



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water Ste 300
Wichita, KS 67202

ATTN: Chuck Schmaltz

Rank #2-2

2-23S-12W Stafford,KS

Start Date: 2016.10.02 @ 10:58:31

End Date: 2016.10.02 @ 18:22:31

Job Ticket #: 55418 DST #: 1

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

Printed: 2016.10.03 @ 11:18:15



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co

2-23S-12W Stafford,KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 55418

DST#: 1

ATTN: Chuck Schmaltz

Test Start: 2016.10.02 @ 10:58:31

GENERAL INFORMATION:

Formation: **Viola**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:46:01

Time Test Ended: 18:22:31

Test Type: Conventional Bottom Hole (Initial)

Tester: Leal Cason

Unit No: 74

Interval: 3554.00 ft (KB) To 3750.00 ft (KB) (TVD)

Reference Elevations: 1840.00 ft (KB)

Total Depth: 3750.00 ft (KB) (TVD)

1829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8525 Inside

Press@RunDepth: 80.44 psig @ 3555.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.10.02 End Date: 2016.10.02

Last Calib.: 2016.10.02

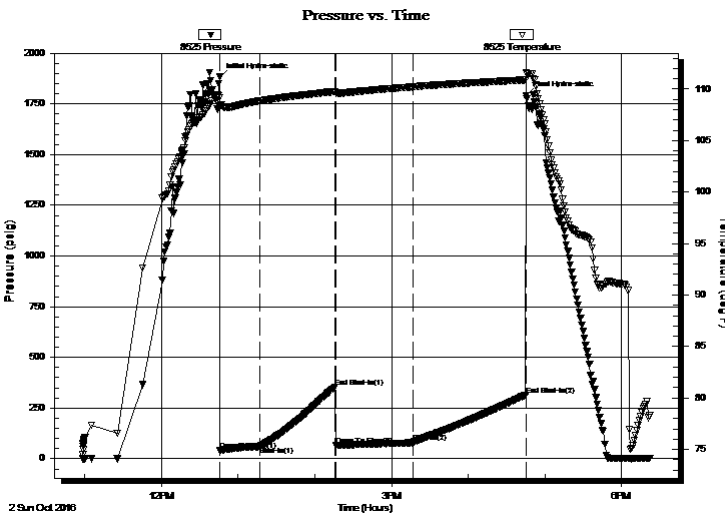
Start Time: 10:58:32 End Time: 18:22:31

Time On Btm: 2016.10.02 @ 12:45:46

Time Off Btm: 2016.10.02 @ 16:45:16

TEST COMMENT: IF: Weak 1 inch Blow , Dead @ 11 minutes
IS: No Blow Back
FF: Weak 1/4 inch Blow , Dead @ 15 minutes
FS: No Blow Back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1882.12	109.19	Initial Hydro-static
1	41.54	108.38	Open To Flow (1)
31	60.19	108.84	Shut-In(1)
90	352.34	109.76	End Shut-In(1)
91	68.30	109.66	Open To Flow (2)
151	80.44	110.22	Shut-In(2)
240	315.24	110.90	End Shut-In(2)
240	1790.55	111.63	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
65.00	Mud	0.32

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co
250 N Water Ste 300
Wichita, KS 67202
ATTN: Chuck Schmalz

2-23S-12W Stafford,KS

Rank #2-2
Job Ticket: 55418 **DST#: 1**
Test Start: 2016.10.02 @ 10:58:31

GENERAL INFORMATION:

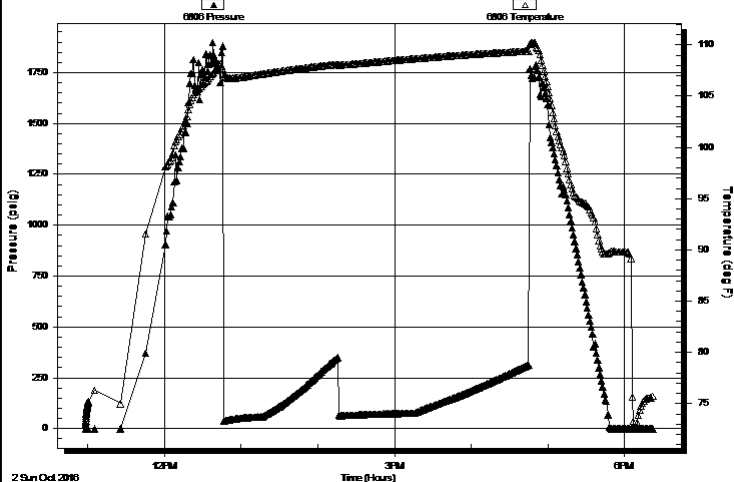
Formation: **Viola**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 12:46:01 Tester: Leal Cason
Time Test Ended: 18:22:31 Unit No: 74
Interval: **3554.00 ft (KB) To 3750.00 ft (KB) (TVD)** Reference Elevations: 1840.00 ft (KB)
Total Depth: 3750.00 ft (KB) (TVD) 1829.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

Serial #: 6806 Outside

Press@RunDepth: psig @ 3555.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.10.02 End Date: 2016.10.02 Last Calib.: 2016.10.02
Start Time: 10:58:32 End Time: 18:22:16 Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Weak 1 inch Blow , Dead @ 11 minutes
IS: No Blow Back
FF: Weak 1/4 inch Blow , Dead @ 15 minutes
FS: No Blow Back

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
65.00	Mud	0.32

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

2-23S-12W Stafford,KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 55418

DST#: 1

ATTN: Chuck Schmaltz

Test Start: 2016.10.02 @ 10:58:31

Tool Information

Drill Pipe:	Length: 3266.00 ft	Diameter: 3.80 inches	Volume: 45.81 bbl	Tool Weight: 2100.00 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: 272.00 ft	Diameter: 2.25 inches	Volume: 1.34 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 47.15 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	3554.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	196.00 ft			
Tool Length:	222.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3533.00	
Hydraulic tool	5.00			3538.00	
Jars	5.00			3543.00	
Safety Joint	2.00			3545.00	
Packer	5.00			3550.00	26.00 Bottom Of Top Packer
Packer	4.00			3554.00	
Stubb	1.00			3555.00	
Recorder	0.00	8525	Inside	3555.00	
Recorder	0.00	6806	Outside	3555.00	
Perforations	7.00			3562.00	
Change Over Sub	1.00			3563.00	
Drill Pipe	159.00			3722.00	
Change Over Sub	1.00			3723.00	
Perforations	24.00			3747.00	
Bullnose	3.00			3750.00	196.00 Bottom Packers & Anchor

Total Tool Length: 222.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

2-23S-12W Stafford,KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 55418

DST#: 1

ATTN: Chuck Schmaltz

Test Start: 2016.10.02 @ 10:58:31

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: 68.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 10500.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
65.00	Mud	0.320

Total Length: 65.00 ft Total Volume: 0.320 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

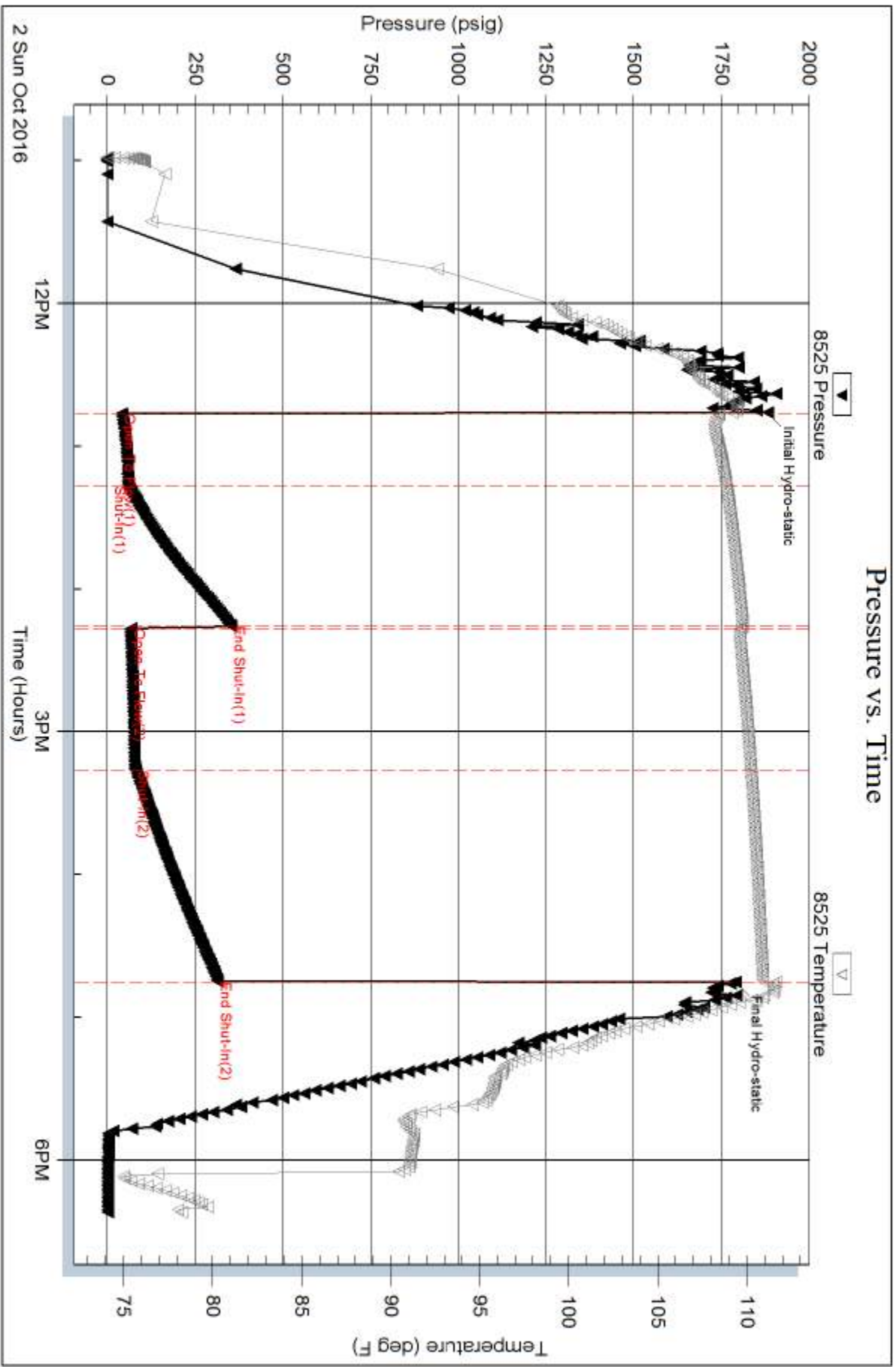
Serial #: 8525

Inside

Murfin Drilling Co

Rank #2-2

DST Test Number: 1

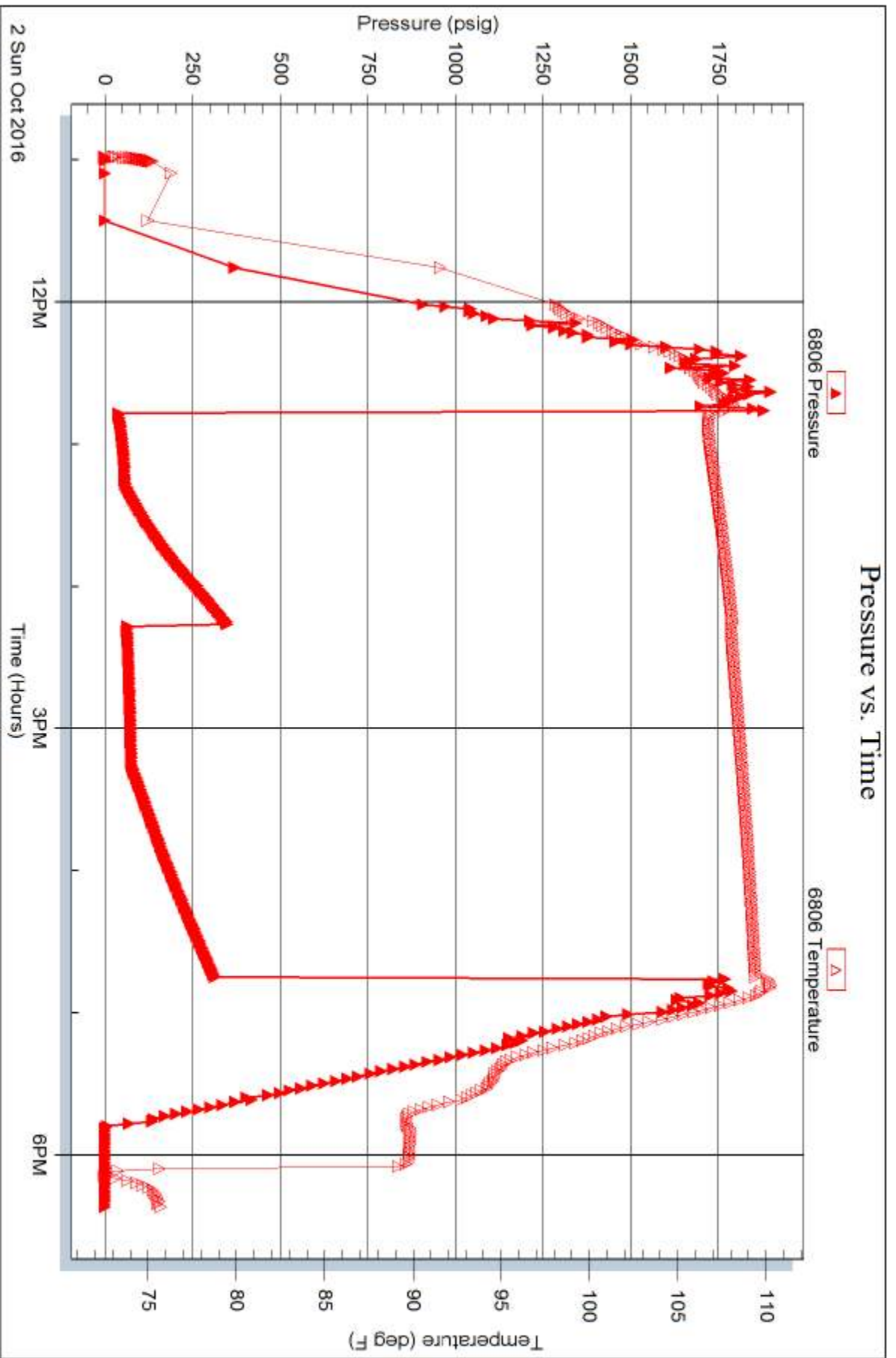


Serial #: 6806

Outside Murfin Drilling Co

Rank #2-2

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co**

250 N Water Ste 300
Wichita, KS 67202

ATTN: Chuck Schmaltz

Rank #2-2

2-23S-12W Stafford,KS

Start Date: 2016.10.03 @ 22:42:00

End Date: 2016.10.04 @ 07:33:45

Job Ticket #: 63084 DST #: 2

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

Printed: 2016.10.04 @ 09:38:57



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co

2-23S-12W Stafford, KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 63084

DST#: 2

ATTN: Chuck Schmaltz

Test Start: 2016.10.03 @ 22:42:00

GENERAL INFORMATION:

Formation: **Viola**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:35:15

Time Test Ended: 07:33:45

Test Type: Conventional Straddle (Initial)

Tester: Jimmy Ricketts

Unit No: 80

Interval: 3595.00 ft (KB) To 3644.00 ft (KB) (TVD)

Reference Elevations: 1840.00 ft (KB)

Total Depth: 3916.00 ft (KB) (TVD)

1829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 6798

Inside

Press@RunDepth: 72.33 psig @ 3596.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.10.03

End Date:

2016.10.04

Last Calib.: 2016.10.03

Start Time: 22:42:05

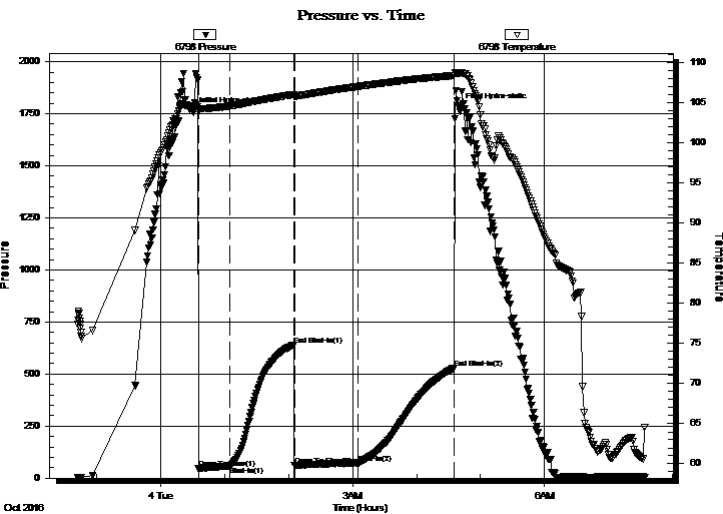
End Time:

07:33:45

Time On Btm: 2016.10.04 @ 00:30:15

Time Off Btm: 2016.10.04 @ 04:39:45

TEST COMMENT: IF - Weak blow building to 3/4 inch initial flow period.
FF - No blow throughout final flow period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1760.01	104.59	Initial Hydro-static
5	44.69	103.95	Open To Flow (1)
35	58.61	104.62	Shut-In(1)
95	640.21	106.05	End Shut-In(1)
95	61.54	105.85	Open To Flow (2)
155	72.33	107.05	Shut-In(2)
245	528.78	108.41	End Shut-In(2)
250	1779.12	108.74	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Oil spotted mud 1% O & 99% M	0.34

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co
250 N Water Ste 300
Wichita, KS 67202
ATTN: Chuck Schmaltz

2-23S-12W Stafford,KS

Rank #2-2

Job Ticket: 63084 **DST#: 2**

Test Start: 2016.10.03 @ 22:42:00

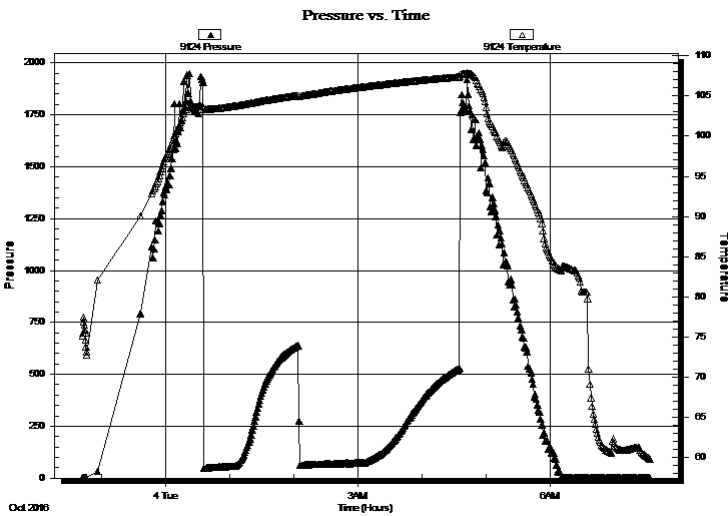
GENERAL INFORMATION:

Formation: **Viola**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Straddle (Initial)
Time Tool Opened: 00:35:15 Tester: Jimmy Ricketts
Time Test Ended: 07:33:45 Unit No: 80
Interval: 3595.00 ft (KB) To 3644.00 ft (KB) (TVD) Reference Elevations: 1840.00 ft (KB)
Total Depth: 3916.00 ft (KB) (TVD) 1829.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 11.00 ft

Serial #: 9124 Outside

Press@RunDepth: psig @ 3596.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.10.03 End Date: 2016.10.04 Last Calib.: 1899.12.30
Start Time: 22:42:05 End Time: 07:33:30 Time On Btm:
Time Off Btm:

TEST COMMENT: IF - Weak blow building to 3/4 inch initial flow period.
FF - No blow throughout final flow period.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Oil spotted mud 1% O & 99% M	0.34

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co
250 N Water Ste 300
Wichita, KS 67202
ATTN: Chuck Schmalz

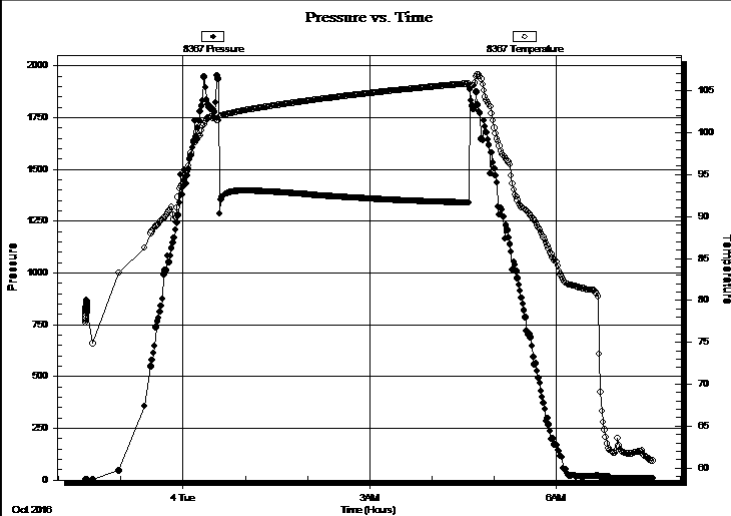
2-23S-12W Stafford, KS
Rank #2-2
Job Ticket: 63084 **DST#: 2**
Test Start: 2016.10.03 @ 22:42:00

GENERAL INFORMATION:

Formation: **Viola**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Straddle (Initial)
Time Tool Opened: 00:35:15 Tester: Jimmy Ricketts
Time Test Ended: 07:33:45 Unit No: 80
Interval: 3595.00 ft (KB) To 3644.00 ft (KB) (TVD) Reference Elevations: 1840.00 ft (KB)
Total Depth: 3916.00 ft (KB) (TVD) 1829.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 11.00 ft

Serial #: 8367 Below (Straddle)
Press@RunDepth: psig @ 3645.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.10.03 End Date: 2016.10.04 Last Calib.: 1899.12.30
Start Time: 22:26:01 End Time: 07:33:00 Time On Btm:
Time Off Btm:

TEST COMMENT: IF - Weak blow building to 3/4 inch initial flow period.
FF - No blow throughout final flow period.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Oil spotted mud 1% O & 99% M	0.34

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co

2-23S-12W Stafford,KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 63084

DST#: 2

ATTN: Chuck Schmaltz

Test Start: 2016.10.03 @ 22:42:00

Tool Information

Drill Pipe:	Length: 3328.00 ft	Diameter: 3.80 inches	Volume: 46.68 bbl	Tool Weight: 4500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 273.00 ft	Diameter: 2.25 inches	Volume: 1.34 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 48.02 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	34.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	3595.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	3644.00 ft			
Interval between Packers:	49.00 ft			
Tool Length:	349.00 ft			
Number of Packers:	3	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3568.00	
Shut In Tool	5.00			3573.00	
Hydraulic tool	5.00			3578.00	
Jars	5.00			3583.00	
Safety Joint	3.00			3586.00	
Packer	4.00			3590.00	28.00 Bottom Of Top Packer
Packer	5.00			3595.00	
Stubb	1.00			3596.00	
Recorder	0.00	9124	Outside	3596.00	
Recorder	0.00	6798	Inside	3596.00	
Perforations	7.00			3603.00	
Change Over Sub	0.50			3603.50	
Blank Spacing	31.00			3634.50	
Change Over Sub	0.50			3635.00	
Perforations	5.00			3640.00	
Blank Off Sub	1.00			3641.00	
T.C.	3.00			3644.00	49.00 Tool Interval
Packer	0.00			3644.00	
Stubb	1.00			3645.00	
Recorder	0.00	8367	Below	3645.00	
Perforations	13.00			3658.00	
Change Over Sub	0.50			3658.50	
Blank Spacing	252.00			3910.50	
Change Over Sub	0.50			3911.00	
Bullnose	5.00			3916.00	272.00 Bottom Packers & Anchor

Total Tool Length: 349.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co

2-23S-12W Stafford,KS

250 N Water Ste 300
Wichita, KS 67202

Rank #2-2

Job Ticket: 63084

DST#: 2

ATTN: Chuck Schmaltz

Test Start: 2016.10.03 @ 22:42:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.20 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 10400.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
70.00	Oil spotted mud 1% O & 99% M	0.344

Total Length: 70.00 ft Total Volume: 0.344 bbl

Num Fluid Samples: 0

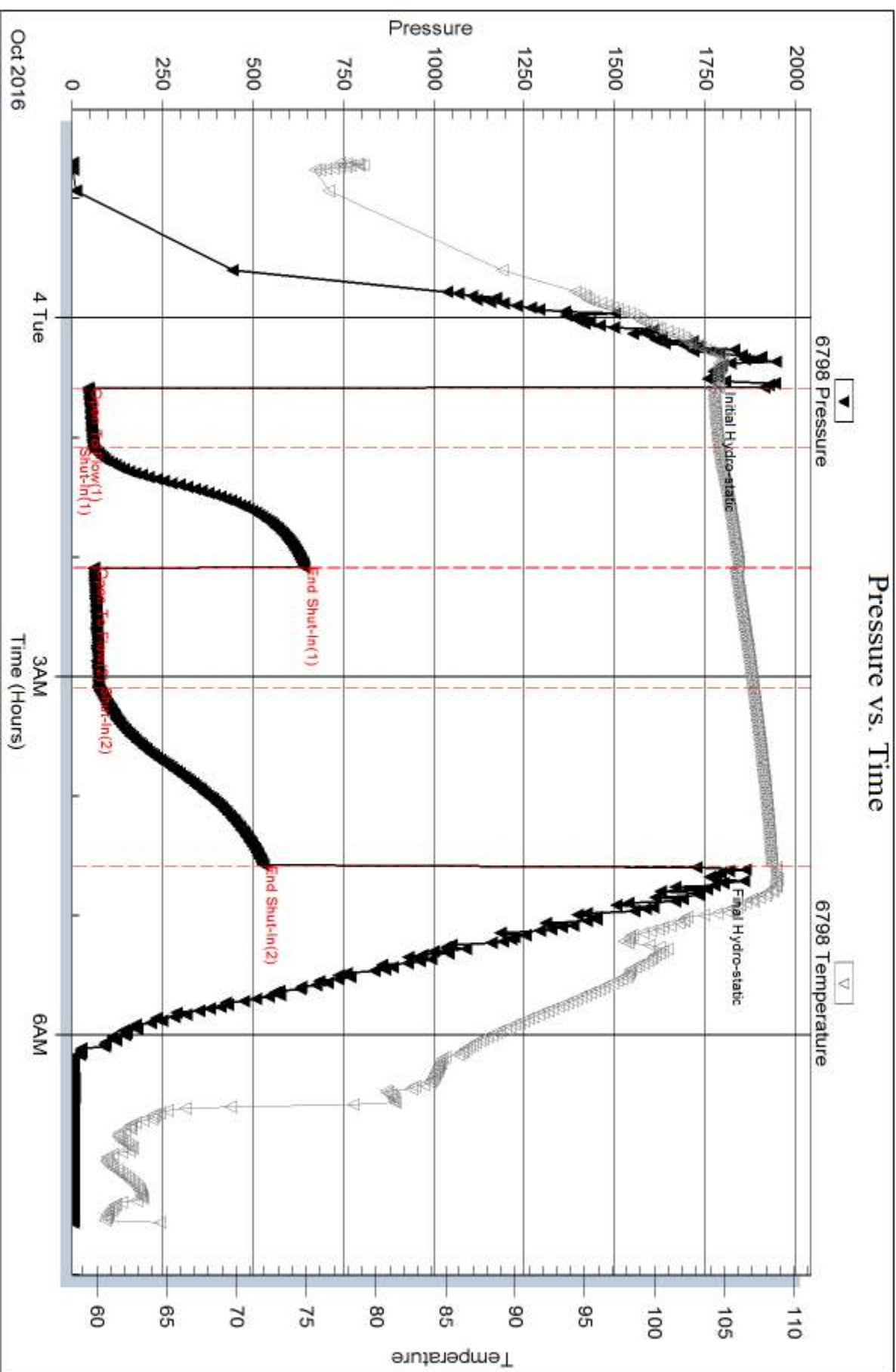
Num Gas Bombs: 0

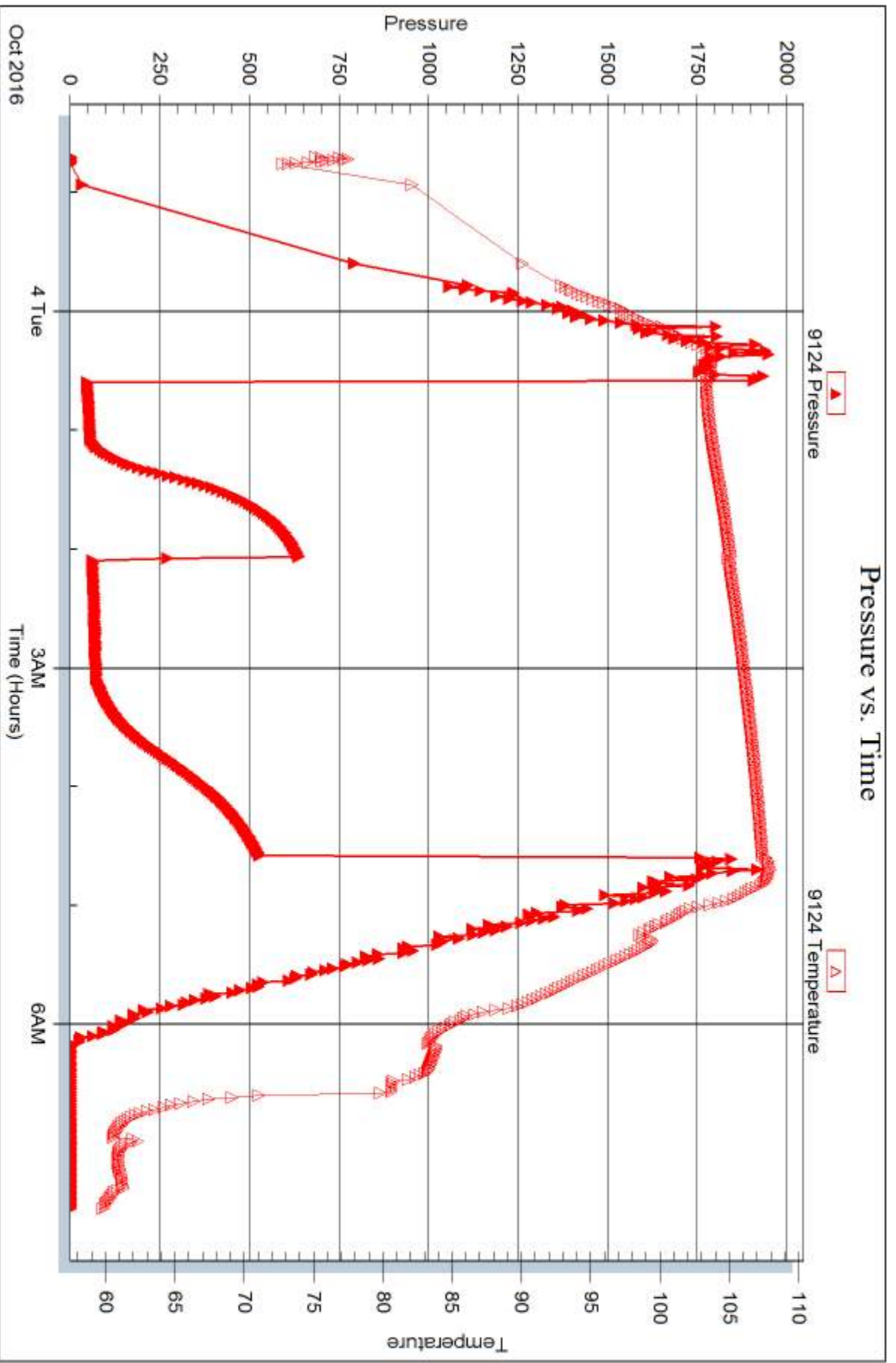
Serial #:

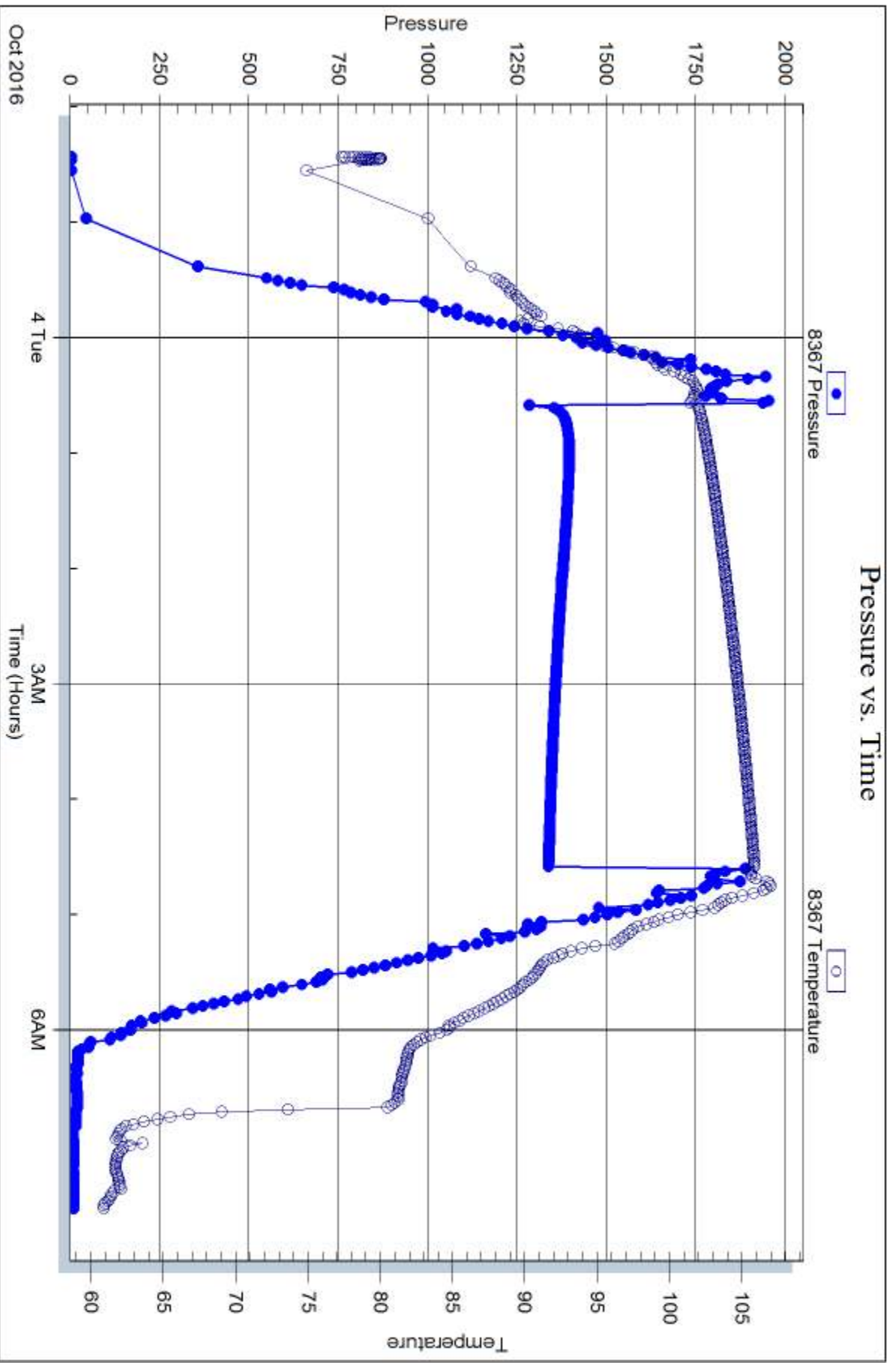
Laboratory Name:

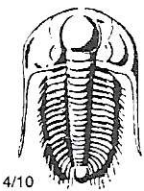
Laboratory Location:

Recovery Comments:









TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **55418** 23233

Well Name & No. Rank 2-2 Test No. 1 Date 10/02/16
 Company Martin Drilling Co Elevation 1840 KB 1829 GL
 Address 250 N. Water st e 300 Wichita, KS 67202
 Co. Rep / Geo. Chuck Schmalz Rig Martin 21
 Location: Sec. 2 Twp. 23S Rge. 12W Co. Stafford State KS

Interval Tested 3554 - 3750 Zone Tested Viola
 Anchor Length 196 Drill Pipe Run 3266 Mud Wt. 9.4
 Top Packer Depth 3549 Drill Collars Run 272 Vis 68
 Bottom Packer Depth 3554 Wt. Pipe Run 0 WL 8.4
 Total Depth 3750 Chlorides 10500 ppm System LCM 2

Blow Description IF: weak 1/4 inch Blow, Dead @ 11 minutes

ISI: NO Blow BACK

FF: weak 1/4 inch Blow, Dead @ 15 minutes

FSI: NO Blow BACK

Rec	Feet of	%gas	%oil	%water	%mud
<u>65</u>	<u>Mud</u>				

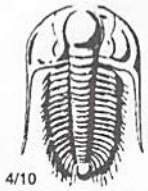
Rec Total 65 BHT 111 Gravity N/C API RW N/C @ N/C °F Chlorides N/C ppm

(A) Initial Hydrostatic 1882 Test 1050 T-On Location 09:30
 (B) First Initial Flow 41 Jars 250 T-Started 16:58
 (C) First Final Flow 60 Safety Joint 75 T-Open 12:46
 (D) Initial Shut-In 352 Circ Sub _____ T-Pulled 16:45
 (E) Second Initial Flow 68 Hourly Standby _____ T-Out 18:22
 (F) Second Final Flow 80 Mileage (70) 52.50 Comments _____
 (G) Final Shut-In 315 Sampler _____
 (H) Final Hydrostatic 1790 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____

Initial Open 30 Extra Packer _____ Extra Copies _____
 Initial Shut-In 60 Extra Recorder _____ Sub Total 0
 Final Flow 60 Day Standby _____ Total 1427.50
 Final Shut-In 90 Accessibility _____ MP/DST Disc't _____
 Sub Total 1427.50

Approved By [Signature] 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. 63084

Well Name & No. Rank #2-2 Test No. 2 Date 10-4
 Company Murfin Drilling Company Elevation 1840 KB 1829 GL
 Address 250 North Water Suite 300 Wichita, KS. 67202
 Co. Rep / Geo. Chuck Schmalz Rig Murfin #21
 Location: Sec. 2 Twp. 23 S Rge. 12 W Co. Stafford State KS

Interval Tested 3595 - 3644 Zone Tested Viola
 Anchor Length 49' Drill Pipe Run 3328 Mud Wt. 9.5
 Top Packer Depth 3590 + 3595 Drill Collars Run 273 Vis 54
 Bottom Packer Depth 3644 Wt. Pipe Run 0 WL 9.2
 Total Depth 3916 Chlorides 10,400 ppm System LCM
 Blow Description IF - weak blow building to 3/4 inch IFP.
FF - No blow throughout FFP

Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>oil spotted mud</u>				<u>99</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 70 BHT 109 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1760</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>2100</u>
(B) First Initial Flow <u>45</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2226</u>
(C) First Final Flow <u>59</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>0035</u>
(D) Initial Shut-In <u>640</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>0435</u>
(E) Second Initial Flow <u>62</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>0700</u>
(F) Second Final Flow <u>72</u>	<input checked="" type="checkbox"/> Mileage <u>RT 200</u> 52.50	Comments _____
(G) Final Shut-In <u>529</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1779</u>	<input checked="" type="checkbox"/> Straddle <u>600</u>	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>60</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby _____	Total <u>2027.50</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>2027.50</u>	

Approved By [Signature] Our Representative Jimmy Dickels
 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.