



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.05 @ 16:52:15

End Date: 2014.11.06 @ 01:45:30

Job Ticket #: 59211 DST #: 1

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

Printed: 2014.11.12 @ 16:41:01



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59211

DST#: 1

Test Start: 2014.11.05 @ 16:52:15

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:43:45

Time Test Ended: 01:45:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 65

Interval: 4096.00 ft (KB) To 4130.00 ft (KB) (TVD)

Reference Elevations: 3035.00 ft (KB)

Total Depth: 4130.00 ft (KB) (TVD)

3025.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 156.05 psig @ 4125.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.05

End Date:

2014.11.06

Last Calib.: 2014.11.06

Start Time: 16:52:15

End Time:

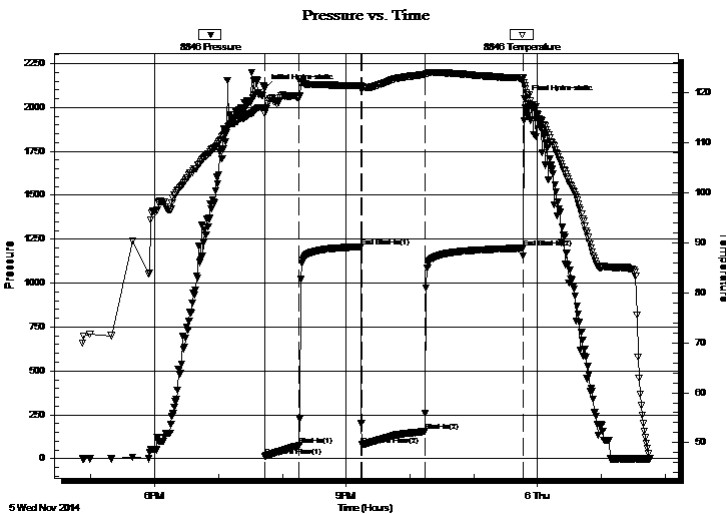
01:45:30

Time On Btm: 2014.11.05 @ 19:43:30

Time Off Btm: 2014.11.05 @ 23:48:00

TEST COMMENT: IF: Built to 4" blow
IS: No return blow
FF: Built to weak surface blow
FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2109.63	117.01	Initial Hydro-static
1	14.57	115.81	Open To Flow (1)
33	75.08	119.23	Shut-In(1)
91	1207.30	121.44	End Shut-In(1)
91	79.43	121.16	Open To Flow (2)
151	156.05	123.69	Shut-In(2)
243	1199.18	122.98	End Shut-In(2)
245	2047.30	121.40	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
271.00	mcw 20% m 80 % w with a trace of oil	1.33

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59211

DST#: 1

Test Start: 2014.11.05 @ 16:52:15

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:43:45

Time Test Ended: 01:45:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 65

Interval: 4096.00 ft (KB) To 4130.00 ft (KB) (TVD)

Reference Elevations: 3035.00 ft (KB)

Total Depth: 4130.00 ft (KB) (TVD)

3025.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4125.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.05

End Date:

2014.11.06

Last Calib.:

2014.11.06

Start Time: 16:52:15

End Time:

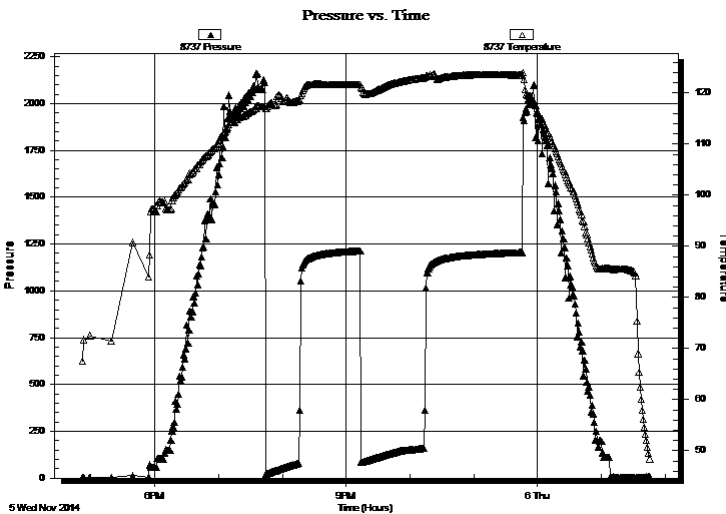
01:45:30

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:Built to 4" blow
 IS:No return blow
 FF:Built to weak surface blow
 FS:No return blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
271.00	mcw 20% m 80 % w with a trace of oil	1.33

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

Kuhn #2-4

Job Ticket: 59211

DST#: 1

ATTN: Tom Funk

Test Start: 2014.11.05 @ 16:52:15

Tool Information

Drill Pipe:	Length: 3832.00 ft	Diameter: 3.80 inches	Volume: 53.75 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 55.08 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4096.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	34.00 ft			
Tool Length:	55.00 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			4076.00	
Shut In Tool	5.00			4081.00	
Hydraulic tool	5.00			4086.00	
Packer	5.00			4091.00	21.00 Bottom Of Top Packer
Packer	5.00			4096.00	
Stubb	1.00			4097.00	
Perforations	28.00			4125.00	
Recorder	0.00	8846	Inside	4125.00	
Recorder	0.00	8737	Outside	4125.00	
Bullnose	5.00			4130.00	34.00 Bottom Packers & Anchor
Total Tool Length:	55.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59211 **DST#: 1**
Test Start: 2014.11.05 @ 16:52:15

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 40000 ppm
Viscosity: 69.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.34 in ³	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 2600.00 ppm		
Filter Cake: 1.00 inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
271.00	mcw 20%m 80 % w w with a trace of oil	1.333

Total Length: 271.00 ft Total Volume: 1.333 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW= 42.8@ 35*= 40,000 ppm



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.06 @ 16:36:15

End Date: 2014.11.07 @ 00:18:15

Job Ticket #: 59212 DST #: 2

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

Printed: 2014.11.12 @ 16:39:58

Murfin Drilling Co Inc. 4-13s-32w Logan,KS Kuhn #2-4 DST # 2 LKC I-J 2014.11.06



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59212

DST#: 2

Test Start: 2014.11.06 @ 16:36:15

GENERAL INFORMATION:

Formation: **LKC I-J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 18:31:45
 Time Test Ended: 00:18:15
 Interval: **4198.00 ft (KB) To 4246.00 ft (KB) (TVD)**
 Total Depth: 4246.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3035.00 ft (KB)
 3025.00 ft (CF)
 KB to GR/CF: 10.00 ft

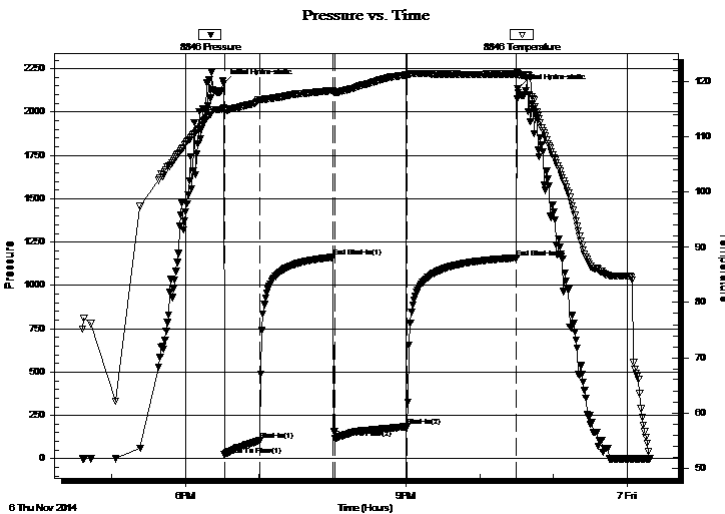
Serial #: 8846

Inside

Press@RunDepth: 185.05 psig @ 4241.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.11.06 End Date: 2014.11.07 Last Calib.: 2014.11.07
 Start Time: 16:36:15 End Time: 00:18:15 Time On Btm: 2014.11.06 @ 18:31:15
 Time Off Btm: 2014.11.06 @ 22:30:45

TEST COMMENT: IF: Built to 5" blow
 IS: No return blow
 FF: Built to 6" blow
 FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2163.39	115.23	Initial Hydro-static
1	22.24	114.81	Open To Flow (1)
29	104.05	116.73	Shut-In(1)
89	1162.39	118.40	End Shut-In(1)
91	117.72	118.09	Open To Flow (2)
150	185.05	121.26	Shut-In(2)
239	1159.29	121.45	End Shut-In(2)
240	2137.23	121.41	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	mcw 50% m 50% w	0.44
241.00	mud 100% m	1.73

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59212

DST#: 2

Test Start: 2014.11.06 @ 16:36:15

GENERAL INFORMATION:

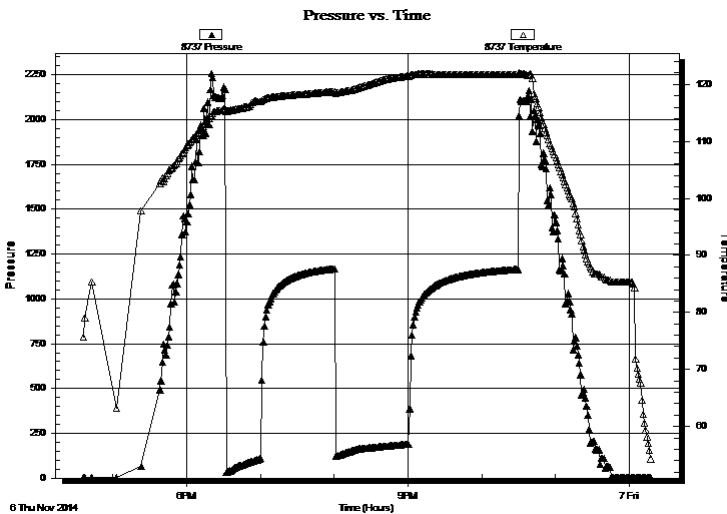
Formation: **LKC I-J**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 18:31:45 Tester: Mike Roberts
 Time Test Ended: 00:18:15 Unit No: 65
 Interval: **4198.00 ft (KB) To 4246.00 ft (KB) (TVD)** Reference Elevations: 3035.00 ft (KB)
 Total Depth: 4246.00 ft (KB) (TVD) 3025.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

Serial #: 8737

Outside

Press@RunDepth: psig @ 4241.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.11.06 End Date: 2014.11.07 Last Calib.: 2014.11.07
 Start Time: 16:36:15 End Time: 00:18:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Built to 5" blow
 IS: No return blow
 FF: Built to 6" blow
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
90.00	mcw 50% m 50% w	0.44
241.00	mud 100% m	1.73

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

Kuhn #2-4

Job Ticket: 59212

DST#: 2

ATTN: Tom Funk

Test Start: 2014.11.06 @ 16:36:15

Tool Information

Drill Pipe:	Length: 3933.00 ft	Diameter: 3.80 inches	Volume: 55.17 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 56.50 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 74000.00 lb
Depth to Top Packer:	4198.00 ft			Final 76000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	69.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4178.00	
Shut In Tool	5.00			4183.00	
Hydraulic tool	5.00			4188.00	
Packer	5.00			4193.00	21.00 Bottom Of Top Packer
Packer	5.00			4198.00	
Stubb	1.00			4199.00	
Perforations	8.00			4207.00	
Change Over Sub	1.00			4208.00	
Drill Pipe	32.00			4240.00	
Change Over Sub	1.00			4241.00	
Recorder	0.00	8846	Inside	4241.00	
Recorder	0.00	8737	Outside	4241.00	
Bullnose	5.00			4246.00	48.00 Bottom Packers & Anchor

Total Tool Length: 69.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59212 **DST#: 2**
Test Start: 2014.11.06 @ 16:36:15

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 14000 ppm
Viscosity: 69.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.32 in ³	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 2600.00 ppm		
Filter Cake: 1.00 inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	mcw 50%m 50% w	0.443
241.00	mud 100%m	1.732

Total Length: 331.00 ft Total Volume: 2.175 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: RW= .70@ 47.5*= 14,000 ppm



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.07 @ 09:22:15

End Date: 2014.11.07 @ 17:34:00

Job Ticket #: 59213 DST #: 3

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

Printed: 2014.11.12 @ 16:39:31



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59213

DST#: 3

Test Start: 2014.11.07 @ 09:22:15

GENERAL INFORMATION:

Formation: **LKC K-L**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:23:30
 Time Test Ended: 17:34:00
 Interval: **4253.00 ft (KB) To 4315.00 ft (KB) (TVD)**
 Total Depth: 4315.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3035.00 ft (KB)
 3025.00 ft (CF)
 KB to GR/CF: 10.00 ft

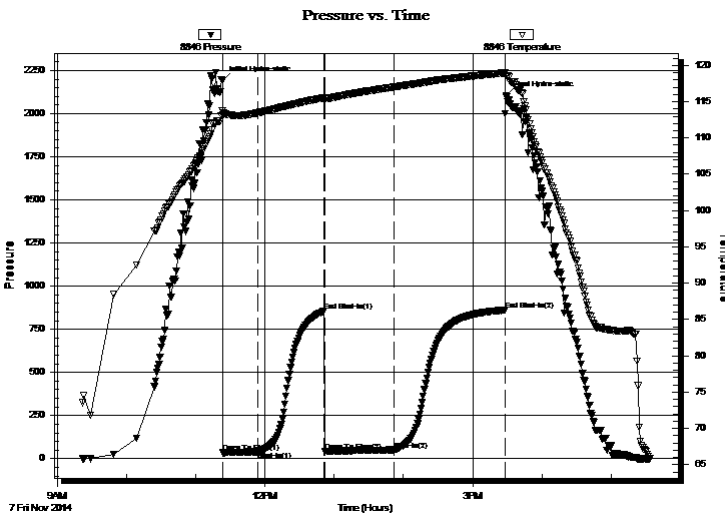
Serial #: 8846

Inside

Press@RunDepth: 51.37 psig @ 4310.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.11.07 End Date: 2014.11.07 Last Calib.: 2014.11.07
 Start Time: 09:22:15 End Time: 17:34:00 Time On Btm: 2014.11.07 @ 11:23:15
 Time Off Btm: 2014.11.07 @ 15:28:45

TEST COMMENT: IF: Built to 1/2" blow
 IS: No return blow
 FF: No blow
 FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2193.14	113.71	Initial Hydro-static
1	34.86	113.18	Open To Flow (1)
31	40.73	113.45	Shut-In(1)
89	856.04	115.55	End Shut-In(1)
89	43.17	115.34	Open To Flow (2)
149	51.37	117.00	Shut-In(2)
245	861.48	118.96	End Shut-In(2)
246	2105.82	118.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud w ith oil spots	0.05

* Recovery from multiple tests

Gas Rates

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



DRILL STEM TEST REPORT

Murfin Drilling Co Inc.

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59213

DST#: 3

Test Start: 2014.11.07 @ 09:22:15

GENERAL INFORMATION:

Formation: **LKC K-L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:23:30

Time Test Ended: 17:34:00

Interval: 4253.00 ft (KB) To 4315.00 ft (KB) (TVD)

Total Depth: 4315.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Reference Elevations: 3035.00 ft (KB)

3025.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8737 **Outside**

Press@RunDepth: psig @ 4310.00 ft (KB)

Start Date: 2014.11.07 End Date: 2014.11.07

Start Time: 09:22:15 End Time: 17:34:00

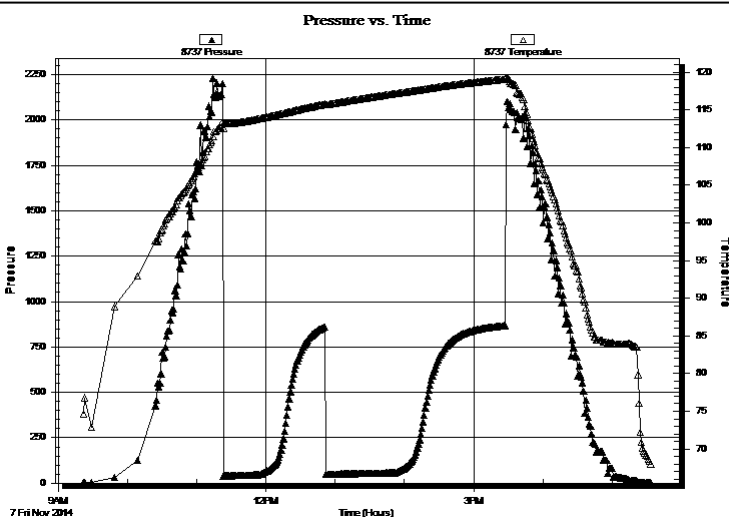
Capacity: 8000.00 psig

Last Calib.: 2014.11.07

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 1/2" blow
IS: No return blow
FF: No blow
FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud w ith oil spots	0.05

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

Kuhn #2-4

Job Ticket: 59213

DST#: 3

ATTN: Tom Funk

Test Start: 2014.11.07 @ 09:22:15

Tool Information

Drill Pipe:	Length: 3969.00 ft	Diameter: 3.80 inches	Volume: 55.67 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 57.00 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 74000.00 lb
Depth to Top Packer:	4253.00 ft			Final 74000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	83.00 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			4233.00	
Shut In Tool	5.00			4238.00	
Hydraulic tool	5.00			4243.00	
Packer	5.00			4248.00	21.00 Bottom Of Top Packer
Packer	5.00			4253.00	
Stubb	1.00			4254.00	
Perforations	8.00			4262.00	
Change Over Sub	1.00			4263.00	
Drill Pipe	32.00			4295.00	
Change Over Sub	1.00			4296.00	
Perforations	14.00			4310.00	
Recorder	0.00	8846	Inside	4310.00	
Recorder	0.00	8737	Outside	4310.00	
Bullnose	5.00			4315.00	62.00 Bottom Packers & Anchor

Total Tool Length: 83.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

Kuhn #2-4

Job Ticket: 59213

DST#: 3

ATTN: Tom Funk

Test Start: 2014.11.07 @ 09:22:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.95 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	mud w ith oil spots	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.08 @ 07:24:15

End Date: 2014.11.08 @ 15:48:45

Job Ticket #: 59214 DST #: 4

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

Printed: 2014.11.12 @ 16:39:07



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59214

DST#: 4

Test Start: 2014.11.08 @ 07:24:15

GENERAL INFORMATION:

Formation: **Marmaton-Altamont**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:44:15

Time Test Ended: 15:48:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4316.00 ft (KB) To 4435.00 ft (KB) (TVD)

Reference Elevations: 3035.00 ft (KB)

Total Depth: 4435.00 ft (KB) (TVD)

3025.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 140.87 psig @ 4430.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.08

End Date:

2014.11.08

Last Calib.: 2014.11.08

Start Time: 07:24:15

End Time:

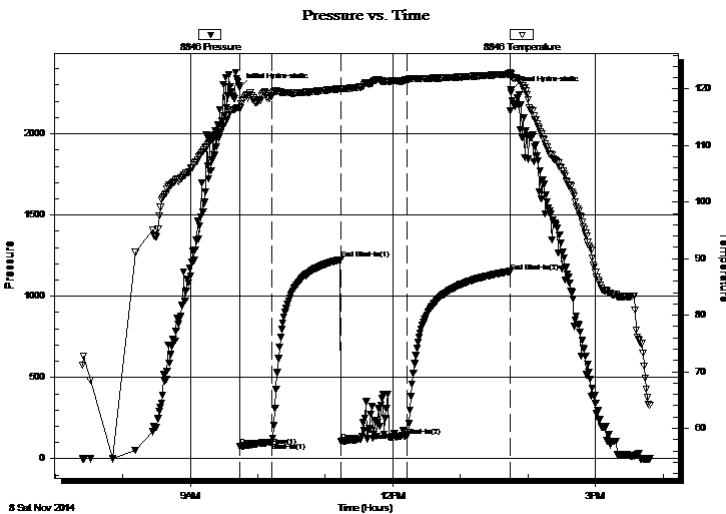
15:48:45

Time On Btm: 2014.11.08 @ 09:43:45

Time Off Btm: 2014.11.08 @ 13:44:45

TEST COMMENT: IF: Built to 2" blow
 IS: No return blow
 FF: Built to 1/2" blow
 FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2284.30	116.72	Initial Hydro-static
1	75.94	116.63	Open To Flow (1)
29	103.38	118.75	Shut-In(1)
90	1226.66	120.06	End Shut-In(1)
91	108.36	119.90	Open To Flow (2)
149	140.87	121.54	Shut-In(2)
241	1152.80	122.64	End Shut-In(2)
241	2267.85	122.63	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
100.00	mud 100% m	0.49

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59214 **DST#: 4**
 Test Start: 2014.11.08 @ 07:24:15

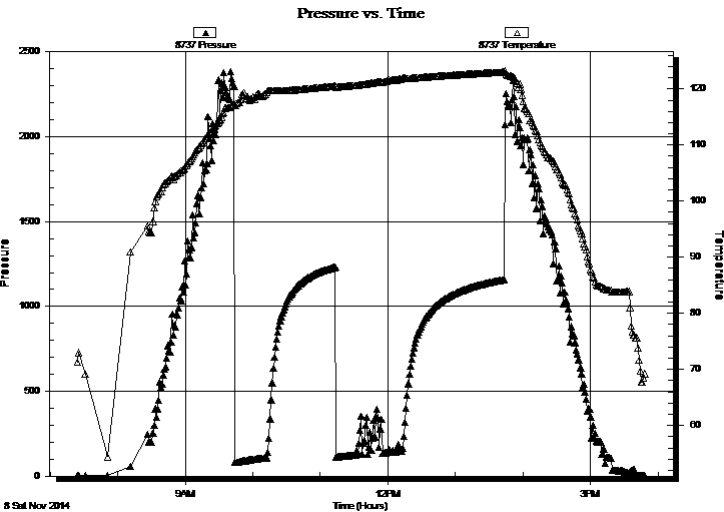
GENERAL INFORMATION:

Formation: Marmaton-Altamont		
Deviated: No Whipstock: ft (KB)	Test Type: Conventional Bottom Hole (Reset)	
Time Tool Opened: 09:44:15	Tester: Mike Roberts	
Time Test Ended: 15:48:45	Unit No: 65	
Interval: 4316.00 ft (KB) To 4435.00 ft (KB) (TVD)	Reference Elevations: 3035.00 ft (KB)	
Total Depth: 4435.00 ft (KB) (TVD)	3025.00 ft (CF)	
Hole Diameter: 7.88 inches Hole Condition: Fair	KB to GR/CF: 10.00 ft	

Serial #: 8737 Outside

Press@RunDepth: psig @ 4430.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.11.08 End Date: 2014.11.08	Last Calib.: 2014.11.08
Start Time: 07:24:15 End Time: 15:48:45	Time On Btm:
	Time Off Btm:

TEST COMMENT: IF: Built to 2" blow
 IS: No return blow
 FF: Built to 1/2" blow
 FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
100.00	mud 100% m	0.49

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59214 **DST#: 4**
Test Start: 2014.11.08 @ 07:24:15

Tool Information

Drill Pipe:	Length: 4033.00 ft	Diameter: 3.80 inches	Volume: 56.57 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 57.90 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	4316.00 ft			Final 79000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	119.00 ft			
Tool Length:	140.00 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			4296.00	
Shut In Tool	5.00			4301.00	
Hydraulic tool	5.00			4306.00	
Packer	5.00			4311.00	21.00 Bottom Of Top Packer
Packer	5.00			4316.00	
Stubb	1.00			4317.00	
Perforations	1.00			4318.00	
Change Over Sub	1.00			4319.00	
Drill Pipe	95.00			4414.00	
Change Over Sub	1.00			4415.00	
Perforations	15.00			4430.00	
Recorder	0.00	8846	Inside	4430.00	
Recorder	0.00	8737	Outside	4430.00	
Bullnose	5.00			4435.00	119.00 Bottom Packers & Anchor

Total Tool Length: 140.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59214 **DST#: 4**
Test Start: 2014.11.08 @ 07:24:15

Mud and Cushion Information

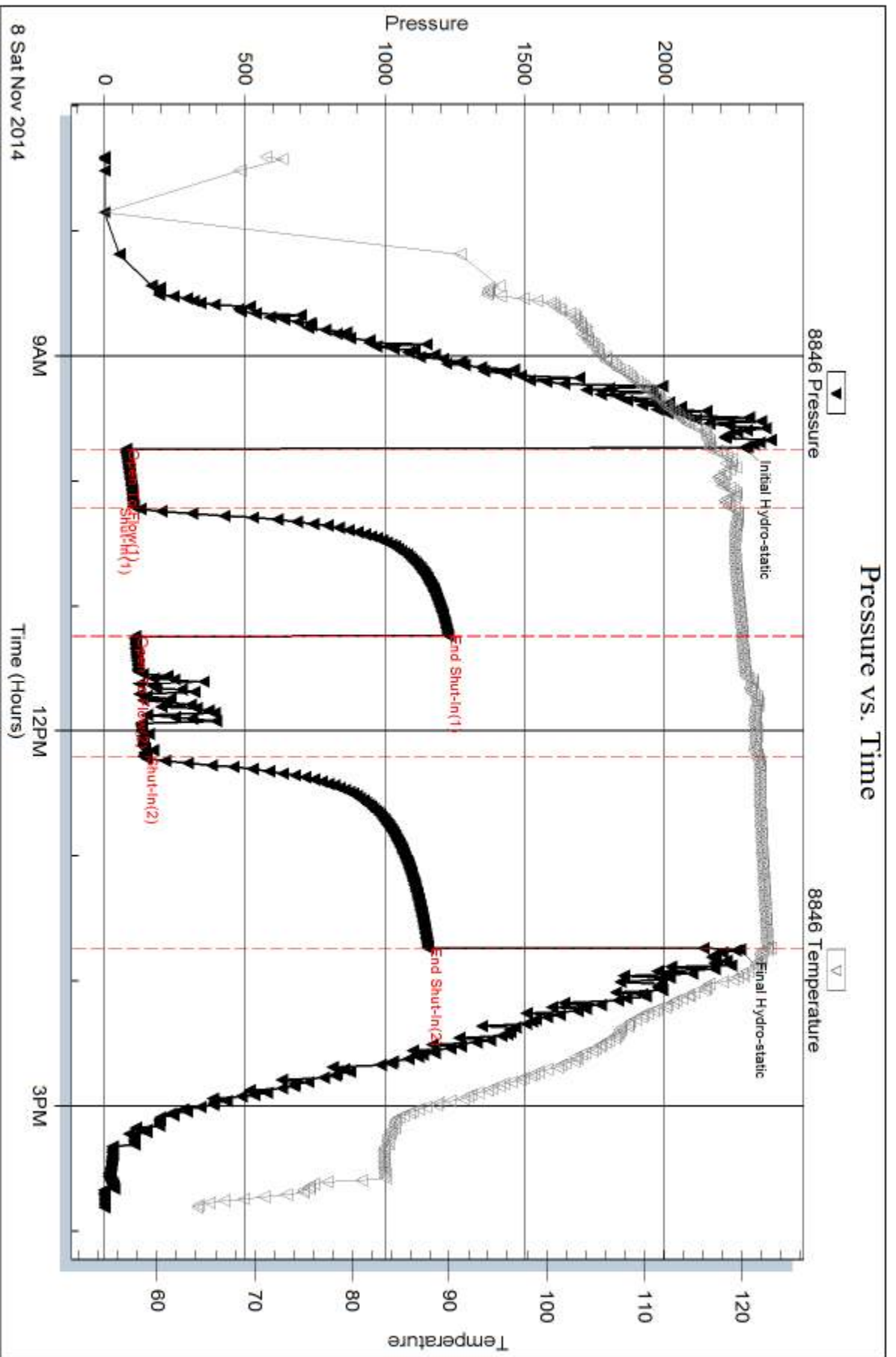
Mud Type: Gel Chem	Cushion Type:	Oil API:	0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	0 ppm
Viscosity: 56.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.96 in ³	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 2500.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
100.00	mud 100% m	0.492

Total Length: 100.00 ft Total Volume: 0.492 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

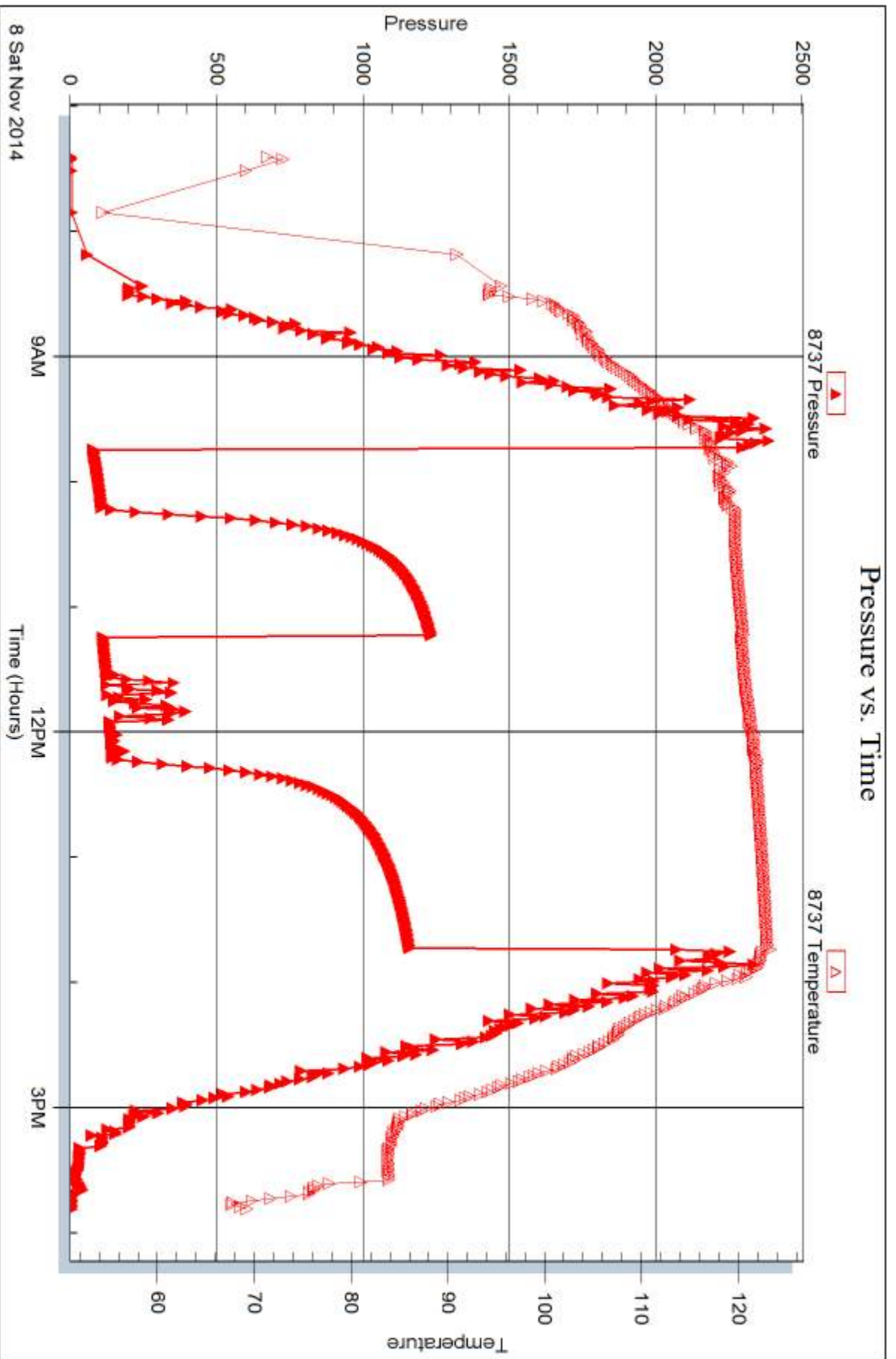


Serial #: 8737

Outside Murfin Drilling Co Inc.

Kuhn #2-4

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 59214

Printed: 2014.11.12 @ 16:39:08



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.09 @ 04:43:15

End Date: 2014.11.09 @ 12:48:00

Job Ticket #: 59215 DST #: 5

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

Printed: 2014.11.12 @ 16:38:36

Murfin Drilling Co Inc.
4-13s-32w Logan,KS
Kuhn #2-4
DST # 5
Pawnee-Lower Pawnee
2014.11.09



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59215

DST#: 5

Test Start: 2014.11.09 @ 04:43:15

GENERAL INFORMATION:

Formation: **Pawnee-Lower Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:54:15

Time Test Ended: 12:48:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: **4447.00 ft (KB) To 4535.00 ft (KB) (TVD)**

Reference Elevations: 3035.00 ft (KB)

Total Depth: 4535.00 ft (KB) (TVD)

3025.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8846

Inside

Press@RunDepth: 89.26 psig @ 4449.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.09

End Date:

2014.11.09

Last Calib.:

2014.11.09

Start Time:

04:43:15

End Time:

12:48:00

Time On Btm:

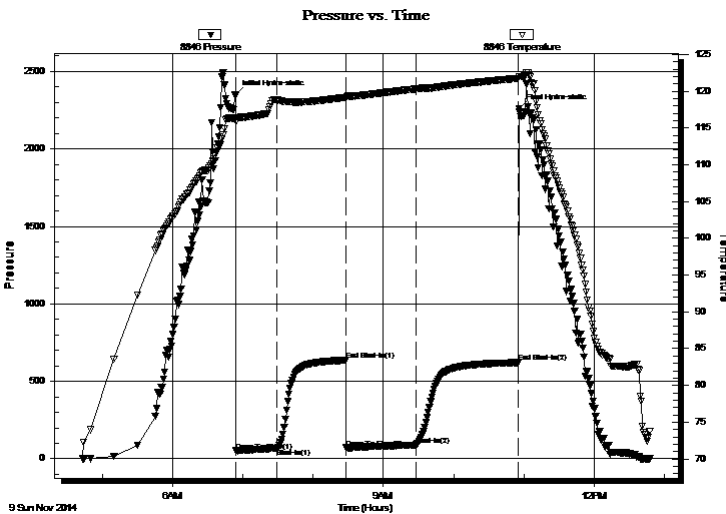
2014.11.09 @ 06:54:00

Time Off Btm:

2014.11.09 @ 10:56:00

TEST COMMENT: IF: Built to 1" blow
IS: No return blow
FF: No blow
FS: No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2348.40	116.27	Initial Hydro-static
1	51.30	115.90	Open To Flow (1)
36	67.64	118.80	Shut-In(1)
94	636.22	119.16	End Shut-In(1)
95	70.73	119.09	Open To Flow (2)
154	89.26	120.30	Shut-In(2)
242	621.48	121.74	End Shut-In(2)
242	2259.24	121.95	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
25.00	mud w with a trace of oil 100%m	0.12

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59215

DST#: 5

Test Start: 2014.11.09 @ 04:43:15

GENERAL INFORMATION:

Formation: **Pawnee-Lower Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:54:15

Time Test Ended: 12:48:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4447.00 ft (KB) To 4535.00 ft (KB) (TVD)

Reference Elevations: 3035.00 ft (KB)

Total Depth: 4535.00 ft (KB) (TVD)

3025.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4449.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.09

End Date: 2014.11.09

Last Calib.: 2014.11.09

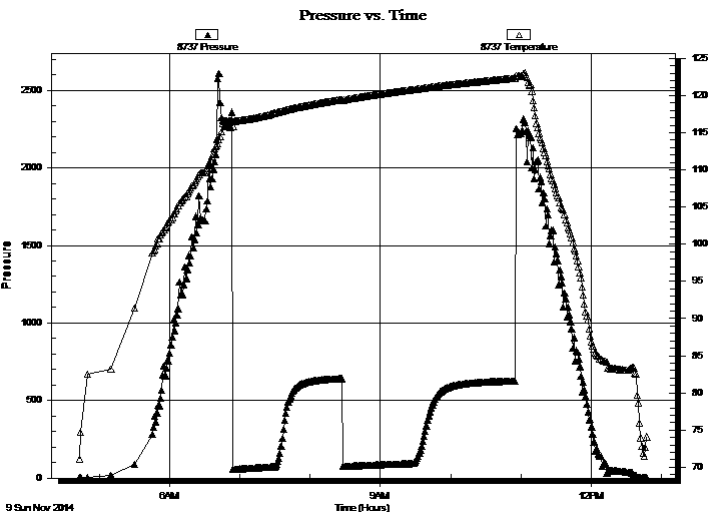
Start Time: 04:43:15

End Time: 12:48:00

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:Built to 1" blow
 IS:No return blow
 FF:No blow
 FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
25.00	mud w ith a trace of oil 100%m	0.12

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (MMcf/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
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59215 **DST#: 5**
Test Start: 2014.11.09 @ 04:43:15

Tool Information

Drill Pipe:	Length: 4178.00 ft	Diameter: 3.80 inches	Volume: 58.61 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 59.94 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	4447.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	88.00 ft			
Tool Length:	108.00 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			4428.00	
Shut In Tool	5.00			4433.00	
Hydraulic tool	5.00			4438.00	
Packer	5.00			4443.00	20.00 Bottom Of Top Packer
Packer	4.00			4447.00	
Stubb	1.00			4448.00	
Perforations	1.00			4449.00	
Recorder	0.00	8846	Inside	4449.00	
Recorder	0.00	8737	Outside	4449.00	
Change Over Sub	1.00			4450.00	
Blank Spacing	64.00			4514.00	
Change Over Sub	1.00			4515.00	
Perforations	15.00			4530.00	
Bullnose	5.00			4535.00	88.00 Bottom Packers & Anchor

Total Tool Length: 108.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.

4-13s-32w Logan,KS

250 N Water STE 300
Wichita KS 67202

Kuhn #2-4

Job Ticket: 59215

DST#: 5

ATTN: Tom Funk

Test Start: 2014.11.09 @ 04:43:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2700.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
25.00	mud w ith a trace of oil 100%m	0.123

Total Length: 25.00 ft Total Volume: 0.123 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

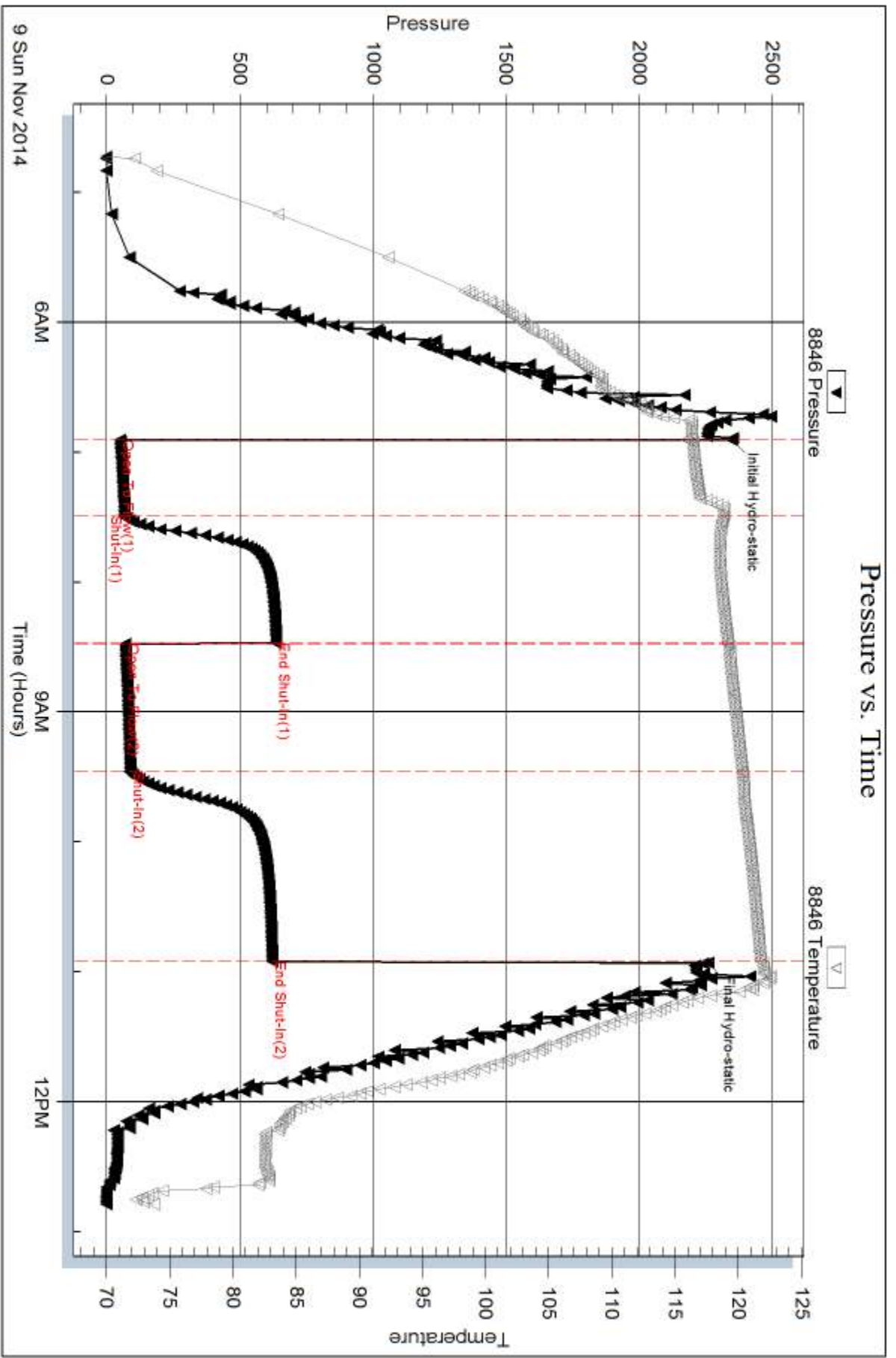
Serial #: 8846

Inside

Murfin Drilling Co Inc.

Kuhn #2-4

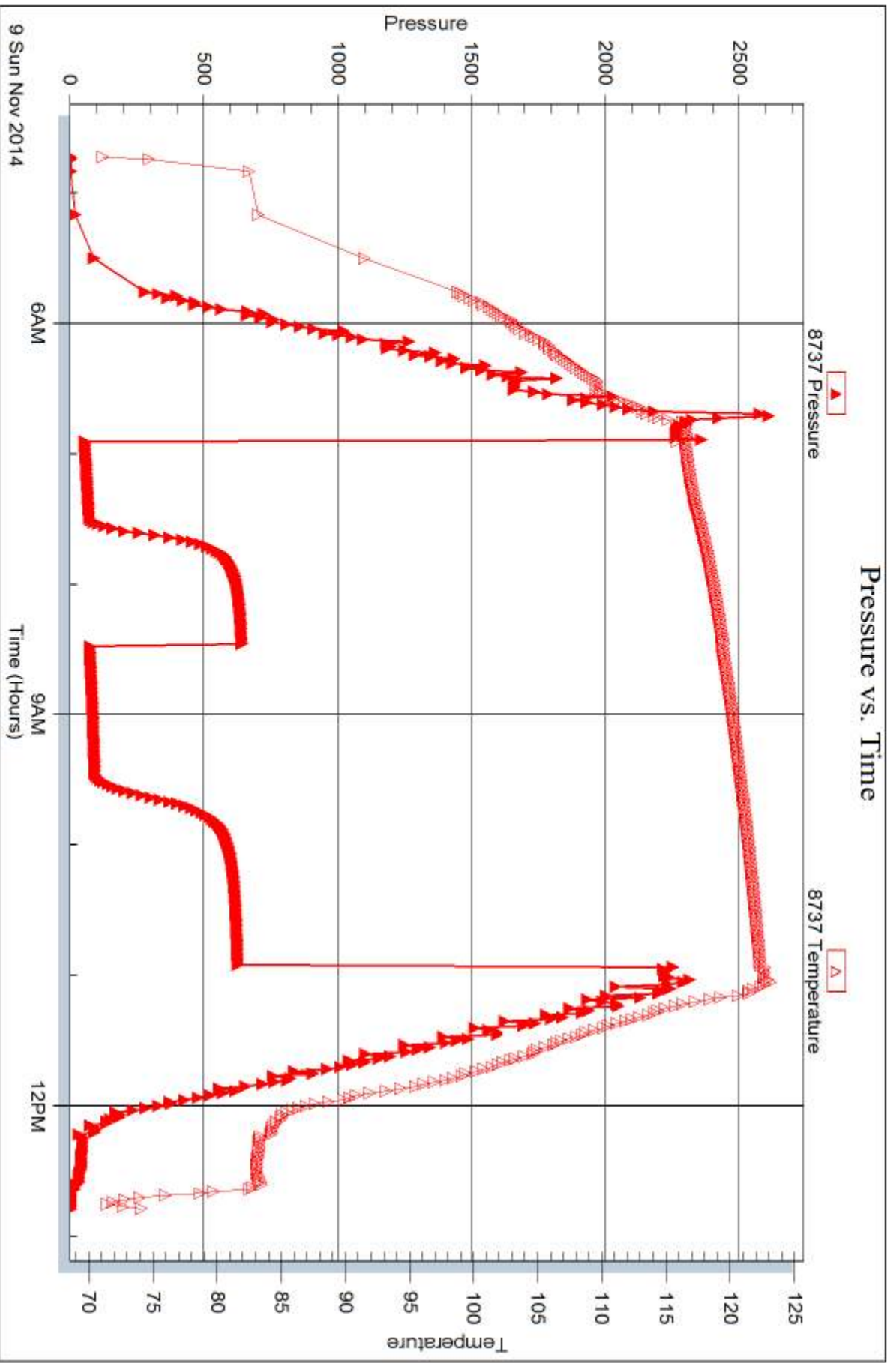
DST Test Number: 5



Tribble Testing, Inc

Ref. No: 59215

Printed: 2014.11.12 @ 16:38:37





DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Tom Funk

Kuhn #2-4

4-13s-32w Logan,KS

Start Date: 2014.11.09 @ 01:11:15

End Date: 2014.11.09 @ 09:19:45

Job Ticket #: 59216 DST #: 6

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

Printed: 2014.11.12 @ 16:38:01



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59216

DST#: 6

Test Start: 2014.11.09 @ 01:11:15

GENERAL INFORMATION:

Formation: **Johnson**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 03:25:00
 Time Test Ended: 09:19:45
 Interval: **4550.00 ft (KB) To 4610.00 ft (KB) (TVD)**
 Total Depth: 4610.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3035.00 ft (KB)
 3025.00 ft (CF)
 KB to GR/CF: 10.00 ft

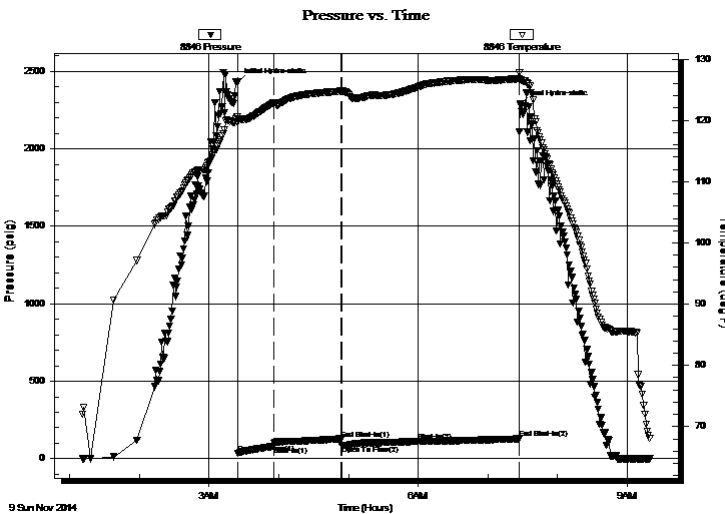
Serial #: 8846

Inside

Press@RunDepth: 111.99 psig @ 4556.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.11.09 End Date: 2014.11.09 Last Calib.: 2014.11.10
 Start Time: 01:11:15 End Time: 09:19:45 Time On Btm: 2014.11.09 @ 03:24:45
 Time Off Btm: 2014.11.09 @ 07:28:00

TEST COMMENT: IF:BOB in 14 min.
 IS:No return blow
 FF:Built to 9" blow
 FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2427.94	120.58	Initial Hydro-static
1	36.59	119.57	Open To Flow (1)
31	79.92	122.83	Shut-In(1)
89	128.13	124.75	End Shut-In(1)
90	86.25	124.72	Open To Flow (2)
156	111.99	125.43	Shut-In(2)
243	128.89	126.78	End Shut-In(2)
244	2288.34	126.62	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
100.00	mud 100%m	0.49

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS

Kuhn #2-4

Job Ticket: 59216 **DST#: 6**
Test Start: 2014.11.09 @ 01:11:15

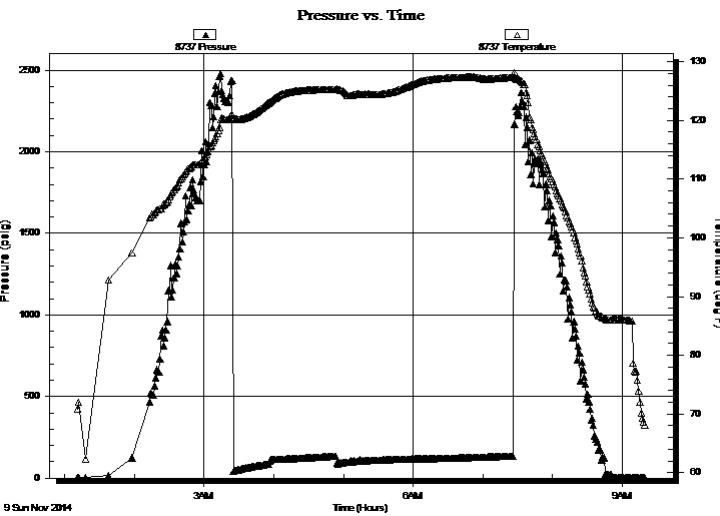
GENERAL INFORMATION:

Formation: **Johnson**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 03:25:00 Tester: Mike Roberts
Time Test Ended: 09:19:45 Unit No: 65
Interval: 4550.00 ft (KB) To 4610.00 ft (KB) (TVD) Reference Elevations: 3035.00 ft (KB)
Total Depth: 4610.00 ft (KB) (TVD) 3025.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4556.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.11.09 End Date: 2014.11.09 Last Calib.: 2014.11.10
Start Time: 01:11:15 End Time: 09:19:45 Time On Btm:
Time Off Btm:

TEST COMMENT: IF:BOB in 14 min.
IS:No return blow
FF:Built to 9" blow
FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
100.00	mud 100%m	0.49

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59216 **DST#: 6**
Test Start: 2014.11.09 @ 01:11:15

Tool Information

Drill Pipe:	Length: 4277.00 ft	Diameter: 3.80 inches	Volume: 60.00 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 271.00 ft	Diameter: 2.25 inches	Volume: 1.33 bbl	Weight to Pull Loose:	100000.0 lb
			<u>Total Volume: 61.33 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial	80000.00 lb
Depth to Top Packer:	4550.00 ft			Final	81000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	64.00 ft				
Tool Length:	84.00 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			4531.00	
Shut In Tool	5.00			4536.00	
Hydraulic tool	5.00			4541.00	
Packer	5.00			4546.00	20.00 Bottom Of Top Packer
Packer	4.00			4550.00	
Stubb	1.00			4551.00	
Perforations	5.00			4556.00	
Recorder	0.00	8846	Inside	4556.00	
Recorder	0.00	8737	Outside	4556.00	
Change Over Sub	1.00			4557.00	
Blank Spacing	32.00			4589.00	
Change Over Sub	1.00			4590.00	
Perforations	19.00			4609.00	
Bullnose	5.00			4614.00	64.00 Bottom Packers & Anchor

Total Tool Length: 84.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc.
250 N Water STE 300
Wichita KS 67202
ATTN: Tom Funk

4-13s-32w Logan,KS
Kuhn #2-4
Job Ticket: 59216 **DST#: 6**
Test Start: 2014.11.09 @ 01:11:15

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	0 ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.18 in ³	Gas Cushion Type:		
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig		
Salinity: 2700.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
100.00	mud 100%m	0.492

Total Length: 100.00 ft Total Volume: 0.492 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

Serial #: 8846

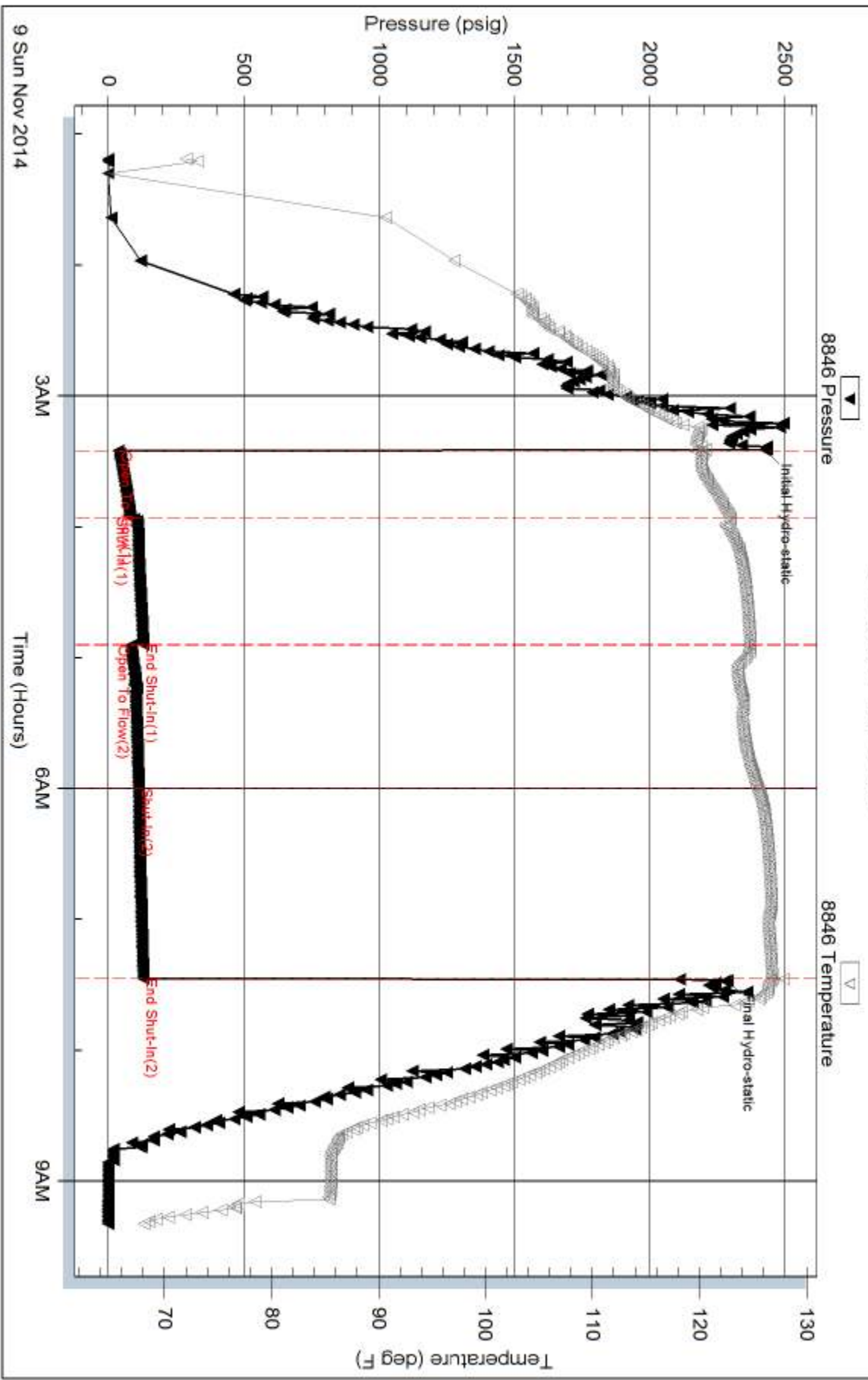
Inside

Murfin Drilling Co Inc.

Kuhn #2-4

DST Test Number: 6

Pressure vs. Time

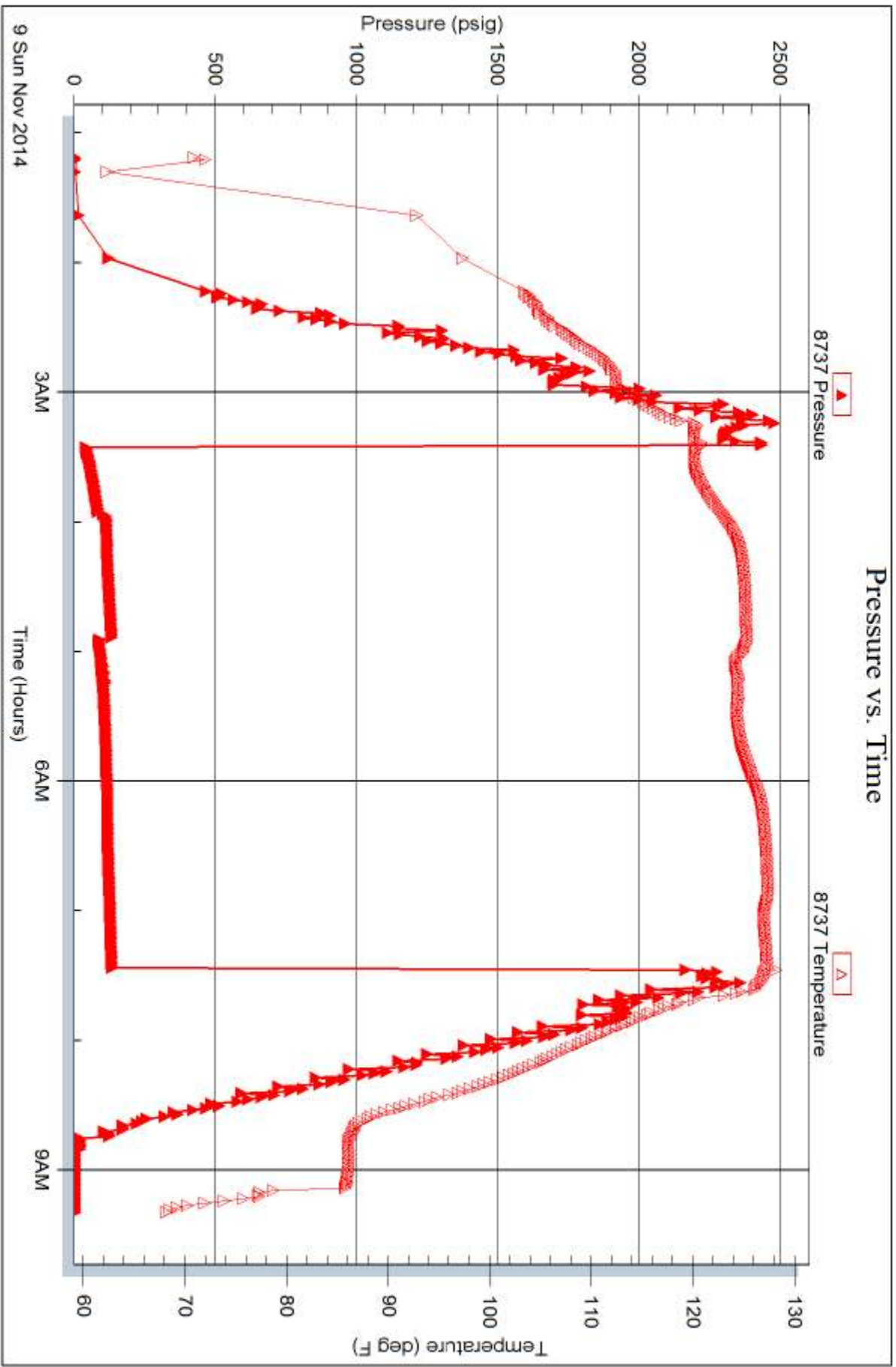


Serial #: 8737

Outside Murfin Drilling Co Inc.

Kuhn #2-4

DST Test Number: 6





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59211

Well Name & No. Kuhn # 2-4 Test No. 1 Date 11-5-14
 Company Murfin Drilling Co Inc Elevation 3035 KB 3025 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Murfin 4
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4096-4130 Zone Tested E-F
 Anchor Length 34 Drill Pipe Run 3832 Mud Wt. 9.2
 Top Packer Depth 4091 Drill Collars Run 276 Vis 69
 Bottom Packer Depth 4096 Wt. Pipe Run Ø WL 6.4
 Total Depth 4130 Chlorides 2600 ppm System LCM 5

Blow Description IF: Built to 4" Blow
IS: No Return Blow
FF: Built to weak surface Blow
FS: No Return Blow

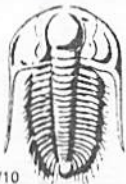
Rec	Feet of	%gas	%oil	%water	%mud
<u>271</u>	<u>MCW with a trace of oil</u>		<u>80</u>	<u>20</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 271 BHT 122 Gravity — API RW 42.8 @ 35 °F Chlorides 40,000 ppm
 (A) Initial Hydrostatic 2109 Test 1250.00 T-On Location 16:15
 (B) First Initial Flow 14 Jars _____ T-Started 16:52
 (C) First Final Flow 75 Safety Joint _____ T-Open 19:43
 (D) Initial Shut-In 1207 Circ Sub NC T-Pulled 23:43
 (E) Second Initial Flow 79 Hourly Standby _____ T-Out 01:45
 (F) Second Final Flow 156 Mileage 80 RT 124.00 Comments _____
 (G) Final Shut-In 1199 Sampler _____
 (H) Final Hydrostatic 2047 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1374
 Accessibility _____ MP/DST Disc't _____

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

Approved By [Signature] Sub Total 1374.00 Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59212

4/10

Well Name & No. Kuhn #2-4 Test No. 2 Date 11-6-14
 Company Murfin Drilling Co Inc. Elevation 3035 KB 3025 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Murfin 4
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4198-4246 Zone Tested I-5
 Anchor Length 48 Drill Pipe Run 3933 Mud Wt. 9.1
 Top Packer Depth 4193 Drill Collars Run ~~3710~~ 271 Vis 56
 Bottom Packer Depth 4198 Wt. Pipe Run Ø WL 5.6
 Total Depth 4246 Chlorides 2500 ppm System LCM 5
 Blow Description IF: Built to 5" Blow
IS: No Return Blow
FF: Built to 6" Blow
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>90</u>	<u>mcw</u>			<u>50</u>	<u>50</u>
<u>241</u>	<u>MUD</u>			<u>100</u>	

Rec Total 331 BHT 121 Gravity — API RW .70 @ 47.5° F Chlorides 14,000 ppm
 (A) Initial Hydrostatic 2163 Test 1250.00 T-On Location 15:45
 (B) First Initial Flow 22 Jars _____ T-Started 16:36
 (C) First Final Flow 104 Safety Joint _____ T-Open 18:30
 (D) Initial Shut-In 1162 Circ Sub NO T-Pulled 22:30
 (E) Second Initial Flow 117 Hourly Standby _____ T-Out 00:18
 (F) Second Final Flow 185 Mileage 80 RT = 124.00 Comments _____
 (G) Final Shut-In 1159 Sampler _____
 (H) Final Hydrostatic 2137 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1374
 Final Flow 60 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 90 Sub Total \$1374.00

Approved By [Signature] Our Representative Mike Roberts
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59213

Well Name & No. Kuhn #2-4 Test No. 3 Date 11-7-14
 Company Martin Drilling Co Inc. Elevation 3035 KB 3025 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Martin 4
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4253-4315 Zone Tested K-L
 Anchor Length 62 Drill Pipe Run 3969 Mud Wt. 9.2
 Top Packer Depth 4248 Drill Collars Run ~~3969~~ 271 Vis 56
 Bottom Packer Depth 4253 Wt. Pipe Run 0 WL 6.0
 Total Depth 4315 Chlorides 2500 ppm System LCM 4

Blow Description IF: Boilt to 1/2" Blow
IS: No Return Blow
FF: NO Blow
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>mud with oil spots</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 121 Gravity ✓ API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 2193 Test \$1250.00 T-On Location 08:45
 (B) First Initial Flow 34 Jars — T-Started 09:22
 (C) First Final Flow 40 Safety Joint — T-Open 11:23
 (D) Initial Shut-In 856 Circ Sub NC T-Pulled 15:23
 (E) Second Initial Flow 43 Hourly Standby — T-Out 17:34
 (F) Second Final Flow 51 Mileage BORT = 124.00 Comments —
 (G) Final Shut-In 861 Sampler —
 (H) Final Hydrostatic 2105 Straddle — Ruined Shale Packer —
 Shale Packer — Ruined Packer —
 Extra Packer — Extra Copies —
 Extra Recorder — Sub Total 0
 Day Standby — Total 1374
 Accessibility — MP/DST Disc't —

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1374

Approved By [Signature] Our Representative \$1374.00/-

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59214

Well Name & No. Kuhn #2-4 Test No. 4 Date 11-8-14
 Company Martin Drilling Co Inc. Elevation 3035 KB 3025 GL
 Address 250 N. Water St 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig _____
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4316-4435 Zone Tested Marmaton - Altamont
 Anchor Length 119 Drill Pipe Run 4033 Mud Wt. 9.2
 Top Packer Depth 4311 Drill Collars Run 274 Vis 56
 Bottom Packer Depth 4316 Wt. Pipe Run Ø WL 6.0
 Total Depth 4435 Chlorides 2500 ppm System LCM 4
 Blow Description IF: Built to 2" Blow
IS: No Return Blow
FF: Built to 1/2" Blow
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>100</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 100 BHT 122 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm
 (A) Initial Hydrostatic 2284 Test #1250.00/- T-On Location 06:30
 (B) First Initial Flow 75 Jars _____ T-Started 07:24
 (C) First Final Flow 103 Safety Joint _____ T-Open 09:43
 (D) Initial Shut-In 1226 Circ Sub NC T-Pulled 13:43
 (E) Second Initial Flow 108 Hourly Standby _____ T-Out 15:48
 (F) Second Final Flow 140 Mileage BORT = 124.00/- Comments _____
 (G) Final Shut-In 1152 Sampler _____
 (H) Final Hydrostatic 2267 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1374
 Accessibility _____ MP/DST Disc't _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total \$1374.00/-

Approved By [Signature] Our Representative Mike Roberts

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59215

Well Name & No. Kuhn #2-4 Test No. 5 Date 11-9-14
 Company Murfin Drilling Co Inc. Elevation 3035 KB 3025 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Murfin 4
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4447-4535 Zone Tested Pawnee-Lower Pawnee
 Anchor Length 88 Drill Pipe Run 4178 Mud Wt. 9.5
 Top Packer Depth 4442 Drill Collars Run 271 Vis 58
 Bottom Packer Depth 4447 Wt. Pipe Run Ø WL 6.8
 Total Depth 4535 Chlorides 2700 ppm System LCM 5
 Blow Description IF: Built to 1" Blow
IS: No Return Blow
FF: No Blow
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>25</u>	<u>MUD with Ø Trace of oil</u>			<u>25</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 25 BHT 122 Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 2348 Test \$1250.00 T-On Location 04:03
 (B) First Initial Flow 51 Jars — T-Started 04:43
 (C) First Final Flow 67 Safety Joint — T-Open 06:53
 (D) Initial Shut-In 636 Circ Sub NL T-Pulled 10:53
 (E) Second Initial Flow 70 Hourly Standby — T-Out 12:48
 (F) Second Final Flow 89 Mileage 80 RT = \$124.00 Comments —
 (G) Final Shut-In 621 Sampler —
 (H) Final Hydrostatic 2259 Straddle — Ruined Shale Packer —
 Shale Packer — Ruined Packer —
 Extra Packer — Extra Copies —
 Extra Recorder — Sub Total 0
 Day Standby — Total 1374
 Accessibility — MP/DST Disc't —
 Sub Total \$1374.00/-

Approved By [Signature] Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59216

Well Name & No. Kuhn # 2-4 Test No. 6 Date 11-10-14
 Company Martin Drilling Co Inc. Elevation 3035 KB 3025 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Tom Funk Rig Martin 4
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4550 - 4610 Zone Tested Johnson
 Anchor Length 60 Drill Pipe Run 4277 Mud Wt. 9.4
 Top Packer Depth 4545 Drill Collars Run 271 Vis 55
 Bottom Packer Depth 4550 Wt. Pipe Run Ø WL 7.2
 Total Depth 4610 Chlorides 2700 ppm System LCM 4
 Blow Description IF: BOB IN 14 Min
IS: No Return Blow
FF: Built to 9" Blow
FS: No Return Blow

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

Rec Total 100 BHT 123 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2427</u>	<input checked="" type="checkbox"/> Test <u>1250.00/-</u>	T-On Location <u>00:15</u>
(B) First Initial Flow <u>36</u>	<input type="checkbox"/> Jars	T-Started <u>01:11</u>
(C) First Final Flow <u>79</u>	<input type="checkbox"/> Safety Joint	T-Open <u>03:25</u>
(D) Initial Shut-In <u>128</u>	<input checked="" type="checkbox"/> Circ Sub <u>NL</u>	T-Pulled <u>07:25</u>
(E) Second Initial Flow <u>86</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>09:19</u>
(F) Second Final Flow <u>111</u>	<input checked="" type="checkbox"/> Mileage <u>80 RT = \$124.00</u>	Comments <u>Mileage</u>
(G) Final Shut-In <u>128</u>	<input type="checkbox"/> Sampler <u>124.00</u>	<u>X-2 Loaded</u>
(H) Final Hydrostatic <u>2288</u>	<input type="checkbox"/> Straddle	<u>11-11- 9 Am</u>

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 96

Sub Total 0
 Total 1498
 MP/DST Disc't

Sub Total \$1374.00/-

Approved By [Signature] Our Representative [Signature]
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