



## DRILL STEM TEST REPORT

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

250 N Water STE #300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Theron #3-10**

#### **10-1S-37W Cheyenne, KS**

Start Date: 2014.07.20 @ 03:43:00

End Date: 2014.07.20 @ 11:26:30

Job Ticket #: 58242                      DST #: 1

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

Printed: 2014.07.24 @ 15:11:04



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N Water STE #300  
Wichita, KS 67202  
ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

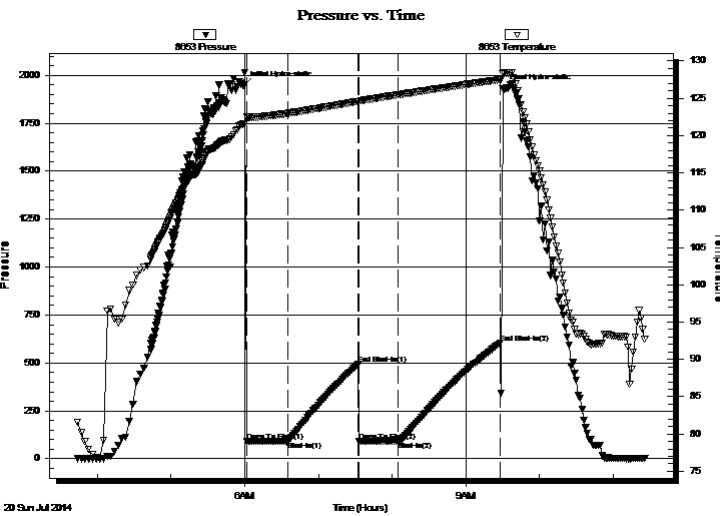
Job Ticket: 58242      **DST#: 1**  
Test Start: 2014.07.20 @ 03:43:00

## GENERAL INFORMATION:

Formation: **Oread**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 06:02:00  
Time Test Ended: 11:26:30  
Interval: **4011.00 ft (KB) To 4075.00 ft (KB) (TVD)**  
Total Depth: 4075.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Kevin Mack  
Unit No: 66  
Reference Elevations: 3197.00 ft (KB)  
3192.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8653      Outside**  
Press@RunDepth: 93.66 psig @ 4012.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2014.07.20      End Date: 2014.07.20      Last Calib.: 2014.07.20  
Start Time: 03:44:00      End Time: 11:26:30      Time On Btm: 2014.07.20 @ 05:59:30  
Time Off Btm: 2014.07.20 @ 09:30:00

TEST COMMENT: 30 - IF- 1/4" Blow died back to 1/8"  
60 - IS- No Return  
30 - FF- No Blow  
60 - FS- No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1948.07	121.58	Initial Hydro-static
3	89.91	122.46	Open To Flow (1)
36	91.21	122.98	Shut-In(1)
93	491.83	124.59	End Shut-In(1)
94	91.44	124.56	Open To Flow (2)
126	93.66	125.46	Shut-In(2)
209	603.85	127.50	End Shut-In(2)
211	1929.23	128.29	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
135.00	Mud 100M	0.66

## Gas Rates

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



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# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

250 N Water STE #300  
Wichita, KS 67202

ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58242

**DST#: 1**

Test Start: 2014.07.20 @ 03:43:00

## GENERAL INFORMATION:

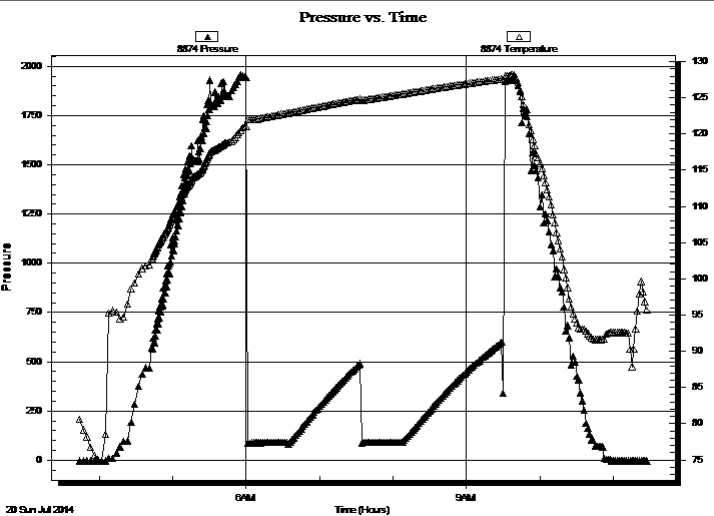
Formation:	<b>Oread</b>		Test Type:	Conventional Bottom Hole (Initial)
Deviated:	No Whipstock:	ft (KB)	Tester:	Kevin Mack
Time Tool Opened:	06:02:00		Unit No:	66
Time Test Ended:	11:26:30		Reference Elevations:	3197.00 ft (KB) 3192.00 ft (CF)
<b>Interval:</b>	<b>4011.00 ft (KB) To 4075.00 ft (KB) (TVD)</b>		KB to GR/CF:	5.00 ft
Total Depth:	4075.00 ft (KB) (TVD)			
Hole Diameter:	7.88 inches		Hole Condition:	Good

## Serial #: 8874

**Inside**

Press@RunDepth:	psig @	4012.00 ft (KB)	Capacity:	8000.00 psig	
Start Date:	2014.07.20	End Date:	2014.07.20	Last Calib.:	2014.07.20
Start Time:	03:44:00	End Time:	11:28:00	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: 30 - IF- 1/4" Blow died back to 1/8"  
60 - ISI- No Return  
30 - FF- No Blow  
60 - FSI- No Return



20 Sun Jul 2014

## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
135.00	Mud 100M	0.66

## 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

**Theron #3-10**

Job Ticket: 58242

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2014.07.20 @ 03:43:00

## Tool Information

Drill Pipe:	Length: 3815.00 ft	Diameter: 3.80 inches	Volume: 53.51 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: 183.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose:	68000.00 lb
			<u>Total Volume: 54.41 bbl</u>	Tool Chased	20.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4011.00 ft			Final	65000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	64.00 ft				
Tool Length:	92.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: Chased tool approx 20'to bottom. Reset tool and bled off initial mud surge

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3984.00	
Shut In Tool	5.00			3989.00	
Hydraulic tool	5.00			3994.00	
Jars	5.00			3999.00	
Safety Joint	3.00			4002.00	
Packer	5.00			4007.00	28.00 Bottom Of Top Packer
Packer	4.00			4011.00	
Stubb	1.00			4012.00	
Recorder	0.00	8653	Outside	4012.00	
Recorder	0.00	8874	Inside	4012.00	
Perforations	25.00			4037.00	
Change Over Sub	1.00			4038.00	
Drill Pipe	31.00			4069.00	
Change Over Sub	1.00			4070.00	
Bullnose	5.00			4075.00	64.00 Bottom Packers & Anchor

**Total Tool Length: 92.00**



**TRILOBITE  
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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**10-1S-37W Cheyenne, KS**

250 N Water STE #300  
Wichita, KS 67202

**Theron #3-10**

Job Ticket: 58242

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2014.07.20 @ 03:43:00

## 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: 63.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.58 in<sup>3</sup>

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
135.00	Mud 100M	0.664

Total Length: 135.00 ft      Total Volume: 0.664 bbl

Num Fluid Samples: 0

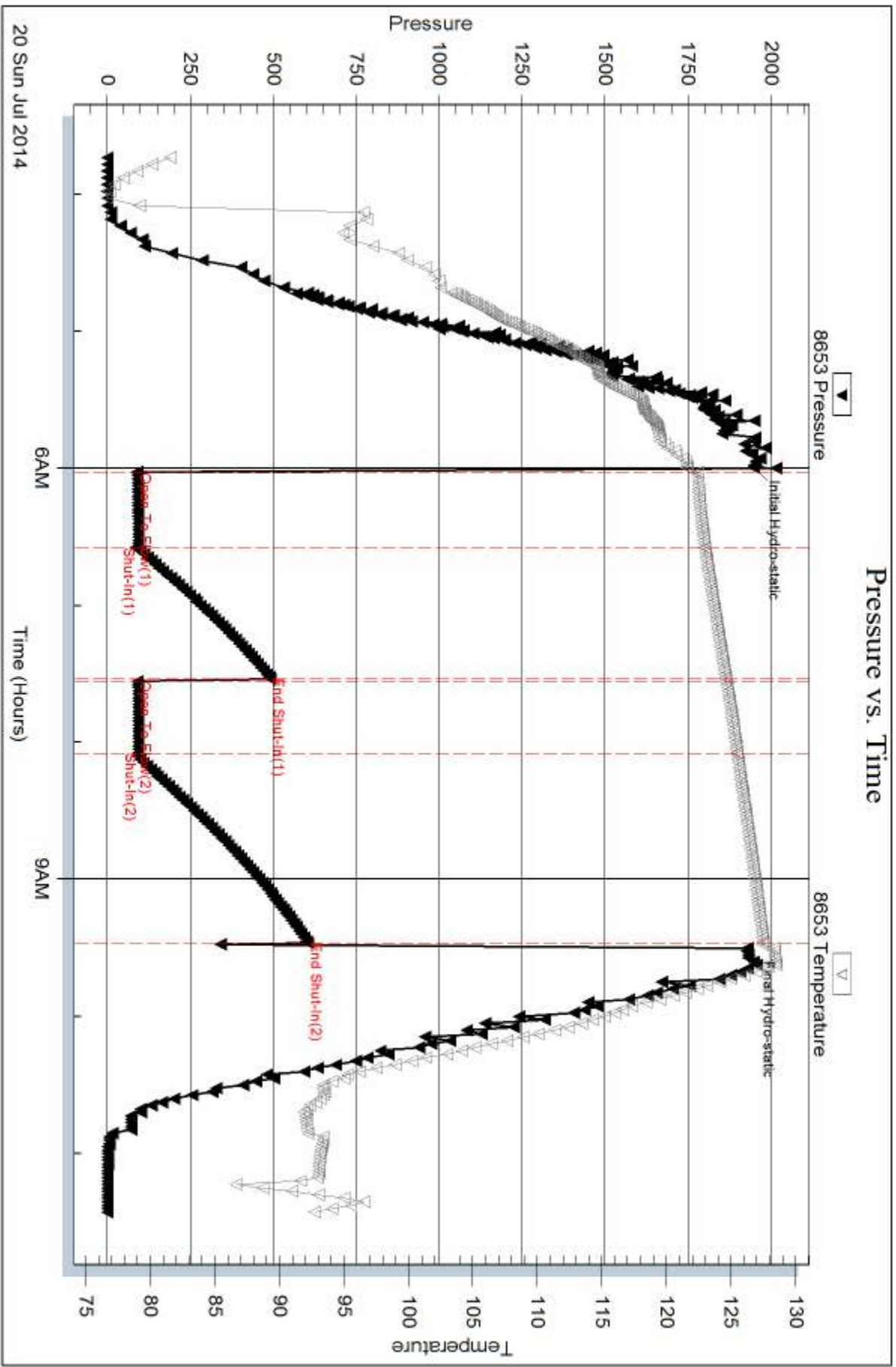
Num Gas Bombs: 0

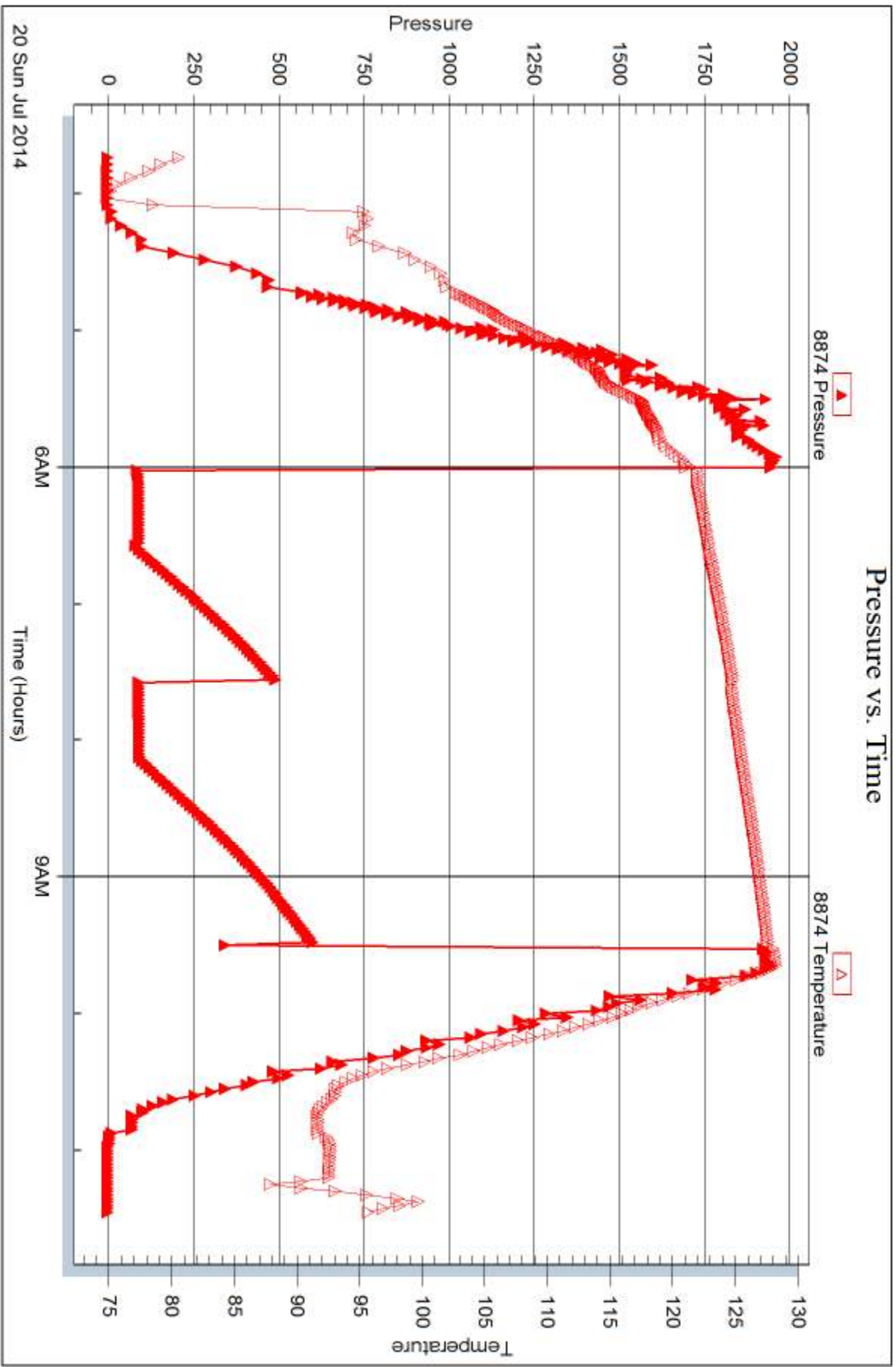
Serial #:

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: Rocky Milford

### **Theron #3-10**

#### **10-1S-37W Cheyenne, KS**

Start Date: 2014.07.21 @ 08:20:00

End Date: 2014.07.21 @ 17:20:00

Job Ticket #: 58243                      DST #: 2

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

Printed: 2014.07.24 @ 15:10:32

Murfin Drilling Co., Inc. 10-1S-37W Cheyenne, KS Theron #3-10 DST # 2 LKC "D" 2014.07.21





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N Water STE #300  
Wichita, KS 67202  
ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58243

**DST#: 2**

Test Start: 2014.07.21 @ 08:20:00

## GENERAL INFORMATION:

Formation: **LKC "D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 11:08:30  
 Time Test Ended: 17:20:00  
 Interval: **4163.00 ft (KB) To 4218.00 ft (KB) (TVD)**  
 Total Depth: 4218.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 3197.00 ft (KB)  
 3192.00 ft (CF)  
 KB to GR/CF: 5.00 ft

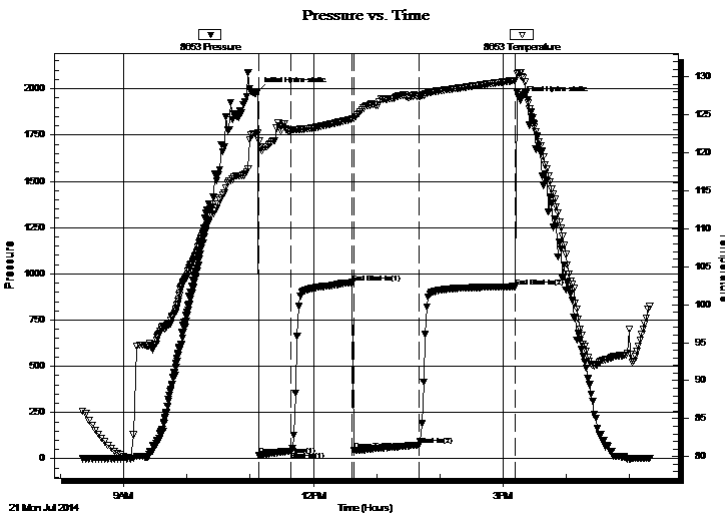
## Serial #: 8653

**Outside**

Press@RunDepth: 74.98 psig @ 4164.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.07.21 End Date: 2014.07.21 Last Calib.: 2014.07.21  
 Start Time: 08:21:00 End Time: 17:20:00 Time On Btm: 2014.07.21 @ 11:07:00  
 Time Off Btm: 2014.07.21 @ 15:16:30

TEST COMMENT: 30 - IF- Surface Blow built to 3/4"  
 60 - IS- No Return  
 60 - FF- Surface Blow started at 7 min. Built to 1"  
 90 - FS- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1984.76	122.57	Initial Hydro-static
2	18.72	121.51	Open To Flow (1)
32	42.17	122.78	Shut-In(1)
90	952.94	124.46	End Shut-In(1)
92	45.08	124.53	Open To Flow (2)
153	74.98	127.41	Shut-In(2)
245	930.96	129.53	End Shut-In(2)
250	1938.10	130.58	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
120.00	OSM 100M (oil spots)	0.59

## 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: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58243

**DST#: 2**

Test Start: 2014.07.21 @ 08:20:00

### GENERAL INFORMATION:

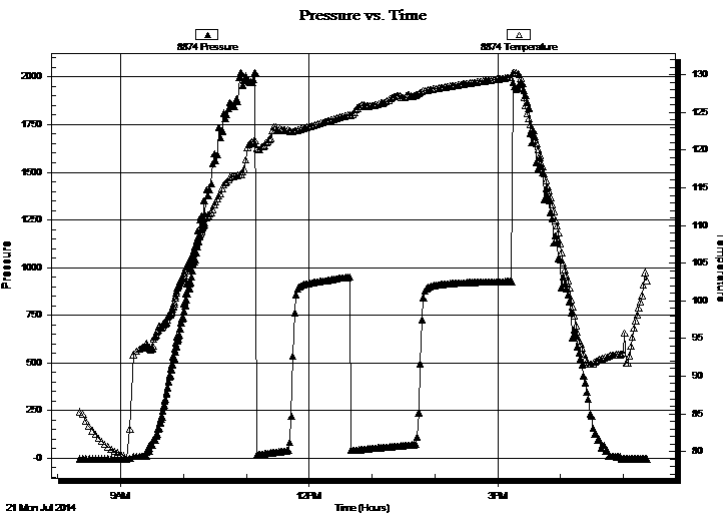
Formation: **LKC "D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 11:08:30  
 Time Test Ended: 17:20:00  
 Interval: **4163.00 ft (KB) To 4218.00 ft (KB) (TVD)**  
 Total Depth: 4218.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 3197.00 ft (KB)  
 3192.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8874**

**Inside**

Press@RunDepth: psig @ 4164.00 ft (KB)  
 Start Date: 2014.07.21 End Date: 2014.07.21 Capacity: 8000.00 psig  
 Start Time: 08:21:00 End Time: 17:22:00 Last Calib.: 2014.07.21  
 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 30 - IF- Surface Blow built to 3/4"  
 60 - IS- No Return  
 60 - FF- Surface Blow started at 7 min. Built to 1"  
 90 - FS- No Return



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
120.00	OSM 100M (oil spots)	0.59

### 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

**Theron #3-10**

Job Ticket: 58243

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2014.07.21 @ 08:20:00

## Tool Information

Drill Pipe:	Length: 3975.00 ft	Diameter: 3.80 inches	Volume: 55.76 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: 183.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 56.66 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4163.00 ft			Final 67000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.00 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			4136.00	
Shut In Tool	5.00			4141.00	
Hydraulic tool	5.00			4146.00	
Jars	5.00			4151.00	
Safety Joint	3.00			4154.00	
Packer	5.00			4159.00	28.00 Bottom Of Top Packer
Packer	4.00			4163.00	
Stubb	1.00			4164.00	
Recorder	0.00	8653	Outside	4164.00	
Recorder	0.00	8874	Inside	4164.00	
Perforations	15.00			4179.00	
Change Over Sub	1.00			4180.00	
Drill Pipe	32.00			4212.00	
Change Over Sub	1.00			4213.00	
Bullnose	5.00			4218.00	55.00 Bottom Packers & Anchor

**Total Tool Length: 83.00**



**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

**Theron #3-10**

Job Ticket: 58243

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2014.07.21 @ 08:20:00

### 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: 52.00 sec/qt

Cushion Volume: bbl

Water Loss: 8.38 in<sup>3</sup>

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
120.00	OSM 100M (oil spots)	0.590

Total Length: 120.00 ft      Total Volume: 0.590 bbl

Num Fluid Samples: 0

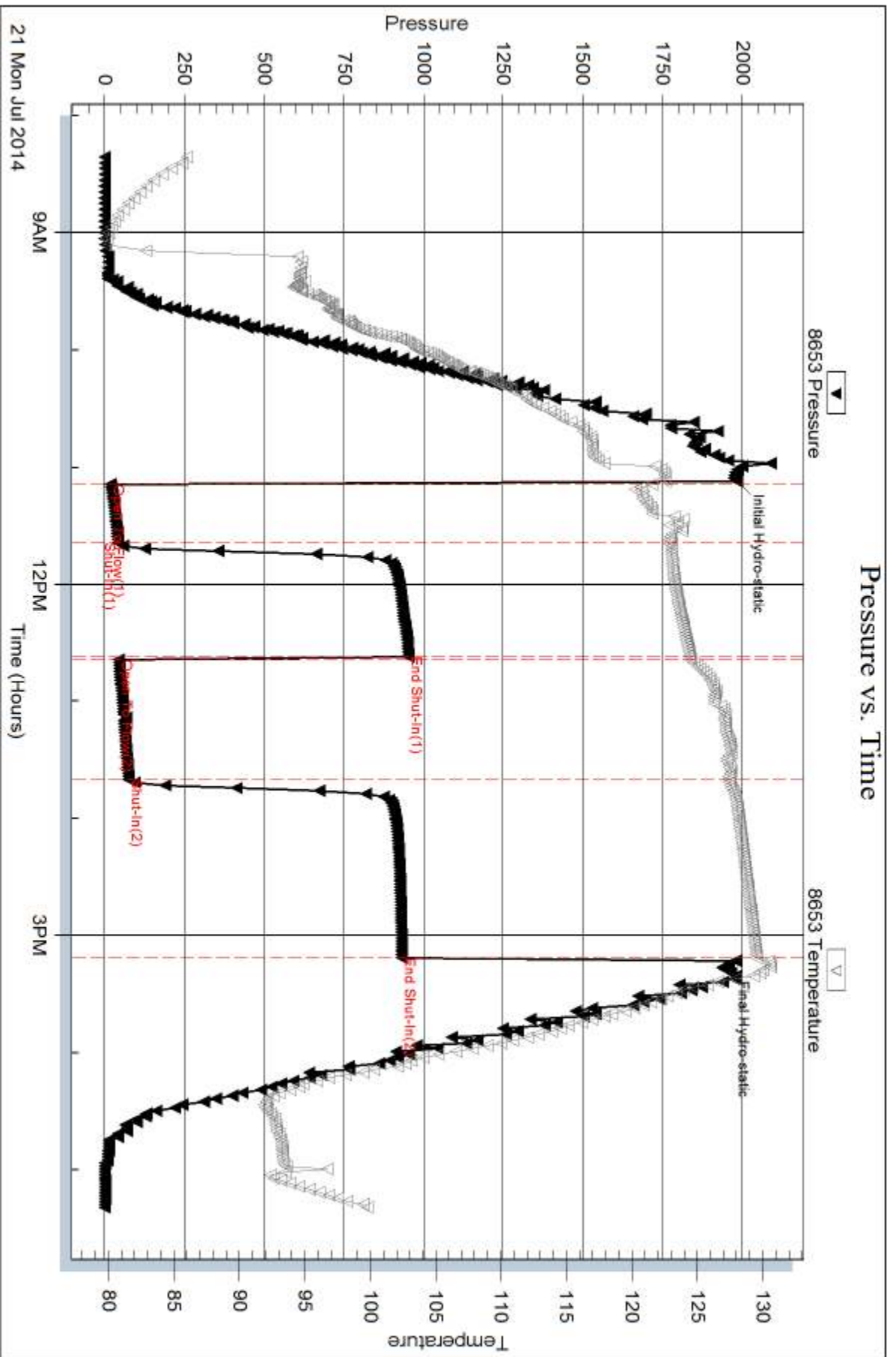
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



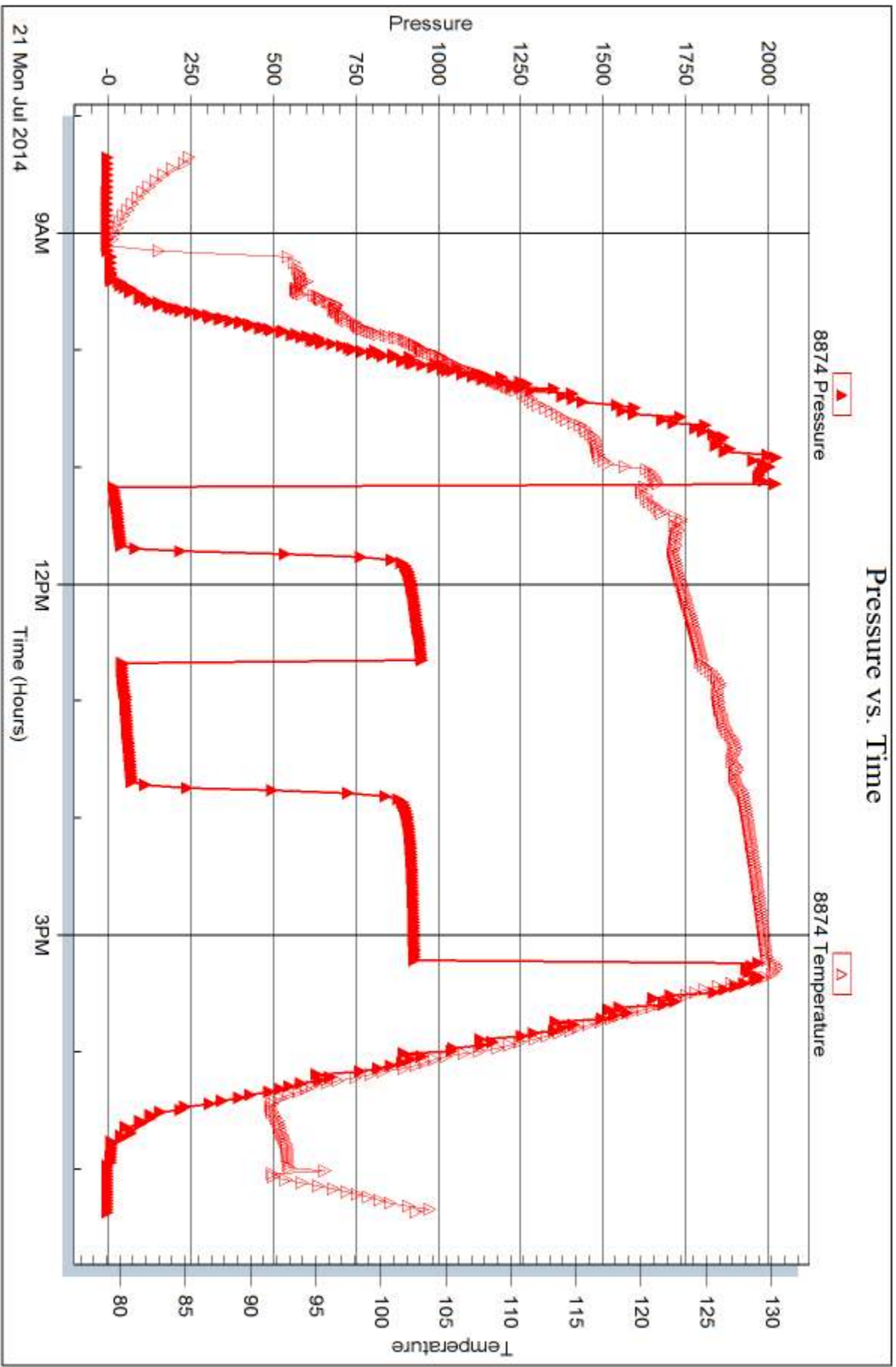
Serial #: 8874

Inside

Murfin Drilling Co., Inc.

Theron #3-10

DST Test Number: 2





## DRILL STEM TEST REPORT

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

250 N Water STE #300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Theron #3-10**

#### **10-1S-37W Cheyenne, KS**

Start Date: 2014.07.22 @ 09:15:00

End Date: 2014.07.22 @ 16:55:30

Job Ticket #: 58244                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.07.24 @ 15:10:08



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N Water STE #300  
Wichita, KS 67202  
ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58244

**DST#: 3**

Test Start: 2014.07.22 @ 09:15:00

## GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:23:30

Time Test Ended: 16:55:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 66

**Interval: 4215.00 ft (KB) To 4365.00 ft (KB) (TVD)**

Reference Elevations: 3197.00 ft (KB)

Total Depth: 4365.00 ft (KB) (TVD)

3192.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8874**

**Inside**

Press@RunDepth: 54.70 psig @ 4216.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.07.22

End Date:

2014.07.22

Last Calib.:

2014.07.24

Start Time: 09:16:00

End Time:

16:55:30

Time On Btm:

2014.07.22 @ 11:22:00

Time Off Btm:

2014.07.22 @ 14:43:30

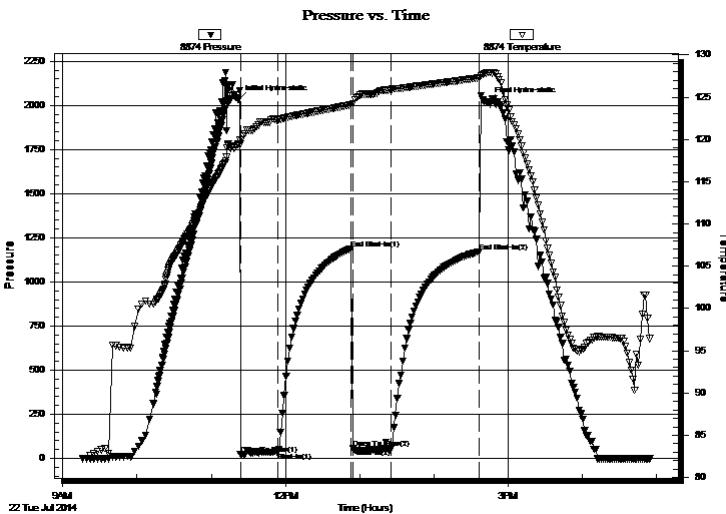
**TEST COMMENT:** 30 - IF- 1/2" Blow built to 1" in 20 min. then died back to 3/4"

60 - IS- No Return

30 - FF- No Blow

60 - FS- No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2033.81	119.48	Initial Hydro-static
2	21.73	119.51	Open To Flow (1)
32	35.96	122.29	Shut-In(1)
91	1188.29	124.09	End Shut-In(1)
93	55.12	124.20	Open To Flow (2)
123	54.70	125.91	Shut-In(2)
195	1170.73	127.27	End Shut-In(2)
202	2018.61	127.88	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
70.00	Mud 100M	0.34

## 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: Rocky Milford

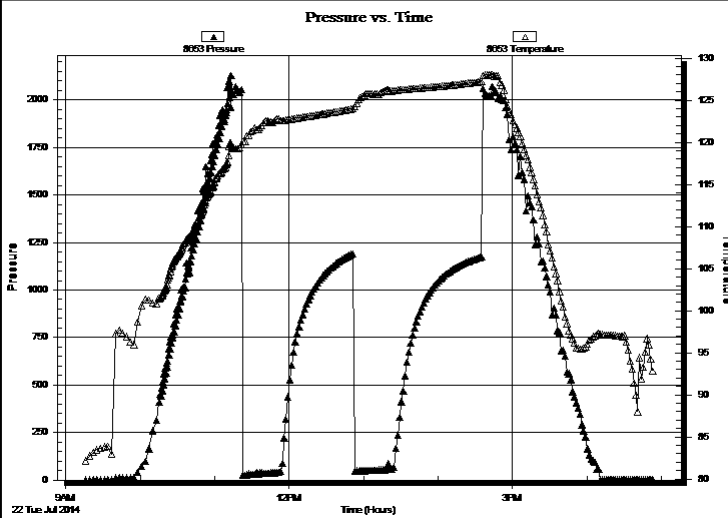
**10-1S-37W Cheyenne, KS**  
**Theron #3-10**  
 Job Ticket: 58244 **DST#: 3**  
 Test Start: 2014.07.22 @ 09:15:00

## GENERAL INFORMATION:

Formation: **LKC "G-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 11:23:30  
 Time Test Ended: 16:55:30  
**Interval: 4215.00 ft (KB) To 4365.00 ft (KB) (TVD)**  
 Total Depth: 4365.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 3197.00 ft (KB)  
 3192.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8653 Outside**  
 Press@RunDepth: psig @ 4216.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.07.22 End Date: 2014.07.22 Last Calib.: 2014.07.22  
 Start Time: 09:16:00 End Time: 16:53:30 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 30 - IF- 1/2" Blow built to 1" in 20 min. then died back to 3/4"  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
70.00	Mud 100M	0.34

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

**Theron #3-10**

Job Ticket: 58244

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2014.07.22 @ 09:15:00

## Tool Information

Drill Pipe:	Length: 4007.00 ft	Diameter: 3.80 inches	Volume: 56.21 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: 183.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 57.11 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	3.00 ft			String Weight: Initial 67000.00 lb
Depth to Top Packer:	4215.00 ft			Final 67000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	150.00 ft			
Tool Length:	178.00 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			4188.00	
Shut In Tool	5.00			4193.00	
Hydraulic tool	5.00			4198.00	
Jars	5.00			4203.00	
Safety Joint	3.00			4206.00	
Packer	5.00			4211.00	28.00 Bottom Of Top Packer
Packer	4.00			4215.00	
Stubb	1.00			4216.00	
Recorder	0.00	8653	Outside	4216.00	
Recorder	0.00	8874	Inside	4216.00	
Perforations	15.00			4231.00	
Change Over Sub	1.00			4232.00	
Drill Pipe	127.00			4359.00	
Change Over Sub	1.00			4360.00	
Bullnose	5.00			4365.00	150.00 Bottom Packers & Anchor

**Total Tool Length: 178.00**



**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

**Theron #3-10**

Job Ticket: 58244

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2014.07.22 @ 09:15:00

### 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: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

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
70.00	Mud 100M	0.344

Total Length: 70.00 ft      Total Volume: 0.344 bbl

Num Fluid Samples: 0

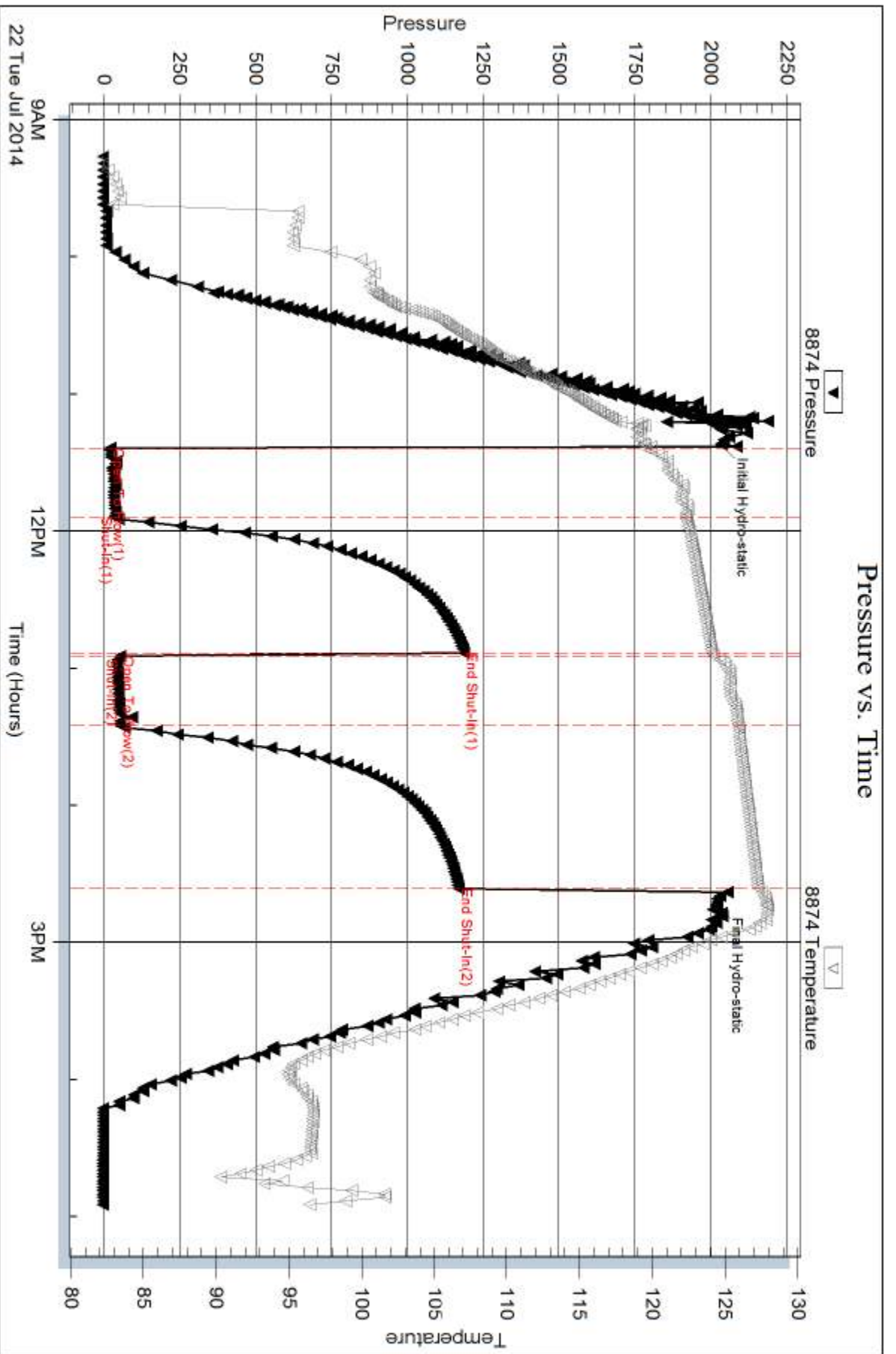
Num Gas Bombs: 0

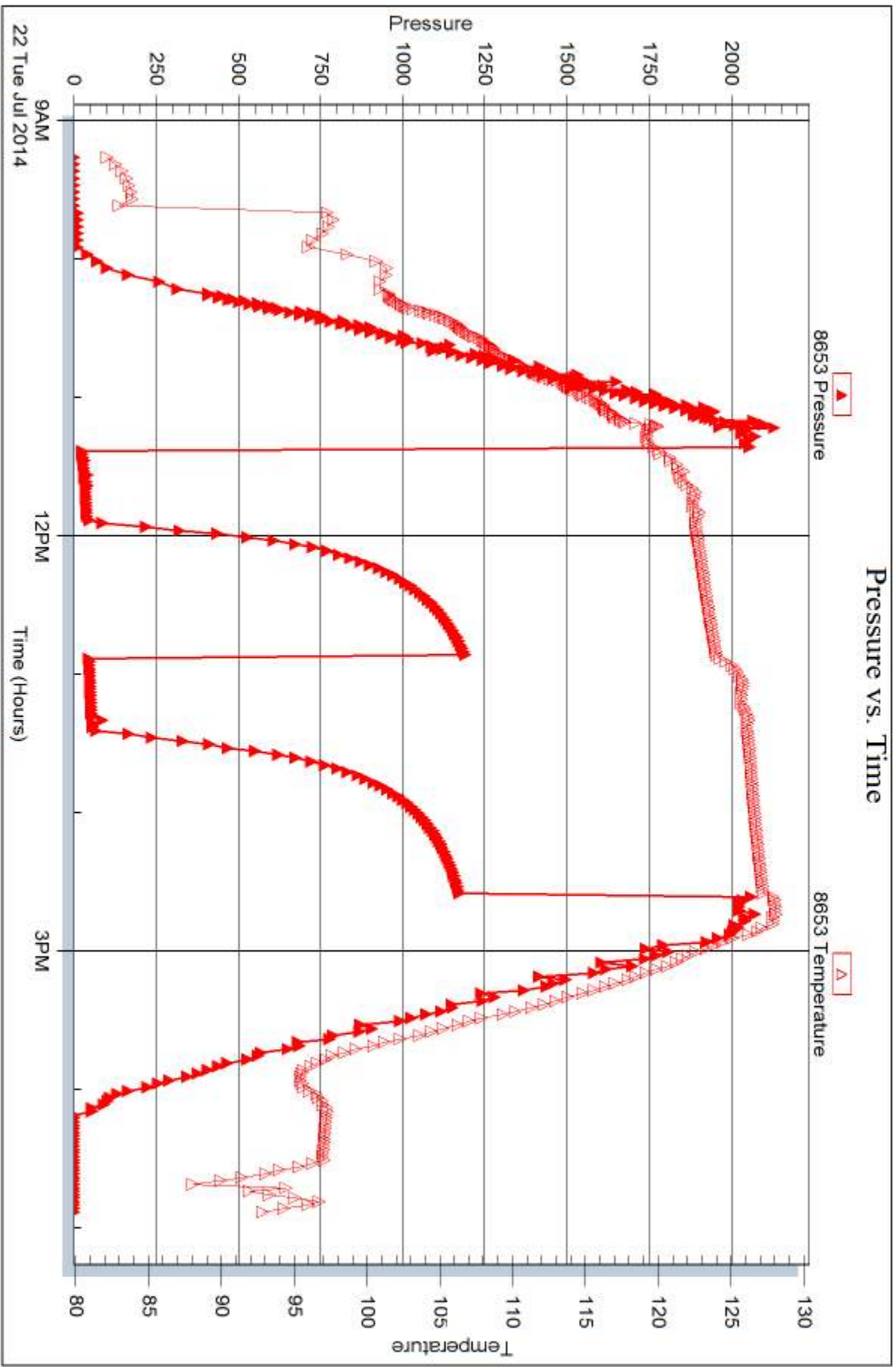
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Show of oil spots in tool







## DRILL STEM TEST REPORT

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

250 N Water STE #300  
Wichita, KS 67202

ATTN: Rocky Milford

### **Theron #3-10**

#### **10-1S-37W Cheyenne, KS**

Start Date: 2014.07.23 @ 12:25:00

End Date: 2014.07.23 @ 23:11:30

Job Ticket #: 58245                      DST #: 4

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

Printed: 2014.07.24 @ 15:07:01



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N Water STE #300  
Wichita, KS 67202  
ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58245

**DST#: 4**

Test Start: 2014.07.23 @ 12:25:00

## GENERAL INFORMATION:

Formation: **Pawnee**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 15:34:30  
 Time Test Ended: 23:11:30  
 Interval: **4521.00 ft (KB) To 4570.00 ft (KB) (TVD)**  
 Total Depth: 4570.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 3197.00 ft (KB)  
 3192.00 ft (CF)  
 KB to GR/CF: 5.00 ft

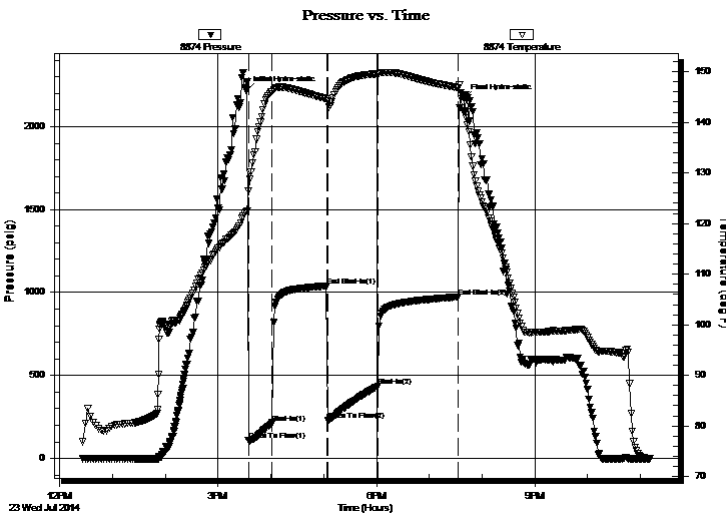
## Serial #: 8874

Inside

Press@RunDepth: 435.33 psig @ 4522.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.07.23 End Date: 2014.07.23 Last Calib.: 2014.07.23  
 Start Time: 12:26:00 End Time: 23:11:30 Time On Btm: 2014.07.23 @ 15:32:00  
 Time Off Btm: 2014.07.23 @ 19:40:00

TEST COMMENT: 30 - IF- BoB in 4 min.  
 60 - IS- BoB in 17  
 60 - FF - BoB in 7 min  
 90 - FSI - Blow built to 9"

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2216.72	122.37	Initial Hydro-static
3	106.96	126.44	Open To Flow (1)
30	213.97	146.11	Shut-In(1)
91	1039.33	144.66	End Shut-In(1)
93	231.14	144.29	Open To Flow (2)
150	435.33	149.56	Shut-In(2)
241	973.43	146.85	End Shut-In(2)
248	2168.76	142.16	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	MCO 50M 50o	0.89
60.00	OCM 70M 30o	0.81
860.00	Clean Gassy Oil 40G 60o	12.06
0.00	1450 GIP	0.00

## Gas Rates

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



# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

250 N Water STE #300  
Wichita, KS 67202

ATTN: Rocky Milford

**10-1S-37W Cheyenne, KS**

**Theron #3-10**

Job Ticket: 58245

**DST#: 4**

Test Start: 2014.07.23 @ 12:25:00

## GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:34:30

Time Test Ended: 23:11:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 66

Interval: **4521.00 ft (KB) To 4570.00 ft (KB) (TVD)**

Total Depth: 4570.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3197.00 ft (KB)

3192.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8653** **Outside**

Press@RunDepth: psig @ 4522.00 ft (KB)

Start Date: 2014.07.23

End Date:

Start Time: 12:26:00

End Time:

Capacity: 8000.00 psig

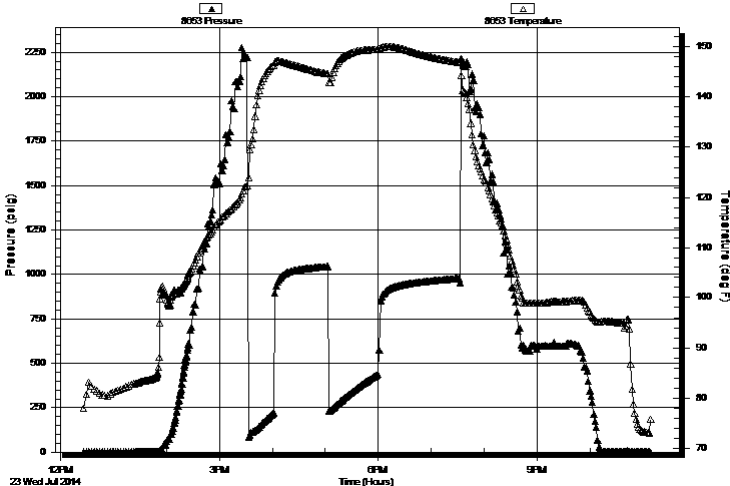
Last Calib.:

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 - IF- BoB in 4 min.  
60 - IS- BoB in 17  
60 - FF - BoB in 7 min  
90 - FSI - Blow built to 9"

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	MCO 50M 50o	0.89
60.00	OCM 70M 30o	0.81
860.00	Clean Gassy Oil 40G 60o	12.06
0.00	1450 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.

**10-1S-37W Cheyenne, KS**

250 N Water STE #300  
Wichita, KS 67202

**Theron #3-10**

Job Ticket: 58245

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2014.07.23 @ 12:25:00

## Tool Information

Drill Pipe:	Length: 4320.00 ft	Diameter: 3.80 inches	Volume: 60.60 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: 183.00 ft	Diameter: 2.25 inches	Volume: 0.90 bbl	Weight to Pull Loose: 100000.0 lb
			<u>Total Volume: 61.50 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4521.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	49.00 ft			
Tool Length:	77.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: Dropped bar to reverse out fluid

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4494.00	
Shut In Tool	5.00			4499.00	
Hydraulic tool	5.00			4504.00	
Jars	5.00			4509.00	
Safety Joint	3.00			4512.00	
Packer	5.00			4517.00	28.00 Bottom Of Top Packer
Packer	4.00			4521.00	
Packer - Shale	0.00			4521.00	
Stubb	1.00			4522.00	
Recorder	0.00	8653	Outside	4522.00	
Recorder	0.00	8874	Inside	4522.00	
Perforations	10.00			4532.00	
Change Over Sub	1.00			4533.00	
Drill Pipe	31.00			4564.00	
Change Over Sub	1.00			4565.00	
Bullnose	5.00			4570.00	49.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>77.00</b>				



**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

**Theron #3-10**

Job Ticket: 58245

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2014.07.23 @ 12:25:00

## 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: 8.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
180.00	MCO 50M 50o	0.885
60.00	OCM 70M 30o	0.814
860.00	Clean Gassy Oil 40G 60o	12.064
0.00	1450 GIP	0.000

Total Length: 1100.00 ft      Total Volume: 13.763 bbl

Num Fluid Samples: 0

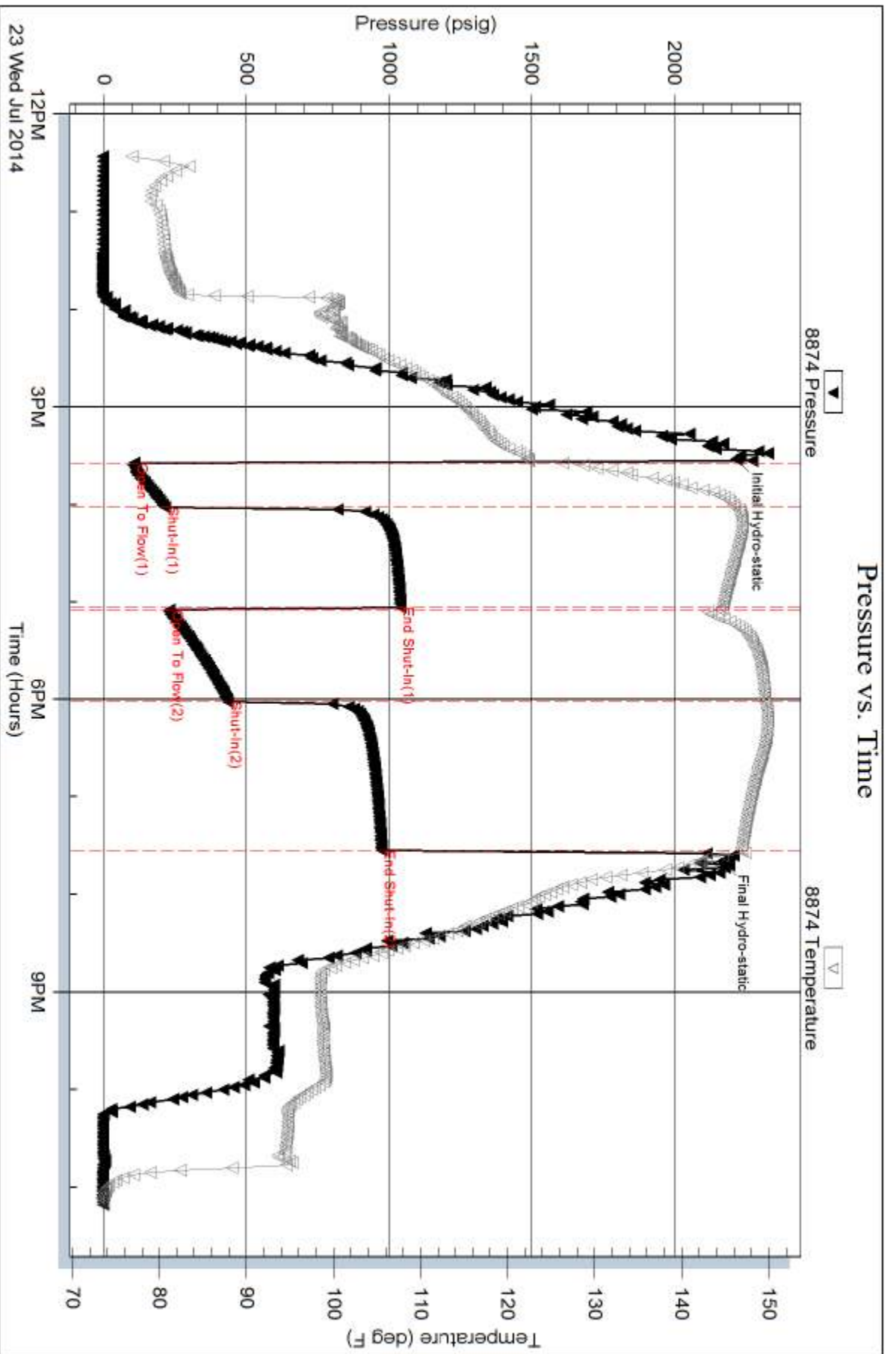
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil API 36 @ 80 deg = 34

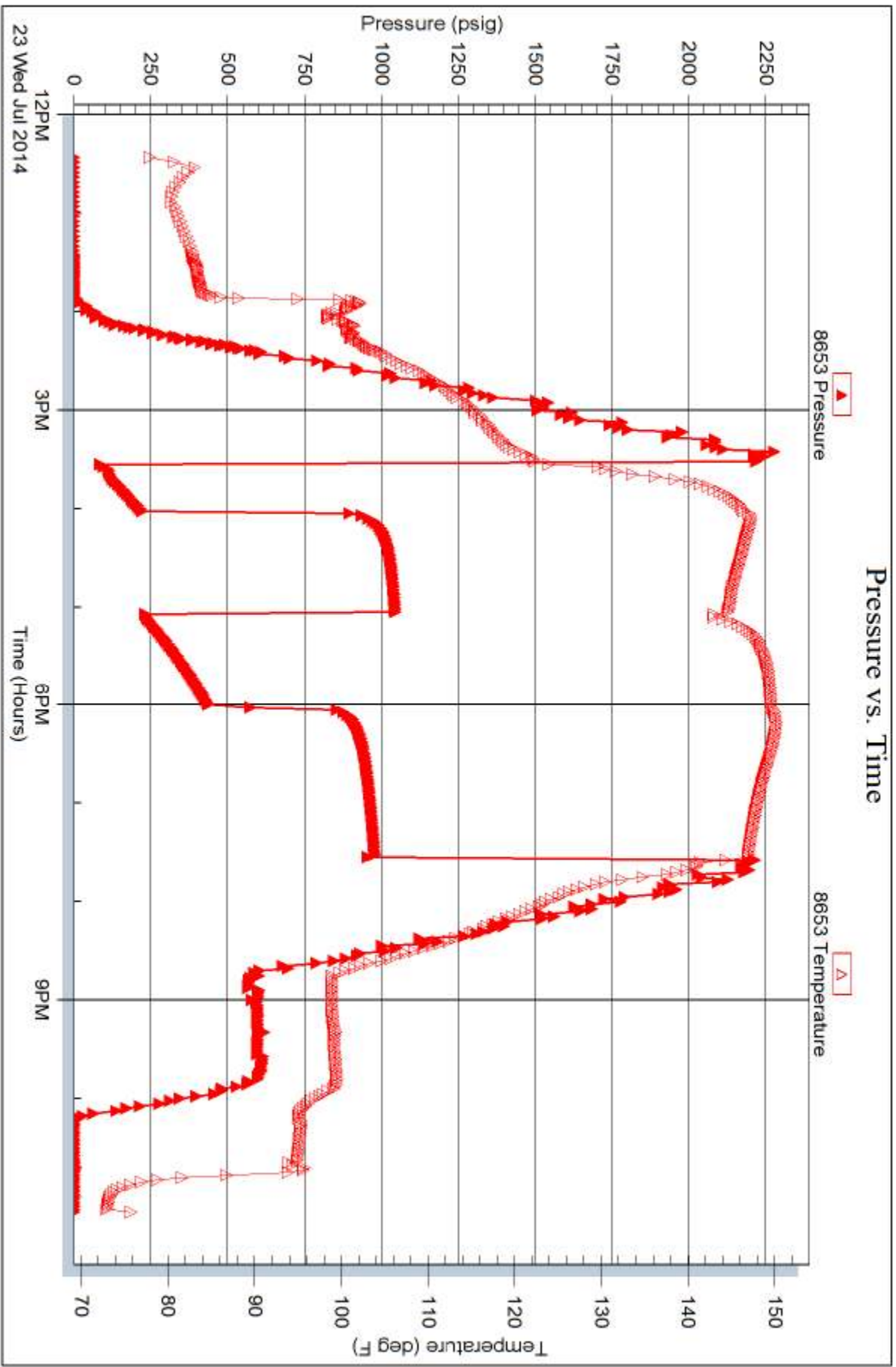


Serial #: 8653

Outside Murfin Drilling Co., Inc.

Theron #3-10

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 58245

Printed: 2014.07.24 @ 15:07:02



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58242

Well Name & No. Theron #3-10 Test No. 1 Date 7-20-14  
 Company Murfin Drilling Co., Inc. Elevation 3197 KB 3192 GL  
 Address 250 N Water St #300 Wichita, KS 67202  
 Co. Rep / Geo. Rockx Milford Rig Murfin #8  
 Location: Sec. 10 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4011-4075 Zone Tested Oreud  
 Anchor Length 64 Drill Pipe Run 3815' Mud Wt. 8.9  
 Top Packer Depth 4007 Drill Collars Run 183' Vis 63  
 Bottom Packer Depth 4011 Wt. Pipe Run 0 WL 7.6  
 Total Depth 4075 Chlorides 500 ppm System LCM 2#  
 Blow Description IF- 1/4" Blow died back to 1/8"  
ISI- No Return  
FF- No Blow  
FSI- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>135</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 135' BHT 128° Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>1948</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>3:00 AM</u>
(B) First Initial Flow <u>89</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>3:43 AM</u>
(C) First Final Flow <u>91</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>6:05 AM</u>
(D) Initial Shut-In <u>491</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>9:35 AM</u>
(E) Second Initial Flow <u>91</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>11:30 AM</u>
(F) Second Final Flow <u>93</u>	<input checked="" type="checkbox"/> Mileage <u>136 RT</u> 210.80	Comments <u>Chased tool approx</u>
(G) Final Shut-In <u>603</u>	<input type="checkbox"/> Sampler	<u>20' to bottom. Reset</u>
(H) Final Hydrostatic <u>1929</u>	<input type="checkbox"/> Straddle	<u>tool and bleed off initial surge</u>
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<u>waited for rig to make repairs</u>
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Shale Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Ruined Packer
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Accessibility	Sub Total <u>0</u>
	Sub Total <u>1785.80</u>	Total <u>1785.80</u>

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58243

Well Name & No. Theron #3-10 Test No. 2 Date 7-21-14  
 Company Murfin Drilling Co., Inc Elevation 3197 KB 3192 GL  
 Address 250 N Water St #3000 Wichita, KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #8  
 Location: Sec. 10 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4163-4218 Zone Tested LKC "D"  
 Anchor Length 55' Drill Pipe Run 3975' Mud Wt. 9.2  
 Top Packer Depth 4159 Drill Collars Run 183' Vis 52  
 Bottom Packer Depth 4163 Wt. Pipe Run Ø WL 8.4  
 Total Depth 4218 Chlorides 6000 ppm System LCM RT

Blow Description IF - Surface Blow built to 3/4"  
ISI - NO Return  
FF - Surface Blow started out 7 min. Built to 1"  
FSI - NO Return

Rec	Feet of	%gas	SPOTS	%oil	%water	%mud
<u>120</u>	<u>0.5M</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

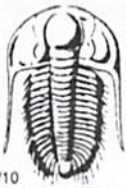
Rec Total 120 BHT 1300 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1984  Test 1250 T-On Location 7:30 Am  
 (B) First Initial Flow 18  Jars 250 T-Started 8:20 Am  
 (C) First Final Flow 42  Safety Joint 75 T-Open 11:10 Am  
 (D) Initial Shut-In 952  Circ Sub \_\_\_\_\_ T-Pulled 3:10 Pm  
 (E) Second Initial Flow 45  Hourly Standby \_\_\_\_\_ T-Out 5:23 Pm  
 (F) Second Final Flow 74  Mileage 136 RT 210.80 Comments \_\_\_\_\_  
 (G) Final Shut-In 930  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1938  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90  
 Sub Total 0  
 Total 1785.80  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1785.80

Approved By \_\_\_\_\_ Our Representative [Signature]

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58244

Well Name & No. Theron #3-10 Test No. 3 Date 7-22-14  
 Company Murfin Drilling Co., Inc. Elevation 3197 KB 3192 GL  
 Address 2508 N Water STE # 3000 Wichita, KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #8  
 Location: Sec. 10 Twp. 15 Rge. 37W Co. Cherokee State KS

Interval Tested 4215 - 4365 Zone Tested LKC "G°-J"  
 Anchor Length 158' Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.0  
 Top Packer Depth 4211 Drill Collars Run 183' Vis 64  
 Bottom Packer Depth 4215 Wt. Pipe Run 9000 WL 8.0  
 Total Depth 4365 Chlorides 600 ppm System LCM 7#  
 Blow Description IF - 1/2" Blow built to 1" in 20 min. Then died back to 3/4"  
ISI - NO Return  
FF - NO Blow  
FSI - NO Return

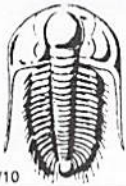
Rec	Feet of	%gas	%oil	%water	%mud
<u>708</u>	<u>mud</u>			<u>1000</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 708 BHT 127 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>2033</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>9:00 AM</u>
(B) First Initial Flow <u>21</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>9:15 AM</u>
(C) First Final Flow <u>35</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>11:24 AM</u>
(D) Initial Shut-In <u>1188</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>2:24 PM</u>
(E) Second Initial Flow <u>55</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>5:00 PM</u>
(F) Second Final Flow <u>55</u>	<input checked="" type="checkbox"/> Mileage <u>136 RT</u> 210.80	Comments <u>Show of oil spots in tool</u>
(G) Final Shut-In <u>1170</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>2018</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>00</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Total <u>1785.80</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1785.80</u>	

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58245

Well Name & No. Theron #3-10 Test No. 4 Date 7-27-14  
 Company Murfin Drilling Co., Inc. Elevation 3197 KB 3192 GL  
 Address 250 N Water STE #3000 Wichita, KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin #8  
 Location: Sec. 10 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4521-4570 Zone Tested Pawnee  
 Anchor Length 49' Drill Pipe Run 4320 Mud Wt. 9.1  
 Top Packer Depth 4517 Drill Collars Run 183 Vis 60  
 Bottom Packer Depth 4521 Wt. Pipe Run 0 WL 8.2  
 Total Depth 4570 Chlorides 7000 ppm System LCM 6#  
 Blow Description IF-BoB in 4 min  
ISI-BoB in 17 min.  
FF-BoB in 7 min  
FSI-Blow built to 9"

Rec	Feet of	%gas	%oil	%water	%mud
<u>860</u>	<u>Feet of Clean Gassy oil</u>	<u>40</u>	<u>60</u>		
<u>60</u>	<u>Feet of OCM</u>		<u>30</u>	<u>70</u>	
<u>180</u>	<u>Feet of MCO</u>		<u>50</u>	<u>50</u>	
	<u>Feet of</u>				
<u>1450</u>	<u>Feet of GIP</u>	<u>100</u>			

Rec Total 11000' BHT 147 Gravity 34 API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic <u>2216</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>12:00 PM</u>
(B) First Initial Flow <u>1086</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:25 PM</u>
(C) First Final Flow <u>213</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>3:34 PM</u>
(D) Initial Shut-In <u>1039</u>	<input checked="" type="checkbox"/> Circ Sub <u>50</u>	T-Pulled <u>7:34 PM</u>
(E) Second Initial Flow <u>231</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>11:12 PM</u>
(F) Second Final Flow <u>435</u>	<input checked="" type="checkbox"/> Mileage <u>136RT</u> 210.80	Comments <u>Dropped Bar</u>
(G) Final Shut-In <u>973</u>	<input type="checkbox"/> Sampler	<u>to reverse out fluid</u>
(H) Final Hydrostatic <u>2108</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input checked="" type="checkbox"/> Shale Packer <u>250</u>	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby	Total <u>2085.80</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>2085.80</u>	

Approved By \_\_\_\_\_ Our Representative [Signature]

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