



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Keith Reavis

Ruda C #1-13

13-4s-33w Rawlins,KS

Start Date: 2015.01.27 @ 02:02:00

End Date: 2015.01.27 @ 10:31:30

Job Ticket #: 61123 DST #: 1

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

Printed: 2015.02.03 @ 14:05:42



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61123

DST#: 1

ATTN: Keith Reavis

Test Start: 2015.01.27 @ 02:02:00

GENERAL INFORMATION:

Formation: **Lecompton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:57:40

Time Test Ended: 10:31:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Kevin Mack

Unit No: 82

Interval: 3800.00 ft (KB) To 3863.00 ft (KB) (TVD)

Reference Elevations: 3010.00 ft (KB)

Total Depth: 3863.00 ft (KB) (TVD)

3005.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

Serial #: 8874 Inside

Press@RunDepth: 87.96 psig @ 3801.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.27 End Date: 2015.01.27

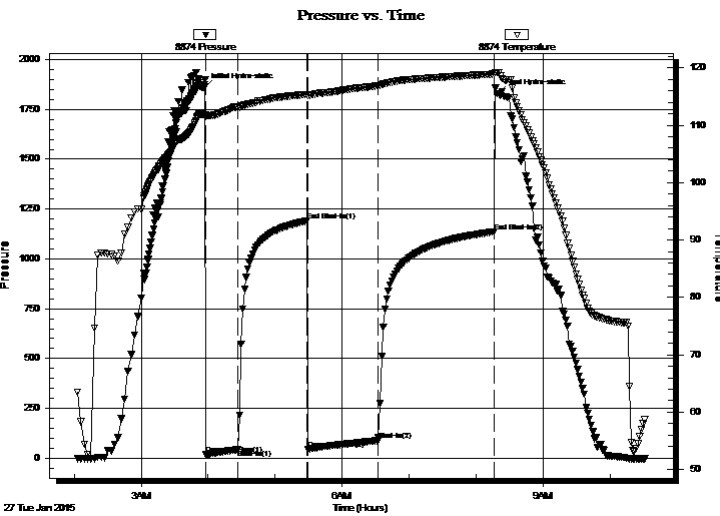
Last Calib.: 2015.01.27

Start Time: 02:03:00 End Time: 10:31:30

Time On Btm: 2015.01.27 @ 03:56:20

Time Off Btm: 2015.01.27 @ 08:19:30

TEST COMMENT: 30 - IF- 1/2" Blow built to 3 1/2"
60 - IS- No Return
60 - FF- Surface Blow Built to 4"
90 - FS- Weak Surface Return started at 33 min. Built to 1/4"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1858.59	111.77	Initial Hydro-static
2	18.24	111.44	Open To Flow (1)
31	43.03	113.01	Shut-In(1)
92	1189.56	115.34	End Shut-In(1)
94	46.44	115.18	Open To Flow (2)
156	87.96	116.84	Shut-In(2)
260	1136.48	118.90	End Shut-In(2)
264	1828.23	119.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	MW 50M 50W	0.30
62.00	WM 20W 80M	0.30
30.00	Mud 100M	0.15

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61123

DST#: 1

ATTN: Keith Reavis

Test Start: 2015.01.27 @ 02:02:00

Tool Information

Drill Pipe:	Length: 3615.00 ft	Diameter: 3.80 inches	Volume: 50.71 bbl	Tool Weight:	2500.00 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume: 51.63 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	3800.00 ft			Final	62000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	63.00 ft				
Tool Length:	91.00 ft				
Number of Packers:	2	Diameter:	6.75 inches		
Tool Comments:					

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3773.00	
Shut In Tool	5.00			3778.00	
Hydraulic tool	5.00			3783.00	
Jars	5.00			3788.00	
Safety Joint	3.00			3791.00	
Packer	5.00			3796.00	28.00 Bottom Of Top Packer
Packer	4.00			3800.00	
Stubb	1.00			3801.00	
Recorder	0.00	8653	Outside	3801.00	
Recorder	0.00	8874	Inside	3801.00	
Perforations	23.00			3824.00	
Change Over Sub	1.00			3825.00	
Drill Pipe	32.00			3857.00	
Change Over Sub	1.00			3858.00	
Bullnose	5.00			3863.00	63.00 Bottom Packers & Anchor

Total Tool Length: 91.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61123

DST#: 1

ATTN: Keith Reavis

Test Start: 2015.01.27 @ 02:02:00

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:

4900 ppm

Viscosity: 70.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	MW 50M 50W	0.305
62.00	WM 20W 80M	0.305
30.00	Mud 100M	0.148

Total Length: 154.00 ft Total Volume: 0.758 bbl

Num Fluid Samples: 0

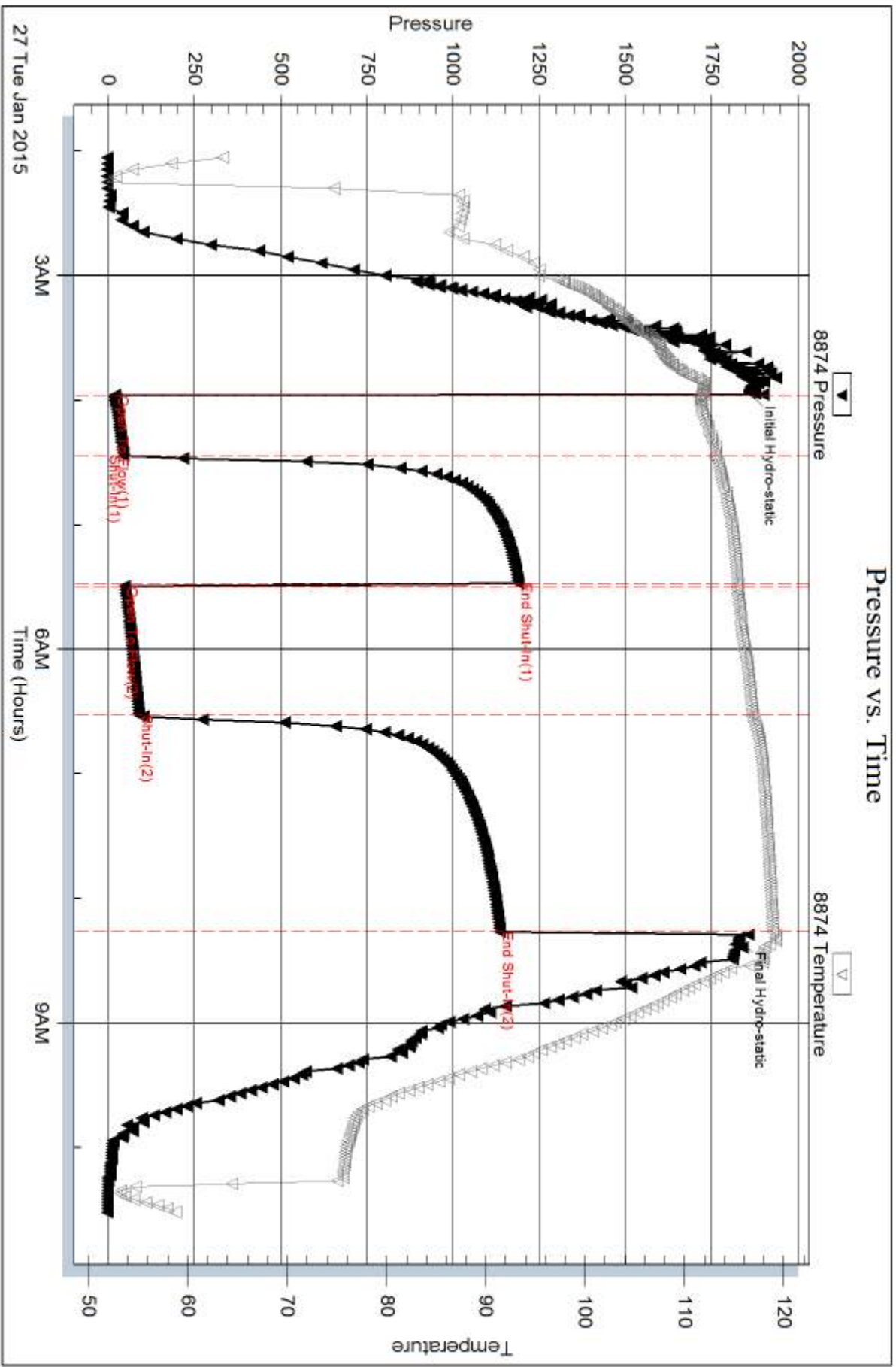
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW 1.58 @ 51 deg = 4,900ppm

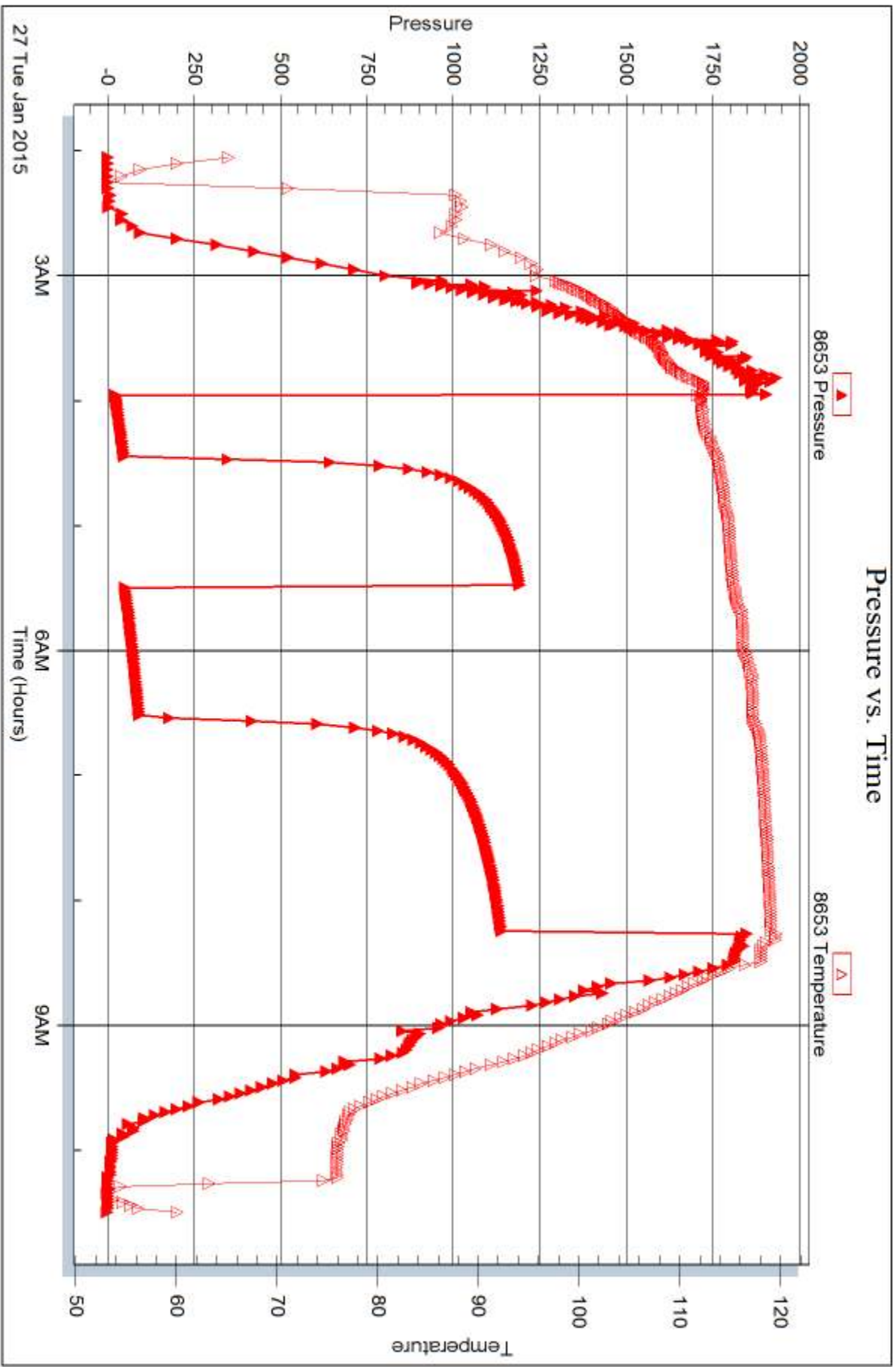


Serial #: 8653

Outside Murfin Drilling Co., Inc.

Ruda C#1-13

DST Test Number: 1





DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Keith Reavis

Ruda C #1-13

13-4s-33w Rawlins,KS

Start Date: 2015.01.27 @ 20:30:00

End Date: 2015.01.28 @ 05:09:30

Job Ticket #: 61124 DST #: 2

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

Printed: 2015.02.03 @ 13:58:54

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

Ruda C #1-13

DST # 2

Toronto - LKC "A"

2015.01.27



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
250 N Water STE #300
Wichita, KS 67202
ATTN: Keith Reavis

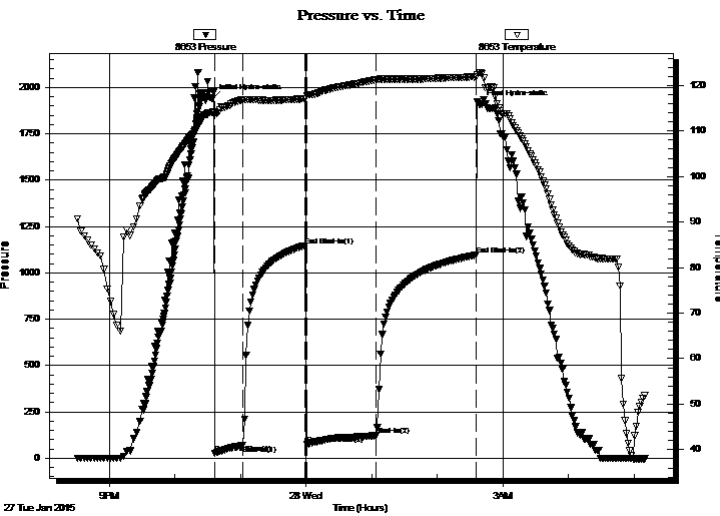
13-4s-33w Rawlins,KS
Ruda C #1-13
Job Ticket: 61124 **DST#: 2**
Test Start: 2015.01.27 @ 20:30:00

GENERAL INFORMATION:

Formation: **Toronto - LKC "A"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:36:30
Time Test Ended: 05:09:30
Test Type: Conventional Bottom Hole (Initial)
Tester: Kevin Mack
Unit No: 82
Interval: **3892.00 ft (KB) To 3954.00 ft (KB) (TVD)**
Reference Elevations: 3010.00 ft (KB)
Total Depth: 3954.00 ft (KB) (TVD) 3005.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 8653 Outside
Press@RunDepth: 121.73 psig @ 3893.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2015.01.27 End Date: 2015.01.28 Last Calib.: 2015.01.28
Start Time: 20:31:00 End Time: 05:09:30 Time On Btm: 2015.01.27 @ 22:34:30
Time Off Btm: 2015.01.28 @ 02:38:30

TEST COMMENT: 30 - IF- 1/2" Blow built to 5"
60 - IS- No Return
60 - FF- Blow started at 13 min. Built to 5 1/4"
90 - FS- No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1939.84	114.10	Initial Hydro-static
2	26.14	113.66	Open To Flow (1)
28	69.14	116.90	Shut-In(1)
85	1147.56	117.10	End Shut-In(1)
86	76.40	117.70	Open To Flow (2)
149	121.73	121.25	Shut-In(2)
241	1095.91	121.89	End Shut-In(2)
244	1910.36	122.85	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	OSMW 40M 60W (oil spots)	0.30
62.00	OSMW 50M 50W (oil spots)	0.30
62.00	OSWM 40W 60M (oil spots)	0.30
30.00	VSOCM 5o 95M	0.41

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61124

DST#: 2

ATTN: Keith Reavis

Test Start: 2015.01.27 @ 20:30:00

Tool Information

Drill Pipe:	Length: 3709.00 ft	Diameter: 3.80 inches	Volume: 52.03 bbl	Tool Weight: 2500.00 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 52.95 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3892.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	90.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3865.00	
Shut In Tool	5.00			3870.00	
Hydraulic tool	5.00			3875.00	
Jars	5.00			3880.00	
Safety Joint	3.00			3883.00	
Packer	5.00			3888.00	28.00 Bottom Of Top Packer
Packer	4.00			3892.00	
Stubb	1.00			3893.00	
Recorder	0.00	8653	Outside	3893.00	
Recorder	0.00	8874	Inside	3893.00	
Perforations	22.00			3915.00	
Change Over Sub	1.00			3916.00	
Drill Pipe	32.00			3948.00	
Change Over Sub	1.00			3949.00	
Bullnose	5.00			3954.00	62.00 Bottom Packers & Anchor

Total Tool Length: 90.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61124

DST#: 2

ATTN: Keith Reavis

Test Start: 2015.01.27 @ 20:30:00

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:

40000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
62.00	OSMW 40M 60W (oil spots)	0.305
62.00	OSMW 50M 50W (oil spots)	0.305
62.00	OSWM 40W 60M (oil spots)	0.305
30.00	VSOCM 5o 95M	0.412

Total Length: 216.00 ft

Total Volume: 1.327 bbl

Num Fluid Samples: 0

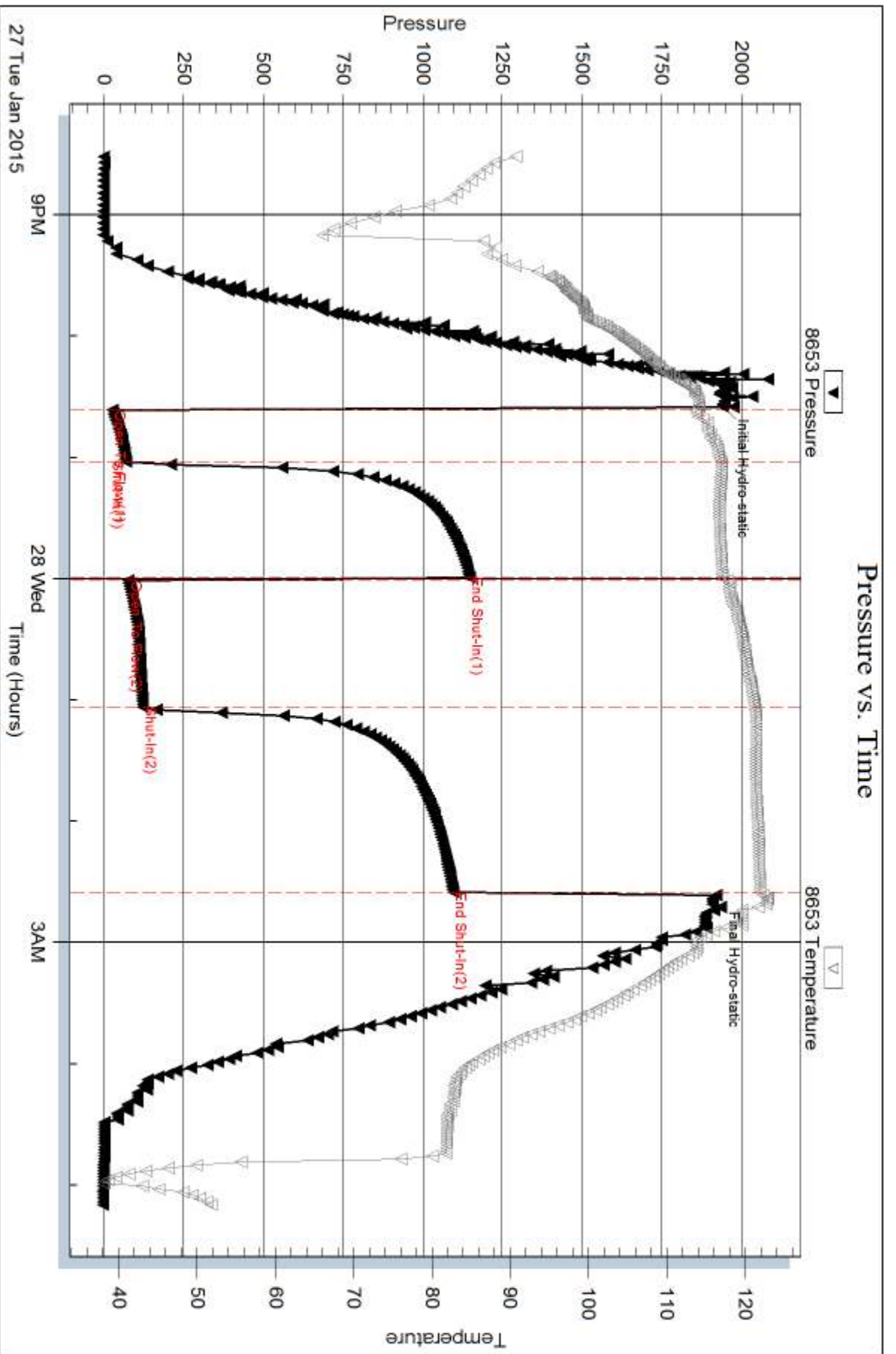
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw = .18 @ 70 deg = 40,000ppm



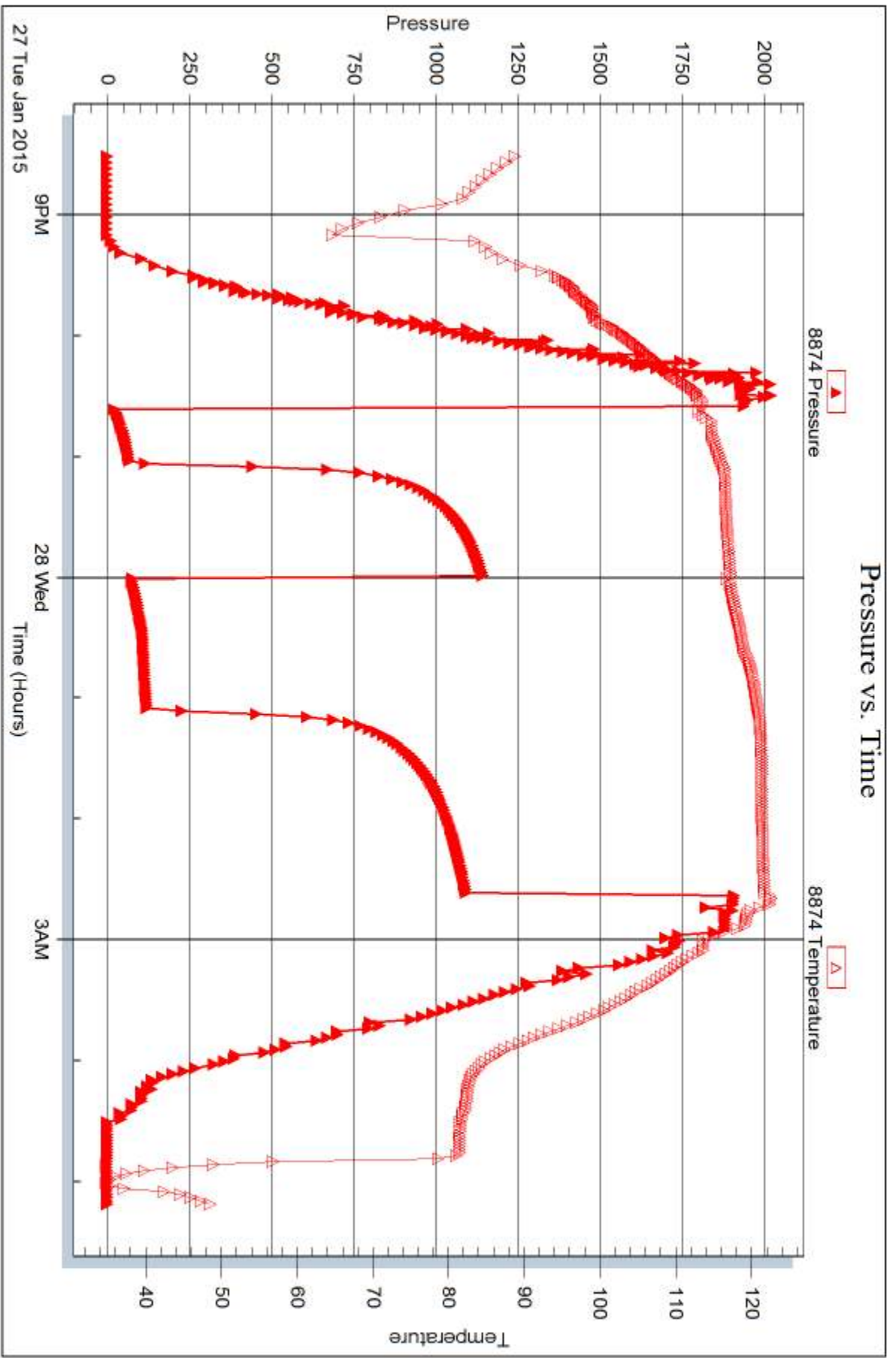
Serial #: 8874

Inside

Murfin Drilling Co., Inc.

Ruda C#1-13

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 61124

Printed: 2015.02.03 @ 13:58:55



DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Keith Reavis

Ruda C #1-13

13-4s-33w Rawlins,KS

Start Date: 2015.01.28 @ 14:15:00

End Date: 2015.01.28 @ 21:22:00

Job Ticket #: 61125 DST #: 3

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

Printed: 2015.02.03 @ 13:55:09



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N Water STE #300
 Wichita, KS 67202
 ATTN: Keith Reavis

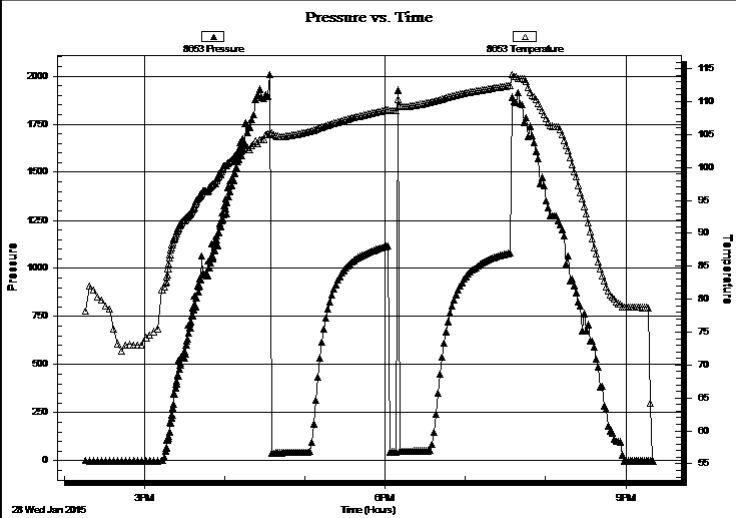
13-4s-33w Rawlins, KS
Ruda C #1-13
 Job Ticket: 61125 **DST#: 3**
 Test Start: 2015.01.28 @ 14:15:00

GENERAL INFORMATION:

Formation: **LKC "B-D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 16:35:00
 Time Test Ended: 21:22:00
 Interval: **3950.00 ft (KB) To 3990.00 ft (KB) (TVD)**
 Total Depth: 3990.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Real-Time)
 Tester: Kevin Mack
 Unit No: 82
 Reference Elevations: 3010.00 ft (KB)
 3005.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8653 Outside
 Press@RunDepth: psig @ 3951.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.01.28 End Date: 2015.01.28 Last Calib.: 2015.01.28
 Start Time: 14:16:00 End Time: 21:20:30 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF- 1 1/4" Blow died in 5 min.
 60 - ISI- No Return
 30 - FF- No Blow - Flushed tool at 5 min - 1/4" Blow died to surface blow . Surface Blow died at 7 min.
 60 - FSI- No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
65.00	Mud 100M	0.32

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61125

DST#: 3

ATTN: Keith Reavis

Test Start: 2015.01.28 @ 14:15:00

Tool Information

Drill Pipe:	Length: 3740.00 ft	Diameter: 3.80 inches	Volume: 52.46 bbl	Tool Weight:	2500.00 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	66000.00 lb
			<u>Total Volume: 53.38 bbl</u>	Tool Chased	4.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	3950.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	40.00 ft				
Tool Length:	68.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments: chased tool approx 4' to bottom

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3923.00	
Shut In Tool	5.00			3928.00	
Hydraulic tool	5.00			3933.00	
Jars	5.00			3938.00	
Safety Joint	3.00			3941.00	
Packer	5.00			3946.00	28.00 Bottom Of Top Packer
Packer	4.00			3950.00	
Stubb	1.00			3951.00	
Recorder	0.00	8653	Outside	3951.00	
Recorder	0.00	8874	Inside	3951.00	
Perforations	1.00			3952.00	
Change Over Sub	1.00			3953.00	
Drill Pipe	31.00			3984.00	
Change Over Sub	1.00			3985.00	
Bullnose	5.00			3990.00	40.00 Bottom Packers & Anchor

Total Tool Length: 68.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 61125

DST#: 3

ATTN: Keith Reavis

Test Start: 2015.01.28 @ 14:15:00

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: bbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure: psig

Salinity: 6200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
65.00	Mud 100M	0.320

Total Length: 65.00 ft Total Volume: 0.320 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

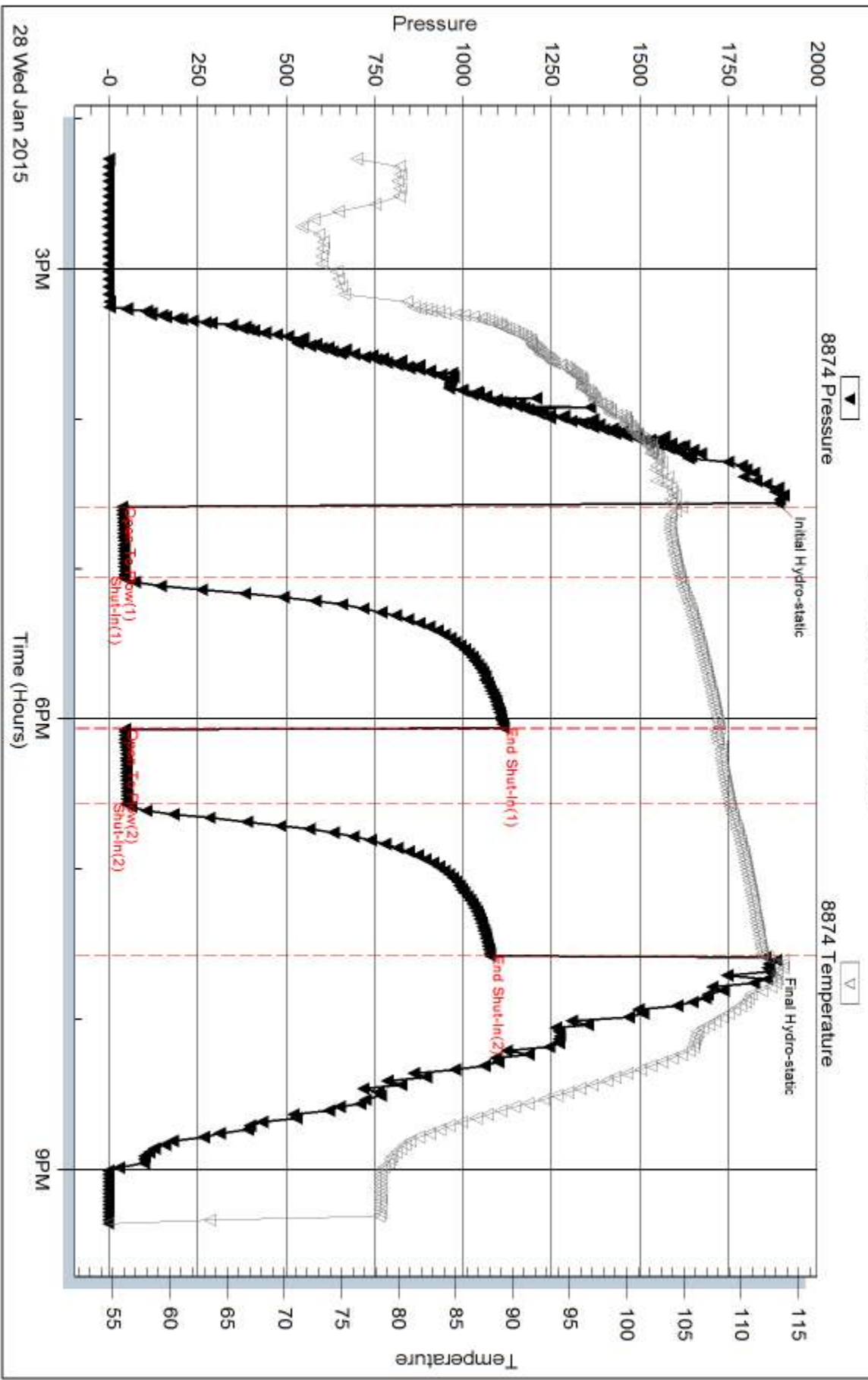
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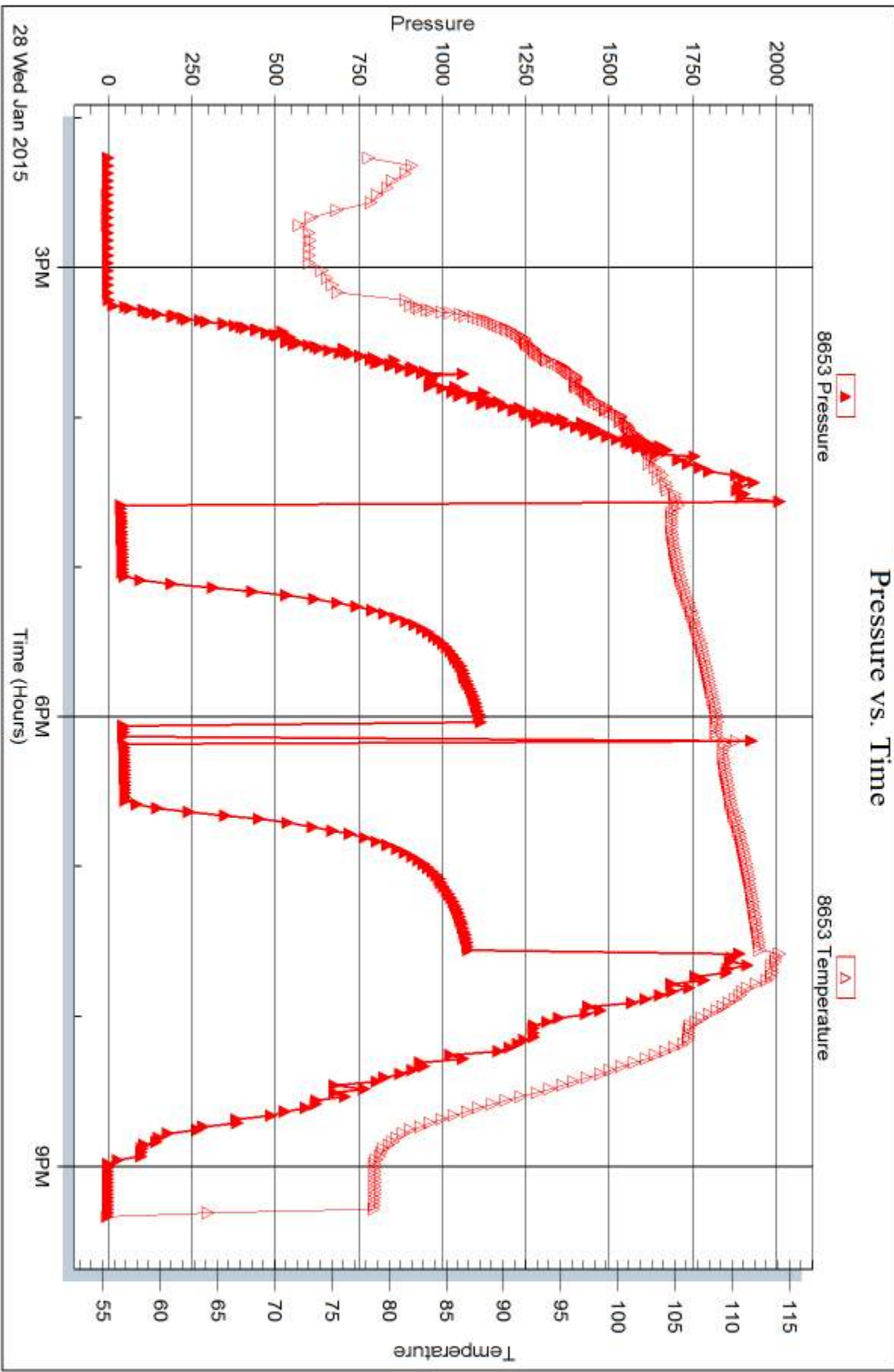
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Keith Reavis

Ruda C #1-13

13-4s-33w Rawlins,KS

Start Date: 2015.01.29 @ 06:26:00

End Date: 2015.01.29 @ 15:49:00

Job Ticket #: 60877 DST #: 4

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

Printed: 2015.02.03 @ 13:54:41



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N Water STE #300
 Wichita, KS 67202
 ATTN: Keith Reavis

13-4s-33w Rawlins, KS
Ruda C #1-13
 Job Ticket: 60877 **DST#: 4**
 Test Start: 2015.01.29 @ 06:26:00

GENERAL INFORMATION:

Formation: **LKC "F-G"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 08:47:30 Tester: Kevin Mack
 Time Test Ended: 15:49:00 Unit No: 82
 Interval: **3986.00 ft (KB) To 4046.00 ft (KB) (TVD)** Reference Elevations: 3010.00 ft (KB)
 Total Depth: 4046.00 ft (KB) (TVD) 3005.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

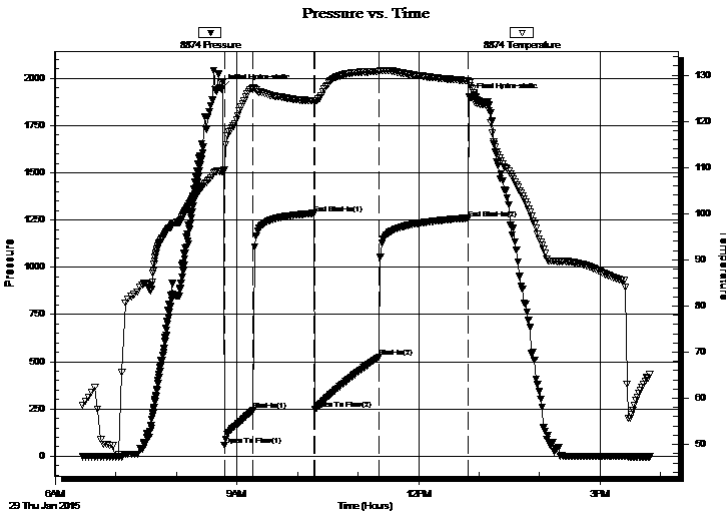
Serial #: 8874

Inside

Press@RunDepth: 524.90 psig @ 3987.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.01.29 End Date: 2015.01.29 Last Calib.: 2015.01.29
 Start Time: 06:27:00 End Time: 15:49:00 Time On Btm: 2015.01.29 @ 08:44:30
 Time Off Btm: 2015.01.29 @ 12:51:00

TEST COMMENT: 30 - IF- BoB in 12 min.
 60 - IS- No Return
 60 - FF- BoB in 10 min.
 90 - FS- No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1943.48	109.08	Initial Hydro-static
3	58.61	109.49	Open To Flow (1)
32	244.86	127.23	Shut-In(1)
92	1285.82	124.41	End Shut-In(1)
93	249.46	124.38	Open To Flow (2)
156	524.90	130.81	Shut-In(2)
245	1256.49	128.77	End Shut-In(2)
247	1900.22	127.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud (heavy) 100M	0.02
371.00	MW 5M 95 W	3.55
252.00	OSMW 10M 90W (oil spots)	3.53
189.00	OSMW 30M 70W (oil spots)	2.65
204.00	OSMW 50M 50W (oil spots)	2.86

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 60877

DST#: 4

ATTN: Keith Reavis

Test Start: 2015.01.29 @ 06:26:00

Tool Information

Drill Pipe:	Length: 3803.00 ft	Diameter: 3.80 inches	Volume: 53.35 bbl	Tool Weight: 2500.00 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose: 73000.00 lb
			<u>Total Volume: 54.27 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	3986.00 ft			Final 69000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	88.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3959.00	
Shut In Tool	5.00			3964.00	
Hydraulic tool	5.00			3969.00	
Jars	5.00			3974.00	
Safety Joint	3.00			3977.00	
Packer	5.00			3982.00	28.00 Bottom Of Top Packer
Packer	4.00			3986.00	
Stubb	1.00			3987.00	
Recorder	0.00	8653	Outside	3987.00	
Recorder	0.00	8874	Inside	3987.00	
Perforations	20.00			4007.00	
Change Over Sub	1.00			4008.00	
Drill Pipe	32.00			4040.00	
Change Over Sub	1.00			4041.00	
Bullnose	5.00			4046.00	60.00 Bottom Packers & Anchor

Total Tool Length: 88.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 60877

DST#: 4

ATTN: Keith Reavis

Test Start: 2015.01.29 @ 06:26:00

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud (heavy) 100M	0.025
371.00	MW 5M 95 W	3.546
252.00	OSMW 10M 90W (oil spots)	3.535
189.00	OSMW 30M 70W (oil spots)	2.651
204.00	OSMW 50M 50W (oil spots)	2.862

Total Length: 1021.00 ft Total Volume: 12.619 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

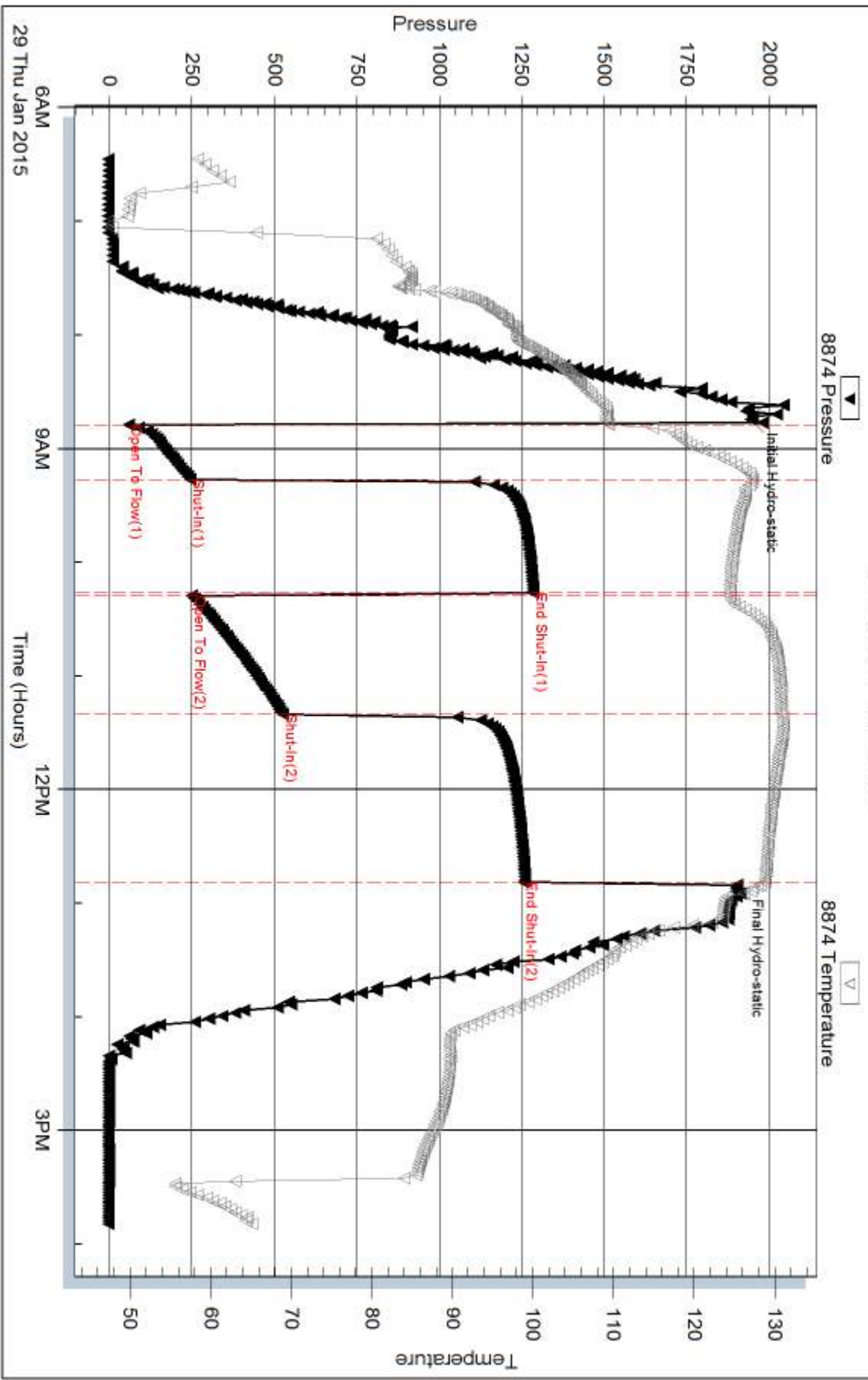
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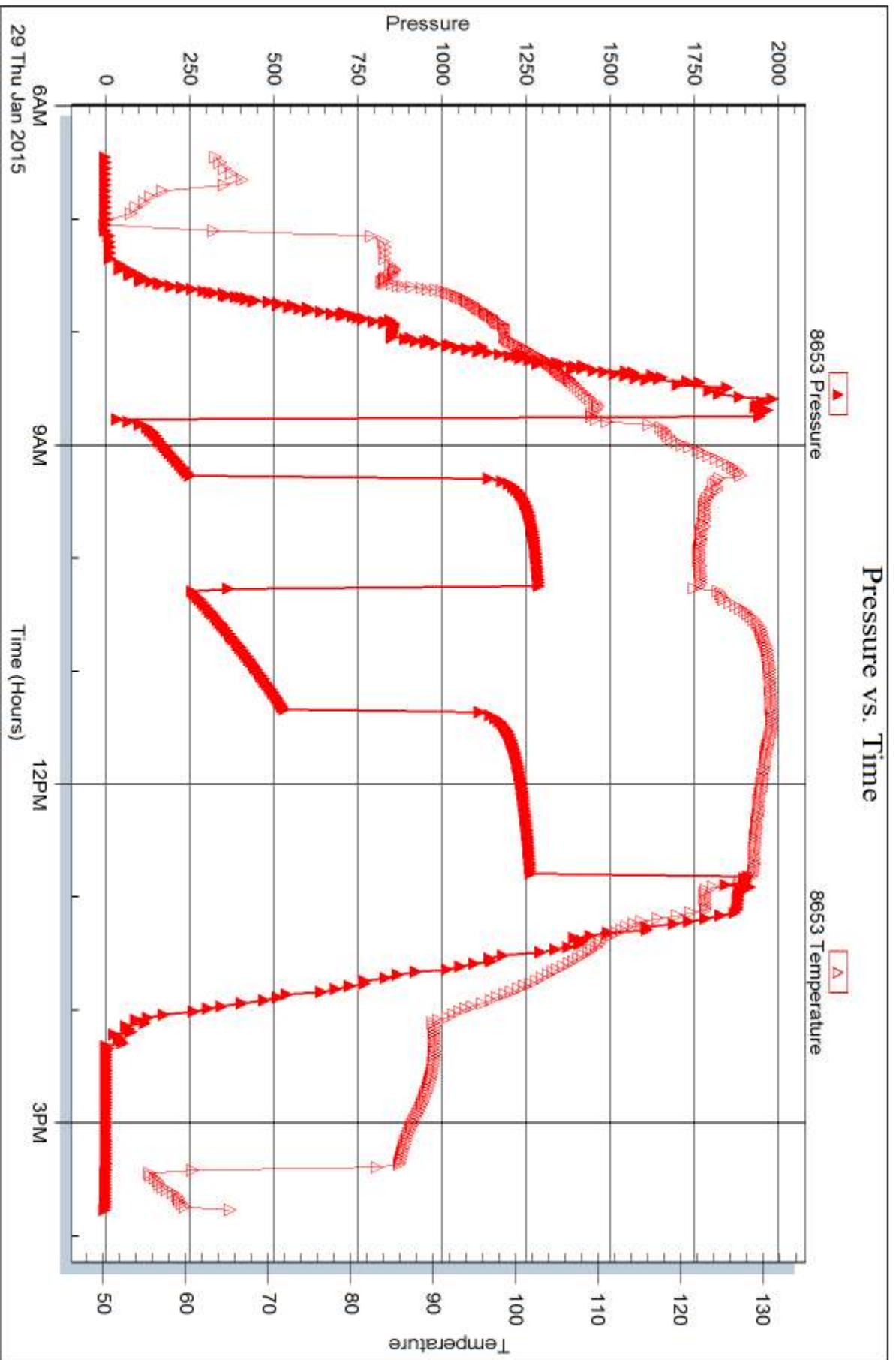
Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .14 @ 62 deg = 75,000ppm

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N Water STE #300
Wichita, KS 67202

ATTN: Keith Reavis

Ruda C #1-13

13-4s-33w Rawlins,KS

Start Date: 2015.01.30 @ 19:08:00

End Date: 2015.01.31 @ 02:55:00

Job Ticket #: 60878 DST #: 5

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

Printed: 2015.02.03 @ 13:52:59



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.
 250 N Water STE #300
 Wichita, KS 67202
 ATTN: Keith Reavis

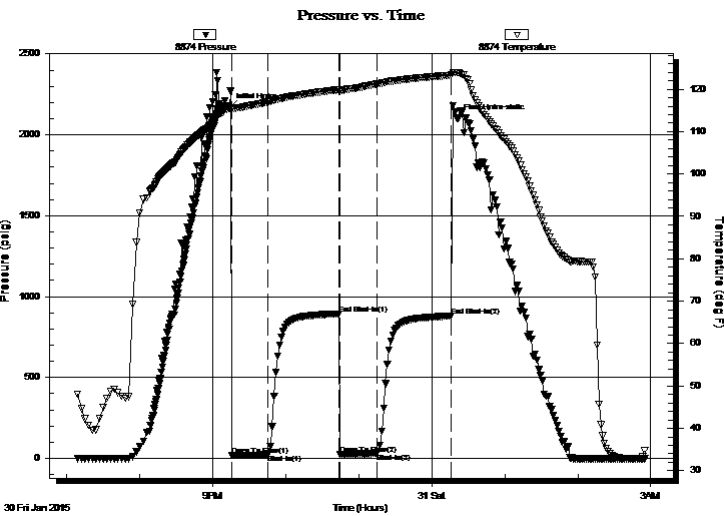
13-4s-33w Rawlins, KS
Ruda C #1-13
 Job Ticket: 60878 **DST#: 5**
 Test Start: 2015.01.30 @ 19:08:00

GENERAL INFORMATION:

Formation: **Pawnee**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 21:15:30 Tester: Kevin Mack
 Time Test Ended: 02:55:00 Unit No: 82
 Interval: **4310.00 ft (KB) To 4341.00 ft (KB) (TVD)** Reference Elevations: 3010.00 ft (KB)
 Total Depth: 4341.00 ft (KB) (TVD) 3005.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

Serial #: 8874 Inside
 Press@RunDepth: 29.96 psig @ 4311.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.01.30 End Date: 2015.01.31 Last Calib.: 2015.01.31
 Start Time: 19:09:00 End Time: 02:55:00 Time On Btm: 2015.01.30 @ 21:14:00
 Time Off Btm: 2015.01.31 @ 00:21:00

TEST COMMENT: 30 - IF- 1/2" Blow built to 1 1/2"
 60 - IS- No Return
 30 - FF- Weak Surface Blow started at 5 min. built to 1/2"
 60 - FS- No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2165.77	115.42	Initial Hydro-static
2	17.38	115.24	Open To Flow (1)
31	22.23	116.94	Shut-In(1)
90	893.10	119.87	End Shut-In(1)
91	24.37	119.48	Open To Flow (2)
121	29.96	121.23	Shut-In(2)
182	879.96	123.32	End Shut-In(2)
187	2099.58	123.96	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	OSM 100M (oil spots)	0.10

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 60878

DST#: 5

ATTN: Keith Reavis

Test Start: 2015.01.30 @ 19:08:00

Tool Information

Drill Pipe:	Length: 4122.00 ft	Diameter: 3.80 inches	Volume: 57.82 bbl	Tool Weight:	2500.00 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: 187.00 ft	Diameter: 2.25 inches	Volume: 0.92 bbl	Weight to Pull Loose:	66000.00 lb
			<u>Total Volume: 58.74 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4310.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	31.00 ft				
Tool Length:	59.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4283.00	
Shut In Tool	5.00			4288.00	
Hydraulic tool	5.00			4293.00	
Jars	5.00			4298.00	
Safety Joint	3.00			4301.00	
Packer	5.00			4306.00	28.00 Bottom Of Top Packer
Packer	4.00			4310.00	
Stubb	1.00			4311.00	
Recorder	0.00	8653	Outside	4311.00	
Recorder	0.00	8874	Inside	4311.00	
Perforations	25.00			4336.00	
Bullnose	5.00			4341.00	31.00 Bottom Packers & Anchor

Total Tool Length: 59.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

13-4s-33w Rawlins,KS

250 N Water STE #300
Wichita, KS 67202

Ruda C #1-13

Job Ticket: 60878

DST#: 5

ATTN: Keith Reavis

Test Start: 2015.01.30 @ 19:08:00

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:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	OSM 100M (oil spots)	0.098

Total Length: 20.00 ft Total Volume: 0.098 bbl

Num Fluid Samples: 0

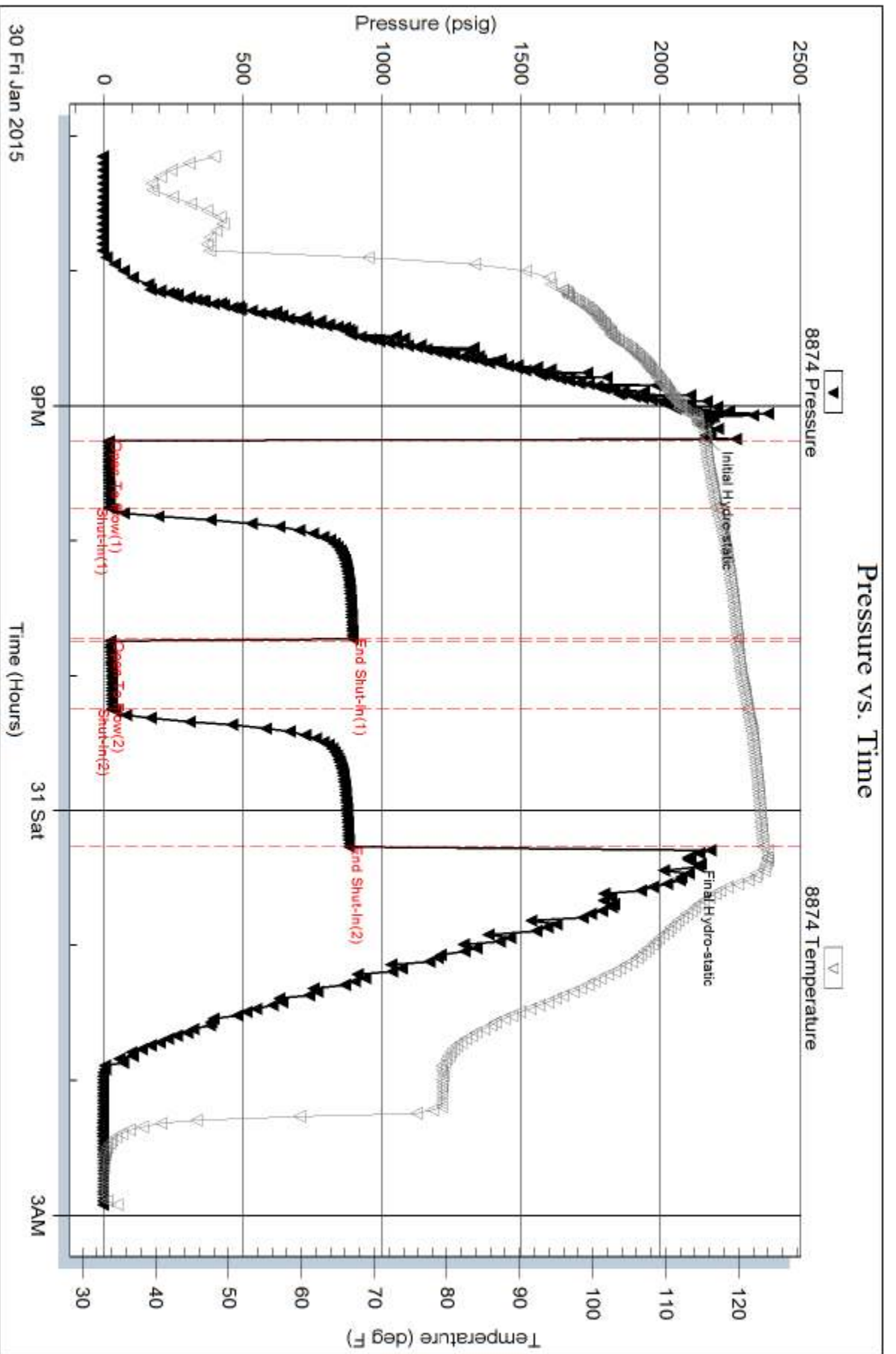
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61123

Well Name & No. Ruda C #143 Test No. 1 Date 1-27-15
 Company Murrin Drilling Co., Inc. Elevation 3010 KB 3005 GL
 Address 250 N Water STE #3000 Wichita, KS 67202
 Co. Rep / Geo. Keith Reavis Rig Murrin #7
 Location: Sec. 13 Twp. 4S Rge. 33W Co. Rawlins State KS

Interval Tested 3800-3863 Zone Tested Lecompton
 Anchor Length 63' Drill Pipe Run 3615 Mud Wt. 8.4
 Top Packer Depth 3796 Drill Collars Run 187 Vis 70
 Bottom Packer Depth 3800 Wt. Pipe Run 8 WL 5.6
 Total Depth 3863 Chlorides 3,600 ppm System LCM 2#
 Blow Description IF- 1/2" Blow built to 3 1/2"
ISI- NO Return
FF- Surface Blow built to 4"
FSI- Weak surface Return started at 33min. Built to 1/4"

Rec	Feet of	%gas	%oil	%water	%mud
<u>308</u>	<u>Mud</u>			<u>100</u>	
<u>62</u>	<u>LM</u>		<u>20</u>	<u>80</u>	
<u>62</u>	<u>MW</u>		<u>50</u>	<u>50</u>	

Rec Total 154 BHT 119 Gravity 1.58 @ 51 °F Chlorides 4,900 ppm
 (A) Initial Hydrostatic 1858 Test 1050 T-On Location 1:30 AM
 (B) First Initial Flow 18 Jars 250 T-Started 2:02 AM
 (C) First Final Flow 43 Safety Joint 75 T-Open 3:58 AM
 (D) Initial Shut-In 1189 Circ Sub _____ T-Pulled 7:58 AM
 (E) Second Initial Flow 46 Hourly Standby _____ T-Out 10:30 PM
 (F) Second Final Flow 87 Mileage 70 RT 70 Comments _____
 (G) Final Shut-In 1136 Sampler _____
 (H) Final Hydrostatic 1828 Straddle _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 60 Extra Recorder _____ Sub Total 0
 Final Shut-In 90 Day Standby _____ Total 1445
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1445

Approved By _____ Our Representative

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. 61124

Well Name & No. Ruda C #113 Test No. 2 Date 1-27-15
 Company Murfin Drilling Co., Inc. Elevation 3010 KB 3005 GL
 Address 250 N Water STE #3000 Wichita, KS 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. B Twp. 4S Rge. 33 W Co. Rawlins State KS

Interval Tested 3892-3954 Zone Tested Toronto - LKC "A"
 Anchor Length 62' Drill Pipe Run 3709' Mud Wt. 9.3
 Top Packer Depth 3888 Drill Collars Run 187' Vis 57
 Bottom Packer Depth 3892 Wt. Pipe Run 0 WL 6.0
 Total Depth 3954 Chlorides 3,500 ppm System LCM 2#
 Blow Description DF - 1/2" Blow built to 5"
ISI - NO Return
PF - Blow started at 12 min. Built to 5 1/4"
PSI - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>308</u>	<u>VS CRM</u>	<u>5</u>		<u>95</u>	
<u>62</u>	<u>OSM + CRM</u>	<u>SPOTS</u>		<u>60</u>	
<u>62</u>	<u>OSMW</u>	<u>SPOTS</u>		<u>50</u>	
<u>62</u>	<u>OSMW</u>	<u>SPOTS</u>		<u>40</u>	
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 216 BHT 122 Gravity - API RW .18 @ 70 °F Chlorides 40,000 ppm

- (A) Initial Hydrostatic 1939
- (B) First Initial Flow 26
- (C) First Final Flow 69
- (D) Initial Shut-In 1147
- (E) Second Initial Flow 76
- (F) Second Final Flow 121
- (G) Final Shut-In 1095
- (H) Final Hydrostatic 1910

- Test 1050
- Jars 250
- Safety Joint 75
- Circ Sub
- Hourly Standby
- Mileage 70 RT 70
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1445

T-On Location 8:15 PM
 T-Started 8:30 ~~AM~~ PM
 T-Open 10:35 PM
 T-Pulled 2:35 AM
 T-Out 5:12 AM

Comments _____
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1445
 MP/DST Disc't _____

Initial Open 300
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61125

Well Name & No. Ruda-C #113 1-13 Test No. 3 Date 1-28-15
 Company Murfin Drilling Co., Inc Elevation 3010 KB 3005 GL
 Address 250 N Water STE #300 Wichita, KS 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 13 Twp. 4S Rge. 33W Co. Rawlins State KS

Interval Tested 3950 - 3990 Zone Tested L14 "B-D"
 Anchor Length 40' Drill Pipe Run 3950' Mud Wt. 9.4
 Top Packer Depth 3946 Drill Collars Run 187 Vis 65
 Bottom Packer Depth 3950 Wt. Pipe Run 0 WL 6.4
 Total Depth 3990 Chlorides 6,200 ppm System LCM 2#
 Blow Description IF - 1 1/4" Blow died in 5 min.
ISI - NO Return

FF - No Blow - Flushed tool at 5 min. - 1/4" Blow died to surface. Surface Blow died in 7 min.

FSD - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>65</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 65 BHT 112 Gravity - API RW - @ - ° F Chlorides - ppm

- (A) Initial Hydrostatic 1890
- (B) First Initial Flow 36
- (C) First Final Flow 42
- (D) Initial Shut-In 114
- (E) Second Initial Flow 43
- (F) Second Final Flow 49
- (G) Final Shut-In 1077
- (H) Final Hydrostatic 1863

- Test 1050
- Jars 250
- Safety Joint 75
- Circ Sub
- Hourly Standby
- Mileage 70 RT 70
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1445

- T-On Location 1:45 PM
- T-Started 2:15 PM
- T-Open 4:35 PM
- T-Pulled 7:35 PM
- T-Out 9:22 PM

Comments Chased tool approx 4' to bottom

- Ruined Shale Packer
- Ruined Packer
- Extra Copies
- Sub Total 0
- Total 1445
- MP/DST Disc't

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

Approved By _____ Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **60877**

4/10

Well Name & No. <u>Ruda C #1-13</u>	Test No. <u>4</u>	Date <u>1-29-15</u>
Company <u>Murfin Drilling Co., Inc.</u>	Elevation <u>3010</u>	KB <u>3005</u> GL
Address <u>250 N Water STE #300 Wichita, KS 67202</u>		
Co. Rep / Geo. <u>Keith Lewis</u>	Rig <u>Murfin #7</u>	
Location: Sec. <u>13</u> Twp. <u>4S</u> Rge. <u>33W</u> Co. <u>Rawlins</u> State <u>KS</u>		

Interval Tested <u>3986-4046</u>	Zone Tested <u>LKC "F-6"</u>
Anchor Length <u>60'</u>	Drill Pipe Run <u>3803</u> Mud Wt. <u>9.1</u>
Top Packer Depth <u>3982</u>	Drill Collars Run <u>187'</u> Vis <u>50</u>
Bottom Packer Depth <u>3986</u>	Wt. Pipe Run <u>0</u> WL <u>5.6</u>
Total Depth <u>4046</u>	Chlorides <u>6,000</u> ppm System LCM <u>3#</u>

Blow Description IF - BoB in 12 min
IST - NO Return
FF - BoB in 10 min.
FST - NO Return

Rec	Feet of	%gas	SPOTS	%oil	%water	%mud
<u>204</u>	<u>OS MW</u>			<u>50</u>	<u>50</u>	
<u>189</u>	<u>OS MW</u>			<u>70</u>	<u>30</u>	
<u>252</u>	<u>OS MW</u>			<u>90</u>	<u>10</u>	
<u>371</u>	<u>MW</u>			<u>95</u>	<u>5</u>	
<u>5</u>	<u>Mud</u>				<u>100</u>	

Rec Total 1021 BHT 129 Gravity _____ API RW .14 @ 62 ° F Chlorides 75,000 ppm

(A) Initial Hydrostatic <u>1943</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>6:15 AM</u>
(B) First Initial Flow <u>58</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>6:26 AM</u>
(C) First Final Flow <u>244</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>8:46 AM</u>
(D) Initial Shut-In <u>1285</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>12:46 PM</u>
(E) Second Initial Flow <u>249</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>3:50 PM</u>
(F) Second Final Flow <u>524</u>	<input checked="" type="checkbox"/> Mileage <u>70 RT</u> <u>70</u>	Comments _____
(G) Final Shut-In <u>1256</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>1900</u>	<input type="checkbox"/> Straddle _____	<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>1545</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1545</u>	

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 60878

Well Name & No. Ruda 'C' #1-13 Test No. 5 Date 1-30-15
 Company Murfin Drilling Co., Inc. Elevation 3010 KB 3005 GL
 Address 250 N Water STE #300 Wichita, KS 67202
 Co. Rep / Geo. Keith Reavis Rig Murfin #7
 Location: Sec. 13 Twp. 4S Rge. 33W Co. Rawlins State KS

Interval Tested 4310-4341 Zone Tested Pawnee
 Anchor Length 31' Drill Pipe Run _____ Mud Wt. 9.2
 Top Packer Depth 4306 Drill Collars Run 187' Vis 62
 Bottom Packer Depth 4310 Wt. Pipe Run 0 WL 6.8
 Total Depth 4341 Chlorides 65000 ppm System _____ LCM 4#
 Blow Description IF - 1/2" Blow built to 1 1/2"
ISI - NO Return
FF - Weak Surface Blow started at 5 min. Built to 1/2"
FSE - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>OSM</u>	<u>spots</u>		<u>1000</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 20 BHT 123 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2165 Test 1150 T-On Location 7:00 PM
 (B) First Initial Flow 170 Jars 250 T-Started 7:08 PM
 (C) First Final Flow 22 Safety Joint 75 T-Open 9:15 PM
 (D) Initial Shut-In 893 Circ Sub _____ T-Pulled 12:15 AM
 (E) Second Initial Flow 24 Hourly Standby _____ T-Out 2:55 AM
 (F) Second Final Flow 29 Mileage 70 RT 70 Comments _____
 (G) Final Shut-In 879 Sampler _____
 (H) Final Hydrostatic 2099 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1545
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1545

Approved By _____ Our Representative

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