

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company**

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637

ATTN: Phil Askey

SAT Unit #1-14

14-17s-45w Kiowa,CO

Start Date: 2002.01.07 @ 21:23:05

End Date: 2002.01.08 @ 06:15:05

Job Ticket #: 50024 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.10.15 @ 11:58:06



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637
ATTN: Phil Askey

SAT Unit #1-14

Job Ticket: 50024

DST#: 1

Test Start: 2002.01.07 @ 21:23:05

GENERAL INFORMATION:

Formation: **Lansing "K"**

Deviated: No Whipstock: 4112.00 ft (KB)

Time Tool Opened: 00:14:35

Time Test Ended: 06:15:05

Test Type: Conventional Bottom Hole (Initial)

Tester: Tate Lang

Unit No: 46

Interval: 4271.00 ft (KB) To 4282.00 ft (KB) (TVD)

Total Depth: 4282.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4112.00 ft (KB)

4101.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8675 Inside

Press@RunDepth: 236.21 psig @ 4272.00 ft (KB)

Start Date: 2002.01.07

End Date:

2002.01.08

Start Time: 21:23:20

End Time:

06:15:05

Capacity: 8000.00 psig

Last Calib.: 2012.10.08

Time On Btm: 2002.01.08 @ 00:14:20

Time Off Btm: 2002.01.08 @ 04:00:05

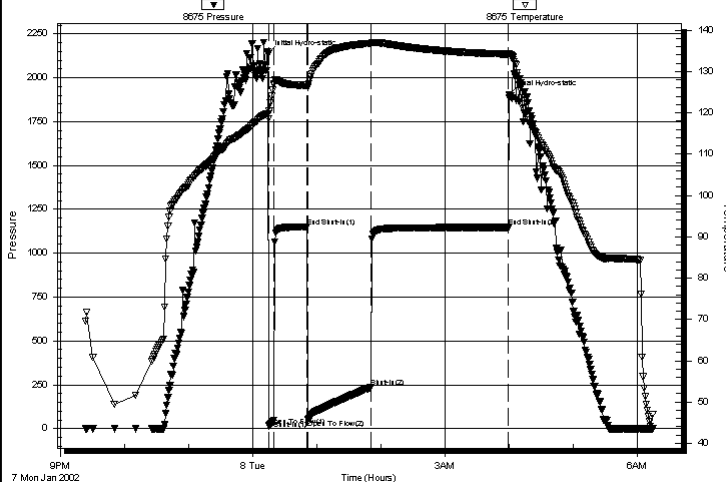
TEST COMMENT: IF- Weak surface blow built to 3"

ISI-Dead no return.

FF-BOB 25 mins

FSI-Dead no return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2134.52	119.82	Initial Hydro-static
1	16.20	118.57	Open To Flow (1)
6	48.17	127.10	Shut-In(1)
37	1149.05	126.65	End Shut-In(1)
37	53.22	126.26	Open To Flow (2)
96	236.21	136.83	Shut-In(2)
225	1147.08	134.16	End Shut-In(2)
226	1902.80	134.31	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
528.00	10%M 90%W	5.78

Gas Rates

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

DRILL STEM TEST REPORT

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637
ATTN: Phil Askey

SAT Unit #1-14

Job Ticket: 50024

DST#: 1

Test Start: 2002.01.07 @ 21:23:05

GENERAL INFORMATION:

Formation: **Lansing "K"**

Deviated: No Whipstock: 4112.00 ft (KB)

Time Tool Opened: 00:14:35

Time Test Ended: 06:15:05

Test Type: Conventional Bottom Hole (Initial)

Tester: Tate Lang

Unit No: 46

Interval: 4271.00 ft (KB) To 4282.00 ft (KB) (TVD)

Total Depth: 4282.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4112.00 ft (KB)

4101.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8650 Outside

Press @ Run Depth: psig @ 4272.00 ft (KB)

Start Date: 2002.01.07

End Date:

2002.01.08

Start Time: 21:23:35

End Time:

06:15:05

Capacity: 8000.00 psig

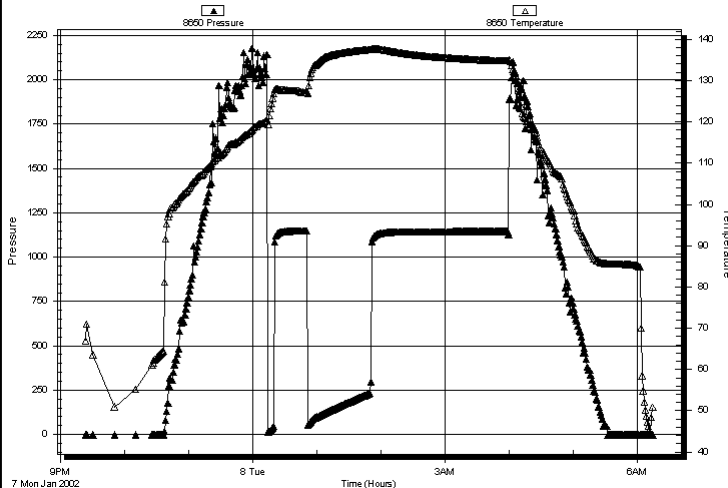
Last Calib.: 2012.10.08

Time On Btm:

Time Off Btm:

TEST COMMENT: IF- Weak surface blow built to 3"
ISI-Dead no return.
FF-BOB 25 mins
FSI-Dead 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)
528.00	10%M 90%W	5.78

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

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637
ATTN: Phil Askey

SAT Unit #1-14

Job Ticket: 50024

DST#: 1

Test Start: 2002.01.07 @ 21:23:05

Tool Information

Drill Pipe:	Length:	4105.00 ft	Diameter:	3.80 inches	Volume:	57.58 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:	20000.00 lb
Drill Collar:	Length:	179.00 ft	Diameter:	2.25 inches	Volume:	0.88 bbl	Weight to Pull Loose:	68000.00 lb
					Total Volume:	58.46 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		33.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		4271.00 ft					Final	60000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		11.00 ft						
Tool Length:		31.00 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			4252.00		
Shut In Tool	5.00			4257.00		
Hydraulic tool	5.00			4262.00		
Packer	5.00			4267.00	20.00	Bottom Of Top Packer
Packer	4.00			4271.00		
Stubb	1.00			4272.00		
Recorder	0.00	8675	Inside	4272.00		
Recorder	0.00	8650	Outside	4272.00		
Perforations	7.00			4279.00		
Change Over Sub	0.00			4279.00		
Drill Pipe	0.00			4279.00		
Change Over Sub	0.00			4279.00		
Bullnose	3.00			4282.00	11.00	Bottom Packers & Anchor

Total Tool Length: 31.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy

SAT Unit #1-14

B #1200

Job Ticket: 50024

DST#: 1

Wichita KS 67202-6637

Test Start: 2002.01.07 @ 21:23:05

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:

31000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.94 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1600.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
528.00	10%M 90%W	5.776

Total Length: 528.00 ft

Total Volume: 5.776 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

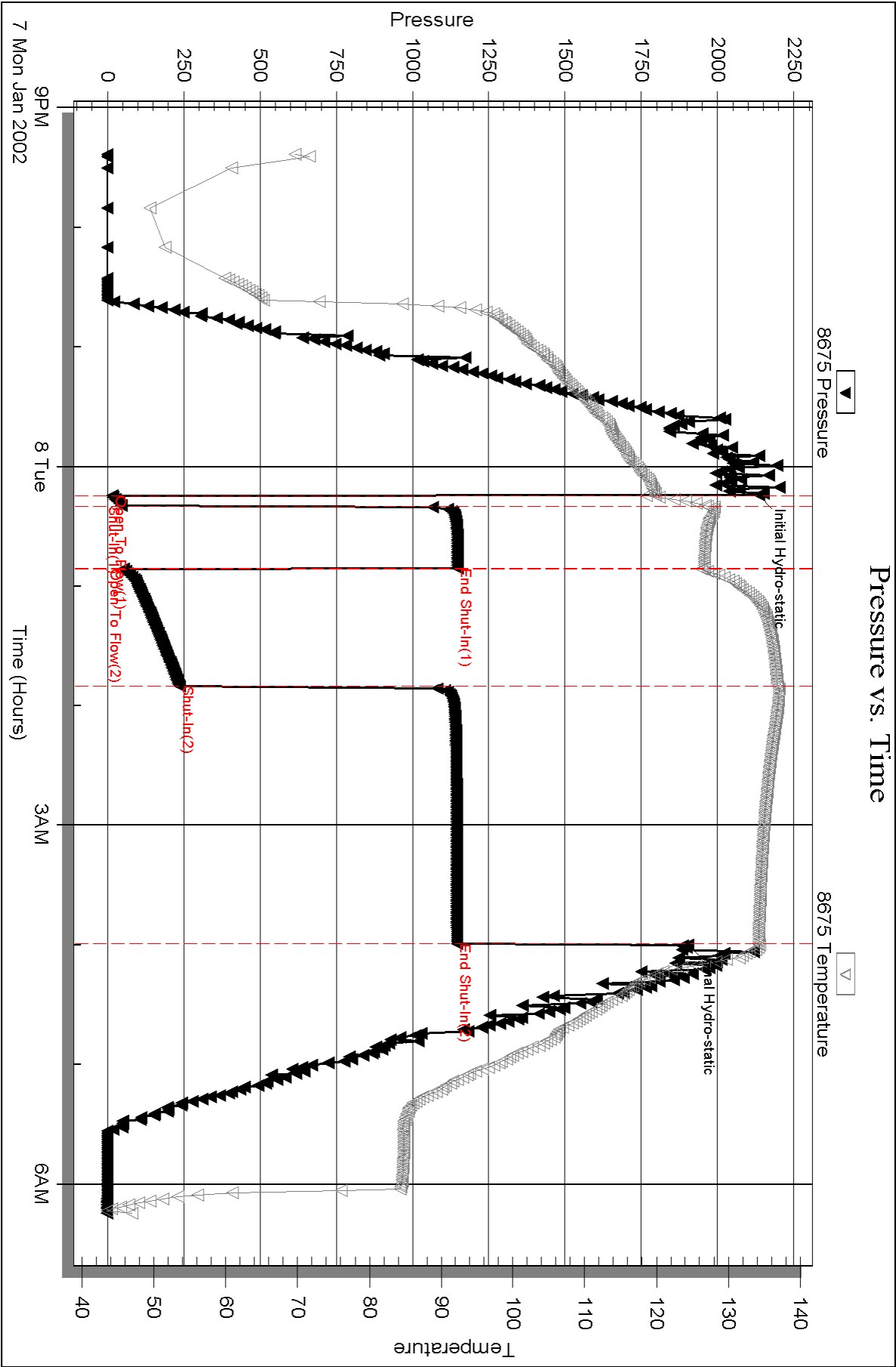
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Inside

Mull Drilling Company

SAT Unit #1-14

DST Test Number: 1

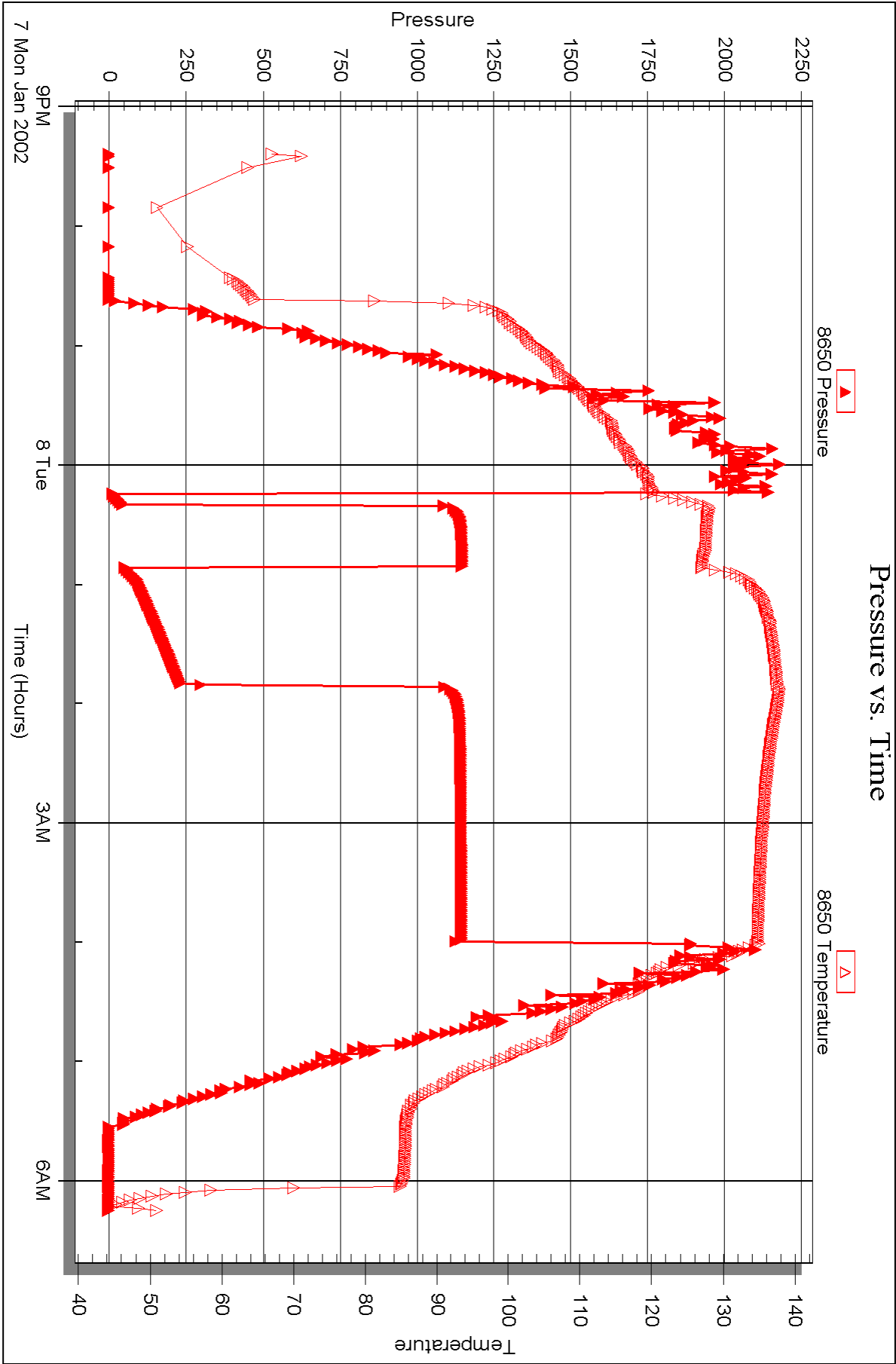


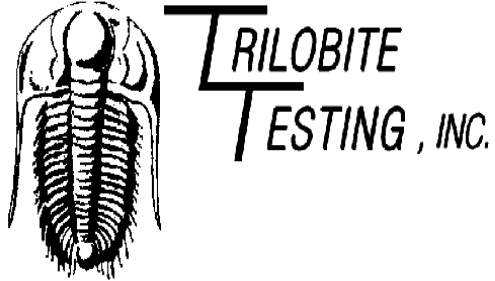
Serial #: 8650

Outside Mull Drilling Company

SAT Unit #1-14

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company**

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637

ATTN: Phil Askey

SAT Unit #1-14

14-17s-45w Kiowa,CO

Start Date: 2012.10.11 @ 20:00:00

End Date: 2012.10.12 @ 05:33:00

Job Ticket #: 48663 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.10.15 @ 11:57:21

Mull Drilling Company
14-17s-45w Kiowa,CO
SAT Unit #1-14
DST # 2
Miss - Spergen
2012.10.11



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637
ATTN: Phil Askey

SAT Unit #1-14

Job Ticket: 48663

DST#: 2

Test Start: 2012.10.11 @ 20:00:00

GENERAL INFORMATION:

Formation: **Miss - Spergen**

Deviated: No Whipstock: 4112.00 ft (KB)

Time Tool Opened: 22:39:00

Time Test Ended: 05:33:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 58

Interval: 5050.00 ft (KB) To 5140.00 ft (KB) (TVD)

Total Depth: 5140.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 4112.00 ft (KB)

4101.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8674 Inside

Press @ Run Depth: 320.33 psig @ 5051.00 ft (KB)

Start Date: 2012.10.11

End Date:

2012.10.12

Start Time: 20:00:05

End Time:

05:31:00

Capacity: 8000.00 psig

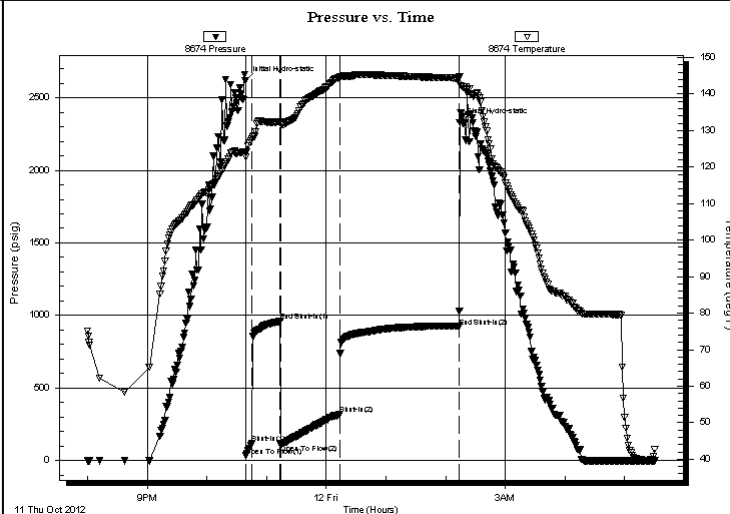
Last Calib.: 2012.10.12

Time On Btm: 2012.10.11 @ 22:38:45

Time Off Btm: 2012.10.12 @ 02:14:15

TEST COMMENT: 5-IFP- 4" Blow in 5 min
30-ISIP- No Blow
60-FFP- BOB in 10 1/2 min
120-FSIP- Weak Surface Blow Died in 2 min

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2619.08	124.23	Initial Hydro-static
1	31.78	122.71	Open To Flow (1)
7	116.71	127.69	Shut-In(1)
35	959.38	132.43	End Shut-In(1)
36	109.60	131.91	Open To Flow (2)
95	320.33	144.52	Shut-In(2)
215	922.19	144.39	End Shut-In(2)
216	2329.50	144.82	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GMCO 10%g 5%m 85%o	0.30
370.00	GOCM 10%g 20%o 70%m	4.12
336.00	GMCO 25%g 5%m 70%o	4.71

Gas Rates

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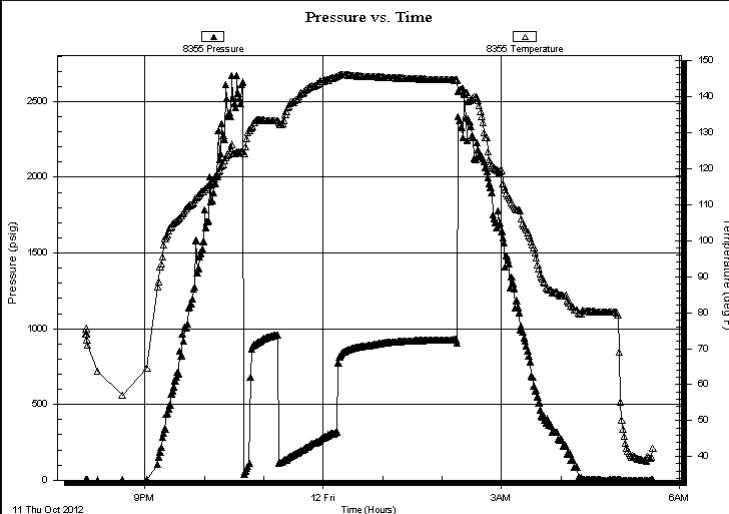
* Recovery from multiple tests



Test Start: 2012.10.11 @ 20:00:00

KB to GR/CF: 11.00 ft

TEST COMMENT: 5-IFP- 4" Blow in 5 min
30-ISIP- No Blow
60-FFP- BOB in 10 1/2 min
120-FSIP- Weak Surface Blow Died in 2 min



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GMCO 10%g 5%m 85%o	0.30
370.00	GOCM 10%g 20%o 70%m	4.12
336.00	GMCO 25%g 5%m 70%o	4.71

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy
B #1200
Wichita KS 67202-6637
ATTN: Phil Askey

SAT Unit #1-14

Job Ticket: 48663

DST#: 2

Test Start: 2012.10.11 @ 20:00:00

Tool Information

Drill Pipe:	Length: 4865.00 ft	Diameter: 3.80 inches	Volume: 68.24 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:	25000.00 lb
Drill Collar:	Length: 179.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose:	70000.00 lb
		Total Volume:	69.12 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial	66000.00 lb
Depth to Top Packer:	5050.00 ft			Final	70000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	90.00 ft				
Tool Length:	110.00 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			5031.00	
Shut In Tool	5.00			5036.00	
Hydraulic tool	5.00			5041.00	
Packer	5.00			5046.00	20.00 Bottom Of Top Packer
Packer	4.00			5050.00	
Stubb	1.00			5051.00	
Recorder	0.00	8674	Inside	5051.00	
Recorder	0.00	8355	Outside	5051.00	
Perforations	21.00			5072.00	
Change Over Sub	1.00			5073.00	
Drill Pipe	63.00			5136.00	
Change Over Sub	1.00			5137.00	
Bullnose	3.00			5140.00	90.00 Bottom Packers & Anchor

Total Tool Length: 110.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Company

14-17s-45w Kiowa, CO

1700 N Waterfront Pkwy

SAT Unit #1-14

B #1200

Job Ticket: 48663

DST#: 2

Wichita KS 67202-6637

Test Start: 2012.10.11 @ 20:00:00

ATTN: Phil Askey

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

36 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.95 in³

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
62.00	GMCO 10%g 5%m 85%o	0.305
370.00	GOCM 10%g 20%o 70%m	4.124
336.00	GMCO 25%g 5%m 70%o	4.713

Total Length: 768.00 ft

Total Volume: 9.142 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

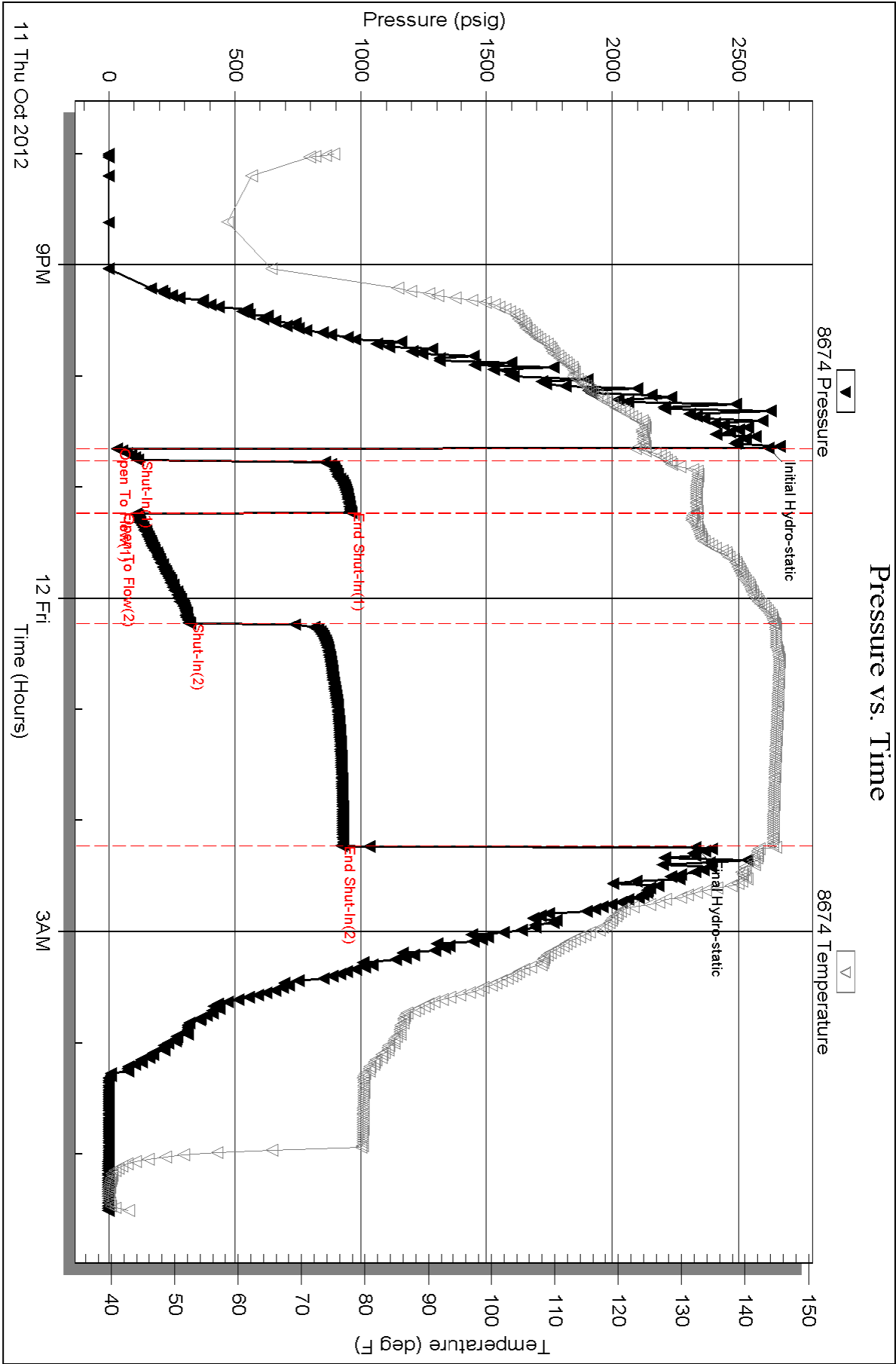
Serial #: 8674

Inside

Mull Drilling Company

SAT Unit #1-14

DST Test Number: 2

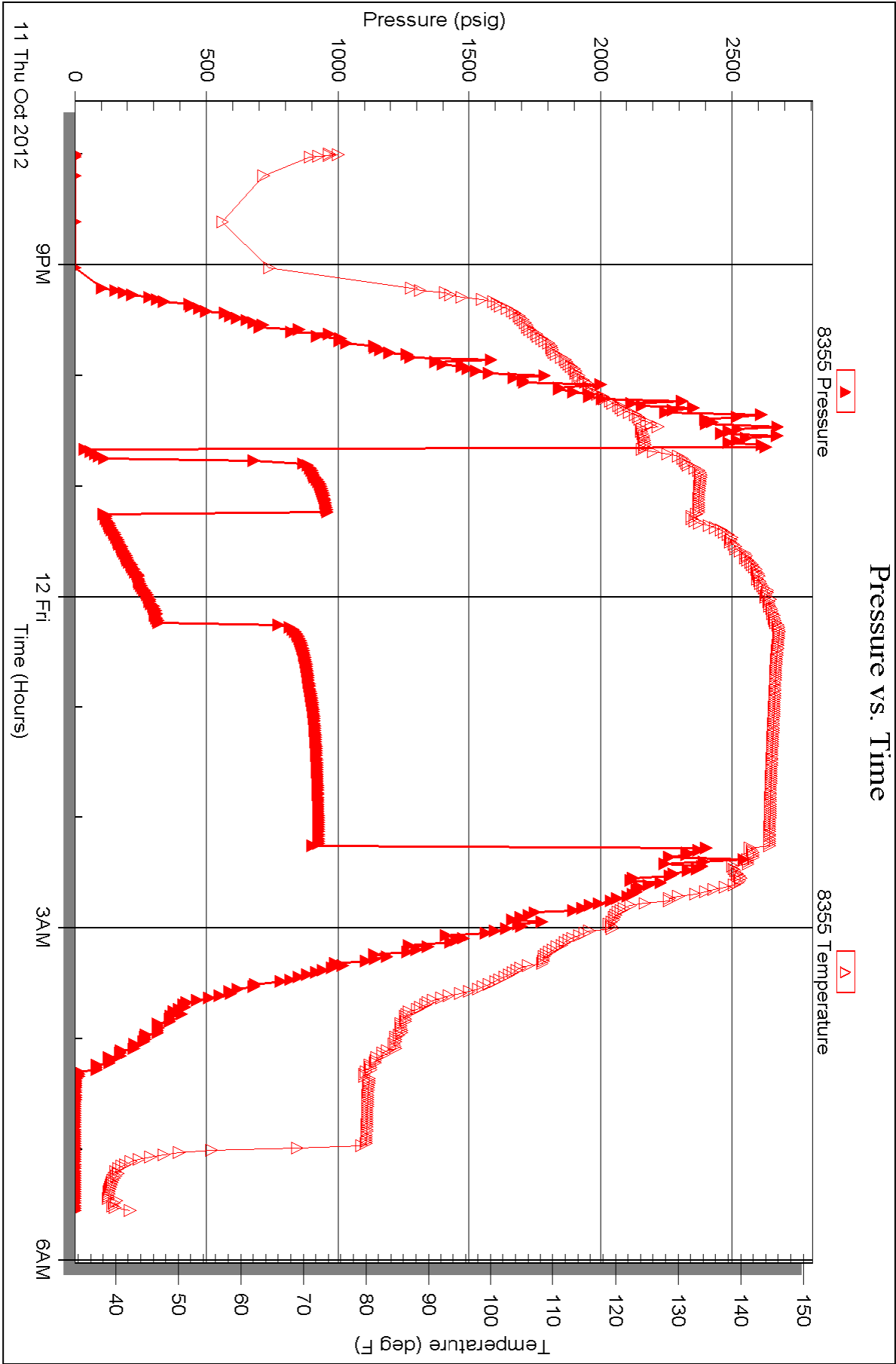


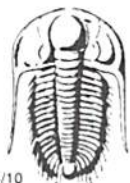
Serial #: 8355

Outside Mull Drilling Company

SAT Unit #1-14

DST Test Number: 2





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 50024

Well Name & No. SAT Unit # 1-14 Test No. 1 Date 10-7-12
 Company Mull Drilling Company Elevation 4112 KB 4101 GL
 Address 1700 N Waterfront PKWY B#1200 Wichita KS 67620-6637
 Co. Rep / Geo. Phil Askey Rig Murfin #20
 Location: Sec. 14 Twp. 17S Rge. 45W Co. Kiowa State CO

Interval Tested 4271 4282 Zone Tested Lansing "K"
 Anchor Length 11 Drill Pipe Run 4105 Mud Wt. 9.3
 Top Packer Depth 4267 Drill Collars Run 179 Vis 57
 Bottom Packer Depth 4271 Wt. Pipe Run 0 WL 8.0
 Total Depth 4282 Chlorides 1600 ppm System LCM 6#

Blow Description IF - Weak Surface Blow Built to 3in.
ISI - Dead No Return
FF - B.O.B. 25 mins.
FST -

Rec	Feet of	%gas	%oil	%water	%mud
<u>528</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	Feet of	%gas	%oil	%water	%mud

Rec Total 528 BHT 137 Gravity - API RW .58 @ 33 °F Chlorides 3100 ppm
 (A) Initial Hydrostatic 2135 ☒ Test 1250 T-On Location 19:55 ALT
 (B) First Initial Flow 16 ☐ Jars - T-Started 21:23
 (C) First Final Flow 48 ☐ Safety Joint - T-Open 00:15
 (D) Initial Shut-In 1149 ☒ Circ Sub N/C T-Pulled 03:50
 (E) Second Initial Flow 53 ☐ Hourly Standby - T-Out 06:18
 (F) Second Final Flow 236 ☒ Mileage 190 R/T 294.50 Comments 10-9-12 @ 10:00 a.m.
 (G) Final Shut-In 1147 ☐ Sampler - ☐ Ruined Shale Packer -
 (H) Final Hydrostatic 1903 ☐ Straddle - ☐ Ruined Packer -

Initial Open 5 ☐ Extra Packer - ☐ Extra Copies -
 Initial Shut-In 30 ☐ Extra Recorder - Sub Total 125
 Final Flow 60 ☐ Day Standby 1d 3.75 Total 1669.50
 Final Shut-In 120 ☐ Accessibility - MP/DST Disc't -
 Sub Total 1544.50

Approved By Phil Askey Our Representative Phil Askey
 Trilobite Testing Inc. shall not be liable for damaged or 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.

Well Name & No. SAT Unit # 1-14 Test No. 2 Date 10-11-12
 Company Mull Drilling Co., Inc Elevation 4112 KB 4101 GL
 Address 1700 N. Waterfront Pkwy B#1200 Wichita Ks, 67206-6637
 Co. Rep / Geo. Phil Askey Rig Murfin #2
 Location: Sec. 14 Twp. 17S Rge. R45W Co. NeWA State CO.

Interval Tested 5050-5140 Zone Tested Miss - Spergen
 Anchor Length 90 Drill Pipe Run 4865 Mud Wt. 9.1
 Top Packer Depth 5045 Drill Collars Run 179 Vis 53
 Bottom Packer Depth 5050 Wt. Pipe Run 0 WL 8.0
 Total Depth 5140 Chlorides 2200 ppm System LCM 10 #

Flow Description IFP - 4 in. Blow in 5 min
ISIP - No Blow
FFP - BOB in 10 1/2 min.
FSIP - Weak Surface Blow Died in 2 min.

Feet of	%gas	%oil	%water	%mud
62 Feet of <u>amco</u>	10	85	5	
117 Feet of <u>amco</u>	10	20	70	
253 Feet of <u>amco</u>	10	20	70	
336 Feet of <u>amco</u>	25	70	5	

ec Total 768 BHT 144 Gravity 36 API RW @ °F Chlorides ppm

Initial Hydrostatic 2619 Test 1350 T-On Location 18:39
 First Initial Flow 31 Jars T-Started 20:00
 First Final Flow 116 Safety Joint T-Open 22:40
 Initial Shut-In 959 Circ Sub T-Pulled 02:15
 Second Initial Flow 109 Hourly Standby T-Out 05:33
 Second Final Flow 320 Mileage 386 RT 294.50 Comments
 Final Shut-In 922 Sampler
 Final Hydrostatic 2329 Straddle
 Ruined Shale Packer

Initial Open 5 Shale Packer
 Initial Shut-In 30 Extra Packer
 Initial Flow 60 Extra Recorder
 Initial Shut-In 120 Day Standby
 Accessibility
 Sub Total 1644.50 Sub Total 0
 Total 1644.50 MP/DST Disc't

Approved By Our Representative
 Mobilite 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.