

## DRILL STEM TEST REPORT

Prepared For: **Sam Gary**

1515 Wynkoop Ste 700  
Denver Co 80202

ATTN: Tom Fertal

**10-17-16-Rush-Ks**

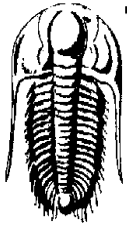
**Brack et al # 1-10**

Start Date: 2010.08.05 @ 02:50:13

End Date: 2010.08.05 @ 11:18:28

Job Ticket #: 039915      DST #: 4

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
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**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Sam Gary  
 1515 Wynkoop Ste 700  
 Denver Co 80202  
 ATTN: Tom Fertal

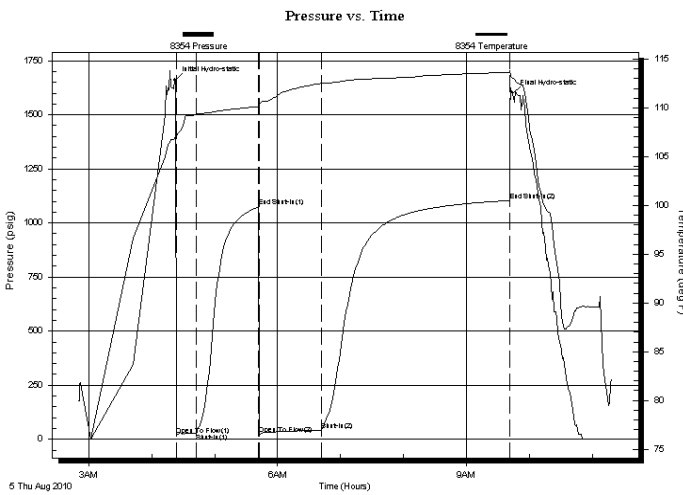
**Brack et al # 1-10**  
**10-17-16-Rush-Ks**  
 Job Ticket: 039915 **DST#: 4**  
 Test Start: 2010.08.05 @ 02:50:13

## GENERAL INFORMATION:

Formation: **H-I LKC**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:23:13  
 Time Test Ended: 11:18:28  
 Interval: **3415.00 ft (KB) To 3450.00 ft (KB) (TVD)**  
 Total Depth: 3450.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole  
 Tester: Dan Bangle  
 Unit No: 38  
 Reference Elevations: 2007.00 ft (KB)  
 1919.00 ft (CF)  
 KB to GR/CF: 88.00 ft

**Serial #: 8354 Inside**  
 Press@RunDepth: 42.89 psig @ 3416.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2010.08.05 End Date: 2010.08.05 Last Calib.: 2010.08.05  
 Start Time: 02:50:14 End Time: 11:18:28 Time On Btm: 2010.08.05 @ 04:22:28  
 Time Off Btm: 2010.08.05 @ 09:44:28

TEST COMMENT: IF-Weak building to 2"  
 FF-Strong B-B in 8 min



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1659.83	107.15	Initial Hydro-static
1	18.40	106.87	Open To Flow (1)
20	28.22	109.42	Shut-In(1)
80	1074.96	110.15	End Shut-In(1)
81	23.46	110.50	Open To Flow (2)
140	42.89	112.50	Shut-In(2)
319	1103.45	113.66	End Shut-In(2)
322	1598.23	113.04	Final Hydro-static

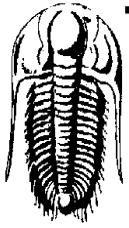
## Recovery

Length (ft)	Description	Volume (bbl)
60.00	MCGsyO 10%g 70%o 20%m	0.57
15.00	OCGsyM 20%g 30%o 50%m	0.21
0.00	480 GIP	0.00

## Gas Rates

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





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## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Sam Gary  
1515 Wynkoop Ste 700  
Denver Co 80202  
ATTN: Tom Fertal

**Bracket # 1-10**  
**10-17-16-Rush-Ks**  
Job Ticket: 039915      **DST#: 4**  
Test Start: 2010.08.05 @ 02:50:13

### Tool Information

Drill Pipe:	Length: 3365.00 ft	Diameter: 3.80 inches	Volume: 47.20 bbl	Tool Weight: 2800.00 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: 47.35 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 56000.00 lb
Depth to Top Packer:	3415.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	35.00 ft			
Tool Length:	63.00 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			3388.00	
Shut In Tool	5.00			3393.00	
Hydraulic tool	5.00			3398.00	
Jars	5.00			3403.00	
Safety Joint	3.00			3406.00	
Packer	5.00			3411.00	28.00      Bottom Of Top Packer
Packer	4.00			3415.00	
Stubb	1.00			3416.00	
Recorder	0.00	8354	Inside	3416.00	
Recorder	0.00	8520	Outside	3416.00	
Perforations	31.00			3447.00	
Bullnose	3.00			3450.00	35.00      Bottom Packers & Anchor

**Total Tool Length: 63.00**



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**FLUID SUMMARY**

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**Brack et al # 1-10**  
**10-17-16-Rush-Ks**  
Job Ticket: 039915      **DST#: 4**  
Test Start: 2010.08.05 @ 02:50:13

## 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: bbl		
Water Loss: 8.78 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 6300.00 ppm			
Filter Cake: inches			

## Recovery Information

Recovery Table

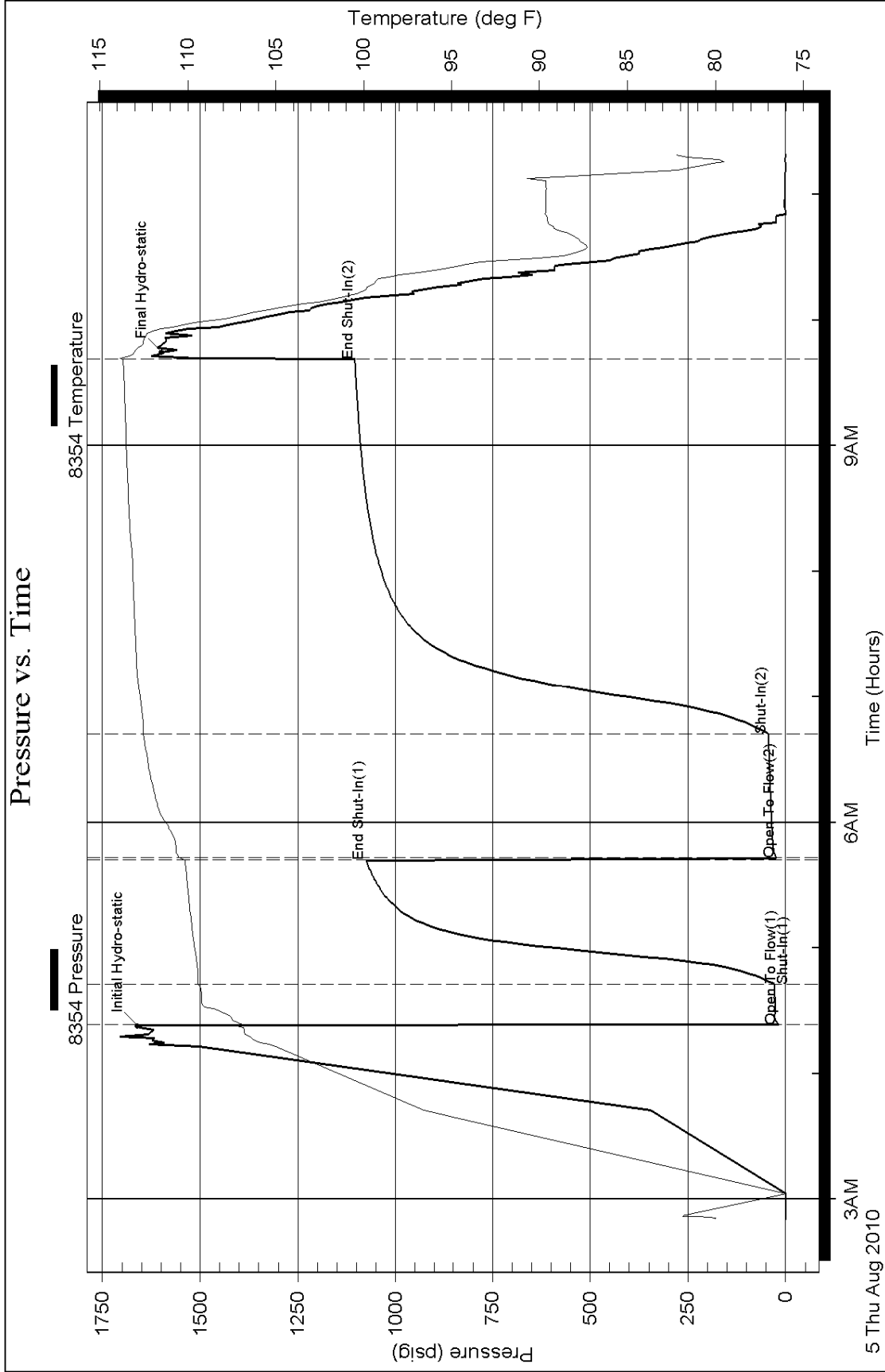
Length ft	Description	Volume bbl
60.00	MCGsyO 10%g 70%o 20%m	0.568
15.00	OCGsyM 20%g 30%o 50%m	0.210
0.00	480 GIP	0.000

Total Length: 75.00 ft      Total Volume: 0.778 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments:

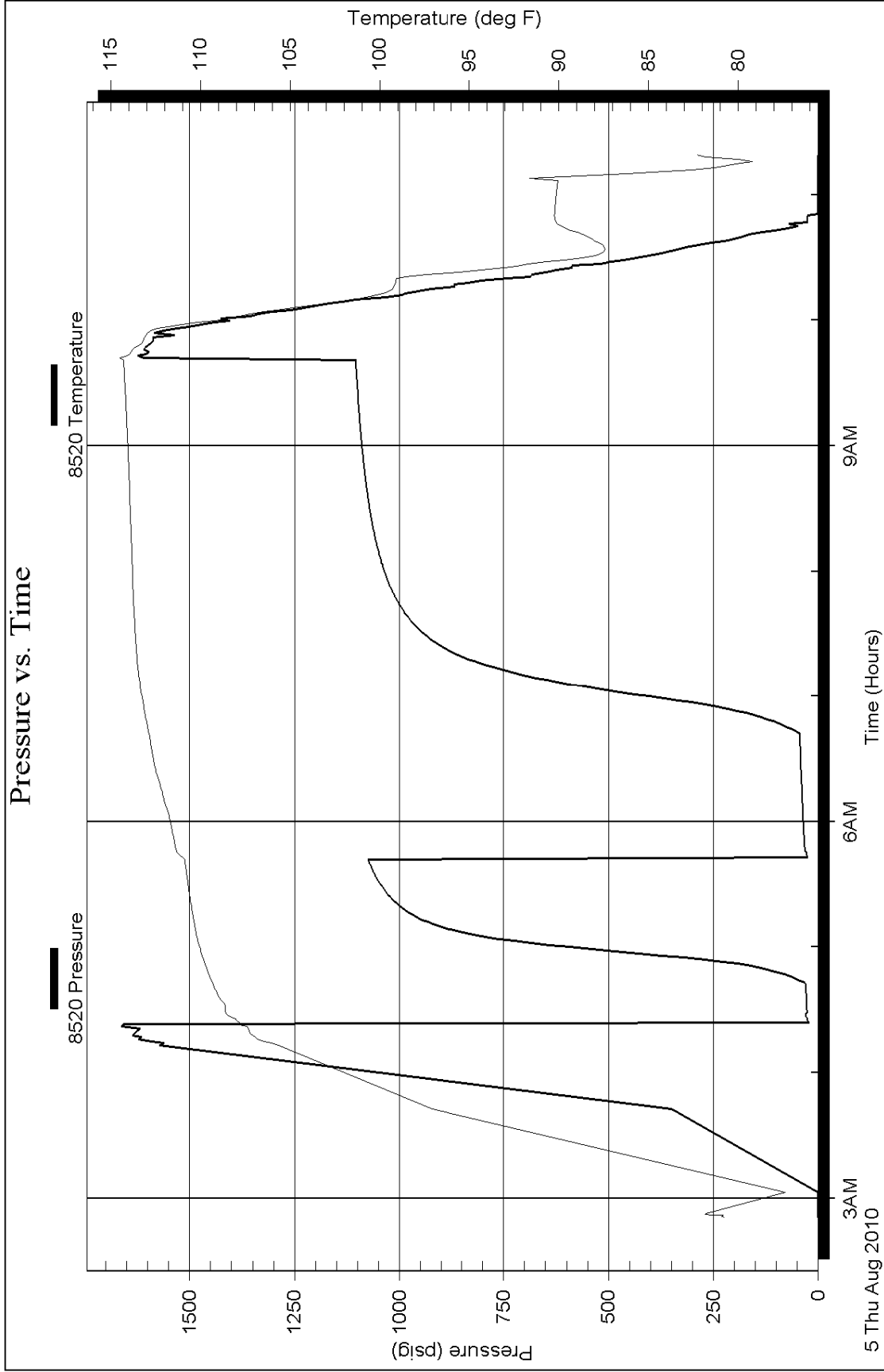


Serial #: 8520

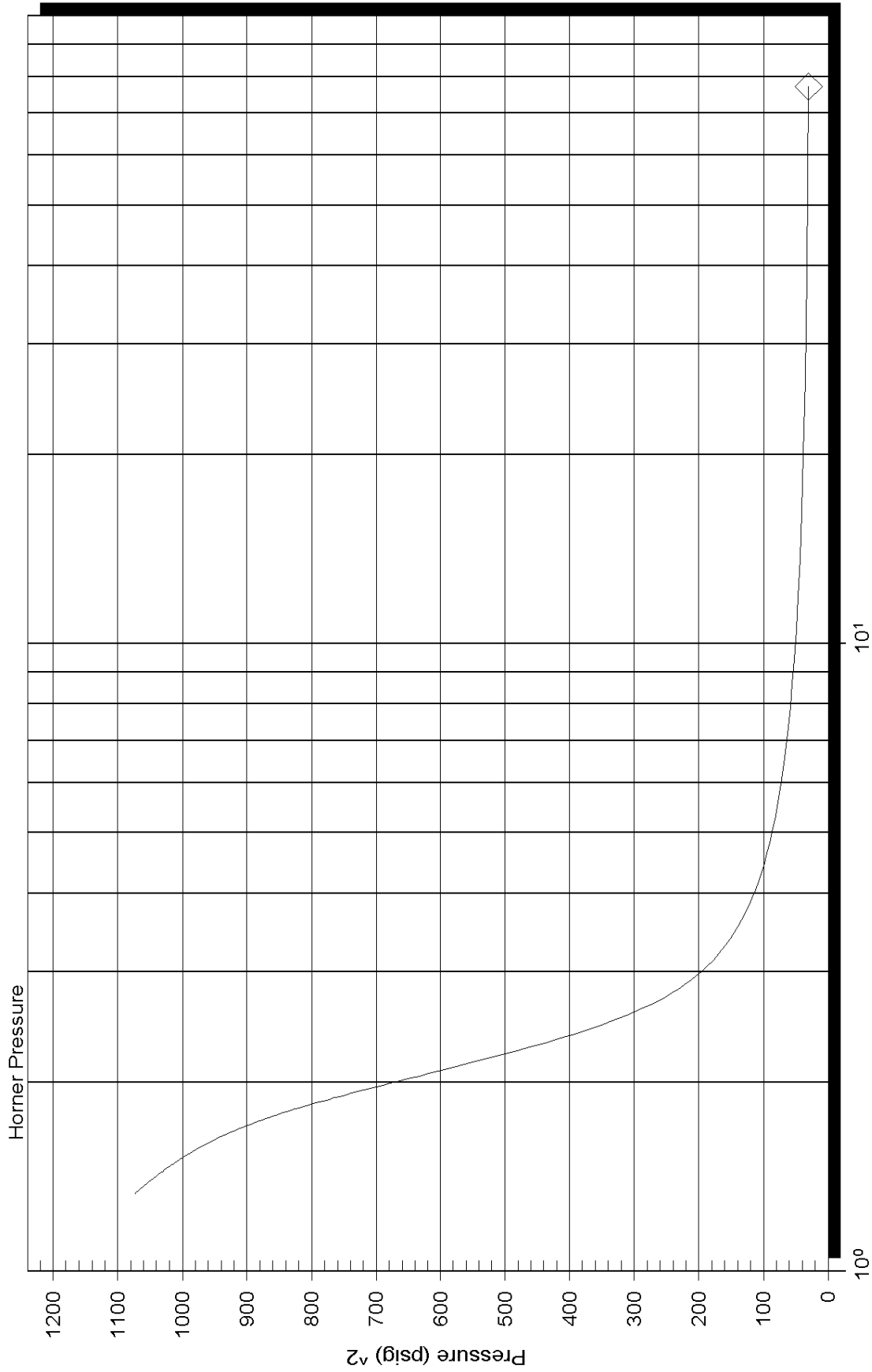
Outside Sam Gary

10-17-16-Rush-Ks

DST Test Number: 4



# Horner Plot



Serial Number: 8354 (Inside)

Slope (m) : kpa/log cycle

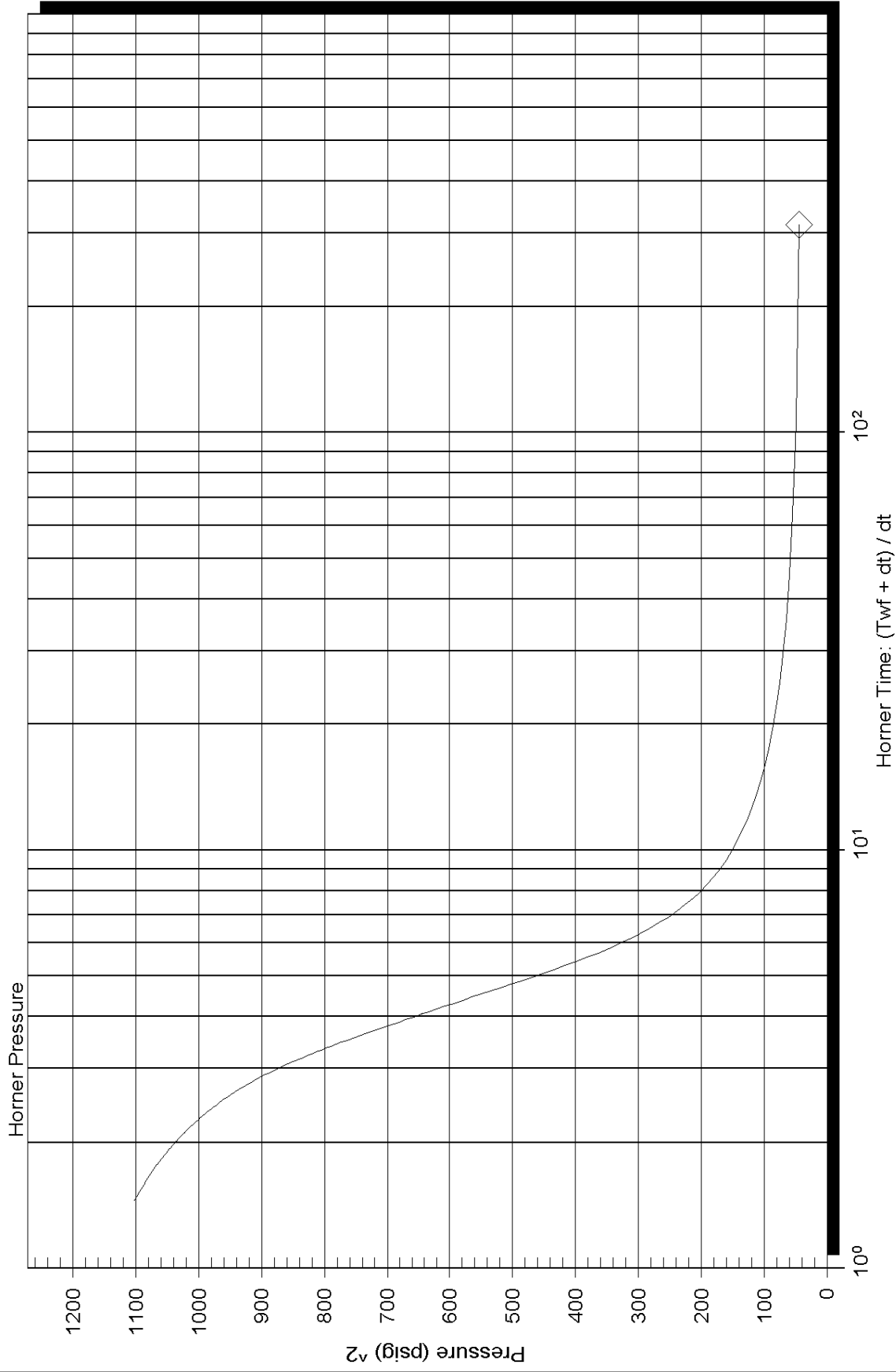
P\* :

Horner Time: (Twf + dt) / dt

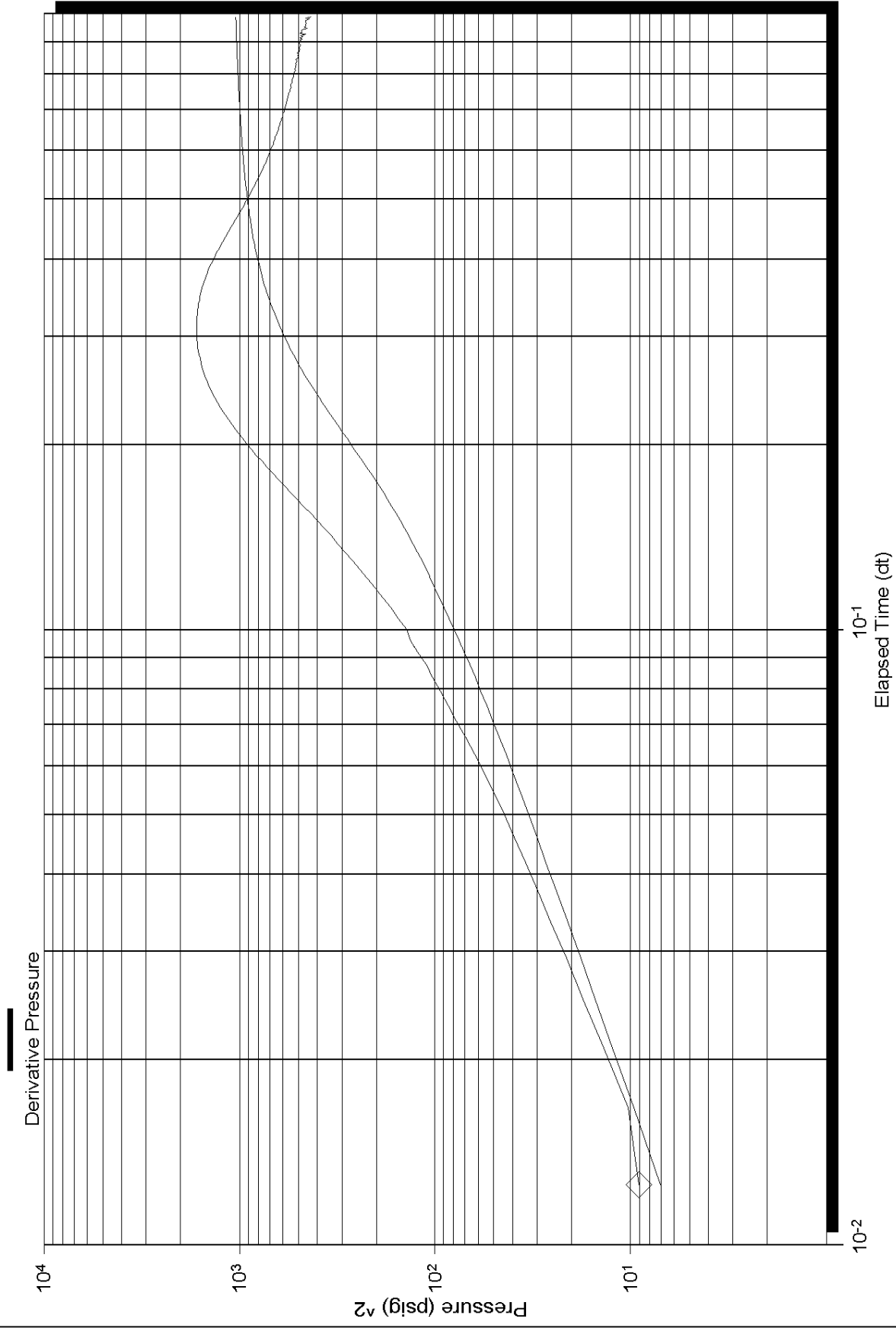
Flow Cycle: 1



# Horner Plot



# Log-Log and Pseudo-Log-Log



# Log-Log and Pseudo-Log-Log

