



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

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

P.O. Box 372  
Hays, KS 67601

ATTN: Ron Nelson

**13-13-21 Trego KS**

**Kuhn # 1-13**

Start Date: 2001.07.10 @ 19:40:22

End Date: 2001.07.11 @ 00:14:51

Job Ticket #: 15462

DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Downing-Nelson Oil Co. Inc.

Kuhn # 1-13

13-13-21 Trego KS

DST # 1

Toronto/A LKC

2001.07.10



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co. Inc.

Kuhn # 1-13

P.O. Box 372  
Hays, KS 67601

13-13-21 Trego KS

Job Ticket: 15462      **DST#: 1**

ATTN: Ron Nelson

Test Start: 2001.07.10 @ 19:40:22

### GENERAL INFORMATION:

Formation: **Toronto/A LKC**

Deviated: No Whipstock:                      ft (KB)

Time Tool Opened: 21:39:21

Time Test Ended: 00:14:51

Test Type: Conventional Bottom Hole

Tester: Dan Bangle

Unit No: 21

Interval: **3442.00 ft (KB) To 3535.00 ft (KB) (TVD)**

Reference Elevations: 2189.00 ft (KB)

Total Depth: 3535.00 ft (KB) (TVD)

2181.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

**Serial #: 2357**

Inside

Press@RunDepth: 20.87 psig @ 3449.01 ft (KB)

Capacity: 7000.00 psig

Start Date: 2001.07.10

End Date: 2001.07.11

Last Calib.: 2001.01.13

Start Time: 19:40:22

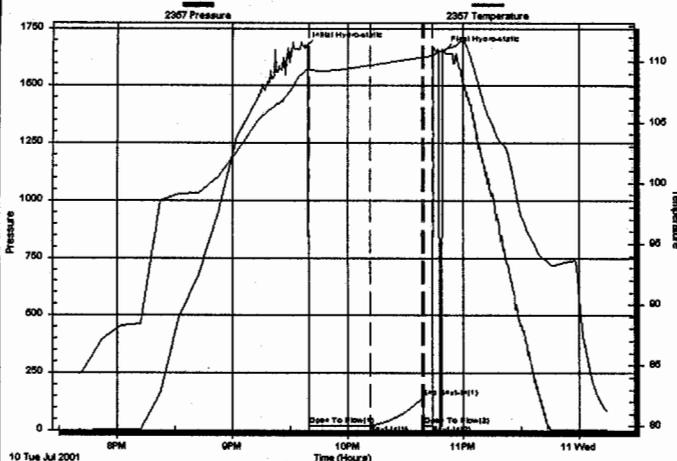
End Time: 00:14:51

Time On Btm: 2001.07.10 @ 21:37:51

Time Off Btm: 2001.07.10 @ 22:50:21

**TEST COMMENT:** IF-Weak died in 5 min  
FFNo blow -flushed tool  
Times-30-30-5-0

Pressure vs. Time



### PRESSURE SUMMARY

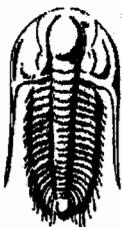
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1669.27	109.23	Initial Hydro-static
2	18.69	109.36	Open To Flow (1)
34	20.87	109.71	Shut-In(1)
61	141.26	110.40	End Shut-In(1)
62	20.85	110.42	Open To Flow (2)
66	21.17	110.49	Shut-In(2)
73	1650.29	111.02	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
10.00	Drilling mud	0.14

### Gas Rates

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



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**TOOL DIAGRAM**

Dow ning-Nelson Oil Co. Inc.

**Kuhn # 1-13**

P.O. Box 372  
Hays, KS 67601

**13-13-21 Trego KS**

Job Ticket: 15462

**DST#: 1**

ATTN: Ron Nelson

Test Start: 2001.07.10 @ 19:40:22

## Tool Information

Drill Pipe:	Length: 3444.00 ft	Diameter: 3.80 inches	Volume: 48.31 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
		<u>Total Volume:</u>	<u>48.31 bbl</u>	Tool Chased 0.01 ft
Drill Pipe Above KB:	23.02 ft			String Weight: Initial 38000.00 lb
Depth to Top Packer:	3442.00 ft			Final 38000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	93.02 ft			
Tool Length:	114.02 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
C.O. Sub	1.00			3422.00	
S.I. Tool	5.00			3427.00	
HMV	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	5.00			3448.00	
C.O. Sub	1.00			3449.00	
Recorder	0.01	2357	Inside	3449.01	
Blank Spacing	61.00			3510.01	
C.O. Sub	1.00			3511.01	
Recorder	0.01	13254	Outside	3511.02	
Perforations	21.00			3532.02	
Bullnose	3.00			3535.02	93.02 Bottom Packers & Anchor

**Total Tool Length: 114.02**



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**FLUID SUMMARY**

Dow ning-Nelson Oil Co. Inc.

**Kuhn # 1-13**

P.O. Box 372  
Hays, KS 67601

**13-13-21 Trego KS**

Job Ticket: 15462

**DST#: 1**

ATTN: Ron Nelson

Test Start: 2001.07.10 @ 19:40:22

## 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: 40.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.35 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
10.00	Drilling mud	0.140

Total Length: 10.00 ft

Total Volume: 0.140 bbl

Num Fluid Samples: 0

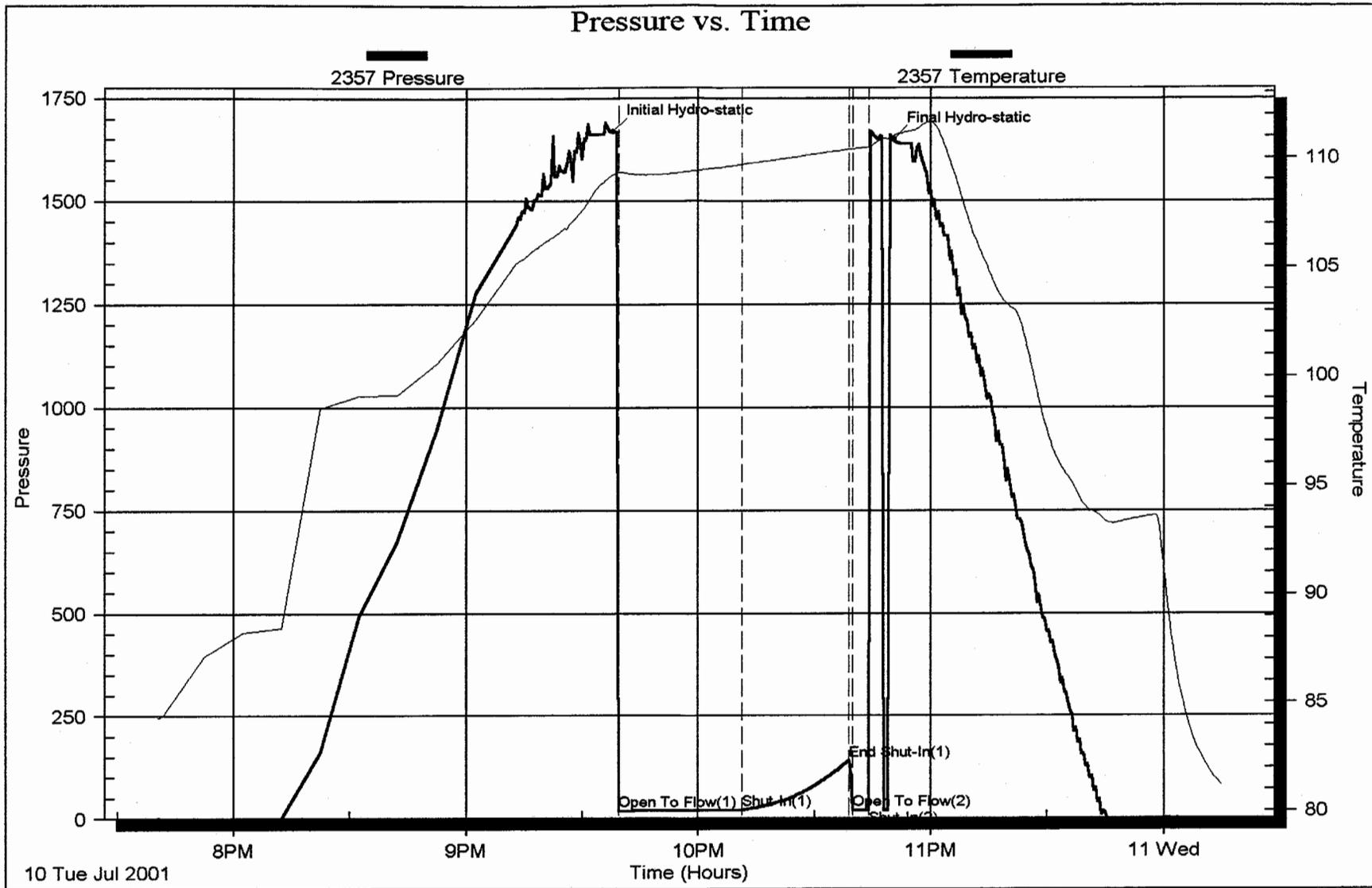
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Dow ning-Nelson Oil Co. Inc.

Kuhn # 1-13

P.O. Box 372  
Hays, KS 67601

13-13-21 Trego KS

Job Ticket: 15463

DST#: 2

ATTN: Ron Nelson

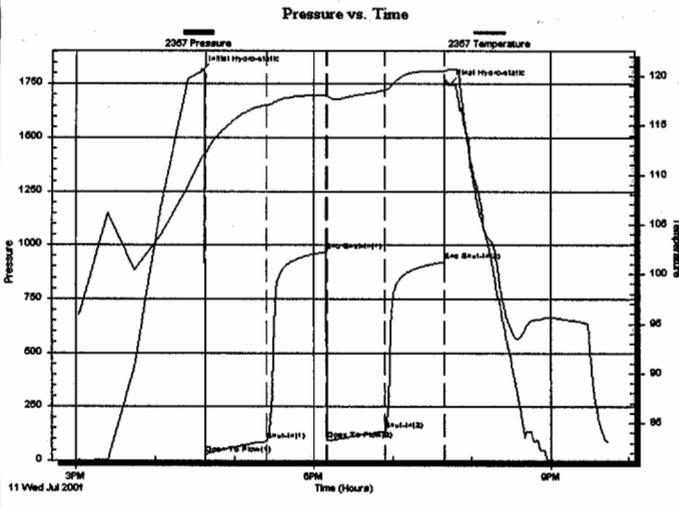
Test Start: 2001.07.11 @ 15:02:16

### GENERAL INFORMATION:

Formation: **LKC**  
 Deviated: **No** Whipstock: **ft (KB)** Test Type: **Conventional Bottom Hole**  
 Time Tool Opened: **16:37:46** Tester: **Dan Bangle**  
 Time Test Ended: **21:44:46** Unit No: **21**  
 Interval: **3630.00 ft (KB) To 3673.00 ft (KB) (TVD)** Reference Elevations: **2189.00 ft (KB)**  
 Total Depth: **3673.00 ft (KB) (TVD)** **2181.00 ft (CF)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Fair** KB to GR/CF: **8.00 ft**

**Serial #: 2357** **Inside**  
 Press@RunDepth: **136.45 psig @ 3640.01 ft (KB)** Capacity: **7000.00 psig**  
 Start Date: **2001.07.11** End Date: **2001.07.11** Last Calib.: **2001.01.13**  
 Start Time: **15:02:17** End Time: **21:44:46** Time On Btm: **2001.07.11 @ 16:35:16**  
 Time Off Btm: **2001.07.11 @ 19:43:16**

**TEST COMMENT:** IF-Strong BOB in 5 min  
 ISI-Weak building to 3"  
 FF-Strong BOB in 7 min  
 FSI-Weak building to 5"



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1811.05	111.87	Initial Hydro-static
3	24.54	112.23	Open To Flow (1)
49	88.32	117.08	Shut-In(1)
94	968.74	118.02	End Shut-In(1)
95	95.11	118.02	Open To Flow (2)
139	136.45	118.60	Shut-In(2)
184	922.84	120.48	End Shut-In(2)
188	1747.78	120.70	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
155.00	Slightly mud cut gassy oil 40%g 55%o 5%2.17	2.17
155.00	Clean gassy oil 60%g 40%o	2.17
1803.00	Gas in pipe	25.29

Gas Rates			
	Choke(Inches)	Pressure (psig)	Gas Rate (Mcf/d)



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**TOOL DIAGRAM**

Dow ning-Nelson Oil Co. Inc.

**Kuhn # 1-13**

P.O. Box 372  
Hays, KS 67601

**13-13-21 Trego KS**

Job Ticket: 15463

**DST#: 2**

ATTN: Ron Nelson

Test Start: 2001.07.11 @ 15:02:16

**Tool Information**

Drill Pipe:	Length: 3631.00 ft	Diameter: 3.80 inches	Volume: 50.93 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 50.93 bbl</u>	Tool Chased 0.01 ft
Drill Pipe Above KB:	22.02 ft			String Weight: Initial 38000.00 lb
Depth to Top Packer:	3630.00 ft			Final 40000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	43.02 ft			
Tool Length:	64.02 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

**Tool Description**

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

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
C.O. Sub	1.00			3610.00	
S.I. Tool	5.00			3615.00	
HMV	5.00			3620.00	
Packer	5.00			3625.00	21.00 Bottom Of Top Packer
Packer	5.00			3630.00	
Stubb	1.00			3631.00	
Perforations	5.00			3636.00	
Perforations	4.00			3640.00	
Recorder	0.01	2357	Inside	3640.01	
Perforations	30.00			3670.01	
Recorder	0.01	13254	Outside	3670.02	
Bullnose	3.00			3673.02	43.02 Bottom Packers & Anchor

**Total Tool Length: 64.02**



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**Kuhn # 1-13**

P.O. Box 372  
Hays, KS 67601

**13-13-21 Trego KS**

Job Ticket: 15463

**DST#: 2**

ATTN: Ron Nelson

Test Start: 2001.07.11 @ 15:02:16

## 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: 50.00 sec/qt

Cushion Volume:

bbl

Water Loss: 8.76 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
155.00	Slightly mud cut gassy oil 40%g 55%o 5%m	2.174
155.00	Clean gassy oil 60%g 40%o	2.174
1803.00	Gas in pipe	25.291

Total Length: 2113.00 ft

Total Volume: 29.639 bbl

Num Fluid Samples: 0

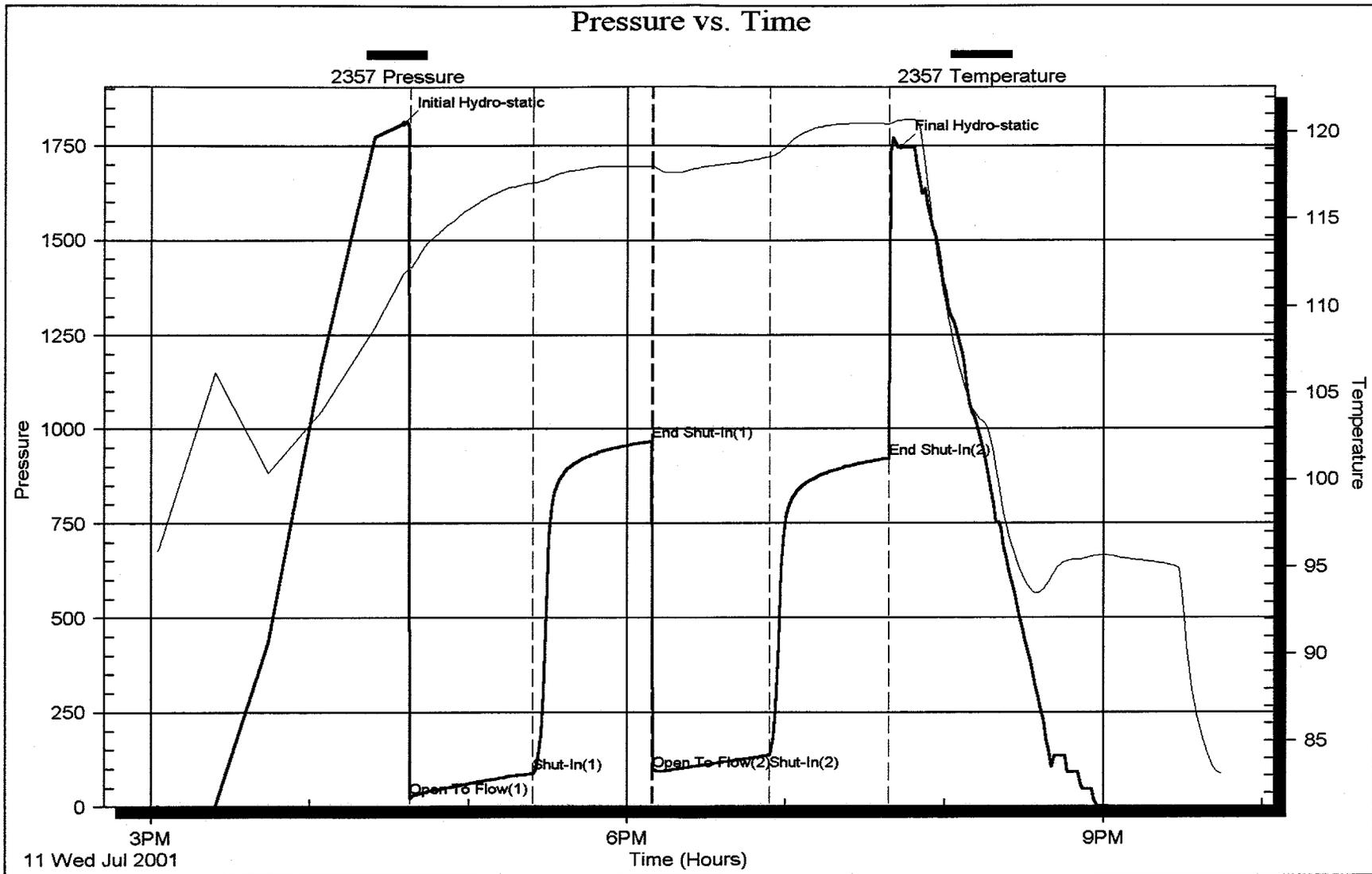
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





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Dow ning-Nelson Oil Co. Inc.

Kuhn # 1-13

P.O. Box 372  
Hays, KS 67601

13-13-21 Trego KS

Job Ticket: 15464

DST#: 3

ATTN: Ron Nelson

Test Start: 2001.07.12 @ 14:49:15

### GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:28:15

Time Test Ended: 21:14:45

Test Type: Conventional Bottom Hole

Tester: Dan Bangle

Unit No: 21

Interval: **3797.00 ft (KB) To 3828.00 ft (KB) (TVD)**

Reference Elevations: 2189.00 ft (KB)

Total Depth: 3828.00 ft (KB) (TVD)

2181.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: **2357**

Inside

Press@RunDepth: 91.43 psig @ 3805.01 ft (KB)

Capacity: 7000.00 psig

Start Date: 2001.07.12

End Date: 2001.07.12

Last Calib.: 2001.01.13

Start Time: 14:49:16

End Time: 21:14:45

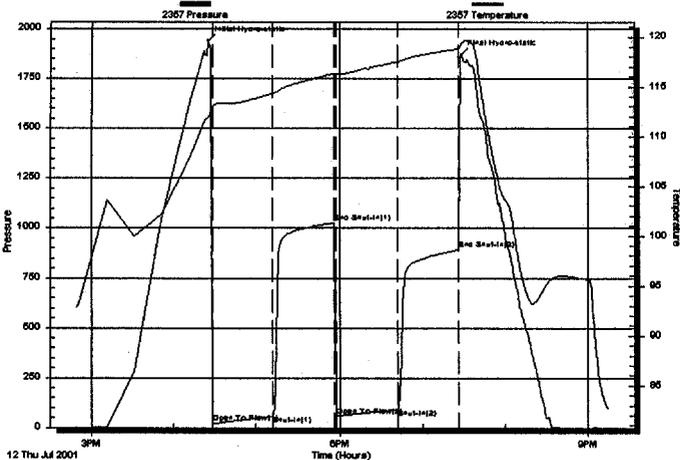
Time On Btm: 2001.07.12 @ 16:25:15

Time Off Btm: 2001.07.12 @ 19:28:15

TEST COMMENT: IF- Strong BOB in 13 min  
IS- No blow back  
FF-Strong BOB in 15 min  
FSI-Weak steady surface blow

Times 45-45-45

Pressure vs. Time



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1939.64	111.90	Initial Hydro-static
3	21.07	113.02	Open To Flow (1)
47	56.96	114.35	Shut-In(1)
91	1026.24	116.35	End Shut-In(1)
92	57.54	116.34	Open To Flow (2)
137	91.43	117.51	Shut-In(2)
181	892.58	118.84	End Shut-In(2)
183	1871.01	119.34	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
92.00	Mud cut assy oil 20%g 60%o 20%m	1.29
132.00	Clean gassy oil 30%g 70%o	1.85
640.00	Gas in pipe	8.98

### Gas Rates

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



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# DRILL STEM TEST REPORT

TOOL DIAGRAM

Dow ning-Nelson Oil Co. Inc.

Kuhn # 1-13

P.O. Box 372  
Hays, KS 67601

13-13-21 Trego KS

Job Ticket: 15464

DST#: 3

ATTN: Ron Nelson

Test Start: 2001.07.12 @ 14:49:15

## Tool Information

Drill Pipe:	Length: 3786.00 ft	Diameter: 3.80 inches	Volume: 53.11 bbl	Tool Weight: 1700.00 lb
Heavy Wt. Pipe:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 0.01 ft	Diameter: 0.01 inches	Volume: 0.00 bbl	Weight to Pull Loose: 45000.00 lb
		Total Volume: 53.11 bbl		Tool Chased 0.01 ft
Drill Pipe Above KB:	10.02 ft			String Weight: Initial 39000.00 lb
Depth to Top Packer:	3797.00 ft			Final 39000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	31.02 ft			
Tool Length:	52.02 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
C.O. Sub	1.00			3777.00	
S.I. Tool	5.00			3782.00	
HMV	5.00			3787.00	
Packer	5.00			3792.00	21.00 Bottom Of Top Packer
Packer	5.00			3797.00	
Stubb	1.00			3798.00	
Perforations	7.00			3805.00	
Recorder	0.01	2357	Inside	3805.01	
Perforations	20.00			3825.01	
Recorder	0.01	13254	Outside	3825.02	
Bullnose	3.00			3828.02	31.02 Bottom Packers & Anchor

**Total Tool Length: 52.02**



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**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

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**Kuhn # 1-13**

P.O. Box 372  
Hays, KS 67601

**13-13-21 Trego KS**

Job Ticket: 15464

**DST#: 3**

ATTN: Ron Nelson

Test Start: 2001.07.12 @ 14:49:15

**Mud and Cushion Information**

Mud Type: Gel Chem

Cushion Type:

Oil API:

36 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 48.00 sec/qt

Cushion Volume:

bbf

Water Loss: 8.77 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: inches

**Recovery Information**

**Recovery Table**

Length ft	Description	Volume bbf
92.00	Mud cut assy oil 20%g 60%o 20%m	1.290
132.00	Clean gassy oil 30%g 70%o	1.852
640.00	Gas in pipe	8.978

Total Length: 864.00 ft

Total Volume: 12.120 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

CALCULATED RECOVERY ANALYSIS

DST 3

TICKET 15464

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD		
		%	FEET	%	FEET	%	FEET	%	FEET	
DRILL	1	640	100	640	0	0	0	0	0	0
PIPE	2	132	30	39.6	70	92.4	0	0	0	0
	3	92	20	18.4	60	55.2	0	0	20	18.4
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0
WEIGHT	1	0	0	0	0	0	0	0	0	0
PIPE	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
DRILL	1	0	0	0	0	0	0	0	0	0
COLLARS	2	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0
	4	0	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>		<b>864</b>	<b>0</b>	<b>698</b>	<b>0</b>	<b>147.6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18.4</b>

BBL OIL=	2.098872	*	HRS OPEN	1.5	=	BBL/DAY	33.581952
BBL WATER=	0	*			=		0
BBL MUD=	0.261648						
BBL GAS =	9.92556						

