



DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co**

PO Box 1019
Hays KS 67601

ATTN: Alan Downing

Norma Jean #1-22

22-1s-33w Rawlins,KS

Start Date: 2014.08.03 @ 15:28:15

End Date: 2014.08.03 @ 21:19:00

Job Ticket #: 59108 DST #: 1

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

Printed: 2014.08.06 @ 15:50:56



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59108

DST#: 1

ATTN: Alan Dow ning

Test Start: 2014.08.03 @ 15:28:15

GENERAL INFORMATION:

Formation: **LKC "E"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:26:00

Time Test Ended: 21:19:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 65

Interval: 4123.00 ft (KB) To 4170.00 ft (KB) (TVD)

Reference Elevations: 3000.00 ft (KB)

Total Depth: 4123.00 ft (KB) (TVD)

2995.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8846 Inside

Press@RunDepth: 33.02 psig @ 4125.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.03

End Date: 2014.08.03

Last Calib.: 2014.08.03

Start Time: 15:28:15

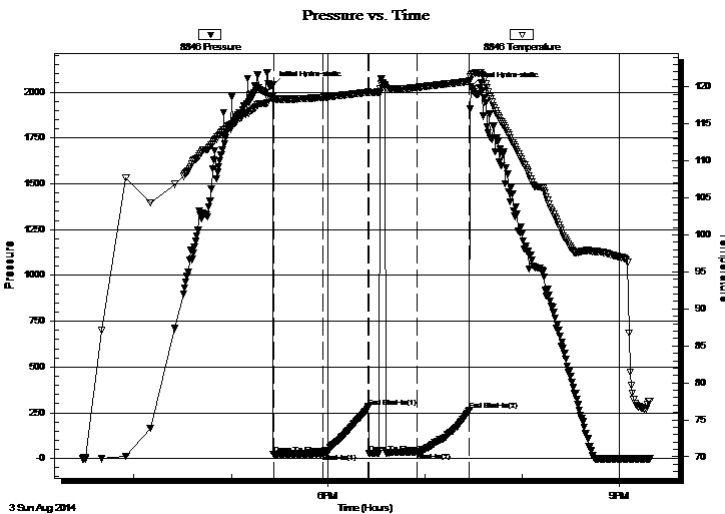
End Time: 21:19:00

Time On Btm: 2014.08.03 @ 17:25:45

Time Off Btm: 2014.08.03 @ 19:28:15

TEST COMMENT: IF:Weak surface blow
IS:No return blow
FF:No blow ---flushed tool---w eak surface blow died in 10 min
FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2037.52	118.68	Initial Hydro-static
1	22.73	118.24	Open To Flow (1)
31	28.12	118.57	Shut-In(1)
59	282.71	119.27	End Shut-In(1)
60	29.26	119.19	Open To Flow (2)
90	33.02	119.92	Shut-In(2)
122	264.84	120.75	End Shut-In(2)
123	2032.19	121.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud w ith oil spots	0.02

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59108 **DST#: 1**

ATTN: Alan Dow ning

Test Start: 2014.08.03 @ 15:28:15

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Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:26:00

Time Test Ended: 21:19:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Mike Roberts

Unit No: 65

Interval: 4123.00 ft (KB) To 4170.00 ft (KB) (TVD)

Reference Elevations: 3000.00 ft (KB)

Total Depth: 4123.00 ft (KB) (TVD)

2995.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 4125.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.03 End Date: 2014.08.03

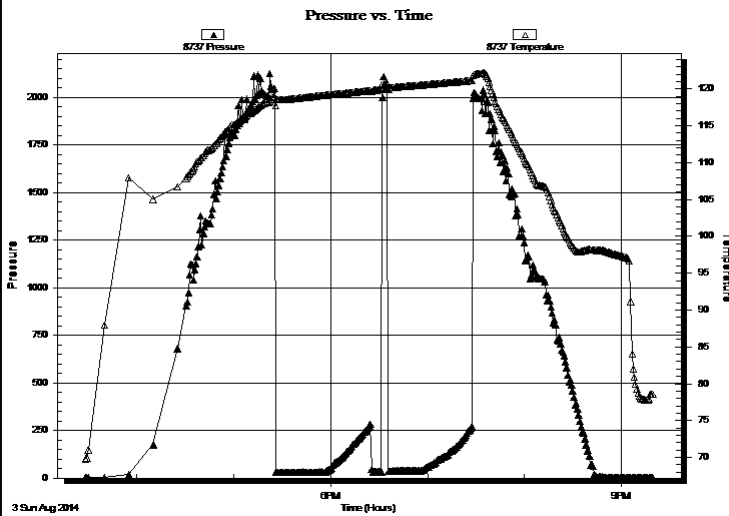
Last Calib.: 2014.08.03

Start Time: 15:28:15 End Time: 21:19:15

Time On Btm:

Time Off Btm:

TEST COMMENT: IF:Weak surface blow
IS:No return blow
FF:No blow ---flushed tool----w eak surface blow died in 10 min
FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud w ith oil spots	0.02

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59108

DST#: 1

ATTN: Alan Dow ning

Test Start: 2014.08.03 @ 15:28:15

Tool Information

Drill Pipe:	Length: 4077.00 ft	Diameter: 3.80 inches	Volume: 57.19 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: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 57.34 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4123.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.00 ft			
Tool Length:	75.00 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			4096.00	
Shut In Tool	5.00			4101.00	
Hydraulic tool	5.00			4106.00	
Jars	5.00			4111.00	
Safety Joint	3.00			4114.00	
Packer	5.00			4119.00	28.00 Bottom Of Top Packer
Packer	4.00			4123.00	
Stubb	1.00			4124.00	
Perforations	1.00			4125.00	
Recorder	0.00	8846	Inside	4125.00	
Recorder	0.00	8737	Outside	4125.00	
Change Over Sub	1.00			4126.00	
Blank Spacing	31.00			4157.00	
Change Over Sub	1.00			4158.00	
Perforations	7.00			4165.00	
Bullnose	5.00			4170.00	47.00 Bottom Packers & Anchor
Total Tool Length:	75.00				



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59108

DST#: 1

ATTN: Alan Dow ning

Test Start: 2014.08.03 @ 15:28:15

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: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.35 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
5.00	mud w ith oil spots	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 #: 8846

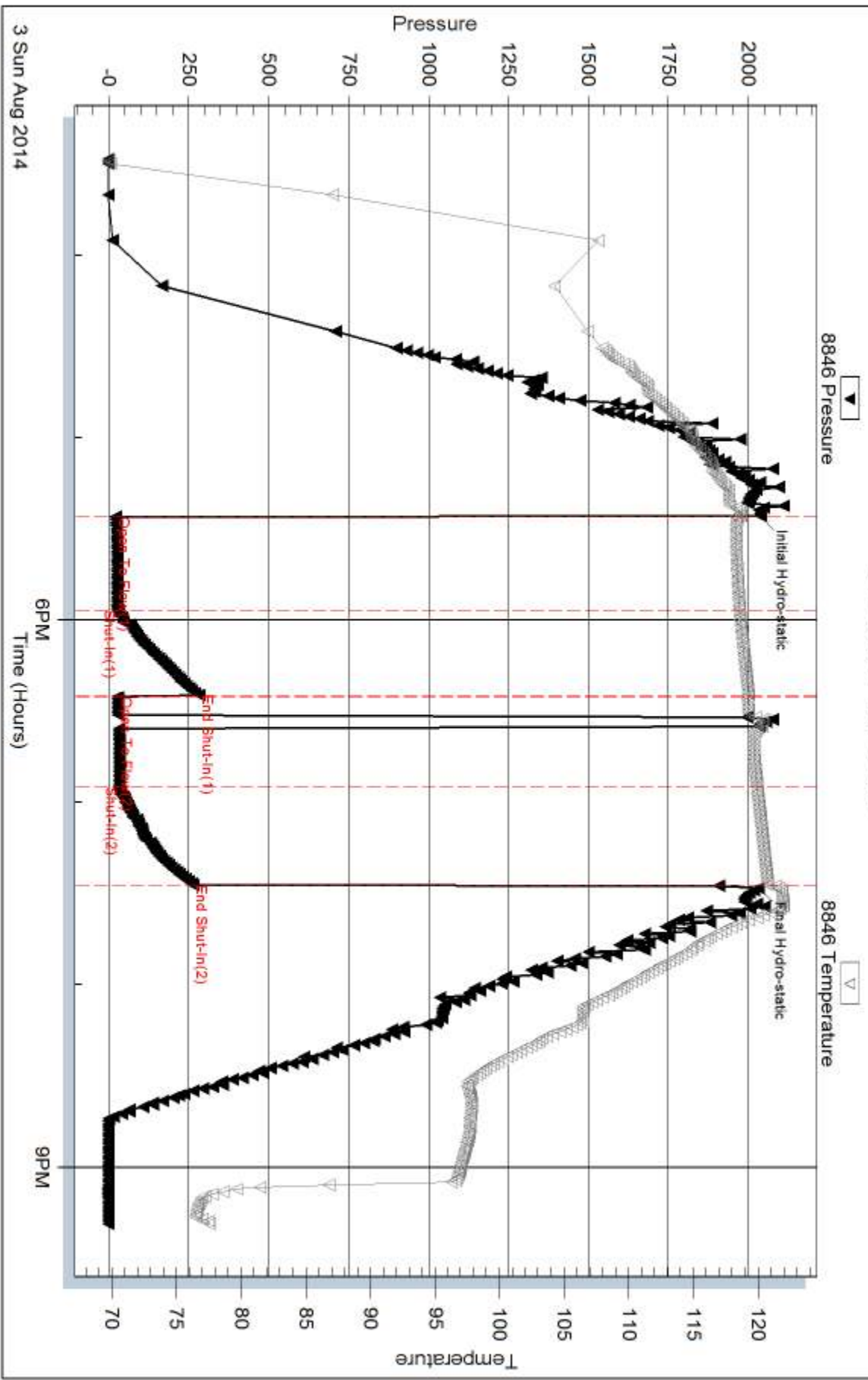
Inside

Dow nifg-Nelson Oil Co

Norma Jean #1-22

DST Test Number: 1

Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 59108

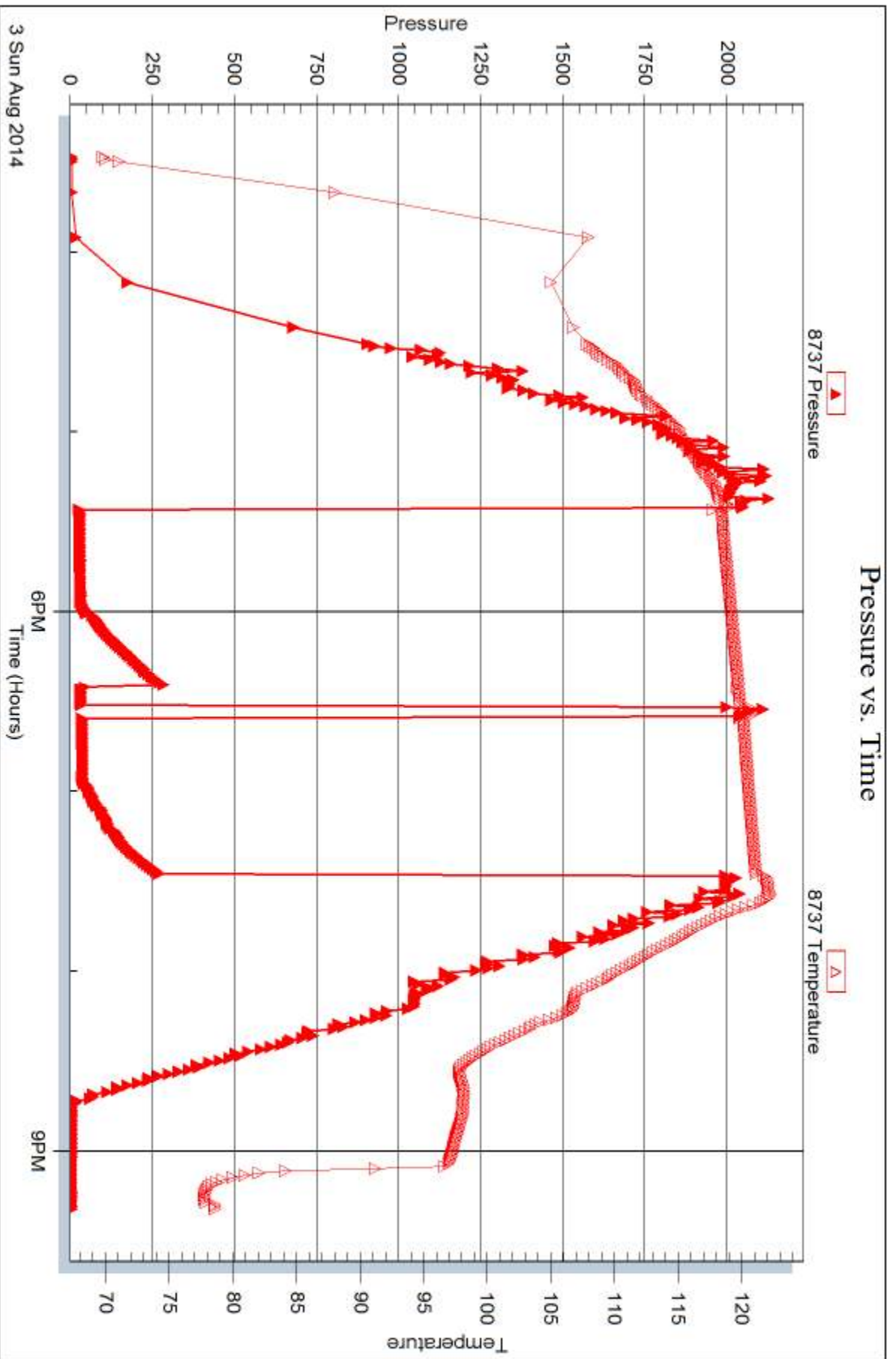
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Serial #: 8737

Outside Dow n/ing-Nelson Oil Co

Norma Jean #1-22

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 59108

Printed: 2014.08.06 @ 15:50:57



DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co**

PO Box 1019
Hays KS 67601

ATTN: Alan Downing

Norma Jean #1-22

22-1s-33w Rawlins,KS

Start Date: 2014.08.04 @ 17:11:15

End Date: 2014.08.05 @ 00:03:45

Job Ticket #: 59109 DST #: 2

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

Printed: 2014.08.06 @ 15:50:01



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59109

DST#: 2

ATTN: Alan Dow ning

Test Start: 2014.08.04 @ 17:11:15

GENERAL INFORMATION:

Formation: **D**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 19:05:00
 Tester: Mike Roberts
 Time Test Ended: 00:03:45
 Unit No: 65
 Interval: **3976.00 ft (KB) To 4072.00 ft (KB) (TVD)**
 Reference Elevations: 3000.00 ft (KB)
 Total Depth: 4280.00 ft (KB) (TVD)
 2995.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Fair
 KB to GR/CF: 5.00 ft

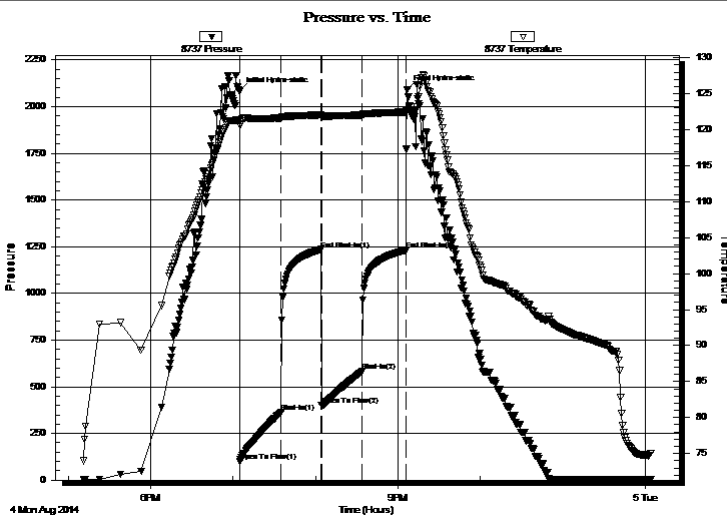
Serial #: 8737

Outside

Press@RunDepth: 581.62 psig @ 3985.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.08.04 End Date: 2014.08.05 Last Calib.: 2014.08.05
 Start Time: 17:11:15 End Time: 00:03:45 Time On Btm: 2014.08.04 @ 19:04:45
 Time Off Btm: 2014.08.04 @ 21:06:45

TEST COMMENT: IF:BOB in 4 min.
 IS:No return blow
 FF:BOB in 4 min.
 FS:No return blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2082.97	121.38	Initial Hydro-static
1	102.69	120.63	Open To Flow (1)
31	365.36	121.60	Shut-In(1)
60	1232.38	122.06	End Shut-In(1)
60	400.14	121.73	Open To Flow (2)
89	581.62	122.05	Shut-In(2)
121	1231.01	122.46	End Shut-In(2)
122	2090.77	122.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
414.00	w cgom 2%w 3%o 5%g 90%m	5.53
192.00	gcow m 5%g 5%o 30%w 60%m	2.69
192.00	gcomw 2%g 8%o 30%m 60%w	2.69
192.00	gcomw 2%g 3%o 10%m 85%w	2.69
128.00	ocmw 5%o 20%m 75%w	1.80

* Recovery from multiple tests

Gas Rates

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



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DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59109

DST#: 2

ATTN: Alan Dow ning

Test Start: 2014.08.04 @ 17:11:15

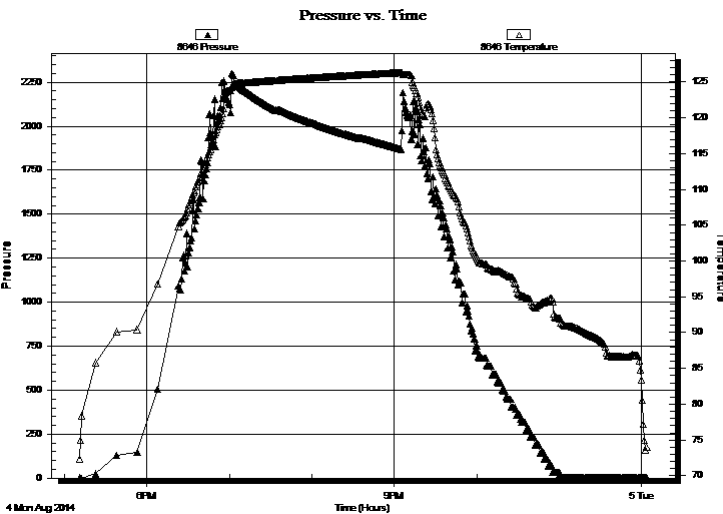
GENERAL INFORMATION:

Formation: **D**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:05:00
 Time Test Ended: 00:03:45
 Interval: **3976.00 ft (KB) To 4072.00 ft (KB) (TVD)**
 Total Depth: 4280.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Mike Roberts
 Unit No: 65
 Reference Elevations: 3000.00 ft (KB)
 2995.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8646 Below (Straddle)

Press@RunDepth: psig @ 4083.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.08.04 End Date: 2014.08.05 Last Calib.: 2014.08.05
 Start Time: 17:11:15 End Time: 00:03:30 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF:BOB in 4 min.
 IS:No return blow
 FF:BOB in 4 min.
 FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
414.00	w cgom 2%w 3%o 5%g 90%m	5.53
192.00	gcow m 5%g 5%o 30%w 60%m	2.69
192.00	gcomw 2%g 8%o 30%m 60%w	2.69
192.00	gcomw 2%g 3%o 10%m 85%w	2.69
128.00	ocmw 5%o 20%m 75%w	1.80

* Recovery from multiple tests

Gas Rates

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



DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co
 PO Box 1019
 Hays KS 67601
 ATTN: Alan Dow ning

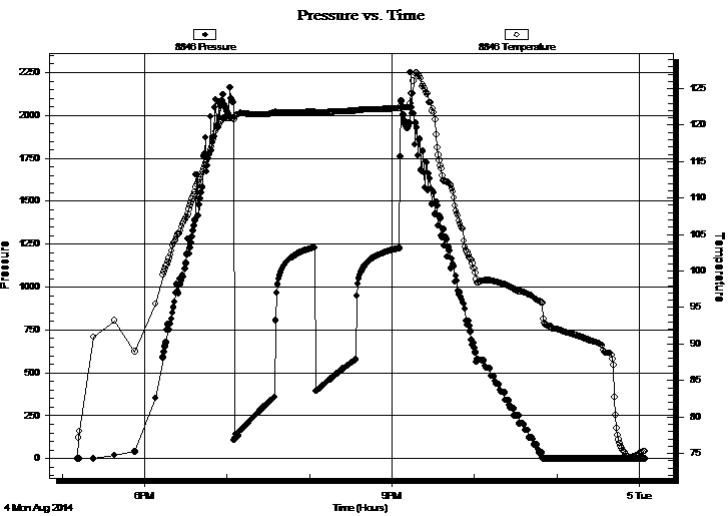
22-1s-33w Rawlins,KS
Norma Jean #1-22
 Job Ticket: 59109 **DST#: 2**
 Test Start: 2014.08.04 @ 17:11:15

GENERAL INFORMATION:

Formation: **D**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 19:05:00
 Time Test Ended: 00:03:45
Interval: 3976.00 ft (KB) To 4072.00 ft (KB) (TVD)
 Total Depth: 4280.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Reference Elevations: 3000.00 ft (KB)
 2995.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8846 Inside
 Press@RunDepth: psig @ 3985.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2014.08.04 End Date: 2014.08.05 Last Calib.: 2014.08.05
 Start Time: 17:11:15 End Time: 00:04:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF:BOB in 4 min.
 IS:No return blow
 FF:BOB in 4 min.
 FS:No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
414.00	w cgom 2%w 3%o 5%g 90%m	5.53
192.00	gcow m 5%g 5%o 30%w 60%m	2.69
192.00	gcomw 2%g 8%o 30%m 60%w	2.69
192.00	gcomw 2%g 3%o 10%m 85%w	2.69
128.00	ocmw 5%o 20%m 75%w	1.80

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59109

DST#: 2

ATTN: Alan Dow ning

Test Start: 2014.08.04 @ 17:11:15

Tool Information

Drill Pipe:	Length: 3950.00 ft	Diameter: 3.80 inches	Volume: 55.41 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: 30000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 55.56 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3976.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	304.00 ft			
Tool Length:	332.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Change Over Sub	1.00			3949.00	
Shut In Tool	5.00			3954.00	
Hydraulic tool	5.00			3959.00	
Jars	5.00			3964.00	
Safety Joint	3.00			3967.00	
Packer	5.00			3972.00	28.00 Bottom Of Top Packer
Packer	4.00			3976.00	
Stubb	1.00			3977.00	
Perforations	7.00			3984.00	
Change Over Sub	1.00			3985.00	
Recorder	0.00	8846	Inside	3985.00	
Recorder	0.00	8737	Outside	3985.00	
Drill Pipe	64.00			4049.00	
Change Over Sub	1.00			4050.00	
Perforations	18.00			4068.00	
Blank Off Sub	1.00			4069.00	304.00 Tool Interval
Packer	3.00			4072.00	
Stubb	1.00			4073.00	
Perforations	9.00			4082.00	
Change Over Sub	1.00			4083.00	
Recorder	0.00	8646	Below	4083.00	
Blank Spacing	191.00			4274.00	
Change Over Sub	1.00			4275.00	
Bullnose	5.00			4280.00	1000331.00 Bottom Packers & Anchor
Total Tool Length:	332.00				



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DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59109

DST#: 2

ATTN: Alan Dow ning

Test Start: 2014.08.04 @ 17:11:15

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:

13000 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbf

Water Loss: 8.36 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
414.00	w cgom 2%w 3%o 5%g 90%m	5.534
192.00	gcow m 5%g 5%o 30%w 60%m	2.693
192.00	gcomw 2%g 8%o 30%m 60%w	2.693
192.00	gcomw 2%g 3%o 10%m 85%w	2.693
128.00	ocmw 5%o 20%m 75%w	1.796

Total Length: 1118.00 ft Total Volume: 15.409 bbf

Num Fluid Samples: 0

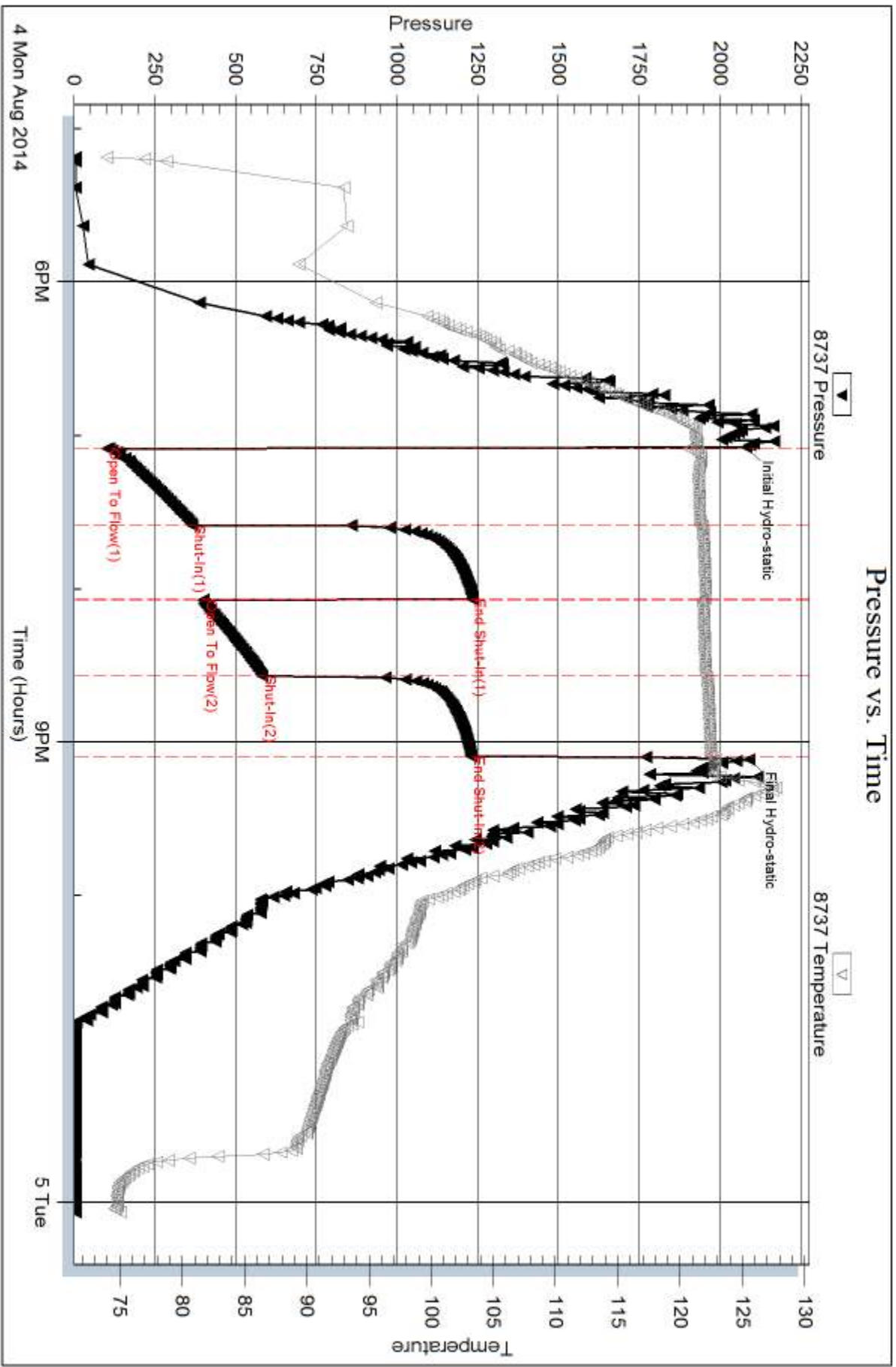
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW= .601 @ 75.2*= 13000 ppm

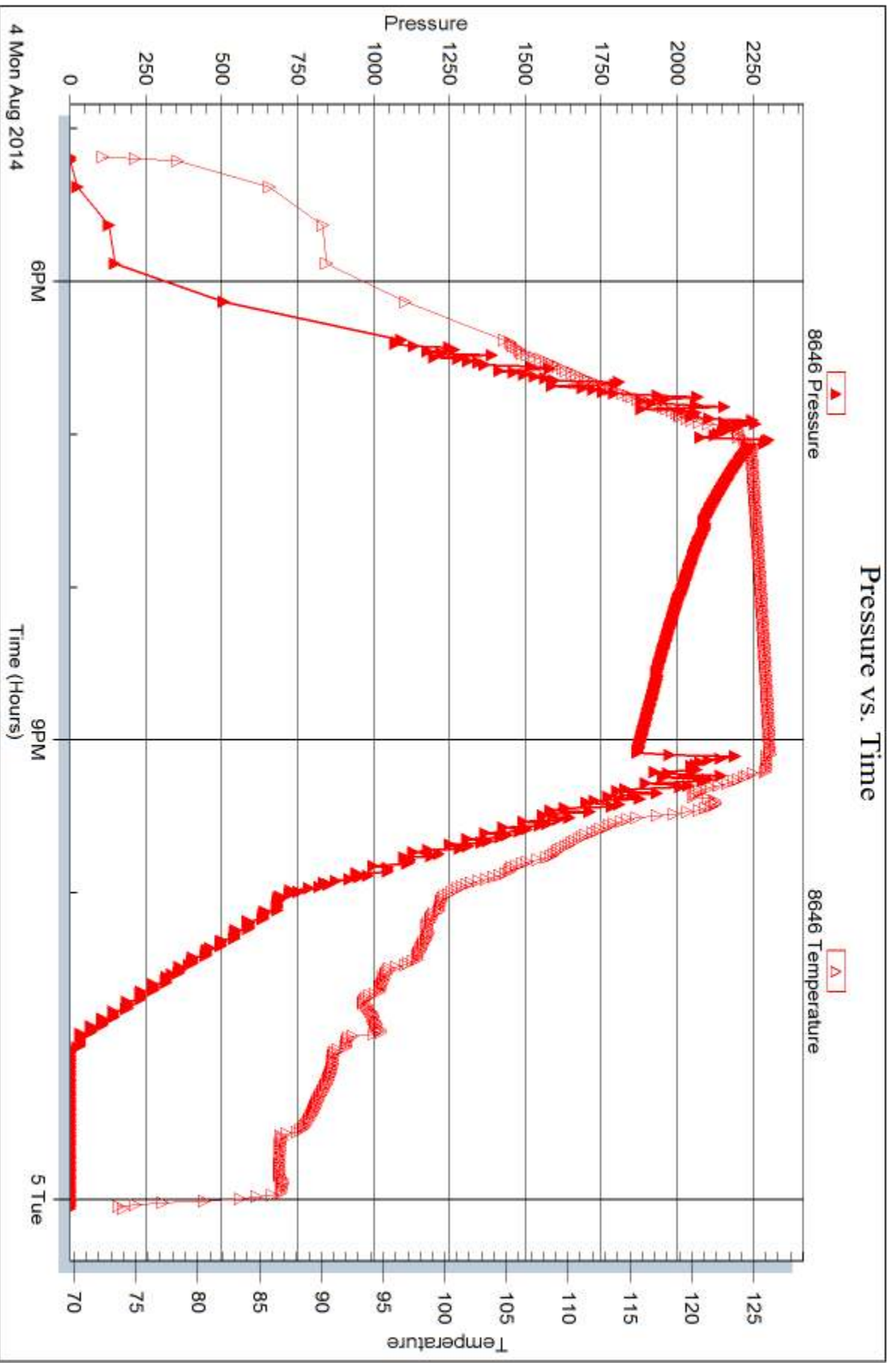


Serial #: 8646

Below (Stratton)ng-Nelson Oil Co

Norma Jean #1-22

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 59109

Printed: 2014.08.06 @ 15:50:02

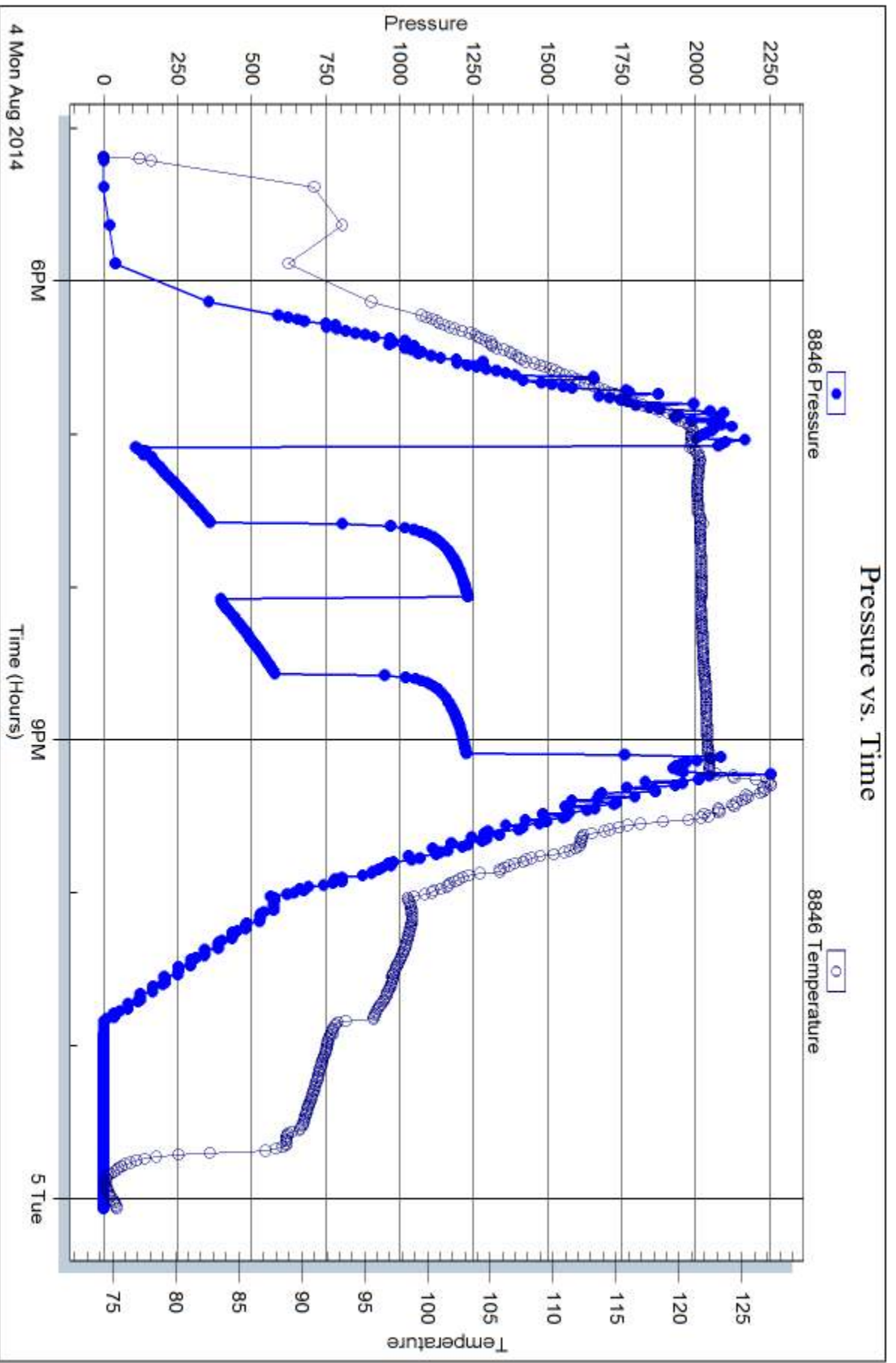
Serial #: 8846

Inside

Dow nrg-Nelson Oil Co

Norma Jean #1-22

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 59109

Printed: 2014.08.06 @ 15:50:02



DRILL STEM TEST REPORT

Prepared For: **Downing-Nelson Oil Co**

PO Box 1019
Hays KS 67601

ATTN: Alan Downing

Norma Jean #1-22

22-1s-33w Rawlins,KS

Start Date: 2014.08.05 @ 01:56:15

End Date: 2014.08.05 @ 08:56:45

Job Ticket #: 59110 DST #: 3

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

Printed: 2014.08.06 @ 15:47:06



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59110

DST#: 3

ATTN: Alan Dow ning

Test Start: 2014.08.05 @ 01:56:15

GENERAL INFORMATION:

Formation:

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:03:45

Time Test Ended: 08:56:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4074.00 ft (KB) To 4123.00 ft (KB) (TVD)

Reference Elevations: 3000.00 ft (KB)

Total Depth: 4280.00 ft (KB) (TVD)

2995.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8737

Outside

Press@RunDepth: 125.70 psig @ 4075.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.05

End Date:

2014.08.05

Last Calib.:

2014.08.05

Start Time: 01:56:15

End Time:

08:56:45

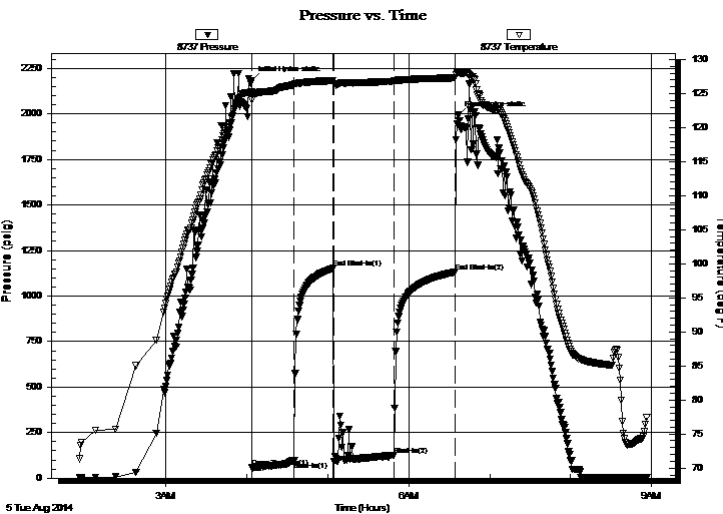
Time On Btm:

2014.08.05 @ 04:03:30

Time Off Btm:

2014.08.05 @ 06:36:45

TEST COMMENT: IF:Built to 7" blow
IS:No return blow
FF:Built to 3: blow
FS:No return blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2181.01	125.19	Initial Hydro-static
1	58.03	124.02	Open To Flow (1)
32	94.59	126.28	Shut-In(1)
61	1152.24	126.90	End Shut-In(1)
61	89.60	126.51	Open To Flow (2)
106	125.70	126.79	Shut-In(2)
151	1131.52	127.32	End Shut-In(2)
154	1992.31	128.11	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
192.00	mud w ith oil spots	2.42

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59110 **DST#: 3**

ATTN: Alan Dow ning

Test Start: 2014.08.05 @ 01:56:15

GENERAL INFORMATION:

Formation:

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:03:45

Time Test Ended: 08:56:45

Interval: 4074.00 ft (KB) To 4123.00 ft (KB) (TVD)

Total Depth: 4280.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Reference Elevations: 3000.00 ft (KB)

2995.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8846

Inside

Press@RunDepth: psig @ 4075.00 ft (KB)

Start Date: 2014.08.05

End Date:

2014.08.05

Start Time: 01:56:15

End Time:

08:56:30

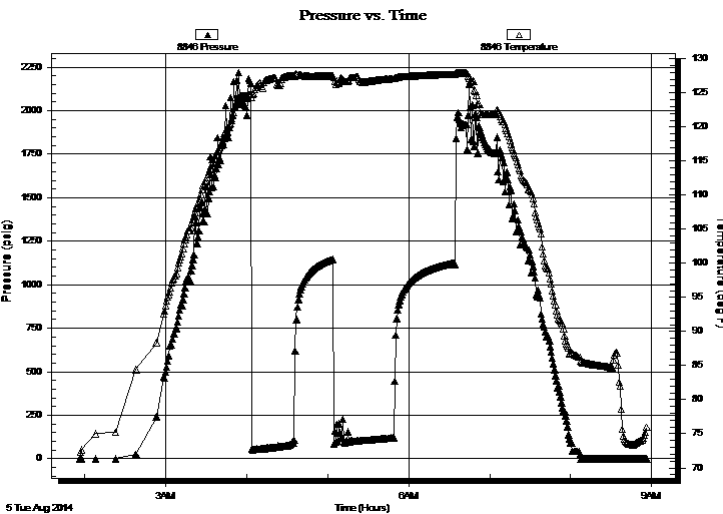
Capacity: 8000.00 psig

Last Calib.: 2014.08.05

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 7" blow
IS: No return blow
FF: Built to 3: blow
FS: No return blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
192.00	mud with oil spots	2.42

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

ATTN: Alan Dow ning

Job Ticket: 59110

DST#: 3

Test Start: 2014.08.05 @ 01:56:15

GENERAL INFORMATION:

Formation:

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:03:45

Time Test Ended: 08:56:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Mike Roberts

Unit No: 65

Interval: 4074.00 ft (KB) To 4123.00 ft (KB) (TVD)

Reference Elevations: 3000.00 ft (KB)

Total Depth: 4280.00 ft (KB) (TVD)

2995.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8646

Below (Straddle)

Press@RunDepth: psig @ 4141.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.05

End Date:

2014.08.05

Last Calib.:

2014.08.05

Start Time: 01:56:15

End Time:

08:56:45

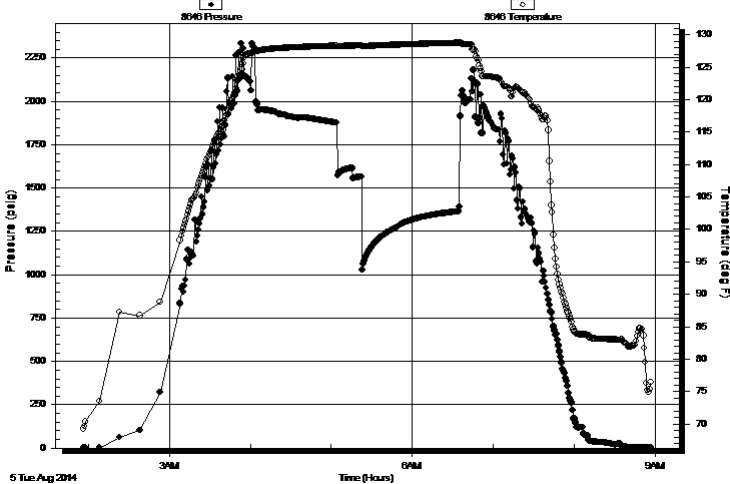
Time On Btm:

Time Off Btm:

TEST COMMENT: IF: Built to 7" blow
IS: No return blow
FF: Built to 3' blow
FS: No return blow

PRESSURE SUMMARY

Pressure vs. Time



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

Recovery

Length (ft)	Description	Volume (bbl)
192.00	mud w ith oil spots	2.42

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59110

DST#: 3

ATTN: Alan Dow ning

Test Start: 2014.08.05 @ 01:56:15

Tool Information

Drill Pipe:	Length: 4046.00 ft	Diameter: 3.80 inches	Volume: 56.75 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: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 56.90 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4074.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	201.00 ft			
Tool Length:	229.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Change Over Sub	1.00			4047.00	
Shut In Tool	5.00			4052.00	
Hydraulic tool	5.00			4057.00	
Jars	5.00			4062.00	
Safety Joint	3.00			4065.00	
Packer	5.00			4070.00	28.00 Bottom Of Top Packer
Packer	4.00			4074.00	
Stubb	1.00			4075.00	
Recorder	0.00	8846	Inside	4075.00	
Recorder	0.00	8737	Outside	4075.00	
Perforations	5.00			4080.00	
Change Over Sub	1.00			4081.00	
Drill Pipe	32.00			4113.00	
Change Over Sub	1.00			4114.00	
Blank Off Sub	1.00			4115.00	201.00 Tool Interval
Packer	3.00			4118.00	
Stubb	1.00			4119.00	
Perforations	21.00			4140.00	
Change Over Sub	1.00			4141.00	
Recorder	0.00	8646	Below	4141.00	
Blank Spacing	128.00			4269.00	
Change Over Sub	1.00			4270.00	
Bullnose	5.00			4275.00	1000228.00 Bottom Packers & Anchor
Total Tool Length:	229.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co

22-1s-33w Rawlins,KS

PO Box 1019
Hays KS 67601

Norma Jean #1-22

Job Ticket: 59110

DST#: 3

ATTN: Alan Dow ning

Test Start: 2014.08.05 @ 01:56:15

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: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.38 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
192.00	mud w ith oil spots	2.420

Total Length: 192.00 ft Total Volume: 2.420 bbl

Num Fluid Samples: 0

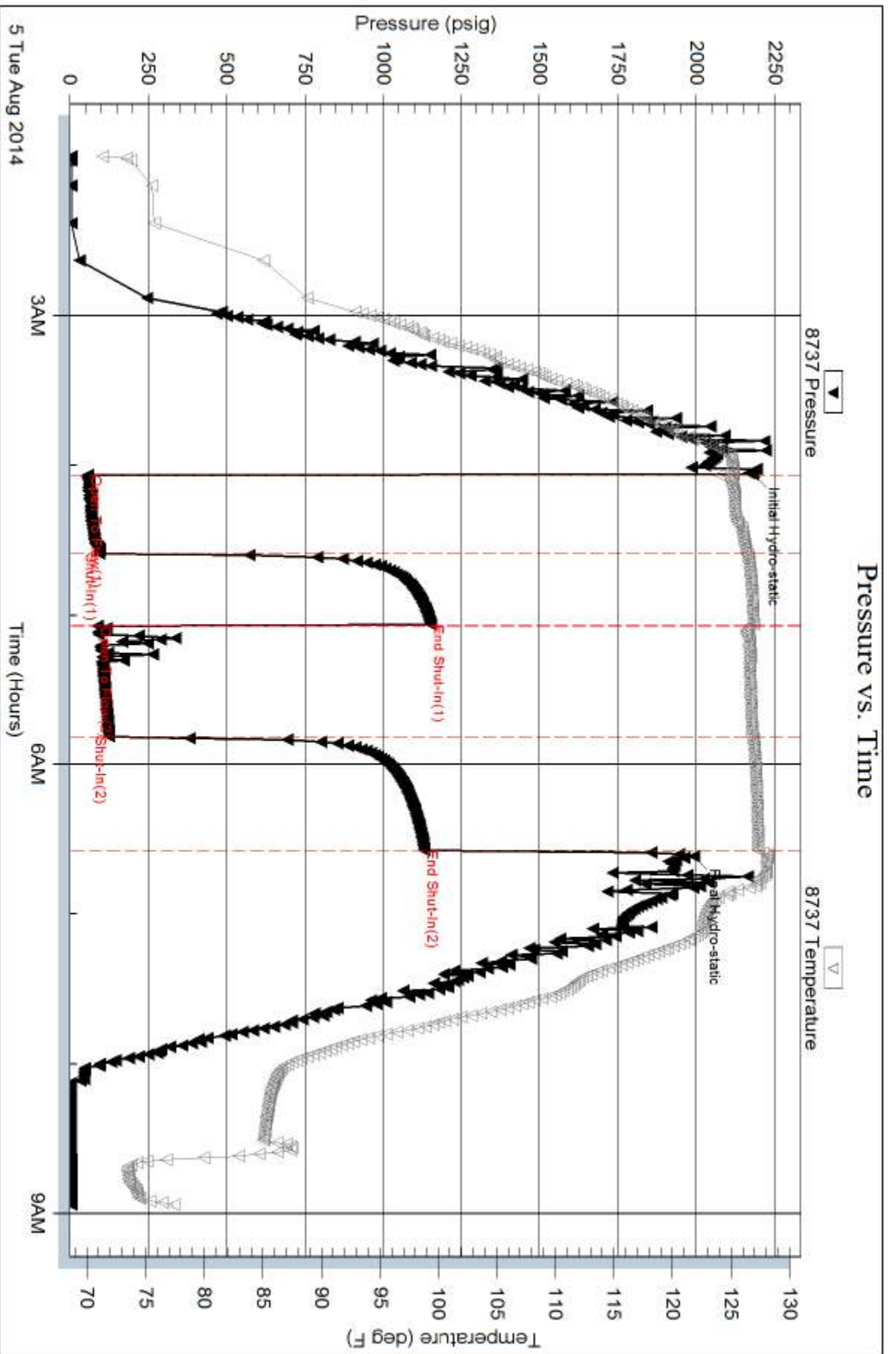
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



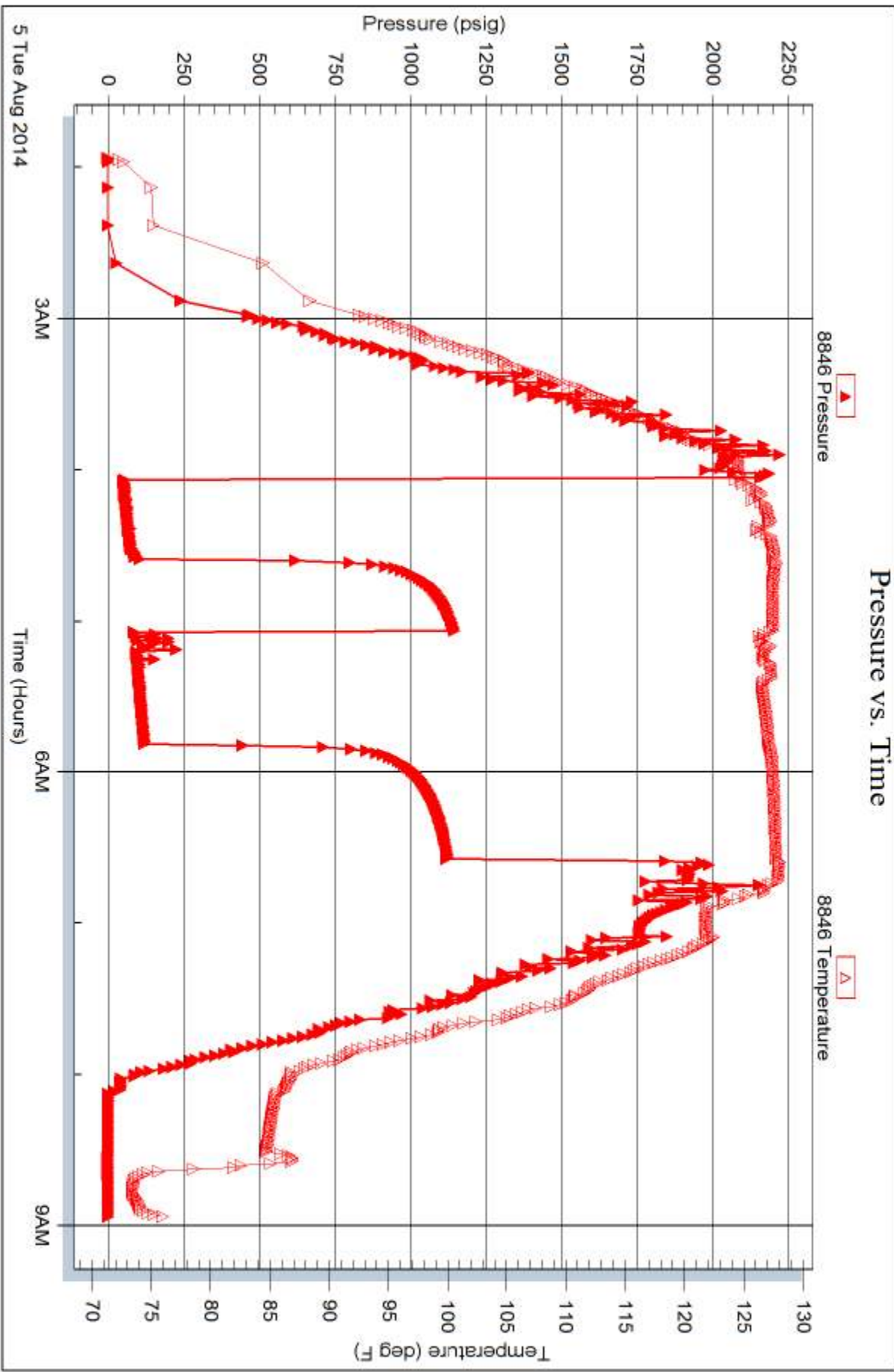
Serial #: 8846

Inside

Dow nging-Nelson Oil Co

Norma Jean #1-22

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 59110

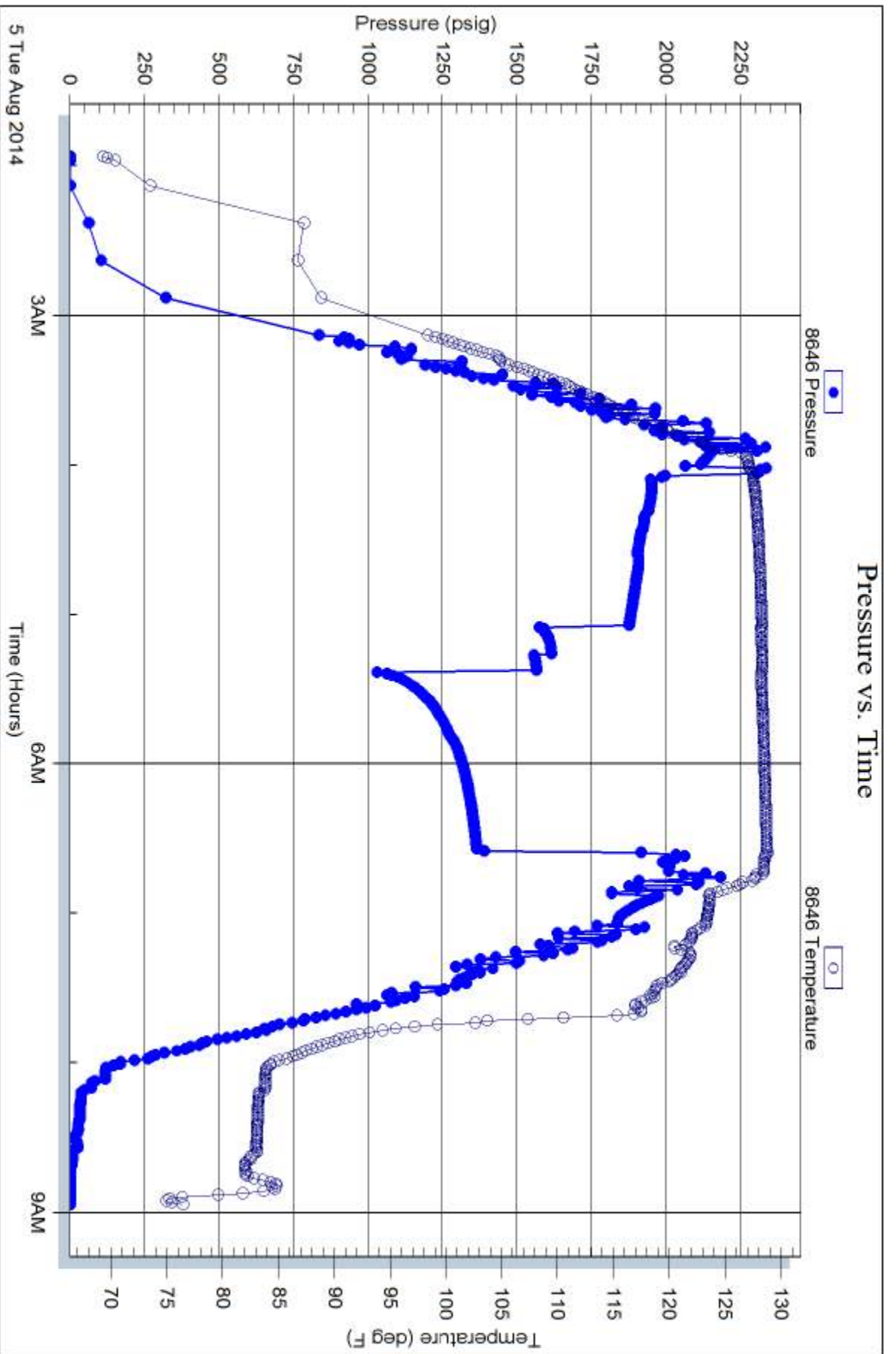
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Serial #: 8646

Below (Str-Robot)ing-Nelson Oil Co

Norma Jean #1-22

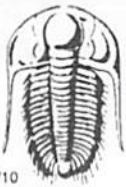
DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 59110

Printed: 2014.08.06 @ 15:47:11



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59108

4/10

Jean

Well Name & No. Norma ~~622~~ 122 Test No. 1 Date 8-3-14
 Company DNOC Elevation 3000 KB 2995 GL
 Address P.O. Box 1019 111 West 19th Street Hays KS 67601
 Co. Rep / Geo. Alan ~~Adler~~ Downing Rig
 Location: Sec. 22 Twp. 1 Rge. 33 Co. Rawlins State KS

Interval Tested 4123-4170 Zone Tested LKC "E"
 Anchor Length 47 Drill Pipe Run 4077 Mud Wt. 9.1
 Top Packer Depth 4118 Drill Collars Run 30 Vis 47
 Bottom Packer Depth 4123 Wt. Pipe Run Ø WL 8.4
 Total Depth 4170 Chlorides 500 ppm System LCM 1

Blow Description IF: Weak Surface Blow
IS: No Return Blow
FF: NO Blow - Flushed - Weak surface Blow Died in 10 Min
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>MUD with 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 Total 5 BHT Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 2037 Test 1250 T-On Location 13:45
 (B) First Initial Flow 22 Jars 250 T-Started 15:28
 (C) First Final Flow 28 Safety Joint 75 T-Open 17:25
 (D) Initial Shut-In 282 Circ Sub NC T-Pulled 19:25
 (E) Second Initial Flow 29 Hourly Standby T-Out 21:19
 (F) Second Final Flow 33 Mileage 218 RT 337.90 Comments Motel
 (G) Final Shut-In 264 Sampler Ruined Shale Packer
 (H) Final Hydrostatic 2032 Straddle Ruined Packer

Initial Open 30 Extra Packer Extra Copies
 Initial Shut-In 30 Extra Recorder Sub Total 0
 Final Flow 30 Day Standby Total 1912.90
 Final Shut-In 30 Accessibility MP/DST Disc't
 Sub Total 1912.90

Approved By _____ Our Representative Mike Robert
 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. 59109

Well Name & No. Norma ~~Gate~~ 122 Test No. 2 Date 8-4-14
 Company DNOC Elevation 3000 KB 2995 GL
 Address P.O. Box 1019 111 West 19th Street Hays KS 67601
 Co. Rep / Geo. Al Downing Rig Discovery 1
 Location: Sec. 22 Twp. 1 Rge. 33 Co. Rawlins State KS

Interval Tested 3976-4072 Tail 208 Zone Tested "D"
 Anchor Length 96' Drill Pipe Run 3950 Mud Wt. 9.2
 Top Packer Depth 3971 Drill Collars Run 30 Vis 49
 Bottom Packer Depth 3976 Wt. Pipe Run φ WL 8.4
 Total Depth 4280 Chlorides 750 ppm System LCM 1
 Blow Description IF: BOB in 4 Min
FS: No Return Blow
FF: BOB in 4 Min
FS: No Return Blow

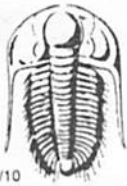
Rec <u>414</u>	Feet of <u>WCGOM</u>	<u>5</u> %gas	<u>3</u> %oil	<u>2</u> %water	<u>90</u> %mud	✓
Rec <u>192</u>	Feet of <u>GCOWM</u>	<u>5</u> %gas	<u>5</u> %oil	<u>30</u> %water	<u>60</u> %mud	✓
Rec <u>192</u>	Feet of <u>GCOWM</u>	<u>2</u> %gas	<u>8</u> %oil	<u>60</u> %water	<u>30</u> %mud	✓
Rec <u>192</u>	Feet of <u>GCOWM</u>	<u>2</u> %gas	<u>3</u> %oil	<u>85</u> %water	<u>10</u> %mud	✓
Rec <u>128</u>	Feet of <u>OCMW</u>	<u>5</u> %gas	<u>5</u> %oil	<u>75</u> %water	<u>20</u> %mud	✓

Rec Total 1118 BHT 122 Gravity 1.601 @ 75.2° F Chlorides 13000 ppm
 (A) Initial Hydrostatic 2082 Test 1250.09 T-On Location 14:00
 (B) First Initial Flow 102 Jars 250.09 T-Started 17:11
 (C) First Final Flow 365 Safety Joint 75.09 T-Open 19:05
 (D) Initial Shut-In 1232 Circ Sub NC T-Pulled 21:05
 (E) Second Initial Flow 400 Hourly Standby _____ T-Out 00:03
 (F) Second Final Flow 581 Mileage 218RT 337.90 Comments Motel
 (G) Final Shut-In 1231 Sampler _____
 (H) Final Hydrostatic 2009 Straddle 600.00 Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 30 Day Standby _____ Total 2512.90
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 30 Sub Total 2512.50/-

Approved By _____

Our Representative Mike Bole

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. 59110

Well Name & No. Norma ~~Case~~ 122 ^{Jean} Test No. 3 Date 8-5-12
 Company DNOC Elevation 3000 KB 2995 GL
 Address P.O. Box 1019, 11 West 19th St. Hays KS 67601
 Co. Rep / Geo. Al Downing Rig Discovery 1
 Location: Sec. 22 Twp. 1 Rge. 33 Co. Rawlins State KS

Interval Tested 4074-4123 157' tail Zone Tested _____
 Anchor Length 49 Drill Pipe Run 4046 Mud Wt. 9.2
 Top Packer Depth 4070 Drill Collars Run 30 Vis 49
 Bottom Packer Depth 4074 Wt. Pipe Run 0 WL 8.4
 Total Depth 4280 Chlorides 250 ppm System LCM 1

Blow Description IF: Built to 7" Blow
IS: No Return Blow
FF: Built to 3" Blow
FS: No Return Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>192</u>	<u>Mud with 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 _____ BHT 128 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2181 Test 1050 T-On Location Stayed
 (B) First Initial Flow 58 Jars 250 T-Started 01:56
 (C) First Final Flow 94 Safety Joint 75 T-Open 04:05
 (D) Initial Shut-In 1152. Circ Sub NC T-Pulled 06:35
 (E) Second Initial Flow 89 Hourly Standby _____ T-Out 08:56
 (F) Second Final Flow 125 Mileage Stayed on location Comments _____
 (G) Final Shut-In 1131. Sampler _____
 (H) Final Hydrostatic 1992 Straddle 600 Ruined Shale Packer _____

Initial Open 30 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 45 Extra Recorder _____
 Final Shut-In 45 Day Standby _____
 Sub Total 1975.00 Accessibility _____
 Total 1975.00 MP/DST Disc't _____

Approved By _____ Our Representative Mike Ralston
 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.