

## DRILL STEM TEST REPORT

Prepared For: **Mull Driling Co.**

1700 N Waterfront PKWY  
B # 1200  
Wichita KS 67206

ATTN: Phil Askey

### **APC-Mako #1-19**

#### **19/44s/44w Cheyenne,CO**

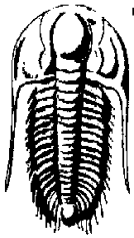
Start Date: 2012.01.07 @ 07:15:00

End Date: 2012.01.07 @ 14:56:45

Job Ticket #: 44984                      DST #: 1

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

Printed: 2012.01.13 @ 14:48:15



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

## DRILL STEM TEST REPORT

Mull Drilling Co.

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

**19/44s/44w Cheyenne, CO**

**APC-Mako #1-19**

Job Ticket: 44984

**DST#: 1**

Test Start: 2012.01.07 @ 07:15:00

### GENERAL INFORMATION:

Formation: **Mississippi - St. Lo**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:56:15

Time Test Ended: 14:56:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Will MacLean

Unit No: 48

**Interval: 5302.00 ft (KB) To 5350.00 ft (KB) (TVD)**

Reference Elevations: 4296.00 ft (KB)

Total Depth: 5350.00 ft (KB) (TVD)

4285.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 6668 Outside**

Press @ Run Depth: 44.60 psig @ 5303.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2012.01.07

End Date:

2012.01.07

Last Calib.: 2012.01.07

Start Time: 07:15:00

End Time:

14:56:45

Time On Btm: 2012.01.07 @ 09:55:45

Time Off Btm: 2012.01.07 @ 12:05:30

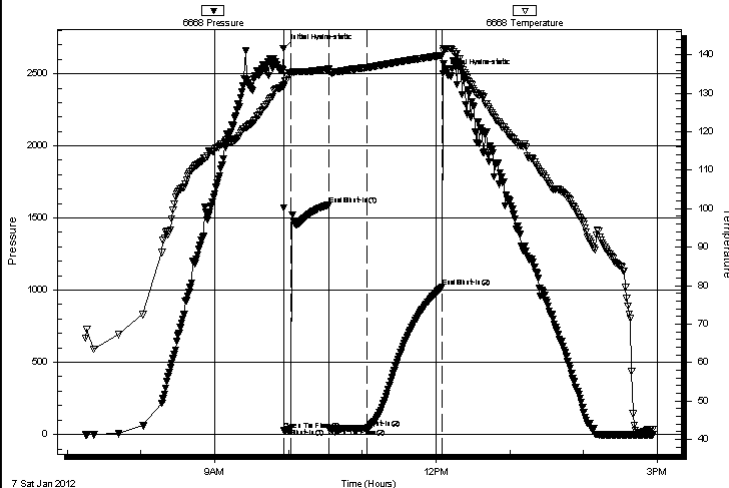
TEST COMMENT: IF- Surface Blow Built to 3/4"

ISI- No Blow

FF- Surface Blow 1/2" Blow

FSI- No Blow

Pressure vs. Time



PRESSURE SUMMARY

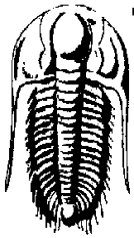
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2675.55	131.96	Initial Hydro-static
1	27.06	131.80	Open To Flow (1)
7	43.54	134.77	Shut-In(1)
37	1590.94	136.27	End Shut-In(1)
38	39.14	135.61	Open To Flow (2)
69	44.60	136.69	Shut-In(2)
130	1021.13	139.87	End Shut-In(2)
130	2502.70	140.97	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	WCM 2%w 98% m	0.30

Gas Rates

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



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

## DRILL STEM TEST REPORT

Mull Drilling Co.

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

**19/44s/44w Cheyenne, CO**

**APC-Mako #1-19**

Job Ticket: 44984

**DST#: 1**

Test Start: 2012.01.07 @ 07:15:00

### GENERAL INFORMATION:

Formation: **Mississippi - St. Lo**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:56:15

Time Test Ended: 14:56:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Will MacLean

Unit No: 48

**Interval: 5302.00 ft (KB) To 5350.00 ft (KB) (TVD)**

Total Depth: 5350.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 4296.00 ft (KB)

4285.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8358 Inside**

Press@RunDepth: psig @ 5303.00 ft (KB)

Start Date: 2012.01.07

End Date:

2012.01.07

Start Time: 07:15:00

End Time:

14:56:45

Capacity: 8000.00 psig

Last Calib.: 2012.01.07

Time On Btm:

Time Off Btm:

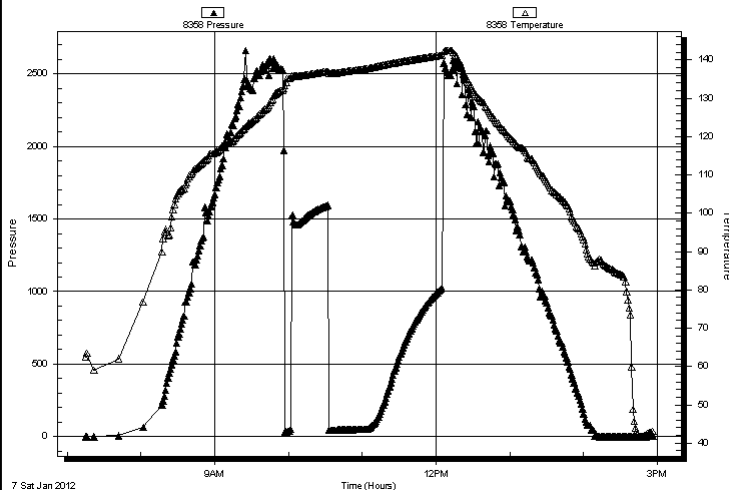
TEST COMMENT: IF- Surface Blow Built to 3/4"

IS- No Blow

FF- Surface Blow 1/2" Blow

FS- No Blow

Pressure vs. Time



### PRESSURE SUMMARY

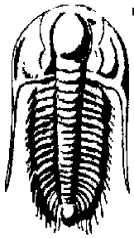
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
-------------	-----------------	--------------	------------

### Recovery

Length (ft)	Description	Volume (bbl)
60.00	WCM 2%w 98%m	0.30

### Gas Rates

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



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

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Mull Drilling Co.

**19/44s/44w Cheyenne, CO**

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

**APC-Mako #1-19**

Job Ticket: 44984

**DST#: 1**

Test Start: 2012.01.07 @ 07:15:00

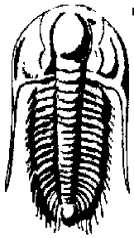
### Tool Information

Drill Pipe:	Length: 5135.00 ft	Diameter: 3.80 inches	Volume: 72.03 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: 24000.00 lb
Drill Collar:	Length: 174.00 ft	Diameter: 2.25 inches	Volume: 0.86 bbl	Weight to Pull Loose: 8000.00 lb
		Total Volume:	72.89 bbl	Tool Chased ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	5302.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	68.00 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			5283.00	
Shut In Tool	5.00			5288.00	
Hydraulic tool	5.00			5293.00	
Packer	5.00			5298.00	20.00 Bottom Of Top Packer
Packer	4.00			5302.00	
Stubb	1.00			5303.00	
Recorder	0.00	8358	Inside	5303.00	
Recorder	0.00	6668	Outside	5303.00	
Perforations	9.00			5312.00	
Change Over Sub	1.00			5313.00	
Drill Pipe	31.00			5344.00	
Change Over Sub	1.00			5345.00	
Bullnose	5.00			5350.00	48.00 Bottom Packers & Anchor

**Total Tool Length: 68.00**



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

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Co.

**19/44s/44w Cheyenne, CO**

1700 N Waterfront PKWY

**APC-Mako #1-19**

B # 1200

Job Ticket: 44984

**DST#: 1**

Wichita KS 67206

Test Start: 2012.01.07 @ 07:15:00

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: 64.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.17 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2100.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	WCM 2%w 98%m	0.295

Total Length: 60.00 ft

Total Volume: 0.295 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

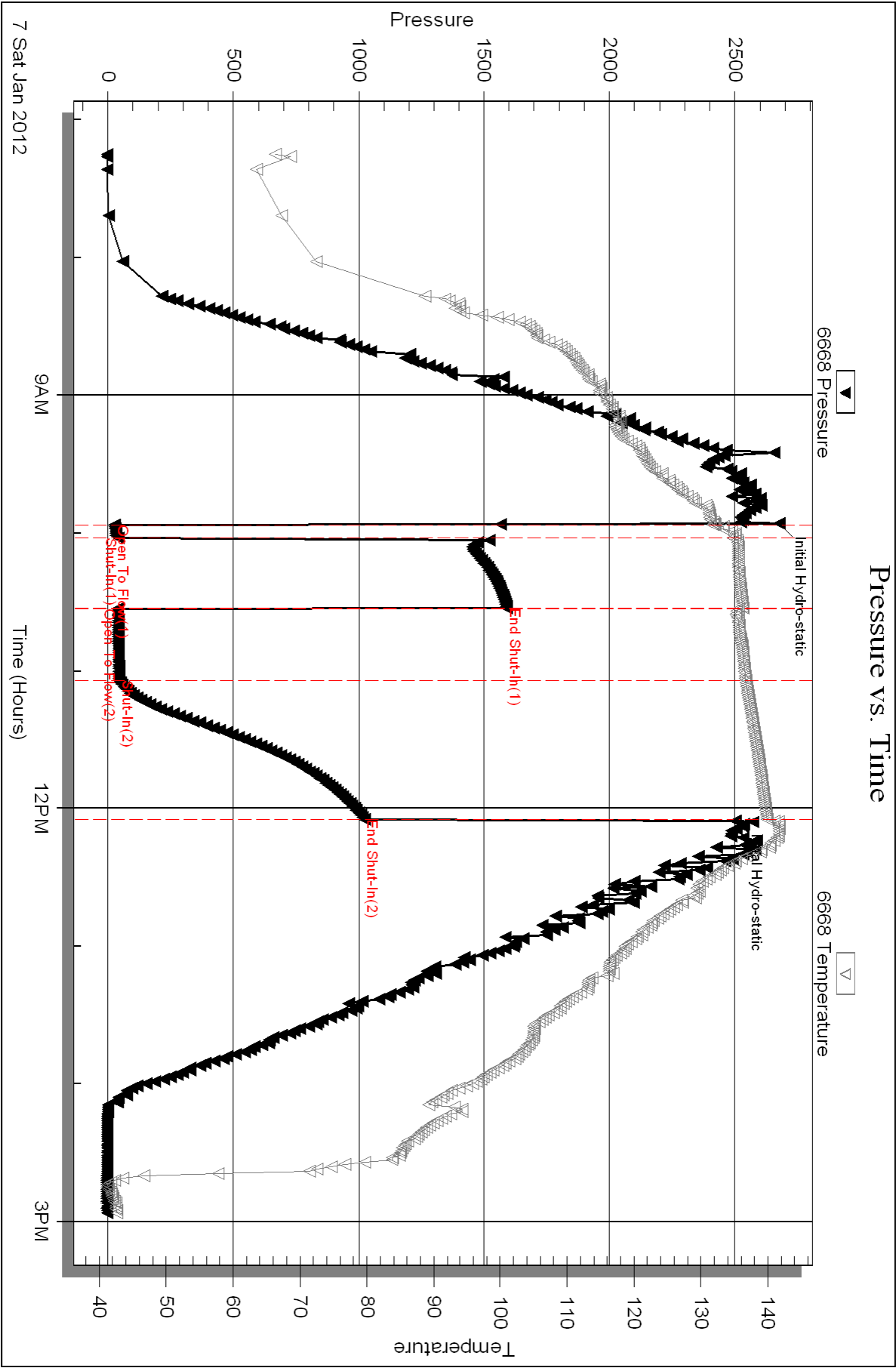
Recovery Comments:

Serial #: 6668

Outside Mull Drilling Co.

APC-Mako #1-19

DST Test Number: 1



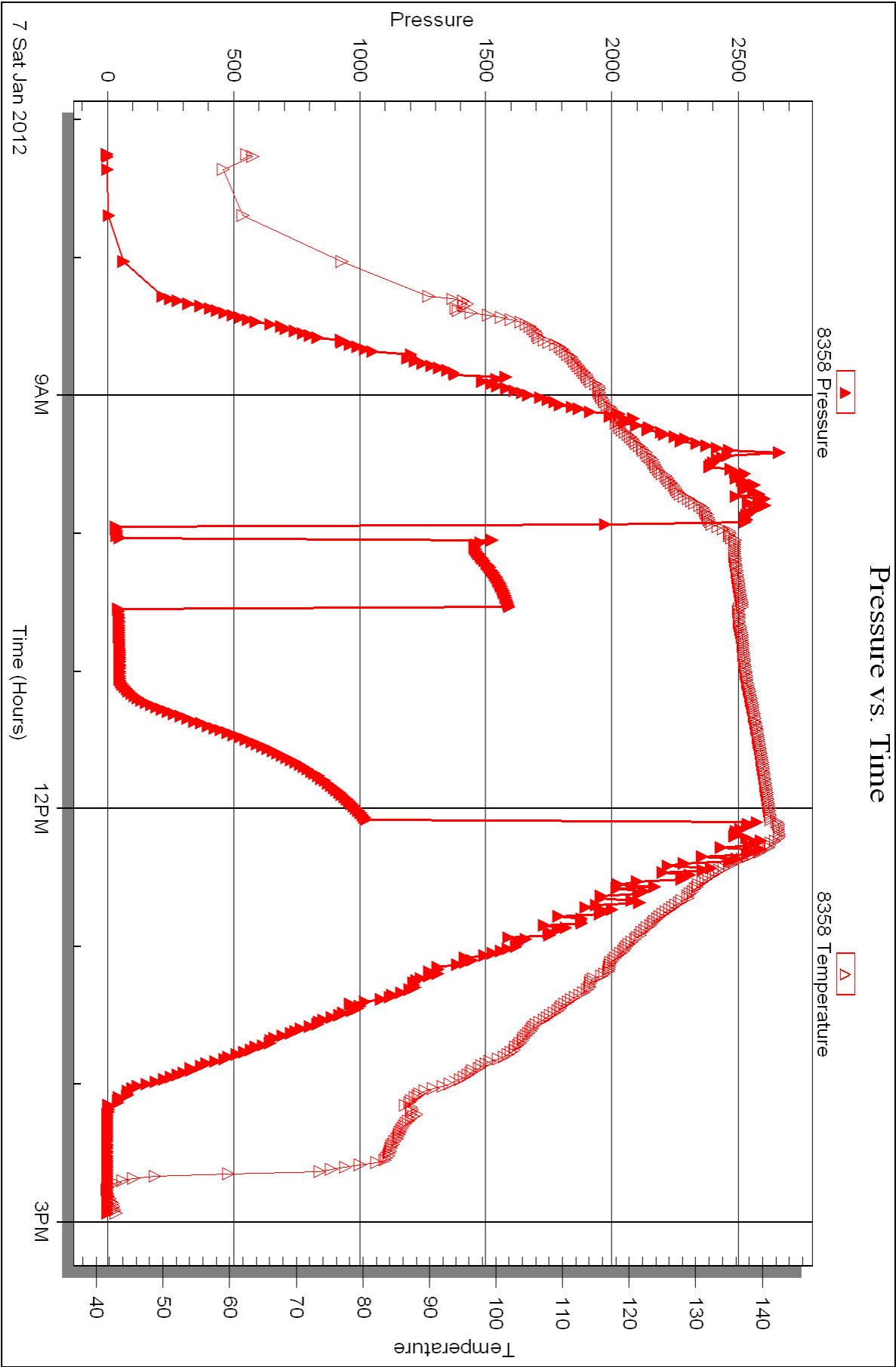
Serial #: 8358

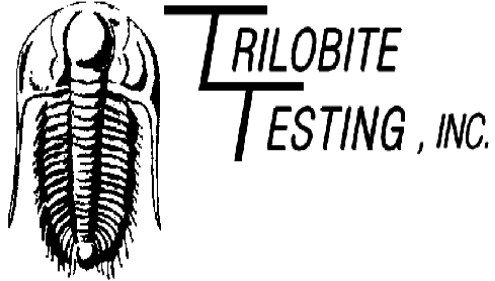
Inside

Mull Drilling Co.

APC-Mako #1-19

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co.**

1700 N Waterfront PKWY  
B # 1200  
Wichita KS 67206

ATTN: Phil Askey

### **APC-Mako #1-19**

#### **19/44s/44w Cheyenne,CO**

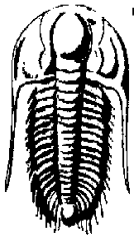
Start Date: 2012.01.08 @ 08:52:00

End Date: 2012.01.08 @ 16:28:45

Job Ticket #: 44985                      DST #: 2

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

Printed: 2012.01.13 @ 14:47:35



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

## DRILL STEM TEST REPORT

Mull Drilling Co.

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

**19/44s/44w Cheyenne, CO**

**APC-Mako #1-19**

Job Ticket: 44985

**DST#: 2**

Test Start: 2012.01.08 @ 08:52:00

### GENERAL INFORMATION:

Formation: **Mississippi - Sperge**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:47:15

Time Test Ended: 16:28:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 48

**Interval: 5343.00 ft (KB) To 5420.00 ft (KB) (TVD)**

Total Depth: 5420.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4296.00 ft (KB)

4285.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8358 Inside**

Press @ Run Depth: 26.50 psig @ 5344.00 ft (KB)

Start Date: 2012.01.08

End Date:

2012.01.08

Start Time: 08:52:00

End Time:

16:28:45

Capacity: 8000.00 psig

Last Calib.: 2012.01.08

Time On Btm: 2012.01.08 @ 11:47:00

Time Off Btm: 2012.01.08 @ 14:01:00

TEST COMMENT: IF- Surface Blow Built to 3/4"

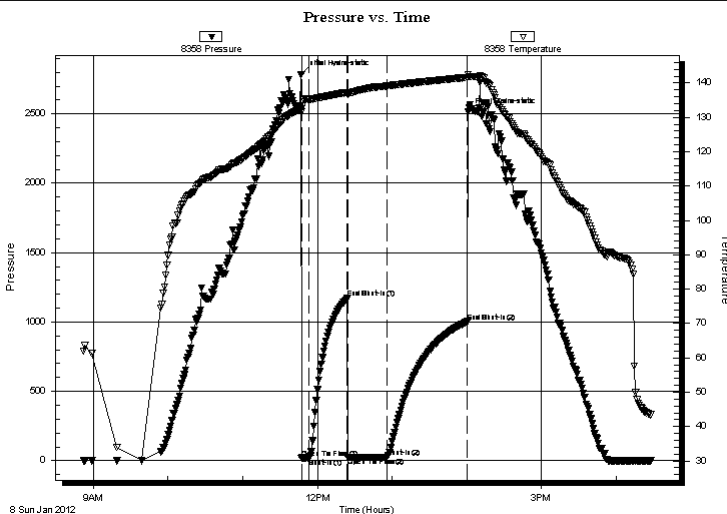
ISI- No Blow

FF- Weak Surface Blow 1/4"

FSI- No Blow

### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2784.06	132.38	Initial Hydro-static
1	19.95	131.66	Open To Flow (1)
7	20.71	135.18	Shut-In(1)
37	1169.88	137.28	End Shut-In(1)
38	23.34	136.75	Open To Flow (2)
69	26.50	139.15	Shut-In(2)
134	1003.18	141.67	End Shut-In(2)
134	2511.00	142.53	Final Hydro-static



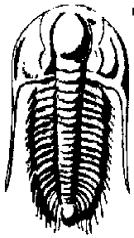
### Recovery

Length (ft)	Description	Volume (bbl)
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 Co.

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

**19/44s/44w Cheyenne, CO**

**APC-Mako #1-19**

Job Ticket: 44985

**DST#: 2**

Test Start: 2012.01.08 @ 08:52:00

### GENERAL INFORMATION:

Formation: **Mississippi - Sperge**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:47:15

Time Test Ended: 16:28:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 48

**Interval: 5343.00 ft (KB) To 5420.00 ft (KB) (TVD)**

Total Depth: 5420.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4296.00 ft (KB)

4285.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 6668 Outside**

Press @ Run Depth: psig @ 5344.00 ft (KB)

Start Date: 2012.01.08

End Date:

2012.01.08

Start Time: 08:52:00

End Time:

16:28:45

Capacity: 8000.00 psig

Last Calib.: 2012.01.08

Time On Btm:

Time Off Btm:

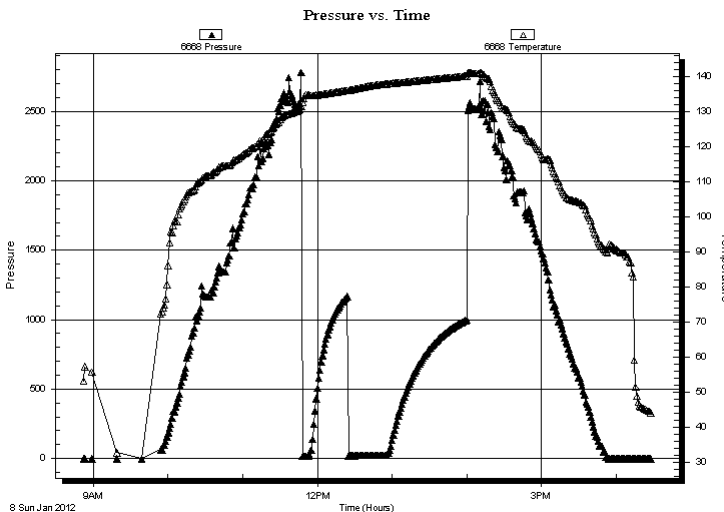
TEST COMMENT: IF- Surface Blow Built to 3/4"

ISI- No Blow

FF- Weak Surface Blow 1/4"

FSI- No Blow

### PRESSURE SUMMARY



Time  
(Min.)

Pressure  
(psig)

Temp  
(deg F)

Annotation

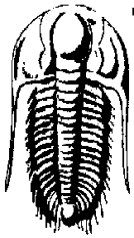
### Recovery

Length (ft)	Description	Volume (bbl)
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

**TOOL DIAGRAM**

Mull Drilling Co.

**19/44s/44w Cheyenne, CO**

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

**APC-Mako #1-19**

Job Ticket: 44985

**DST#: 2**

Test Start: 2012.01.08 @ 08:52:00

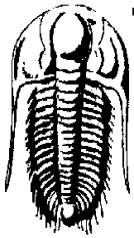
### Tool Information

Drill Pipe:	Length: 5168.00 ft	Diameter: 3.80 inches	Volume: 72.49 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: 24000.00 lb
Drill Collar:	Length: 174.00 ft	Diameter: 2.25 inches	Volume: 0.86 bbl	Weight to Pull Loose: 10000.00 lb
		Total Volume:	73.35 bbl	Tool Chased ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 78000.00 lb
Depth to Top Packer:	5343.00 ft			Final 78000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	77.00 ft			
Tool Length:	97.00 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			5324.00	
Shut In Tool	5.00			5329.00	
Hydraulic tool	5.00			5334.00	
Packer	5.00			5339.00	20.00 Bottom Of Top Packer
Packer	4.00			5343.00	
Stubb	1.00			5344.00	
Recorder	0.00	8358	Inside	5344.00	
Recorder	0.00	6668	Outside	5344.00	
Perforations	6.00			5350.00	
Change Over Sub	1.00			5351.00	
Drill Pipe	63.00			5414.00	
Change Over Sub	1.00			5415.00	
Bullnose	5.00			5420.00	77.00 Bottom Packers & Anchor

**Total Tool Length: 97.00**



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

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Co.

**19/44s/44w Cheyenne, CO**

1700 N Waterfront PKWY

**APC-Mako #1-19**

B # 1200

Job Ticket: 44985

**DST#: 2**

Wichita KS 67206

Test Start: 2012.01.08 @ 08:52:00

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: 60.00 sec/qt

Cushion Volume:

bbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
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 #: 8358

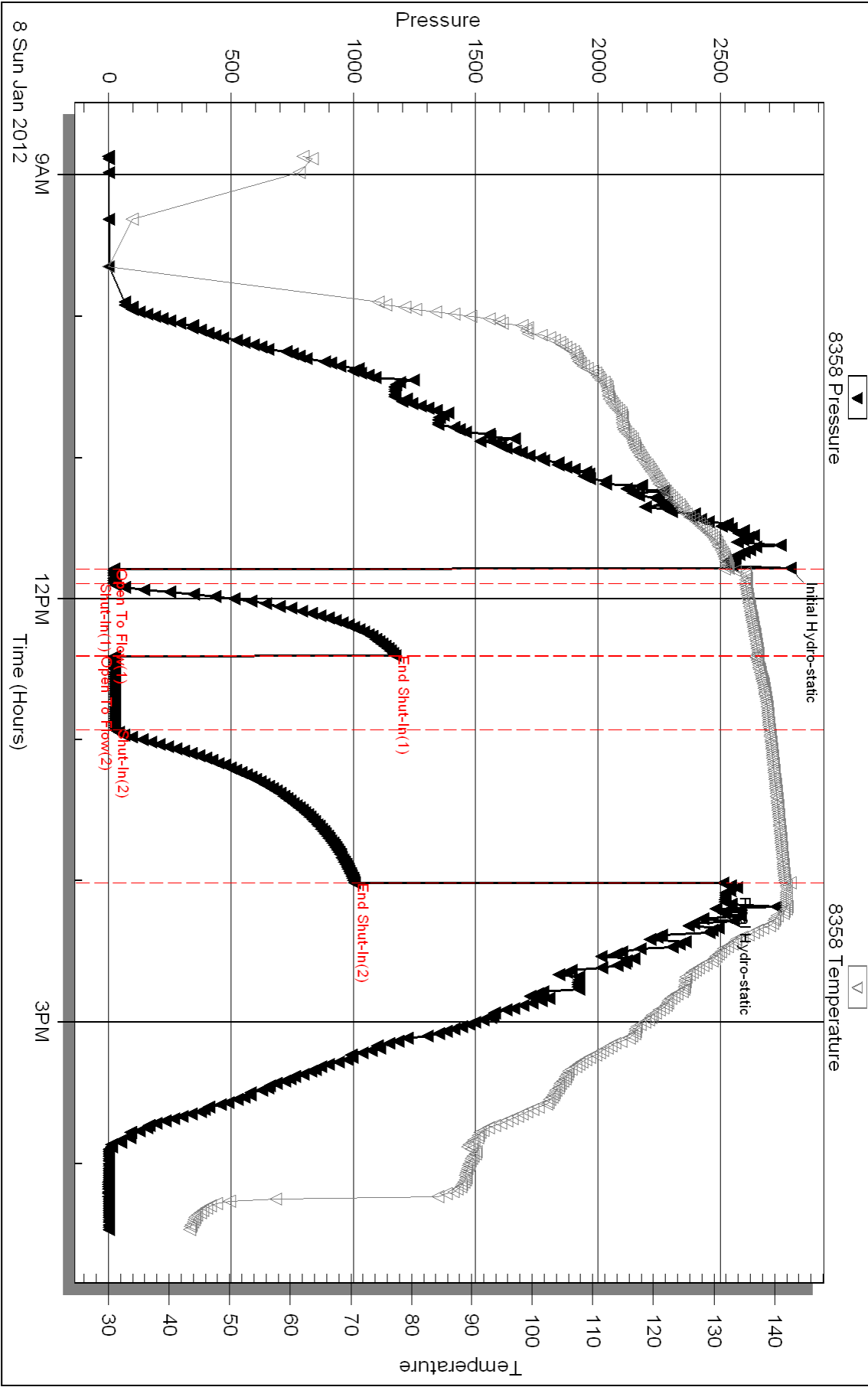
Inside

Mull Drilling Co.

APC-Mako #1-19

DST Test Number: 2

# Pressure vs. Time

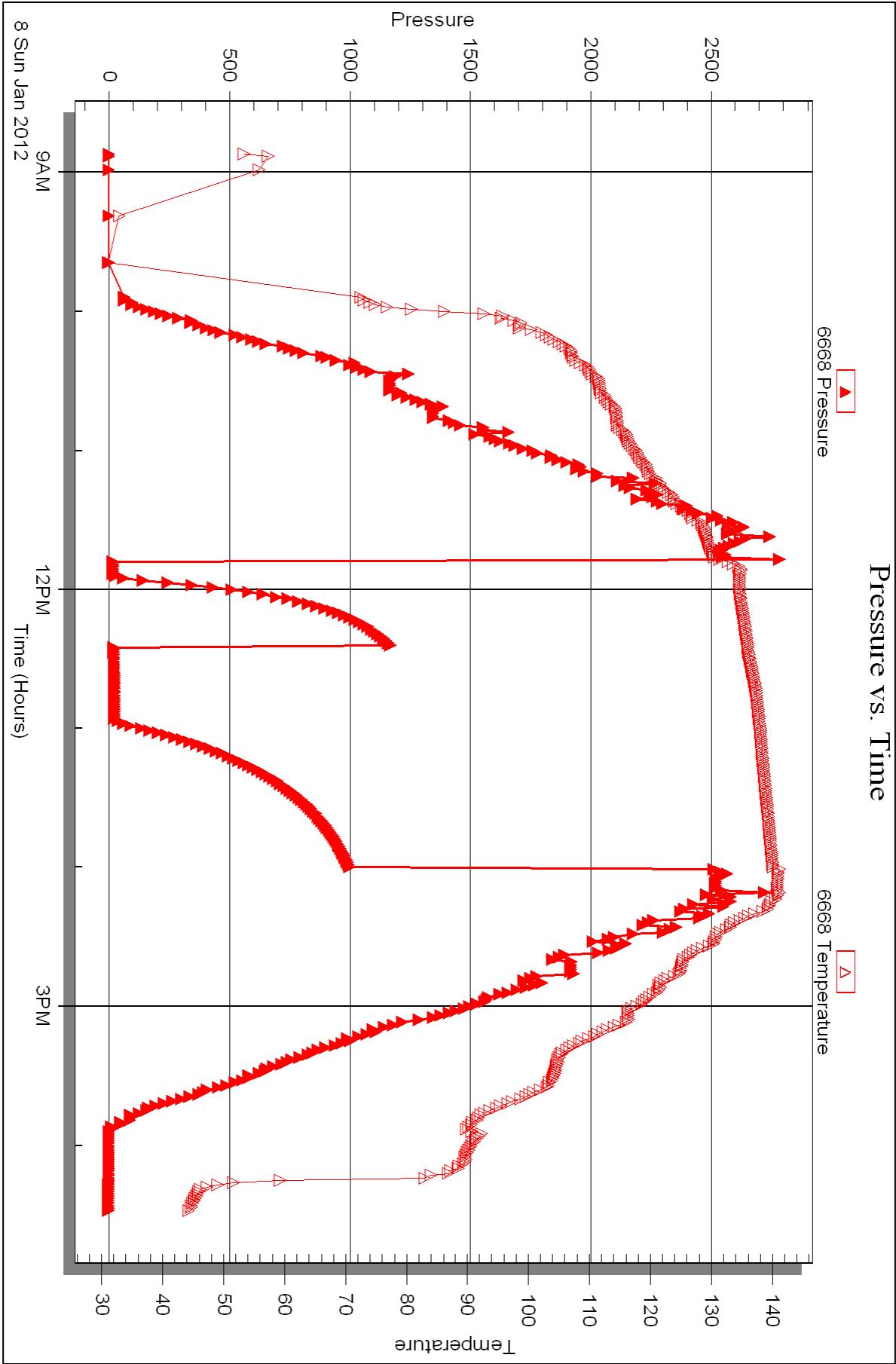


Serial #: 6668

Outside      Mall Drilling Co.

APC-Mako #1-19

DST Test Number: 2





**TRILOBITE  
TESTING INC.**

P.O. Box 1733 • Hays, Kansas 67601

RECEIVED  
JAN 13 2012

**Test Ticket**

NO. **44984**

Well Name & No. APC-MaKo #1-19 BY:                      Test No. DST #1 Date 1-7-12  
Company Mull Drilling Co. Elevation 4296 KB 4285 GL  
Address 1700 N Waterfront PKWY B#1200 Wichita KS 67206  
Co. Rep / Geo. Phil Askey Rig Murfin Rig #20  
Location: Sec. 19 Twp. 14s Rge. 44w Co. Cheyenne State CO

Interval Tested 5302-5350 Zone Tested Mississippi - St. Louis  
Anchor Length 48' Drill Pipe Run 5135 Mud Wt. 9.1  
Top Packer Depth 5298 Drill Collars Run 174 Vis 64  
Bottom Packer Depth 5302 Wt. Pipe Run 0 WL 7.2  
Total Depth 5350 Chlorides 2100 ppm System LCM 1216

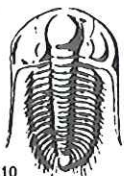
Blow Description IF- Surface Blow Built to 34"  
ISI- No Blow  
FF- Surface Blow "1/2" Blow "  
FSI- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>WCM</u>			<u>2%</u>	<u>98%</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 60 BHT 135 Gravity                      API RW                      @                      ° F Chlorides                      ppm  
(A) Initial Hydrostatic 2675 ☒ Test 1325 T-On Location 4:33 AM  
(B) First Initial Flow 27 ☐ Jars                      T-Started 7:15 AM  
(C) First Final Flow 43 ☐ Safety Joint                      T-Open 9:56 AM  
(D) Initial Shut-In 1590 ☒ Circ Sub N/C T-Pulled 12:06  
(E) Second Initial Flow 39 ☐ Hourly Standby                      T-Out 14:56  
(F) Second Final Flow 44 ☒ Mileage 216 R/T 30240 Comments                       
(G) Final Shut-In 1021 ☐ Sampler                       
(H) Final Hydrostatic 2502 ☐ Straddle                      ☐ Ruined Shale Packer                       
☐ Shale Packer                      ☐ Ruined Packer                       
☐ Extra Packer                      ☐ Extra Copies                       
☐ Extra Recorder                      Sub Total 0  
☐ Day Standby                      Total 1627.40  
☐ Accessibility                      MP/DST Disc't                     

Initial Open 5  
Initial Shut-In 30  
Final Flow 30  
Final Shut-In 60  
Sub Total 1627.40

Approved By Phil Askey Our Representative Lin Ma  
TriLOBITE TESTING INC. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

RECEIVED  
JAN 13 2012

## Test Ticket

NO. 44985

Well Name & No. APC - MaKo #1-19 BY:                      Test No. DST #2 Date 1-8-12  
Company Mull Drilling Co Elevation 4296 KB 4285 GL  
Address 1700 N Waterfront PKWY B#1200 Wichita KS 67206  
Co. Rep / Geo. Phil Askey Rig Martin Rig #20  
Location: Sec. 19 Twp. 44s Rge. 44w Co. Cheyenne State CO

Interval Tested 5343-5420 Zone Tested Mississippi - Spergen  
Anchor Length 77 Drill Pipe Run 5168 Mud Wt. 9.2  
Top Packer Depth 5339 Drill Collars Run 174 Vis 60  
Bottom Packer Depth 5343 Wt. Pipe Run 0 WL 8.0  
Total Depth 5420 Chlorides 2200 ppm System LCM 1216  
Blow Description IF - Surface Blow Built to 3/4"  
ISI - No Blow  
FF Weak Surface Blow (1/4")  
FSI - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT Gravity API RW @ °F Chlorides ppm  
(A) Initial Hydrostatic 2784 ☒ Test 1325 T-On Location 8:20 AM  
(B) First Initial Flow 19 ☐ Jars T-Started 8:52 AM  
(C) First Final Flow 20 ☐ Safety Joint T-Open 11:47 AM  
(D) Initial Shut-In 1169 ☒ Circ Sub N/C T-Pulled 14:01  
(E) Second Initial Flow 23 ☐ Hourly Standby T-Out 16:28  
(F) Second Final Flow 26 ☒ Mileage 216 R/T x 2 Comments 604.80  
(G) Final Shut-In 1003 ☐ Sampler  
(H) Final Hydrostatic 2511 ☐ Straddle ☐ Ruined Shale Packer

Initial Open 5 ☐ Shale Packer ☒ Ruined Packer 320  
Initial Shut-In 30 ☐ Extra Packer ☐ Extra Copies  
Final Flow 30 ☐ Extra Recorder Sub Total 320  
Final Shut-In 60 ☐ Day Standby Total 2249.80  
☐ Accessibility MP/DST Disc't  
Sub Total 1929.80

Approved By

Our Representative

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