

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](mailto: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	HENNINGSEN 1-9
Doc ID	1469496

All Electric Logs Run

DUCP
DIL
MICRO
SONIC







# 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: Henningsen 1-9  
Location: 1655 FSL / 1850 FEL  
9 - 3S - 31W  
Rawlins Co., KS

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

Elevation: 2934' KB 2929' GL  
Field: Wildcat

API No: 15-153- 21235-0000  
Surface Casing: 8 5/8" set @ 286' KB

Drilling Contractor: Murfin Drilling Co Rig #3. Rig Phone (785-443-1857), Tool Pusher Jay Ruzicka (308-340-1089)

	DRILLING WELL				COMPARISON WELL				COMPARISON WELL			
	Henningsen 1-9				Olson Trust 1-19 Sam Gary Jr: D&A				Falconer 1 Empire Drilling: D&A			
	1655 FSL / 1850 FEL 9 - 3S - 31W				340 FSL / 1500 FWL 19 - 3S - 31W				660 FSL / 1980 FWL 5 - 3S - 31W			
	2934 KB				3013 KB		Structural Relationship		2995 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
B. STONE CORRAL	2770	164	2767	167	2822	191	-27	-24	2838	157	7	10
JANESVILLE SH	3523	-589	3523	-589	3572	-559	-30	-30	3585	-590	1	1
TOPEKA	3752	-818	3750	-816	3803	-790	-28	-26	3811	-816	-2	0
LECOMPTON	3857	-923	3858	-924	3902	-889	-34	-35	3918	-923	0	-1
HEENBER	3914	-980	3914	-980	3961	-948	-32	-32	3970	-975	-5	-5
LANSING	3955	-1021	3954	-1020	4002	-989	-32	-31	4017	-1022	1	2
LANSING "D" Zone	3990	-1056	3994	-1060	4044	-1031	-25	-29	4062	-1067	11	7
LANSING "H" Zone	4074	-1140	4074	-1140	4120	-1107	-33	-33	4139	-1144	4	4
LANSING "K" Zone	4150	-1216	4148	-1214	4196	-1183	-33	-31	4211	-1216	0	2
BKC	4188	-1254	4188	-1254	4234	-1221	-33	-33	4250	-1255	1	1
ALTAMONT	DND				4309	-1296			NDE		0	
LABETTE	DND				4361	-1348			NDE		0	
FORT SCOTT	DND				4407	-1394			NDE		0	
MISSISSIPPIAN	DND				4569	-1556			NDE		0	
Total Depth	4260	-1326	4261	-1327	4668	-1655			4270	-1275		

2' Uphole Correction  
Drill Time Vs E-logs



## DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration**

1474 S St Paul  
Denver CO 80210

ATTN: Clayton Camozzi

### **Henningsen #1-9**

#### **9-3s-31w Rawlins,KS**

Start Date: 2019.08.10 @ 16:31:00

End Date: 2019.08.11 @ 00:23:30

Job Ticket #: 66026                      DST #: 1

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

Printed: 2019.08.13 @ 15:02:50

Black Oak Exploration

9-3s-31w Rawlins,KS

Henningsen #1-9

DST # 1

Toronto - LKC A

2019.08.10





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66026

**DST#: 1**

ATTN: Clayton Camozzi

Test Start: 2019.08.10 @ 16:31:00

## GENERAL INFORMATION:

Formation: **Toronto - LKC A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:06:00

Time Test Ended: 00:23:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Shawn Wheelbarger

Unit No: 76

**Interval: 3947.00 ft (KB) To 3964.00 ft (KB) (TVD)**

Reference Elevations: 2934.00 ft (KB)

Total Depth: 3964.00 ft (KB) (TVD)

2929.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 55.70 psig @ 3948.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.08.10

End Date:

2019.08.11

Last Calib.: 2019.08.11

Start Time: 16:31:01

End Time:

00:23:30

Time On Btm: 2019.08.10 @ 19:05:20

Time Off Btm: 2019.08.10 @ 22:33:30

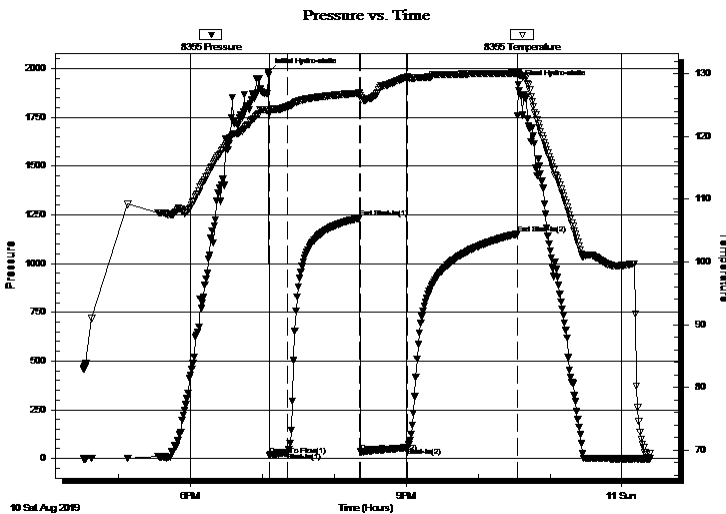
**TEST COMMENT:** 15-IF-1/8" Blow @ open built to 1 1/2"

60-ISI-No blow back

40-FF-Blow built to 1 3/4"

90-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1981.08	124.22	Initial Hydro-static
1	17.57	123.61	Open To Flow (1)
16	29.55	124.76	Shut-In(1)
76	1233.42	126.92	End Shut-In(1)
77	33.96	126.47	Open To Flow (2)
116	55.70	129.48	Shut-In(2)
208	1152.87	130.11	End Shut-In(2)
209	1917.60	130.07	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
59.00	OCMW 15%O, 50%W, 35%M	0.29
10.00	100% Oil	0.05

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66026

**DST#: 1**

ATTN: Clayton Camozzi

Test Start: 2019.08.10 @ 16:31:00

## Tool Information

Drill Pipe:	Length: 3765.00 ft	Diameter: 3.80 inches	Volume: 52.81 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 53.68 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3947.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	17.00 ft			
Tool Length:	45.00 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			3920.00	
Shut In Tool	5.00			3925.00	
Hydraulic tool	5.00		Inside	3930.00	
Jars	5.00			3935.00	
Safety Joint	2.00			3937.00	
Packer	5.00			3942.00	28.00 Bottom Of Top Packer
Packer	5.00			3947.00	
Packer - Shale	0.00			3947.00	
Stubb	1.00			3948.00	
Recorder	0.00	8355	Outside	3948.00	
Recorder	0.00	8645	Inside	3948.00	
Perforations	13.00			3961.00	
Bullnose	3.00			3964.00	17.00 Bottom Packers & Anchor

**Total Tool Length: 45.00**



**TRILOBITE**  
TESTING, INC.

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66026

**DST#: 1**

ATTN: Clayton Camozzi

Test Start: 2019.08.10 @ 16:31:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

21.9 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

17000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
59.00	OCMW 15%O, 50%W, 35%M	0.290
10.00	100% Oil	0.049

Total Length: 69.00 ft      Total Volume: 0.339 bbl

Num Fluid Samples: 0

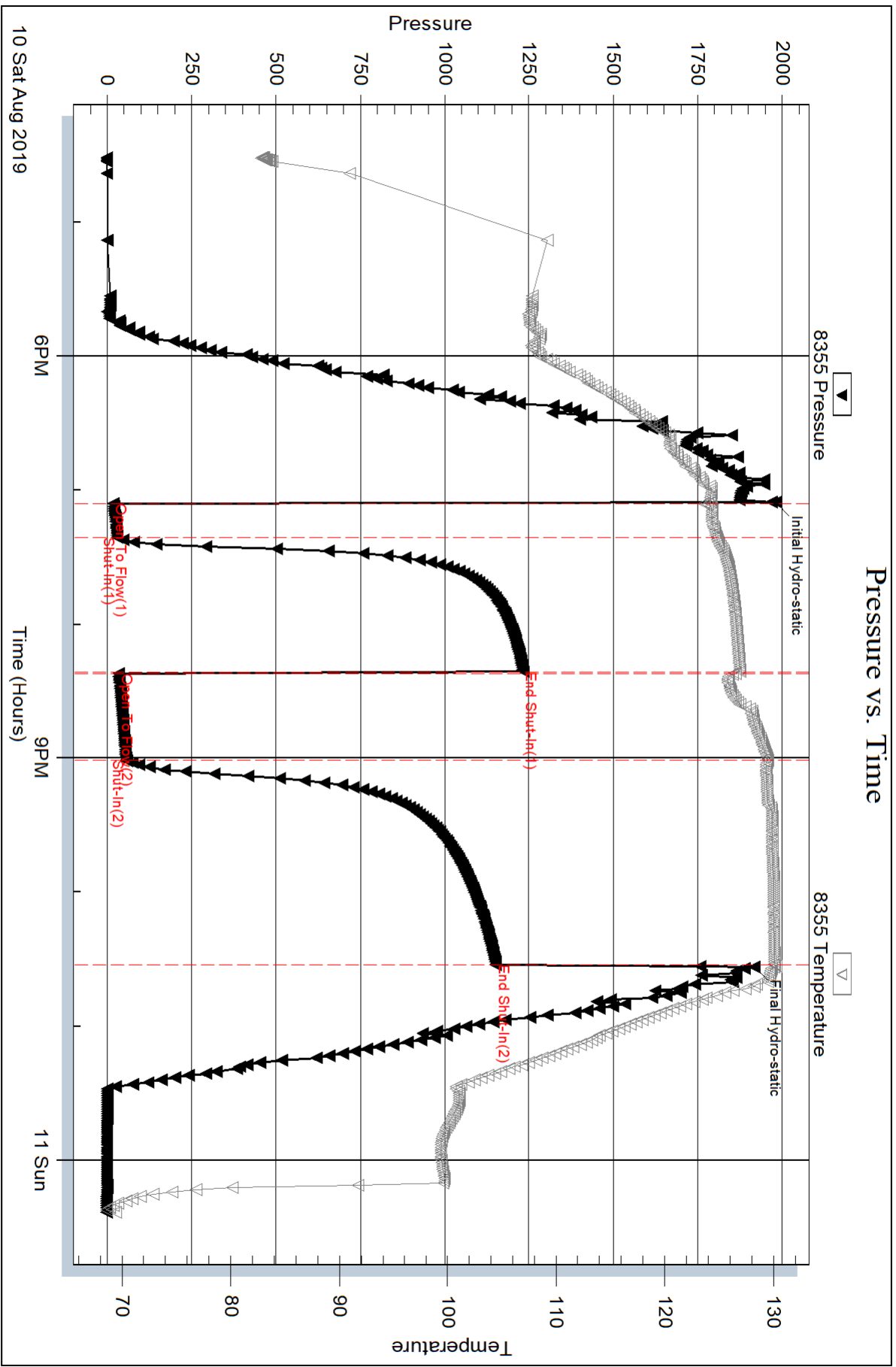
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 22.2@ 90 DEG F Adjusted to 21.9@ 60 DEG F  
RW .416 @ 69.5 DEG F



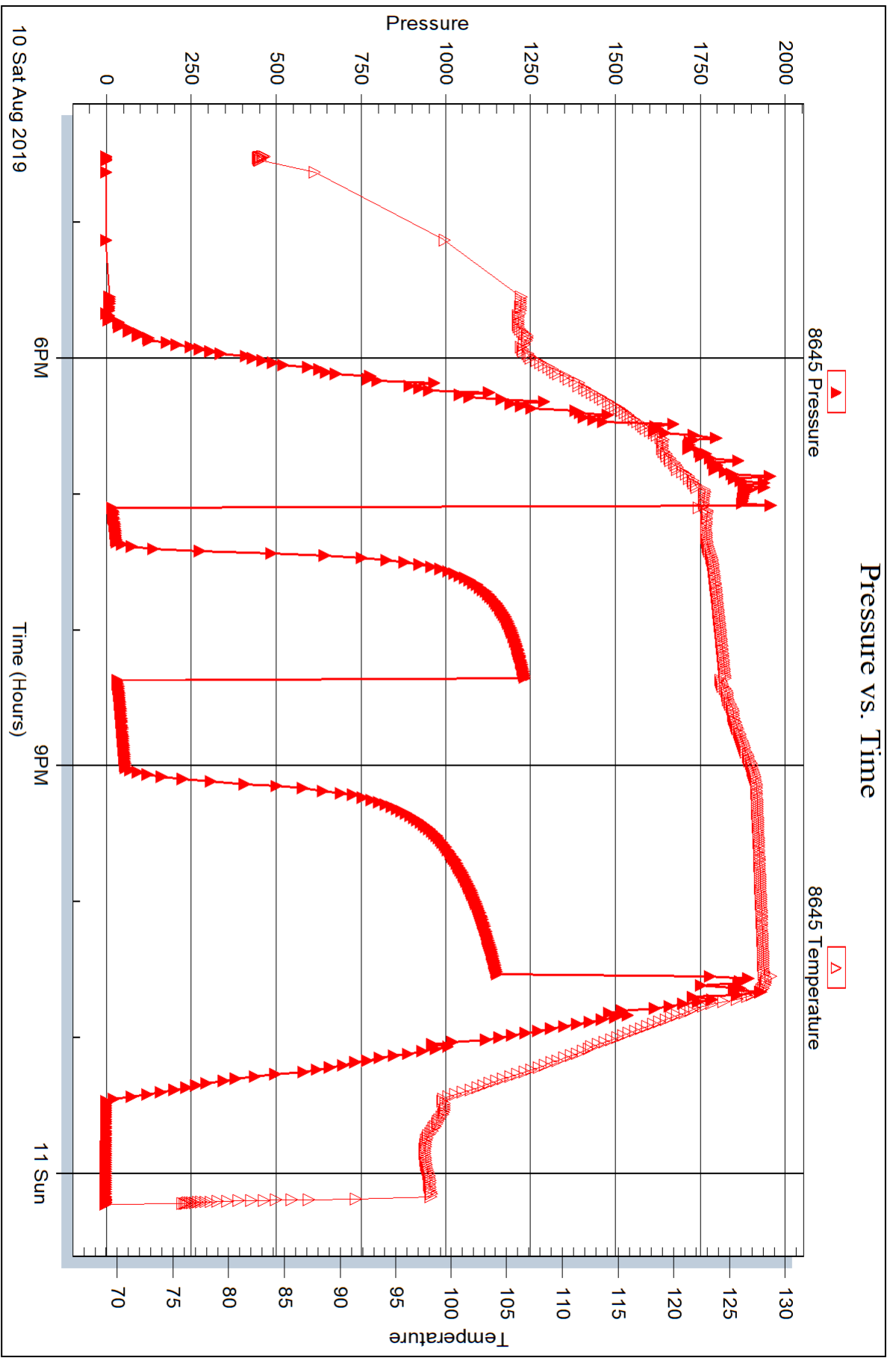
Serial #: 8645

Inside

Black Oak Exploration

Henningsen #1-9

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration**

1474 S St Paul  
Denver CO 80210

ATTN: Clayton Camozzi

### **Henningsen #1-9**

#### **9-3s-31w Rawlins,KS**

Start Date: 2019.08.11 @ 13:06:00

End Date: 2019.08.11 @ 20:22:42

Job Ticket #: 66027                      DST #: 2

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

Printed: 2019.08.13 @ 15:02:13



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66027

**DST#: 2**

ATTN: Clayton Camozzi

Test Start: 2019.08.11 @ 13:06:00

## GENERAL INFORMATION:

Formation: **LKC G - H**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:47:52

Time Test Ended: 20:22:42

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

**Interval: 4012.00 ft (KB) To 4090.00 ft (KB) (TVD)**

Reference Elevations: 2934.00 ft (KB)

Total Depth: 4090.00 ft (KB) (TVD)

2929.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 277.98 psig @ 4013.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.08.11 End Date: 2019.08.11

Last Calib.: 2019.08.11

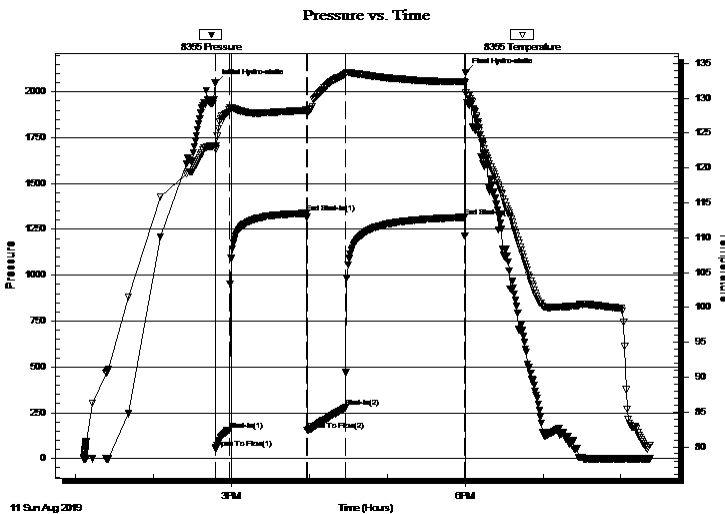
Start Time: 13:06:01 End Time: 20:22:41

Time On Btm: 2019.08.11 @ 14:47:12

Time Off Btm: 2019.08.11 @ 18:00:32

**TEST COMMENT:** 10-IF-3" Blow @ open BOB @ 7 mins 15 secs Built to 15"  
60-ISI-1/4" of blow declined after 13 mins  
30-FF1 BOB @ 12 mins 30 secs Built to 29"  
90-FSI-Blow built to 1/2" @ 16 mins Died @ 55 mins

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2047.27	123.21	Initial Hydro-static
1	55.52	122.68	Open To Flow (1)
11	156.92	128.39	Shut-In(1)
71	1337.67	128.27	End Shut-In(1)
71	155.80	127.89	Open To Flow (2)
101	277.98	133.43	Shut-In(2)
193	1316.06	132.35	End Shut-In(2)
194	2105.93	130.75	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
433.00	SOCMW 8%O, 59%W, 33%M	4.46
128.00	OCM 15%O, 85%M	1.80
5.00	Oil 100%	0.07

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66027

**DST#: 2**

ATTN: Clayton Camozzi

Test Start: 2019.08.11 @ 13:06:00

## Tool Information

Drill Pipe:	Length: 3827.00 ft	Diameter: 3.80 inches	Volume: 53.68 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 54.55 bbl</u>	Tool Chased 15.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4012.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	78.00 ft			
Tool Length:	106.00 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			3985.00	
Shut In Tool	5.00			3990.00	
Hydraulic tool	5.00		Inside	3995.00	
Jars	5.00			4000.00	
Safety Joint	2.00			4002.00	
Packer	5.00			4007.00	28.00 Bottom Of Top Packer
Packer	5.00			4012.00	
Packer - Shale	0.00			4012.00	
Stubb	1.00			4013.00	
Recorder	0.00	8355	Outside	4013.00	
Recorder	0.00	8645	Inside	4013.00	
Perforations	8.00			4021.00	
Change Over Sub	1.00			4022.00	
Drill Pipe	64.00			4086.00	
Change Over Sub	1.00			4087.00	
Bullnose	3.00			4090.00	78.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>106.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66027

**DST#: 2**

ATTN: Clayton Camozzi

Test Start: 2019.08.11 @ 13:06:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

47000 ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
433.00	SOCMW 8%O, 59%W, 33%M	4.461
128.00	OCM 15%O, 85%M	1.796
5.00	Oil 100%	0.070

Total Length: 566.00 ft      Total Volume: 6.327 bbl

Num Fluid Samples: 0

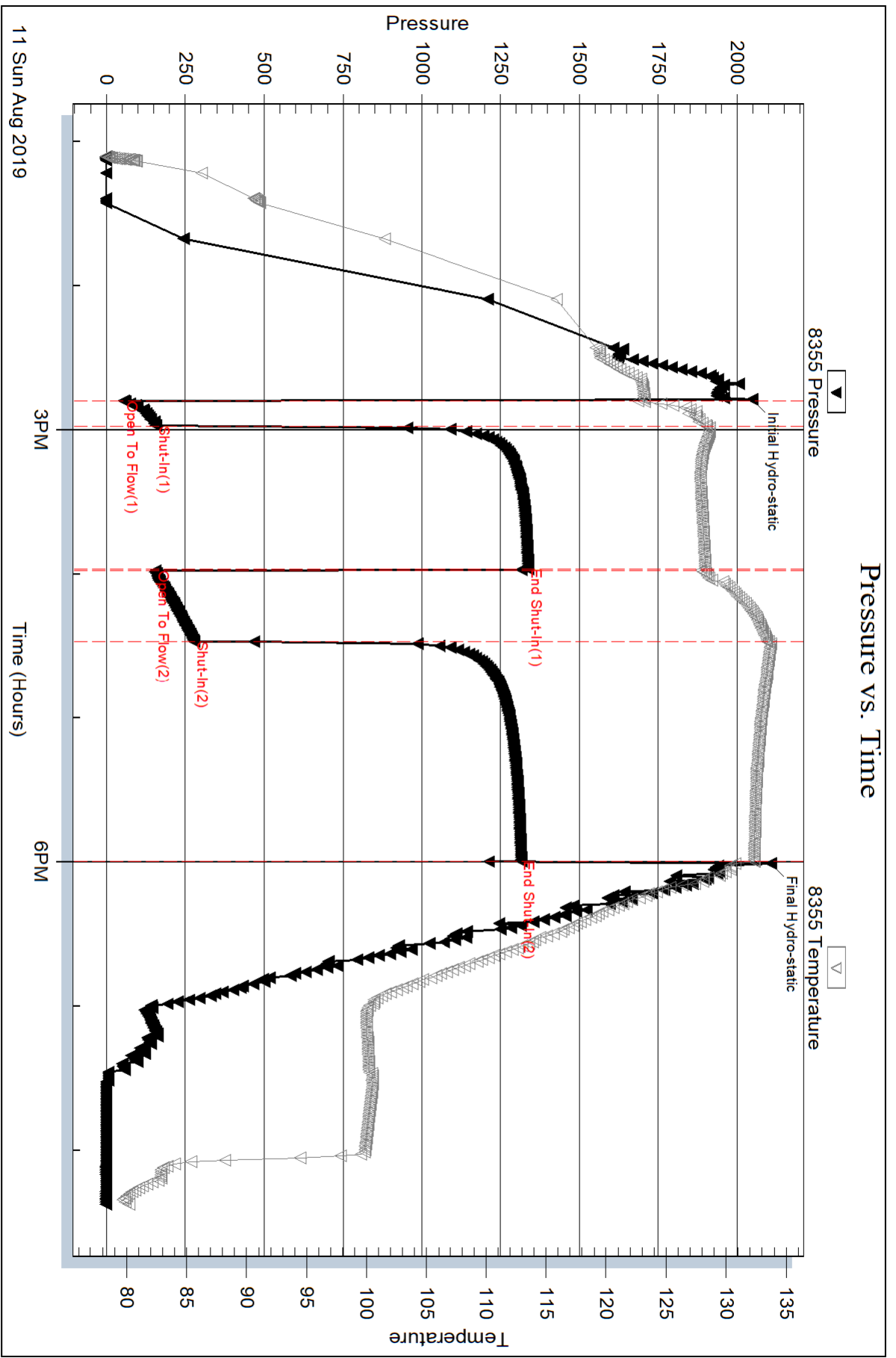
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil API 32.2 @ 82 Deg F Adjusted to 30 @ 60 Deg F  
RW .146 @ 74.7 Deg F 47000 PPM







## DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration**

1474 S St Paul  
Denver CO 80210

ATTN: Clayton Camozzi

### **Henningsen #1-9**

#### **9-3s-31w Rawlins,KS**

Start Date: 2019.08.12 @ 06:09:00

End Date: 2019.08.12 @ 11:56:12

Job Ticket #: 66028                      DST #: 3

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

Printed: 2019.08.13 @ 15:01:17



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66028

**DST#: 3**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 06:09:00

## GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:05:02

Time Test Ended: 11:56:12

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

**Interval: 4089.00 ft (KB) To 4134.00 ft (KB) (TVD)**

Reference Elevations: 2934.00 ft (KB)

Total Depth: 4134.00 ft (KB) (TVD)

2929.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 19.35 psig @ 4090.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.08.12

End Date:

2019.08.12

Last Calib.:

2019.08.12

Start Time: 06:09:01

End Time:

11:56:11

Time On Btm:

2019.08.12 @ 08:04:12

Time Off Btm:

2019.08.12 @ 10:16:12

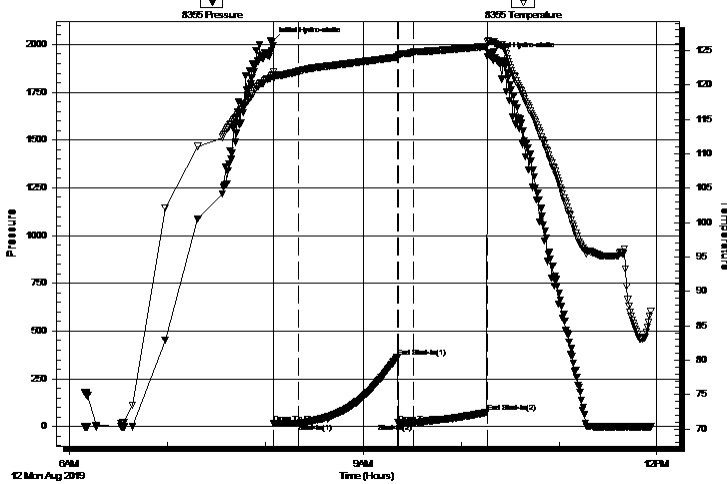
**TEST COMMENT:** 15-IF-1/4" Blow @ open built to 1/2"

60-ISI-No blow back

10-FF-No blow

45-FSI-No blow

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2017.21	121.54	Initial Hydro-static
1	15.75	120.99	Open To Flow (1)
17	17.23	122.00	Shut-In(1)
77	362.58	124.04	End Shut-In(1)
77	19.15	124.09	Open To Flow (2)
87	19.35	124.75	Shut-In(2)
132	74.31	125.61	End Shut-In(2)
132	1937.15	126.29	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud W/ Oil spots 100%M	0.02

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66028

**DST#: 3**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 06:09:00

## Tool Information

Drill Pipe:	Length: 3891.00 ft	Diameter: 3.80 inches	Volume: 54.58 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 55.45 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4089.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	45.00 ft			
Tool Length:	73.00 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			4062.00	
Shut In Tool	5.00			4067.00	
Hydraulic tool	5.00		Inside	4072.00	
Jars	5.00			4077.00	
Safety Joint	2.00			4079.00	
Packer	5.00			4084.00	28.00 Bottom Of Top Packer
Packer	5.00			4089.00	
Packer - Shale	0.00			4089.00	
Stubb	1.00			4090.00	
Recorder	0.00	8355	Outside	4090.00	
Recorder	0.00	8645	Inside	4090.00	
Perforations	8.00			4098.00	
Change Over Sub	1.00			4099.00	
Drill Pipe	31.00			4130.00	
Change Over Sub	1.00			4131.00	
Bullnose	3.00			4134.00	45.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>73.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66028

**DST#: 3**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 06:09:00

### 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: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud W/ Oil spots 100%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

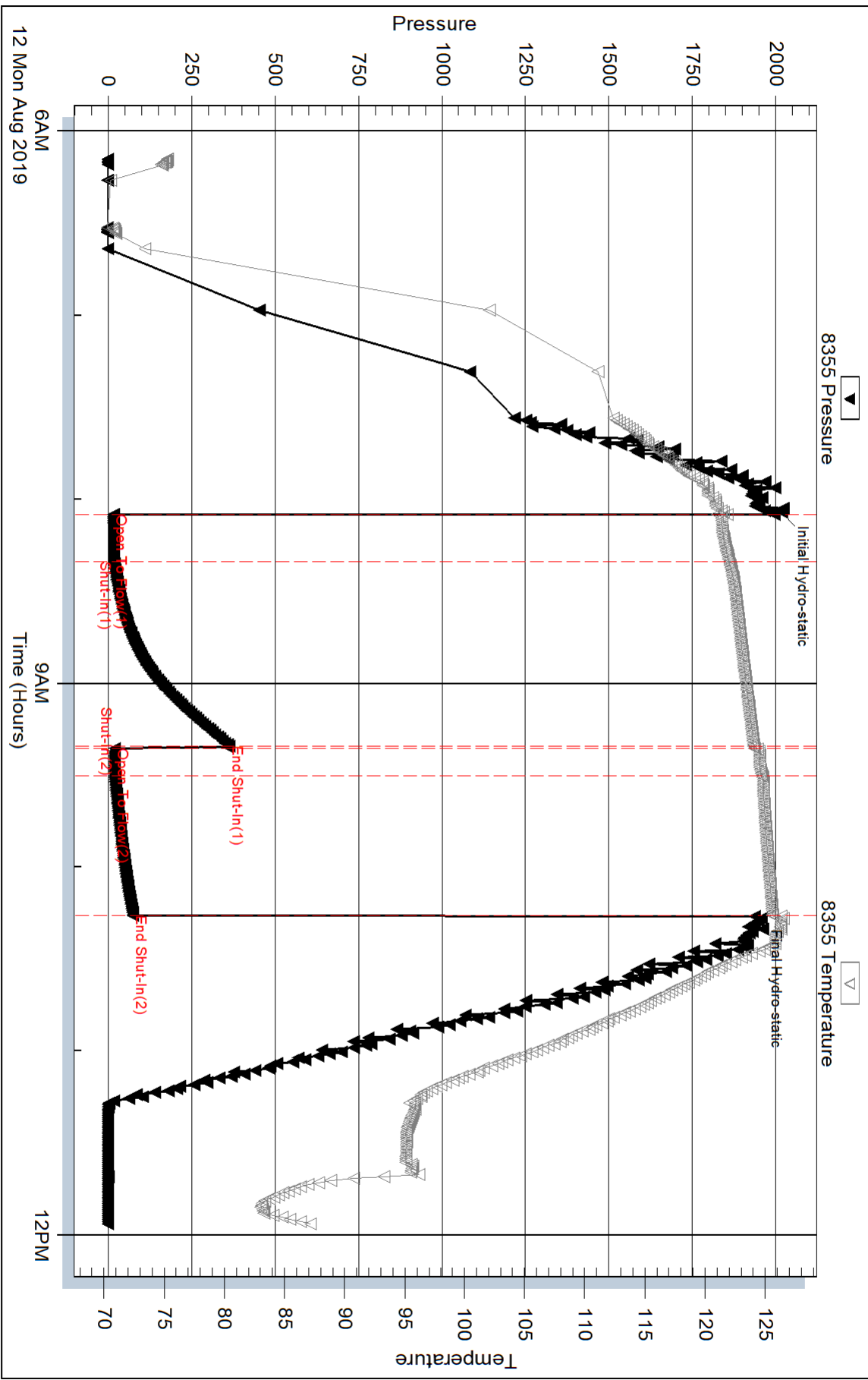
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time



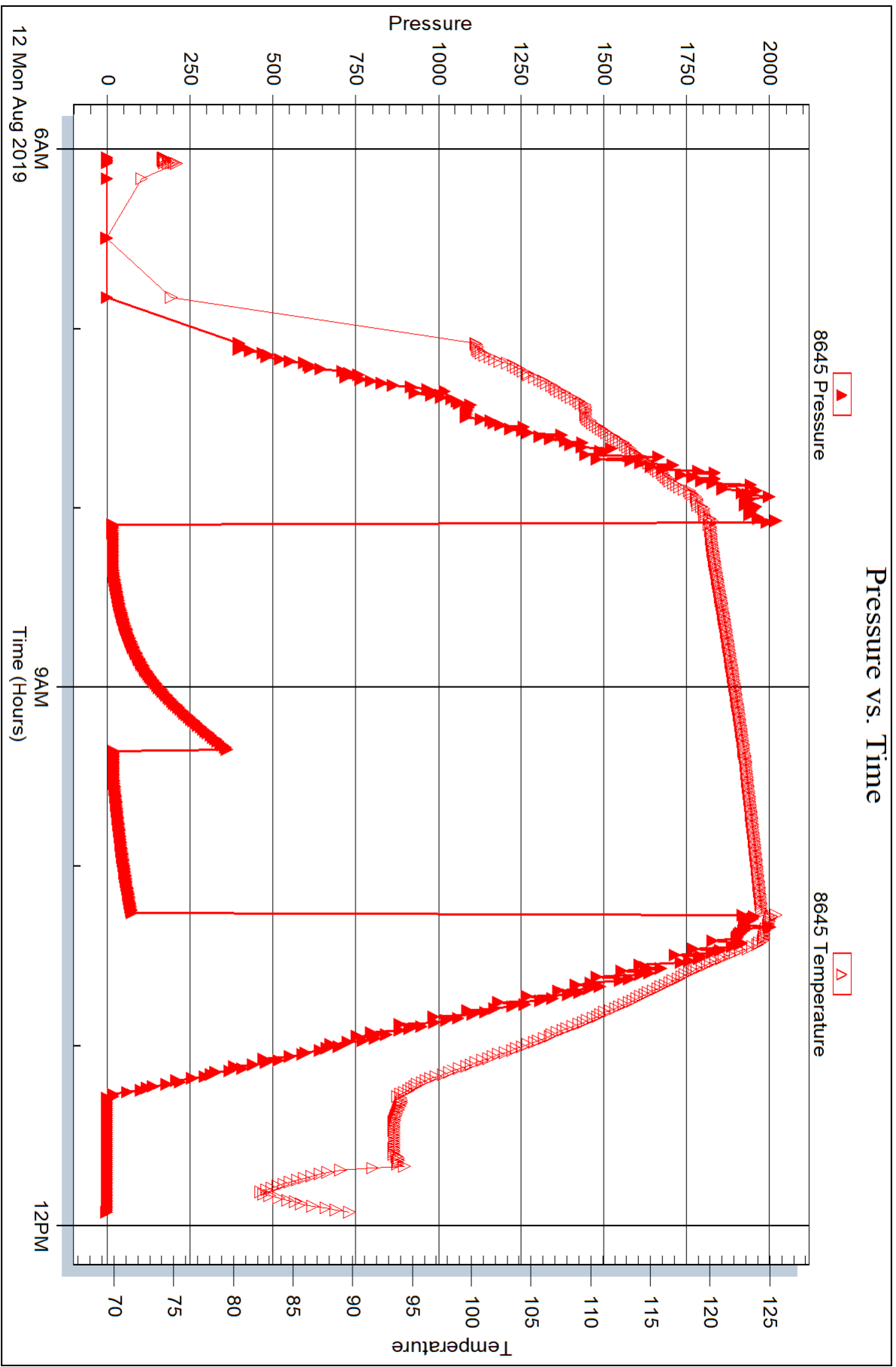
Serial #: 8645

Inside

Black Oak Exploration

Henningsen #1-9

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Black Oak Exploration**

1474 S St Paul  
Denver CO 80210

ATTN: Clayton Camozzi

### **Henningsen #1-9**

#### **9-3s-31w Rawlins,KS**

Start Date: 2019.08.12 @ 20:12:00

End Date: 2019.08.13 @ 03:53:50

Job Ticket #: 66029                      DST #: 4

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

Printed: 2019.08.13 @ 15:00:45



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66029

**DST#: 4**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 20:12:00

## GENERAL INFORMATION:

Formation: **LKC G**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:09:20

Time Test Ended: 03:53:50

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

**Interval: 4013.00 ft (KB) To 4061.00 ft (KB) (TVD)**

Reference Elevations: 2934.00 ft (KB)

Total Depth: 4178.00 ft (KB) (TVD)

2929.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 185.77 psig @ 4014.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.08.12

End Date:

2019.08.13

Last Calib.:

2019.08.13

Start Time: 20:12:01

End Time:

03:53:50

Time On Btm:

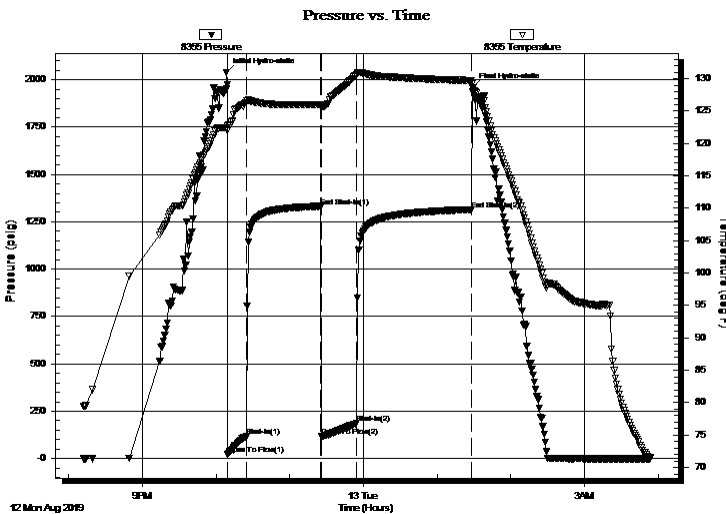
2019.08.12 @ 22:08:20

Time Off Btm:

2019.08.13 @ 01:28:50

**TEST COMMENT:** 15-IF-1/2" Blow @ open Built to 10"  
60-ISI-No blow back  
30-FF-BOB in 21 mins Blow built to 15 3/4"  
90-FSI-No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2038.39	122.45	Initial Hydro-static
1	21.42	121.93	Open To Flow (1)
17	115.16	126.30	Shut-In(1)
77	1330.57	126.04	End Shut-In(1)
78	115.35	125.68	Open To Flow (2)
106	185.77	130.58	Shut-In(2)
200	1314.65	129.72	End Shut-In(2)
201	1958.74	129.25	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
367.00	SGOCWM 5%G 8%O 38%W 49%M	3.54

## 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

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66029

**DST#: 4**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 20:12:00

## Tool Information

Drill Pipe:	Length: 3828.00 ft	Diameter: 3.80 inches	Volume: 53.70 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 54.57 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4013.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	165.00 ft			
Tool Length:	193.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

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

Change Over Sub	1.00			3986.00	
Shut In Tool	5.00			3991.00	
Hydraulic tool	5.00		Inside	3996.00	
Jars	5.00			4001.00	
Safety Joint	2.00			4003.00	
Packer	5.00			4008.00	28.00 Bottom Of Top Packer
Packer	5.00			4013.00	
Stubb	1.00			4014.00	
Recorder	0.00	8355	Outside	4014.00	
Recorder	0.00	8645	Inside	4014.00	
Perforations	5.00			4019.00	
Change Over Sub	1.00			4020.00	
Drill Pipe	31.00			4051.00	
Change Over Sub	1.00			4052.00	
Perforations	4.00			4056.00	
Blank Off Sub	1.00			4057.00	
Blank Spacing	4.00			4061.00	
Packer - Shale	0.00			4061.00	
Stubb	1.00			4062.00	
Recorder	0.00	8791	Below	4062.00	
Perforations	16.00			4078.00	
Change Over Sub	1.00			4079.00	
Drill Pipe	95.00			4174.00	
Change Over Sub	1.00			4175.00	
Bullnose	3.00			4178.00	165.00 Bottom Packers & Anchor

**Total Tool Length: 193.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Oak Exploration

**9-3s-31w Rawlins,KS**

1474 S St Paul  
Denver CO 80210

**Henningsen #1-9**

Job Ticket: 66029

**DST#: 4**

ATTN: Clayton Camozzi

Test Start: 2019.08.12 @ 20:12:00

## 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:

53000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1200.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
367.00	SGOCWM 5%G 8%O 38%W 49%M	3.536

Total Length: 367.00 ft      Total Volume: 3.536 bbl

Num Fluid Samples: 0

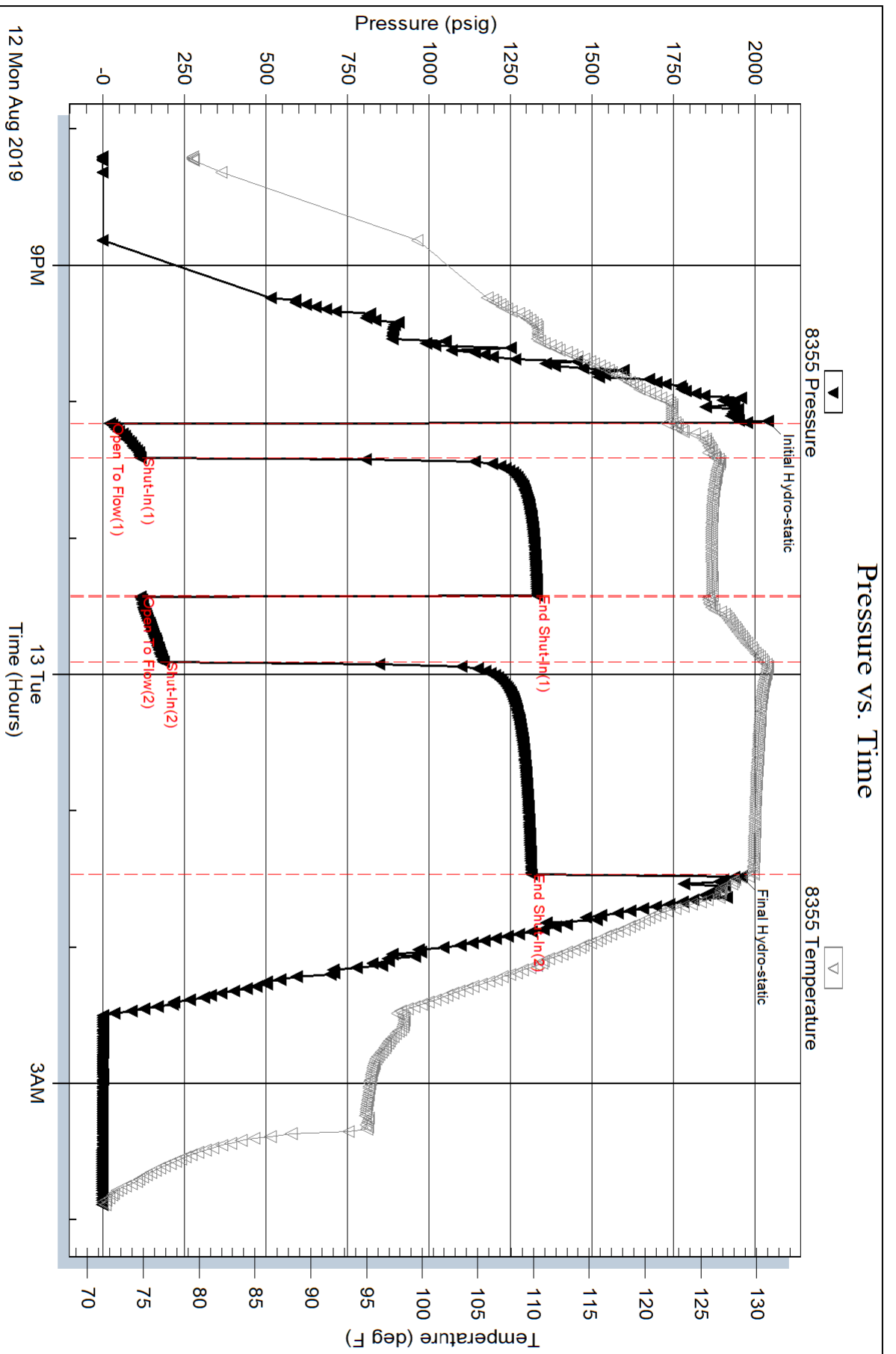
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .144 @ 65.3 Deg F Chlorides 53000



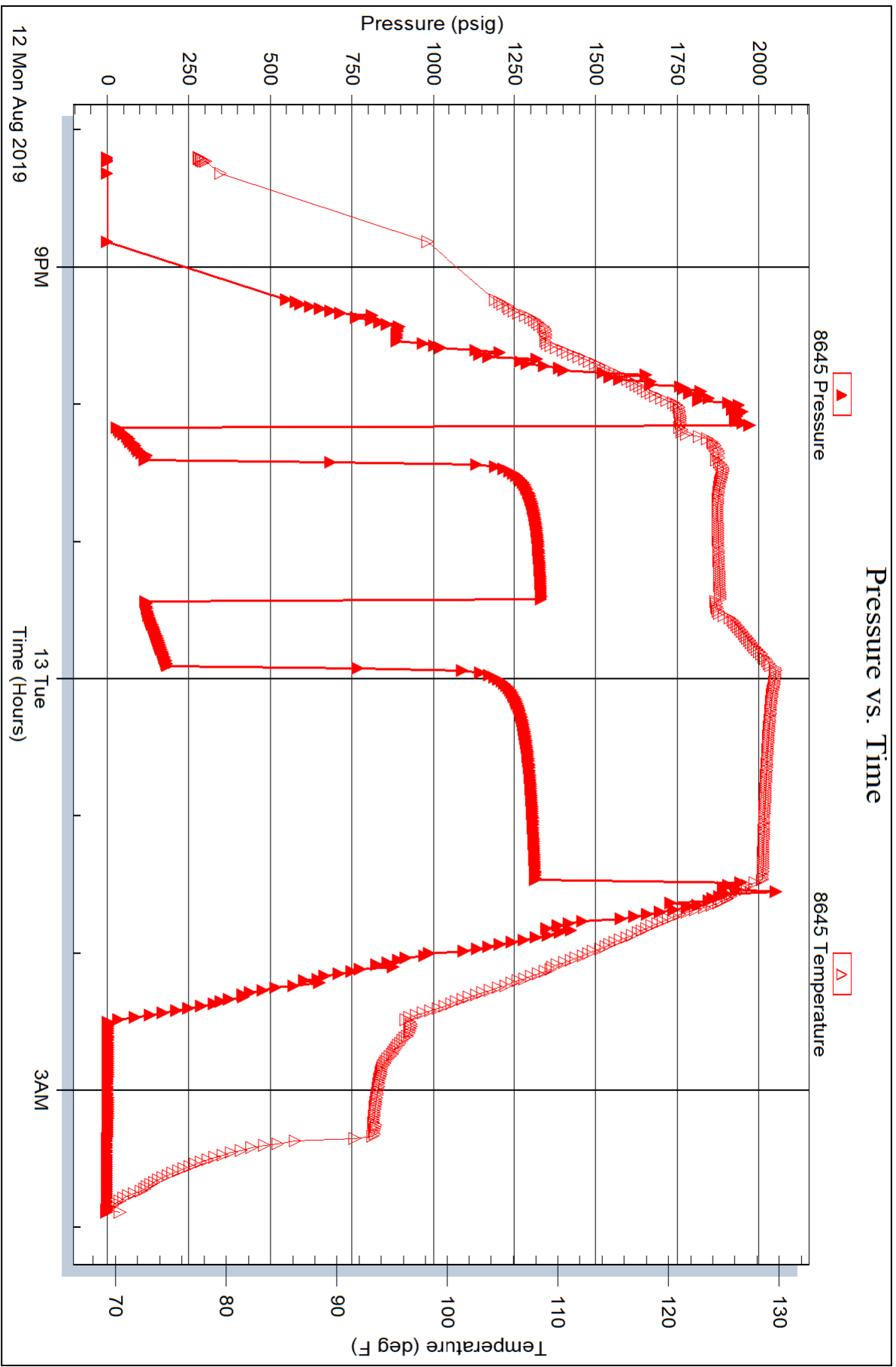
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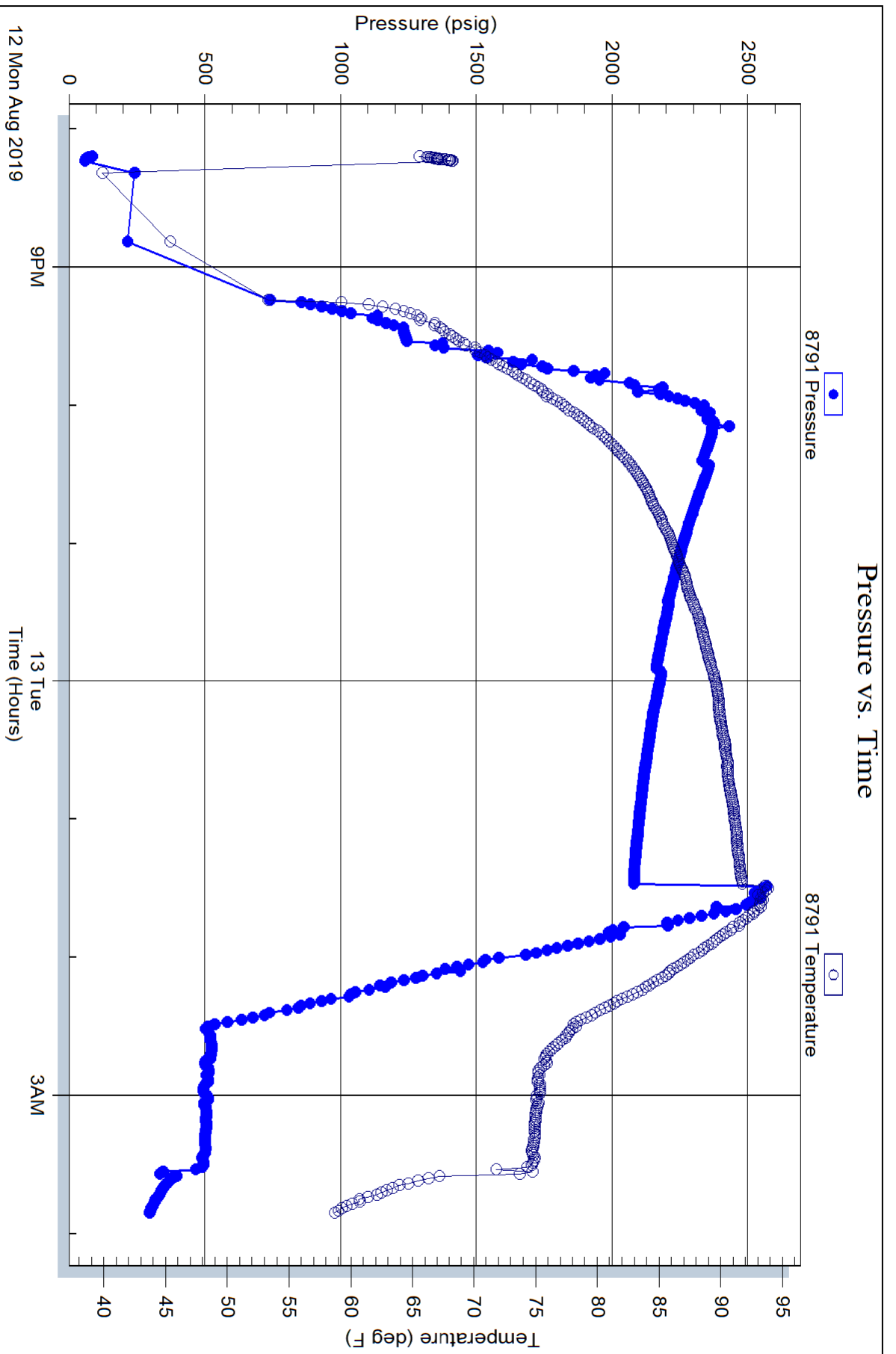
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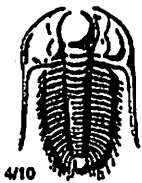
Black Oak Exploration

Henningsen #1-9

DST Test Number: 4







# TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66026

NO.

Well Name & No. Henninussen #1-9 Test No. 1 Date 8-10-19  
 Company Black Oak Exploration Elevation 2934 KB 2929 GL  
 Address 1474 S St Paul Denver CO 80210  
 Co. Rep / Geo. Clayton Camozzi Rig Murfin #3  
 Location: Sec. 9 Twp 35 Rge. 3/W Co. Rawlins State KS

Interval Tested 3947 - 3964 Zone Tested Toronto Lens A  
 Anchor Length 17 Drill Pipe Run 3765 Mud Wt. 8.8  
 Top Packer Depth 3942 Drill Collars Run 177 Vis 59  
 Bottom Packer Depth 3947 Wt. Pipe Run - WL 6.4  
 Total Depth 3964 Chlorides 700 ppm System LCM 4  
 Blow Description IF 1/8" Blow @ open built to 1 1/2"  
ISI No blow back  
FF Blow built to 1 3/4"  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Oil</u>		<u>100</u>		
<u>59</u>	<u>SOLMW</u>	<u>15</u>	<u>50</u>	<u>35</u>	

Rec Total 69 BHT 130 Gravity 21.9 API RW 416 @ 69.5 F Chlorides 17000 ppm

- (A) Initial Hydrostatic 1981
- (B) First Initial Flow 18
- (C) First Final Flow 30
- (D) Initial Shut-In 1233
- (E) Second Initial Flow 34
- (F) Second Final Flow 56
- (G) Final Shut-In 1153
- (H) Final Hydrostatic 1918

- Test 1200
- Jars 250
- Safety Joint 75
- Circ Sub
- Hourly Standby
- Mileage 41 RT 41
- Sampler
- Straddle
- Shale Packer 250
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1816

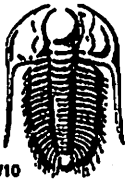
T-On Location 15:25  
 T-Started 16:31  
 T-Open 19:06  
 T-Pulled 22:31  
 T-Out 00:20

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 EM Tool  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1816  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_

Our Representative Shawn Wheelberger

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 66027

NO.

Well Name & No. Henningsen #1-9 Test No. 2 Date 8-11-19  
 Company Black Oak Exploration Elevation 2934 KB 2929 GL  
 Address 1474 S St Paul Denver CO 80210  
 Co. Rep / Geo. Clayton Cumozzi Rig Murfin #3  
 Location: Sec. 9 Twp 3s Rge. 31W Co. Rawlins State KS

Interval Tested 4012-4090 Zone Tested Lans G-H  
 Anchor Length 78 Drill Pipe Run 3827 Mud Wt. 9  
 Top Packer Depth 4007 Drill Collars Run 177 Vis 60  
 Bottom Packer Depth 4012 Wt. Pipe Run - WL 6.4  
 Total Depth 4090 Chlorides 700 ppm System LCM 4

Blow Description IF 3" Blow @ open BOB @ 7 mins 15 secs built to 15"  
ISI 1/4" of blow declined after 13 mins  
FF 1/2" of Blow built to BOB @ 12 mins 30 secs built to 29"  
FSI Blow built to 1/2" @ 16 mins declined to 0 @ 55 mins

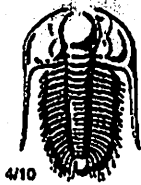
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Oil</u>	<u>100</u>			
<u>128</u>	<u>OLM</u>	<u>15</u>		<u>85</u>	
<u>433</u>	<u>SOLMW</u>	<u>8</u>	<u>59</u>	<u>33</u>	

Rec Total 566 BHT 131 Gravity 30 API RW .146 @ 74.7 °F Chlorides 47000 ppm

(A) Initial Hydrostatic 2047  Test 1300 T-On Location 12:50  
 (B) First Initial Flow 56  Jars 250 T-Started 13:06  
 (C) First Final Flow 157  Safety Joint 75 T-Open 14:56  
 (D) Initial Shut-In 1338  Circ Sub \_\_\_\_\_ T-Pulled 18:06  
 (E) Second Initial Flow 156  Hourly Standby \_\_\_\_\_ T-Out 20:23  
 (F) Second Final Flow 279  Mileage 41 RT 41 Comments Tool slid 15 ft  
 (G) Final Shut-In 1316  Sampler \_\_\_\_\_ to bottom  
 (H) Final Hydrostatic 2106  Straddle \_\_\_\_\_

Initial Open 10  Shale Packer 250  EM Tool \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Shut-In 90  Day Standby \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Sub Total 1916  Accessibility \_\_\_\_\_ Sub Total 0  
 Sub Total 1916 Total 1916 MP/DST Disc't \_\_\_\_\_

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 66028

NO.

Well Name & No. Henninason #1-9 Test No. 3 Date 8-12-19  
 Company Black Oak Exploration Elevation 2934 KB 2929 GL  
 Address 1474 S St Paul Denver CO 80210  
 Co. Rep / Geo. Clayton Camozzi Rig Murfin #3  
 Location: Sec. 9 Twp 3s Rge. 31w Co. Rawlins State KS

Interval Tested 4084-4134 Zone Tested Lans J  
 Anchor Length 45 Drill Pipe Run 3891 Mud Wt. 8.9  
 Top Packer Depth 4084 Drill Collars Run 177 Vis. 57  
 Bottom Packer Depth 4089 Wt. Pipe Run - Wt. 6.4  
 Total Depth 4134 Chlorides 1200 ppm System LCM 4  
 Blow Description IF 1/4" Blow @ open built to 1/2"  
ISI No blow back  
FF No blow  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud w/oil spots</u>			<u>100</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 5 BHT 126 Gravity - API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic 2017  
 (B) First Initial Flow 16  
 (C) First Final Flow 17  
 (D) Initial Shut-In 363  
 (E) Second Initial Flow 19  
 (F) Second Final Flow 19  
 (G) Final Shut-In 74  
 (H) Final Hydrostatic 1937

Test 1300  
 Jars 250  
 Safety Joint 75  
 Circ Sub  
 Hourly Standby  
 Mileage 41 RT 41  
 Sampler  
 Straddle  
 Shale Packer 250  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility  
 Sub Total 1916

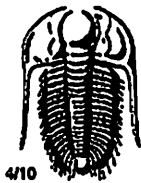
T-On Location 6:00  
 T-Started 6:07  
 T-Open 8:02  
 T-Pulled 10:22  
 T-Out 11:55

Comments \_\_\_\_\_  
 EM Tool  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1916

Initial Open 15  
 Initial Shut-In 60  
 Final Flow 10  
 Final Shut-In 45

Approved By \_\_\_\_\_ Our Representative Shawn Heelbasger  
 Trilobite Testing Inc. shall not be liable for damaged or 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 66029

NO.

Well Name & No. Henningsen #1-9 Test No. 4 Date 8-12-19  
 Company Black Oak Exploration Elevation 2934 KB 2929 GL  
 Address 1474 S st Paul Denver CO 80210  
 Co. Rep / Geo. Clayton Camozzi Rig Murfin #3  
 Location: Sec. 9 Twp 3S Rge. 3/W Co. Rawlins State KS

Interval Tested 4013-4061 Zone Tested Lansing G  
 Anchor Length 48-117 Tail Drill Pipe Run 3828 Mud Wt. 8.9  
 Top Packer Depth 4008-4013 Drill Collars Run 177 Vis 58  
 Bottom Packer Depth 4061 Wt. Pipe Run - WL 6.4  
 Total Depth 4178 Chlorides 1200 ppm System LCM 4

Blow Description IF 1/2" Blow @ open built to 10"  
FSI No blow back  
FF BOB in 21 mins blow built to 15 3/4"  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>367</u>	<u>SGOCUM</u>	<u>5</u>	<u>8</u>	<u>38</u>	<u>49</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 367 BHT 129 Gravity - API RW 144 @ 65.3°F Chlorides 53000 ppm

- (A) Initial Hydrostatic 2038
- (B) First Initial Flow 21
- (C) First Final Flow 115
- (D) Initial Shut-In 1331
- (E) Second Initial Flow 115
- (F) Second Final Flow 186
- (G) Final Shut-In 1315
- (H) Final Hydrostatic 1959

- Test 1300
- Jars 250
- Safety Joint 75
- Circ Sub
- Hourly Standby
- Mileage 41 RT 41
- Sampler
- Straddle 600
- Shale Packer 250
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 2516

T-On Location 19:05  
 T-Started 20:12  
 T-Open 22:10  
 T-Pulled 1:25 8-13  
 T-Out 4:10 8-13

Comments \_\_\_\_\_  
 EM Tool \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 2516

Initial Open 15  
 Initial Shut-In 60  
 Final Flow 30  
 Final Shut-In 90

Approved By \_\_\_\_\_ Our Representative Shawn Heckberger

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.

# BLACK OAK



## EXPLORATION

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

Well Name: Henningsen 1-9  
Well Id:  
Location: Section 9 - 3S - 31W Decatur Co, Kansas  
License Number: API # 15-153-21235-0000  
Spud Date: 8/6/2019  
Surface Coordinates: 1655 FSL & 1850 FEL  
Region: Wildcat  
Drilling Completed: 8/13/2019

Bottom Hole  
Coordinates:  
Ground Elevation (ft): 2929' K.B. Elevation (ft): 2934'  
Logged Interval (ft): 3700 To: 4260 Total Depth (ft): 4260  
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.com](http://www.WellSight.com)

### 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

# Black Oak Exploration, LLC

## WELL COMPARISON SHEET

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

Elevation: 2934' KB 2929' GL  
 Field: Wildcat

API No: 15-153-21235-0000  
 Surface Casing: 8 5/8" set @ 286' KB

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

Rawlins Co., KS  
 Wellsite Geologist: Clayton Camozzi Cell: (303) 968-4999

Drilling Contractor: Murfin Drilling Co Rig #3. Rig Phone (785-443-1857), Tool Pusher Jay Ruzicka (308-340-1089)

Formation	DRILLING WELL			
	Sample	Sub-Sea	Log	Sub-Sea
Henningsen 1-9				
1655 FSL / 1850 FEL 9 - 3S - 31W				
2934 KB				
B. STONE CORRAL	2770	164	2767	167
JANESVILLE SH	3523	-589	3523	-589
TOPEKA	3752	-818	3750	-816
LECOMPTON	3857	-923	3858	-924
HEENBER	3914	-980	3914	-980
LANSING	3955	-1021	3954	-1020
LANSING "D" Zone	3990	-1056	3994	-1060
LANSING "H" Zone	4074	-1140	4074	-1140
LANSING "K" Zone	4150	-1216	4148	-1214
BKC	4188	-1254	4188	-1254
ALTAMONT	DND			
LABETTE	DND			
FORT SCOTT	DND			
MISSISSIPPIAN	DND			
Total Depth	4260	-1326	4261	-1327

2' Uphole Correction  
 Drill Time Vs E-logs

Formation	COMPARISON WELL			
	Log	Sub-Sea	Sample	Relationship
Olson Trust 1-19 Sam Gary Jr: D&A				
340 FSL / 1500 FWL 19 - 3S - 31W				
3013 KB				
	2822	191	-27	-24
	3572	-559	-30	-30
	3803	-790	-28	-26
	3902	-889	-34	-35
	3961	-948	-32	-32
	4002	-989	-32	-31
	4044	-1031	-25	-29
	4120	-1107	-33	-33
	4196	-1183	-33	-31
	4234	-1221	-33	-33
	4309	-1296		
	4361	-1348		
	4407	-1394		
	4569	-1556		
	4668	-1655		

Formation	COMPARISON WELL			
	Log	Sub-Sea	Sample	Relationship
Falconer 1 Empire Drilling: D&A				
660 FSL / 1980 FWL 5 - 3S - 31W				
2995 KB				
	2838	157	7	10
	3585	-590	1	1
	3811	-816	-2	0
	3918	-923	0	-1
	3970	-975	-5	-5
	4017	-1022	1	2
	4062	-1067	11	7
	4139	-1144	4	4
	4211	-1216	0	2
	4250	-1255	1	1
	NDE		0	
	NDE		0	
	NDE		0	
	NDE		0	
	4270	-1275		



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

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

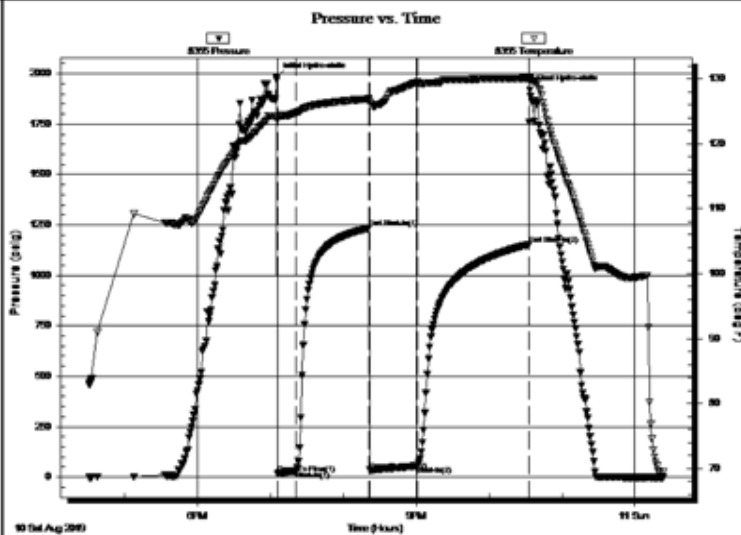
**9/3s/31w Rawlins KS**  
**Henningsen #1-9**  
Job Ticket: 66026      **DST#: 1**  
Test Start: 2019.08.10 @ 16:31:00

## GENERAL INFORMATION:

Formation: **Toronto Lans A**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 19:06:00  
Time Test Ended: 00:23:30  
Interval: **3947.00 ft (KB) To 3964.00 ft (KB) (TVD)**  
Total Depth: 3964.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Shaw n Wheelbarger  
Unit No: 76  
Reference Elevations: 2934.00 ft (KB)  
2929.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8355**      **Outside**  
Press@RunDepth: 55.70 psig @ 3948.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2019.08.10      End Date: 2019.08.11      Last Calib.: 2019.08.11  
Start Time: 16:31:01      End Time: 00:23:30      Time On Btm: 2019.08.10 @ 19:05:20  
Time Off Btm: 2019.08.10 @ 22:33:30

**TEST COMMENT:** 15-IF-1/8" Blow @ open built to 1 1/2"  
60-ISI-No blow back  
40-FF-Blow built to 1 3/4"  
90-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1981.08	124.22	Initial Hydro-static
1	17.57	123.61	Open To Flow (1)
16	29.55	124.76	Shut-In(1)
76	1233.42	126.92	End Shut-In(1)
77	33.96	126.47	Open To Flow (2)
116	55.70	129.48	Shut-In(2)
208	1152.87	130.11	End Shut-In(2)
209	1917.60	130.07	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
59.00	SOCMW 15%O, 50%W, 35%M	0.29
10.00	100% Oil	0.05

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

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

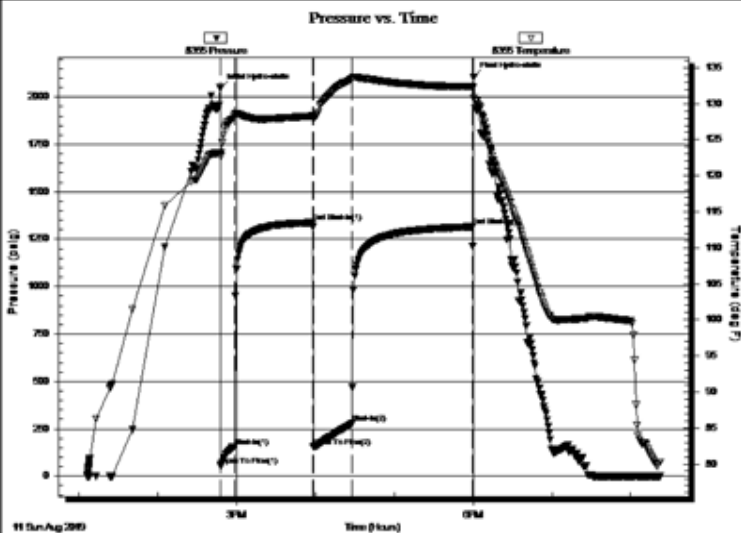
**9/3s/31w Rawlins KS**  
**Henningsen #1-9**  
Job Ticket: 66027      **DST#: 2**  
Test Start: 2019.08.11 @ 13:06:00

## GENERAL INFORMATION:

Formation: **Lans G-H**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 14:47:52  
Time Test Ended: 20:22:42  
Interval: **4012.00 ft (KB) To 4090.00 ft (KB) (TVD)**  
Total Depth: 4090.00 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: 2934.00 ft (KB)  
2929.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8355      Outside**  
Press@RunDepth: 277.98 psig @ 4013.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2019.08.11      End Date: 2019.08.11      Last Calib.: 2019.08.11  
Start Time: 13:06:01      End Time: 20:22:42      Time On Btm: 2019.08.11 @ 14:47:12  
Time Off Btm: 2019.08.11 @ 18:00:32

**TEST COMMENT:** 10-IF-3" Blow @ open BOB @ 7 mins 15 secs Built to 15"  
60-ISI-1/4" of blow declined after 13 mins  
30-FF1/2" of blow built to BOB @ 12 mins 30 secs Built to 29"  
90-FSI-Blow built to 1/2" @ 16 mins Declined to 0 @ 55 mins



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2047.27	123.21	Initial Hydro-static
1	55.52	122.68	Open To Flow (1)
11	156.92	128.39	Shut-In(1)
71	1337.67	128.27	End Shut-In(1)
71	155.80	127.89	Open To Flow (2)
101	277.98	133.43	Shut-In(2)
193	1316.06	132.35	End Shut-In(2)
194	2105.93	130.75	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
433.00	SOCMW 8%O, 59%W, 33%M	4.46
128.00	OCM 15%O, 85%M	1.80
5.00	Oil 100%	0.07

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

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

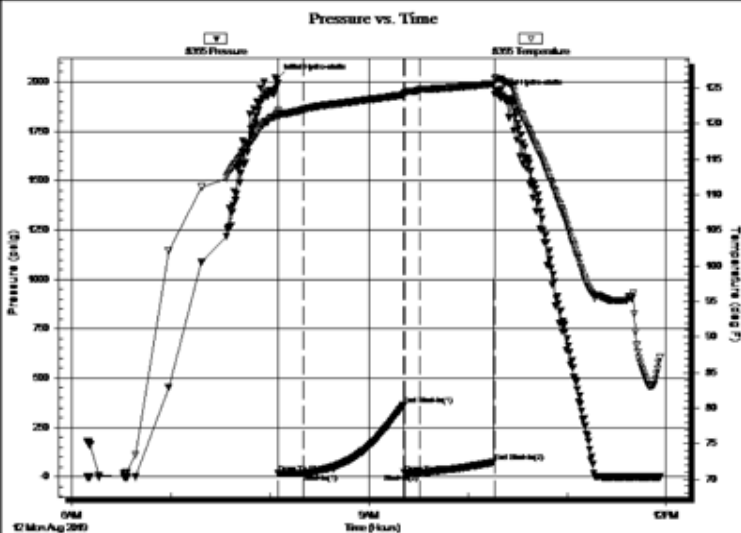
**9/3s/31w Rawlins KS**  
**Henningsen #1-9**  
Job Ticket: 66028      **DST#: 3**  
Test Start: 2019.08.12 @ 06:09:00

## GENERAL INFORMATION:

Formation: **Lans J**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 08:05:02  
Time Test Ended: 11:56:12  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Shawn Wheelbarger  
Unit No: 76  
Interval: **4089.00 ft (KB) To 4134.00 ft (KB) (TVD)**  
Reference Elevations: 2934.00 ft (KB)  
Total Depth: 4134.00 ft (KB) (TVD)      2929.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Fair      KB to GR/CF: 5.00 ft

**Serial #: 8355**      **Outside**  
Press@RunDepth: 19.35 psig @ 4090.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2019.08.12      End Date: 2019.08.12      Last Calib.: 2019.08.12  
Start Time: 06:09:01      End Time: 11:56:12      Time On Btm: 2019.08.12 @ 08:04:12  
Time Off Btm: 2019.08.12 @ 10:16:12

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



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2017.21	121.54	Initial Hydro-static
1	15.75	120.99	Open To Flow (1)
17	17.23	122.00	Shut-In(1)
77	362.58	124.04	End Shut-In(1)
77	19.15	124.09	Open To Flow (2)
87	19.35	124.75	Shut-In(2)
132	74.31	125.61	End Shut-In(2)
132	1937.15	126.29	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud W/ Oil spots 100%M	0.02

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

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

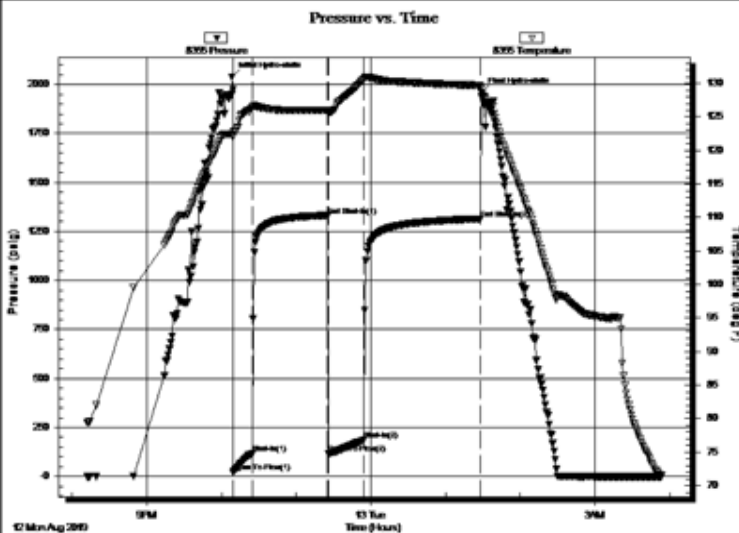
**9/3s/31w Rawlins KS**  
**Henningsen #1-9**  
Job Ticket: 66029      **DST#: 4**  
Test Start: 2019.08.12 @ 20:12:00

## GENERAL INFORMATION:

Formation: **Lans G**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 22:09:20  
Time Test Ended: 03:53:50  
Interval: **4013.00 ft (KB) To 4061.00 ft (KB) (TVD)**  
Total Depth: 4178.00 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: 2934.00 ft (KB)  
2929.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 8355      Outside**  
Press@RunDepth: 185.77 psig @ 4014.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2019.08.12      End Date: 2019.08.13      Last Calib.: 2019.08.13  
Start Time: 20:12:01      End Time: 03:53:50      Time On Btm: 2019.08.12 @ 22:08:20  
Time Off Btm: 2019.08.13 @ 01:28:50

**TEST COMMENT:** 15-IF-1/2" Blow @ open Built to 10"  
60-ISI-No blow back  
30-FF-BOB in 21 mins Blow built to 15 3/4"  
90-FSI-No Blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2038.39	122.45	Initial Hydro-static
1	21.42	121.93	Open To Flow (1)
17	115.16	126.30	Shut-In(1)
77	1330.57	126.04	End Shut-In(1)
78	115.35	125.68	Open To Flow (2)
106	185.77	130.58	Shut-In(2)
200	1314.65	129.72	End Shut-In(2)
201	1958.74	129.25	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
367.00	SGOCWM 5%G 8%O 38%W 49%M	3.54

## 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
- Sltst
- Ss
- Till
- Sltstn
- 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
- Sltstrg

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

- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymn
- 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

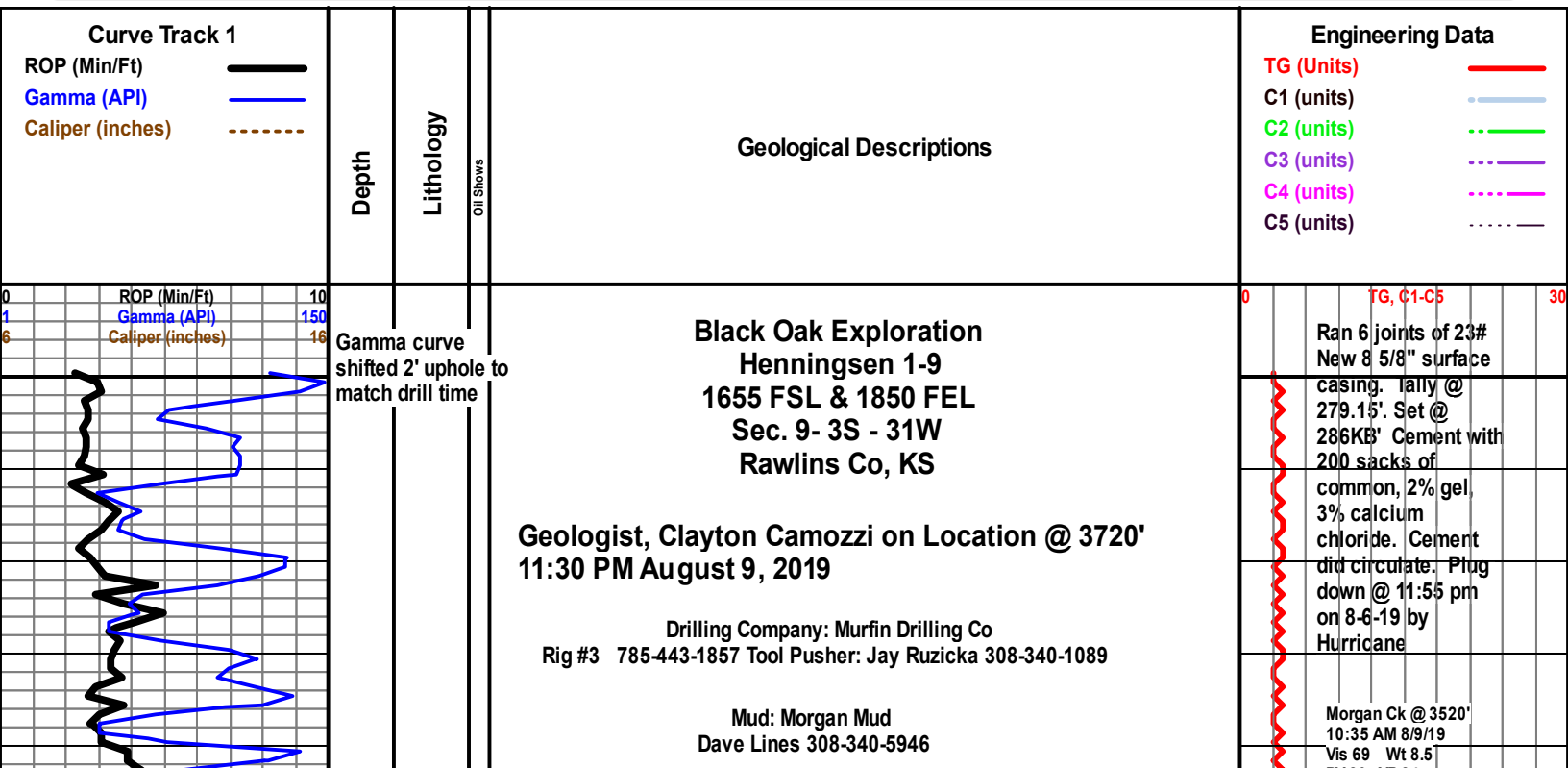
- Gas show
- Even
- Spotted
- Ques
- Dead

### INTERVAL

- Dst
- Core
- Dst
- Straddle test tail pip

### EVENT

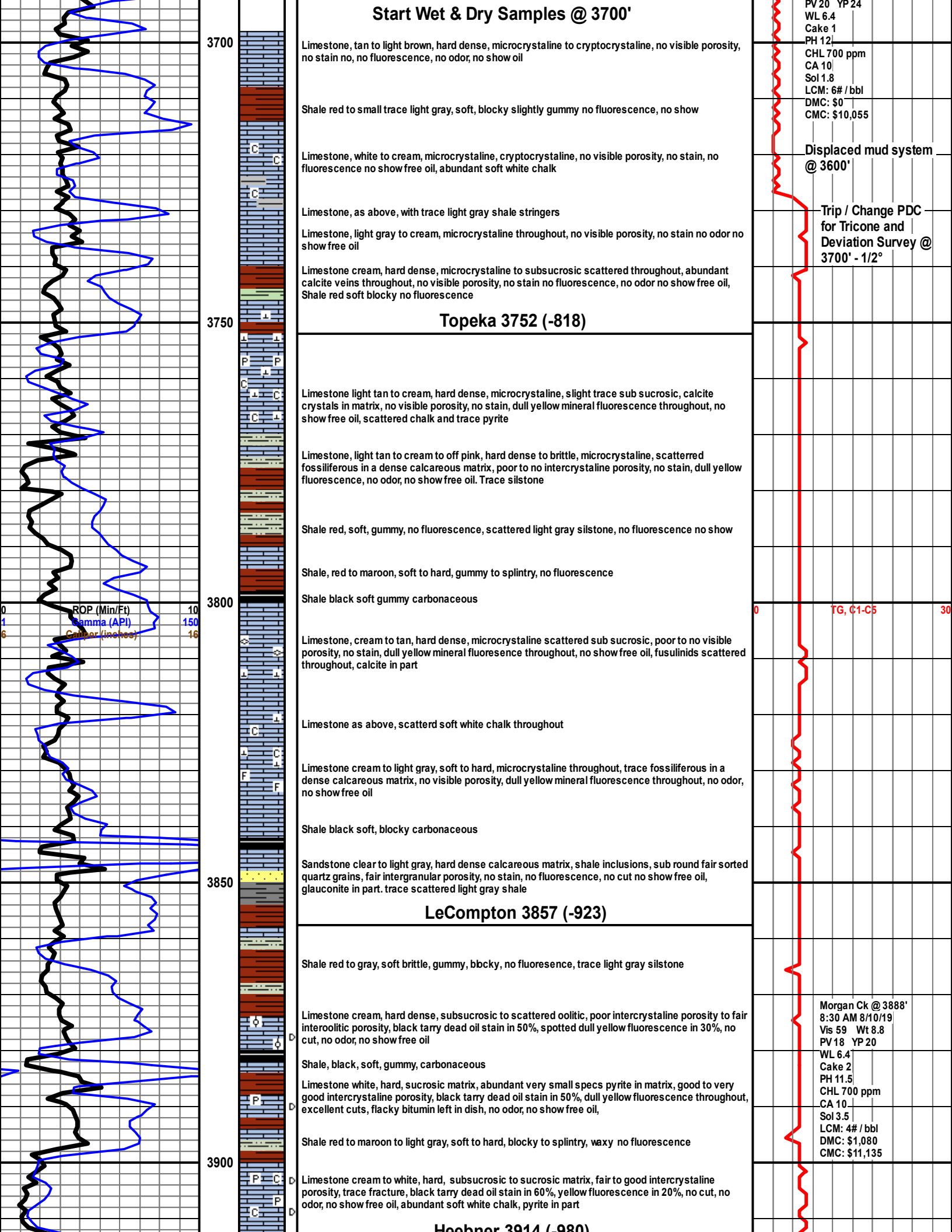
- Rft
- Sidewall
- Dst
- Open hole
- Perforations



Gamma curve shifted 2' uphole to match drill time



# Start Wet & Dry Samples @ 3700'



3700

Limestone, tan to light brown, hard dense, microcrystalline to cryptocrystalline, no visible porosity, no stain no, no fluorescence, no odor, no show oil

Shale red to small trace light gray, soft, blocky slightly gummy no fluorescence, no show

C

Limestone, white to cream, microcrystalline, cryptocrystalline, no visible porosity, no stain, no fluorescence no show free oil, abundant soft white chalk

C

Limestone, as above, with trace light gray shale stringers

Limestone, light gray to cream, microcrystalline throughout, no visible porosity, no stain no odor no show free oil

Limestone cream, hard dense, microcrystalline to subsucrosic scattered throughout, abundant calcite veins throughout, no visible porosity, no stain no fluorescence, no odor no show free oil, Shale red soft blocky no fluorescence

3750

## Topeka 3752 (-818)

C

Limestone light tan to cream, hard dense, microcrystalline, slight trace sub sucrosic, calcite crystals in matrix, no visible porosity, no stain, dull yellow mineral fluorescence throughout, no show free oil, scattered chalk and trace pyrite

C

Limestone, light tan to cream to off pink, hard dense to brittle, microcrystalline, scattered fossiliferous in a dense calcareous matrix, poor to no intercrystalline porosity, no stain, dull yellow fluorescence, no odor, no show free oil. Trace silstone

Shale red, soft, gummy, no fluorescence, scattered light gray silstone, no fluorescence no show

Shale, red to maroon, soft to hard, gummy to splinty, no fluorescence

3800

Shale black soft gummy carbonaceous

C

Limestone, cream to tan, hard dense, microcrystalline scattered sub sucrosic, poor to no visible porosity, no stain, dull yellow mineral fluorescence throughout, no show free oil, fusulinids scattered throughout, calcite in part

C

Limestone as above, scattered soft white chalk throughout

C

Limestone cream to light gray, soft to hard, microcrystalline throughout, trace fossiliferous in a dense calcareous matrix, no visible porosity, dull yellow mineral fluorescence throughout, no odor, no show free oil

F

Shale black soft, blocky carbonaceous

3850

Sandstone clear to light gray, hard dense calcareous matrix, shale inclusions, sub round fair sorted quartz grains, fair intergranular porosity, no stain, no fluorescence, no cut no show free oil, glauconite in part. trace scattered light gray shale

## LeCompton 3857 (-923)

Shale red to gray, soft brittle, gummy, blocky, no fluorescence, trace light gray silstone

D

Limestone cream, hard dense, subsucrosic to scattered oolitic, poor intercrystalline porosity to fair interoolitic porosity, black tarry dead oil stain in 50%, spotted dull yellow fluorescence in 30%, no cut, no odor, no show free oil

Shale, black, soft, gummy, carbonaceous

P

Limestone white, hard, sucrosic matrix, abundant very small specs pyrite in matrix, good to very good intercrystalline porosity, black tarry dead oil stain in 50%, dull yellow fluorescence throughout, excellent cuts, flacky bitumin left in dish, no odor, no show free oil,

P

Shale red to maroon to light gray, soft to hard, blocky to splinty, waxy no fluorescence

3900

P

Limestone cream to white, hard, subsucrosic to sucrosic matrix, fair to good intercrystalline porosity, trace fracture, black tarry dead oil stain in 60%, yellow fluorescence in 20%, no cut, no odor, no show free oil, abundant soft white chalk, pyrite in part

C

## Hebner 3914 (-980)

PV 20 YP 24  
WL 6.4  
Cake 1  
PH 12  
CHL 700 ppm  
CA 10  
Sol 1.8  
LCM: 6# / bbl  
DMC: \$0  
CMC: \$10,055

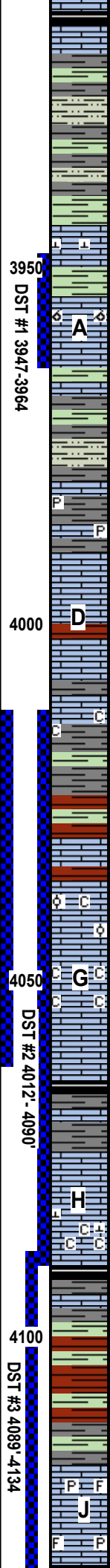
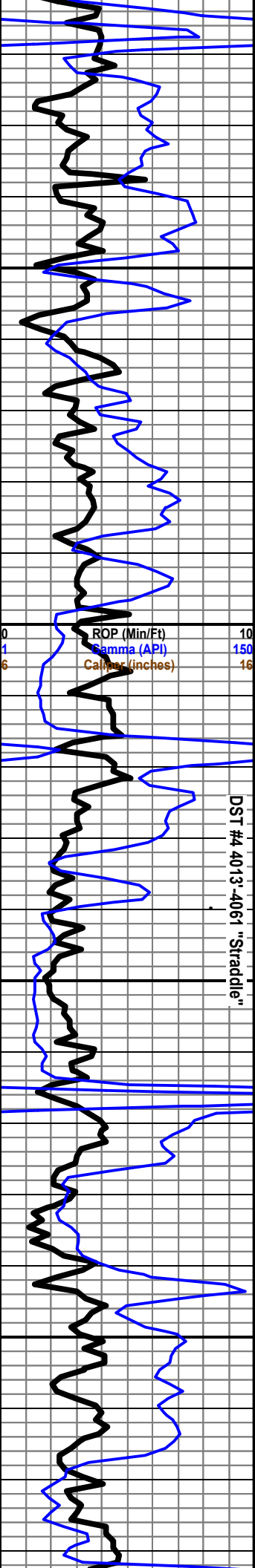
Displaced mud system @ 3600'

Trip / Change PDC for Tricone and Deviation Survey @ 3700' - 1/2°

0 TG, C1-C5 30

Morgan Ck @ 3888'  
8:30 AM 8/10/19  
Vis 59 Wt 8.8  
PV 18 YP 20  
WL 6.4  
Cake 2  
PH 11.5  
CHL 700 ppm  
CA 10  
Sol 3.5  
LCM: 4# / bbl  
DMC: \$1,080  
CMC: \$11,135

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



Shale, black, soft blocky, carbonaceous

Limestone, light gray, hard dense, microcrystalline scattered cryptocrystalline, no visible porosity no stain, mineral fluorescence throughout, no odor no show

Siltstone, light gray, blocky, very soft, chalky matrix with shale inclusions, black tarry dead oil stain throughout, poor to no fluorescence, no cuts, no odor, no show free oil

Silty shale/siltstone, light gray to green to turquoise, very soft, calcareous, slight dead tarry oil stain in 20%, dull yellow fluorescence, no cuts, no odor no show free oil

Limestone, cream, brittle, sucrosic matrix throughout with trace calcite veins in part, fair scattered good intercrystalline porosity, spotted black oil stain in 80%, spotted yellow fluorescence in 80%, good flush cut to fair slow stream cut, fair oil odor, sample slowly bleeding light brown oil, good show free oil in tray

### Lansing 3955 (-1021)

Limestone light tan to white to trace black, brittle, oomoldic recrystalline matrix throughout, scattered calcite and pyrite in matrix, good oomoldic porosity throughout, brown to scattered black oil stain in 90%, yellow fluorescence in 75%, good flush and slow stream cut, strong oil odor, good show light brown free oil

Limestone light tan to cream, hard dense, microcrystalline throughout to trace oomoldic with calcite crystals in matrix, poor to fair intercrystalline to no visible porosity throughout, stain in 10%, scattered yellow fluorescence, fair flush cut to good slow stream cut, very faint oil odor, no show free oil in tray, abundant light gray shale, blocky shale throughout

Siltstone light gray, soft, brittle, chalky matrix, micaceous in part, slight oil black dead oil stain in 30%, no fluorescence, no odor no show free oil

Limestone, cream, microcrystalline, poor intercrystalline porosity, very spotted black stain in 40%, dull yellow spotted fluorescence, no flush cut to poor slow stream cut, no odor, slight show light black free oil in tray, pyrite in part

### Lansing D 3990 (-1056)

Limestone tan, hard dense, microcrystalline throughout with red shale inclusions, no visible porosity, no stain, dull yellow mineral fluorescence throughout, no cuts, no odor no show free oil.

Limestone cream, hard dense, microcrystalline throughout, very poor to no visible porosity, no stain, dull yellow mineral fluorescence throughout, no cuts, no odor no show free oil

Shale, light gray to green, soft, blocky, micaceous, no fluorescence, abundant soft white chalk

Limestone, cream, hard, sub sucrosic to sucrosic matrix, fair intercrystalline porosity, light brown oil stain in 40%, dull yellow fluorescence, poor flush cut to poor slow stream cut, faint oil odor samples slowly bleeding light brown oil, good show light brown free oil in tray, interbedded red shales

Limestone, cream, hard dense, sub sucrosic to oolitic / transitional oomoldic in part w scattered calcite in part, fair intercrystalline & oomoldic porosity, light brown stain in 20%, spotty dull yellow fluorescence, faint oil odor, poor show light brown free oil in tray, abundant soft white chalk

Limestone, cream, hard dense, microcrystalline throughout, no visible porosity, no stain, dull yellow mineral fluorescence, no cuts, no odor, no show free oil, abundant soft white chalk

### Lansing H 4074 (-1140)

Limestone tan to light brown, microcrystalline to scattered cryptocrystalline, no visible porosity, no stain, dull yellow fluorescence throughout, no odor, no show

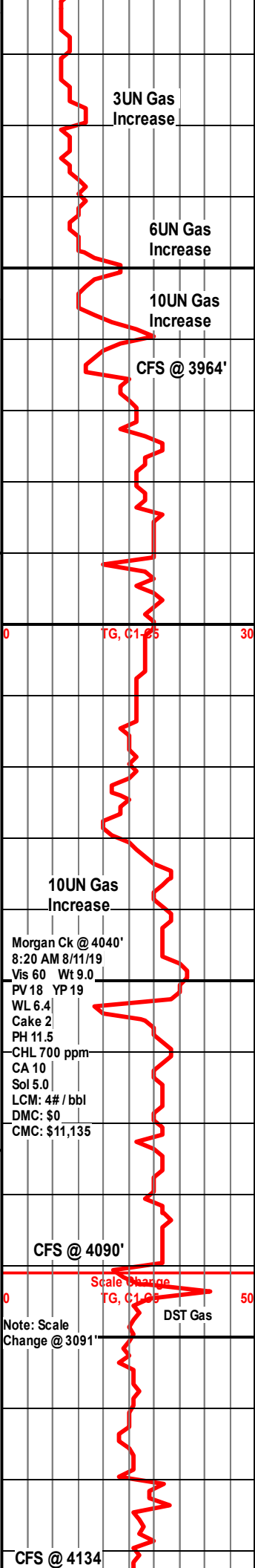
Limestone, cream, hard dense, microcrystalline, scattered cryptocrystalline calcite veins in part, no visible porosity, no stain, dull yellow mineral fluorescence throughout, no cuts no odor, no show free oil, abundant soft white chalk

Shale, black, soft, splinty, carbonaceous

Shale light gray to red to turquoise, soft gummy, blocky to splinty, no fluorescence

Shale as above

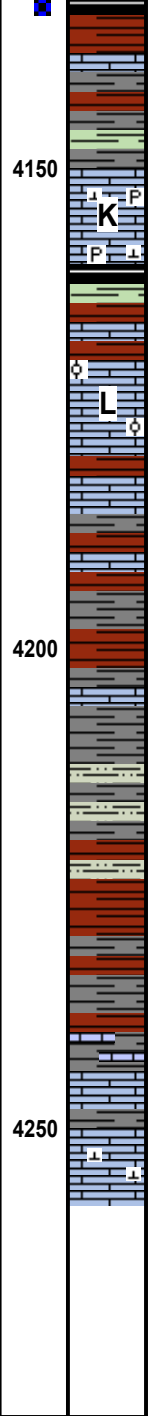
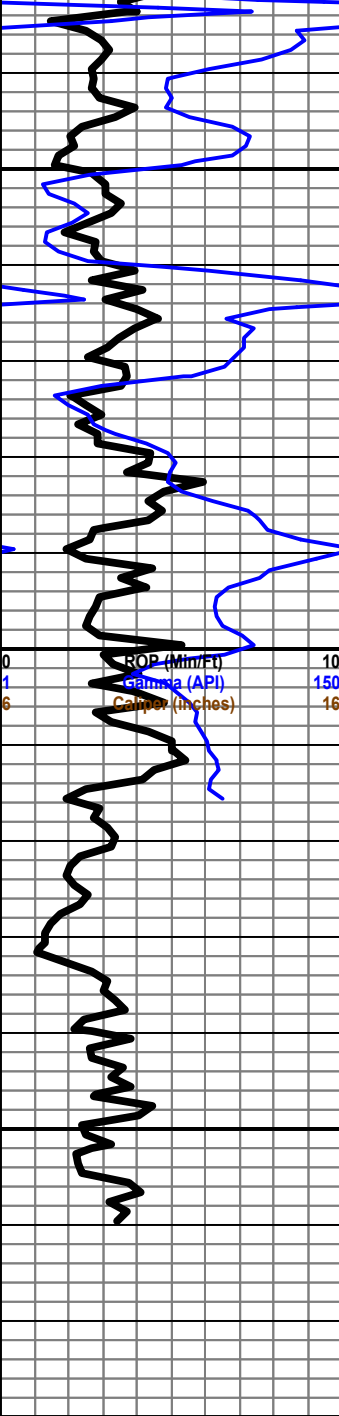
Limestone white to cream, microcrystalline, scattered sub sucrosic / fossiliferous matrix secondary recrystallization in part, poor intercrystalline porosity to small trace vugular porosity to possible fracture porosity, light brown spotted stain in 20%, yellow fluorescence throughout, excellent flush cut to good slow blue stream cut, very faint oil odor, fair show light brown free oil in tray, trace pyrite



Morgan Ck @ 4040'  
8:20 AM 8/11/19  
Vis 60 Wt 9.0  
PV 18 YP 19  
WL 6.4  
Cake 2  
PH 11.5  
CHL 700 ppm  
CA 10  
Sol 5.0  
LCM: 4# / bbl  
DMC: \$0  
CMC: \$11,135

Note: Scale Change @ 3091'

CFS @ 4134



Shale black very soft, gummy, carbonaceous

Shale light gray to abundant red, soft, blocky no fluorescence, small trace microcrystalline limestone, no visible porosity no fluorescence no show

**Lansing K 4150 (-1216)**

Limestone cream, microcrystalline to sub sucrosic, calcite in matrix, no visible porosity, no stain, dull yellow mineral fluorescence, no odor, no show free oil, soft white chalk throughout, pyrite

shale black soft, splintery, carbonaceous

Limestone, tan to cream, microcrystalline throughout to trace oolitic in a dense calcareous matrix, no visible porosity, no stain, dull yellow fluorescence, no odor no show free oil

**BKC 4188 (-1254)**

Shale, red to maroon to purple, soft to hard, splintery, no fluorescence,

Shale, as above

Shale and Silty shale, abundant gray, very soft, blocky, micaceous in part, no fluorescence, scattered limestone, microcrystalline, no fluorescence no show

Shale to silty shale, light gray to gray, very soft, gummy, no fluorescence

Shale, red to slight gray, very soft, muddy, sticky, no fluorescence

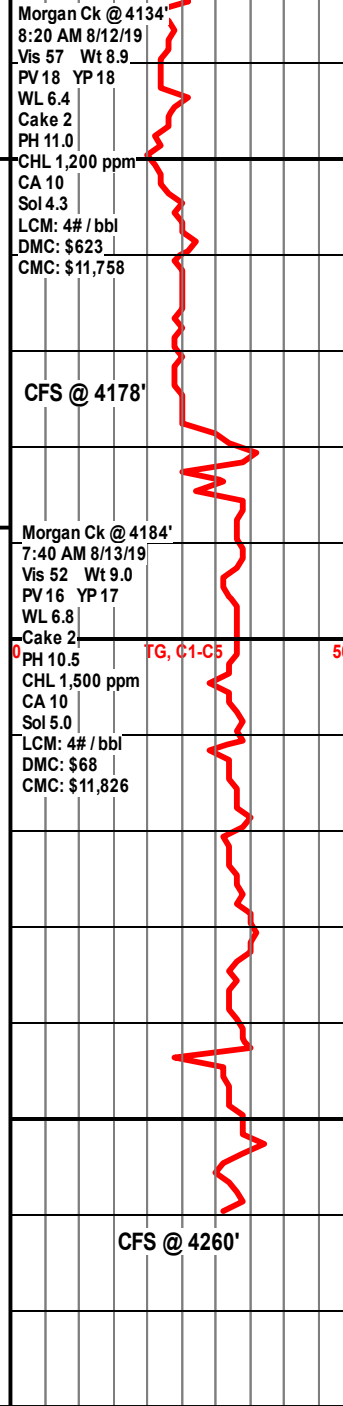
Shale as above

Limestone brown, soft to hard, microcrystalline with abundant imbedded light gray shale in matrix, no stain, no fluorescence no show

Limestone, cream, hard to brittle, microcrystalline throught with abundant dense calcite veins, light black dead oil stain in 5%, dull yellow mineral fluorescence, no cut, no odor, no show free oil

**TD @ 426012:05pm CDT 08-13-2019**

**Weatherford on Location @ 4:00pm**



Morgan Ck @ 4134'  
 8:20 AM 8/12/19  
 Vis 57 Wt 8.9  
 PV 18 YP 18  
 WL 6.4  
 Cake 2  
 PH 11.0  
 CHL 1,200 ppm  
 CA 10  
 Sol 4.3  
 LCM: 4# / bbl  
 DMC: \$623  
 CMC: \$11,758

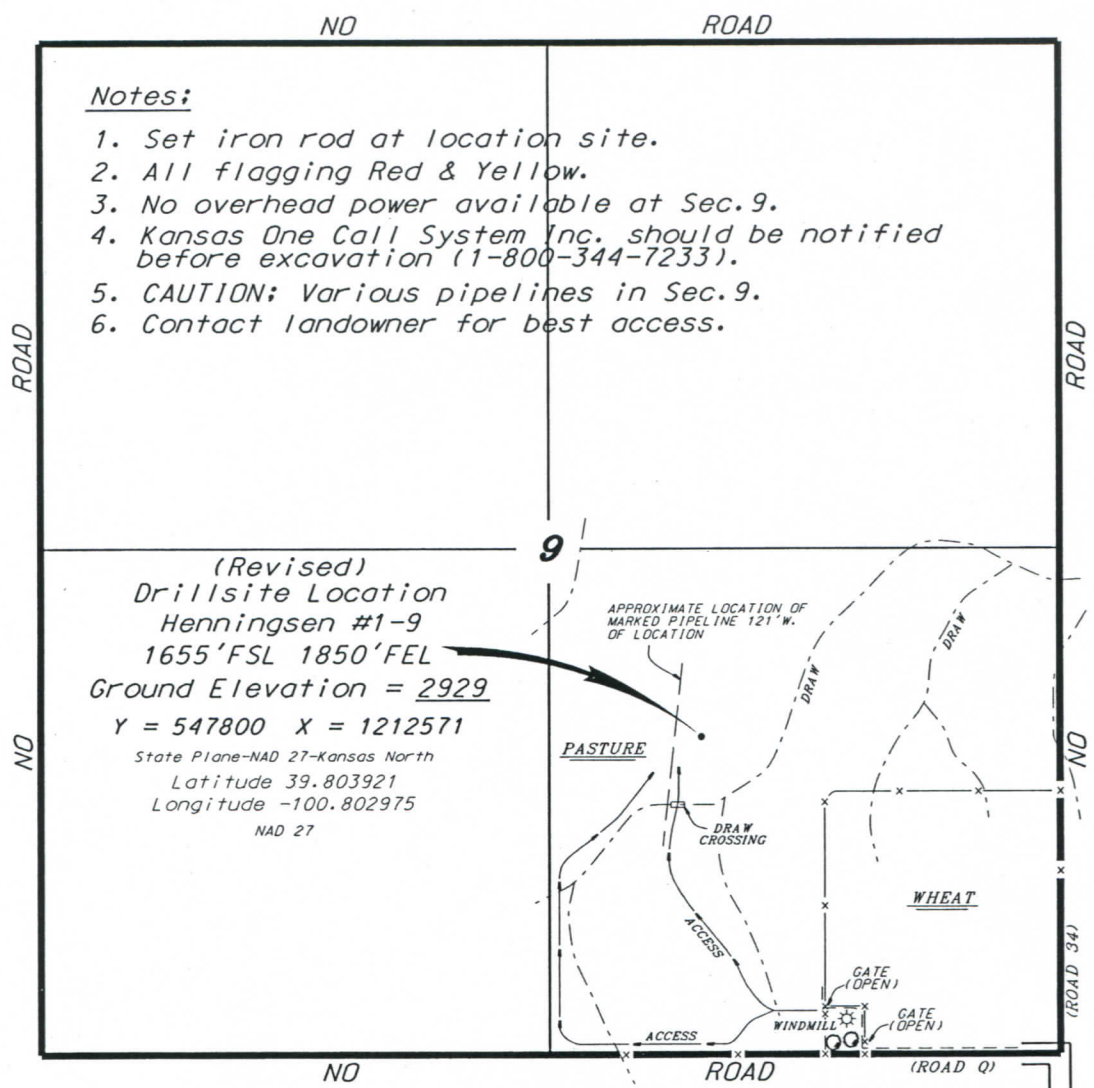
CFS @ 4178'

Morgan Ck @ 4184'  
 7:40 AM 8/13/19  
 Vis 52 Wt 9.0  
 PV 16 YP 17  
 WL 6.8  
 Cake 2  
 PH 10.5  
 CHL 1,500 ppm  
 CA 10  
 Sol 5.0  
 LCM: 4# / bbl  
 DMC: \$68  
 CMC: \$11,826

CFS @ 4260'

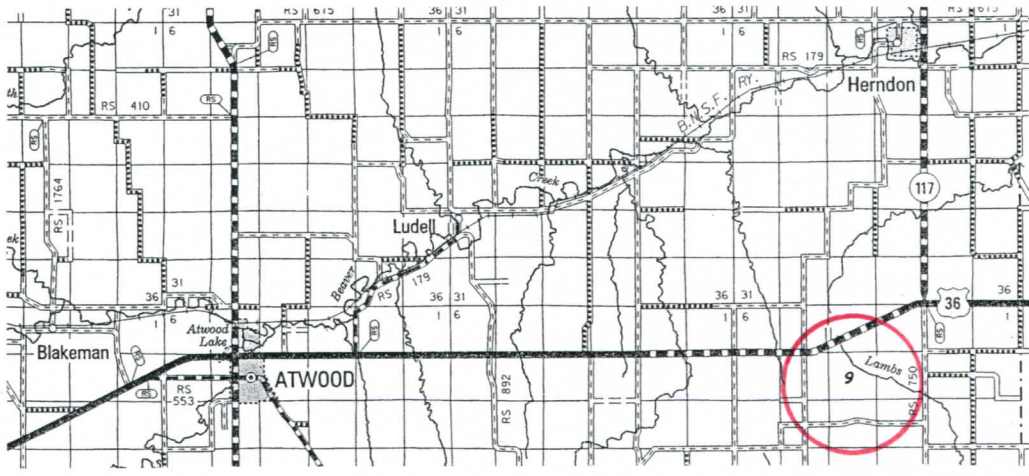
**BLACK OAK EXPLORATION  
HENNINGSEN LEASE  
SE.1/4, SECTION 9, T3S, R31W  
RAWLINS COUNTY, KANSAS**

\*Ingress and egress to location as shown on this plot is per usage only and may not be legally opened for public use. Contact landowner, tenant and county road department for access.



- Notes:
1. Set iron rod at location site.
  2. All flagging Red & Yellow.
  3. No overhead power available at Sec.9.
  4. Kansas One Call System Inc. should be notified before excavation (1-800-344-7233).
  5. CAUTION: Various pipelines in Sec.9.
  6. Contact landowner for best access.

*(Revised)*  
**Drillsite Location  
Henningsen #1-9  
1655'FSL 1850'FEL  
Ground Elevation = 2929  
Y = 547800 X = 1212571  
State Plane-NAD 27-Kansas North  
Latitude 39.803921  
Longitude -100.802975  
NAD 27**



\* Controlling data is based upon the best maps and photographs available to us and upon a regular section of land containing 640 acres.  
\* Approximate section lines were determined using the normal standard of care of oilfield surveyors practicing in the state of Kansas. The section corners, which establish the precise section lines, were not necessarily located, and the exact location of the drillsite location in the section is not guaranteed. Therefore, the operator securing this service and accepting this plot and all other parties relying thereon agree to hold Central Kansas Oilfield Services, Inc., its officers and employees harmless from all losses, costs and expenses and said entities released from any liability from incidental or consequential damages.  
\* Elevations derived from National Geodetic Vertical Datum.

Date June 28, 2019

