



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste 300  
Wichita KS. 67202

ATTN: Rocky Milford

**Shuler ' A ' #2-20**

**20-5s-29w Decatur,KS**

Start Date: 2015.01.06 @ 17:00:00

End Date: 2015.01.07 @ 02:10:55

Job Ticket #: 58688                      DST #: 1

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

Printed: 2015.01.12 @ 09:22:37



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58688

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2015.01.06 @ 17:00:00

## GENERAL INFORMATION:

Formation: **Toronto / LKC "B"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:07:25  
 Time Test Ended: 02:10:55  
 Interval: **3850.00 ft (KB) To 3930.00 ft (KB) (TVD)**  
 Total Depth: 3930.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Will MacLean  
 Unit No: 71  
 Reference Elevations: 2825.00 ft (KB)  
 2820.00 ft (CF)  
 KB to GR/CF: 5.00 ft

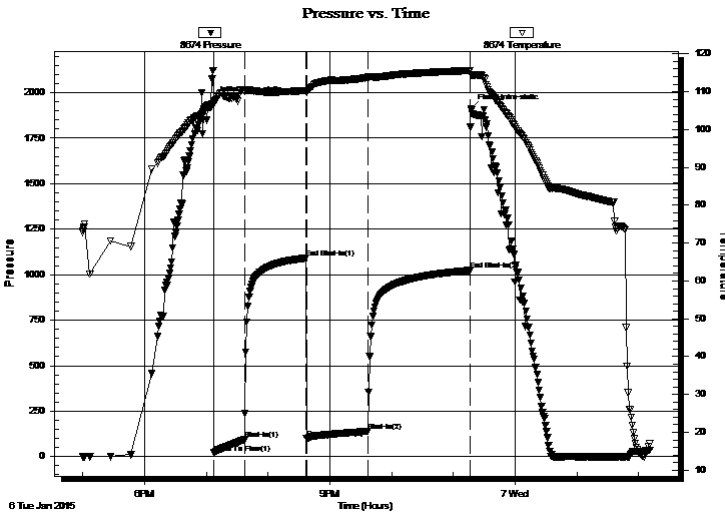
## Serial #: 8674

Inside

Press@RunDepth: 139.92 psig @ 3851.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2015.01.06 End Date: 2015.01.07 Last Calib.: 2015.01.07  
 Start Time: 17:00:00 End Time: 02:10:55 Time On Btm: 2015.01.06 @ 19:07:10  
 Time Off Btm: 2015.01.06 @ 23:17:09

TEST COMMENT: IF- Weak Surface Blow Built to 5 1/2"  
 IS- No Blow  
 FF- Weak Surface Blow Built to 3"  
 FS- No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1956.01	107.22	Initial Hydro-static
1	20.73	106.64	Open To Flow (1)
30	93.44	110.19	Shut-In(1)
90	1092.11	110.33	End Shut-In(1)
91	99.43	109.70	Open To Flow (2)
150	139.92	113.76	Shut-In(2)
249	1023.83	115.63	End Shut-In(2)
250	1912.09	114.61	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	WCM 3%w 97%m with Oil Spots	0.30
124.00	WCM 3%w 97%m with a Skim of Oil on	0.61
68.00	WCM 4%w 96% with Oil Spots	0.95

## Gas Rates

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



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TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

20-5s-29w Decatur, KS

250 N. Water Ste 300  
Wichita KS. 67202

Shuler ' A ' #2-20

ATTN: Rocky Milford

Job Ticket: 58688

DST#: 1

Test Start: 2015.01.06 @ 17:00:00

### GENERAL INFORMATION:

Formation: **Toronto / LKC "B"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:07:25

Time Test Ended: 02:10:55

Interval: **3850.00 ft (KB) To 3930.00 ft (KB) (TVD)**

Total Depth: 3930.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole (Initial)

Tester: Will MacLean

Unit No: 71

Reference Elevations: 2825.00 ft (KB)

2820.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: **8355** **Outside**

Press@RunDepth: psig @ 3851.00 ft (KB)

Start Date: 2015.01.06

End Date:

2015.01.07

Capacity: 8000.00 psig

Last Calib.: 2015.01.07

Start Time: 17:00:05

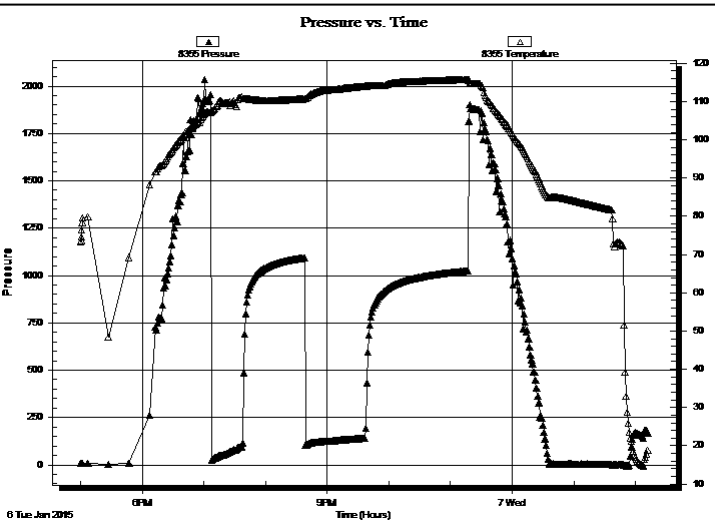
End Time:

02:12:15

Time On Btm:

Time Off Btm:

**TEST COMMENT:** IF- Weak Surface Blow Built to 5 1/2"  
IS- No Blow  
FF- Weak Surface Blow Built to 3"  
FS- No Blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
62.00	WCM 3%w 97% m with Oil Spots	0.30
124.00	WCM 3%w 97% m with a Skim of Oil on 0.61	
68.00	WCM 4%w 96% w with Oil Spots	0.95

### Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58688

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2015.01.06 @ 17:00:00

## Tool Information

Drill Pipe:	Length: 3645.00 ft	Diameter: 3.80 inches	Volume: 51.13 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 186.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 16000.00 lb
			<u>Total Volume: 52.04 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3850.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	80.00 ft			
Tool Length:	107.00 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			3824.00	
Shut In Tool	5.00			3829.00	
Hydraulic tool	5.00			3834.00	
Jars	5.00			3839.00	
Safety Joint	2.00			3841.00	
Packer	5.00			3846.00	27.00 Bottom Of Top Packer
Packer	4.00			3850.00	
Stubb	1.00			3851.00	
Recorder	0.00	8355	Outside	3851.00	
Recorder	0.00	8674	Inside	3851.00	
Perforations	9.00			3860.00	
Change Over Sub	1.00			3861.00	
Drill Pipe	63.00			3924.00	
Change Over Sub	1.00			3925.00	
Bullnose	5.00			3930.00	80.00 Bottom Packers & Anchor

**Total Tool Length: 107.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58688

**DST#: 1**

ATTN: Rocky Milford

Test Start: 2015.01.06 @ 17:00:00

## 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:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.74 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	WCM 3%w 97%m with Oil Spots	0.305
124.00	WCM 3%w 97%m with a Skim of Oil on To	0.610
68.00	WCM 4%w 96% with Oil Spots	0.954

Total Length: 254.00 ft      Total Volume: 1.869 bbl

Num Fluid Samples: 0

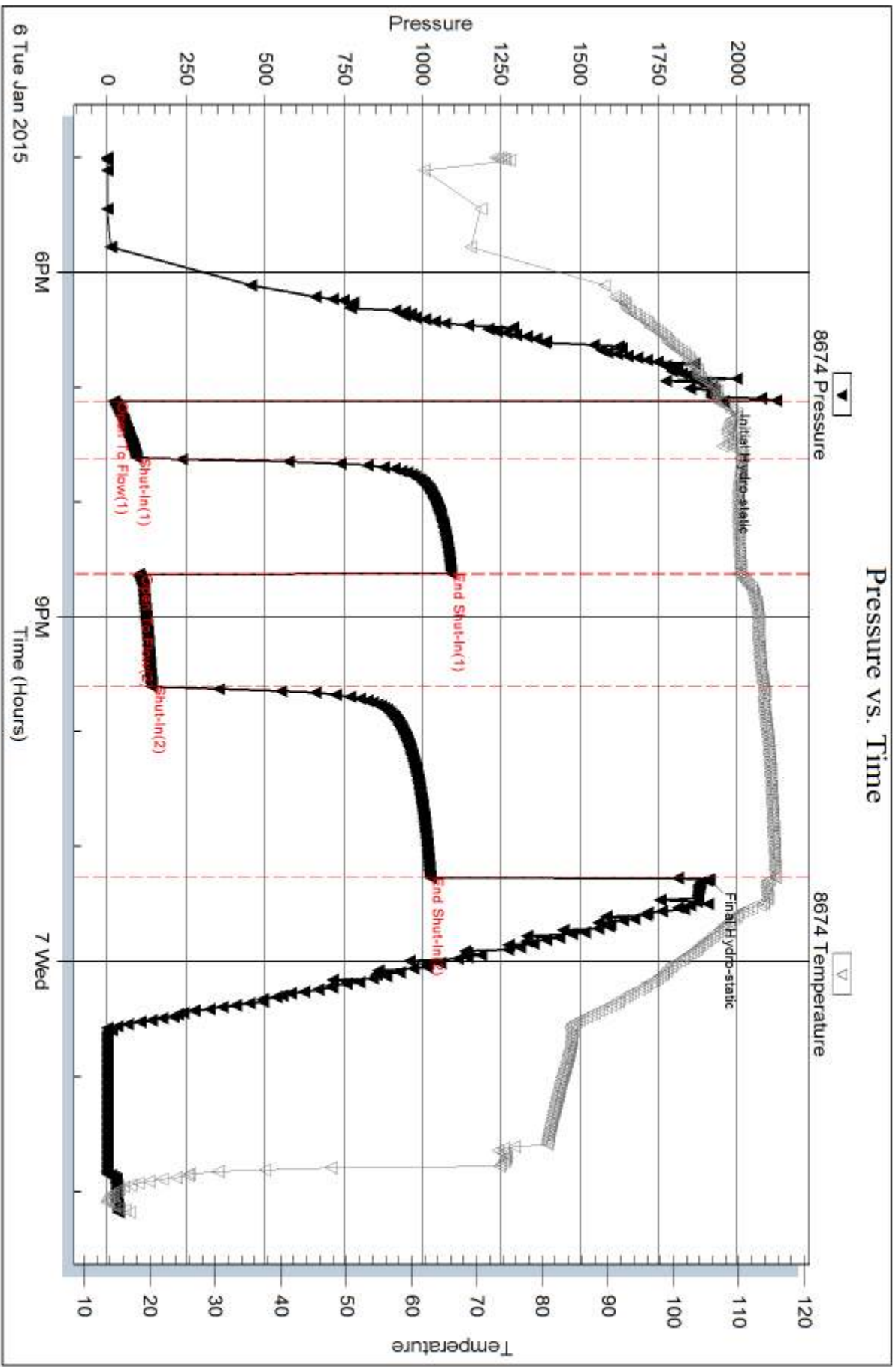
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

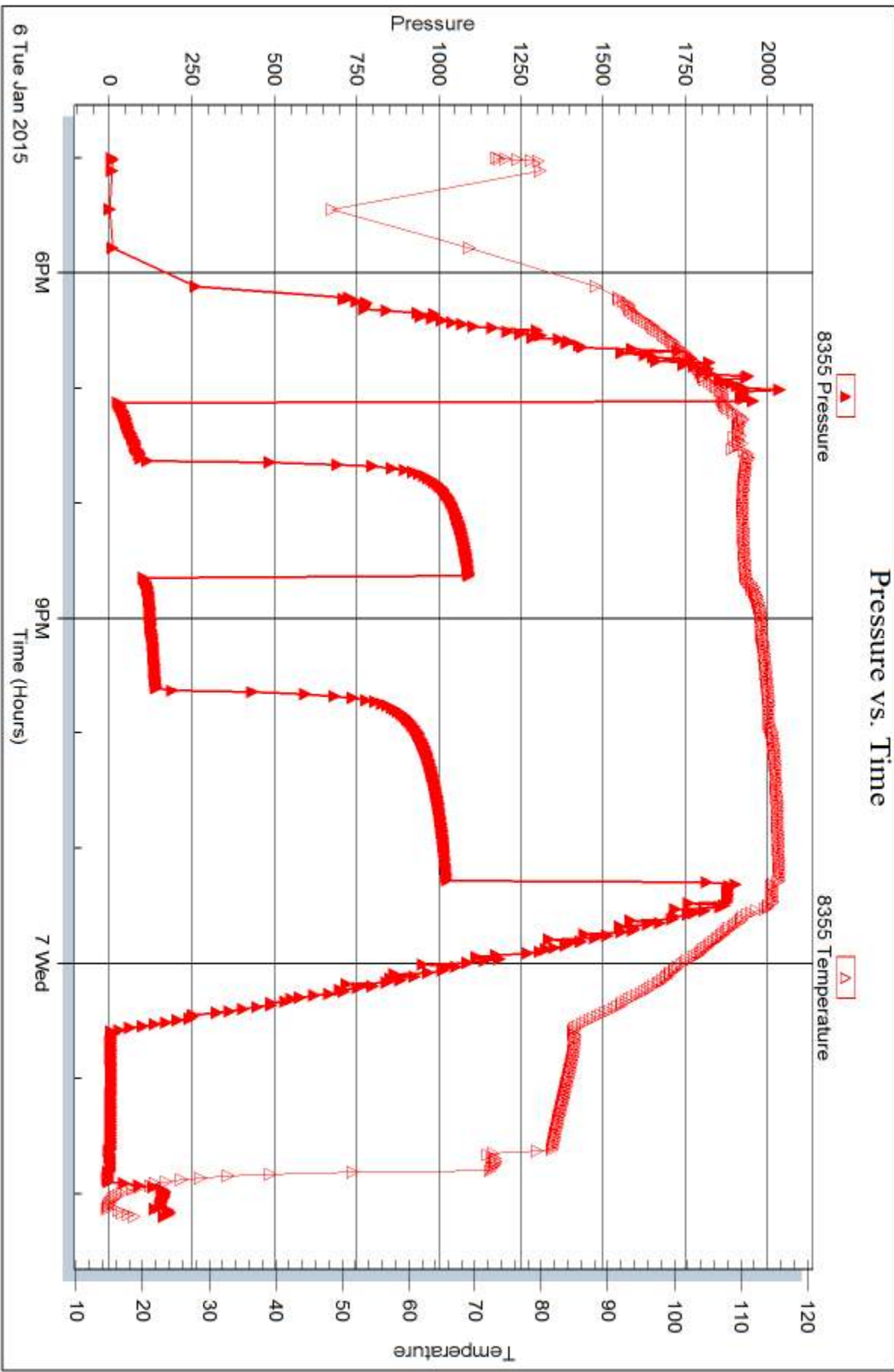


Serial #: 8355

Outside Murfin Drilling Co.

Shuler 'A' #2-20

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 59688

Printed: 2015.01.12 @ 09:22:38



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste 300  
Wichita KS. 67202

ATTN: Rocky Milford

**Shuler ' A ' #2-20**

**20-5s-29w Decatur,KS**

Start Date: 2015.01.07 @ 11:18:00

End Date: 2015.01.07 @ 19:32:54

Job Ticket #: 58689                      DST #: 2

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

Printed: 2015.01.12 @ 09:22:13





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58689

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2015.01.07 @ 11:18:00

## GENERAL INFORMATION:

Formation: **LKC " D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:32:10

Time Test Ended: 19:32:54

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 71

**Interval: 3926.00 ft (KB) To 3947.00 ft (KB) (TVD)**

Reference Elevations: 2825.00 ft (KB)

Total Depth: 3947.00 ft (KB) (TVD)

2820.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8674 Inside**

Press@RunDepth: 67.95 psig @ 3927.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.07

End Date:

2015.01.07

Last Calib.:

2015.01.07

Start Time: 11:18:00

End Time:

19:32:54

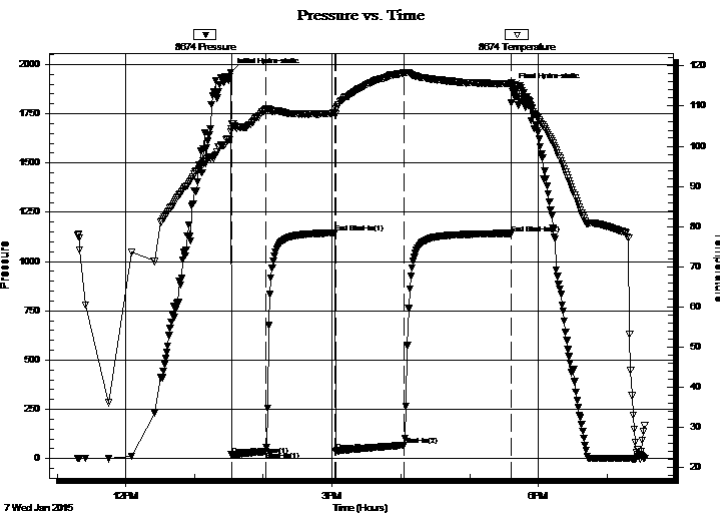
Time On Btm:

2015.01.07 @ 13:31:40

Time Off Btm:

2015.01.07 @ 17:37:09

**TEST COMMENT:** IF- Weak nSurface Blow Built to 1"  
IS- Very Weak Surface Blow in 20 min  
FF- Weak Surface Blow Built to 1 1/4"  
FS- Weak Surface Blow in 10min Built to 1/4"



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1959.90	103.64	Initial Hydro-static
1	18.41	104.28	Open To Flow (1)
31	36.17	109.18	Shut-In(1)
91	1145.75	108.39	End Shut-In(1)
92	37.57	107.97	Open To Flow (2)
152	67.95	118.34	Shut-In(2)
245	1142.87	115.48	End Shut-In(2)
246	1880.62	115.36	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	GMCW 5%g 18%m 77%w with a Skin	0.30
30.00	GOWCM 4%g 7%oil 26%w 63%m	0.15
0.00	94' of Weak GIP	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.  
250 N. Water Ste 300  
Wichita KS. 67202  
ATTN: Rocky Milford

**20-5s-29w Decatur, KS**  
**Shuler ' A ' #2-20**  
Job Ticket: 58689 **DST#: 2**  
Test Start: 2015.01.07 @ 11:18:00

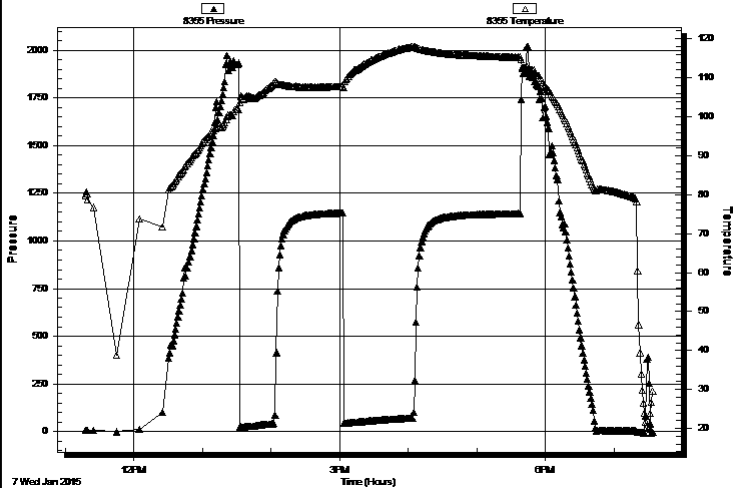
## GENERAL INFORMATION:

Formation: **LKC " D"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 13:32:10  
Time Test Ended: 19:32:54  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Will MacLean  
Unit No: 71  
**Interval: 3926.00 ft (KB) To 3947.00 ft (KB) (TVD)**  
Reference Elevations: 2825.00 ft (KB)  
Total Depth: 3947.00 ft (KB) (TVD) 2820.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**  
Press@RunDepth: psig @ 3927.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2015.01.07 End Date: 2015.01.07 Last Calib.: 2015.01.07  
Start Time: 11:18:05 End Time: 19:34:29 Time On Btm:  
Time Off Btm:

TEST COMMENT: IF- Weak nSurface Blow Built to 1"  
IS- Very Weak Surface Blow in 20 min  
FF- Weak Surface Blow Built to 1 1/4"  
FS- Weak Surface Blow in 10min Built to 1/4"

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	GMCW 5%g 18%m 77%w with a Skin	0.30
30.00	GOWCM 4%g 7%oil 26%w 63%m	0.15
0.00	94' of Weak 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**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58689

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2015.01.07 @ 11:18:00

## Tool Information

Drill Pipe:	Length: 3737.00 ft	Diameter: 3.80 inches	Volume: 52.42 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	300000.0 lb
Drill Collar:	Length: 186.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose:	20000.00 lb
			<u>Total Volume: 53.33 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3926.00 ft			Final	58000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	80.00 ft				
Tool Length:	107.00 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			3900.00	
Shut In Tool	5.00			3905.00	
Hydraulic tool	5.00			3910.00	
Jars	5.00			3915.00	
Safety Joint	2.00			3917.00	
Packer	5.00			3922.00	27.00 Bottom Of Top Packer
Packer	4.00			3926.00	
Stubb	1.00			3927.00	
Recorder	0.00	8355	Outside	3927.00	
Recorder	0.00	8674	Inside	3927.00	
Perforations	9.00			3936.00	
Change Over Sub	1.00			3937.00	
Drill Pipe	63.00			4000.00	
Change Over Sub	1.00			4001.00	
Bullnose	5.00			4006.00	80.00 Bottom Packers & Anchor

**Total Tool Length: 107.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58689

**DST#: 2**

ATTN: Rocky Milford

Test Start: 2015.01.07 @ 11:18:00

## 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:

71000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.74 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
62.00	GMCW 5%g 18%m 77%w with a Skim of O	0.305
30.00	GOWCM 4%g 7%oil 26%w 63%m	0.148
0.00	94' of Weak GIP	0.000

Total Length: 92.00 ft Total Volume: 0.453 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW is .381 @ 18f = 71000

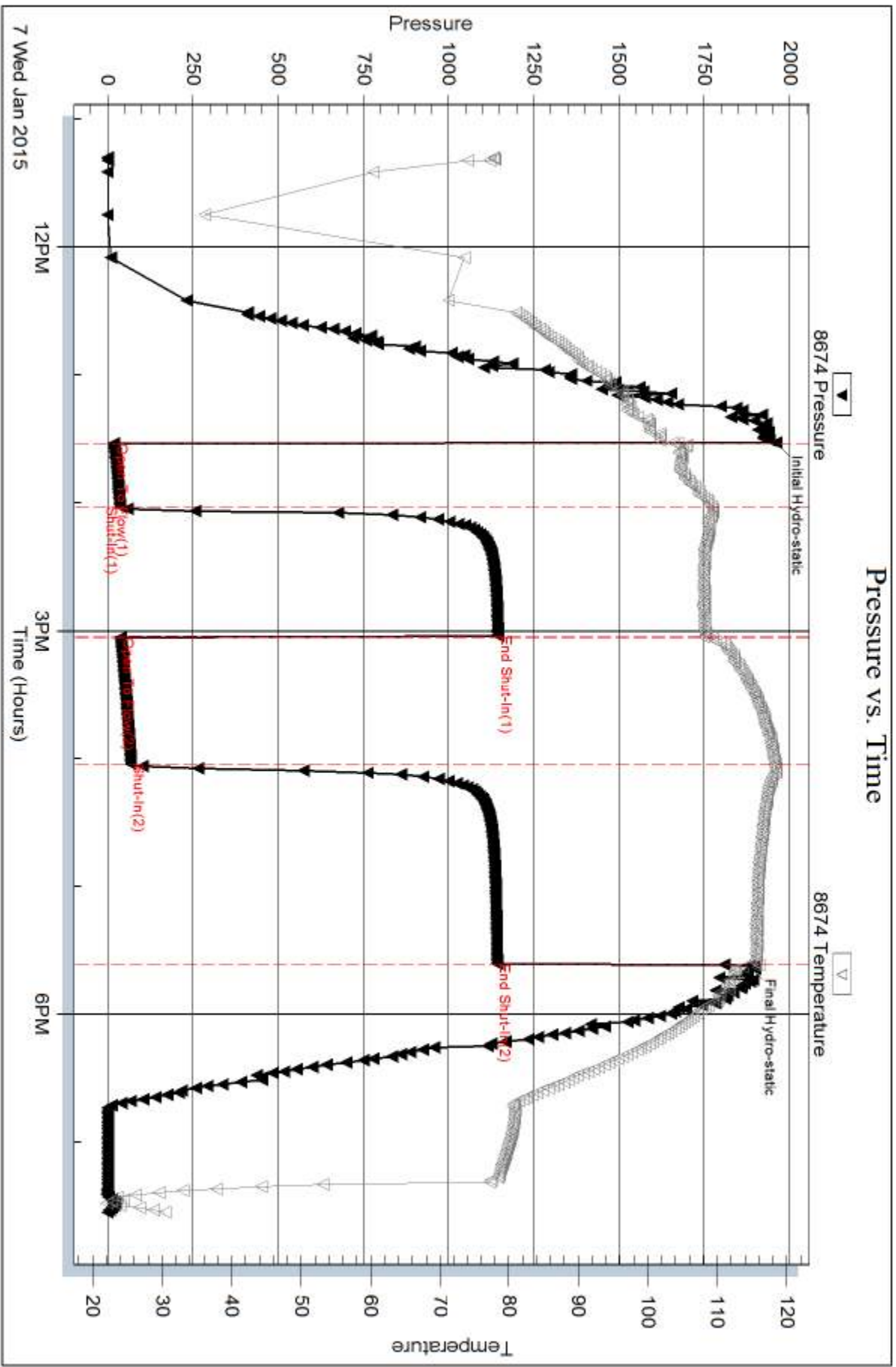
Serial #: 8674

Inside

Murfin Drilling Co.

Shuler 'A' #2-20

DST Test Number: 2

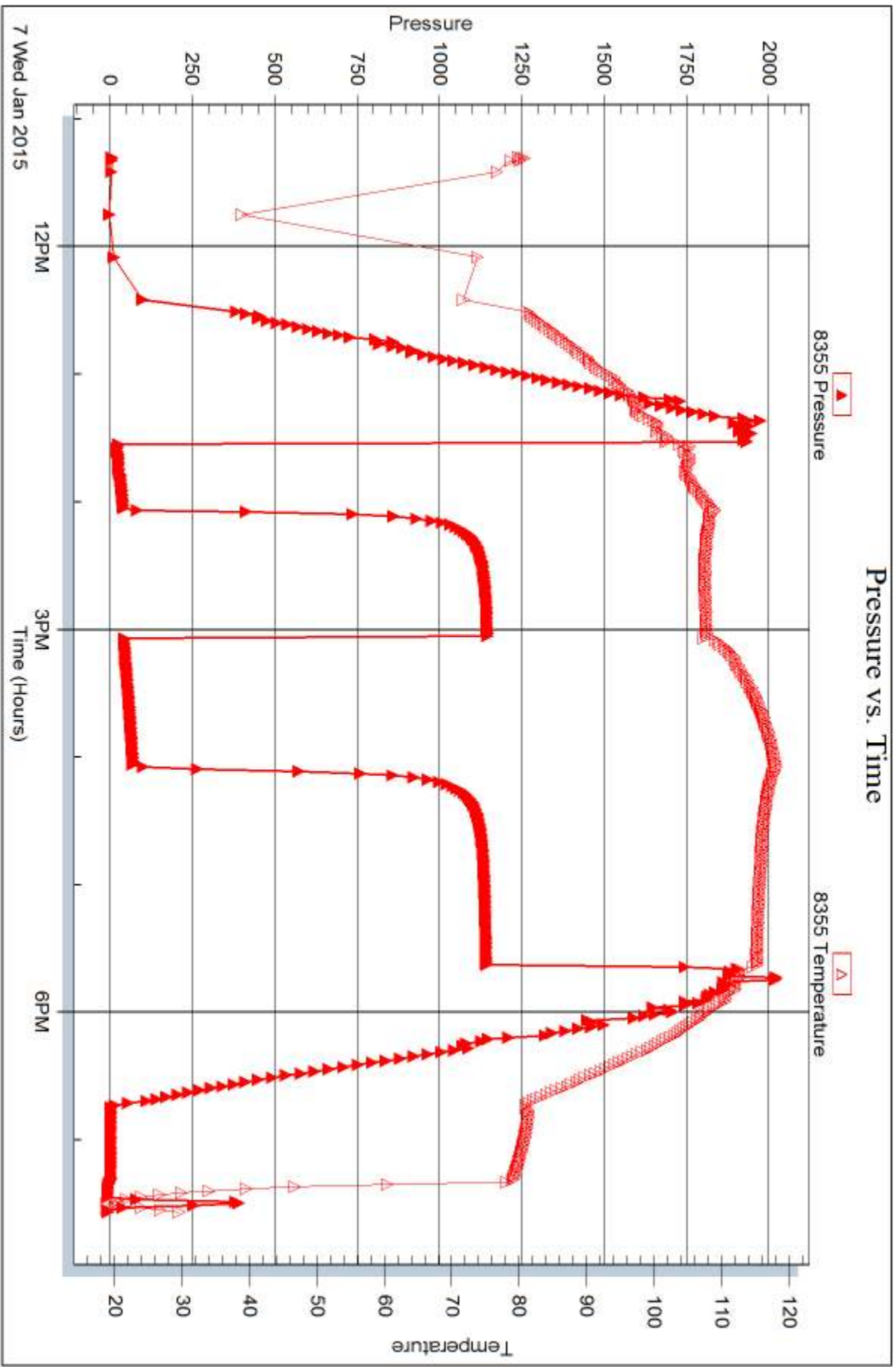


Serial #: 8355

Outside Murfin Drilling Co.

Shuler 'A' #2-20

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 58689

Printed: 2015.01.12 @ 09:22:15



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste 300  
Wichita KS. 67202

ATTN: Rocky Milford

**Shuler ' A ' #2-20**

**20-5s-29w Decatur,KS**

Start Date: 2015.01.08 @ 07:12:00

End Date: 2015.01.08 @ 15:33:09

Job Ticket #: 58690                      DST #: 3

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

Printed: 2015.01.12 @ 09:21:46



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58690

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2015.01.08 @ 07:12:00

## GENERAL INFORMATION:

Formation: **LKC " E - G "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:17:10

Time Test Ended: 15:33:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 71

**Interval: 3945.00 ft (KB) To 3995.00 ft (KB) (TVD)**

Reference Elevations: 2825.00 ft (KB)

Total Depth: 3995.00 ft (KB) (TVD)

2820.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8674**

**Inside**

Press@RunDepth: 108.29 psig @ 3947.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.08

End Date:

2015.01.08

Last Calib.:

2015.01.08

Start Time:

07:12:00

End Time:

15:33:09

Time On Btm:

2015.01.08 @ 09:16:25

Time Off Btm:

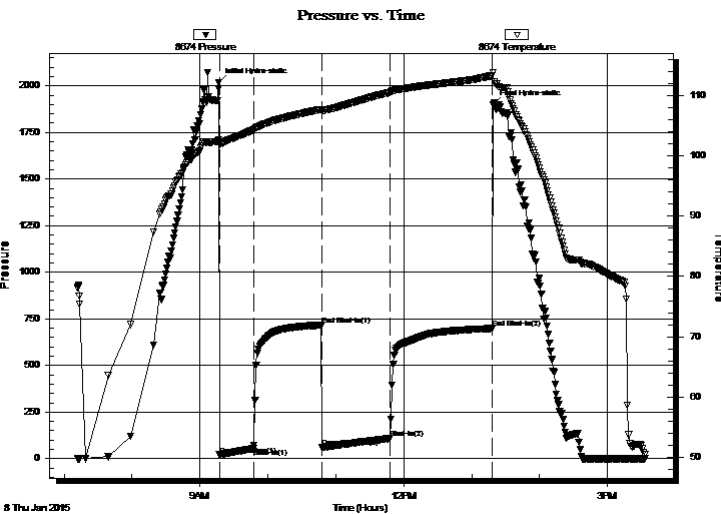
2015.01.08 @ 13:18:39

TEST COMMENT: IF- Weak Surface Blow Built to 1 1/2"

IS- No Blow

FF- Weak Surface Blow Built to 3/4"

FS- No Blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2016.80	102.73	Initial Hydro-static
1	20.55	101.86	Open To Flow (1)
31	54.23	104.33	Shut-In(1)
91	716.26	107.70	End Shut-In(1)
92	59.41	107.44	Open To Flow (2)
152	108.29	110.51	Shut-In(2)
242	698.29	113.28	End Shut-In(2)
243	1897.80	113.84	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
124.00	WCM 4%w 96%m with a Skim of Oil	0.61
64.00	WCM 2%w 98%m with Oil Spots	0.33

\* 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.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58690

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2015.01.08 @ 07:12:00

## Tool Information

Drill Pipe:	Length: 3744.00 ft	Diameter: 3.80 inches	Volume: 52.52 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 32000.00 lb
Drill Collar:	Length: 186.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 14000.00 lb
			<u>Total Volume: 53.43 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3945.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	77.00 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			3919.00	
Shut In Tool	5.00			3924.00	
Hydraulic tool	5.00			3929.00	
Jars	5.00			3934.00	
Safety Joint	2.00			3936.00	
Packer	5.00			3941.00	27.00 Bottom Of Top Packer
Packer	4.00			3945.00	
Stubb	1.00			3946.00	
Perforations	1.00			3947.00	
Recorder	0.00	8355	Outside	3947.00	
Recorder	0.00	8674	Inside	3947.00	
Perforations	10.00			3957.00	
Change Over Sub	1.00			3958.00	
Drill Pipe	31.00			3989.00	
Change Over Sub	1.00			3990.00	
Bullnose	5.00			3995.00	50.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>77.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58690

**DST#: 3**

ATTN: Rocky Milford

Test Start: 2015.01.08 @ 07:12:00

### 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: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
124.00	WCM 4%w 96%m with a Skim of Oil	0.610
64.00	WCM 2%w 98%m with Oil Spots	0.333

Total Length: 188.00 ft

Total Volume: 0.943 bbl

Num Fluid Samples: 0

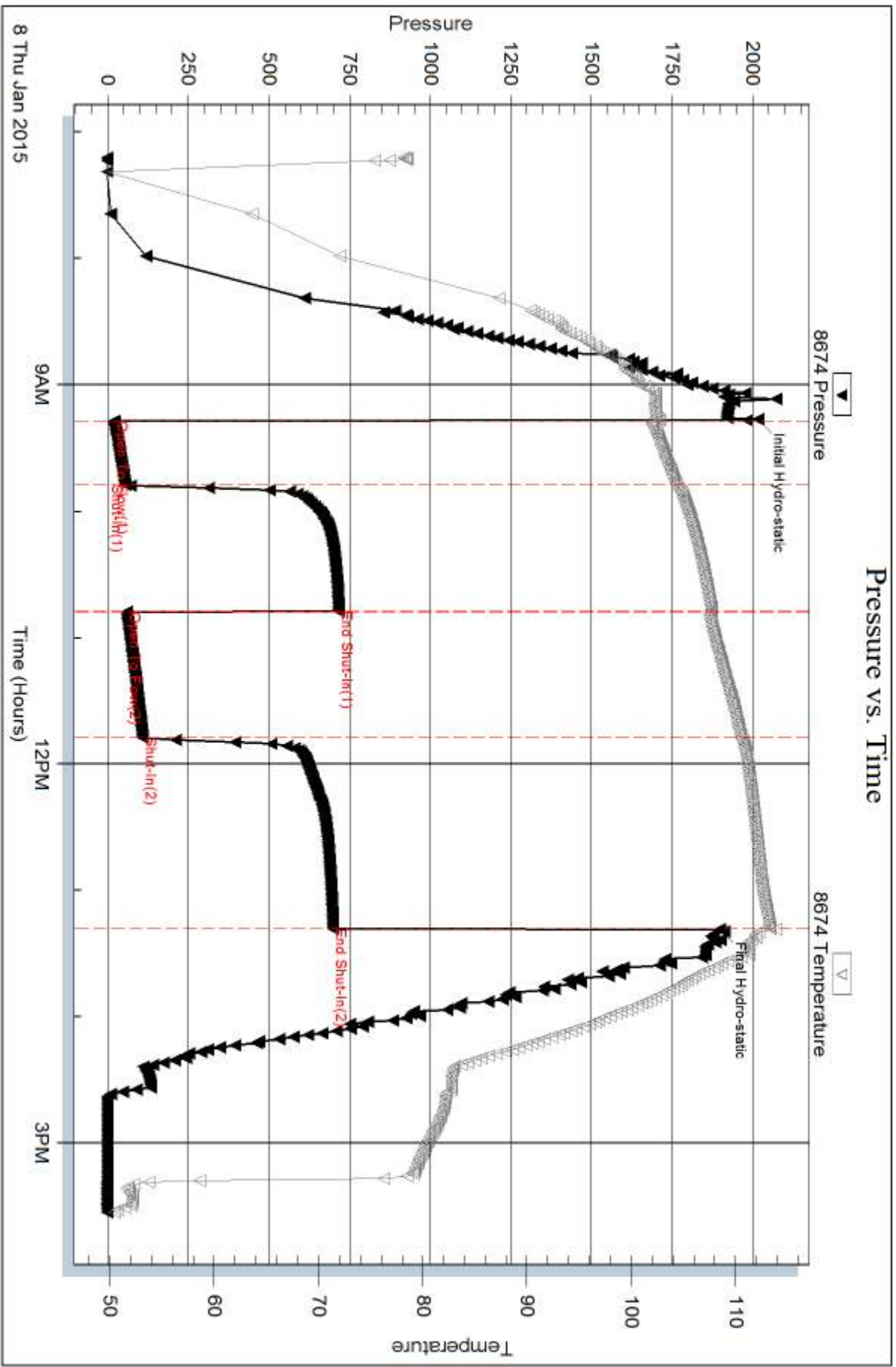
Num Gas Bombs: 0

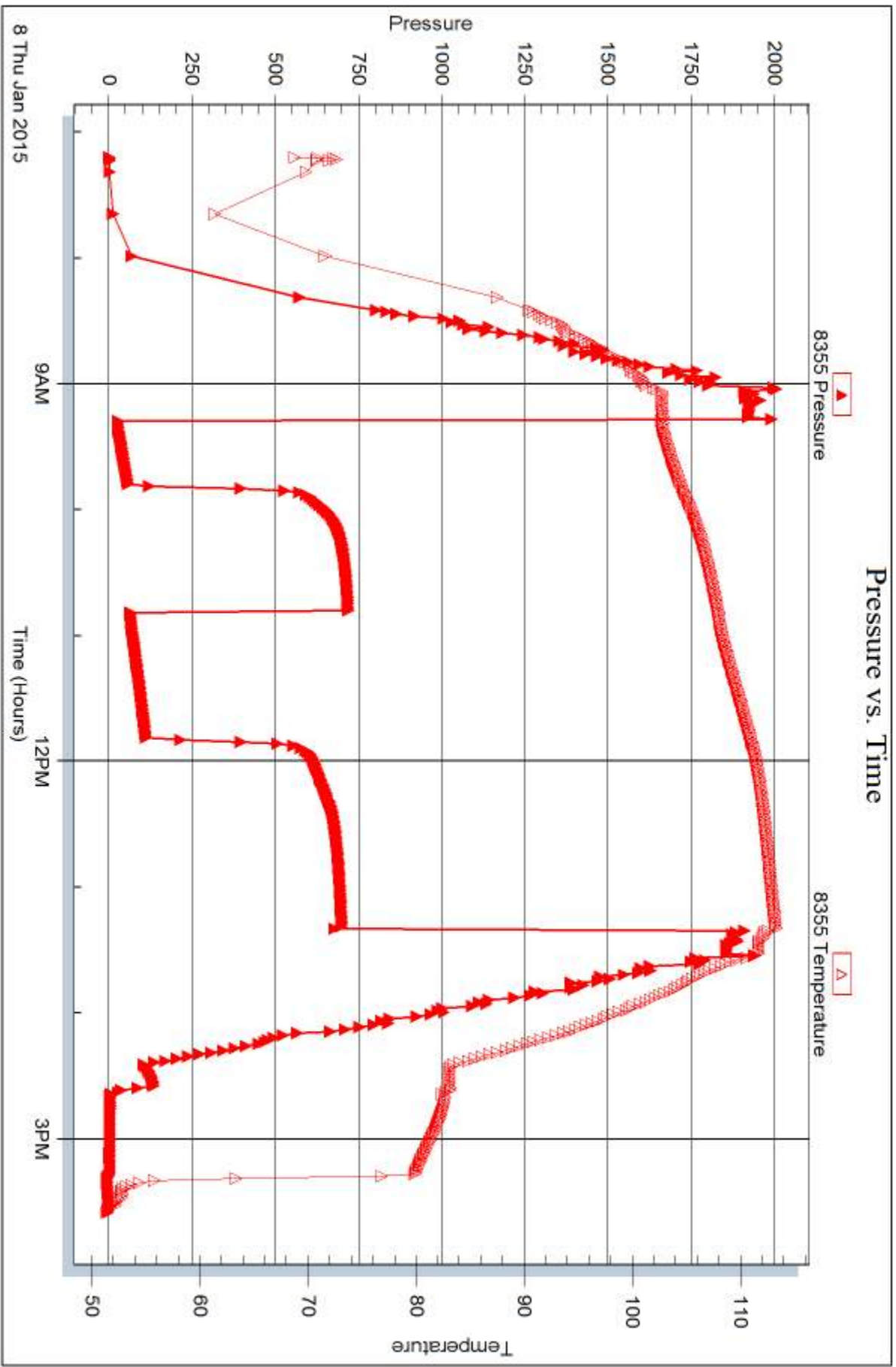
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N. Water Ste 300  
Wichita KS. 67202

ATTN: Rocky Milford

**Shuler ' A ' #2-20**

**20-5s-29w Decatur,KS**

Start Date: 2015.01.09 @ 04:18:00

End Date: 2015.01.09 @ 12:03:54

Job Ticket #: 58691                      DST #: 4

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

Printed: 2015.01.12 @ 09:20:52



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58691

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2015.01.09 @ 04:18:00

## GENERAL INFORMATION:

Formation: **LKC " H - K "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:35:55

Time Test Ended: 12:03:54

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 71

**Interval: 3990.00 ft (KB) To 4085.00 ft (KB) (TVD)**

Reference Elevations: 2825.00 ft (KB)

Total Depth: 4085.00 ft (KB) (TVD)

2820.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8674**

**Inside**

Press@RunDepth: 33.59 psig @ 3992.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.09

End Date:

2015.01.09

Last Calib.: 2015.01.09

Start Time: 04:18:00

End Time:

12:03:54

Time On Btm: 2015.01.09 @ 06:35:40

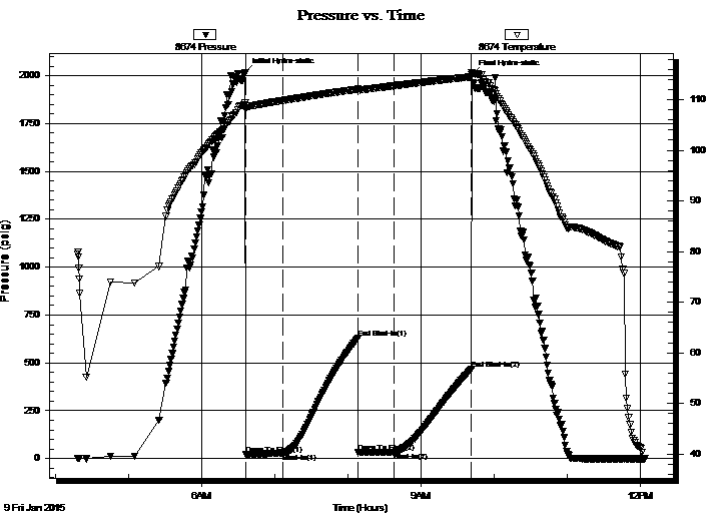
Time Off Btm: 2015.01.09 @ 09:41:39

TEST COMMENT: IF- Weak Surface Blow Built to 1/2"

IS- No Blow

FF- No Blow

FS- No Blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2017.23	109.39	Initial Hydro-static
1	22.26	108.02	Open To Flow (1)
31	27.40	109.83	Shut-In(1)
93	628.63	112.06	End Shut-In(1)
93	31.15	111.76	Open To Flow (2)
123	33.59	112.74	Shut-In(2)
186	467.18	114.52	End Shut-In(2)
186	2005.57	115.39	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% m with Oil Spots in Tool	0.05

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.

**20-5s-29w Decatur, KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58691

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2015.01.09 @ 04:18:00

## GENERAL INFORMATION:

Formation: **LKC " H - K "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:35:55

Time Test Ended: 12:03:54

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 71

**Interval: 3990.00 ft (KB) To 4085.00 ft (KB) (TVD)**

Reference Elevations: 2825.00 ft (KB)

Total Depth: 4085.00 ft (KB) (TVD)

2820.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: psig @ 3992.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.01.09 End Date: 2015.01.09

Last Calib.: 2015.01.09

Start Time: 04:18:05 End Time: 12:05:29

Time On Btm:

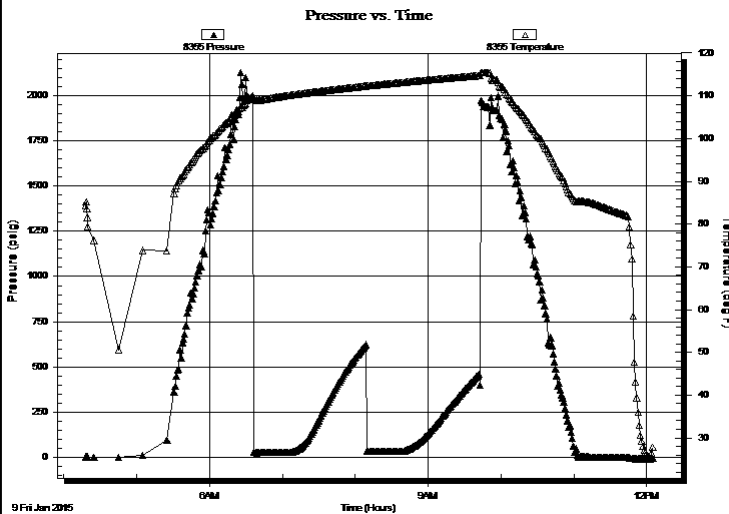
Time Off Btm:

TEST COMMENT: IF- Weak Surface Blow Built to 1/2"

IS- No Blow

FF- No Blow

FS- No Blow



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% m with Oil Spots in Tool	0.05

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58691

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2015.01.09 @ 04:18:00

## Tool Information

Drill Pipe:	Length: 3811.00 ft	Diameter: 3.80 inches	Volume: 53.46 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 28000.00 lb
Drill Collar:	Length: 186.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 18000.00 lb
			<u>Total Volume: 54.37 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	34.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3990.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	95.00 ft			
Tool Length:	122.00 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			3964.00	
Shut In Tool	5.00			3969.00	
Hydraulic tool	5.00			3974.00	
Jars	5.00			3979.00	
Safety Joint	2.00			3981.00	
Packer	5.00			3986.00	27.00 Bottom Of Top Packer
Packer	4.00			3990.00	
Stubb	1.00			3991.00	
Perforations	1.00			3992.00	
Recorder	0.00	8355	Outside	3992.00	
Recorder	0.00	8674	Inside	3992.00	
Perforations	23.00			4015.00	
Change Over Sub	1.00			4016.00	
Drill Pipe	63.00			4079.00	
Change Over Sub	1.00			4080.00	
Bullnose	5.00			4085.00	95.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>122.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**20-5s-29w Decatur,KS**

250 N. Water Ste 300  
Wichita KS. 67202

**Shuler ' A ' #2-20**

Job Ticket: 58691

**DST#: 4**

ATTN: Rocky Milford

Test Start: 2015.01.09 @ 04:18:00

## 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: 50.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.75 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
10.00	100% m with Oil Spots in Tool	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

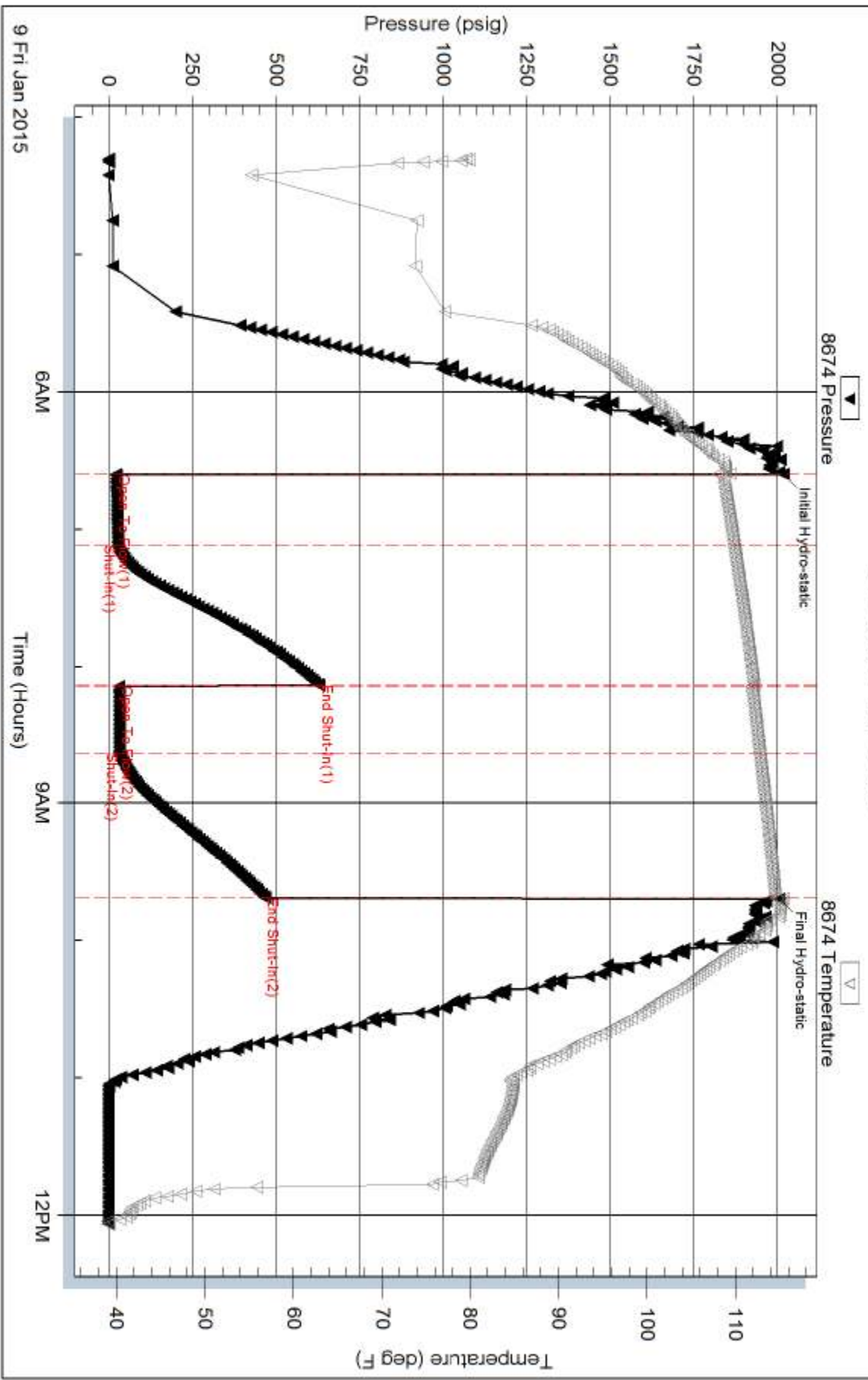
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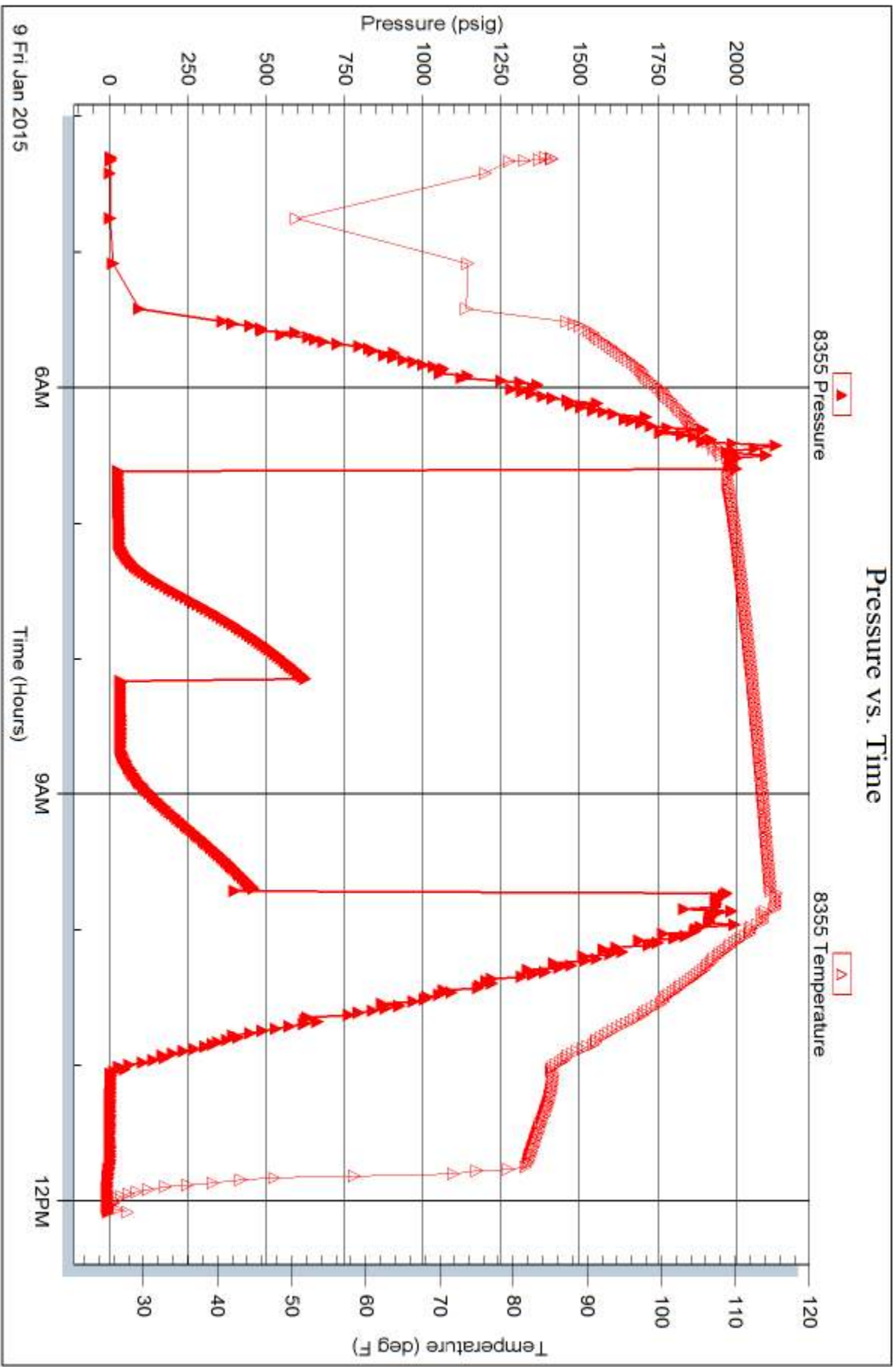
Laboratory Name:

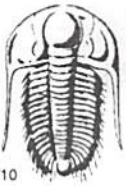
Laboratory Location:

Recovery Comments:

### Pressure vs. Time







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58688

4/10

Well Name & No. Shuler "A" # 2-20 Test No. DST #1 Date 1-6-15  
 Company Murfin Drilling Co. Elevation 2825 KB 2820 GL  
 Address 250 N. Water Ste 300 Wichita KS 67202  
 Co. Rep / Geo. \_\_\_\_\_ Rig Murfin 7  
 Location: Sec. 20 Twp. 5S Rge. 29W Co. Decatur State KS

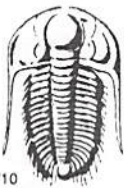
Interval Tested 3850 - 3930 Zone Tested Toronto - LRC "B"  
 Anchor Length 80 Drill Pipe Run 3645 Mud Wt. 9.3  
 Top Packer Depth 3846 Drill Collars Run 186 Vis 50  
 Bottom Packer Depth 3850 Wt. Pipe Run 0 WL 6.8  
 Total Depth 39.30 Chlorides 1000 ppm System LCM 1 1/2 lb  
 Blow Description IF - Weak Surface Blow Built to 5 1/2"  
ISI - No Blow  
FF - Weak Surface Blow Built to 3"  
PSI - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>68</u>	<u>WCM with oil spots</u>		<u>4</u>	<u>96</u>	
<u>124</u>	<u>WCM with slickensided oil</u>		<u>3</u>	<u>97</u>	
<u>62</u>	<u>WCM with oil spots</u>		<u>3</u>	<u>97</u>	
_____	_____				
_____	_____				

Rec Total 254 BHT 115 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1956  Test 1050 T-On Location 15:18  
 (B) First Initial Flow 20  Jars 250 T-Started 17:00  
 (C) First Final Flow 93  Safety Joint 75 T-Open 19:07  
 (D) Initial Shut-In 1092  Circ Sub N/C T-Pulled 23:17  
 (E) Second Initial Flow 99  Hourly Standby \_\_\_\_\_ T-Out 2:10  
 (F) Second Final Flow 139  Mileage 184 R/T 40rt 40 Comments Stay at Oberlin Shop  
 (G) Final Shut-In 1023  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1912  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1415  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1415

Approved By Rocky Milford Our Representative [Signature]  
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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58689

4/10

Well Name & No. Shuler "A" # 2-20 Test No. DST # 2 Date 1-7-15  
 Company Murfin Drilling Co. Elevation 2825 KB 2820 GL  
 Address 250 N. Water Ste 300 Wichita KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murten 7  
 Location: Sec. 20 Twp. 5s Rge. 29W Co. \_\_\_\_\_ State KS

Interval Tested 3926-3947 Zone Tested LRC "D"  
 Anchor Length 21 Drill Pipe Run 3737 Mud Wt. 9.1  
 Top Packer Depth 3922 Drill Collars Run 186 Vis 52  
 Bottom Packer Depth 3926 Wt. Pipe Run 0 WL 6.4  
 Total Depth 3947 Chlorides 1060 ppm System LCM 116

Blow Description IF - Weak Surface Blow Built to 1"  
ISF - Very Weak Surface Blow in 20m  
FF - Weak Surface Blow Built to 1 1/4"  
FSF - Weak Surface Blow in 10m - Built to 1/4"

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>GOWCM</u>	<u>4</u>	<u>7</u>	<u>26</u>	<u>63</u>
<u>62</u>	<u>G-MCW with GRM oil</u>	<u>5</u>		<u>77</u>	<u>18</u>
	<u>94' of WOTP</u>				

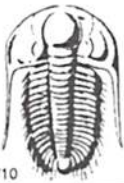
Rec Total 92 BHT 114 Gravity \_\_\_\_\_ API RW 381 @ 18 °F Chlorides 71000 ppm

(A) Initial Hydrostatic 1959  Test 1050 T-On Location 10:34  
 (B) First Initial Flow 18  Jars 250 T-Started 11:18  
 (C) First Final Flow 36  Safety Joint 75 T-Open 13:32  
 (D) Initial Shut-In 1145  Circ Sub NIC T-Pulled 17:37  
 (E) Second Initial Flow 37  Hourly Standby \_\_\_\_\_ T-Out 19:32  
 (F) Second Final Flow 67  Mileage 184 RIT 40 Comments \_\_\_\_\_  
 (G) Final Shut-In 1142  Sampler \_\_\_\_\_ Shop at Oberlin Shop  
 (H) Final Hydrostatic 1850  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1665  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90  
 Sub Total 1665

Approved By Rocky Milford Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58690

4/10

Well Name & No.	Shuler "A" # 2-20	Test No.	DST #3	Date	1-8-15
Company	Murfin Drilling Co	Elevation	2825	KB	2820 GL
Address	250 N. Water St. 300 Wichita KS 67202				
Co. Rep / Geo.	Rocky Milford	Rig	Murfin 7		
Location: Sec.	20	Twp.	5S	Rge.	29W
		Co.	Decatur	State	KS

Interval Tested	3945 - 3995	Zone Tested	LRC "E-G"
Anchor Length	50	Drill Pipe Run	3744
Top Packer Depth	3941	Drill Collars Run	186
Bottom Packer Depth	3945	Wt. Pipe Run	0
Total Depth	3995	Chlorides	1400 ppm System
Blow Description	IF - Weak Surface Blow Built to 1 1/2" ISF - No Blow FF - Weak Surface Blow Built to 3/4" FSF - No Blow		

Rec	Feet of	%gas	%oil	%water	%mud
64	Feet of WCM with oil spots			2	98
124	Feet of WCM with a glk of oil		4	%water	96
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total	188	BHT	124	Gravity	API RW	@	F	Chlorides	ppm
(A) Initial Hydrostatic	2016	<input checked="" type="checkbox"/> Test	1050	T-On Location	5:46				
(B) First Initial Flow	20	<input checked="" type="checkbox"/> Jars	250	T-Started	7:12				
(C) First Final Flow	54	<input checked="" type="checkbox"/> Safety Joint	75	T-Open	9:17				
(D) Initial Shut-In	716	<input checked="" type="checkbox"/> Circ Sub	NIC	T-Pulled	13:18				
(E) Second Initial Flow	59	<input type="checkbox"/> Hourly Standby		T-Out	15:33				
(F) Second Final Flow	108	<input checked="" type="checkbox"/> Mileage	184 RIT 40	Comments	Shy Oberlin Shop				
(G) Final Shut-In	698	<input type="checkbox"/> Sampler		<input type="checkbox"/> Ruined Shale Packer					
(H) Final Hydrostatic	1897	<input type="checkbox"/> Straddle		<input type="checkbox"/> Ruined Packer					
Initial Open	30	<input type="checkbox"/> Shale Packer		<input type="checkbox"/> Extra Copies					
Initial Shut-In	60	<input type="checkbox"/> Extra Packer		Sub Total	0				
Final Flow	60	<input type="checkbox"/> Extra Recorder		Total	1415				
Final Shut-In	90	<input type="checkbox"/> Day Standby		MP/DST Disc't					
		<input type="checkbox"/> Accessibility		Sub Total	1415				

Approved By Rocky Milford Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58691

Well Name & No. Shuler A #2-20 Test No. DST#4 Date 1-9-15  
 Company Murfin Drilling Co. Elevation 2825 KB 2820 GL  
 Address 250 N. Water Ste 300 Wichita KS 67202  
 Co. Rep / Geo. Rocky Milford Rig Murfin 7  
 Location: Sec. 20 Twp. 5S Rge. 29W Co. Decatur State KS

Interval Tested 3990 - 4085 Zone Tested LRC "H-R"  
 Anchor Length 95 Drill Pipe Run 3811 Mud Wt. 9.2  
 Top Packer Depth 3986 Drill Collars Run 186 Vis 56  
 Bottom Packer Depth 3990 Wt. Pipe Run 0 WL 6.0  
 Total Depth 4085 Chlorides 1400 ppm System LCM 115

Blow Description IF- Weal Surface Blow Bolt to 1/2"  
TSI- No Blow  
FF- No Blow  
FSI- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud with oil spts in Tool</u>			<u>100</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 10 BHT 115 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2017  Test 1150 T-On Location 3:26  
 (B) First Initial Flow 22  Jars 250 T-Started 4:18  
 (C) First Final Flow 27  Safety Joint 75 T-Open 6:35  
 (D) Initial Shut-In 628  Circ Sub NIC T-Pulled 9:41  
 (E) Second Initial Flow 31  Hourly Standby \_\_\_\_\_ T-Out 12:03  
 (F) Second Final Flow 33  Mileage 184 RIT 40 Comments \_\_\_\_\_  
 (G) Final Shut-In 467  Sampler \_\_\_\_\_ Stayed at obelin shop  
 (H) Final Hydrostatic 2005  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_

Initial Open 30  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Shut-In 60  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Flow 30  Day Standby \_\_\_\_\_ Total 1515  
 Final Shut-In 60  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1515

Approved By Rocky Milford Our Representative Kim

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