



DRILL STEM TEST REPORT

Prepared For: **Hartman Oil Co Inc.**

10500 E. Berkeley Sq Pkwy
STE 100
Wichita KS 67206

ATTN: Kitt Noah

Ward #4 Twin

16-22s-33w Finney,KS

Start Date: 2018.03.18 @ 14:02:15

End Date: 2018.03.18 @ 20:52:00

Job Ticket #: 64440 DST #: 1

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

Printed: 2018.03.21 @ 09:28:22



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Hartman Oil Co Inc.
10500 E. Berkeley Sq Pkw y
STE 100
Wichita KS 67206
ATTN: Kitt Noah

16-22s-33w Finney,KS

Ward #4 Twin

Job Ticket: 64440

DST#: 1

Test Start: 2018.03.18 @ 14:02:15

GENERAL INFORMATION:

Formation: **Alt A-C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:15:00

Time Test Ended: 20:52:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 81

Interval: 4294.00 ft (KB) To 4377.00 ft (KB) (TVD)

Reference Elevations: 2897.00 ft (KB)

Total Depth: 4377.00 ft (KB) (TVD)

2887.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 10.00 ft

Serial #: 8647

Inside

Press@RunDepth: 174.22 psig @ 4362.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.03.18

End Date:

2018.03.18

Last Calib.:

2018.03.18

Start Time:

14:02:15

End Time:

20:52:00

Time On Btm:

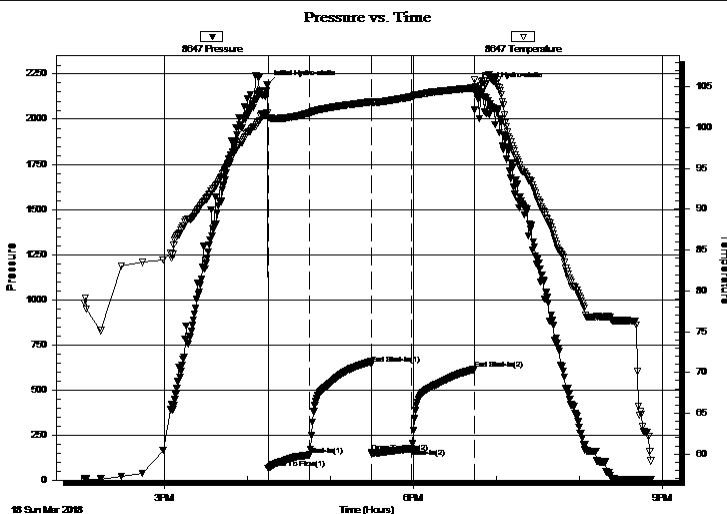
2018.03.18 @ 16:14:30

Time Off Btm:

2018.03.18 @ 18:45:00

TEST COMMENT: IF: Built to 14" blow (ipro) BOB in 15 min
IS: No return blow
FF: Built to 21" (ipro) BOB in 15 min.
FS: Week surface blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2188.62	101.79	Initial Hydro-static
1	64.06	101.18	Open To Flow (1)
31	139.95	101.82	Shut-In(1)
75	642.32	103.15	End Shut-In(1)
76	151.90	103.02	Open To Flow (2)
105	174.22	103.77	Shut-In(2)
150	613.27	104.88	End Shut-In(2)
151	2179.08	104.91	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
140.00	ocm 10%o 90% m (collars)	0.69
140.00	w com 3%w 7%o 90% m	1.60
62.00	ocm 5%o 95% m	0.87
15.00	mco 30% m 70% o	0.21
15.00	free oil	0.21

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Hartman Oil Co Inc.

16-22s-33w Finney,KS

10500 E. Berkeley Sq Pkw y
STE 100
Wichita KS 67206
ATTN: Kitt Noah

Ward #4 Twin

Job Ticket: 64440

DST#: 1

Test Start: 2018.03.18 @ 14:02:15

Tool Information

Drill Pipe:	Length: 4107.00 ft	Diameter: 3.80 inches	Volume: 57.61 bbl	Tool Weight: 1500.00 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: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 58.50 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4294.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	83.00 ft			
Tool Length:	111.00 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			4267.00	
Shut In Tool	5.00			4272.00	
Hydraulic tool	5.00			4277.00	
Jars	5.00			4282.00	
Safety Joint	3.00			4285.00	
Packer	5.00			4290.00	28.00 Bottom Of Top Packer
Packer	4.00			4294.00	
Stubb	1.00			4295.00	
Perforations	3.00			4298.00	
Change Over Sub	1.00			4299.00	
Drill Pipe	62.00			4361.00	
Change Over Sub	1.00			4362.00	
Recorder	0.00	8647	Inside	4362.00	
Recorder	0.00	8374	Outside	4362.00	
Perforations	10.00			4372.00	
Bullnose	5.00			4377.00	83.00 Bottom Packers & Anchor
Total Tool Length:	111.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Hartman Oil Co Inc.

16-22s-33w Finney,KS

10500 E. Berkeley Sq Pkw y
STE 100
Wichita KS 67206
ATTN: Kitt Noah

Ward #4 Twin

Job Ticket: 64440

DST#: 1

Test Start: 2018.03.18 @ 14:02:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.16 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
140.00	ocm 10%o 90%m (collars(0.688
140.00	w com 3%w 7%o 90%m	1.599
62.00	ocm 5%o 95%m	0.870
15.00	mco 30%m 70%o	0.210
15.00	free oil	0.210

Total Length: 372.00 ft Total Volume: 3.577 bbl

Num Fluid Samples: 0

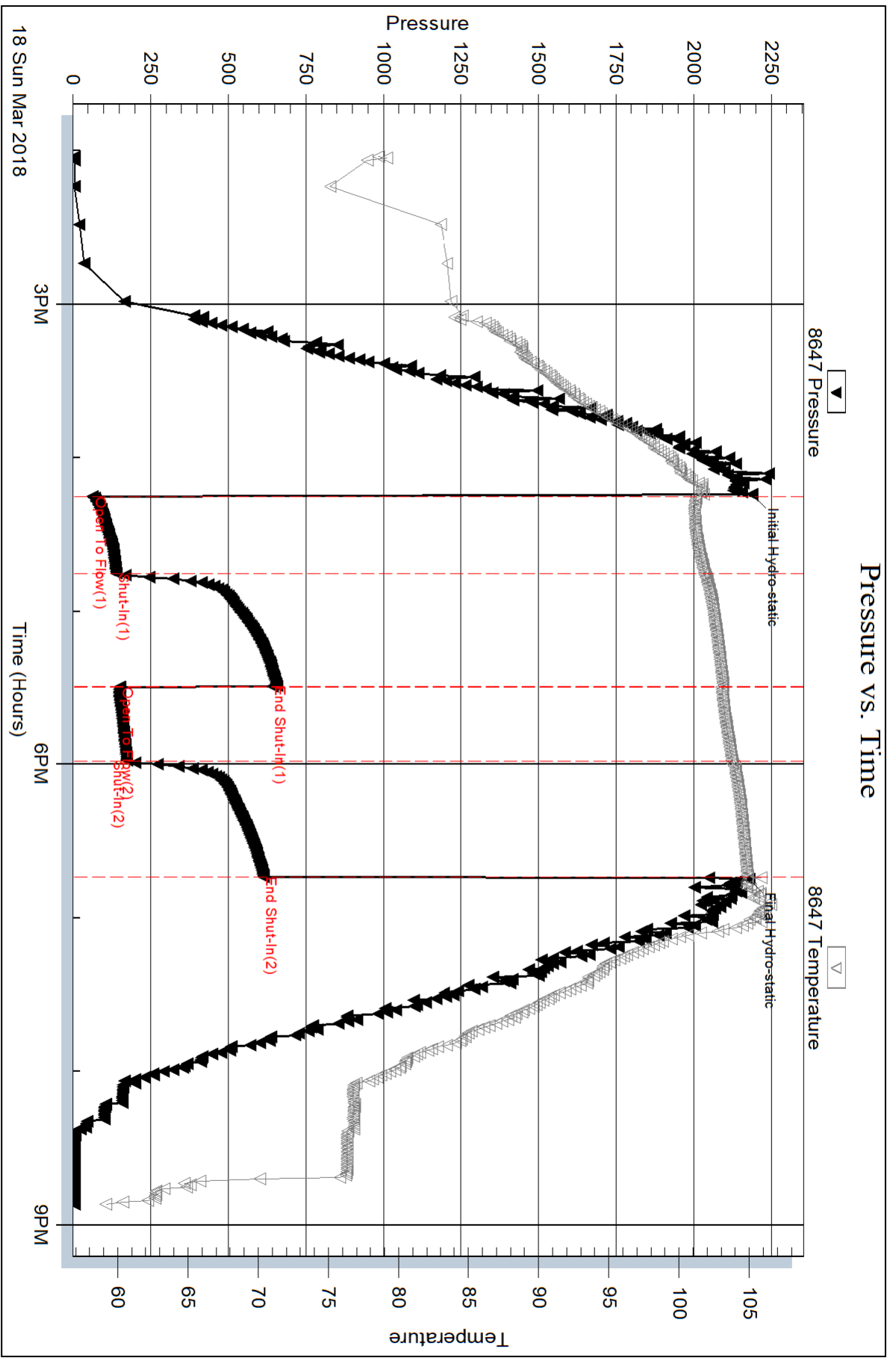
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API= 28@ 60 corrected to 28

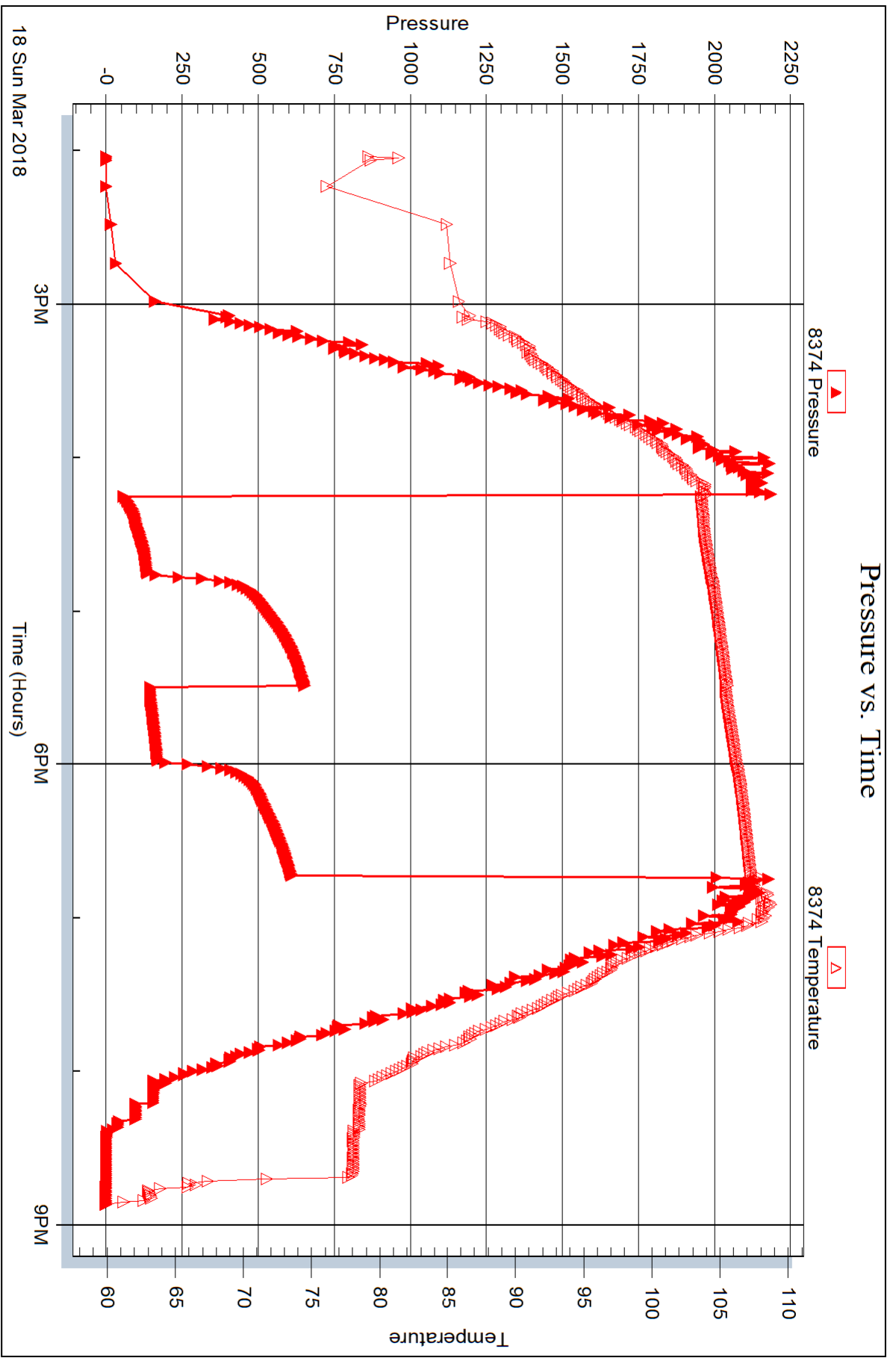


Serial #: 8374

Outside Hartman Oil Co Inc.

Ward #4 Twin

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Hartman Oil Co Inc.**

10500 E. Berkeley Sq Pkwy
STE 100
Wichita KS 67206

ATTN: Kitt Noah

Ward #4 Twin

16-22s-33w Finney,KS

Start Date: 2018.03.20 @ 12:46:15

End Date: 2018.03.20 @ 20:31:30

Job Ticket #: 64441 DST #: 2

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

Printed: 2018.03.21 @ 09:27:50



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Hartman Oil Co Inc.
 10500 E. Berkeley Sq Pkw y
 STE 100
 Wichita KS 67206
 ATTN: Kitt Noah

16-22s-33w Finney,KS

Ward #4 Twin

Job Ticket: 64441

DST#: 2

Test Start: 2018.03.20 @ 12:46:15

GENERAL INFORMATION:

Formation: **St.Louis**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 15:04:15
 Time Test Ended: 20:31:30
 Interval: **4678.00 ft (KB) To 4700.00 ft (KB) (TVD)**
 Total Depth: 4700.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 81
 Reference Elevations: 2897.00 ft (KB)
 2887.00 ft (CF)
 KB to GR/CF: 10.00 ft

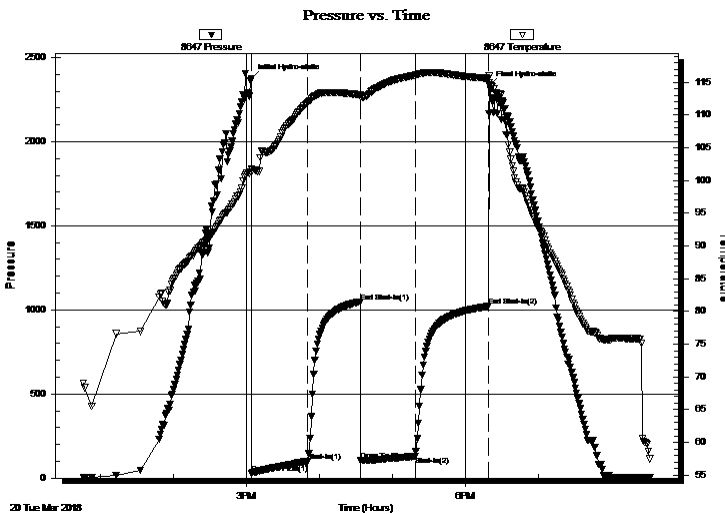
Serial #: 8647

Inside

Press@RunDepth: 129.34 psig @ 4679.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.03.20 End Date: 2018.03.20 Last Calib.: 2018.03.20
 Start Time: 12:46:15 End Time: 20:31:30 Time On Btm: 2018.03.20 @ 15:04:00
 Time Off Btm: 2018.03.20 @ 18:19:45

TEST COMMENT: IF:BOB in 26 min.
 IS:Weak surface blow
 FF:BOB in 31 min.
 FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2376.28	101.73	Initial Hydro-static
1	27.51	101.20	Open To Flow (1)
47	97.49	111.90	Shut-In(1)
90	1048.65	113.09	End Shut-In(1)
90	104.76	112.73	Open To Flow (2)
135	129.34	116.08	Shut-In(2)
195	1021.09	115.60	End Shut-In(2)
196	2331.89	114.96	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
210.00	mcw 10% m 90% w (collars)	1.31
70.00	ocmw 10% o 30% m 60% w (collars)	0.98
35.00	ocgw m 2% o 5% g 13% w 80% m	0.49
25.00	Free oil 100% o	0.35
0.00	GIP= 248 ft	0.00

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

TOOL DIAGRAM

Hartman Oil Co Inc.

16-22s-33w Finney,KS

10500 E. Berkeley Sq Pkwy
STE 100
Wichita KS 67206
ATTN: Kitt Noah

Ward #4 Twin

Job Ticket: 64441

DST#: 2

Test Start: 2018.03.20 @ 12:46:15

Tool Information

Drill Pipe:	Length: 4481.00 ft	Diameter: 3.80 inches	Volume: 62.86 bbl	Tool Weight: 1500.00 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: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 63.75 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4678.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	22.00 ft			
Tool Length:	50.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4651.00	
Shut In Tool	5.00			4656.00	
Hydraulic tool	5.00			4661.00	
Jars	5.00			4666.00	
Safety Joint	3.00			4669.00	
Packer	5.00			4674.00	28.00 Bottom Of Top Packer
Packer	4.00			4678.00	
Stubb	1.00			4679.00	
Recorder	0.00	8647	Inside	4679.00	
Recorder	0.00	8374	Outside	4679.00	
Perforations	16.00			4695.00	
Bullnose	5.00			4700.00	22.00 Bottom Packers & Anchor

Total Tool Length: 50.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Hartman Oil Co Inc.

16-22s-33w Finney,KS

10500 E. Berkeley Sq Pkw y
STE 100
Wichita KS 67206
ATTN: Kitt Noah

Ward #4 Twin

Job Ticket: 64441

DST#: 2

Test Start: 2018.03.20 @ 12:46:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

31 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

17000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2100.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
210.00	mcw 10%m 90%w (collars)	1.306
70.00	ocmw 10%o 30%m 60%w (collars)	0.982
35.00	ocgw m 2%o 5%g 13%w 80%m	0.491
25.00	Free oil 100%o	0.351
0.00	GIP= 248 ft	0.000

Total Length: 340.00 ft Total Volume: 3.130 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

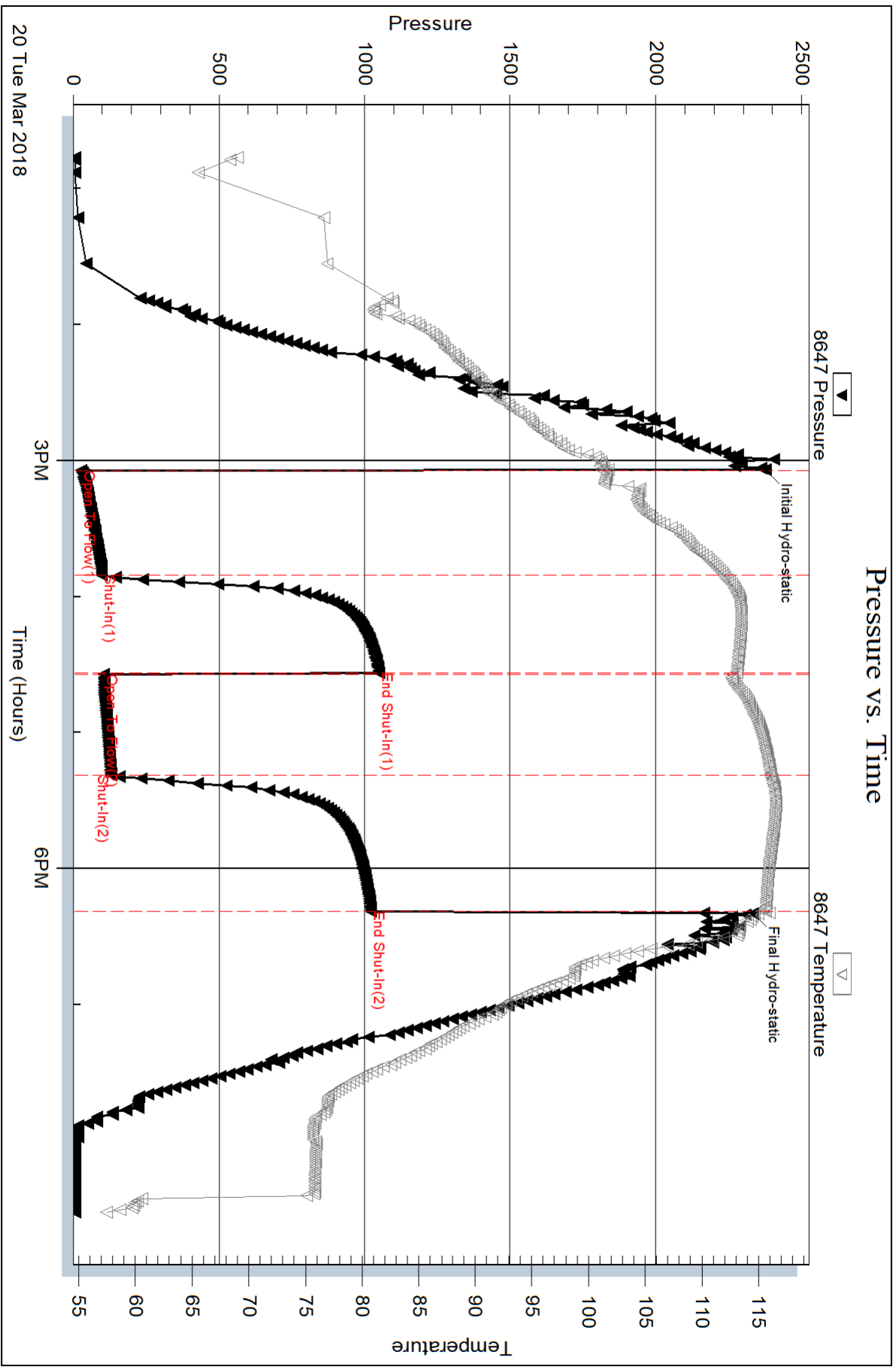
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API 31 @ 60 corrected to 31

RW= 49.8* @ .613 = 17,000 ppm

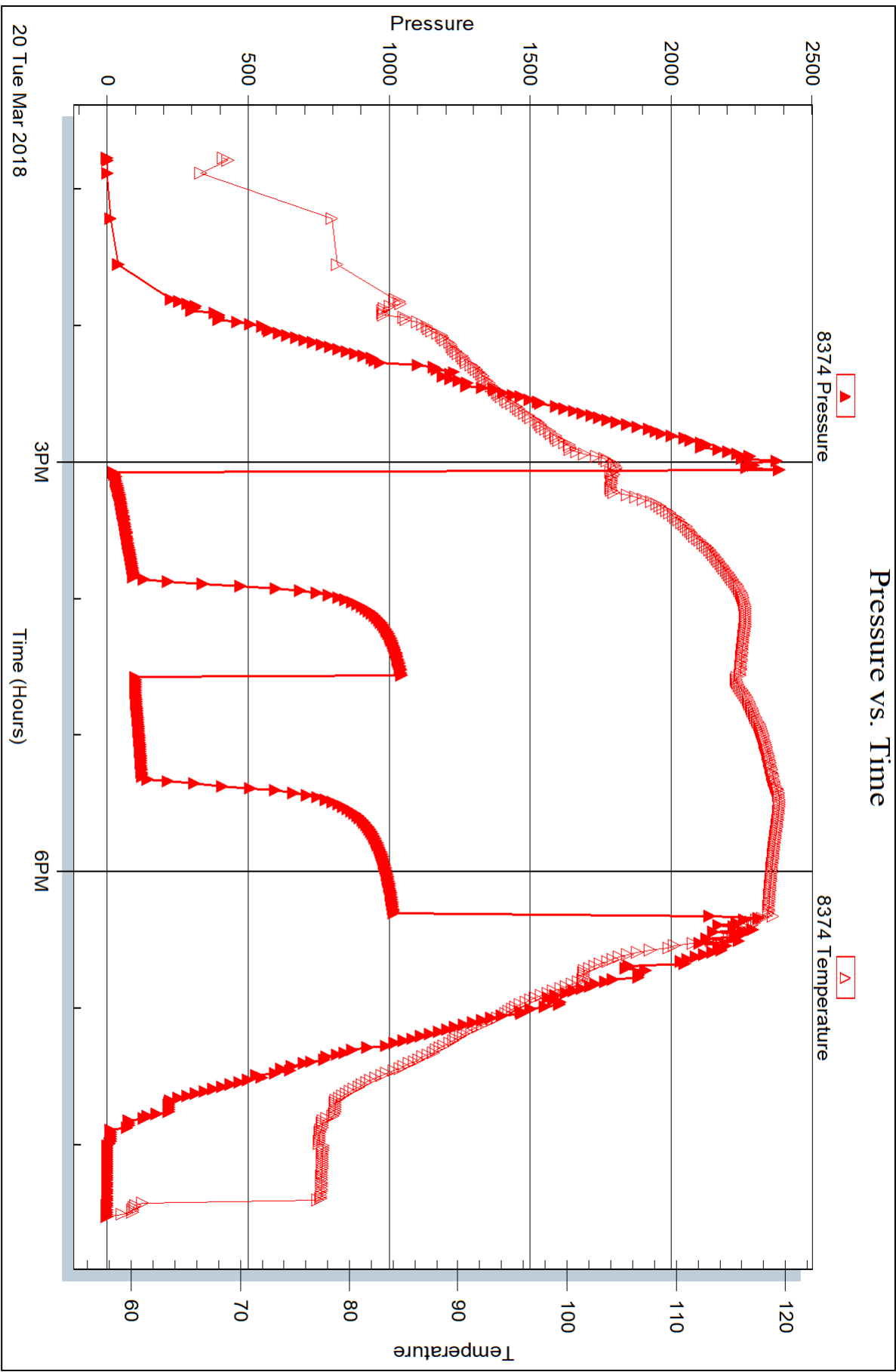


Serial #: 8374

Outside Hartman Oil Co Inc.

Ward #4 Twin

DST Test Number: 2





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **64440**

Well Name & No. Ward #4 Twin Test No. 1 Date 3-18-18
 Company Hartman Oil Co. Inc Elevation 2897 KB 2887 GL
 Address 10500 E Berkeley SQ Pkwy STE100 Wichita KS 67206
 Co. Rep / Geo. KITT NOAH Rig NW 12
 Location: Sec. 16 Twp. 22S Rge. 33W Co. Finney State KS

Interval Tested 4294-4377 Zone Tested Alt A-C
 Anchor Length 83 Drill Pipe Run ~~4107~~ 4107 Mud Wt. 9.1
 Top Packer Depth 4289 Drill Collars Run ~~180~~ 180 Vis 60
 Bottom Packer Depth 4294 Wt. Pipe Run Ø WL 7.2
 Total Depth 4377 Chlorides 2500 ppm System LCM 3
 Blow Description IF: Built to 14" (Ipro) BOB IN 15 Min
IS: No Return Blow
FF: Built to 21" (Ipro) BOB IN 15 Min
FS: ~~15~~ ~~15~~ ~~15~~ Weak Surface Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Free Oil</u>		<u>100</u>		
<u>15</u>	<u>MCO</u>	<u>70</u>		<u>30</u>	
<u>62</u>	<u>OCM</u>	<u>5</u>		<u>95</u>	
<u>140</u>	<u>WCOM</u>	<u>7</u>		<u>3</u>	<u>90</u>
<u>140</u>	<u>OCM</u>	<u>10</u>			<u>90</u>

Rec Total 372 BHT 105 Gravity 28 API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2188 Test 1150 T-On Location 11:55
 (B) First Initial Flow 64 Jars 250 T-Started 14:02
 (C) First Final Flow 139 Safety Joint 75 T-Open 16:15
 (D) Initial Shut-In 642 Circ Sub NC T-Pulled 18:45
 (E) Second Initial Flow 151 Hourly Standby _____ T-Out 20:52
 (F) Second Final Flow 174 Mileage 60 RT 60 Comments _____
 (G) Final Shut-In 613 Sampler _____
 (H) Final Hydrostatic 2179 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

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

Sub Total 1535

Approved By Kitt Noah Our Representative Mike Roberts
 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. **64441**

Well Name & No. Ward #4 Twin Test No. 2 Date 3-20-18
 Company Hartman Oil Co. Inc. Elevation 2897 KB 2887 GL
 Address 10500 E Berkeley SQ Pkwy STE 100 Wichita KS 67206
 Co. Rep / Geo. KITT NOAH Rig WW12
 Location: Sec. 16 Twp. 22S Rge. 33W Co. Finnney State KS

Interval Tested 4678-4700 Zone Tested St. Louis "B"
 Anchor Length 22 Drill Pipe Run 4481 Mud Wt. 9.1
 Top Packer Depth 4673 Drill Collars Run 180 Vis 54
 Bottom Packer Depth 4678 Wt. Pipe Run Ø WL 8.0
 Total Depth 4700 Chlorides 2100 ppm System LCM 8
 Blow Description IF: BOB 26 MIN
IS: Weak Surface Blow
FF: BOB 31 MIN
FS: Weak Surface Blow

Rec	Feet of	%gas	%oil	%water	%mud
	GIP = 248'				
25	Feet of Free Oil		100		
85	Feet of OCGWM	5	2	13	80
70	Feet of OCMW (Collars)	10		60	30
210	Feet of MCW (Collars)			90	10
Rec Total	340	BHT 115	Gravity 31	API RW 1613 @ 49.8° F	Chlorides 17000 ppm

(A) Initial Hydrostatic 2376
 (B) First Initial Flow 27
 (C) First Final Flow 97
 (D) Initial Shut-In 1048
 (E) Second Initial Flow 104
 (F) Second Final Flow 129
 (G) Final Shut-In 1021
 (H) Final Hydrostatic 2331

Test 1150
 Jars 250
 Safety Joint 75
 Circ Sub NC
 Hourly Standby
 Mileage 60 RT 60
 Sampler
 Straddle
 Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby 1.5d 3.5h
 Accessibility
 Sub Total 1535

T-On Location 12:15
 T-Started 12:46
 T-Open 14:45
 T-Pulled 18:00
 T-Out 20:31
 Comments
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 116.67
 Total 1535+116.67
 MP/DST Disc't

Initial Open 30 45
 Initial Shut-In 45
 Final Flow 45
 Final Shut-In 60

Approved By [Signature] Our Representative [Signature]

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