



DRILL STEM TEST REPORT

Prepared For: **Larson Engineering , Inc**

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

19-18s-28w Lane,KS

Industrial Park #1-19

Start Date: 2015.12.04 @ 16:40:32

End Date: 2015.12.04 @ 22:05:32

Job Ticket #: 48268 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2015.12.07 @ 10:42:53



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering, Inc

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Industrial Park #1-19

19-18s-28w Lane, KS

Job Ticket: 48268

DST#: 1

Test Start: 2015.12.04 @ 16:40:32

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:50:47

Time Test Ended: 22:05:32

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 84

Interval: 4341.00 ft (KB) To 4455.00 ft (KB) (TVD)

Reference Elevations: 2770.00 ft (KB)

Total Depth: 4455.00 ft (KB) (TVD)

2761.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

Serial #: 9120 Outside

Press@RunDepth: 26.68 psig @ 4342.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.12.04

End Date:

2015.12.04

Last Calib.:

2015.12.04

Start Time: 16:40:32

End Time:

21:54:32

Time On Btm:

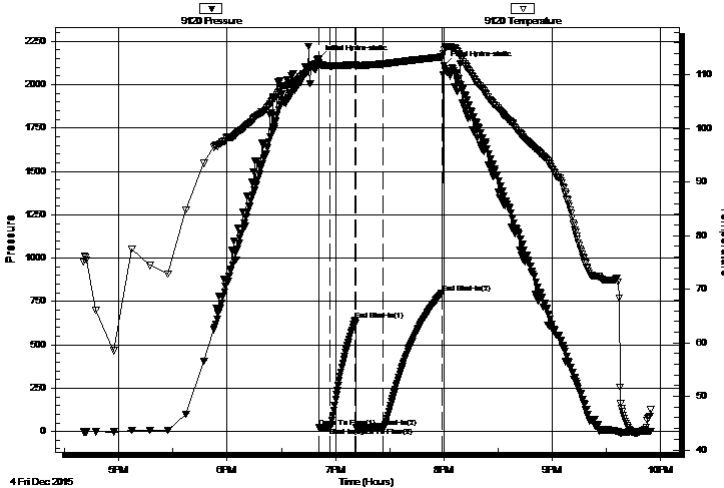
2015.12.04 @ 18:50:32

Time Off Btm:

2015.12.04 @ 20:00:02

TEST COMMENT: 1/2" blow
No return
Surface blow in 4 min.
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2147.97	112.25	Initial Hydro-static
1	21.22	111.57	Open To Flow (1)
7	22.03	111.70	Shut-In(1)
21	641.80	111.91	End Shut-In(1)
21	23.59	111.68	Open To Flow (2)
36	26.68	112.08	Shut-In(2)
69	796.56	113.36	End Shut-In(2)
70	2108.59	114.79	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.02

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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DRILL STEM TEST REPORT

Larson Engineering, Inc

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Industrial Park #1-19

19-18s-28w Lane, KS

Job Ticket: 48268

DST#: 1

Test Start: 2015.12.04 @ 16:40:32

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:50:47

Time Test Ended: 22:05:32

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

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Interval: 4341.00 ft (KB) To 4455.00 ft (KB) (TVD)

Reference Elevations: 2770.00 ft (KB)

Total Depth: 4455.00 ft (KB) (TVD)

2761.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

Serial #: 8938 Inside

Press@RunDepth: psig @ 4342.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.12.04

End Date:

2015.12.04

Last Calib.:

2015.12.04

Start Time: 16:41:03

End Time:

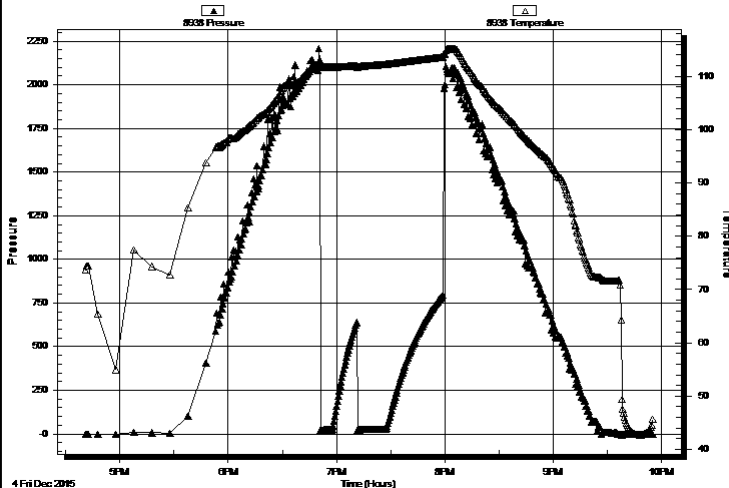
21:55:03

Time On Btm:

Time Off Btm:

TEST COMMENT: 1/2" blow
No return
Surface blow in 4 min.
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% m	0.02

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering , Inc

Industrial Park #1-19

562 W. State Rd 4
Olmitz, KS 67564

19-18s-28w Lane,KS

Job Ticket: 48268

DST#: 1

ATTN: Vern Schrag

Test Start: 2015.12.04 @ 16:40:32

Tool Information

Drill Pipe:	Length:	4203.00 ft	Diameter:	3.80 inches	Volume:	58.96 bbl	Tool Weight:	2500.00 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:	124.00 ft	Diameter:	2.25 inches	Volume:	0.61 bbl	Weight to Pull Loose:	70000.00 lb
					Total Volume:	59.57 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		14.00 ft					String Weight: Initial	52000.00 lb
Depth to Top Packer:		4341.00 ft					Final	52000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		114.00 ft						
Tool Length:		142.00 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		4314.00	
Shut In Tool	5.00		4319.00	
Hydraulic tool	5.00		4324.00	
Jars	5.00		4329.00	
Safety Joint	3.00		4332.00	
Packer	5.00		4337.00	28.00 Bottom Of Top Packer
Packer	4.00		4341.00	
Stubb	1.00		4342.00	
Recorder	0.00	9120 Outside	4342.00	
Recorder	0.00	8938 Inside	4342.00	
Perforations	12.00		4354.00	
Change Over Sub	1.00		4355.00	
Drill Pipe	94.00		4449.00	
Change Over Sub	1.00		4450.00	
Bullnose	5.00		4455.00	114.00 Bottom Packers & Anchor

Total Tool Length: 142.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering , Inc

Industrial Park #1-19

562 W. State Rd 4
Olmitz, KS 67564

19-18s-28w Lane,KS

Job Ticket: 48268

DST#: 1

ATTN: Vern Schrag

Test Start: 2015.12.04 @ 16:40:32

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: 51.00 sec/qt

Cushion Volume:

bbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	mud 100%m	0.025

Total Length: 5.00 ft

Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

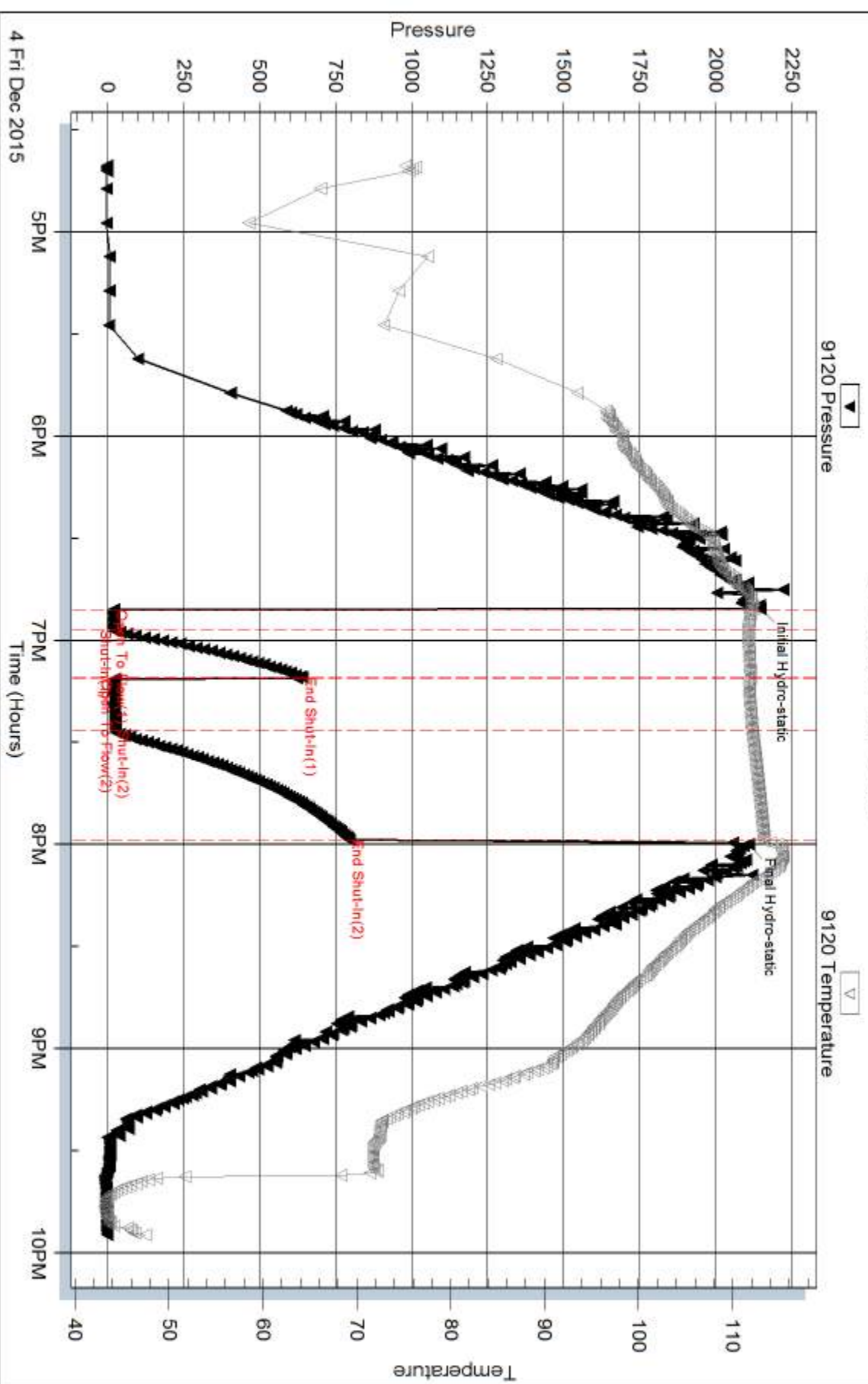
Serial #: 9120

Outside Larson Engineering, Inc

19-18s-28w Lane, KS

DST Test Number: 1

Pressure vs. Time



Serial #: 8938

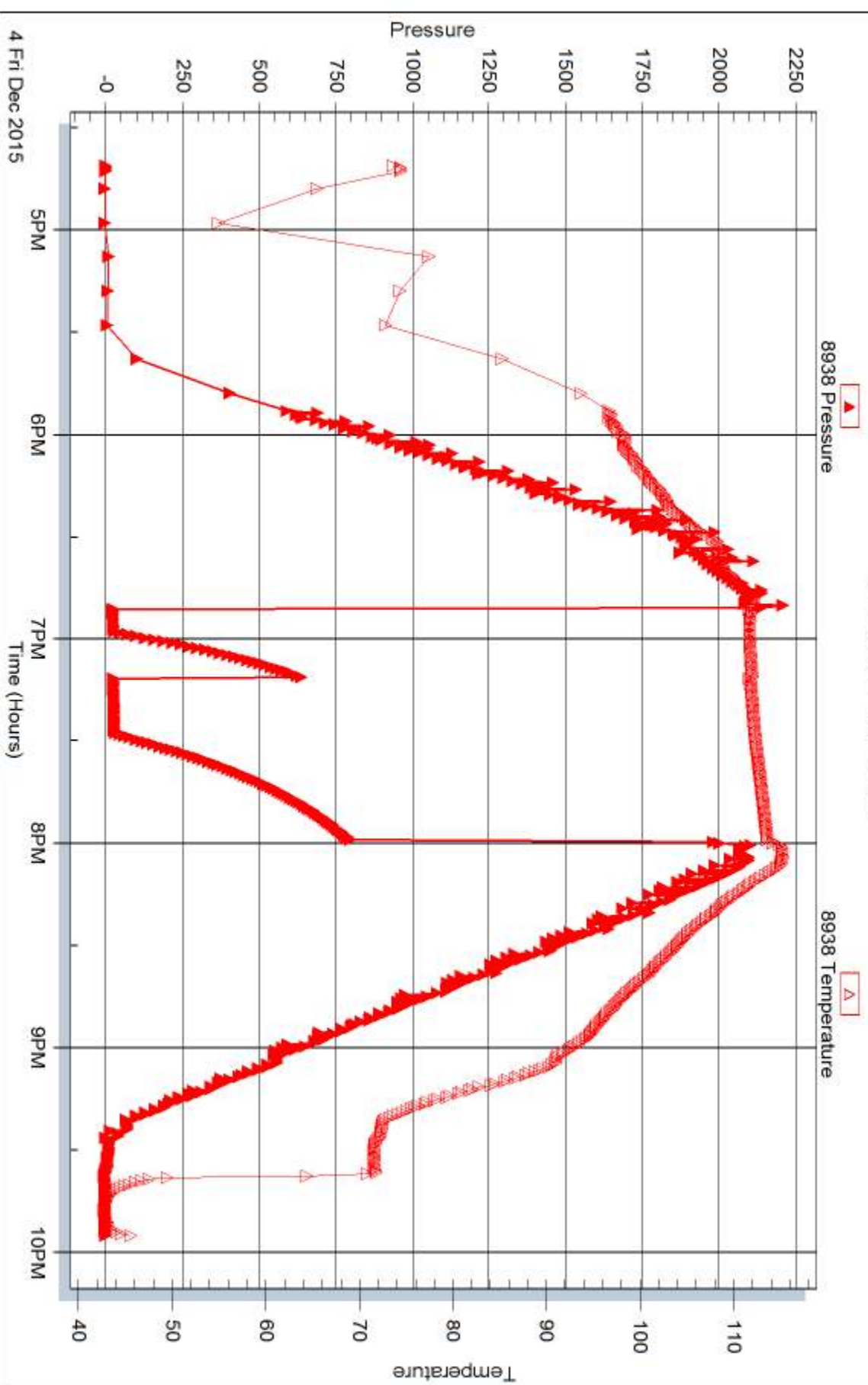
Inside

Larson Engineering, Inc

19-18s-28w Lane, KS

DST Test Number: 1

Pressure vs. Time





DRILL STEM TEST REPORT

Prepared For: **Larson Engineering , Inc**

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

19-18s-28w Lane,KS

Industrial Park #1-19

Start Date: 2015.12.05 @ 16:46:06

End Date: 2015.12.05 @ 22:10:21

Job Ticket #: 48269 DST #: 2

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2015.12.07 @ 10:44:25



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering, Inc

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Industrial Park #1-19

19-18s-28w Lane, KS

Job Ticket: 48269

DST#: 2

Test Start: 2015.12.05 @ 16:46:06

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:55:06

Time Test Ended: 22:10:21

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4482.00 ft (KB) To 4596.00 ft (KB) (TVD)

Reference Elevations: 2770.00 ft (KB)

Total Depth: 4596.00 ft (KB) (TVD)

2761.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

Serial #: 9120 Outside

Press@RunDepth: 22.78 psig @ 4483.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.12.05

End Date:

2015.12.05

Last Calib.: 2015.12.05

Start Time: 16:46:06

End Time:

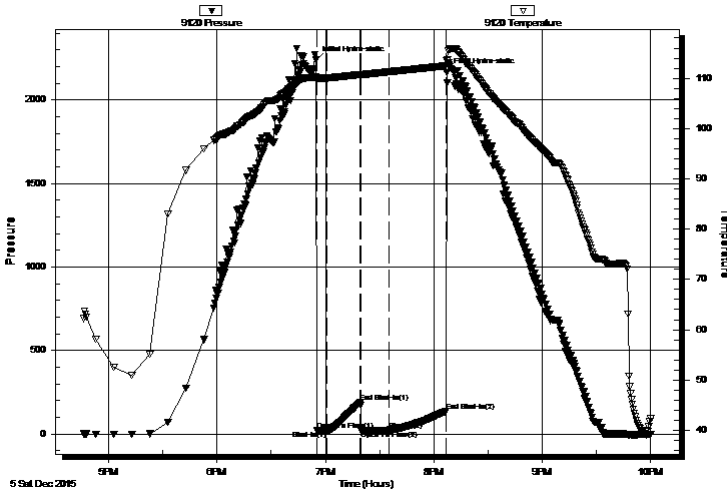
22:00:21

Time On Btm: 2015.12.05 @ 18:54:36

Time Off Btm: 2015.12.05 @ 20:07:06

TEST COMMENT: 1/4" blow
No return
No blow
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2237.93	110.27	Initial Hydro-static
1	21.51	109.65	Open To Flow (1)
7	21.54	110.03	Shut-In(1)
25	189.34	110.74	End Shut-In(1)
26	22.33	110.70	Open To Flow (2)
41	22.78	111.29	Shut-In(2)
72	135.49	112.47	End Shut-In(2)
73	2163.04	113.42	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	mud 100% m	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering, Inc

562 W. State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Industrial Park #1-19

19-18s-28w Lane, KS

Job Ticket: 48269

DST#: 2

Test Start: 2015.12.05 @ 16:46:06

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:55:06

Time Test Ended: 22:10:21

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 84

Interval: 4482.00 ft (KB) To 4596.00 ft (KB) (TVD)

Total Depth: 4596.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2770.00 ft (KB)

2761.00 ft (CF)

KB to GR/CF: 9.00 ft

Serial #: 8938 Inside

Press@RunDepth: psig @ 4483.00 ft (KB)

Start Date: 2015.12.05

End Date:

2015.12.05

Start Time: 16:45:58

End Time:

22:00:13

Capacity: 8000.00 psig

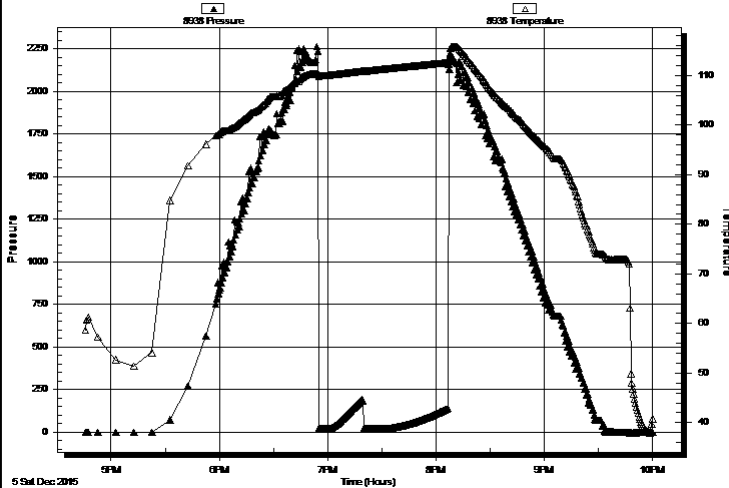
Last Calib.: 2015.12.05

Time On Btm:

Time Off Btm:

TEST COMMENT: 1/4" blow
No return
No blow
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
1.00	mud 100% m	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering , Inc

Industrial Park #1-19

562 W. State Rd 4
Olmitz, KS 67564

19-18s-28w Lane,KS

Job Ticket: 48269

DST#: 2

ATTN: Vern Schrag

Test Start: 2015.12.05 @ 16:46:06

Tool Information

Drill Pipe:	Length:	4357.00 ft	Diameter:	3.80 inches	Volume:	61.12 bbl	Tool Weight:	2500.00 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:	124.00 ft	Diameter:	2.25 inches	Volume:	0.61 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	61.73 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		27.00 ft					String Weight: Initial	54000.00 lb
Depth to Top Packer:		4482.00 ft					Final	54000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		114.00 ft						
Tool Length:		142.00 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			4455.00	
Shut In Tool	5.00			4460.00	
Hydraulic tool	5.00			4465.00	
Jars	5.00			4470.00	
Safety Joint	3.00			4473.00	
Packer	5.00			4478.00	28.00 Bottom Of Top Packer
Packer	4.00			4482.00	
Stubb	1.00			4483.00	
Recorder	0.00	9120	Outside	4483.00	
Recorder	0.00	8938	Inside	4483.00	
Perforations	12.00			4495.00	
Change Over Sub	1.00			4496.00	
Drill Pipe	94.00			4590.00	
Change Over Sub	1.00			4591.00	
Bullnose	5.00			4596.00	114.00 Bottom Packers & Anchor

Total Tool Length: 142.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering , Inc

Industrial Park #1-19

562 W. State Rd 4
Olmitz, KS 67564

19-18s-28w Lane,KS

Job Ticket: 48269

DST#: 2

ATTN: Vern Schrag

Test Start: 2015.12.05 @ 16:46:06

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: 62.00 sec/qt

Cushion Volume:

bbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3400.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	mud 100%m	0.005

Total Length: 1.00 ft

Total Volume: 0.005 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

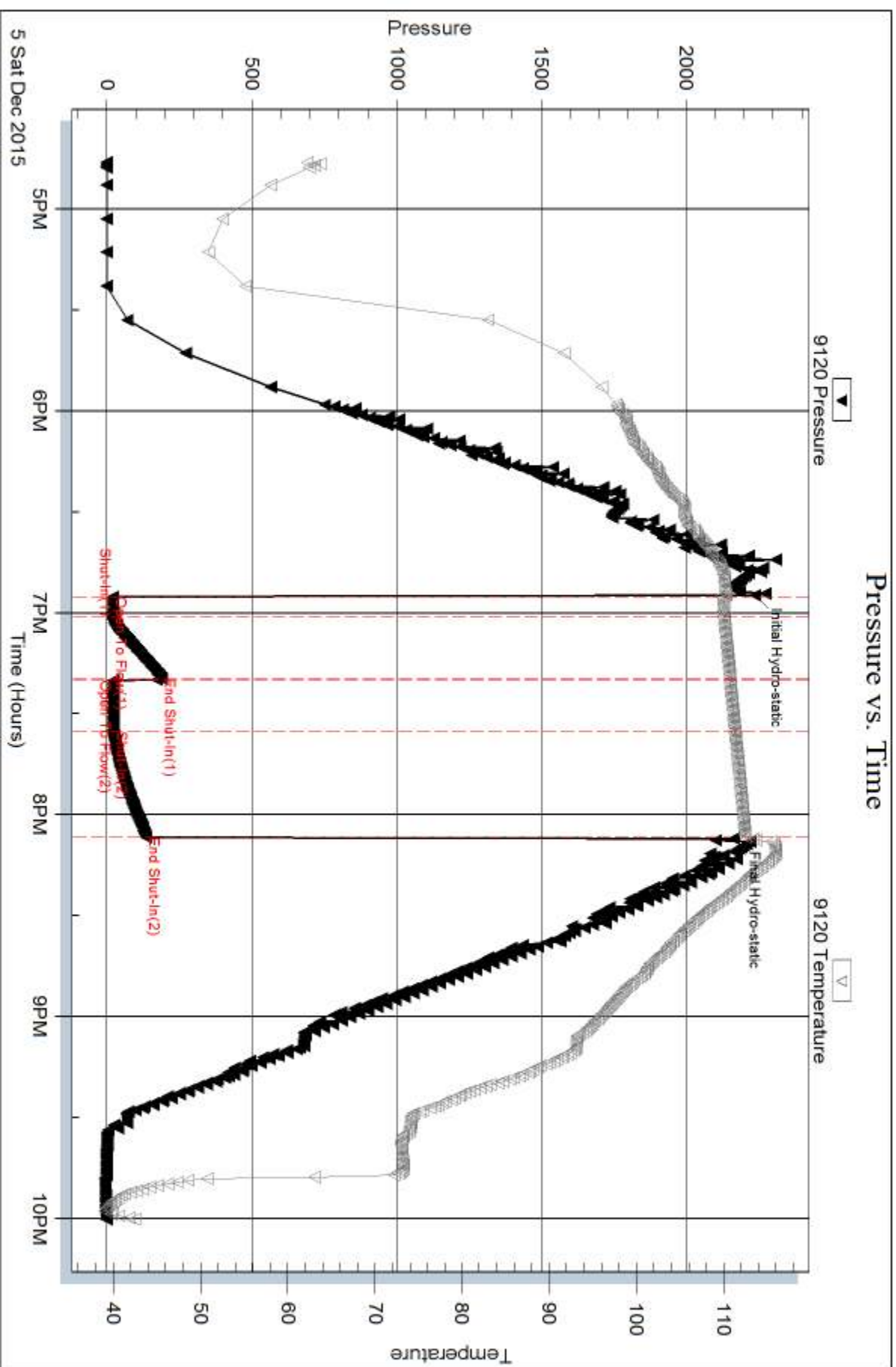
Recovery Comments:

Serial #: 9120

Outside Larson Engineering, Inc

19-18s-28w Lane, KS

DST Test Number: 2



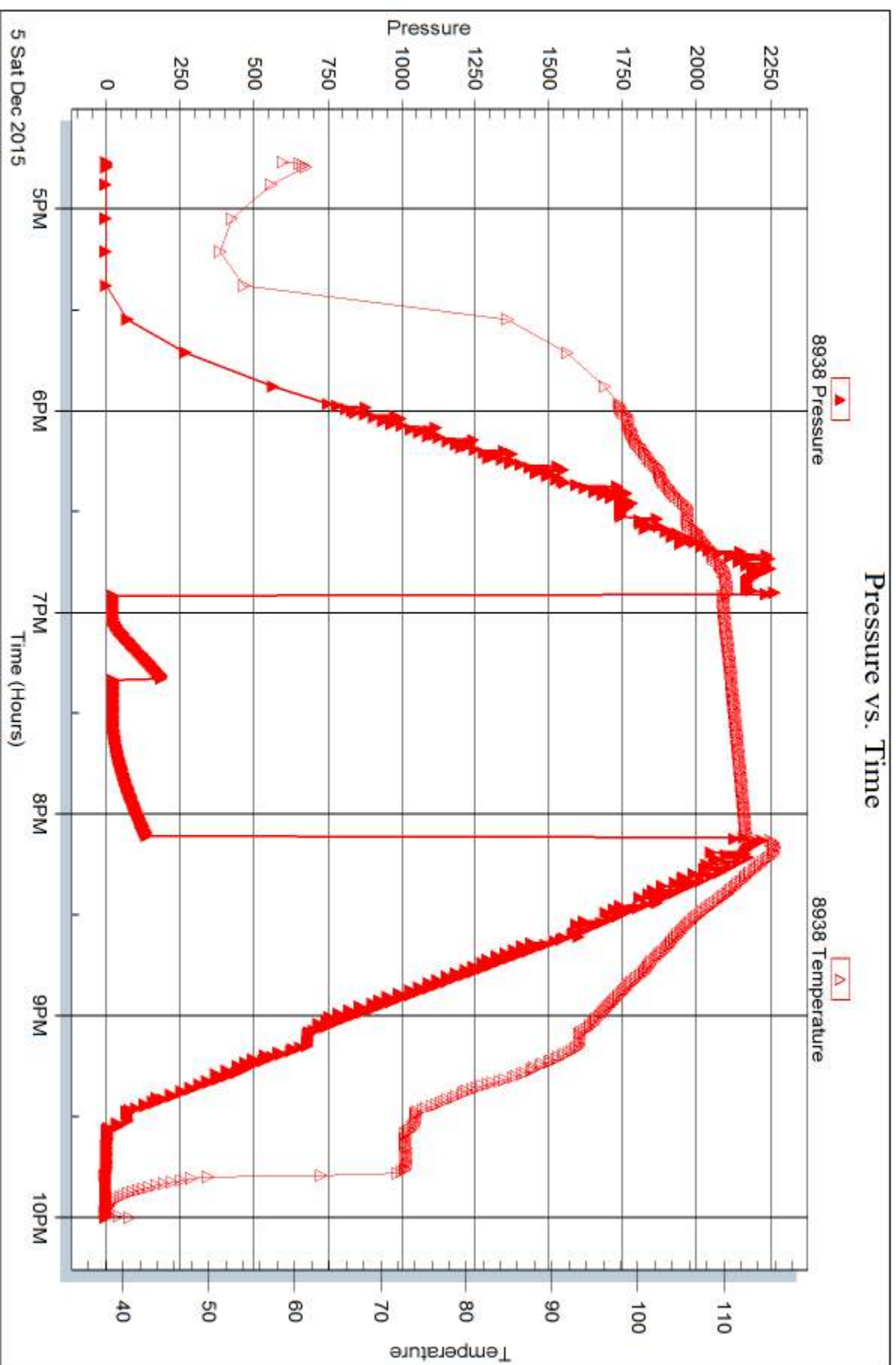
Serial #: 8938

Inside

Larson Engineering, Inc

19-18s-28w Lane, KS

DST Test Number: 2





TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

Test Ticket

NO. 48268

Well Name & No. Industrial Park #1-19 Test No. #1 Date 12/4/15
 Company Larson Engineering Inc. Elevation 2776 KB 2761 GL
 Address 562 W. State Rd 4 Okemite, KS
 Co. Rep / Geo. Vern Schrag Rig H.D. #3
 Location: Sec. 19 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4341 4455 Zone Tested Wormaton
 Anchor Length 114 Drill Pipe Run 4203 Mud Wt. 9.1
 Top Packer Depth 4336 Drill Collars Run 124' Vis 51
 Bottom Packer Depth 4341 Wt. Pipe Run WL 6.8
 Total Depth 4455 Chlorides 2600 ppm System LCM #3

Blow Description 1/2" in blow
No return
Surface blow on 4 man
No return

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

Rec Total 5' BHT 115° Gravity API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2147
 (B) First Initial Flow 21
 (C) First Final Flow 22
 (D) Initial Shut-In 641
 (E) Second Initial Flow 23
 (F) Second Final Flow 26
 (G) Final Shut-In 796
 (H) Final Hydrostatic 2108

☒ Test 1150
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub N/C
☐ Hourly Standby
☒ Mileage 49 RT
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1524

T-On Location 15:30
 T-Started 16:40
 T-Open 18:51
 T-Pulled 19:56
 T-Out 22:05

Comments

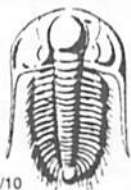
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1524

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

Approved By Vern Schrag

Our Representative

Triobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRIBOLITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

Test Ticket

NO. 48269

Well Name & No. Industrial Park # 1-19 Test No. #2 Date 12/5/15
 Company Hurston Engineering Inc Elevation 2770 KB 2761 GL
 Address 562 W. State Rd 48 Olathe, KS
 Co. Rep / Geo. Vern Schrey Rig H.D. #3
 Location: Sec. 19 Twp. 18.5 Rge. 28W Co. lane State KS

Interval Tested 3482 4596 Zone Tested Cherokee
 Anchor Length 114 Drill Pipe Run 4357 Mud Wt. 9.2
 Top Packer Depth 4477 Drill Collars Run 124 Vis 6.2
 Bottom Packer Depth 4482 Wt. Pipe Run --- WL 6.4
 Total Depth 4596 Chlorides 3400 ppm System LCM #2

Blow Description 1/4" w. blow
No return
No blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>1'</u>	<u>Mud</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 115° Gravity --- API RW --- @ --- °F Chlorides --- ppm

(A) Initial Hydrostatic 2237
 (B) First Initial Flow 21
 (C) First Final Flow 21
 (D) Initial Shut-In 189
 (E) Second Initial Flow 22
 (F) Second Final Flow 22
 (G) Final Shut-In 135
 (H) Final Hydrostatic 2163

☒ Test 1150
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub N/C
☐ Hourly Standby ---
☒ Mileage 49.15
☐ Sampler ---
☐ Straddle ---
☐ Shale Packer ---
☐ Extra Packer ---
☐ Extra Recorder ---
☐ Day Standby ---
☐ Accessibility ---
 Sub Total 1524

T-On Location 16:30
 T-Started 16:43
 T-Open 18:55
 T-Pulled 20:00
 T-Out 22:10

Comments ---
☐ Ruined Shale Packer ---
☐ Ruined Packer ---
☐ Extra Copies ---
 Sub Total 0
 Total 1524

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

Approved By

Our Representative

Tribolite 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.