



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.27 @ 18:00:00

End Date: 2013.05.28 @ 01:53:39

Job Ticket #: 51748 DST #: 1

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

Printed: 2013.06.06 @ 11:52:45



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS

Kuhn #1-4

Job Ticket: 51748

DST#: 1

Test Start: 2013.05.27 @ 18:00:00

GENERAL INFORMATION:

Formation: **Lansing 'B'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:58:00

Time Test Ended: 01:53:39

Test Type: Conventional Bottom Hole (Initial)

Tester: Chuck Smith

Unit No: 62

Interval: 4027.00 ft (KB) To 4050.00 ft (KB) (TVD)

Reference Elevations: 3022.00 ft (KB)

Total Depth: 4050.00 ft (KB) (TVD)

3011.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8018

Inside

Press @ Run Depth: 182.83 psig @ 4028.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.05.27

End Date:

2013.05.28

Last Calib.:

2013.05.28

Start Time: 18:00:02

End Time:

01:53:40

Time On Btm:

2013.05.27 @ 19:56:50

Time Off Btm:

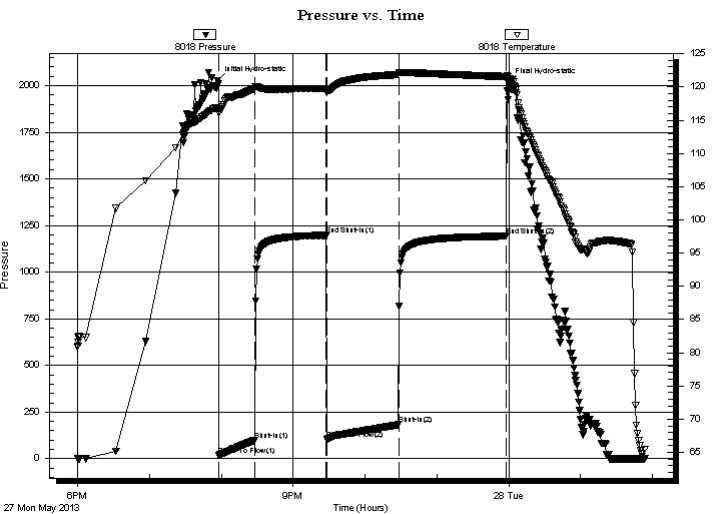
2013.05.27 @ 23:59:50

TEST COMMENT: 6" Blow .

No return.

11" Blow .

No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2025.87	116.78	Initial Hydro-static
2	19.32	116.07	Open To Flow (1)
31	99.34	119.74	Shut-In(1)
91	1198.05	119.72	End Shut-In(1)
92	102.66	119.13	Open To Flow (2)
152	182.83	121.86	Shut-In(2)
242	1193.37	121.57	End Shut-In(2)
243	2013.90	121.24	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OSMW 20m 80w	0.30
175.00	MW 10m 90w	0.86
124.00	MW 30m 70w	1.74
5.00	SOCMW 1o 49m 50w	0.07

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51748

DST#: 1

ATTN: Tom Funk

Test Start: 2013.05.27 @ 18:00:00

Tool Information

Drill Pipe:	Length: 3792.00 ft	Diameter: 3.80 inches	Volume: 53.19 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 54.35 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.50 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4027.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	23.00 ft			
Tool Length:	50.50 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			4000.50	
Shut In Tool	5.00			4005.50	
Hydraulic tool	5.00			4010.50	
Jars	5.00			4015.50	
Safety Joint	2.50			4018.00	
Packer	5.00			4023.00	27.50 Bottom Of Top Packer
Packer	4.00			4027.00	
Stubb	1.00			4028.00	
Recorder	0.00	8018	Inside	4028.00	
Recorder	0.00	6751	Outside	4028.00	
Perforations	19.00			4047.00	
Bullnose	3.00			4050.00	23.00 Bottom Packers & Anchor

Total Tool Length: 50.50



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51748

DST#: 1

ATTN: Tom Funk

Test Start: 2013.05.27 @ 18:00:00

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:

54000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	OSMW 20m 80w	0.295
175.00	MW 10m 90w	0.861
124.00	MW 30m 70w	1.739
5.00	SOCMW 1o 49m 50w	0.070

Total Length: 364.00 ft Total Volume: 2.965 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .170 @ 58 Degrees F = 54000 PPM

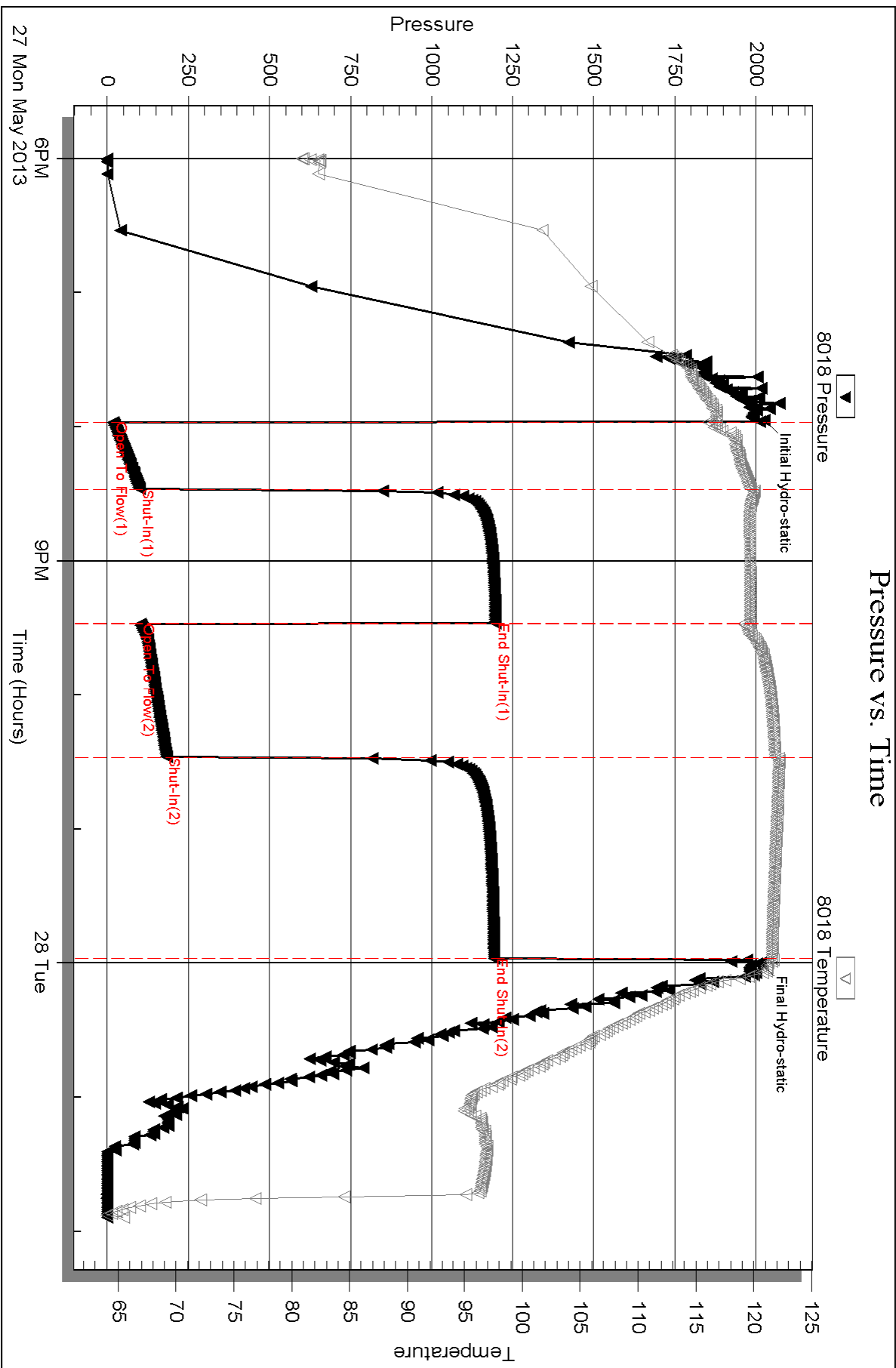
Serial #: 8018

Inside

Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 1

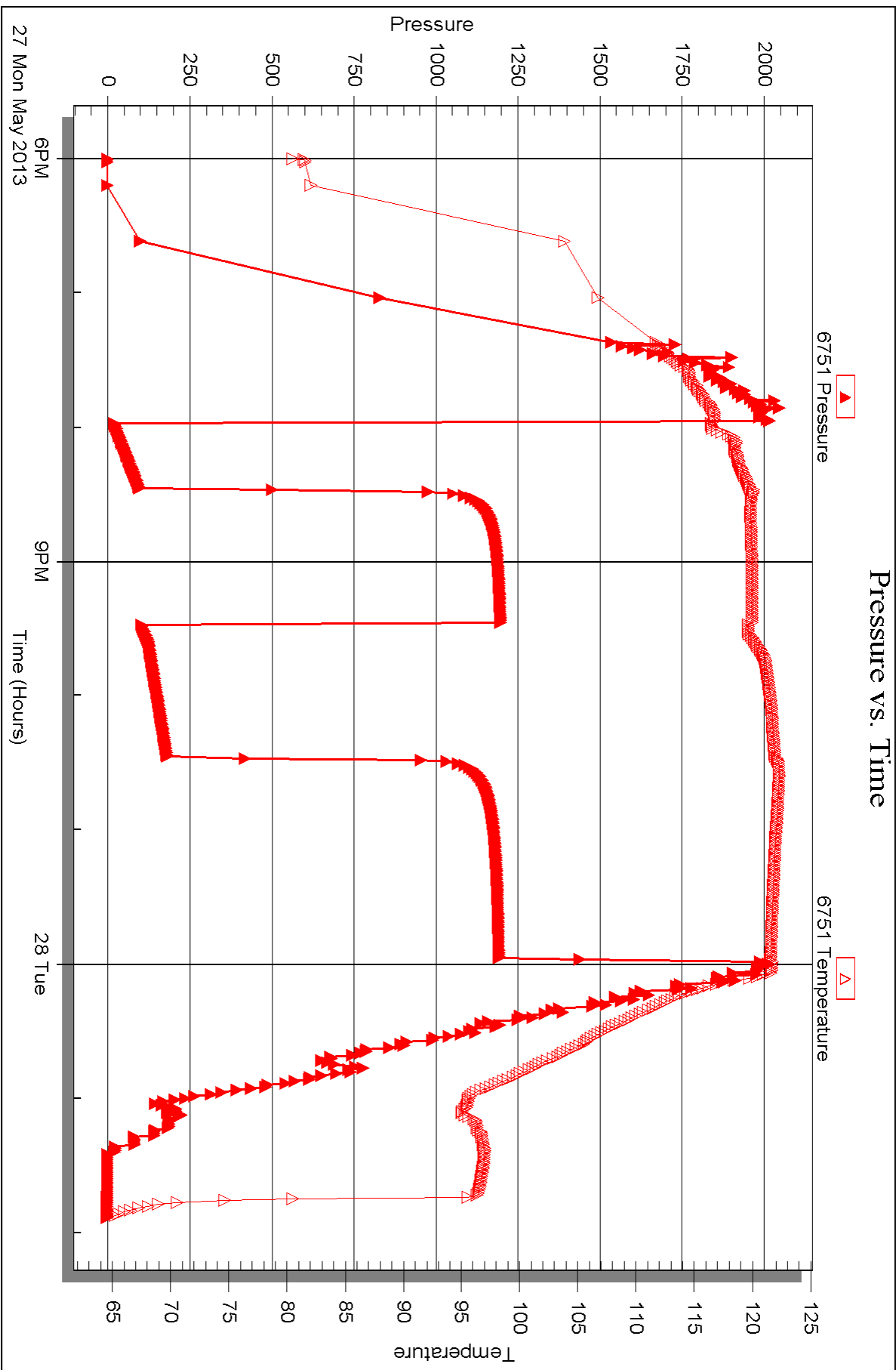


Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.28 @ 11:50:00

End Date: 2013.05.28 @ 19:00:20

Job Ticket #: 51749 DST #: 2

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

Printed: 2013.06.06 @ 11:52:08

Murfin Drilling Co. S4-13s-32w Logan,KS Kuhn #1-4 DST # 2 Lansing, E-F 2013.05.28



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS

Kuhn #1-4

Job Ticket: 51749

DST#: 2

Test Start: 2013.05.28 @ 11:50:00

GENERAL INFORMATION:

Formation: **Lansing 'E-F'**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:09:40
 Time Test Ended: 19:00:20
 Interval: **4077.00 ft (KB) To 4110.00 ft (KB) (TVD)**
 Total Depth: 4110.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Chuck Smith
 Unit No: 62
 Reference Elevations: 3022.00 ft (KB)
 3011.00 ft (CF)
 KB to GR/CF: 11.00 ft

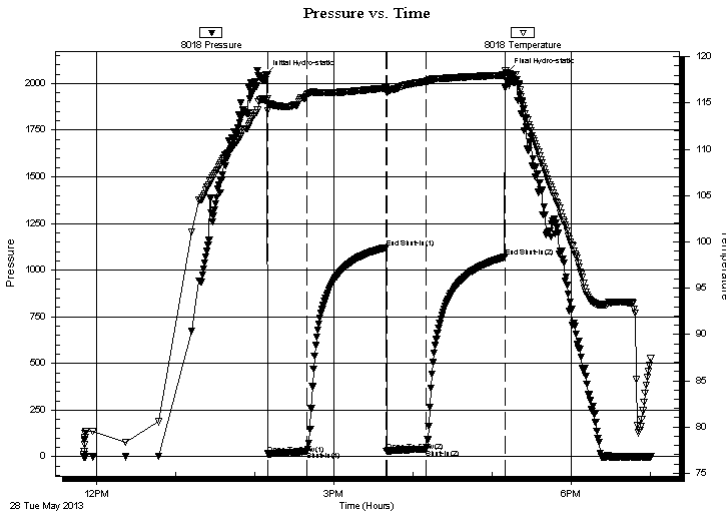
Serial #: 8018

Inside

Press @ Run Depth: 41.67 psig @ 4078.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.05.28 End Date: 2013.05.28 Last Calib.: 2013.05.28
 Start Time: 11:50:02 End Time: 19:00:19 Time On Btm: 2013.05.28 @ 14:08:30
 Time Off Btm: 2013.05.28 @ 17:11:20

TEST COMMENT: 3/4" Blow .
 No return.
 No blow .
 No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2048.97	115.24	Initial Hydro-static
2	16.07	114.16	Open To Flow (1)
31	28.83	115.92	Shut-In(1)
91	1120.62	116.61	End Shut-In(1)
92	30.92	116.11	Open To Flow (2)
122	41.67	117.32	Shut-In(2)
182	1069.89	118.02	End Shut-In(2)
183	2058.51	118.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
58.00	SOCM 1 to 99m	0.29

* 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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51749

DST#: 2

ATTN: Tom Funk

Test Start: 2013.05.28 @ 11:50:00

Tool Information

Drill Pipe:	Length: 3853.00 ft	Diameter: 3.80 inches	Volume: 54.05 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 95000.00 lb
			<u>Total Volume: 55.21 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 71000.00 lb
Depth to Top Packer:	4077.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	33.00 ft			
Tool Length:	53.00 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			4058.00	
Shut In Tool	5.00			4063.00	
Hydraulic tool	5.00			4068.00	
Packer	5.00			4073.00	20.00 Bottom Of Top Packer
Packer	4.00			4077.00	
Stubb	1.00			4078.00	
Recorder	0.00	8018	Inside	4078.00	
Recorder	0.00	6751	Outside	4078.00	
Perforations	29.00			4107.00	
Bullnose	3.00			4110.00	33.00 Bottom Packers & Anchor
Total Tool Length:	53.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51749

DST#: 2

ATTN: Tom Funk

Test Start: 2013.05.28 @ 11:50:00

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: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
58.00	SOCM 1o 99m	0.285

Total Length: 58.00 ft Total Volume: 0.285 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8018

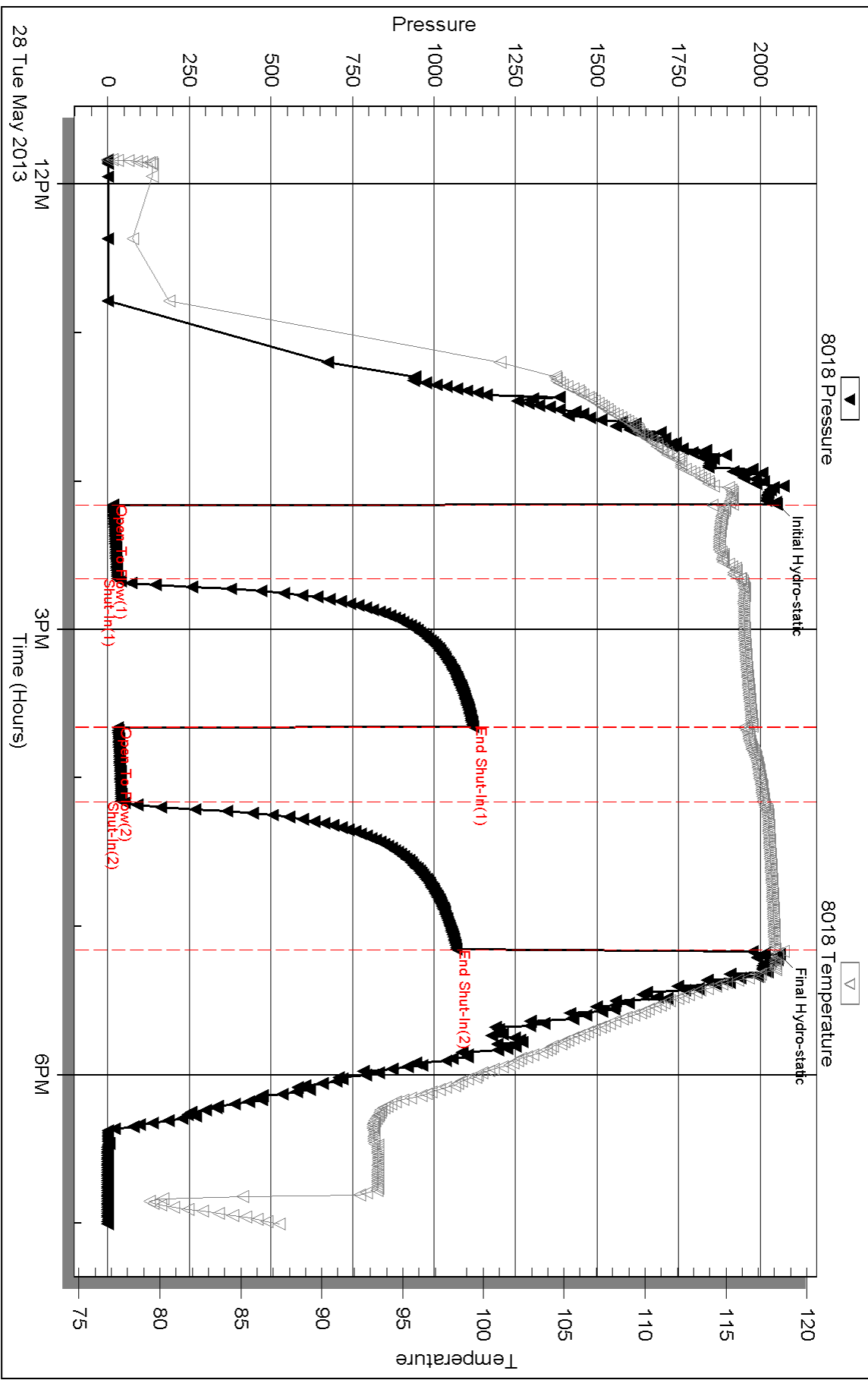
Inside

Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 2

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 51749

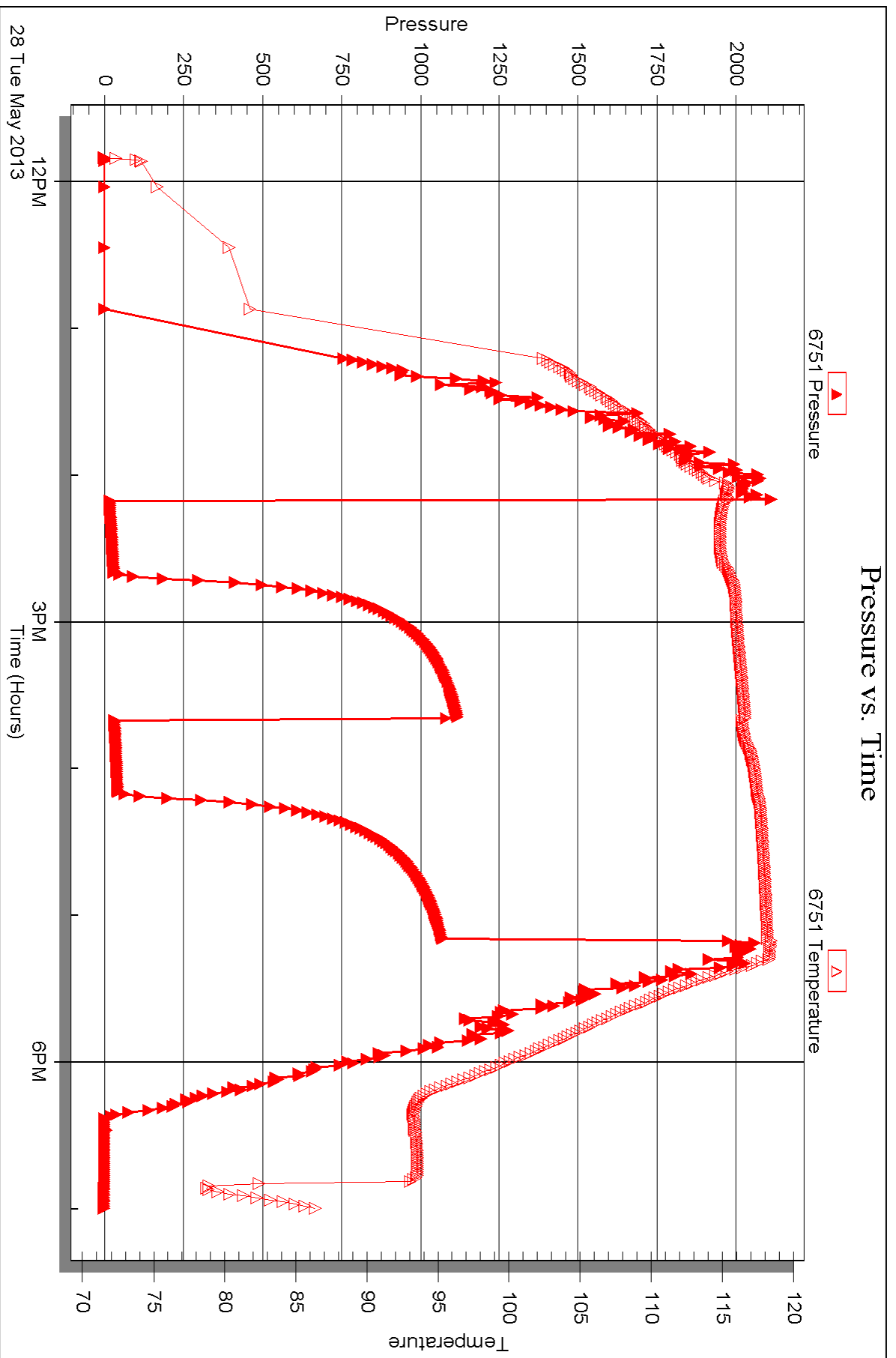
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Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.29 @ 11:13:00

End Date: 2013.05.30 @ 11:13:50

Job Ticket #: 51750 DST #: 3

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

Printed: 2013.06.06 @ 11:51:28



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N. Water Suite 300
 Wichita, KS 67202
 ATTN: Tom Funk

S4-13s-32w Logan,KS
Kuhn #1-4
 Job Ticket: 51750 **DST#: 3**
 Test Start: 2013.05.29 @ 11:13:00

GENERAL INFORMATION:

Formation: **Lansing 'I - J'**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 13:13:10
 Tester: Chuck Smith
 Time Test Ended: 11:13:50
 Unit No: 62
 Interval: **4175.00 ft (KB) To 4230.00 ft (KB) (TVD)**
 Reference Elevations: 3022.00 ft (KB)
 Total Depth: 4230.00 ft (KB) (TVD)
 3011.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Good
 KB to GR/CF: 11.00 ft

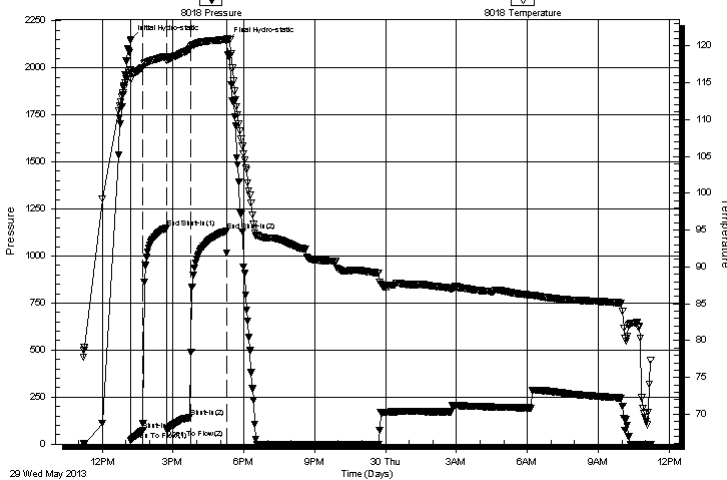
Serial #: 8018

Inside

Press @ RunDepth: 141.79 psig @ 4176.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.05.29 End Date: 2013.05.30 Last Calib.: 2013.05.30
 Start Time: 11:13:02 End Time: 11:13:50 Time On Btm: 2013.05.29 @ 13:12:00
 Time Off Btm: 2013.05.29 @ 17:17:00

TEST COMMENT: 4 1/2" Blow .
 No return.
 4" Blow .
 No return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2151.58	116.69	Initial Hydro-static
2	19.92	115.50	Open To Flow (1)
32	72.82	117.06	Shut-In(1)
92	1150.11	118.56	End Shut-In(1)
93	78.86	117.95	Open To Flow (2)
153	141.79	119.59	Shut-In(2)
244	1133.89	120.85	End Shut-In(2)
245	2140.38	121.01	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
58.00	OSWM 10w 90m	0.29
197.00	M 100m	1.15

* 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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51750

DST#: 3

ATTN: Tom Funk

Test Start: 2013.05.29 @ 11:13:00

Tool Information

Drill Pipe:	Length: 3945.00 ft	Diameter: 3.80 inches	Volume: 55.34 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 56.50 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.50 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4175.00 ft			Final 73000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.00 ft			
Tool Length:	82.50 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			4148.50	
Shut In Tool	5.00			4153.50	
Hydraulic tool	5.00			4158.50	
Jars	5.00			4163.50	
Safety Joint	2.50			4166.00	
Packer	5.00			4171.00	27.50 Bottom Of Top Packer
Packer	4.00			4175.00	
Stubb	1.00			4176.00	
Recorder	0.00	8018	Inside	4176.00	
Recorder	0.00	6751	Outside	4176.00	
Perforations	18.00			4194.00	
Change Over Sub	1.00			4195.00	
Drill Pipe	31.00			4226.00	
Change Over Sub	1.00			4227.00	
Bullnose	3.00			4230.00	55.00 Bottom Packers & Anchor

Total Tool Length: 82.50



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51750

DST#: 3

ATTN: Tom Funk

Test Start: 2013.05.29 @ 11:13:00

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:

42000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
58.00	OSWM 10w 90m	0.285
197.00	M 100m	1.151

Total Length: 255.00 ft Total Volume: 1.436 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .170 @ 73 Degrees F = 42000 PPM

Serial #: 8018

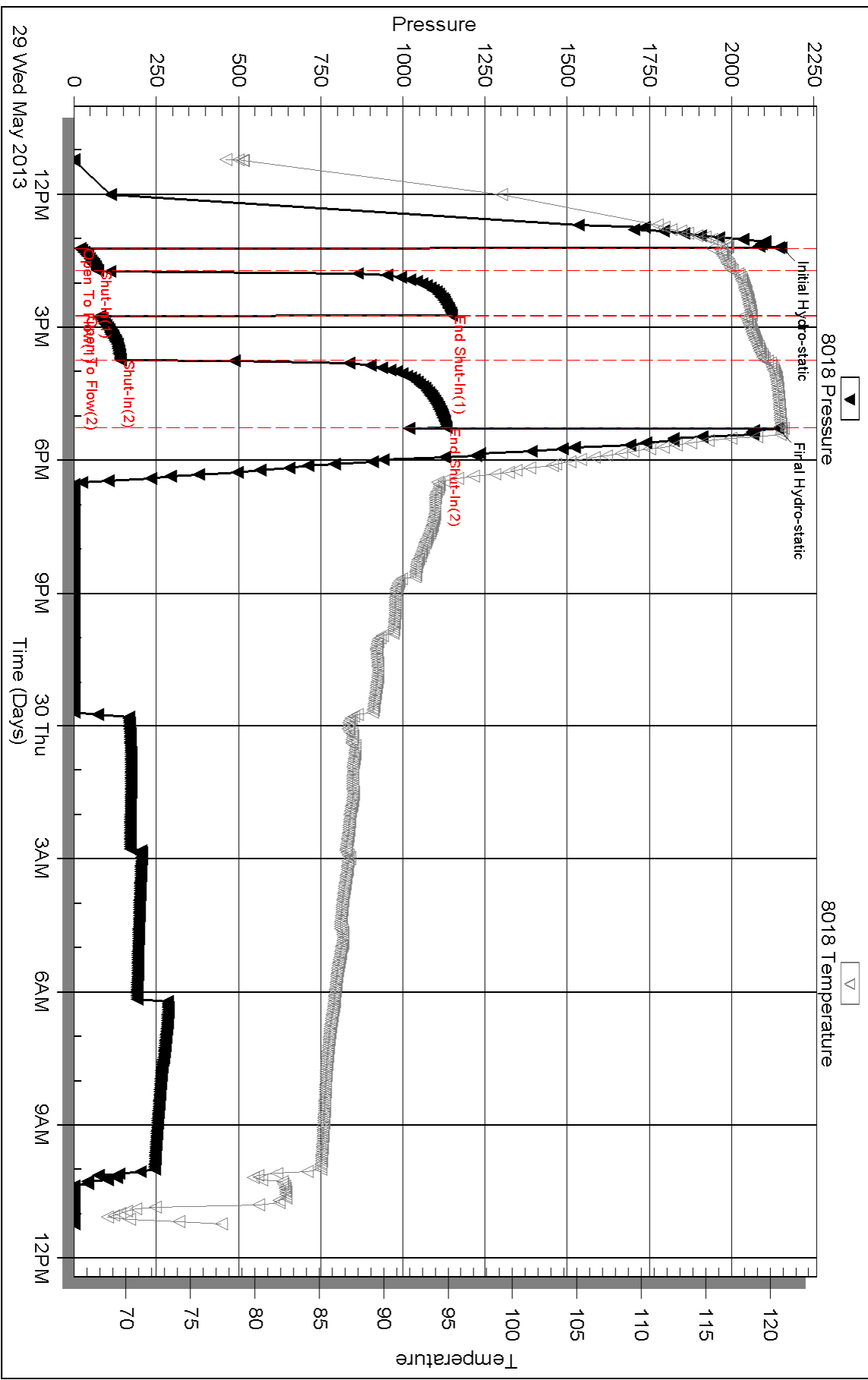
Inside

Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 3

Pressure vs. Time

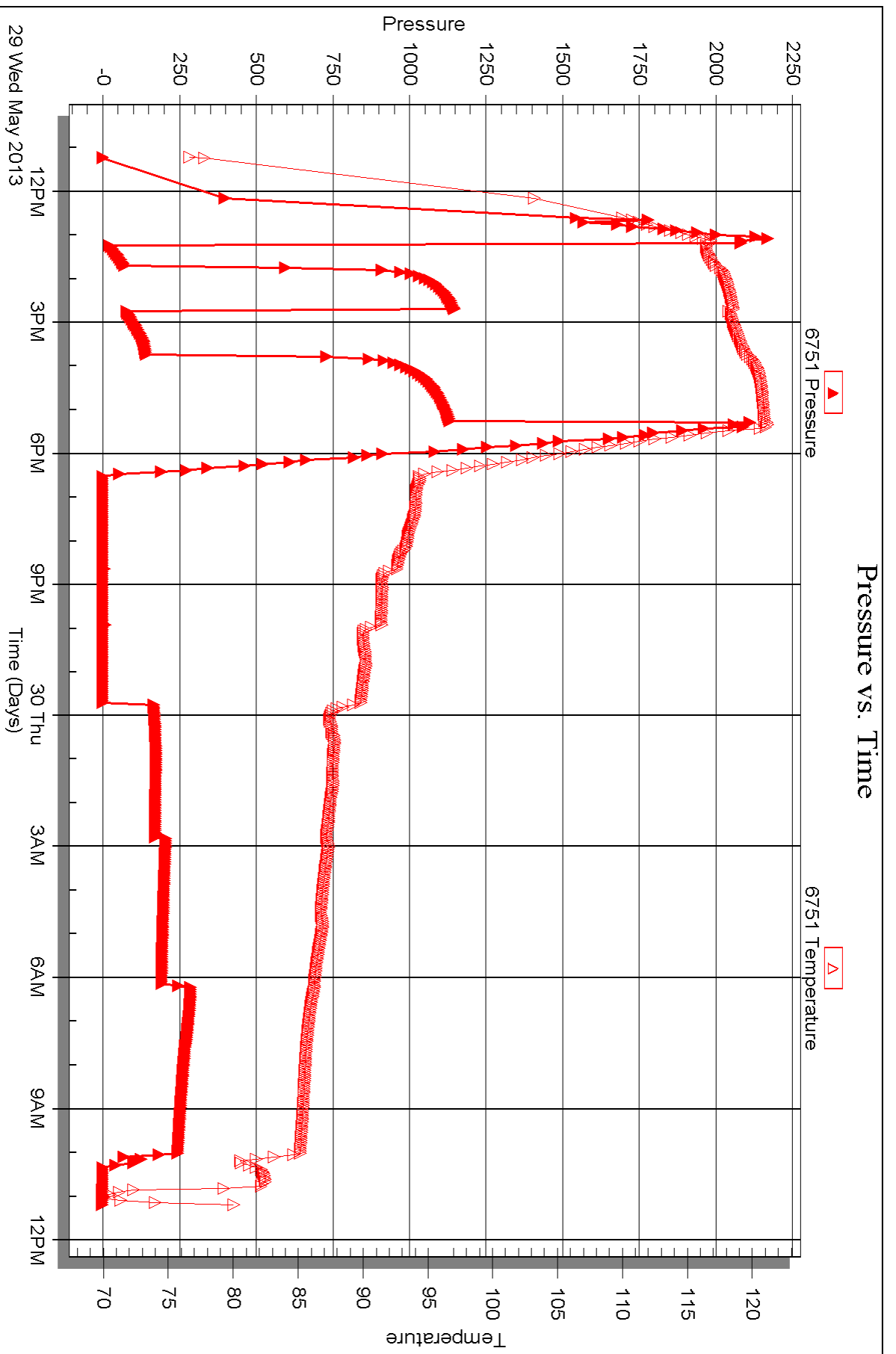


Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.30 @ 10:07:00

End Date: 2013.05.30 @ 19:22:40

Job Ticket #: 51752 DST #: 4

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

Printed: 2013.06.06 @ 11:48:45



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS

Kuhn #1-4

Job Ticket: 51752

DST#: 4

Test Start: 2013.05.30 @ 10:07:00

GENERAL INFORMATION:

Formation: **Lansing 'K- L'**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 12:31:00
 Tester: Chuck Smith
 Time Test Ended: 19:22:40
 Unit No: 62
 Interval: **4230.00 ft (KB) To 4295.00 ft (KB) (TVD)**
 Reference Elevations: 3022.00 ft (KB)
 Total Depth: 4295.00 ft (KB) (TVD)
 3011.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Good
 KB to GR/CF: 11.00 ft

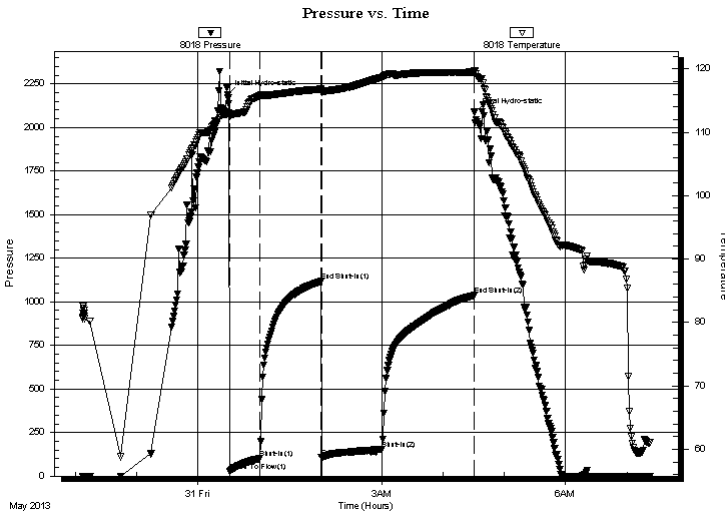
Serial #: 8018

Inside

Press @ RunDepth: 154.19 psig @ 4234.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.05.30 End Date: 2013.05.31 Last Calib.: 2013.05.31
 Start Time: 22:07:02 End Time: 07:22:40 Time On Btm: 2013.05.31 @ 00:29:00
 Time Off Btm: 2013.05.31 @ 04:30:50

TEST COMMENT: 7" Blow .
 No return.
 6" Blow .
 No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2186.14	112.97	Initial Hydro-static
2	27.46	112.49	Open To Flow (1)
32	102.32	115.87	Shut-In(1)
92	1117.97	116.80	End Shut-In(1)
92	108.08	116.28	Open To Flow (2)
152	154.19	118.68	Shut-In(2)
242	1037.12	119.47	End Shut-In(2)
242	2087.45	119.76	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
117.00	OSWM 20w 80m	0.58
183.00	OSM 100m	1.49

* 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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51752

DST#: 4

ATTN: Tom Funk

Test Start: 2013.05.30 @ 10:07:00

Tool Information

Drill Pipe:	Length: 3977.00 ft	Diameter: 3.80 inches	Volume: 55.79 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 56.95 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.50 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4230.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	65.00 ft			
Tool Length:	92.50 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			4203.50	
Shut In Tool	5.00			4208.50	
Hydraulic tool	5.00			4213.50	
Jars	5.00			4218.50	
Safety Joint	2.50			4221.00	
Packer	5.00			4226.00	27.50 Bottom Of Top Packer
Packer	4.00			4230.00	
Stubb	1.00			4231.00	
Perforations	3.00			4234.00	
Recorder	0.00	8018	Inside	4234.00	
Recorder	0.00	6751	Outside	4234.00	
Perforations	25.00			4259.00	
Change Over Sub	1.00			4260.00	
Drill Pipe	31.00			4291.00	
Change Over Sub	1.00			4292.00	
Bullnose	3.00			4295.00	65.00 Bottom Packers & Anchor
Total Tool Length:	92.50				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51752

DST#: 4

ATTN: Tom Funk

Test Start: 2013.05.30 @ 10:07:00

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:

63000 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: 3200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
117.00	OSWM 20w 80m	0.575
183.00	OSM 100m	1.492

Total Length: 300.00 ft Total Volume: 2.067 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .175 @ 50 Degrees F = 63000 PPM

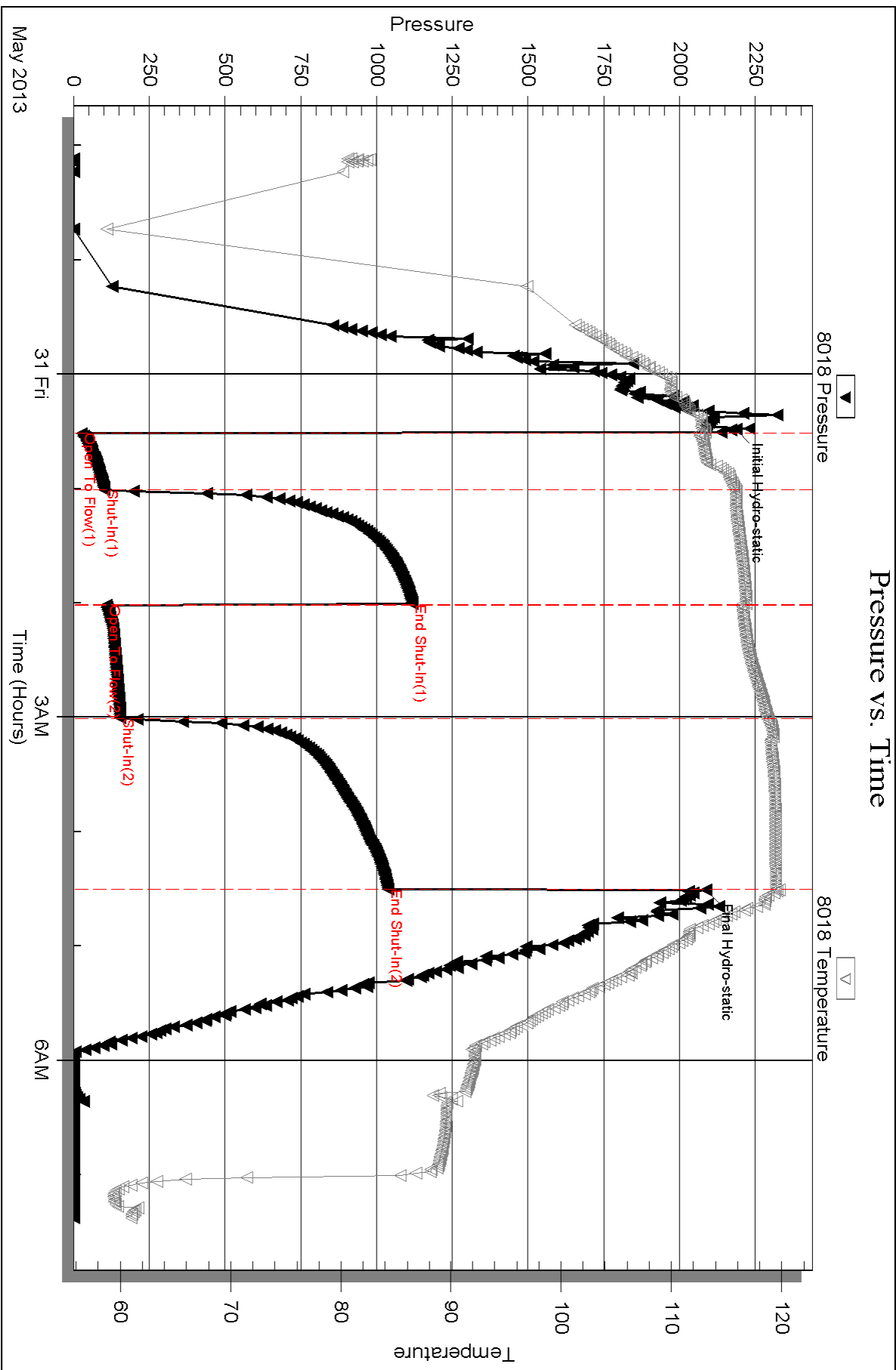
Serial #: 8018

Inside

Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 4

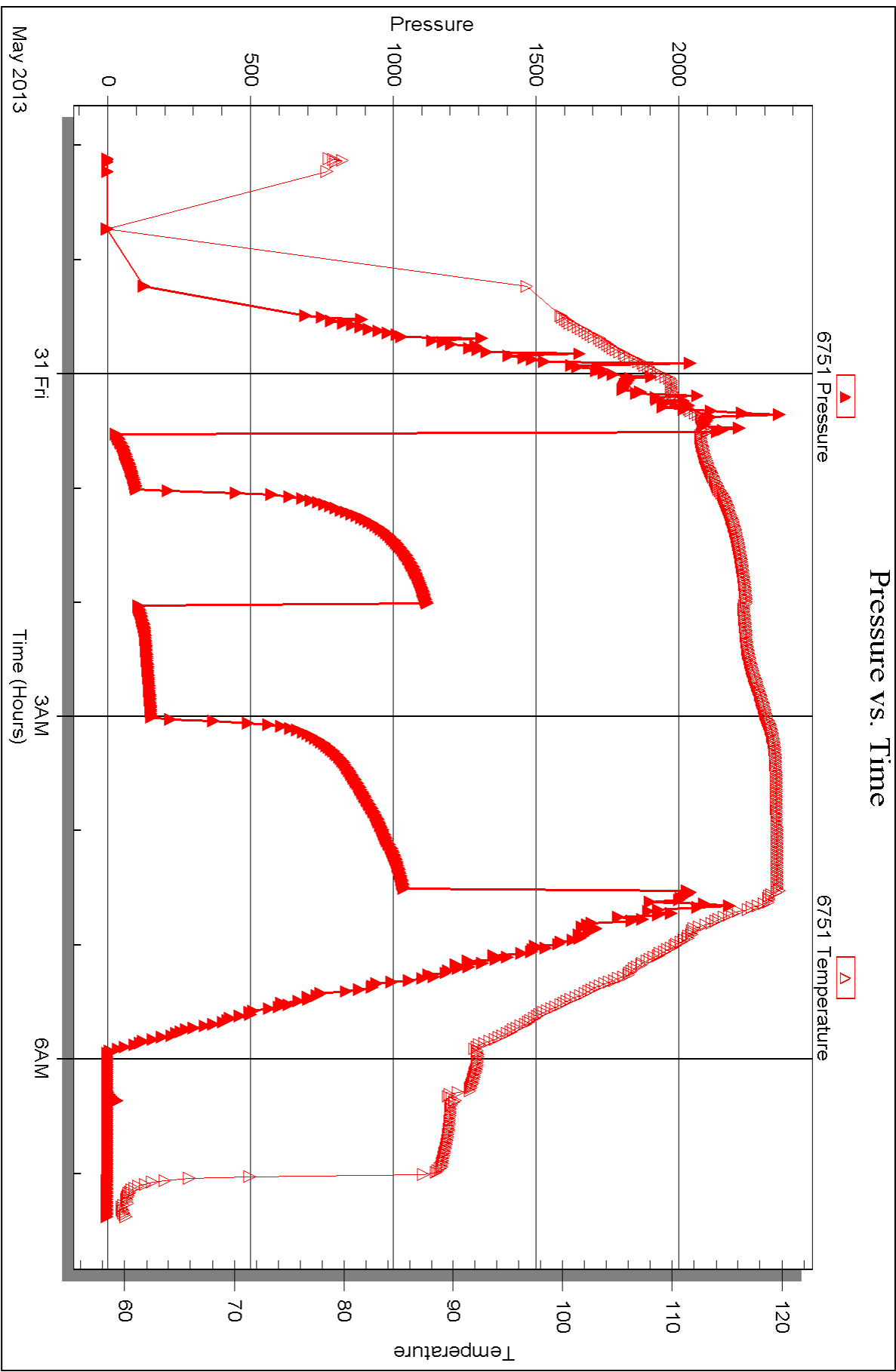


Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.31 @ 22:31:00

End Date: 2013.06.01 @ 07:28:40

Job Ticket #: 51753 DST #: 5

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

Printed: 2013.06.06 @ 11:47:44

Murfin Drilling Co. S4-13s-32w Logan,KS Kuhn #1-4 DST # 5 Lenapah - Altamont 2013.05.31



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS
Kuhn #1-4
Job Ticket: 51753 **DST#: 5**
Test Start: 2013.05.31 @ 22:31:00

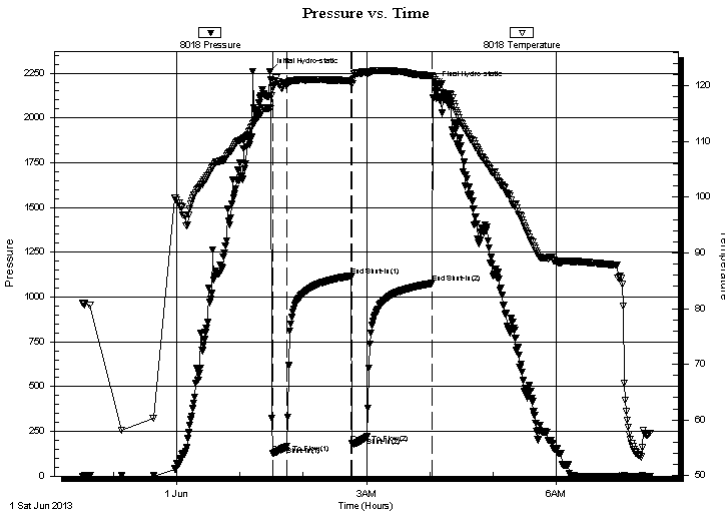
GENERAL INFORMATION:

Formation: **Lenapah - Altamont**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 01:31:00 Tester: Chuck Smith
Time Test Ended: 07:28:40 Unit No: 62
Interval: 4295.00 ft (KB) To 4420.00 ft (KB) (TVD) Reference Elevations: 3022.00 ft (KB)
Total Depth: 4420.00 ft (KB) (TVD) 3011.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

Serial #: 8018 Inside
Press @ Run Depth: 219.68 psig @ 4296.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2013.05.31 End Date: 2013.06.01 Last Calib.: 2013.06.01
Start Time: 22:31:02 End Time: 07:28:40 Time On Btm: 2013.06.01 @ 01:28:20
Time Off Btm: 2013.06.01 @ 04:05:09

TEST COMMENT: B.O.B. @ 3 min.
10" Blow .
B.O.B. @ 5 1/2 min.
B.O.B. @ 32 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2256.20	116.10	Initial Hydro-static
3	126.26	119.83	Open To Flow (1)
17	165.46	120.13	Shut-In(1)
77	1117.68	120.91	End Shut-In(1)
79	183.31	120.44	Open To Flow (2)
93	219.68	122.22	Shut-In(2)
155	1077.16	121.85	End Shut-In(2)
157	2182.86	121.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
297.00	GMCO 20g 15m 65o	2.03
186.00	GMCO 20g 5m 75o	2.61
31.00	GO 30g 70o	0.43
0.00	1615' GIP	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N. Water Suite 300
 Wichita, KS 67202
 ATTN: Tom Funk

S4-13s-32w Logan, KS

Kuhn #1-4

Job Ticket: 51753

DST#: 5

Test Start: 2013.05.31 @ 22:31:00

GENERAL INFORMATION:

Formation: **Lenapah - Altamont**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:31:00

Time Test Ended: 07:28:40

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 62

Interval: **4295.00 ft (KB) To 4420.00 ft (KB) (TVD)**

Reference Elevations: 3022.00 ft (KB)

Total Depth: 4420.00 ft (KB) (TVD)

3011.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6751 Outside

Press @ Run Depth: psig @ 4296.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.05.31

End Date:

2013.06.01

Last Calib.:

2013.06.01

Start Time: 22:31:05

End Time:

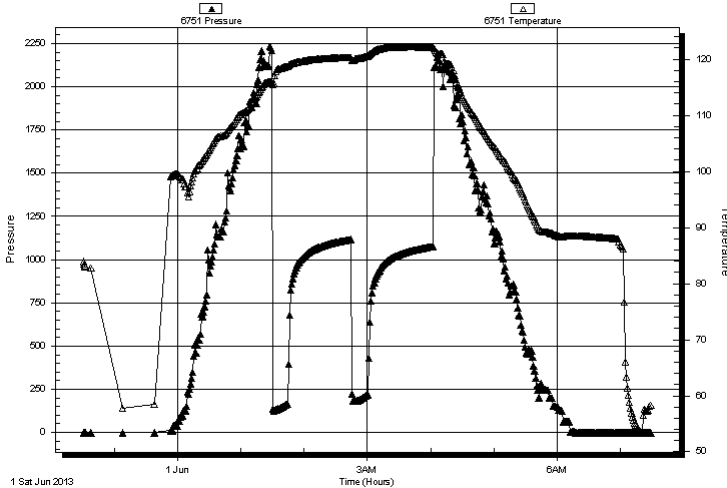
07:28:39

Time On Btm:

Time Off Btm:

TEST COMMENT: B.O.B. @ 3 min.
 10" Blow .
 B.O.B. @ 5 1/2 min.
 B.O.B. @ 32 min.

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
297.00	GMCO 20g 15m 65o	2.03
186.00	GMCO 20g 5m 75o	2.61
31.00	GO 30g 70o	0.43
0.00	1615' GIP	0.00

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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51753

DST#: 5

ATTN: Tom Funk

Test Start: 2013.05.31 @ 22:31:00

Tool Information

Drill Pipe:	Length: 4042.00 ft	Diameter: 3.80 inches	Volume: 56.70 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 100000.0 lb
			<u>Total Volume: 57.86 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.50 ft			String Weight: Initial 71000.00 lb
Depth to Top Packer:	4295.00 ft			Final 73000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	125.00 ft			
Tool Length:	152.50 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4268.50	
Shut In Tool	5.00			4273.50	
Hydraulic tool	5.00			4278.50	
Jars	5.00			4283.50	
Safety Joint	2.50			4286.00	
Packer	5.00			4291.00	27.50 Bottom Of Top Packer
Packer	4.00			4295.00	
Stubb	1.00			4296.00	
Recorder	0.00	8018	Inside	4296.00	
Recorder	0.00	6751	Outside	4296.00	
Perforations	25.00			4321.00	
Change Over Sub	1.00			4322.00	
Drill Pipe	94.00			4416.00	
Change Over Sub	1.00			4417.00	
Bullnose	3.00			4420.00	125.00 Bottom Packers & Anchor

Total Tool Length: 152.50



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51753

DST#: 5

ATTN: Tom Funk

Test Start: 2013.05.31 @ 22:31:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

26 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
297.00	GMCO 20g 15m 65o	2.025
186.00	GMCO 20g 5m 75o	2.609
31.00	GO 30g 70o	0.435
0.00	1615' GIP	0.000

Total Length: 514.00 ft Total Volume: 5.069 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

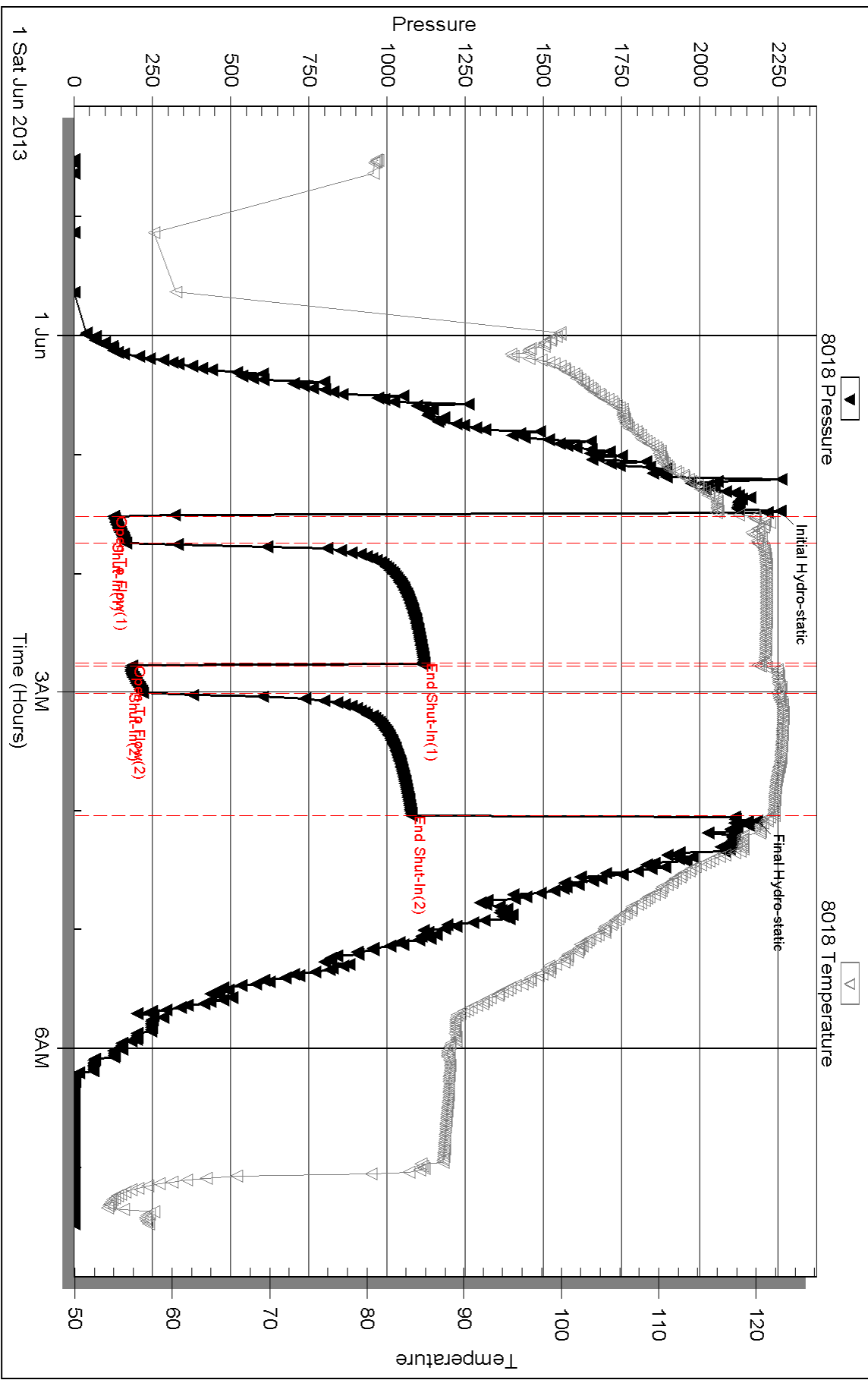
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 27 @ 70 Degrees F = 26.

Pressure vs. Time

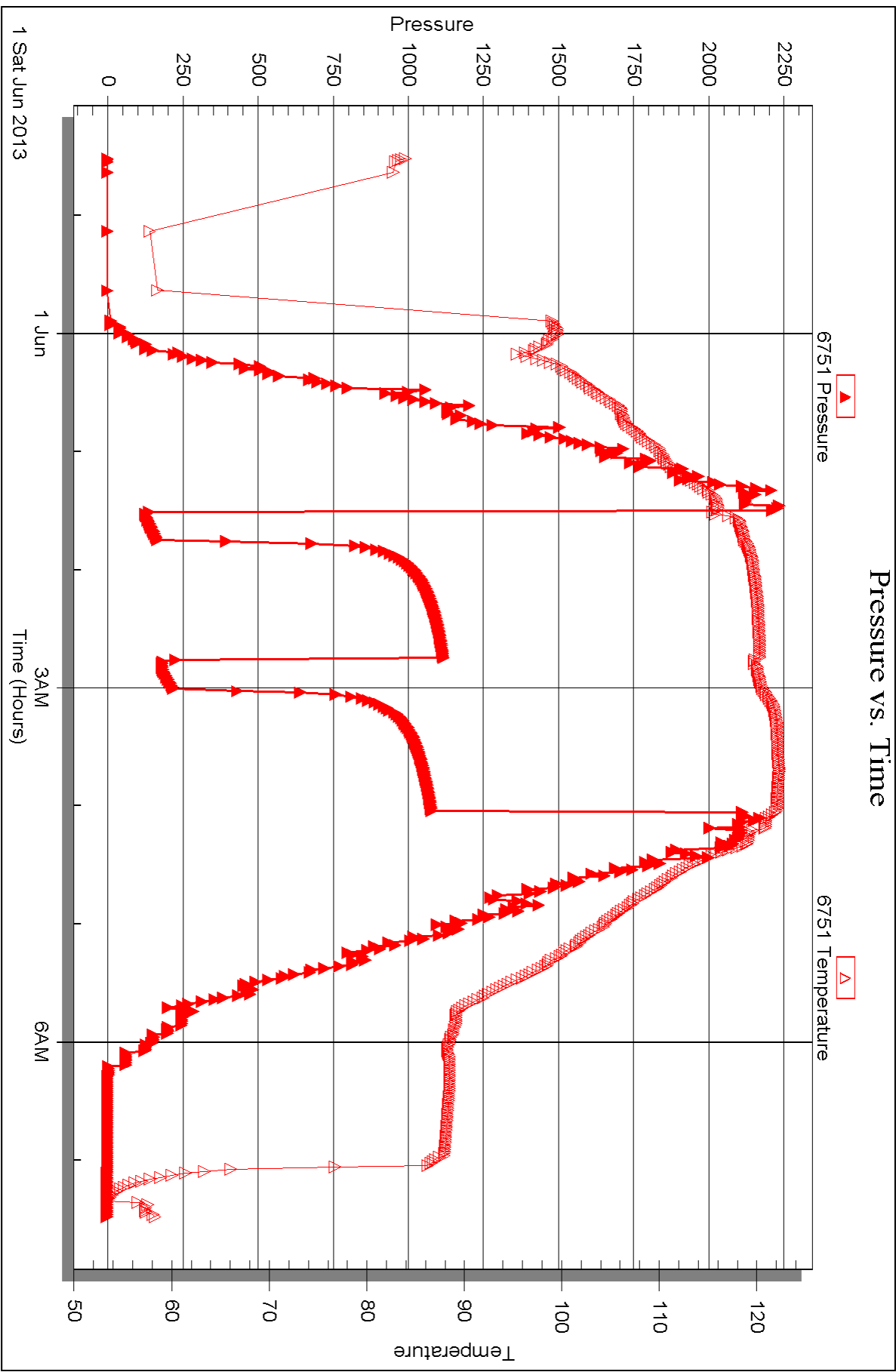


Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.05.31 @ 22:31:00

End Date: 2013.06.01 @ 07:28:40

Job Ticket #: 51753 DST #: 5

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

Printed: 2013.06.06 @ 11:46:35

Murfin Drilling Co. S4-13s-32w Logan,KS Kuhn #1-4 DST # 5 Lenapah - Altamont 2013.05.31



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS

Kuhn #1-4

Job Ticket: 51753

DST#: 5

Test Start: 2013.05.31 @ 22:31:00

GENERAL INFORMATION:

Formation: **Lenapah - Altamont**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:31:00

Time Test Ended: 07:28:40

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 62

Interval: 4295.00 ft (KB) To 4420.00 ft (KB) (TVD)

Reference Elevations: 3022.00 ft (KB)

Total Depth: 4420.00 ft (KB) (TVD)

3011.00 ft (CF)

Hole Diameter: 6.75 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8018

Inside

Press @ Run Depth: 219.68 psig @ 4296.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.05.31

End Date:

2013.06.01

Last Calib.:

2013.06.01

Start Time: 22:31:02

End Time:

07:28:40

Time On Btm:

2013.06.01 @ 01:28:20

Time Off Btm:

2013.06.01 @ 04:05:09

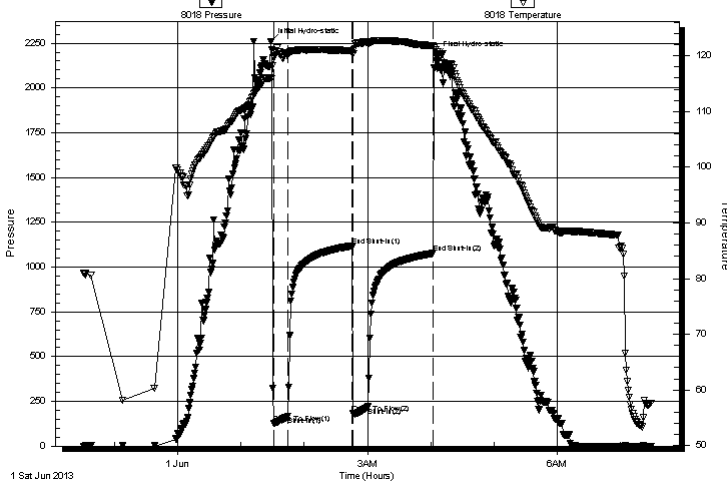
TEST COMMENT: B.O.B. @ 3 min.

10" Blow .

B.O.B. @ 5 1/2 min.

B.O.B. @ 32 min.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2256.20	116.10	Initial Hydro-static
3	126.26	119.83	Open To Flow (1)
17	165.46	120.13	Shut-In(1)
77	1117.68	120.91	End Shut-In(1)
79	183.31	120.44	Open To Flow (2)
93	219.68	122.22	Shut-In(2)
155	1077.16	121.85	End Shut-In(2)
157	2182.86	121.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
297.00	GMCO 20g 15m 65o	2.03
186.00	GMCO 20g 5m 75o	2.61
31.00	GO 30g 70o	0.43
0.00	1615' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51753

DST#: 5

ATTN: Tom Funk

Test Start: 2013.05.31 @ 22:31:00

GENERAL INFORMATION:

Formation: **Lenapah - Altamont**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:31:00

Time Test Ended: 07:28:40

Test Type: Conventional Bottom Hole (Reset)

Tester: Chuck Smith

Unit No: 62

Interval: 4295.00 ft (KB) To 4420.00 ft (KB) (TVD)

Reference Elevations: 3022.00 ft (KB)

Total Depth: 4420.00 ft (KB) (TVD)

3011.00 ft (CF)

Hole Diameter: 6.75 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6751 Outside

Press @ Run Depth: psig @ 4296.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.05.31

End Date:

2013.06.01

Last Calib.:

2013.06.01

Start Time: 22:31:05

End Time:

07:28:39

Time On Btm:

Time Off Btm:

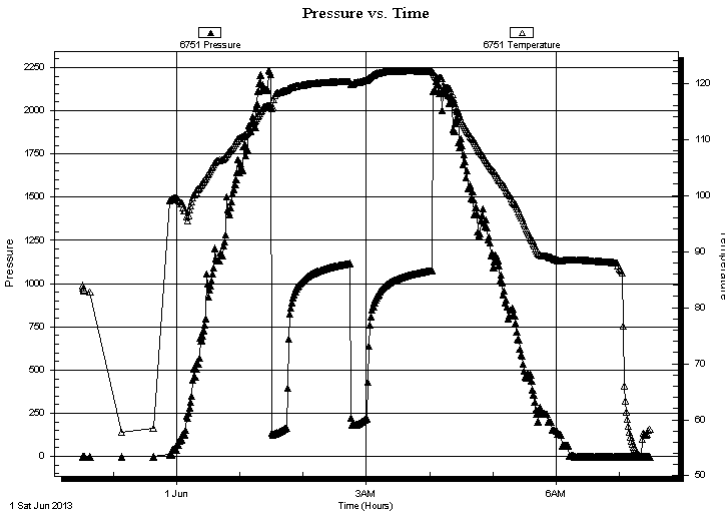
TEST COMMENT: B.O.B. @ 3 min.

10" Blow .

B.O.B. @ 5 1/2 min.

B.O.B. @ 32 min.

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
297.00	GMCO 20g 15m 65o	2.03
186.00	GMCO 20g 5m 75o	2.61
31.00	GO 30g 70o	0.43
0.00	1615' GIP	0.00

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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51753

DST#: 5

ATTN: Tom Funk

Test Start: 2013.05.31 @ 22:31:00

Tool Information

Drill Pipe:	Length: 4042.00 ft	Diameter: 3.80 inches	Volume: 56.70 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 100000.0 lb
			<u>Total Volume: 57.86 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.50 ft			String Weight: Initial 71000.00 lb
Depth to Top Packer:	4295.00 ft			Final 73000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	125.00 ft			
Tool Length:	152.50 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4268.50	
Shut In Tool	5.00			4273.50	
Hydraulic tool	5.00			4278.50	
Jars	5.00			4283.50	
Safety Joint	2.50			4286.00	
Packer	5.00			4291.00	27.50 Bottom Of Top Packer
Packer	4.00			4295.00	
Stubb	1.00			4296.00	
Recorder	0.00	8018	Inside	4296.00	
Recorder	0.00	6751	Outside	4296.00	
Perforations	25.00			4321.00	
Change Over Sub	1.00			4322.00	
Drill Pipe	94.00			4416.00	
Change Over Sub	1.00			4417.00	
Bullnose	3.00			4420.00	125.00 Bottom Packers & Anchor

Total Tool Length: 152.50



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51753

DST#: 5

ATTN: Tom Funk

Test Start: 2013.05.31 @ 22:31:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

26 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
297.00	GMCO 20g 15m 65o	2.025
186.00	GMCO 20g 5m 75o	2.609
31.00	GO 30g 70o	0.435
0.00	1615' GIP	0.000

Total Length: 514.00 ft Total Volume: 5.069 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

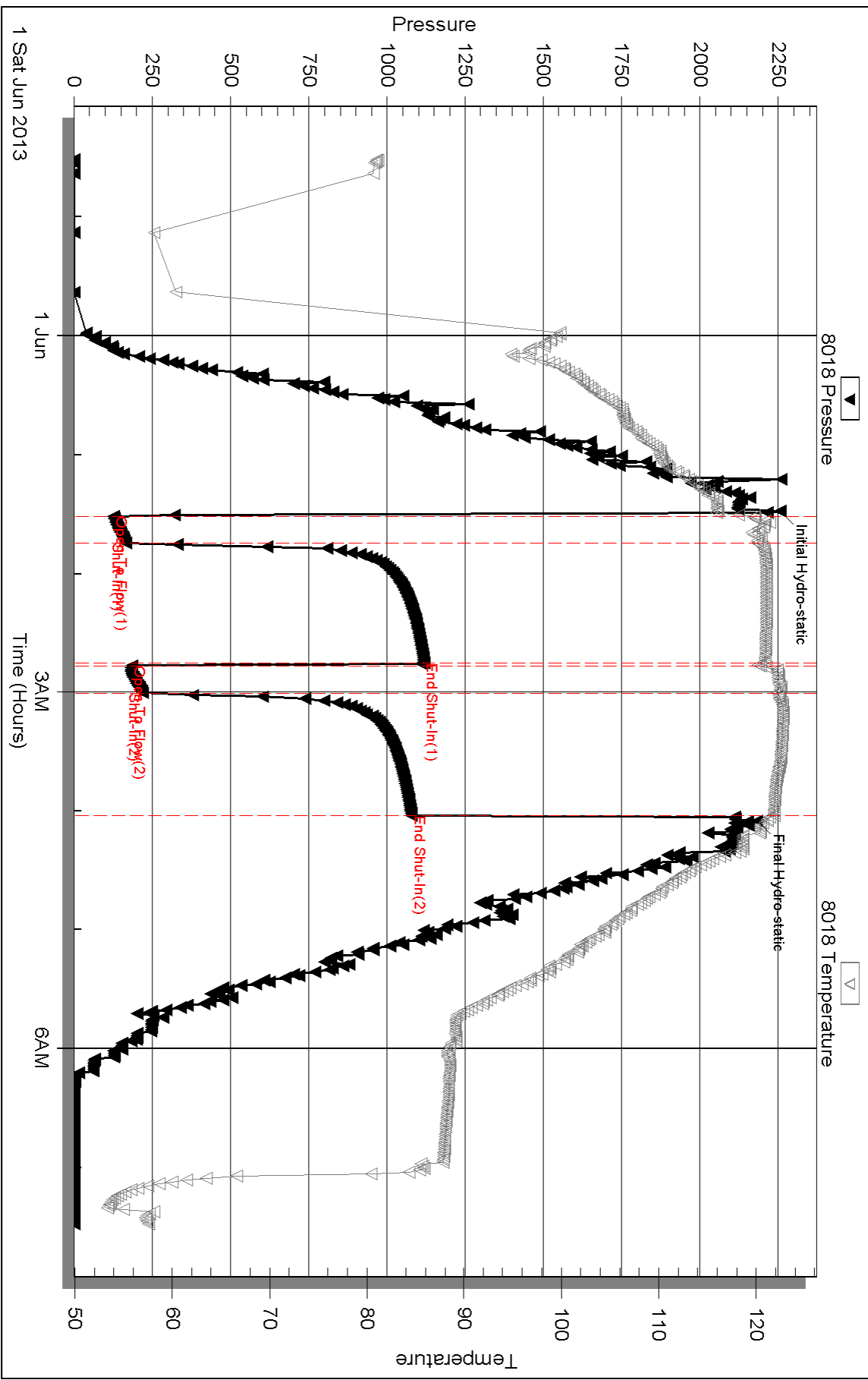
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 27 @ 70 Degrees F = 26.

Pressure vs. Time

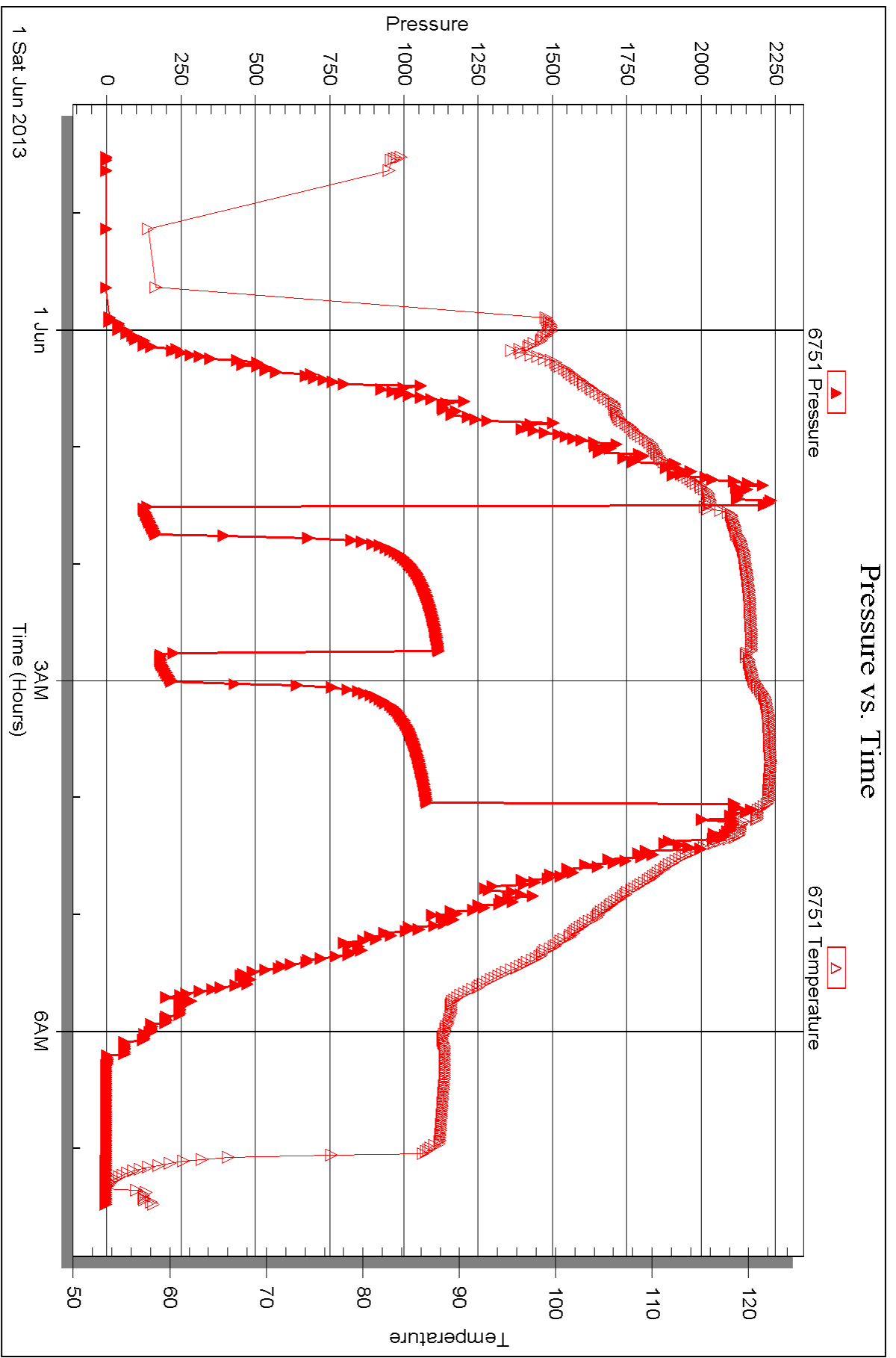


Serial #: 6751

Outside Murfin Drilling Co.

Kuhn #1-4

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 51753

Printed: 2013.06.06 @ 11:46:38



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Suite 300
Wichita, KS 67202

ATTN: Tom Funk

Kuhn #1-4

S4-13s-32w Logan,KS

Start Date: 2013.06.02 @ 19:36:00

End Date: 2013.06.03 @ 03:15:20

Job Ticket #: 51755 DST #: 7

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

Printed: 2013.06.06 @ 11:44:59

Murfin Drilling Co. S4-13s-32w Logan,KS Kuhn #1-4 DST # 7 Johnson 2013.06.02



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co.
 250 N. Water Suite 300
 Wichita, KS 67202
 ATTN: Tom Funk

S4-13s-32w Logan,KS

Kuhn #1-4

Job Ticket: 51755

DST#: 7

Test Start: 2013.06.02 @ 19:36:00

GENERAL INFORMATION:

Formation: **Johnson**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 21:47:20
 Time Test Ended: 03:15:20
 Interval: **4532.00 ft (KB) To 4581.00 ft (KB) (TVD)**
 Total Depth: 4581.00 ft (KB) (TVD)
 Hole Diameter: 6.75 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Chuck Smith
 Unit No: 62
 Reference Elevations: 3022.00 ft (KB)
 3011.00 ft (CF)
 KB to GR/CF: 11.00 ft

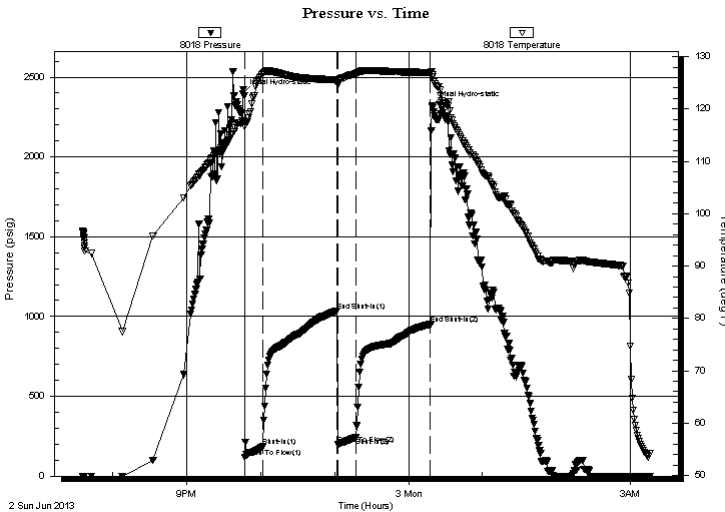
Serial #: 8018

Inside

Press @ Run Depth: 241.52 psig @ 4533.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.06.02 End Date: 2013.06.03 Last Calib.: 2013.06.03
 Start Time: 19:36:02 End Time: 03:15:19 Time On Btm: 2013.06.02 @ 21:45:50
 Time Off Btm: 2013.06.03 @ 00:19:20

TEST COMMENT: B.O.B. @ 4 1/2 min.
 B.O.B. @ 16 min.
 B.O.B. @ 7 min.
 B.O.B. @ 33 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2397.00	117.35	Initial Hydro-static
2	118.99	116.63	Open To Flow (1)
17	185.39	126.78	Shut-In(1)
77	1034.98	125.53	End Shut-In(1)
77	199.32	124.68	Open To Flow (2)
92	241.52	126.66	Shut-In(2)
152	951.17	126.96	End Shut-In(2)
154	2319.44	126.50	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
235.00	GOCM 15g 35o 50m	1.16
124.00	GMCO 40g 25m35o	1.74
62.00	GMCO 30g 5m 65o	0.87
124.00	GO 50g 50o	1.74
0.00	1178' GIP	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Suite 300
Wichita, KS 67202
ATTN: Tom Funk

S4-13s-32w Logan,KS
Kuhn #1-4
Job Ticket: 51755 **DST#: 7**
Test Start: 2013.06.02 @ 19:36:00

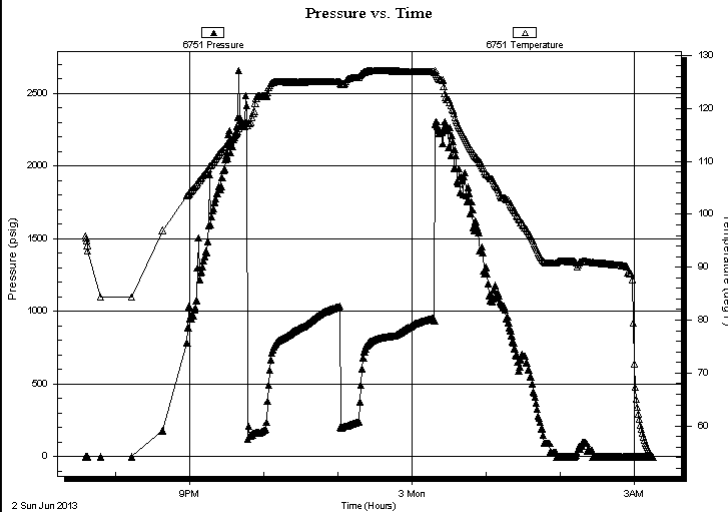
GENERAL INFORMATION:

Formation: **Johnson**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:47:20
Time Test Ended: 03:15:20
Interval: 4532.00 ft (KB) To 4581.00 ft (KB) (TVD)
Total Depth: 4581.00 ft (KB) (TVD)
Hole Diameter: 6.75 inches Hole Condition: Good
Reference Elevations: 3022.00 ft (KB)
3011.00 ft (CF)
KB to GR/CF: 11.00 ft
Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 62

Serial #: 6751 Outside

Press @ Run Depth: psig @ 4533.00 ft (KB)
Start Date: 2013.06.02 End Date: 2013.06.03
Start Time: 19:36:05 End Time: 03:15:20
Capacity: 8000.00 psig
Last Calib.: 2013.06.03
Time On Btm:
Time Off Btm:

TEST COMMENT: B.O.B. @ 4 1/2 min.
B.O.B. @ 16 min.
B.O.B. @ 7 min.
B.O.B. @ 33 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
235.00	GOCM 15g 35o 50m	1.16
124.00	GMCO 40g 25m35o	1.74
62.00	GMCO 30g 5m 65o	0.87
124.00	GO 50g 50o	1.74
0.00	1178' GIP	0.00

* 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.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51755

DST#: 7

ATTN: Tom Funk

Test Start: 2013.06.02 @ 19:36:00

Tool Information

Drill Pipe:	Length: 4292.00 ft	Diameter: 3.80 inches	Volume: 60.21 bbl	Tool Weight: 2300.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 235.00 ft	Diameter: 2.25 inches	Volume: 1.16 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 61.37 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.50 ft			String Weight: Initial 72000.00 lb
Depth to Top Packer:	4532.00 ft			Final 74000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	49.00 ft			
Tool Length:	76.50 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			4505.50	
Shut In Tool	5.00			4510.50	
Hydraulic tool	5.00			4515.50	
Jars	5.00			4520.50	
Safety Joint	2.50			4523.00	
Packer	5.00			4528.00	27.50 Bottom Of Top Packer
Packer	4.00			4532.00	
Stubb	1.00			4533.00	
Recorder	0.00	8018	Inside	4533.00	
Recorder	0.00	6751	Outside	4533.00	
Perforations	12.00			4545.00	
Change Over Sub	1.00			4546.00	
Drill Pipe	31.00			4577.00	
Change Over Sub	1.00			4578.00	
Bullnose	3.00			4581.00	49.00 Bottom Packers & Anchor

Total Tool Length: 76.50



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

S4-13s-32w Logan,KS

250 N. Water Suite 300
Wichita, KS 67202

Kuhn #1-4

Job Ticket: 51755

DST#: 7

ATTN: Tom Funk

Test Start: 2013.06.02 @ 19:36:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
235.00	GOCM 15g 35o 50m	1.156
124.00	GMCO 40g 25m35o	1.739
62.00	GMCO 30g 5m 65o	0.870
124.00	GO 50g 50o	1.739
0.00	1178' GIP	0.000

Total Length: 545.00 ft Total Volume: 5.504 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API: 28 @ 60 Degrees F = 28.

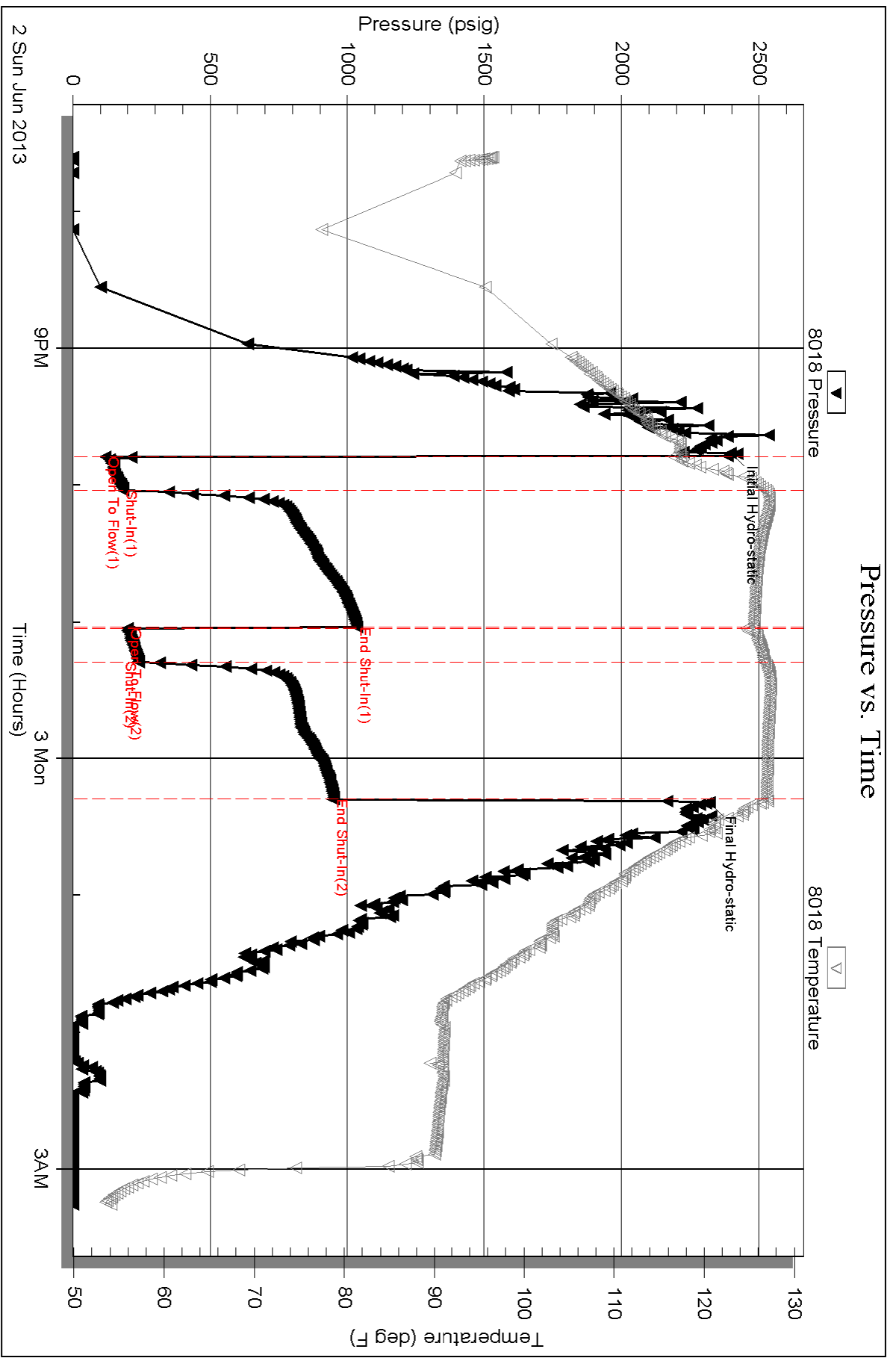
Serial #: 8018

Inside

Murfin Drilling Co.

Kuhn #1-4

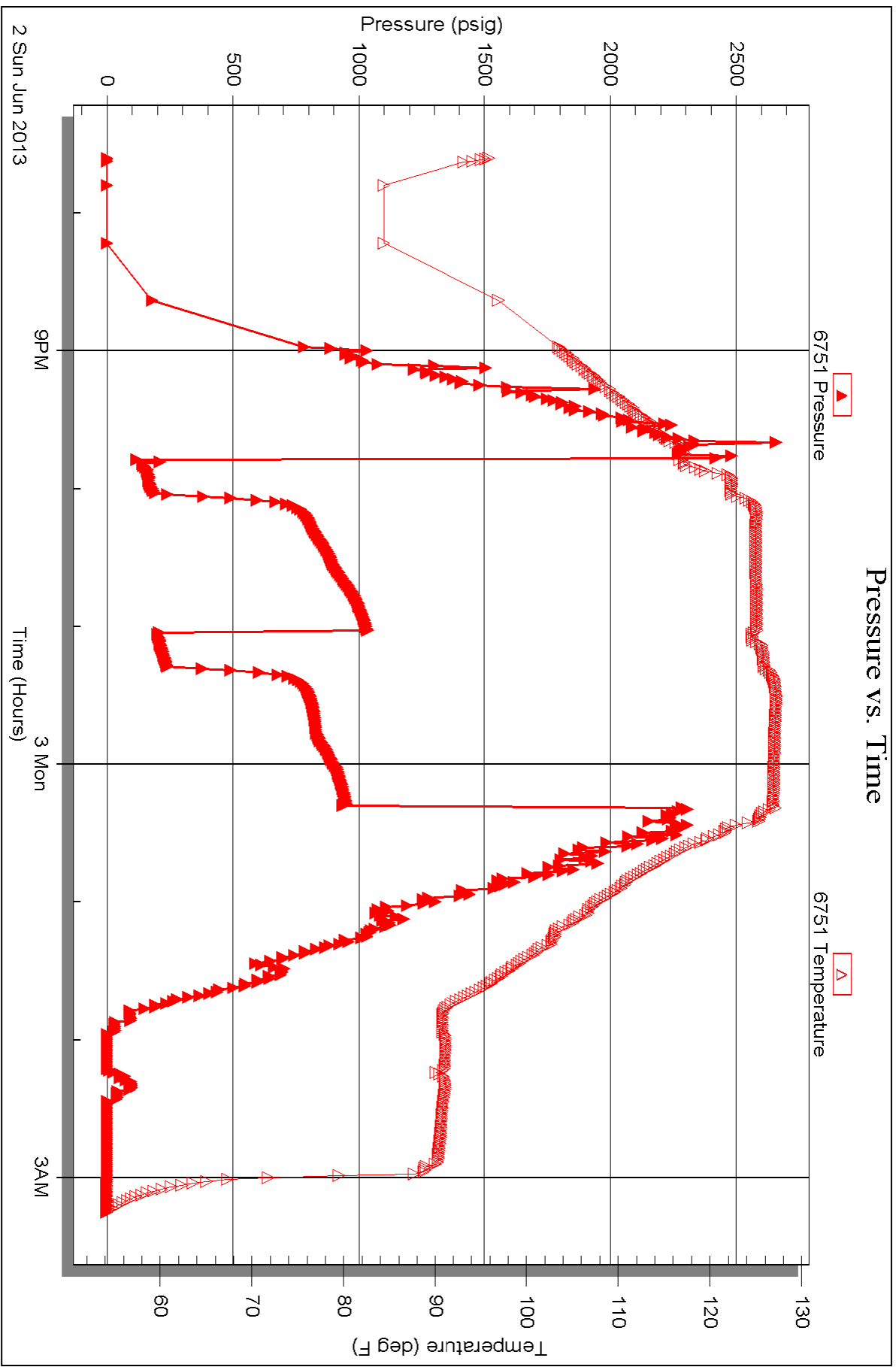
DST Test Number: 7

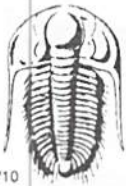


Triobite Testing, Inc

Ref. No: 51755

Printed: 2013.06.06 @ 11:45:02





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51748

4/10

Well Name & No.	<u>Kuhn #1-4</u>	Test No.	<u>1</u>	Date	<u>5-27-13</u>
Company	<u>Murfin Drilling Co.</u>	Elevation	<u>3022</u>	KB	<u>3011</u> GL
Address	<u>250 N. Water STE 300 Wichita, KS 67202</u>				
Co. Rep / Geo.	<u>Tom Funk</u>	Rig	<u>MDC #22</u>		
Location: Sec.	<u>4</u>	Twp.	<u>13</u>	Rge.	<u>32</u>
		Co.	<u>Logan</u>	State	<u>KS</u>

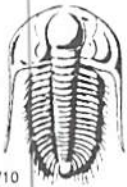
Interval Tested	<u>4027-4050</u>	Zone Tested	<u>Lansing 'B'</u>		
Anchor Length	<u>23</u>	Drill Pipe Run	<u>3792</u>	Mud Wt.	<u>9.3</u>
Top Packer Depth	<u>4023</u>	Drill Collars Run	<u>23.5</u>	Vis	<u>59</u>
Bottom Packer Depth	<u>4027</u>	Wt. Pipe Run	<u>-</u>	WL	<u>6.8</u>
Total Depth	<u>4050</u>	Chlorides	<u>2600</u> ppm System	LCM	<u>6"</u>
Blow Description	<u>6" Blow.</u>				
	<u>No return.</u>				
	<u>11" Blow.</u>				
	<u>No return.</u>				

Rec	<u>5</u>	Feet of	<u>SOCMW</u>	%gas	<u>1</u>	%oil	<u>50</u>	%water	<u>49</u>	%mud
Rec	<u>124</u>	Feet of	<u>MW</u>	%gas		%oil	<u>70</u>	%water	<u>30</u>	%mud
Rec	<u>175</u>	Feet of	<u>MW</u>	%gas		%oil	<u>90</u>	%water	<u>10</u>	%mud
Rec	<u>60</u>	Feet of	<u>OSMW</u>	%gas		%oil	<u>80</u>	%water	<u>20</u>	%mud
Rec		Feet of		%gas		%oil		%water		%mud

Rec Total	<u>364</u>	BHT	<u>122</u>	Gravity	<u>-</u>	API RW	<u>.170</u> @ <u>58</u> °F	Chlorides	<u>54,000</u> ppm
(A) Initial Hydrostatic	<u>2026</u>	<input checked="" type="checkbox"/>	Test	<u>1250</u>	T-On Location	<u>17:45</u>			
(B) First Initial Flow	<u>19</u>	<input checked="" type="checkbox"/>	Jars	<u>250</u>	T-Started	<u>18:00</u>			
(C) First Final Flow	<u>99</u>	<input checked="" type="checkbox"/>	Safety Joint	<u>75</u>	T-Open	<u>19:58</u>			
(D) Initial Shut-In	<u>1198</u>	<input checked="" type="checkbox"/>	Circ Sub	<u>N/C</u>	T-Pulled	<u>23:58</u>			
(E) Second Initial Flow	<u>103</u>	<input type="checkbox"/>	Hourly Standby		T-Out	<u>1:54</u>			
(F) Second Final Flow	<u>183</u>	<input checked="" type="checkbox"/>	Mileage	<u>76RT</u> 117.80	Comments				
(G) Final Shut-In	<u>1193</u>	<input type="checkbox"/>	Sampler						
(H) Final Hydrostatic	<u>2014</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>1692.80</u>			
		<input type="checkbox"/>	Accessibility		MP/DST Disc't				
		Sub Total	<u>1692.80</u>						

Approved By [Signature] Our Representative Chuck Smith

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51749

4/10

Well Name & No. Kuhn #1-4 Test No. 2 Date 5-28-13
 Company Murfin Drilling Co. Elevation 3022 KB 3011 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Tom Funk Rig MDC #22
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State Ks

Interval Tested 4077 - 4110 Zone Tested Lang Lansing 'E-F'
 Anchor Length 33 Drill Pipe Run 3853 Mud Wt. 9.1
 Top Packer Depth 4073 Drill Collars Run 235 Vis 60
 Bottom Packer Depth 4077 Wt. Pipe Run - WL 6.0
 Total Depth 4110 Chlorides 3000 ppm System LCM 4#
 Blow Description 3/4" Blow.
No return.
No blow.
No return.

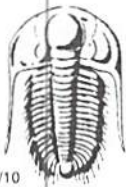
Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>58</u>	Feet of <u>SOCM</u>	%gas	<u>1</u> %oil	%water	<u>99</u> %mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 58 BHT 118 Gravity - API RW @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2049 Test 1250 T-On Location 11:30
 (B) First Initial Flow 16 Jars T-Started 11:50
 (C) First Final Flow 29 Safety Joint T-Open 14:10
 (D) Initial Shut-In 1121 Circ Sub N/C T-Pulled 17:10
 (E) Second Initial Flow 31 Hourly Standby T-Out 19:00
 (F) Second Final Flow 42 Mileage 76RT 117.80 Comments
 (G) Final Shut-In 1070 Sampler
 (H) Final Hydrostatic 2059 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies
 Initial Open 30 Extra Recorder Sub Total 0
 Initial Shut-In 60 Day Standby Total 1367.80
 Final Flow 30 Accessibility MP/DST Disc't
 Final Shut-In 60 Sub Total 1367.80

Approved By [Signature] Our Representative Chuck Smith

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51750

4/10

Well Name & No.	<u>Kuhn #1-4</u>	Test No.	<u>3</u>	Date	<u>5-29-13</u>
Company	<u>Murfin Drilling Co.</u>	Elevation	<u>3022</u>	KB	<u>3011</u> GL
Address	<u>250 N Water STE 300 Wichita, KS 67202</u>				
Co. Rep / Geo.	<u>Tom Funk</u>	Rig	<u>MDC #22</u>		
Location: Sec.	<u>4</u>	Twp.	<u>13</u>	Rge.	<u>32</u>
		Co.	<u>Logan</u>	State	<u>KS</u>

Interval Tested	<u>4175-4230</u>	Zone Tested	<u>Lansing 'I-J'</u>		
Anchor Length	<u>55</u>	Drill Pipe Run	<u>3945</u>	Mud Wt.	<u>9.2</u>
Top Packer Depth	<u>4171</u>	Drill Collars Run	<u>235</u>	Vis	<u>54</u>
Bottom Packer Depth	<u>4175</u>	Wt. Pipe Run	<u>-</u>	WL	<u>7.2</u>
Total Depth	<u>4230</u>	Chlorides	<u>3200</u> ppm System	LCM	<u>5[#]</u>
Blow Description	<u>4 1/2" Blow.</u>				
	<u>No return.</u>				
	<u>4" ReBlow.</u>				
	<u>No return</u>				

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>197</u>	Feet of <u>M</u>				
Rec <u>58</u>	Feet of <u>OSWM</u>			<u>10</u>	<u>90</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

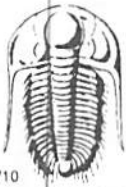
Rec Total 255 BHT 121 Gravity - API RW 170 @ 73 °F Chlorides 42000 ppm

(A) Initial Hydrostatic	<u>2152</u>	<input checked="" type="checkbox"/> Test	<u>1250</u>	T-On Location	<u>11:00</u>
(B) First Initial Flow	<u>20</u>	<input checked="" type="checkbox"/> Jars	<u>250</u>	T-Started	<u>11:13</u>
(C) First Final Flow	<u>73</u>	<input checked="" type="checkbox"/> Safety Joint	<u>75</u>	T-Open	<u>13:13</u>
(D) Initial Shut-In	<u>1150</u>	<input checked="" type="checkbox"/> Circ Sub	<u>NIC</u>	T-Pulled	<u>17:16</u>
(E) Second Initial Flow	<u>79</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>11:14 5-29-13</u>
(F) Second Final Flow	<u>142</u>	<input checked="" type="checkbox"/> Mileage	<u>76RT x2</u> 235.60	Comments	<u>30</u>
(G) Final Shut-In	<u>1134</u>	<input type="checkbox"/> Sampler		<u>Stopped pulling tool @ 58 stands due to damage to derrick board.</u>	
(H) Final Hydrostatic	<u>2140</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>800</u>
Final Shut-In	<u>90</u>	<input checked="" type="checkbox"/> Day Standby	<u>1d during test</u>	Total	<u>2610.60</u>
		<input type="checkbox"/> Accessibility		MP/DST Disc't	
		Sub Total	<u>1810.60</u>		

Approved By [Signature] Our Representative Chuck Smith

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51752

4/10

Well Name & No. Kuhn #1-4 Test No. 4 Date 5-30-13
 Company Murfin Drilling Co. Elevation 3022 KB 3011 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Tom Funk Rig MDC #22
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4230-4295 Zone Tested Lansing 'K-L'
 Anchor Length 65 Drill Pipe Run 3977 Mud Wt. 9.2
 Top Packer Depth 4226 Drill Collars Run 235 Vis 55
 Bottom Packer Depth 4230 Wt. Pipe Run 0 WL 6.8
 Total Depth 4295 Chlorides 3200 ppm System LCM 6#
 Blow Description 7" Blow.
No return
6" Blow.
No return.

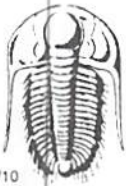
Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>183</u>	Feet of <u>OSM</u>			<u>100</u>	
Rec <u>117</u>	Feet of <u>OSWM</u>		<u>20</u>	<u>80</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 300 BHT 120 Gravity - API RW .175 @ 50 °F Chlorides 63000 ppm

(A) Initial Hydrostatic <u>2186</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>10:00 pm</u>
(B) First Initial Flow <u>28</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>22:07</u>
(C) First Final Flow <u>102</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>00:31</u>
(D) Initial Shut-In <u>1118</u>	<input checked="" type="checkbox"/> Circ Sub <u>NK</u>	T-Pulled <u>4:31</u>
(E) Second Initial Flow <u>108</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>7:23</u>
(F) Second Final Flow <u>154</u>	<input checked="" type="checkbox"/> Mileage <u>76RT</u> 117.80	Comments
(G) Final Shut-In <u>1037</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2087</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>1692.80</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1692.80</u>	

Approved By Tom Funk Our Representative Chuck Smith

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51753

4/10

Well Name & No. Kuhn #1-4 Test No. 5 Date 5-31-13
 Company Murfin Drilling Co. Elevation 3022 KB 3011 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Tom Funk Rig MDC #22
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4295 - 4420 Zone Tested Lenapah - Altamont
 Anchor Length 125 Drill Pipe Run 4042 Mud Wt. 9.3
 Top Packer Depth 4291 Drill Collars Run 235 Vis 55
 Bottom Packer Depth 4295 Wt. Pipe Run - WL 7.6
 Total Depth 4420 Chlorides 3000 ppm System LCM 5[#]
 Blow Description B.O.B. @ 3 min.
10" Return.
B.O.B. @ 5 1/2 min.
B.O.B. @ 32 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>31</u>	<u>G-O</u>	<u>30</u>	<u>70</u>		
<u>186</u>	<u>GMCO</u>	<u>20</u>	<u>75</u>		<u>5</u>
<u>297</u>	<u>GMCO</u>	<u>20</u>	<u>65</u>		<u>15</u>

Rec Total 514 BHT 122 Gravity 26 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic	<u>2256</u>	<input checked="" type="checkbox"/> Test	<u>1250</u>	T-On Location	<u>22:15</u>
(B) First Initial Flow	<u>126</u>	<input checked="" type="checkbox"/> Jars	<u>250</u>	T-Started	<u>22:31</u>
(C) First Final Flow	<u>165</u>	<input checked="" type="checkbox"/> Safety Joint	<u>75</u>	T-Open	<u>1:31</u>
(D) Initial Shut-In	<u>1118</u>	<input checked="" type="checkbox"/> Circ Sub	<u>N/C</u>	T-Pulled	<u>7:03</u>
(E) Second Initial Flow	<u>183</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>7:29</u>
(F) Second Final Flow	<u>220</u>	<input checked="" type="checkbox"/> Mileage	<u>76RT</u> 117.80	Comments	<u>Some rubber left</u>
(G) Final Shut-In	<u>1077</u>	<input type="checkbox"/> Sampler			<u>in the hole.</u>
(H) Final Hydrostatic	<u>2183</u>	<input type="checkbox"/> Straddle		<input checked="" type="checkbox"/> Ruined Shale Packer	
Initial Open	<u>15</u>	<input type="checkbox"/> Shale Packer		<input checked="" type="checkbox"/> Ruined Packer	<u>320</u>
Initial Shut-In	<u>60</u>	<input type="checkbox"/> Extra Packer		<input type="checkbox"/> Extra Copies	
Final Flow	<u>15</u>	<input type="checkbox"/> Extra Recorder		Sub Total	<u>0</u>
Final Shut-In	<u>60</u>	<input type="checkbox"/> Day Standby		Total	<u>2012.80</u>
		<input type="checkbox"/> Accessibility		MP/DST Disc't	
		Sub Total	<u>1692.80</u>		

Approved By [Signature] Our Representative Chuck Smith

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51754

4/10

Well Name & No.	<u>Kuhn # 1-4</u>	Test No.	<u>6</u>	Date	<u>6-1-13</u>
Company	<u>Murfin Drilling Co.</u>	Elevation	<u>3022</u>	KB	<u>3011</u> GL
Address	<u>250 N. Water STE 300 Wichita, KS 67202</u>				
Co. Rep / Geo.	<u>Tom Funk</u>	Rig	<u>MDC #22</u>		
Location: Sec.	<u>4</u>	Twp.	<u>13</u>	Rge.	<u>32</u>
		Co.	<u>Logan</u>	State	<u>KS</u>

Interval Tested	<u>4422 - 4505</u>	Zone Tested	<u>Pawnee - Ft. Scott</u>		
Anchor Length	<u>83</u>	Drill Pipe Run	<u>4167</u>	Mud Wt.	<u>9.2</u>
Top Packer Depth	<u>4418</u>	Drill Collars Run	<u>235</u>	Vis	<u>50</u>
Bottom Packer Depth	<u>4422</u>	Wt. Pipe Run	<u>-</u>	WL	<u>7.6</u>
Total Depth	<u>4505</u>	Chlorides	<u>3600</u> ppm System	LCM	<u>6[#]</u>

Blow Description B.O.B. @ 9 min.
11" Return
B.O.B. @ 12 min.
B.O.B. @ 13 min.

Rec	<u>35</u>	Feet of	<u>GOCM</u>	<u>10</u> %gas	<u>20</u> %oil	%water	<u>70</u> %mud
Rec	<u>124</u>	Feet of	<u>GMOO</u>	<u>50</u> %gas	<u>30</u> %oil	%water	<u>20</u> %mud
Rec	<u>180</u>	Feet of	<u>GOCM</u>	<u>45</u> %gas	<u>15</u> %oil	%water	<u>40</u> %mud
Rec	<u>117</u>	Feet of	<u>GOCM</u>	<u>10</u> %gas	<u>35</u> %oil	%water	<u>55</u> %mud
Rec		Feet of	<u>1645 GIP</u>	%gas	%oil	%water	%mud

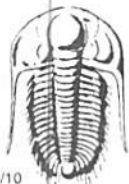
Rec Total 456 BHT 124 Gravity _____ API RW _____ @ _____ °F Chlorides - ppm

(A) Initial Hydrostatic	<u>2316</u>	<input checked="" type="checkbox"/> Test	<u>1250</u>	T-On Location	<u>23:15</u>
(B) First Initial Flow	<u>64</u>	<input checked="" type="checkbox"/> Jars	<u>250</u>	T-Started	<u>23:27</u>
(C) First Final Flow	<u>148</u>	<input checked="" type="checkbox"/> Safety Joint	<u>75</u>	T-Open	<u>1:48</u>
(D) Initial Shut-In	<u>1088</u>	<input checked="" type="checkbox"/> Circ Sub	<u>NIC</u>	T-Pulled	<u>4:51</u>
(E) Second Initial Flow	<u>154</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>7:27</u>
(F) Second Final Flow	<u>204</u>	<input checked="" type="checkbox"/> Mileage	<u>76 RT</u> 117.80	Comments	
(G) Final Shut-In	<u>1054</u>	<input type="checkbox"/> Sampler			
(H) Final Hydrostatic	<u>2269</u>	<input type="checkbox"/> Straddle			

Initial Open	<u>30</u>	<input type="checkbox"/> Shale Packer		<input type="checkbox"/> Ruined Shale Packer	
Initial Shut-In	<u>60</u>	<input type="checkbox"/> Extra Packer		<input type="checkbox"/> Ruined Packer	
Final Flow	<u>30</u>	<input type="checkbox"/> Extra Recorder		<input type="checkbox"/> Extra Copies	
Final Shut-In	<u>60</u>	<input type="checkbox"/> Day Standby		Sub Total	<u>0</u>
		<input type="checkbox"/> Accessibility		Total	<u>1692.80</u>
		Sub Total	<u>1692.80</u>	MP/DST Disc't	

Approved By [Signature] Our Representative Chuck Smith

Trilobite Testing Inc. shall not be liable for damaged or 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.

1516 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51755

4/10

Well Name & No. Kuhn #1-4 Test No. 7 Date 6-2-13
 Company Murfin Drilling Co. Elevation 3022 KB 3011 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Tom Funk Rig MDC #22
 Location: Sec. 4 Twp. 13 Rge. 32 Co. Logan State KS

Interval Tested 4532 - 4581 Zone Tested Johnson
 Anchor Length 49 Drill Pipe Run 4292 Mud Wt. 9.2
 Top Packer Depth 4528 Drill Collars Run 235 Vis 60
 Bottom Packer Depth 4532 Wt. Pipe Run - WL 7.6
 Total Depth 4581 Chlorides 3900 ppm System LCM 6"

Blow Description B.O.B. @ 4 1/2 min.
B.O.B. @ 16 min.
B.O.B. @ 7 min.
B.O.B. @ 33 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>124</u>	<u>60</u>	<u>50</u>	<u>50</u>		
<u>62</u>	<u>GMCO</u>	<u>30</u>	<u>65</u>		<u>5</u>
<u>124</u>	<u>GMCO</u>	<u>40</u>	<u>35</u>		<u>25</u>
<u>235</u>	<u>GOCM</u>	<u>15</u>	<u>35</u>		<u>50</u>
	<u>1178' GIP</u>				

Rec Total 545 BHT 127 Gravity 28 API RW @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>2397</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>19:30</u>
(B) First Initial Flow <u>119</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>19:36</u>
(C) First Final Flow <u>185</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>21:47</u>
(D) Initial Shut-In <u>1035</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>00:18</u>
(E) Second Initial Flow <u>199</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>3:15</u>
(F) Second Final Flow <u>242</u>	<input checked="" type="checkbox"/> Mileage <u>76RT</u> 117.80	Comments
(G) Final Shut-In <u>951</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2319</u>	<input type="checkbox"/> Straddle	

Initial Open 15 Shale Packer
 Initial Shut-In 60 Extra Packer
 Final Flow 15 Extra Recorder
 Final Shut-In 60 Day Standby
 Accessibility
 Sub Total 1692.80

Approved By [Signature] Our Representative Chuck Smith

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