



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita, KS 67202

ATTN: Steve Miller

Betty #1-2

2-1s-37w Cheyenne,KS

Start Date: 2014.03.26 @ 03:34:00

End Date: 2014.03.26 @ 11:53:45

Job Ticket #: 56921 DST #: 1

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

Printed: 2014.04.02 @ 14:28:00



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne, KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56921

DST#: 1

ATTN: Steve Miller

Test Start: 2014.03.26 @ 03:34:00

GENERAL INFORMATION:

Formation: **Lansing**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:42:45

Time Test Ended: 11:53:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: #54

Interval: 4137.00 ft (KB) To 4188.00 ft (KB) (TVD)

Reference Elevations: 3163.00 ft (KB)

Total Depth: 4188.00 ft (KB) (TVD)

3152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8368

Inside

Press@RunDepth: 106.09 psig @ 4138.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.26

End Date:

2014.03.26

Last Calib.:

2014.03.26

Start Time: 03:34:05

End Time:

11:53:44

Time On Btm:

2014.03.26 @ 05:42:30

Time Off Btm:

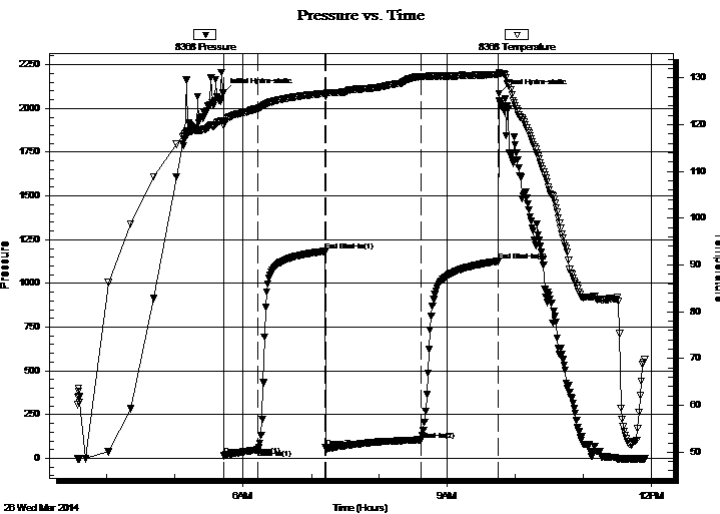
2014.03.26 @ 09:45:30

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

60 - ISI - No Return

60 - FF - Surface blow built to 2"

90 - FSI - No Return



PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2088.84 | 120.83 | Initial Hydro-static |
| 1 | 15.21 | 119.80 | Open To Flow (1) |
| 31 | 49.31 | 123.43 | Shut-In(1) |
| 90 | 1183.42 | 126.67 | End Shut-In(1) |
| 90 | 63.10 | 125.96 | Open To Flow (2) |
| 175 | 106.09 | 130.20 | Shut-In(2) |
| 242 | 1127.43 | 130.68 | End Shut-In(2) |
| 243 | 2083.88 | 131.15 | Final Hydro-static |

Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|------------------------|--------------|
| 63.00 | OCM - 90M - 10o | 0.31 |
| 63.00 | OCM - 55M - 45o | 0.31 |
| 63.00 | OCWM - 60M - 20W - 20o | 0.41 |
| 6.00 | Free oil - 100o | 0.08 |
| | | |
| | | |

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: Steve Miller

2-1s-37w Cheyenne, KS

Betty #1-2

Job Ticket: 56921

DST#: 1

Test Start: 2014.03.26 @ 03:34:00

GENERAL INFORMATION:

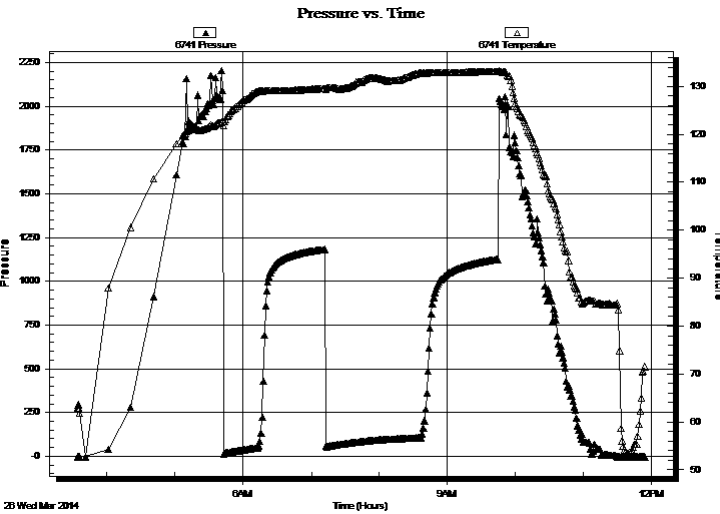
Formation: **Lansing**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:42:45
 Time Test Ended: 11:53:45
Interval: 4137.00 ft (KB) To 4188.00 ft (KB) (TVD)
 Total Depth: 4188.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Royal Fisher
 Unit No: #54
 Reference Elevations: 3163.00 ft (KB)
 3152.00 ft (CF)
 KB to GR/CF: 11.00 ft

Serial #: 6741

Inside

Press@RunDepth: psig @ 4138.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.03.26 End Date: 2014.03.26 Last Calib.: 2014.03.26
 Start Time: 03:34:05 End Time: 11:53:44 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF - Surface blow built to 3 3/4"
 60 - ISI - No Return
 60 - FF - Surface blow built to 2"
 90 - FSI - No Return



PRESSURE SUMMARY

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

Recovery

Gas Rates

| Length (ft) | Description | Volume (bbl) |
|-------------|------------------------|--------------|
| 63.00 | OCM - 90M - 10o | 0.31 |
| 63.00 | OCM - 55M - 45o | 0.31 |
| 63.00 | OCWM - 60M - 20W - 20o | 0.41 |
| 6.00 | Free oil - 100o | 0.08 |
| | | |
| | | |

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56921

DST#: 1

ATTN: Steve Miller

Test Start: 2014.03.26 @ 03:34:00

Tool Information

| | | | | |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe: | Length: 3947.60 ft | Diameter: 3.80 inches | Volume: 55.37 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: 177.52 ft | Diameter: 2.25 inches | Volume: 0.87 bbl | Weight to Pull Loose: 70000.00 lb |
| | | | <u>Total Volume: 56.24 bbl</u> | Tool Chased 0.00 ft |
| Drill Pipe Above KB: | 15.12 ft | | | String Weight: Initial 60000.00 lb |
| Depth to Top Packer: | 4137.00 ft | | | Final 60000.00 lb |
| Depth to Bottom Packer: | ft | | | |
| Interval between Packers: | 51.00 ft | | | |
| Tool Length: | 78.00 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 | | | 4115.00 | |
| Hydraulic tool | 5.00 | | | 4120.00 | |
| Jars | 5.00 | | | 4125.00 | |
| Safety Joint | 3.00 | | | 4128.00 | |
| Packer | 4.00 | | | 4132.00 | 27.00 Bottom Of Top Packer |
| Packer | 5.00 | | | 4137.00 | |
| Stubb | 1.00 | | | 4138.00 | |
| Recorder | 0.00 | 6741 | Inside | 4138.00 | |
| Recorder | 0.00 | 8368 | Inside | 4138.00 | |
| Perforations | 13.00 | | | 4151.00 | |
| Change Over Sub | 1.00 | | | 4152.00 | |
| Drill Pipe | 31.00 | | | 4183.00 | |
| Change Over Sub | 1.00 | | | 4184.00 | |
| Bullnose | 4.00 | | | 4188.00 | 51.00 Bottom Packers & Anchor |

Total Tool Length: 78.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56921

DST#: 1

ATTN: Steve Miller

Test Start: 2014.03.26 @ 03:34:00

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: 75.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 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 bbbl |
|--------------|------------------------|----------------|
| 63.00 | OCM - 90M - 10o | 0.310 |
| 63.00 | OCM - 55M - 45o | 0.310 |
| 63.00 | OCWM - 60M - 20W - 20o | 0.414 |
| 6.00 | Free oil - 100o | 0.084 |

Total Length: 195.00 ft

Total Volume: 1.118 bbl

Num Fluid Samples: 0

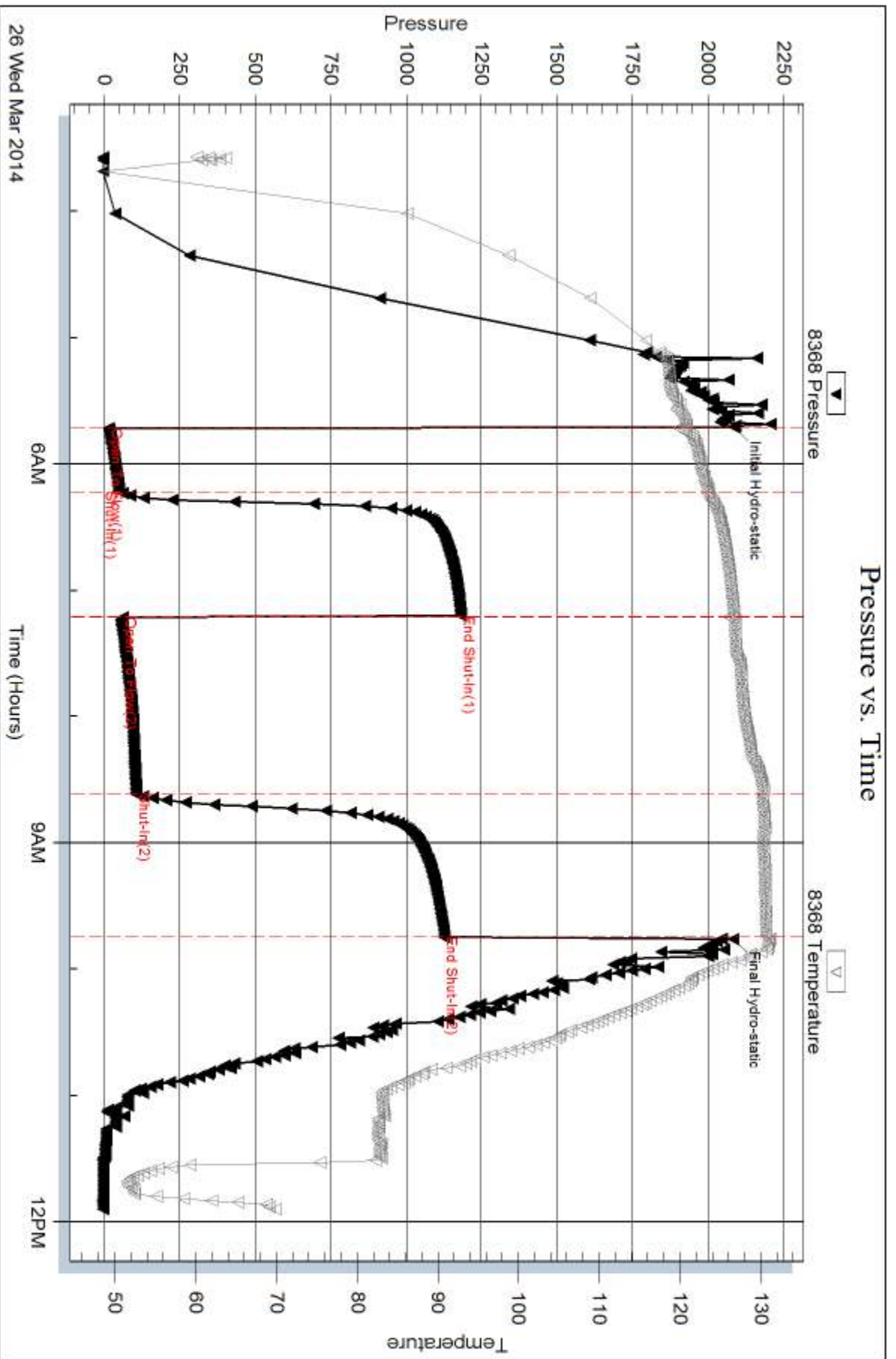
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



Serial #: 6741

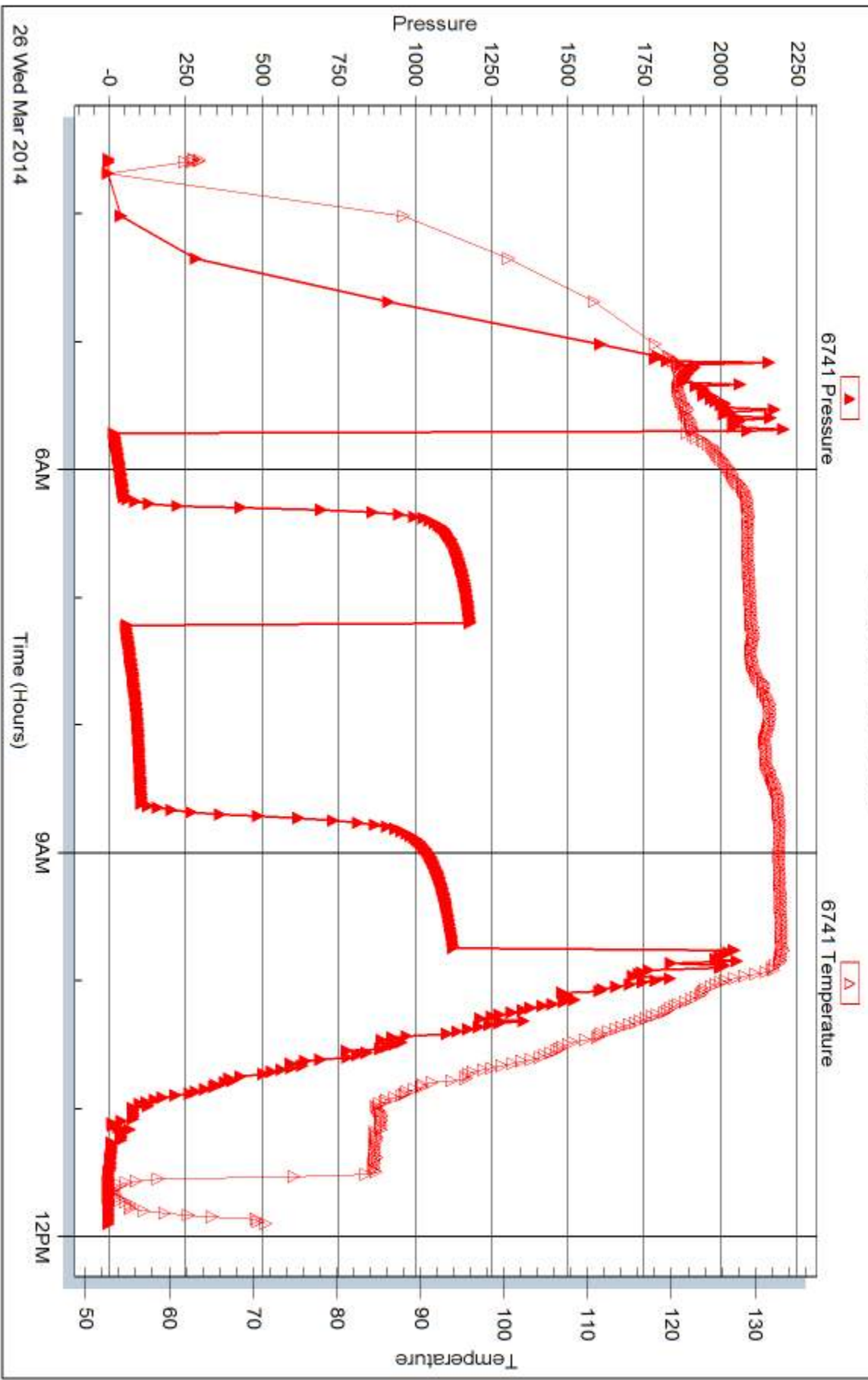
Inside

Murfin Drilling Co., Inc.

Betty #1-2

DST Test Number: 1

Pressure vs. Time





DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita, KS 67202

ATTN: Steve Miller

Betty #1-2

2-1s-37w Cheyenne,KS

Start Date: 2014.03.27 @ 00:21:00

End Date: 2014.03.27 @ 08:56:30

Job Ticket #: 56922 DST #: 2

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

Printed: 2014.04.02 @ 14:27:36



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
250 N. Water, Ste 300
Wichita, KS 67202
ATTN: Steve Miller

2-1s-37w Cheyenne, KS

Betty #1-2

Job Ticket: 56922

DST#: 2

Test Start: 2014.03.27 @ 00:21:00

GENERAL INFORMATION:

Formation: **LKC G**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 02:31:45
 Tester: Royal Fisher
 Time Test Ended: 08:56:30
 Unit No: #54
 Interval: **4187.00 ft (KB) To 4239.00 ft (KB) (TVD)**
 Reference Elevations: 3163.00 ft (KB)
 Total Depth: 4239.00 ft (KB) (TVD)
 3152.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Good
 KB to GR/CF: 11.00 ft

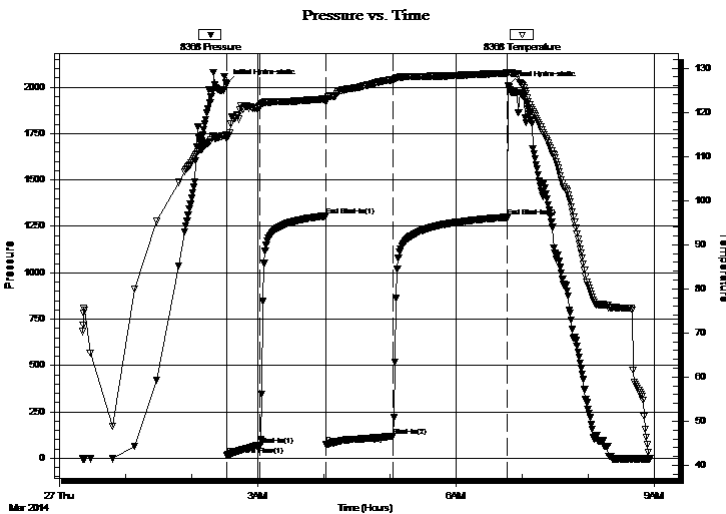
Serial #: 8368

Inside

Press@RunDepth: 118.39 psig @ 4188.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.03.27 End Date: 2014.03.27 Last Calib.: 2014.03.27
 Start Time: 00:21:05 End Time: 08:56:30 Time On Btm: 2014.03.27 @ 02:31:30
 Time Off Btm: 2014.03.27 @ 06:47:30

TEST COMMENT: 30 - IF - Surface blow built to 3 1/4"
 60 - ISI - No Return
 60 - FF - Surface blow built to 2 1/4"
 90 - FSI - No Return

PRESSURE SUMMARY



| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2017.13 | 114.87 | Initial Hydro-static |
| 1 | 15.18 | 114.06 | Open To Flow (1) |
| 31 | 71.20 | 121.52 | Shut-In(1) |
| 91 | 1305.90 | 123.02 | End Shut-In(1) |
| 91 | 77.40 | 122.27 | Open To Flow (2) |
| 152 | 118.39 | 127.43 | Shut-In(2) |
| 256 | 1299.13 | 128.89 | End Shut-In(2) |
| 256 | 2009.39 | 129.02 | Final Hydro-static |

Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|-----------------------|--------------|
| 189.00 | OCWM - 60M - 35W - 5o | 1.03 |
| 53.00 | OCM - 90M - 10o | 0.74 |
| | | |
| | | |
| | | |

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56922

DST#: 2

ATTN: Steve Miller

Test Start: 2014.03.27 @ 00:21:00

Tool Information

| | | | | | |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------|-------------|
| Drill Pipe: | Length: 4010.48 ft | Diameter: 3.80 inches | Volume: 56.26 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: 177.52 ft | Diameter: 2.25 inches | Volume: 0.87 bbl | Weight to Pull Loose: | 68000.00 lb |
| | | | <u>Total Volume: 57.13 bbl</u> | Tool Chased | 0.00 ft |
| Drill Pipe Above KB: | 28.00 ft | | | String Weight: Initial | 62000.00 lb |
| Depth to Top Packer: | 4187.00 ft | | | Final | 62000.00 lb |
| Depth to Bottom Packer: | ft | | | | |
| Interval between Packers: | 52.00 ft | | | | |
| Tool Length: | 79.00 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 | | | 4165.00 | |
| Hydraulic tool | 5.00 | | | 4170.00 | |
| Jars | 5.00 | | | 4175.00 | |
| Safety Joint | 3.00 | | | 4178.00 | |
| Packer | 4.00 | | | 4182.00 | 27.00 Bottom Of Top Packer |
| Packer | 5.00 | | | 4187.00 | |
| Stubb | 1.00 | | | 4188.00 | |
| Recorder | 0.00 | 6741 | Inside | 4188.00 | |
| Recorder | 0.00 | 8368 | Inside | 4188.00 | |
| Perforations | 14.00 | | | 4202.00 | |
| Change Over Sub | 1.00 | | | 4203.00 | |
| Drill Pipe | 31.00 | | | 4234.00 | |
| Change Over Sub | 1.00 | | | 4235.00 | |
| Bullnose | 4.00 | | | 4239.00 | 52.00 Bottom Packers & Anchor |

Total Tool Length: 79.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56922

DST#: 2

ATTN: Steve Miller

Test Start: 2014.03.27 @ 00:21:00

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: 75.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

| Length ft | Description | Volume bbl |
|--------------|-----------------------|---------------|
| 189.00 | OCWM - 60M - 35W - 5o | 1.034 |
| 53.00 | OCM - 90M - 10o | 0.743 |

Total Length: 242.00 ft Total Volume: 1.777 bbl

Num Fluid Samples: 0

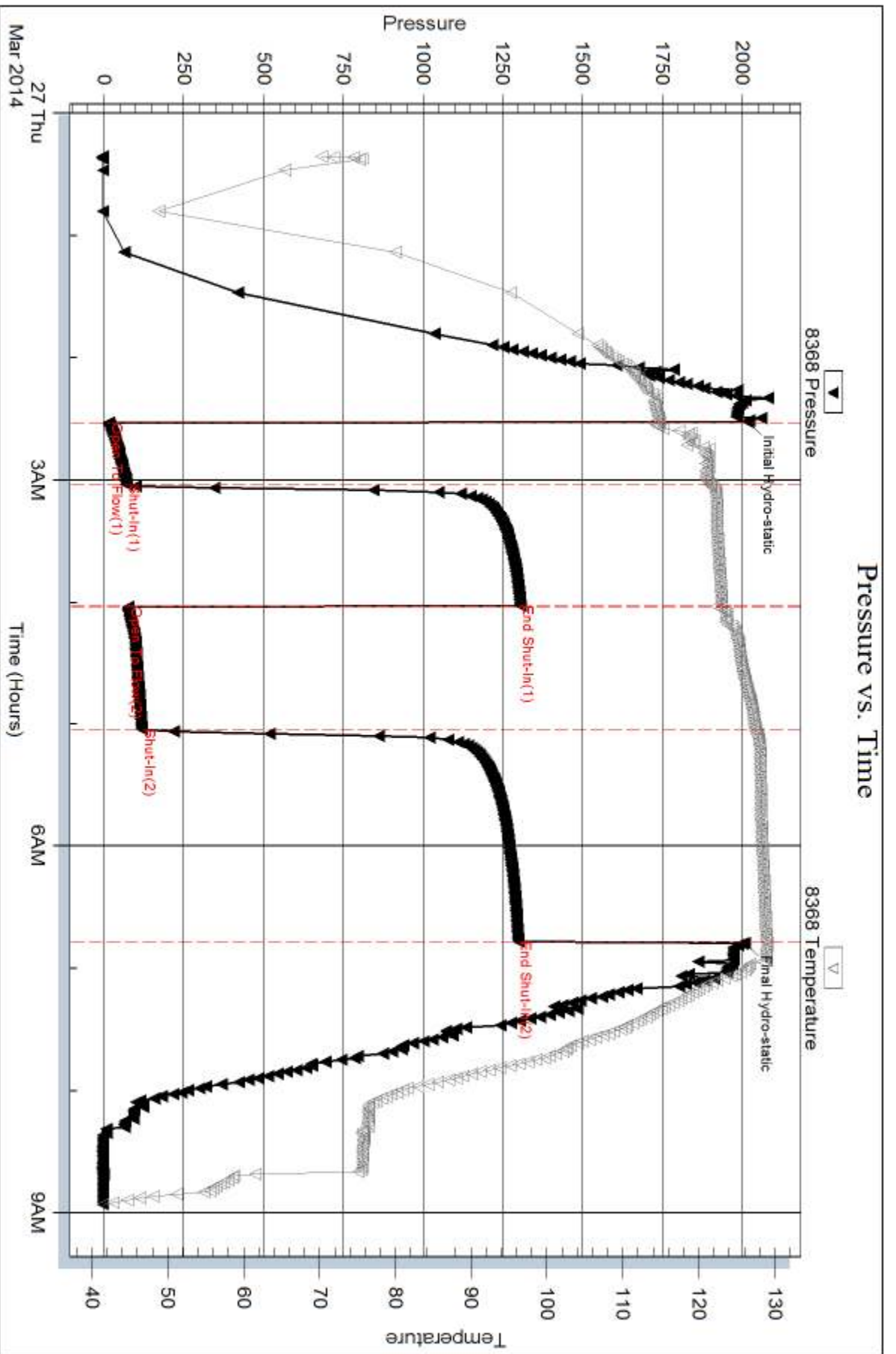
Num Gas Bombs: 0

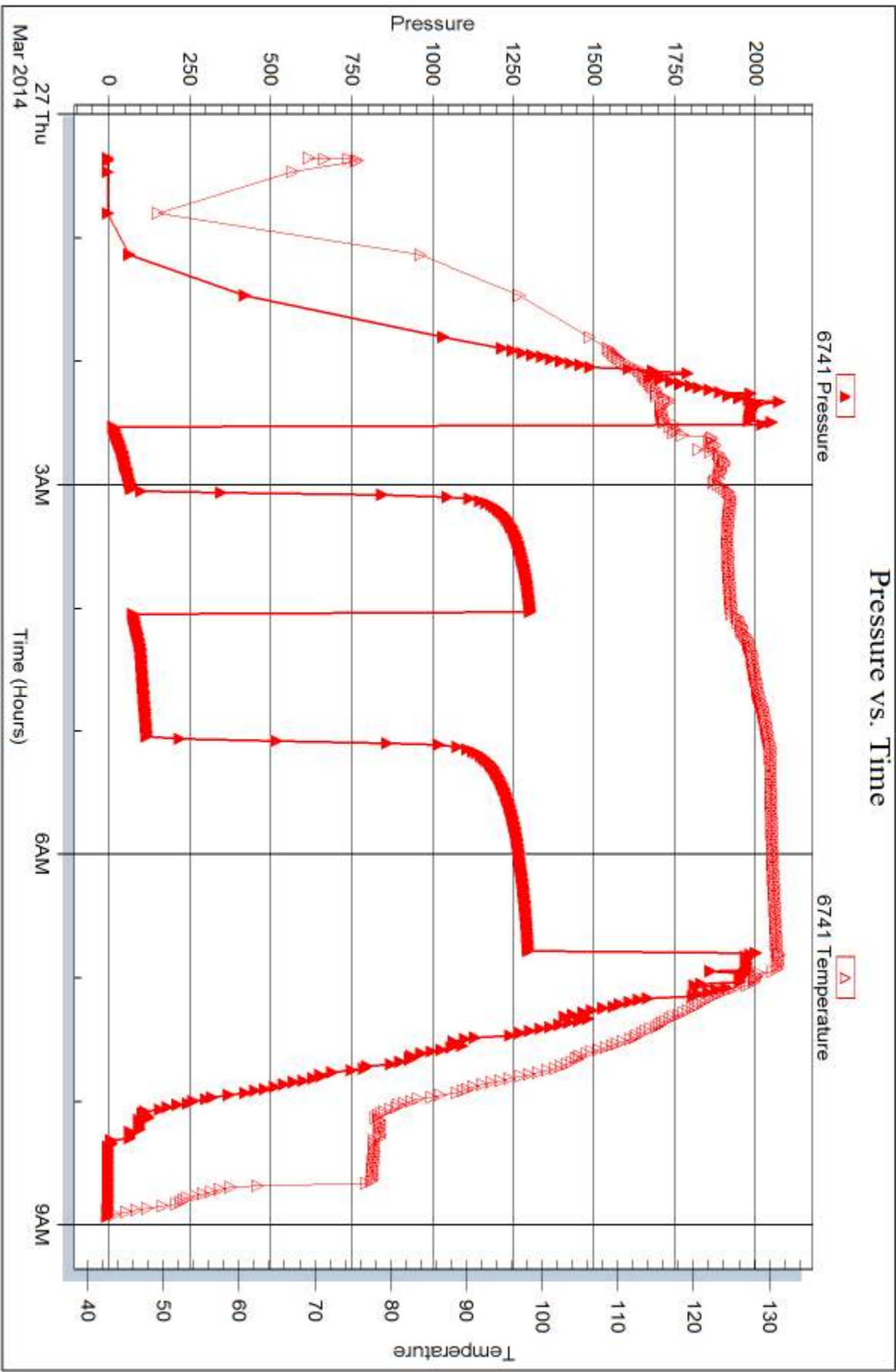
Serial #:

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: Steve Miller

Betty #1-2

2-1s-37w Cheyenne,KS

Start Date: 2014.03.28 @ 04:45:00

End Date: 2014.03.28 @ 13:54:00

Job Ticket #: 56923 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.04.02 @ 14:27:10

Murfin Drilling Co., Inc.
2-1s-37w Cheyenne,KS
Betty #1-2
DST # 3
LKC J
2014.03.28



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
250 N. Water, Ste 300
Wichita, KS 67202
ATTN: Steve Miller

2-1s-37w Cheyenne, KS

Betty #1-2

Job Ticket: 56923

DST#: 3

Test Start: 2014.03.28 @ 04:45:00

GENERAL INFORMATION:

Formation: **LKC J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:52:00
 Time Test Ended: 13:54:00
 Interval: **4243.00 ft (KB) To 4330.00 ft (KB) (TVD)**
 Total Depth: 4330.00 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: 3163.00 ft (KB)
 3152.00 ft (CF)
 KB to GR/CF: 11.00 ft

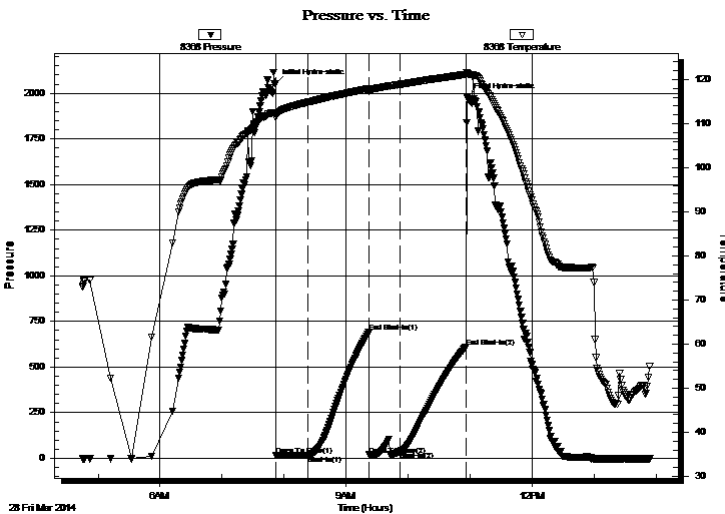
Serial #: 8368

Inside

Press@RunDepth: 41.36 psig @ 4244.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.03.28 End Date: 2014.03.28 Last Calib.: 2014.03.28
 Start Time: 04:45:05 End Time: 13:54:00 Time On Btm: 2014.03.28 @ 07:51:45
 Time Off Btm: 2014.03.28 @ 10:57:00

TEST COMMENT: 30 - IF - Surface blow built to 1/4" and stayed
 60 - ISI - No Return
 30 - FF - No Surface blow
 60 - FSI - No Return

PRESSURE SUMMARY



| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2051.55 | 112.54 | Initial Hydro-static |
| 1 | 15.79 | 111.32 | Open To Flow (1) |
| 32 | 17.75 | 114.85 | Shut-In(1) |
| 90 | 689.41 | 117.88 | End Shut-In(1) |
| 91 | 18.72 | 117.63 | Open To Flow (2) |
| 121 | 41.36 | 118.89 | Shut-In(2) |
| 184 | 610.99 | 121.15 | End Shut-In(2) |
| 186 | 1974.88 | 121.46 | Final Hydro-static |

Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|-------------|--------------|
| 2.00 | Mud - 100M | 0.01 |
| | | |
| | | |
| | | |
| | | |

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56923

DST#: 3

ATTN: Steve Miller

Test Start: 2014.03.28 @ 04:45:00

Tool Information

| | | | | |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe: | Length: 4042.94 ft | Diameter: 3.80 inches | Volume: 56.71 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: 177.52 ft | Diameter: 2.25 inches | Volume: 0.87 bbl | Weight to Pull Loose: 65000.00 lb |
| | | | <u>Total Volume: 57.58 bbl</u> | Tool Chased 0.00 ft |
| Drill Pipe Above KB: | 4.46 ft | | | String Weight: Initial 62000.00 lb |
| Depth to Top Packer: | 4243.00 ft | | | Final 62000.00 lb |
| Depth to Bottom Packer: | ft | | | |
| Interval between Packers: | 87.00 ft | | | |
| Tool Length: | 114.00 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 | | | 4221.00 | |
| Hydraulic tool | 5.00 | | | 4226.00 | |
| Jars | 5.00 | | | 4231.00 | |
| Safety Joint | 3.00 | | | 4234.00 | |
| Packer | 4.00 | | | 4238.00 | 27.00 Bottom Of Top Packer |
| Packer | 5.00 | | | 4243.00 | |
| Stubb | 1.00 | | | 4244.00 | |
| Recorder | 0.00 | 6741 | Inside | 4244.00 | |
| Recorder | 0.00 | 8368 | Inside | 4244.00 | |
| Perforations | 17.00 | | | 4261.00 | |
| Change Over Sub | 1.00 | | | 4262.00 | |
| Drill Pipe | 63.00 | | | 4325.00 | |
| Change Over Sub | 1.00 | | | 4326.00 | |
| Bullnose | 4.00 | | | 4330.00 | 87.00 Bottom Packers & Anchor |

Total Tool Length: 114.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56923

DST#: 3

ATTN: Steve Miller

Test Start: 2014.03.28 @ 04:45:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 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 |
|--------------|-------------|---------------|
| 2.00 | Mud - 100M | 0.010 |

Total Length: 2.00 ft Total Volume: 0.010 bbl

Num Fluid Samples: 0

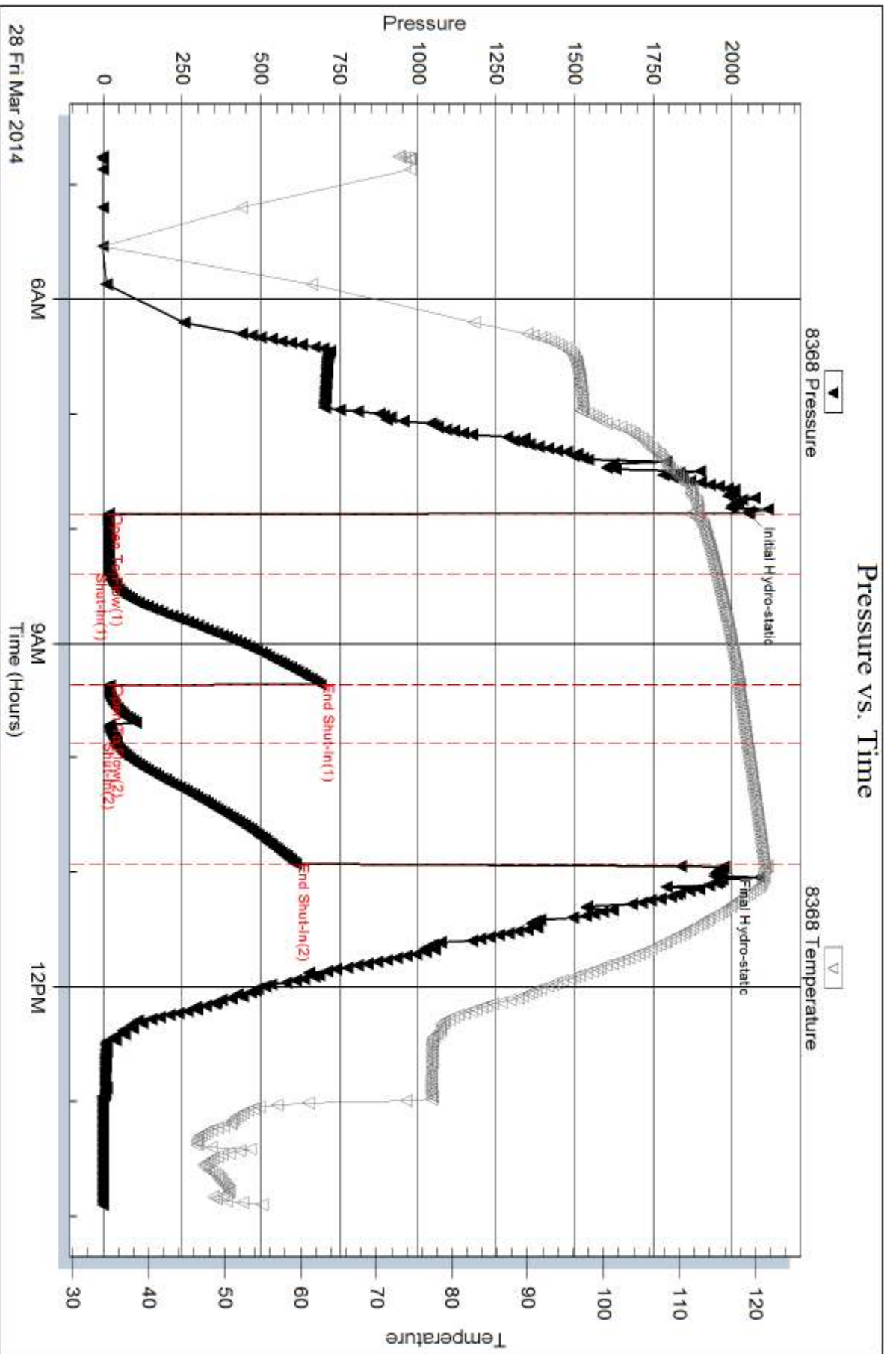
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



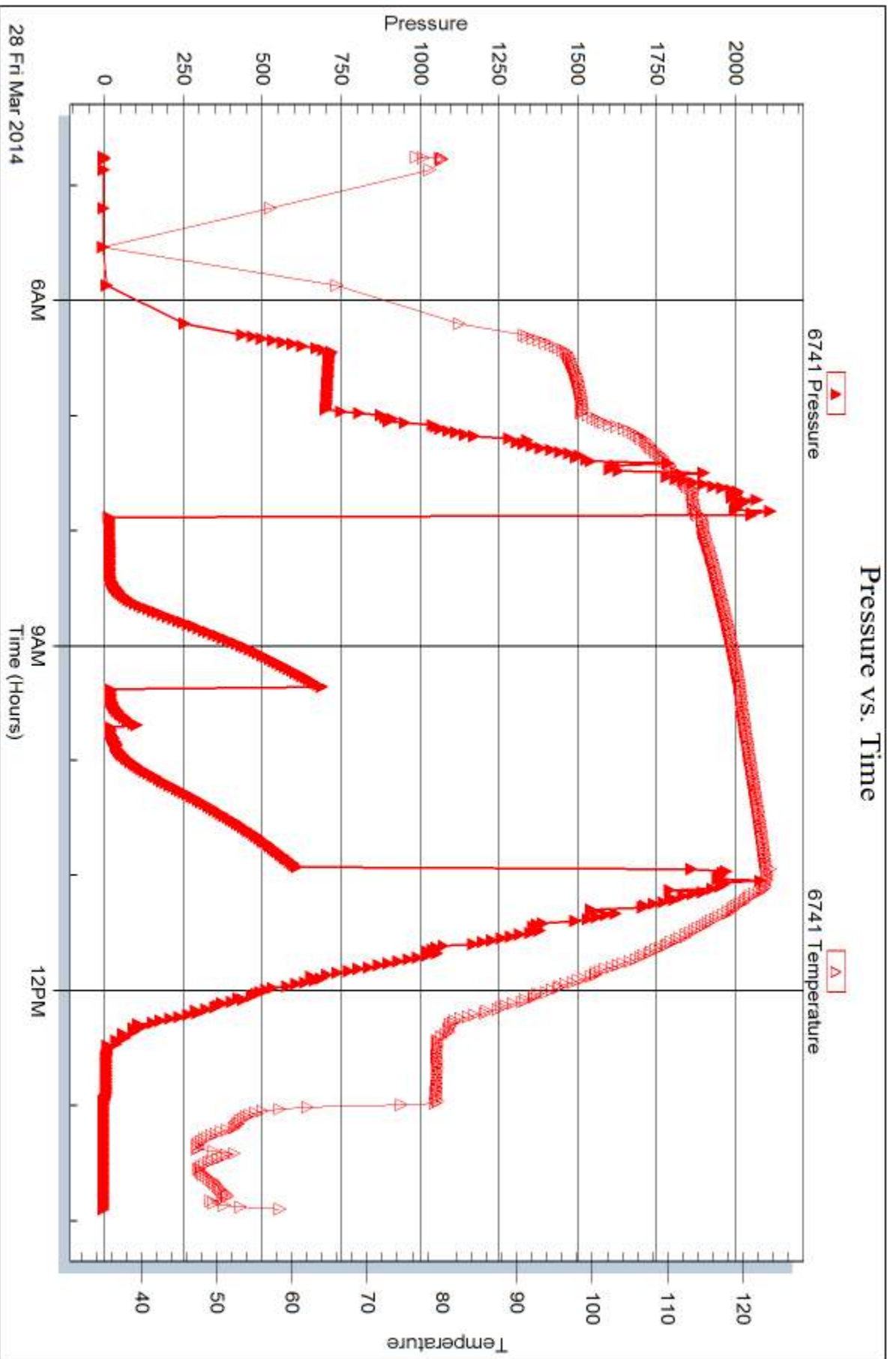
Serial #: 6741

Inside

Murfin Drilling Co., Inc.

Betty #1-2

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 56923

Printed: 2014.04.02 @ 14:27:13



DRILL STEM TEST REPORT

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

250 N. Water, Ste 300
Wichita, KS 67202

ATTN: Steve Miller

Betty #1-2

2-1s-37w Cheyenne,KS

Start Date: 2014.03.29 @ 12:48:05

End Date: 2014.03.29 @ 20:51:00

Job Ticket #: 56924 DST #: 4

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

Printed: 2014.04.02 @ 14:26:31



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne, KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56924

DST#: 4

ATTN: Steve Miller

Test Start: 2014.03.29 @ 12:48:05

GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:41:30

Time Test Ended: 20:51:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4489.00 ft (KB) To 4524.00 ft (KB) (TVD)

Reference Elevations: 3163.00 ft (KB)

Total Depth: 4524.00 ft (KB) (TVD)

3152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8368

Inside

Press@RunDepth: 14.42 psig @ 4490.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.29

End Date:

2014.03.29

Last Calib.:

2014.03.29

Start Time:

12:48:05

End Time:

20:50:59

Time On Btm:

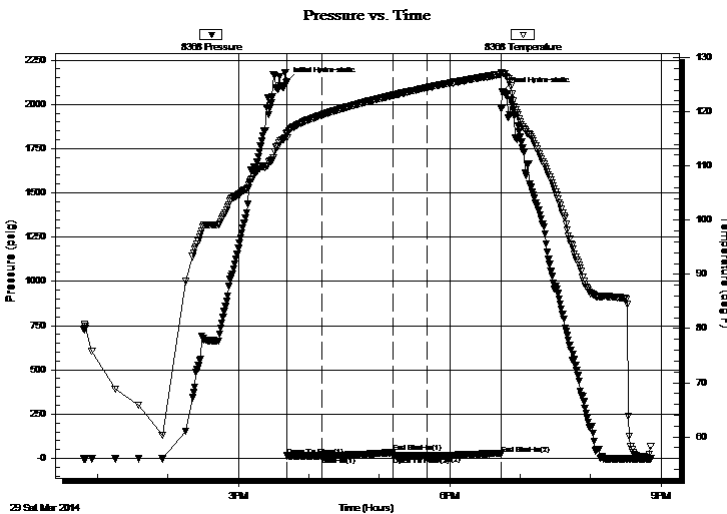
2014.03.29 @ 15:41:15

Time Off Btm:

2014.03.29 @ 18:44:14

TEST COMMENT: 30 - IF - Surface blow stayed at a weak surface
60 - ISI - No Return
30 - FF - Started w/a weak surface blow then died in 23 mins
60 - FSI - No Return

PRESSURE SUMMARY



| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2127.23 | 116.10 | Initial Hydro-static |
| 1 | 13.50 | 115.26 | Open To Flow (1) |
| 30 | 14.31 | 119.45 | Shut-In(1) |
| 91 | 33.22 | 123.16 | End Shut-In(1) |
| 91 | 13.62 | 123.04 | Open To Flow (2) |
| 120 | 14.42 | 124.42 | Shut-In(2) |
| 183 | 21.08 | 126.95 | End Shut-In(2) |
| 183 | 2073.50 | 127.20 | Final Hydro-static |

Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|------------------------|--------------|
| 3.00 | OSM - 100M - Oil Spots | 0.01 |
| | | |
| | | |
| | | |
| | | |

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56924

DST#: 4

ATTN: Steve Miller

Test Start: 2014.03.29 @ 12:48:05

Tool Information

| | | | | |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe: | Length: 4295.48 ft | Diameter: 3.80 inches | Volume: 60.25 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: 177.52 ft | Diameter: 2.25 inches | Volume: 0.87 bbl | Weight to Pull Loose: 70000.00 lb |
| | | | <u>Total Volume: 61.12 bbl</u> | Tool Chased 0.00 ft |
| Drill Pipe Above KB: | 11.00 ft | | | String Weight: Initial 65000.00 lb |
| Depth to Top Packer: | 4489.00 ft | | | Final 65000.00 lb |
| Depth to Bottom Packer: | ft | | | |
| Interval between Packers: | 35.00 ft | | | |
| Tool Length: | 62.00 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 | | | 4467.00 | |
| Hydraulic tool | 5.00 | | | 4472.00 | |
| Jars | 5.00 | | | 4477.00 | |
| Safety Joint | 3.00 | | | 4480.00 | |
| Packer | 4.00 | | | 4484.00 | 27.00 Bottom Of Top Packer |
| Packer | 5.00 | | | 4489.00 | |
| Stubb | 1.00 | | | 4490.00 | |
| Recorder | 0.00 | 6741 | Inside | 4490.00 | |
| Recorder | 0.00 | 8368 | Inside | 4490.00 | |
| Perforations | 30.00 | | | 4520.00 | |
| Bullnose | 4.00 | | | 4524.00 | 35.00 Bottom Packers & Anchor |

Total Tool Length: 62.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

2-1s-37w Cheyenne,KS

250 N. Water, Ste 300
Wichita, KS 67202

Betty #1-2

Job Ticket: 56924

DST#: 4

ATTN: Steve Miller

Test Start: 2014.03.29 @ 12:48:05

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: 80.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 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 |
|--------------|------------------------|---------------|
| 3.00 | OSM - 100M - Oil Spots | 0.015 |

Total Length: 3.00 ft Total Volume: 0.015 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

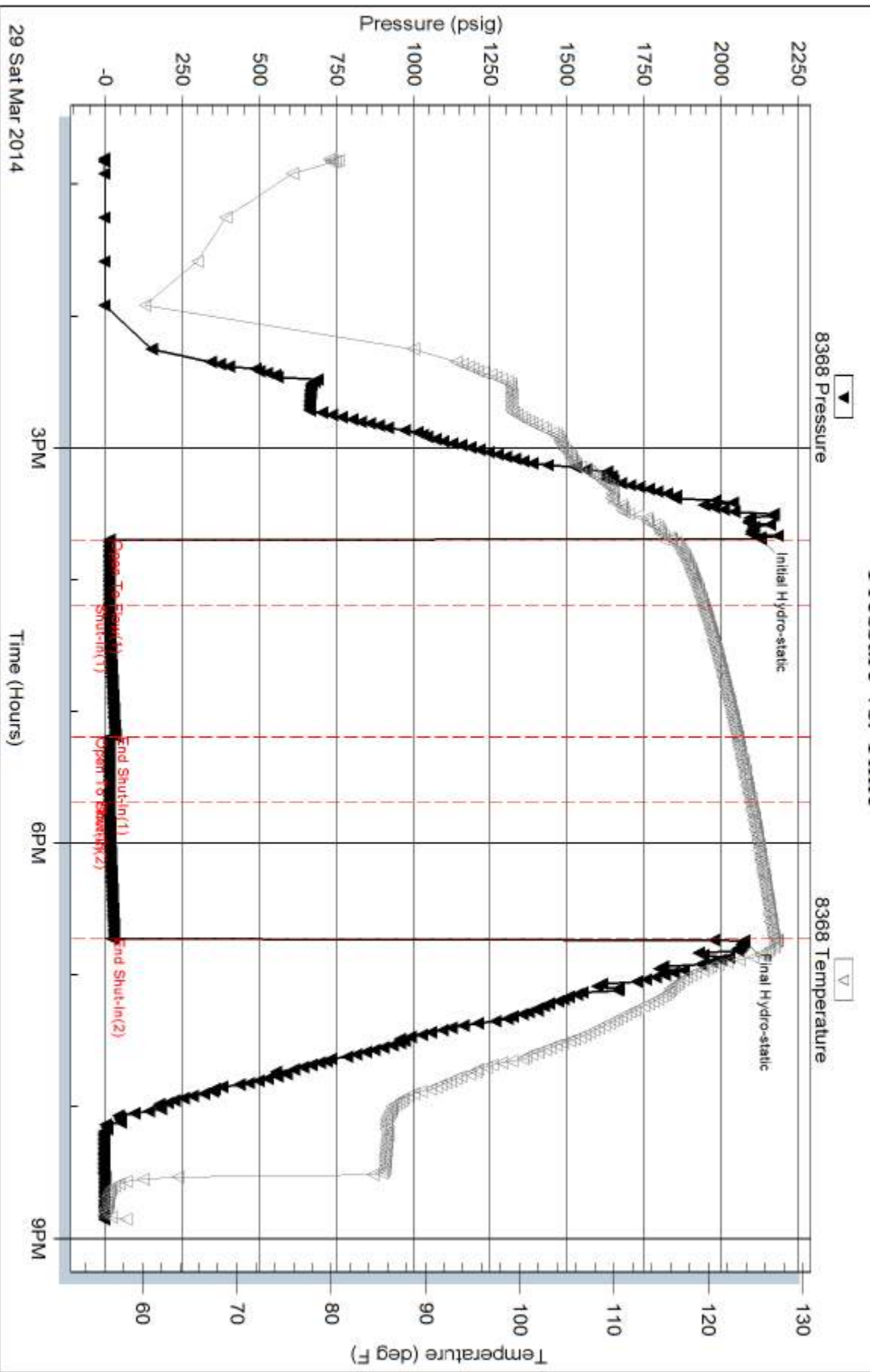
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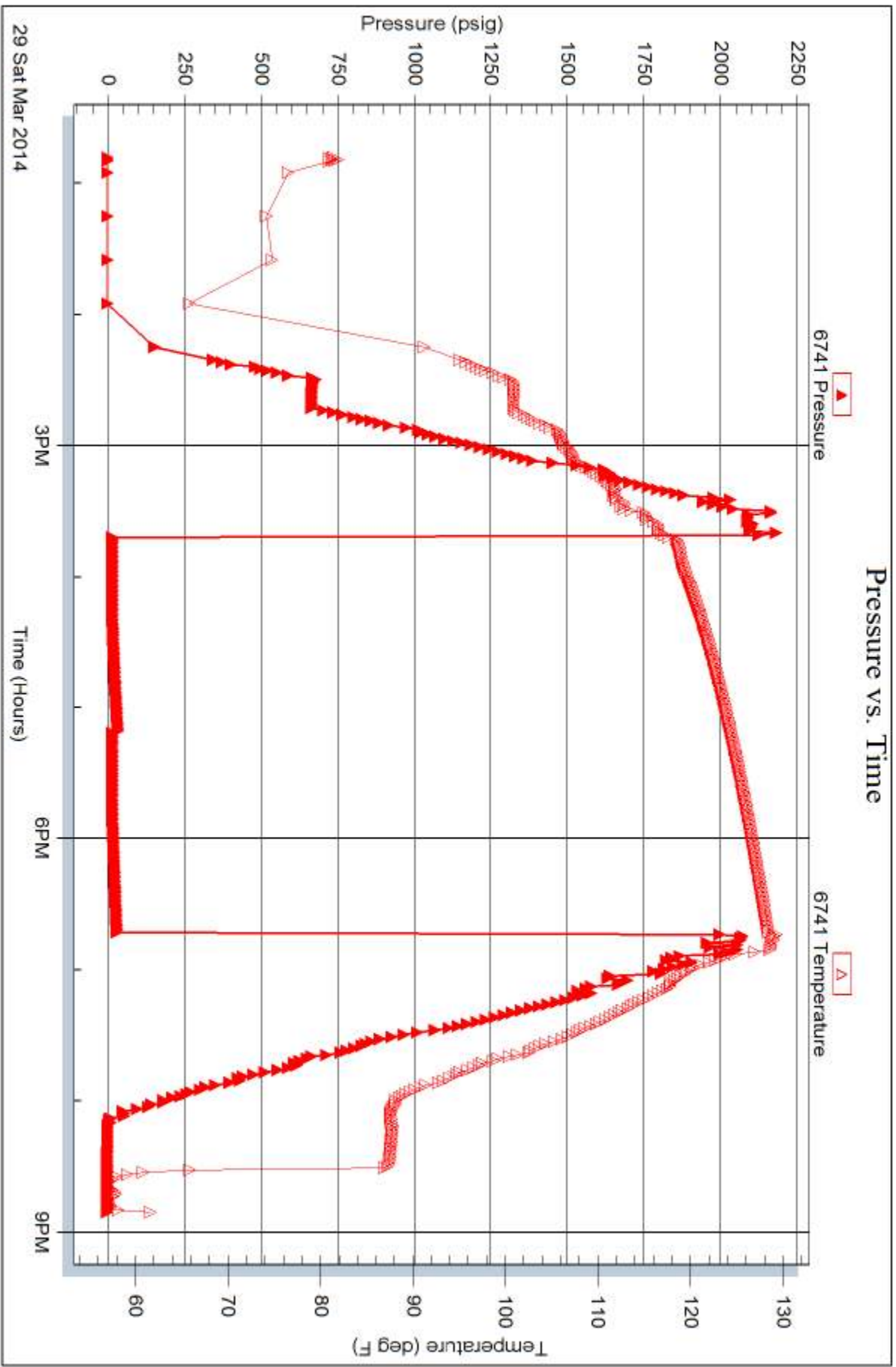
Laboratory Name:

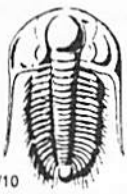
Laboratory Location:

Recovery Comments:

Pressure vs. Time







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56921

Well Name & No. Betty #1-2 Test No. 1 Date 3-26-14
 Company Murfin Drilling Co., Inc. Elevation 3163 KB 3152 GL
 Address ~~Steve Miller~~ 250 N. Water, Ste 300 Wichita KS 67202
 Co. Rep / Geo. Steve Miller Rig Murfin #20
 Location: Sec. 2 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4137-4188 Zone Tested Lansing
 Anchor Length 51' Drill Pipe Run 3947.60 Mud Wt. 9.2
 Top Packer Depth 4133 Drill Collars Run 177.52 Vis 75
 Bottom Packer Depth 4137 Wt. Pipe Run 0 WL 5.6
 Total Depth 4188 Chlorides 600 ppm System LCM 6#
 Blow Description IF-Surface blow built to 3 3/4"
ISI-No return
FF-Surface blow built to 2"
FST-No return

| Rec | Feet of | %gas | %oil | %water | %mud |
|------------|-----------------|------------|-----------|-----------|------|
| <u>6'</u> | <u>Free oil</u> | <u>100</u> | | | |
| <u>63'</u> | <u>OCWm</u> | <u>20</u> | <u>20</u> | <u>60</u> | |
| <u>63'</u> | <u>OCm</u> | <u>45</u> | | <u>55</u> | |
| <u>63'</u> | <u>OCm</u> | <u>10</u> | | <u>90</u> | |
| Rec | Feet of | %gas | %oil | %water | %mud |

Rec Total 195 BHT 130°F Gravity 24@100°F API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2088 Test 1250 T-On Location 2:45am
 (B) First Initial Flow 15 Jars 250 T-Started 3:34am
 (C) First Final Flow 49 Safety Joint 75 T-Open 5:43am
 (D) Initial Shut-In 1183 Circ Sub NIC T-Pulled 9:43am
 (E) Second Initial Flow 63 Hourly Standby T-Out 11:54
 (F) Second Final Flow 106 Mileage 166 R/T 257.30 Comments
 (G) Final Shut-In 1127 Sampler Ruined Shale Packer
 (H) Final Hydrostatic 2083 Straddle Ruined Packer
 Shale Packer Extra Copies
 Extra Packer Extra Recorder
 Extra Recorder Sub Total 0
 Day Standby Total 1832.30
 Accessibility MP/DST Disc't
 Sub Total 1832.30

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. 56922

Well Name & No. Betty #1-2 Test No. 2 Date 3-~~20~~²⁷-14
 Company Murfin Drilling Co., Inc. Elevation 3163 KB 3152 GL
 Address 250 N. Water, Ste. 300 Wichita KS 67202
 Co. Rep / Geo. Steve Miller Rig Murfin #20
 Location: Sec. 2 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4187-4239 Zone Tested 'G'
 Anchor Length 52' Drill Pipe Run 4010.48 Mud Wt. 9.2
 Top Packer Depth 4183 Drill Collars Run 177.52 Vis 75
 Bottom Packer Depth 4187 Wt. Pipe Run 0 WL 5.6
 Total Depth 4239 Chlorides 900 ppm System LCM 6#
 Blow Description IF - Surface blow built to 3 1/4"
ISI - No return
FF - Surface blow built to 2 1/4"
FST - No return

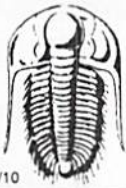
| Rec | Feet of | %gas | %oil | %water | %mud |
|-------------|-------------|-----------|-----------|-----------|------|
| <u>53'</u> | <u>OCM</u> | <u>10</u> | | <u>90</u> | |
| <u>189'</u> | <u>OCWm</u> | <u>5</u> | <u>35</u> | <u>60</u> | |
| | | | | | |
| | | | | | |
| | | | | | |

Rec Total 242' BHT 128°F Gravity _____ API RW 307 @ 41 °F Chlorides 42,000 ppm

(A) Initial Hydrostatic 2017 Test 1250 T-On Location 12:00am
 (B) First Initial Flow 15 Jars 250 T-Started 12:21am
 (C) First Final Flow 71 Safety Joint 75 T-Open 2:32am
 (D) Initial Shut-In 1305 Circ Sub N/C T-Pulled 6:32am
 (E) Second Initial Flow 77 Hourly Standby _____ T-Out 8:56am
 (F) Second Final Flow 118 Mileage 166 R/T 257.30 Comments _____
 (G) Final Shut-In 1299 Sampler _____
 (H) Final Hydrostatic 2009 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1832.30
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1832.30

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56923

4/10

Well Name & No. Betty #1-2 Test No. 3 Date 3-28-14
 Company Murfin Drilling Co., Inc. Elevation 3163 KB 3152 GL
 Address 250 N. Water, STE 300 Wichita KS 67202
 Co. Rep / Geo. Steve Miller Rig Murfin #20
 Location: Sec. 2 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4243 - 4330 Zone Tested LKC - J
 Anchor Length ~~4239~~ 87' Drill Pipe Run 4042.94 Mud Wt. 9.0
 Top Packer Depth ~~4243~~ 4239 Drill Collars Run 177.52 Vis 53
 Bottom Packer Depth 4243 Wt. Pipe Run 0 WL 64
 Total Depth 4330 Chlorides 500 ppm System LCM 8#
 Blow Description IF - Surface blow built to 1/4" and stayed
ISI - No Return
FF - No Surface blow
FSL - No Return

| Rec | Feet of | %gas | %oil | %water | %mud |
|-----------|------------|------|------|------------|------|
| <u>2'</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 2' BHT 121°F Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2051 Test 1250 T-On Location 4:00am
 (B) First Initial Flow 15 Jars 250 T-Started 4:45am
 (C) First Final Flow 17 Safety Joint 75 T-Open 7:54am
 (D) Initial Shut-In 689 Circ Sub N/C T-Pulled 10:54am
 (E) Second Initial Flow 18 Hourly Standby _____ T-Out 1:56pm
 (F) Second Final Flow 41 Mileage 166 R/T 257.30 Comments _____
 (G) Final Shut-In 610 Sampler _____
 (H) Final Hydrostatic 1974 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

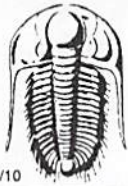
Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60

Sub Total 1832.30

Total 1832.30
 MP/DST Disc't _____

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56924

Well Name & No. Betty #1-2 Test No. 4 Date 3-29-14
 Company Murfin Drilling Co., Inc. Elevation 3163 KB 3/52 GL
 Address 250 N. Water St. 300 Wichita KS 67202
 Co. Rep / Geo. Steve Miller Rig Murfin #20
 Location: Sec. 2 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4489-4524 Zone Tested Pawnee
 Anchor Length 35' Drill Pipe Run 4295.48 Mud Wt. 8.9
 Top Packer Depth 4484 Drill Collars Run 177.52 Vis 80
 Bottom Packer Depth 4489 Wt. Pipe Run 0 WL 6.0
 Total Depth 4524 Chlorides 600 ppm System LCM 12#

Blow Description IF-Surface blow stayed at a weak surface
ISI-No return
FF-Started w/weak surface blow then died 23 mins. in
FSI-No return

| Rec | Feet of | %gas | %oil | %water | %mud |
|-----------|------------|-------------|------|------------|------|
| <u>3'</u> | <u>OSM</u> | <u>sets</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 3' BHT 127°F Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2127 Test 1250 T-On Location 11:45am
 (B) First Initial Flow 13 Jars 250 T-Started 12:48pm
 (C) First Final Flow 14 Safety Joint 75 T-Open 3:41pm
 (D) Initial Shut-In 33 Circ Sub N/C T-Pulled 6:41pm
 (E) Second Initial Flow 13 Hourly Standby _____ T-Out 8:50pm
 (F) Second Final Flow 14 Mileage 1166 R/T 257.30 Comments On location at 11:00pm
 (G) Final Shut-In 21 Sampler _____ 3-30-14 to pick up tool, waited
 (H) Final Hydrostatic 2073 Straddle _____ on loggers 11:45 loaded 12:30
 Shale Packer _____ left.

Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 30 Extra Recorder _____
 Final Shut-In 60 Day Standby _____
 Accessibility _____
 Sub Total 1832.30 MP/DST Disc't _____

Approved By _____ Our Representative [Signature]

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