

DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

Younger #1

7-15s-19w Ellis,KS

Start Date: 2013.11.01 @ 05:10:00

End Date: 2013.11.01 @ 12:21:45

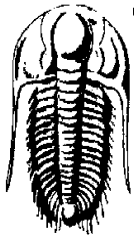
Job Ticket #: 55309 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.11.06 @ 10:32:24



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55309

DST#: 1

Test Start: 2013.11.01 @ 05:10:00

GENERAL INFORMATION:

Formation: **KC "C-D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:45:30

Time Test Ended: 12:21:45

Test Type: Conventional Straddle (Initial)

Tester: Brett Dickinson

Unit No: 59

Interval: 3321.00 ft (KB) To 3378.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8736 Inside

Press@RunDepth: 61.13 psig @ 3357.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.01

Start Time: 05:10:05

End Time:

12:21:44

Capacity: 8000.00 psig

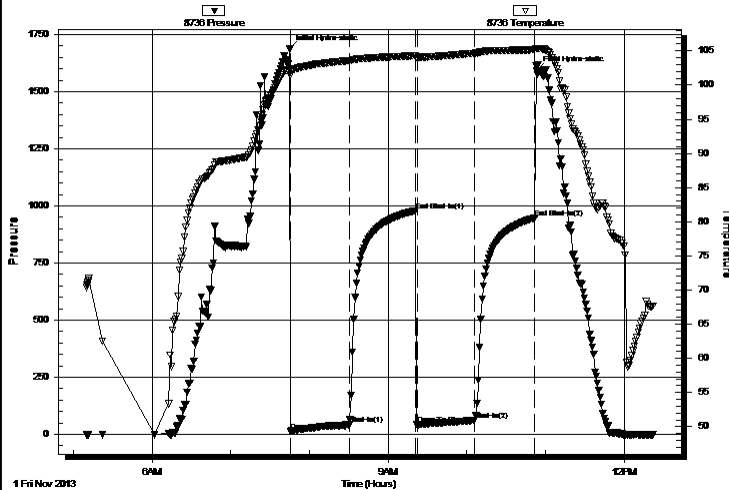
Last Calib.: 2013.11.01

Time On Btm: 2013.11.01 @ 07:45:00

Time Off Btm: 2013.11.01 @ 10:53:00

TEST COMMENT: IF-6 1/4" blow
ISI-No blow
FF-1 1/2" blow
FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1686.65	102.42	Initial Hydro-static
1	14.17	101.43	Open To Flow (1)
46	41.99	103.57	Shut-In(1)
96	979.31	104.29	End Shut-In(1)
97	42.18	104.05	Open To Flow (2)
141	61.13	104.64	Shut-In(2)
187	947.52	105.15	End Shut-In(2)
188	1592.99	105.36	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	WCM 25%W 75%M	0.84
50.00	Mud	0.70

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TDL, Inc.

ATTN: Herb Deines

Younger #1

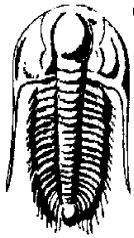
DST#: 1

Test Start: 2013.11.01 @ 05:10:00

KB to GR/CF: 10.00 ft

Time Off Btm:

Printed: 2013.11.06 @ 10:32:25



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55309

DST#: 1

Test Start: 2013.11.01 @ 05:10:00

GENERAL INFORMATION:

Formation: **KC "C-D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:45:30

Time Test Ended: 12:21:45

Test Type: Conventional Straddle (Initial)

Tester: Brett Dickinson

Unit No: 59

Interval: 3321.00 ft (KB) To 3378.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 6753 Outside

Press@RunDepth: psig @ 3357.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.01

Start Time: 05:10:05

End Time:

12:21:59

Capacity: 8000.00 psig

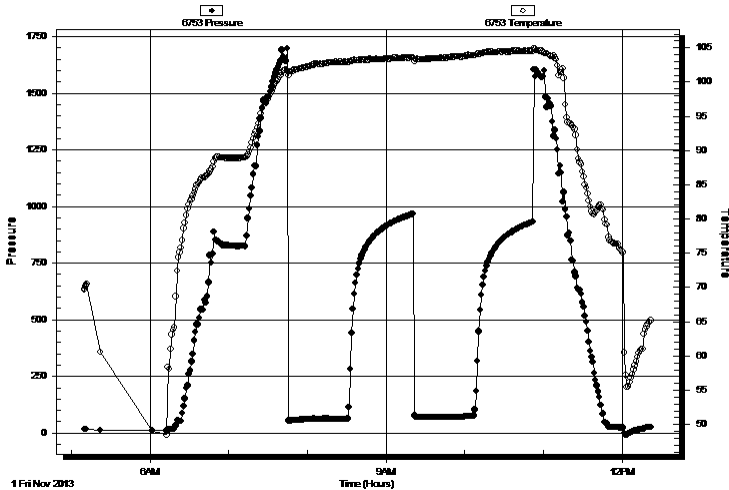
Last Calib.: 2013.11.01

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-6 1/4" blow
ISI-No blow
FF-1 1/2" blow
FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

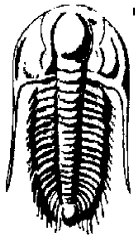
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
60.00	WCM 25%W 75%M	0.84
50.00	Mud	0.70

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55309

DST#: 1

Test Start: 2013.11.01 @ 05:10:00

Tool Information

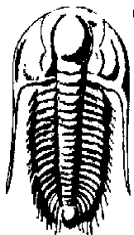
Drill Pipe:	Length:	3309.00 ft	Diameter:	3.80 inches	Volume:	46.42 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.70 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	47000.00 lb
					Total Volume:	46.42 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		8.00 ft					String Weight: Initial	40000.00 lb
Depth to Top Packer:		3321.00 ft					Final	41000.00 lb
Depth to Bottom Packer:		3378.00 ft						
Interval between Packers:		57.00 ft						
Tool Length:		402.00 ft						
Number of Packers:		3	Diameter:	6.75 inches				

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3302.00	
Shut In Tool	5.00			3307.00	
Hydraulic tool	5.00			3312.00	
Packer	4.00			3316.00	20.00 Bottom Of Top Packer
Packer	5.00			3321.00	
Stubb	1.00			3322.00	
Perforations	1.00			3323.00	
change Over Sub	1.00			3324.00	
Blank Spacing	32.00			3356.00	
change Over Sub	1.00			3357.00	
Recorder	0.00	8736	Inside	3357.00	
Recorder	0.00	6753	Outside	3357.00	
Change Over Sub	1.00			3358.00	
Perforations	16.00			3374.00	
Blank Off Sub	4.00			3378.00	57.00 Tool Interval
Packer	4.00			3382.00	
Stubb	1.00			3383.00	
Recorder	0.00	8319	Below	3383.00	
perforations	3.00			3386.00	
Change Over Sub	1.00			3387.00	
Blank Spacing	316.00			3703.00	325.00 Bottom Packers & Anchor

Total Tool Length: 402.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc.

7-15s-19w Ellis,KS

1310 Bison Rd
Hays KS 67601

Younger #1

Job Ticket: 55309

DST#: 1

ATTN: Herb Deines

Test Start: 2013.11.01 @ 05:10:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 5.99 in³

Resistivity: ohm.m

Salinity: 3000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	WCM 25%W 75%M	0.842
50.00	Mud	0.701

Total Length: 110.00 ft

Total Volume: 1.543 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

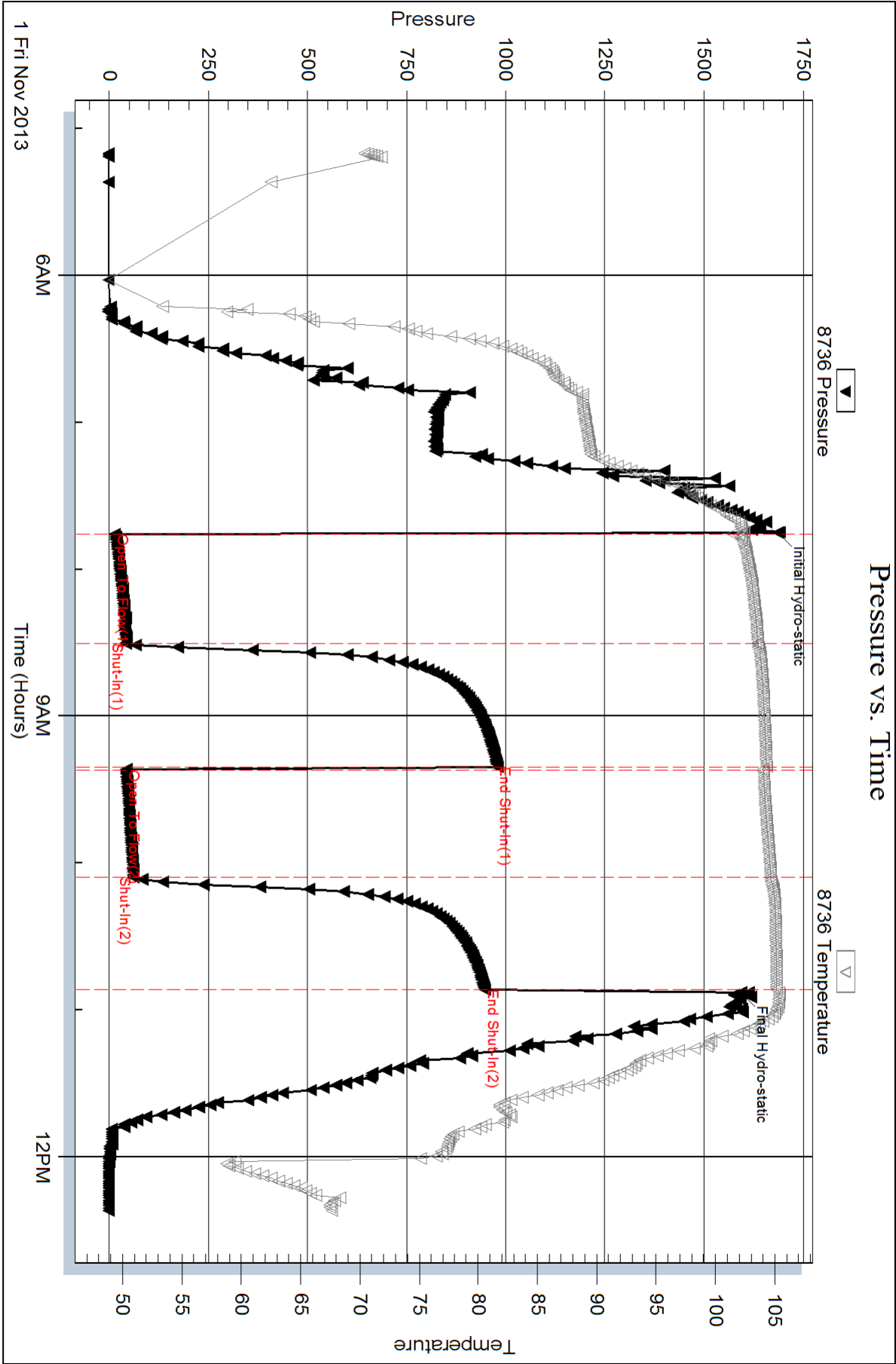
Serial #: 8736

Inside

TDI, Inc.

Y ounger #1

DST Test Number: 1

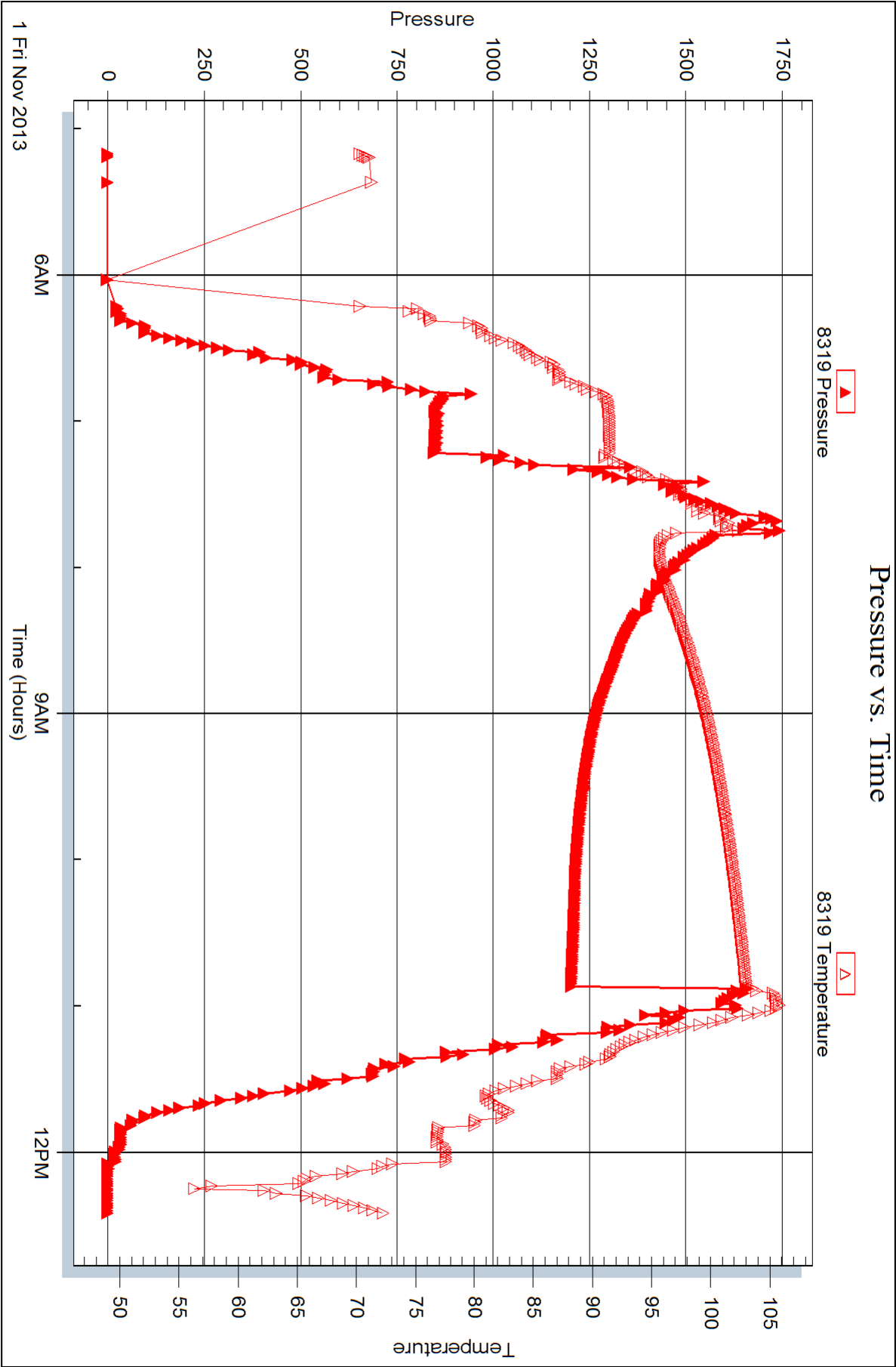


Serial #: 8319

Below (Straddle)

Younger #1

DST Test Number: 1

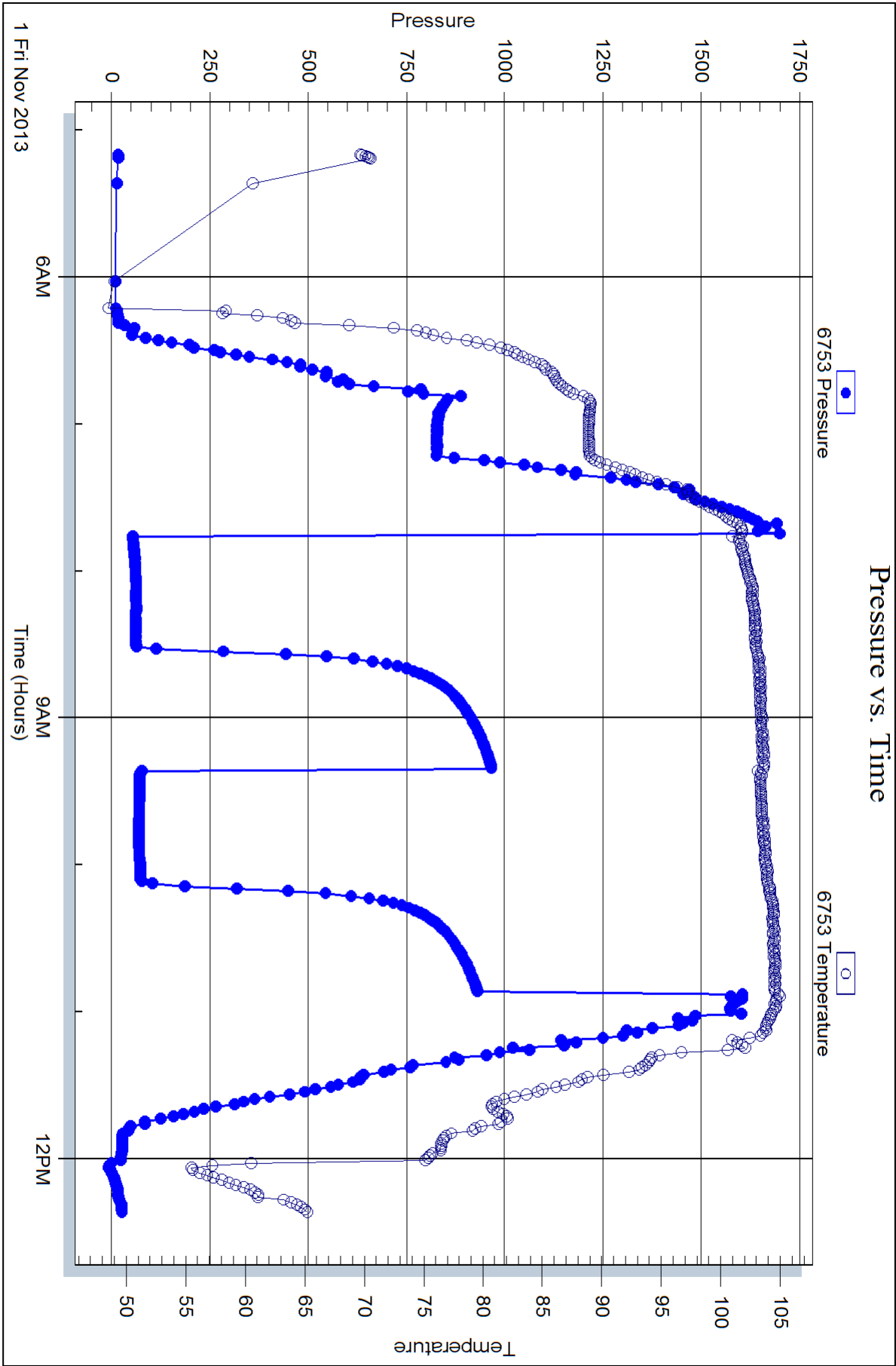


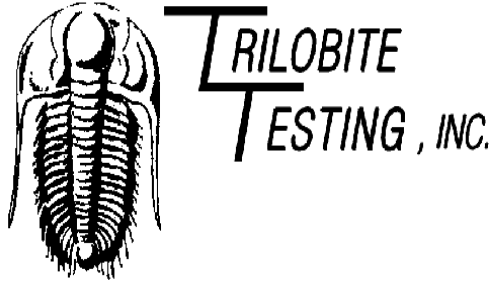
Serial #: 6753

Outside TDI, Inc.

Younger #1

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

Younger #1

7-15s-19w Ellis,KS

Start Date: 2013.11.01 @ 12:45:00

End Date: 2013.11.01 @ 16:59:15

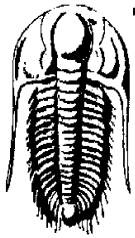
Job Ticket #: 55310 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.11.06 @ 10:28:53



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55310

DST#: 2

Test Start: 2013.11.01 @ 12:45:00

GENERAL INFORMATION:

Formation: **KC"H"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:55:00

Time Test Ended: 16:59:15

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3420.00 ft (KB) To 3470.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 6753 Outside

Press@RunDepth: 45.19 psig @ 3456.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.01

Start Time: 12:45:05

End Time:

16:59:15

Capacity: 8000.00 psig

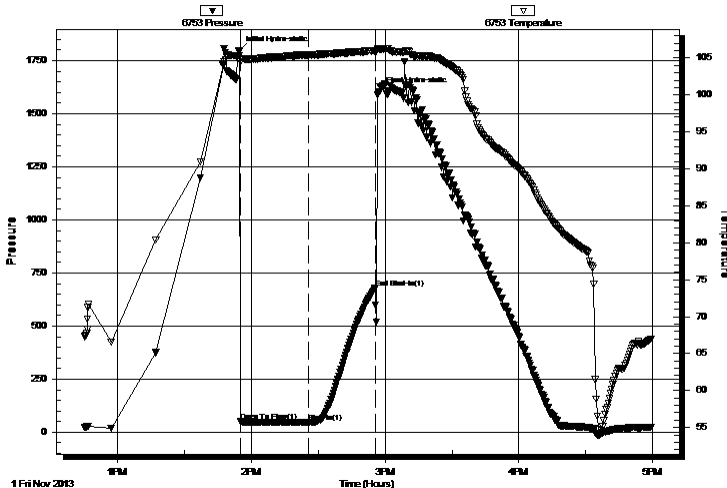
Last Calib.: 2013.11.01

Time On Btm: 2013.11.01 @ 13:54:30

Time Off Btm: 2013.11.01 @ 14:57:15

TEST COMMENT: IF-1/4" blow
ISI-No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1795.81	105.34	Initial Hydro-static
1	50.61	104.44	Open To Flow (1)
31	45.19	105.34	Shut-In(1)
61	678.94	105.91	End Shut-In(1)
63	1603.15	106.23	Final Hydro-static

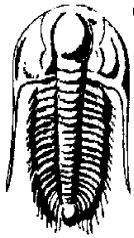
Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.07

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55310

DST#: 2

Test Start: 2013.11.01 @ 12:45:00

GENERAL INFORMATION:

Formation: **KC"H"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:55:00

Time Test Ended: 16:59:15

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3420.00 ft (KB) To 3470.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8736 Inside

Press@RunDepth: psig @ 3456.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.01

Start Time: 12:45:05

End Time:

16:59:15

Capacity: 8000.00 psig

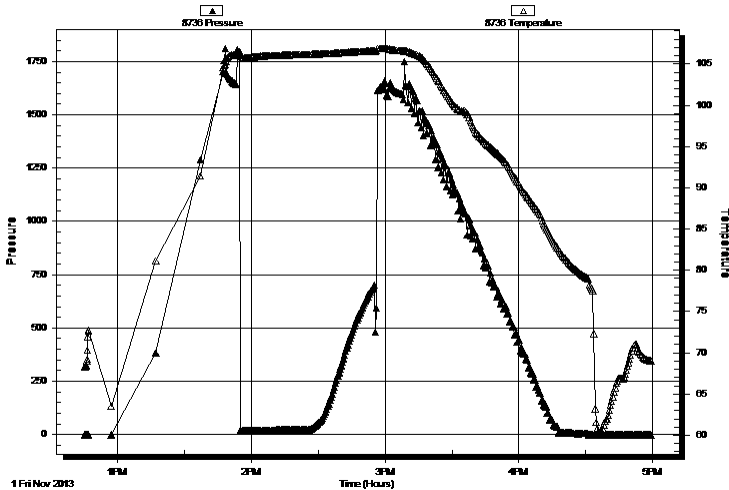
Last Calib.: 2013.11.01

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-1/4" blow
ISI-No blow

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.07

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TDI, Inc.

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55310

DST#: 2

Test Start: 2013.11.01 @ 12:45:00

Formation: **KC"H"**

Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:55:00
Time Test Ended: 16:59:15

Test Type: Conventional Straddle (Reset)
Tester: Brett Dickinson
Unit No: 59

Interval: 3420.00 ft (KB) To 3470.00 ft (KB) (TVD)
Total Depth: 3699.00 ft (KB) (TVD)
Hole Diameter: 7.88 inchesHole Condition: Fair

Reference Elevations: 2036.00 ft (KB)
2026.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8319 **Below (Straddle)**

Press@RunDepth: psig @ 3475.00 ft (KB)

Start Date: 2013.11.01 End Date: 2013.11.01

Start Time: 12:45:05 End Time: 17:09:44

Capacity: 8000.00 psig

Last Calib.: 2013.11.01

Time On Btm:

Time Off Btm:

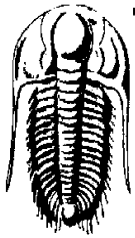
TEST COMMENT: IF-1/4" blow
IS-No blow



Recovery

Gas Rates

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55310

DST#: 2

Test Start: 2013.11.01 @ 12:45:00

Tool Information

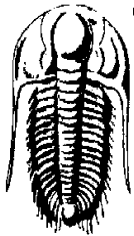
Drill Pipe:	Length:	3414.00 ft	Diameter:	3.80 inches	Volume:	47.89 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.70 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	62000.00 lb
					Total Volume:	47.89 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	14.00 ft					String Weight: Initial	40000.00 lb	
Depth to Top Packer:	3420.00 ft					Final	40000.00 lb	
Depth to Bottom Packer:	3470.00 ft							
Interval between Packers:	50.00 ft							
Tool Length:	303.00 ft							
Number of Packers:	3		Diameter:	6.75 inches				
Tool Comments:								

Tool Description

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

Change Over Sub	1.00			3401.00	
Shut In Tool	5.00			3406.00	
Hydraulic tool	5.00			3411.00	
Packer	4.00			3415.00	20.00 Bottom Of Top Packer
Packer	5.00			3420.00	
Stubb	1.00			3421.00	
Perforations	1.00			3422.00	
change Over Sub	1.00			3423.00	
Blank Spacing	32.00			3455.00	
change Over Sub	1.00			3456.00	
Recorder	0.00	8736	Inside	3456.00	
Recorder	0.00	6753	Outside	3456.00	
Change Over Sub	1.00			3457.00	
Perforations	9.00			3466.00	
Blank Off Sub	4.00			3470.00	50.00 Tool Interval
Packer	4.00			3474.00	
Stubb	1.00			3475.00	
Recorder	0.00	8319	Below	3475.00	
perforations	5.00			3480.00	
Change Over Sub	1.00			3481.00	
Blank Spacing	222.00			3703.00	233.00 Bottom Packers & Anchor

Total Tool Length: 303.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc.

7-15s-19w Ellis,KS

1310 Bison Rd
Hays KS 67601

Younger #1

Job Ticket: 55310

DST#: 2

ATTN: Herb Deines

Test Start: 2013.11.01 @ 12:45:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 5.99 in³

Resistivity: ohm.m

Salinity: 3000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud	0.070

Total Length: 5.00 ft

Total Volume: 0.070 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

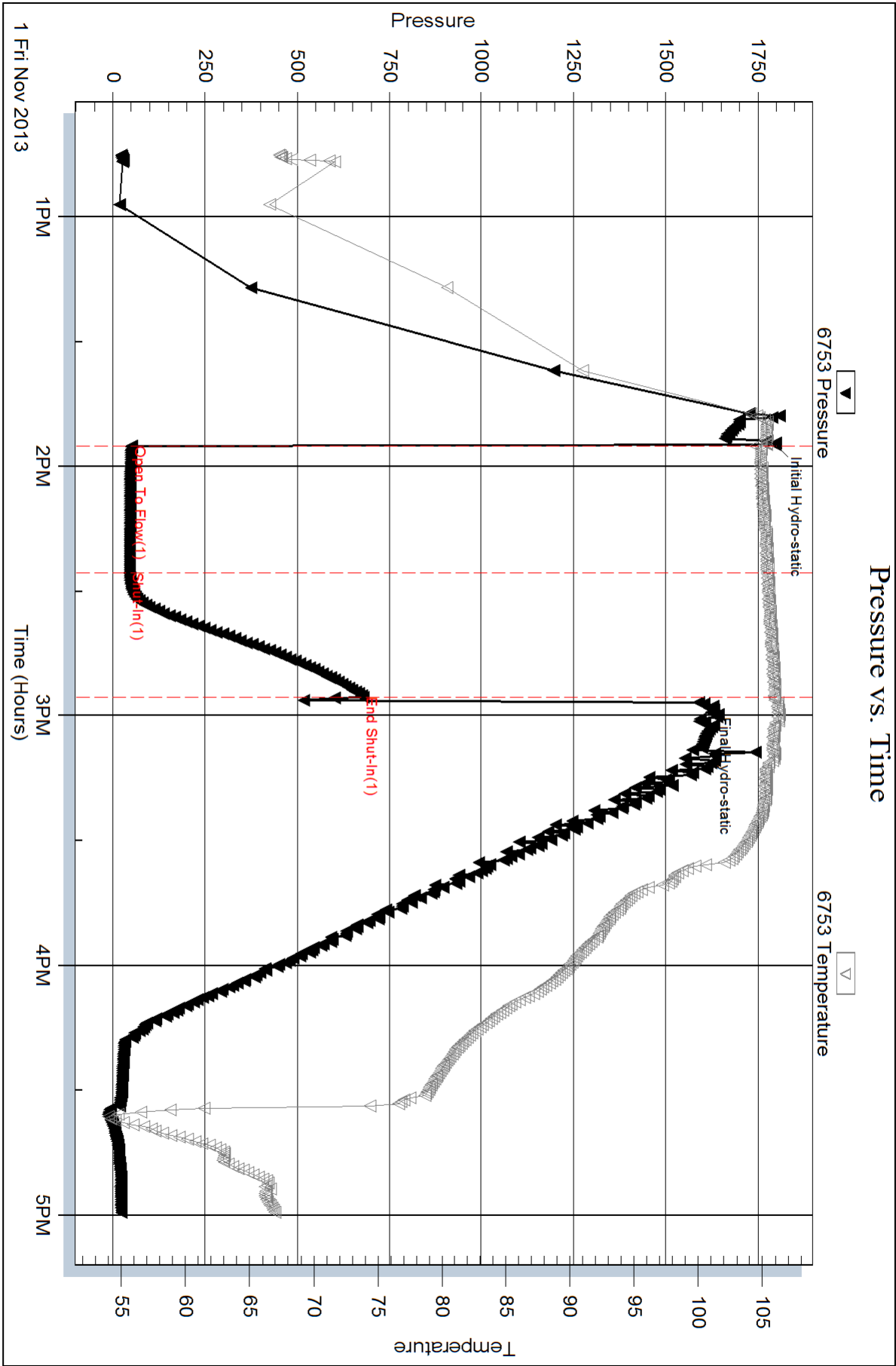
Recovery Comments:

Serial #: 6753

Outside TDI, Inc.

Younger #1

DST Test Number: 2



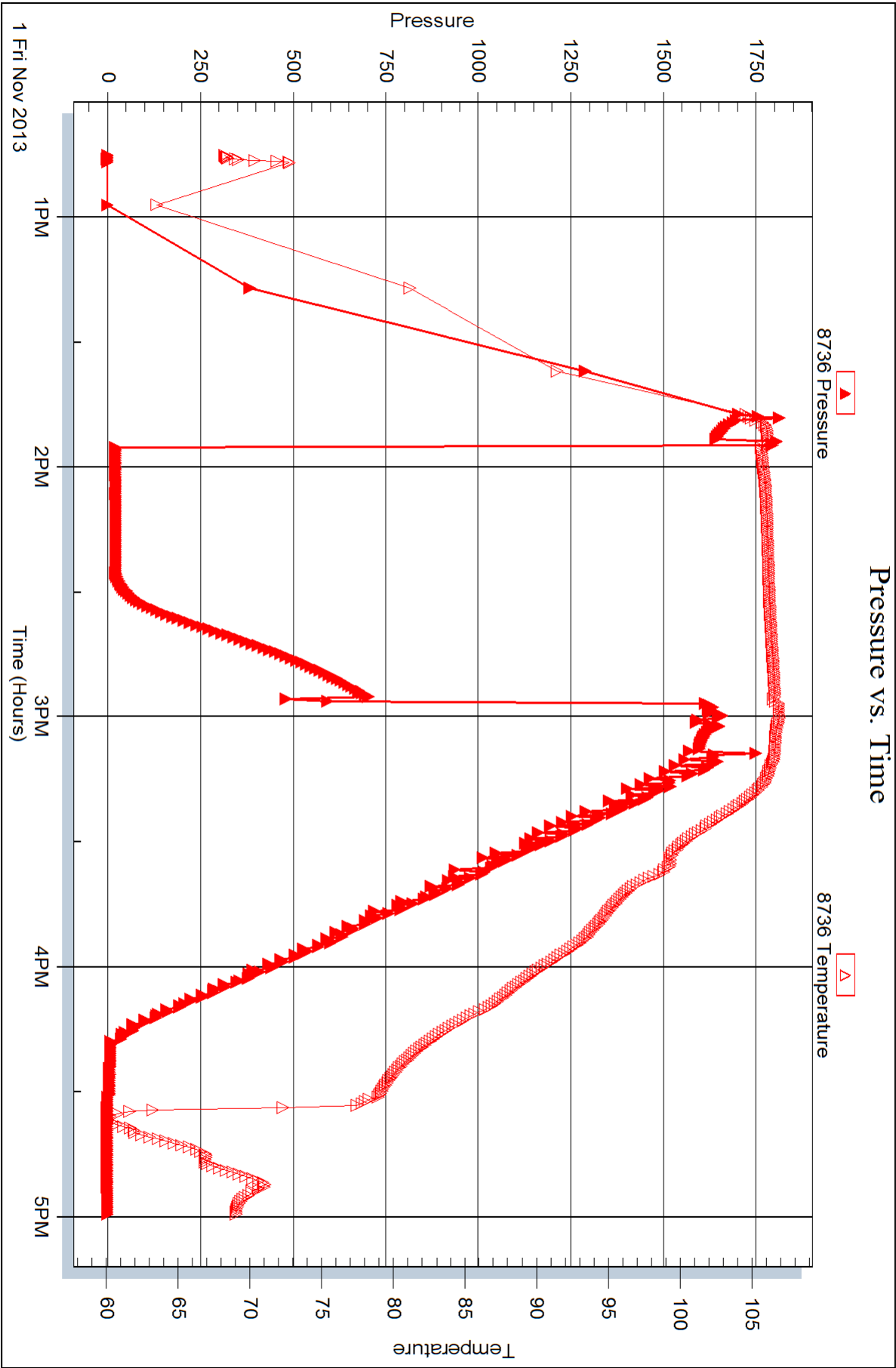
Serial #: 8736

Inside

TDI, Inc.

Younger #1

DST Test Number: 2

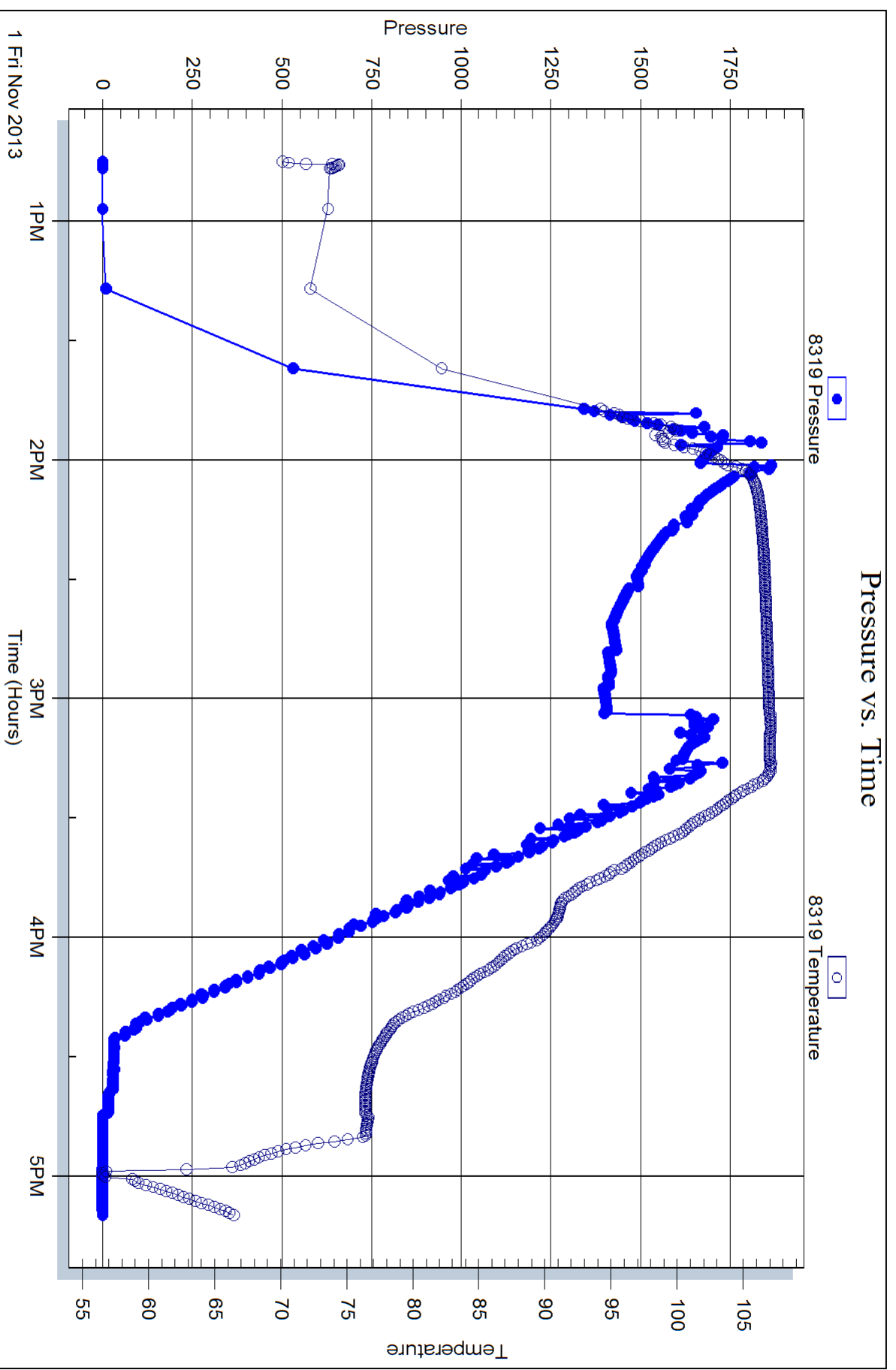


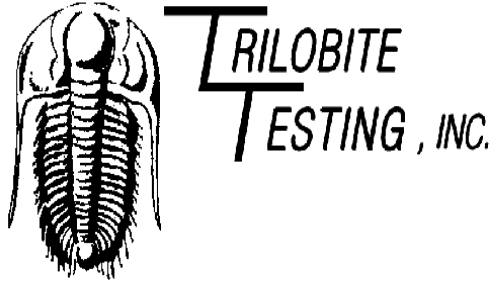
Serial #: 8319

Below (Straddle)

Younger #1

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

Younger #1

7-15s-19w Ellis,KS

Start Date: 2013.11.01 @ 21:40:00

End Date: 2013.11.02 @ 04:09:45

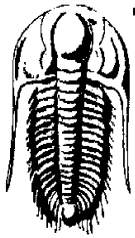
Job Ticket #: 55311 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.11.06 @ 10:28:24



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55311

DST#: 3

Test Start: 2013.11.01 @ 21:40:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:27:00

Time Test Ended: 04:09:45

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3617.00 ft (KB) To 3672.00 ft (KB) (TVD)

Reference Elevations: 2036.00 ft (KB)

Total Depth: 3699.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 6753 Outside

Press@RunDepth: 1046.91 psig @ 3658.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.11.01

End Date:

2013.11.02

Last Calib.: 2013.11.02

Start Time: 21:40:05

End Time:

04:09:44

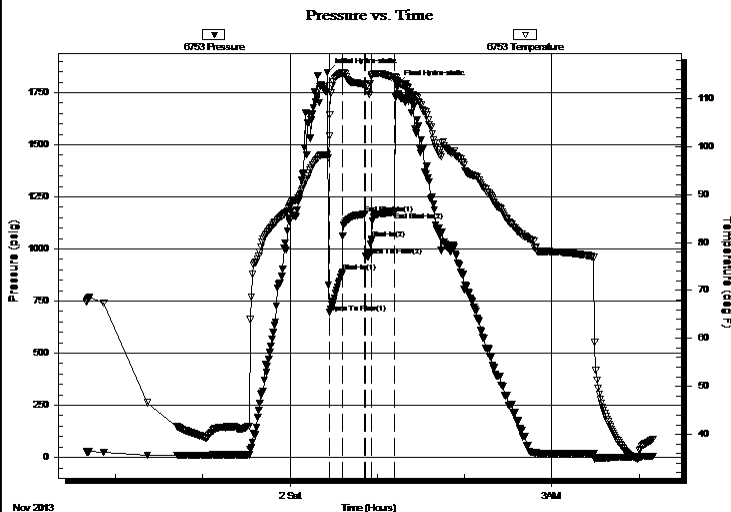
Time On Btm: 2013.11.02 @ 00:26:00

Time Off Btm: 2013.11.02 @ 01:13:30

TEST COMMENT: IF-BOB in 30 sec
ISI-No blow
FF-BOB in 30 sec
FSI-No blow

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1847.02	98.32	Initial Hydro-static
1	694.77	102.13	Open To Flow (1)
10	889.46	115.32	Shut-In(1)
26	1169.10	112.96	End Shut-In(1)
26	967.55	112.86	Open To Flow (2)
31	1046.91	114.87	Shut-In(2)
46	1180.17	114.25	End Shut-In(2)
48	1788.93	113.71	Final Hydro-static



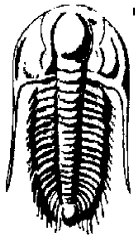
Recovery

Length (ft)	Description	Volume (bbl)
180.00	SMCW 10%M 90%W	2.52
180.00	SWCM 15%W 85%M	2.52
1480.00	SMCW 15%M 85%W	20.76
120.00	MCW 40%M 60%W	1.68
160.00	VSWCM 5%W 95%M	2.24

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55311

DST#: 3

Test Start: 2013.11.01 @ 21:40:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:27:00

Time Test Ended: 04:09:45

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3617.00 ft (KB) To 3672.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8736 Inside

Press@RunDepth: psig @ 3658.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.02

Start Time: 21:40:05

End Time:

04:09:59

Capacity: 8000.00 psig

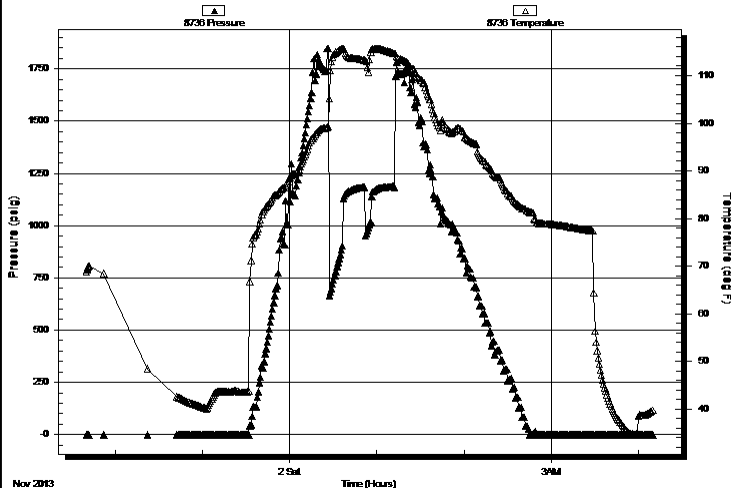
Last Calib.: 2013.11.02

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-BOB in 30 sec
ISI-No blow
FF-BOB in 30 sec
FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

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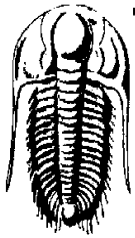
Recovery

Length (ft)	Description	Volume (bbl)
180.00	SMCW 10%M 90%W	2.52
180.00	SWCM 15%W 85%M	2.52
1480.00	SMCW 15%M 85%W	20.76
120.00	MCW 40%M 60%W	1.68
160.00	VSWCM 5%W 95%M	2.24

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55311

DST#: 3

Test Start: 2013.11.01 @ 21:40:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:27:00

Time Test Ended: 04:09:45

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3617.00 ft (KB) To 3672.00 ft (KB) (TVD)

Total Depth: 3699.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2036.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 10.00 ft

Serial #: 8319 Below (Straddle)

Press@RunDepth: psig @ 3677.00 ft (KB)

Start Date: 2013.11.01

End Date:

2013.11.02

Start Time: 21:40:05

End Time:

04:10:59

Capacity: 8000.00 psig

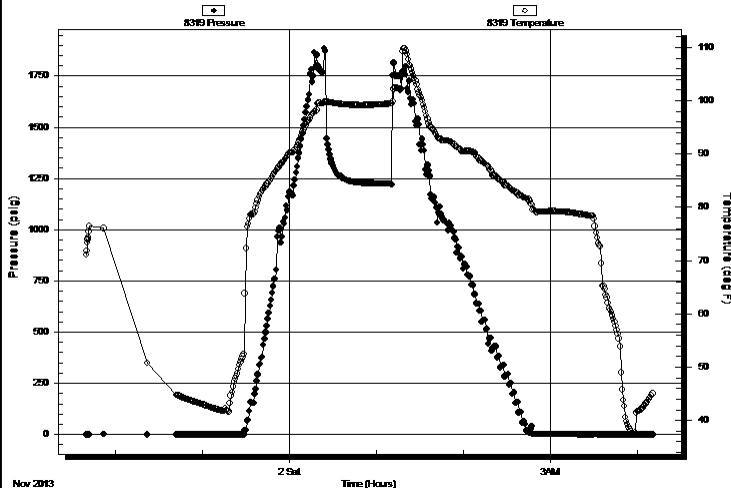
Last Calib.: 2013.11.02

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-BOB in 30 sec
ISI-No blow
FF-BOB in 30 sec
FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

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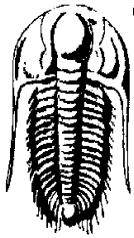
Recovery

Length (ft)	Description	Volume (bbl)
180.00	SMCW 10%M 90%W	2.52
180.00	SWCM 15%W 85%M	2.52
1480.00	SMCW 15%M 85%W	20.76
120.00	MCW 40%M 60%W	1.68
160.00	VSWCM 5%W 95%M	2.24

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI, Inc.

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

7-15s-19w Ellis,KS

Younger #1

Job Ticket: 55311

DST#: 3

Test Start: 2013.11.01 @ 21:40:00

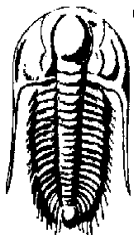
Tool Information

Drill Pipe:	Length:	3624.00 ft	Diameter:	3.80 inches	Volume:	50.84 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.70 inches	Volume:	0.00 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
					Total Volume:	50.84 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		27.00 ft					String Weight: Initial	40000.00 lb
Depth to Top Packer:		3617.00 ft					Final	48000.00 lb
Depth to Bottom Packer:		3672.00 ft						
Interval between Packers:		55.00 ft						
Tool Length:		106.00 ft						
Number of Packers:		3	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3598.00	
Shut In Tool	5.00			3603.00	
Hydraulic tool	5.00			3608.00	
Packer	4.00			3612.00	20.00 Bottom Of Top Packer
Packer	5.00			3617.00	
Stubb	1.00			3618.00	
Perforations	7.00			3625.00	
change Over Sub	1.00			3626.00	
Blank Spacing	31.00			3657.00	
change Over Sub	1.00			3658.00	
Recorder	0.00	8736	Inside	3658.00	
Recorder	0.00	6753	Outside	3658.00	
Change Over Sub	1.00			3659.00	
Perforations	9.00			3668.00	
Blank Off Sub	4.00			3672.00	55.00 Tool Interval
Packer	4.00			3676.00	
Stubb	1.00			3677.00	
Recorder	0.00	8319	Below	3677.00	
Perforations	23.00			3700.00	
Bullnose	3.00			3703.00	31.00 Bottom Packers & Anchor

Total Tool Length: 106.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc.

7-15s-19w Ellis,KS

1310 Bison Rd
Hays KS 67601

Younger #1

Job Ticket: 55311

DST#: 3

ATTN: Herb Deines

Test Start: 2013.11.01 @ 21:40:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 5.98 in³

Resistivity: ohm.m

Salinity: 3000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

26000 ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	SMCW 10%M 90%W	2.525
180.00	SWCM 15%W 85%M	2.525
1480.00	SMCW 15%M 85%W	20.761
120.00	MCW 40%M 60%W	1.683
160.00	VSWCM 5%W 95%M	2.244

Total Length: 2120.00 ft

Total Volume: 29.738 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

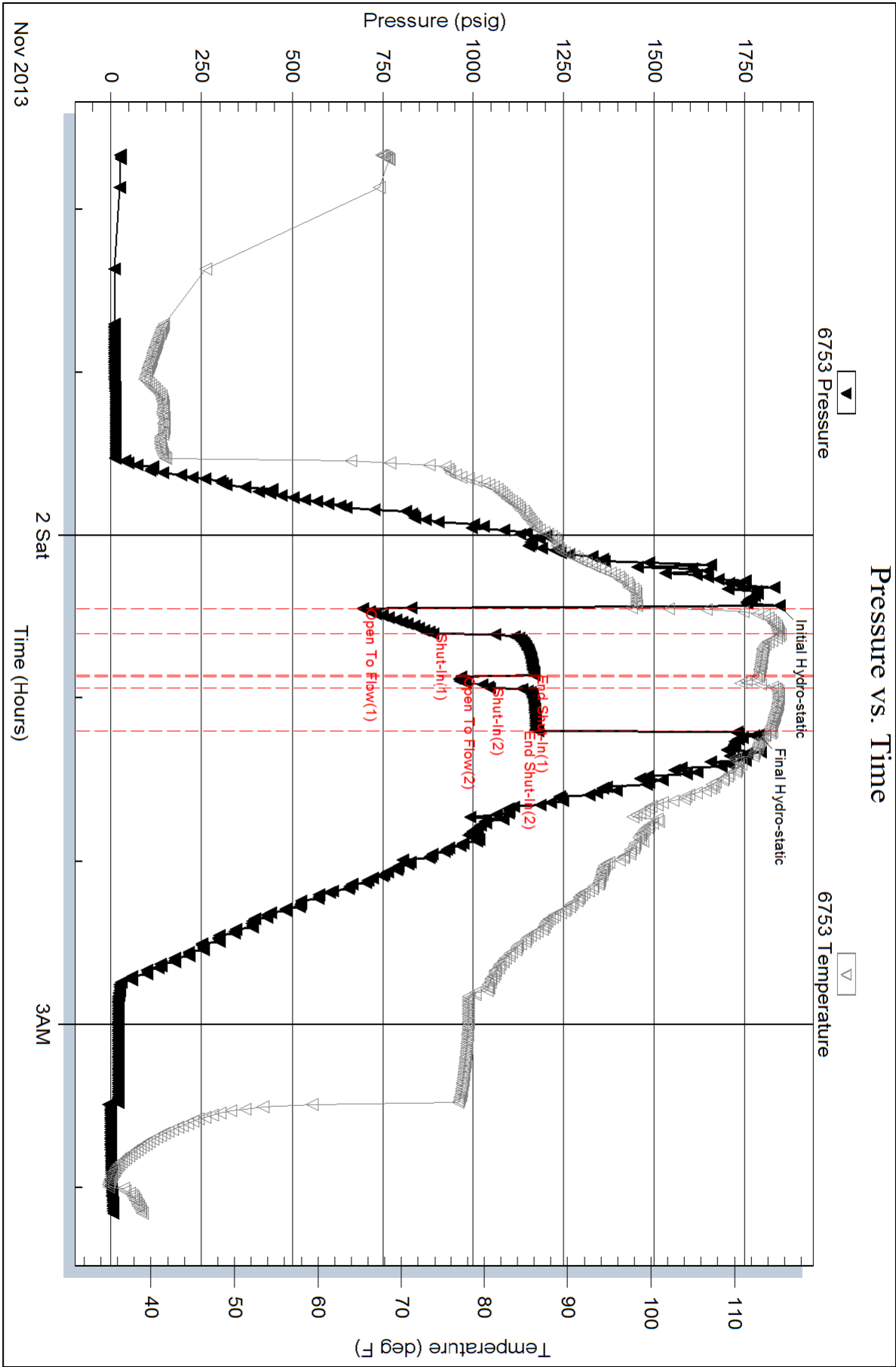
Recovery Comments:

Serial #: 6753

Outside TDI, Inc.

Younger #1

DST Test Number: 3



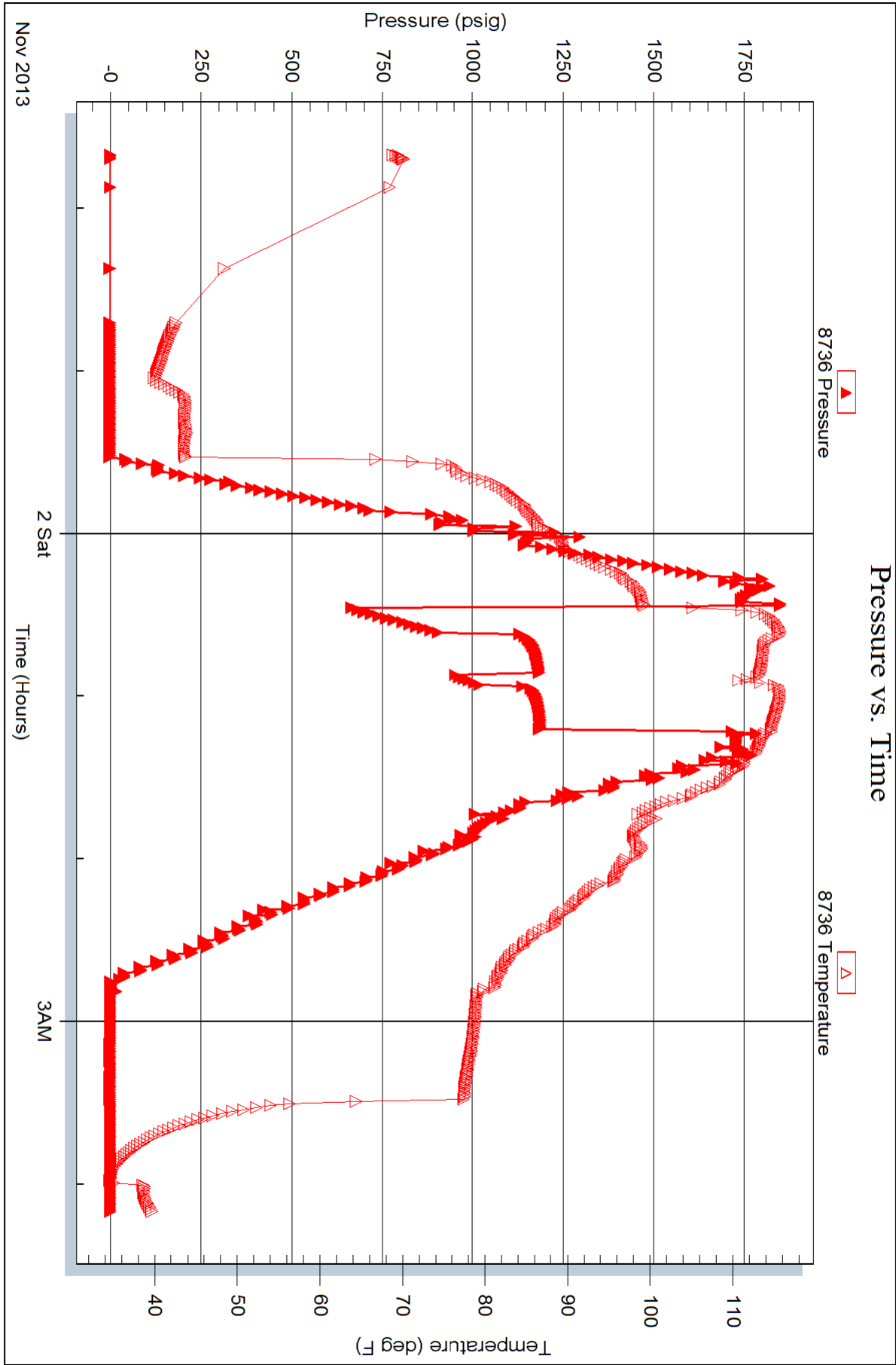
Serial #: 8736

Inside

TDI, Inc.

Younger #1

DST Test Number: 3

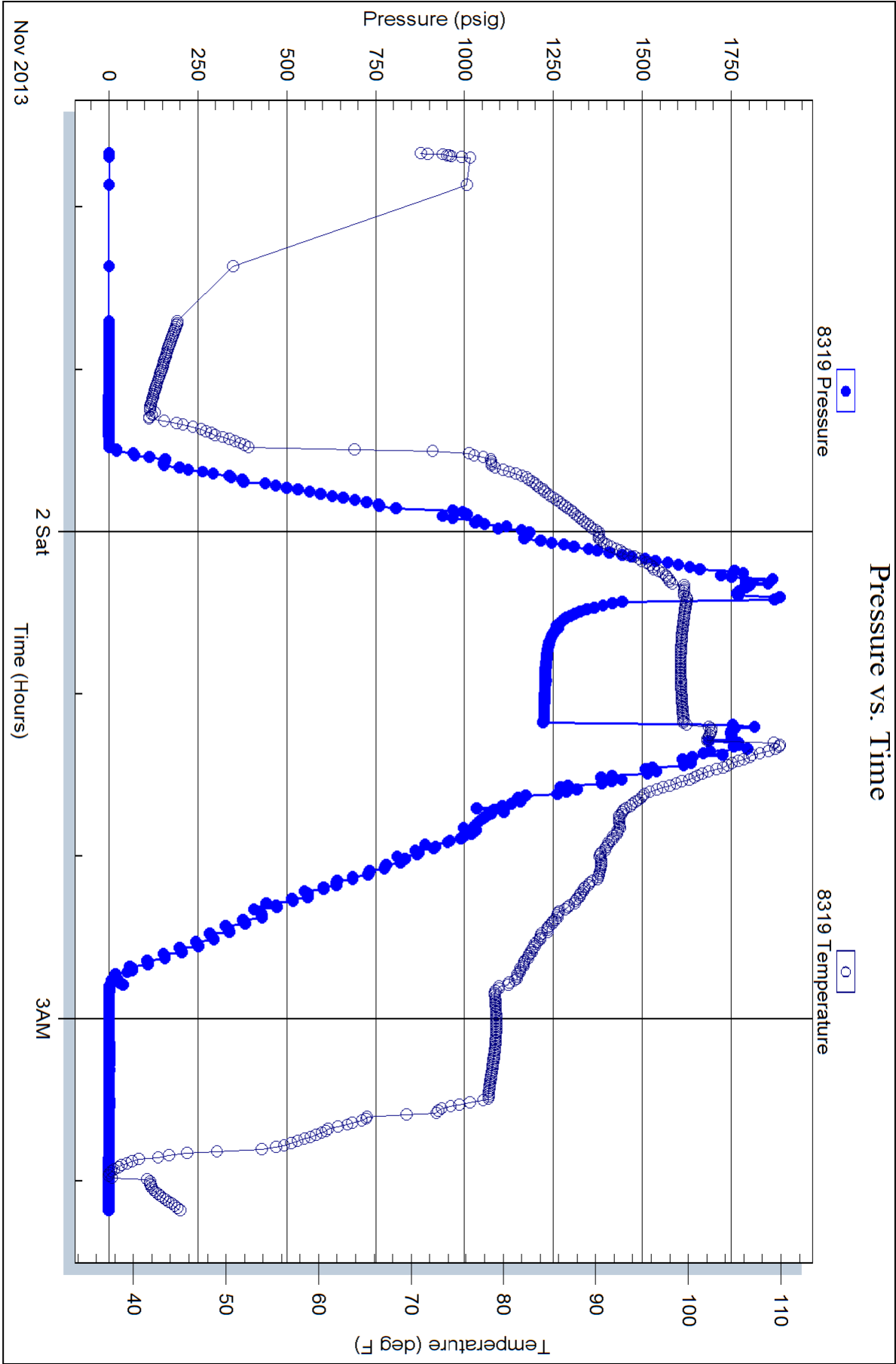


Serial #: 8319

Below (Straddle)

Younger #1

DST Test Number: 3





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **55309**

Well Name & No. Younger #1 Test No. 1 Date 11/1/13
 Company 7DI, Inc. Elevation 2036 KB 2026 GL
 Address 1310 Bison Rd Hays KS 67601
 Co. Rep / Geo. Herb D Rig Southwind #1
 Location: Sec. 7 Twp. 15 Rge. 19 Co. Ellis State KS

Interval Tested 3321 - 3378 Zone Tested KC "C-D"
 Anchor Length 57 Drill Pipe Run 3309 Mud Wt. 9.3
 Top Packer Depth 3316 + 3321 Drill Collars Run — Vis 55
 Bottom Packer Depth 3378 Wt. Pipe Run — WL 6.0
 Total Depth ~~3378~~ 3699 Chlorides 3,000 ppm System LCM 2

Blow Description IF - 6 1/4 in blow
7SI - No blow
FF - 1 1/2 in blow
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>WCM</u>			<u>25</u>	<u>75</u>
<u>50</u>	<u>Mud</u>				

Rec Total 110 BHT 105 Gravity — API RW 122 @ 60 °F Chlorides 39000 ppm
 (A) Initial Hydrostatic 1,687 ☒ Test 1150 T-On Location 4:20
 (B) First Initial Flow 14 ☐ Jars — T-Started 5:10
 (C) First Final Flow 42 ☐ Safety Joint — T-Open 7:42
 (D) Initial Shut-In 979 ☐ Circ Sub — T-Pulled 10:42
 (E) Second Initial Flow 42 ☐ Hourly Standby — T-Out 12:20
 (F) Second Final Flow 61 ☒ Mileage 41 RT 63.55
 (G) Final Shut-In 948 ☐ Sampler —
 (H) Final Hydrostatic 1,593 ☒ Straddle 600

Initial Open 45 ☐ Ruined Shale Packer —
 Initial Shut-In 45 ☐ Ruined Packer —
 Final Flow 45 ☐ Extra Copies —
 Final Shut-In 45 ☐ Extra Recorder — Sub Total 0
☐ Day Standby — Total 1813.55
☐ Accessibility — MP/DST Disc't —
 Sub Total 1813.55

Approved By — Our Representative Herb D
 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. **55310**

Well Name & No. Younger #1 Test No. 2 Date 11/1/13
 Company TPE, Inc. Elevation 2036 KB 2026 GL
 Address 1310 Bison Rd Hays KS 67601
 Co. Rep / Geo. Herb D Rig Southwind #1
 Location: Sec. 7 Twp. 15 Rge. 19 Co. Ellis State KS

Interval Tested 3420-3470 Zone Tested KC
 Anchor Length 50 Drill Pipe Run _____ Mud Wt. 9.3
 Top Packer Depth 3415 3420 Drill Collars Run — Vis 55
 Bottom Packer Depth 3470 Wt. Pipe Run — WL 6.0
 Total Depth 3699 Chlorides 3,000 ppm System LCM 2
 Blow Description IF - 1/4 in blow
ISL - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</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 106 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1,796 ☒ Test 1150 T-On Location _____
 (B) First Initial Flow 51 ☐ Jars _____ T-Started 12:43
 (C) First Final Flow 45 ☐ Safety Joint _____ T-Open 13:56
 (D) Initial Shut-In 679 ☐ Circ Sub _____ T-Pulled 14:56
 (E) Second Initial Flow _____ ☐ Hourly Standby _____ T-Out 17:00
 (F) Second Final Flow _____ ☒ Mileage 41.1 Comments _____
 (G) Final Shut-In _____ ☐ Sampler _____
 (H) Final Hydrostatic 1,603 ☒ Straddle 600

Initial Open 30 ☐ Ruined Shale Packer _____
 Initial Shut-In 30 ☐ Ruined Packer _____
 Final Flow _____ ☐ Extra Copies _____
 Final Shut-In _____ ☐ Extra Recorder _____ Sub Total 0
☐ Day Standby _____ Total 1750
☐ Accessibility _____ MP/DST Disc't _____
 Sub Total 1750

Approved By _____ 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. **55311**

Well Name & No. Younger #1 Test No. 3 Date 11/13
 Company TDT, Inc. Elevation 2036 KB 2026 GL
 Address 1310 Bison Rd Hays KS 67601
 Co. Rep / Geo. Herb D Rig Southwind #1
 Location: Sec. 7 Twp. 15 Rge. 19 Co. Ellis State KS

Interval Tested 3617 - 3672 Zone Tested Arb
 Anchor Length 55 Drill Pipe Run _____ Mud Wt. 9.3
 Top Packer Depth 3612, 3617 Drill Collars Run 5 Vis 55
 Bottom Packer Depth 3672 Wt. Pipe Run 1 WL 6.0
 Total Depth 3699 Chlorides 3000 ppm System LCM 2

Blow Description IF-BOB in 30sec
FSI-No blow
FF-BOB in 30sec
FSI-No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>180</u>	<u>SMCW</u>		<u>90</u>	<u>10</u>	
<u>160 180</u>	<u>SWCM</u>		<u>15</u>	<u>85</u>	
<u>1480</u>	<u>SMCW</u>		<u>85</u>	<u>15</u>	
<u>120</u>	<u>MCW</u>		<u>60</u>	<u>40</u>	
<u>160</u>	<u>VSWM</u>		<u>5</u>	<u>95</u>	
Rec Total <u>2120</u>	BHT <u>114</u>	Gravity _____	API RW <u>38</u>	@ <u>56</u> °F	Chlorides <u>26000</u> ppm

(A) Initial Hydrostatic <u>1,847</u>	☒ Test <u>1150</u>	T-On Location <u>21:05</u>
(B) First Initial Flow <u>695</u>	☐ Jars _____	T-Started <u>21:40</u>
(C) First Final Flow <u>889</u>	☐ Safety Joint _____	T-Open <u>00:23</u>
(D) Initial Shut-In <u>1,169</u>	☐ Circ Sub _____	T-Pulled <u>1:08</u>
(E) Second Initial Flow <u>968</u>	☐ Hourly Standby _____	T-Out <u>4:06</u>
(F) Second Final Flow <u>1,047</u>	☒ Mileage <u>41.1</u> 63.55	Comments _____
(G) Final Shut-In <u>1,180</u>	☐ Sampler _____	
(H) Final Hydrostatic <u>1,789</u>	☒ Straddle <u>600</u>	

Initial Open <u>10</u>	☐ Shale Packer _____	☐ Ruined Shale Packer _____
Initial Shut-In <u>15</u>	☐ Extra Packer _____	☐ Ruined Packer _____
Final Flow <u>5</u>	☐ Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>15</u>	☐ Day Standby _____	Total <u>1813.55</u>
	☐ Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1813.55</u>	

Approved By _____ Our Representative Beth D

Triobite 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.