



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Ziegler #1-30

30-9s-27w,Sheridan,KS

Start Date: 2014.01.14 @ 11:05:00

End Date: 2014.01.14 @ 18:43:15

Job Ticket #: 55496 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.01.17 @ 13:02:06



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55496

DST#: 1

ATTN: Jeff Christian

Test Start: 2014.01.14 @ 11:05:00

GENERAL INFORMATION:

Formation: **KC"B-D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:01:00

Time Test Ended: 18:43:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Brett Dickinson

Unit No: 59

Interval: 3932.00 ft (KB) To 3974.00 ft (KB) (TVD)

Reference Elevations: 2767.00 ft (KB)

Total Depth: 3974.00 ft (KB) (TVD)

2762.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8018

Inside

Press@RunDepth: 19.89 psig @ 3933.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.01.14

End Date:

2014.01.14

Last Calib.:

2014.01.14

Start Time: 11:05:05

End Time:

18:43:14

Time On Btm:

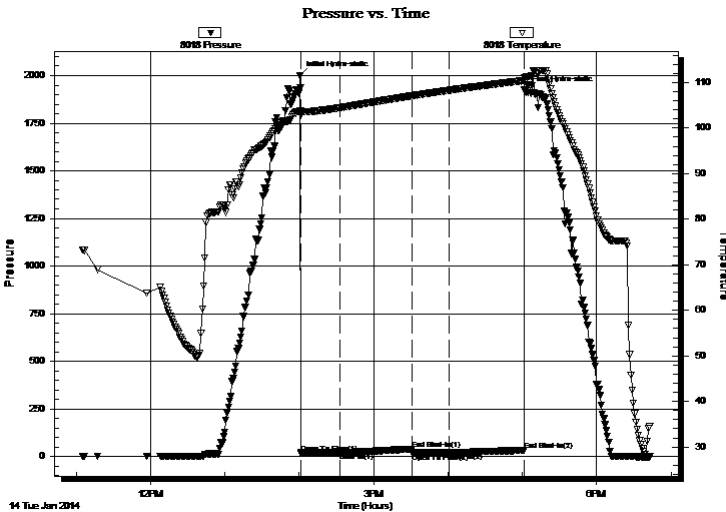
2014.01.14 @ 14:00:15

Time Off Btm:

2014.01.14 @ 17:02:30

TEST COMMENT: IF-1/2" blow
IS-No blow
FF-No blow
FS-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1997.90	103.69	Initial Hydro-static
1	18.20	102.83	Open To Flow (1)
33	19.63	104.46	Shut-In(1)
91	38.81	107.07	End Shut-In(1)
91	18.84	107.08	Open To Flow (2)
121	19.89	108.29	Shut-In(2)
181	32.17	110.43	End Shut-In(2)
183	1920.77	111.06	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Oil Spotted Mud	0.02

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55496

DST#: 1

ATTN: Jeff Christian

Test Start: 2014.01.14 @ 11:05:00

Tool Information

Drill Pipe:	Length: 3894.00 ft	Diameter: 3.80 inches	Volume: 54.62 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - 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: 80000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 49000.00 lb
Depth to Top Packer:	3932.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	42.00 ft			
Tool Length:	70.00 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			3905.00	
Shut In Tool	5.00			3910.00	
Hydraulic tool	5.00			3915.00	
Jars	5.00			3920.00	
Safety Joint	2.00			3922.00	
Packer	5.00			3927.00	28.00 Bottom Of Top Packer
Packer	5.00			3932.00	
Stubb	1.00			3933.00	
Recorder	0.00	8018	Inside	3933.00	
Recorder	0.00	8319	Outside	3933.00	
Perforations	4.00			3937.00	
Change Over Sub	1.00			3938.00	
Blank Spacing	32.00			3970.00	
Change Over Sub	1.00			3971.00	
Bullnose	3.00			3974.00	42.00 Bottom Packers & Anchor

Total Tool Length: 70.00



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TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55496

DST#: 1

ATTN: Jeff Christian

Test Start: 2014.01.14 @ 11:05:00

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:

ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Oil Spotted Mud	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

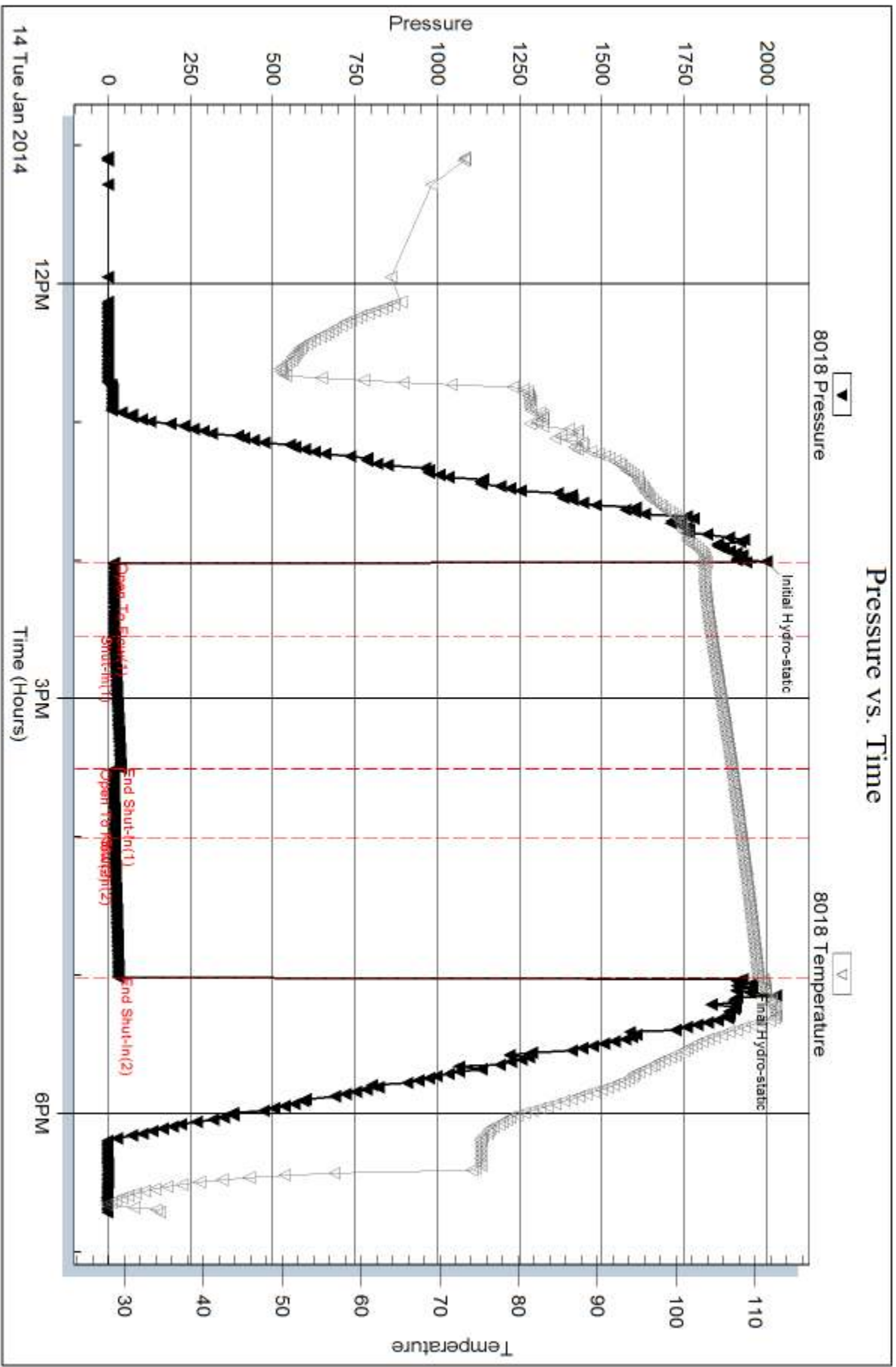
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

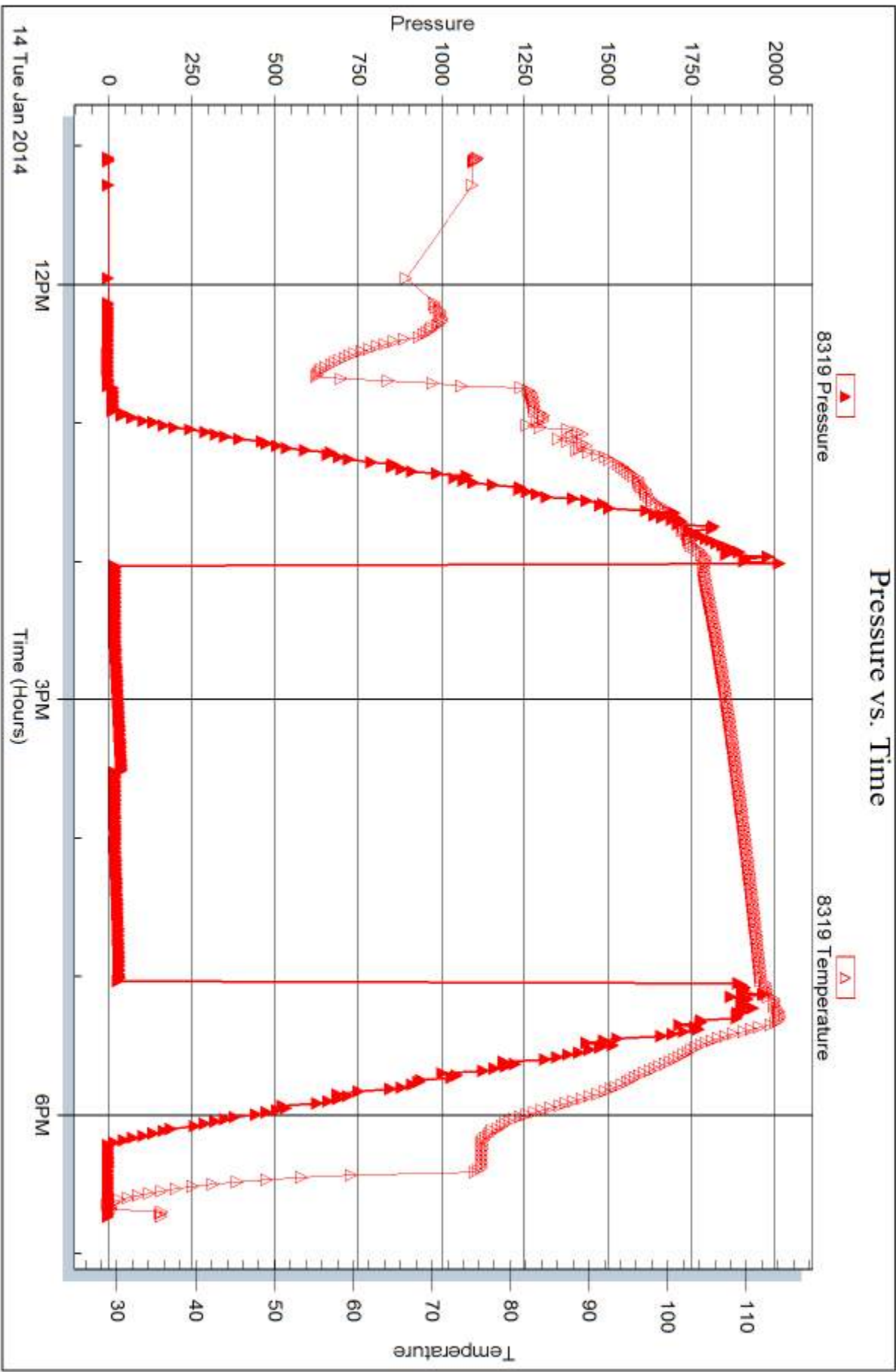


Serial #: 8319

Outside Murfin Drilling Co.

Ziegler #1-30

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 55496

Printed: 2014.01.17 @ 13:02:09



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE 300
Wichita KS 67202

ATTN: Jeff Christian

Ziegler #1-30

30-9s-27w,Sheridan,KS

Start Date: 2014.01.15 @ 01:45:00

End Date: 2014.01.15 @ 09:30:00

Job Ticket #: 55497 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.01.17 @ 13:01:40

Murfin Drilling Co. 30-9s-27w,Sheridan,KS Ziegler #1-30 DST # 2 KC"E-F" 2014.01.15



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55497

DST#: 2

ATTN: Jeff Christian

Test Start: 2014.01.15 @ 01:45:00

GENERAL INFORMATION:

Formation: **KC"E-F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:53:45

Time Test Ended: 09:30:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: 3971.00 ft (KB) To 3999.00 ft (KB) (TVD)

Reference Elevations: 2767.00 ft (KB)

Total Depth: 3999.00 ft (KB) (TVD)

2762.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8018

Inside

Press@RunDepth: 77.82 psig @ 3972.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.01.15

End Date:

2014.01.15

Last Calib.:

2014.01.15

Start Time: 01:45:05

End Time:

09:29:59

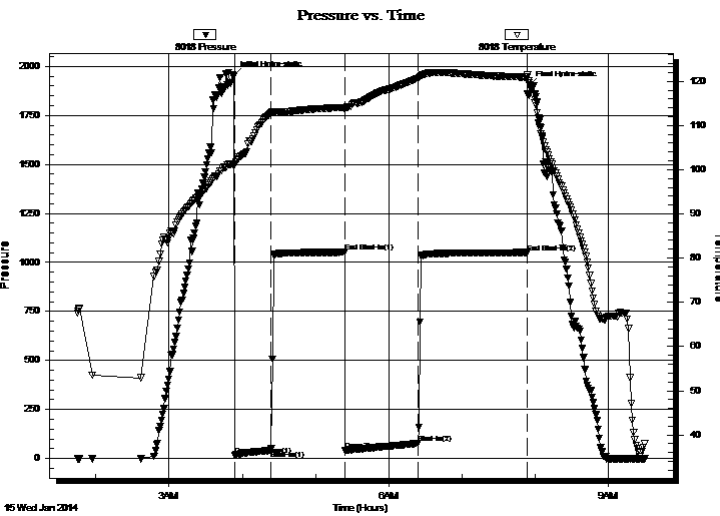
Time On Btm:

2014.01.15 @ 03:52:45

Time Off Btm:

2014.01.15 @ 07:55:00

TEST COMMENT: IF-4 1/2" blow
IS-Very weak surface blow
FF-6in blow
FS-Very weak surface blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1950.24	101.31	Initial Hydro-static
1	16.81	101.11	Open To Flow (1)
31	41.87	112.78	Shut-In(1)
92	1052.06	114.09	End Shut-In(1)
92	43.73	113.61	Open To Flow (2)
151	77.82	120.64	Shut-In(2)
241	1050.53	120.93	End Shut-In(2)
243	1903.74	119.69	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
130.00	WCM 35%W 65%M	1.55

* 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.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55497

DST#: 2

ATTN: Jeff Christian

Test Start: 2014.01.15 @ 01:45:00

Tool Information

Drill Pipe:	Length: 3925.00 ft	Diameter: 3.80 inches	Volume: 55.06 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - 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: 75000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 49000.00 lb
Depth to Top Packer:	3971.00 ft			Final 50000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	28.00 ft			
Tool Length:	56.00 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			3944.00	
Shut In Tool	5.00			3949.00	
Hydraulic tool	5.00			3954.00	
Jars	5.00			3959.00	
Safety Joint	2.00			3961.00	
Packer	5.00			3966.00	28.00 Bottom Of Top Packer
Packer	5.00			3971.00	
Stubb	1.00			3972.00	
Recorder	0.00	8018	Inside	3972.00	
Recorder	0.00	8319	Outside	3972.00	
Perforations	24.00			3996.00	
Bullnose	3.00			3999.00	28.00 Bottom Packers & Anchor

Total Tool Length: 56.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co.

30-9s-27w, Sheridan, KS

250 N Water STE 300
Wichita KS 67202

Ziegler #1-30

Job Ticket: 55497

DST#: 2

ATTN: Jeff Christian

Test Start: 2014.01.15 @ 01:45:00

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:

45000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
130.00	WCM 35%W 65%M	1.550

Total Length: 130.00 ft

Total Volume: 1.550 bbl

Num Fluid Samples: 0

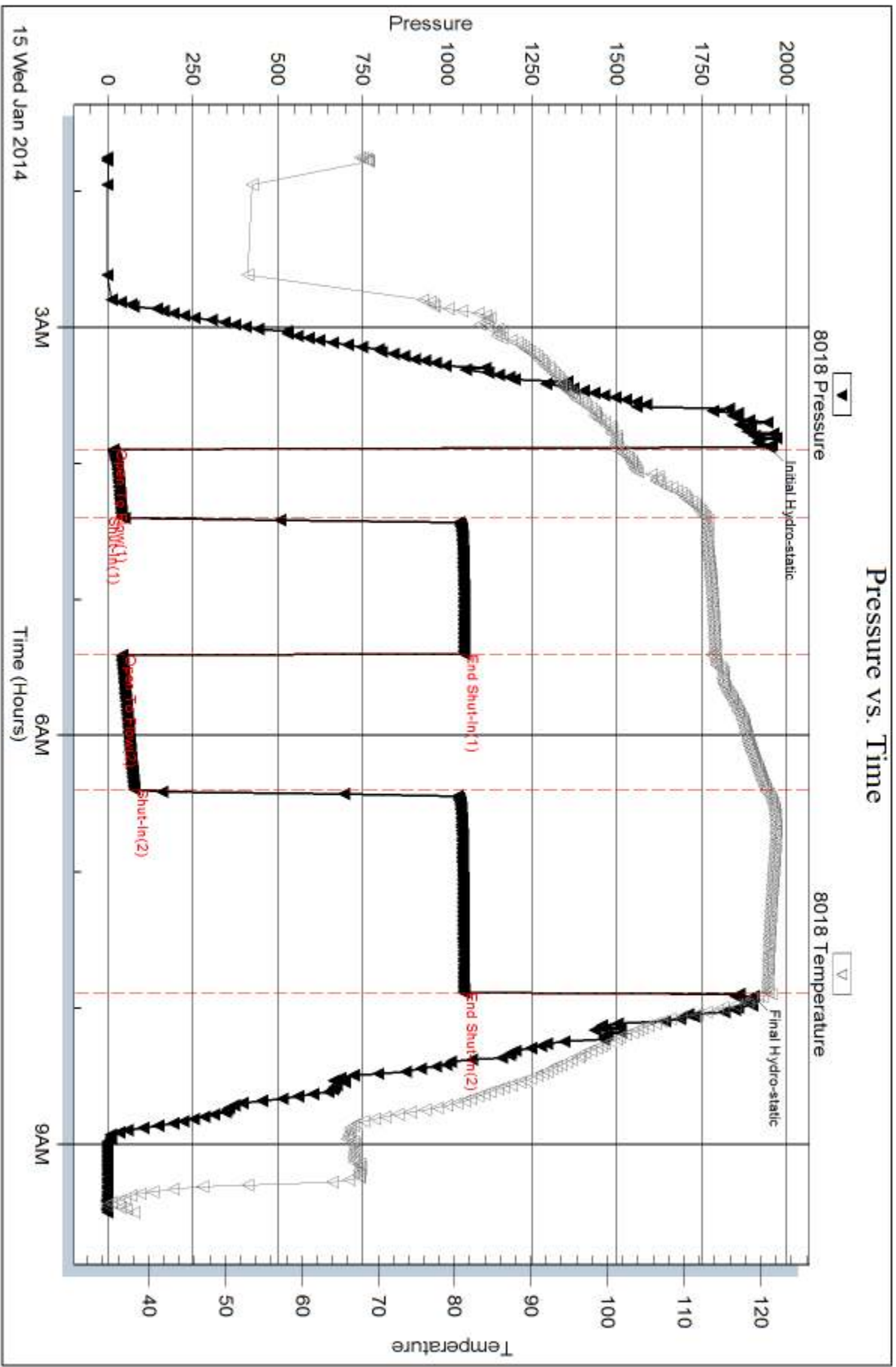
Num Gas Bombs: 0

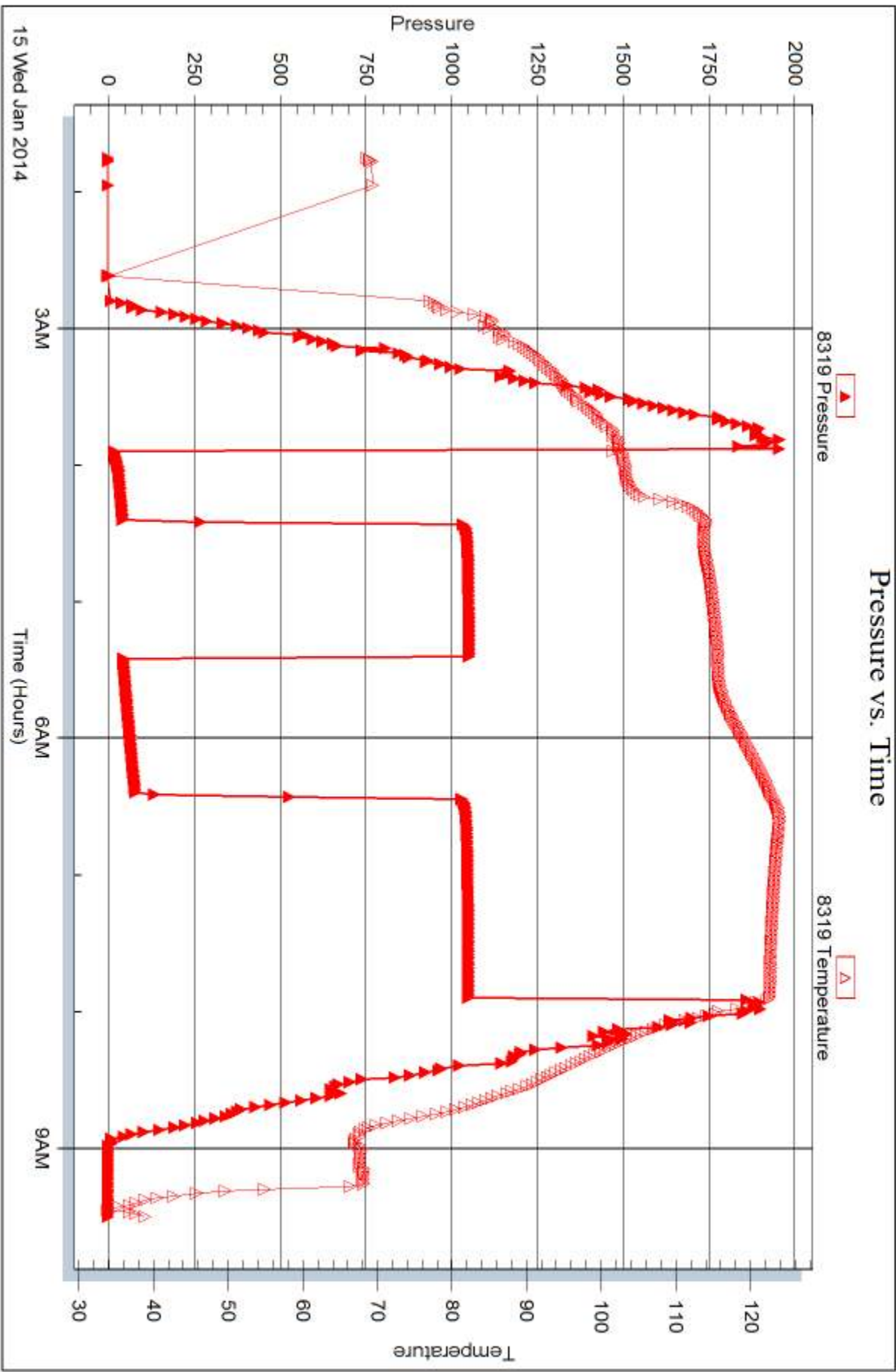
Serial #:

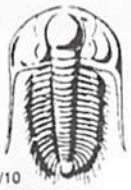
Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **55496**

Well Name & No. Ziegler #1-30 Test No. 1 Date 1/14/14
 Company Murfin Drilling Co. Elevation 2767 KB 2762 GL
 Address 250 N water STE 300 Wichita KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #16
 Location: Sec. 30 Twp. 9s Rge. 27w Co. Sheridan State KS

Interval Tested 3932 - 3974 Zone Tested KC "B-D"
 Anchor Length 42 Drill Pipe Run 3894 Mud Wt. 9.1
 Top Packer Depth 3927 Drill Collars Run 30 Vis 57
 Bottom Packer Depth 3932 Wt. Pipe Run - WL 6.4
 Total Depth 3974 Chlorides 1,400 ppm System LCM #1

Blow Description IF - 1/2 in blow
ISF - No blow
FF - No blow
FSF - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>OS Mud</u>				
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 <u>5</u>	BHT <u>110</u>	Gravity	API RW	@	° F Chlorides

(A) Initial Hydrostatic 6998 Test 1150 T-On Location 11:00
 (B) First Initial Flow 18 Jars 250 T-Started 11:05
 (C) First Final Flow 20 Safety Joint 75 T-Open 13:58
 (D) Initial Shut-In 39 Circ Sub _____ T-Pulled 16:58
 (E) Second Initial Flow 19 ~~20~~ Hourly Standby _____ T-Out 18:40
 (F) Second Final Flow 20 ~~21~~ Mileage 187rt 98rt 151.90 Comments slayed Note 1
 (G) Final Shut-In 32 Sampler _____
 (H) Final Hydrostatic 6921 Straddle _____ Ruined Shale Packer _____
 Ruined Packer 320
 Extra Copies _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 60 Day Standby _____ Total 1946.90
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1626.90

Approved By _____ Our Representative Bruce Durr

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. 55497

Well Name & No. Ziegler # 1-30 Test No. 2 Date 1/15/14
 Company Murfin Drilling Co Elevation 2767 KB 2762 GL
 Address 250 N water STE 300 Wichita KS 67202
 Co. Rep / Geo. Jeff Christian Rig Murfin #16
 Location: Sec. 30 Twp. 9s Rge. 27w Co. Sheridan State KS

Interval Tested 3971-3999 Zone Tested KC"E-F"
 Anchor Length 28 Drill Pipe Run _____ Mud Wt. 9.1
 Top Packer Depth 3966- Drill Collars Run 30 Vis 57
 Bottom Packer Depth 3971 Wt. Pipe Run - WL 6.4
 Total Depth 3999 Chlorides 4,400 ppm System LCM #1
 Blow Description IF - 4 1/2 in blow
ISF - very weak surface blow
FF - 6 in blow
FSI - very weak surface blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>130</u>	<u>wcm</u>		<u>35</u>	<u>65</u>	
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Rec Total 130 BHT 121 Gravity _____ API RW 3 @ 40 °F Chlorides 45000 ppm
 (A) Initial Hydrostatic 1,950 Test 1150 T-On Location 1:05
 (B) First Initial Flow 17 Jars 250 T-Started 1:45
 (C) First Final Flow 42 Safety Joint 75 T-Open 3:52
 (D) Initial Shut-In 1,052 Circ Sub _____ T-Pulled 7:52
 (E) Second Initial Flow 44 Hourly Standby _____ T-Out 9:30
 (F) Second Final Flow 78 Mileage 162.7 151.90 Comments steel motor
 (G) Final Shut-In 1,051 Sampler _____ loaded 10:15?
 (H) Final Hydrostatic 1,904 Straddle _____ 1/16/14
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Extra Packer _____
 Initial Shut-In 60 Extra Recorder _____ Sub Total 800
 Final Flow 60 Day Standby 1d .75h Total 2426.90
 Final Shut-In 90 Accessibility _____ MP/DST Disc't _____
 Sub Total 1626.90

Approved By _____ Our Representative Butt

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.