

## DRILL STEMTEST REPORT

Prepared For: **Samuel Gary, Jr & Associates**

1515 Wynkoop st  
suite 700  
Denver Co 80202

ATTN Tom Feral

**Elsie 1-13**

**13-16s-17wRush**

Start Date 2011.11.05 @01:44:15

End Date 2011.11.05 @10:48:45

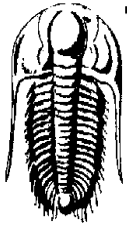
Job Ticket #: 44868 DST #: 2

Trilobite Testing Inc

PO Box 362 Hays, KS 67601

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

Printed 2011.11.06 @08:11:19



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Samuel Gary, Jr & Associates

13-16s-17w-Rush

1515 Wyrkoop st  
suite 700  
Denver Co 80202  
ATTN: Tom Fernald

Elsie 1-13

Job Ticket: 44868

DST# 2

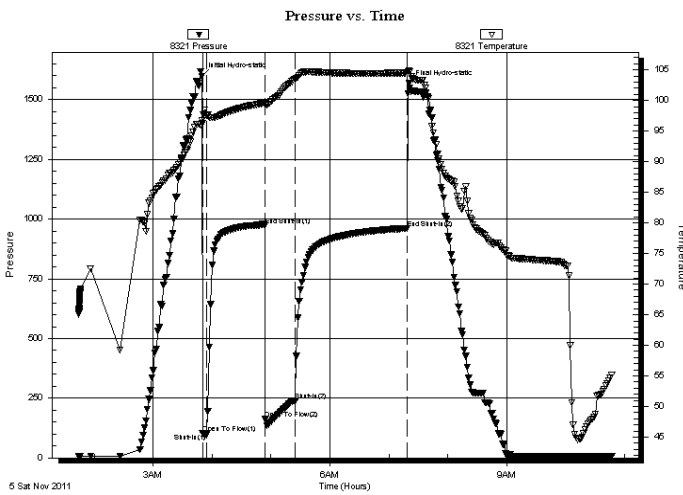
Test Start: 2011.11.05 @ 01:44:15

## GENERAL INFORMATION

Formation: **Lansing -A & C**  
 Deviated: No Whipstock ft (KB)  
 Time Tool Opened: 03:50:15  
 Time Test Ended: 10:48:45  
 Interval: **3247.00 ft (KB) To 3303.00 ft (KB) (TVD)**  
 Total Depth: 3303.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Jeff Brown  
 Unit No: 44  
 Reference Elevations: 1983.00 ft (KB)  
 1973.00 ft (CF)  
 KB to GRCF: 10.00 ft

**Serial #: 8321 Inside**  
 Press@RunDepth: 240.07 psig @ 3285.00 ft (KB)  
 Start Date: 2011.11.05 End Date: 2011.11.05 Capacity: 8000.00 psig  
 Start Time: 01:44:16 End Time: 10:47:45 Last Calib.: 2011.11.05  
 Time On Btm: 2011.11.05 @ 03:49:45  
 Time Off Btm: 2011.11.05 @ 07:20:15

**TEST COMMENT:** FP5-min-Strong blow BOB in 1 min  
 IS-60-min-Weak blow back built to 1 1/4 in  
 FP30-min-Strong blow BOB in 30 sec  
 FS-105-min-Strong blow Back BOB in 1 1/2 min Gas to surface in 6 min Ded back to a surface blow

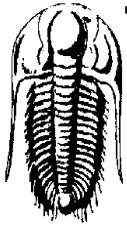


PRESSURE SUMMARY			
Time (Mh)	Pressure (psig)	Temp (deg F)	Action
0	1597.80	96.69	Initial Hydro-static
1	104.23	96.32	Open To Flow(1)
5	102.52	97.51	Shut-h(1)
64	972.99	99.60	End Shut-h(1)
65	163.61	99.45	Open To Flow(2)
95	240.07	103.50	Shut-h(2)
209	961.12	104.51	End Shut-h(2)
211	1567.38	104.90	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (lb)
31.00	00M10%/080%/M	0.43
63.00	003M15%/020%/065%/M	0.88
68.00	H003/M5%/M8%/A/80%/060%/G	0.95
315.00	M03/M05%/M8%/A/25%/065%/O	4.42
0.00	2754 GP	0.00

Gas Rates			
	Orde (inches)	Pressure (psig)	Gas Rate (Mcf/d)

\* Recovery from multiple tests



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**13-16s-17w-Rush**

1515 Wyrkoop st  
suite 700  
Denver Co 80202  
ATTN: Tom Fernald

**Elsie 1-13**

Job Ticket: 44868

**DST# 2**

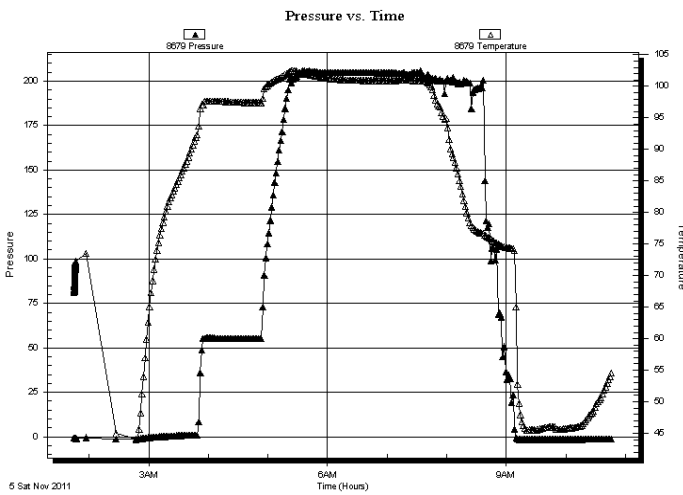
Test Start: 2011.11.05 @01:44:15

## GENERAL INFORMATION

Formation: **Lansing -A & C**  
 Deviated: **No Whipstock** ft (KB)  
 Time Tool Opened: **03:50:15**  
 Time Test Ended: **10:48:45**  
 Interval: **3247.00 ft (KB) To 3303.00 ft (KB) (TVD)**  
 Total Depth: **3303.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Test Type: **Conventional Bottom Hole (Reset)**  
 Tester: **Jeff Brown**  
 Unit No: **44**  
 Reference Elevations: **1983.00 ft (KB)**  
**1973.00 ft (CF)**  
 KB to GRCP: **10.00 ft**

**Serial #: 8679 Fluid**  
 Press@Run Depth: \_\_\_\_\_ psig @ **3213.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2011.11.05** End Date: **2011.11.05** Last Calib.: **2011.11.05**  
 Start Time: **01:44:51** End Time: **10:46:50** Time On Btm \_\_\_\_\_  
 Time Off Btm \_\_\_\_\_

**TEST COMMENT:** FP5-min-Strong blow BOB in 1 min  
 IS-60-min-Weak blow back built to 1 1/4 in  
 FP30-min-Strong blow BOB in 30 sec  
 FS-105-min-Strong blow Back BOB in 1 1/2 min Gas to surface in 6 min Ded back to a surface blow

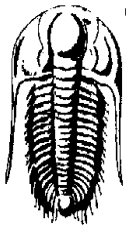


PRESSURE SUMMARY			
Time (Mh)	Pressure (psig)	Temp (deg F)	Annotation

Recovery		
Length (ft)	Description	Volume (bt)
31.00	OOV10%/O80%/M	0.43
63.00	OO3M15%/G20%/O65%/M	0.88
68.00	HOO3/M5%/M8%/A/80%/O60%/G	0.95
315.00	M03/M05%/M8%/A/25%/O65%/O	4.42
0.00	2754 GP	0.00

Gas Rates			
	Orde (inches)	Pressure (psig)	Gas Rate (Mcf/d)

\* Recovery from multiple tests



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# DRILL STEM TEST REPORT

Samuel Gary, Jr & Associates

13-16s-17w-Rush

1515 Wyrkoop st  
 suite 700  
 Denver Co 80202  
 ATIN TomFertal

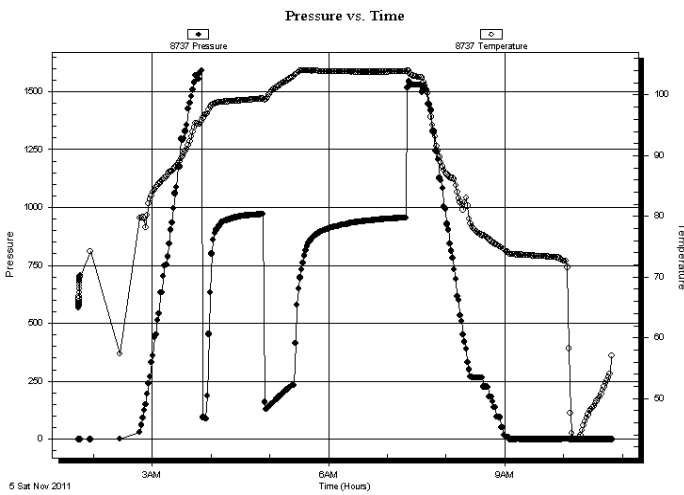
**Elsie 1-13**  
 Job Ticket: 4868 **DST# 2**  
 Test Start: 2011.11.05 @01:44:15

## GENERAL INFORMATION

Formation: **Lansing -A & C**  
 Deviated: **No Whipstock** ft (KB)  
 Time Tool Opened: **03:50:15**  
 Time Test Ended: **10:48:45**  
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 Tester: **Jeff Brown**  
 Unit Nr: **44**  
 Reference Elevations: **1983.00 ft (KB)**  
**1973.00 ft (CF)**  
 KB to GRCF: **10.00 ft**

**Serial #: 8737** **Outside**  
 Press@Run Depth: \_\_\_\_\_ psig @ **3285.00 ft (KB)** Capacity: \_\_\_\_\_ 8000.00 psig  
 Start Date: **2011.11.05** End Date: **2011.11.05** Last Calib.: **2011.11.05**  
 Start Time: **01:44:57** End Time: **10:48:56** Time On Btm \_\_\_\_\_  
 Time Off Btm \_\_\_\_\_

**TEST COMMENT:** FP-5-min-Strong blow BOB in 1 min  
 IS-60-min-Weak blow back built to 1 1/4 in  
 FP-30-min-Strong blow BOB in 30 sec  
 FS-105-min-Strong blow Back BOB in 1 1/2 min Gas to surface in 6 min Ded back to a surface blow



## PRESSURE SUMMARY

Time (Mh)	Pressure (psig)	Temp (deg F)	Annotation

## Recovery

Length (ft)	Description	Volume (bt)
31.00	00M10%080%AM	0.43
63.00	003M15%030%065%AM	0.88
68.00	H003M5%AM8%AM80%060%G	0.95
315.00	M03M05%AM8%AM25%065%O	4.42
0.00	2754 GP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

TOOL DIAGRAM

Samuel Gary, Jr & Associates

13-16s-17w-Rush

1515 Wyrkoop st  
suite 700  
Denver Co 80202  
ATTN: Tom Fernal

Elsie 1-13

Job Ticket: 44868

DST# 2

Test Start: 2011.11.05 @01:44:15

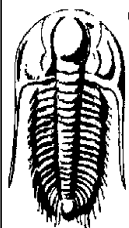
### Tool Information

Drill Pipe:	Length: 3226.00 ft	Diameter: 3.80 inches	Volume: 45.25 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 22000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 45.25 bbl</u>	Tool Chased: 0.00 ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial 50000.00 lb
Depth to Top Packer:	3247.00 ft			Final 53000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	90.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No	Position	Depth (ft)	Accum Lengths
Recorder	0.00	8679	Fluid	3213.00	
Stub	5.00			3218.00	
Shut In Tool	5.00			3223.00	
Sampler	2.00			3225.00	
Hydraulic tool	5.00			3230.00	
Jars	5.00			3235.00	
Safety Joint	3.00			3238.00	
Packer	4.00			3242.00	34.00 Bottom of Top Packer
Packer	5.00			3247.00	
Stub	1.00			3248.00	
Perforations	4.00			3252.00	
Change Over Sub	1.00			3253.00	
Drill Pipe	31.00			3284.00	
Change Over Sub	1.00			3285.00	
Recorder	0.00	8321	Inside	3285.00	
Recorder	0.00	8737	Outside	3285.00	
Perforations	15.00			3300.00	
Bullnose	3.00			3303.00	56.00 Bottom Packers & Anchor

**Total Tool Length: 90.00**



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## DRILL STEM TEST REPORT

FLUID SUMMARY

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ATTN Tom Feral

Elsie 1-13

Job Ticket: 44868

DST# 2

Test Start: 2011.11.05 @01:44:15

### Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	CI AP	31 deg AP
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm	
Viscosity: 56.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.79 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm-cm	Gas Cushion Pressure: psig		
Salinity: 2900.00 ppm			
Filter Cake: inches			

### Recovery Information

#### Recovery Table

Length ft	Description	Volume bbl
31.00	OOO10%OOO%M	0.435
63.00	OOO15%OOO%M	0.884
68.00	HOOG/MS/MS/80%OOO%G	0.954
315.00	MGG/OS/MS/25%OOO%O	4.419
0.00	2754 GP	0.000

Total Length: 477.00 ft      Total Volume: 6.692 bbl

NumFluid Samples: 0      NumGas Bontus: 0      Serial #

Laboratory Name:      Laboratory Location:

Recovery Comments: 2500 M/G CI  
700 PSI  
1 1/4 Su Foot of gas

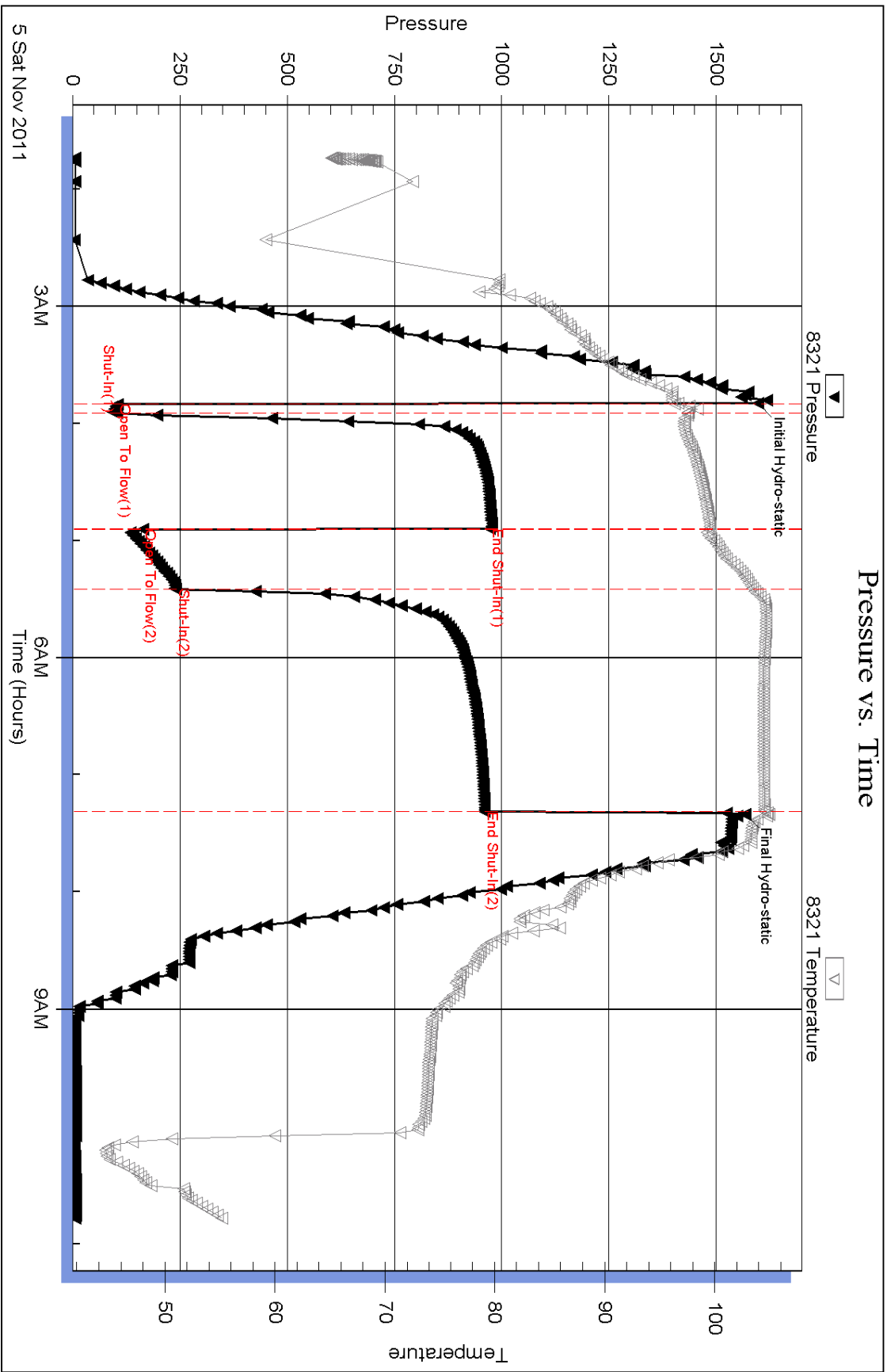
Serial #: 8321

Inside Samuel Gary, Jr. & Associates

Esle 1-13

DST Test Number: 2

### Pressure vs. Time



Trioxide Testing, Inc

Ref. No: 44868

Printed: 2011.11.06 @08:11:24

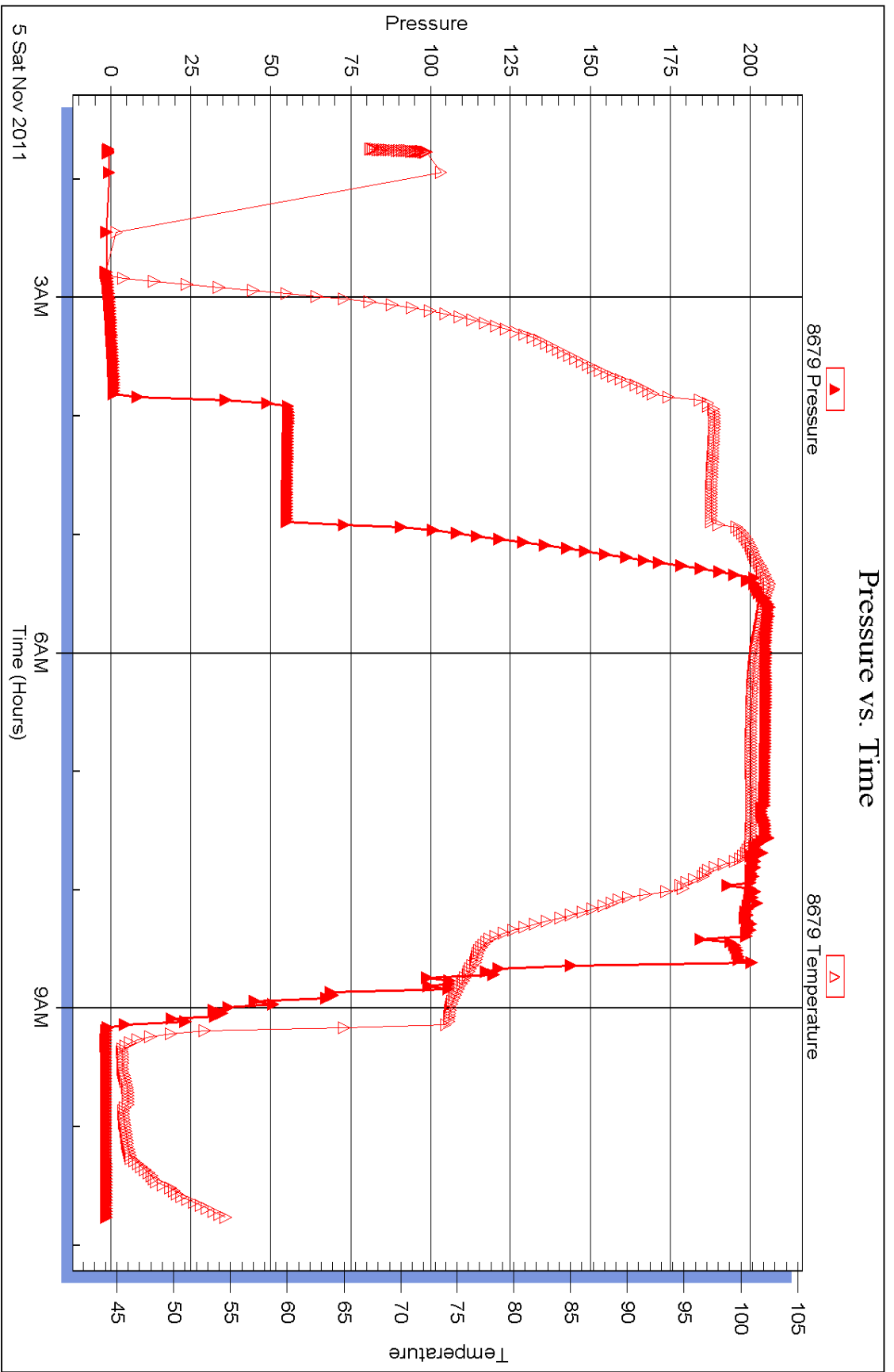
Serial #: 8679

Fluid

Samuel Gary, Jr. & Associates

Est# 1-13

DST Test Number: 2



Triobite Testing, Inc.

Ref. No: 44868

Printed: 2011.11.06 @08:11:25

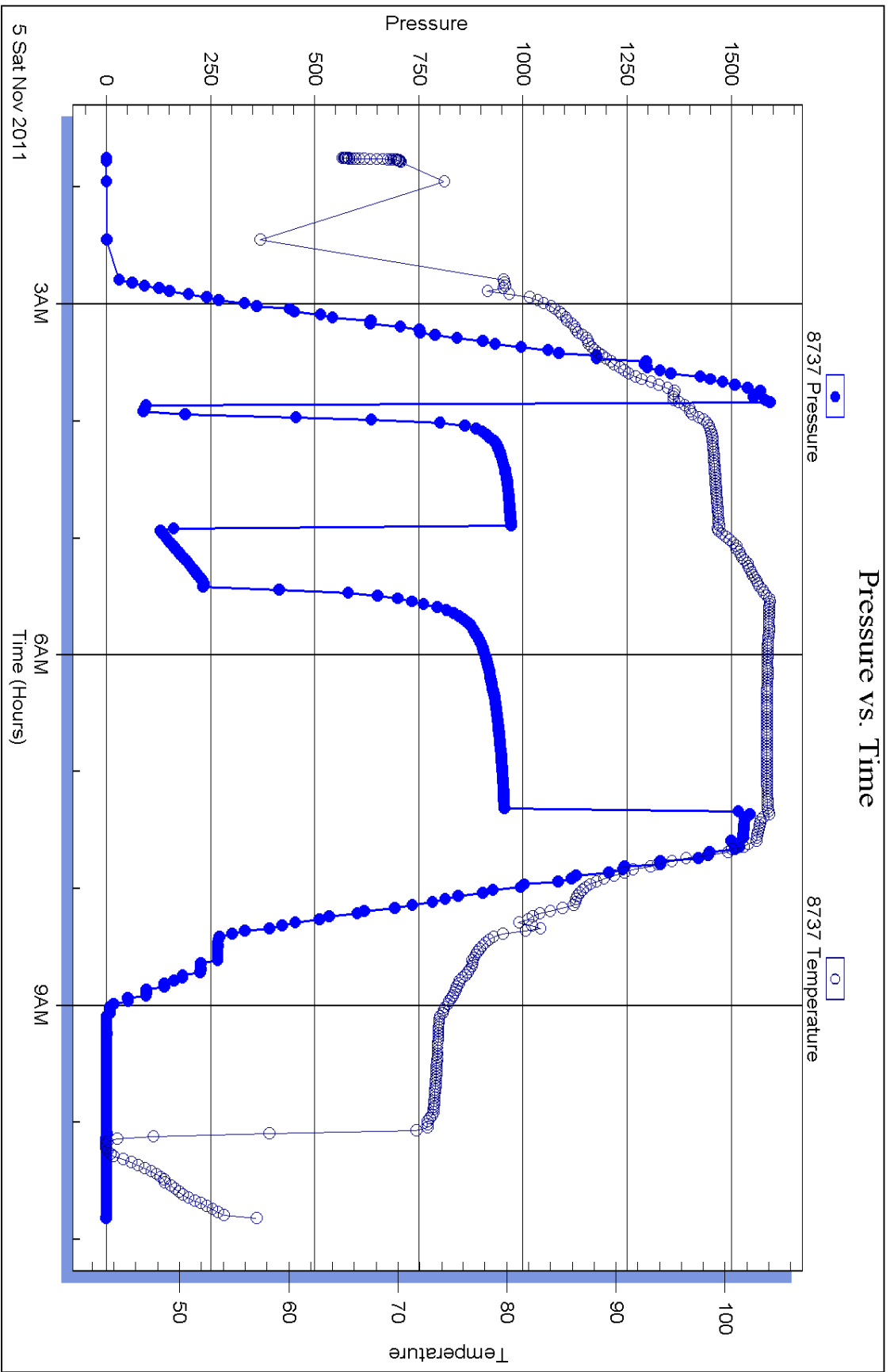


Serial #: 8737

Outside Samuel Gary, Jr. & Associates

Esle 1-13

DST Test Number: 2

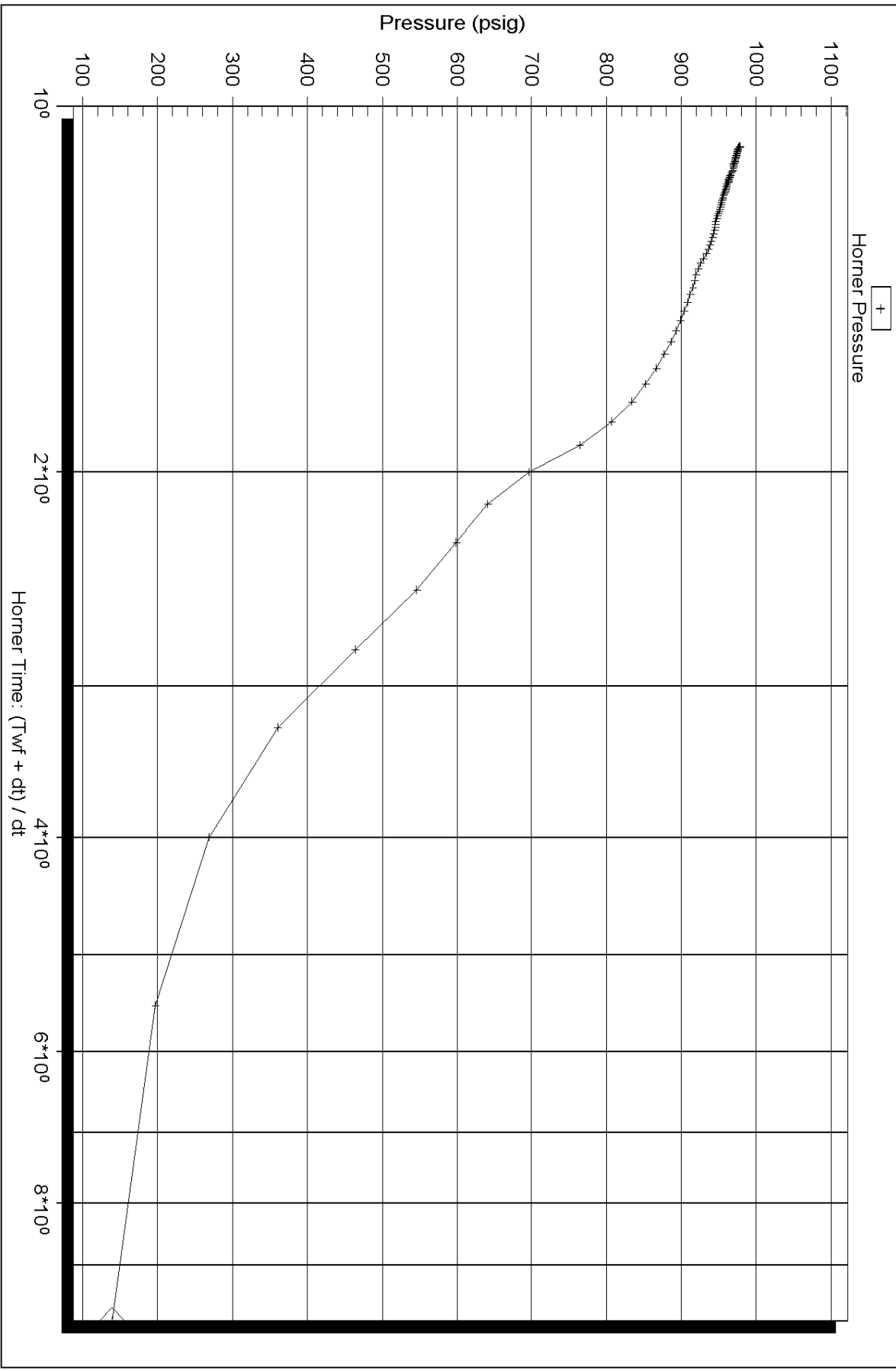


Trioxide Testing, Inc.

Ref. No: 44868

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### Horner Plot



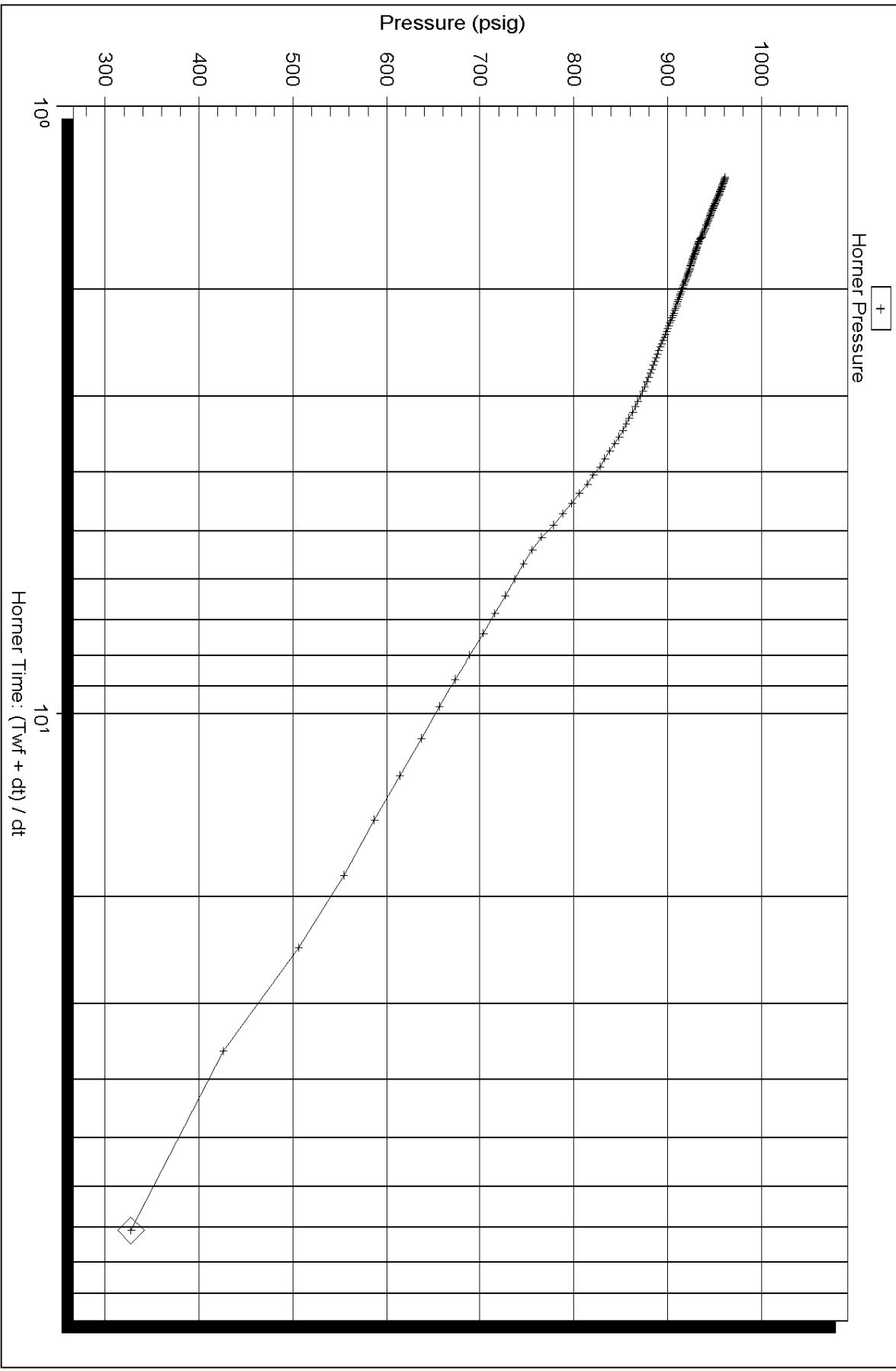
Serial Number: 8821 (Inside)

P\* :

Slope (m) : kpa/log cycle

Flow Cycle: 1

### Horner Plot



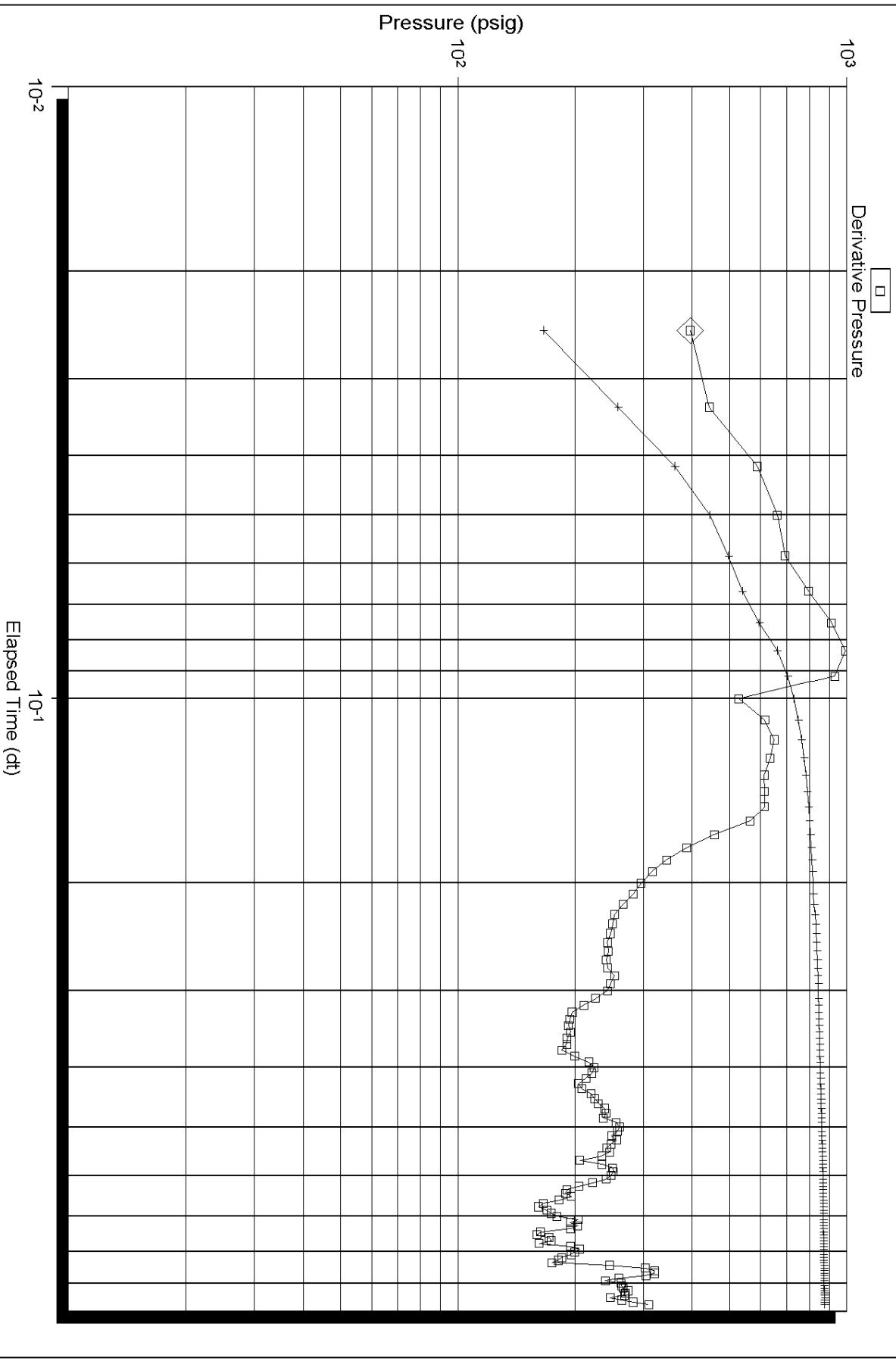
Serial Number: 8821 (Inside)

P\*:

Slope (m) : kpa/log cycle

Flow Cycle: 2

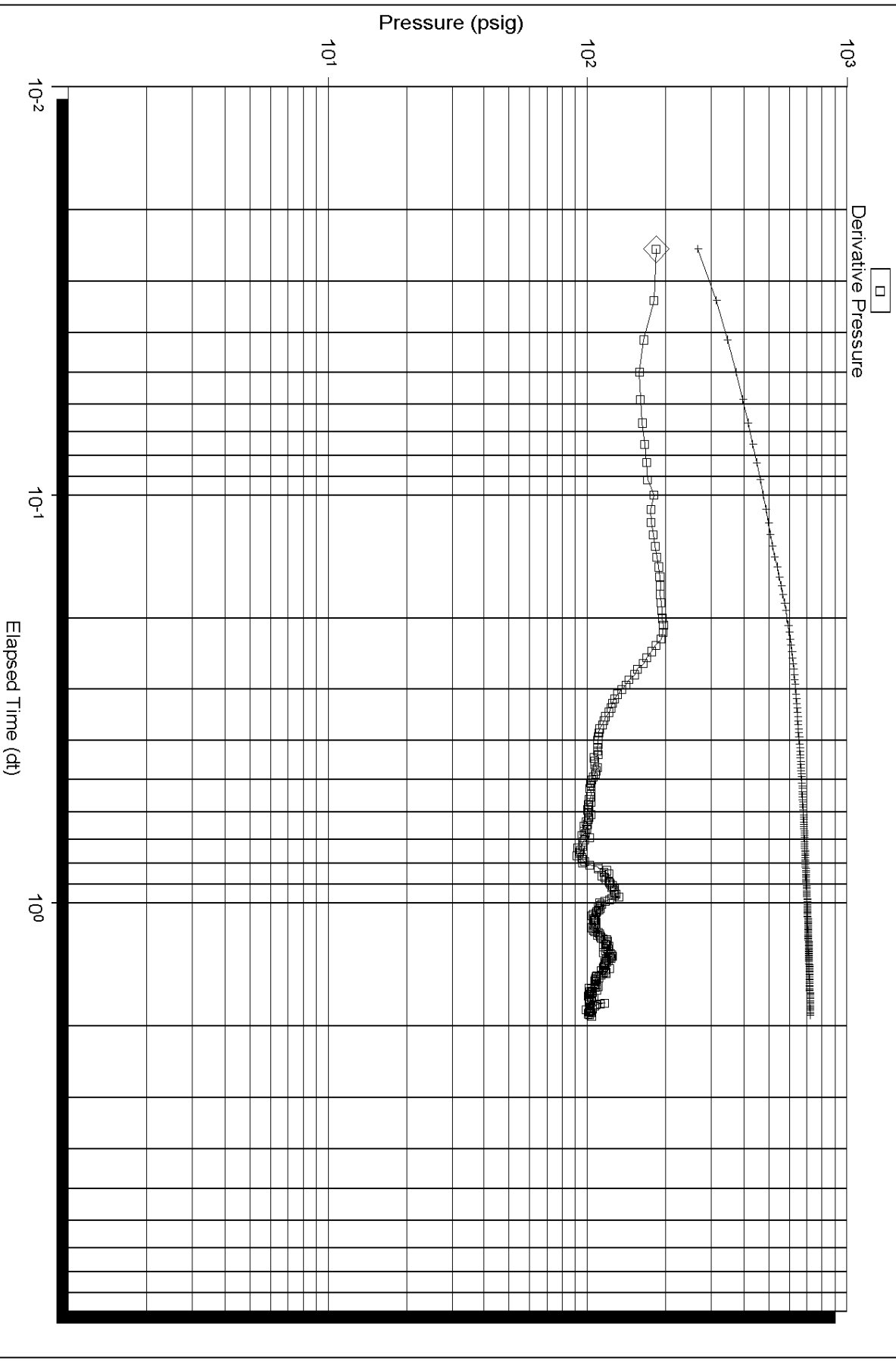
### Log-Log and Pseudo-Derivative



Serial Number: 8821 (Inside)

Flow Cycle: 1

# Log-Log and Pseudo-Derivative



Serial Number: 8821 (Inside)

Flow Cycle: 2