



## DRILL STEM TEST REPORT

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

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

ATTN: Phil Askey

**W-K #1-27**

**27-6s-47w Kit Carson, CO**

Start Date: 2014.10.01 @ 17:00:40

End Date: 2014.10.02 @ 01:48:10

Job Ticket #: 60915                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.07 @ 10:46:30



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

## DRILL STEM TEST REPORT

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60915

**DST#: 1**

ATTN: Phil Askey

Test Start: 2014.10.01 @ 17:00:40

### GENERAL INFORMATION:

Formation: **L Morrow Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:34:40

Time Test Ended: 01:48:10

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 62

Interval: **5832.00 ft (KB) To 5980.00 ft (KB) (TVD)**

Total Depth: 5980.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 4301.00 ft (KB)

4290.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8651 Inside**

Press@RunDepth: 118.51 psig @ 5833.00 ft (KB)

Start Date: 2014.10.01

End Date:

2014.10.02

Start Time: 17:00:41

End Time:

01:48:10

Capacity: 8000.00 psig

Last Calib.: 2014.10.02

Time On Btm: 2014.10.01 @ 20:31:40

Time Off Btm: 2014.10.01 @ 22:41:10

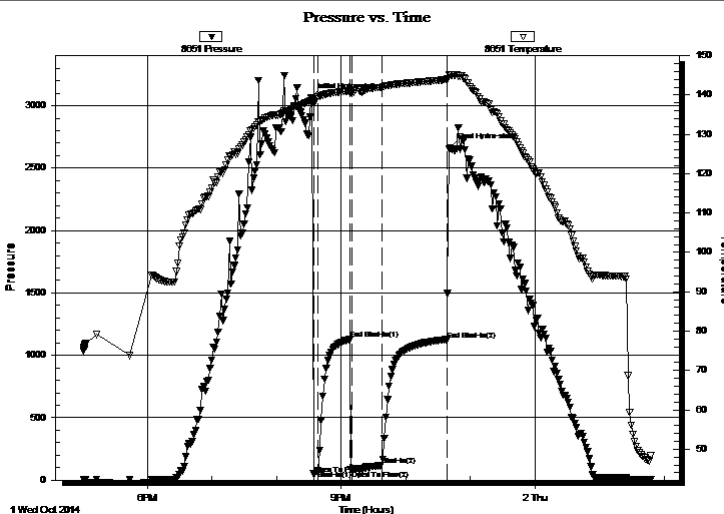
TEST COMMENT: 05- IF- Initial blow of 1/2" built to 3/4"

30- IS- No blow

30- FF- Built slowly to 3/4"

60- FSI- No blow

### PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	3066.71	138.63	Initial Hydro-static
3	49.07	138.12	Open To Flow (1)
7	75.73	139.64	Shut-In(1)
36	1127.11	141.03	End Shut-In(1)
39	81.11	140.45	Open To Flow (2)
66	118.51	141.96	Shut-In(2)
127	1126.34	143.89	End Shut-In(2)
130	2660.12	145.10	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
180.00	M	0.90

### Gas Rates

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

## DRILL STEM TEST REPORT

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60915

**DST#: 1**

ATTN: Phil Askey

Test Start: 2014.10.01 @ 17:00:40

### GENERAL INFORMATION:

Formation: **L Morrow Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:34:40

Time Test Ended: 01:48:10

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 62

Interval: **5832.00 ft (KB) To 5980.00 ft (KB) (TVD)**

Reference Elevations: 4301.00 ft (KB)

Total Depth: 5980.00 ft (KB) (TVD)

4290.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 8655 Outside**

Press@RunDepth: psig @ 5833.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.10.01

End Date:

2014.10.02

Last Calib.:

2014.10.02

Start Time: 17:00:40

End Time:

01:46:39

Time On Btm:

Time Off Btm:

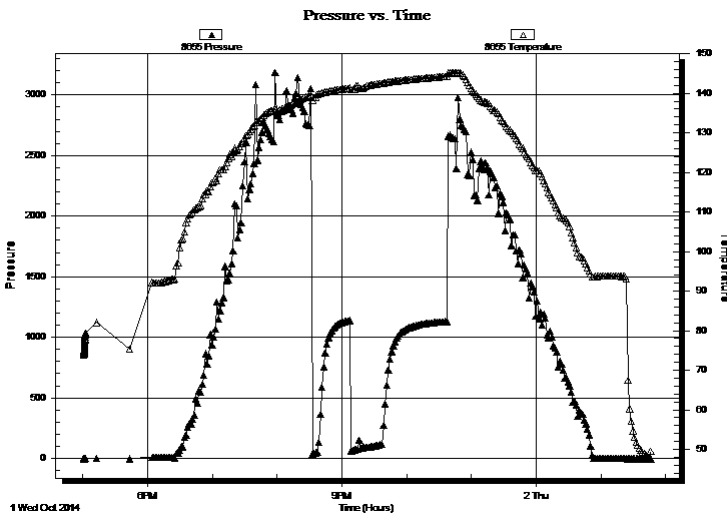
TEST COMMENT: 05- IF- Initial blow of 1/2" built to 3/4"

30- IS- No blow

30- FF- Built slowly to 3/4"

60- FS- No blow

### PRESSURE SUMMARY



Time  
(Min.)

Pressure  
(psig)

Temp  
(deg F)

Annotation

### Recovery

Length (ft)	Description	Volume (bbl)
180.00	M	0.90

### Gas Rates

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

## DRILL STEM TEST REPORT

### TOOL DIAGRAM

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60915

**DST#: 1**

ATTN: Phil Askey

Test Start: 2014.10.01 @ 17:00:40

### Tool Information

Drill Pipe:	Length: 5655.00 ft	Diameter: 3.75 inches	Volume: 77.25 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose:	110000.0 lb
		Total Volume:	- bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial	90000.00 lb
Depth to Top Packer:	5832.00 ft			Final	90000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	148.00 ft				
Tool Length:	175.00 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			5806.00	
Shut In Tool	5.00			5811.00	
Hydraulic tool	5.00			5816.00	
Jars	5.00			5821.00	
Safety Joint	2.00			5823.00	
Packer	5.00			5828.00	27.00 Bottom Of Top Packer
Packer	4.00			5832.00	
Stubb	1.00			5833.00	
Recorder	0.00	8651	Inside	5833.00	
Recorder	0.00	8655	Outside	5833.00	
Perforations	15.00			5848.00	
Change Over Sub	1.00			5849.00	
Drill Pipe	127.00			5976.00	
Change Over Sub	1.00			5977.00	
Bullnose	3.00			5980.00	148.00 Bottom Packers & Anchor

**Total Tool Length: 175.00**



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

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60915

**DST#: 1**

ATTN: Phil Askey

Test Start: 2014.10.01 @ 17:00:40

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 65.00 sec/qt

Water Loss: 7.19 in<sup>3</sup>

Resistivity: ohm.m

Salinity: 300.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	M	0.903

Total Length: 180.00 ft

Total Volume: 0.903 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

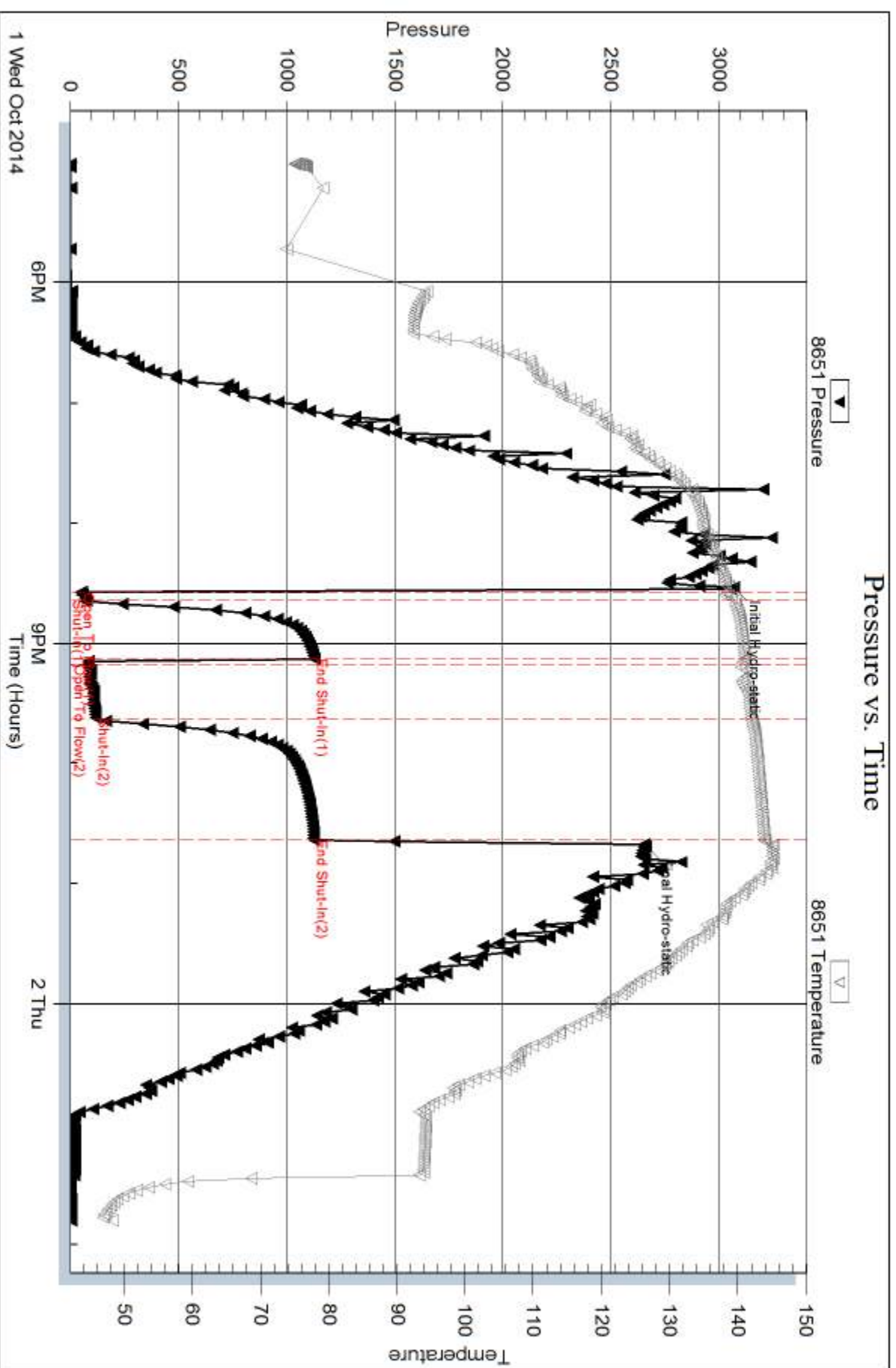
Serial #: 8651

Inside

Mull Drilling Company, Inc.

W-K #1-27

DST Test Number: 1

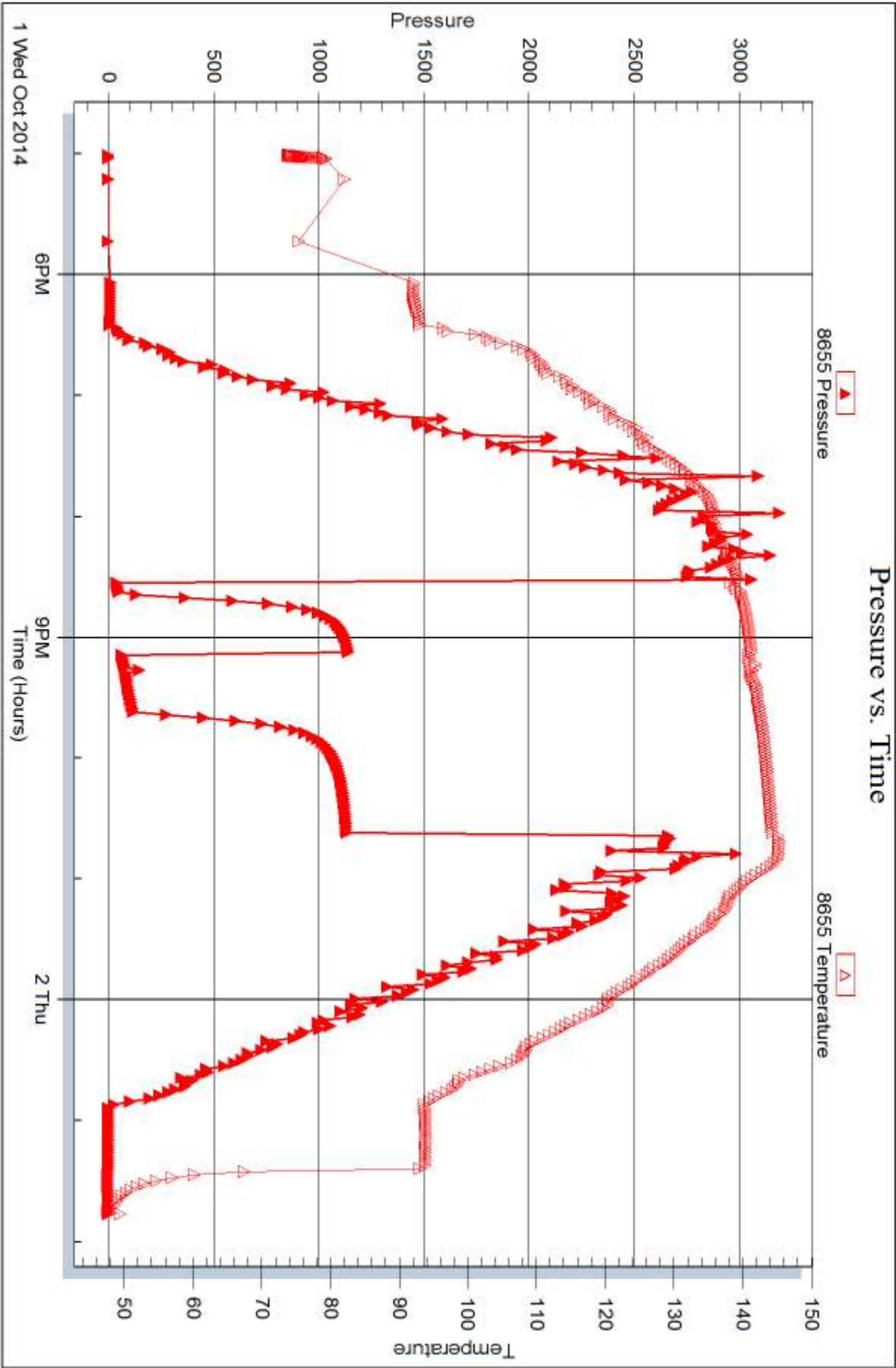


Serial #: 8655

Outside Mull Drilling Company, Inc.

W-K #1-27

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 60915

Printed: 2014, 10, 07 @ 10:46:32



## DRILL STEM TEST REPORT

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

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

ATTN: Phil Askey

**W-K #1-27**

**27-6s-47w Kit Carson, CO**

Start Date: 2014.10.02 @ 17:54:02

End Date: 2014.10.03 @ 03:40:32

Job Ticket #: 60916 DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.07 @ 10:45:52





**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60916

**DST#: 2**

ATTN: Phil Askey

Test Start: 2014.10.02 @ 17:54:02

### GENERAL INFORMATION:

Formation: **Mississippi**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:39:32

Time Test Ended: 03:40:32

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 62

**Interval: 5985.00 ft (KB) To 6070.00 ft (KB) (TVD)**

Total Depth: 6070.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 4301.00 ft (KB)

4290.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8655 Outside**

Press@RunDepth: 184.88 psig @ 5986.00 ft (KB)

Start Date: 2014.10.02

End Date:

2014.10.03

Start Time: 17:54:03

End Time:

03:40:32

Capacity: 8000.00 psig

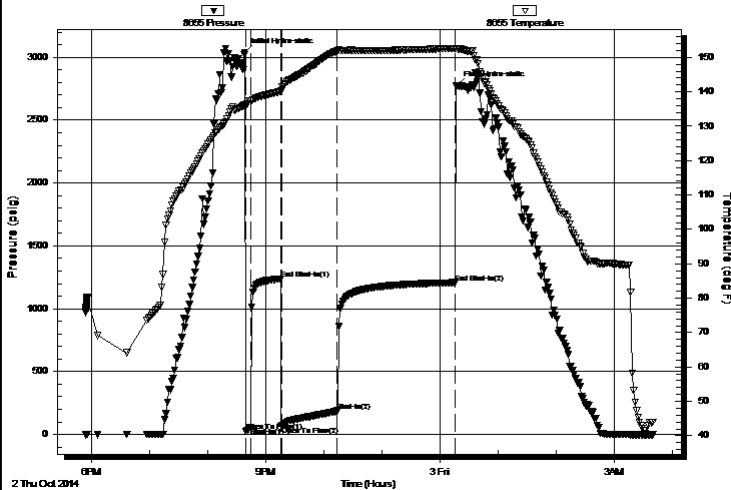
Last Calib.: 2014.10.03

Time On Btm: 2014.10.02 @ 20:38:32

Time Off Btm: 2014.10.03 @ 00:17:02

TEST COMMENT: 005- IF- Built to 1 1/2"  
030- ISI- No blow  
060- FF- Built to 5 1/2"  
120- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	3038.59	136.20	Initial Hydro-static
1	25.69	135.76	Open To Flow (1)
6	58.02	137.48	Shut-In(1)
37	1236.92	140.08	End Shut-In(1)
38	63.66	140.17	Open To Flow (2)
95	184.88	151.88	Shut-In(2)
217	1208.43	152.62	End Shut-In(2)
219	2772.01	152.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
180.00	MW, 25%M 75%W	0.90
200.00	M	2.73

Gas Rates

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



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## DRILL STEM TEST REPORT

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60916

**DST#: 2**

ATTN: Phil Askey

Test Start: 2014.10.02 @ 17:54:02

### GENERAL INFORMATION:

Formation: **Mississippi**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:39:32

Time Test Ended: 03:40:32

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 62

**Interval: 5985.00 ft (KB) To 6070.00 ft (KB) (TVD)**

Total Depth: 6070.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 4301.00 ft (KB)

4290.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8651 Inside**

Press@RunDepth: psig @ 5986.00 ft (KB)

Start Date: 2014.10.02

End Date:

2014.10.03

Start Time: 17:53:56

End Time:

03:41:55

Capacity: 8000.00 psig

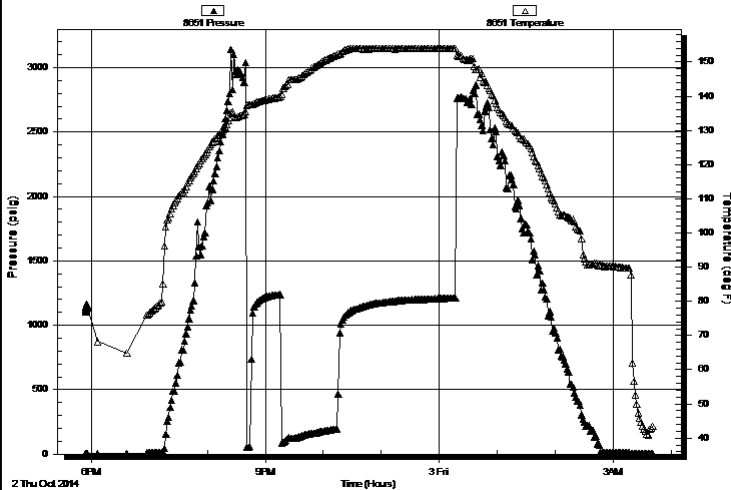
Last Calib.: 2014.10.03

Time On Btm:

Time Off Btm:

TEST COMMENT: 005- IF- Built to 1 1/2"  
030- ISI- No blow  
060- FF- Built to 5 1/2"  
120- FSI- No blow

Pressure vs. Time



### PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
180.00	MW, 25%M 75%W	0.90
200.00	M	2.73

### Gas Rates

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



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

## DRILL STEM TEST REPORT

### TOOL DIAGRAM

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60916

**DST#: 2**

ATTN: Phil Askey

Test Start: 2014.10.02 @ 17:54:02

### Tool Information

Drill Pipe:	Length: 5812.00 ft	Diameter: 3.75 inches	Volume: 79.40 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose:	120000.0 lb
		Total Volume:	- bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial	87000.00 lb
Depth to Top Packer:	5985.00 ft			Final	89000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	85.00 ft				
Tool Length:	112.00 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			5959.00	
Shut In Tool	5.00			5964.00	
Hydraulic tool	5.00			5969.00	
Jars	5.00			5974.00	
Safety Joint	2.00			5976.00	
Packer	5.00			5981.00	27.00 Bottom Of Top Packer
Packer	4.00			5985.00	
Stubb	1.00			5986.00	
Recorder	0.00	8651	Inside	5986.00	
Recorder	0.00	8655	Outside	5986.00	
Perforations	15.00			6001.00	
Change Over Sub	1.00			6002.00	
Drill Pipe	64.00			6066.00	
Change Over Sub	1.00			6067.00	
Bullnose	3.00			6070.00	85.00 Bottom Packers & Anchor

**Total Tool Length: 112.00**



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

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Mull Drilling Company, Inc.

**27-6s-47w Kit Carson, CO**

1700 N Waterfront Pkwy B#1200  
Wichita, KS 67206

**W-K #1-27**

Job Ticket: 60916

**DST#: 2**

ATTN: Phil Askey

Test Start: 2014.10.02 @ 17:54:02

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 72.00 sec/qt

Water Loss: 7.99 in<sup>3</sup>

Resistivity: ohm.m

Salinity: 350.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity: 50000 ppm

deg API

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	MW, 25%M 75%W	0.903
200.00	M	2.732

Total Length: 380.00 ft

Total Volume: 3.635 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

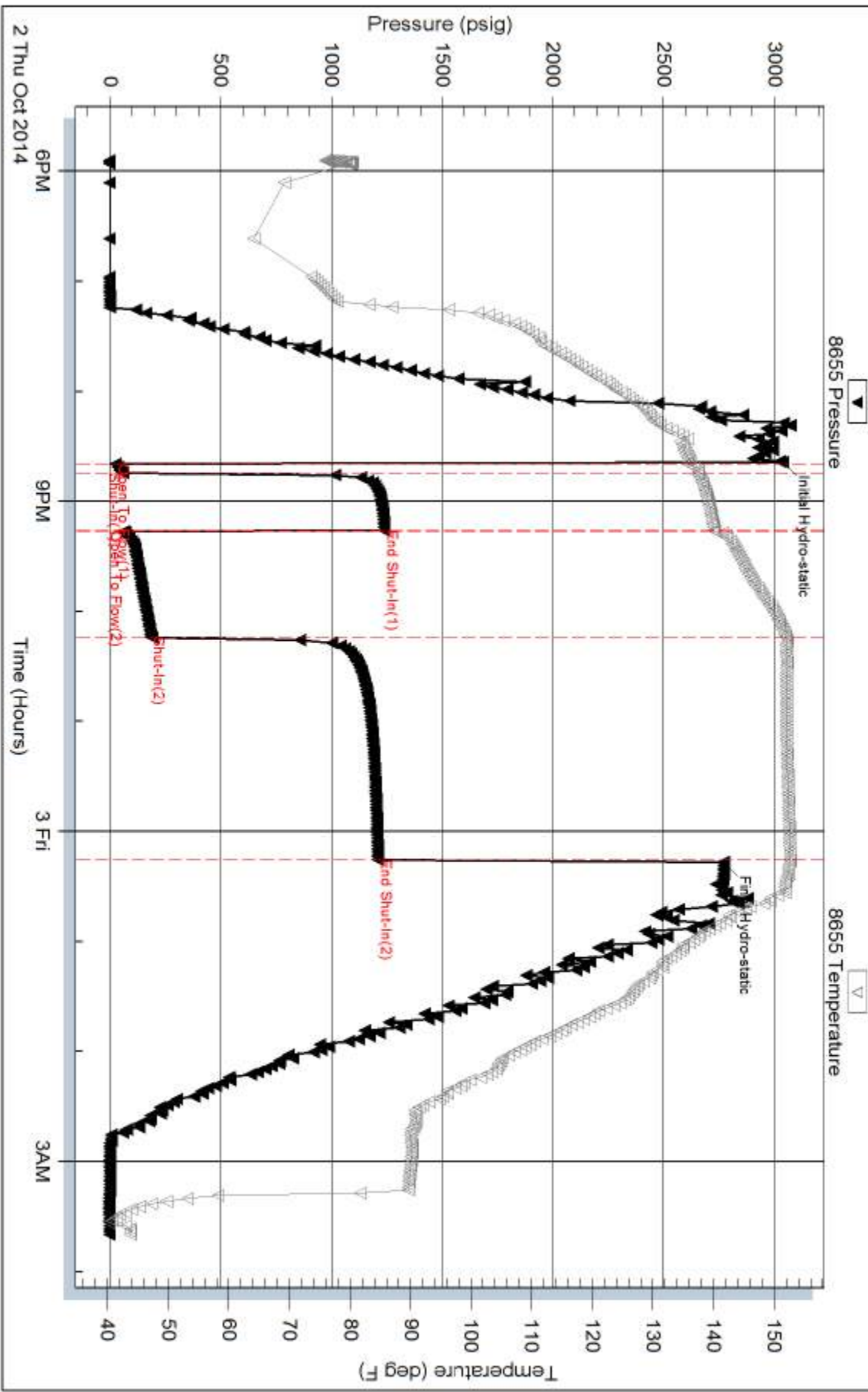
Serial #: 8655

Outside Mull Drilling Company, Inc.

W-K #1-27

DST Test Number: 2

# Pressure vs. Time



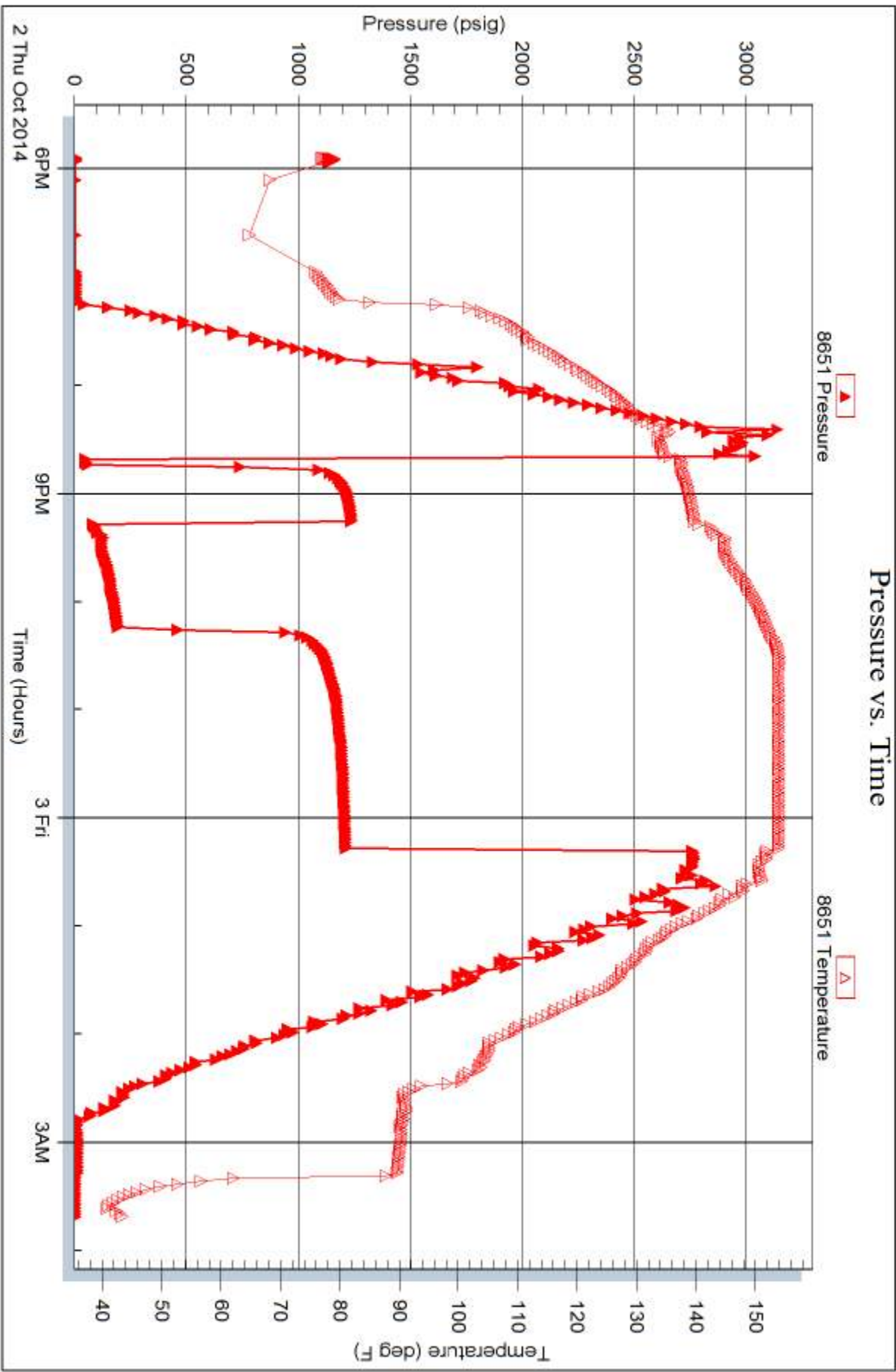
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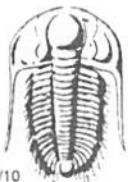
Inside

Mull Drilling Company, Inc.

W-K #1-27

DST Test Number: 2





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60915

Well Name & No. W-K #1-27 Test No. 1 Date 10/1/14  
 Company Mull Drilling Company, Inc. Elevation 4290 KB 4301 GL  
 Address 1700 N. Waterfront Pkwy B #1200 Wichita, KS 67206  
 Co. Rep / Geo. Phil Askey Rig Murfin #20  
 Location: Sec. 27 Twp. 6 S Rge. 47 W Co. Kit Carson State CO

Interval Tested 5832-5980 Zone Tested L Morrow Sand  
 Anchor Length 148' Drill Pipe Run 3655 Mud Wt. 9.2  
 Top Packer Depth 5827 Drill Collars Run 178 Vis 65  
 Bottom Packer Depth 5832 Wt. Pipe Run — WL 7.2  
 Total Depth 5980 Chlorides 300 ppm System LCM 10<sup>#</sup>

Blow Description IF - Initial blow of 1/2" built to 3/4"  
ISI - No blow  
FF - Slowly built to 3/4"  
PSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>180'</u>	<u>M</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 180' BHT 1440 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>3067</u>	<input checked="" type="checkbox"/> Test <u>1550</u>	T-On Location <u>1639</u>
(B) First Initial Flow <u>49</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1701</u>
(C) First Final Flow <u>26</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>2033</u>
(D) Initial Shut-In <u>1127</u>	<input type="checkbox"/> Circ Sub <u>—</u>	T-Pulled <u>2238</u>
(E) Second Initial Flow <u>81</u>	<input type="checkbox"/> Hourly Standby <u>—</u>	T-Out <u>0148 10/2</u>
(F) Second Final Flow <u>119</u>	<input checked="" type="checkbox"/> Mileage <u>444 RT</u> 310rt	Comments <u>—</u>
(G) Final Shut-In <u>1126</u>	<input type="checkbox"/> Sampler <u>—</u> 480.50	
(H) Final Hydrostatic <u>2660</u>	<input type="checkbox"/> Straddle <u>—</u>	<input type="checkbox"/> Ruined Shale Packer <u>—</u>
	<input type="checkbox"/> Shale Packer <u>—</u>	<input type="checkbox"/> Ruined Packer <u>—</u>
	<input type="checkbox"/> Extra Packer <u>—</u>	<input type="checkbox"/> Extra Copies <u>—</u>
	<input type="checkbox"/> Extra Recorder <u>—</u>	Sub Total <u>0</u>
	<input type="checkbox"/> Day Standby <u>—</u>	Total <u>2355.50</u>
	<input type="checkbox"/> Accessibility <u>—</u>	MP/DST Disc't <u>—</u>
	Sub Total <u>2355.50</u>	

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

Approved By —

Our Representative Brannan Lonsdale

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. 60916

Well Name & No. W-K #1-27 Test No. 2 Date 10/2/14  
 Company Mull Drilling Company, Inc. Elevation 4301 KB 4290 GL  
 Address 1700 N. Waterfront Pkwy B #1200 Wichita, KS 67206  
 Co. Rep / Geo. Phil Askey Rig Marlon #20  
 Location: Sec. 27 Twp. 6 S Rge. 47 W Co. Kan State CO

Interval Tested 5985-6070 Zone Tested Mississippi  
 Anchor Length 85' Drill Pipe Run 5812 Mud Wt. 9.2  
 Top Packer Depth 5980 Drill Collars Run 178 Vis 72  
 Bottom Packer Depth 5985 Wt. Pipe Run            WL 8.0  
 Total Depth 6070 Chlorides 350 ppm System LCM 10#  
 Blow Description IF - Built to 1 1/2"  
ISI - No blow  
FF - Built to 5 1/2"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>180</u>	<u>MW</u>			<u>75</u>	<u>25</u>
<u>200</u>	<u>M</u>				

Rec Total 380' BHT 1530 Gravity            API RW .25 @ 40 °F Chlorides 5000 ppm  
 (A) Initial Hydrostatic 3039 ☒ Test 1650 T-On Location 1732  
 (B) First Initial Flow 26 ☒ Jars 250 T-Started 1754  
 (C) First Final Flow 58 ☒ Safety Joint 75 T-Open 2040  
 (D) Initial Shut-In 1237 ☐ Circ Sub            T-Pulled 0015 10/3  
 (E) Second Initial Flow 64 ☐ Hourly Standby            T-Out 0342  
 (F) Second Final Flow 185 ☒ Mileage 444 RTX2 Comments Stayed 3 nights  
 (G) Final Shut-In 1208 ☐ Sampler 480.50+480.50 in Stratton, CO @  
 (H) Final Hydrostatic 2772 ☐ Straddle            Roadway Inn!  
☐ Ruined Shale Packer             
☐ Ruined Packer             
☐ Extra Copies           

Initial Open 5  
 Initial Shut-In 30  
 Final Flow 60  
 Final Shut-In 120  
☒ Day Standby Loaded 10/4 @ 1215 Sub Total 800  
☐ Accessibility 1d 9.5h Total 3736  
 Sub Total 2936 MP/DST Disc't           

Approved By            Our Representative Brannan Lonsdale  
 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.