



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling CO INC**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Burk E #1-14**

### **14 1 36 Rawlins KS**

Start Date: 2014.07.05 @ 12:25:00

End Date: 2014.07.05 @ 20:53:00

Job Ticket #: 53693                      DST #: 1

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

Printed: 2014.07.08 @ 16:26:20



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53693

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2014.07.05 @ 12:25:00

## GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:56:00

Time Test Ended: 20:53:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 49

**Interval: 4258.00 ft (KB) To 4313.00 ft (KB) (TVD)**

Reference Elevations: 3309.00 ft (KB)

Total Depth: 4313.00 ft (KB) (TVD)

3298.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 6769 Outside**

Press@RunDepth: 94.03 psig @ 4259.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.07.05

End Date:

2014.07.05

Last Calib.:

2014.07.05

Start Time: 12:25:05

End Time:

20:52:59

Time On Btm:

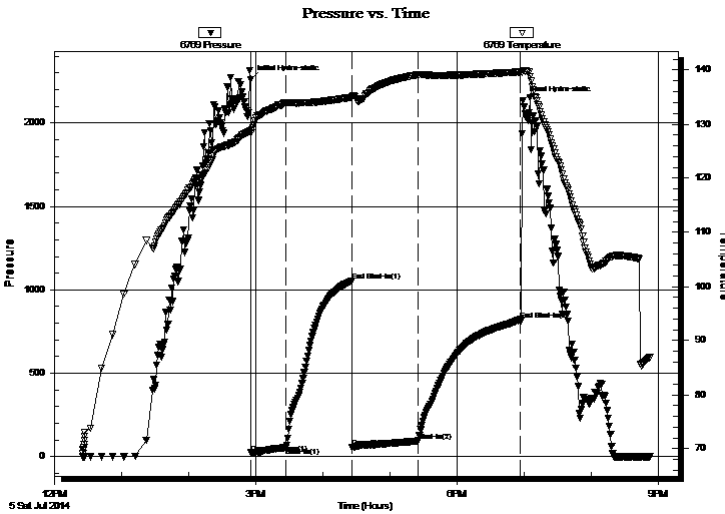
2014.07.05 @ 14:55:30

Time Off Btm:

2014.07.05 @ 18:59:30

**TEST COMMENT:** 30-IF- Blow built to 3"  
60-IS- No return  
60-FF- Blow started in 15 mins built to 2"  
90-FS- No return

## PRESSURE SUMMARY



| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 2260.00         | 128.71       | Initial Hydro-static |
| 1           | 23.28           | 128.47       | Open To Flow (1)     |
| 31          | 54.11           | 133.94       | Shut-In(1)           |
| 91          | 1052.91         | 134.95       | End Shut-In(1)       |
| 91          | 58.48           | 135.09       | Open To Flow (2)     |
| 150         | 94.03           | 139.14       | Shut-In(2)           |
| 241         | 821.91          | 139.65       | End Shut-In(2)       |
| 244         | 2136.05         | 139.93       | Final Hydro-static   |

## Recovery

| Length (ft) | Description   | Volume (bbl) |
|-------------|---------------|--------------|
| 140.00      | ocm 25%o 75%m | 0.69         |
|             |               |              |
|             |               |              |
|             |               |              |
|             |               |              |

## 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: Robert Hendrix

**14 1 36 Rawlins KS**

**Burk E #1-14**

Job Ticket: 53693

**DST#: 1**

Test Start: 2014.07.05 @ 12:25:00

## GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:56:00

Time Test Ended: 20:53:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 49

Interval: **4258.00 ft (KB) To 4313.00 ft (KB) (TVD)**

Total Depth: 4313.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3309.00 ft (KB)

3298.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8521**

Inside

Press@RunDepth: psig @ 4259.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.07.05

End Date:

2014.07.05

Last Calib.:

2014.07.05

Start Time: 12:25:05

End Time:

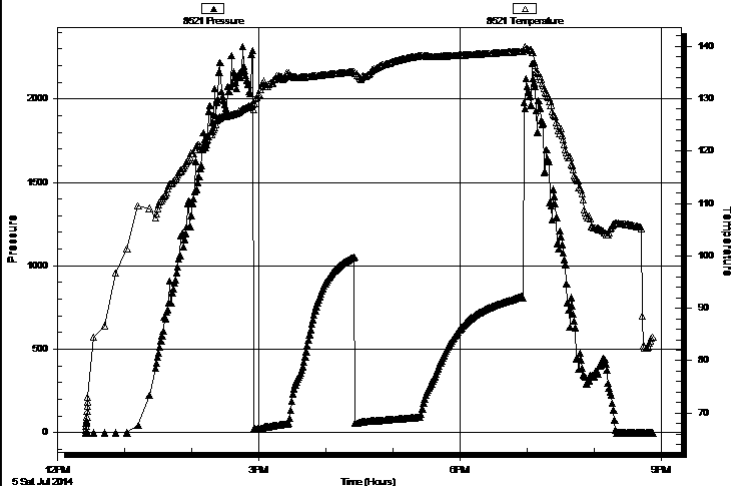
20:52:29

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF- Blow built to 3"  
60-ISI- No return  
60-FF- Blow started in 15 mins built to 2"  
90-FSI- No return

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

| Length (ft) | Description   | Volume (bbl) |
|-------------|---------------|--------------|
| 140.00      | ocm 25%o 75%m | 0.69         |
|             |               |              |
|             |               |              |
|             |               |              |
|             |               |              |

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53693

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2014.07.05 @ 12:25:00

## Tool Information

|                           |                    |                       |                                |                                    |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe:               | Length: 4041.00 ft | Diameter: 3.88 inches | Volume: 59.10 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: 207.00 ft  | Diameter: 2.25 inches | Volume: 1.02 bbl               | Weight to Pull Loose: 88000.00 lb  |
|                           |                    |                       | <u>Total Volume: 60.12 bbl</u> | Tool Chased ft                     |
| Drill Pipe Above KB:      | 17.00 ft           |                       |                                | String Weight: Initial 80000.00 lb |
| Depth to Top Packer:      | 4258.00 ft         |                       |                                | Final 80000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                                |                                    |
| Interval between Packers: | 55.00 ft           |                       |                                |                                    |
| Tool Length:              | 82.00 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  |      |         | 4236.00 |                               |
| Hydraulic tool  | 5.00  |      |         | 4241.00 |                               |
| Jars            | 5.00  |      |         | 4246.00 |                               |
| Safety Joint    | 3.00  |      |         | 4249.00 |                               |
| Packer          | 5.00  |      |         | 4254.00 | 27.00 Bottom Of Top Packer    |
| Packer          | 4.00  |      |         | 4258.00 |                               |
| Stubb           | 1.00  |      |         | 4259.00 |                               |
| Recorder        | 0.00  | 8521 | Inside  | 4259.00 |                               |
| Recorder        | 0.00  | 6769 | Outside | 4259.00 |                               |
| Perforations    | 18.00 |      |         | 4277.00 |                               |
| Change Over Sub | 1.00  |      |         | 4278.00 |                               |
| Drill Pipe      | 31.00 |      |         | 4309.00 |                               |
| Change Over Sub | 1.00  |      |         | 4310.00 |                               |
| Bullnose        | 3.00  |      |         | 4313.00 | 55.00 Bottom Packers & Anchor |

**Total Tool Length: 82.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53693

**DST#: 1**

ATTN: Robert Hendrix

Test Start: 2014.07.05 @ 12:25:00

## 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: 72.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

| Length<br>ft | Description   | Volume<br>bbl |
|--------------|---------------|---------------|
| 140.00       | ocm 25%o 75%m | 0.688         |

Total Length: 140.00 ft      Total Volume: 0.688 bbl

Num Fluid Samples: 0

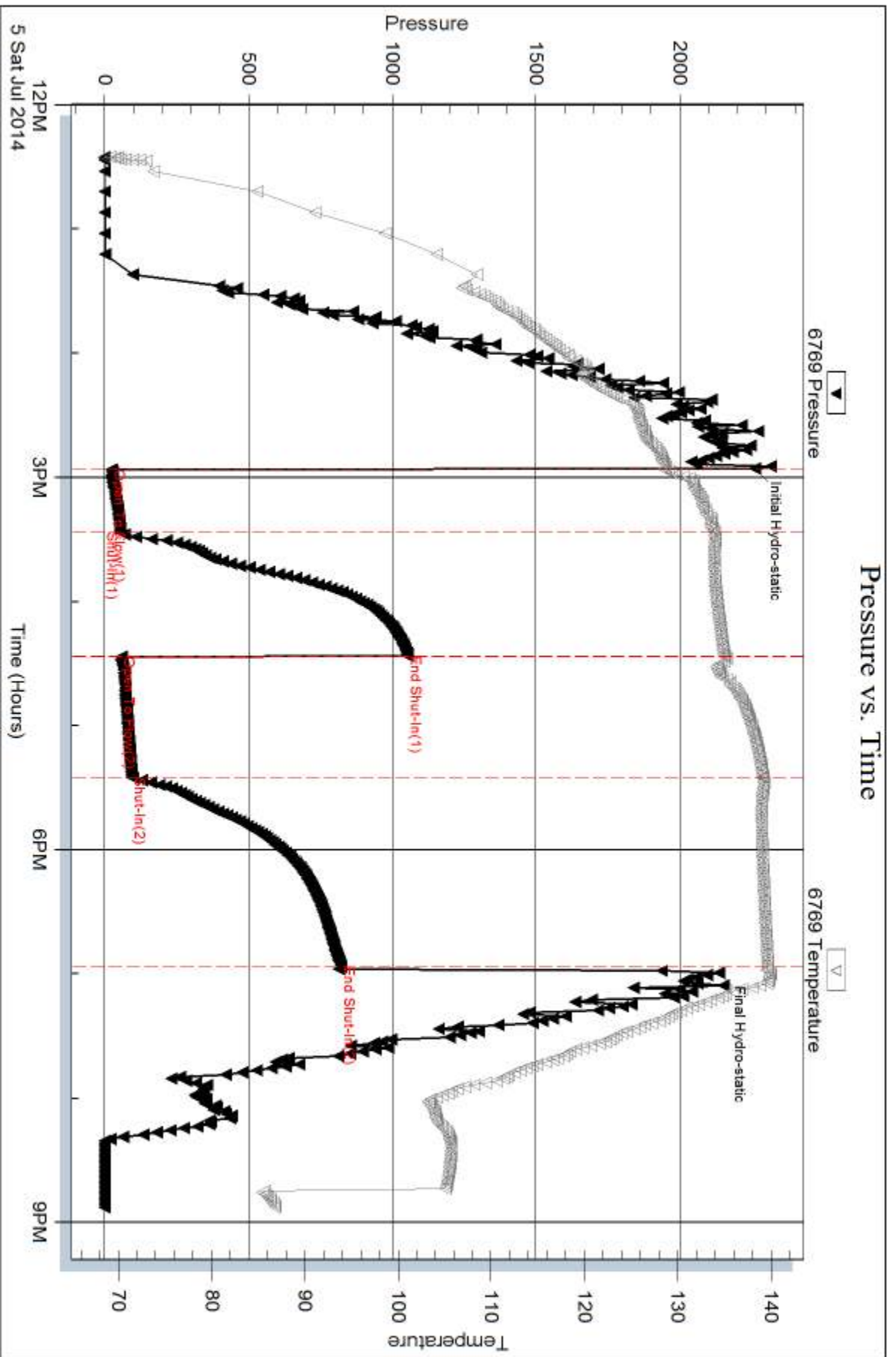
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



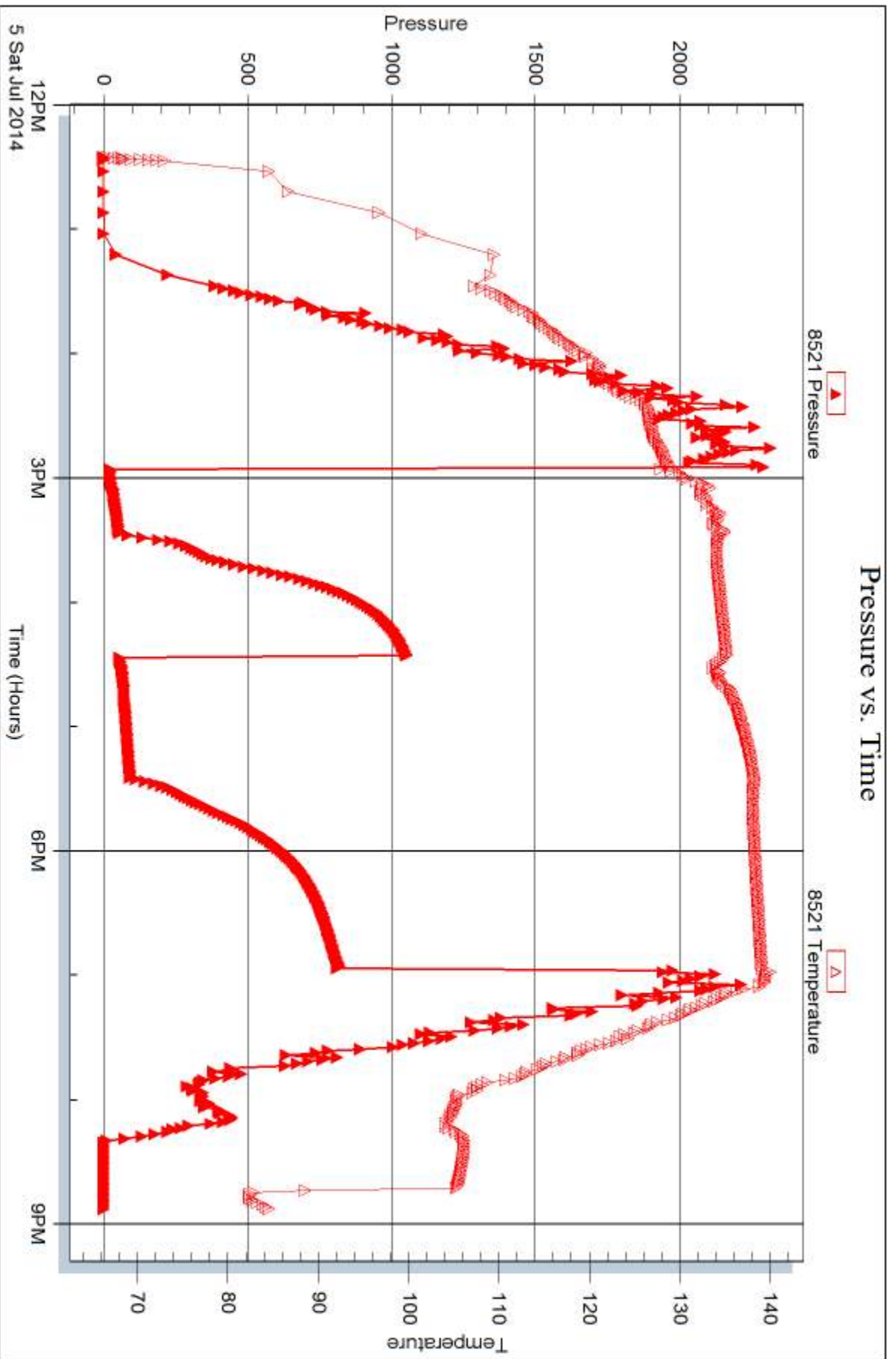
Serial #: 8521

Inside

Murfin Drilling CO INC

Burk E#1-14

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling CO INC**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Burk E #1-14**

### **14 1 36 Rawlins KS**

Start Date: 2014.07.06 @ 05:35:00

End Date: 2014.07.06 @ 14:48:00

Job Ticket #: 53694                      DST #: 2

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

Printed: 2014.07.08 @ 16:11:03





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53694

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2014.07.06 @ 05:35:00

## GENERAL INFORMATION:

Formation: **LKC "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:08:00

Time Test Ended: 14:48:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 49

**Interval: 4327.00 ft (KB) To 4376.00 ft (KB) (TVD)**

Reference Elevations: 3309.00 ft (KB)

Total Depth: 4313.00 ft (KB) (TVD)

3298.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 6769 Outside**

Press@RunDepth: 95.09 psig @ 4328.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.07.06

End Date:

2014.07.06

Last Calib.:

2014.07.06

Start Time: 05:35:05

End Time:

14:48:00

Time On Btm:

2014.07.06 @ 08:07:30

Time Off Btm:

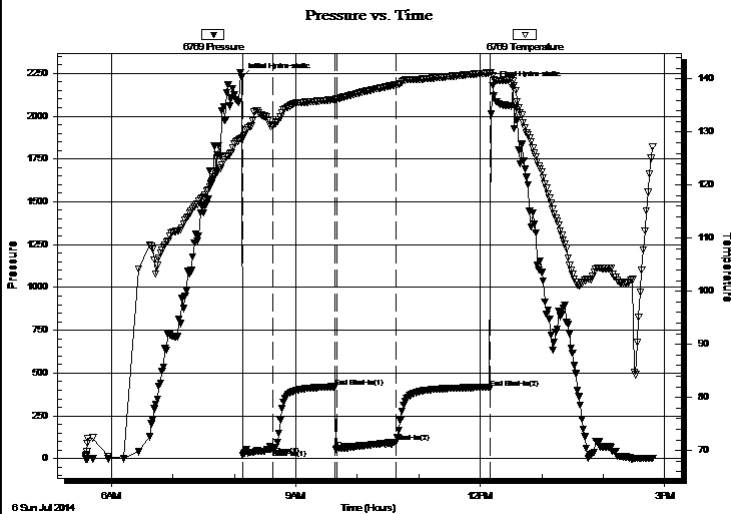
2014.07.06 @ 12:12:00

TEST COMMENT: 30-IF- Blow built to 5 3/4"

60-ISI- No return

60-FF- Blow built to 7"

90-FSI- No return



## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 2225.91         | 128.91       | Initial Hydro-static |
| 1           | 20.37           | 128.79       | Open To Flow (1)     |
| 31          | 53.03           | 131.13       | Shut-In(1)           |
| 91          | 420.52          | 136.13       | End Shut-In(1)       |
| 93          | 57.30           | 136.24       | Open To Flow (2)     |
| 150         | 95.09           | 138.88       | Shut-In(2)           |
| 242         | 411.96          | 141.15       | End Shut-In(2)       |
| 245         | 2179.30         | 140.61       | Final Hydro-static   |

## Recovery

| Length (ft) | Description               | Volume (bbl) |
|-------------|---------------------------|--------------|
| 60.00       | gocm 10%g 65%m 25%o       | 0.30         |
| 60.00       | gmco 10%g 5%m 85%o        | 0.30         |
| 90.00       | clean gassy oil 15%g 85%o | 0.47         |
| 0.00        | 126' GIP                  | 0.00         |
|             |                           |              |
|             |                           |              |

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53694

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2014.07.06 @ 05:35:00

**GENERAL INFORMATION:**

Formation: **LKC "G"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 08:08:00  
 Time Test Ended: 14:48:00  
 Interval: **4327.00 ft (KB) To 4376.00 ft (KB) (TVD)**  
 Total Depth: 4313.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Robert Zodrow  
 Unit No: 49  
 Reference Elevations: 3309.00 ft (KB)  
 3298.00 ft (CF)  
 KB to GR/CF: 11.00 ft

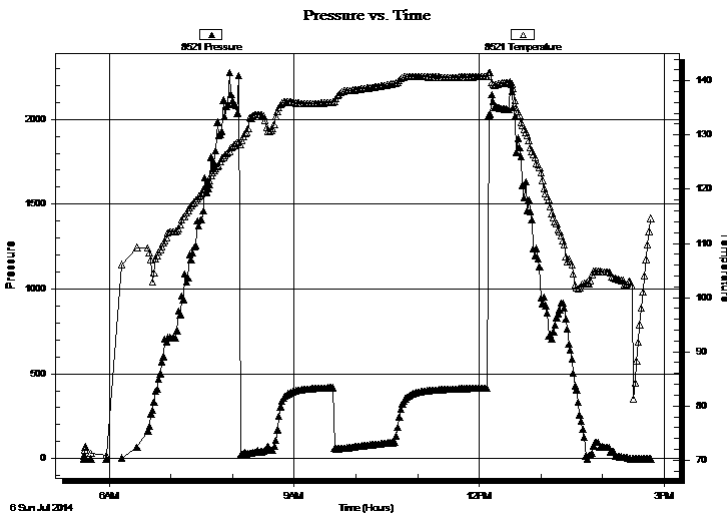
**Serial #: 8521**

**Inside**

Press@RunDepth: psig @ 4328.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.07.06 End Date: 2014.07.06 Last Calib.: 2014.07.06  
 Start Time: 05:35:05 End Time: 14:47:30 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 30-IF- Blow built to 5 3/4"  
 60-ISI- No return  
 60-FF- Blow built to 7"  
 90-FSI- No return

**PRESSURE SUMMARY**



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

**Recovery**

| Length (ft) | Description               | Volume (bbl) |
|-------------|---------------------------|--------------|
| 60.00       | gocm 10%g 65%m 25%o       | 0.30         |
| 60.00       | gmco 10%g 5%m 85%o        | 0.30         |
| 90.00       | clean gassy oil 15%g 85%o | 0.47         |
| 0.00        | 126' GIP                  | 0.00         |
|             |                           |              |
|             |                           |              |

**Gas Rates**

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53694

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2014.07.06 @ 05:35:00

## Tool Information

|                           |                    |                       |                                |                        |             |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------|-------------|
| Drill Pipe:               | Length: 4103.00 ft | Diameter: 3.88 inches | Volume: 60.00 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: 207.00 ft  | Diameter: 2.25 inches | Volume: 1.02 bbl               | Weight to Pull Loose:  | 94000.00 lb |
|                           |                    |                       | <u>Total Volume: 61.02 bbl</u> | Tool Chased            | ft          |
| Drill Pipe Above KB:      | 10.00 ft           |                       |                                | String Weight: Initial | 78000.00 lb |
| Depth to Top Packer:      | 4327.00 ft         |                       |                                | Final                  | 80000.00 lb |
| Depth to Bottom Packer:   | ft                 |                       |                                |                        |             |
| Interval between Packers: | 49.00 ft           |                       |                                |                        |             |
| Tool Length:              | 76.00 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  |      |         | 4305.00 |                               |
| Hydraulic tool  | 5.00  |      |         | 4310.00 |                               |
| Jars            | 5.00  |      |         | 4315.00 |                               |
| Safety Joint    | 3.00  |      |         | 4318.00 |                               |
| Packer          | 5.00  |      |         | 4323.00 | 27.00 Bottom Of Top Packer    |
| Packer          | 4.00  |      |         | 4327.00 |                               |
| Stubb           | 1.00  |      |         | 4328.00 |                               |
| Recorder        | 0.00  | 8521 | Inside  | 4328.00 |                               |
| Recorder        | 0.00  | 6769 | Outside | 4328.00 |                               |
| Perforations    | 12.00 |      |         | 4340.00 |                               |
| Change Over Sub | 1.00  |      |         | 4341.00 |                               |
| Drill Pipe      | 31.00 |      |         | 4372.00 |                               |
| Change Over Sub | 1.00  |      |         | 4373.00 |                               |
| Bullnose        | 3.00  |      |         | 4376.00 | 49.00 Bottom Packers & Anchor |

**Total Tool Length: 76.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53694

**DST#: 2**

ATTN: Robert Hendrix

Test Start: 2014.07.06 @ 05:35:00

## 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: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

| Length<br>ft | Description               | Volume<br>bbl |
|--------------|---------------------------|---------------|
| 60.00        | gocm 10%g 65%m 25%o       | 0.295         |
| 60.00        | gmco 10%g 5%m 85%o        | 0.295         |
| 90.00        | clean gassy oil 15%g 85%o | 0.472         |
| 0.00         | 126' GIP                  | 0.000         |

Total Length: 210.00 ft

Total Volume: 1.062 bbl

Num Fluid Samples: 0

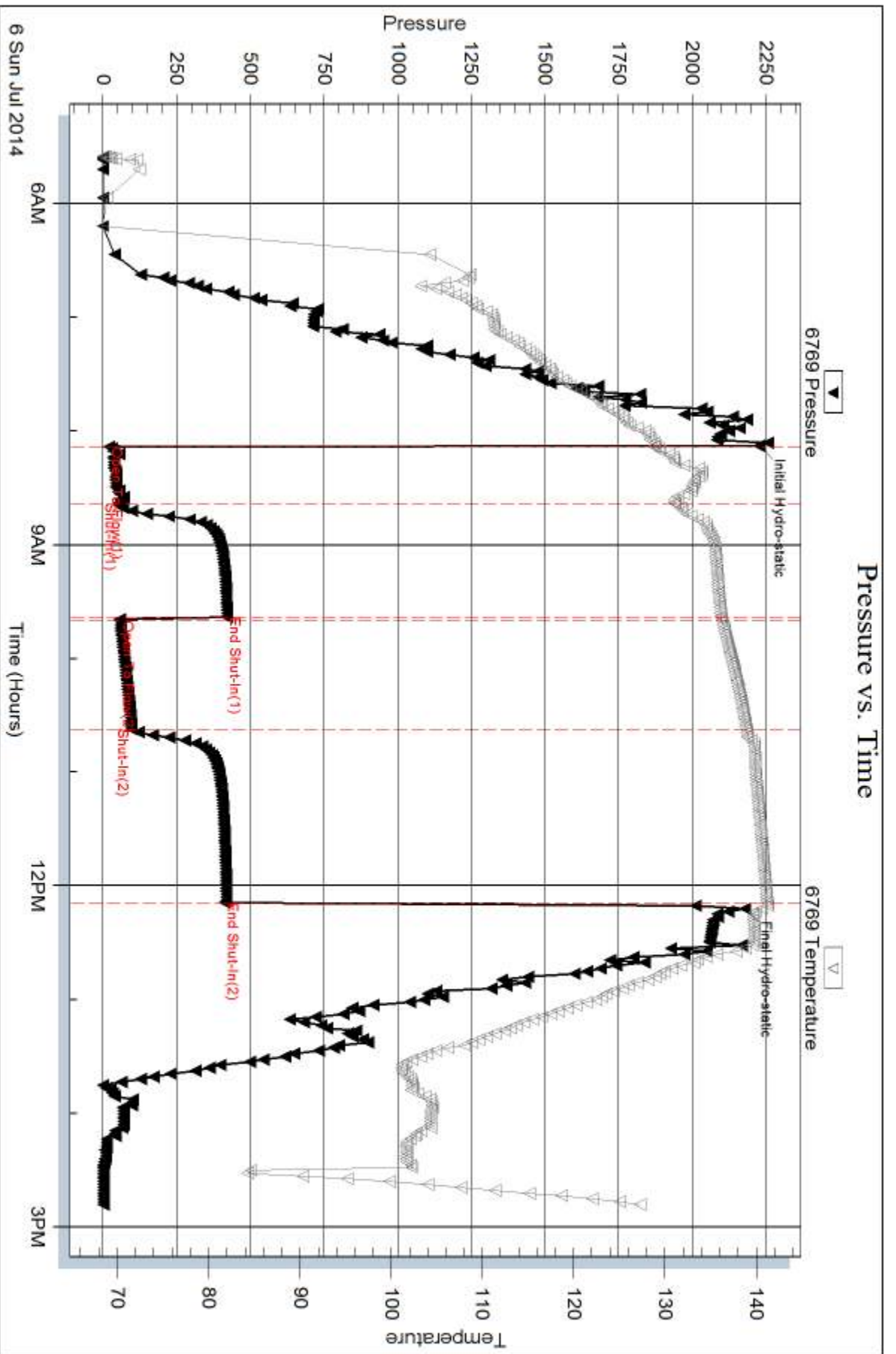
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



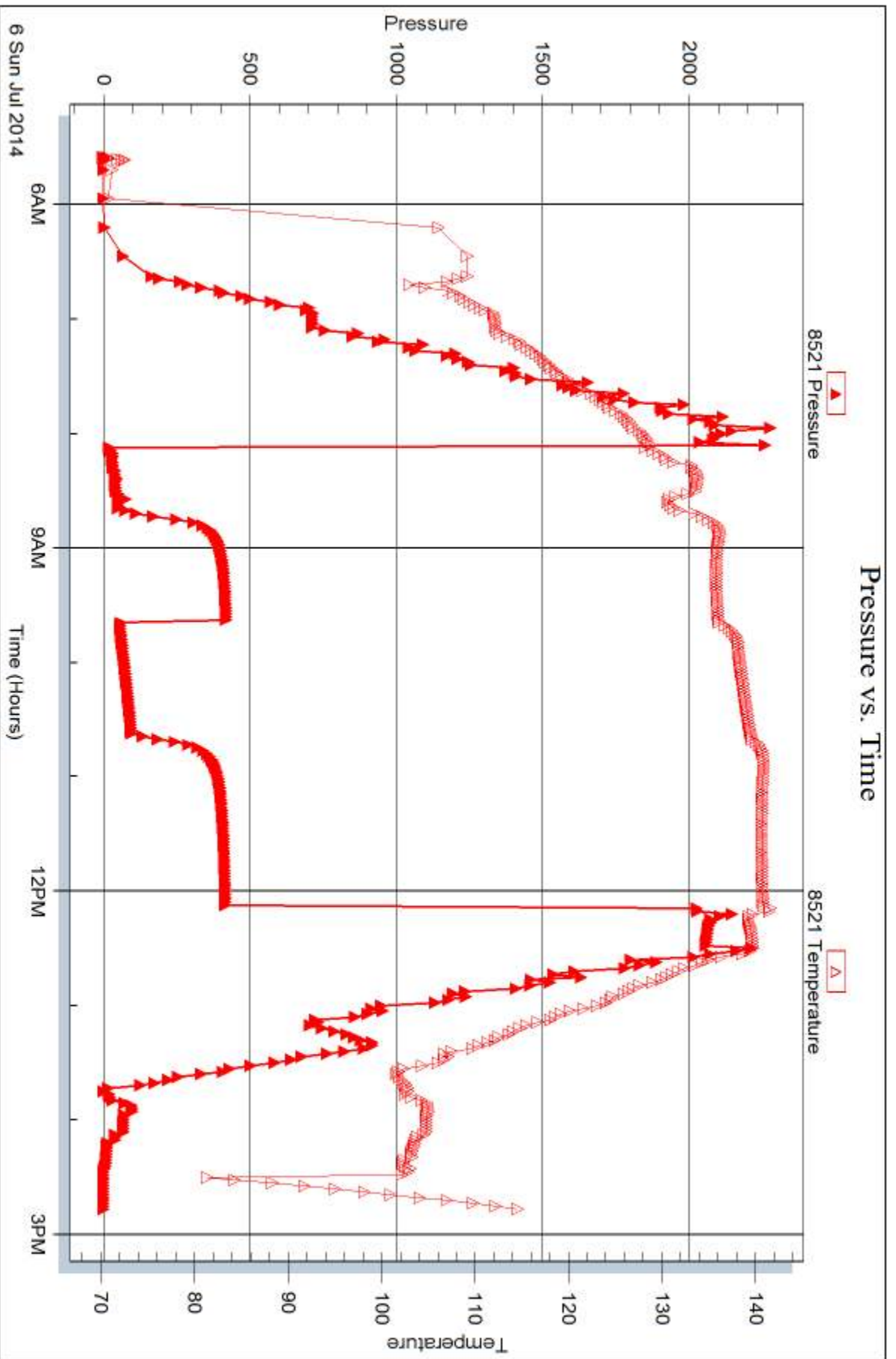
Serial #: 8521

Inside

Murfin Drilling CO INC

Burk E#1-14

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling CO INC**

250 N Water STE 300  
Wichita KS 67202

ATTN: Robert Hendrix

### **Burk E #1-14**

### **14 1 36 Rawlins KS**

Start Date: 2014.07.07 @ 02:45:00

End Date: 2014.07.07 @ 11:01:30

Job Ticket #: 53695                      DST #: 3

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

Printed: 2014.07.08 @ 16:03:26



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53695

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2014.07.07 @ 02:45:00

## GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:13:30

Time Test Ended: 11:01:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 49

**Interval: 4417.00 ft (KB) To 4470.00 ft (KB) (TVD)**

Reference Elevations: 3309.00 ft (KB)

Total Depth: 4313.00 ft (KB) (TVD)

3298.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 6769 Outside**

Press@RunDepth: 68.50 psig @ 4418.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.07.07

End Date:

2014.07.07

Last Calib.:

2014.07.07

Start Time: 02:45:05

End Time:

11:01:29

Time On Btm:

2014.07.07 @ 05:12:30

Time Off Btm:

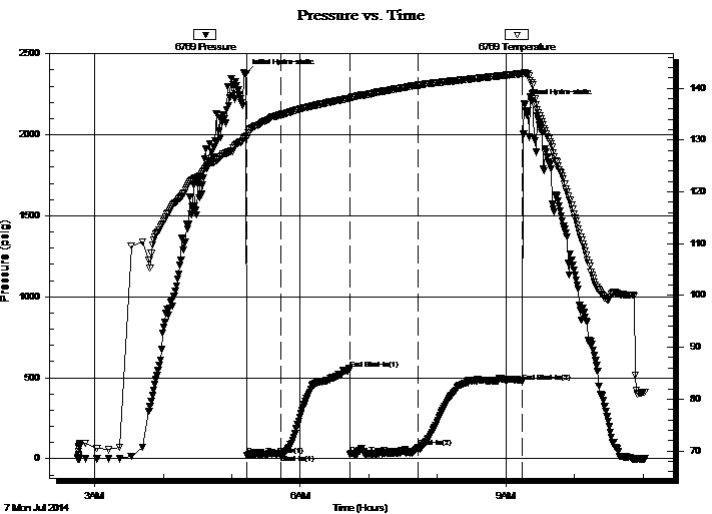
2014.07.07 @ 09:16:00

TEST COMMENT: 30-IS- Blow built to 3/4"

60-IS- No return

60-FF- No blow

90-FS- No return



## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 2379.26         | 130.29       | Initial Hydro-static |
| 1           | 23.12           | 130.72       | Open To Flow (1)     |
| 31          | 25.50           | 134.87       | Shut-In(1)           |
| 91          | 555.02          | 138.03       | End Shut-In(1)       |
| 91          | 29.55           | 138.07       | Open To Flow (2)     |
| 151         | 68.50           | 140.56       | Shut-In(2)           |
| 242         | 475.57          | 142.82       | End Shut-In(2)       |
| 244         | 2191.03         | 143.05       | Final Hydro-static   |

## Recovery

| Length (ft) | Description               | Volume (bbl) |
|-------------|---------------------------|--------------|
| 10.00       | mud w ith oil spots 100%m | 0.05         |
|             |                           |              |
|             |                           |              |
|             |                           |              |
|             |                           |              |

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53695

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2014.07.07 @ 02:45:00

## GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:13:30

Time Test Ended: 11:01:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 49

**Interval: 4417.00 ft (KB) To 4470.00 ft (KB) (TVD)**

Total Depth: 4313.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3309.00 ft (KB)

3298.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8521**

**Inside**

Press@RunDepth: psig @ 4418.00 ft (KB)

Start Date: 2014.07.07

End Date: 2014.07.07

Start Time: 02:45:05

End Time: 11:01:29

Capacity: 8000.00 psig

Last Calib.: 2014.07.07

Time On Btm:

Time Off Btm:

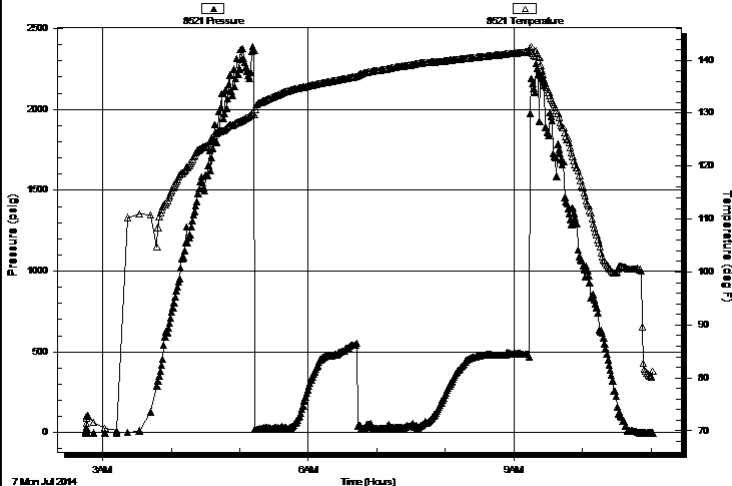
TEST COMMENT: 30-IF- Blow built to 3/4"

60-ISI- No return

60-FF- No blow

90-FSI- No return

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

| Length (ft) | Description               | Volume (bbl) |
|-------------|---------------------------|--------------|
| 10.00       | mud w ith oil spots 100%m | 0.05         |
|             |                           |              |
|             |                           |              |
|             |                           |              |
|             |                           |              |

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53695

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2014.07.07 @ 02:45:00

## Tool Information

|                           |                    |                       |                                |                        |             |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------|-------------|
| Drill Pipe:               | Length: 4197.00 ft | Diameter: 3.88 inches | Volume: 61.38 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: 207.00 ft  | Diameter: 2.25 inches | Volume: 1.02 bbl               | Weight to Pull Loose:  | 82000.00 lb |
|                           |                    |                       | <u>Total Volume: 62.40 bbl</u> | Tool Chased            | ft          |
| Drill Pipe Above KB:      | 14.00 ft           |                       |                                | String Weight: Initial | 76000.00 lb |
| Depth to Top Packer:      | 4417.00 ft         |                       |                                | Final                  | 78000.00 lb |
| Depth to Bottom Packer:   | ft                 |                       |                                |                        |             |
| Interval between Packers: | 53.00 ft           |                       |                                |                        |             |
| Tool Length:              | 80.00 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  |      |         | 4395.00 |                               |
| Hydraulic tool  | 5.00  |      |         | 4400.00 |                               |
| Jars            | 5.00  |      |         | 4405.00 |                               |
| Safety Joint    | 3.00  |      |         | 4408.00 |                               |
| Packer          | 5.00  |      |         | 4413.00 | 27.00 Bottom Of Top Packer    |
| Packer          | 4.00  |      |         | 4417.00 |                               |
| Stubb           | 1.00  |      |         | 4418.00 |                               |
| Recorder        | 0.00  | 8521 | Inside  | 4418.00 |                               |
| Recorder        | 0.00  | 6769 | Outside | 4418.00 |                               |
| Perforations    | 16.00 |      |         | 4434.00 |                               |
| Change Over Sub | 1.00  |      |         | 4435.00 |                               |
| Drill Pipe      | 31.00 |      |         | 4466.00 |                               |
| Change Over Sub | 1.00  |      |         | 4467.00 |                               |
| Bullnose        | 3.00  |      |         | 4470.00 | 53.00 Bottom Packers & Anchor |

**Total Tool Length: 80.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling CO INC

**14 1 36 Rawlins KS**

250 N Water STE 300  
Wichita KS 67202

**Burk E #1-14**

Job Ticket: 53695

**DST#: 3**

ATTN: Robert Hendrix

Test Start: 2014.07.07 @ 02:45:00

## 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: 57.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 600.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

| Length<br>ft | Description               | Volume<br>bbf |
|--------------|---------------------------|---------------|
| 10.00        | mud w ith oil spots 100%m | 0.049         |

Total Length: 10.00 ft      Total Volume: 0.049 bbf

Num Fluid Samples: 0

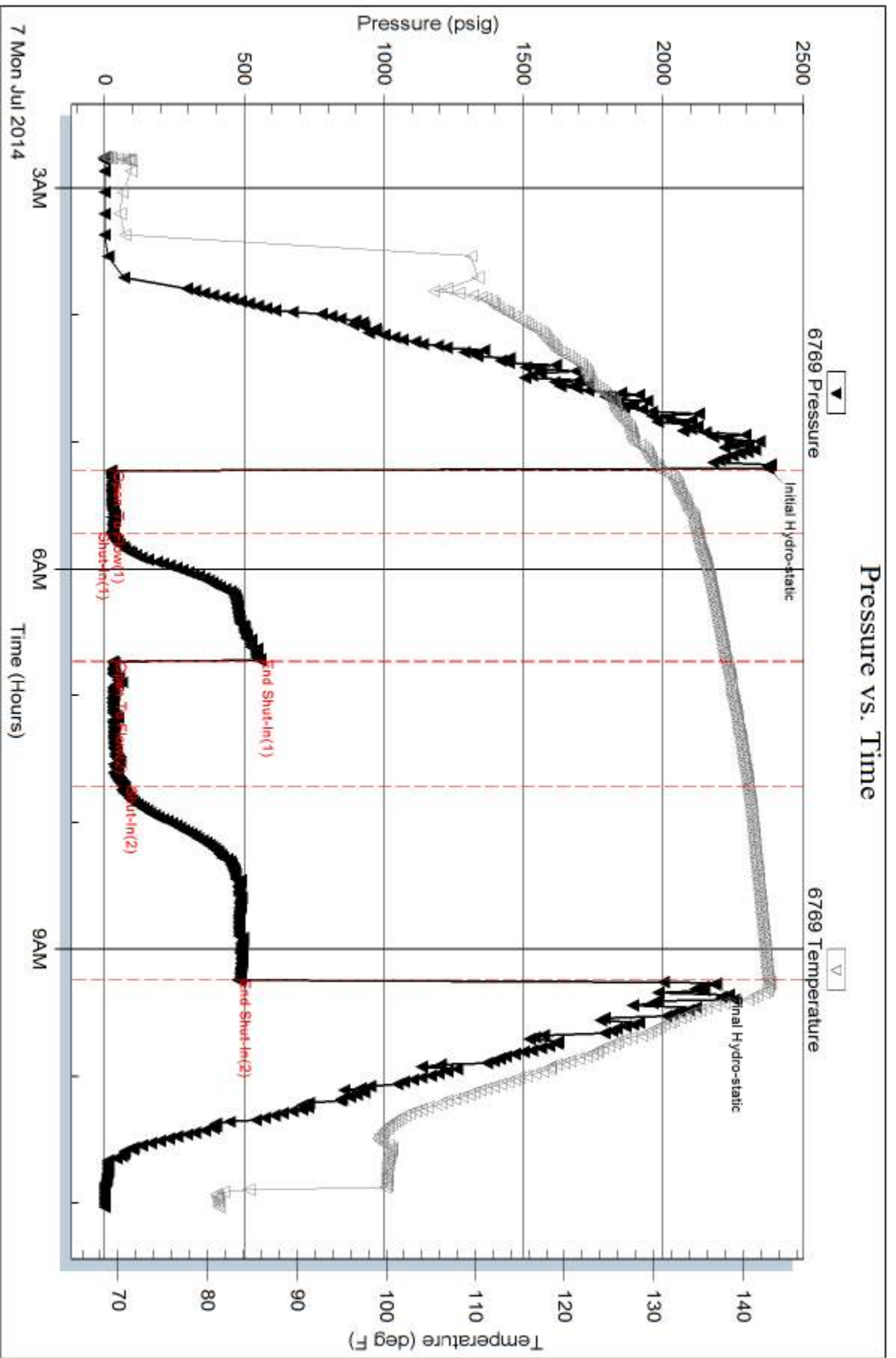
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



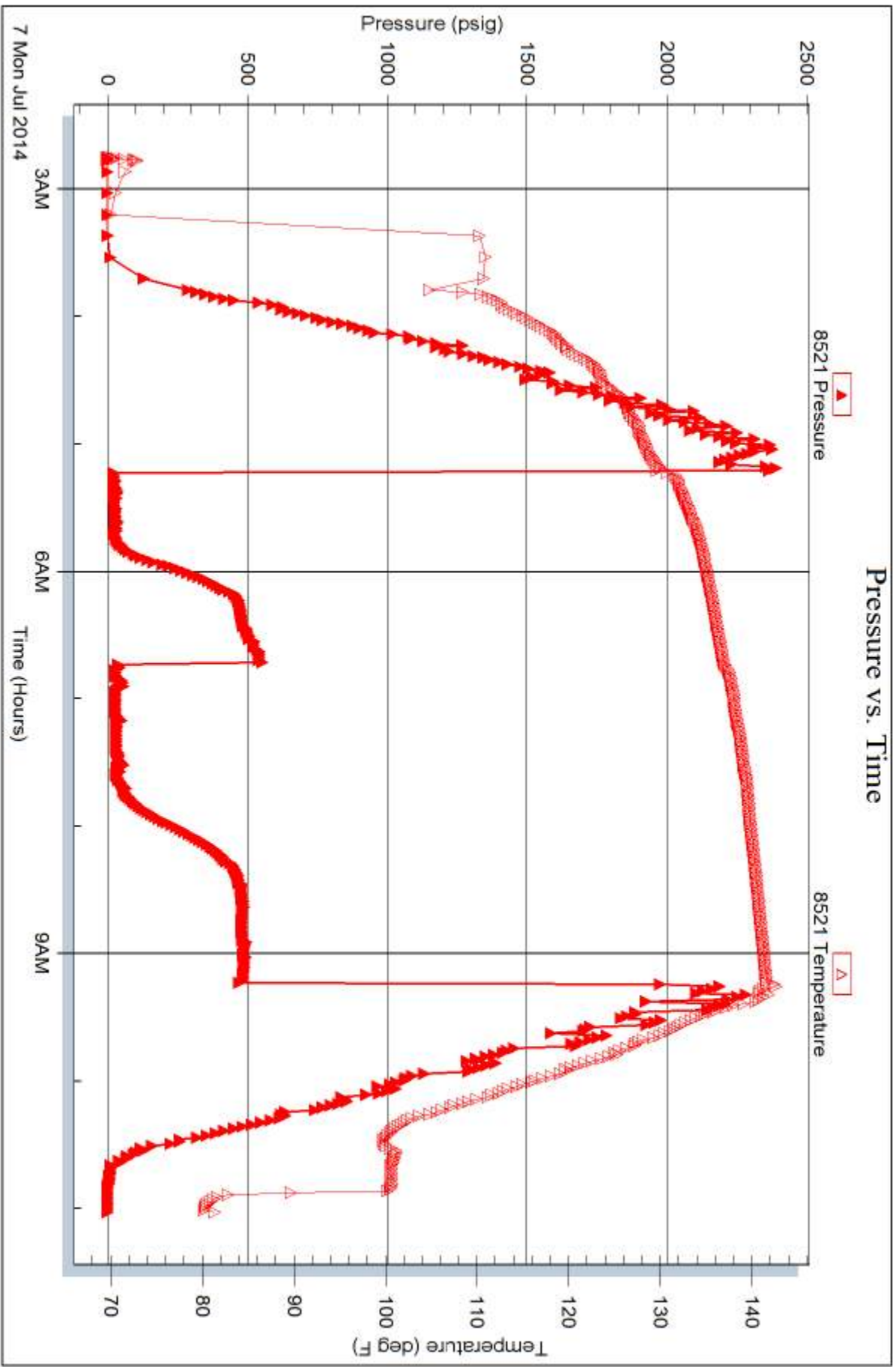
Serial #: 8521

Inside

Murfin Drilling CO INC

Burk E#1-14

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 53895

Printed: 2014.07.08 @ 16:03:28



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53693

Well Name & No. Burk E #1-14 Test No. 1 Date 7-5-2014  
 Company Murfin Drilling Co. Inc Elevation 3309 KB 23298 GL  
 Address 250 N Waver STE 300 Wichita KS, 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2  
 Location: Sec. 14 Twp. 1 Rge. 36 Co. Rawlins State KS.

Interval Tested 4258-4313 Zone Tested LKC "0"  
 Anchor Length 55 Drill Pipe Run 4041 Mud Wt. 9.3  
 Top Packer Depth 4254 Drill Collars Run 207 Vis 72  
 Bottom Packer Depth 4258 Wt. Pipe Run 0 WL 6.0  
 Total Depth 4313 Chlorides 600 ppm System LCM 12

Blow Description IF - Blow built to 3"  
ISI - NO return  
FF - Blow started in 15 mins built to 2"  
FSI - NO return

| Rec        | Feet of    | %gas      | %oil | %water    | %mud |
|------------|------------|-----------|------|-----------|------|
| <u>140</u> | <u>OCM</u> | <u>25</u> |      | <u>75</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 140 BHT 139 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm  
 (A) Initial Hydrostatic 2260  Test 1250 T-On Location 11:25 7-5  
 (B) First Initial Flow 23  Jars 250 T-Started 12:25 7-5  
 (C) First Final Flow 54  Safety Joint 75 T-Open 14:56 7-5  
 (D) Initial Shut-In 1053  Circ Sub \_\_\_\_\_ T-Pulled 18:56 7-5  
 (E) Second Initial Flow 58  Hourly Standby \_\_\_\_\_ T-Out 20:53 7-5  
 (F) Second Final Flow 94  Mileage 114 RT 176.70 Comments \_\_\_\_\_  
 (G) Final Shut-In 822  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2136  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90  
 Sub Total 0  
 Total 1751.70  
 MP/DST Disc't \_\_\_\_\_

Approved By Rh D. Lilly Our Representative Robert Zecher

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53694

Well Name & No. Burk E #1-14 Test No. 2 Date 7-6-2014  
 Company Murfin Drilling Co Inc Elevation 3309 KB 3298 GL  
 Address 250 N water STE 300 Wichita KS, 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2  
 Location: Sec. 14 Twp. 1 Rge. 36 Co. Rawlins State KS

Interval Tested 4327 - 4376 Zone Tested LKC "H"  
 Anchor Length 49 Drill Pipe Run 4103 Mud Wt. 9.3  
 Top Packer Depth 4323 Drill Collars Run 207 Vis 54  
 Bottom Packer Depth ~~4300~~ 4327 Wt. Pipe Run 0 WL 6.4  
 Total Depth 4376 Chlorides 600 ppm System LCM 11

Blow Description IF - Blow built to 5 3/4"  
ISE - NO return  
FF - Blow built to 7"  
FSE - NO return

| Rec | Feet of                        | %gas | %oil | %water | %mud |
|-----|--------------------------------|------|------|--------|------|
| 90  | clean <del>oil</del> gassy oil | 15   | 85   |        |      |
| 60  | <del>oil</del> gmco            | 10   | 85   |        | 5    |
| 60  | gocm                           | 10   | 25   |        | 65   |
|     | 126' MIP                       |      |      |        |      |

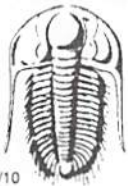
Rec Total 210 BHT 141 Gravity 28 API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic 2226  Test 1250 T-On Location 05:00 7-6  
 (B) First Initial Flow ~~20~~ 20  Jars 250 T-Started 05:35 7-6  
 (C) First Final Flow ~~53~~ 53  Safety Joint 75 T-Open 08:08 7-6  
 (D) Initial Shut-In 421  Circ Sub \_\_\_\_\_ T-Pulled 12:09 7-6  
 (E) Second Initial Flow 57  Hourly Standby \_\_\_\_\_ T-Out 14:48 7-6  
 (F) Second Final Flow 95  Mileage 114 RT 176.70  
 (G) Final Shut-In 412  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2179  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Shale Packer \_\_\_\_\_  
 Final Flow 60  Extra Packer \_\_\_\_\_  
 Final Shut-In 90  Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1751.70

Approved By [Signature] Our Representative Robert Zedlow

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53695

Well Name & No. Burk E #1-14 Test No. 3 Date 7-7-2014  
 Company Murfin Drilling Co. Inc. Elevation 3309 KB 3298 GL  
 Address 250 N water St E 300 Wichita KS, 67202  
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2  
 Location: Sec. 14 Twp. 1 Rge. 36 Co. Rawlins State KS

Interval Tested 4417 - 4470 Zone Tested LKC "J"  
 Anchor Length 53 Drill Pipe Run 4197 Mud Wt. 9.4  
 Top Packer Depth 4413 Drill Collars Run 207 Vis 57  
 Bottom Packer Depth 4417 Wt. Pipe Run 0 WL 6.4  
 Total Depth 4470 Chlorides 600 ppm System LCM 12  
 Blow Description IF - Blow built to 3/4"  
ISI - NO return  
FF - NO blow  
FSI - NO return

| Rec       | Feet of             | %gas           | %oil | %water     | %mud |
|-----------|---------------------|----------------|------|------------|------|
| <u>10</u> | <u>mud w/ spots</u> | <u>Spotted</u> |      | <u>100</u> |      |
| Rec       | Feet of             | %gas           | %oil | %water     | %mud |
| Rec       | Feet of             | %gas           | %oil | %water     | %mud |
| Rec       | Feet of             | %gas           | %oil | %water     | %mud |

Rec Total 10 BHT 143 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2379  Test 1250 T-On Location 02:15 7-7  
 (B) First Initial Flow 23  Jars 250 T-Started 02:45 7-7  
 (C) First Final Flow 26  Safety Joint 75 T-Open 05:13 7-7  
 (D) Initial Shut-In 555  Circ Sub \_\_\_\_\_ T-Pulled 09:14 7-7  
 (E) Second Initial Flow 30  Hourly Standby \_\_\_\_\_ T-Out 11:02 7-7  
 (F) Second Final Flow 69  Mileage 114 RT 176.70  
 (G) Final Shut-In 476  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2191  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

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 1751.70  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1751.70

Approved By Rob D. [Signature]

Our Representative Robert Zedrow

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