



DRILL STEM TEST REPORT

Prepared For: **John O. Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Leiker Unit #1

12-6s-33w Thomas,KS

Start Date: 2016.07.20 @ 15:32:00

End Date: 2016.07.20 @ 22:39:45

Job Ticket #: 65400 DST #: 1

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

Printed: 2016.07.26 @ 09:54:48



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65400

DST#: 1

ATTN: Austin Klaus

Test Start: 2016.07.20 @ 15:32:00

GENERAL INFORMATION:

Formation: **LKC "A - C"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:53:45

Time Test Ended: 22:39:45

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 3936.00 ft (KB) To 4023.00 ft (KB) (TVD)

Reference Elevations: 3086.00 ft (KB)

Total Depth: 4023.00 ft (KB) (TVD)

3078.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6625

Inside

Press@RunDepth: 691.67 psig @ 3937.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.07.20

End Date:

2016.07.20

Last Calib.:

2016.07.20

Start Time:

15:32:05

End Time:

22:39:44

Time On Btm:

2016.07.20 @ 17:53:30

Time Off Btm:

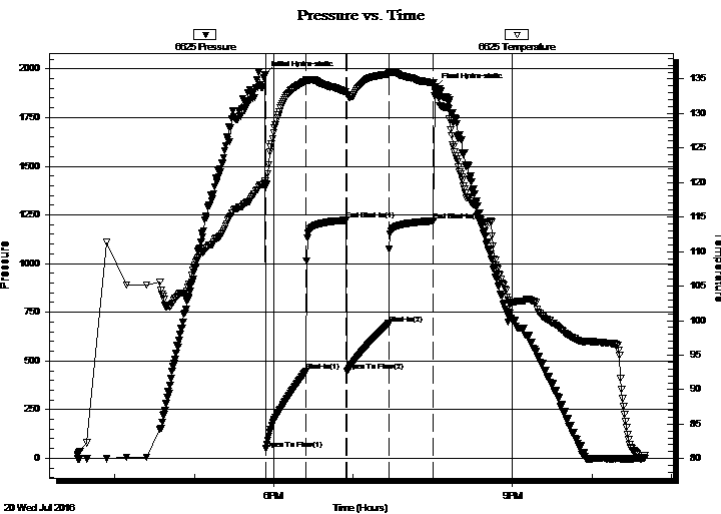
2016.07.20 @ 20:01:30

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 3 1/2 min.

30 - IS: No blow back

30 - FF: Blow built to BOB at 4 1/2 min.

30 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1968.47	120.20	Initial Hydro-static
1	48.41	119.73	Open To Flow (1)
31	446.09	134.68	Shut-In(1)
61	1222.95	133.19	End Shut-In(1)
62	448.46	132.76	Open To Flow (2)
93	691.67	135.73	Shut-In(2)
127	1219.01	134.50	End Shut-In(2)
128	1906.06	132.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
948.00	SMCW 92%w, 8%m	11.22
510.00	MCW 65%w, 35%m	7.15
32.00	Mud 100%	0.45
0.00	Trace of Oil in tool	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65400

DST#: 1

ATTN: Austin Klaus

Test Start: 2016.07.20 @ 15:32:00

Tool Information

Drill Pipe:	Length: 3629.00 ft	Diameter: 3.80 inches	Volume: 50.91 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 311.00 ft	Diameter: 2.75 inches	Volume: 2.28 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 53.19 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3936.00 ft			Final 50000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	87.00 ft			
Tool Length:	108.00 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			3916.00	
Shut In Tool	5.00			3921.00	
Hydraulic tool	5.00			3926.00	
Packer	5.00			3931.00	21.00 Bottom Of Top Packer
Packer	5.00			3936.00	
Stubb	1.00			3937.00	
Recorder	0.00	6625	Inside	3937.00	
Recorder	0.00	8366	Outside	3937.00	
Perforations	17.00			3954.00	
Blank Spacing	66.00			4020.00	
Bullnose	3.00			4023.00	87.00 Bottom Packers & Anchor

Total Tool Length: 108.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65400

DST#: 1

ATTN: Austin Klaus

Test Start: 2016.07.20 @ 15:32:00

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:

16000 ppm

Viscosity: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.97 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
948.00	SMCW 92%w , 8%m	11.220
510.00	MCW 65%w , 35%m	7.154
32.00	Mud 100%	0.449
0.00	Trace of Oil in tool	0.000

Total Length: 1490.00 ft Total Volume: 18.823 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .338 ohms @ 84.5 deg F

Chlorides = 16,000 ppm

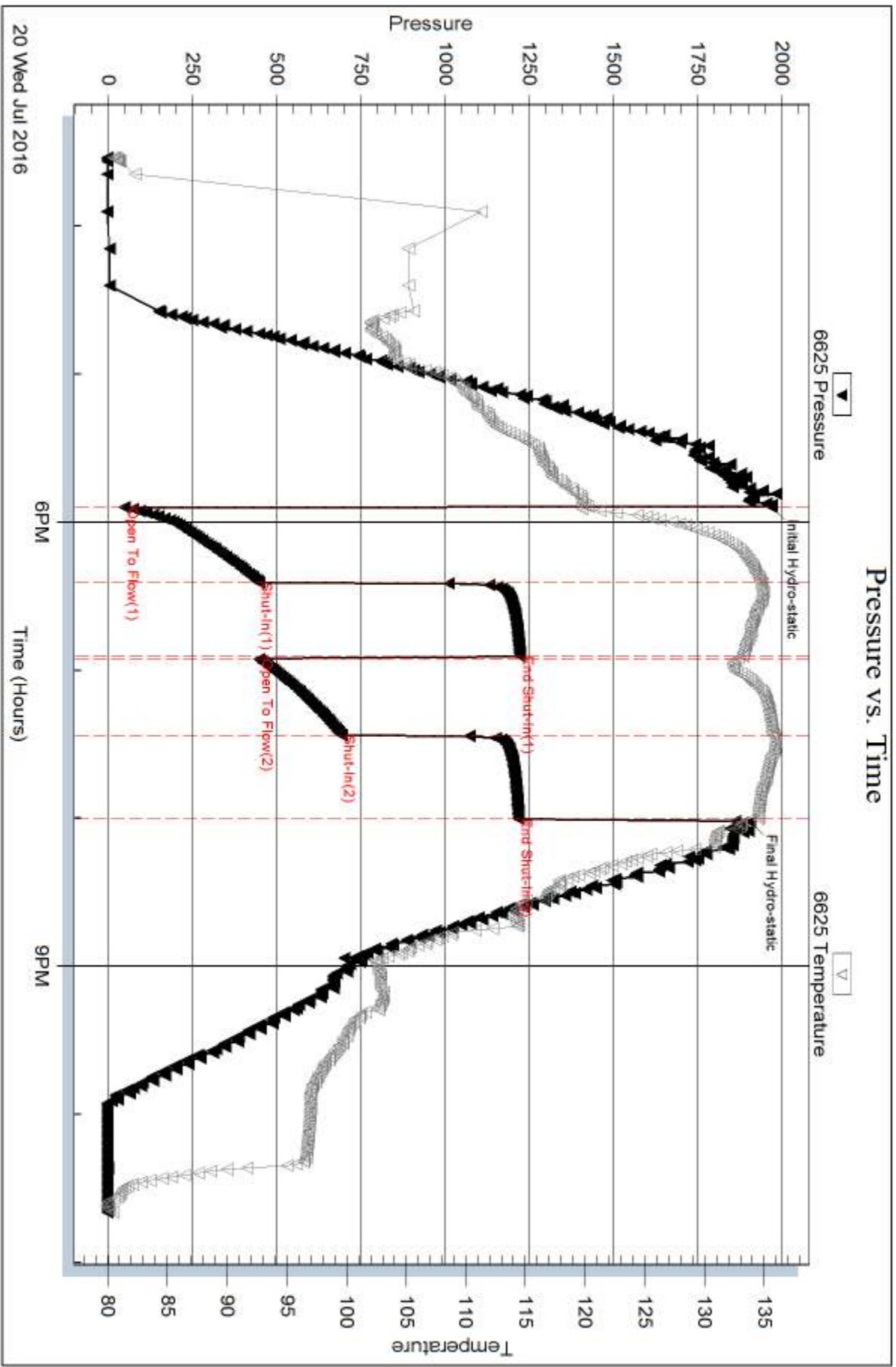
Serial #: 6625

Inside

John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 65400

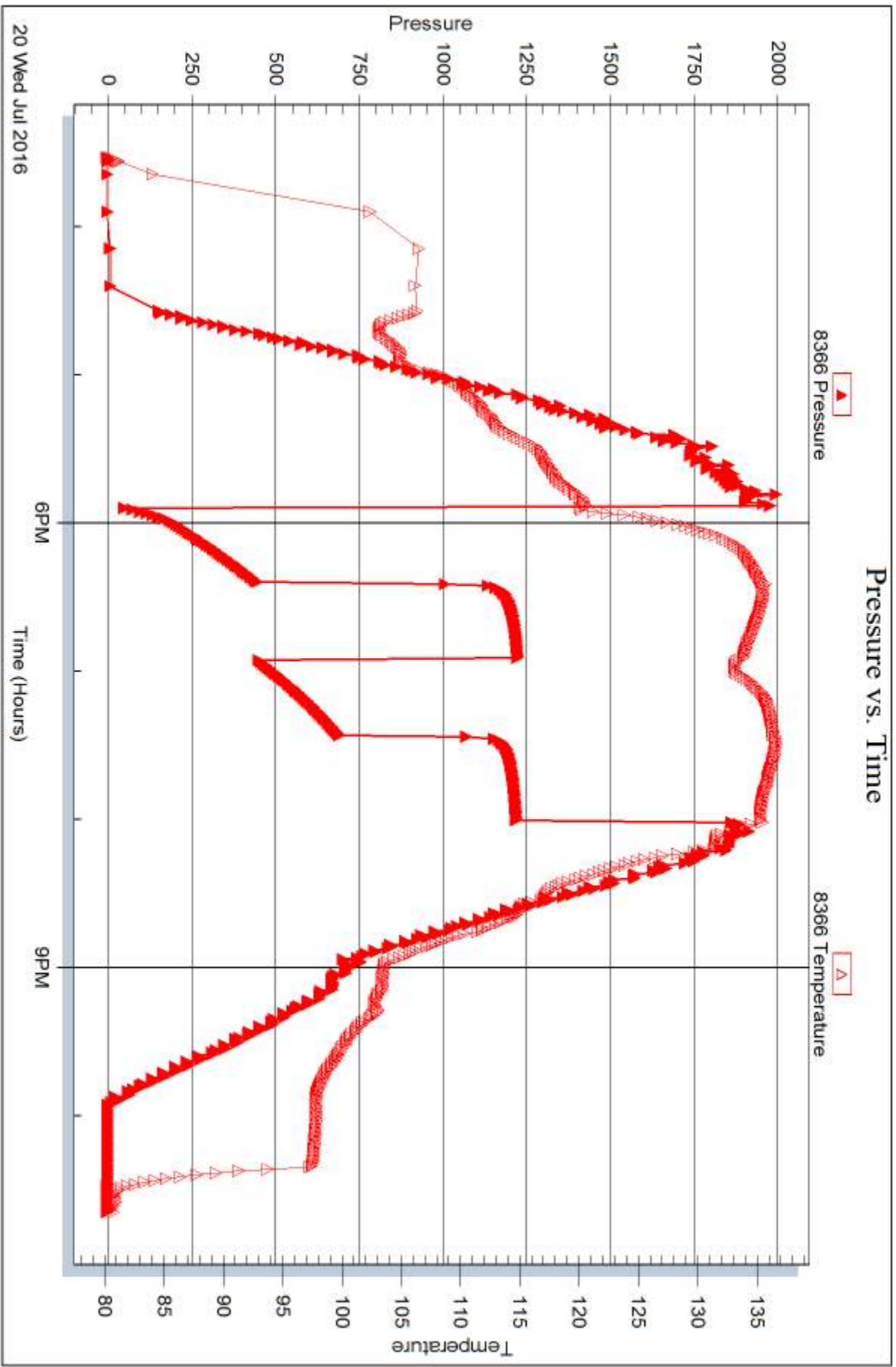
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Serial #: 8366

Outside John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 1



20 Wed Jul 2016

Triobite Testing, Inc

Ref. No: 65400

Printed: 2016.07.26 @ 09:54:49



DRILL STEM TEST REPORT

Prepared For: **John O. Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Leiker Unit #1

12-6s-33w Thomas,KS

Start Date: 2016.07.21 @ 08:51:00

End Date: 2016.07.21 @ 15:24:30

Job Ticket #: 65401 DST #: 2

Trilobite Testing, Inc
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ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.07.26 @ 09:54:23



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65401

DST#: 2

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 08:51:00

GENERAL INFORMATION:

Formation: **LKC "F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:41:30

Time Test Ended: 15:24:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4019.00 ft (KB) To 4042.00 ft (KB) (TVD)

Reference Elevations: 3086.00 ft (KB)

Total Depth: 4042.00 ft (KB) (TVD)

3078.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6625 Inside

Press@RunDepth: 190.97 psig @ 4020.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.07.21

End Date:

2016.07.21

Last Calib.:

2016.07.21

Start Time: 08:51:05

End Time:

15:24:29

Time On Btm:

2016.07.21 @ 10:41:00

Time Off Btm:

2016.07.21 @ 12:51:30

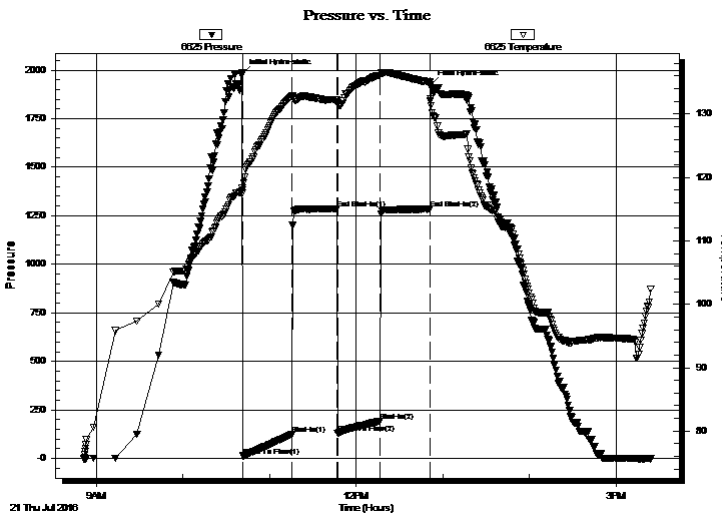
TEST COMMENT: 30 - IF: Blow built to BOB (11") at 26 1/2 min.

30 - IS: No blow back

30 - FF: Blow built to BOB at 29 min.

30 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1981.87	118.27	Initial Hydro-static
1	12.11	118.05	Open To Flow (1)
34	122.40	132.68	Shut-In(1)
66	1287.23	132.22	End Shut-In(1)
66	129.32	131.80	Open To Flow (2)
96	190.97	136.09	Shut-In(2)
130	1283.96	134.97	End Shut-In(2)
131	1926.35	132.44	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
311.00	SMCW 92%w, 8%m	2.28
74.00	MCW 61%w, 39%m	1.04

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65401

DST#: 2

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 08:51:00

Tool Information

Drill Pipe:	Length: 3694.00 ft	Diameter: 3.80 inches	Volume: 51.82 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 311.00 ft	Diameter: 2.75 inches	Volume: 2.28 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	52000.00 lb
			<u>Total Volume: 54.10 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial	45000.00 lb
Depth to Top Packer:	4019.00 ft			Final	46000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	23.00 ft				
Tool Length:	44.00 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			3999.00	
Shut In Tool	5.00			4004.00	
Hydraulic tool	5.00			4009.00	
Packer	5.00			4014.00	21.00 Bottom Of Top Packer
Packer	5.00			4019.00	
Stubb	1.00			4020.00	
Recorder	0.00	6625	Inside	4020.00	
Recorder	0.00	8366	Outside	4020.00	
Perforations	19.00			4039.00	
Bullnose	3.00			4042.00	23.00 Bottom Packers & Anchor
Total Tool Length:	44.00				



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65401

DST#: 2

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 08:51:00

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:

21000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
311.00	SMCW 92%w , 8%m	2.285
74.00	MCW 61%w , 39%m	1.038

Total Length: 385.00 ft Total Volume: 3.323 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

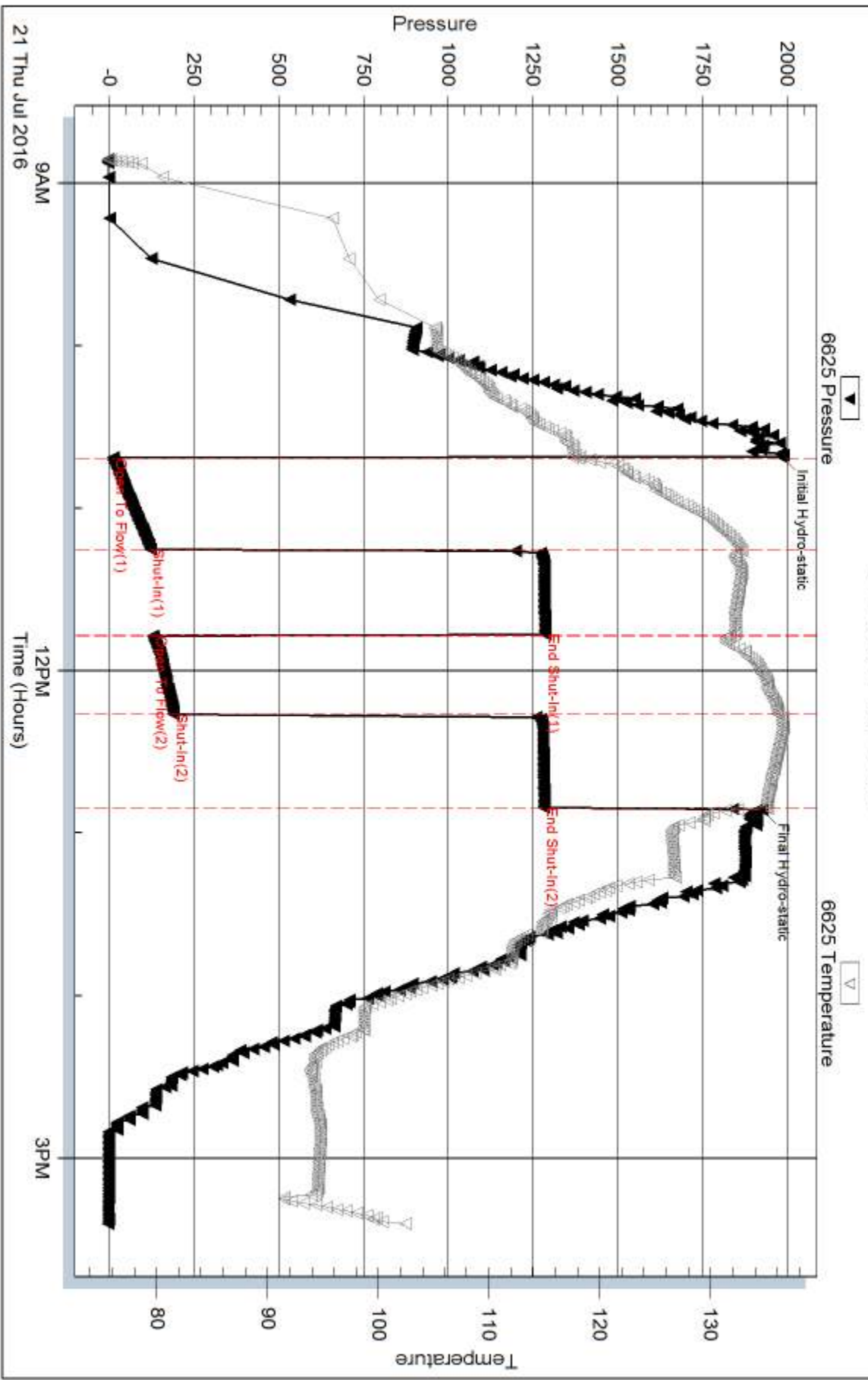
Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .216 ohms @ 104 deg F

Chlorides = 21,000 ppm

Pressure vs. Time

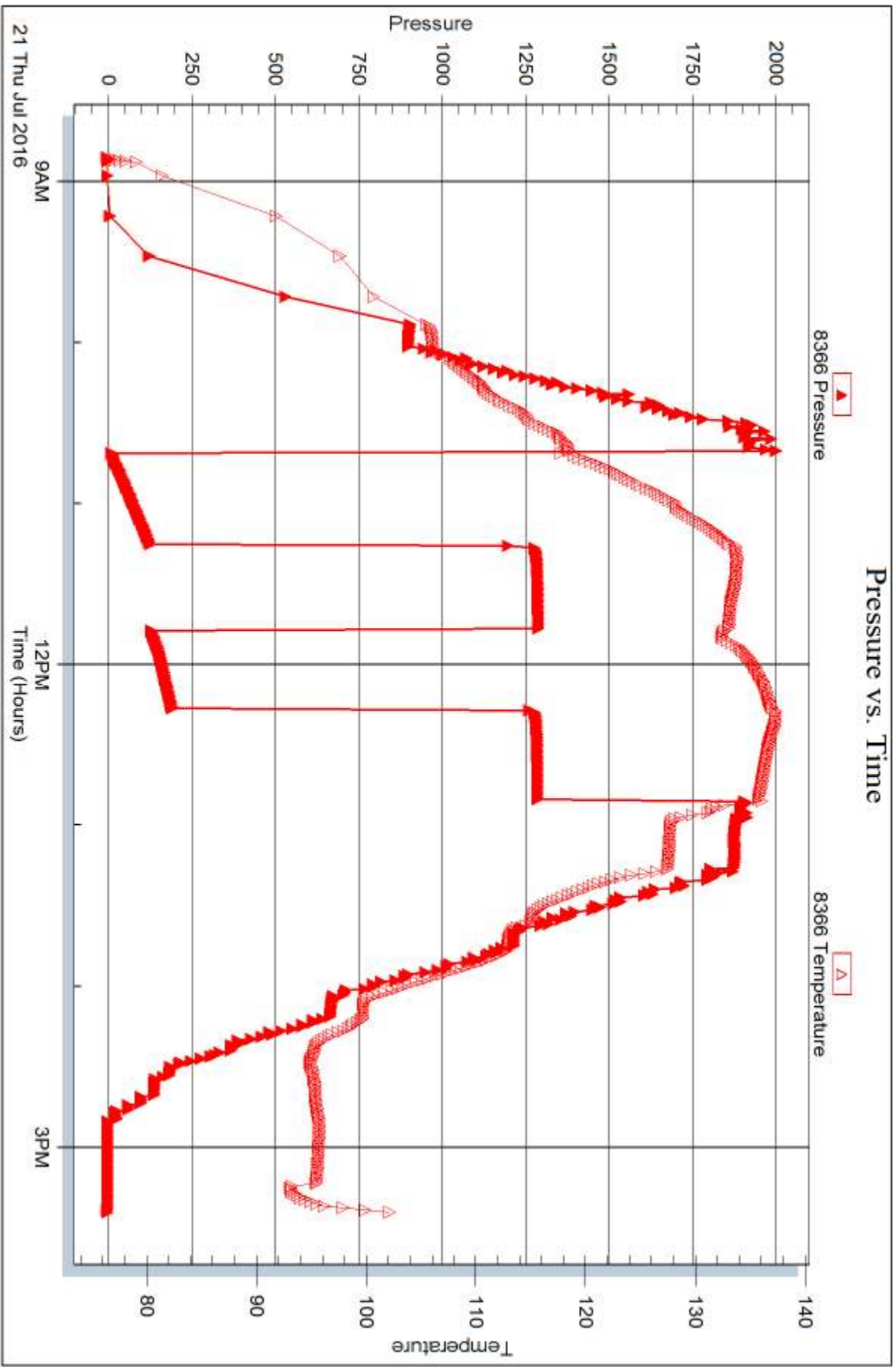


Serial #: 8366

Outside John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 65401

Printed: 2016.07.26 @ 09:54:25



DRILL STEM TEST REPORT

Prepared For: **John O. Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Leiker Unit #1

12-6s-33w Thomas,KS

Start Date: 2016.07.21 @ 23:59:00

End Date: 2016.07.22 @ 07:07:00

Job Ticket #: 65402 DST #: 3

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

Printed: 2016.07.26 @ 09:53:09



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65402

DST#: 3

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 23:59:00

GENERAL INFORMATION:

Formation: **LKC "F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:06:15

Time Test Ended: 07:07:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4038.00 ft (KB) To 4066.00 ft (KB) (TVD)

Reference Elevations: 3086.00 ft (KB)

Total Depth: 4066.00 ft (KB) (TVD)

3078.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6625 Inside

Press@RunDepth: 21.77 psig @ 4039.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.07.21

End Date:

2016.07.22

Last Calib.:

2016.07.22

Start Time: 23:59:05

End Time:

07:06:59

Time On Btm:

2016.07.22 @ 02:05:45

Time Off Btm:

2016.07.22 @ 05:13:30

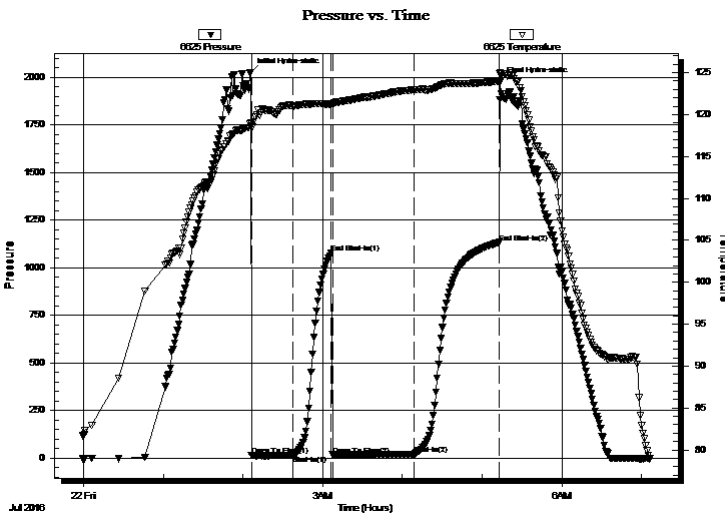
TEST COMMENT: 30 - IF: Blow built to 1 1/4"

30 - IS: No blow back

60 - FF: Blow built to 1/2"

60 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2025.92	119.07	Initial Hydro-static
1	14.86	118.69	Open To Flow (1)
32	15.71	121.00	Shut-In(1)
61	1077.53	121.20	End Shut-In(1)
62	17.37	121.26	Open To Flow (2)
123	21.77	122.97	Shut-In(2)
187	1133.03	123.95	End Shut-In(2)
188	1975.67	125.03	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	OCM 83% m, 15% o, 2% g	0.11
15.00	SMCO 92% o, 6% m, 2% g	0.11

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65402

DST#: 3

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 23:59:00

Tool Information

Drill Pipe:	Length: 3726.00 ft	Diameter: 3.80 inches	Volume: 52.27 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 311.00 ft	Diameter: 2.75 inches	Volume: 2.28 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	55000.00 lb
			<u>Total Volume: 54.55 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	45000.00 lb
Depth to Top Packer:	4038.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	28.00 ft				
Tool Length:	49.00 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			4018.00	
Shut In Tool	5.00			4023.00	
Hydraulic tool	5.00			4028.00	
Packer	5.00			4033.00	21.00 Bottom Of Top Packer
Packer	5.00			4038.00	
Stubb	1.00			4039.00	
Recorder	0.00	6625	Inside	4039.00	
Recorder	0.00	8366	Outside	4039.00	
Perforations	24.00			4063.00	
Bullnose	3.00			4066.00	28.00 Bottom Packers & Anchor
Total Tool Length:	49.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65402

DST#: 3

ATTN: Austin Klaus

Test Start: 2016.07.21 @ 23:59:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 53.00 sec/qt
Water Loss: 9.59 in³
Resistivity: ohm.m
Salinity: 3000.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: 29 deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	OCM 83%m, 15%o, 2%g	0.110
15.00	SMCO 92%o, 6%m, 2%g	0.110

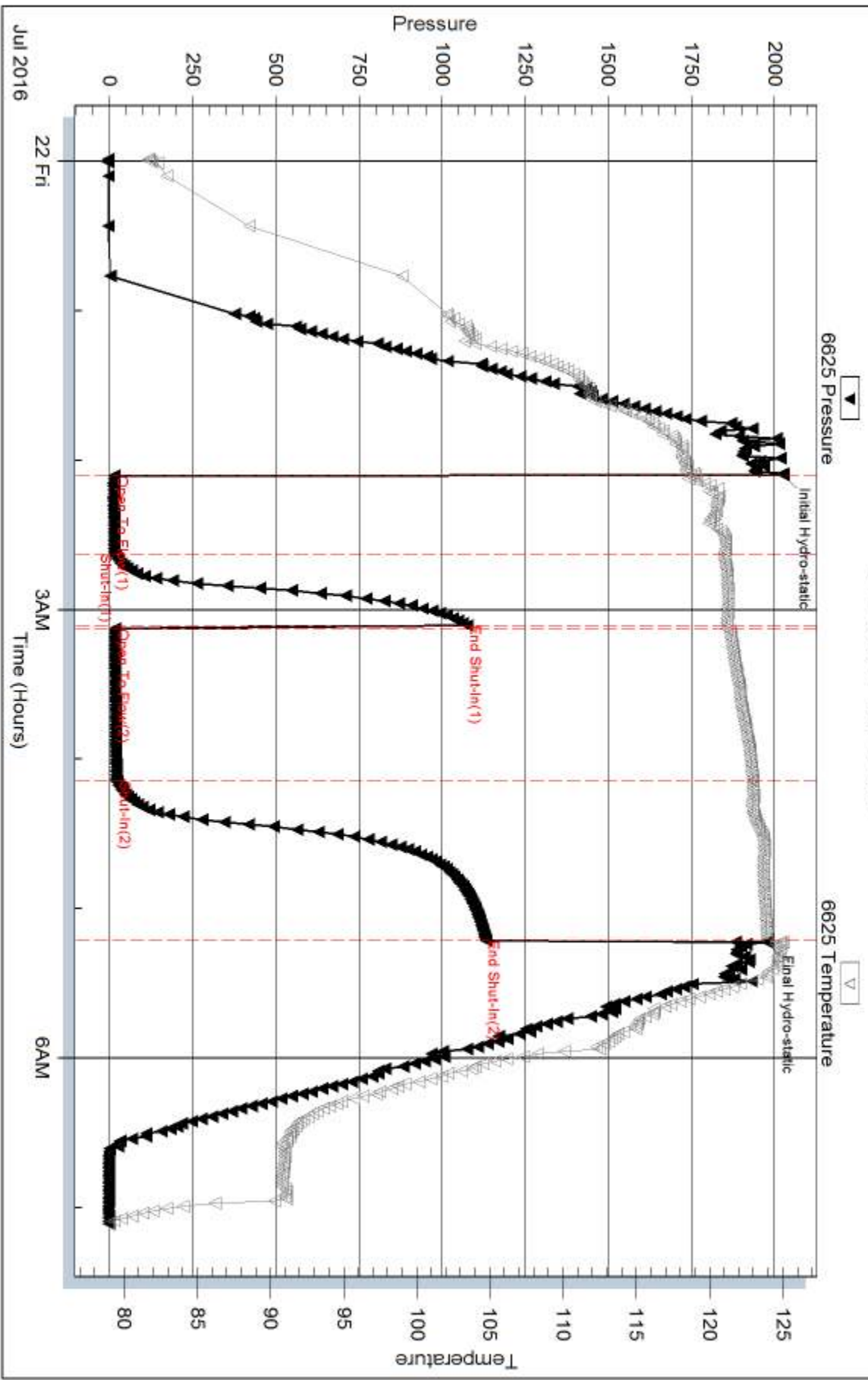
Total Length: 30.00 ft Total Volume: 0.220 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: Gravity = 31 api @ 80 deg F
Corrected Gravity = 29 api

Pressure vs. Time

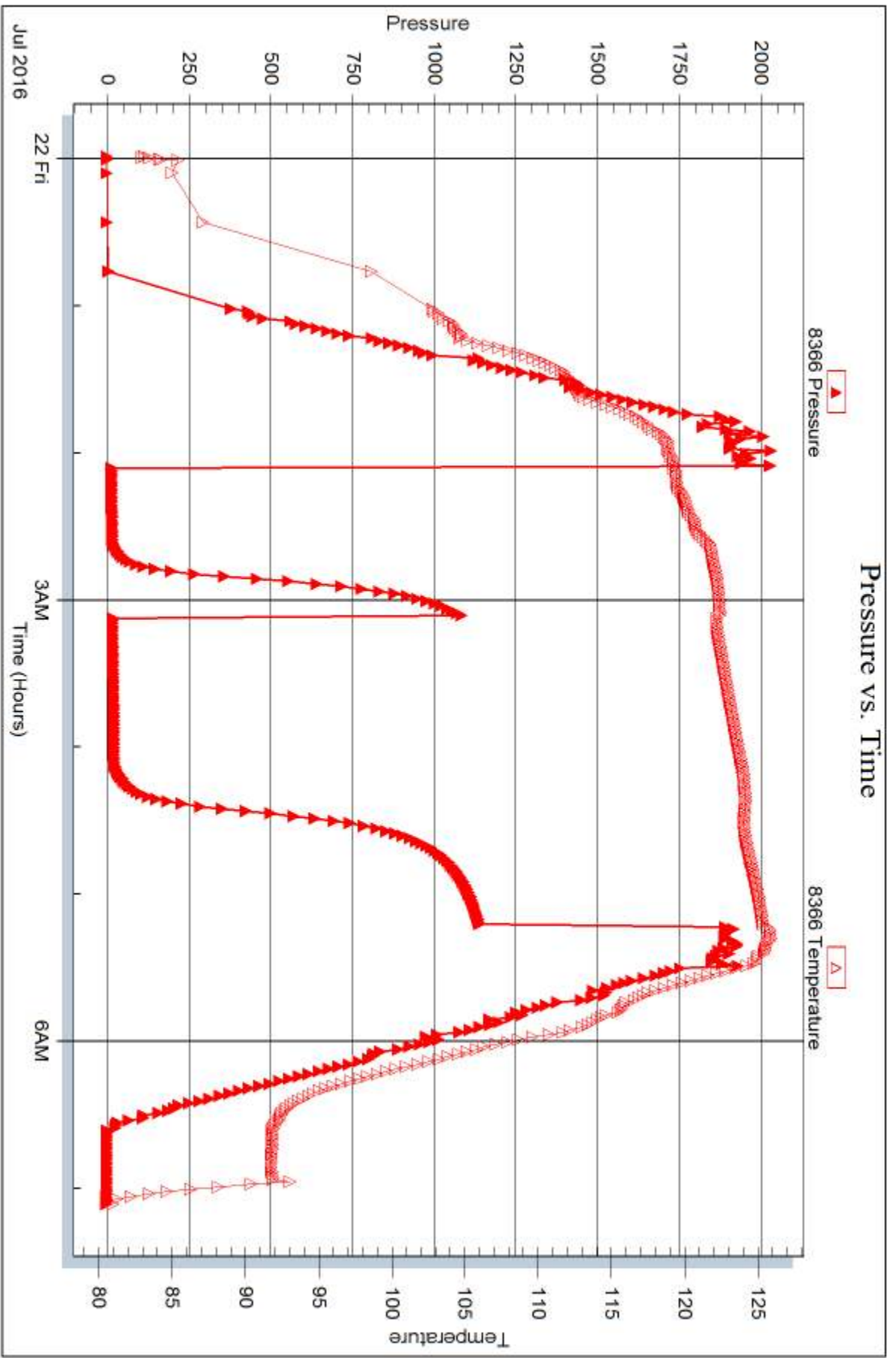


Serial #: 8366

Outside John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 65402

Printed: 2016.07.26 @ 09:53:11



DRILL STEM TEST REPORT

Prepared For: **John O. Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Leiker Unit #1

12-6s-33w Thomas,KS

Start Date: 2016.07.22 @ 20:05:00

End Date: 2016.07.23 @ 02:11:30

Job Ticket #: 65403 DST #: 4

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

Printed: 2016.07.26 @ 09:52:34



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65403

DST#: 4

ATTN: Austin Klaus

Test Start: 2016.07.22 @ 20:05:00

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:48:30

Time Test Ended: 02:11:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4117.00 ft (KB) To 4160.00 ft (KB) (TVD)

Total Depth: 4160.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3086.00 ft (KB)

3078.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6625

Inside

Press@RunDepth: 182.99 psig @ 4118.00 ft (KB)

Start Date: 2016.07.22

End Date:

2016.07.23

Start Time: 20:05:05

End Time:

02:11:29

Capacity: 8000.00 psig

Last Calib.: 2016.07.23

Time On Btm: 2016.07.22 @ 21:48:00

Time Off Btm: 2016.07.22 @ 23:53:15

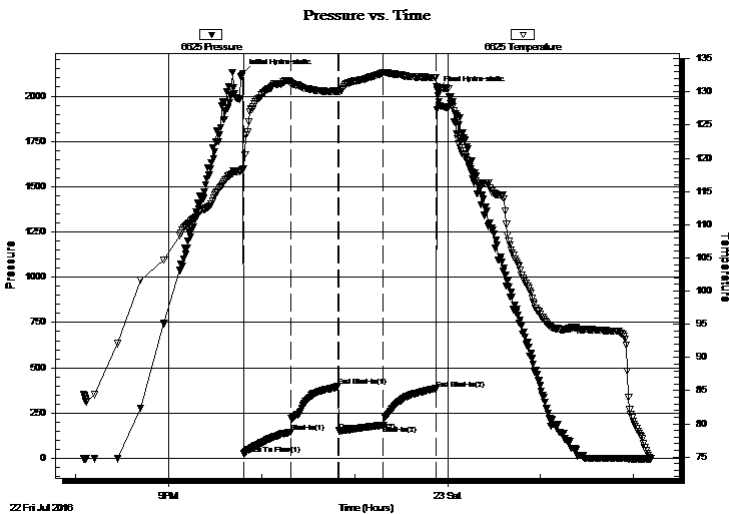
TEST COMMENT: 30 - IF: Blow built to BOB (11") at 16 1/4 min.

30 - IS: No blow back

30 - FF: Blow built to 7 1/2"

30 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2124.55	118.41	Initial Hydro-static
1	24.82	118.41	Open To Flow (1)
31	145.11	131.40	Shut-In(1)
62	398.11	130.12	End Shut-In(1)
62	151.88	130.05	Open To Flow (2)
91	182.99	132.89	Shut-In(2)
125	384.35	132.14	End Shut-In(2)
126	2033.42	130.64	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	SO/MCW 88%w , 18%m, 2%o, 2%g	0.46
187.00	SO/GMCW 54%w , 29%m, 13%g, 4%o	1.37
125.00	SO/GWCM 57%w , 29%w , 9%g, 5%o	1.34
2.00	SMCO 94%o, 6%m	0.03

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65403

DST#: 4

ATTN: Austin Klaus

Test Start: 2016.07.22 @ 20:05:00

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:48:30

Time Test Ended: 02:11:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4117.00 ft (KB) To 4160.00 ft (KB) (TVD)

Reference Elevations: 3086.00 ft (KB)

Total Depth: 4160.00 ft (KB) (TVD)

3078.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8366 Outside

Press@RunDepth: psig @ 4118.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.07.22

End Date:

2016.07.23

Last Calib.:

2016.07.23

Start Time: 20:05:05

End Time:

02:10:59

Time On Btm:

Time Off Btm:

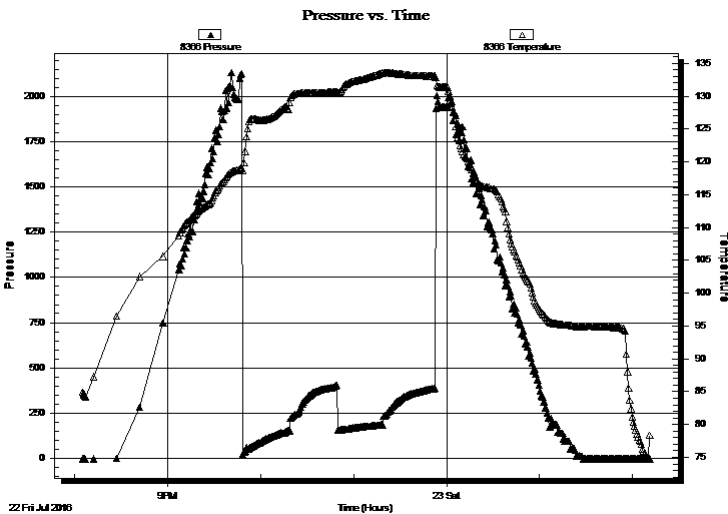
TEST COMMENT: 30 - IF: Blow built to BOB (11") at 16 1/4 min.

30 - IS!: No blow back

30 - FF: Blow built to 7 1/2"

30 - FS!: No blow back

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	SO/MCW 88%w , 18%m, 2%o, 2%g	0.46
187.00	SO/GMCW 54%w , 29%m, 13%g, 4%o	1.37
125.00	SO/GWCM 57%w , 29%w , 9%g, 5%o	1.34
2.00	SMCO 94%o, 6%m	0.03

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65403

DST#: 4

ATTN: Austin Klaus

Test Start: 2016.07.22 @ 20:05:00

Tool Information

Drill Pipe:	Length: 3789.00 ft	Diameter: 3.80 inches	Volume: 53.15 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 311.00 ft	Diameter: 2.75 inches	Volume: 2.28 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 48000.00 lb
			<u>Total Volume: 55.43 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	4117.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	43.00 ft			
Tool Length:	64.00 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			4097.00	
Shut In Tool	5.00			4102.00	
Hydraulic tool	5.00			4107.00	
Packer	5.00			4112.00	21.00 Bottom Of Top Packer
Packer	5.00			4117.00	
Stubb	1.00			4118.00	
Recorder	0.00	6625	Inside	4118.00	
Recorder	0.00	8366	Outside	4118.00	
Perforations	5.00			4123.00	
Blank Spacing	34.00			4157.00	
Bullnose	3.00			4160.00	43.00 Bottom Packers & Anchor

Total Tool Length: 64.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65403

DST#: 4

ATTN: Austin Klaus

Test Start: 2016.07.22 @ 20:05:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

23000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
62.00	SO/MCW 88%w , 18%m, 2%o, 2%g	0.455
187.00	SO/GMCW 54%w , 29%m, 13%g, 4%o	1.374
125.00	SO/GWCM 57%m, 29%w , 9%g, 5%o	1.339
2.00	SMCO 94%o, 6%m	0.028

Total Length: 376.00 ft

Total Volume: 3.196 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

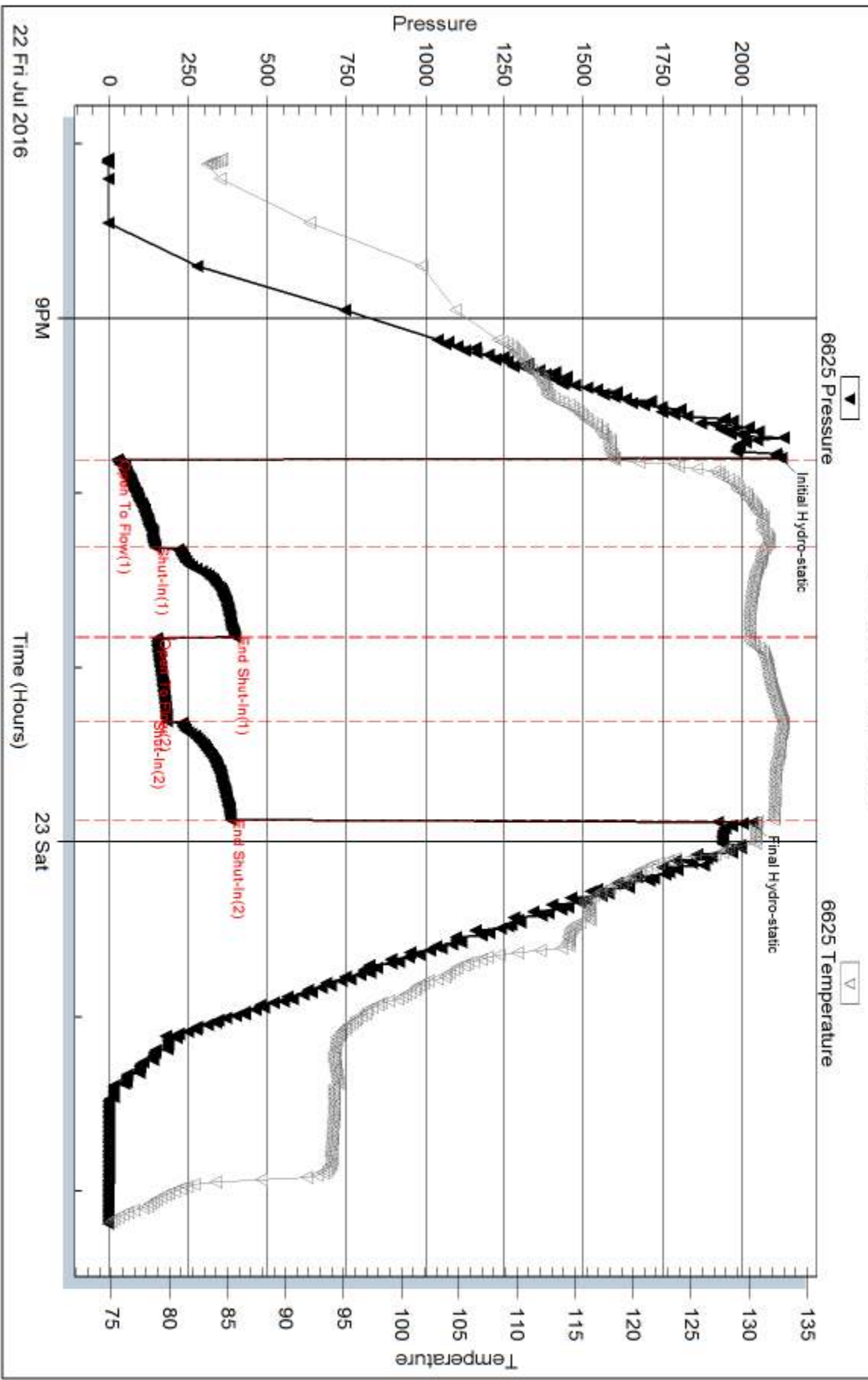
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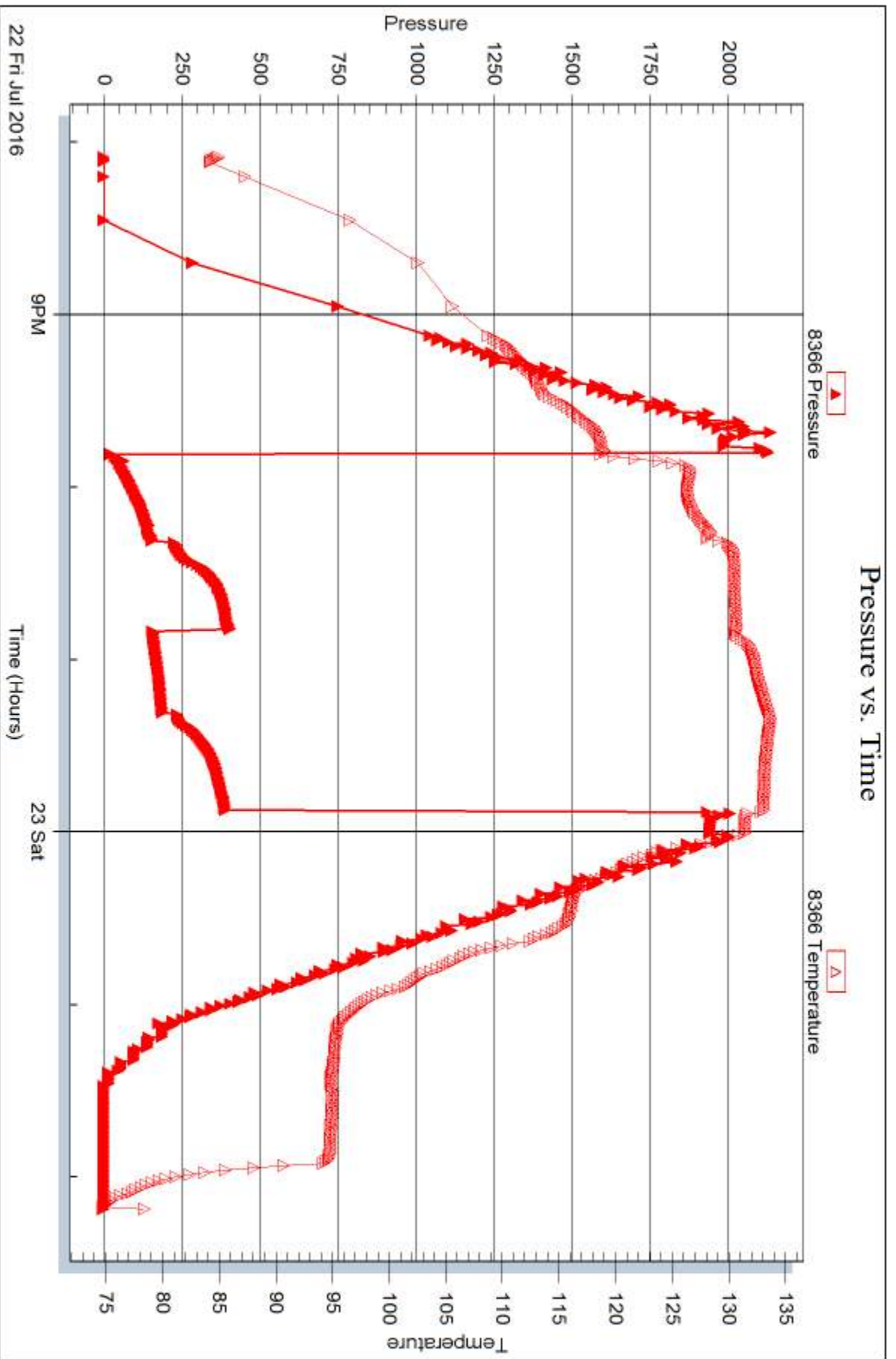
Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 31.6 api @ 76 deg F Corrected Gravity = 30 api
RW = .287 ohms @ 73.8 deg F Chlorides = 23,000 ppm

Pressure vs. Time







DRILL STEM TEST REPORT

Prepared For: **John O. Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Leiker Unit #1

12-6s-33w Thomas,KS

Start Date: 2016.07.24 @ 02:48:00

End Date: 2016.07.24 @ 09:38:15

Job Ticket #: 65404 DST #: 5

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

Printed: 2016.07.26 @ 09:51:22



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65404

DST#: 5

ATTN: Austin Klaus

Test Start: 2016.07.24 @ 02:48:00

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:37:45

Time Test Ended: 09:38:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4414.00 ft (KB) To 4452.00 ft (KB) (TVD)

Reference Elevations: 3086.00 ft (KB)

Total Depth: 4452.00 ft (KB) (TVD)

3078.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6625

Inside

Press@RunDepth: 25.03 psig @ 4415.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.07.24

End Date:

2016.07.24

Last Calib.:

2016.07.24

Start Time: 02:48:05

End Time:

09:38:14

Time On Btm:

2016.07.24 @ 04:37:30

Time Off Btm:

2016.07.24 @ 06:41:45

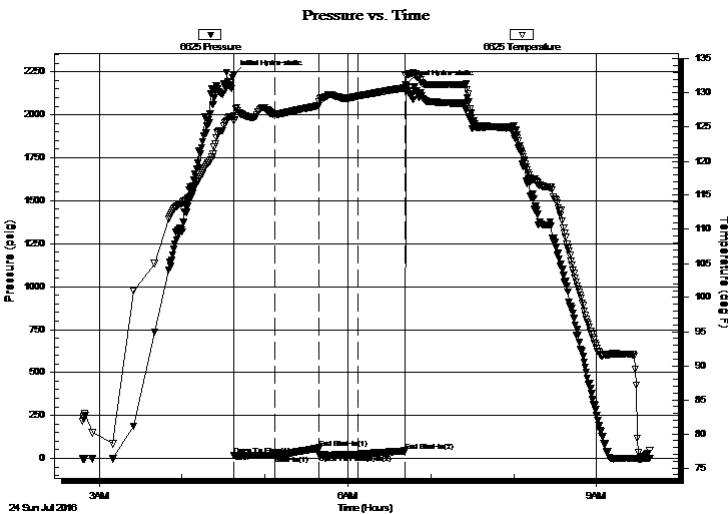
TEST COMMENT: 30 - IF: Blow built to 1 1/8"

30 - ISI: No blow back

30 - FF: No blow

30 - FSI: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2232.81	126.66	Initial Hydro-static
1	17.02	125.96	Open To Flow (1)
30	19.68	126.89	Shut-In(1)
62	61.21	128.17	End Shut-In(1)
62	21.04	128.70	Open To Flow (2)
90	25.03	129.53	Shut-In(2)
124	43.97	130.77	End Shut-In(2)
125	2173.93	132.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	SOCM 92% m, 6% o, 2% g	0.22

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65404

DST#: 5

ATTN: Austin Klaus

Test Start: 2016.07.24 @ 02:48:00

Tool Information

Drill Pipe:	Length: 4108.00 ft	Diameter: 3.80 inches	Volume: 57.62 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 311.00 ft	Diameter: 2.75 inches	Volume: 2.28 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 52000.00 lb
			<u>Total Volume: 59.90 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 50000.00 lb
Depth to Top Packer:	4414.00 ft			Final 50000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	59.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4394.00	
Shut In Tool	5.00			4399.00	
Hydraulic tool	5.00			4404.00	
Packer	5.00			4409.00	21.00 Bottom Of Top Packer
Packer	5.00			4414.00	
Stubb	1.00			4415.00	
Recorder	0.00	6625	Inside	4415.00	
Recorder	0.00	8366	Outside	4415.00	
Perforations	34.00			4449.00	
Bullnose	3.00			4452.00	38.00 Bottom Packers & Anchor
Total Tool Length:	59.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O. Farmer Inc.

12-6s-33w Thomas,KS

PO Box 352
Russell, KS 67665

Leiker Unit #1

Job Ticket: 65404

DST#: 5

ATTN: Austin Klaus

Test Start: 2016.07.24 @ 02:48:00

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: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4400.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	SOCM 92%m, 6%o, 2%g	0.220

Total Length: 30.00 ft Total Volume: 0.220 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 6625

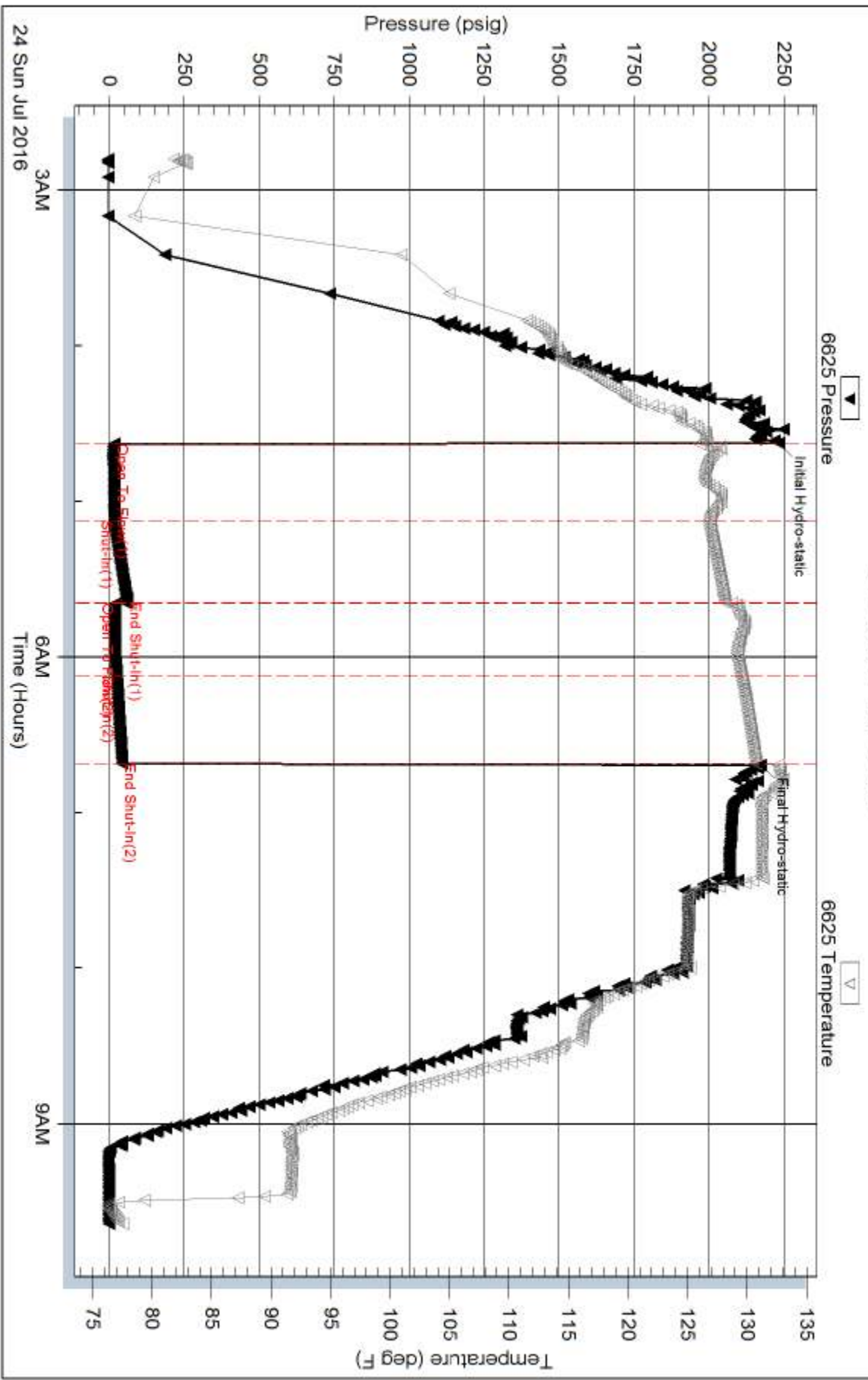
Inside

John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 5

Pressure vs. Time

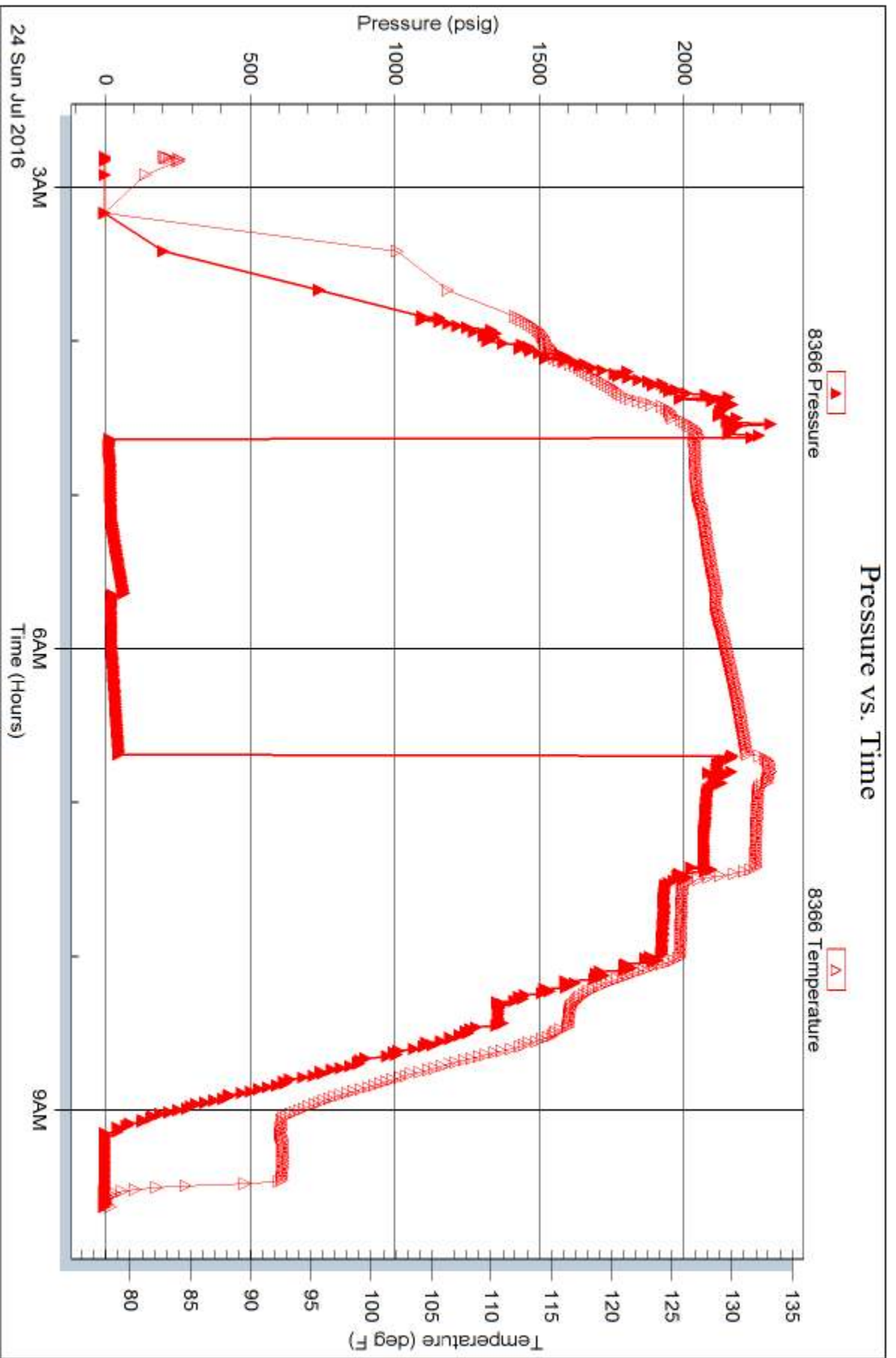


Serial #: 8366

Outside John O. Farmer Inc.

Leiker Unit #1

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 65404

Printed: 2016.07.26 @ 09:51:24



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65400**

Well Name & No. Leiker Unit #1 Test No. 1 Date 7-20-16
 Company John O. Farmer Inc. Elevation 3086 KB 3078 GL
 Address 370 W Wichita Ave PO Box 352 Russell KS 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery #1
 Location: Sec. 12 Twp. 6s Rge. 33w Co. Thomas State KS

Interval Tested 3936-4023 Zone Tested LKC-A-C*
 Anchor Length 87 Drill Pipe Run 3629 Mud Wt. 9.0
 Top Packer Depth 3931 Drill Collars Run - Vis 47
 Bottom Packer Depth 3936 Wt. Pipe Run 311 WL 8.0
 Total Depth 4023 Chlorides 2500 ppm System LCM 4

Blow Description IF: Blow built to BOB (11") at 3 1/2 min.
ISI: No blowback
FF: Blow built to BOB at 4 1/2 min
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>32</u>	<u>Mud</u>			<u>100</u>	
<u>510</u>	<u>MCW</u>		<u>65</u>	<u>35</u>	
<u>948</u>	<u>SMCW</u>		<u>92</u>	<u>8</u>	
	<u>Trace of oil in tool</u>				

Rec Total 1490 BHT 135 Gravity _____ API RW .338 @ 84.5 °F Chlorides 16,000 ppm
 (A) Initial Hydrostatic 1968 Test 1150 T-On Location 14:00
 (B) First Initial Flow 48 Jars _____ T-Started 15:32
 (C) First Final Flow 446 Safety Joint _____ T-Open 17:53
 (D) Initial Shut-In 1223 Circ Sub _____ T-Pulled 20:00
 (E) Second Initial Flow 448 Hourly Standby _____ T-Out 22:35
 (F) Second Final Flow 692 Mileage 106 RT 79.50 Comments _____
 (G) Final Shut-In 1219 Sampler _____
 (H) Final Hydrostatic 1906 Straddle _____
 Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 30 Extra Packer _____ Extra Copies _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 30 Day Standby _____ Total 1229.50
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1229.50

Approved By _____ Our Representative James Windsor

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65401**

Well Name & No. Leiker Unit #1 Test No. 2 Date 7-21-16
 Company John O Farmer Inc. Elevation 3086 KB 3078 GL
 Address 370 W. Wichita Ave PO Box 352 Russell KS 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery #1
 Location: Sec. 12 Twp. 6s Rge. 33w Co. Thomas State KS

Interval Tested 4019 - 4042 Zone Tested LKC "D"
 Anchor Length 23 Drill Pipe Run 3694 Mud Wt. 9.0
 Top Packer Depth 4014 Drill Collars Run - Vis 58
 Bottom Packer Depth 4019 Wt. Pipe Run 311 WL 8.8
 Total Depth 4042 Chlorides 2500 ppm System LCM 4

Blow Description IF: Blow built to BOB (11") at 26 1/2 min.
ISI: No blowback
FF: Blow built to BOB at 29 min.
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>74</u>	<u>mcw</u>		<u>61</u>	<u>39</u>	
<u>311</u>	<u>SMCW</u>		<u>92</u>	<u>8</u>	
	<u>show of oil in tool</u>				

Rec Total 385 BHT 135 Gravity _____ API RW .216 @ 104 °F Chlorides 21000 ppm

(A) Initial Hydrostatic 1982 Test 1150 T-On Location 7:25
 (B) First Initial Flow 12 Jars _____ T-Started 8:51
 (C) First Final Flow 122 Safety Joint _____ T-Open 10:41
 (D) Initial Shut-In 1287 Circ Sub _____ T-Pulled 12:50
 (E) Second Initial Flow 129 Hourly Standby _____ T-Out 15:25
 (F) Second Final Flow 191 Mileage 106 RT 79.50 Comments _____
 (G) Final Shut-In 1284 Sampler _____
 (H) Final Hydrostatic 1926 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1229.50 MP/DST Disc't _____

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

Approved By _____ Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65402**

Well Name & No. Leiker Unit #1 Test No. 3 Date 7-22-16
 Company John O. Farmer Inc Elevation 3086 KB 3078 GL
 Address 370 W. Wichita Ave PO Box 352 Russell KS 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery #1
 Location: Sec. 12 Twp. 6s Rge. 33w Co. Thomas State KS

Interval Tested 4038 - 4066 Zone Tested LKC "F"
 Anchor Length 28 Drill Pipe Run 3726 Mud Wt. 9.0
 Top Packer Depth 4033 Drill Collars Run - Vis 53
 Bottom Packer Depth 4038 Wt. Pipe Run 311 WL 9.6
 Total Depth 4066 Chlorides 3000 ppm System LCM 4

Blow Description IF: Blow built to 1'4"
ISI: No blowback
FF: Blow built to 1/2"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>SMCO</u>	<u>2</u>	<u>92</u>	<u>6</u>	
<u>15</u>	<u>OCM</u>	<u>2</u>	<u>15</u>	<u>83</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 124 Gravity 29 API RW @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2026 Test 1150 T-On Location 23:50 7a1
 (B) First Initial Flow 15 Jars _____ T-Started 23:59
 (C) First Final Flow 16 Safety Joint _____ T-Open 2:06
 (D) Initial Shut-In 1078 Circ Sub _____ T-Pulled 5:12
 (E) Second Initial Flow 17 Hourly Standby _____ T-Out 7:25
 (F) Second Final Flow 22 Mileage 106 RT 79.50 Comments _____
 (G) Final Shut-In 1133 Sampler _____
 (H) Final Hydrostatic 1976 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1229.50
 MP/DST Disc't _____

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

Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1229.50

Approved By _____ Our Representative James Winder
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65403**

Well Name & No. Leiker Unit Test No. 4 Date 7-22-16
 Company John O Farmer Inc Elevation 3086 KB 3078 GL
 Address 370 W Wichita Ave PO Box 352 Russell KS 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery #1
 Location: Sec. 12 Twp. 6S Rge. 33w Co. Thomas State KS

Interval Tested 4117-4160 Zone Tested LKC "J"
 Anchor Length 43 Drill Pipe Run 3789 Mud Wt. 9.0
 Top Packer Depth 4112 Drill Collars Run - Vis 53
 Bottom Packer Depth 4117 Wt. Pipe Run 311 WL 9.6
 Total Depth 4160 Chlorides 3000 ppm System LCM 4

Blow Description IF: Blow built to BOB(11") at 16 1/4 min.
ISI: No blowback
FF: Blow built to 7 1/2"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>SMCO</u>	<u>-</u>	<u>94</u>	<u>-</u>	<u>6</u>
<u>125</u>	<u>50/SMCO GWCM</u>	<u>90</u>	<u>5</u>	<u>29</u>	<u>57</u>
<u>187</u>	<u>50/GMCW</u>	<u>13</u>	<u>4</u>	<u>54</u>	<u>29</u>
<u>62</u>	<u>50/MCW</u>	<u>2</u>	<u>2</u>	<u>88</u>	<u>18</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 376 BHT 132 Gravity 30 API RW .287 @ 73.8 °F Chlorides 23000 ppm

(A) Initial Hydrostatic 2125 Test 1150 T-On Location 19:25 7/22
 (B) First Initial Flow 25 Jars _____ T-Started 20:05
 (C) First Final Flow 145 Safety Joint _____ T-Open 21:48
 (D) Initial Shut-In 398 Circ Sub _____ T-Pulled 23:52
 (E) Second Initial Flow 152 Hourly Standby _____ T-Out 2:05 7/23
 (F) Second Final Flow 183 Mileage 106 RT 79.50
 (G) Final Shut-In 384 Sampler _____
 (H) Final Hydrostatic 2033 Straddle _____

Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 30
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1229.50
 Sub Total _____
 Sub Total _____

Approved By _____ Our Representative James Winder

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65404**

Well Name & No. Leiker Unit #1 Test No. 5 Date 7-24-16
 Company John O Farmer Inc. Elevation 3086 KB 3078 GL
 Address 370 W Wichita Ave PO Box 352 Russell, KS 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery #1
 Location: Sec. 12 Twp. 6S Rge. 33W Co. Thomas State KS

Interval Tested 4414 - 4452 Zone Tested Cherokee
 Anchor Length 38 Drill Pipe Run 4108 Mud Wt. 9.3
 Top Packer Depth 4409 Drill Collars Run - Vis 56
 Bottom Packer Depth 4414 Wt. Pipe Run 311 WL 9.6
 Total Depth 4452 Chlorides 4400 ppm System LCM 5
 Blow Description IF: Blow bit to 1 1/8"
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>50cm</u>	<u>2</u>	<u>6</u>		<u>92</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 131 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2233 Test 1150 T-On Location 2:30
 (B) First Initial Flow 17 Jars _____ T-Started 2:48
 (C) First Final Flow 20 Safety Joint _____ T-Open 4:37
 (D) Initial Shut-In 61 Circ Sub _____ T-Pulled 6:41
 (E) Second Initial Flow 21 Hourly Standby _____ T-Out 9:35
 (F) Second Final Flow 25 Mileage 106 RT 79.50 Comments _____
 (G) Final Shut-In 44 Sampler _____
 (H) Final Hydrostatic 2174 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 30 Day Standby _____ Total 1229.50
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1229.50

Approved By _____

Our Representative

James Winkler

TriLOBite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.