



DRILL STEM TEST REPORT

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

1515 Wynkoop
Denver, CO. 80202

ATTN: Tom Fertal

Copper #1-30

30-14s-17w-Ellis

Start Date: 2012.07.02 @ 04:05:22

End Date: 2012.07.02 @ 13:04:37

Job Ticket #: 47824 DST #: 2

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

Printed: 2012.07.02 @ 14:09:13



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Samuel Gary Jr. & Associates

30-14s-17w-Ellis

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Denver, CO. 80202

Copper #1-30

Job Ticket: 47824

DST#: 2

ATTN: Tom Fertal

Test Start: 2012.07.02 @ 04:05:22

GENERAL INFORMATION:

Formation: **F-G**

Deviated: No Whipstock: 0.00 ft (KB)

Time Tool Opened: 06:21:52

Time Test Ended: 13:04:37

Test Type: (Reset)

Tester: Jason McLemore

Unit No: 54

Interval: 3275.00 ft (KB) To 3324.00 ft (KB) (TVD)

Reference Elevations: 1942.00 ft (KB)

Total Depth: 3324.00 ft (KB) (TVD)

1934.00 ft (CF)

Hole Diameter: 7.80 inches Hole Condition: Good

KB to GR/CF: 8.00 ft

Serial #: 8366

Inside

Press @ Run Depth: 141.64 psig @ 3343.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2012.07.02

End Date:

2012.07.02

Last Calib.:

2012.07.02

Start Time:

04:05:24

End Time:

13:04:37

Time On Btm:

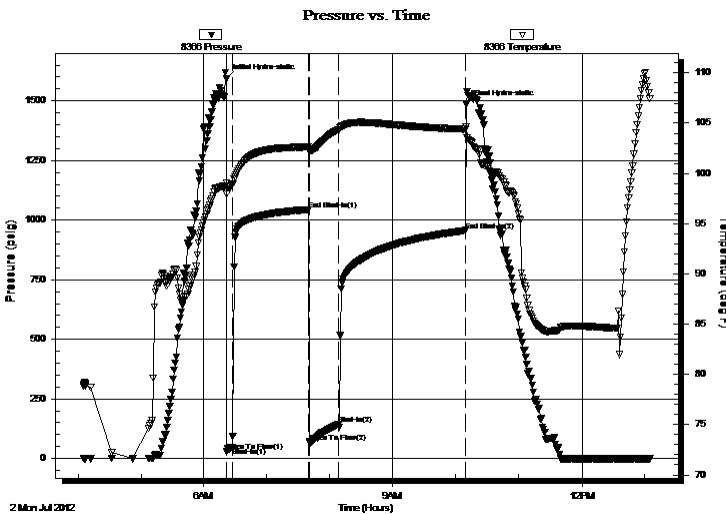
2012.07.02 @ 06:21:37

Time Off Btm:

2012.07.02 @ 10:09:37

TEST COMMENT: IFP-Strong Blow, BOB in 3 Min.
ISI-Blow back Built to 1"
FFP-Good Blow, BOB in 6 Min.
FSI-Blow back Built to 3"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1591.88	99.06	Initial Hydro-static
1	30.87	98.00	Open To Flow (1)
6	46.91	98.84	Shut-In(1)
79	1044.61	102.64	End Shut-In(1)
79	66.73	102.14	Open To Flow (2)
107	141.64	104.34	Shut-In(2)
228	956.41	104.41	End Shut-In(2)
228	1486.62	104.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	Muddy Water-95%W-5%M	1.41
150.00	HOCMW-20%G-30%O-45%W-5%M	2.10
0.00	300' Gas In Pipe	0.00

* Recovery from multiple tests

Gas Rates

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



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Copper #1-30

ATTN: Tom Fertal

Job Ticket: 47824 **DST#: 2**
Test Start: 2012.07.02 @ 04:05:22

GENERAL INFORMATION:

Formation: F-G			Test Type: (Reset)
Deviated: No Whipstock: 0.00 ft (KB)			Tester: Jason McLemore
Time Tool Opened: 06:21:52			Unit No: 54
Time Test Ended: 13:04:37			
Interval: 3275.00 ft (KB) To 3324.00 ft (KB) (TVD)		Reference Elevations: 1942.00 ft (KB)	
Total Depth: 3324.00 ft (KB) (TVD)		1934.00 ft (CF)	
Hole Diameter: 7.80 inches	Hole Condition: Good	KB to GR/CF: 8.00 ft	

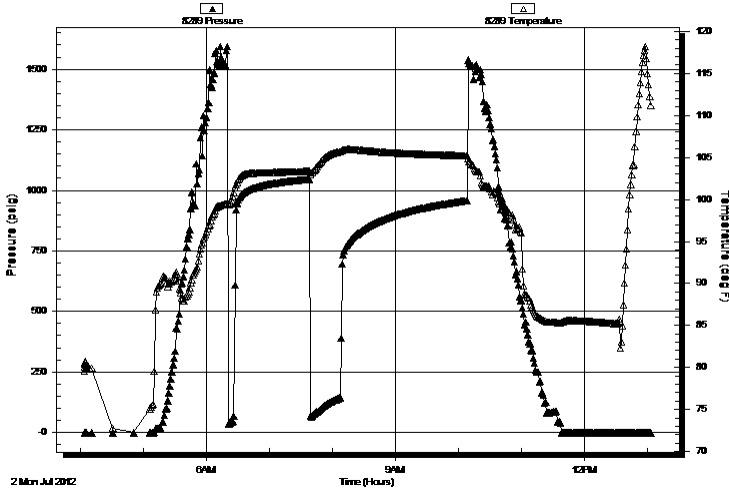
Serial #: 8289

Fluid

Press @ RunDepth: psig @ 3240.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2012.07.02 End Date: 2012.07.02	Last Calib.: 2012.07.02
Start Time: 04:03:32 End Time: 13:03:00	Time On Btm:
	Time Off Btm:

TEST COMMENT: IFP-Strong Blow , BOB in 3 Min.
ISI-Blow back Built to 1"
FFP-Good Blow , BOB in 6 Min.
FSI-Blow back Built to 3"

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
120.00	Muddy Water-95%W-5%M	1.41
150.00	HOCMW-20%G-30%O-45%W-5%M	2.10
0.00	300' Gas In Pipe	0.00

Gas Rates

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

* Recovery from multiple tests



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Copper #1-30

Job Ticket: 47824

DST#: 2

ATTN: Tom Fertal

Test Start: 2012.07.02 @ 04:05:22

GENERAL INFORMATION:

Formation: **F-G**

Deviated: No Whipstock: 0.00 ft (KB)

Time Tool Opened: 06:21:52

Time Test Ended: 13:04:37

Test Type: (Reset)

Tester: Jason McLemore

Unit No: 54

Interval: **3275.00 ft (KB) To 3324.00 ft (KB) (TVD)**

Total Depth: 3324.00 ft (KB) (TVD)

Hole Diameter: 7.80 inches Hole Condition: Good

Reference Elevations: 1942.00 ft (KB)

1934.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8789 Outside

Press @ Run Depth: psig @ 3343.00 ft (KB)

Start Date: 2012.07.02

End Date:

2012.07.02

Start Time: 04:08:01

End Time:

13:07:14

Capacity: 8000.00 psig

Last Calib.:

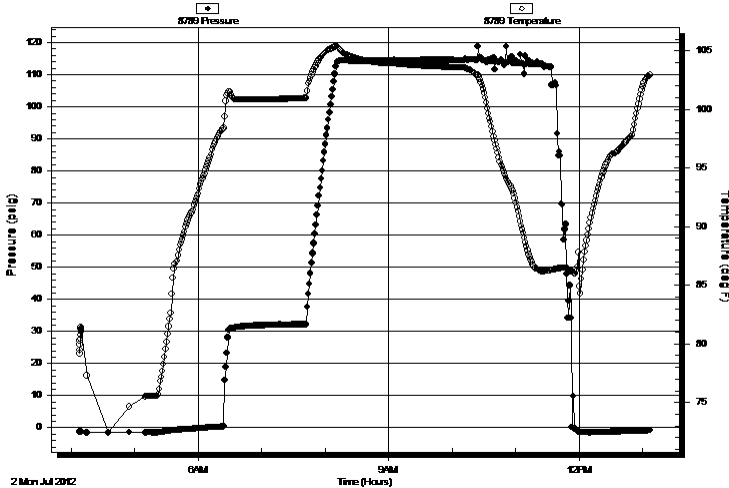
2012.07.02

Time On Btm:

Time Off Btm:

TEST COMMENT: IFP-Strong Blow, BOB in 3 Min.
ISI-Blow back Built to 1"
FFP-Good Blow, BOB in 6 Min.
FSI-Blow back Built to 3"

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
120.00	Muddy Water-95%W-5%M	1.41
150.00	HOCMW-20%G-30%O-45%W-5%M	2.10
0.00	300' Gas In Pipe	0.00

Gas Rates

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

* Recovery from multiple tests



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DRILL STEM TEST REPORT

TOOL DIAGRAM

Samuel Gary Jr. & Associates

30-14s-17w-Ellis

1515 Wynkoop
Denver, CO. 80202

Copper #1-30

Job Ticket: 47824

DST#: 2

ATTN: Tom Fertal

Test Start: 2012.07.02 @ 04:05:22

Tool Information

Drill Pipe:	Length: 3221.00 ft	Diameter: 3.80 inches	Volume: 45.18 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 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: 46000.00 lb
			<u>Total Volume: 45.33 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 35000.00 lb
Depth to Top Packer:	3275.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	111.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Recorder	0.00	8289	Fluid	3240.00	
Change Over Sub	5.00			3245.00	
Shut In Tool	5.00			3250.00	
Sampler	3.00			3253.00	
Hydraulic tool	5.00			3258.00	
Jars	5.00			3263.00	
Safety Joint	2.00			3265.00	
Packer	5.00			3270.00	35.00 Bottom Of Top Packer
Packer	5.00			3275.00	
Stubb	1.00			3276.00	
Perforations	2.00			3278.00	
Change Over Sub	1.00			3279.00	
Blank Spacing	63.00			3342.00	
Change Over Sub	1.00			3343.00	
Recorder	0.00	8366	Inside	3343.00	
Recorder	0.00	8789	Outside	3343.00	
Perforations	5.00			3348.00	
Bullnose	3.00			3351.00	76.00 Bottom Packers & Anchor

Total Tool Length: 111.00



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FLUID SUMMARY

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Copper #1-30

Job Ticket: 47824

DST#: 2

ATTN: Tom Fertal

Test Start: 2012.07.02 @ 04:05:22

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

32 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

35000 ppm

Viscosity: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.39 cm³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 8000.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	Muddy Water-95%W-5%M	1.410
150.00	HOCMW-20%G-30%O-45%W-5%M	2.104
0.00	300' Gas In Pipe	0.000

Total Length: 270.00 ft Total Volume: 3.514 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

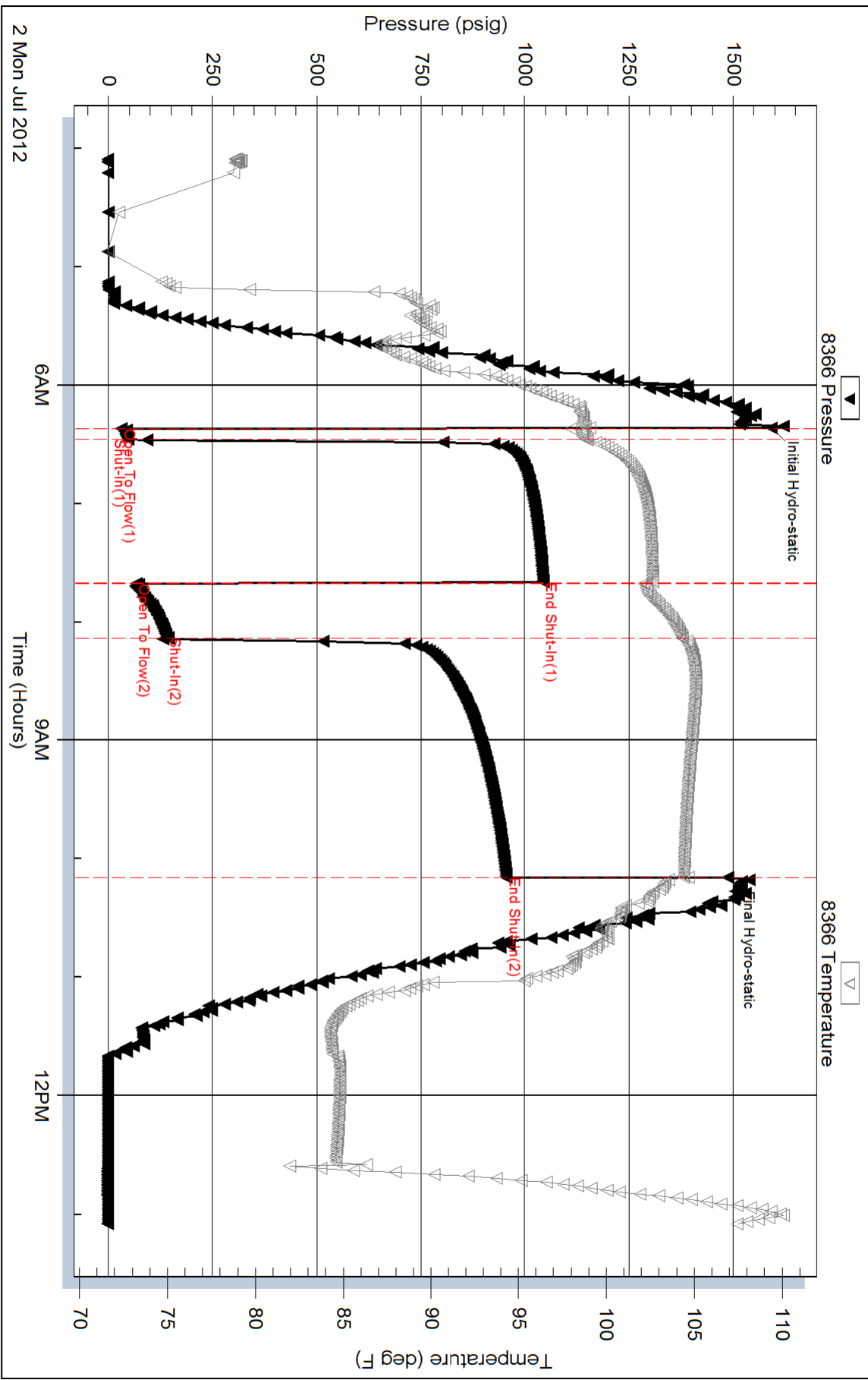
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Sampler: 275#,300ml Oil,3700ml Water

Pressure vs. Time



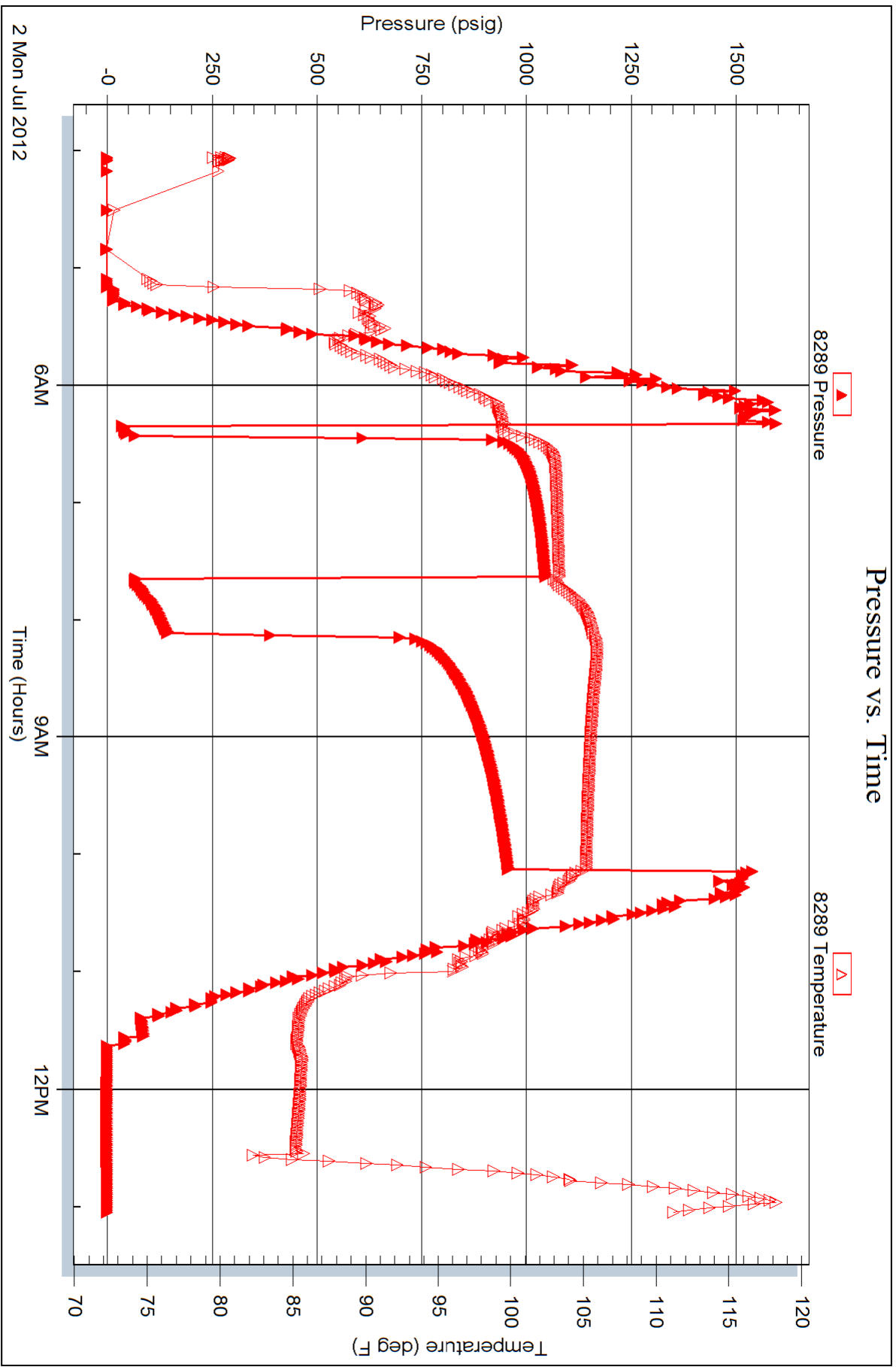
Serial #: 8289

Fluid

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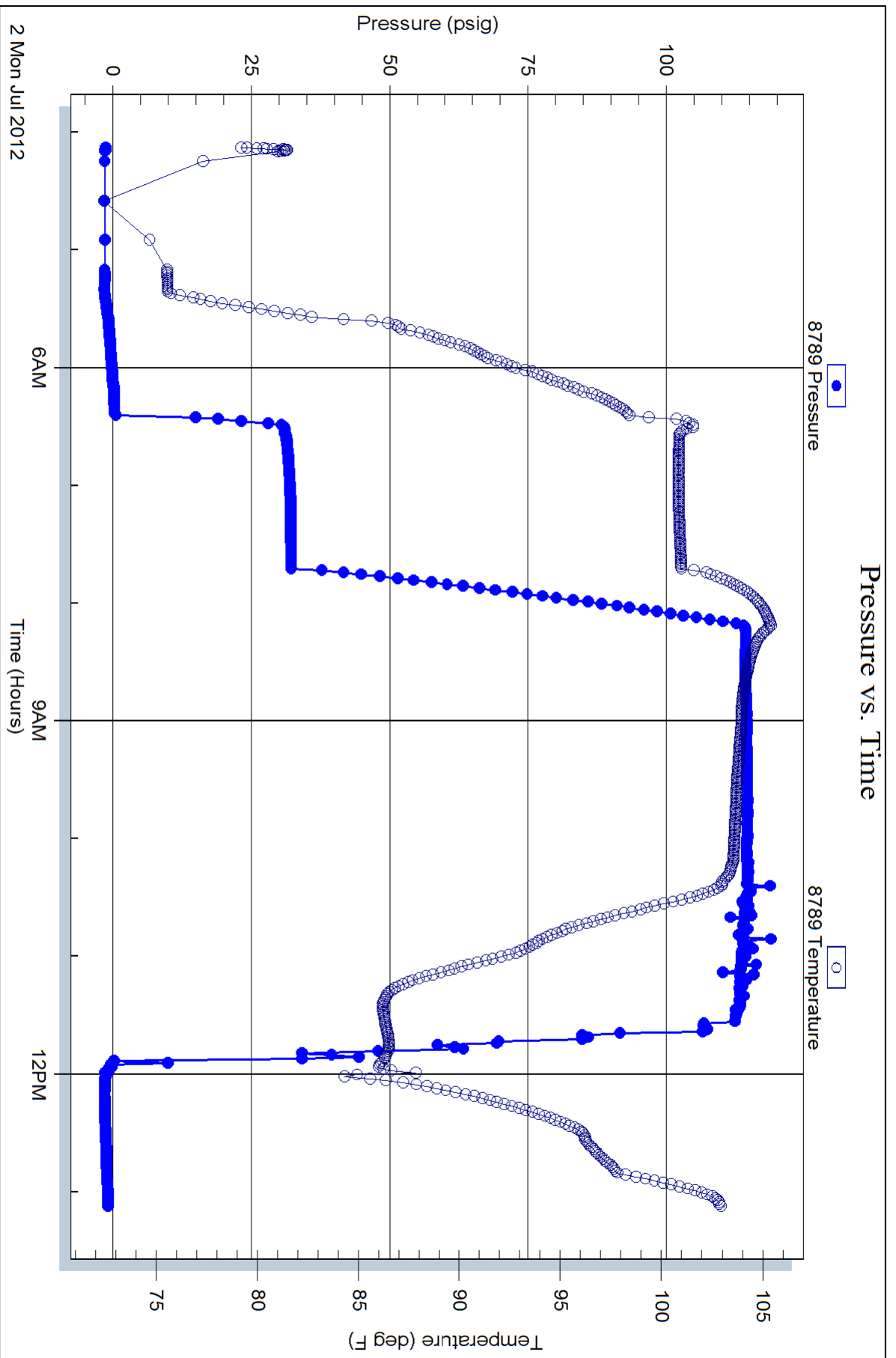


Serial #: 8789

Outside Samuel Gary Jr. & Associates

Copper #1-30

DST Test Number: 2

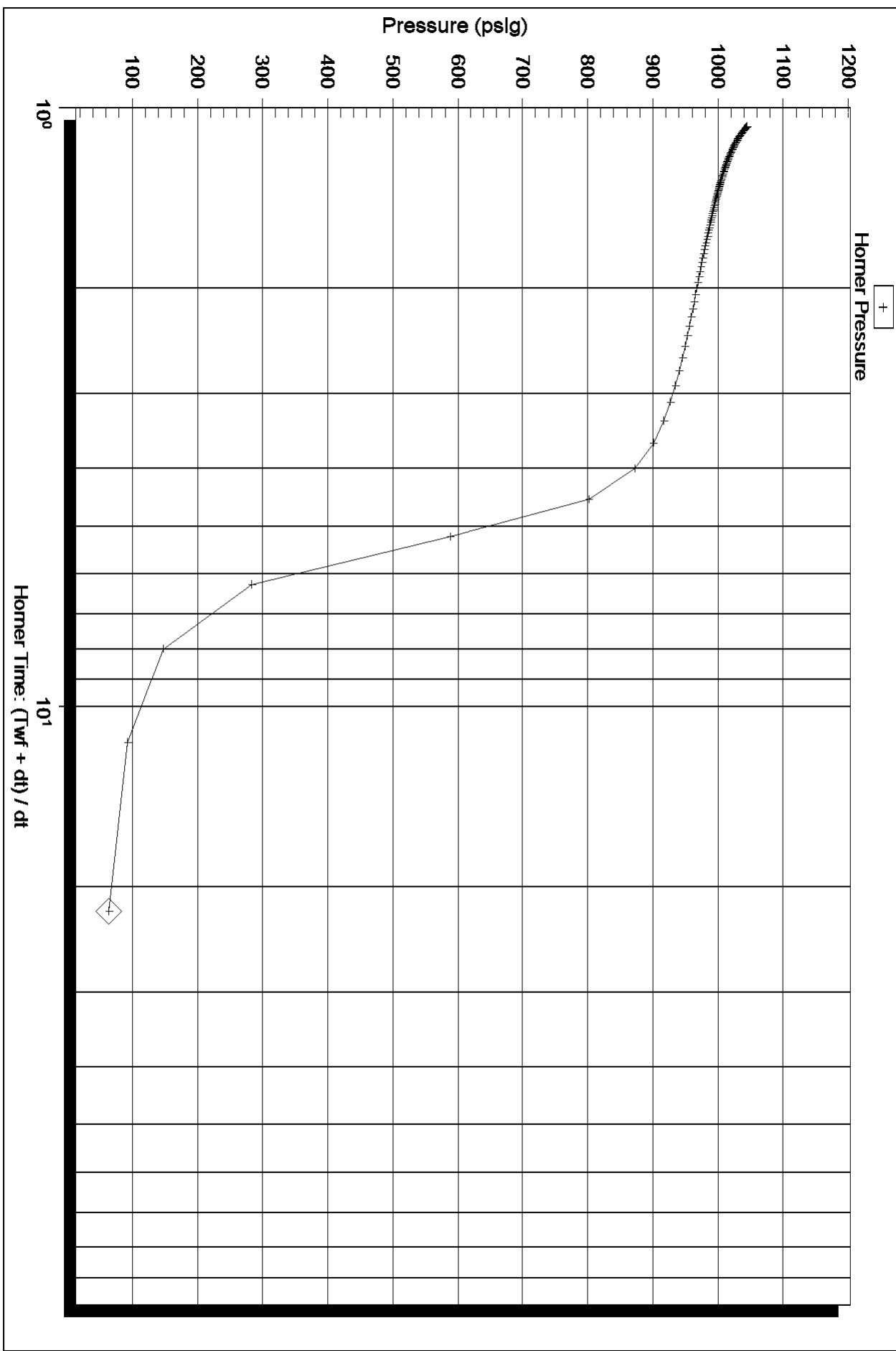


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Ref. No: 47824

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Horner Plot



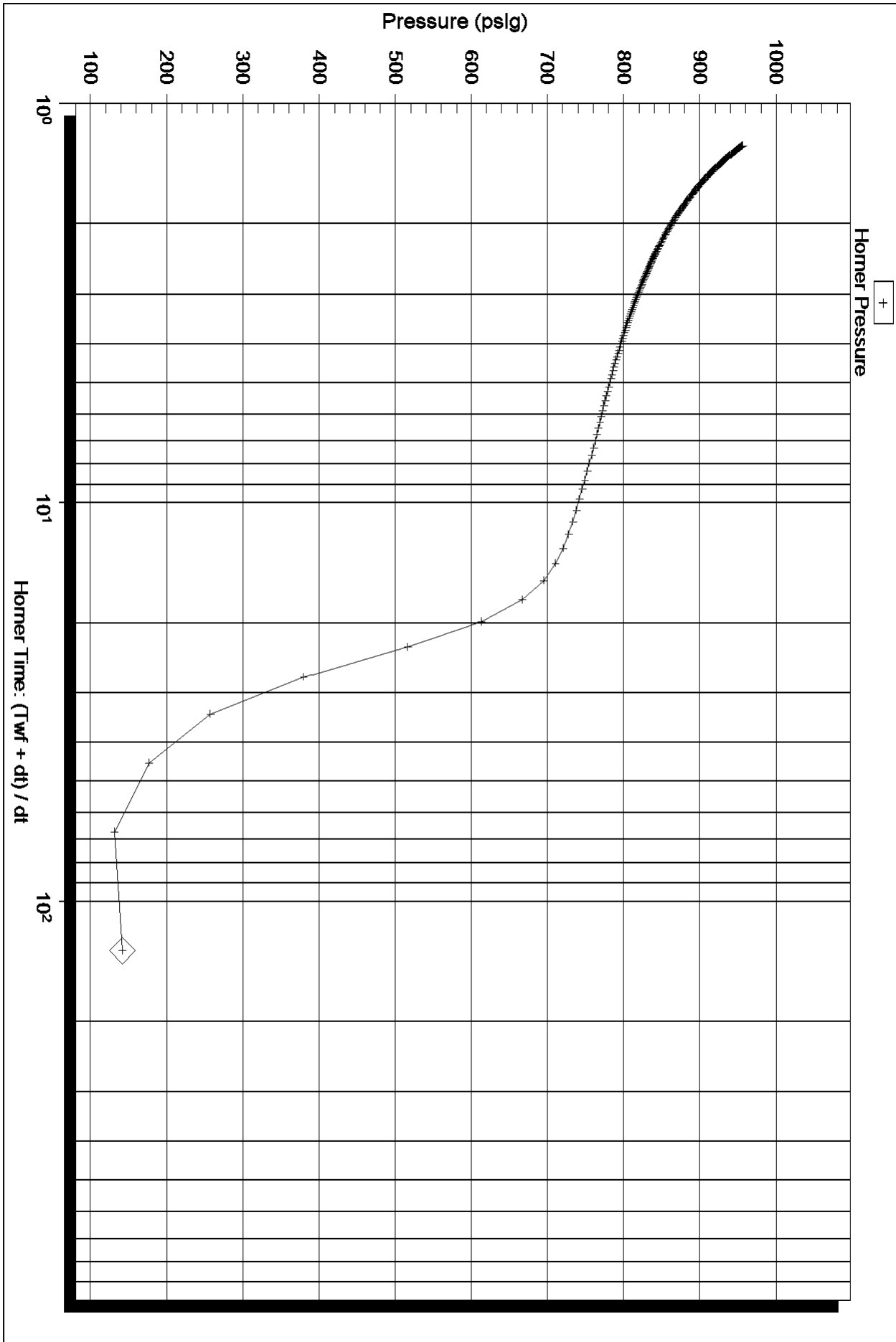
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P* :

Slope (m) : kpa/log cycle

Flow Cycle: 1

Horner Plot



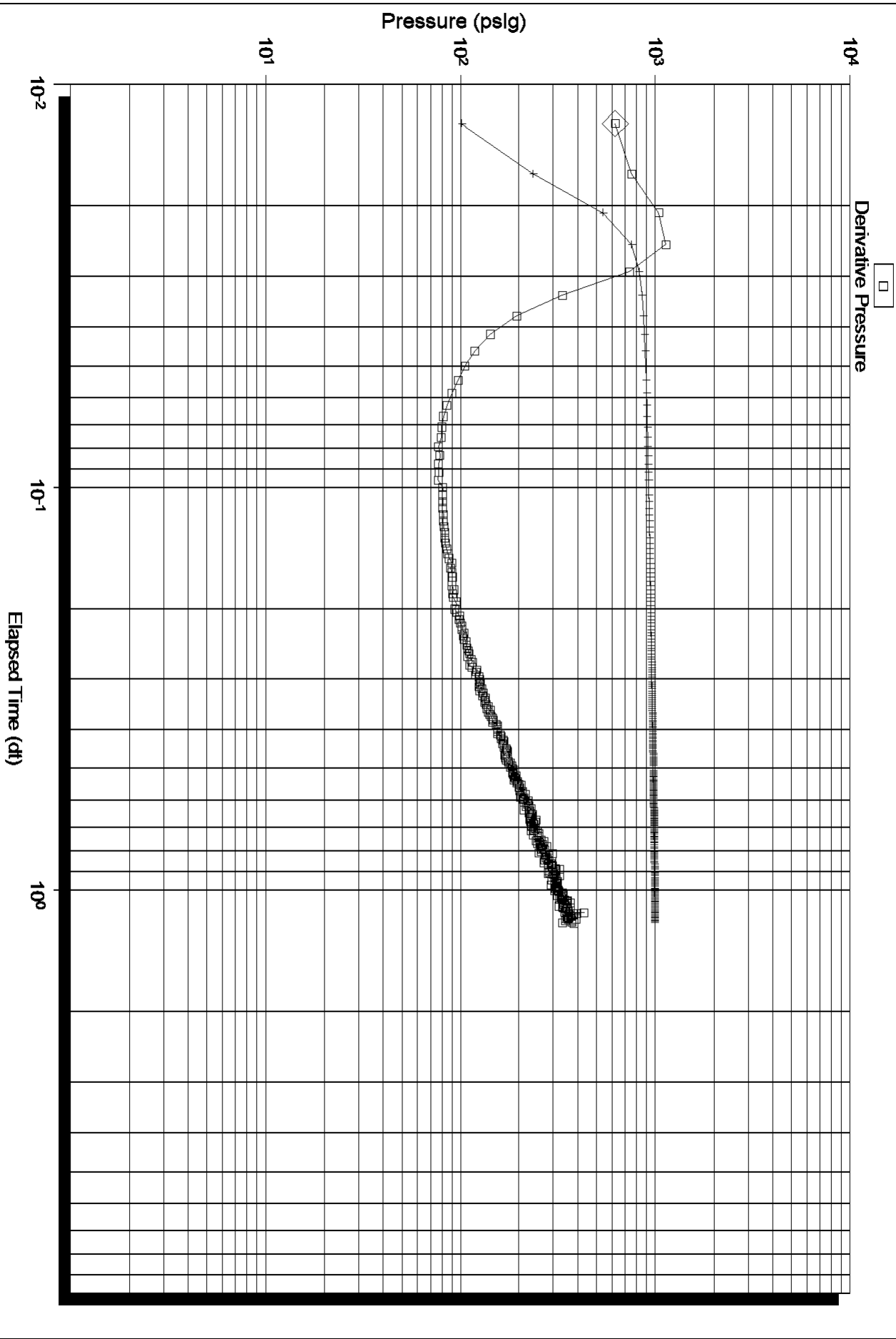
Serial Number: 8366 (Inside)

P* :

Slope (m) : kpa/log cycle

Flow Cycle: 2

Log-Log and Pseudo-Derivative



Log-Log and Pseudo-Derivative

