

**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Prepared For: **Outlaw Well Service LLC**

1408 West 42ND
Hays KS 67601

ATTN: Preston Wolf

Don #1

20-8s-19w Rooks,KS

Start Date: 2015.07.13 @ 10:30:26

End Date: 2015.07.13 @ 16:25:50

Job Ticket #: 60593 DST #: 2

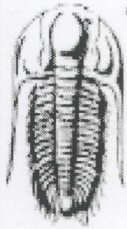
Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2015.07.14 @ 09:46:33

Outlaw Well Service LLC 20-8s-19w Rooks,KS Don #1 DST # 2 Arbuckle 2015.07.13



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Outlaw Well Service LLC

20-8s-19w Rooks, KS

1408 West 42ND
Hays KS 67601

Don #1

Job Ticket: 60593

DST#: 2

ATTN: Preston Wolf

Test Start: 2015.07.13 @ 10:30:26

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:52:06

Time Test Ended: 16:25:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 70

Interval: **3411.00 ft (KB) To 3471.00 ft (KB) (TVD)**

Total Depth: 3471.00 ft (KB) (TVD)

Hole Diameter: 7.85 inches Hole Condition: Fair

Reference Elevations: 2014.00 ft (KB)

2006.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: **8018**

Inside

Press@RunDepth: 771.56 psig @ 3417.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.07.13

End Date: 2015.07.13

Last Calib.: 2015.07.13

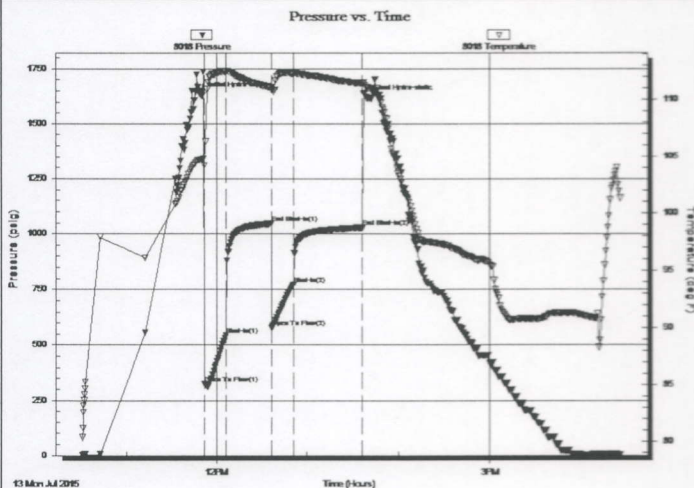
Start Time: 10:30:26

End Time: 16:25:50

Time On Btm: 2015.07.13 @ 11:50:36

Time Off Btm: 2015.07.13 @ 13:39:36

TEST COMMENT: 15-IFP-strg bl in 1 min
30-ISIP-surface to 1/8"bl bk
15-FFP-strg bl in 30 sec
45-FSIP-surface bl thru-out



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1627.67	104.73	Initial Hydro-static
2	324.66	104.16	Open To Flow (1)
16	545.17	112.43	Shut-In (1)
46	1046.78	111.07	End Shut-In (1)
46	578.94	110.86	Open To Flow (2)
61	771.56	112.29	Shut-In (2)
106	1028.61	111.38	End Shut-In (2)
109	1616.73	111.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
165.00	OCWM 5%O20%W75%M	2.31
186.00	OCMV 5%O20%M75%W	2.61
620.00	SOCW 2%O98%W	8.70
560.00	Water	7.86

* Recovery from multiple tests

Gas Rates

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



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1408 West 42ND
Hays KS 67601

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Don #1

Job Ticket: 60593 DST#: 2

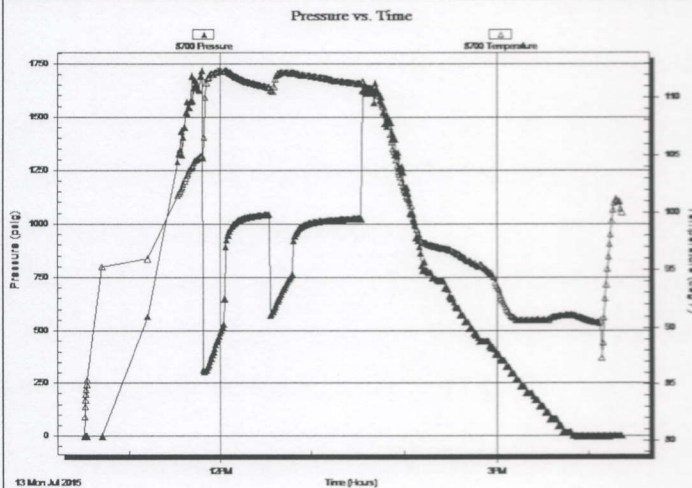
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 Time Test Ended: 16:25:50
 Interval: **3411.00 ft (KB) To 3471.00 ft (KB) (TVD)**
 Total Depth: 3471.00 ft (KB) (TVD)
 Hole Diameter: 7.85 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Ray Schwager
 Unit No: 70
 Reference Elevations: 2014.00 ft (KB)
 2006.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8700 Outside
 Press@RunDepth: psig @ 3417.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.07.13 End Date: 2015.07.13 Last Calib.: 2015.07.13
 Start Time: 10:30:05 End Time: 16:22:14 Time On Btm:
 Time Off Btm:

TEST COMMENT: 15-IFP-strg bl in 1 min
 30-ISIP-surface to 1/8"bl bk
 15-FFP-strg bl in 30 sec
 45-FSIP-surface bl thru-out



PRESSURE SUMMARY

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

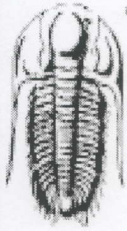
Recovery

Length (ft)	Description	Volume (bbl)
165.00	OCWM 5%O20%W75%M	2.31
186.00	OCMW 5%O20%M75%W	2.61
620.00	SOCW 2%O98%W	8.70
560.00	Water	7.86

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

TOOL DIAGRAM

Outlaw Well Service LLC

20-8s-19w Rooks, KS

1408 West 42ND
Hays KS 67601

Don #1

Job Ticket: 60593

DST#: 2

ATTN: Preston Wolf

Test Start: 2015.07.13 @ 10:30:26

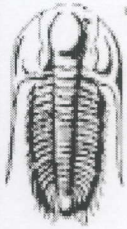
Tool Information

Drill Pipe:	Length: 3405.00 ft	Diameter: 3.80 inches	Volume: 47.76 bbl	Tool Weight: 2200.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			Total Volume: 47.76 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 38000.00 lb
Depth to Top Packer:	3411.00 ft			Final 43000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	81.00 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			3391.00	
Shut In Tool	5.00			3396.00	
Hydraulic tool	5.00			3401.00	
Packer	5.00			3406.00	21.00 Bottom Of Top Packer
Packer	5.00			3411.00	
Stubb	1.00			3412.00	
Perforations	5.00			3417.00	
Recorder	0.00	8018	Inside	3417.00	
Recorder	0.00	8700	Outside	3417.00	
Blank Spacing	33.00			3450.00	
Perforations	18.00			3468.00	
Bullnose	3.00			3471.00	60.00 Bottom Packers & Anchor

Total Tool Length: 81.00



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FLUID SUMMARY

Outlaw Well Service LLC

20-8s-19w Rooks,KS

1408 West 42ND
Hays KS 67601

Don #1

Job Ticket: 60593

DST#: 2

ATTN: Preston Wolf

Test Start: 2015.07.13 @ 10:30:26

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:

36000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 11.16 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
165.00	OCWM 5%O20%W75%M	2.315
186.00	OCMW 5%O20%M75%W	2.609
620.00	SOCW 2%O98%W	8.697
560.00	Water	7.855

Total Length: 1531.00 ft

Total Volume: 21.476 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .1@75F

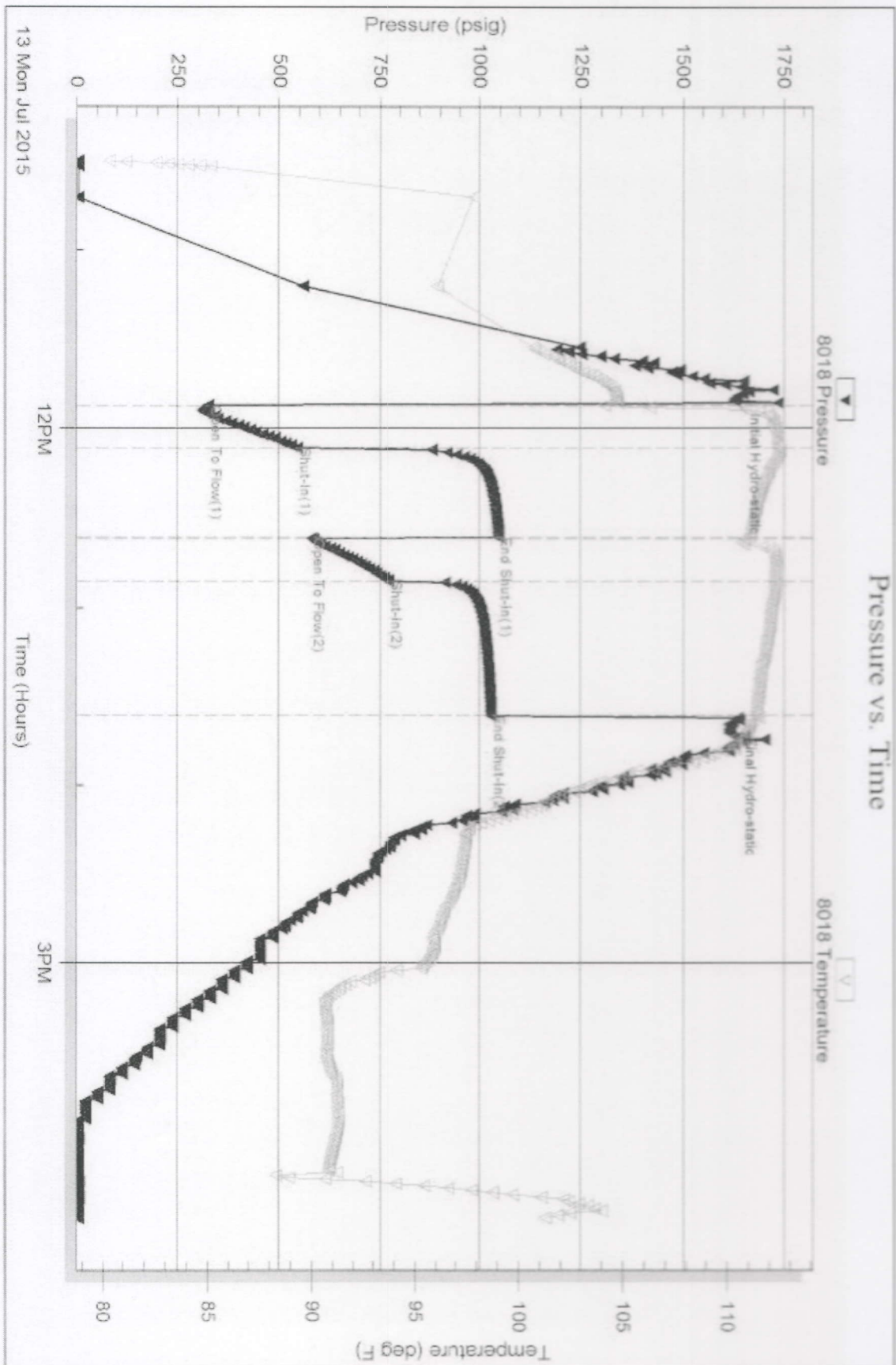
Serial #: 8018

Inside

Outlaw Well Service LLC

Don #1

DGT Test Number: 2



Tribble Testing, Inc

Ref. No: 60593

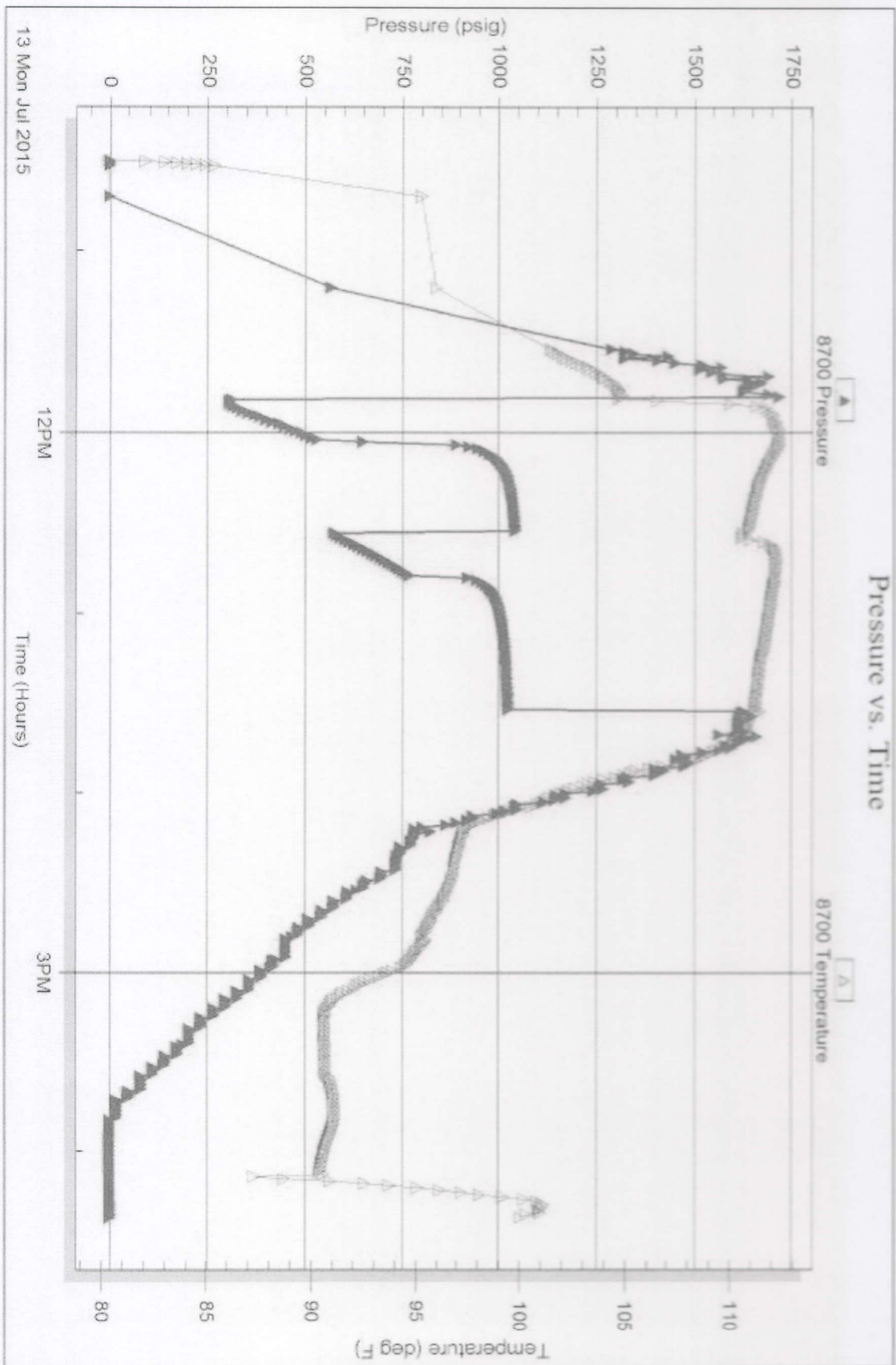
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Serial #: 8700

Outside Outlaw Well Service LLC

Don #1

DST Test Number: 2



Trioble Testing, Inc

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