



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling CO INC**

250 N Water STE 300
Wichita KS 67202

ATTN: Saman Sharifaie

Cheryl #1-33

33-1s-36w Rawlins KS

Start Date: 2015.02.15 @ 16:00:00

End Date: 2015.02.16 @ 01:05:00

Job Ticket #: 60811 DST #: 1

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

Printed: 2015.02.19 @ 08:31:57

Murfin Drilling CO INC
33-1s-36w Rawlins KS
Cheryl #1-33
DST # 1
LKC "B-D"
2015.02.15



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling CO INC

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60811

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.02.15 @ 16:00:00

GENERAL INFORMATION:

Formation: **LKC "B--D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:21:00

Time Test Ended: 01:05:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 66

Interval: 4232.00 ft (KB) To 4280.00 ft (KB) (TVD)

Reference Elevations: 3280.00 ft (KB)

Total Depth: 4280.00 ft (KB) (TVD)

3269.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 8959

Inside

Press@RunDepth: 995.48 psig @ 4233.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.15

End Date:

2015.02.16

Last Calib.:

2015.02.16

Start Time: 16:00:05

End Time:

01:05:00

Time On Btm:

2015.02.15 @ 18:20:30

Time Off Btm:

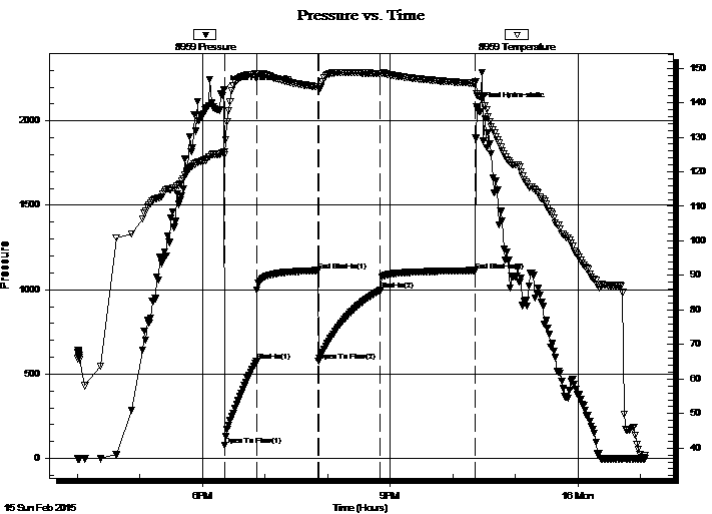
2015.02.15 @ 22:23:00

TEST COMMENT: 30-IF- Bob in 2 1/2 mins

60-ISI- No return

60-FF- Blow built to 3" died back to 1"

90-FSI- No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2184.45	125.73	Initial Hydro-static
1	77.13	124.87	Open To Flow (1)
31	575.03	148.31	Shut-In(1)
90	1113.87	144.53	End Shut-In(1)
91	575.54	144.18	Open To Flow (2)
150	995.48	148.39	Shut-In(2)
241	1113.89	145.65	End Shut-In(2)
243	2086.07	142.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
900.00	SW 100%W	11.16
900.00	MW 10%M 90%W	13.16
480.00	WM 15%W 85%M	7.02

Gas Rates

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



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TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling CO INC

250 N Water STE 300
Wichita KS 67202

ATTN: Saman Sharifaie

33-1s-36w Rawlins KS

Cheryl #1-33

Job Ticket: 60811

DST#: 1

Test Start: 2015.02.15 @ 16:00:00

GENERAL INFORMATION:

Formation: **LKC "B--D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:21:00

Time Test Ended: 01:05:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Robert Zodrow

Unit No: 66

Interval: 4232.00 ft (KB) To 4280.00 ft (KB) (TVD)

Total Depth: 4280.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3280.00 ft (KB)

3269.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8521 Outside

Press@RunDepth: psig @ 4233.00 ft (KB)

Start Date: 2015.02.15 End Date: 2015.02.16

Start Time: 16:00:05 End Time: 01:05:30

Capacity: 8000.00 psig

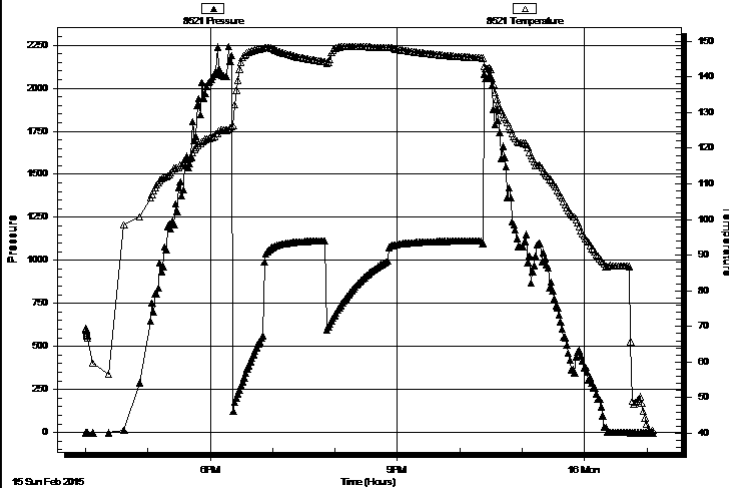
Last Calib.: 2015.02.16

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF- Bob in 2 1/2 mins
60-ISI- No return
60-FF- Blow built to 3" died back to 1"
90-FSI- No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
900.00	SW 100%W	11.16
900.00	MW 10%M 90%W	13.16
480.00	WM 15%W 85%M	7.02

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling CO INC

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60811

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.02.15 @ 16:00:00

Tool Information

Drill Pipe:	Length: 4006.00 ft	Diameter: 3.88 inches	Volume: 58.58 bbl	Tool Weight: 2500.00 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: 206.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 59.59 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4232.00 ft			Final 74000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	75.00 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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Shut In Tool	5.00			4210.00	
Hydraulic tool	5.00			4215.00	
Jars	5.00			4220.00	
Safety Joint	3.00			4223.00	
Packer	5.00			4228.00	27.00 Bottom Of Top Packer
Packer	4.00			4232.00	
Stubb	1.00			4233.00	
Recorder	0.00	8959	Inside	4233.00	
Recorder	0.00	8521	Outside	4233.00	
Perforations	11.00			4244.00	
Change Over Sub	1.00			4245.00	
Drill Pipe	31.00			4276.00	
Change Over Sub	1.00			4277.00	
Bullnose	3.00			4280.00	48.00 Bottom Packers & Anchor

Total Tool Length: 75.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling CO INC

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60811

DST#: 1

ATTN: Saman Sharifaie

Test Start: 2015.02.15 @ 16:00:00

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:

20000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
900.00	SW 100%W	11.162
900.00	MW 10%M 90%W	13.162
480.00	WM 15%W 85%M	7.020

Total Length: 2280.00 ft Total Volume: 31.344 bbl

Num Fluid Samples: 0

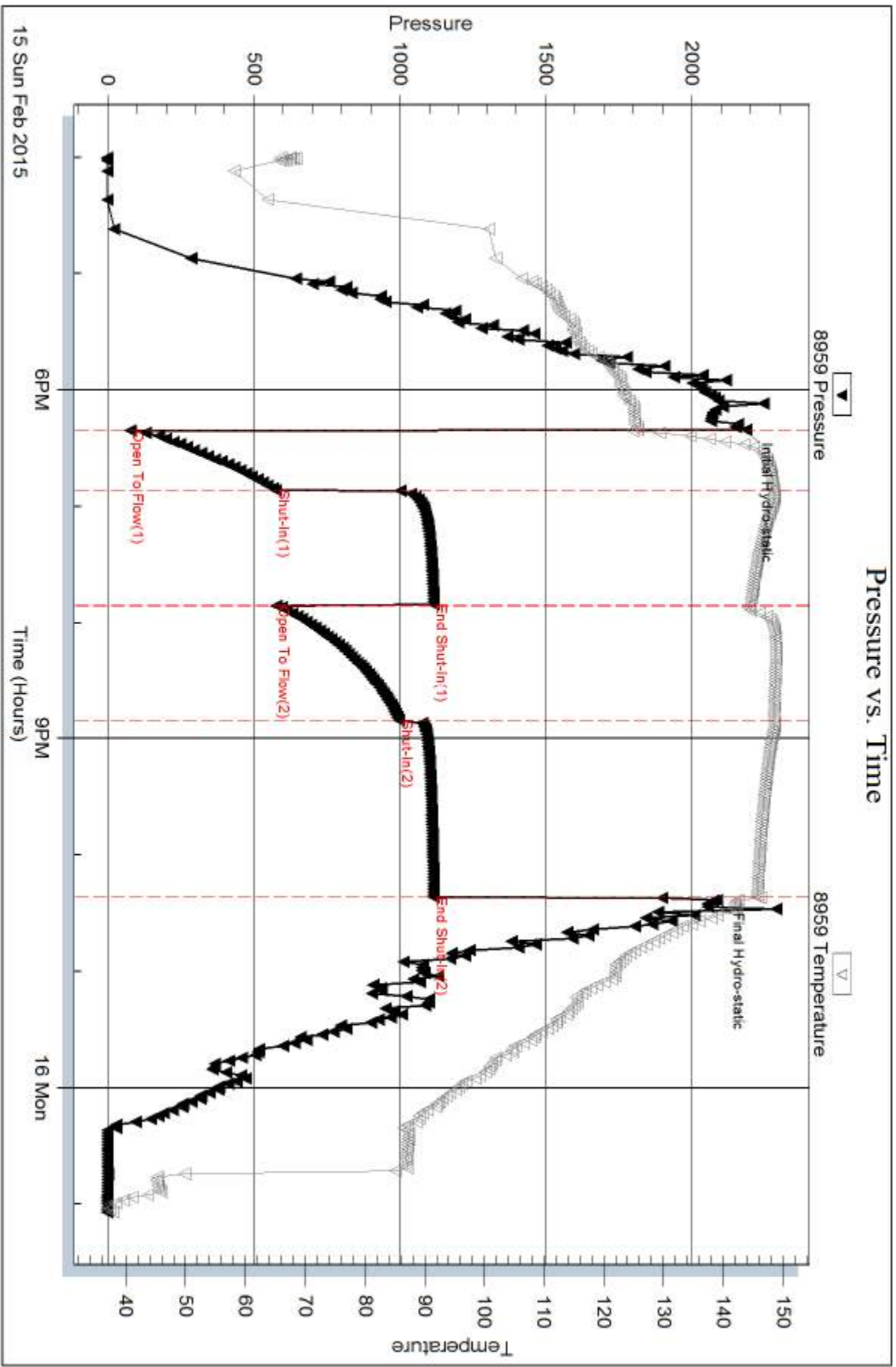
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .432 @ 55 Deg F = 20000

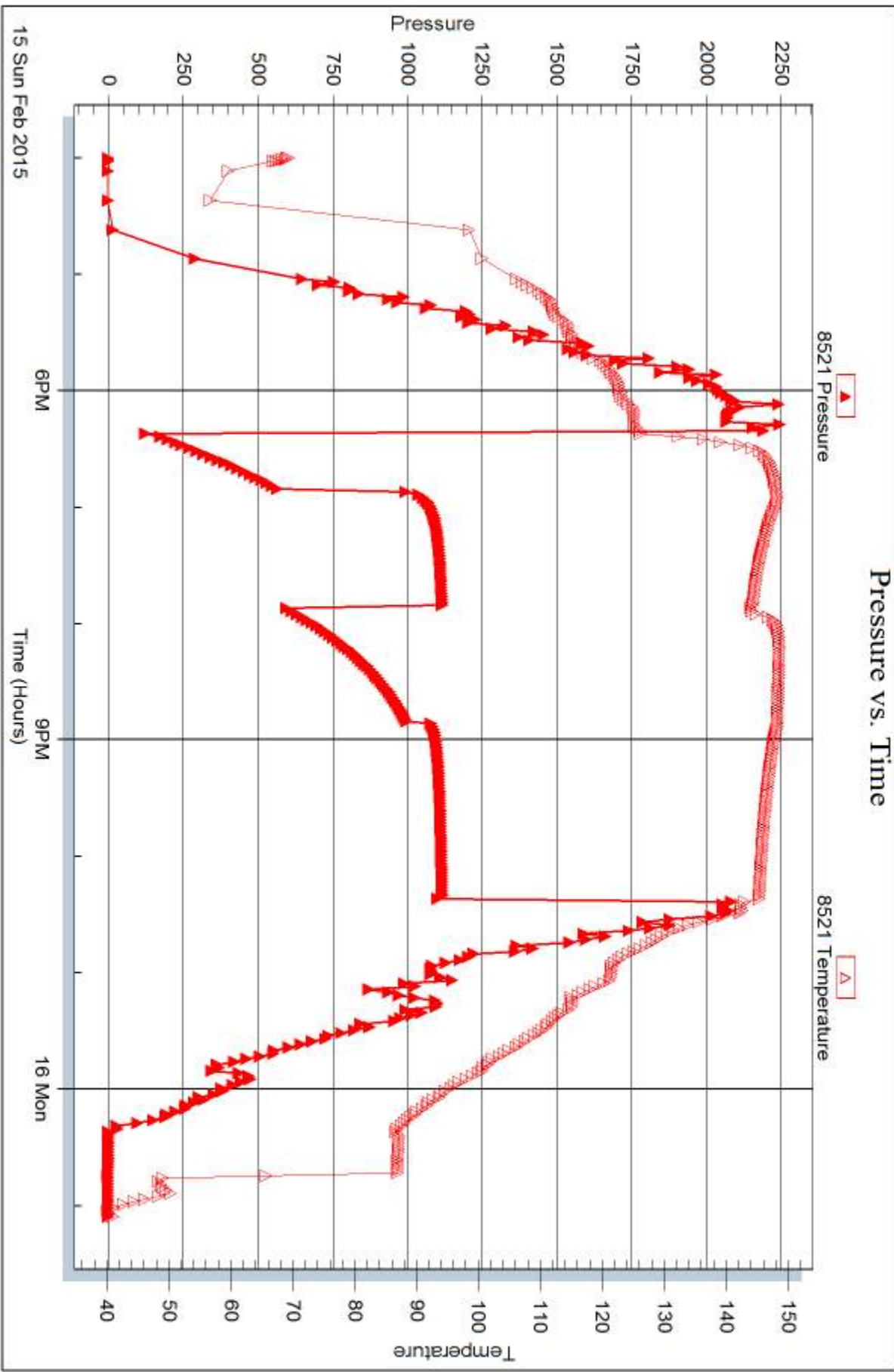


Serial #: 8521

Outside Murfin Drilling CO INC

Cheryl#1-33

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 60811

Printed: 2015.02.19 @ 08:31:58



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling CO INC**

250 N Water STE 300
Wichita KS 67202

ATTN: Saman Sharifaie

Cheryl #1-33

33-1s-36w Rawlins KS

Start Date: 2015.02.16 @ 17:25:00

End Date: 2015.02.17 @ 02:04:00

Job Ticket #: 60812 DST #: 2

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

Printed: 2015.02.19 @ 08:31:27



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Murfin Drilling CO INC

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60812

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.02.16 @ 17:25:00

GENERAL INFORMATION:

Formation: **LKC "H--J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:27:00

Time Test Ended: 02:04:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Robert Zodrow

Unit No: 66

Interval: 4345.00 ft (KB) To 4430.00 ft (KB) (TVD)

Reference Elevations: 3280.00 ft (KB)

Total Depth: 4430.00 ft (KB) (TVD)

3269.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 8959

Inside

Press@RunDepth: 199.34 psig @ 4346.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.16

End Date:

2015.02.17

Last Calib.:

2015.02.17

Start Time: 17:25:05

End Time:

02:04:00

Time On Btm:

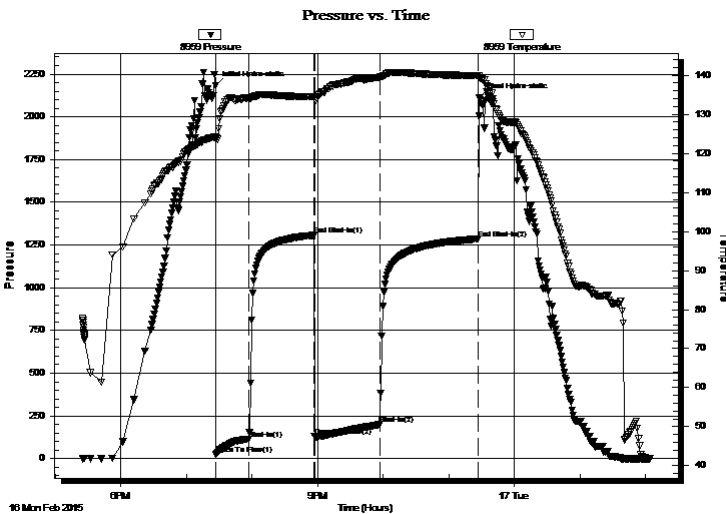
2015.02.16 @ 19:26:30

Time Off Btm:

2015.02.16 @ 23:28:00

TEST COMMENT: 30-IF- Bob in 14 mins
60-ISI- Return built to 1" died back to 1/4"
60-FF- Bob in 15 mins
90-FSI- Return built to 1 1/4" died back to 1/2"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2181.73	124.32	Initial Hydro-static
1	25.54	123.84	Open To Flow (1)
31	114.75	134.01	Shut-In(1)
90	1306.81	134.50	End Shut-In(1)
91	130.69	133.92	Open To Flow (2)
150	199.34	139.49	Shut-In(2)
240	1286.49	139.91	End Shut-In(2)
242	2113.93	139.33	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
240.00	GMCO 10%G 40%M 50%O	1.51
180.00	GO 10%G 90%O	2.63
0.00	GIP 360'	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

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60812

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.02.16 @ 17:25:00

Tool Information

Drill Pipe:	Length: 4130.00 ft	Diameter: 3.88 inches	Volume: 60.40 bbl	Tool Weight: 2500.00 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: 206.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 61.41 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4345.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	85.00 ft			
Tool Length:	112.00 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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Shut In Tool	5.00			4323.00	
Hydraulic tool	5.00			4328.00	
Jars	5.00			4333.00	
Safety Joint	3.00			4336.00	
Packer	5.00			4341.00	27.00 Bottom Of Top Packer
Packer	4.00			4345.00	
Stubb	1.00			4346.00	
Recorder	0.00	8959	Inside	4346.00	
Recorder	0.00	8521	Outside	4346.00	
Perforations	16.00			4362.00	
Change Over Sub	1.00			4363.00	
Drill Pipe	63.00			4426.00	
Change Over Sub	1.00			4427.00	
Bullnose	3.00			4430.00	85.00 Bottom Packers & Anchor

Total Tool Length: 112.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling CO INC

33-1s-36w Rawlins KS

250 N Water STE 300
Wichita KS 67202

Cheryl #1-33

Job Ticket: 60812

DST#: 2

ATTN: Saman Sharifaie

Test Start: 2015.02.16 @ 17:25:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

31 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
240.00	GMCO 10%G 40%M 50%O	1.510
180.00	GO 10%G 90%O	2.632
0.00	GIP 360'	0.000

Total Length: 420.00 ft Total Volume: 4.142 bbl

Num Fluid Samples: 0

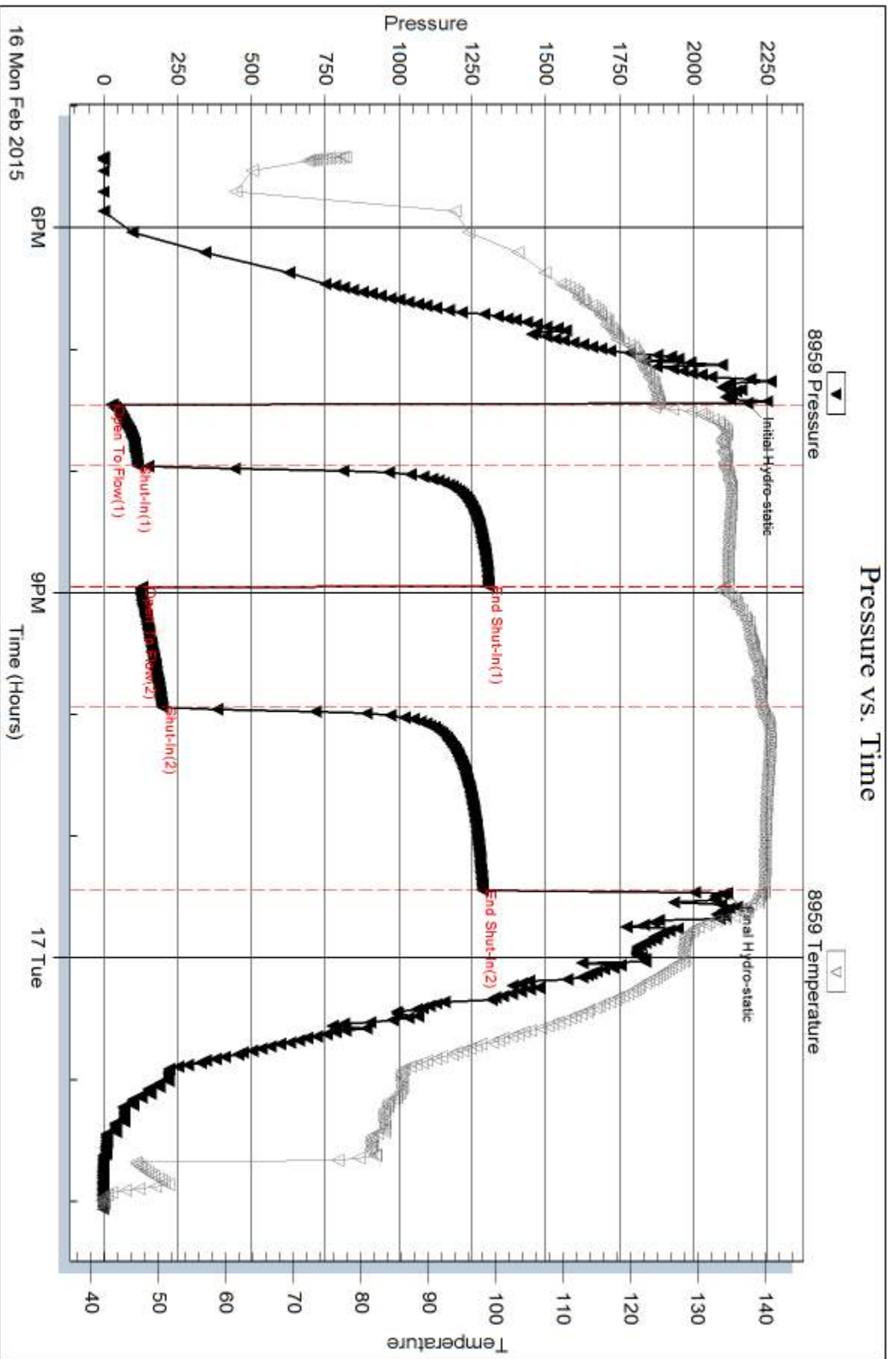
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

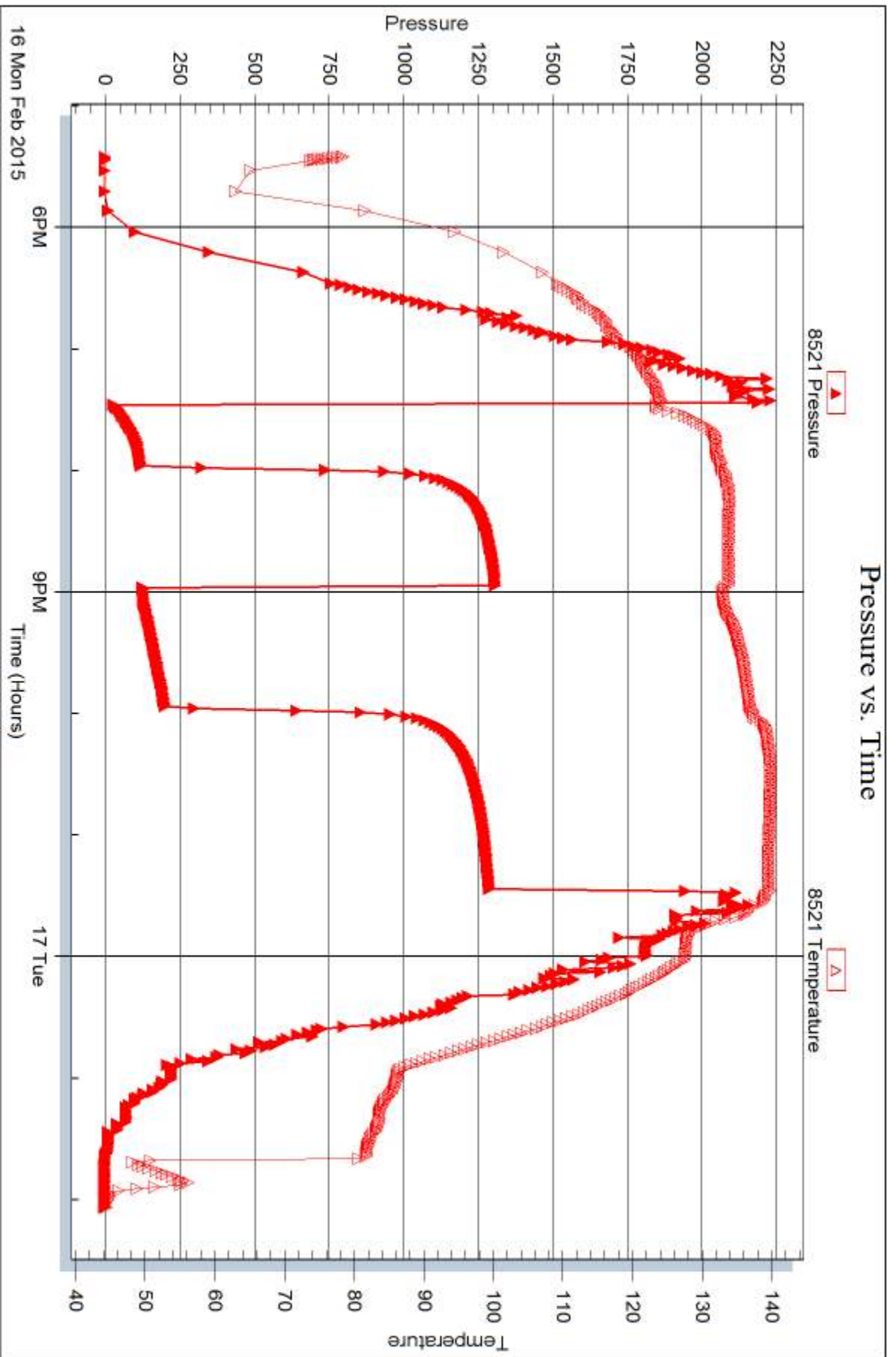


Serial #: 8521

Outside Murfin Drilling CO INC

Cheryl#1-33

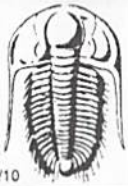
DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 60812

Printed: 2015.02.19 @ 08:31:29



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **60811**

Well Name & No. Cheryl # 1-33 Test No. 1 Date 2-15-2015
 Company Murfin Drilling Co. Inc. Elevation ~~3280~~ 3280 KB ~~3280~~ 3268
 Address 250 N Water STE 300 Wichita KS, 67202
 Co. Rep / Geo. Saman Sharif Aie Rig Murfin #2
 Location: Sec. 33 Twp. 1 S Rge. 36 W Co. Rawlins State KS

Interval Tested 4232 — 4280 Zone Tested LKC "B-D"
 Anchor Length 48 Drill Pipe Run 4006 Mud Wt. 9.3
 Top Packer Depth 4228 Drill Collars Run 206 Vis 53
 Bottom Packer Depth 4232 Wt. Pipe Run 0 WL 6.8
 Total Depth 4280 Chlorides 706 ppm System LCM 8

Blow Description FF - Bob in 2 1/2 mins

ISF - NO return

FF - Blow built to 3" died back to 1"

FSF - NO return

Rec	Feet of	%gas	%oil	%water	%mud
<u>480</u>	<u>WM</u>		<u>15</u>	<u>85</u>	
<u>900</u>	<u>MW</u>		<u>90</u>	<u>10</u>	
<u>900</u>	<u>SW</u>		<u>100</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2280 BHT 145 Gravity — API RW 432 @ 55 °F Chlorides 20,000 ppm

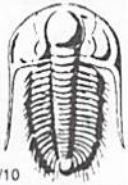
(A) Initial Hydrostatic <u>2184</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>15:00 2-15</u>
(B) First Initial Flow <u>77</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>16:00 2-15</u>
(C) First Final Flow <u>575</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>18:21 2-15</u>
(D) Initial Shut-In <u>1114</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>22:21 2-15</u>
(E) Second Initial Flow <u>576</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>01:05 2-16</u>
(F) Second Final Flow <u>995</u>	<input checked="" type="checkbox"/> Mileage <u>112 RT</u> 112	Comments
(G) Final Shut-In <u>11103</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2086</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
	<input type="checkbox"/> Day Standby	Total <u>1587</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1587</u>	

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

Approved By _____

Our Representative Robert Zedner

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.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **60812**

Well Name & No. Cheryl #1-33 Test No. 2 Date 2-16-2015
 Company Murfin Drilling Co. Inc. Elevation 3280 KB 3269 GL
 Address 250 N Water STE 300 Wichita KS, 67202
 Co. Rep / Geo. Saman SharifAie Rig Murfin #2
 Location: Sec. 33 Twp. 15 Rge. 36W Co. Rawlins State KS

Interval Tested 4345 - 4430 Zone Tested LKC "H-5"
 Anchor Length 85 Drill Pipe Run 4130 Mud Wt. 9.1
 Top Packer Depth 4341 Drill Collars Run 206 Vis 55
 Bottom Packer Depth 4345 Wt. Pipe Run 0 WL 6.4
 Total Depth 4430 Chlorides 700 ppm System LCM 10

Blow Description IF - Bob in 14 mins
FSI - Return built to 1" died back to 1/4"
FF - Bob in 15 mins
FSI - Return built to 1 1/4" died back to 1/2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>180</u>	<u>90</u>	<u>10</u>	<u>90</u>		
<u>240</u>	<u>9MCO</u>	<u>10</u>	<u>50</u>		<u>40</u>
<u> </u>	<u>GIP 360'</u>				
<u> </u>	<u> </u>				
<u> </u>	<u> </u>				

Rec Total 420 BHT 140 Gravity 31 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2182 Test 1150 T-On Location 16:45 2-16
 (B) First Initial Flow 25 Jars 250 T-Started 17:25 2-16
 (C) First Final Flow 115 Safety Joint 75 T-Open 19:27 2-16
 (D) Initial Shut-In 1307 Circ Sub T-Pulled 23:26 2-16
 (E) Second Initial Flow 131 Hourly Standby T-Out 02:04 2-17
 (F) Second Final Flow 199 Mileage 11.2 RT x2 112 Comments drove out loaded
 (G) Final Shut-In 1286 Sampler 112 Tool 11:30 on 2-18-15
 (H) Final Hydrostatic 2114 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies

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

Extra Recorder Sub Total 0
 Day Standby Total 1699
 Accessibility MP/DST Disc't
 Sub Total 1699

Approved By _____ Our Representative Robert Zedler

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.