

TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Bird Dog Oil**

1801 Broadway Ste 200
Denver, CO 80202

ATTN: Justin Carter

Rutti-Gates #1-5

5-22S-13W Stafford,KS

Start Date: 2019.08.23 @ 18:01:00

End Date: 2019.08.23 @ 23:43:02

Job Ticket #: 65895 DST #: 1

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Bird Dog Oil

5-22S-13W Stafford, KS

1801 Broadway Ste 200
Denver, CO 80202

Rutti-Gates #1-5

Job Ticket: 65895

DST#: 1

ATTN: Justin Carter

Test Start: 2019.08.23 @ 18:01:00

Tool Information

Drill Pipe:	Length: 3641.00 ft	Diameter: 3.80 inches	Volume: 51.07 bbl	Tool Weight: 2100.00 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: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: 51.07 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 34000.00 lb
Depth to Top Packer:	3662.00 ft			Final 34000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	28.00 ft			
Tool Length:	54.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3641.00	
Hydraulic tool	5.00			3646.00	
Jars	5.00			3651.00	
Safety Joint	2.00			3653.00	
Packer	5.00			3658.00	26.00 Bottom Of Top Packer
Packer	4.00			3662.00	
Stubb	1.00			3663.00	
Recorder	0.00	8672	Inside	3663.00	
Recorder	0.00	6751	Outside	3663.00	
Perforations	24.00			3687.00	
Bullnose	3.00			3690.00	28.00 Bottom Packers & Anchor

Total Tool Length: 54.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil
1801 Broadway Ste 200
Denver, CO 80202
ATTN: Justin Carter

5-22S-13W Stafford,KS
Rutti-Gates #1-5
Job Ticket: 65895 DST#: 1
Test Start: 2019.08.23 @ 18:01:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 56.00 sec/qt	Cushion Volume: bbl		
Water Loss: 9.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5300.00 ppm			
Filter Cake: 0.02 inches			

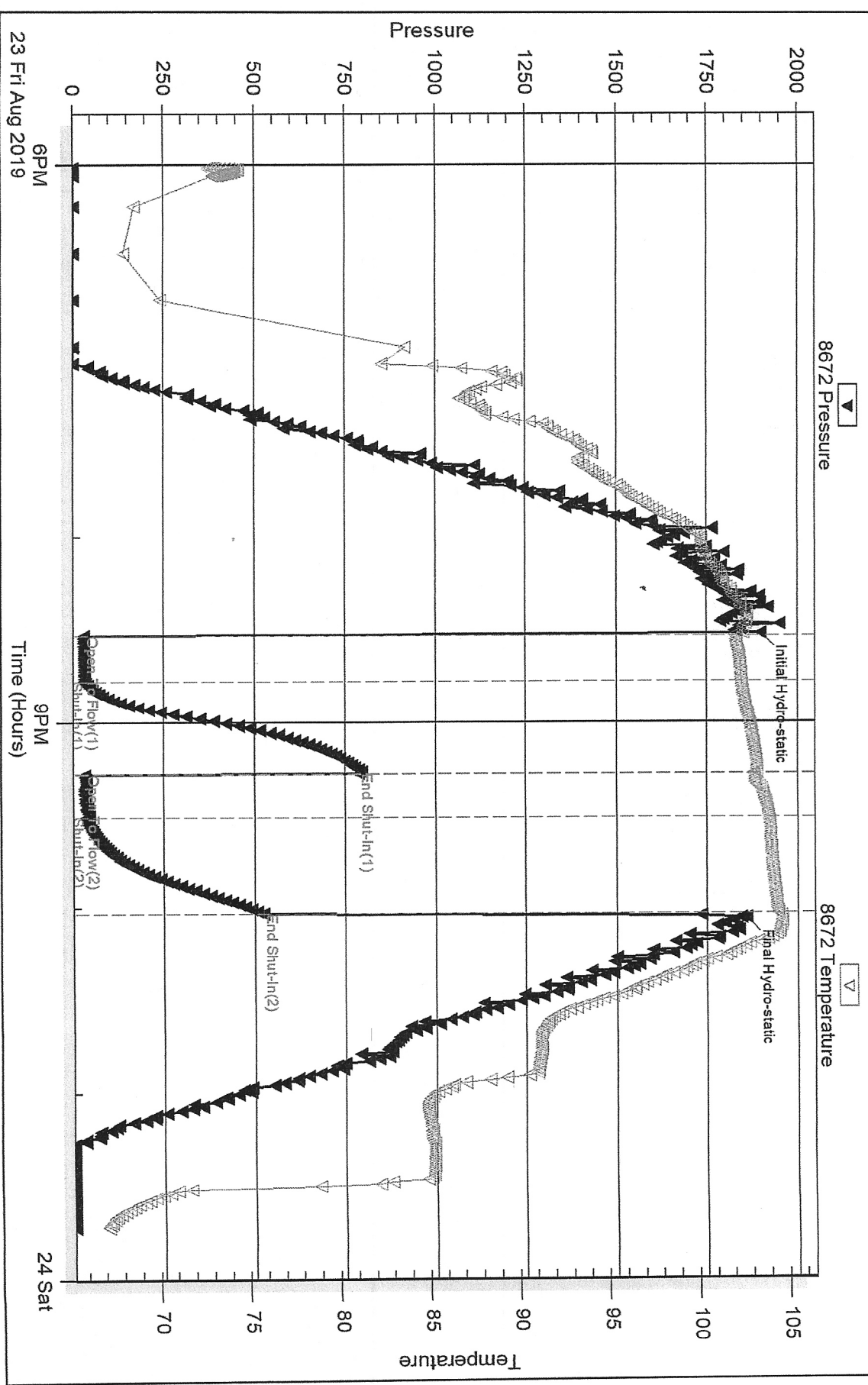
Recovery Information

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:

Pressure vs. Time

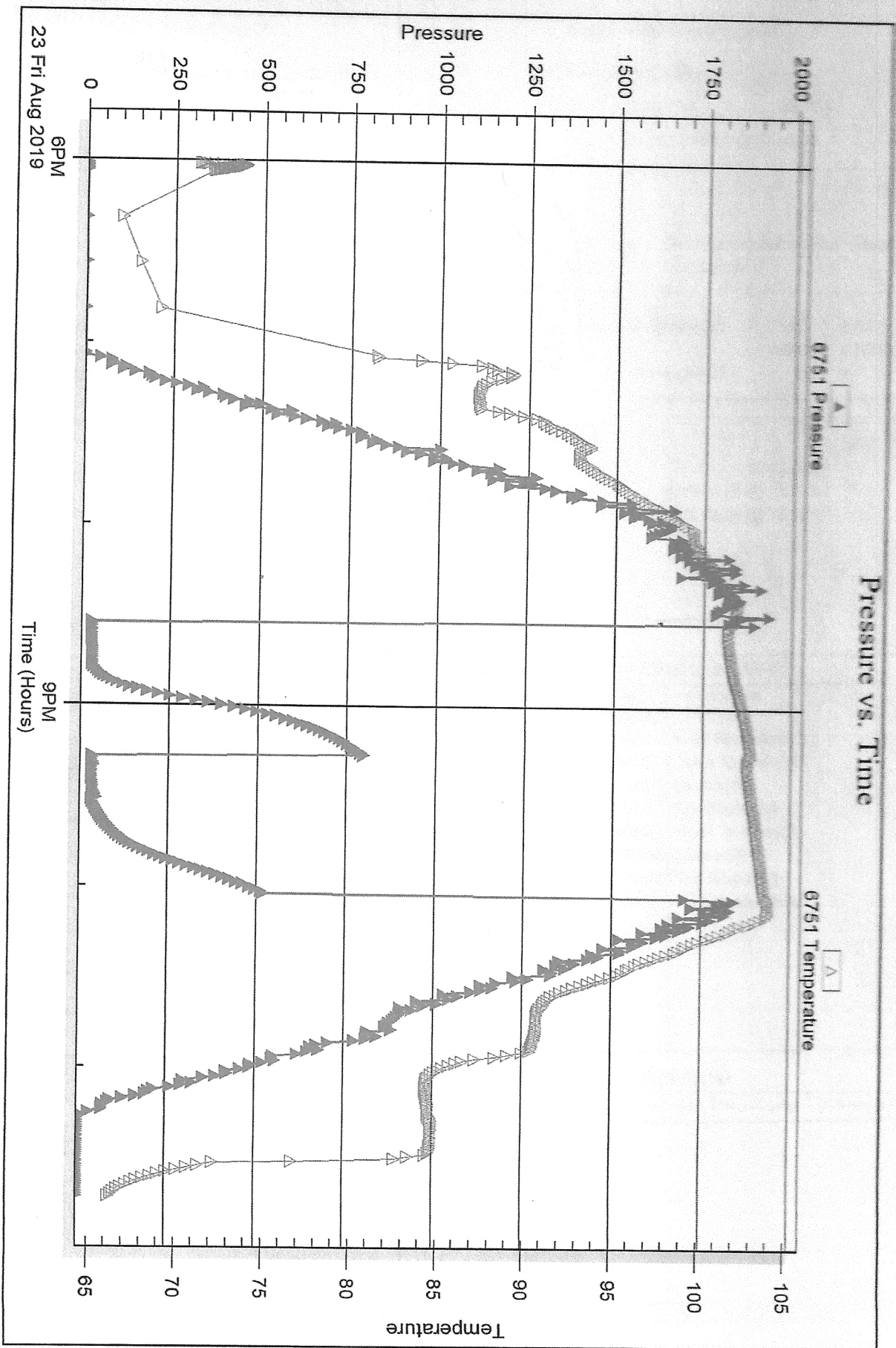


Serial #: 6751

Outside Bird Dog Oil

Rull-Gates #1-5

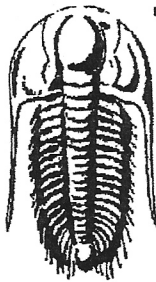
DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 65895

Printed: 2019.08.26 @ 09:52:44



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Bird Dog Oil**

1801 Broadway Ste 200
Denver, CO 80202

ATTN: Justin Carter

Rutti-Gates #1-5

5-22S-13W Stafford,KS

Start Date: 2019.08.24 @ 08:48:00

End Date: 2019.08.24 @ 15:12:02

Job Ticket #: 65896 DST #: 2

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Bird Dog Oil
1801 Broadway Ste 200
Denver, CO 80202
ATTN: Justin Carter

5-22S-13W Stafford, KS
Rutti-Gates #1-5
Job Ticket: 65896 DST#: 2
Test Start: 2019.08.24 @ 08:48:00

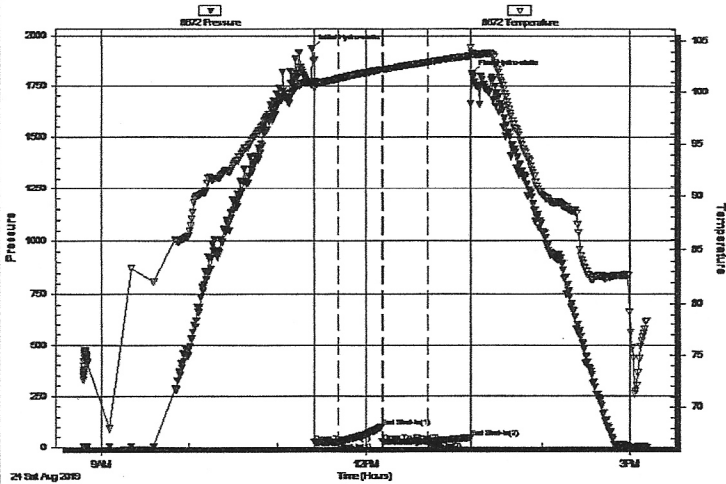
GENERAL INFORMATION:

Formation: **Viola**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:25:17
Time Test Ended: 15:12:02
Test Type: Conventional Bottom Hole (Reset)
Tester: Leal Cason
Unit No: 74
Interval: **3690.00 ft (KB) To 3727.00 ft (KB) (TVD)**
Reference Elevations: 1905.00 ft (KB)
Total Depth: 3727.00 ft (KB) (TVD) 1896.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 9.00 ft

Serial #: 8672 Inside
Press@RunDepth: 28.35 psig @ 3691.00 ft (KB) Capacity: psig
Start Date: 2019.08.24 End Date: 2019.08.24 Last Calib.: 2019.08.24
Start Time: 08:48:01 End Time: 15:12:02 Time On Btm: 2019.08.24 @ 11:23:32
Time Off Btm: 2019.08.24 @ 13:12:17

TEST COMMENT: IF: Weak Blow , Built to 1 1/2"
ISI: No Blow Back
FF: Weak Blow , Built to 1/2"
FSI: No Blow Back

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1938.70	101.00	Initial Hydro-static
2	25.17	100.37	Open To Flow (1)
18	24.93	101.29	Shut-In(1)
48	100.40	102.17	End Shut-In(1)
48	26.96	102.18	Open To Flow (2)
79	28.35	102.96	Shut-In(2)
108	47.15	103.62	End Shut-In(2)
109	1813.81	103.87	Final Hydro-static

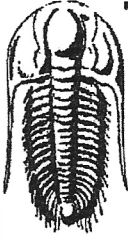
Recovery

Length (ft)	Description	Volume (bbl)
15.00	SOSM 1%O 99%M	0.21

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

Bird Dog Oil
 1801 Broadway Ste 200
 Denver, CO 80202
 ATTN: Justin Carter

5-22S-13W Stafford,KS

Rutti-Gates #1-5
 Job Ticket: 65896 **DST#: 2**
 Test Start: 2019.08.24 @ 08:48:00

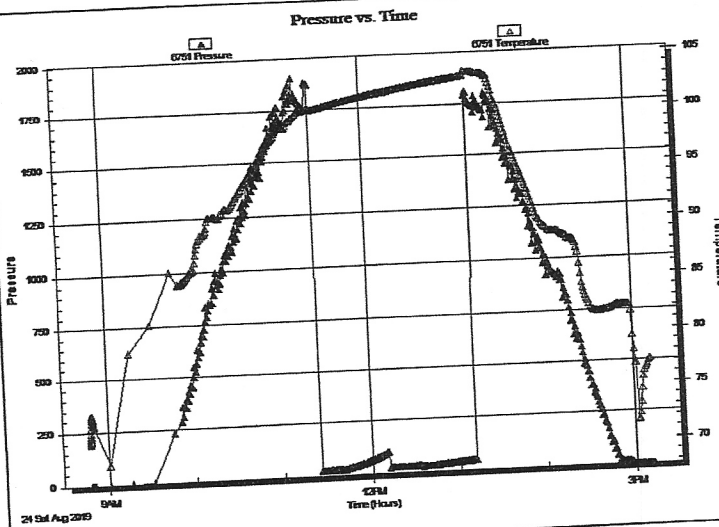
GENERAL INFORMATION:

Formation: **Viola**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:25:17
 Time Test Ended: 15:12:02
 Interval: **3690.00 ft (KB) To 3727.00 ft (KB) (TVD)**
 Total Depth: 3727.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole (Reset)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1905.00 ft (KB)
 1896.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 6751 Outside Capacity: psig
 Press@RunDepth: psig @ 3691.00 ft (KB)
 Start Date: 2019.08.24 End Date: 2019.08.24
 Start Time: 08:48:01 End Time: 15:12:02
 Last Calib.: 2019.08.24
 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Weak Blow , Built to 1 1/2"
 IS: No Blow Back
 FF: Weak Blow , Built to 1/2"
 FS: No Blow Back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
15.00	SOSM 1%O 99%M	0.21

Gas Rates

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

* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 65896

Printed: 2019.08.26 @ 09:52:12



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Bird Dog Oil
1801 Broadway Ste 200
Denver, CO 80202
ATTN: Justin Carter

5-22S-13W Stafford,KS
Rutti-Gates #1-5
Job Ticket: 65896 DST#: 2
Test Start: 2019.08.24 @ 08:48:00

Tool Information

Drill Pipe:	Length: 3673.00 ft	Diameter: 3.80 inches	Volume: 51.52 bbl	Tool Weight: 2100.00 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: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
		Total Volume: 51.52 bbl		Tool Chased ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 34000.00 lb
Depth to Top Packer:	3690.00 ft			Final 34000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	37.00 ft			
Tool Length:	63.00 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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Shut In Tool	5.00			3669.00	
Hydraulic tool	5.00			3674.00	
Jars	5.00			3679.00	
Safety Joint	2.00			3681.00	
Packer	5.00			3686.00	26.00 Bottom Of Top Packer
Packer	4.00			3690.00	
Stubb	1.00			3691.00	
Recorder	0.00	8672	Inside	3691.00	
Recorder	0.00	6751	Outside	3691.00	
Perforations	33.00			3724.00	
Bullnose	3.00			3727.00	37.00 Bottom Packers & Anchor

Total Tool Length: 63.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil
1801 Broadway Ste 200
Denver, CO 80202
ATTN: Justin Carter

5-22S-13W Stafford,KS
Rutti-Gates #1-5
Job Ticket: 65896 **DST#: 2**
Test Start: 2019.08.24 @ 08:48:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 56.00 sec/qt	Cushion Volume: bbl		
Water Loss: 9.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5300.00 ppm			
Filter Cake: 0.02 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	SOSM 1%O 99%M	0.210

Total Length: 15.00 ft Total Volume: 0.210 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

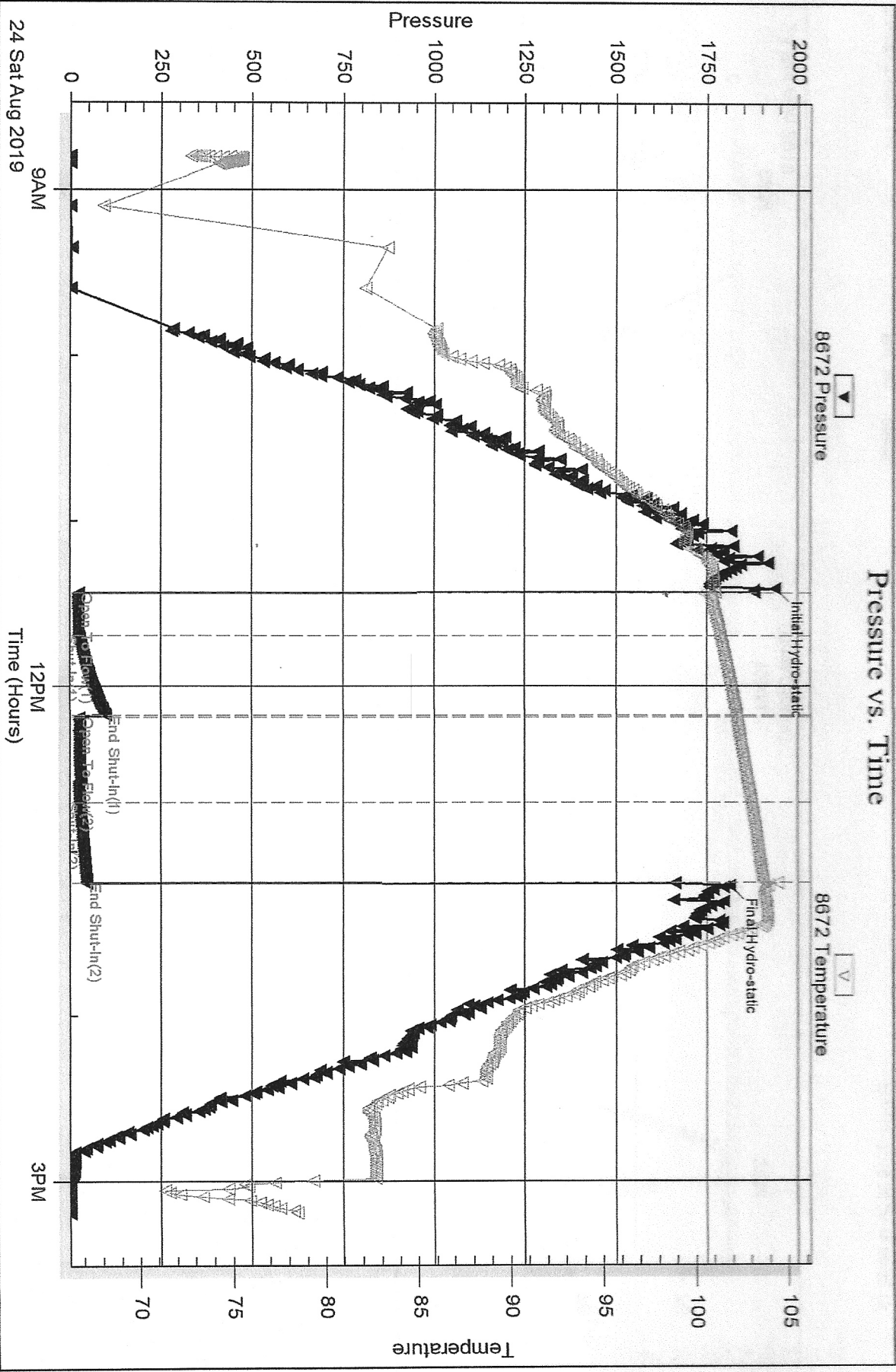
Serial #: 8672

Inside

Blid Dog Oil

Ruth-Gates #1-5

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 65896

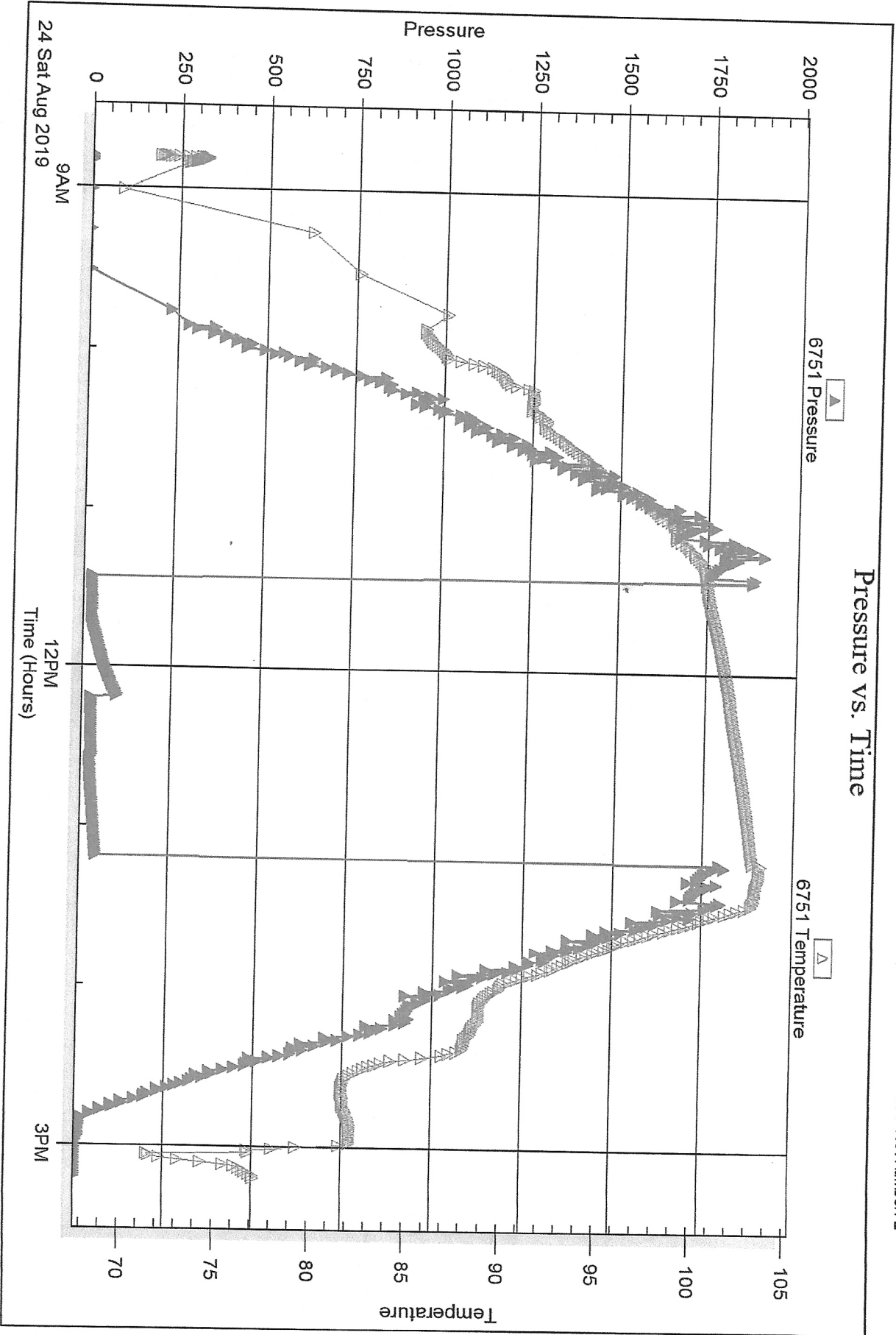
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Serial #: 6751

Outside Bird Dog Oil

Rutti-Gates #1-5

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 65896

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DRILL STEM TEST REPORT

Prepared For: **Bird Dog Oil**

1801 Broadway Ste 200
Denver, CO 80202

ATTN: Justin Carter

Rutti-Gates #1-5

5-22S-13W Stafford,KS

Start Date: 2019.08.25 @ 02:37:00

End Date: 2019.08.25 @ 08:23:02

Job Ticket #: 65897 DST #: 3

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Bird Dog Oil
 1801 Broadway Ste 200
 Denver, CO 80202
 ATTN: Justin Carter

5-22S-13W Stafford, KS

Rutti-Gates #1-5

Job Ticket: 65897

DST#: 3

Test Start: 2019.08.25 @ 02:37:00

GENERAL INFORMATION:

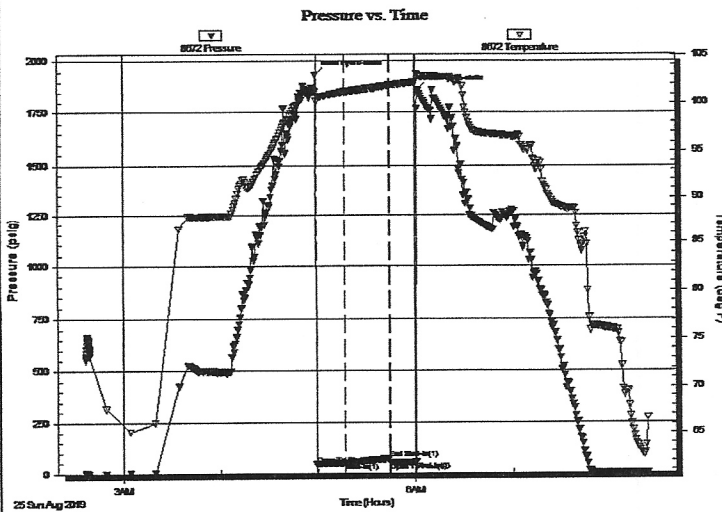
Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 04:59:02
 Time Test Ended: 08:23:02
 Interval: **3720.00 ft (KB) To 3778.00 ft (KB) (TVD)**
 Total Depth: 3778.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1905.00 ft (KB)
 1896.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 8672

Inside

Press@RunDepth: 49.92 psig @ 3721.00 ft (KB) Capacity: psig
 Start Date: 2019.08.25 End Date: 2019.08.25 Last Calib.: 2019.08.25
 Start Time: 02:37:01 End Time: 08:23:02 Time On Btm: 2019.08.25 @ 04:58:47
 Time Off Btm: 2019.08.25 @ 06:01:32

TEST COMMENT: IF: Weak Blow , Built to 3/4", Dead @ 14 minutes
 IS: No Blow Back
 FF: No Blow , Pulled Test



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1934.89	101.15	Initial Hydro-static
1	43.79	100.19	Open To Flow (1)
18	49.92	101.20	Shut-In(1)
45	70.40	101.86	End Shut-In(1)
46	50.20	101.87	Open To Flow (2)
62	54.31	102.27	Shut-In(2)
63	1860.77	103.00	Final Hydro-static

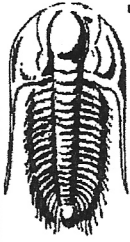
Recovery

Length (ft)	Description	Volume (bbl)
20.00	Mud	0.28

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Bird Dog Oil

5-22S-13W Stafford,KS

1801 Broadway Ste 200
Denver, CO 80202

Rutti-Gates #1-5

Job Ticket: 65897

DST#: 3

ATTN: Justin Carter

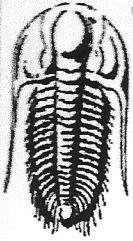
Test Start: 2019.08.25 @ 02:37:00

Tool Information

Drill Pipe:	Length: 3703.00 ft	Diameter: 3.80 inches	Volume: 51.94 bbl	Tool Weight: 2100.00 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: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 40000.00 lb
			<u>Total Volume: 51.94 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 34000.00 lb
Depth to Top Packer:	3720.00 ft			Final 34000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	84.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3699.00	
Hydraulic tool	5.00			3704.00	
Jars	5.00			3709.00	
Safety Joint	2.00			3711.00	
Packer	5.00			3716.00	26.00 Bottom Of Top Packer
Packer	4.00			3720.00	
Stubb	1.00			3721.00	
Recorder	0.00	8672	Inside	3721.00	
Recorder	0.00	6751	Outside	3721.00	
Perforations	4.00			3725.00	
Change Over Sub	1.00			3726.00	
Drill Pipe	32.00			3758.00	
Change Over Sub	2.00			3760.00	
Perforations	15.00			3775.00	
Bullnose	3.00			3778.00	58.00 Bottom Packers & Anchor
Total Tool Length:	84.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil

5-22S-13W Stafford,KS

1801 Broadway Ste 200
Denver, CO 80202

Rutti-Gates #1-5

Job Ticket: 65897

DST#: 3

ATTN: Justin Carter

Test Start: 2019.08.25 @ 02:37:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 72.00 sec/qt

Water Loss: 8.79 in³

Resistivity: ohm.m

Salinity: 5300.00 ppm

Filter Cake: 0.02 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
20.00	Mud	0.281

Total Length: 20.00 ft Total Volume: 0.281 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8672

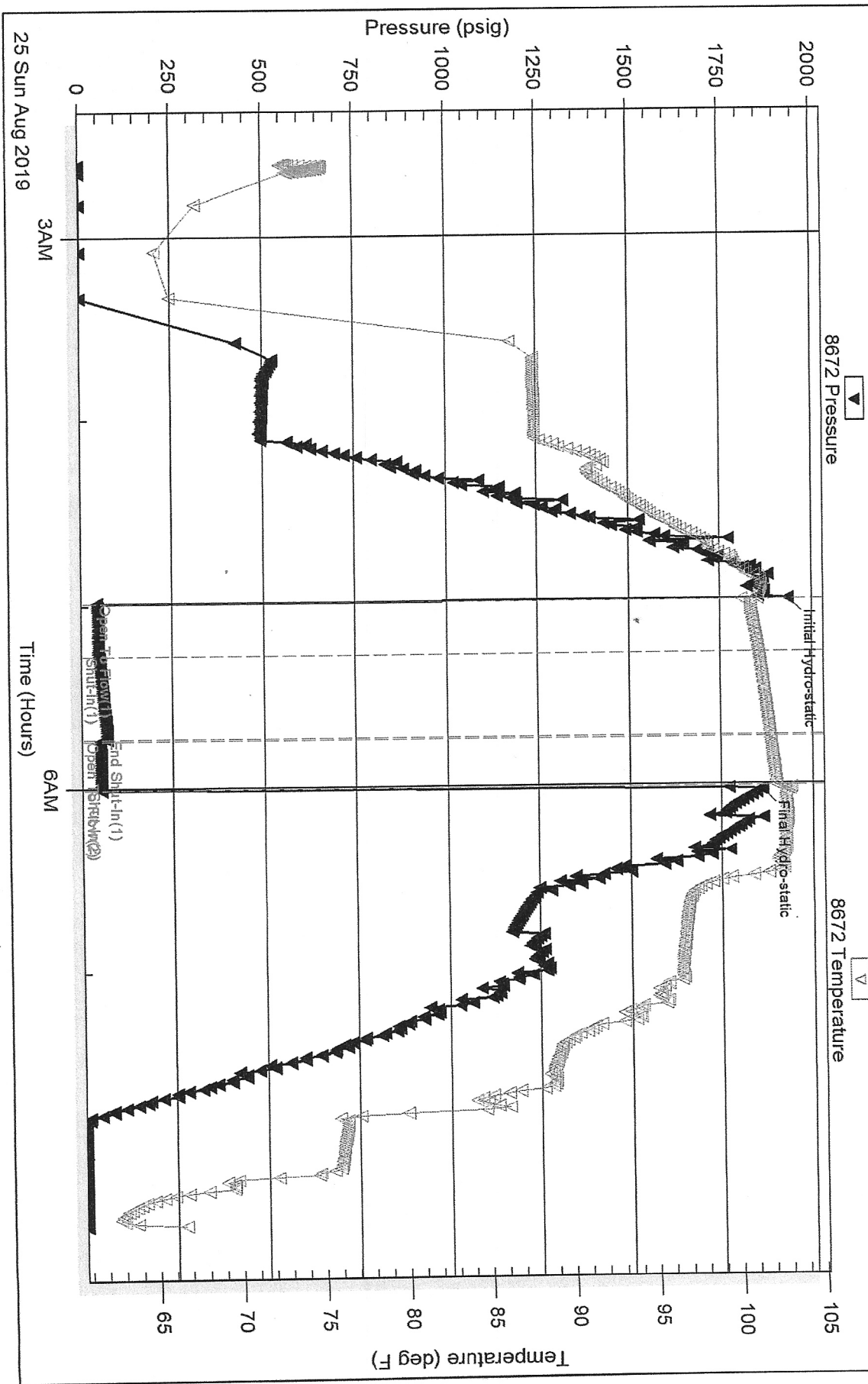
Inside

Bird Dog Oil

Rutti-Gates #1-5

DST Test Number: 3

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 65897

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