



## DRILL STEM TEST REPORT

Prepared For: **Production Drilling Inc**

1023 Reservation Rd  
Hays KS 67601-3982

ATTN: Marc Downing

### **East Elrick #3-1**

### **11-10s-25w Graham,KS**

Start Date: 2014.09.29 @ 14:03:00

End Date: 2014.09.29 @ 21:15:00

Job Ticket #: 56146                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.10.03 @ 10:09:02



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Production Drilling Inc  
1023 Reservation Rd  
Hays KS 67601-3982  
ATTN: Marc Downing

**11-10s-25w Graham,KS**  
**East Elrick #3-1**  
Job Ticket: 56146 **DST#: 1**  
Test Start: 2014.09.29 @ 14:03:00

## GENERAL INFORMATION:

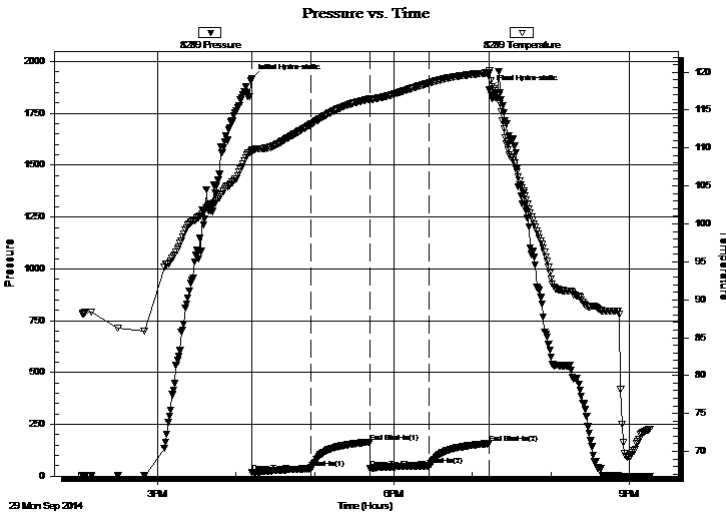
Formation: **LKC " D "**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 16:12:15  
Time Test Ended: 21:15:00  
Interval: **3795.00 ft (KB) To 3815.00 ft (KB) (TVD)**  
Total Depth: 3815.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Jim Svaty  
Unit No: 76  
Reference Elevations: 2480.00 ft (KB)  
2473.00 ft (CF)  
KB to GR/CF: 7.00 ft

## Serial #: 8289 Outside

Press@RunDepth: 50.38 psig @ 3797.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2014.09.29 End Date: 2014.09.29 Last Calib.: 2014.09.29  
Start Time: 14:03:02 End Time: 21:15:15 Time On Btm: 2014.09.29 @ 16:11:45  
Time Off Btm: 2014.09.29 @ 19:13:15

TEST COMMENT: 45-IFP- Surface Blow Building to 9" in 35 min.  
45-ISIP- No Blow  
45-FFP- Surface Blow Building to 4 1/2"  
45-FSIP- No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1916.22	109.74	Initial Hydro-static
1	17.49	109.57	Open To Flow (1)
45	36.54	113.08	Shut-In(1)
90	164.63	116.44	End Shut-In(1)
91	38.86	116.36	Open To Flow (2)
136	50.38	118.57	Shut-In(2)
181	157.52	119.89	End Shut-In(2)
182	1865.38	120.24	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
63.00	MCW 5% m 95% w	0.88
9.00	OMCW 5% o 40% m 55% w	0.13
6.00	CO 100%	0.08
0.00	108 GIP	0.00

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Production Drilling Inc

**11-10s-25w Graham,KS**

1023 Reservation Rd  
Hays KS 67601-3982

**East Elrick #3-1**

Job Ticket: 56146

**DST#: 1**

ATTN: Marc Downing

Test Start: 2014.09.29 @ 14:03:00

## Tool Information

Drill Pipe:	Length: 3791.00 ft	Diameter: 3.80 inches	Volume: 53.18 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	50000.00 lb
			<u>Total Volume: 53.18 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial	48000.00 lb
Depth to Top Packer:	3795.00 ft			Final	48000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	20.00 ft				
Tool Length:	41.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3775.00	
Shut In Tool	5.00			3780.00	
Hydraulic tool	5.00			3785.00	
Packer	5.00			3790.00	21.00 Bottom Of Top Packer
Packer	5.00			3795.00	
Stubb	1.00			3796.00	
Perforations	1.00			3797.00	
Recorder	0.00	8789	Inside	3797.00	
Recorder	0.00	8289	Outside	3797.00	
Blank Spacing	15.00			3812.00	
Bullnose	3.00			3815.00	20.00 Bottom Packers & Anchor

**Total Tool Length: 41.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Production Drilling Inc

**11-10s-25w Graham,KS**

1023 Reservation Rd  
Hays KS 67601-3982

**East Elrick #3-1**

Job Ticket: 56146

**DST#: 1**

ATTN: Marc Downing

Test Start: 2014.09.29 @ 14:03:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

39 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

35000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 1.50 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
63.00	MCW 5% <sub>m</sub> 95% <sub>w</sub>	0.884
9.00	OMCW 5% <sub>o</sub> 40% <sub>m</sub> 55% <sub>w</sub>	0.126
6.00	CO 100%	0.084
0.00	108 GIP	0.000

Total Length: 78.00 ft

Total Volume: 1.094 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

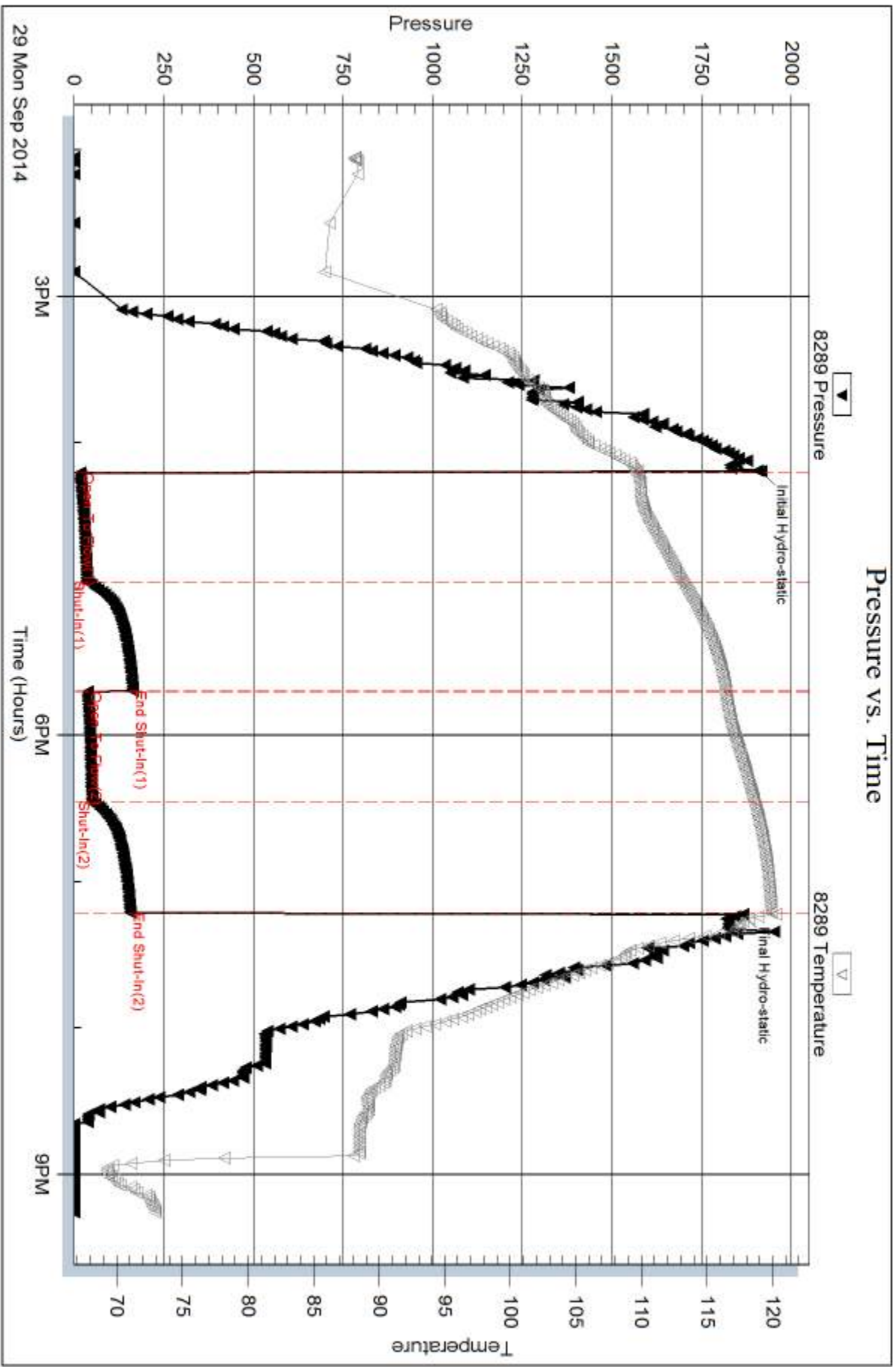
Recovery Comments: .195 @ 74

Serial #: 8289

Outside Production Drilling Inc

East Erick #3-1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 56146

Printed: 2014, 10:03 @ 10:09:04

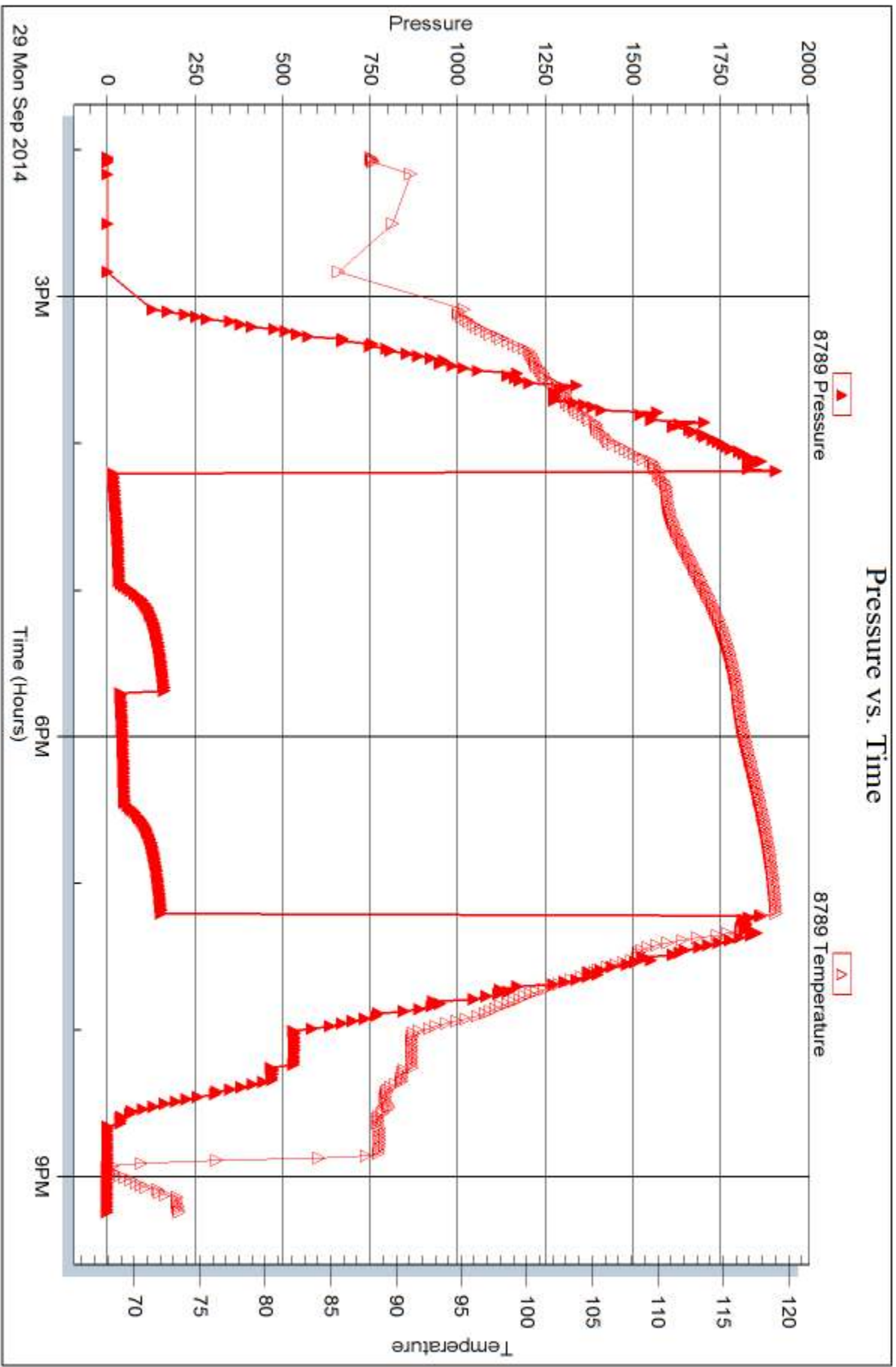
Serial #: 8789

Inside

Production Drilling Inc

East Erick #3-1

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 56146

Printed: 2014, 10:03 @ 10:09:04



## DRILL STEM TEST REPORT

Prepared For: **Production Drilling Inc**

1023 Reservation Rd  
Hays KS 67601-3982

ATTN: Marc Downing

### **East Elrick #3-1**

#### **11-10s-25w Graham,KS**

Start Date: 2014.09.30 @ 11:21:00

End Date: 2014.09.30 @ 18:04:00

Job Ticket #: 56147                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

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Production Drilling Inc

11-10s-25w Graham,KS

East Elrick #3-1

DST # 2

LKC " H - J "

2014.09.30





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Production Drilling Inc  
1023 Reservation Rd  
Hays KS 67601-3982  
ATTN: Marc Downing

**11-10s-25w Graham,KS**  
**East Elrick #3-1**  
Job Ticket: 56147 **DST#: 2**  
Test Start: 2014.09.30 @ 11:21:00

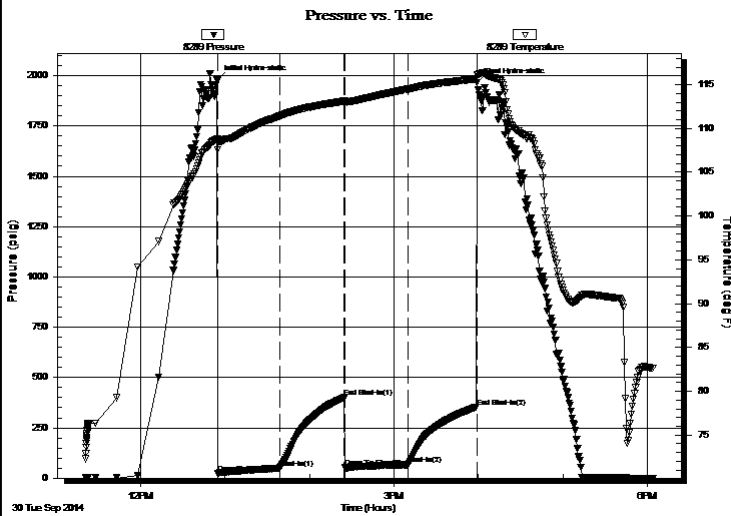
## GENERAL INFORMATION:

Formation: **LKC "H - J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 12:54:45  
Time Test Ended: 18:04:00  
Interval: **3874.00 ft (KB) To 3950.00 ft (KB) (TVD)**  
Total Depth: 3950.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Jim Svaty  
Unit No: 76  
Reference Elevations: 2480.00 ft (KB)  
2473.00 ft (CF)  
KB to GR/CF: 7.00 ft

## Serial #: 8289 Outside

Press@RunDepth: 67.19 psig @ 3883.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2014.09.30 End Date: 2014.09.30 Last Calib.: 2014.09.30  
Start Time: 11:21:02 End Time: 18:04:15 Time On Btm: 2014.09.30 @ 12:54:30  
Time Off Btm: 2014.09.30 @ 15:59:15

TEST COMMENT: 45-IFP- BOB in 15 min.  
45-ISIP- No Blow  
45-FFP- BOB in 28 min.  
45-FSIP- Weak Surface Blow in 4 min. Died Back 10 min.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1978.84	108.78	Initial Hydro-static
1	21.38	107.57	Open To Flow (1)
45	50.52	111.41	Shut-In(1)
91	400.35	113.11	End Shut-In(1)
91	52.47	112.97	Open To Flow (2)
136	67.19	114.47	Shut-In(2)
185	354.35	115.65	End Shut-In(2)
185	1967.21	116.13	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
116.00	GOCM 10%g 35%o 55%m	1.63
0.00	450 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Production Drilling Inc

**11-10s-25w Graham,KS**

1023 Reservation Rd  
Hays KS 67601-3982

**East Elrick #3-1**

Job Ticket: 56147

**DST#: 2**

ATTN: Marc Downing

Test Start: 2014.09.30 @ 11:21:00

## Tool Information

Drill Pipe:	Length: 3885.00 ft	Diameter: 3.80 inches	Volume: 54.50 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 54.50 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	3874.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	97.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3854.00	
Shut In Tool	5.00			3859.00	
Hydraulic tool	5.00			3864.00	
Packer	5.00			3869.00	21.00 Bottom Of Top Packer
Packer	5.00			3874.00	
Stubb	1.00			3875.00	
Perforations	7.00			3882.00	
Change Over Sub	1.00			3883.00	
Recorder	0.00	8789	Inside	3883.00	
Recorder	0.00	8289	Outside	3883.00	
Blank Spacing	63.00			3946.00	
Change Over Sub	1.00			3947.00	
Bullnose	3.00			3950.00	76.00 Bottom Packers & Anchor

**Total Tool Length: 97.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Production Drilling Inc

**11-10s-25w Graham,KS**

1023 Reservation Rd  
Hays KS 67601-3982

**East Elrick #3-1**

Job Ticket: 56147

**DST#: 2**

ATTN: Marc Downing

Test Start: 2014.09.30 @ 11:21:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

38 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
116.00	GOCM 10%g 35%o 55%m	1.627
0.00	450 GIP	0.000

Total Length: 116.00 ft      Total Volume: 1.627 bbl

Num Fluid Samples: 0

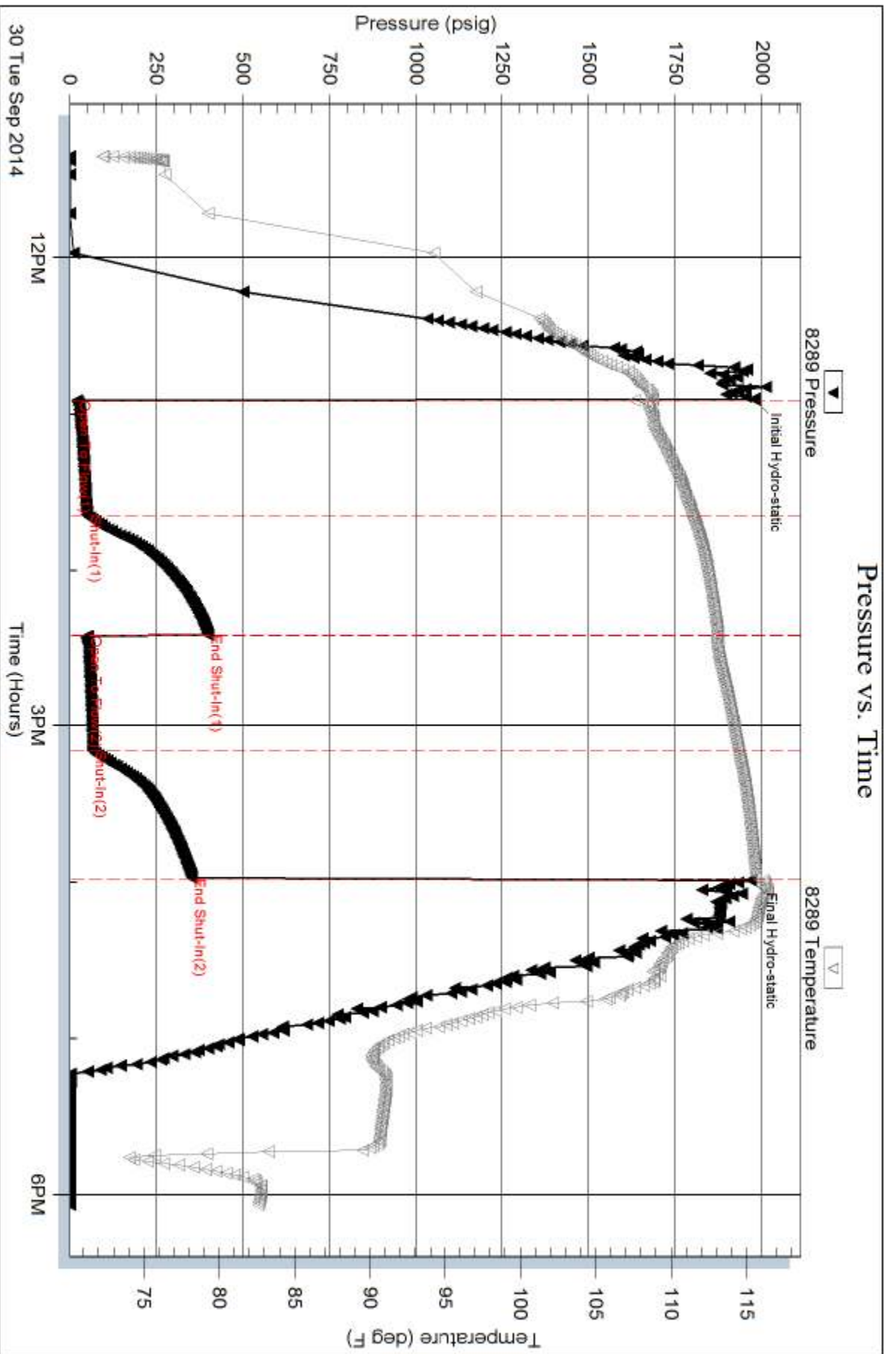
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



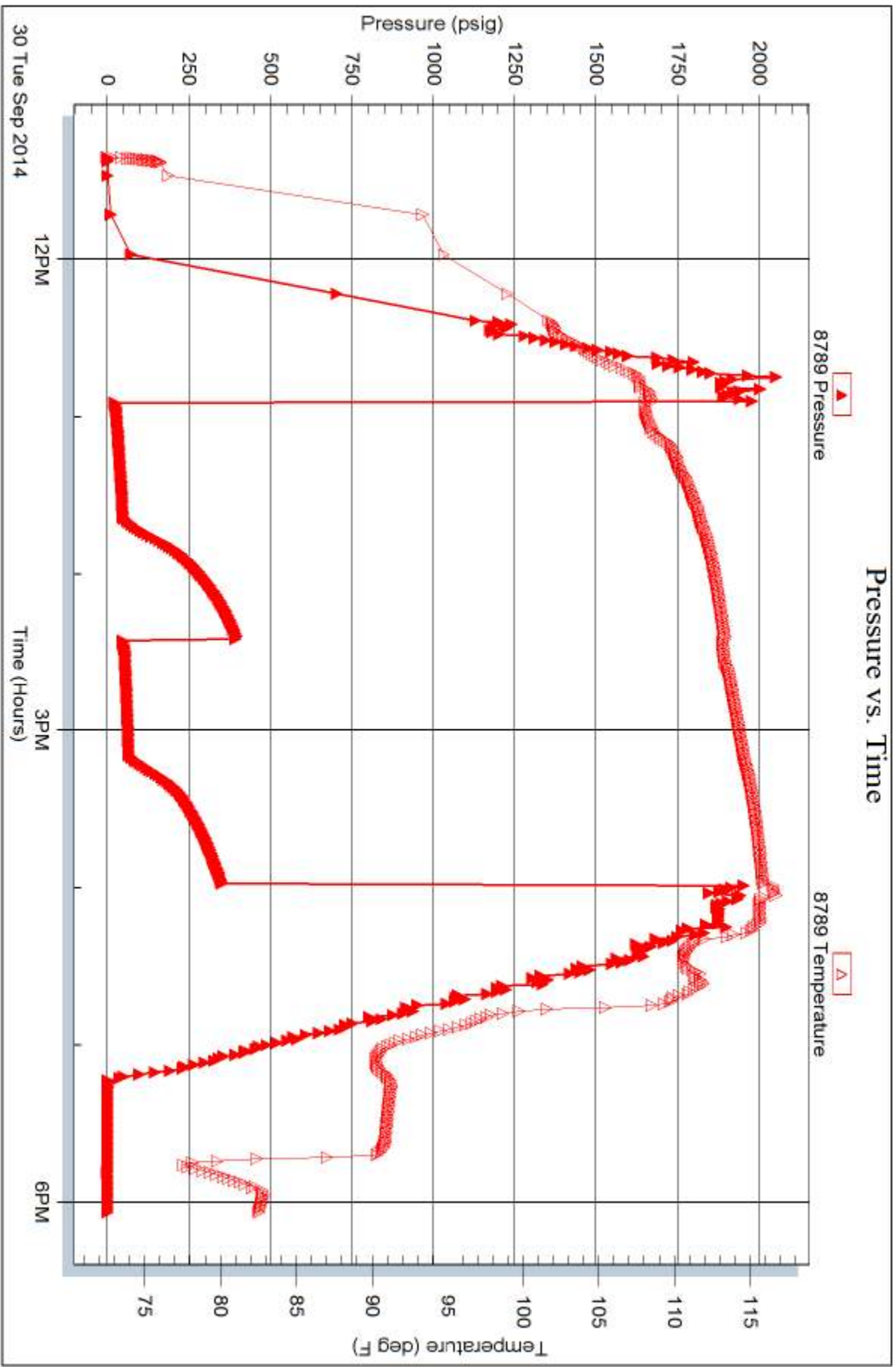
Serial #: 8789

Inside

Production Drilling Inc

East Erick #3-1

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 56147

Printed: 2014, 10:03 @ 10:08:33





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56146

Well Name & No. EAST Elrick # 3-1 Test No. 1 Date 9-29-14  
 Company Production Drilling, Inc. Elevation 2480 KB 2473 GL  
 Address 1023 Reservation Rd Hays KS 67601-3982  
 Co. Rep / Geo. Marc Downing Rig Discovery #1  
 Location: Sec. 11 Twp. 10 S Rge. 25 W Co. Graham State KS

Interval Tested 3795-3815 Zone Tested LKC "D"  
 Anchor Length 20 Drill Pipe Run 3781 Mud Wt. 9.1  
 Top Packer Depth 3790 Drill Collars Run 0 Vis 54  
 Bottom Packer Depth 3795 Wt. Pipe Run 0 WL 7.2  
 Total Depth 3815 Chlorides 1000 ppm System LCM 1.5

Blow Description IFP - Surface Blow Building to 9" in 35 min.  
ISIP - No Blow  
FFP - Surface Blow Building to 4 1/2 in.  
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>63</u>	<u>mcw</u>		<u>95</u>	<u>5</u>	
<u>9</u>	<u>0 mcw</u>	<u>5</u>	<u>55</u>	<u>40</u>	
<u>6</u>	<u>CO</u>	<u>100</u>			
	<u>108 SIP</u>				

Rec Total 78 BHT 120 Gravity 39 API RW 195 @ 74 °F Chlorides 35000 ppm  
 Test 1150 T-On Location 11:33  
 Jars T-Started 14:03  
 Safety Joint T-Open 16:12  
 Circ Sub T-Pulled 19:12  
 Hourly Standby T-Out 21:13  
 Mileage 120 RT 186  
 Sampler  
 Straddle  
 Shale Packer  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility

Initial Open 45  
 Initial Shut-In 45  
 Final Flow 45  
 Final Shut-In 45  
 Sub Total 1336  
 Total 1336  
 MP/DST Disc't

Approved By \_\_\_\_\_

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.

7856395864





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56147

Well Name & No. EAST Elrick #3-1 Test No. 2 Date 9-30-14  
 Company Production Drilling, Inc Elevation 2480 KB 2473 GL  
 Address 1023 Reservation Rd Hays KS 67601-3982  
 Co. Rep / Geo. MARC Downing Rig Discovery #1  
 Location: Sec. 11 Twp. 105 Rge. 25W Co. Graham State KS

Interval Tested 3874 - 3950 Zone Tested LKC "H-J"  
 Anchor Length 76 Drill Pipe Run 3885 Mud Wt. 9.1  
 Top Packer Depth 3869 Drill Collars Run 0 Vis 56  
 Bottom Packer Depth 3874 Wt. Pipe Run 0 WL 8.8  
 Total Depth 3950 Chlorides 2000 ppm System LCM 1

Blow Description IFP - BOB in 15min  
ISIP - No Blow  
FFP - BOB in 28min.  
FSIP - Weak Surface Blow in 4min. Died Back in 10min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>116</u>	<u>20CM</u>	<u>10</u>	<u>35</u>	<u>55</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>450 ISIP</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 116 BHT 116 Gravity 38 API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1978  Test 1150 T-On Location 10:40  
 (B) First Initial Flow 21  Jars \_\_\_\_\_ T-Started 11:21  
 (C) First Final Flow 50  Safety Joint \_\_\_\_\_ T-Open 12:55  
 (D) Initial Shut-In 400  Circ Sub \_\_\_\_\_ T-Pulled 15:55  
 (E) Second Initial Flow 52  Hourly Standby \_\_\_\_\_ T-Out 18:04  
 (F) Second Final Flow 67  Mileage 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 354  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1967  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 45  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 45  Day Standby \_\_\_\_\_ Total 1336  
 Final Flow 45  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 45 Sub Total 1336

Approved By \_\_\_\_\_

Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60704

Well Name & No. East Elrick #3-1 Test No. \_\_\_\_\_ Date 10-1-14  
 Company Production Drilling, Inc Elevation 2480 KB 2473 GL \_\_\_\_\_  
 Address 1023 Reservation Rd Hays, KS 67601  
 Co. Rep / Geo. Marc Downhey Rig Discovery #1  
 Location: Sec. 11 Twp. 90s Rge. 25w Co. Crawford State KY

Interval Tested \_\_\_\_\_ Zone Tested \_\_\_\_\_  
 Anchor Length \_\_\_\_\_ Drill Pipe Run \_\_\_\_\_ Mud Wt. \_\_\_\_\_  
 Top Packer Depth \_\_\_\_\_ Drill Collars Run \_\_\_\_\_ Vis \_\_\_\_\_  
 Bottom Packer Depth \_\_\_\_\_ Wt. Pipe Run \_\_\_\_\_ WL \_\_\_\_\_  
 Total Depth \_\_\_\_\_ Chlorides \_\_\_\_\_ ppm System \_\_\_\_\_ LCM \_\_\_\_\_  
 Blow Description \_\_\_\_\_

Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total \_\_\_\_\_ BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic \_\_\_\_\_  Test \_\_\_\_\_ T-On Location 08100  
 (B) First Initial Flow \_\_\_\_\_  Jars \_\_\_\_\_ T-Started \_\_\_\_\_  
 (C) First Final Flow \_\_\_\_\_  Safety Joint \_\_\_\_\_ T-Open \_\_\_\_\_  
 (D) Initial Shut-In \_\_\_\_\_  Circ Sub \_\_\_\_\_ T-Pulled \_\_\_\_\_  
 (E) Second Initial Flow \_\_\_\_\_  Hourly Standby \_\_\_\_\_ T-Out \_\_\_\_\_  
 (F) Second Final Flow \_\_\_\_\_  Mileage 120 RT Comments Loaded Tools at 08:00 a.m.  
 (G) Final Shut-In \_\_\_\_\_  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic \_\_\_\_\_  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Initial Open \_\_\_\_\_  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Shut-In \_\_\_\_\_  Extra Recorder \_\_\_\_\_ Sub Total \_\_\_\_\_  
 Final Flow \_\_\_\_\_  Day Standby \_\_\_\_\_ Total \_\_\_\_\_  
 Final Shut-In \_\_\_\_\_  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Philp Goy

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