

DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Munsch #11

9-15S-18W Ellis, KS

Start Date: 2017.11.15 @ 22:42:01

End Date: 2017.11.16 @ 07:22:21

Job Ticket #: 63116 DST #: 1

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

Printed: 2017.11.16 @ 14:45:25



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

9-15S-18W Ellis, KS
Munsch #11
Job Ticket: 63116 **DST#: 1**
Test Start: 2017.11.15 @ 22:42:01

GENERAL INFORMATION:

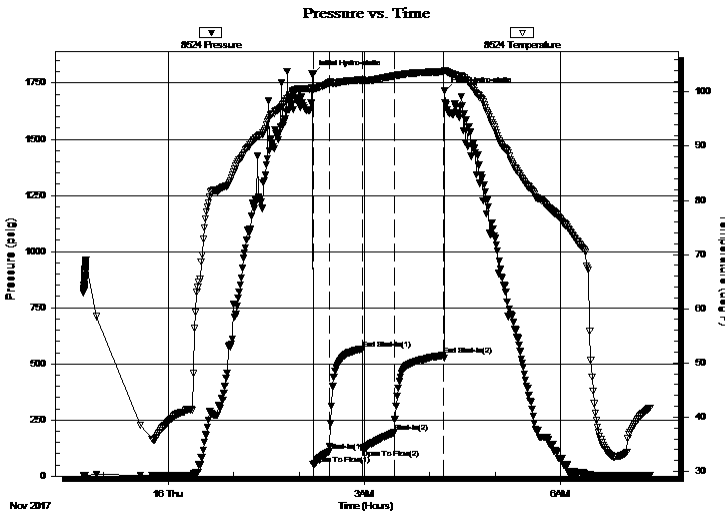
Formation: **LKC "C - D"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:12:52
Time Test Ended: 07:22:21
Interval: **3334.00 ft (KB) To 3382.00 ft (KB) (TVD)**
Total Depth: 3748.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Straddle (Initial)
Tester: Brannan Lonsdale
Unit No: 73
Reference Elevations: 2039.00 ft (KB)
2029.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 8524 Outside

Press@RunDepth: 194.38 psig @ 3335.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.11.15 End Date: 2017.11.16 Last Calib.: 2017.11.16
Start Time: 22:42:02 End Time: 07:22:21 Time On Btm: 2017.11.16 @ 02:12:22
Time Off Btm: 2017.11.16 @ 04:13:22

TEST COMMENT: 15- IF- BOB 5 mins
30- IS- Surface blow died in 12 mins
30- FF- BOB 4 mins
45- FSI- BOB 11 mins

PRESSURE SUMMARY



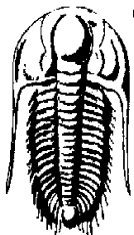
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1788.85	100.83	Initial Hydro-static
1	51.28	100.48	Open To Flow (1)
16	109.22	101.69	Shut-In(1)
46	566.33	102.22	End Shut-In(1)
46	121.15	102.14	Open To Flow (2)
75	194.38	102.97	Shut-In(2)
121	537.69	103.71	End Shut-In(2)
121	1713.86	103.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
127.00	GOCMW, 10%G 5%O 20%M 65%W	1.80
191.00	GWMCO, 35%G 10%W 20%M 35%O	2.71
48.00	GOCM, 10%G 10%O 80%M	0.68

Gas Rates

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



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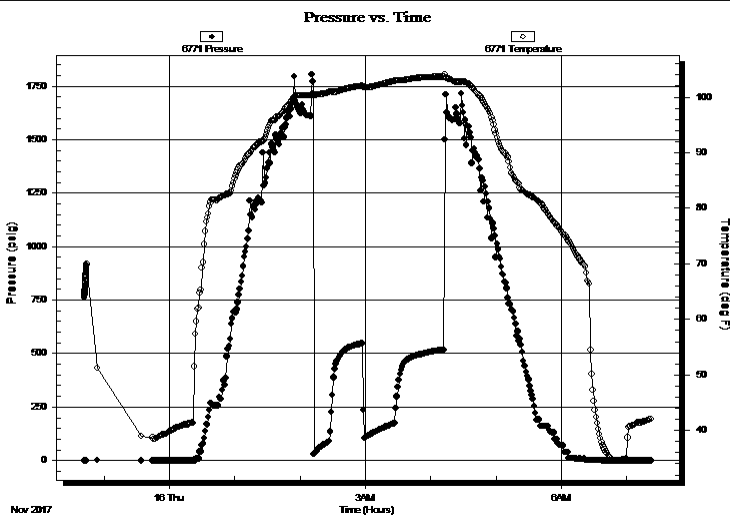
9-15S-18W Ellis, KS
Munsch #11
Job Ticket: 63116 **DST#: 1**
Test Start: 2017.11.15 @ 22:42:01

GENERAL INFORMATION:

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Time Test Ended: 07:22:21
Interval: **3334.00 ft (KB) To 3382.00 ft (KB) (TVD)**
Total Depth: 3748.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Straddle (Initial)
Tester: Brannan Lonsdale
Unit No: 73
Reference Elevations: 2039.00 ft (KB)
2029.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 6771 Inside
Press@RunDepth: psig @ 3335.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.11.15 End Date: 2017.11.16 Last Calib.: 2017.11.16
Start Time: 22:42:05 End Time: 07:22:09 Time On Btm:
Time Off Btm:

TEST COMMENT: 15- IF- BOB 5 mins
30- IS- Surface blow died in 12 mins
30- FF- BOB 4 mins
45- FS- BOB 11 mins



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
127.00	GOCMW, 10%G 5%O 20%M 65%W	1.80
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Gas Rates

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



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TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

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

9-15S-18W Ellis, KS
Munsch #11
Job Ticket: 63116 **DST#: 1**
Test Start: 2017.11.15 @ 22:42:01

Tool Information

Drill Pipe:	Length: 3337.00 ft	Diameter: 3.82 inches	Volume: 47.30 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 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: 56000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	3334.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	3382.00 ft			
Interval between Packers:	48.00 ft			
Tool Length:	434.00 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			3315.00	
Shut In Tool	5.00			3320.00	
Hydraulic tool	5.00			3325.00	
Packer	5.00			3330.00	20.00 Bottom Of Top Packer
Packer	4.00			3334.00	
Stubb	1.00			3335.00	
Recorder	0.00	6771	Inside	3335.00	
Recorder	0.00	8524	Outside	3335.00	
Perforations	5.00			3340.00	
Change Over Sub	1.00			3341.00	
Drill Pipe	32.00			3373.00	
Perforations	5.00			3378.00	
Blank Off Sub	1.00			3379.00	
Blank Spacing	3.00			3382.00	48.00 Tool Interval
Packer	1.00			3383.00	
Stubb	1.00			3384.00	
Recorder	0.00	6753	Below	3384.00	
Perforations	10.00			3394.00	
Change Over Sub	1.00			3395.00	
Drill Pipe	349.00			3744.00	
Change Over Sub	1.00			3745.00	
Bullnose	3.00			3748.00	366.00 Bottom Packers & Anchor
Total Tool Length:	434.00				



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FLUID SUMMARY

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Hays, KS 67601
ATTN: Herb Deines

9-15S-18W Ellis, KS
Munsch #11
Job Ticket: 63116 **DST#: 1**
Test Start: 2017.11.15 @ 22:42:01

Mud and Cushion Information

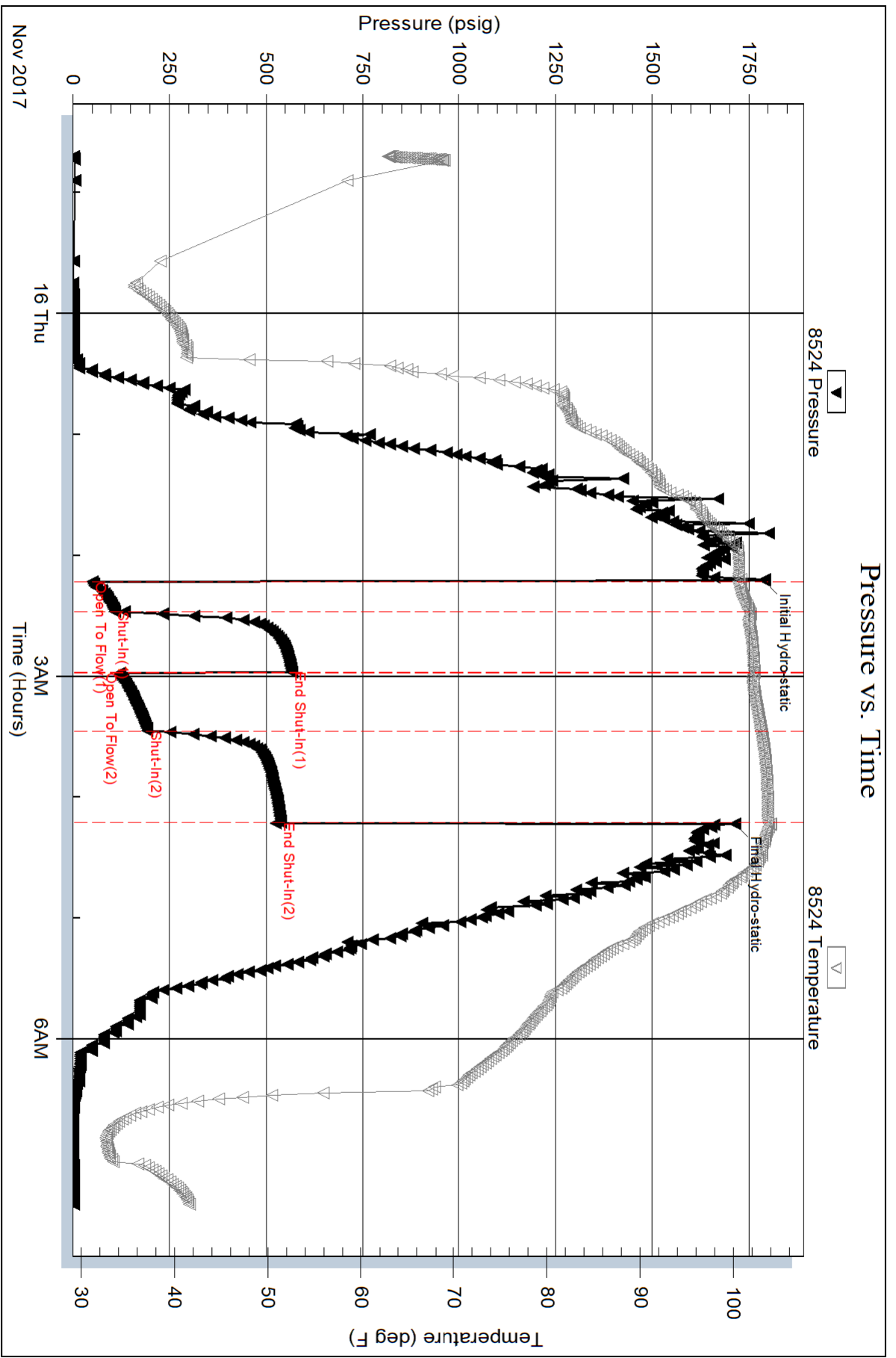
Mud Type: Gel Chem	Cushion Type:	Oil API: 33 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 115000 ppm
Viscosity: 56.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.20 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 3800.00 ppm		
Filter Cake: inches		

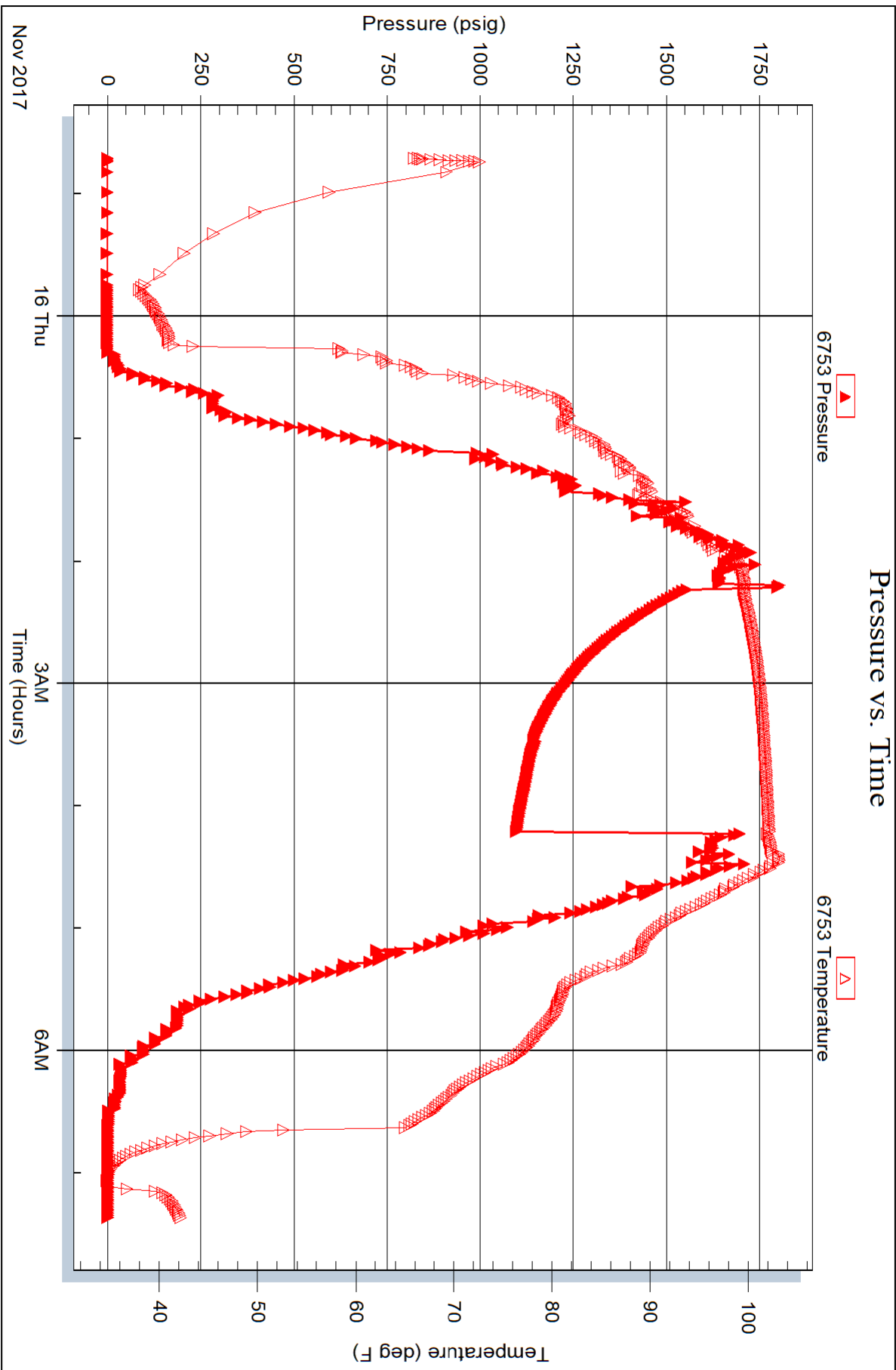
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
127.00	GOCMW, 10%G 5%O 20%M 65%W	1.800
191.00	GWMCO, 35%G 10%W 20%M 35%O	2.708
48.00	GOCM, 10%G 10%O 80%M	0.680

Total Length: 366.00 ft Total Volume: 5.188 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: RW: .09@47deg





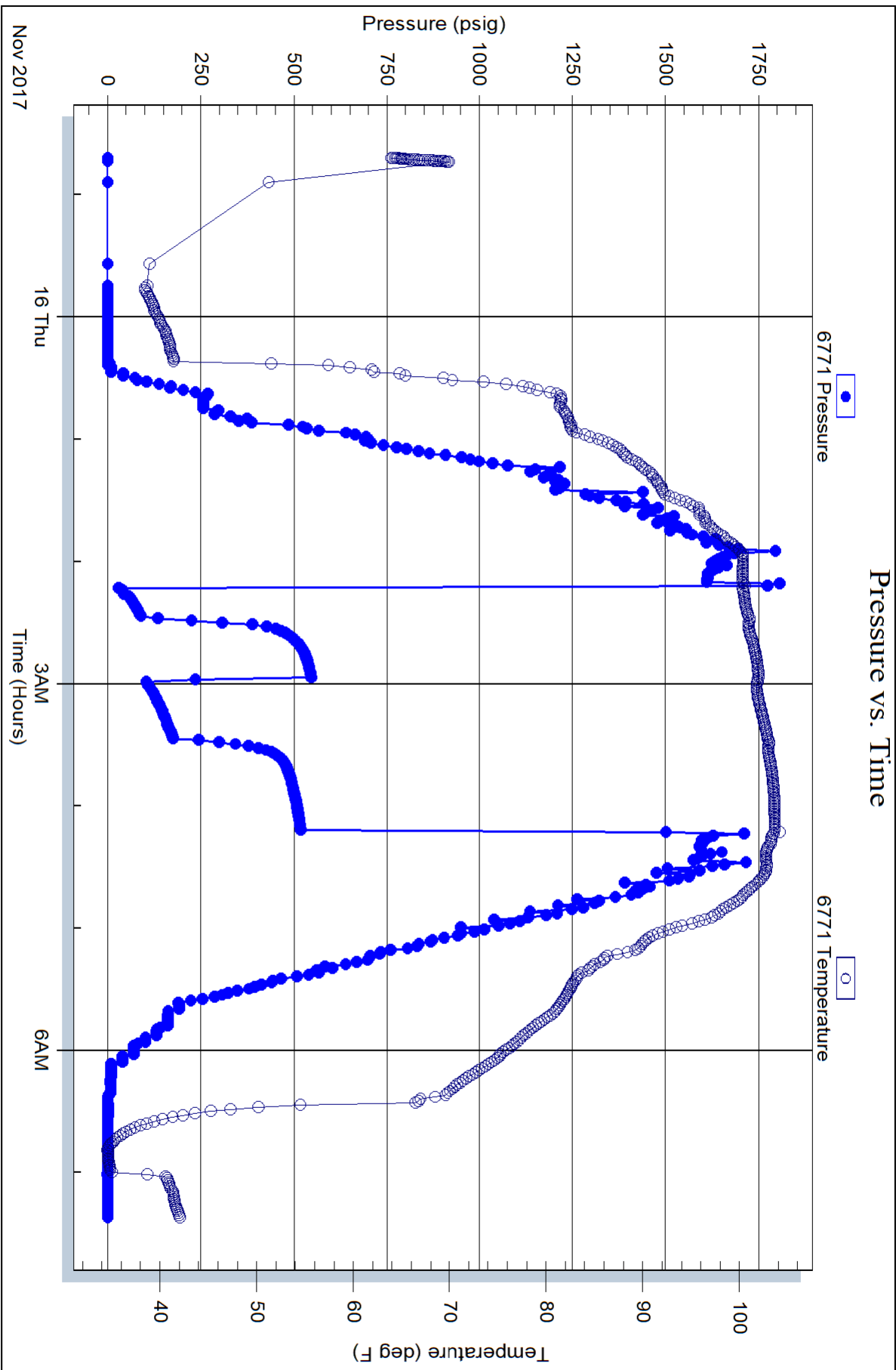
Serial #: 6771

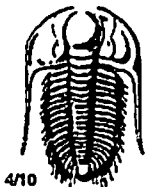
Inside

TDI, Inc.

Munsch #11

DST Test Number: 1





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63116

Well Name & No. Munsch #11 Test No. 1 Date 11/16/17
 Company TDI, Inc. Elevation 2039 KB 2029 GL
 Address 1310 Bison Rd. Hays, KS 67601
 Co. Rep / Geo. Herb Dernes Rig Southwind #8
 Location: Sec. 9 Twp. 15 S Rge. 18 W Co. Ellis State KS

Interval Tested 3334-3382 Zone Tested LRC "C&D"
 Anchor Length 48' Tail: 366' Drill Pipe Run 3337 Mud Wt. 9.4
 Top Packer Depth 3329-3334 Drill Collars Run --- Vis 56
 Bottom Packer Depth 3382 Wt. Pipe Run --- WL 7.2
 Total Depth 3748 Chlorides 3800 ppm System LCM 1#

Blow Description IF-BOB 5 mins
ISE - 1/4" blow throughout
FF-BOB 4 mins
FSE-BOB 11 mins

Rec	Feet of	%gas	%oil	%water	%mud
127	GOCMW	10%	5%	65%	20%
191	GWMCO	35%	35%	16%	20%
48	GOCM	10%	10%	%water	80%
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 366' BHT 104° Gravity 33 API RW .09 @ 47° F Chlorides 115,000 ppm

(A) Initial Hydrostatic	<u>1789</u>	<input checked="" type="checkbox"/> Test	<u>1050</u>	T-On Location	<u>11/15 2235</u>
(B) First Initial Flow	<u>51</u>	<input type="checkbox"/> Jars		T-Started	<u>2242</u>
(C) First Final Flow	<u>169</u>	<input type="checkbox"/> Safety Joint		T-Open	<u>0213</u>
(D) Initial Shut-In	<u>566</u>	<input type="checkbox"/> Circ Sub		T-Pulled	<u>0413</u>
(E) Second Initial Flow	<u>121</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>0722</u>
(F) Second Final Flow	<u>194</u>	<input checked="" type="checkbox"/> Mileage	<u>22 RT 16.50</u>	Comments	
(G) Final Shut-In	<u>538</u>	<input type="checkbox"/> Sampler			
(H) Final Hydrostatic	<u>1714</u>	<input checked="" type="checkbox"/> Straddle	<u>600</u>		
		<input checked="" type="checkbox"/> Shale Packer	<u>250</u>	<input type="checkbox"/> Ruined Shale Packer	
Initial Open	<u>15</u>	<input type="checkbox"/> Extra Packer		<input type="checkbox"/> Ruined Packer	
Initial Shut-In	<u>30</u>	<input type="checkbox"/> Extra Recorder		<input type="checkbox"/> Extra Copies	
Final Flow	<u>30</u>	<input type="checkbox"/> Day Standby		Sub Total	<u>0</u>
Final Shut-In	<u>45</u>	<input type="checkbox"/> Accessibility		Total	<u>1916.50</u>
		Sub Total	<u>1916.50</u>	MP/DST Disc't	

Approved By _____

Our Representative
Brannan Lonsdale