

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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Conservation Division
266 N. Main St., Ste. 220
Wichita, KS 67202-1513



Phone: 316-337-6200
Fax: 346-337-6211
<http://kcc.ks.gov/>

Dwight D. Keen, Chair
Shari Feist Albrecht, Commissioner
Jay Scott Emler, Commissioner

Laura Kelly, Governor

April 02, 2019

ROBERT SUTHERLAND
Northern Lights Oil Company, LLC
PO BOX 164
ANDOVER, KS 67002-0164

Re: ACO-1
API 15-101-22611-00-00
KEENAN 3
NE/4 Sec.03-19S-29W
Lane County, Kansas

Dear ROBERT SUTHERLAND:

K.A.R. 82-3-107 provides for all completion information to be filed within 120 days of the spud date. Subsection(e)(2) of that regulation states "All rights to confidentiality shall be lost if the filings are not timely."

The above referenced well was spudded on 11/23/2018 and the ACO-1 was received on April 01, 2019 (not within the 120 days timely requirement).

Therefore, your request for confidential treatment of data contained within the ACO-1 filing cannot be granted at this time.

If you should have any questions, please do not hesitate to contact me at (316)337-6200.

Sincerely,

Production Department



DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

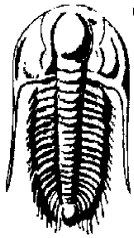
Start Date: 2018.11.29 @ 12:35:04

End Date: 2018.11.29 @ 20:20:04

Job Ticket #: 64304 DST #: 1

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

Printed: 2018.12.06 @ 09:32:53



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Northern Lights Oil Co

3-19s-29w Lane, KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64304

DST#: 1

ATTN: Jeff Christian

Test Start: 2018.11.29 @ 12:35:04

GENERAL INFORMATION:

Formation: **LKC E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:03:04

Time Test Ended: 20:20:04

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Turley

Unit No: 79

Interval: 4050.00 ft (KB) To 4086.00 ft (KB) (TVD)

Reference Elevations: 2820.00 ft (KB)

Total Depth: 4086.00 ft (KB) (TVD)

2810.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 10.00 ft

Serial #: 6651

Inside

Press@RunDepth: 286.33 psig @ 4051.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.11.29

End Date: 2018.11.29

Last Calib.: 2018.11.29

Start Time: 12:35:09

End Time: 20:20:03

Time On Btm: 2018.11.29 @ 15:02:04

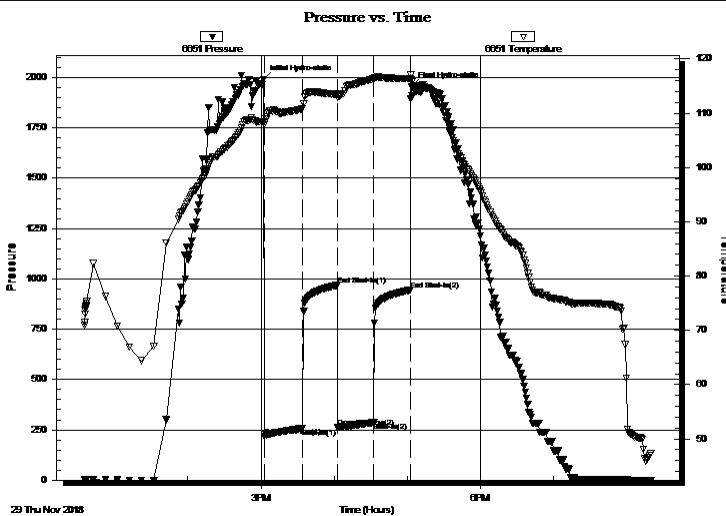
Time Off Btm: 2018.11.29 @ 17:03:34

TEST COMMENT: IF: 3" blow built to 10 1/2 Slid and open tool before we got to bottom

IS: No return.

FF: Surface blow built to 6"

FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1988.39	108.41	Initial Hydro-static
1	218.60	107.83	Open To Flow (1)
32	257.85	110.83	Shut-In(1)
61	968.09	113.46	End Shut-In(1)
61	263.96	112.95	Open To Flow (2)
91	286.33	116.30	Shut-In(2)
121	944.53	116.36	End Shut-In(2)
122	1954.37	116.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	gocm 10%g 10%o 80%m	0.88
378.00	ocm 10%o 90%m	5.30
126.00	ocm 50%o 50%m	1.77
10.00	oil 100%o	0.14

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane, KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64304

DST#: 1

ATTN: Jeff Christian

Test Start: 2018.11.29 @ 12:35:04

Tool Information

Drill Pipe:	Length: 4058.00 ft	Diameter: 3.80 inches	Volume: 56.92 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 56.92 bbl</u>	Tool Chased 14.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 38000.00 lb
Depth to Top Packer:	4050.00 ft			Final 42000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	36.00 ft			
Tool Length:	56.00 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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Stubb	1.00			4031.00	
Shut In Tool	5.00			4036.00	
Hydraulic tool	5.00			4041.00	
Packer	5.00			4046.00	20.00 Bottom Of Top Packer
Packer	4.00			4050.00	
Stubb	1.00			4051.00	
Recorder	0.00	6651	Inside	4051.00	
Recorder	0.00	8166	Outside	4051.00	
Perforations	30.00			4081.00	
Bullnose	5.00			4086.00	36.00 Bottom Packers & Anchor
Total Tool Length:	56.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64304

DST#: 1

ATTN: Jeff Christian

Test Start: 2018.11.29 @ 12:35:04

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2400.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
63.00	gocm 10%g 10%o 80%m	0.884
378.00	ocm 10%o 90%m	5.302
126.00	ocm 50%o 50%m	1.767
10.00	oil 100%o	0.140

Total Length: 577.00 ft

Total Volume: 8.093 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

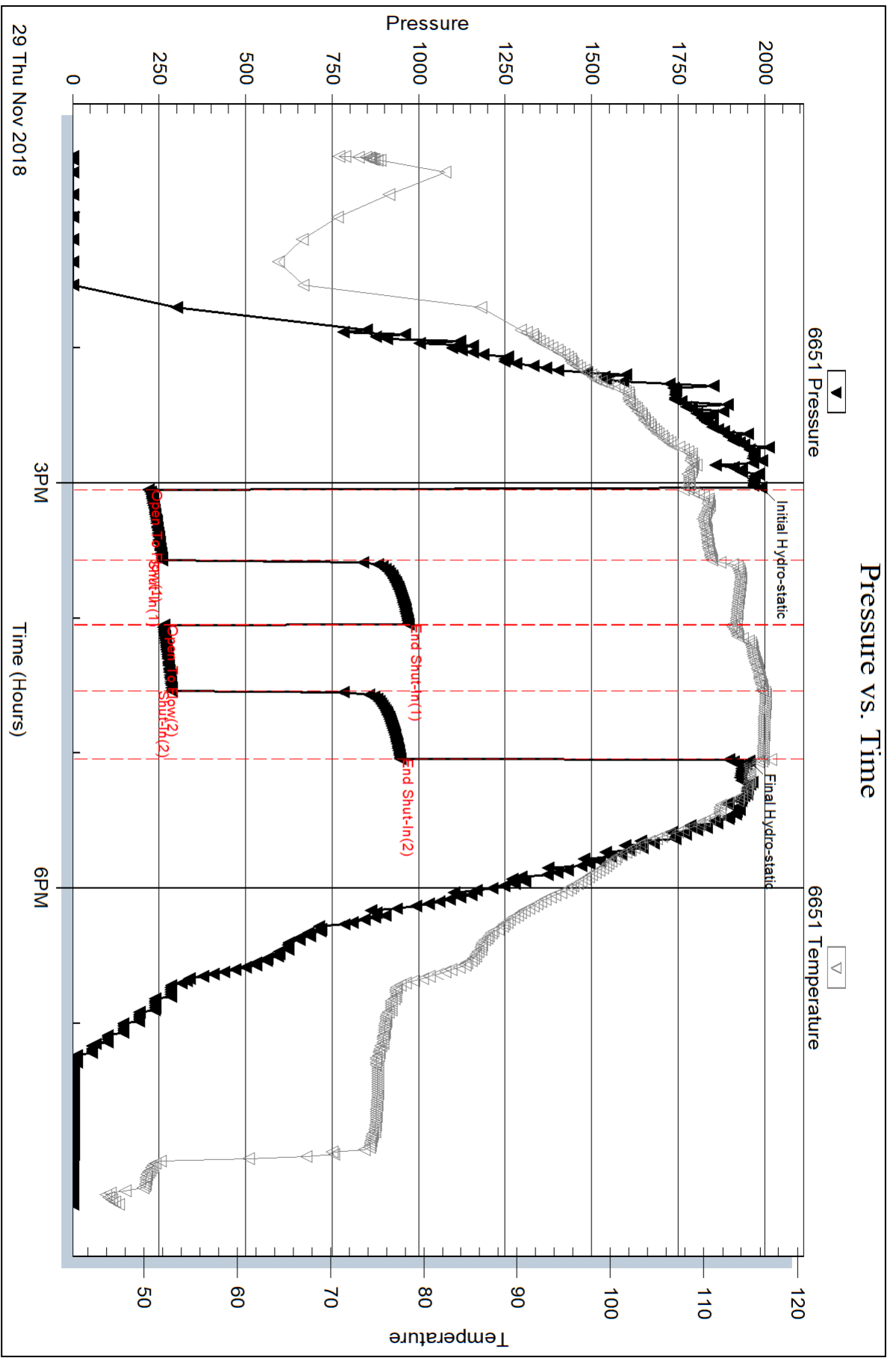
Serial #: 6651

Inside

Northern Lights Oil Co

Keenan #3

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 64304

Printed: 2018.12.06 @ 09:32:54

Serial #: 8166

Outside Northern Lights Oil Co

Keenan #3

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 64304

Printed: 2018.12.06 @ 09:32:54



DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

Start Date: 2018.11.30 @ 11:07:37

End Date: 2018.11.30 @ 18:07:37

Job Ticket #: 64305 DST #: 2

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

Printed: 2018.12.06 @ 09:32:08



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Northern Lights Oil Co
PO Box 164
Andover KS 67002
ATTN: Jeff Christian

3-19s-29w Lane, KS

Keenan #3

Job Ticket: 64305

DST#: 2

Test Start: 2018.11.30 @ 11:07:37

GENERAL INFORMATION:

Formation: **LKC G**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:06:37
 Time Test Ended: 18:07:37
 Interval: **4148.00 ft (KB) To 4195.00 ft (KB) (TVD)**
 Total Depth: 4195.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brandon Turley
 Unit No: 79
 Reference Elevations: 2820.00 ft (KB)
 2810.00 ft (CF)
 KB to GR/CF: 10.00 ft

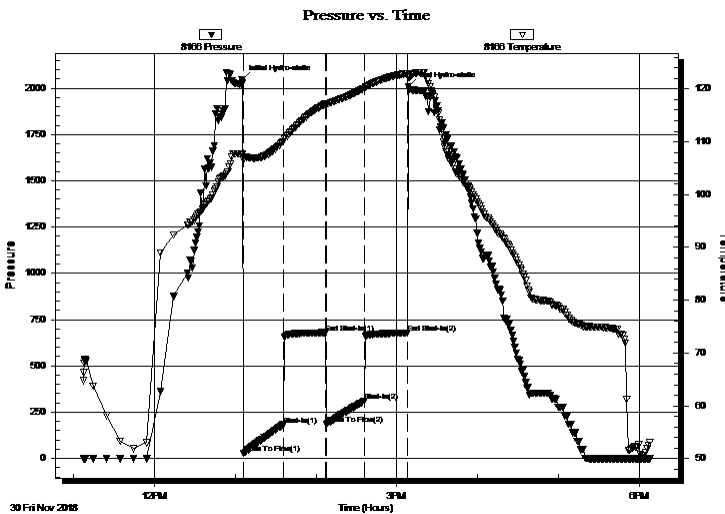
Serial #: 8166

Outside

Press@RunDepth: 308.32 psig @ 4149.00 ft (KB)
 Start Date: 2018.11.30 End Date: 2018.11.30
 Start Time: 11:07:42 End Time: 18:07:36
 Capacity: 8000.00 psig
 Last Calib.: 2018.11.30
 Time On Btm: 2018.11.30 @ 13:05:07
 Time Off Btm: 2018.11.30 @ 15:08:37

TEST COMMENT: IF: 3" blow BOB in 8 mins. 33"
 IS: Surface blow built to 1/2.
 FF: BOB in 11 mins. 27"
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2046.33	107.75	Initial Hydro-static
2	26.51	106.60	Open To Flow (1)
31	181.68	110.06	Shut-In(1)
62	679.36	117.16	End Shut-In(1)
63	184.75	117.05	Open To Flow (2)
91	308.32	120.09	Shut-In(2)
123	677.03	122.92	End Shut-In(2)
124	2008.49	122.17	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
252.00	mcw 80%w 20%m	3.53
189.00	gocw m 10%g 5%o 40%w 45%m	2.65
189.00	gcw m 10%o 10%w 80%m	2.65
2.00	free oil 100%o	0.03

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64305

DST#: 2

ATTN: Jeff Christian

Test Start: 2018.11.30 @ 11:07:37

Tool Information

Drill Pipe:	Length: 4151.00 ft	Diameter: 3.80 inches	Volume: 58.23 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 48000.00 lb
			<u>Total Volume: 58.23 bbl</u>	Tool Chased 5.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 35000.00 lb
Depth to Top Packer:	4148.00 ft			Final 42000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.00 ft			
Tool Length:	74.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Stubb	1.00			4122.00	
Shut In Tool	5.00			4127.00	
Hydraulic tool	5.00			4132.00	
Jars	5.00			4137.00	
Safety Joint	2.00			4139.00	
Packer	5.00			4144.00	27.00 Bottom Of Top Packer
Packer	4.00			4148.00	
Stubb	1.00			4149.00	
Recorder	0.00	6651	Inside	4149.00	
Recorder	0.00	8166	Outside	4149.00	
Perforations	7.00			4156.00	
Change Over Sub	1.00			4157.00	
Drill Pipe	32.00			4189.00	
Change Over Sub	1.00			4190.00	
Bullnose	5.00			4195.00	47.00 Bottom Packers & Anchor

Total Tool Length: 74.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64305

DST#: 2

ATTN: Jeff Christian

Test Start: 2018.11.30 @ 11:07:37

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

46000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
252.00	mcw 80%w 20%m	3.535
189.00	gocw m 10%g 5%o 40%w 45%m	2.651
189.00	gcw m 10%o 10%w 80%m	2.651
2.00	free oil 100%o	0.028

Total Length: 632.00 ft Total Volume: 8.865 bbl

Num Fluid Samples: 0

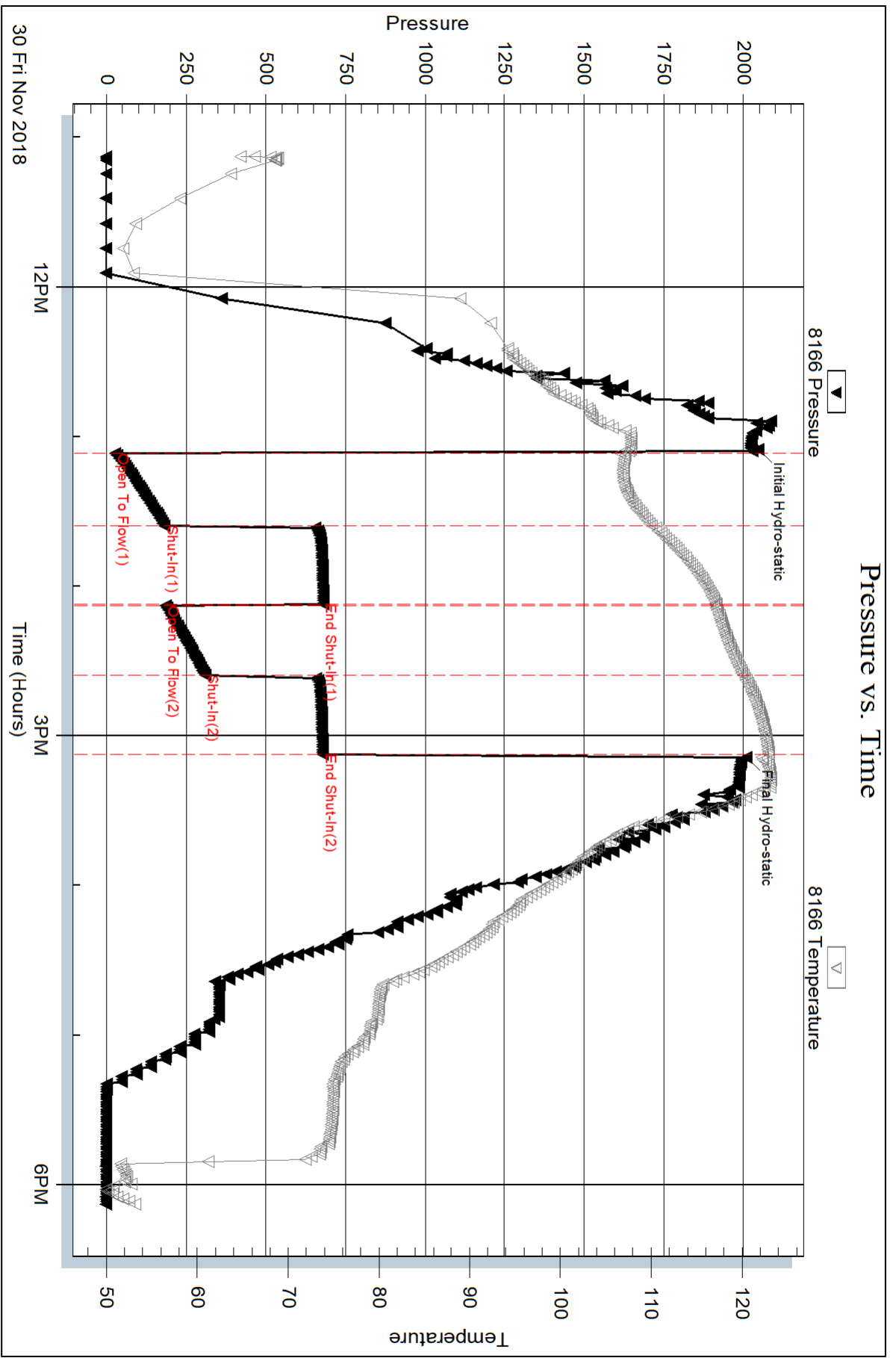
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .29@40=46000



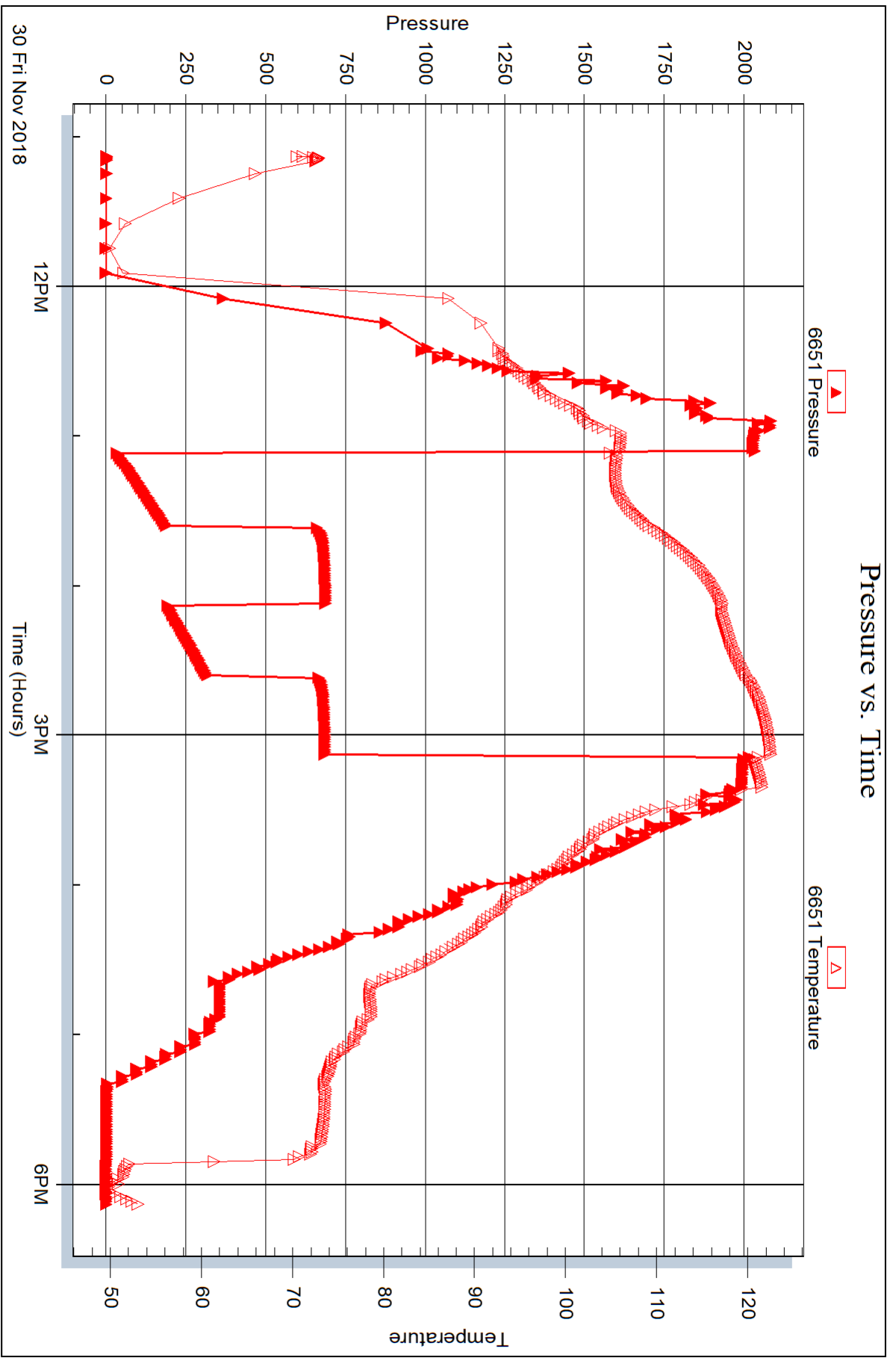
Serial #: 6651

Inside

Northern Lights Oil Co

Keenan #3

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 64305

Printed: 2018.12.06 @ 09:32:09



DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

Start Date: 2018.12.01 @ 08:45:18

End Date: 2018.12.01 @ 15:01:18

Job Ticket #: 64306 DST #: 3

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

Printed: 2018.12.06 @ 09:30:35



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Northern Lights Oil Co
 PO Box 164
 Andover KS 67002
 ATTN: Jeff Christian

3-19s-29w Lane, KS

Keenan #3

Job Ticket: 64306

DST#: 3

Test Start: 2018.12.01 @ 08:45:18

GENERAL INFORMATION:

Formation: **LKC H**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:09:18
 Time Test Ended: 15:01:18
 Interval: **4193.00 ft (KB) To 4223.00 ft (KB) (TVD)**
 Total Depth: 4223.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brandon Turley
 Unit No: 79
 Reference Elevations: 2820.00 ft (KB)
 2810.00 ft (CF)
 KB to GR/CF: 10.00 ft

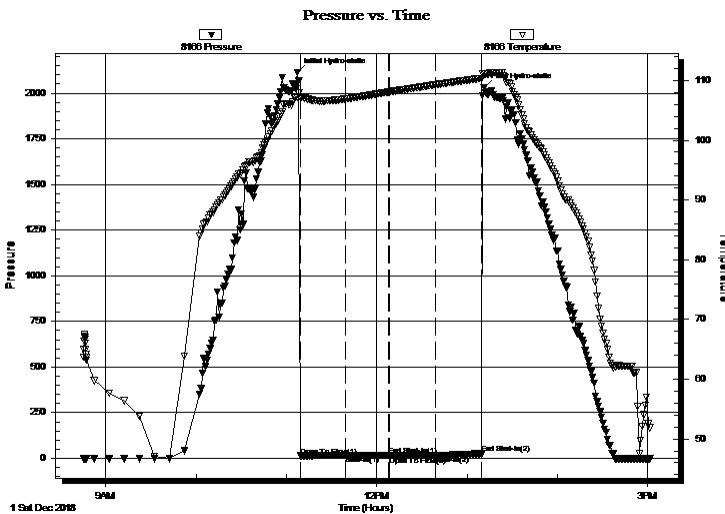
Serial #: 8166

Outside

Press@RunDepth: 15.62 psig @ 4194.00 ft (KB)
 Start Date: 2018.12.01 End Date: 2018.12.01
 Start Time: 08:45:23 End Time: 15:01:17
 Capacity: 8000.00 psig
 Last Calib.: 2018.12.01
 Time On Btm: 2018.12.01 @ 11:07:18
 Time Off Btm: 2018.12.01 @ 13:11:18

TEST COMMENT: IF: 1/2" blow built to 1 1/2" and died in 3/4"
 IS: No return.
 FF: Surface blow died in 10 min.
 FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2113.70	107.10	Initial Hydro-static
2	13.48	107.20	Open To Flow (1)
32	14.90	106.92	Shut-In(1)
61	15.67	108.07	End Shut-In(1)
61	13.55	108.09	Open To Flow (2)
92	15.62	109.31	Shut-In(2)
123	25.85	110.38	End Shut-In(2)
124	2028.84	111.09	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	mud oil spots 100%m	0.01

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64306

DST#: 3

ATTN: Jeff Christian

Test Start: 2018.12.01 @ 08:45:18

Tool Information

Drill Pipe:	Length: 4182.00 ft	Diameter: 3.80 inches	Volume: 58.66 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 48000.00 lb
			<u>Total Volume: 58.66 bbl</u>	Tool Chased 2.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 38000.00 lb
Depth to Top Packer:	4193.00 ft			Final 38000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	57.00 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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Stubb	1.00			4167.00	
Shut In Tool	5.00			4172.00	
Hydraulic tool	5.00			4177.00	
Jars	5.00			4182.00	
Safety Joint	2.00			4184.00	
Packer	5.00			4189.00	27.00 Bottom Of Top Packer
Packer	4.00			4193.00	
Stubb	1.00			4194.00	
Recorder	0.00	6651	Inside	4194.00	
Recorder	0.00	8166	Outside	4194.00	
Perforations	24.00			4218.00	
Bullnose	5.00			4223.00	30.00 Bottom Packers & Anchor

Total Tool Length: 57.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64306

DST#: 3

ATTN: Jeff Christian

Test Start: 2018.12.01 @ 08:45:18

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
1.00	mud oil spots 100%m	0.014

Total Length: 1.00 ft Total Volume: 0.014 bbl

Num Fluid Samples: 0

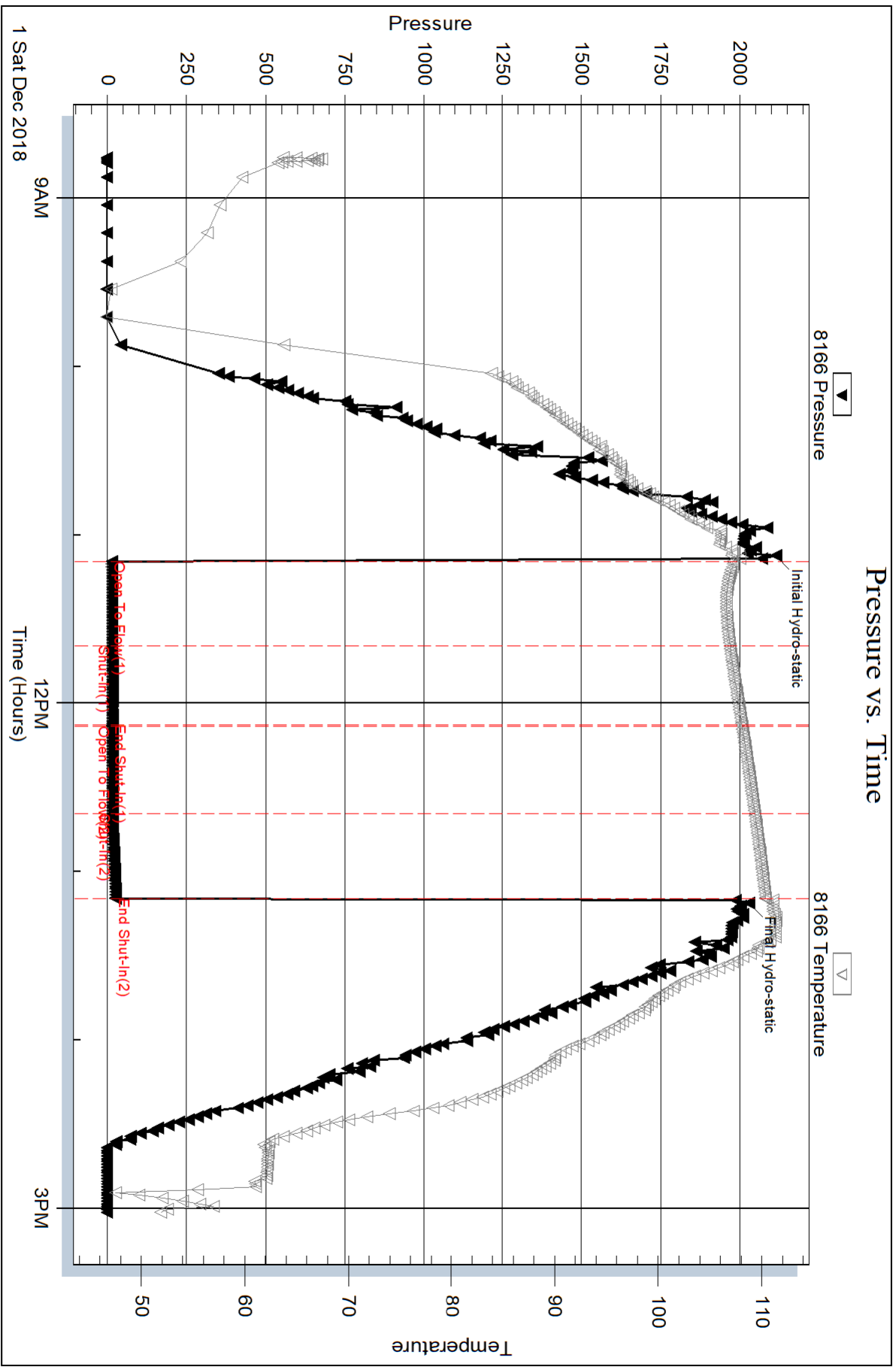
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



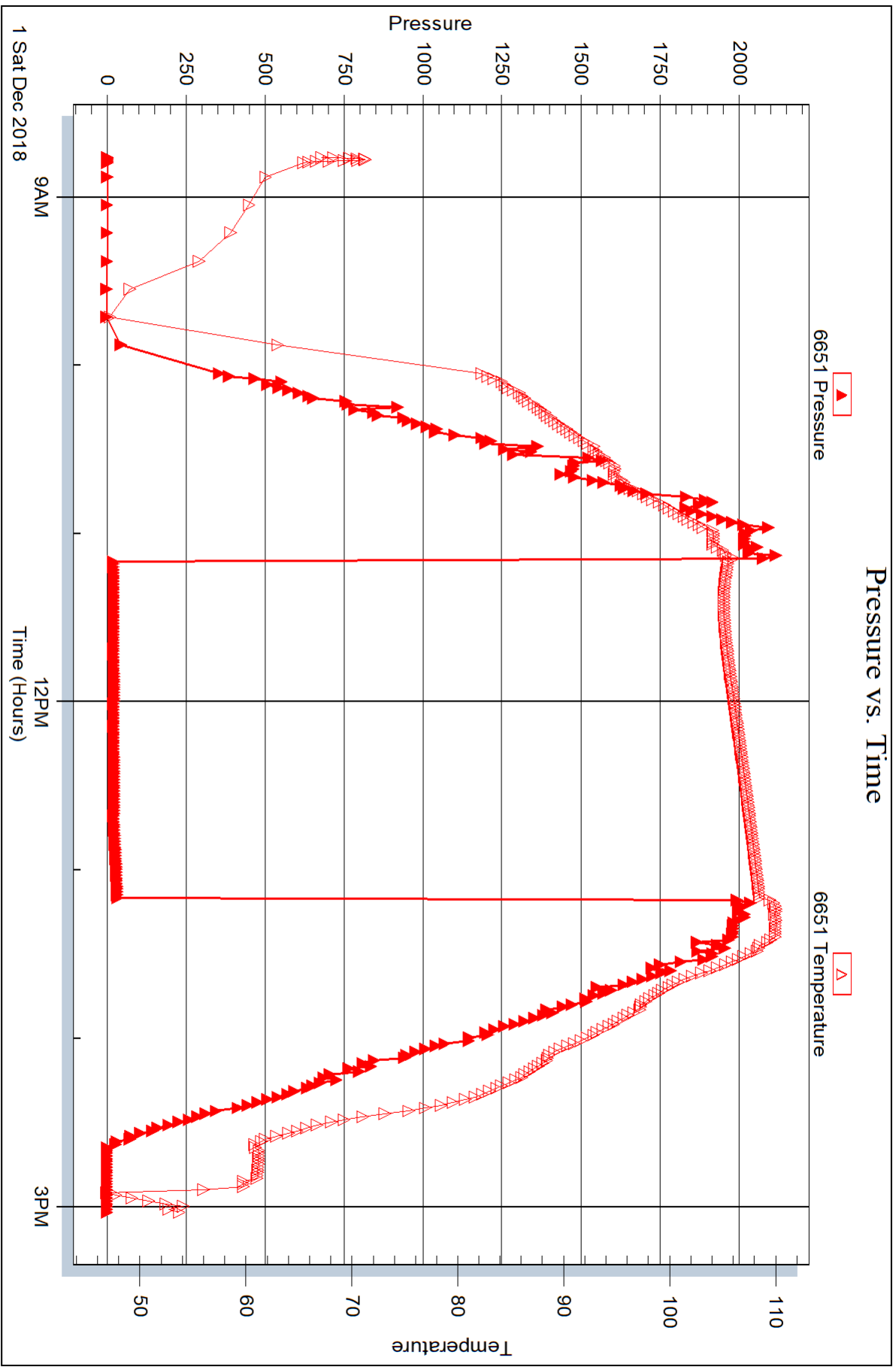
Serial #: 6651

Inside

Northern Lights Oil Co

Keenan #3

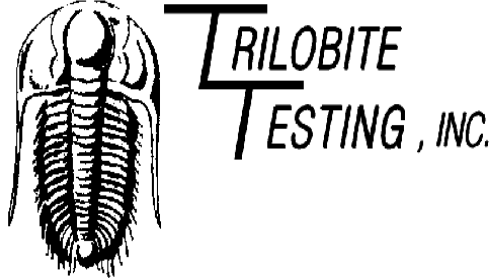
DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 64306

Printed: 2018.12.06 @ 09:30:36



DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

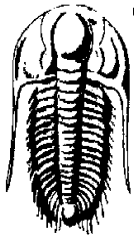
Start Date: 2018.12.02 @ 06:48:02

End Date: 2018.12.02 @ 13:24:02

Job Ticket #: 64307 DST #: 4

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

Printed: 2018.12.06 @ 09:27:14



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Northern Lights Oil Co

3-19s-29w Lane, KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64307

DST#: 4

ATTN: Jeff Christian

Test Start: 2018.12.02 @ 06:48:02

GENERAL INFORMATION:

Formation: **Middle Creek**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:06:02

Time Test Ended: 13:24:02

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

Interval: 4290.00 ft (KB) To 4301.00 ft (KB) (TVD)

Reference Elevations: 2820.00 ft (KB)

Total Depth: 4301.00 ft (KB) (TVD)

2810.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 10.00 ft

Serial #: 8166 Outside

Press@RunDepth: 26.74 psig @ 4291.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.12.02 End Date: 2018.12.02

Last Calib.: 2018.12.02

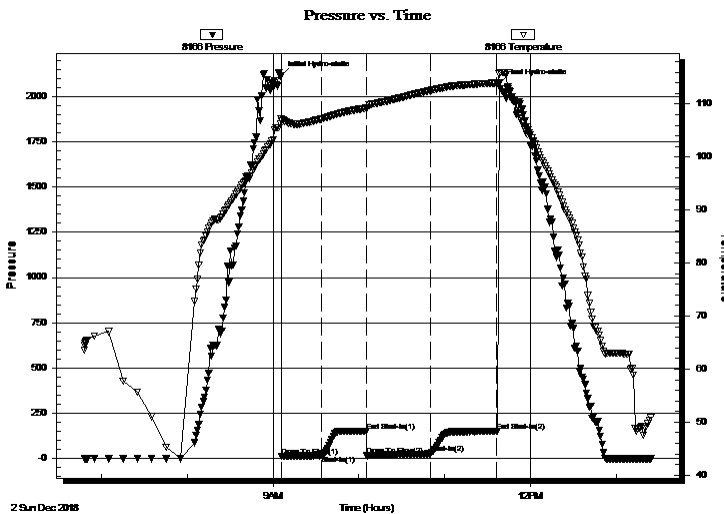
Start Time: 06:48:07 End Time: 13:24:01

Time On Btm: 2018.12.02 @ 09:05:32

Time Off Btm: 2018.12.02 @ 11:38:02

TEST COMMENT: IF: 1/4" blow built to 3"
IS: No return.
FF: 1/2" blow built to 5 3/4"
FS: No return.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2115.28	107.17	Initial Hydro-static
1	12.59	106.87	Open To Flow (1)
28	16.06	107.18	Shut-In(1)
60	150.36	109.23	End Shut-In(1)
60	16.27	109.18	Open To Flow (2)
105	26.74	112.55	Shut-In(2)
151	148.63	113.98	End Shut-In(2)
153	2073.62	115.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	ocm 10%o 90%m	0.14
10.00	free oil 100%o	0.14
0.00	103 GIP	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64307

DST#: 4

ATTN: Jeff Christian

Test Start: 2018.12.02 @ 06:48:02

Tool Information

Drill Pipe:	Length: 4282.00 ft	Diameter: 3.80 inches	Volume: 60.07 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume: 60.07 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	40000.00 lb
Depth to Top Packer:	4290.00 ft			Final	40000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	11.00 ft				
Tool Length:	31.00 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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Stubb	1.00			4271.00	
Shut In Tool	5.00			4276.00	
Hydraulic tool	5.00			4281.00	
Packer	5.00			4286.00	20.00 Bottom Of Top Packer
Packer	4.00			4290.00	
Stubb	1.00			4291.00	
Recorder	0.00	6651	Inside	4291.00	
Recorder	0.00	8166	Outside	4291.00	
Perforations	5.00			4296.00	
Bullnose	5.00			4301.00	11.00 Bottom Packers & Anchor
Total Tool Length:	31.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64307

DST#: 4

ATTN: Jeff Christian

Test Start: 2018.12.02 @ 06:48:02

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

34 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	ocm 10%o 90%m	0.140
10.00	free oil 100%o	0.140
0.00	103 GIP	0.000

Total Length: 20.00 ft Total Volume: 0.280 bbl

Num Fluid Samples: 0

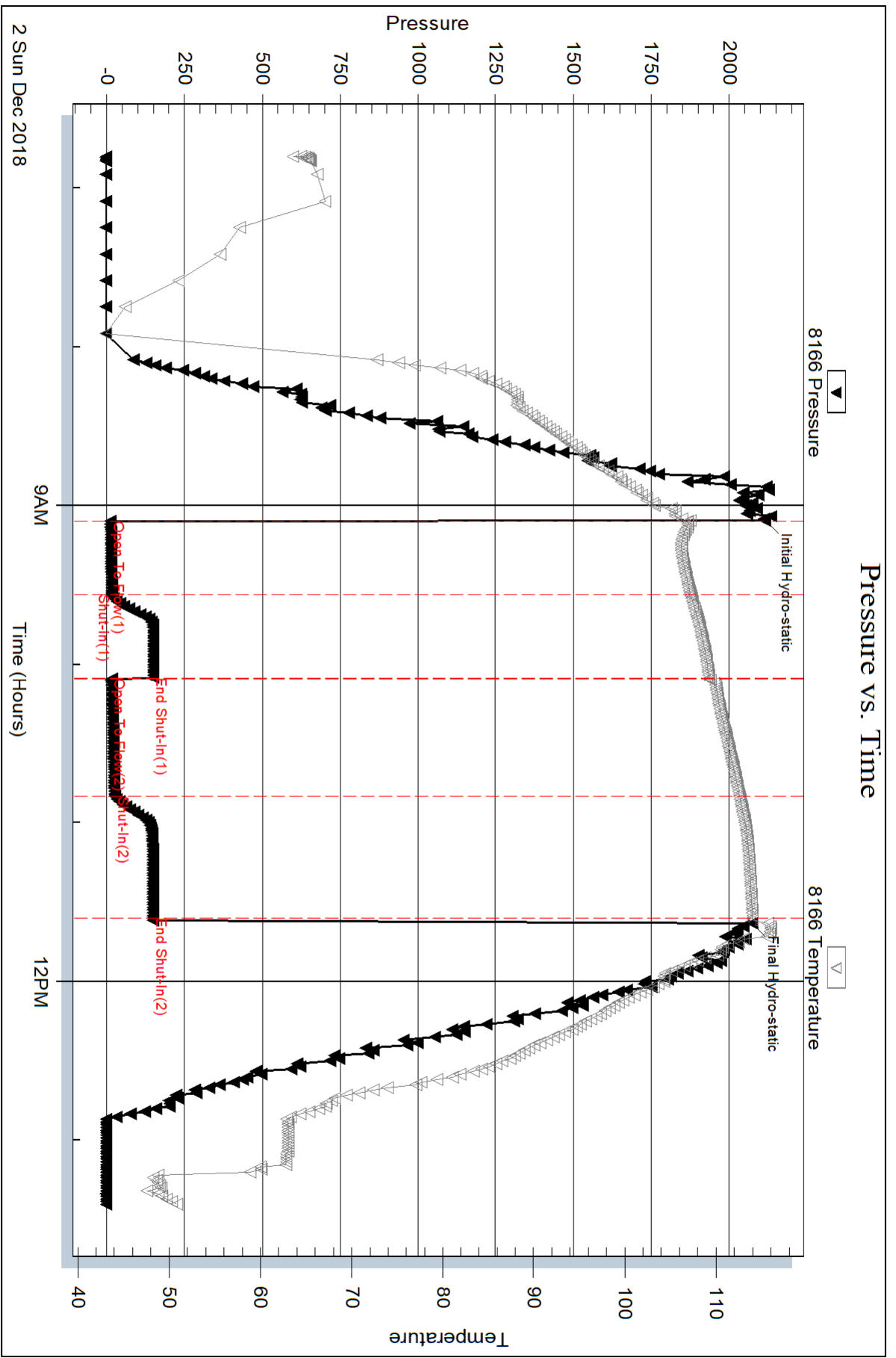
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 33@50=34



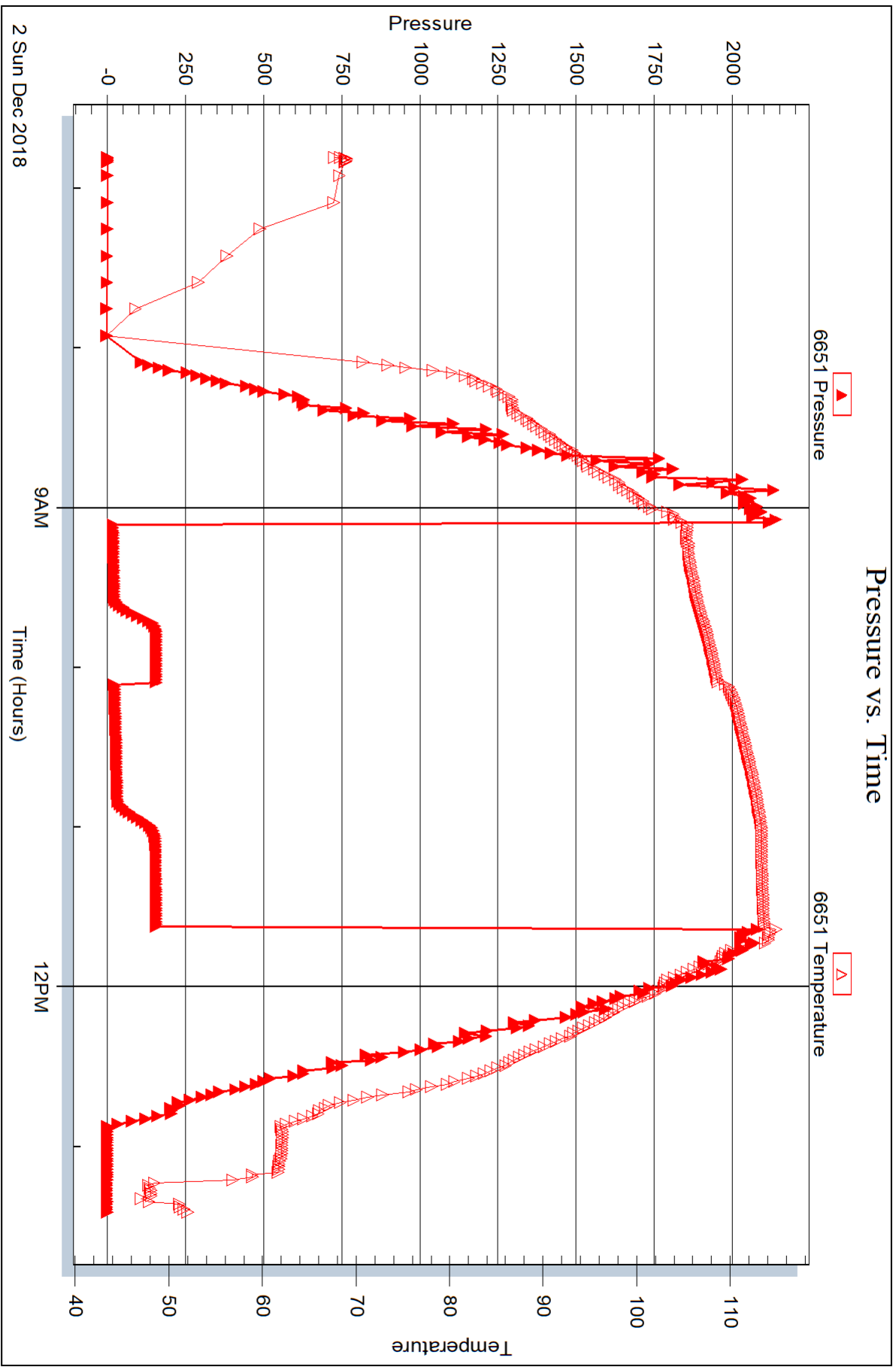
Serial #: 6651

Inside

Northern Lights Oil Co

Keenan #3

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

Start Date: 2018.12.03 @ 06:10:25

End Date: 2018.12.03 @ 13:02:25

Job Ticket #: 64308 DST #: 5

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

Printed: 2018.12.06 @ 09:26:51



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Northern Lights Oil Co
PO Box 164
Andover KS 67002
ATTN: Jeff Christian

3-19s-29w Lane, KS

Keenan #3

Job Ticket: 64308

DST#: 5

Test Start: 2018.12.03 @ 06:10:25

GENERAL INFORMATION:

Formation: **Altamont**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 08:45:55
 Time Test Ended: 13:02:25
 Interval: **4394.00 ft (KB) To 4430.00 ft (KB) (TVD)**
 Total Depth: 4430.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brandon Turley
 Unit No: 79
 Reference Elevations: 2820.00 ft (KB)
 2810.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 8166

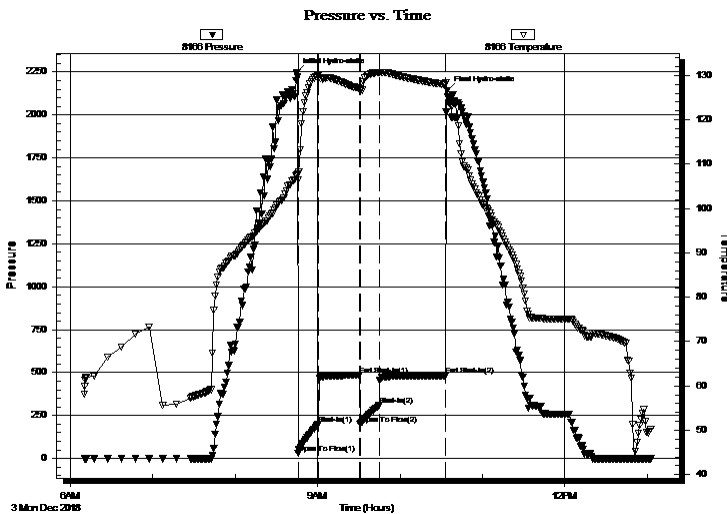
Outside

Press@RunDepth: 310.60 psig @ 4395.00 ft (KB)
 Start Date: 2018.12.03 End Date: 2018.12.03
 Start Time: 06:10:30 End Time: 13:02:24
 Capacity: 8000.00 psig
 Last Calib.: 2018.12.03
 Time On Btm: 2018.12.03 @ 08:44:55
 Time Off Btm: 2018.12.03 @ 10:34:25

TEST COMMENT: IF: BOB in 4 min. 35"
 IS: Weak surface blow never built.
 FF: BOB in 5 min. 26"
 FS: No return.

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2247.57	107.52	Initial Hydro-static
1	30.16	106.47	Open To Flow (1)
16	199.78	129.91	Shut-In(1)
46	484.60	127.01	End Shut-In(1)
46	198.30	126.77	Open To Flow (2)
60	310.60	130.60	Shut-In(2)
108	482.88	127.95	End Shut-In(2)
110	2141.18	125.21	Final Hydro-static



Recovery

Length (ft)	Description	Volume (bbl)
378.00	mcw 70%w 30%m	5.30
272.00	w cm 30%w 70%m	3.82
0.00	50 ppm H2S	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64308

DST#: 5

ATTN: Jeff Christian

Test Start: 2018.12.03 @ 06:10:25

Tool Information

Drill Pipe:	Length: 4379.00 ft	Diameter: 3.80 inches	Volume: 61.43 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume: 61.43 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	40000.00 lb
Depth to Top Packer:	4394.00 ft			Final	42000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	36.00 ft				
Tool Length:	56.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Stubb	1.00			4375.00	
Shut In Tool	5.00			4380.00	
Hydraulic tool	5.00			4385.00	
Packer	5.00			4390.00	20.00 Bottom Of Top Packer
Packer	4.00			4394.00	
Stubb	1.00			4395.00	
Recorder	0.00	6651	Inside	4395.00	
Recorder	0.00	8166	Outside	4395.00	
Perforations	30.00			4425.00	
Bullnose	5.00			4430.00	36.00 Bottom Packers & Anchor
Total Tool Length:	56.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64308

DST#: 5

ATTN: Jeff Christian

Test Start: 2018.12.03 @ 06:10:25

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

45000 ppm

Viscosity: 45.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
378.00	mcw 70%w 30%m	5.302
272.00	w cm 30%w 70%m	3.815
0.00	50 ppm H2S	0.000

Total Length: 650.00 ft Total Volume: 9.117 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

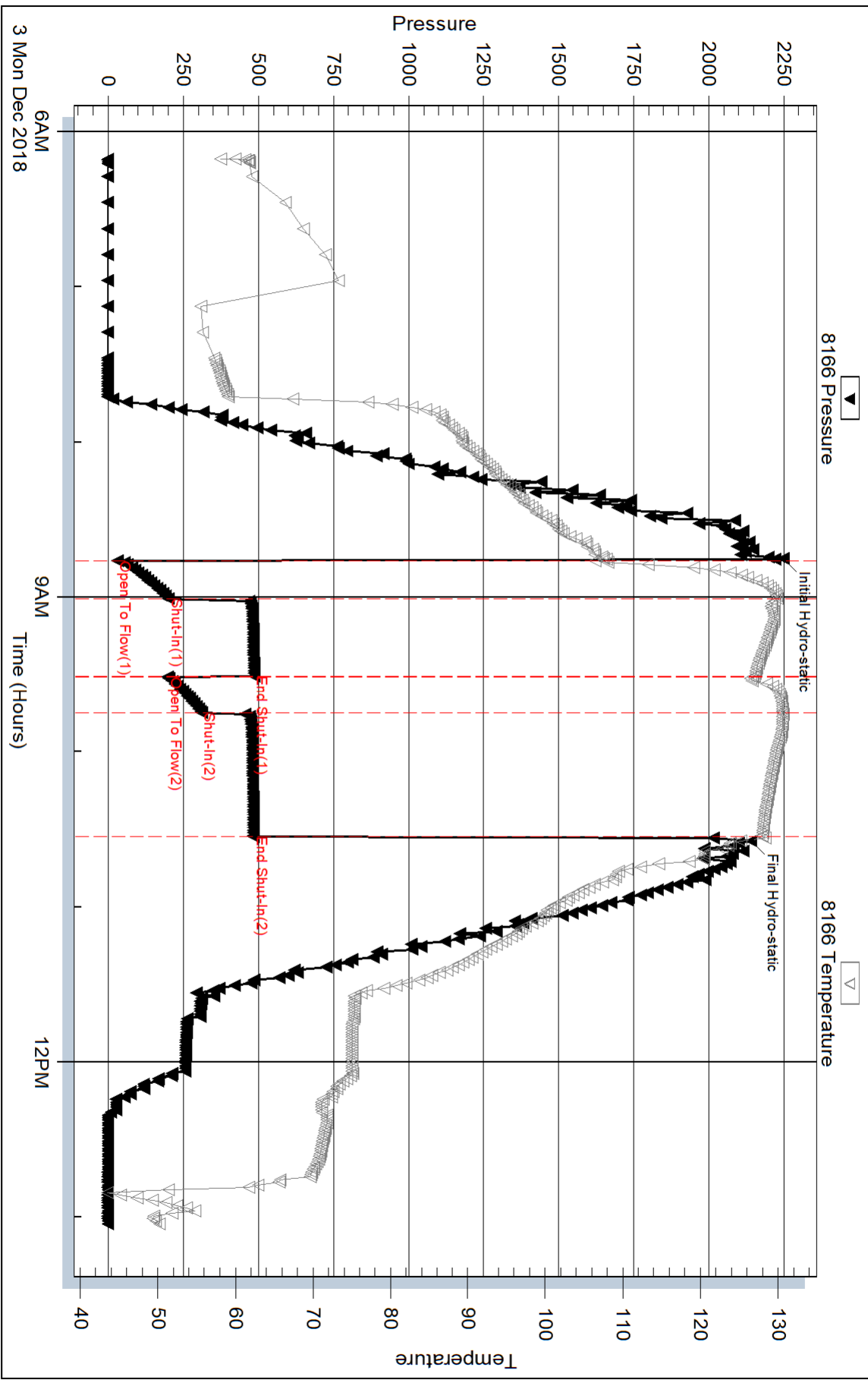
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .33@35=45000

Pressure vs. Time



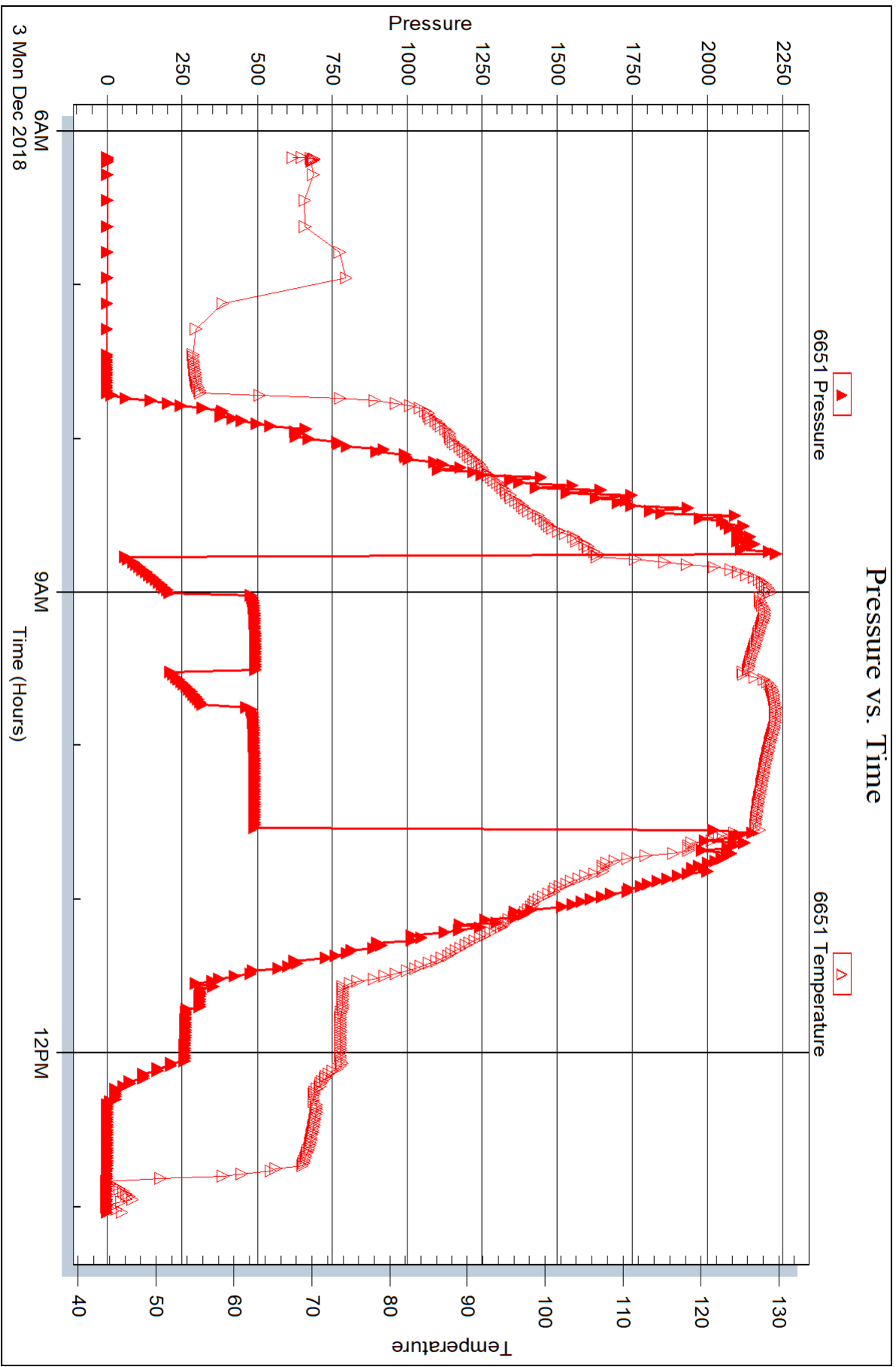
Serial #: 6651

Inside

Northern Lights Oil Co

Keenan #3

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 64308

Printed: 2018.12.06 @ 09:26:52



DRILL STEM TEST REPORT

Prepared For: **Northern Lights Oil Co**

PO Box 164
Andover KS 67002

ATTN: Jeff Christian

Keenan #3

3-19s-29w Lane,KS

Start Date: 2018.12.04 @ 12:52:51

End Date: 2018.12.04 @ 18:59:51

Job Ticket #: 64309 DST #: 6

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

Printed: 2018.12.06 @ 09:26:28



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Northern Lights Oil Co

3-19s-29w Lane, KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64309

DST#: 6

ATTN: Jeff Christian

Test Start: 2018.12.04 @ 12:52:51

GENERAL INFORMATION:

Formation: **Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:43:21

Time Test Ended: 18:59:51

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

Interval: 4536.00 ft (KB) To 4587.00 ft (KB) (TVD)

Reference Elevations: 2820.00 ft (KB)

Total Depth: 4587.00 ft (KB) (TVD)

2810.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 10.00 ft

Serial #: 8166 Outside

Press@RunDepth: 22.45 psig @ 4537.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.12.04

End Date:

2018.12.04

Last Calib.:

2018.12.04

Start Time: 12:52:56

End Time:

18:59:50

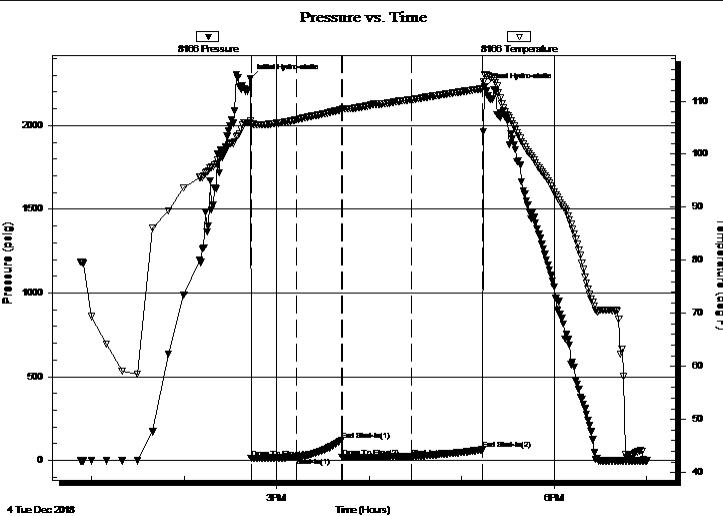
Time On Btm:

2018.12.04 @ 14:42:51

Time Off Btm:

2018.12.04 @ 17:14:51

TEST COMMENT: IF: 1/4" blow built to 1 1/2"
IS: No return.
FF: Surface blow built to 1/2"
FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2281.58	106.22	Initial Hydro-static
1	14.26	105.61	Open To Flow (1)
30	17.16	106.47	Shut-In(1)
59	121.69	108.38	End Shut-In(1)
60	19.36	108.42	Open To Flow (2)
105	22.45	110.29	Shut-In(2)
151	64.05	112.34	End Shut-In(2)
152	2228.95	115.03	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	ocm 10%o 90%m	0.28

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64309

DST#: 6

ATTN: Jeff Christian

Test Start: 2018.12.04 @ 12:52:51

Tool Information

Drill Pipe:	Length: 4536.00 ft	Diameter: 3.80 inches	Volume: 63.63 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 63.63 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 40000.00 lb
Depth to Top Packer:	4536.00 ft			Final 40000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	51.00 ft			
Tool Length:	71.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Stubb	1.00			4517.00	
Shut In Tool	5.00			4522.00	
Hydraulic tool	5.00			4527.00	
Packer	5.00			4532.00	20.00 Bottom Of Top Packer
Packer	4.00			4536.00	
Stubb	1.00			4537.00	
Recorder	0.00	6651	Inside	4537.00	
Recorder	0.00	8166	Outside	4537.00	
Perforations	12.00			4549.00	
Change Over Sub	1.00			4550.00	
Drill Pipe	31.00			4581.00	
Change Over Sub	1.00			4582.00	
Bullnose	5.00			4587.00	51.00 Bottom Packers & Anchor

Total Tool Length: 71.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Northern Lights Oil Co

3-19s-29w Lane,KS

PO Box 164
Andover KS 67002

Keenan #3

Job Ticket: 64309

DST#: 6

ATTN: Jeff Christian

Test Start: 2018.12.04 @ 12:52:51

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	ocm 10%o 90%m	0.281

Total Length: 20.00 ft Total Volume: 0.281 bbl

Num Fluid Samples: 0

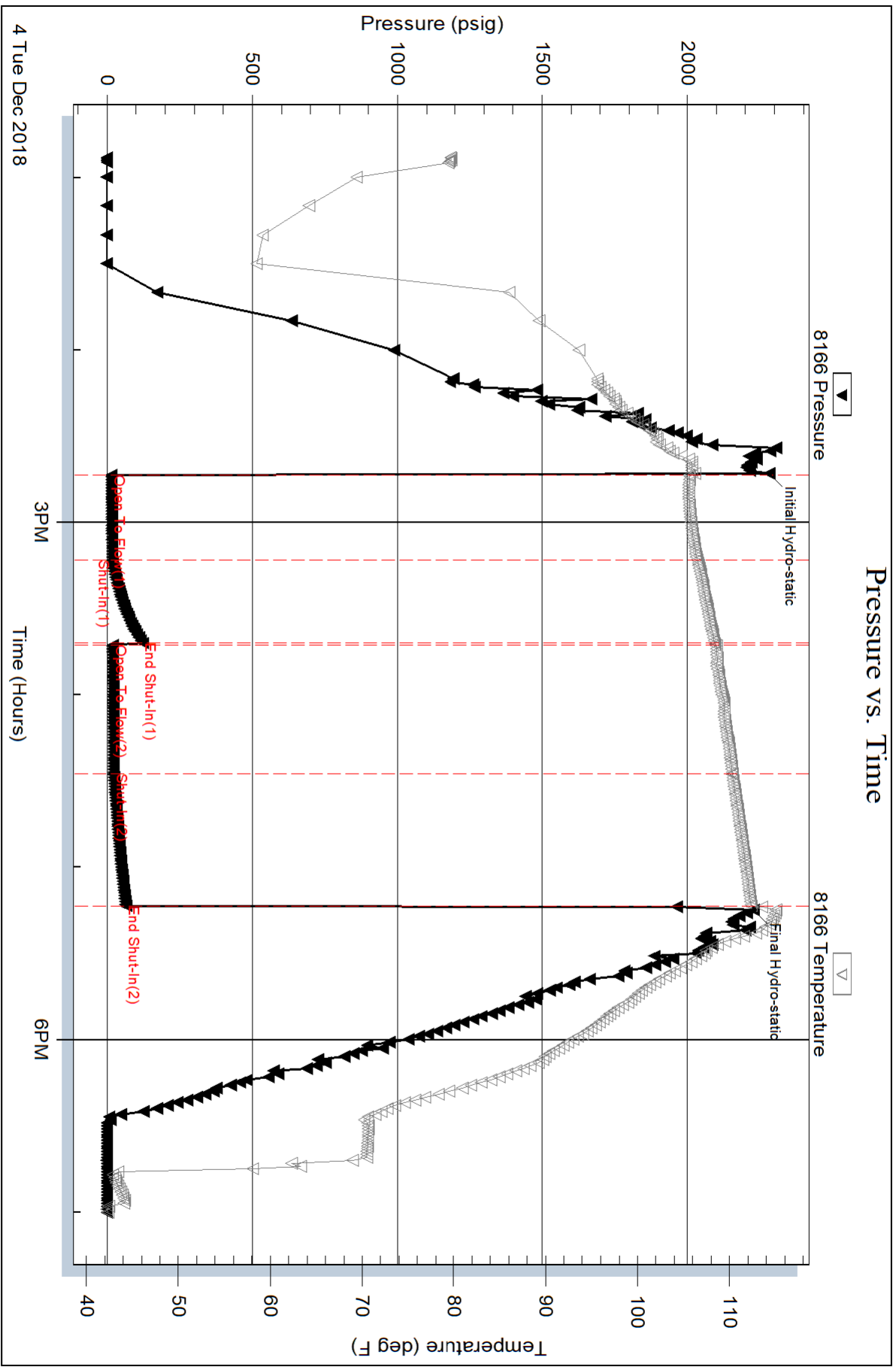
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



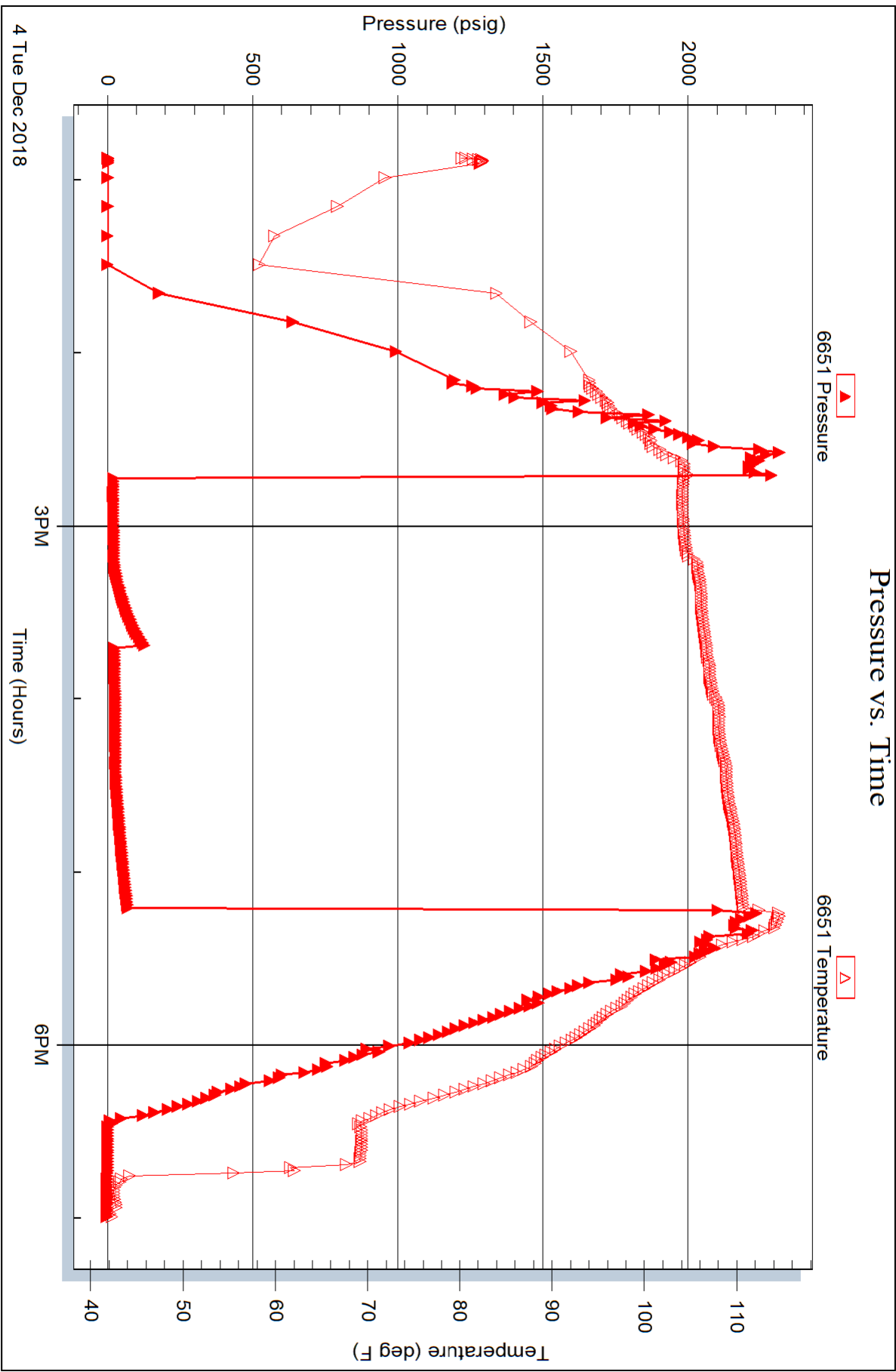
Serial #: 6651

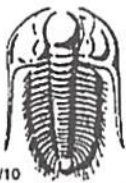
Inside

Northern Lights Oil Co

Keenan #3

DST Test Number: 6





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64304

Well Name & No. Keenym #3 Test No. 1 Date 11-29-18
 Company Northern Lights oil co Elevation 2820 KB 2810 GL
 Address P.O. Box 164 Andover KS 67002
 Co. Rep / Geo. Jeff Christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Lane State KS

Interval Tested 4050 4086 Zone Tested LKC E-F
 Anchor Length 36 Drill Pipe Run 4058 Mud Wt. 8.6
 Top Packer Depth 4045 Drill Collars Run — Vis 55
 Bottom Packer Depth 4050 Wt. Pipe Run — WL 7.2
 Total Depth 4086 Chlorides 2400 ppm System LCM 1

Blow Description IF: 3" blow built to 10 1/2"
IS: No return.
FF: Surface blow built to 6", slid and opened tool
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>oil</u>	<u>100</u>			
<u>126</u>	<u>ocm</u>	<u>50</u>		<u>50</u>	
<u>378</u>	<u>ocm</u>	<u>10</u>		<u>90</u>	
<u>63</u>	<u>9ocm</u>	<u>10</u>		<u>80</u>	
Rec	Feet of	%gas	%oil	%water	%mud

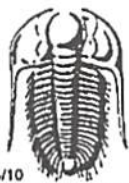
Rec Total 577 BHT 116 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 1988 Test 1150
 (B) First Initial Flow 218 Jars _____
 (C) First Final Flow 257 Safety Joint _____
 (D) Initial Shut-In 968 Circ Sub NIL
 (E) Second Initial Flow 263 Hourly Standby _____
 (F) Second Final Flow 286 Mileage 70 - 70
 (G) Final Shut-In 944 Sampler _____
 (H) Final Hydrostatic 1954 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1220

T-On Location 11:00
 T-Started 12:35
 T-Open 15:02
 T-Pulled 17:02
 T-Out 20:20
 Comments Slide tool
10' to bottom.
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1220
 MP/DST Disc't _____

Approved By Jeff Christian Our Representative [Signature]

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. 64305

Well Name & No. Keenan #3 Test No. 2 Date 11-30-18
 Company Northern Lights oil CO Elevation 2820 KB 2810 GL
 Address _____
 Co. Rep / Geo. Jeff Christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Lane State KS

Interval Tested 4148 4195 Zone Tested LKC-6
 Anchor Length _____ 47 Drill Pipe Run 4151 Mud Wt. 9.2
 Top Packer Depth _____ 4143 Drill Collars Run _____ Vis 58
 Bottom Packer Depth _____ 4148 Wt. Pipe Run _____ WL 7.6
 Total Depth _____ 4195 Chlorides 3000 ppm System LCM 1
 Blow Description IF: 3" Blow BoB in 8 min. 33"
IS: surface blow built to 1/2.
FF: BoB 11 min. 27"
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>Free oil</u>	<u>100</u>			
<u>189</u>	<u>90W M</u>	<u>10</u>	<u>10</u>	<u>80</u>	
<u>189</u>	<u>90LW M</u>	<u>10</u>	<u>5</u>	<u>40</u>	<u>45</u>
<u>252</u>	<u>M L W</u>		<u>80</u>	<u>20</u>	

Rec Total 632 BHT 122 Gravity _____ API RW .29 @ 40 ° F Chlorides 46,000 ppm

(A) Initial Hydrostatic 2046 Test 1150 T-On Location 10:00
 (B) First Initial Flow 26 Jars 250 T-Started 11:07
 (C) First Final Flow 181 Safety Joint 75 T-Open 13:06
 (D) Initial Shut-In 679 Circ Sub NIC T-Pulled 15:06
 (E) Second Initial Flow 184 Hourly Standby _____ T-Out 18:08
 (F) Second Final Flow 308 Mileage 70 - 70 Comments _____
 (G) Final Shut-In 677 Sampler _____
 (H) Final Hydrostatic 2008 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1545

Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 30

Sub Total 0
 Total 1545
 MP/DST Disc't _____

Approved By Jeff Christian Our Representative _____
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64306

Well Name & No. Keenan #3 Test No. 3 Date 12-1-18
 Company Northern Lights oil co Elevation 2820 KB 2810 GL
 Address _____
 Co. Rep / Geo. Jeff Christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Lane State KS

Interval Tested 4193 4223 Zone Tested LKC H
 Anchor Length 30 Drill Pipe Run 4182 Mud Wt. 9.2
 Top Packer Depth 4188 Drill Collars Run — Vis 58
 Bottom Packer Depth 4193 Wt. Pipe Run — WL 7.6
 Total Depth 4223 Chlorides 3000 ppm System LCM 1

Blow Description IF: 1/2 blow built to 1 1/2 died to 3/4.
IS: No return.
FF: surface blow that died in 10 min.
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>Mud 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 1 BHT 110 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2113 Test 1150
 (B) First Initial Flow 13 Jars 250
 (C) First Final Flow 14 Safety Joint 75
 (D) Initial Shut-In 15 Circ Sub _____
 (E) Second Initial Flow 13 Hourly Standby _____
 (F) Second Final Flow 15 Mileage 70-70
 (G) Final Shut-In 25 Sampler _____
 (H) Final Hydrostatic 2028 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1545

T-On Location 7:45
 T-Started 8:45
 T-Open 11:08
 T-Pulled 13:08
 T-Out 15:02
 Comments _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1545
 MP/DST Disc't _____

Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 30

Approved By [Signature] Our Representative [Signature]

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. 64307

Well Name & No. Keenm #3 Test No. 4 Date 12-2-18
 Company Northern Lights oil co Elevation 2820 KB 2810 GL
 Address _____
 Co. Rep / Geo. Jeff christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Lame State KS

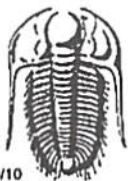
Interval Tested 4290 4301 Zone Tested Middle creek
 Anchor Length _____ Drill Pipe Run 4282 Mud Wt. 9.2
 Top Packer Depth _____ Drill Collars Run _____ Vis 56
 Bottom Packer Depth 4285 Wt. Pipe Run _____ WL 6.8
 Total Depth _____ Chlorides 6000 ppm System LCM 1
 Blow Description IF: 1/4 blow built to 3'
IS: No return.
FF: 1/2 blow built to 5 3/4.
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>16</u>	<u>Free oil</u>	<u>100</u>			
<u>10</u>	<u>ocm</u>	<u>10</u>		<u>90</u>	
	<u>103 GIP</u>				

Rec Total 20 BHT 114 Gravity 34 API RW - @ - ° F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2115</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>6:30</u>
(B) First Initial Flow <u>12</u>	<input type="checkbox"/> Jars _____	T-Started <u>6:48</u>
(C) First Final Flow <u>16</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>9:05</u>
(D) Initial Shut-In <u>150</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>11:35</u>
(E) Second Initial Flow <u>16</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>13:28</u>
(F) Second Final Flow <u>26</u>	<input checked="" type="checkbox"/> Mileage <u>70 - 70</u>	Comments <u>cat walk</u>
(G) Final Shut-In <u>148</u>	<input type="checkbox"/> Sampler _____	<u>is unsafe and</u>
(H) Final Hydrostatic <u>2073</u>	<input type="checkbox"/> Straddle _____	<u>been covered with pipe</u>
	<input type="checkbox"/> Shale Packer _____	<u>every test</u>
Initial Open <u>30</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>45</u>	<input type="checkbox"/> Day Standby _____	Extra Copies _____
Final Shut-In <u>45</u>	<input checked="" type="checkbox"/> Accessibility <u>150.00</u>	Sub Total <u>0</u>
	Sub Total <u>1220</u>	Total <u>1220</u>

Approved By Jeff Christian Our Representative _____
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64308

Well Name & No. Keen9N #3 Test No. 5 Date 12-3-18
 Company Northern Lights oil co Elevation 2820 KB 2810 GL
 Address _____
 Co. Rep / Geo. Jeff Christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Lane State KS

Interval Tested 4394 4430 Zone Tested Altamont
 Anchor Length 36 Drill Pipe Run 4379 Mud Wt. 9.1
 Top Packer Depth 4389 Drill Collars Run — Vis 45
 Bottom Packer Depth 4394 Wt. Pipe Run — WL 6.8
 Total Depth 4430 Chlorides 2800 ppm System LCM 1
 Blow Description IF: BoB in 4 mins. 35"
IS: Weak surface blow never built,
FF: BoB in 5 min. 26"
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>272</u>	<u>WCM</u>		<u>30</u>	<u>20</u>	
<u>378</u>	<u>MCW</u>		<u>70</u>	<u>30</u>	
	<u>50 ppm H₂S</u>				
Rec Total	<u>650</u>	BHT <u>128</u>	Gravity <u>—</u>	API RW <u>.33 @ 35 °F</u>	Chlorides <u>45,000</u> ppm

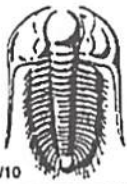
(A) Initial Hydrostatic 2247 Test 1150 T-On Location 8:30
 (B) First Initial Flow 30 Jars _____ T-Started 6:10
 (C) First Final Flow 199 Safety Joint _____ T-Open 8:45
 (D) Initial Shut-In 484 Circ Sub NIL T-Pulled 10:30
 (E) Second Initial Flow 198 Hourly Standby _____ T-Out 13:05
 (F) Second Final Flow 310 Mileage 70 - 70 Comments _____
 (G) Final Shut-In 482 Sampler _____
 (H) Final Hydrostatic 2141 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1220

Initial Open 15
 Initial Shut-In 30
 Final Flow 15
 Final Shut-In 45

Sub Total 0
 Total 1220
 MP/DST Disc't _____

Approved By [Signature] Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64309

Well Name & No. Keenan #3 Test No. 6 Date 12-4-18
 Company Northern Lights oil co Elevation 2820 KB 2810 GL
 Address _____
 Co. Rep / Geo. Jeff Christian Rig Southwind #1
 Location: Sec. 3 Twp 19S Rge. 29W Co. Linn State KS

Interval Tested 4536 4587 Zone Tested Johnson
 Anchor Length _____ Drill Pipe Run 4536 Mud Wt. 9.0
 Top Packer Depth _____ Drill Collars Run _____ Vis 52
 Bottom Packer Depth _____ Wt. Pipe Run _____ WL 7.2
 Total Depth _____ Chlorides 2800 ppm System LCM 1
 Blow Description IF: 1/4 blow built to 1 1/2.
IS: No return.
EF: surface blow built to 1/2.
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>OCM</u>	<u>10</u>		<u>90</u>	
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 112 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm
 (A) Initial Hydrostatic 2281 Test 1150 T-On Location 12:10
 (B) First Initial Flow 14 Jars _____ T-Started 12:52
 (C) First Final Flow 17 Safety Joint _____ T-Open 14:41
 (D) Initial Shut-In 121 Circ Sub N/C T-Pulled 17:11
 (E) Second Initial Flow 19 Hourly Standby _____ T-Out 19:00
 (F) Second Final Flow 22 Mileage 90 x 2 70+70
 (G) Final Shut-In 64 Sampler _____
 (H) Final Hydrostatic 2228 Straddle _____
 Shale Packer _____
 Ruined Packer 320
 Extra Copies _____
 Initial Open 30 Extra Recorder _____
 Initial Shut-In 30 Day Standby _____
 Final Flow 45 Accessibility _____
 Final Shut-In 45 Sub Total 1290 MP/DST Disc't _____

Approved By Jeff Christian Our Representative [Signature]
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PRESSURE PUMPING LLC
PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

12104
12043

FIELD TICKET & TREATMENT REPORT
CEMENT

TICKET NUMBER 55967
LOCATION Oalley Ks
FOREMAN Walt Dinkel
Invoice # 814723

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
12-5-18	5610	Keenan #3	3	195	29W	Lane
CUSTOMER			TRUCK #	DRIVER	TRUCK #	DRIVER
Northern lights oil Co, LLC Dighton 2-South 3-West 1-South 1/2 W			731	Cory Davis		
			70	Man		
			772-T127	Neil White		
			697	Walt Dinkel		
MAILING ADDRESS			CITY			
P.O. Box 164			Andover			
STATE			ZIP CODE			
KS			67002			

JOB TYPE Prod - 2 Stages HOLE SIZE 7 7/8 HOLE DEPTH 4620' CASING SIZE & WEIGHT 5 1/2 - 14 #
CASING DEPTH 4619 DRILL PIPE _____ TUBING _____ OTHER DY 2 2160
SLURRY WEIGHT 14.2-11.7 SLURRY VOL _____ WATER gal/sk _____ CEMENT LEFT in CASING 43.38
DISPLACEMENT _____ DISPLACEMENT PSI _____ MIX PSI _____ RATE 5 BPM

REMARKS: Safety Meeting, Rig up on Southwind #, run Float Equipment on casing, Circ + Reciprocate on Dutton, Pumped 500gal Mud Flush + 20 BBL KCL, mixed 17.5 sks Thixoblend III, 5# Kolsel, Clear Pump + Lines, released Plug and Displace 60 BBL H₂O + 52 BBL mud @ 950#, Landed Plug 21500#, release Pressure Float held, Drop opening Tool, open DU Tool, Circ 3 Hrs, Pumped 500 gal Mud Flush, mix 30 sks in Aft, 20 sks in Mft, mixed 400 sks cement, Clear Pump + Lines, release Plug + Displaced 5.3 BBL H₂O, landed Plug + shut Tool @ 2000#, released Pressure, Float held. Cement Did Cure

Thank You
Walt + Crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CC0453	1	PUMP CHARGE	2800.00	2,800.00
CC0002	35	MILEAGE	7.15	250.25
CC0710	27.58	Ton Mileage Delivery	1.75	482.65
CC5326	200 #	Salt	.75	150.00
CC5862	175 sks	Thixoblend III	26.00	4,550.00
CC6077	875 #	Kolsel	1.50	1,312.50
CC5831	450 sks	Lite weight Blend XII	17.50	7,875.00
CC6075	113 #	Flo-Seal	3.00	339.00
CC5301	2 gal	KCL	39.00	78.00
CC5825	1,000 gal	mod Flush	1.65	1,650.00
CP8485	1	5 1/2 AEU Float Shoe	585.00	585.00
CP8257	1	5 1/2 Latch down Plug	400.00	400.00
CP8554	8	5 1/2 Centralizers	81.00	648.00
CP8629	3	5 1/2 Basket	385.00	1,155.00
CP8676	36	5 1/2 Scratchers	75.00	2,700.00
CP8801	1	5 1/2 - DY Tool	5,970.00	5,970.00
Total = 30,127.20			Less 25% = 7,531.80	
			Total = 22,595.40	
			SALES TAX	1428.05
			ESTIMATED TOTAL	24,023.40

Ravin 3737

AUTHORIZATION

TITLE _____ DATE _____

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

Jeff Christian

PETROLEUM GEOLOGIST

Wichita, Kansas

GEOLOGISTS' REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR **NORTHERN LIGHTS OIL CO.**

LEASE **KEENAN # 3**

LOCATION **1801' FWL & 2305' FEL**

ELEVATIONS

KB **2820'**

GL **2810'**

MEASUREMENTS FROM KB

SEC. **3** TWP. **19 S** R. **29 W**

COUNTY **LANE** STATE **KANSAS**

FIELD **MCWHIRTER**

APR **15-01-22611-00-00**

CONTRACTOR **SOUTH WIND DRILLING** RIG NO. **1**

DRILLING STARTED **11/22/2018** COMPLETED **12/5/2018**

MUD DISPLACED **3900'** MUD TYPE **CHEMICAL**

DRILLING TIME KEYS FROM **3700'** TO **RTD**

SAMPLES SAVED FROM **3650'** TO **RTD**

SAMPLES EXAMINED FROM **3650'** TO **RTD**

GEOLOGICAL SUPERVISION FROM **3732'** TO **RTD**

CAINING RECORD

CONDUCTOR **NONE**

Surface **8.5/8' @ 26.7'**

W/ 185 SX

Production **5.1/2"**

ELECTRICAL SURVEYS:

ELI:

Radiation/Guard

FORMATION NAME	LOG TOP	DATUM	LOG BOTTOM	SAMPLE
ANHYDRITE	2144'	(+676)	2146'	(-674)
HEEBNER	3928'	(-1108)	3926'	(-1106)
LANSGING	3968'	(-1148)	3970'	(-1150)
STARK	4256'	(-1436)	4257'	(-1437)
MARMATON	4370'	(-1550)	4368'	(-1548)
PAWNEE	4452'	(-1632)	4451'	(-1631)
FT SCOTT	4504'	(-1684)	4502'	(-1682)
CHEROKEE	4526'	(-1706)	4523'	(-1783)
MISSISSIPPIAN	4607'	(-1787)	4606'	(-1786)
TOTAL DEPTH	4621'	(-1801)	4620'	(-1800)

DATE	7:00 AM DEPTH	REMARKS
11/23/18	MIRT	SPUD
11/24/18	378'	WOC dev 1/4 deg.
11/25/18	1640'	Drlg.
11/26/18	2401'	Drlg.
11/27/18	2972'	Drlg.
11/28/18	3542'	Drlg.
11/29/18	4081'	Drlg. dev 3/4 deg. @ 4086'
11/30/18	4180'	CFS
12/1/18	4223'	TOH for DST # 3
12/2/18	4301'	TOH for DST # 4
12/3/18	4430'	TIH for DST # 5
12/4/18	4487'	CFS
12/5/18	4620'	Logging RTD 4620' @ 12:30 am Dev 1 deg.

Remarks

5/2" production casing set to further test multiple zones in the Lansing Kansas City, Marmaton and Cherokee formations.

Electric log measurements correlate about even compared to rotary measurements.

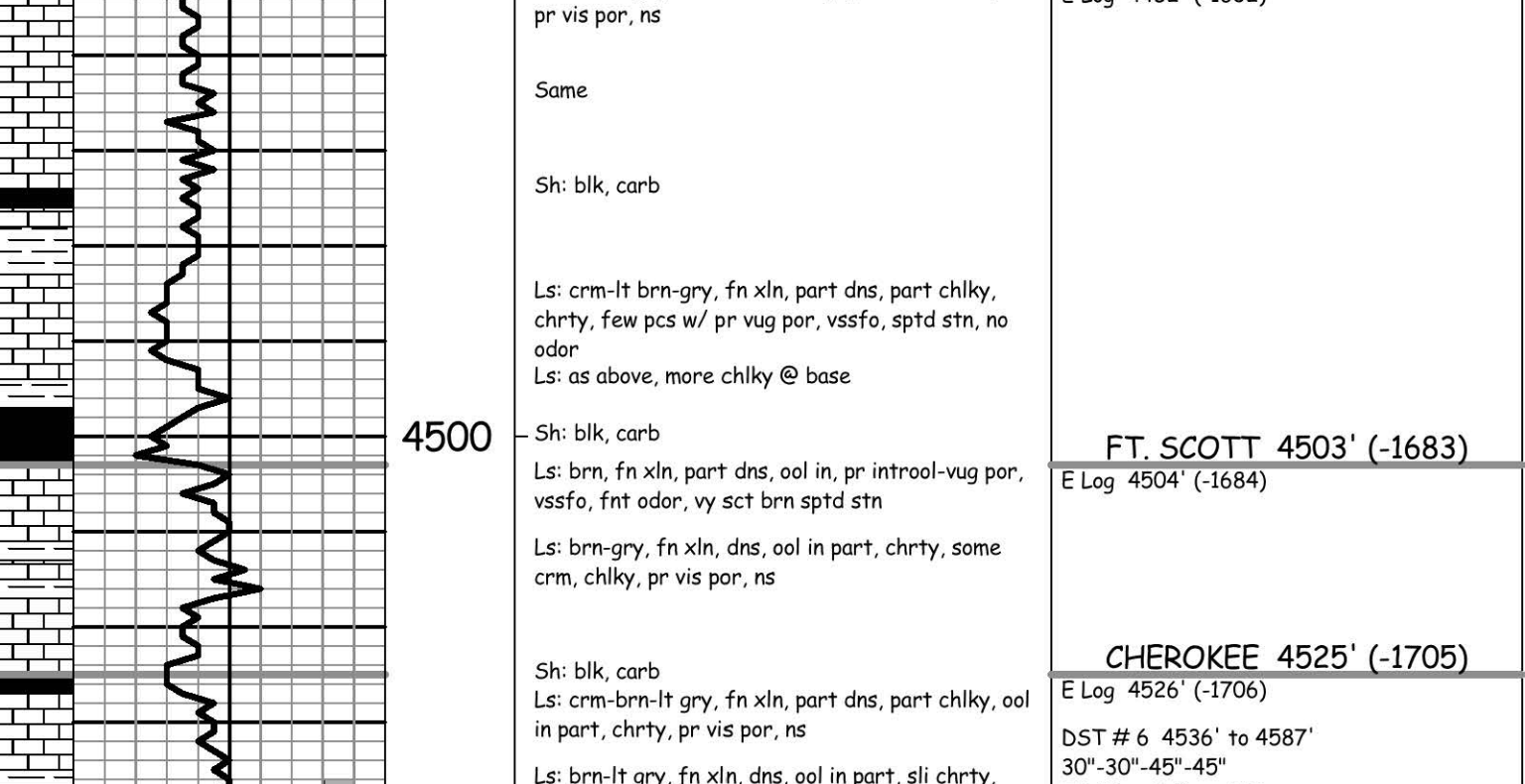
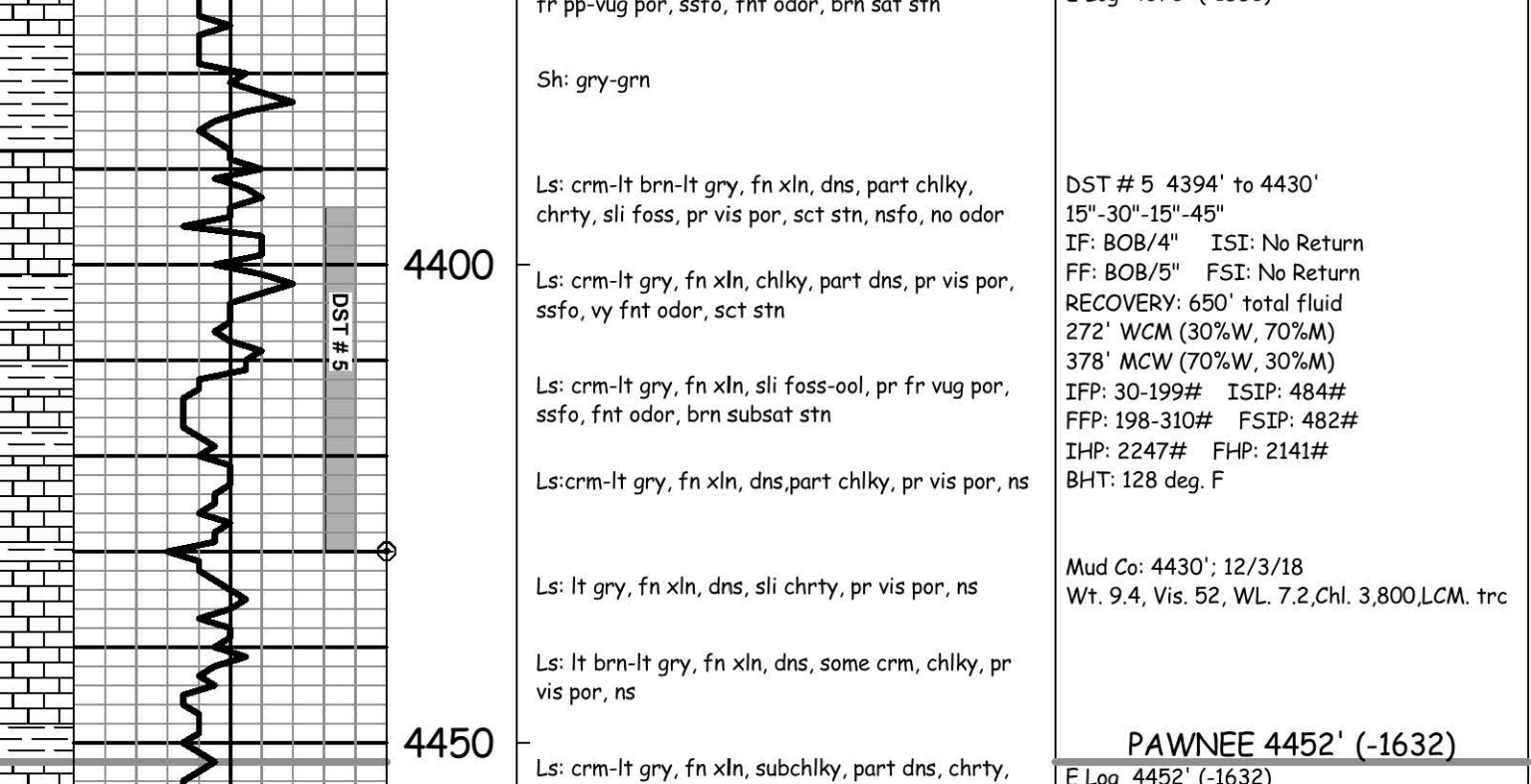
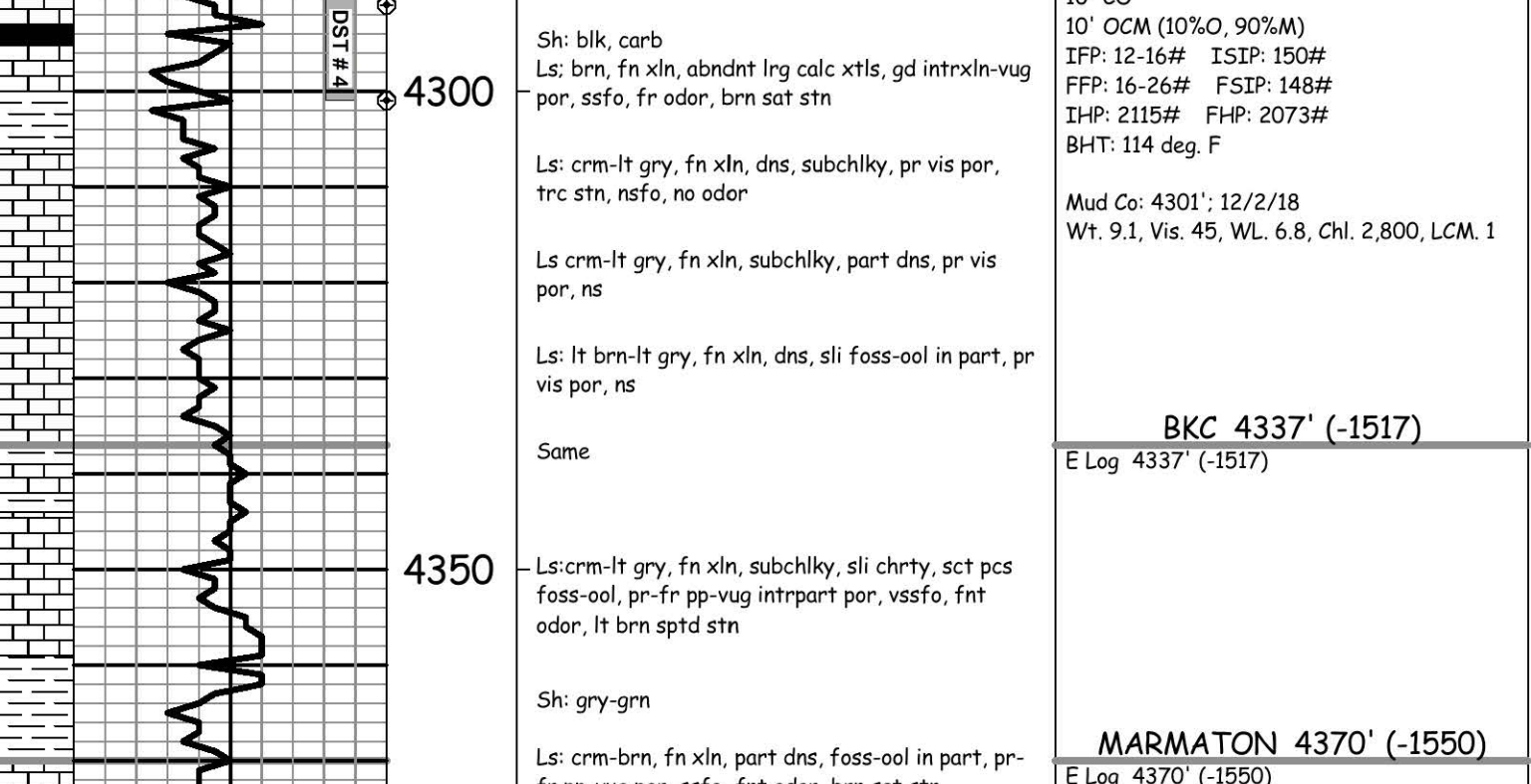
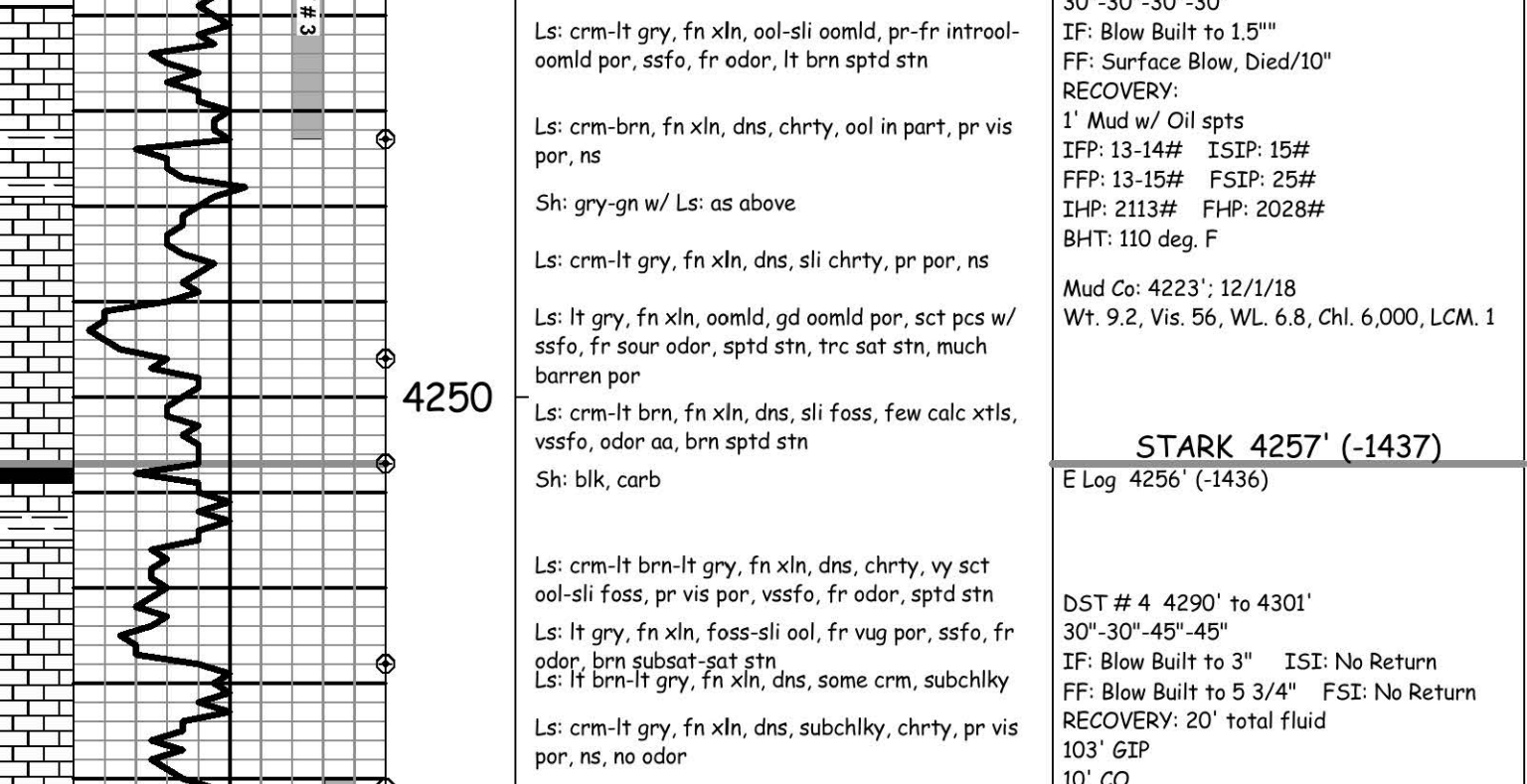
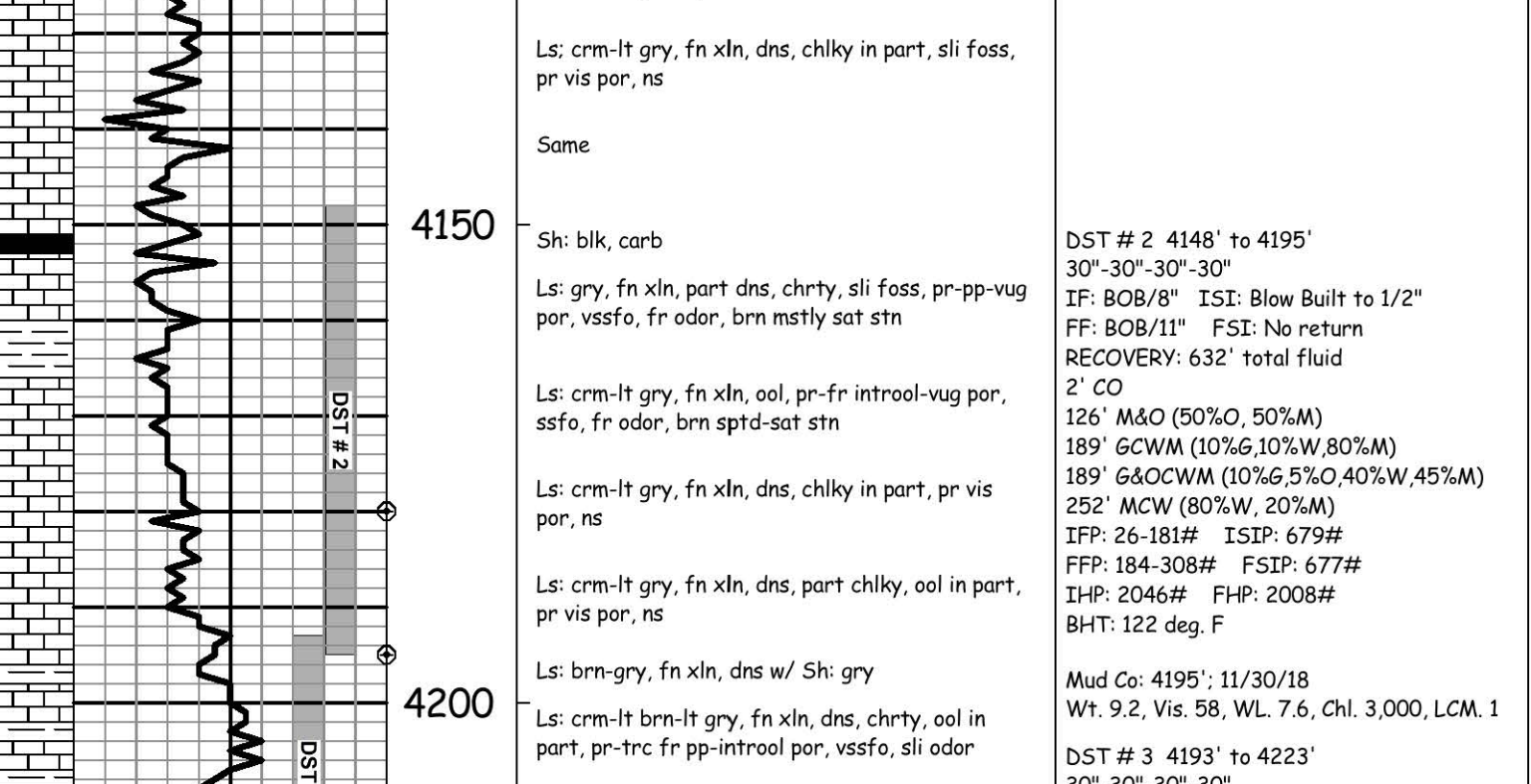
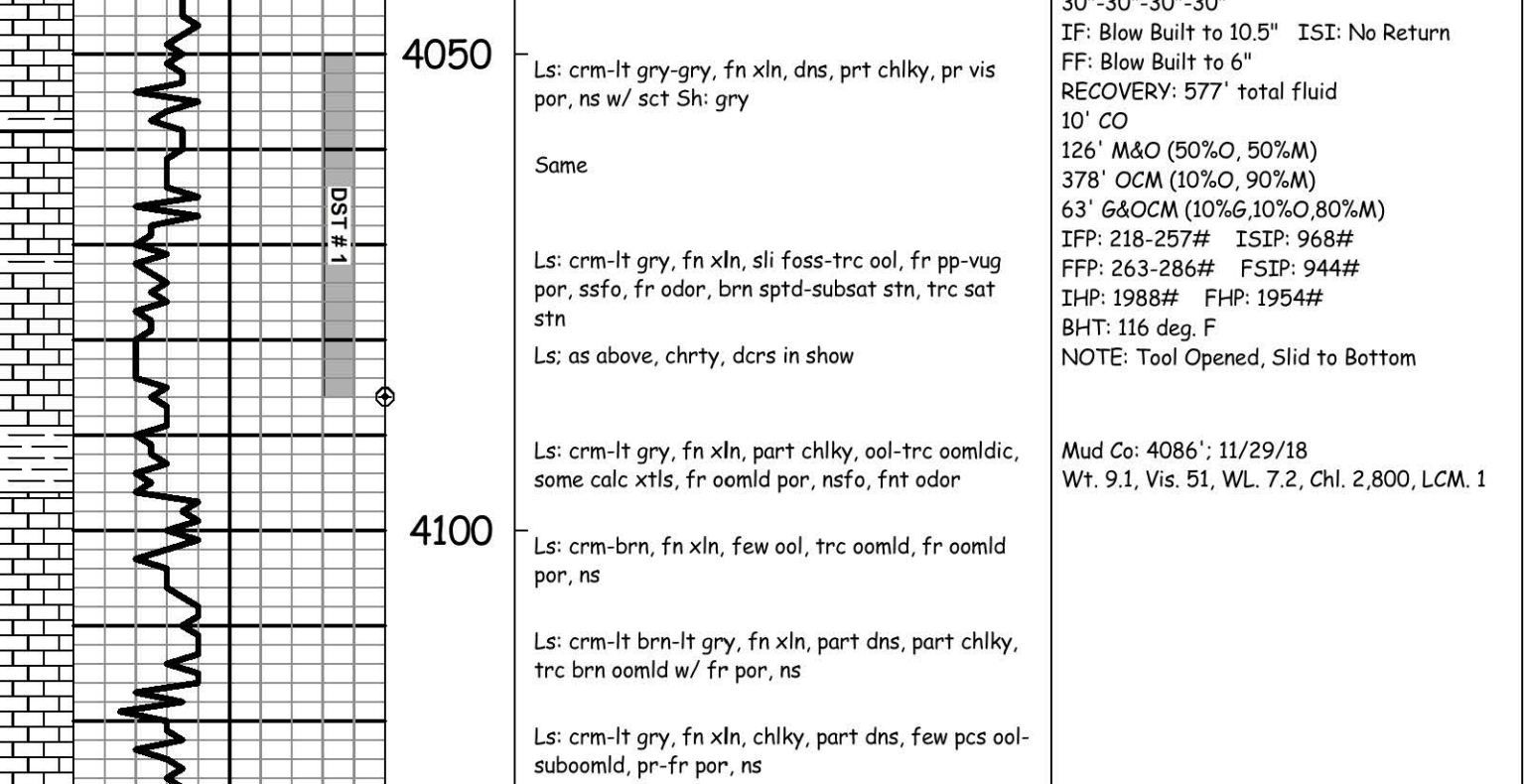
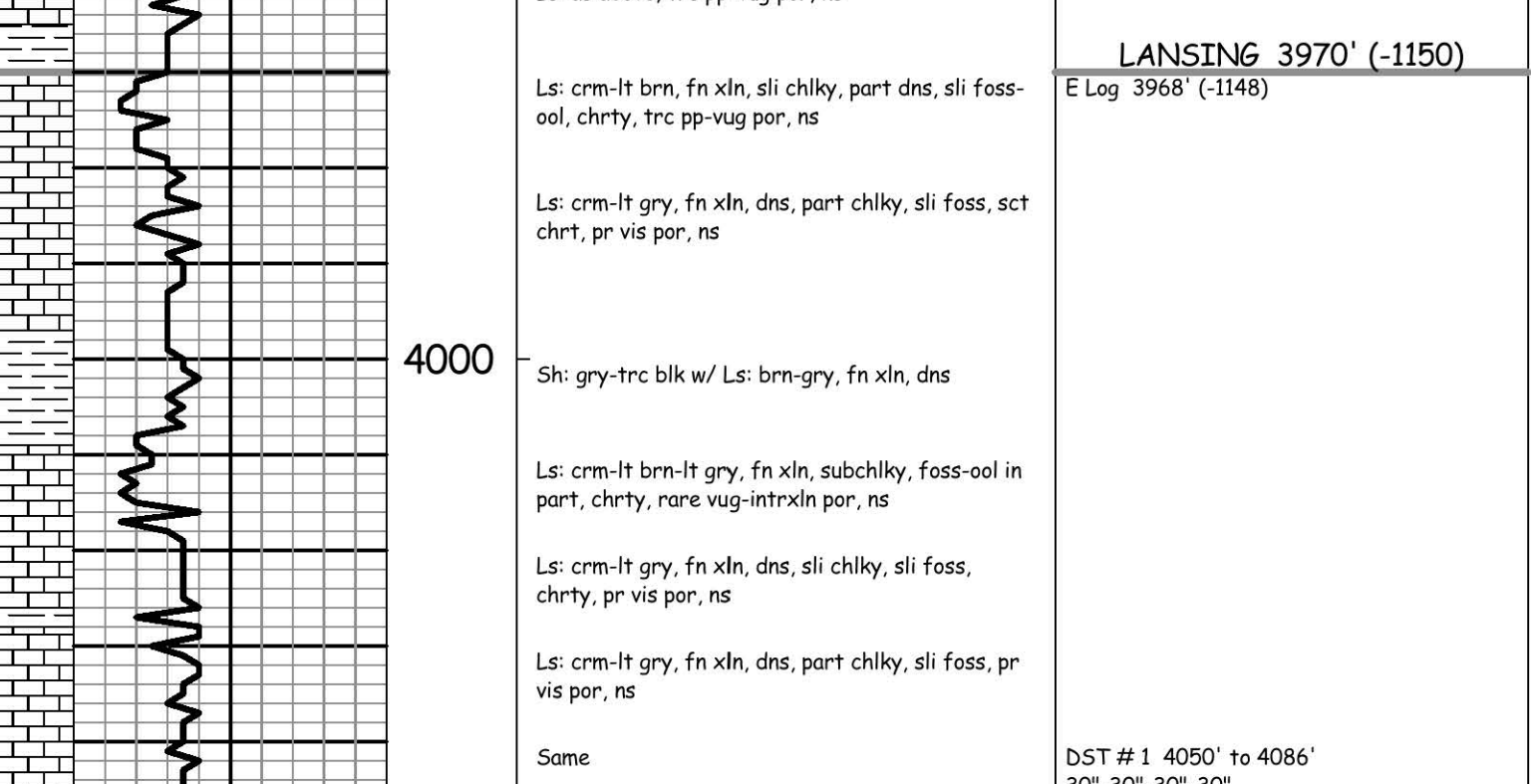
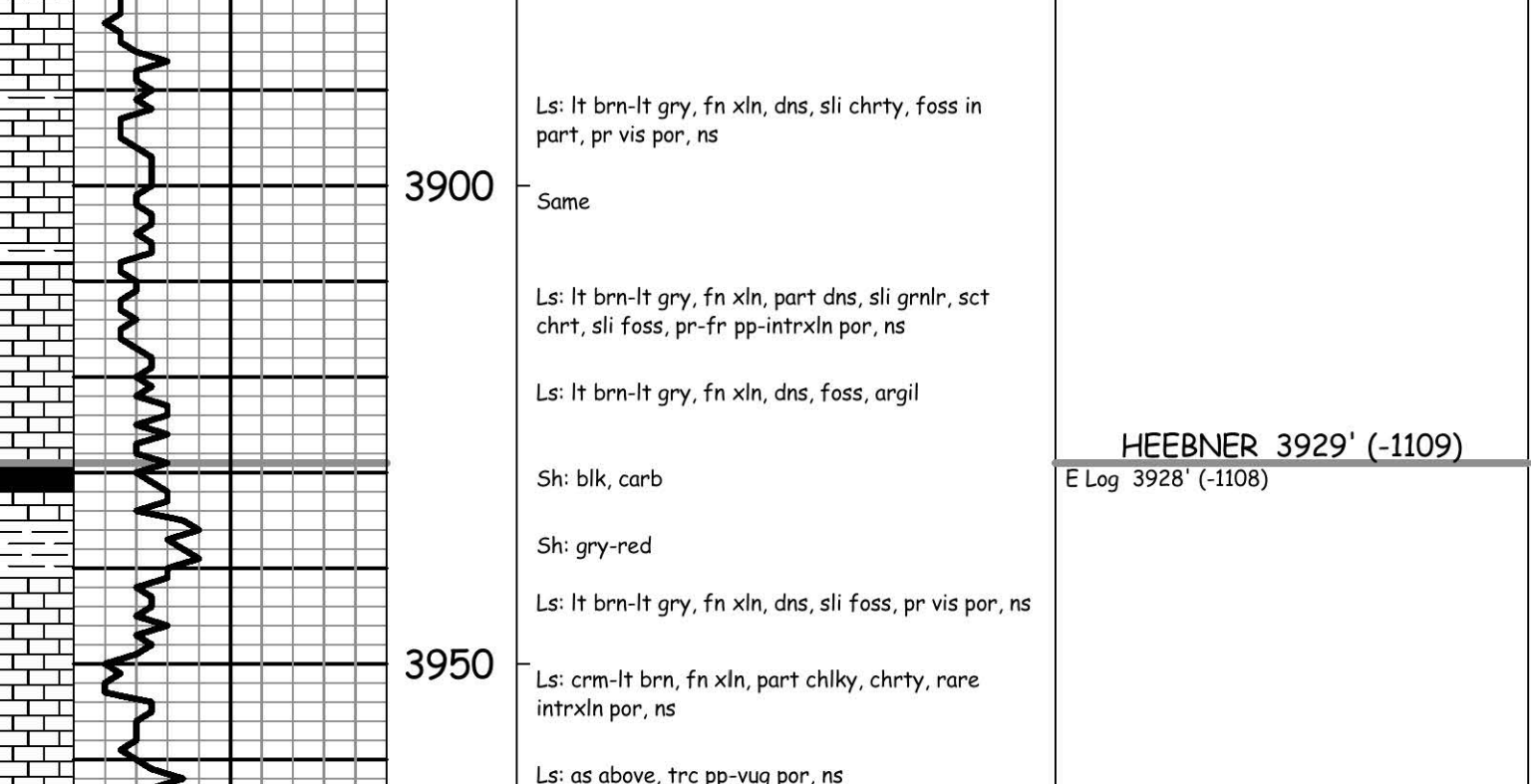
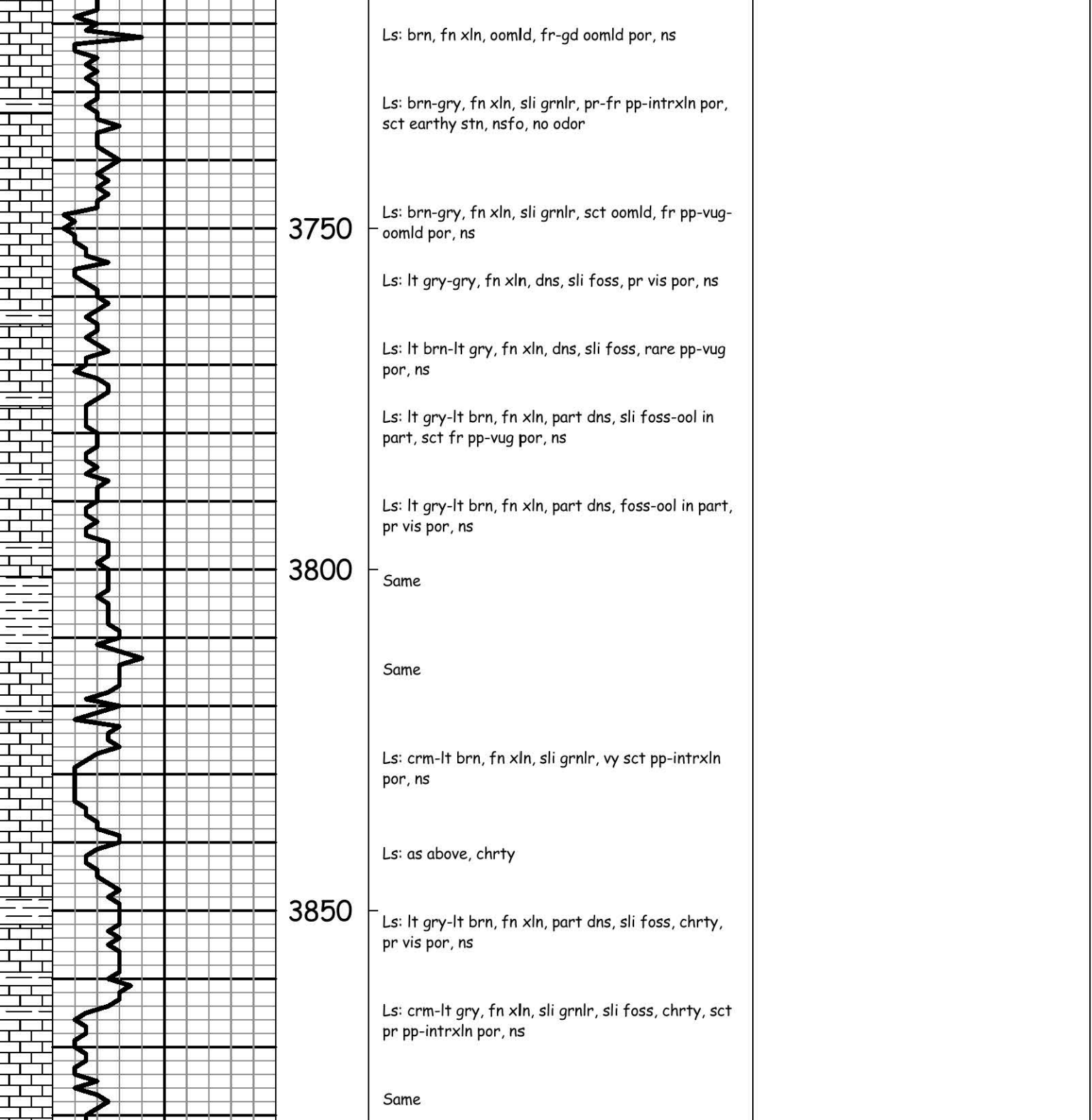
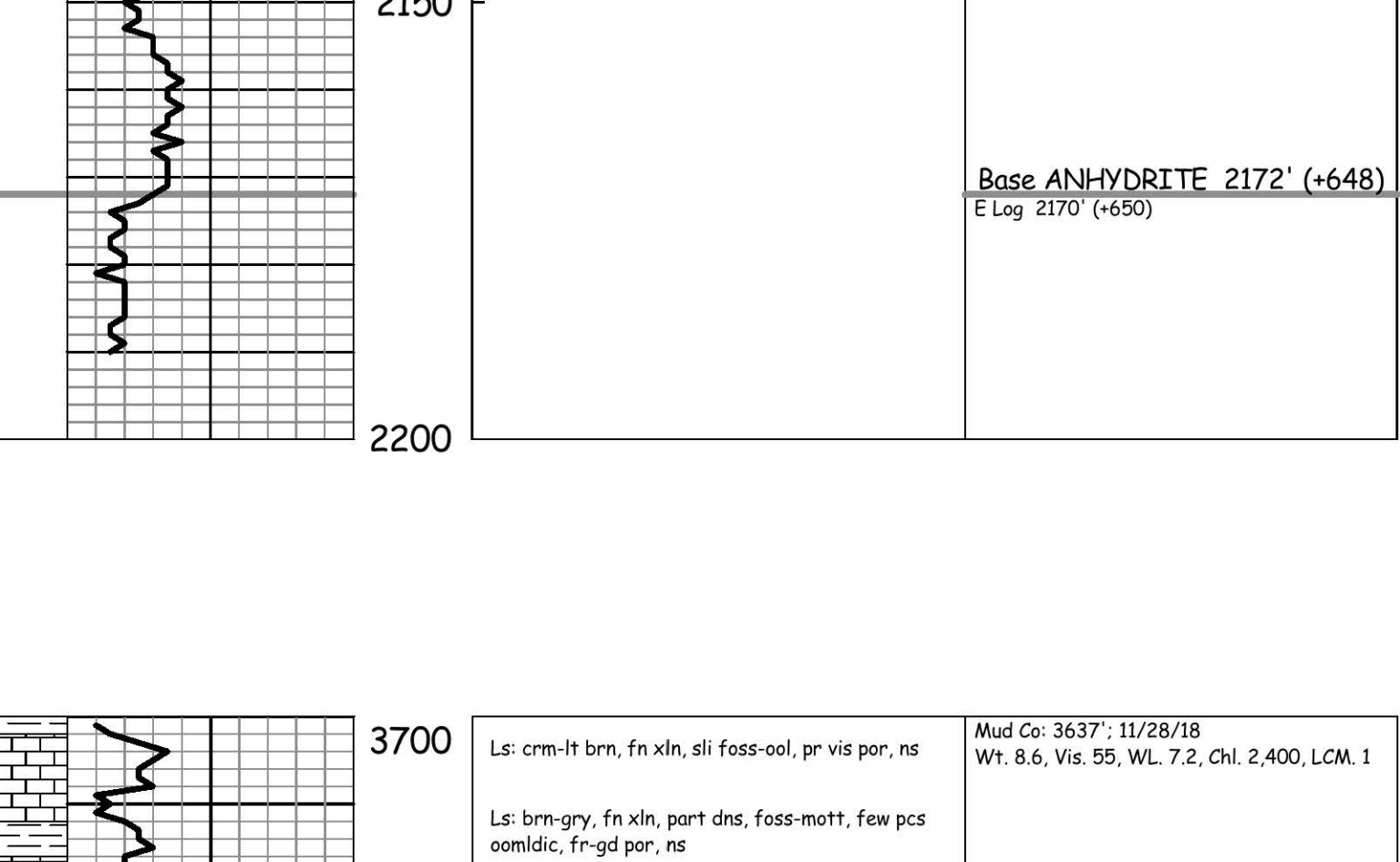
Sample tops adjusted to the electric log.

Respectfully Submitted,

Jeff Christian

Jeff Christian

LITH.	DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
-------	---------------------	-------	---------------------	---------



FORMATION NAME	LOG TOP	DATUM	LOG BOTTOM	SAMPLE
ANHYDRITE	2144'	(+676)	2146'	(-674)
HEEBNER	3928'	(-1108)	3926'	(-1106)
LANSGING	3968'	(-1148)	3970'	(-1150)
STARK	4256'	(-1436)	4257'	(-1437)
MARMATON	4370'	(-1550)	4368'	(-1548)
PAWNEE	4452'	(-1632)	4451'	(-1631)
FT SCOTT	4504'	(-1684)	4502'	(-1682)
CHEROKEE	4526'	(-1706)	4523'	(-1783)
MISSISSIPPIAN	4607'	(-1787)	4606'	(-1786)
TOTAL DEPTH	4621'	(-1801)	4620'	(-1800)

5/2" production casing set to further test multiple zones in the Lansing Kansas City, Marmaton and Cherokee formations.

Electric log measurements correlate about even compared to rotary measurements.

Sample tops adjusted to the electric log.

Respectfully Submitted,

Jeff Christian

Jeff Christian

DATE	7:00 AM DEPTH	REMARKS
11/23/18	MIRT	SPUD
11/24/18	378'	WOC dev 1/4 deg.
11/25/18	1640'	Drlg.
11/26/18	2401'	Drlg.
11/27/18	2972'	Drlg.
11/28/18	3542'	Drlg.
11/29/18	4081'	Drlg. dev 3/4 deg. @ 4086'
11/30/18	4180'	CFS
12/1/18	4223'	TOH for DST # 3
12/2/18	4301'	TOH for DST # 4
12/3/18	4430'	TIH for DST # 5
12/4/18	4487'	CFS
12/5/18	4620'	Logging RTD 4620' @ 12:30 am Dev 1 deg.

Remarks

5/2" production casing set to further test multiple zones in the Lansing Kansas City, Marmaton and Cherokee formations.

Electric log measurements correlate about even compared to rotary measurements.

Sample tops adjusted to the electric log.

Respectfully Submitted,

Jeff Christian

Jeff Christian

LITH.	DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
-------	---------------------	-------	---------------------	---------

FORMATION NAME	LOG TOP	DATUM	LOG BOTTOM	SAMPLE
ANHYDRITE	2144'	(+676)	2146'	(-674)
HEEBNER	3928'	(-1108)	3926'	(-1106)
LANSGING	3968'	(-1148)	3970'	(-1150)
STARK	4256'	(-1436)	4257'	(-1437)
MARMATON	4370'	(-1550)	4368'	(-1548)
PAWNEE	4452'	(-1632)	4451'	(-1631)
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CHEROKEE	4526'	(-1706)	4523'	(-1783)
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TOTAL DEPTH	4621'	(-1801)	4620'	(-1800)

5/2" production casing set to further test multiple zones in the Lansing Kansas City, Marmaton and Cherokee formations.

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Sample tops adjusted to the electric log.

Respectfully Submitted,

Jeff Christian

Jeff Christian

DATE	7:00 AM DEPTH	REMARKS
11/23/18	MIRT	SPUD
11/24/18	378'	WOC dev 1/4 deg.
11/25/18	1640'	Drlg.
11/26/18	2401'	Drlg.
11/27/18	2972'	Drlg.
11/28/18	3542'	Drlg.
11/29/18	4081'	Drlg. dev 3/4 deg. @ 4086'
11/30/18	4180'	CFS
12/1/18	4223'	TOH for DST # 3
12/2/18	4301'	TOH for DST # 4
12/3/18	4430'	TIH for DST # 5
12/4/18	4487'	CFS
12/5/18	4620'	Logging RTD 4620' @ 12:30 am Dev 1 deg.

Remarks

5/2" production casing set to further test multiple zones in the Lansing Kansas City, Marmaton and Cherokee formations.

Electric log measurements correlate about even compared to rotary measurements.

Sample tops adjusted to the electric log.

Respectfully Submitted,

Jeff Christian

Jeff Christian

LITH.	DRILL TIME (MIN/FT)	DEPTH	SAMPLE DESCRIPTIONS	REMARKS
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FORMATION NAME	LOG TOP	DATUM	LOG BOTTOM	SAMPLE
ANHYDRITE	2144'	(+676)	2146'	(-674)
HEEBNER	3928'	(-1108)	3926'	(-1106)
LANSGING	3968'	(-1148)	3970'	(-1150)
STARK	4256'	(-1436)	4257'	(-1437)
MARMATON	4370'	(-1550)	4368'	(-1548)
PAWNEE	4452'	(-1632)	4451'	(-1631)
FT SCOTT	4504'	(-1684)	4502'	(-1682)
CHEROKEE	4526'	(-1706)	4523'	(-1783)
MISSISSIPPIAN	4607'	(-1787)	4606'	(-1786)
TOTAL DEPTH	4621'	(-1801)	4620'	(-1800)

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