



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita KS 67202

ATTN: Chuck Schmultz

Culwell 'C' #3-10

10-1s-37w Cheyenne,KS

Start Date: 2015.02.11 @ 04:04:00

End Date: 2015.02.11 @ 12:45:45

Job Ticket #: 61092 DST #: 1

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

Printed: 2015.02.16 @ 10:34:06

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

Culwell 'C' #3-10

DST # 1

LKC 'A - D'

2015.02.11



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61092

DST#: 1

ATTN: Chuck Schmultz

Test Start: 2015.02.11 @ 04:04:00

GENERAL INFORMATION:

Formation: **LKC 'A - D'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:03:15

Time Test Ended: 12:45:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4106.00 ft (KB) To 4225.00 ft (KB) (TVD)

Reference Elevations: 3200.00 ft (KB)

Total Depth: 4225.00 ft (KB) (TVD)

3189.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6753

Outside

Press@RunDepth: 148.37 psig @ 4107.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.11

End Date: 2015.02.11

Last Calib.: 2015.02.11

Start Time: 04:04:05

End Time: 12:45:45

Time On Btm: 2015.02.11 @ 06:02:45

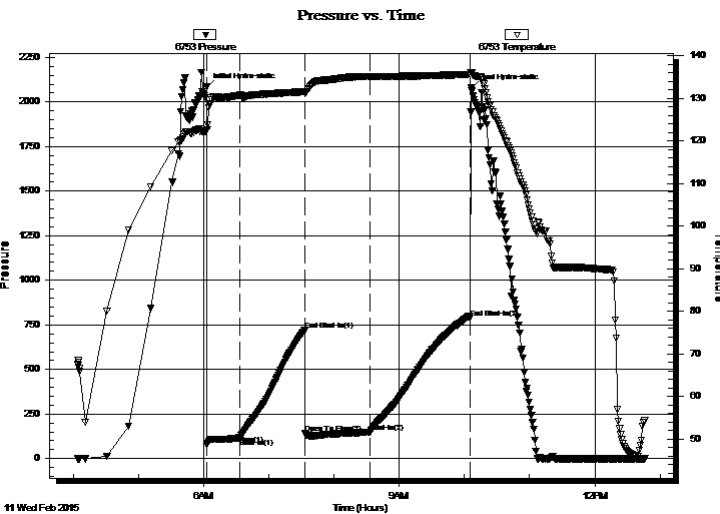
Time Off Btm: 2015.02.11 @ 10:06:30

TEST COMMENT: 30 - IF - Surface blow built to bottom of the bucket in 7 mins.

60 - ISI - No Return

60 - FF - Surface blow built up to 10"

90 - FSI - No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2083.62	122.53	Initial Hydro-static
1	80.86	122.66	Open To Flow (1)
31	116.39	130.71	Shut-In(1)
91	720.58	131.55	End Shut-In(1)
91	139.80	131.24	Open To Flow (2)
151	148.37	135.04	Shut-In(2)
243	789.63	135.57	End Shut-In(2)
244	2077.58	136.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
121.00	OCM - 60M - 40o	0.60
126.00	OCM - 50M - 50o	1.19
93.00	Free Oil - 100o	1.30

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

ATTN: Chuck Schmultz

10-1s-37w Cheyenne, KS

Culwell 'C' #3-10

Job Ticket: 61092 **DST#: 1**

Test Start: 2015.02.11 @ 04:04:00

GENERAL INFORMATION:

Formation: **LKC 'A - D'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:03:15

Time Test Ended: 12:45:45

Interval: 4106.00 ft (KB) To 4225.00 ft (KB) (TVD)

Total Depth: 4225.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Reference Elevations: 3200.00 ft (KB)

3189.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8368 Inside

Press@RunDepth: psig @ 4107.00 ft (KB)

Start Date: 2015.02.11 End Date: 2015.02.11

Start Time: 04:04:05 End Time: 12:45:45

Capacity: 8000.00 psig

Last Calib.: 2015.02.11

Time On Btm:

Time Off Btm:

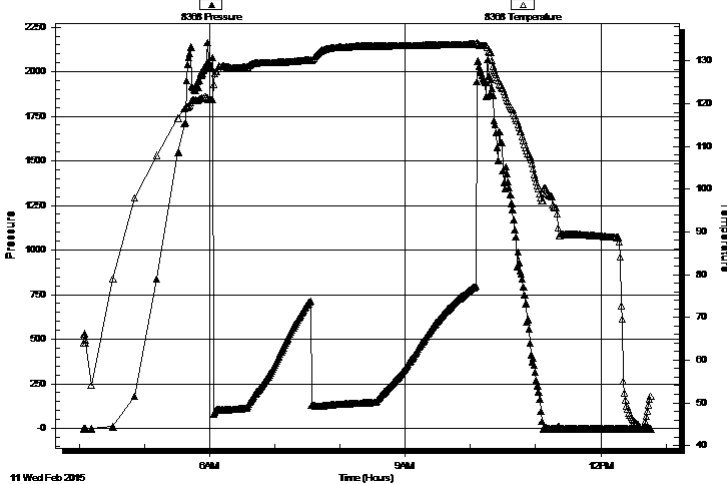
TEST COMMENT: 30 - IF - Surface blow built to bottom of the bucket in 7 mins.

60 - ISI - No Return

60 - FF - Surface blow built up to 10"

90 - FSI - No Return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
121.00	OCM - 60M - 40o	0.60
126.00	OCM - 50M - 50o	1.19
93.00	Free Oil - 100o	1.30

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61092

DST#: 1

ATTN: Chuck Schmultz

Test Start: 2015.02.11 @ 04:04:00

Tool Information

Drill Pipe:	Length: 3924.64 ft	Diameter: 3.80 inches	Volume: 55.05 bbl	Tool Weight: 2500.00 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: 184.39 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 55.96 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.03 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4106.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	119.00 ft			
Tool Length:	146.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4084.00	
Hydraulic tool	5.00			4089.00	
Jars	5.00			4094.00	
Safety Joint	3.00			4097.00	
Packer	4.00			4101.00	27.00 Bottom Of Top Packer
Packer	5.00			4106.00	
Stubb	1.00			4107.00	
Recorder	0.00	8368	Inside	4107.00	
Recorder	0.00	6753	Outside	4107.00	
Perforations	18.00			4125.00	
Change Over Sub	1.00			4126.00	
Drill Pipe	94.00			4220.00	
Change Over Sub	1.00			4221.00	
Bullnose	4.00			4225.00	119.00 Bottom Packers & Anchor

Total Tool Length: 146.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61092

DST#: 1

ATTN: Chuck Schmultz

Test Start: 2015.02.11 @ 04:04:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 45.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.78 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
121.00	OCM - 60M - 40o	0.595
126.00	OCM - 50M - 50o	1.190
93.00	Free Oil - 100o	1.305

Total Length: 340.00 ft

Total Volume: 3.090 bbl

Num Fluid Samples: 0

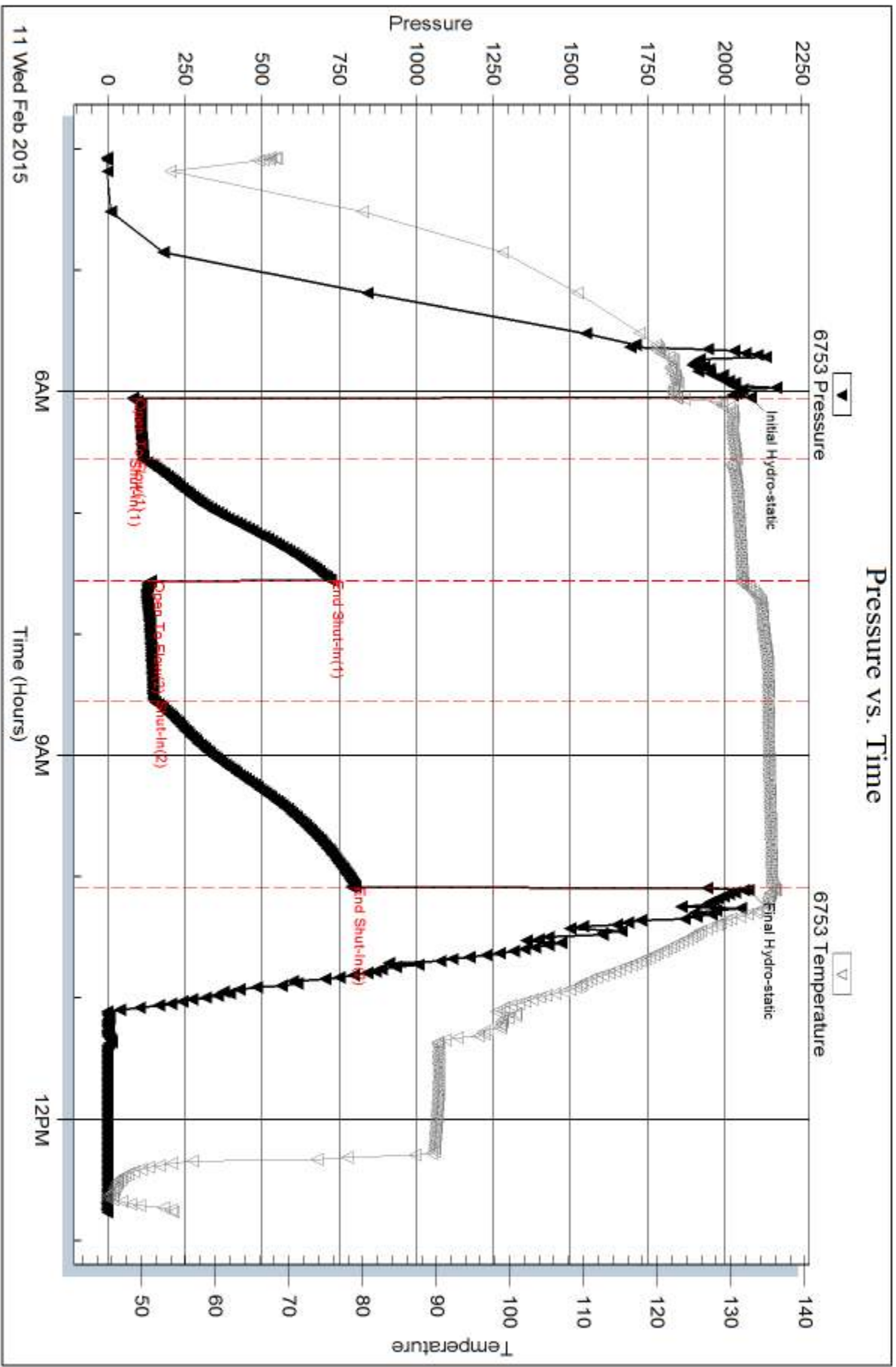
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



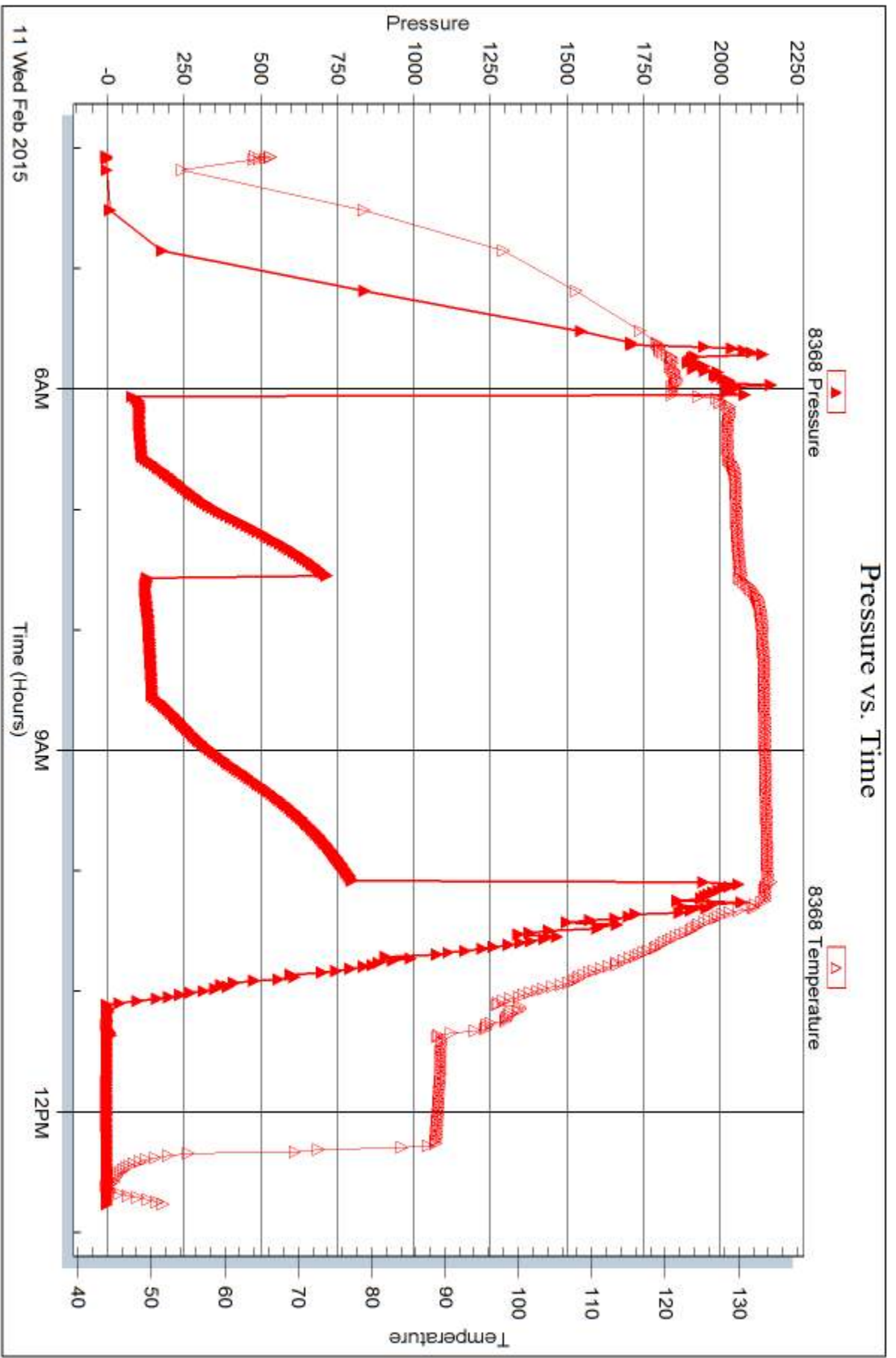
Serial #: 8368

Inside

Murfin Drilling Co., Inc.

Oilwell 'C' #3-10

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 61092

Printed: 2015.02.16 @ 10:34:07



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita KS 67202

ATTN: Chuck Schmultz

Culwell 'C' #3-10

10-1s-37w Cheyenne,KS

Start Date: 2015.02.12 @ 00:26:00

End Date: 2015.02.12 @ 08:48:45

Job Ticket #: 61093 DST #: 2

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

Printed: 2015.02.16 @ 10:33:42



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne, KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61093

DST#: 2

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 00:26:00

GENERAL INFORMATION:

Formation: **LKC 'G'**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 02:28:30
 Time Test Ended: 08:48:45
 Interval: **4230.00 ft (KB) To 4270.00 ft (KB) (TVD)**
 Total Depth: 4270.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Royal Fisher
 Unit No: 54
 Reference Elevations: 3200.00 ft (KB)
 3189.00 ft (CF)
 KB to GR/CF: 11.00 ft

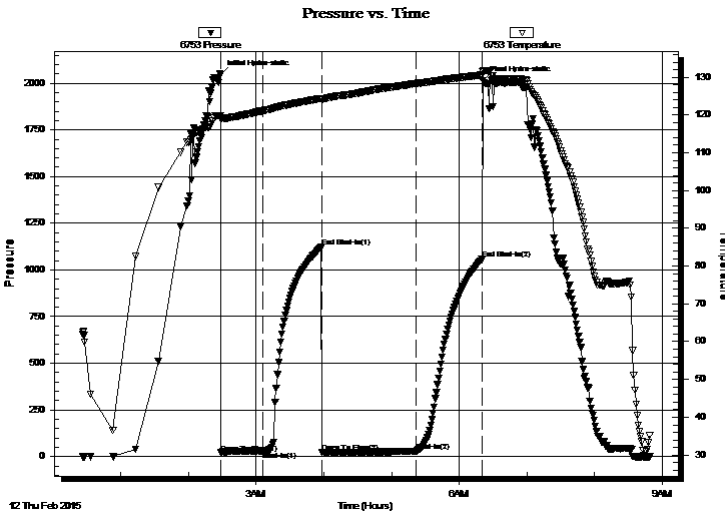
Serial #: 6753

Inside

Press@RunDepth: 27.62 psig @ 4231.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.02.12 End Date: 2015.02.12 Last Calib.: 2015.02.12
 Start Time: 00:26:05 End Time: 08:48:44 Time On Btm: 2015.02.12 @ 02:28:15
 Time Off Btm: 2015.02.12 @ 06:20:45

TEST COMMENT: 30 - IF - Surface blow slowly built to 3/4"
 60 - No Return
 80 - No Surface blow
 60 - No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2048.12	119.78	Initial Hydro-static
1	19.69	119.08	Open To Flow (1)
38	30.70	121.12	Shut-In(1)
90	1123.44	124.43	End Shut-In(1)
91	22.36	124.00	Open To Flow (2)
173	27.62	128.32	Shut-In(2)
232	1056.33	130.57	End Shut-In(2)
233	2015.54	131.37	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OSM - 100M - Oil Spots	0.05

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61093

DST#: 2

ATTN: Chuck Schmultz

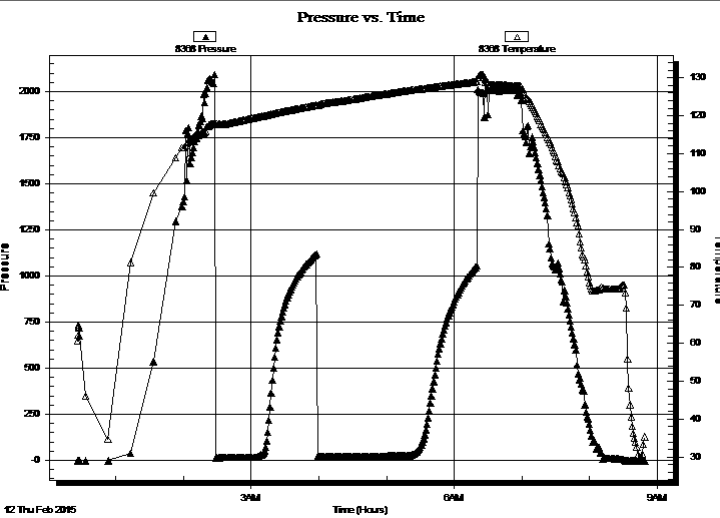
Test Start: 2015.02.12 @ 00:26:00

GENERAL INFORMATION:

Formation: **LKC 'G'**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 02:28:30 Tester: Royal Fisher
 Time Test Ended: 08:48:45 Unit No: 54
 Interval: **4230.00 ft (KB) To 4270.00 ft (KB) (TVD)** Reference Elevations: 3200.00 ft (KB)
 Total Depth: 4270.00 ft (KB) (TVD) 3189.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

Serial #: 8368 Outside
 Press@RunDepth: psig @ 4231.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.02.12 End Date: 2015.02.12 Last Calib.: 2015.02.12
 Start Time: 00:26:05 End Time: 08:48:44 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF - Surface blow slowly built to 3/4"
 60 - No Return
 80 - No Surface blow
 60 - No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
10.00	OSM - 100M - Oil Spots	0.05

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61093

DST#: 2

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 00:26:00

Tool Information

Drill Pipe:	Length: 4051.17 ft	Diameter: 3.80 inches	Volume: 56.83 bbl	Tool Weight: 2500.00 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: 184.39 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 82000.00 lb
			<u>Total Volume: 57.74 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.56 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4230.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	40.00 ft			
Tool Length:	67.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4208.00	
Hydraulic tool	5.00			4213.00	
Jars	5.00			4218.00	
Safety Joint	3.00			4221.00	
Packer	4.00			4225.00	27.00 Bottom Of Top Packer
Packer	5.00			4230.00	
Stubb	1.00			4231.00	
Recorder	0.00	6753	Inside	4231.00	
Recorder	0.00	8368	Outside	4231.00	
Perforations	35.00			4266.00	
Bullnose	4.00			4270.00	40.00 Bottom Packers & Anchor

Total Tool Length: 67.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61093

DST#: 2

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 00:26:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	OSM - 100M - Oil Spots	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

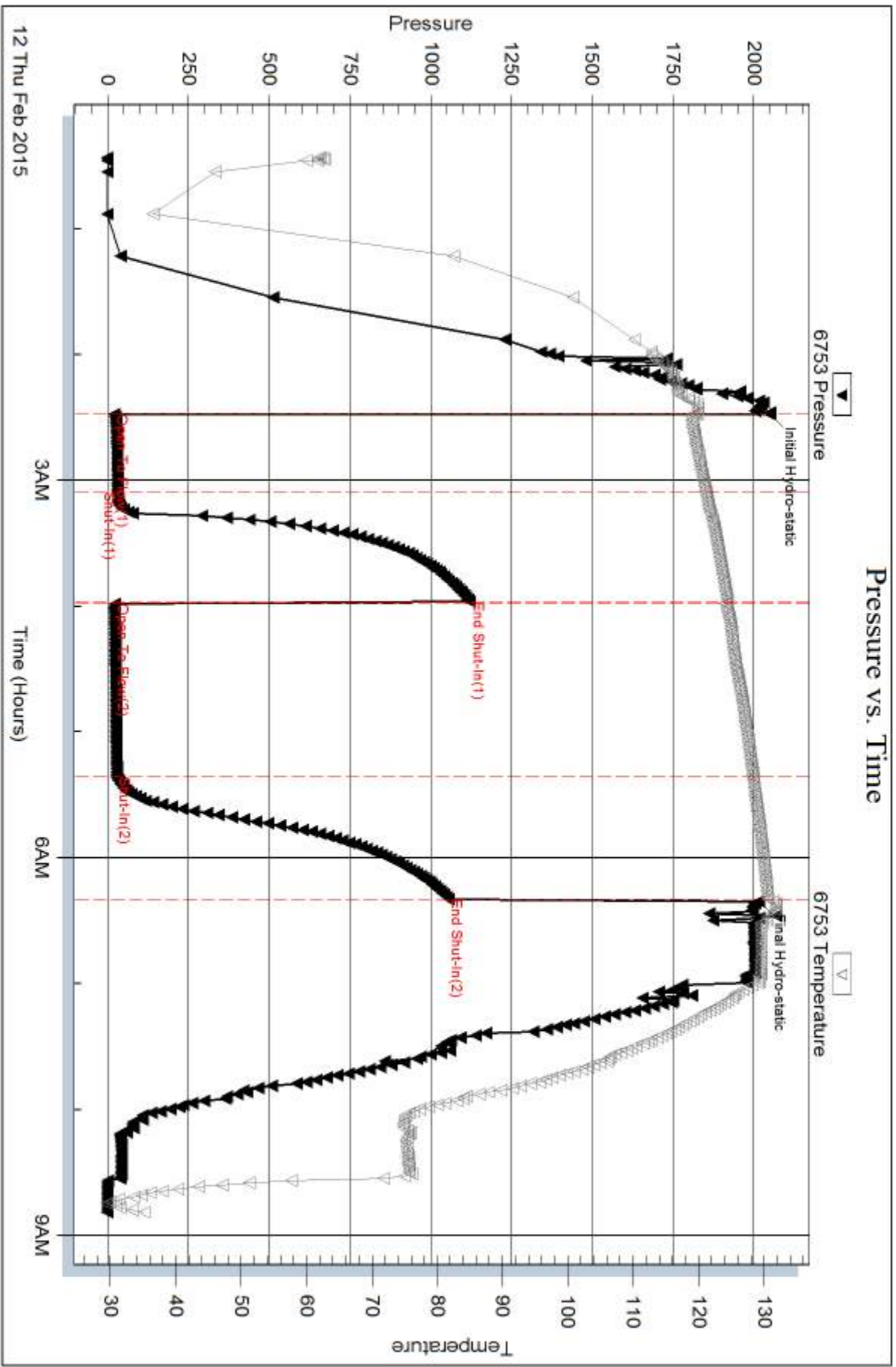
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

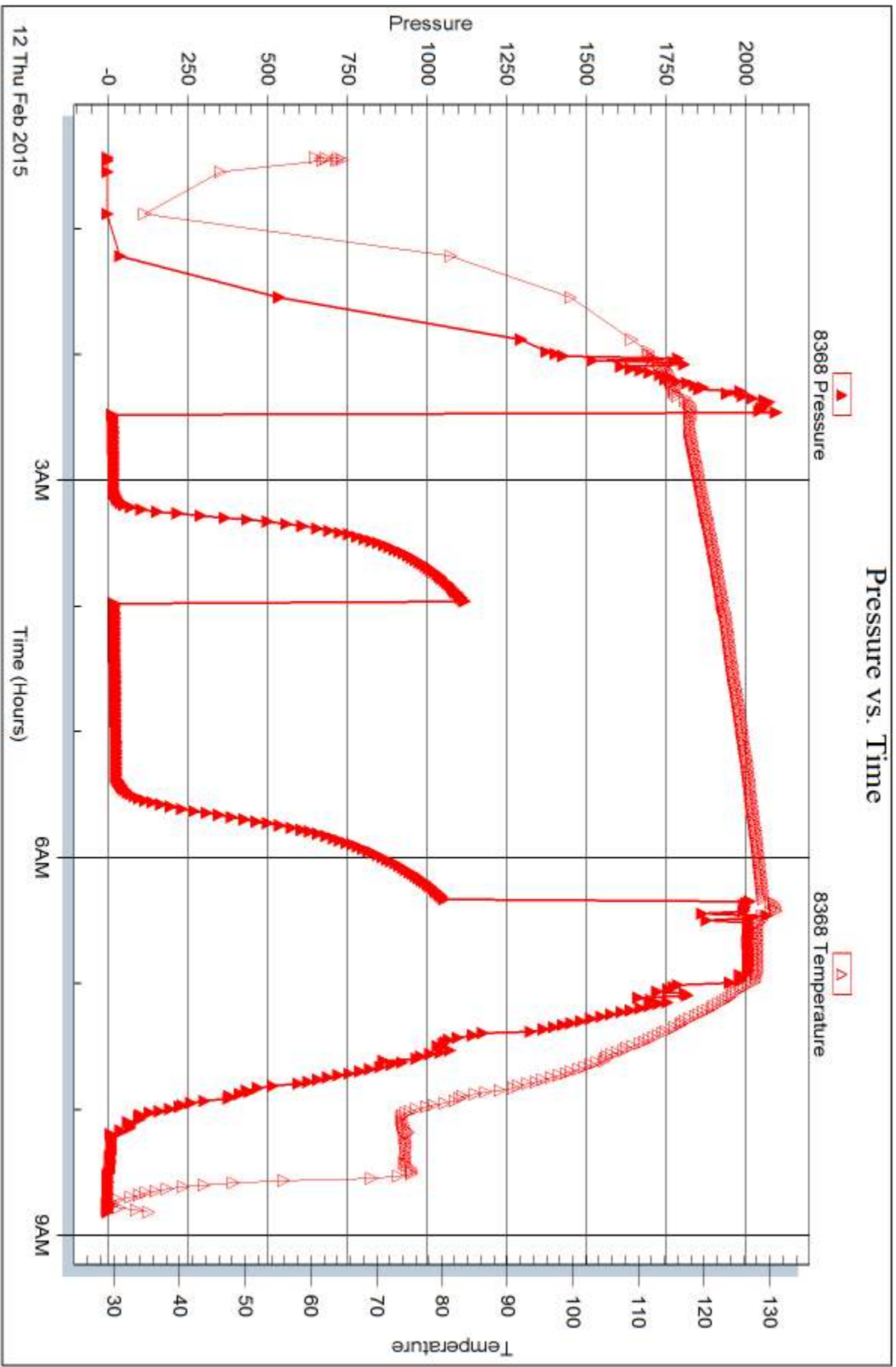


Serial #: 8368

Outside Murfin Drilling Co., Inc.

Oilwell 'C' #3-10

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 61093

Printed: 2015.02.16 @ 10:33:43



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita KS 67202

ATTN: Chuck Schmultz

Culwell 'C' #3-10

10-1s-37w Cheyenne,KS

Start Date: 2015.02.12 @ 22:39:00

End Date: 2015.02.13 @ 05:23:30

Job Ticket #: 61094 DST #: 3

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

Printed: 2015.02.16 @ 10:33:03



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne, KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61094

DST#: 3

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 22:39:00

GENERAL INFORMATION:

Formation: **LKC 'H - J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:27:15

Time Test Ended: 05:23:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4272.00 ft (KB) To 4365.00 ft (KB) (TVD)

Reference Elevations: 3200.00 ft (KB)

Total Depth: 4365.00 ft (KB) (TVD)

3189.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8368

Inside

Press@RunDepth: 26.75 psig @ 4273.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.12

End Date:

2015.02.13

Last Calib.:

2015.02.13

Start Time: 22:39:05

End Time:

05:23:29

Time On Btm:

2015.02.13 @ 00:27:00

Time Off Btm:

2015.02.13 @ 03:28:45

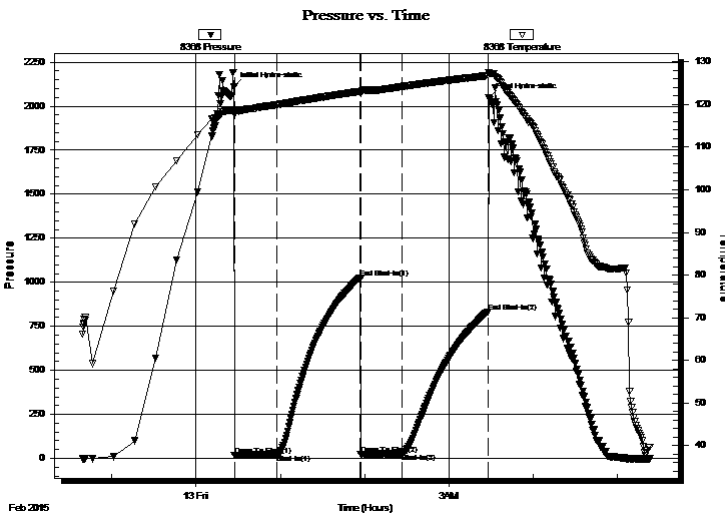
TEST COMMENT: 30 - IF - Surface blow built up to 3/4"

60 - ISI - No Return

30 - FF - No Surface blow

60 - FSI - No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2111.08	118.75	Initial Hydro-static
1	15.39	117.65	Open To Flow (1)
31	21.37	119.95	Shut-In(1)
90	1026.02	123.06	End Shut-In(1)
91	23.68	122.67	Open To Flow (2)
120	26.75	124.19	Shut-In(2)
181	832.22	126.75	End Shut-In(2)
182	2046.66	127.41	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OSM - 100M - Oil Spots	0.05

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

ATTN: Chuck Schmultz

10-1s-37w Cheyenne, KS

Culwell 'C' #3-10

Job Ticket: 61094

DST#: 3

Test Start: 2015.02.12 @ 22:39:00

GENERAL INFORMATION:

Formation: **LKC 'H - J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:27:15

Time Test Ended: 05:23:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4272.00 ft (KB) To 4365.00 ft (KB) (TVD)

Total Depth: 4365.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3200.00 ft (KB)

3189.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 6753 Outside

Press@RunDepth: psig @ 4273.00 ft (KB)

Start Date: 2015.02.12

End Date: 2015.02.13

Capacity: 8000.00 psig

Last Calib.: 2015.02.13

Start Time: 22:39:05

End Time: 05:23:29

Time On Btm:

Time Off Btm:

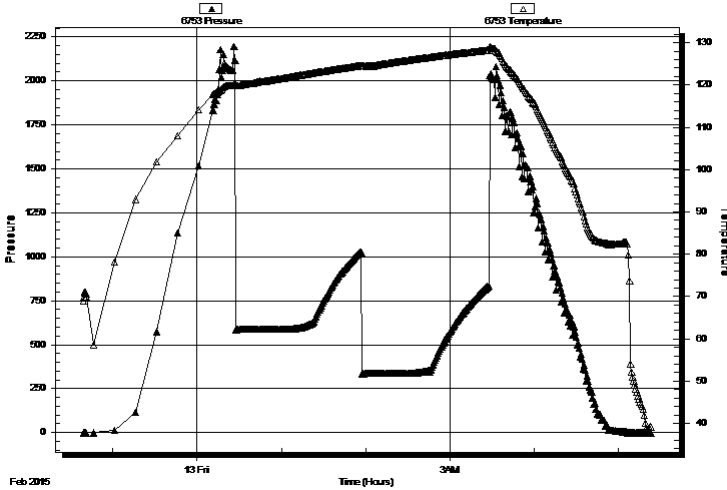
TEST COMMENT: 30 - IF - Surface blow built up to 3/4"

60 - ISI - No Return

30 - FF - No Surface blow

60 - FSI - No Return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OSM - 100M - Oil Spots	0.05

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61094

DST#: 3

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 22:39:00

Tool Information

Drill Pipe:	Length: 4082.05 ft	Diameter: 3.80 inches	Volume: 57.26 bbl	Tool Weight: 2500.00 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: 184.39 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 58.17 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.44 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4272.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	93.00 ft			
Tool Length:	120.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Shut In Tool	5.00			4250.00	
Hydraulic tool	5.00			4255.00	
Jars	5.00			4260.00	
Safety Joint	3.00			4263.00	
Packer	4.00			4267.00	27.00 Bottom Of Top Packer
Packer	5.00			4272.00	
Stubb	1.00			4273.00	
Recorder	0.00	8368	Inside	4273.00	
Recorder	0.00	6753	Outside	4273.00	
Perforations	23.00			4296.00	
Change Over Sub	1.00			4297.00	
Drill Pipe	63.00			4360.00	
Change Over Sub	1.00			4361.00	
Bullnose	4.00			4365.00	93.00 Bottom Packers & Anchor

Total Tool Length: 120.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61094

DST#: 3

ATTN: Chuck Schmultz

Test Start: 2015.02.12 @ 22:39:00

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: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	OSM - 100M - 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:

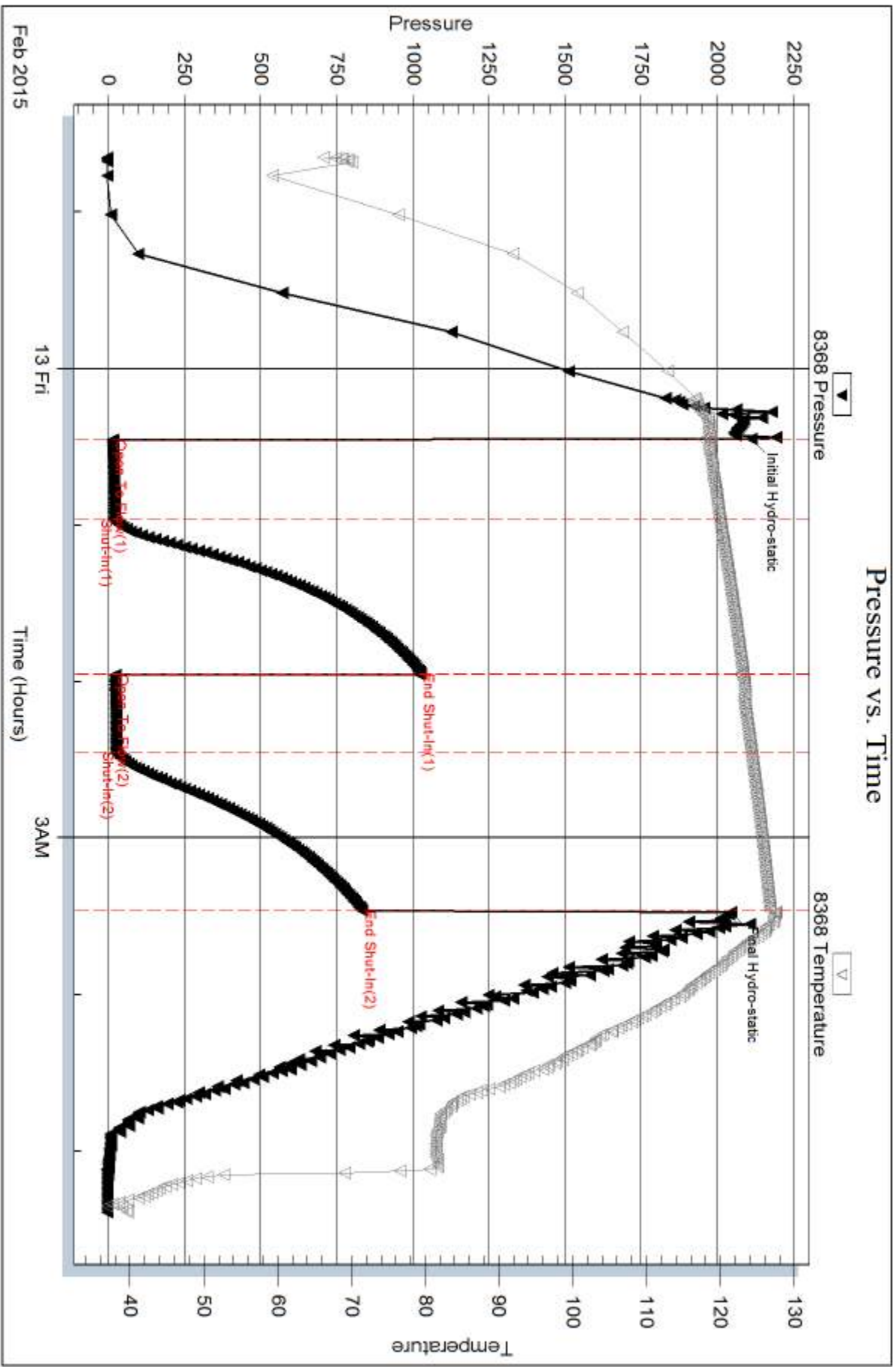
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Inside

Murfin Drilling Co., Inc.

Oilwell 'C' #3-10

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 61094

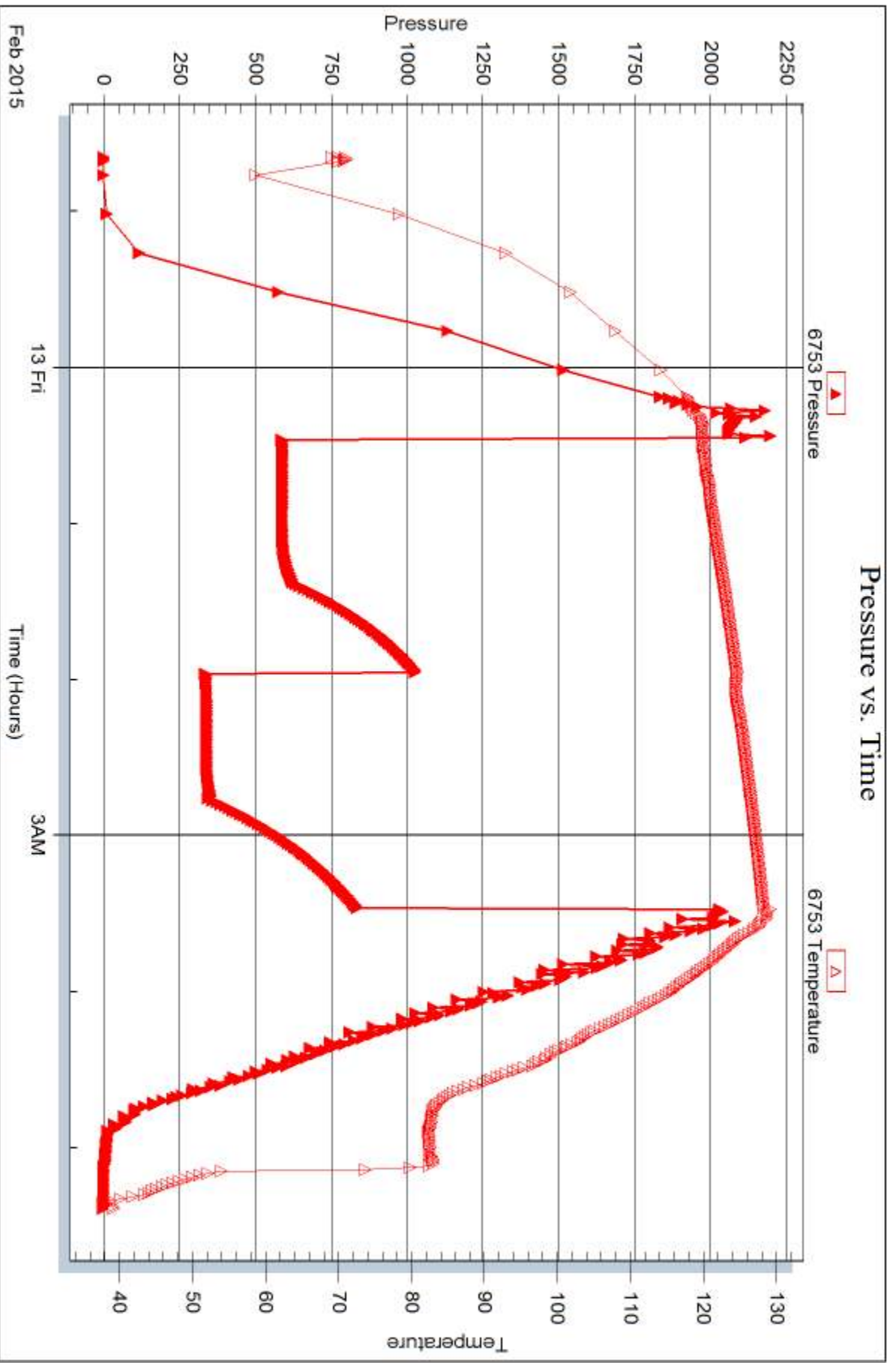
Printed: 2015.02.16 @ 10:33:04

Serial #: 6753

Outside Murfin Drilling Co., Inc.

Oilwell 'C' #3-10

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 61094

Printed: 2015.02.16 @ 10:33:04



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita KS 67202

ATTN: Chuck Schmultz

Culwell 'C' #3-10

10-1s-37w Cheyenne,KS

Start Date: 2015.02.14 @ 02:27:00

End Date: 2015.02.14 @ 10:40:45

Job Ticket #: 61095 DST #: 4

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

Printed: 2015.02.16 @ 10:32:10



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61095

DST#: 4

ATTN: Chuck Schmultz

Test Start: 2015.02.14 @ 02:27:00

GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:42:45

Time Test Ended: 10:40:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4520.00 ft (KB) To 4565.00 ft (KB) (TVD)

Reference Elevations: 3200.00 ft (KB)

Total Depth: 4565.00 ft (KB) (TVD)

3189.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6753 Outside

Press@RunDepth: 41.58 psig @ 4521.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.14

End Date:

2015.02.14

Last Calib.: 2015.02.14

Start Time: 02:27:05

End Time:

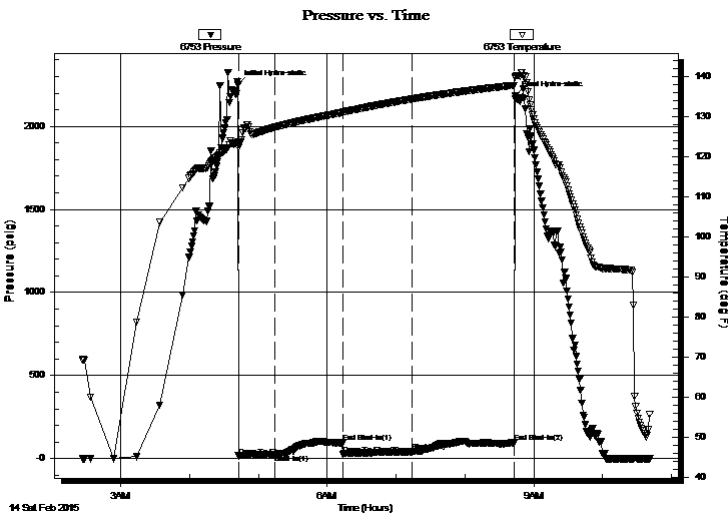
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Time On Btm: 2015.02.14 @ 04:42:30

Time Off Btm: 2015.02.14 @ 08:44:00

TEST COMMENT: 30 - IF - Surface blow built up to 2"
60 - ISI - Faint return at end of shut-in
60 - FF - Surface blow built to 7 1/2"
90 - FSI - Faint Return started 4 mins. in and built to 2"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2250.46	123.64	Initial Hydro-static
1	16.80	122.29	Open To Flow (1)
32	26.01	127.34	Shut-In(1)
91	95.93	131.09	End Shut-In(1)
92	26.88	131.15	Open To Flow (2)
152	41.58	134.43	Shut-In(2)
241	96.28	137.87	End Shut-In(2)
242	2185.38	140.00	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCM - 50M - 50o	0.30
35.00	Free Oil - 100o	0.17

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61095

DST#: 4

ATTN: Chuck Schmultz

Test Start: 2015.02.14 @ 02:27:00

GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:42:45

Time Test Ended: 10:40:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4520.00 ft (KB) To 4565.00 ft (KB) (TVD)

Total Depth: 4565.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3200.00 ft (KB)

3189.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8368

Inside

Press@RunDepth: psig @ 4521.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.14

End Date:

2015.02.14

Last Calib.:

2015.02.14

Start Time: 02:27:05

End Time:

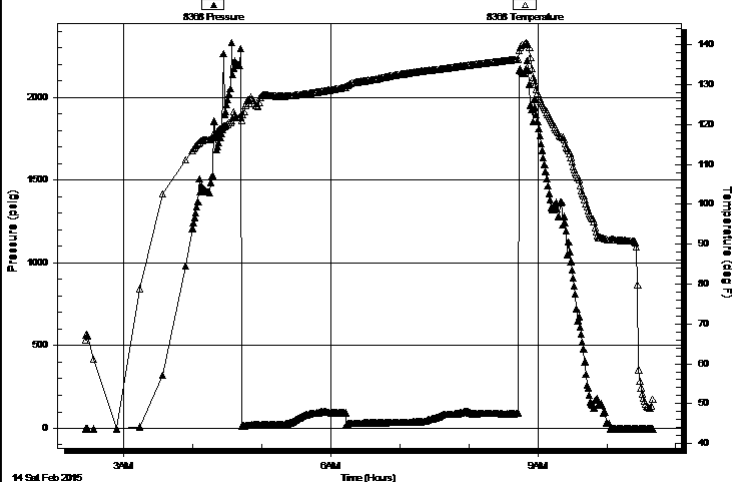
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Time On Btm:

Time Off Btm:

TEST COMMENT: 30 - IF - Surface blow built up to 2"
60 - ISI - Faint return at end of shut-in
60 - FF - Surface blow built to 7 1/2"
90 - FSI - Faint Return started 4 mins. in and built to 2"

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCM - 50M - 50o	0.30
35.00	Free Oil - 100o	0.17

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61095

DST#: 4

ATTN: Chuck Schmultz

Test Start: 2015.02.14 @ 02:27:00

Tool Information

Drill Pipe:	Length: 4333.78 ft	Diameter: 3.80 inches	Volume: 60.79 bbl	Tool Weight: 2500.00 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: 184.39 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 61.70 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.17 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4520.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	72.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			4498.00	
Hydraulic tool	5.00			4503.00	
Jars	5.00			4508.00	
Safety Joint	3.00			4511.00	
Packer	4.00			4515.00	27.00 Bottom Of Top Packer
Packer	5.00			4520.00	
Stubb	1.00			4521.00	
Recorder	0.00	8368	Inside	4521.00	
Recorder	0.00	6753	Outside	4521.00	
Perforations	7.00			4528.00	
Change Over Sub	1.00			4529.00	
Drill Pipe	31.00			4560.00	
Change Over Sub	1.00			4561.00	
Bullnose	4.00			4565.00	45.00 Bottom Packers & Anchor

Total Tool Length: 72.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

10-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita KS 67202

Culwell 'C' #3-10

Job Ticket: 61095

DST#: 4

ATTN: Chuck Schmultz

Test Start: 2015.02.14 @ 02:27:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

34 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	OCM - 50M - 50o	0.295
35.00	Free Oil - 100o	0.172

Total Length: 95.00 ft Total Volume: 0.467 bbl

Num Fluid Samples: 0

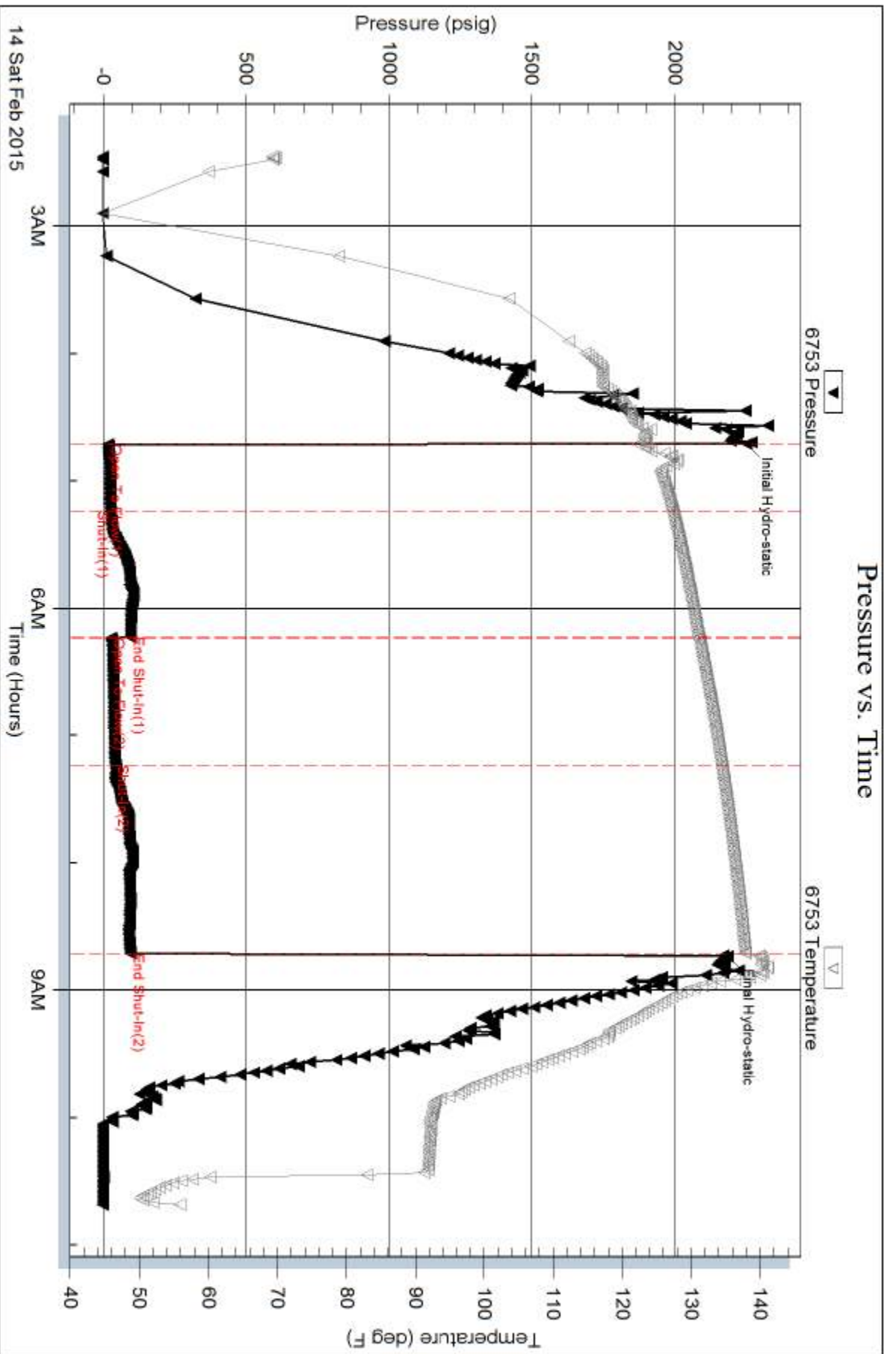
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



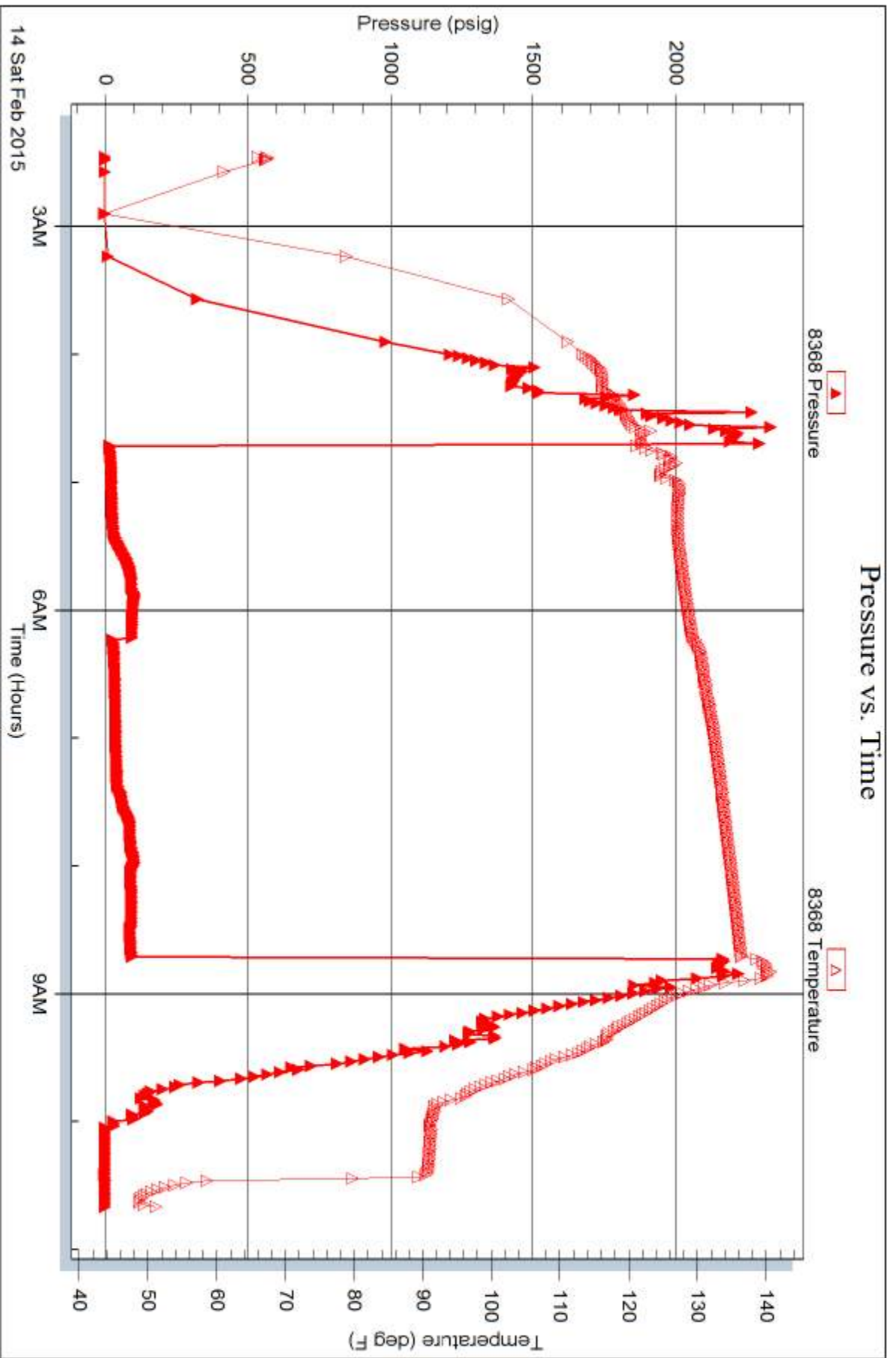
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Inside

Murfin Drilling Co., Inc.

Oilwell 'C' #3-10

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 61095

Printed: 2015.02.16 @ 10:32:11



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61092

Well Name & No. Culwell 'C' # 3-10 Test No. 1 Date 2-11-15
 Company Murfin Drilling Co. Inc. Elevation 3200 KB 3189 GL
 Address 250 N. Water, Ste 300 Wichita Ks 67202
 Co. Rep / Geo. Chuck Schmultz Rig Murfin #20
 Location: Sec. 10 Twp. 1S Rge. 37W Co. Cheyenne State Ks

Interval Tested 4106' - 4225' Zone Tested Lans. - 'A40'
 Anchor Length 119' Drill Pipe Run 3924.54' Mud Wt. 9.4
 Top Packer Depth 4101' Drill Collars Run 184.39' Vis 45
 Bottom Packer Depth 4106' Wt. Pipe Run 0 WL 8.8
 Total Depth 4225' Chlorides 600 ppm System LCM 10#

Blow Description IF - Surface blow built to bottom of the bucket in 7 mins.
ISI - No Return
FF - Surface blow built up to 10"
FST - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>93'</u>	<u>Free Oil</u>	<u>100</u>			
<u>126'</u>	<u>OCM</u>	<u>50</u>			<u>50</u>
<u>121'</u>	<u>OCM</u>	<u>40</u>			<u>60</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 340' BHT 135°F Gravity 30 @ 60°F API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2083 Test 1150 T-On Location 3:05am
 (B) First Initial Flow 80 Jars 250 T-Started 4:04am
 (C) First Final Flow 116 Safety Joint 75 T-Open 6:03am
 (D) Initial Shut-In 720 Circ Sub N/C T-Pulled 10:03am
 (E) Second Initial Flow 139 Hourly Standby T-Out 12:46pm
 (F) Second Final Flow 148 Mileage 130 R/T 130 Comments _____
 (G) Final Shut-In 789 Sampler _____
 (H) Final Hydrostatic 2077 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 0
 Total 1605
 MP/DST Disc't _____
 Sub Total 1605

Approved By _____ Our Representative Paul Fisher

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. 61093

4/10

Well Name & No. Culwell 'C' #3-10 Test No. 2 Date 2-11-15
 Company Murkin Drilling Co., Inc. Elevation 3200 KB 3189 GL
 Address 250 N. Water, Ste 300 Wichita Ks 67202
 Co. Rep / Geo. Chuck Schmultz Rig Murkin #20
 Location: Sec. 10 Twp. 1S Rge. 37W Co. Cheyenne State Ks

Interval Tested 4230-4270 Zone Tested Lans. - G
 Anchor Length 40' Drill Pipe Run 4051.17' Mud Wt. 9.4
 Top Packer Depth 4225 Drill Collars Run 184.39' Vis 60
 Bottom Packer Depth 4230 Wt. Pipe Run 0 WL 6.8
 Total Depth 4270 Chlorides 600 ppm System LCM 10#
 Blow Description IF - Surface blow slowly built to 3/4"
ISI - No Return
FF - No Surface blow
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10'</u>	<u>OSM</u>	<u>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	Feet of	%gas	%oil	%water	%mud

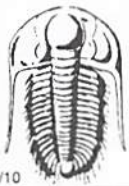
Rec Total 10' BHT 130°F Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2048 Test 1150 T-On Location 11:59pm
 (B) First Initial Flow 19 Jars 250 T-Started 12:26am
 (C) First Final Flow 30 Safety Joint 75 T-Open 2:28am
 (D) Initial Shut-In 1123 Circ Sub N/C T-Pulled 6:20am
 (E) Second Initial Flow 22 Hourly Standby _____ T-Out 8:49am
 (F) Second Final Flow 27 Mileage 130 R/T 130 Comments I messed up on
second open, was sicker
then a dog all night.
 (G) Final Shut-In 1056 Sampler _____ Ruined Shale Packer _____
 (H) Final Hydrostatic 2015 Straddle _____ Ruined Packer _____
 Shale Packer _____ Extra Copies _____
 Extra Packer _____ Extra Recorder _____
 Extra Recorder _____ Day Standby _____
 Day Standby _____ Accessibility _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 80
 Final Shut-In 60

Sub Total 1605 Total 1605 MP/DST Disc't _____

Approved By _____ Our Representative Ronald L. [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. 61094

Well Name & No. Culwell 'C' #3-10 Test No. 3 Date 2-12-15
 Company Murfin Drilling Co., Inc. Elevation 3200 KB 3189 GL
 Address 250 N. Water, Ste 300 Wichita Ks 67202
 Co. Rep / Geo. Chuck Schmultz Rig Murfin #20
 Location: Sec. 10 Twp. 1S Rge. 37W Co. Cheyenne State Ks

Interval Tested 4272-4365 Zone Tested Lans. 'H & J'
 Anchor Length 93' Drill Pipe Run 4082.05' Mud Wt. 9.3
 Top Packer Depth 4267 Drill Collars Run 184.39' Vis 54
 Bottom Packer Depth 4272 Wt. Pipe Run ⊖ WL 6.0
 Total Depth 4365 Chlorides 500 ppm System LCM 10#
 Blow Description IF - Surface blow built up to 3/4"
ISI - No Return
FF - No Surface blow
FST - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10'</u>	<u>asm</u>	<u>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	Feet of	%gas	%oil	%water	%mud

Rec Total 10' BHT 126°F Gravity 1150 API RW 130 @ 130 °F Chlorides 500 ppm

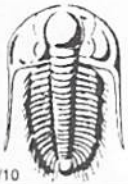
(A) Initial Hydrostatic 2111 Test 1150 T-On Location 10:21pm
 (B) First Initial Flow 15 Jars 250 T-Started 10:39pm
 (C) First Final Flow 21 Safety Joint 75 T-Open 12:27am
 (D) Initial Shut-In 1026 Circ Sub N/C T-Pulled 3:27am
 (E) Second Initial Flow 23 Hourly Standby _____ T-Out 5:24am
 (F) Second Final Flow 26 Mileage 130 R/T 130 Comments _____
 (G) Final Shut-In 832 Sampler _____
 (H) Final Hydrostatic 2046 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1605

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

Sub Total 0
 Total 1605
 MP/DST Disc't _____

Approved By _____ Our Representative Ronald Edman

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61095

Well Name & No. Calwell 'C' #3-10 Test No. 4 Date 2-14-15
 Company Martin Drilling Co., Inc. Elevation 3200 KB 3189 GL
 Address 250 W. Water, Ste 300 Wichita ks 67202
 Co. Rep / Geo. Chuck Schmultz Rig Martin #20
 Location: Sec. 10 Twp. 1S Rge. 37 W Co. Cheyenne State ks

Interval Tested 4520-4565 Zone Tested Pawnee
 Anchor Length 45' Drill Pipe Run 4333.78' Mud Wt. 9.3
 Top Packer Depth 4515 Drill Collars Run 184.39' Vis 60
 Bottom Packer Depth 4520 Wt. Pipe Run 0 WL 7.2
 Total Depth 4565 Chlorides 500 ppm System LCM 10#

Blow Description IF-Surface blow built up to 2"
ISI-Faint return started at end of shut-in.
FF-Surface blow built to 7 1/2"
FSI-Faint return started 4mins into and built to 2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>35'</u>	<u>Free Oil</u>	<u>100</u>			
<u>60'</u>	<u>OCM</u>	<u>50</u>		<u>50</u>	
	<u>189'-G.I.P</u>	<u>100</u>			

Rec Total 95' BHT 137°F Gravity 34 API RW @ ° F Chlorides ppm

(A) Initial Hydrostatic 2250 Test 1150 T-On Location 2:01 am
 (B) First Initial Flow 16 Jars 250 T-Started 2:27 am
 (C) First Final Flow 26 Safety Joint 75 T-Open 4:44 am
 (D) Initial Shut-In 95 Circ Sub N/C T-Pulled 8:44 am
 (E) Second Initial Flow 26 Hourly Standby T-Out 10:41 am
 (F) Second Final Flow 41 Mileage 130 R/T 130 Comments loaded tool after test but not released
 (G) Final Shut-In 96 Sampler
 (H) Final Hydrostatic 2185 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies
 Extra Recorder
 Day Standby
 Accessibility

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1605
 Total 1605
 MP/DST Disc't

Approved By _____

Our Representative [Signature]

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