



## DRILL STEM TEST REPORT

Prepared For: **Grady Bolding Corp.**

PO Box 486  
Ellinwood, KS 67526

ATTN: Clint Musgrove

### **Armbruster #5**

#### **17-12s-20w Ellis,KS**

Start Date: 2013.11.07 @ 02:17:41

End Date: 2013.11.07 @ 11:41:11

Job Ticket #: 55770                      DST #: 1

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

Printed: 2013.11.13 @ 11:15:44



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55770

**DST#: 1**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 02:17:41

## GENERAL INFORMATION:

Formation: **LKC**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 06:30:41  
 Time Test Ended: 11:41:11  
 Interval: **3620.00 ft (KB) To 3700.00 ft (KB) (TVD)**  
 Total Depth: 3700.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brannan L  
 Unit No: 68  
 Reference Elevations: 2299.00 ft (KB)  
 2290.00 ft (CF)  
 KB to GR/CF: 9.00 ft

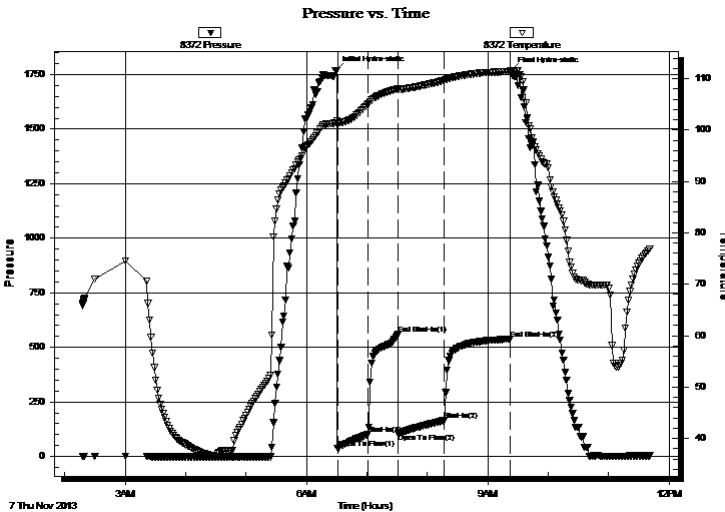
## Serial #: 8372

Inside

Press@RunDepth: 164.41 psig @ 3621.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.11.07 End Date: 2013.11.07 Last Calib.: 2013.11.07  
 Start Time: 02:17:42 End Time: 11:41:11 Time On Btm: 2013.11.07 @ 06:28:41  
 Time Off Btm: 2013.11.07 @ 09:23:11

TEST COMMENT: 30- IF- BOB 14 mins  
 30- IS- Surface blow  
 45- FF- BOB 19 mins  
 60- FSI- No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1768.84	101.50	Initial Hydro-static
2	37.21	101.49	Open To Flow (1)
33	100.32	105.07	Shut-In(1)
62	559.08	108.04	End Shut-In(1)
63	105.44	107.87	Open To Flow (2)
108	164.41	109.65	Shut-In(2)
173	538.36	111.36	End Shut-In(2)
175	1765.86	111.40	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
50.00	WMCO, 20%W 35%M 45%O	0.68
190.00	MW, 35%M 65%W	2.60
0.00	75' GIP	0.00

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55770

**DST#: 1**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 02:17:41

## Tool Information

Drill Pipe:	Length: 3632.00 ft	Diameter: 3.75 inches	Volume: 49.62 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3620.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	80.00 ft			
Tool Length:	100.00 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			3601.00	
Shut In Tool	5.00			3606.00	
Hydraulic tool	5.00			3611.00	
Packer	5.00			3616.00	20.00 Bottom Of Top Packer
Packer	4.00			3620.00	
Stubb	1.00			3621.00	
Recorder	0.00	8372	Inside	3621.00	
Recorder	0.00	8321	Outside	3621.00	
Perforations	11.00			3632.00	
Change Over Sub	1.00			3633.00	
Drill Pipe	63.00			3696.00	
change Over Sub	1.00			3697.00	
Bullnose	3.00			3700.00	80.00 Bottom Packers & Anchor

**Total Tool Length: 100.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55770

**DST#: 1**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 02:17:41

## 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:

90000 ppm

Viscosity: 61.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1900.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
50.00	WMCO, 20%W 35%M 45%O	0.683
190.00	MW, 35%M 65%W	2.596
0.00	75' GIP	0.000

Total Length: 240.00 ft      Total Volume: 3.279 bbl

Num Fluid Samples: 0

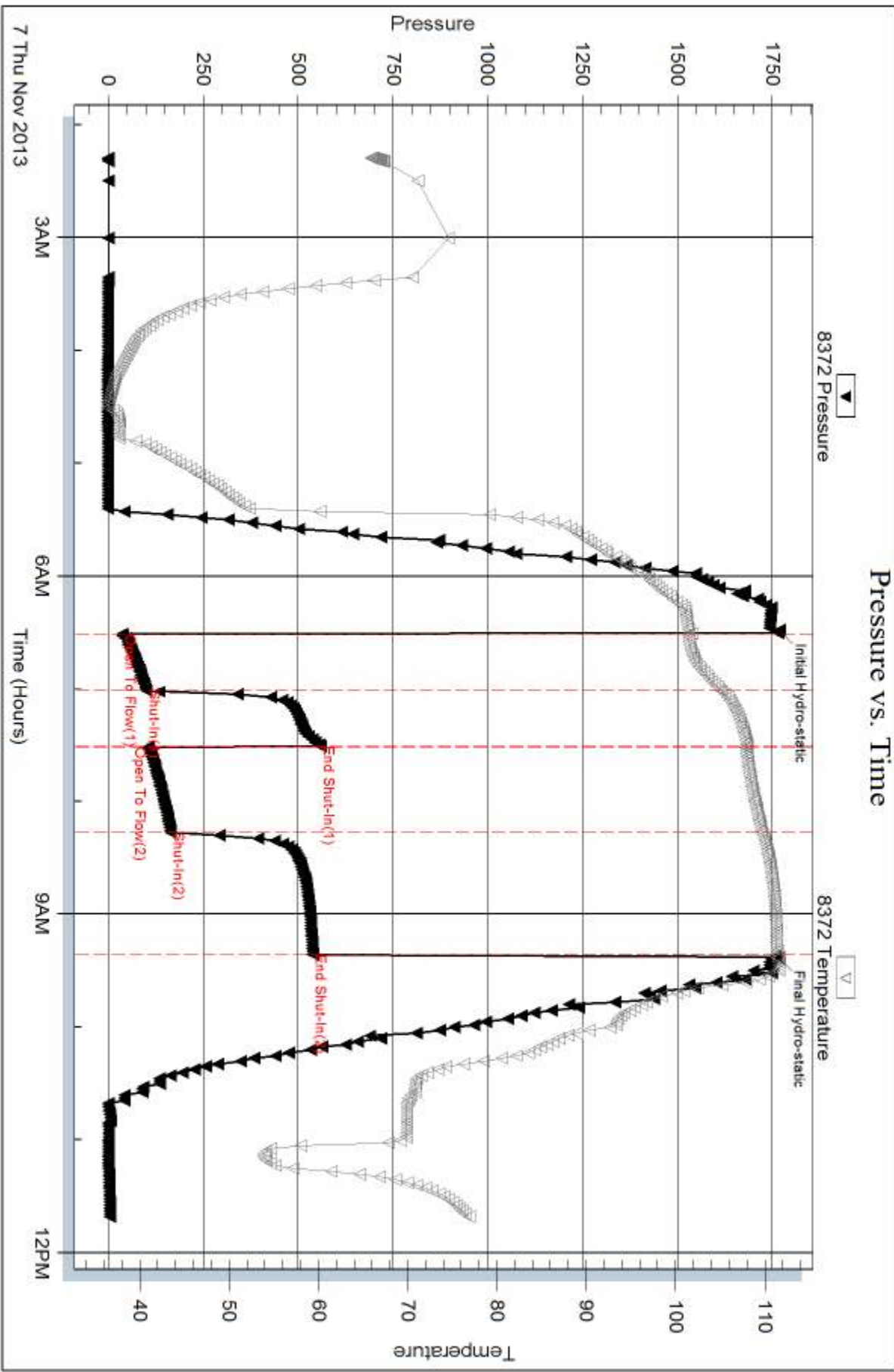
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

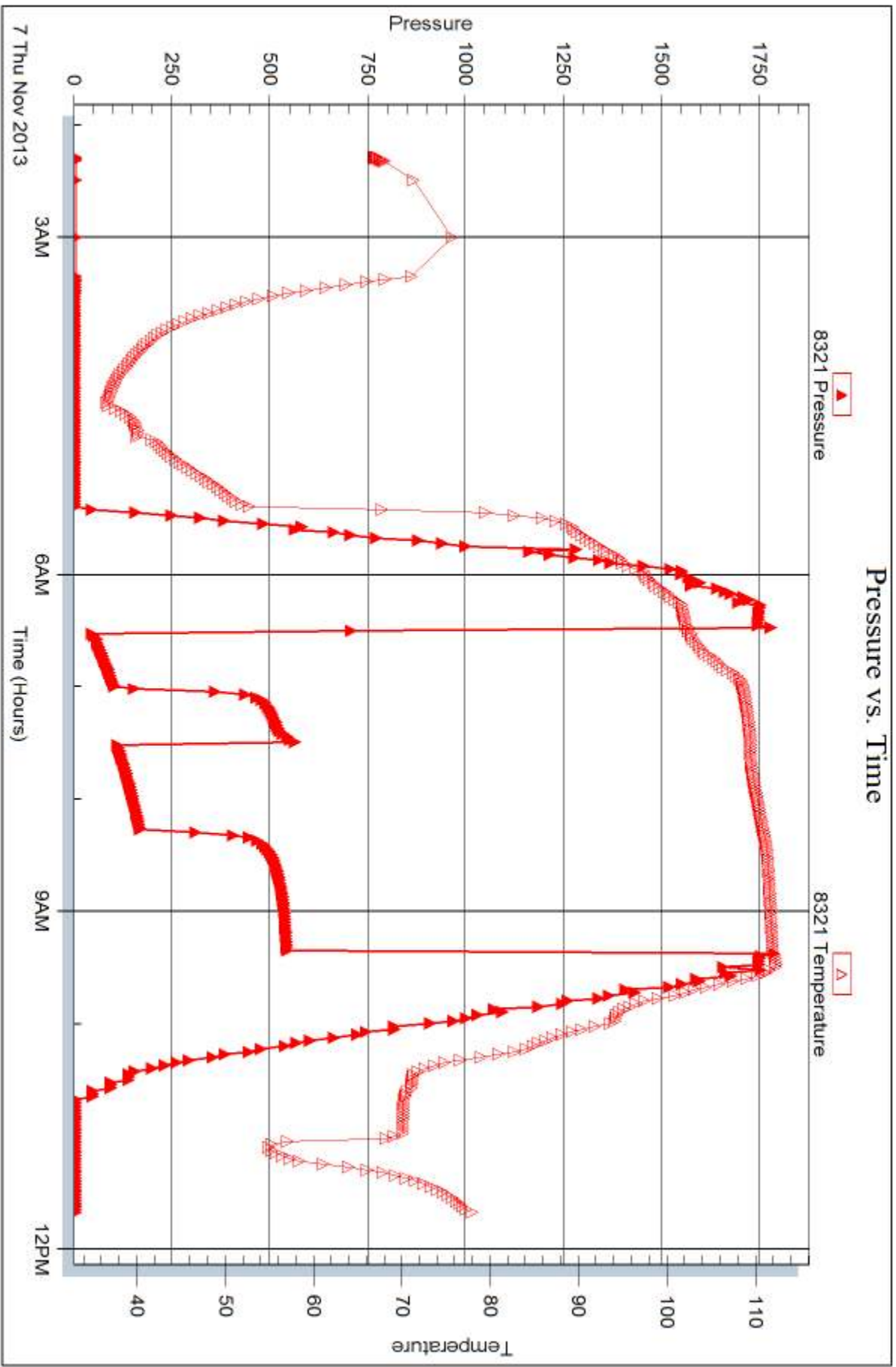


Serial #: 8321

Outside Grady Bolding Corp.

Amburster #5

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Grady Bolding Corp.**

PO Box 486  
Ellinwood, KS 67526

ATTN: Clint Musgrove

### **Armbruster #5**

#### **17-12s-20w Ellis,KS**

Start Date: 2013.11.07 @ 22:37:34

End Date: 2013.11.08 @ 04:43:04

Job Ticket #: 55771                      DST #: 2

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

Printed: 2013.11.13 @ 11:14:39





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55771

**DST#: 2**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 22:37:34

## GENERAL INFORMATION:

Formation: **LKC**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:37:04

Time Test Ended: 04:43:04

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan L

Unit No: 68

**Interval: 3796.00 ft (KB) To 3830.00 ft (KB) (TVD)**

Reference Elevations: 2299.00 ft (KB)

Total Depth: 3830.00 ft (KB) (TVD)

2290.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

**Serial #: 8372**

**Inside**

Press@RunDepth: 22.92 psig @ 3797.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.11.07 End Date: 2013.11.08

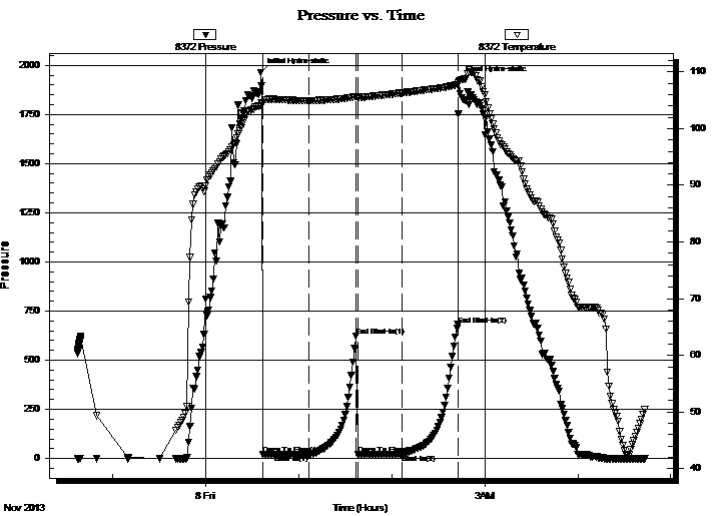
Last Calib.: 2013.11.08

Start Time: 22:37:35 End Time: 04:43:04

Time On Btm: 2013.11.08 @ 00:35:34

Time Off Btm: 2013.11.08 @ 02:43:34

**TEST COMMENT:** 30- IF- Slowly built to 4"  
30- IS- No blow  
30- FF- Slowly built to 5"  
30- FS- No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1963.67	104.09	Initial Hydro-static
2	20.18	104.36	Open To Flow (1)
31	19.80	104.96	Shut-In(1)
62	622.58	105.66	End Shut-In(1)
63	20.06	105.51	Open To Flow (2)
91	22.92	106.30	Shut-In(2)
127	681.25	107.74	End Shut-In(2)
128	1923.06	108.45	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
20.00	OCM, 5%O	0.27

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55771

**DST#: 2**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 22:37:34

## GENERAL INFORMATION:

Formation: **LKC**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 00:37:04  
 Time Test Ended: 04:43:04  
 Interval: **3796.00 ft (KB) To 3830.00 ft (KB) (TVD)**  
 Total Depth: 3830.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brannan L  
 Unit No: 68  
 Reference Elevations: 2299.00 ft (KB)  
 2290.00 ft (CF)  
 KB to GR/CF: 9.00 ft

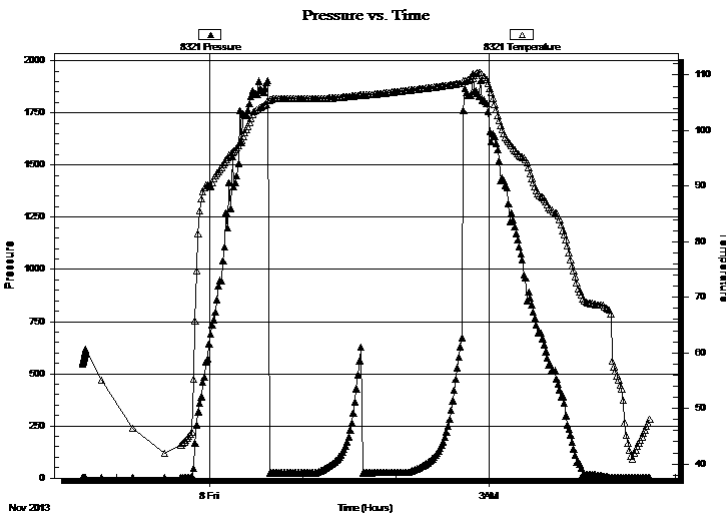
## Serial #: 8321

**Outside**

Press@RunDepth: psig @ 3797.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.11.07 End Date: 2013.11.08 Last Calib.: 2013.11.08  
 Start Time: 22:37:52 End Time: 04:43:21 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 30- IF- Slowly built to 4"  
 30- IS- No blow  
 30- FF- Slowly built to 5"  
 30- FS- No blow

## PRESSURE SUMMARY



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

## Recovery

Length (ft)	Description	Volume (bbl)
20.00	OCM, 5%O	0.27

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55771

**DST#: 2**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 22:37:34

## Tool Information

Drill Pipe:	Length: 3789.00 ft	Diameter: 3.75 inches	Volume: 51.76 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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:</u>	Tool Chased	0.00 ft
			- bbl	String Weight: Initial	47000.00 lb
Drill Pipe Above KB:	13.00 ft			Final	47000.00 lb
Depth to Top Packer:	3796.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	34.00 ft				
Tool Length:	54.00 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			3777.00	
Shut In Tool	5.00			3782.00	
Hydraulic tool	5.00			3787.00	
Packer	5.00			3792.00	20.00 Bottom Of Top Packer
Packer	4.00			3796.00	
Stubb	1.00			3797.00	
Recorder	0.00	8372	Inside	3797.00	
Recorder	0.00	8321	Outside	3797.00	
Perforations	30.00			3827.00	
Bullnose	3.00			3830.00	34.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>54.00</b>				



**TRILOBITE  
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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55771

**DST#: 2**

ATTN: Clint Musgrove

Test Start: 2013.11.07 @ 22:37:34

## 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: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2100.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	OCM, 5%O	0.273

Total Length: 20.00 ft      Total Volume: 0.273 bbl

Num Fluid Samples: 0

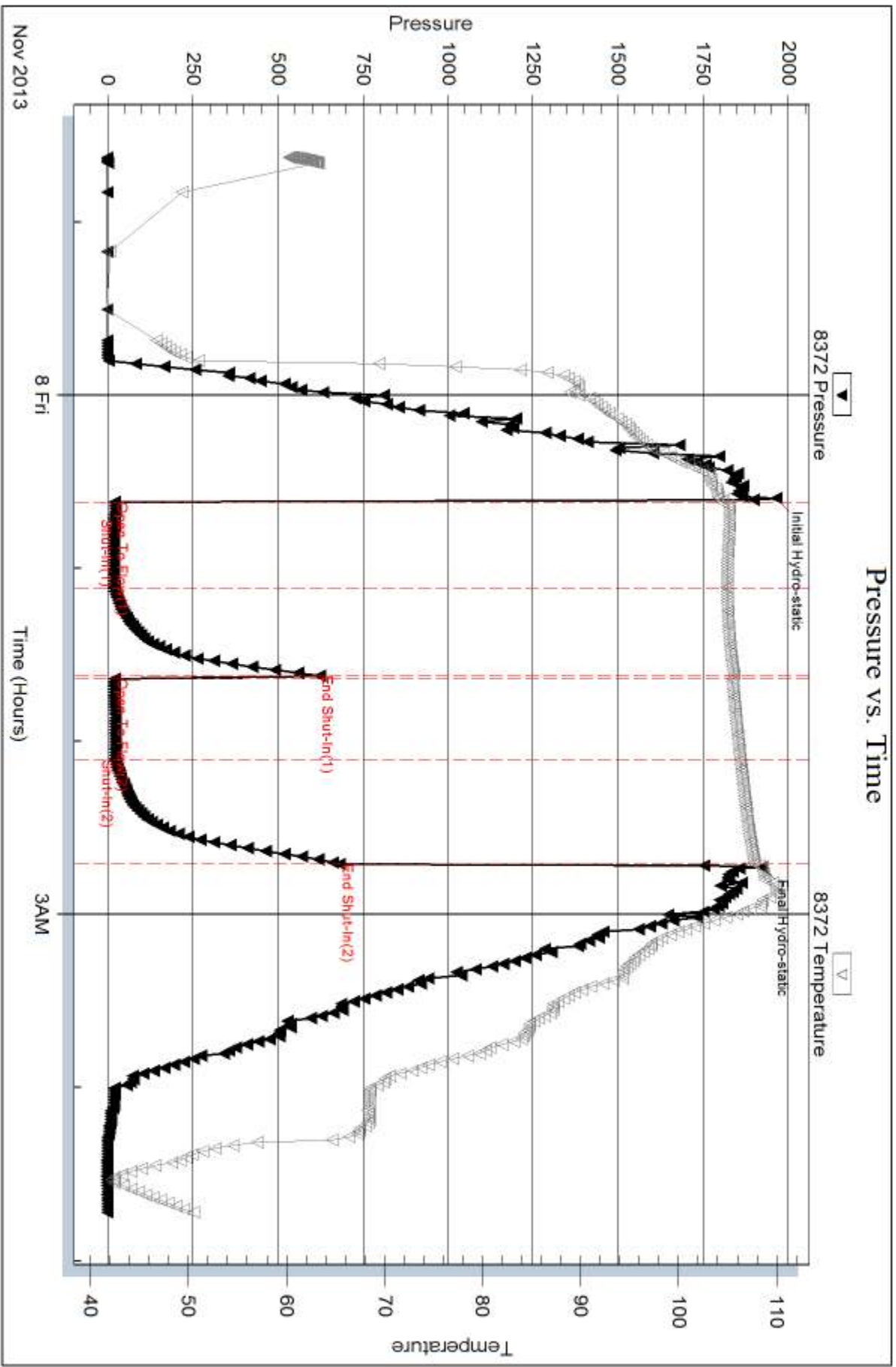
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

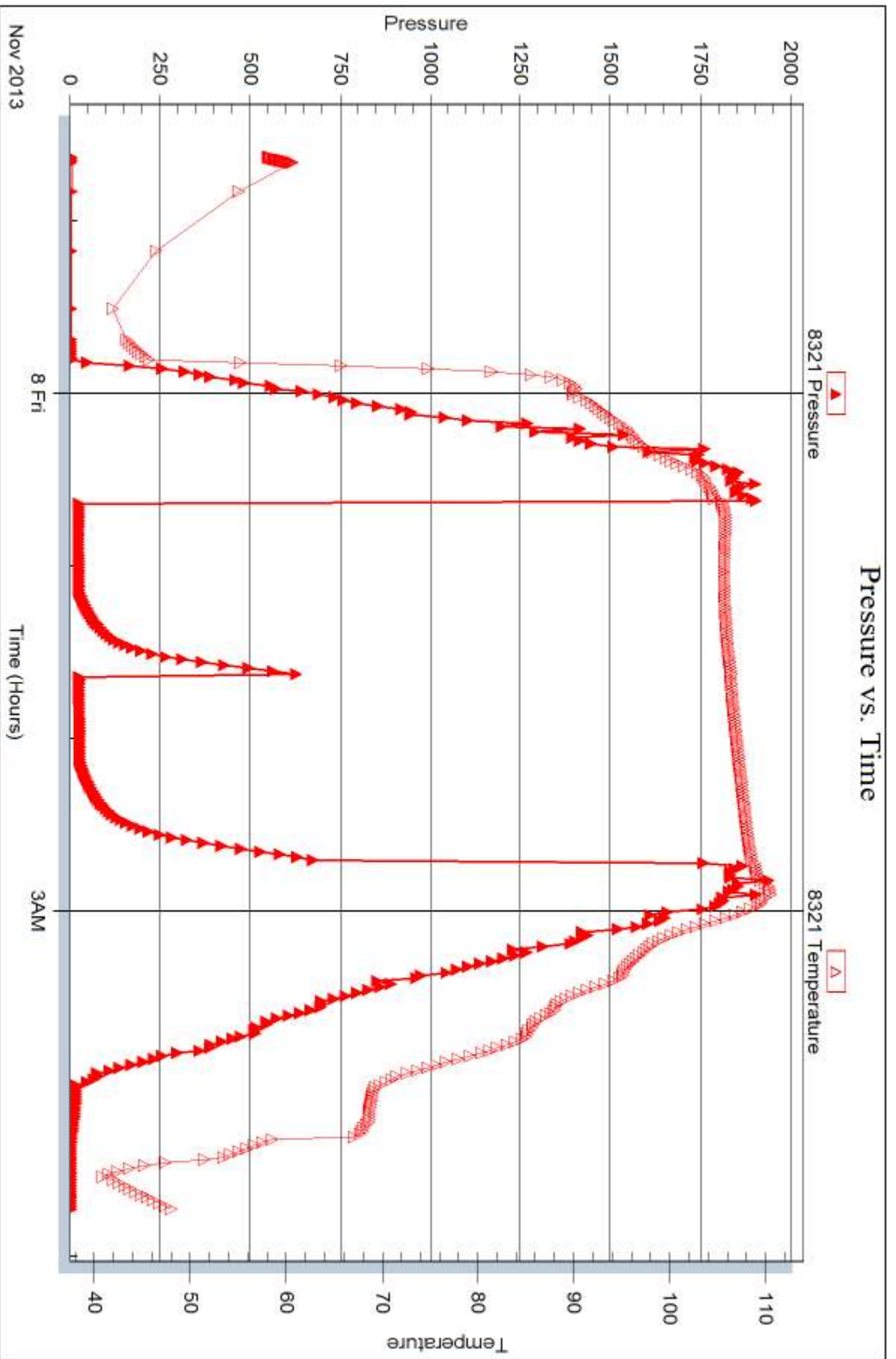


Serial #: 8321

Outside Grady Bolding Corp.

Amburster #5

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **Grady Bolding Corp.**

PO Box 486  
Ellinwood, KS 67526

ATTN: Clint Musgrove

### **Armbruster #5**

### **17-12s-20w Ellis,KS**

Start Date: 2013.11.08 @ 16:05:30

End Date: 2013.11.08 @ 23:51:00

Job Ticket #: 55772                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2013.11.13 @ 11:13:41



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55772

**DST#: 3**

ATTN: Clint Musgrove

Test Start: 2013.11.08 @ 16:05:30

## GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:47:30

Time Test Ended: 23:51:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan L

Unit No: 68

**Interval: 3852.00 ft (KB) To 3934.00 ft (KB) (TVD)**

Reference Elevations: 2299.00 ft (KB)

Total Depth: 3934.00 ft (KB) (TVD)

2290.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 9.00 ft

**Serial #: 8372**

**Inside**

Press@RunDepth: 105.84 psig @ 3853.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.11.08

End Date:

2013.11.08

Last Calib.:

2013.11.08

Start Time: 16:05:31

End Time:

23:51:00

Time On Btm:

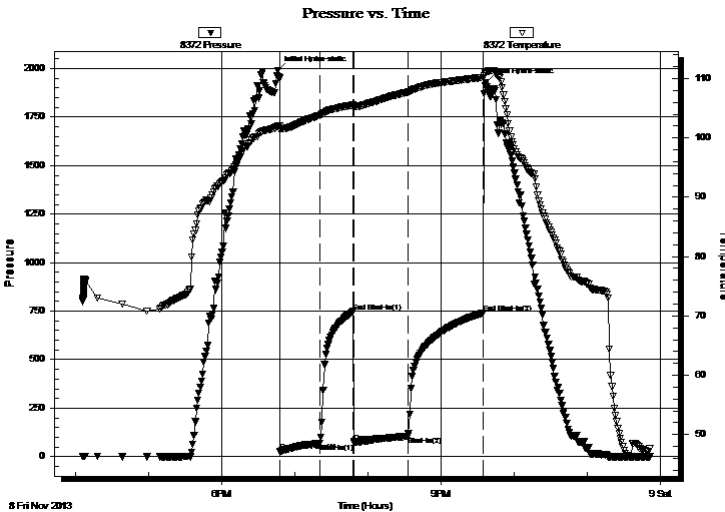
2013.11.08 @ 18:45:30

Time Off Btm:

2013.11.08 @ 21:36:30

TEST COMMENT: 30- IF- BOB 18 mins  
30- IS- No blow  
45- FF- BOB 14 mins  
60- FS- No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1990.63	101.97	Initial Hydro-static
2	25.62	101.44	Open To Flow (1)
35	69.52	103.80	Shut-In(1)
62	747.66	105.55	End Shut-In(1)
63	73.30	105.34	Open To Flow (2)
107	105.84	107.72	Shut-In(2)
169	740.38	110.21	End Shut-In(2)
171	1929.32	110.97	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
200.00	OCM, 55%M	2.73
0.00	240' 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**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55772

**DST#: 3**

ATTN: Clint Musgrove

Test Start: 2013.11.08 @ 16:05:30

## Tool Information

Drill Pipe:	Length: 3853.00 ft	Diameter: 3.75 inches	Volume: 52.63 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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: 60000.00 lb
			Total Volume: - bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 49000.00 lb
Depth to Top Packer:	3852.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	82.00 ft			
Tool Length:	102.00 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			3833.00	
Shut In Tool	5.00			3838.00	
Hydraulic tool	5.00			3843.00	
Packer	5.00			3848.00	20.00 Bottom Of Top Packer
Packer	4.00			3852.00	
Stubb	1.00			3853.00	
Recorder	0.00	8372	Inside	3853.00	
Recorder	0.00	8321	Outside	3853.00	
Perforations	13.00			3866.00	
Change Over Sub	1.00			3867.00	
Drill Pipe	63.00			3930.00	
change Over Sub	1.00			3931.00	
Bullnose	3.00			3934.00	82.00 Bottom Packers & Anchor

**Total Tool Length: 102.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55772

**DST#: 3**

ATTN: Clint Musgrove

Test Start: 2013.11.08 @ 16:05:30

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

38 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2900.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
200.00	OCM, 55%M	2.732
0.00	240' GIP	0.000

Total Length: 200.00 ft      Total Volume: 2.732 bbl

Num Fluid Samples: 0

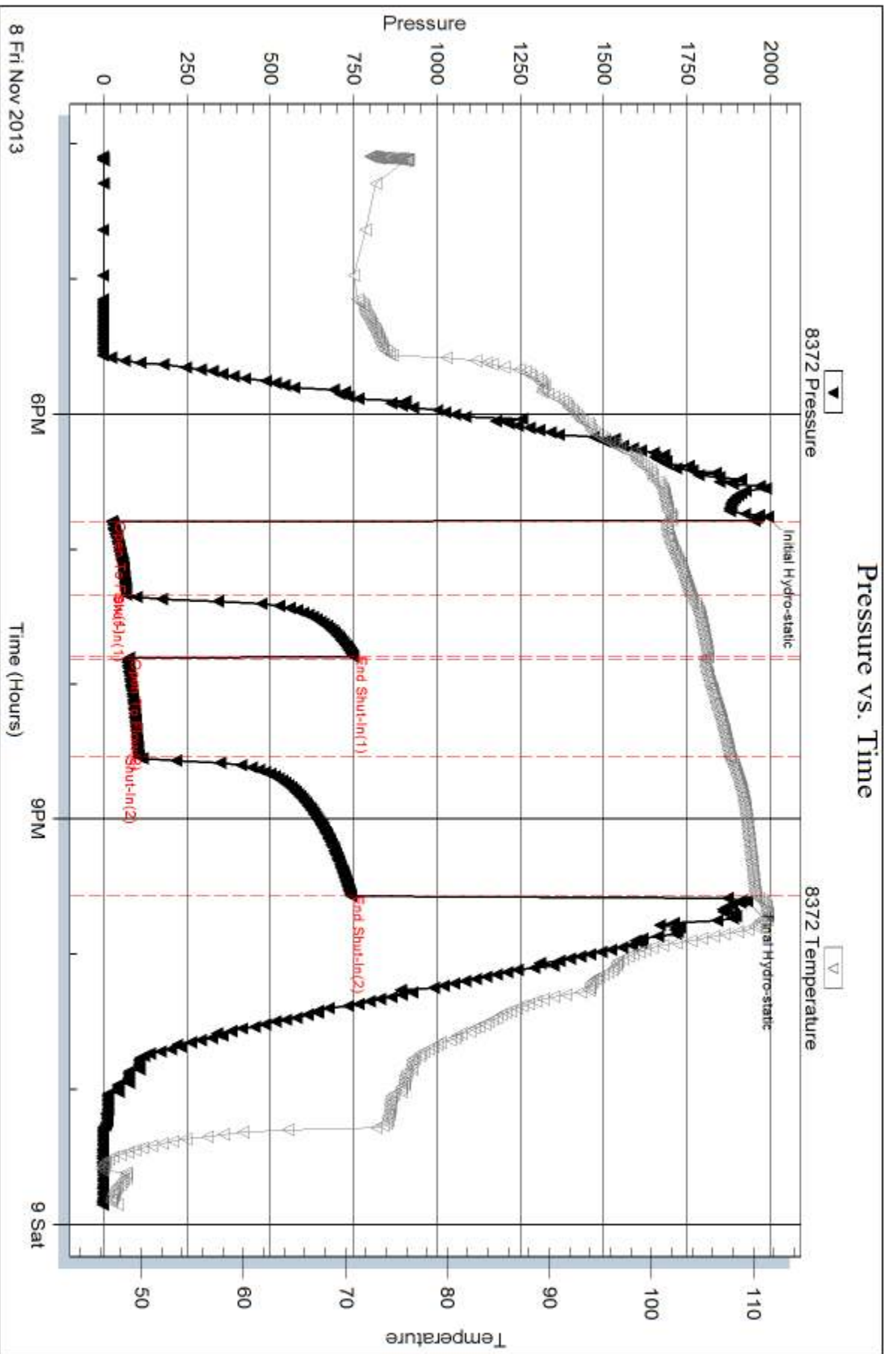
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

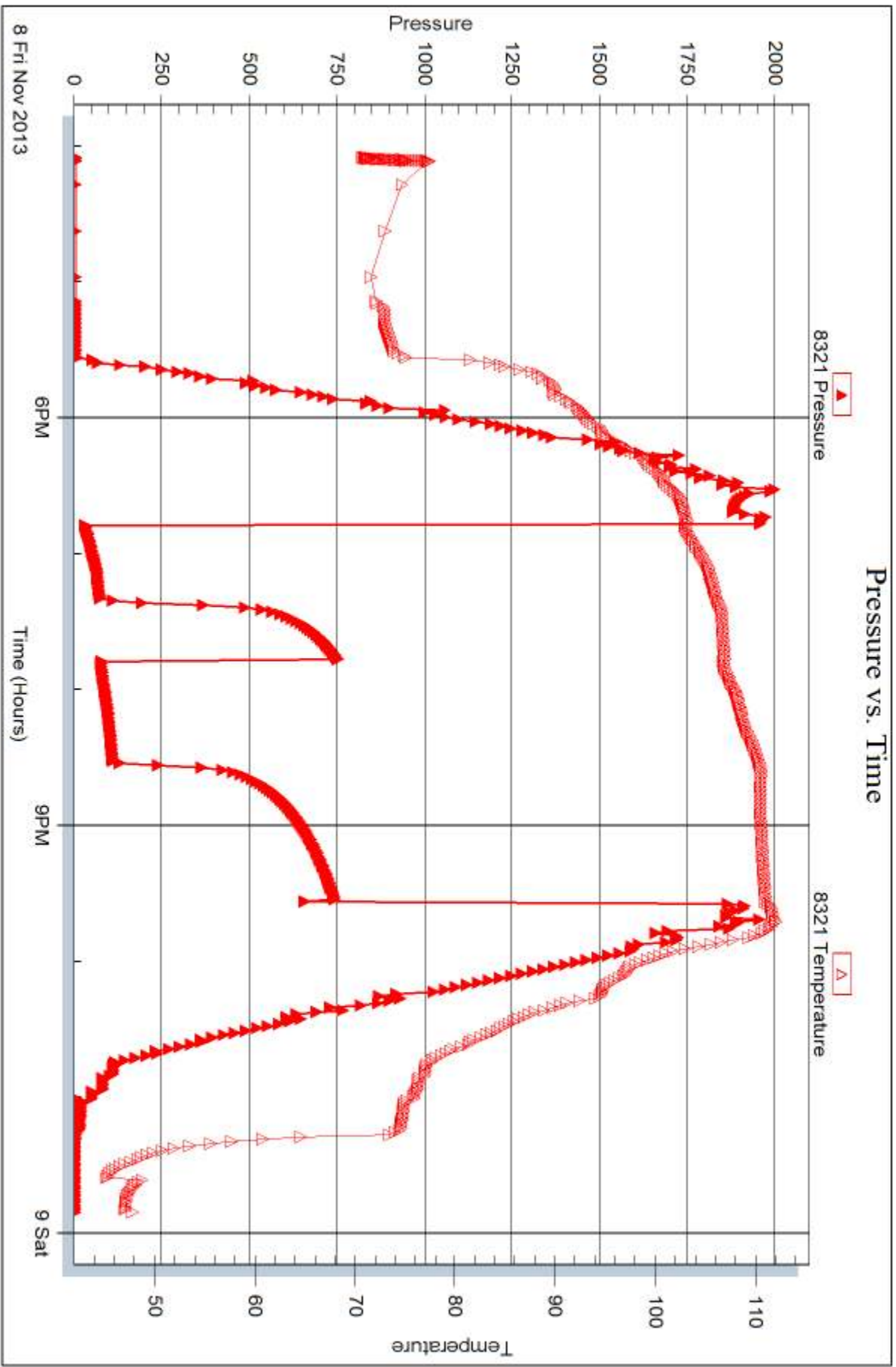


Serial #: 8321

Outside Grady Bolding Corp.

Amburster #5

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Grady Bolding Corp.**

PO Box 486  
Ellinwood, KS 67526

ATTN: Clint Musgrove

### **Armbruster #5**

#### **17-12s-20w Ellis,KS**

Start Date: 2013.11.09 @ 10:32:28

End Date: 2013.11.09 @ 16:56:58

Job Ticket #: 55773                      DST #: 4

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

Printed: 2013.11.13 @ 11:12:07



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55773

**DST#: 4**

ATTN: Clint Musgrove

Test Start: 2013.11.09 @ 10:32:28

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:24:58

Time Test Ended: 16:56:58

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan L

Unit No: 68

**Interval: 3987.00 ft (KB) To 3995.00 ft (KB) (TVD)**

Reference Elevations: 2299.00 ft (KB)

Total Depth: 3995.00 ft (KB) (TVD)

2290.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

**Serial #: 8372 Inside**

Press@RunDepth: 79.75 psig @ 3988.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.11.09 End Date: 2013.11.09

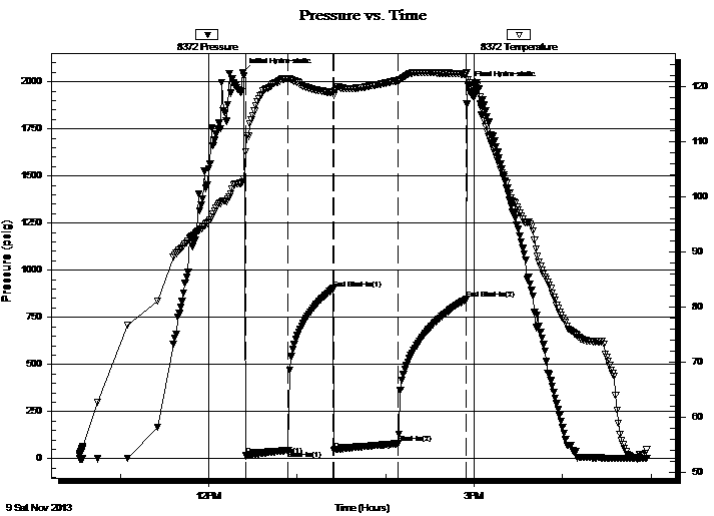
Last Calib.: 2013.11.09

Start Time: 10:32:29 End Time: 16:56:58

Time On Btm: 2013.11.09 @ 12:22:58

Time Off Btm: 2013.11.09 @ 14:55:58

TEST COMMENT: 30- IF- Built to 5"  
30- IS- No blow  
45- FF- Built to 5"  
45- FS- No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2049.90	102.75	Initial Hydro-static
2	15.64	108.19	Open To Flow (1)
31	44.83	121.35	Shut-In(1)
62	902.36	118.90	End Shut-In(1)
62	45.62	118.49	Open To Flow (2)
106	79.75	121.13	Shut-In(2)
152	845.43	122.27	End Shut-In(2)
153	1980.16	121.23	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
140.00	MW, 85%W	1.91

## Gas Rates

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

\* Recovery from multiple tests







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55773

**DST#: 4**

ATTN: Clint Musgrove

Test Start: 2013.11.09 @ 10:32:28

## Tool Information

Drill Pipe:	Length: 3979.00 ft	Diameter: 3.75 inches	Volume: 54.36 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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:</u>	Tool Chased	0.00 ft
				String Weight: Initial	48000.00 lb
Drill Pipe Above KB:	12.00 ft			Final	48000.00 lb
Depth to Top Packer:	3987.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	8.00 ft				
Tool Length:	28.00 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			3968.00	
Shut In Tool	5.00			3973.00	
Hydraulic tool	5.00			3978.00	
Packer	5.00			3983.00	20.00 Bottom Of Top Packer
Packer	4.00			3987.00	
Stubb	1.00			3988.00	
Recorder	0.00	8372	Inside	3988.00	
Recorder	0.00	8321	Outside	3988.00	
Perforations	4.00			3992.00	
Bullnose	3.00			3995.00	8.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>28.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Grady Bolding Corp.

**17-12s-20w Ellis,KS**

PO Box 486  
Ellinwood, KS 67526

**Armbruster #5**

Job Ticket: 55773

**DST#: 4**

ATTN: Clint Musgrove

Test Start: 2013.11.09 @ 10:32:28

## 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:

28000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
140.00	MW, 85%W	1.912

Total Length: 140.00 ft

Total Volume: 1.912 bbl

Num Fluid Samples: 0

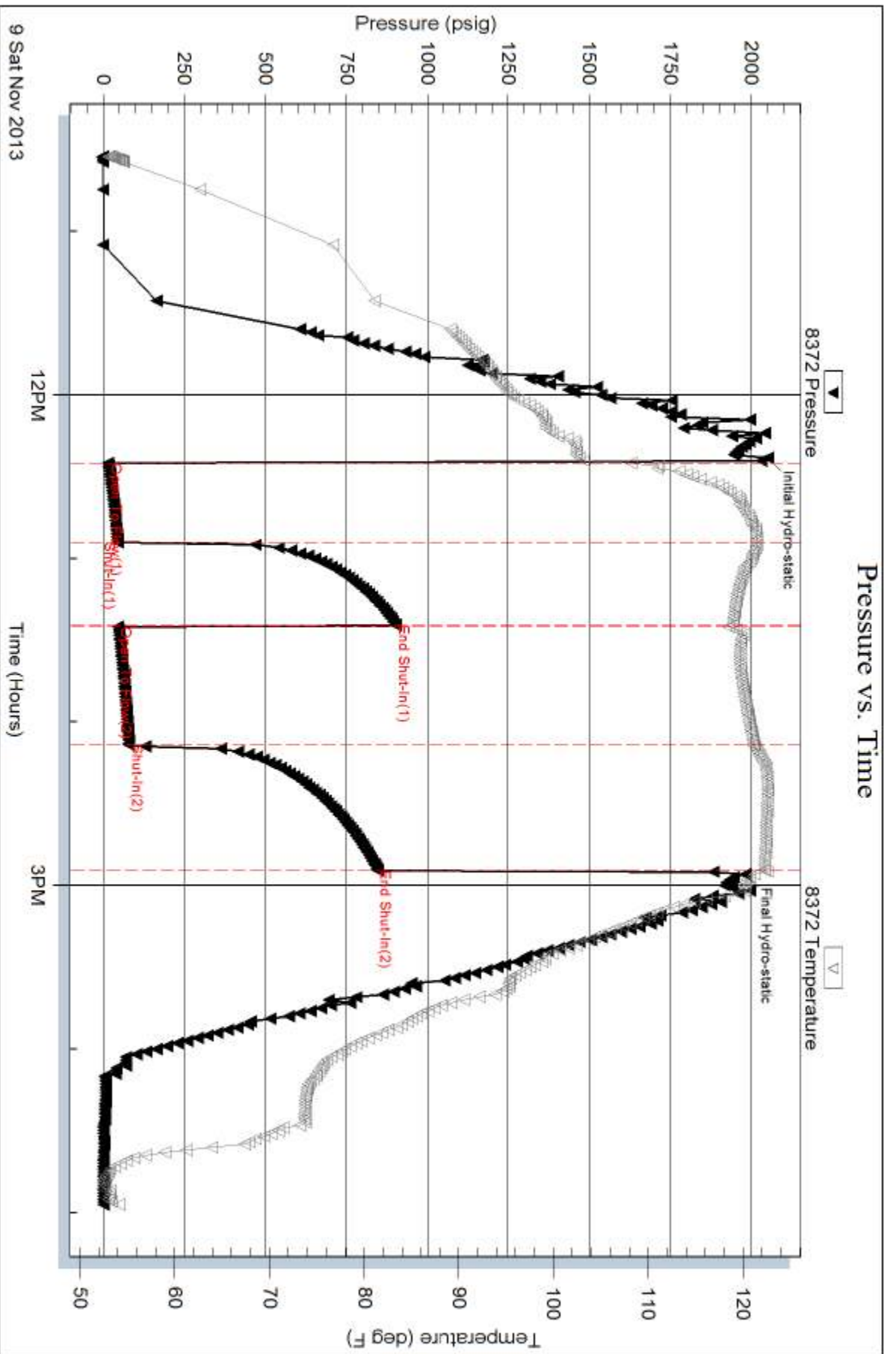
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

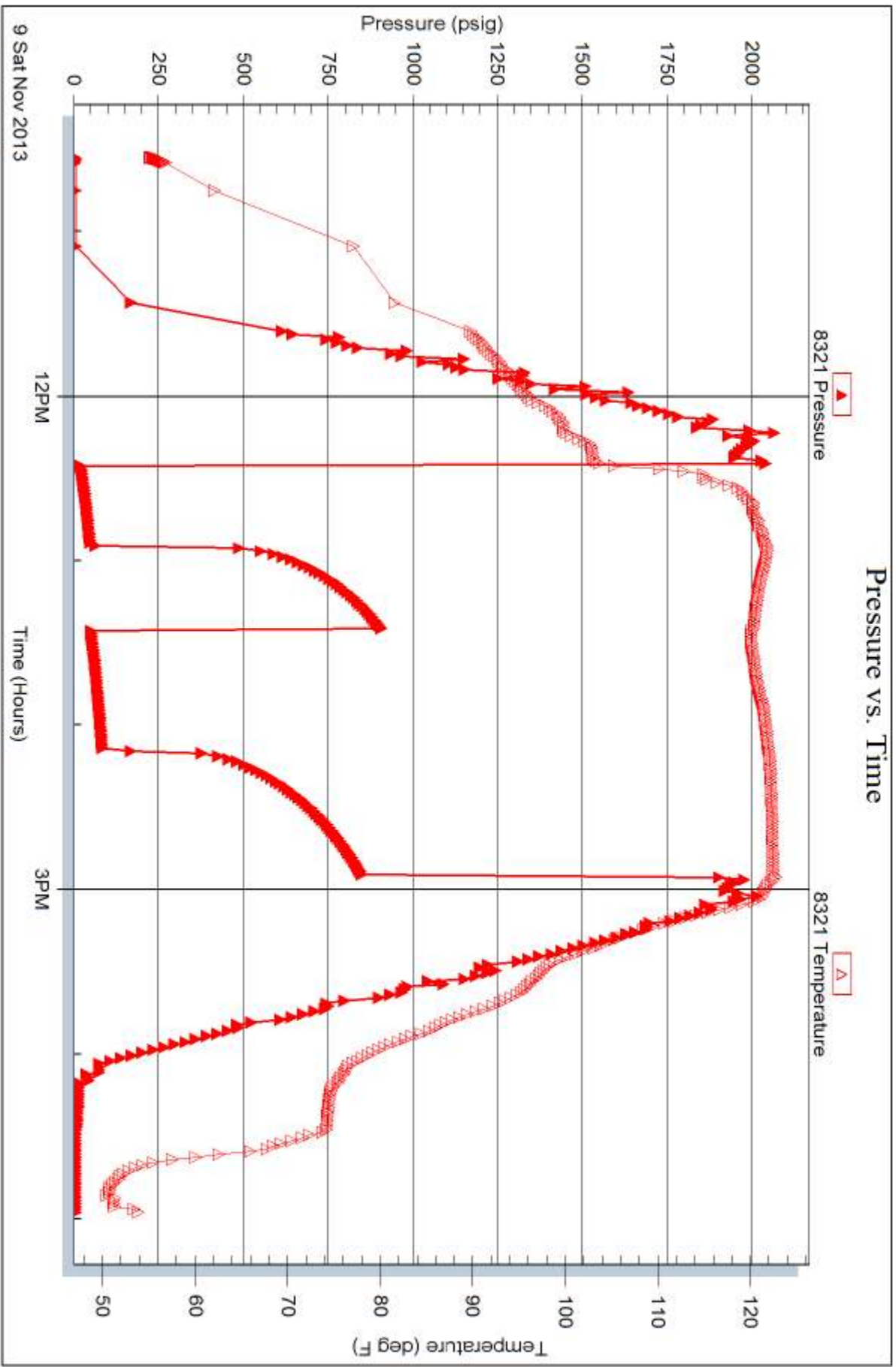


Serial #: 8321

Outside Grady Bolding Corp.

Amburster #5

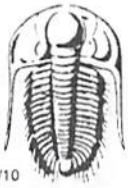
DST Test Number: 4



Tribble Testing, Inc

Ref. No: 55773

Printed: 2013.11.13 @ 11:12:06



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55770

Well Name & No. Armbruster #5 Test No. 1 Date 11/7/13  
 Company Gary Bolding Corp. Elevation 2299 KB 2290 GL  
 Address PO Box 486 114<sup>th</sup> N. Main Billinwood, KS 67526  
 Co. Rep / Geo. Clint Musgrove Rig Southwind #8  
 Location: Sec. 17 Twp. R2S Rge. 20w Co. Ellis State KS

Interval Tested 3620-3700 Zone Tested LKC  
 Anchor Length 80' Drill Pipe Run 3632 Mud Wt. 8.7  
 Top Packer Depth 3615 Drill Collars Run ———— Vis 61  
 Bottom Packer Depth 3620 Wt. Pipe Run ———— WL 5.4  
 Total Depth 3700 Chlorides 1900 ppm System LCM 3#

Blow Description IF-BOB 14 mins  
ISI - Surface blow  
FF-BOB 19 mins  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>WNICO</u>	<u>45</u>	<u>20</u>	<u>35</u>	<u>35</u>
<u>190</u>	<u>MW</u>		<u>65</u>	<u>35</u>	<u>35</u>
	<u>75' GIP</u>				

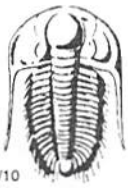
Rec Total 240 BHT 111° Gravity ———— API RW .15 @ 36° F Chlorides 90,000 ppm

(A) Initial Hydrostatic 1769  Test 1150 T-On Location 0214  
 (B) First Initial Flow 37  Jars ———— T-Started 0217  
 (C) First Final Flow 100  Safety Joint ———— T-Open 0630  
 (D) Initial Shut-In 559  Circ Sub ———— T-Pulled 0915  
 (E) Second Initial Flow 105  Hourly Standby ———— T-Out 1141  
 (F) Second Final Flow 164  Mileage 46 RT 71.30  
 (G) Final Shut-In 538  Sampler ————  
 (H) Final Hydrostatic 1766  Straddle ————  Ruined Shale Packer ————  
 Shale Packer ————  Ruined Packer ————

Initial Open 30  Extra Packer ————  Extra Copies ————  
 Initial Shut-In 30  Extra Recorder ———— Sub Total 0  
 Final Flow 45  Day Standby ———— Total 1221.30  
 Final Shut-In 60  Accessibility ———— MP/DST Disc't ————  
 Sub Total 1221.30

Approved By \_\_\_\_\_ Our Representative Brannan L

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55771

Well Name & No. Armbruster #5 Test No. 2 Date 11/7/13  
 Company Grady Bolding Corp. Elevation 2299 KB 2290 GL  
 Address PO Box 486 114 N. Main Ellinwood, KS 67526  
 Co. Rep / Geo. Clint Musgrove Rig Southwind #8  
 Location: Sec. 17 Twp. Ds Rge. 20w Co. Ellis State KS

Interval Tested 3796-3830 Zone Tested ~~3789~~ Lansing  
 Anchor Length 34' Drill Pipe Run 3789 Mud Wt. 9.1  
 Top Packer Depth 3791 Drill Collars Run — Vis 58  
 Bottom Packer Depth 3796 Wt. Pipe Run — WL 6.8  
 Total Depth 3830 Chlorides 2100 ppm System LCM 2<sup>#</sup>

Blow Description IF - Slowly built to 4"  
ISF - No blow  
FF - Slowly built to 5"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>OCM</u>		<u>5</u>		<u>95</u>
	<u>40' GIP</u>				

Rec Total 20' BHT 1080 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 1964  Test 1150 T-On Location 2230  
 (B) First Initial Flow 20  Jars — T-Started 2237  
 (C) First Final Flow 20  Safety Joint — T-Open 0037  
 (D) Initial Shut-In 623  Circ Sub — T-Pulled 0237  
 (E) Second Initial Flow 20  Hourly Standby — T-Out 0443  
 (F) Second Final Flow 23  Mileage 46 RT 71.30 Comments —  
 (G) Final Shut-In 681  Sampler —  
 (H) Final Hydrostatic 1923  Straddle —  Ruined Shale Packer —  
 Shale Packer —  Ruined Packer —  
 Extra Packer —  Extra Copies —  
 Extra Recorder — Sub Total 0  
 Day Standby — Total 1221.30  
 Accessibility — MP/DST Disc't —  
 Sub Total 1221.30

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

Approved By \_\_\_\_\_ Our Representative Brennan L

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55772

Well Name & No. Armbruster #5 Test No. 3 Date 11/8/13  
 Company Grady Bolding Corp. Elevation 2299 KB 2290 GL  
 Address PO Box 486 114 N. Main Ellinwood, KS 67526  
 Co. Rep / Geo. Clint Musgrave Rig Southwind #8  
 Location: Sec. 17 Twp. 12s Rge. 20w Co. Ellis State KS

Interval Tested 3852-3934 Zone Tested Marmaton  
 Anchor Length 82' Drill Pipe Run 3853 Mud Wt. 91  
 Top Packer Depth 3847 Drill Collars Run --- Vis 53  
 Bottom Packer Depth 3852 Wt. Pipe Run --- WL 28  
 Total Depth 3934 Chlorides 2900 ppm System LCM 2#

Blow Description IF-BOB 18mins  
ISI- No blow  
FF-BOB 14mins  
FSI- No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>200</u>	<u>CCM</u>	<u>45</u>		<u>55</u>	
	<u>240 GIP</u>				

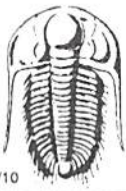
Rec Total 200 BHT 110° Gravity 38 API RW --- @ --- °F Chlorides --- ppm

(A) Initial Hydrostatic 1991  Test 1150 T-On Location 1600  
 (B) First Initial Flow 26  Jars --- T-Started 1605  
 (C) First Final Flow 70  Safety Joint --- T-Open 1847  
 (D) Initial Shut-In 748  Circ Sub --- T-Pulled 2132  
 (E) Second Initial Flow 73  Hourly Standby --- T-Out 2350  
 (F) Second Final Flow 106  Mileage 46 RT 71.30  
 (G) Final Shut-In 740  Sampler ---  
 (H) Final Hydrostatic 1929  Straddle ---

Ruined Shale Packer ---  
 Ruined Packer ---  
 Extra Copies ---  
 Initial Open 30  Extra Packer ---  
 Initial Shut-In 30  Extra Recorder ---  
 Final Flow 45  Day Standby ---  
 Final Shut-In 60  Accessibility ---  
 Sub Total 1221.30 MP/DST Disc't ---

Approved By --- Our Representative Brannan L

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 55773

4/10

Well Name & No. Armbruster #5 Test No. 4 Date 11/9/13  
 Company Crady Bolding Corp. Elevation 2299 KB 2290 GL  
 Address PO Box 486 114 N. Main Ellonwood, KS 67526  
 Co. Rep / Geo. Clint Musgrove Rig Southwind #8  
 Location: Sec. 17 Twp. Ds Rge. 20w Co. Ellis State KS

Interval Tested 3987-3995 Zone Tested Arbuckle  
 Anchor Length 8' Drill Pipe Run 3979 Mud Wt. 9.3  
 Top Packer Depth 3982 Drill Collars Run — Vis 59  
 Bottom Packer Depth 3987 Wt. Pipe Run — WL 9.6  
 Total Depth 3995 Chlorides 6000 ppm System LCM 2<sup>nd</sup>  
 Blow Description IF - Built to 5"  
ISI - No blow  
FF - Built to 5"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>140</u>	<u>MW</u>			<u>85</u>	<u>15</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 140 BHT 122° Gravity — API RW 27 @ 59 °F Chlorides 28000 ppm

(A) Initial Hydrostatic 2050  Test 1150 T-On Location 1020  
 (B) First Initial Flow 16  Jars — T-Started 1032  
 (C) First Final Flow 45  Safety Joint — T-Open 1224  
 (D) Initial Shut-In 902  Circ Sub — T-Pulled 1754  
 (E) Second Initial Flow 46  Hourly Standby — T-Out 1657  
 (F) Second Final Flow 80  Mileage 46 RT 71.30  
 (G) Final Shut-In 845  Sampler —  
 (H) Final Hydrostatic 1980  Straddle —  Ruined Shale Packer —  
 Shale Packer —  Ruined Packer —  
 Extra Packer —  Extra Copies —  
 Extra Recorder — Sub Total 0  
 Day Standby — Total 1221.30  
 Accessibility — MP/DST Disc't —  
 Sub Total 1221.30

Initial Open 30  
 Initial Shut-In 30  
 Final Flow 45  
 Final Shut-In 45

Approved By \_\_\_\_\_ Our Representative Brannan L  
 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.