

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD
 Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	KUHLMAN 2-23
Doc ID	1427160

All Electric Logs Run

DIL
DUCP
MEL
BHCS

MDCI
 Kuhlman #2-23
 1500' FNL 1320' FWL
 Sec. 23-T12S-R33W
 3092' KB

Formation	Sample tops	Datum	Ref	Log Tops	Datum	Ref
Anhydrite	2573	+519	+1	2569	+523	+5
B/Anhydrite	2597	+495	+2	2593	+499	+6
Topeka	3722	-630	+4	3776	-684	+6
Heebner	4002	-910	+1	4001	-909	+2
Lansing	4043	-951	-3	4039	-947	+1
Stark	4280	-1188	-4	4274	-1182	+2
Mound City	4358	-1266	-19	4336	-1244	+3
Marmaton	4383	-1291	+25	4406	-1314	+2
Breezy Hill	4531	-1439	-2	4529	-1437	Flat
Oakley	4559	-1467	-1	4556	-1464	+2
Johnson	4604	-1512	-3	4598	-1506	+3
Mississippi	4668	-1576	-5	4670	-1578	-7
RTD	4768					
LTD				4768		

Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Co., Inc.**

LEASE **Kuhlman #2-23**

FIELD **Owen East**

LOCATION **1500'fml & 1320'fml**

SEC **23** TWP **12S** RGE **33W**

COUNTY **Logan** STATE **Kansas**

CONTRACTOR **Murfin Drilling Co., Inc. Rig #21**

RTD **9/13/18** COMP **9/23/2018**

SPUD **4/7/88** TYPE **4768'**

RTD UP **3422'** TYPE MUD **Chemical**

SAMPLES SAVED FROM **3680'** TO **4768'**

DRILLING TIME KEPT FROM **3680'** TO **4768'**

SAMPLES EXAMINED FROM **3680'** TO **4768'**

GEOLOGICAL SUPERVISION FROM **3608'**

GEOLOGIST ON WELL **Robert D. Hendrix**

FORMATION TOPS

FORMATION	ELECTRIC LOG	SAMPLE
Anhydrite	2868 (+824)	2573 (+519)
Heebner Shale	4001 (-909)	4002 (-910)
Lansing	4039 (-947)	4043 (-951)
Stark Shale	4274 (-1182)	4280 (-1188)
Mound City	4353 (-1261)	4358 (-1266)
Marmaton	4382 (-1290)	4394 (-1292)
Breezy Hill	4528 (-1436)	4531 (-1439)
Oakley	4559 (-1467)	4559 (-1467)
Mississippi	4664 (-1572)	4668 (-1576)

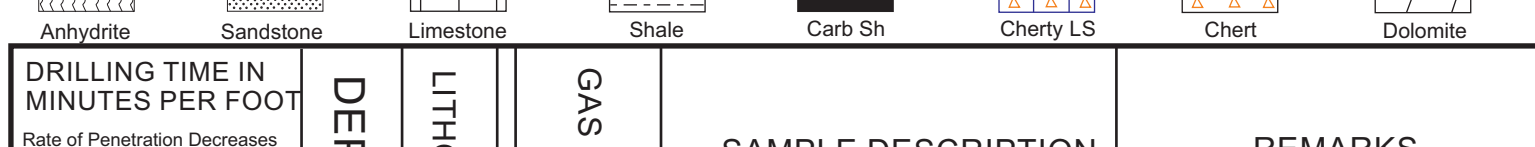
DATE COMPILED BY/DATA INPUTTER: **Robert D. Hendrix**

Micro log / Stone / Fromme Energy Services

REMARKS:

AP# 15-109-21568

LEGEND



DEPTH	LITHOLOGY	GAS UNIT	SAMPLE DESCRIPTION	REMARKS
2500				
2573				Anhydrite 2573 (+519)
2600				Base Anhydrite 2597 (+495)
3608				Geologist on location 3608' at 2:15 pm 9/16/2018 Bit Trip at 3561' to change from PDC to button. Strap out of hole was 1.25' long to board.
3722				Topeka 3722 (-630)
3800				
3900				
4002				Heebner Shale 4002 (-910)
4043				Lansing 4043 (-951)
4100				DST #1 4114-4137 30-60-60-90 1st open: bob 30 min 1st shut in: no return 2nd open: built to 9" 2nd shut in: surface blow began in 7min died @ 18 min Rec: 90' ocm 10/30/60 215' gip hydro: 2047-2007 psi ff: 39-70 psi sfp: 919-857 psi bht: 118° F gravity: 27°
4200				Muncie Creek Shale 4193 (-1101)
4219				DST #2 4189-4223 30-60-60-90 1st open: continuous 1/2" blow 2nd open: wk blow started at 10min built to 1 1/4" no returns Rec: 25' ocm 35/65 95' gip hydro: 2095-1994 psi ff: 17-21 psi sfp: 118-27 psi bht: 228-275 psi bht: 117° F
4300				Stark Shale 4280 (-1188)
4358				DST #3 4219-4282 30-60-60-90 1st open: blow built to 3 1/2" 2nd open: blow built to 3 3/4" no returns Rec: 122' ocm 10/35/55 80' ocm 25/75 hydro: 2100-1918 psi ff: 19-51 psi sfp: 118-27 psi bht: 176-774 psi chl: 44,000 ppm
4400				Mound City 4358 (-1266)
4431				DST #4 4278-4319 30-60-60-90 1st open: blow built to 7" 2nd open: blow built to 10" no returns Rec: 374' mcw 15/85 hydro: 2171-2094 psi ff: 22-109 psi sfp: 118-27 psi bht: 176-774 psi chl: 75,000 ppm
4475				Pawnee 4475 (-1383)
4528				DST #5 4523-4641 30-60-60-90 1st open: bob 2 1/2 min 1st shut in: bob 3 1/2 min 2nd open: bob 7 min 2nd shut in: 6 min Rec: 1030' m&gco 15/25/60 2425' gip hydro: 2267-2217 psi ff: 110-316 psi sfp: 329-386 psi bht: 147-721 psi bht: 122° F gravity: 32°
4531				Breezy Hill 4531 (-1439)
4559				Oakley (Cherokee Shale) 4559 (-1467)
4604				Johnson Zone 4604 (-1512)
4668				Mississippi 4668 (-1576)
4768				RTD 4768 (-1676)
4800				8:00am, 9/23/2018 wt 9.1, vis. 73, lcm 3# Morgan Mud Inc, Dave Lines



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Kuhlman #2-23

23-12s-33w Logan,KS

Start Date: 2018.09.18 @ 05:20:00

End Date: 2018.09.18 @ 13:33:00

Job Ticket #: 64136 DST #: 1

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

Printed: 2018.09.24 @ 13:44:40



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64136

DST#: 1

Test Start: 2018.09.18 @ 05:20:00

GENERAL INFORMATION:

Formation: **LKC " E "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:33:31
 Time Test Ended: 13:33:00
 Interval: **4114.00 ft (KB) To 4137.00 ft (KB) (TVD)**
 Total Depth: 4137.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

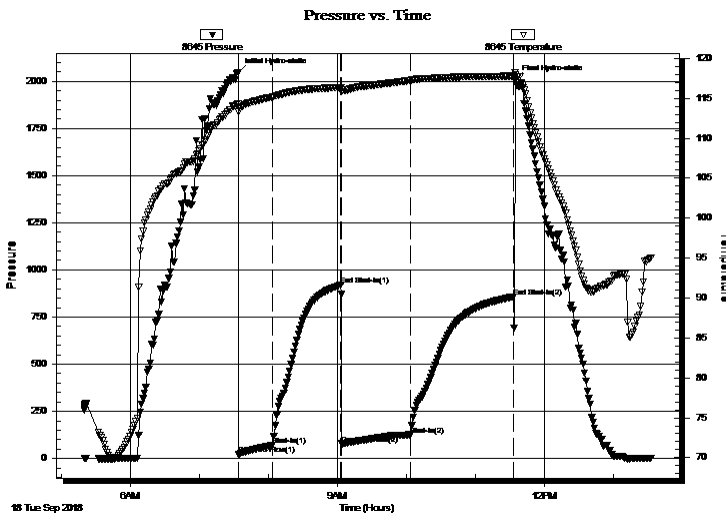
Serial #: 8645

Outside

Press@RunDepth: 125.17 psig @ 4115.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.09.18 End Date: 2018.09.18 Last Calib.: 2018.09.18
 Start Time: 05:20:01 End Time: 13:33:01 Time On Btm: 2018.09.18 @ 07:33:16
 Time Off Btm: 2018.09.18 @ 11:34:01

TEST COMMENT: 30-IFP- BOB in 30 min.
 60-ISIP- No Blow
 60-FFP- Surface Blow Built to 9"
 90-FSIP- Weak Surface Blow in 7 min. Dead in 18 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2047.03	114.27	Initial Hydro-static
1	19.93	113.27	Open To Flow (1)
30	70.01	115.15	Shut-In(1)
90	919.65	116.36	End Shut-In(1)
91	77.25	115.88	Open To Flow (2)
150	125.17	117.24	Shut-In(2)
240	857.28	117.80	End Shut-In(2)
241	2007.20	118.25	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	GOCM 10%g 30%o 60%m	0.44
190.00	GCO 20%g 80%o	0.99
0.00	215 GIP	0.00

Gas Rates

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



TRIOLOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan, KS

Kuhlman #2-23

Job Ticket: 64136

DST#: 1

Test Start: 2018.09.18 @ 05:20:00

GENERAL INFORMATION:

Formation: **LKC " E "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:33:31

Time Test Ended: 13:33:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

Interval: 4114.00 ft (KB) To 4137.00 ft (KB) (TVD)

Reference Elevations: 3092.00 ft (KB)

Total Depth: 4137.00 ft (KB) (TVD)

3081.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 6731

Inside

Press@RunDepth: psig @ 4115.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.09.18

End Date:

2018.09.18

Last Calib.:

2018.09.18

Start Time: 05:20:01

End Time:

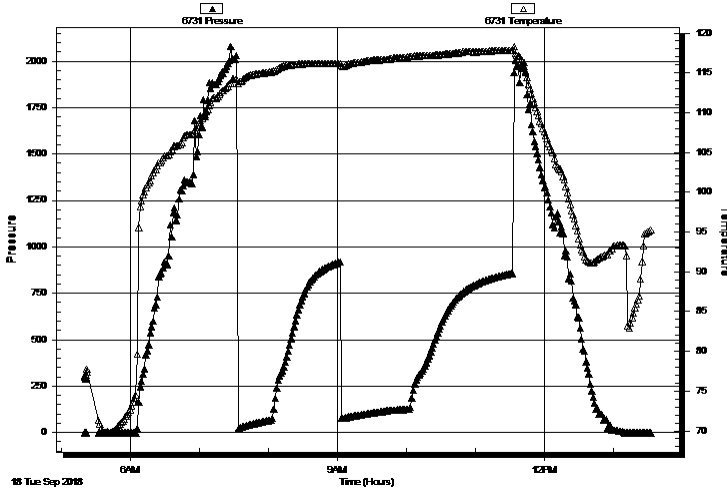
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Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 30 min.
60-ISIP- No Blow
60-FFP- Surface Blow Built to 9"
90-FSIP- Weak Surface Blow in 7 min. Dead in 18 min.

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
90.00	GOCM 10%g 30%o 60%m	0.44
190.00	GCO 20%g 80%o	0.99
0.00	215 GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc

23-12s-33w Logan,KS

250 N Water Ste 300
Wichita KS 67202-1216

Kuhlman #2-23

Job Ticket: 64136

DST#: 1

ATTN: Robert Hendrix

Test Start: 2018.09.18 @ 05:20:00

Tool Information

Drill Pipe:	Length: 3832.00 ft	Diameter: 3.80 inches	Volume: 53.75 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: 274.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume: 55.10 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	65000.00 lb
Depth to Top Packer:	4114.00 ft			Final	66000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	23.00 ft				
Tool Length:	51.00 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			4087.00	
Shut In Tool	5.00			4092.00	
Hydraulic tool	5.00		Inside	4097.00	
Jars	5.00			4102.00	
Safety Joint	2.00			4104.00	
Packer	5.00			4109.00	28.00 Bottom Of Top Packer
Packer	5.00			4114.00	
Stubb	1.00			4115.00	
Recorder	0.00	8645	Outside	4115.00	
Recorder	0.00	6731	Inside	4115.00	
Perforations	19.00			4134.00	
Bullnose	3.00			4137.00	23.00 Bottom Packers & Anchor

Total Tool Length: 51.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64136 **DST#: 1**
Test Start: 2018.09.18 @ 05:20:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 27 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.36 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 2900.00 ppm		
Filter Cake: 2.00 inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	GOCM 10%g 30%o 60%m	0.443
190.00	GCO 20%g 80%o	0.989
0.00	215 GIP	0.000

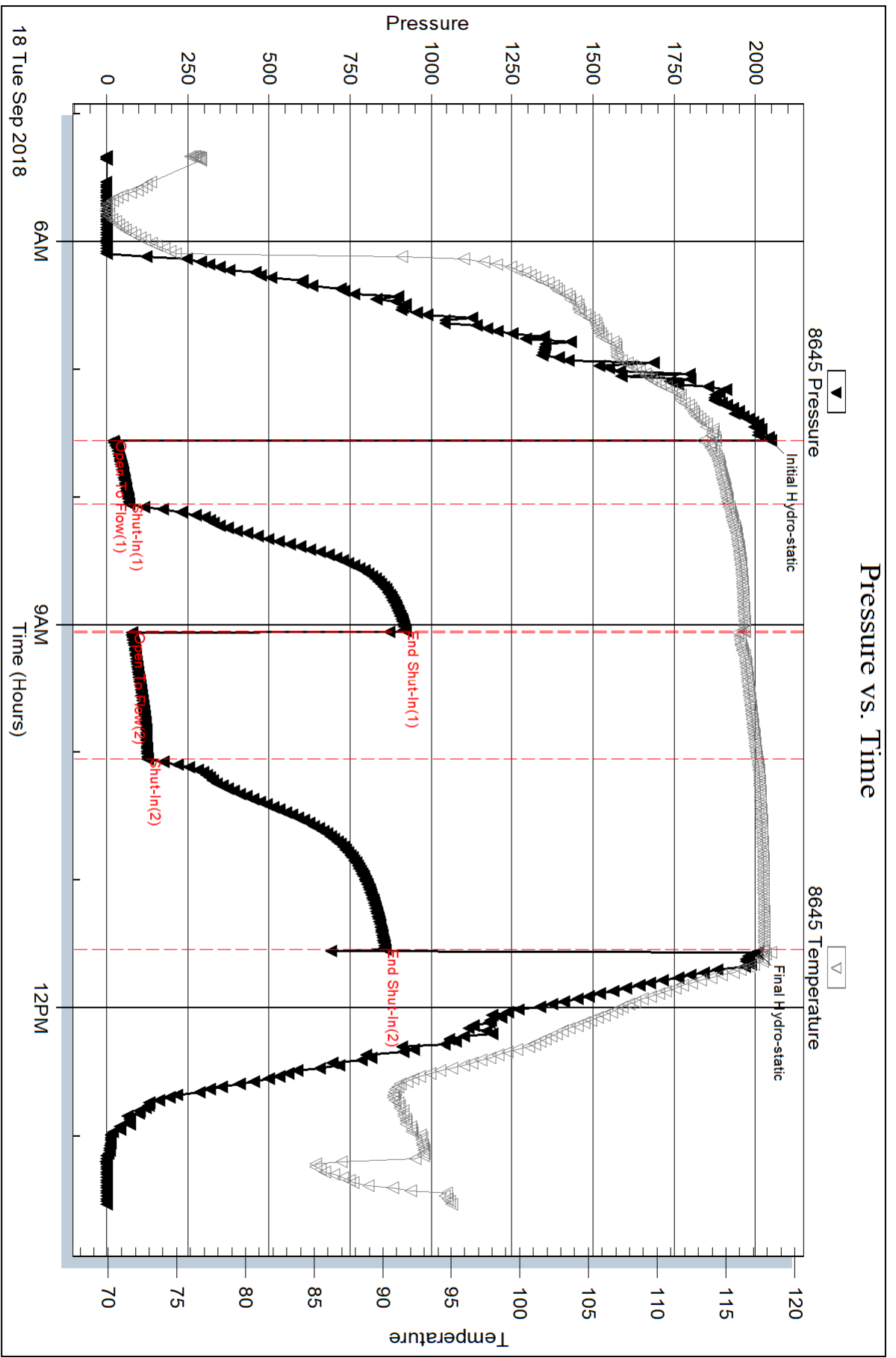
Total Length: 280.00 ft Total Volume: 1.432 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8645

Outside Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 1



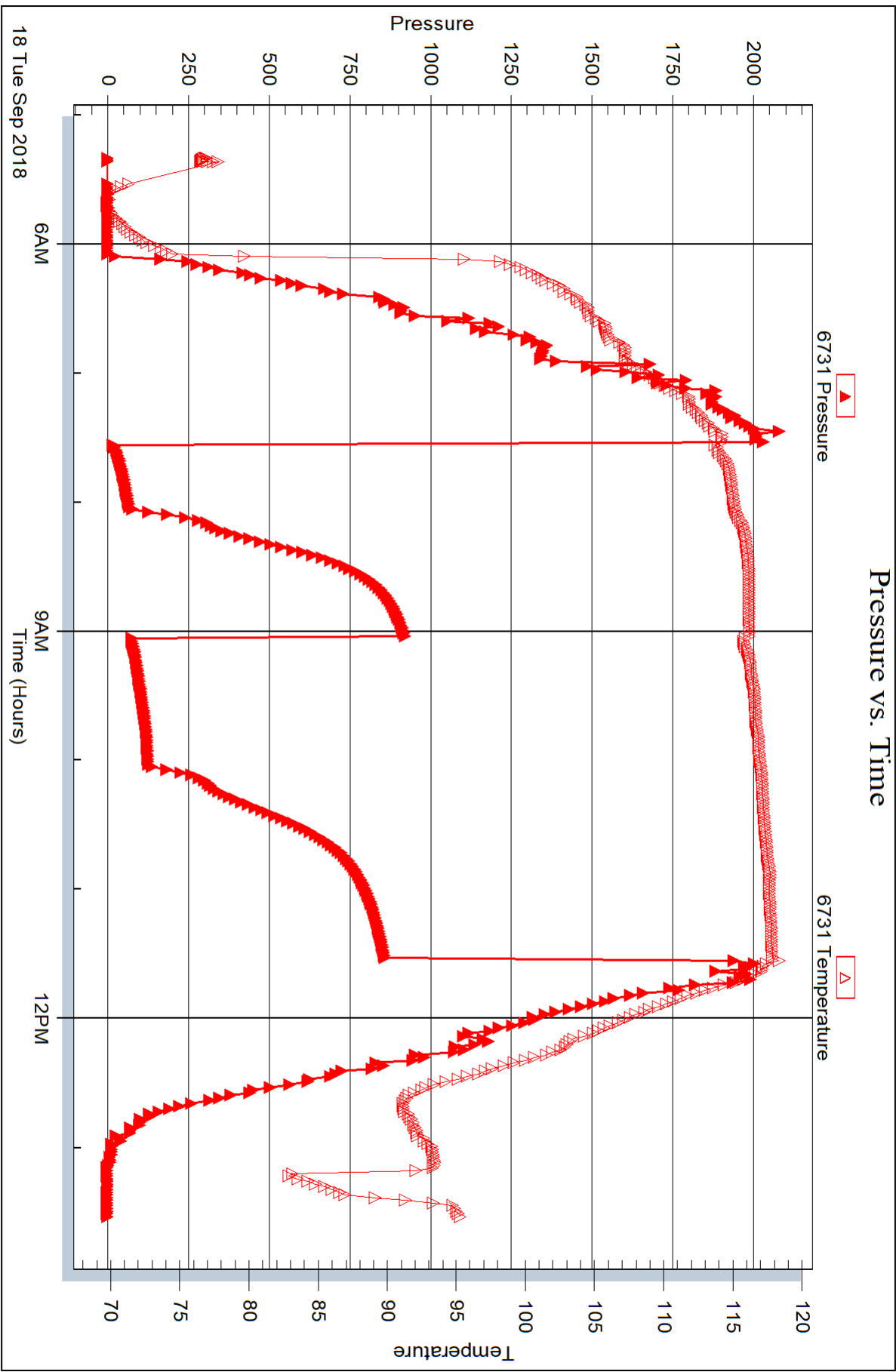
Serial #: 6731

Inside

Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Kuhlman #2-23

23-12s-33w Logan,KS

Start Date: 2018.09.19 @ 02:07:00

End Date: 2018.09.19 @ 09:45:00

Job Ticket #: 64137 DST #: 2

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

Printed: 2018.09.24 @ 13:44:16



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64137

DST#: 2

Test Start: 2018.09.19 @ 02:07:00

GENERAL INFORMATION:

Formation: **LKC " H "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:55:31
 Time Test Ended: 09:45:00
 Interval: **4189.00 ft (KB) To 4223.00 ft (KB) (TVD)**
 Total Depth: 4223.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

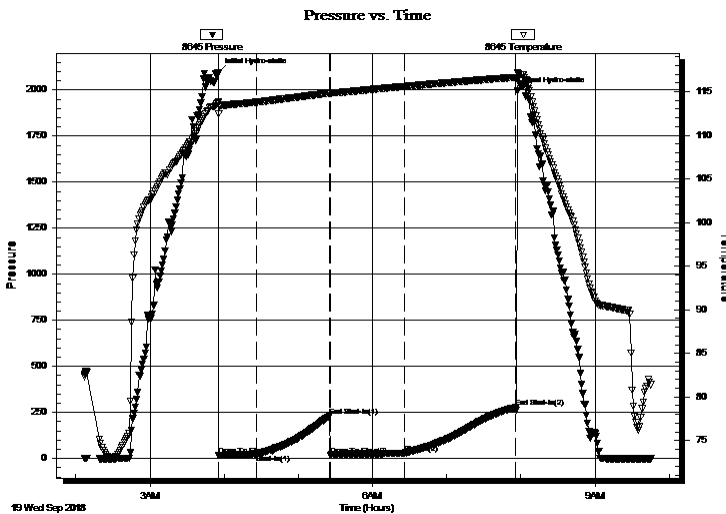
Serial #: 8645

Outside

Press@RunDepth: 27.73 psig @ 4191.00 ft (KB)
 Start Date: 2018.09.19 End Date: 2018.09.19
 Start Time: 02:07:01 End Time: 09:45:01
 Capacity: 8000.00 psig
 Last Calib.: 2018.09.19
 Time On Btm: 2018.09.19 @ 03:55:16
 Time Off Btm: 2018.09.19 @ 07:57:01

TEST COMMENT: 30-IFP- 1/2" Blow Thru-Out
 60-ISIP- No Blow
 60-FFP- Weak Surface Blow in 10 min. Building to 1 1/4"
 90-FSIP- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2095.91	113.82	Initial Hydro-static
1	17.56	112.46	Open To Flow (1)
31	21.40	113.79	Shut-In(1)
90	228.68	114.83	End Shut-In(1)
91	18.67	114.73	Open To Flow (2)
151	27.73	115.59	Shut-In(2)
241	275.84	116.63	End Shut-In(2)
242	1994.00	117.20	Final Hydro-static

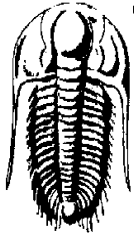
Recovery

Length (ft)	Description	Volume (bbl)
25.00	OCM 35%o 65%m	0.12
0.00	95 GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64137

DST#: 2

Test Start: 2018.09.19 @ 02:07:00

GENERAL INFORMATION:

Formation: **LKC " H "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:55:31
 Time Test Ended: 09:45:00
 Interval: **4189.00 ft (KB) To 4223.00 ft (KB) (TVD)**
 Total Depth: 4223.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

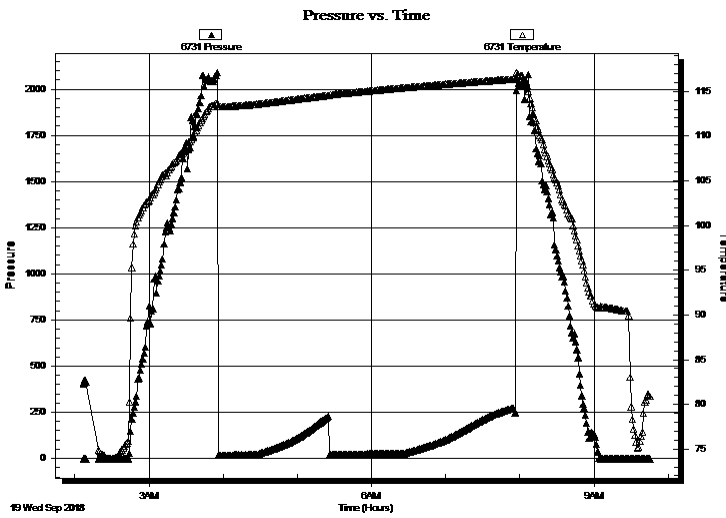
Serial #: 6731

Inside

Press@RunDepth: psig @ 4191.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.09.19 End Date: 2018.09.19 Last Calib.: 2018.09.19
 Start Time: 02:07:01 End Time: 09:45:01 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IFP- 1/2" Blow Thru-Out
 60-ISIP- No Blow
 60-FFP- Weak Surface Blow in 10 min. Building to 1 1/4"
 90-FSIP- No Blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
25.00	OCM 35%o 65%m	0.12
0.00	95 GIP	0.00

* 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
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64137 **DST#: 2**
Test Start: 2018.09.19 @ 02:07:00

Tool Information

Drill Pipe:	Length: 3894.00 ft	Diameter: 3.80 inches	Volume: 54.62 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: 274.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 55.97 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 67000.00 lb
Depth to Top Packer:	4189.00 ft			Final 67000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	34.00 ft			
Tool Length:	62.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4162.00	
Shut In Tool	5.00			4167.00	
Hydraulic tool	5.00		Inside	4172.00	
Jars	5.00			4177.00	
Safety Joint	2.00			4179.00	
Packer	5.00			4184.00	28.00 Bottom Of Top Packer
Packer	5.00			4189.00	
Stubb	1.00			4190.00	
Perforations	1.00			4191.00	
Recorder	0.00	8645	Outside	4191.00	
Recorder	0.00	6731	Inside	4191.00	
Perforations	29.00			4220.00	
Bullnose	3.00			4223.00	34.00 Bottom Packers & Anchor

Total Tool Length: 62.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64137 **DST#: 2**
Test Start: 2018.09.19 @ 02:07:00

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: 61.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.37 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 4100.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
25.00	OCM 35%o 65%m	0.123
0.00	95 GIP	0.000

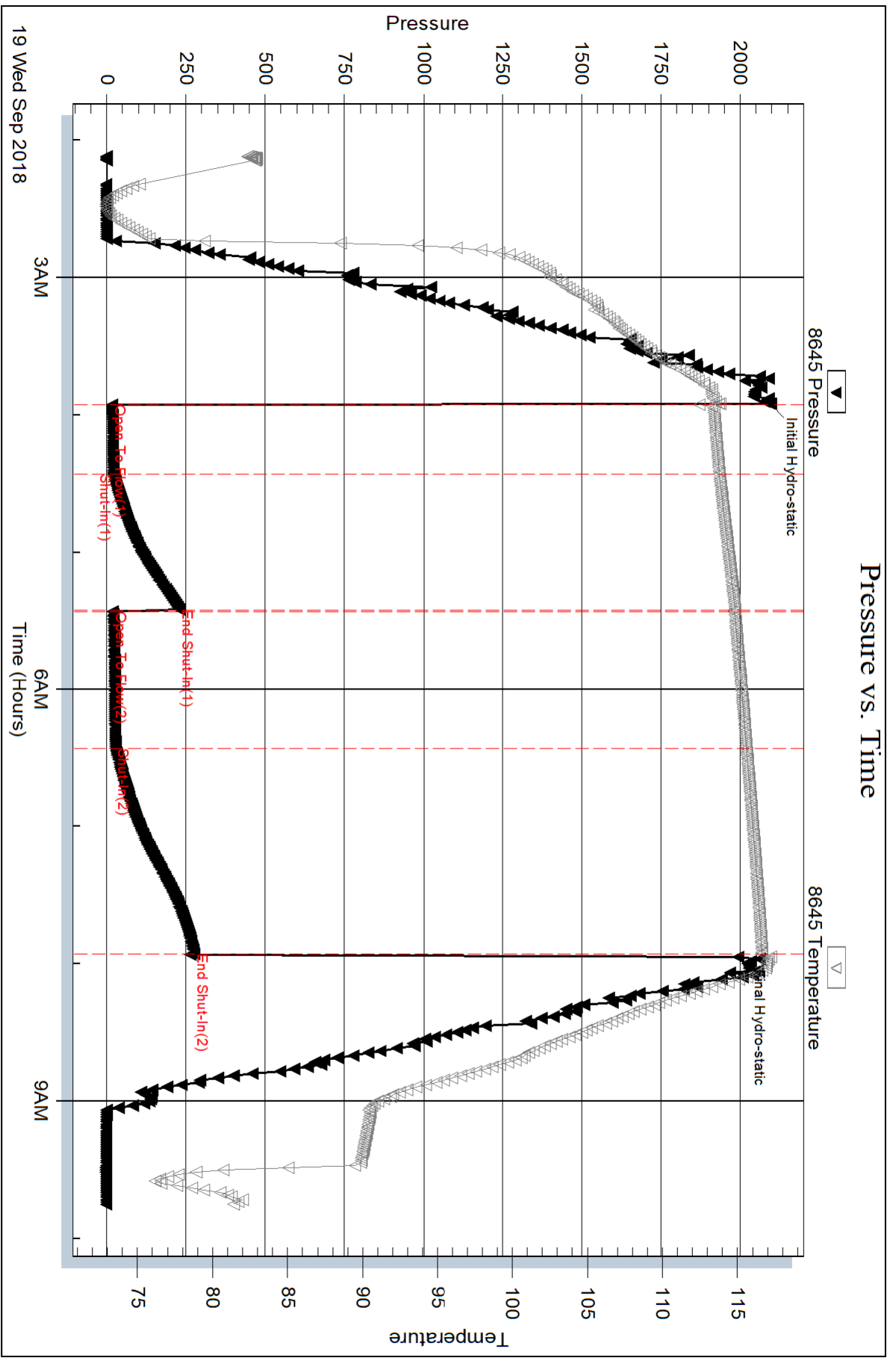
Total Length: 25.00 ft Total Volume: 0.123 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

Serial #: 8645

Outside Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 64137

Printed: 2018.09.24 @ 13:44:17

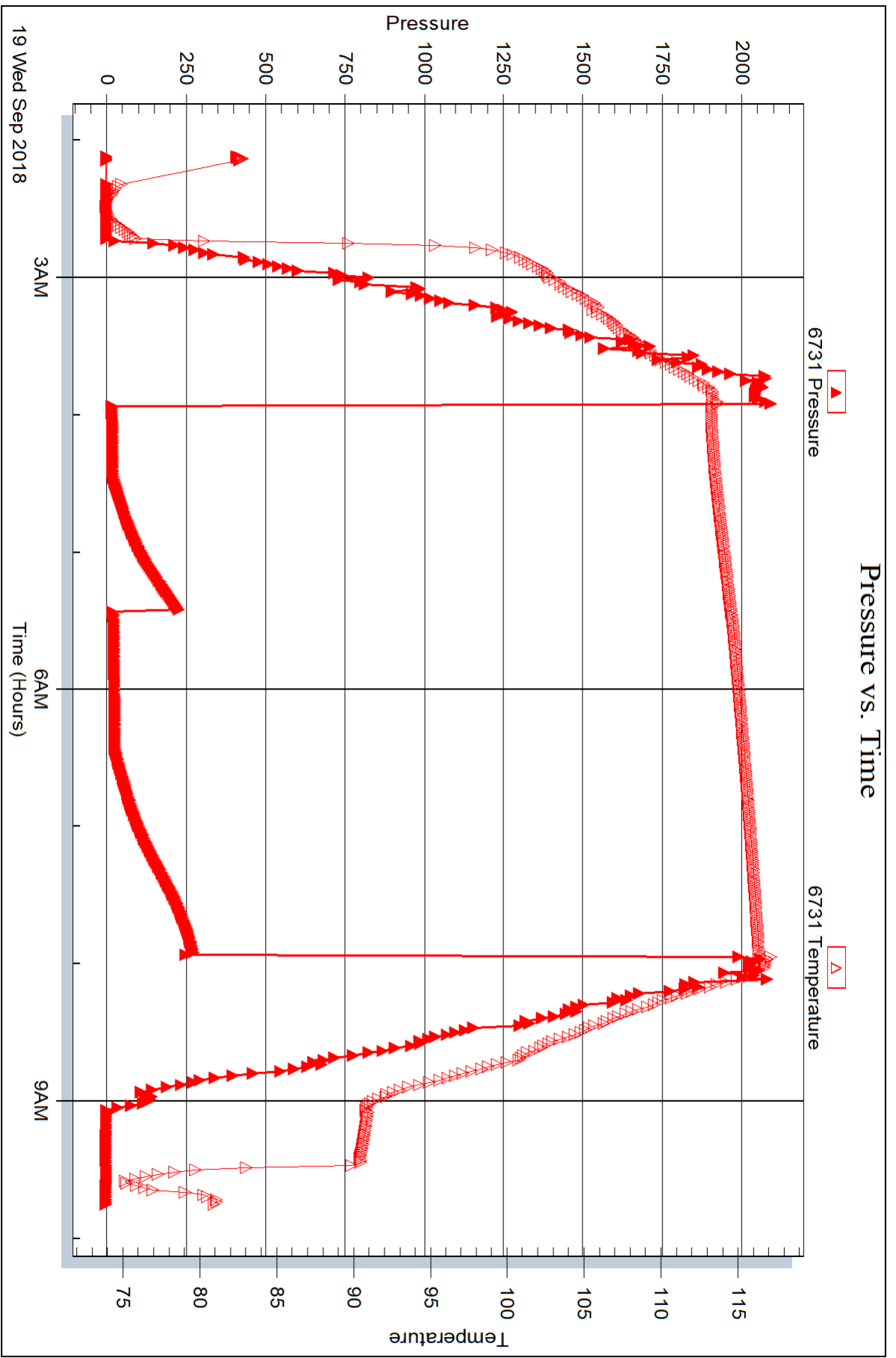
Serial #: 6731

Inside

Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Kuhlman #2-23

23-12s-33w Logan,KS

Start Date: 2018.09.19 @ 20:30:00

End Date: 2018.09.20 @ 04:30:00

Job Ticket #: 64138 DST #: 3

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

Printed: 2018.09.24 @ 13:43:53



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64138

DST#: 3

Test Start: 2018.09.19 @ 20:30:00

GENERAL INFORMATION:

Formation: **LKC "I - J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:19:01
 Time Test Ended: 04:30:00
 Interval: **4219.00 ft (KB) To 4282.00 ft (KB) (TVD)**
 Total Depth: 4282.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

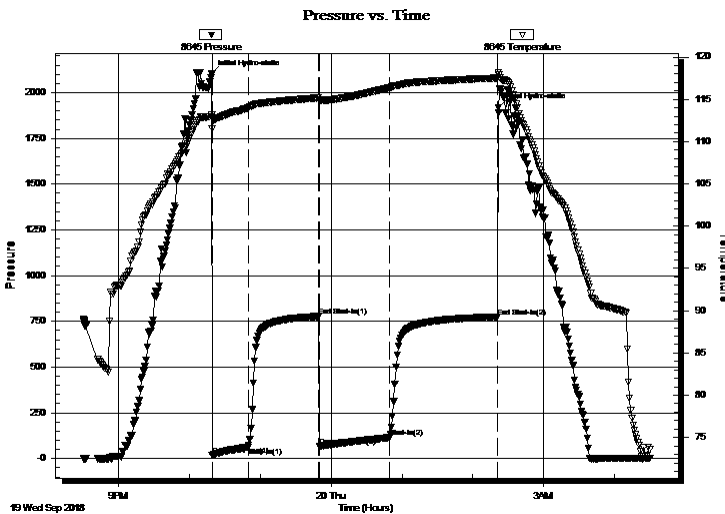
Serial #: 8645

Outside

Press@RunDepth: 114.77 psig @ 4222.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.09.19 End Date: 2018.09.20 Last Calib.: 2018.09.20
 Start Time: 20:30:01 End Time: 04:30:01 Time On Btm: 2018.09.19 @ 22:18:46
 Time Off Btm: 2018.09.20 @ 02:21:46

TEST COMMENT: 30-IFP- Surface Blow Built to 3 1/2"
 60-ISIP- No Blow
 60-FFP- Weak Surface Blow in 10min. Built to 5 3/4"
 90-FSIP- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.85	113.12	Initial Hydro-static
1	19.37	111.51	Open To Flow (1)
31	61.73	114.00	Shut-In(1)
91	776.84	115.17	End Shut-In(1)
91	66.54	114.82	Open To Flow (2)
151	114.77	116.36	Shut-In(2)
243	774.44	117.51	End Shut-In(2)
243	1918.88	118.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
122.00	OWCM 10%o 35%w 55%m	0.60
80.00	OCM 25%o 75%m	0.39
0.00	80 GIP	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
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan, KS

Kuhlman #2-23

Job Ticket: 64138 **DST#: 3**

Test Start: 2018.09.19 @ 20:30:00

GENERAL INFORMATION:

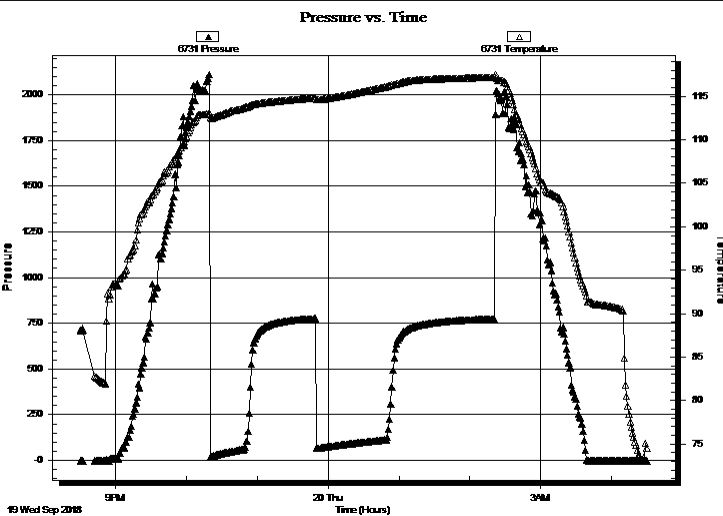
Formation: **LKC "I - J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:19:01
 Time Test Ended: 04:30:00
 Interval: **4219.00 ft (KB) To 4282.00 ft (KB) (TVD)**
 Total Depth: 4282.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

Serial #: 6731

Inside

Press@RunDepth: psig @ 4222.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.09.19 End Date: 2018.09.20 Last Calib.: 2018.09.20
 Start Time: 20:30:01 End Time: 04:30:01 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IFP- Surface Blow Built to 3 1/2"
 60-ISIP- No Blow
 60-FFP- Weak Surface Blow in 10min. Built to 5 3/4"
 90-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
122.00	OWCM 10%o 35%w 55% m	0.60
80.00	OCM 25%o 75% m	0.39
0.00	80 GIP	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
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64138 **DST#: 3**
Test Start: 2018.09.19 @ 20:30:00

Tool Information

Drill Pipe:	Length: 3925.00 ft	Diameter: 3.80 inches	Volume: 55.06 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: 274.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 56.41 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4219.00 ft			Final 69000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	63.00 ft			
Tool Length:	91.00 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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Change Over Sub	1.00			4192.00	
Shut In Tool	5.00			4197.00	
Hydraulic tool	5.00		Inside	4202.00	
Jars	5.00			4207.00	
Safety Joint	2.00			4209.00	
Packer	5.00			4214.00	28.00 Bottom Of Top Packer
Packer	5.00			4219.00	
Stubb	1.00			4220.00	
Perforations	1.00			4221.00	
Change Over Sub	1.00			4222.00	
Recorder	0.00	8645	Outside	4222.00	
Recorder	0.00	6731	Inside	4222.00	
Drill Pipe	31.00			4253.00	
Change Over Sub	1.00			4254.00	
Perforations	25.00			4279.00	
Bullnose	3.00			4282.00	63.00 Bottom Packers & Anchor
Total Tool Length:	91.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64138 **DST#: 3**
Test Start: 2018.09.19 @ 20:30:00

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:	44000 ppm
Viscosity: 56.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 4800.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
122.00	OWCM 10%o 35%w 55%m	0.600
80.00	OCM 25%o 75%m	0.393
0.00	80 GIP	0.000

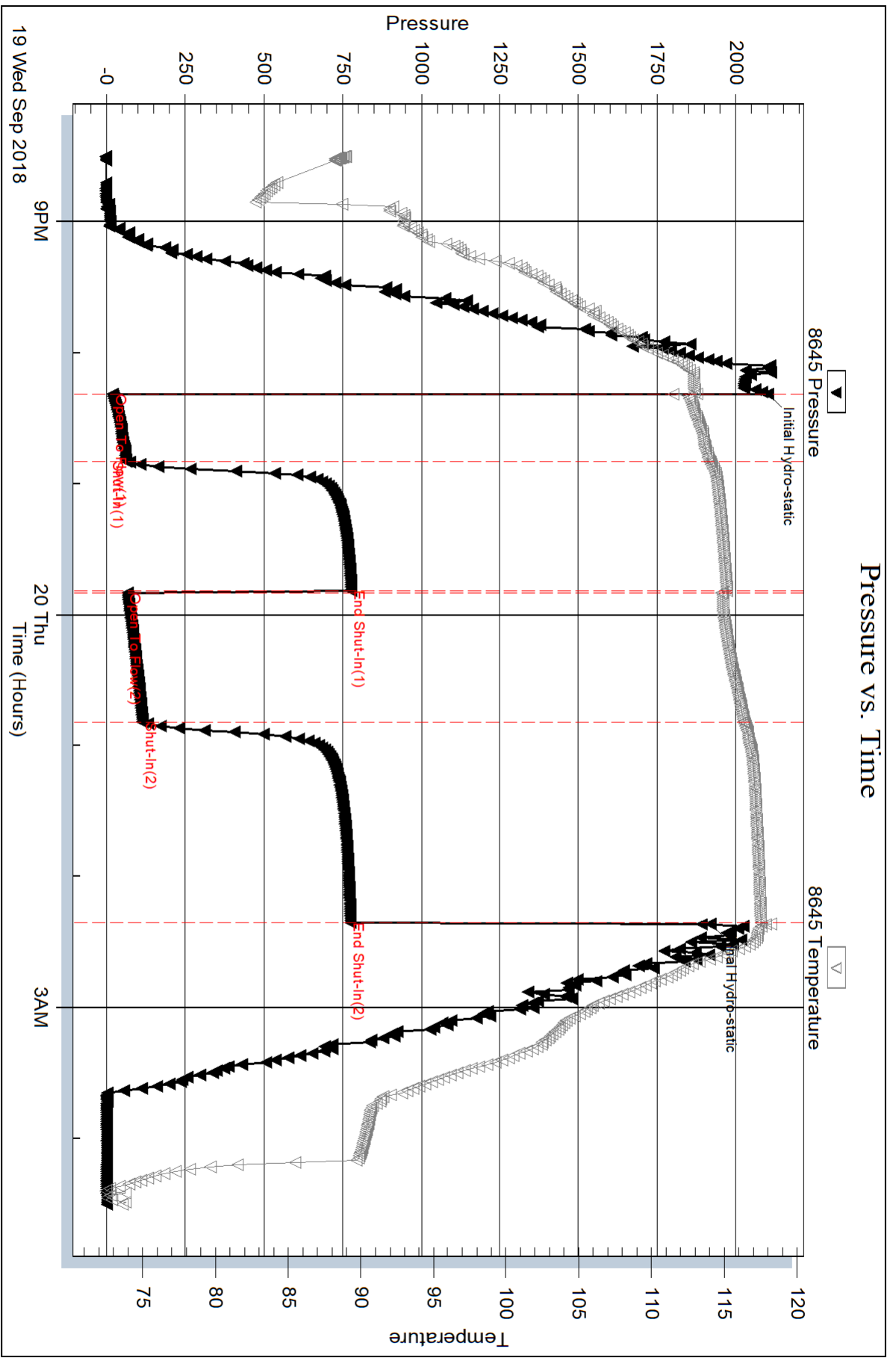
Total Length: 202.00 ft Total Volume: 0.993 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: .173 @ 68

Serial #: 8645

Outside Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 64138

Printed: 2018.09.24 @ 13:43:54

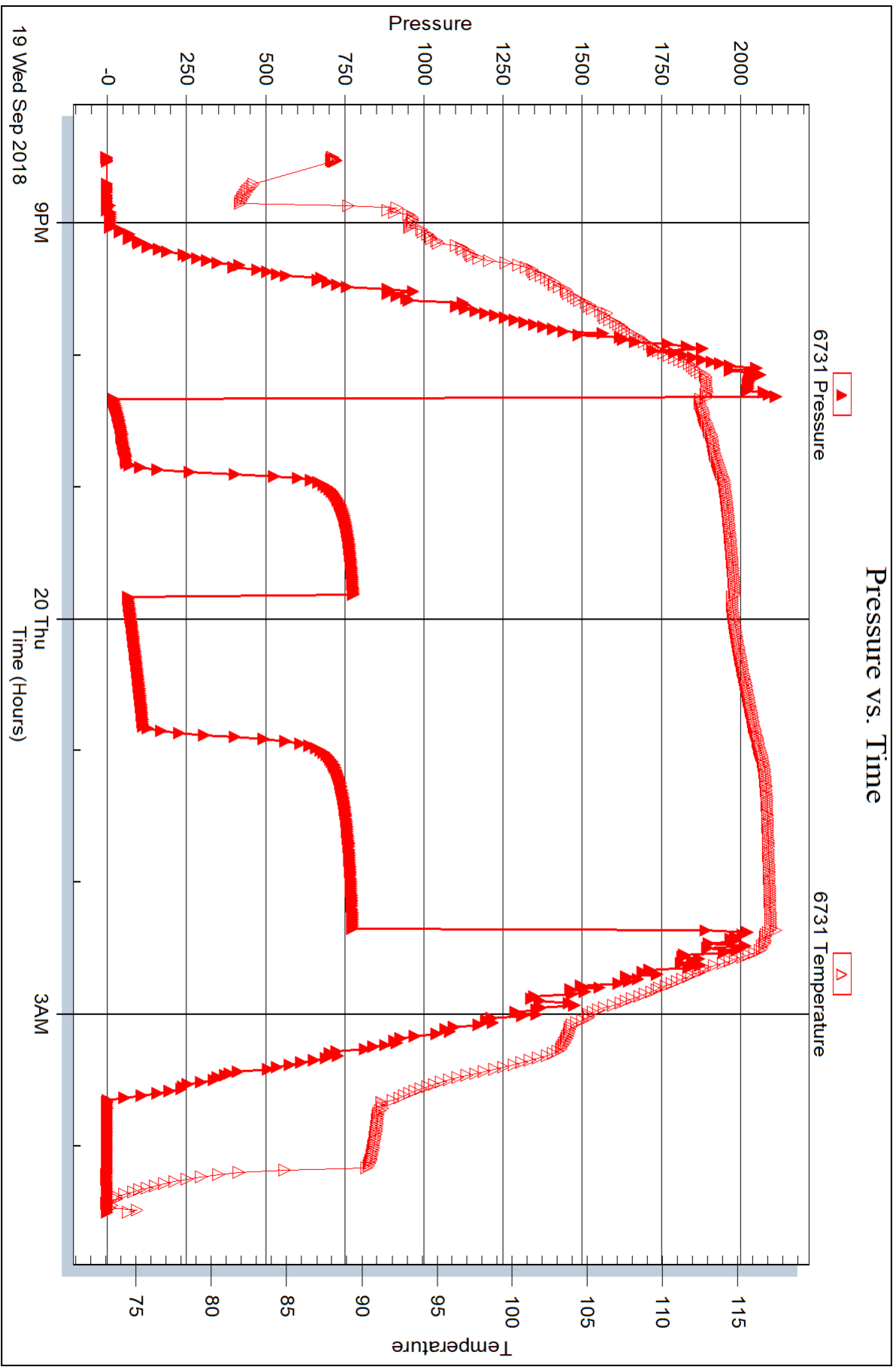
Serial #: 6731

Inside

Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 64138

Printed: 2018.09.24 @ 13:43:54



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Kuhlman #2-23

23-12s-33w Logan,KS

Start Date: 2018.09.20 @ 12:34:00

End Date: 2018.09.20 @ 20:20:00

Job Ticket #: 64139 DST #: 4

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

Printed: 2018.09.24 @ 13:43:31



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64139

DST#: 4

Test Start: 2018.09.20 @ 12:34:00

GENERAL INFORMATION:

Formation: **LKC " K "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:19:16
 Time Test Ended: 20:20:00
 Interval: **4278.00 ft (KB) To 4319.00 ft (KB) (TVD)**
 Total Depth: 4319.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

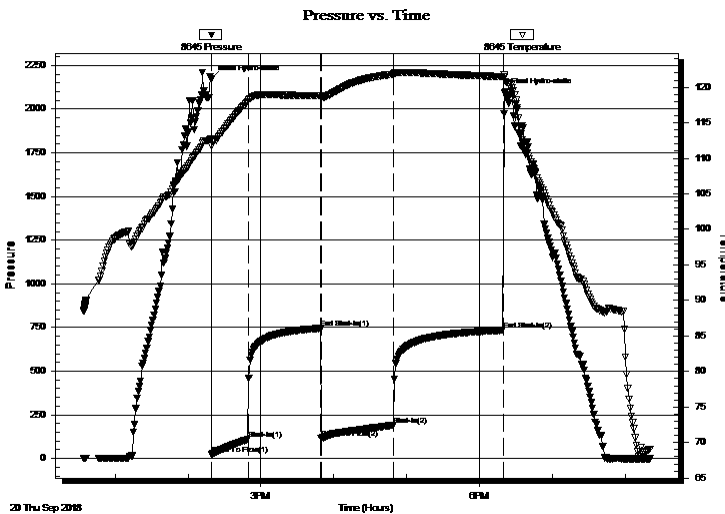
Serial #: 8645

Outside

Press@RunDepth: 191.22 psig @ 4282.00 ft (KB)
 Start Date: 2018.09.20 End Date: 2018.09.20
 Start Time: 12:34:01 End Time: 20:20:01
 Capacity: 8000.00 psig
 Last Calib.: 2018.09.20
 Time On Btm: 2018.09.20 @ 14:19:01
 Time Off Btm: 2018.09.20 @ 18:20:16

TEST COMMENT: 30-IFP- Surface Blow Built to 7"
 60-ISIP- No Blow
 60-FFP- Surface Blow Built to 10"
 90-FSIP- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2171.13	112.80	Initial Hydro-static
1	22.14	111.72	Open To Flow (1)
31	109.08	117.97	Shut-In(1)
90	745.05	118.79	End Shut-In(1)
91	115.00	118.44	Open To Flow (2)
151	191.22	121.84	Shut-In(2)
241	734.00	121.49	End Shut-In(2)
242	2094.71	121.43	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
374.00	MCW 15% m 85% w Show of Oil in Tool	2.75

* 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
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64139

DST#: 4

Test Start: 2018.09.20 @ 12:34:00

GENERAL INFORMATION:

Formation: **LKC " K "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:19:16
 Time Test Ended: 20:20:00
 Interval: **4278.00 ft (KB) To 4319.00 ft (KB) (TVD)**
 Total Depth: 4319.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 76
 Reference Elevations: 3092.00 ft (KB)
 3081.00 ft (CF)
 KB to GR/CF: 11.00 ft

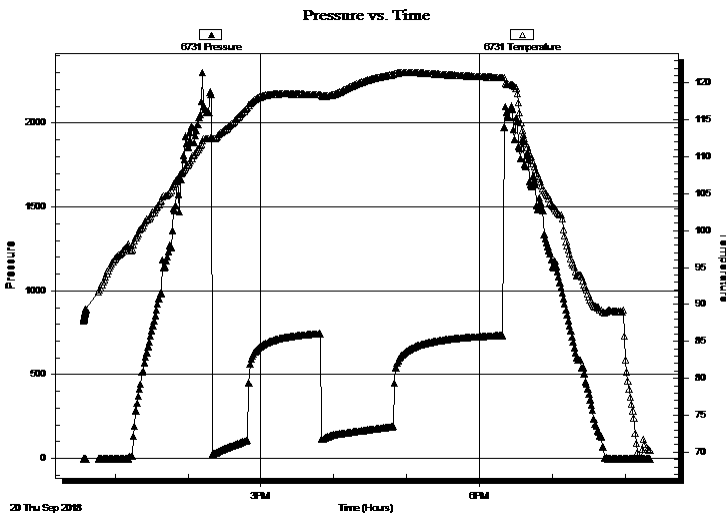
Serial #: 6731

Inside

Press@RunDepth: psig @ 4282.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.09.20 End Date: 2018.09.20 Last Calib.: 2018.09.20
 Start Time: 12:34:01 End Time: 20:20:01 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IFP- Surface Blow Built to 7"
 60-ISIP- No Blow
 60-FFP- Surface Blow Built to 10"
 90-FSIP- No Blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
374.00	MCW 15% m 85% w Show of Oil in Tool	2.75

* 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
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64139 **DST#: 4**
Test Start: 2018.09.20 @ 12:34:00

Tool Information

Drill Pipe:	Length: 3989.00 ft	Diameter: 3.80 inches	Volume: 55.96 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: 274.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 57.31 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4278.00 ft			Final 69000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	41.00 ft			
Tool Length:	69.00 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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Change Over Sub	1.00			4251.00	
Shut In Tool	5.00			4256.00	
Hydraulic tool	5.00		Inside	4261.00	
Jars	5.00			4266.00	
Safety Joint	2.00			4268.00	
Packer	5.00			4273.00	28.00 Bottom Of Top Packer
Packer	5.00			4278.00	
Stubb	1.00			4279.00	
Perforations	3.00			4282.00	
Recorder	0.00	8645	Outside	4282.00	
Recorder	0.00	6731	Inside	4282.00	
Perforations	34.00			4316.00	
Bullnose	3.00			4319.00	41.00 Bottom Packers & Anchor

Total Tool Length: 69.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64139 **DST#: 4**
Test Start: 2018.09.20 @ 12:34:00

Mud and Cushion Information

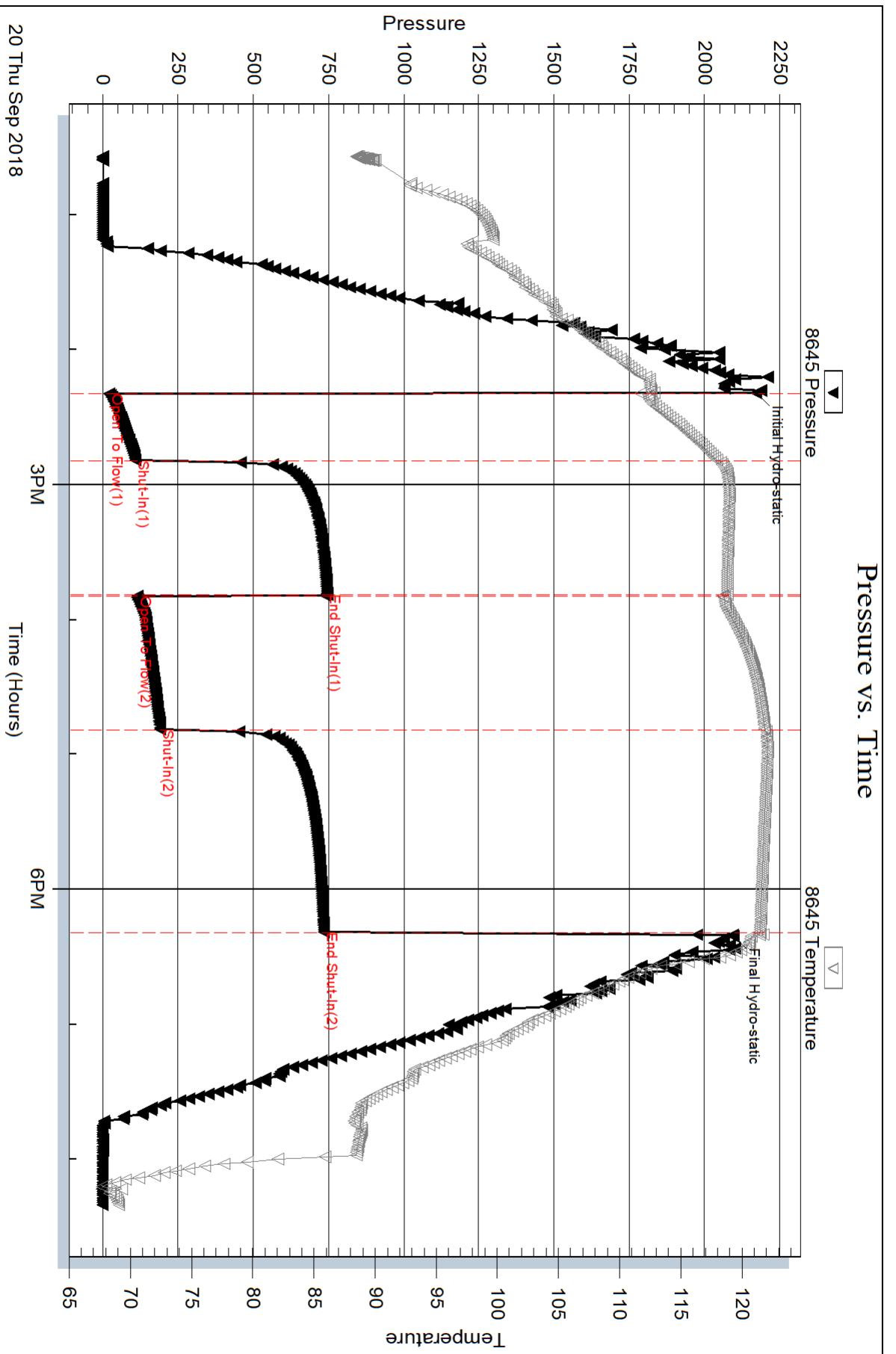
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	75000 ppm
Viscosity: 69.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.39 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5600.00 ppm			
Filter Cake: 2.00 inches			

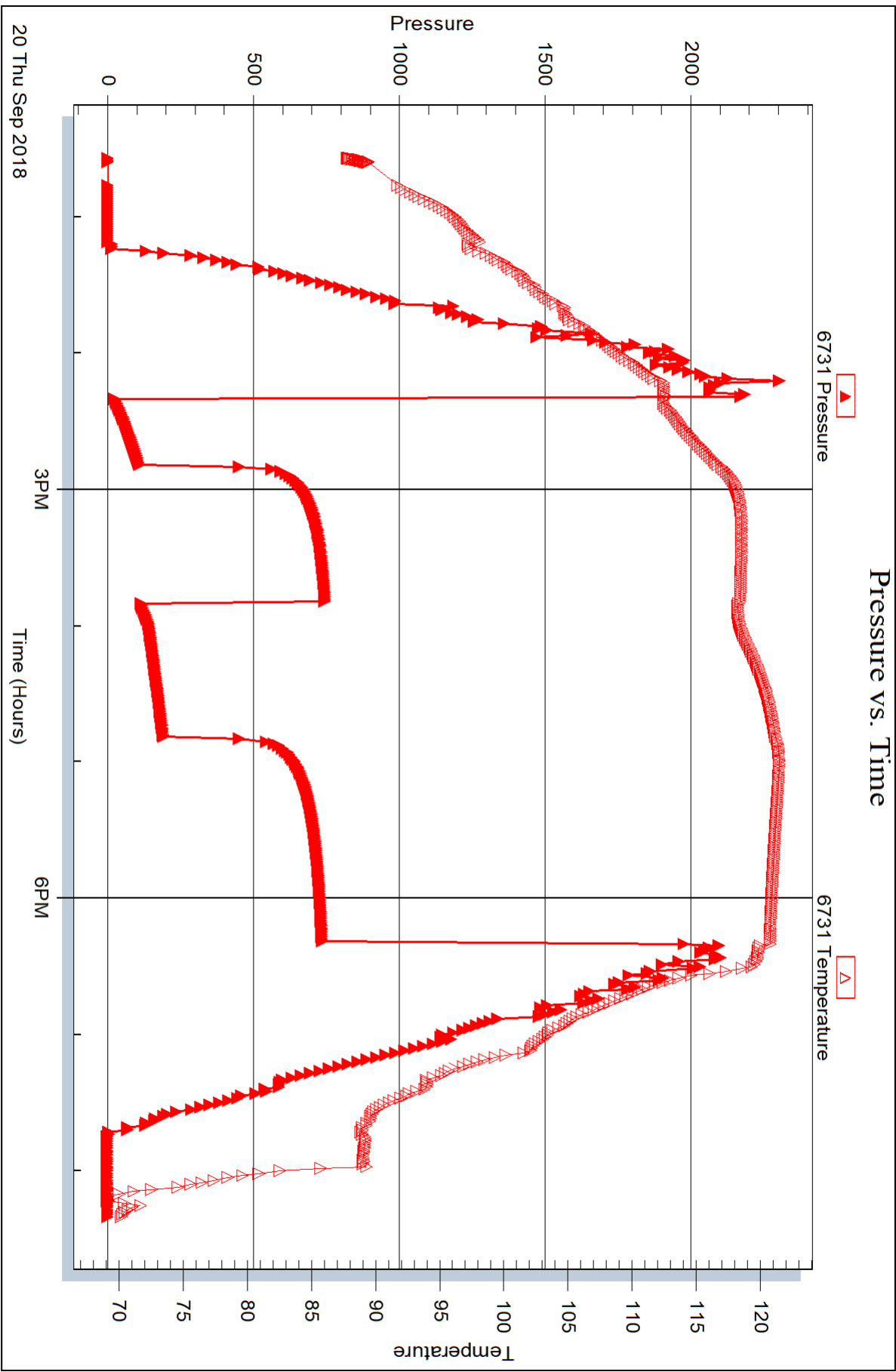
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
374.00	MCW 15% m 85% w Show of Oil in Tool	2.750

Total Length: 374.00 ft Total Volume: 2.750 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: .115 @ 64







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Kuhlman #2-23

23-12s-33w Logan,KS

Start Date: 2018.09.22 @ 03:40:00

End Date: 2018.09.22 @ 13:05:00

Job Ticket #: 64140 DST #: 5

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

Printed: 2018.09.24 @ 13:43:00



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan,KS

Kuhlman #2-23

Job Ticket: 64140

DST#: 5

Test Start: 2018.09.22 @ 03:40:00

GENERAL INFORMATION:

Formation: **Ft Scott & Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:43:31

Time Test Ended: 13:05:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

Interval: **4523.00 ft (KB) To 4641.00 ft (KB) (TVD)**

Reference Elevations: 3092.00 ft (KB)

Total Depth: 4641.00 ft (KB) (TVD)

3081.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 8645 Outside

Press@RunDepth: 386.50 psig @ 4527.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.09.22 End Date: 2018.09.22

Last Calib.: 2018.09.22

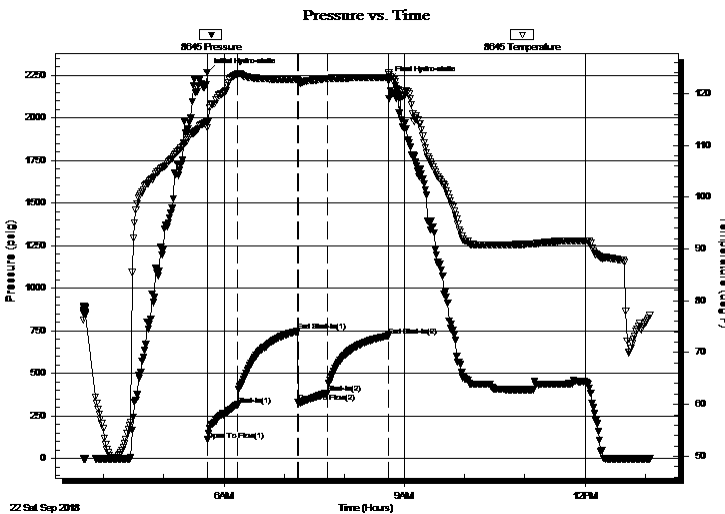
Start Time: 03:40:01 End Time: 13:05:01

Time On Btm: 2018.09.22 @ 05:43:16

Time Off Btm: 2018.09.22 @ 08:44:16

TEST COMMENT: 30-IFP- BOB in 2 1/2 min. IPRO--135in.
 60-ISIP- BOB in 3 1/2 min. IPRO-- 61in.
 30-FFP- BOB in 7 min. IPRO--66in.
 60-FSIP- BOB in 6 min. IPRO--34in.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2267.32	114.52	Initial Hydro-static
1	110.41	113.37	Open To Flow (1)
31	316.65	123.79	Shut-In(1)
90	747.87	122.62	End Shut-In(1)
91	329.28	122.38	Open To Flow (2)
120	386.50	122.88	Shut-In(2)
181	721.94	123.03	End Shut-In(2)
181	2217.86	124.05	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1030.00	GMCO 25%g 15%m 60%o	11.95
0.00	2425 GIP	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
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Robert Hendrix

23-12s-33w Logan, KS
Kuhlman #2-23
 Job Ticket: 64140 **DST#: 5**
 Test Start: 2018.09.22 @ 03:40:00

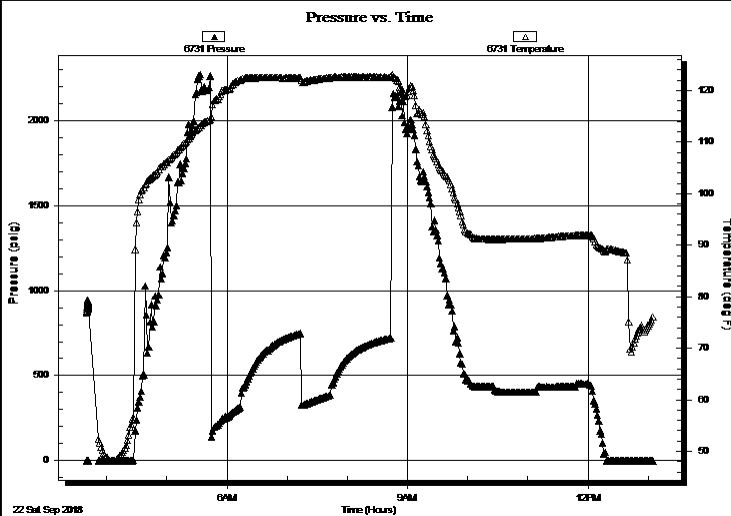
GENERAL INFORMATION:

Formation: Ft Scott & Johnson	Test Type: Conventional Bottom Hole (Reset)
Deviated: No Whipstock: ft (KB)	Tester: Jim Svaty
Time Tool Opened: 05:43:31	Unit No: 76
Time Test Ended: 13:05:00	Reference Elevations: 3092.00 ft (KB) 3081.00 ft (CF)
Interval: 4523.00 ft (KB) To 4641.00 ft (KB) (TVD)	KB to GR/CF: 11.00 ft
Total Depth: 4641.00 ft (KB) (TVD)	
Hole Diameter: 7.88 inches Hole Condition: Fair	

Serial #: 6731 Inside

Press@RunDepth: psig @ 4527.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2018.09.22 End Date: 2018.09.22	Last Calib.: 2018.09.22
Start Time: 03:40:01 End Time: 13:05:16	Time On Btm:
	Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 2 1/2 min. IPR--135in.
 60-ISIP- BOB in 3 1/2 min. IPR-- 61in.
 30-FFP- BOB in 7 min. IPR--66in.
 60-FSIP- BOB in 6 min. IPR--34in.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
1030.00	GMCO 25%g 15%m 60%o	11.95
0.00	2425 GIP	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
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64140 **DST#: 5**
Test Start: 2018.09.22 @ 03:40:00

Tool Information

Drill Pipe:	Length: 4243.00 ft	Diameter: 3.80 inches	Volume: 59.52 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: 274.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 60.87 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4523.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	118.00 ft			
Tool Length:	146.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

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

Change Over Sub	1.00			4496.00	
Shut In Tool	5.00			4501.00	
Hydraulic tool	5.00		Inside	4506.00	
Jars	5.00			4511.00	
Safety Joint	2.00			4513.00	
Packer	5.00			4518.00	28.00 Bottom Of Top Packer
Packer	5.00			4523.00	
Stubb	1.00			4524.00	
Perforations	3.00			4527.00	
Recorder	0.00	8645	Outside	4527.00	
Recorder	0.00	6731	Inside	4527.00	
Perforations	15.00			4542.00	
Change Over Sub	1.00			4543.00	
Drill Pipe	94.00			4637.00	
Change Over Sub	1.00			4638.00	
Bullnose	3.00			4641.00	118.00 Bottom Packers & Anchor
Total Tool Length:	146.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Robert Hendrix

23-12s-33w Logan,KS
Kuhlman #2-23
Job Ticket: 64140 **DST#: 5**
Test Start: 2018.09.22 @ 03:40:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 32 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 65.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.19 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 6900.00 ppm		
Filter Cake: 2.00 inches		

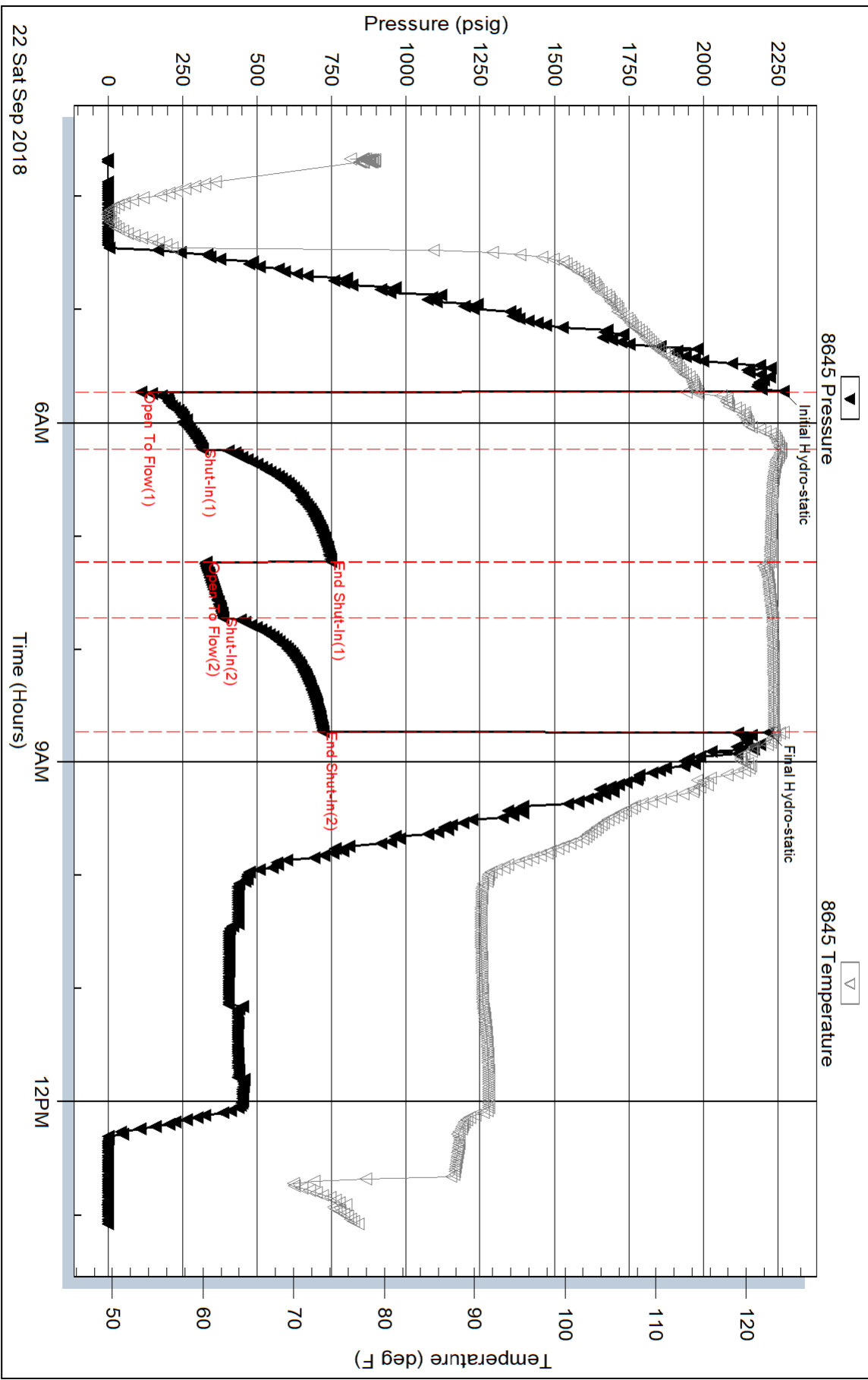
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1030.00	GMCO 25%g 15%m 60%o	11.952
0.00	2425 GIP	0.000

Total Length: 1030.00 ft Total Volume: 11.952 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Pressure vs. Time



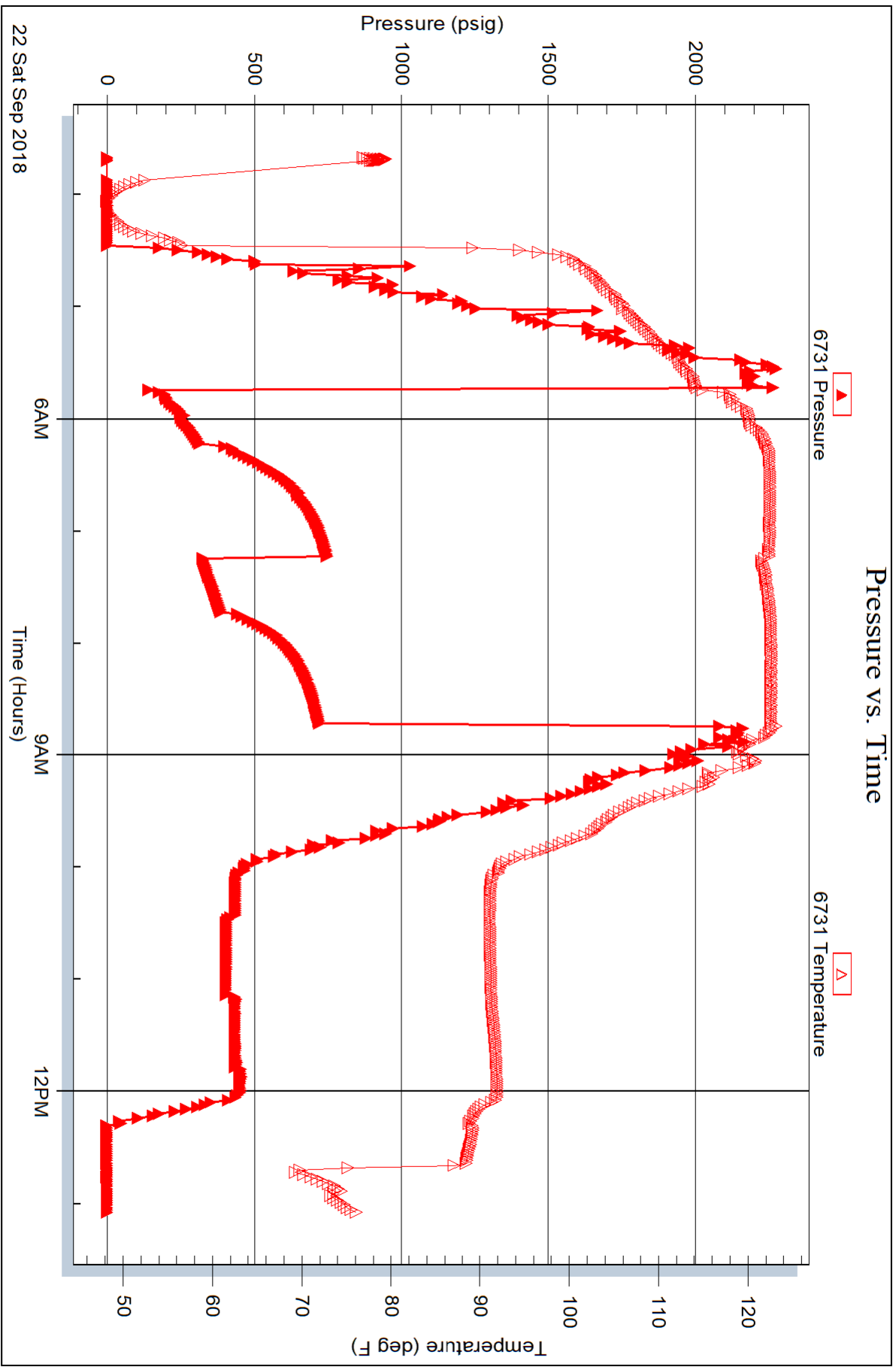
Serial #: 6731

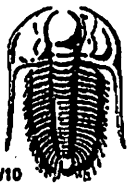
Inside

Murfin Drilling Co Inc

Kuhman #2-23

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64136

Well Name & No. Kuhlman 2-23 Test No. 1 Date 9-18-18
 Company Murfin Drilling Co. Inc. Elevation 3092 KB 3081 GL
 Address 250 N. Water Ste. 300 Wichita KS 67202-1216
 Co. Rep / Geo. Robert Hendrix Rig Murfin 21
 Location: Sec. 23 Twp 12 Rge. 33W Co. LOGAN State KS

Interval Tested 4114~~000~~ - 4137 Zone Tested LKC "E"
 Anchor Length 23 Drill Pipe Run 3832 Mud Wt. 8.9
 Top Packer Depth 4108 Drill Collars Run 274 Vis 55
 Bottom Packer Depth 4114~~000~~ Wt. Pipe Run 0 WL 6.4
 Total Depth 4137 Chlorides 2900 ppm System LCM 2

Blow Description IFP - BOB in 30 min. IPRO 9.9!
ISIP - No Blow

FFP - Surface Blow Built to 9 in.
FSIP - Weak Surface Blow in 7 min. Dead in 18 min.

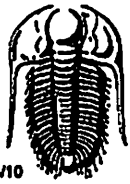
Rec	Feet of	%gas	%oil	%water	%mud
<u>90</u>	<u>40 CM</u>	<u>10</u>	<u>30</u>	<u>60</u>	
<u>190</u>	<u>400</u>	<u>20</u>	<u>80</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 280 BHT 118 Gravity 27 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2047 Test 1150 T-On Location 04:20
 (B) First Initial Flow 19 Jars 250 T-Started 05:20
 (C) First Final Flow 70 Safety Joint 75 T-Open 07:33
 (D) Initial Shut-In 919 Circ Sub _____ T-Pulled 11:33
 (E) Second Initial Flow 77 Hourly Standby _____ T-Out 13:33
 (F) Second Final Flow 125 Mileage 88rt 157 RT Comments _____
 (G) Final Shut-In 857 Sampler _____
 (H) Final Hydrostatic 2007 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1563
 MP/DST Disc't _____

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64137

Well Name & No. Kuhlman 2-23 Test No. 2 Date 9-19-18
 Company Murfin Drilling Co. Inc. Elevation 3092 KB 3081 GL
 Address 250 N. Water St. 300 Nichita KS 67202-1216
 Co. Rep / Geo. Robert Hendrix Rig MurFid 21
 Location: Sec. 23 Twp 12^s Rge. 33^w Co. LOGAN State KS

Interval Tested 4189-4223 Zone Tested LKC "H"
 Anchor Length 34 Drill Pipe Run 3894 Mud Wt. 9.1
 Top Packer Depth 4184 Drill Collars Run 274 Vis 61
 Bottom Packer Depth 4189 Wt. Pipe Run 0 WL 6.4
 Total Depth 4223 Chlorides 4100 ppm System LCM 2
 Blow Description IFP - 1/2 in. Blow Thru-out
IFIP - No Blow
IFP - Weak Surface Blow in 10 min. Building to 1 1/4 in.
IFIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>25</u>	<u>OCM</u>	<u>35</u>		<u>65</u>	
	<u>95 MIP</u>				

Rec Total 25 BHT 117 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2095</u>	<input checked="" type="checkbox"/> Test 1150	T-On Location <u>01:30</u>
(B) First Initial Flow <u>17</u>	<input checked="" type="checkbox"/> Jars 250	T-Started <u>02:07</u>
(C) First Final Flow <u>21</u>	<input checked="" type="checkbox"/> Safety Joint 75	T-Open <u>03:56</u>
(D) Initial Shut-In <u>228</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>07:56</u>
(E) Second Initial Flow <u>18</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>09:45</u>
(F) Second Final Flow <u>27</u>	<input checked="" type="checkbox"/> Mileage 88	Comments _____
(G) Final Shut-In <u>275</u>	<input type="checkbox"/> Sampler	_____
(H) Final Hydrostatic <u>1994</u>	<input type="checkbox"/> Straddle	_____
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1563</u>
	Sub Total <u>1563</u>	MP/DST Disc't _____

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64138

Well Name & No. Kuhlman 2-23 Test No. 3 Date 9-19-18
 Company Murfin Drilling Co. Inc. Elevation 3092 KB 3081 GL
 Address 250 N. Water Ste 300 Wichita KS 67202-1216
 Co. Rep / Geo. Robert Hendrix Rig Murfin 21
 Location: Sec. 23 Twp 12^s Rge. 33^w Co. Logan State KS

Interval Tested 4219-4282 Zone Tested LKC" I+J"
 Anchor Length 63 Drill Pipe Run 3925 Mud Wt. 9.3
 Top Packer Depth 4214 Drill Collars Run 274 Vis 56
 Bottom Packer Depth 4219 Wt. Pipe Run 0 WL 6.8
 Total Depth 4282 Chlorides 4800 ppm System LCM 2

Blow Description I-FP- Surface Blow Built to 3 1/2 in.
ISIP- No Blow.
F-FP- Weak Surface Blow in 10 min. Built to 5 3/4 in.
FSIP- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>122</u>	<u>0 WCM</u>	<u>10</u>	<u>35</u>	<u>55</u>	
<u>80</u>	<u>0 CM</u>	<u>25</u>		<u>75</u>	
	<u>80 SIP</u>				

Rec Total 202 BHT 118 Gravity API RW, 17.3 @ 68 °F Chlorides 44000 ppm

(A) Initial Hydrostatic 2100 Test 1150 T-On Location 19:40
 (B) First Initial Flow 19 Jars 250 T-Started 20:30
 (C) First Final Flow 61 Safety Joint 75 T-Open 22:20
 (D) Initial Shut-In 776 Circ Sub _____ T-Pulled 02:20
 (E) Second Initial Flow 66 Hourly Standby _____ T-Out 04:30
 (F) Second Final Flow 114 Mileage 88 Comments _____
 (G) Final Shut-In 774 Sampler _____
 (H) Final Hydrostatic 1918 Straddle _____
 Shale Packer _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Packer _____
 Extra Copies _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1563
 Total 1563
 MP/DST Disc't _____

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



TRIBOLITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64139

Well Name & No. Kuhlman 2-23 Test No. 4 Date 9-20-18
 Company Murfin Drilling Co. Inc Elevation 3092 KB 3081 GL
 Address 250 N. Water St. 300 Wichita KS 67202-1216
 Co. Rep / Geo. Robert Hendrix Rig Murfin 21
 Location: Sec. 23 Twp 12^s Rge. 33^w Co. Logan State KS

Interval Tested 4278-4319 Zone Tested LKC "K"
 Anchor Length 41 Drill Pipe Run 3989 Mud Wt. 9.1
 Top Packer Depth 4273 Drill Collars Run 274 Vis 69
 Bottom Packer Depth 4278 Wt. Pipe Run 0 WL 6.4
 Total Depth 4319 Chlorides 5600 ppm System LCM 2

Blow Description IFP - Surface Blow Built To 7 inches
ISIP - No Blow
FFP - Surface Blow Built to 10 in.
FSIP - No Blow

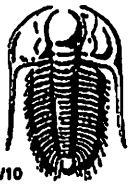
Rec	Feet of	%gas	%oil	%water	%mud
<u>374</u>	<u>MCW</u>		<u>85</u>	<u>15</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>Show of Oil in Tool</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 374 BHT 122 Gravity _____ API RW 115 @ 64 °F Chlorides 75000 ppm

(A) Initial Hydrostatic <u>2171</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>11:50</u>
(B) First Initial Flow <u>22</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:34</u>
(C) First Final Flow <u>109</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>14:20</u>
(D) Initial Shut-In <u>945</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>18:20</u>
(E) Second Initial Flow <u>115</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>20:20</u>
(F) Second Final Flow <u>191</u>	<input checked="" type="checkbox"/> Mileage <u>88</u>	Comments _____
(G) Final Shut-In <u>734</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>2099</u>	<input type="checkbox"/> Straddle _____	

Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1563</u>
	Sub Total <u>1563</u>	MP/DST Disc't _____

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64140

Well Name & No. Kuhlman 2-23 Test No. 5 Date 9-22-18
 Company Murfin Drilling Co. Inc. Elevation 3092 KB 3081 GL
 Address 250 N. WATER ST. 300 WICHITA KS 67202-1216
 Co. Rep / Geo. Robert Hendrix Rig MURFIN 21
 Location: Sec. 23 Twp 12^S Rge. 33^W Co. LOGAN State KS

Interval Tested 4523-4641 Zone Tested Ft. Scott & Johnson
 Anchor Length 118 Drill Pipe Run 4243 Mud Wt. 9.2
 Top Packer Depth 4518 Drill Collars Run 274 Vis 6.5
 Bottom Packer Depth 4523 Wt. Pipe Run 0 WL 7.2
 Total Depth 4641 Chlorides 6900 ppm System LCM 2

Blow Description I.F.P. - BOB in 2 1/2 min. I.P.R.O 135 in.
I.S.I.P. - BOB in 3 1/2 min. I.P.R.O 61 in.
F.F.P. - BOB in 7 min. I.P.R.O 66 in.
F.S.I.P. - BOB in 6 min. I.P.R.O 34 in.

Rec 1030 Feet of M M C O 25 %gas 60 %oil %water 15 %mud
 Rec _____ Feet of _____ %gas %oil %water %mud
 Rec _____ Feet of _____ %gas %oil %water %mud
 Rec _____ Feet of _____ %gas %oil %water %mud
 Rec _____ Feet of 2425 GIP %gas %oil %water %mud

Rec Total 1030 BHT 124 Gravity 32 API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2267 Test 1150 T-On Location 00:50
 (B) First Initial Flow 110 Jars 250 T-Started 03:40
 (C) First Final Flow 316 Safety Joint 75 T-Open 05:44
 (D) Initial Shut-In 747 Circ Sub 50 T-Pulled 08:44
 (E) Second Initial Flow 329 Hourly Standby _____ T-Out 13:05
 (F) Second Final Flow 386 Mileage 88 Comments _____
 (G) Final Shut-In 721 Sampler _____
 (H) Final Hydrostatic 2217 Straddle _____
 Ruined Shale Packer _____
 Shale Packer _____
 Ruined Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60
 Sub Total 1613
 MP/DST Disc't _____

Approved By _____ Our Representative [Signature]
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TREATMENT REPORT



HURRICANE SERVICES INC

Customer: Murfin Drilling INC	Date: 9/13/2018	Ticket #: ICT1380
Field Rep: Juan		
Address: PO Box 661		
City, State: Hill City KS		
County, Zip: 67642		

Field Order No.:		Open Hole:	12 1/4	<table border="1"> <thead> <tr> <th>Perf Depths (ft)</th> <th>Perfs</th> </tr> </thead> <tbody> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr> <td>Total Perfs</td> <td>0</td> </tr> </tbody> </table>	Perf Depths (ft)	Perfs																			Total Perfs	0
Perf Depths (ft)	Perfs																									
Total Perfs	0																									
Well Name:	Kuhlman 2-23	Casing Depth:	295																							
Location:	Logan, Ks	Casing Size:	8 5/8																							
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:	308																							

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (g/s)	FLUID (bbbls)
	FLUID	N2/CO2	STP	ANNULUS				
7:16 PM					Arrive on location			
7:20 PM					Safety meeting			
7:25 PM					Rig up			
9:12 PM					Rig runs casing			
9:55 PM					Casing on bottom. Circulate			
10:16 PM	5.5		300.0		Mix 255 sks of Class A 3% cc 2% gel .26 flo 1.41 Yield			65.00
10:25 PM	4.5		300.0		Displace			18.00
10:35 PM			150.0		End displacement/ Shut in well			
10:40 PM					Wash Up			
10:45 PM					Rig down			
10:55 PM					Depart Location			
					Approx 1 bbbls to pit			
TOTAL:						-	-	83.00

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
5.5	5.0	300.0	250.0

PRODUCTS USED

255 sacks, 3% CC, 2% gel, 1/4#/sk flo seal

Treater: Dave Retzloff

Customer: Juan

TREATMENT REPORT



HURRICANE SERVICES INC

Customer: Murfin Drilling Co	Date: 9/23/2018	Ticket #: ICT1409
Field Rep: Ben		
Address: Colby ks		
City, State:		
County, Zip:		

Field Order No.:		Open Hole:		<table border="1"> <thead> <tr> <th>Perf Depths (ft)</th> <th>Perfs</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr> <td>Total Perfs</td> <td>0</td> </tr> </tbody> </table>	Perf Depths (ft)	Perfs																							Total Perfs	0
Perf Depths (ft)	Perfs																													
Total Perfs	0																													
Well Name:	Kuhlman 2-23	Casing Depth:	4764																											
Location:	Logan 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:	4768																											

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N ₂ /CO ₂	STP	ANNULUS				
4:20 PM					Arrive on location			
4:26 PM					Safety meeting			
4:30 PM					Rig up			
6:00 PM					Run casing			
6:54 PM					Circulate			
7:10 PM					Run casing			
9:00 PM					Casing on bottom. Circulate. Drop ball			
10:25 PM	4.0		220.0		Mix 500 gls of mudflush			12.00
10:30 PM	2.0		80.0		Plug RH and MH with 50 sks			13.50
10:40 PM	6.0		290.0		Mix 175 sks of H long @ 1.50 Yield			47.00
11:14 PM	6.0		320.0		Release plug and displace			113.00
11:30 PM					Plug landed @1600 psi. Final lift was 1000 psi			
11:43 PM					wash up			
11:50 PM					Rig down			
					Turbos on 1-10 12 14 18 30 51			
					Baskets 18 30 51			
					Port Collar top of 52			
TOTAL:								186.50

SUMMARY			
Max FI. Rate	Avg FI. Rate	Max PSI	Avg PSI
5.0	4.0	320.0	227.5

PRODUCTS USED

225 sks H Long

Treater: Dave Retzlaff

Customer: Ben S

TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin Drilling Co Inc	Date:	10/1/2018	Ticket #:	ICT1435
Field Rep:	Ben Gabel				
Address:					
City, State:	Wichita				
County, Zip:					

Field Order No.:		Open Hole:		Perf Depths (ft)	Perfs
Well Name:	Kuhlman 2-23	Casing Depth:			
Location:	Logan K8	Casing Size:			
Formation:		Tubing Depth:			
Type of Service:	Cement	Tubing Size:	2 3/8		
Well Type:	Oil	Liner Depth:			
Age of Well:	New	Liner Size:			
Packer Type:		Liner Top:			
Packer Depth:		Liner Bottom:			
Treatment Via:		Total Depth:	2575		
				Total Perfs	0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
8:00 AM					Arrive on location			
8:05 AM					Safety meeting			
8:10 AM					Rig up			
8:15 AM	2.5		1,000.0		Test port collar			
8:20 AM	2.5		750.0		Establish flow			10.00
8:50 AM	3.5		620.0		Mix 250 sks of H Con 2.55 yield			127.00
9:30 AM	3.5		580.0		Displace			10.00
9:40 AM					Rig runs 6 joints in			
9:50 AM	3.5		220.0		Reverse clean			20.00
10:10 AM					Washup pump and lines			
10:20 AM					rig down			
10:30 AM					Depart			
					Approx. 20 sks to pit			
TOTAL:								

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
3.5	2.1	1,000.0	548.4

PRODUCTS USED
280 sks H con

Treater: Dave Roteloff

Customer: Book Solis