

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

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

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	HALLER 1-7
Doc ID	1324825

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	HALLER 1-7
Doc ID	1324825

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	4116-4120	300g 20% MCA, 250g 20%MCA, 750g 20% FE, SQZ 75 sks standard cement	
4	4016-4020	300g 20% MCA	

JOB LOG

SWIFT Services, Inc.

DATE 11-27-16 PAGE NO.

CUSTOMER Murkin Drilling Co WELL NO. 1-7 LEASE Hauer JOB TYPE Top to Bottom long string TICKET NO. 29504

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1100							ON LOCATION w/ Float Equip
								5 1/2
								RTD- 4735
								PIPE SET @ 4728
								SHOE JT - 23.63
								BAFFLE - 4705
								CENTRALIZERS - 1-7, 9, 11, 13, 16, 18
								19, 41, 62
								BASKETS - 20, 42. 63
	1300							START RUNNING Csg
	1425							Circ ON JT 63 FOR 20 MIN
	1545							BREAK CIRCULATION ON BOTTOM
	1645	2.5	16			0		PLUG RAT HOLE - 30 SKS
	1650	2.5	11			0		PLUG HOUSE HOLE - 20 SKS
	1655	5	12			300		PUMP MUD FLUSH - 500 GAL
		5	20			300		PUMP WCL SPACER -
	1705	7	138			600		Pump SMD CMT @ 11.2 PPG - 850 SKS
	1735	4.5	45			300		Pump EA-2 CMT @ 15.5 PPG - 200 SKS
	1745							DROP PLUG / WASH P&L
	1750		112			900		DISPLACE CMT
	1810		113			900		PLUG DOWN - Displaced 1 BBC past Hole volume. Did not see plug land - Released Pressure - Did not Flow back - lift pressure was 1300 psi and was holding 900 psi - Circ 40 SKS CMT to pit
								THANKS
								DAVID, JON, AUSTIN & ISAAC

MDCI
Haller #1-7
660' FSL 395'FWL
Sec. 7-2S-34W
3123' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	2936	+187	+27 / +2	2934	+189	+29/+4
B/Anhydrite	2974	+149	+30 / +3	2973	+150	+31/+4
Topeka	3821	-698	+45 / +8	3818	-695	+48/+11
Oread	3924	-801	+41 / +6	3925	-802	+40/+5
Lansing	4016	-893	+47 / +10	4015	-892	+48/+11
Stark	4231	-1108	+45 / +9	4230	-1107	+46/+10
BKC	4276	-1153	+47 / +12	4274	-1151	+49/+14
Ft Scott	4397	-1274	+53 / +11	4396	-1273	+54/+12
Oakley	4476	-1353	+53 / +12	4473	-1350	+56/+15
Mississippi	4635	-1512	+96 / +66	4644	-1521	+87/+57
RTD	4735	-1612				
LTD				4737	-1614	



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.20 @ 16:50:00

End Date: 2016.11.21 @ 02:20:00

Job Ticket #: 63024 DST #: 1

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

Printed: 2016.11.28 @ 15:56:00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 63024 **DST#: 1**
Test Start: 2016.11.20 @ 16:50:00

Tool Information

Drill Pipe:	Length: 3547.00 ft	Diameter: 3.80 inches	Volume: 49.76 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 50.68 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	3746.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	113.00 ft			
Tool Length:	141.00 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			3719.00	
Shut In Tool	5.00			3724.00	
Hydraulic tool	5.00			3729.00	
Jars	5.00			3734.00	
Safety Joint	2.00			3736.00	
Packer	5.00			3741.00	28.00 Bottom Of Top Packer
Packer	5.00			3746.00	
Stubb	1.00			3747.00	
Perforations	7.00			3754.00	
Change Over Sub	1.00			3755.00	
Recorder	0.00	8789	Inside	3755.00	
Recorder	0.00	8372	Outside	3755.00	
Blank Spacing	95.00			3850.00	
Change Over Sub	1.00			3851.00	
Perforations	5.00			3856.00	
Bullnose	3.00			3859.00	113.00 Bottom Packers & Anchor
Total Tool Length:	141.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 63024 **DST#: 1**
Test Start: 2016.11.20 @ 16:50:00

Mud and Cushion Information

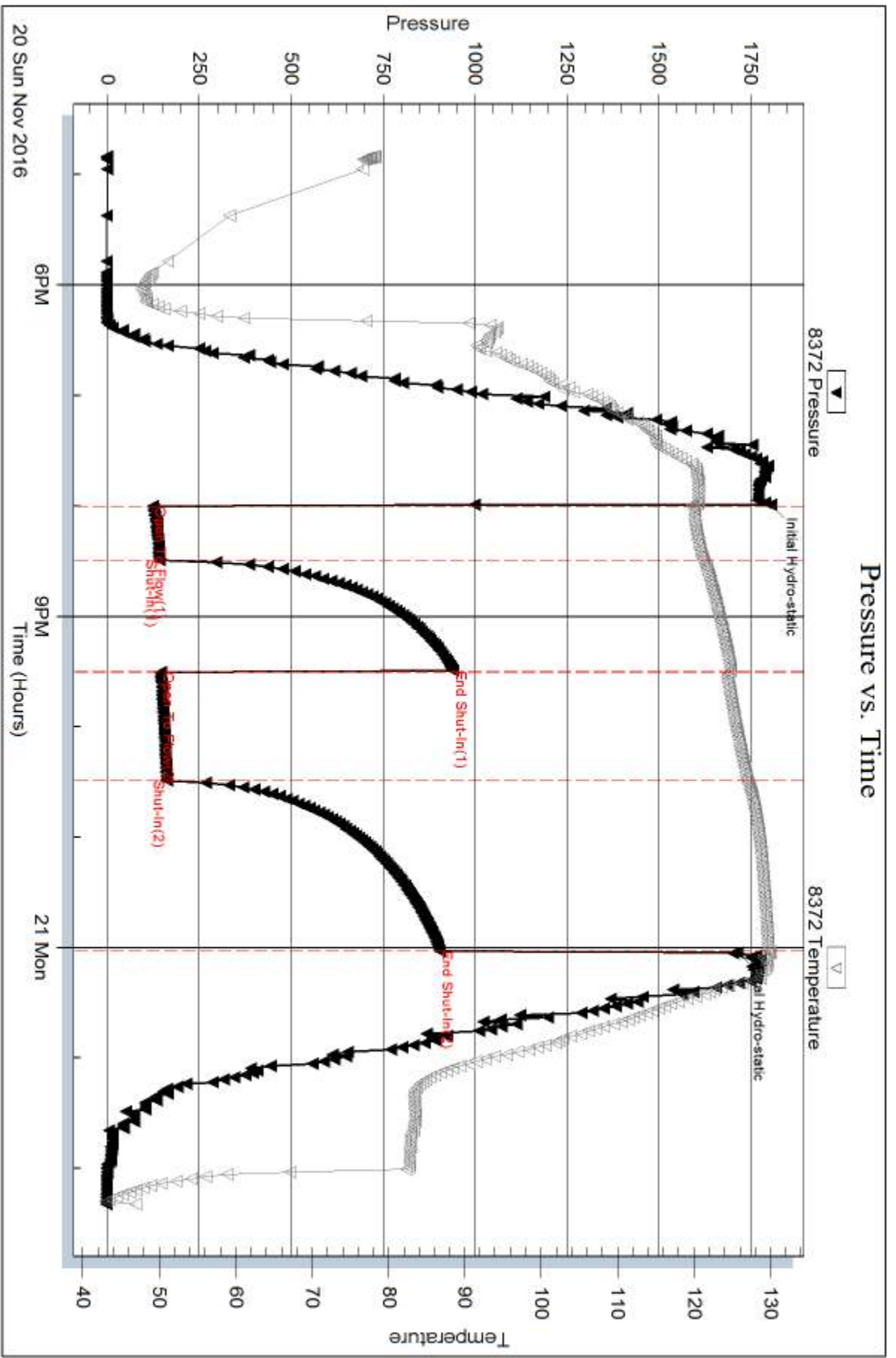
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	40000 ppm
Viscosity: 61.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.54 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 600.00 ppm			
Filter Cake: 4.00 inches			

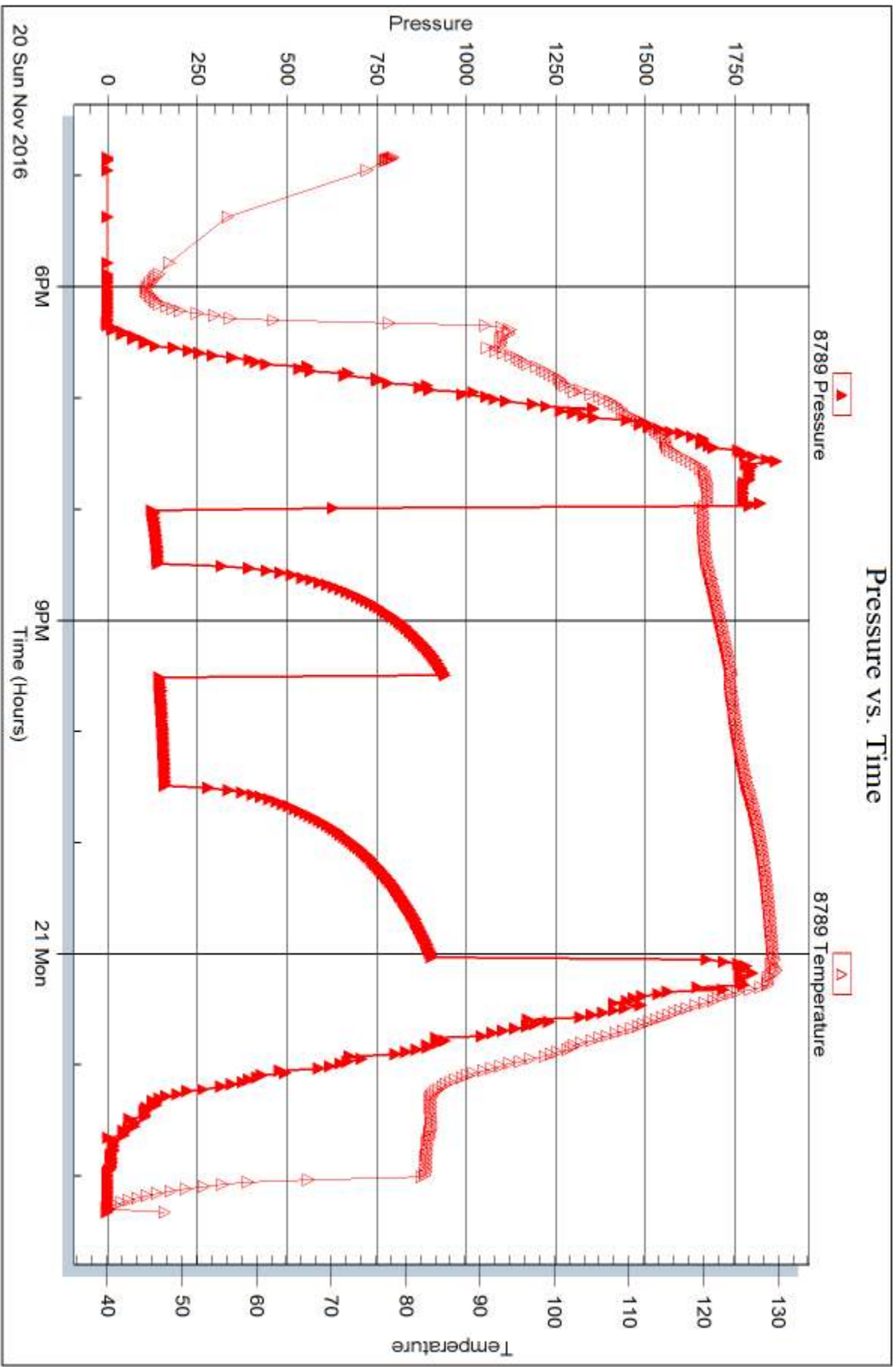
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
125.00	WCM 45%w 55%m Show of Oil	0.615
62.00	WCM 10%w 90%m Show of Oil	0.305
113.00	Oil Speck Mud 100%	1.585

Total Length: 300.00 ft Total Volume: 2.505 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: .320 @ 40







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.21 @ 12:25:00

End Date: 2016.11.21 @ 19:03:00

Job Ticket #: 63025 DST #: 2

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

Printed: 2016.11.28 @ 15:55:04

Murfin Drilling Co Inc
7-2s-34w Rawlins,KS
Haller #1-7
DST # 2
Oread
2016.11.21



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

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

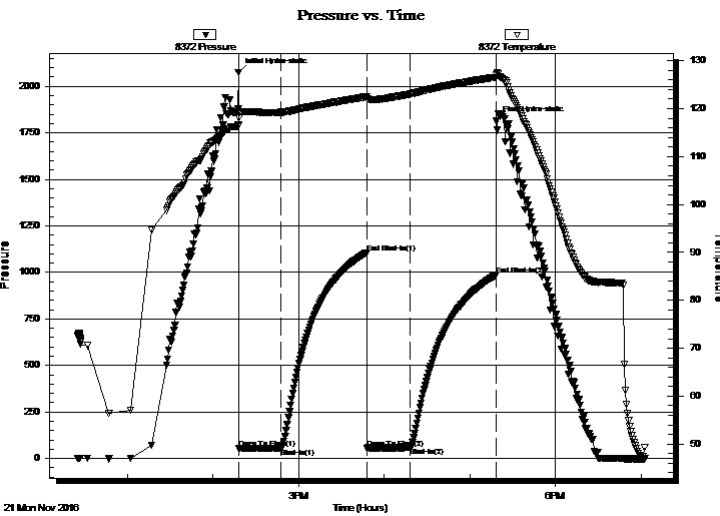
7-2s-34w Rawlins,KS
Haller #1-7
 Job Ticket: 63025 **DST#: 2**
 Test Start: 2016.11.21 @ 12:25:00

GENERAL INFORMATION:

Formation: **Oread**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:18:15
 Time Test Ended: 19:03:00
 Interval: **3884.00 ft (KB) To 3944.00 ft (KB) (TVD)**
 Total Depth: 3944.00 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: 3123.00 ft (KB)
 3118.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8372 Outside
 Press@RunDepth: 58.47 psig @ 3888.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.11.21 End Date: 2016.11.21 Last Calib.: 2016.11.21
 Start Time: 12:25:02 End Time: 19:03:00 Time On Btm: 2016.11.21 @ 14:17:45
 Time Off Btm: 2016.11.21 @ 17:18:30

TEST COMMENT: 30-IFP- 1/4" Blow ---Tool Slide 10ft.---Mud Dropped 5ft.---Bled off 30 sec.
 60-ISIP- No Blow
 30-FFP- No Blow
 60-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2074.68	116.54	Initial Hydro-static
1	52.37	118.17	Open To Flow (1)
30	55.32	119.26	Shut-In(1)
90	1105.57	122.51	End Shut-In(1)
91	56.15	122.10	Open To Flow (2)
120	58.47	123.02	Shut-In(2)
181	985.27	126.58	End Shut-In(2)
181	1815.22	127.01	Final Hydro-static

Recovery

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

* 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: Rocky Milford

7-2s-34w Rawlins,KS

Haller #1-7

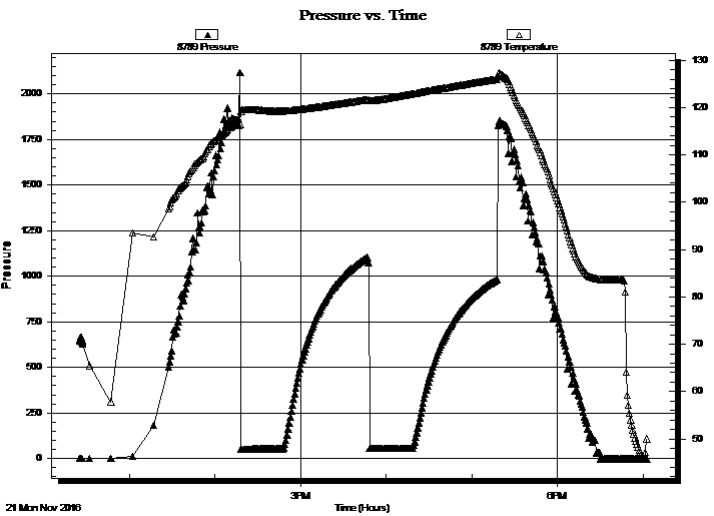
Job Ticket: 63025 **DST#: 2**
Test Start: 2016.11.21 @ 12:25:00

GENERAL INFORMATION:

Formation: **Oread**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:18:15
Time Test Ended: 19:03:00
Interval: **3884.00 ft (KB) To 3944.00 ft (KB) (TVD)**
Total Depth: 3944.00 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: 3123.00 ft (KB)
3118.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8789 Inside
Press@RunDepth: psig @ 3888.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.21 End Date: 2016.11.21 Last Calib.: 2016.11.21
Start Time: 12:25:02 End Time: 19:02:45 Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- 1/4" Blow ---Tool Slide 10ft.---Mud Dropped 5ft.---Bled off 30 sec.
60-ISIP- No Blow
30-FFP- No Blow
60-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

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

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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 63025 **DST#: 2**
Test Start: 2016.11.21 @ 12:25:00

Tool Information

Drill Pipe:	Length: 3674.00 ft	Diameter: 3.80 inches	Volume: 51.54 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 55000.00 lb
			<u>Total Volume: 52.46 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 52000.00 lb
Depth to Top Packer:	3884.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	88.00 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			3857.00	
Shut In Tool	5.00			3862.00	
Hydraulic tool	5.00			3867.00	
Jars	5.00			3872.00	
Safety Joint	2.00			3874.00	
Packer	5.00			3879.00	28.00 Bottom Of Top Packer
Packer	5.00			3884.00	
Stubb	1.00			3885.00	
Perforations	2.00			3887.00	
Change Over Sub	1.00			3888.00	
Recorder	0.00	8789	Inside	3888.00	
Recorder	0.00	8372	Outside	3888.00	
Blank Spacing	32.00			3920.00	
Change Over Sub	1.00			3921.00	
Perforations	20.00			3941.00	
Bullnose	3.00			3944.00	60.00 Bottom Packers & Anchor
Total Tool Length:	88.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 63025 **DST#: 2**
Test Start: 2016.11.21 @ 12:25:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.94 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 700.00 ppm			
Filter Cake: 4.00 inches			

Recovery Information

Recovery Table

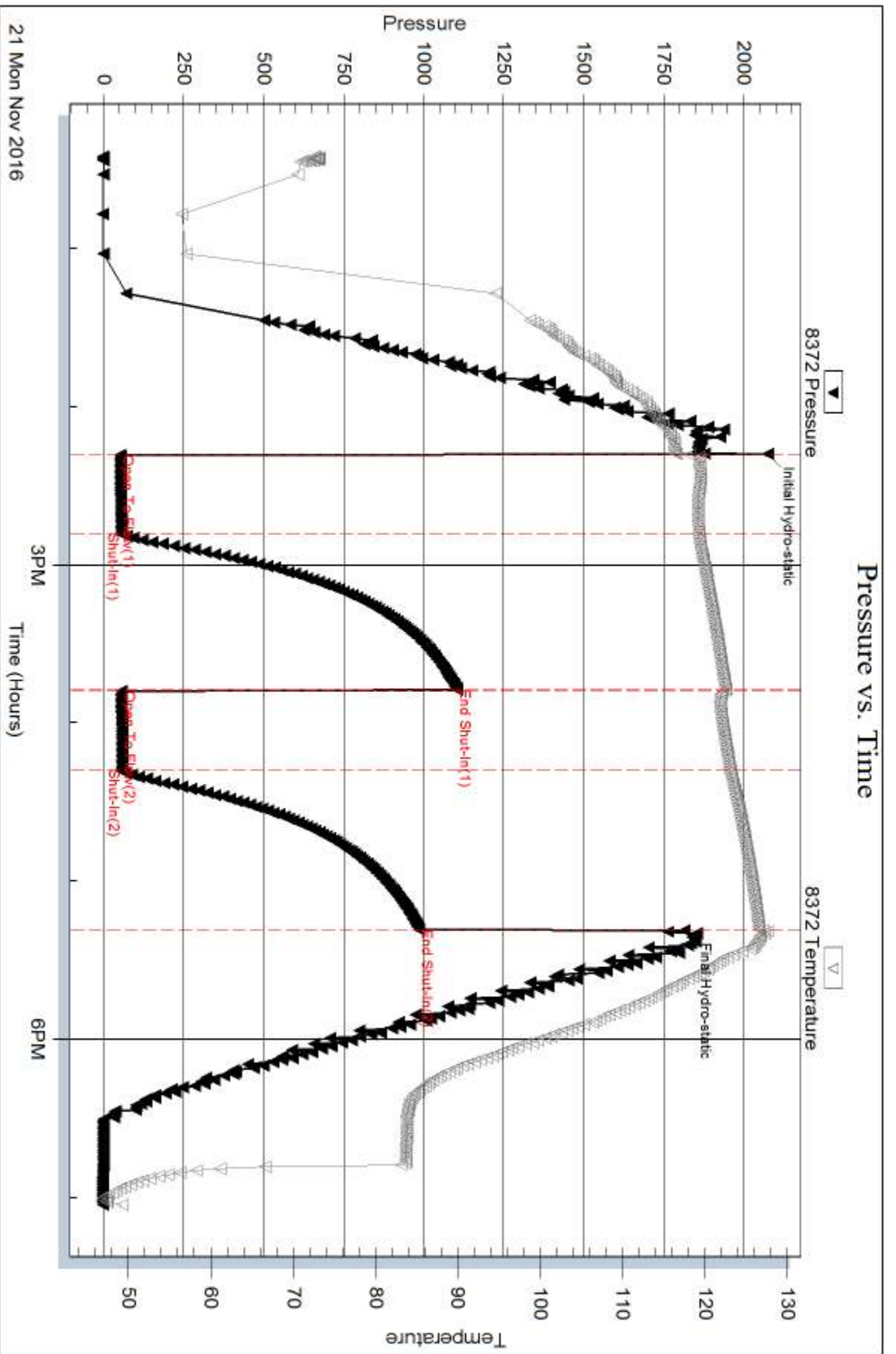
Length ft	Description	Volume bbl
65.00	Mud 100%	0.320

Total Length: 65.00 ft Total Volume: 0.320 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:



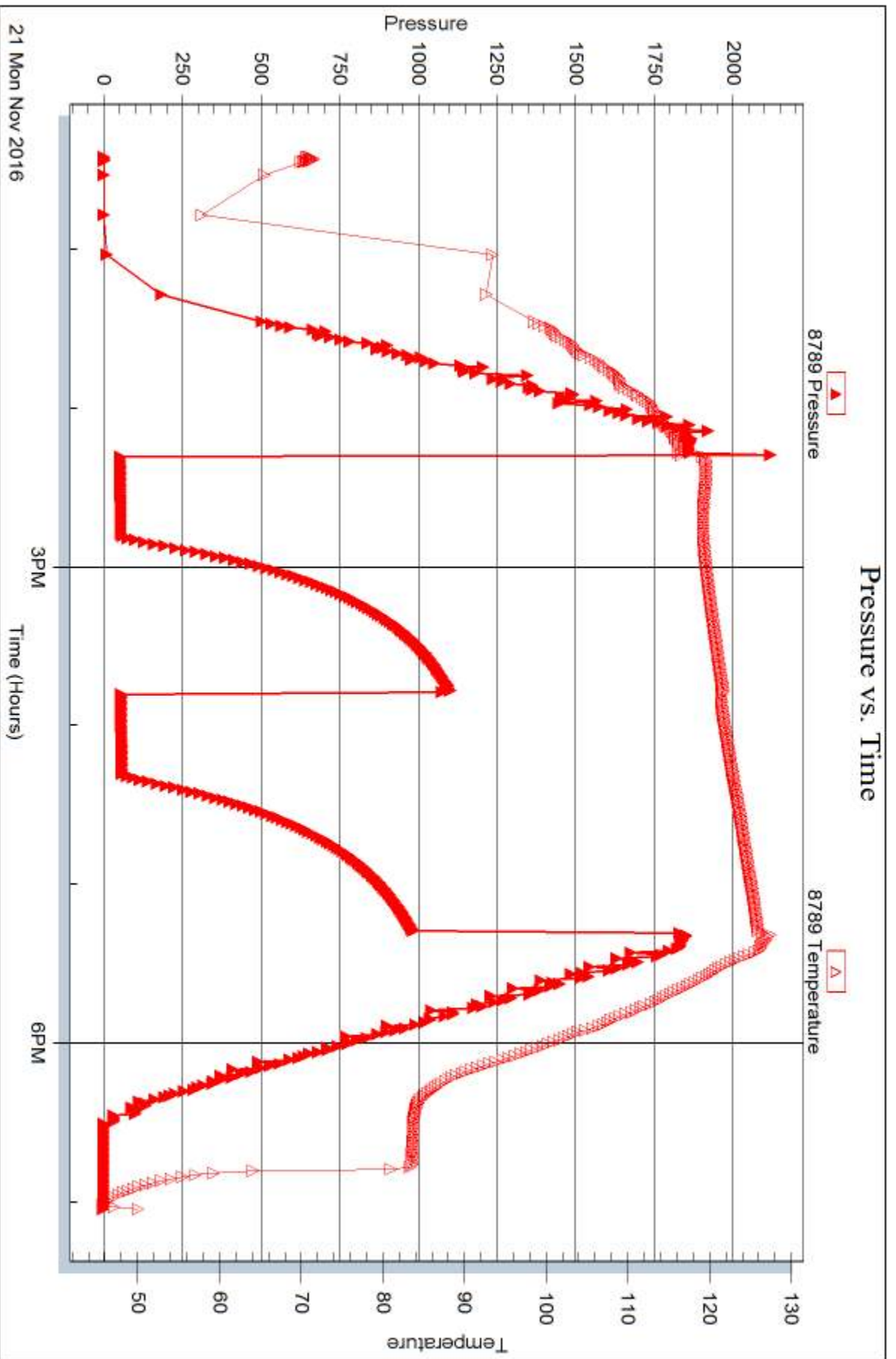
Serial #: 8789

Inside

Murfin Drilling Co Inc

Haller #1-7

DST Test Number: 2



21 Mon Nov 2016

Trilobite Testing, Inc

Ref. No: 63025

Printed: 2016.11.28 @ 15:55:06



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.22 @ 07:03:00

End Date: 2016.11.22 @ 15:29:00

Job Ticket #: 61201 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.11.28 @ 15:53:52



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

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

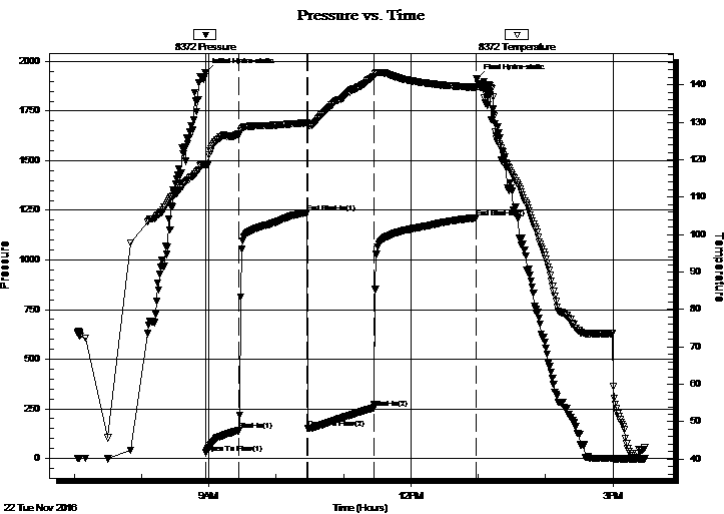
7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61201 **DST#: 3**
Test Start: 2016.11.22 @ 07:03:00

GENERAL INFORMATION:

Formation: **LKC " A "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 08:57:00
Time Test Ended: 15:29:00
Interval: **3963.00 ft (KB) To 4040.00 ft (KB) (TVD)**
Total Depth: 4040.00 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: 3123.00 ft (KB)
3118.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8372 Outside
Press@RunDepth: 254.86 psig @ 3970.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.22 End Date: 2016.11.22 Last Calib.: 2016.11.22
Start Time: 07:03:02 End Time: 15:28:45 Time On Btm: 2016.11.22 @ 08:56:45
Time Off Btm: 2016.11.22 @ 12:58:30

TEST COMMENT: 30-IFP- BOB in 10 min.
60-ISIP- Surface Blow Building to 6 1/2"
60-FFP- BOB in 9 min.
90-FSIP- BOB in 15 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1944.70	118.99	Initial Hydro-static
1	27.90	118.32	Open To Flow (1)
30	140.35	126.87	Shut-In(1)
91	1238.66	129.87	End Shut-In(1)
92	151.12	129.48	Open To Flow (2)
151	254.86	142.21	Shut-In(2)
241	1211.59	139.30	End Shut-In(2)
242	1913.47	139.55	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
187.00	GOCM 30%g 20%o 50%m	0.92
63.00	GOCM 20%g 30%o 50%m	0.88
368.00	GCO 20%g 80%o	5.16
0.00	GIP 955	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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61201 **DST#: 3**
Test Start: 2016.11.22 @ 07:03:00

Tool Information

Drill Pipe:	Length: 3769.00 ft	Diameter: 3.80 inches	Volume: 52.87 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 53.79 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	3963.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	77.00 ft			
Tool Length:	105.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3936.00	
Shut In Tool	5.00			3941.00	
Hydraulic tool	5.00			3946.00	
Jars	5.00			3951.00	
Safety Joint	2.00			3953.00	
Packer	5.00			3958.00	28.00 Bottom Of Top Packer
Packer	5.00			3963.00	
Stubb	1.00			3964.00	
Perforations	5.00			3969.00	
Change Over Sub	1.00			3970.00	
Recorder	0.00	8789	Inside	3970.00	
Recorder	0.00	8372	Outside	3970.00	
Blank Spacing	32.00			4002.00	
Change Over Sub	1.00			4003.00	
Perforations	34.00			4037.00	
Bullnose	3.00			4040.00	77.00 Bottom Packers & Anchor
Total Tool Length:	105.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61201 **DST#: 3**
Test Start: 2016.11.22 @ 07:03:00

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: 59.00 sec/qt	Cushion Volume: bbl	
Water Loss: 5.56 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 700.00 ppm		
Filter Cake: 4.00 inches		

Recovery Information

Recovery Table

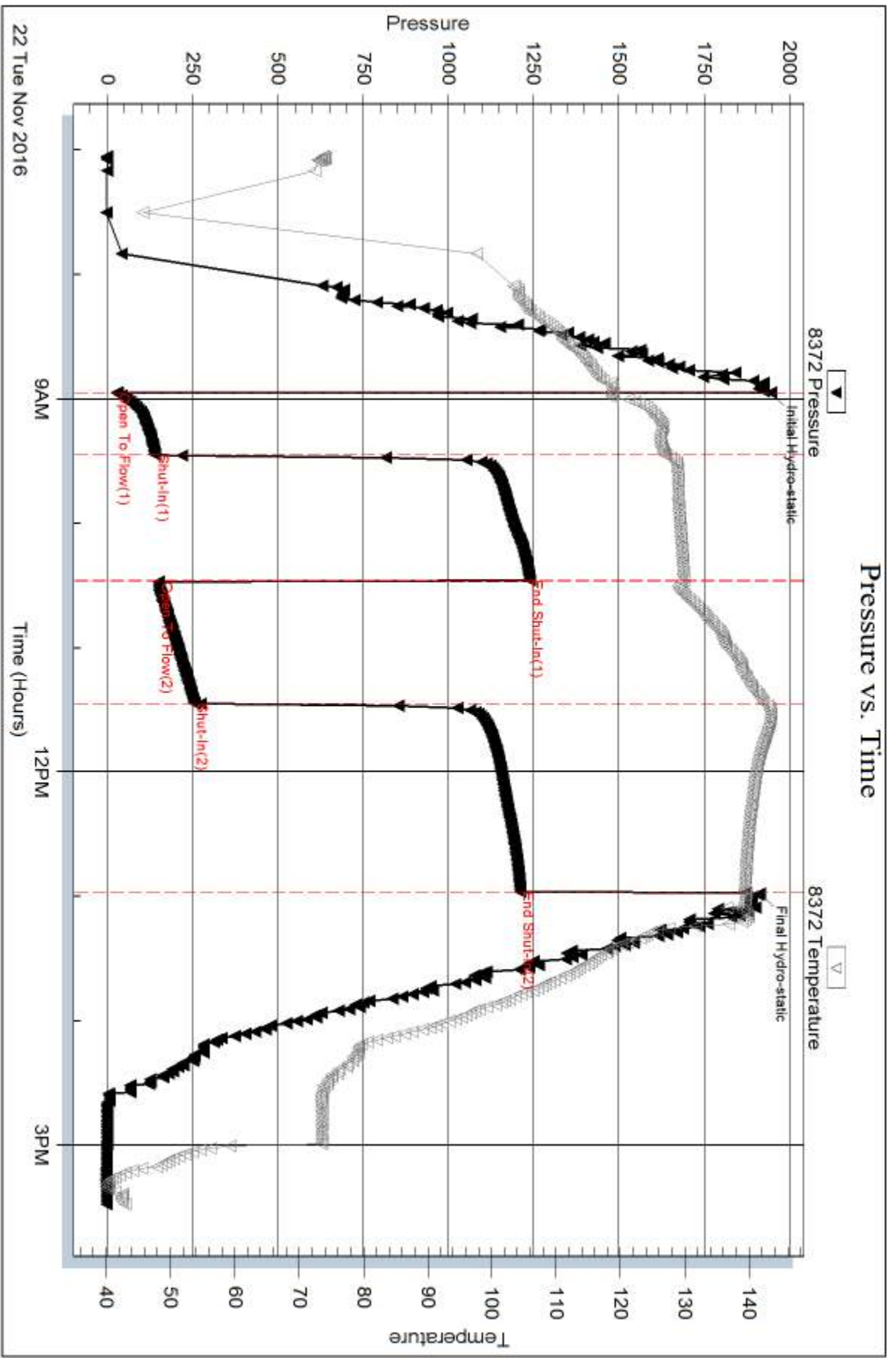
Length ft	Description	Volume bbl
187.00	GOCM 30%g 20%o 50%m	0.920
63.00	GOCM 20%g 30%o 50%m	0.884
368.00	GCO 20%g 80%o	5.162
0.00	GIP 955	0.000

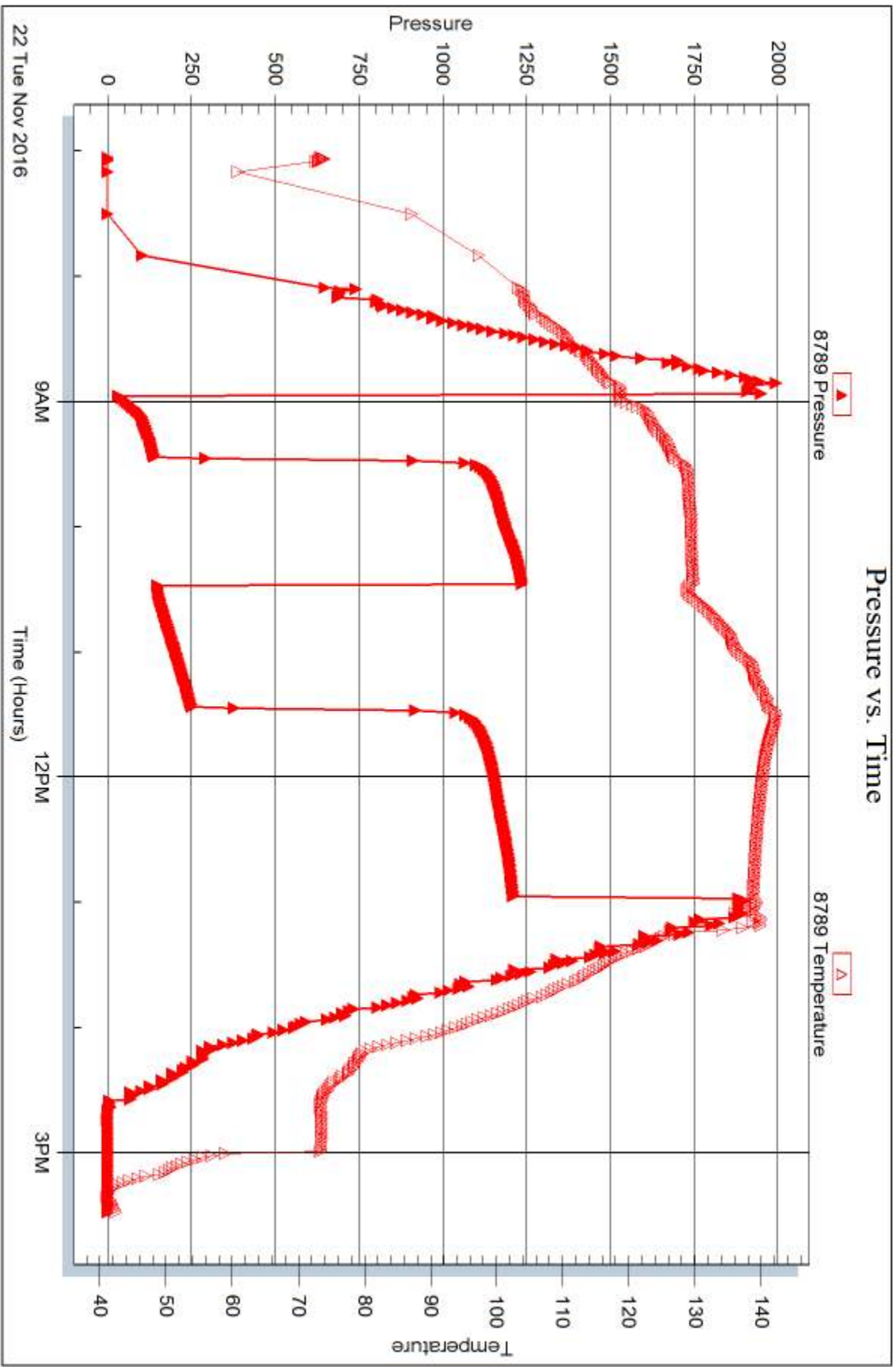
Total Length: 618.00 ft Total Volume: 6.966 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.23 @ 01:08:00

End Date: 2016.11.23 @ 09:30:00

Job Ticket #: 61202 DST #: 4

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

Printed: 2016.11.28 @ 15:53:13

Murfin Drilling Co Inc

7-2s-34w Rawlins,KS

Haller #1-7

DST # 4

LKC " A Sand---D Pri

2016.11.23



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

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

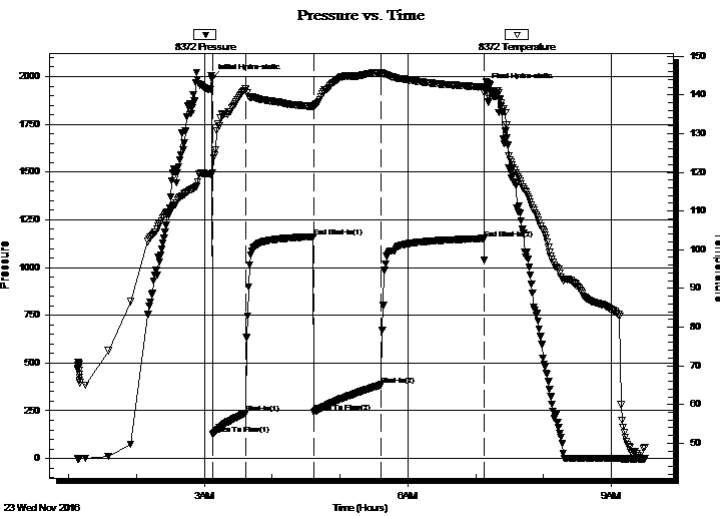
7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61202 **DST#: 4**
Test Start: 2016.11.23 @ 01:08:00

GENERAL INFORMATION:

Formation: **LKC " A Sand---D Pri**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 03:07:15
Time Test Ended: 09:30:00
Interval: **4035.00 ft (KB) To 4107.00 ft (KB) (TVD)**
Total Depth: 4107.00 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: 3123.00 ft (KB)
3118.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8372 Outside
Press@RunDepth: 385.76 psig @ 4042.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.23 End Date: 2016.11.23 Last Calib.: 2016.11.23
Start Time: 01:08:02 End Time: 09:30:00 Time On Btm: 2016.11.23 @ 03:06:45
Time Off Btm: 2016.11.23 @ 07:07:45

TEST COMMENT: 30-IFP- Tool Slide 10ft.--Mud Drop 20ft.--Bled off 1min.--BOB in 8 min.
60-ISIP- Very Weak Surface Blow Died in 44 min.
60-FFP- BOB in 13 min.
90-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1990.86	119.56	Initial Hydro-static
1	128.63	119.84	Open To Flow (1)
30	237.75	141.66	Shut-In(1)
90	1160.49	136.94	End Shut-In(1)
91	242.88	136.79	Open To Flow (2)
150	385.76	145.81	Shut-In(2)
241	1151.93	142.01	End Shut-In(2)
241	1939.58	140.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
313.00	MCW 25%w 75%w Show of Oil	2.69
189.00	WCM 45%w 55%w Show of Oil	2.65
282.00	Oil Speck WCM 1%o 4%w 95%w	3.96

* 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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61202 **DST#: 4**
Test Start: 2016.11.23 @ 01:08:00

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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 58000.00 lb
			<u>Total Volume: 54.67 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	4035.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	72.00 ft			
Tool Length:	100.00 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			4008.00	
Shut In Tool	5.00			4013.00	
Hydraulic tool	5.00			4018.00	
Jars	5.00			4023.00	
Safety Joint	2.00			4025.00	
Packer	5.00			4030.00	28.00 Bottom Of Top Packer
Packer	5.00			4035.00	
Stubb	1.00			4036.00	
Perforations	5.00			4041.00	
Change Over Sub	1.00			4042.00	
Recorder	0.00	8789	Inside	4042.00	
Recorder	0.00	8372	Outside	4042.00	
Blank Spacing	32.00			4074.00	
Change Over Sub	1.00			4075.00	
Perforations	29.00			4104.00	
Bullnose	3.00			4107.00	72.00 Bottom Packers & Anchor
Total Tool Length:	100.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61202 **DST#: 4**
Test Start: 2016.11.23 @ 01:08:00

Mud and Cushion Information

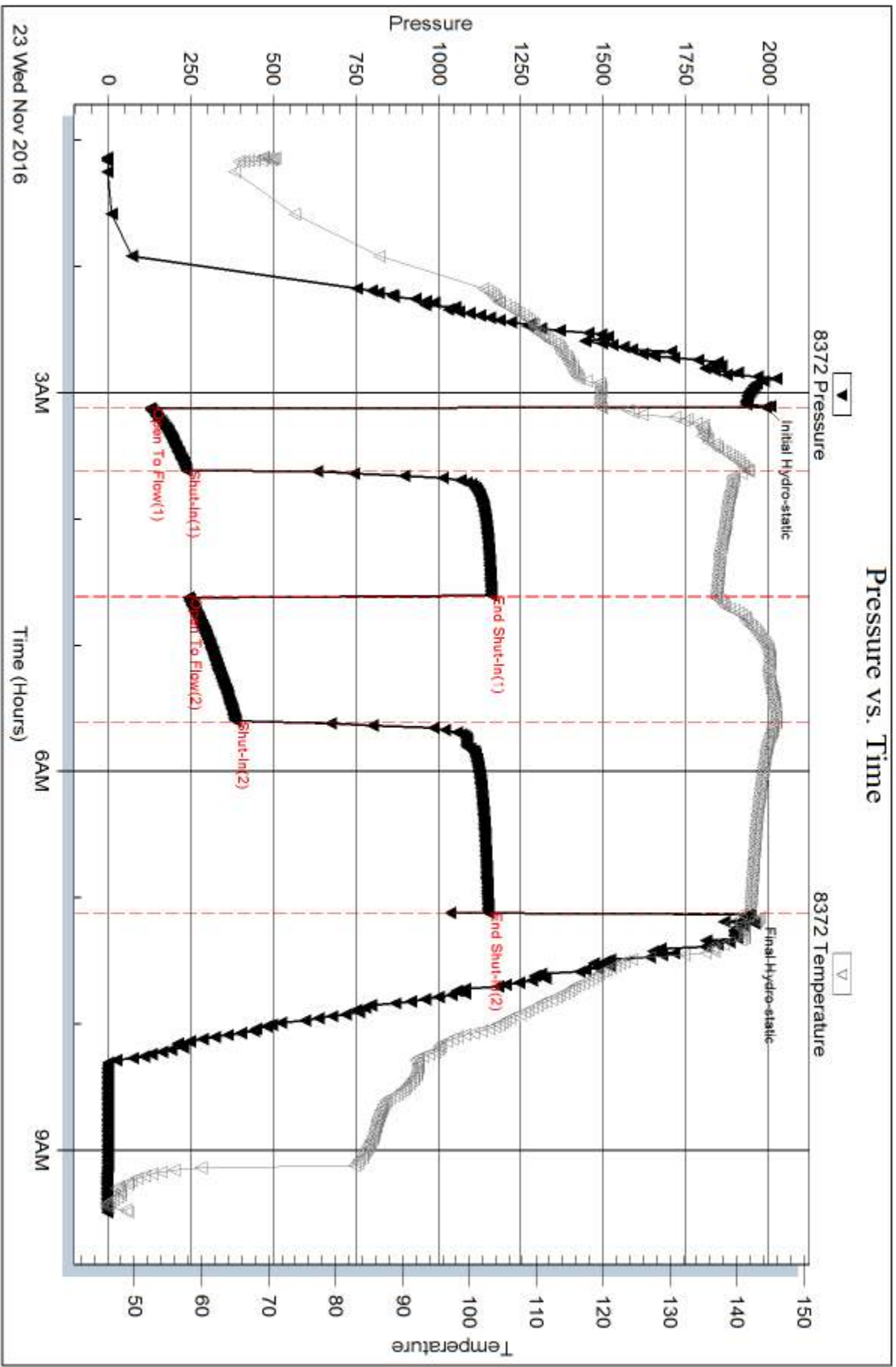
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 70000 ppm	
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.57 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 700.00 ppm			
Filter Cake: 4.00 inches			

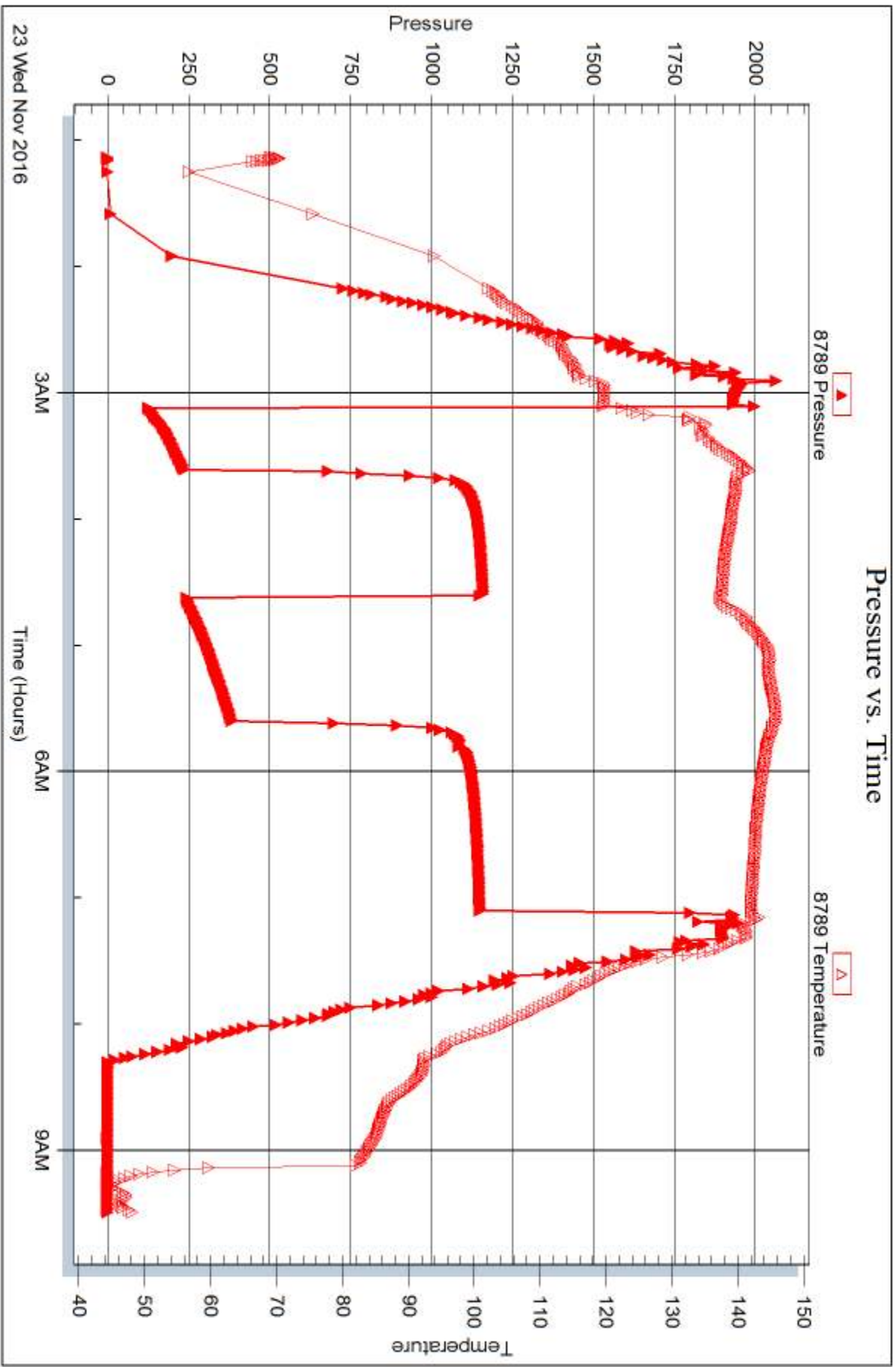
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
313.00	MCW 25% <i>m</i> 75% <i>w</i> Show of Oil	2.687
189.00	WCM 45% <i>w</i> 55% <i>m</i> Show of Oil	2.651
282.00	Oil Speck WCM 1% <i>o</i> 4% <i>w</i> 95% <i>m</i>	3.956

Total Length: 784.00 ft Total Volume: 9.294 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: .160 @ 49







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.23 @ 18:12:00

End Date: 2016.11.24 @ 02:04:00

Job Ticket #: 61203 DST #: 5

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

Printed: 2016.11.28 @ 15:52:35



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

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

7-2s-34w Rawlins,KS
Haller #1-7
 Job Ticket: 61203 **DST#: 5**
 Test Start: 2016.11.23 @ 18:12:00

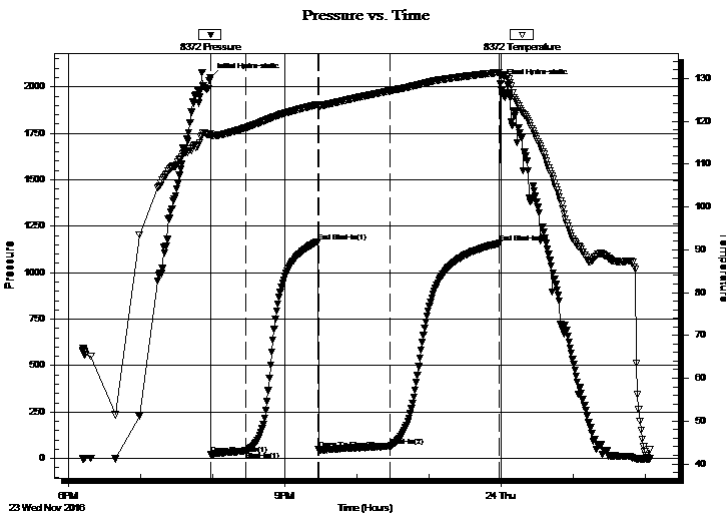
GENERAL INFORMATION:

Formation: **LKC " G "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:58:15
 Time Test Ended: 02:04:00
 Interval: **4102.00 ft (KB) To 4150.00 ft (KB) (TVD)**
 Total Depth: 4150.00 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: 3123.00 ft (KB)
 3118.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8372 Outside

Press@RunDepth: 67.49 psig @ 4109.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.11.23 End Date: 2016.11.24 Last Calib.: 2016.11.24
 Start Time: 18:12:02 End Time: 02:04:00 Time On Btm: 2016.11.23 @ 19:58:00
 Time Off Btm: 2016.11.23 @ 23:59:15

TEST COMMENT: 30-IFP- 4". Blow -- 2" 10min. -- 3" 18 min.
 60-ISIP- Weak Surface Blow in 5 min. Died Back in 13 min.
 60-FFP- 7 1/2" Blow [1"-1 min.] [2" 3 min.] [3" 9 min.] [4" 17 min.] [5" 29 min.] [6" 41 min.] [7" 54 min.]
 90-FSIP- Weak Surface Blow in 4 min. Died Back in 7 min. Dead in 24 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2048.22	117.17	Initial Hydro-static
1	21.52	116.48	Open To Flow (1)
30	38.12	118.53	Shut-In(1)
90	1167.61	123.89	End Shut-In(1)
90	48.39	123.50	Open To Flow (2)
150	67.49	127.11	Shut-In(2)
241	1157.82	131.42	End Shut-In(2)
242	2018.95	130.61	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCM 25% o 75% m	0.30
15.00	CO 100%	0.07

* 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: Rocky Milford

7-2s-34w Rawlins,KS

Haller #1-7

Job Ticket: 61203

DST#: 5

Test Start: 2016.11.23 @ 18:12:00

GENERAL INFORMATION:

Formation: **LKC " G "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:58:15

Time Test Ended: 02:04:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

Interval: 4102.00 ft (KB) To 4150.00 ft (KB) (TVD)

Total Depth: 4150.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3123.00 ft (KB)

3118.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8789 Inside

Press@RunDepth: psig @ 4109.00 ft (KB)

Start Date: 2016.11.23

End Date:

2016.11.24

Start Time: 18:12:02

End Time:

02:04:00

Capacity: 8000.00 psig

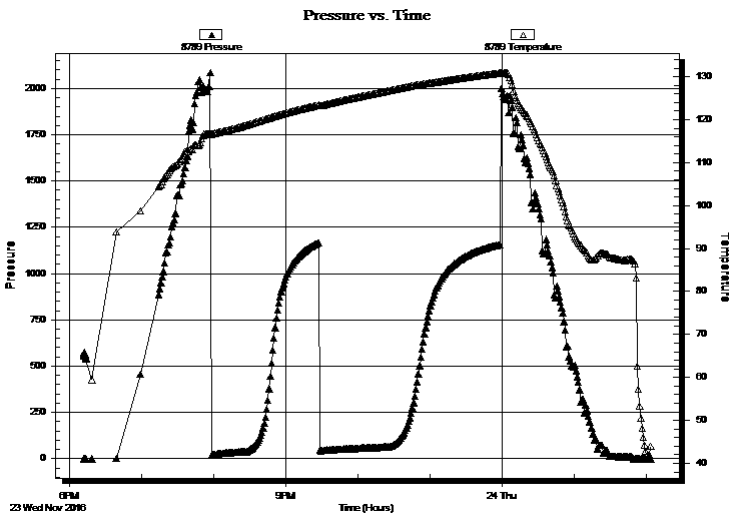
Last Calib.:

2016.11.24

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IFP- 4". Blow -- 2" 10min. -- 3" 18 min.
60-ISIP- Weak Surface Blow in 5 min. Died Back in 13 min.
60-FFP- 7 1/2" Blow [1"-1 min.] [2" 3 min.] [3" 9 min.] [4" 17 min.] [5" 29 min.] [6" 41 min.] [7" 54 min.]
90-FSIP- Weak Surface Blow in 4 min. Died Back in 7 min. Dead in 24 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCM 25% o 75% m	0.30
15.00	CO 100%	0.07

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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61203 **DST#: 5**
Test Start: 2016.11.23 @ 18:12:00

Tool Information

Drill Pipe:	Length: 3896.00 ft	Diameter: 3.80 inches	Volume: 54.65 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 56000.00 lb
			<u>Total Volume: 55.57 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 52000.00 lb
Depth to Top Packer:	4102.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	76.00 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			4075.00	
Shut In Tool	5.00			4080.00	
Hydraulic tool	5.00			4085.00	
Jars	5.00			4090.00	
Safety Joint	2.00			4092.00	
Packer	5.00			4097.00	28.00 Bottom Of Top Packer
Packer	5.00			4102.00	
Stubb	1.00			4103.00	
Perforations	5.00			4108.00	
Change Over Sub	1.00			4109.00	
Recorder	0.00	8789	Inside	4109.00	
Recorder	0.00	8372	Outside	4109.00	
Blank Spacing	32.00			4141.00	
Change Over Sub	1.00			4142.00	
Perforations	5.00			4147.00	
Bullnose	3.00			4150.00	48.00 Bottom Packers & Anchor
Total Tool Length:	76.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61203 **DST#: 5**
Test Start: 2016.11.23 @ 18:12:00

Mud and Cushion Information

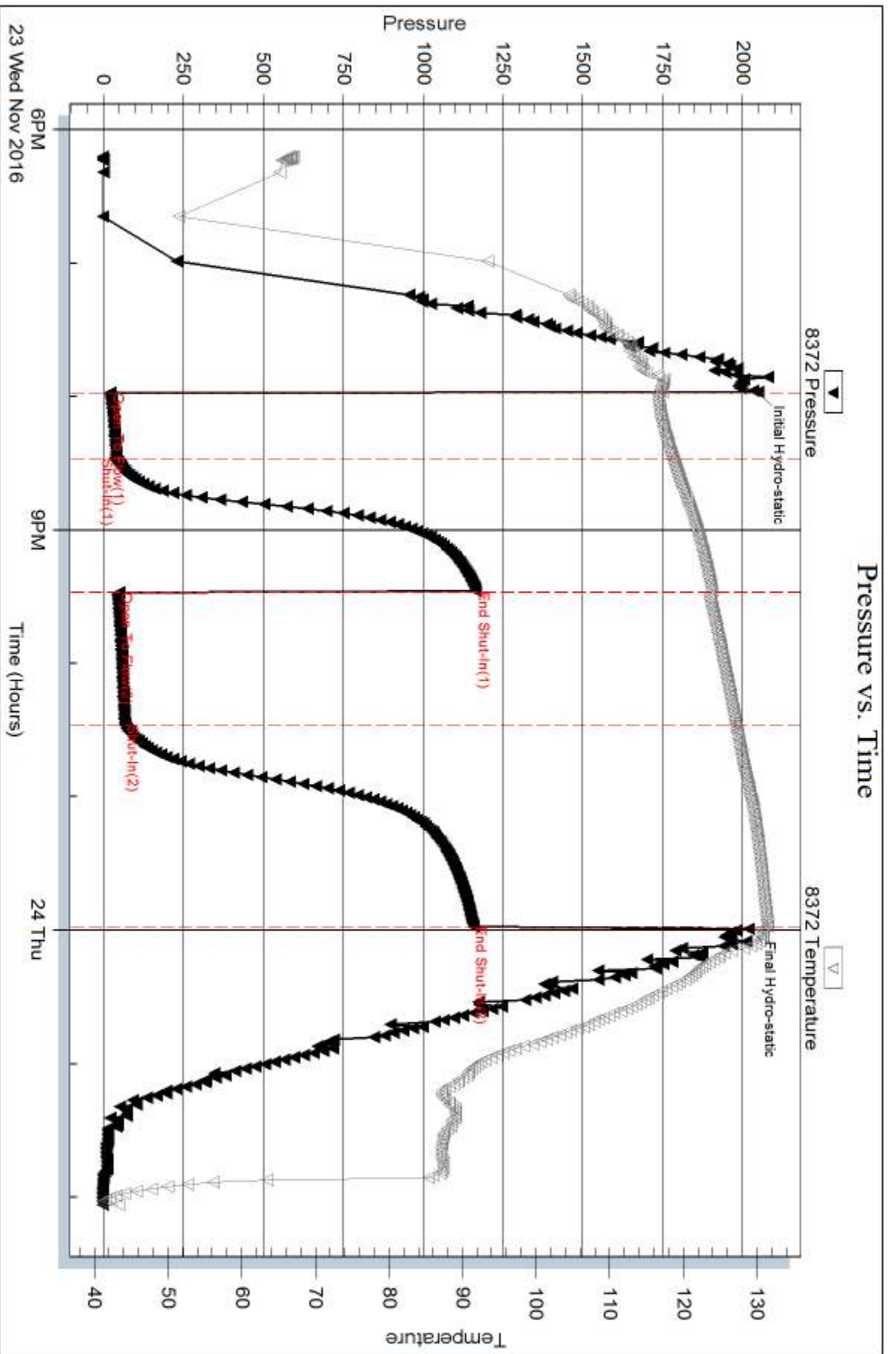
Mud Type: Gel Chem	Cushion Type:	Oil API: 36 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl	
Water Loss: 5.56 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 800.00 ppm		
Filter Cake: 3.00 inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	OCM 25%o 75%m	0.295
15.00	CO 100%	0.074

Total Length: 75.00 ft Total Volume: 0.369 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:



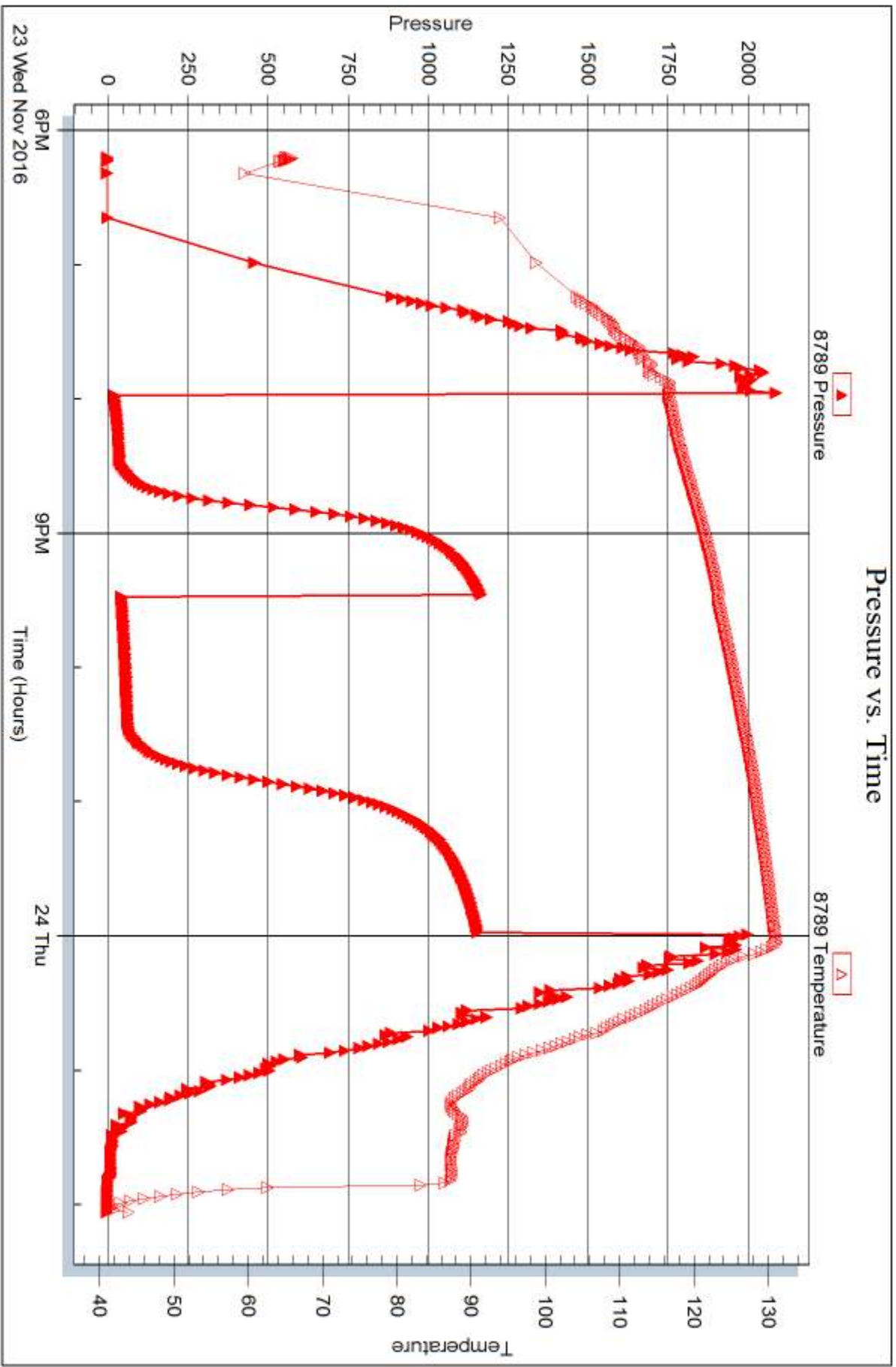
Serial #: 8789

Inside

Murfin Drilling Co Inc

Haller #1-7

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.24 @ 13:45:00

End Date: 2016.11.24 @ 22:32:00

Job Ticket #: 61204 DST #: 6

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

Printed: 2016.11.28 @ 15:51:55

Murfin Drilling Co Inc
7-2s-34w Rawlins,KS
Haller #1-7
DST # 6
LKC " G-Prime -J "
2016.11.24



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

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

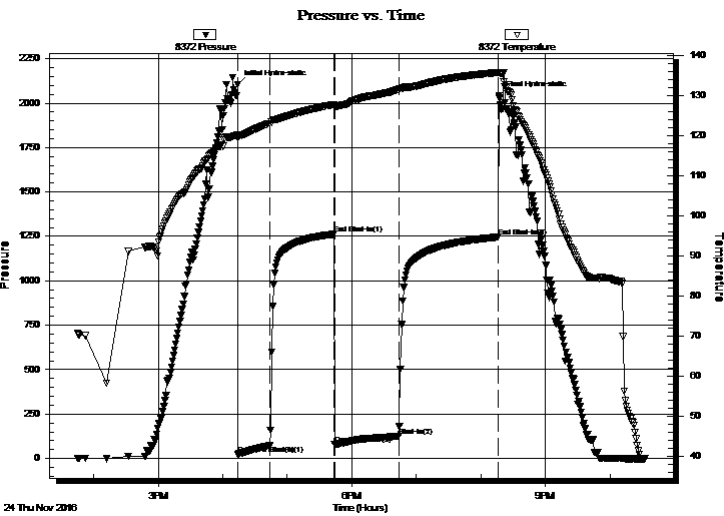
7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61204 **DST#: 6**
Test Start: 2016.11.24 @ 13:45:00

GENERAL INFORMATION:

Formation: **LKC "G-Prime - J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:14:00
Time Test Ended: 22:32:00
Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76
Interval: 4145.00 ft (KB) To 4234.00 ft (KB) (TVD)
Reference Elevations: 3123.00 ft (KB)
Total Depth: 4234.00 ft (KB) (TVD) 3118.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 8372 Outside
Press@RunDepth: 125.43 psig @ 4152.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.24 End Date: 2016.11.24 Last Calib.: 2016.11.24
Start Time: 13:45:02 End Time: 22:32:15 Time On Btm: 2016.11.24 @ 16:13:45
Time Off Btm: 2016.11.24 @ 20:17:00

TEST COMMENT: 30-IFP- [2".-6 1/2 min.] [3" 11 1/2 min.] [4" 21 min.] [5". 30 min.]
60-ISIP- No Blow
60-FFP- [1" 14 min.] [2" 21 min.] [3". 33 min.] [4" 46 min.] [5" 59 min.]
90-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2103.85	120.31	Initial Hydro-static
1	23.43	119.48	Open To Flow (1)
30	72.24	123.09	Shut-In(1)
90	1263.23	127.87	End Shut-In(1)
91	78.73	127.30	Open To Flow (2)
150	125.43	131.61	Shut-In(2)
243	1246.40	135.85	End Shut-In(2)
244	2042.22	135.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
125.00	WCM 30%w 70%m w/Show of Oil	0.61
97.00	OCM 5%o 95%m	0.80

* 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: Rocky Milford

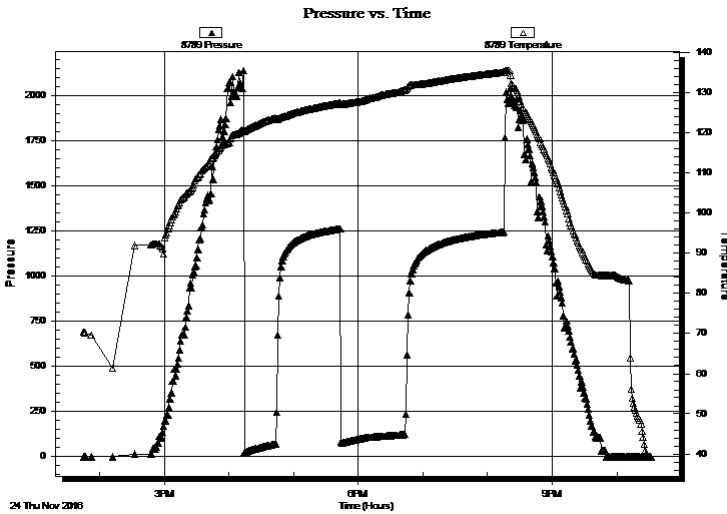
7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61204 **DST#: 6**
Test Start: 2016.11.24 @ 13:45:00

GENERAL INFORMATION:

Formation: **LKC "G-Prime - J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:14:00
Time Test Ended: 22:32:00
Interval: **4145.00 ft (KB) To 4234.00 ft (KB) (TVD)**
Total Depth: 4234.00 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: 3123.00 ft (KB)
3118.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8789 **Inside**
Press@RunDepth: psig @ 4152.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.24 End Date: 2016.11.24 Last Calib.: 2016.11.24
Start Time: 13:45:02 End Time: 22:32:00 Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- [2".-6 1/2 min.] [3" 11 1/2 min.] [4" 21 min.] [5". 30 min.]
60-ISIP- No Blow
60-FFP- [1" 14 min.] [2" 21 min.] [3". 33 min.] [4" 46 min.] [5" 59 min.]
90-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
125.00	WCM 30%w 70%m w/Show of Oil	0.61
97.00	OCM 5%o 95%m	0.80

* 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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61204 **DST#: 6**
Test Start: 2016.11.24 @ 13:45:00

Tool Information

Drill Pipe:	Length: 3958.00 ft	Diameter: 3.80 inches	Volume: 55.52 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 58000.00 lb
			<u>Total Volume: 56.44 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	4145.00 ft			Final 55000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	89.00 ft			
Tool Length:	117.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4118.00	
Shut In Tool	5.00			4123.00	
Hydraulic tool	5.00			4128.00	
Jars	5.00			4133.00	
Safety Joint	2.00			4135.00	
Packer	5.00			4140.00	28.00 Bottom Of Top Packer
Packer	5.00			4145.00	
Stubb	1.00			4146.00	
Perforations	5.00			4151.00	
Change Over Sub	1.00			4152.00	
Recorder	0.00	8789	Inside	4152.00	
Recorder	0.00	8372	Outside	4152.00	
Blank Spacing	63.00			4215.00	
Change Over Sub	1.00			4216.00	
Perforations	15.00			4231.00	
Bullnose	3.00			4234.00	89.00 Bottom Packers & Anchor
Total Tool Length:	117.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61204 **DST#: 6**
Test Start: 2016.11.24 @ 13:45:00

Mud and Cushion Information

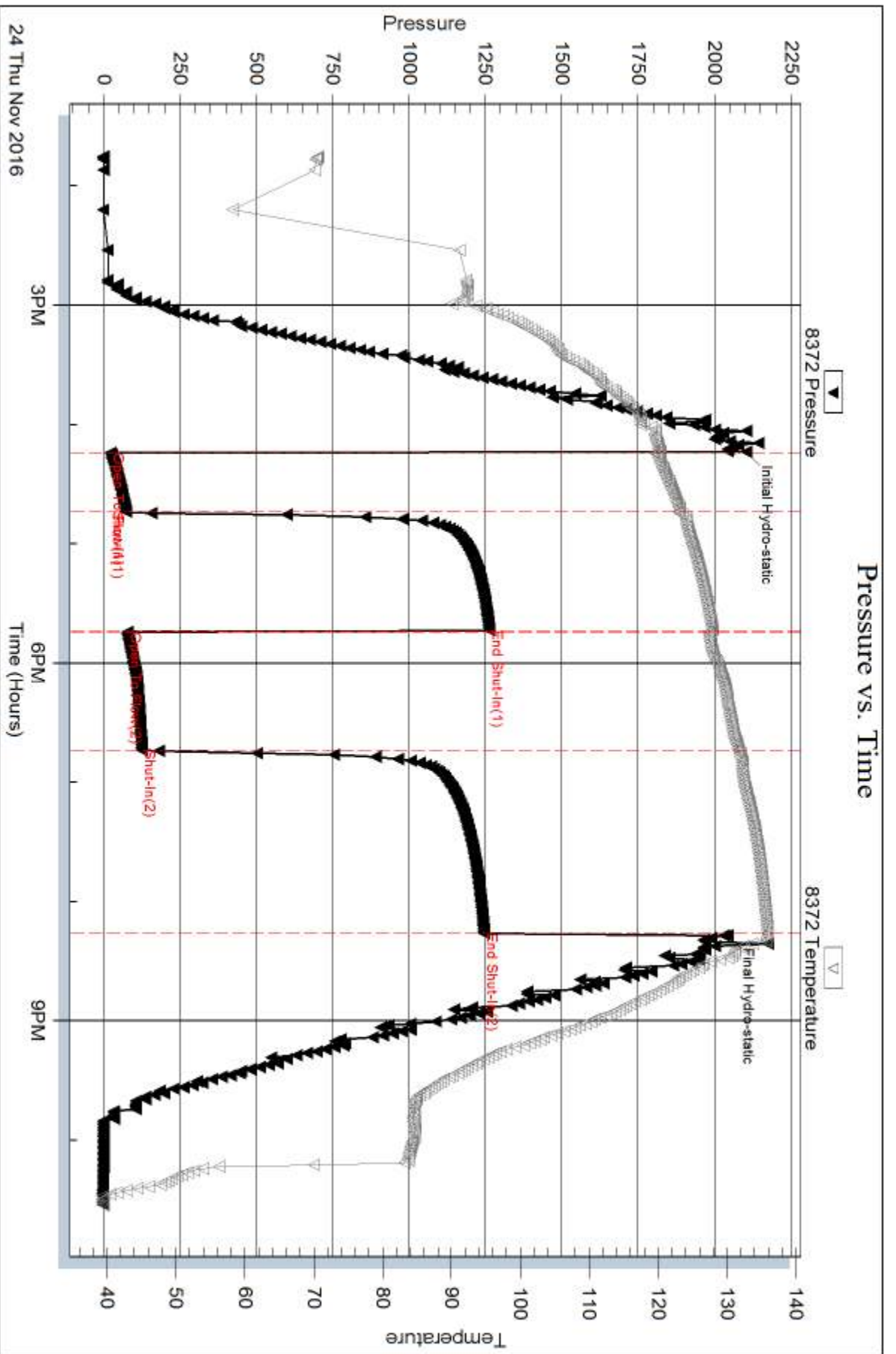
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	60000 ppm
Viscosity: 60.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.97 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1400.00 ppm			
Filter Cake: 4.00 inches			

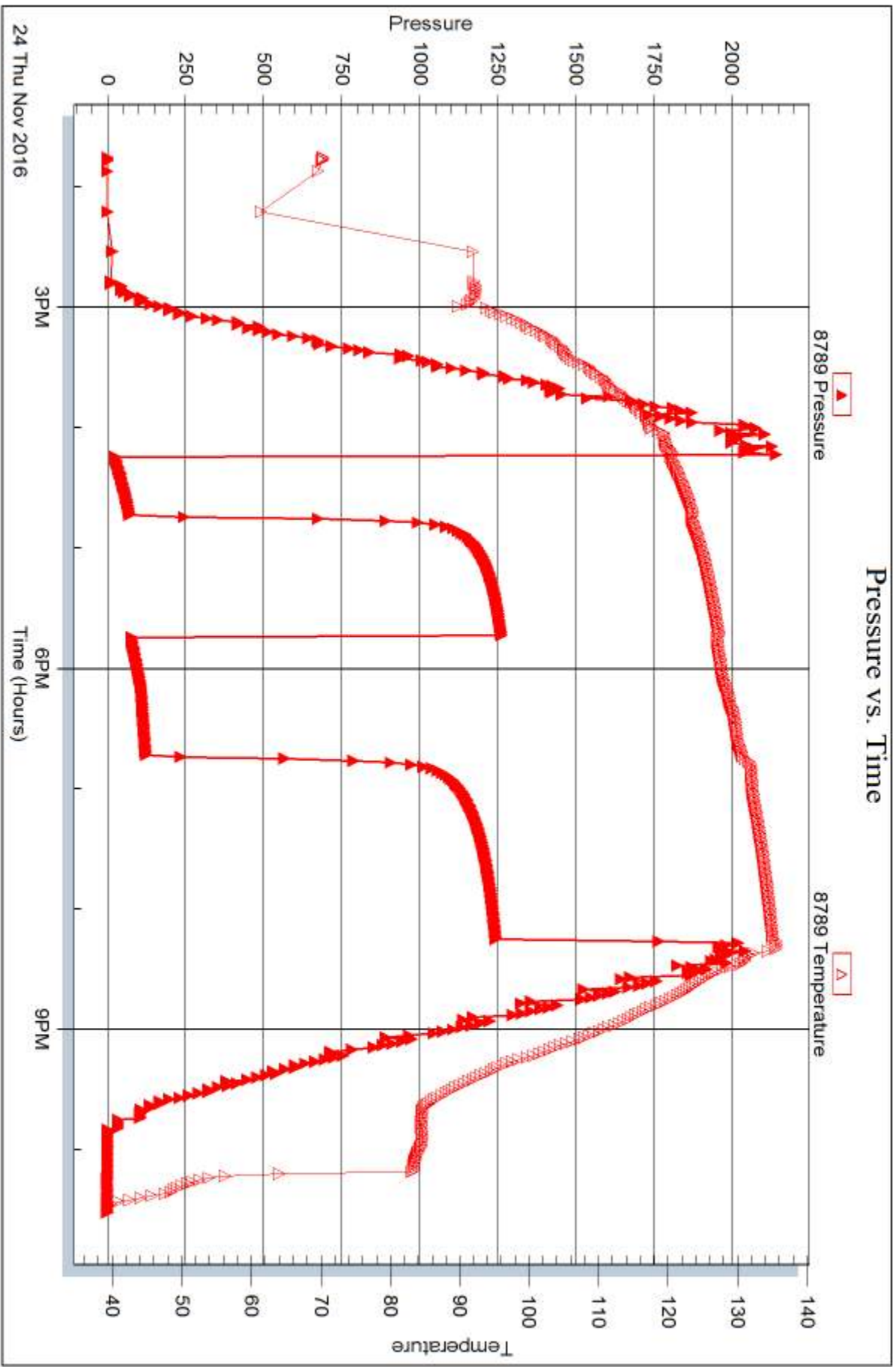
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
125.00	WCM 30%w 70%m w/Show of Oil	0.615
97.00	OCM 5%o 95%m	0.796

Total Length: 222.00 ft Total Volume: 1.411 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: .238 @ 38







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Rocky Milford

Haller #1-7

7-2s-34w Rawlins,KS

Start Date: 2016.11.25 @ 08:52:00

End Date: 2016.11.25 @ 16:15:00

Job Ticket #: 61205 DST #: 7

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

Printed: 2016.11.28 @ 15:49:51



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

7-2s-34w Rawlins,KS
Haller #1-7
 Job Ticket: 61205 **DST#: 7**
 Test Start: 2016.11.25 @ 08:52:00

GENERAL INFORMATION:

Formation: **LKC " K & L "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:04:00
 Time Test Ended: 16:15:00
 Interval: **4228.00 ft (KB) To 4285.00 ft (KB) (TVD)**
 Total Depth: 4285.00 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: 3123.00 ft (KB)
 3118.00 ft (CF)
 KB to GR/CF: 5.00 ft

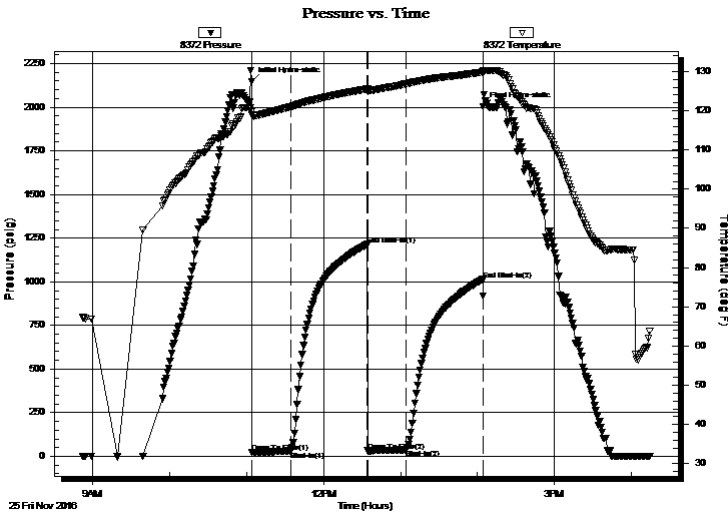
Serial #: 8372

Outside

Press@RunDepth: 38.01 psig @ 4235.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.11.25 End Date: 2016.11.25 Last Calib.: 2016.11.25
 Start Time: 08:52:02 End Time: 16:15:00 Time On Btm: 2016.11.25 @ 11:03:45
 Time Off Btm: 2016.11.25 @ 14:04:30

TEST COMMENT: 30-IFP- Surface Blow Building to 1 3/4" In 23 min.
 60-ISIP- No Blow
 30-FFP- Surface Blow Building to 1/2" In 20 min.
 60-FSIP- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2145.85	119.78	Initial Hydro-static
1	21.66	118.85	Open To Flow (1)
31	30.63	120.99	Shut-In(1)
91	1214.24	125.54	End Shut-In(1)
91	31.72	125.00	Open To Flow (2)
121	38.01	126.83	Shut-In(2)
181	1013.77	129.83	End Shut-In(2)
181	2003.28	130.28	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Oil Speck Mud 100%	0.07

* 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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
 Job Ticket: 61205 **DST#: 7**
 Test Start: 2016.11.25 @ 08:52:00

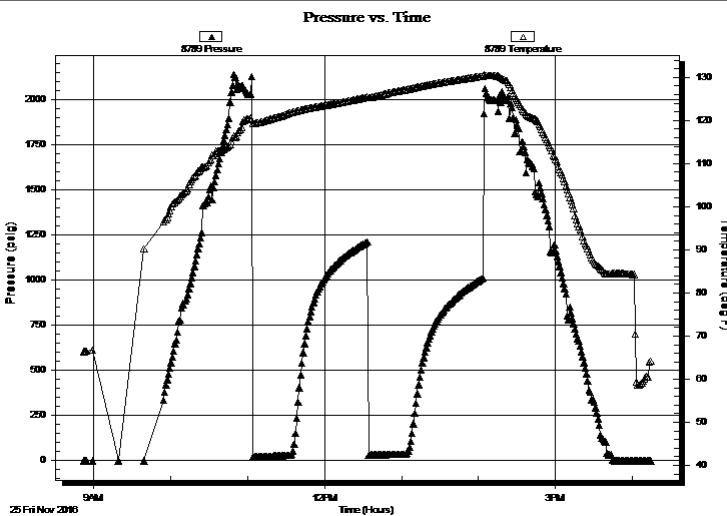
GENERAL INFORMATION:

Formation: **LKC "K & L "**
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 11:04:00 Tester: Jim Svaty
 Time Test Ended: 16:15:00 Unit No: 76
Interval: 4228.00 ft (KB) To 4285.00 ft (KB) (TVD) Reference Elevations: 3123.00 ft (KB)
 Total Depth: 4285.00 ft (KB) (TVD) 3118.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 8789 Inside

Press@RunDepth: psig @ 4235.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2016.11.25 End Date: 2016.11.25	Last Calib.: 2016.11.25
Start Time: 08:52:02 End Time: 16:14:45	Time On Btm:
	Time Off Btm:

TEST COMMENT: 30-IFP- Surface Blow Building to 1 3/4" In 23 min.
 60-ISIP- No Blow
 30-FFP- Surface Blow Building to 1/2" In 20 min.
 60-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Oil Speck Mud 100%	0.07

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: Rocky Milford

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61205 **DST#: 7**
Test Start: 2016.11.25 @ 08:52:00

Tool Information

Drill Pipe:	Length: 4022.00 ft	Diameter: 3.80 inches	Volume: 56.42 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	60000.00 lb
			<u>Total Volume: 57.34 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	4228.00 ft			Final	58000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	57.00 ft				
Tool Length:	85.00 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			4201.00	
Shut In Tool	5.00			4206.00	
Hydraulic tool	5.00			4211.00	
Jars	5.00			4216.00	
Safety Joint	2.00			4218.00	
Packer	5.00			4223.00	28.00 Bottom Of Top Packer
Packer	5.00			4228.00	
Stubb	1.00			4229.00	
Perforations	5.00			4234.00	
Change Over Sub	1.00			4235.00	
Recorder	0.00	8789	Inside	4235.00	
Recorder	0.00	8372	Outside	4235.00	
Blank Spacing	31.00			4266.00	
Change Over Sub	1.00			4267.00	
Perforations	15.00			4282.00	
Bullnose	3.00			4285.00	57.00 Bottom Packers & Anchor
Total Tool Length:	85.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

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

7-2s-34w Rawlins,KS
Haller #1-7
Job Ticket: 61205 **DST#: 7**
Test Start: 2016.11.25 @ 08:52:00

Mud and Cushion Information

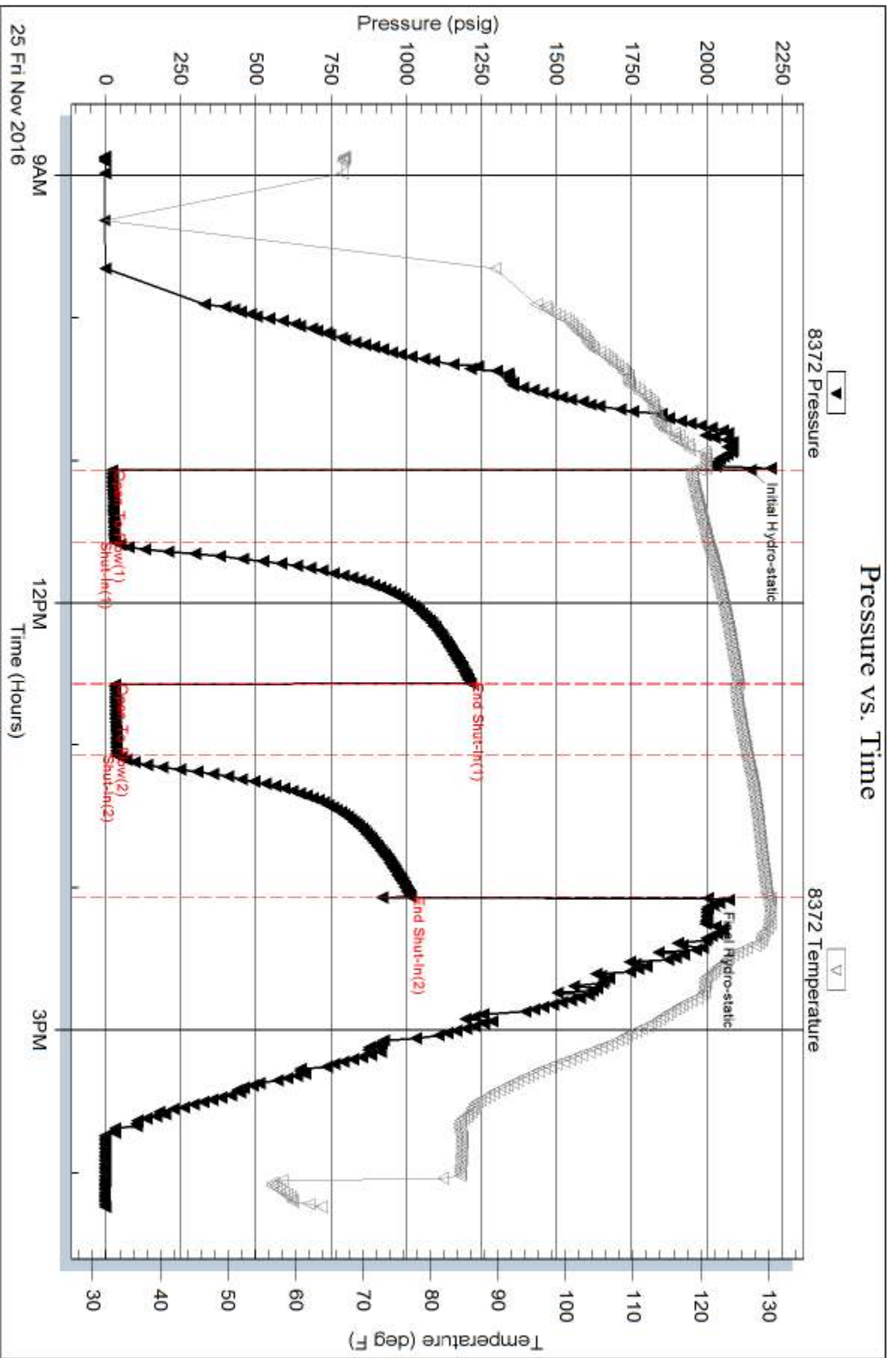
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 58.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.99 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1500.00 ppm			
Filter Cake: 4.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	Oil Speck Mud 100%	0.074

Total Length: 15.00 ft Total Volume: 0.074 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:



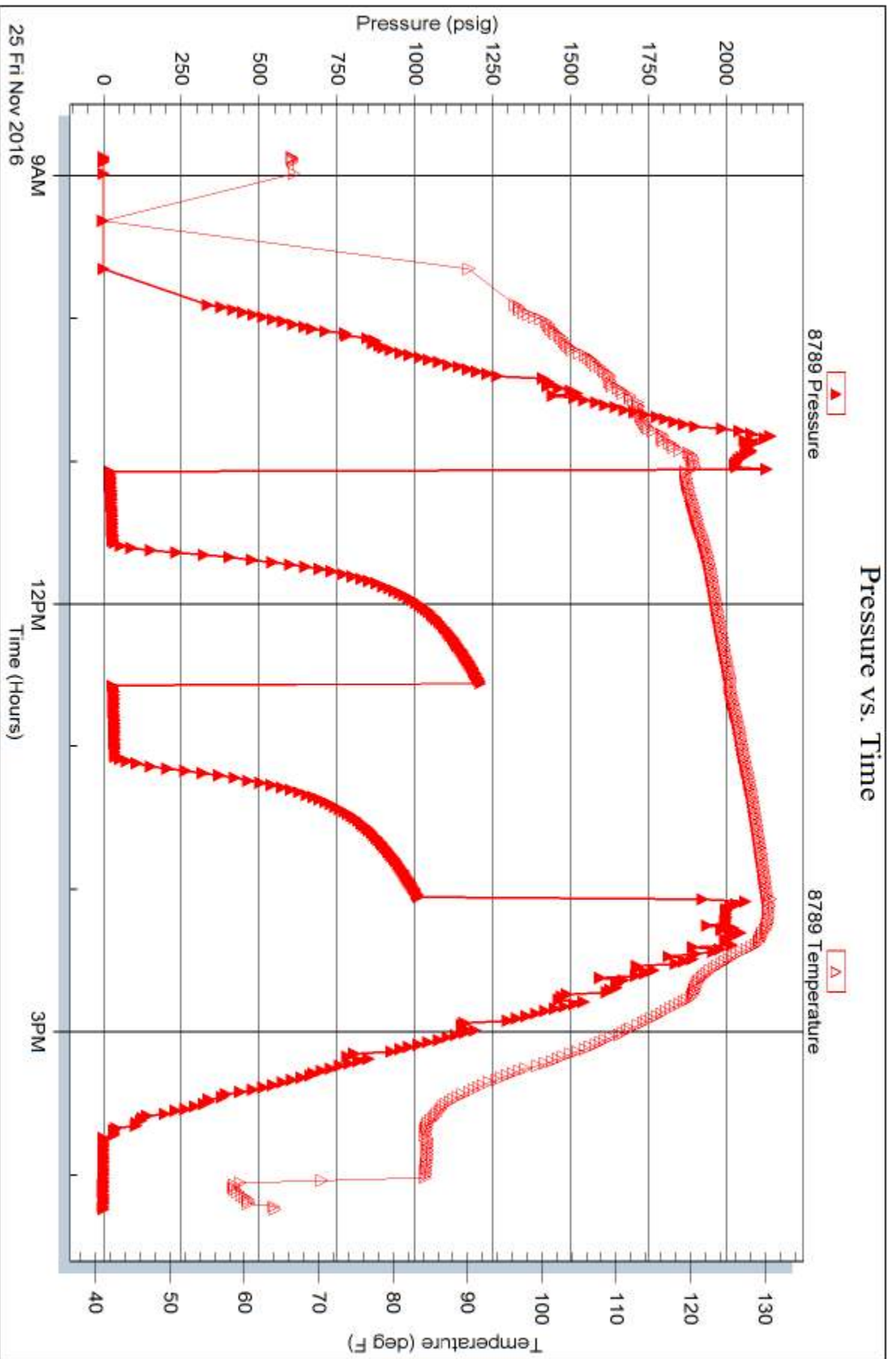
Serial #: 8789

Inside

Murfin Drilling Co Inc

Haller #1-7

DST Test Number: 7



Trilobite Testing, Inc

Ref. No: 61205

Printed: 2016.11.28 @ 15:49:57



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63024

4/10

Well Name & No. Haller # 1-7 Test No. 1 Date 11-20-16
 Company Murfin Drilling Co. Inc. Elevation 3123 KB 3118 GL
 Address 250 N Water Ste 300 Wichita KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 2^s Rge. 34^w Co. RAWLINS State KS

Interval Tested 3746-3859 Zone Tested Stotter-Topeka
 Anchor Length 113 Drill Pipe Run 3547 Mud Wt. 8.7
 Top Packer Depth 3741 Drill Collars Run 187 Vis 61
 Bottom Packer Depth 3746 Wt. Pipe Run 0 WL 5.6
 Total Depth 3859 Chlorides 600 ppm System LCM 4

Blow Description I FP - 5" Blow Tool Slid 21 ft. Mud Dropped 30+ ft. Bled off 2 1/2 min.
ISIP - No Blow
FFP - Surface Blow Building to 4 1/4"
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>125</u>	<u>WCM Show of Oil</u>		<u>45</u>	<u>55</u>	
<u>62</u>	<u>WCM Show of Oil</u>		<u>10</u>	<u>90</u>	
<u>113</u>	<u>Oil Speck Mud</u>			<u>100</u>	

Rec Total 300 BHT 130 Gravity _____ API RW 320 @ 40 ° F Chlorides 40000 ppm

(A) Initial Hydrostatic 1804 Test 1050 T-On Location 15:05
 (B) First Initial Flow 122 Jars 250 T-Started 16:50
 (C) First Final Flow 141 Safety Joint 75 T-Open 20:00
 (D) Initial Shut-In 940 Circ Sub _____ T-Pulled 00:00
 (E) Second Initial Flow 145 Hourly Standby _____ T-Out 02:20
 (F) Second Final Flow 161 Mileage RT 85 63.75 Comments _____
 (G) Final Shut-In 902 Sampler _____
 (H) Final Hydrostatic 1714 Straddle _____ Ruined Shale Packer _____

Initial Open 30 Shale Packer 250 Ruined Packer _____
 Initial Shut-In 60 Extra Packer _____ Extra Copies _____
 Final Flow 60 Extra Recorder _____ Sub Total 0
 Final Shut-In 90 Day Standby _____ Total 1688.75
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1688.75

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.

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63025

Well Name & No. Haller #1-7 Test No. 2 Date 11-21-16
 Company Murfin Drilling Co Inc. Elevation 3123 KB 3118 GL
 Address 250 N Water Ste 300 Wichita KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 25 Rge. 34W Co. Rawlins State KS

Interval Tested 3884-3944 Zone Tested Oread
 Anchor Length 60 Drill Pipe Run 3674 Mud Wt. 9
 Top Packer Depth 3879 Drill Collars Run 187 Vis 57
 Bottom Packer Depth 3884 Wt. Pipe Run 0 WL 6
 Total Depth 3944 Chlorides 700 ppm System LCM 4

Blow Description IFP - 1/4 in Blow - Tool Slide 10 ft. - Mud Drop 5 ft. - Bled off 30 sec.
ISIP - No Blow
FFP - No Blow
FSIP - No Blow

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

Rec Total 65 BHT 127 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2074</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>11:57</u>
(B) First Initial Flow <u>52</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:25</u>
(C) First Final Flow <u>55</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>14:18</u>
(D) Initial Shut-In <u>1105</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>17:18</u>
(E) Second Initial Flow <u>56</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>19:03</u>
(F) Second Final Flow <u>58</u>	<input checked="" type="checkbox"/> Mileage <u>63.75</u>	Comments _____
(G) Final Shut-In <u>985</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1815</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>30</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1438.75</u>
	Sub Total <u>1458.75</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. 61201

Well Name & No. Haller # 1-7 Test No. 3 Date 11-22-16
 Company Martin Drilling Co. Inc. Elevation 3123 KB 3118 GL
 Address 250 N. WATER Ste 300 Wichita KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Martin 7
 Location: Sec. 7 Twp. 2^s Rge. 34^w Co. RAWLINS State KS

Interval Tested 3963-4040 Zone Tested LKC "A"
 Anchor Length 77 Drill Pipe Run 3769 Mud Wt. 9.0
 Top Packer Depth 3958 Drill Collars Run 187 Vis 59
 Bottom Packer Depth 3963 Wt. Pipe Run 0 WL 5.6
 Total Depth 4040 Chlorides 700 ppm System LCM 4

Blow Description IFP - BOBIN 10min
ISIP - Surface Blow Building to 6 1/2 in.
FFP - BOBIN 9min.
FSIP - BOBIN 15min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>187</u>	<u>MOCM</u>	<u>30</u>	<u>20</u>	<u>50</u>	
<u>63</u>	<u>MOCM</u>	<u>20</u>	<u>30</u>	<u>50</u>	
<u>368</u>	<u>SCO</u>	<u>20</u>	<u>80</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 618 BHT 139 Gravity 32 API RW @ _____ °F Chlorides _____ ppm

(MIP 955)
 Test 1150
 Jars 250
 Safety Joint 75
 Circ Sub _____
 Hourly Standby _____
 Mileage 63.75
 Sampler _____
 Straddle _____

(A) Initial Hydrostatic 1944
 (B) First Initial Flow 27
 (C) First Final Flow 140
 (D) Initial Shut-In 1238
 (E) Second Initial Flow 151
 (F) Second Final Flow 254
 (G) Final Shut-In 1211
 (H) Final Hydrostatic 1913

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

Approved By _____ Our Representative [Signature]
 Sub Total 1538.75
 Total 1538.75
 MP/DST Disc't _____

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61202

4/10

Well Name & No. Haller #1-7 Test No. 4 Date 11-23-16
 Company Murfin Drilling Co Inc. Elevation 3123 KB 3118 GL
 Address 250 N. WATER STE 300 WICHITA KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 25 Rge. 34W Co. RAWLINS State KS

Interval Tested 4035-4107 Zone Tested LKC "A Sand - D Prime"
 Anchor Length 72 Drill Pipe Run 3832 Mud Wt. 9.0
 Top Packer Depth 4030 Drill Collars Run 187 Vis 59
 Bottom Packer Depth 4035 Wt. Pipe Run 0 WL 5.6
 Total Depth 4107 Chlorides 700 ppm System LCM 4

Blow Description I FP - Tool Slide 10ft. - Mud Drop 20ft. - Bled 1min. BOB in 3min.
ISIP - Very Weak Surface Blow Died in 44min
FFP - BOB in 13min.
FSIP - No Blow.

Rec	Feet of	show of	%gas	%oil	%water	%mud
<u>313</u>	<u>MCW</u>	<u>Show of Oil</u>		<u>75</u>	<u>25</u>	
<u>189</u>	<u>WCM</u>	<u>Show of Oil</u>		<u>45</u>	<u>55</u>	
<u>282</u>	<u>Oil/Speck</u>	<u>WCM</u>	<u>1</u>	<u>4</u>	<u>95</u>	
Rec	Feet of		%gas	%oil	%water	%mud
Rec	Feet of		%gas	%oil	%water	%mud

Rec Total 784 BHT 142 Gravity (WIP 125) API RW .160 @ 49 °F Chlorides 70,000 ppm

(A) Initial Hydrostatic 1990 Test 1150 T-On Location 00:10
 (B) First Initial Flow 128 Jars 250 T-Started 01:08
 (C) First Final Flow 237 Safety Joint 75 T-Open 03:07
 (D) Initial Shut-In 1160 Circ Sub _____ T-Pulled 07:07
 (E) Second Initial Flow 242 Hourly Standby _____ T-Out 09:30
 (F) Second Final Flow 385 Mileage 63.75 Comments _____
 (G) Final Shut-In 1151 Sampler _____
 (H) Final Hydrostatic 1939 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1538.75
 Accessibility _____ MP/DST Disc't _____

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

Approved By _____ Our Representative [Signature]
 Sub Total 1538.75

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61203

4/10

Well Name & No. Haller #1-7 Test No. 5 Date 11-23-16
 Company Murfin Drilling Co. Inc. Elevation 3123 KB 3118 GL
 Address 250 N. Water Ste 300 Wichita KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 2^s Rge. 34W Co. Rawlins State KS

Interval Tested 4102-4150 Zone Tested LRC "A"
 Anchor Length 48 Drill Pipe Run 3896 Mud Wt. 9
 Top Packer Depth 4097 Drill Collars Run 187 Vis 55
 Bottom Packer Depth 4102 Wt. Pipe Run 0 WL 5.6
 Total Depth 4150 Chlorides 800 ppm System LCM 3

Blow Description IFP - Built to 4 in. (2 in. 10 min.) (3 in. 18 min.)
IFIP - Weak Surface Blow in 5 min. Died Back in 13 min.
FFP - 1 1/2 in. Blow (1 in. 1 m) (2 in. 3 m) (3 in. 9 m) (4 in. 17 m) (5 in. 29 m) (6 in. 41 m) (7 in. 54 m)
IFIP - Weak Surface Blow in 4 min. (Died Back 7 min.) (Dead 24 min.)

Rec 60 Feet of OCM %gas 25 %oil %water 75 %mud
 Rec 15 Feet of CO %gas 100 %oil %water %mud
 Rec _____ Feet of _____ %gas %oil %water %mud
 Rec _____ Feet of IFP 175 %gas %oil %water %mud
 Rec _____ Feet of _____ %gas %oil %water %mud

Rec Total 75 BHT 131 Gravity 36 API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2048
 (B) First Initial Flow 21
 (C) First Final Flow 38
 (D) Initial Shut-In 1167
 (E) Second Initial Flow 48
 (F) Second Final Flow 67
 (G) Final Shut-In 1157
 (H) Final Hydrostatic 2018

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

Test 1150
 Jars 250
 Safety Joint 75
 Circ Sub _____
 Hourly Standby _____
 Mileage 63.75
 Sampler _____
 Straddle _____
 Shale Packer 250
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1788.75

T-On Location 17:25
 T-Started 18:12
 T-Open 19:58
 T-Pulled 23:58
 T-Out 02:04

Comments _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1788.75
 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. 61204

4/10

Well Name & No. Haller #1-7 Test No. 6 Date 11-24-16
 Company Murfin Drilling Co. Inc. Elevation 3123 KB 3118 GL
 Address 250 N. Water St 300 Wichita KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 2^s Rge. 34^w Co. Rawlins State KS

Interval Tested 4145-4234 Zone Tested LKC "A-Prime-J"
 Anchor Length 89 Drill Pipe Run 3958 Mud Wt. 9
 Top Packer Depth 4140 Drill Collars Run 187 Vis 60
 Bottom Packer Depth 4145 Wt. Pipe Run 0 WL 6
 Total Depth 4234 Chlorides 1400 ppm System LCM 4

Blow Description IFP - (2in. 6 1/2 min) (3in. 11 1/2 min) (4in. 2 min) (5in. 30 min)
ISIP - No Blow
FFP - (1in. 14m) (2in. 21m) (3in. 33m) (4in. 46m) (5in. 59m)
FSIP - No Blow

Rec	Feet of	w/show oil	%gas	%oil	%water	%mud
<u>125</u>	<u>Wcm</u>	<u>w/show oil</u>		<u>30</u>	<u>70</u>	
<u>97</u>	<u>OCM</u>		<u>5</u>		<u>95</u>	

Rec Total 222 BHT _____ Gravity _____ API RW 238 @ 38 °F Chlorides 60000 ppm

- (A) Initial Hydrostatic 2103
- (B) First Initial Flow 23
- (C) First Final Flow 72
- (D) Initial Shut-In 1263
- (E) Second Initial Flow 78
- (F) Second Final Flow 125
- (G) Final Shut-In 1246
- (H) Final Hydrostatic 2042

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

- Test 1150
- Jars 250
- Safety Joint 75
- Circ Sub _____
- Hourly Standby _____
- Mileage 63.75
- Sampler _____
- Straddle _____
- Shale Packer _____
- Extra Packer _____
- Extra Recorder _____
- Day Standby _____
- Accessibility _____
- Sub Total 1538.75

- T-On Location 12:54
- T-Started 13:45
- T-Open 16:14
- T-Pulled 20:14
- T-Out 22:32

- Comments _____
- Ruined Shale Packer _____
- Ruined Packer _____
- Extra Copies _____
- Sub Total 0
- Total 1538.75
- 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. 61205

4/10

Well Name & No. Haller #1-7 Test No. 7 Date 11-25-16
 Company Murfin Drilling Co. Inc. Elevation 3123 KB 3118 GL
 Address 250 N. WATER STE 300 WICHITA KS 67202-1216
 Co. Rep / Geo. Rocky Milford Rig Murfin 7
 Location: Sec. 7 Twp. 2^s Rge. 34^w Co. RAWLINS State KS

Interval Tested 4228-4285 Zone Tested LKC "K-L"
 Anchor Length 57 Drill Pipe Run 4022 Mud Wt. 9.2
 Top Packer Depth 4223 Drill Collars Run 187 Vis 58
 Bottom Packer Depth 4228 Wt. Pipe Run 0 WL 6
 Total Depth 4285 Chlorides 1500 ppm System LCM 4

Blow Description IFP - Surface Blow Building to 1 3/4 in. IN 23 min.
ISIP - No Blow
FFP - Surface Blow Building to 1/2 in. IN 20 min.
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Oil Speck Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15 BHT 130 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

- (A) Initial Hydrostatic 2145
- (B) First Initial Flow 21
- (C) First Final Flow 30
- (D) Initial Shut-In 1214
- (E) Second Initial Flow 31
- (F) Second Final Flow 38
- (G) Final Shut-In 1013
- (H) Final Hydrostatic 2003

- Test 1150
- Jars 250
- Safety Joint 75
- Circ Sub _____
- Hourly Standby _____
- Mileage 127.50
- Sampler _____
- Straddle _____
- Shale Packer _____
- Extra Packer _____
- Extra Recorder _____
- Day Standby _____
- Accessibility _____

T-On Location 08:12
 T-Started 08:52
 T-Open 11:04
 T-Pulled 14:04
 T-Out 16:15

Comments loaded tools 10/26 9:16

Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____

Sub Total 0
 Total 1602.50
 MP/DST Disc't _____

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

Sub Total 1602.50
 Approved By _____ Our Representative [Signature]

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Robert L. Milford

PETROLEUM GEOLOGIST
Wichita, Kansas

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **Murfin Drilling Company, Inc.**

LEASE **Haller #1-7**

LOC SPOT **65 E of W2 SW SW**

LOC FOOTAGE **660' FSL 395' FWL**

SEC. **7** TWPSP **2S** RANG **34W**

COUNTY **Rawlins** STATE **Kansas**

WELL NO. **15-153-2182-00-00**

CONTRACTOR **Murfin Drilling Co., Inc.** RIG NO. **7**

DRILLING STARTED **11-27-2016** COMPLETED **11-26-2016**

WELL DISPLACED **3.990** MUD TYPE **Chemical**

DRILLING TIME KEPT FROM **3.600** TO RTD

SAMPLES SAVED FROM **3.720** TO RTD

SAMPLES EXAMINED FROM **3.720** TO RTD

GEOLOGICAL SUPERVISION FROM **3.720** TO RTD

MEASUREMENTS

CONDUCTOR

CASING RECORD

ELEVATIONS

KOB **3.123'**

GL **3.118'**

FORMATION NAME

LOG DATE/TIME

SAMPLE DATE/TIME

STONE CORRAL

OPRECKA

LANSHING

STARK

B/KC

PORT SCOTT

OAKLEY

MISSISSIPPIAN

TRIAL DEPTH

DATE	7:00 AM DEPTH	REMARKS
11-17-16	0'	Spud @ 6:00 pm. Plug down @ 11:30 pm. Dev.: 0.75' @ 232'
11-18-16	232'	Cut 232' in last 24 hrs. Drilled out plug @ 7:30 am w/ PDC bit. Dev.: 0.25' @ 1520'
11-19-16	2,800'	Cut 2,568' in last 24 hrs; 21.75 hrs drlg. Bit trip @ 3500' (ran button bit)
11-20-16	3,745'	Cut 945' in last 24 hrs; 18.25 hrs drlg. DST #1 @ 3859'
11-21-16	3,905'	Cut 160' in last 24 hrs; 5.5 hrs drlg. DST #2 @ 3944'
11-22-16	4,040'	Cut 135' in last 24 hrs; 6.75 hrs drlg. DST #4 @ 4107'
11-23-16	4,107'	Cut 67' in last 24 hrs; 2.75 hrs drlg. DST #5 @ 4150'
11-24-16	4,180'	Cut 73' in last 24 hrs; 3.75 hrs drlg. DST #6 @ 4234'
11-25-16	4,285'	Cut 105' in last 24 hrs; 5.5 hrs drlg. DST #7 @ 4285'
11-26-16	4,495'	Cut 210' in last 24 hrs; 9.75 hrs drlg. RTD 4735' @ 7:13 pm
11-27-16	4,735'	Cut 240' in last 24 hrs; 11.75 hrs drlg. Ran production casing.

Remarks

The electric log measurements correlate from even to 1' higher to the drilling measurements.

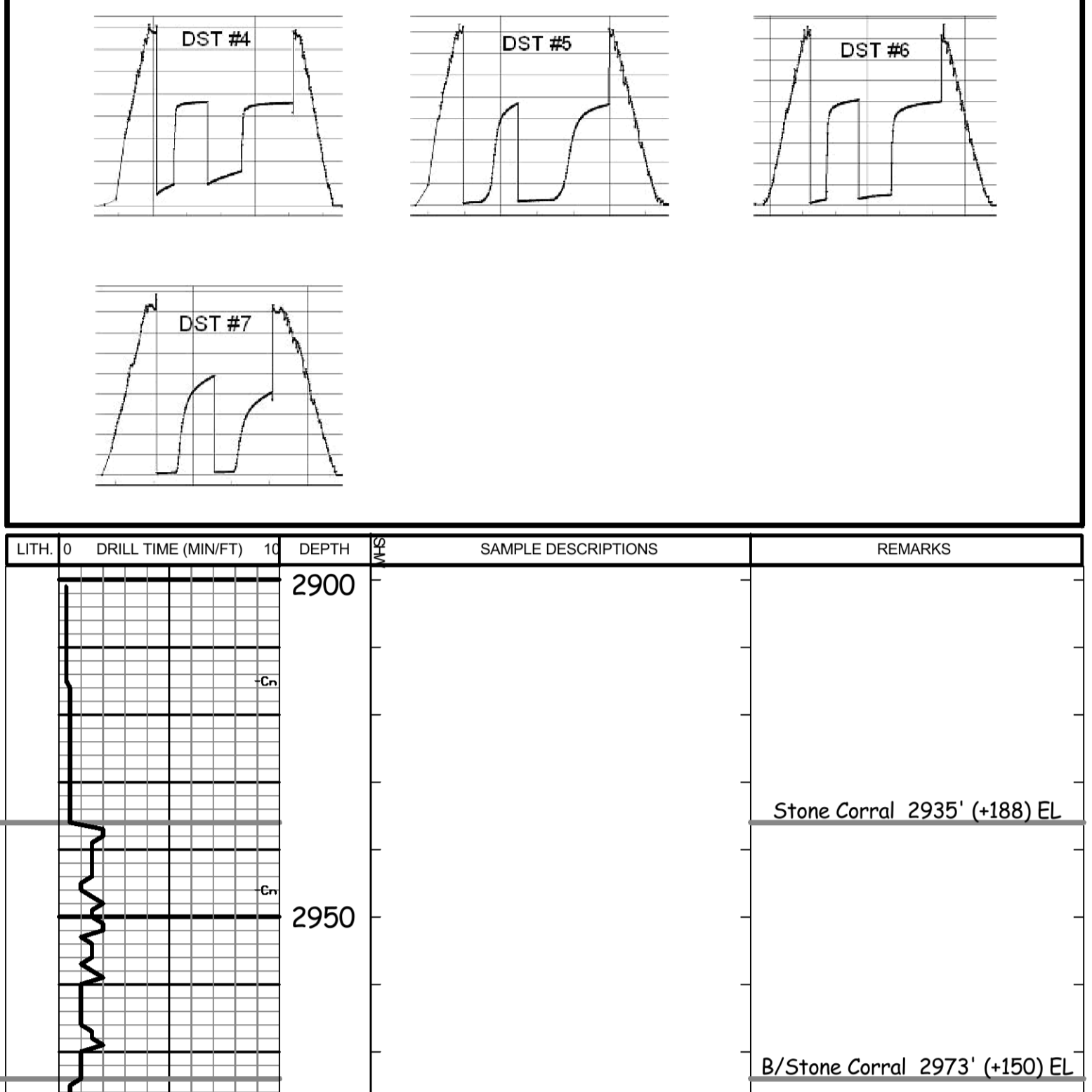
Formation tops and lithology on this report have been corrected to the electric log.

The drilling samples were deposited at the Kansas Geological Survey office in Wichita.

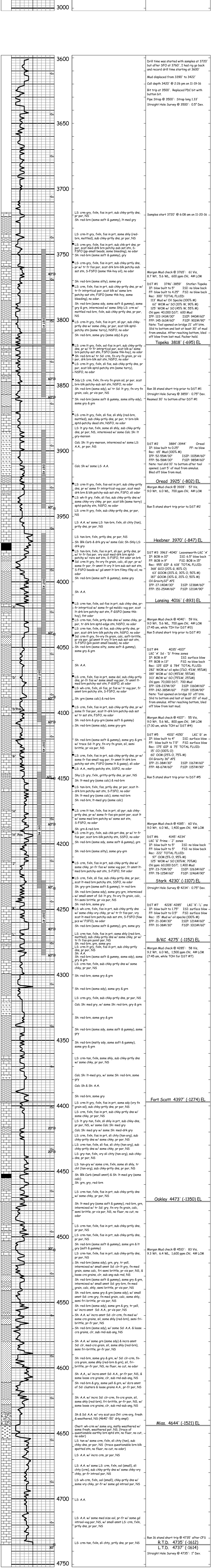
Respectfully submitted,

Robert L. Milford

Drill Stem Test Charts



LITHO



Drill time was started with samples at 3720' but after SFO at 3760'. I had rig go back and record drill time starting at 3600'

Mud displaced from 3390' to 3422'

Call depth 3420' @ 2:26 pm on 11-19-16

Bit trip at 3500'. Replaced PDC bit with button bit.

Pipe Strap @ 3500': Strap long 1.33'

Straight Hole Survey @ 3500': 0.5° Dev.

Stone Corral 2935' (+188) EL

B/Stone Corral 2973' (+150) EL

Drill time was started with samples at 3720' but after SFO at 3760'. I had rig go back and record drill time starting at 3600'

Mud displaced from 3390' to 3422'

Call depth 3420' @ 2:26 pm on 11-19-16

Bit trip at 3500'. Replaced PDC bit with button bit.

Pipe Strap @ 3500': Strap long 1.33'

Straight Hole Survey @ 3500': 0.5° Dev.

Heebner 3970' (-847) EL

DST #1 3746'-3859' Stotler-Topeka IF: blow built to 5" ISI: no blow back Rec: 300' TOTAL FLUID: 113' Mud w/ Oil Specks (100% M) 62' WCM w/ SO (10% W, 90% M) 125' WCM w/ SO (45% W, 55% M) Chl ppm: 40,000 DST: 600 Mud IFF: 122-141#/30" ISIP: 940#/60" FFP: 145-161#/60" FSIP: 902#/90"

Note: Tool opened on bridge 21' off btm. Slid to bottom and lost at least 20' of mud from annulus. After reaching bottom, bled off blow from lost mud. Packer held.

Topeka 3818' (-695) EL

Ran 18 stand short trip prior to DST #1

Straight Hole Survey @ 3859': 0.75° Dev.

Reamed 30' to bottom after DST #1

DST #2 3884'-3944' Oread IF: blow built to 0.25" FF: no blow Rec: 65' Mud (100% M) IFF: 52-55#/30" ISIP: 1105#/60" FFP: 56-58#/30" FSIP: 985#/60"

Note: tool slid 10' to bottom after tool opened. Lost 5' of mud from annulus. Bled off blow from mud.

Oread 3925' (-802) EL

Morgan Mud check @ 3928': 57 Vis, 9.0 Wt, 6.0 WL, 700 ppm Chl, 4# LCM

Ran 5 stand short trip prior to DST #2

Heebner 3970' (-847) EL

DST #3 3963'-4040' Leavenworth-LKC 'A' IF: BOB in 10" ISI: 6.5' blow back Rec: 65' Mud (100% M) FFP: 52-55#/30" ISIP: 1105#/60" IFF: 56-58#/30" FSIP: 985#/60"

Note: Tool opened on bridge 21' off btm. Slid to bottom and lost at least 20' of mud from annulus. After reaching bottom, bled off blow from lost mud.

Lansing 4016' (-893) EL

Morgan Mud check @ 4040': 59 Vis, 9.0 Wt, 5.6 WL, 700 ppm Chl, 4# LCM (7:45 am, while TTH for DST #3)

Ran 5 stand short trip prior to DST #3

DST #4 4035'-4107' LKC 'A' 'Sd - 'D' Prime zones IF: BOB in 8" ISI: surface blow Rec: 125' GIP & 784' TOTAL FLUID: 282' WCM w/ oil spks (1% O, 4% W, 95% M) 189' WCM w/ SO (75% W, 25% M) Chl ppm: 70,000 DST: 700 Mud IFF: 128-237#/30" ISIP: 1160#/60" FFP: 242-385#/60" FSIP: 1151#/90"

Note: Tool opened on bridge 10' off btm. Slid to bottom and lost at least 20' of mud from annulus. After reaching bottom, bled off blow from lost mud.

Stark 4230' (-1107) EL

Morgan Mud check @ 4185': 60 Vis, 9.0 Wt, 6.0 WL, 1,400 ppm Chl, 4# LCM

Straight Hole Survey @ 4234': 0.75° Dev.

DST #7 4228'-4285' LKC 'K' 'L' zns IF: blow built to 1.75" ISI: surface blow Rec: 15' Mud w/ oil specks (100% M) IFF: 21-30#/30" ISIP: 1214#/60" FFP: 31-38#/30" FSIP: 1013#/60"

B/KC 4275' (-1152) EL

Morgan Mud check @ 4285': 58 Vis, 9.2 Wt, 6.0 WL, 1,500 ppm Chl, 4# LCM (7:45 am, while TOH for DST #7)

Fort Scott 4397' (-1274) EL

Morgan Mud check @ 4510': 83 Vis, 9.3 Wt, 6.4 WL, 1,600 ppm Chl, 4# LCM

Oakley 4473' (-1350) EL

DST #5 4102'-4150' LKC 'G' 'n IF: blow built to 4" ISI: surface blow Rec: 175' GIP & 75' TOTAL FLUID: 15' CO (100% O) 60' OCM (25% O, 75% M) Oil Gravity 36° API IFF: 21-38#/30" ISIP: 1167#/60" FFP: 48-67#/60" FSIP: 1157#/90"

Ran 5 stand short trip prior to DST #5

Morgan Mud check @ 4185': 60 Vis, 9.0 Wt, 6.0 WL, 1,400 ppm Chl, 4# LCM

DST #6 4145'-4234' LKC 'G' 'n' 'J' zones IF: blow built to 5" ISI: no blow back Rec: 222' TOTAL FLUID: 97' OCM (5% O, 95% M) 125' WCM w/ SO (30% W, 70% M) Chl ppm: 60,000 DST: 1,400 Mud IFF: 23-72#/30" ISIP: 1263#/60" FFP: 78-125#/60" FSIP: 1246#/90"

Miss. 4644' (-1521) EL

Chert: wh-cr, w/ some org, mostly weathered w/ some fresh, weathered por. NS, trace of questionable earthy brn spfld stn, no fluor, no cut, no odor

LS: tan w/ some crm, fxl, sli chy (tan-ang), sub chky-dns, pr por, NS (trace questionable brn-blk spotted stn, no fluor, no cut, no odor)

LS: A.A. w/ incrs crm, pr por, NS

LS: A.A. w/ some LS: crm, fxl, ool (small), sli chy (cm), sub chky-prty dns w/ some chky-vry chy, pr-fr introol por. NS

LS: wh-cr, fxl, ool (small), chky-prty dns w/ some vry chy, pr-fr w/ some gd introol por. NS

LS: A.A.

LS: A.A. w/ some med size ool, pr-fr w/ some fxl, prty dns, pr por, NS

LS: crm-tan, fxl, sli chy, prty dns, pr por, NS

Ran 16 stand short trip @ 4735' after CFS

R.T.D. 4735' (-1612)

L.T.D. 4737' (-1614)

Straight Hole Survey @ 4735': 1° Dev.