

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

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

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	H & C Oil Operating Inc.
Well Name	BUTTERFLY FARMS 1-13
Doc ID	1484489

All Electric Logs Run

Borehole Compensated Sonic Log
Compensated Neutron Density Log
Micro Log
Phased Induction SP Log
Compsite Log



DRILL STEM TEST REPORT

Prepared For: **H & C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Butterfly Farms 1-13

13-4s-22w Norton,KS

Start Date: 2019.11.08 @ 11:09:00

End Date: 2019.11.08 @ 17:54:30

Job Ticket #: 65598 DST #: 1

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

Printed: 2019.11.11 @ 16:03:34



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

ATTN: Marc Downing

Job Ticket: 65598

DST#: 1

Test Start: 2019.11.08 @ 11:09:00

GENERAL INFORMATION:

Formation: **LKC "A - D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:09:30

Time Test Ended: 17:54:30

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 3437.00 ft (KB) To 3501.00 ft (KB) (TVD)

Reference Elevations: 2233.00 ft (KB)

Total Depth: 3501.00 ft (KB) (TVD)

2225.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8652 Outside

Press@RunDepth: 68.63 psig @ 3438.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.11.08 End Date: 2019.11.08

Last Calib.: 2019.11.08

Start Time: 11:09:05 End Time: 17:54:29

Time On Btm: 2019.11.08 @ 13:09:15

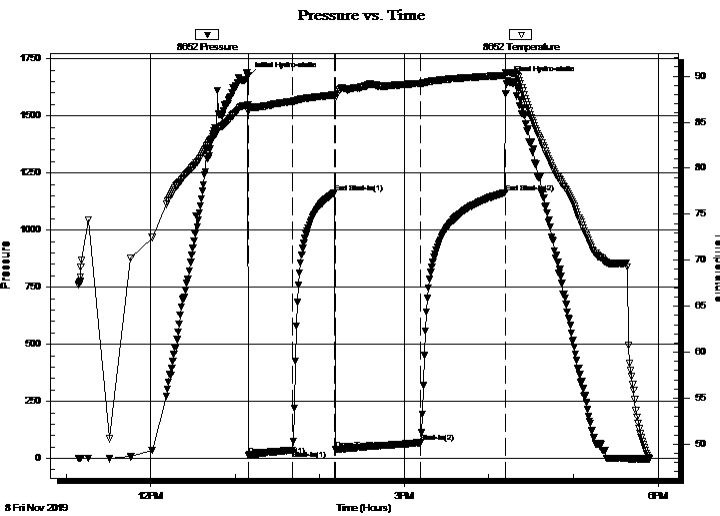
Time Off Btm: 2019.11.08 @ 16:13:15

TEST COMMENT: 30 - IF: Blow built to 3 1/2"

30 - IS: No blow back

60 - FF: Blow built to 5"

60 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1672.75	86.96	Initial Hydro-static
1	15.17	86.15	Open To Flow (1)
32	36.58	87.28	Shut-In(1)
62	1164.29	87.97	End Shut-In(1)
62	39.02	87.59	Open To Flow (2)
122	68.63	89.23	Shut-In(2)
183	1163.55	90.10	End Shut-In(2)
184	1654.65	90.42	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	HWCM w /trace oil 56% _m , 44% _w	0.44
60.00	Mud w /Oil spots 99% _m , 1% _o	0.44

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65598

DST#: 1

ATTN: Marc Downing

Test Start: 2019.11.08 @ 11:09:00

Tool Information

Drill Pipe:	Length: 3160.00 ft	Diameter: 3.80 inches	Volume: 44.33 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 273.00 ft	Diameter: 2.75 inches	Volume: 2.01 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: 64000.00 lb
			<u>Total Volume: 46.34 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 59000.00 lb
Depth to Top Packer:	3437.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	64.00 ft			
Tool Length:	85.00 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			3417.00	
Shut In Tool	5.00			3422.00	
Hydraulic tool	5.00			3427.00	
Packer	5.00			3432.00	21.00 Bottom Of Top Packer
Packer	5.00			3437.00	
Stubb	1.00			3438.00	
Recorder	0.00	6625	Inside	3438.00	
Recorder	0.00	8652	Outside	3438.00	
Perforations	25.00			3463.00	
Blank Spacing	34.00			3497.00	
Perforations	1.00			3498.00	
Bullnose	3.00			3501.00	64.00 Bottom Packers & Anchor

Total Tool Length: 85.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65598

DST#: 1

ATTN: Marc Downing

Test Start: 2019.11.08 @ 11:09:00

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:

18500 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	HWCM w /trace oil 56%m, 44%w	0.441
60.00	Mud w /Oil spots 99%m, 1%o	0.441

Total Length: 120.00 ft Total Volume: 0.882 bbl

Num Fluid Samples: 0

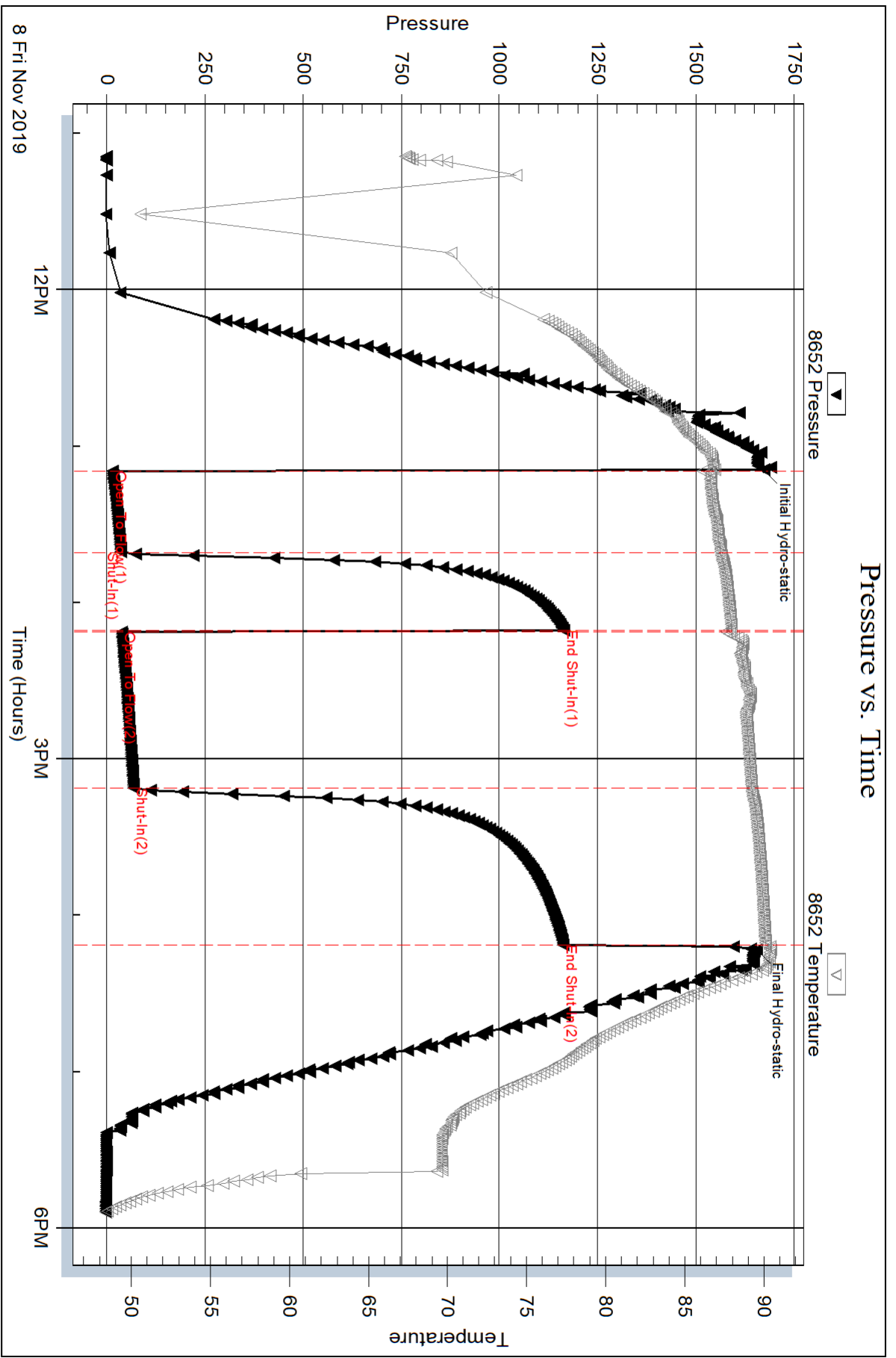
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .421 ohms @ 59.3 deg F Chlorides = 18,500 ppm



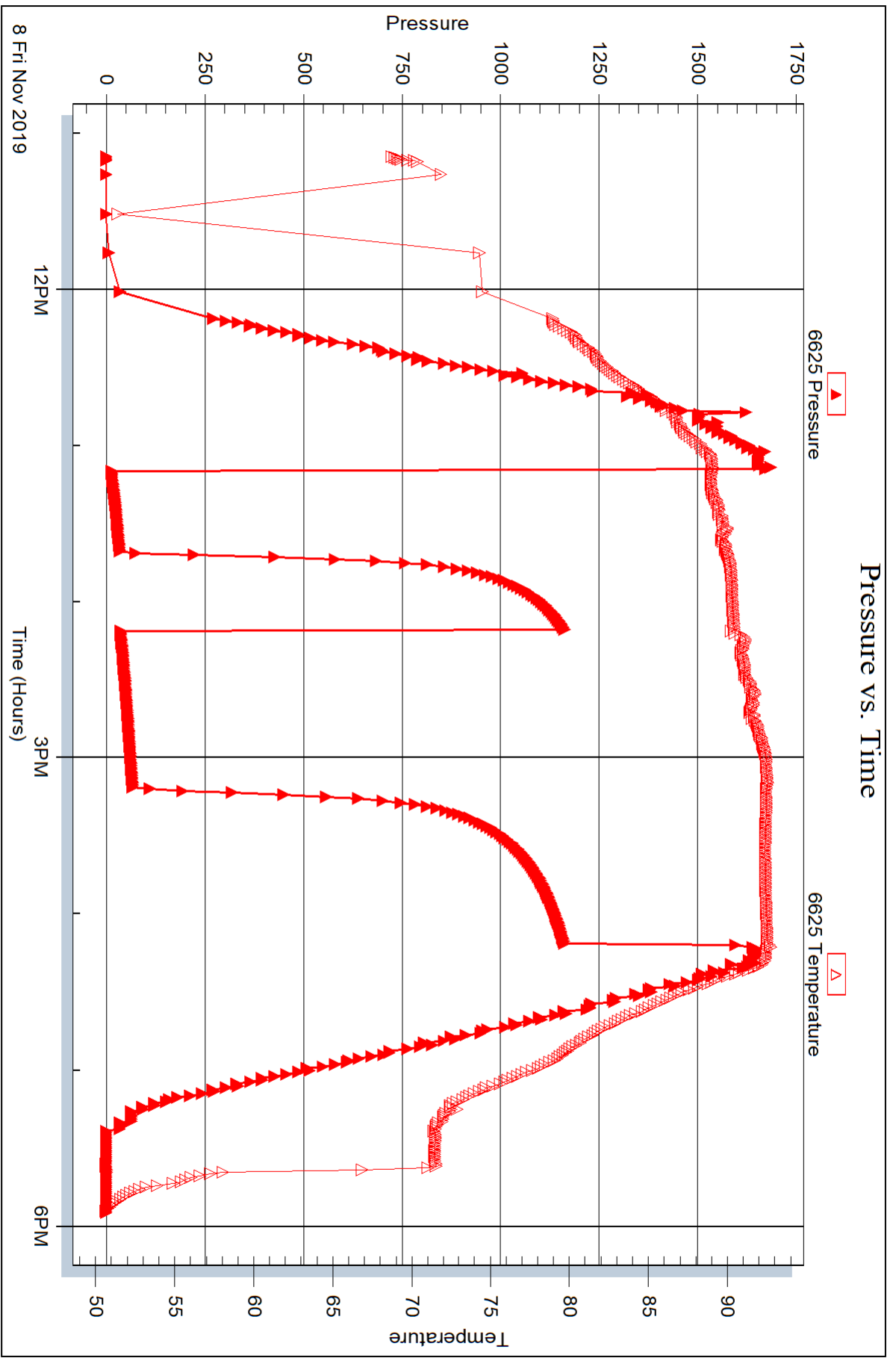
Serial #: 6625

Inside

H & C Oil Operating, Inc.

Butterfly Farms 1-13

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **H & C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Butterfly Farms 1-13

13-4s-22w Norton,KS

Start Date: 2019.11.09 @ 15:34:00

End Date: 2019.11.09 @ 21:24:45

Job Ticket #: 65599 DST #: 2

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

Printed: 2019.11.11 @ 16:03:09



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

ATTN: Marc Downing

Job Ticket: 65599

DST#: 2

Test Start: 2019.11.09 @ 15:34:00

GENERAL INFORMATION:

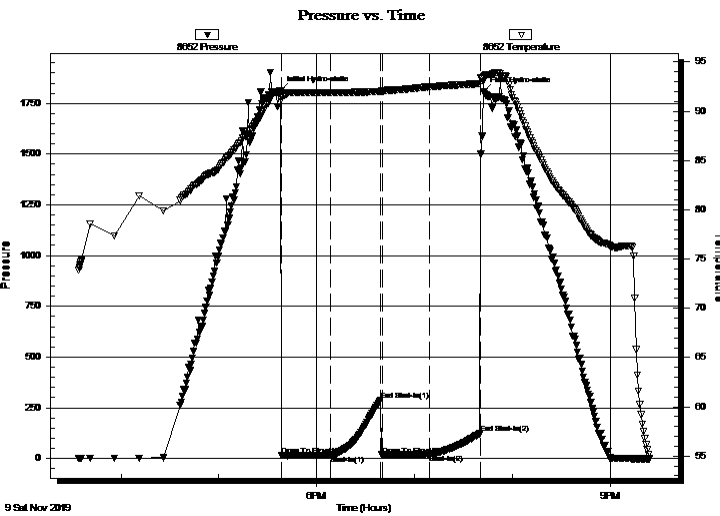
Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 17:38:15
 Time Test Ended: 21:24:45
 Interval: **3674.00 ft (KB) To 3699.00 ft (KB) (TVD)**
 Total Depth: 3699.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 2233.00 ft (KB)
 2225.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8652

Outside

Press@RunDepth: 19.13 psig @ 3675.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.11.09 End Date: 2019.11.09 Last Calib.: 2019.11.09
 Start Time: 15:34:05 End Time: 21:24:44 Time On Btm: 2019.11.09 @ 17:38:00
 Time Off Btm: 2019.11.09 @ 19:42:30

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 1"
 30 - IS: No blow back
 30 - FF: Blow built to 1/4"
 30 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1811.83	92.00	Initial Hydro-static
1	14.21	91.17	Open To Flow (1)
31	15.70	91.92	Shut-In(1)
61	286.07	92.02	End Shut-In(1)
63	18.36	92.05	Open To Flow (2)
91	19.13	92.48	Shut-In(2)
123	123.70	92.80	End Shut-In(2)
125	1807.14	93.49	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 75% m, 23% o, 2% g	0.07
2.00	Free Oil (no sample)	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

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65599

DST#: 2

ATTN: Marc Downing

Test Start: 2019.11.09 @ 15:34:00

Tool Information

Drill Pipe:	Length: 3413.00 ft	Diameter: 3.80 inches	Volume: 47.88 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 273.00 ft	Diameter: 2.75 inches	Volume: 2.01 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: 68000.00 lb
			<u>Total Volume: 49.89 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	3674.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	25.00 ft			
Tool Length:	46.00 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			3654.00	
Shut In Tool	5.00			3659.00	
Hydraulic tool	5.00			3664.00	
Packer	5.00			3669.00	21.00 Bottom Of Top Packer
Packer	5.00			3674.00	
Stubb	1.00			3675.00	
Recorder	0.00	6625	Inside	3675.00	
Recorder	0.00	8652	Outside	3675.00	
Perforations	21.00			3696.00	
Bullnose	3.00			3699.00	25.00 Bottom Packers & Anchor
Total Tool Length:	46.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65599

DST#: 2

ATTN: Marc Downing

Test Start: 2019.11.09 @ 15:34:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
10.00	OCM 75% _m , 23% _o , 2% _g	0.073
2.00	Free Oil (no sample)	0.015

Total Length: 12.00 ft Total Volume: 0.088 bbl

Num Fluid Samples: 0

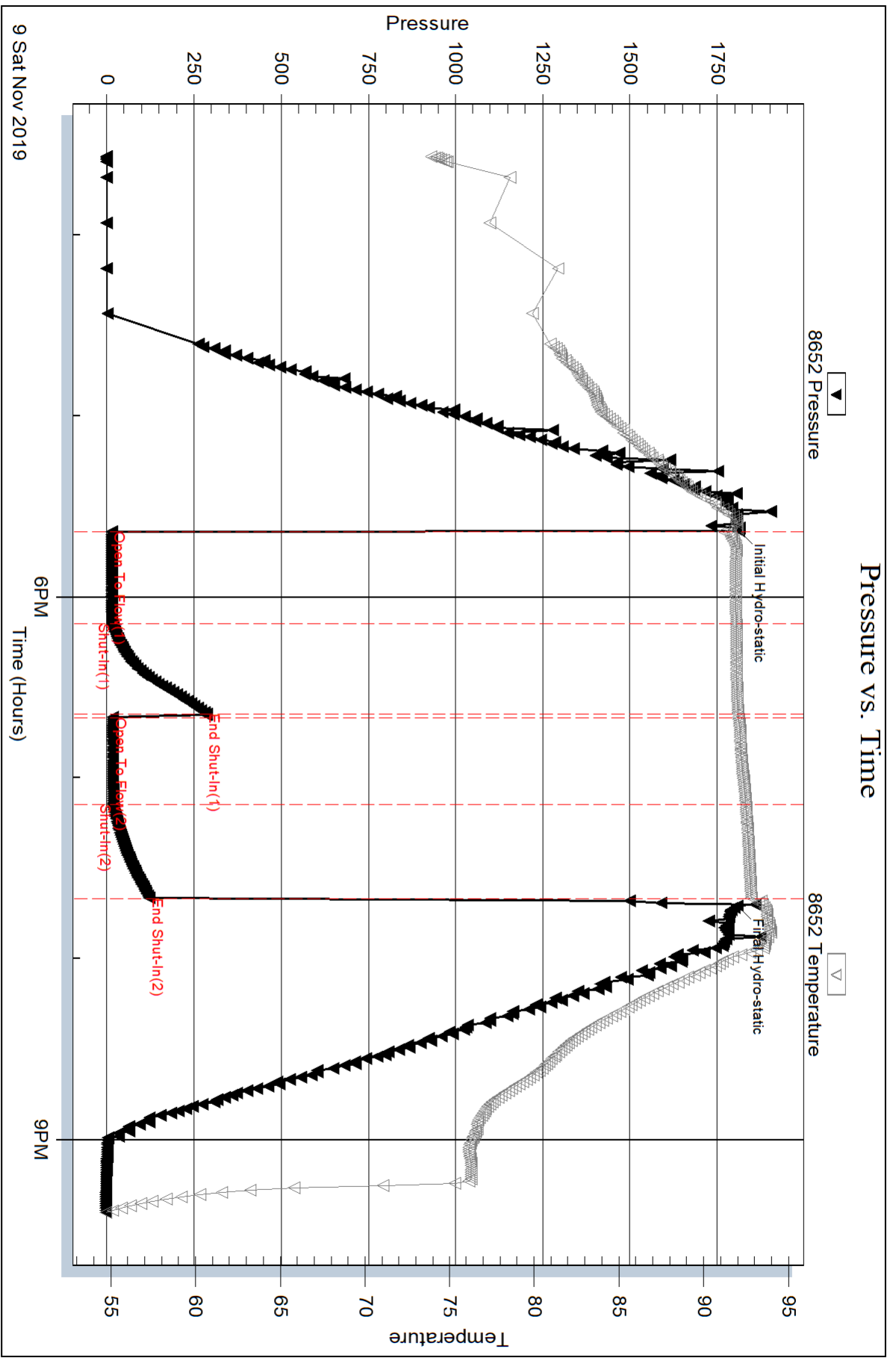
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Oil looked to be very low gravity



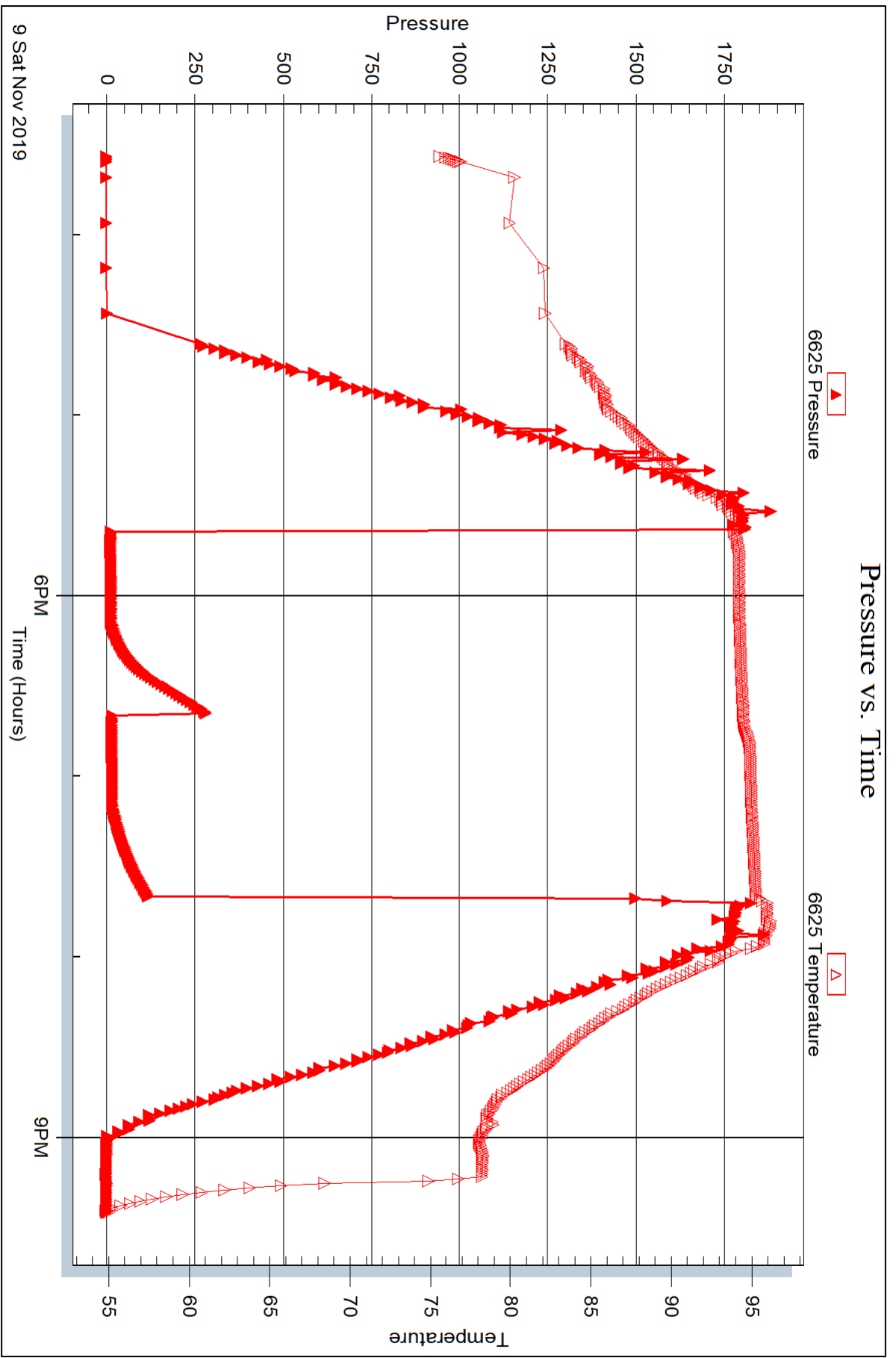
Serial #: 6625

Inside

H & C Oil Operating, Inc.

Butterfly Farms 1-13

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 65599

Printed: 2019.11.11 @ 16:03:10



DRILL STEM TEST REPORT

Prepared For: **H & C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Butterfly Farms 1-13

13-4s-22w Norton,KS

Start Date: 2019.11.10 @ 03:39:00

End Date: 2019.11.10 @ 10:02:00

Job Ticket #: 65600 DST #: 3

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

Printed: 2019.11.11 @ 16:00:49



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

ATTN: Marc Downing

Job Ticket: 65600

DST#: 3

Test Start: 2019.11.10 @ 03:39:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:11:45
 Time Test Ended: 10:02:00
 Interval: **3674.00 ft (KB) To 3710.00 ft (KB) (TVD)**
 Total Depth: 3710.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 2233.00 ft (KB)
 2225.00 ft (CF)
 KB to GR/CF: 8.00 ft

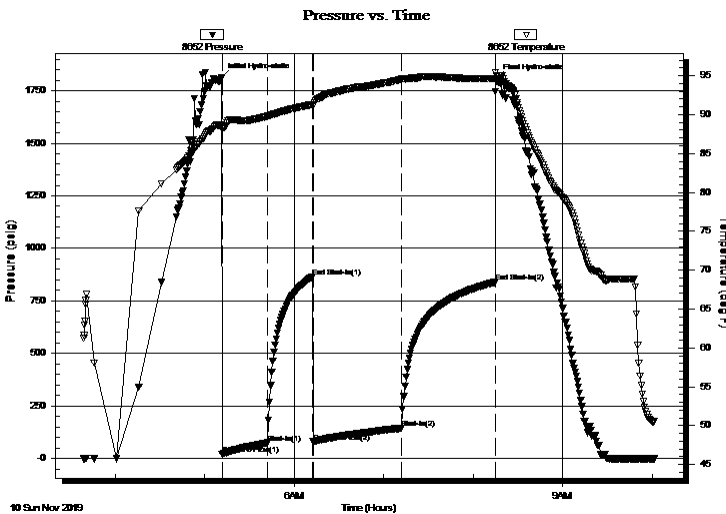
Serial #: 8652

Outside

Press@RunDepth: 142.88 psig @ 3675.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.11.10 End Date: 2019.11.10 Last Calib.: 2019.11.10
 Start Time: 03:39:05 End Time: 10:01:59 Time On Btm: 2019.11.10 @ 05:11:15
 Time Off Btm: 2019.11.10 @ 08:15:30

TEST COMMENT: 30 - IF: Blow built to 9"
 30 - IS: No blow back
 60 - FF: Blow built to 10"
 60 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1810.56	88.66	Initial Hydro-static
1	20.09	88.13	Open To Flow (1)
31	73.88	89.78	Shut-In(1)
61	864.51	91.30	End Shut-In(1)
62	79.13	91.15	Open To Flow (2)
121	142.88	94.56	Shut-In(2)
184	838.94	94.61	End Shut-In(2)
185	1806.20	95.00	Final Hydro-static

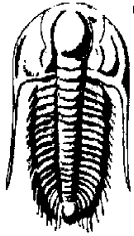
Recovery

Length (ft)	Description	Volume (bbl)
180.00	MCW w/trace oil 68%w, 32%m	1.32
110.00	WCM w/oil spots 65%m, 34%w, 1%o	0.92

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65600

DST#: 3

ATTN: Marc Downing

Test Start: 2019.11.10 @ 03:39:00

Tool Information

Drill Pipe:	Length: 3413.00 ft	Diameter: 3.80 inches	Volume: 47.88 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 273.00 ft	Diameter: 2.75 inches	Volume: 2.01 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: 66000.00 lb
			<u>Total Volume: 49.89 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3674.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	36.00 ft			
Tool Length:	57.00 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			3654.00	
Shut In Tool	5.00			3659.00	
Hydraulic tool	5.00			3664.00	
Packer	5.00			3669.00	21.00 Bottom Of Top Packer
Packer	5.00			3674.00	
Stubb	1.00			3675.00	
Recorder	0.00	6625	Inside	3675.00	
Recorder	0.00	8652	Outside	3675.00	
Perforations	32.00			3707.00	
Bullnose	3.00			3710.00	36.00 Bottom Packers & Anchor
Total Tool Length:	57.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

H & C Oil Operating, Inc.

13-4s-22w Norton, KS

PO Box 86
Plainville, KS 67663

Butterfly Farms 1-13

Job Ticket: 65600

DST#: 3

ATTN: Marc Downing

Test Start: 2019.11.10 @ 03:39:00

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:

19000 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
180.00	MCW w/trace oil 68%w , 32%m	1.322
110.00	WCM w/oil spots 65%m, 34%w , 1%o	0.922

Total Length: 290.00 ft Total Volume: 2.244 bbl

Num Fluid Samples: 0

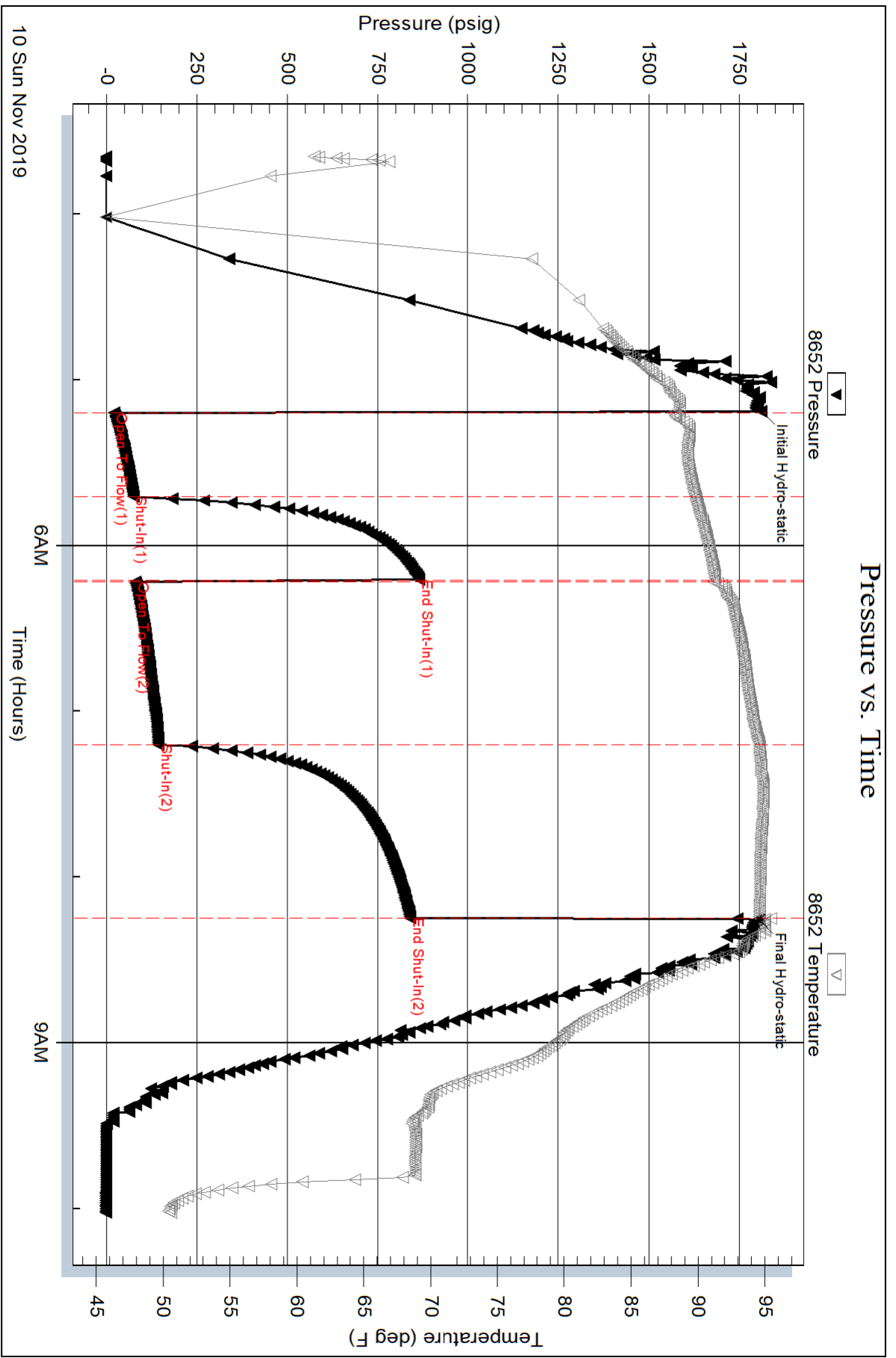
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .466 ohms @ 53.2 deg F Chlorides = 19,000 ppm



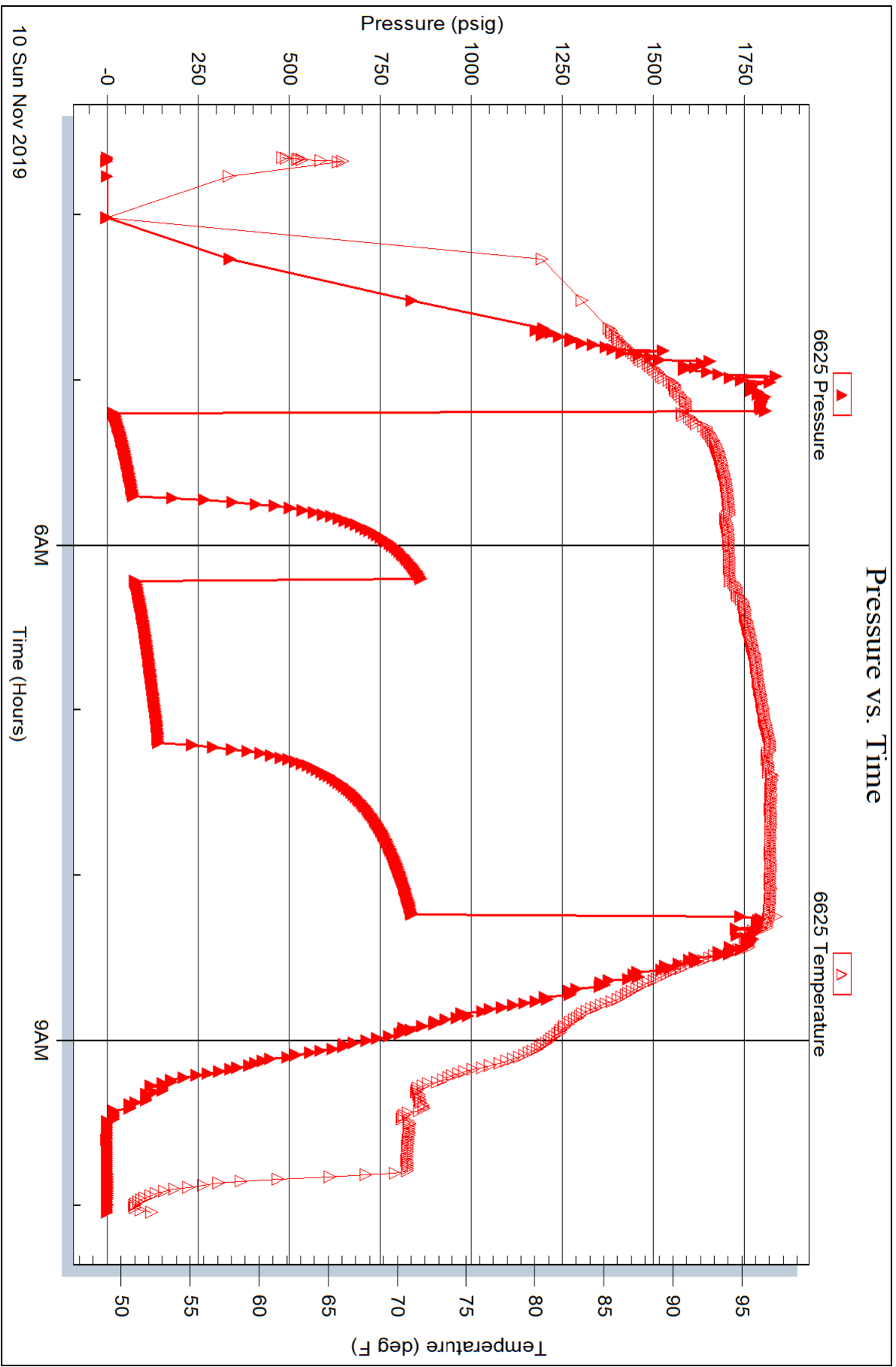
Serial #: 6625

Inside

H & C Oil Operating, Inc.

Butterfly Farms 1-13

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 65600

Printed: 2019-11-11 @ 16:00:50



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 65598 25557

Well Name & No. Butterfly Farms #1-13 Test No. 1 Date 11-8-19
 Company H+C Oil Operating Inc Elevation 2233 KB 2225 GL
 Address PO Box 86 Plainville KS 67663
 Co. Rep / Geo. Marc Downing Rig Discovery #2
 Location: Sec. 13 Twp 4s Rge. 22w Co. Norton State KS

Interval Tested 3437-3501 Zone Tested LKC "A-D"
 Anchor Length 64 Drill Pipe Run 3160 Mud Wt. 9.0
 Top Packer Depth 3432 Drill Collars Run - Vls 58
 Bottom Packer Depth 3437 Wt. Pipe Run 273 WL 6.4
 Total Depth 3501 Chlorides 900 ppm System LCM 2

Blow Description IF: Blow built to 3 1/2"
ISI: No blowback
FF: Blow built to 5"
FST: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>Mud w/oil spots</u>		<u>1</u>		<u>99</u>
<u>60</u>	<u>HWCM w/trace oil</u>		<u>44</u>	<u>56</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

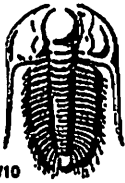
Rec Total 120 BHT 90 Gravity _____ API RW 421 @ 59.3 °F Chlorides 18,500 ppm

(A) Initial Hydrostatic 1673 Test 1200 T-On Location 9:20
 (B) First Initial Flow 15 Jars _____ T-Started 11:09
 (C) First Final Flow 37 Safety Joint _____ T-Open 13:09
 (D) Initial Shut-In 1164 Circ Sub _____ T-Pulled 16:11
 (E) Second Initial Flow 39 Hourly Standby _____ T-Out 17:50
 (F) Second Final Flow 69 Mileage 120 RT 120 Comments _____
 (G) Final Shut-In 1164 Sampler _____
 (H) Final Hydrostatic 1655 Straddle _____

Initial Open 30 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 60 Extra Recorder _____
 Final Shut-In 60 Day Standby _____
 Sub Total 1320 Accessibility _____
 Total 1320 MP/DST Disc't _____

Approved By _____ Our Representative James Nicks

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. 65599

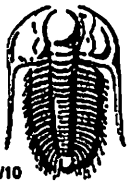
Well Name & No. Butterfly Farms #1-13 Test No. 2 Date 11-9-19
 Company H+C Oil Operating Inc. Elevation 2233 KB 2225 GL
 Address PO Box 86 Plainville KS 67663
 Co. Rep / Geo. Marc Downing Rig Discovery #2
 Location: Sec. 13 Twp 4s Rge. 22w Co. Norton State KS

Interval Tested 3674 - 3699 Zone Tested Arbuckle
 Anchor Length 25 Drill Pipe Run 3413 Mud Wt. 9.1
 Top Packer Depth 3669 Drill Collars Run - Vis 58
 Bottom Packer Depth 3674 Wt. Pipe Run 273 WL 7.2
 Total Depth 3699 Chlorides 800 ppm System LCM 1
 Blow Description IF: 1/4" Blow at open, built to 1"
ISI: No blowback
FF: Blow built to 1/4"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>0cm</u>	<u>2</u>	<u>23</u>	<u>75</u>	
<u>2</u>	<u>Free Oil (No sample)</u>				

Rec Total 12 BHT 93 Gravity API RW @ ° F Chlorides ppm
 (A) Initial Hydrostatic 1812 Test 1200 T-On Location 14:20
 (B) First Initial Flow 14 Jars _____ T-Started 15:34
 (C) First Final Flow 16 Safety Joint _____ T-Open 17:38
 (D) Initial Shut-In 286 Circ Sub _____ T-Pulled 19:40
 (E) Second Initial Flow 18 Hourly Standby _____ T-Out 21:25
 (F) Second Final Flow 19 Mileage 120 RT 120 Comments _____
 (G) Final Shut-In 124 Sampler _____
 (H) Final Hydrostatic 1807 Straddle _____
 EM Tool _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 30 Extra Recorder _____
 Final Shut-In 30 Day Standby _____
 Accessibility _____
 Sub Total 1320 Sub Total 1320 MP/DST Disc't _____

Approved By _____ Our Representative James Winder
 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. 65600

Well Name & No. Butterfly Farms #1-13 Test No. 3 Date 11-10-19
 Company H+C Oil Operating Inc Elevation 2233 KB 2225 GL
 Address PO Box 86 Plainville, KS 67663
 Co. Rep / Geo. Marc Downing Rig Discovery #2
 Location: Sec. 13 Twp 4S Rge. 22W Co. Norton State KS

Interval Tested 3674 - 3710 Zone Tested Arbuckle
 Anchor Length 36 Drill Pipe Run 3413 Mud Wt. 9.1
 Top Packer Depth 3669 Drill Collars Run - Vis 56
 Bottom Packer Depth 3674 Wt. Pipe Run 273 WL 7.2
 Total Depth 3710 Chlorides 1000 ppm System LCM 2

Blow Description IF: Blow built to 9"
ISI: No blowback
FF: Blow built to 10"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>110</u>	<u>wcm w/oil spots</u>	<u>1</u>	<u>34</u>	<u>65</u>	
<u>180</u>	<u>mcw w/trace oil</u>	<u>trace</u>	<u>68</u>	<u>32</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 290 BHT 95 Gravity API RW 466 @ 53.2 °F Chlorides 19,000 ppm

- (A) Initial Hydrostatic 1811
- (B) First Initial Flow 20
- (C) First Final Flow 74
- (D) Initial Shut-In 865
- (E) Second Initial Flow 79
- (F) Second Final Flow 143
- (G) Final Shut-In 839
- (H) Final Hydrostatic 1806

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

- Test 1300
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 120 RT 120+120
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1440

T-On Location 3:15
 T-Started 3:39
 T-Open 5:11
 T-Pulled 8:14
 T-Out 10:00

Comments Loaded tools 22:00 11/10
 EM Tool
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1440
 MP/DST Disc't

Approved By _____ Our Representative Jane Wicker

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.

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041 pm

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

No. 1761
11-11-19

Date 11-10-19	Sec. 13	Twp. 4	Range 22	County Norton	State Kansas	On Location	Finish 8:30 AM
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Location Densmore 1w 3N 2E

Lease <u>Butterfly Farms</u>	Well No. <u>1-13</u>	Owner
Contractor <u>DISCOVERY DRILLING RIG #2</u>	Type Job <u>ROTARY PLUG</u>	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
Hole Size <u>7 7/8</u>	T.D. <u>3770'</u>	Charge To <u>H E C OPERATING, INC.</u>
Csg. <u>8 5/8 SURFACE</u>	Depth <u>220'</u>	Street
Csg. Size <u>4 1/2 -X-H</u>	Depth <u>@ 3676'</u>	City
Tool	Depth	State
Cement Left in Csg.	Shoe Joint	The above was done to satisfaction and supervision of owner agent or contractor.
		Cement Amount Ordered <u>305 sx 40 4% GEL 1/4 FLO SEAL</u>

Meas Line Displace MUD-H²⁰

EQUIPMENT		Common <u>183</u>
Pumptrk <u>20</u>	No. Cementer <u>Glenn G.</u>	Poz. Mix <u>122</u>
Bulktrk <u>15</u>	No. Driver <u>Fony Doug H</u>	Gel. <u>11</u>
Bulktrk	No. Driver	Calcium

JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal <u>75#</u>
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
<u>50 sx @ 3676'</u>	Sand
<u>50 sx @ 1900'</u>	Handling <u>316</u>
<u>100 sx @ 1100'</u>	Mileage

FLOAT EQUIPMENT

<u>50 sx @ 270'</u>	Guide Shoe
<u>10 sx @ 40' SWIPER PLUG</u>	Centralizer
<u>30 sx @ Rathole</u>	Baskets
<u>15 sx @ Mousehole</u>	AFU Inserts
	Float Shoe
	Latch Down
	<u>8 5/8 DRY Hole PLUG</u>
	Pumptrk Charge <u>plug</u>
	Mileage <u>55</u>

X Signature <u>[Signature]</u>	Tax
	Discount
	Total Charge

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

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

No. 1819

Date	Sec.	Twp.	Range	County	State	On Location	Finish
11-4-19	13	4	22	Norton	KS		8:55
				Location <u>Densmore / W E 7th 30' Upr 1/25' into</u>			

Lease	Well No.	Owner
<u>Butterfly Farms</u>	<u>1-13</u>	To Quality Oilwell Cementing, Inc.
Contractor	You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.	
<u>D. Spaven #2</u>		
Type Job	Charge To	
<u>Surface</u>	<u>H/C</u>	
Hole Size	T.D.	
<u>12 1/4</u>	<u>220</u>	
Csg.	Depth	
<u>8 5/8</u>	<u>219</u>	
Tbg. Size	Depth	City State
Tool	Depth	The above was done to satisfaction and supervision of owner agent or contractor.
Cement Left in Csg.	Shoe Joint	Cement Amount Ordered
<u>10</u>		<u>150 com 3/16 2/62</u>
Meas Line	Displace	
	<u>13 BCL</u>	

EQUIPMENT

Pumptrk	No.	Cementer	Common
<u>17</u>		<u>Craig</u>	<u>120</u>
		Helper	Poz. Mix
		<u>Tony L.</u>	<u>30</u>
Bulktrk	No.	Driver	Gel.
		<u>Tony L.</u>	<u>3</u>
Bulktrk	No.	Driver	Calcium
<u>9</u>		<u>Michael</u>	<u>6</u>

JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
<u>8 5/8 on bottom. Est. Circulation.</u>	Sand
<u>Mix 150SK 9 Displace.</u>	Handling <u>159</u>
	Mileage

FLOAT EQUIPMENT

	Guide Shoe
	Centralizer
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down

Pumptrk Charge	Tax
<u>Surface</u>	
Mileage	Discount
<u>55</u>	
	Total Charge

X Signature [Handwritten Signature]

Marc A. Downing
Consulting Petroleum Geologist

Geologic Report
Drilling Time and Sample Log

Operator **H&C Oil Operating, Inc.**
 Lease **Butterfly Farms** No. 1-13
 API # **15-137-20753-0000**
 Field **Hansen Estate Northeast**
 Location **330' FSL & 1800' FWL**

Sec. **13** Twp. **4s** Rge. **22w**
 County **Norton** State **Kansas**

Formation	Sample tops	Log Tops	Datum	Struct Comp
Top Anhydrite	1882	1882	+347	
Base Anhydrite	1913	1913	+316	
Topeka	3204	3203	-974	
Heebner	3403	3402	-1173	
Toronto	3430	3431	-1202	
LKC	3446	3446	-1217	
BKC	3634	3634	-1405	
Arbuckle	3696	3696	-1467	
Total Depth	3770	3770	-1541	

Reference Well For Structural Comparison **H&C - Diana #1**
330' FNL & 660' FWL, Sec. 24-4s-22w

Drilling Contractor **Discovery Drilling, Rig #2**
 Commenced **11-4-19** Completed **11-10-19**
 Samples Saved From **3200** To **RTD**
 Drilling Time Kept From **3100** To **RTD**
 Samples Examined From **3200** To **RTD**
 Geological Supervision From **3200** To **RTD**

Elevation **2229**
 KB **2229**
 DF **2227**
 GL **2221**

Casing Record
 Surface **8 5/8" @ 210'**
 Production **None**

Electrical Surveys
CNDL, DIL MEL, Sonic

Summary and Recommendations
 The Butterfly Farms #1-13 ran structurally high throughout the LKC but lost structure at the Arbuckle. Good sample shows were encountered throughout the well, but were condemned via DST and/or log. Due to structural position, DST recovery, and log evaluation, it was decided to plug and abandon the well.

Respectfully Submitted,
 Marc A. Downing

ROCK TYPES
 shale, gry
 Carbon Sh
 Dolprim
 Unst fw7>

ACCESSORIES
 Stringer
 Sandstone
 Siltstone

OTHER SYMBOLS
 DST
 DST Int
 DST alt
 Core
 Tail pipe

MISC
 Daily Report
 Digital Photo
 Document
 Folder
 Link
 Vertical Log File
 Horizontal Log File
 Core Log File
 Drill Cuttings Rpt

OIL SHOWS
 Even Sin
 Spotted Sin 50-75 %
 Spotted Sin 25-50 %
 Spotted Sin 1-25 %
 Questionable Sin
 Dead Oil Sin
 Fluorescence

MINERAL
 Chert, dark
 Chert White

