

**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **Herman L Loeb, LLC**

PO Box 838  
Lawrenceville, IL 62439

ATTN: Jon Christensen

**23-28s-18w Kiowa,KS**

**Hardy # 3**

Start Date: 2011.07.24 @ 10:46:26

End Date: 2011.07.24 @ 20:06:11

Job Ticket #: 43933      DST #: 1

Trilobite Testing, Inc

PO Box 1733 Hays, KS 67601

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

Herman L Loeb, LLC

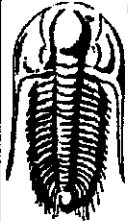
Hardy # 3

23-28s-18w Kiowa,KS

DST # 1

Lansing "A"

2011.07.24



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Herman L Loeb, LLC  
 PO Box 838  
 Lawrenceville, IL 62439  
 ATTN: Jon Christensen

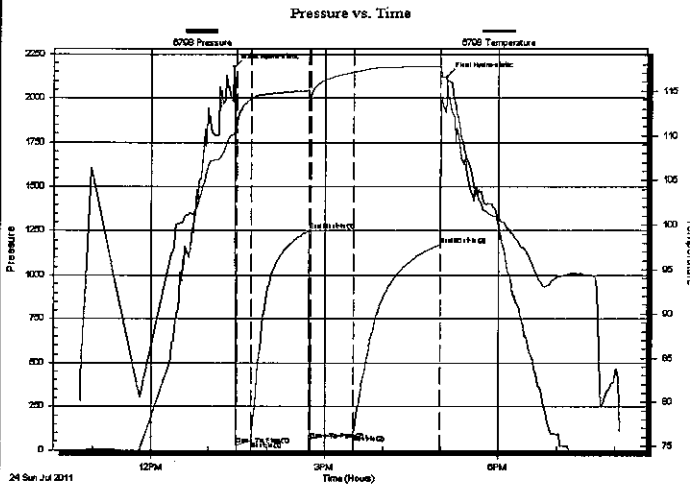
**Hardy # 3**  
**23-28s-18w Kiowa,KS**  
 Job Ticket: 43933 **DST#: 1**  
 Test Start: 2011.07.24 @ 10:46:26

## GENERAL INFORMATION:

Formation: **Lansing "A"**  
 Deviated: **No Whipstock** ft (KB)  
 Time Tool Opened: 13:27:41  
 Time Test Ended: 20:06:11  
 Interval: **4244.00 ft (KB) To 4262.00 ft (KB) (TVD)**  
 Total Depth: **4262.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Leal Cason**  
 Unit No: **45**  
 Reference Elevations: **2231.00 ft (KB)**  
**2220.00 ft (CF)**  
 KB to GR/CF: **11.00 ft**

**Serial #: 6798** Inside  
 Press@RunDepth: **89.20 psig @ 4245.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2011.07.24** End Date: **2011.07.24** Last Calib.: **2011.07.24**  
 Start Time: **10:46:27** End Time: **20:06:11** Time On Btm: **2011.07.24 @ 13:25:11**  
 Time Off Btm: **2011.07.24 @ 17:06:41**

**TEST COMMENT:** IF: Strong Blow, BOB in 15 seconds  
 IS: Bled Off, No Blow back  
 FF: Strong Blow, BOB in 1 minute  
 FS: Bled Off, No Blow back



## PRESSURE SUMMARY

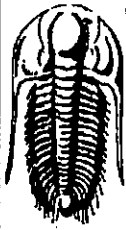
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2174.19	110.17	Initial Hydro-static
3	29.72	111.30	Open To Flow (1)
18	52.11	114.07	Shut-In(1)
78	1251.06	115.05	End Shut-In(1)
81	57.03	114.38	Open To Flow (2)
124	89.20	117.10	Shut-In(2)
214	1172.76	117.78	End Shut-In(2)
222	2123.13	116.37	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
0.00	2500 GIP	0.00
60.00	MCW 10%M 90%W	0.30
125.00	SOGWCM 1%O 4%G 43%W 52%M	0.61

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

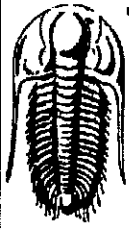
Herman L Loeb, LLC  
 PO Box 838  
 Lawrenceville, IL 62439  
 ATTN: Jon Christensen

**Hardy # 3**  
**23-28s-18w Kiowa,KS**  
 Job Ticket: 43933      **DST#: 1**  
 Test Start: 2011.07.24 @ 10:46:26

**Tool Information**

Drill Pipe:	Length: 4026.00 ft	Diameter: 3.80 inches	Volume: 56.47 bbl	Tool Weight:	2100.00 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: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose:	80000.00 lb
			<b>Total Volume: 57.52 bbl</b>	Tool Chased	ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial	70000.00 lb
Depth to Top Packer:	4244.00 ft			Final	71000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	18.00 ft				
Tool Length:	40.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			
Tool Comments:					

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4227.00	
Hydraulic tool	5.00			4232.00	
Safety Joint	2.00			4234.00	
Packer	5.00			4239.00	22.00      Bottom Of Top Packer
Packer	5.00			4244.00	
Stubb	1.00			4245.00	
Recorder	0.00	6798	Inside	4245.00	
Recorder	0.00	8367	Outside	4245.00	
Perforations	14.00			4259.00	
Bullnose	3.00			4262.00	18.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>40.00</b>				



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**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Herman L Loeb, LLC  
 PO Box 838  
 Lawrenceville, IL 62439  
 ATTN: Jon Christensen

**Hardy # 3**  
**23-28s-18w Kiowa, KS**  
 Job Ticket: 43933      **DST#: 1**  
 Test Start: 2011.07.24 @ 10:46:26

**Mud and Cushion Information**

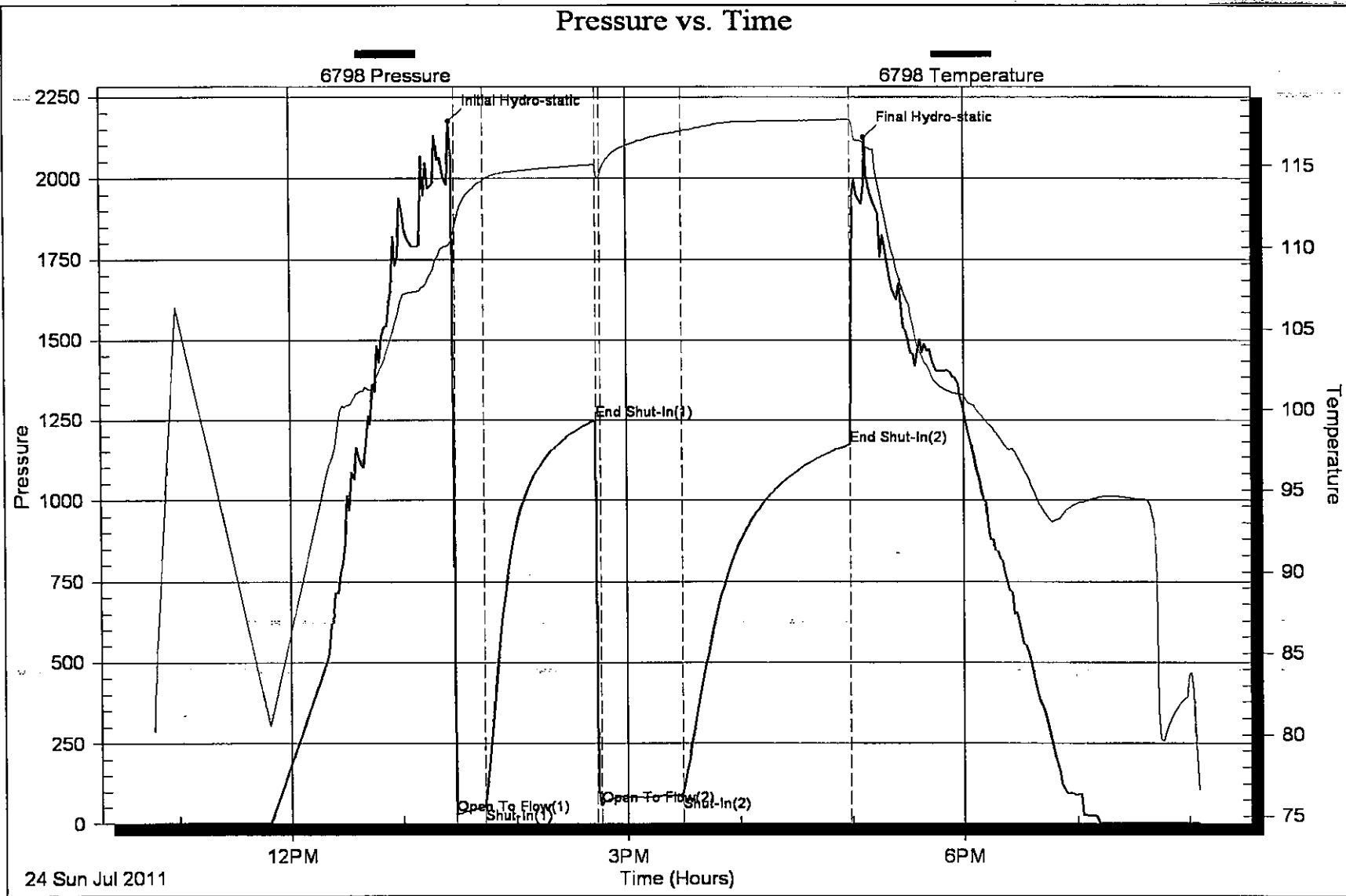
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	125000 ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 13.97 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5800.00 ppm			
Filter Cake: 0.20 inches			

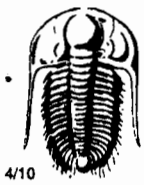
**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
0.00	2500 GIP	0.000
60.00	MCW 10%M 90%W	0.295
125.00	SOGWCM 1%O 4%G 43%W 52%M	0.615

Total Length: 185.00 ft      Total Volume: 0.910 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: RW was .065 @ 85 degrees





# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

JUL 29 2011

## Test Ticket

NO. 43933 16077

Well Name & No. Hardy #3 Test No. 1 Date 07/24/11  
 Company Herman L. Loebe, LLC Elevation 2231 KB 2220 GL  
 Address PO BOX 838 Lawrenceville, IL 62439  
 Co. Rep / Geo. Jon Christensen Rig Sterling 2  
 Location: Sec. 23 Twp. 28S Rge. 18W Co. Kiowa State KS

Interval Tested 4244 - 4262 Zone Tested ~~Lansing~~ Lansing "A"  
 Anchor Length 18 Drill Pipe Run 4026 Mud Wt. 9.2  
 Top Packer Depth 4239 Drill Collars Run 213 Vis 59  
 Bottom Packer Depth 4244 Wt. Pipe Run 0 WL 14.0  
 Total Depth 4262 Chlorides 5800 ppm System LCM 1#

Blow Description IF: Strong Blow, BOB in 15 seconds

PSI: Bled off, No blowback

FF: Strong Blow, BOB in 1 minute

FSI: Bled off, No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>2500</u>	<u>GIP</u>				
<u>125</u>	<u>50G WCM</u>	<u>4</u>	<u>1</u>	<u>43</u>	<u>52</u>
<u>60</u>	<u>MCLW</u>			<u>90%</u>	<u>10</u>
Rec Total	<u>185</u>				

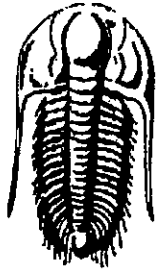
BHT 118° Gravity N/C API RW .065 @ 85° F Chlorides 125,000 ppm

(A) Initial Hydrostatic 2174  Test 1225 T-On Location 10:15  
 (B) First Initial Flow 30  Jars \_\_\_\_\_ T-Started 10:46  
 (C) First Final Flow 52  Safety Joint 75 T-Open 13:27  
 (D) Initial Shut-In 1251  Circ Sub \_\_\_\_\_ T-Pulled 16:58  
 (E) Second Initial Flow 57  Hourly Standby \_\_\_\_\_ T-Out 20:06  
 (F) Second Final Flow 89  Mileage 701 98 Comments \_\_\_\_\_  
 (G) Final Shut-In 1173  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2123  Straddle \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1398 Total 1398 MP/DST Disc't \_\_\_\_\_

Approved By

Our Representative

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.**

## DRILL STEM TEST REPORT

Prepared For: **Herman L Loeb, LLC**

PO Box 838  
Lawrenceville, IL 62439

ATTN: Jon Christensen

**23-28s-18w Kiowa,KS**

**Hardy # 3**

Start Date: 2011.07.26 @ 14:55:29

End Date: 2011.07.27 @ 00:25:29

Job Ticket #: 43934                      DST #: 2

Trilobite Testing, Inc

PO Box 1733 Hays, KS 67601

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

Herman L Loeb, LLC

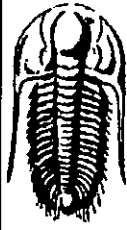
Hardy # 3

23-28s-18w Kiowa,KS

DST # 2

Mississippi

2011.07.26



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Herman L. Loeb, LLC  
 PO Box 838  
 Lawrenceville, IL 62439  
 ATTN: Jon Christensen

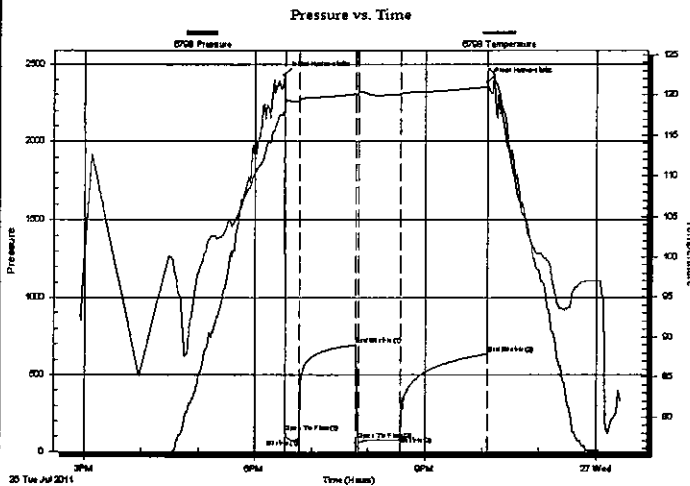
**Hardy # 3**  
**23-28s-18w Kiowa,KS**  
 Job Ticket: 43934      **DST#: 2**  
 Test Start: 2011.07.26 @ 14:55:29

**GENERAL INFORMATION:**

Formation: **Mississippi**  
 Deviated: **No Whipstock**      ft (KB)  
 Time Tool Opened: 18:31:59  
 Time Test Ended: 00:25:29  
 Interval: **4786.00 ft (KB) To 4844.00 ft (KB) (TVD)**  
 Total Depth: **4844.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Leal Cason**  
 Unit No: **45**  
 Reference Elevations: **2231.00 ft (KB)**  
**2220.00 ft (CF)**  
 KB to GR/CF: **11.00 ft**

**Serial #: 6798**      **Inside**  
 Press@RunDepth: **104.73 psig @ 4787.00 ft (KB)**      Capacity: **8000.00 psig**  
 Start Date: **2011.07.26**      End Date: **2011.07.27**      Last Calib.: **2011.07.27**  
 Start Time: **14:55:30**      End Time: **00:25:29**      Time On Btm: **2011.07.26 @ 18:30:29**  
 Time Off Btm: **2011.07.26 @ 22:05:14**

**TEST COMMENT:** IF: Strong Blow, BOB in 30 seconds, GTS in 12 minutes, Gauged Gas  
 IS: Bled Off, 4 inch Blow back  
 FF: Strong Blow, BOB & GTS Immediate, Gauged Gas & Caught Sample  
 FSI: Bled Off, 2 inch Blow back



**PRESSURE SUMMARY**

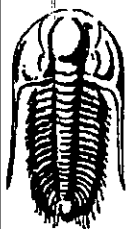
Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	2427.79	118.13	Initial Hydro-static
2	129.62	118.78	Open To Flow (1)
16	84.19	119.20	Shut-In(1)
77	693.53	120.15	End Shut-In(1)
79	77.77	120.51	Open To Flow (2)
123	104.73	120.09	Shut-In(2)
215	636.48	121.01	End Shut-In(2)
215	2384.97	121.68	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
0.00	4654 GIP	0.00
125.00	SGOM 2%G 98%M	0.61

**Gas Rates**

	Choke (Inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.25	28.00	67.26
Last Gas Rate	0.25	19.00	52.99
Max. Gas Rate	0.25	28.00	67.26



**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Herman L Loeb, LLC

**Hardy # 3**

PO Box 838  
Lawrenceville, IL 62439

**23-28s-18w Kiowa, KS**

Job Ticket: 43934      **DST#: 2**

ATTN: Jon Christensen

Test Start: 2011.07.26 @ 14:55:29

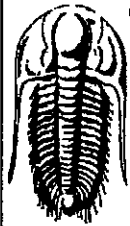
### Tool Information

Drill Pipe:	Length: 4566.00 ft	Diameter: 3.80 inches	Volume: 64.05 bbl	Tool Weight: 2100.00 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: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose: 85000.00 lb
			<b>Total Volume: 65.10 bbl</b>	Tool Chased ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 79000.00 lb
Depth to Top Packer:	4786.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	80.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

### Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4769.00	
Hydraulic tool	5.00			4774.00	
Safety Joint	2.00			4776.00	
Packer	5.00			4781.00	22.00      Bottom Of Top Packer
Packer	5.00			4786.00	
Stubb	1.00			4787.00	
Recorder	0.00	6798	Inside	4787.00	
Recorder	0.00	8367	Outside	4787.00	
Perforations	6.00			4793.00	
Change Over Sub	1.00			4794.00	
Drill Pipe	32.00			4826.00	
Change Over Sub	1.00			4827.00	
Perforations	14.00			4841.00	
Bullnose	3.00			4844.00	58.00      Bottom Packers & Anchor

**Total Tool Length: 80.00**



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**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Herrman L Loeb, LLC

**Hardy # 3**

PO Box 838  
Lawrenceville, IL 62439

**23-28s-18w Kiowa, KS**

Job Ticket: 43934

**DST#: 2**

ATTN: Jon Christensen

Test Start: 2011.07.26 @ 14:55:29

**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: 61.00 sec/qt

Cushion Volume:

bbl

Water Loss: 9.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5800.00 ppm

Filter Cake: 0.20 inches

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
0.00	4654 GIP	0.000
125.00	SGCM 2%G 98%M	0.615

Total Length: 125.00 ft      Total Volume: 0.615 bbl

Num Fluid Samples: 0

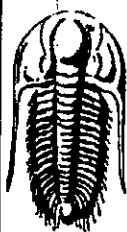
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

**GAS RATES**

Herman L Loeb, LLC  
PO Box 838  
Lawrenceville, IL 62439

**Hardy # 3**

**23-28s-18w Kiowa, KS**

Job Ticket: 43934

**DST#: 2**

ATTN: Jon Christensen

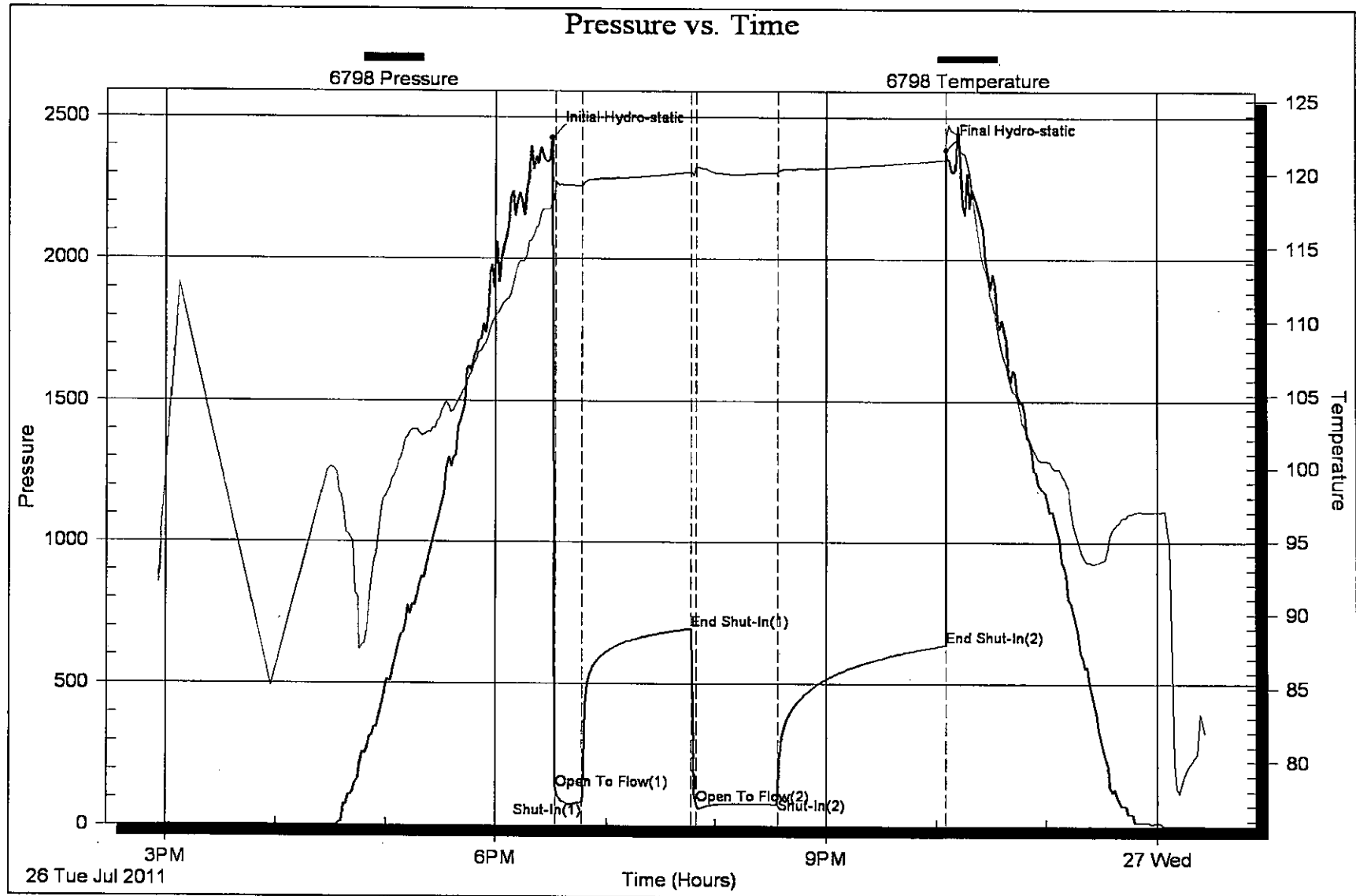
Test Start: 2011.07.26 @ 14:55:29

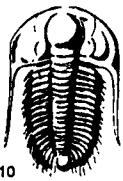
### Gas Rates Information

Temperature: 59 deg C  
Relative Density: 0.65  
Z Factor: 0.8

Gas Rates Table

Flow Period	Elapsed Time	Choke (mm)	Pressure (kPaa)	Gas Rate (m <sup>3</sup> /d)
1	15	0.25	28.00	67.26
1	15	0.25	28.00	67.26
2	10	0.25	20.00	54.57
2	20	0.25	22.00	57.75
2	30	0.25	22.00	57.75
2	40	0.25	19.00	52.99





# TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

## Test Ticket

JUL 29 2011

NO. 43934

Well Name & No. Hardy #3 Test No. 2 Date 07/26/11  
 Company Herman L Loeb LLC Elevation 2231 KB 2220 GL  
 Address PO Box 838 Lawrenceville, IL 62439  
 Co. Rep / Geo. Jon Christensen Rig Starling 2  
 Location: Sec. 23 Twp. 28S Rge. 18W Co. Kiowa State KS

Interval Tested 4786 - 4844 Zone Tested Mississippi  
 Anchor Length 58 Drill Pipe Run 4566 Mud Wt. 9.3  
 Top Packer Depth 4781 Drill Collars Run 23 Vis 61  
 Bottom Packer Depth 4786 Wt. Pipe Run 0 WL 10.0  
 Total Depth 4844 Chlorides 5800 ppm System LCM 1#

Blow Description IF: Strong Blow, BOB in 30 seconds, GTS in 12 minutes, Gauged Gas  
ISI: Bled off, 4 inch Blowback  
FE: Strong Blow, BOB + GTS Immediate, Gauged Gas + caught sample  
FSD: Bled off, 2 inch Blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>4654</u>	<u>GIP</u>				
<u>125</u>	<u>SGCM</u>	<u>2</u>			<u>98</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 125 BHT 121° Gravity N/C API RW N/C @ N/C °F Chlorides N/C ppm

(A) Initial Hydrostatic 2428  Test 1225 T-On Location 14:30  
 (B) First Initial Flow 130  Jars T-Started 14:55  
 (C) First Final Flow 84  Safety Joint 75 T-Open 18:31  
 (D) Initial Shut-In 693  Circ Sub T-Pulled 22:04  
 (E) Second Initial Flow 78  Hourly Standby T-Out 00:25  
 (F) Second Final Flow 105  Mileage 70 98 Comments \_\_\_\_\_  
 (G) Final Shut-In 636  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2385  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1398 Total 1398 MP/DST Disc't \_\_\_\_\_

Initial Open 15  
 Initial Shut-In 60  
 Final Flow 45  
 Final Shut-In 90

Approved By [Signature] Our Representative [Signature]

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.

