

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	KELLER-GATES 1-17
Doc ID	1460497

All Electric Logs Run

DI
CDNL
Micro
Sonic

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

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

No. 1100

Cell 785-324-1041

Date	1-6-19	Sec.	17	Twp.	22	Range	13	County	Stafford KS	State	KS	On Location		Finish	2:30 AM
Location								Great Bend S Hwy 19 W 1/4 S Winto							

Lease	Keller Gates	Well No.	1-17	Owner	To Quality Oilwell Cementing, Inc.
Contractor	Discovery #2	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	Production String	Charge To	Bird Dog Oil LLC		
Hole Size	7 7/8	T.D.	3890	Street	
Csg.	5 1/2 15,500#	Depth	3886	City	
Tbg. Size		Depth		State	
Tool		Depth		The above was done to satisfaction and supervision of owner agent or contractor.	
Cement Left in Csg.	22'	Shoe Joint	22'	Cement Amount Ordered	3000 Q-Pro-C
Meas Line		Displace	92BC	500gal mid clear	220

EQUIPMENT

Pumptrk	17	No.	Cement Helper	3	Common	220 Q-Pro-C
Bulktrk		No.	Driver	1	Poz. Mix	
Bulktrk	15	No.	Driver	1	Gel.	
		No.	Driver	1	Calcium	

JOB SERVICES & REMARKS

Remarks:		Hulls	
Rat Hole	30SK	Salt	17
Mouse Hole	15SK	Flowseal	
Centralizers		Kol-Seal	950#
Baskets		Mud CLR 48	500 gal
D/V or Port Collar		CFL-117 or CD110 CAF 38	
		Sand	
		Handling	246
		Mileage	

FLOAT EQUIPMENT

Guide Shoe	
Centralizer	8
Baskets	1
AFU Inserts	
Float Shoe	1
Latch Down	1

5 1/2 size @ 3886 Bkt @ 3864.
 Est. circulation. Pump 500 gal mid clear
 1000 gal water space. Cement Rathole was sealed.
 Cement 5 1/2 with 175SK
 Clear lines & D spacer Plug.
 Plug land @ 15200#
 L.H. Pressure @ 800#

Thanks

Pumptrk Charge	Prod String	Tax	
Mileage	17	Discount	
Signature		Total Charge	

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. 1163

Date	12-19-18	Sec.	17	Twp.	22	Range	13	County	Stafford	State	Ks	On Location		Finish	7:00 PM
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Lease Keller-Gates Well No. 1-17 Location 281 + K-19 Jet - 1W, 1 1/4 S, W1 Into

Contractor Discovery #2 Owner To Quality Oilwell Cementing, Inc.
 Type Job Surface You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Hole Size 12 1/4" T.D. 306' Charge To Bird Dog
 Csg. 8 5/8" Depth 305' Street

Tbg. Size Depth City State

Tool Depth The above was done to satisfaction and supervision of owner agent or contractor.

Cement Left in Csg. 15' Shoe Joint 15' Cement Amount Ordered 425 @ 1/20 3% CC 2 1/2 Gal 1/2 # Flow Seal

Meas Line Displace 18 1/4" BLS

EQUIPMENT

Pumptrk <u>17</u> No. <u>17</u> Cementer <u>David</u>	Common
Bulktrk <u>13</u> No. <u>13</u> Helper <u>David</u>	Poz. Mix
Bulktrk <u>p.u.</u> No. <u>p.u.</u> Driver <u>Jack</u>	Gel.
	Calcium
	Hulls

JOB SERVICES & REMARKS

Remarks: <u>Cement did Circulate</u>	Salt
Rat Hole	Flowseal
Mouse Hole	Kol-Seal
Centralizers	Mud CLR 48
Baskets	CFL-117 or CD110 CAF 38
D/V or Port Collar	Sand
	Handling
	Mileage

FLOAT EQUIPMENT

	Guide Shoe
	Centralizer
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down

	Pumptrk Charge
	Mileage

X Signature [Handwritten Signature]

Tax	
Discount	
Total Charge	



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1601 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: 01061

DST#: 1

ATTN: Justen Carter

Test Start: 2018.12.31 @ 12:18:00

GENERAL INFORMATION:

Formation: Kansas City "A-D"

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:20:00

Time Test Ended: 19:21:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: 3428.00 ft (KB) To 3474.00 ft (KB) (TVD)

Total Depth: 3474.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1912.00 ft (KB)

1904.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 91716 Outside

Press@RunDepth: 839.86 psig @ 3468.74 ft (KB)

Start Date: 2018.12.31

End Date: 2018.12.31

Capacity: 5000.00 psig

Last Calib.: 2018.12.31

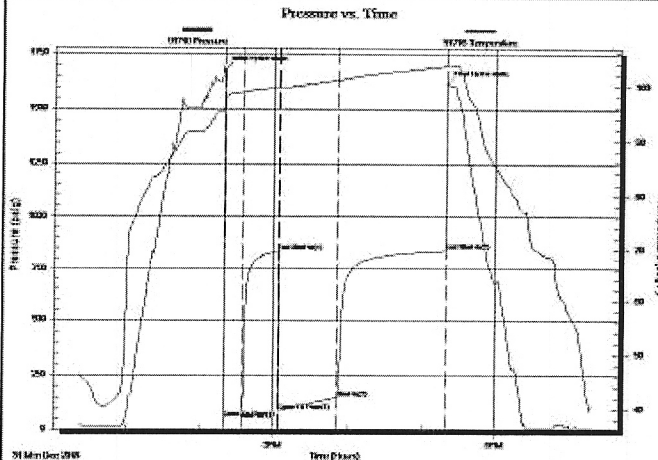
Start Time: 12:18:00

End Time: 19:19:59

Time On Blm: 2018.12.31 @ 14:19:30

Time Off Blm: 2018.12.31 @ 17:19:30

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 9 inchesw into the water
2ndn Shut-In 90 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1679.82	96.78	Initial Hydro-static
1	51.39	97.71	Open To Flow (1)
15	78.03	98.99	Shut-In (1)
45	838.27	99.89	End Shut-In (1)
45	81.23	99.89	Open To Flow (2)
92	147.45	101.13	Shut-In (2)
180	839.86	103.69	End Shut-In (2)
180	1615.89	103.72	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	slightly muddy water 15% Mud 85% Water	0.72
120.00	Slightly muddy water 10% Mud 90% Water	0.95

Gas Rates

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



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1801 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: 01062

DST#: 2

ATTN: Justen Carter

Test Start: 2019.01.01 @ 02:03:00

GENERAL INFORMATION:

Formation: Kansas City "E & F"

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:51:00

Time Test Ended: 09:02:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: 3470.00 ft (KB) To 3496.00 ft (KB) (TVD)

Total Depth: 3496.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1912.00 ft (KB)

1904.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 91716

Outside

Press@RunDepth: 223.75 psig @ 3491.00 ft (KB)

Start Date: 2019.01.01

End Date: 2019.01.01

Start Time: 02:03:00

End Time: 09:01:30

Capacity: 5000.00 psig

Last Calib.: 2019.01.01

Time On Bltn: 2019.01.01 @ 03:51:00

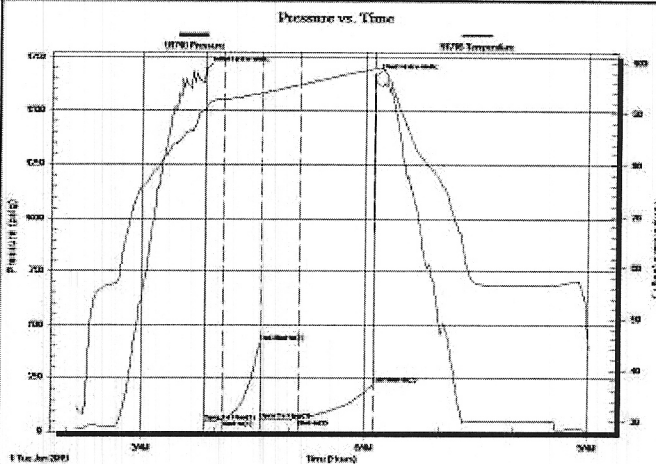
Time Off Bltn: 2019.01.01 @ 06:07:00

TEST COMMENT: 1st Opening 15 minutes weak blow for 5 minutes and died

1 Shut-in 30 minutes

2nd opening 30 minutes very weak blow for 4 minutes & decreased to intermittent blow 4 minutes and died

2nd Shut-in minutes



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1697.84	90.97	Initial Hydro-static
1	46.58	91.15	Open To Flow (1)
15	54.73	92.61	Shut-In (1)
45	418.88	93.92	End Shut-In (1)
45	55.36	93.95	Open To Flow (2)
76	59.75	95.60	Shut-In (2)
136	223.75	98.76	End Shut-In (2)
136	1663.46	98.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	oil cut mud 90%Mud 10%Oil	0.24

Gas Rates

	Choke (Inches)	Pressure (psig)	Gas Rate (Mc/K)



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1801 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: 01063

DST#: 3

ATTN: Justen Carter

Test Start: 2019.01.01 @ 22:24:00

GENERAL INFORMATION:

Formation: **Kansas City "H-I-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:58:00

Time Test Ended: 08:46:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Gene Budig

Unit No: 1

Interval: 3536.00 ft (KB) To 3592.00 ft (KB) (TVD)

Total Depth: 3496.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1912.00 ft (KB)

1904.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 91716

Outside

Press@RunDepth: 825.92 psig @ 3586.76 ft (KB)

Start Date: 2019.01.01

End Date:

2019.01.02

Capacity: 5000.00 psig

Last Calib.: 2019.01.02

Start Time: 22:28:30

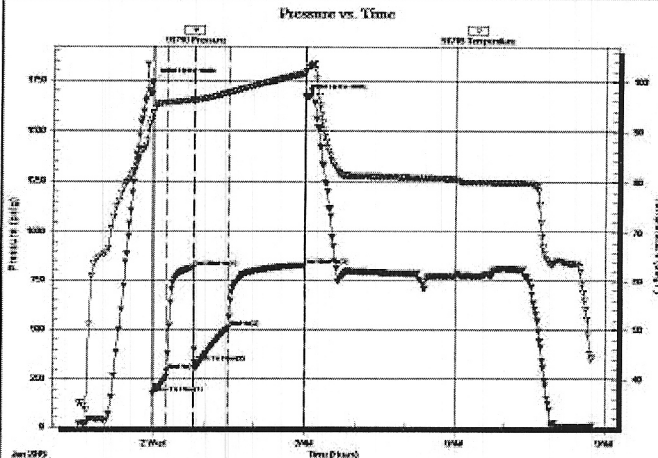
End Time:

08:45:30

Time On Btm: 2019.01.01 @ 23:57:30

Time Off Btm: 2019.01.02 @ 02:59:30

TEST COMMENT: 1st Opening 15 Minutes Strong blow bottom of the bucket in 1 minute
1st Shut-In 30 Minutes Gas to surface
2nd Opening 45 Minutes Strong blow gas to surface SEE GAS FLOW REPORT
2nd Shut-In 90 Minutes strong blow back



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1746.08	93.53	Initial Hydro-static
1	177.10	93.70	Open To Flow (1)
18	287.88	95.65	Shut-In (1)
50	814.94	96.28	End Shut-In (1)
51	329.23	96.28	Open To Flow (2)
91	506.88	97.71	Shut-In (2)
182	825.92	101.59	End Shut-In (2)
182	1669.67	101.61	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1750.00	Clean Gassy oil 35% Gas 65% Oil	23.03

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.13	39.00	19.99
Last Gas Rate	0.13	0.01	5.39
Max. Gas Rate	0.13	39.00	19.99

* Recovery from multiple tests



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1801 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: ew

DST#: 4

ATTN: Justen Carter

Test Start: 2019.01.03 @ 03:04:00

GENERAL INFORMATION:

Formation: viola

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:34:00

Time Test Ended: 08:43:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Gene Budig

Unit No: 1

Interval: 3698.00 ft (KB) To 3760.00 ft (KB) (TVD)

Total Depth: 3760.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1912.00 ft (KB)

1904.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 91716 Outside

Press@RunDepth: 293.77 psig @ 3754.77 ft (KB)

Start Date: 2019.01.03

End Date:

2019.01.03

Capacity: 5000.00 psig

Last Calib.: 2019.01.03

Start Time: 03:04:00

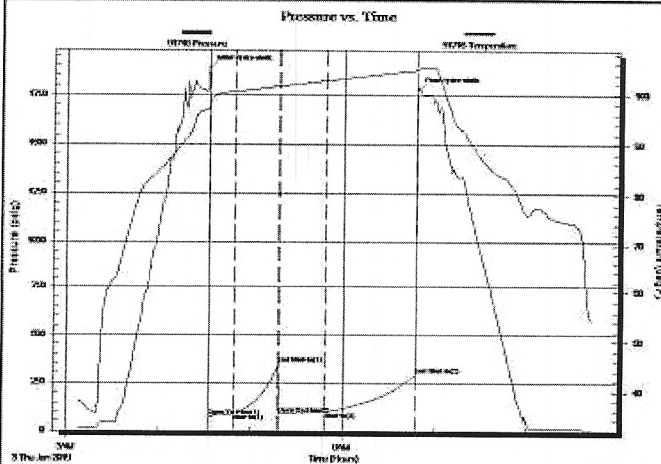
End Time:

08:43:30

Time On Blm: 2019.01.03 @ 04:33:00

Time Off Blm: 2019.01.03 @ 06:48:00

TEST COMMENT: 1st Opening 15 Minutes weak building blow built to 4 inches into the water
1st Shut-In 30 Minutes
2nd Opening 30 Minutes weak steady 2 inch blow
2nd Shut-In 60 Minutes



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1885.65	97.70	Initial Hydro-static
1	72.51	98.21	Open To Flow (1)
16	85.21	100.52	Shut-In(1)
46	347.54	101.69	End Shut-In(1)
46	89.31	101.70	Open To Flow (2)
76	97.86	102.76	Shut-In(2)
135	293.77	104.80	End Shut-In(2)
135	1776.18	104.87	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Drilling Mud	0.56

Gas Rates

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



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1801 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: 01065

DST#: 5

ATTN: Justen Carter

Test Start: 2019.01.03 @ 17:08:00

GENERAL INFORMATION:

Formation: **Simpson**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:00:00
 Time Test Ended: 22:46:00
 Interval: 3756.00 ft (KB) To 3810.00 ft (KB) (TVD)
 Total Depth: 3810.00 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: 1912.00 ft (KB)
 1904.00 ft (CF)
 KB to GR/CF: 8.00 ft

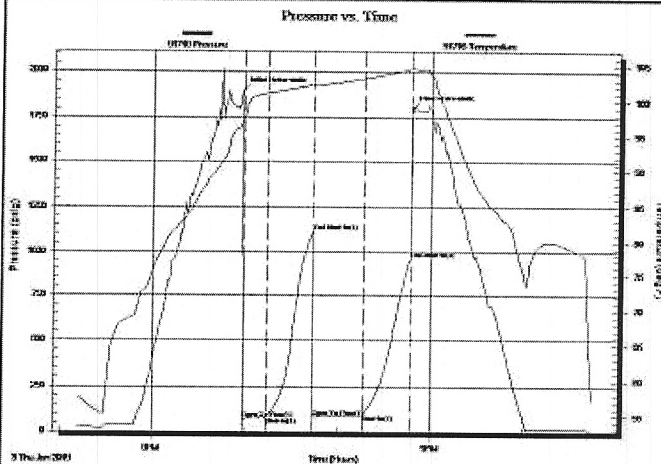
Serial #: 91716

Outside

Press@RunDepth: 966.66 psig @ 3804.77 ft (KB)
 Start Date: 2019.01.03 End Date: 2019.01.03
 Start Time: 17:08:00 End Time: 22:44:29

Capacity: 5000.00 psig
 Last Calib.: 2019.01.03
 Time On Btm: 2019.01.03 @ 18:58:00
 Time Off Btm: 2019.01.03 @ 20:47:00

TEST COMMENT: 1st Opening 15 Minutes weak blow built to 2 1/2 inches
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes weak blow built to 1 1/2 inches decreased to 1 1/4 inch into the water
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

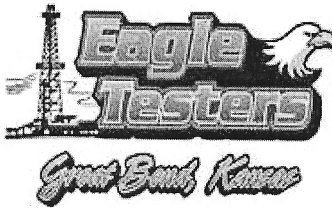
Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1895.96	97.28	Initial Hydro-static
1	66.95	97.52	Open To Flow (1)
16	77.16	101.26	Shut-In (1)
46	1111.31	102.48	End Shut-In (1)
46	79.39	102.48	Open To Flow (2)
78	90.88	103.28	Shut-In (2)
109	966.66	104.56	End Shut-In (2)
109	1800.83	104.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	Drilling Mud	0.48

Gas Rates

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



DRILL STEM TEST REPORT

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

17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01066 DST#: 6
 Test Start: 2019.01.04 @ 07:45:00

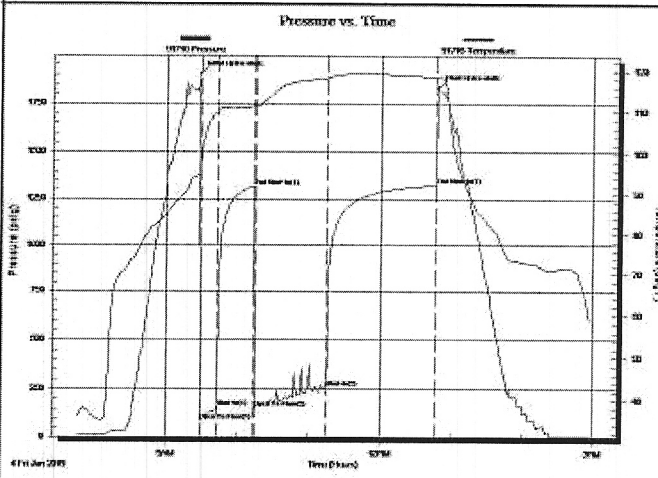
GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: **No** Whipstock: **ft (KB)**
 Time Tool Opened: 09:32:00
 Time Test Ended: 15:03:00
 Interval: **3756.00 ft (KB) To 3832.00 ft (KB) (TVD)**
 Total Depth: **3832.00 ft (KB) (TVD)**
 Hole Diameter: **7.88 inches** Hole Condition: **Fair**
 Test Type: **Conventional Bottom Hole (Initial)**
 Tester: **Gans Budig**
 Unit No: **1**
 Reference Elevations: **1912.00 ft (KB)**
1904.00 ft (CF)
KB to GRVCF: 8.00 ft

Serial #: 91716

Outside
 Press@RunDepth: **1324.19 psig @ 3826.77 ft (KB)**
 Start Date: **2019.01.04** End Date: **2019.01.04** Capacity: **5000.00 psig**
 Start Time: **07:45:00** End Time: **14:58:59** Last Calib.: **2019.01.04**
 Time On Blm: **2019.01.04 @ 09:28:00**
 Time Off Blm: **2019.01.04 @ 12:48:00**

TEST COMMENT: 1st Opening 15 minutes fair blow built to 8 1/2 inches into the water
 1st Shut-In 30 Minutes no blow back
 2nd Opening 60 Minutes built to the bottom of a 5 gallon bucket in 27 Minutes
 2nd Shut-In 90 Minutes no blow back



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1900.33	96.03	Initial Hydro-static
1	88.98	96.94	Open To Flow (1)
15	158.36	109.91	Shut-In(1)
46	1317.26	111.34	End Shut-In(1)
47	156.50	111.34	Open To Flow(2)
107	255.89	118.32	Shut-In(2)
199	1324.19	118.46	End Shut-In(2)
200	1834.14	118.44	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
390.00	Muddy Gassy Frothy Oil	3.96
0.00	w could not seperate when ground out	0.00

Gas Rates			
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/D)



DRILL STEM TEST REPORT

Bird Dog Oil LLC

17-22s-13w Stafford

1801 Broadway Suite 200
Denver, Colorado 80202

Keller Gates #1-17

Job Ticket: 0167

DST#: 7

ATTN: Justen Carter

Test Start: 2019.01.04 @ 20:30:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:06:00
 Time Test Ended: 12:32:00

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

Interval: 3832.00 ft (KB) To 3837.00 ft (KB) (TVD)
 Total Depth: 3837.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition:

Reference Elevations: 1912.00 ft (KB)
 1904.00 ft (CF)
 KB to GR/CF: 8.00 ft

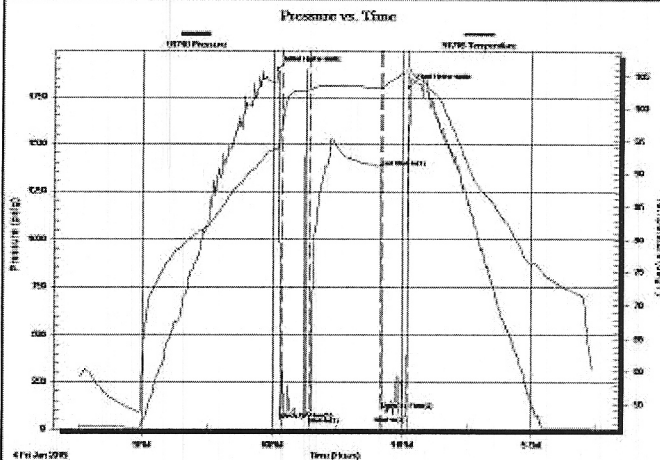
Serial #: 91716

Outside

Press@RunDepth: 1378.83 psig @ 3832.00 ft (KB)
 Start Date: 2019.01.04 End Date: 2019.01.05
 Start Time: 20:30:00 End Time: 00:28:30

Capacity: 5000.00 psig
 Last Calib.: 2019.01.05
 Time On Blm: 2019.01.04 @ 22:02:00
 Time Off Blm: 2019.01.04 @ 23:03:00

TEST COMMENT: 1st opening 15 Minutes weakblow for 5 minutes and died flushed tool weak surge no help
 1st shut-in 30 minutes
 2nd opening 10 minutes no blow came out of the hole



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1900.47	93.74	Initial Hydro-static
2	49.24	96.67	Open To Flow (1)
15	64.45	102.96	Shut-In (1)
48	1378.83	103.22	End Shut-In (1)
49	101.17	103.22	Open To Flow (2)
60	69.85	105.89	Shut-In (2)
61	1808.02	106.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	drilling mud	0.16

Gas Rates

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

JUSTIN D. CARTER

CONSULTING GEOLOGIST

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

Well Name: KELLER-GATES 1-17
Well Id:
Location: NE, SE, NE, NE Sec. 17 - 22S - 13W Stafford Co., KS
License Number: 15-185-24043-0000
Spud Date: 12/19/18
Surface Coordinates: 835' FNL, 110' FEL
Region: Kenilworth West
Drilling Completed: 01/05/19

Bottom Hole
Coordinates:
Ground Elevation (ft): 1902' K.B. Elevation (ft): 1910'
Logged Interval (ft): 3100' To: 3890' Total Depth (ft): 3890'
Formation: L/KC, 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 305'

Mud: MudCo
Engineer: Jason Whiting

Gas Detector: Blue Stem

DSTs: Eagle Testers
Tester: Gene Budig

Open-Hole Loggers: ELI Wireline



DRILL STEM TEST REPORT

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

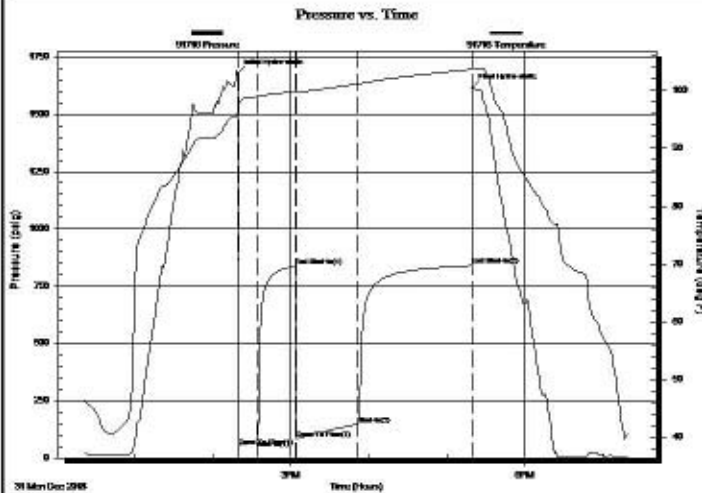
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01061 DST#:1
 Test Start: 2018.12.31 @ 12:18:00

GENERAL INFORMATION:

Formation: **Kansas City "A-D"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 14:20:00 Tester: Gene Budig
 Time Test Ended: 19:21:00 Unit No: 1
 Interval: **3428.00 ft (KB) To 3474.00 ft (KB) (TVD)** Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3474.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 839.86 psig @ 3468.74 ft (KB) Capacity: 5000.00 psig
 Start Date: 2018.12.31 End Date: 2018.12.31 Last Calib.: 2018.12.31
 Start Time: 12:18:00 End Time: 19:19:59 Time On Blm: 2018.12.31 @ 14:19:30
 Time Off Blm: 2018.12.31 @ 17:19:30

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 9 inches into the water
 2nd Shut-In 90 Minutes



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1679.82	96.78	Initial Hydro-static
1	51.39	97.71	Open To Flow (1)
15	78.03	98.99	Shut-In(1)
45	838.27	99.88	End Shut-In(1)
45	81.23	99.89	Open To Flow (2)
92	147.45	101.13	Shut-In(2)
180	839.86	103.69	End Shut-In(2)
180	1615.89	103.72	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	slightly muddy water 15% Mud 85% Water	0.72
120.00	Slightly muddy water 10% Mud 90% Water	0.95

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: Justen Carter

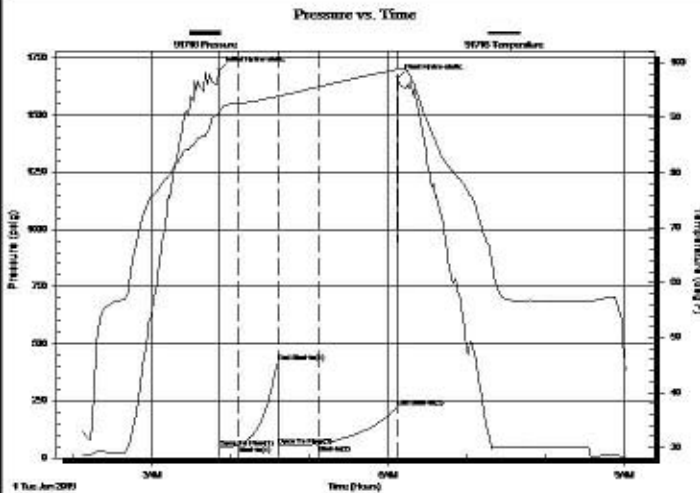
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01062 DST#: 2
 Test Start: 2019.01.01 @ 02:03:00

GENERAL INFORMATION:

Formation: **Kansas City "E & F"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 03:51:00 Tester: Gene Budig
 Time Test Ended: 09:02:00 Unit No: 1
 Interval: **3470.00 ft (KB) To 3496.00 ft (KB) (TVD)** Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3496.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 91716 **Outside**
 Press@RunDepth: 223.75 psig @ 3491.00 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.01 End Date: 2019.01.01 Last Calib.: 2019.01.01
 Start Time: 02:03:00 End Time: 09:01:30 Time On Btm: 2019.01.01 @ 03:51:00
 Time Off Btm: 2019.01.01 @ 06:07:00

TEST COMMENT: 1st Opening 15 minutes weak blow for 5 minutes and died
 1 Shut-In 30 minutes
 2nd opening 30 minutes very weak blow for 4 minutes & decreased to intermittent blow 4 minutes and died
 2nd Shut-In minutes



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1697.84	90.97	Initial Hydro-static
1	46.58	91.15	Open To Flow (1)
15	54.73	92.61	Shut-In(1)
45	418.88	93.92	End Shut-In(1)
45	55.36	93.95	Open To Flow (2)
76	59.75	95.60	Shut-In(2)
136	223.75	98.76	End Shut-In(2)
136	1663.46	98.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	oil cut mud 90%Mud 10%Oil	0.24

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: Justen Carter

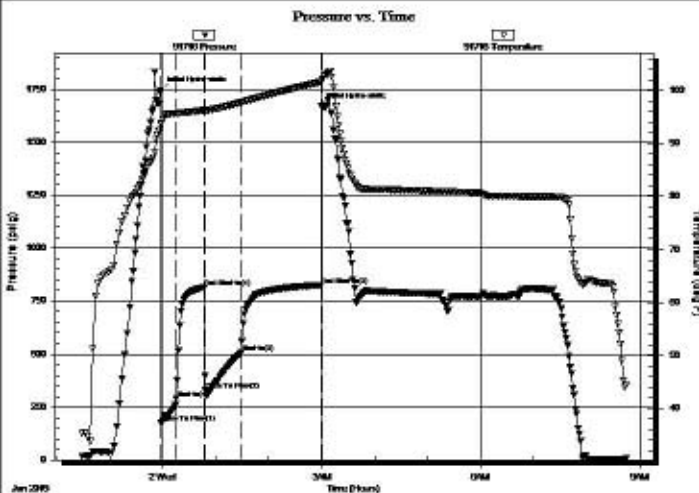
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01063 DST#: 3
 Test Start: 2019.01.01 @ 22:24:00

GENERAL INFORMATION:

Formation: **Kansas City "H-I-J"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 23:58:00 Tester: Gene Budig
 Time Test Ended: 08:46:00 Unit No: 1
 Interval: 3536.00 ft (KB) To 3592.00 ft (KB) (TVD) Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3496.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 825.92 psig @ 3586.76 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.01 End Date: 2019.01.02 Last Calib.: 2019.01.02
 Start Time: 22:28:30 End Time: 08:45:30 Time On Btm: 2019.01.01 @ 23:57:30
 Time Off Btm: 2019.01.02 @ 02:59:30

TEST COMMENT: 1st Opening 15 Minutes Strong blow bottom of the bucket in 1 minute
 1st Shut-In 30 Minutes Gas to surface
 2nd Opening 45 Minutes Strong blow gas to surface SEE GAS FLOW REPORT
 2nd Shut-In 90 Minutes strong blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1746.08	93.53	Initial Hydro-static
1	177.10	93.70	Open To Flow (1)
18	287.88	95.65	Shut-In(1)
50	814.94	96.28	End Shut-In(1)
51	329.23	96.28	Open To Flow (2)
91	506.88	97.71	Shut-In(2)
182	825.92	101.59	End Shut-In(2)
182	1669.67	101.61	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1750.00	Clean Gassy oil 35% Gas 65% Oil	23.03

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.13	39.00	19.99
Last Gas Rate	0.13	0.01	5.39
Max. Gas Rate	0.13	39.00	19.99



DRILL STEM TEST REPORT

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

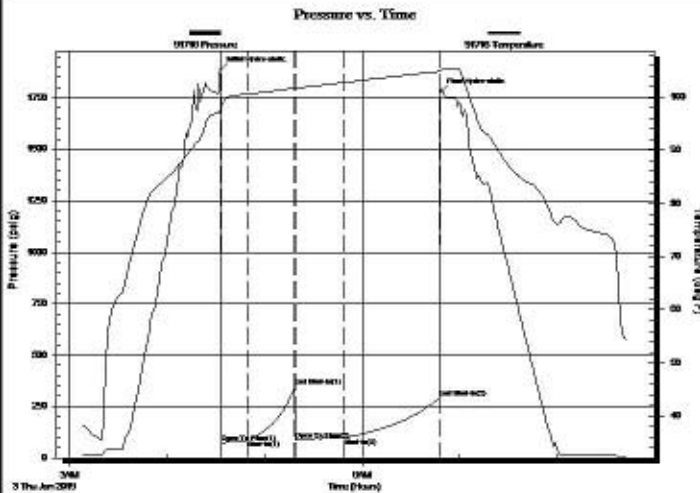
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: ew DST#: 4
 Test Start: 2019.01.03 @ 03:04:00

GENERAL INFORMATION:

Formation: **viola**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 04:34:00
 Time Test Ended: 08:43:00
 Interval: **3698.00 ft (KB) To 3760.00 ft (KB) (TVD)**
 Total Depth: **3760.00 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: 1912.00 ft (KB)
 1904.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 293.77 psig @ 3754.77 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.03 End Date: 2019.01.03 Last Calib.: 2019.01.03
 Start Time: 03:04:00 End Time: 08:43:30 Time On Btm: 2019.01.03 @ 04:33:00
 Time Off Btm: 2019.01.03 @ 06:48:00

TEST COMMENT: 1st Opening 15 Minutes weak building blow built to 4 inches into the water
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes weak steady 2 inch blow
 2nd Shut-In 60 Minutes



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1885.65	97.70	Initial Hydro-static
1	72.51	98.21	Open To Flow (1)
16	85.21	100.52	Shut-In(1)
46	347.54	101.69	End Shut-In(1)
46	89.31	101.70	Open To Flow (2)
76	97.86	102.76	Shut-In(2)
135	293.77	104.80	End Shut-In(2)
135	1776.18	104.87	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Drilling Mud	0.56

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: Justen Carter

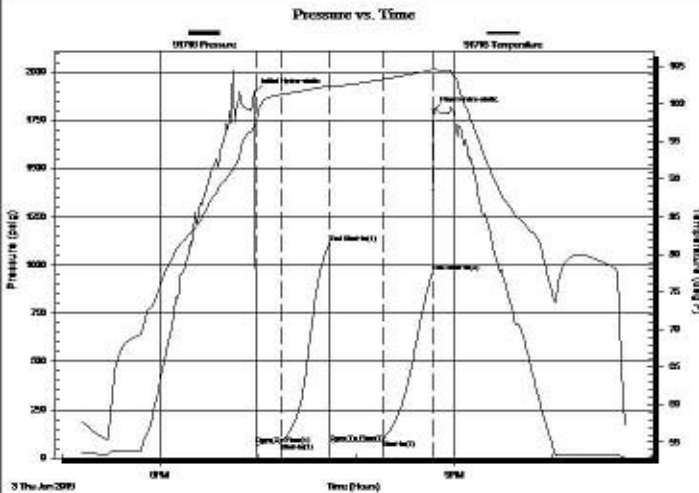
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01065 DST#: 5
 Test Start: 2019.01.03 @ 17:08:00

GENERAL INFORMATION:

Formation: **Simpson**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:00:00
 Time Test Ended: 22:46:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Gene Budig
 Unit No: 1
 Interval: **3756.00 ft (KB) To 3810.00 ft (KB) (TVD)**
 Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3810.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 966.66 psig @ 3804.77 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.03 End Date: 2019.01.03 Last Calib.: 2019.01.03
 Start Time: 17:08:00 End Time: 22:44:29 Time On Btm: 2019.01.03 @ 18:58:00
 Time Off Btm: 2019.01.03 @ 20:47:00

TEST COMMENT: 1st Opening 15 Minutes weak blow built to 2 1/2 inches
 1st Shut-In 30 Minutes
 2nd Opening 30 Minutes weak blow built to 1 1/2 inches decreased to 1 1/4 inch into the water
 2nd Shut-In 30 Minutes



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1895.96	97.28	Initial Hydro-static
1	66.95	97.52	Open To Flow (1)
16	77.16	101.26	Shut-In(1)
46	1111.31	102.48	End Shut-In(1)
46	79.39	102.48	Open To Flow (2)
78	90.88	103.28	Shut-In(2)
109	966.66	104.56	End Shut-In(2)
109	1800.83	104.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	Drilling Mud	0.48

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: Justen Carter

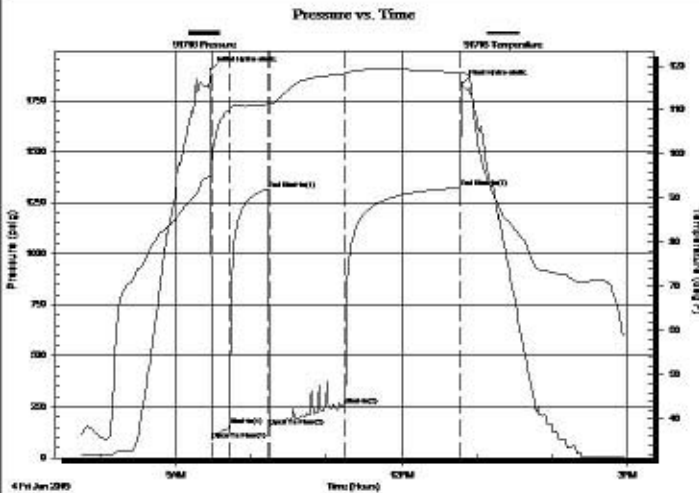
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 01066 DST#: 6
 Test Start: 2019.01.04 @ 07:45:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 09:32:00 Tester: Gene Budig
 Time Test Ended: 15:03:00 Unit No: 1
 Interval: 3756.00 ft (KB) To 3832.00 ft (KB) (TVD) Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3832.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 1324.19 psig @ 3826.77 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.04 End Date: 2019.01.04 Last Calib.: 2019.01.04
 Start Time: 07:45:00 End Time: 14:58:59 Time On Btm: 2019.01.04 @ 09:28:00
 Time Off Btm: 2019.01.04 @ 12:48:00

TEST COMMENT: 1st Opening 15 minutes fair blow built to 8 1/2 inches into the water
 1st Shut-In 30 Minutes no blow back
 2nd Opening 60 Minutes built to the bottom of a 5 gallon bucket in 27 Minutes
 2nd Shut-In 90 Minutes no blow back



PRESSURE SUMMARY			
Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1900.33	96.03	Initial Hydro-static
1	88.98	96.84	Open To Flow (1)
15	158.36	109.91	Shut-In(1)
46	1317.26	111.34	End Shut-In(1)
47	156.50	111.34	Open To Flow (2)
107	255.89	118.32	Shut-In(2)
199	1324.19	118.46	End Shut-In(2)
200	1834.14	118.44	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
390.00	Muddy Gassy Frothy Oil	3.96
0.00	would not separate when ground out	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: Justen Carter

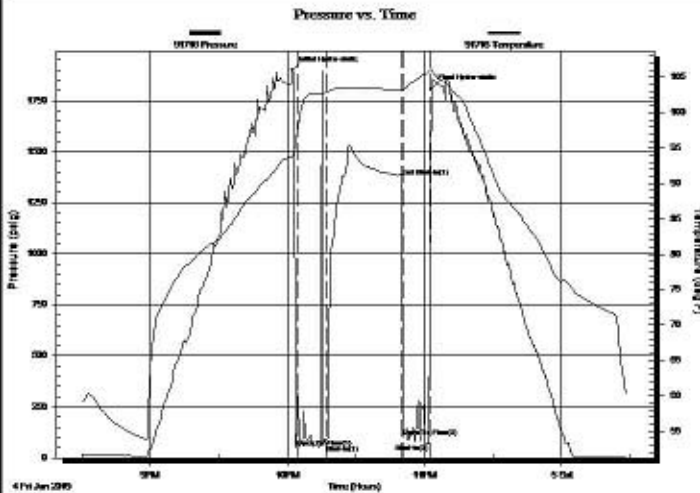
17-22s-13w Stafford
Keller Gates #1-17
 Job Ticket: 0167 DST#: 7
 Test Start: 2019.01.04 @ 20:30:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 22:06:00 Tester: Gene Budig
 Time Test Ended: 12:32:00 Unit No: 1
 Interval: **3832.00 ft (KB) To 3837.00 ft (KB) (TVD)** Reference Elevations: 1912.00 ft (KB)
 Total Depth: 3837.00 ft (KB) (TVD) 1904.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: KB to GR/CF: 8.00 ft

Serial #: 91716 Outside
 Press@RunDepth: 1378.83 psig @ 3832.00 ft (KB) Capacity: 5000.00 psig
 Start Date: 2019.01.04 End Date: 2019.01.05 Last Calib.: 2019.01.05
 Start Time: 20:30:00 End Time: 00:28:30 Time On Btm: 2019.01.04 @ 22:02:00
 Time Off Btm: 2019.01.04 @ 23:03:00

TEST COMMENT: 1st opening 15 Minutes w eakblow for 5 minutesn and died flushed tool w eak surge no help
 1st shut-in 30 minutes
 2nd opening 10 minutges no blow came out of the hole



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1900.47	93.74	Initial Hydro-static
2	49.24	96.67	Open To Flow (1)
15	64.45	102.96	Shut-In(1)
48	1378.83	103.22	End Shut-In(1)
49	101.17	103.22	Open To Flow (2)
60	69.95	105.89	Shut-In(2)
61	1808.02	106.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	drilling mud	0.16

Gas Rates

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

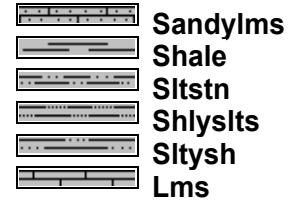
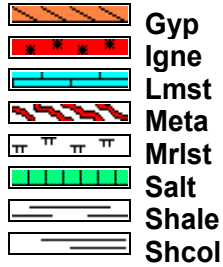
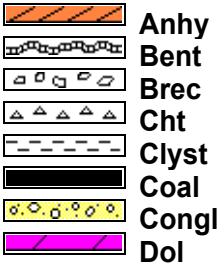
Remarks

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 Keller-Gates #1-17.

Respectfully submitted,

Justin D. Carter
Consulting Geologist

ROCK TYPES



ACCESSORIES

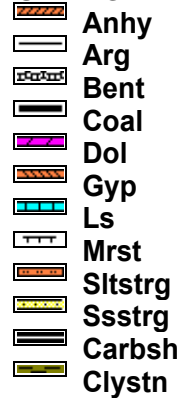
FOSSIL



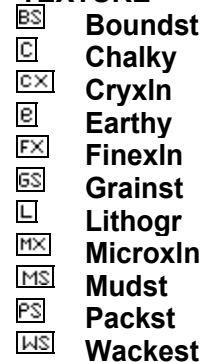
MINERAL



STRINGER

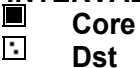


TEXTURE

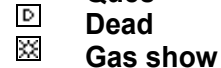


OTHER SYMBOLS

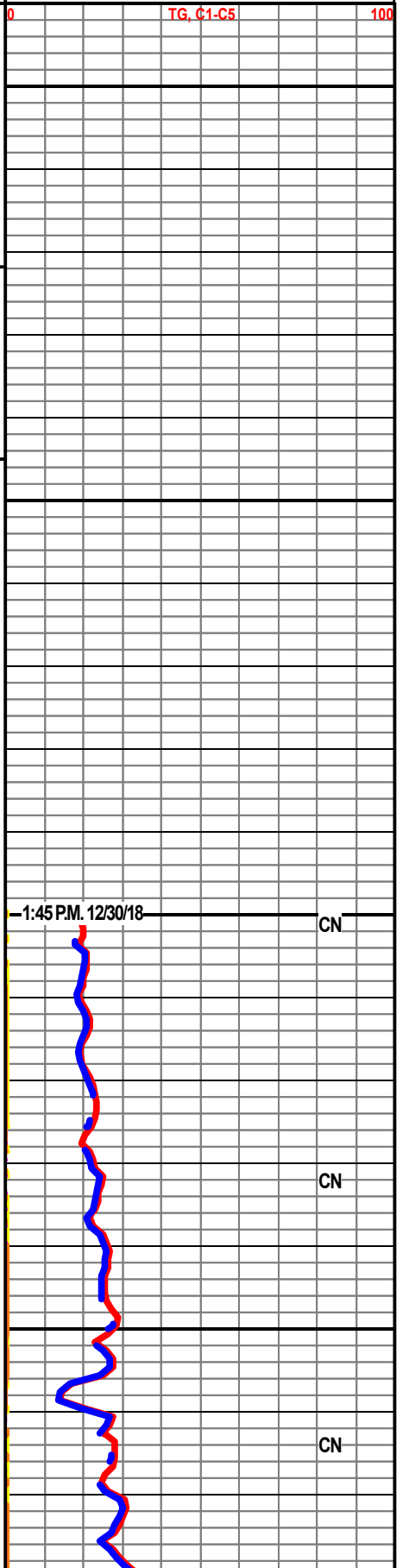
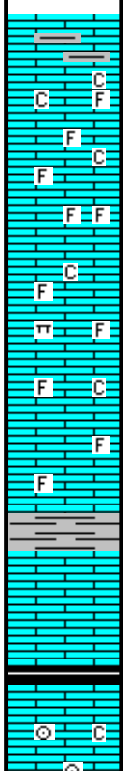
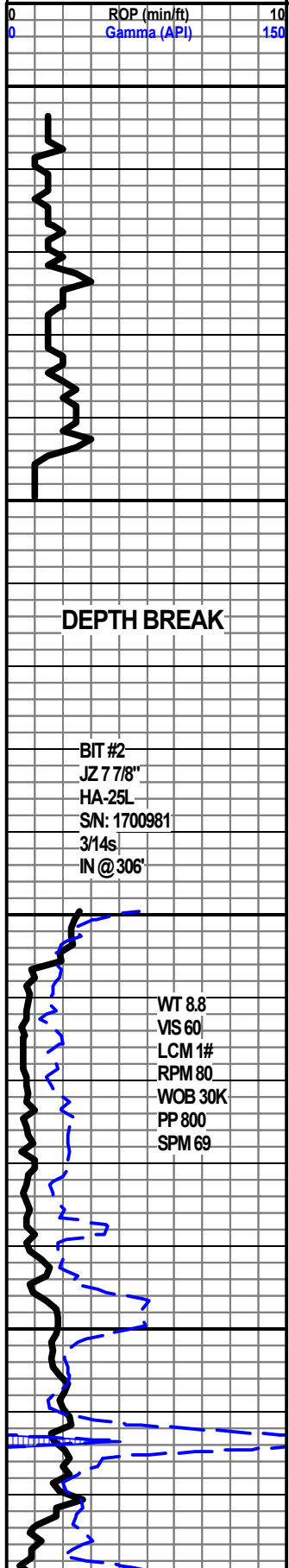
INTERVALS

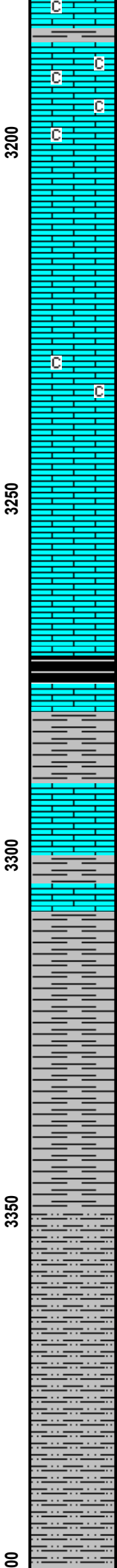
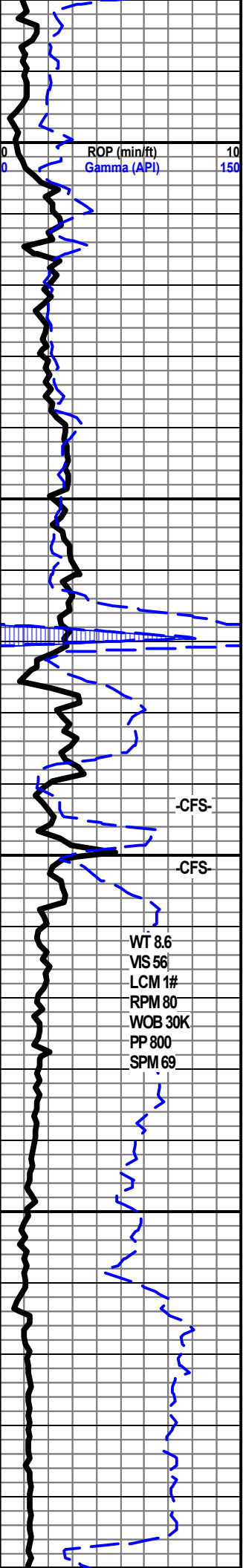


OIL SHOWS



Curve Track 1		Depth	Lithology	Oil Shows	Geological Descriptions	TG (units)	Remarks
ROP (min/ft)	—						
Gamma (API)	- - - -						
0	ROP (min/ft)	10				0	TG, C1-C5
0	Gamma (API)	150				100	
		7500			TOP ANHYDRITE 772' (+1138')		
					BASE ANHYDRITE 795' (+1115')		
		8000					
					DEPTH BREAK		
					DISPLACE HOLE @2971'		
					GEOLOGIST ON LOCATION 12:30 P.M. 12/30/18		
		3100					1:45 P.M. 12/30/18
					LS- CRM, BRITT TO HRD IP, MD/VF-XLN, GRNST THRU TO TR SUCRO MTRX, IMBED FOSS FRAGS IP, SFT WHT CHLK IP, NO FLO, FR INTER-XLN POR SCAT THRU TO TR MICRO PP POR TO TR INTER-FOSS POR, NS		CN
					LS- CRM, HRD TO BRITT IP, F/VF-XLN, GRNST THRU TO TR SUB-CHLKY, TR SFT WHT CHLK, TR MARL, IMBED FOSS FRAGS IP, NO FLO, TR INTER-XLN POR, NS		CN
					LS- CRM BFF, HRD DNS, F-XLN, GRNST, IMBED FOSS FRAGS SCAT THRU, NO FLO, PR VUG POR IP, NS		
		3150			LS- CRM BFF, HRD DNS, VF-XLN, RE-XLN MTRX IP, TR SFT WHT CHLK, NO FLO, NO VIS POR		CN
					LS- GY CRM, BRITT, MD/VF-XLN, GRNST TO TR MUDSTN, IMBED FOSS FRAGS (CRIN) SCAT THRU. SFT WHT CHLK IP, NO		





FLO, PR INTER-XLN POR SCAT THRU TO TR INTER-FOSS POR, TR DEAD STAIN, NO ODOR

LS- LT TN, HRD, MD/F-XLN, GRNST, SFT WHT CHLK IP, NO FLO, PR/FR INTER-XLN POR THRU, NS

LS- LT GY, HRD DNS, VF-XLN, RE-XLN MTRX IP, TR IMBED SH, NO FLO, NO VIS POR

LS- CRM TN, HRD TO BRITT IP, MD/F-XLN, SUCRO MTRX THRU, NO FLO, FR INTER-XLN POR THRU, NS

LS- BFF CRM, HRD DNS, VF-XLN, RE-XLN MTRX IP TO TR GRNST, TR SFT WHT CHLK, NO FLO, NO VIS POR

LS- WHT BFF, HRD DNS, VF-XLN, RE-XLN MTRX IP TO GRNST IP, NO FLO, TR INTER-XLN POR TO NO VIS POR THRU, TR DEAD STAIN, NO ODOR

HEEBNER 3271' (-1361')

LS- LT GY WHT, HRD, MDVF-XLN, GRNST IP TO RE-XLN MTRX IP, TR PYR, NO FLO, NO VIS CUT, TR INTER-XLN POR TO TR VUG POR, NO STAIN, NO ODOR

TORONTO 3289' (-1379')

LS- TN CRM, BRITT TO HRD IP, FVF-XLN, GRNST, TR DLL YEL GLD FLO, NO VIS CUT, FR MICRO PP POR IP TO TR INTER-XLN POR, NO STAIN, NO ODOR

DOUGLAS 3307' (-1397')

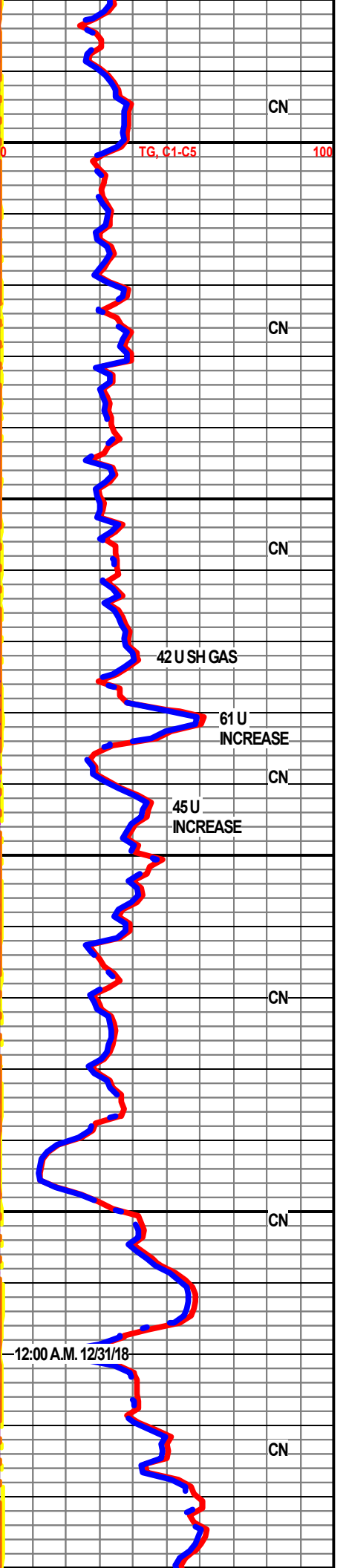
SH- RD GRN, FRM TO SFT IP, OXIDIZ RD SH, BLKY

SH- GY LT GRN, FRM TO SFT IP, FISS TO BLKYIP, ARG

SLTST- LT GY, TT, VF-GRN, DISS BLK SH THRU, NO VIS POR

SLTST- GY, TT, FVF-GRNS, DISS BLK SH IP TO MICA SH IP, TR INTER-GRN POR TO NO VIS POR THRU

BROWN LIME 3402' (-1492')



ROP (min/ft)
Gamma (API)

TG, C1-C5

WT 8.6
VIS 56
LCM 1#
RPM 80
WOB 30K
PP 800
SPM 69

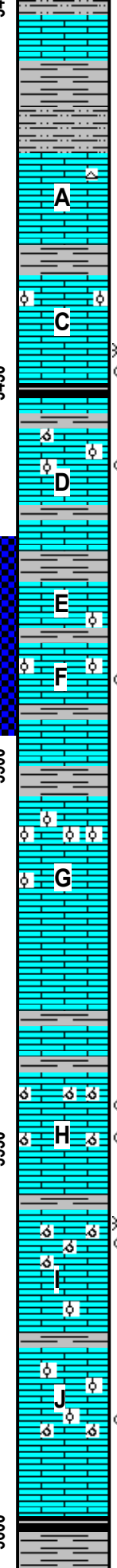
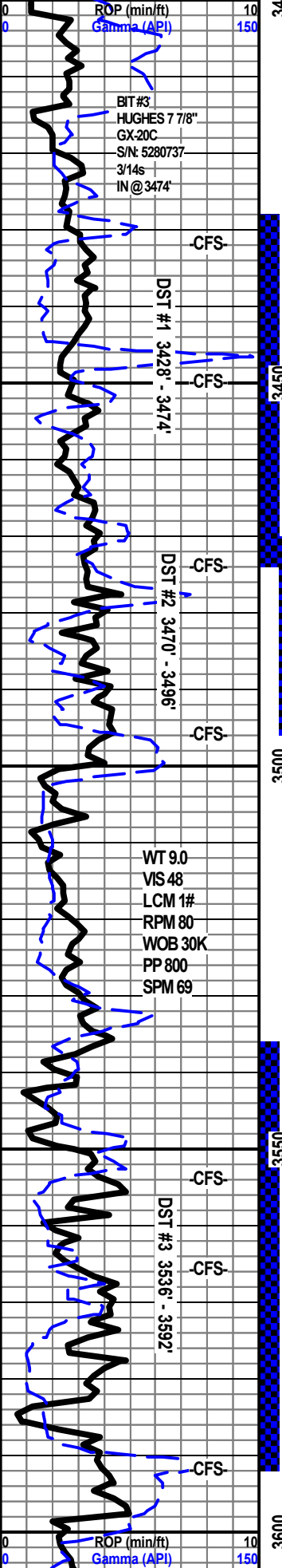
-CFS-
-CFS-

42 U SH GAS

61 U INCREASE

45 U INCREASE

12:00 A.M. 12/31/18



SHORT TRIP 25 STANDS @ 3403'

LANSING 3420' (-1510')

LS- OFF WHT, HRD DNS, FVF-XLN, GRNST IP TO RE-XLN MTRX IP TO TR SUB-CHLKY, NO FLO, TR INTER-XLN POR TO NO VS POR THRU, NS

LS- TN CRM, HRD TO BRITT IP, FVF-XLN, GRNST, YEL GLD FLO IN 70%, PR/FR FLUSH TO FR SLO BLU STRM CUT, PR/FR INTER-XLN POR SCAT THRU, TN STAIN IN 80%, FAINT ODOR

LS- WHT BFF TN, HRD TO BRITT IP, FVF-XLN, GRNST TO TR SUB-CHLKY, TR IMBED OOL, BRIT YEL GLD FLO IN 90%, PR FLUSH TO FR SLO BLU STRM CUT, FR INTER-XLN POR SCAT THRU TO TR VUG TO OOMLD POR, TN STAIN IN 80%, FAINT ODOR, TR FREE OIL

STRAP OUT @ 3474', 0.6' SHORT TO BOARD

LS- OFF WHT, BRITT, F-XLN, GRNST TO TR SUB-CHLKY, IMBED OOL IP, YEL GLD FLO SCAT THRU, FR FLUSH TO FR SLO BLU STRM CUT, FR INTE-XLN POR THRU TO TR INTER-OOL POR, TN STAIN IN 70%, FAINT ODOR, TR FREE OIL

LS- CRM, BRITT, FVF-XLN, GRNST, IMBED OOL SCAT THRU, NO FLO, TR DLL YEL FLO, NO VIS CUT, PR INTER-XLN POR THRU TO TR INTER-OOL POR, TR STAIN, NO ODOR

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

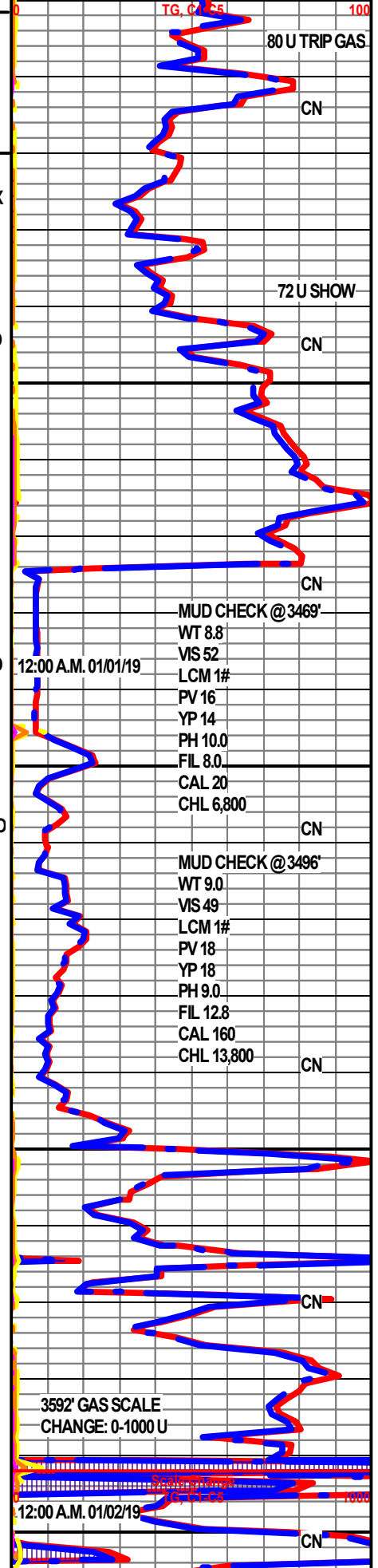
LS- BFF LT GY, BRITT, VF-XLN, GRNST, IMBED OOL IP, TR YEL GL FLO, PR FLUSH TO FR SLO BLU STRM CUT, FR OOMLD POR THRU, TR DK TN STAIN, FAINT ODOR, NS FREE OIL

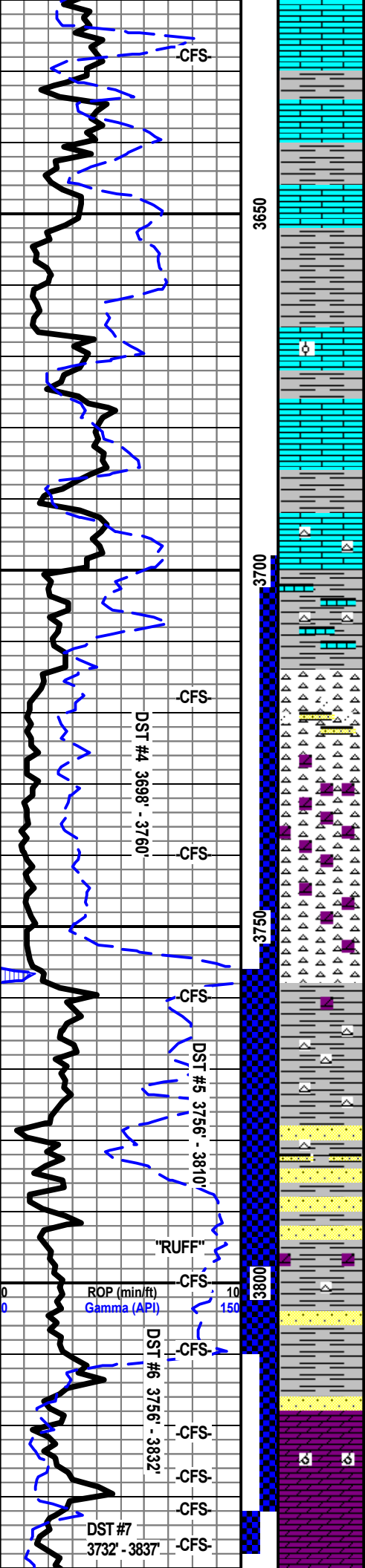
LS- TN WHT, BRITT, FVF-XLN, GRNST, TR IMBED OOL, BRIT YEL GLD FLO IN 20%, GD FLUSH TO GD BLU STRM CUT, FR OOMLD POR THRU, TN STAIN THRU TO BLK DEAD STAIN IN OOMLDS, STRNG ODOR, TR FREE OIL, TR GAS BUBBLS

LS- WHT TN, BRITT, VF-XLN, GRNST, OOL IP, SCAT BRIT YEL GLD FLO, FR FLUSH TO FR BLU STRM CUT, FR INTER-OOL POR IP TO PR/FR OOMLD POR IP, TR LIVE OIL STAIN TO TN STAIN IP, FREE OIL, FR ODOR

SH- GY LT GRN, SFT TO FRM IP, LMY, FISS IPTO BLKY IP

LS- CRM LT GY, HRD DNS, VF-XLN, RE-XLN MTRX THRU, TR OOL, BRIT YEL GLD FLO IN 50%, PR FLUSH TO PR SLO BLU STRM CUT, TR INTER-XLN POR TO TR MICRO PP POR, TR TN STAIN, FAINT ODOR, NO FREE OIL





BKC 3631' (-1721')

LS- CRM LT GY, HRD DNS, VF-XLN, RE-XLN MTRX, NO FLO, NO VIS CUT, NO VIS POR, TR DEAD BLK STAIN, FAINT ODOR

SH- GY GRN, FRM, BLKY, SLTY TO TR LMY

LS- WHT LT GY, HRD, FVF-XLN, RE-XLN MTRX IP TO GRNST IP, TR OOL, SCATYEL GLD FLO, FR FLUSH TO PR BLU STRM CUT, TR INTER-XLN POR TO TR VUG POR, TN STAIN IP TO TR LIVE BLK STAIN, TR FREE OIL, FAINT ODOR

LS- LT GY, HRD DNS, FVF-XLN, RE-XLN MTRX THRU, TR BRITYEL GLD FLO, FR FLUSH TO TO FAINT BLU STRM CUT, TR INTER-XLN POR TO NO VIS POR THRU, TR LIVE OIL STAIN, NO ODOR

LS- TN LT GRN, HRD DNS, MIDVF-XLN, RE-XLN MTRX TO TR MUDSTN, TR OPQ CHRT, IMBED GRN SH IP, NO FLO, NO VIS CUT, NO VIS POR, TR BLK STAIN, NO ODOR

CONGL RD GRN GY SH & LS- CRM, HRD DNS, VF-XLN, RE-XLN MTRX IP, TR OOL, NO FLO, NO VIS CUT, NO VIS POR, TR BLK STAIN, NO ODOR

VIOLA 3714' (-1804')

CHRT- WHT, HRD DNS, ANG, TR BLK STAIN, NO VIS CUT, NO ODOR, TR FREE OIL

LMY SS- TN MOTT, TT TO FRI IP, F-GRN, FR SRT, SUB-ANG GRNS, ARG IP, TR LG LIME GRNS, NO FLO, PR SLO BLU STRM CUT, TR TN STAIN, NO ODOR

3726' CHRT- WHT, HRD DNS, ANG, TR IMBED FOSS FRAGS, TR BRIT YEL FLO, PR SLO BLU STRM CUT, TR TN STAIN, NO VIS POR, NO ODOR

DOLO- TN, HRD DNS, VF-XLN, SUCRO MTRX THRU TO TR RE-XLN MTRX, YEL GLD FLO IN 90%, FR FLUSH TO FAINT BLU STRM CUT, NO VIS POR, TN STAIN THRU, GD SHOW FREE OIL

CHRT- WHT, HRD DNS, TR TN VF-XLN DOLO, TR TN STAIN, NO ODOR

SH- RD GRN GY, FRM, BLKY, LMY, WHT CHRT IP, TR DOLO

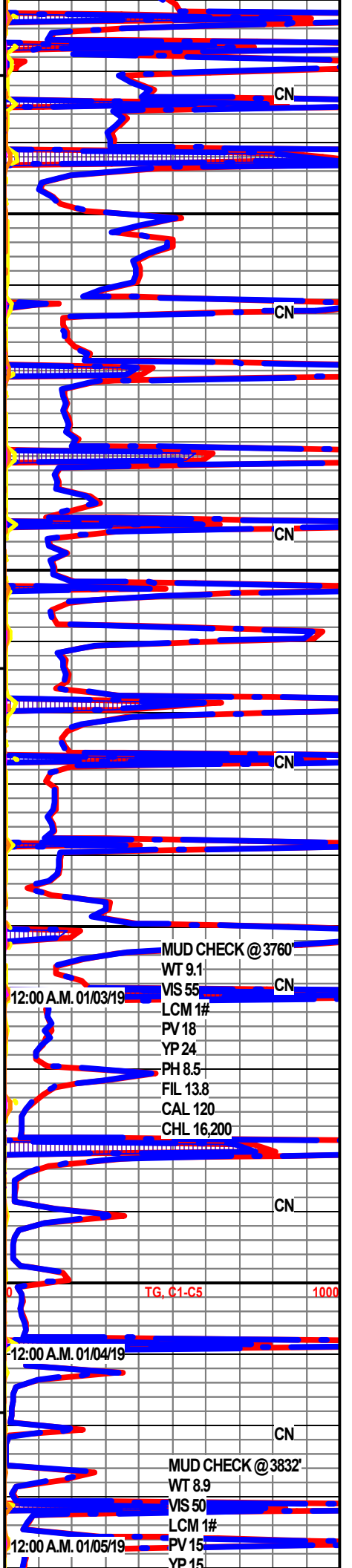
SS- TN CLR, TT TO FRI IP, FVF-GRNS, PR SRT, SUB-ANG GRNS, SILI, TR YEL FLO, FR FLUSH TO GD FAST BLU STRM CUT, FR INTER-GRN POR THRU, TN STAIN IP, TR FREE OIL, NO ODOR

SS- TN, TT, F-GRNS, FR SRT, SUB-ANG GRNS, TR YEL GLD FLO, FAINT FLUSH TO PR SLO BLU STRM CUT, PR/FR INTER-GRN POR THRU, DK TN STAIN THRU, NO ODOR, TR FREE OIL

ARBUCKLE 3818' (-1908')

DOLO- TN, HRD, FVF-XLN, SUCRO MTRX THRU, DLL YEL FLO THRU, FAINT SLO BLU STRM CUT, PR OOMLD POR SCAT THRU TO TR INTER-XLN POR, TR TN STAIN, FR ODOR, FREE OIL IP

3830' DOLO- TN WHT, HRD DNS, FVF-XLN, SUCRO MTRX THRU, YEL GLD FLO THRU, FAINT FLUSH TO FAINT BLU STRM CUT, PR INTER-XLN POR THRU, BLK STAIN IP, FAINT ODOR



MUD CHECK @ 3760'

WT 9.1

12:00 A.M. 01/03/19 VIS 55

LCM 1#

PV 18

YP 24

PH 8.5

FIL 13.8

CAL 120

CHL 16,200

12:00 A.M. 01/04/19

TG, C1-C5 1000

MUD CHECK @ 3832'

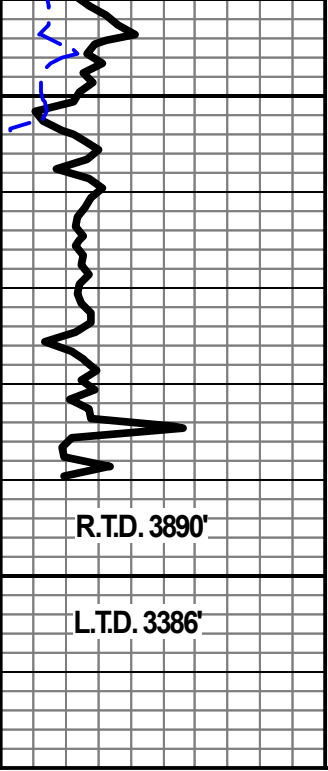
WT 8.9

12:00 A.M. 01/05/19 VIS 50

LCM 1#

PV 15

YP 15



3850

3900



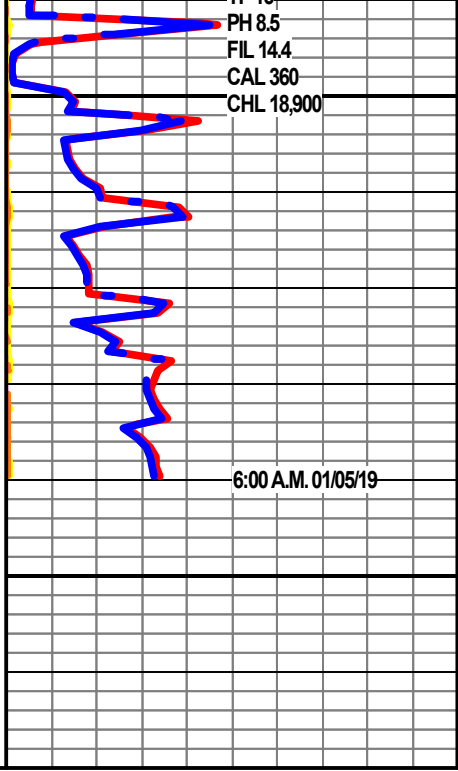
3835' DOLO- PINKISH WHT, HRD, MD-XLN, SUCRO MTRX THRU, TR YEL GLD FLO, GD FLUSH TO FR BRN STRM CUT, FR INTER-XLN POR THRU, LIVE BLK STAIN SCAT THRU, STRNG ODOR, FREE OIL

3840' DOLO- WHT, HRD, MD/F-XLN, SUCRO MTRX THRU, YEL GLD FLO THRU, FR/GD FLUSH TO FR BLU STRM CUT, FR INTER-XLN POR THRU, LIVE BLK STAIN IP, FAIR ODOR, TR FREE OIL

3852' DOLO- WHT LT CRM, HRD, MD/F-XLN, SUCRO MTRX THRU, YEL GLD FLO THRU, FAINT BLU STRM CUT, FR INTER-XLN POR THRU, TR BLK STAIN, FAINT/FR ODOR, NO FREE OIL

3865' DOLO- CRM, HRD, F-XLN, SUCRO MTRX THRU, DLL YEL GLD FLO THRU, NO VIS CUT, PR INTER-XLN POR THRU, TR BLK RESID STAIN, FR ODOR

3880' DOLO- CRM, HRD DNS, FVF-XLN, SUCRO MTRX THRU TO TR RE-XLN MTRX, DLL YEL FLO THRU, NO VIS CUT, NO VIS POR



PH 8.5
 FIL 14.4
 CAL 360
 CHL 18,900

6:00 A.M. 01/05/19

R.T.D. 3890'

L.T.D. 3386'