

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company**

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

Larsen Unit #1-24

24-17s-45w Kiowa,CO

Start Date: 2013.01.02 @ 11:46:32

End Date: 2013.01.02 @ 18:46:32

Job Ticket #: 50121 DST #: 1

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

Printed: 2013.01.10 @ 11:46:31



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Company

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

24-17s-45w Kiowa, CO

Larsen Unit #1-24

Job Ticket: 50121

DST#: 1

Test Start: 2013.01.02 @ 11:46:32

GENERAL INFORMATION:

Formation: **Lansing I-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:30:32

Time Test Ended: 18:46:32

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Turley

Unit No: 60

Interval: **4180.00 ft (KB) To 4191.00 ft (KB) (TVD)**

Total Depth: 4191.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4119.00 ft (KB)

4109.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8373 Inside

Press @ Run Depth: 578.47 psig @ 4181.00 ft (KB)

Start Date: 2013.01.02

End Date:

2013.01.02

Start Time: 11:46:37

End Time:

18:46:31

Capacity: 8000.00 psig

Last Calib.: 2013.01.02

Time On Btm: 2013.01.02 @ 13:29:02

Time Off Btm: 2013.01.02 @ 16:21:32

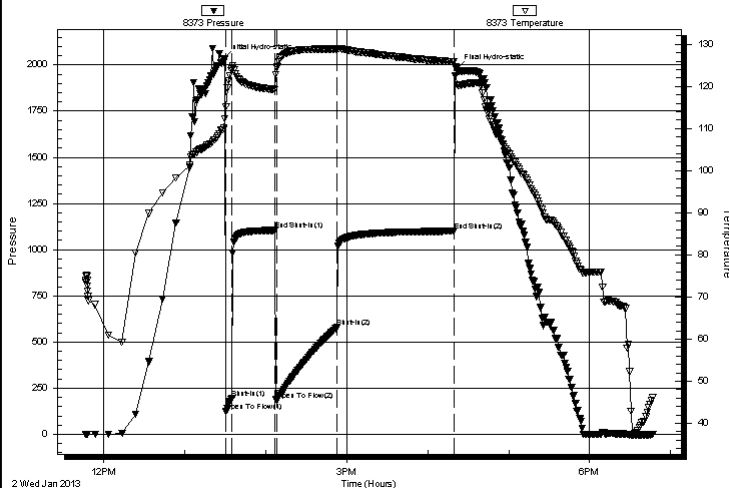
TEST COMMENT: IF: 1/4" blow BOB in 4 min.

IS: No return.

FF: 1/4" blow BOB in 6 min.

FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2034.80	110.07	Initial Hydro-static
2	125.96	115.22	Open To Flow (1)
6	194.54	124.24	Shut-In (1)
38	1105.00	119.25	End Shut-In (1)
39	184.54	124.46	Open To Flow (2)
84	578.47	128.86	Shut-In (2)
171	1100.34	125.84	End Shut-In (2)
173	1979.89	120.46	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
930.00	water 100%w	11.40
310.00	w cm 10%w 90%m	4.35

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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DRILL STEM TEST REPORT

Mull Drilling Company

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

24-17s-45w Kiowa, CO

Larsen Unit #1-24

Job Ticket: 50121

DST#: 1

Test Start: 2013.01.02 @ 11:46:32

GENERAL INFORMATION:

Formation: **Lansing I-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:30:32

Time Test Ended: 18:46:32

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Turley

Unit No: 60

Interval: 4180.00 ft (KB) To 4191.00 ft (KB) (TVD)

Total Depth: 4191.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4119.00 ft (KB)

4109.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8356 Outside

Press @ Run Depth: psig @ 4181.00 ft (KB)

Start Date: 2013.01.02

End Date:

2013.01.02

Start Time: 11:46:25

End Time:

18:46:19

Capacity: 8000.00 psig

Last Calib.: 2013.01.02

Time On Btm:

Time Off Btm:

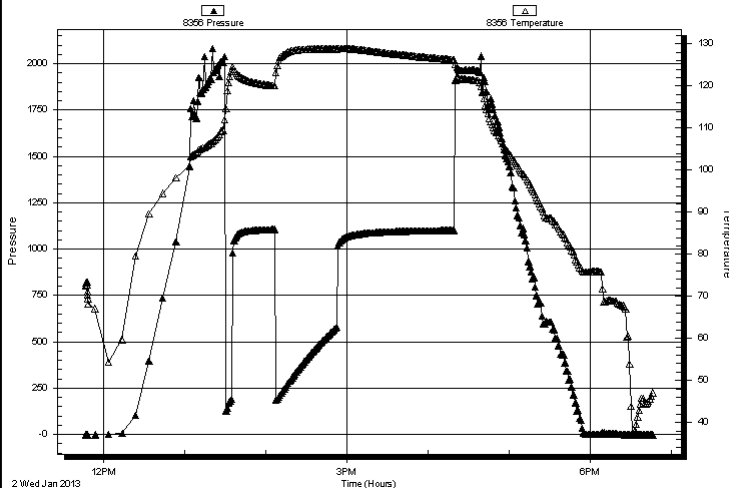
TEST COMMENT: IF: 1/4" blow BOB in 4 min.

IS: No return.

FF: 1/4" blow BOB in 6 min.

FS: 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)
930.00	water 100%w	11.40
310.00	w cm 10%w 90%m	4.35

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

24-17s-45w Kiowa, CO

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

Larsen Unit #1-24

Job Ticket: 50121

DST#: 1

ATTN: Phil Askay

Test Start: 2013.01.02 @ 11:46:32

Tool Information

Drill Pipe:	Length:	3983.00 ft	Diameter:	3.80 inches	Volume:	55.87 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:	25000.00 lb
Drill Collar:	Length:	181.00 ft	Diameter:	2.25 inches	Volume:	0.89 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	56.76 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		4.00 ft					String Weight: Initial	68000.00 lb
Depth to Top Packer:		4180.00 ft					Final	68000.00 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
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Stubb	1.00			4161.00	
Shut In Tool	5.00			4166.00	
Hydraulic tool	5.00			4171.00	
Packer	5.00			4176.00	20.00 Bottom Of Top Packer
Packer	4.00			4180.00	
Stubb	1.00			4181.00	
Recorder	0.00	8373	Inside	4181.00	
Recorder	0.00	8356	Outside	4181.00	
Perforations	5.00			4186.00	
Bullnose	5.00			4191.00	11.00 Bottom Packers & Anchor
Total Tool Length:	31.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Company

24-17s-45w Kiowa, CO

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

Larsen Unit #1-24

Job Ticket: 50121

DST#: 1

ATTN: Phil Askay

Test Start: 2013.01.02 @ 11:46:32

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

17000 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
930.00	water 100%w	11.397
310.00	w cm 10%w 90%m	4.348

Total Length: 1240.00 ft

Total Volume: 15.745 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .80@34=17000
20ppm H₂S

Serial #: 8373

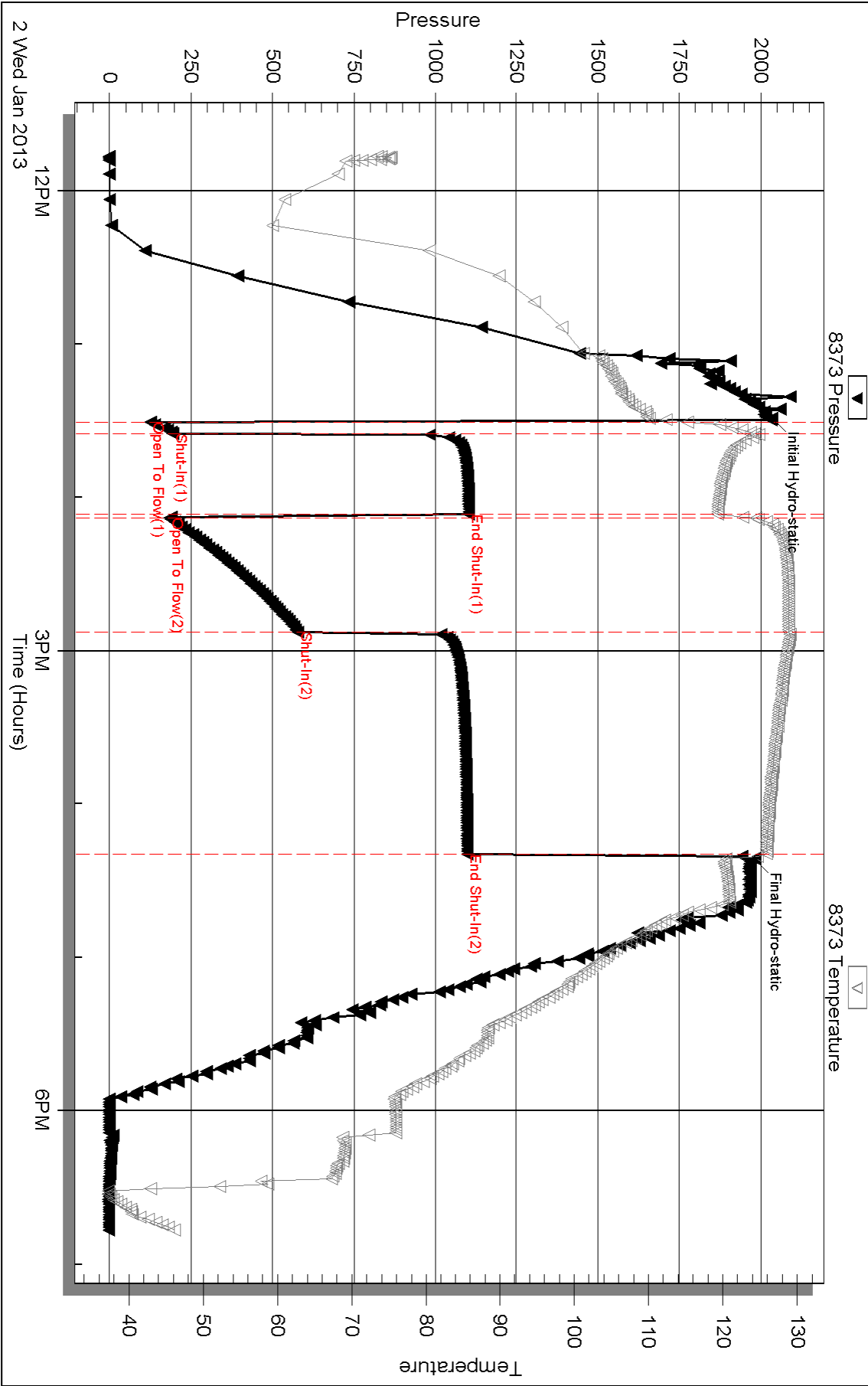
Inside

Mull Drilling Company

Larsen Unit #1-24

DST Test Number: 1

Pressure vs. Time

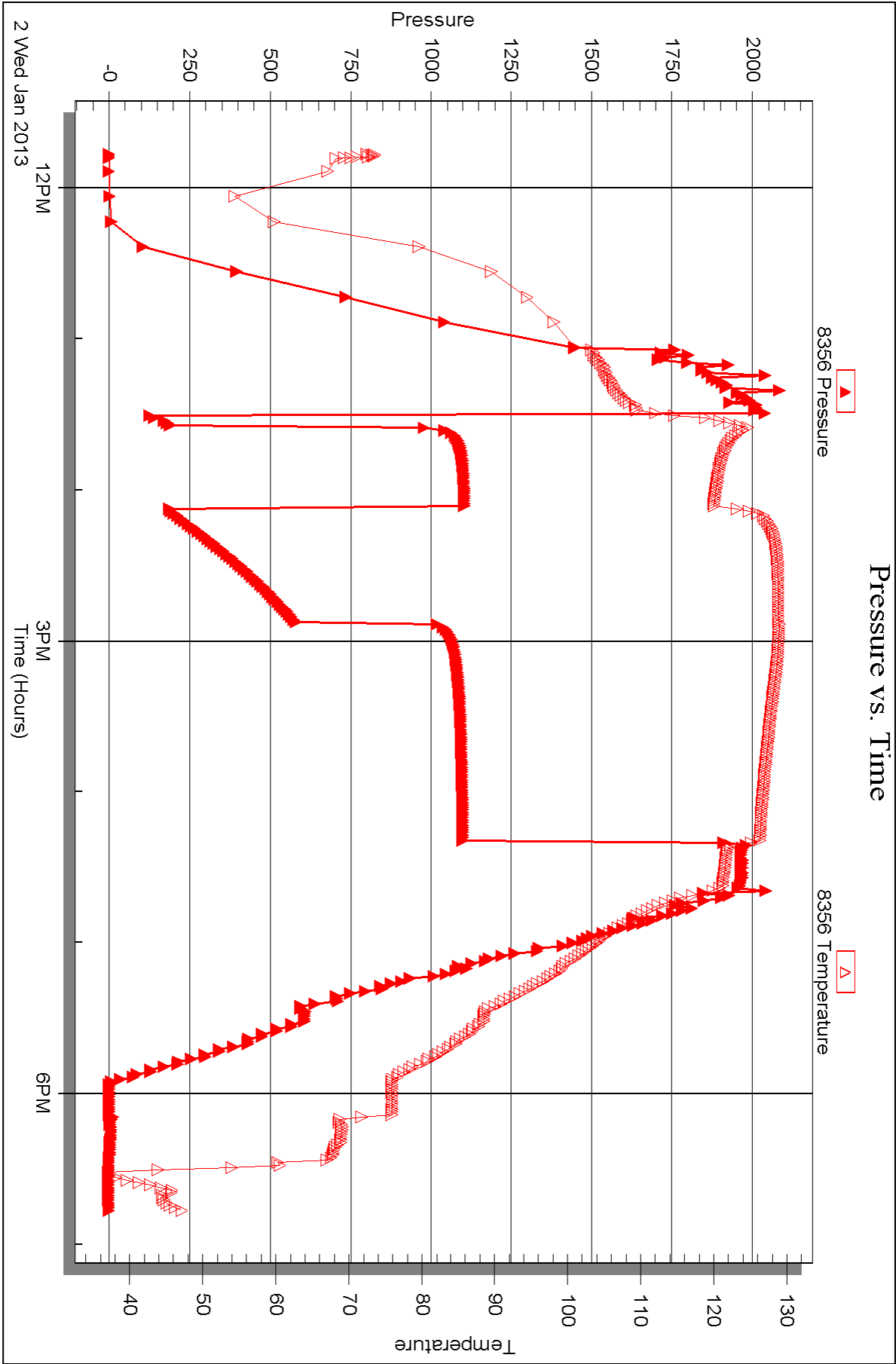


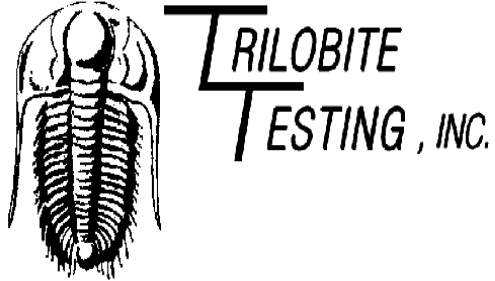
Serial #: 8356

Outside Mull Drilling Company

Larsen Unit #1-24

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Company**

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

Larsen Unit #1-24

24-17s-45w Kiowa,CO

Start Date: 2013.01.04 @ 05:17:09

End Date: 2013.01.04 @ 11:12:39

Job Ticket #: 50122 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.01.10 @ 11:45:41



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Company

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

24-17s-45w Kiowa, CO

Larsen Unit #1-24

Job Ticket: 50122

DST#: 2

Test Start: 2013.01.04 @ 05:17:09

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:28:39

Time Test Ended: 11:12:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 60

Interval: 4444.00 ft (KB) To 4497.00 ft (KB) (TVD)

Total Depth: 4497.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4119.00 ft (KB)

4109.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8373 Inside

Press @ Run Depth: 19.99 psig @ 4445.00 ft (KB)

Start Date: 2013.01.04

End Date:

2013.01.04

Start Time: 05:17:14

End Time:

11:12:38

Capacity: 8000.00 psig

Last Calib.: 2013.01.04

Time On Btm: 2013.01.04 @ 07:27:09

Time Off Btm: 2013.01.04 @ 09:35:09

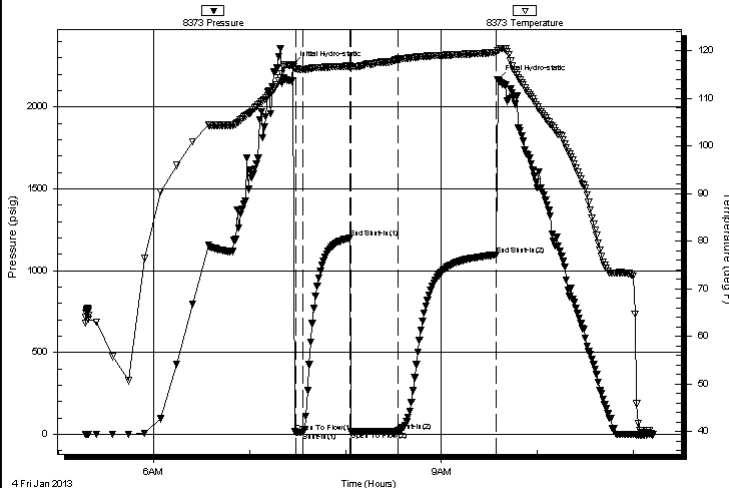
TEST COMMENT: IF: Surface blow .

IS: No return.

FF: No blow .

FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2256.21	116.76	Initial Hydro-static
2	13.45	116.26	Open To Flow (1)
6	13.87	116.07	Shut-In(1)
36	1199.19	116.83	End Shut-In(1)
36	16.55	116.38	Open To Flow (2)
66	19.99	118.26	Shut-In(2)
127	1096.44	119.66	End Shut-In(2)
128	2167.81	120.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100%m	0.02

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

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

ATTN: Phil Askay

24-17s-45w Kiowa, CO

Larsen Unit #1-24

Job Ticket: 50122

DST#: 2

Test Start: 2013.01.04 @ 05:17:09

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:28:39

Time Test Ended: 11:12:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 60

Interval: 4444.00 ft (KB) To 4497.00 ft (KB) (TVD)

Total Depth: 4497.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 4119.00 ft (KB)

4109.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8356 Outside

Press @ Run Depth: psig @ 4445.00 ft (KB)

Start Date: 2013.01.04

End Date:

2013.01.04

Start Time: 05:17:06

End Time:

11:12:00

Capacity: 8000.00 psig

Last Calib.: 2013.01.04

Time On Btm:

Time Off Btm:

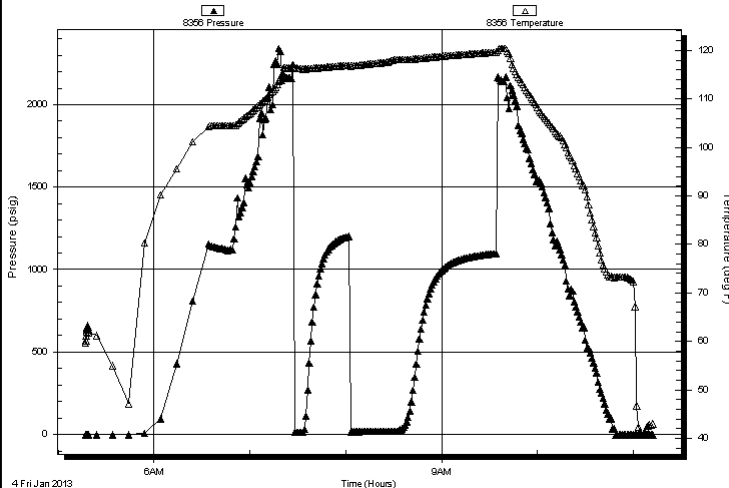
TEST COMMENT: IF: Surface blow .

IS: No return.

FF: No blow .

FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

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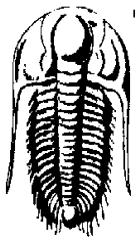
Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.02

Gas Rates

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



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TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Company

24-17s-45w Kiowa, CO

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

Larsen Unit #1-24

Job Ticket: 50122

DST#: 2

ATTN: Phil Askay

Test Start: 2013.01.04 @ 05:17:09

Tool Information

Drill Pipe:	Length:	4267.00 ft	Diameter:	3.80 inches	Volume:	59.85 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:	25000.00 lb
Drill Collar:	Length:	181.00 ft	Diameter:	2.25 inches	Volume:	0.89 bbl	Weight to Pull Loose:	85000.00 lb
					Total Volume:	60.74 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		24.00 ft					String Weight: Initial	68000.00 lb
Depth to Top Packer:		4444.00 ft					Final	68000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		53.00 ft						
Tool Length:		73.00 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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Stubb	1.00			4425.00	
Shut In Tool	5.00			4430.00	
Hydraulic tool	5.00			4435.00	
Packer	5.00			4440.00	20.00 Bottom Of Top Packer
Packer	4.00			4444.00	
Stubb	1.00			4445.00	
Recorder	0.00	8373	Inside	4445.00	
Recorder	0.00	8356	Outside	4445.00	
Perforations	13.00			4458.00	
Change Over Sub	1.00			4459.00	
Drill Pipe	32.00			4491.00	
Change Over Sub	1.00			4492.00	
Bullnose	5.00			4497.00	53.00 Bottom Packers & Anchor

Total Tool Length: 73.00



TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Company

24-17s-45w Kiowa, CO

1700 N Waterfront Pkwy B #1200
Wichita, KS 67206

Larsen Unit #1-24

Job Ticket: 50122

DST#: 2

ATTN: Phil Askay

Test Start: 2013.01.04 @ 05:17:09

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 54.00 sec/qt

Water Loss: 7.99 in³

Resistivity: 0.00 ohm.m

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	mud 100%m	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:

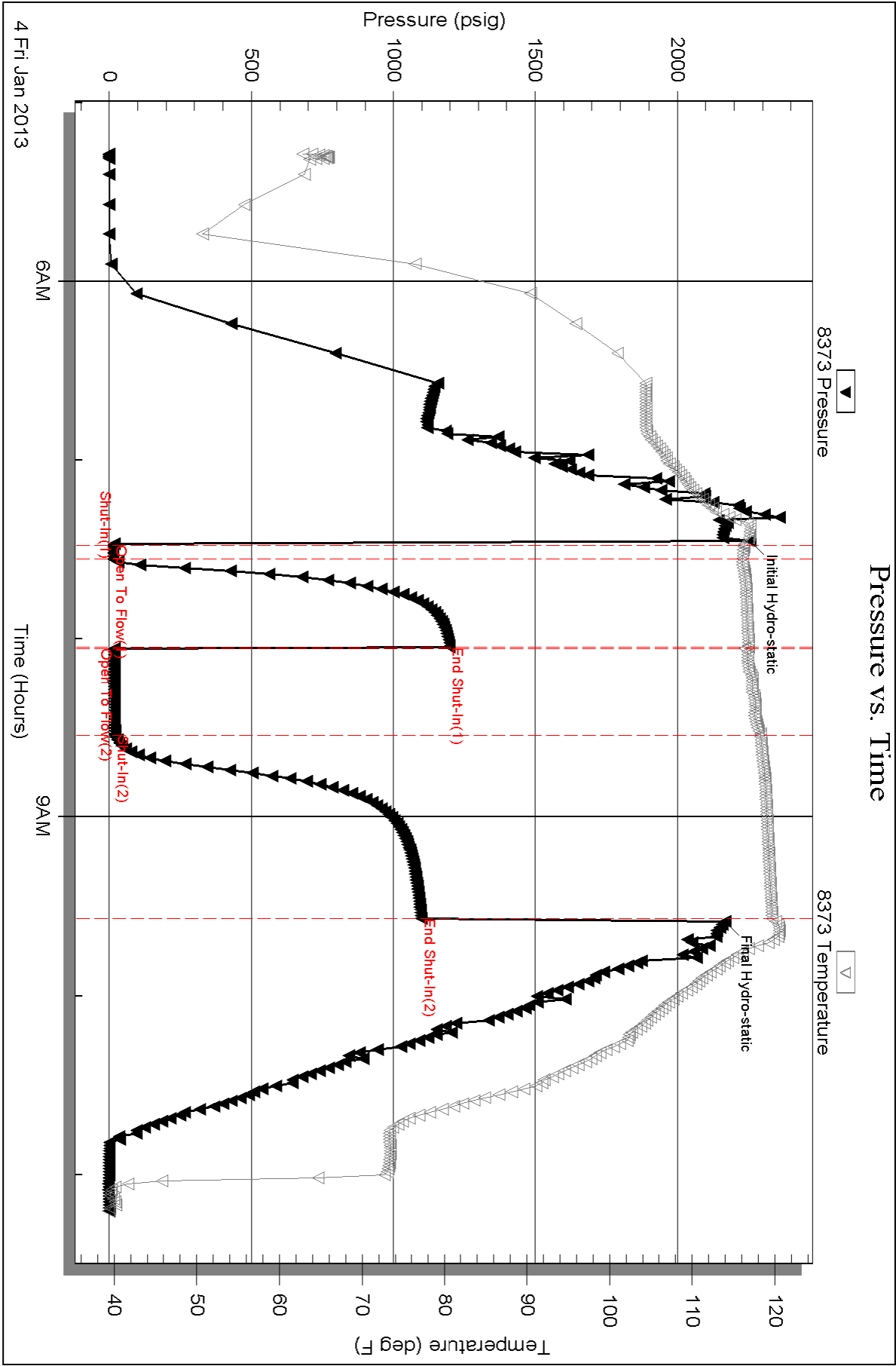
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Inside

Mull Drilling Company

Larsen Unit #1-24

DST Test Number: 2



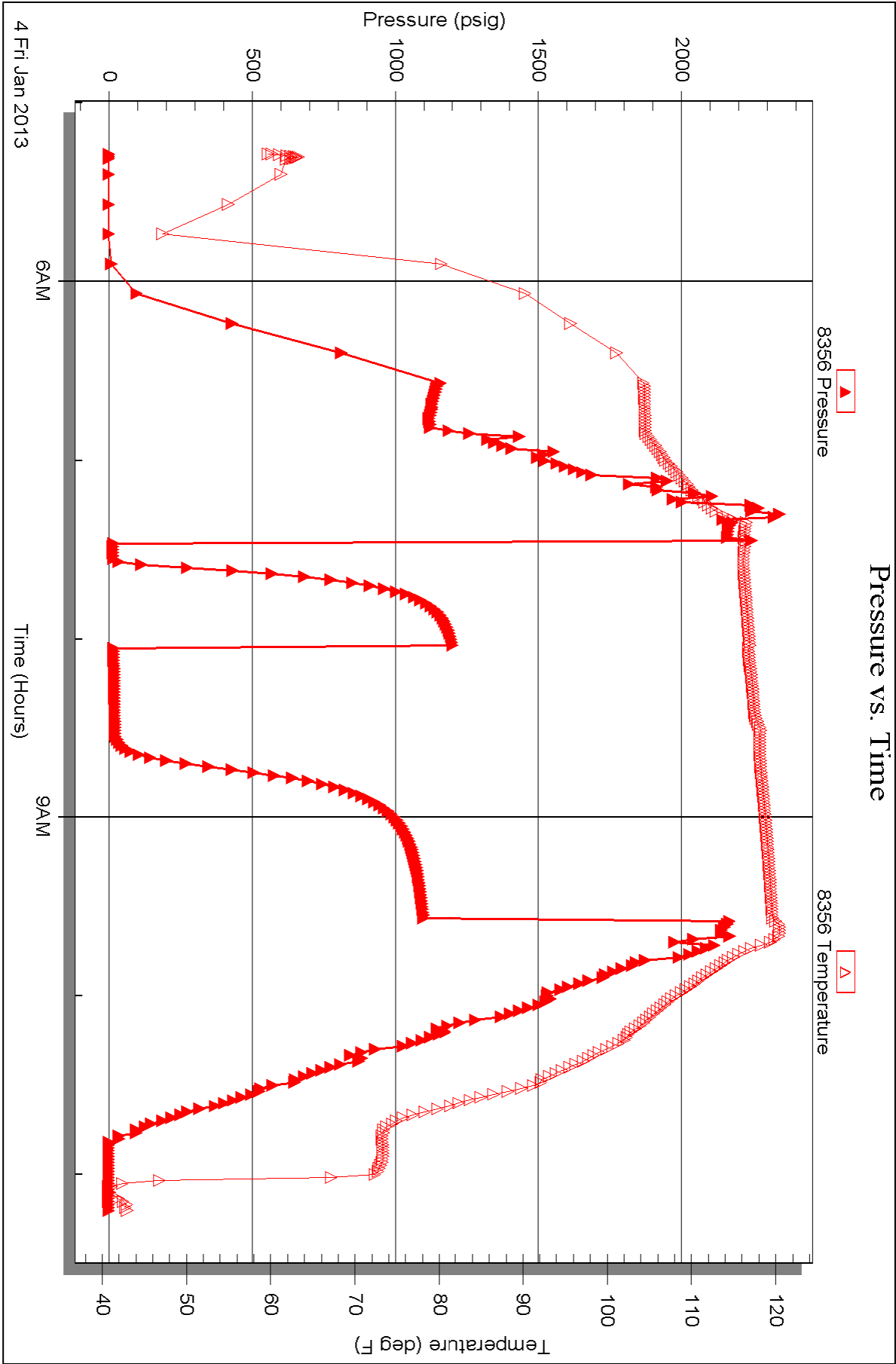
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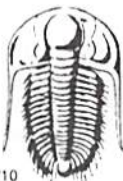
Outside

Mull Drilling Company

Larsen Unit #1-24

DST Test Number: 2





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 50121

Well Name & No. Larsen unit 1-24 Test No. 1 Date 1-2-13
 Company Mull Drilling Company Elevation 4119 KB 4109 GL
 Address 1700 N Waterfront Pkwy B#1200 Wichita, KS 67206
 Co. Rep / Geo. Phil Askey Rig Martin 20
 Location: Sec. 24 Twp. 17S Rge. 45W Co. Kiowa State KS

Interval Tested 4180 4191 Zone Tested Lansing
 Anchor Length 11 Drill Pipe Run 3983 Mud Wt. 9.1
 Top Packer Depth 4175 Drill Collars Run 181 Vis 49
 Bottom Packer Depth 4180 Wt. Pipe Run — WL 7.2
 Total Depth 4191 Chlorides 2400 ppm System LCM 4

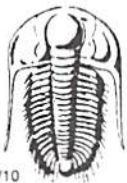
Blow Description IF: 1/4 blow BoB in 4 min.
IS: No return.
FF: 1/4 blow BoB in 6 min.
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>310</u>	<u>wcm</u>		<u>10</u>	<u>90</u>	
<u>930</u>	<u>water</u>		<u>160</u>		

Rec Total 1240 BHT 125 Gravity — API RW .80 @ 34 °F Chlorides 17000 ppm
 (A) Initial Hydrostatic 2034 ☒ Test 1250 T-On Location 11:15
 (B) First Initial Flow 125 ☐ Jars T-Started 11:46
 (C) First Final Flow 194 ☐ Safety Joint T-Open 13:29
 (D) Initial Shut-In 1105 ☒ Circ Sub N/C T-Pulled 16:19
 (E) Second Initial Flow 184 ☐ Hourly Standby T-Out 18:45
 (F) Second Final Flow 578 ☒ Mileage 184- 285.20 Comments 20 ppm H2S
 (G) Final Shut-In 1100 ☐ Sampler
 (H) Final Hydrostatic 1979 ☐ Straddle ☐ Ruined Shale Packer
☐ Shale Packer ☐ Ruined Packer
☐ Extra Packer ☐ Extra Copies

Initial Open 5
 Initial Shut-In 30
 Final Flow 45
 Final Shut-In 90
 Sub Total 1535.20

Approved By Phil Askey 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. 50122

Well Name & No. Larsen unit 1-24 Test No. 2 Date 1-4-13
 Company Mull Drilling Company Elevation 4119 KB 4109 GL
 Address 1700 N Waterfront Hwy B 1200 Wichita, KS 67206
 Co. Rep / Geo. Phil Askey Rig Murfin 20
 Location: Sec. 24 Twp. 17S Rge. 45W Co. KS09 State KS

Interval Tested 4444 4497 Zone Tested Marmaton
 Anchor Length 53 Drill Pipe Run 4267 Mud Wt. 9.2
 Top Packer Depth 4439 Drill Collars Run 181 Vis 54
 Bottom Packer Depth 4444 Wt. Pipe Run — WL 8.0
 Total Depth 4495 Chlorides 2500 ppm System LCM 4

Blow Description IF: Surface blow.
IS: No return.
FF: No blow.
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</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 5 BHT — Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 2256 ☒ Test 1250 T-On Location 4:40
 (B) First Initial Flow 13 ☐ Jars T-Started 5:17
 (C) First Final Flow 13 ☐ Safety Joint T-Open 7:28
 (D) Initial Shut-In 1199 ☒ Circ Sub NIL T-Pulled 9:33
 (E) Second Initial Flow 16 ☐ Hourly Standby T-Out 11:15
 (F) Second Final Flow 19 ☒ Mileage 184- 285.20 Comments motel
 (G) Final Shut-In 1096 ☐ Sampler
 (H) Final Hydrostatic 2167 ☐ Straddle ☐ Ruined Shale Packer
☐ Shale Packer ☐ Ruined Packer
☐ Extra Packer ☐ Extra Copies

Initial Open 5
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 60
☒ Day Standby 1d 10h
☐ Accessibility
 Sub Total 1868.53
 Sub Total 1868.53
 MP/DST Disc't —

Approved By Phil Askey Our Representative [Signature]
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