



DRILL STEM TEST REPORT

Prepared For: **Bird Dog Oil LLC**

1801 Broadway Suite 200 Denver ,Colorado
80202

ATTN: Justin Carter

M&N-Gates #1-16

16-22s-13w Stafford

Start Date: 2019.01.22 @ 00:48:00

End Date: 2019.01.22 @ 06:38:00

Job Ticket #: 01072 DST #: 1

Eagle Testers
1309 Patton Road Great Bend, Kansas 67530
620-791-7394

Printed: 2019.01.22 @ 07:13:35

Bird Dog Oil LLC 16-22s-13w Stafford M&N-Gates #1-16 DST # 1 Kansas City "C" 2019.01.22



DRILL STEM TEST REPORT

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado
 80202
 ATTN: Justin Carter

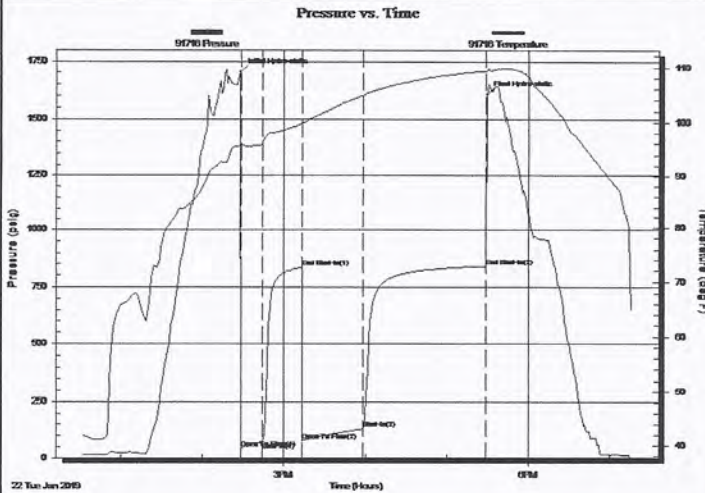
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01072 **DST#: 1**
 Test Start: 2019.01.22 @ 00:48:00

GENERAL INFORMATION:

Formation: **Kansas City "C"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 01:49:00
 Time Test Ended: 06:38:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Interval: **3429.00 ft (KB) To 3446.00 ft (KB) (TVD)**
 Total Depth: 3446.00 ft (KB) (TVD)
 Reference Elevations: 1909.00 ft (KB)
 1901.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 837.21 psig @ 3441.00 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.22 End Date: 2019.01.22 Last Calib.: 2019.01.22
 Start Time: 12:28:00 End Time: 19:16:00 Time On Btm: 2019.01.22 @ 14:28:00
 Time Off Btm: 2019.01.22 @ 17:29:30

TEST COMMENT: 1st Opening 15 Minutes weak building blow built to 5 inches into the water
 1st Shut-In 30 Minutes
 2nd Opening 45 Minutes weak building blow built to 12 inches into the water
 2nd Shut-In 90 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1702.95	95.76	Initial Hydro-static
1	42.11	95.82	Open To Flow (1)
16	69.89	96.04	Shut-In(1)
45	832.04	99.78	End Shut-In(1)
46	76.72	99.80	Open To Flow (2)
90	129.84	104.87	Shut-In(2)
181	837.21	109.31	End Shut-In(2)
182	1605.96	109.47	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	SLIGHTLY OIL CUT MUD	0.24
0.00	8%Oil 62%Mud 30% Water	0.00
150.00	Muddy Water 10% Mud 90% Watere	1.19
0.00	chlorides 56000	0.00

Gas Rates

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



DRILL STEM TEST REPORT

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado 80202
 ATTN: Justin Carter

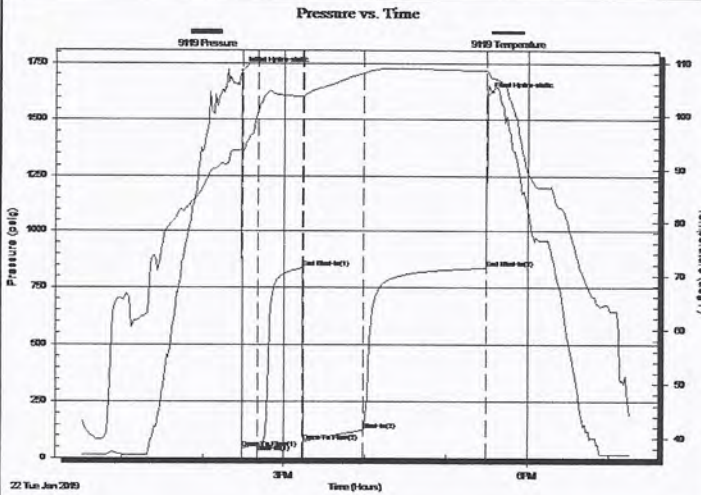
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01072 **DST#: 1**
 Test Start: 2019.01.22 @ 00:48:00

GENERAL INFORMATION:

Formation: **Kansas City "C"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 01:49:00
 Time Test Ended: 06:38:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Interval: **3429.00 ft (KB) To 3446.00 ft (KB) (TVD)**
 Total Depth: 3446.00 ft (KB) (TVD)
 Reference Elevations: 1909.00 ft (KB)
 1901.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 KB to GR/CF: 8.00 ft

Serial #: 9119 Inside
 Press@RunDepth: 835.46 psig @ 3441.00 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.22 End Date: 2019.01.22 Last Calib.: 2019.01.22
 Start Time: 12:28:00 End Time: 19:16:29 Time On Btm: 2019.01.22 @ 14:28:30
 Time Off Btm: 2019.01.22 @ 17:30:00

TEST COMMENT: 1st Opening 15 Minutes weak building blow built to 5 inches into the water
 1st Shut-In 30 Minutes
 2nd Opening 45 Minutes weak building blow built to 12 inches into the water
 2nd Shut-In 90 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1715.31	93.75	Initial Hydro-static
1	40.39	93.29	Open To Flow (1)
12	61.11	100.95	Shut-In(1)
45	834.04	103.68	End Shut-In(1)
46	72.06	103.46	Open To Flow (2)
90	123.30	107.94	Shut-In(2)
181	835.46	108.46	End Shut-In(2)
182	1609.41	108.28	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	SLIGHTLY OIL CUT MUD	0.24
0.00	8%Oil 62%Mud 30% Water	0.00
150.00	Muddy Water 10% Mud 90% Water	1.19
0.00	chlorides 56000	0.00

Gas Rates

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



DRILL STEM TEST REPORT

TOOL DIAGRAM

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

ATTN: Justin Carter

Job Ticket: 01072

DST#: 1

Test Start: 2019.01.22 @ 00:48:00

Tool Information

Drill Pipe:	Length: 3093.00 ft	Diameter: 3.80 inches	Volume: 43.39 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.86 inches	Volume: 2.46 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: 63000.00 lb
			<u>Total Volume: 45.85 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3429.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	17.00 ft			
Tool Length:	47.00 ft			
Number of Packers:	2	Diameter: 6.78 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3404.00	
Hydraulic tool	5.00			3409.00	
Jars	5.00			3414.00	
Safety Joint	5.00			3419.00	
Packer	5.00			3424.00	30.00 Bottom Of Top Packer
Packer	5.00		Fluid	3429.00	
Anchor	12.00			3441.00	
Recorder	0.00	9119	Inside	3441.00	
Recorder	0.00	91716	Outside	3441.00	
Bullnose	5.00			3446.00	17.00 Bottom Packers & Anchor
Total Tool Length:	47.00				



DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado 80202
 ATTN: Justin Carter

16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01072 **DST#: 1**
 Test Start: 2019.01.22 @ 00:48:00

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: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.40 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 6500.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	SLIGHTLY OIL CUT MUD	0.238
0.00	8%Oil 62%Mud 30% Water	0.000
150.00	Muddy Water 10% Mud 90% Watere	1.192
0.00	chlorides 56000	0.000

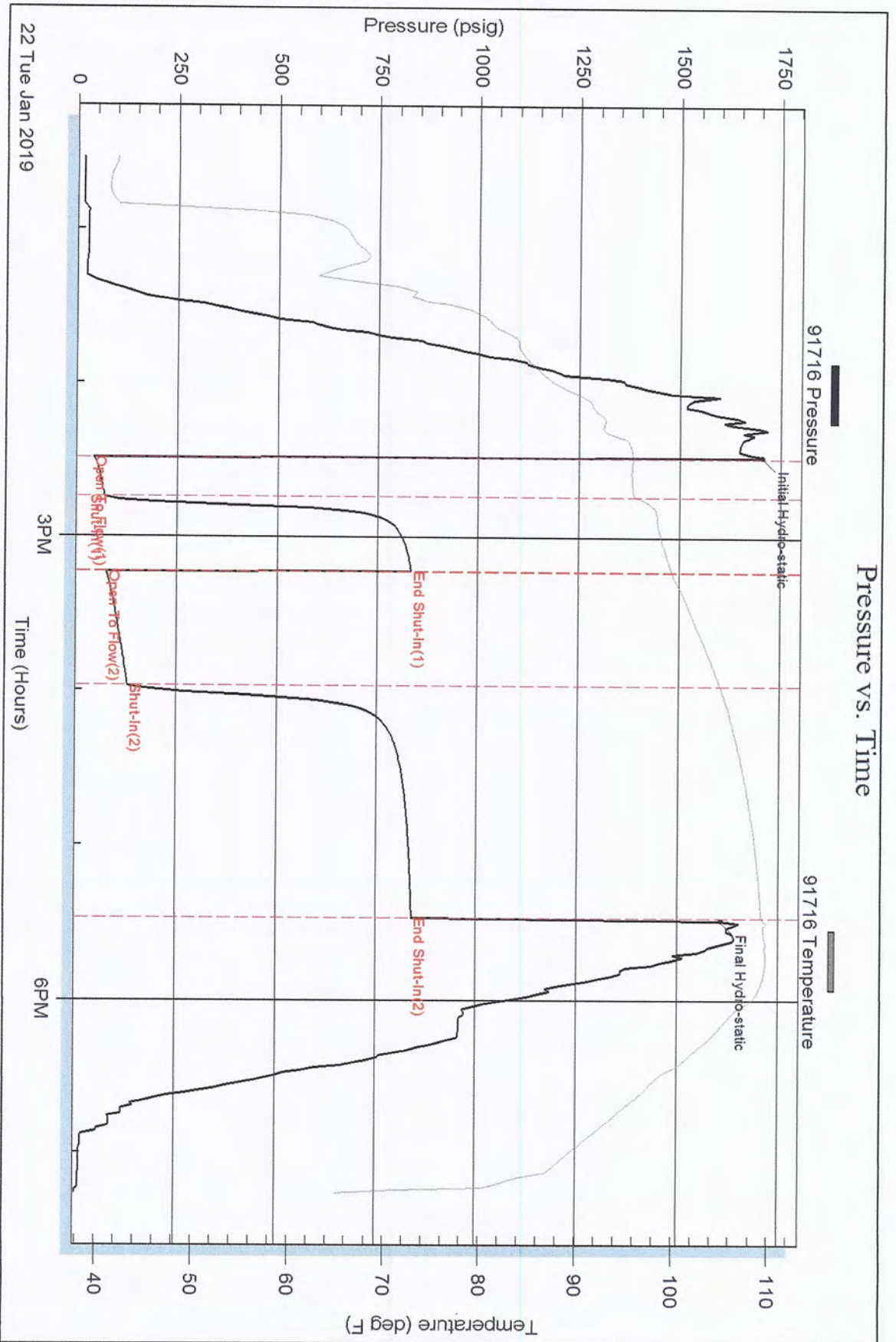
Total Length: 180.00 ft Total Volume: 1.430 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

Serial #: 91716

Outside Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 1



Eagle Testers

Ref. No: 01072

Printed: 2019.01.22 @ 07:13:37

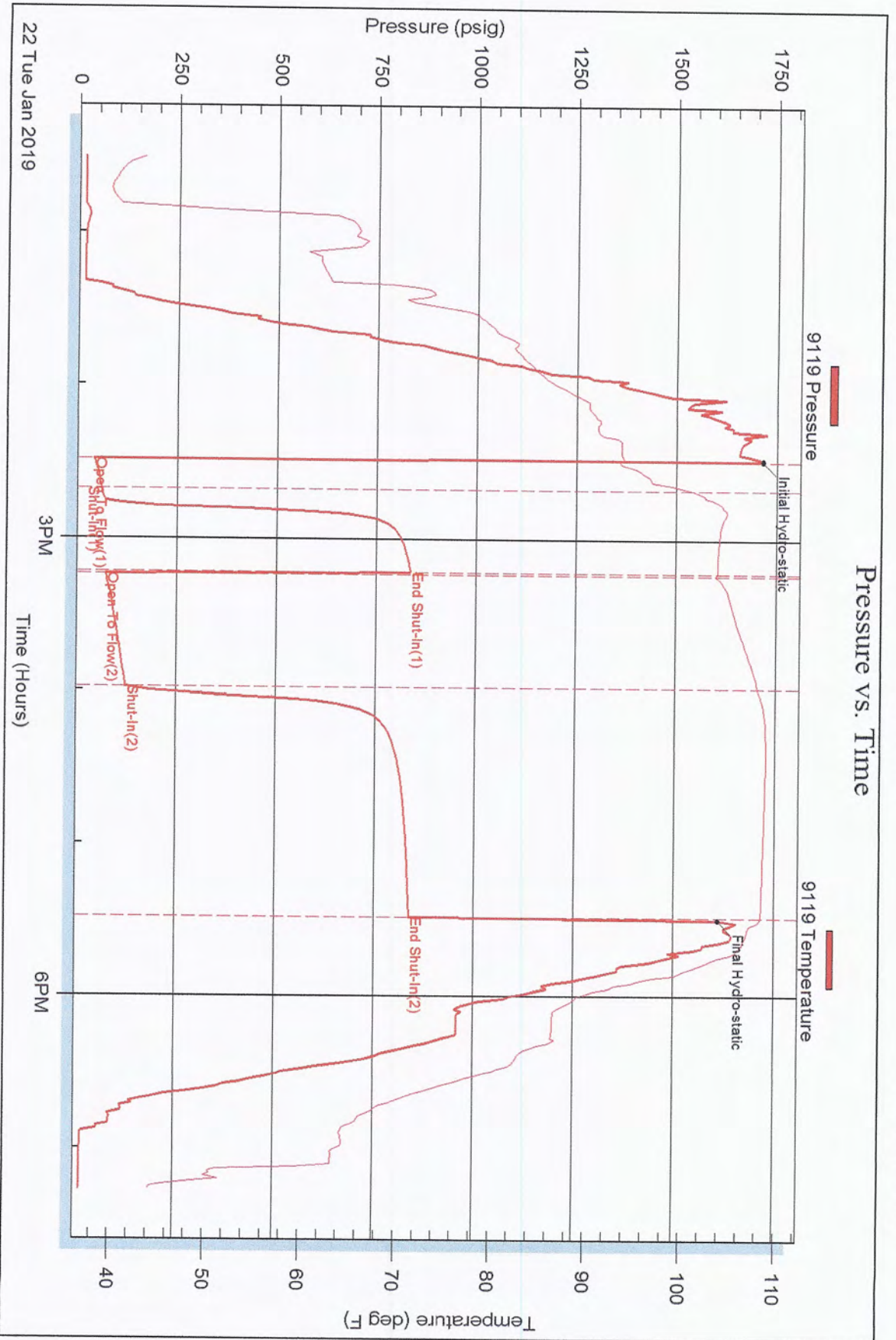
Serial #: 9119

Inside

Bird Dog Oil LLC

M&N-Cates #1-16

DST Test Number: 1



Eagle Testers

Ref. No: 01072

Printed: 2019.01.22 @ 07:13:37



DRILL STEM TEST REPORT

Prepared For: **Bird Dog Oil LLC**

1801 Broadway Suite 200 Denver ,Colorado
80202

ATTN: Justin Carter

M&N-Gates #1-16

16-22s-13w Stafford

Start Date: 2019.01.22 @ 14:21:00

End Date: 2019.01.22 @ 19:48:00

Job Ticket #: 01073 DST #: 2

Eagle Testers

1309 Patton Road Great Bend, Kansas 67530

620-791-7394

Printed: 2019.01.22 @ 20:00:04



DRILL STEM TEST REPORT

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado
 80202
 ATTN: Justin Carter

16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01073 **DST#: 2**
 Test Start: 2019.01.22 @ 14:21:00

GENERAL INFORMATION:

Formation: **Kansas City E & F:**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 16:07:00
 Time Test Ended: 19:48:00
Interval: 3470.00 ft (KB) To 3500.00 ft (KB) (TVD)
 Total Depth: 3500.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair

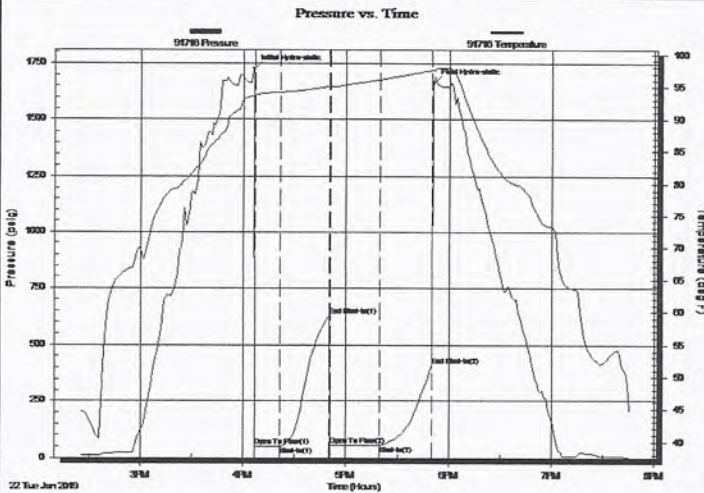
Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Reference Elevations: 1909.00 ft (KB)
 1901.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 91716 Outside

Press@RunDepth: 408.14 psig @ 3495.00 ft (KB)
 Start Date: 2019.01.22 End Date: 2019.01.22
 Start Time: 14:21:00 End Time: 19:46:00

Capacity: 5000.00 psig
 Last Calib.: 2019.01.22
 Time On Btm: 2019.01.22 @ 16:06:00
 Time Off Btm: 2019.01.22 @ 17:51:00

TEST COMMENT: 1st Opening 15 Minutes Weak blow for 12 minutes and died
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes weak blow for 10 Minutes decreased to a weak intermantant blow
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1725.19	93.66	Initial Hydro-static
1	49.17	93.77	Open To Flow (1)
16	51.01	94.20	Shut-In(1)
44	627.47	95.04	End Shut-In(1)
45	53.27	95.08	Open To Flow (2)
74	56.27	96.10	Shut-In(2)
104	408.14	97.58	End Shut-In(2)
105	1664.21	97.63	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	very slightly oil cut mud less than	0.24
0.00	1 % oil 99% mud	0.00

Gas Rates

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



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado 80202

M&N-Gates #1-16

ATTN: Justin Carter

Job Ticket: 01073

DST#: 2

Test Start: 2019.01.22 @ 14:21:00

GENERAL INFORMATION:

Formation: **Kansas City :E & F:**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:07:00

Time Test Ended: 19:48:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: **3470.00 ft (KB) To 3500.00 ft (KB) (TVD)**

Total Depth: 3500.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1909.00 ft (KB)

1901.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 9119

Inside

Press@RunDepth: 402.04 psig @ 3495.00 ft (KB)

Start Date: 2019.01.22

End Date: 2019.01.22

Start Time: 14:21:00

End Time: 19:46:30

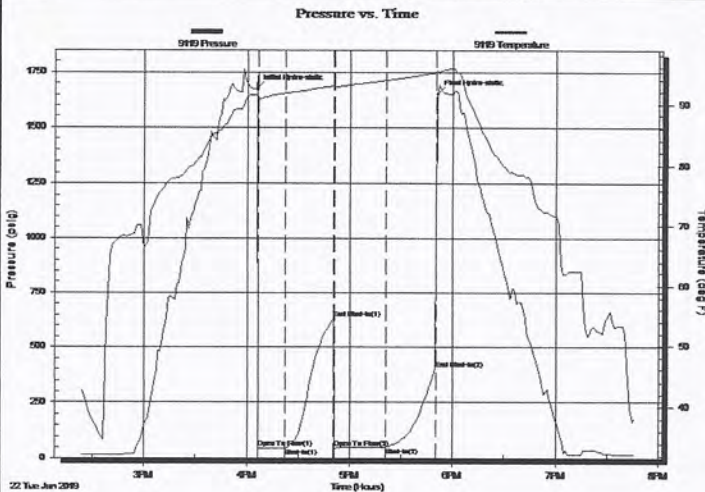
Capacity: psig

Last Calib.: 2019.01.22

Time On Btm: 2019.01.22 @ 16:05:30

Time Off Btm: 2019.01.22 @ 17:51:00

TEST COMMENT: 1st Opening 15 Minutes Weak blow for 12 minutes and died
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes weak blow for 10 Minutes decreased to a weak intermantant blow
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1672.47	91.58	Initial Hydro-static
1	45.42	90.61	Open To Flow (1)
17	46.69	91.83	Shut-In(1)
45	631.15	92.98	End Shut-In(1)
46	48.51	92.84	Open To Flow (2)
76	51.58	93.91	Shut-In(2)
105	402.04	95.16	End Shut-In(2)
106	1651.88	95.53	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	very slightly oil cut mud less than	0.24
0.00	1 % oil 99% mud	0.00

Gas Rates

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



DRILL STEM TEST REPORT

TOOL DIAGRAM

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado
 80202
 ATTN: Justin Carter

16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01073 **DST#: 2**
 Test Start: 2019.01.22 @ 14:21:00

Tool Information

Drill Pipe:	Length: 3153.00 ft	Diameter: 3.80 inches	Volume: 44.23 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.86 inches	Volume: 2.46 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: 64000.00 lb
			<u>Total Volume: 46.69 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3470.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	60.00 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			3445.00	
Hydraulic tool	5.00			3450.00	
Jars	5.00			3455.00	
Safety Joint	5.00			3460.00	
Packer	5.00			3465.00	30.00 Bottom Of Top Packer
Packer	5.00		Fluid	3470.00	
Anchor	25.00			3495.00	
Recorder	0.00	9119	Inside	3495.00	
Recorder	0.00	91716	Outside	3495.00	
Bullnose	5.00			3500.00	30.00 Bottom Packers & Anchor
Total Tool Length:	60.00				



DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil LLC
 1801 Broadway Suite 200 Denver, Colorado
 80202
 ATTN: Justin Carter

16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01073 **DST#: 2**
 Test Start: 2019.01.22 @ 14:21:00

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: 58.00 sec/qt	Cushion Volume: bbl		
Water Loss: 11.20 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 13200.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	very slightly oil cut mud less than	0.238
0.00	1 % oil 99% mud	0.000

Total Length: 30.00 ft Total Volume: 0.238 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

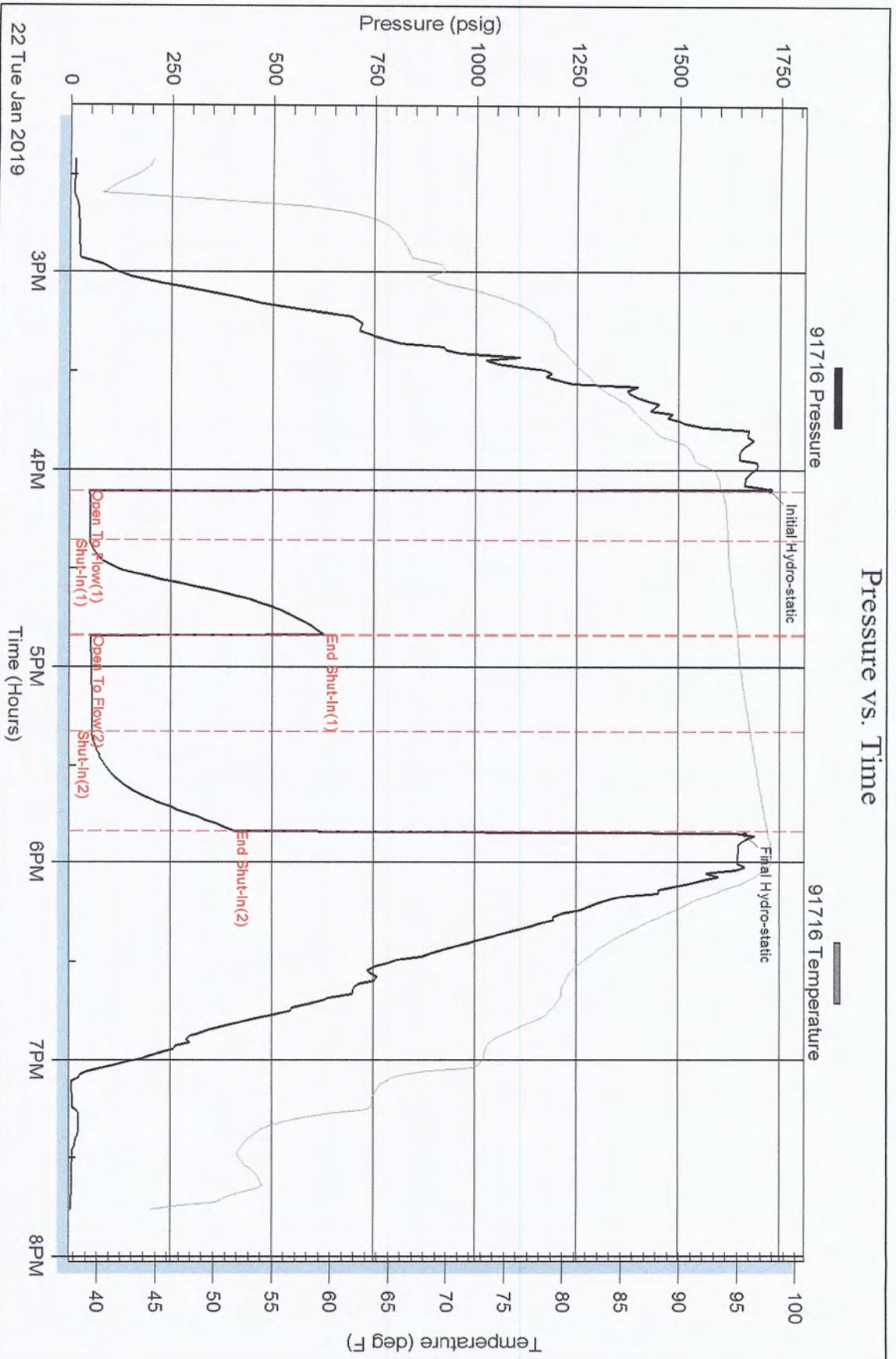
Serial #: 91716

Outside Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 2

Pressure vs. Time



Eagle Testers

Ref. No: 01073

Printed: 2019.01.22 @ 20:00:06

Serial #: 9119

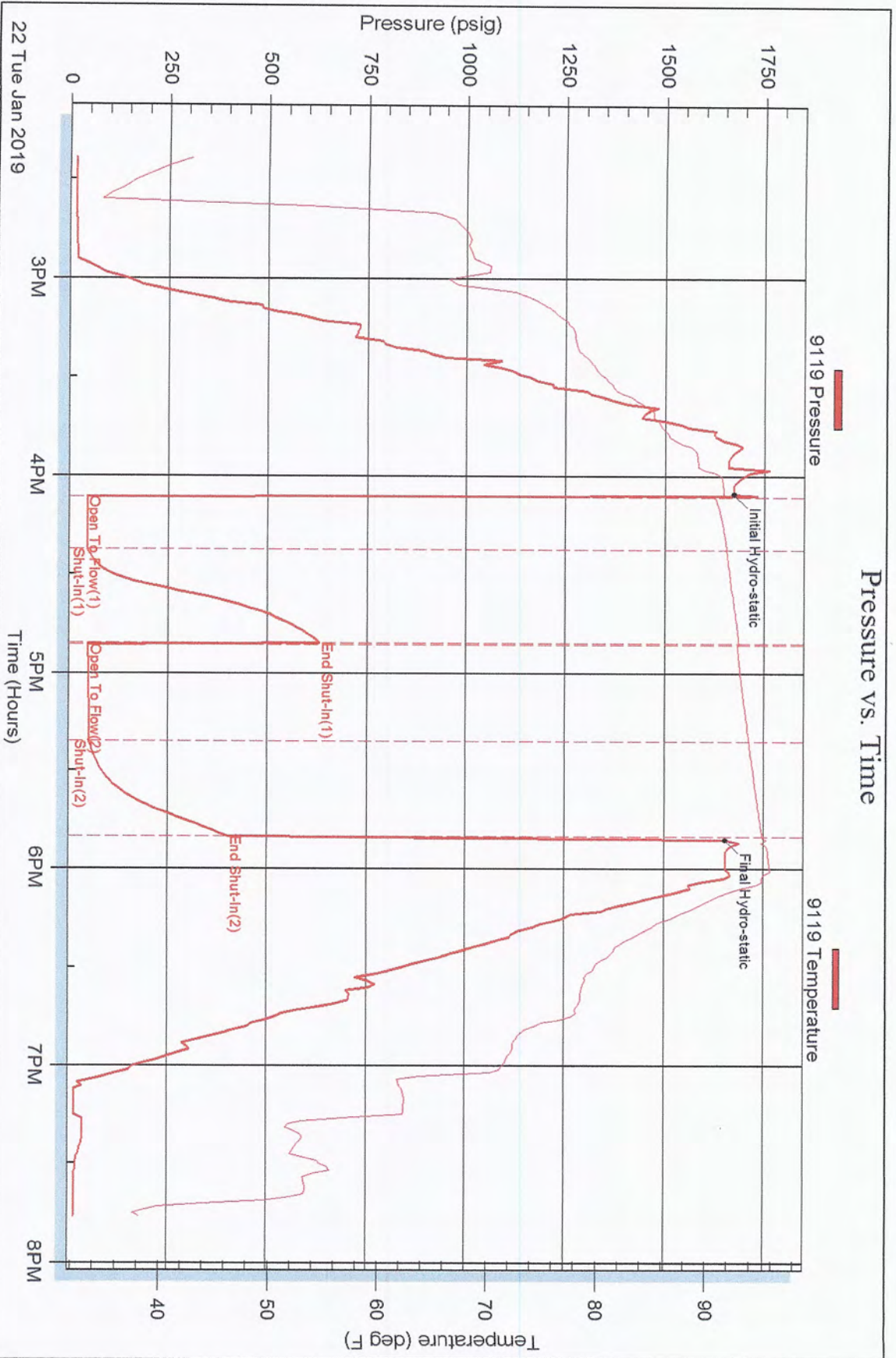
Inside

Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 2

Pressure vs. Time



Eagle Testers

Ref. No.: 01073

Printed: 2019.01.22 @ 20:00:06