

Job Ticket #: 64219 DST #: 3

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

Printed: 2018.08.13 @ 16:23:15

Murfin Drilling Co., Inc. 17-1s-35w Rawlins,KS Ken #5-17 DST # 3 LKC "G - J" 2018.08.10



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64219

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2018.08.10 @ 18:00:00

GENERAL INFORMATION:

Formation: **LKC "G - J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:12:30

Time Test Ended: 02:30:45

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4258.00 ft (KB) To 4350.00 ft (KB) (TVD)

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4350.00 ft (KB) (TVD)

3205.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 89.15 psig @ 4259.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.08.10 End Date: 2018.08.11

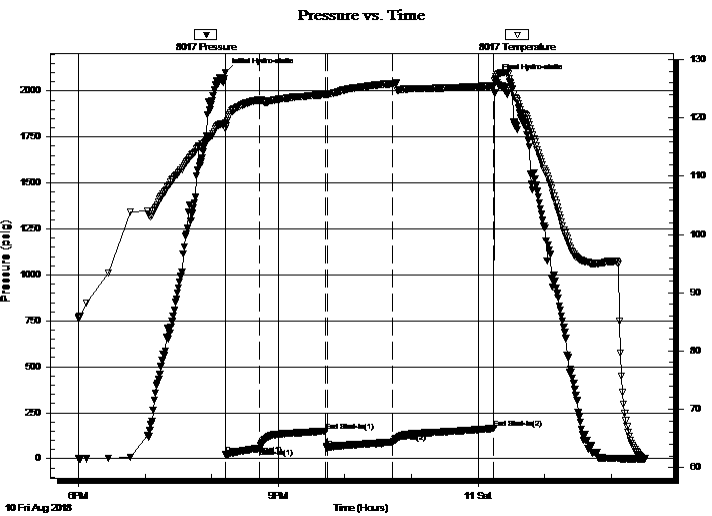
Last Calib.: 2018.08.11

Start Time: 18:00:05 End Time: 02:30:44

Time On Btm: 2018.08.10 @ 20:12:15

Time Off Btm: 2018.08.11 @ 00:15:45

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 6 1/4 min., built to 45 1/2"
60 - IS: No blow back
60 - FF: Blow built to BOB at 5 min., built to 39 1/2"
90 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2101.07	119.10	Initial Hydro-static
1	26.19	118.14	Open To Flow (1)
31	57.13	123.09	Shut-In(1)
91	150.40	124.00	End Shut-In(1)
92	54.71	123.97	Open To Flow (2)
151	89.15	125.86	Shut-In(2)
242	165.09	125.52	End Shut-In(2)
244	2067.53	126.67	Final Hydro-static

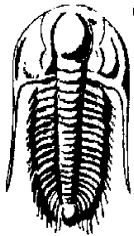
Recovery

Length (ft)	Description	Volume (bbl)
120.00	GOCM 56%m, 34%o, 10%g	0.59
55.00	Mud w/oil spots 92%m, 6%g, 2%o	0.27

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64219

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2018.08.10 @ 18:00:00

GENERAL INFORMATION:

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Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4258.00 ft (KB) To 4350.00 ft (KB) (TVD)

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4350.00 ft (KB) (TVD)

3205.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: psig @ 4259.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.08.10

End Date: 2018.08.11

Last Calib.: 2018.08.11

Start Time: 18:00:05

End Time: 02:31:14

Time On Btm:

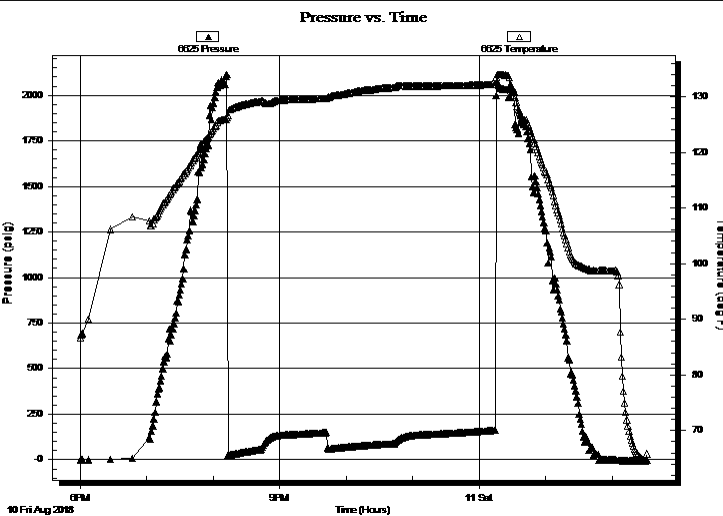
Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 6 1/4 min., built to 45 1/2"

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60 - FF: Blow built to BOB at 5 min., built to 39 1/2"

90 - FS: No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
120.00	GOCM 56%m, 34%o, 10%g	0.59
55.00	Mud w/oil spots 92%m, 6%g, 2%o	0.27

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., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64219

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2018.08.10 @ 18:00:00

Tool Information

Drill Pipe:	Length: 4070.00 ft	Diameter: 3.80 inches	Volume: 57.09 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: 179.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 57.97 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4258.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	92.00 ft			
Tool Length:	121.00 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			4230.00	
Shut In Tool	5.00			4235.00	
Hydraulic tool	5.00			4240.00	
Jars	5.00			4245.00	
Safety Joint	3.00			4248.00	
Packer	5.00			4253.00	29.00 Bottom Of Top Packer
Packer	5.00			4258.00	
Stubb	1.00			4259.00	
Recorder	0.00	6625	Inside	4259.00	
Recorder	0.00	8017	Outside	4259.00	
Perforations	22.00			4281.00	
Blank Spacing	65.00			4346.00	
Perforations	1.00			4347.00	
Bullnose	3.00			4350.00	92.00 Bottom Packers & Anchor

Total Tool Length: 121.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

17-1s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 672020

Ken #5-17

Job Ticket: 64219

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2018.08.10 @ 18:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 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
120.00	GOCM 56%m, 34%o, 10%g	0.590
55.00	Mud w /oil spots 92%m, 6%g, 2%o	0.270

Total Length: 175.00 ft

Total Volume: 0.860 bbl

Num Fluid Samples: 0

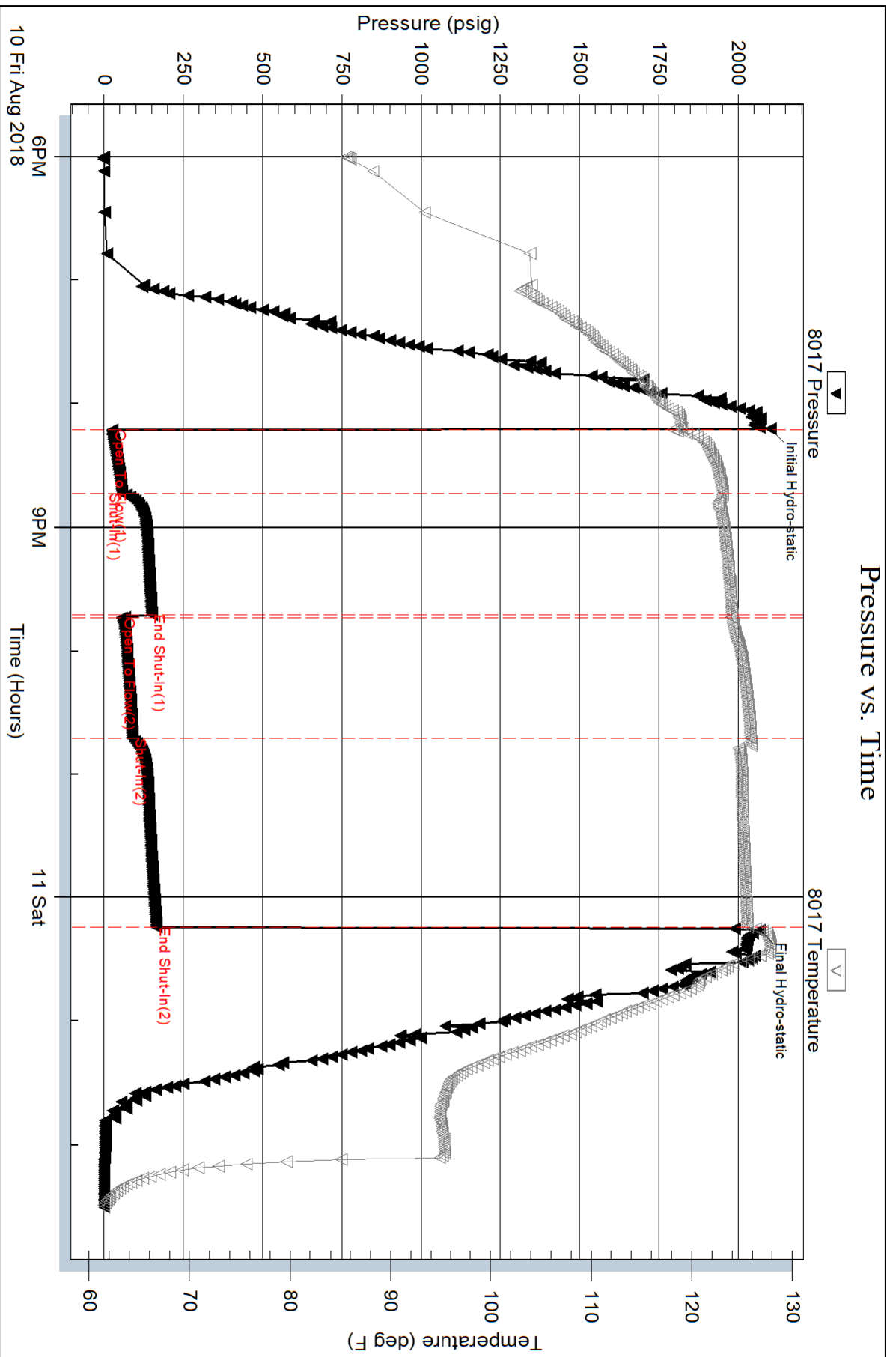
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



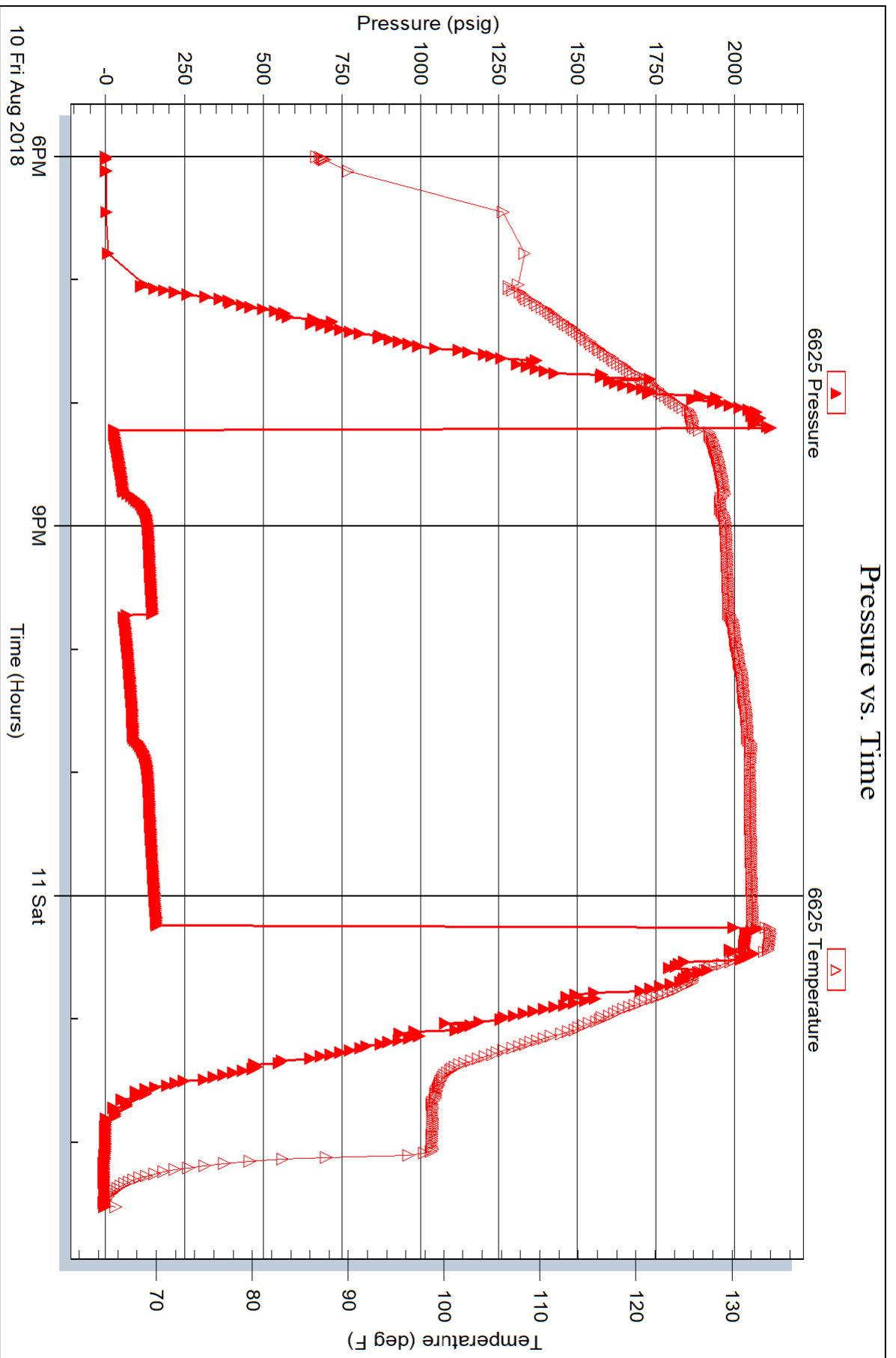
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Ken #5-17

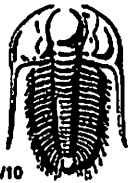
DST Test Number: 3



Triobite Testing, Inc

Ref. No: 64219

Printed: 2018.08.13 @ 16:23:16



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64217

Well Name & No. Ken *5-17 Test No. 1 Date 8-8-18
 Company Murfin Drilling Co. Inc Elevation 3210 KB 3205 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Saman Sharifaie Rig Murfin #3
 Location: Sec. 17 Twp 1S Rge. 35W Co. Rawlins State KS

Interval Tested 4076 - 4220 Zone Tested LKC "A-D"
 Anchor Length 144 Drill Pipe Run 3881 Mud Wt. 9.3
 Top Packer Depth 4071 Drill Collars Run 179 Vis 60
 Bottom Packer Depth 4076 Wt. Pipe Run - WL 6.8
 Total Depth 4220 Chlorides 800 ppm System LCM 4

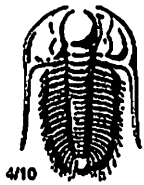
Blow Description IF: 1/2" Blow at open, built to 3/4", died back to 1/4"
ISI: No blowback
FF: No blow
FSI: No blow

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 Total 10 BHT 125 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2016 Test 1150 T-On Location 20:20 8/8
 (B) First Initial Flow 24 Jars 250 T-Started 06:15
 (C) First Final Flow 23 Safety Joint 75 T-Open 2:57
 (D) Initial Shut-In 167 Circ Sub _____ T-Pulled 7:03
 (E) Second Initial Flow 26 Hourly Standby _____ T-Out 9:40 8/9
 (F) Second Final Flow 25 Mileage 104RT 104 Comments _____
 (G) Final Shut-In 128 Sampler _____ Ruined Shale Packer _____
 (H) Final Hydrostatic 2003 Straddle _____ Ruined Packer _____
 Shale Packer _____ Extra Copies _____
 Initial Open 30 Extra Packer _____ Sub Total 0
 Initial Shut-In 60 Extra Recorder _____ Total 1579
 Final Flow 60 Day Standby _____ MP/DST Disc't _____
 Final Shut-In 90 Accessibility _____
 Sub Total 1579

Approved By _____ Our Representative James Winder
 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.



TRIBOLITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64218

Well Name & No. Ken #5-17 Test No. 2 Date 8-9-18
 Company Murfin Drilling Co Inc Elevation 3210 KB 3205 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Saman Sharifaie Rig Murfin #3
 Location: Sec. 17 Twp 1s Rge. 35w Co. Rawlins State KS

Interval Tested 4200 ~~4222~~ - 4258 Zone Tested LKC 6"
 Anchor Length ~~36~~ 58 Drill Pipe Run 4008 Mud Wt. 9.2
 Top Packer Depth ~~4217~~ 4195 Drill Collars Run 179 Vis 66
 Bottom Packer Depth ~~4222~~ 4200 Wt. Pipe Run - WL 6.8
 Total Depth 4258 Chlorides 1000 ppm System LCM 4

Blow Description IF: Blow built to 4"
ISI: No blowback
FF: Blow built to 10 1/4"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>45</u>	<u>Oil</u>	<u>4</u>	<u>90</u>	<u>-</u>	<u>6</u>
<u>70</u>	<u>MCO</u>	<u>8</u>	<u>54</u>	<u>-</u>	<u>38</u>
<u>65</u>	<u>GIP = 65'</u>				

Rec Total 115 BHT 125 Gravity 32.6 API RW @ °F Chlorides ppm
 (A) Initial Hydrostatic 2034 Test 1150 T-On Location 17:25 8/9
 (B) First Initial Flow 19 Jars 250 T-Started 18:27
 (C) First Final Flow 35 Safety Joint 75 T-Open 20:29
 (D) Initial Shut-In 1156 Circ Sub _____ T-Pulled 00:33
 (E) Second Initial Flow 36 Hourly Standby _____ T-Out 2:45 8/10
 (F) Second Final Flow 58 Mileage 104RT 104 Comments _____
 (G) Final Shut-In 1117 Sampler _____
 (H) Final Hydrostatic 2003 Straddle _____
 Shale Packer _____ Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 0
 Total 1579
 MP/DST Disc't _____
 Sub Total 1579

Approved By _____ Our Representative James Wicks
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64219

Well Name & No. Ken #5-17 Test No. 3 Date 8-10-18
 Company Murfin Drilling Co. Inc Elevation 3210 KB 3205 GL
 Address 250 N. Water St E 300 Wichita, KS 67202
 Co. Rep / Geo. Saman Sharifaie Rig Murfin #3
 Location: Sec. 17 Twp 15 Rge. 35w Co. Rawlins State KS

Interval Tested 4258-4350 Zone Tested LKC "G-J"
 Anchor Length 92 Drill Pipe Run 4070 Mud Wt. 9.0
 Top Packer Depth 4253 Drill Collars Run 179 Vis 59
 Bottom Packer Depth 4258 Wt. Pipe Run - WL 6.4
 Total Depth 4350 Chlorides 900 ppm System LCM 5

Blow Description IF: Blow built to BOB (11") at 6 1/4 min., built to 45 1/2"
ISI: No blowback
FF: Blow built to BOB at 5 min., built to 39 1/2"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>55</u>	<u>Mud w/oil spots</u>	<u>6</u>	<u>2</u>	<u>92</u>	
<u>120</u>	<u>60cm</u>	<u>10</u>	<u>34</u>	<u>56</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 175 BHT 126 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

- (A) Initial Hydrostatic 2101
- (B) First Initial Flow 26
- (C) First Final Flow 57
- (D) Initial Shut-In 150
- (E) Second Initial Flow 55
- (F) Second Final Flow 89
- (G) Final Shut-In 165
- (H) Final Hydrostatic 2068

- Test 1150
- Jars 250
- Safety Joint 75
- Circ Sub _____
- Hourly Standby _____
- Mileage 104 RT 104
- Sampler _____
- Straddle _____
- Shale Packer _____
- Extra Packer _____
- Extra Recorder _____
- Day Standby _____
- Accessibility _____
- Sub Total 1579

- T-On Location 16:35
- T-Started 18:00
- T-Open 20:12
- T-Pulled 00:14
- T-Out 2:25

- Comments _____
- Ruined Shale Packer _____
- Ruined Packer _____
- Extra Copies _____
- Sub Total 0
- Total 1579
- MP/DST Disc't _____

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

Approved By _____ Our Representative James Winder

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Saman Sharifaie

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY: **Murfin Drilling Co., Inc.**
LEASE: **Ken #5-17**

ELEVATIONS
KB 3210'

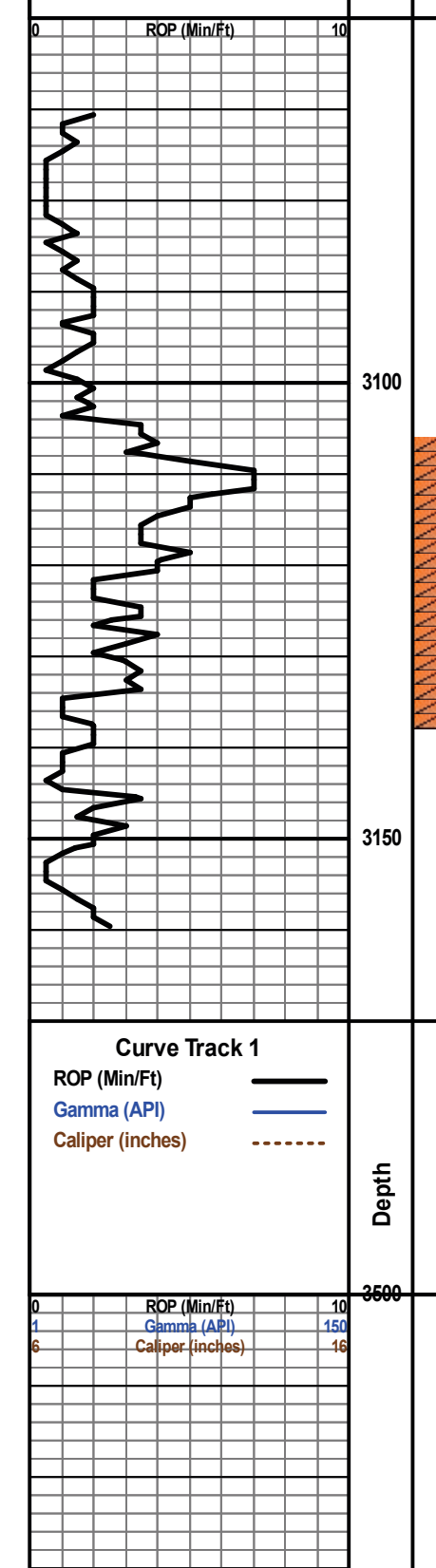
FIELD: **Wildcat**
LOCATION: **330' E.N.L. & 990' E.W.L.**
SEC: **17** TWP: **1S** RGE: **33W**
COUNTY: **Randolph** STATE: **Kansas**
CONTRACTOR: **Murfin Drilling #3**
RTPD: **08/03/18** COMP: **08/12/18**
MUD UP: **4500'** TYPE MUD: **Chemical**

CASING
CONDUCTOR: **8-5/8" at 301'**
SURFACE: **5-1/2" at 493'**
PRODUCTION: **5-1/2" at 493'**

SAMPLES SAVED FROM: **3600'** TO RTD
DRILLING TIME KEPT FROM: **3600'** TO RTD
SAMPLES EXAMINED FROM: **3600'** TO RTD
GEOLOGICAL SUPERVISION FROM: **3300'**
GEOLOGICAL WELL: **MDCI - Ken #1-17**

ELECTRICAL SURVEYS
CND, DJL, MEL, SANC
Fluoriter Hydrine

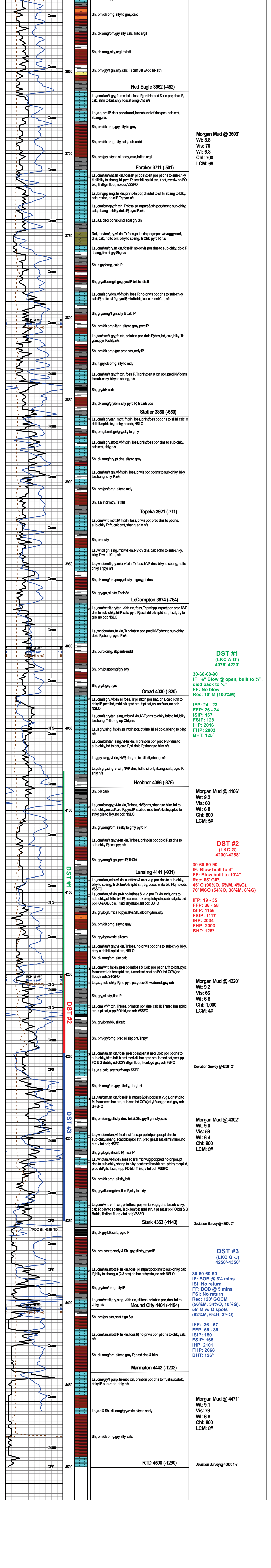
Formation	Sample Tops	E-log Tops	Strat
Anhydrite	3104 (+106)	3106 (+104)	-9
Base Anhydrite	3134 (+76)	3138 (+72)	-3
Topeka	3708 (-408)	3711 (-501)	-4
Topeka	3708 (-408)	3921 (-711)	-4
Ordov	4029 (-819)	4030 (-820)	-3
Lansing	4138 (-928)	4141 (-931)	-3
Stark	4333 (-1143)	4335 (-1145)	-3
Mound City	4403 (-1193)	4404 (-1194)	-4
Marmaton	4442 (-1232)	4442 (-1232)	-1



REMARKS Due to fair shows of oil in multiple potential pay zones and positive DST results, it is recommended and agreed upon by all parties that production casing be set to further evaluate this well.

Respectfully Submitted,
Saman Sharifaie
Petroleum Geologist

*Tops have been adjusted to electric logs



ROP (Min/Ft) vs Depth (Feet) graph showing drilling rate of penetration and depth.

ROP (Min/Ft) vs Depth (Feet) graph showing drilling rate of penetration and depth.

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ROP (Min/Ft) vs Depth (Feet) graph showing drilling rate of penetration and depth.

TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin Drilling INC.	Date:	8/11/2018	Tickot #:	ICT1285
Field Rep:	Nathan Witt				
Address:					
City, State:	Colby, KS				
County, Zip:					

Field Order No.:		Open Hole:	Shoe Joint 22.63	Perf Depths (ft)	Perfs
Well Name:	Ken 5-17	Casing Depth:	4493		
Location:	Rawlins Co Ks	Casing Size:	5 1/2		
Formation:		Tubing Depth:			
Type of Service:	Cement	Tubing Size:			
Well Type:	Oil	Liner Depth:			
Age of Well:	New	Liner Size:			
Packer Type:		Liner Top:			
Packer Depth:		Liner Bottom:			
Treatment Via:	Cement	Total Depth:	4500		
				Total Perfs	0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
3:37 AM					Arrive on location			
3:40 AM					Safety meeting			
3:50 AM					Rig Up			
6:00 AM					Rig runs casing.			
6:56 AM					Circulate			
6:26 AM					Resume running casing			
7:00 AM					Casing on bottom. Circulate ball through at 800 psi			
8:00 AM	4.0		300.0		Mix 500 gls of mudflush			12.00
8:08 AM	2.0		50.0		Plug MH and RH with 60 sks			23.00
8:11 AM	5.0		350.0		Mix 250 sks of Hcon 2.65 yield			113.00
	6.0		360.0		Tail in 200 sks of Hlong 1.49 yield			53.00
8:40 AM					Wash up			
8:50 AM	6.0		1,500.0		Drop plug and displace			108.00
9:20 AM					Final Lift was 1500 psi plug landed at 2200 psi			
9:23 AM					Release pressure. Plug held			
9:35 AM					Rig down			
					Turbos on 1-13 34, 44 Baskets on 11 35 45			
10:00 AM					Depart			
TOTAL:						-	-	307.00

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
6.0	4.4	1,500.0	510.0

PRODUCTS USED

300 sks of Hcon 200 sks of Hlong

Treater: Dave Rotzloff

Customer: _____