



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
250 N WaterSte 300  
Wichita Ks 67202 + 1216  
ATTN: Shauna Gunzelman

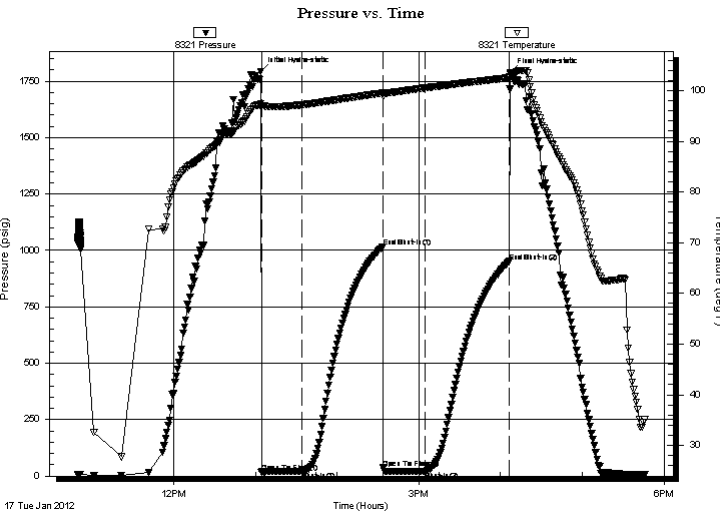
**36-10s-24w-Graham**  
**Ruder Unit #1-36**  
Job Ticket: 46376 **DST#: 1**  
Test Start: 2012.01.17 @ 10:49:19

## GENERAL INFORMATION:

Formation: **Toronto**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 13:04:19  
Time Test Ended: 17:47:19  
Interval: **3669.00 ft (KB) To 3700.00 ft (KB) (TVD)**  
Total Depth: 3700.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Jeff Brown  
Unit No: 44  
Reference Elevations: 2360.00 ft (KB)  
2355.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8321 Inside**  
Press @ Run Depth: 22.54 psig @ 3672.00 ft (KB) Capacity: 1000.00 psig  
Start Date: 2012.01.17 End Date: 2012.01.17 Last Calib.: 2012.01.17  
Start Time: 10:49:20 End Time: 17:46:19 Time On Btm: 2012.01.17 @ 13:03:49  
Time Off Btm: 2012.01.17 @ 16:07:19

**TEST COMMENT:** IFP-Weak blow built to 1 3/4 in  
ISI-weak surface blow back  
FFP-Weak surface blow  
FSI-Dead no blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1793.94	97.36	Initial Hydro-static
1	18.07	96.95	Open To Flow (1)
31	20.91	97.20	Shut-In(1)
90	1016.71	99.50	End Shut-In(1)
90	36.96	98.94	Open To Flow (2)
121	22.54	100.50	Shut-In(2)
183	951.42	102.51	End Shut-In(2)
184	1786.93	103.22	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud with a scum of oil	0.01

## Gas Rates

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



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**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46376

**DST#: 1**

ATTN: Shauna Gunzelman

Test Start: 2012.01.17 @ 10:49:19

## 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: 73.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud with a scum of oil	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:

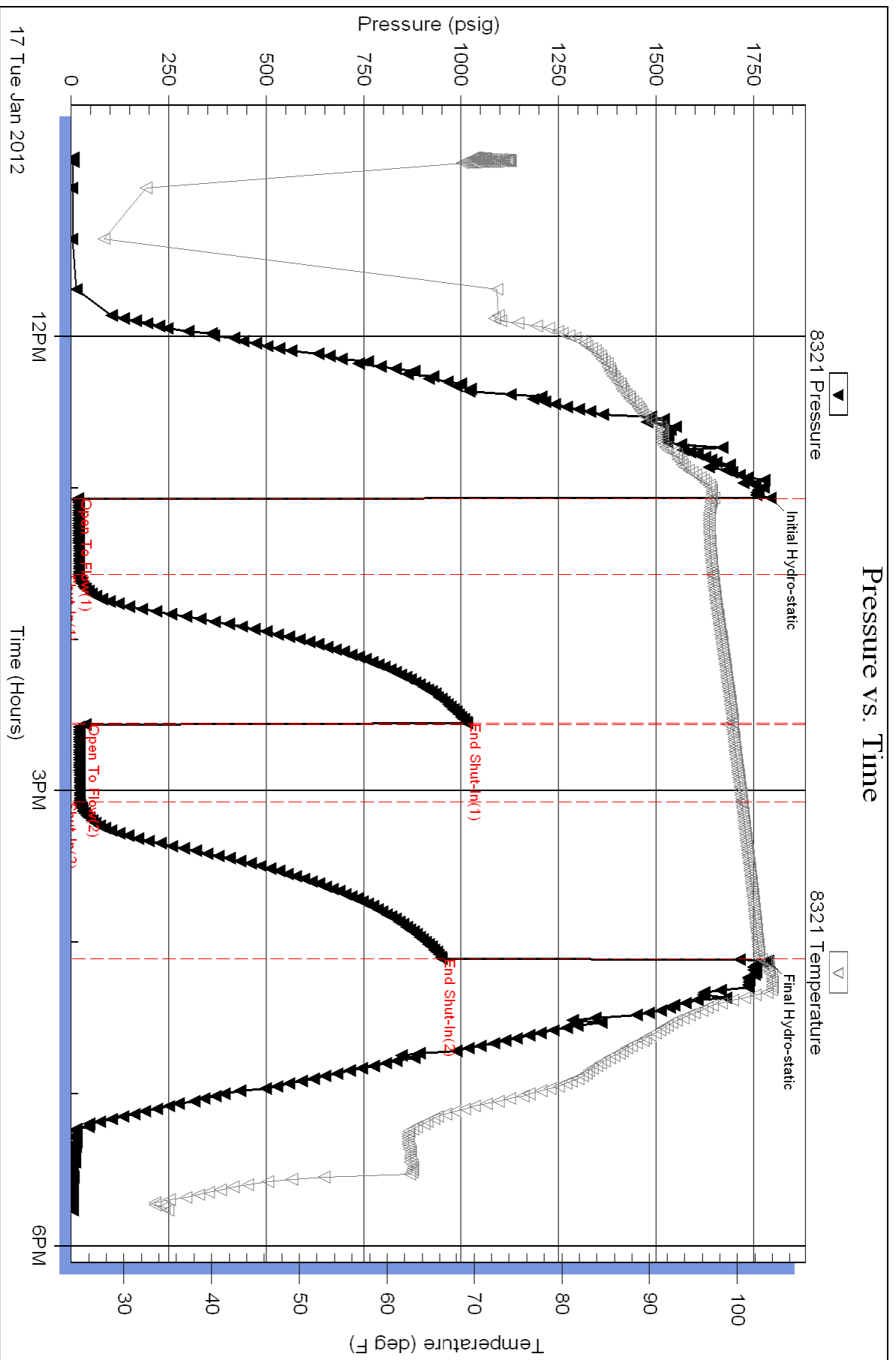
Serial #: 8321

Inside

Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 1





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N WaterSte 300  
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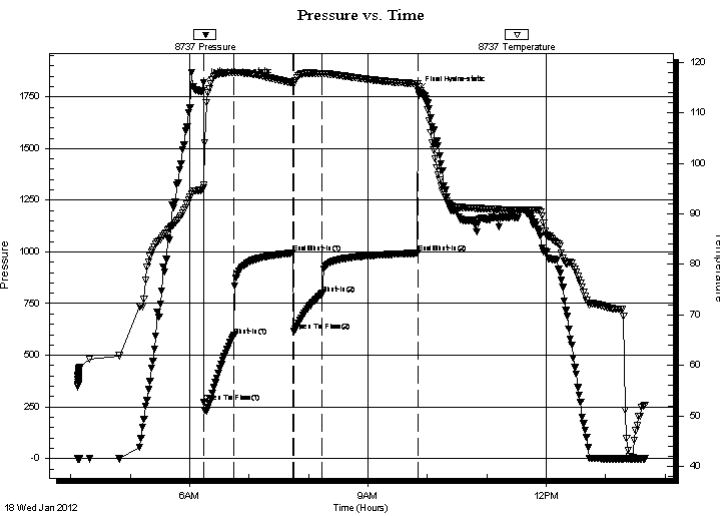
**36-10s-24w-Graham**  
**Ruder Unit #1-36**  
 Job Ticket: 46377 **DST#: 2**  
 Test Start: 2012.01.18 @ 04:06:45

## GENERAL INFORMATION:

Formation: **Lansing B-D**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 06:14:15 Tester: Jeff Brown  
 Time Test Ended: 13:40:15 Unit No: 44  
 Interval: **3727.00 ft (KB) To 3758.00 ft (KB) (TVD)** Reference Elevations: 2360.00 ft (KB)  
 Total Depth: 3758.00 ft (KB) (TVD) 2355.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

**Serial #: 8737 Outside**  
 Press @ Run Depth: 798.31 psig @ 3730.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2012.01.18 End Date: 2012.01.18 Last Calib.: 2012.01.18  
 Start Time: 04:06:46 End Time: 13:40:15 Time On Btm: 2012.01.18 @ 06:13:45  
 Time Off Btm: 2012.01.18 @ 09:50:45

**TEST COMMENT:** IFP-Strong blow BOB in 30 Sec  
 ISI-Good blow back BOB in 12 min  
 FFP-Strong blow BOB in 1 min  
 FSI-Good blow back BOB in 4 1/2 min gas to surface



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1820.65	95.64	Initial Hydro-static
1	273.77	95.21	Open To Flow (1)
31	594.48	117.93	Shut-In(1)
91	994.40	115.88	End Shut-In(1)
92	614.95	115.55	Open To Flow (2)
120	798.31	117.73	Shut-In(2)
217	993.07	115.77	End Shut-In(2)
217	1778.61	115.77	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
126.00	MWCO 20%M20%W60%O	1.50
2331.00	Gassy Oil 20%G80%O	32.70
0.00	1301-GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



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**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46377

**DST#: 2**

ATTN: Shauna Gunzelman

Test Start: 2012.01.18 @ 04:06:45

## 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: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 98.05 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
126.00	MWCO 20%M20%W60%O	1.503
2331.00	Gassy Oil 20%G80%O	32.698
0.00	1301-GIP	0.000

Total Length: 2457.00 ft

Total Volume: 34.201 bbl

Num Fluid Samples: 0

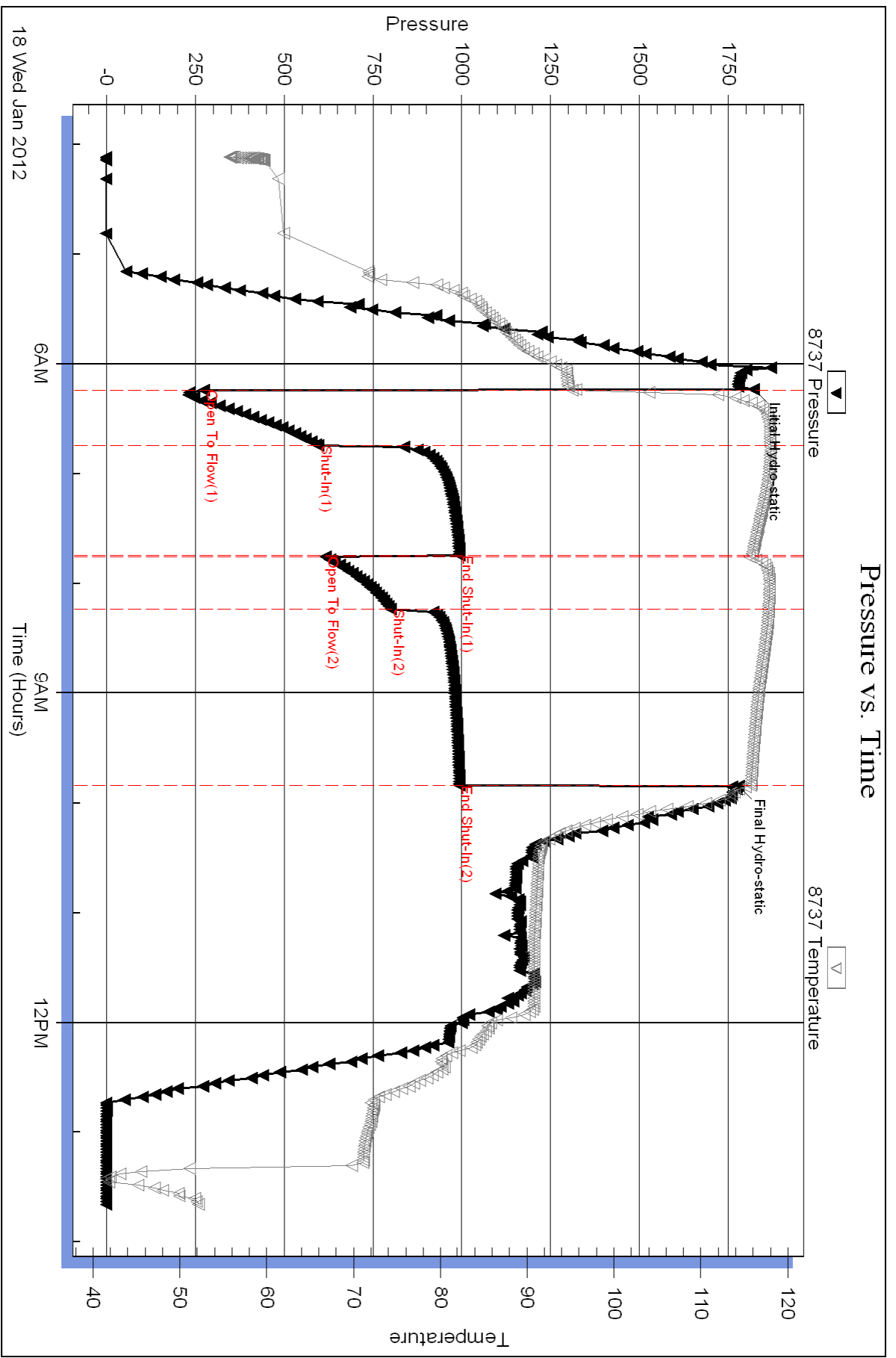
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





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# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
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 ATTN: Shauna Gunzelman

**36-10s-24w-Graham**  
**Ruder Unit #1-36**  
 Job Ticket: 46378 **DST#: 3**  
 Test Start: 2012.01.18 @ 21:04:43

## GENERAL INFORMATION:

Formation: **lansing-E&F**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 23:08:43  
 Time Test Ended: 05:57:43  
 Interval: **3769.00 ft (KB) To 3794.00 ft (KB) (TVD)**  
 Total Depth: 3794.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Jeff Brown  
 Unit No: 44  
 Reference Elevations: 2360.00 ft (KB)  
 2355.00 ft (CF)  
 KB to GR/CF: 5.00 ft

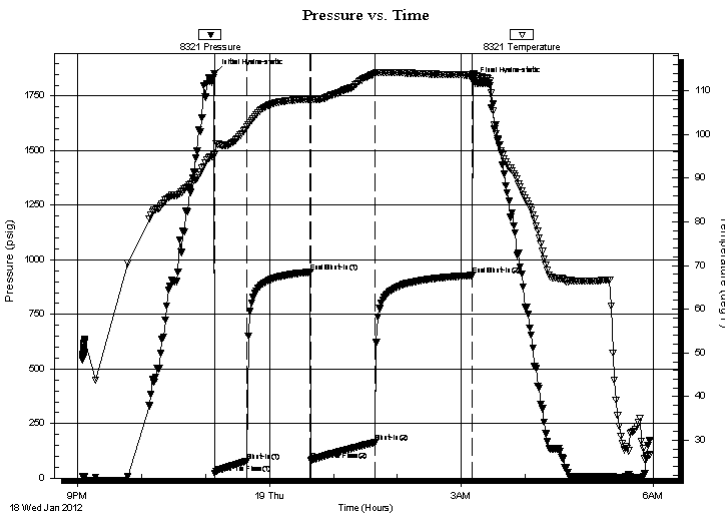
## Serial #: 8321

Inside

Press @ Run Depth: 162.19 psig @ 3771.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2012.01.18 End Date: 2012.01.19 Last Calib.: 2012.01.19  
 Start Time: 21:04:44 End Time: 05:57:43 Time On Btm: 2012.01.18 @ 23:08:13  
 Time Off Btm: 2012.01.19 @ 03:11:13

TEST COMMENT: IFP-Good blow BOB in 22 min  
 ISI-Dead no Blow back  
 FFP-Good blow BOB in 28 1/2 min  
 FSI-Dead no blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1854.46	95.34	Initial Hydro-static
1	23.05	95.43	Open To Flow (1)
31	78.10	101.64	Shut-In(1)
90	943.09	108.10	End Shut-In(1)
91	81.01	107.93	Open To Flow (2)
151	162.19	113.97	Shut-In(2)
242	928.78	113.59	End Shut-In(2)
243	1815.15	113.82	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
199.00	MW 15%M85%W	2.53
63.00	MW with oil spots 10%M90%W	0.88

\* Recovery from multiple tests

## Gas Rates

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



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**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46378

**DST#: 3**

ATTN: Shauna Gunzelman

Test Start: 2012.01.18 @ 21:04:43

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
199.00	MW 15%M85%W	2.527
63.00	MW w ith oil spots 10%M90%W	0.884

Total Length: 262.00 ft

Total Volume: 3.411 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



Serial #: 8321

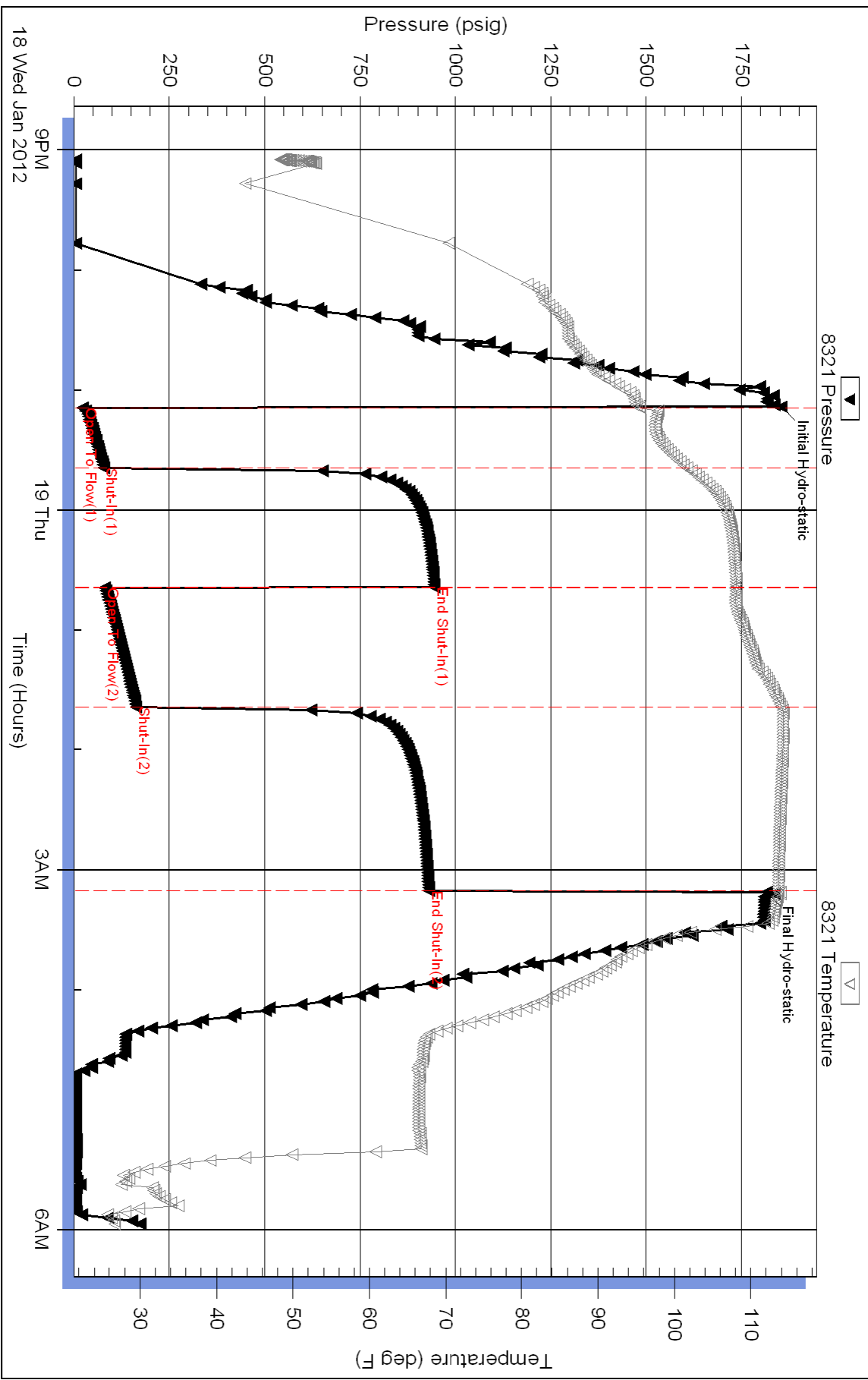
Inside

Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 3

# Pressure vs. Time



Triobite Testing, Inc

Ref. No: 46378

Printed: 2012.01.19 @ 08:13:16



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TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
250 N WaterSte 300  
Wichita Ks 67202 + 1216  
ATTN: Shauna Gunzelman

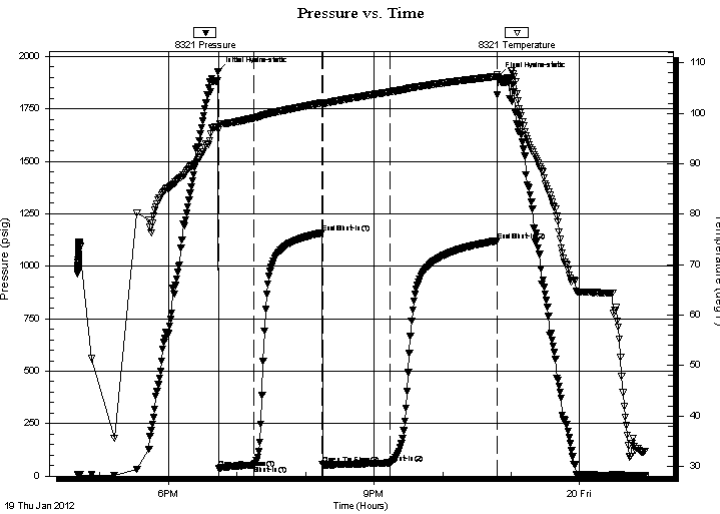
**36-10s-24w-Graham**  
**Ruder Unit #1-36**  
Job Ticket: 46380      **DST#: 4**  
Test Start: 2012.01.19 @ 16:40:24

## GENERAL INFORMATION:

Formation: **LKC-H-I**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 18:43:54  
Time Test Ended: 00:58:24  
Interval: **3831.00 ft (KB) To 3881.00 ft (KB) (TVD)**  
Total Depth: 3881.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Jeff Brown  
Unit No: 44  
Reference Elevations: 2360.00 ft (KB)  
2355.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8321      Inside**  
Press @ Run Depth: 63.00 psig @ 3867.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2012.01.19      End Date: 2012.01.20      Last Calib.: 2012.01.20  
Start Time: 16:40:25      End Time: 00:57:24      Time On Btm: 2012.01.19 @ 18:43:24  
Time Off Btm: 2012.01.19 @ 22:48:24

**TEST COMMENT:** IFP-Weak blow built to 3 1/2 in  
ISI-Weak surface Blow Back  
FFP-Weak blow back 3 in  
FSI-Weak surface blow back built to 3/4 in



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1929.13	97.40	Initial Hydro-static
1	37.10	96.76	Open To Flow (1)
31	51.36	99.05	Shut-In(1)
91	1158.80	102.07	End Shut-In(1)
92	54.93	101.60	Open To Flow (2)
151	63.00	104.25	Shut-In(2)
244	1120.63	107.31	End Shut-In(2)
245	1902.02	106.87	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
55.00	MW with oil spots 50%M50%W	0.51
5.00	OCWM 10%O30%W60%M	0.07

\* Recovery from multiple tests

## Gas Rates

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



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**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46380

**DST#: 4**

ATTN: Shauna Gunzelman

Test Start: 2012.01.19 @ 16:40:24

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
55.00	MW w ith oil spots 50%M50%W	0.507
5.00	OCWM 10%O30%W60%M	0.070

Total Length: 60.00 ft      Total Volume: 0.577 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

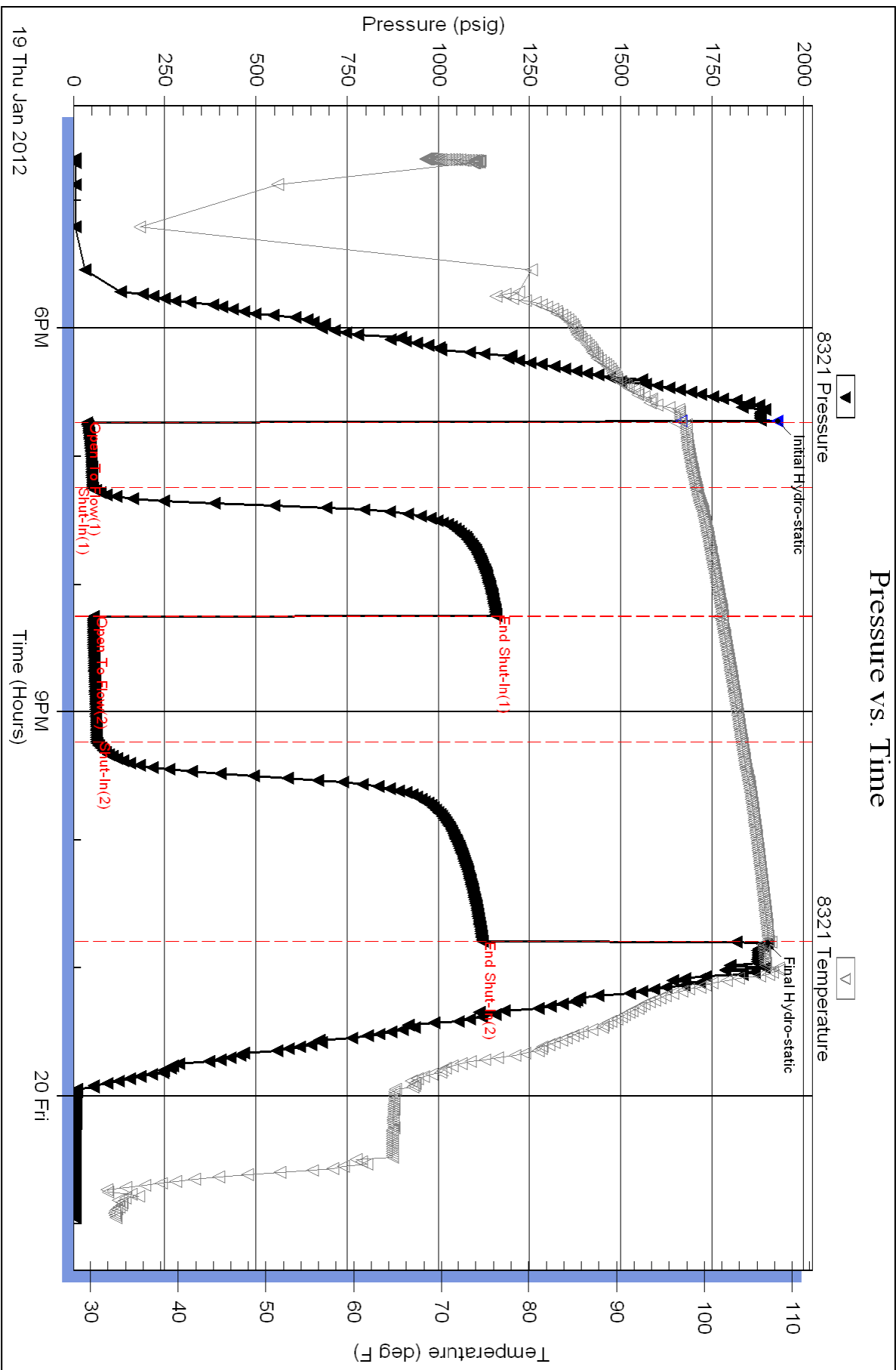
Serial #: 8321

Inside

Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 4





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N WaterSte 300  
 Wichita Ks 67202 + 1216  
 ATTN: Shauna Gunzelman

**36-10s-24w-Graham**  
**Ruder Unit #1-36**  
 Job Ticket: 46381 **DST#: 5**  
 Test Start: 2012.01.20 @ 08:05:29

## GENERAL INFORMATION:

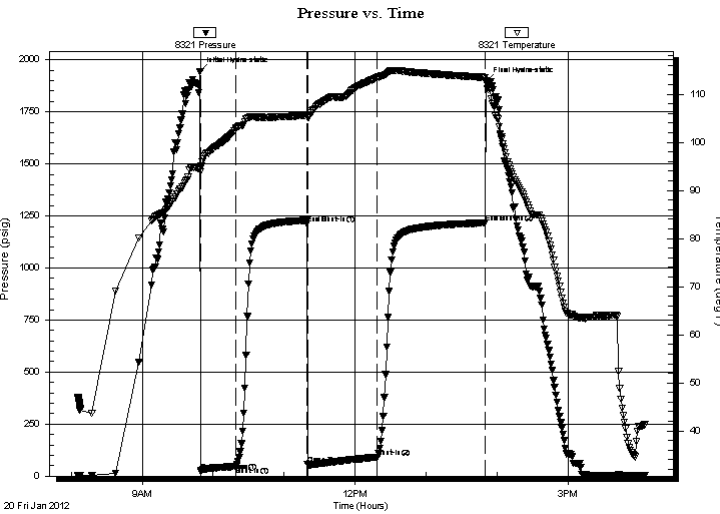
Formation: **LKC-J**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 09:49:29 Tester: Jeff Brown  
 Time Test Ended: 16:05:59 Unit No: 44  
 Interval: **3875.00 ft (KB) To 3899.00 ft (KB) (TVD)** Reference Elevations: 2360.00 ft (KB)  
 Total Depth: 3899.00 ft (KB) (TVD) 2355.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

## Serial #: 8321

Inside

Press @ Run Depth: 92.24 psig @ 3878.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2012.01.20 End Date: 2012.01.20 Last Calib.: 2012.01.20  
 Start Time: 08:05:30 End Time: 16:04:59 Time On Btm: 2012.01.20 @ 09:48:59  
 Time Off Btm: 2012.01.20 @ 13:50:59

**TEST COMMENT:** IFP-Good blow BOB in 12 1/2 min  
 ISI-Fair blow back built to 6 in  
 FFP-Good blow BOB in 30 min  
 FSI-Weak surface blow back built to 1 1/2 in died out in 45 min



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1945.14	94.55	Initial Hydro-static
1	24.48	93.92	Open To Flow (1)
31	47.51	102.95	Shut-In(1)
91	1213.08	105.58	End Shut-In(1)
91	58.28	105.17	Open To Flow (2)
150	92.24	113.49	Shut-In(2)
241	1217.02	113.50	End Shut-In(2)
242	1897.72	112.82	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
78.00	HOCGM 20%G35%O45%M	0.83
116.00	Gassy Oil 25%G75%O	1.63

\* Recovery from multiple tests

## Gas Rates

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





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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46381

**DST#: 5**

ATTN: Shauna Gunzelman

Test Start: 2012.01.20 @ 08:05:29

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.60 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
78.00	HOCGM 20%G35%O45%M	0.830
116.00	Gassy Oil 25%G75%O	1.627

Total Length: 194.00 ft

Total Volume: 2.457 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

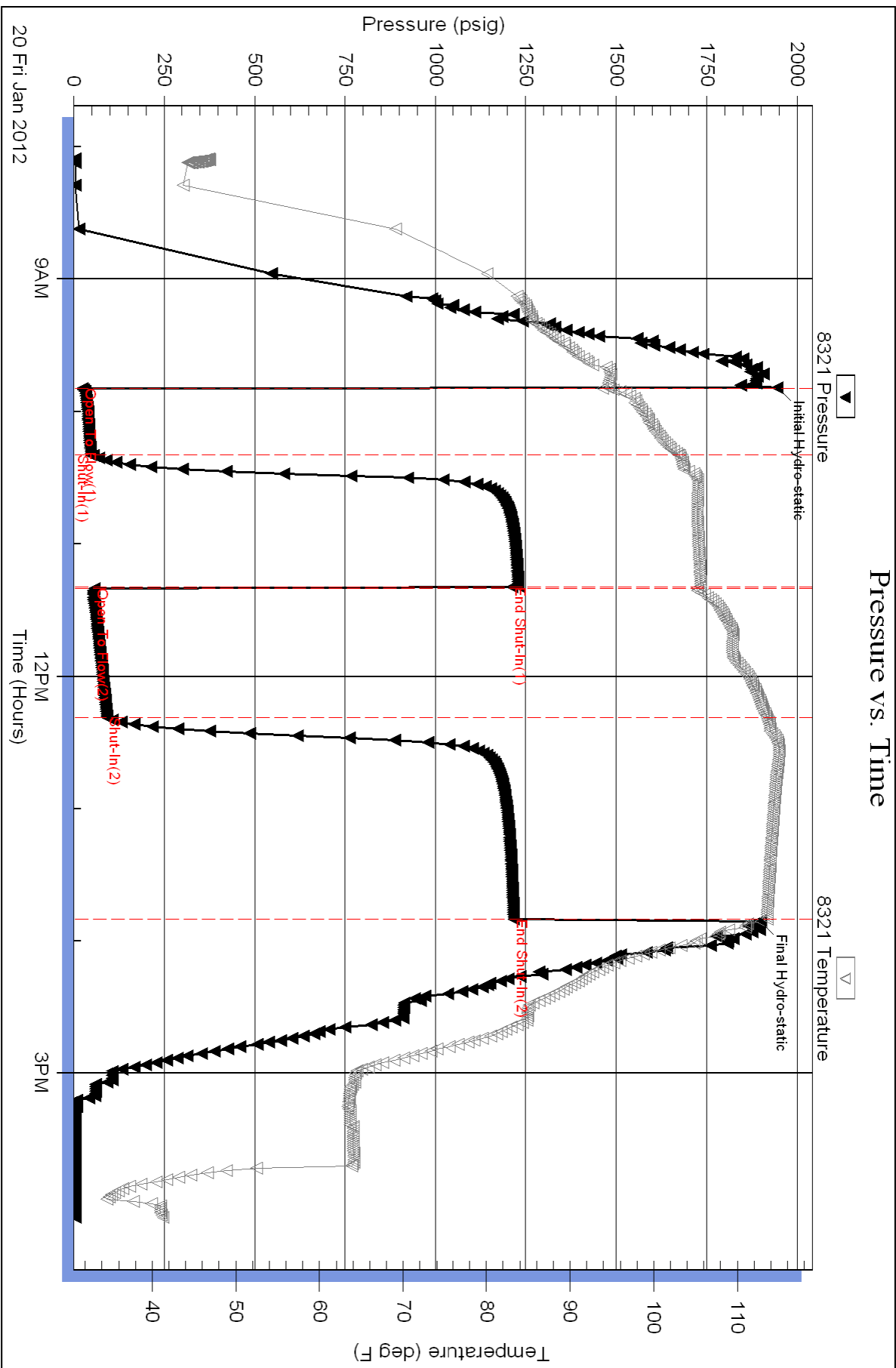
Serial #: 8321

Inside

Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 5



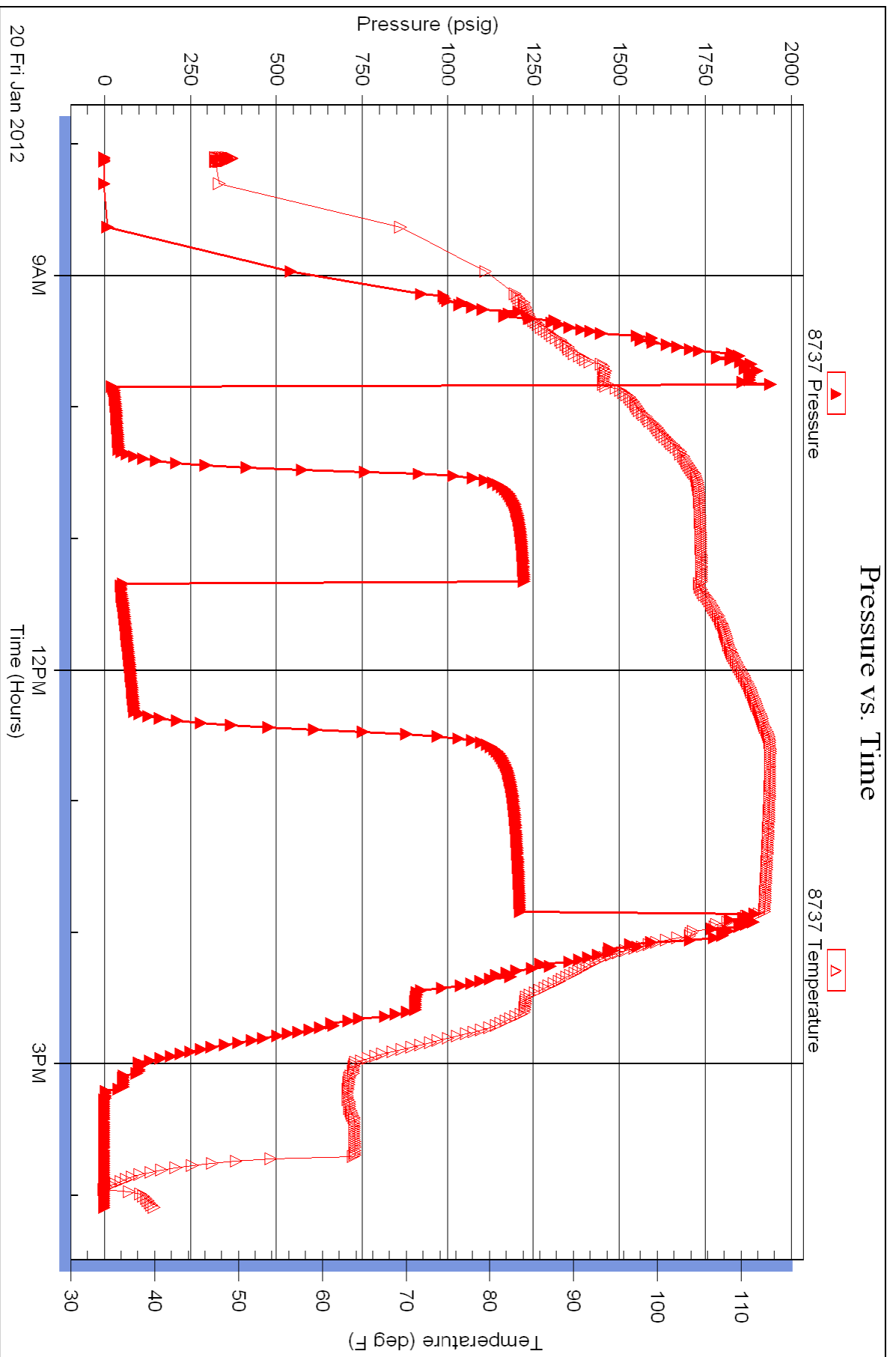


Serial #: 8737

Outside Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 5







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc

**36-10s-24w-Graham**

250 N WaterSte 300  
Wichita Ks 67202 + 1216

**Ruder Unit #1-36**

Job Ticket: 46382

**DST#: 6**

ATTN: Shauna Gunzelman

Test Start: 2012.01.20 @ 22:03:40

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.60 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
861.00	MW w ith a scum of oil 10%M90%W	11.813
126.00	SOCWM 5%O30%W65%M	1.767
46.00	Gasst Oil 5%G95%O	0.645
0.00	189-GIP	0.000

Total Length: 1033.00 ft

Total Volume: 14.225 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8321

Inside

Murfin Drilling Co Inc

Ruder Unit #1-36

DST Test Number: 6

### Pressure vs. Time

