



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202-1216

ATTN: Bob Stolze

WNRB #1-12

12-21s-19w Pawnee,KS

Start Date: 2014.09.11 @ 06:12:00

End Date: 2014.09.11 @ 14:15:00

Job Ticket #: 60454 DST #: 1

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

Printed: 2014.09.16 @ 09:01:04



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.
250 N. Water STE 300
Wichita KS 67202-1216
ATTN: Bob Stolzle

12-21s-19w Pawnee, KS
WNRB #1-12
Job Ticket: 60454 **DST#: 1**
Test Start: 2014.09.11 @ 06:12:00

GENERAL INFORMATION:

Formation: **Fort Scott Sandstone**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 09:29:30
Time Test Ended: 14:15:00
Interval: **4156.00 ft (KB) To 4195.00 ft (KB) (TVD)**
Total Depth: 4195.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor
Test Type: Conventional Bottom Hole (Initial)
Tester: Shane Konzem
Unit No: S3
Reference Elevations: 2124.00 ft (KB)
2113.00 ft (CF)
KB to GR/CF: 11.00 ft

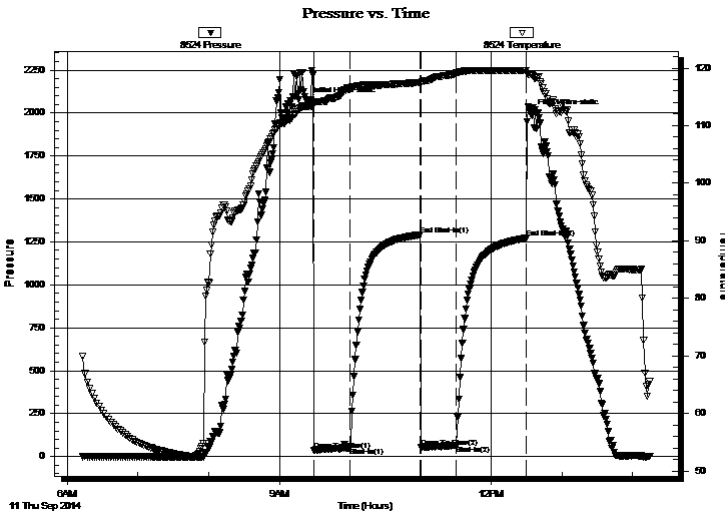
Serial #: 8524

Inside

Press@RunDepth: 64.68 psig @ 4191.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.09.11 End Date: 2014.09.11 Last Calib.: 2014.09.11
Start Time: 06:13:00 End Time: 14:15:00 Time On Btm: 2014.09.11 @ 09:23:30
Time Off Btm: 2014.09.11 @ 12:33:30

TEST COMMENT: IFP 30 Weak blow built to 3/4"
ISI 60 No blow back.
FFP 60 Weak surface blow that died at 10 minutes. Did not flush per Geo.
FSI 90 No blow back.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2064.40	113.31	Initial Hydro-static
6	37.72	113.62	Open To Flow (1)
37	53.30	116.47	Shut-In(1)
96	1291.40	117.48	End Shut-In(1)
97	54.94	117.29	Open To Flow (2)
127	64.68	119.09	Shut-In(2)
186	1271.27	119.59	End Shut-In(2)
190	1994.07	118.83	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% mud	0.05

Gas Rates

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



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Murfin Drilling Co. Inc.
250 N. Water STE 300
Wichita KS 67202-1216
ATTN: Bob Stolzle

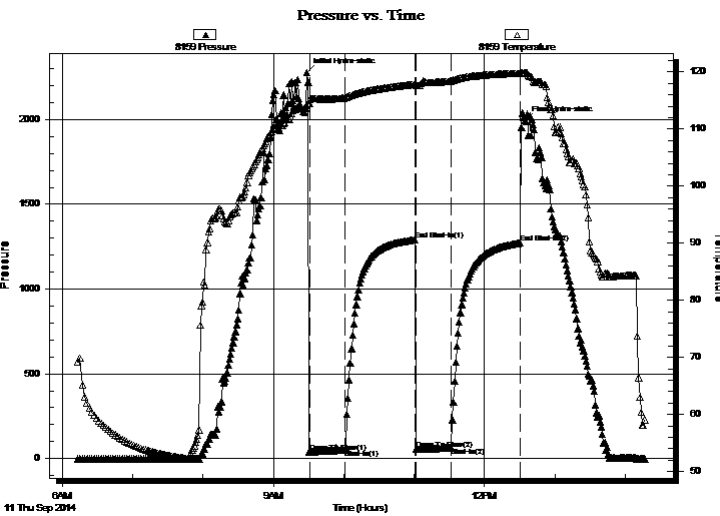
12-21s-19w Pawnee, KS
WNRB #1-12
Job Ticket: 60454 **DST#: 1**
Test Start: 2014.09.11 @ 06:12:00

GENERAL INFORMATION:

Formation: **Fort Scott Sandstone**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 09:29:30
 Time Test Ended: 14:15:00
 Interval: **4156.00 ft (KB) To 4195.00 ft (KB) (TVD)**
 Total Depth: 4195.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Shane Konzem
 Unit No: S3
 Reference Elevations: 2124.00 ft (KB)
 2113.00 ft (CF)
 KB to GR/CF: 11.00 ft

Serial #: 8159 Outside
 Press@RunDepth: 1271.57 psig @ 4192.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.09.11 End Date: 2014.09.11 Last Calib.: 2014.09.11
 Start Time: 06:13:00 End Time: 14:16:30 Time On Btm: 2014.09.11 @ 09:28:30
 Time Off Btm: 2014.09.11 @ 12:34:30

TEST COMMENT: IFP 30 Weak blow built to 3/4"
 ISI 60 No blow back.
 FFP 60 Weak surface blow that died at 10 minutes. Did not flush per Geo.
 FSI 90 No blow back.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2278.50	113.89	Initial Hydro-static
3	38.31	115.26	Open To Flow (1)
33	52.92	115.50	Shut-In(1)
92	1291.24	117.85	End Shut-In(1)
94	52.82	117.68	Open To Flow (2)
123	64.75	118.40	Shut-In(2)
182	1271.57	119.81	End Shut-In(2)
186	1993.84	119.86	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% mud	0.05

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

12-21s-19w Pawnee,KS

250 N. Water STE 300
Wichita KS 67202-1216

WNRB #1-12

Job Ticket: 60454

DST#: 1

ATTN: Bob Stolzle

Test Start: 2014.09.11 @ 06:12:00

Tool Information

Drill Pipe:	Length: 3914.00 ft	Diameter: 3.80 inches	Volume: 54.90 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: 246.00 ft	Diameter: 2.25 inches	Volume: 1.21 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 56.11 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4156.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	39.00 ft			
Tool Length:	67.00 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			4133.00	
Hydraulic tool	5.00			4138.00	
Jars	6.00			4144.00	
Safety Joint	2.00			4146.00	
Top Packer	5.00			4151.00	
Packer	5.00			4156.00	28.00 Bottom Of Top Packer
Anchor	34.00			4190.00	
Recorder	1.00	8524	Inside	4191.00	
Recorder	1.00	8159	Outside	4192.00	
Bull Plug	3.00			4195.00	39.00 Anchor Tool
Total Tool Length:	67.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

12-21s-19w Pawnee,KS

250 N. Water STE 300
Wichita KS 67202-1216

WNRB #1-12

Job Ticket: 60454

DST#: 1

ATTN: Bob Stolzle

Test Start: 2014.09.11 @ 06:12:00

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: 62.00 sec/qt

Cushion Volume:

bbf

Water Loss: 8.77 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
10.00	100% mud	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbf

Num Fluid Samples: 0

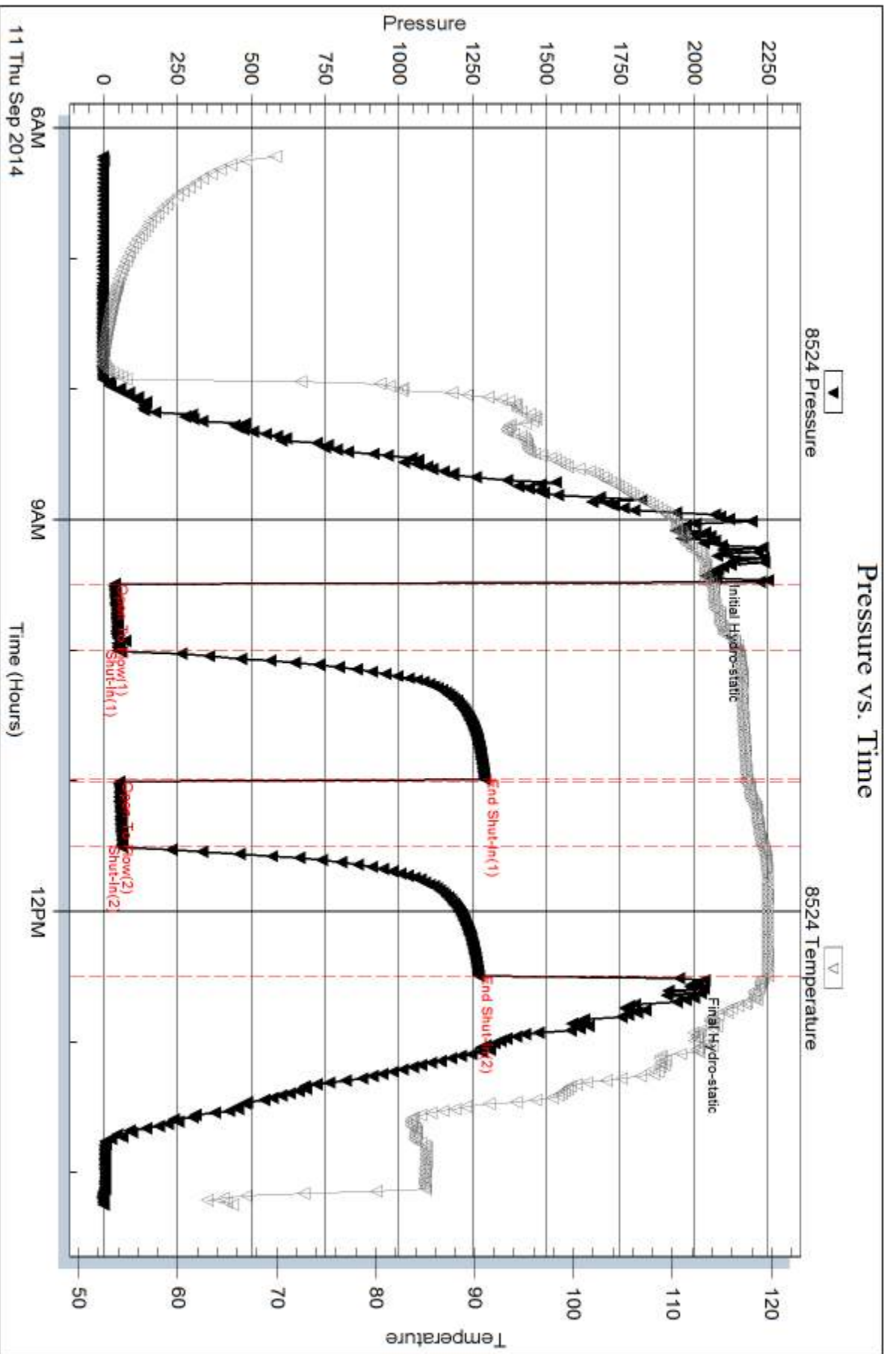
Num Gas Bombs: 0

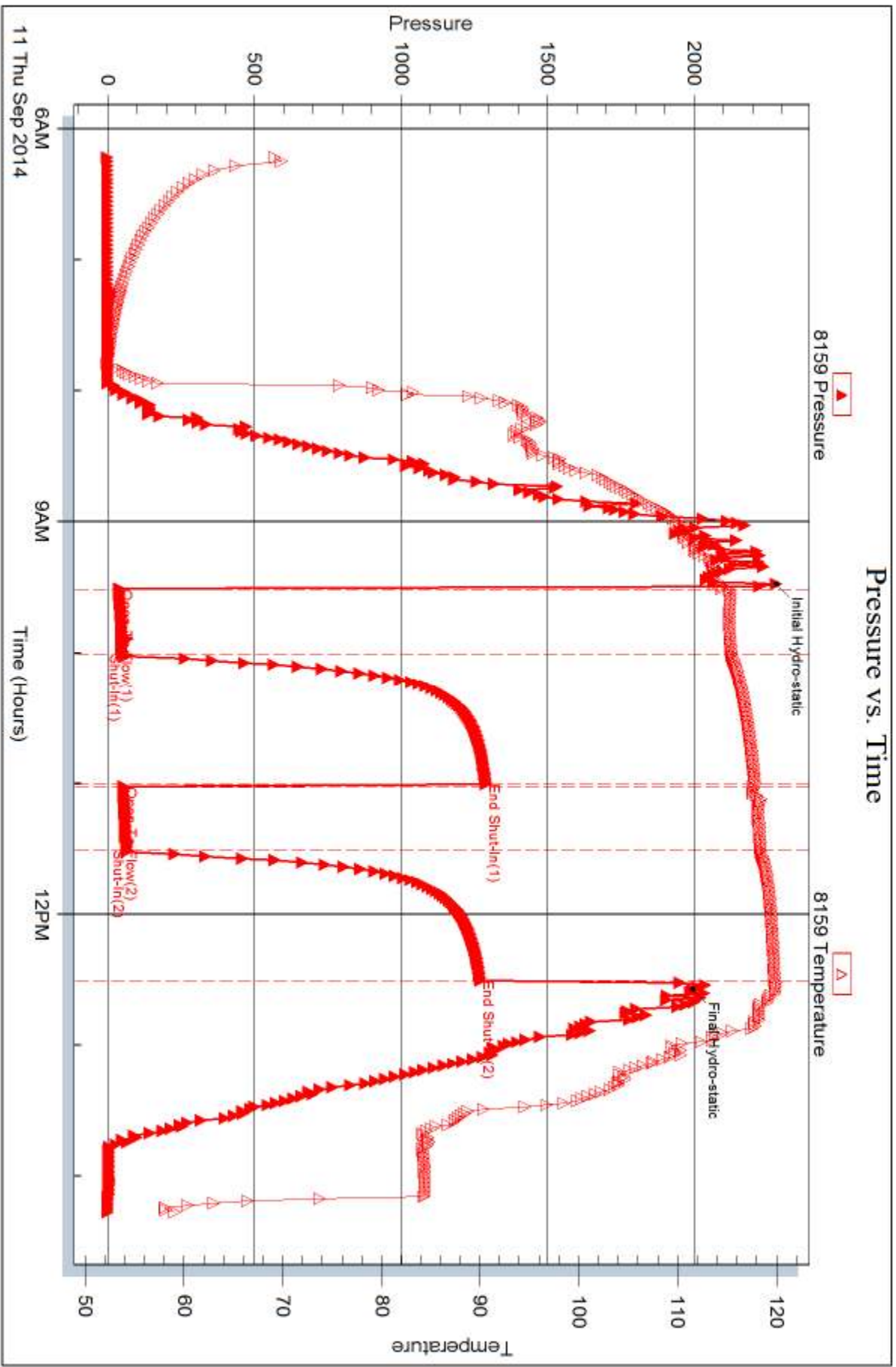
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202-1216

ATTN: Bob Stolze

WNRB #1-12

12-21s-19w Pawnee,KS

Start Date: 2014.09.11 @ 20:00:00

End Date: 2014.09.12 @ 03:25:00

Job Ticket #: 60455 DST #: 2

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

Printed: 2014.09.16 @ 09:00:30

Murfin Drilling Co. Inc.

12-21s-19w Pawnee,KS

WNRB #1-12

DST # 2

Conglomerate Sandsto

2014.09.11



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DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.
250 N. Water STE 300
Wichita KS 67202-1216
ATTN: Bob Stolzle

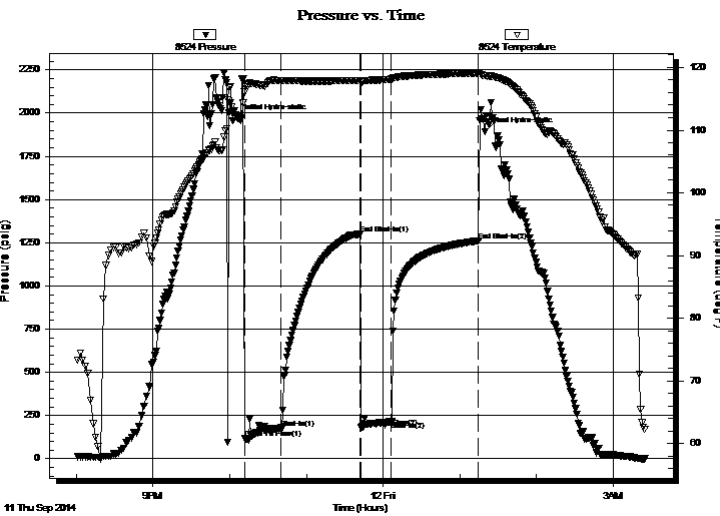
12-21s-19w Pawnee, KS
WNRB #1-12
Job Ticket: 60455 **DST#: 2**
Test Start: 2014.09.11 @ 20:00:00

GENERAL INFORMATION:

Formation: **Conglomerate Sandsto**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 22:11:30 Tester: Shane Konzem
Time Test Ended: 03:25:00 Unit No: S3
Interval: 4158.00 ft (KB) To 4220.00 ft (KB) (TVD) Reference Elevations: 2124.00 ft (KB)
Total Depth: 4220.00 ft (KB) (TVD) 2113.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Poor KB to GR/CF: 11.00 ft

Serial #: 8524 Inside
Press@RunDepth: 216.05 psig @ 4216.90 ft (KB) Capacity: 8000.00 psig
Start Date: 2014.09.11 End Date: 2014.09.12 Last Calib.: 2014.09.12
Start Time: 20:01:00 End Time: 03:25:00 Time On Btm: 2014.09.11 @ 22:06:30
Time Off Btm: 2014.09.12 @ 01:19:30

TEST COMMENT: IFP 30 Weak blow built to 4"
ISI 60 No blow back.
FFP 30 Weak blow built to 4"
FSI 60 No blow back.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1966.66	112.10	Initial Hydro-static
5	116.55	116.09	Open To Flow (1)
34	178.61	117.88	Shut-In(1)
95	1298.91	117.94	End Shut-In(1)
96	181.93	117.67	Open To Flow (2)
120	216.05	118.13	Shut-In(2)
188	1261.57	119.12	End Shut-In(2)
193	1894.36	118.70	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
276.00	100% Mud.	1.63

Gas Rates

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



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DRILL STEM TEST REPORT

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 250 N. Water STE 300
 Wichita KS 67202-1216
 ATTN: Bob Stolzle

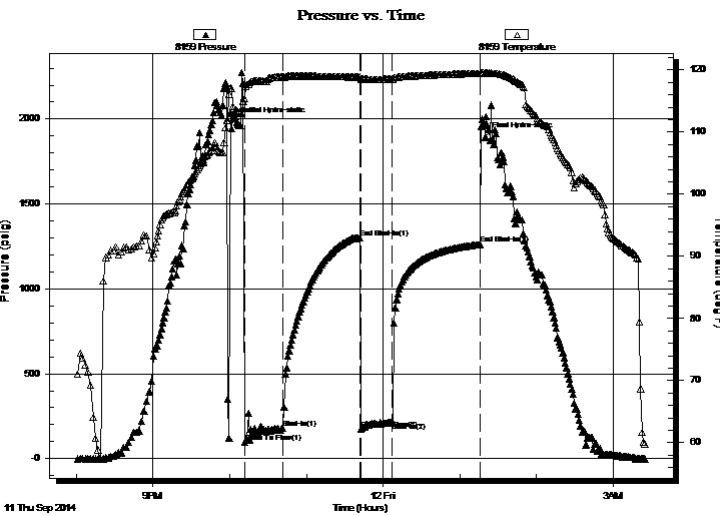
12-21s-19w Pawnee, KS
WNRB #1-12
 Job Ticket: 60455 **DST#: 2**
 Test Start: 2014.09.11 @ 20:00:00

GENERAL INFORMATION:

Formation: **Conglomerate Sandsto**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:11:30
 Time Test Ended: 03:25:00
 Interval: **4158.00 ft (KB) To 4220.00 ft (KB) (TVD)**
 Total Depth: 4220.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Shane Konzem
 Unit No: S3
 Reference Elevations: 2124.00 ft (KB)
 2113.00 ft (CF)
 KB to GR/CF: 11.00 ft

Serial #: 8159 Outside
 Press@RunDepth: 1262.21 psig @ 4217.90 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.09.11 End Date: 2014.09.12 Last Calib.: 2014.09.12
 Start Time: 20:01:00 End Time: 03:25:00 Time On Btm: 2014.09.11 @ 22:05:30
 Time Off Btm: 2014.09.12 @ 01:20:00

TEST COMMENT: IFP 30 Weak blow built to 4"
 ISI 60 No blow back.
 FFP 30 Weak blow built to 4"
 FSI 60 No blow back.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1982.78	113.40	Initial Hydro-static
6	97.96	115.41	Open To Flow (1)
36	177.33	118.85	Shut-In(1)
97	1300.66	118.86	End Shut-In(1)
97	173.73	118.55	Open To Flow (2)
122	213.67	118.54	Shut-In(2)
190	1262.21	119.47	End Shut-In(2)
195	1894.15	119.50	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
276.00	100% Mud.	1.63

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

12-21s-19w Pawnee,KS

250 N. Water STE 300
Wichita KS 67202-1216

WNRB #1-12

Job Ticket: 60455

DST#: 2

ATTN: Bob Stolzle

Test Start: 2014.09.11 @ 20:00:00

Tool Information

Drill Pipe:	Length: 3889.00 ft	Diameter: 3.80 inches	Volume: 54.55 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: 246.00 ft	Diameter: 2.25 inches	Volume: 1.21 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 55.76 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4158.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.90 ft			
Tool Length:	90.90 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			4135.00	
Hydraulic tool	5.00			4140.00	
Jars	6.00			4146.00	
Safety Joint	2.00			4148.00	
Packer	5.00			4153.00	28.00 Bottom Of Top Packer
Packer	5.00			4158.00	
Anchor	5.00			4163.00	
Change Over Sub	0.75			4163.75	
Drill Pipe	31.40			4195.15	
Drill Pipe	0.00			4195.15	
Change Over Sub	0.75			4195.90	
Anchor	20.00			4215.90	
Recorder	1.00	8524	Inside	4216.90	
Recorder	1.00	8159	Outside	4217.90	
Bullk Plug	3.00			4220.90	62.90 Bottom Packers & Anchor

Total Tool Length: 90.90



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

12-21s-19w Pawnee,KS

250 N. Water STE 300
Wichita KS 67202-1216

WNRB #1-12

Job Ticket: 60455

DST#: 2

ATTN: Bob Stolzle

Test Start: 2014.09.11 @ 20:00:00

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: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.09 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
276.00	100% Mud.	1.631

Total Length: 276.00 ft Total Volume: 1.631 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

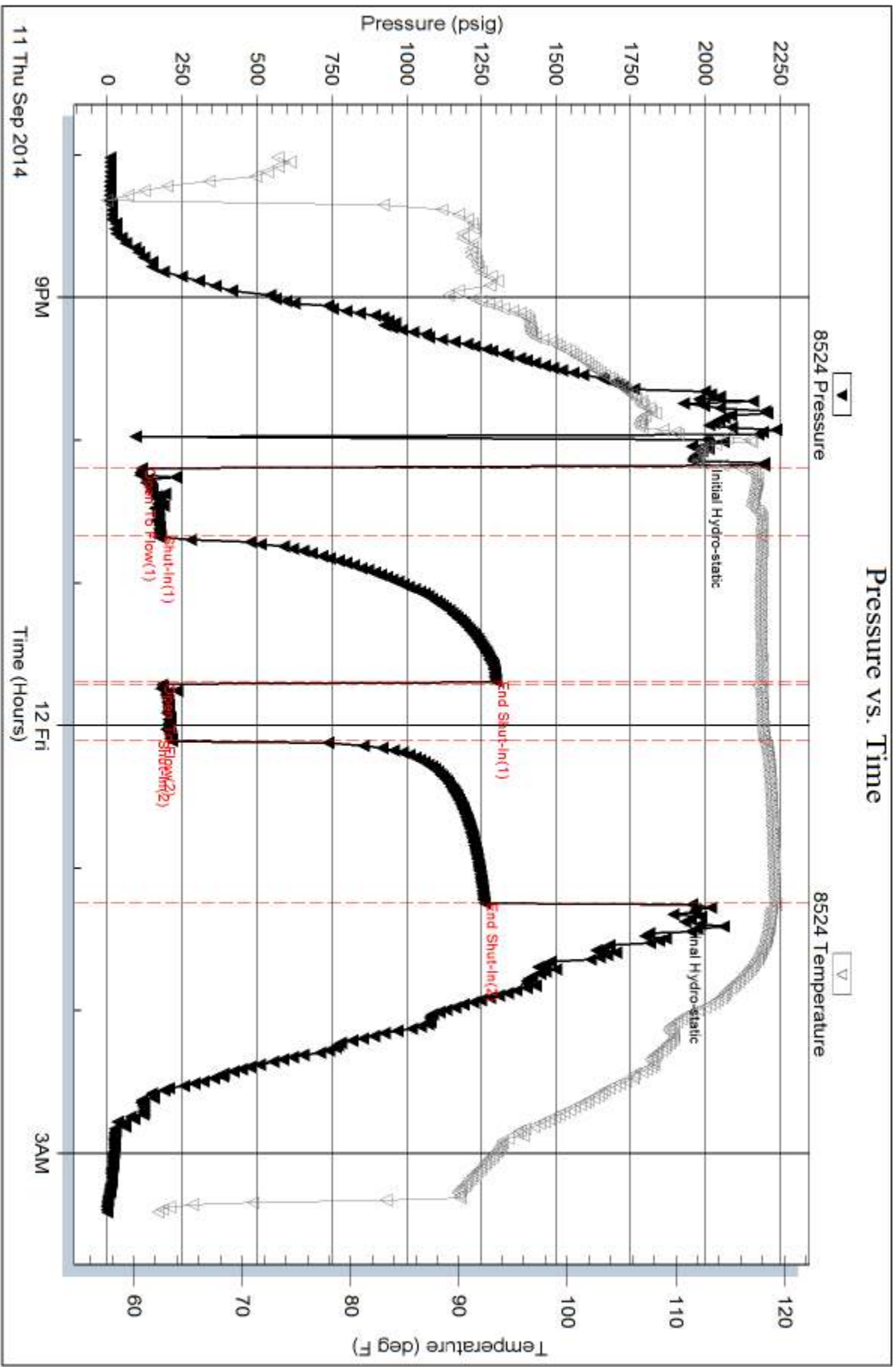
Serial #: 8524

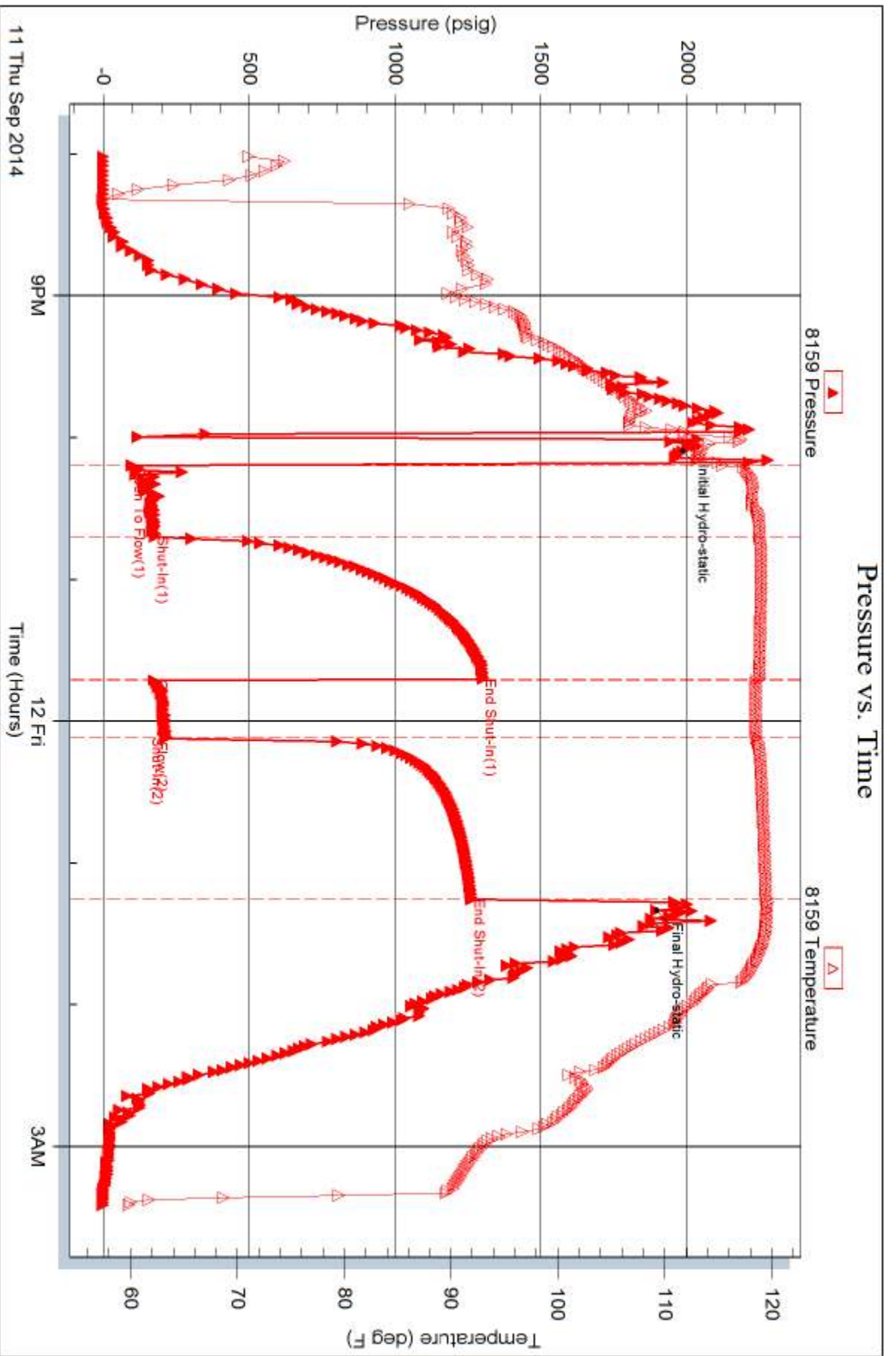
Inside

Murfin Drilling Co. Inc.

WNRB#1-12

DST Test Number: 2







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 60454

4/10

Well Name & No. WNRB #1-12 Test No. 1 Date 9-11-14
 Company Murfin Drilling Co. Inc. Elevation 2124 KB 2113 GL
 Address 250 N. Water STE 300 Wichita KS 67202-1216
 Co. Rep / Geo. Bob Stolze Rig Murfin Rig # 21
 Location: Sec. 12 Twp. 21S Rge. 19W Co. Pawnee State KS

Interval Tested 4156 - 4195 Zone Tested Ft. Scott Sandstone
 Anchor Length 39' Drill Pipe Run 3914 Mud Wt. 4.2
 Top Packer Depth 4151 Drill Collars Run 246 Vis 62
 Bottom Packer Depth 4156 Wt. Pipe Run 0 WL 8.8
 Total Depth 4195 Chlorides 6,800 ppm System LCM 2
 Blow Description 1st Open - weak blow built to 3/4 inch into water. 1st Shut In - No blow back. 2nd Open - weak surface blow that died at 10mins. Did not flush per Geo. 2nd Shut in - No blow back.

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>mud</u>			<u>100</u>	

Rec Total 10 BHT 118 Gravity \ API RW \ @ \ ° F Chlorides \ ppm

(A) Initial Hydrostatic <u>2064</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>0530</u>
(B) First Initial Flow <u>37</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0740</u>
(C) First Final Flow <u>53</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>0930</u>
(D) Initial Shut-In <u>1291</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>1230</u>
(E) Second Initial Flow <u>54</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1415</u>
(F) Second Final Flow <u>64</u>	<input checked="" type="checkbox"/> Mileage <u>84</u> 130.20	Comments
(G) Final Shut-In <u>1271</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1994</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Day Standby	Total <u>1705.20</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1705.20</u>	

Approved By _____ Our Representative Shane [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. 60455

Well Name & No. WNRB #1-12 Test No. 2 Date 9-11-14
 Company Murfin Drilling Co, Inc. Elevation 2124 KB 2113 GL
 Address 250 N. Water STE 300 Wichita KS 67202-1216
 Co. Rep / Geo. Bob Stoltzle Rig Murfin Drilling Rig #21
 Location: Sec. 12 Twp. 21S Rge. 19W Co. Pawnee State KS

Interval Tested 4158 - 4220 Zone Tested conglomerate sand stone
 Anchor Length 62 Drill Pipe Run 3889 Mud Wt. 9.6
 Top Packer Depth 4153 Drill Collars Run 246 Vis 65
 Bottom Packer Depth 4158 Wt. Pipe Run 0 WL 8.1
 Total Depth 4220 Chlorides 7800 ppm System LCM 2

Blow Description 1st Open - Weak blow built to 4 inches into water. 1st Shut In - No Blow back. 2nd Open - Weak blow built to 4 inches into water. 2nd Shut In - No blow back.

Rec	Feet of	%gas	%oil	%water	%mud
<u>276</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 276 BHT 118 Gravity 1250 API RW 130.20 @ 1 ° F Chlorides 7800 ppm

(A) Initial Hydrostatic 1966 Test 1250 T-On Location 2030
 (B) First Initial Flow 116 Jars 250 T-Started 2115
 (C) First Final Flow 178 Safety Joint 75 T-Open 2310
 (D) Initial Shut-In 1298 Circ Sub _____ T-Pulled 2210
 (E) Second Initial Flow 181 Hourly Standby _____ T-Out _____
 (F) Second Final Flow 216 Mileage 84 130.20 Comments _____
 (G) Final Shut-In 1261 Sampler _____
 (H) Final Hydrostatic 1894 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1705.20
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1705.20

Approved By _____

Our Representative [Signature]