



## DRILL STEM TEST REPORT

Prepared For: **Norstar Petroleum Inc**

88 Inverness Cir E Unit F104  
Englewood, CO 80112

ATTN: Wes Hansen

### **Hineman Unit #1-16**

### **16-19s-27w Lane,KS**

Start Date: 2017.02.20 @ 21:20:11

End Date: 2017.02.21 @ 04:14:11

Job Ticket #: 65663                      DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.02.24 @ 10:04:29



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Norstar Petroleum Inc  
 88 Inverness Cir E Unit F104  
 Englewood, CO 80112  
 ATTN: Wes Hansen

**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
 Job Ticket: 65663 **DST#: 1**  
 Test Start: 2017.02.20 @ 21:20:11

## GENERAL INFORMATION:

Formation: **LKC K**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 23:20:41  
 Time Test Ended: 04:14:11  
 Interval: **4272.00 ft (KB) To 4300.00 ft (KB) (TVD)**  
 Total Depth: 4300.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2709.00 ft (KB)  
 2702.00 ft (CF)  
 KB to GR/CF: 7.00 ft

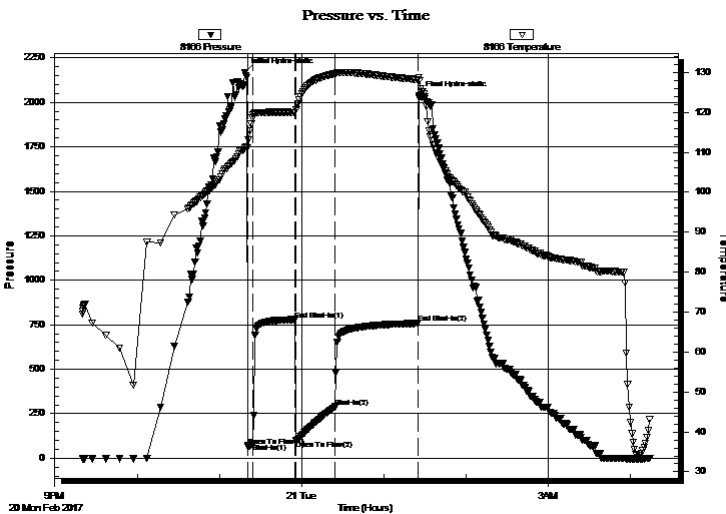
## Serial #: 8166

Outside

Press@RunDepth: 289.40 psig @ 4273.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.02.20 End Date: 2017.02.21 Last Calib.: 2017.02.21  
 Start Time: 21:20:16 End Time: 04:14:10 Time On Btm: 2017.02.20 @ 23:18:41  
 Time Off Btm: 2017.02.21 @ 01:25:41

TEST COMMENT: IF: BOB in 1 min.  
 IS: BOB in 7 min.  
 FF: BOB in 1 min.  
 FS: BOB in 10 min.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2167.91	110.98	Initial Hydro-static
2	66.73	111.16	Open To Flow (1)
6	84.02	119.26	Shut-In(1)
37	779.23	119.99	End Shut-In(1)
38	100.41	120.58	Open To Flow (2)
66	289.40	129.64	Shut-In(2)
127	758.12	128.16	End Shut-In(2)
127	2037.91	128.64	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
186.00	gocm 10%g 10%o 80%m	2.61
248.00	mogo 30%g 65%o 5%m	3.48
692.00	go 30%g 70%0	9.71
0.00	858 GIP	0.00

## Gas Rates

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



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Norstar Petroleum Inc  
 88 Inverness Cir E Unit F104  
 Englewood, CO 80112  
 ATTN: Wes Hansen

**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
 Job Ticket: 65663      **DST#: 1**  
 Test Start: 2017.02.20 @ 21:20:11

### GENERAL INFORMATION:

Formation: **LKC K**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 23:20:41  
 Time Test Ended: 04:14:11

Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Turley  
 Unit No: 79

Interval: **4272.00 ft (KB) To 4300.00 ft (KB) (TVD)**  
 Total Depth: 4300.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good

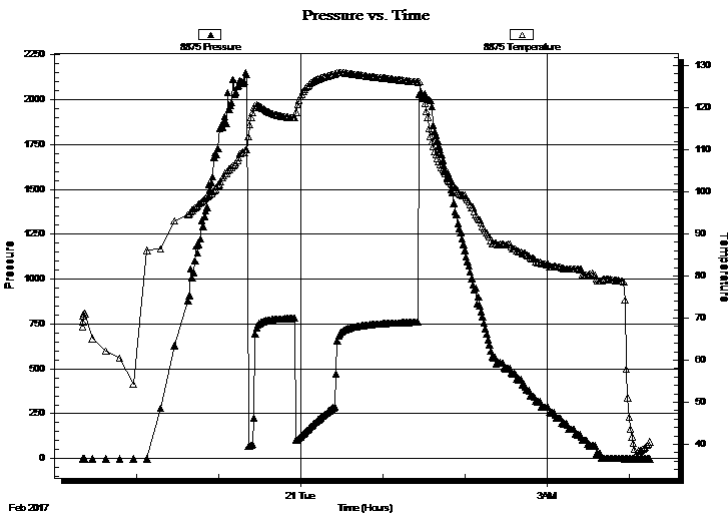
Reference Elevations: 2709.00 ft (KB)  
 2702.00 ft (CF)  
 KB to GR/CF: 7.00 ft

**Serial #: 8875 Inside**

Press@RunDepth: psig @ 4273.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2017.02.20      End Date: 2017.02.21      Last Calib.: 2017.02.21  
 Start Time: 21:20:52      End Time: 04:14:46      Time On Btm:  
 Time Off Btm:

TEST COMMENT: IF: BOB in 1 min.  
 IS: BOB in 7 min.  
 FF: BOB in 1 min.  
 FS: BOB in 10 min.

### PRESSURE SUMMARY



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

### Recovery

Length (ft)	Description	Volume (bbl)
186.00	gocm 10%g 10%o 80%m	2.61
248.00	mco 30%g 65%o 5%m	3.48
692.00	go 30%g 70%o	9.71
0.00	858 GIP	0.00

### Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Norstar Petroleum Inc  
88 Inverness Cir E Unit F104  
Englewood, CO 80112  
ATTN: Wes Hansen

**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
Job Ticket: 65663 **DST#: 1**  
Test Start: 2017.02.20 @ 21:20:11

**Tool Information**

Drill Pipe:	Length: 4250.00 ft	Diameter: 3.80 inches	Volume: 59.62 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: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 59.62 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 56000.00 lb
Depth to Top Packer:	4272.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	28.00 ft			
Tool Length:	55.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Stubb	1.00			4246.00	
Shut In Tool	5.00			4251.00	
Hydraulic tool	5.00			4256.00	
Jars	5.00			4261.00	
Safety Joint	2.00			4263.00	
Packer	5.00			4268.00	27.00 Bottom Of Top Packer
Packer	4.00			4272.00	
Stubb	1.00			4273.00	
Recorder	0.00	8875	Inside	4273.00	
Recorder	0.00	8166	Outside	4273.00	
Perforations	22.00			4295.00	
Bullnose	5.00			4300.00	28.00 Bottom Packers & Anchor

**Total Tool Length: 55.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Norstar Petroleum Inc  
88 Inverness Cir E Unit F104  
Englewood, CO 80112  
ATTN: Wes Hansen

**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
Job Ticket: 65663      **DST#: 1**  
Test Start: 2017.02.20 @ 21:20:11

## Mud and Cushion Information

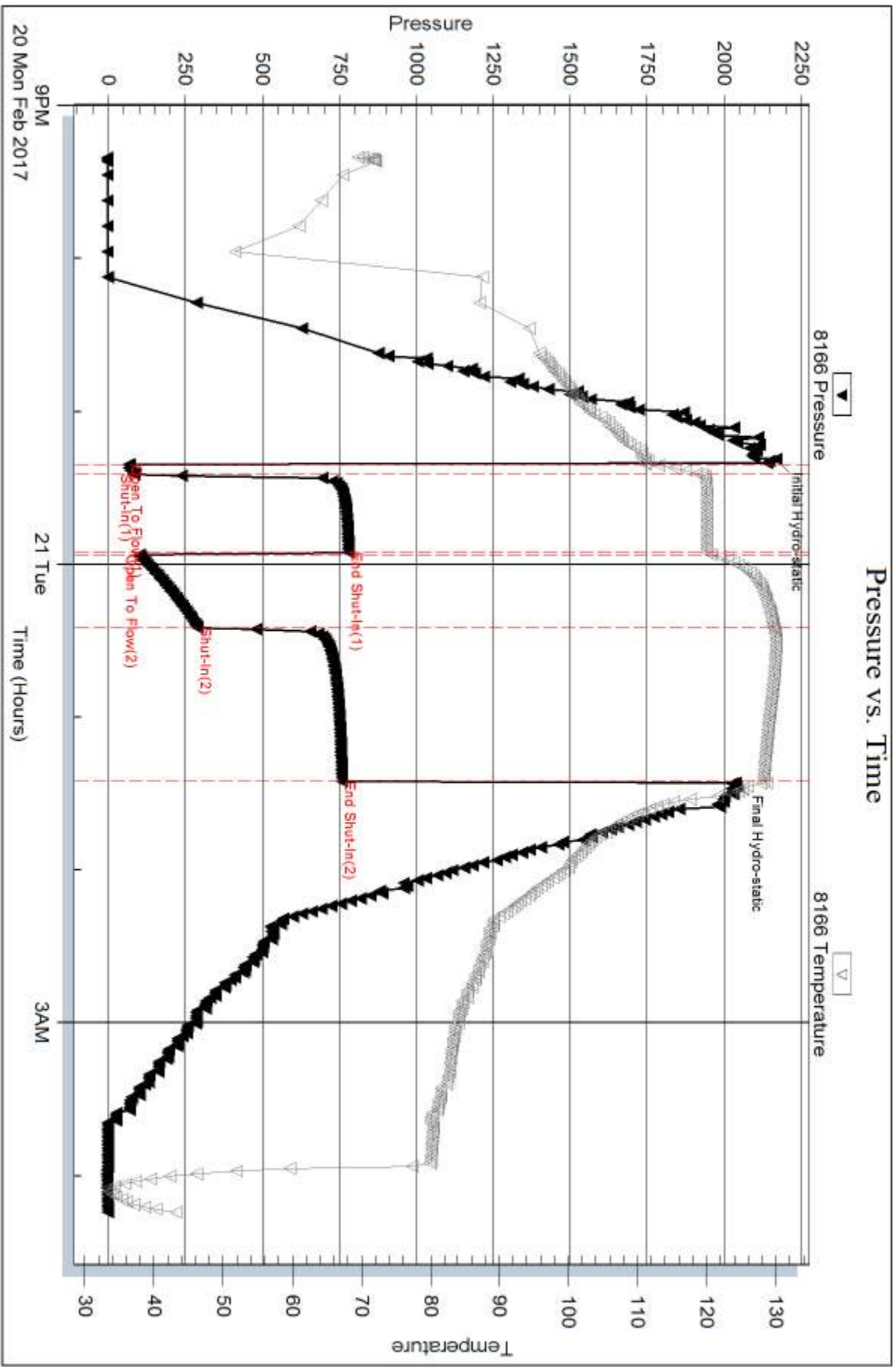
Mud Type: Gel Chem	Cushion Type:	Oil API: 35 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 0 ppm
Viscosity: 58.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 3000.00 ppm		
Filter Cake: 1.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
186.00	gocm 10%g 10%o 80%m	2.609
248.00	mcgo 30%g 65%o 5%m	3.479
692.00	go 30%g 70%o	9.707
0.00	858 GIP	0.000

Total Length: 1126.00 ft      Total Volume: 15.795 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 33@40=35



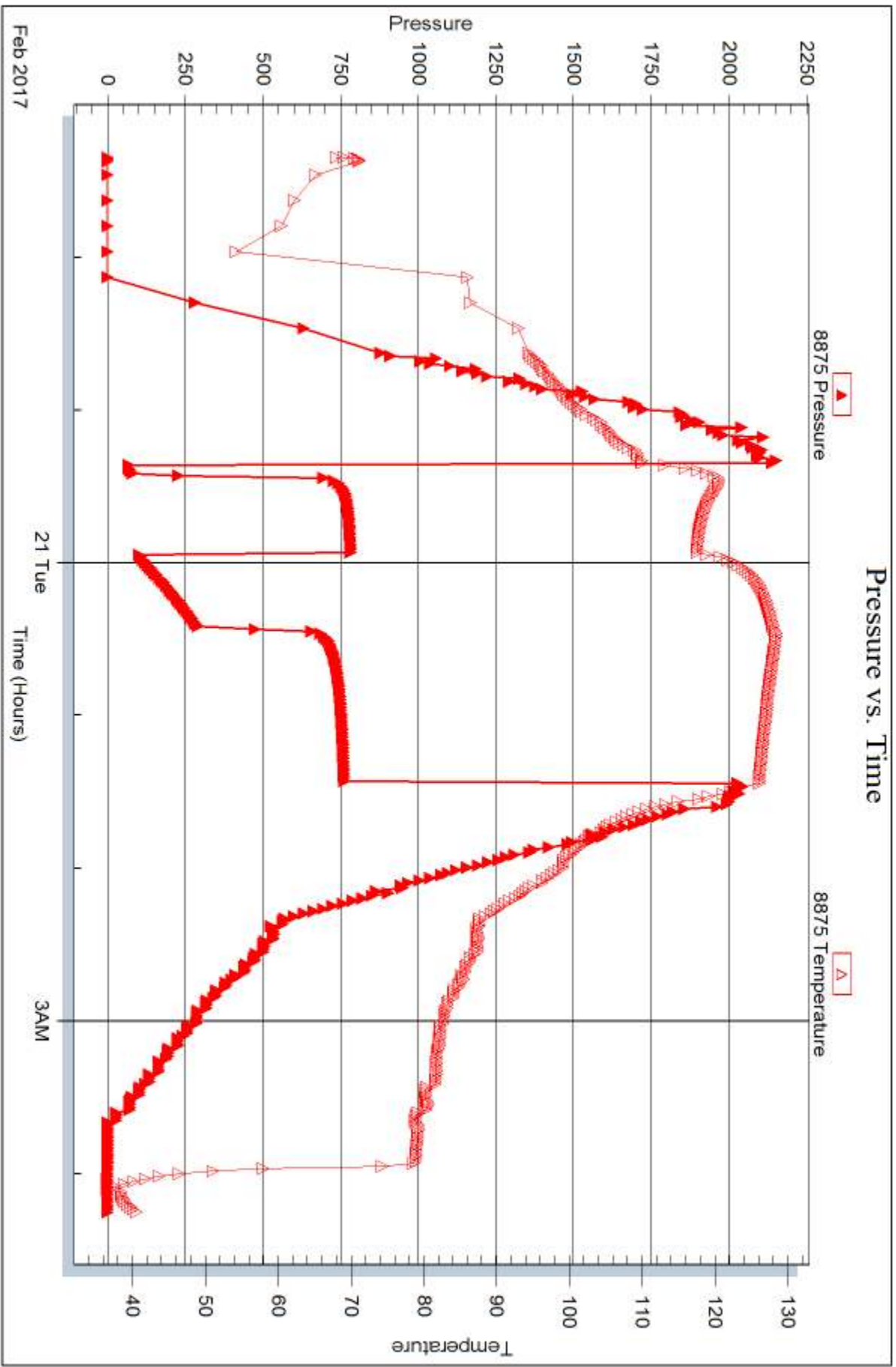
Serial #: 8875

Inside

Norstar Petroleum Inc

Hineman Unit #1-16

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 65663

Printed: 2017.02.24 @ 10:04:30



## DRILL STEM TEST REPORT

Prepared For: **Norstar Petroleum Inc**

88 Inverness Cir E Unit F104  
Englewood, CO 80112

ATTN: Wes Hansen

### **Hineman Unit #1-16**

### **16-19s-27w Lane,KS**

Start Date: 2017.02.22 @ 11:15:11

End Date: 2017.02.22 @ 17:27:11

Job Ticket #: 65664                      DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.02.24 @ 10:03:24





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Norstar Petroleum Inc  
 88 Inverness Cir E Unit F104  
 Englewood, CO 80112  
 ATTN: Wes Hansen

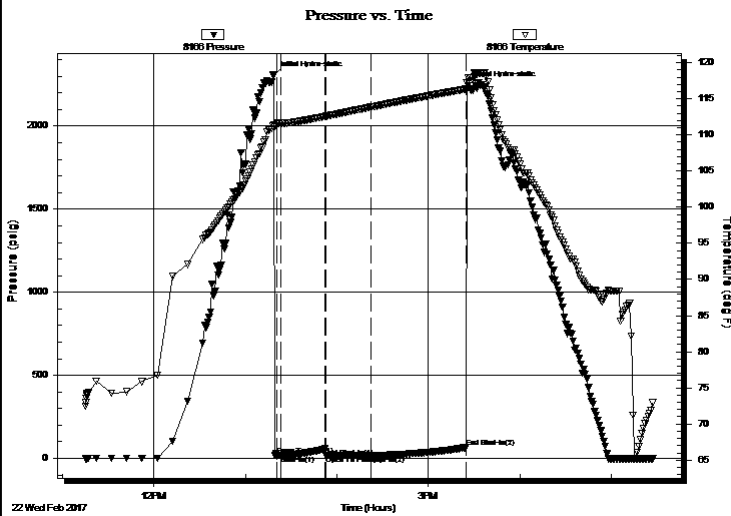
**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
 Job Ticket: 65664 **DST#: 2**  
 Test Start: 2017.02.22 @ 11:15:11

## GENERAL INFORMATION:

Formation: **Cherokee Sand**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 13:20:41  
 Time Test Ended: 17:27:11  
 Interval: **4576.00 ft (KB) To 4623.00 ft (KB) (TVD)**  
 Total Depth: 4623.00 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: 2709.00 ft (KB)  
 2702.00 ft (CF)  
 KB to GR/CF: 7.00 ft

**Serial #: 8166 Outside**  
 Press@RunDepth: 16.96 psig @ 4577.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.02.22 End Date: 2017.02.22 Last Calib.: 2017.02.22  
 Start Time: 11:15:16 End Time: 17:27:10 Time On Btm: 2017.02.22 @ 13:18:41  
 Time Off Btm: 2017.02.22 @ 15:26:11

**TEST COMMENT:** IF: 1/4 blow died to surface.  
 IS: No return.  
 FF: No blow.  
 FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2307.18	111.34	Initial Hydro-static
2	16.19	111.56	Open To Flow (1)
5	16.63	111.62	Shut-In(1)
34	57.56	112.57	End Shut-In(1)
34	16.72	112.57	Open To Flow (2)
64	16.96	113.87	Shut-In(2)
126	64.96	116.35	End Shut-In(2)
128	2244.97	117.97	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.07

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Norstar Petroleum Inc  
88 Inverness Cir E Unit F104  
Englewood, CO 80112  
ATTN: Wes Hansen

**16-19s-27w Lane, KS**  
**Hineman Unit #1-16**  
Job Ticket: 65664 **DST#: 2**  
Test Start: 2017.02.22 @ 11:15:11

## Tool Information

Drill Pipe:	Length: 4561.00 ft	Diameter: 3.80 inches	Volume: 63.98 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: 30000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 63.98 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4576.00 ft			Final 65000.00 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	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Stubb	1.00			4550.00	
Shut In Tool	5.00			4555.00	
Hydraulic tool	5.00			4560.00	
Jars	5.00			4565.00	
Safety Joint	2.00			4567.00	
Packer	5.00			4572.00	27.00 Bottom Of Top Packer
Packer	4.00			4576.00	
Stubb	1.00			4577.00	
Recorder	0.00	8875	Inside	4577.00	
Recorder	0.00	8166	Outside	4577.00	
Perforations	7.00			4584.00	
Change Over Sub	1.00			4585.00	
Drill Pipe	32.00			4617.00	
Change Over Sub	1.00			4618.00	
Bullnose	5.00			4623.00	47.00 Bottom Packers & Anchor

**Total Tool Length: 74.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Norstar Petroleum Inc

**16-19s-27w Lane, KS**

88 Inverness Cir E Unit F104  
Englewood, CO 80112

**Hineman Unit #1-16**

Job Ticket: 65664

**DST#: 2**

ATTN: Wes Hansen

Test Start: 2017.02.22 @ 11:15:11

### 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: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.60 in<sup>3</sup>

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
5.00	mud 100%m	0.070

Total Length: 5.00 ft      Total Volume: 0.070 bbl

Num Fluid Samples: 0

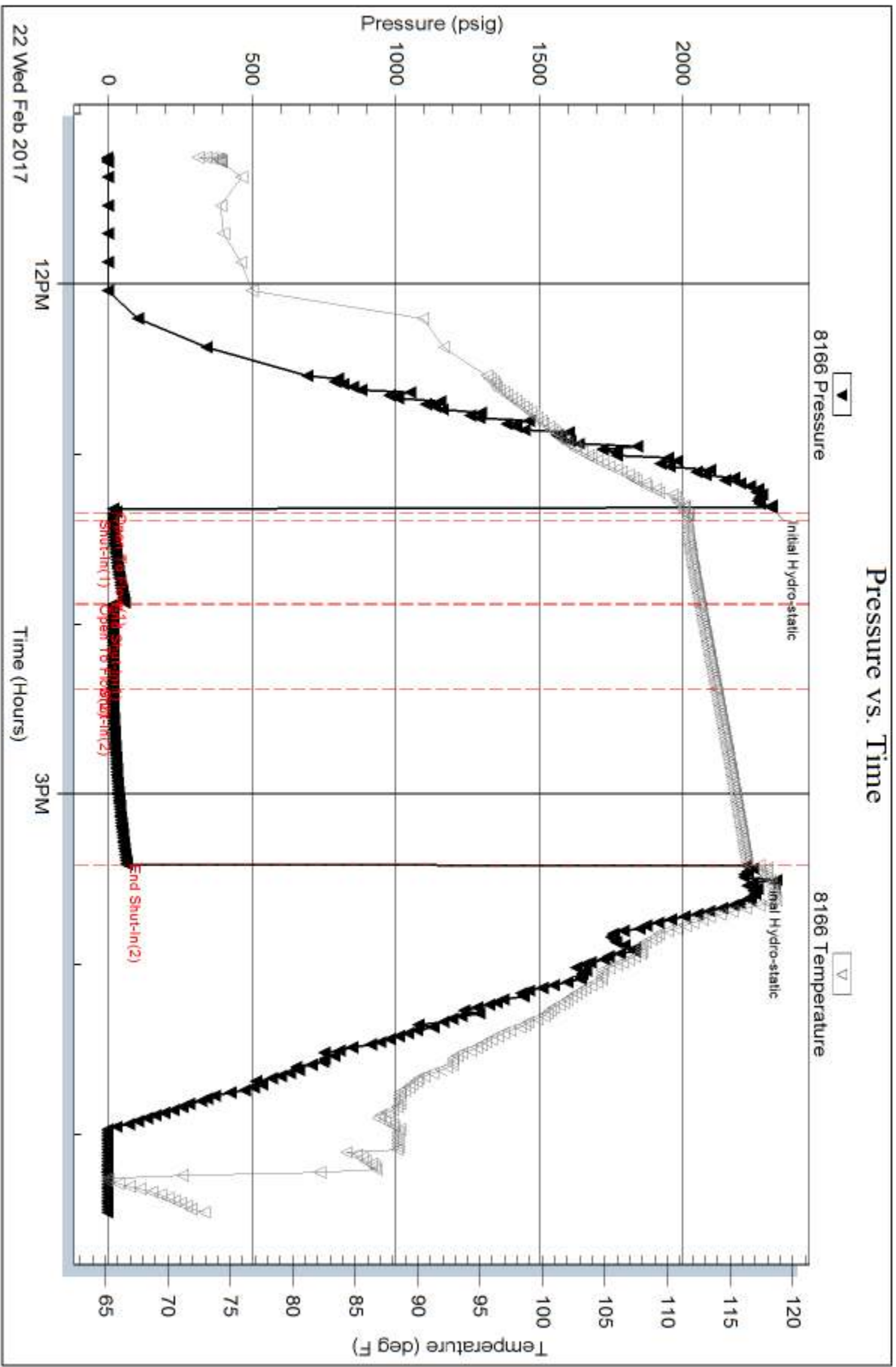
Num Gas Bombs: 0

Serial #:

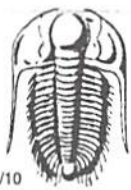
Laboratory Name:

Laboratory Location:

Recovery Comments:







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **65663**

Well Name & No. Hineman unit 1-16 Test No. 1 Date 2-20-17  
 Company Norstar Petroleum Inc Elevation 2709 KB 2702 GL  
 Address 88 Inverness Cir E unit F104 Englewood, Co 80112  
 Co. Rep / Geo. Wes Hansen Rig Pickrell #10  
 Location: Sec. 16 Twp. 19S Rge. 27W Co. Lone State KS

Interval Tested 4272 4300 Zone Tested K  
 Anchor Length 28 Drill Pipe Run 4250 Mud Wt. 9.2  
 Top Packer Depth 4267 Drill Collars Run — Vis 58  
 Bottom Packer Depth 4272 Wt. Pipe Run — WL 7.2  
 Total Depth 4300 Chlorides 3000 ppm System LCM 2  
 Blow Description IF: BoB in 1 min.  
IS: BoB in 7 min.  
FF: BoB in 1 min.  
FS: BoB in 10 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>692</u>	<u>90</u>	<u>30</u>	<u>70</u>		
<u>248</u>	<u>MC90</u>	<u>30</u>	<u>65</u>	<u>5</u>	
<u>186</u>	<u>90CM</u>	<u>10</u>	<u>10</u>	<u>80</u>	
<u>858</u>	<u>GIP</u>				

Rec Total 1126 BHT 128 Gravity 35 API RW — @ —° F Chlorides — ppm

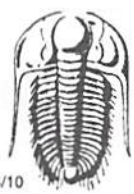
(A) Initial Hydrostatic 2167  Test 1150 T-On Location 19:45  
 (B) First Initial Flow 66  Jars 250 T-Started 21:20  
 (C) First Final Flow 84  Safety Joint 75 T-Open 23:20  
 (D) Initial Shut-In 779  Circ Sub N/C T-Pulled 1:25  
 (E) Second Initial Flow 100  Hourly Standby \_\_\_\_\_ T-Out 4:15  
 (F) Second Final Flow 289  Mileage 86 - 64.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 758  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2057  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1539.50

Initial Open 5  
 Initial Shut-In 30  
 Final Flow 30  
 Final Shut-In 60

Sub Total 0  
 Total 1539.50  
 MP/DST Disc't \_\_\_\_\_

Approved By Wes Hansen 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. **65664**

Well Name & No. Hime man unit 1-16 Test No. 2 Date 2-22-17  
 Company Norstar Petroleum Inc Elevation 2709 KB 2702 GL  
 Address \_\_\_\_\_  
 Co. Rep / Geo. Wes Hansen Rig Pickrell #10  
 Location: Sec. 16 Twp. 19S Rge. 27W Co. Lyme State KS

Interval Tested 4576 4623 Zone Tested Cherokee SMD  
 Anchor Length \_\_\_\_\_ 47 Drill Pipe Run 4561 Mud Wt. 9.4  
 Top Packer Depth \_\_\_\_\_ 4571 Drill Collars Run \_\_\_\_\_ Vis 59  
 Bottom Packer Depth \_\_\_\_\_ 4576 Wt. Pipe Run \_\_\_\_\_ WL 7.6  
 Total Depth \_\_\_\_\_ 4623 Chlorides 3000 ppm System LCM 2

Blow Description IF: 1/4 blow died to surface.  
IS: NO return,  
FF: No blow,  
FS: No return,

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Rec Total 5 BHT 116 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2307  Test 1150 T-On Location 10:00  
 (B) First Initial Flow 16  Jars 250 T-Started 11:15  
 (C) First Final Flow 16  Safety Joint 75 T-Open 13:18  
 (D) Initial Shut-In 57  Circ Sub NIL T-Pulled 15:23  
 (E) Second Initial Flow 16  Hourly Standby \_\_\_\_\_ T-Out 17:27  
 (F) Second Final Flow 16  Mileage 86 - 64.50 + 64.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 64  Sampler \_\_\_\_\_ Loaded tools 2/23  
 (H) Final Hydrostatic 2244  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 5  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 30  Day Standby \_\_\_\_\_ Total 1604  
 Final Flow 30  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 60 Sub Total 1604

Approved By Wesley Hansen Our Representative [Signature]

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