



DRILL STEM TEST REPORT

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

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.08 @ 17:18:00

End Date: 2014.05.09 @ 02:06:15

Job Ticket #: 57066 DST #: 1

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

Printed: 2014.05.16 @ 10:27:05



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57066

DST#: 1

ATTN: Steve Reed

Test Start: 2014.05.08 @ 17:18:00

GENERAL INFORMATION:

Formation: **LKC "E-G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:07:15

Time Test Ended: 02:06:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Samuel Esparza

Unit No: 71

Interval: 4203.00 ft (KB) To 4253.00 ft (KB) (TVD)

Reference Elevations: 3428.00 ft (KB)

Total Depth: 4253.00 ft (KB) (TVD)

3419.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 9.00 ft

Serial #: 8845 Inside

Press@RunDepth: 1115.90 psig @ 4204.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.08

End Date:

2014.05.09

Last Calib.:

2014.05.09

Start Time: 17:18:05

End Time:

02:06:15

Time On Btm:

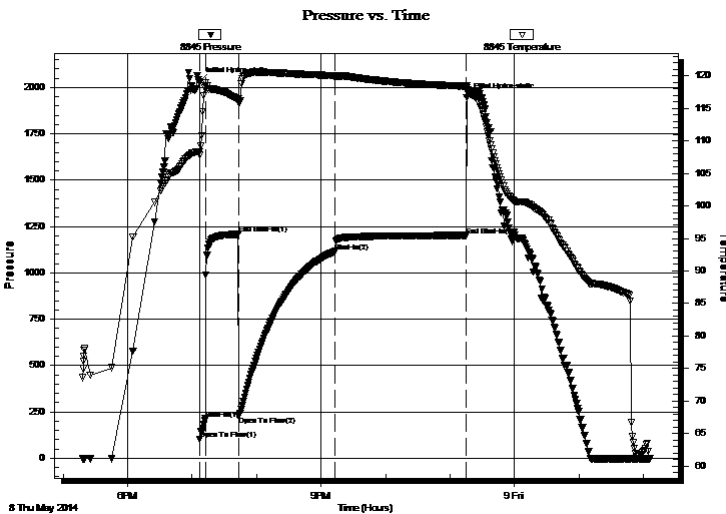
2014.05.08 @ 19:07:00

Time Off Btm:

2014.05.08 @ 23:15:30

TEST COMMENT: IF: BOB @ 2 min.
IS: No Return.
FF: BOB @ 2 min,
FS: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2033.44	108.36	Initial Hydro-static
1	102.59	107.81	Open To Flow (1)
6	213.53	118.49	Shut-In(1)
37	1208.75	116.46	End Shut-In(1)
37	227.09	115.94	Open To Flow (2)
126	1115.90	119.95	Shut-In(2)
248	1202.08	118.38	End Shut-In(2)
249	1944.02	118.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1890.00	OMCW 5o 5m 90w	26.51
560.00	OWCM 5o 40w 55m	7.86

Gas Rates

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



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DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

ATTN: Steve Reed

Job Ticket: 57066

DST#: 1

Test Start: 2014.05.08 @ 17:18:00

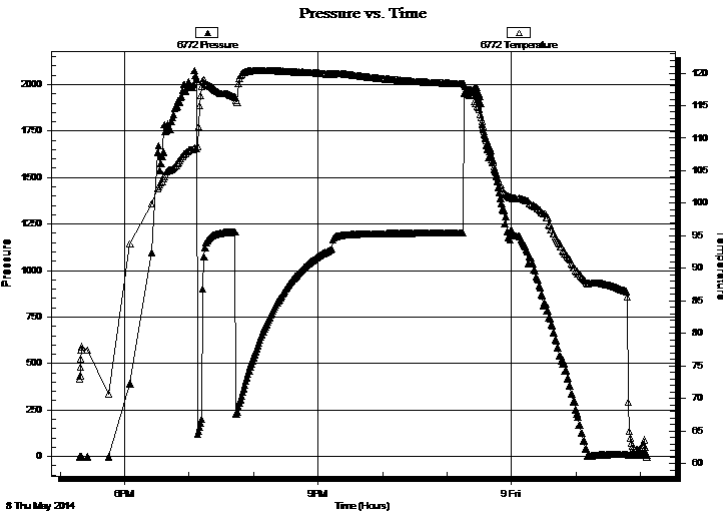
GENERAL INFORMATION:

Formation: **LKC "E-G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:07:15
 Time Test Ended: 02:06:15
 Interval: **4203.00 ft (KB) To 4253.00 ft (KB) (TVD)**
 Total Depth: 4253.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Samuel Esparza
 Unit No: 71
 Reference Elevations: 3428.00 ft (KB)
 3419.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 6772 Outside

Press@RunDepth: psig @ 4204.00 ft (KB)
 Start Date: 2014.05.08 End Date: 2014.05.09
 Start Time: 17:18:05 End Time: 02:06:30
 Capacity: 8000.00 psig
 Last Calib.: 2014.05.09
 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: BOB @ 2 min.
 IS: No Return.
 FF: BOB @ 2 min,
 FS: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
1890.00	OMCW 5o 5m 90w	26.51
560.00	OWCM 5o 40w 55m	7.86

Gas Rates

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



**TRILOBITE
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DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57066

DST#: 1

ATTN: Steve Reed

Test Start: 2014.05.08 @ 17:18:00

Tool Information

Drill Pipe:	Length: 4198.00 ft	Diameter: 3.80 inches	Volume: 58.89 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 58.89 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	4203.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	70.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4184.00	
Shut In Tool	5.00			4189.00	
Hydraulic tool	5.00			4194.00	
Packer	5.00			4199.00	20.00 Bottom Of Top Packer
Packer	4.00			4203.00	
Stubb	1.00			4204.00	
Recorder	0.00	6772	Outside	4204.00	
Recorder	0.00	8845	Inside	4204.00	
Perforations	11.00			4215.00	
Change Over Sub	1.00			4216.00	
Drill Pipe	31.00			4247.00	
Change Over Sub	1.00			4248.00	
Bullnose	5.00			4253.00	50.00 Bottom Packers & Anchor

Total Tool Length: 70.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57066

DST#: 1

ATTN: Steve Reed

Test Start: 2014.05.08 @ 17:18:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

20000 ppm

Viscosity: 45.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1890.00	OMCW 5o 5m 90w	26.512
560.00	OWCM 5o 40w 55m	7.855

Total Length: 2450.00 ft Total Volume: 34.367 bbl

Num Fluid Samples: 0

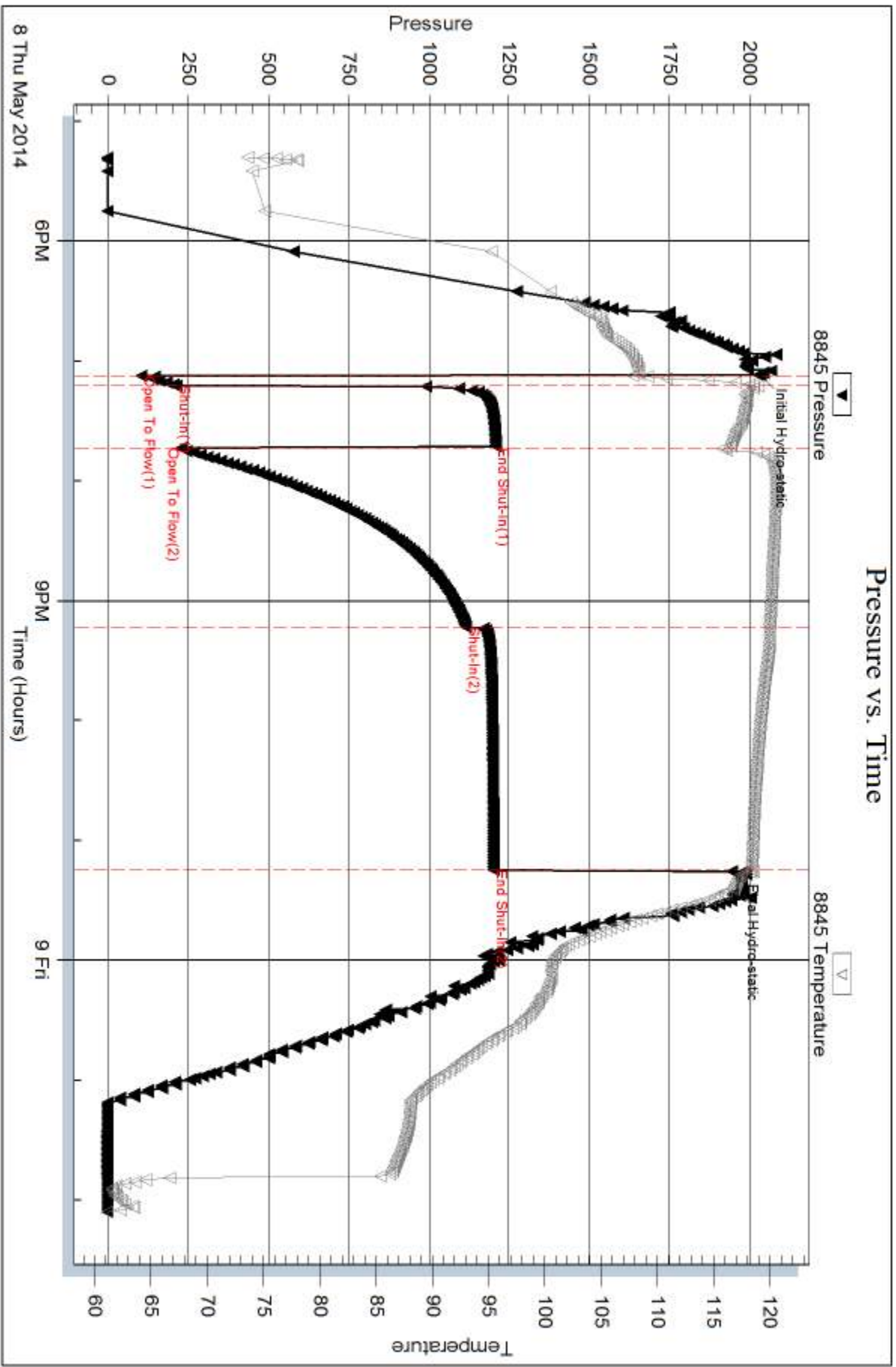
Num Gas Bombs: 0

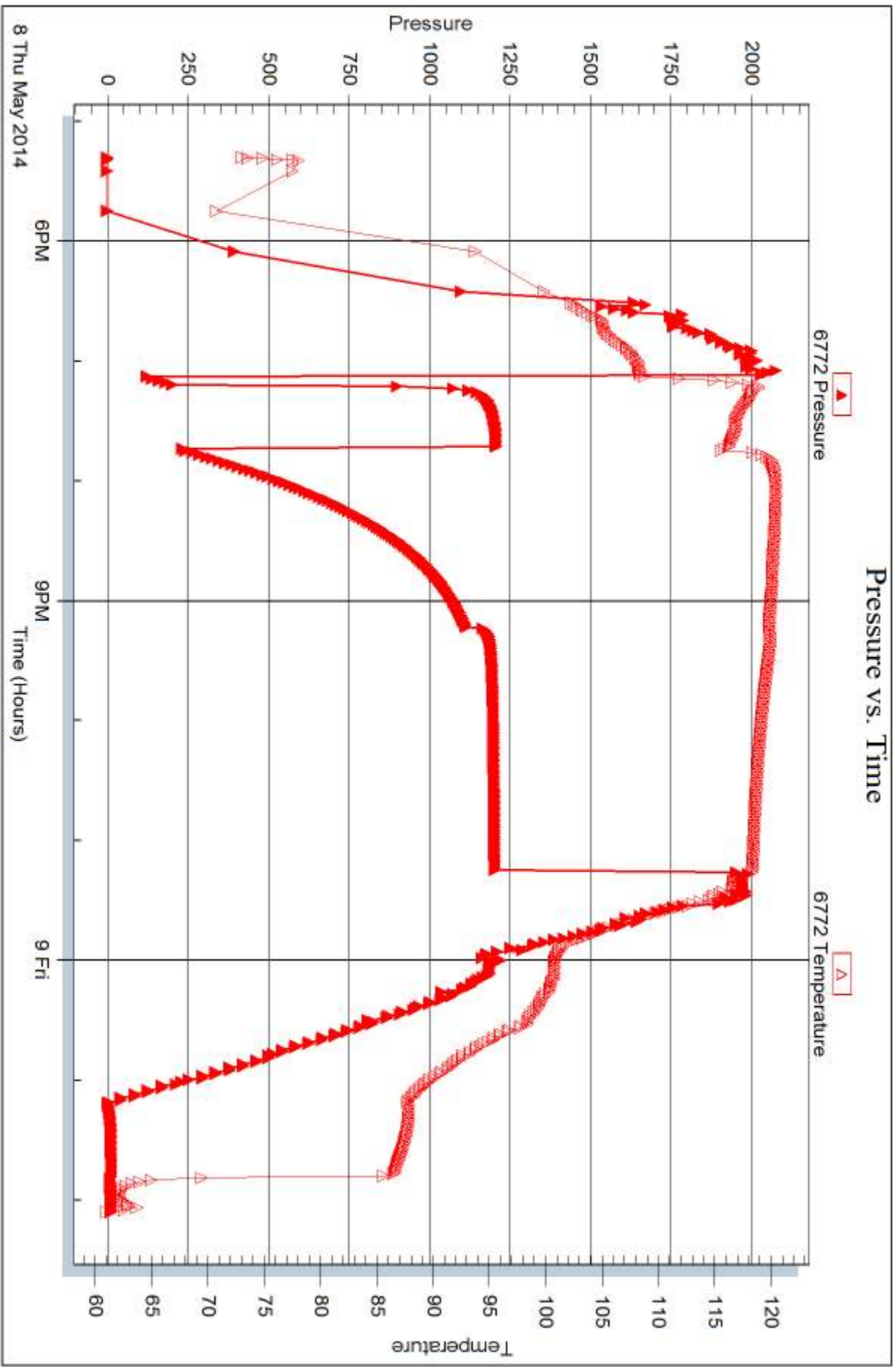
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Water Salinity: .469 @ 48 degrees= 20,000







DRILL STEM TEST REPORT

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

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.09 @ 13:30:00

End Date: 2014.05.09 @ 22:10:15

Job Ticket #: 57067 DST #: 2

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

Printed: 2014.05.16 @ 10:25:56



**TRILOBITE
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DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57067

DST#: 2

ATTN: Steve Reed

Test Start: 2014.05.09 @ 13:30:00

GENERAL INFORMATION:

Formation: **LCK " H "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:12:15

Time Test Ended: 22:10:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Samuel Esparza

Unit No: 71

Interval: 4293.00 ft (KB) To 4335.00 ft (KB) (TVD)

Reference Elevations: 3428.00 ft (KB)

Total Depth: 4335.00 ft (KB) (TVD)

3419.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 9.00 ft

Serial #: 8845

Inside

Press@RunDepth: 690.79 psig @ 4294.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.09

End Date:

2014.05.09

Last Calib.:

2014.05.09

Start Time: 13:30:05

End Time:

22:10:15

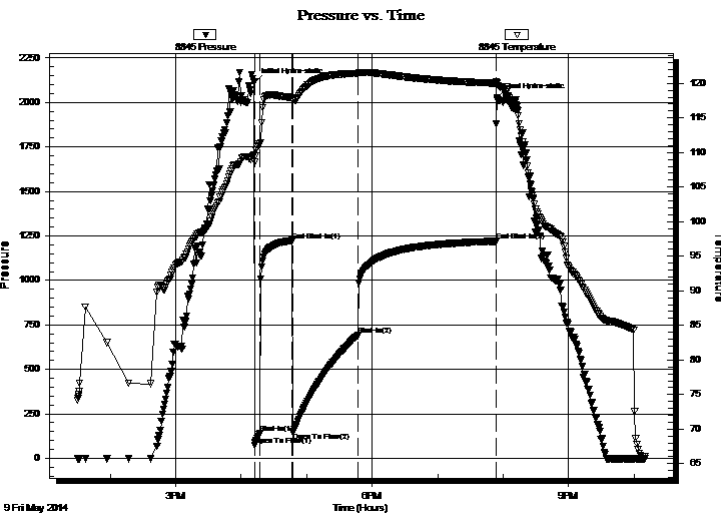
Time On Btm:

2014.05.09 @ 16:12:00

Time Off Btm:

2014.05.09 @ 19:54:30

TEST COMMENT: IF: BOB @ 3 min.
IS: No Return.
FF: BOB @ 3 min.
FS: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2114.53	109.62	Initial Hydro-static
1	71.50	108.56	Open To Flow (1)
5	140.86	111.25	Shut-In(1)
35	1224.80	117.89	End Shut-In(1)
36	147.78	117.49	Open To Flow (2)
95	690.79	121.45	Shut-In(2)
222	1220.10	120.01	End Shut-In(2)
223	2025.58	120.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1635.00	MCW 10m 90w	22.93
315.00	MCW 40m 60w	4.42

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

ATTN: Steve Reed

Job Ticket: 57067

DST#: 2

Test Start: 2014.05.09 @ 13:30:00

GENERAL INFORMATION:

Formation: **LCK "H"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:12:15

Time Test Ended: 22:10:15

Interval: 4293.00 ft (KB) To 4335.00 ft (KB) (TVD)

Total Depth: 4335.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole (Reset)

Tester: Samuel Esparza

Unit No: 71

Reference Elevations: 3428.00 ft (KB)

3419.00 ft (CF)

KB to GR/CF: 9.00 ft

Serial #: 6772 Outside

Press@RunDepth: psig @ 4294.00 ft (KB)

Start Date: 2014.05.09

End Date:

2014.05.09

Start Time: 13:30:05

End Time:

22:10:30

Capacity: 8000.00 psig

Last Calib.:

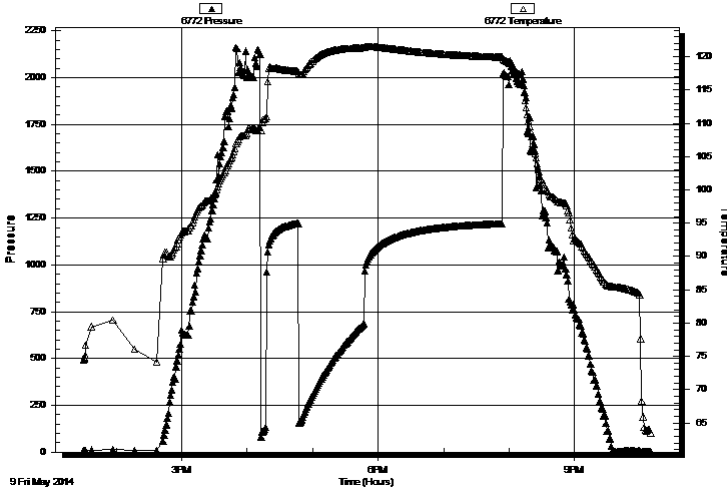
2014.05.09

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: BOB @ 3 min.
IS: No Return.
FF: BOB @ 3 min.
FS: No Return.

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
1635.00	MCW 10m 90w	22.93
315.00	MCW 40m 60w	4.42

Gas Rates

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

* Recovery from multiple tests



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DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57067

DST#: 2

ATTN: Steve Reed

Test Start: 2014.05.09 @ 13:30:00

Tool Information

Drill Pipe:	Length: 4293.00 ft	Diameter: 3.80 inches	Volume: 60.22 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 60.22 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	4293.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	42.00 ft			
Tool Length:	62.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4274.00	
Shut In Tool	5.00			4279.00	
Hydraulic tool	5.00			4284.00	
Packer	5.00			4289.00	20.00 Bottom Of Top Packer
Packer	4.00			4293.00	
Stubb	1.00			4294.00	
Recorder	0.00	6772	Outside	4294.00	
Recorder	0.00	8845	Inside	4294.00	
Perforations	3.00			4297.00	
Change Over Sub	1.00			4298.00	
Drill Pipe	31.00			4329.00	
Change Over Sub	1.00			4330.00	
Bullnose	5.00			4335.00	42.00 Bottom Packers & Anchor

Total Tool Length: 62.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57067

DST#: 2

ATTN: Steve Reed

Test Start: 2014.05.09 @ 13:30:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

40000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1635.00	MCW 10m 90w	22.935
315.00	MCW 40m 60w	4.419

Total Length: 1950.00 ft Total Volume: 27.354 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

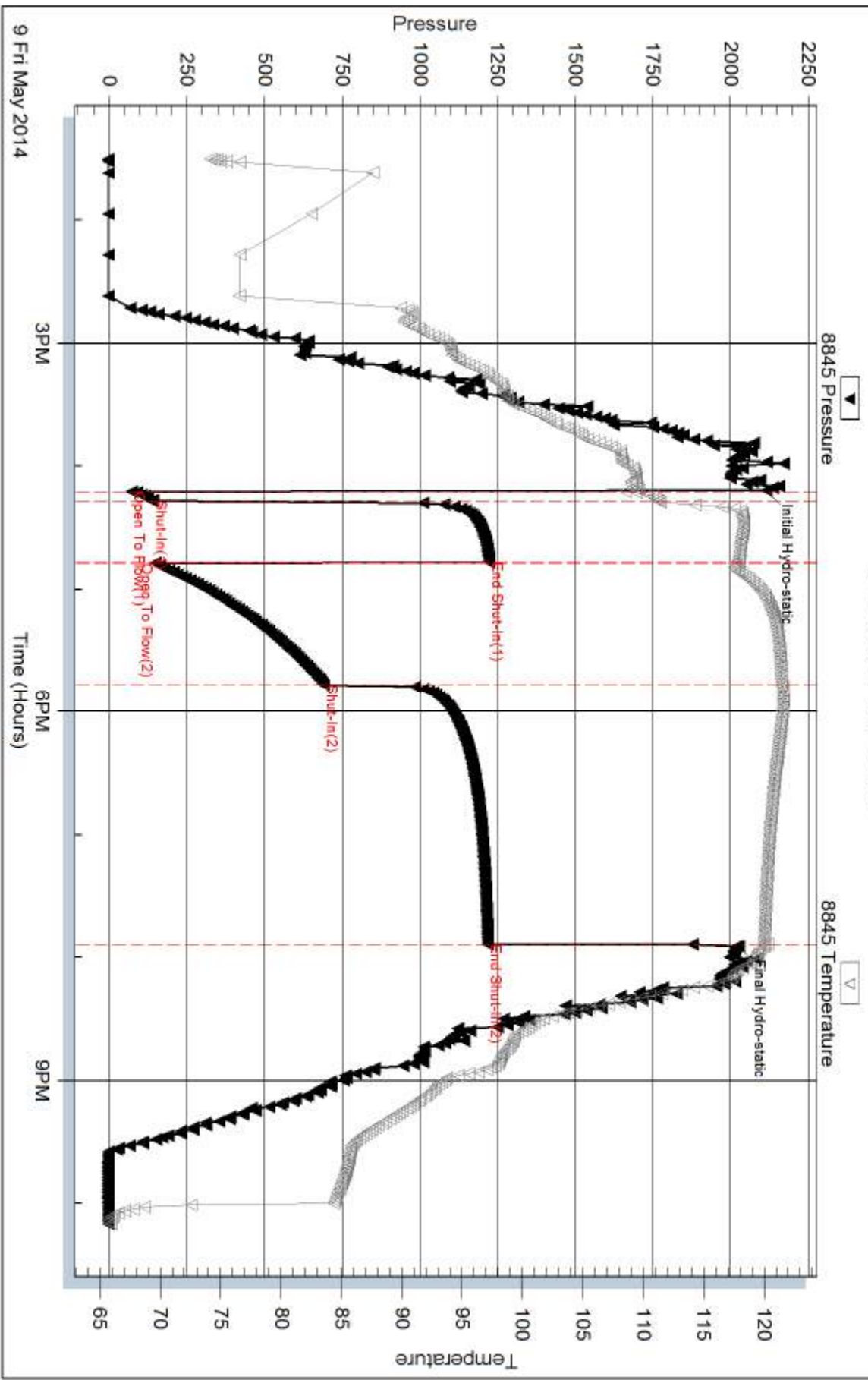
Serial #:

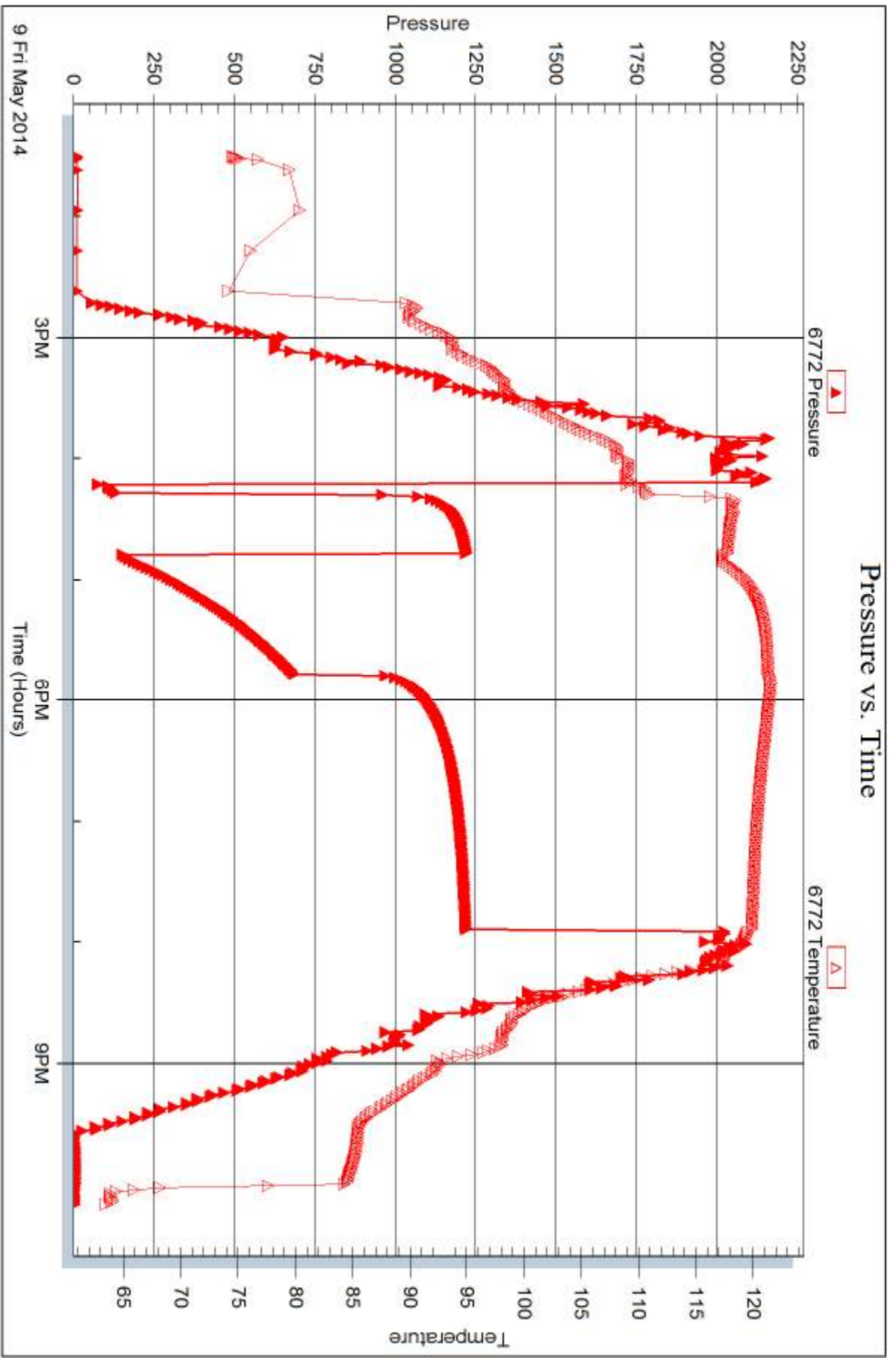
Laboratory Name:

Laboratory Location:

Recovery Comments: Water Salinity: .175 @ 71 degrees= 40,000 ppm

Pressure vs. Time







DRILL STEM TEST REPORT

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

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.11 @ 00:23:00

End Date: 2014.05.11 @ 05:38:45

Job Ticket #: 57068 DST #: 3

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

Printed: 2014.05.16 @ 10:24:01



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57068

DST#: 3

ATTN: Steve Reed

Test Start: 2014.05.11 @ 00:23:00

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:14:00

Time Test Ended: 05:38:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Samuel Esparza

Unit No: 71

Interval: 4537.00 ft (KB) To 4575.00 ft (KB) (TVD)

Reference Elevations: 3428.00 ft (KB)

Total Depth: 4575.00 ft (KB) (TVD)

3419.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 9.00 ft

Serial #: 8845 Inside

Press@RunDepth: 13.48 psig @ 4538.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.11

End Date:

2014.05.11

Last Calib.:

2014.05.11

Start Time: 00:23:05

End Time:

05:38:44

Time On Btm:

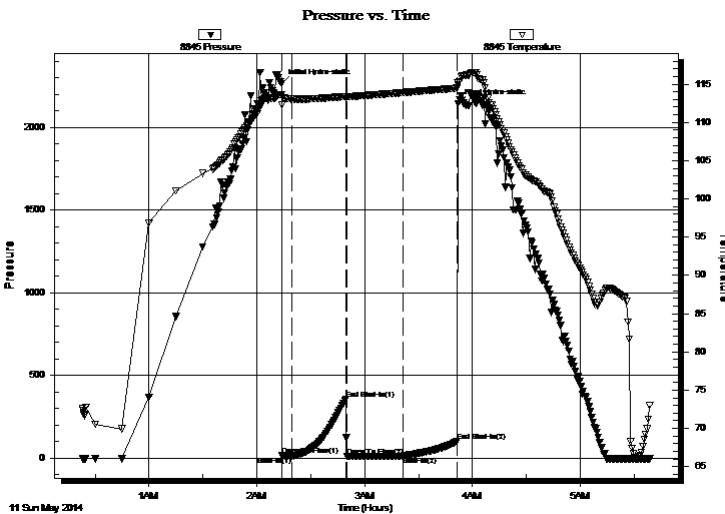
2014.05.11 @ 02:13:45

Time Off Btm:

2014.05.11 @ 03:51:45

TEST COMMENT: IF: 1/4" Blow .
IS: No Return.
FF: No Blow .
FS: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2264.75	113.66	Initial Hydro-static
1	15.99	112.26	Open To Flow (1)
6	14.23	113.05	Shut-In(1)
36	356.90	113.39	End Shut-In(1)
37	12.00	113.34	Open To Flow (2)
68	13.48	113.88	Shut-In(2)
98	101.93	114.47	End Shut-In(2)
98	2141.36	115.13	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Scum On Top)	0.07

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57068

DST#: 3

ATTN: Steve Reed

Test Start: 2014.05.11 @ 00:23:00

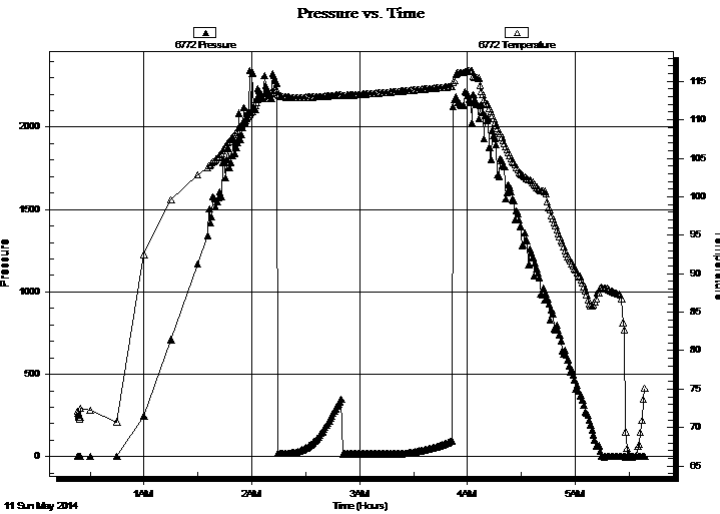
GENERAL INFORMATION:

Formation: Marmaton		
Deviated: No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 02:14:00		Tester: Samuel Esparza
Time Test Ended: 05:38:45		Unit No: 71
Interval: 4537.00 ft (KB) To 4575.00 ft (KB) (TVD)		Reference Elevations: 3428.00 ft (KB)
Total Depth: 4575.00 ft (KB) (TVD)		3419.00 ft (CF)
Hole Diameter: 7.88 inches	Hole Condition: Good	KB to GR/CF: 9.00 ft

Serial #: 6772 Outside

Press@RunDepth: psig @ 4538.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.05.11	End Date: 2014.05.11
Start Time: 00:23:05	End Time: 05:38:59
	Last Calib.: 2014.05.11
	Time On Btm:
	Time Off Btm:

TEST COMMENT: IF: 1/4" Blow .
IS: No Return.
FF: No Blow .
FS: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Scum On Top)	0.07

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57068

DST#: 3

ATTN: Steve Reed

Test Start: 2014.05.11 @ 00:23:00

Tool Information

Drill Pipe:	Length: 4542.00 ft	Diameter: 3.80 inches	Volume: 63.71 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 95000.00 lb
			<u>Total Volume: 63.71 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 47000.00 lb
Depth to Top Packer:	4537.00 ft			Final 47000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	58.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4518.00	
Shut In Tool	5.00			4523.00	
Hydraulic tool	5.00			4528.00	
Packer	5.00			4533.00	20.00 Bottom Of Top Packer
Packer	4.00			4537.00	
Stubb	1.00			4538.00	
Recorder	0.00	6772	Outside	4538.00	
Recorder	0.00	8845	Inside	4538.00	
Perforations	32.00			4570.00	
Bullnose	5.00			4575.00	38.00 Bottom Packers & Anchor
Total Tool Length:	58.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57068

DST#: 3

ATTN: Steve Reed

Test Start: 2014.05.11 @ 00:23:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.58 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 8000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100m (Oil Scum On Top)	0.070

Total Length: 5.00 ft Total Volume: 0.070 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

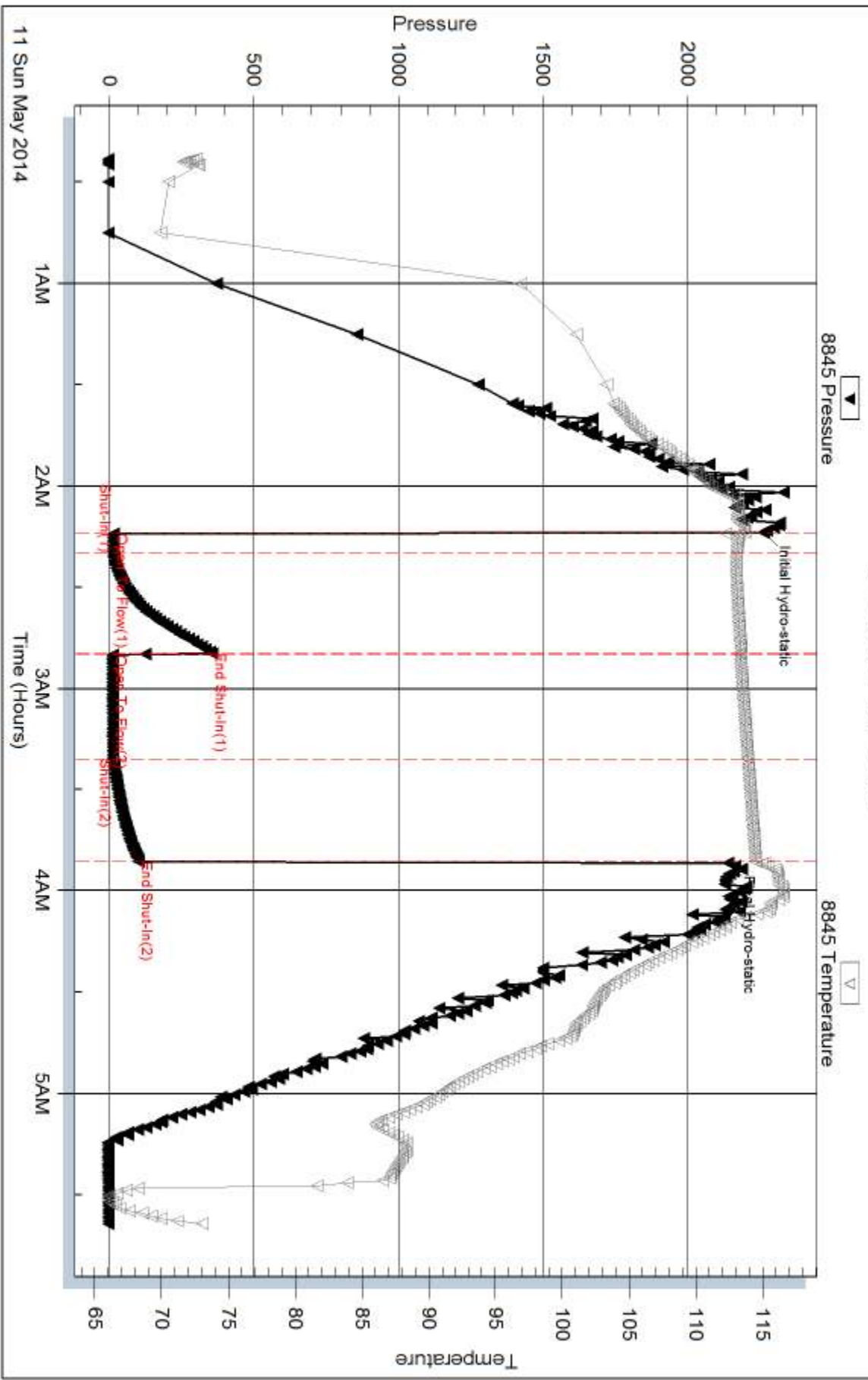
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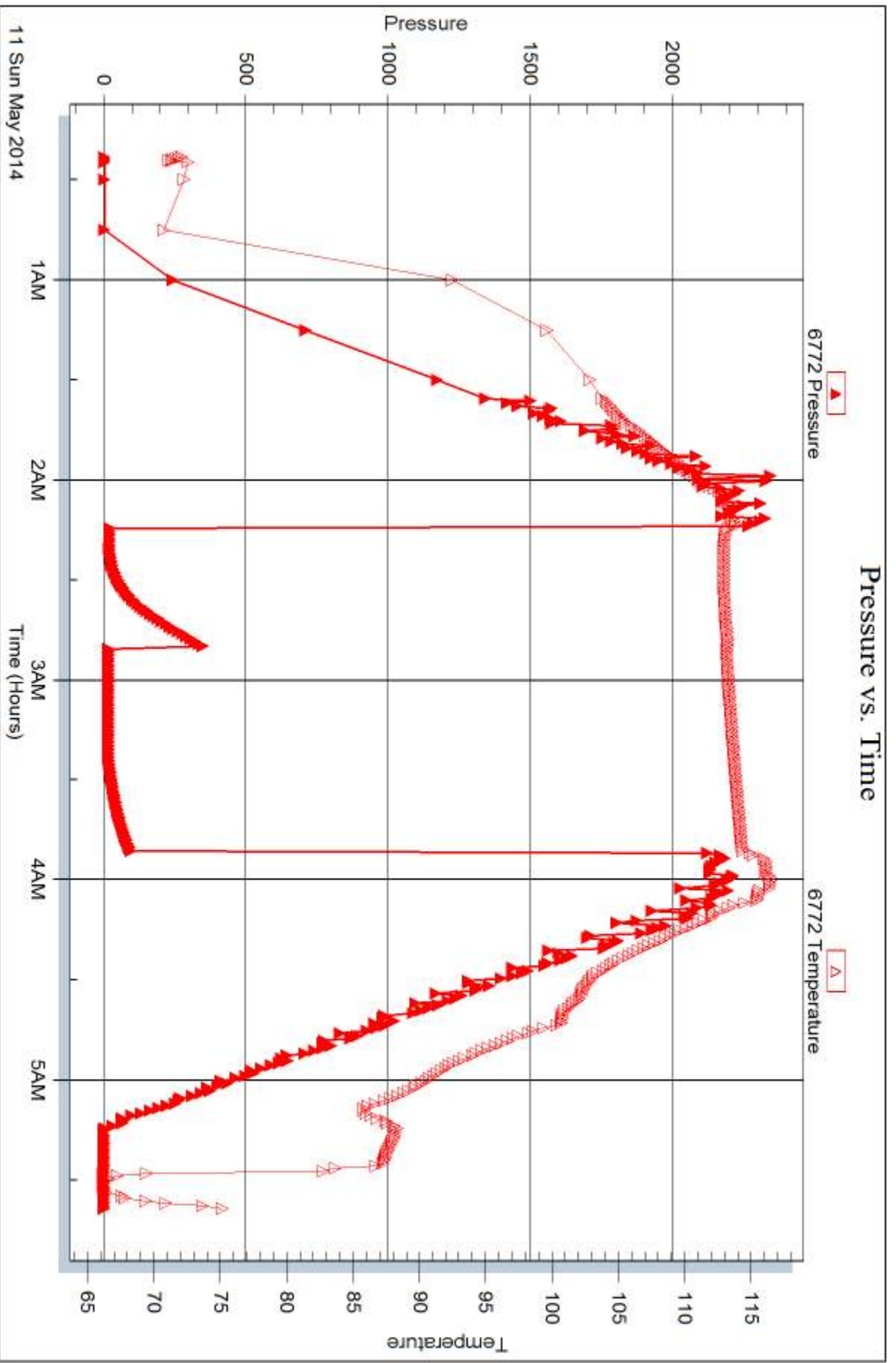
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

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

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.12 @ 18:40:00

End Date: 2014.05.13 @ 04:05:00

Job Ticket #: 57069 DST #: 4

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

Printed: 2014.05.16 @ 10:23:24



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1-16s-38w Wichita, KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57069

DST#: 4

ATTN: Steve Reed

Test Start: 2014.05.12 @ 18:40:00

GENERAL INFORMATION:

Formation: **Morrow upper sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:50:15

Time Test Ended: 04:05:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Samuel Esparza

Unit No: 71

Interval: 4852.00 ft (KB) To 4895.00 ft (KB) (TVD)

Reference Elevations: 3428.00 ft (KB)

Total Depth: 4895.00 ft (KB) (TVD)

3419.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 9.00 ft

Serial #: 8845

Inside

Press@RunDepth: 1114.06 psig @ 4853.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.05.12

End Date:

2014.05.13

Last Calib.:

2014.05.13

Start Time: 18:40:05

End Time:

04:05:00

Time On Btm:

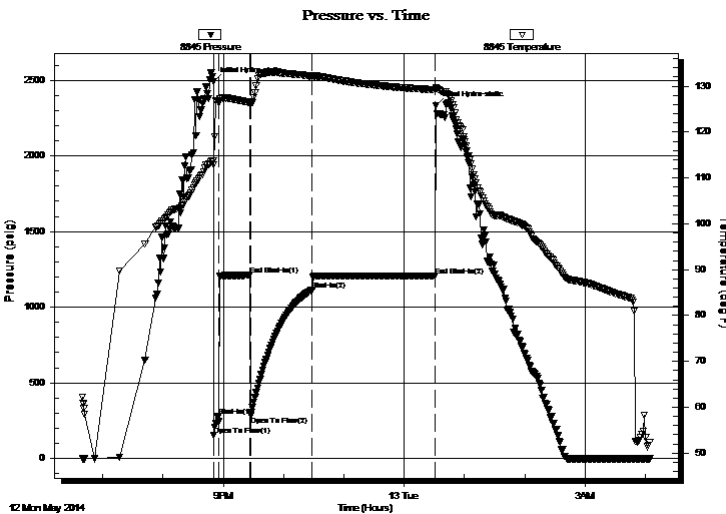
2014.05.12 @ 20:50:00

Time Off Btm:

2014.05.13 @ 00:31:30

TEST COMMENT: IF: BOB @ 2 min.
IS: No Return.
FF: BOB @ 1 1/2 in.
FS: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2494.50	113.80	Initial Hydro-static
1	154.14	112.80	Open To Flow (1)
6	277.09	126.50	Shut-In(1)
37	1211.33	126.43	End Shut-In(1)
37	281.90	126.02	Open To Flow (2)
99	1114.06	132.23	Shut-In(2)
221	1209.04	129.21	End Shut-In(2)
222	2333.65	129.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2020.00	MW 15m 85w	28.34
505.00	WCM 30w 70m	7.08

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
1700 N Waterfront PKWY
Wichita, KS 67202
ATTN: Steve Reed

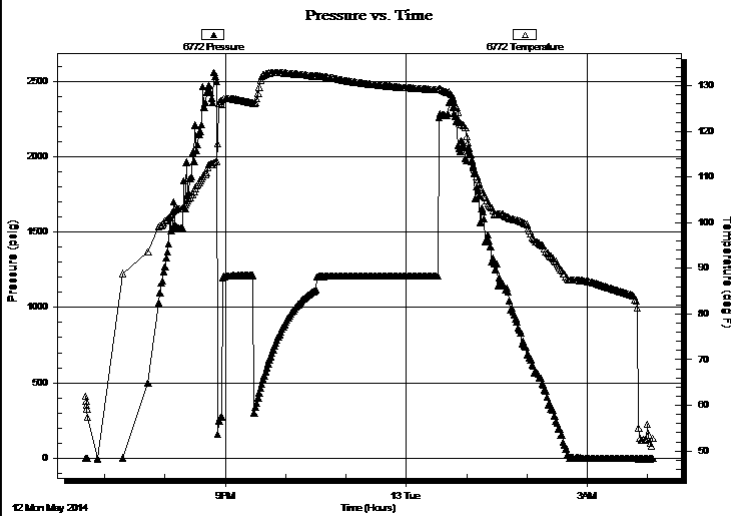
1-16s-38w Wichita, KS
Joy #1-1
Job Ticket: 57069 **DST#: 4**
Test Start: 2014.05.12 @ 18:40:00

GENERAL INFORMATION:

Formation: **Morrow upper sand**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 20:50:15 Tester: Samuel Esparza
 Time Test Ended: 04:05:00 Unit No: 71
 Interval: **4852.00 ft (KB) To 4895.00 ft (KB) (TVD)** Reference Elevations: 3428.00 ft (KB)
 Total Depth: 4895.00 ft (KB) (TVD) 3419.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 9.00 ft

Serial #: 6772 Outside
 Press@RunDepth: psig @ 4853.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.05.12 End Date: 2014.05.13 Last Calib.: 2014.05.13
 Start Time: 18:41:04 End Time: 04:05:59 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: BOB @ 2 min.
 IS: No Return.
 FF: BOB @ 1 1/2 in.
 FS: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
2020.00	MW 15m 85w	28.34
505.00	WCM 30w 70m	7.08

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57069

DST#: 4

ATTN: Steve Reed

Test Start: 2014.05.12 @ 18:40:00

Tool Information

Drill Pipe:	Length: 4852.00 ft	Diameter: 3.80 inches	Volume: 68.06 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 95000.00 lb
			<u>Total Volume: 68.06 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	4852.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	43.00 ft			
Tool Length:	63.00 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			4833.00	
Shut In Tool	5.00			4838.00	
Hydraulic tool	5.00			4843.00	
Packer	5.00			4848.00	20.00 Bottom Of Top Packer
Packer	4.00			4852.00	
Stubb	1.00			4853.00	
Recorder	0.00	6772	Outside	4853.00	
Recorder	0.00	8845	Inside	4853.00	
Perforations	4.00			4857.00	
Change Over Sub	1.00			4858.00	
Drill Pipe	31.00			4889.00	
Change Over Sub	1.00			4890.00	
Bullnose	5.00			4895.00	43.00 Bottom Packers & Anchor

Total Tool Length: 63.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1-16s-38w Wichita,KS

1700 N Waterfront PKWY
Wichita, KS 67202

Joy #1-1

Job Ticket: 57069

DST#: 4

ATTN: Steve Reed

Test Start: 2014.05.12 @ 18:40:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

30000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.58 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 7500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2020.00	MW 15m 85w	28.335
505.00	WCM 30w 70m	7.084

Total Length: 2525.00 ft Total Volume: 35.419 bbl

Num Fluid Samples: 0

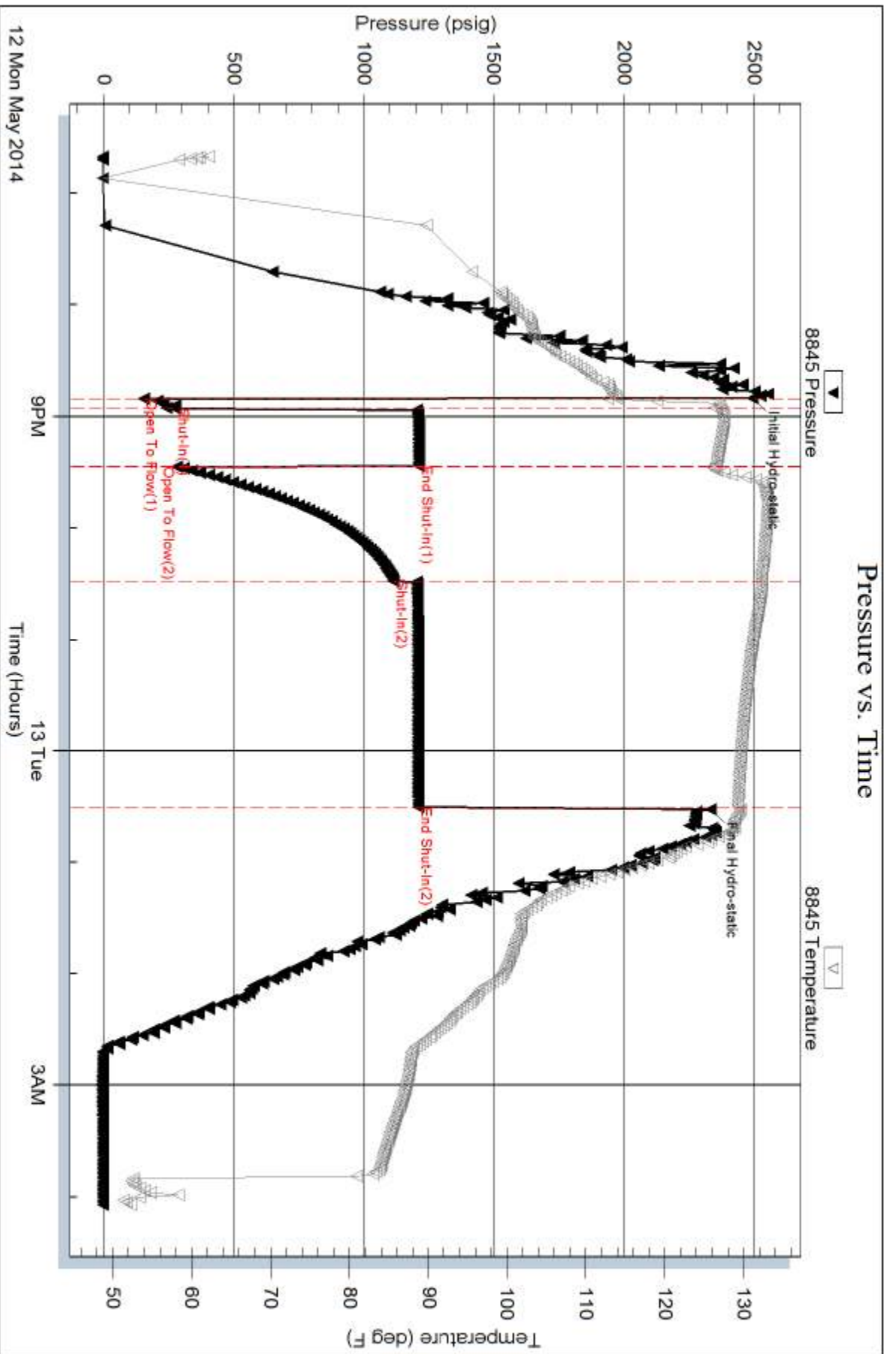
Num Gas Bombs: 0

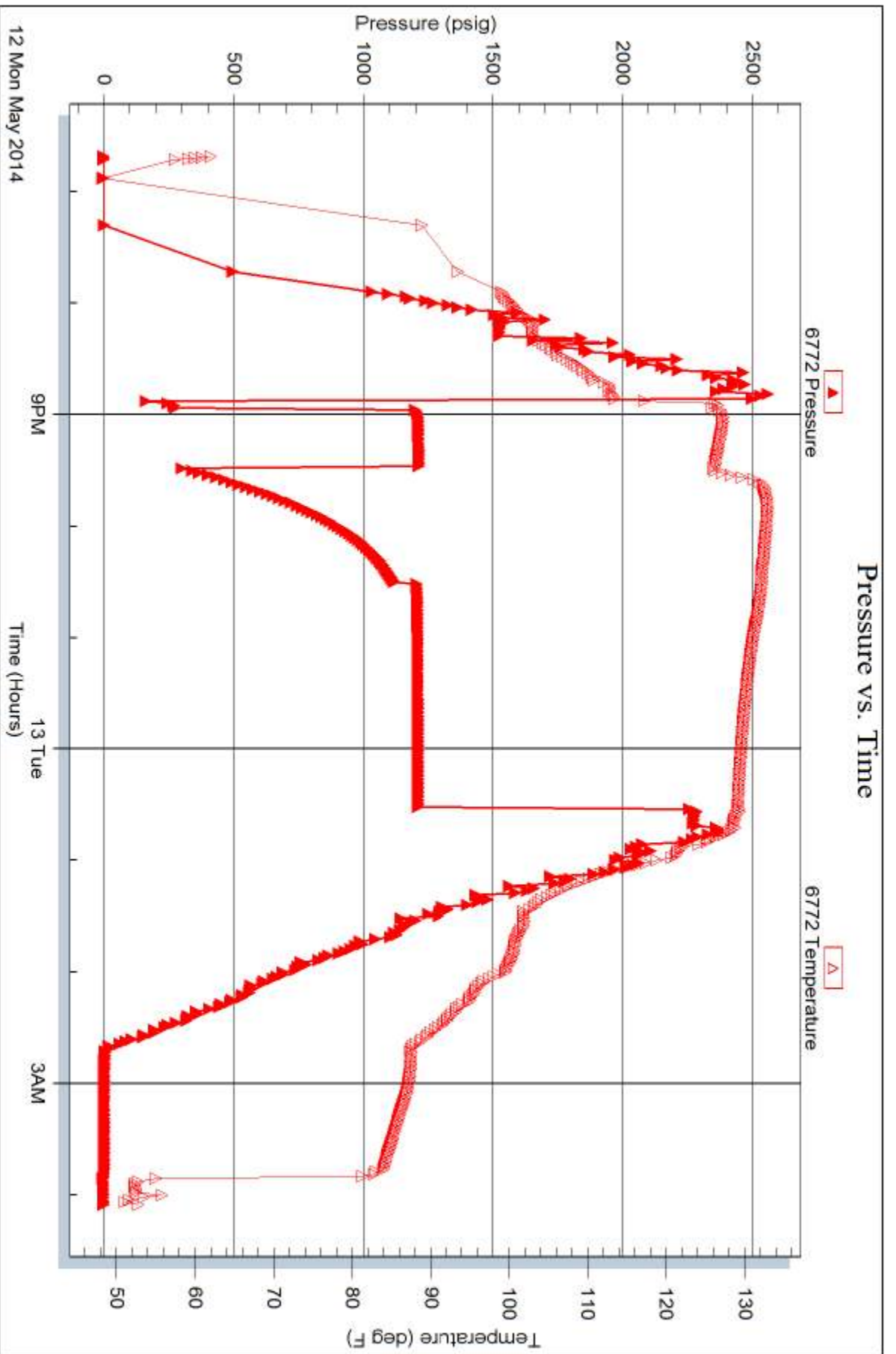
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rW .185@86







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57066

Well Name & No. Mull Drilling Co. Inc. Test No. 1 Date 5/8/14
 Company Jay #1-1 Elevation 3428 KB 3419 GL
 Address 1700 N Waterfront Pkwy Wichita, KS 67202
 Co. Rep / Geo. Steve Reed Rig Duke #4
 Location: Sec. 1 Twp. 16 S Rge. 38 W Co. Wichita State KS

Interval Tested 4203-4253 Zone Tested LKC "F-R-5"
 Anchor Length 53 Drill Pipe Run 4198 Mud Wt. 9.1
 Top Packer Depth 4199 Drill Collars Run 0 Vis 45
 Bottom Packer Depth 4203 Wt. Pipe Run 0 WL 6.4
 Total Depth 4253 Chlorides 3500 ppm System LCM 2

Blow Description IF: BoB @ 2 min.
EST: No Return.
FF: BoB @ 2 min.
EST: No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>560</u>	<u>OWCM</u>	<u>5</u>	<u>40</u>	<u>55</u>	
<u>1890</u>	<u>OMCW</u>	<u>5</u>	<u>90</u>	<u>5</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2450 BHT 118 Gravity - API RW 469 @ 48 °F Chlorides 20,000 ppm

(A) Initial Hydrostatic 2033 Test 1250 T-On Location 16:45
 (B) First Initial Flow 103 Jars _____ T-Started 17:18
 (C) First Final Flow 214 Safety Joint _____ T-Open 19:07
 (D) Initial Shut-In 1209 Circ Sub N/C T-Pulled 23:14
 (E) Second Initial Flow 227 Hourly Standby _____ T-Out 2:06
 (F) Second Final Flow 1116 Mileage 100 R/P 155 Comments _____
 (G) Final Shut-In 1202 Sampler _____
 (H) Final Hydrostatic 1944 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 5 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 60 Extra Recorder _____
 Final Shut-In 120 Day Standby _____
 Accessibility _____
 Sub Total 1405 Sub Total 0
 Total 1405 MP/DST Disc't _____

Approved By _____ Our Representative [Signature]

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57067

Well Name & No. Joy #1-1 Test No. 2 Date 5/9/14
 Company Mall Drilling Co., Inc. Elevation 3428 KB 3419 GL
 Address 1700 N Waterfront Pkwy Wichita KS 67202
 Co. Rep / Geo. Steve Bush Rig Duke #4
 Location: Sec. 1 Twp. 16 S Rge. 36 W Co. Wichita State KS

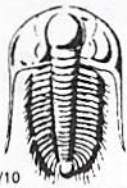
Interval Tested 4293-4335 Zone Tested LKC "H"
 Anchor Length 42' Drill Pipe Run 4293 Mud Wt. 8.9
 Top Packer Depth 4199 Drill Collars Run 0 Vis 53
 Bottom Packer Depth 4293 Wt. Pipe Run 0 WL 4.0
 Total Depth 4325 Chlorides 6000 ppm System LCM 3
 Blow Description IF: Bobe 3 min.
TSL: No Return,
PR: Bob @ 3 min
PSB: No Return,

Rec	Feet of	%gas	%oil	%water	%mud
<u>315</u>	<u>MCW</u>		<u>60</u>	<u>40</u>	
<u>1635</u>	<u>MCW</u>		<u>90</u>	<u>10</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 1950 BHT 120 Gravity — API RW PS @ 71 °F Chlorides 40,000 ppm

(A) Initial Hydrostatic 2115 Test 1250 T-On Location 13:10
 (B) First Initial Flow 72 Jars _____ T-Started 13:30
 (C) First Final Flow 141 Safety Joint _____ T-Open 16:12
 (D) Initial Shut-In 1225 Circ Sub N/C T-Pulled 19:53
 (E) Second Initial Flow 148 Hourly Standby _____ T-Out 22:10
 (F) Second Final Flow 671 Mileage 100 RJP 155 Comments _____
 (G) Final Shut-In 1220 Sampler _____
 (H) Final Hydrostatic 2026 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 5 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 60 Extra Recorder _____
 Final Shut-In 120 Day Standby _____
 Accessibility _____
 Sub Total 1405 Sub Total _____
 Total 1405 MP/DST Disc't _____

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.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57068

Well Name & No. Joy #1-1 Test No. 3 Date 5/11/14
 Company Mull Drilling Co., Inc Elevation 3428 KB 3419 GL
 Address 1700 N Waterfront Hwy Wichita, KS 67202
 Co. Rep / Geo. Stowe Reed Rig Duke #4
 Location: Sec. 1 Twp. 16S Rge. 38W Co. Wichita State KS

Interval Tested 4537-4575 Zone Tested Mormon
 Anchor Length 38 Drill Pipe Run 4542 Mud Wt. 9.2
 Top Packer Depth 4533 Drill Collars Run 0 Vis 50
 Bottom Packer Depth 4537 Wt. Pipe Run 0 WL 9.6
 Total Depth 4575 Chlorides 8000 ppm System LCM 2

Blow Description LF; 4" Blow.
EST: No Return.
RF: No Blow
FTD: No Return.

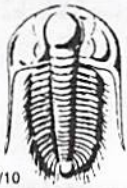
Rec	Feet of	%gas	%oil	%water	%mud
<u>S</u>	<u>Mud (Oil seen on Top)</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total S BHT 115 Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic 2265 Test 1250 T-On Location 0005
 (B) First Initial Flow 16 Jars — T-Started 0023
 (C) First Final Flow 14 Safety Joint — T-Open 215
 (D) Initial Shut-In 357 Circ Sub N/C T-Pulled 352
 (E) Second Initial Flow 12 Hourly Standby — T-Out 5140
 (F) Second Final Flow 13 Mileage 100 RFT 155 Comments —
 (G) Final Shut-In 102 Sampler —
 (H) Final Hydrostatic 2141 Straddle — Ruined Shale Packer —
 Shale Packer — Ruined Packer —
 Extra Packer — Extra Copies —
 Initial Open 5 Extra Recorder — Sub Total 0
 Initial Shut-In 30 Day Standby — Total 1405
 Final Flow 30 Accessibility — MP/DST Disc't —
 Final Shut-In 30 Sub Total 1405

Approved By _____ Our Representative [Signature]

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 57069

Well Name & No. Joy # 1-1 Test No. 4 Date 5/13/14
 Company Mull Drilling Co. Inc. Elevation 3428 KB 3419 GL
 Address 200 N Waterfront Pkwy Wichita, KS 67202
 Co. Rep / Geo. Steve Reed Rig Duke # 4
 Location: Sec. 1 Twp. 16S Rge. 38W Co. Wichita State KS

Interval Tested 4852 - 4895 Zone Tested Morrow upper sand
 Anchor Length 43 Drill Pipe Run 4852 Mud Wt. 9.3
 Top Packer Depth 4848 Drill Collars Run 8 Vis 50
 Bottom Packer Depth 4895 Wt. Pipe Run 8 WL 9.6
 Total Depth 4895 Chlorides 7500 ppm System LCM 4

Blow Description IF: BOB @ 2 min.
IST: No Return.
FF: BOB @ 12 min.
FSI: No Return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>505</u>	<u>WCM</u>			<u>30</u>	<u>70</u>
<u>2020</u>	<u>MW</u>			<u>85</u>	<u>15</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2525 BHT 129 Gravity — API RW 185 @ 96 °F Chlorides 30,000 ppm
 (A) Initial Hydrostatic 2495 Test 1250 T-On Location 18:00
 (B) First Initial Flow 154 Jars _____ T-Started 18:40
 (C) First Final Flow 277 Safety Joint _____ T-Open 20:50
 (D) Initial Shut-In 1211 Circ Sub N/C _____ T-Pulled 00:30
 (E) Second Initial Flow 282 Hourly Standby _____ T-Out 4:05
 (F) Second Final Flow 1114 Mileage 100 RT X 2 310 _____
 (G) Final Shut-In 1209 Sampler _____
 (H) Final Hydrostatic 2334 Straddle loaded Tools 5/15/14 _____
 Shale Packer @ 16:00 _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby 1d 12h _____
 Accessibility _____
 Sub Total 1560

Comments My Batteries are dead so I was unable to get chlorides I will replace and check it for you sorry
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 800
 Total 2360
 MP/DST Disc't _____

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.