

DRILL STEM TEST REPORT

Prepared For: **Bruce Oil Company LLC**

1704 Limestone RD
McPherson KS 67460+6500

ATTN: Bob Peterson

Thornburg #1

7-8s-14w Osborne,KS

Start Date: 2019.07.15 @ 12:10:00

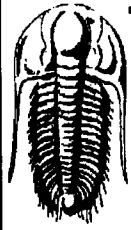
End Date: 2019.07.15 @ 17:45:39

Job Ticket #: 65799 DST #: 1

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

Printed: 2019.07.16 @ 16:36:59

Bruce Oil Company LLC
7-8s-14w Osborne,KS
Thornburg #1
DST # 1
Topoka
2019.07.15



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Bruce Oil Company LLC
1704 Limestone RD
McPherson KS 67460+6500
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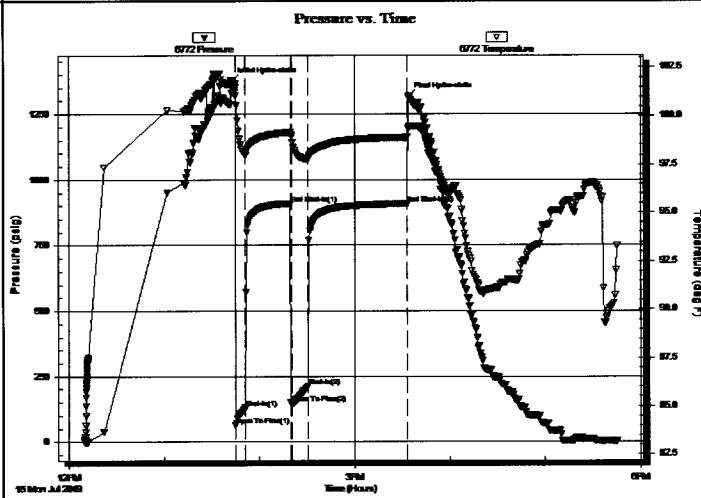
7-8s-14w Osborne,KS
Thornburg #1
Job Ticket: 65799 **DST#: 1**
Test Start: 2019.07.15 @ 12:10:00

GENERAL INFORMATION:

Formation: **Topeka**
Deviated: **No** Whipstock: ft (KB)
Time Tool Opened: 13:44:50
Time Test Ended: 17:45:39
Interval: **2758.00 ft (KB) To 2778.00 ft (KB) (TVD)**
Total Depth: 2778.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Initial)
Tester: Benny Mulligan
Unit No: 66
Reference Elevations: 1799.00 ft (KB)
1794.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6772 **Inside**
Press@RunDepth: 213.24 psig @ 2759.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.07.15 End Date: 2019.07.15 Last Calib.: 2019.07.15
Start Time: 12:10:01 End Time: 17:45:40 Time On Btm: 2019.07.15 @ 13:42:00
Time Off Btm: 2019.07.15 @ 15:33:50

TEST COMMENT: IF-5-BOB 1min 50 secs total build of 40"
ISI-30- 7" blow back
FF-10- BOB 2 mins 5 secs total build of 49"
FSI-60- 13" blow back



PRESSURE SUMMARY

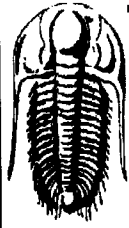
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1375.69	101.66	Initial Hydro-static
3	61.87	101.05	Open To Flow (1)
9	129.89	97.96	Shut-In(1)
38	909.01	99.17	End Shut-In(1)
38	147.95	98.92	Open To Flow (2)
49	213.24	97.74	Shut-In(2)
111	908.54	98.89	End Shut-In(2)
112	1315.71	99.36	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
180.00	GMCO 10%G 5%M 85%O	0.89
380.00	GO 10%O 90%O	5.28
0.00	GIP 60'	0.00

Gas Rates

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



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DRILL STEM TEST REPORT

TOOL DIAGRAM

Bruce Oil Company LLC
1704 Limestone RD
McPherson KS 67460+6500
ATTN: Bob Peterson

7-8s-14w Osborne,KS
Thornburg #1
Job Ticket: 65799 **DST#: 1**
Test Start: 2019.07.15 @ 12:10:00

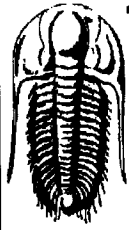
Tool Information

Drill Pipe:	Length: 2554.00 ft	Diameter: 3.80 inches	Volume: 35.83 bbl	Tool Weight: 2500.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 40000.00 lb
		Total Volume: 36.74 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 36000.00 lb
Depth to Top Packer:	2758.00 ft			Final 37000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	20.00 ft			
Tool Length:	47.00 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			2732.00	
Shut In Tool	5.00			2737.00	
Hydraulic tool	5.00			2742.00	
Jars	5.00			2747.00	
Safety Joint	2.00			2749.00	
Packer	5.00			2754.00	27.00 Bottom Of Top Packer
Packer	4.00			2758.00	
Stubb	1.00			2759.00	
Recorder	0.00	6772	Inside	2759.00	
Recorder	0.00	6769	Outside	2759.00	
Perforations	16.00			2775.00	
Bullnose	3.00			2778.00	20.00 Bottom Packers & Anchor

Total Tool Length: 47.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Bruce Oil Company LLC

7-8s-14w Osborne,KS

1704 Limestone RD
McPherson KS 67460+6500

Thornburg #1

Job Ticket: 65799

DST#: 1

ATTN: Bob Peterson

Test Start: 2019.07.15 @ 12:10:00

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:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	GMCO 10%G 5%M 85%O	0.885
380.00	GO 10%O 90%O	5.285
0.00	GIP 60'	0.000

Total Length: 560.00 ft

Total Volume: 6.170 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 6772

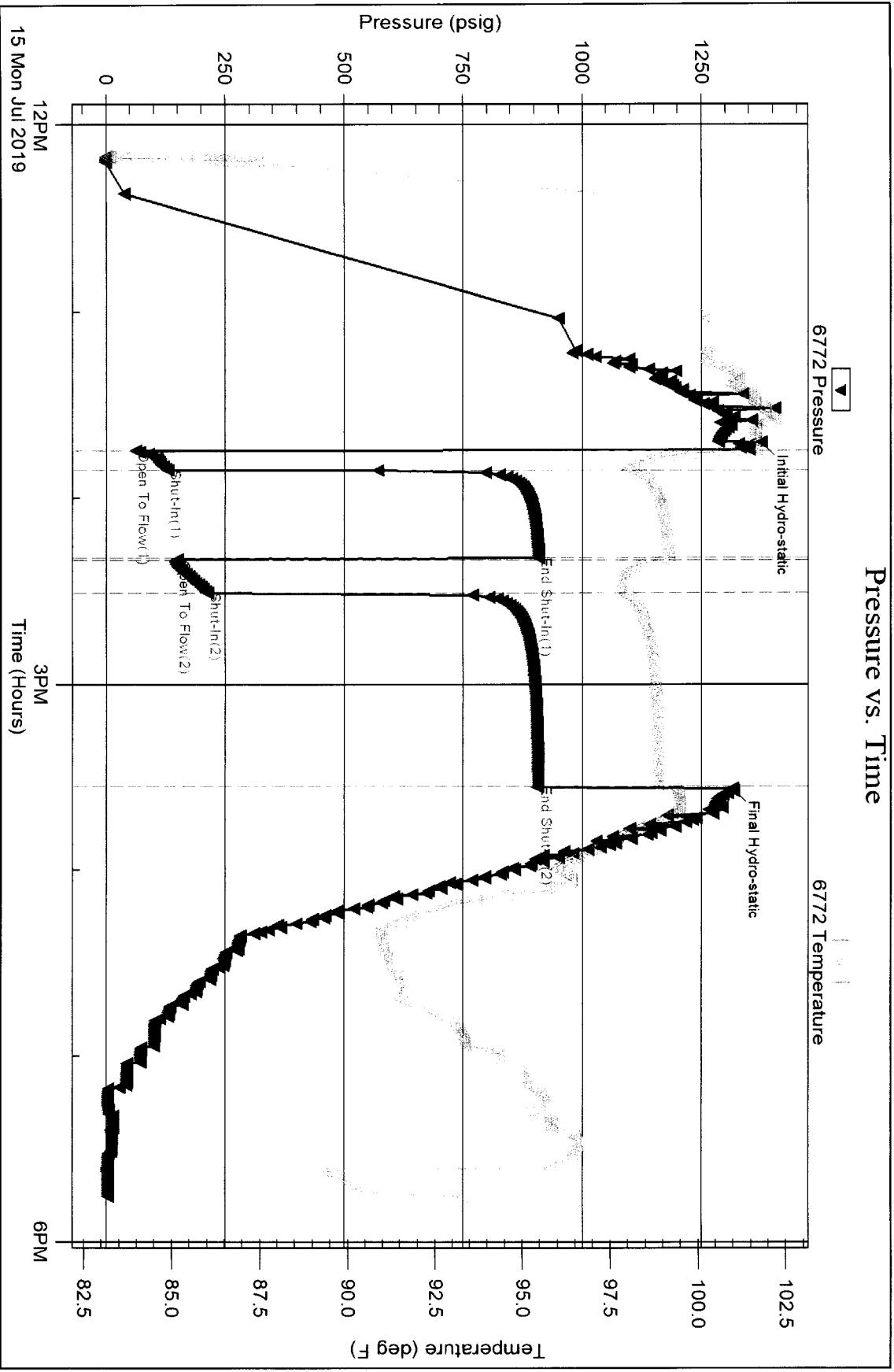
Inside

Bruce Oil Company LLC

Thornburg #1

DST Test Number: 1

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 65799

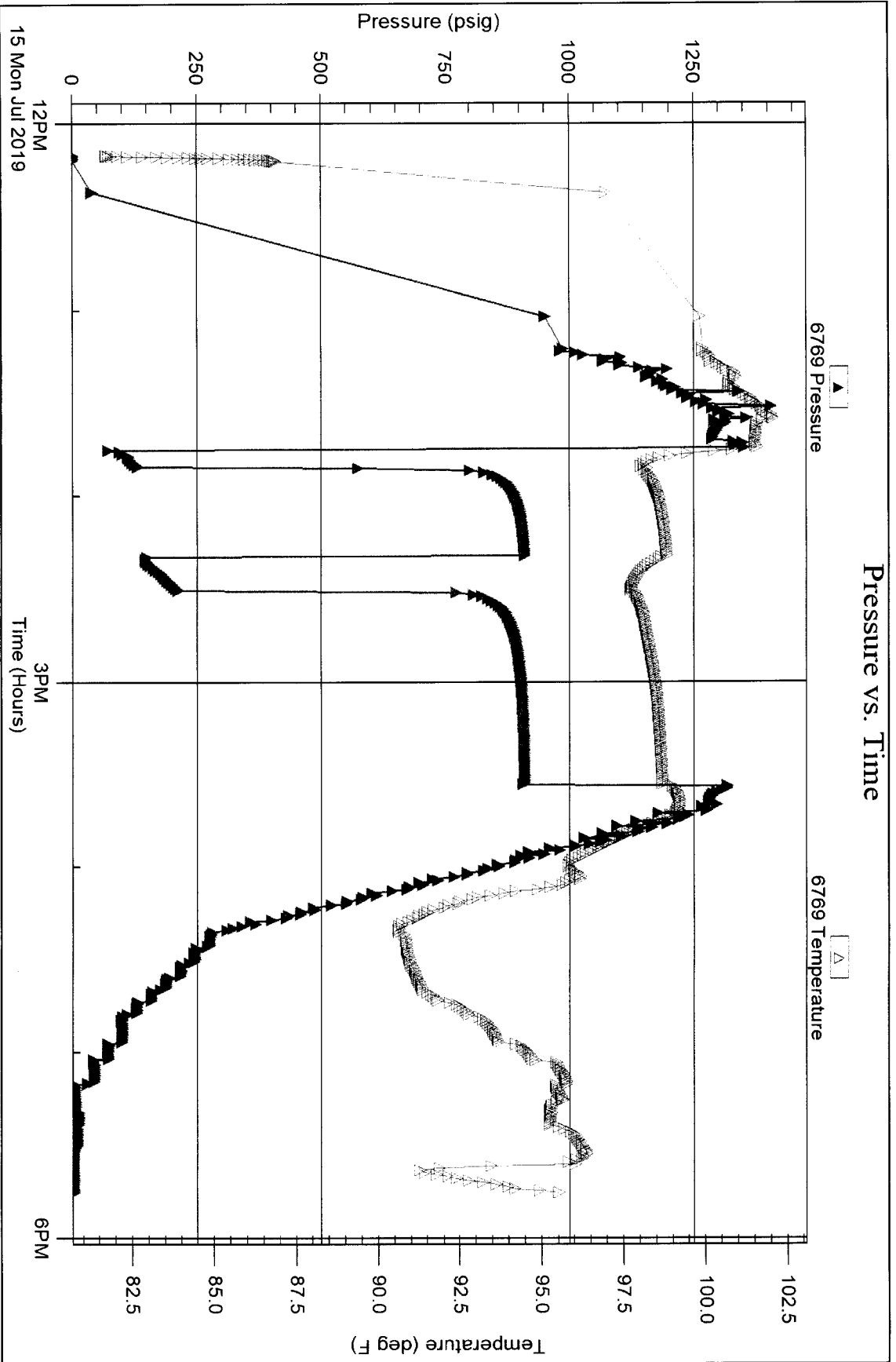
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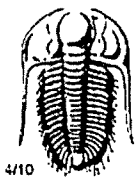
Serial #: 6769

Outside Bruce Oil Company LLC

Thorburg #1

DST Test Number: 1





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

85762

NO.

Well Name & No. Thornburg #1 Test No. DST 1 Date 7/15/2019
 Company Bruce Oil Company LLC Elevation 1799 KB 1794 GL
 Address 1704 Limestone RD Mpherson KS 67460+6500
 Co. Rep / Geo. Bob Peterson Rig Murphy 8
 Location: Sec. 7 Twp 85 Rge. 14w Co. Oshone State KS

Interval Tested 2758~2778 Zone Tested Tapeka A
 Anchor Length 20' Drill Pipe Run 2554 Mud Wt. ~~8~~ 9.0
 Top Packer Depth 2753 Drill Collars Run 185 Vls 58
 Bottom Packer Depth 2778 Wt. Pipe Run _____ WL 7.2
 Total Depth 2778 Chlorides 4300 ppm System LCM 2#

Blow Description IF-BOB 1min 50secs total build of 40"
FST- 7" blow back
FF-BOB 2mins 5secs total build of 49"
FST- 13" blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>380'</u>	<u>G.O.</u>	<u>10</u>	<u>90</u>		
<u>180'</u>	<u>G.M.C.O.</u>	<u>10</u>	<u>85</u>		<u>5</u>
<u>0</u>	<u>G.I.P 60'</u>				

Rec Total 560' BHT 99 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1375 Test 1200 T-On Location 1020 AM
 (B) First Initial Flow 61 Jars 250 T-Started 1210 AM
 (C) First Final Flow 129 Safety Joint 75 T-Open 1:45
 (D) Initial Shut-In 909 Circ Sub _____ T-Pulled 3:30
 (E) Second Initial Flow 147 Hourly Standby _____ T-Out 5:46
 (F) Second Final Flow 213 Mileage 122 RT 122 Comments looked for 1 after DST 1
 (G) Final Shut-In 908 Sampler _____
 (H) Final Hydrostatic 1315 Straddle _____ EM Tool _____
 Shale Packer _____ Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____
 Day Standby _____ Sub Total 0
 Accessibility _____ Total 1647
 Sub Total 1647 MP/DST Disc't _____

Approved By _____ Our Representative Benny Kulligan

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