



DRILL STEM TEST REPORT

Prepared For: **TDI inc.**

1310 Bison Rd
Hays KS. 67601

ATTN: Herb Deines

Johnson #1

19-14s-18w Ellis,KS

Start Date: 2013.09.23 @ 16:30:01

End Date: 2013.09.23 @ 21:43:00

Job Ticket #: 53626 DST #: 1

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

Printed: 2013.09.26 @ 08:58:56

TDI inc.
19-14s-18w Ellis,KS
Johnson #1
DST # 1
LKC"D"
2013.09.23



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

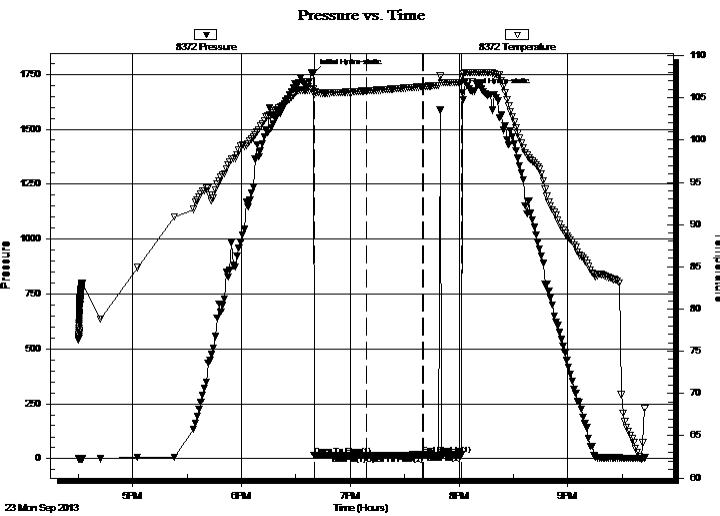
19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53626 **DST#: 1**
Test Start: 2013.09.23 @ 16:30:01

GENERAL INFORMATION:

Formation: **LKC"D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 18:40:00
 Time Test Ended: 21:43:00
 Interval: **3468.00 ft (KB) To 3496.00 ft (KB) (TVD)**
 Total Depth: 3496.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Andy Carreira
 Unit No: 68
 Reference Elevations: 2124.00 ft (KB)
 2114.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 8372 Inside
 Press @ RunDepth: 16.36 psig @ 3469.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.09.23 End Date: 2013.09.23 Last Calib.: 2013.09.23
 Start Time: 16:30:01 End Time: 21:43:00 Time On Btm: 2013.09.23 @ 18:39:30
 Time Off Btm: 2013.09.23 @ 20:02:00

TEST COMMENT: IF:(30min) Surge, No Blow
 IS:(30min) No Return
 FF:(25min) No Blow , Flushed, Surged, No Blow , Pulled.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1755.22	106.03	Initial Hydro-static
1	16.90	105.44	Open To Flow (1)
30	16.36	105.82	Shut-In(1)
61	20.79	106.33	End Shut-In(1)
61	15.47	106.33	Open To Flow (2)
82	18.19	106.85	Shut-In(2)
83	1666.05	107.53	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	Mud	0.01

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

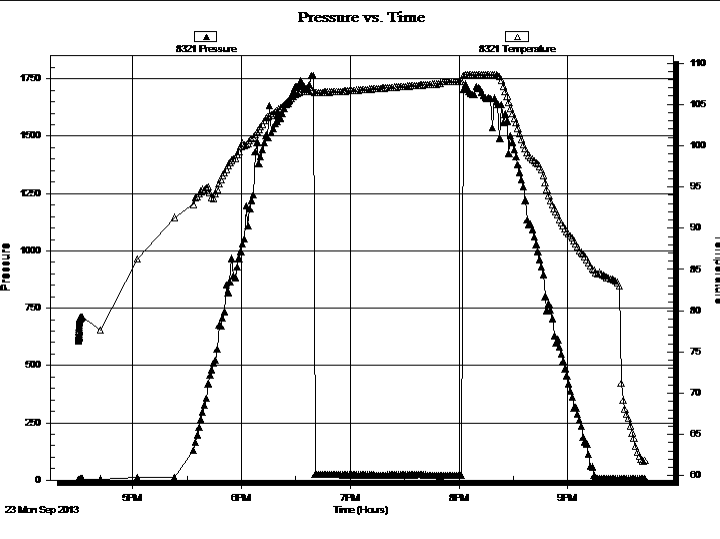
19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53626 **DST#: 1**
Test Start: 2013.09.23 @ 16:30:01

GENERAL INFORMATION:

Formation: LKC"D"	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Andy Carreira
Time Tool Opened: 18:40:00	Unit No: 68
Time Test Ended: 21:43:00	
Interval: 3468.00 ft (KB) To 3496.00 ft (KB) (TVD)	Reference Elevations: 2124.00 ft (KB)
Total Depth: 3496.00 ft (KB) (TVD)	2114.00 ft (CF)
Hole Diameter: 7.88 inches	KB to GR/CF: 10.00 ft
Hole Condition: Poor	

Serial #: 8321	Outside	Capacity: 8000.00 psig
Press @ Run Depth: psig @ 3469.00 ft (KB)	Start Date: 2013.09.23	Last Calib.: 2013.09.23
Start Time: 16:30:01	End Date: 2013.09.23	Time On Btm:
End Time: 21:43:00	End Time: 21:43:00	Time Off Btm:

TEST COMMENT: IF:(30min) Surge, No Blow
IS:(30min) No Return
FF:(25min) No Blow , Flushed, Surged, No Blow , Pulled.



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

Recovery		
Length (ft)	Description	Volume (bbl)
1.00	Mud	0.01

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53626 **DST#: 1**
Test Start: 2013.09.23 @ 16:30:01

Tool Information

Drill Pipe:	Length: 3474.00 ft	Diameter: 3.80 inches	Volume: 48.73 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 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: 48.73 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial	40000.00 lb
Depth to Top Packer:	3468.00 ft			Final	40000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	28.00 ft				
Tool Length:	48.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3449.00	
Shut In Tool	5.00			3454.00	
Hydraulic tool	5.00			3459.00	
Packer	5.00			3464.00	20.00 Bottom Of Top Packer
Packer	4.00			3468.00	
Stubb	1.00			3469.00	
Recorder	0.00	8372	Inside	3469.00	
Recorder	0.00	8321	Outside	3469.00	
Perforations	24.00			3493.00	
Bullnose	3.00			3496.00	28.00 Bottom Packers & Anchor
Total Tool Length:	48.00				



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

TDI inc. **19-14s-18w Ellis,KS**
 1310 Bison Rd **Johnson #1**
 Hays KS. 67601 Job Ticket: 53626 **DST#: 1**
 ATTN: Herb Deines Test Start: 2013.09.23 @ 16:30:01

Mud and Cushion Information

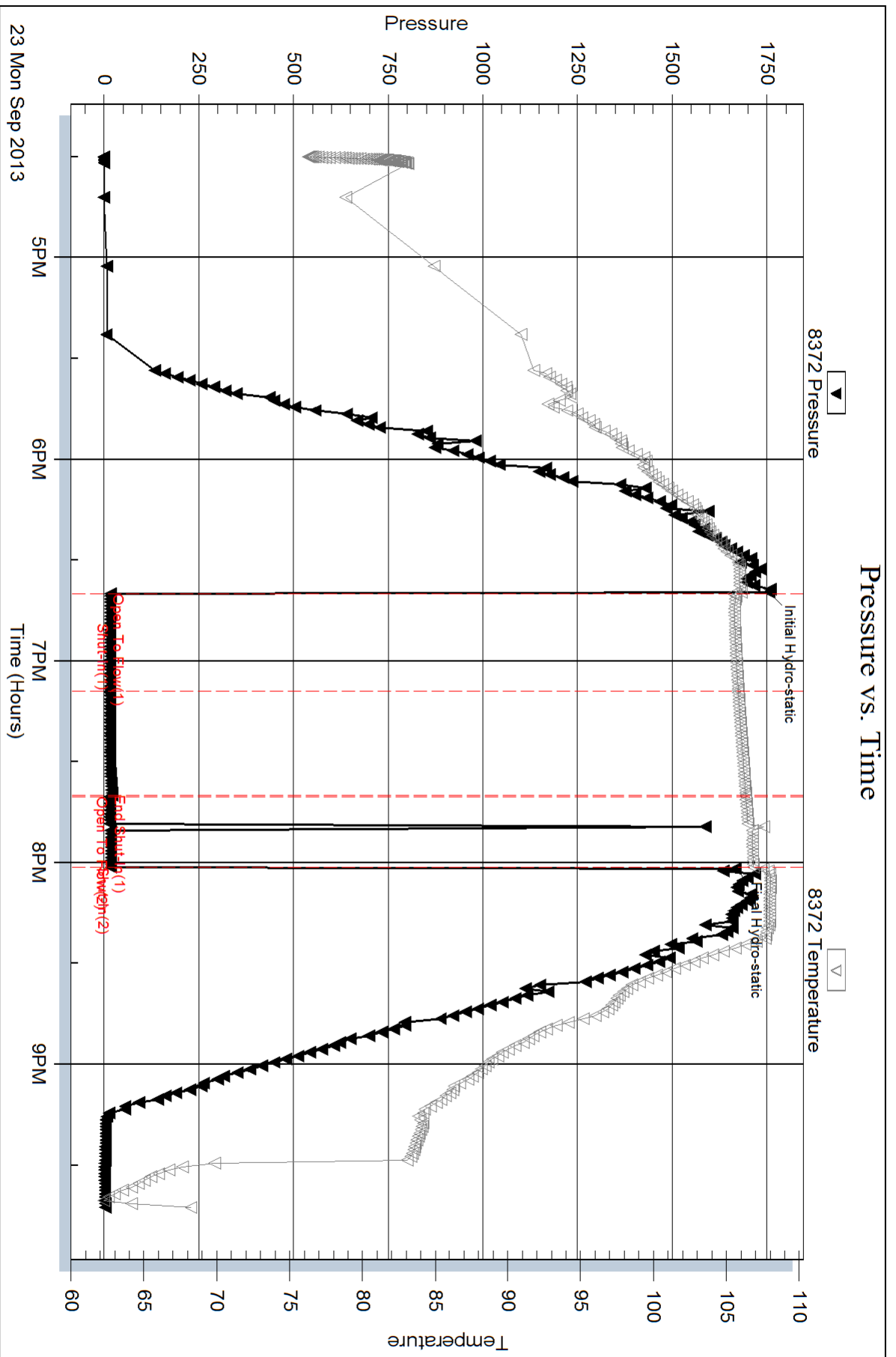
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 60.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.38 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 2800.00 ppm			
Filter Cake: inches			

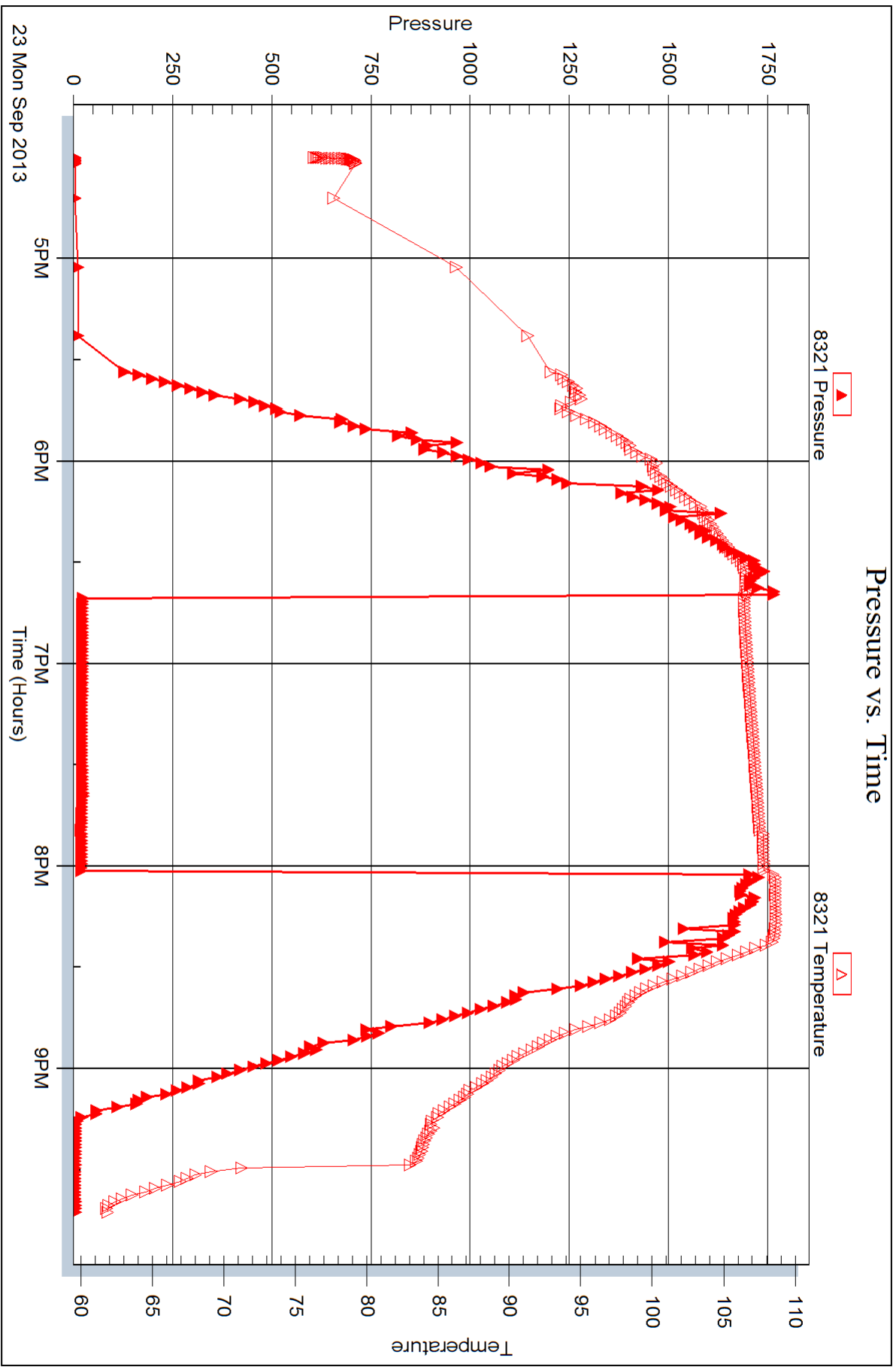
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	Mud	0.014

Total Length: 1.00 ft Total Volume: 0.014 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **TDI inc.**

1310 Bison Rd
Hays KS. 67601

ATTN: Herb Deines

Johnson #1

19-14s-18w Ellis,KS

Start Date: 2013.09.24 @ 11:00:01

End Date: 2013.09.24 @ 17:34:30

Job Ticket #: 53627 DST #: 2

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

Printed: 2013.09.26 @ 08:58:27

TDI inc. 19-14s-18w Ellis,KS Johnson #1 DST # 2 LKC"H-K" 2013.09.24



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

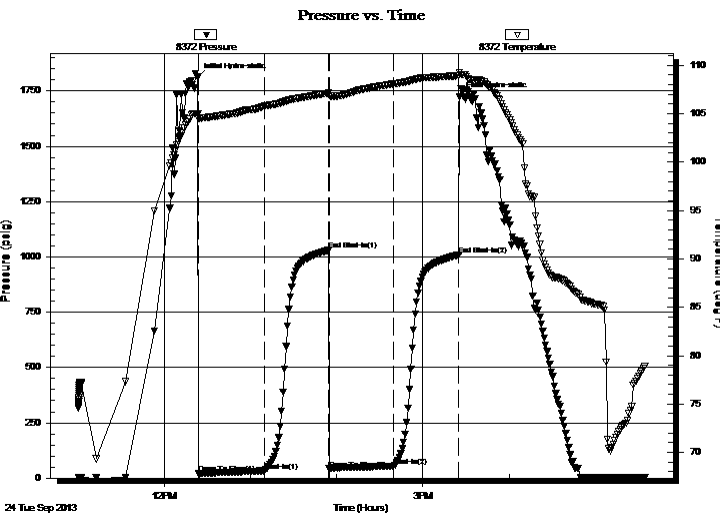
19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53627 **DST#: 2**
Test Start: 2013.09.24 @ 11:00:01

GENERAL INFORMATION:

Formation: **LKC"H-K"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:23:30
Time Test Ended: 17:34:30
Interval: **3551.00 ft (KB) To 3639.00 ft (KB) (TVD)**
Total Depth: 3639.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor
Test Type: Conventional Bottom Hole (Reset)
Tester: Andy Carreira
Unit No: 68
Reference Elevations: 2124.00 ft (KB)
2114.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8372 Inside
Press @ Run Depth: 53.90 psig @ 3557.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2013.09.24 End Date: 2013.09.24 Last Calib.: 2013.09.24
Start Time: 11:00:01 End Time: 17:34:30 Time On Btm: 2013.09.24 @ 12:23:00
Time Off Btm: 2013.09.24 @ 15:25:30

TEST COMMENT: IF:(45min) 1" blow in 3 min. 2" in 14 min. 3" in 29 min. 4" in 45 min.
IS:(45min) No Return
FF:(45min) 1" blow in 6 min. 2" in 14 min. 3" in 25 min. 4" in 36 min. 5" in 45 min.
FS:(45min) No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1812.29	105.02	Initial Hydro-static
1	19.78	104.51	Open To Flow (1)
47	32.95	105.78	Shut-In(1)
91	1029.69	107.12	End Shut-In(1)
92	41.70	106.84	Open To Flow (2)
137	53.90	108.08	Shut-In(2)
182	1009.82	108.93	End Shut-In(2)
183	1722.59	109.27	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	SOSGM o=trace g=5% m=95%	0.88
12.00	SOCGM g=5% o=5% m=90%	0.17

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53627 **DST#: 2**
Test Start: 2013.09.24 @ 11:00:01

GENERAL INFORMATION:

Formation: **LKC"H-K"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:23:30
Time Test Ended: 17:34:30

Test Type: Conventional Bottom Hole (Reset)
Tester: Andy Carreira
Unit No: 68

Interval: **3551.00 ft (KB) To 3639.00 ft (KB) (TVD)**
Total Depth: 3639.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2124.00 ft (KB)
2114.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8321

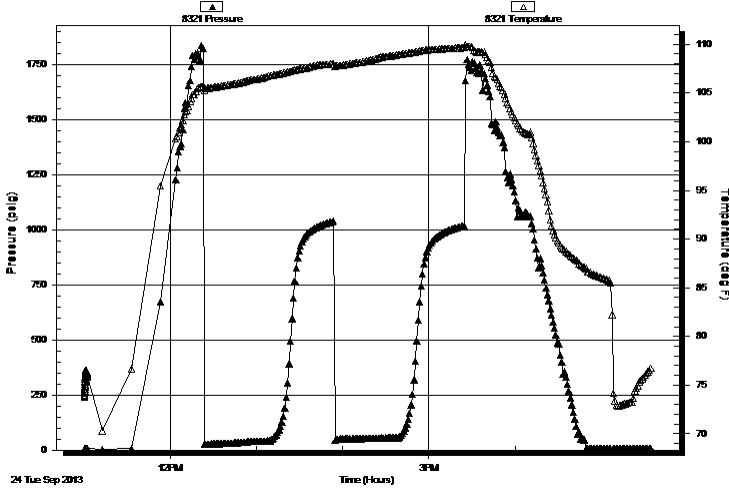
Outside

Press@RunDepth: psig @ 3557.00 ft (KB)
Start Date: 2013.09.24 End Date: 2013.09.24
Start Time: 11:00:01 End Time: 17:34:30

Capacity: 8000.00 psig
Last Calib.: 2013.09.24
Time On Btm:
Time Off Btm:

TEST COMMENT: IF:(45min) 1" blow in 3 min. 2" in 14 min. 3" in 29 min. 4" in 45 min.
IS:(45min) No Return
FF:(45min) 1" blow in 6 min. 2" in 14 min. 3" in 25 min. 4" in 36 min. 5" in 45 min.
FS:(45min) No Return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
63.00	SOSGM o=trace g=5% m=95%	0.88
12.00	SOCGM g=5% o=5% m=90%	0.17

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI inc.
1310 Bison Rd
Hays KS. 67601
ATTN: Herb Deines

19-14s-18w Ellis,KS
Johnson #1
Job Ticket: 53627 **DST#: 2**
Test Start: 2013.09.24 @ 11:00:01

Tool Information

Drill Pipe:	Length: 3561.00 ft	Diameter: 3.80 inches	Volume: 49.95 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	46000.00 lb
			<u>Total Volume: 49.95 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial	42000.00 lb
Depth to Top Packer:	3551.00 ft			Final	43000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	88.00 ft				
Tool Length:	108.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3532.00	
Shut In Tool	5.00			3537.00	
Hydraulic tool	5.00			3542.00	
Packer	5.00			3547.00	20.00 Bottom Of Top Packer
Packer	4.00			3551.00	
Stubb	1.00			3552.00	
Perforations	4.00			3556.00	
Change Over Sub	1.00			3557.00	
Recorder	0.00	8372	Inside	3557.00	
Recorder	0.00	8321	Outside	3557.00	
Drill Pipe	63.00			3620.00	
Perforations	15.00			3635.00	
Change Over Sub	1.00			3636.00	
Bullnose	3.00			3639.00	88.00 Bottom Packers & Anchor

Total Tool Length: 108.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI inc. **19-14s-18w Ellis,KS**
 1310 Bison Rd **Johnson #1**
 Hays KS. 67601 Job Ticket: 53627 **DST#: 2**
 ATTN: Herb Deines Test Start: 2013.09.24 @ 11:00:01

Mud and Cushion Information

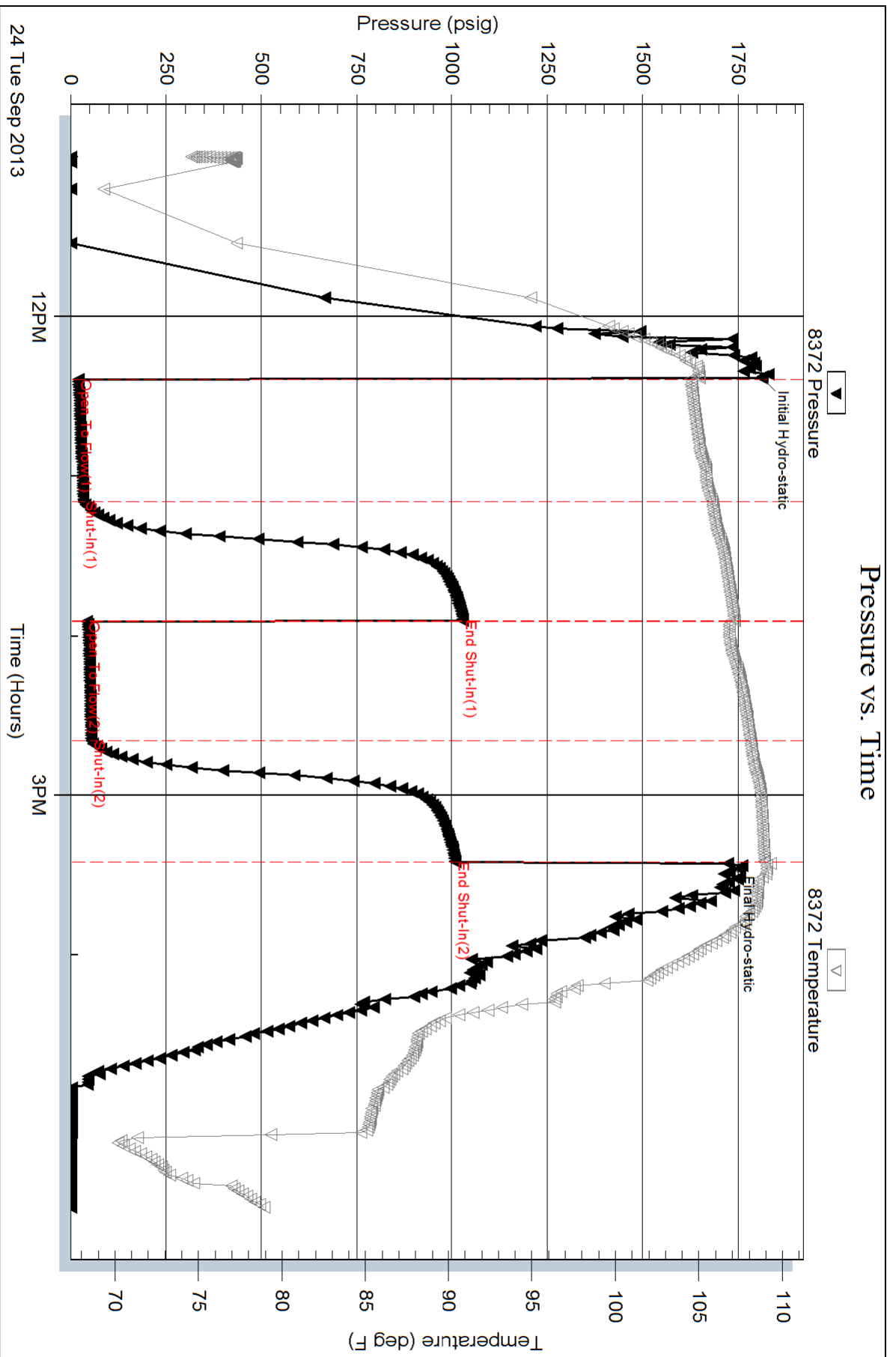
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 2900.00 ppm			
Filter Cake: inches			

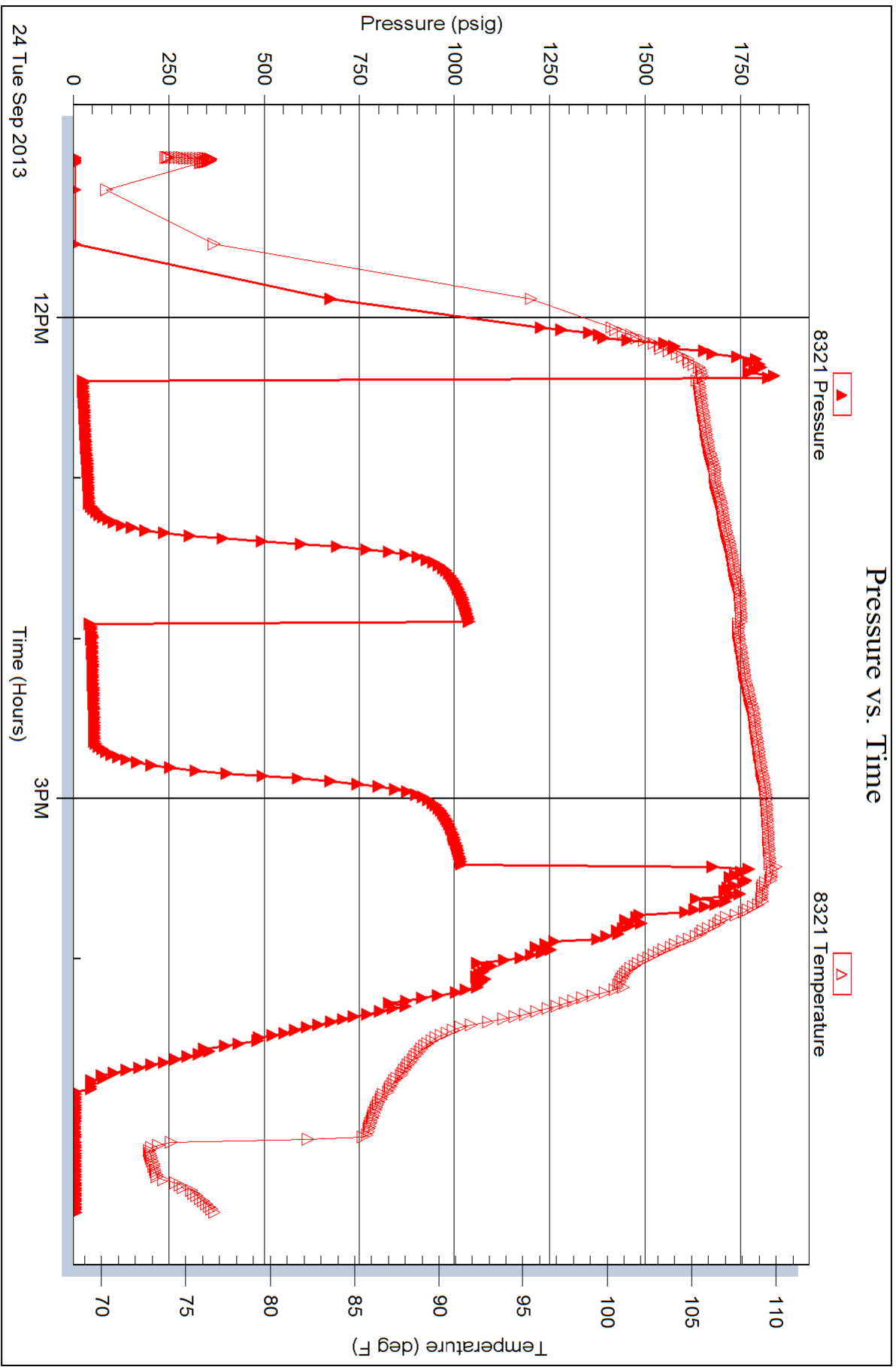
Recovery Information

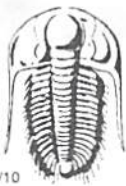
Recovery Table

Length ft	Description	Volume bbl
63.00	SOSGM o=trace g=5% m=95%	0.884
12.00	SOCGM g=5% o=5% m=90%	0.168

Total Length: 75.00 ft Total Volume: 1.052 bbl
 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. 53626

4/10

Well Name & No. Johnson #1 Test No. 1 Date 9-23-13
 Company TDI inc Elevation 2124 KB 2114 GL
 Address 1310 BISON RD Hays, Ks. 67601
 Co. Rep / Geo. Herb Deines Rig Southwind #1
 Location: Sec. 19 Twp. 14S Rge. 18W Co. Ellis State Ks

Interval Tested 3468-3496 Zone Tested LKC "D"
 Anchor Length 28' Drill Pipe Run 3474 Mud Wt. 9.2
 Top Packer Depth 3463 Drill Collars Run 0 Vis 60
 Bottom Packer Depth 3468 Wt. Pipe Run 0 WL 6.4
 Total Depth 3496 Chlorides 2800 ppm System LCM 2#

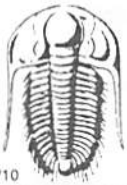
Blow Description FF: Surges, No blow
ISF: NO RETURN
FF: NO Blow, Flushed, surges, NO blow, Pulled
FSI: —

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</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 1 BHT 106° Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic 1755 Test 1150 T-On Location 13:47
 (B) First Initial Flow 16 Jars _____ T-Started 16:30
 (C) First Final Flow 16 Safety Joint _____ T-Open 18:40
 (D) Initial Shut-In 20 Circ Sub _____ T-Pulled 20:05
 (E) Second Initial Flow 15 Hourly Standby _____ T-Out 21:43
 (F) Second Final Flow 18 Mileage 18RT 27.90 Comments _____
 (G) Final Shut-In _____ Sampler _____
 (H) Final Hydrostatic 1666 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 30 Day Standby _____ Total 1177.90
 Final Flow 25 Accessibility _____ MP/DST Disc't _____
 Final Shut-In _____ Sub Total 1177.90

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. 53627

Well Name & No. Johnson #1 Test No. 2 Date 9-24-13
 Company TDI Inc Elevation 2124 KB 2114 GL
 Address 1310 BISON RD Hays Ks. 67601
 Co. Rep / Geo. Herb Deines Rig Southwind 1
 Location: Sec. 19 Twp. 14s Rge. 18W Co. Ellis State Ks

Interval Tested 3551 - 3639 Zone Tested LKC "H, I, J, K"
 Anchor Length 88' Drill Pipe Run _____ Mud Wt. 9.3
 Top Packer Depth 3546 Drill Collars Run 0 Vis 57
 Bottom Packer Depth 3551 Wt. Pipe Run 0 WL 7.2
 Total Depth 3639 Chlorides 2900 ppm System LCM 1

Blow Description IF: 1" blow in 3min. 2" in 14min. 3" in 29min. 4" in 45min.
ISI: NO RETURN
FF: 1" blow in 6min. 2" in 14min. 3" in 25min. 4" in 36min. 5" in 45min
FSL: NO RETURN

Rec	Feet of	%gas	%oil	%water	%mud
<u>12</u>	<u>SO CBM</u>	<u>5</u>	<u>5</u>	<u>90</u>	<u>0</u>
<u>63[#]</u>	<u>SO SGM</u>	<u>5</u>	<u>TR</u>	<u>95</u>	<u>0</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 75' BHT 108° Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic 1812 Test 1150 T-On Location 10:12
 (B) First Initial Flow 19 Jars _____ T-Started 11:00
 (C) First Final Flow 32 Safety Joint _____ T-Open 12:24
 (D) Initial Shut-In 1029 Circ Sub _____ T-Pulled 15:24
 (E) Second Initial Flow 41 Hourly Standby _____ T-Out 17:35

(F) Second Final Flow 53 Mileage 18RTX 2 55.80
 (G) Final Shut-In 1009 Sampler _____
 (H) Final Hydrostatic 1722 Straddle _____

Initial Open 45 Shale Packer _____
 Initial Shut-In 45 Shale Packer _____
 Final Flow 45 Extra Packer _____
 Final Shut-In 45 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1205.80

Comments Picked up tools 9/25
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1205.80
 MP/DST Disc't _____

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.