

## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.07 @ 12:15:00

End Date: 2012.02.07 @ 20:44:45

Job Ticket #: 45062                      DST #: 1

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

Printed: 2012.02.20 @ 15:10:20



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45062

**DST#: 1**

Test Start: 2012.02.07 @ 12:15:00

### GENERAL INFORMATION:

Formation: **Kansas City "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:30:30

Time Test Ended: 20:44:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Jace McKinney

Unit No: 46

**Interval: 3779.00 ft (KB) To 3813.00 ft (KB) (TVD)**

Total Depth: 3813.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8675 Inside**

Press @ Run Depth: 187.36 psig @ 3780.00 ft (KB)

Start Date: 2012.02.07

End Date:

2012.02.07

Start Time: 12:15:01

End Time:

20:44:45

Capacity: 8000.00 psig

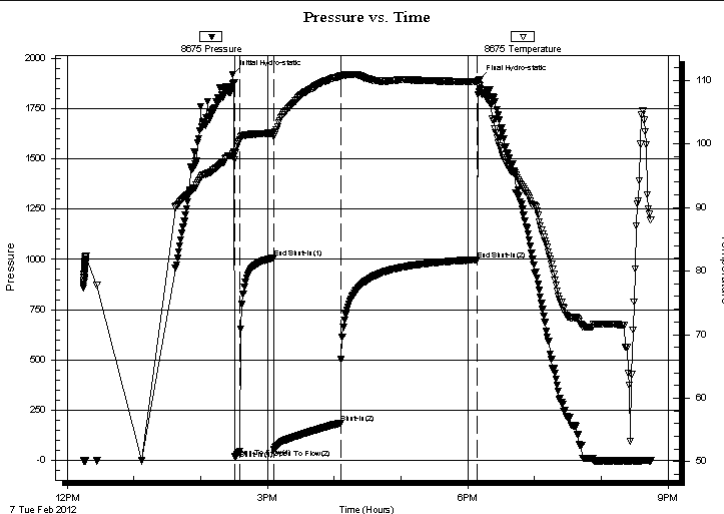
Last Calib.: 2012.02.07

Time On Btm: 2012.02.07 @ 14:29:00

Time Off Btm: 2012.02.07 @ 18:10:30

**TEST COMMENT:** Built to 3" blow  
No return blow  
B.O.B. in 24 min.  
No return blow

### PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1919.13	98.37	Initial Hydro-static
2	18.78	97.55	Open To Flow (1)
7	49.75	100.62	Shut-In(1)
37	1007.44	101.74	End Shut-In(1)
37	55.73	101.11	Open To Flow (2)
97	187.36	110.66	Shut-In(2)
220	998.86	109.77	End Shut-In(2)
222	1891.59	109.18	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
300.00	Water 100%W	2.58
94.00	mcw 30%M 70%W w ith oil scum	1.32

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45062

**DST#: 1**

Test Start: 2012.02.07 @ 12:15:00

### GENERAL INFORMATION:

Formation: **Kansas City "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:30:30

Time Test Ended: 20:44:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Jace McKinney

Unit No: 46

**Interval: 3779.00 ft (KB) To 3813.00 ft (KB) (TVD)**

Total Depth: 3813.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8650 Outside**

Press @ Run Depth: psig @ 3780.00 ft (KB)

Start Date: 2012.02.07

End Date:

2012.02.07

Start Time: 12:15:01

End Time:

20:44:30

Capacity: 8000.00 psig

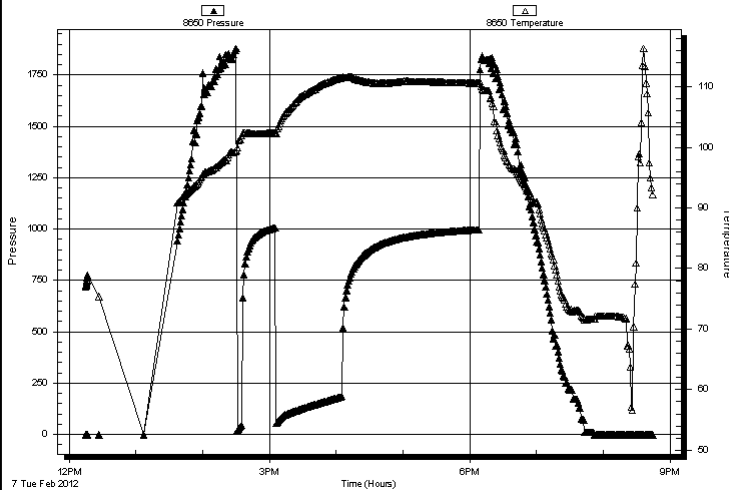
Last Calib.: 2012.02.07

Time On Btm:

Time Off Btm:

**TEST COMMENT:** Built to 3" blow  
No return blow  
B.O.B. in 24 min.  
No return blow

Pressure vs. Time



### PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
300.00	Water 100%W	2.58
94.00	mcw 30%M 70%W w ith oil scum	1.32

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa, CO**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**ETW #1-15**

Job Ticket: 45062

**DST#: 1**

Test Start: 2012.02.07 @ 12:15:00

### Tool Information

Drill Pipe:	Length:	3598.04 ft	Diameter:	3.80 inches	Volume:	50.47 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length:	178.64 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	51.35 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		17.68 ft					String Weight: Initial	60000.00 lb
Depth to Top Packer:		3779.00 ft					Final	62000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		34.00 ft						
Tool Length:		54.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3760.00	
Shut In Tool	5.00			3765.00	
Hydraulic tool	5.00			3770.00	
Packer	5.00			3775.00	20.00 Bottom Of Top Packer
Packer	4.00			3779.00	
Stubb	1.00			3780.00	
Recorder	0.00	8675	Inside	3780.00	
Recorder	0.00	8650	Outside	3780.00	
Perforations	30.00			3810.00	
Change Over Sub	0.00			3810.00	
Drill Pipe	0.00			3810.00	
Change Over Sub	0.00			3810.00	
Bullnose	3.00			3813.00	34.00 Bottom Packers & Anchor

**Total Tool Length: 54.00**



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45062

**DST#: 1**

Wichita, KS 67206-6637

Test Start: 2012.02.07 @ 12:15:00

ATTN: Phil Askey

### 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:

15000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.96 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3600.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
300.00	Water 100%W	2.581
94.00	mcw 30%M 70%W w ith oil scum	1.319

Total Length: 394.00 ft

Total Volume: 3.900 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .60 @ 55 F = 15,000

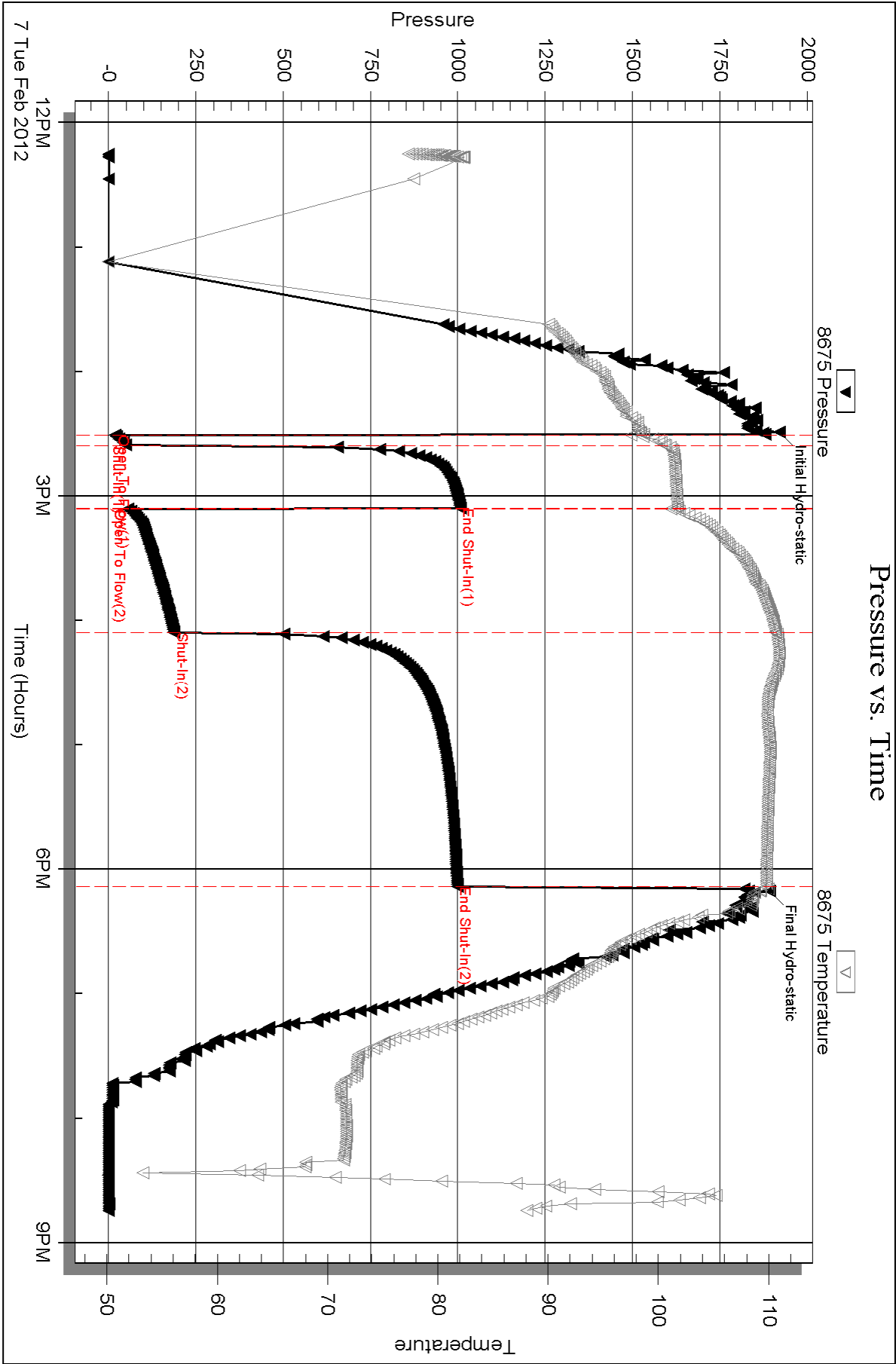
Serial #: 8675

Inside

Mull Drilling Company Inc

ETW-#1-15

DST Test Number: 1

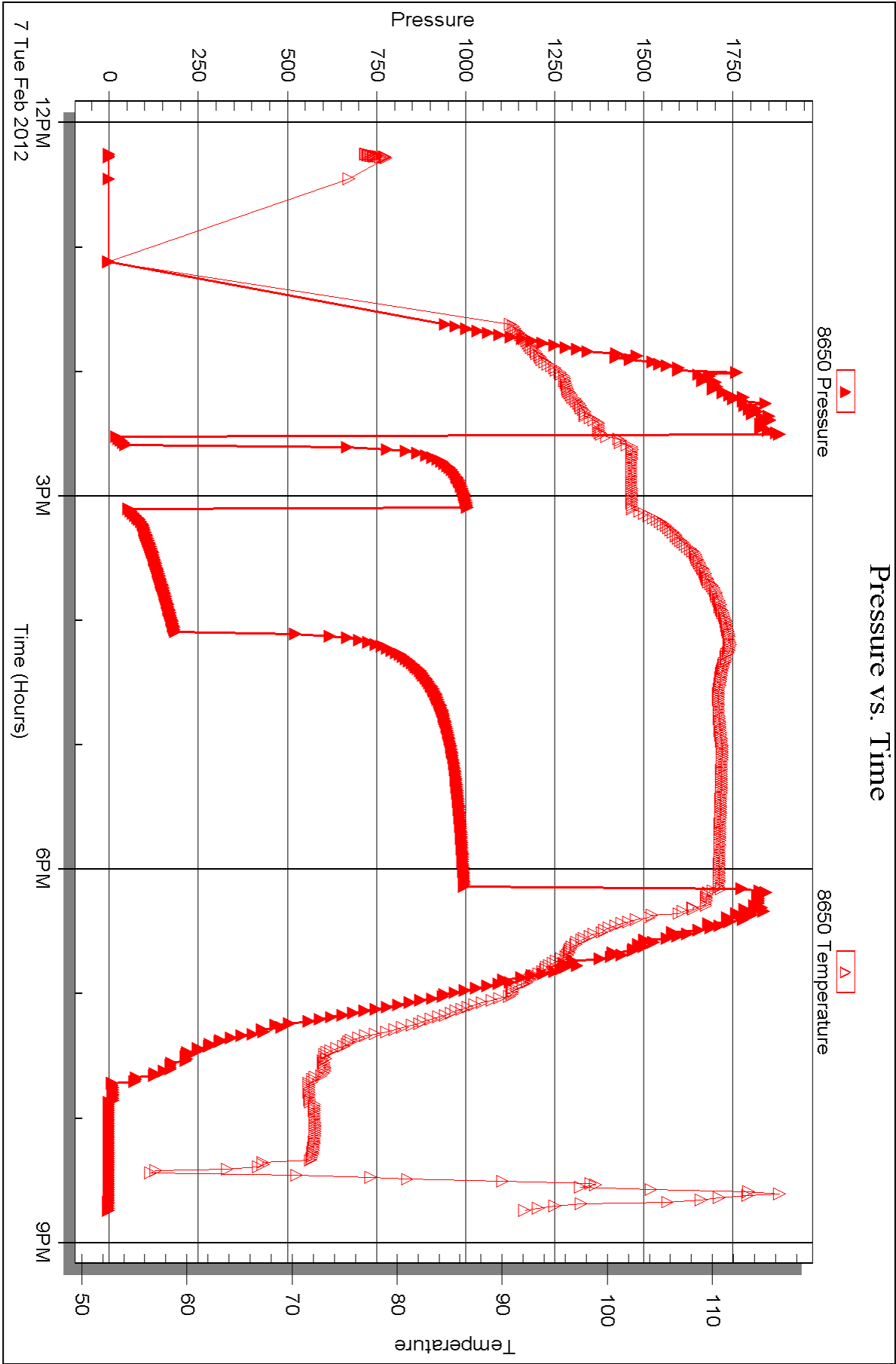


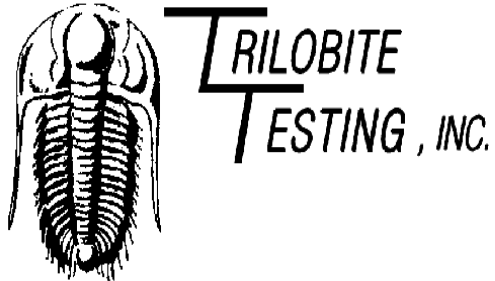
Serial #: 8650

Outside Mull Drilling Company Inc

ETW#1-15

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.08 @ 17:05:00

End Date: 2012.02.09 @ 01:30:00

Job Ticket #: 45063                      DST #: 2

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

Printed: 2012.02.20 @ 15:09:25





**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45063

**DST#: 2**

Test Start: 2012.02.08 @ 17:05:00

### GENERAL INFORMATION:

Formation: **Kansas City "K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:00:15

Time Test Ended: 01:30:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 3910.00 ft (KB) To 3938.00 ft (KB) (TVD)**

Total Depth: 3938.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8675 Inside**

Press @ Run Depth: 33.11 psig @ 3911.00 ft (KB)

Start Date: 2012.02.08

End Date:

2012.02.09

Start Time: 17:05:01

End Time:

01:30:00

Capacity: 8000.00 psig

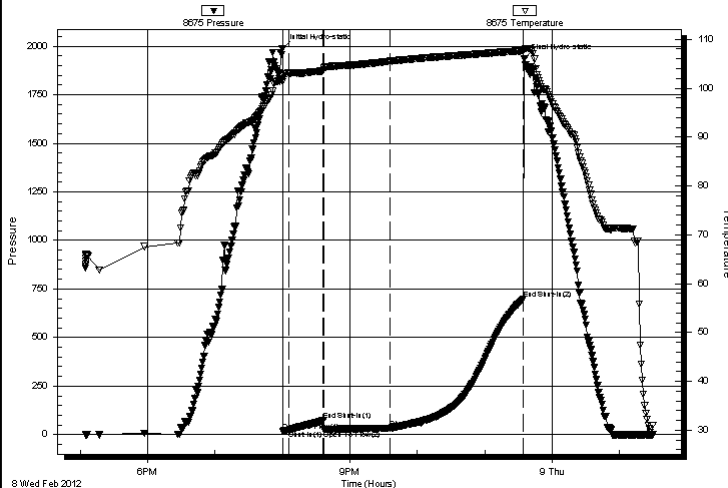
Last Calib.: 2012.02.09

Time On Btm: 2012.02.08 @ 20:00:00

Time Off Btm: 2012.02.08 @ 23:35:15

**TEST COMMENT:** Built to 2" blow  
No return blow  
Built to 6" blow  
Weak return blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1988.38	101.98	Initial Hydro-static
1	18.09	101.35	Open To Flow (1)
6	23.10	103.06	Shut-In(1)
37	72.66	103.52	End Shut-In(1)
37	24.46	103.75	Open To Flow (2)
96	33.11	105.51	Shut-In(2)
215	699.43	107.65	End Shut-In(2)
216	1937.38	107.95	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
40.00	gcm 10%G 90%M w ith oil scum	0.20
0.00	180 feet gas in pipe	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests



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## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45063

**DST#: 2**

Test Start: 2012.02.08 @ 17:05:00

### GENERAL INFORMATION:

Formation: **Kansas City "K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:00:15

Time Test Ended: 01:30:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 3910.00 ft (KB) To 3938.00 ft (KB) (TVD)**

Total Depth: 3938.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8650 Outside**

Press @ Run Depth: psig @ 3911.00 ft (KB)

Start Date: 2012.02.08

End Date:

2012.02.09

Start Time: 17:05:01

End Time:

01:29:45

Capacity: 8000.00 psig

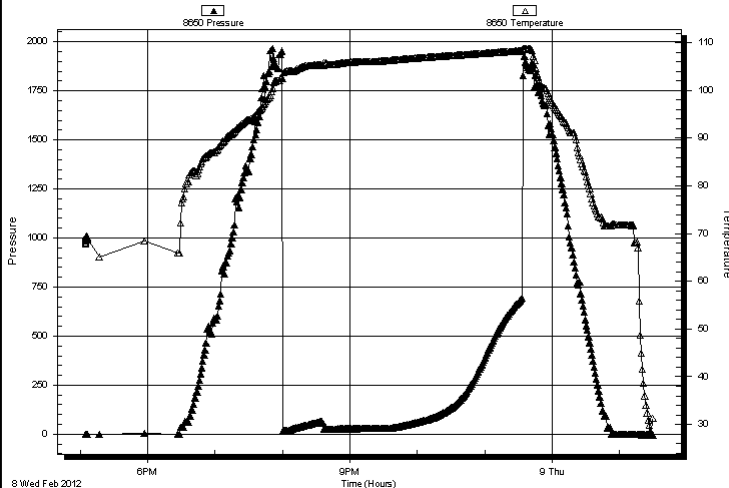
Last Calib.: 2012.02.09

Time On Btm:

Time Off Btm:

**TEST COMMENT:** Built to 2" blow  
No return blow  
Built to 6" blow  
Weak return blow

Pressure vs. Time



### PRESSURE SUMMARY

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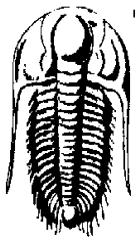
### Recovery

Length (ft)	Description	Volume (bbl)
40.00	gcm 10%G 90%M with oil scum	0.20
0.00	180 feet gas in pipe	0.00

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa, CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45063

**DST#: 2**

Wichita, KS 67206-6637

Test Start: 2012.02.08 @ 17:05:00

ATTN: Phil Askey

### Tool Information

Drill Pipe:	Length:	3722.36 ft	Diameter:	3.80 inches	Volume:	52.21 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length:	178.64 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	53.09 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		11.00 ft					String Weight: Initial	64000.00 lb
Depth to Top Packer:		3910.00 ft					Final	64000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		28.00 ft						
Tool Length:		48.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3891.00	
Shut In Tool	5.00			3896.00	
Hydraulic tool	5.00			3901.00	
Packer	5.00			3906.00	20.00 Bottom Of Top Packer
Packer	4.00			3910.00	
Stubb	1.00			3911.00	
Recorder	0.00	8675	Inside	3911.00	
Recorder	0.00	8650	Outside	3911.00	
Perforations	24.00			3935.00	
Change Over Sub	0.00			3935.00	
Drill Pipe	0.00			3935.00	
Change Over Sub	0.00			3935.00	
Bullnose	3.00			3938.00	28.00 Bottom Packers & Anchor

**Total Tool Length: 48.00**



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45063

**DST#: 2**

Wichita, KS 67206-6637

Test Start: 2012.02.08 @ 17:05:00

ATTN: Phil Askey

### 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: 49.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4800.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
40.00	gcm 10%G 90%M with oil scum	0.197
0.00	180 feet gas in pipe	0.000

Total Length: 40.00 ft

Total Volume: 0.197 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8675

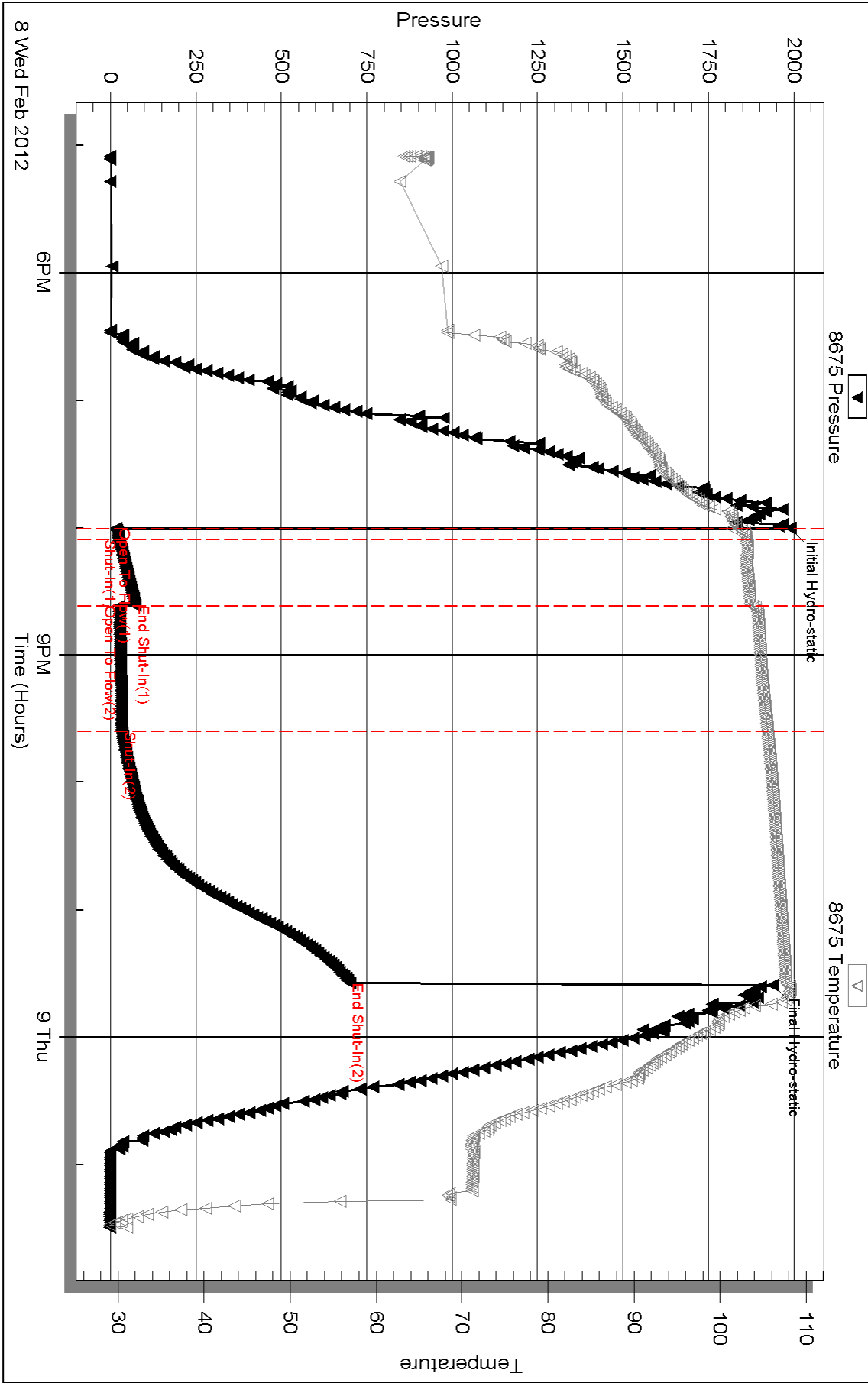
Inside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 2

# Pressure vs. Time



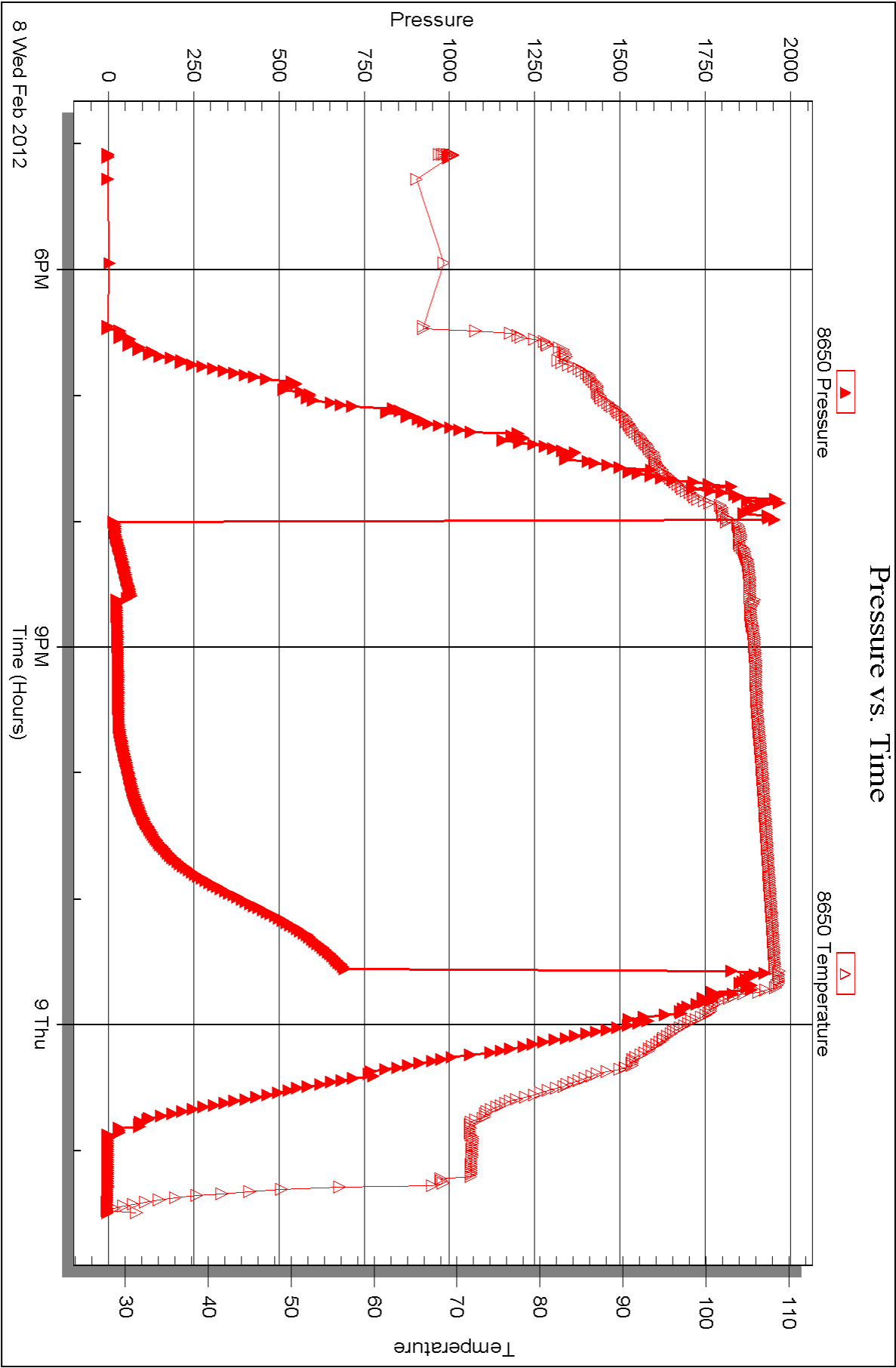
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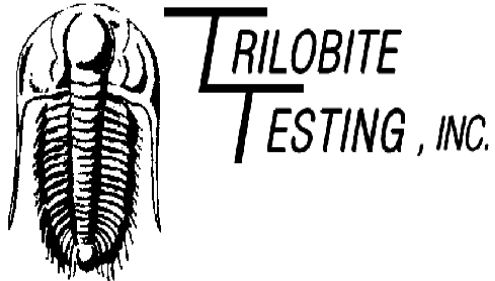
Outside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.10 @ 04:15:00

End Date: 2012.02.10 @ 13:36:00

Job Ticket #: 45064                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.02.20 @ 15:08:50

Mull Drilling Company Inc

15-18s-45w Kiowa,CO

ETW #1-15

DST # 3

Marmaton - Fort Scot

2012.02.10



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45064

**DST#: 3**

Test Start: 2012.02.10 @ 04:15:00

### GENERAL INFORMATION:

Formation: **Marmaton - Fort Scot**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:18:45

Time Test Ended: 13:36:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4005.00 ft (KB) To 4092.00 ft (KB) (TVD)**

Total Depth: 4092.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8675 Inside**

Press @ Run Depth: 664.49 psig @ 4006.00 ft (KB)

Start Date: 2012.02.10

End Date:

2012.02.10

Start Time: 04:15:01

End Time:

13:36:00

Capacity: 8000.00 psig

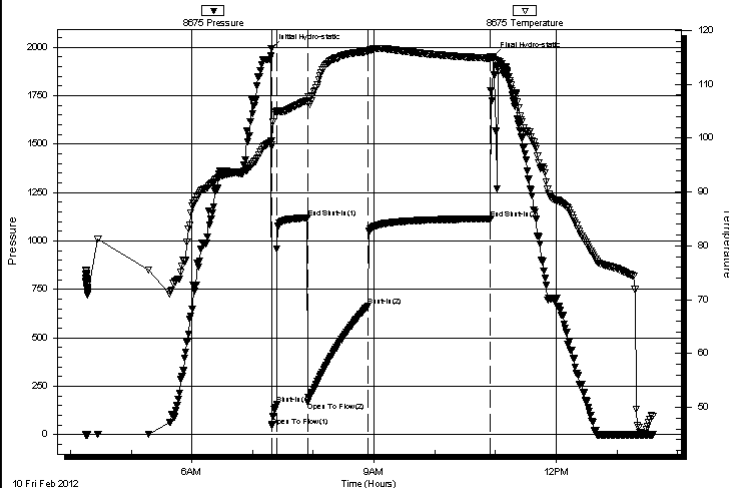
Last Calib.: 2012.02.10

Time On Btm: 2012.02.10 @ 07:18:30

Time Off Btm: 2012.02.10 @ 10:57:45

**TEST COMMENT:** B.O.B. in 3 1/2 min.  
Bled off for 5 min. No return blow  
B.O.B. in 4 min.  
Bled off for 5 min. No return blow

Pressure vs. Time



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1994.69	99.42	Initial Hydro-static
1	45.32	98.41	Open To Flow (1)
6	154.86	104.72	Shut-In(1)
36	1119.09	107.01	End Shut-In(1)
36	166.10	106.46	Open To Flow (2)
96	664.49	116.07	Shut-In(2)
217	1115.39	114.83	End Shut-In(2)
220	1950.37	114.69	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
798.00	100%Water	9.57
434.00	mcw 40%M 60%W	6.09
186.00	100%Mud	2.61

\* Recovery from multiple tests

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45064

**DST#: 3**

Test Start: 2012.02.10 @ 04:15:00

### GENERAL INFORMATION:

Formation: **Marmaton - Fort Scot**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:18:45

Time Test Ended: 13:36:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4005.00 ft (KB) To 4092.00 ft (KB) (TVD)**

Total Depth: 4092.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8650 Outside**

Press @ Run Depth: psig @ 4006.00 ft (KB)

Start Date: 2012.02.10

End Date:

2012.02.10

Start Time: 04:15:01

End Time:

13:35:45

Capacity: 8000.00 psig

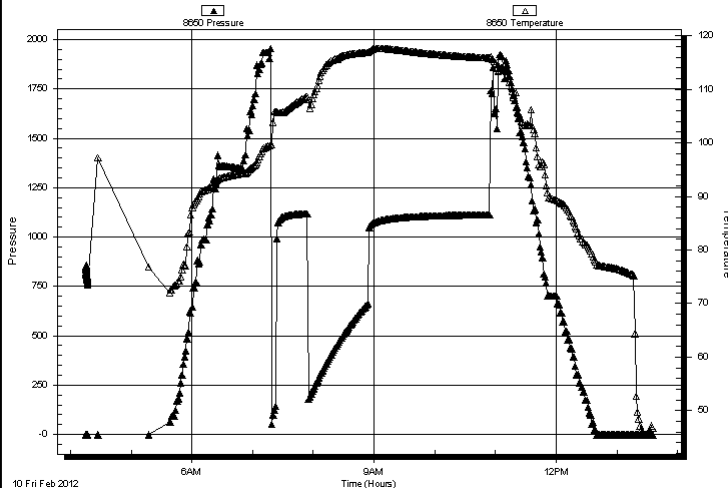
Last Calib.: 2012.02.10

Time On Btm:

Time Off Btm:

**TEST COMMENT:** B.O.B. in 3 1/2 min.  
Bled off for 5 min. No return blow  
B.O.B. in 4 min.  
Bled off for 5 min. No return blow

Pressure vs. Time



### PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
798.00	100%Water	9.57
434.00	mcw 40%M 60%W	6.09
186.00	100%Mud	2.61

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa, CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45064

**DST#: 3**

Wichita, KS 67206-6637

Test Start: 2012.02.10 @ 04:15:00

ATTN: Phil Askey

### Tool Information

Drill Pipe:	Length:	3817.05 ft	Diameter:	3.80 inches	Volume:	53.54 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length:	178.64 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	100000.0 lb
					Total Volume:	54.42 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		10.69 ft					String Weight: Initial	64000.00 lb
Depth to Top Packer:		4005.00 ft					Final	74000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		87.00 ft						
Tool Length:		107.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			3986.00	
Shut In Tool	5.00			3991.00	
Hydraulic tool	5.00			3996.00	
Packer	5.00			4001.00	20.00 Bottom Of Top Packer
Packer	4.00			4005.00	
Stubb	1.00			4006.00	
Recorder	0.00	8675	Inside	4006.00	
Recorder	0.00	8650	Outside	4006.00	
Perforations	18.00			4024.00	
Change Over Sub	1.00			4025.00	
Drill Pipe	63.00			4088.00	
Change Over Sub	1.00			4089.00	
Bullnose	3.00			4092.00	87.00 Bottom Packers & Anchor

**Total Tool Length: 107.00**



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45064

**DST#: 3**

Wichita, KS 67206-6637

Test Start: 2012.02.10 @ 04:15:00

ATTN: Phil Askey

### 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:

bbl

Water Loss: 8.77 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4900.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
798.00	100%Water	9.567
434.00	mcw 40%M 60%W	6.088
186.00	100%Mud	2.609

Total Length: 1418.00 ft

Total Volume: 18.264 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8675

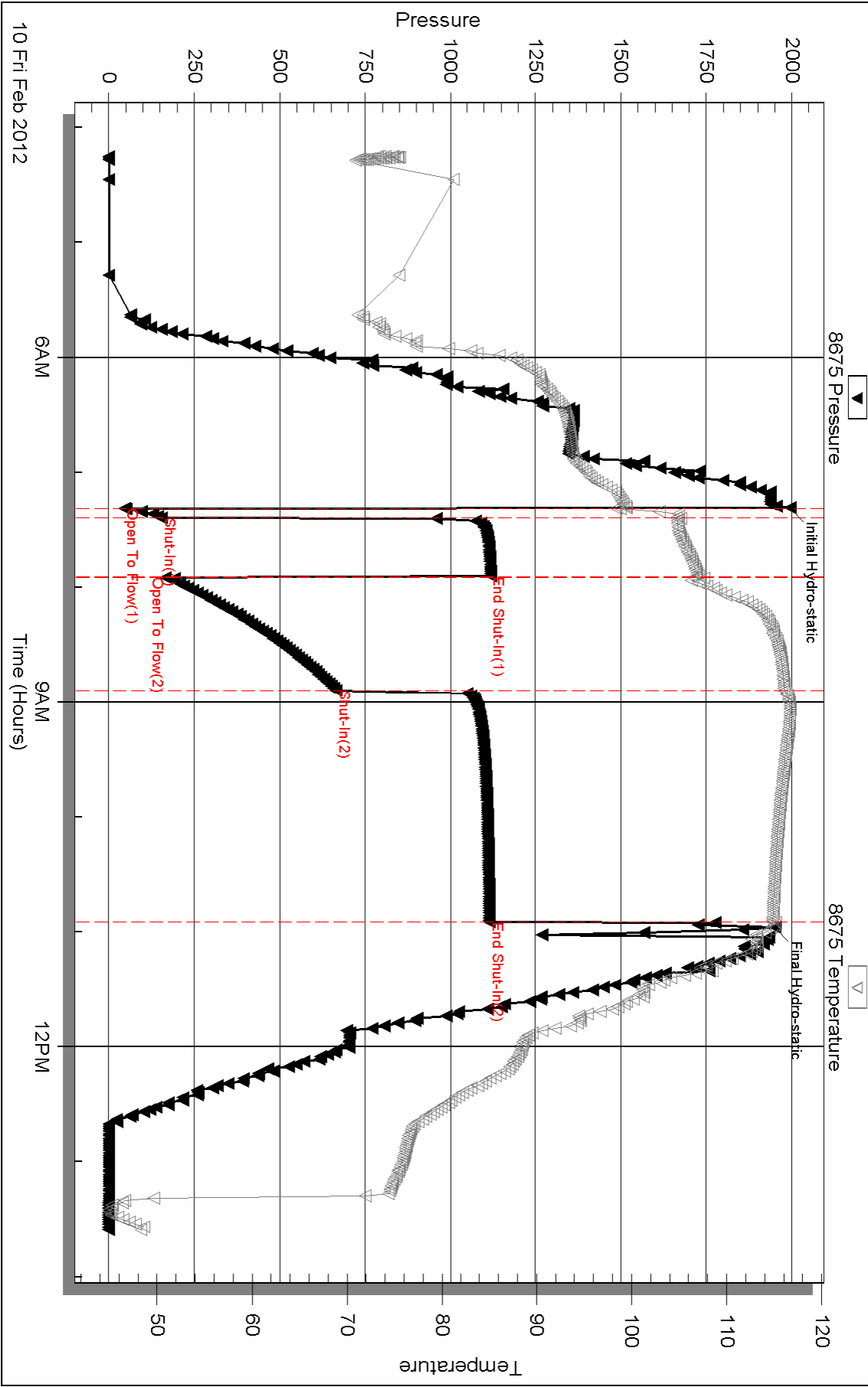
Inside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 3

# Pressure vs. Time



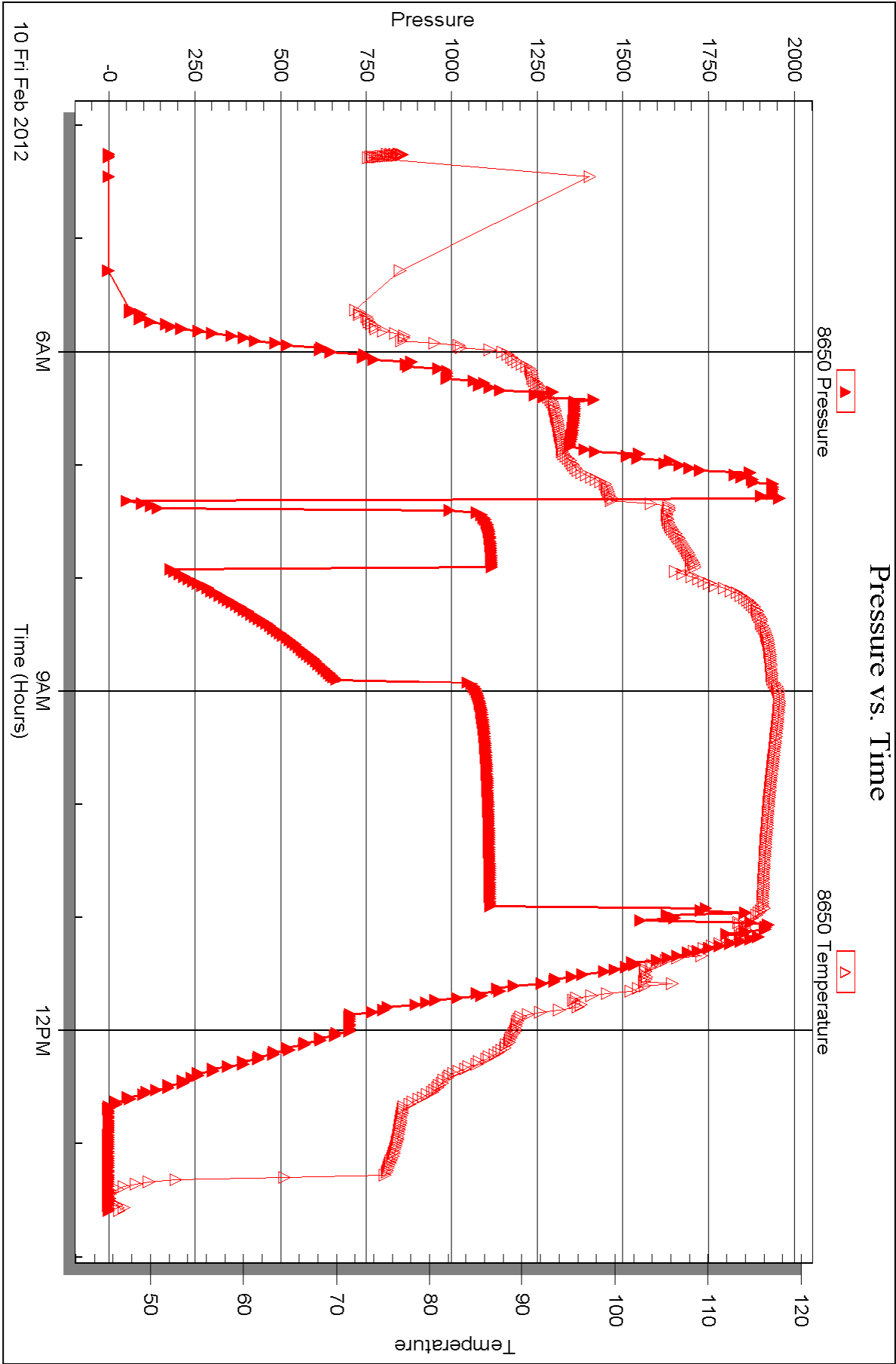
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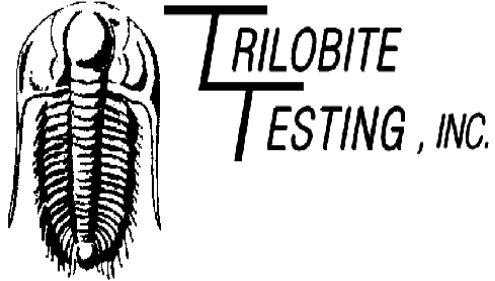
Outside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.11 @ 09:25:00

End Date: 2012.02.11 @ 16:11:50

Job Ticket #: 45393                      DST #: 4

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

Printed: 2012.02.20 @ 15:08:07



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45393

**DST#: 4**

Test Start: 2012.02.11 @ 09:25:00

### GENERAL INFORMATION:

Formation: **Ft. Scott - Upper Ch**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:42:00

Time Test Ended: 16:11:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 37

**Interval: 4101.00 ft (KB) To 4185.00 ft (KB) (TVD)**

Total Depth: 4185.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8018 Inside**

Press @ Run Depth: 24.05 psig @ 4102.00 ft (KB)

Start Date: 2012.02.11

End Date:

2012.02.11

Start Time: 09:25:02

End Time:

16:11:49

Capacity: 8000.00 psig

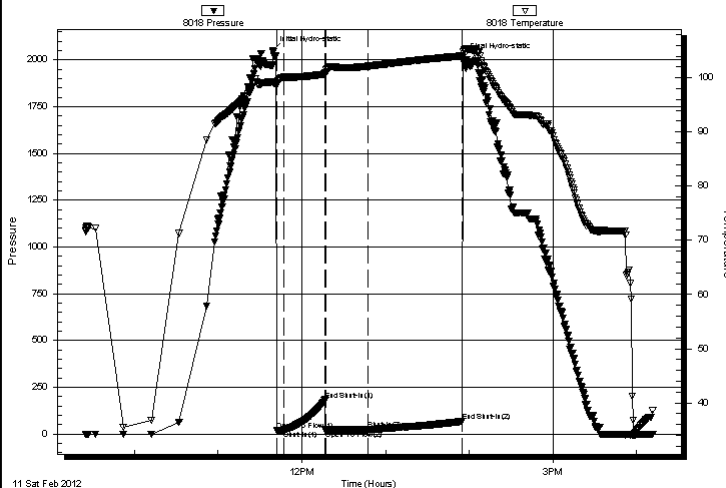
Last Calib.: 2012.02.11

Time On Btm: 2012.02.11 @ 11:39:20

Time Off Btm: 2012.02.11 @ 13:55:39

TEST COMMENT: 1/2" Blow .  
No return.  
No blow .  
No return.

Pressure vs. Time



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2048.84	99.22	Initial Hydro-static
3	18.53	98.57	Open To Flow (1)
8	20.69	100.10	Shut-In (1)
38	182.98	100.72	End Shut-In (1)
38	22.21	100.84	Open To Flow (2)
69	24.05	102.16	Shut-In (2)
136	67.78	104.05	End Shut-In (2)
137	2011.56	104.92	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	M 100m Oil spot in tool.	0.02

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45393

**DST#: 4**

Test Start: 2012.02.11 @ 09:25:00

### GENERAL INFORMATION:

Formation: **Ft. Scott - Upper Ch**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:42:00

Time Test Ended: 16:11:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 37

**Interval: 4101.00 ft (KB) To 4185.00 ft (KB) (TVD)**

Total Depth: 4185.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 6751 Outside**

Press @ Run Depth: psig @ 4102.00 ft (KB)

Start Date: 2012.02.11

End Date:

2012.02.11

Start Time: 09:25:02

End Time:

16:11:49

Capacity: 8000.00 psig

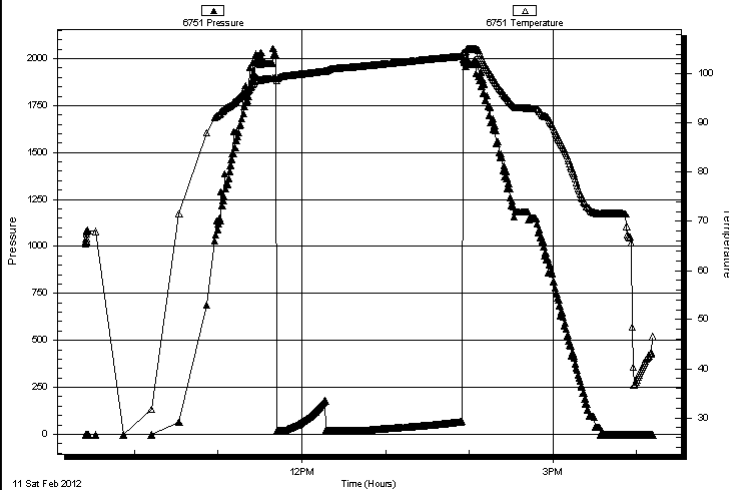
Last Calib.: 2012.02.11

Time On Btm:

Time Off Btm:

TEST COMMENT: 1/2" Blow .  
No return.  
No blow .  
No return.

Pressure vs. Time



### PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
5.00	M 100m Oil spot in tool.	0.02

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests





**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**ETW #1-15**

Job Ticket: 45393

**DST#: 4**

Test Start: 2012.02.11 @ 09:25:00

### Tool Information

Drill Pipe:	Length:	3909.00 ft	Diameter:	3.80 inches	Volume:	54.83 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length:	179.00 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	95000.00 lb
					Total Volume:	55.71 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		14.50 ft					String Weight: Initial	65000.00 lb
Depth to Top Packer:		4101.00 ft					Final	65000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		84.00 ft						
Tool Length:		111.50 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			4074.50	
Shut In Tool	5.00			4079.50	
Hydraulic tool	5.00			4084.50	
Jars	5.00			4089.50	
Safety Joint	2.50			4092.00	
Packer	5.00			4097.00	27.50 Bottom Of Top Packer
Packer	4.00			4101.00	
Stubb	1.00			4102.00	
Recorder	0.00	8018	Inside	4102.00	
Recorder	0.00	6751	Outside	4102.00	
Perforations	15.00			4117.00	
Change Over Sub	1.00			4118.00	
Drill Pipe	63.00			4181.00	
Change Over Sub	1.00			4182.00	
Bullnose	3.00			4185.00	84.00 Bottom Packers & Anchor

**Total Tool Length: 111.50**



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45393

**DST#: 4**

Wichita, KS 67206-6637

Test Start: 2012.02.11 @ 09:25:00

ATTN: Phil Askey

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

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3400.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	M 100m Oil spot in tool.	0.025

Total Length: 5.00 ft

Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8018

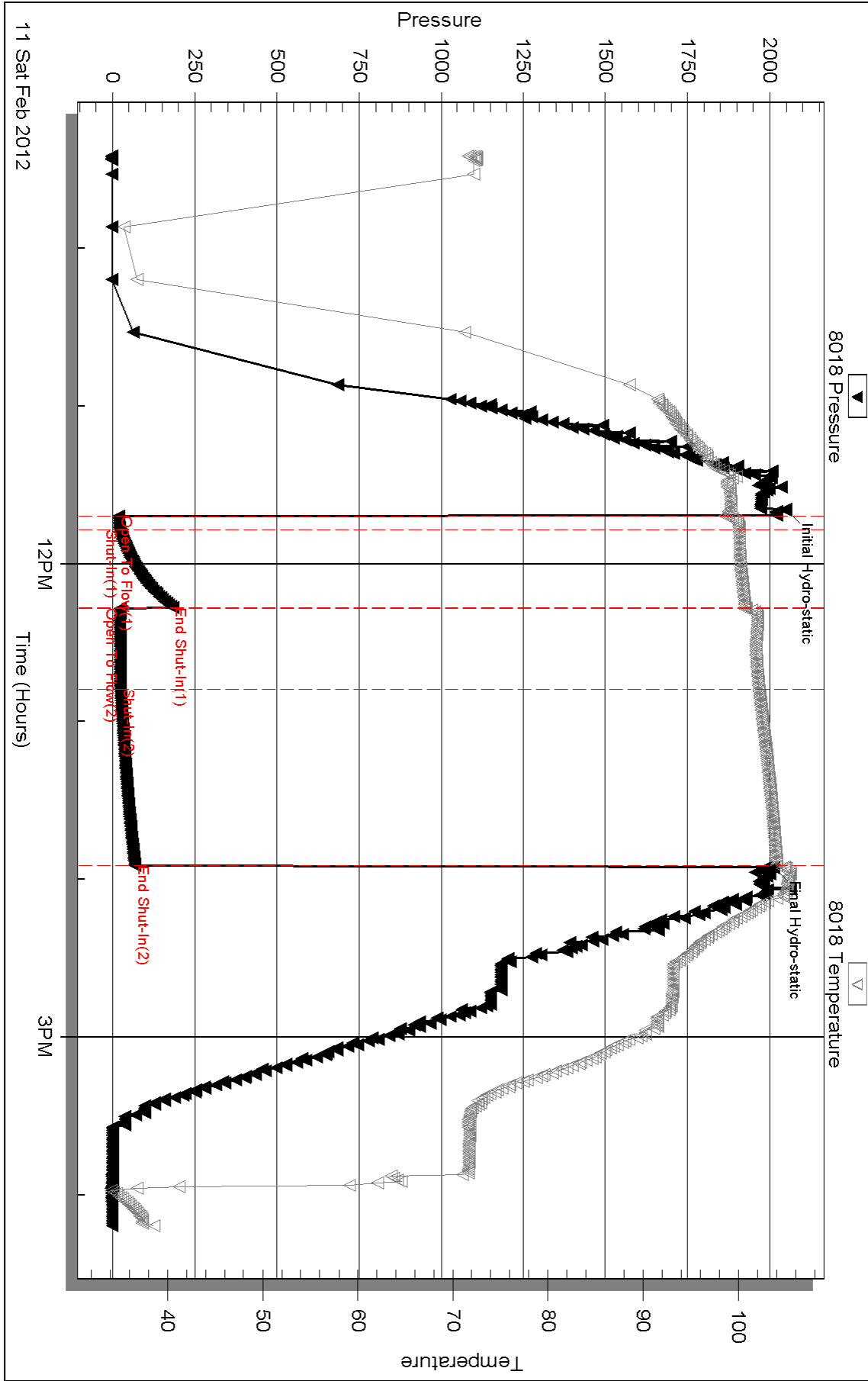
Inside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 4

# Pressure vs. Time



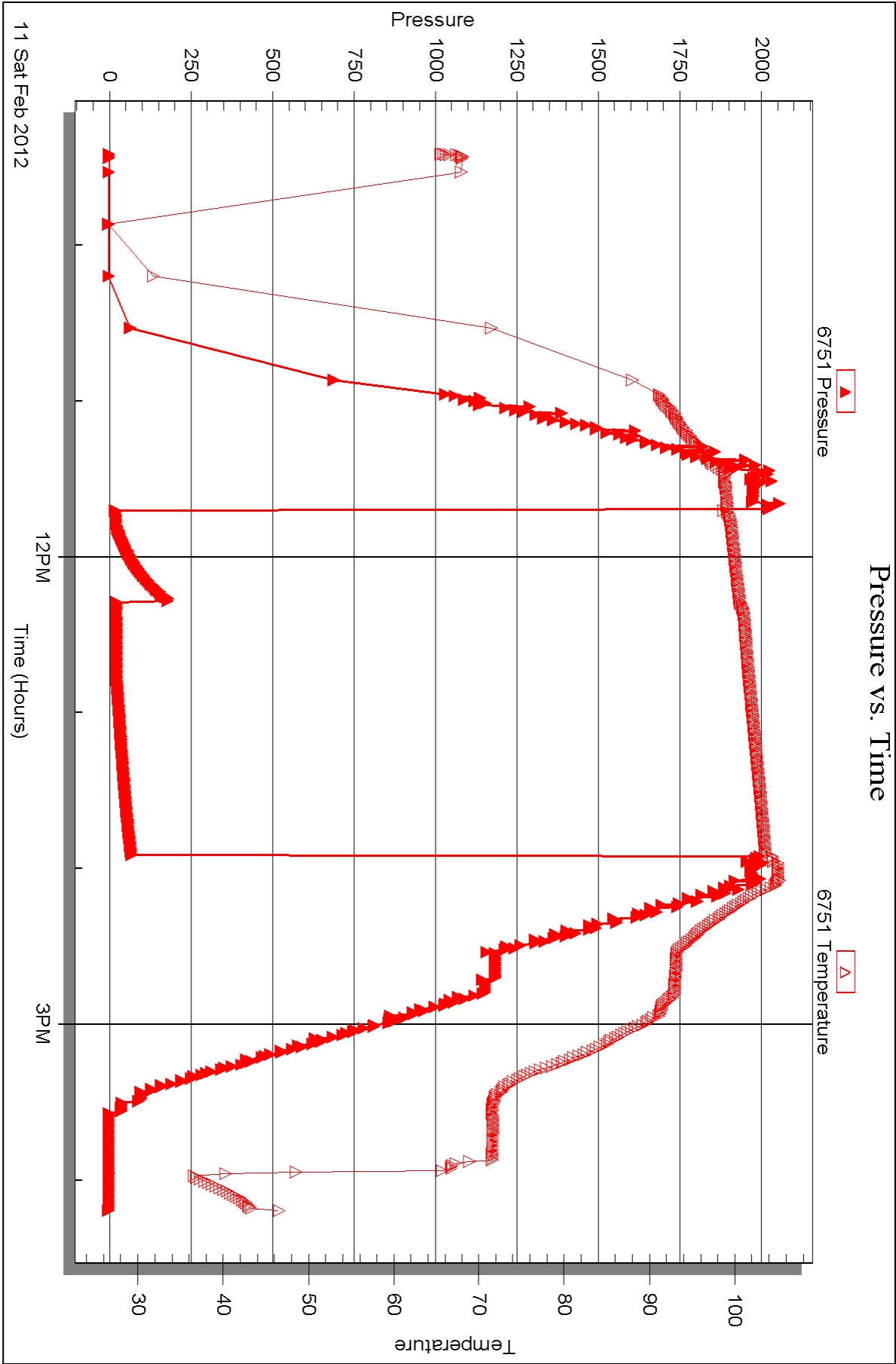
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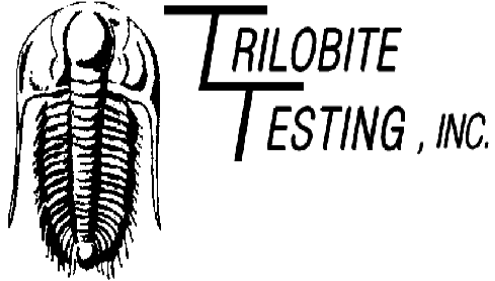
Outside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 4





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.13 @ 11:15:00

End Date: 2012.02.13 @ 19:25:00

Job Ticket #: 45065                      DST #: 5

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

Printed: 2012.02.20 @ 15:07:01



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45065

**DST#: 5**

Test Start: 2012.02.13 @ 11:15:00

### GENERAL INFORMATION:

Formation: **Morrow Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:08:00

Time Test Ended: 19:25:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4426.00 ft (KB) To 4470.00 ft (KB) (TVD)**

Total Depth: 4470.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8675 Inside**

Press @ Run Depth: 26.11 psig @ 4427.00 ft (KB)

Start Date: 2012.02.13

End Date:

2012.02.13

Start Time: 11:15:01

End Time:

19:25:00

Capacity: 8000.00 psig

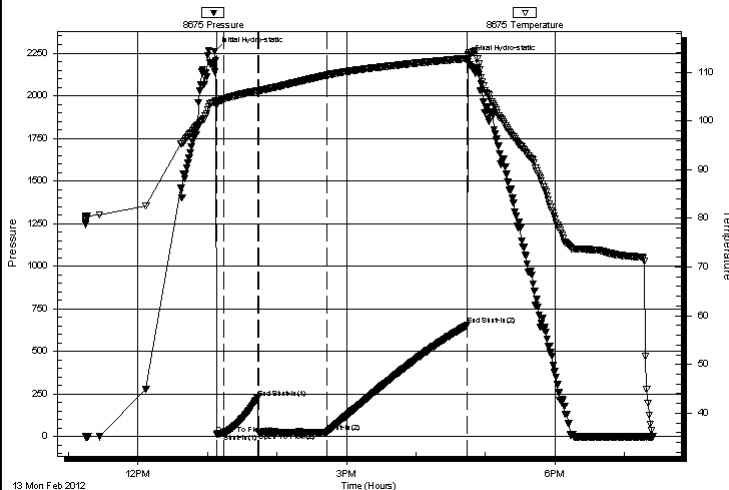
Last Calib.: 2012.02.13

Time On Btm: 2012.02.13 @ 13:06:30

Time Off Btm: 2012.02.13 @ 16:45:00

**TEST COMMENT:** Built to 1/4" blow  
No return blow  
B.O.B. in 40 min.  
No return blow

Pressure vs. Time



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2260.85	103.96	Initial Hydro-static
2	15.59	103.19	Open To Flow (1)
8	19.14	104.44	Shut-In(1)
37	226.96	106.21	End Shut-In(1)
38	22.92	106.18	Open To Flow (2)
97	26.11	109.40	Shut-In(2)
218	652.62	112.86	End Shut-In(2)
219	2213.03	113.45	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
0.00	186 Feet Gas In Pipe	0.00
10.00	100% Mud	0.05

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45065

**DST#: 5**

Test Start: 2012.02.13 @ 11:15:00

### GENERAL INFORMATION:

Formation: **Morrow Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:08:00

Time Test Ended: 19:25:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4426.00 ft (KB) To 4470.00 ft (KB) (TVD)**

Total Depth: 4470.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8650 Outside**

Press @ Run Depth: psig @ 4427.00 ft (KB)

Start Date: 2012.02.13

End Date:

2012.02.13

Start Time: 11:15:01

End Time:

19:24:45

Capacity: 8000.00 psig

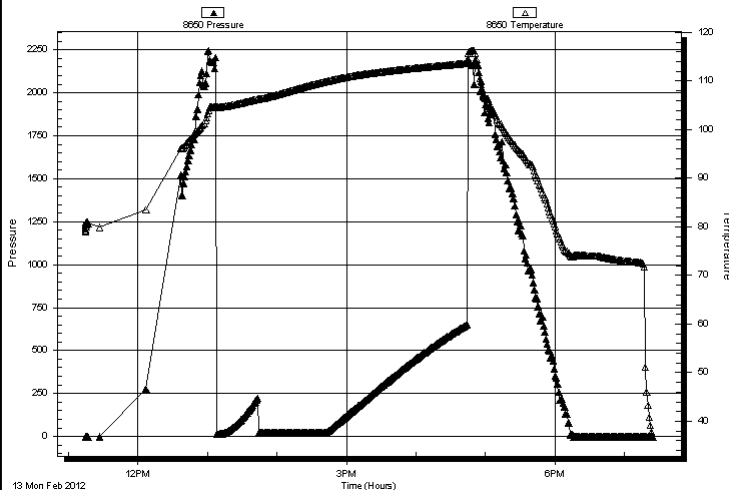
Last Calib.: 2012.02.13

Time On Btm:

Time Off Btm:

**TEST COMMENT:** Built to 1/4" blow  
No return blow  
B.O.B. in 40 min.  
No return blow

Pressure vs. Time



### PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
0.00	186 Feet Gas In Pipe	0.00
10.00	100% Mud	0.05

### Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa, CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45065

**DST#: 5**

Wichita, KS 67206-6637

Test Start: 2012.02.13 @ 11:15:00

ATTN: Phil Askey

### Tool Information

Drill Pipe:	Length:	4254.75 ft	Diameter:	3.80 inches	Volume:	59.68 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length:	178.64 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	78000.00 lb
					Total Volume:	60.56 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		27.39 ft					String Weight: Initial	68000.00 lb
Depth to Top Packer:		4426.00 ft					Final	68000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		44.00 ft						
Tool Length:		64.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

### Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Change Over Sub	1.00			4407.00	
Shut In Tool	5.00			4412.00	
Hydraulic tool	5.00			4417.00	
Packer	5.00			4422.00	20.00 Bottom Of Top Packer
Packer	4.00			4426.00	
Stubb	1.00			4427.00	
Recorder	0.00	8675	Inside	4427.00	
Recorder	0.00	8650	Outside	4427.00	
Perforations	2.00			4429.00	
Change Over Sub	1.00			4430.00	
Drill Pipe	31.00			4461.00	
Change Over Sub	1.00			4462.00	
Bullnose	8.00			4470.00	44.00 Bottom Packers & Anchor

**Total Tool Length: 64.00**





**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45065

**DST#: 5**

Wichita, KS 67206-6637

Test Start: 2012.02.13 @ 11:15:00

ATTN: Phil Askey

### 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: 46.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	186 Feet Gas In Pipe	0.000
10.00	100% Mud	0.049

Total Length: 10.00 ft

Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8675

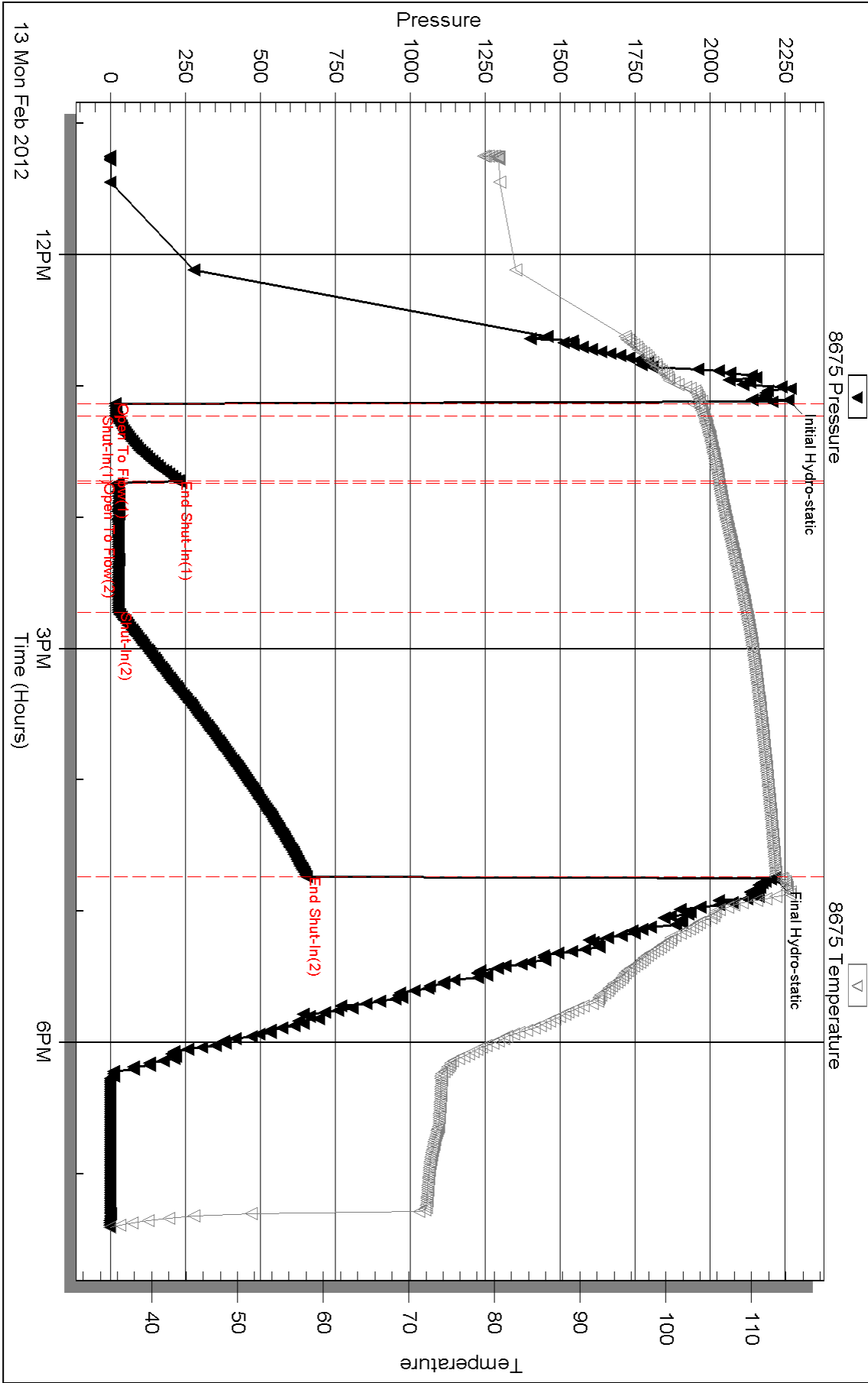
Inside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 5

Pressure vs. Time



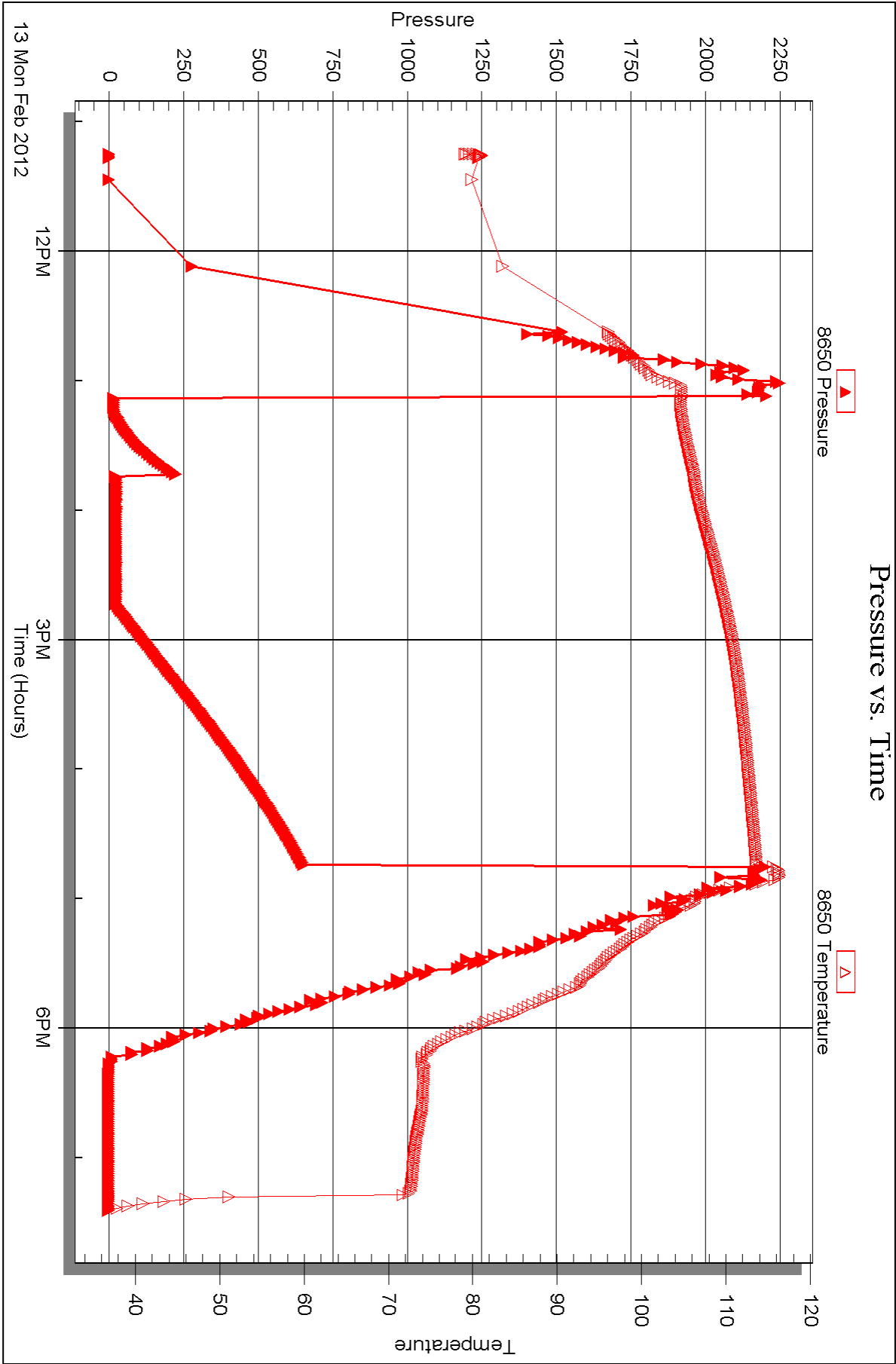
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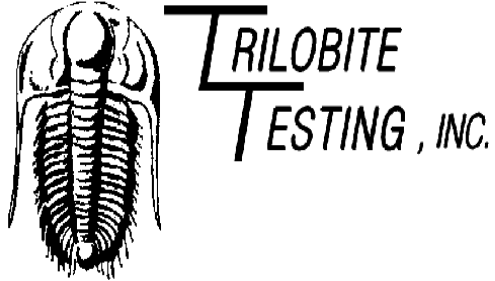
Outside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 5





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company Inc**

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637

ATTN: Phil Askey

### **ETW #1-15**

#### **15-18s-45w Kiowa,CO**

Start Date: 2012.02.15 @ 13:45:00

End Date: 2012.02.15 @ 22:20:00

Job Ticket #: 45066                      DST #: 6

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

Printed: 2012.02.20 @ 15:06:24



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45066

**DST#: 6**

Test Start: 2012.02.15 @ 13:45:00

### GENERAL INFORMATION:

Formation: **St. Louis & Spergen**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:26:30

Time Test Ended: 22:20:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4765.00 ft (KB) To 4820.00 ft (KB) (TVD)**

Total Depth: 4820.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8675 Inside**

Press @ Run Depth: 34.04 psig @ 4766.00 ft (KB)

Start Date: 2012.02.15

End Date:

2012.02.15

Start Time: 13:45:01

End Time:

22:20:00

Capacity: 8000.00 psig

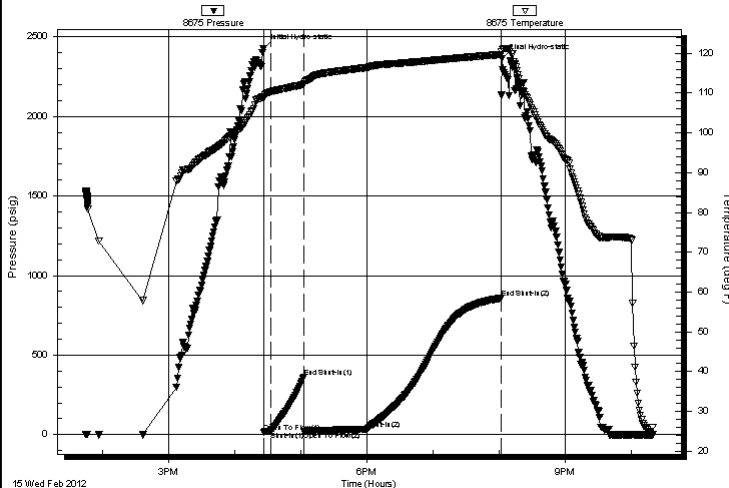
Last Calib.: 2012.02.15

Time On Btm: 2012.02.15 @ 16:26:15

Time Off Btm: 2012.02.15 @ 20:02:30

**TEST COMMENT:** Built to 3/4" blow  
No return blow  
B.O.B. in 17 min.  
Bled off for 5 min. No return blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2427.60	109.12	Initial Hydro-static
1	13.26	108.62	Open To Flow (1)
7	21.40	110.27	Shut-In(1)
37	360.52	112.17	End Shut-In(1)
37	18.61	112.32	Open To Flow (2)
94	34.04	116.39	Shut-In(2)
216	857.83	119.70	End Shut-In(2)
217	2365.44	120.46	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	396 Feet Gas In Pipe	0.00
30.00	gcom 10%G 20%O 70%M	0.15

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company Inc

1700 N Waterfront PKWY  
B # 1200  
Wichita, KS 67206-6637  
ATTN: Phil Askey

**15-18s-45w Kiowa, CO**

**ETW #1-15**

Job Ticket: 45066

**DST#: 6**

Test Start: 2012.02.15 @ 13:45:00

### GENERAL INFORMATION:

Formation: **St. Louis & Spergen**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:26:30

Time Test Ended: 22:20:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 46

**Interval: 4765.00 ft (KB) To 4820.00 ft (KB) (TVD)**

Total Depth: 4820.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3928.00 ft (KB)

3917.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8650 Outside**

Press @ Run Depth: psig @ 4766.00 ft (KB)

Start Date: 2012.02.15

End Date:

2012.02.15

Start Time: 13:45:16

End Time:

22:20:15

Capacity: 8000.00 psig

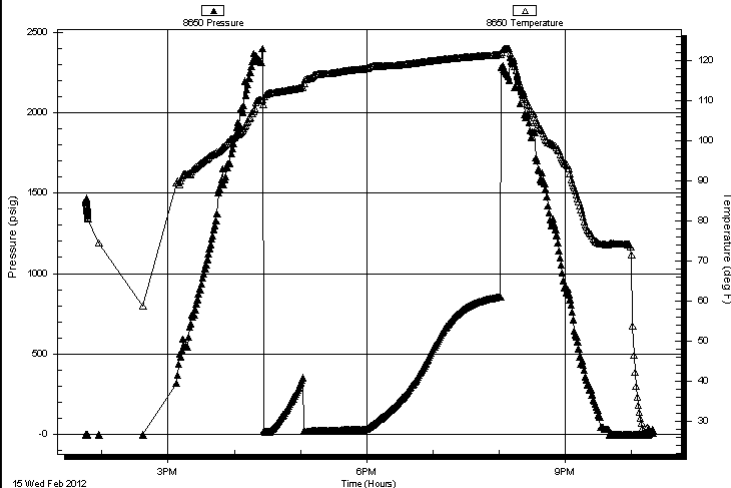
Last Calib.: 2012.02.15

Time On Btm:

Time Off Btm:

**TEST COMMENT:** Built to 3/4" blow  
No return blow  
B.O.B. in 17 min.  
Bled off for 5 min. No return blow

Pressure vs. Time



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
0.00	396 Feet Gas In Pipe	0.00
30.00	gcom 10%G 20%O 70%M	0.15

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Company Inc

**15-18s-45w Kiowa, CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45066

**DST#: 6**

Wichita, KS 67206-6637

Test Start: 2012.02.15 @ 13:45:00

ATTN: Phil Askey

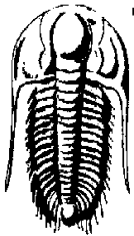
### Tool Information

Drill Pipe:	Length:	4599.32 ft	Diameter:	3.80 inches	Volume:	64.52 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	30000.00 lb
Drill Collar:	Length:	178.64 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	92000.00 lb
					Total Volume:	65.40 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		32.96 ft					String Weight: Initial	74000.00 lb
Depth to Top Packer:		4765.00 ft					Final	74000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		55.00 ft						
Tool Length:		75.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4746.00	
Shut In Tool	5.00			4751.00	
Hydraulic tool	5.00			4756.00	
Packer	5.00			4761.00	20.00 Bottom Of Top Packer
Packer	4.00			4765.00	
Stubb	1.00			4766.00	
Recorder	0.00	8675	Inside	4766.00	
Recorder	0.00	8650	Outside	4766.00	
Perforations	18.00			4784.00	
Change Over Sub	1.00			4785.00	
Drill Pipe	31.00			4816.00	
Change Over Sub	1.00			4817.00	
Bullnose	3.00			4820.00	55.00 Bottom Packers & Anchor

**Total Tool Length: 75.00**



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company Inc

**15-18s-45w Kiowa,CO**

1700 N Waterfront PKWY

**ETW #1-15**

B # 1200

Job Ticket: 45066

**DST#: 6**

Wichita, KS 67206-6637

Test Start: 2012.02.15 @ 13:45:00

ATTN: Phil Askey

### 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:

bbl

Water Loss: 0.00 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	396 Feet Gas In Pipe	0.000
30.00	gcom 10%G 20%O 70%M	0.148

Total Length: 30.00 ft

Total Volume: 0.148 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



Serial #: 8675

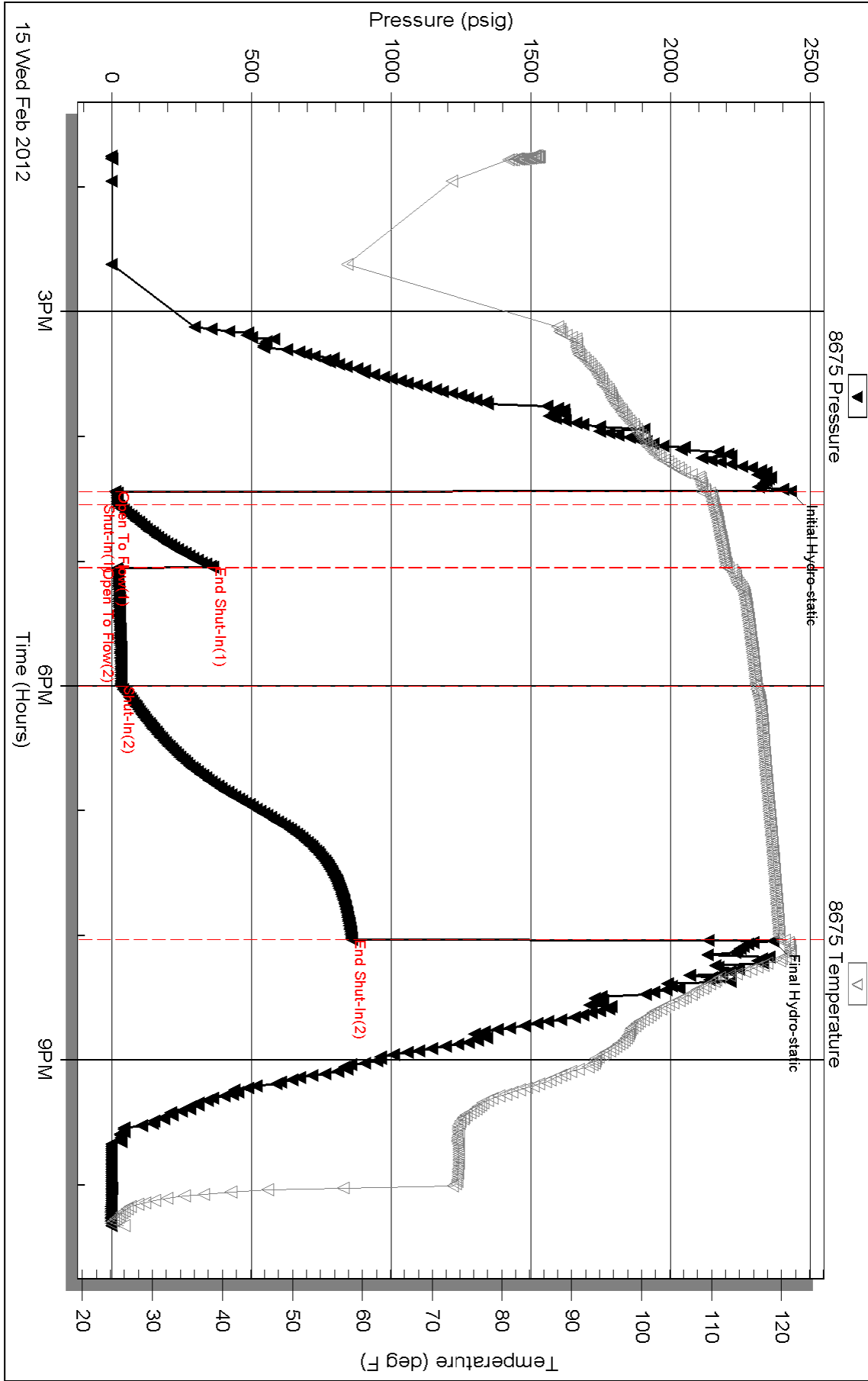
Inside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 6

# Pressure vs. Time



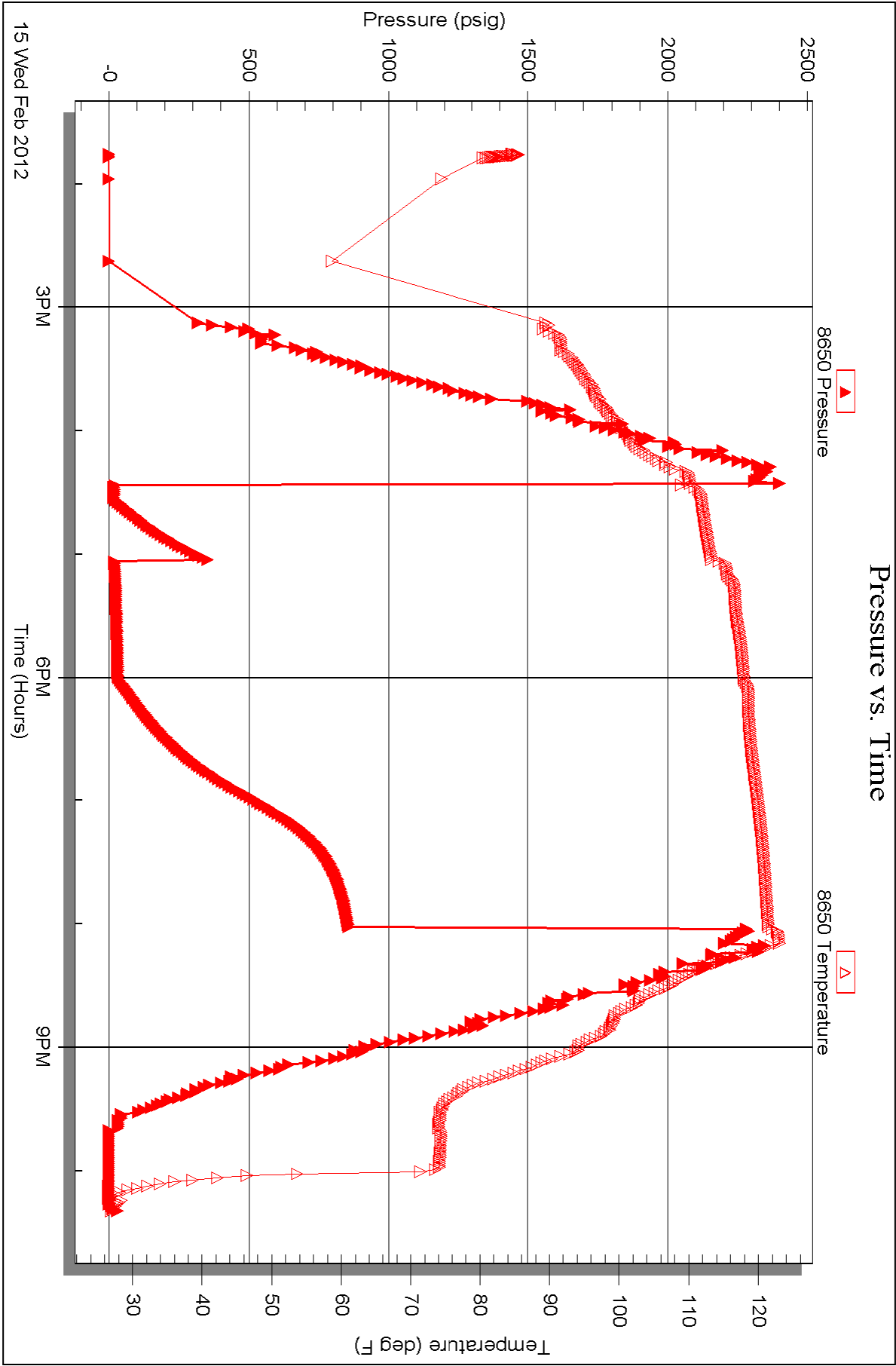
Serial #: 8650

Outside

Mull Drilling Company Inc

ETW#1-15

DST Test Number: 6





# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601



## Test Ticket

NO. 45062

Well Name & No. ETW 1-15 Test No. 1 Date 2/7/12  
 Company Mull Drilling Company Inc Elevation 3928 KB 3917 GL  
 Address 1700 N Waterfront PKW B#1200 Wichita KS 67206-6637  
 Co. Rep / Geo. Phil Askey Rig Martin 20  
 Location: Sec. 15 Twp. 18S Rge. 45W Co. Kiowa State CO.

Interval Tested 3779 - 3813 Zone Tested Kansas City "B"  
 Anchor Length 34 Drill Pipe Run 3598.04 Mud Wt. 9.2  
 Top Packer Depth 3775 Drill Collars Run 178.64 Vis 55  
 Bottom Packer Depth 3779 Wt. Pipe Run 0 WL 8.0  
 Total Depth 3813 Chlorides 3,600 ppm System LCM 2

Blow Description Built to 3" below  
No return below  
B.O.B. in 24 min.  
No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>94</u>	<u>mcw with oil</u>	<u>scum</u>	<u>70</u>	<u>30</u>	<u>scum</u>
<u>300</u>	<u>W</u>		<u>100</u>		

Rec Total 394 BHT 110 Gravity — API RW 60 @ 55 °F Chlorides 15,000 ppm  
 (A) Initial Hydrostatic 1,919 ☒ Test 1125 T-On Location 11:00  
 (B) First Initial Flow 19 ☐ Jars T-Started 12:15  
 (C) First Final Flow 50 ☐ Safety Joint T-Open 14:30  
 (D) Initial Shut-In 1,007 ☒ Circ Sub N/C T-Pulled 18:08  
 (E) Second Initial Flow 56 ☒ Hourly Standby 34 hours 75 T-Out 20:44  
 (F) Second Final Flow 187 ☒ Mileage 178 RT 249.20 Comments went over 9 hrs  
 (G) Final Shut-In 999 ☐ Sampler ☐ Ruined Shale Packer  
 (H) Final Hydrostatic 1,892 ☐ Straddle ☐ Ruined Packer  
☐ Shale Packer ☐ Extra Copies  
☐ Extra Packer ☐ Extra Recorder  
☐ Extra Recorder ☐ Day Standby  
☐ Accessibility

Initial Open 5 Sub Total 8  
 Initial Shut-In 30 Total 1449.20  
 Final Flow 60 MP/DST Disc't  
 Final Shut-In 120

Approved By Phil Askey Our Representative [Signature]  
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RECEIVED  
FEB 13 2012

## Test Ticket

NO. 45063

Well Name & No. ETW 1-15 Test No. 2 Date 2/8/12  
Company Mull Drilling Company Inc Elevation 3928 KB 3917 GL  
Address 1700 N Waterfront Pkwy B#1200 Wichita, KS 67206-6637  
Co. Rep / Geo. Phil Askey Rig Martin 30  
Location: Sec. 15 Twp. 18s Rge. 95w Co. Kiowa State CO.

Interval Tested 3910 - 3938 Zone Tested Kansas City "15"  
Anchor Length 28 Drill Pipe Run 3722 Mud Wt. 9.2  
Top Packer Depth 3906 Drill Collars Run 178 Vis 49  
Bottom Packer Depth 3910 Wt. Pipe Run 0 WL 8.0  
Total Depth 3938 Chlorides 4,800 ppm System LCM 5#

Blow Description Built to 2" below  
No return below  
Built to 6" below  
Weak return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>180 feet gas in pipe</u>				
<u>40</u>	<u>60M with oil gum</u>	<u>10</u>			<u>90</u>

Rec Total 40 BHT 108 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	<u>1,988</u>	<input checked="" type="checkbox"/> Test	<u>1125</u>	T-On Location	<u>16:10</u>
(B) First Initial Flow	<u>18</u>	<input type="checkbox"/> Jars		T-Started	<u>17:05</u>
(C) First Final Flow	<u>23</u>	<input type="checkbox"/> Safety Joint		T-Open	<u>20:00</u>
(D) Initial Shut-In	<u>73</u>	<input checked="" type="checkbox"/> Circ Sub	<u>N/C</u>	T-Pulled	<u>23:35</u>
(E) Second Initial Flow	<u>24</u>	<input checked="" type="checkbox"/> Hourly Standby	<u>174K 25'</u>	T-Out	<u>1:30</u>
(F) Second Final Flow	<u>33</u>	<input checked="" type="checkbox"/> Mileage	<u>178 RT 249.20</u>	Comments	
(G) Final Shut-In	<u>699</u>	<input type="checkbox"/> Sampler			
(H) Final Hydrostatic	<u>1,937</u>	<input type="checkbox"/> Straddle		<input type="checkbox"/> Ruined Shale Packer	

Initial Open	<u>5</u>	<input type="checkbox"/> Shale Packer		<input type="checkbox"/> Ruined Packer	
Initial Shut-In	<u>30</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>120</u>	<input type="checkbox"/> Day Standby		Total	<u>1399.20</u>
		<input type="checkbox"/> Accessibility		MP/DST Disc't	
		Sub Total	<u>1399.20</u>		

Approved By

Our Representative

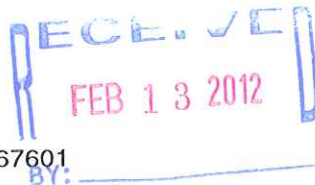
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## Test Ticket

NO. **45064**

Well Name & No. ETW 1-15 Test No. 3 Date 2/10/12  
Company Mull Drilling Company INC Elevation 3928 KB 3917 GL  
Address 1700 N Waterfront Pkwy B#1200 Wichita KS 67206-6637  
Co. Rep / Geo. Phil Askey Rig Murphy 20  
Location: Sec. 15 Twp. 18S Rge. 45W Co. Kansas State CO.

Interval Tested 4005 - 4092 Zone Tested Marmaton - Fort Scott  
Anchor Length 87 Drill Pipe Run 3817 Mud Wt. 9.2  
Top Packer Depth 4001 Drill Collars Run 178 Vis 54  
Bottom Packer Depth 4005 Wt. Pipe Run 0 WL 8.8  
Total Depth 4092 Chlorides 4900 ppm System LCM 3#

Blow Description B.O.B. in 3 1/2 min.

Bled off for 5 min. No return below

B.O.B. in 4 min.

Bled off for 5 min. No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>186</u>	<u>Mud</u>			<u>100</u>	
<u>434</u>	<u>mcw</u>			<u>60</u>	<u>40</u>
<u>798</u>	<u>water</u>			<u>100</u>	

Rec Total 1418 BHT 115 Gravity — API RW 60 @ 45 °F Chlorides 20,000 ppm  
(A) Initial Hydrostatic 1995 ☒ Test 1225 T-On Location 3:30  
(B) First Initial Flow 45 ☐ Jars — T-Started 4:15  
(C) First Final Flow 155 ☐ Safety Joint — T-Open 7:18  
(D) Initial Shut-In 1,119 ☒ Circ Sub n/c T-Pulled 10:55  
(E) Second Initial Flow 1660 ☒ Hourly Standby 12hrs 50 T-Out 13:56  
(F) Second Final Flow 664 ☒ Mileage 178 RT 249.20 Comments —  
(G) Final Shut-In 1,115 ☐ Sampler —  
(H) Final Hydrostatic 1,950 ☐ Straddle — ☐ Ruined Shale Packer —  
☐ Shale Packer — ☐ Ruined Packer —  
☐ Extra Packer — ☐ Extra Copies —  
☐ Extra Recorder — Sub Total 166.70  
☒ Day Standby 26hrs Total 1590.90  
☐ Accessibility — MP/DST Disc't —  
Sub Total 1524.20

Initial Open 5  
Initial Shut-In 30  
Final Flow 60  
Final Shut-In 120

Approved By

Phil Askey

Our Representative

[Signature]

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FEB 15 2012

# Test Ticket

NO. 45393

Well Name & No. ETW 1-15 BY:                      Test No. 4 Date 2-11-12  
Company Mull Elevation 3928 KB 3917 GL                       
Address 1700 N. Waterfront Pkwy. B#1200 Wichita, KS 67206  
Co. Rep / Geo. Phil Askey Rig MDC 20  
Location: Sec. 15 Twp. 18s Rge. 45w Co.                      State KS CO

Interval Tested 4101 - 4185 Zone Tested Fr. Scott - Upper Cherokee  
Anchor Length 84 Drill Pipe Run 3909 Mud Wt. 9.1  
Top Packer Depth 4097 Drill Collars Run 179 Vis 52  
Bottom Packer Depth 4101 Wt. Pipe Run 0 WL 8.0  
Total Depth 4185 Chlorides 3400 ppm System LCM 3  
Blow Description 1/2" Blow.  
No return.  
No blow.  
No return.

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>5</u>	Feet of <u>M Oil spot in tool</u>	%gas	%oil	%water <u>100</u>	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 104 Gravity - API RW @ °F Chlorides - ppm  
(A) Initial Hydrostatic 2049 ☒ Test 1225 T-On Location 8:45  
(B) First Initial Flow 19 ☒ Jars 250 T-Started 9:25  
(C) First Final Flow 21 ☒ Safety Joint 75' T-Open 11:42  
(D) Initial Shut-In 183 ☒ Circ Sub 50 T-Pulled 13:55  
(E) Second Initial Flow 22 ☐ Hourly Standby                      T-Out 16:12  
(F) Second Final Flow 24 ☒ Mileage 178 RT 249.20 Comments                       
(G) Final Shut-In 68 ☐ Sampler                       
(H) Final Hydrostatic 2012 ☐ Straddle                      ☐ Ruined Shale Packer                       
☐ Shale Packer                      ☐ Ruined Packer                       
☐ Extra Packer                      ☐ Extra Copies                       
☐ Extra Recorder                      Sub Total 0  
☐ Day Standby                      Total 1849.20  
☐ Accessibility                      MP/DST Disc't                     

Initial Open 5  
Initial Shut-In 30  
Final Flow 30  
Final Shut-In 60

Approved By Phil Askey Our Representative Chuck Smith  
Sub Total 1849.20

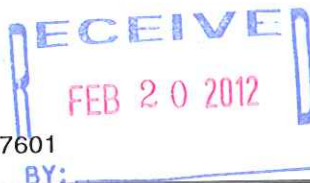
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TESTING INC.**

P.O. Box 1733 • Hays, Kansas 67601



**Test Ticket**

**NO. 45065**

Well Name & No. ETW 1-15 Test No. 5 Date 2/13/12  
 Company Mull Drilling Company Inc Elevation 3928 KB 3917 GL  
 Address 1700 W Waterfront PKWY B #1200 Wichita KS 67206-6037  
 Co. Rep / Geo. Phil Askey Rig Martin 20  
 Location: Sec. 15 Twp. 18S Rge. 45W Co. Kiowa State CO

Interval Tested 4426 - 4470 Zone Tested Morrow Sand  
 Anchor Length 44 Drill Pipe Run 4254 Mud Wt. 9.2  
 Top Packer Depth 4422 Drill Collars Run 178 Vis 46  
 Bottom Packer Depth 4426 Wt. Pipe Run 0 WL 8.0  
 Total Depth 4470 Chlorides 3,000 ppm System LCM 3#

Blow Description Built to 1/4" below  
No return below  
B.O.B. in 40 min.  
No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
<u>0</u>	<u>100 Feet Gas In Pipe</u>				

Rec Total 10 BHT 113 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2,261</u>	<input checked="" type="checkbox"/> Test <u>1225</u>	T-On Location <u>10:40</u>
(B) First Initial Flow <u>16</u>	<input type="checkbox"/> Jars	T-Started <u>11:15</u>
(C) First Final Flow <u>19</u>	<input type="checkbox"/> Safety Joint	T-Open <u>13:09</u>
(D) Initial Shut-In <u>227</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>16:44</u>
(E) Second Initial Flow <u>23</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>19:25</u>
(F) Second Final Flow <u>26</u>	<input checked="" type="checkbox"/> Mileage <u>178 RT 249.20</u>	Comments
(G) Final Shut-In <u>653</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2,213</u>	<input type="checkbox"/> Straddle	
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1474.20</u>
	Sub Total <u>1474.20</u>	MP/DST Disc't

Initial Open 5  
 Initial Shut-In 30  
 Final Flow 60  
 Final Shut-In 120

Approved By Phil Askey

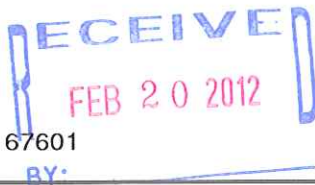
Our Representative [Signature]

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**TRILOBITE  
TESTING INC.**

P.O. Box 1733 • Hays, Kansas 67601



**Test Ticket**

**NO. 45066**

Well Name & No. ETW 1-15 Test No. 6 Date 2/15/12  
 Company Mull Drilling Company INC Elevation 3928 KB 3917 GL  
 Address 1700 N Water Front B#1200 Wichita KS 67206-6637  
 Co. Rep / Geo. Phil Askey Rig Martin 20  
 Location: Sec. 15 Twp. 78S Rge. 45W Co. Kiowa State CO.

Interval Tested 4765 - 4820 Zone Tested St. Louis & Spargen  
 Anchor Length 55 Drill Pipe Run 4599 Mud Wt. 9.1  
 Top Packer Depth 4761 Drill Collars Run 178 Vis. 53  
 Bottom Packer Depth 4765 Wt. Pipe Run 0 WL 8.0  
 Total Depth 4820 Chlorides 3,000 ppm System LCM 8#

Blow Description Built to 3/4" below  
No return below  
B.O. B. in 17 min.

Bled off for 5 min. No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>396 Feet Gas In Pipe</u>				
<u>30</u>	<u>66CM</u>	<u>10</u>	<u>20</u>	<u>70</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 120 Gravity — API RW — @ — ° F Chlorides — ppm  
 (A) Initial Hydrostatic 2,428 ☒ Test 1225 T-On Location 12:25  
 (B) First Initial Flow 13 ☐ Jars — T-Started 13:45  
 (C) First Final Flow 22 ☐ Safety Joint — T-Open 16:26  
 (D) Initial Shut-In 361 ☒ Circ Sub N/C T-Pulled 20:02  
 (E) Second Initial Flow 19 ☐ Hourly Standby — T-Out 22:20  
 (F) Second Final Flow 34 ☒ Mileage 178RT 249.20 Comments —  
 (G) Final Shut-In 858 ☐ Sampler —  
 (H) Final Hydrostatic 2,365 ☐ Straddle —  
☐ Shale Packer —  
☐ Extra Packer —  
☐ Extra Recorder —  
☐ Day Standby —  
☐ Accessibility —

Initial Open 5  
 Initial Shut-In 30  
 Final Flow 620  
 Final Shut-In 120  
 Sub Total 1474.20

Approved By Phil Askey Our Representative [Signature]  
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