



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Abell #1-24

24-12s-31w Gove,KS

Start Date: 2015.01.29 @ 19:55:00

End Date: 2015.01.30 @ 03:36:30

Job Ticket #: 61516 DST #: 1

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

Printed: 2015.02.03 @ 11:51:42

Murfin Drilling Co. 24-12s-31w Gove,KS Abell #1-24 DST # 1 Toronto - LKC "D" 2015.01.29



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61516

DST#: 1

ATTN: Jeff Christian

Test Start: 2015.01.29 @ 19:55:00

GENERAL INFORMATION:

Formation: **Totonto - LKC "D"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 21:41:30 Tester: Justin Harris
 Time Test Ended: 03:36:30 Unit No: 71
 Interval: **3854.00 ft (KB) To 3966.00 ft (KB) (TVD)** Reference Elevations: 2836.00 ft (KB)
 Total Depth: 3966.00 ft (KB) (TVD) 2827.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Poor KB to GR/CF: 9.00 ft

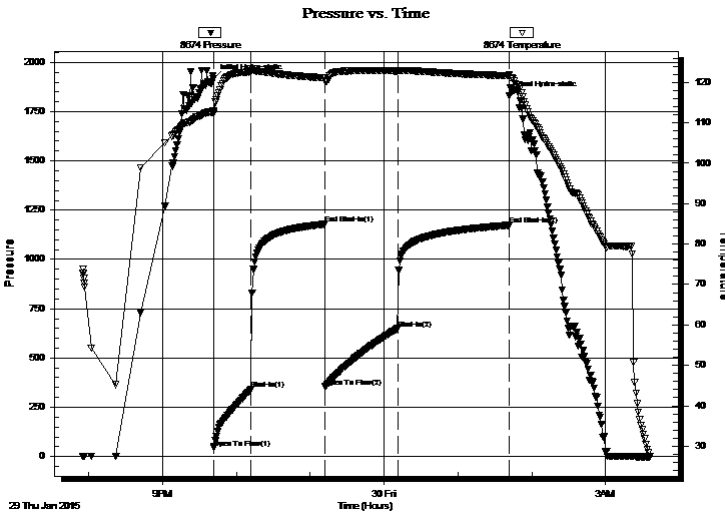
Serial #: 8674

Inside

Press@RunDepth: 649.34 psig @ 3855.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.01.29 End Date: 2015.01.30 Last Calib.: 2015.01.30
 Start Time: 19:55:05 End Time: 03:36:29 Time On Btm: 2015.01.29 @ 21:41:15
 Time Off Btm: 2015.01.30 @ 01:41:45

TEST COMMENT: 30: B.O.B in 3 1/2 Mins.
 60: No Return.
 60: B.O.B in 5 1/2 Mins.
 90: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1916.37	112.91	Initial Hydro-static
1	43.73	112.20	Open To Flow (1)
31	341.33	122.59	Shut-In(1)
91	1179.00	121.09	End Shut-In(1)
91	354.03	120.49	Open To Flow (2)
150	649.34	122.81	Shut-In(2)
241	1173.29	121.63	End Shut-In(2)
241	1829.23	121.95	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
276.00	mcw 10m 90w	1.36
504.00	mcw 5m 95w	7.07
441.00	mcw 10m 90w	6.19

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove, KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61516

DST#: 1

ATTN: Jeff Christian

Test Start: 2015.01.29 @ 19:55:00

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Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:41:30

Time Test Ended: 03:36:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Justin Harris

Unit No: 71

Interval: **3854.00 ft (KB) To 3966.00 ft (KB) (TVD)**

Reference Elevations: 2836.00 ft (KB)

Total Depth: 3966.00 ft (KB) (TVD)

2827.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

Serial #: 8355 Outside

Press@RunDepth: psig @ 3855.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.29

End Date: 2015.01.30

Last Calib.: 2015.01.30

Start Time: 19:55:05

End Time: 03:39:14

Time On Btm:

Time Off Btm:

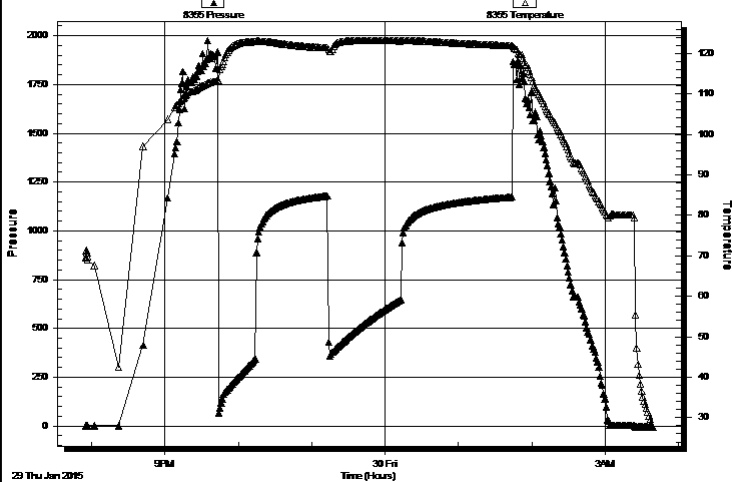
TEST COMMENT: 30: B.O.B in 3 1/2 Mins.

60: No Return.

60: B.O.B in 5 1/2 Mins.

90: No Return.

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
276.00	mcw 10m 90w	1.36
504.00	mcw 5m 95w	7.07
441.00	mcw 10m 90w	6.19

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61516

DST#: 1

ATTN: Jeff Christian

Test Start: 2015.01.29 @ 19:55:00

Tool Information

Drill Pipe:	Length: 3576.00 ft	Diameter: 3.80 inches	Volume: 50.16 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 276.00 ft	Diameter: 2.25 inches	Volume: 1.36 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 51.52 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	3854.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	112.00 ft			
Tool Length:	139.00 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			3828.00	
Shut In Tool	5.00			3833.00	
Hydraulic tool	5.00			3838.00	
Jars	5.00			3843.00	
Safety Joint	2.00			3845.00	
Packer	5.00			3850.00	27.00 Bottom Of Top Packer
Packer	4.00			3854.00	
Stubb	1.00			3855.00	
Recorder	0.00	8355	Outside	3855.00	
Recorder	0.00	8674	Inside	3855.00	
Perforations	10.00			3865.00	
Change Over Sub	1.00			3866.00	
Drill Pipe	94.00			3960.00	
Change Over Sub	1.00			3961.00	
Bullnose	5.00			3966.00	112.00 Bottom Packers & Anchor

Total Tool Length: 139.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61516

DST#: 1

ATTN: Jeff Christian

Test Start: 2015.01.29 @ 19:55:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

30000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
276.00	mcw 10m 90w	1.357
504.00	mcw 5m 95w	7.070
441.00	mcw 10m 90w	6.186

Total Length: 1221.00 ft Total Volume: 14.613 bbl

Num Fluid Samples: 0

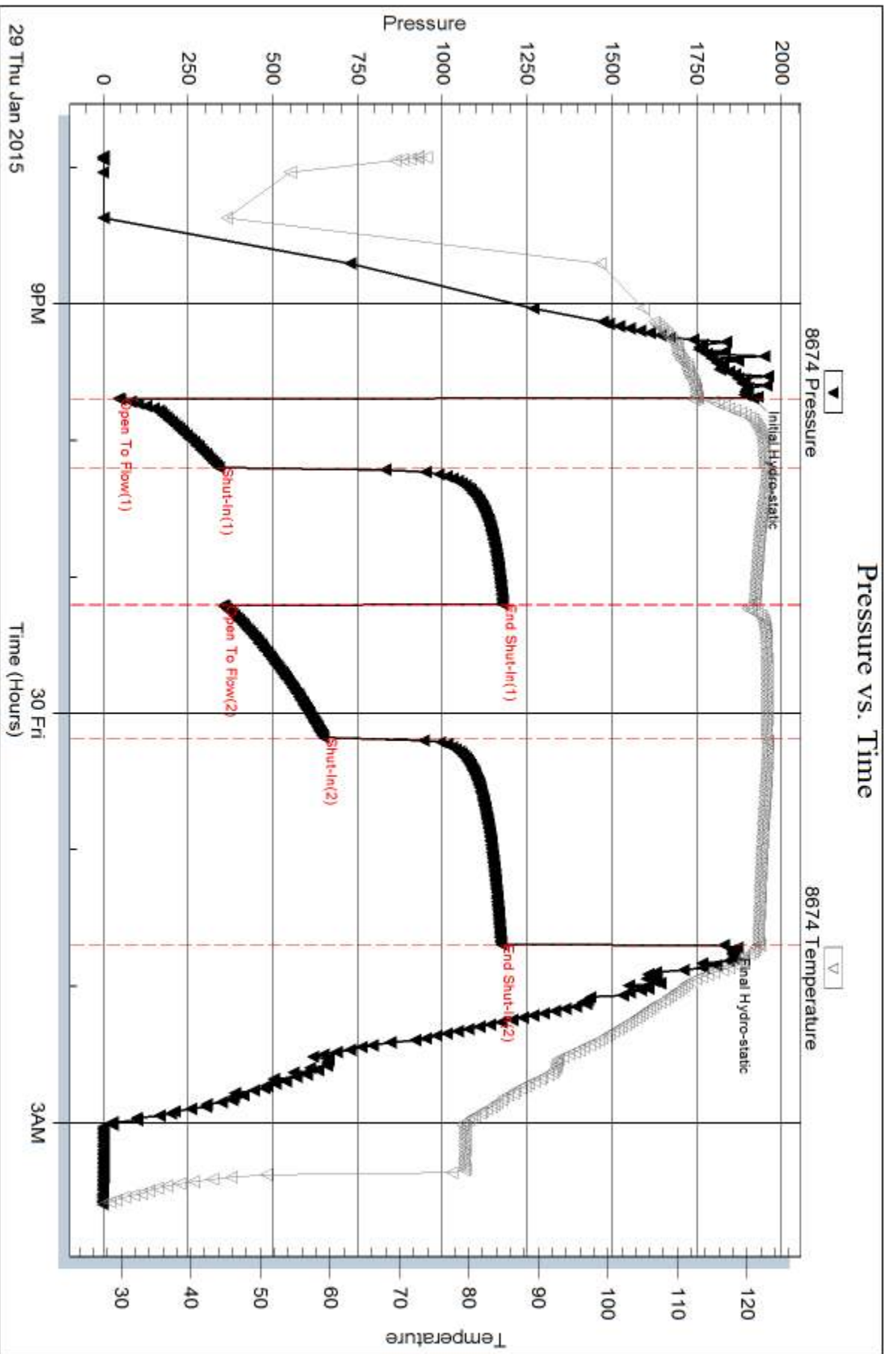
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API RW .41 @ 37F - 30000 Chlorides

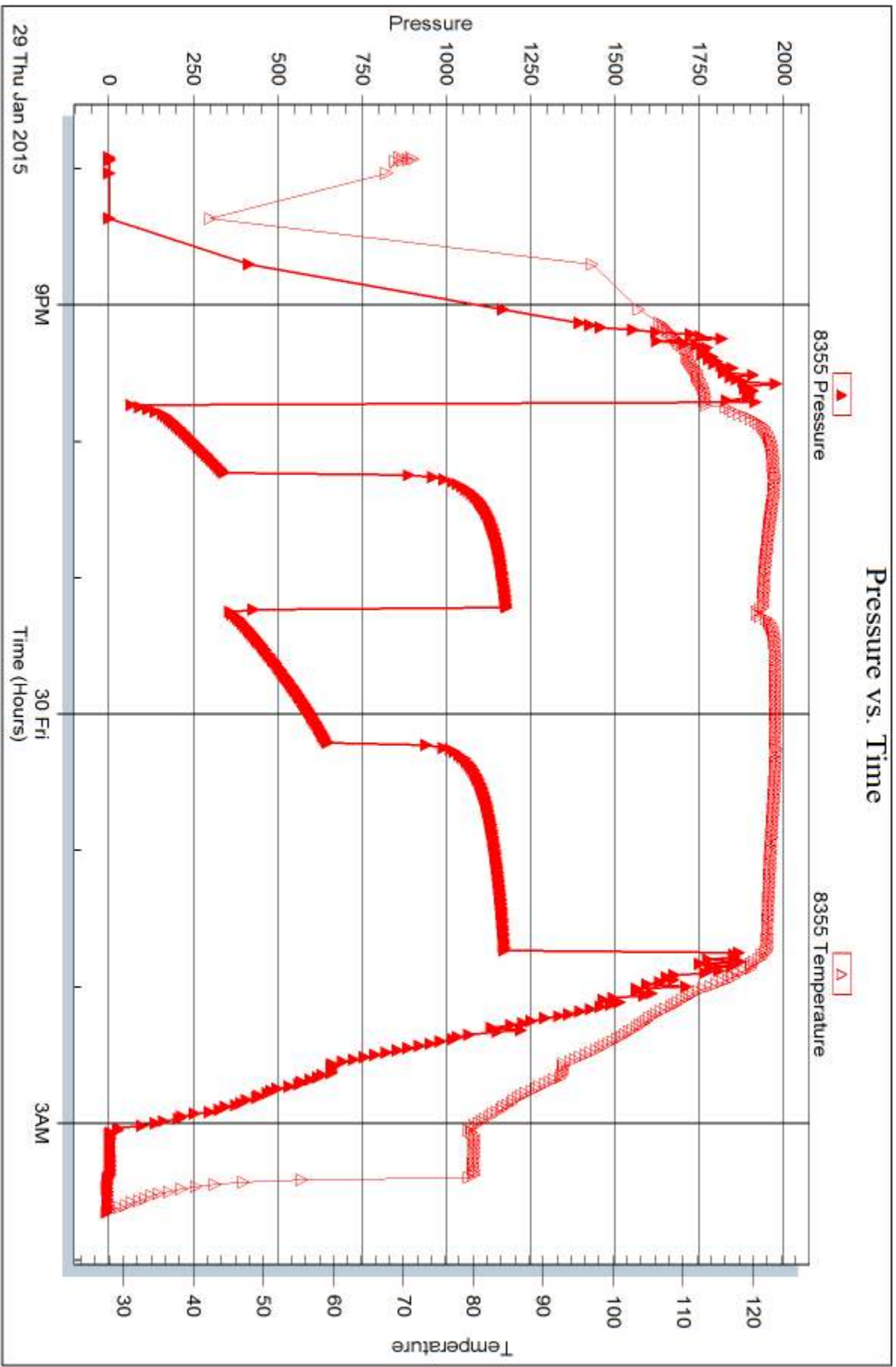


Serial #: 8355

Outside Murfin Drilling Co.

Abell #1-24

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 61516

Printed: 2015.02.03 @ 11:51:43



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Abell #1-24

24-12s-31w Gove,KS

Start Date: 2015.01.30 @ 09:40:00

End Date: 2015.01.30 @ 16:55:30

Job Ticket #: 61517 DST #: 2

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

Printed: 2015.02.03 @ 11:51:22



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61517

DST#: 2

ATTN: Jeff Christian

Test Start: 2015.01.30 @ 09:40:00

GENERAL INFORMATION:

Formation: **LKC "E, F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:07:30

Time Test Ended: 16:55:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 71

Interval: 3967.00 ft (KB) To 3996.00 ft (KB) (TVD)

Reference Elevations: 2836.00 ft (KB)

Total Depth: 3996.00 ft (KB) (TVD)

2827.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

Serial #: 8674

Inside

Press@RunDepth: 117.88 psig @ 3968.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.30

End Date:

2015.01.30

Last Calib.:

2015.01.30

Start Time: 09:40:05

End Time:

16:55:29

Time On Btm:

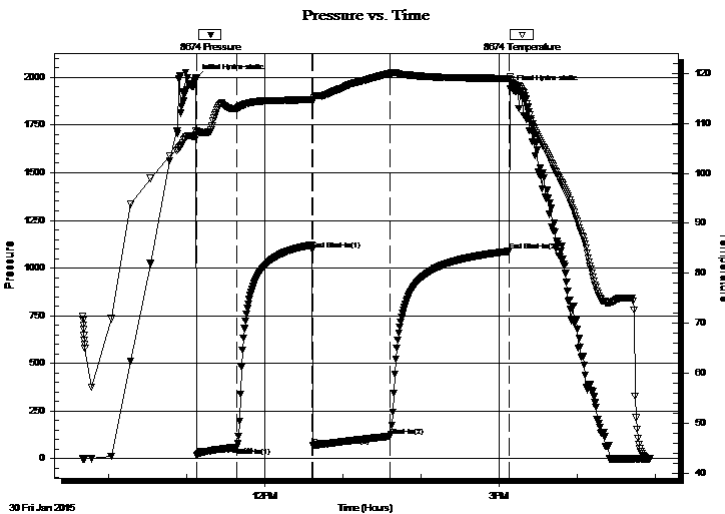
2015.01.30 @ 11:07:15

Time Off Btm:

2015.01.30 @ 15:08:15

TEST COMMENT: 30: Weak surface blow build to 3 1/4 ".
60: No Return.
60: Weak surface blow to 1/2 ".
90: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1992.31	108.60	Initial Hydro-static
1	19.19	107.37	Open To Flow (1)
32	62.01	113.01	Shut-In(1)
89	1097.37	114.75	End Shut-In(1)
90	67.32	114.44	Open To Flow (2)
149	117.88	120.02	Shut-In(2)
241	1088.51	119.02	End Shut-In(2)
241	1938.66	119.28	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
189.00	ow cm 20o 30w 50m	0.93
2.00	Clean oil	0.01

* Recovery from multiple tests

Gas Rates

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



DRILL STEM TEST REPORT

Murfin Drilling Co.

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

24-12s-31w Gove,KS

Abell #1-24

Job Ticket: 61517

DST#: 2

Test Start: 2015.01.30 @ 09:40:00

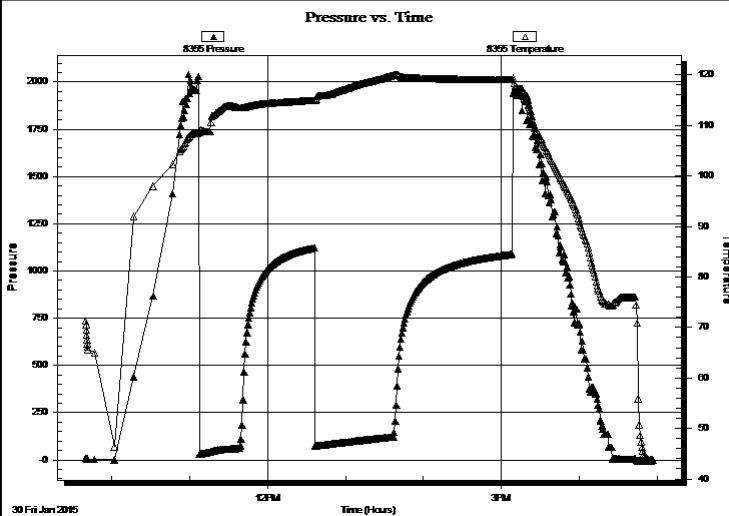
GENERAL INFORMATION:

Formation: **LKC "E, F"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:07:30
 Time Test Ended: 16:55:30
Interval: 3967.00 ft (KB) To 3996.00 ft (KB) (TVD)
 Total Depth: 3996.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Justin Harris
 Unit No: 71
 Reference Elevations: 2836.00 ft (KB)
 2827.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 8355 Outside

Press@RunDepth: psig @ 3968.00 ft (KB)
 Start Date: 2015.01.30 End Date: 2015.01.30
 Start Time: 09:40:05 End Time: 16:56:14
 Capacity: 8000.00 psig
 Last Calib.: 2015.01.30
 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30: Weak surface blow build to 3 1/4 ".
 60: No Return.
 60: Weak surface blow to 1/2 ".
 90: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
189.00	ow cm 20o 30w 50m	0.93
2.00	Clean oil	0.01

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.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61517

DST#: 2

ATTN: Jeff Christian

Test Start: 2015.01.30 @ 09:40:00

Tool Information

Drill Pipe:	Length: 3675.00 ft	Diameter: 3.80 inches	Volume: 51.55 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 276.00 ft	Diameter: 2.25 inches	Volume: 1.36 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 52.91 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	3967.00 ft			Final 67000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	29.00 ft			
Tool Length:	56.00 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			3941.00	
Shut In Tool	5.00			3946.00	
Hydraulic tool	5.00			3951.00	
Jars	5.00			3956.00	
Safety Joint	2.00			3958.00	
Packer	5.00			3963.00	27.00 Bottom Of Top Packer
Packer	4.00			3967.00	
Stubb	1.00			3968.00	
Recorder	0.00	8355	Outside	3968.00	
Recorder	0.00	8674	Inside	3968.00	
Perforations	23.00			3991.00	
Bullnose	5.00			3996.00	29.00 Bottom Packers & Anchor

Total Tool Length: 56.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61517

DST#: 2

ATTN: Jeff Christian

Test Start: 2015.01.30 @ 09:40:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
189.00	ow cm 20o 30w 50m	0.929
2.00	Clean oil	0.010

Total Length: 191.00 ft Total Volume: 0.939 bbf

Num Fluid Samples: 0

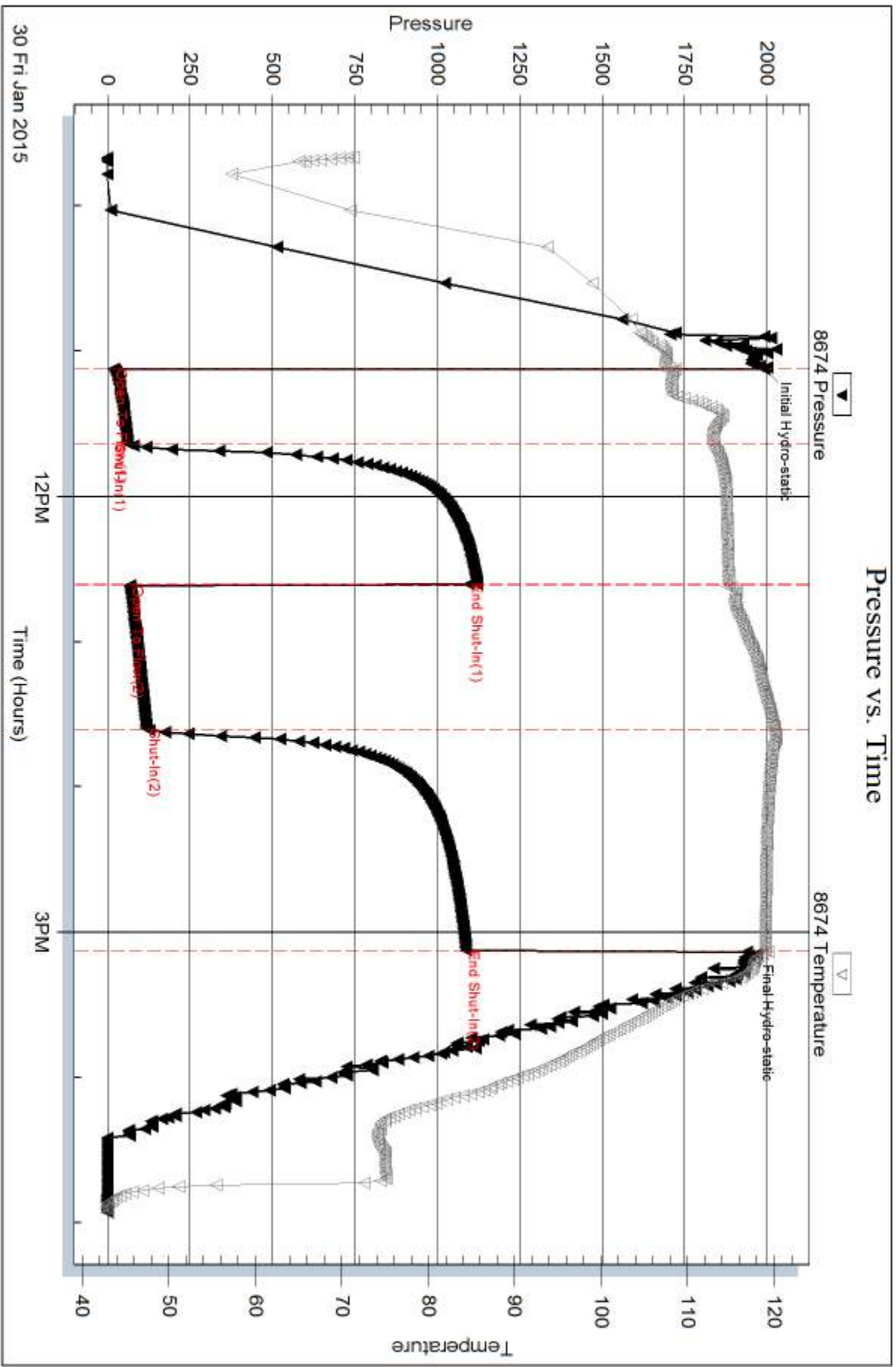
Num Gas Bombs: 0

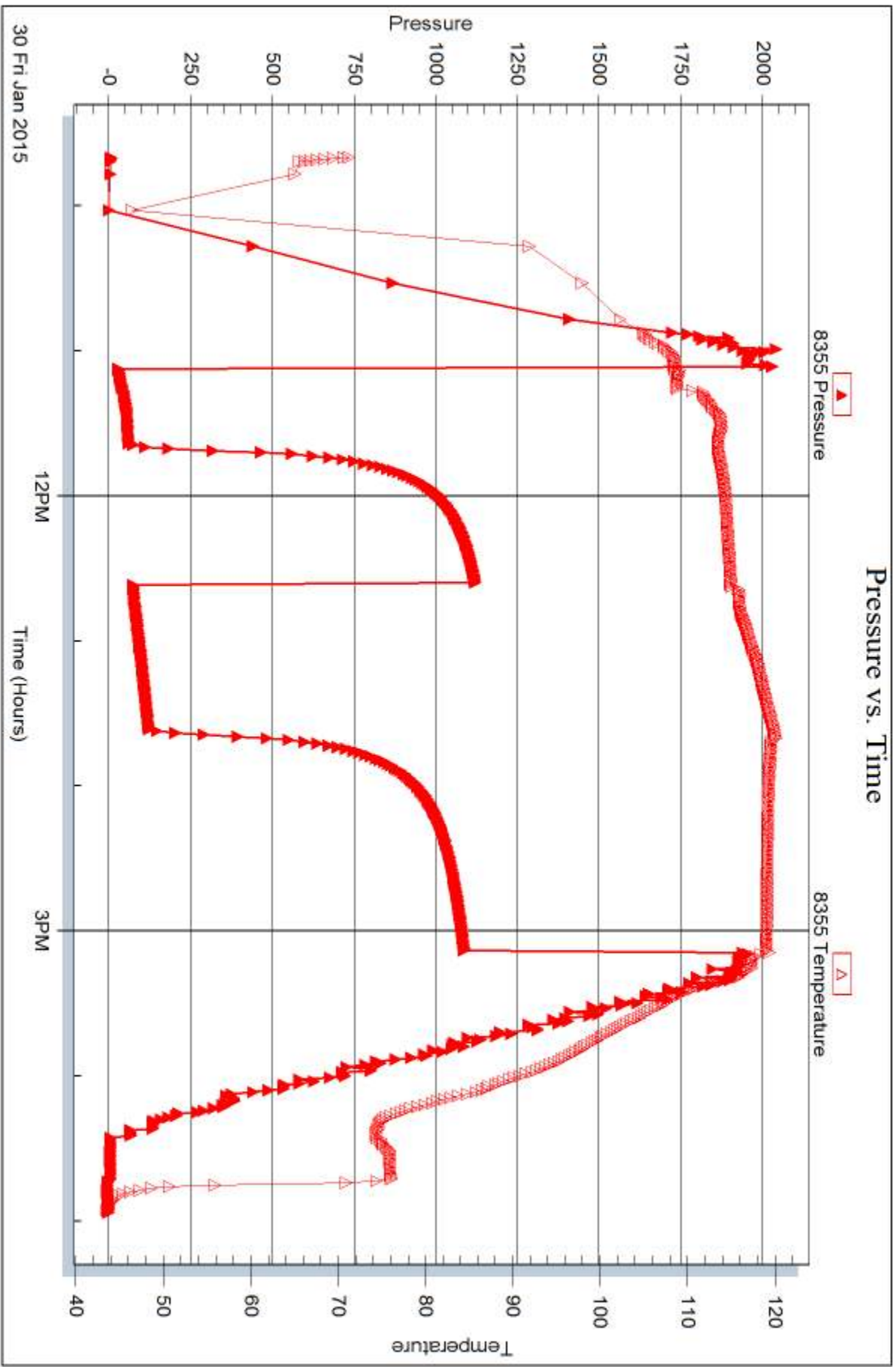
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Abell #1-24

24-12s-31w Gove,KS

Start Date: 2015.01.31 @ 08:00:00

End Date: 2015.01.31 @ 15:24:15

Job Ticket #: 61518 DST #: 3

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

Printed: 2015.02.03 @ 11:51:01

Murfin Drilling Co. 24-12s-31w Gove,KS Abell #1-24 DST # 3 LKC "J - K" 2015.01.31



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61518

DST#: 3

ATTN: Jeff Christian

Test Start: 2015.01.31 @ 08:00:00

GENERAL INFORMATION:

Formation: **LKC "J - K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:37:45

Time Test Ended: 15:24:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 71

Interval: 4093.00 ft (KB) To 4152.00 ft (KB) (TVD)

Reference Elevations: 2836.00 ft (KB)

Total Depth: 4152.00 ft (KB) (TVD)

2827.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

Serial #: 8674

Inside

Press@RunDepth: 298.95 psig @ 4094.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.31

End Date:

2015.01.31

Last Calib.:

2015.01.31

Start Time: 08:00:05

End Time:

15:24:14

Time On Btm:

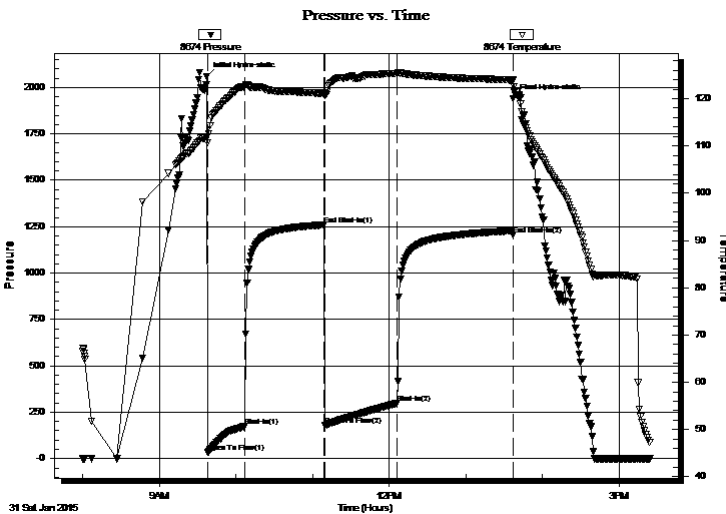
2015.01.31 @ 09:37:15

Time Off Btm:

2015.01.31 @ 13:37:00

TEST COMMENT: 30: B.O.B in 12 mins.
60: No Return.
60: B.O.B in 21 mins.
90: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2058.71	112.02	Initial Hydro-static
1	35.00	110.75	Open To Flow (1)
30	174.45	122.63	Shut-In(1)
92	1259.73	121.15	End Shut-In(1)
93	178.47	120.68	Open To Flow (2)
149	298.95	125.35	Shut-In(2)
240	1205.31	123.89	End Shut-In(2)
240	1940.77	124.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
276.00	mcw 50m 50w	1.36
333.00	mcw oil spot 1o 9m 90w	4.67

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61518

DST#: 3

ATTN: Jeff Christian

Test Start: 2015.01.31 @ 08:00:00

GENERAL INFORMATION:

Formation: **LKC "J - K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:37:45

Time Test Ended: 15:24:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 71

Interval: 4093.00 ft (KB) To 4152.00 ft (KB) (TVD)

Reference Elevations: 2836.00 ft (KB)

Total Depth: 4152.00 ft (KB) (TVD)

2827.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

Serial #: 8355 Outside

Press@RunDepth: 1228.23 psig @ 4094.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.31

End Date:

2015.01.31

Last Calib.:

2015.01.31

Start Time: 08:00:05

End Time:

15:25:14

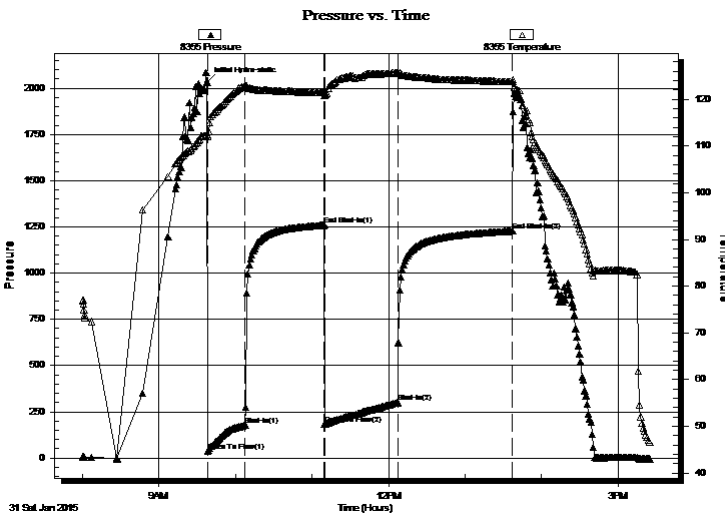
Time On Btm:

2015.01.31 @ 09:38:00

Time Off Btm:

TEST COMMENT: 30: B.O.B in 12 mins.
60: No Return.
60: B.O.B in 21 mins.
90: No Return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2035.07	112.48	Initial Hydro-static
1	36.76	112.09	Open To Flow (1)
30	179.04	122.83	Shut-In(1)
92	1259.25	121.36	End Shut-In(1)
92	184.03	121.09	Open To Flow (2)
150	300.44	125.65	Shut-In(2)
240	1228.23	123.75	End Shut-In(2)

Recovery

Length (ft)	Description	Volume (bbl)
276.00	mcw 50m 50w	1.36
333.00	mcw oil spot 1o 9m 90w	4.67

* 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.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61518

DST#: 3

ATTN: Jeff Christian

Test Start: 2015.01.31 @ 08:00:00

Tool Information

Drill Pipe:	Length: 3801.00 ft	Diameter: 3.80 inches	Volume: 53.32 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 276.00 ft	Diameter: 2.25 inches	Volume: 1.36 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 54.68 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4093.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	59.00 ft			
Tool Length:	86.00 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			4067.00	
Shut In Tool	5.00			4072.00	
Hydraulic tool	5.00			4077.00	
Jars	5.00			4082.00	
Safety Joint	2.00			4084.00	
Packer	5.00			4089.00	27.00 Bottom Of Top Packer
Packer	4.00			4093.00	
Stubb	1.00			4094.00	
Recorder	0.00	8355	Outside	4094.00	
Recorder	0.00	8674	Inside	4094.00	
Perforations	20.00			4114.00	
Change Over Sub	1.00			4115.00	
Drill Pipe	31.00			4146.00	
Change Over Sub	1.00			4147.00	
Bullnose	5.00			4152.00	59.00 Bottom Packers & Anchor

Total Tool Length: 86.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61518

DST#: 3

ATTN: Jeff Christian

Test Start: 2015.01.31 @ 08:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

90000 ppm

Viscosity: 70.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
276.00	mcw 50m 50w	1.357
333.00	mcw oil spot 1o 9m 90w	4.671

Total Length: 609.00 ft Total Volume: 6.028 bbl

Num Fluid Samples: 0

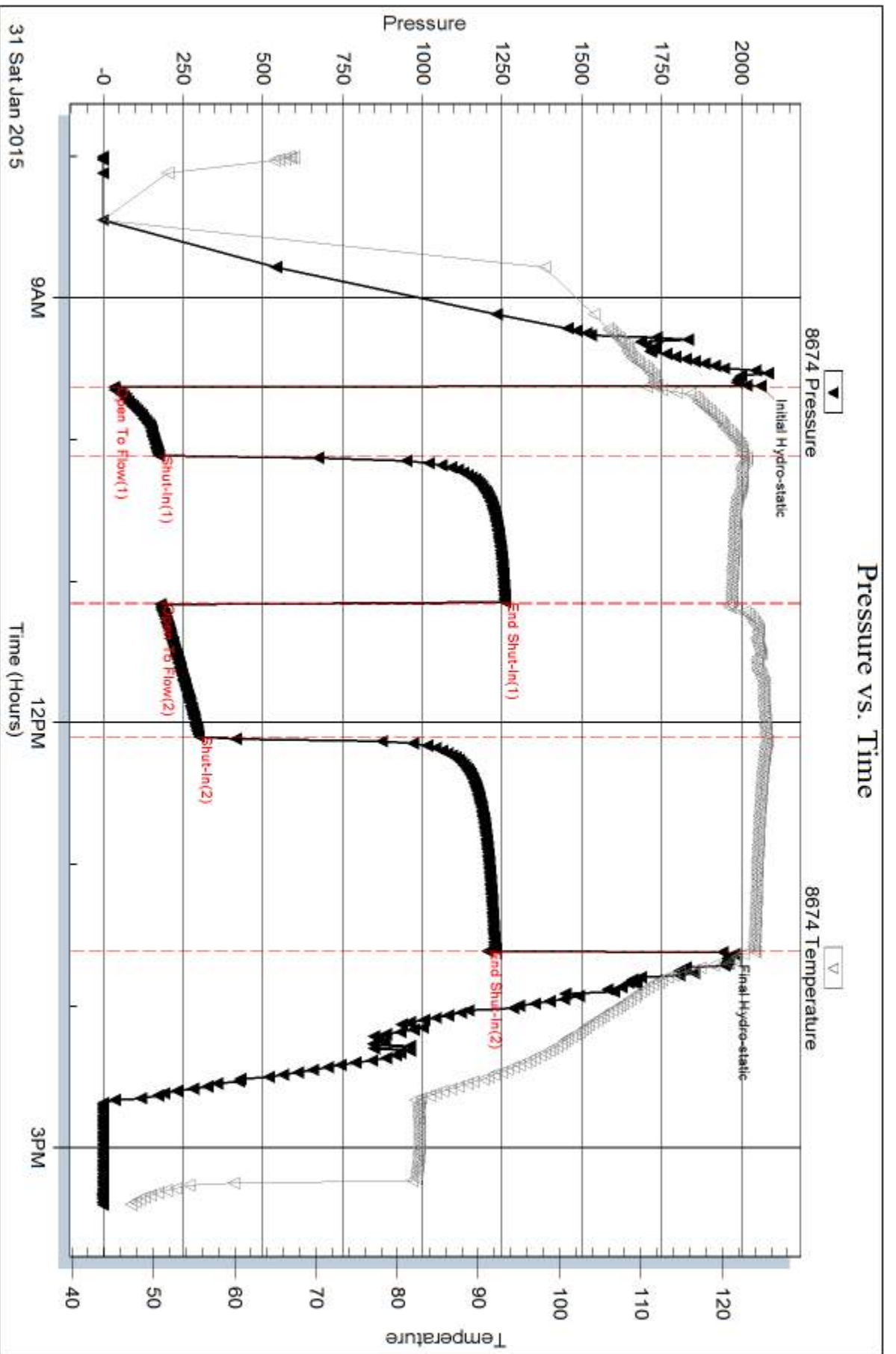
Num Gas Bombs: 0

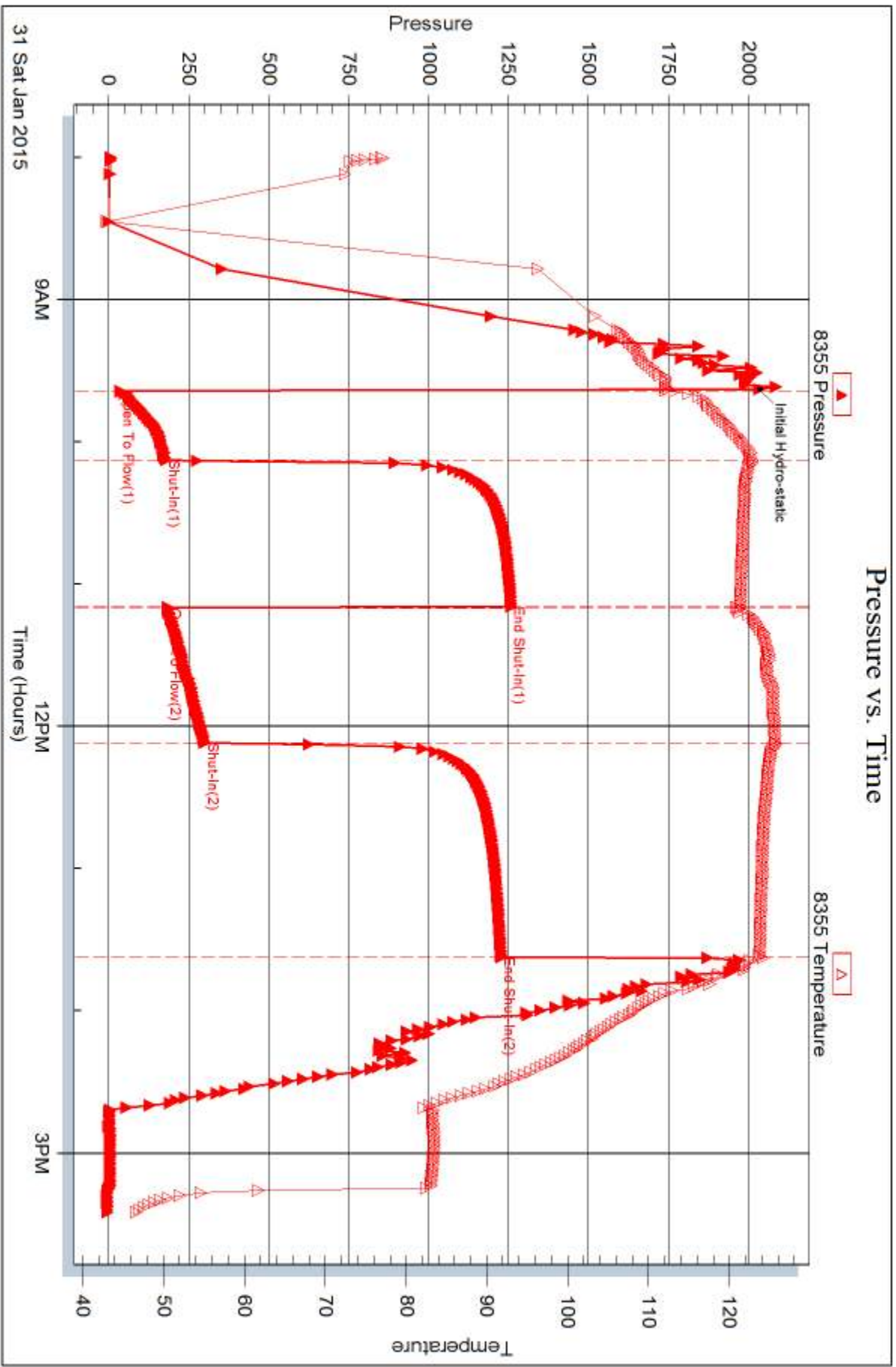
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API RW .13 @ 46F = 90000 Chlorides







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Abell #1-24

24-12s-31w Gove,KS

Start Date: 2015.02.01 @ 14:35:00

End Date: 2015.02.02 @ 00:31:30

Job Ticket #: 61519 DST #: 4

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

Printed: 2015.02.03 @ 11:50:27



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61519

DST#: 4

ATTN: Jeff Christian

Test Start: 2015.02.01 @ 14:35:00

GENERAL INFORMATION:

Formation: **Lower Pawnee - Johns**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:51:45

Time Test Ended: 00:31:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 71

Interval: 4332.00 ft (KB) To 4458.00 ft (KB) (TVD)

Reference Elevations: 2836.00 ft (KB)

Total Depth: 4458.00 ft (KB) (TVD)

2827.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

Serial #: 8674

Inside

Press@RunDepth: 377.97 psig @ 4333.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.01

End Date:

2015.02.02

Last Calib.:

2015.02.02

Start Time: 14:35:05

End Time:

00:31:30

Time On Btm:

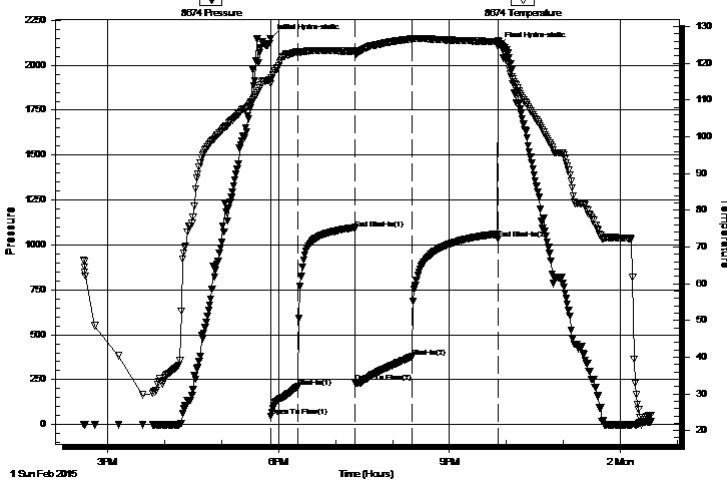
2015.02.01 @ 17:51:30

Time Off Btm:

2015.02.01 @ 21:51:00

TEST COMMENT: 30: B.O.B in 5 mins.
60: B.O.B in 10 mins.
60: B.O.B in 5 mins.
90: B.O.B in 8 mins.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2149.29	115.35	Initial Hydro-static
1	45.72	114.47	Open To Flow (1)
29	210.90	123.10	Shut-In(1)
89	1088.70	123.29	End Shut-In(1)
90	234.85	122.82	Open To Flow (2)
149	377.97	126.60	Shut-In(2)
239	1031.28	125.88	End Shut-In(2)
240	2104.72	126.27	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
276.00	gmcw 5g 15m 80w	1.36
346.00	gocm 10g 20o 70m	4.85
325.00	clean oil 5g 95o	4.56

Gas Rates

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

* Recovery from multiple tests



DRILL STEM TEST REPORT

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61519

DST#: 4

ATTN: Jeff Christian

Test Start: 2015.02.01 @ 14:35:00

GENERAL INFORMATION:

Formation: **Lower Pawnee - Johns**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:51:45

Time Test Ended: 00:31:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 71

Interval: 4332.00 ft (KB) To 4458.00 ft (KB) (TVD)

Total Depth: 4458.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2836.00 ft (KB)

2827.00 ft (CF)

KB to GR/CF: 9.00 ft

Serial #: 8355 Outside

Press@RunDepth: psig @ 4333.00 ft (KB)

Start Date: 2015.02.01

Start Time: 14:35:05

End Date:

End Time:

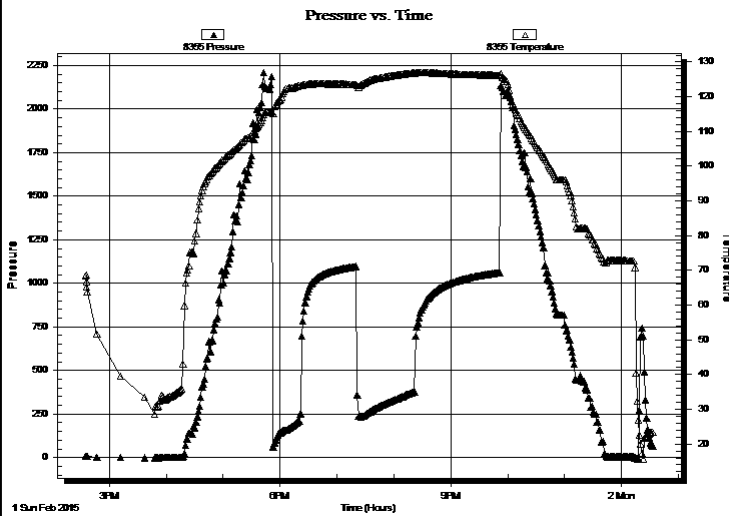
Capacity: 8000.00 psig

Last Calib.: 2015.02.02

Time On Btm:

Time Off Btm:

TEST COMMENT: 30: B.O.B in 5 mins.
60: B.O.B in 10 mins.
60: B.O.B in 5 mins.
90: B.O.B in 8 mins.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
276.00	gmcw 5g 15m 80w	1.36
346.00	gocm 10g 20o 70m	4.85
325.00	clean oil 5g 95o	4.56

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.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61519

DST#: 4

ATTN: Jeff Christian

Test Start: 2015.02.01 @ 14:35:00

Tool Information

Drill Pipe:	Length: 4052.00 ft	Diameter: 3.80 inches	Volume: 56.84 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 276.00 ft	Diameter: 2.25 inches	Volume: 1.36 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 58.20 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4332.00 ft			Final 75000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	126.00 ft			
Tool Length:	153.00 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			4306.00	
Shut In Tool	5.00			4311.00	
Hydraulic tool	5.00			4316.00	
Jars	5.00			4321.00	
Safety Joint	2.00			4323.00	
Packer	5.00			4328.00	27.00 Bottom Of Top Packer
Packer	4.00			4332.00	
Stubb	1.00			4333.00	
Recorder	0.00	8355	Outside	4333.00	
Recorder	0.00	8674	Inside	4333.00	
Perforations	24.00			4357.00	
Change Over Sub	1.00			4358.00	
Drill Pipe	94.00			4452.00	
Change Over Sub	1.00			4453.00	
Bullnose	5.00			4458.00	126.00 Bottom Packers & Anchor

Total Tool Length: 153.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

24-12s-31w Gove,KS

250 N Water STE 300
Wichita KS 67202

Abell #1-24

Job Ticket: 61519

DST#: 4

ATTN: Jeff Christian

Test Start: 2015.02.01 @ 14:35:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

32 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

150000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.00 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
276.00	gmcw 5g 15m 80w	1.357
346.00	gocm 10g 20o 70m	4.853
325.00	clean oil 5g 95o	4.559

Total Length: 947.00 ft Total Volume: 10.769 bbl

Num Fluid Samples: 0

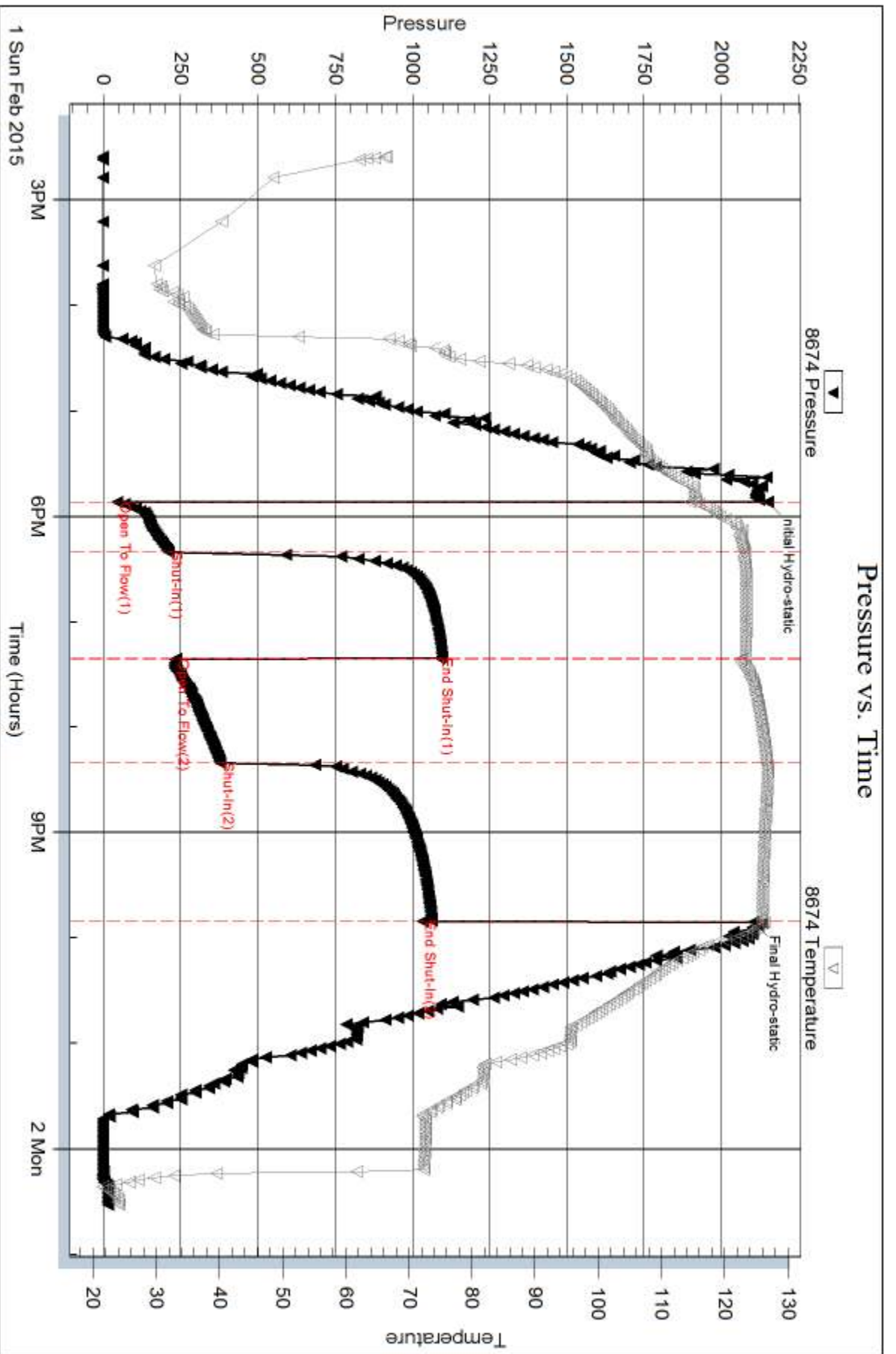
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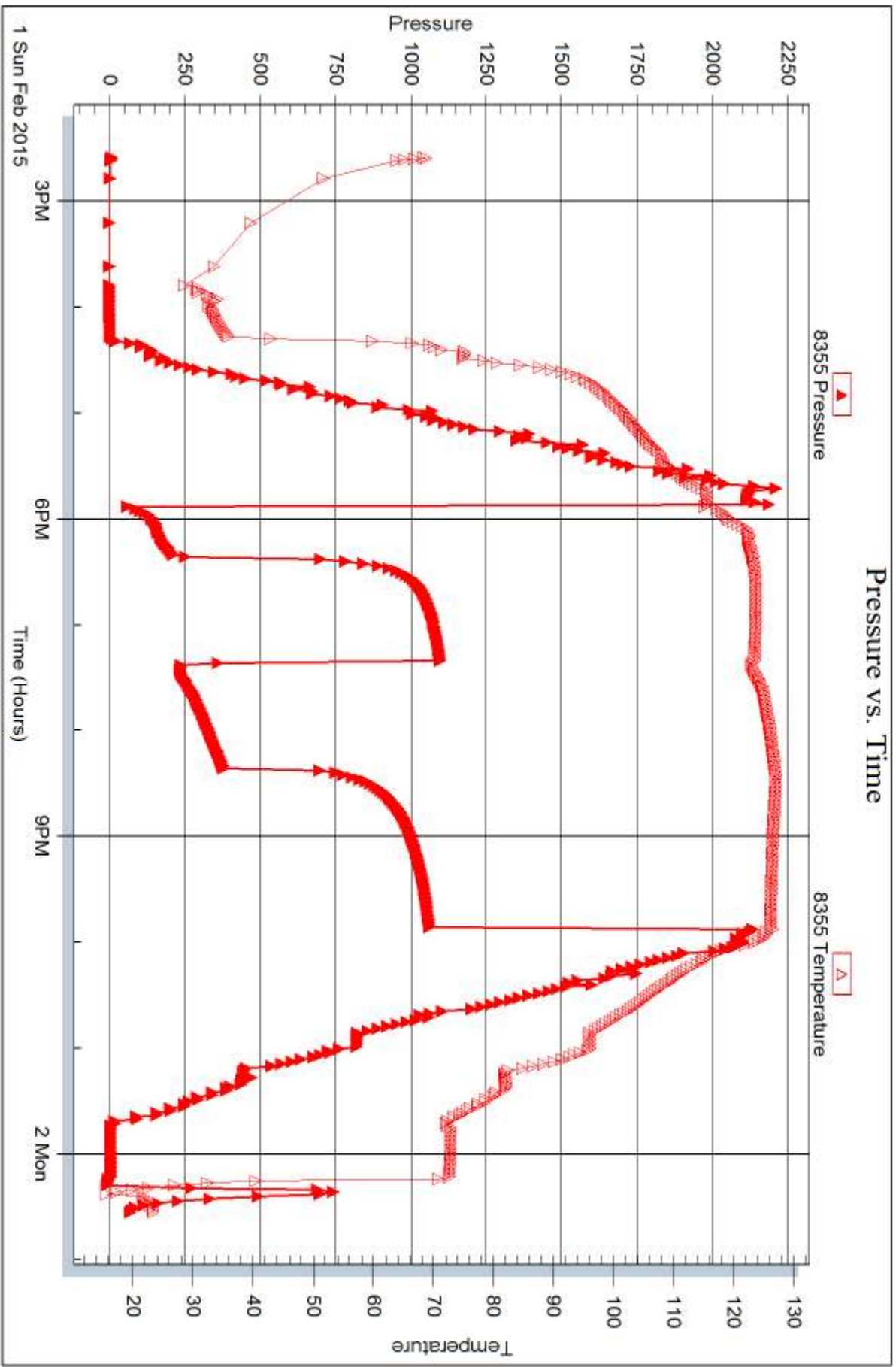
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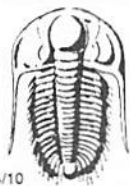
Laboratory Name:

Laboratory Location:

Recovery Comments: RW .25 @ 13F = 150000 Chlorides







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61516

Well Name & No. ABell # 1-24 Test No. 1 Date 1/29 1/30
 Company Murfin Drilling Co, Inc Elevation 2834 KB 2827 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin 21
 Location: Sec. 24 Twp. 12S Rge. 31W Co. Cove State KS

Interval Tested 3854 3946 Zone Tested Toronto - Linc 1/0" zone
 Anchor Length 112 Drill Pipe Run 3574 Mud Wt. 9.1
 Top Packer Depth 3850 Drill Collars Run 276 Vis 52
 Bottom Packer Depth 3854 Wt. Pipe Run Ø WL 5.4
 Total Depth 3946 Chlorides 2000 ppm System LCM 3
 Blow Description 30 B.O.B in 3 1/2 min
40 No Return
60 B.O.B in 5 1/2 min
90 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>276</u>	<u>mcw</u>			<u>80</u>	<u>20</u>
<u>504</u>	<u>mcw</u>			<u>95</u>	<u>5</u>
<u>444</u>	<u>mcw</u>			<u>90</u>	<u>10</u>

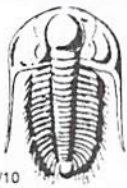
Rec Total 1221 BHT 122 Gravity — API RW .41 @ 37 °F Chlorides 30000 ppm

(A) Initial Hydrostatic <u>1914</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>19:00</u>
(B) First Initial Flow <u>44</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>19:55</u>
(C) First Final Flow <u>341</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>21:41</u>
(D) Initial Shut-In <u>1179</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/R</u>	T-Pulled <u>1:41</u>
(E) Second Initial Flow <u>354</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>3:37</u>
(F) Second Final Flow <u>649</u>	<input checked="" type="checkbox"/> Mileage <u>94 RT 94</u>	Comments
(G) Final Shut-In <u>1173</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1829</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>60</u>	<input type="checkbox"/> Day Standby	Total <u>1469</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1469</u>	

Approved By Jeff Christian

Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **61517**

Well Name & No. A Bell # 1-24 Test No. 2 Date 1/30
 Company Murfin Drilling Co, Inc Elevation 2834 KB 2827 GL
 Address 250 N water STE 300 Wichita KS 67202
 Co. Rep / Geo. Teff Christian Rig Murfin 21
 Location: Sec. 24 Twp. 12S Rge. 31W Co. Gove State KS

Interval Tested 3947 3994 Zone Tested LKC "E,F"
 Anchor Length 29 Drill Pipe Run 3675 Mud Wt. 9.1
 Top Packer Depth 3943 Drill Collars Run 276 Vis 52
 Bottom Packer Depth 3947 Wt. Pipe Run Ø WL 5.6
 Total Depth 3994 Chlorides 2000 ppm System LCM 3

Blow Description 30 weak surface blow to 3 1/4"
60 No Return
40 weak surface blow to 1/2"
90 No Return

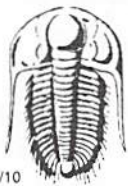
Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>clean oil</u>				
<u>189</u>	<u>owcm</u>		<u>20</u>	<u>30</u>	<u>50</u>

Rec Total 191 BHT 119 Gravity - API RW - @ - °F Chlorides - ppm
 (A) Initial Hydrostatic 1992 Test 1050 T-On Location 9:20
 (B) First Initial Flow 19 Jars 250 T-Started 9:40
 (C) First Final Flow 42 Safety Joint 75 T-Open 11:10
 (D) Initial Shut-In 1097 Circ Sub N/C T-Pulled 15:10
 (E) Second Initial Flow 47 Hourly Standby _____ T-Out 16:56
 (F) Second Final Flow 118 Mileage 94 RT 94 Comments _____
 (G) Final Shut-In 1089 Sampler _____
 (H) Final Hydrostatic 1939 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90
 Sub Total 1469
 Total 1469
 MP/DST Disc't _____

Approved By Teff Christian Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **61518**

4/10

Well Name & No. ABell # 1-24 Test No. 3 Date 1/31
 Company Murfin Drilling Co, Inc. Elevation 2834 KB 2827 GL
 Address 250 N water STE 300 wichita ks, 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin 21
 Location: Sec. 24 Twp. 12S Rge. 3/W Co. Gove State KS

Interval Tested 4093 4162 Zone Tested LKC "J-K"
 Anchor Length 59 Drill Pipe Run 3801 Mud Wt. 9.2
 Top Packer Depth 4089 Drill Collars Run 276 Vis 70
 Bottom Packer Depth 4093 Wt. Pipe Run Ø WL 5.2
 Total Depth 4162 Chlorides 2300 ppm System LCM 4

Blow Description 30 B.O.B in 12 mins.
60 No Return
60 B.O.B in 21 mins
90 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>276</u>	<u>new</u>			<u>50</u>	<u>50</u>
<u>333</u>	<u>new oil spots</u>		<u>1</u>	<u>90</u>	<u>9</u>

Rec Total 609 BHT 124 Gravity — API RW .13 @ 46 °F Chlorides 90000 ppm

(A) Initial Hydrostatic <u>2059</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>7:35</u>
(B) First Initial Flow <u>35</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>8:00</u>
(C) First Final Flow <u>174</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>9:38</u>
(D) Initial Shut-In <u>1240</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>13 38</u>
(E) Second Initial Flow <u>178</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>15 24</u>
(F) Second Final Flow <u>299</u>	<input checked="" type="checkbox"/> Mileage <u>94 RT 94</u>	Comments
(G) Final Shut-In <u>1205</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1941</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>60</u>	<input type="checkbox"/> Day Standby	Total <u>1569</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1569</u>	

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO.

61519

Well Name & No. A Bell # 1-24 Test No. 4 Date 2-1-15
 Company Murfin Drilling Co, Inc. Elevation 2836 KB 2827 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin 21
 Location: Sec. 24 Twp. 12S Rge. 31W Co. Gove State KS

Interval Tested 4332 4458 Zone Tested lower Pawnee - Johnson
 Anchor Length 126' Drill Pipe Run 4052 Mud Wt. 9.3
 Top Packer Depth 4328 Drill Collars Run 276 Vis 55
 Bottom Packer Depth 4332 Wt. Pipe Run Ø WL 6.0
 Total Depth 4458 Chlorides 2300 ppm System LCM 6

Blow Description 30 B.O.B in 5 min
60 B.O.B in 10 min
60 B.O.B in 5 min
90 B.O.B in 8 min

Rec	Feet of	%gas	%oil	%water	%mud
325	clean oil	5	95		
346	gocm	10	20		70
276	gmcw oil spots	5		80	15

Rec Total 9 47 BHT 124 Gravity 32 API RW .25 @ 13 °F Chlorides 150,000 ppm

(A) Initial Hydrostatic 2149 Test 1150 T-On Location 14:15
 (B) First Initial Flow 44 Jars 250 T-Started 14:35
 (C) First Final Flow 211 Safety Joint 75 T-Open 17:50
 (D) Initial Shut-In 1089 Circ Sub N/C T-Pulled 21:50
 (E) Second Initial Flow 235 Hourly Standby _____ T-Out 00:31
 (F) Second Final Flow 376 Mileage 94 RT 94 Comments _____
 (G) Final Shut-In 1031 Sampler _____
 (H) Final Hydrostatic 2105 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____

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

Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1569
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1569

Approved By _____ Our Representative Justin Her

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