



DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.26 @ 19:50:49

End Date: 2013.01.27 @ 02:02:58

Job Ticket #: 51639 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:30:20

Downing-Nelson Oil Co Inc
21-16s-17w Rush,KS
Roth-Robben #1-21
DST # 1
LKC A-C
2013.01.26



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51639

DST#: 1

Test Start: 2013.01.26 @ 19:50:49

GENERAL INFORMATION:

Formation: **LKC A-C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:54:29

Time Test Ended: 02:02:58

Test Type: Conventional Bottom Hole (Initial)

Tester: Ray Schwager

Unit No: 42

Interval: 3300.00 ft (KB) To 3348.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3348.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @RunDepth: 163.25 psig @ 3312.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.26

End Date: 2013.01.27

Last Calib.: 2013.01.27

Start Time: 19:50:49

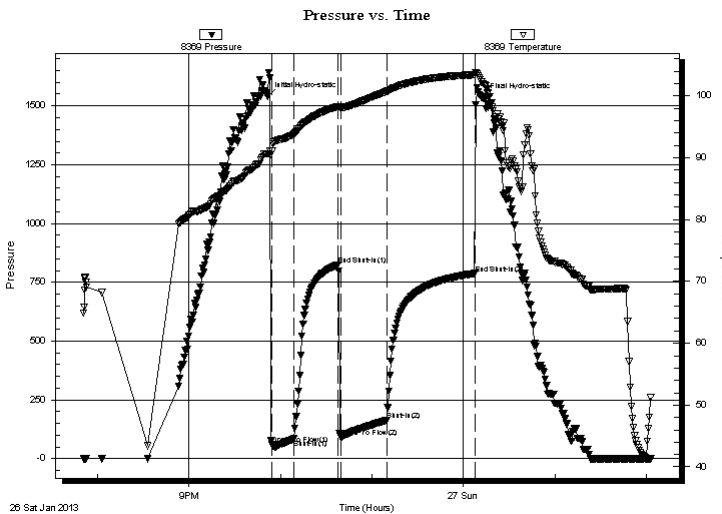
End Time: 02:02:58

Time On Btm: 2013.01.26 @ 21:51:29

Time Off Btm: 2013.01.27 @ 00:12:28

TEST COMMENT: 15-IFP-strg bl thru-out
30-ISIP-no bl
30-FFP-strg bl thru-out GTS to weak to gauge 28 min into
60-FSIP-surface bl bk

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1540.94	90.64	Initial Hydro-static
3	59.91	91.11	Open To Flow (1)
18	84.33	93.83	Shut-In(1)
47	824.70	98.29	End Shut-In(1)
48	92.60	98.11	Open To Flow (2)
78	163.25	100.70	Shut-In(2)
136	787.65	103.43	End Shut-In(2)
141	1533.45	101.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	GMO 30%G10%M60%O	0.99
470.00	CO	6.59
0.00	GTS	0.00

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51639

DST#: 1

ATTN: Ron Nelson

Test Start: 2013.01.26 @ 19:50:49

GENERAL INFORMATION:

Formation: **LKC A-C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:54:29

Time Test Ended: 02:02:58

Test Type: Conventional Bottom Hole (Initial)

Tester: Ray Schwager

Unit No: 42

Interval: 3300.00 ft (KB) To 3348.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3348.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8700 Outside

Press @RunDepth: psig @ 3312.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.26

End Date: 2013.01.27

Last Calib.: 2013.01.27

Start Time: 19:51:19

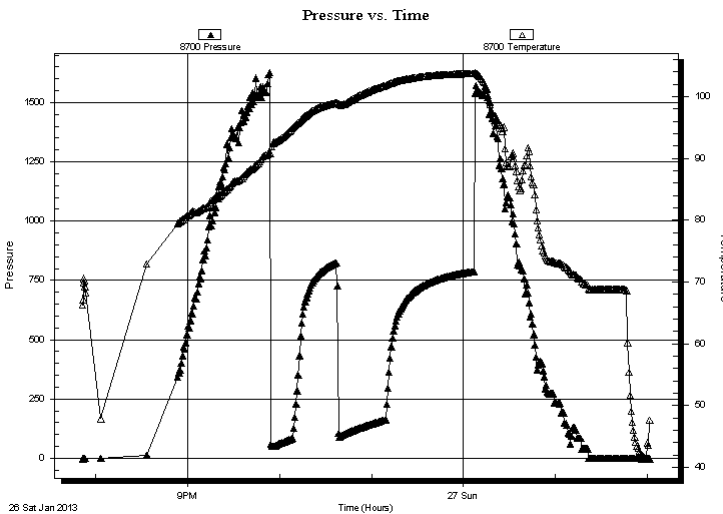
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Time On Btm:

Time Off Btm:

TEST COMMENT: 15-IFP-strg bl thru-out
30-ISIP-no bl
30-FFP-strg bl thru-out GTS to weak to gauge 28 min into
60-FSIP-surface bl bk

PRESSURE SUMMARY



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

Recovery

Gas Rates

Length (ft)	Description	Volume (bbl)
90.00	GMO 30%G10%M60%O	0.99
470.00	CO	6.59
0.00	GTS	0.00

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51639

DST#: 1

ATTN: Ron Nelson

Test Start: 2013.01.26 @ 19:50:49

Tool Information

Drill Pipe:	Length: 3269.00 ft	Diameter: 3.80 inches	Volume: 45.86 bbl	Tool Weight:	2200.00 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:	60000.00 lb
			<u>Total Volume: 46.01 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3300.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	48.00 ft				
Tool Length:	69.00 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			3280.00	
Shut In Tool	5.00			3285.00	
Hydraulic tool	5.00			3290.00	
Packer	5.00			3295.00	21.00 Bottom Of Top Packer
Packer	5.00			3300.00	
Stubb	1.00			3301.00	
Perforations	11.00			3312.00	
Recorder	0.00	8369	Inside	3312.00	
Recorder	0.00	8700	Outside	3312.00	
Blank Spacing	33.00			3345.00	
Bullnose	3.00			3348.00	48.00 Bottom Packers & Anchor

Total Tool Length: 69.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51639

DST#: 1

ATTN: Ron Nelson

Test Start: 2013.01.26 @ 19:50:49

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:

ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.88 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
90.00	GMO 30%G10%M60%O	0.989
470.00	CO	6.593
0.00	GTS	0.000

Total Length: 560.00 ft

Total Volume: 7.582 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8369

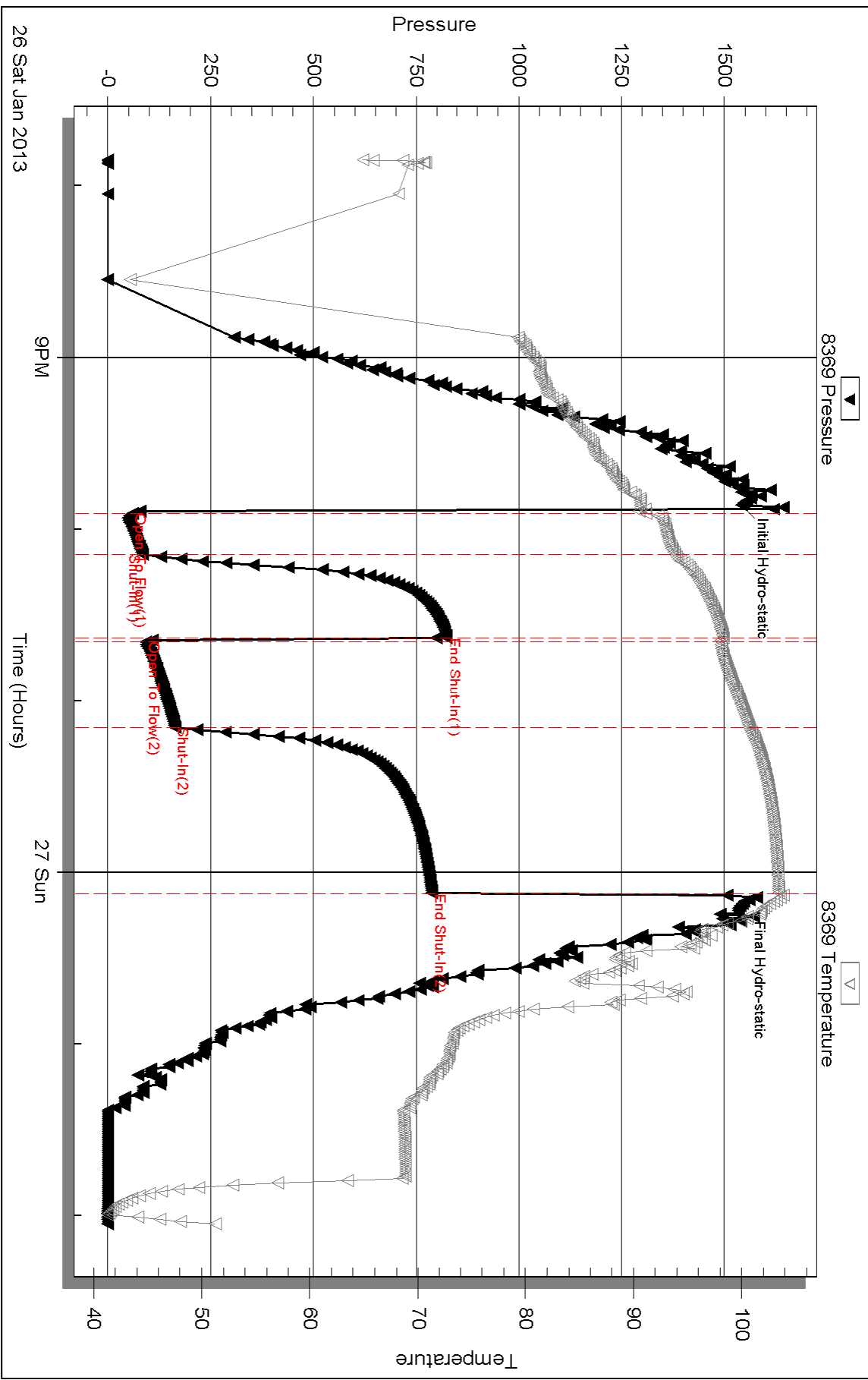
Inside

Dow nings-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 1

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 51639

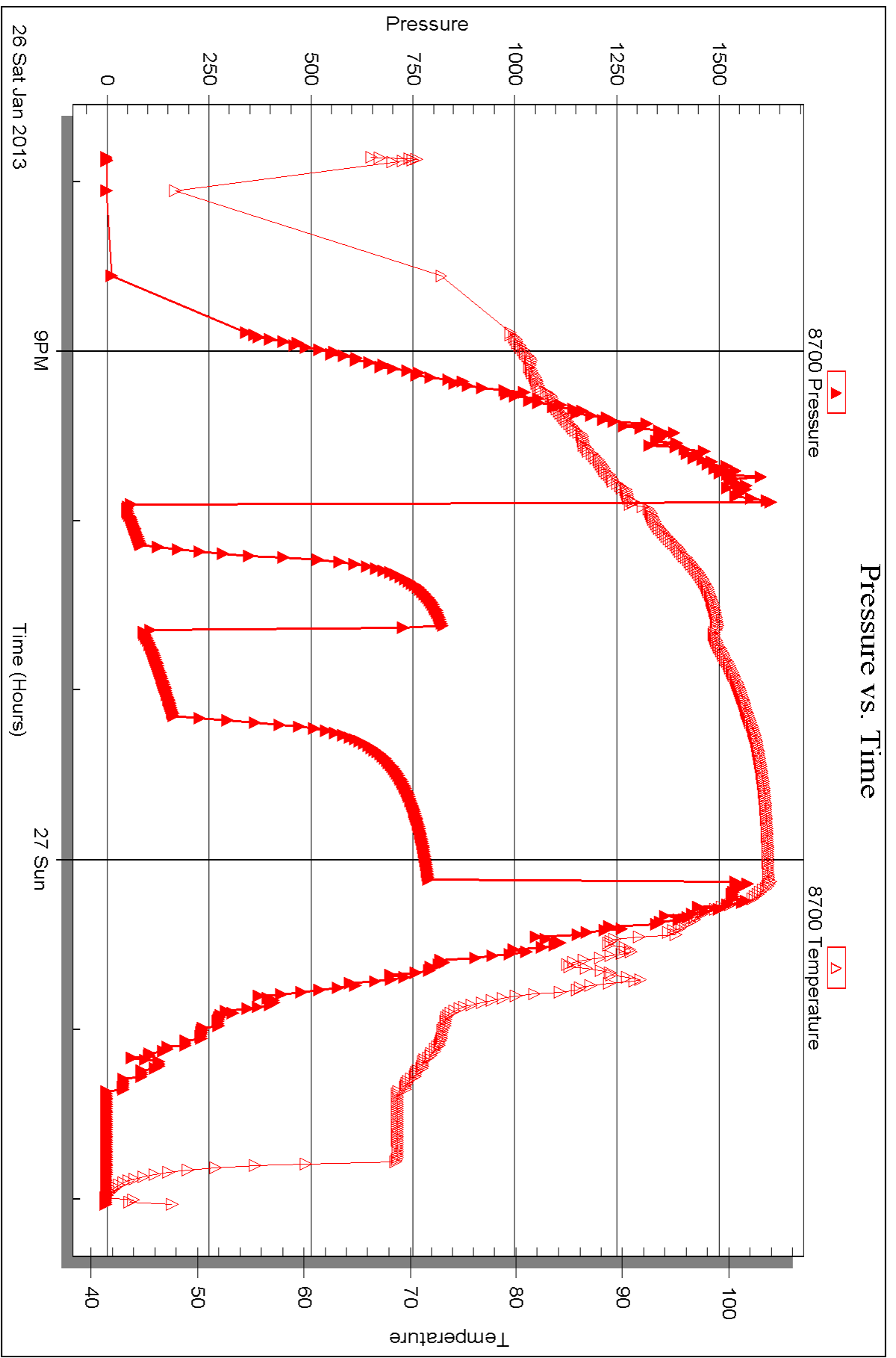
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Serial #: 8700

Outside Dow nting-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 51639

Printed: 2013.02.04 @ 10:30:23



DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.27 @ 08:45:14

End Date: 2013.01.27 @ 15:18:53

Job Ticket #: 51640 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:29:33



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51640

DST#: 2

Test Start: 2013.01.27 @ 08:45:14

GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:51:09

Time Test Ended: 15:18:53

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3355.00 ft (KB) To 3375.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3375.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @RunDepth: 49.59 psig @ 3356.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.27

End Date:

2013.01.27

Last Calib.:

2013.01.27

Start Time:

08:45:14

End Time:

15:18:53

Time On Btm:

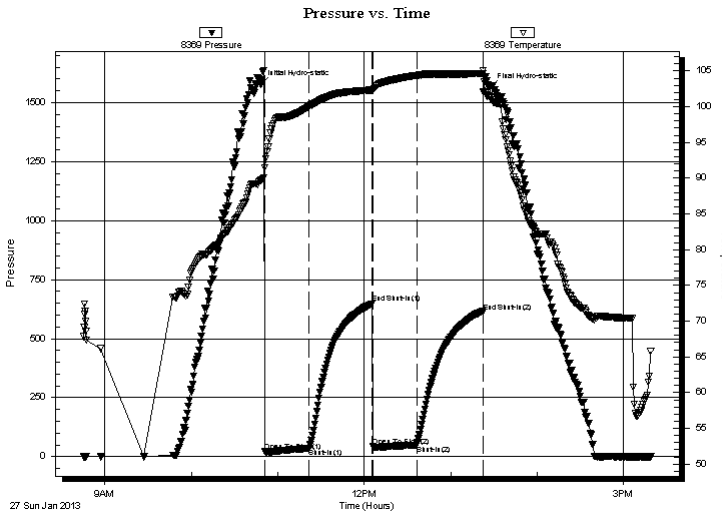
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Time Off Btm:

2013.01.27 @ 13:27:08

TEST COMMENT: 30-IFP-strg bl in 4 min
45-ISIP-surface bl bk
30-FFP-w k to strg in 25 min
45-FSIP-no bl bk

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1576.38	89.69	Initial Hydro-static
3	22.30	91.41	Open To Flow (1)
34	35.99	100.04	Shut-In(1)
78	649.29	102.33	End Shut-In(1)
78	44.79	102.20	Open To Flow (2)
108	49.59	104.38	Shut-In(2)
154	613.09	104.62	End Shut-In(2)
159	1565.11	101.35	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	465'GIP	0.00
60.00	OCMW 8%O10%M82%W	0.57
25.00	HO&GCM 20%G25%O55%M	0.35

* Recovery from multiple tests

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51640

DST#: 2

ATTN: Ron Nelson

Test Start: 2013.01.27 @ 08:45:14

GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:51:09

Time Test Ended: 15:18:53

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3355.00 ft (KB) To 3375.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3375.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8700 Outside

Press @RunDepth: psig @ 3356.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.27

End Date:

2013.01.27

Last Calib.:

2013.01.27

Start Time: 08:45:47

End Time:

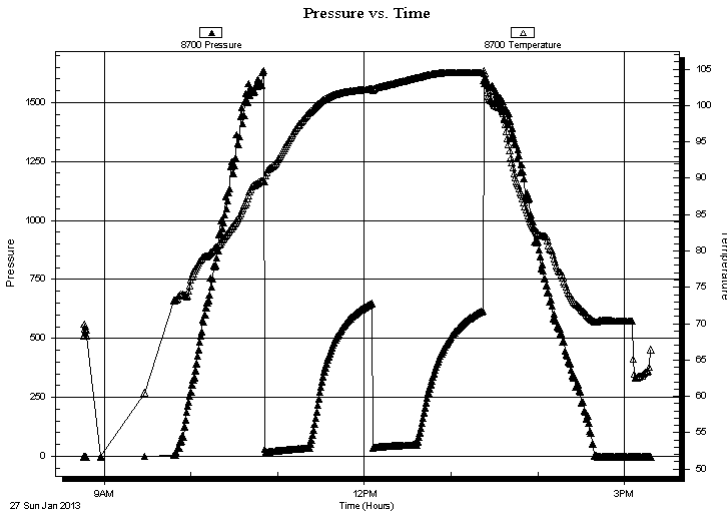
15:18:11

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IFP-strg bl in 4 min
45-ISIP-surface bl bk
30-FFP-w k to strg in 25 min
45-FSIP-no bl bk

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
0.00	465'GIP	0.00
60.00	OCMW 8%O10%M82%W	0.57
25.00	HO&GCM 20%G25%O55%M	0.35

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51640

DST#: 2

ATTN: Ron Nelson

Test Start: 2013.01.27 @ 08:45:14

Tool Information

Drill Pipe:	Length: 3323.00 ft	Diameter: 3.80 inches	Volume: 46.61 bbl	Tool Weight:	2200.00 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:	55000.00 lb
			<u>Total Volume: 46.76 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3355.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	20.00 ft				
Tool Length:	41.00 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			3335.00	
Shut In Tool	5.00			3340.00	
Hydraulic tool	5.00			3345.00	
Packer	5.00			3350.00	21.00 Bottom Of Top Packer
Packer	5.00			3355.00	
Stubb	1.00			3356.00	
Recorder	0.00	8369	Inside	3356.00	
Recorder	0.00	8700	Outside	3356.00	
Perforations	16.00			3372.00	
Bullnose	3.00			3375.00	20.00 Bottom Packers & Anchor
Total Tool Length:	41.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51640

DST#: 2

ATTN: Ron Nelson

Test Start: 2013.01.27 @ 08:45:14

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:

68000 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.86 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
0.00	465'GIP	0.000
60.00	OCMW 8%O10%M82%W	0.568
25.00	HO&GCM 20%G25%O55%M	0.351

Total Length: 85.00 ft Total Volume: 0.919 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

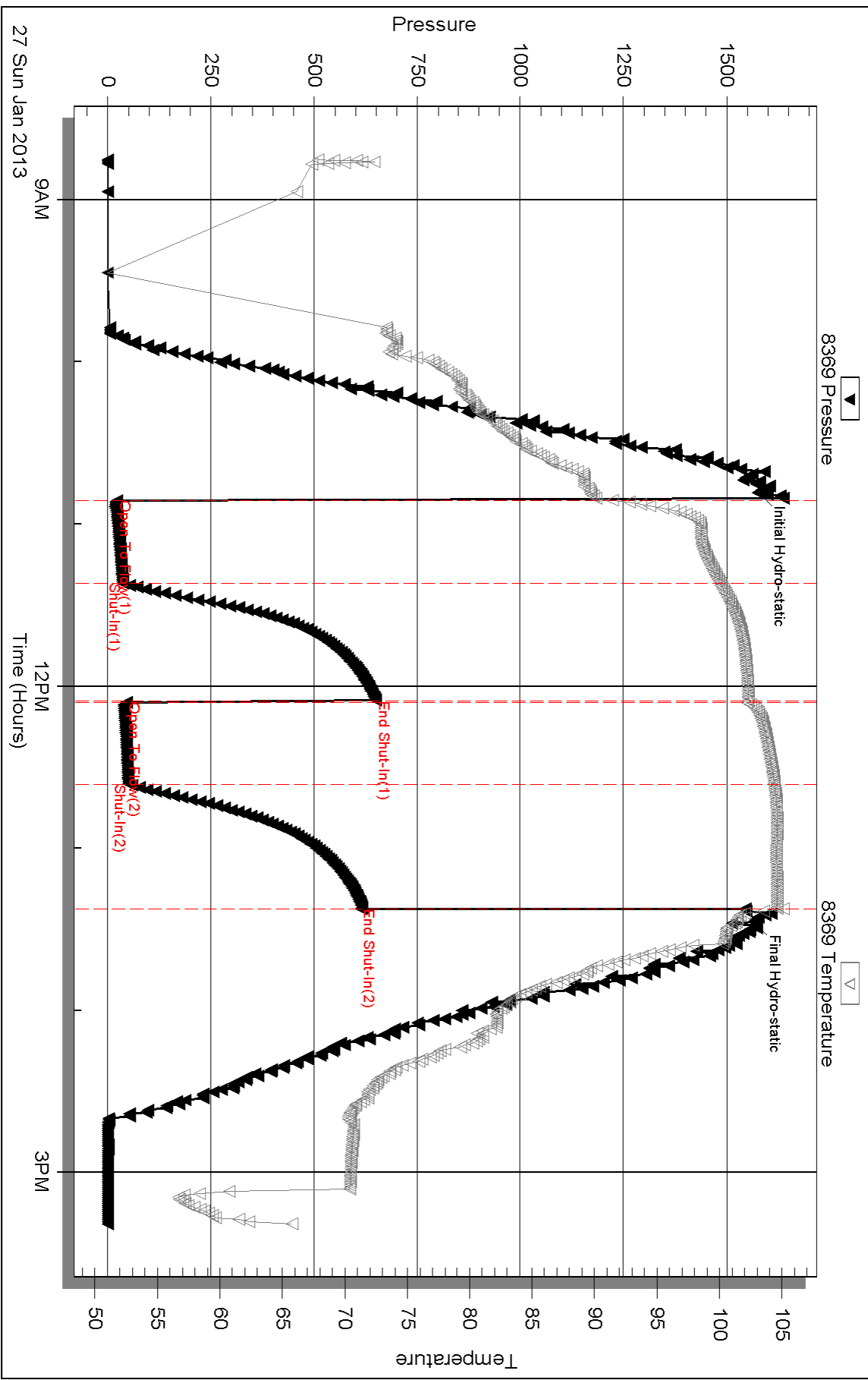
Serial #:

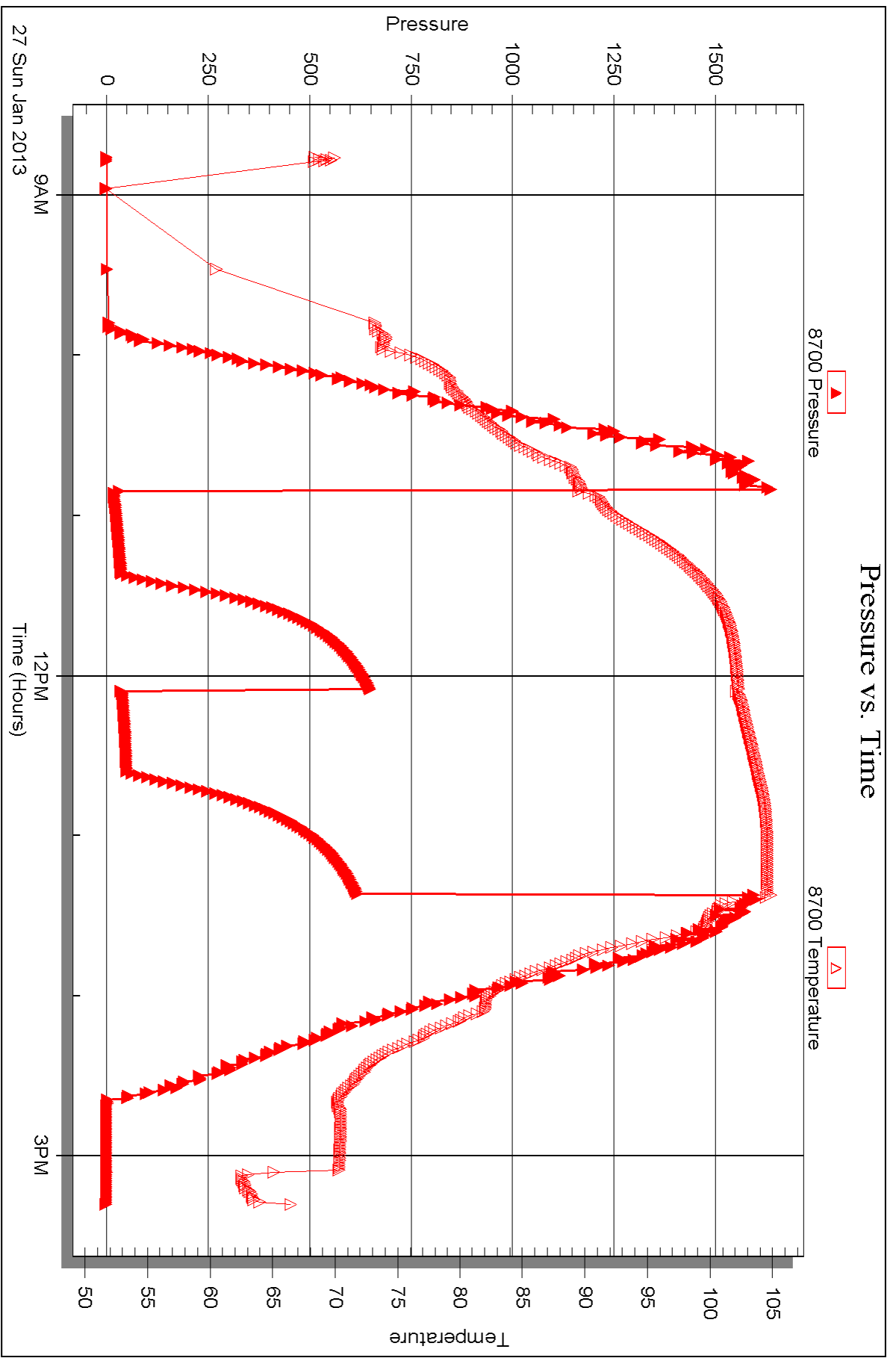
Laboratory Name:

Laboratory Location:

Recovery Comments: RW .14@55F

Pressure vs. Time







DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.27 @ 21:05:11

End Date: 2013.01.28 @ 02:26:05

Job Ticket #: 51641 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:28:09



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51641

DST#: 3

Test Start: 2013.01.27 @ 21:05:11

GENERAL INFORMATION:

Formation: **LKC "E"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:01:36

Time Test Ended: 02:26:05

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3375.00 ft (KB) To 3393.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3393.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @ Run Depth: 19.54 psig @ 3376.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.27

End Date:

2013.01.28

Last Calib.: 2013.01.28

Start Time: 21:05:11

End Time:

02:26:05

Time On Btm: 2013.01.27 @ 22:59:21

Time Off Btm: 2013.01.28 @ 01:09:21

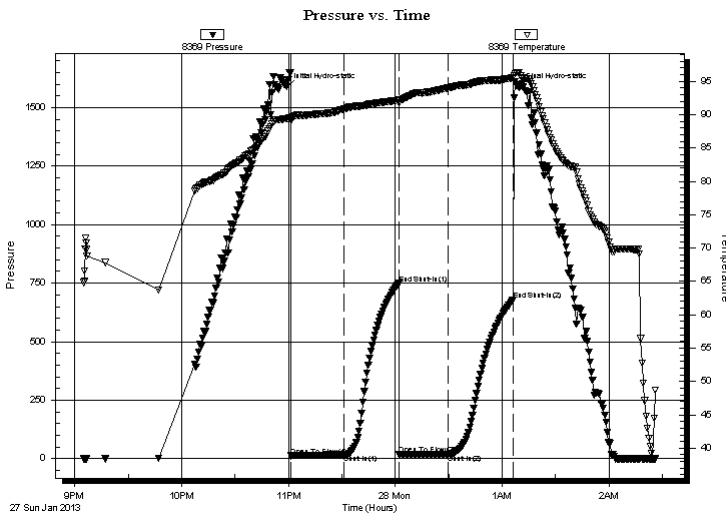
TEST COMMENT: 30-IFP-surface bl thru-out

30-ISIP-no bl

30-FFP-no bl

30-FSIP-no bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1587.52	89.39	Initial Hydro-static
3	11.43	89.21	Open To Flow (1)
32	16.67	90.88	Shut-In(1)
63	748.56	92.18	End Shut-In(1)
63	17.56	91.83	Open To Flow (2)
91	19.54	94.08	Shut-In(2)
127	678.02	95.55	End Shut-In(2)
130	1586.86	96.35	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud	0.05

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51641

DST#: 3

Test Start: 2013.01.27 @ 21:05:11

GENERAL INFORMATION:

Formation: **LKC "E"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:01:36

Time Test Ended: 02:26:05

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: **3375.00 ft (KB) To 3393.00 ft (KB) (TVD)**

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3393.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: **8700** Outside

Press @ RunDepth: psig @ 3376.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.27 End Date: 2013.01.28

Last Calib.: 2013.01.28

Start Time: 21:05:40 End Time: 02:25:19

Time On Btm:

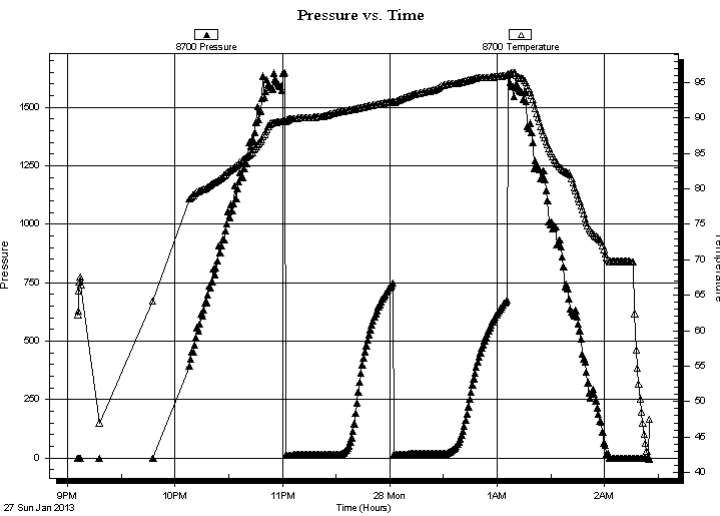
Time Off Btm:

TEST COMMENT: 30-IFP-surface bl thru-out

30-ISIP-no bl

30-FFP-no bl

30-FSIP-no bl



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51641

DST#: 3

ATTN: Ron Nelson

Test Start: 2013.01.27 @ 21:05:11

Tool Information

Drill Pipe:	Length: 3355.00 ft	Diameter: 3.80 inches	Volume: 47.06 bbl	Tool Weight: 2200.00 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: 55000.00 lb
			<u>Total Volume: 47.21 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3375.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	18.00 ft			
Tool Length:	39.00 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			3355.00	
Shut In Tool	5.00			3360.00	
Hydraulic tool	5.00			3365.00	
Packer	5.00			3370.00	21.00 Bottom Of Top Packer
Packer	5.00			3375.00	
Stubb	1.00			3376.00	
Recorder	0.00	8369	Inside	3376.00	
Recorder	0.00	8700	Outside	3376.00	
Perforations	14.00			3390.00	
Bullnose	3.00			3393.00	18.00 Bottom Packers & Anchor
Total Tool Length:	39.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51641

DST#: 3

ATTN: Ron Nelson

Test Start: 2013.01.27 @ 21:05:11

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: 56.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.87 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
10.00	Mud	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8369

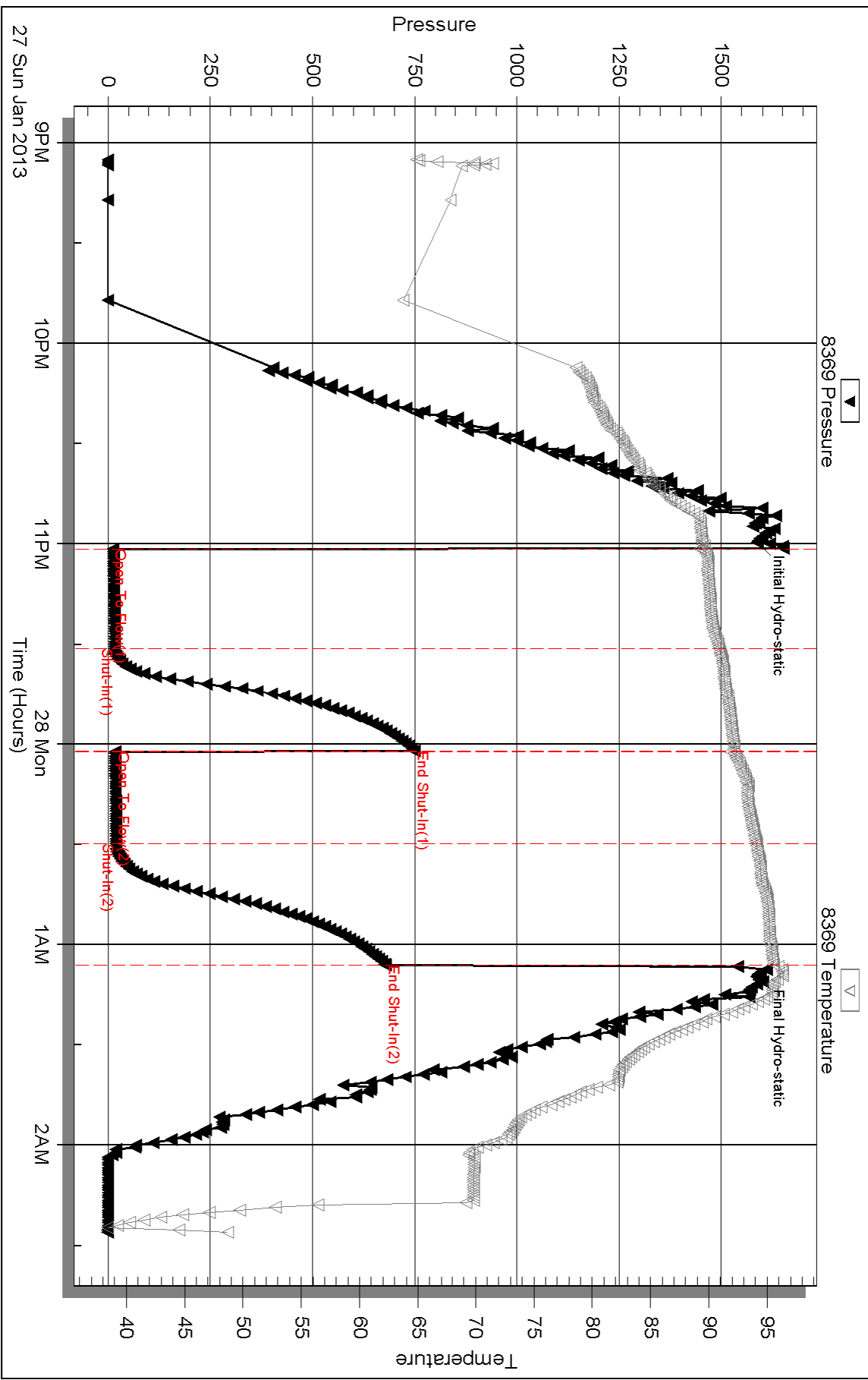
Inside

Downing-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 3

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 51641

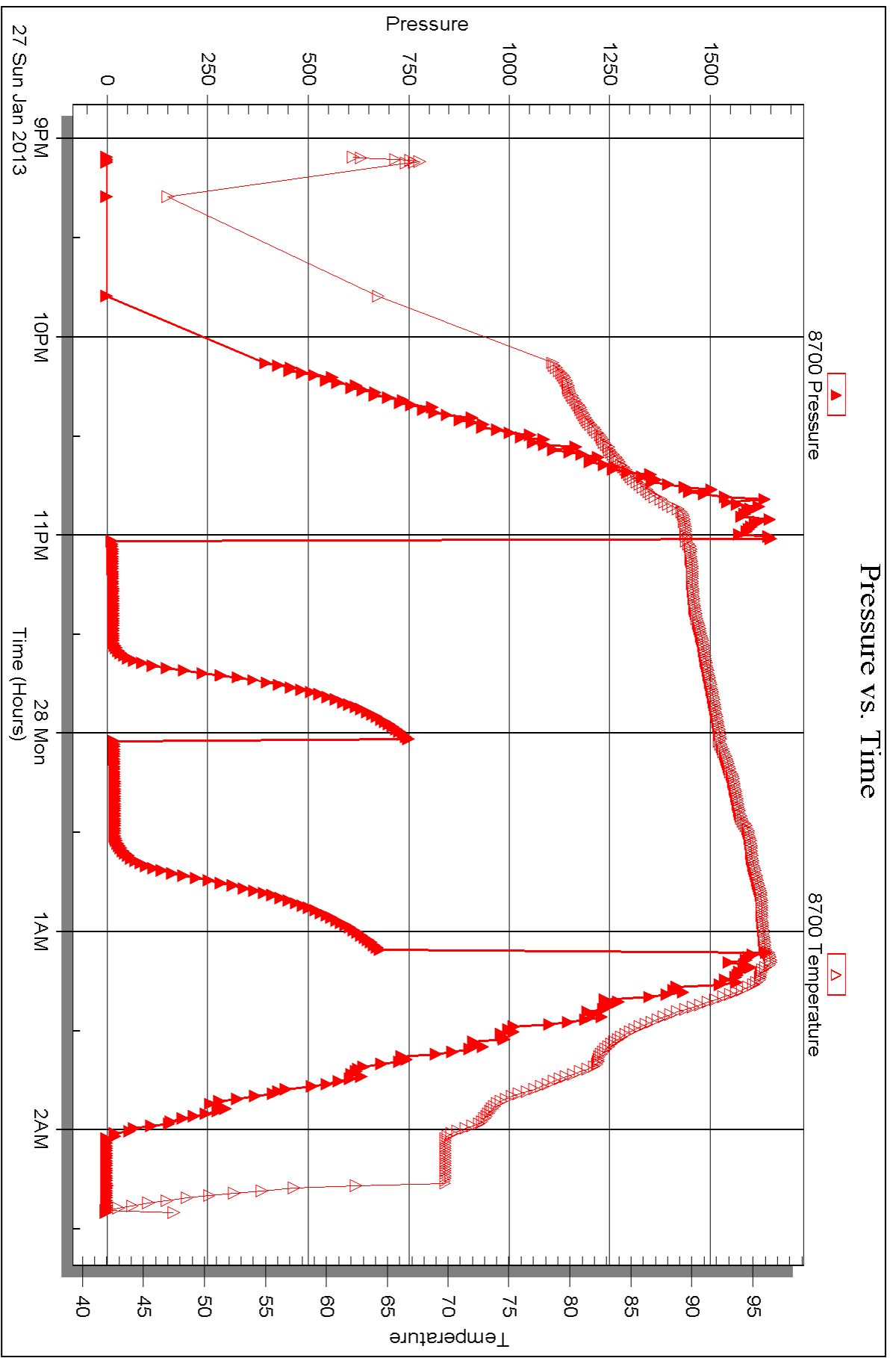
Printed: 2013.02.04 @ 10:28:11

Serial #: 8700

Outside Dow nung-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 3





DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.28 @ 13:50:37

End Date: 2013.01.28 @ 19:26:16

Job Ticket #: 51642 DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:26:15



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51642

DST#: 4

ATTN: Ron Nelson

Test Start: 2013.01.28 @ 13:50:37

GENERAL INFORMATION:

Formation: **LKC H,I,J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:59:32

Time Test Ended: 19:26:16

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3442.00 ft (KB) To 3510.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3510.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @RunDepth: 25.58 psig @ 3453.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.28

End Date:

2013.01.28

Last Calib.:

2013.01.28

Start Time: 13:50:37

End Time:

19:26:16

Time On Btm:

2013.01.28 @ 15:57:32

Time Off Btm:

2013.01.28 @ 18:04:17

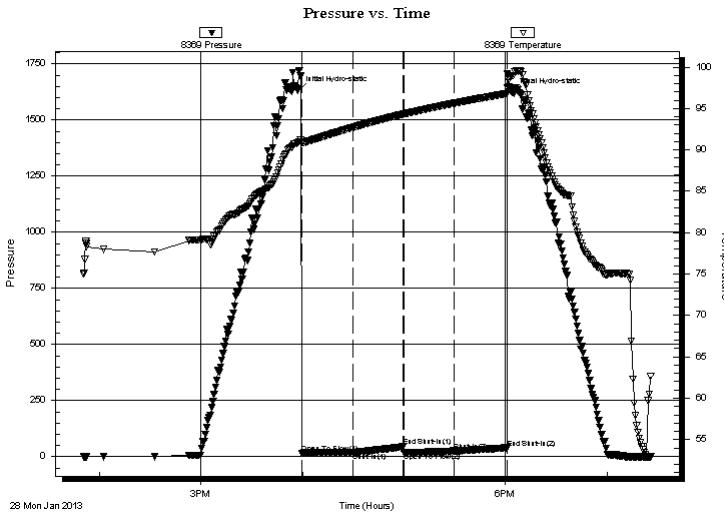
TEST COMMENT: 30-IFP-w k bl thru-out 1/8" to surface

30-ISIP-no bl

30-FFP-no bl

30-FSIP-no bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1630.40	90.85	Initial Hydro-static
2	16.24	90.83	Open To Flow (1)
32	19.75	92.70	Shut-In(1)
62	44.50	94.32	End Shut-In(1)
63	20.25	94.32	Open To Flow (2)
92	25.58	95.63	Shut-In(2)
124	39.30	96.80	End Shut-In(2)
127	1620.77	98.96	Final Hydro-static

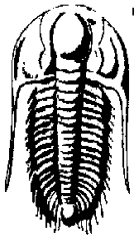
Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud w/show of oil	0.05

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51642

DST#: 4

Test Start: 2013.01.28 @ 13:50:37

GENERAL INFORMATION:

Formation: LKC H,I,J

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:59:32

Time Test Ended: 19:26:16

Interval: 3442.00 ft (KB) To 3510.00 ft (KB) (TVD)

Total Depth: 3510.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schw ager

Unit No: 42

Reference Elevations: 2034.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8700 Outside

Press @RunDepth: psig @ 3453.00 ft (KB)

Start Date: 2013.01.28

End Date: 2013.01.28

Capacity: 8000.00 psig

Last Calib.: 2013.01.28

Start Time: 13:50:31

End Time: 19:24:55

Time On Btm:

Time Off Btm:

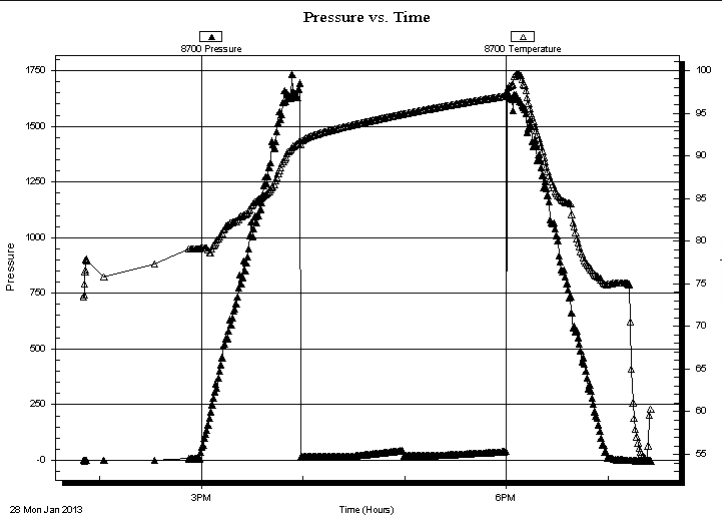
TEST COMMENT: 30-IFP-w k bl thru-out 1/8" to surface

30-ISIP-no bl

30-FFP-no bl

30-FSIP-no bl

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud w/show of oil	0.05

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51642

DST#: 4

ATTN: Ron Nelson

Test Start: 2013.01.28 @ 13:50:37

Tool Information

Drill Pipe:	Length: 3411.00 ft	Diameter: 3.80 inches	Volume: 47.85 bbl	Tool Weight: 2200.00 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: 60000.00 lb
			Total Volume: 48.00 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3442.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	68.00 ft			
Tool Length:	89.00 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			3422.00	
Shut In Tool	5.00			3427.00	
Hydraulic tool	5.00			3432.00	
Packer	5.00			3437.00	21.00 Bottom Of Top Packer
Packer	5.00			3442.00	
Stubb	1.00			3443.00	
Perforations	10.00			3453.00	
Recorder	0.00	8369	Inside	3453.00	
Recorder	0.00	8700	Outside	3453.00	
Blank Spacing	33.00			3486.00	
Perforations	21.00			3507.00	
Bullnose	3.00			3510.00	68.00 Bottom Packers & Anchor

Total Tool Length: 89.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51642

DST#: 4

ATTN: Ron Nelson

Test Start: 2013.01.28 @ 13:50:37

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: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.71 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud w/show of oil	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

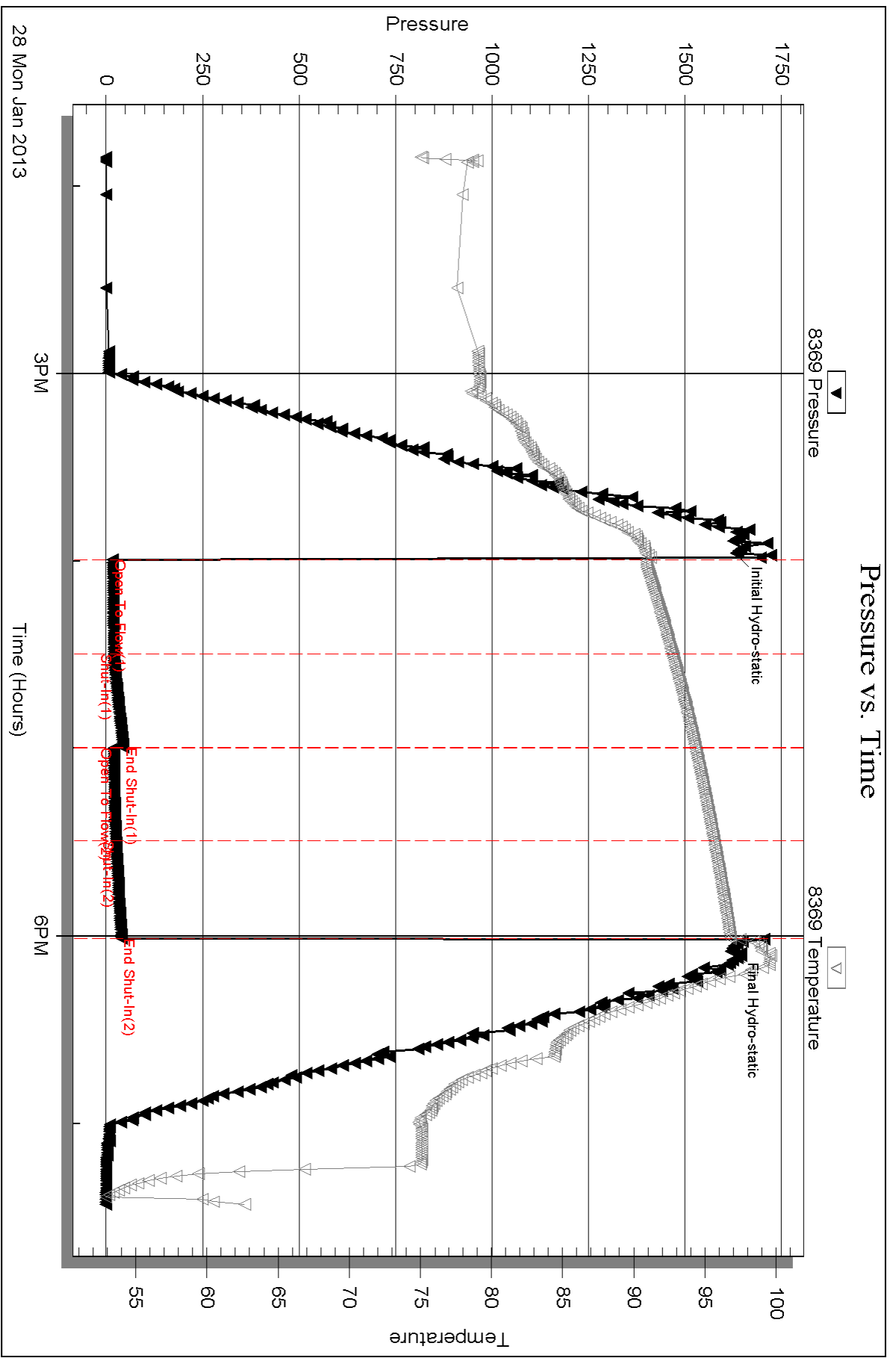
Serial #: 8369

Inside

Dow nting-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 4



Triobite Testing, Inc

Ref. No: 51642

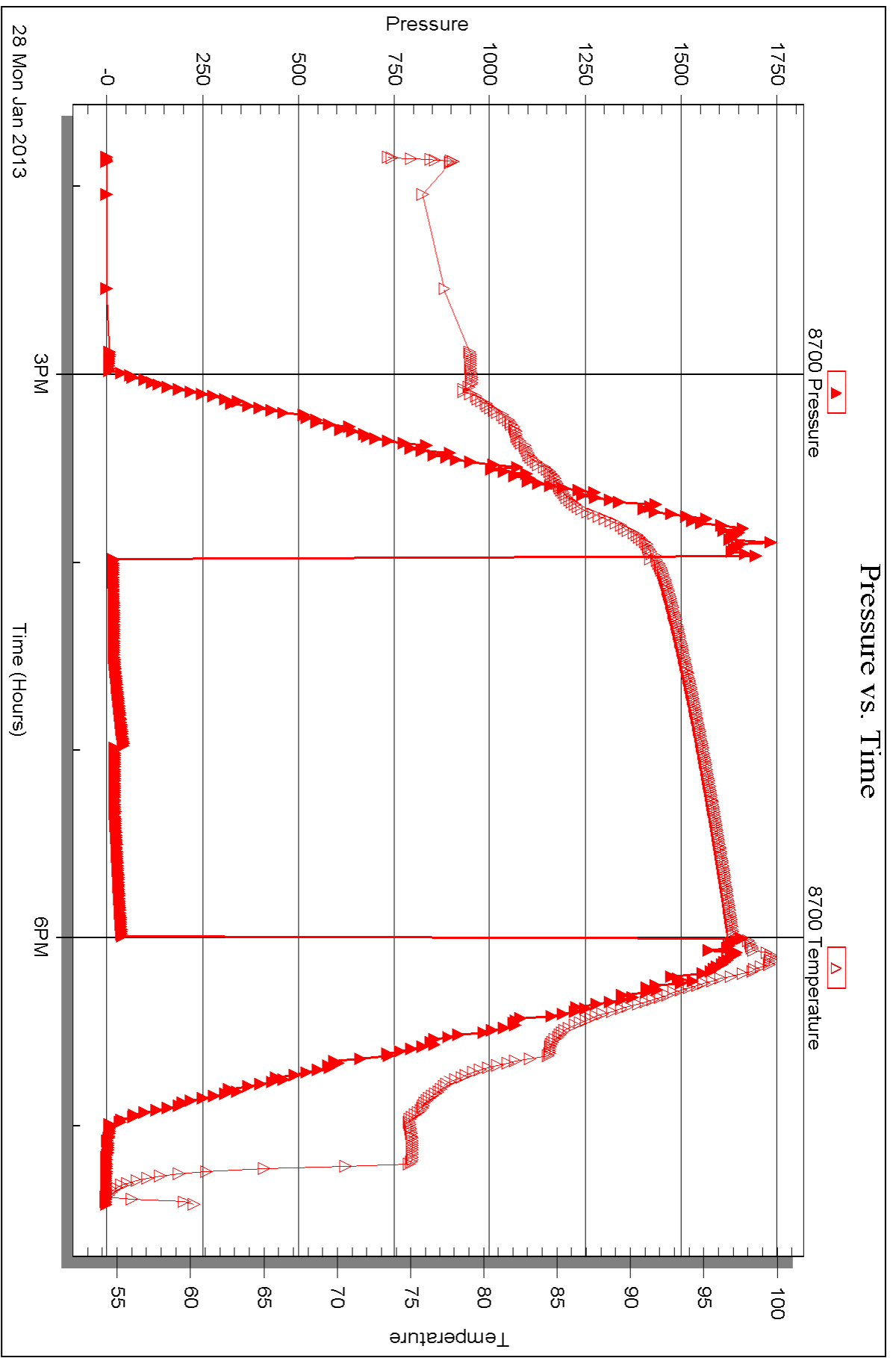
Printed: 2013.02.04 @ 10:26:18

Serial #: 8700

Outside Dow nung-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 4



Triobite Testing, Inc

Ref. No: 51642

Printed: 2013.02.04 @ 10:26:18



DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.29 @ 05:11:03

End Date: 2013.01.29 @ 11:33:27

Job Ticket #: 51643 DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:22:41



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

ATTN: Ron Nelson

Job Ticket: 51643

DST#: 5

Test Start: 2013.01.29 @ 05:11:03

GENERAL INFORMATION:

Formation: **Congl Sd**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:46:58

Time Test Ended: 11:33:27

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3529.00 ft (KB) To 3590.00 ft (KB) (TVD)

Total Depth: 3590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2034.00 ft (KB)

2026.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @ Run Depth: 33.57 psig @ 3533.00 ft (KB)

Start Date: 2013.01.29

End Date:

2013.01.29

Start Time: 05:11:03

End Time:

11:33:27

Capacity: 8000.00 psig

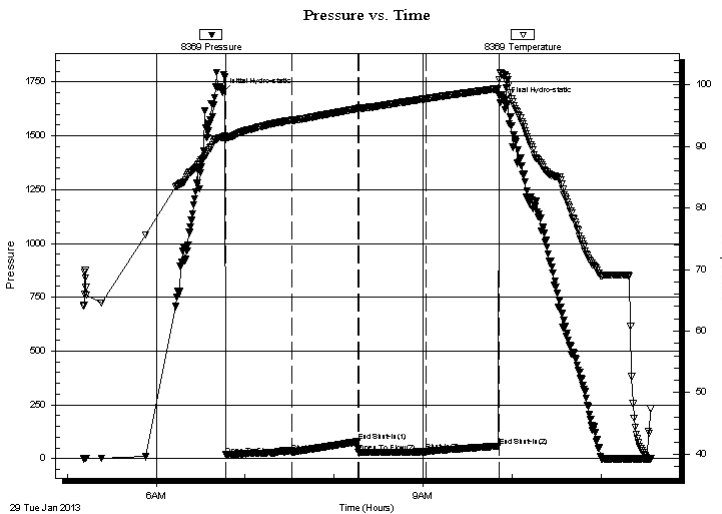
Last Calib.: 2013.01.29

Time On Btm: 2013.01.29 @ 06:44:58

Time Off Btm: 2013.01.29 @ 09:54:42

TEST COMMENT: 45-IFP-w k bl thru-out 1/4" to 1" bl
45-ISIP-no bl
45-FFP-w k bl thru-out 1/4" to 1/2" bl
45-FSIP-no bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1701.47	91.50	Initial Hydro-static
2	17.70	91.38	Open To Flow (1)
47	28.60	94.24	Shut-In(1)
91	79.47	96.15	End Shut-In(1)
92	30.85	96.18	Open To Flow (2)
137	33.57	97.76	Shut-In(2)
186	57.88	99.41	End Shut-In(2)
190	1659.95	101.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
35.00	O&GCM 5%G20%O75%M	0.22
0.00	60'GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51643

DST#: 5

ATTN: Ron Nelson

Test Start: 2013.01.29 @ 05:11:03

GENERAL INFORMATION:

Formation: **Congl Sd**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:46:58

Time Test Ended: 11:33:27

Test Type: Conventional Bottom Hole (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: **3529.00 ft (KB) To 3590.00 ft (KB) (TVD)**

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3590.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8700 Outside

Press @RunDepth: psig @ 3533.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.29

End Date:

2013.01.29

Last Calib.:

2013.01.29

Start Time: 05:10:17

End Time:

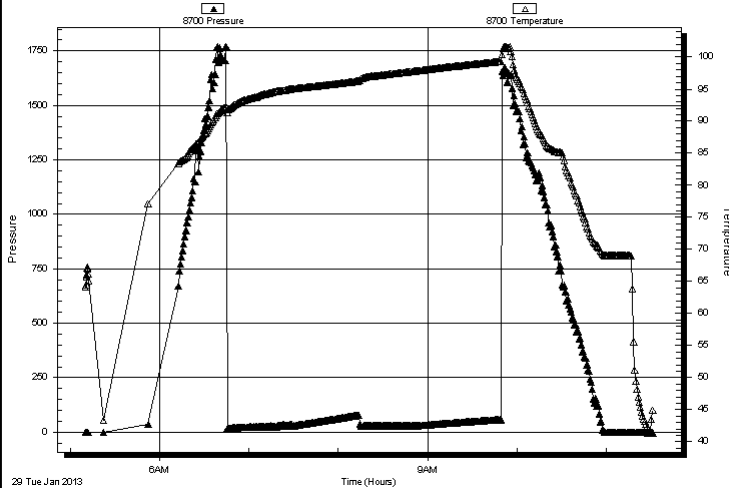
11:31:26

Time On Btm:

Time Off Btm:

TEST COMMENT: 45-IFP-w k bl thru-out 1/4" to 1" bl
45-ISIP-no bl
45-FFP-w k bl thru-out 1/4" to 1/2" bl
45-FSIP-no bl

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
35.00	O&GCM 5%G20%O75%M	0.22
0.00	60'GIP	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51643

DST#: 5

ATTN: Ron Nelson

Test Start: 2013.01.29 @ 05:11:03

Tool Information

Drill Pipe:	Length: 3484.00 ft	Diameter: 3.80 inches	Volume: 48.87 bbl	Tool Weight: 2200.00 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: 60000.00 lb
			<u>Total Volume: 49.02 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3529.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	61.00 ft			
Tool Length:	82.00 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			3509.00	
Shut In Tool	5.00			3514.00	
Hydraulic tool	5.00			3519.00	
Packer	5.00			3524.00	21.00 Bottom Of Top Packer
Packer	5.00			3529.00	
Stubb	1.00			3530.00	
Perforations	3.00			3533.00	
Recorder	0.00	8369	Inside	3533.00	
Recorder	0.00	8700	Outside	3533.00	
Blank Spacing	33.00			3566.00	
Perforations	21.00			3587.00	
Bullnose	3.00			3590.00	61.00 Bottom Packers & Anchor

Total Tool Length: 82.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51643

DST#: 5

ATTN: Ron Nelson

Test Start: 2013.01.29 @ 05:11:03

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: 49.00 sec/qt

Cushion Volume:

bbf

Water Loss: 7.89 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
35.00	O&GCM 5%G20%O75%M	0.218
0.00	60'GIP	0.000

Total Length: 35.00 ft Total Volume: 0.218 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

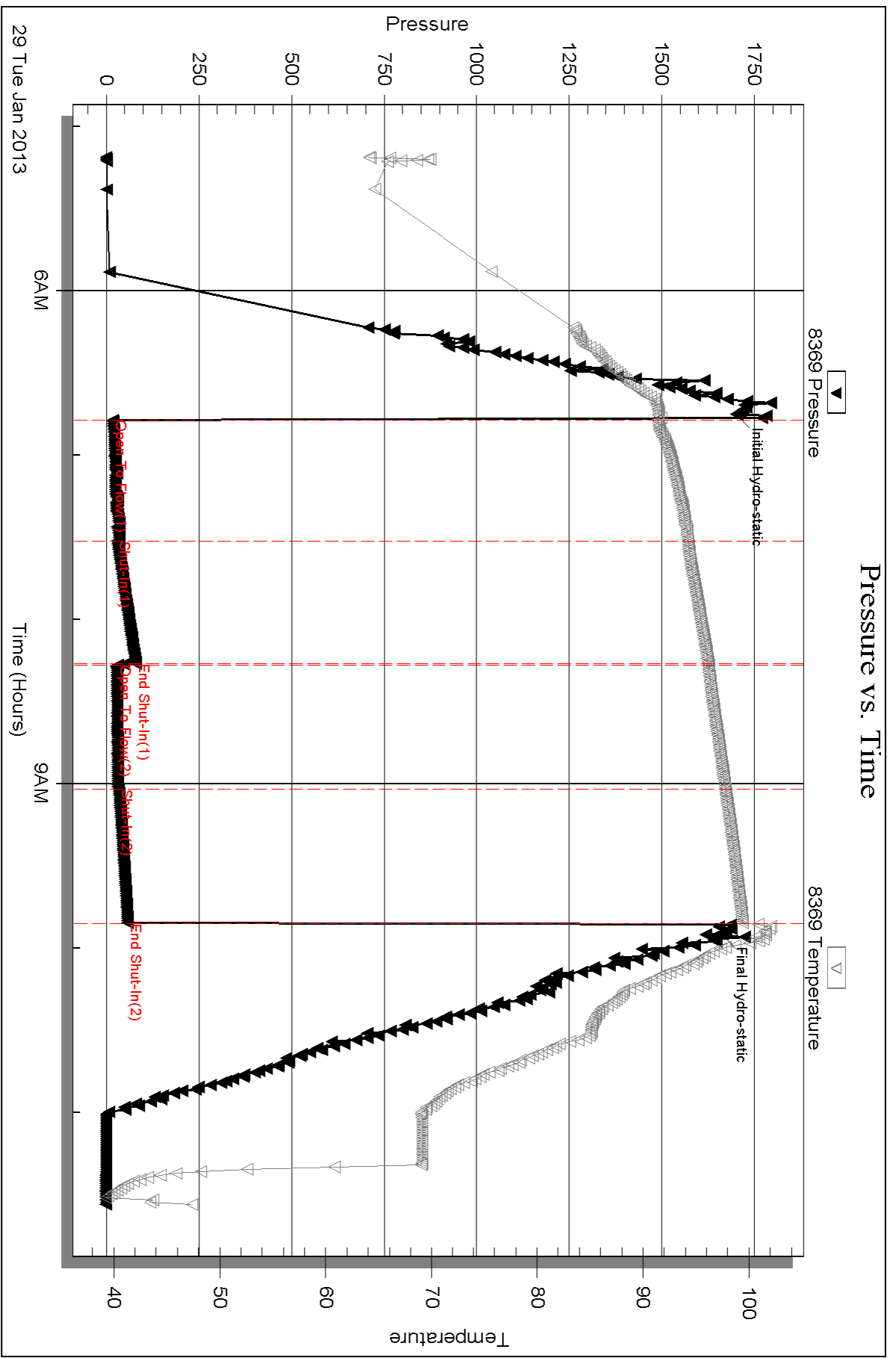
Serial #: 8369

Inside

Dow nung-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 51643

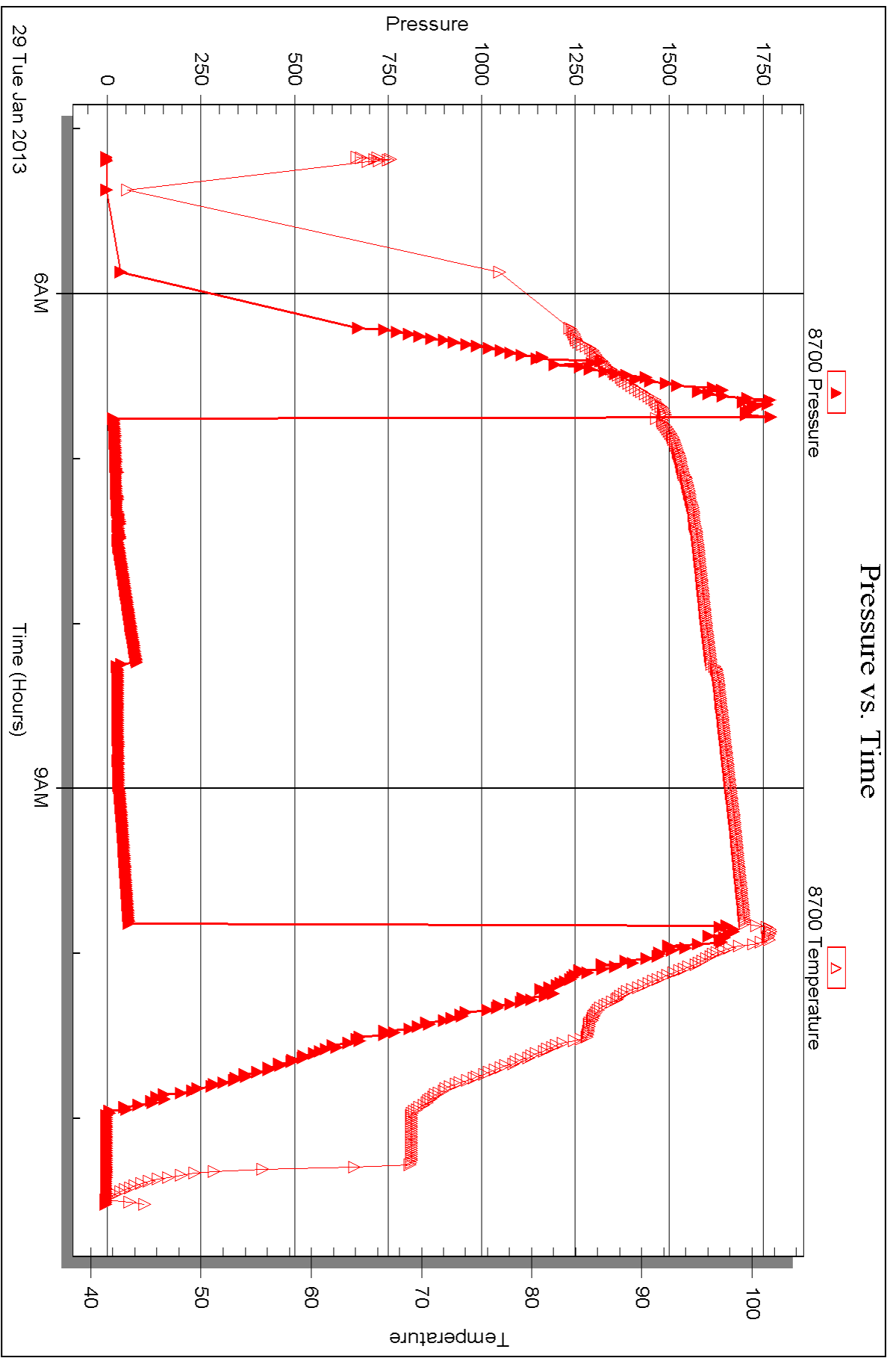
Printed: 2013.02.04 @ 10:22:43

Serial #: 8700

Outside Dow nung-Nelson Oil Co Inc

Roth-Robben #1-21

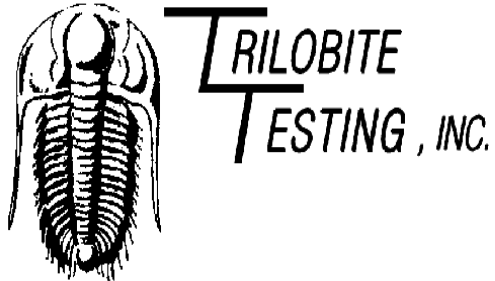
DST Test Number: 5



Triobite Testing, Inc

Ref. No: 51643

Printed: 2013.02.04 @ 10:22:44



DRILL STEM TEST REPORT

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

PO Box 1019
Hays KS 67601

ATTN: Ron Nelson

Roth-Robben #1-21

21-16s-17w Rush,KS

Start Date: 2013.01.30 @ 03:00:38

End Date: 2013.01.30 @ 11:14:32

Job Ticket #: 51644 DST #: 6

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.04 @ 10:20:03



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51644

DST#: 6

ATTN: Ron Nelson

Test Start: 2013.01.30 @ 03:00:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:26:33

Time Test Ended: 11:14:32

Test Type: Conventional Straddle (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3530.00 ft (KB) To 3613.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3613.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8369

Inside

Press @RunDepth: 104.79 psig @ 3540.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.30

End Date:

2013.01.30

Last Calib.:

2013.01.30

Start Time: 03:00:38

End Time:

11:14:32

Time On Btm:

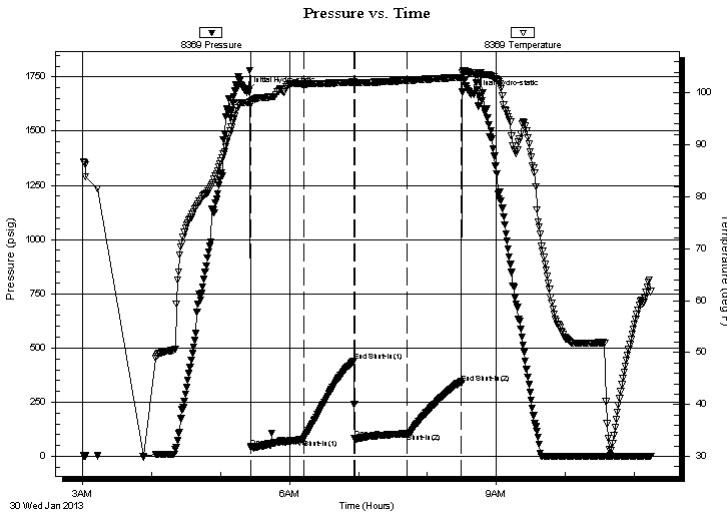
2013.01.30 @ 05:22:48

Time Off Btm:

2013.01.30 @ 08:38:02

TEST COMMENT: 45-IFP-w k to strg in 25 min
45-ISIP-no bl
45-FFP-w k to strg in 20 min
45-FSIP-no bl, 1st 15 min, then w k 1/4" bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1680.46	98.16	Initial Hydro-static
4	42.05	98.18	Open To Flow (1)
50	79.78	101.73	Shut-In(1)
94	439.11	102.09	End Shut-In(1)
94	81.62	101.99	Open To Flow (2)
140	104.79	102.41	Shut-In(2)
187	337.68	102.99	End Shut-In(2)
196	1669.36	103.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
124.00	MGO 25%G20%M55%O	1.47
76.00	HO&GCM 20%G20%O60%M	1.07
0.00	790'GIP	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51644

DST#: 6

ATTN: Ron Nelson

Test Start: 2013.01.30 @ 03:00:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:26:33

Time Test Ended: 11:14:32

Test Type: Conventional Straddle (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3530.00 ft (KB) To 3613.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3613.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8374 Below (Straddle)

Press @RunDepth: psig @ 3633.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.30

End Date: 2013.01.30

Last Calib.: 2013.01.30

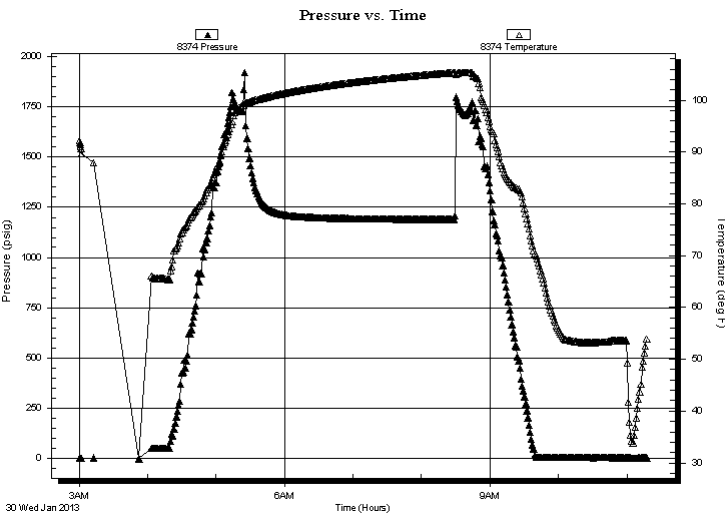
Start Time: 03:00:33

End Time: 11:17:42

Time On Btm:

Time Off Btm:

TEST COMMENT: 45-IFP-w k to strg in 25 min
45-ISIP-no bl
45-FFP-w k to strg in 20 min
45-FSIP-no bl, 1st 15 min, then w k 1/4" bl



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
124.00	MGO 25%G20%M55%O	1.47
76.00	HO&GCM 20%G20%O60%M	1.07
0.00	790'GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51644 **DST#: 6**

ATTN: Ron Nelson

Test Start: 2013.01.30 @ 03:00:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:26:33

Time Test Ended: 11:14:32

Test Type: Conventional Straddle (Reset)

Tester: Ray Schwager

Unit No: 42

Interval: 3530.00 ft (KB) To 3613.00 ft (KB) (TVD)

Reference Elevations: 2034.00 ft (KB)

Total Depth: 3613.00 ft (KB) (TVD)

2026.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8700 Outside

Press @RunDepth: psig @ 3540.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.01.30

End Date:

2013.01.30

Last Calib.:

2013.01.30

Start Time: 03:00:06

End Time:

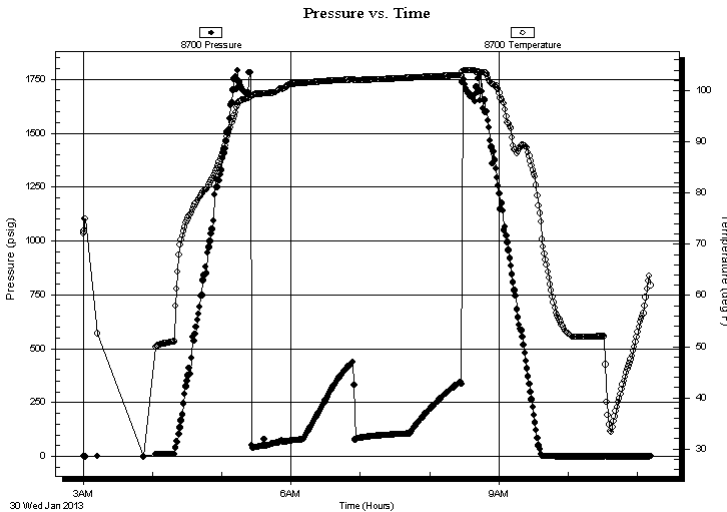
11:12:30

Time On Btm:

Time Off Btm:

TEST COMMENT: 45-IFP-w k to strg in 25 min
45-ISIP-no bl
45-FFP-w k to strg in 20 min
45-FSIP-no bl, 1st 15 min, then w k 1/4" bl

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
124.00	MGO 25%G20%M55%O	1.47
76.00	HO&GCM 20%G20%O60%M	1.07
0.00	790'GIP	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51644

DST#: 6

ATTN: Ron Nelson

Test Start: 2013.01.30 @ 03:00:38

Tool Information

Drill Pipe:	Length: 3510.00 ft	Diameter: 3.80 inches	Volume: 49.24 bbl	Tool Weight: 2200.00 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: 55000.00 lb
			<u>Total Volume: 49.39 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3530.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	3613.00 ft			
Interval between Packers:	83.00 ft			
Tool Length:	222.00 ft			
Number of Packers:	3	Diameter: 6.75 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			3510.00	
Shut In Tool	5.00			3515.00	
Hydraulic tool	5.00			3520.00	
Packer	5.00			3525.00	21.00 Bottom Of Top Packer
Packer	5.00			3530.00	
Stubb	1.00			3531.00	
Perforations	9.00			3540.00	
Recorder	0.00	8369	Inside	3540.00	
Recorder	0.00	8700	Outside	3540.00	
Blank Spacing	64.00			3604.00	
Perforations	5.00			3609.00	
Blank Off Sub	1.00			3610.00	
Blank Spacing	3.00			3613.00	83.00 Tool Interval
Packer	5.00			3618.00	
Stubb	1.00			3619.00	
Perforations	14.00			3633.00	
Recorder	0.00	8374	Below	3633.00	
Blank Spacing	95.00			3728.00	
Bullnose	3.00			3731.00	118.00 Bottom Packers & Anchor

Total Tool Length: 222.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Dow ning-Nelson Oil Co Inc

21-16s-17w Rush,KS

PO Box 1019
Hays KS 67601

Roth-Robben #1-21

Job Ticket: 51644

DST#: 6

ATTN: Ron Nelson

Test Start: 2013.01.30 @ 03:00:38

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: 7.95 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
124.00	MGO 25%G20%M55%O	1.466
76.00	HO&GCM 20%G20%O60%M	1.066
0.00	790'GIP	0.000

Total Length: 200.00 ft Total Volume: 2.532 bbl

Num Fluid Samples: 0

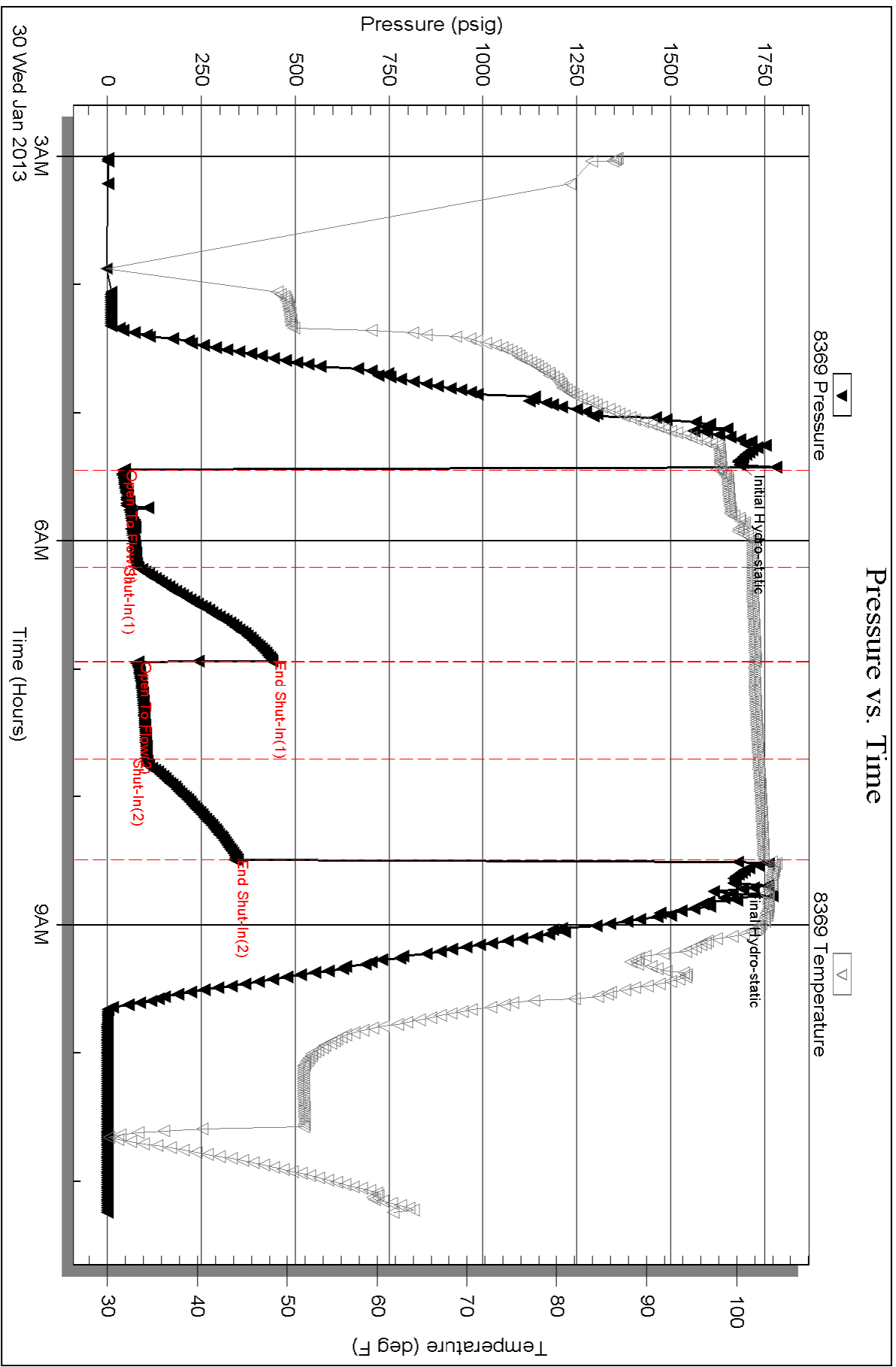
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

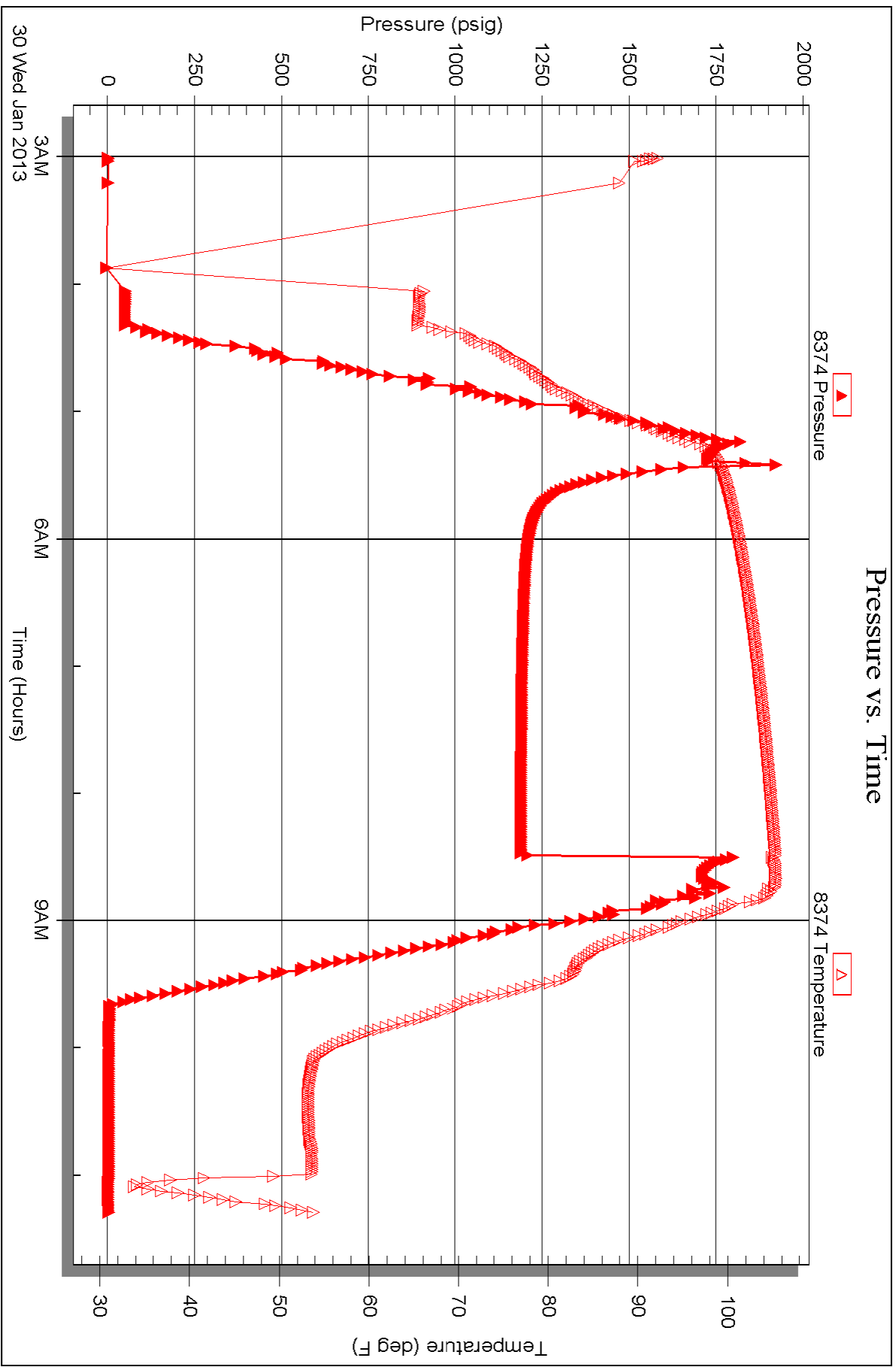


Serial #: 8374

Below (Stratton)ng-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 6



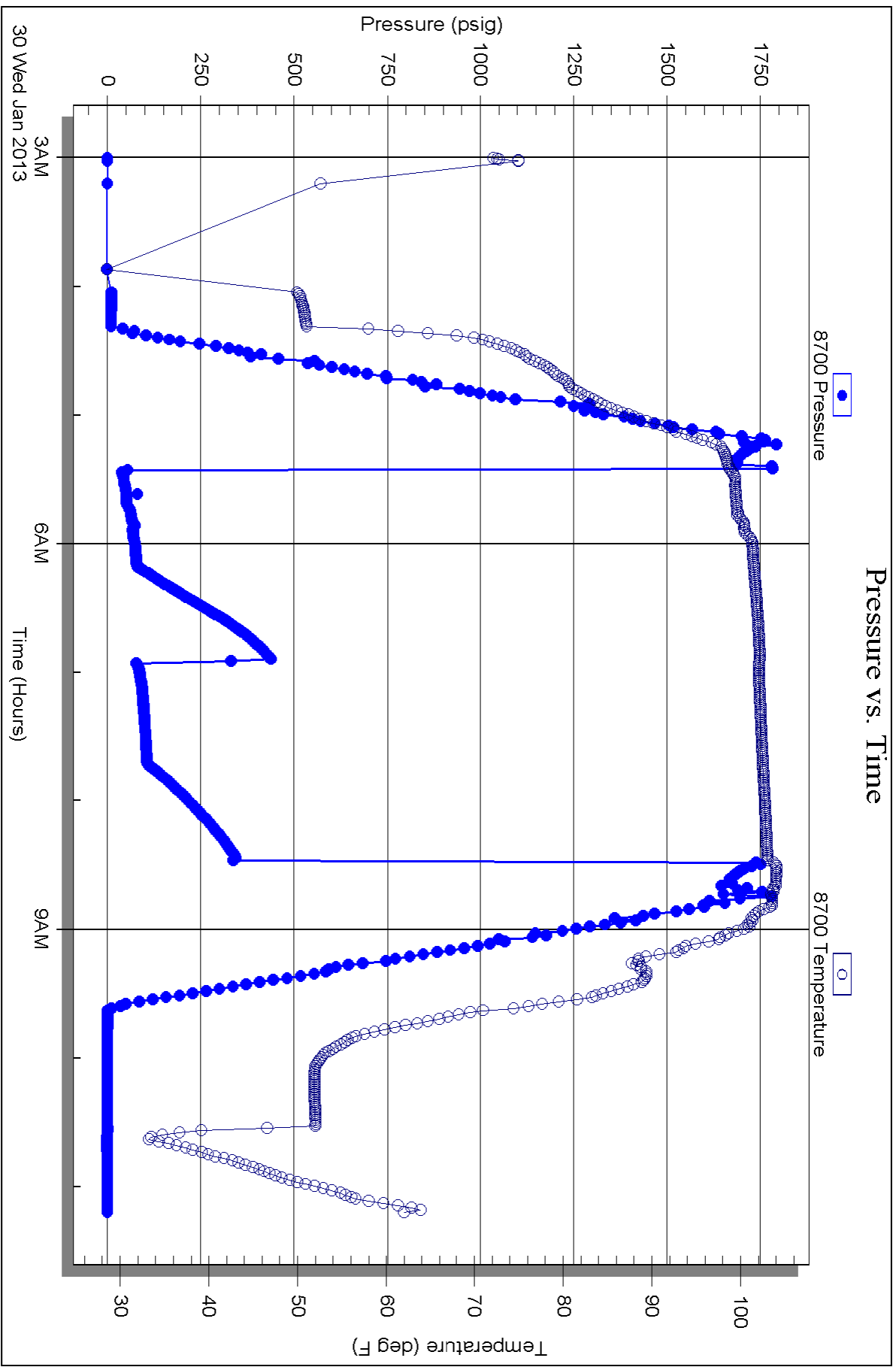
Serial #: 8700

Outside

Dow nung-Nelson Oil Co Inc

Roth-Robben #1-21

DST Test Number: 6





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51639

4/10

Well Name & No. Roth - Robben #1-21 Test No. 1 Date 1-26-13
 Company Downing-Nelson Oil Co Inc Elevation 2034 KB 2026 GL
 Address PO Box 1019 HAYS, Ks 67601
 Co. Rep / Geo. MARC Downing Rig Discovery rig 4
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State Ks

Interval Tested 3300-3348 Zone Tested LKC A-C
 Anchor Length 48 Drill Pipe Run 3269 Mud Wt. 8.8
 Top Packer Depth 3295 Drill Collars Run 30 Vis 57
 Bottom Packer Depth 3360 Wt. Pipe Run - WL 8
 Total Depth 3348 Chlorides 4000 ppm System LCM 2 1/2 #

Blow Description IFP - STRONG Blow Thru-out
TSIP - NO Blow
FFP - STRONG Blow Thru-out, GTS IN 28 MIN, NO GAUGE
FSIP - WEAK Blow BACK

Rec	Feet of	%gas	%oil	%water	%mud
	<u>GTS</u>				
<u>90</u>	<u>GMO</u>	<u>30</u>	<u>60</u>		<u>10</u>
<u>470</u>	<u>CO</u>				

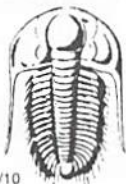
Rec Total 560 BHT 103 Gravity 28 API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic 1540 Test 1150 T-On Location 1845
 (B) First Initial Flow 59 Jars - T-Started 1950
 (C) First Final Flow 84 Safety Joint - T-Open 2150
 (D) Initial Shut-In 824 Circ Sub - T-Pulled 0605
 (E) Second Initial Flow 92 Hourly Standby - T-Out 0202
 (F) Second Final Flow 163 Mileage 50 RT 77.50 Comments -
 (G) Final Shut-In 787 Sampler -
 (H) Final Hydrostatic 1533 Straddle -
 Shale Packer - Ruined Shale Packer -
 Extra Packer - Ruined Packer -
 Extra Recorder - Extra Copies -

Initial Open 15
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 60
 Sub Total 1227.50
 Total 1227.50
 MP/DST Disc't -

Approved By _____ Our Representative Ray Schwager Thank you

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. 51640

Well Name & No. Roth-Robben #1-21 Test No. 2 Date 1-27-13
 Company Downing-Nelson Oil Co Inc Elevation 2034 KB 2026 GL
 Address PO Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig Discovery rig 4
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State Ks

Interval Tested 3355-3375 Zone Tested LKC "0"
 Anchor Length 20 Drill Pipe Run 3323 Mud Wt. 9
 Top Packer Depth 3350 Drill Collars Run 30 Vis 49
 Bottom Packer Depth 3355 Wt. Pipe Run - WL 8
 Total Depth 3375 Chlorides 6000 ppm System LCM 2[#]

Blow Description IFP - STRONG BLOW IN 4 MIN
ISIP - SURFACE BLOW BACK
FFP - WEAK TO A STRONG BLOW IN 25 MIN
FSIP - NO BLOW BACK!

Rec	Feet of	%gas	%oil	%water	%mud
<u>465</u>	<u>GIP</u>				
<u>25</u>	<u>HOT+6CM</u>	<u>20</u>	<u>25</u>	<u>55</u>	
<u>60</u>	<u>OCMW</u>	<u>8</u>	<u>82</u>	<u>10</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 85 BHT 104 Gravity - API RW .14 @ 55 °F Chlorides 68000 ppm

(A) Initial Hydrostatic 1576 Test 1150 T-On Location 0745
 (B) First Initial Flow 22 Jars T-Started 0845
 (C) First Final Flow 35 Safety Joint T-Open 1030
 (D) Initial Shut-In 649 Circ Sub T-Pulled 1300
 (E) Second Initial Flow 44 Hourly Standby T-Out 1518
 (F) Second Final Flow 49 Mileage 77.50 Comments _____
 (G) Final Shut-In 613 Sampler _____
 (H) Final Hydrostatic 1565 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 1227.50
 Total 1227.50
 MP/DST Disc't _____

Approved By _____ Our Representative Ray Schwager *Thank you*

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51641

4/10

Well Name & No. Roth-Robben # 1-21 Test No. 3 Date 1-27-13
 Company Downing-Nelson Oil Co Inc Elevation 2034 KB 2026 GL
 Address PO Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig Discovery rig 4
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State Ks

Interval Tested 3375-3393 Zone Tested LKC "E"
 Anchor Length 18 Drill Pipe Run 3355 Mud Wt. 8.7
 Top Packer Depth 3370 Drill Collars Run 30 Vis 56
 Bottom Packer Depth 3375 Wt. Pipe Run — WL 8
 Total Depth 3393 Chlorides 6000 ppm System LCM 2#
 Blow Description IFP - SURFACE BLOW THRU-OUT
ISIP - NO BLOW
FFP - NO BLOW
FSIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</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 10 BHT 95 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>1587</u>	<input checked="" type="checkbox"/> Test 1150	T-On Location <u>2045</u>
(B) First Initial Flow <u>11</u>	<input type="checkbox"/> Jars	T-Started <u>2105</u>
(C) First Final Flow <u>16</u>	<input type="checkbox"/> Safety Joint	T-Open <u>2305</u>
(D) Initial Shut-In <u>748</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0105</u>
(E) Second Initial Flow <u>17</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0226</u>
(F) Second Final Flow <u>19</u>	<input checked="" type="checkbox"/> Mileage <u>77.50</u>	Comments
(G) Final Shut-In <u>678</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1586</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>30</u>	<input type="checkbox"/> Day Standby	Total <u>1227.50</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1227.50</u>	

Approved By _____ Our Representative Ray Schwager *Thank you*

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51642

Well Name & No. Roth-Robben #1-21 Test No. 4 Date 1-28-13
 Company Downing-Nelson Oil Co Inc Elevation 2034 KB 2026 GL
 Address Po Box 1019 Hays, Ks 67601
 Co. Rep / Geo. MARC Downing Rig Discovery rig 4
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State Ks

Interval Tested 3442-3510 Zone Tested LKC H, I, J
 Anchor Length 68 Drill Pipe Run 3411 Mud Wt. 8.8
 Top Packer Depth 3437 Drill Collars Run 30 Vis 56
 Bottom Packer Depth 3442 Wt. Pipe Run - WL 8.8
 Total Depth 3510 Chlorides 7000 ppm System LCM 1 1/2 #

Blow Description IFP - WEAK BLOW THRU-OUT 1/8" TO SURFACE
ISIP - NO BLOW
FFP - NO BLOW
FSIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</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

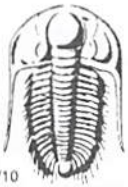
Rec Total 10 BHT 92 Gravity - API RW - @ - F Chlorides - ppm

(A) Initial Hydrostatic 1630 Test 1150 T-On Location 1255
 (B) First Initial Flow 16 Jars _____ T-Started 1350
 (C) First Final Flow 19 Safety Joint _____ T-Open 1600
 (D) Initial Shut-In 44 Circ Sub _____ T-Pulled 1800
 (E) Second Initial Flow 20 Hourly Standby _____ T-Out 1926
 (F) Second Final Flow 25 Mileage 77.50 Comments _____
 (G) Final Shut-In 39 Sampler _____
 (H) Final Hydrostatic 1620 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____

Initial Open 30 Extra Packer _____ Extra Copies _____
 Initial Shut-In 30 Extra Recorder _____ Sub Total 0
 Final Flow 30 Day Standby _____ Total 1227.50
 Final Shut-In 30 Accessibility _____ MP/DST Disc't _____
 Sub Total 1227.50

Approved By _____ Our Representative RAY SCHWAGER *Thank you*

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51643

4/10

Well Name & No. Roth-Robben #1-21 Test No. 5 Date 1-29-13
 Company Downing-Nelson Oil Co Inc Elevation 2034 KB 2026 GL
 Address PO Box 1019 Hays, Ko 67601
 Co. Rep / Geo. MARC Downing Rig Discrepary rig 4
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State Ko

Interval Tested 3529-3590 Zone Tested Congl sd.
 Anchor Length 61 Drill Pipe Run 3484 Mud Wt. 8.7
 Top Packer Depth 3524 Drill Collars Run 30 Vis 49
 Bottom Packer Depth 3529 Wt. Pipe Run - WL 8
 Total Depth 3590 Chlorides 7000 ppm System LCM 1 1/2 #
 Blow Description IFP - Weak Blow Thru-out 1/4" To 1" Blow
ISIP - NO Blow
FFP - Weak Blow Thru-out 1/4" To 1/2" Blow
FSIP - NO Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>GIP</u>				
<u>35</u>	<u>OTGCM</u>	<u>5</u>	<u>20</u>		<u>75</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 35 BHT 99 Gravity - API RW - @ - F Chlorides - ppm

(A) Initial Hydrostatic <u>1701</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>0450</u>
(B) First Initial Flow <u>17</u>	<input type="checkbox"/> Jars	T-Started <u>0510</u>
(C) First Final Flow <u>28</u>	<input type="checkbox"/> Safety Joint	T-Open <u>0645</u>
(D) Initial Shut-In <u>29</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0945</u>
(E) Second Initial Flow <u>30</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1133</u>
(F) Second Final Flow <u>33</u>	<input checked="" type="checkbox"/> Mileage <u>77.50</u>	Comments
(G) Final Shut-In <u>57</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1659</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>45</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>45</u>	<input type="checkbox"/> Day Standby	Total <u>1227.50</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1227.50</u>	

Approved By _____ Our Representative Ray Schwager Thank you

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 51644

Well Name & No. Roth-Robben #1-21 Test No. 6 Date 1-30-13
 Company Downing-Nelson Oil Co, Inc Elevation 2034 KB 2026 GL
 Address PO Box 1019 Hays, Ko 67601
 Co. Rep / Geo. MARC DOWNING Rig Discovery rig #
 Location: Sec. 21 Twp. 16^s Rge. 17^w Co. Rush State K

Interval Tested 3530-3613 Zone Tested Arbuckle
 Anchor Length 83 Drill Pipe Run 3510 Mud Wt. 8.7
 Top Packer Depth 3530-3525 Drill Collars Run 30 Vis 58
 Bottom Packer Depth 3613 Wt. Pipe Run - WL 8
 Total Depth 3727 Chlorides 7000 ppm System LCM 2#
 Blow Description IFP - WEAK TO STRONG IN 25 MIN
ISIP - NO BLOW

FIF - WEAK TO STRONG IN 20 MIN
FSIP - NO BLOW 1st 15 min, THEN WK 1/4" BLOWBACK

Rec	Feet of	%gas	%oil	%water	%mud
<u>790</u>	<u>GIP</u>				
<u>76</u>	<u>HOT GCM</u>	<u>20</u>	<u>20</u>		<u>60</u>
<u>124</u>	<u>MGO</u>	<u>25</u>	<u>55</u>		<u>20</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 200 BHT 102 Gravity - API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic 1680 Test 1150 T-On Location 0215
 (B) First Initial Flow 42 Jars - T-Started 0300
 (C) First Final Flow 79 Safety Joint - T-Open 0530
 (D) Initial Shut-In 439 Circ Sub - T-Pulled 0830
 (E) Second Initial Flow 81 Hourly Standby - T-Out 1114
 (F) Second Final Flow 104 Mileage 77.50 Comments -
 (G) Final Shut-In 337 Sampler -
 (H) Final Hydrostatic 1669 Straddle 600 Ruined Shale Packer -
 Shale Packer - Ruined Packer -
 Extra Packer - Extra Copies -
 Extra Recorder - Sub Total 0
 Day Standby - Total 1827.50
 Accessibility - MP/DST Disc't -
 Sub Total 1827.50

Approved By _____ Our Representative Ray Schwaner *Thank you*

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