

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:	
----------------	-------	---------	------------	--

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	SOWERS 'A' 1-19
Doc ID	1470041

All Electric Logs Run

DIL
DUCP
MEL
BHCS
CBL







**CEMENT TREATMENT REPORT**

Customer: <b>Murfin Drilling Co.</b>	Well: <b>Sowers 'A' #1-19</b>	Ticket: <b>ICT2167</b>
City, State: <b>Witchta, KS</b>	County: <b>Cheyenne, KS</b>	Date: <b>7/21/2019</b>
Field Rep: <b>Jay</b>	S-T-R: <b>Sec19 - T2S - R38W</b>	Service: <b>Cement</b>

Downhole Information	
Hole Size:	7 7/8 In
Hole Depth:	5200 ft
Casing Size:	8 5/8 In
Casing Depth:	329 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Depth:	ft
Displacement:	bbbls

*Plugging*

Slurry	
Weight:	13.8 # / sx
Water / Sx:	6.89 gal / sx
Yield:	1.42 ft <sup>3</sup> / sx
Bbls / Ft.:	
Depth:	ft
Volume:	bbbls
Excess:	%
Total Slurry:	bbbls
Total Sacks:	255 sx

Cement Blend		
Product	%	#
Class A	60.0	13923
Gel	4.0	928
CaCl		
Metso		
KofSeal		
Flo-Seal	1/4#/sk	64
Salt		
Fly Ash	40.0	9282
<b>Total</b>		<b>24,197</b>

TIME	RATE	PSI	BBLs	REMARKS	TIME	RATE	PSI	BBLs	REMARKS
6:00 AM				Called for job	2:45 PM	3.0	75	7.50	Plug Rathole w/ 30sx slurry @ 13.8ppg
8:00 AM				Depart Oakley yard	2:52 PM	2.5	50	3.80	Plug Mousehole w/ 15sx slurry @ 13.8ppg
10:00 AM				Arrive on locn. Rig RIH w/ DP to 3360'	2:56 PM	3.0	75	10.00	Pump 40sx @ 13.8ppg & plug surface
10:05 AM				JSA, discuss moving, spotting & rig-u					Y - 1.42cuf/sk, MW - 6.89g/sk
10:10 AM				Move on, spot & rig-up	3:00 PM				Shutdown
10:30 AM				Rig-up complete	3:05 PM				Wash-up pumps & lines
10:45 AM				Circulate & condltion hole	3:10 PM				JSA, discuss rigging down & rackup equip.
				Plug #1 3360' - 3150'	3:15 PM				Rig down & rack-up equipment
11:32 AM	4.0	130.0	5.0	Pump H2O ahead	3:45 AM				Rig down complete
11:35 AM	4.7	290.0	12.5	Mix & pump 50sx slurry @ 13.8ppg	3:50 PM				JSA, discuss journey management
				Y - 1.42cuf/sk, MW - 6.89g/sk	4:00 PM				Depart locn
11:37 AM	3.5	140.0	2.0	Pump H2O behind					
11:41 AM	7.0	200.0	42.8	Rig displace w/ mud					
11:47 AM				Rig POH to 2550'					
				Set Plug #2 - 2550' - 2130'					
12:19 PM	3.2	80.0	5.0	Pump H2O ahead					Thanks for calling Hurricane Svcs Inc.
12:22 PM	5.5	270.0	25.3	Mix & pump 100sx slurry @ 13.8ppg					
				Y - 1.42cuf/sk, MW - 6.89g/sk					
12:27 PM	3.4	140.0	2.0	Pump H2O behind					
12:30 PM			29.7	Rig displace w/ mud					
12:35 PM				Rig POH to 380'					
				Set Plug #3 - 380' - 185'					
1:49 PM	4.7	160.0	12.5	Mix & pump 50sx slurry @ 13.8ppg					
				Y - 1.42cuf/sk, MW - 6.89g/sk					
1:52 PM	3.4	140.0	2.4	Displace w/ H2O					
1:54 PM				Rig POH to surface					
2:05 PM				L/D Kelly, Rathole & Mousehole					

CREW			SUMMARY		
Cementer:	Scott Green	74	Average Rate	Average Pressure	Total Fluid
Pump Operator:	Michael Rebarcek	231	3.99167 bpm	145.83 psi	160.50 bbbls
Bulk #1:	Jesse Jones	242			
Bulk #2:					

MDCI  
 Sowers 'A' #1-19  
 330FSL 330FEL  
 Sec. 19-T2S-R38W  
 3440' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3329	+111	+45 / -22	3335	+105	+39 / -28
B/Anhydrite	3370	+70	+40 / -26	3366	+74	+44 / -22
Topeka	4133	-693	+50 / -12	4141	-701	+47 / -20
Oread	4266	-826	+56 / -1	4280	-840	+42 / -15
Lansing	4347	-907	+46 / -4	4352	-912	+41 / -9
Stark	4578	-1138	+56 / -9	4590	-1150	+44 / -21
Mound City	4622	-1182	+72 / -2	4650	-1210	+44 / -30
Ft Scott	4755	-1315	+70 / -5	4786	-1346	+39 / -36
Oakley	4829	-1389	+81 / -5	4865	-1425	+45 / -41
Mississippian	5133	-1693	+45 / -81	5144	-1704	+34 / -92
RTD	5200					
LTD				5201		



# Robert D. Hendrix

## Petroleum Geologist

### GEOLOGIST'S REPORT

#### DRILLING TIME AND SAMPLE LOG

COMPANY: **Murfin Drilling Co. Inc**

LEASE: **Sowers A #1-19**

FIELD: **Wildcat**

LOCATION: **330'fs1 & 330'fe1**

SEC: **19** TWP: **28S** RGE: **38W**

COUNTY: **Cherokee** STATE: **KS**

CONTRACTOR: **Murfin Drilling Co. Inc. Rig #3**

SPUD: **7/9/2019** COMP: **7/22/2019**

RTD: **5/200'** LTD: **5/201'**

MUD UP: **3600** TYPE MUD: **Chemical**

SAMPLES SAVED FROM: **4020'** TO **5200'**

DRILLING TIME KEPT FROM: **4020'** TO **5200'**

SAMPLES EXAMINED FROM: **4020'** TO **5200'**

GEOLOGICAL SUPERVISION FROM: **3950'**

GEOLOGIST ON WELL: **Robert D. Hendrix**

FORMATION TOPS: **ELECTRIC LOG**

ANHYDRITE: **4141 (-701)**

TOPEKA: **4133 (-693)**

OREAD: **4266 (-826)**

LANSLING: **4352 (-912)**

STARK SHALE: **4578 (-1138)**

MOUND CITY: **4622 (-1182)**

FT. SCOTT: **4786 (-1346)**

MISSISSIPPIAN: **5144 (-1704)**

ELEVATIONS: **KB 3440'**

DF: **GL 3435'**

CONDUCTOR: **From Kelly Blasting**

CASING: **Surface 8-5/8" @ 369'**

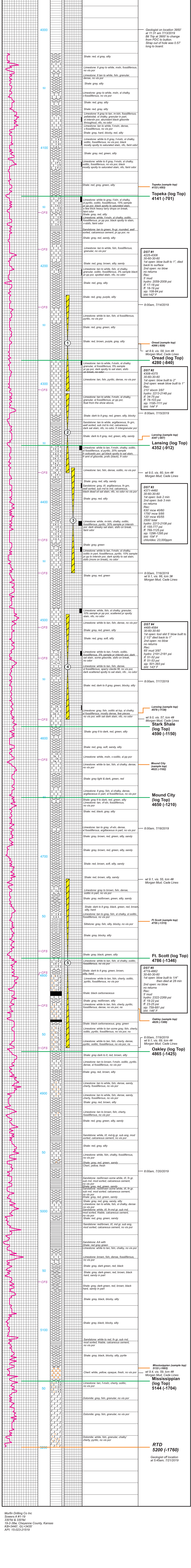
PRODUCTION: **Production**

ELECTRICAL SURVEYS: **Camp Research Dial Induction, Macrolog, Sonic Log**

REMARKS: **All shows were tested and negative results from the DST's. The decision was made to condemn of this well. This Geologists Report was adjusted to the Electric Log's.**

AP# 15-023-21519

### LEGEND







## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Sowers A #1-19**

#### **19-2s-38w Cheyenne,KS**

Start Date: 2019.07.14 @ 19:13:00

End Date: 2019.07.15 @ 03:16:09

Job Ticket #: 65260                      DST #: 1

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

Printed: 2019.07.22 @ 14:46:39



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65260

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2019.07.14 @ 19:13:00

## GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:10:20

Time Test Ended: 03:16:09

Test Type: Conventional Bottom Hole (Initial)

Tester: Ryan Nichols

Unit No: 71

**Interval: 4225.00 ft (KB) To 4306.00 ft (KB) (TVD)**

Reference Elevations: 3440.00 ft (KB)

Total Depth: 4306.00 ft (KB) (TVD)

3435.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8366 Outside**

Press@RunDepth: 19.06 psig @ 4226.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.14

End Date:

2019.07.15

Last Calib.: 2019.07.15

Start Time: 19:13:01

End Time:

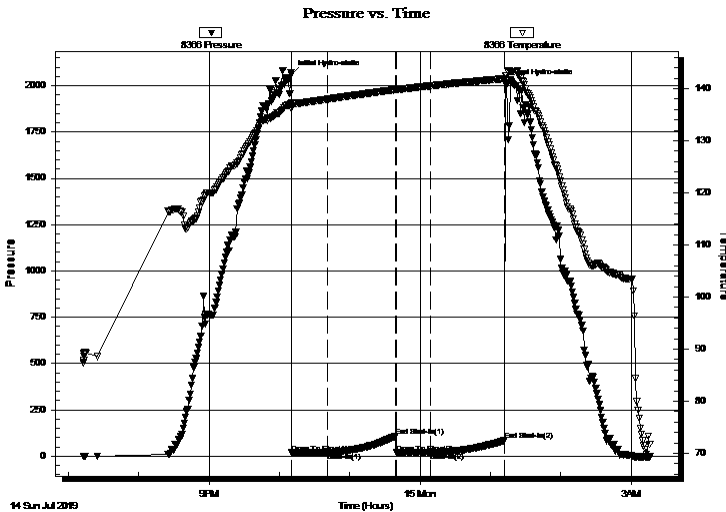
03:16:10

Time On Btm: 2019.07.14 @ 22:10:10

Time Off Btm: 2019.07.15 @ 01:12:50

**TEST COMMENT:** 30 IF - Blow built to 1" died back to surface blow  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2059.15	137.19	Initial Hydro-static
1	17.45	136.15	Open To Flow (1)
31	18.20	137.96	Shut-In(1)
90	108.46	139.79	End Shut-In(1)
90	17.83	139.78	Open To Flow (2)
120	19.06	140.53	Shut-In(2)
182	84.13	141.92	End Shut-In(2)
183	2009.14	142.52	Final Hydro-static

## Recovery

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

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65260

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2019.07.14 @ 19:13:00

## GENERAL INFORMATION:

Formation: **Oread**

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Test Type: Conventional Bottom Hole (Initial)

Tester: Ryan Nichols

Unit No: 71

**Interval: 4225.00 ft (KB) To 4306.00 ft (KB) (TVD)**

Reference Elevations: 3440.00 ft (KB)

Total Depth: 4306.00 ft (KB) (TVD)

3435.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8353**

**Inside**

Press@RunDepth: psig @ 4226.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.14

End Date:

2019.07.15

Last Calib.:

2019.07.15

Start Time: 19:13:01

End Time:

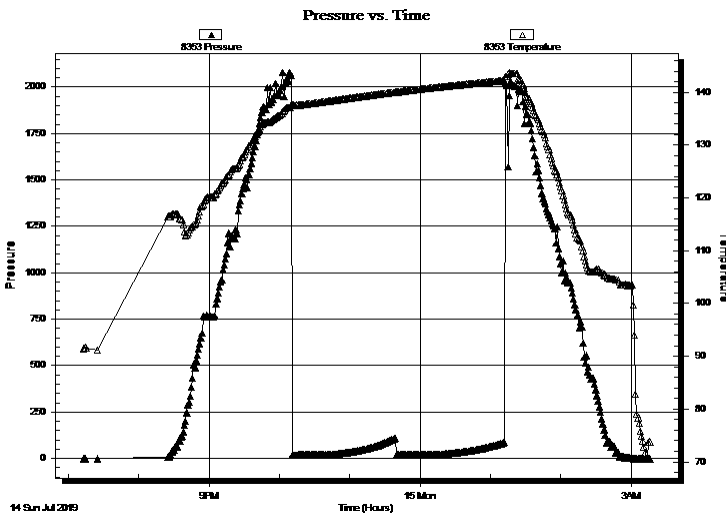
03:16:10

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 IF - Blow built to 1" died back to surface blow  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

## PRESSURE SUMMARY



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

## Recovery

## Gas Rates

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

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65260

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2019.07.14 @ 19:13:00

## Tool Information

Drill Pipe:	Length: 4040.00 ft	Diameter: 3.80 inches	Volume: 56.67 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 57.54 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4225.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	81.00 ft			
Tool Length:	109.00 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			4202.00	
Hydraulic tool	5.00			4207.00	
Jars	5.00			4212.00	
Safety Joint	3.00			4215.00	
Packer	5.00			4220.00	28.00 Bottom Of Top Packer
Packer	5.00			4225.00	
Stubb	1.00			4226.00	
Recorder	0.00	8353	Inside	4226.00	
Recorder	0.00	8366	Outside	4226.00	
Perforations	12.00			4238.00	
Blank Spacing	65.00			4303.00	
Bullnose	3.00			4306.00	81.00 Bottom Packers & Anchor

**Total Tool Length: 109.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65260

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2019.07.14 @ 19:13:00

### 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: 6.38 in<sup>3</sup>

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
5.00	Mud 100%M	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:

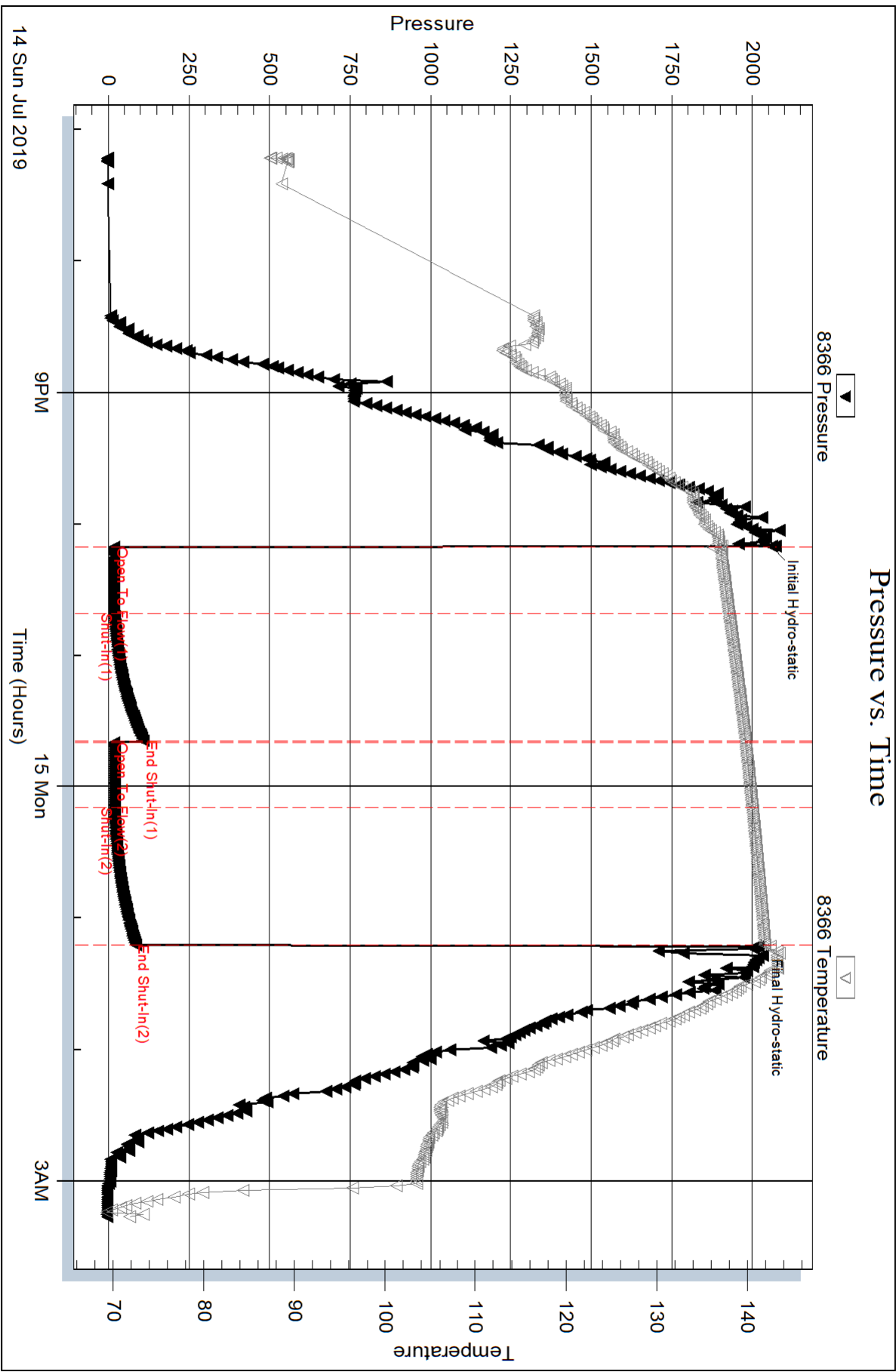


Serial #: 8366

Outside Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 1



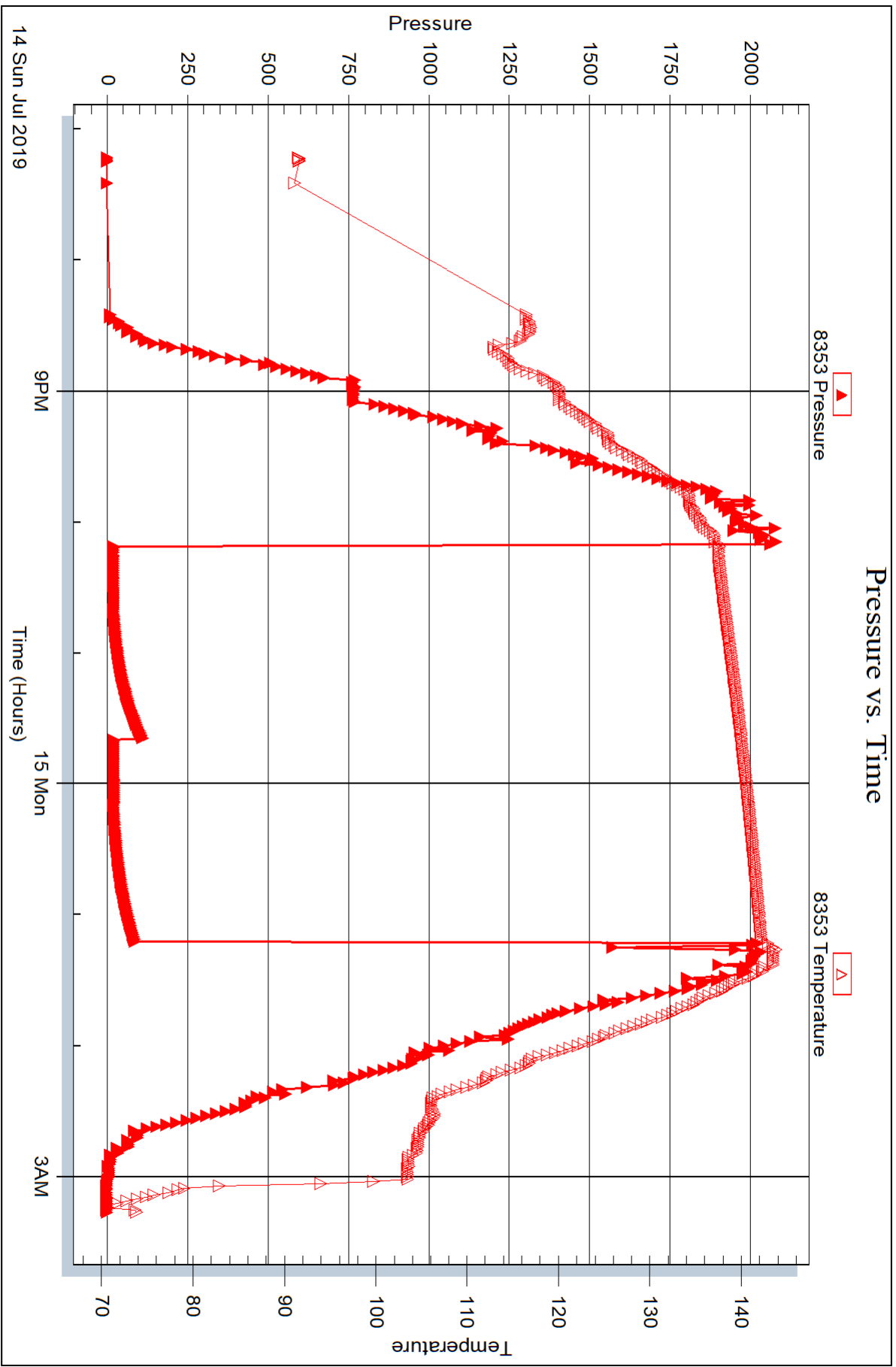
Serial #: 8353

Inside

Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 65260

Printed: 2019.07.22 @ 14:46:41



## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Sowers A #1-19**

#### **19-2s-38w Cheyenne,KS**

Start Date: 2019.07.15 @ 14:15:00

End Date: 2019.07.15 @ 21:52:09

Job Ticket #: 65261                      DST #: 2

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

Printed: 2019.07.22 @ 14:45:52



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne, KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65261

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2019.07.15 @ 14:15:00

## GENERAL INFORMATION:

Formation: **LKC A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:15:00

Time Test Ended: 21:52:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 71

**Interval: 4308.00 ft (KB) To 4375.00 ft (KB) (TVD)**

Reference Elevations: 3440.00 ft (KB)

Total Depth: 4375.00 ft (KB) (TVD)

3435.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8366 Outside**

Press@RunDepth: 103.29 psig @ 4309.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.15

End Date:

2019.07.15

Last Calib.:

2019.07.15

Start Time: 14:15:01

End Time:

21:52:10

Time On Btm:

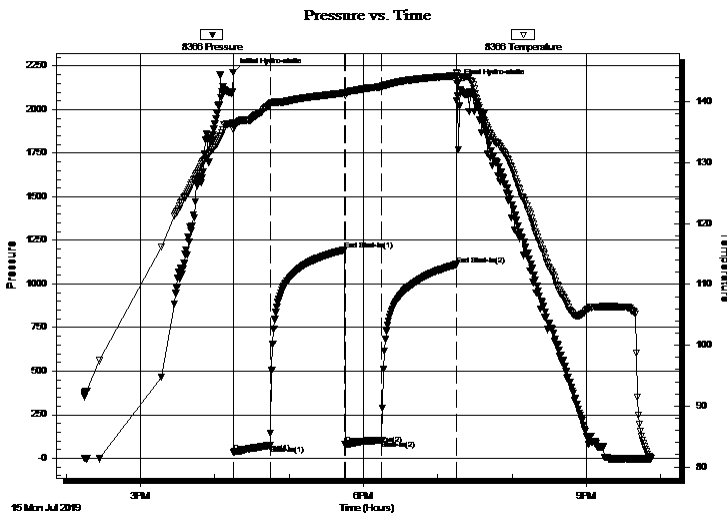
2019.07.15 @ 16:14:50

Time Off Btm:

2019.07.15 @ 19:15:39

**TEST COMMENT:** 30 IF - Blow built to 2"  
60 ISI - No Return  
30 FF - Blow started @ 10 mins built to 1"  
60 ISI - No return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2213.30	136.47	Initial Hydro-static
1	34.13	135.41	Open To Flow (1)
31	74.96	139.56	Shut-In(1)
90	1194.63	141.43	End Shut-In(1)
91	77.97	141.05	Open To Flow (2)
120	103.29	142.48	Shut-In(2)
180	1111.47	144.30	End Shut-In(2)
181	2147.55	144.55	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
210.00	VSOCM - 3%o - 97%M	1.33

## 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.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65261

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2019.07.15 @ 14:15:00

## Tool Information

Drill Pipe:	Length: 4133.00 ft	Diameter: 3.80 inches	Volume: 57.98 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 58.85 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4308.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	67.00 ft			
Tool Length:	95.00 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			4285.00	
Hydraulic tool	5.00			4290.00	
Jars	5.00			4295.00	
Safety Joint	3.00			4298.00	
Packer	5.00			4303.00	28.00 Bottom Of Top Packer
Packer	5.00			4308.00	
Stubb	1.00			4309.00	
Recorder	0.00	8353	Inside	4309.00	
Recorder	0.00	8366	Outside	4309.00	
Perforations	30.00			4339.00	
Blank Spacing	33.00			4372.00	
Bullnose	3.00			4375.00	67.00 Bottom Packers & Anchor

**Total Tool Length: 95.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65261

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2019.07.15 @ 14:15:00

## 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: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1100.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
210.00	VSOCM - 3%o - 97%M	1.333

Total Length: 210.00 ft      Total Volume: 1.333 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

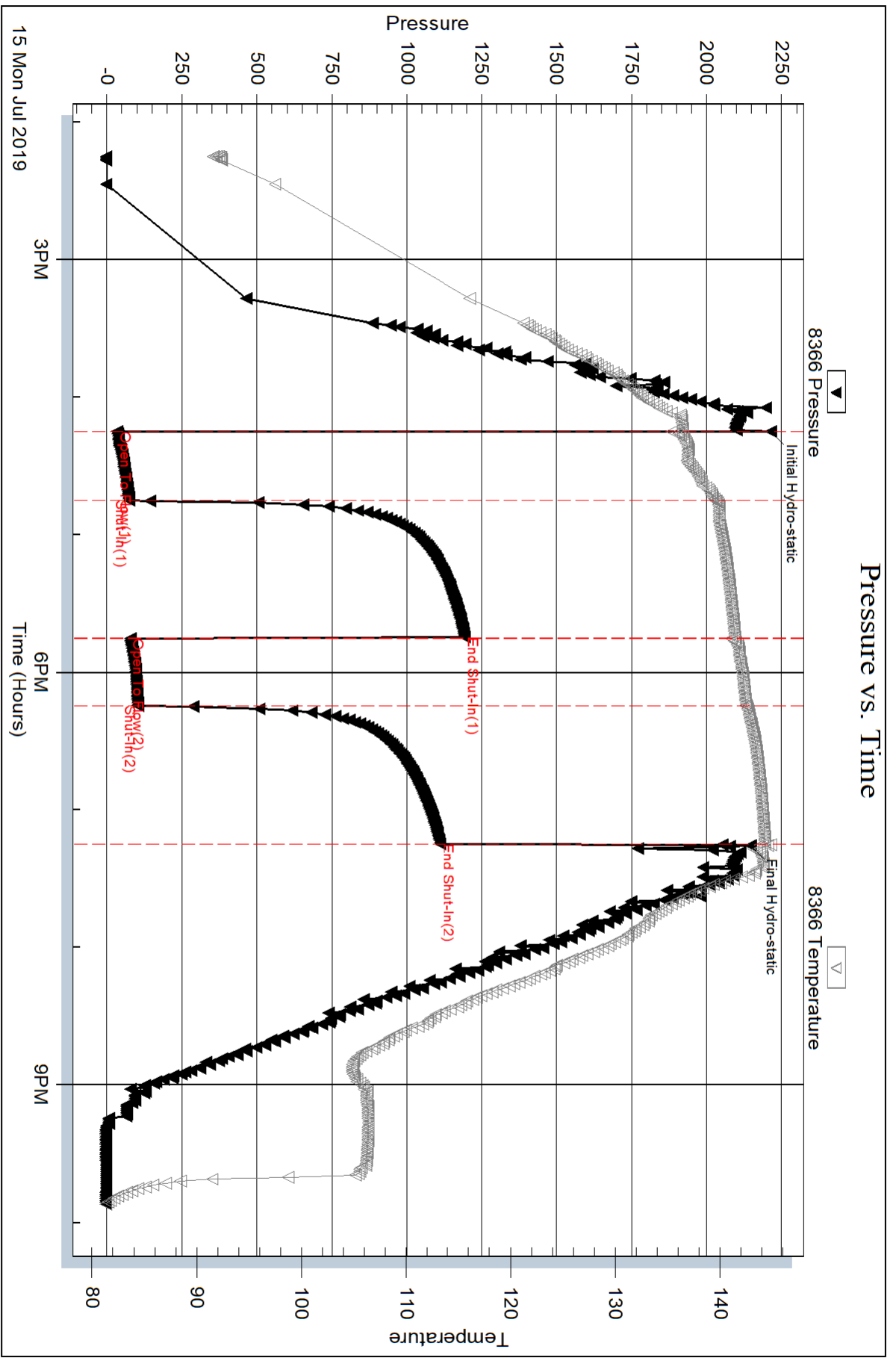
Recovery Comments:

Serial #: 8366

Outside Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 65261

Printed: 2019.07.22 @ 14:45:53

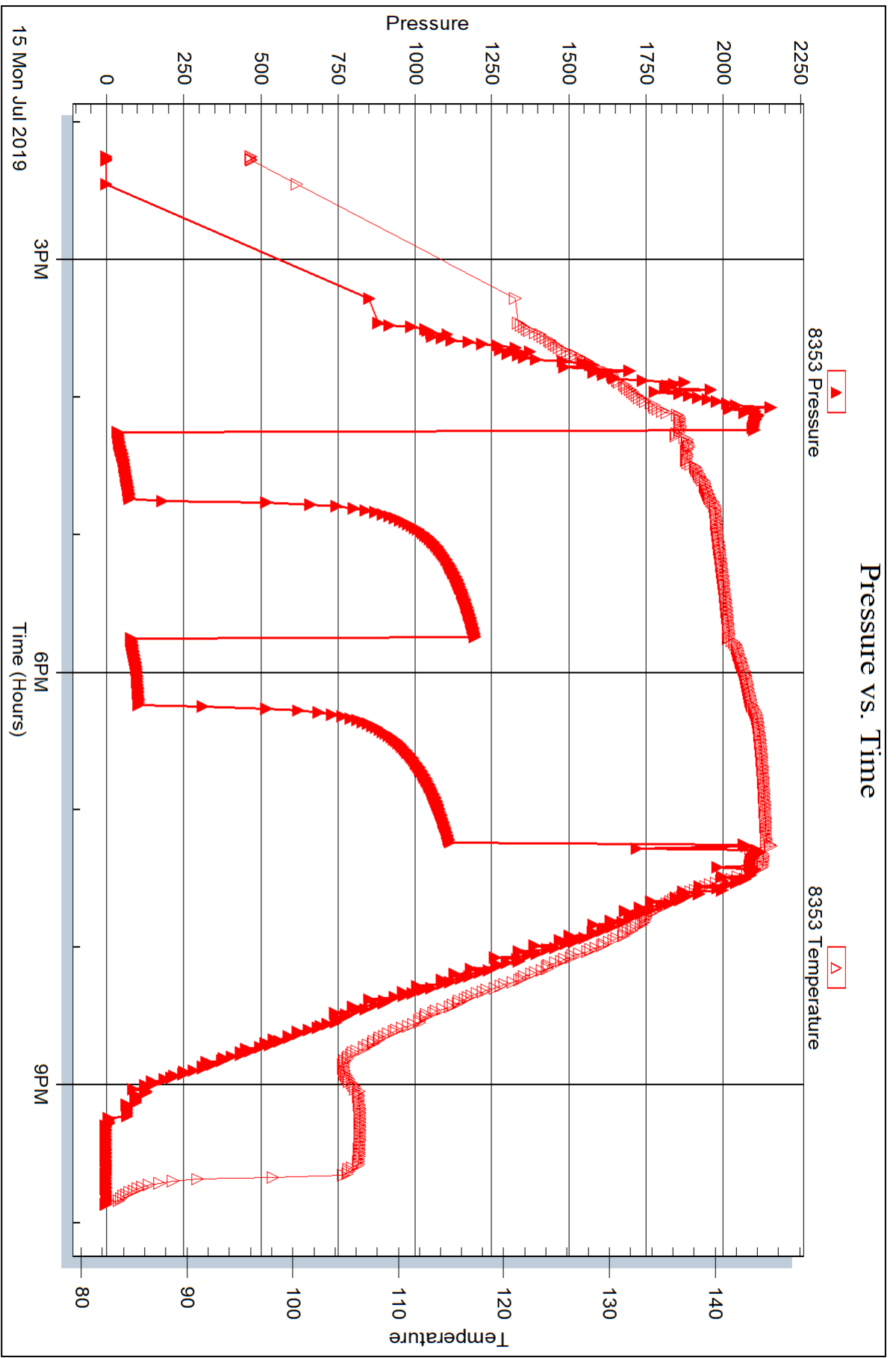
Serial #: 8353

Inside

Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 65261

Printed: 2019.07.22 @ 14:45:53



## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Sowers A #1-19**

#### **19-2s-38w Cheyenne,KS**

Start Date: 2019.07.16 @ 11:07:00

End Date: 2019.07.16 @ 19:23:09

Job Ticket #: 65262                      DST #: 3

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

Printed: 2019.07.22 @ 14:45:05

Murfin Drilling Co. Inc.  
19-2s-38w Cheyenne,KS  
Sowers A #1-19  
DST # 3  
LKC " D "  
2019.07.16





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65262

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2019.07.16 @ 11:07:00

## GENERAL INFORMATION:

Formation: **LKC " D "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:21:20

Time Test Ended: 19:23:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 71

**Interval: 4371.00 ft (KB) To 4460.00 ft (KB) (TVD)**

Reference Elevations: 3440.00 ft (KB)

Total Depth: 4460.00 ft (KB) (TVD)

3435.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8366**

**Outside**

Press@RunDepth: 1125.46 psig @ 4372.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.16

End Date:

2019.07.16

Last Calib.:

2019.07.16

Start Time: 11:07:01

End Time:

19:23:10

Time On Btm:

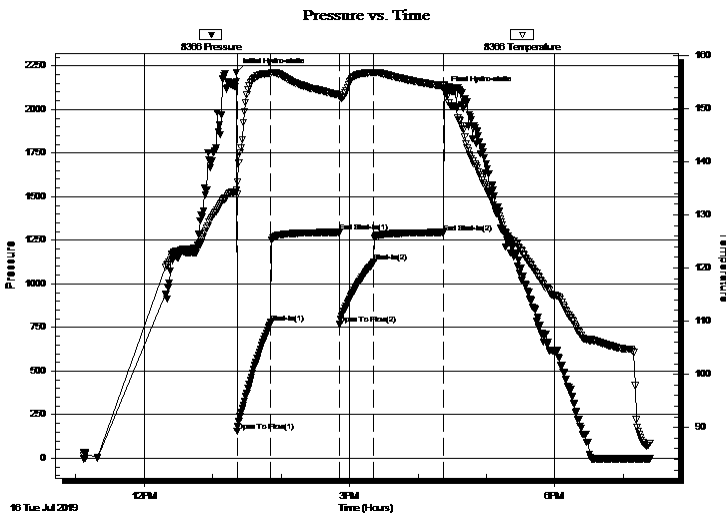
2019.07.16 @ 13:21:10

Time Off Btm:

2019.07.16 @ 16:22:50

**TEST COMMENT:** 30 IF - BoB @ 2 mins  
60 ISI - No return  
30 FF - BoB @ 3 mins  
60 FSI - No return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2213.05	134.76	Initial Hydro-static
1	154.80	133.84	Open To Flow (1)
30	777.47	156.61	Shut-In(1)
90	1296.02	152.54	End Shut-In(1)
91	768.78	152.19	Open To Flow (2)
121	1125.46	156.70	Shut-In(2)
181	1295.36	154.20	End Shut-In(2)
182	2108.02	154.40	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
120.00	MCW - 45%M - 55%W	0.59
1750.00	MCW - 5%M - 95%W	24.03
630.00	MCW - 40%M - 60%W	8.84

## 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.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65262

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2019.07.16 @ 11:07:00

## Tool Information

Drill Pipe:	Length: 4194.00 ft	Diameter: 3.80 inches	Volume: 58.83 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 115000.0 lb
			<u>Total Volume: 59.70 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4371.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	89.00 ft			
Tool Length:	117.00 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			4348.00	
Hydraulic tool	5.00			4353.00	
Jars	5.00			4358.00	
Safety Joint	3.00			4361.00	
Packer	5.00			4366.00	28.00 Bottom Of Top Packer
Packer	5.00			4371.00	
Stubb	1.00			4372.00	
Recorder	0.00	8353	Inside	4372.00	
Recorder	0.00	8366	Outside	4372.00	
Perforations	20.00			4392.00	
Blank Spacing	65.00			4457.00	
Bullnose	3.00			4460.00	89.00 Bottom Packers & Anchor

**Total Tool Length: 117.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65262

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2019.07.16 @ 11:07:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 66.00 sec/qt  
Water Loss: 6.39 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 1200.00 ppm  
Filter Cake: 2.00 inches

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

Oil API: deg API  
Water Salinity: 23000 ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	MCW - 45%M - 55%W	0.590
1750.00	MCW - 5%M - 95%W	24.029
630.00	MCW - 40%M - 60%W	8.837

Total Length: 2500.00 ft      Total Volume: 33.456 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

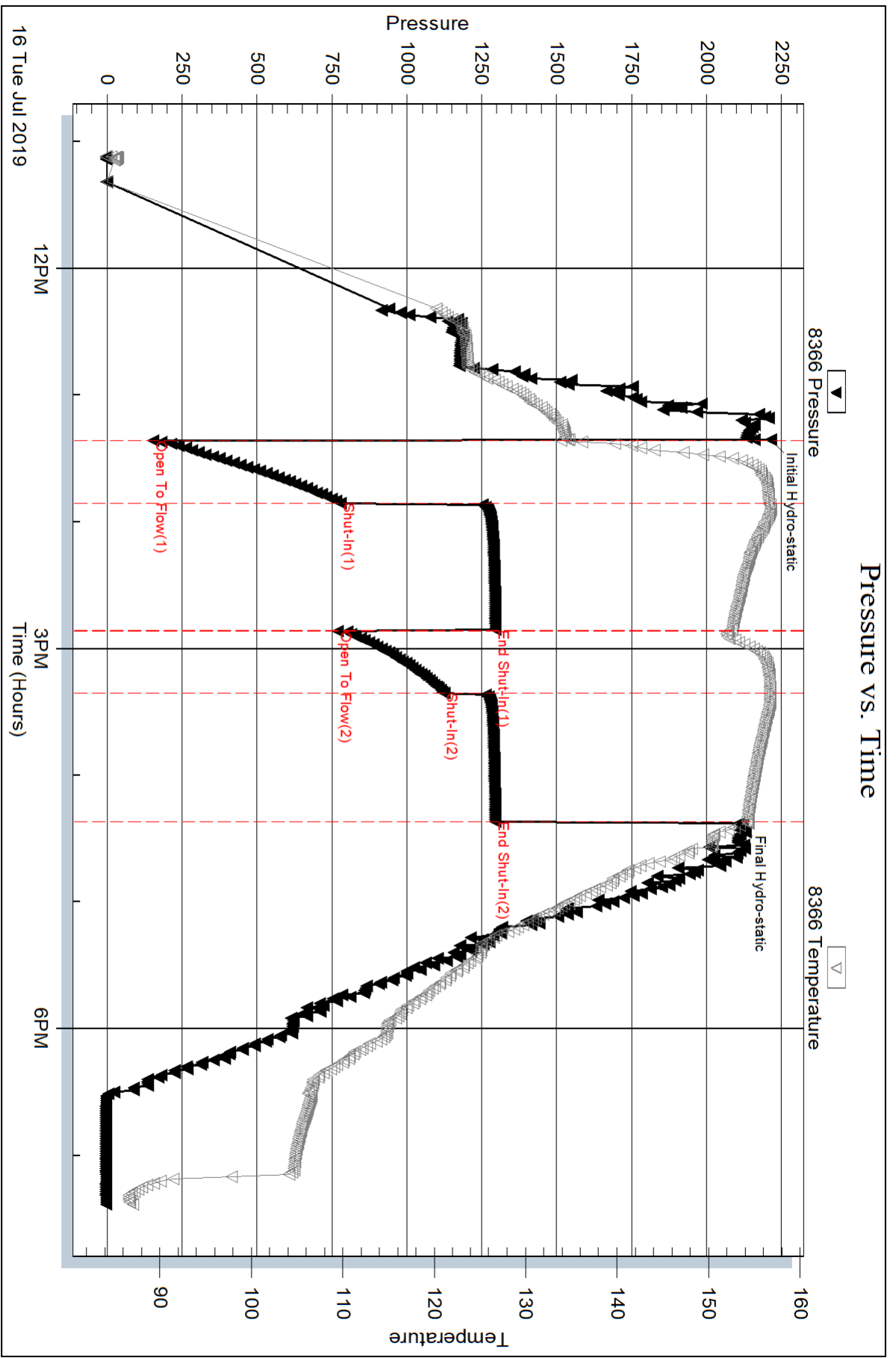
Recovery Comments: RW = .215 @ 90 DEG F  
CHLORIDES = 23,000 ppm

Serial #: 8366

Outside Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 65262

Printed: 2019.07.22 @ 14:45:06

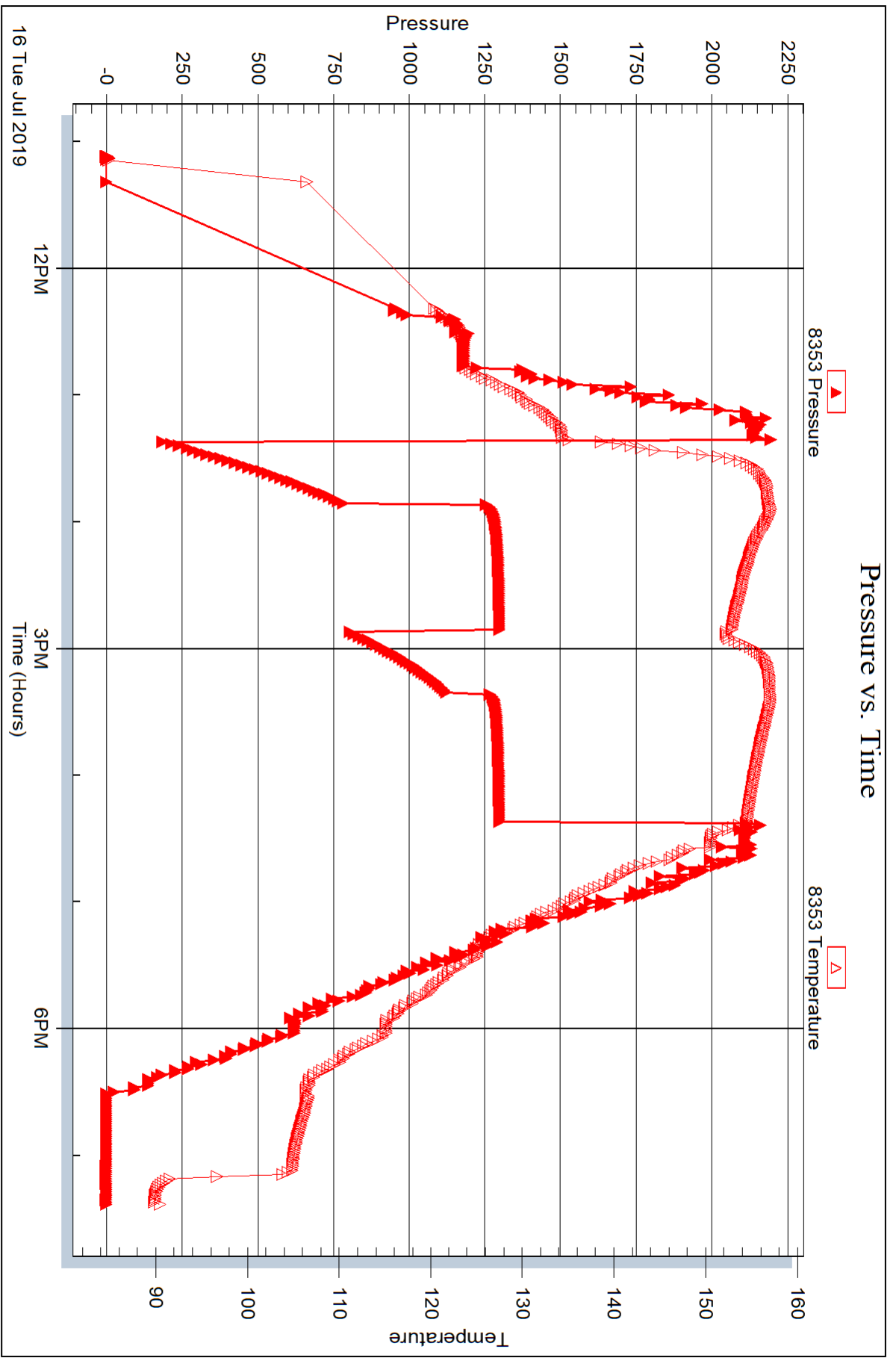
Serial #: 8353

Inside

Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 65262

Printed: 2019.07.22 @ 14:45:06



## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Sowers A #1-19**

#### **19-2s-38w Cheyenne,KS**

Start Date: 2019.07.17 @ 13:35:00

End Date: 2019.07.17 @ 20:54:39

Job Ticket #: 65623                      DST #: 4

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

Printed: 2019.07.22 @ 14:44:33

Murfin Drilling Co. Inc.

19-2s-38w Cheyenne,KS

Sowers A #1-19

DST # 4

LKC "H-J"

2019.07.17



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65623

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2019.07.17 @ 13:35:00

## GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:35:50

Time Test Ended: 20:54:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Ryan Nichols

Unit No: 71

**Interval: 4495.00 ft (KB) To 4584.00 ft (KB) (TVD)**

Reference Elevations: 3440.00 ft (KB)

Total Depth: 4584.00 ft (KB) (TVD)

3435.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8366 Outside**

Press@RunDepth: 53.08 psig @ 4496.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.17 End Date: 2019.07.17

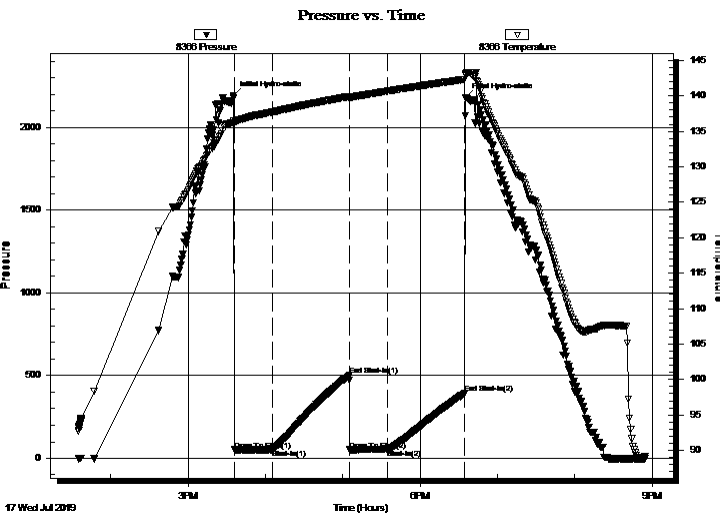
Last Calib.: 2019.07.17

Start Time: 13:35:01 End Time: 20:54:40

Time On Btm: 2019.07.17 @ 15:35:20

Time Off Btm: 2019.07.17 @ 18:35:20

**TEST COMMENT:** 30 IF - Opened tool slide 5', 2" blow built to 2 1/2" died back to 1"  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2191.83	136.46	Initial Hydro-static
1	50.72	136.03	Open To Flow (1)
31	52.31	137.72	Shut-In(1)
90	501.14	139.91	End Shut-In(1)
90	51.45	139.62	Open To Flow (2)
120	53.08	140.67	Shut-In(2)
180	392.86	142.33	End Shut-In(2)
180	2181.18	143.12	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
65.00	Mud 100%M	0.32

\* 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. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65623

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2019.07.17 @ 13:35:00

## Tool Information

Drill Pipe:	Length: 4319.00 ft	Diameter: 3.80 inches	Volume: 60.58 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 61.45 bbl</u>	Tool Chased 5.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4495.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	89.00 ft			
Tool Length:	117.00 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			4472.00	
Hydraulic tool	5.00			4477.00	
Jars	5.00			4482.00	
Safety Joint	3.00			4485.00	
Packer	5.00			4490.00	28.00 Bottom Of Top Packer
Packer	5.00			4495.00	
Stubb	1.00			4496.00	
Recorder	0.00	8353	Inside	4496.00	
Recorder	0.00	8366	Outside	4496.00	
Perforations	20.00			4516.00	
Blank Spacing	65.00			4581.00	
Bullnose	3.00			4584.00	89.00 Bottom Packers & Anchor

**Total Tool Length: 117.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65623

**DST#: 4**

ATTN: Robert Hendrix

Test Start: 2019.07.17 @ 13:35:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in<sup>3</sup>

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
65.00	Mud 100%M	0.320

Total Length: 65.00 ft      Total Volume: 0.320 bbl

Num Fluid Samples: 0

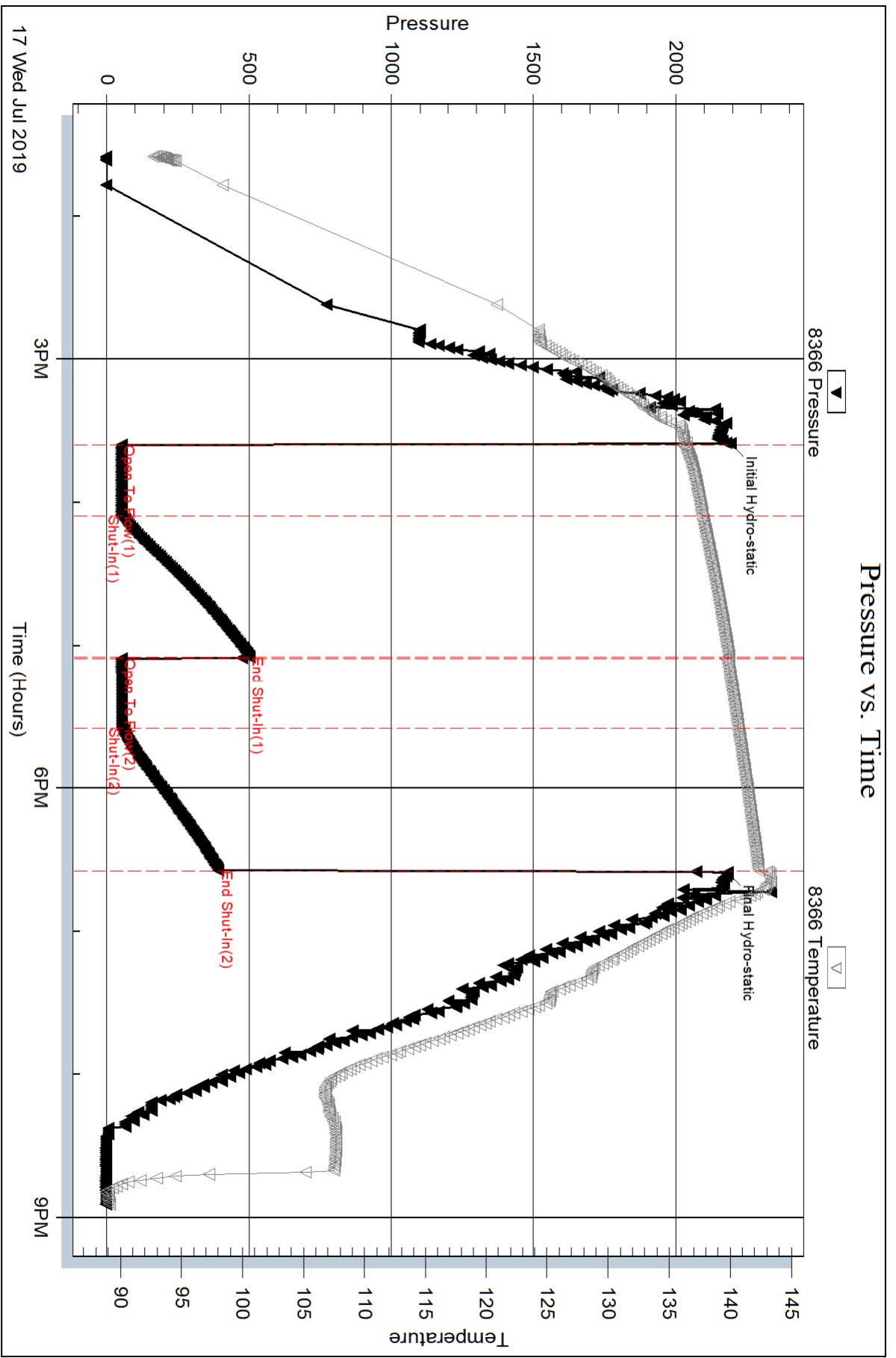
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



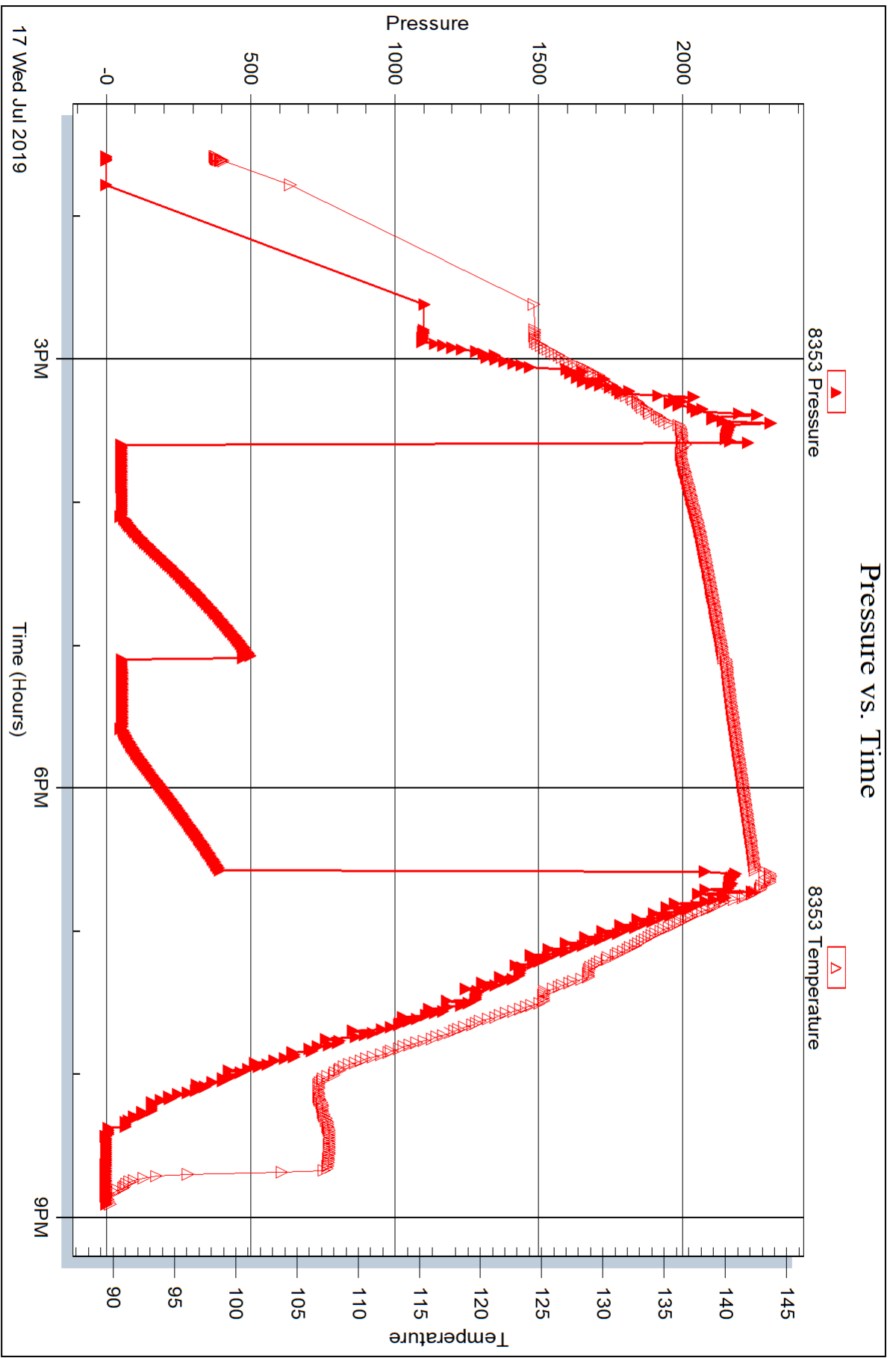
Serial #: 8353

Inside

Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 65623

Printed: 2019.07.22 @ 14:44:34



## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Sowers A #1-19**

#### **19-2s-38w Cheyenne,KS**

Start Date: 2019.07.19 @ 05:37:00

End Date: 2019.07.19 @ 13:38:39

Job Ticket #: 65264                      DST #: 5

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

Printed: 2019.07.22 @ 14:44:09



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne, KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65264

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2019.07.19 @ 05:37:00

## GENERAL INFORMATION:

Formation: **Ft. Scott - Celia**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 08:27:30  
 Time Test Ended: 13:38:39  
 Interval: **4719.00 ft (KB) To 4862.00 ft (KB) (TVD)**  
 Total Depth: 4862.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Ryan Nichols  
 Unit No: 71  
 Reference Elevations: 3440.00 ft (KB)  
 3435.00 ft (CF)  
 KB to GR/CF: 5.00 ft

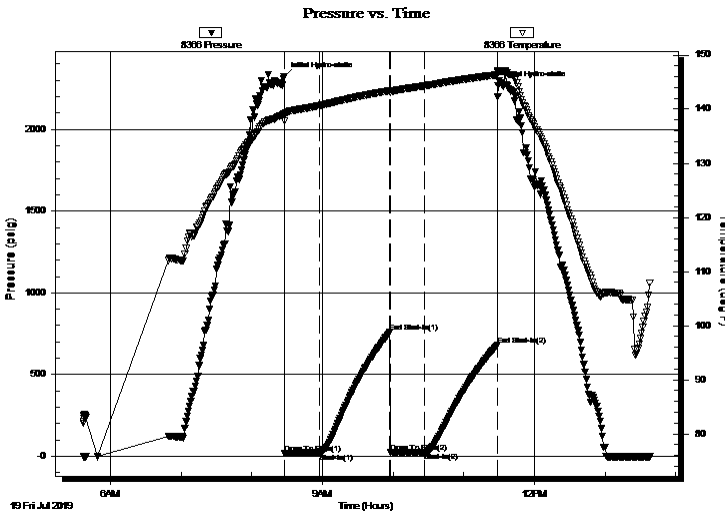
## Serial #: 8366

Outside

Press@RunDepth: 25.00 psig @ 4720.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2019.07.19 End Date: 2019.07.19 Last Calib.: 2019.07.19  
 Start Time: 05:37:01 End Time: 13:38:40 Time On Btm: 2019.07.19 @ 08:27:20  
 Time Off Btm: 2019.07.19 @ 11:29:09

TEST COMMENT: 30 IF - Blow built to 1/4" died @ 28 mins  
 60 ISI - No return  
 30 FF - No blow  
 60 FSI - No return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2321.90	139.07	Initial Hydro-static
1	19.40	137.81	Open To Flow (1)
31	21.75	140.65	Shut-In(1)
90	758.55	143.42	End Shut-In(1)
91	22.98	143.07	Open To Flow (2)
120	25.00	144.32	Shut-In(2)
182	681.19	146.36	End Shut-In(2)
182	2269.12	146.79	Final Hydro-static

## Recovery

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

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65264

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2019.07.19 @ 05:37:00

## Tool Information

Drill Pipe:	Length: 4474.00 ft	Diameter: 3.80 inches	Volume: 62.76 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 237.00 ft	Diameter: 2.25 inches	Volume: 1.17 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 63.93 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4719.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	143.00 ft			
Tool Length:	171.00 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			4696.00	
Hydraulic tool	5.00			4701.00	
Jars	5.00			4706.00	
Safety Joint	3.00			4709.00	
Packer	5.00			4714.00	28.00 Bottom Of Top Packer
Packer	5.00			4719.00	
Stubb	1.00			4720.00	
Recorder	0.00	8353	Inside	4720.00	
Recorder	0.00	8366	Outside	4720.00	
Perforations	11.00			4731.00	
Blank Spacing	128.00			4859.00	
Bullnose	3.00			4862.00	143.00 Bottom Packers & Anchor

**Total Tool Length: 171.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co. Inc.

**19-2s-38w Cheyenne,KS**

250 N. Water STE 300  
Wichita KS 67202

**Sowers A #1-19**

Job Ticket: 65264

**DST#: 5**

ATTN: Robert Hendrix

Test Start: 2019.07.19 @ 05:37:00

## 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: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%M	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:

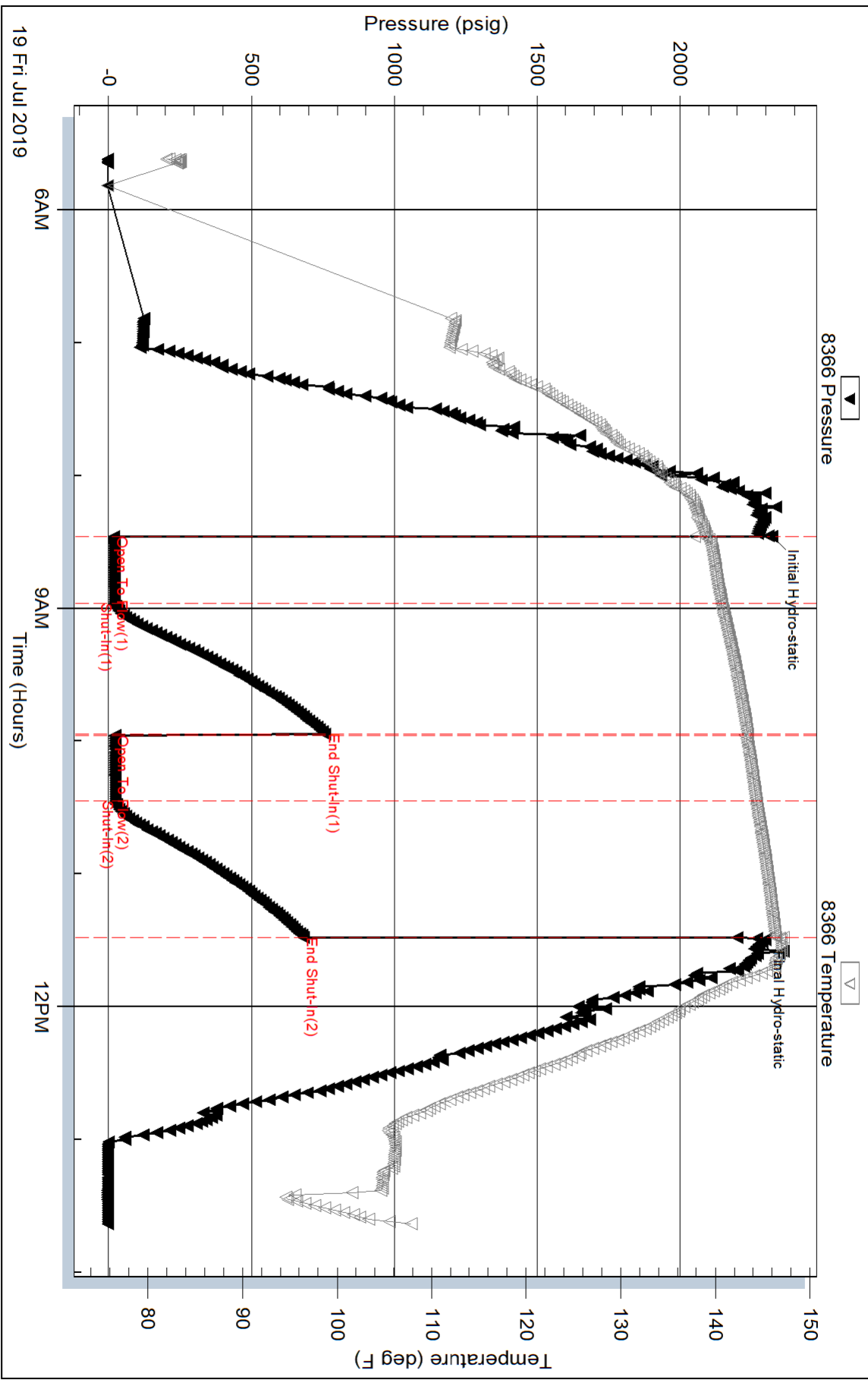
Serial #: 8366

Outside Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 5

### Pressure vs. Time



Triobite Testing, Inc

Ref. No: 65264

Printed: 2019.07.22 @ 14:44:10

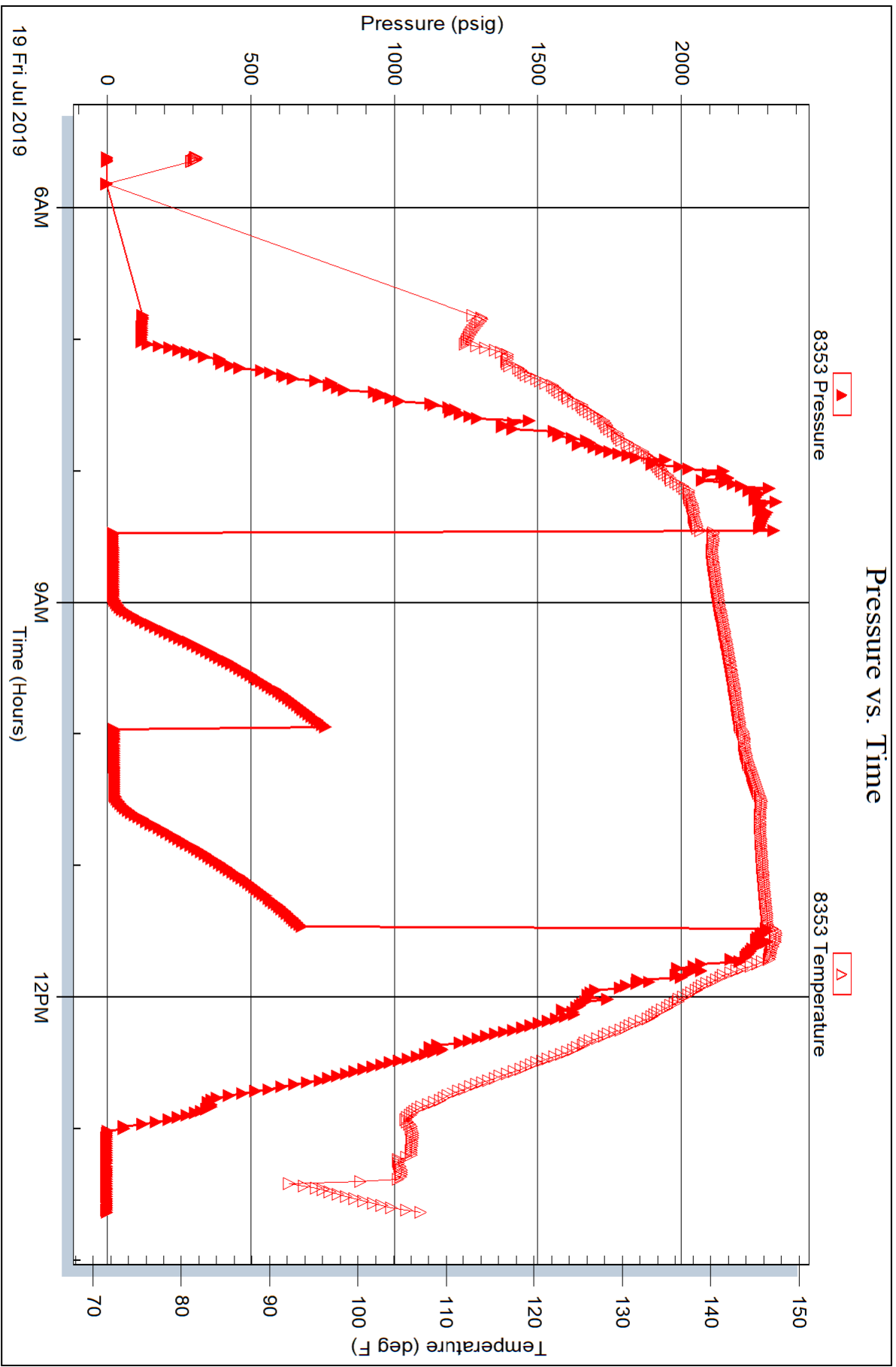
Serial #: 8353

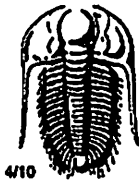
Inside

Murfin Drilling Co. Inc.

Sowers A #1-19

DST Test Number: 5





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65260

Well Name & No. Sowers A #1-19 Test No. 1 Date 7/14/19  
 Company Martin Drilling Co Inc. Elevation 3440 KB 3435 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Martin # 3  
 Location: Sec. 19 Twp 25 Rge. 38W Co. Cheyenne State KS

Interval Tested 4225-4306 Zone Tested Oread  
 Anchor Length 81' Drill Pipe Run 4040' Mud Wt. 8.9  
 Top Packer Depth 4220 Drill Collars Run 177' Vls 58  
 Bottom Packer Depth 4225 Wt. Pipe Run 0' WL 6.4  
 Total Depth 4306 Chlorides 900 ppm System LCM 4  
 Blow Description 30 IF - blow built to 1" died to surface  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

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 142° Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic <u>2059</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>18:00</u>
(B) First Initial Flow <u>17</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>19:13</u>
(C) First Final Flow <u>18</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>22:10</u>
(D) Initial Shut-In <u>108</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>01:12</u>
(E) Second Initial Flow <u>18</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>03:15</u>
(F) Second Final Flow <u>19</u>	<input checked="" type="checkbox"/> Mileage <u>133 RT</u> 133	Comments
(G) Final Shut-In <u>84</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>209</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1758</u>
	Sub Total <u>1758</u>	MP/DST Disc't <u>—</u>

Approved By \_\_\_\_\_ Our Representative Robert Hendrix  
 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. 65261

Well Name & No. Sowers A #1-19 Test No. 2 Date 7/25/19  
 Company Martin Drilling Co Inc. Elevation 3440 KB 3435 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendriks Rig Martin # 3  
 Location: Sec. 19 Twp 2 S Rge. 38 W Co. Cheyenne State KS

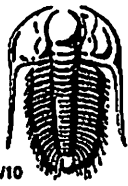
Interval Tested 4308 - 4375 Zone Tested Lansing A  
 Anchor Length 67' Drill Pipe Run 4133' Mud Wt. 9.0  
 Top Packer Depth 4303 Drill Collars Run 177' Vis 60  
 Bottom Packer Depth 4308 Wt. Pipe Run 0' WL 6.4  
 Total Depth 4375 Chlorides 1100 ppm System LCM 4  
 Blow Description 30 IF - Blow built to 2"  
60 ISI - No return  
30 FF - Blow started @ 10 mins built to 1"  
60 FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>240'</u>	<u>VSOCM</u>	<u>3</u>		<u>97</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 240' BHT 144° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2313</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>13:30</u>
(B) First Initial Flow <u>34</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>14:15</u>
(C) First Final Flow <u>75</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>16:15</u>
(D) Initial Shut-In <u>11 95</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>19:15</u>
(E) Second Initial Flow <u>78</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>21:45</u>
(F) Second Final Flow <u>103</u>	<input checked="" type="checkbox"/> Mileage <u>133 RT</u> 133	Comments
(G) Final Shut-In <u>1111</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2148</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1758</u>
	Sub Total <u>1758</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative Robert Hendriks  
 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. 65262

Well Name & No. Sowers A # 1-19 Test No. 3 Date 7/16/19  
 Company Mudlin Drilling Co. Inc. Elevation 3440 KB 3435 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep/Geo. Robert Hendrix Rig Mudlin # 3  
 Location: Sec. 19 Twp 2S Rge. 38 W Co. Cheyenne State KS

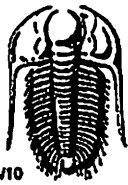
Interval Tested 4371 - 4460 Zone Tested LKC "D"  
 Anchor Length 89' Drill Pipe Run 4194' Mud Wt. 9.1  
 Top Packer Depth 4366 Drill Collars Run 177' Vis 66  
 Bottom Packer Depth 4371 Wt. Pipe Run 0' WL 6.4  
 Total Depth 4460 Chlorides 1200 ppm System LCM 3  
 Blow Description 30 IF - BoB @ 2 min  
60 ISI - No return  
30 FF - BoB @ 3 min  
60 FSI - No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>630</u>	<u>MLW</u>		<u>60</u>	<u>40</u>	
<u>1750</u>	<u>MLW</u>		<u>95</u>	<u>5</u>	
<u>120'</u>	<u>MLW</u>		<u>55</u>	<u>45</u>	

Rec Total 2500' BHT 154° Gravity — API RW .215 @ 90° F Chlorides 23000 ppm

(A) Initial Hydrostatic <u>2213</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>10:30</u>
(B) First Initial Flow <u>155</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>11:07</u>
(C) First Final Flow <u>777</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>13:21</u>
(D) Initial Shut-In <u>1296</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>16:22</u>
(E) Second Initial Flow <u>769</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>17:15</u>
(F) Second Final Flow <u>1125</u>	<input checked="" type="checkbox"/> Mileage <u>133 RT</u> 133	Comments _____
(G) Final Shut-In <u>1295</u>	<input type="checkbox"/> Sampler	_____
(H) Final Hydrostatic <u>2108</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1758</u>
	Sub Total <u>1758</u>	MP/DST Disc't _____

Approved By \_\_\_\_\_ Our Representative Robert Hendrix  
 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. 65263

Well Name & No. Sowers A #1-19 Test No. 4 Date 7/17/19  
 Company Murfin Drilling Co. Inc. Elevation 3440 KB 3435 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3  
 Location: Sec. 19 Twp 2S Rge. 38W Co. Cheyenne State KS

Interval Tested 4495-4584 Zone Tested LKC "H-J"  
 Anchor Length 89' Drill Pipe Run 4319' Mud Wt. 9.0  
 Top Packer Depth 4490 Drill Collars Run 177' Vis 57  
 Bottom Packer Depth 4495 Wt. Pipe Run 0' WL 6.4  
 Total Depth 4584 Chlorides 800 ppm System LCM 3  
 Blow Description 30 IF - @. Open top slide 5', 2" blow built to 2 1/2' died to 1"  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

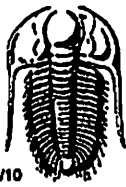
Rec	Feet of	%gas	%oil	%water	%mud
<u>65'</u>	<u>Mud</u>			<u>100%</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15' BHT 143° Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic <u>2191</u>	<input type="checkbox"/> Test <u>1300</u>	T-On Location <u>13:00</u>
(B) First Initial Flow <u>51</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>13:35</u>
(C) First Final Flow <u>52</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>15:35</u>
(D) Initial Shut-In <u>501</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>18:35</u>
(E) Second Initial Flow <u>51</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>20:45</u>
(F) Second Final Flow <u>53</u>	<input checked="" type="checkbox"/> Mileage <u>133 RT</u> 133	Comments
(G) Final Shut-In <u>393</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2181</u>	<input type="checkbox"/> Straddle	
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> EM Tool
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Shale Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Ruined Packer
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Accessibility	Sub Total <u>0</u>
	Sub Total <u>1758</u>	Total <u>1758</u>

Approved By \_\_\_\_\_ Our Representative R. J. Hendrix  
 Triobite 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.





# TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65264

Well Name & No. Sowers A # 1-19 Test No. 5 Date 7/19/19  
 Company Martin Drilling Co. Inc. Elevation 3440 KB 3435 GL  
 Address 250 N. Water STE 300 Wichita KS 67202  
 Co. Rep/Geo. Robert Hendrix Rig Martin # 3  
 Location: Sec. 19 Twp 2S Rge. 28 W Co. Cheyenne State KS

Interval Tested 4719 - 4862 Zone Tested Ft. Scott - Celia  
 Anchor Length 143' Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.1  
 Top Packer Depth 4714 Drill Collars Run 237' Vis 69  
 Bottom Packer Depth 4719 Wt. Pipe Run 0' WL 6.0  
 Total Depth 4862 Chlorides 1000 ppm System LCM 4  
 Blow Description 30 IF - Blow built to 1/4" died @ 28 mins  
60 ISI - No return  
30 FF - No blow  
60 FSI - No return

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 146° Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2322</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>05:00</u>
(B) First Initial Flow <u>19</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>05:37</u>
(C) First Final Flow <u>22</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>08:27</u>
(D) Initial Shut-In <u>759</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>11:29</u>
(E) Second Initial Flow <u>23</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>13:30</u>
(F) Second Final Flow <u>25</u>	<input checked="" type="checkbox"/> Mileage <u>133 RT X 2</u>	Comments <u>Loaded tools</u>
(G) Final Shut-In <u>681</u>	<input type="checkbox"/> Sampler _____	<u>@ 15:30 on</u>
(H) Final Hydrostatic <u>2269</u>	<input type="checkbox"/> Straddle _____	<u>7/21/19</u>
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> EM Tool _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Ruined Packer _____
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	<input type="checkbox"/> Extra Copies _____
	<input type="checkbox"/> Accessibility _____	Sub Total <u>0</u>
	Sub Total <u>1891</u>	Total <u>1891</u>

Approved By \_\_\_\_\_ Our Representative [Signature]  
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