



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Steve Miler

Sandlin #1-32

32-10s-23w,Graham,KS

Start Date: 2014.12.06 @ 02:05:00

End Date: 2014.12.06 @ 11:46:45

Job Ticket #: 62543 DST #: 1

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

Printed: 2014.12.10 @ 16:52:31



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62543

DST#: 1

ATTN: Steve Miller

Test Start: 2014.12.06 @ 02:05:00

GENERAL INFORMATION:

Formation: **Toronto - LKC B**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:59:30

Time Test Ended: 11:46:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Brett Dickinson

Unit No: 59

Interval: 3631.00 ft (KB) To 3704.00 ft (KB) (TVD)

Reference Elevations: 2368.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2363.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8957 Outside

Press@RunDepth: 268.65 psig @ 3632.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.06

End Date:

2014.12.06

Last Calib.:

2014.12.06

Start Time: 02:05:05

End Time:

11:46:45

Time On Btm:

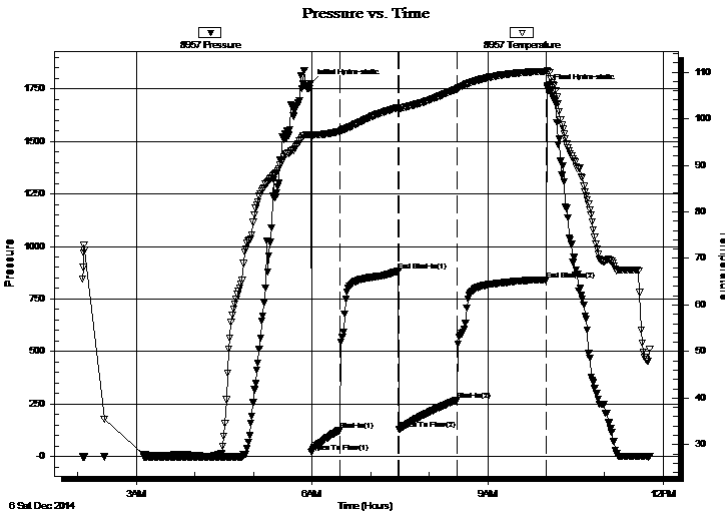
2014.12.06 @ 05:58:30

Time Off Btm:

2014.12.06 @ 10:01:15

TEST COMMENT: IF-BOB in 10 min
IS-No blow
FF-BOB in 13 min
FS-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1774.62	96.59	Initial Hydro-static
1	20.33	95.89	Open To Flow (1)
30	123.72	97.28	Shut-In(1)
90	881.79	102.38	End Shut-In(1)
91	127.64	101.91	Open To Flow (2)
151	268.65	106.41	Shut-In(2)
241	840.84	110.20	End Shut-In(2)
243	1753.31	110.30	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
300.00	Water	3.94
180.00	MCW 40%M 60%W	2.52
60.00	OS Mud	0.84

Gas Rates

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



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DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62543

DST#: 1

ATTN: Steve Miller

Test Start: 2014.12.06 @ 02:05:00

GENERAL INFORMATION:

Formation: **Toronto - LKC B**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:59:30

Time Test Ended: 11:46:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Brett Dickinson

Unit No: 59

Interval: 3631.00 ft (KB) To 3704.00 ft (KB) (TVD)

Reference Elevations: 2368.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2363.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8736

Inside

Press@RunDepth: psig @ 3632.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.06

End Date: 2014.12.06

Last Calib.: 2014.12.06

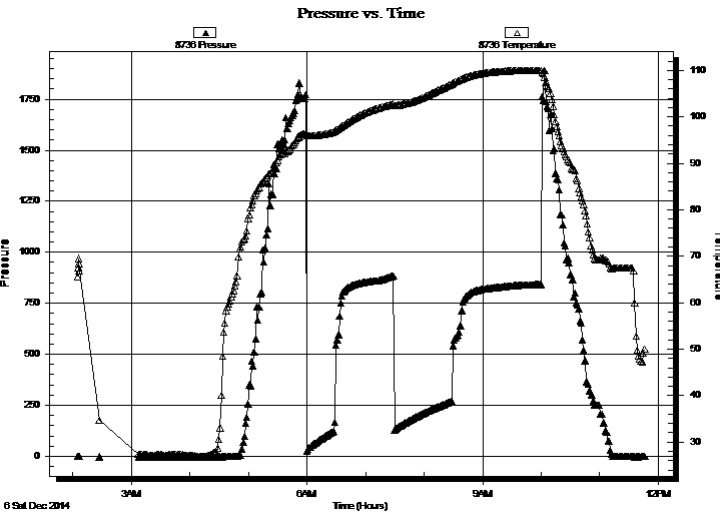
Start Time: 02:05:05

End Time: 11:46:45

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-BOB in 10 min
IS-No blow
FF-BOB in 13 min
FS-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
300.00	Water	3.94
180.00	MCW 40%M 60%W	2.52
60.00	OS Mud	0.84

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62543

DST#: 1

ATTN: Steve Miller

Test Start: 2014.12.06 @ 02:05:00

Tool Information

Drill Pipe:	Length: 3610.00 ft	Diameter: 3.80 inches	Volume: 50.64 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 55000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	3631.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	73.00 ft			
Tool Length:	93.00 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			3616.00	
Hydraulic tool	5.00			3621.00	
Packer	5.00			3626.00	20.00 Bottom Of Top Packer
Packer	5.00			3631.00	
Stubb	1.00			3632.00	
Recorder	0.00	8736	Inside	3632.00	
Recorder	0.00	8957	Outside	3632.00	
Perforations	4.00			3636.00	
Change Over Sub	1.00			3637.00	
Drill Pipe	63.00			3700.00	
Change Over Sub	1.00			3701.00	
Bullnose	3.00			3704.00	73.00 Bottom Packers & Anchor

Total Tool Length: 93.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62543

DST#: 1

ATTN: Steve Miller

Test Start: 2014.12.06 @ 02:05:00

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:

32000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
300.00	Water	3.944
180.00	MCW 40%M 60%W	2.525
60.00	OS Mud	0.842

Total Length: 540.00 ft Total Volume: 7.311 bbl

Num Fluid Samples: 0

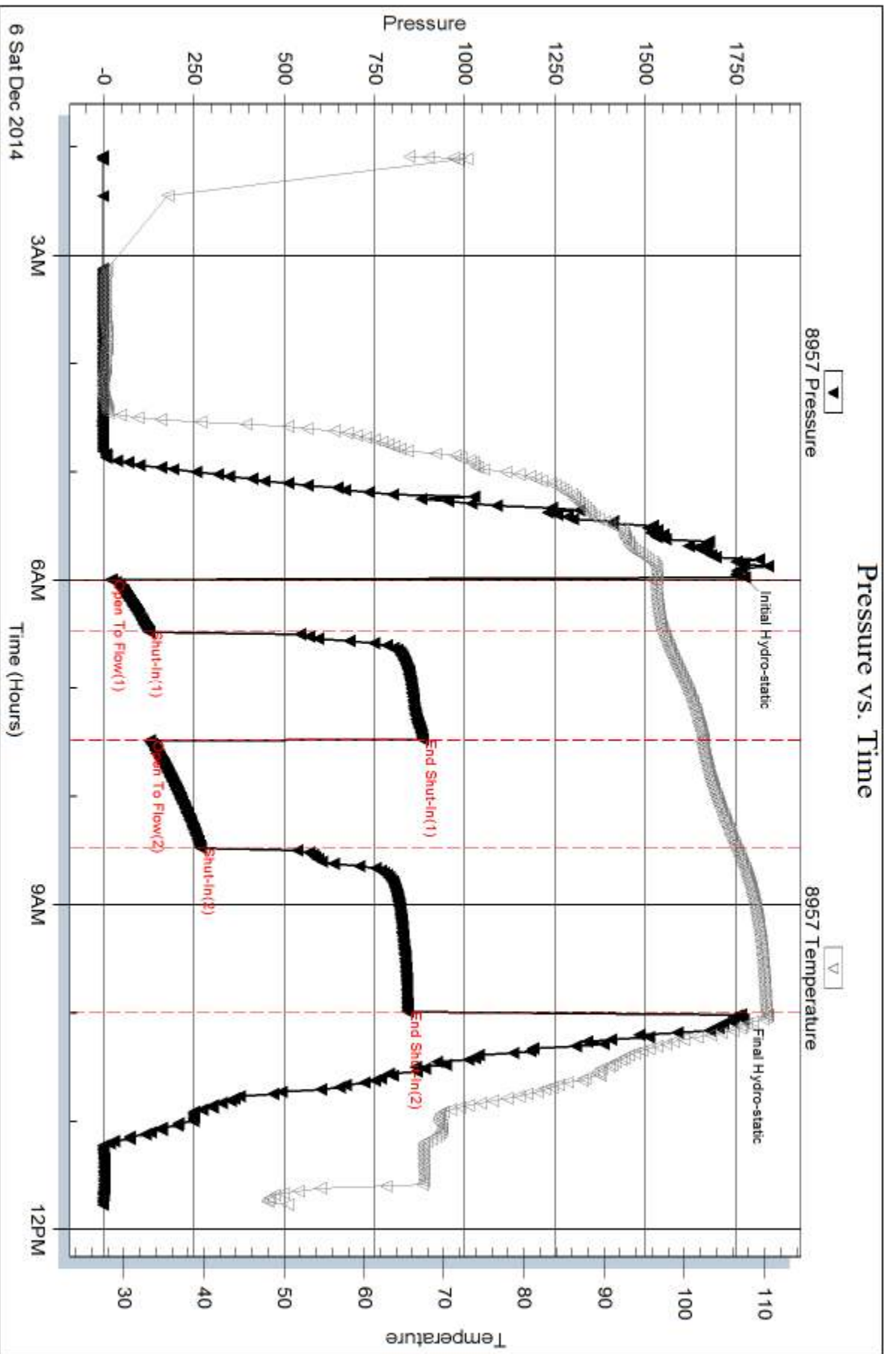
Num Gas Bombs: 0

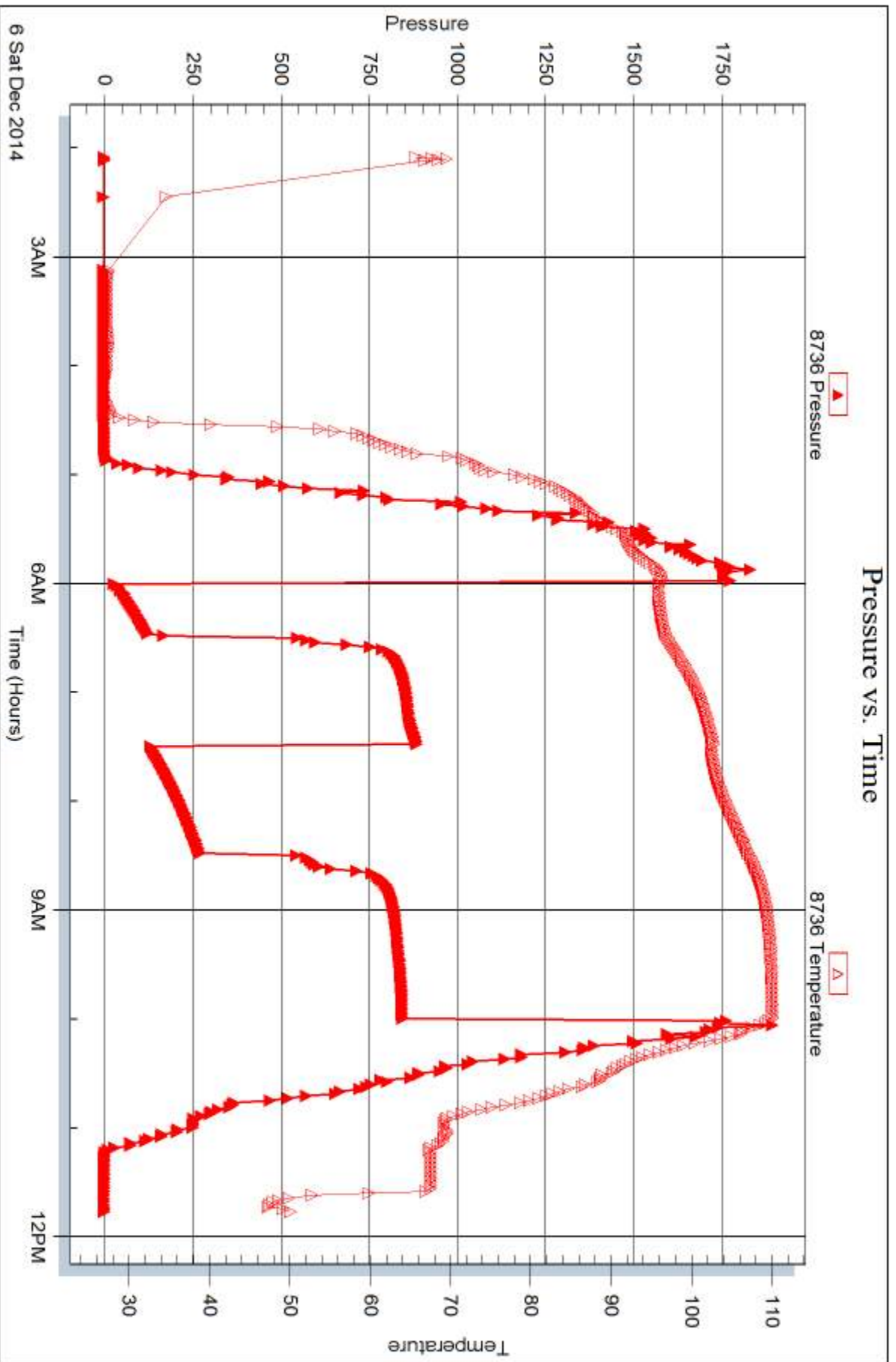
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Steve Miler

Sandlin #1-32

32-10s-23w,Graham,KS

Start Date: 2014.12.06 @ 17:25:00

End Date: 2014.12.06 @ 22:45:45

Job Ticket #: 62544 DST #: 2

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

Printed: 2014.12.10 @ 16:51:51



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62544

DST#: 2

ATTN: Steve Miller

Test Start: 2014.12.06 @ 17:25:00

GENERAL INFORMATION:

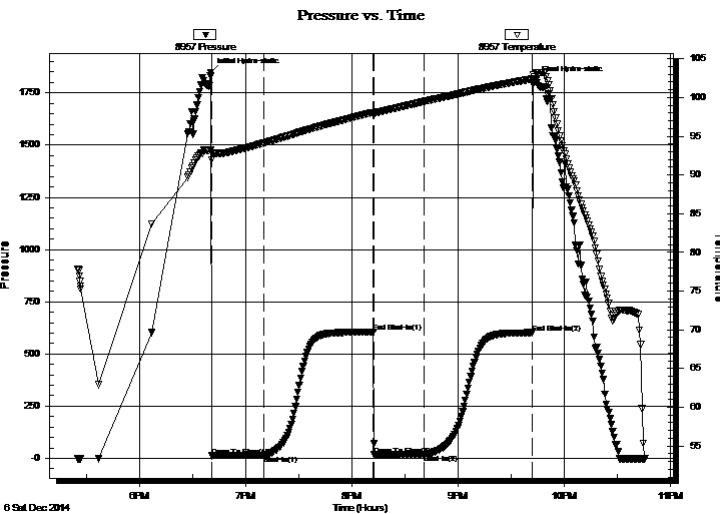
Formation: **KC**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 18:40:45
 Time Test Ended: 22:45:45
 Interval: **3700.00 ft (KB) To 3718.00 ft (KB) (TVD)**
 Total Depth: 3718.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brett Dickinson
 Unit No: 59
 Reference Elevations: 2368.00 ft (KB)
 2363.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8957

Outside

Press@RunDepth: 18.66 psig @ 3701.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.12.06 End Date: 2014.12.06 Last Calib.: 2014.12.06
 Start Time: 17:25:05 End Time: 22:45:44 Time On Btm: 2014.12.06 @ 18:40:15
 Time Off Btm: 2014.12.06 @ 21:43:15

TEST COMMENT: IF-1 1/4" blow
 IS-No blow
 FF-No blow
 FS-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1848.30	93.19	Initial Hydro-static
1	11.72	91.93	Open To Flow (1)
30	15.95	94.10	Shut-In(1)
92	605.41	98.08	End Shut-In(1)
93	16.70	97.93	Open To Flow (2)
121	18.66	99.47	Shut-In(2)
182	602.00	102.39	End Shut-In(2)
183	1807.48	102.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62544

DST#: 2

ATTN: Steve Miler

Test Start: 2014.12.06 @ 17:25:00

Tool Information

Drill Pipe:	Length: 3676.00 ft	Diameter: 3.80 inches	Volume: 51.56 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
			- bbl	String Weight: Initial	46000.00 lb
Drill Pipe Above KB:	25.00 ft			Final	46000.00 lb
Depth to Top Packer:	3700.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	18.00 ft				
Tool Length:	38.00 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			3685.00	
Hydraulic tool	5.00			3690.00	
Packer	5.00			3695.00	20.00 Bottom Of Top Packer
Packer	5.00			3700.00	
Stubb	1.00			3701.00	
Recorder	0.00	8736	Inside	3701.00	
Recorder	0.00	8957	Outside	3701.00	
Perforations	14.00			3715.00	
Bullnose	3.00			3718.00	18.00 Bottom Packers & Anchor
Total Tool Length:	38.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62544

DST#: 2

ATTN: Steve Miller

Test Start: 2014.12.06 @ 17:25:00

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: 55.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
10.00	Mud	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

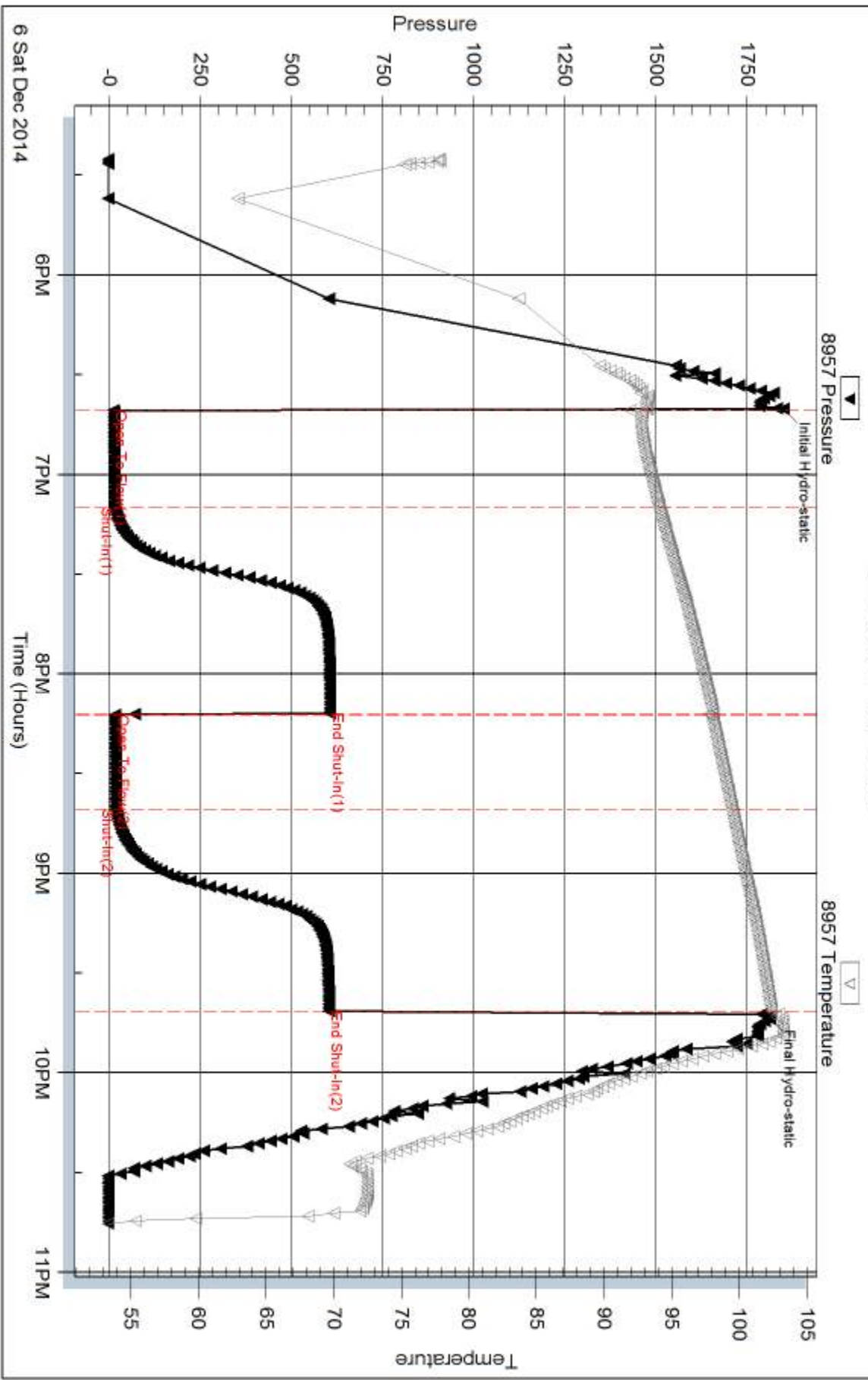
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time



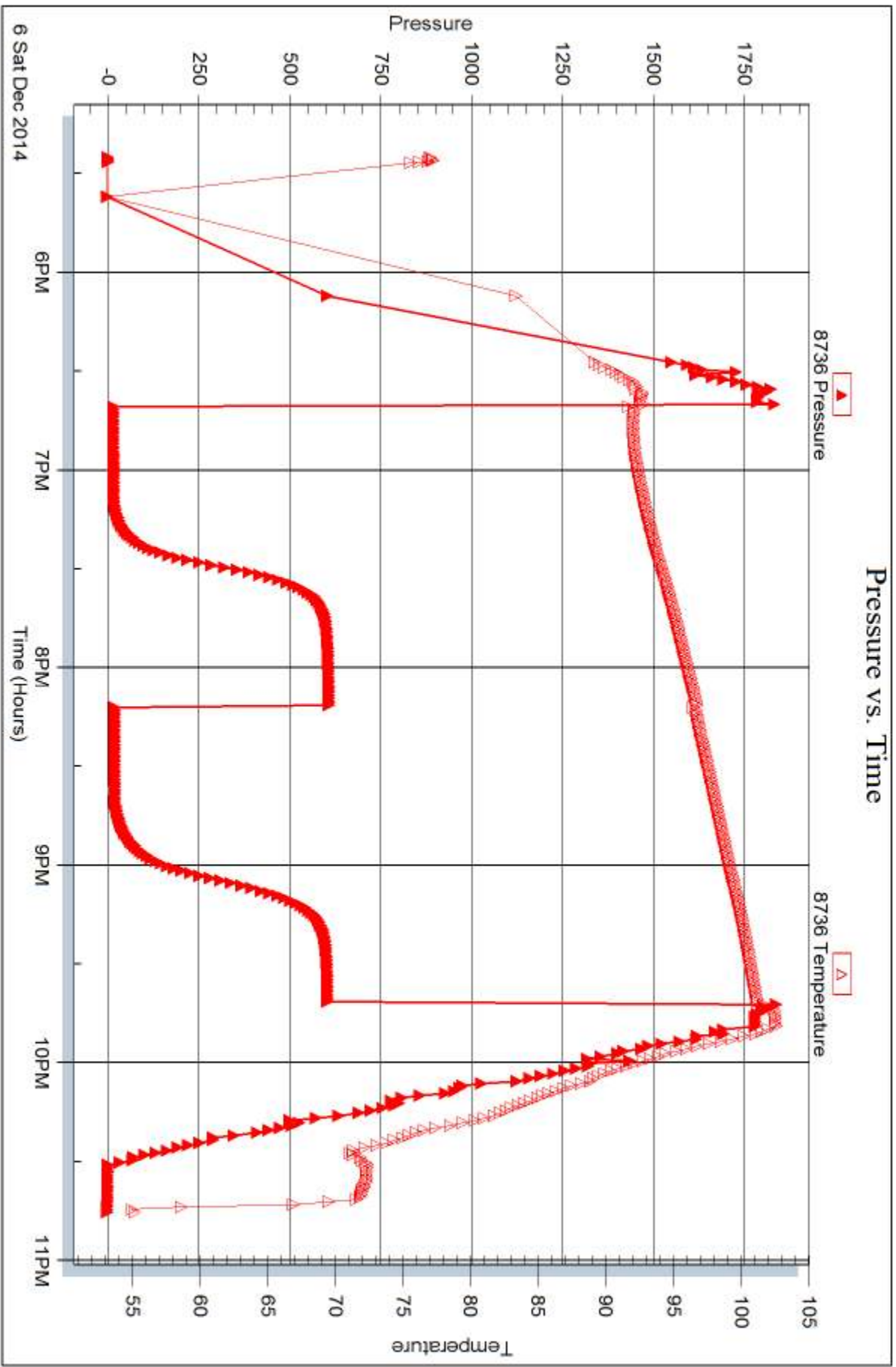
Serial #: 8736

Inside

Murfin Drilling Co. LLC

Sandlin #1-32

DST Test Number: 2





DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Steve Miler

Sandlin #1-32

32-10s-23w,Graham,KS

Start Date: 2014.12.07 @ 04:45:00

End Date: 2014.12.07 @ 10:45:15

Job Ticket #: 62545 DST #: 3

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

Printed: 2014.12.10 @ 16:51:18

Murfin Drilling Co. LLC
32-10s-23w,Graham,KS
Sandlin #1-32
DST # 3
KC
2014.12.07



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Steve Miller

32-10s-23w, Graham, KS

Sandlin #1-32

Job Ticket: 62545

DST#: 3

Test Start: 2014.12.07 @ 04:45:00

GENERAL INFORMATION:

Formation: **KC**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:25:15
 Time Test Ended: 10:45:15
 Interval: **3722.00 ft (KB) To 3752.00 ft (KB) (TVD)**
 Total Depth: 3752.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brett Dickinson
 Unit No: 59
 Reference Elevations: 2368.00 ft (KB)
 2363.00 ft (CF)
 KB to GR/CF: 5.00 ft

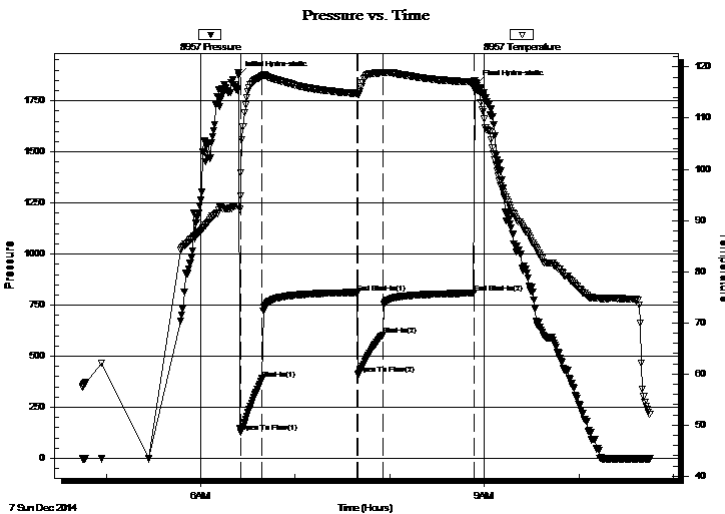
Serial #: 8957

Outside

Press@RunDepth: 603.90 psig @ 3723.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.12.07 End Date: 2014.12.07 Last Calib.: 2014.12.07
 Start Time: 04:45:05 End Time: 10:45:14 Time On Btm: 2014.12.07 @ 06:24:15
 Time Off Btm: 2014.12.07 @ 08:54:30

TEST COMMENT: IF-BOB in 1 min
 IS-No blow
 FF-BOB in 1 1/2 min
 FS-No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1874.73	92.98	Initial Hydro-static
1	129.10	94.87	Open To Flow (1)
15	389.97	118.23	Shut-In(1)
76	811.95	114.84	End Shut-In(1)
76	411.28	114.66	Open To Flow (2)
92	603.90	118.86	Shut-In(2)
150	808.70	117.02	End Shut-In(2)
151	1831.08	116.90	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1080.00	Water	14.89
240.00	OS MCW 35%M 65%W	3.37

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62545

DST#: 3

ATTN: Steve Miller

Test Start: 2014.12.07 @ 04:45:00

Tool Information

Drill Pipe:	Length: 3703.00 ft	Diameter: 3.80 inches	Volume: 51.94 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 52.08 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	3722.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	50.00 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			3707.00	
Hydraulic tool	5.00			3712.00	
Packer	5.00			3717.00	20.00 Bottom Of Top Packer
Packer	5.00			3722.00	
Stubb	1.00			3723.00	
Recorder	0.00	8736	Inside	3723.00	
Recorder	0.00	8957	Outside	3723.00	
Perforations	26.00			3749.00	
Bullnose	3.00			3752.00	30.00 Bottom Packers & Anchor
Total Tool Length:	50.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

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32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62545

DST#: 3

ATTN: Steve Miller

Test Start: 2014.12.07 @ 04:45:00

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:

68000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
1080.00	Water	14.885
240.00	OS MCW 35%M 65%W	3.367

Total Length: 1320.00 ft Total Volume: 18.252 bbl

Num Fluid Samples: 0

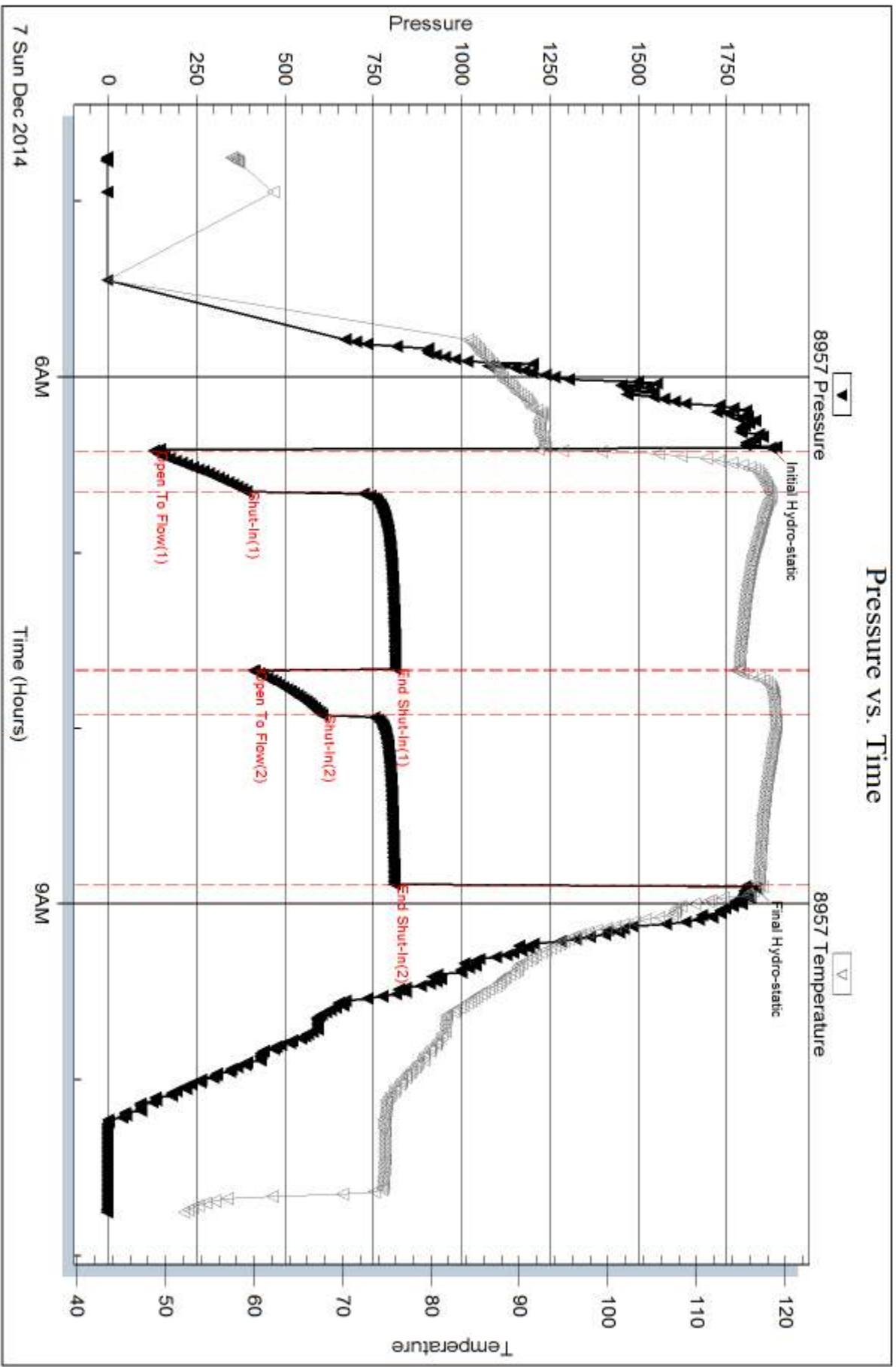
Num Gas Bombs: 0

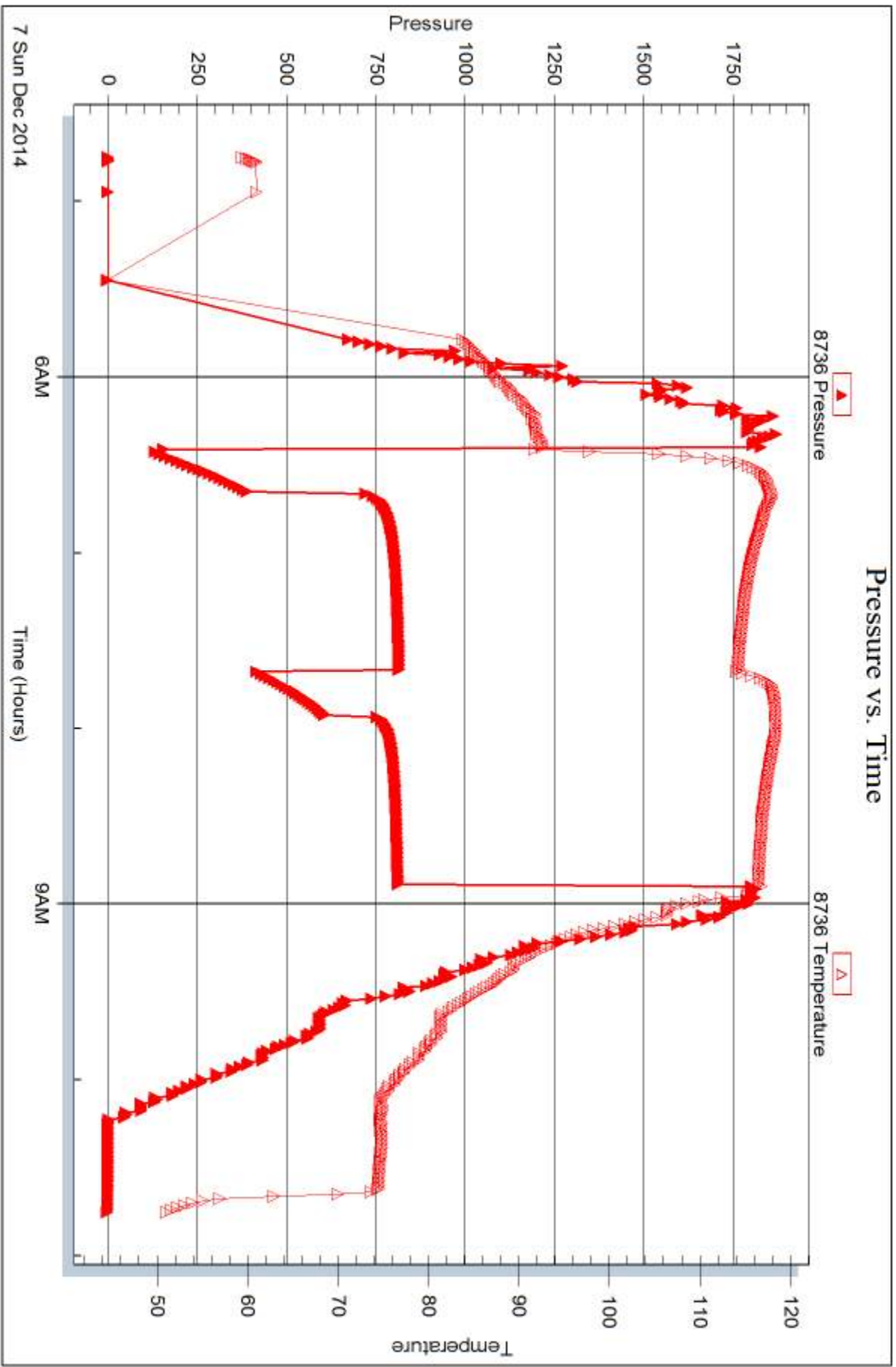
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Steve Miler

Sandlin #1-32

32-10s-23w,Graham,KS

Start Date: 2014.12.07 @ 20:10:00

End Date: 2014.12.08 @ 02:57:30

Job Ticket #: 62546 DST #: 4

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

Printed: 2014.12.10 @ 16:50:38



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62546

DST#: 4

ATTN: Steve Miller

Test Start: 2014.12.07 @ 20:10:00

GENERAL INFORMATION:

Formation: **KC "H-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:28:30

Time Test Ended: 02:57:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3782.00 ft (KB) To 3846.00 ft (KB) (TVD)

Reference Elevations: 2368.00 ft (KB)

Total Depth: 3846.00 ft (KB) (TVD)

2363.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8957 Outside

Press@RunDepth: 338.97 psig @ 3783.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.07

End Date: 2014.12.08

Last Calib.: 2014.12.08

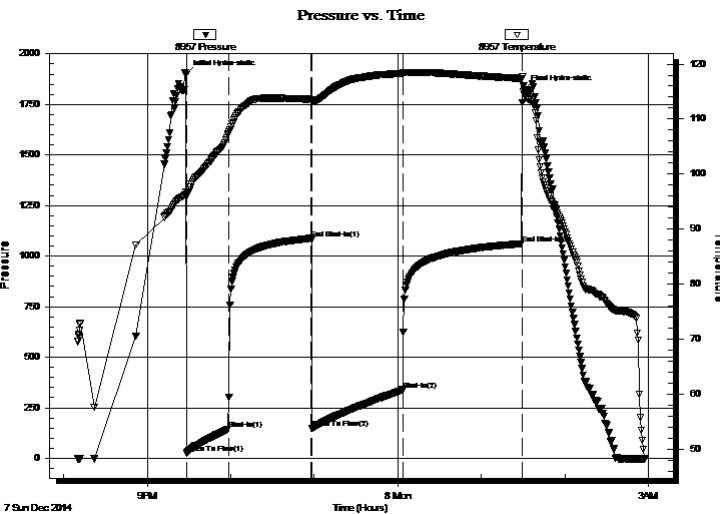
Start Time: 20:10:05

End Time: 02:57:29

Time On Btm: 2014.12.07 @ 21:28:00

Time Off Btm: 2014.12.08 @ 01:30:45

TEST COMMENT: IF-BOB in 6 min
IS-No blow
FF-BOB in 13 min
FS-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1897.20	96.68	Initial Hydro-static
1	23.74	95.96	Open To Flow (1)
31	144.03	107.32	Shut-In(1)
90	1087.54	113.59	End Shut-In(1)
91	149.13	113.19	Open To Flow (2)
156	338.97	118.28	Shut-In(2)
241	1061.32	117.38	End Shut-In(2)
243	1821.83	114.50	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
759.00	MW 20%M 80%W	10.38
1.00	Free Oil	0.01

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62546

DST#: 4

ATTN: Steve Miler

Test Start: 2014.12.07 @ 20:10:00

Tool Information

Drill Pipe:	Length: 3736.00 ft	Diameter: 3.80 inches	Volume: 52.41 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose:	55000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
				String Weight: Initial	47000.00 lb
Drill Pipe Above KB:	3.00 ft			Final	50000.00 lb
Depth to Top Packer:	3782.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	64.00 ft				
Tool Length:	84.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3767.00	
Hydraulic tool	5.00			3772.00	
Packer	5.00			3777.00	20.00 Bottom Of Top Packer
Packer	5.00			3782.00	
Stubb	1.00			3783.00	
Recorder	0.00	8736	Inside	3783.00	
Recorder	0.00	8957	Outside	3783.00	
Perforations	4.00			3787.00	
Change Over Sub	1.00			3788.00	
Drill Pipe	31.00			3819.00	
Change Over Sub	1.00			3820.00	
Perforations	23.00			3843.00	
Bullnose	3.00			3846.00	64.00 Bottom Packers & Anchor

Total Tool Length: 84.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62546

DST#: 4

ATTN: Steve Miller

Test Start: 2014.12.07 @ 20:10:00

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: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
759.00	MW 20%M 80%W	10.383
1.00	Free Oil	0.014

Total Length: 760.00 ft Total Volume: 10.397 bbl

Num Fluid Samples: 0

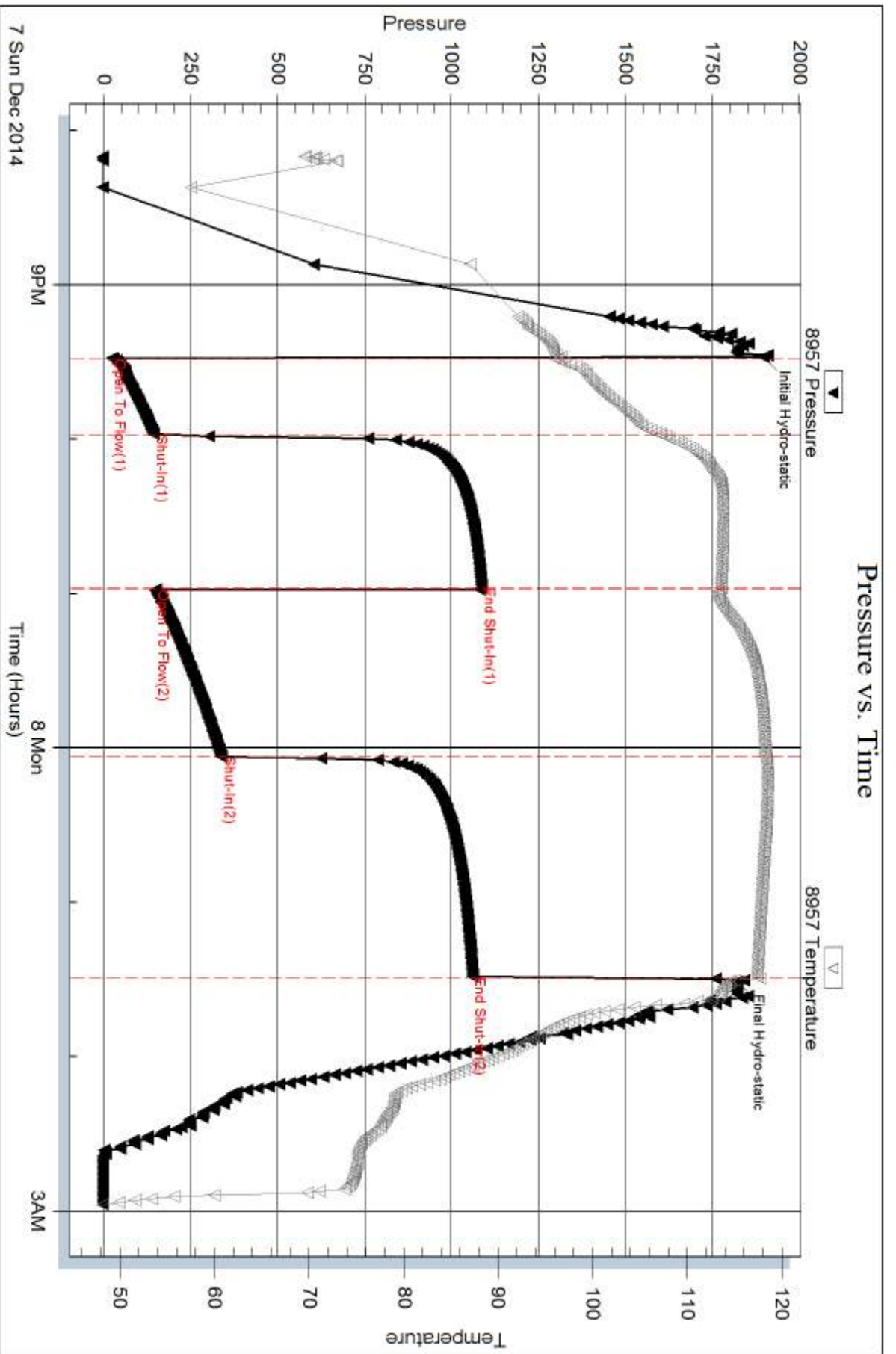
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



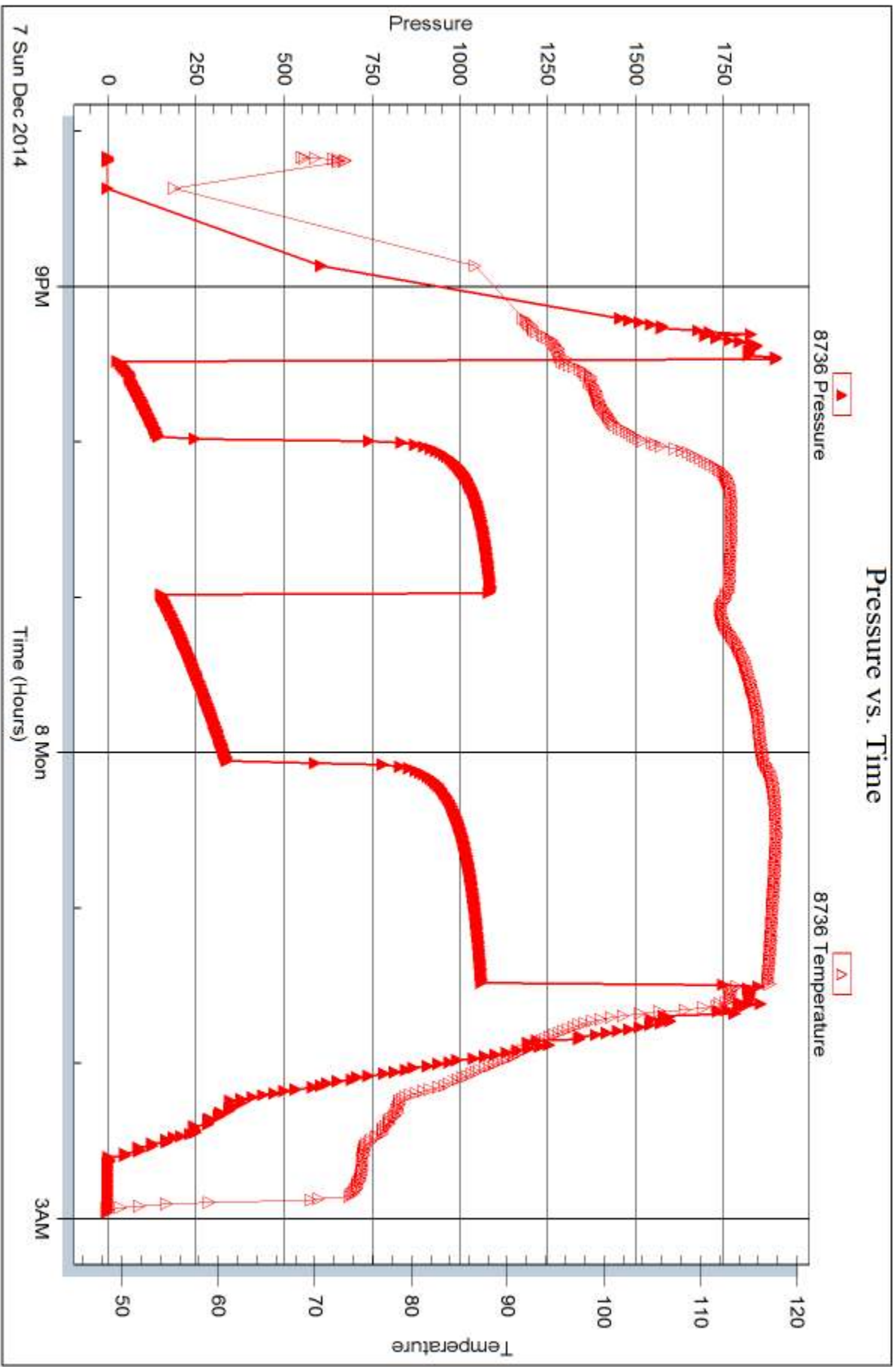
Serial #: 8736

Inside

Murfin Drilling Co. LLC

Sandlin #1-32

DST Test Number: 4



Triobite Testing, Inc

Ref. No: 62546

Printed: 2014.12.10 @ 16:50:39



DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita KS 67202

ATTN: Steve Miler

Sandlin #1-32

32-10s-23w,Graham,KS

Start Date: 2014.12.08 @ 08:35:00

End Date: 2014.12.08 @ 15:54:00

Job Ticket #: 62547 DST #: 5

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

Printed: 2014.12.10 @ 16:49:37



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62547

DST#: 5

ATTN: Steve Miller

Test Start: 2014.12.08 @ 08:35:00

GENERAL INFORMATION:

Formation: **KC"K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:44:45

Time Test Ended: 15:54:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3848.00 ft (KB) To 3868.00 ft (KB) (TVD)

Reference Elevations: 2368.00 ft (KB)

Total Depth: 3868.00 ft (KB) (TVD)

2363.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8957 Outside

Press@RunDepth: 106.97 psig @ 3849.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.08

End Date: 2014.12.08

Last Calib.: 2014.12.08

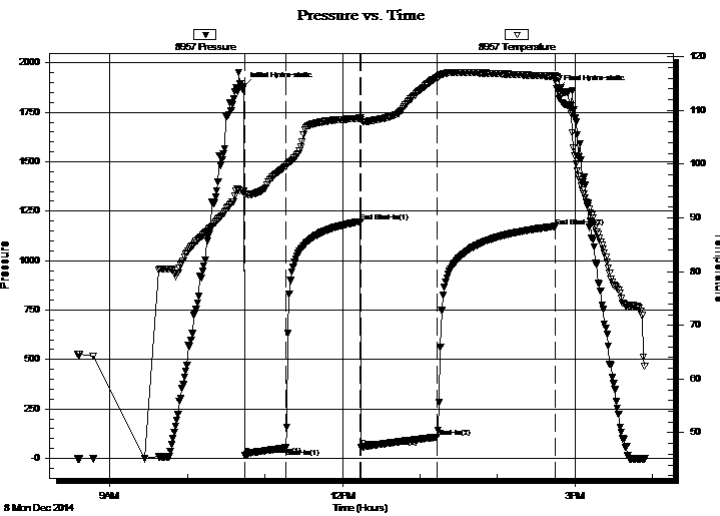
Start Time: 08:35:05

End Time: 15:53:59

Time On Btm: 2014.12.08 @ 10:43:45

Time Off Btm: 2014.12.08 @ 14:46:00

TEST COMMENT: IF-6 1/2" blow
IS-No blow
FF-6 1/2" blow
FS-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1878.34	94.95	Initial Hydro-static
1	15.26	94.36	Open To Flow (1)
32	53.04	99.56	Shut-In(1)
90	1197.40	108.58	End Shut-In(1)
91	56.65	108.26	Open To Flow (2)
150	106.97	116.14	Shut-In(2)
241	1172.84	116.38	End Shut-In(2)
243	1864.23	116.14	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
195.00	water	2.47

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62547

DST#: 5

ATTN: Steve Miller

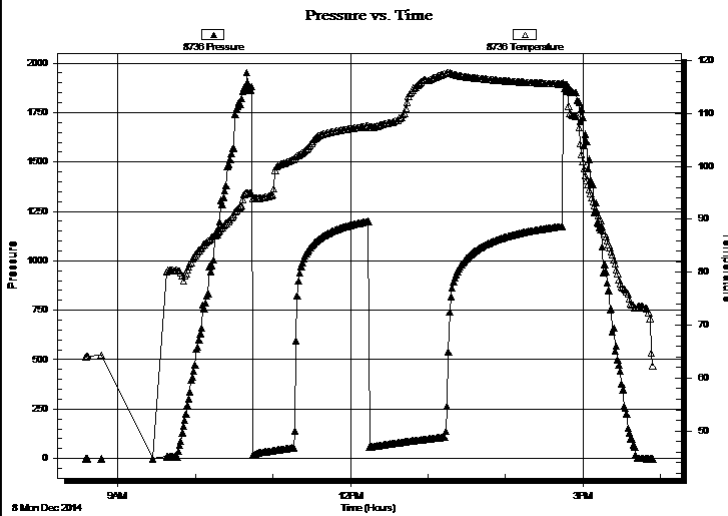
Test Start: 2014.12.08 @ 08:35:00

GENERAL INFORMATION:

Formation: KC"K"	Deviated: No Whipstock: ft (KB)	Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 10:44:45	Time Test Ended: 15:54:00	Tester: Brett Dickinson
Interval: 3848.00 ft (KB) To 3868.00 ft (KB) (TVD)	Total Depth: 3868.00 ft (KB) (TVD)	Unit No: 59
Hole Diameter: 7.88 inches	Hole Condition: Fair	Reference Elevations: 2368.00 ft (KB) 2363.00 ft (CF)
		KB to GR/CF: 5.00 ft

Serial #: 8736	Inside				
Press@RunDepth: psig @ 3849.00 ft (KB)	Capacity: 8000.00 psig				
Start Date: 2014.12.08	End Date: 2014.12.08	Last Calib.: 2014.12.08			
Start Time: 08:35:05	End Time: 15:53:59	Time On Btm:			
		Time Off Btm:			

TEST COMMENT: IF-6 1/2" blow
IS-No blow
FF-6 1/2" blow
FS-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
195.00	water	2.47

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 Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62547

DST#: 5

ATTN: Steve Miller

Test Start: 2014.12.08 @ 08:35:00

Tool Information

Drill Pipe:	Length: 3828.00 ft	Diameter: 3.80 inches	Volume: 53.70 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
			- bbl	String Weight: Initial	47000.00 lb
Drill Pipe Above KB:	29.00 ft			Final	48000.00 lb
Depth to Top Packer:	3848.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	20.00 ft				
Tool Length:	40.00 ft				
Number of Packers:	2	Diameter:	6.75 inches		
Tool Comments:					

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3833.00	
Hydraulic tool	5.00			3838.00	
Packer	5.00			3843.00	20.00 Bottom Of Top Packer
Packer	5.00			3848.00	
Stubb	1.00			3849.00	
Recorder	0.00	8736	Inside	3849.00	
Recorder	0.00	8957	Outside	3849.00	
Perforations	16.00			3865.00	
Bullnose	3.00			3868.00	20.00 Bottom Packers & Anchor
Total Tool Length:	40.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. LLC

32-10s-23w, Graham, KS

250 N Water STE 300
Wichita KS 67202

Sandlin #1-32

Job Ticket: 62547

DST#: 5

ATTN: Steve Miller

Test Start: 2014.12.08 @ 08:35:00

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:

75000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2200.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
195.00	water	2.471

Total Length: 195.00 ft Total Volume: 2.471 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

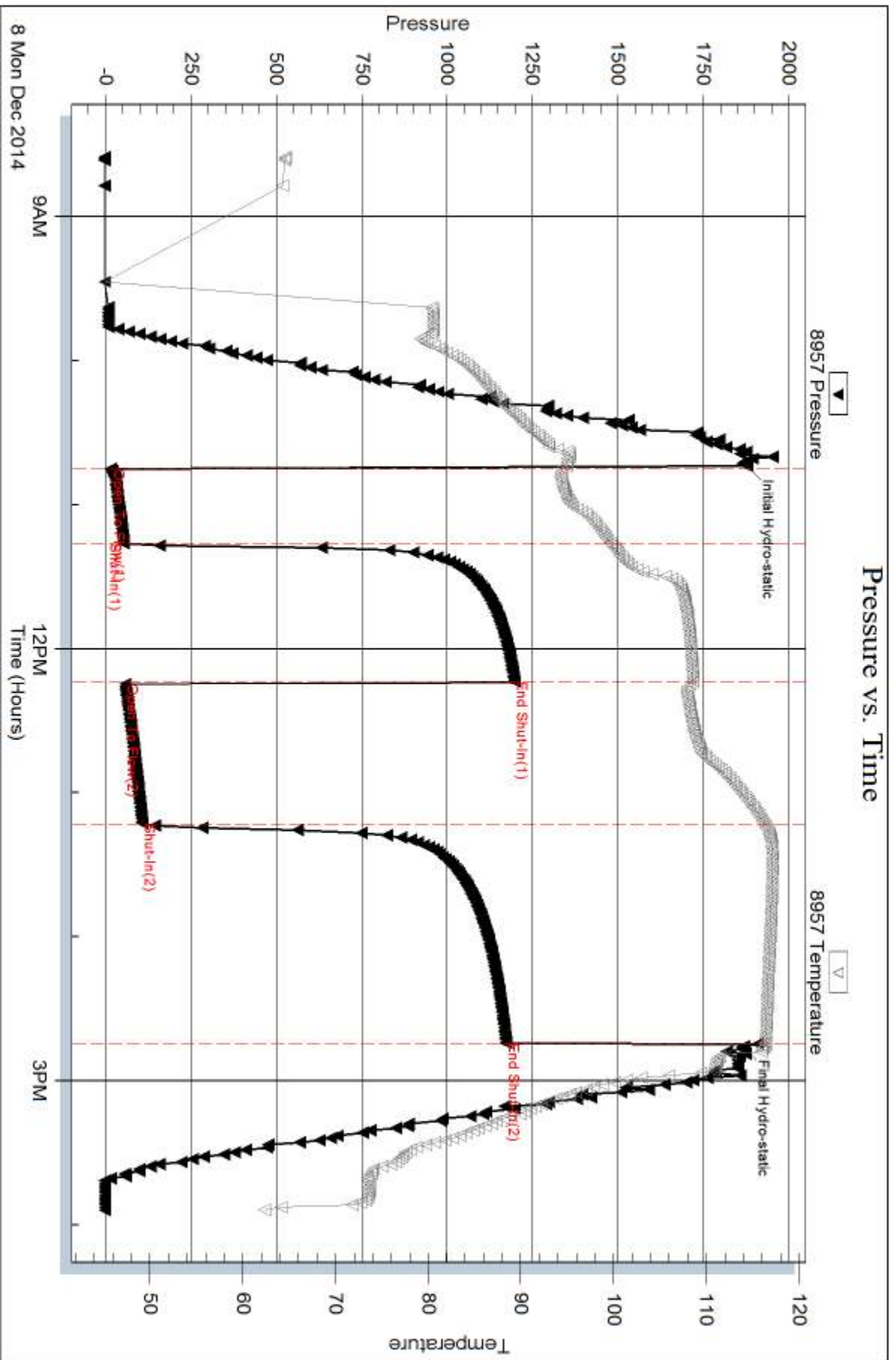
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time



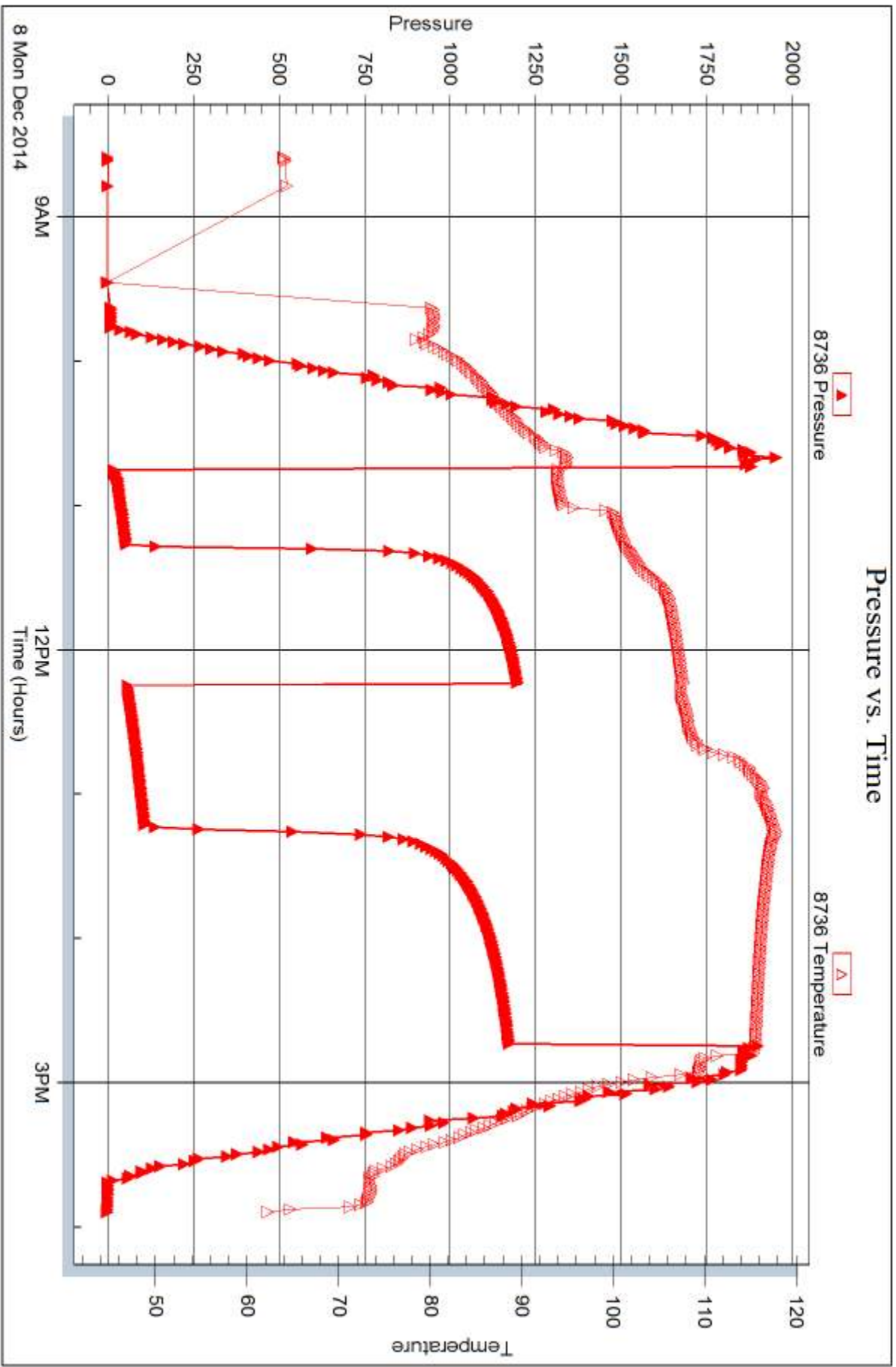
Serial #: 8736

Inside

Murfin Drilling Co. LLC

Sandlin #1-32

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 62547

Printed: 2014.12.10 @ 16:49:38



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Brett

785-639-1270

Test Ticket

NO. 62543

Well Name & No. Sandlin #1-32 Test No. 1 Date 12/6/14
 Company Murfin Drilling Co. Inc. Elevation 2368 KB 2363 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. _____ Rig Murfin #16
 Location: Sec. 32 Twp. B10S Rge. 23w Co. Graham State KS

Interval Tested 3631-3704 Zone Tested KC
 Anchor Length 73 Drill Pipe Run _____ Mud Wt. 8.8
 Top Packer Depth 3626 Drill Collars Run 29 Vis 55
 Bottom Packer Depth 3631 Wt. Pipe Run - WL 6.8
 Total Depth 3704 Chlorides 2,200 ppm System LCM -
 Blow Description IF-BOB in 10min
ISF-No blow
FF-BOB in 13min
FSI-No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>OS Mud</u>				
<u>180</u>	<u>MW</u>		<u>60</u>		<u>40</u>
<u>300</u>	<u>water</u>				
_____	_____				
_____	_____				

Rec Total 540 BHT 110 Gravity _____ API RW .4 @ 90 °F Chlorides 32,000 ppm
 (A) Initial Hydrostatic 1,725 Test 1150 T-On Location 1:12
 (B) First Initial Flow 20 Jars _____ T-Started 2:05
 (C) First Final Flow 124 Safety Joint _____ T-Open 6:00
 (D) Initial Shut-In 882 Circ Sub _____ T-Pulled 10:00
 (E) Second Initial Flow 128 Hourly Standby .75h 75 T-Out 11:45
 (F) Second Final Flow 269 Mileage 92rt 142.60
 (G) Final Shut-In 841 Sampler _____
 (H) Final Hydrostatic 1,753 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1367.60
 Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1367.60
 MP/DST Disc't _____

Approved By _____ Our Representative Brett Dickman

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. 62544

Well Name & No. Sandlin # 1-32 Test No. 2 Date 12/6/14
 Company Murkin Drilling Co. Inc. Elevation 2368 KB 2363 GL
 Address _____
 Co. Rep / Geo. Steve Miller Rig Murkin #16
 Location: Sec. 32 Twp. 10s Rge. 23w Co. Graham State KS

Interval Tested 3700-3718 Zone Tested KL
 Anchor Length 18 Drill Pipe Run _____ Mud Wt. 8.8
 Top Packer Depth 3695 Drill Collars Run 29 Vis 55
 Bottom Packer Depth 3700 Wt. Pipe Run _____ WL 6.8
 Total Depth 3718 Chlorides 2,200 ppm System LCM _____
 Blow Description IF - 1 1/4 in blow
ISI - No blow
FF - No blow
FSI - No blow

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

Rec Total 10 BHT 107 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm
 (A) Initial Hydrostatic 1,848 Test 1150 T-On Location 17:45
 (B) First Initial Flow 12 Jars _____ T-Started 17:25
 (C) First Final Flow 16 Safety Joint _____ T-Open 18:40
 (D) Initial Shut-In 605 Circ Sub _____ T-Pulled 21:40
 (E) Second Initial Flow 17 Hourly Standby _____ T-Out 22:45
 (F) Second Final Flow 19 Mileage 92r 7 142.60 Comments _____
 (G) Final Shut-In 602 Sampler _____
 (H) Final Hydrostatic 1,807 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1292.60
 Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1292.60
 MP/DST Disc't _____

Approved By _____ Our Representative Burd

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. 62545

Well Name & No. Sandlin #1-32 Test No. 3 Date 12/7/14
 Company Martin Drilling Co Inc. Elevation 2368 KB 2363 GL
 Address _____
 Co. Rep / Geo. _____ Rig Martin #16
 Location: Sec. 32 Twp. 10s Rge. 23w Co. Graham State KS

Interval Tested 3720 - 3752 Zone Tested KC
 Anchor Length 30 Drill Pipe Run _____ Mud Wt. _____
 Top Packer Depth ~~3717~~ 3717 Drill Collars Run 29 Vis _____
 Bottom Packer Depth ~~3722~~ 3722 Wt. Pipe Run - WL _____
 Total Depth 3752 Chlorides _____ ppm System LCM _____
 Blow Description IF - BOB in 1 min
ISF - No blow
FF - BOB in 1 1/2 min

Rec	Feet of	%gas	%oil	%water	%mud
<u>240</u>	<u>OS MCW</u>			<u>65</u>	<u>35</u>
<u>1080</u>	<u>water</u>				
_____	_____				
_____	_____				
_____	_____				

Rec Total 1320 BHT _____ Gravity _____ API RW 2 @ 40 ° F Chlorides _____ ppm

(A) Initial Hydrostatic 1,875 Test 1150 T-On Location 4:35
 (B) First Initial Flow 129 Jars _____ T-Started 4:45
 (C) First Final Flow 390 Safety Joint _____ T-Open 6:25
 (D) Initial Shut-In 812 Circ Sub _____ T-Pulled 8:55
 (E) Second Initial Flow 411 Hourly Standby _____ T-Out 10:43
 (F) Second Final Flow 604 Mileage 92rt 142.60 Comments _____
 (G) Final Shut-In 808 Sampler _____
 (H) Final Hydrostatic 1,831 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 15
 Initial Shut-In 60
 Final Flow 15
 Final Shut-In 60

Sub Total 1292.60
 Total 1292.60
 MP/DST Disc't _____

Approved By _____ Our Representative Burton

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. 62546

Well Name & No. Sandlin #1-32 Test No. 4 Date 12/7/14
 Company Murkin Drilling Co Inc Elevation 2368 KB 2363 GL
 Address _____
 Co. Rep / Geo. Steve M. Rig Murkin #16
 Location: Sec. 32 Twp. 10s Rge. 23w Co. Graham State KS

Interval Tested 3782-3846 Zone Tested KC" H-J"
 Anchor Length 64 Drill Pipe Run _____ Mud Wt. _____
 Top Packer Depth 3777 Drill Collars Run 29 Vis _____
 Bottom Packer Depth 3782 Wt. Pipe Run _____ WL _____
 Total Depth 3846 Chlorides _____ ppm System _____ LCM _____
 Blow Description FF - BOB in 6 min
ISI - No blow
FF - BOB in 13 min
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>Free Oil</u>				
<u>759</u>	<u>MW</u>		<u>80</u>	<u>20</u>	
_____	_____				
_____	_____				
_____	_____				

Rec Total 760 BHT 117 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1,897 Test 1150 T-On Location 20:00
 (B) First Initial Flow 24 Jars _____ T-Started 20:10
 (C) First Final Flow 144 Safety Joint _____ T-Open 21:28
 (D) Initial Shut-In 1,087 Circ Sub _____ T-Pulled 1:28
 (E) Second Initial Flow 149 Hourly Standby _____ T-Out 2:55
 (F) Second Final Flow 339 Mileage 142.60 Comments _____
 (G) Final Shut-In 1,061 Sampler _____
 (H) Final Hydrostatic 1,822 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Sub Total 1292.60

MP/DST Disc't _____

Approved By _____ Our Representative Butt

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. 62547

Well Name & No. Sandlin # 1-32 Test No. 5 Date 12/8/14
 Company Martin Drilling Co Inc Elevation 2369 KB 2363 GL
 Address _____
 Co. Rep / Geo. Steve M Rig Martin #16
 Location: Sec. 32 Twp. 10s Rge. 23w Co. Graham State KS

Interval Tested 3848-3868 Zone Tested KC "K"
 Anchor Length 20 Drill Pipe Run _____ Mud Wt. _____
 Top Packer Depth 3843 Drill Collars Run 29 Vis _____
 Bottom Packer Depth 3848 Wt. Pipe Run _____ WL _____
 Total Depth 3868 Chlorides _____ ppm System LCM _____
 Blow Description IF - 6 1/2 in blow
ISI - No blow
FF - 6 1/2 in blow
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>195</u>	<u>water</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 195 BHT 116 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm
 (A) Initial Hydrostatic 1828 Test 1150 T-On Location 5
 (B) First Initial Flow 15 Jars _____ T-Started 8:35
 (C) First Final Flow 53 Safety Joint _____ T-Open 10:43
 (D) Initial Shut-In 4,197 Circ Sub _____ T-Pulled 14:45
 (E) Second Initial Flow 57 Hourly Standby _____ T-Out 15:55
 (F) Second Final Flow 107 Mileage 92- JX 2 Comments Leaked Tool 13
 (G) Final Shut-In 1,173 Sampler 142.60+142.60 12/9/14
 (H) Final Hydrostatic 1,884 Straddle _____ Ruined Shale Packer _____
 Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 60 Extra Packer _____ Extra Copies _____
 Final Flow 60 Extra Recorder _____ Sub Total 0
 Final Shut-In 90 Day Standby _____ Total 1435.20
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1435.20

Approved By _____ Our Representative Burt D...
 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.