



DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Buena Vista #1-18

18-17s-29w Lane,KS

Start Date: 2015.02.17 @ 16:30:27

End Date: 2015.02.17 @ 22:30:42

Job Ticket #: 61467 DST #: 1

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

Printed: 2015.02.23 @ 10:52:52



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61467

DST#: 1

Test Start: 2015.02.17 @ 16:30:27

GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:10:12

Time Test Ended: 22:30:42

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 84

Interval: 4189.00 ft (KB) To 4210.00 ft (KB) (TVD)

Reference Elevations: 2837.00 ft (KB)

Total Depth: 4210.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6771 Outside

Press@RunDepth: 29.85 psig @ 4190.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.17 End Date: 2015.02.17

Last Calib.: 2015.02.17

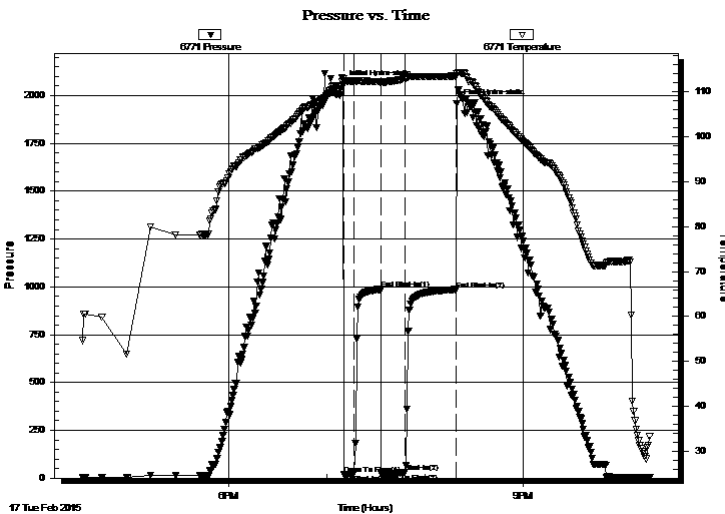
Start Time: 16:30:27 End Time: 22:17:42

Time On Btm: 2015.02.17 @ 19:09:57

Time Off Btm: 2015.02.17 @ 20:19:27

TEST COMMENT: Surface blow
No return
Weak surface blow in 5 min.
No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2055.55	112.97	Initial Hydro-static
1	18.24	112.28	Open To Flow (1)
7	19.96	112.28	Shut-In(1)
23	986.78	112.29	End Shut-In(1)
24	22.53	111.91	Open To Flow (2)
38	29.85	113.00	Shut-In(2)
70	985.48	113.54	End Shut-In(2)
70	1958.16	114.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
3.00	mud w/oil spots 100%m	0.01

Gas Rates

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



DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61467

DST#: 1

ATTN: Vern Schrag

Test Start: 2015.02.17 @ 16:30:27

GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:10:12

Time Test Ended: 22:30:42

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 84

Interval: **4189.00 ft (KB) To 4210.00 ft (KB) (TVD)**

Reference Elevations: 2837.00 ft (KB)

Total Depth: 4210.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: **8844**

Inside

Press@RunDepth: psig @ 4190.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.17

End Date:

2015.02.17

Last Calib.:

2015.02.17

Start Time: 16:31:14

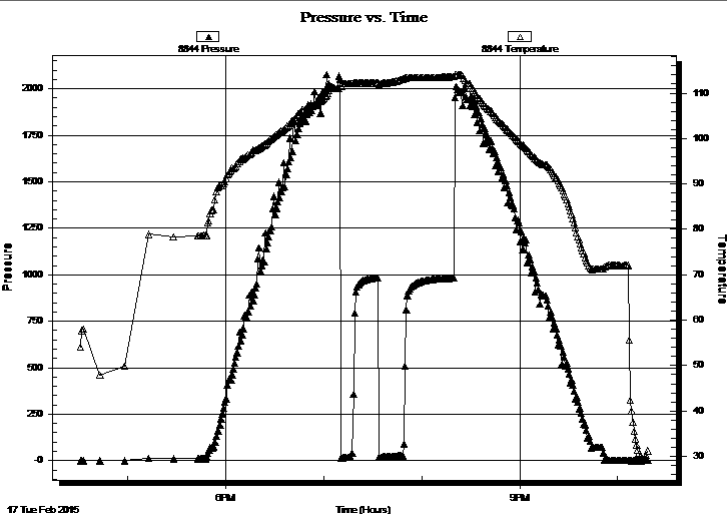
End Time:

22:18:29

Time On Btm:

Time Off Btm:

TEST COMMENT: Surface blow
No return
Weak surface blow in 5 min.
No return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
3.00	mud w/oil spots 100%m	0.01

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering Inc

18-17s-29w Lane,KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61467

DST#: 1

ATTN: Vern Schrag

Test Start: 2015.02.17 @ 16:30:27

Tool Information

Drill Pipe:	Length: 4046.00 ft	Diameter: 3.80 inches	Volume: 56.75 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 124.00 ft	Diameter: 2.25 inches	Volume: 0.61 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 57.36 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4189.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	21.00 ft			
Tool Length:	49.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

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

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4162.00	
Shut In Tool	5.00			4167.00	
Hydraulic tool	5.00			4172.00	
Jars	5.00			4177.00	
Safety Joint	3.00			4180.00	
Packer	5.00			4185.00	28.00 Bottom Of Top Packer
Packer	4.00			4189.00	
Stubb	1.00			4190.00	
Recorder	0.00	6771	Outside	4190.00	
Recorder	0.00	8844	Inside	4190.00	
Perforations	15.00			4205.00	
Bullnose	5.00			4210.00	21.00 Bottom Packers & Anchor

Total Tool Length: 49.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61467

DST#: 1

ATTN: Vern Schrag

Test Start: 2015.02.17 @ 16:30:27

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.96 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
3.00	mud w /oil spots 100%m	0.015

Total Length: 3.00 ft Total Volume: 0.015 bbl

Num Fluid Samples: 0

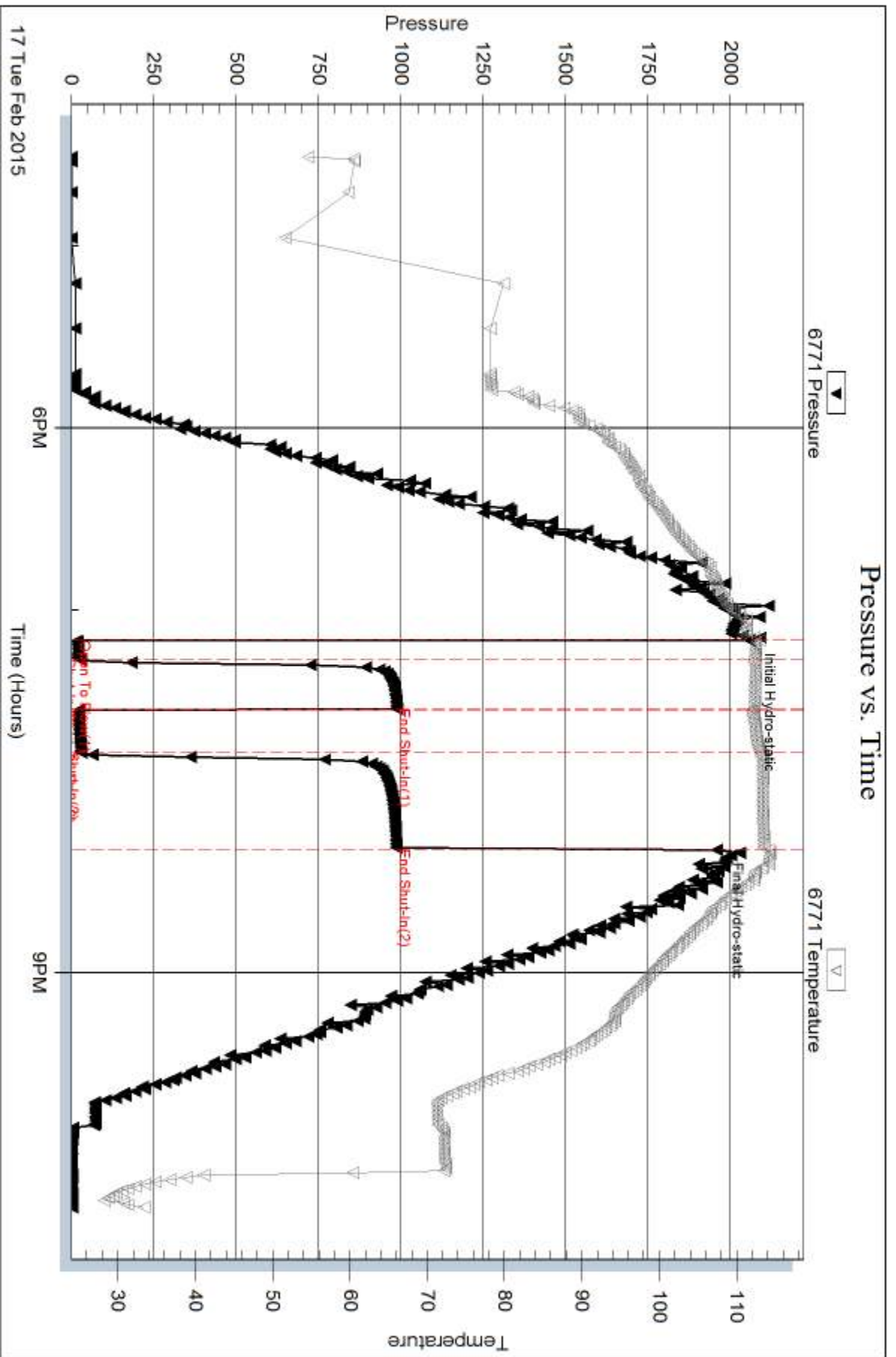
Num Gas Bombs: 0

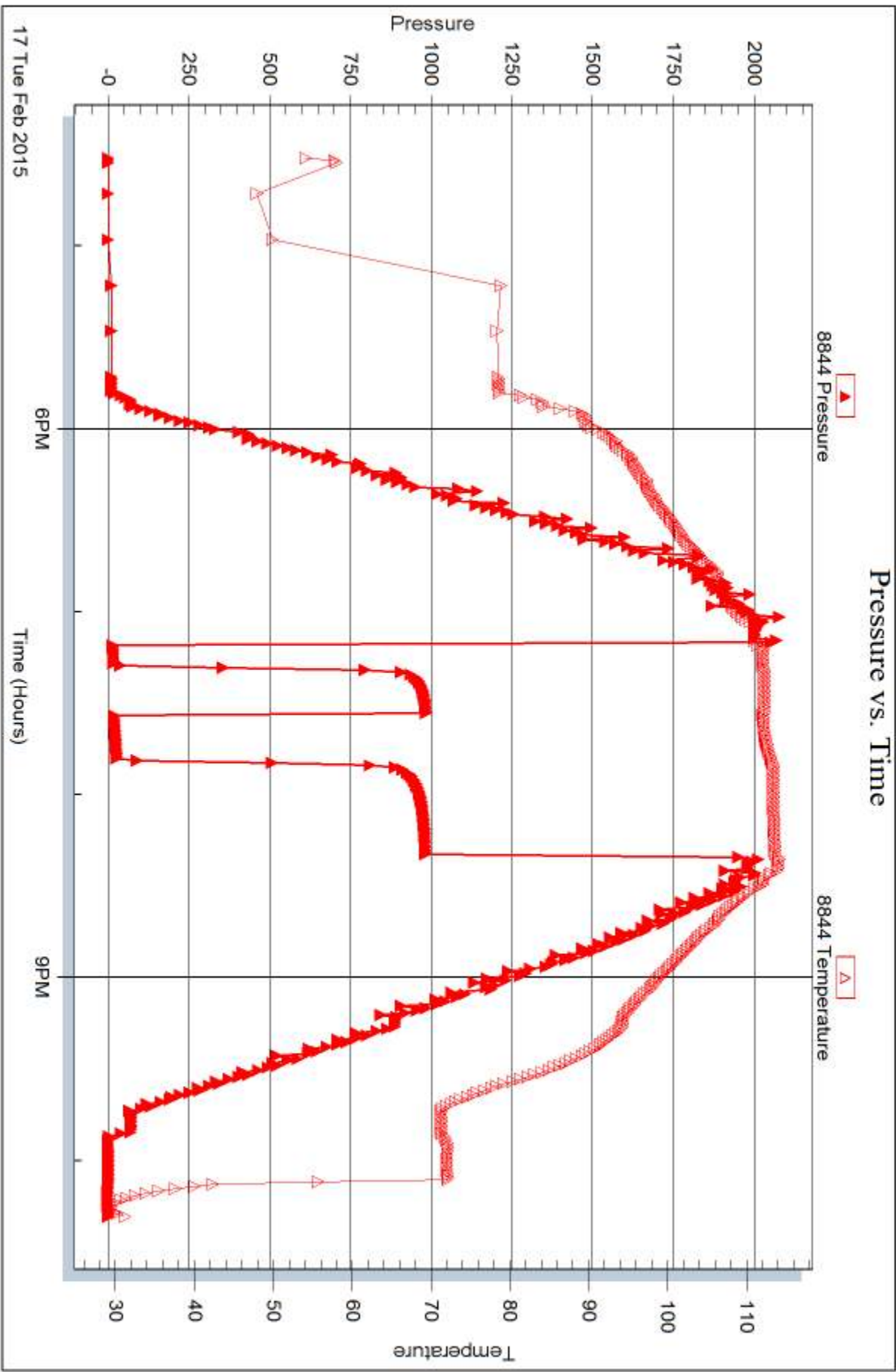
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Buena Vista #1-18

18-17s-29w Lane,KS

Start Date: 2015.02.18 @ 09:10:34

End Date: 2015.02.18 @ 14:30:19

Job Ticket #: 61468 DST #: 2

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

Printed: 2015.02.23 @ 10:49:25



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61468

DST#: 2

Test Start: 2015.02.18 @ 09:10:34

GENERAL INFORMATION:

Formation: **LKC K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:14:34

Time Test Ended: 14:30:19

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4220.00 ft (KB) To 4232.00 ft (KB) (TVD)

Reference Elevations: 2837.00 ft (KB)

Total Depth: 42132.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6771 Outside

Press@RunDepth: 19.68 psig @ 4221.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.18

End Date:

2015.02.18

Last Calib.:

2015.02.18

Start Time: 09:10:34

End Time:

14:18:19

Time On Btm:

2015.02.18 @ 11:14:19

Time Off Btm:

2015.02.18 @ 12:21:49

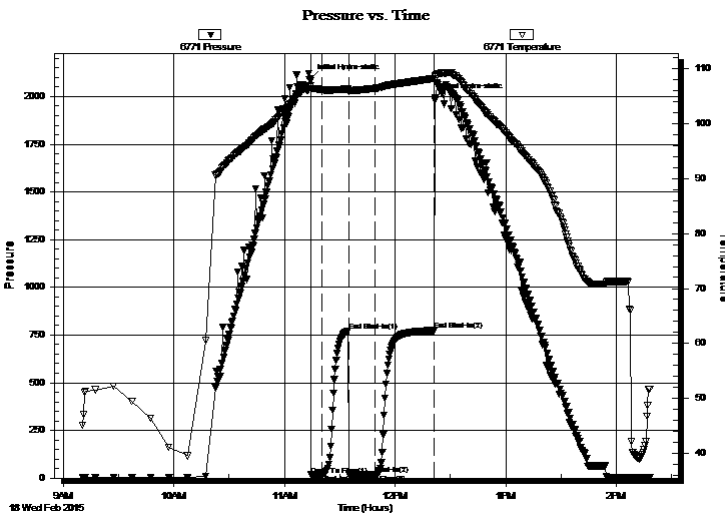
TEST COMMENT: Surface blow died in 5 min.

No return

No blow

No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2094.21	106.99	Initial Hydro-static
1	17.17	106.33	Open To Flow (1)
6	19.26	106.21	Shut-In(1)
21	772.85	106.33	End Shut-In(1)
21	18.12	105.92	Open To Flow (2)
35	19.68	106.49	Shut-In(2)
67	774.59	108.26	End Shut-In(2)
68	1992.69	108.75	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	mud 100% m	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61468 **DST#: 2**
Test Start: 2015.02.18 @ 09:10:34

GENERAL INFORMATION:

Formation: **LKC K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:14:34

Time Test Ended: 14:30:19

Interval: 4220.00 ft (KB) To 4232.00 ft (KB) (TVD)

Total Depth: 42132.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Reference Elevations: 2837.00 ft (KB)

2829.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844

Press@RunDepth: psig @ ft (KB)

Start Date: 2015.02.18 End Date: 2015.02.18

Start Time: 09:10:54 End Time: 14:18:24

Capacity: 8000.00 psig

Last Calib.: 2015.02.18

Time On Btm:

Time Off Btm:

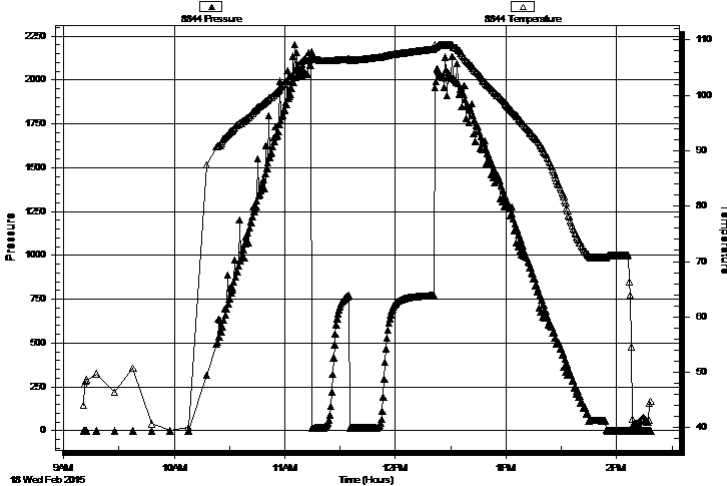
TEST COMMENT: Surface blow died in 5 min.

No return

No blow

No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
1.00	mud 100% m	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

Larson Engineering Inc

18-17s-29w Lane,KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61468

DST#: 2

ATTN: Vern Schrag

Test Start: 2015.02.18 @ 09:10:34

Tool Information

Drill Pipe:	Length: 4078.00 ft	Diameter: 3.80 inches	Volume: 57.20 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 124.00 ft	Diameter: 2.25 inches	Volume: 0.61 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 57.81 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4220.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	12.00 ft			
Tool Length:	40.00 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			4193.00	
Shut In Tool	5.00			4198.00	
Hydraulic tool	5.00			4203.00	
Jars	5.00			4208.00	
Safety Joint	3.00			4211.00	
Packer	5.00			4216.00	28.00 Bottom Of Top Packer
Packer	4.00			4220.00	
Stubb	1.00			4221.00	
Recorder	0.00	6771	Outside	4221.00	
Recorder	0.00	8844	Inside	4221.00	
Perforations	6.00			4227.00	
Bullnose	5.00			4232.00	12.00 Bottom Packers & Anchor

Total Tool Length: 40.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc

18-17s-29w Lane,KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61468

DST#: 2

ATTN: Vern Schrag

Test Start: 2015.02.18 @ 09:10:34

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.97 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	mud 100%m	0.005

Total Length: 1.00 ft Total Volume: 0.005 bbl

Num Fluid Samples: 0

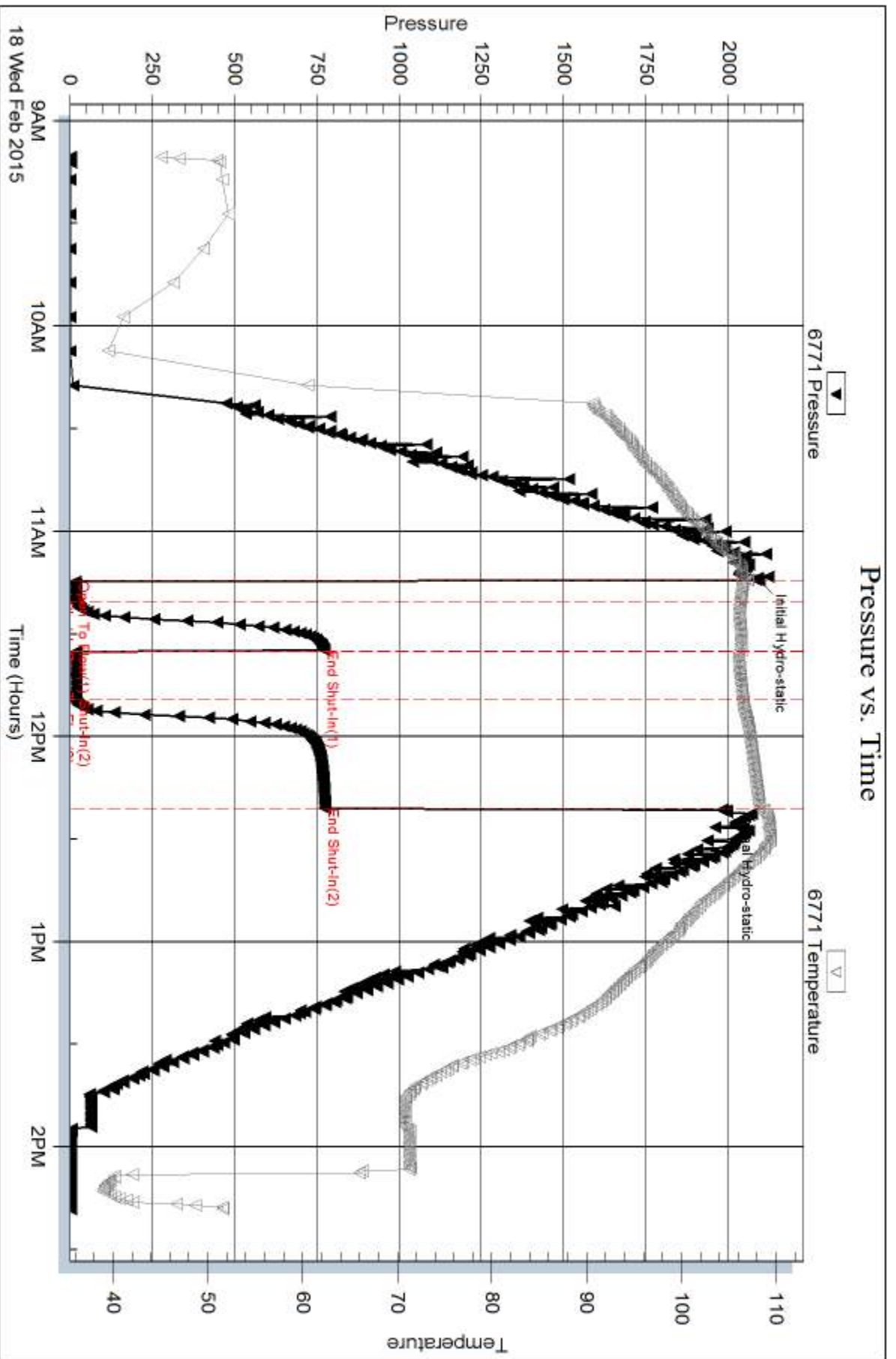
Num Gas Bombs: 0

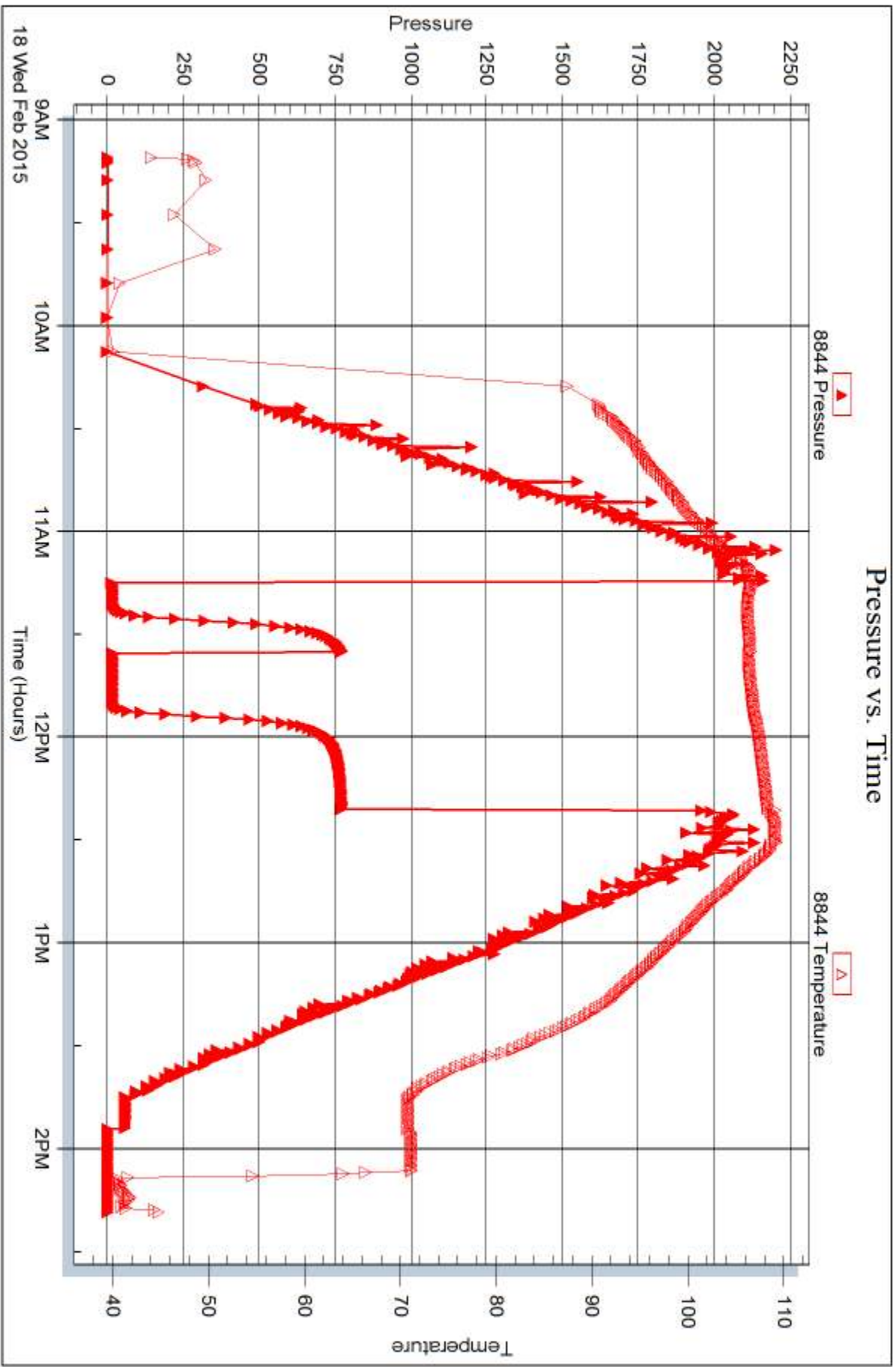
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Buena Vista #1-18

18-17s-29w Lane,KS

Start Date: 2015.02.19 @ 21:51:02

End Date: 2015.02.20 @ 04:30:02

Job Ticket #: 61469 DST #: 3

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

Printed: 2015.02.23 @ 10:48:25



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61469

DST#: 3

Test Start: 2015.02.19 @ 21:51:02

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:02:02

Time Test Ended: 04:30:02

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4299.00 ft (KB) To 4400.00 ft (KB) (TVD)

Reference Elevations: 2837.00 ft (KB)

Total Depth: 4400.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8844

Inside

Press@RunDepth: 365.25 psig @ 4300.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.19

End Date:

2015.02.20

Last Calib.:

2015.02.20

Start Time: 21:51:02

End Time:

04:17:02

Time On Btm:

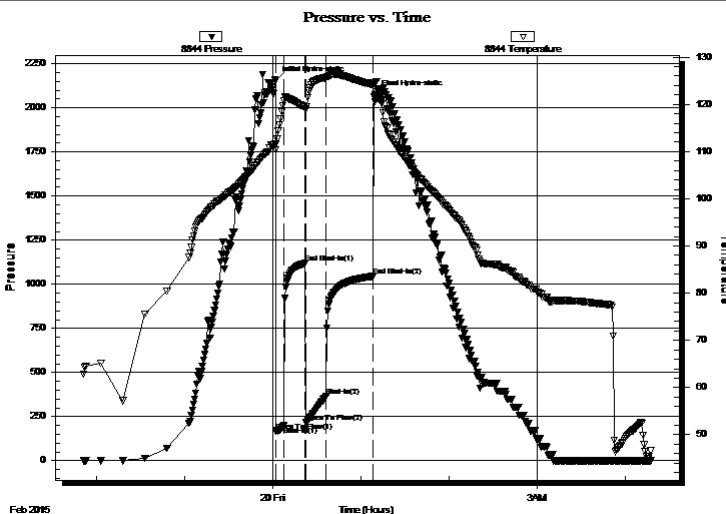
2015.02.20 @ 00:01:47

Time Off Btm:

2015.02.20 @ 01:09:17

TEST COMMENT: B.O.B. in 2 min.
3" return blow
B.O.B. in 1 min
10" return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2154.07	111.56	Initial Hydro-static
1	166.12	110.36	Open To Flow (1)
6	197.87	120.70	Shut-In(1)
20	1119.58	119.46	End Shut-In(1)
21	218.59	118.95	Open To Flow (2)
35	365.25	125.66	Shut-In(2)
67	1045.78	124.16	End Shut-In(2)
68	2073.75	124.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	g m c o 30g 30m 40o	0.59
120.00	g s m c o 30g 10m 60o	1.65
615.00	c g o 25g 75o	8.63
0.00	1125' gas in pipe	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61469

DST#: 3

ATTN: Vern Schrag

Test Start: 2015.02.19 @ 21:51:02

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:02:02

Time Test Ended: 04:30:02

Interval: 4299.00 ft (KB) To 4400.00 ft (KB) (TVD)

Total Depth: 4400.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Reference Elevations: 2837.00 ft (KB)

2829.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771

Outside

Press@RunDepth: psig @ 4300.00 ft (KB)

Start Date: 2015.02.19

End Date:

2015.02.20

Start Time: 21:51:00

End Time:

04:17:15

Capacity: 8000.00 psig

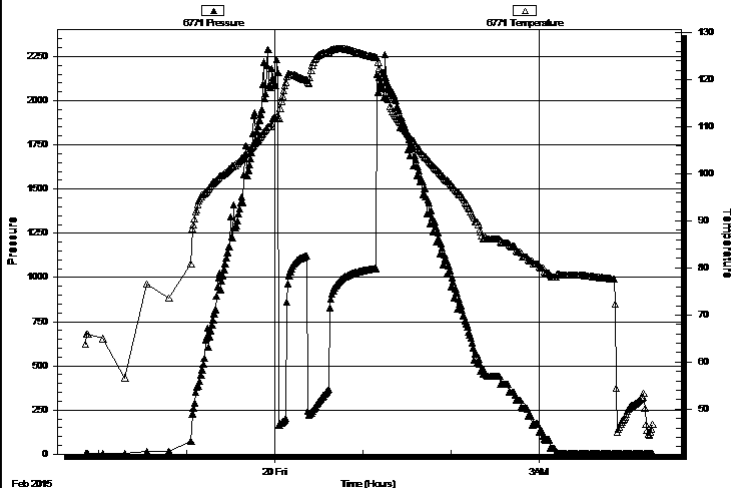
Last Calib.: 2015.02.20

Time On Btm:

Time Off Btm:

TEST COMMENT: B.O.B. in 2 min.
3" return blow
B.O.B. in 1 min
10" return blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
120.00	g m c o 30g 30m 40o	0.59
120.00	g s m c o 30g 10m 60o	1.65
615.00	c g o 25g 75o	8.63
0.00	1125' gas in pipe	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

Larson Engineering Inc

18-17s-29w Lane,KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61469

DST#: 3

ATTN: Vern Schrag

Test Start: 2015.02.19 @ 21:51:02

Tool Information

Drill Pipe:	Length: 4171.00 ft	Diameter: 3.80 inches	Volume: 58.51 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 124.00 ft	Diameter: 2.25 inches	Volume: 0.61 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 59.12 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4299.00 ft			Final 69000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	101.00 ft			
Tool Length:	129.00 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			4272.00	
Shut In Tool	5.00			4277.00	
Hydraulic tool	5.00			4282.00	
Jars	5.00			4287.00	
Safety Joint	3.00			4290.00	
Packer	5.00			4295.00	28.00 Bottom Of Top Packer
Packer	4.00			4299.00	
Stubb	1.00			4300.00	
Recorder	0.00	6771	Outside	4300.00	
Recorder	0.00	8844	Inside	4300.00	
Perforations	30.00			4330.00	
Change Over Sub	1.00			4331.00	
Drill Pipe	63.00			4394.00	
Change Over Sub	1.00			4395.00	
Bullnose	5.00			4400.00	101.00 Bottom Packers & Anchor

Total Tool Length: 129.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61469

DST#: 3

ATTN: Vern Schrag

Test Start: 2015.02.19 @ 21:51:02

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:

0 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1700.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
120.00	g m c o 30g 30m 40o	0.590
120.00	g s m c o 30g 10m 60o	1.647
615.00	c g o 25g 75o	8.627
0.00	1125' gas in pipe	0.000

Total Length: 855.00 ft

Total Volume: 10.864 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

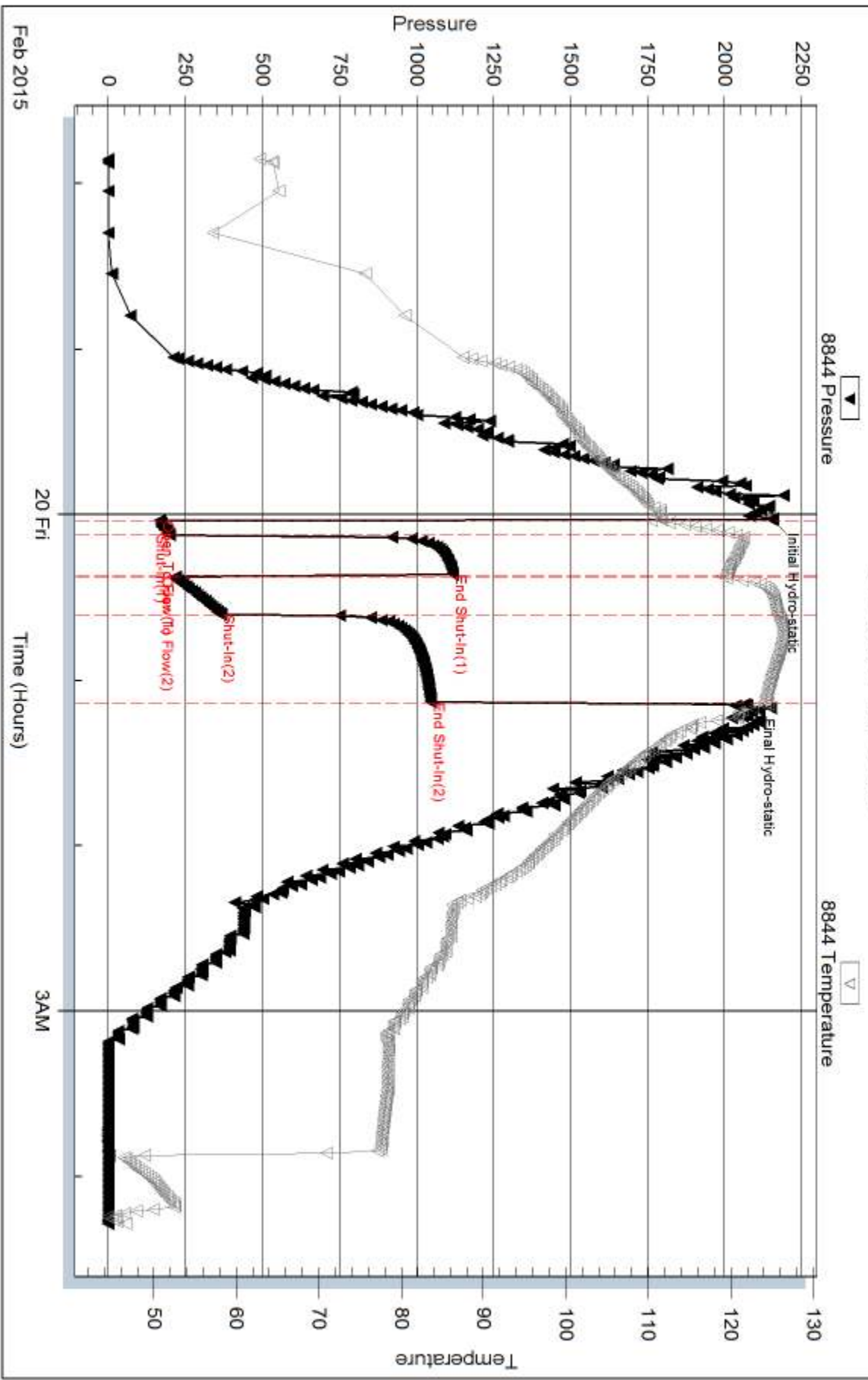
Serial #:

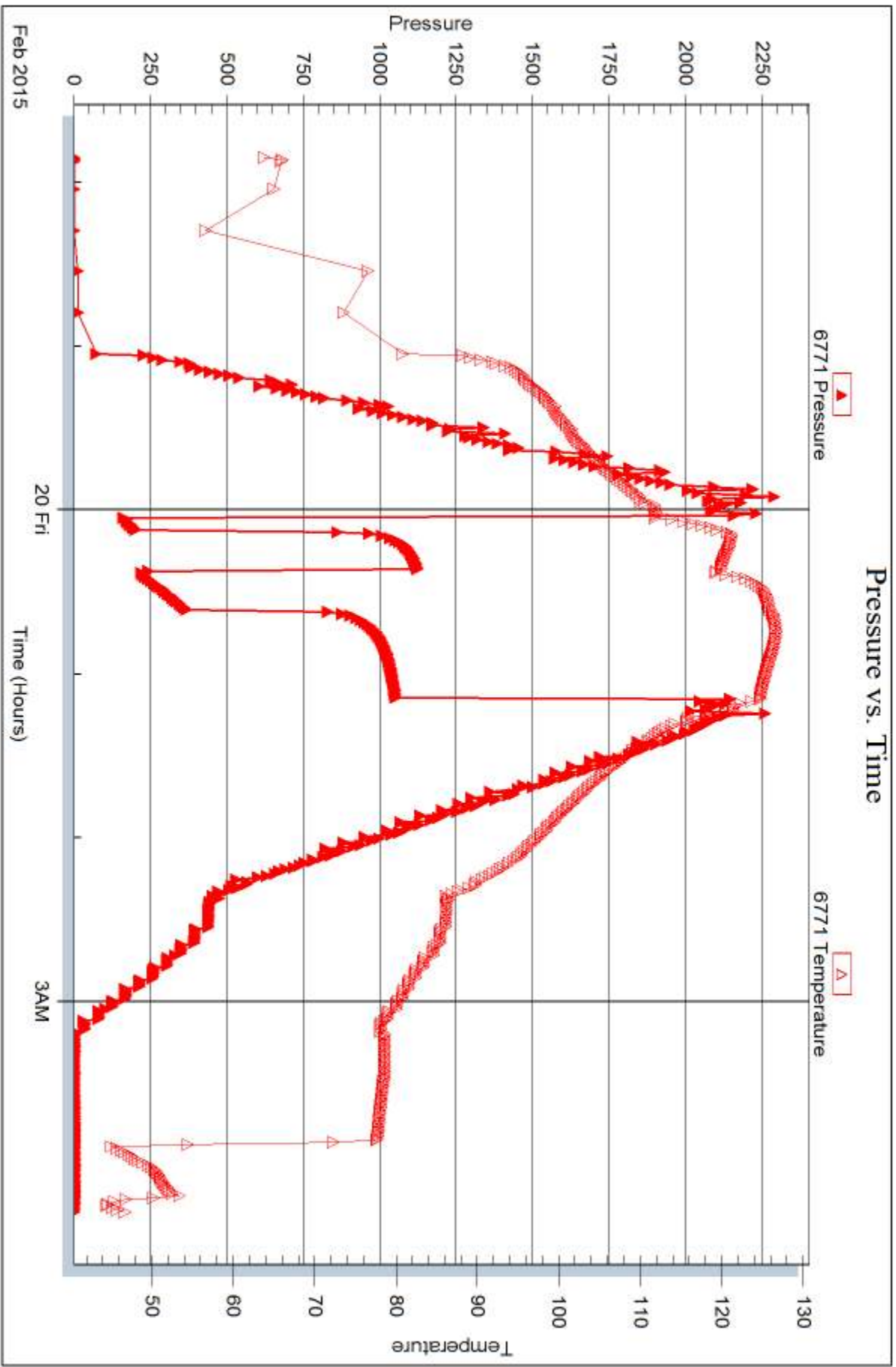
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Buena Vista #1-18

18-17s-29w Lane,KS

Start Date: 2015.02.21 @ 01:11:04

End Date: 2015.02.21 @ 07:00:34

Job Ticket #: 61470 DST #: 4

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

Printed: 2015.02.23 @ 10:41:51



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61470

DST#: 4

Test Start: 2015.02.21 @ 01:11:04

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:31:19

Time Test Ended: 07:00:34

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4408.00 ft (KB) To 4560.00 ft (KB) (TVD)

Reference Elevations: 2837.00 ft (KB)

Total Depth: 4560.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8844 Inside

Press@RunDepth: 22.95 psig @ 4409.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.21

End Date:

2015.02.21

Last Calib.:

2015.02.21

Start Time: 01:11:04

End Time:

06:49:34

Time On Btm:

2015.02.21 @ 03:31:04

Time Off Btm:

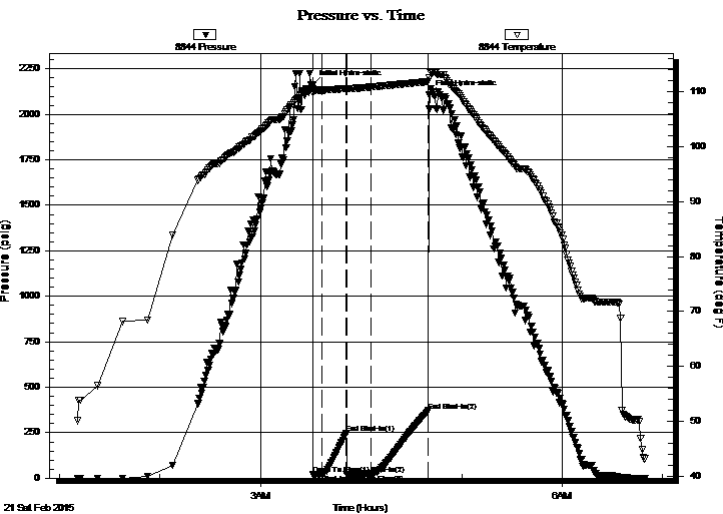
2015.02.21 @ 04:40:34

TEST COMMENT: 3/4" blow died back to 1/4"

No return

Weak surface blow died in 4 min.

No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2161.17	110.63	Initial Hydro-static
1	19.95	109.75	Open To Flow (1)
6	21.14	110.30	Shut-In(1)
20	244.52	110.59	End Shut-In(1)
21	21.20	110.48	Open To Flow (2)
35	22.95	110.87	Shut-In(2)
69	370.70	111.86	End Shut-In(2)
70	2109.97	112.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.02

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

ATTN: Vern Schrag

Job Ticket: 61470

DST#: 4

Test Start: 2015.02.21 @ 01:11:04

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:31:19

Time Test Ended: 07:00:34

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4408.00 ft (KB) To 4560.00 ft (KB) (TVD)

Reference Elevations: 2837.00 ft (KB)

Total Depth: 4560.00 ft (KB) (TVD)

2829.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6771 Outside

Press@RunDepth: psig @ 4409.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.21

End Date:

2015.02.21

Last Calib.:

2015.02.21

Start Time: 01:10:24

End Time:

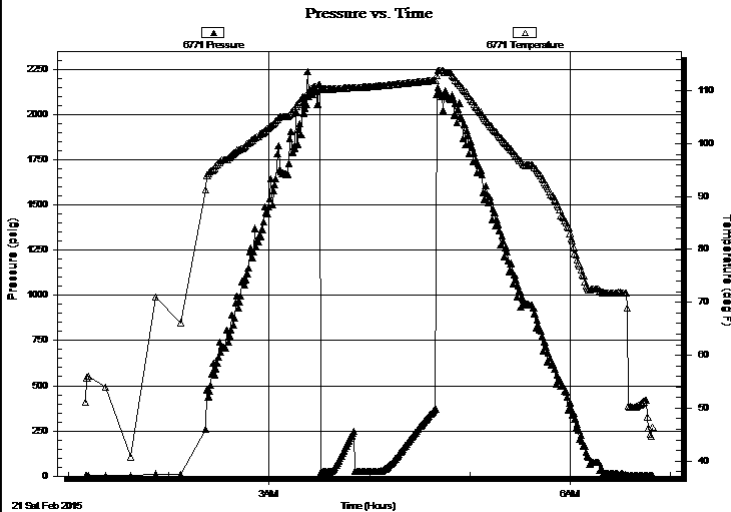
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Time On Btm:

Time Off Btm:

TEST COMMENT: 3/4" blow died back to 1/4"
No return
Weak surface blow died in 4 min.
No return

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering Inc

18-17s-29w Lane,KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61470

DST#: 4

ATTN: Vern Schrag

Test Start: 2015.02.21 @ 01:11:04

Tool Information

Drill Pipe:	Length: 4266.00 ft	Diameter: 3.80 inches	Volume: 59.84 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 124.00 ft	Diameter: 2.25 inches	Volume: 0.61 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 60.45 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4408.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	152.00 ft			
Tool Length:	180.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

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

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4381.00	
Shut In Tool	5.00			4386.00	
Hydraulic tool	5.00			4391.00	
Jars	5.00			4396.00	
Safety Joint	3.00			4399.00	
Packer	5.00			4404.00	28.00 Bottom Of Top Packer
Packer	4.00			4408.00	
Stubb	1.00			4409.00	
Recorder	0.00	6771	Outside	4409.00	
Recorder	0.00	8844	Inside	4409.00	
Perforations	19.00			4428.00	
Change Over Sub	1.00			4429.00	
Drill Pipe	125.00			4554.00	
Change Over Sub	1.00			4555.00	
Bullnose	5.00			4560.00	152.00 Bottom Packers & Anchor

Total Tool Length: 180.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc

18-17s-29w Lane, KS

562 W State Rd 4
Olmitz, KS 67564

Buena Vista #1-18

Job Ticket: 61470

DST#: 4

ATTN: Vern Schrag

Test Start: 2015.02.21 @ 01:11:04

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbf

Water Loss: 5.99 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1700.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
5.00	mud 100%m	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbf

Num Fluid Samples: 0

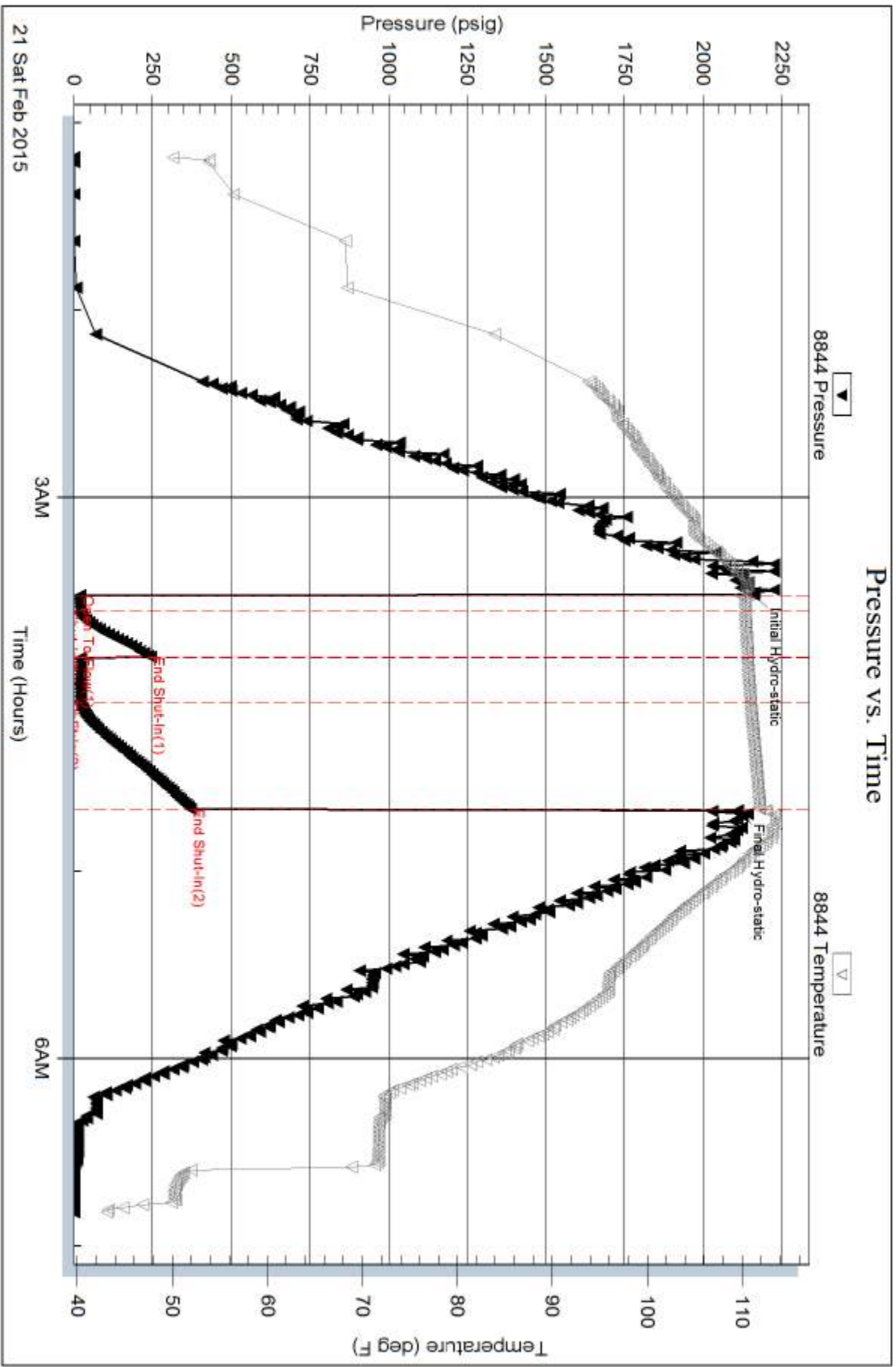
Num Gas Bombs: 0

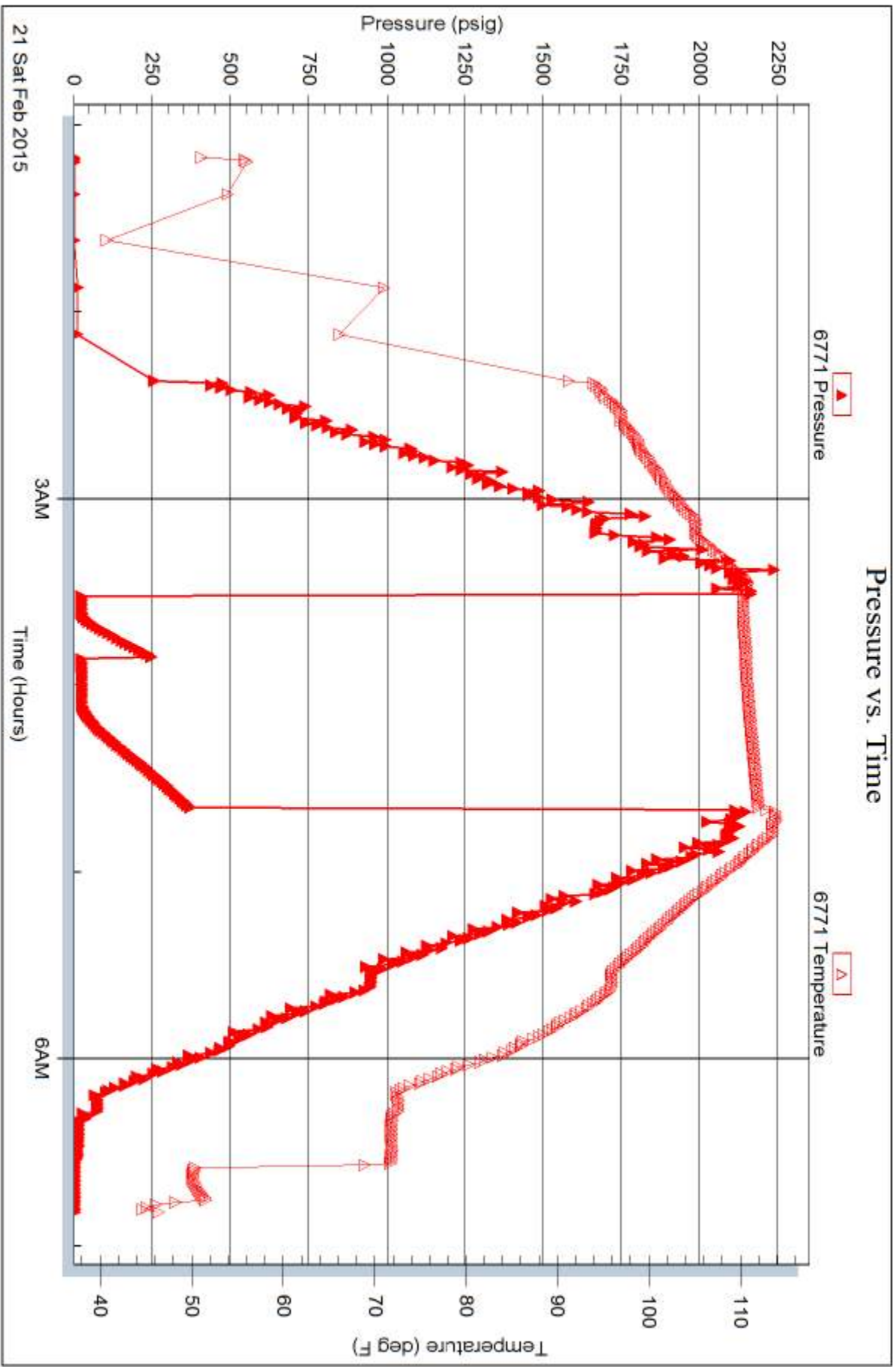
Serial #:

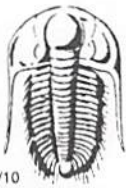
Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61467

4/10

Well Name & No. Buena Vista #1-18 Test No. #1 Date 2/17/15
 Company Parson Engineering Inc Elevation 2837 KB 2829 GL
 Address 562 W State Rd #1, Okmütz KS
 Co. Rep / Geo Ken Schrag Rig HD #3
 Location: Sec. 18 Twp. 17S Rge. 29W Co. Dane State KS

Interval Tested 4189 - 4210 Zone Tested J
 Anchor Length 21 Drill Pipe Run 4046 Mud Wt. 9.2
 Top Packer Depth 4184 Drill Collars Run 124 Vis 50
 Bottom Packer Depth 4189 Wt. Pipe Run _____ WL 8.0
 Total Depth 4210 Chlorides 2000 ppm System LCM #1

Blow Description Surface blow
No return
Weak surface blow at 3 min.
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>3'</u>	<u>Mud w/ oil spots</u>	<u>spots</u>		<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

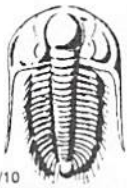
Rec Total 3' BHT 114° Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic 2055 Test 1150 T-On Location 15:25
 (B) First Initial Flow 18 Jars 250 T-Started 16:30
 (C) First Final Flow 19 Safety Joint 75 T-Open 19:00
 (D) Initial Shut-In 986 Circ Sub N/A T-Pulled 20:15
 (E) Second Initial Flow 22 Hourly Standby _____ T-Out _____
 (F) Second Final Flow 29 Mileage 50 RT 50 Comments _____
 (G) Final Shut-In 985 Sampler _____
 (H) Final Hydrostatic 1958 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1525
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1525

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

Approved By James C. Schrag Our Representative [Signature]

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or person 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. 61468

Well Name & No. Buena Vista #1-18 Test No. #2 Date 2/18/15
 Company Hanson Engineering Inc. Elevation 2937 KB 2829 GL
 Address 562 W State Rd 4 Chautauk, KS
 Co. Rep / Geo. Vern Schrag Rig H.D. #3
 Location: Sec. 18 Twp. 17S Rge. 29W Co. Law State KS

Interval Tested 4220 4232 Zone Tested R
 Anchor Length _____ Drill Pipe Run 4078 Mud Wt. 9.1
 Top Packer Depth 4213 Drill Collars Run 124 Vis 54
 Bottom Packer Depth 4220 Wt. Pipe Run _____ WL 6.0
 Total Depth 4232 Chlorides 2400 ppm System LCM #2

Blow Description Surface blow dried at 5min
No return
No blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
1	Mud			100	

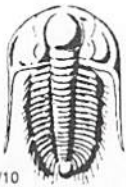
Rec Total 1 BHT 109 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2094 Test 1150 T-On Location 08:15
 (B) First Initial Flow 17 Jars 250 T-Started 09:00
 (C) First Final Flow 19 Safety Joint 75 T-Open 11:14
 (D) Initial Shut-In 772 Circ Sub N/C T-Pulled 12:21
 (E) Second Initial Flow 18 Hourly Standby _____ T-Out _____
 (F) Second Final Flow 19 Mileage 300 50 Comments _____
 (G) Final Shut-In 774 Sampler _____
 (H) Final Hydrostatic 1992 Straddle _____

Initial Open 5 Shale Packer _____ Ruined Shale Packer _____
 Initial Shut-In 15 Extra Packer _____ Ruined Packer _____
 Final Flow 15 Extra Recorder _____ Sub Total 0
 Final Shut-In 30 Day Standby _____ Total 1525
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1525

Approved By Vernon C Schrag Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61469

4/10

Well Name & No. Buena Vista #1-18 Test No. #3 Date 2/20/15
 Company Larson Engineering Inc. Elevation 2837 KB 2829 GL
 Address 562 West State Rd 4, Okm #2, Ks
 Co. Rep / Geo. Vern Schrag Rig H.D. #3
 Location: Sec. 18 Twp. 17s Rge. 29w Co. Lawe State Ks

Interval Tested 4299 4400 Zone Tested Marmaton
 Anchor Length 101 Drill Pipe Run 4171' Mud Wt. 9.1
 Top Packer Depth 4294 Drill Collars Run 124' Vis 55
 Bottom Packer Depth 4299 Wt. Pipe Run --- WL 4.0
 Total Depth 4400 Chlorides 1700 ppm System LCM #1

Blow Description B.O.B. in 2 min
3" in Return
B.O.B. in 1 min
10" in Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>615'</u>	<u>CGO</u>	<u>25%</u>	<u>75%</u>		
<u>120'</u>	<u>gsmco</u>	<u>30%</u>	<u>60%</u>	<u>10%</u>	
<u>120'</u>	<u>gmco</u>	<u>30%</u>	<u>40%</u>	<u>30%</u>	

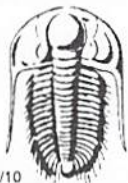
Rec Total 855' BHT Gravity 30 API RW --- @ --- °F Chlorides --- ppm

(A) Initial Hydrostatic 2154 Test 1150 T-On Location 21:05 2/19
 (B) First Initial Flow 166 Jars 250 T-Started 21:50
 (C) First Final Flow 197 Safety Joint 75 T-Open 00:01
 (D) Initial Shut-In 1119 Circ Sub N/C T-Pulled 01:06
 (E) Second Initial Flow 218 Hourly Standby _____ T-Out 04:30
 (F) Second Final Flow 365 Mileage 3000 50 Comments _____
 (G) Final Shut-In 1045 Sampler _____
 (H) Final Hydrostatic 2073 Straddle _____
 Shale Packer _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Packer _____
 Extra Copies _____

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30
 Day Standby 1d 9.75h
 Accessibility _____
 Sub Total 1525 MP/DST Disc't _____

Approved By Vern Schrag Our Representative [Signature]

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. **61470**

Well Name & No. Buena Vista #1-18 Test No. #4 Date 2/21/13
 Company Larson Engineering Inc. Elevation 2837 KB 2829 GL
 Address 362 West State Rd N, Chmitz, KS
 Co. Rep / Geo. Verd Schrag Rig A.D. #3
 Location: Sec. 18 Twp. 175 Rge. 29w Co. Lane State KS

Interval Tested 4408 4560 Zone Tested Chero Ree
 Anchor Length 152 Drill Pipe Run 4266' Mud Wt. 9.1'
 Top Packer Depth 4403 Drill Collars Run 124 Vis 53
 Bottom Packer Depth 4408 Wt. Pipe Run --- WL 6.0
 Total Depth 4560 Chlorides 1700 ppm System LCM #1

Blow Description 3/4" w blow died back to 1/4" w.
No return
Weak surface blow died w 4 min w
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5'</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5' BHT 112° Gravity --- API RW --- @ --- °F Chlorides --- ppm

(A) Initial Hydrostatic <u>2161</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>00:40</u>
(B) First Initial Flow <u>19</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>01:10</u>
(C) First Final Flow <u>21</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>03:30</u>
(D) Initial Shut-In <u>244</u>	<input checked="" type="checkbox"/> Circ Sub <u>w/c</u>	T-Pulled <u>04:35</u>
(E) Second Initial Flow <u>21</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>07:00</u>
(F) Second Final Flow <u>22</u>	<input checked="" type="checkbox"/> Mileage <u>50 RT</u> <u>50</u>	Comments <u>Auto Released</u>
(G) Final Shut-In <u>370</u>	<input type="checkbox"/> Sampler	<u>3 Loaded Tool</u>
(H) Final Hydrostatic <u>2109</u>	<input type="checkbox"/> Straddle	<u>2/21/13 @ 07:00 AM.</u>

Initial Open <u>5</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>15</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>15</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>30</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1525</u>

Approved By Jermol Ashby Sub Total 1525 Our Representative [Signature]

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