



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Saman Sharifaie

Culwell "F" #1-14

14-1s-37w Cheyenne,KS

Start Date: 2015.04.10 @ 10:05:00

End Date: 2015.04.10 @ 18:03:30

Job Ticket #: 62229 DST #: 1

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

Printed: 2015.04.16 @ 10:45:04

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

Culwell "F" #1-14

DST # 1

LKC "B-D"

2015.04.10



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62229

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.04.10 @ 10:05:00

GENERAL INFORMATION:

Formation: **LKC "B-D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:16:00

Time Test Ended: 18:03:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 82

Interval: 4170.00 ft (KB) To 4230.00 ft (KB) (TVD)

Reference Elevations: 3214.00 ft (KB)

Total Depth: 4230.00 ft (KB) (TVD)

3203.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8653 Outside

Press@RunDepth: 78.86 psig @ 4171.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.04.10

End Date:

2015.04.10

Last Calib.:

2015.04.10

Start Time: 10:06:00

End Time:

18:03:30

Time On Btm:

2015.04.10 @ 12:11:00

Time Off Btm:

2015.04.10 @ 16:18:00

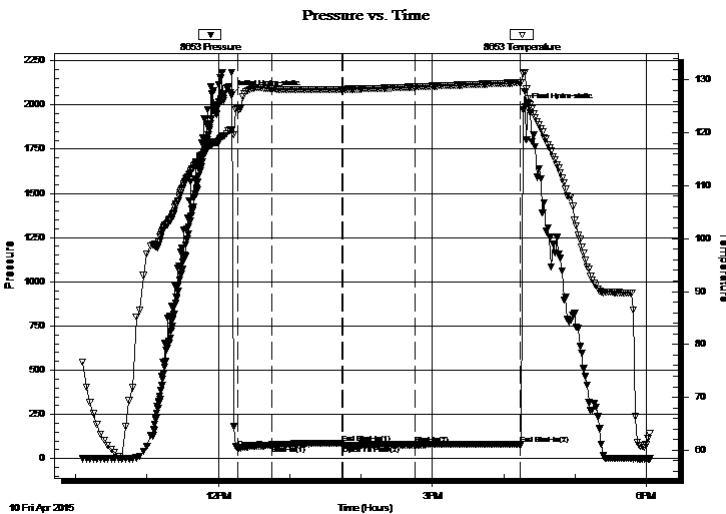
TEST COMMENT: 30 - IF- 1" Blow built to 7"

60 - IS- No Return

60 - FF- Surface Blow started at 7 min. Built to 1/4", then died back to Surface Blow

90 - FS- No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2056.32	120.53	Initial Hydro-static
5	60.37	124.55	Open To Flow (1)
34	76.73	128.32	Shut-In(1)
93	87.39	128.20	End Shut-In(1)
94	76.68	128.20	Open To Flow (2)
154	78.86	128.69	Shut-In(2)
243	81.98	129.52	End Shut-In(2)
247	1987.03	131.44	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
80.00	MCO 40M 60o	0.39
80.00	Free Oil 100o	0.39

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62229

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.04.10 @ 10:05:00

Tool Information

Drill Pipe:	Length: 3942.00 ft	Diameter: 3.80 inches	Volume: 55.30 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: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: 100000.0 lb
			<u>Total Volume: 56.33 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4170.00 ft			Final 75000.00 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

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4143.00	
Shut In Tool	5.00			4148.00	
Hydraulic tool	5.00			4153.00	
Jars	5.00			4158.00	
Safety Joint	3.00			4161.00	
Packer	5.00			4166.00	28.00 Bottom Of Top Packer
Packer	4.00			4170.00	
Stubb	1.00			4171.00	
Recorder	0.00	8653	Outside	4171.00	
Recorder	0.00	8874	Inside	4171.00	
Perforations	20.00			4191.00	
Change Over Sub	1.00			4192.00	
Drill Pipe	32.00			4224.00	
Change Over Sub	1.00			4225.00	
Bullnose	5.00			4230.00	60.00 Bottom Packers & Anchor

Total Tool Length: 88.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62229

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.04.10 @ 10:05:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
80.00	MCO 40M 60o	0.393
80.00	Free Oil 100o	0.393

Total Length: 160.00 ft Total Volume: 0.786 bbl

Num Fluid Samples: 0

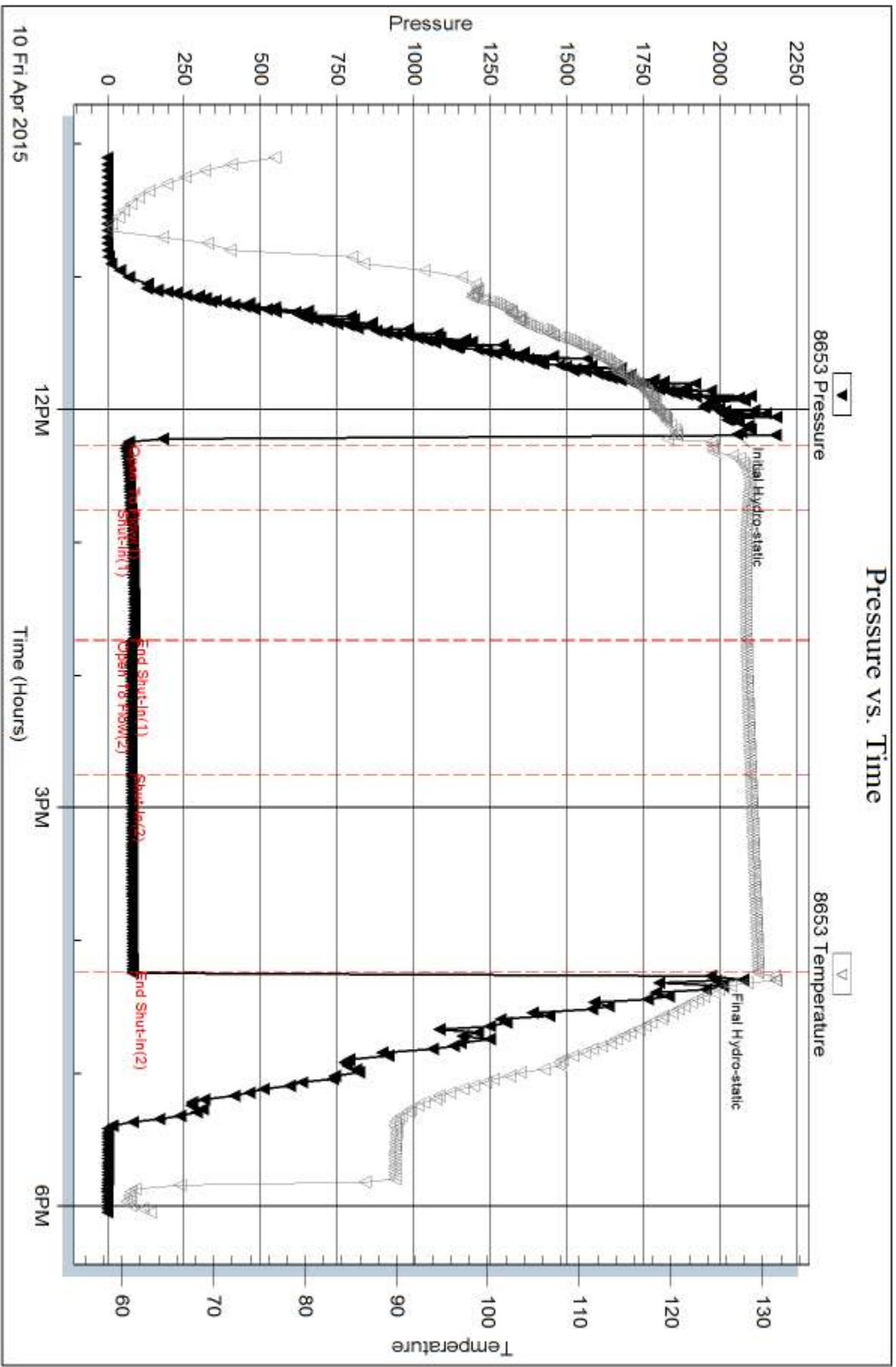
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil API 31 @ 90 deg = 28 corrected



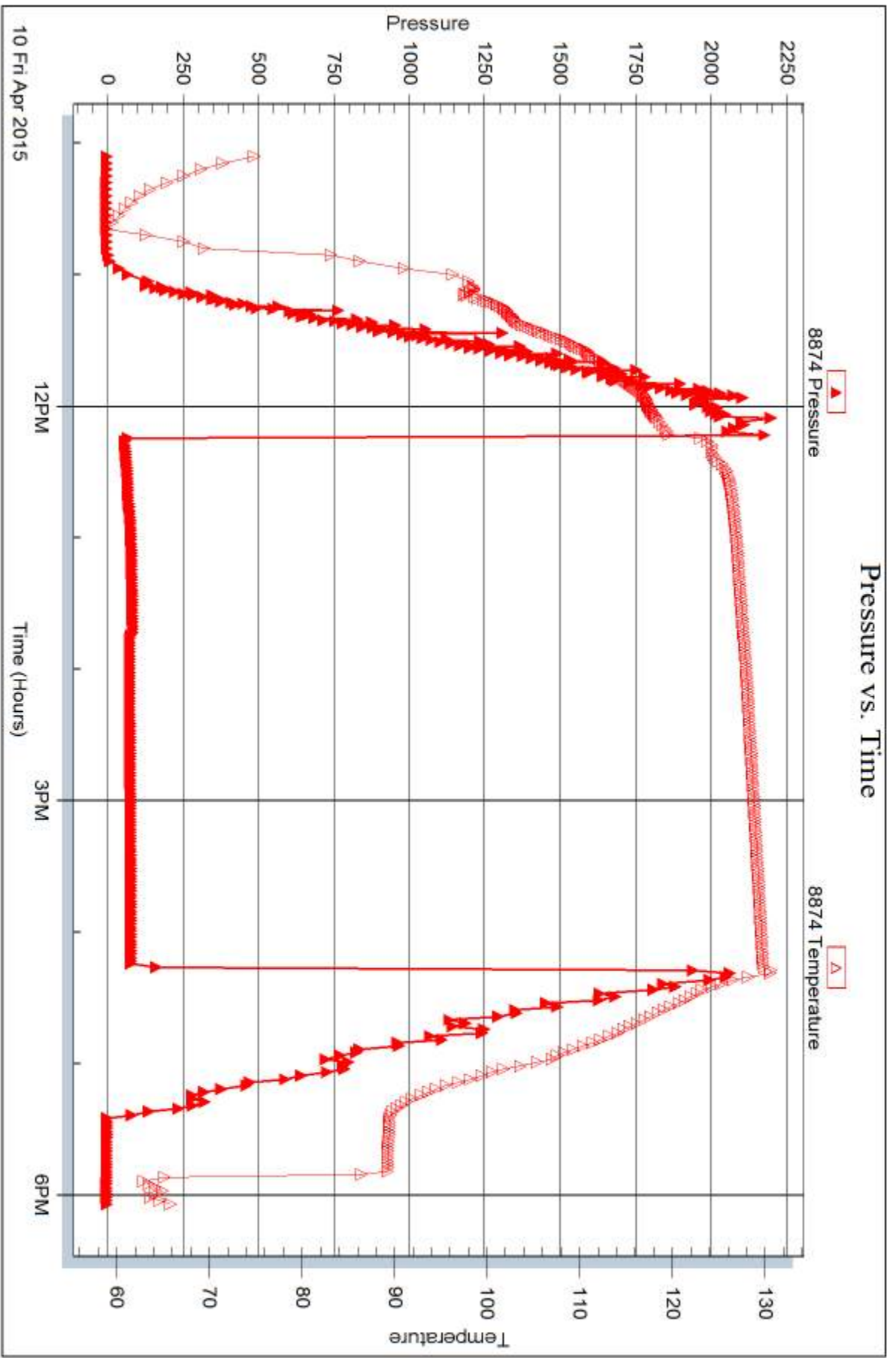
Serial #: 8874

Inside

Murfin Drilling Co., Inc.

Oilwell "P" #1-14

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 62229

Printed: 2015.04.16 @ 10:45:06



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Saman Sharifaie

Culwell "F" #1-14

14-1s-37w Cheyenne,KS

Start Date: 2015.04.11 @ 13:55:00

End Date: 2015.04.11 @ 17:46:30

Job Ticket #: 62230 DST #: 2

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

Printed: 2015.04.16 @ 10:43:02

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

Culwell "F" #1-14

DST # 2

LKC "E-J"

2015.04.11



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne, KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62230

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.04.11 @ 13:55:00

GENERAL INFORMATION:

Formation: **LKC "E-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened:

Time Test Ended: 17:46:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 82

Interval: 4226.00 ft (KB) To 4370.00 ft (KB) (TVD)

Total Depth: 4370.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3214.00 ft (KB)

3203.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8874 Inside

Press@RunDepth: psig @ 4227.00 ft (KB)

Start Date: 2015.04.11

End Date:

2015.04.11

Start Time: 13:56:00

End Time:

17:46:30

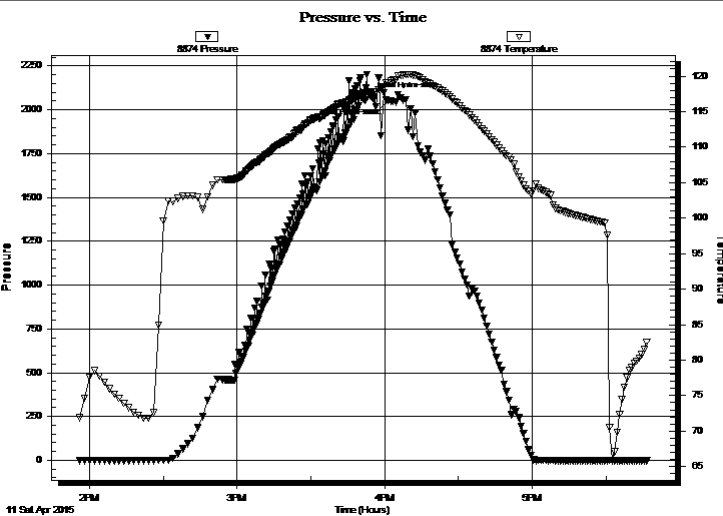
Capacity: 8000.00 psig

Last Calib.: 2015.04.11

Time On Btm: 2015.04.11 @ 15:54:30

Time Off Btm: 2015.04.11 @ 16:01:30

TEST COMMENT: PACKER FAILURE



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2076.56	117.79	Initial Hydro-static
7	2052.77	119.12	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
300.00	Mud 100M	2.30

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62230

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.04.11 @ 13:55:00

Tool Information

Drill Pipe:	Length: 4008.00 ft	Diameter: 3.80 inches	Volume: 56.22 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: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 57.25 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 75000.00 lb
Depth to Top Packer:	4226.00 ft			Final 77000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	144.00 ft			
Tool Length:	172.00 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			4199.00	
Shut In Tool	5.00			4204.00	
Hydraulic tool	5.00			4209.00	
Jars	5.00			4214.00	
Safety Joint	3.00			4217.00	
Packer	5.00			4222.00	28.00 Bottom Of Top Packer
Packer	4.00			4226.00	
Stubb	1.00			4227.00	
Recorder	0.00	8653	Outside	4227.00	
Recorder	0.00	8874	Inside	4227.00	
Perforations	9.00			4236.00	
Change Over Sub	1.00			4237.00	
Drill Pipe	127.00			4364.00	
Change Over Sub	1.00			4365.00	
Bullnose	5.00			4370.00	144.00 Bottom Packers & Anchor

Total Tool Length: 172.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62230

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.04.11 @ 13:55:00

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:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
300.00	Mud 100M	2.295

Total Length: 300.00 ft Total Volume: 2.295 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

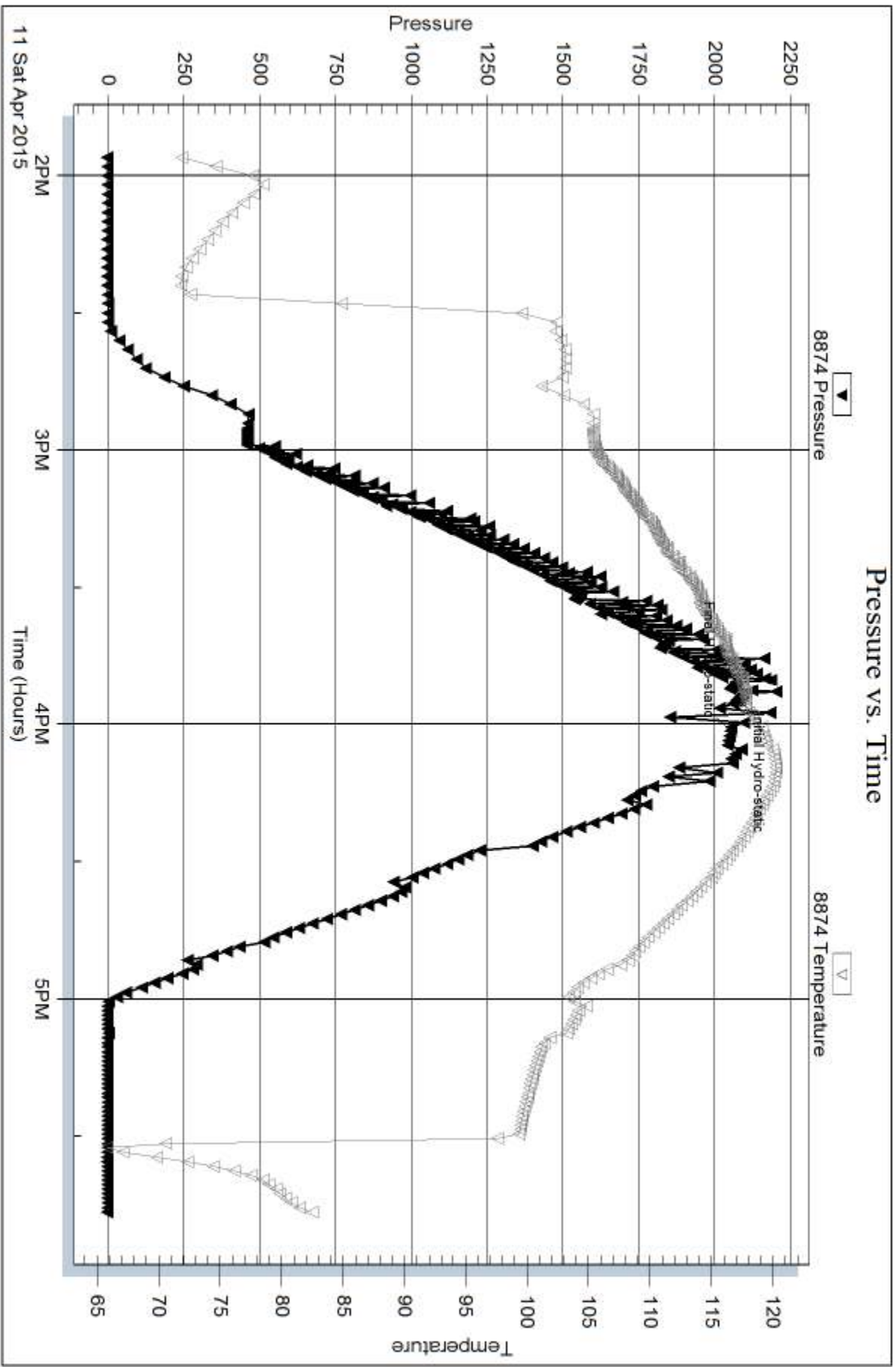
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Inside

Murfin Drilling Co., Inc.

Oilwell "P" #1-14

DST Test Number: 2



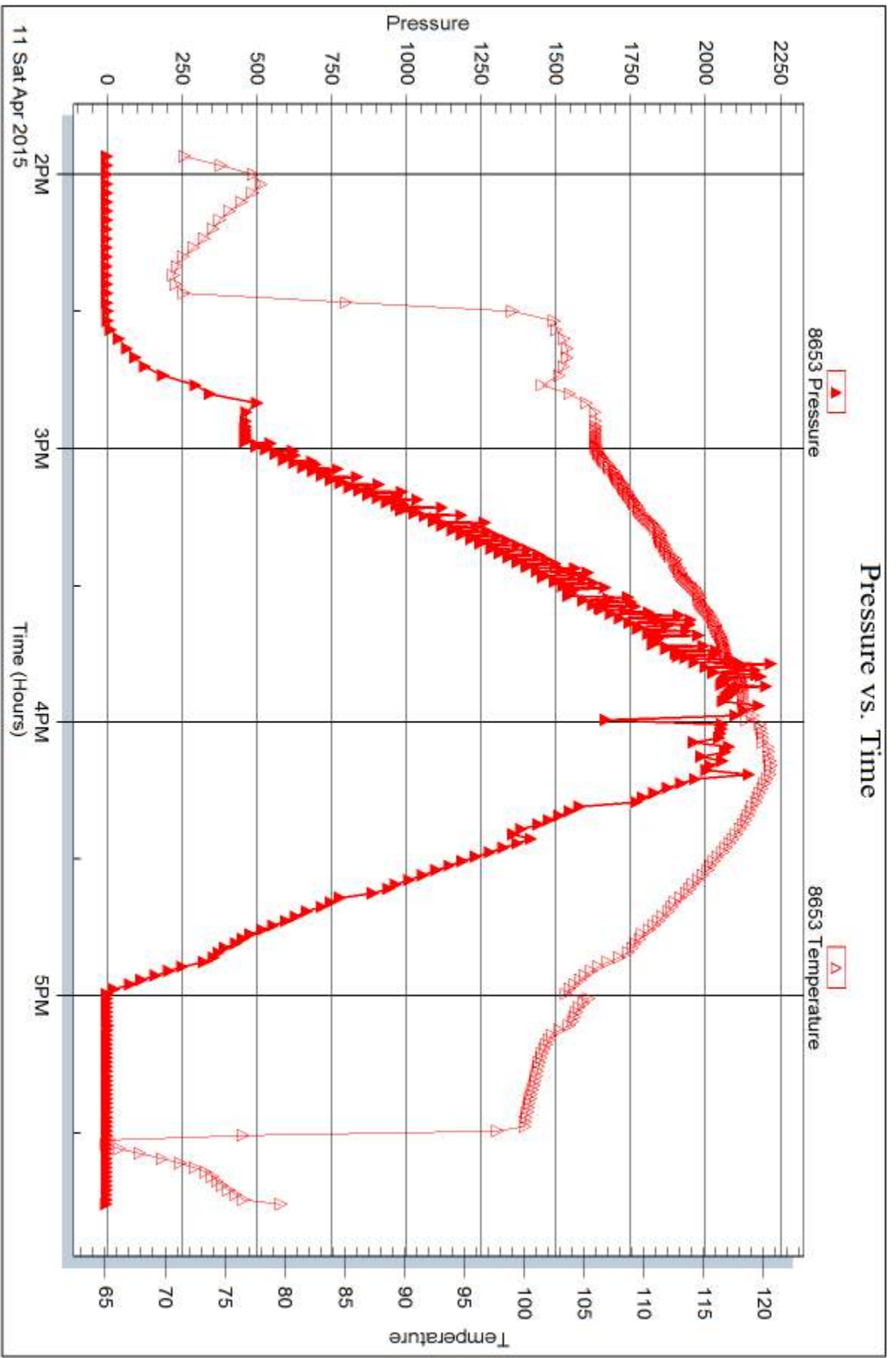
11 Sat Apr 2015

Serial #: 8653

Outside Murfin Drilling Co., Inc.

Oilwell "P" #1-14

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 62230

Printed: 2015.04.16 @ 10:43:15



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Saman Sharifaie

Culwell "F" #1-14

14-1s-37w Cheyenne,KS

Start Date: 2015.04.11 @ 18:00:00

End Date: 2015.04.11 @ 19:31:50

Job Ticket #: 62231 DST #: 3

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

Printed: 2015.04.16 @ 10:36:56

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

Culwell "F" #1-14

DST # 3

LKC "G-J"

2015.04.11



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62231

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2015.04.11 @ 18:00:00

Tool Information

Drill Pipe:	Length: 4004.00 ft	Diameter: 3.80 inches	Volume: 56.17 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: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: lb
			<u>Total Volume: 57.20 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	1.00 ft			String Weight: Initial 75000.00 lb
Depth to Top Packer:	4241.00 ft			Final lb
Depth to Bottom Packer:	ft			
Interval between Packers:	129.00 ft			
Tool Length:	157.00 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			4214.00	
Shut In Tool	5.00			4219.00	
Hydraulic tool	5.00			4224.00	
Jars	5.00			4229.00	
Safety Joint	3.00			4232.00	
Packer	5.00			4237.00	28.00 Bottom Of Top Packer
Packer	4.00			4241.00	
Packer - Shale	0.00			4241.00	
Stubb	1.00			4242.00	
Recorder	0.00	8653	Outside	4242.00	
Recorder	0.00	8874	Inside	4242.00	
Perforations	26.00			4268.00	
Change Over Sub	1.00			4269.00	
Drill Pipe	95.00			4364.00	
Change Over Sub	1.00			4365.00	
Bullnose	5.00			4370.00	129.00 Bottom Packers & Anchor
Total Tool Length:	157.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62231

DST#: 3

ATTN: Saman Sharifaie

Test Start: 2015.04.11 @ 18:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl

Total Length:

ft

Total Volume:

bbbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

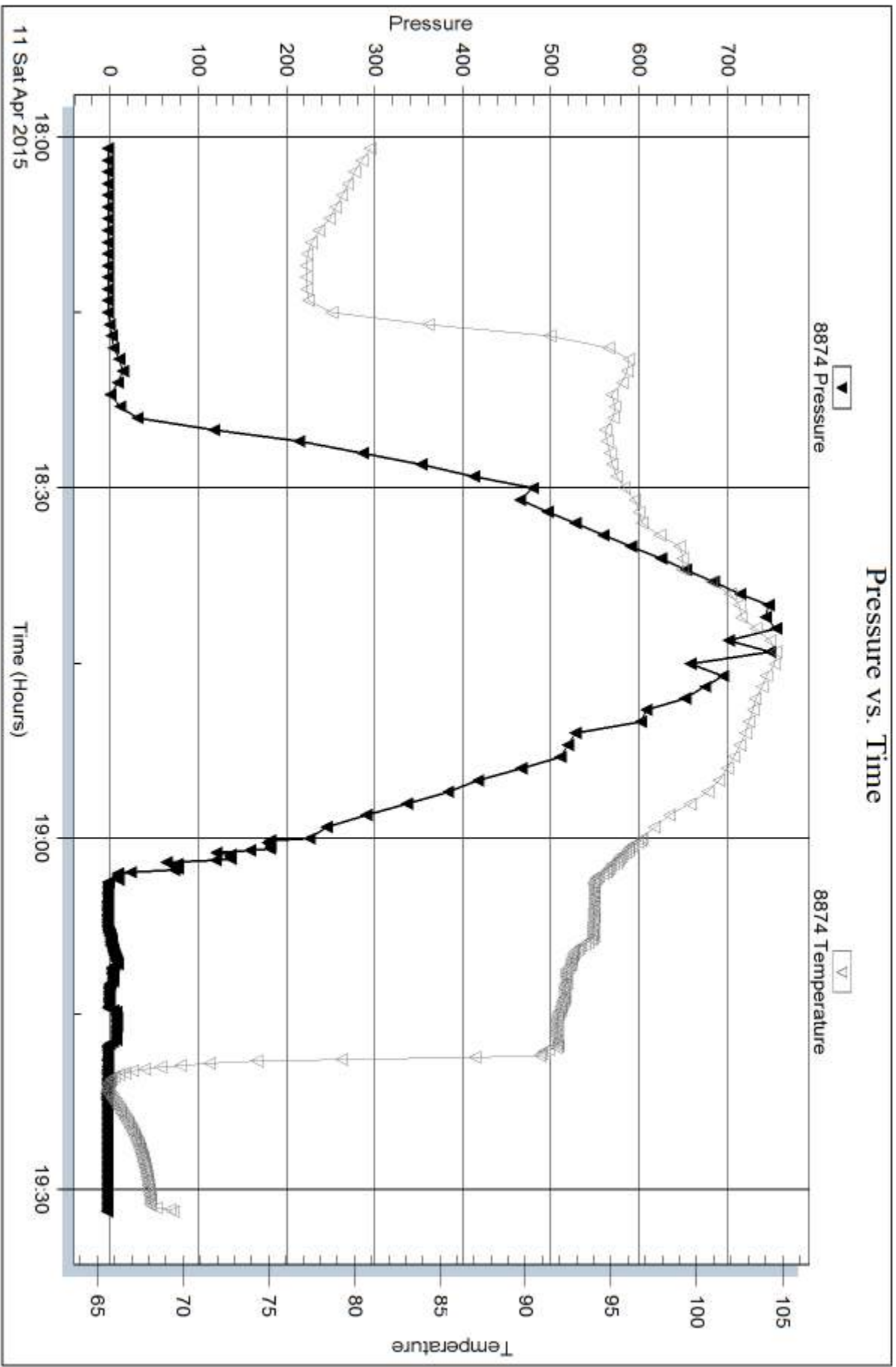
Serial #: 8874

Inside

Murfin Drilling Co., Inc.

Oilwell "F" #1-14

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 62231

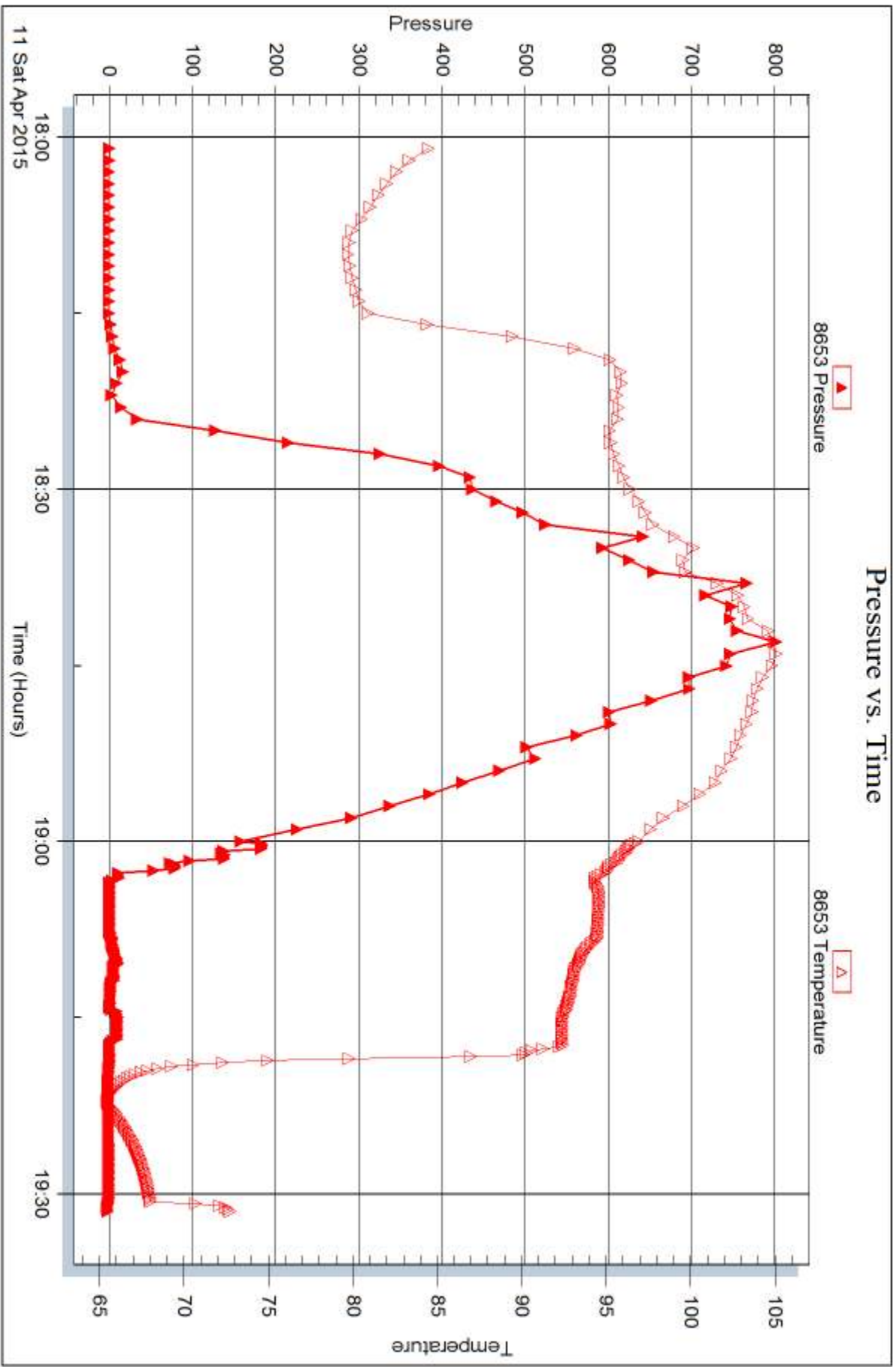
Printed: 2015.04.16 @ 10:36:58

Serial #: 8653

Outside Murfin Drilling Co., Inc.

Oilwell "F" #1-14

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 62231

Printed: 2015.04.16 @ 10:36:58



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Saman Sharifaie

Culwell "F" #1-14

14-1s-37w Cheyenne,KS

Start Date: 2015.04.12 @ 02:27:00

End Date: 2015.04.12 @ 08:58:00

Job Ticket #: 62232 DST #: 4

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

Printed: 2015.04.16 @ 10:29:25



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62232

DST#: 4

ATTN: Saman Sharifaie

Test Start: 2015.04.12 @ 02:27:00

GENERAL INFORMATION:

Formation: **LKC "G-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:09:40

Time Test Ended: 08:58:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 82

Interval: 4241.00 ft (KB) To 4370.00 ft (KB) (TVD)

Reference Elevations: 3214.00 ft (KB)

Total Depth: 4370.00 ft (KB) (TVD)

3203.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8874

Inside

Press@RunDepth: 27.15 psig @ 4242.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.04.12

End Date:

2015.04.12

Last Calib.:

2015.04.12

Start Time: 02:28:00

End Time:

08:58:00

Time On Btm:

2015.04.12 @ 04:09:10

Time Off Btm:

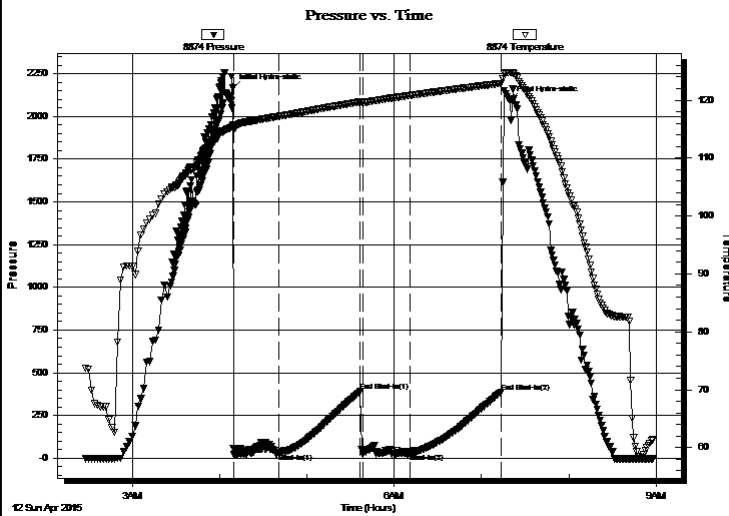
2015.04.12 @ 07:19:30

TEST COMMENT: 30 - IF- 1/4" Blow built to 1/2" then died back to Surface Blow

60 - IS- No Return

30 - FF- No Blow

60 - FS- No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2165.35	115.75	Initial Hydro-static
1	19.73	114.91	Open To Flow (1)
32	27.92	117.18	Shut-In(1)
88	390.15	119.69	End Shut-In(1)
90	23.83	119.56	Open To Flow (2)
122	27.15	120.78	Shut-In(2)
185	387.67	122.89	End Shut-In(2)
191	2090.65	124.78	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 10o 90M	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.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62232

DST#: 4

ATTN: Saman Sharifaie

Test Start: 2015.04.12 @ 02:27:00

Tool Information

Drill Pipe:	Length: 4030.00 ft	Diameter: 3.80 inches	Volume: 56.53 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: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 57.56 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 75000.00 lb
Depth to Top Packer:	4241.00 ft			Final 75000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	129.00 ft			
Tool Length:	157.00 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			4214.00	
Shut In Tool	5.00			4219.00	
Hydraulic tool	5.00			4224.00	
Jars	5.00			4229.00	
Safety Joint	3.00			4232.00	
Packer	5.00			4237.00	28.00 Bottom Of Top Packer
Packer	4.00			4241.00	
Packer - Shale	0.00			4241.00	
Stubb	1.00			4242.00	
Recorder	0.00	8653	Outside	4242.00	
Recorder	0.00	8874	Inside	4242.00	
Perforations	26.00			4268.00	
Change Over Sub	1.00			4269.00	
Drill Pipe	95.00			4364.00	
Change Over Sub	1.00			4365.00	
Bullnose	5.00			4370.00	129.00 Bottom Packers & Anchor
Total Tool Length:	157.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62232

DST#: 4

ATTN: Saman Sharifaie

Test Start: 2015.04.12 @ 02:27:00

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:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	OCM 10o 90M	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

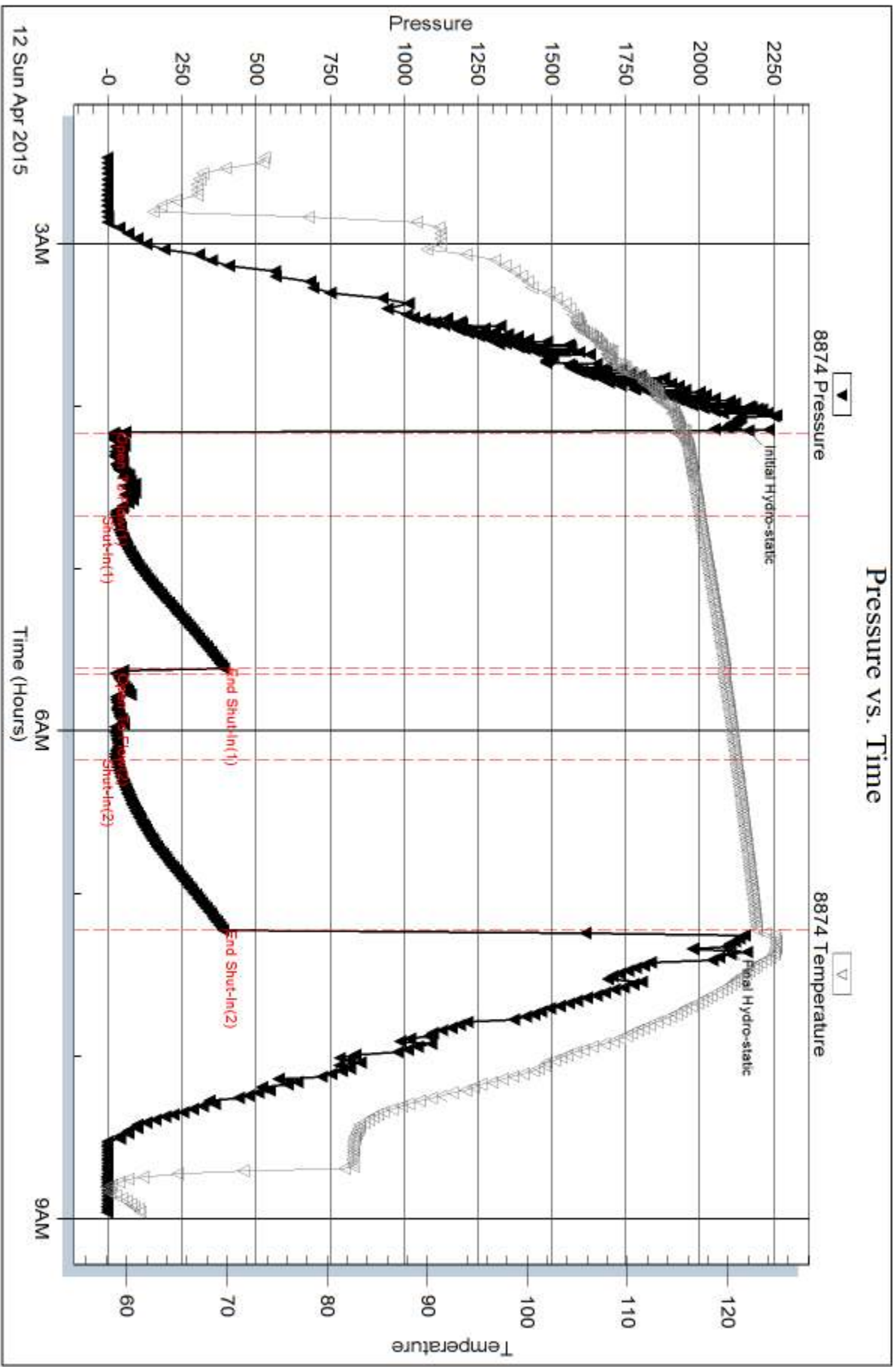
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

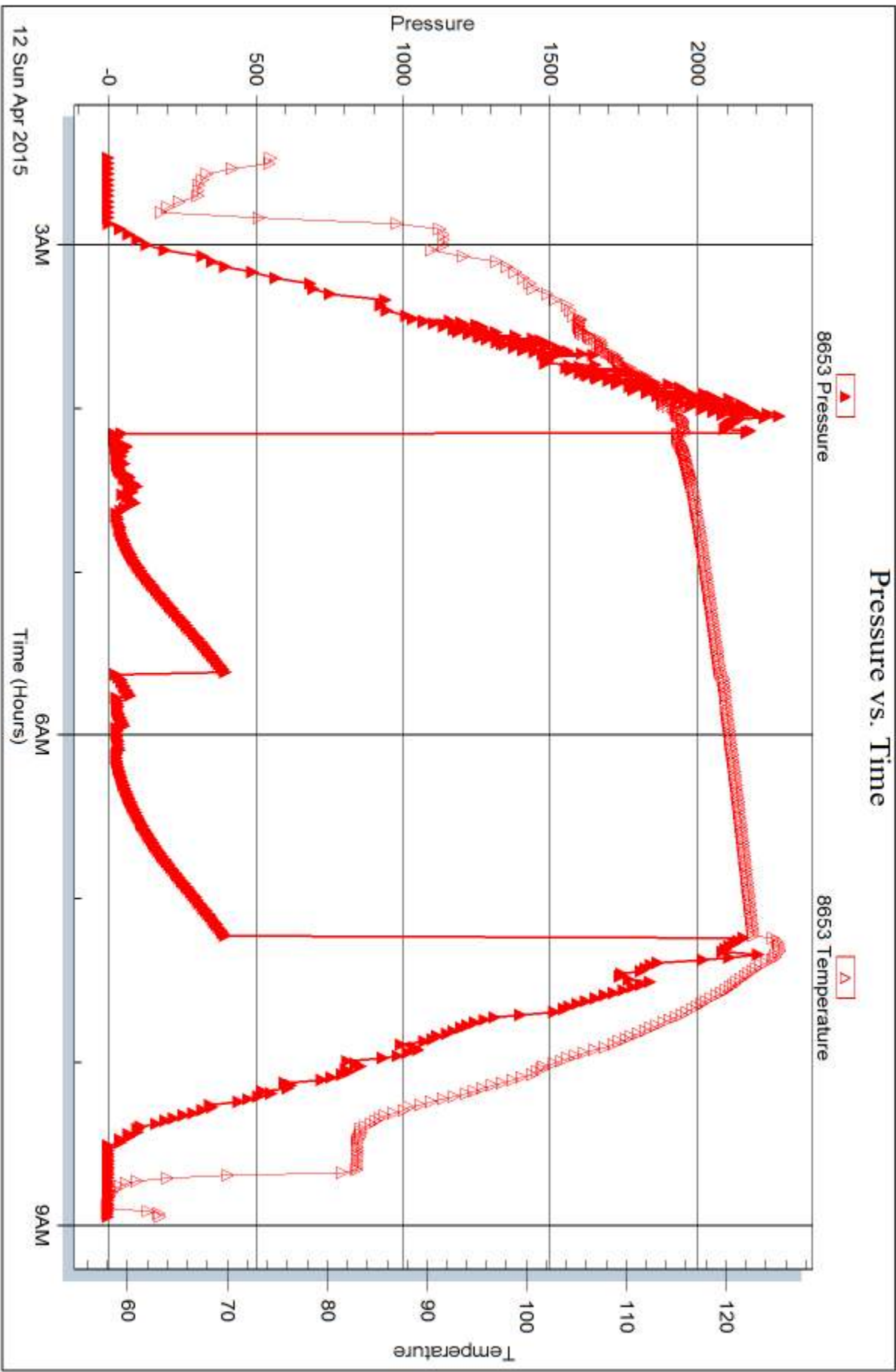


Serial #: 8653

Outside Murfin Drilling Co., Inc.

Oilwell "P" #1-14

DST Test Number: 4





DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Saman Sharifaie

Culwell "F" #1-14

14-1s-37w Cheyenne,KS

Start Date: 2015.04.13 @ 05:00:00

End Date: 2015.04.13 @ 13:09:00

Job Ticket #: 62233 DST #: 5

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

Printed: 2015.04.16 @ 10:09:12



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne, KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62233

DST#: 5

ATTN: Saman Sharifaie

Test Start: 2015.04.13 @ 05:00:00

GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:53:30

Time Test Ended: 13:09:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 82

Interval: 4528.00 ft (KB) To 4570.00 ft (KB) (TVD)

Reference Elevations: 3214.00 ft (KB)

Total Depth: 4570.00 ft (KB) (TVD)

3203.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8653 Outside

Press@RunDepth: 71.97 psig @ 4529.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.04.13

End Date:

2015.04.13

Last Calib.: 2015.04.13

Start Time: 05:01:00

End Time:

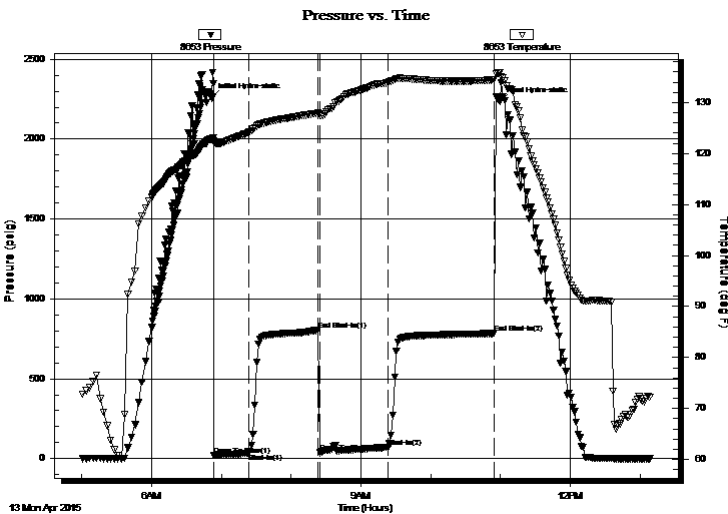
13:09:00

Time On Btm: 2015.04.13 @ 06:52:10

Time Off Btm: 2015.04.13 @ 10:59:30

TEST COMMENT: 30 - IF- 1/4" Blow built to 6 3/4"
60 - IS- No Return
60 - FF- Surface Blow started at 4 min. BoB in 55 min.
90 - FS- No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2257.21	122.87	Initial Hydro-static
2	20.70	122.27	Open To Flow (1)
32	34.61	124.17	Shut-In(1)
91	804.77	127.94	End Shut-In(1)
93	37.45	127.65	Open To Flow (2)
152	71.97	133.98	Shut-In(2)
243	784.09	134.46	End Shut-In(2)
248	2235.88	135.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCM 30o 70M	0.30
100.00	CGO 20G 80o	0.49
0.00	300' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62233

DST#: 5

ATTN: Saman Sharifaie

Test Start: 2015.04.13 @ 05:00:00

Tool Information

Drill Pipe:	Length: 4315.00 ft	Diameter: 3.80 inches	Volume: 60.53 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: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: 84000.00 lb
			<u>Total Volume: 61.56 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	4528.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	42.00 ft			
Tool Length:	70.00 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			4501.00	
Shut In Tool	5.00			4506.00	
Hydraulic tool	5.00			4511.00	
Jars	5.00			4516.00	
Safety Joint	3.00			4519.00	
Packer	5.00			4524.00	28.00 Bottom Of Top Packer
Packer	4.00			4528.00	
Packer - Shale	0.00			4528.00	
Stubb	1.00			4529.00	
Recorder	0.00	8653	Outside	4529.00	
Recorder	0.00	8874	Inside	4529.00	
Perforations	2.00			4531.00	
Change Over Sub	1.00			4532.00	
Drill Pipe	32.00			4564.00	
Change Over Sub	1.00			4565.00	
Bullnose	5.00			4570.00	42.00 Bottom Packers & Anchor
Total Tool Length:	70.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

14-1s-37w Cheyenne,KS

250 N Water STE #300
Wichita, KS 67202

Culwell "F" #1-14

Job Ticket: 62233

DST#: 5

ATTN: Saman Sharifaie

Test Start: 2015.04.13 @ 05:00:00

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: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	OCM 30o 70M	0.295
100.00	CGO 20G 80o	0.492
0.00	300' GIP	0.000

Total Length: 160.00 ft Total Volume: 0.787 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

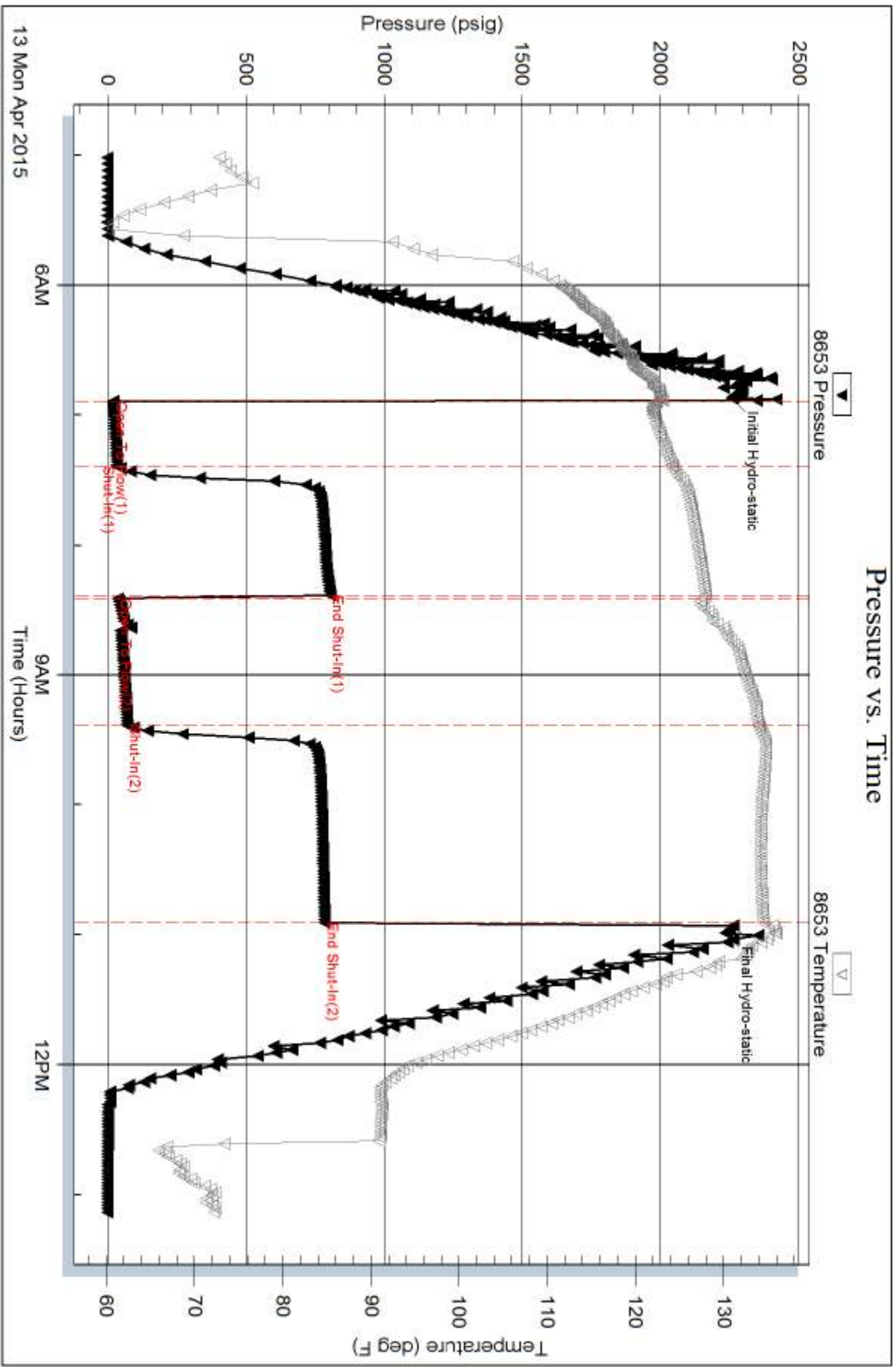
Recovery Comments: OIL API 37 @ 90 deg. = 34 corrected

Serial #: 8653

Outside Murfin Drilling Co., Inc.

Oilwell "P" #1-14

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 62233

Printed: 2015.04.16 @ 10:09:13

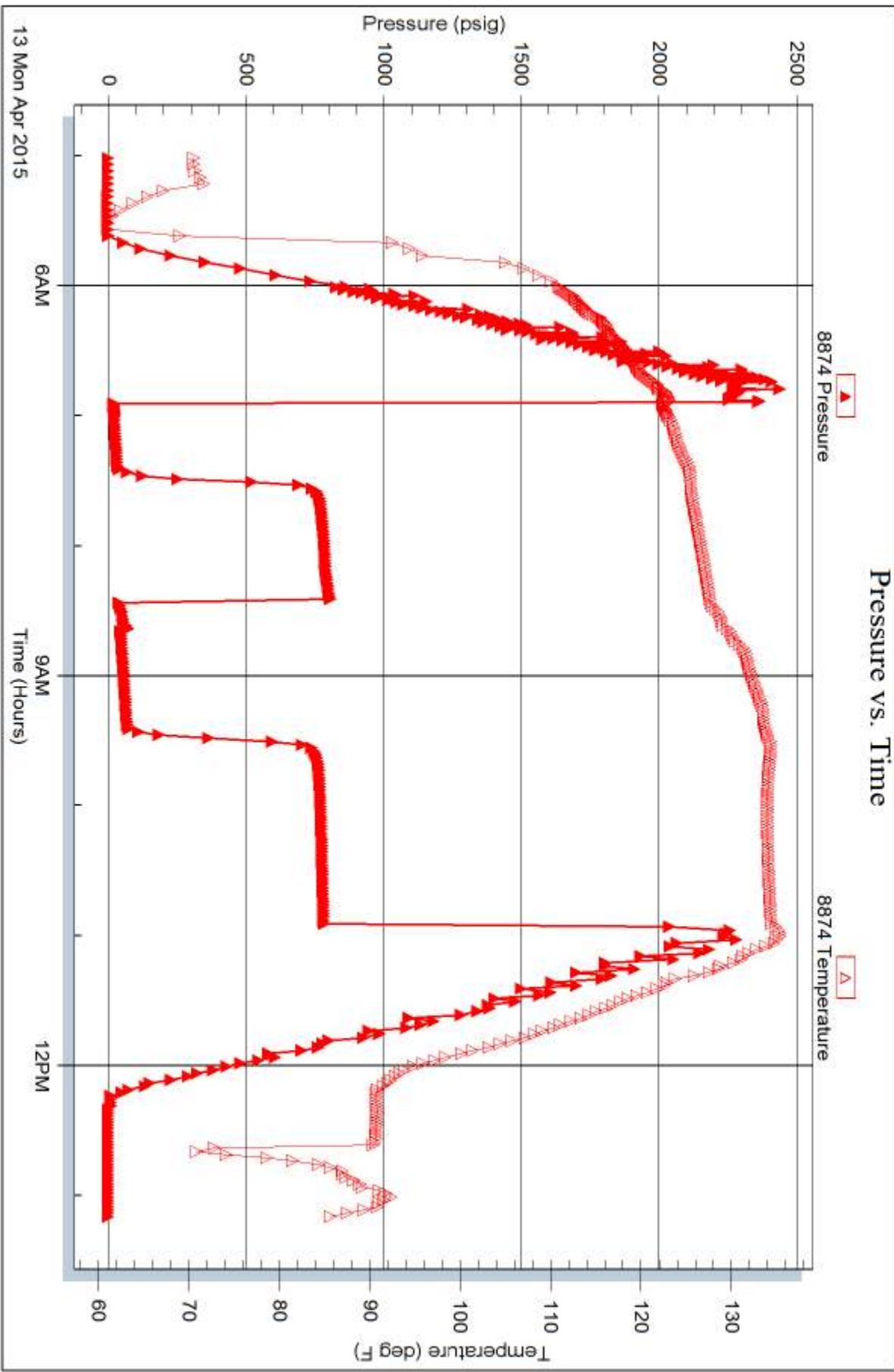
Serial #: 8874

Inside

Murfin Drilling Co., Inc.

Oilwell "F" #1-14

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62229

Well Name & No. Culwell "F" #1-14 Test No. 1 Date 4-10-15
 Company Murphy Drilling Co. Inc Elevation 3214 KB 3203 GL
 Address 250 N Water Wichita, KS 67202
 Co. Rep / Geo. Samun Sharifaie Rig Murphy #2
 Location: Sec. 14 Twp. 1S Rge. 37 W Co. Cherokee State KS

Interval Tested 4170 - 4230' Zone Tested LKC "B-D"
 Anchor Length 60' Drill Pipe Run 3942' Mud Wt. 9.4
 Top Packer Depth 4166 Drill Collars Run 210' Vis 55
 Bottom Packer Depth 4170 Wt. Pipe Run 0 WL 8.0
 Total Depth 4230 Chlorides 1,000 ppm System LCM 10*
 Blow Description IF = 1" Blow built to 7"
ISI - No Return
FF - Surface Blow started at 7 min. Built to
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>80</u>	<u>Free Oil</u>	<u>100</u>			
<u>80</u>	<u>Mud</u>	<u>60</u>		<u>40</u>	

Rec Total 160 BHT 130 Gravity 29 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2056 Test 1150 T-On Location 9:50 AM
 (B) First Initial Flow 60 Jars 250 T-Started 10:05 AM
 (C) First Final Flow 76 Safety Joint 75 T-Open 12:15 PM
 (D) Initial Shut-In 87 Circ Sub T-Pulled 4:15 PM
 (E) Second Initial Flow 76 Hourly Standby T-Out 6:04 PM
 (F) Second Final Flow 78 Mileage 136 RT 128
 (G) Final Shut-In 81 Sampler
 (H) Final Hydrostatic 1987 Straddle
 Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby
 Accessibility
 Sub Total 1603

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

Comments
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1603
 MP/DST Disc't

Approved By _____ Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62230

Well Name & No. Culwell "F" #1-14 Test No. 2 Date 4-11-15
 Company Murphy Drilling Co., Inc Elevation 3214 KB 3203 GL
 Address 250 N Water STE #3000 Wichita, KS 67202
 Co. Rep / Geo. Samuel Shurifae Rig Murphy #2
 Location: Sec. 14 Twp. 15 Rge. 37 W Co. Cherokee State KS

Interval Tested 4226-4370 Zone Tested LKC "E-S"
 Anchor Length 144' Drill Pipe Run 40008 Mud Wt. 9.1
 Top Packer Depth 4222 Drill Collars Run 210' Vis 57
 Bottom Packer Depth 4226 Wt. Pipe Run 0 WL 5.6
 Total Depth 4370 Chlorides 10000 ppm System LCM 12[#]
 Blow Description IF -
ISI -
FF - packer failure
FSI -

Rec	Feet of	%gas	%oil	%water	%mud
<u>300</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 300 BHT 118 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2097 Test 950 T-On Location 1:45 PM
 (B) First Initial Flow | Jars 250 T-Started 1:55 PM
 (C) First Final Flow | Safety Joint 75 T-Open 3:55 PM
 (D) Initial Shut-In | Circ Sub — T-Pulled 4:40 PM
 (E) Second Initial Flow | Hourly Standby — T-Out 5:46 PM
 (F) Second Final Flow | Mileage 136 RT 128
 (G) Final Shut-In | Sampler —
 (H) Final Hydrostatic 2052 Straddle —
 Shale Packer —
 Shale Packer —
 Extra Packer —
 Extra Recorder —
 Day Standby —
 Accessibility —
 Sub Total 1403

Initial Open |
 Initial Shut-In |
 Final Flow |
 Final Shut-In |

Sub Total 1403

Comments —
 Ruined Shale Packer —
 Ruined Packer —
 Extra Copies 0
 Sub Total 0
 Total 1403
 MP/DST Disc't —

Approved By _____ Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62231

Well Name & No. Culwell "F" #14 Test No. 3 Date 4-11-15
 Company Murfin Drilling Co, Inc. Elevation 3214 KB 3243 GL
 Address 250 N Water St #3000 Wichita, KS 67202
 Co. Rep / Geo. Samir Sharifaie Rig Murfin #2
 Location: Sec. 14 Twp. 1S Rge. 37W Co. Cheyeme State KS

Interval Tested 4241-4370 Zone Tested LKC "G-5"
 Anchor Length 129' Drill Pipe Run _____ Mud Wt. 9.1
 Top Packer Depth 4237 Drill Collars Run 210' Vis 57
 Bottom Packer Depth 4241 - Shale Packer Wt. Pipe Run 0 WL 5.6
 Total Depth 4370 Chlorides 40000 ppm System LCM 12#
 Blow Description IF - Hit Bridge @ 1650
FF -
PSI - Tripped out to condition hole.

Rec	Feet of	%gas	%oil	%water	%mud

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

(A) Initial Hydrostatic _____ Test 850 T-On Location 1:45 PM
 (B) First Initial Flow _____ Jars 250 T-Started 6:00 PM
 (C) First Final Flow _____ Safety Joint 75 T-Open _____
 (D) Initial Shut-In _____ Circ Sub _____ T-Pulled _____
 (E) Second Initial Flow _____ Hourly Standby _____ T-Out 7:32 PM
 (F) Second Final Flow _____ Mileage _____
 (G) Final Shut-In _____ Sampler _____
 (H) Final Hydrostatic _____ Straddle _____
 Shale Packer 250 Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1425
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1425

Approved By _____ Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62232

Well Name & No. Culwell "F" #14 Test No. 4 Date 4-12-15
 Company MURKIN Drilling CO., Inc. Elevation 3214 KB 3203 GL
 Address 2508 N Water STE #300 Wichita, KS 67202
 Co. Rep / Geo. Saman Sharifaie Rig MURKIN #2
 Location: Sec. 14 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4241-4370 Zone Tested LKC "G-5"
 Anchor Length 129' Drill Pipe Run 4030 Mud Wt. 9.1
 Top Packer Depth 4237 Drill Collars Run 210 Vis 57
 Bottom Packer Depth 4241 - shale Packer Wt. Pipe Run 0 WL 5.6
 Total Depth 4370 Chlorides 10000 ppm System LCM 12#

Blow Description IE - 1/4" Blow built to 1/2" Then died back to Surface Blow
ISI - NO Return
FF - NO Blow
PSE - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>CCM</u>	<u>10</u>		<u>90</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 123 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2165 Test 1150 T-On Location 2:10 Am
 (B) First Initial Flow 19 Jars 250 T-Started 2:27 Am
 (C) First Final Flow 27 Safety Joint 75 T-Open 4:10 Am
 (D) Initial Shut-In 390 Circ Sub _____ T-Pulled 7:10 Am
 (E) Second Initial Flow 23 Hourly Standby _____ T-Out 8:58 Am
 (F) Second Final Flow 27 Mileage 136 RT 128 Comments _____
 (G) Final Shut-In 387 Sampler _____
 (H) Final Hydrostatic 2090 Straddle _____
 Shale Packer 250 Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____
 Initial Open 30 Day Standby _____ Sub Total 0
 Initial Shut-In 60 Accessibility _____ Total 1853
 Final Flow 30 Sub Total 1853 MP/DST Disc't _____
 Final Shut-In 60

Approved By _____ Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62233

Well Name & No. Culwell "F" #1-14 Test No. 5 Date 4-13-14
 Company Murrin Drilling Co., Inc. Elevation 3214 KB 3203 GL
 Address 250 N Water STE #3000 Wichita, KS 67202
 Co. Rep / Geo. Saman Sharifaie Rig Murrin #2
 Location: Sec. 14 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4528-4570 Zone Tested Pawnee
 Anchor Length 42' Drill Pipe Run 4315' Mud Wt. 9.3
 Top Packer Depth 4524 Drill Collars Run 210 Vis 58
 Bottom Packer Depth 4528 - shale packer Wt. Pipe Run 0 WL 60
 Total Depth 4570 Chlorides 10000 ppm System LCM 12#
 Blow Description IF - 1/4" Blow built to 6 3/4"
ISI - NO Return
FF - Surface Blow started at 4 min. Built to BoB in 55 min.
FSI - ~~NO Return~~ NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>1000</u>	<u>C60</u>	<u>20</u>	<u>80</u>		
<u>60</u>	<u>CCM</u>		<u>30</u>	<u>70</u>	
<u>3000</u>	<u>GIP</u>	<u>1000</u>			
Rec Total	<u>1600'</u>	BHT <u>135</u>	Gravity <u>34</u>	API RW <u>-</u>	@ <u>-</u> °F Chlorides <u>-</u> ppm

(A) Initial Hydrostatic 2257 Test 1150 T-On Location 4:55: AM
 (B) First Initial Flow 20 Jars 250 T-Started 5:00 AM
 (C) First Final Flow 34 Safety Joint 75 T-Open 6:54 AM
 (D) Initial Shut-In 804 Circ Sub _____ T-Pulled 10:54 AM
 (E) Second Initial Flow 37 Hourly Standby _____ T-Out 1:10 PM
 (F) Second Final Flow 71 Mileage 136 RT 128 Comments loaded tools
 (G) Final Shut-In 784 Sampler _____ at end of test
 (H) Final Hydrostatic 2235 Straddle _____ Ruined Shale Packer X1 350
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 350
 Initial Shut-In 60 Day Standby _____ Total 2203
 Final Flow 60 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 90 Sub Total 1853

Approved By _____ Our Representative

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