



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Jeff Christian

Hobbs #1-2

2-11s-24w Trego,KS

Start Date: 2013.12.28 @ 20:32:00

End Date: 2013.12.29 @ 05:26:00

Job Ticket #: 50409 DST #: 1

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

Printed: 2013.12.31 @ 09:13:43



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Jeff Christian

2-11s-24w Trego,KS

Hobbs #1-2

Job Ticket: 50409

DST#: 1

Test Start: 2013.12.28 @ 20:32:00

GENERAL INFORMATION:

Formation: **LKC " B - F "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:21:00

Time Test Ended: 05:26:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 54

Interval: 3726.00 ft (KB) To 3797.00 ft (KB) (TVD)

Reference Elevations: 2350.00 ft (KB)

Total Depth: 3797.00 ft (KB) (TVD)

2345.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8289 Outside

Press@RunDepth: 99.49 psig @ 3731.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.12.28

End Date:

2013.12.29

Last Calib.:

2013.12.29

Start Time: 20:32:02

End Time:

05:26:00

Time On Btm:

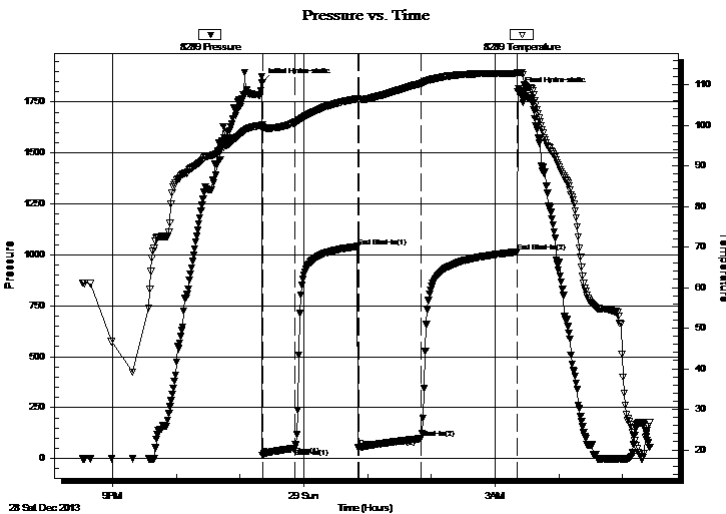
2013.12.28 @ 23:20:45

Time Off Btm:

2013.12.29 @ 03:21:15

TEST COMMENT: 30-IFP- BOB in 20 min.
60-ISIP- No Blow
60-FFP- BOB in 22 min.
90-FSIP- Surface Blow Died in 14 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1846.79	100.07	Initial Hydro-static
1	17.42	99.30	Open To Flow (1)
31	51.85	100.67	Shut-In(1)
90	1041.79	106.52	End Shut-In(1)
91	54.48	106.26	Open To Flow (2)
150	99.49	110.37	Shut-In(2)
240	1014.58	112.75	End Shut-In(2)
241	1803.16	112.95	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
156.00	OSMCW 20% m 80% w	1.92
30.00	CO 100%	0.42

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
Job Ticket: 50409 **DST#: 1**
Test Start: 2013.12.28 @ 20:32:00

Tool Information

Drill Pipe:	Length: 3706.00 ft	Diameter: 3.80 inches	Volume: 51.99 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: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 52.13 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	3726.00 ft			Final 47000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	71.00 ft			
Tool Length:	92.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3706.00	
Shut In Tool	5.00			3711.00	
Hydraulic tool	5.00			3716.00	
Packer	5.00			3721.00	21.00 Bottom Of Top Packer
Packer	5.00			3726.00	
Stubb	1.00			3727.00	
Perforations	3.00			3730.00	
Change Over Sub	1.00			3731.00	
Recorder	0.00	8789	Inside	3731.00	
Recorder	0.00	8289	Outside	3731.00	
Blank Spacing	32.00			3763.00	
Change Over Sub	1.00			3764.00	
Perforations	30.00			3794.00	
Bullnose	3.00			3797.00	71.00 Bottom Packers & Anchor

Total Tool Length: 92.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
Job Ticket: 50409 **DST#: 1**
Test Start: 2013.12.28 @ 20:32:00

Mud and Cushion Information

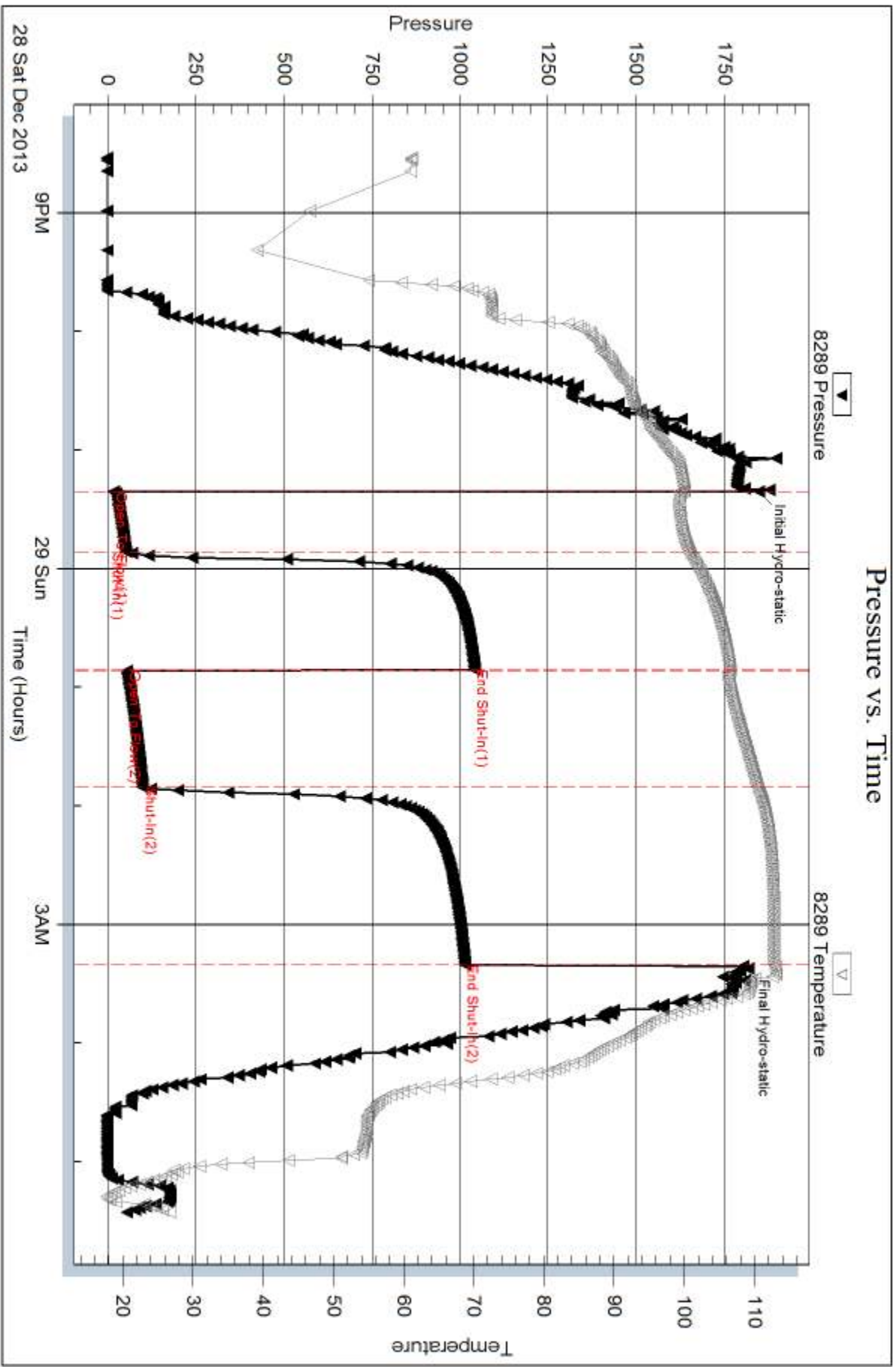
Mud Type: Gel Chem	Cushion Type:	Oil API: 37 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 140000 ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.18 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 4000.00 ppm		
Filter Cake: inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
156.00	OSMCW 20%m 80%w	1.924
30.00	CO 100%	0.421

Total Length: 186.00 ft Total Volume: 2.345 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: .214 @ 20



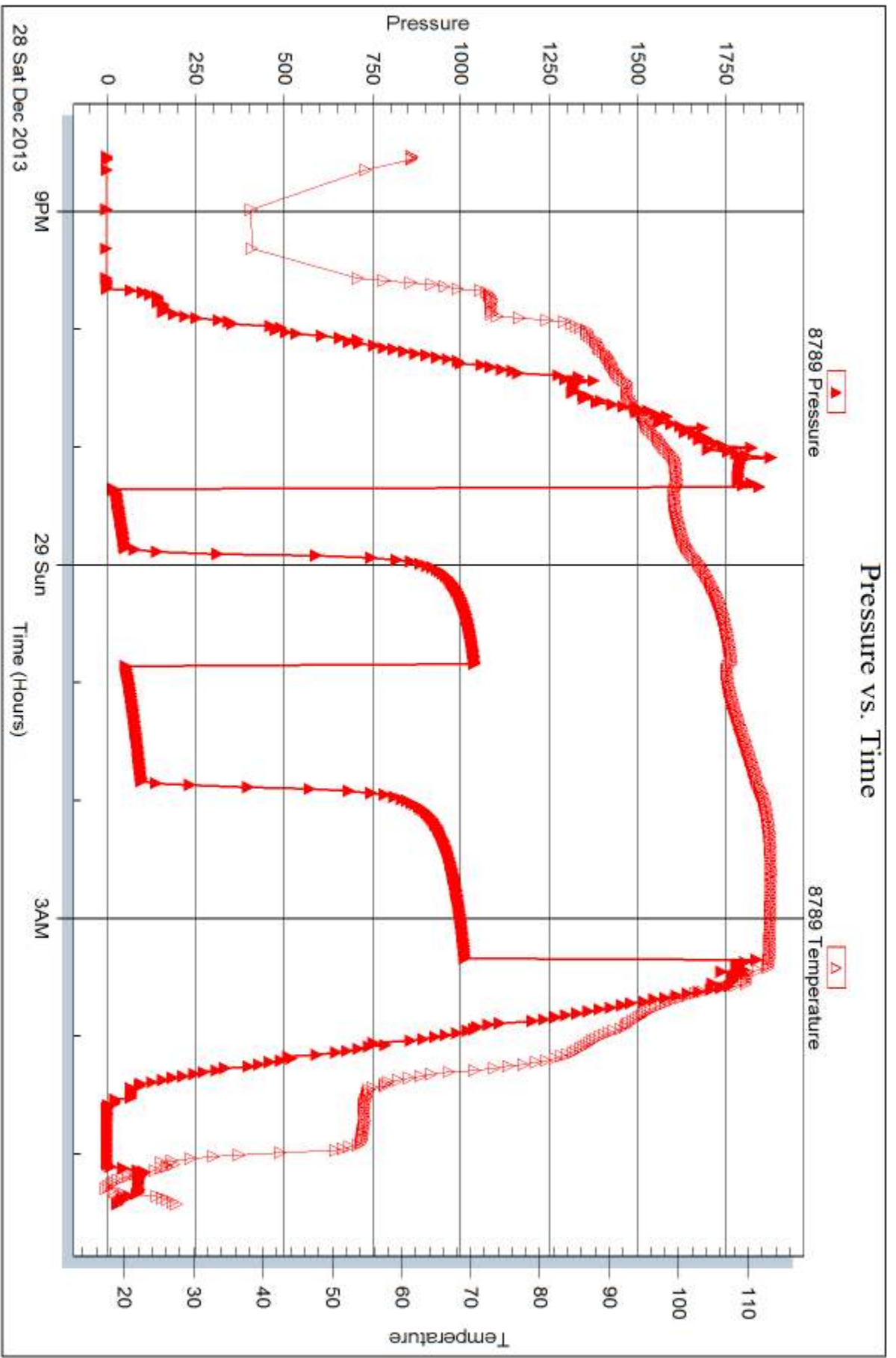
Serial #: 8789

Inside

Murfin Drilling Co. Inc

Hobbs #1-2

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 50409

Printed: 2013.12.31 @ 09:13:45



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Jeff Christian

Hobbs #1-2

2-11s-24w Trego,KS

Start Date: 2013.12.29 @ 18:45:00

End Date: 2013.12.30 @ 05:47:00

Job Ticket #: 50410 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.12.31 @ 09:13:05



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
 Job Ticket: 50410 **DST#: 2**
 Test Start: 2013.12.29 @ 18:45:00

GENERAL INFORMATION:

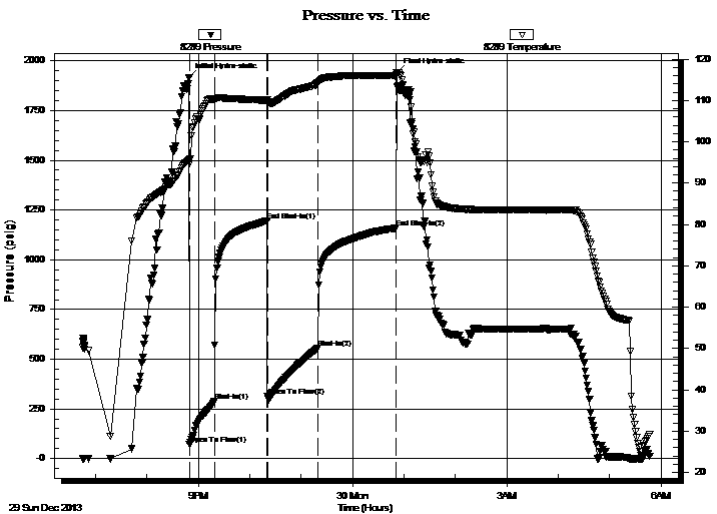
Formation: **LKC " H - K "**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:49:30
 Time Test Ended: 05:47:00
 Interval: **3829.00 ft (KB) To 3922.00 ft (KB) (TVD)**
 Total Depth: 3922.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 54
 Reference Elevations: 2350.00 ft (KB)
 2345.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8289 Outside

Press@RunDepth: 555.61 psig @ 3834.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.12.29 End Date: 2013.12.30 Last Calib.: 2013.12.30
 Start Time: 18:45:02 End Time: 05:47:00 Time On Btm: 2013.12.29 @ 20:49:15
 Time Off Btm: 2013.12.30 @ 00:51:30

TEST COMMENT: 30-IFP- BOB in 2 min 30 sec.
 60-ISIP- BOB in 22 min.
 60-FFP- BOB in 45 sec.
 90-FSIP- BOB in 11 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1915.91	95.60	Initial Hydro-static
1	72.90	94.62	Open To Flow (1)
30	287.30	110.23	Shut-In(1)
91	1197.10	110.05	End Shut-In(1)
92	313.04	109.55	Open To Flow (2)
151	555.61	114.30	Shut-In(2)
242	1159.27	115.93	End Shut-In(2)
243	1942.44	116.17	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
125.00	OCM 40% o 60% m	1.49
1283.00	CO 100%	18.00
0.00	GIP 1260	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc
 250 N Water Ste 300
 Wichita KS 67202-1216
 ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
 Job Ticket: 50410 **DST#: 2**
 Test Start: 2013.12.29 @ 18:45:00

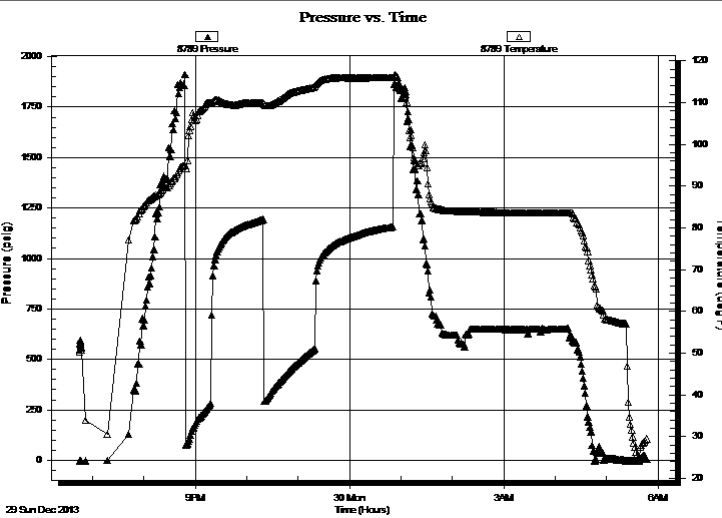
GENERAL INFORMATION:

Formation: **LKC "H - K"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:49:30
 Time Test Ended: 05:47:00
 Interval: **3829.00 ft (KB) To 3922.00 ft (KB) (TVD)**
 Total Depth: 3922.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Jim Svaty
 Unit No: 54
 Reference Elevations: 2350.00 ft (KB)
 2345.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8789 Inside

Press@RunDepth: psig @ 3834.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.12.29 End Date: 2013.12.30 Last Calib.: 2013.12.30
 Start Time: 18:45:02 End Time: 05:47:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 2 min 30 sec.
 60-ISIP- BOB in 22 min.
 60-FFP- BOB in 45 sec.
 90-FSIP- BOB in 11 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
125.00	OCM 40% o 60% m	1.49
1283.00	CO 100%	18.00
0.00	GIP 1260	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

Murfin Drilling Co. Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
Job Ticket: 50410 **DST#: 2**
Test Start: 2013.12.29 @ 18:45:00

Tool Information

Drill Pipe:	Length: 3803.00 ft	Diameter: 3.80 inches	Volume: 53.35 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: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 53.49 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3829.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	93.00 ft			
Tool Length:	114.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3809.00	
Shut In Tool	5.00			3814.00	
Hydraulic tool	5.00			3819.00	
Packer	5.00			3824.00	21.00 Bottom Of Top Packer
Packer	5.00			3829.00	
Stubb	1.00			3830.00	
Perforations	3.00			3833.00	
Change Over Sub	1.00			3834.00	
Recorder	0.00	8789	Inside	3834.00	
Recorder	0.00	8289	Outside	3834.00	
Blank Spacing	63.00			3897.00	
Change Over Sub	1.00			3898.00	
Perforations	21.00			3919.00	
Bullnose	3.00			3922.00	93.00 Bottom Packers & Anchor

Total Tool Length: 114.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc
250 N Water Ste 300
Wichita KS 67202-1216
ATTN: Jeff Christian

2-11s-24w Trego,KS
Hobbs #1-2
Job Ticket: 50410 **DST#: 2**
Test Start: 2013.12.29 @ 18:45:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 30 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 53.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.95 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 5000.00 ppm		
Filter Cake: inches		

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
125.00	OCM 40%o 60%m	1.489
1283.00	CO 100%	17.997
0.00	GIP 1260	0.000

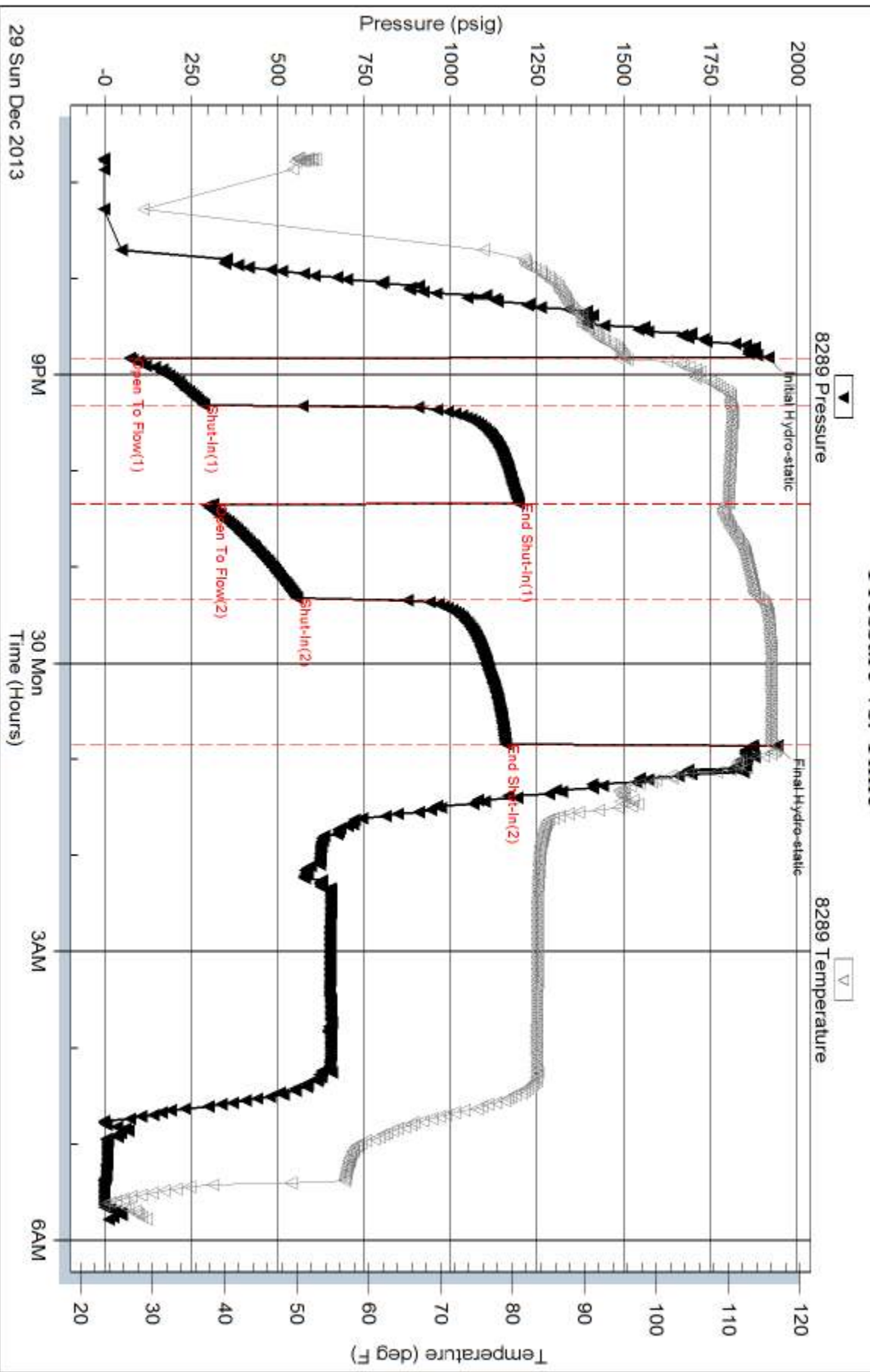
Total Length: 1408.00 ft Total Volume: 19.486 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:

Pressure vs. Time



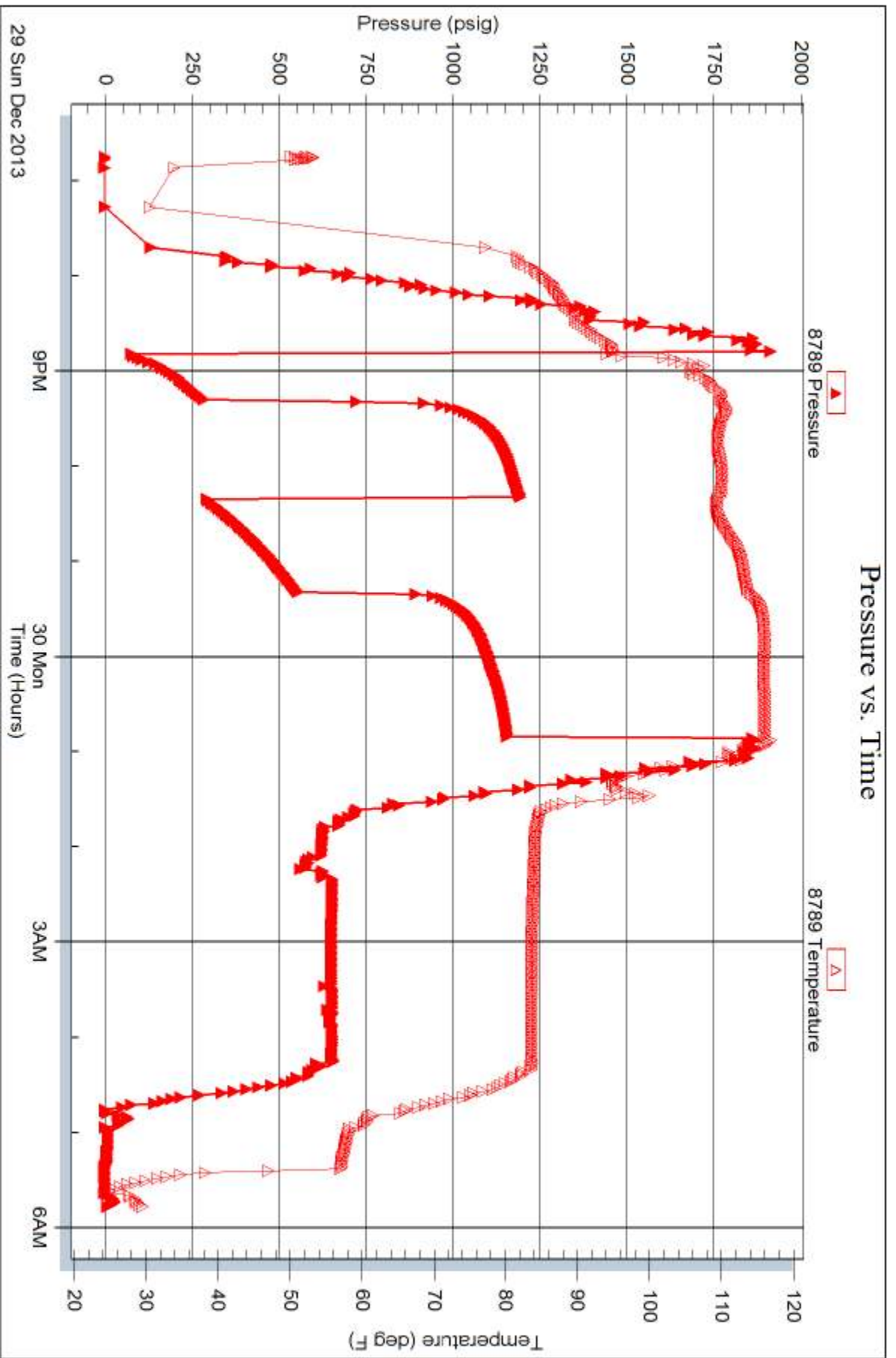
Serial #: 8789

Inside

Murfin Drilling Co. Inc

Hobbs #1-2

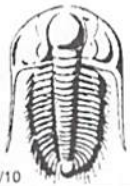
DST Test Number: 2



Triobite Testing, Inc

Ref. No: 50410

Printed: 2013.12.31 @ 09:13:06



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 50409

Well Name & No. Hobbs # 1-2 Test No. 1 Date 12-28-13
 Company Murfin Drilling Co. Inc. Elevation 2350 KB 2345 GL
 Address 250 N. Water Ste 300 Wichita Ks. 67202-1216
 Co. Rep / Geo. JEFF CHRISTIAN Rig Murfin 16
 Location: Sec. 2 Twp. 11^s Rge. 24^w Co. Trego State KS

Interval Tested 3726 - 3797 Zone Tested LKC "B-F"
 Anchor Length 71 Drill Pipe Run 3706 Mud Wt. 9.1
 Top Packer Depth 3721 Drill Collars Run 29 Vis 55
 Bottom Packer Depth 3726 Wt. Pipe Run 0 WL 7.2
 Total Depth 3797 Chlorides 4000 ppm System LCM 0

Blow Description IFP - BOB in 20min.
ISFP - NO Blow
FFP - BOB in 22min
FSFP - SURFACE Blow Died in 14min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>156</u>	<u>05MCW</u>			<u>80</u>	<u>20</u>
<u>30</u>	<u>CO</u>		<u>100</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 186 BHT 113 Gravity 37 API RW 1.214 @ 20 ° F Chlorides 140,000 ppm

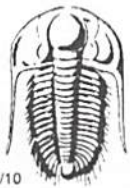
(A) Initial Hydrostatic 1846 Test 1150 T-On Location 19:31
 (B) First Initial Flow 17 Jars _____ T-Started 20:32
 (C) First Final Flow 51 Safety Joint _____ T-Open 23:21
 (D) Initial Shut-In 1041 Circ Sub _____ T-Pulled 03:21
 (E) Second Initial Flow 54 Hourly Standby _____ T-Out 05:26
 (F) Second Final Flow 99 Mileage 94RT 145.70 Comments _____
 (G) Final Shut-In 1014 Sampler _____
 (H) Final Hydrostatic 1803 Straddle _____ Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 60 Extra Packer _____ Extra Copies _____
 Final Flow 60 Extra Recorder _____ Sub Total 0
 Final Shut-In 90 Day Standby _____ Total 1295.70
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1295.70

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.

785 639 5864



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 50410

4/10

Well Name & No. Hebbs #1-2 Test No. 2 Date 12-29-13
 Company Murfin Drilling Co. Inc. Elevation 2350 KB 2345 GL
 Address 250 N. Water St 300 Wichita KS 67202-1216
 Co. Rep / Geo. JEFF CHRISTIAN Rig MURFIN 16
 Location: Sec. 2 Twp. 11^S Rge. 24^W Co. Trego State KS

Interval Tested 3829-3922 Zone Tested LKC "H-K"
 Anchor Length 93 Drill Pipe Run 3803 Mud Wt. 9.1
 Top Packer Depth 3824 Drill Collars Run 29 Vis 53
 Bottom Packer Depth 3829 Wt. Pipe Run 0 WL 8.0
 Total Depth 3922 Chlorides 5000 ppm System LCM 0

Blow Description IFF- BOB in 2 min 30 sec.
ISIP- BOB in 22 min.
FFP- BOB in 45 sec.
FSIP- BOB in 11 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>125</u>	<u>OCM</u>	<u>40</u>		<u>60</u>	
<u>1283</u>	<u>CO</u>	<u>100</u>			
	<u>ISIP 1260</u>				

Rec Total 1408 BHT 116 Gravity 30 API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1915</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>18:29</u>
(B) First Initial Flow <u>72</u>	<input type="checkbox"/> Jars _____	T-Started <u>18:45</u>
(C) First Final Flow <u>287</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>20:50</u>
(D) Initial Shut-In <u>1197</u>	<input type="checkbox"/> Circ Sub <u>50</u>	T-Pulled <u>00:50</u>
(E) Second Initial Flow <u>313</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>05:47</u>
(F) Second Final Flow <u>555</u>	<input checked="" type="checkbox"/> Mileage <u>291.40</u>	Comments _____
(G) Final Shut-In <u>1159</u>	<input type="checkbox"/> Sampler _____	<u>loaded 12/30 12:30</u>
(H) Final Hydrostatic <u>1942</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____
	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 60
 Final Shut-In 90

Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Sub Total 1491.40

Total 1491.40
 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.