

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Bird Dog Oil, LLC
Well Name	M&N-GATES 1-16
Doc ID	1463304

All Electric Logs Run

DI
CDNL
Micro
Sonic

JUSTIN D. CARTER

CONSULTING GEOLOGIST

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: M&N GATES 1-16
Well Id:
Location: NW, NW, NW Sec. 16 - 22S - 13W Stafford Co., KS
License Number: 15-185-24046-0000
Spud Date: 01/17/19
Surface Coordinates: 330' FNL, 330' FWL
Region: Kenilworth West
Drilling Completed: 01/25/19

Bottom Hole Coordinates: 306': 1/2 DEG, 3446': 3/4 DEG, 3900': 3/4 DEG
Ground Elevation (ft): 1898' K.B. Elevation (ft): 1906'
Logged Interval (ft): 3100' To: 3900' Total Depth (ft): 3900'
Formation: L/KC, VIOLA, ARBUCKLE
Type of Drilling Fluid: Chemical Mud

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: BIRD DOG OIL, LLC
Address: 1801 Broadway, Suite #200
Denver, CO 80202-3840
Co. Geo.: Mr. Scott Stewart

GEOLOGIST

Name: Justin D. Carter
Company: Consulting Geologist
Address: 1640 N. Roosevelt Ave.
Liberal, KS 67901
Phone: 620-655-1187

Comments

Drilling Contractor: Discovery Drilling Rig #2
Tool Pusher: Terry Wickham

8 5/8" surface casing set at 306'

Mud: MudCo
Engineer: Jason Whiting

Gas Detector: Blue Stem

DSTs: Eagle Testers
Tester: Gene Budig

Open-Hole Loggers: Pioneer Wireline



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1601 Broadway Suite 200 Denver, Colorado 80202

M&N-Gates #1-16

Job Ticket: 01073

DST#: 2

ATTN: Justin Carter

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: 19:49:00

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: 7.00 inches Hole Condition: Fair

Reference Elevations: 1909.00 ft (KB)

1901.00 ft (CF)

KB to CR/CF: 8.00 ft

Serial #: 91716 Outside

Press@RunDepth: 400.14 psig @ 3495.00 ft (KB)

Start Date: 2019.01.22

End Date:

2019.01.22

Start Time: 14:21:00

End Time:

19:49:00

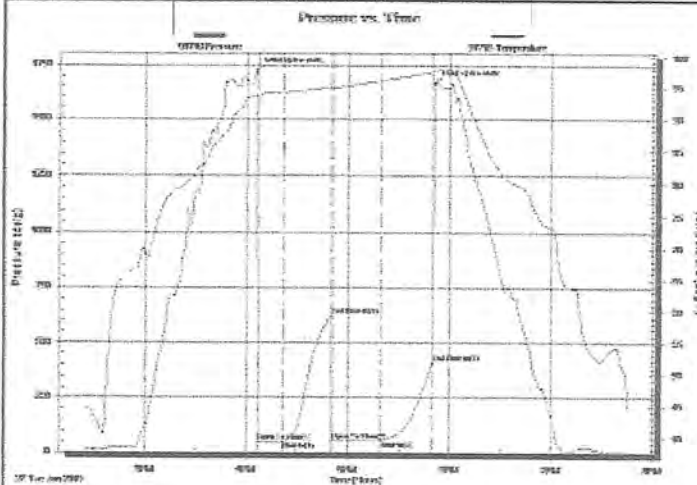
Capacity: 5000.00 psig

Last Calib.: 2019.01.22

Time On Blm: 2019.01.22 @ 16:06:00

Time Off Blm: 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 intermittent 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	95.09	Open To Flow (2)
74	56.27	96.10	Shut-In (2)
104	400.14	97.59	End Shut-In (2)
105	1684.21	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

Circle (inches)	Pressure (psig)	Gas Rate (Mscf/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 @ 00:49:00

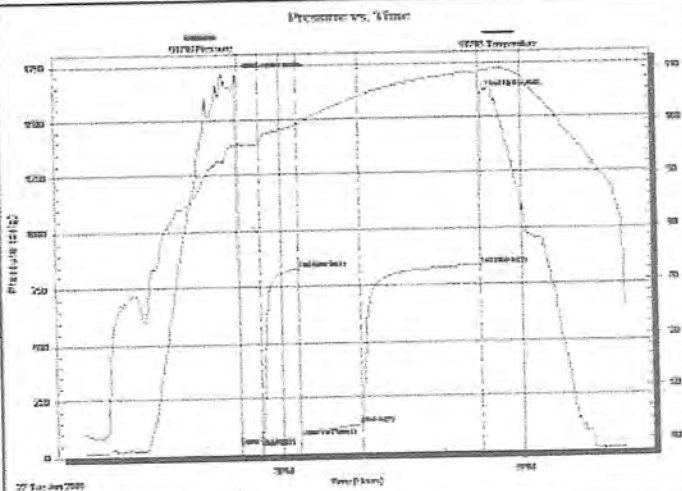
GENERAL INFORMATION

Formation: **Kansas City "C"**
 Deviated: **No Whipstock:** ft (KB)
 Time Tool Opened: 01:49:00
 Time Test Ended: 06:38:00
 Interval: **3429.00 ft (KB) To 3446.00 ft (KB) (TVD)**
 Total Depth: **3446.00 ft (KB) (TVD)**
 Hole Diameter: **7.89 inches** Hole Condition: **Fair**

Test Type: **Conventional Bottom Hole (Initial)**
 Tester: **Gene Budig**
 Unit No: **1**
 Reference Elevations: **1908.00 ft (KB)**
1901.00 ft (CF)
 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	89.89	98.04	Shut-In (1)
45	832.04	99.78	End Shut-In (1)
46	76.72	99.80	Open To Flow (2)
90	129.84	104.97	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 (BU)
30.00	SLIGHTLY OIL CUT MUD	0.24
0.00	8% Oil 82% Mud 80% Water	0.00
150.00	Muddy Water 10% Mud 90% Water	1.18
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

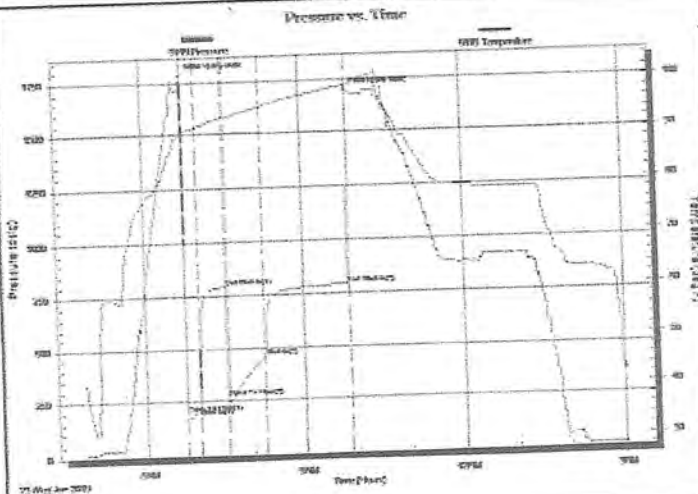
16-22s-13w Stafford
 M&N-Gates #1-16
 Job Ticket: 01074 DST#:3
 Test Start: 2019.01.23 @ 04:49:00

GENERAL INFORMATION

Formation: **Kansas City "H"**
 Deviated: No Whipstock: IL (KB)
 Time Tool Opened: 00:00:00
 Time Test Ended: 03:09:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Interval: 3532.00 ft (KB) To 3552.00 ft (KB) (TVD)
 Total Depth: 3552.00 ft (KB) (TVD)
 Hole Diameter: 7.00 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: 798.02 psig @ 3547.00 ft (KB)
 Start Date: 2019.01.23 End Date: 2019.01.23
 Start Time: 04:49:00 End Time: 15:03:00
 Capacity: 5000.00 psig
 Last Calib.: 2019.01.23
 Time On Btm: 2019.01.23 @ 08:44:30
 Time Off Btm: 2019.01.23 @ 09:50:30

TEST COMMENT 1st Opening 15 Minutes strong blow gas to surface in 8 minutes
 1st Shut-In 30 Minutes good blow back
 2nd opening 45 Minutes strong blow see gas flow report
 2nd Shut-In 30 Minutes good blow back



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1779.71	90.52	Initial Hydro-static
1	196.88	90.52	Open To Flow (1)
15	220.26	91.17	Shut-In (1)
47	798.27	93.00	End Shut-In (1)
49	268.83	92.89	Open To Flow (2)
60	480.80	95.00	Shut-In (2)
108	798.02	99.84	End Shut-In (2)
186	1690.69	99.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (BBL)
1900.00	Clean Gassy Oil 30% Gas 70% Oil	24.77
0.00	Gravity SB Corrected	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (MMSCF)
First Gas Rate	0.13	21.00	13.25
Last Gas Rate	0.13	1.00	5.76
Max. Gas Rate	0.13	21.00	13.25



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1601 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: **IL (KB)**

Time Tool Opened: 08:16:00

Time Test Ended: 21:49:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: **3760.00 ft (KB) To 3623.00 ft (KB) (TVD)**

Total Depth: **3923.00 ft (KB) (TVD)**

Hole Diameter: **7.69 inches** Hole Condition: Fair

Reference Elevations: **1909.00 ft (KB)**

1901.00 ft (CF)

KB to GR/CF: **6.00 ft**

Serial #: **91716** Outside

Press@RunDepth: **479.49 psig @ 3817.76 ft (KB)**

Start Date: **2019.01.24**

End Date: **2019.01.24**

Capacity: **5000.00 psig**

Last Calib.: **2019.01.24**

Start Time: **16:19:00**

End Time: **21:31:29**

Time On Blm: **2019.01.24 @ 16:02:00**

Time Off Blm: **2019.01.24 @ 16:50:00**

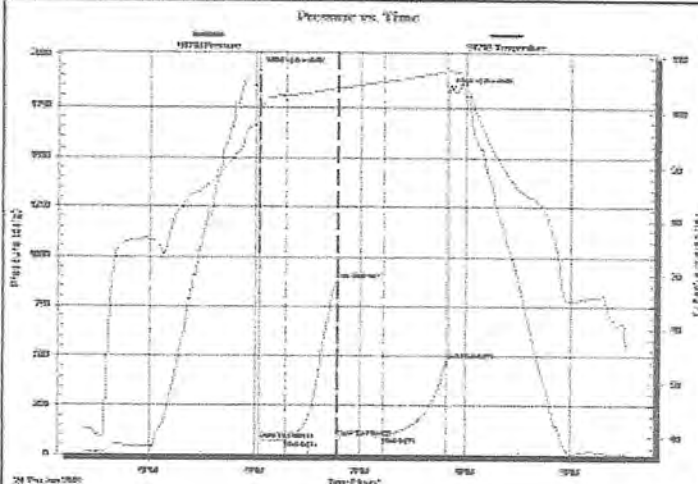
TEST COMMENT

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	73.98	100.52	Open To Flow (1)
15	74.76	103.00	Shut-In (1)
45	91.54	104.33	End Shut-In (1)
45	91.54	104.35	Open To Flow (2)
71	92.97	105.48	Shut-In (2)
107	479.49	107.40	End Shut-In (2)
109	1024.70	107.48	Final Hydro-static

Recovery

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

Gas Rates

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



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1601 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 Test Opened: 05:50:00

Time Test Ended: 11:19:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: 3923.00 ft (KB) To 3926.00 ft (KB) (TVD)

Total Depth: 3926.00 ft (KB) (TVD)

Hole Diameter: 7.86 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 @ 3923.00 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

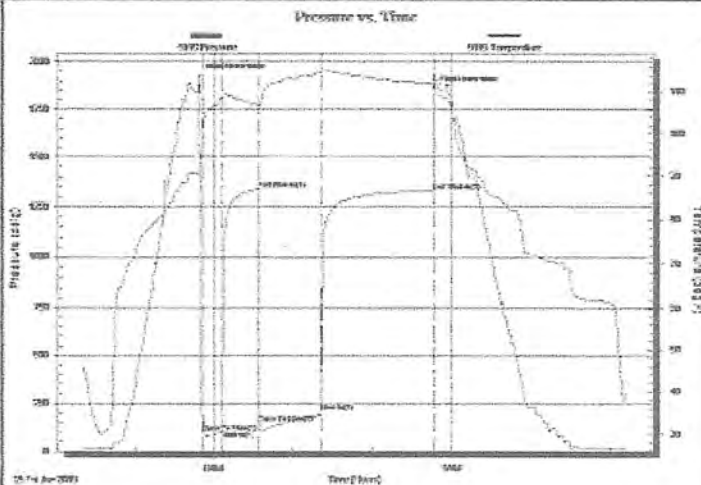
Last Calc.: 2019.01.25

Time On Blm: 2019.01.25 @ 05:49:00

Time Off Blm: 2019.01.25 @ 09:46:30

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	100.39	99.69	Open To Flow (1)
16	107.77	109.69	Shut-In (1)
45	1336.07	106.67	End Shut-In (1)
45	150.97	106.23	Open To Flow (2)
62	206.08	114.67	Shut-In (2)
177	1326.37	112.01	End Shut-In (2)
179	1657.86	112.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
420.00	Clean Gassy Oil 290% Gas 90 % Oil	3.84
30.00	muddy gassy oil 20% gas 50 % Oil 30% MO 42	

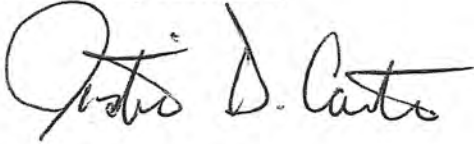
Gas Rates

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

Remarks

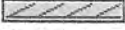
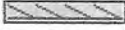
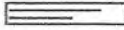

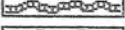


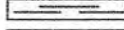
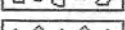

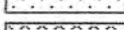
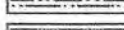
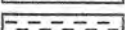
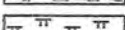

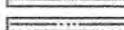



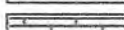
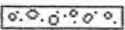
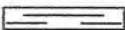



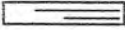




After careful review of the sample log, electric logs, and DST reports, the decision was made to run 5 1/2" casing to do further testing of the L/KC and Arbuckle zones in the M&N Gates #1-16.

Respectfully submitted,

























































































Justin D. Carter
Consulting Geologist

ROCK TYPES

 Anhy	 Gyp	 Shgy	 Sandylms
 Bent	 Igne	 Sltst	 Shale
 Brec	 Lmst	 Ss	 Sltstn
 Cht	 Meta	 Till	 Shlyslts
 Clyst	 Mrlst	 Carb sh	 Sltyslts
 Coal	 Salt	 Dol	 Lms
 Congl	 Shale	 Dtd	
 Dol	 Shcol	 Gry sh	

ACCESSORIES

FOSSIL	MINERAL	 Salt	 Dol
 Algae	 Anhy	 Sandy	 Grysh
 Amph	 Arggrn	 Silt	 Gryslt
 Belm	 Arg	 Sil	 Lms
 Bioclst	 Bent	 Sulphur	 Sandylms
 Brach	 Bit	 Tuff	 Sh
 Bryozoa	 Brecfrag	 Chlorite	 Sltstn
 Cephal	 Calc	 Dol	
 Coral	 Carb	 Sand	TEXTURE
 Crin	 Chtdk	 Silty	 Boundst
 Echin	 Chtft		 Chalky
 Fish	 Dol	STRINGER	 Cryxin
 Foram	 Feldspar	 Anhy	 Earthy
 Fossil	 Ferrpel	 Arg	 Finexin
 Gastro	 Ferr	 Bent	 Grainst
 Oolite	 Glau	 Coal	 Lithogr
 Ostra	 Gyp	 Dol	 Microxin
 Pelec	 Hvymin	 Gyp	 Mudst
 Pellet	 Kaol	 Ls	 Packst
 Pisolite	 Marl	 Mrst	 Wackest
 Plant	 Minxl	 Sltstrg	
 Strom	 Nodule	 Ssstrg	
 Fuss	 Phos	 Carbsh	
 Oomold	 Pyr	 Clystn	

OTHER SYMBOLS

INTERVALS	 Dst	OIL SHOWS	 Ques
 Core		 Even	 Dead
 Dst		 Spotted	 Gas show

N @ 306'

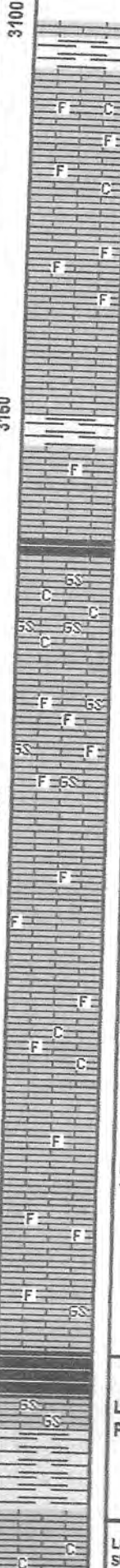
WT 8.6
VIS 63
LCM 1#
RPM 80
WOB 30K
PP 760

3100

3150

3200

3250



LS-LT TN, HRD TO BRITT IP, VF-XLN, SUCRO MTRX THRU, TR IMBED FOSS FRAGS, SFT WHT CHLK IP, NO FLO, PR INTER-XLN POR SCAT THRU, NS

LS-LT CRM, HRD TO BRITT IP, VF-XLN, SUCRO MTRX IPTO RE-XLN MTRX IP, IMBED FOSS FRAGS IP, TR SFT WHT CHLK, NO FLO, TR INTER-FOSS POR TO TR INTER-XLN POR, NS

LS-GY, HRD DNS, CRYPTO-XLN, RE-XLN MTRX IP, TR IMBED FOSS FRAGS, NO FLO, NO VIS POR

LS-CRM, BRITT, MDF-XLN, GRNST, FRIABLE IP, TR SFT WHT CHLK, NO FLO, GD INTER-XLN POR IP, NS

LS-CRM TN, BRITT, MDF-XLN, GRNST, IMBED FOSS FRAGS SCAT THRU, NO FLO, FR INTER-XLN POR SCAT THRU, NS

LS-GY CRM TN, MOTT, HRD TO BRITT IP, FVF-XLN, RE-XLN MTRX TO TR GRNST, SFT WHT CHLK IP, IMBED FOSS FRAGS IP, NO FLO, TR INTER-XLN POR, TR BLK RESID OIL STAIN, NO ODOR

LS-CRM, HRD TO BRITT IP, VF-XLN, RE-XLN MTRX IP TO SUB-CHLKY MTRX IP, TR IMBED FOSS FRAGS, TR SFT WHT CHLK, NO FLO, NO VIS POR

LS-CRM, HRD, VF-XLN, RE-XLN MTRX IP TO TR SUCRO MTRX, TR IMBED FOSS FRAGS, NO FLO, NO VIS POR

HEEBNER 3271' (-1365')

LS-CRM, HRD DNS, F-XLN, GRNST, NO FLO, TR INTER-XLN POR TO NO VIS POR THRU, NS

TORONTO 3291' (-1385')

LS-OFF WHT, HRD DNS, FVF-XLN, SUB-SUCRO MTRX THRU TO TR SUB-CHLKY, TR SFT WHT CHLK, NO FLO, TR INTER-XLN POR, NS

6:00 A.M. 01/21/19

CN

CN

CN

CN

CN

CN

RDP (min/ft) 10
Gamma (API) 150

MUD CHECK @ 3206'
WT 8.7
VIS 65
LCM TR
PV 16
YP 14
PH 10.5
FIL 64
CAL 20
CHL 6,500

TG. 01-C5 200

TORONTO 3291' (-1385')

LS- OFF WHT, HRD DNS, FVF-XLN, SUB-SUCRO MTRX THRU TO TR SUB-CHLKY, TR SFT WHT CHLK, NO FLO, TR INTER-XLN POR, NS

DOUGLAS 3306' (-1400')

SH- RD GY, FRM TO SFT IP, BLKY TO FISS IP, ARG TO TR SLTY

SH- GY LT GRN, FRM, FISS TO TR BLKY, ARG

SH- GY LT GY, FRM, BLKY TO FISS IP, ARG TO TR SLTY

SLTST-LT GY, TT, VF-GRNS, DISS BLK SH IP, NO VIS POR

SLTST- GYLT GY, TT, VF-GRNS, DISS BLK SH IP TO TR MICA BLK SH, NO FLO, TR INTER-GRN POR, NS

BROWN LIME 3399' (-1493')

SHORT TRIP 25 STANDS @ 3403'

LANSING 3416' (-1510')

LS- CRM, HRD DNS, VF-XLN, RE-XLN MTRX IP, IMBED OOL THRU, TR OPQ OOL CHRT, NO FLO, NO VIS POR

LS- CRM WHT, HRD, FVF-XLN, GRNST TO TR RE-XLN MTRX, YEL GLD FLO IN 80%, FAINT FLUSH TO PR SLO BLU STRM CUT, PR INTER-XLN POR IP TO TR MICRO PP POR, TN STAIN IN 20%, FAINT ODOR, TR FREE OIL

LS- CRM BFF, HRD DNS, FVF-XLN, RE-XLN MTRX THRU, BRIT YEL GLD FLO IN 40%, PR FLUSH TO VIFAINST SLO BLU STRM CUT, TR INTER-XLN POR TO TR VUG POR, TN STAIN IN 20%, FAINT ODOR, NSFO

LS- CRM, HRD DNS, VF-XLN, RE-XLN MTRX THRU, TR BRIT YEL GLD FLO, FAINT BLU STRM CUT, NO VIS POR TO TR INTER-XLN POR, TR STAIN, FAINT ODOR, NSFO

LS- GY CRM, HRD TO BRIT IP, MDIF-XLN, GRNST, BRIT YEL GLD FLO IN 80%, PR FLUSH TO FAINT SLO BLU STRM CUT, FR INTER-XLN POR SCAT THRU, TN STAIN IP TO TR BLK RESID STAIN, FAINT ODOR, NSFO

LS- LT CRM OFF WHT, HRD, FVF-XLN, SUCRO MTRX THRU TO TR GRNST, TR SFT WHT CHLK, BRIT YEL GLD FLO IN 70%, FR FLUSH TO PRFR SLO BLU STRM CUT, NO VIS POR TO TR INTER-XLN POR, LIVE STAIN IN 50%, FAINT ODOR, TR FREE OIL

WT 8.9
VIS 60
LCM TR
RPM 80
WOB 30K
PP 760

OP (min/ft)
Gamma (API)

DST #1 3429' - 3446'

DST #2 3470' - 3500'

MUD CHECK @ 3446'

WT 9.2
VIS 68
LCM TR
PV 13
YP 22
PH 9.5
FIL 11.2
CAL 120
CHL 13,200

12:00 A.M.
01/22/19

230 U
SHOW

3300

3350

3400

3450

3500

CN

CN

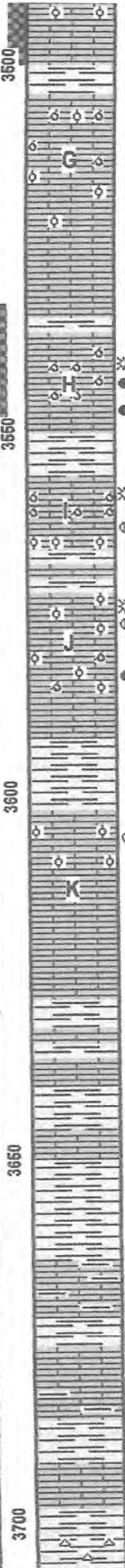
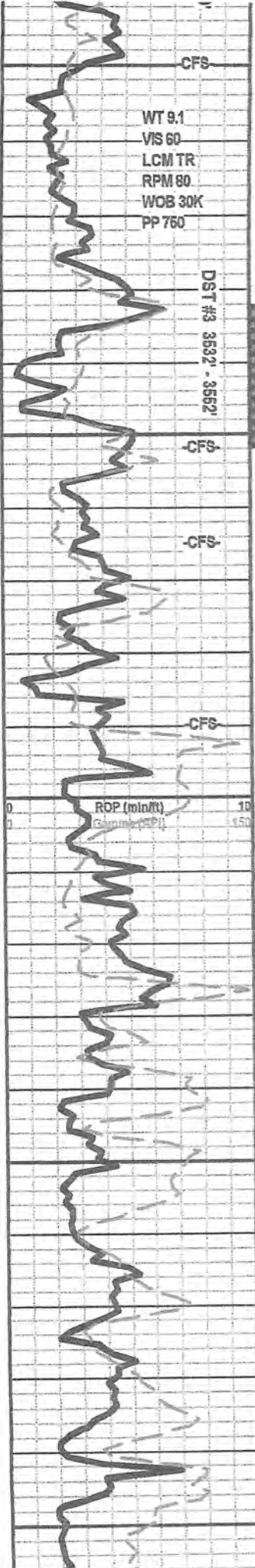
CN

CN

CN

CN

185 U SHOW



ODDR, TR FREE OIL

LS-CRM LT TN, HRD TO BRITT IP, FMF-XLN, GRNST, IMBED OOL SCAT THRU, NO FLO, PR INTER-OOL POR TO TR OOMLD POR, TR BLK RESID STAIN, NO ODOR

LS-CRM, HRD, FMF-XLN, GRNST, TR IMBED OOL, NO FLO, NO VIS CUT, PR INTER-XLN POR SCAT THRU, NS

LS-CRM LT TN, HRD DNS, VF-XLN, RE-XLN MTRX IP, NO FLO, NO VIS POR

LS-CRM TN, BRITT, FMF-XLN, GRNST THRU TO TR SUB-CHLKY, TR IMBED OOL, SCAT BRIT YEL GLD FLO THRU, GD FLUSH CUT, FR/GD OOMLD POR THRU TO TR INTER-OOL POR, LIVE STAIN IN 80%, FREE OIL, FR/STRNG ODOR, TR GAS BUBBLS

LS-CRM GY, HRD TO BRITT IP, VF-XLN, GRST THRU TO TR RE-XLN MTRX, IMBED OOL IP, YEL GLD FLO IN 40%, FR/GD FLUSH TO FR BLU STRM CUT, FR OOMLD POR THRU TO TR INTER-OOL POR, LIVE STAIN IN 60%, STRNG ODOR, FREE OIL, GAS BUBBLS

LS-OFF WHT BFF, BRITT TO HRD IP, F-XLN, GRNST THRU, IMBED OOL SCAT THRU, SCAT BRIT YEL GLD FLO THRU, FR/GD FLUSH TO GD FAST BLU STRM CUT, FR INTER-OOL POR IP TO PR/FR OOMLD POR IP TO TR INTER-XLN POR, LIVE STAIN IN 40%, STRNG ODOR, FREE OIL, TR GAS BUBBLS

SH-LT GRN GY, FRM, BLKY, ARG

LS-CRM, HRD TO BRITT IP, VF-XLN, GRNST TO TR RE-XLN MTRX, IMBED OOL SCAT THRU, BRIT YEL GLD FLO IN 20%, PR FLUSH TO PR SLO BLU STRM CUT, PR/FR INTER-OOL POR IP, TN STAIN IN 40%, FAINT ODOR, NSFO

LS-LT GY CRM, HRD DNS, CRYPTO-XLN, RE-XLN MTRX IP, NO FLO, NO VIS POR

BKC 3629' (-1723')

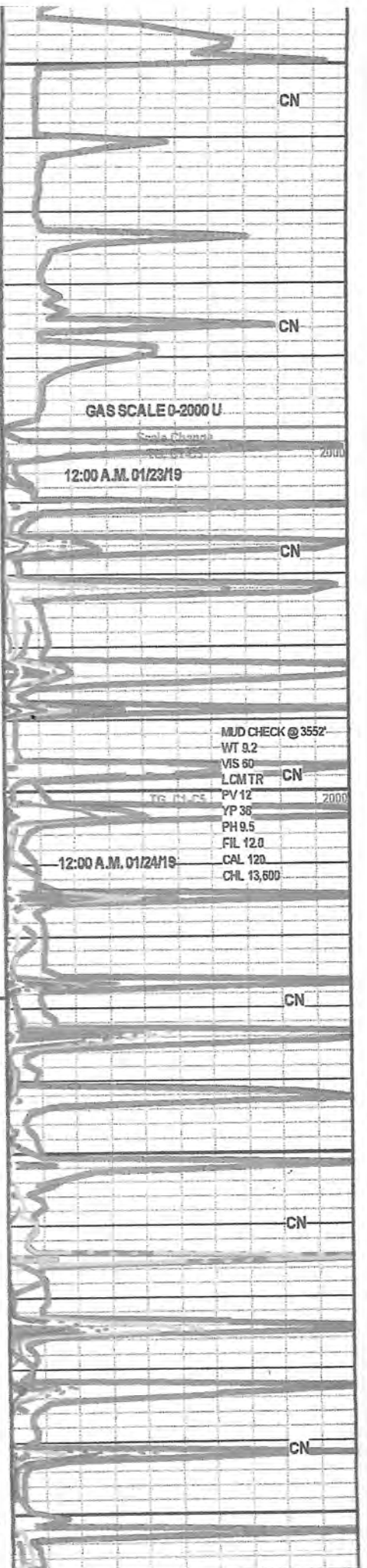
LS-LT GY BFF, HRD DNS TO BRITT IP, FMF-XLN, RE-XLN MTRX IP TO SUB-CHLKY MTRX IP, IMBED SH IP, NO FLO, NO VIS POR

SH-GY, FRM, BLKY, SLTY TO TRARG

LS-LT GY, HRD DNS, CRYPTO-XLN, RE-XLN MTRX IP, TR YEL FLO, VFAINT VSLO BLU STRM CUT, NO VIS POR TO POSS FRAC POR, TN BLK STAIN, FAINT ODOR

LS-CRM DK CRM, HRD, VF-XLN, RE-XLN MTRX IP TO SUB-SUCRO MTRX IP, TR IMBED GLAUC, TR YEL FLO, FAINT VSLO BLU STRM CUT, NO VIS POR, TR TN STAIN, NO ODOR

SH-RD GRN LT GRN, CONG, FRM, BLKY TO TR GMMY, SLTY IP TO LMY IP, LT YEL CRHT IPW/BLK RESID STAIN, NO ODOR



VIOLA 3716' (-1810')

CHRT-CRM WHT, HRD DNS, ANG, BRIT YEL GLD FLO IN 30%, FAINT FLUSH TO PR SLO BLU STRM CUT, NO VIS POR TO POSS FRAC POR, BLK/DK TN STAIN IP, FAINT ODOR, NSFO

CHRT-WHT, HRD DNS, ANG, TN DOLO W/ STAIN IP, YEL GLD FLO IN 80%, PR FLUSH TO PR SLO BLU STRM CUT, TR INTER-XLN POR IN DOLO TO NO VIS POR THRU, TN STAIN IN 30%, STRNG ODOR, NSFO

3754' DOLO-TN, HRD, F-XLN, SUCRO MTRX THRU, WHT CHRT W/ STAIN IP, DLL YEL FLO THRU, FAINT FLUSH TO PR SLO BLU STRM CUT, PR INTER-XLN POR THRU, TN STAIN THRU, STRNG ODDR, FREE OIL

SIMPSON 3763' (-1857')

SH-DK RD GRN, FRM, BLKY, ARG, WXYTEXT, RD CHRT IP, TR OOMLDC DOLO

SS-TN, TT, F-GRNS, FR SRT, SUB-ANG TO SUB-RND GRNS, SILI CMNT, TR IMBED CHLK, VIDLL YEL FLO THRU, FR FLUSH TO FR BLU STRM CUT, PR/FR INTER-GRN POR THRU, TN STAIN THRU, STRNG ODOR, FREE OIL

SH-BLUI SH GRN, FRM TO SFT IP, LMY, IMBED CLR SS GRNS

ARBUCKLE 3814' (-1908')

DOLO-WHT, BRITT TO HRD DNS, VF-XLN, SUCRO MTRX THRU, OOL IMBED IP, YEL GLD FLO THRU, GD FLUSH TO GD FAST BLU STRM CUT, FR OOMLDC POR SCAT THRU TO TR INTER-OOL POR, LIVE STAIN IN 70%, STRNG ODOR, FREE OIL

3825' DOLO-WHT PINK, HRD TO BRITT IP, MDIF-XLN, SUCRO MTRX THRU, YEL GLD FLO THRU, FR FLUSH TO FR BLU STRM CUT, FR INTER-XLN POR THRU, BLK STAIN IN 40%, STRNG ODOR, TR FREE OIL

3831' DOLO-WHT, HRD TO BRITT IP, MDIF-XLN, SUCRO MTRX THRU, YEL GLD FLO IN 20%, FR FLUSH TO FR BLU STRM CUT, PR/FR INTER-XLN POR THRU, BLK STAIN SCAT THRU, FR/STRNG ODOR, TR FREE OIL

3840' DOLO-WHT LT CRM, HRD, MDIF-XLN, SUCRO MTRX THRU, YEL GLD FLO IN 80%, FR FLUSH TO FR BLU STRM CUT, PR/FR INTER-XLN POR THRU, BLK STAIN IN 30%, STRNG ODOR, HVY FREE OIL IP

3855' DOLO-OFF WHT LT CRM, HRD, MDIF-XLN, SUCRO MTRX THRU, DLL YEL GLD FLO THRU, FAINT FLUSH TO PR SLO BLU STRM CUT, PR INTER-XLN POR THRU, TR BLK STAIN, TR FREE OIL FR/STRNG ODOR

3870' DOLO-OFF WHT, HRD DNS, FVF-XLN, SUCRO MTRX THRU TO TR RE-XLN MTRX, TR WHT CHRT, NO FLO, NO VIS CUT, TR INTER-XLN POR

DOLO-OFF WHT, HRD, MD-XLN, SUCRO MTRX THRU, TR GLAUC, NO FLO, NO VIS CUT, PR/FR INTER-XLN POR THRU

FINISH E-LOG 1:30 A.M. 01/25/19

MUD CHECK @ 3720'
WT 9.0
VIS 60
LCM TR
PV 11
YP 36
PH 10.0
FIL 10.0
CAL 160
CHL 11,200

CN

CN

CN

12:00 A.M. 01/25/19

MUD CHECK @ 3825'
WT 9.2
VIS 51
LCM TR
PV 10
YP 28
PH 10.0
FIL 14.4
CAL 100
CHL 15,800

CN

CN

8:15 P.M. 01/25/19

-CFS-

DST #4 3760-3823'

ROP (min/ft)
Gamm's (API)

DST #5 3823' - 3828'

-CFS-

R.T.D. 3900'

L.T.D. 3895'

3750

3800

3850

3900

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 1178

Date	1-18-19	Sec.	16	Twp.	22	Range	13	County	Stafford	State	Ks	On Location		Finish	12:15 AM				
Location								281 + K-19, 1W, 1 1/8 S, E15											
Lease	M+N-Gates			Well No.			1-16												
Contractor	Discovery			#2			Owner To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.												
Type Job	Surface						Charge To Bird dog												
Hole Size	12 1/4"			T.D.			306'												
Csg.	8 5/8"			Depth			306'												
Tbg. Size				Depth			Street												
Tool				Depth			City												
Cement Left in Csg.	15'			Shoe Joint			15'												
Meas Line	Displace			18 1/2' Bus			1/2 # Flo-seal used 390												
EQUIPMENT												Common				3/2			
Pumptrk	17 No. Cementer			David			Pos. Mix									78			
Bulktrk	21 No. Driver			Tony			Gel.									8			
Bulktrk	p.u. No. Driver			Rick			Calcium									14			
JOB SERVICES & REMARKS																			
Remarks:	Cement did Circulate																		
Rat Hole	Flowseal 225#																		
Mouse Hole	Kol-Seal																		
Centralizers	Mud CLR 48																		
Baskets	CFL-117 or CD110 CAF 38																		
D/V or Port Collar	Sand																		
used 390 slk																			
Handling 425 425																			
Mileage																			
FLOAT EQUIPMENT																			
Guide Shoe																			
Centralizer																			
Baskets																			
AFU Inserts																			
Float Shoe																			
Latch Down																			
Pumptrk Charge Surface																			
Mileage 20																			
Signature																			
Tax																			
Discount																			
Total Charge																			

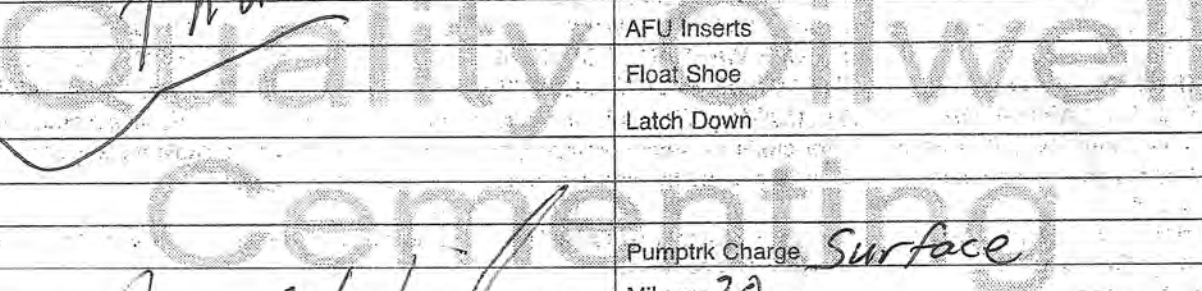
Thanks

used 390 slk

Handling ~~425~~ 425

Pumptrk Charge Surface

Mileage 20



QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

025

Home Office P.O. Box 32 Russell, KS 67665

No. 1211

041

Sec.	Twp.	Range	County	State	On Location	Finish
26.19	16	22	Stafford	KS		1:15 PM
Lease			Location			
M & N Gates			Hwy 281419 / W 1/4 S E 1/4			
Well No. 1-16			Owner			
Contractor			To Quality Oilwell Cementing, Inc.			
Discovery #2			You are hereby requested to rent cementing equipment and furnish			
Type Job			cement and helper to assist owner or contractor to do work as listed.			
Production String			Charge To			
Hole Size			Bird Dog Oil			
7 7/8			T.D. 3900			
Csg. 5 1/2 15.50*			Depth 3896			
Tbg. Size			Street			
Tool			City			
Cement Left in Csg. 20.84			State			
Shoe Joint 20.84			The above was done to satisfaction and supervision of owner agent or contractor.			
Meas Line			Cement Amount Ordered 235 Q. Proc			
Displace 92 1/2 BCL			10% sand 5% gilsonite			
EQUIPMENT			235 Q. Proc			
Pumptrk 16			Common			
No. Cementer			Poz. Mix 20			
No. Helper			Gel.			
No. Driver			Calcium			
No. Driver			Hulls			
No. Driver			Salt 17			
JOB SERVICES & REMARKS			Flowseal			
Remarks:			Kol-Seal 950 #			
Rat Hole 30SK			Mud CLR 48 500 gal			
Mouse Hole 20SK			CFL-117 or CD110 CAF 38			
Centralizers 1, 2, 5, 7, 9, 11, 13, 15			Sand			
Baskets #16			Handling 2.61			
D/V or Port Collar			Mileage			
5 1/2 size 3896 Baffle 3875.			FLOAT EQUIPMENT			
Est. Circulation. Pump 500 gal mud flush.			Guide Shoe			
Plug Rathole mouse hole. Cement 5 1/2			Centralizer 8			
with 185SK. Clear lines + Displace Plug.			Baskets 1			
C. Pressure 800 #			AFU Inserts			
Plug land @ 1500 #			Float Shoe 1			
Thank			Latch Down 1			
Pumptrk Charge			prod string			
Mileage 20			Tax			
Signature			Discount			
			Total Charge			



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

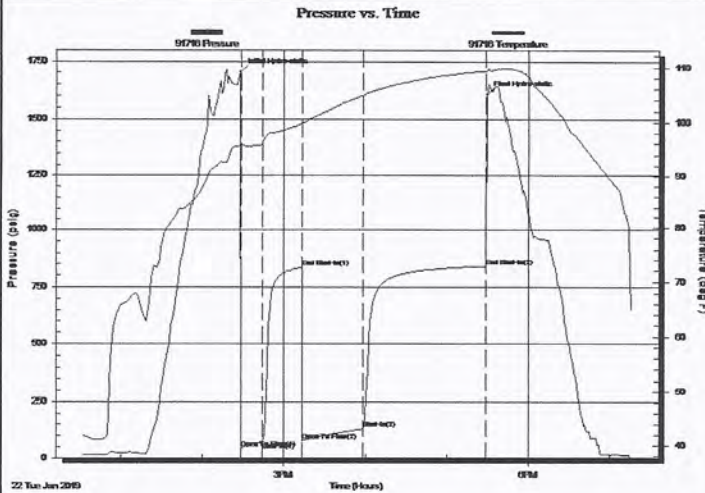
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01072 **DST#: 1**
 Test Start: 2019.01.22 @ 00:48:00

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

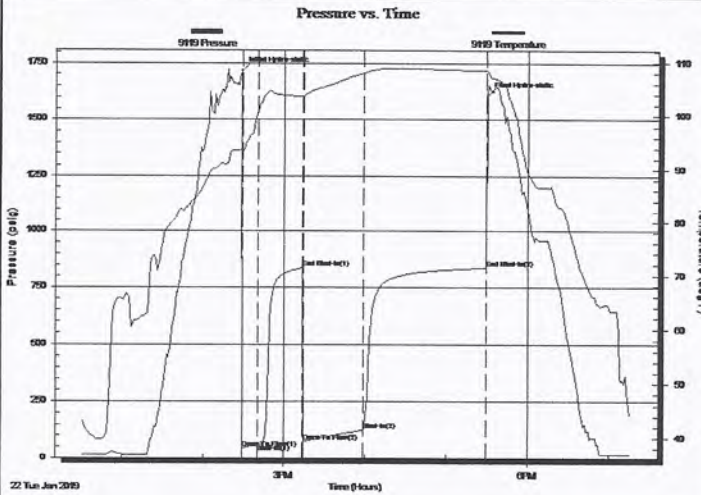
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01072 **DST#: 1**
 Test Start: 2019.01.22 @ 00:48:00

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

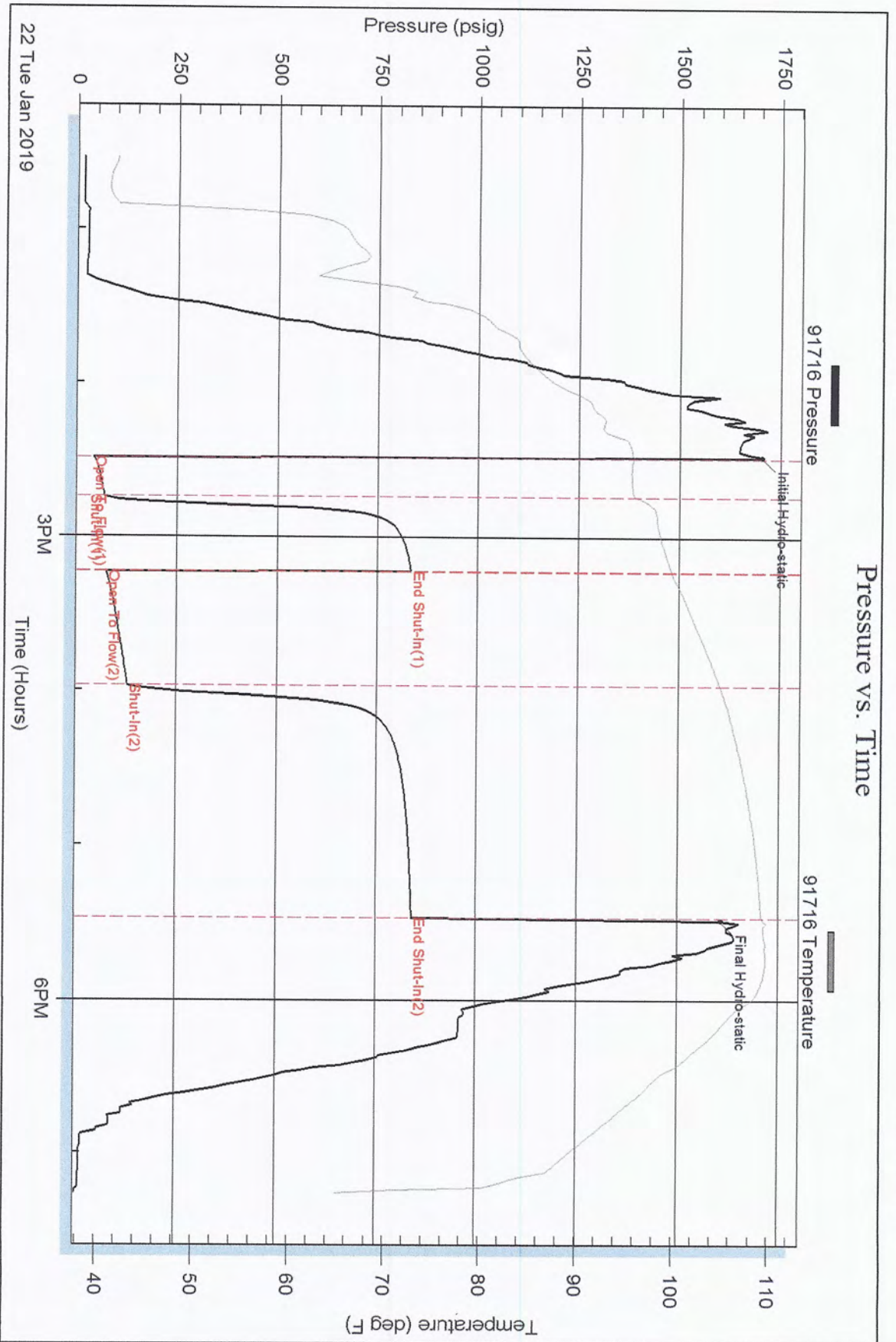
Total Length: 180.00 ft Total Volume: 1.430 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

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

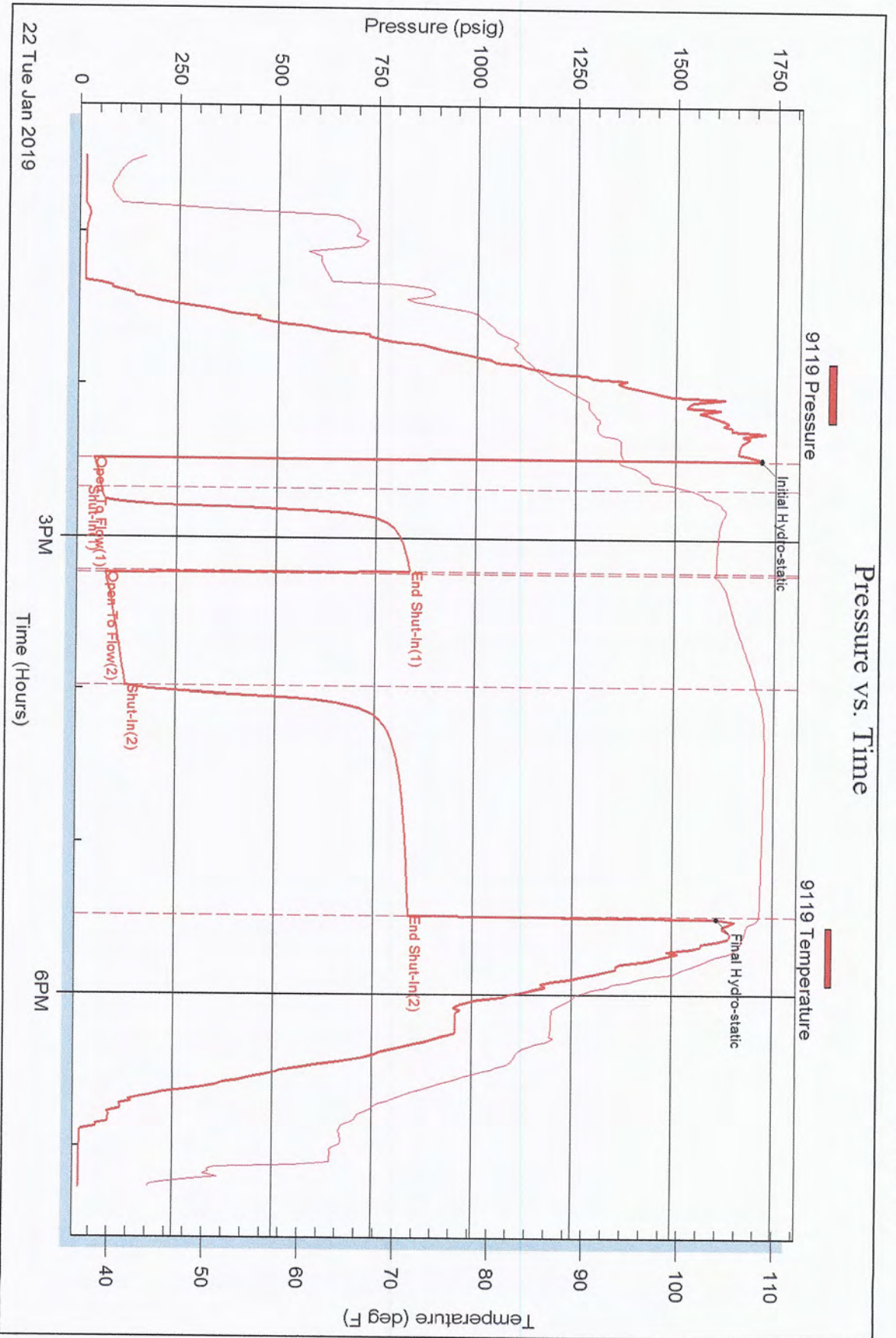
Serial #: 9119

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

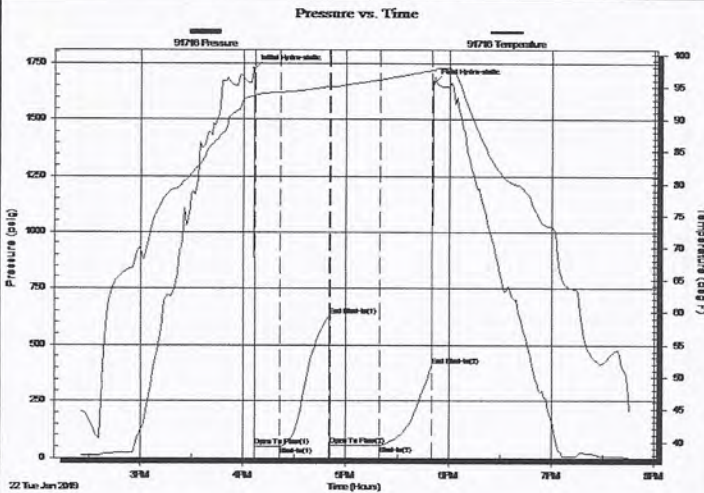
Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Reference Elevations: 1909.00 ft (KB)
 1901.00 ft (CF)
 KB to GR/CF: 8.00 ft

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

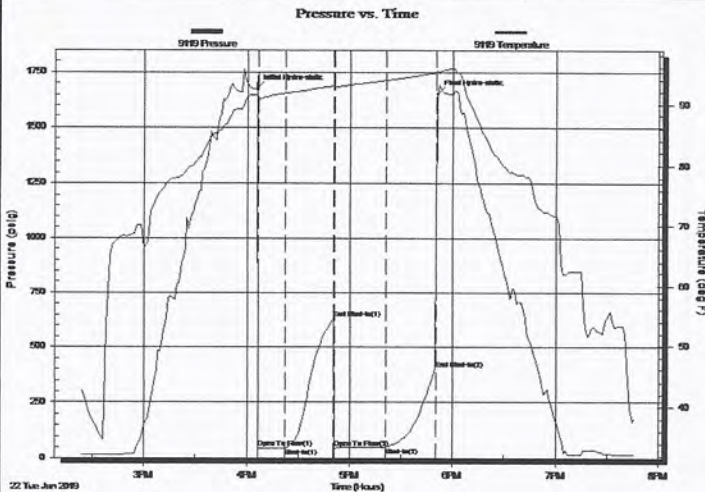
Capacity: psig

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:

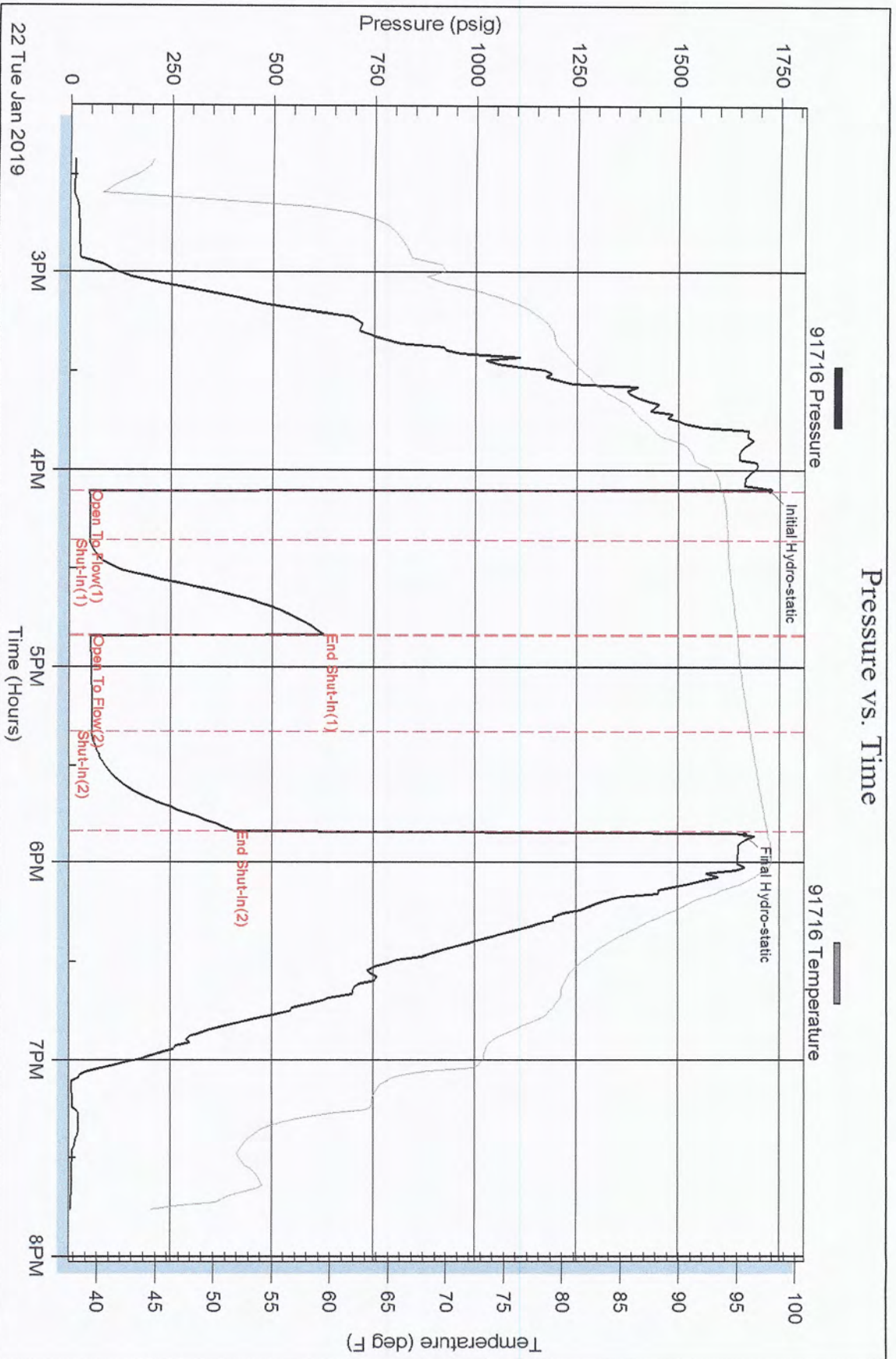
Serial #: 91716

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

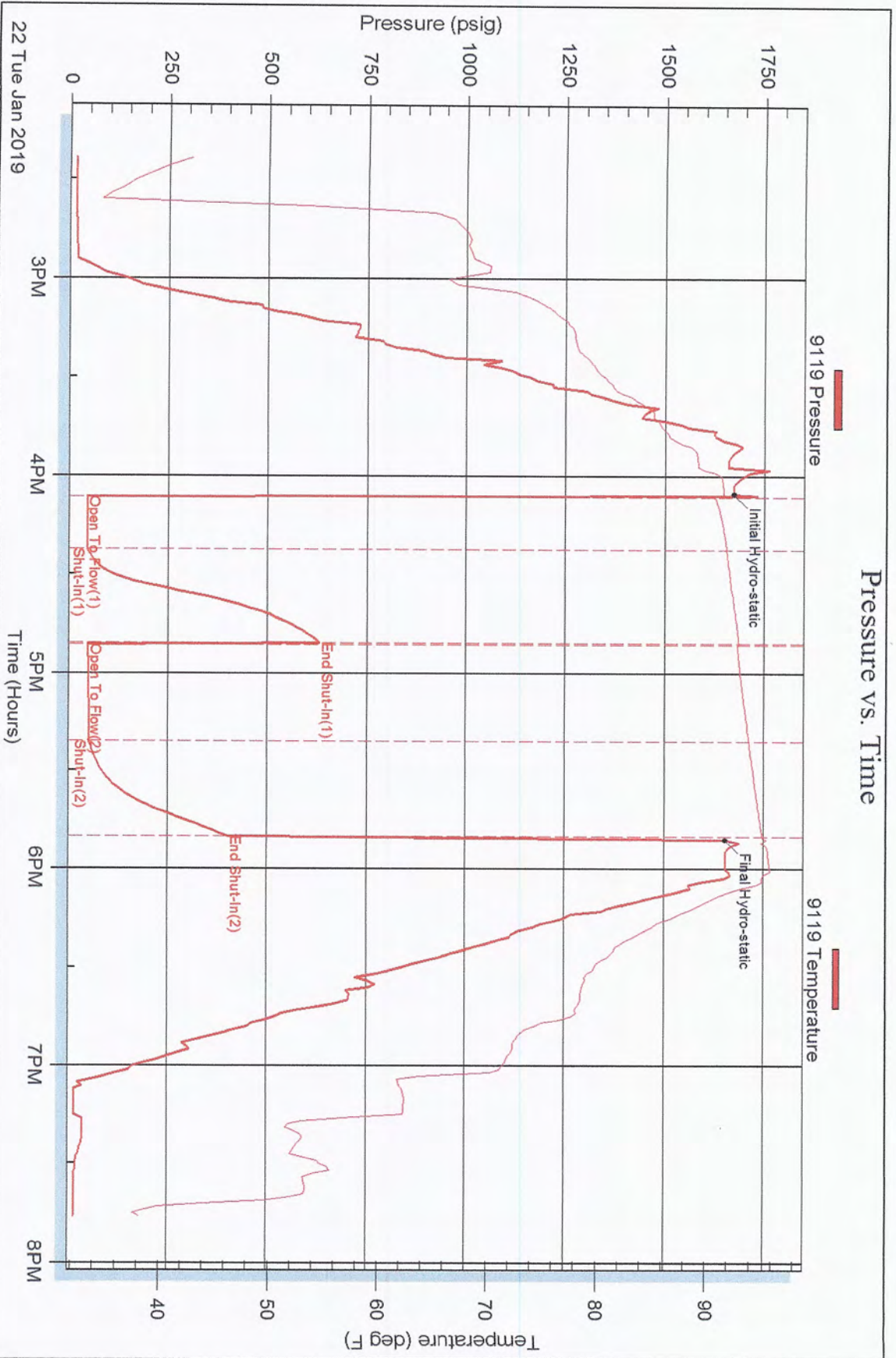
Inside

Bird Dog Oil LLC

M&N-Gates #1-16

DST Test Number: 2

Pressure vs. Time





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: 2019.01.23 @ 04:49:00

End Date: 2019.01.23 @ 03:09:00

Job Ticket #: 01074 DST #: 3

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

Printed: 2019.01.23 @ 15:17:51

Bird Dog Oil LLC 16-22s-13w Stafford M&N-Gates #1-16 DST # 3 Kansas City "H" 2019.01.23



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: 01074 **DST#: 3**
 Test Start: 2019.01.23 @ 04:49:00

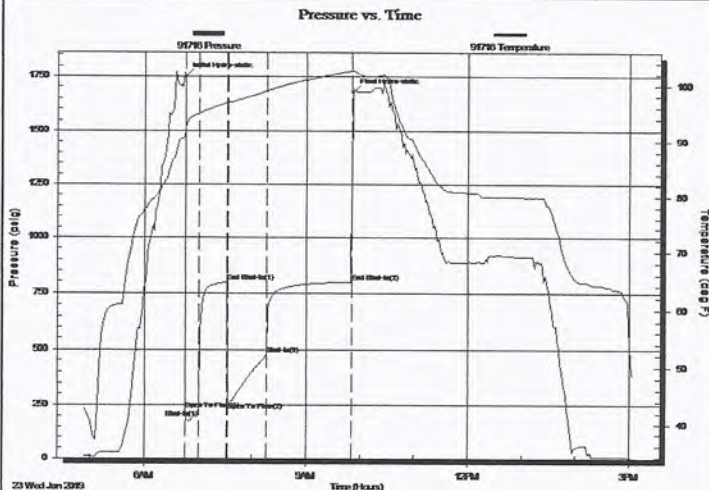
GENERAL INFORMATION:

Formation: **Kansas City "H"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 00:00:00
 Time Test Ended: 03:09:00
 Interval: **3532.00 ft (KB) To 3552.00 ft (KB) (TVD)**
 Total Depth: 3552.00 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: 799.88 psig @ 3547.00 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.23 End Date: 2019.01.23 Last Calib.: 2019.01.23
 Start Time: 04:49:00 End Time: 15:03:30 Time On Btm: 2019.01.23 @ 06:45:00
 Time Off Btm: 2019.01.23 @ 09:51:30

TEST COMMENT: 1st Opening 15 Minutes Strong blow gas to surface in 8 minutes
 1st Shut-In 30 Minutes good blow back
 2nd opening 45 Minutes strong blow see gas flow report
 2nd Shut-In 90 Minutes good blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1747.99	91.92	Initial Hydro-static
1	229.63	92.29	Open To Flow (1)
16	226.45	94.97	Shut-In(1)
47	797.85	96.89	End Shut-In(1)
48	260.50	96.92	Open To Flow (2)
91	479.40	99.00	Shut-In(2)
186	799.88	102.64	End Shut-In(2)
187	1676.53	102.68	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1900.00	Clean Gassy Oil 30% Gas 70% Oil	24.77
0.00	Gravity 36 Corrected	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.13	21.00	13.25
Last Gas Rate	0.13	1.00	5.76
Max. Gas Rate	0.13	21.00	13.25



DRILL STEM TEST REPORT

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado 80202

M&N-Gates #1-16

ATTN: Justin Carter

Job Ticket: 01074

DST#: 3

Test Start: 2019.01.23 @ 04:49:00

GENERAL INFORMATION:

Formation: **Kansas City "H"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 00:00:00
 Time Test Ended: 03:09:00

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

Interval: **3532.00 ft (KB) To 3552.00 ft (KB) (TVD)**
 Total Depth: 3552.00 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

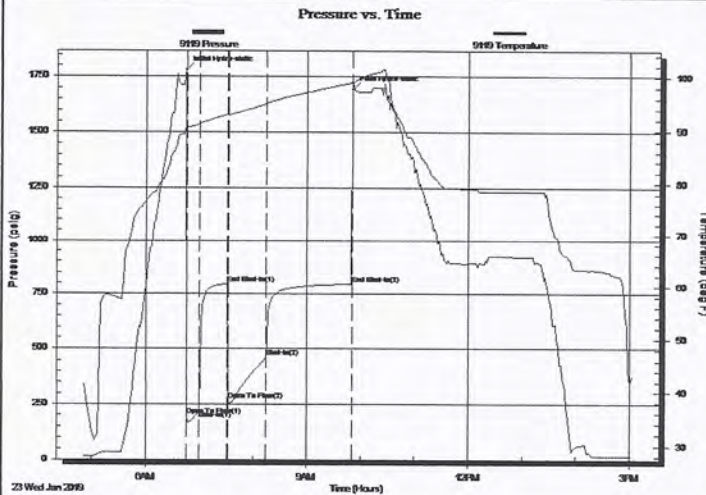
Serial #: 9119

Inside

Press@RunDepth: 796.02 psig @ 3547.00 ft (KB)
 Start Date: 2019.01.23 End Date: 2019.01.23
 Start Time: 04:48:00 End Time: 15:03:00

Capacity: 5000.00 psig
 Last Calib.: 2019.01.23
 Time On Btm: 2019.01.23 @ 06:44:30
 Time Off Btm: 2019.01.23 @ 09:50:30

TEST COMMENT: 1st Opening 15 Minutes Strong blow gas to surface in 8 minutes
 1st Shut-In 30 Minutes good blow back
 2nd opening 45 Minutes strong blow see gas flow report
 2nd Shut-In 90 Minutes good blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1779.71	90.52	Initial Hydro-static
1	196.88	90.52	Open To Flow (1)
15	220.29	91.17	Shut-In(1)
47	796.27	93.00	End Shut-In(1)
48	268.93	92.89	Open To Flow (2)
90	460.90	95.08	Shut-In(2)
186	796.02	98.84	End Shut-In(2)
186	1690.69	99.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1900.00	Clean Gassy Oil 30% Gas 70% Oil	24.77
0.00	Gravity 36 Corrected	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.13	21.00	13.25
Last Gas Rate	0.13	1.00	5.76
Max. Gas Rate	0.13	21.00	13.25



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: 01074

DST#:3

ATTN: Justin Carter

Test Start: 2019.01.23 @ 04:49:00

Tool Information

Drill Pipe:	Length: 3220.00 ft	Diameter: 3.80 inches	Volume: 45.17 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: lb
			<u>Total Volume: 47.63 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 55000.00 lb
Depth to Top Packer:	3532.00 ft			Final lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	50.00 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			3507.00	
Hydraulic tool	5.00			3512.00	
Jars	5.00			3517.00	
Safety Joint	5.00			3522.00	
Packer	5.00			3527.00	30.00 Bottom Of Top Packer
Packer	5.00		Fluid	3532.00	
Anchor	15.00			3547.00	
Recorder	0.00	9119	Inside	3547.00	
Recorder	0.00	91716	Outside	3547.00	
Bullnose	5.00			3552.00	20.00 Bottom Packers & Anchor
Total Tool Length:	50.00				



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: 01074

DST#: 3

ATTN: Justin Carter

Test Start: 2019.01.23 @ 04:49:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 60.00 sec/qt

Water Loss: 12.00 in³

Resistivity: ohm.m

Salinity: 13600.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

36 deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1900.00	Clean Gassy Oil 30% Gas 70% Oil	24.767
0.00	Gravity 36 Corrected	0.000

Total Length: 1900.00 ft Total Volume: 24.767 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



DRILL STEM TEST REPORT

GAS RATES

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

Job Ticket: 01074

DST#:3

ATTN: Justin Carter

Test Start: 2019.01.23 @ 04:49:00

Gas Rates Information

Temperature: 59 (deg F)

Relative Density: 0.65

Z Factor: 0.8

Gas Rates Table

Flow Period	Elapsed Time	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
2	5	0.13	21.00	13.25
2	15	0.13	21.00	13.25
2	25	0.13	1.00	5.76
2	35	0.13	1.00	5.76
2	45	0.13	1.00	5.76



DRILL STEM TESTING - DATA LISTING

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

Job Ticket: 01074

DST#:3

ATTN: Justin Carter

Test Start: 2019.01.23 @ 04:49:00

Serial # 91716 Outside				Serial # 91716 Outside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	4.5	11.86	42.7		98.5	1580.14	84.9
	8.5	10.51	41.5		100.5	1560.73	86.2
	12.5	9.77	38.8		102.5	1605.33	86.9
	16.5	9.37	37.1		104.5	1669.02	87.2
	20.5	27.58	51.1		106.5	1726.33	88.2
	24.5	29.07	57.8		108.5	1710.94	89.8
	28.5	29.84	59.7		110.5	1707.05	90.3
	32.5	29.90	60.4		112.5	1704.48	90.6
	36.5	30.14	60.8		114.5	1703.14	90.7
	40.5	30.20	61.0		115.0	1769.88	90.8
	44.5	30.20	61.0		115.5	1746.62	91.5
	48.5	85.20	63.9	Initial Hydro-static	116.0	1747.99	91.9
	52.5	171.40	68.3	Open To Flow (1)	116.5	229.63	92.3
	56.5	321.54	71.2		117.0	210.15	92.7
	60.5	480.15	74.0		117.5	193.92	93.0
	62.5	570.05	75.4		119.5	172.67	93.8
	64.5	595.93	76.2		121.5	176.26	94.2
	66.5	590.30	76.5		123.5	184.62	94.4
	68.5	692.45	77.0		125.5	193.89	94.6
	70.5	750.92	77.6		127.5	204.84	94.7
	72.5	811.10	78.0		129.5	214.99	94.9
	74.5	925.74	78.4		130.5	220.45	94.9
	76.5	965.33	78.9		131.0	223.45	95.0
	78.5	996.68	79.4	Shut-In(1)	131.5	226.45	95.0
	80.5	1058.24	79.6		132.0	289.84	95.0
	82.5	1097.09	79.9		132.5	462.78	95.0
	84.5	1149.67	80.2		133.0	581.75	95.1
	86.5	1175.15	80.9		135.0	704.77	95.3
	88.5	1218.02	81.4		137.0	742.00	95.4
	90.5	1298.05	81.9		139.0	760.91	95.5
	92.5	1361.70	82.4		141.0	771.73	95.7
	94.5	1418.01	83.1		143.0	778.27	95.8
	96.5	1495.23	83.8		145.0	782.60	95.9

Printing every 4 samples

Serial # 91716 Outside				Serial # 91716 Outside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	147.0	785.74	96.0		212.0	732.81	99.3
	149.0	788.33	96.1		214.0	745.11	99.4
	151.0	790.41	96.3		216.0	753.34	99.5
	153.0	792.12	96.3		218.0	758.97	99.6
	155.0	793.70	96.5		220.0	763.63	99.7
	157.0	794.86	96.6		222.0	767.19	99.8
	159.0	796.13	96.7		224.0	770.12	99.9
	161.0	797.01	96.8		226.0	772.81	100.0
	162.0	797.44	96.8		228.0	775.32	100.0
	162.5	797.75	96.9		230.0	777.12	100.1
End Shut-In(1)	163.0	797.85	96.9		232.0	778.94	100.2
	163.5	297.92	96.9		234.0	780.53	100.3
Open To Flow (2)	164.0	260.50	96.9		236.0	781.86	100.4
	164.5	256.93	96.9		238.0	783.04	100.5
	166.5	261.97	97.0		240.0	784.31	100.5
	168.5	267.87	97.1		242.0	785.37	100.6
	170.5	283.70	97.2		244.0	786.33	100.7
	172.5	296.32	97.3		246.0	787.35	100.8
	174.5	309.00	97.4		248.0	788.28	100.8
	176.5	320.24	97.5		250.0	788.85	100.9
	178.5	331.56	97.6		252.0	789.83	101.0
	180.5	342.87	97.7		254.0	790.58	101.1
	182.5	353.64	97.8		256.0	791.23	101.2
	184.5	364.68	97.9		258.0	791.91	101.2
	186.5	374.79	98.0		260.0	792.38	101.3
	188.5	385.58	98.1		262.0	793.08	101.4
	190.5	394.89	98.2		264.0	793.48	101.4
	192.5	404.96	98.3		266.0	793.87	101.5
	194.5	414.29	98.4		268.0	794.51	101.6
	196.5	423.52	98.5		270.0	795.03	101.6
	198.5	432.50	98.6		272.0	795.30	101.7
	200.5	441.38	98.7		274.0	795.74	101.8
	202.5	450.11	98.8		276.0	796.06	101.8
	204.5	458.40	98.9		278.0	796.50	101.9
	205.5	461.94	99.0		280.0	796.71	102.0
	206.0	464.36	99.0		282.0	797.12	102.0
Shut-In(2)	206.5	479.40	99.0		284.0	797.66	102.1
	207.0	607.19	99.0		286.0	797.78	102.2
	207.5	650.44	99.0		288.0	798.34	102.2
	208.0	671.51	99.1		290.0	798.43	102.3
	210.0	712.33	99.2		292.0	798.72	102.4

Printing every 4 samples

Serial # 91716 Outside				Serial # 91716 Outside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	294.0	798.82	102.4		367.0	1373.75	90.6
	296.0	799.48	102.5		369.0	1381.39	90.2
	298.0	799.54	102.5		371.0	1354.39	89.5
	300.0	799.73	102.6		373.0	1326.57	88.9
	300.5	799.83	102.6		375.0	1296.60	88.2
	301.0	799.84	102.6		377.0	1266.35	87.6
End Shut-In(2)	301.5	799.88	102.6		379.0	1238.68	87.0
	302.0	1608.72	102.7		381.0	1199.07	86.5
Final Hydro-static	302.5	1676.53	102.7		383.0	1199.67	86.0
	303.0	1696.86	102.6		385.0	1175.07	85.5
	305.0	1682.01	102.5		387.0	1146.57	85.0
	307.0	1681.07	102.3		389.0	1114.64	84.4
	309.0	1680.28	102.1		391.0	1087.81	83.9
	311.0	1679.76	101.9		393.0	1060.12	83.3
	313.0	1679.55	101.8		395.0	1031.40	82.8
	315.0	1679.26	101.8		397.0	986.38	82.4
	317.0	1679.01	101.7		399.0	968.61	82.1
	319.0	1678.55	101.7		401.0	958.06	81.9
	321.0	1678.38	101.7		403.0	932.66	81.6
	323.0	1687.39	101.6		405.0	902.99	81.4
	325.0	1694.84	101.7		407.0	889.71	81.2
	327.0	1695.46	101.7		409.0	896.43	81.1
	329.0	1695.66	101.7		411.0	885.71	81.0
	331.0	1695.57	101.7		413.0	885.64	81.0
	333.0	1695.05	101.8		415.0	885.28	81.0
	335.0	1694.13	101.8		417.0	885.20	80.9
	337.0	1715.09	102.0		419.0	885.28	80.9
	339.0	1690.61	101.7		421.0	885.23	80.9
	341.0	1670.31	101.3		423.0	884.71	80.9
	343.0	1607.92	100.5		425.0	884.26	80.8
	345.0	1576.19	98.9		427.0	884.09	80.8
	347.0	1597.37	97.2		429.0	883.85	80.8
	349.0	1574.84	96.3		431.0	885.17	80.8
	351.0	1519.55	95.4		433.0	888.34	80.8
	353.0	1521.29	94.4		435.0	885.75	80.7
	355.0	1503.16	93.5		437.0	887.44	80.7
	357.0	1480.50	92.9		439.0	886.12	80.7
	359.0	1449.43	92.2		441.0	885.54	80.7
	361.0	1396.06	91.5		443.0	916.76	80.5
	363.0	1407.08	90.9		445.0	885.18	80.2
	365.0	1395.95	90.7		447.0	883.74	80.1

Printing every 4 samples

Serial # 91716 Outside				Serial # 91716 Outside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	449.0	883.33	80.0		531.0	535.67	73.6
	451.0	902.19	80.0		533.0	472.43	72.5
	453.0	888.85	80.0		535.0	419.89	70.9
	455.0	918.58	80.0		537.0	364.55	69.5
	457.0	919.30	80.0		539.0	292.46	68.5
	459.0	915.82	80.0		541.0	230.29	67.7
	461.0	917.71	80.0		543.0	170.18	66.8
	463.0	919.02	80.0		545.0	102.39	66.4
	465.0	919.36	80.0		547.0	31.71	66.0
	467.0	919.35	80.0		549.0	42.09	65.3
	469.0	918.36	80.0		551.0	50.39	65.0
	471.0	916.75	80.0		553.0	54.76	64.9
	473.0	916.02	80.0		555.0	58.03	64.8
	475.0	915.79	80.0		557.0	60.29	64.8
	477.0	915.73	80.0		559.0	61.40	64.7
	479.0	916.07	80.0		561.0	62.25	64.7
	481.0	915.79	80.0		563.0	62.67	64.6
	483.0	913.44	80.0		565.0	22.56	64.5
	485.0	912.74	80.0		567.0	27.08	64.4
	487.0	912.66	80.0		569.0	8.03	64.3
	489.0	912.40	79.9		571.0	8.28	64.3
	491.0	911.92	79.9		573.0	8.11	64.3
	493.0	912.01	79.9		575.0	8.26	64.3
	495.0	911.75	79.9		577.0	8.29	64.3
	497.0	911.70	79.9		579.0	8.30	64.3
	499.0	912.10	80.0		581.0	8.27	64.1
	501.0	912.08	79.9		583.0	8.11	64.0
	503.0	912.70	80.0		585.0	8.30	63.9
	505.0	864.61	79.9		587.0	8.25	63.9
	507.0	894.58	79.9		589.0	8.49	63.9
	509.0	885.09	79.9		591.0	8.29	63.6
	511.0	880.99	79.9		593.0	8.33	63.5
	513.0	840.02	79.9		595.0	8.34	63.5
	515.0	857.32	79.9		597.0	8.21	63.4
	517.0	822.85	79.0		599.0	8.32	63.4
	519.0	789.83	78.4		601.0	8.24	63.3
	521.0	745.31	78.2		603.0	8.26	63.1
	523.0	694.54	77.6		605.0	7.33	62.2
	525.0	666.81	76.6		607.0	7.48	61.8
	527.0	597.63	75.5		609.0	7.15	61.1
	529.0	602.68	74.3		611.0	4.49	52.5

Printing every 4 samples

Serial # 91716 Outside				Serial # 9119 Inside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	613.0	5.07	49.1				
	614.5	5.19	48.7				



DRILL STEM TESTING - DATA LISTING

Bird Dog Oil LLC

16-22s-13w Stafford

1801 Broadway Suite 200 Denver, Colorado
80202

M&N-Gates #1-16

Job Ticket: 01074

DST#:3

ATTN: Justin Carter

Test Start: 2019.01.23 @ 04:49:00

Serial # 9119 Inside				Serial # 9119 Inside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	3.0	15.31	41.5		90.0	1329.45	80.9
	7.0	15.32	36.7		92.0	1337.06	81.0
	11.0	15.41	33.2		94.0	1397.73	82.0
	15.0	15.41	31.1		96.0	1461.43	82.7
	19.0	31.36	51.6		98.0	1525.05	83.9
	23.0	31.89	57.9		100.0	1568.45	85.1
	27.0	31.92	58.5		102.0	1583.50	86.1
	31.0	31.95	58.4		104.0	1644.93	86.3
	35.0	31.98	58.2		106.0	1704.44	87.2
	39.0	31.99	58.0		108.0	1724.56	89.0
	43.0	32.06	57.8		110.0	1715.61	89.3
	46.0	62.18	57.6		112.0	1712.41	89.4
	48.0	90.00	64.0		114.0	1710.60	89.4
	50.0	119.68	67.2		115.5	1753.59	90.1
	52.0	184.60	68.0		116.0	1750.54	90.4
	54.0	235.79	69.1	Initial Hydro-static	116.5	1779.71	90.5
	56.0	327.81	71.3		117.0	216.10	90.4
	58.0	406.30	72.8	Open To Flow (1)	117.5	196.88	90.5
	60.0	449.28	73.8		118.0	181.56	90.6
	62.0	542.52	74.7		120.0	167.46	90.7
	64.0	605.08	75.3		122.0	172.00	90.7
	66.0	596.97	75.4		124.0	180.59	90.8
	68.0	667.27	75.9		126.0	190.39	90.9
	70.0	724.79	76.4		128.0	201.07	91.0
	72.0	779.93	76.8		130.0	211.62	91.1
	74.0	857.85	77.2		130.5	214.35	91.1
	76.0	939.21	77.7		131.0	217.21	91.1
	78.0	972.27	78.2	Shut-In(1)	131.5	220.29	91.2
	80.0	1027.25	78.4		132.0	223.10	91.2
	82.0	1056.96	78.5		132.5	362.15	91.3
	84.0	1139.79	78.9		133.0	520.52	91.3
	86.0	1187.33	79.7		135.0	695.27	91.5
	88.0	1277.01	80.4		137.0	737.15	91.6

Printing every 4 samples

Serial # 9119 Inside				Serial # 9119 Inside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	139.0	757.91	91.7		207.0	538.43	95.1
	141.0	769.40	91.8		207.5	624.39	95.2
	143.0	776.28	91.9		208.0	656.34	95.2
	145.0	780.86	92.0		210.0	705.27	95.3
	147.0	784.24	92.2		212.0	727.64	95.4
	149.0	787.00	92.3		214.0	740.67	95.5
	151.0	789.11	92.4		216.0	749.35	95.6
	153.0	790.56	92.5		218.0	755.41	95.7
	155.0	792.05	92.6		220.0	760.15	95.8
	157.0	793.35	92.7		222.0	763.77	95.9
	159.0	794.39	92.8		224.0	766.99	96.0
	161.0	795.43	92.9		226.0	769.68	96.1
	162.0	796.03	92.9		228.0	772.04	96.2
	162.5	796.14	93.0		230.0	774.03	96.3
End Shut-In(1)	163.0	796.27	93.0		232.0	775.79	96.3
	163.5	424.55	92.9		234.0	777.25	96.4
Open To Flow (2)	164.0	268.93	92.9		236.0	778.67	96.5
	164.5	252.07	92.9		238.0	780.00	96.6
	166.5	255.84	93.0		240.0	781.09	96.7
	168.5	260.55	93.1		242.0	782.20	96.8
	170.5	276.65	93.2		244.0	783.16	96.8
	172.5	289.36	93.3		246.0	784.07	96.9
	174.5	302.29	93.4		248.0	784.93	97.0
	176.5	313.86	93.5		250.0	785.58	97.1
	178.5	325.05	93.6		252.0	786.44	97.1
	180.5	336.35	93.7		254.0	787.14	97.2
	182.5	347.33	93.8		256.0	787.75	97.3
	184.5	358.29	94.0		258.0	788.34	97.4
	186.5	368.48	94.1		260.0	788.94	97.4
	188.5	379.30	94.2		262.0	789.40	97.5
	190.5	389.08	94.3		264.0	789.95	97.6
	192.5	398.62	94.4		266.0	790.37	97.7
	194.5	408.47	94.5		268.0	790.93	97.7
	196.5	417.70	94.6		270.0	791.24	97.8
	198.5	426.63	94.7		272.0	791.73	97.9
	200.5	435.38	94.8		274.0	792.14	97.9
	202.5	444.27	94.9		276.0	792.41	98.0
	204.5	452.60	95.0		278.0	792.83	98.1
	205.5	456.48	95.0		280.0	793.18	98.1
	206.0	458.60	95.1		282.0	793.45	98.2
Shut-In(2)	206.5	460.90	95.1		284.0	793.72	98.3

Printing every 4 samples

Serial # 9119 Inside				Serial # 9119 Inside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	286.0	794.05	98.3		359.5	1453.81	90.1
	288.0	794.28	98.4		361.5	1437.57	89.6
	290.0	794.59	98.5		363.5	1411.47	88.9
	292.0	794.82	98.5		365.5	1401.38	88.8
	294.0	795.13	98.6		367.5	1383.47	88.9
	296.0	795.38	98.7		369.5	1353.65	88.2
	298.0	795.81	98.7		371.5	1358.72	87.5
	300.0	795.91	98.8		373.5	1331.21	86.7
	301.0	795.97	98.8		375.5	1302.98	86.0
	301.5	796.02	98.8		377.5	1272.87	85.6
End Shut-In(2)	302.0	796.02	98.8		379.5	1243.48	84.8
Final Hydro-static	302.5	1690.69	99.2		381.5	1201.99	84.6
	303.0	1711.28	98.9		383.5	1204.98	84.0
	303.5	1696.44	99.3		385.5	1180.28	83.4
	305.5	1683.47	99.1		387.5	1153.08	82.8
	307.5	1683.36	99.4		389.5	1121.75	82.0
	309.5	1682.70	99.7		391.5	1093.35	81.6
	311.5	1682.18	99.9		393.5	1065.77	81.1
	313.5	1681.90	100.0		395.5	1036.24	80.9
	315.5	1681.71	100.1		397.5	986.14	80.7
	317.5	1681.46	100.3		399.5	979.59	80.0
	319.5	1680.97	100.3		401.5	963.46	79.7
	321.5	1680.85	100.4		403.5	937.79	79.6
	323.5	1689.18	100.5		405.5	908.21	79.3
	325.5	1696.83	100.6		407.5	895.30	79.3
	327.5	1697.98	100.7		409.5	904.31	79.3
	329.5	1697.73	100.8		411.5	891.37	79.3
	331.5	1697.60	100.9		413.5	891.55	79.3
	333.5	1697.01	101.0		415.5	891.43	79.3
	335.5	1699.11	101.1		417.5	891.21	79.3
	337.5	1714.85	101.5		419.5	891.30	79.3
	339.5	1694.97	100.3		421.5	891.06	79.3
	341.5	1672.66	99.9		423.5	890.71	79.2
	343.5	1607.39	98.5		425.5	890.18	79.2
	345.5	1586.42	96.1		427.5	890.02	79.2
	347.5	1599.97	94.4		429.5	890.36	79.2
	349.5	1578.43	93.5		431.5	889.21	79.2
	351.5	1545.29	92.9		433.5	893.83	79.2
	353.5	1494.20	92.2		435.5	891.60	79.1
	355.5	1506.78	91.6		437.5	893.61	79.1
	357.5	1484.49	90.8		439.5	891.75	79.1

Printing every 4 samples

Serial # 9119 Inside				Serial # 9119 Inside			
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)	Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	441.5	891.51	79.1		523.5	702.91	72.6
	443.5	885.38	78.7		525.5	673.33	71.5
	445.5	891.40	78.6		527.5	599.18	70.4
	447.5	890.05	78.6		529.5	609.78	69.6
	449.5	889.32	78.6		531.5	542.63	69.8
	451.5	907.91	78.6		533.5	480.45	68.0
	453.5	894.69	78.6		535.5	429.13	66.7
	455.5	924.86	78.6		537.5	373.05	66.3
	457.5	925.60	78.6		539.5	300.03	66.0
	459.5	922.09	78.6		541.5	237.23	66.0
	461.5	924.14	78.6		543.5	177.75	65.4
	463.5	924.85	78.6		545.5	109.83	65.3
	465.5	925.37	78.6		547.5	38.25	64.0
	467.5	925.14	78.6		549.5	49.03	63.3
	469.5	924.35	78.6		551.5	57.30	63.3
	471.5	922.42	78.6		553.5	61.95	63.2
	473.5	921.66	78.6		555.5	64.92	63.2
	475.5	921.63	78.6		557.5	67.30	63.2
	477.5	921.86	78.6		559.5	68.52	63.3
	479.5	921.88	78.6		561.5	69.28	63.3
	481.5	921.53	78.6		563.5	69.59	63.3
	483.5	919.19	78.6		565.5	29.28	63.1
	485.5	918.83	78.6		567.5	33.87	63.1
	487.5	918.51	78.6		569.5	15.30	63.2
	489.5	918.19	78.6		571.5	15.23	63.2
	491.5	917.85	78.6		573.5	15.27	63.1
	493.5	917.73	78.6		575.5	15.24	63.1
	495.5	917.81	78.6		577.5	15.23	63.1
	497.5	917.47	78.6		579.5	15.24	63.1
	499.5	917.77	78.6		581.5	15.27	62.9
	501.5	918.00	78.6		583.5	15.23	62.8
	503.5	918.65	78.6		585.5	15.15	62.8
	505.5	894.10	78.6		587.5	15.08	62.8
	507.5	899.83	78.6		589.5	15.05	62.7
	509.5	890.50	78.6		591.5	15.07	62.3
	511.5	886.40	78.6		593.5	15.11	62.3
	513.5	848.43	78.6		595.5	15.13	62.2
	515.5	844.19	78.6		597.5	15.14	62.1
	517.5	828.88	77.6		599.5	15.08	61.9
	519.5	795.84	78.2		601.5	14.99	61.8
	521.5	730.05	75.3		603.5	14.92	61.4

Printing every 4 samples

Serial # 9119	Inside		
Comments	Time (Min.)	Pressure (psig)	Temp. (deg F)
	605.5	14.97	58.5
	607.5	14.99	54.7
	609.5	14.88	51.8
	611.5	15.24	42.0
	613.5	15.01	42.3
	615.0	14.94	43.2

Printing every 4 samples

Eagle Testers

Ref. No: 01074

Printed: 2019.01.23 @ 15:17:53



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

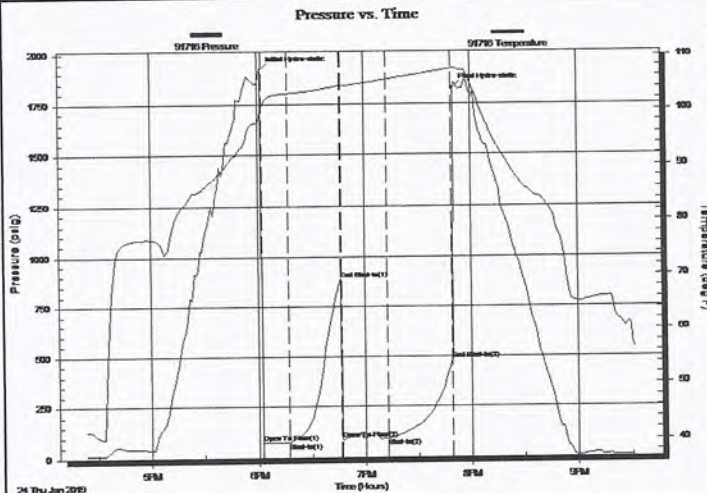
16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01075 **DST#: 4**
 Test Start: 2019.01.24 @ 04:36:00

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

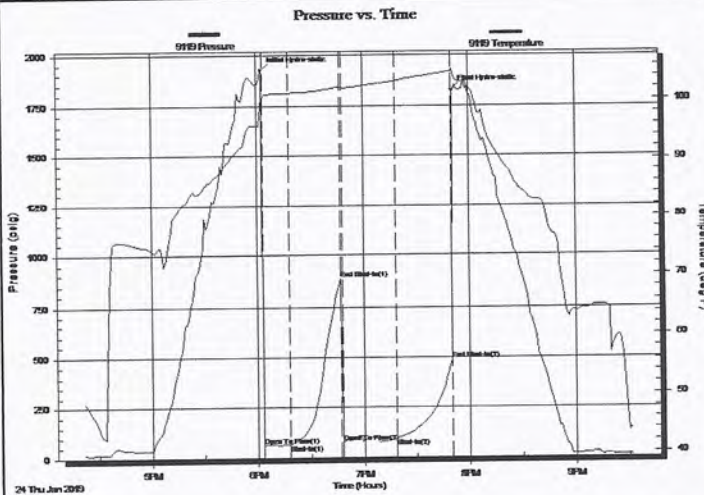
Serial #: 9119

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
 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

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:

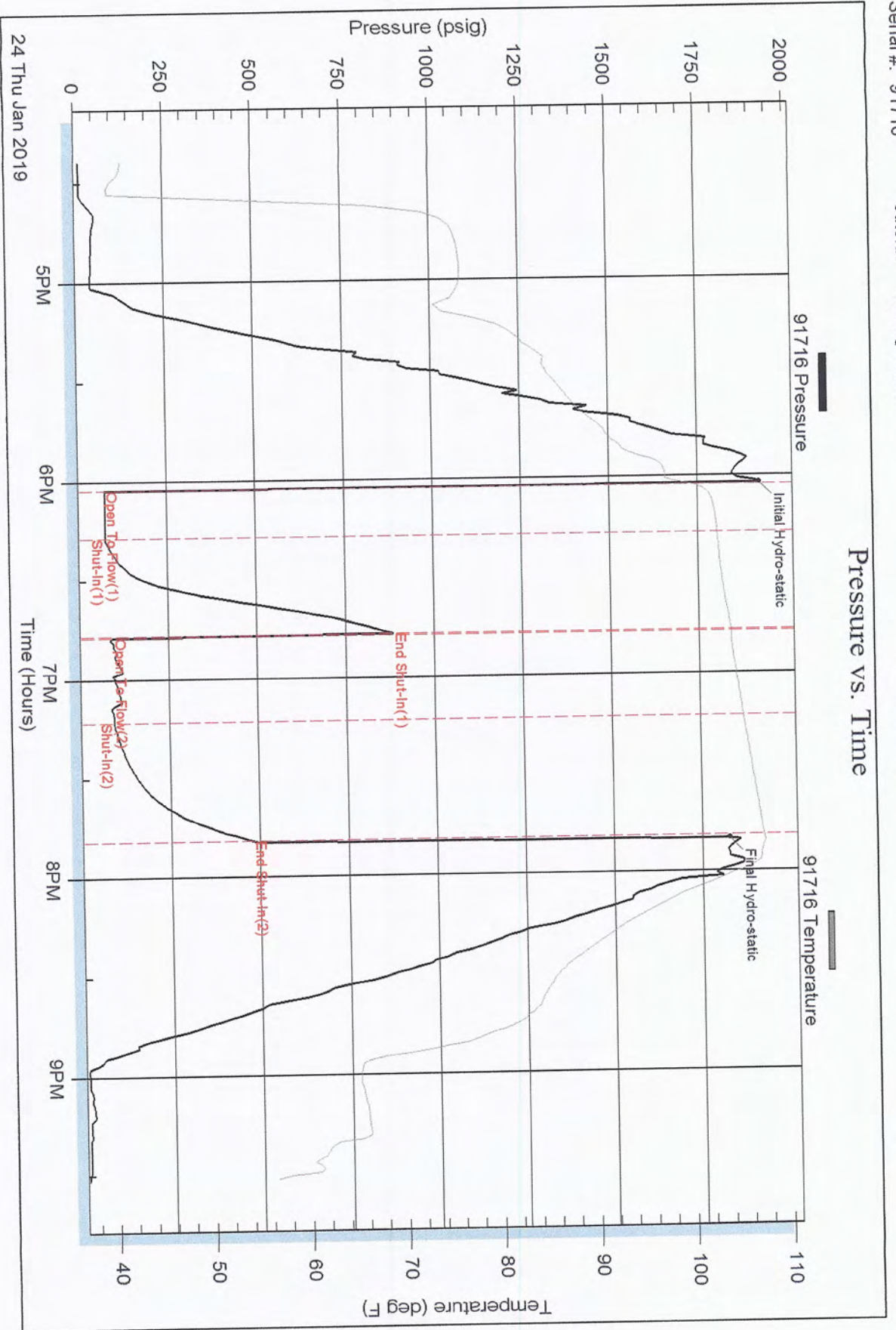
Serial #: 91716

Outside Bird Dog Oil LLC

M&N-Cases #1-16

DST Test Number: 4

Pressure vs. Time



Serial #: 9119

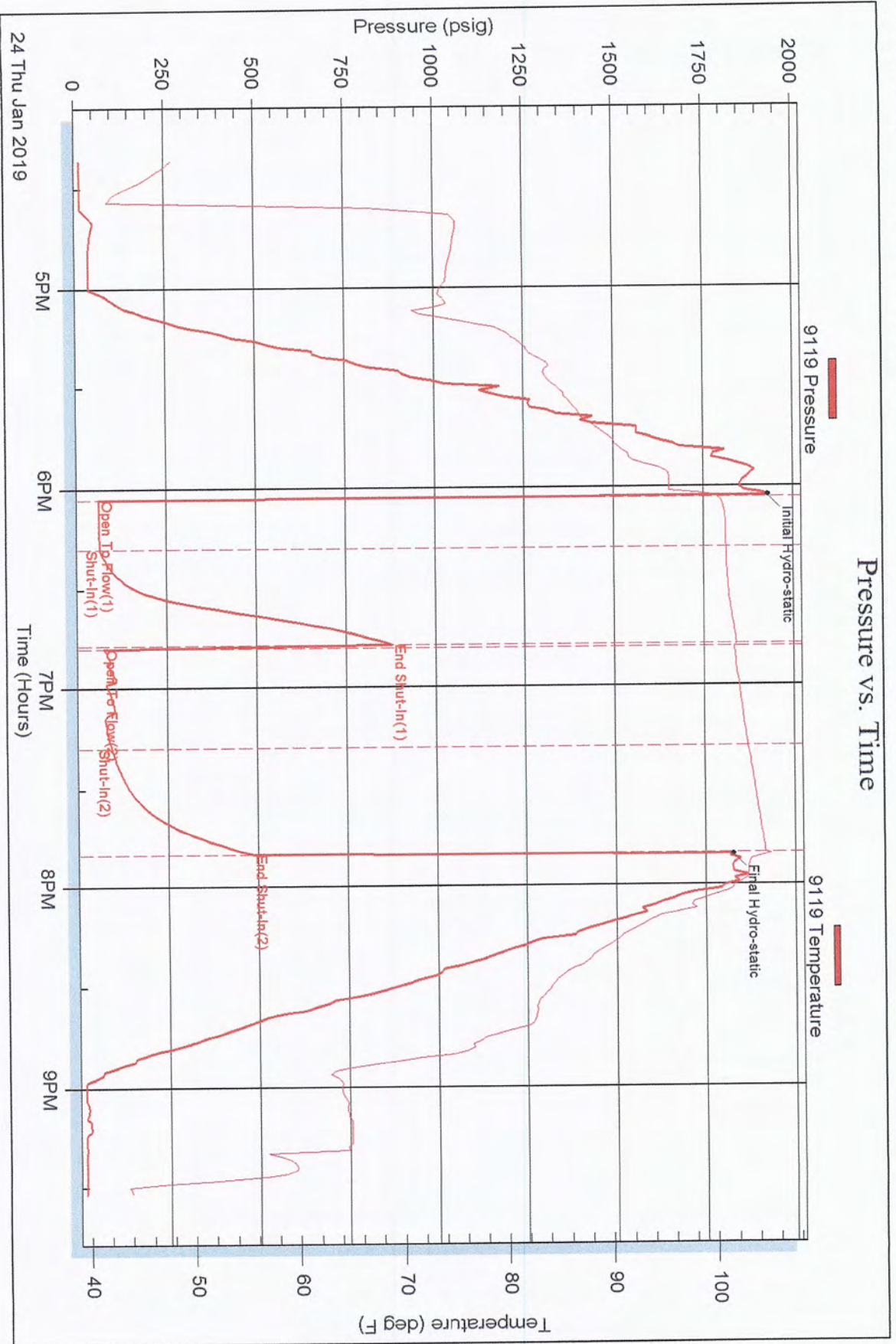
Inside

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

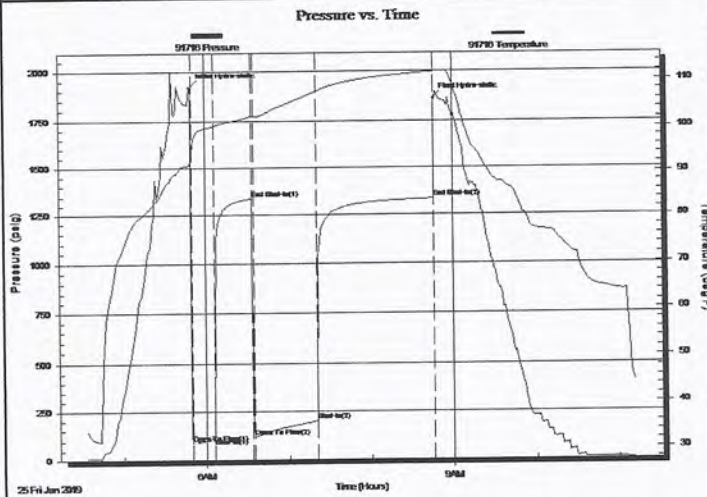
Serial #: 91716

Outside

Press@RunDepth: 1336.48 psig @ 3823.00 ft (KB)
 Start Date: 2019.01.25 End Date: 2019.01.25
 Start Time: 04:19:00 End Time: 11:11:59

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

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)



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: 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

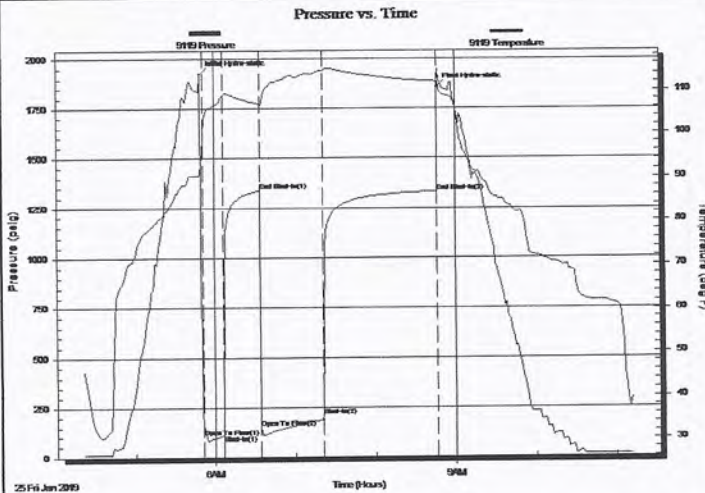
Serial #: 9119

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
 1801 Broadway Suite 200 Denver, Colorado
 80202
 ATTN: Justin Carter

16-22s-13w Stafford
M&N-Gates #1-16
 Job Ticket: 01076 **DST#:5**
 Test Start: 2019.01.25 @ 04:19:00

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
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:

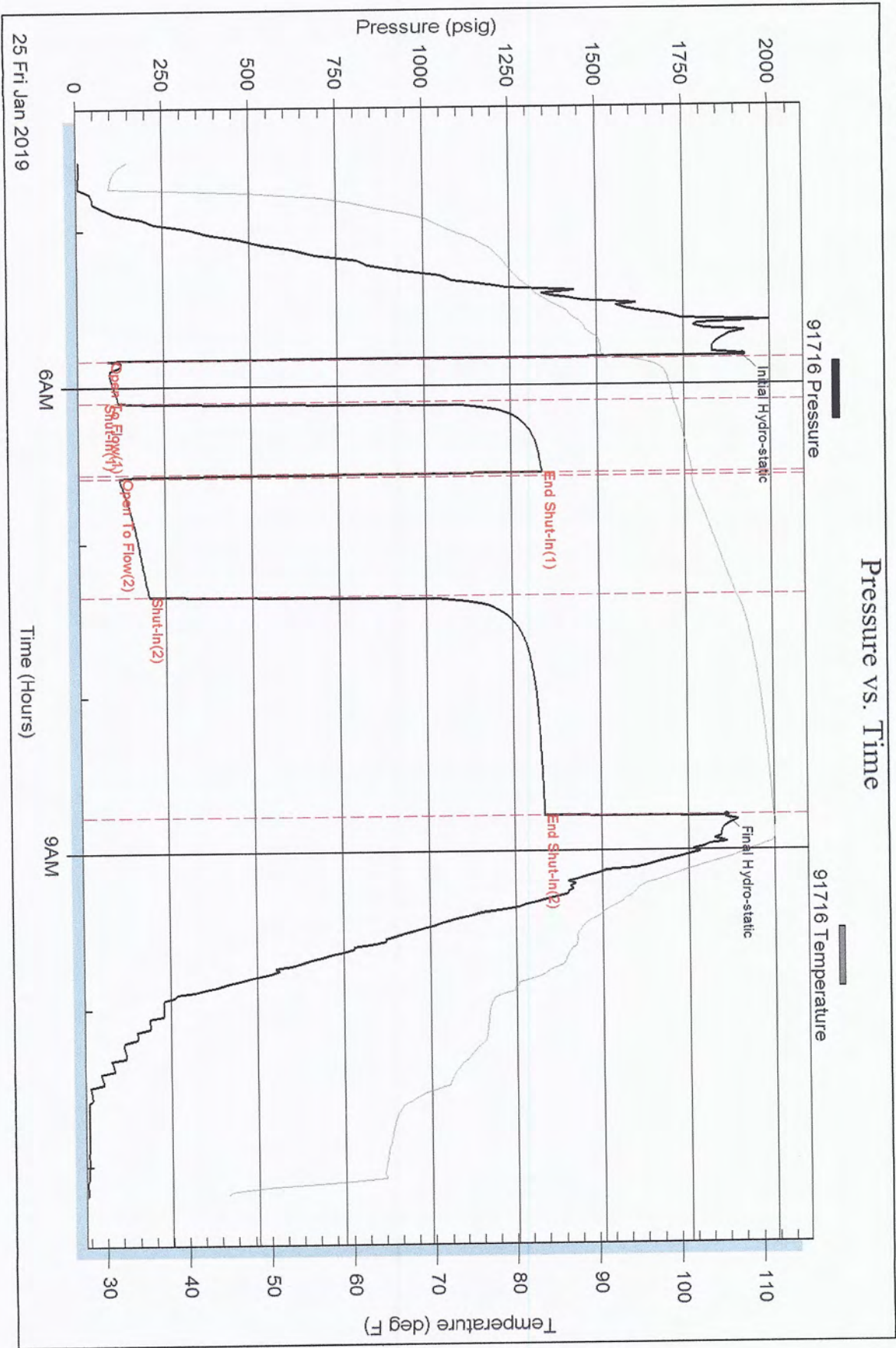
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Outside Bird Dog Oil LLC

M&N-Cates #1-16

DST Test Number: 5

Pressure vs. Time



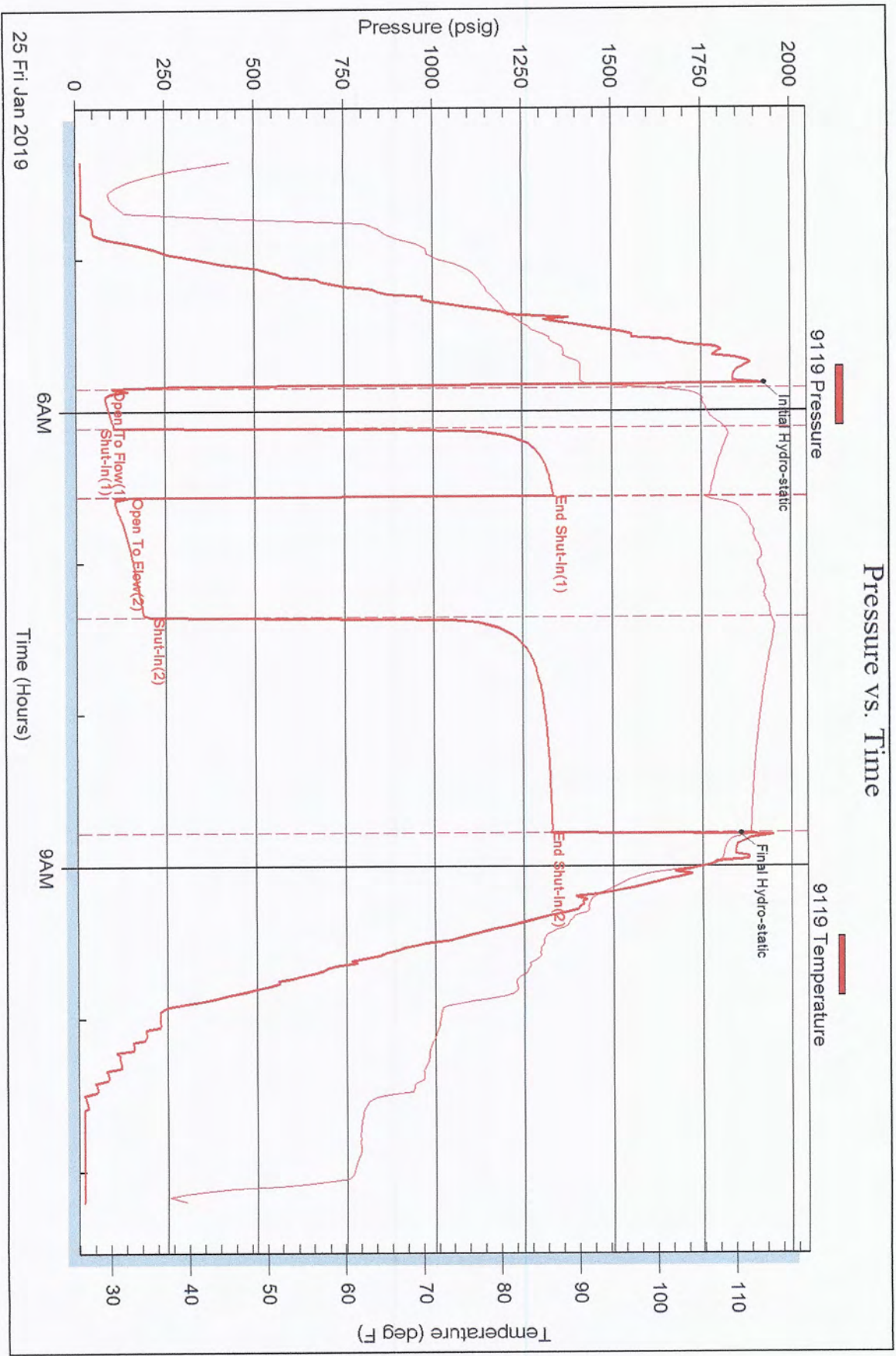
Serial #: 9119

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