



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: 2019.01.24 @ 04:36:00

End Date: 2019.01.24 @ 21:49:00

Job Ticket #: 01075 DST #: 4

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

Printed: 2019.01.24 @ 22:05:18

Bird Dog Oil LLC

16-22s-13w Stafford

M&N-Gates #1-16

DST # 4

Arbuckle

2019.01.24



DRILL STEM TEST REPORT

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

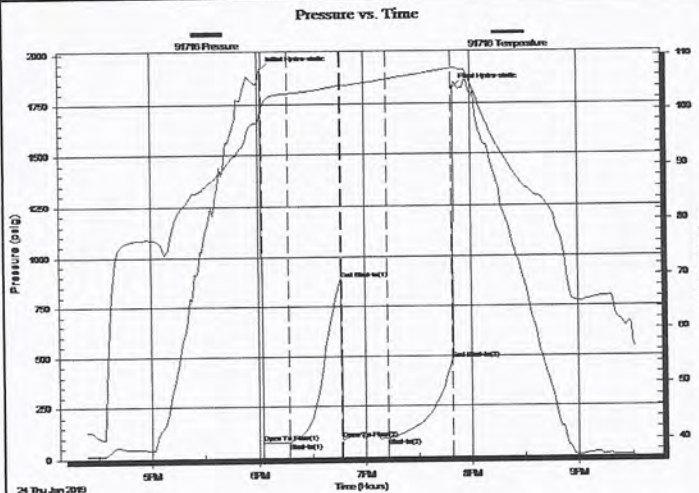
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01075 **DST#: 4**
 Test Start: 2019.01.24 @ 04:36:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:19:00
 Time Test Ended: 21:49:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Interval: **3760.00 ft (KB) To 3823.00 ft (KB) (TVD)**
 Total Depth: 3823.00 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 #: 91716 Outside
 Press@RunDepth: 479.49 psig @ 3817.78 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.24 End Date: 2019.01.24 Last Calib.: 2019.01.24
 Start Time: 16:19:00 End Time: 21:31:29 Time On Btm: 2019.01.24 @ 18:02:00
 Time Off Btm: 2019.01.24 @ 19:50:00

TEST COMMENT: 1st Opening 15 Minutes weak 1 inch blow
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes no blow for 10 minutes weak blow for 6 minutes and died
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1922.17	99.77	Initial Hydro-static
1	73.96	100.52	Open To Flow (1)
15	74.78	103.00	Shut-In(1)
45	883.54	104.33	End Shut-In(1)
45	91.54	104.35	Open To Flow (2)
71	92.97	105.46	Shut-In(2)
107	479.49	107.40	End Shut-In(2)
108	1824.78	107.46	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	oil cut mud 30% Oil 70% Mud	0.08
0.00	Clean oil between the tools	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

Job Ticket: 01075

DST#: 4

ATTN: Justin Carter

Test Start: 2019.01.24 @ 04:36:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:19:00
 Time Test Ended: 21:49:00

Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1

Interval: **3760.00 ft (KB) To 3823.00 ft (KB) (TVD)**
 Total Depth: 3823.00 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

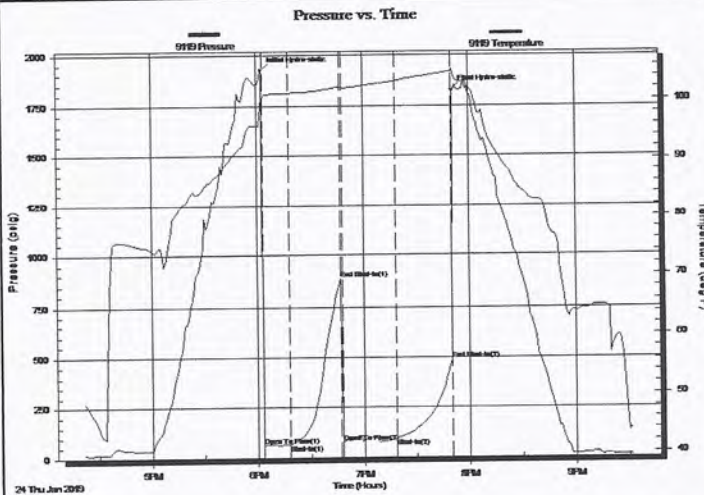
Serial #: 9119

Inside

Press@RunDepth: 486.90 psig @ 3817.78 ft (KB)
 Start Date: 2019.01.24 End Date: 2019.01.24
 Start Time: 16:19:00 End Time: 21:32:00

Capacity: 5000.00 psig
 Last Calib.: 2019.01.24
 Time On Btm: 2019.01.24 @ 18:02:30
 Time Off Btm: 2019.01.24 @ 19:50:30

TEST COMMENT: 1st Opening 15 Minutes weak 1 inch blow
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes no blow for 10 minutes weak blow for 6 minutes and died
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1927.39	100.18	Initial Hydro-static
1	62.74	100.33	Open To Flow (1)
16	64.30	101.13	Shut-In(1)
45	879.06	102.09	End Shut-In(1)
46	74.83	101.89	Open To Flow (2)
76	95.40	103.11	Shut-In(2)
108	486.90	104.72	End Shut-In(2)
108	1824.78	105.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	oil cut mud 30% Oil 70% Mud	0.08
0.00	Clean oil between the tools	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

Job Ticket: 01075

DST#: 4

ATTN: Justin Carter

Test Start: 2019.01.24 @ 04:36:00

Tool Information

Drill Pipe:	Length: 3439.00 ft	Diameter: 3.80 inches	Volume: 48.24 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: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 50.70 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3760.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.78 ft			
Tool Length:	92.78 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			3735.00	
Hydraulic tool	5.00			3740.00	
Jars	5.00			3745.00	
Safety Joint	5.00			3750.00	
Packer	5.00			3755.00	30.00 Bottom Of Top Packer
Packer	5.00		Fluid	3760.00	
Anchor	5.00			3765.00	
Change Over Sub	0.75			3765.75	
Drill Pipe	31.28			3797.03	
Change Over Sub	0.75		Inside	3797.78	
Anchor	20.00			3817.78	
Recorder	0.00	9119	Inside	3817.78	
Recorder	0.00	91716	Outside	3817.78	
Bullnose	5.00			3822.78	62.78 Bottom Packers & Anchor

Total Tool Length: 92.78



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: 01075 **DST#: 4**
 Test Start: 2019.01.24 @ 04:36:00

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: 9.99 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 11200.00 ppm			
Filter Cake: 0.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	oil cut mud 30% Oil 70% Mud	0.079
0.00	Clean oil between the tools	0.000

Total Length: 10.00 ft Total Volume: 0.079 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

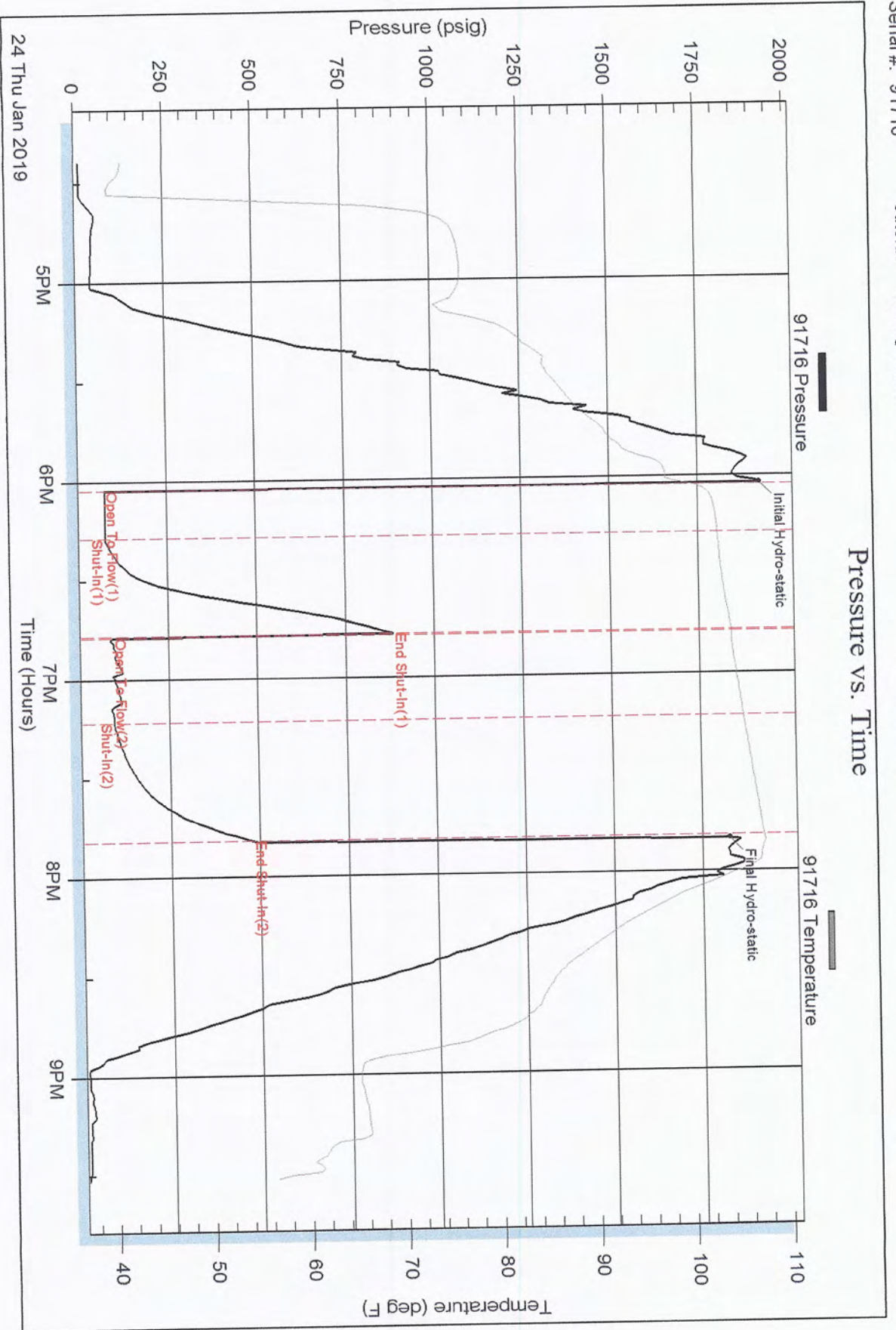
Serial #: 91716

Outside Bird Dog Oil LLC

M&N-Cases #1-16

DST Test Number: 4

Pressure vs. Time



Serial #: 9119

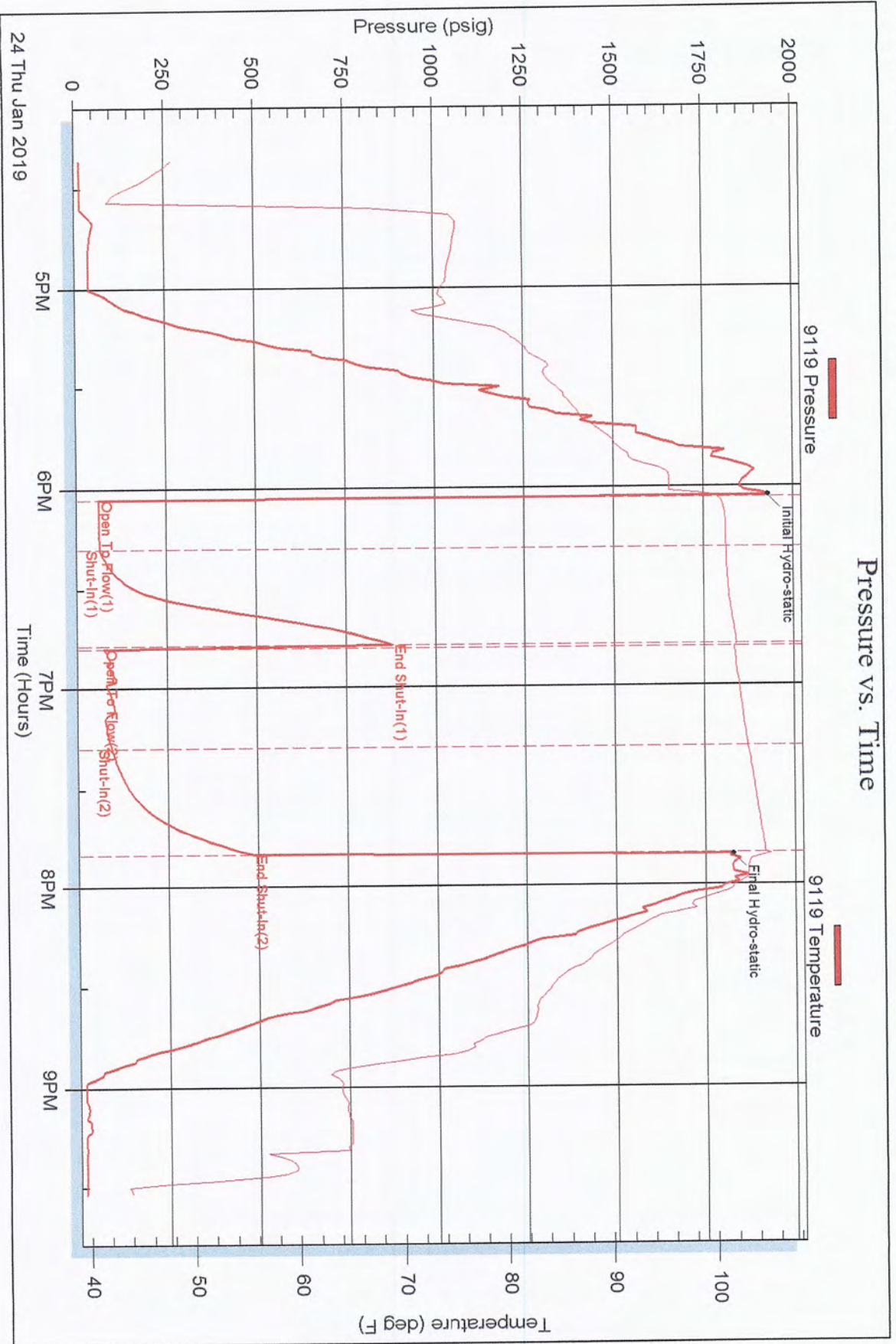
Inside

Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 4

Pressure vs. Time





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: 2019.01.25 @ 04:19:00

End Date: 2019.01.25 @ 11:19:00

Job Ticket #: 01076 DST #: 5

Eagle Testers

1309 Patton Road Great Bend, Kansas 67530

620-791-7394

Printed: 2019.01.25 @ 11:28:49

Bird Dog Oil LLC

16-22s-13w Stafford

M&N-Gates #1-16

DST # 5

Arbuckle

2019.01.25



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

Job Ticket: 01076

DST#: 5

ATTN: Justin Carter

Test Start: 2019.01.25 @ 04:19:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:50:00

Time Test Ended: 11:19:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: **3823.00 ft (KB) To 3828.00 ft (KB) (TVD)**

Total Depth: 3828.00 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 #: **91716**

Outside

Press@RunDepth: 1336.48 psig @ 3823.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2019.01.25 End Date: 2019.01.25

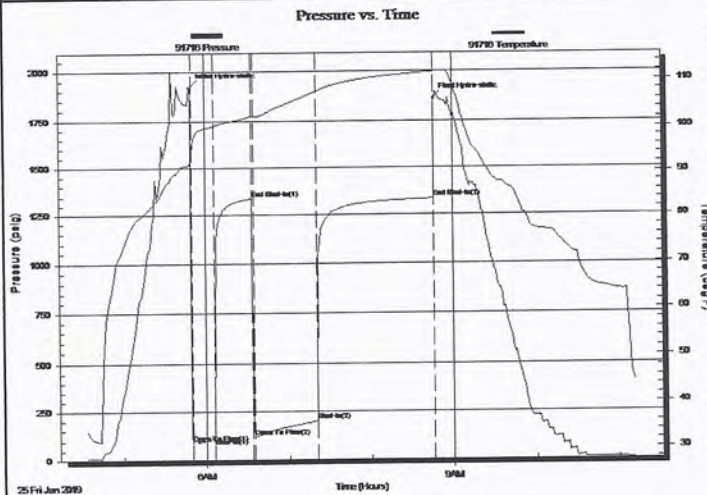
Last Calib.: 2019.01.25

Start Time: 04:19:00 End Time: 11:11:59

Time On Btm: 2019.01.25 @ 05:49:00

Time Off Btm: 2019.01.25 @ 08:46:00

TEST COMMENT: 1st Opening 15 Minutes fair blow built to the bottom of a 5 gallon bucket in 12 minutes
1st Shut-In 30 Minutes 1/2 inch blow back
2nd Opening 45 Minutes fair blow built to the bottom of a 5 gallon bucket in 17 minutes
2nd Shut-In 90 Minutes 1/2 inch blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1920.18	92.20	Initial Hydro-static
1	89.82	94.41	Open To Flow (1)
17	117.01	99.94	Shut-In(1)
45	1338.22	102.17	End Shut-In(1)
46	118.74	102.13	Open To Flow (2)
92	201.10	107.36	Shut-In(2)
177	1336.48	111.66	End Shut-In(2)
177	1859.95	111.67	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
420.00	Clean Gassy Oil 290% Gas 80 %Oil	3.84
30.00	muddy gassy oil 20% gas50 % Oil 30%MO.42	

Gas Rates

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



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Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
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M&N-Gates #1-16

ATTN: Justin Carter

Job Ticket: 01076

DST#: 5

Test Start: 2019.01.25 @ 04:19:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:50:00
 Time Test Ended: 11:19:00

Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1

Interval: **3823.00 ft (KB) To 3828.00 ft (KB) (TVD)**
 Total Depth: 3828.00 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

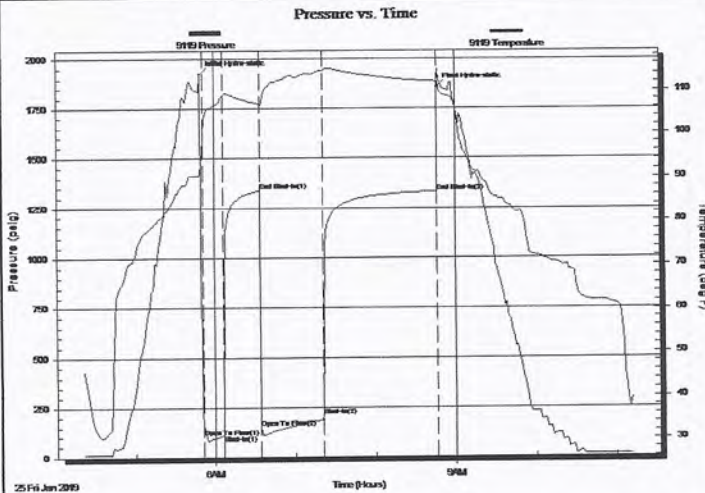
Serial #: 9119

Inside

Press@RunDepth: 1326.37 psig @ 3823.00 ft (KB)
 Start Date: 2019.01.25 End Date: 2019.01.25
 Start Time: 04:19:00 End Time: 11:12:30

Capacity: 5000.00 psig
 Last Calib.: 2019.01.25
 Time On Btm: 2019.01.25 @ 05:49:00
 Time Off Btm: 2019.01.25 @ 08:46:30

TEST COMMENT: 1st Opening 15 Minutes fair blow built to the bottom of a 5 gallon bucket in 12 minutes
 1st Shut-In 30 Minutes 1/2 inch blow back
 2nd Opening 45 Minutes fair blow built to the bottom of a 5 gallon bucket in 17 minutes
 2nd Shut-In 90 Minutes 1/2 inch blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1924.45	90.99	Initial Hydro-static
2	100.38	99.69	Open To Flow (1)
18	107.77	108.69	Shut-In(1)
45	1336.07	106.87	End Shut-In(1)
45	150.97	106.23	Open To Flow (2)
92	208.08	114.67	Shut-In(2)
177	1326.37	112.01	End Shut-In(2)
178	1857.66	112.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
420.00	Clean Gassy Oil 290% Gas 80 %Oil	3.84
30.00	muddy gassy oil 20% gas50 % Oil 30%MO.42	

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

Job Ticket: 01076

DST#: 5

ATTN: Justin Carter

Test Start: 2019.01.25 @ 04:19:00

Tool Information

Drill Pipe:	Length: 3501.00 ft	Diameter: 3.80 inches	Volume: 49.11 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 310.00 ft	Diameter: 2.76 inches	Volume: 2.29 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 51.40 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3823.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	5.00 ft			
Tool Length:	35.00 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			3798.00	
Hydraulic tool	5.00			3803.00	
Jars	5.00			3808.00	
Safety Joint	5.00			3813.00	
Packer	5.00			3818.00	30.00 Bottom Of Top Packer
Packer	5.00		Fluid	3823.00	
Anchor	0.00			3823.00	
Recorder	0.00	9119	Inside	3823.00	
Recorder	0.00	91716	Outside	3823.00	
Bullnose	5.00			3828.00	5.00 Bottom Packers & Anchor
Total Tool Length:	35.00				



DRILL STEM TEST REPORT

FLUID SUMMARY

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

Job Ticket: 01076

DST#:5

ATTN: Justin Carter

Test Start: 2019.01.25 @ 04:19:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 58.00 sec/qt
Water Loss: 11.20 in³
Resistivity: ohm.m
Salinity: 13200.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
420.00	Clean Gassy Oil 290% Gas 80 %Oil	3.837
30.00	muddy gassy oil 20% gas50 % Oil 30%Mud	0.421

Total Length: 450.00 ft Total Volume: 4.258 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

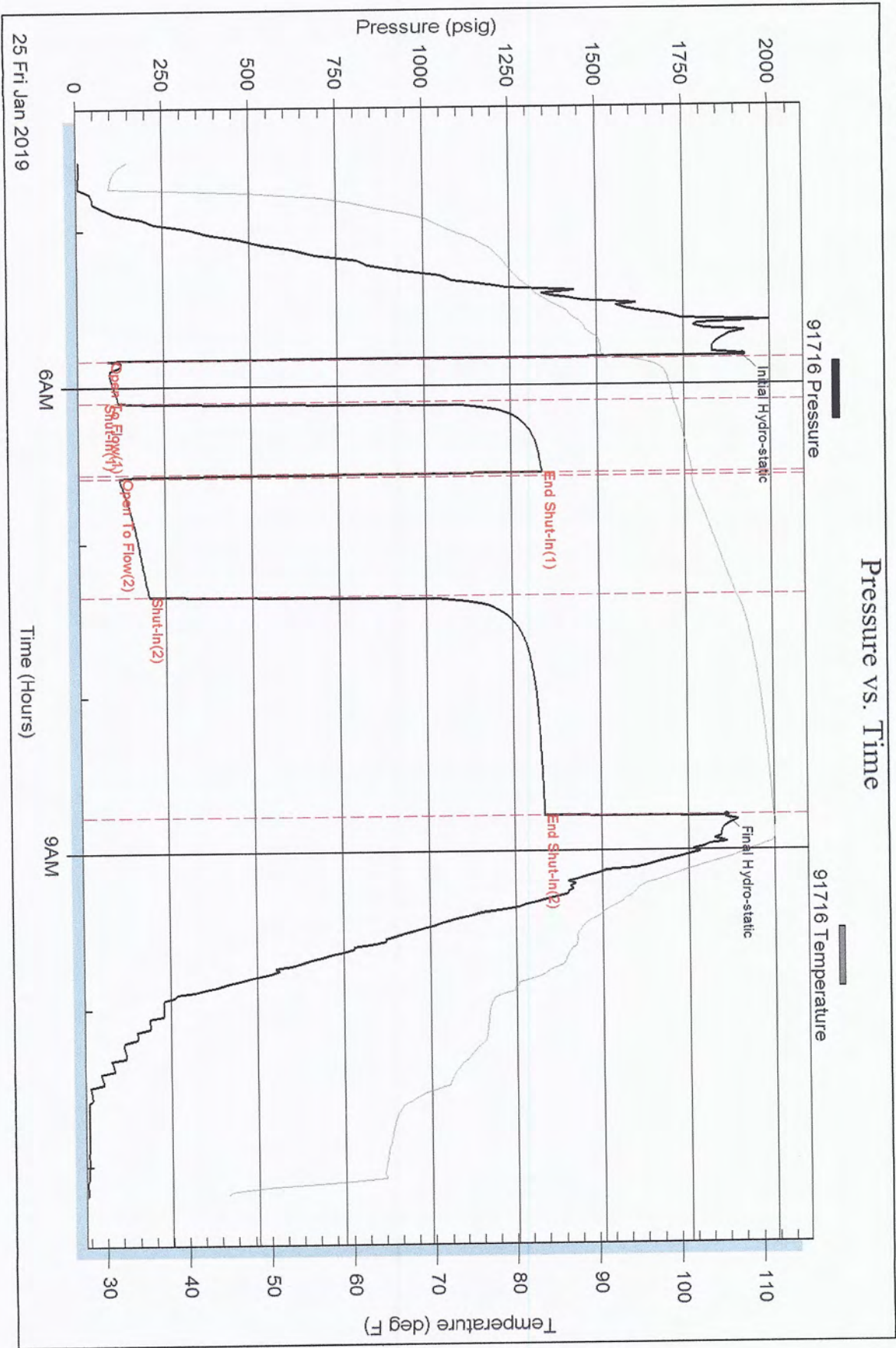
Serial #: 91716

Outside Bird Dog Oil LLC

M&N-Cates #1-16

DST Test Number: 5

Pressure vs. Time



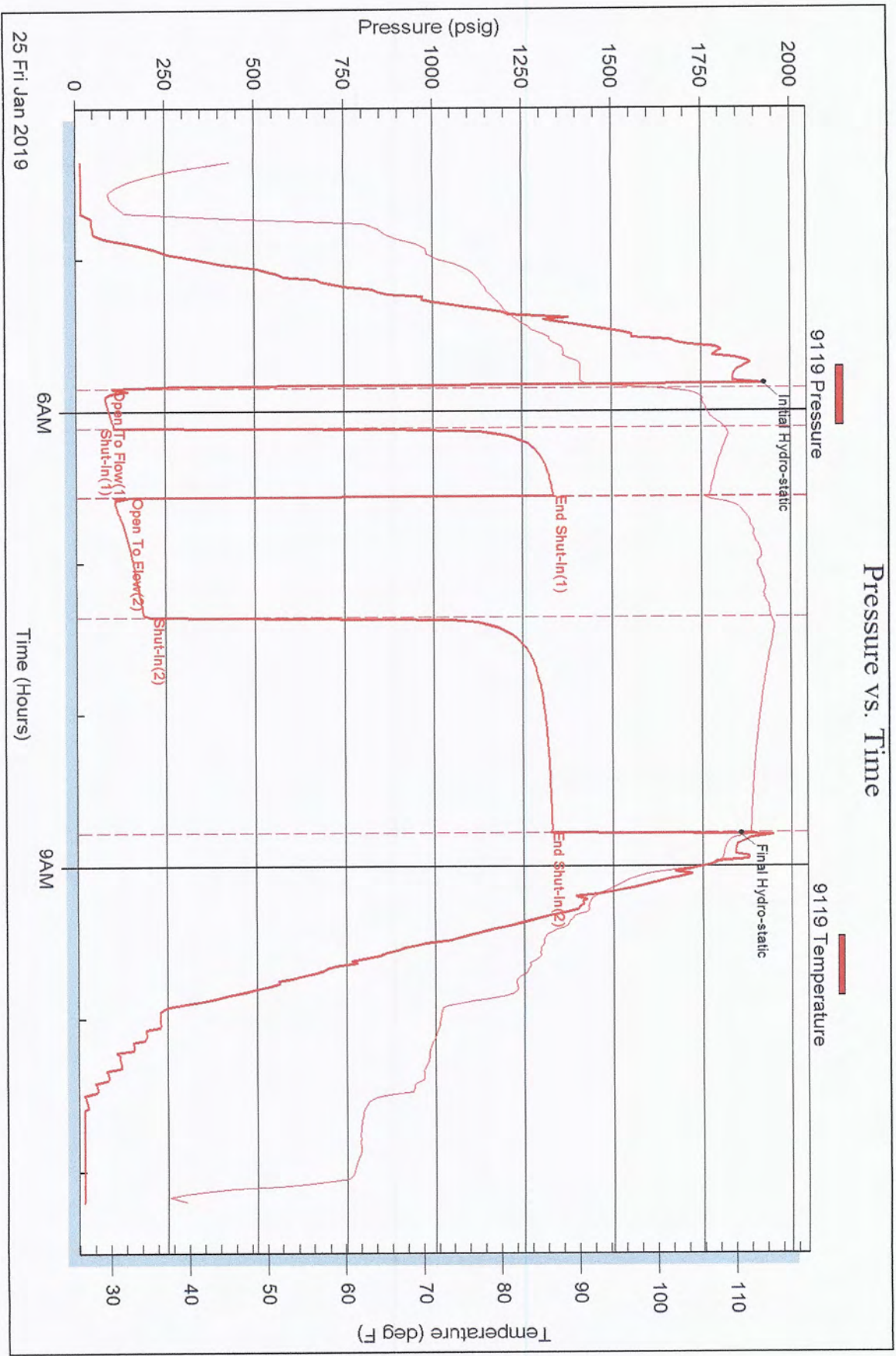
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Inside

Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 5



Eagle Testers

Ref. No: 01076

Printed: 2019.01.25 @ 11:28:51