



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company INC**

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Paul Gunzelman

### **Maher #1-15**

#### **15-1S-32W Rawlins,KS**

Start Date: 2019.02.21 @ 21:00:00

End Date: 2019.02.22 @ 04:46:50

Job Ticket #: 65342                      DST #: 1

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

Printed: 2019.02.26 @ 10:43:48



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maher #1-15**

Job Ticket: 65342

**DST#: 1**

ATTN: Paul Gunzelman

Test Start: 2019.02.21 @ 21:00:00

## GENERAL INFORMATION:

Formation: **Lansing " B "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:58:30

Time Test Ended: 04:46:50

Test Type: Conventional Bottom Hole (Initial)

Tester: Martine Salinas

Unit No: 82

**Interval: 3945.00 ft (KB) To 4002.00 ft (KB) (TVD)**

Total Depth: 4002.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2986.00 ft (KB)

2981.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8959**

**Inside**

Press@RunDepth: 28.89 psig @ 3946.00 ft (KB)

Start Date: 2019.02.21

End Date:

2019.02.22

Start Time: 21:00:01

End Time:

04:46:50

Capacity: 8000.00 psig

Last Calib.: 2019.02.22

Time On Btm: 2019.02.21 @ 23:58:20

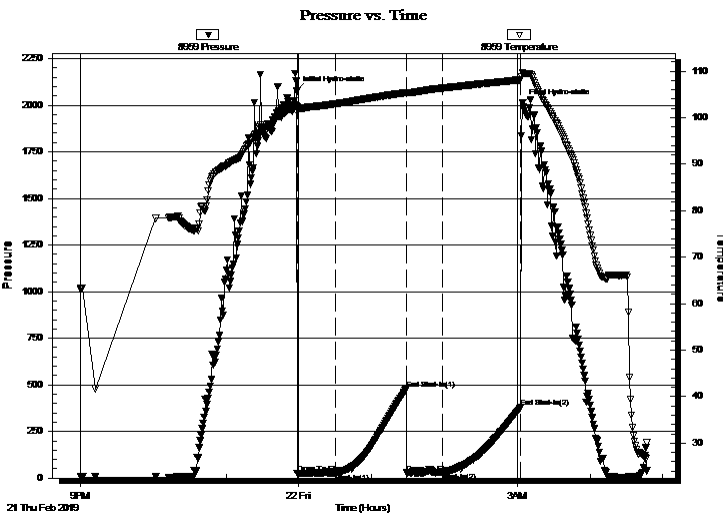
Time Off Btm: 2019.02.22 @ 03:04:20

TEST COMMENT: 30-IF-Surface blow built to 1 1/4" ( In Diesel)

60-ISI-No blow

30-FF-No blow

60-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2078.24	102.38	Initial Hydro-static
1	25.20	101.13	Open To Flow (1)
32	26.67	102.98	Shut-In(1)
91	476.17	105.39	End Shut-In(1)
91	27.58	105.20	Open To Flow (2)
121	28.89	106.36	Shut-In(2)
185	380.01	108.16	End Shut-In(2)
187	2010.90	109.74	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	100% Mud	0.02

## Gas Rates

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



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Murfin Drilling Company INC

15-1S-32W Rawlins,KS

250 N. Water STE 300  
Wichita, KS 67202

**Maher #1-15**

Job Ticket: 65342

**DST#: 1**

ATTN: Paul Gunzelman

Test Start: 2019.02.21 @ 21:00:00

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Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:58:30

Time Test Ended: 04:46:50

Test Type: Conventional Bottom Hole (Initial)

Tester: Martine Salinas

Unit No: 82

**Interval: 3945.00 ft (KB) To 4002.00 ft (KB) (TVD)**

Total Depth: 4002.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2986.00 ft (KB)

2981.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8734 Outside**

Press@RunDepth: psig @ 3946.00 ft (KB)

Start Date: 2019.02.21

End Date:

2019.02.22

Start Time: 21:00:01

End Time:

04:47:00

Capacity: 8000.00 psig

Last Calib.:

2019.02.22

Time On Btm:

Time Off Btm:

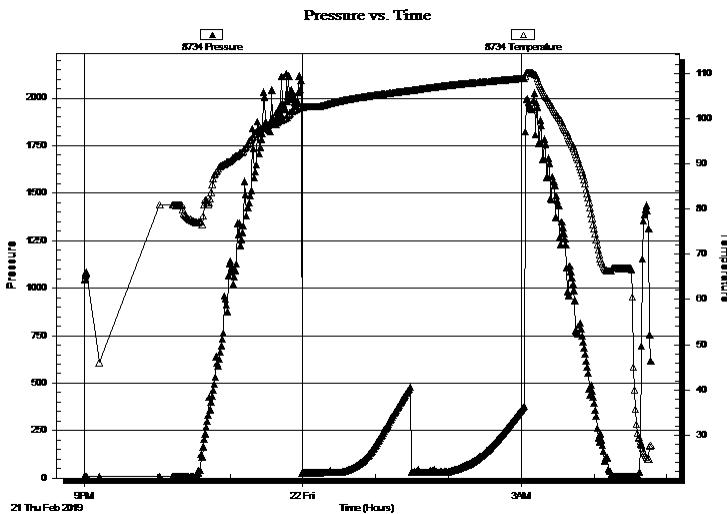
TEST COMMENT: 30-IF-Surface blow built to 1 1/4" ( In Diesel)

60-ISI-No blow

30-FF-No blow

60-FSI-No blow

### PRESSURE SUMMARY



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

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	100% Mud	0.02

### Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**MaheR #1-15**

Job Ticket: 65342

**DST#: 1**

ATTN: Paul Gunzelman

Test Start: 2019.02.21 @ 21:00:00

## Tool Information

Drill Pipe:	Length: 3713.00 ft	Diameter: 3.80 inches	Volume: 52.08 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 53.11 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	3945.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	57.00 ft			
Tool Length:	85.00 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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Shut In Tool	5.00			3922.00	
Hydraulic tool	5.00	1113		3927.00	
Jars	5.00	01-07		3932.00	
Safety Joint	3.00	-001		3935.00	
Packer	5.00			3940.00	28.00 Bottom Of Top Packer
Packer	5.00			3945.00	
Stubb	1.00			3946.00	
Recorder	0.00	8959	Inside	3946.00	
Recorder	0.00	8734	Outside	3946.00	
Perforations	17.00			3963.00	
Change Over Sub	1.00			3964.00	
Drill Pipe	32.00			3996.00	
Change Over Sub	1.00			3997.00	
Bullnose	5.00			4002.00	57.00 Bottom Packers & Anchor

**Total Tool Length: 85.00**



**TRILOBITE  
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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maier #1-15**

Job Ticket: 65342

**DST#: 1**

ATTN: Paul Gunzelman

Test Start: 2019.02.21 @ 21:00:00

## 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: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
5.00	100% Mud	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:

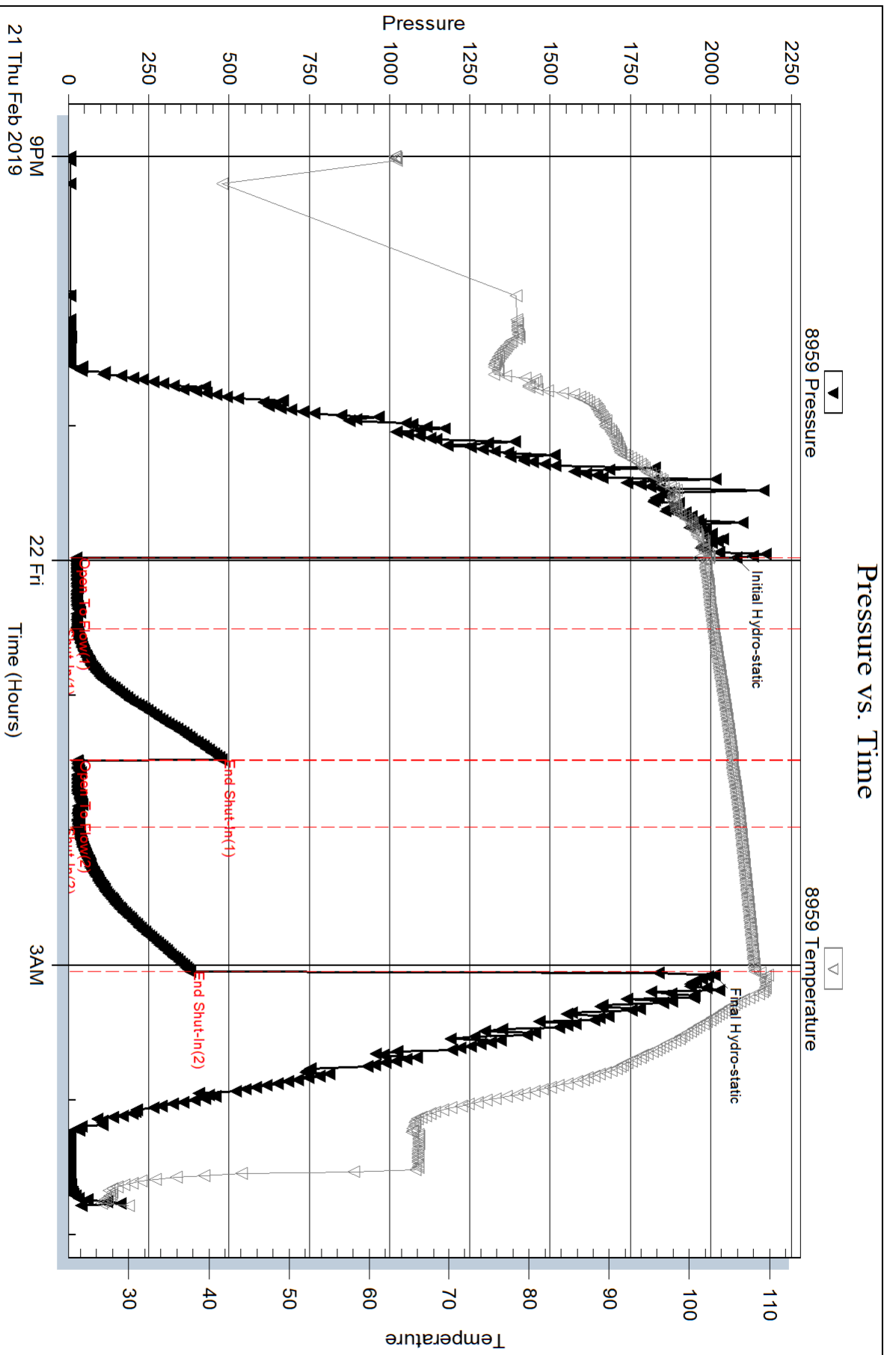
Recovery Comments:

Serial #: 8959

Inside Murfin Drilling Company INC

Maier #1-15

DST Test Number: 1

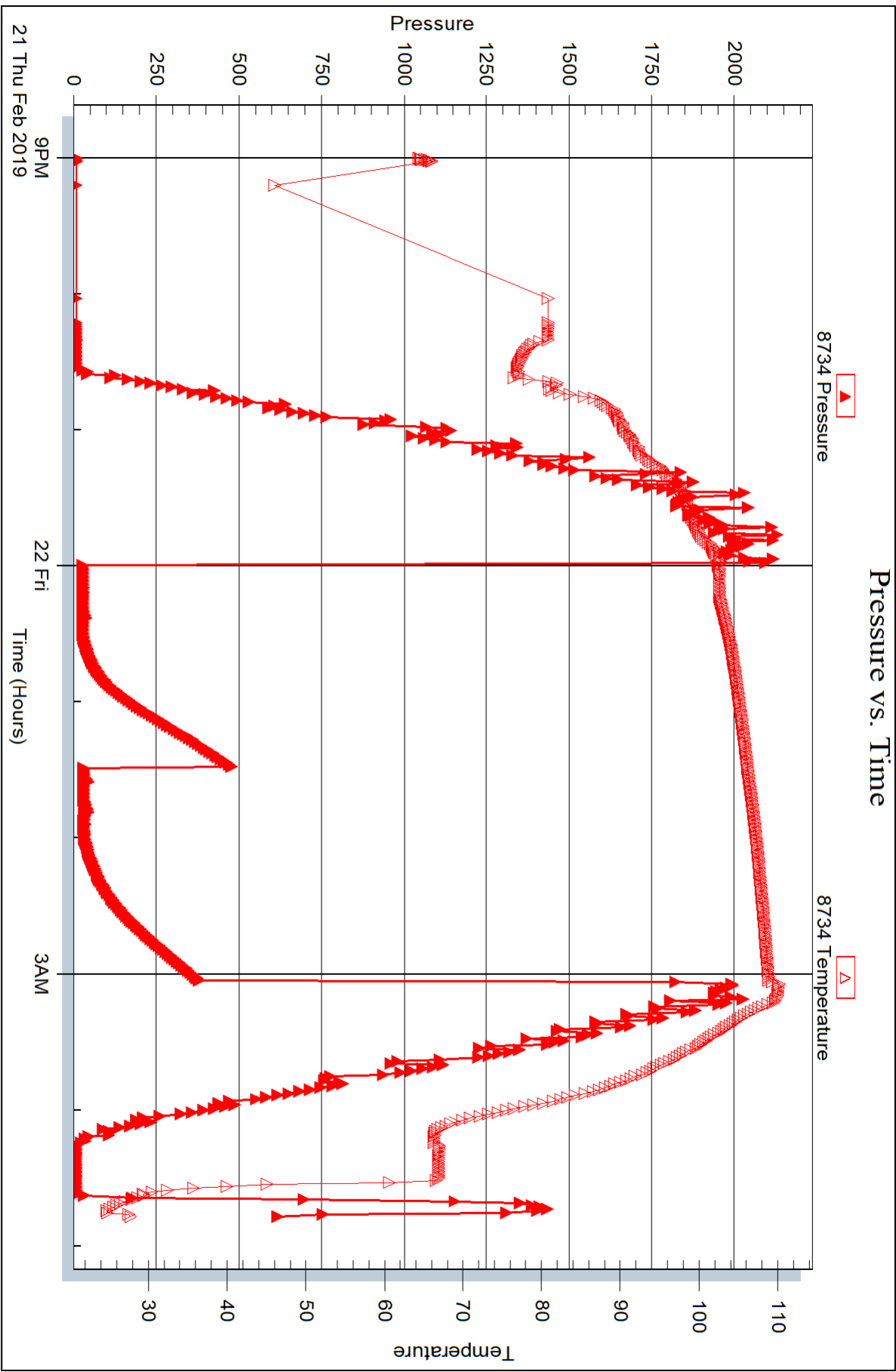


Serial #: 8734

Outside Murfin Drilling Company INC

Maier #1-15

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company INC**

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Paul Gunzelman

### **Maher #1-15**

#### **15-1S-32W Rawlins,KS**

Start Date: 2019.02.24 @ 03:40:00

End Date: 2019.02.24 @ 11:36:50

Job Ticket #: 65343                      DST #: 2

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

Printed: 2019.02.26 @ 10:43:24





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maher #1-15**

Job Ticket: 65343

**DST#: 2**

ATTN: Paul Gunzelman

Test Start: 2019.02.24 @ 03:40:00

## GENERAL INFORMATION:

Formation: **Lansing " H - J "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:32:30

Time Test Ended: 11:36:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

**Interval: 4036.00 ft (KB) To 4126.00 ft (KB) (TVD)**

Reference Elevations: 2986.00 ft (KB)

Total Depth: 4126.00 ft (KB) (TVD)

2981.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8959**

**Inside**

Press@RunDepth: 59.79 psig @ 4037.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.02.24

End Date:

2019.02.24

Last Calib.:

2019.02.24

Start Time: 03:40:01

End Time:

11:36:50

Time On Btm:

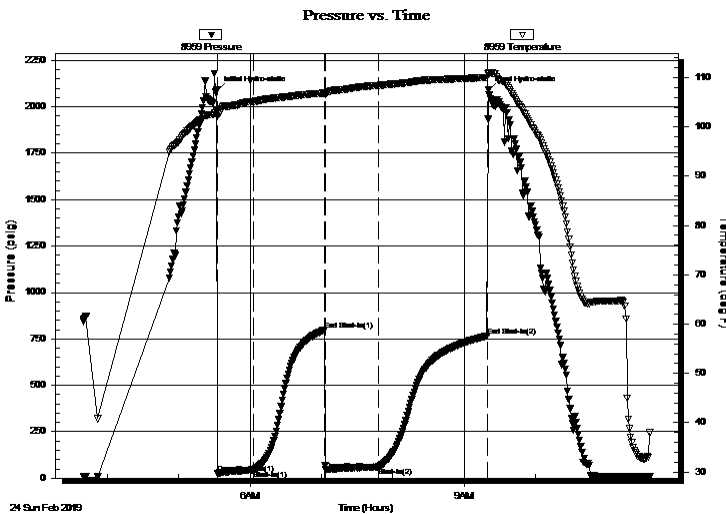
2019.02.24 @ 05:32:20

Time Off Btm:

2019.02.24 @ 09:20:20

**TEST COMMENT:** 30-IF-Surface blow built to 3 1/2"  
60-ISI-No blow  
45-FF-Surface blow built to 4 3/4"  
90-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2089.10	103.26	Initial Hydro-static
1	25.01	102.10	Open To Flow (1)
31	44.15	105.19	Shut-In(1)
91	798.50	106.86	End Shut-In(1)
92	44.66	106.84	Open To Flow (2)
136	59.79	108.43	Shut-In(2)
227	765.65	110.05	End Shut-In(2)
228	2089.48	111.05	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
65.00	HOCM 30%O, 70%M	0.32
15.00	CGO 5%G, 95%O	0.07

## Gas Rates

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

\* Recovery from multiple tests



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**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maher #1-15**

Job Ticket: 65343

**DST#: 2**

ATTN: Paul Gunzelman

Test Start: 2019.02.24 @ 03:40:00

## GENERAL INFORMATION:

Formation: **Lansing " H - J "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:32:30

Time Test Ended: 11:36:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

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Total Depth: 4126.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2986.00 ft (KB)

2981.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8734 Outside**

Press@RunDepth: psig @ 4037.00 ft (KB)

Start Date: 2019.02.24

End Date:

2019.02.24

Start Time: 03:40:01

End Time:

11:36:50

Capacity: 8000.00 psig

Last Calib.:

2019.02.24

Time On Btm:

Time Off Btm:

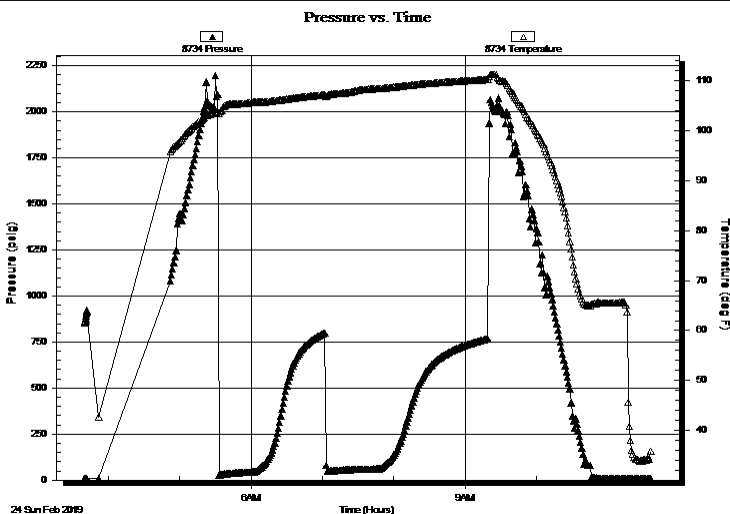
TEST COMMENT: 30-IF-Surface blow built to 3 1/2"

60-ISI-No blow

45-FF-Surface blow built to 4 3/4"

90-FSI-No blow

## PRESSURE SUMMARY



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

## Recovery

Length (ft)	Description	Volume (bbl)
65.00	HOCM 30%O, 70%M	0.32
15.00	CGO 5%G, 95%O	0.07

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maher #1-15**

Job Ticket: 65343

**DST#: 2**

ATTN: Paul Gunzelman

Test Start: 2019.02.24 @ 03:40:00

## Tool Information

Drill Pipe:	Length: 3807.00 ft	Diameter: 3.80 inches	Volume: 53.40 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 210.00 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 54.43 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial	73000.00 lb
Depth to Top Packer:	4036.00 ft			Final	73000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	90.00 ft				
Tool Length:	118.00 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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Shut In Tool	5.00			4013.00	
Hydraulic tool	5.00	1113		4018.00	
Jars	5.00	01-07		4023.00	
Safety Joint	3.00	-001		4026.00	
Packer	5.00			4031.00	28.00 Bottom Of Top Packer
Packer	5.00			4036.00	
Stubb	1.00			4037.00	
Recorder	0.00	8959	Inside	4037.00	
Recorder	0.00	8734	Outside	4037.00	
Perforations	18.00			4055.00	
Change Over Sub	1.00			4056.00	
Drill Pipe	64.00			4120.00	
Change Over Sub	1.00			4121.00	
Bullnose	5.00			4126.00	90.00 Bottom Packers & Anchor

**Total Tool Length: 118.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Company INC

**15-1S-32W Rawlins,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Maier #1-15**

Job Ticket: 65343

**DST#: 2**

ATTN: Paul Gunzelman

Test Start: 2019.02.24 @ 03:40:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

36.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 70.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1300.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
65.00	HOCM 30%O, 70%M	0.320
15.00	CGO 5%G, 95%O	0.074

Total Length: 80.00 ft      Total Volume: 0.394 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

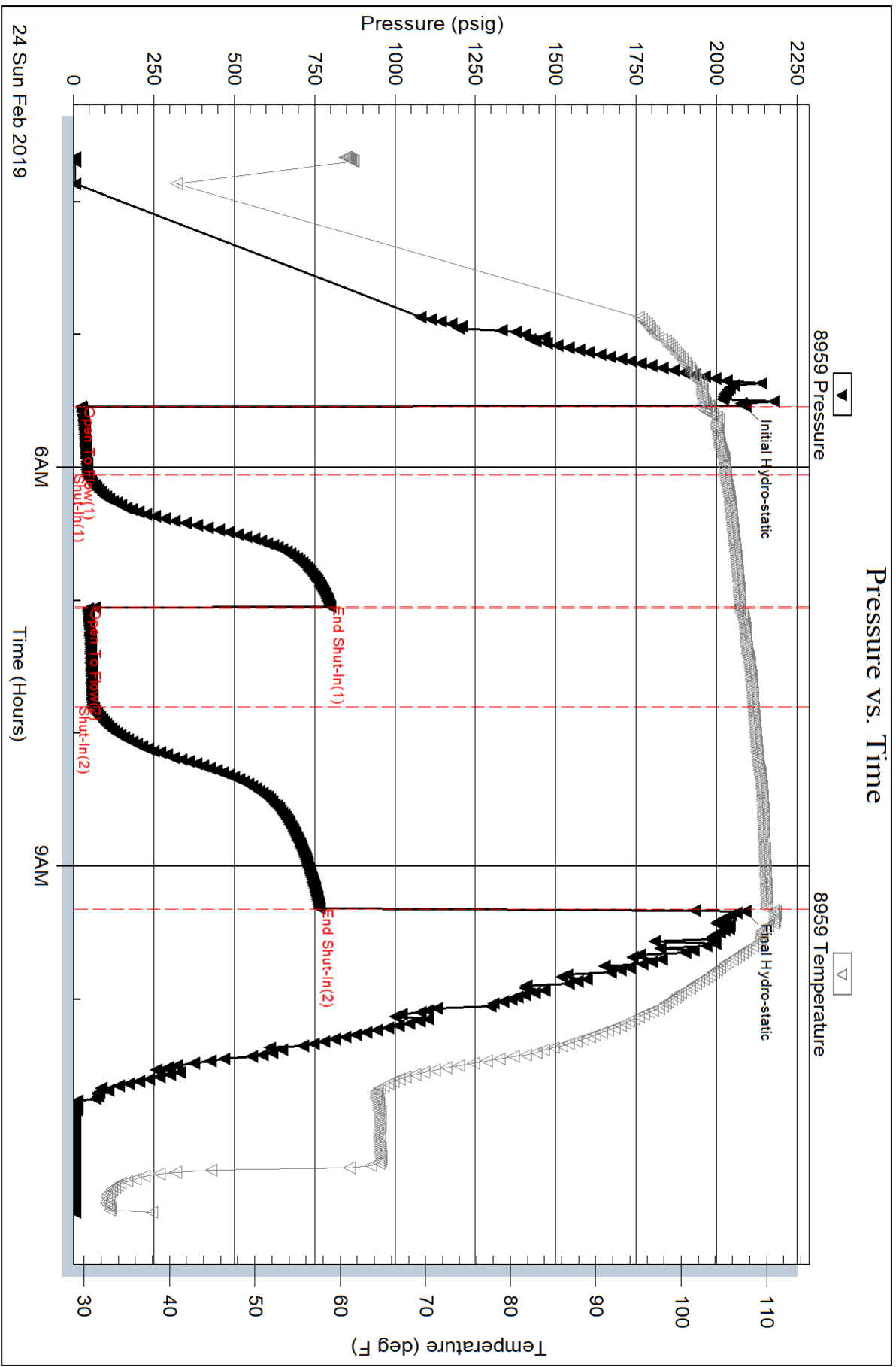
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity of oil = 33.8 @ 30 degs

Gravity corrected to 36.8 @ 60 degs

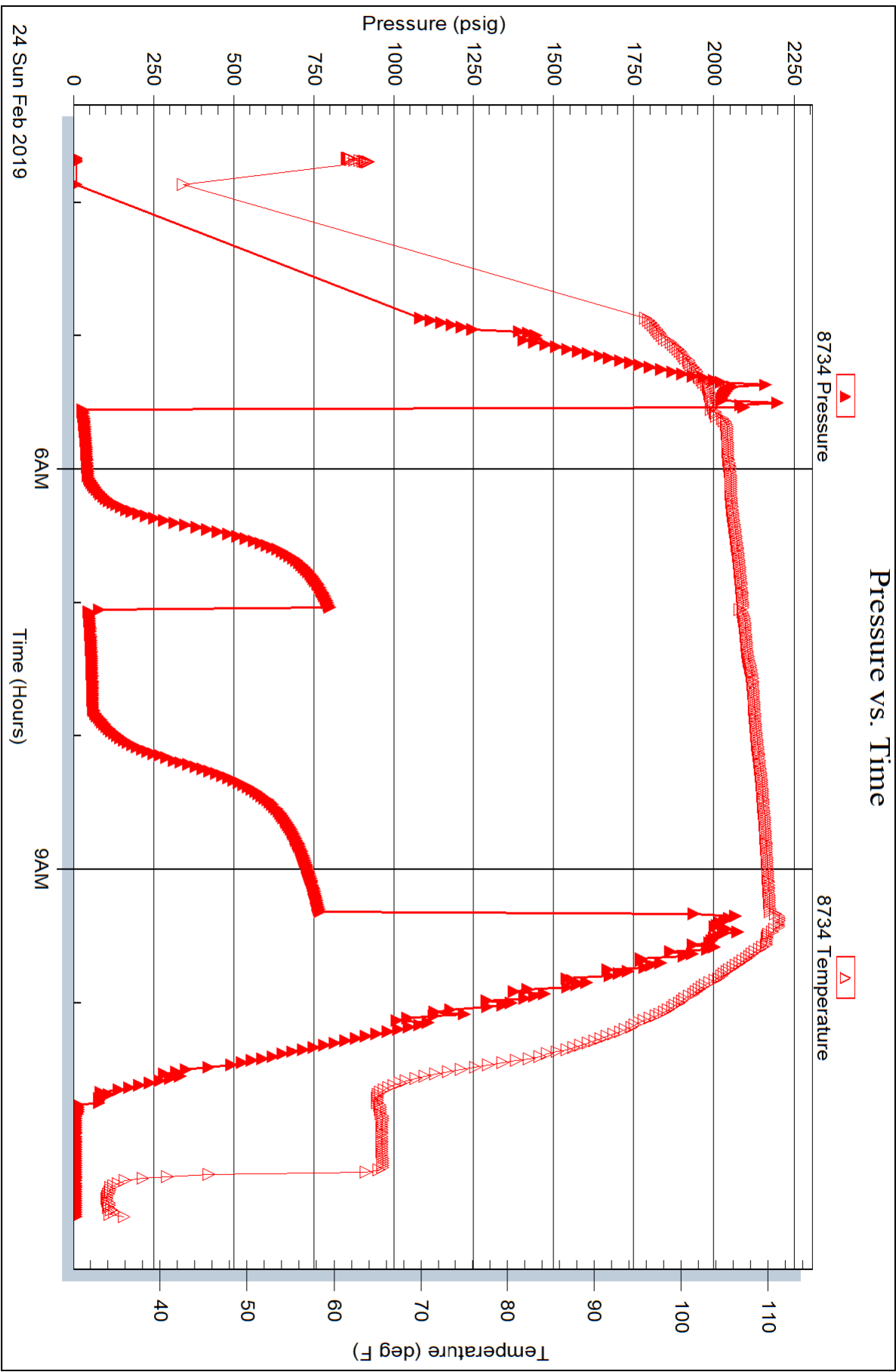


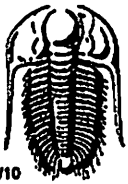
Serial #: 8734

Outside Murfin Drilling Company INC

Maier #1-15

DST Test Number: 2





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65342

Well Name & No. Maier #1-15 Test No. 1 Date 02-21-19  
 Company Murfin Drilling Company Inc Elevation 2986 KB 2981 GL  
 Address 250 N. Water, STE 300, Wichita, KS 67202  
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #7  
 Location: Sec. 15 Twp 1S. Rge. 32W Co. Rawlins State KS

Interval Tested 3945-4002 Zone Tested Lansing "D"  
 Anchor Length 57' Drill Pipe Run 3713 Mud Wt. 9.1  
 Top Packer Depth 3940 Drill Collars Run 210 Vis 65  
 Bottom Packer Depth 3945 Wt. Pipe Run — WL 6.8  
 Total Depth 4002 Chlorides 1400 ppm System LCM 4#  
 Blow Description IF - S. blow built to 1 1/4" (IN Diesel)

ISI - No blow  
FE - No Blow  
FSI - No blow

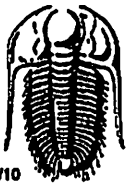
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 110 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2078</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>19:45</u>
(B) First Initial Flow <u>25</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>21:00</u>
(C) First Final Flow <u>27</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>23:59</u>
(D) Initial Shut-In <u>476</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>02:59</u>
(E) Second Initial Flow <u>28</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>04:48</u>
(F) Second Final Flow <u>29</u>	<input checked="" type="checkbox"/> Mileage <u>76RT 76</u>	Comments
(G) Final Shut-In <u>380</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2011</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1701</u>
	Sub Total <u>1701</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative Mark Solinas

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. 65343

Well Name & No. Maier #1-15 Test No. 2 Date 02-24-19  
 Company Murfin Drilling Co Inc. Elevation 2986 KB 2981 GL  
 Address 250 N. Water, STE 300, Wichita, KS 67202  
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #7  
 Location: Sec. 15 Twp 15. Rge. 32W. Co. Rawlins State KS

Interval Tested 4036-4126 Zone Tested Lansing "H + J"  
 Anchor Length 90 Drill Pipe Run 3807 Mud Wt. 9.2  
 Top Packer Depth 4031 Drill Collars Run 210 Vls 70  
 Bottom Packer Depth 4036 Wt. Pipe Run --- WL 6.0  
 Total Depth 4126 Chlorides 1300 ppm System LCM 4#  
 Blow Description IF - S. blow built to 3 1/2"  
ISI - No blow  
FF - S. blow built to 4 3/4"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>65</u>	<u>HORM</u>	<u>30</u>		<u>70</u>	
<u>15</u>	<u>EGO</u>	<u>5</u>	<u>95</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 80 BHT 111 Gravity 36.8 API RW --- @ --- °F Chlorides --- ppm

(A) Initial Hydrostatic 2089  Test 1300 T-On Location 03:15  
 (B) First Initial Flow 25  Jars 250 T-Started 03:40  
 (C) First Final Flow 44  Safety Joint 75 T-Open 05:33  
 (D) Initial Shut-In 799  Circ Sub --- T-Pulled 09:18  
 (E) Second Initial Flow 45  Hourly Standby --- T-Out 11:37  
 (F) Second Final Flow 60  Mileage 76RT 76 Comments Tools loaded @ 12:00, Released @ 20:15 02/25/19  
 (G) Final Shut-In 766  Sampler ---  
 (H) Final Hydrostatic 2089  Straddle ---  EM Tool ---  
 Shale Packer ---  Ruined Shale Packer ---  
 Extra Packer ---  Ruined Packer ---  
 Extra Recorder ---  Extra Copies ---  
 Day Standby 1.5d 10.5h Sub Total 350  
 Accessibility --- Total 2051  
 Sub Total 1701 MP/DST Disc't ---

Approved By \_\_\_\_\_ Our Representative Martin Solinas  
 Triobite 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.