

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	Black Oak Exploration
Well Name	GOETSCH 1-10
Doc ID	1468001

All Electric Logs Run

POR
DIL
SONIC
MICRO



CEMENT TREATMENT REPORT

Customer: Black Oak Expl.	Well: Goetsch #1-10	Ticket: ICT2088
City, State:	County: Sherman, KS	Date: 6/25/2019
Field Rep: Arturo	S-T-R: Sec 5 - T13S - R32W	Service: Cement

Downhole Information	
Hole Size:	12.25 in
Hole Depth:	390 ft
Casing Size:	8.625 in
Casing Depth:	385 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Depth:	ft
Displacement:	23.5 bbls

Slurry	
Weight:	14.8 # / sx
Water / Sx:	6.88 gal / sx
Yield:	1.41 ft³ / sx
Bbls / Ft.:	0.0735
Depth:	385 ft
Volume:	28.3 bbls
Excess:	120% %
Total Slurry:	60.3 bbls
Total Sacks:	240 sx

Cement Blend		
Product	%	#
Class A	100.0	22560
Gel	2.0	451
CaCl	3.0	677
Metso		
KolSeal		
PhenoSeal		
Salt		
Total		23,688

TIME	RATE	PSI	BBLs	REMARKS	TIME	RATE	PSI	BBLs	REMARKS
3:30 PM				Called for job					
5:30 PM				Depart Oakley yard					
6:45 PM				Arrive on locn. Rig drilling 12 14" OH to 390'					
2:25 AM				JSA, discuss moving, spotting & rig-up					
7:00 PM				Move on, spot & rig-up					
7:30 PM				Rig-up complete					
9:15 PM				Rig TD'd hole @ 390'. Cir. & condition hole.					
9:45 PM				Perform wiper trip					
10:20 PM				Rig TOH w/ DP					
10:55 PM				Start to RIH w/ casing					
11:35 PM				Casing @ setting depth					
11:40 PM		100.0		Circulate & condition hole					
11:47 PM	3.5	100.0	5.0	Pump H2O ahead					
11:49 PM	5.0	350.0	60.0	Mix & pump 240sx cement @ 14.8#					
				Y - 1.41cuft/sk, MW - 6.88g/sk					
12:02 AM				Cement to surface, 60bbl cement away					
12:02 AM	3.5	200.0	23.5	Displ. w/ H2O					
12:08 AM				Shutdown. End Job					
12:15 AM				JSA, discuss racking up & moving off					
12:45 AM				Depart locn					
				Note: Circulated approx 23.5bbl good cement to surface.					
				Thanks for calling Hurricane Services					

CREW	UNIT
Cementer: Scott Green	74
Pump Operator: Josh Mosier	231
Bulk #1: Kale Ochs	181 / 254
Bulk #2:	

SUMMARY		
Average Rate	Average Pressure	Total Fluid
4 bpm	187.50 psi	88.50 bbls



CEMENT TREATMENT REPORT

Customer:	Black Oak	Well:	Goetsch 1-10	Ticket:	ICT2108
City, State:	Oakley KS	County:	Sherman	Date:	7/3/2019
Field Rep:	Arturo	S-T-R:	10/6/37 W	Service:	Cement

Downhole Information	
Hole Size:	7 7/8
Hole Depth:	4930
Casing Size:	
Casing Depth:	
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Depth:	
Displacement:	

Slurry	
Weight:	13.8 # / sx
Water / Sx:	6 8/9
Yield:	1.42
Bbls / Ft.:	0.0142
Depth:	ft
Volume:	bbls
Excess:	
Total Slurry:	64.5
Total Sacks:	255 sx

Cement Blend		
Product	%	#
Class A	60.0	14326
Fly Ash	40.0	7518
Gel	4.0	874
Metso		
KolSeal		
PhenoSeal		
Salt		

Total **22,718**

TIME	RATE	PSI	BBLs	REMARKS	TIME	RATE	PSI	BBLs	REMARKS
3:30 AM				Arrive on location					
3:35 AM				Hold Safety meeting					
3:40 AM				Rig up equipment					
8:30 AM	4.0	220.0	57.0	Mix 50 sks @ 3120 and displace					
9:30 AM	4.0	190.0	52.0	Mix 100 sks @ 2200 and displace					
10:20 AM	4.0	90.0	15.0	Mix 50 sks @ 440 and displace					
10:45 AM	3.0	90.0	9.0	Mix 55 sks @ 40 MH and RH					
11:00 AM				Wash up					
11:10 AM				Rig down					
11:20 AM				Depart					

CREW		UNIT	SUMMARY		
Cementer:	Dane Retzloff		Average Rate	Average Pressure	Total Fluid
Pump Operator:	Dane Retzloff	231.0	3.76 bpm	147.50 psi	133.00 bbls
Bulk #1:	John Polly	182.0			
Bulk #2:					



DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration LLC**

1474 S St Paul St
Denver CO 80210

ATTN: Clayton Camozzi

Goetsch #1-10

10-6S-37W Sherman,KS

Start Date: 2019.06.29 @ 00:00:00

End Date:

Job Ticket #: 64651

DST #: 1

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

Printed: 2019.07.03 @ 15:04:20



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64651

DST#: 1

ATTN: Clayton Camozzi

Test Start: 2019.06.29 @ 00:00:00

GENERAL INFORMATION:

Formation: **Lans H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened:

Time Test Ended:

Test Type: Conventional Bottom Hole (Initial)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4430.00 ft (KB) To 4506.00 ft (KB) (TVD)

Reference Elevations: 3453.00 ft (KB)

Total Depth: 4506.00 ft (KB) (TVD)

3448.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8673

Press@RunDepth: psig @ ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.10.29 End Date: 2018.10.29

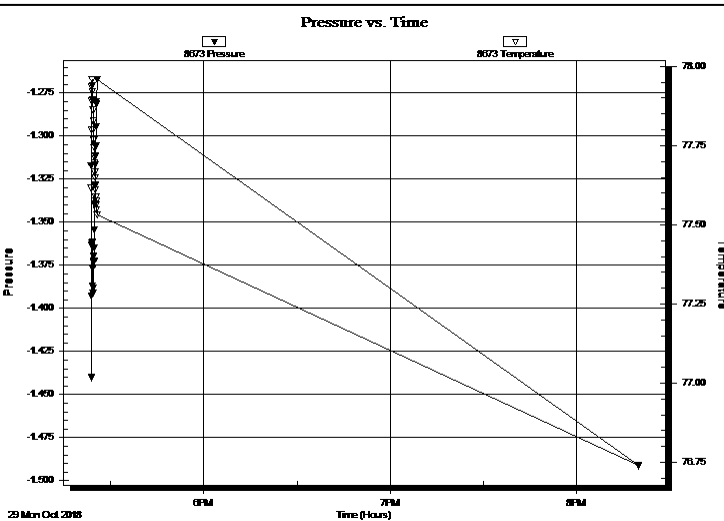
Last Calib.: 1899.12.30

Start Time: 17:23:34 End Time: 20:19:49

Time On Btm:

Time Off Btm:

TEST COMMENT: Geo decided to pull tool after 15 stands because tool was catching so they can condition the hole. No recorders attached.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64651

DST#: 1

ATTN: Clayton Camozzi

Test Start: 2019.06.29 @ 00:00:00

Tool Information

Drill Pipe:	Length: 4248.00 ft	Diameter: 3.80 inches	Volume: 59.59 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: lb
			<u>Total Volume: - bbl</u>	Tool Chased ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial lb
Depth to Top Packer:	4430.00 ft			Final lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	104.00 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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Change Over Sub	1.00			4403.00	
Shut In Tool	5.00			4408.00	
Hydraulic tool	5.00		Inside	4413.00	
Jars	5.00			4418.00	
Safety Joint	2.00			4420.00	
Packer	5.00			4425.00	28.00 Bottom Of Top Packer
Packer	5.00			4430.00	
Packer - Shale	0.00			4430.00	
Stubb	1.00			4431.00	
Recorder	0.00	8645	Outside	4431.00	
Recorder	0.00	6731	Inside	4431.00	
Perforations	7.00			4438.00	
Change Over Sub	1.00			4439.00	
Drill Pipe	63.00			4502.00	
Change Over Sub	1.00			4503.00	
Bullnose	3.00			4506.00	76.00 Bottom Packers & Anchor
Total Tool Length:	104.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64651

DST#: 1

ATTN: Clayton Camozzi

Test Start: 2019.06.29 @ 00:00:00

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:

bbbl

Water Loss: 7.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3200.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl

Total Length: ft

Total Volume: bbbl

Num Fluid Samples: 0

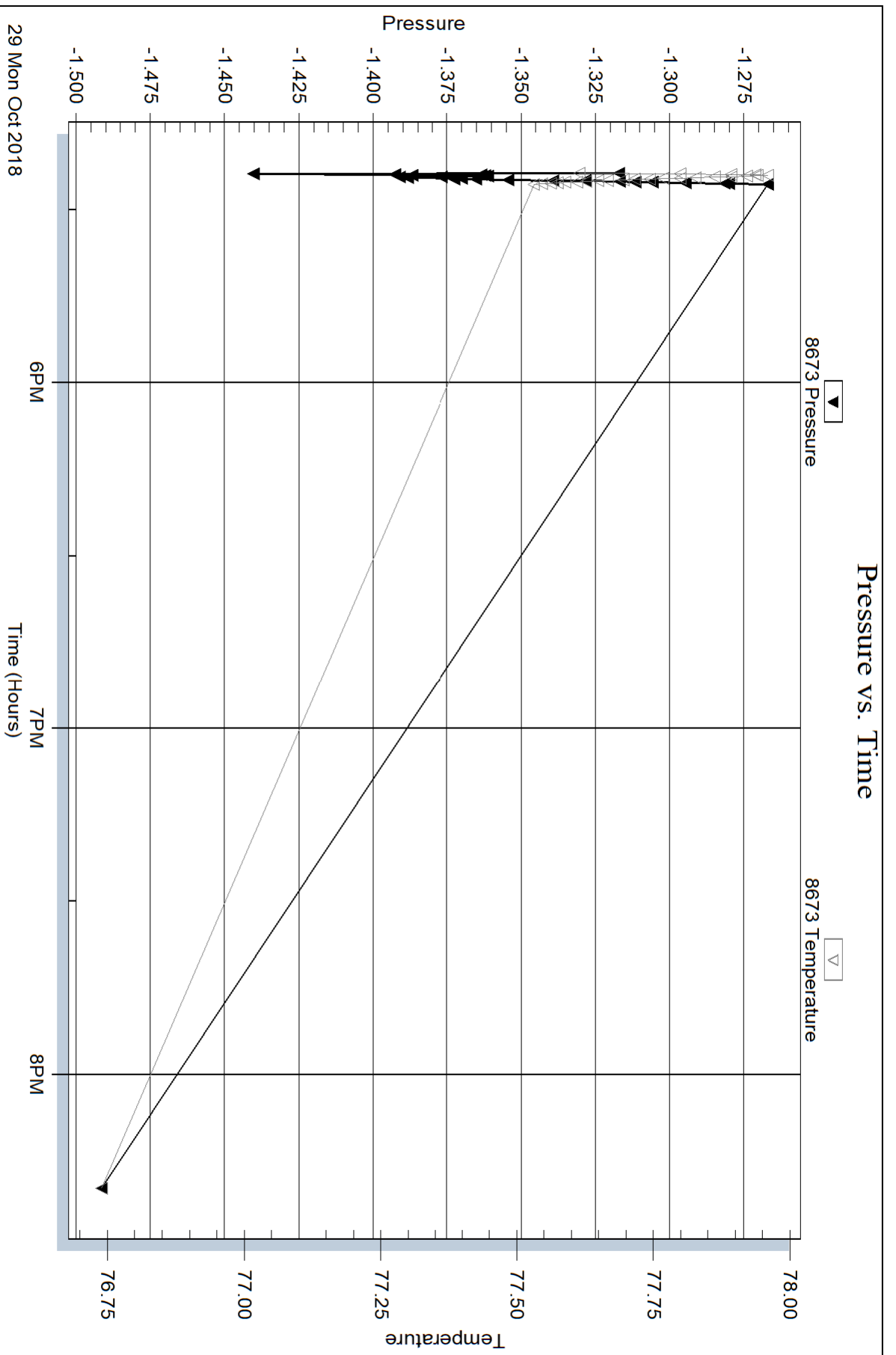
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



29 Mon Oct 2018



DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration LLC**

1474 S St Paul St
Denver CO 80210

ATTN: Clayton Camozzi

Goetsch #1-10

10-6S-37W Sherman,KS

Start Date: 2019.06.30 @ 04:25:00

End Date: 2019.06.30 @ 11:28:09

Job Ticket #: 64652 DST #: 2

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

Printed: 2019.07.03 @ 14:54:13



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Black Oak Exploration LLC

10-6S-37W Sherman, KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64652

DST#: 2

ATTN: Clayton Camozzi

Test Start: 2019.06.30 @ 04:25:00

GENERAL INFORMATION:

Formation: **LKC H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:27:50

Time Test Ended: 11:28:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4430.00 ft (KB) To 4506.00 ft (KB) (TVD)

Reference Elevations: 3453.00 ft (KB)

Total Depth: 4506.00 ft (KB) (TVD)

3448.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8355 Outside

Press@RunDepth: 30.69 psig @ 4431.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.06.30

End Date:

2019.06.30

Last Calib.: 2019.06.30

Start Time: 04:25:01

End Time:

11:28:10

Time On Btm: 2019.06.30 @ 06:26:50

Time Off Btm: 2019.06.30 @ 09:05:50

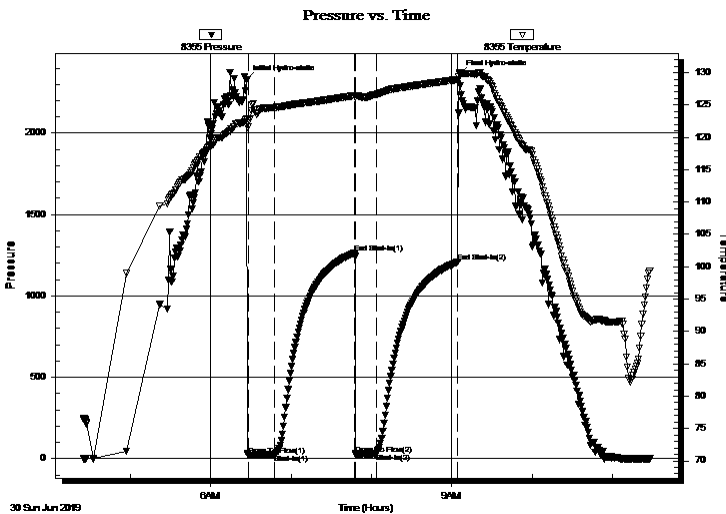
TEST COMMENT: 20-IF-1/4" Blow @ open built to 1 1/4"

60-ISI-No blow back

15-FF-No blow

60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2331.31	122.81	Initial Hydro-static
1	20.57	122.29	Open To Flow (1)
21	25.65	124.61	Shut-In(1)
81	1263.50	126.46	End Shut-In(1)
82	28.41	126.09	Open To Flow (2)
97	30.69	126.62	Shut-In(2)
158	1208.47	128.93	End Shut-In(2)
159	2362.53	129.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	GVSOCM 3%G, 4%O, 93%M	0.10

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Black Oak Exploration LLC

10-6S-37W Sherman, KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64652

DST#: 2

ATTN: Clayton Camozzi

Test Start: 2019.06.30 @ 04:25:00

GENERAL INFORMATION:

Formation: **LKC H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:27:50

Time Test Ended: 11:28:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4430.00 ft (KB) To 4506.00 ft (KB) (TVD)

Reference Elevations: 3453.00 ft (KB)

Total Depth: 4506.00 ft (KB) (TVD)

3448.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8645

Inside

Press@RunDepth: psig @ 4431.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.06.30

End Date:

2019.06.30

Last Calib.:

1899.12.30

Start Time: 04:25:01

End Time:

11:27:31

Time On Btm:

Time Off Btm:

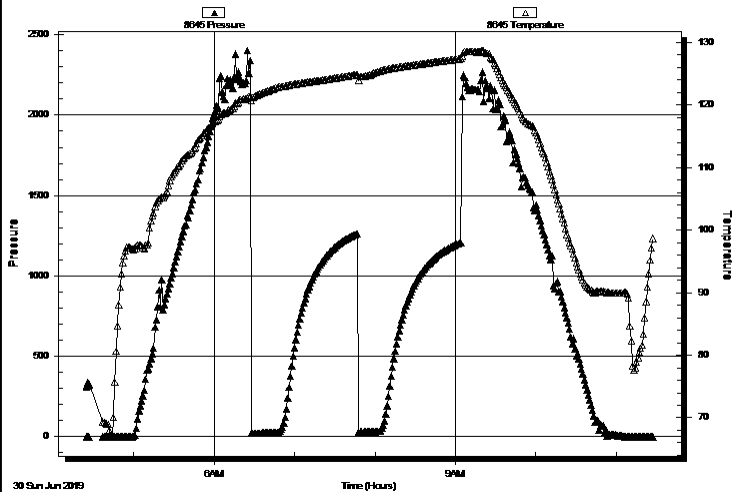
TEST COMMENT: 20-IF-1/4" Blow @ open built to 1 1/4"

60-ISI-No blow back

15-FF-No blow

60-FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
20.00	GV/SOCM 3%G, 4%O, 93%M	0.10

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64652

DST#: 2

ATTN: Clayton Camozzi

Test Start: 2019.06.30 @ 04:25:00

Tool Information

Drill Pipe:	Length: 4248.00 ft	Diameter: 3.80 inches	Volume: 59.59 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 60.48 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4430.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	104.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4403.00	
Shut In Tool	5.00			4408.00	
Hydraulic tool	5.00		Inside	4413.00	
Jars	5.00			4418.00	
Safety Joint	2.00			4420.00	
Packer	5.00			4425.00	28.00 Bottom Of Top Packer
Packer	5.00			4430.00	
Packer - Shale	0.00			4430.00	
Stubb	1.00			4431.00	
Recorder	0.00	8355	Outside	4431.00	
Recorder	0.00	8645	Inside	4431.00	
Perforations	7.00			4438.00	
Change Over Sub	1.00			4439.00	
Drill Pipe	63.00			4502.00	
Change Over Sub	1.00			4503.00	
Bullnose	3.00			4506.00	76.00 Bottom Packers & Anchor
Total Tool Length:	104.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64652

DST#: 2

ATTN: Clayton Camozzi

Test Start: 2019.06.30 @ 04:25:00

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: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3600.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
20.00	GVSOCM 3%G, 4%O, 93%M	0.098

Total Length: 20.00 ft Total Volume: 0.098 bbl

Num Fluid Samples: 0

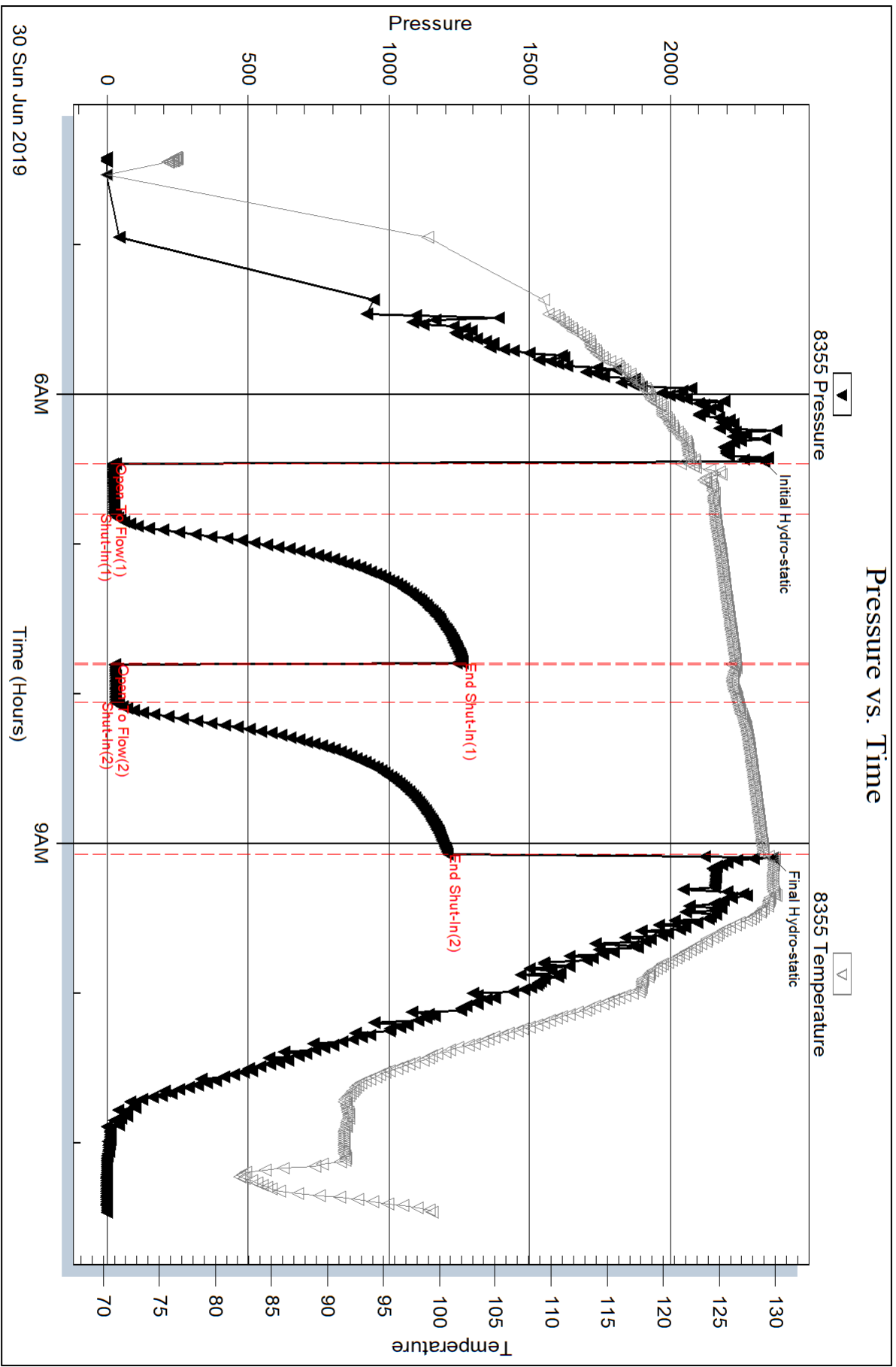
Num Gas Bombs: 0

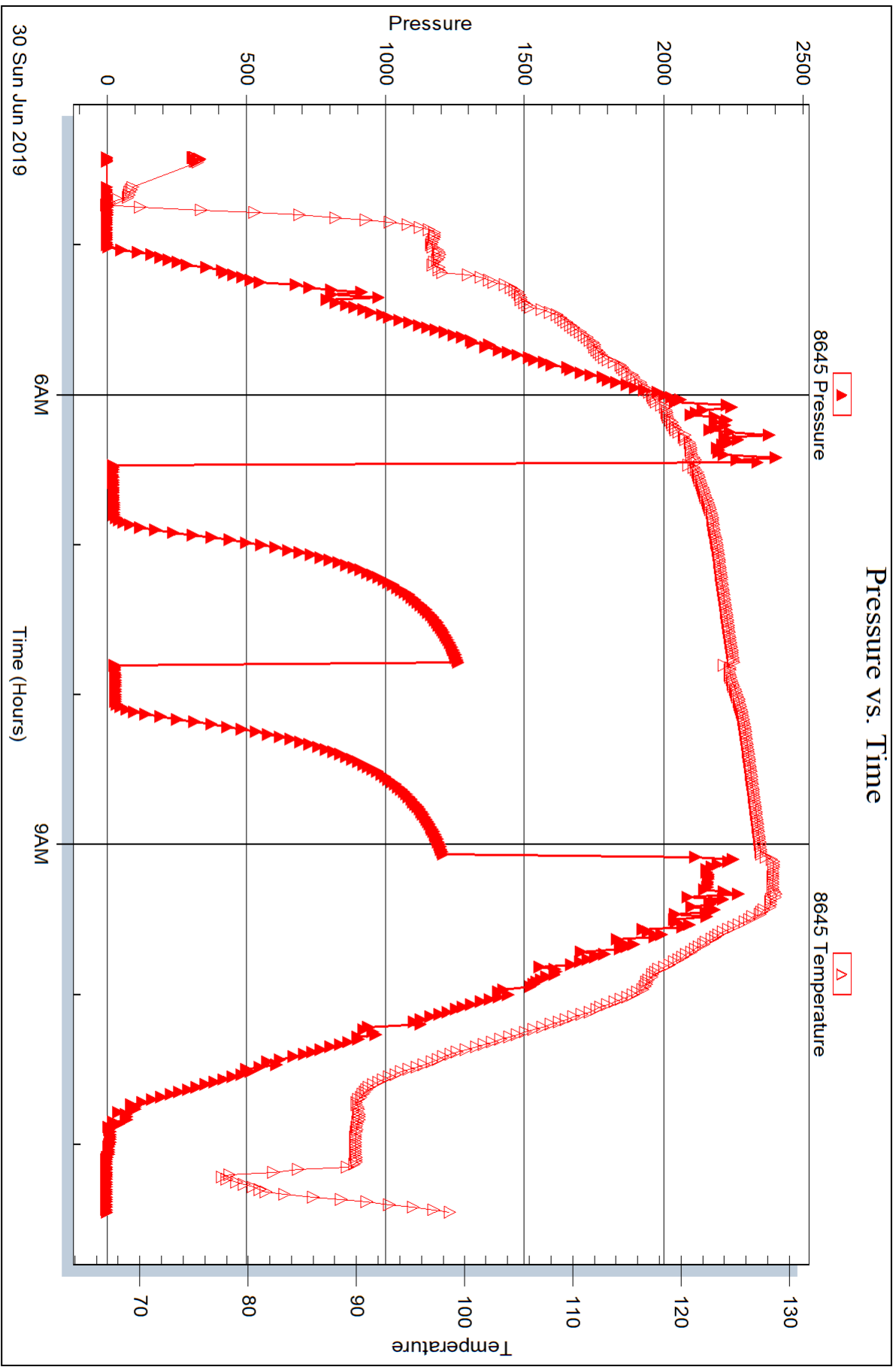
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration LLC**

1474 S St Paul St
Denver CO 80210

ATTN: Clayton Camozzi

Goetsch #1-10

10-6S-37W Sherman,KS

Start Date: 2019.07.01 @ 18:02:00

End Date: 2019.07.02 @ 01:42:30

Job Ticket #: 64653 DST #: 3

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

Printed: 2019.07.03 @ 14:56:19



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64653

DST#: 3

ATTN: Clayton Camozzi

Test Start: 2019.07.01 @ 18:02:00

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:53:00

Time Test Ended: 01:42:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4696.00 ft (KB) To 4772.00 ft (KB) (TVD)

Reference Elevations: 3453.00 ft (KB)

Total Depth: 4772.00 ft (KB) (TVD)

3448.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8355

Inside

Press@RunDepth: 78.40 psig @ 4697.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.01

End Date:

2019.07.02

Last Calib.:

2019.07.02

Start Time: 18:02:01

End Time:

01:42:30

Time On Btm:

2019.07.01 @ 20:50:20

Time Off Btm:

2019.07.01 @ 23:30:20

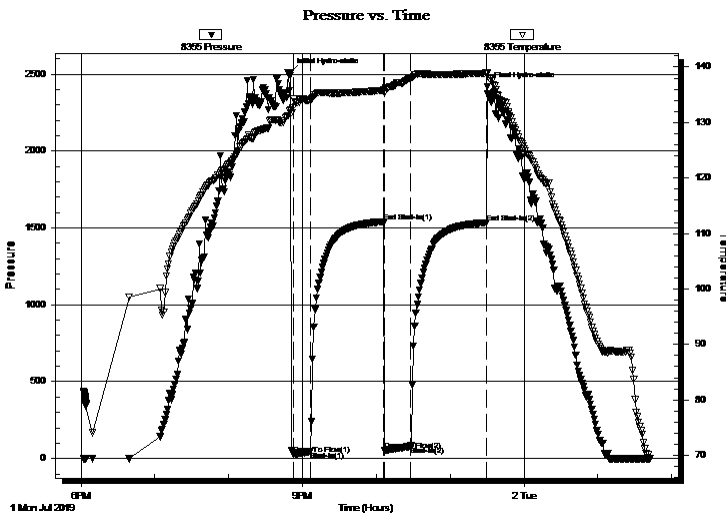
TEST COMMENT: 15-IF-1/2" Blow @ open built to 2 1/4"

60-ISI-No blow back

20-FF-Surface blow built to 1"

60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2510.82	132.28	Initial Hydro-static
3	26.65	134.29	Open To Flow (1)
16	45.72	134.10	Shut-In(1)
76	1539.80	135.82	End Shut-In(1)
77	51.45	135.31	Open To Flow (2)
98	78.40	137.96	Shut-In(2)
159	1534.11	138.88	End Shut-In(2)
161	2418.64	138.83	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	SOSM, 100%M,	0.34
60.00	GOSM, 4%G, 96%M	0.30

* Recovery from multiple tests

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Black Oak Exploration LLC

1474 S St Paul St
Denver CO 80210

ATTN: Clayton Camozzi

10-6S-37W Sherman,KS

Goetsch #1-10

Job Ticket: 64653

DST#: 3

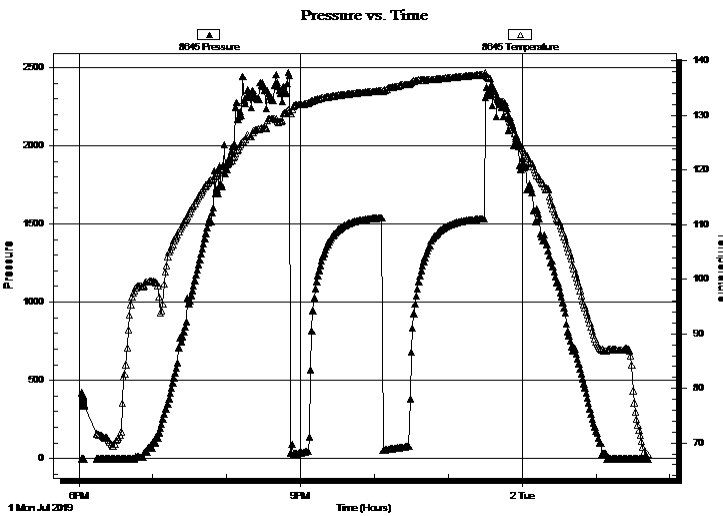
Test Start: 2019.07.01 @ 18:02:00

GENERAL INFORMATION:

Formation: **Cherokee**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:53:00
 Time Test Ended: 01:42:30
 Interval: **4696.00 ft (KB) To 4772.00 ft (KB) (TVD)**
 Total Depth: 4772.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches
 Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3453.00 ft (KB)
 3448.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8645 Outside
 Press@RunDepth: psig @ 4697.00 ft (KB)
 Start Date: 2019.07.01 End Date: 2019.07.02
 Start Time: 18:02:01 End Time: 01:42:01
 Capacity: 8000.00 psig
 Last Calib.: 2019.07.02
 Time On Btm:
 Time Off Btm:

TEST COMMENT: 15-IF-1/2" Blow @ open built to 2 1/4"
 60-ISI-No blow back
 20-FF-Surface blow built to 1"
 60-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
70.00	SOSM, 100%M,	0.34
60.00	GOSM, 4%G, 96%M	0.30

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64653

DST#: 3

ATTN: Clayton Camozzi

Test Start: 2019.07.01 @ 18:02:00

Tool Information

Drill Pipe:	Length: 4502.00 ft	Diameter: 3.80 inches	Volume: 63.15 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 64.04 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4696.00 ft			Final 67000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	104.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4669.00	
Shut In Tool	5.00			4674.00	
Hydraulic tool	5.00		Inside	4679.00	
Jars	5.00			4684.00	
Safety Joint	2.00			4686.00	
Packer	5.00			4691.00	28.00 Bottom Of Top Packer
Packer	5.00			4696.00	
Stubb	1.00			4697.00	
Recorder	0.00	8645	Outside	4697.00	
Recorder	0.00	8355	Inside	4697.00	
Perforations	7.00			4704.00	
Change Over Sub	1.00			4705.00	
Drill Pipe	63.00			4768.00	
Change Over Sub	1.00			4769.00	
Bullnose	3.00			4772.00	76.00 Bottom Packers & Anchor

Total Tool Length: 104.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Black Oak Exploration LLC

10-6S-37W Sherman,KS

1474 S St Paul St
Denver CO 80210

Goetsch #1-10

Job Ticket: 64653

DST#: 3

ATTN: Clayton Camozzi

Test Start: 2019.07.01 @ 18:02:00

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: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.20 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
70.00	SOSM, 100%M _i	0.344
60.00	GOSM, 4%G, 96%M	0.295

Total Length: 130.00 ft

Total Volume: 0.639 bbl

Num Fluid Samples: 0

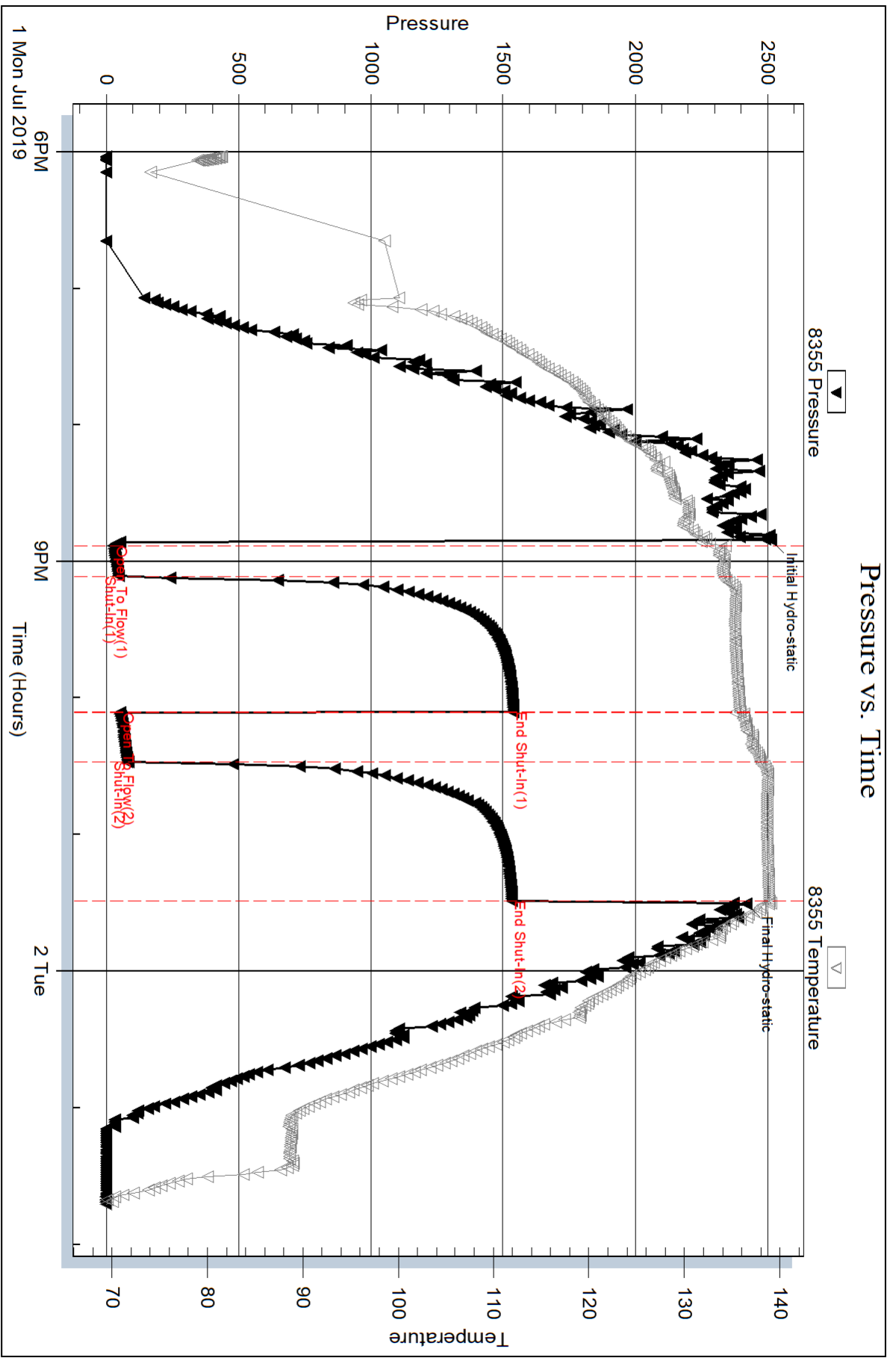
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

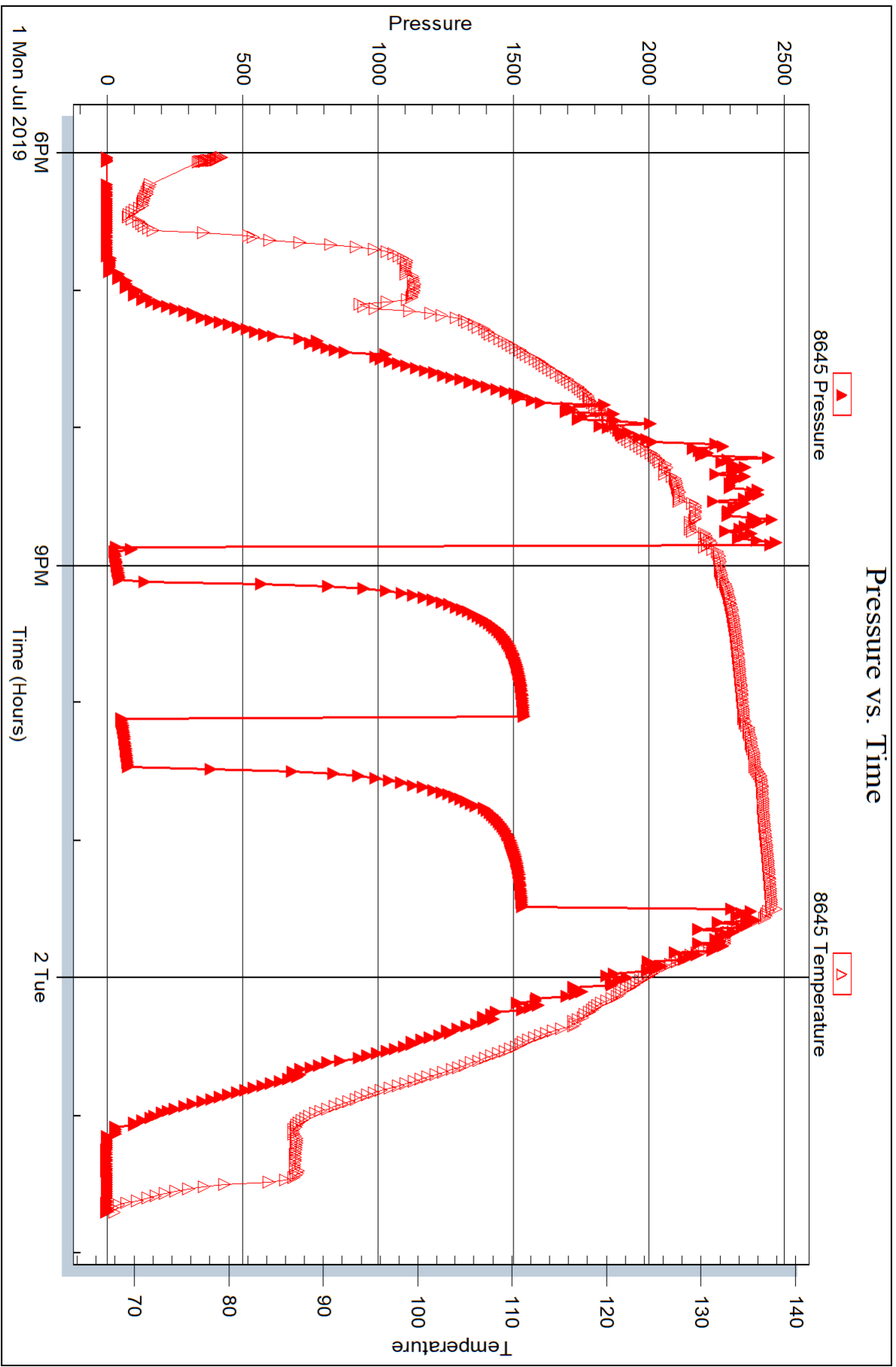


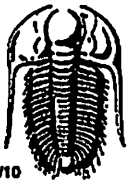
Serial #: 8645

Outside Black Oak Exploration LLC

Goetsch #1-10

DST Test Number: 3





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64651

Well Name & No. Goetsch #1-10 Test No. 1 Date 6-29-19
 Company Black Oak Exploration LLC Elevation 3453 KB 3448 GL
 Address 1474 S St Paul St Denver CO 80210
 Co. Rep / Geo. Clayton Camozzi Rig Murfin #7
 Location: Sec. 10 Twp 6S Rge. 37W Co. Sherman State KS

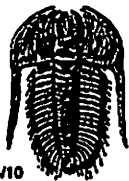
Interval Tested 4430 - 4506 Zone Tested Lans H-J
 Anchor Length 76 Drill Pipe Run 4248 Mud Wt. 9.3
 Top Packer Depth 4425 Drill Collars Run 180 Vis 58
 Bottom Packer Depth 4430 Wt. Pipe Run - WL 8
 Total Depth 4506 Chlorides 3200 ppm System LCM 4
 Blow Description IF Geo decided to pull tool after 15 stands
ISI because tool was catching so they
FF can condition the hole.
FSI

Rec	Feet of	%gas	%oil	%water	%mud

Rec Total _____ BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic _____ Test 500 T-On Location 18:25
 (B) First Initial Flow _____ Jars _____ T-Started 20:50
 (C) First Final Flow _____ Safety Joint _____ T-Open _____
 (D) Initial Shut-In _____ Circ Sub _____ T-Pulled _____
 (E) Second Initial Flow _____ Hourly Standby _____ T-Out 23:20
 (F) Second Final Flow _____ Mileage 139 RT 139 Comments _____
 (G) Final Shut-In _____ Sampler _____
 (H) Final Hydrostatic _____ Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Initial Open _____ Extra Packer _____ Extra Copies _____
 Initial Shut-In _____ Extra Recorder _____ Sub Total 0
 Final Flow _____ Day Standby _____ Total 639
 Final Shut-In _____ Accessibility _____ MP/DST Disc't _____
 Sub Total 639

Approved By _____ Our Representative Shawn Wheelbarger
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64652

Well Name & No. Goetsch #1-10 Test No. 2 Date 6-30-19
 Company Black Oak Exploration LLC Elevation 3453 KB 3448 GL
 Address 1474 55th Paul St Denver CO 80210
 Co. Rep / Geo. Clayton Camozzi Rig Martin #7
 Location: Sec. 10 Twp 6S Rge. 37W Co. Sherman State KS

Interval Tested 4430 - 4506 Zone Tested Lans H-1
 Anchor Length 76 Drill Pipe Run 4248 Mud Wt. 9.3
 Top Packer Depth 4425 Drill Collars Run 160 Vis 69
 Bottom Packer Depth 4430 Wt. Pipe Run - WL 7.6
 Total Depth 4506 Chlorides 3600 ppm System LCM 3

Blow Description IF 1/4" Blow @ open built to 1 1/4"
ISI No blow back
FF No blow
ESI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>GOM</u>	<u>3</u>	<u>4</u>		<u>93</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 20 BHT 130 Gravity - API RW - @ - °F Chlorides - ppm

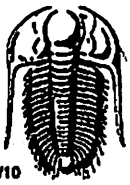
(A) Initial Hydrostatic 2331 Test 1300 T-On Location 18:25 6-29
 (B) First Initial Flow 21 Jars 250 T-Started 4:25
 (C) First Final Flow 26 Safety Joint 75 T-Open 6:32
 (D) Initial Shut-In 1264 Circ Sub _____ T-Pulled 9:07
 (E) Second Initial Flow 28 Hourly Standby _____ T-Out 11:25
 (F) Second Final Flow 31 Mileage 139RT Comments _____
 (G) Final Shut-In 1208 Sampler _____
 (H) Final Hydrostatic 2363 Straddle _____ Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____

Initial Open 20
 Initial Shut-In 60
 Final Flow 15
 Final Shut-In 60

Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1875

Sub Total 1875 Total 1875 MP/DST Disc't _____

Approved By _____ Our Representative Shawn Wheelbarger
 Triobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64653

Well Name & No. Goetsch #1-10 Test No. 3 Date 7-1-19
 Company Black Oak Exploration LLC Elevation 3453 KB 3448 GL
 Address 1474 S St Paul St Denver CO 80210
 Co. Rep / Geo. Clayton Camozzi Rig Murfin #7
 Location: Sec. 10 Twp 6S Rge. 37W Co. Sherman State KS

Interval Tested 4696-4772 Zone Tested Cherokee
 Anchor Length 76 Drill Pipe Run 4502 Mud Wt. 9.3
 Top Packer Depth 4691 Drill Collars Run 150 Vis 54
 Bottom Packer Depth 4696 Wt. Pipe Run — WL 7.2
 Total Depth 4772 Chlorides 3500 ppm System LCM 4

Blow Description IF 1/2" Blow @ open built to 2 1/4"
IST No Blow back
FF Surface blow built to 1"
FST No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>50SM</u>			<u>100</u>	
<u>60</u>	<u>60SM</u>	<u>4</u>		<u>96</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 130 BHT 139 Gravity — API RW — @ — °F Chlorides — ppm

- (A) Initial Hydrostatic 2511
- (B) First Initial Flow 27
- (C) First Final Flow 46
- (D) Initial Shut-In 1540
- (E) Second Initial Flow 51
- (F) Second Final Flow 78
- (G) Final Shut-In 1534
- (H) Final Hydrostatic 2419

- Test 1300
- Jars 250
- Safety Joint 75
- Circ Sub
- Hourly Standby
- Mileage 139 RT ¹³⁹
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1764

T-On Location 15:57
 T-Started 18:02
 T-Open 20:51
 T-Pulled 23:27
 T-Out 1:39 7-2

Comments _____
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1764
 MP/DST Disc't _____

Initial Open 15
 Initial Shut-In 60
 Final Flow 20
 Final Shut-In 60

Approved By _____ Our Representative Shawn Wheelburger
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Black Oak Exploration, LLC

WELL COMPARISON SHEET

Company: Black Oak Exploration, LLC
1474 S St Paul St
Denver, CO 80210

Contact: Clayton Camozzi 303-968-4999 (Cell)

Well: Goetsch 1-10
Location: 1840 FSL / 2650 FEL
10 - 6S - 37W
Sherman Co., KS

Wellsite Geologist: Clayton Camozzi Cell: (303) 968-4999

Elevation: 3453' KB 3448' GL
Field: Wildcat

API No: 15-039- 21261-0000
Surface Casing: 8 5/8" set @ 390' KB

Drilling Contractor: Murfin Drilling Co Rig #7. Rig Phone (785-443-5616), Tool Pusher Arturo Cabezas (785-443-0494)

	DRILLING WELL				COMPARISON WELL				COMPARISON WELL			
	Goetsch 1-10				Perkins 1 Target Drlg: D&A				Goetsch 9-16 McElvain: D&A			
E-logs - 4' Uphole Correction	1840 FSL / 2650 FEL 10 - 6S - 37W				1980 FSL / 1980 FEL 10 - 6S - 37W				411 FSL / 957 FEL 9 - 6S - 37W			
	3453 KB				3461 KB		Structural Relationship		3432 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
STONE CORRAL	3107	346	3103	350	3121	340	6	10	3076	356	-10	-6
NEVA	3646	-193	3640	-187	3660	-199	6	12	3610	-178	-15	-9
TOPEKA	4088	-635	4084	-631	4105	-644	9	13	4049	-617	-18	-14
LECOMPTON	4183	-730	4177	-724	4200	-739	9	15	4147	-715	-15	-9
HEENBER	4253	-800	4248	-795	4269	-808	8	13	4216	-784	-16	-11
LANSING	4307	-854	4300	-847	4324	-863	9	16	4272	-840	-14	-7
LANSING "D" Zone	4356	-903	4348	-895	4374	-913	10	18	4319	-887	-16	-8
LANSING "J" Zone	4486	-1033	4480	-1027	4505	-1044	11	17	4464	-1032	-1	5
BKC	4568	-1115	4559	-1106	4584	-1123	8	17	4534	-1102	-13	-4
ALTAMONT	4632	-1179	4624	-1171	4655	-1194	15	23	4601	-1169	-10	-2
PAWNEE	4688	-1235	4680	-1227	4717	-1256	21	29	4654	-1222	-13	-5
FORT SCOTT	4710	-1257	4707	-1254	4741	-1280	23	26	4681	-1249	-8	-5
CELIA	4783	-1330	4779	-1326	4820	-1359	29	33	4756	-1324	-6	-2
MISSISSIPPIAN	NDE				NDE				4964	-1532		
Total Depth	4930	-1477	4926	-1473	4907	-1446			5010	-1578		

BLACK OAK



EXPLORATION

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

Well Name: GOETSCH 1-10
Well Id:
Location: Section 10 - 6S - 37W Sherman Co, Kansas
License Number: API # 15-181-20623-0000
Spud Date: 6/25/2019
Surface Coordinates: 1840 FSL & 2650 FEL
Region: Wildcat
Drilling Completed: 7/2/2019

Bottom Hole
Coordinates:
Ground Elevation (ft): 3447' K.B. Elevation (ft): 3452'
Logged Interval (ft): 4050 To: 4930 Total Depth (ft): 4930
Formation: Lansing Kansas City
Type of Drilling Fluid: Chemical Gel/Polymer Fresh Water -Based

Printed by WellSight LogViewer from WellSight Systems 1-800-447-1534 www.WellSight.co

OPERATOR

Company: BLACK OAK EXPLORATION, LLC
Address: 1474 S St Paul St
Denver CO 80210

GEOLOGIST

Name: Clayton Camozzi
Company: Black Oak Exploration, LLC
Address: 1474 S St Paul St
Denver CO 80210
Cell: 303.968.4999

REMARKS

After review of the open hole logs, DST data and geological log data it was recommended to plug and abandon the Goetsch 1-10. The sample will be delivered, processed and available for review at the KGS Library located in Wichita, Kansas. Note; there is a 4' uphole correction on the E-logs vs Geolog. The gamma ray curve has been shifted 4' deeper to match the drill time on this log.
Respectfully, Clayton Camozzi

Black Oak Exploration, LLC

WELL COMPARISON SHEET

Company: Black Oak Exploration, LLC
 1474 S St Paul St
 Denver, CO 80210
 Contact: Clayton Camozzi 303-968-4999 (Cell)

Well: Goetsch 1-10
 Location: 1840 FSL / 2650 FEL
 10 - 6S - 37W
 Sherman Co., KS

Elevation: 3453' KB 3448' GL
 Field: Wildcat
 API No: 15-039- 21261-0000
 Surface Casing: 8 5/8" set @ 390' KB

Wellsite Geologist: Clayton Camozzi Cell: (303) 968-4999

Drilling Contractor: Murfin Drilling Co Rig #7. Rig Phone (785-443-5616), Tool Pusher Arturo Cabezas (785-443-0494)

Formation	DRILLING WELL		
	Sample	Sub-Sea	Log
Goetsch 1-10	3107	346	3103
1840 FSL / 2650 FEL 10 - 6S - 37W			
	3453 KB		
STONE CORRAL	3646	-193	3640
NEVA	4088	-635	4084
TOPEKA	4183	-730	4177
LECOMPTON	4253	-800	4248
HEENBER	4307	-854	4300
LANSING	4356	-903	4348
LANSING "D" Zone	4486	-1033	4480
LANSING "J" Zone	4568	-1115	4559
BKC	4632	-1179	4624
ALTAMONT	4688	-1235	4680
PAWNEE	4710	-1257	4707
FORT SCOTT	4783	-1330	4779
CELIA	NDE		
MISSISSIPPIAN	4930	-1477	4926
Total Depth			-1473

Perkins 1	COMPARISON WELL		
	Log	Sub-Sea	Sample
1980 FSL / 1980 FEL 10 - 6S - 37W	3121	340	6
	3660	-199	6
	4105	-644	9
	4200	-739	9
	4269	-808	8
	4324	-863	9
	4374	-913	10
	4505	-1044	11
	4584	-1123	8
	4655	-1194	15
	4717	-1256	21
	4741	-1280	23
	4820	-1359	29
	NDE		
	4907	-1446	

Goetsch 9-16	COMPARISON WELL		
	Log	Sub-Sea	Sample
411 FSL / 957 FEL 9 - 6S - 37W	3076	356	-10
	3610	-178	-15
	4049	-617	-18
	4147	-715	-15
	4216	-784	-16
	4272	-840	-14
	4319	-887	-16
	4464	-1032	-1
	4534	-1102	-13
	4601	-1169	-10
	4654	-1222	-13
	4681	-1249	-8
	4756	-1324	-6
	4964	-1532	
	5010	-1578	

E-logs - 4' Uphole
 Correction

Target Drlg: D&A

McElvain: D&A

3432 KB
 Structural Relationship

3461 KB
 Structural Relationship

3432 KB
 Structural Relationship



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Black Oak Exploration LLC
1474 S St Paul St Denver CO 80210
ATTN: Clayton Camozzi

10/6S/37W
Goetsch #1-10
Job Ticket: 64652 **DST#: 2**
Test Start: 2019.06.30 @ 04:25:00

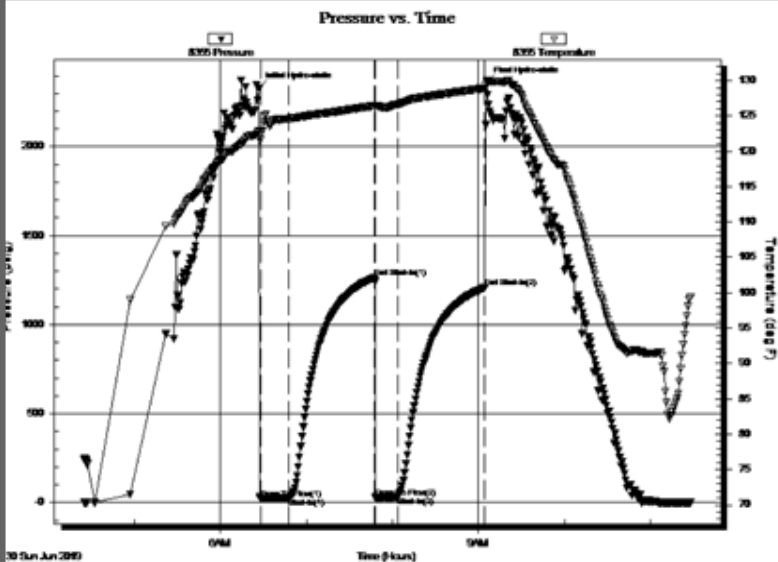
GENERAL INFORMATION:

Formation: **Lans H-J**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 06:27:50
Time Test Ended: 11:28:09
Interval: **4430.00 ft (KB) To 4506.00 ft (KB) (TVD)**
Total Depth: 4506.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Reset)
Tester: Shaw n Wheelbarger
Unit No: 76
Reference Elevations: 3453.00 ft (KB)
3448.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8355

Press@RunDepth: 30.69 psig @ ft (KB) Capacity: 8000.00 psig
Start Date: 2019.06.30 End Date: 2019.06.30 Last Calib.: 2019.06.30
Start Time: 04:25:01 End Time: 11:28:10 Time On Btm: 2019.06.30 @ 06:26:50
Time Off Btm: 2019.06.30 @ 09:05:50

TEST COMMENT: 20-IF-1/4" Blow @ open built to 1 1/4"
60-ISI-No blow back
15-FF-No blow
60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2331.31	122.81	Initial Hydro-static
1	20.57	122.29	Open To Flow (1)
21	25.65	124.61	Shut-In(1)
81	1263.50	126.46	End Shut-In(1)
82	28.41	126.09	Open To Flow (2)
97	30.69	126.62	Shut-In(2)
158	1208.47	128.93	End Shut-In(2)
159	2362.53	129.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	GOM 3%G, 4%O, 93%M	0.10

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Black Oak Exploration LLC
1474 S St Paul St Denver CO 80210
ATTN: Clayton Camozzi

10/6S/37W
Goetsch #1-10
Job Ticket: 64653 **DST#: 3**
Test Start: 2019.07.01 @ 18:02:00

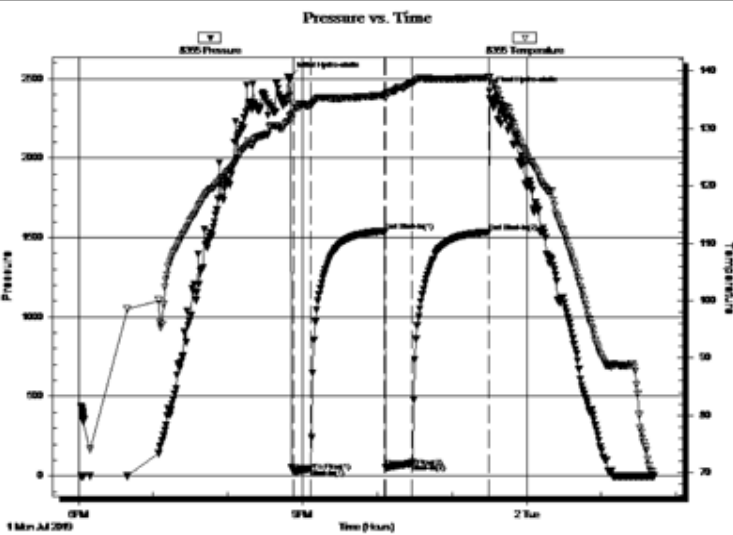
GENERAL INFORMATION:

Formation: **cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:53:00
Time Test Ended: 01:42:30
Interval: **4696.00 ft (KB) To 4772.00 ft (KB) (TVD)**
Total Depth: 4772.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Reset)
Tester: Shawn Wheelbarger
Unit No: 76
Reference Elevations: 3453.00 ft (KB)
3448.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8355

Press@RunDepth: 78.40 psig @ ft (KB) Capacity: 8000.00 psig
Start Date: 2019.07.01 End Date: 2019.07.02 Last Calib.: 2019.07.02
Start Time: 18:02:01 End Time: 01:42:30 Time On Btm: 2019.07.01 @ 20:50:20
Time Off Btm: 2019.07.01 @ 23:30:20

TEST COMMENT: 15-IF-1/2" Blow @ open built to 2 1/4"
60-ISI-No blow back
20-FF-Surface blow built to 1"
60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2510.82	132.28	Initial Hydro-static
3	26.65	134.29	Open To Flow (1)
16	45.72	134.10	Shut-In(1)
76	1539.80	135.82	End Shut-In(1)
77	51.45	135.31	Open To Flow (2)
98	78.40	137.96	Shut-In(2)
159	1534.11	138.88	End Shut-In(2)
161	2418.64	138.83	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	SOSM, 100%M,	0.34
60.00	GOSM, 4%G, 96%M	0.30

Gas Rates

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

ROCK TYPES

LITHOLOGY

- Anhy
- Bent
- Brec
- Cht
- Clyst
- Coal
- Congl
- Dol
- Gyp
- Igne
- Lmst
- Meta
- Mrlst
- Salt
- Shale
- Shcol
- Shgy
- Slstst
- Ss
- Till
- Slststn
- Shale
- Sandylms
- Lms
- Gry sh
- Dtd
- Dol
- Carb sh
- pipesymbol
- unknown lith
- Red shale

FOSSIL

- Oomoldic
- Fuss
- Algae

MINERAL

- Sltly
- Sand
- Dol
- Chlorite
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol

STRINGER

- Sh
- Sandylms
- Lms
- Gryslt
- Grysh
- Dol
- Clystn
- Carbsh
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Slststrg

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- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

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- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

-

- Ssstrg

TEXTURE

- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OIL SHOW

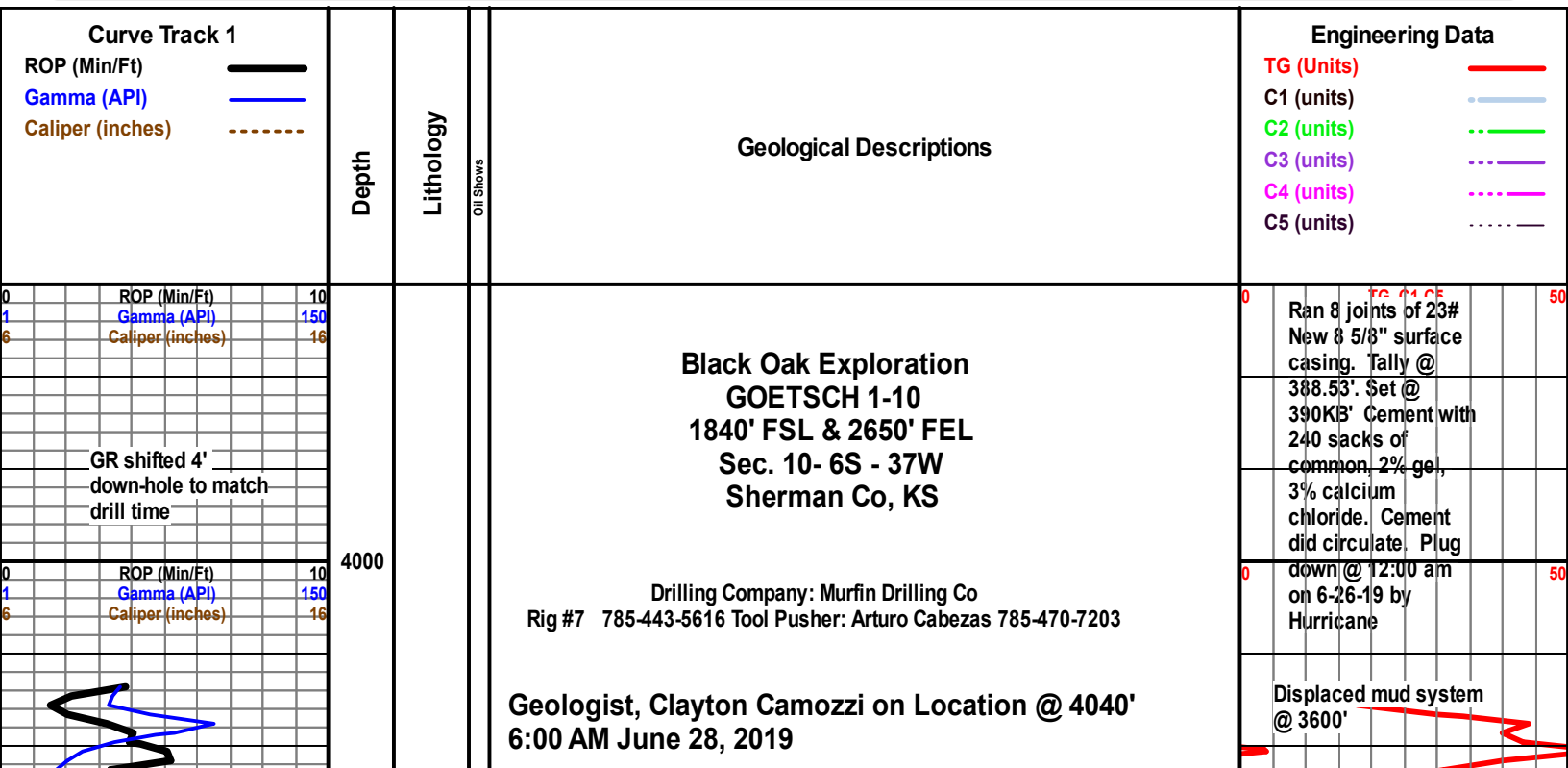
- Gas show
- Even
- Spotted
- Ques
- Dead

INTERVAL

- Dst
- Core
- Dst
- Straddle test tail pip

EVENT

- Rft
- Sidewall
- Dst
- Open hole
- Perforations



Start Wet & Dry Samples @ 4050'

Limestone off white to gray due to shale inclusions, microcrystalline matrix, no visible porosity no show. Sandstone, sub-angular to round, fair sorting, shale inclusions in part, good intergranular porosity, no odor, no fluorescence, no show. Shale, light gray to trace black, hard dense to scattered brittle, no fluorescence

Limestone, white to small trace dark gray, hard dense, microcrystalline matrix, no visible porosity, no stain, no fluorescence no, no odor, no show, trace soft white chalk scattered throughout

Limestone white to light cream, hard dense to scattered brittle, microcrystalline matrix, recrystalline matrix, abundant large calcite crystals in matrix, no visible porosity no stain, no fluorescence no show, trace scattered white chalk

Limestone off white to light gray, hard dense, cryptocrystalline matrix trace oolitic matrix, no visible porosity, no stain, no odor, no fluorescence no show, abundant soft white chalk throughout, scattered subangular pyrite, small trace crinoids

Limestone white to cream, hard to brittle, fine crystalline to scattered sub sucrosic matrix, scattered recrystalline matrix, poor to fair intercrystalline porosity, possible scattered fracture porosity, scattered spotty dead oil stain in 40%, no odor, scattered dull yellow fluorescence in part, good slow stream cut to fair flush cut, no show free oil in try

Topeka 4088 (-635)

Limestone cream, microstyaline throughout, no visible porosity, dull yellow mineral fluorescence throughout, no odor no stain no show free oil, scattered trace soft white chalk

Limestone cream, hard dense to scattered brittle, abundant sub angular to sub round-oolitic in a dense calcareous matrix, calcite veins in part, fair interoolitic porosity, small trace vugular porosity, spotted scattered mineral fluorescence throught, no odor, no stain, no show free oil, very small trace glauconite in part

Limestone white to cream, hard dense, microcrystalline matrix with abundant calcite veins, poor to no intercrystalline porosity, scattered dull yellow fluorescence in part, no odor, very small trace black waxy dead oil stain in 10%, no show free oil in tray, abundant soft white chalk throughout

Limestone cream to off white, hard dense, microcrystalline matrix with trace calcite veins scattered throughout, poor intercrystalline porosity, dull yellow mineral fluorescence, no odor, no cut no show free oil, abundant soft white chalk scattered throughout

Limestone- As above

Limestone cream to scattered light gray, microcrystalline to trace scattered oolitic in a dense cryptocrystalline matrix, very poor to no intercrystalline porosity, dull fellow mineral fluorescence, no odor no stain, no cut, no show free oil. abundant soft whit chalk in partt

Shale black, soft waxy, carbonaceous fissile

Shale light gray to red, very soft to gummy, small trace sandstaone clear sub round fairly sorted, fair intergranular porosity, shale inclusions, no fluorescence no cut no show

LeCompton 4183 (-730)

Limestone light gray, hard dense, microcrystalline throughout, scattered shale inclusions, trace crinoids in matrix, no visible porosity, no odor, scattered mineral fluorescence throughout, no show free oil

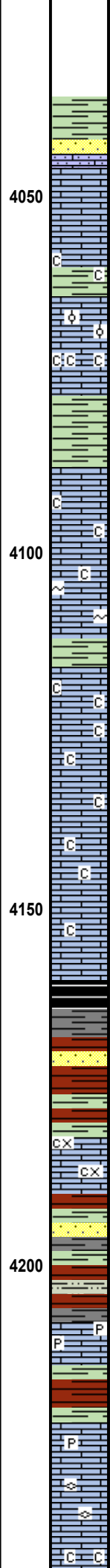
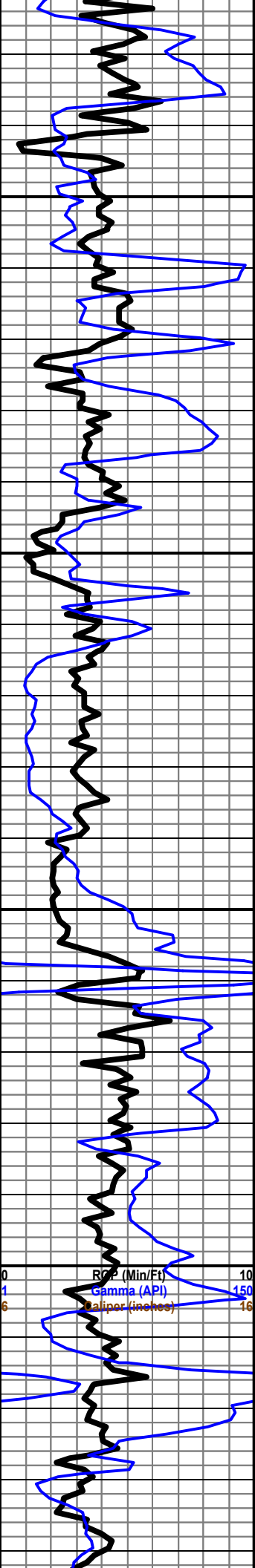
Shale red to scattered light gray, very soft gummy to scattered waxy. Trace scattered sandstaone, sub round to round quartz grains, shale inclusions, fair intercrystalline porosity, no fluorescence, no odor no show free oil. Scattered silstone in red gummy shaly matrix, no show.

Limestone light gray to trace light brown, very hard dense, microcrystalline scattered cryptocrystalline, no visible porosity, dull yellow mineral fluorescence, no odor, no stain, no show free oil, pyrite scattered throughout

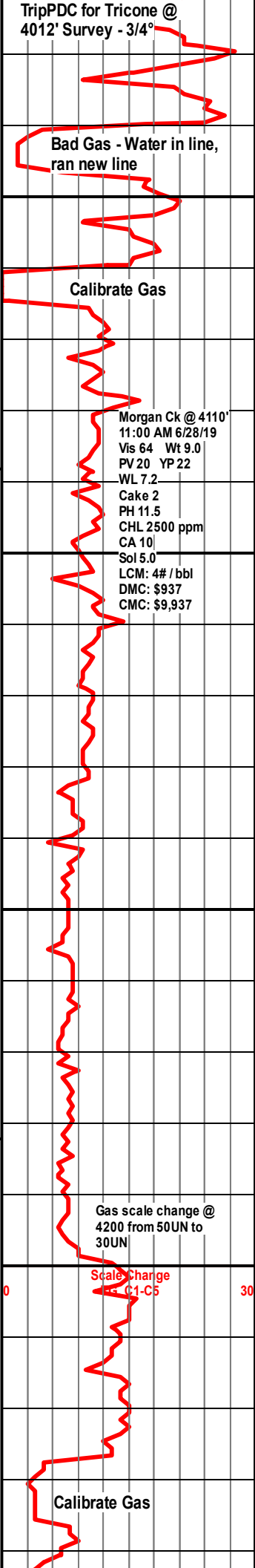
Limestone-As above

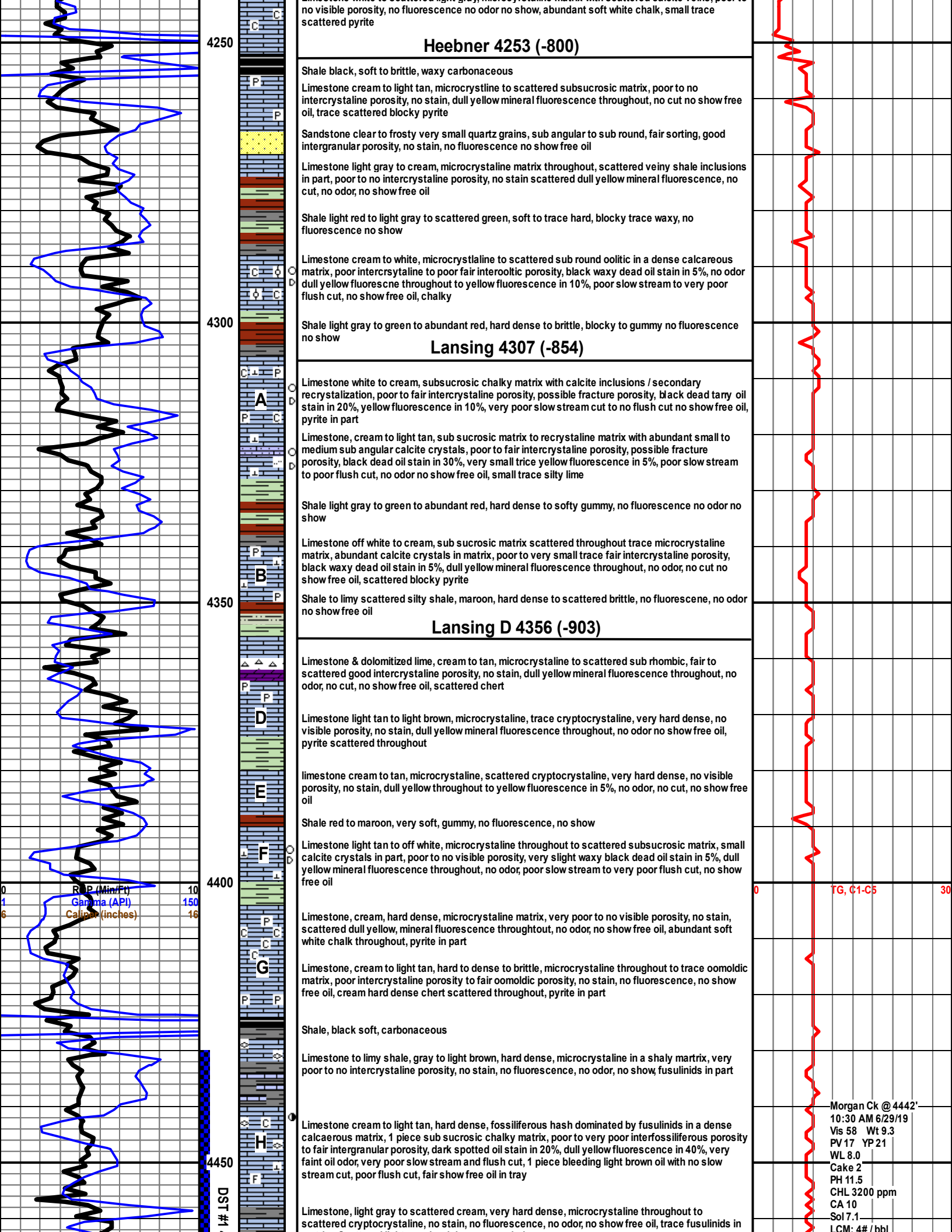
Limestone very fine grained trace scattered oolitic in a dense calcareous matrix, poor to fair intercrystaline porosity, no fluorescence, no odor, no show free oil, scattered fusulinids in matrix

Limestone white to scattered light gray, microcrystalline matrix with scattered calcite veins, poor to



4050
4100
4150
4200





Heebner 4253 (-800)

Shale black, soft to brittle, waxy carbonaceous

Limestone cream to light tan, microcrystalline to scattered subsucrosic matrix, poor to no intercrystalline porosity, no stain, dull yellow mineral fluorescence throughout, no cut no show free oil, trace scattered blocky pyrite

Sandstone clear to frosty very small quartz grains, sub angular to sub round, fair sorting, good intergranular porosity, no stain, no fluorescence no show free oil

Limestone light gray to cream, microcrystalline matrix throughout, scattered veiny shale inclusions in part, poor to no intercrystalline porosity, no stain scattered dull yellow mineral fluorescence, no cut, no odor, no show free oil

Shale light red to light gray to scattered green, soft to trace hard, blocky trace waxy, no fluorescence no show

Limestone cream to white, microcrystalline to scattered sub round oolitic in a dense calcareous matrix, poor intercrystalline to poor fair interoolitic porosity, black waxy dead oil stain in 5%, no odor dull yellow fluorescne throughout to yellow fluorescence in 10%, poor slow stream to very poor flush cut, no show free oil, chalky

Lansing 4307 (-854)

Shale light gray to green to abundant red, hard dense to brittle, blocky to gummy no fluorescence no show

Limestone white to cream, subsucrosic chalky matrix with calcite inclusions / secondary recrystallization, poor to fair intercrystalline porosity, possible fracture porosity, black dead tarry oil stain in 20%, yellow fluorescence in 10%, very poor slow stream cut to no flush cut no show free oil, pyrite in part

Limestone, cream to light tan, sub sucrosic matrix to recrystalline matrix with abundant small to medium sub angular calcite crystals, poor to fair intercrystalline porosity, possible fracture porosity, black dead oil stain in 30%, very small trice yellow fluorescne in 5%, poor slow stream to poor flush cut, no odor no show free oil, small trace silty lime

Shale light gray to green to abundant red, hard dense to softy gummy, no fluorescne no odor no show

Limestone off white to cream, sub sucrosic matrix scattered throughout trace microcrystalline matrix, abundant calcite crystals in matrix, poor to very small trace fair intercrystalline porosity, black waxy dead oil stain in 5%, dull yellow mineral fluorescne throughout, no odor, no cut no show free oil, scattered blocky pyrite

Lansing D 4356 (-903)

Shale to limy scattered silty shale, maroon, hard dense to scattered brittle, no fluorescne, no odor no show free oil

Limestone & dolomitized lime, cream to tan, microcrystalline to scattered sub rhombic, fair to scattered good intercrystalline porosity, no stain, dull yellow mineral fluorescence throughout, no odor, no cut, no show free oil, scattered chert

Limestone light tan to light brown, microcrystalline, trace cryptocrystalline, very hard dense, no visible porosity, no stain, dull yellow mineral fluorescne throughout, no odor no show free oil, pyrite scattered throughout

limestone cream to tan, microcrystalline, scattered cryptocrystalline, very hard dense, no visible porosity, no stain, dull yellow throughout to yellow fluorescne in 5%, no odor, no cut, no show free oil

Shale red to maroon, very soft, gummy, no fluorescne, no show

Limestone light tan to off white, microcrystalline throughout to scattered subsucrosic matrix, small calcite crystals in part, poor to no visible porosity, very slight waxy black dead oil stain in 5%, dull yellow mineral fluorescne throughout, no odor, poor slow stream to very poor flush cut, no show free oil

Limestone, cream, hard dense, microcrystalline matrix, very poor to no visible porosity, no stain, scattered dull yellow, mineral fluorescne throughout, no odor, no show free oil, abundant soft white chalk throughout, pyrite in part

Limestone, cream to light tan, hard to dense to brittle, microcrystalline throughout to trace oomoldic matrix, poor intercrystalline porosity to fair oomoldic porosity, no stain, no fluorescne, no show free oil, cream hard dense chert scattered throughout, pyrite in part

Shale, black soft, carbonaceous

Limestone to limy shale, gray to light brown, hard dense, microcrystalline in a shaly martrix, very poor to no intercrystalline porosity, no stain, no fluorescne, no odor, no show, fusulinids in part

Limestone cream to light tan, hard dense, fossiliferous hash dominated by fusulinids in a dense calcaerous matrix, 1 piece sub sucrosic chalky matrix, poor to very poor interfossiliferous porosity to fair intergranular porosity, dark spotted oil stain in 20%, dull yellow fluorescne in 40%, very faint oil odor, very poor slow stream and flush cut, 1 piece bleeding light brown oil with no slow stream cut, poor flush cut, fair show free oil in tray

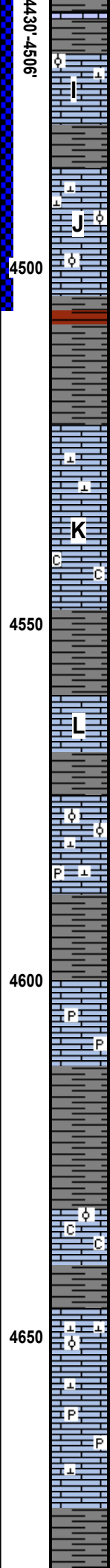
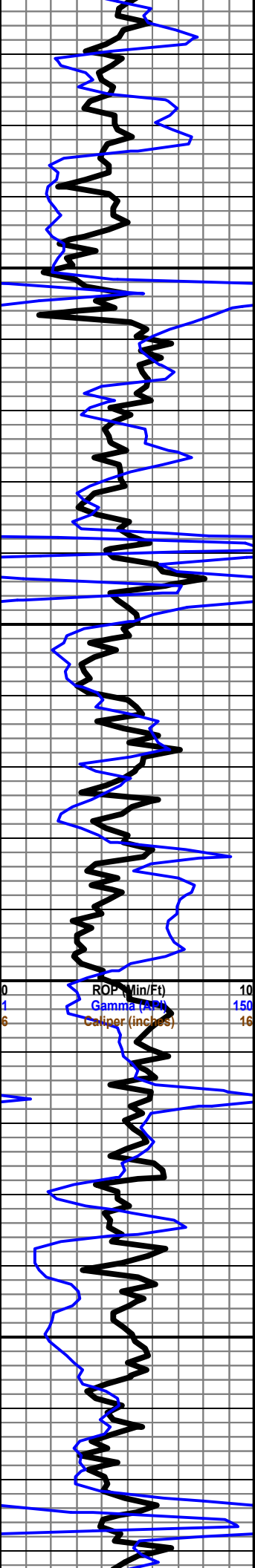
Limestone, light gray to scattered cream, very hard dense, microcrystalline throughout to scattered cryptocrystalline, no stain, no fluorescne, no odor, no show free oil, trace fusulinids in

ROP (Min/Ft) 10
Gamma (API) 150
Caliper (inches) 16

DST #1

Morgan Ck @ 4442'

10:30 AM 6/29/19
Vis 58 Wt 9.3
PV 17 YP 21
WL 8.0
Cake 2
PH 11.5
CHL 3200 ppm
CA 10
Sol 7.1
LCM: 4# / bbl



matrix - Scattered light gray hard dense gray shale

Lansing J 4486 (-1033)

Limestone, cream to tan, sub sucrosic to scattered sucrosic to scattered oolitic with small to medium calcite crystal in matrix, fair to good intergranular porosity to poor to fair interoolitic porosity, light brown stain in 60%, dull yellow fluorescence throughout, good cuts with intergranular sample, no cuts with oolitic, very faint oil odor, intergranular samples slowly bleeding light brown oil, good show free oil in tray,

Limestone light tan, microcrystalline to scattered subsucrosic to scattered oolitic in a recrystallized calcareous matrix, poor to fair intercrystalline porosity to trace poor interoolitic porosity, spotty stain in 40%, dull yellow to no fluorescence throughout, very poor slow stream cut, poor flush cut, very faint oil odor, poor show free oil

Limestone white to cream to trace light tan, hard dense, microcrystalline throughout to trace oolitic in a dense calcareous matrix small trace subsucrosic, light brown stain in 30%, yellow fluorescence in 15%, fair slow stream cut to fair flush cut, very faint oil odor, good show free oil in tray

Shale light gray to dark gray to trace black, very soft gummy micaceous in part, trace scattered carbonaceous shale, pyrite in part

Limestone, off white to cream, hard dense, microcrystalline matrix throughout, no visible porosity, no odor, no fluorescense, no show free oil, trace pyrite scattered throughout

Limestone cream, hard dense, microcrystalline, recrystalline matrix calcite veins in part, por to no visible porosity, no stain, no fluorescense, no odor, no show free oil, trace pyrite, abundant soft white chalk

Limestone - As Above

Limestone cream to tan to scattered light gray, hard dense, microcrystalline to scattered cryptocrystalline, trace shale inclusions/stringers, no visible porosity, no stain, no fluorescense, no odor, no show free oil, scattered soft white chalk

Limestone cream to tan, hard dense, microcrystalline trace cryptocrystalline, no visible porosity, no fluorescense, no odor no show free oil

BKC 4566 (-1113)

Limestone cream to tan, hard dense, microcrystalline trace cryptocrystalline, trace oolitic in a dense calcareous matrix, no visible porosity, dull yellow mineral fluorescence throughout, no odor no show free oil, abundant soft white chalk, pyrite scattered throughout

Limestone cream to tan, hard to soft, microcrystalline with abundant calcite in part, possible recrystalline matrix, poor intercrystalline porosity, streaky spotted light brown oil stain in 10%, dull yellow fluorescence in 40%, no odor, no slow stream or flush cut, no show free oil,

Shale, light gray, soft waxy to gummy, micaceous, no fluorescense, trace pyrite in part

Limestone light gray to cream, hard dense, microcrystalline throughout to scattered cryptocrystalline, no visible porosity no odor, no fluorescense, no show free oil, trace pyrite, trace soft white chalk scattered throughout

Shale light gray to scattered brown, hard dense to soft, blocky to gummy, no fluorescense

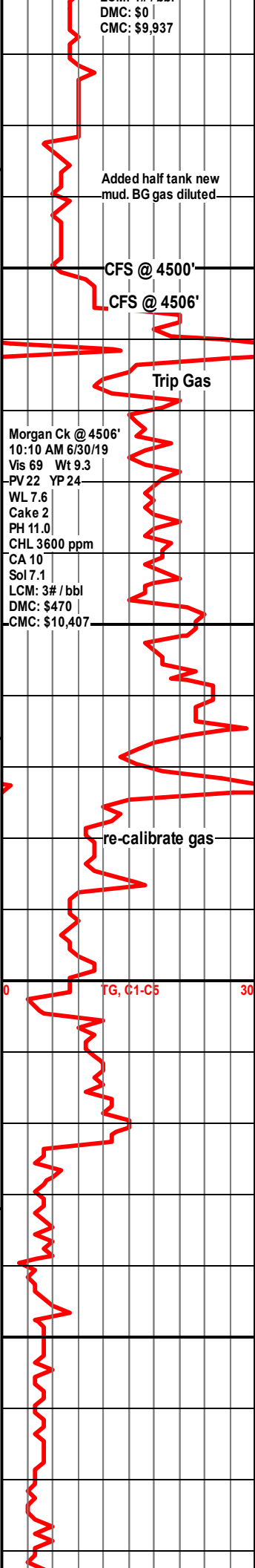
Altamont 4632 (-1180)

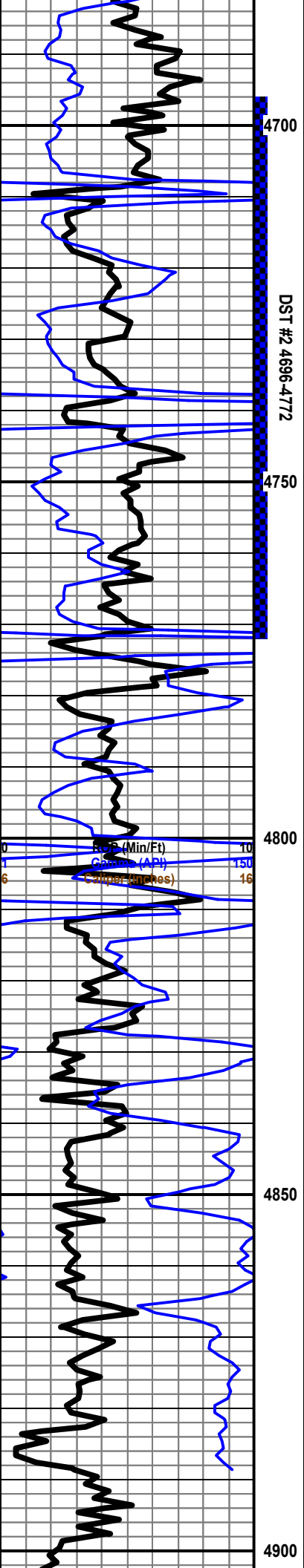
Limestone cream to tan, microcrystalline to small trace sub sucrosic to trace oolitic, abundant calcite in matrix, poor intercrystalline porosity, no stain, no fluorescense, no odor, no show free oil

Limestone cream, hard dense, microcrystalline throughout, very small trace oolitic in a dense calcareous matrix, very poor to no intercrystalline porosity, no stain, yellow fluorescense throughout, no slow stream or flush cut, no show free oil.

Limestone cream, hard dense to trace brittle, microcrystalline recrystalline calcareous matrix in part, poor intercrystalline porosity, no odor, yellow fluorescense throughout, no slow stream or flush cut no show free oil, pyrite in part

Shale light gray to, hard dense to scattered soft, micaceous in part, no fluorescense, small trace scattered black carbonaceous shale





Pawnee 4688 (-1235)

Limestone cream, hard dense, microcrystalline to scattered angular lime fragments in a dense calcareous matrix, trace recrystalline matrix, poor to no intercrystalline porosity, no stain, dull yellow mineral fluorescence throughout, no odor no cut no show free oil, pyrite in part

Shale black soft to hard waxy to splintry, carbonaceous, no fluorescence

Fort Scott 4710 (-1257)

Limestone to limy shale to trace scattered chert, light gray to cream, micrystalline matrix with abundant shale stringer, poor to no intercrystalline porosity, no stain, scattered yellow fluorescence in 10% to scattered dull yellow fluorescence throughout, no cuts, no odor, no show free oil, trace fusillinids in matrix.

Limestone white to cream, hard dense, microcrystalline throughout, calcite stringers in part, trace cryptocrystalline, very poor intercrystalline porosity to no visible porosity, no stain, dull yellow mineral fluorescence throughout, no cuts, no odor, no show free oil, soft white chalk scattered throughout, possible chert

Cherokee 4738 (-1285)

Shale black soft, splintry to waxy, carbonaceous, no fluorescence

Limestone cream to tan, hard to scattered brittle, oolitic/subsucrosic in a dense calcareous matrix, calcite inclusions throughout, possible recrystalline matrix, poor to fair intercrystalline porosity, trace vugular porosity, fair oil stain in 10%, yellow fluorescence throughout to bright yellow fluorescence in 5%, poor slow stream cut to fair flush cut, fair oil odor few samples bleeding oil, good show light brown free oil in tray

Limestone gray to brown, hard dense, microcrystalline to cryptocrystalline throughout, no visible porosity, no stain, no fluorescence no cuts, no odor, no show free oil, shale inclusions throughout

Shale, black, soft, splintry carbonaceous

Limestone, cream to brown to light gray, microcrystalline scattered cryptocrystalline to oolitic in a subsucrosic calcareous matrix w/shale inclusions in part, poor intercrystalline porosity throughout to very small trace fair intercrystalline porosity, no stain, yellow fluorescence in 20%, no odor, no cuts, no show free oil, pyrite in part, trace carbonaceous black shale inclusions in limy/oolitic matrix, pyrite in part

Limestone cream to tan, microcrystalline scattered cryptocrystalline matrix, no visible porosity, no stain, no fluorescence, no odor no show free oil

Limestone as above - shale stringers, light gray hard dense, scattered throughout, very slight trace carbonaceous black shale

Shale, black, soft, splintry, carbonaceous, shale, light gray to scattered green, soft gummy, micaceous, no fluorescence

Limestone cream, microcrystalline to heavy trace recrystalline matrix, large sub angular calcite crystals in part, poor to no visible porosity, no stain, no fluorescence no odor no stain, scattered shale inclusions

Sandstone, cleary to frosty, sub angular to scattered sub round, poorly sorted small quartz grains, calcareous matrix, fair to scattered good intergranular porosity, possible black very spotty dead oil stain, no fluorescence, no odor, no cuts, no show free oil, very small trace glauconite

Limestone, cream to tan, microcrystalline, heavy trace recrystalline matrix, poor intercrystalline porosity, no stain, no fluorescence no show free oil, abundant calcite in part - Interbedded Sandstone angular to sub round, fair to very poorly sorted, dense calcareous matrix, poor intergranular porosity, no fluorescence, no show

Limestone white to cream, hard dense, microcrystalline matrix, trace recrystalline matrix, no visible porosity, no stain, fluorescence, no odor no show free oil

Sand Stone, clear sub angular poorly sorted clear quartz grains in a dense calcareous matrix, fair intergranular porosity no stain, no fluorescence, no cut, no show free oil

Sandstone interbedded shales, very fine sub round fair sorted quartz grains in a red shaly matrix, calcareous, fair to trace good intergranular porosity, no stain, no fluorescence, no odor no show free oil

Shale light gray to gray to green to red, hard dense to scattered soft, splintry to blocky micaceous in part, no fluorescence no show

Limestone white to cream, hard dense, microcrystalline, poor intercrystalline porosity, no stain, no fluorescence, no odor no show - Shale inclusions as above

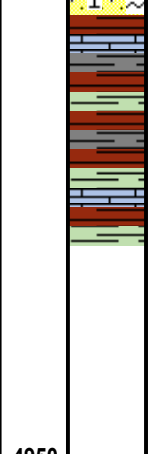
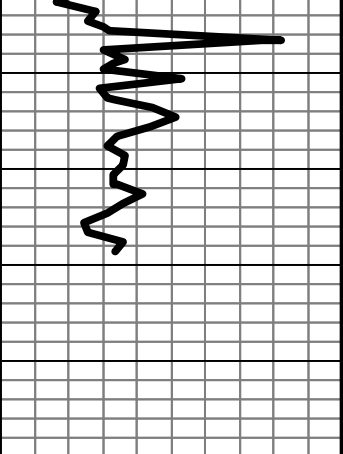
Sandstone red, sub angular to sub round, poorly sorted quartz grains, calcareous matrix, small lime inclusions, possible iron oxidation/arcosic??, good intergranular porosity, no stain, no fluorescence, no odor no show free oil

Shale, red to green to light gray, hard dense, splintry to block, no fluorescence no show, trace pyrite

CFS @ 4772'

TG, C1-C5

30

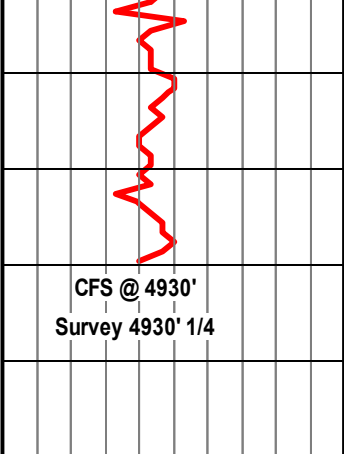


Shaly-Sandstone, fine grained, sub round to round, fair sorting, quartz grains, calcareous matrix, very small black shale inclusions in part to shale stringers, no fluorescence no show, glauconite in part

Shale light gray to green to red, brittle, scattered blocky to abundant splintery, micaceous in part, no fluorescence no show,

Shale light gray to green to red, brittle scattered blocky to splintery, micaceous in part, no fluorescence, no show

TD 4930' at 2:47pm 7-2-2019 CDT
Weatherford Wireline on Location @ 7:30pm CDT



CFS @ 4930'
Survey 4930' 1/4

4950