

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
--	---

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	HATCH 'A' 1-1
Doc ID	1353322

All Electric Logs Run

DIL
DUCP
MEL
BHCS
CBL

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	HATCH 'A' 1-1
Doc ID	1353322

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	4435-4444	1500 gal 20% MCA w/ 3% MS-1, w/ 50 perf balls	

Summary of Changes

Lease Name and Number: HATCH 'A' 1-1

API/Permit #: 15-023-21453-00-00

Doc ID: 1353322

Correction Number: 1

Approved By: Karen Ritter

Field Name	Previous Value	New Value
Approved Date	02/13/2017	04/25/2017
Save Link	../../../../kcc/detail/operatorE ditDetail.cfm?docID=13 24823	../../../../kcc/detail/operatorE ditDetail.cfm?docID=13 53322
Well Type	SWD	OIL



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1324823
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

Form must be Typed

Form must be Signed

All blanks must be Filled

CONFIDENTIAL 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 SIOW
- Gas D&A ENHR SIGW
- OG GSW Temp. Abd.
- 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 ENHR Conv. to SWD
- Plug Back Conv. to GSW Conv. to Producer
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - _____

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
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____

Jeff Christian

PETROLEUM GEOLOGIST
Wichita, Kansas

GEOLOGICAL REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **MURFIN DRILLING COMPANY**
 LEASE **HATCH 'A' #1-1**
 LOCATION **2130' FSL & 330' FEL**

SEC. **1** TWP. **2 S** R. **37 W**
 COUNTY **CHEYENNE** STATE **KANSAS**

API **15-023-21453-00-00**
 CONTRACTOR **COMPANY TOOLS** RIG NO. **3**
 DRILLING STARTED **10/19/2016** COMPLETED **10/27/2016**
 MUD DISPLACED **3407** MUD TYPE **CHEMICAL**
 DRILLING TIME FROM **3390** TO **R/D**
 SAMPLES EXAMINED FROM **3390** TO **R/D**
 SAMPLES EXAMINED FROM **3990** TO **R/D**
 GEOLOGICAL SUPERVISION FROM **3968** TO **R/D**

MEASUREMENTS FROM K/B
 ELEVATIONS
 KB **3379'**
 OL **3374'**

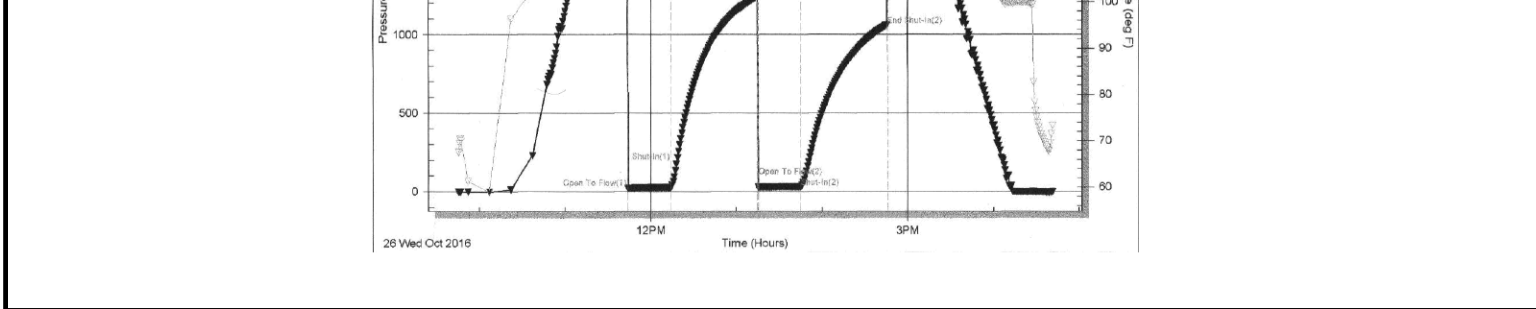
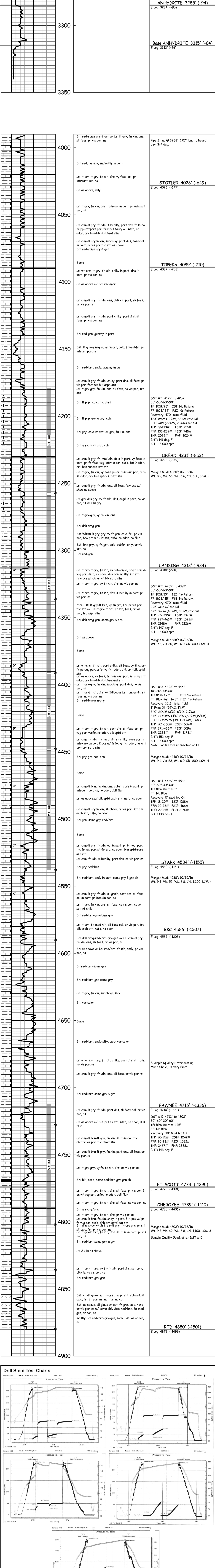
CASING RECORD
 Conductor **NONE**
 Surface **8.5/8" @ 324'**
 W/ 300 SX
 Production **5 1/2" @ 4874'**
 W/ 435 SX

ELECTRICAL SURVEYS:
 DTL
 CHL/DOL
 MEI
 BHCS

FORMATION NAME	LOG TOP	DATUM	SAMPLE TOP	DATUM
ANHYDRITE	3284'	(+95)	3285'	(+94)
BASE ANHYDRITE	3313'	(+66)	3315'	(+64)
TOPEKA	4087'	(-708)	4097'	(-718)
OREAD	4228'	(-849)	4229'	(-850)
LANSING	4310'	(-931)	4313'	(-934)
STARK	4530'	(-1151)	4533'	(-1154)
BKC	4582'	(-1203)	4585'	(-1206)
PAWNEE	4710'	(-1331)	4708'	(-1329)
CHEROKEE	4785'	(-1406)	4784'	(-1405)
TOTAL DEPTH	4878'	(-1499)	4880'	(-1501)

DATE	7:00 AM DEPTH	REMARKS
10/14/16	MIRT	
10/19/16	0'	SPUD 10:00 am
10/20/16	1015'	DRLG. dev. 1/4 deg. @ 324'
10/21/16	3295'	DRLG.
10/22/16	4140'	DRLG. dev. 3/4 deg. @ 3968'
10/23/16	4330'	DRLG. dev. 1/2 deg. @ 4391'
10/24/16	4448'	TOH for DST # 3
10/25/16	4538'	OB w/ DST # 4
10/26/16	4802'	TOH for DST # 5
10/27/16	4880'	RTD @ 11:30 pm 10/26/16 dev. 3/4 deg. Finish Logging 8:00 am

Remarks
 5 1/2" production casing set to further test the Lansing/Kansas City, Marmaton and Cherokee formations.
 Electric log measurements correlate 3' to 4' high compared to rotary measurements.
 Drilling samples deposited at the Kansas Geological Survey.
 Respectfully Submitted,
Jeff Christian
 Jeff Christian





DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Jeff Christian

Hatch 'A' #1-1

1-2s-37w Cheyenne,KS

Start Date: 2016.10.22 @ 17:00:00

End Date: 2016.10.23 @ 01:15:30

Job Ticket #: 61187 DST #: 1

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.10.27 @ 11:53:37



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61187

DST#: 1

ATTN: Jeff Christian

Test Start: 2016.10.22 @ 17:00:00

GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:52:15

Time Test Ended: 01:15:30

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 4179.00 ft (KB) To 4257.00 ft (KB) (TVD)

Reference Elevations: 3379.00 ft (KB)

Total Depth: 4257.00 ft (KB) (TVD)

3374.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8366 Outside

Press@RunDepth: 231.59 psig @ 4180.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.10.22 End Date: 2016.10.23

Last Calib.: 2016.10.23

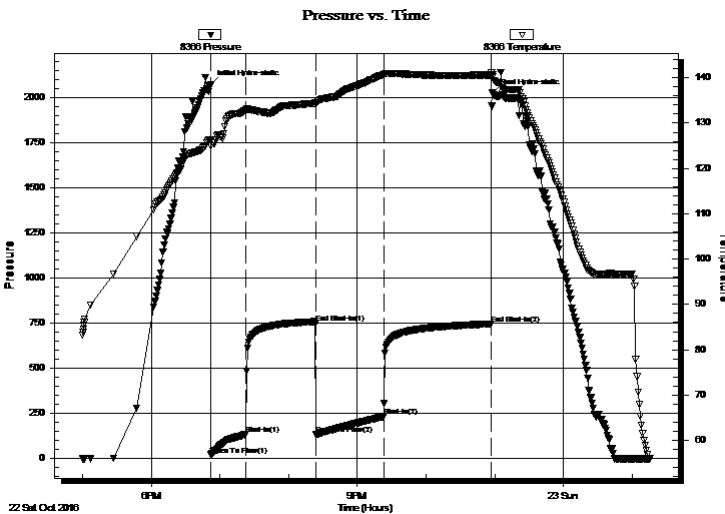
Start Time: 17:00:05 End Time: 01:15:29

Time On Btm: 2016.10.22 @ 18:52:00

Time Off Btm: 2016.10.22 @ 22:58:00

TEST COMMENT: 30 - IF: 1/2" Blow at open, built to BOB (11") at 26 1/4 min.
60 - IS: No blow back
60 - FF: Blow started at 2 min., built to BOB at 36 1/4 min.
90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2068.89	126.22	Initial Hydro-static
1	19.09	125.00	Open To Flow (1)
31	132.57	132.91	Shut-In(1)
92	750.71	134.41	End Shut-In(1)
92	132.71	134.17	Open To Flow (2)
151	231.59	140.74	Shut-In(2)
245	744.53	140.61	End Shut-In(2)
246	2023.86	140.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
175.00	MCW w/trace oil 79%w, 21%m	1.06
125.00	MCW w/trace oil 62%w, 38%m	1.75
170.00	WCM w/trace oil 88%m, 12%w	2.38

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61187

DST#: 1

ATTN: Jeff Christian

Test Start: 2016.10.22 @ 17:00:00

Tool Information

Drill Pipe:	Length: 3988.00 ft	Diameter: 3.80 inches	Volume: 55.94 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: 175.00 ft	Diameter: 2.50 inches	Volume: 1.06 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 57.00 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial 57000.00 lb
Depth to Top Packer:	4179.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	78.00 ft			
Tool Length:	107.00 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			4151.00	
Shut In Tool	5.00			4156.00	
Hydraulic tool	5.00			4161.00	
Jars	5.00			4166.00	
Safety Joint	3.00			4169.00	
Packer	5.00			4174.00	29.00 Bottom Of Top Packer
Packer	5.00			4179.00	
Stubb	1.00			4180.00	
Recorder	0.00	6625	Inside	4180.00	
Recorder	0.00	8366	Outside	4180.00	
Perforations	10.00			4190.00	
Blank Spacing	64.00			4254.00	
Bullnose	3.00			4257.00	78.00 Bottom Packers & Anchor

Total Tool Length: 107.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61187

DST#: 1

ATTN: Jeff Christian

Test Start: 2016.10.22 @ 17:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

16000 ppm

Viscosity: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.56 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
175.00	MCW w /trace oil 79%w , 21%m	1.062
125.00	MCW w /trace oil 62%w , 38%m	1.753
170.00	WCM w /trace oil 88%m, 12%w	2.385

Total Length: 470.00 ft Total Volume: 5.200 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

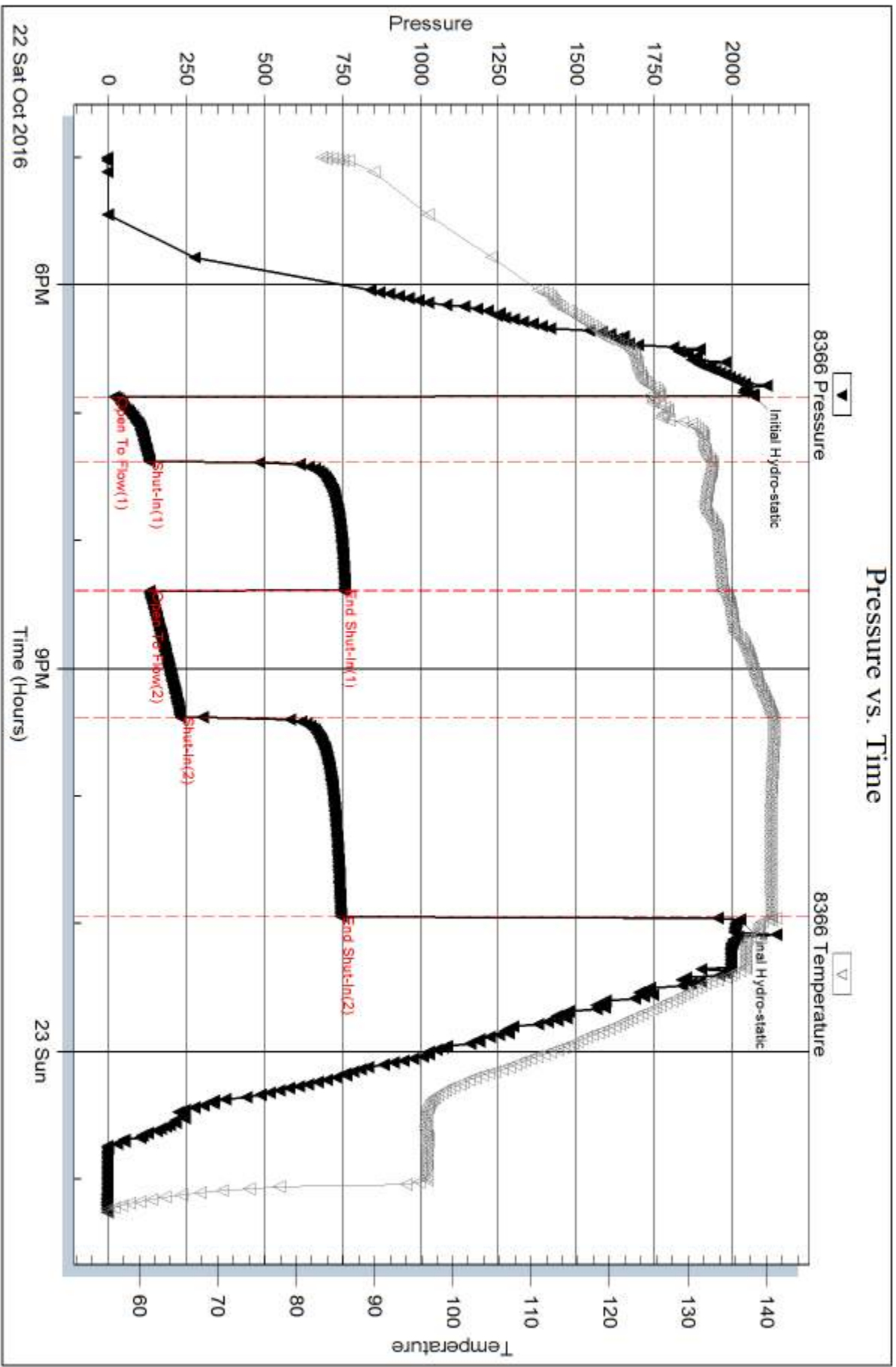
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .570 ohms @ 51.5 deg F

Chlorides = 16,000 ppm



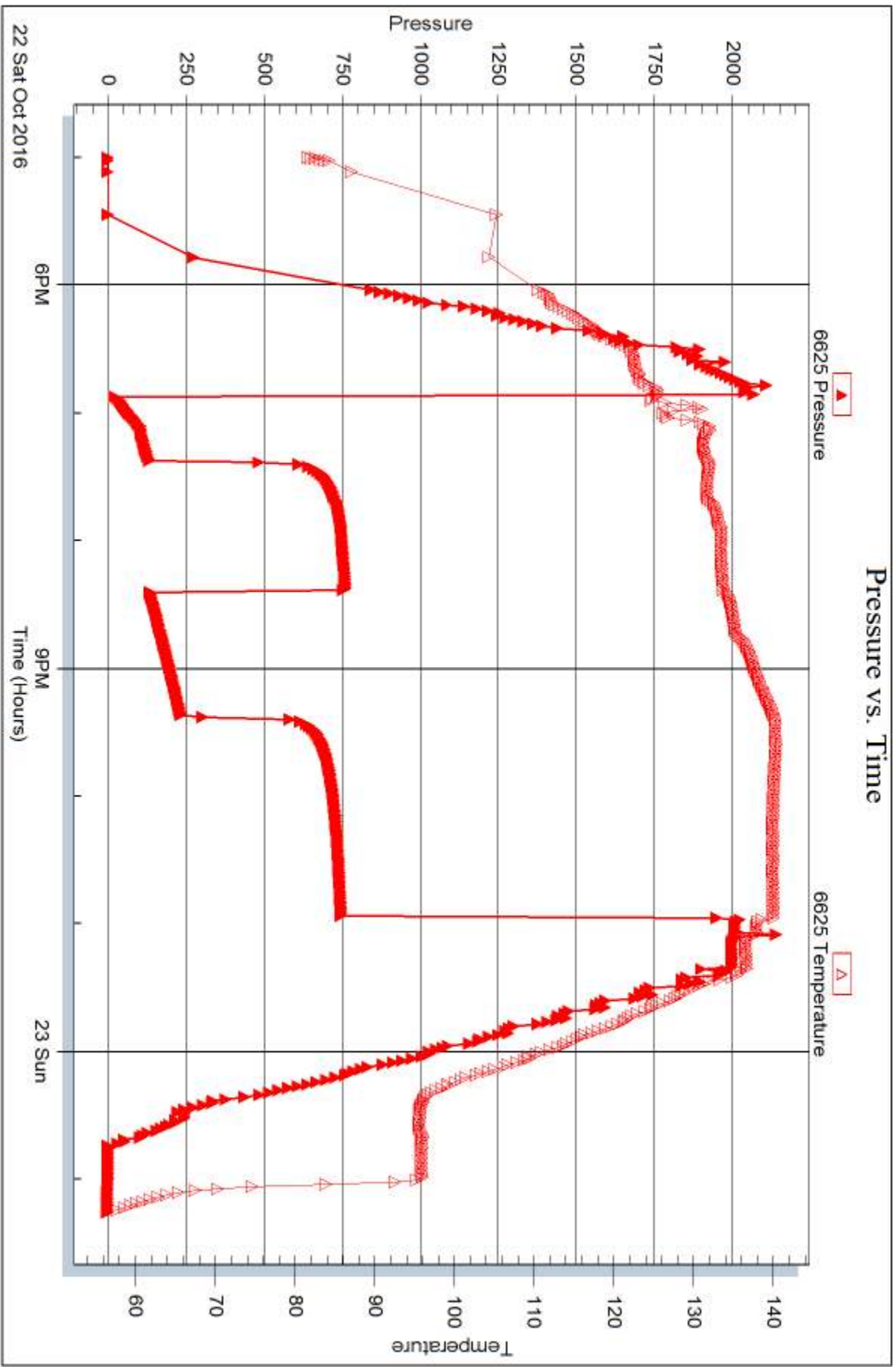
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Hatch 'A' #1-1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 61187

Printed: 2016.10.27 @ 11:53:39



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Jeff Christian

Hatch 'A' #1-1

1-2s-37w Cheyenne,KS

Start Date: 2016.10.23 @ 14:12:00

End Date: 2016.10.23 @ 22:27:15

Job Ticket #: 61188 DST #: 2

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.10.27 @ 11:53:09

Murfin Drilling Co., Inc. 1-2s-37w Cheyenne,KS Hatch 'A' #1-1 DST # 2 LKC "A - D" 2016.10.23



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Jeff Christian

1-2s-37w Cheyenne,KS

Hatch 'A' #1-1

Job Ticket: 61188 **DST#: 2**
 Test Start: 2016.10.23 @ 14:12:00

GENERAL INFORMATION:

Formation: **LKC "A - D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 15:58:00
 Time Test Ended: 22:27:15
 Interval: **4259.00 ft (KB) To 4391.00 ft (KB) (TVD)**
 Total Depth: 4257.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3379.00 ft (KB)
 3374.00 ft (CF)
 KB to GR/CF: 5.00 ft

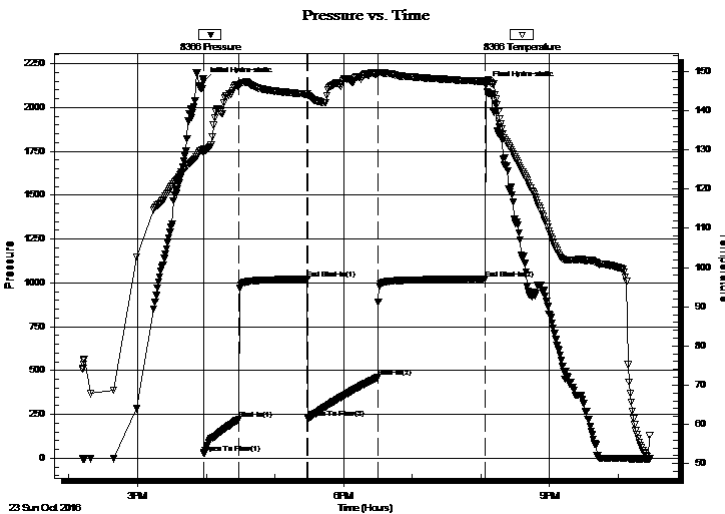
Serial #: 8366

Outside

Press@RunDepth: 460.91 psig @ 4260.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.10.23 End Date: 2016.10.23 Last Calib.: 2016.10.23
 Start Time: 14:12:05 End Time: 22:27:14 Time On Btm: 2016.10.23 @ 15:57:45
 Time Off Btm: 2016.10.23 @ 20:04:15

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 10 1/4 min.
 60 - IS: No blow back
 60 - FF: Blow started at 1 1/2 min., built to BOB at 14 3/4 min.
 90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2147.57	130.16	Initial Hydro-static
1	27.47	129.30	Open To Flow (1)
31	222.04	146.19	Shut-In(1)
91	1020.84	144.21	End Shut-In(1)
91	226.53	143.86	Open To Flow (2)
152	460.91	149.55	Shut-In(2)
246	1021.97	147.49	End Shut-In(2)
247	2126.12	147.63	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
675.00	Watery Mud w /trace oil 60%w, 40%w	8.08
295.00	Mud 100% w /trace oil	4.14

* 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.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61188

DST#: 2

ATTN: Jeff Christian

Test Start: 2016.10.23 @ 14:12:00

Tool Information

Drill Pipe:	Length: 4081.00 ft	Diameter: 3.80 inches	Volume: 57.25 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: 175.00 ft	Diameter: 2.50 inches	Volume: 1.06 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 58.31 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4259.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	132.00 ft			
Tool Length:	161.00 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			4231.00	
Shut In Tool	5.00			4236.00	
Hydraulic tool	5.00			4241.00	
Jars	5.00			4246.00	
Safety Joint	3.00			4249.00	
Packer	5.00			4254.00	29.00 Bottom Of Top Packer
Packer	5.00			4259.00	
Stubb	1.00			4260.00	
Recorder	0.00	6625	Inside	4260.00	
Recorder	0.00	8366	Outside	4260.00	
Perforations	10.00			4270.00	
Blank Spacing	95.00			4365.00	
Perforations	23.00			4388.00	
Bullnose	3.00			4391.00	132.00 Bottom Packers & Anchor

Total Tool Length: 161.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61188

DST#: 2

ATTN: Jeff Christian

Test Start: 2016.10.23 @ 14:12:00

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:

14000 ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.97 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
675.00	Watery Mud w/trace oil 60%w, 40%w	8.076
295.00	Mud 100% w/trace oil	4.138

Total Length: 970.00 ft Total Volume: 12.214 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

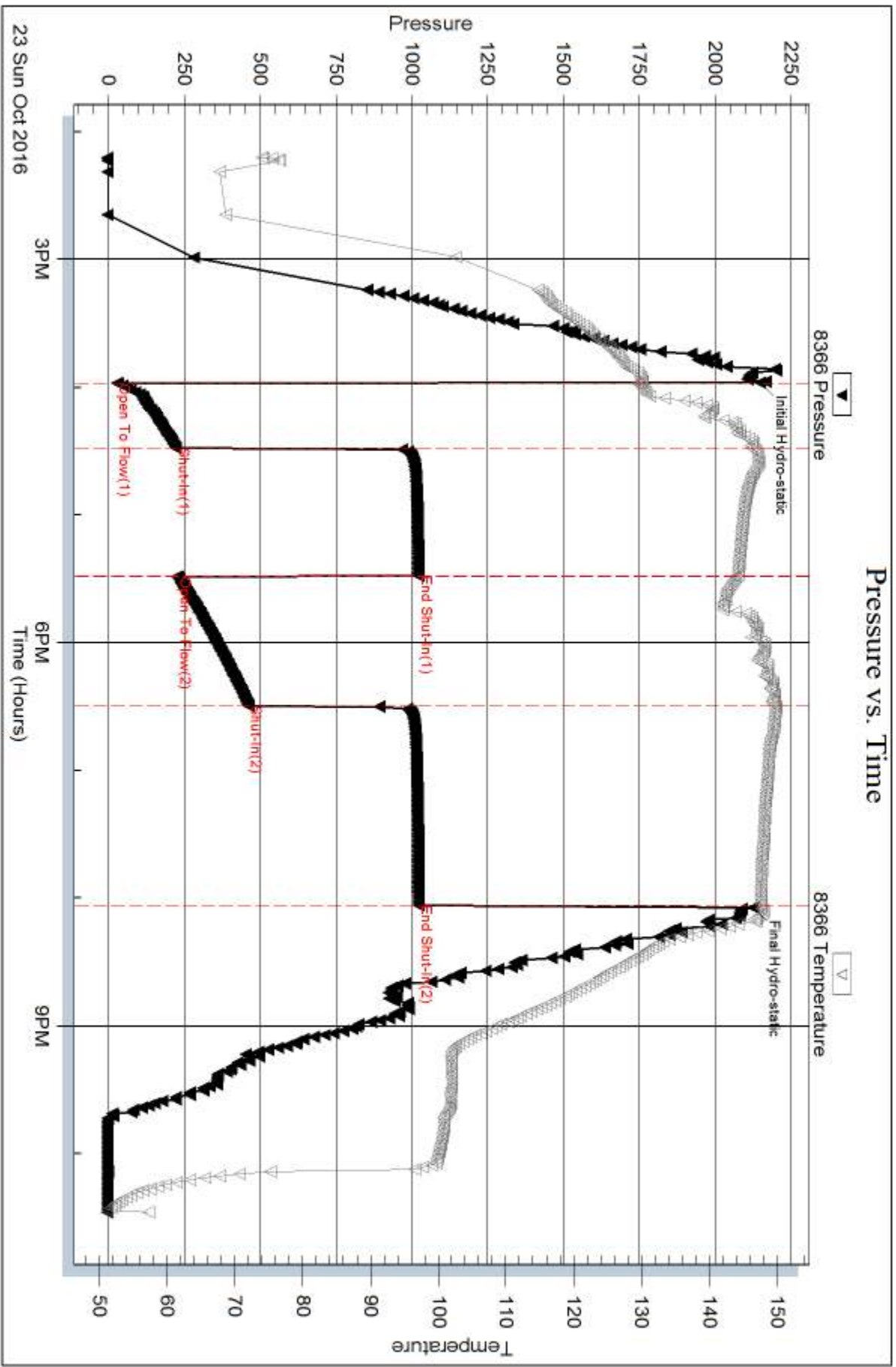
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .663 ohms @ 49.5 deg F

Chlorides = 14,000 ppm



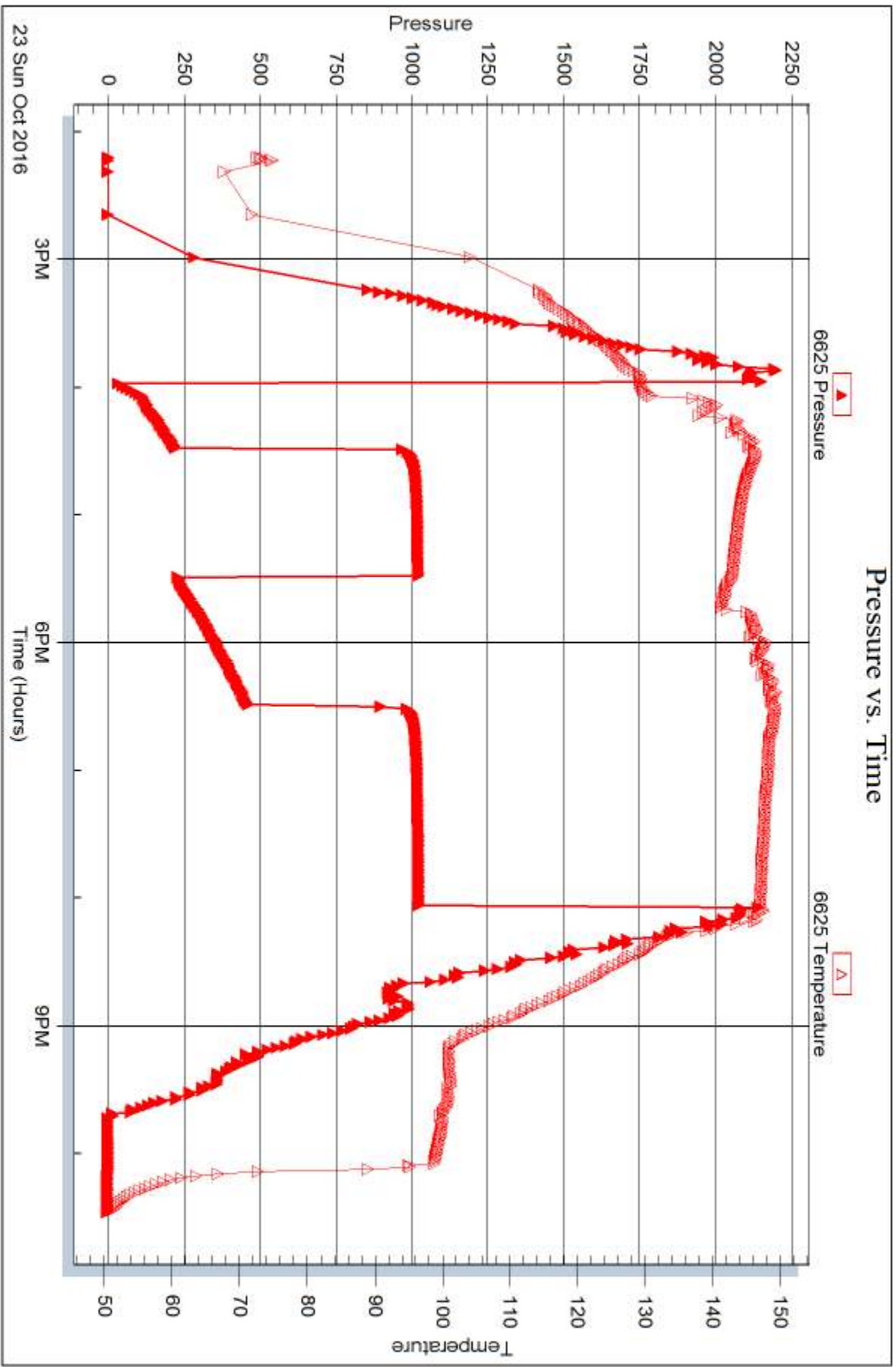
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Hatch 'A' #1-1

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 61188

Printed: 2016.10.27 @ 11:53:11



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Jeff Christian

Hatch 'A' #1-1

1-2s-37w Cheyenne,KS

Start Date: 2016.10.24 @ 07:24:05

End Date: 2016.10.24 @ 14:21:14

Job Ticket #: 61189 DST #: 3

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.10.27 @ 11:39:38



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Jeff Christian

1-2s-37w Cheyenne,KS

Hatch 'A' #1-1

Job Ticket: 61189

DST#: 3

Test Start: 2016.10.24 @ 07:24:05

GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 09:12:15
 Time Test Ended: 14:21:14
 Interval: **4392.00 ft (KB) To 4448.00 ft (KB) (TVD)**
 Total Depth: 4448.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3379.00 ft (KB)
 3374.00 ft (CF)
 KB to GR/CF: 5.00 ft

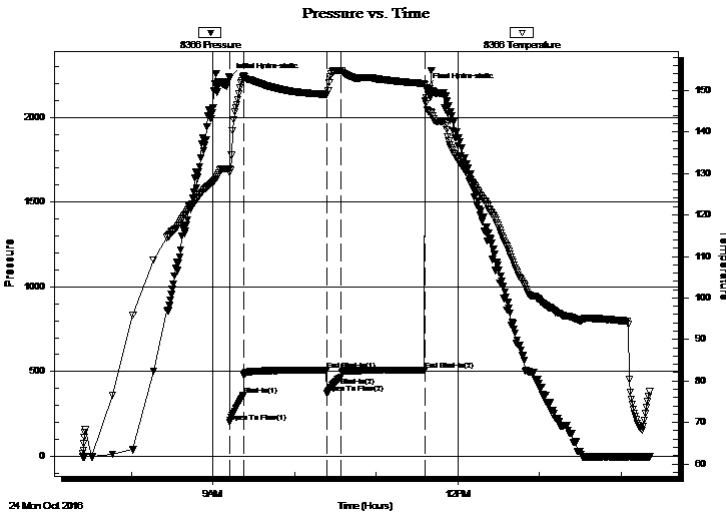
Serial #: 8366

Outside

Press@RunDepth: 465.86 psig @ 4393.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.10.24 End Date: 2016.10.24 Last Calib.: 2016.10.24
 Start Time: 07:24:05 End Time: 14:21:14 Time On Btm: 2016.10.24 @ 09:12:00
 Time Off Btm: 2016.10.24 @ 11:36:30

TEST COMMENT: 10 - IF: Blow built to BOB (11") at 1 3/4 min
 60 - IS: No blow back
 10 - FF: Blow built to 8" (loose hose connection)
 60 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2231.65	131.16	Initial Hydro-static
1	201.20	130.21	Open To Flow (1)
11	360.23	153.30	Shut-In(1)
72	508.93	149.06	End Shut-In(1)
72	371.28	148.98	Open To Flow (2)
82	465.86	154.74	Shut-In(2)
144	509.02	151.59	End Shut-In(2)
145	2172.98	148.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
300.00	SOMCW 94%w , 3%o, 3%m	2.82
375.00	SO/MCW 69%w , 19%m, 8%o, 4%g	5.26
340.00	SOCM 91%m, 6%o, 3%g	4.77
1.00	Free Oil 99%o, 1%m	0.01

* 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.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61189

DST#: 3

ATTN: Jeff Christian

Test Start: 2016.10.24 @ 07:24:05

Tool Information

Drill Pipe:	Length: 4206.00 ft	Diameter: 3.80 inches	Volume: 59.00 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: 175.00 ft	Diameter: 2.50 inches	Volume: 1.06 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 60.06 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 57000.00 lb
Depth to Top Packer:	4392.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	85.00 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			4364.00	
Shut In Tool	5.00			4369.00	
Hydraulic tool	5.00			4374.00	
Jars	5.00			4379.00	
Safety Joint	3.00			4382.00	
Packer	5.00			4387.00	29.00 Bottom Of Top Packer
Packer	5.00			4392.00	
Stubb	1.00			4393.00	
Recorder	0.00	6625	Inside	4393.00	
Recorder	0.00	8366	Outside	4393.00	
Perforations	15.00			4408.00	
Blank Spacing	33.00			4441.00	
Perforations	4.00			4445.00	
Bullnose	3.00			4448.00	56.00 Bottom Packers & Anchor

Total Tool Length: 85.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61189

DST#: 3

ATTN: Jeff Christian

Test Start: 2016.10.24 @ 07:24:05

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 62.00 sec/qt
Water Loss: 5.98 in³
Resistivity: ohm.m
Salinity: 800.00 ppm
Filter Cake: 2.00 inches

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

Oil API: 27.8 deg API
Water Salinity: 14000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
300.00	SOMCW 94%w , 3%o, 3%m	2.816
375.00	SO/MCW 69%w , 19%m, 8%o, 4%g	5.260
340.00	SOCM 91%m, 6%o, 3%g	4.769
1.00	Free Oil 99%o, 1%m	0.014

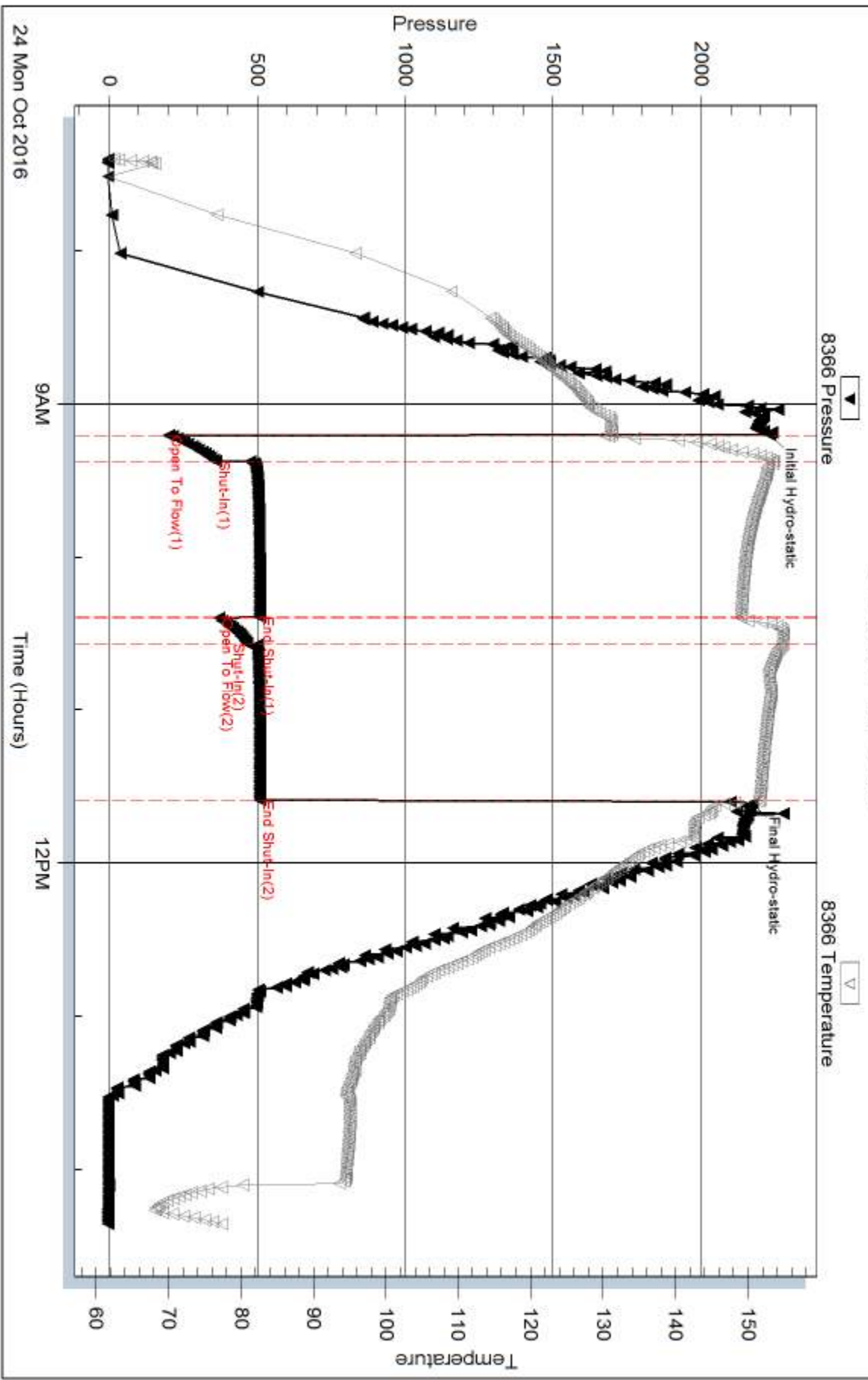
Total Length: 1016.00 ft Total Volume: 12.859 bbl

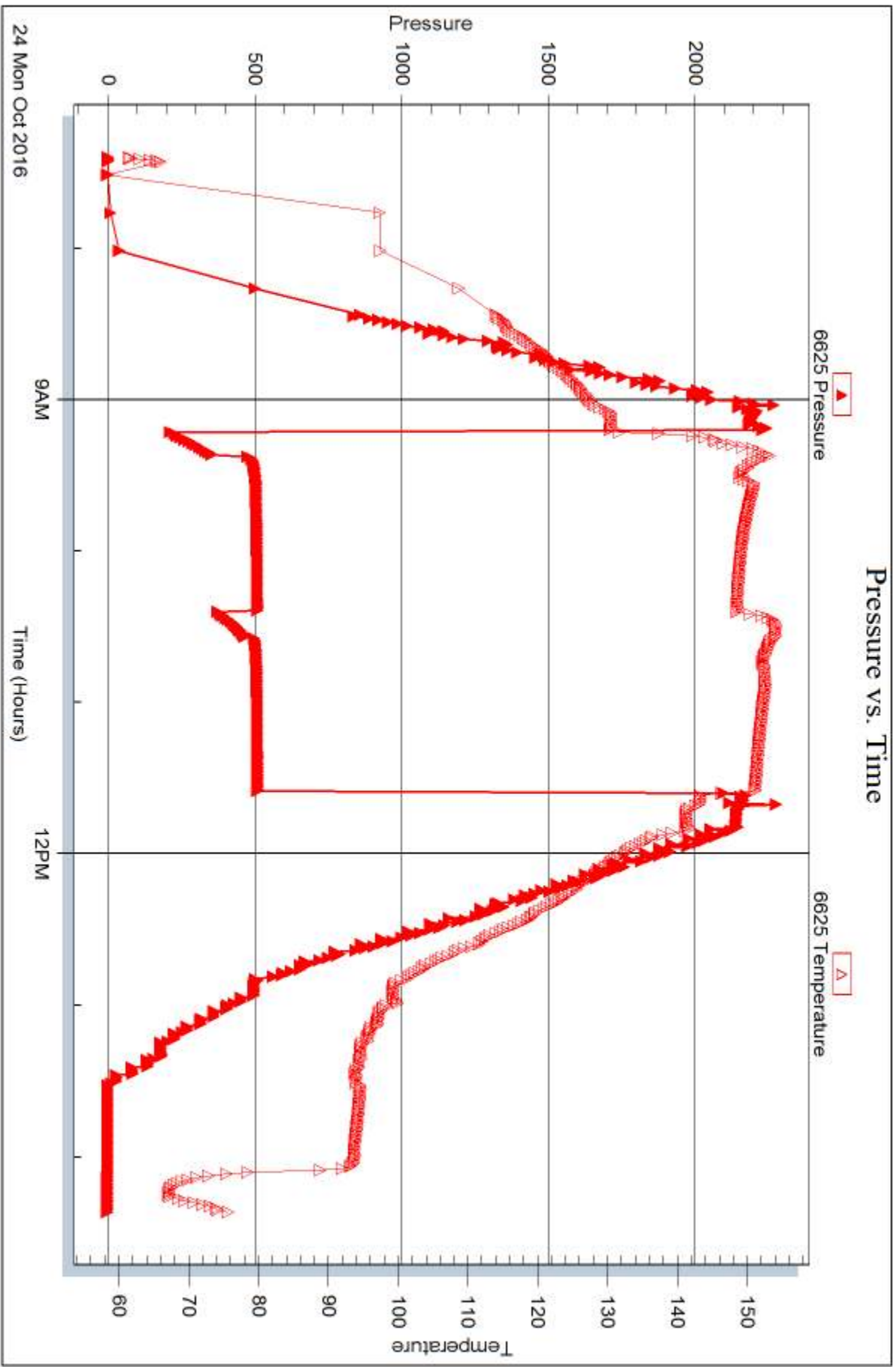
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: Gravity = 29.4 api @ 76 deg F Corrected Gravity = 27.8 api
RW = .452 ohms @ 72.4 deg F Chlorides = 14,000 ppm

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Jeff Christian

Hatch 'A' #1-1

1-2s-37w Cheyenne,KS

Start Date: 2016.10.25 @ 02:18:00

End Date: 2016.10.25 @ 09:26:15

Job Ticket #: 61190 DST #: 4

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.10.27 @ 11:36:51

Murfin Drilling Co., Inc.
1-2s-37w Cheyenne,KS
Hatch 'A' #1-1
DST # 4
LKC "H - J"
2016.10.25



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61190

DST#: 4

ATTN: Jeff Christian

Test Start: 2016.10.25 @ 02:18:00

GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:16:45

Time Test Ended: 09:26:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4449.00 ft (KB) To 4538.00 ft (KB) (TVD)

Reference Elevations: 3379.00 ft (KB)

Total Depth: 4538.00 ft (KB) (TVD)

3374.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8366 Outside

Press@RunDepth: 22.98 psig @ 4450.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.10.25

End Date:

2016.10.25

Last Calib.:

2016.10.25

Start Time: 02:18:05

End Time:

09:26:14

Time On Btm:

2016.10.25 @ 04:16:30

Time Off Btm:

2016.10.25 @ 07:22:00

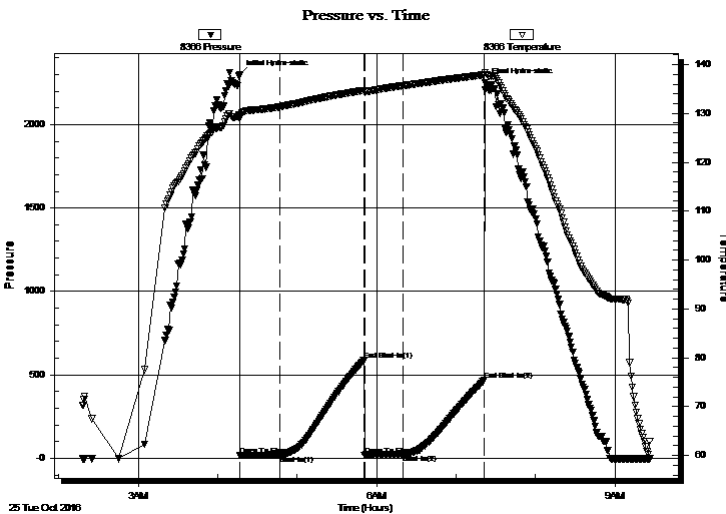
TEST COMMENT: 30 - IF: Blow built to 1", slow ly dying back at end of open

60 - IS: No blow back

30 - FF: No blow

60 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2298.18	129.73	Initial Hydro-static
1	17.63	128.94	Open To Flow (1)
31	19.92	131.35	Shut-In(1)
94	587.76	134.70	End Shut-In(1)
95	20.05	134.38	Open To Flow (2)
124	22.98	135.66	Shut-In(2)
185	466.35	137.87	End Shut-In(2)
186	2250.26	138.38	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w /trace of oil	0.03

* 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.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61190

DST#: 4

ATTN: Jeff Christian

Test Start: 2016.10.25 @ 02:18:00

Tool Information

Drill Pipe:	Length: 4269.00 ft	Diameter: 3.80 inches	Volume: 59.88 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 175.00 ft	Diameter: 2.50 inches	Volume: 1.06 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 60.94 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4449.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	89.00 ft			
Tool Length:	118.00 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			4421.00	
Shut In Tool	5.00			4426.00	
Hydraulic tool	5.00			4431.00	
Jars	5.00			4436.00	
Safety Joint	3.00			4439.00	
Packer	5.00			4444.00	29.00 Bottom Of Top Packer
Packer	5.00			4449.00	
Stubb	1.00			4450.00	
Recorder	0.00	6625	Inside	4450.00	
Recorder	0.00	8366	Outside	4450.00	
Perforations	19.00			4469.00	
Blank Spacing	64.00			4533.00	
Perforations	2.00			4535.00	
Bullnose	3.00			4538.00	89.00 Bottom Packers & Anchor

Total Tool Length: 118.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61190

DST#: 4

ATTN: Jeff Christian

Test Start: 2016.10.25 @ 02:18:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud w /trace of oil	0.030

Total Length: 5.00 ft Total Volume: 0.030 bbl

Num Fluid Samples: 0

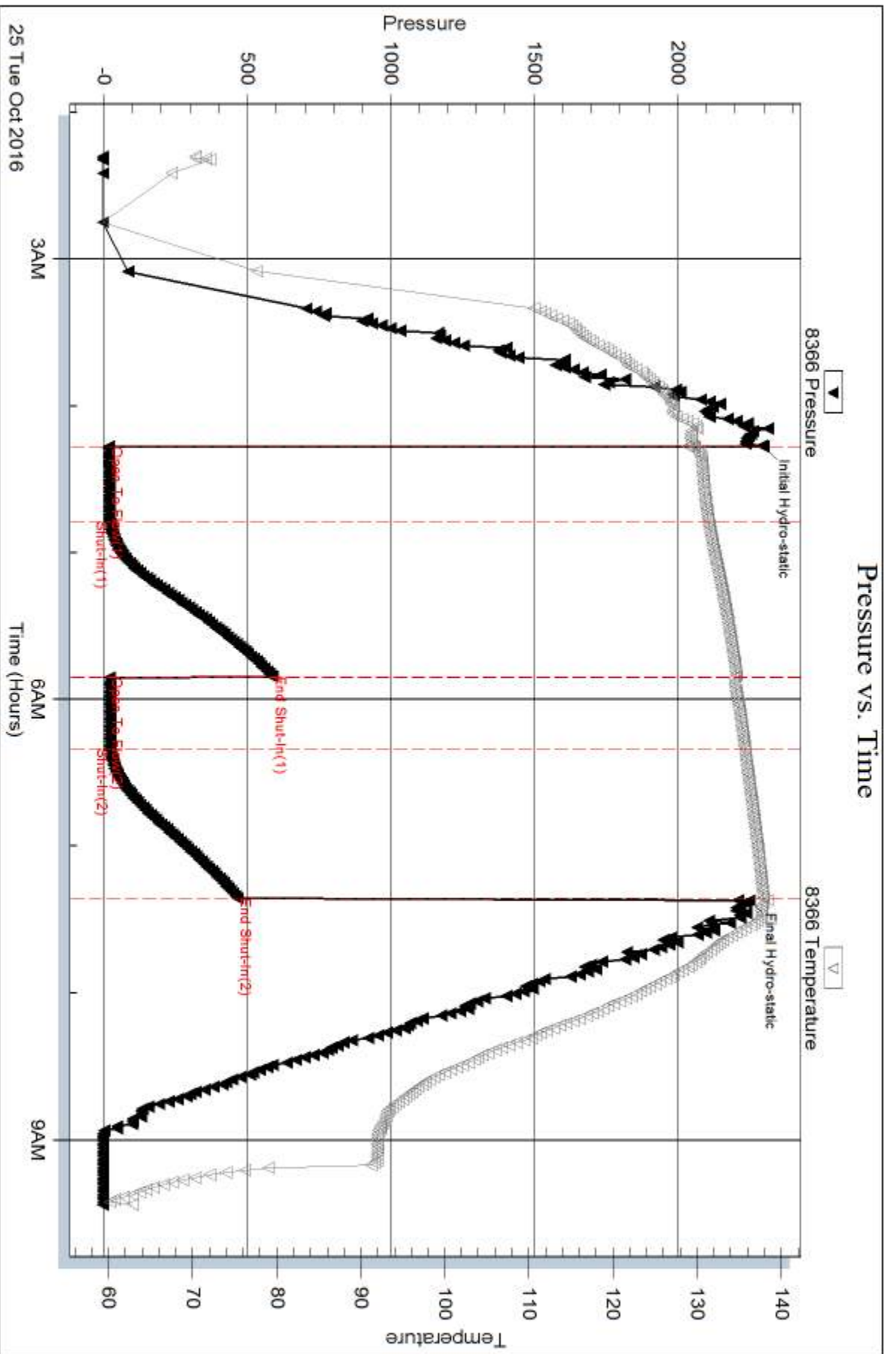
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



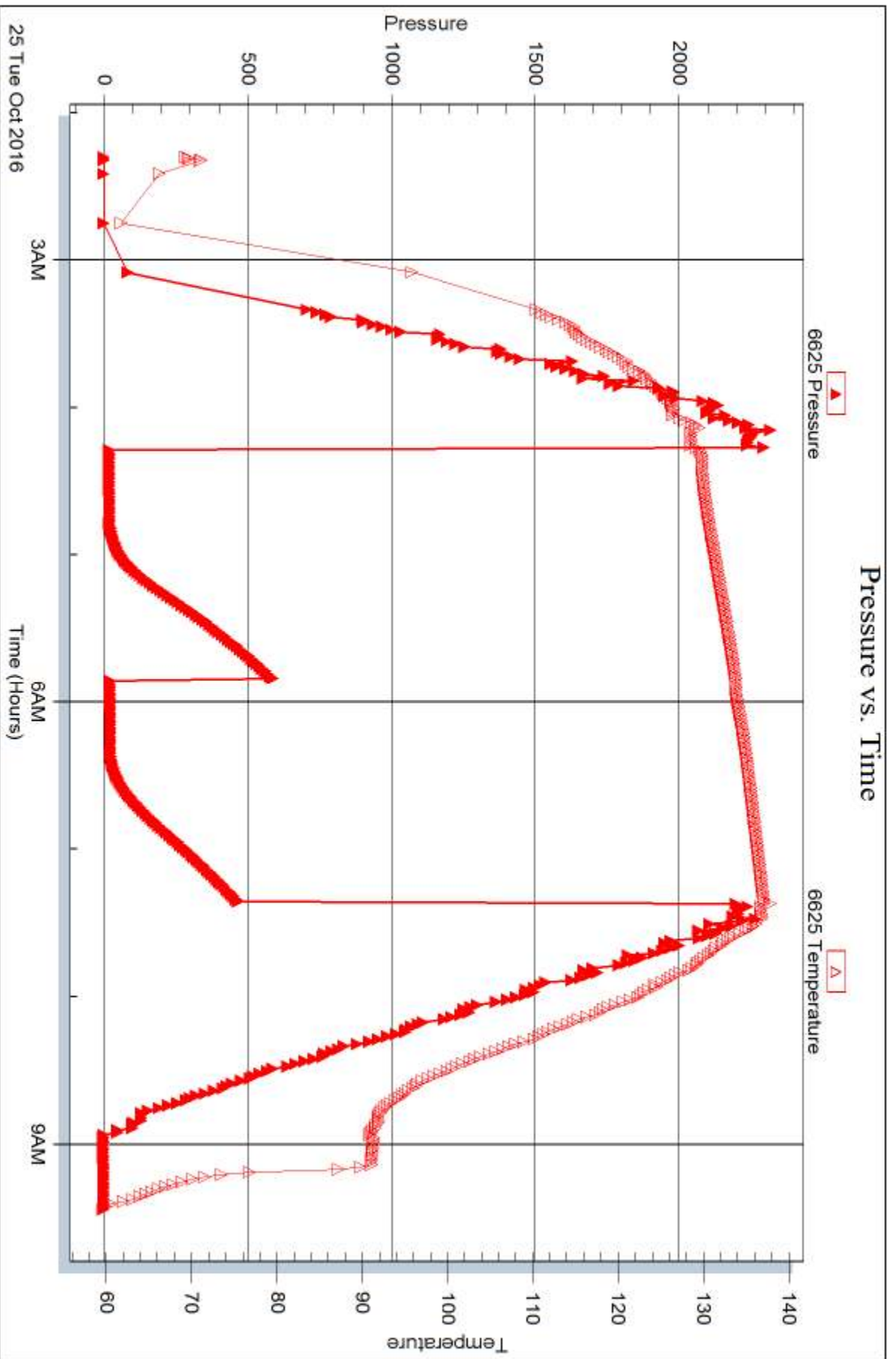
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Hatch 'A' #1-1

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 61190

Printed: 2016.10.27 @ 11:36:52



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Jeff Christian

Hatch 'A' #1-1

1-2s-37w Cheyenne,KS

Start Date: 2016.10.26 @ 09:45:00

End Date: 2016.10.26 @ 16:41:45

Job Ticket #: 61191 DST #: 5

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.10.27 @ 11:36:29

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

Hatch 'A' #1-1

DST # 5

Pawnee - Ft Scott

2016.10.26



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N. Water STE 300
 Wichita, KS 67202
 ATTN: Jeff Christian

1-2s-37w Cheyenne,KS

Hatch 'A' #1-1

Job Ticket: 61191

DST#: 5

Test Start: 2016.10.26 @ 09:45:00

GENERAL INFORMATION:

Formation: **Pawnee - Ft Scott**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:44:00
 Time Test Ended: 16:41:45
 Interval: **4712.00 ft (KB) To 4802.00 ft (KB) (TVD)**
 Total Depth: 4802.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3379.00 ft (KB)
 3374.00 ft (CF)
 KB to GR/CF: 5.00 ft

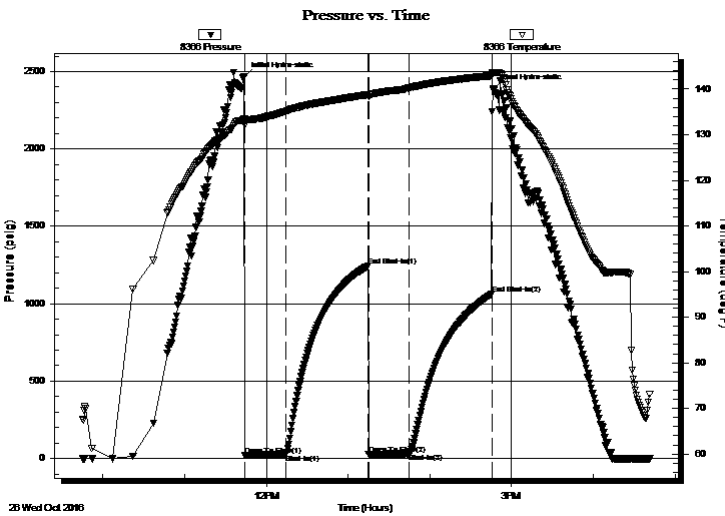
Serial #: 8366

Outside

Press@RunDepth: 30.07 psig @ 4713.00 ft (KB)
 Start Date: 2016.10.26 End Date: 2016.10.26
 Start Time: 09:45:05 End Time: 16:41:44
 Capacity: 8000.00 psig
 Last Calib.: 2016.10.26
 Time On Btm: 2016.10.26 @ 11:43:45
 Time Off Btm: 2016.10.26 @ 14:46:45

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

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2466.90	133.51	Initial Hydro-static
1	20.02	132.12	Open To Flow (1)
31	24.94	135.10	Shut-In(1)
91	1242.13	138.77	End Shut-In(1)
92	27.00	138.32	Open To Flow (2)
121	30.07	140.24	Shut-In(2)
182	1062.13	142.93	End Shut-In(2)
183	2387.92	143.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud 100% w/trace of oil	0.18

* 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.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61191

DST#: 5

ATTN: Jeff Christian

Test Start: 2016.10.26 @ 09:45:00

Tool Information

Drill Pipe:	Length: 4518.00 ft	Diameter: 3.80 inches	Volume: 63.38 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 175.00 ft	Diameter: 2.50 inches	Volume: 1.06 bbl	Weight to Pull Loose: 64000.00 lb
			<u>Total Volume: 64.44 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4712.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	90.00 ft			
Tool Length:	119.00 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			4684.00	
Shut In Tool	5.00			4689.00	
Hydraulic tool	5.00			4694.00	
Jars	5.00			4699.00	
Safety Joint	3.00			4702.00	
Packer	5.00			4707.00	29.00 Bottom Of Top Packer
Packer	5.00			4712.00	
Stubb	1.00			4713.00	
Recorder	0.00	6625	Inside	4713.00	
Recorder	0.00	8366	Outside	4713.00	
Perforations	20.00			4733.00	
Blank Spacing	64.00			4797.00	
Perforations	2.00			4799.00	
Bullnose	3.00			4802.00	90.00 Bottom Packers & Anchor

Total Tool Length: 119.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

1-2s-37w Cheyenne,KS

250 N. Water STE 300
Wichita, KS 67202

Hatch 'A' #1-1

Job Ticket: 61191

DST#: 5

ATTN: Jeff Christian

Test Start: 2016.10.26 @ 09:45:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

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
30.00	Mud 100% w/trace of oil	0.182

Total Length: 30.00 ft Total Volume: 0.182 bbl

Num Fluid Samples: 0

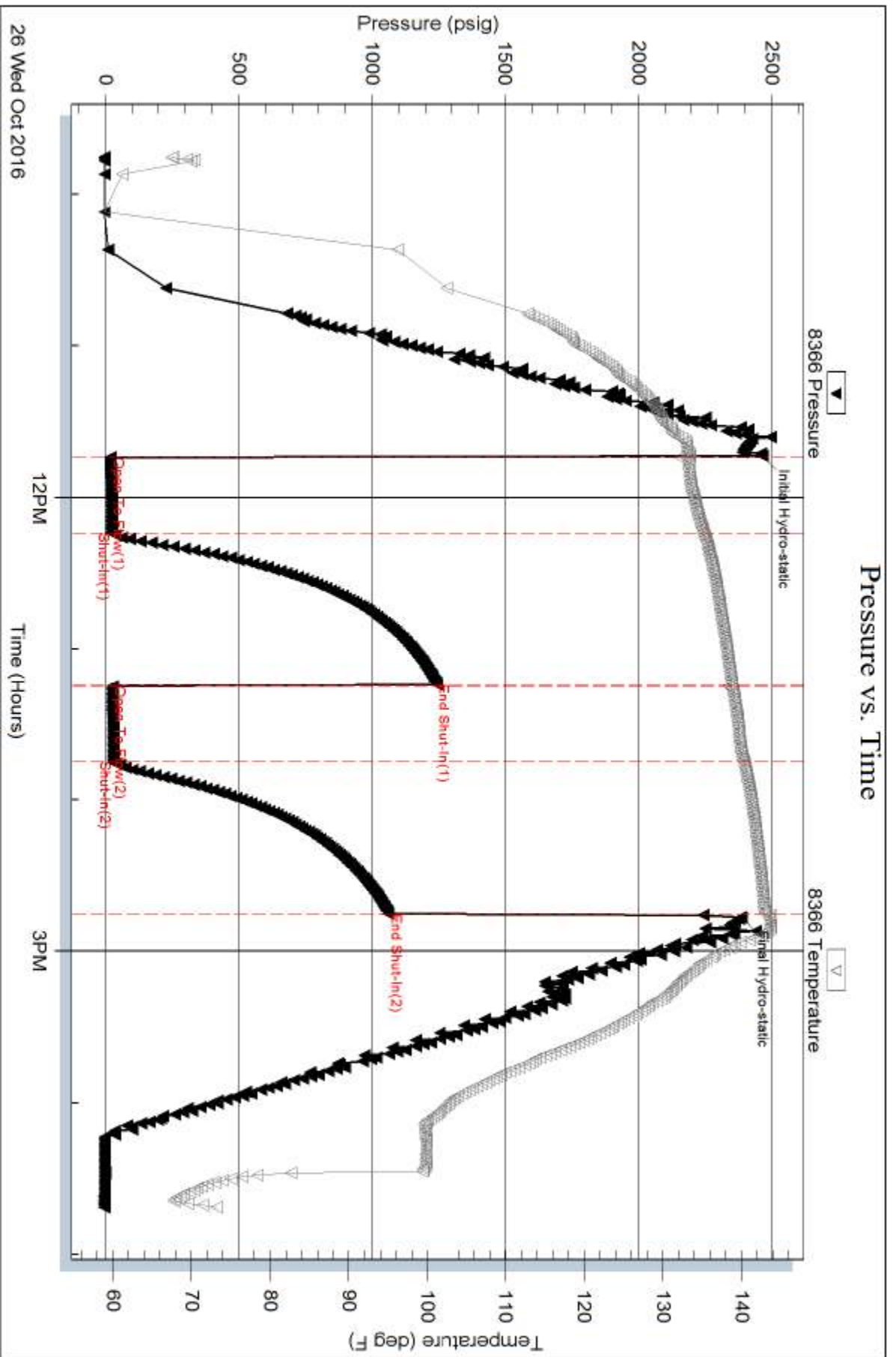
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



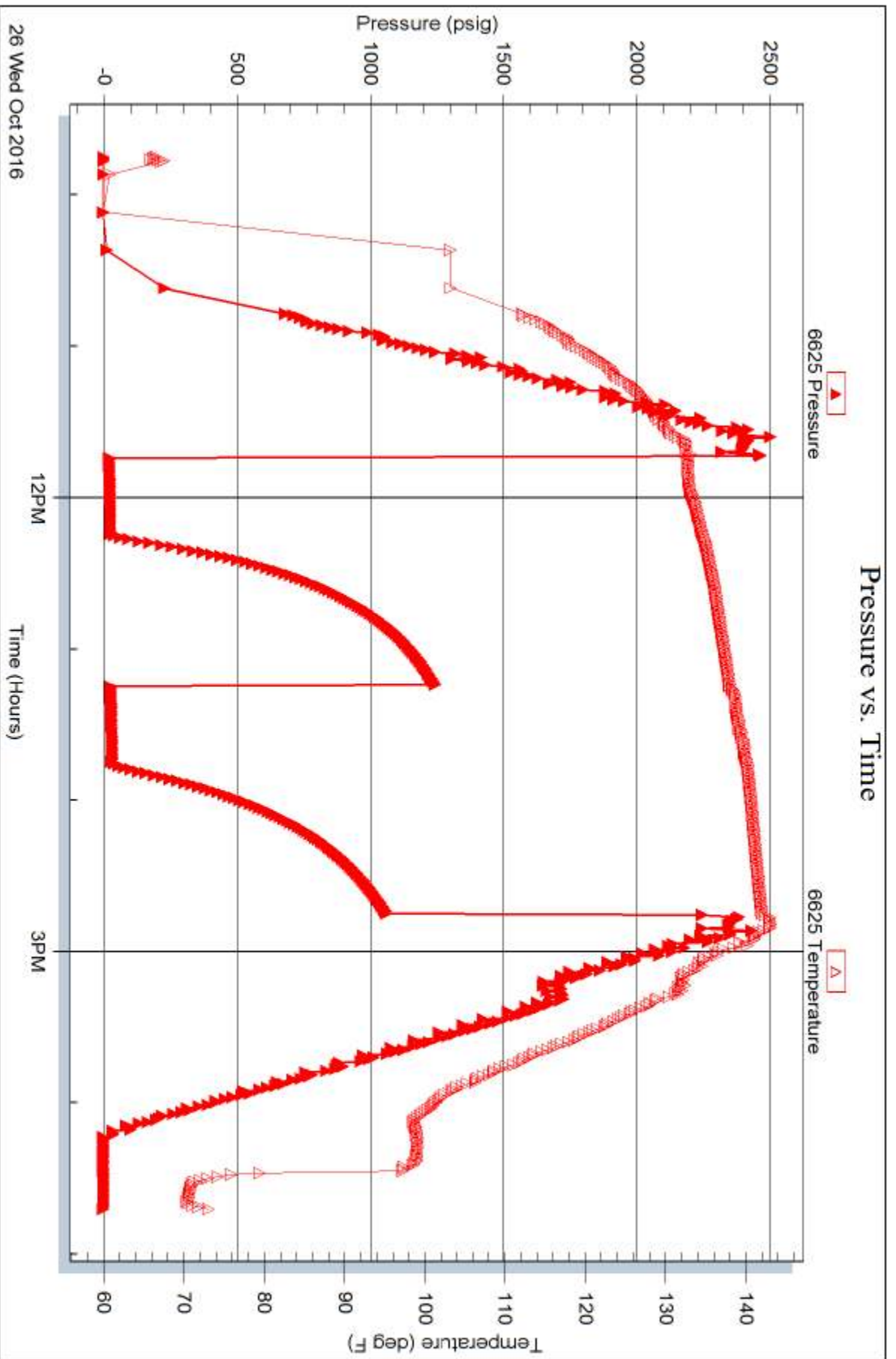
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Hatch 'A' #1-1

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 61191

Printed: 2016.10.27 @ 11:36:32



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61187

Well Name & No. Hatch 'A' #1-1 Test No. 1 Date 10-22-16
 Company Murfin Drilling Co. Inc Elevation 3379 KB 3374 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #3
 Location: Sec. 1 Twp. 2S Rge. 37W Co. Cheyenne State KS

Interval Tested 4179-4257 Zone Tested Oread
 Anchor Length 78 Drill Pipe Run 3988 Mud Wt. 8.9
 Top Packer Depth 4174 Drill Collars Run ~~355~~ 175 Vis 65
 Bottom Packer Depth 4179 Wt. Pipe Run - WL 5.6
 Total Depth 4257 Chlorides 600 ppm System LCM 2
 Blow Description IF: 1/2" Blow at open, built to BOB (11") at 26 1/4 min.
ISI: No blowback
FF: Blow started at 2 min., built to BOB at 36 1/4 min.
FSI: No blowback

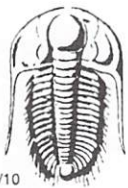
Rec	Feet of	%gas	%oil	%water	%mud
<u>170</u>	<u>WCM w/trace oil</u>	<u>trace</u>	<u>12</u>	<u>88</u>	
<u>125</u>	<u>MCW w/trace oil</u>	<u>trace</u>	<u>62</u>	<u>38</u>	
<u>175</u>	<u>MCW w/trace oil</u>	<u>trace</u>	<u>79</u>	<u>21</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 470 BHT 141 Gravity _____ API RW 570 @ 51.5 °F Chlorides 16,000 ppm
 (A) Initial Hydrostatic 2069 Test 1150 T-On Location 15:30 10/22
 (B) First Initial Flow 19 Jars 250 T-Started 17:00
 (C) First Final Flow 133 Safety Joint 75 T-Open 18:52
 (D) Initial Shut-In 751 Circ Sub _____ T-Pulled 22:56
 (E) Second Initial Flow 133 Hourly Standby _____ T-Out 1:10 10/23
 (F) Second Final Flow 232 Mileage 114 RT 85.50 Comments _____
 (G) Final Shut-In 745 Sampler _____
 (H) Final Hydrostatic 2024 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1560.50
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1560.50

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

Approved By Jeff Christian Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61188

4/10

Well Name & No. Hatch 'A' #1-1 Test No. 2 Date 10-23-16
 Company Murfin Drilling Co. Inc Elevation 3379 KB 3374 GL
 Address 250 N. Water STE 300 Wichita KS, 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #3
 Location: Sec. 1 Twp. 2s Rge. 37w Co. Cheyenne State KS

Interval Tested 4259-4391 Zone Tested LKC "A-D"
 Anchor Length 132 Drill Pipe Run 4081 Mud Wt. 9.1
 Top Packer Depth 4254 Drill Collars Run 175 Vis 60
 Bottom Packer Depth 4259 Wt. Pipe Run - WL 6.0
 Total Depth 4391 Chlorides 600 ppm System LCM 4
 Blow Description IF: Blow built to BOB (11") at 10 1/4 min.
ISI: NO blowback
FF: Blow started at 1 1/2 min., built to BOB at 14 3/4 min.
FSI:

Rec	Feet of	%gas	%oil	%water	%mud
<u>295</u>	<u>Mud w/trace oil</u>	<u>trace</u>	<u>0</u>	<u>100</u>	<u>0</u>
<u>675</u>	<u>Watery Mud w/trace oil</u>	<u>trace</u>	<u>40</u>	<u>60</u>	<u>0</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 970 BHT 147 Gravity API RW .663 @ 49.5 ° F Chlorides 14,000 ppm

(A) Initial Hydrostatic <u>2148</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>13:30</u>
(B) First Initial Flow <u>27</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>14:12</u>
(C) First Final Flow <u>222</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>15:58</u>
(D) Initial Shut-In <u>1021</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>20:03</u>
(E) Second Initial Flow <u>227</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>22:25</u>
(F) Second Final Flow <u>461</u>	<input checked="" type="checkbox"/> Mileage <u>114 RT</u> <u>85.50</u>	Comments
(G) Final Shut-In <u>1022</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2126</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby	Total <u>1560.50</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1560.20</u>	

Approved By Jeff Chalk Our Representative Janna Winkler

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **61189**

4/10

Well Name & No. Hatch 'A' #1-1 Test No. 3 Date 10-24-16
 Company Murfin Drilling Co. Inc Elevation 3379 KB 3374 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #3
 Location: Sec. 1 Twp. 2s Rge. 37w Co. Cheyenne State KS

Interval Tested 4392 - 4448 Zone Tested LKC -6"
 Anchor Length 56 Drill Pipe Run 4206 Mud Wt. 9.1
 Top Packer Depth 4387 Drill Collars Run 175 Vis 62
 Bottom Packer Depth 4392 Wt. Pipe Run - WL 6.0
 Total Depth 4448 Chlorides 800 ppm System LCM 4

Blow Description IF: Blow built to BOB (11") at 1 3/4 min.
ISI: No blowback
FF: Blow built to 8" (had loose hose connection)
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>Free Oil</u>	<u>99</u>	<u>-</u>	<u>1</u>	<u>-</u>
<u>340</u>	<u>Socm</u>	<u>3</u>	<u>6</u>	<u>91</u>	<u>-</u>
<u>375</u>	<u>So/mcw</u>	<u>4</u>	<u>8</u>	<u>69</u>	<u>19</u>
<u>300</u>	<u>So/mcw</u>	<u>-</u>	<u>3</u>	<u>94</u>	<u>3</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 1016 BHT 152 Gravity 27.8 API RW .452 @ 72.4 °F Chlorides 14000 ppm

(A) Initial Hydrostatic 2232 Test 1150 T-On Location 6:40
 (B) First Initial Flow 201 Jars 250 T-Started 7:24
 (C) First Final Flow ~~201~~ 360 Safety Joint 75 T-Open 9:12
 (D) Initial Shut-In 509 Circ Sub _____ T-Pulled 11:35
 (E) Second Initial Flow 371 Hourly Standby _____ T-Out 14:15
 (F) Second Final Flow 466 Mileage 114 RT 85.50 Comments _____
 (G) Final Shut-In 509 Sampler _____
 (H) Final Hydrostatic 2173 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 10
 Initial Shut-In 60
 Final Flow 10
 Final Shut-In 60
 Sub Total 0
 Total 1560.50
 MP/DST Disc't _____
 Sub Total 1560.50

Approved By [Signature] Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61190

4/10

Well Name & No. Hatch 'A' #1-1 Test No. 4 Date 10-25-16
 Company Murfin Drilling Co, Inc Elevation 3379 KB 3374 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #3
 Location: Sec. 1 Twp. 2s Rge. 37w Co. Cheyenne State KS

Interval Tested 4449-4538 Zone Tested LKC "H-J"
 Anchor Length 89 Drill Pipe Run 4269 Mud Wt. 9.3
 Top Packer Depth 4444 Drill Collars Run 175 Vis 55
 Bottom Packer Depth 4449 Wt. Pipe Run - WL 6.0
 Total Depth 4538 Chlorides 800 ppm System LCM 3

Blow Description IF: Blow built to 1", dying back slowly at end of open
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud w/ trace of oil</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 138 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2298 Test 1150 T-On Location 1:15
 (B) First Initial Flow 18 Jars 250 T-Started 2:18
 (C) First Final Flow 20 Safety Joint 75 T-Open 4:16
 (D) Initial Shut-In 588 Circ Sub _____ T-Pulled 7:21
 (E) Second Initial Flow 20 Hourly Standby _____ T-Out 9:20
 (F) Second Final Flow 23 Mileage 114 RT 85.50 Comments _____
 (G) Final Shut-In 466 Sampler _____
 (H) Final Hydrostatic 2250 Straddle _____
 Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 60 Extra Packer _____ Extra Copies _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 60 Day Standby _____ Total 1560.50
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1560.50

Approved By _____ Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61191

4/10

Well Name & No. Hatch 'A' #1-1 Test No. 5 Date 10-26-16
 Company Murfin Drilling Co. Inc Elevation 3379 KB 3374 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #3
 Location: Sec. 1 Twp. 25 Rge. 37w Co. Cheyenne State KS

Interval Tested 4712 - 4802 Zone Tested Pawnee - Ft Scott - Cherokee Lime
 Anchor Length 90 Drill Pipe Run 4518 Mud Wt. 9.5
 Top Packer Depth 4707 Drill Collars Run 175 Vis 69
 Bottom Packer Depth 4712 Wt. Pipe Run - WL 6.8
 Total Depth 4802 Chlorides 1100 ppm System LCM 3
 Blow Description IF: 1/4" Blow at open, built to 1/4"
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>Mud w/trace oil</u>	<u>trace</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 30 BHT 143 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2467 Test 1150 T-On Location 7:55
 (B) First Initial Flow 20 Jars 250 T-Started 9:45
 (C) First Final Flow 25 Safety Joint 75 T-Open 11:44
 (D) Initial Shut-In 1242 Circ Sub _____ T-Pulled 14:45
 (E) Second Initial Flow 27 Hourly Standby _____ T-Out 16:40
 (F) Second Final Flow 30 Mileage 114RTx2 171 Comments _____
 (G) Final Shut-In 1062 Sampler _____
 (H) Final Hydrostatic 2388 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer 320
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1966
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1646

Approved By Jeff Christian Our Representative James W. White
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DRILLING REPORT - HATCH A 1-1

MDCI
Hatch 'A' #1-1
2130' FSL 330'FEL
Sec. 1-2S-37W
3379' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	3285	+94	-8	3283	+96	-6
B/Anhydrite	3315	+64	-4	3314	+65	-3
Topeka	4097	-718	-8	4087	-708	-2
Oread	4229	-850	-6	4228	-849	-5
Lansing	4313	-934	-9	4310	-931	-6
Stark	4533	-1154	-11	4530	-1151	-8
BKC	4585	-1206	-12	4582	-1203	-9
Pawnee	4708	-1329	-9	4710	-1331	-11
Cherokee	4784	-1405	-11	4785	-1406	-12
RTD	4880					
LTD				4878		



Cement Job Summary

Job Number: YKO1610271444		Job Purpose: 02 Production/Long String	
Customer:	MURFIN DRILLING	Date:	10/27/2016
Well Name:	Hatch 'A'	Number:	1-1
County:	Cheyenne	City:	McDonald
Cust. Rep:		Phone:	
Legal Desc:		Rig Name:	
Distance	50 miles (one way)	Supervisor	Roger Smith

Employees:	Emp. ID:	Employees:	Emp. ID:
Smith, Roger	0	Holiman, Kindle	0
Bobby Lewis	#N/A	Jamie	#N/A

Equipment:	Emp. ID:	Employees:	Emp. ID:
1013-469			
818-310			
890-241			

Well Information					
Open Hole Section					
Description:	Size (in):	Excess	Top MD (ft)	Btm MD (ft)	
OPEN HOLE	7 7/8	35%	3870	4,870	TAIL CEMENT
OPEN HOLE	7 7/8	50%	324	3,870	LEAD CEMENT

Tubulars						
Description:	Size (in):	Wgt. (lb/ft)	ID (in)	Grade:	Top MD (ft)	Btm MD (ft)
PREVIOUS CASING	8 5/8	24	8.097	J-55	0	324
TOTAL CASING	5 1/2	15.5	4.95	J-55	0	4,870
SHOE	5 1/2	15.5	4.95	J-55	4,849	4,870

Materials - Pumping Schedule						
Fluid Name	Description	Rqstd Qty	Density	Yield	Water (gal/sk)	
Spacer 1	HIVIS SWEEP	15	8.40	n/a	n/a	
Fluid Name	Description	Rqstd Qty	Density	Yield	Water (gal/sk)	
Spacer 2	MUD CLEAN	15	8.70	n/a	n/a	
Fluid Name	Description	Rqstd Qty	Density	Yield	Water (gal/sk)	
Lead 1	ALLIED MULTI-DENSITY CEMENT - CLASS A	335	11.55	2.94	17.90	
Addl. Additive	Description	Conc. (lb/sk)	Determined by	Load Volume	UOM	
CLC-CPF	CELLOPHANE FLAKES	0.25	lb/sk	83.8	lbm	
Fluid Name	Description	Rqstd Qty	Density	Yield	Water (gal/sk)	
Tail 1	ALLIED SPECIAL BLEND CEMENT - CLASS A	150	14.50	1.58	7.10	
Addl. Additive	Description	Conc. (lb/sk)	Determined by	Load Volume	UOM	
CLC-KOL	KOL-SEAL	5	lb/sk	750.0	lbm	
CFL-330	FLUID LOSS ADDITIVE - LOW DENSITY SLURRIES	0.47	% BWOC	70.5	lbm	
Fluid Name	Description	Rqstd Qty	Density	Yield	Water (gal/sk)	
Tail 2	ALLIED 40/60/4 POZ BLEND - CLASS A	50	13.89	1.40	6.70	
Addl. Additive	Description	Conc. (lb/sk)	Determined by	Load Volume	UOM	
Disp. 1	Displacement	115.4095201	8.33	n/a	n/a	

Job Number: YKO1610271444		Job Purpose: 02 Production/Long String	
Customer:	MURFIN DRILLING	Date:	10/27/2016
Well Name:	Hatch 'A'	Number:	1-1
County:	Cheyenne	City:	McDonald
Cust. Rep:		Phone:	
		Rig Phone:	0



Cement Job Summary

Distance		50 miles (one way)			Supervisor	Roger Smith
TIME	PRESSURE - (PSI)		FLUID PUMPED DATA		COMMENTS	
AM/PM	CASING	ANNULUS	VOLUME	RATE (BPM)		
14:45					On Location	
					Run Float Equipment	
					Break Circulation Rig @2448 ft	
16:30 PM					Rig up To Circulate Drop ball	
18:00					Test Line 2000 psi	
16:20	100			2.5	Pump HI Vis Sweep	
16:35	100			2.5	Pump Mud Flush	
					Cement Rat Hole	
					Cement Mouse Hole	
17:00	130			5.4	Start Lead Cement	
17:43	135			5.5	Start Tail Cement	
18:00					Shut down wash pump and line	
					Drop Plug	
18:07	200			7	Start Displement	
18:19	450			5	50 bbl Out	
20:22	800			4.5	70 bbl out	
20:32	1100			2.5	90 bbl out	
20:36	1350			2.2	100 out	
20:45	2000				Plug down 114.5 BBL	
20:49					Check Float 1/2 BBL Back holding	