



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.21 @ 11:08:00

End Date: 2019.07.21 @ 13:13:45

Job Ticket #: DST #: 1

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

Printed: 2019.07.29 @ 15:33:23



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket:

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2019.07.21 @ 11:08:00

Tool Information

Drill Pipe:	Length: 2962.00 ft	Diameter: 3.82 inches	Volume: 41.99 bbl	Tool Weight:	2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose:	lb
			<u>Total Volume: 42.90 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial	lb
Depth to Top Packer:	3146.00 ft			Final	lb
Depth to Bottom Packer:	ft				
Interval between Packers:	22.00 ft				
Tool Length:	51.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3118.00	
Shut In Tool	5.00			3123.00	
Hydraulic tool	5.00			3128.00	
Jars	5.00			3133.00	
Safety Joint	3.00			3136.00	
Packer	5.00			3141.00	29.00 Bottom Of Top Packer
Packer	5.00			3146.00	
Stubb	1.00			3147.00	
Recorder	0.00	8934	Inside	3147.00	
Recorder	0.00	8352	Outside	3147.00	
Perforations	18.00			3165.00	
Bullnose	3.00			3168.00	22.00 Bottom Packers & Anchor

Total Tool Length: 51.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket:

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2019.07.21 @ 11:08:00

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: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3100.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl

Total Length: ft

Total Volume: bbl

Num Fluid Samples: 0

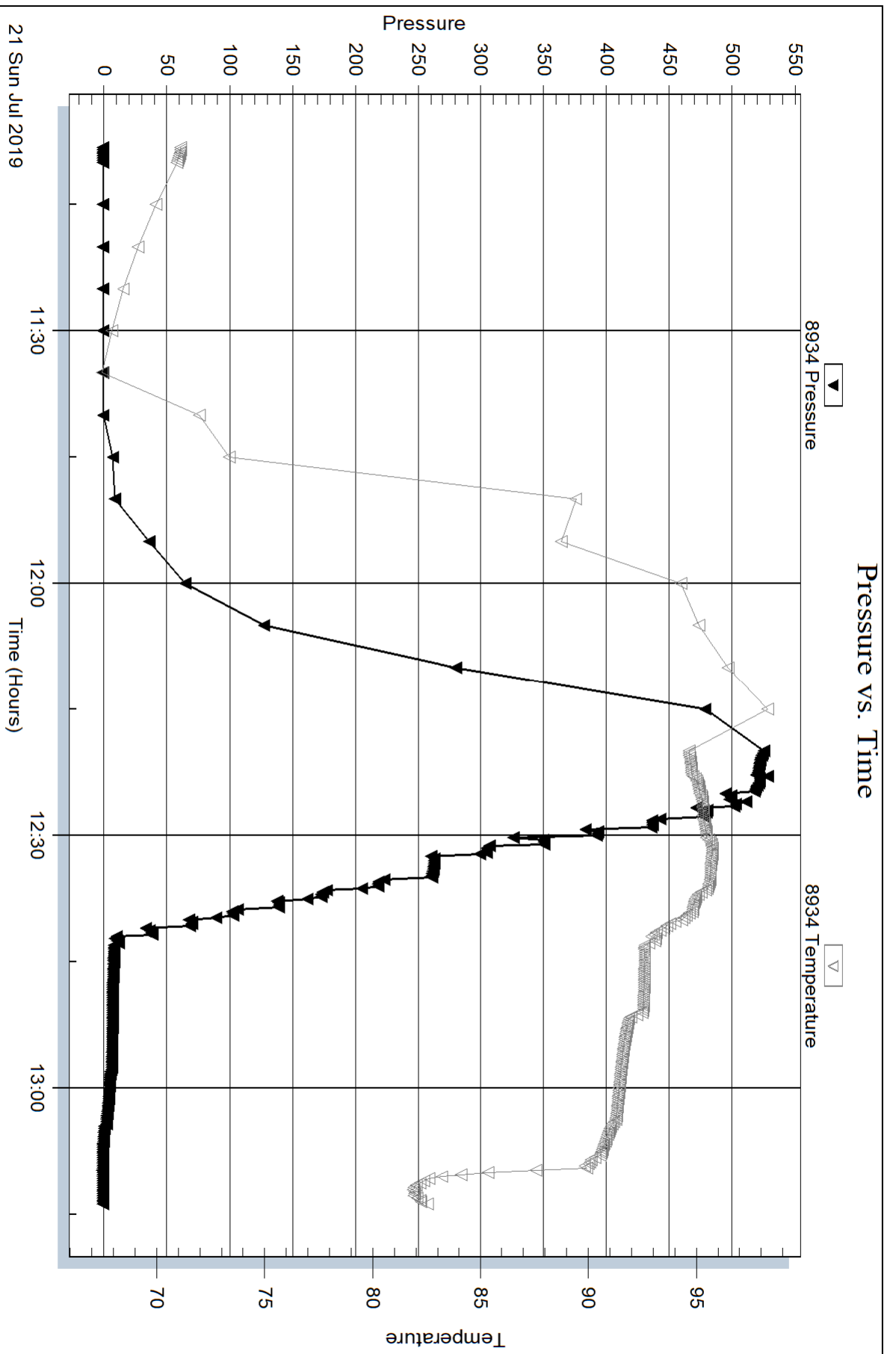
Num Gas Bombs: 0

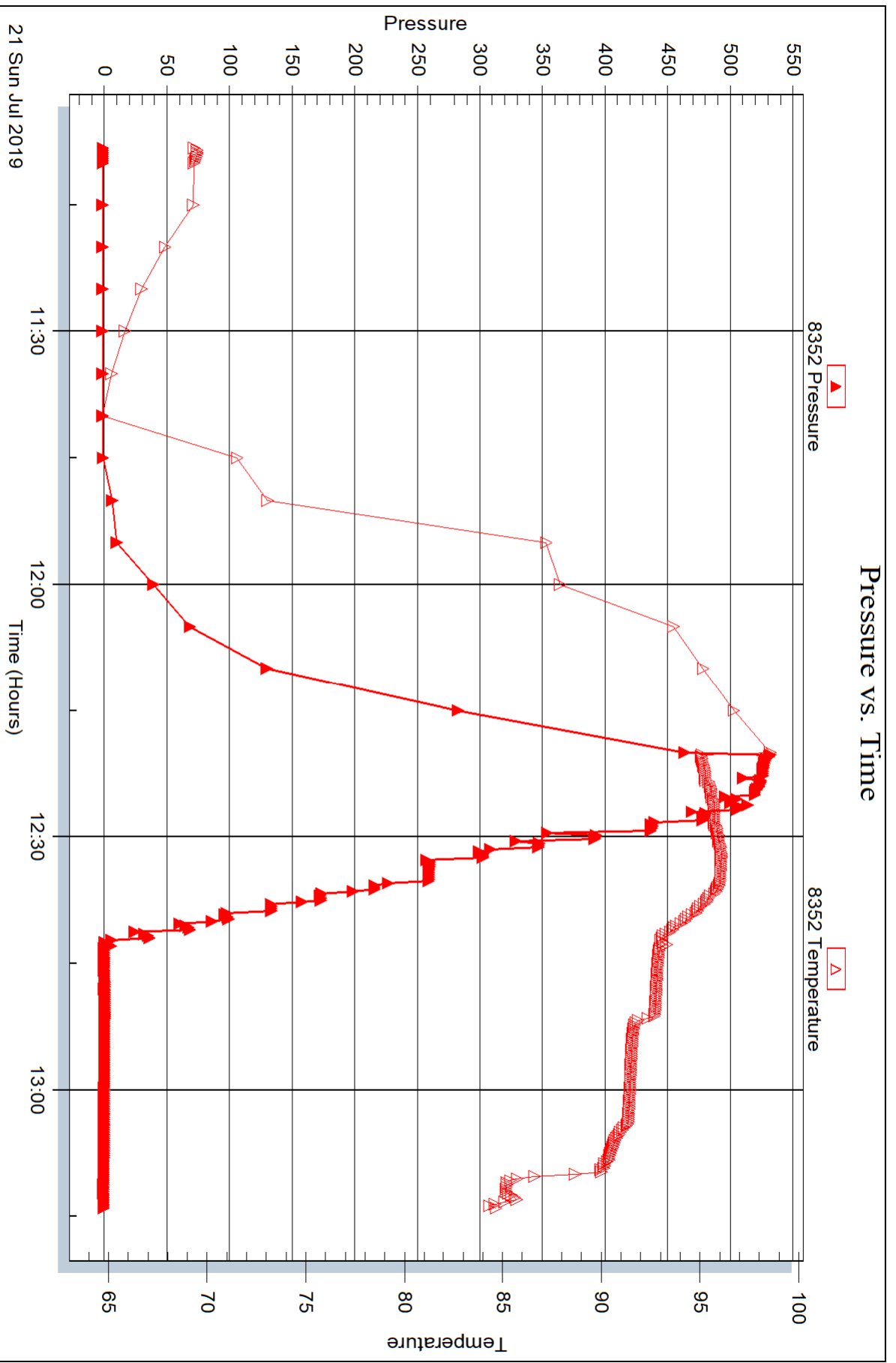
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.21 @ 16:30:00

End Date: 2019.07.21 @ 23:03:00

Job Ticket #: 65969 DST #: 2

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

Printed: 2019.07.29 @ 15:32:47



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65969

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2019.07.21 @ 16:30:00

GENERAL INFORMATION:

Formation: **Topeka**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:13:45

Time Test Ended: 23:03:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3146.00 ft (KB) To 3168.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3168.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 102.45 psig @ 3147.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.21

End Date:

2019.07.21

Last Calib.:

2019.07.21

Start Time: 16:30:15

End Time:

23:03:00

Time On Btm:

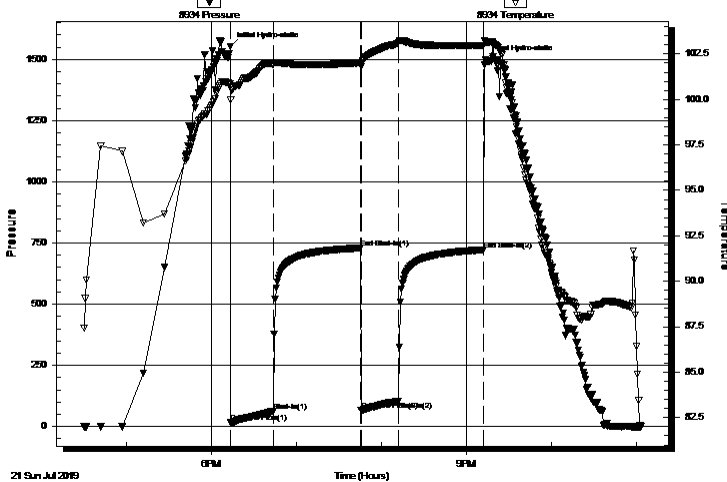
2019.07.21 @ 18:13:30

Time Off Btm:

2019.07.21 @ 21:13:15

TEST COMMENT: 30-IF-Fair; Built to 5"
60-ISI-No Return
30-FF-Weak; Built to 2 1/2"
60-FSI-No Return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1551.46	100.85	Initial Hydro-static
1	16.50	100.00	Open To Flow (1)
30	63.71	101.93	Shut-In(1)
92	729.65	102.01	End Shut-In(1)
92	66.08	101.80	Open To Flow (2)
119	102.45	103.11	Shut-In(2)
179	721.91	102.97	End Shut-In(2)
180	1498.97	103.15	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	HMCW 25%M 75%W	0.31
63.00	MW 50%M 50%W	0.31
74.00	WCM w/ oil spots 10%W 90%M	0.50

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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65969

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2019.07.21 @ 16:30:00

Tool Information

Drill Pipe:	Length: 2962.00 ft	Diameter: 3.82 inches	Volume: 41.99 bbl	Tool Weight: 2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 42.90 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3146.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	22.00 ft			
Tool Length:	51.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3118.00	
Shut In Tool	5.00			3123.00	
Hydraulic tool	5.00			3128.00	
Jars	5.00			3133.00	
Safety Joint	3.00			3136.00	
Packer	5.00			3141.00	29.00 Bottom Of Top Packer
Packer	5.00			3146.00	
Stubb	1.00			3147.00	
Recorder	0.00	8934	Inside	3147.00	
Recorder	0.00	8352	Outside	3147.00	
Perforations	18.00			3165.00	
Bullnose	3.00			3168.00	22.00 Bottom Packers & Anchor

Total Tool Length: 51.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65969

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2019.07.21 @ 16:30:00

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:

37000 ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3100.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
63.00	HMCW 25%M 75%W	0.310
63.00	MW 50%M 50%W	0.310
74.00	WCM w / oil spots 10%W 90%M	0.503

Total Length: 200.00 ft Total Volume: 1.123 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

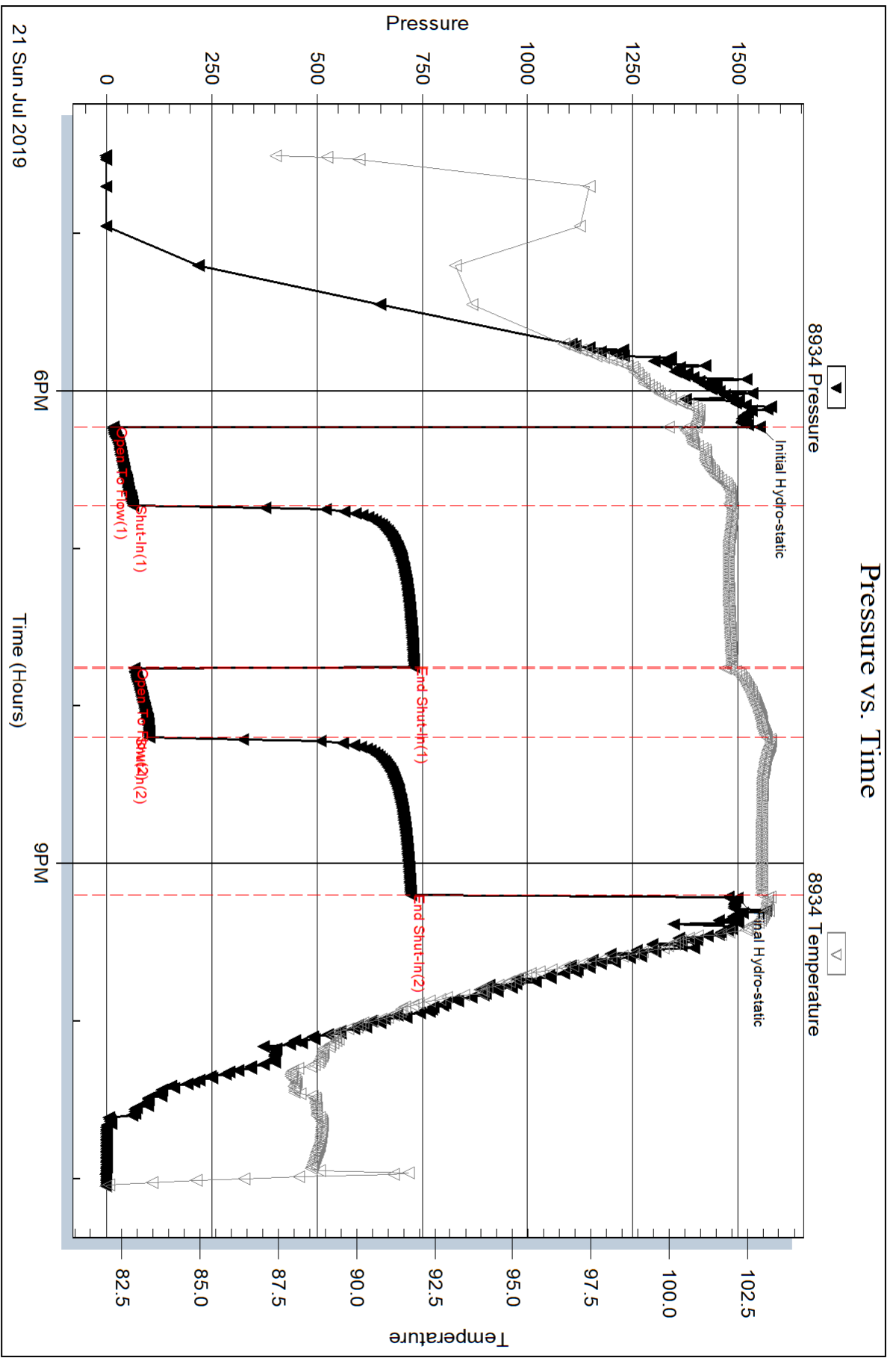
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM

RW=.191@72F

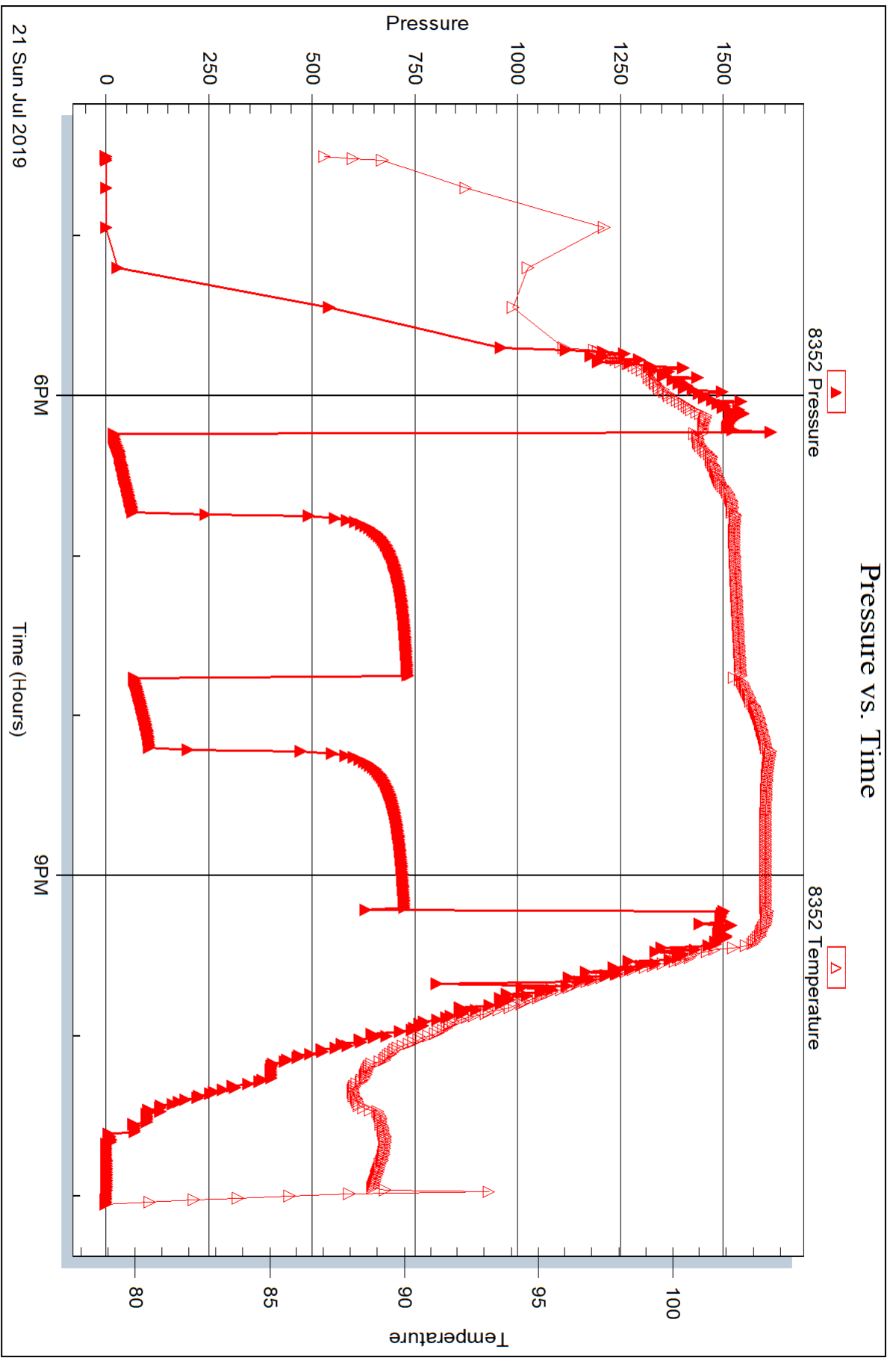


Serial #: 8352

Outside Murfin Drilling Company Inc

Stahl A' #1-30

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 65969

Printed: 2019.07.29 @ 15:32:48



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.23 @ 09:40:00

End Date: 2019.07.23 @ 16:26:00

Job Ticket #: 65970 DST #: 3

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

Printed: 2019.07.29 @ 15:30:01



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65970

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 09:40:00

GENERAL INFORMATION:

Formation: **Toronto - LKC 'B'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:35:30

Time Test Ended: 16:26:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3332.00 ft (KB) To 3426.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3426.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 345.19 psig @ 3335.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.23

End Date:

2019.07.23

Last Calib.:

2019.07.23

Start Time: 09:40:15

End Time:

16:26:00

Time On Btm:

2019.07.23 @ 11:35:00

Time Off Btm:

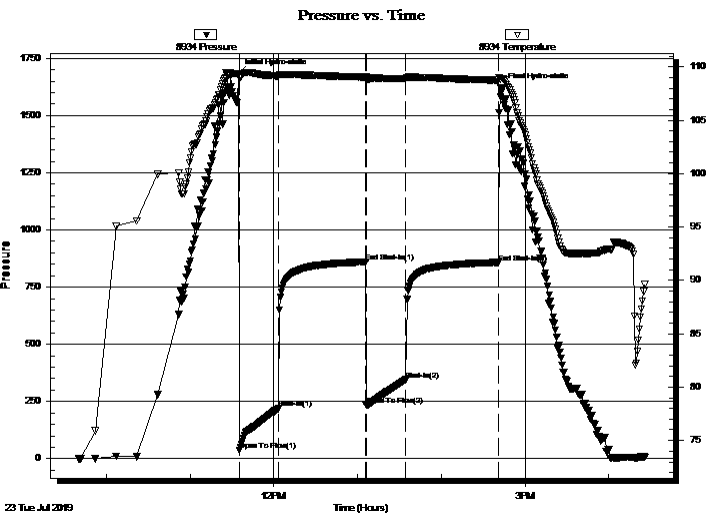
2019.07.23 @ 14:42:45

TEST COMMENT: 30-IF-BOB 9 mins; Built to 38"

60-ISI-No Return

30-FF-BOB 11 mins; Built to 32"

60-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1683.77	109.39	Initial Hydro-static
1	37.24	108.93	Open To Flow (1)
29	219.81	109.12	Shut-In(1)
91	859.25	109.02	End Shut-In(1)
92	232.90	108.74	Open To Flow (2)
120	345.19	108.88	Shut-In(2)
186	857.01	108.75	End Shut-In(2)
188	1622.69	108.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
500.00	HMCW 20%M 80%W	5.38

* 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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65970

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 09:40:00

Tool Information

Drill Pipe:	Length: 3152.00 ft	Diameter: 3.82 inches	Volume: 44.68 bbl	Tool Weight: 2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 51000.00 lb
			<u>Total Volume: 45.59 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	34.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3332.00 ft			Final 49000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	94.00 ft			
Tool Length:	123.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3304.00	
Shut In Tool	5.00			3309.00	
Hydraulic tool	5.00			3314.00	
Jars	5.00			3319.00	
Safety Joint	3.00			3322.00	
Packer	5.00			3327.00	29.00 Bottom Of Top Packer
Packer	5.00			3332.00	
Stubb	1.00			3333.00	
Perforations	1.00			3334.00	
Change Over Sub	1.00			3335.00	
Recorder	0.00	8934	Inside	3335.00	
Recorder	0.00	8352	Inside	3335.00	
Drill Pipe	64.00			3399.00	
Change Over Sub	1.00			3400.00	
Perforations	23.00			3423.00	
Bullnose	3.00			3426.00	94.00 Bottom Packers & Anchor
Total Tool Length:	123.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65970

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 09:40:00

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:

63000 ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
500.00	HMCW 20%M 80%W	5.375

Total Length: 500.00 ft Total Volume: 5.375 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

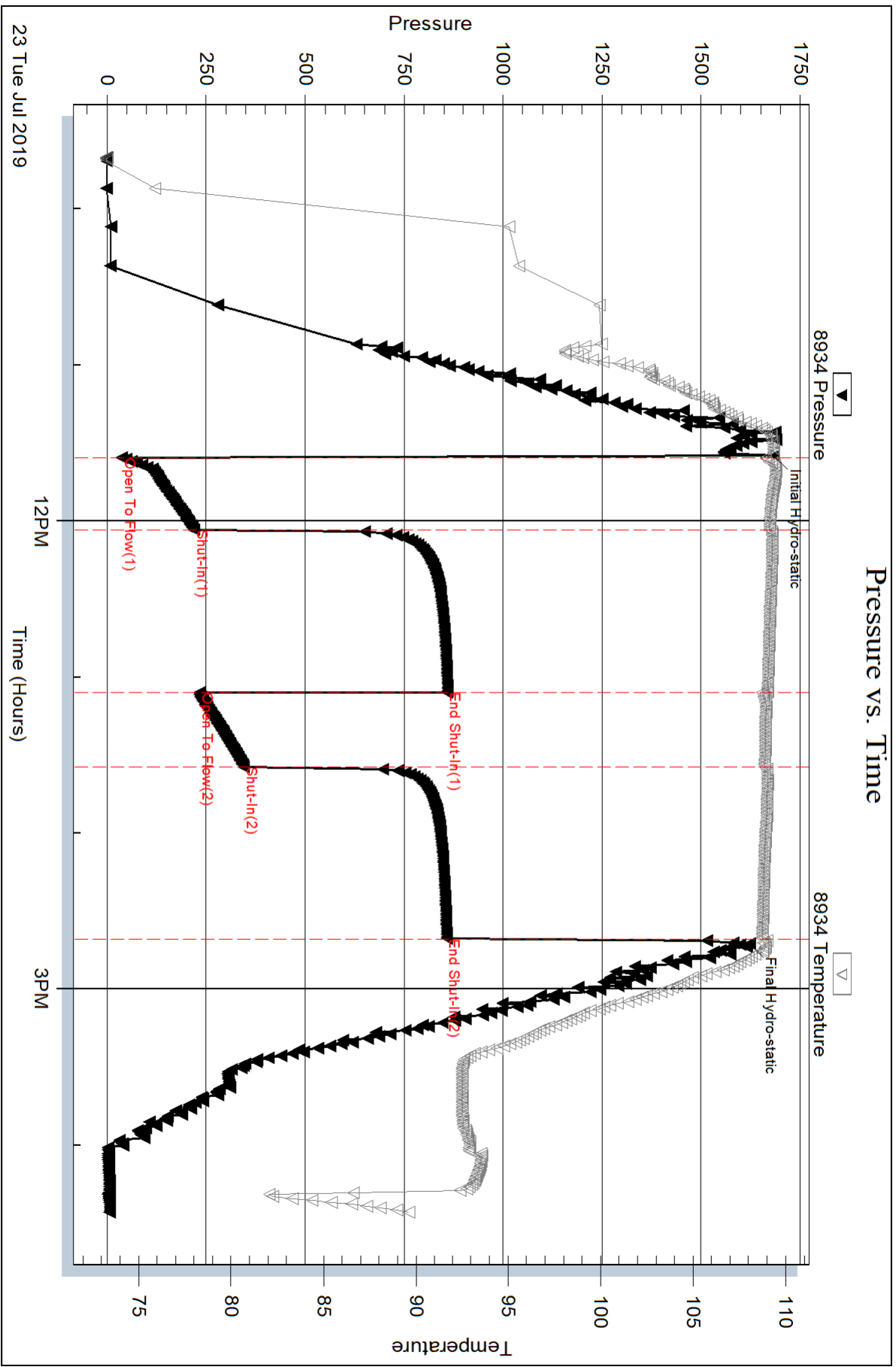
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM

RW=.105@84F





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.23 @ 21:58:00

End Date: 2019.07.24 @ 05:18:45

Job Ticket #: 65971 DST #: 4

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

Printed: 2019.07.29 @ 15:25:06

Murfin Drilling Company Inc
30-9s-19w Rooks,KS
Stahl 'A' #1-30
DST # 4
LKC D
2019.07.23



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65971

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 21:58:00

GENERAL INFORMATION:

Formation: **LKC D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:00:15

Time Test Ended: 05:18:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3425.00 ft (KB) To 3446.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3446.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 26.50 psig @ 3426.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.23

End Date:

2019.07.24

Last Calib.: 2019.07.24

Start Time: 21:58:15

End Time:

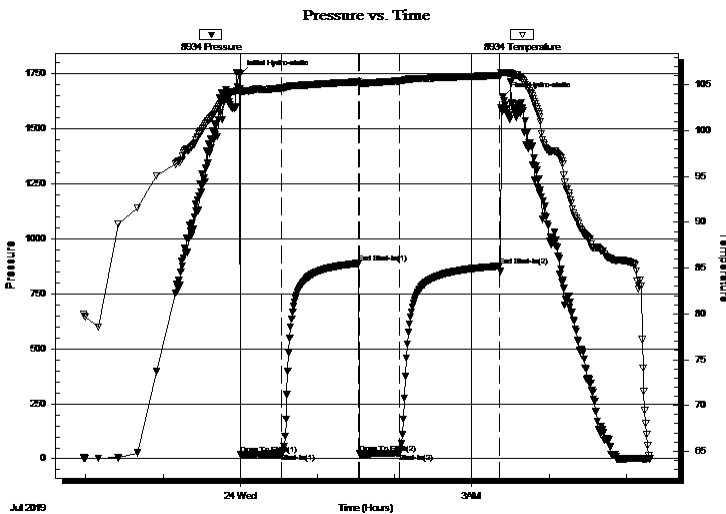
05:18:45

Time On Btm: 2019.07.23 @ 23:59:45

Time Off Btm: 2019.07.24 @ 03:24:15

TEST COMMENT: 30-IF-Weak; Built to 1"
60-ISI-No Return
30-FF-Weak Surface Blow
60-FSI-No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1747.26	104.61	Initial Hydro-static
1	18.76	104.34	Open To Flow (1)
33	23.59	104.65	Shut-In(1)
93	888.74	105.34	End Shut-In(1)
93	22.74	105.14	Open To Flow (2)
124	26.50	105.43	Shut-In(2)
202	876.38	106.04	End Shut-In(2)
205	1646.40	106.36	Final Hydro-static

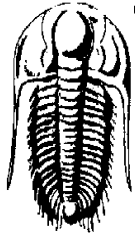
Recovery

Length (ft)	Description	Volume (bbl)
20.00	WCM 15%W 85%M	0.10

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65971

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 21:58:00

GENERAL INFORMATION:

Formation: **LKC D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:00:15

Time Test Ended: 05:18:45

Interval: 3425.00 ft (KB) To 3446.00 ft (KB) (TVD)

Total Depth: 3446.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Reference Elevations: 2163.00 ft (KB)

2158.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 9120

Outside

Press@RunDepth: psig @ 3426.00 ft (KB)

Start Date: 2019.07.23

End Date:

2019.07.24

Start Time: 21:58:15

End Time:

05:18:45

Capacity: 8000.00 psig

Last Calib.:

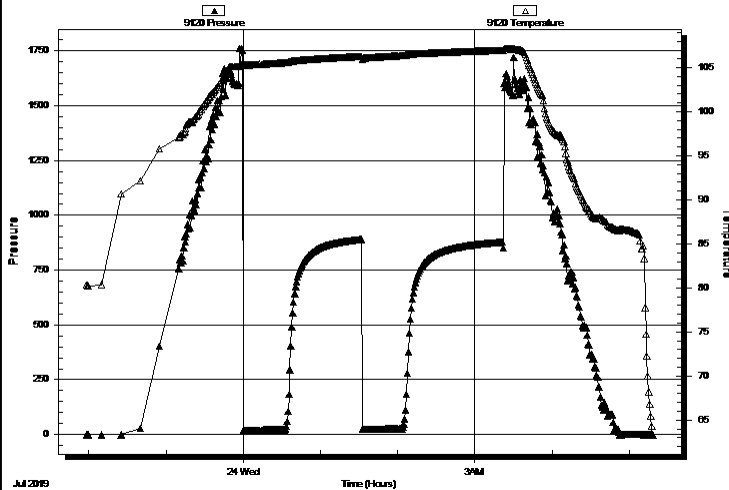
2019.07.24

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF-Weak; Built to 1"
60-ISI-No Return
30-FF-Weak Surface Blow
60-FSI-No Return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
20.00	WCM 15%W 85%M	0.10

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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65971

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 21:58:00

Tool Information

Drill Pipe:	Length: 3216.00 ft	Diameter: 3.82 inches	Volume: 45.59 bbl	Tool Weight: 2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 53000.00 lb
			<u>Total Volume: 46.50 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3425.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	21.00 ft			
Tool Length:	50.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		
Tool Comments:				

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3397.00	
Shut In Tool	5.00			3402.00	
Hydraulic tool	5.00			3407.00	
Jars	5.00			3412.00	
Safety Joint	3.00			3415.00	
Packer	5.00			3420.00	29.00 Bottom Of Top Packer
Packer	5.00			3425.00	
Stubb	1.00			3426.00	
Recorder	0.00	8934	Inside	3426.00	
Recorder	0.00	9120	Outside	3426.00	
Perforations	17.00			3443.00	
Bullnose	3.00			3446.00	21.00 Bottom Packers & Anchor

Total Tool Length: 50.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65971

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2019.07.23 @ 21:58:00

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: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	WCM 15%W 85%M	0.098

Total Length: 20.00 ft Total Volume: 0.098 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM

RW=.132@57F

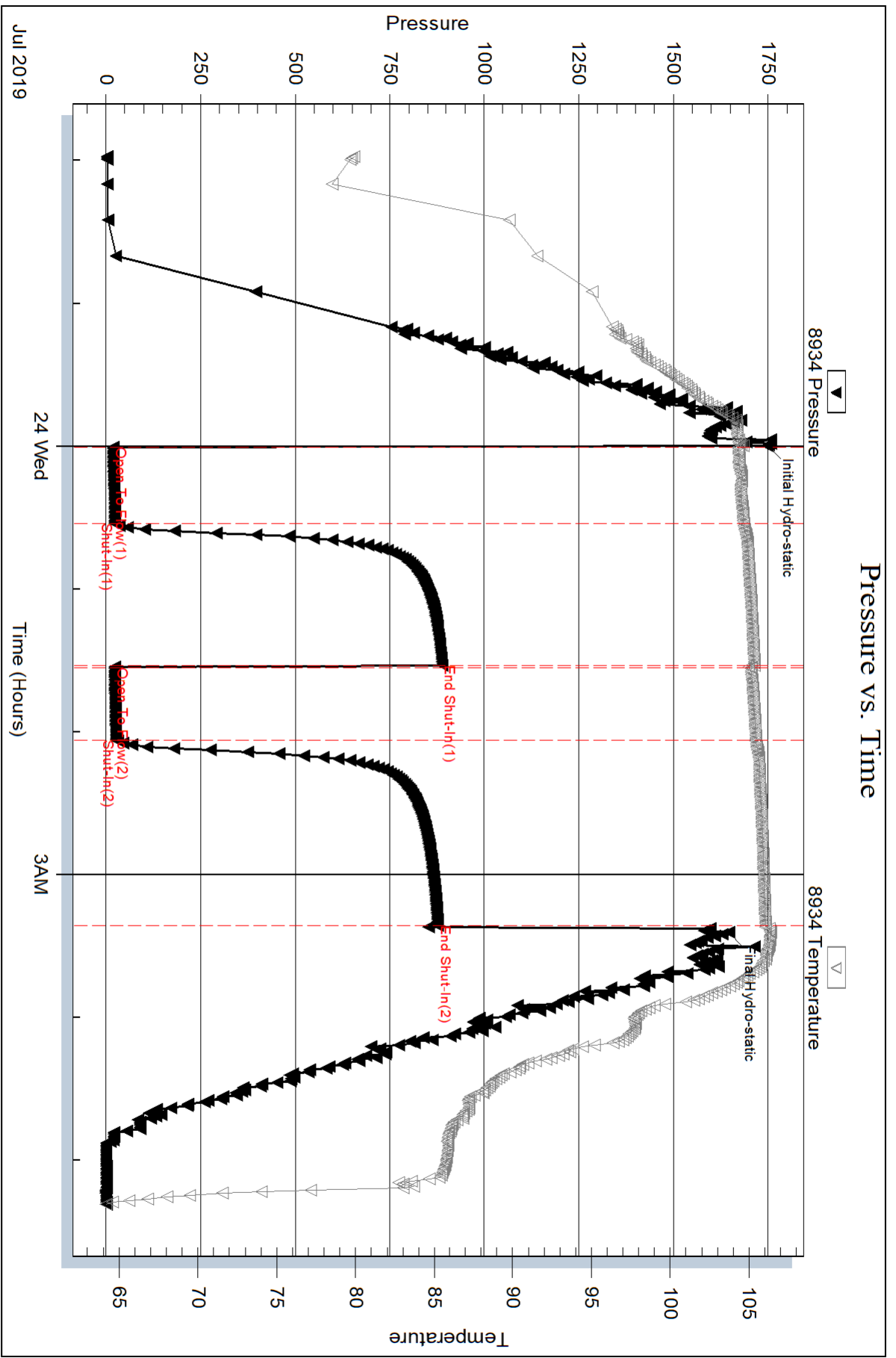
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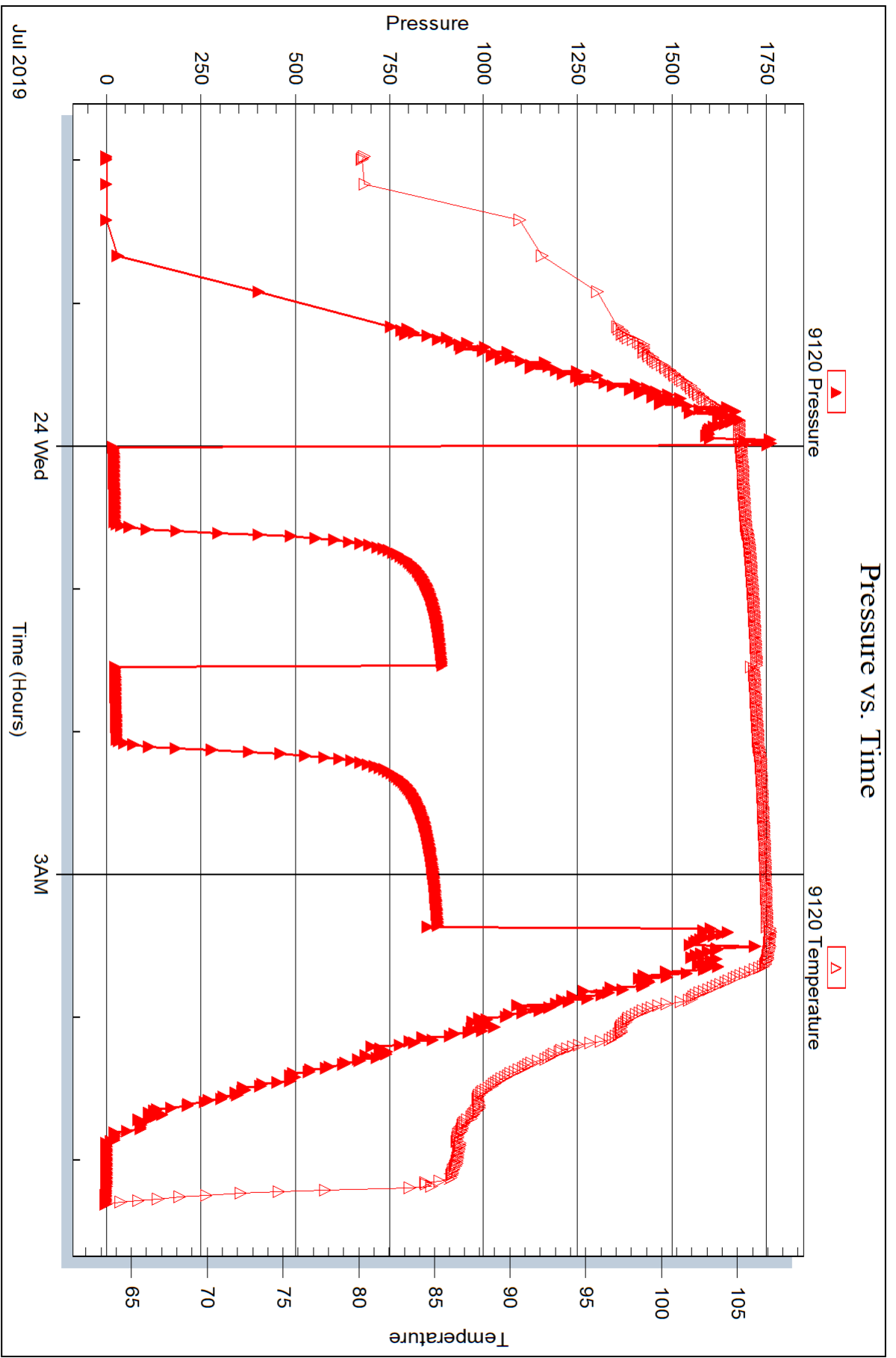
Inside

Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 4







DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.24 @ 11:30:00

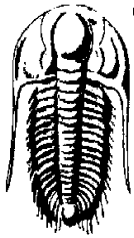
End Date: 2019.07.24 @ 18:17:30

Job Ticket #: 65972 DST #: 5

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

Printed: 2019.07.29 @ 15:24:38

Murfin Drilling Company Inc
30-9s-19w Rooks,KS
Stahl 'A' #1-30
DST # 5
LKC 'E-F'
2019.07.24



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65972

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2019.07.24 @ 11:30:00

GENERAL INFORMATION:

Formation: **LKC 'E-F'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:27:30

Time Test Ended: 18:17:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3446.00 ft (KB) To 3467.00 ft (KB) (TVD)

Total Depth: 3446.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2163.00 ft (KB)

2158.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 885.89 psig @ 3447.00 ft (KB)

Start Date: 2019.07.24

End Date: 2019.07.24

Start Time: 11:30:15

End Time: 18:17:30

Capacity: 8000.00 psig

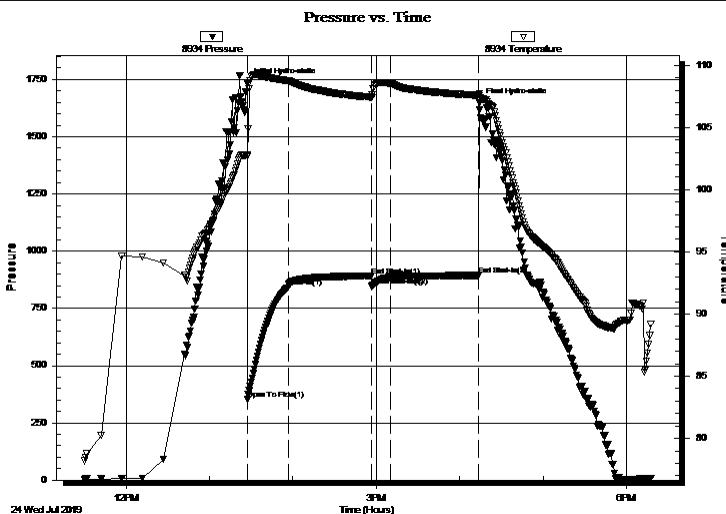
Last Calib.: 2019.07.24

Time On Btm: 2019.07.24 @ 13:27:00

Time Off Btm: 2019.07.24 @ 16:14:00

TEST COMMENT: 30-IF-BOB 45 secs; Built to 343"
60-ISI-Weak Surface Blow after 10 mins; Died 40 mins in
15-FF-BOB 1 min; Built to 23"
60-FSI-No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1734.66	102.77	Initial Hydro-static
1	351.38	102.67	Open To Flow (1)
30	841.94	108.75	Shut-In(1)
90	891.92	107.41	End Shut-In(1)
90	846.24	107.38	Open To Flow (2)
104	885.89	108.51	Shut-In(2)
167	894.49	107.62	End Shut-In(2)
167	1647.66	107.71	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1690.00	Water 100%W	22.24
200.00	MW 50%M 50%W	2.84
10.00	OSM 100%M	0.14

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65972

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2019.07.24 @ 11:30:00

GENERAL INFORMATION:

Formation: **LKC 'E-F'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:27:30

Time Test Ended: 18:17:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3446.00 ft (KB) To 3467.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3446.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 9120 Outside

Press@RunDepth: psig @ 3447.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.24 End Date: 2019.07.24

Last Calib.: 2019.07.24

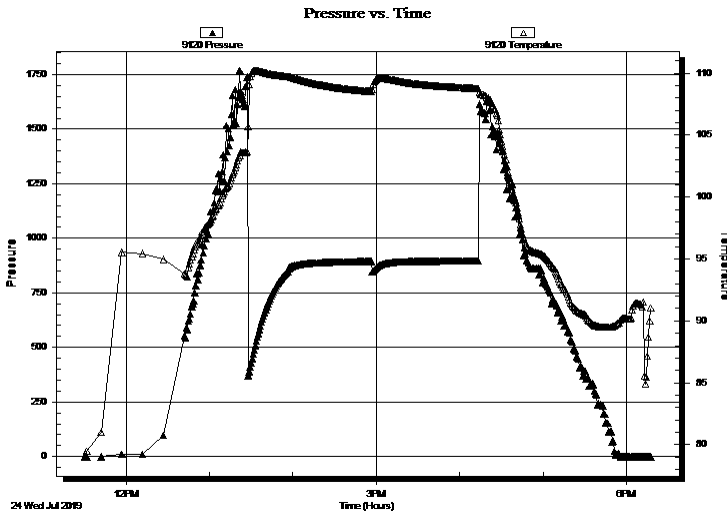
Start Time: 11:30:15 End Time: 18:17:30

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF-BOB 45 secs; Built to 343"
60-ISI-Weak Surface Blow after 10 mins; Died 40 mins in
15-FF-BOB 1 min; Built to 23"
60-FSI-No Return

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
1690.00	Water 100%W	22.24
200.00	MW 50%M 50%W	2.84
10.00	OSM 100%M	0.14

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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65972

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2019.07.24 @ 11:30:00

Tool Information

Drill Pipe:	Length: 3247.00 ft	Diameter: 3.82 inches	Volume: 46.03 bbl	Tool Weight: 2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 46.94 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 43000.00 lb
Depth to Top Packer:	3446.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	21.00 ft			
Tool Length:	50.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3418.00	
Shut In Tool	5.00			3423.00	
Hydraulic tool	5.00			3428.00	
Jars	5.00			3433.00	
Safety Joint	3.00			3436.00	
Packer	5.00			3441.00	29.00 Bottom Of Top Packer
Packer	5.00			3446.00	
Stubb	1.00			3447.00	
Recorder	0.00	8934	Inside	3447.00	
Recorder	0.00	9120	Outside	3447.00	
Perforations	17.00			3464.00	
Bullnose	3.00			3467.00	21.00 Bottom Packers & Anchor

Total Tool Length: 50.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65972

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2019.07.24 @ 11:30:00

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:

86000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1690.00	Water 100%W	22.244
200.00	MW 50%M 50%W	2.835
10.00	OSM 100%M	0.142

Total Length: 1900.00 ft Total Volume: 25.221 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 1#LCM

RW=.069@90F

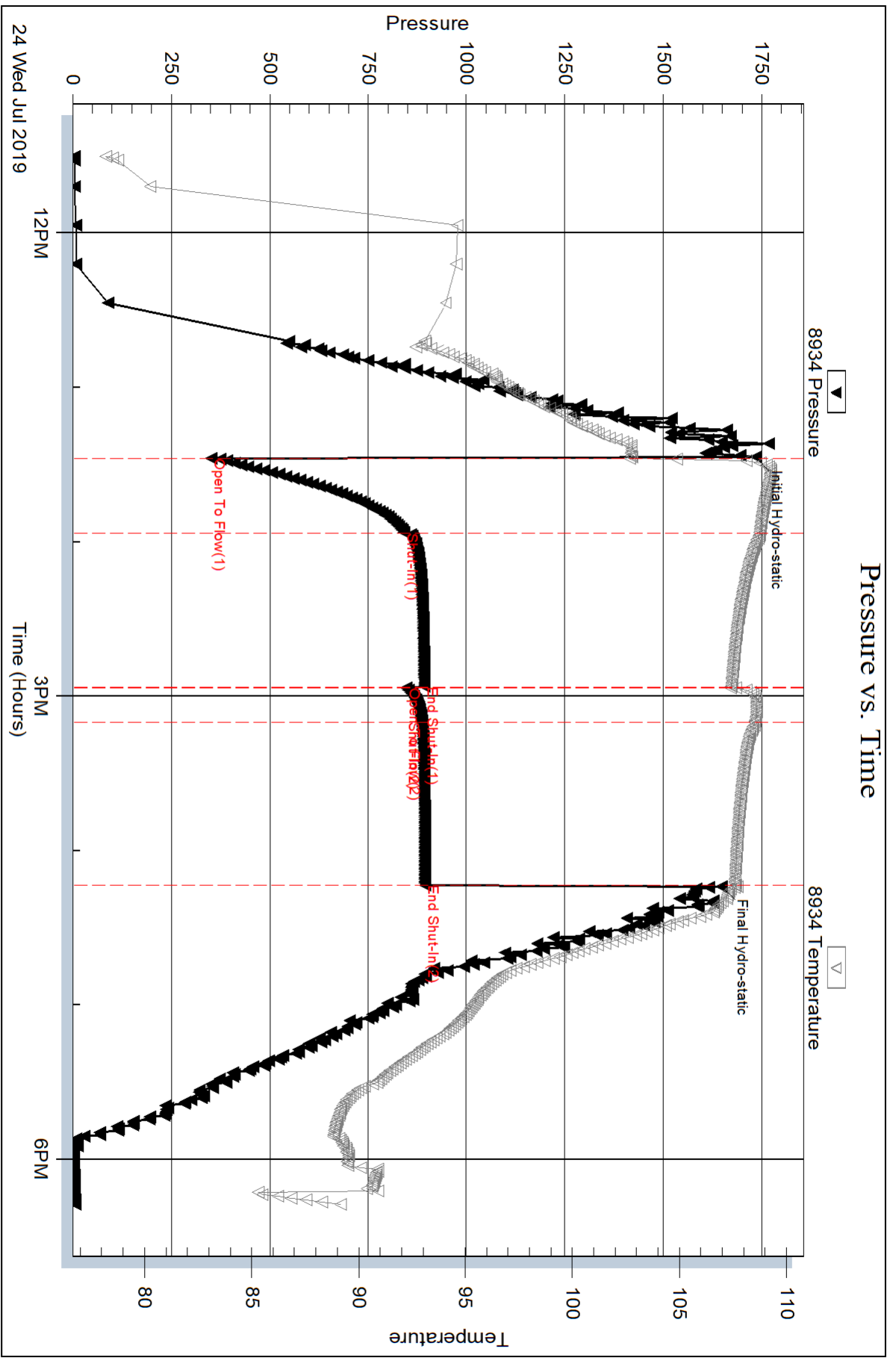
Serial #: 8934

Inside

Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 65972

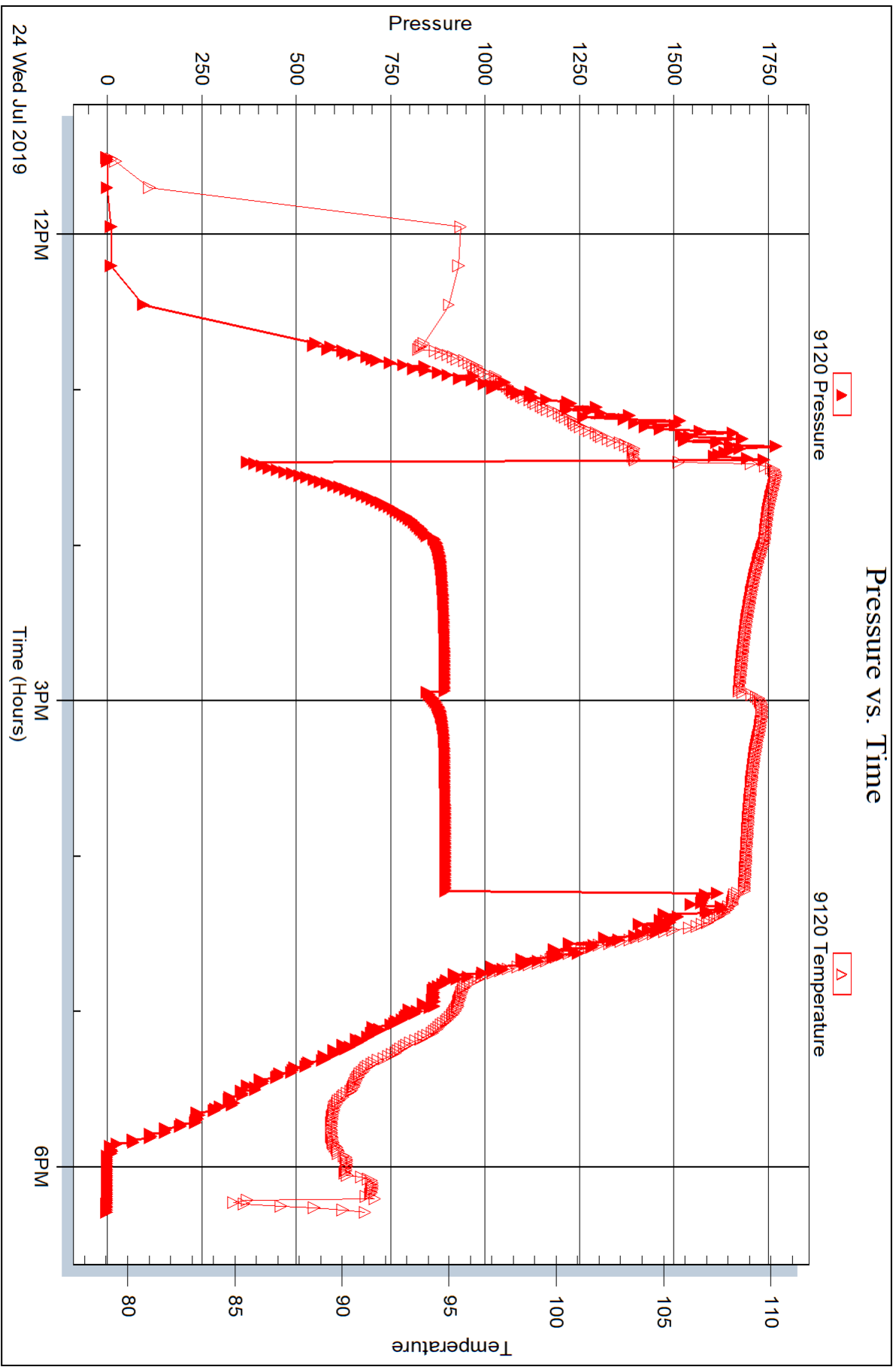
Printed: 2019.07.29 @ 15:24:39

Serial #: 9120

Outside Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 65972

Printed: 2019.07.29 @ 15:24:39



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.25 @ 05:35:00

End Date: 2019.07.25 @ 12:21:45

Job Ticket #: 65973 DST #: 6

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

Printed: 2019.07.29 @ 15:21:43

Murfin Drilling Company Inc
30-9s-19w Rooks,KS
Stahl 'A' #1-30
DST # 6
LKC 'H-J'
2019.07.25



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65973

DST#: 6

ATTN: Paul Gunzelman

Test Start: 2019.07.25 @ 05:35:00

GENERAL INFORMATION:

Formation: **LKC 'H-J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:31:45

Time Test Ended: 12:21:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3496.00 ft (KB) To 3560.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3560.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 32.96 psig @ 3499.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.25

End Date:

2019.07.25

Last Calib.:

2019.07.25

Start Time: 05:35:15

End Time:

12:21:45

Time On Btm:

2019.07.25 @ 07:31:30

Time Off Btm:

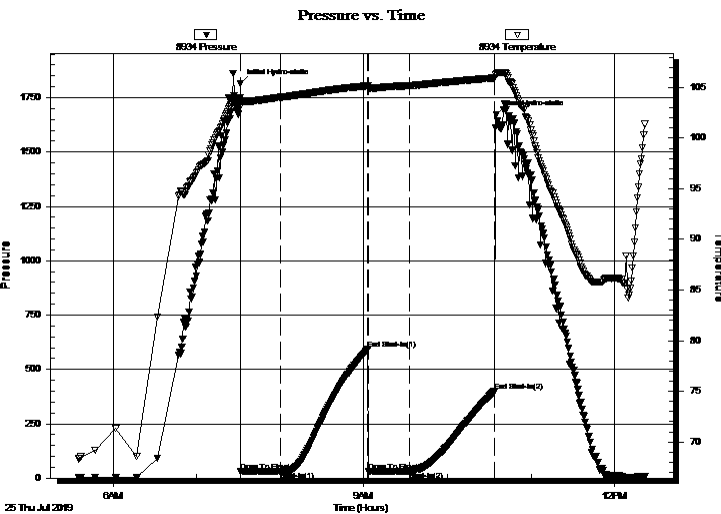
2019.07.25 @ 10:35:00

TEST COMMENT: 30-IF-Weak; Built to 1/4"; Died back to Surface

60-ISI-No Return

30-FF-No Blow

60-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1815.40	104.00	Initial Hydro-static
1	30.93	103.26	Open To Flow (1)
29	32.43	104.03	Shut-In(1)
92	592.47	105.18	End Shut-In(1)
92	32.71	104.99	Open To Flow (2)
122	32.96	105.19	Shut-In(2)
183	399.77	105.94	End Shut-In(2)
184	1672.08	106.40	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud 100%M	0.07

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc
 250 N Water STE 300
 Wichita KS 67202+1216
 ATTN: Paul Gunzelman

30-9s-19w Rooks, KS

Stahl 'A' #1-30

Job Ticket: 65973

DST#: 6

Test Start: 2019.07.25 @ 05:35:00

GENERAL INFORMATION:

Formation: **LKC 'H-J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:31:45

Time Test Ended: 12:21:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3496.00 ft (KB) To 3560.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3560.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 9120 Outside

Press@RunDepth: psig @ 3499.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.25 End Date: 2019.07.25

Last Calib.: 2019.07.25

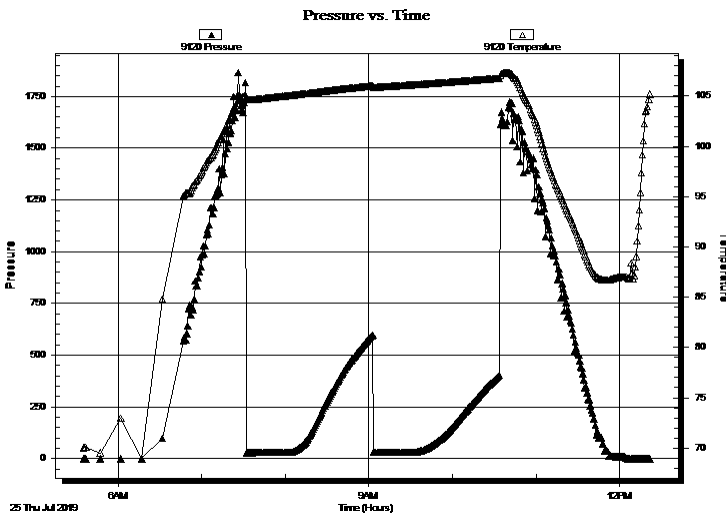
Start Time: 05:35:15 End Time: 12:21:45

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF-Weak; Built to 1/4"; Died back to Surface
 60-ISI-No Return
 30-FF-No Blow
 60-FSI-No Return

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud 100%M	0.07

* 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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65973

DST#: 6

ATTN: Paul Gunzelman

Test Start: 2019.07.25 @ 05:35:00

Tool Information

Drill Pipe:	Length: 3311.00 ft	Diameter: 3.82 inches	Volume: 46.93 bbl	Tool Weight:	2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose:	48000.00 lb
			<u>Total Volume: 47.84 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial	45000.00 lb
Depth to Top Packer:	3496.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	64.00 ft				
Tool Length:	93.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			
Tool Comments:					

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3468.00	
Shut In Tool	5.00			3473.00	
Hydraulic tool	5.00			3478.00	
Jars	5.00			3483.00	
Safety Joint	3.00			3486.00	
Packer	5.00			3491.00	29.00 Bottom Of Top Packer
Packer	5.00			3496.00	
Stubb	1.00			3497.00	
Perforations	1.00			3498.00	
Change Over Sub	1.00			3499.00	
Recorder	0.00	8934	Inside	3499.00	
Recorder	0.00	9120	Outside	3499.00	
Drill Pipe	32.00			3531.00	
Change Over Sub	1.00			3532.00	
Perforations	25.00			3557.00	
Bullnose	3.00			3560.00	64.00 Bottom Packers & Anchor
Total Tool Length:	93.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65973

DST#: 6

ATTN: Paul Gunzelman

Test Start: 2019.07.25 @ 05:35:00

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: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	Mud 100%M	0.074

Total Length: 15.00 ft Total Volume: 0.074 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

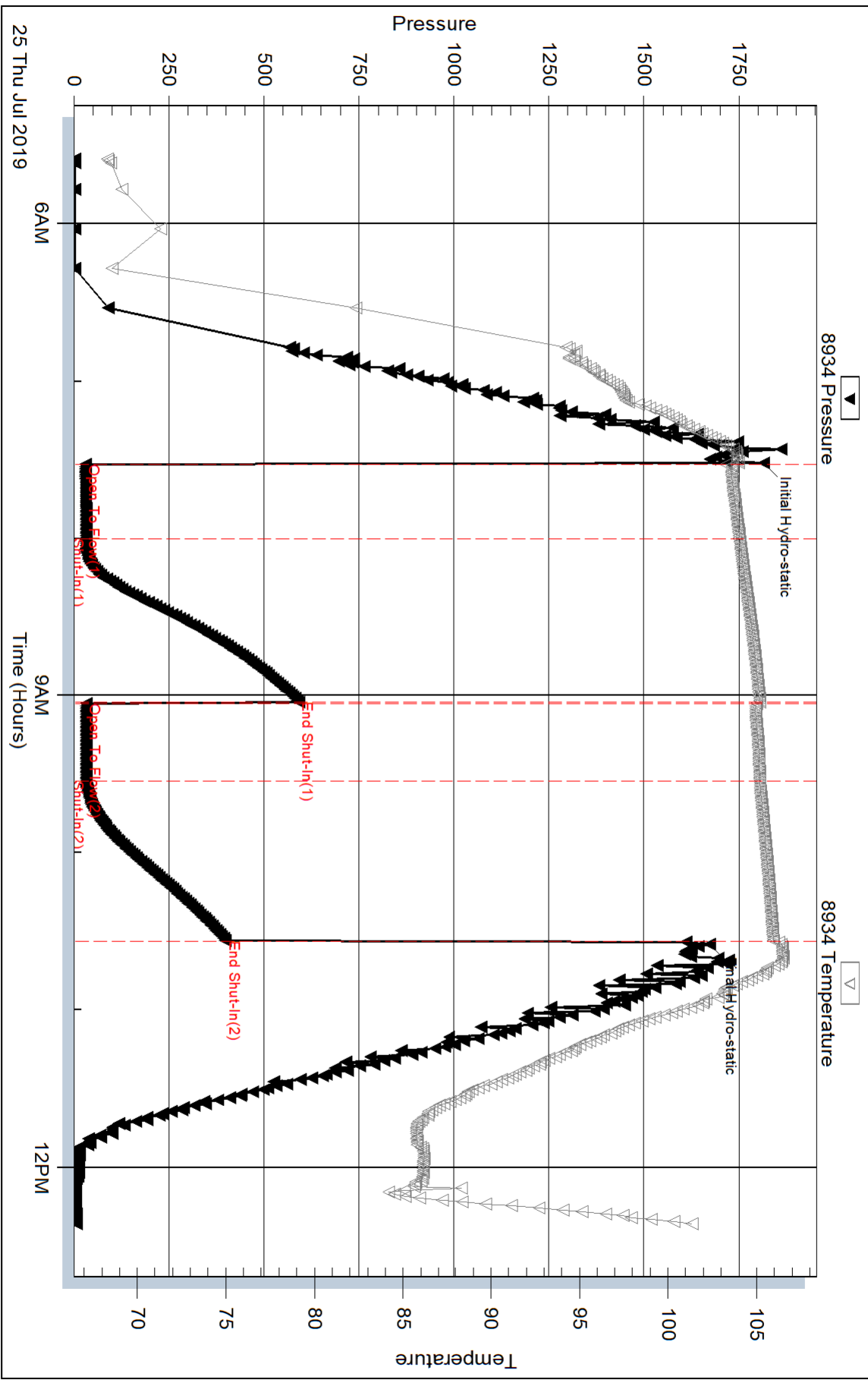
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 1#LCM

Pressure vs. Time

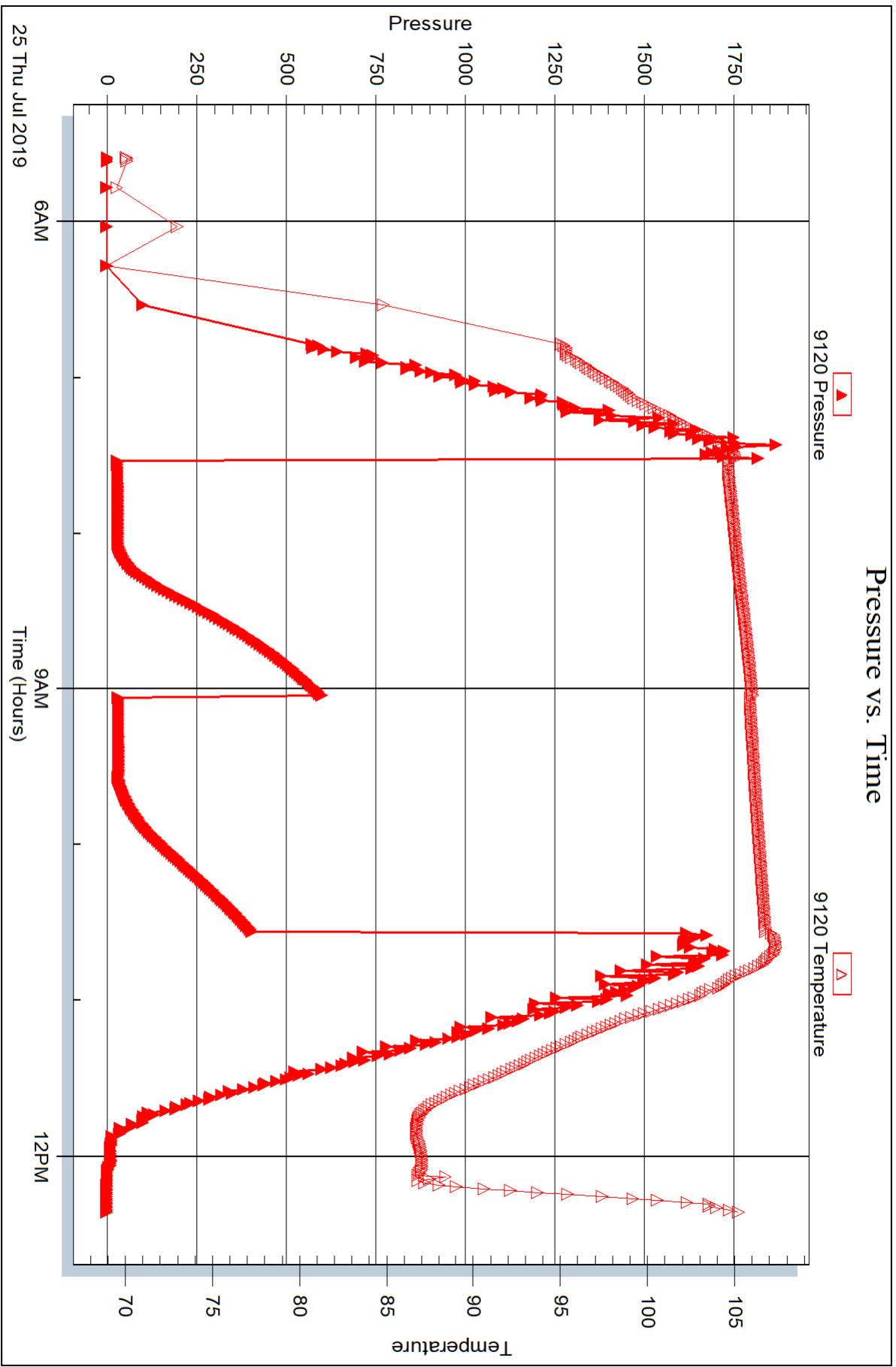


Serial #: 9120

Outside Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 65973

Printed: 2019.07.29 @ 15:21:44



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company Inc**

250 N Water STE 300
Wichita KS 67202+1216

ATTN: Paul Gunzelman

Stahl 'A' #1-30

30-9s-19w Rooks,KS

Start Date: 2019.07.26 @ 01:05:00

End Date: 2019.07.26 @ 07:48:30

Job Ticket #: 65974 DST #: 7

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

Printed: 2019.07.29 @ 15:20:31



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65974

DST#: 7

ATTN: Paul Gunzelman

Test Start: 2019.07.26 @ 01:05:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:52:45

Time Test Ended: 07:48:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J Staab

Unit No: 84

Interval: 3608.00 ft (KB) To 3650.00 ft (KB) (TVD)

Reference Elevations: 2163.00 ft (KB)

Total Depth: 3650.00 ft (KB) (TVD)

2158.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8934

Inside

Press@RunDepth: 24.39 psig @ 3611.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.26

End Date: 2019.07.26

Last Calib.: 2019.07.26

Start Time: 01:05:15

End Time: 07:48:30

Time On Btm: 2019.07.26 @ 02:52:15

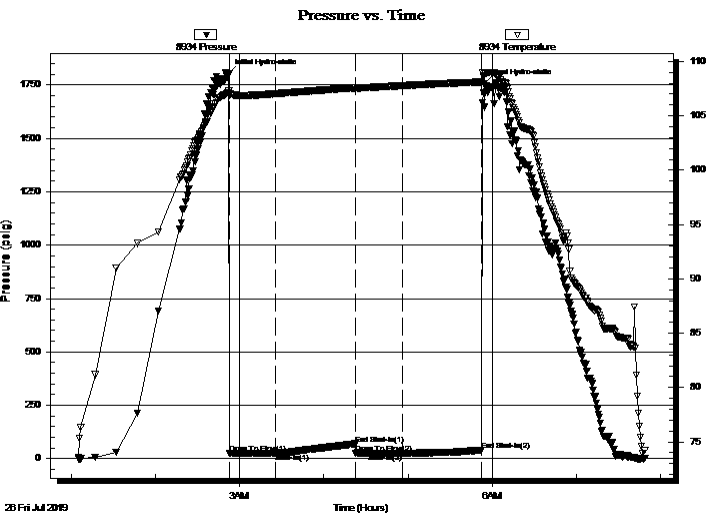
Time Off Btm: 2019.07.26 @ 05:54:15

TEST COMMENT: 30-IF-Weak Surface; Built to 1/4"; Died back to Surface

60-ISI-No Return

30-FF-No Blow

60FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1803.94	107.27	Initial Hydro-static
1	24.31	106.89	Open To Flow (1)
34	25.17	107.03	Shut-In(1)
91	68.71	107.56	End Shut-In(1)
91	26.46	107.55	Open To Flow (2)
124	24.39	107.77	Shut-In(2)
181	39.86	108.12	End Shut-In(2)
182	1757.67	108.68	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
3.00	Mud 100%M	0.01

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65974

DST#: 7

ATTN: Paul Gunzelman

Test Start: 2019.07.26 @ 01:05:00

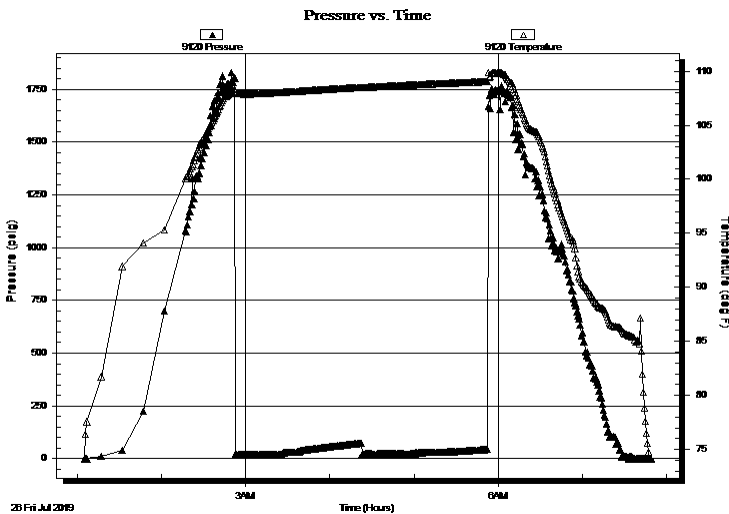
GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 02:52:45 Tester: Spencer J Staab
 Time Test Ended: 07:48:30 Unit No: 84
 Interval: **3608.00 ft (KB) To 3650.00 ft (KB) (TVD)** Reference Elevations: 2163.00 ft (KB)
 Total Depth: 3650.00 ft (KB) (TVD) 2158.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 9120 Outside

Press@RunDepth: psig @ 3611.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.26 End Date: 2019.07.26 Last Calib.: 2019.07.26
 Start Time: 01:05:15 End Time: 07:48:30 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IF-Weak Surface; Built to 1/4"; Died back to Surface
 60-ISI-No Return
 30-FF-No Blow
 60FSI-No Return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
3.00	Mud 100%M	0.01

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 Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65974

DST#: 7

ATTN: Paul Gunzelman

Test Start: 2019.07.26 @ 01:05:00

Tool Information

Drill Pipe:	Length: 3407.00 ft	Diameter: 3.82 inches	Volume: 48.30 bbl	Tool Weight:	2200.00 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: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume: 49.21 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	13.00 ft			String Weight: Initial	46000.00 lb
Depth to Top Packer:	3608.00 ft			Final	46000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	42.00 ft				
Tool Length:	71.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3580.00	
Shut In Tool	5.00			3585.00	
Hydraulic tool	5.00			3590.00	
Jars	5.00			3595.00	
Safety Joint	3.00			3598.00	
Packer	5.00			3603.00	29.00 Bottom Of Top Packer
Packer	5.00			3608.00	
Stubb	1.00			3609.00	
Perforations	1.00			3610.00	
Change Over Sub	1.00			3611.00	
Recorder	0.00	8934	Inside	3611.00	
Recorder	0.00	9120	Outside	3611.00	
Drill Pipe	32.00			3643.00	
Change Over Sub	1.00			3644.00	
Perforations	3.00			3647.00	
Bullnose	3.00			3650.00	42.00 Bottom Packers & Anchor
Total Tool Length:	71.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Company Inc

30-9s-19w Rooks,KS

250 N Water STE 300
Wichita KS 67202+1216

Stahl 'A' #1-30

Job Ticket: 65974

DST#: 7

ATTN: Paul Gunzelman

Test Start: 2019.07.26 @ 01:05:00

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: 41.00 sec/qt

Cushion Volume: bbl

Water Loss: 17.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure: psig

Salinity: 7000.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
3.00	Mud 100%M	0.015

Total Length: 3.00 ft Total Volume: 0.015 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM

Serial #: 8934

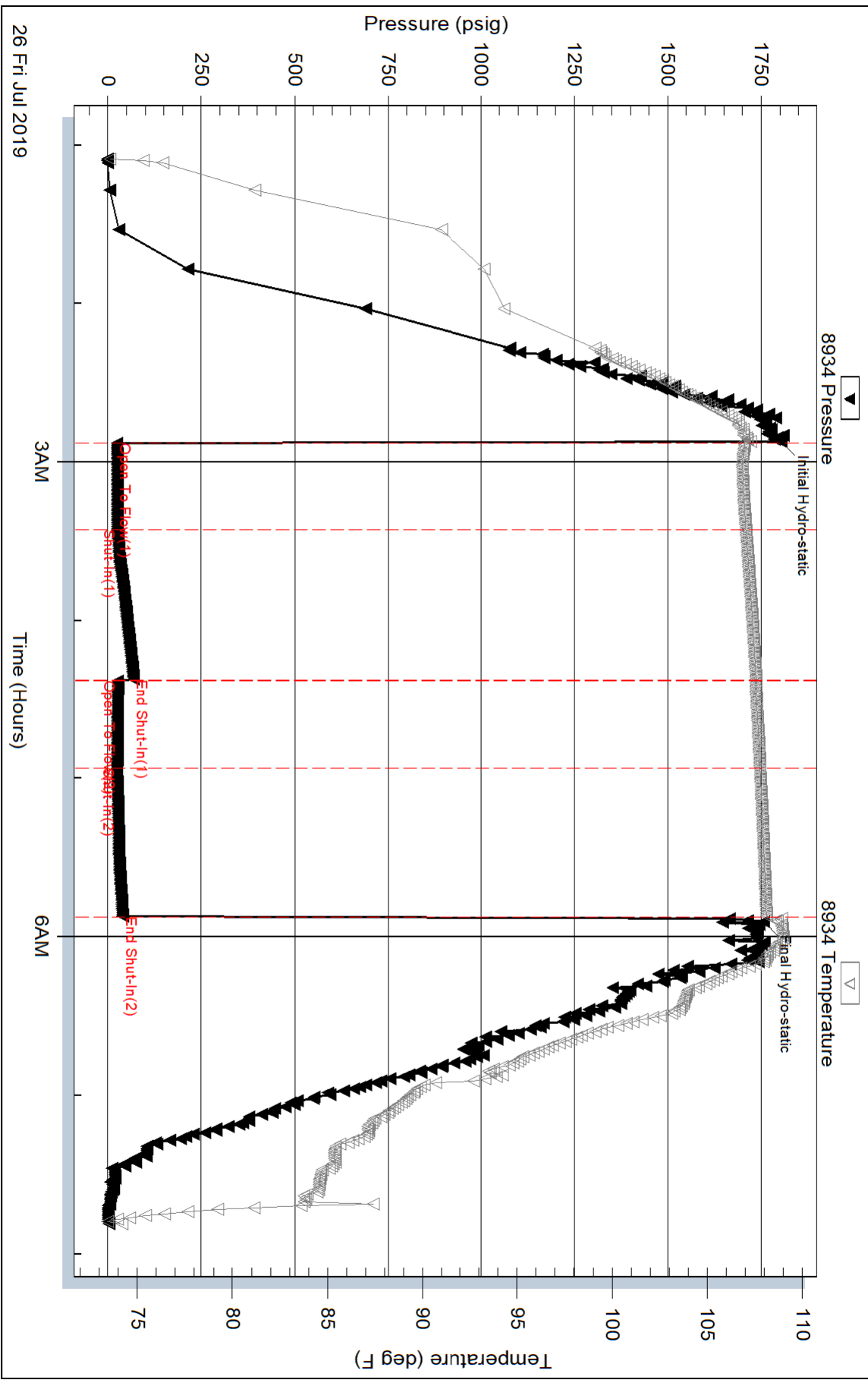
Inside

Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 7

Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 65974

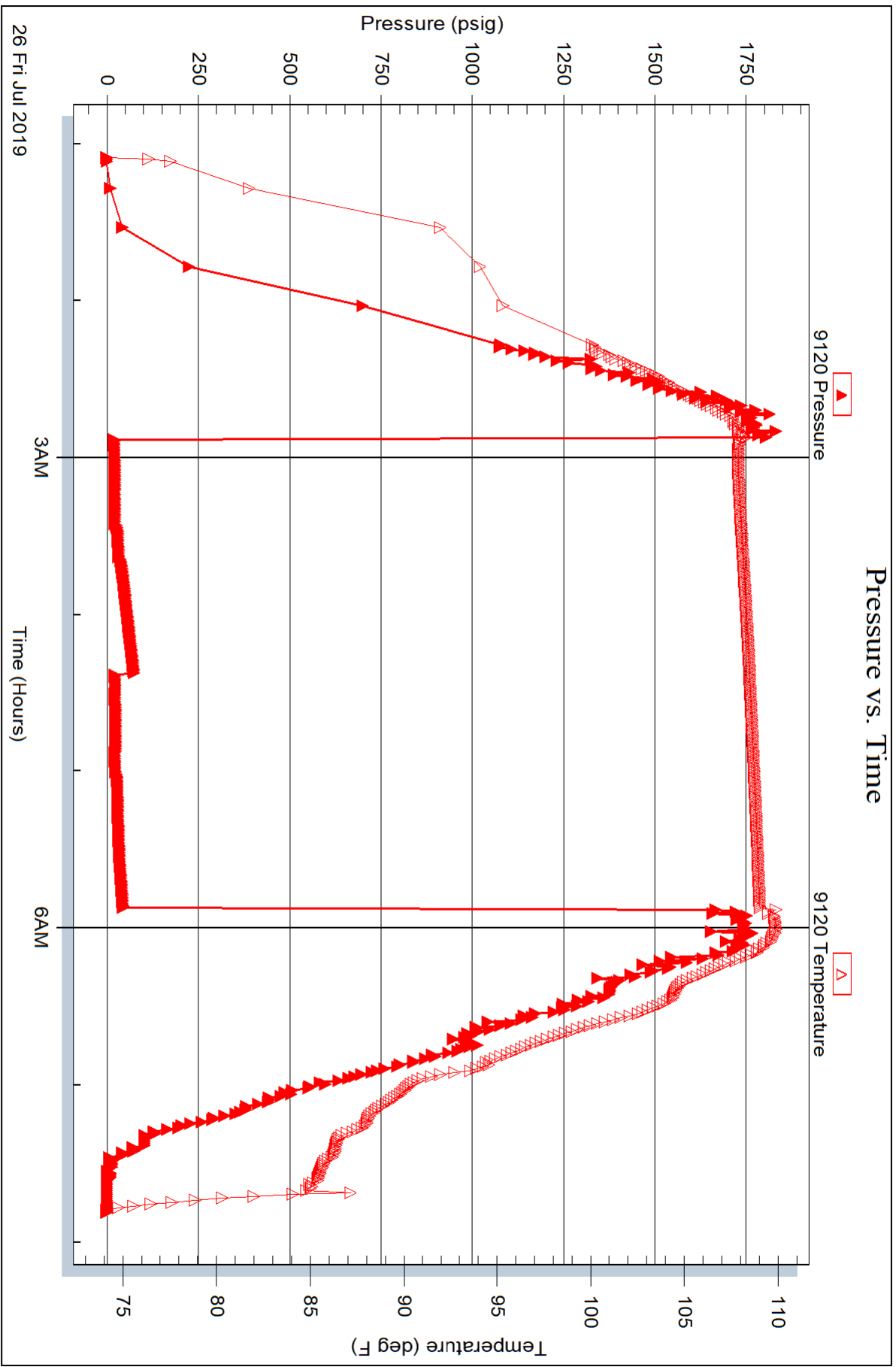
Printed: 2019.07.29 @ 15:20:32

Serial #: 9120

Outside Murfin Drilling Company Inc

Stahl 'A' #1-30

DST Test Number: 7



Trilobite Testing, Inc

Ref. No: 65974

Printed: 2019.07.29 @ 15:20:33



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65968

NO.

Well Name & No. Stahl 'A' # 1-30 Test No. 1 Date 07/21/2019
 Company Murfin Drilling Co Elevation 2163 KB 2158 GL
 Address 250 N Water St E 300 Wichita Ks 67202-1216
 Co. Rep / Geo. Paul Jungelman Rig Murfin #8
 Location: Sec. 30 Twp 9s Rge. 19w Co. Rooks State Ks

Interval Tested 3146' - 3168' Zone Tested Topeka
 Anchor Length 82' Drill Pipe Run _____ Mud Wt. 9.0
 Top Packer Depth 3141' Drill Collars Run 185' Vis 64
 Bottom Packer Depth 3146' Wt. Pipe Run _____ WL 6.0
 Total Depth 3168' Chlorides 3100 ppm System LCM 2#

Blow Description 17-
1st - Hit Bridge ~~Body~~ 18 stands in
7:7 - Misrun 1100' approx
7SD

Rec	Feet of	%gas	%oil	%water	%mud

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

(A) Initial Hydrostatic _____ Test 500? _____ T-On Location 10:40
 (B) First Initial Flow _____ Jars 250 _____ T-Started 11:08
 (C) First Final Flow _____ Safety Joint 75 _____ T-Open _____
 (D) Initial Shut-In _____ Circ Sub _____ T-Pulled _____
 (E) Second Initial Flow _____ Hourly Standby _____ T-Out 13:12
 (F) Second Final Flow _____ Mileage 7827 78 _____ Comments _____
 (G) Final Shut-In _____ Sampler _____
 (H) Final Hydrostatic _____ Straddle _____ EM Tool _____
 Shale Packer _____ Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____
 Initial Open _____ Day Standby _____ Sub Total 0
 Initial Shut-In _____ Accessibility _____ Total 903
 Final Flow _____ Sub Total 903
 Final Shut-In _____ MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. [Signature] Thanks!
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785-259-0086



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65969

NO.

Well Name & No. Stahl 'a' #1-30 Test No. 2 Date 07/21/2019
 Company Murfin Drilling Co Inc Elevation 2163 KB 2158 GL
 Address 250 N Water STE 300 Wichita KS 67202 +1216
 Co. Rep / Geo. Paul J. Juppelman Rig Murfin #8
 Location: Sec. 30 Twp 9s Rge. 19w Co. Rooks State KS

Interval Tested 3146' - 3168' Zone Tested Topeka
 Anchor Length 22' Drill Pipe Run 2962' Mud Wt. 9.0
 Top Packer Depth 3141' Drill Collars Run 185' Vis 64
 Bottom Packer Depth 3146' Wt. Pipe Run - WL 6.0
 Total Depth 3168' Chlorides 3100 ppm System LCM 2#

Blow Description 17- Fair; Built to 5"
1SD- No Return
47- Weak; Built to 2 1/2"
75- No Return

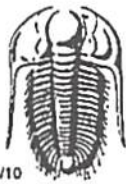
Rec	Feet of	%gas	%oil	%water	%mud
63	HMCW		75	25	
63	MW		50	50	
74	WCM w/oil spots		10	90	

Rec Total 250 BHT 103° Gravity - API RW 191 @ 72 °F Chlorides 37,000 ppm

(A) Initial Hydrostatic 1551 Test 1200 T-On Location 13:12
 (B) First Initial Flow 16 Jars 250 T-Started 16:30
 (C) First Final Flow 83 Safety Joint 75 T-Open 18:28
 (D) Initial Shut-In 729 Circ Sub _____ T-Pulled 21:28
 (E) Second Initial Flow 66 Hourly Standby x1 1hr 100 T-Out 23:17
 (F) Second Final Flow 102 Mileage _____
 (G) Final Shut-In 721 Sampler _____
 (H) Final Hydrostatic 1498 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60
 Sub Total 0
 Total 1625
 Sub Total 1625
 MP/DST Disc't _____

Approved By _____ Our Representative J. Stahl
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65970

NO.

Well Name & No. Stahl 'A' #1-30 Test No. 3 Date 07/23/2017
 Company Murfin Drilling Co Inc Elevation 2163 KB 2158 GL
 Address 250 N Water STE 300 Wichita KS 67202 +1216
 Co. Rep / Geo. Paul Gungelman Rig Murfin #8
 Location: Sec. 30 Twp 9s Rge. 19w Co. Rock State KS

Interval Tested 3332' - 3426' Zone Tested 702, Lams 'A & B'
 Anchor Length 94' Drill Pipe Run 3152' Mud Wt. 9.3
 Top Packer Depth 3327' Drill Collars Run 185' Vis 64
 Bottom Packer Depth 3332' Wt. Pipe Run - WL 7.2
 Total Depth 3426' Chlorides 3500 ppm System LCM 2#

Blow Description 47-BOB 9 mins; Built to 38"
55- No Return
77-BOB 11 mins; Built to 32"
75- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>500'</u>	<u>29M CW</u>		<u>80</u>	<u>20</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 500' BHT 108° Gravity - API RW 105 @ 84° F Chlorides 63000 ppm

(A) Initial Hydrostatic <u>1683</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>09:20</u>
(B) First Initial Flow <u>37</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>09:40</u>
(C) First Final Flow <u>219</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>11:32</u>
(D) Initial Shut-In <u>859</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>14:32</u>
(E) Second Initial Flow <u>232</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>16:23</u>
(F) Second Final Flow <u>345</u>	<input checked="" type="checkbox"/> Mileage <u>78+24</u> 78+24	Comments <u>24 miles called</u>
(G) Final Shut-In <u>857</u>	<input type="checkbox"/> Sampler	<u>and sent home on 07/22</u>
(H) Final Hydrostatic <u>1622</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool

Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1627</u>
	Sub Total <u>1627</u>	MP/DST Disc't

Approved By _____ Our Representative Spencer J. Stahl Thanks!
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785-259-0056



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65971

NO.

Well Name & No. Stahl 'a' #1-30 Test No. 4 Date 07/23/2019
 Company Murfin Drilling Co Inc Elevation 2163 KB 2158 GL
 Address 250 N Water STE 300 Wichita KS 67202+1216
 Co. Rep / Geo. Paul Gungelman Rig Murfin #8
 Location: Sec. 30 Twp 9s Rge. 19w Co. Roooks State KS

Interval Tested 3425' - 3446' Zone Tested Lansing D
 Anchor Length 21' Drill Pipe Run 3216' Mud Wt. 9.3
 Top Packer Depth 3420' Drill Collars Run 185' Vis 64
 Bottom Packer Depth 3425' Wt. Pipe Run - WL 7.2
 Total Depth 3446' Chlorides 3500 ppm System LCM 2#

Blow Description 77- Weak; Built to 1"
78- No Return
79- Weak Surface Blow
78- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>20'</u>	<u>WCM</u>		<u>15</u>	<u>85</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 20' BHT 106° Gravity - API RW 132 @ 57 °F Chlorides 71000 ppm

(A) Initial Hydrostatic 1747 Test 1200 T-On Location 21:50
 (B) First Initial Flow 18 Jars 250 T-Started 21:58
 (C) First Final Flow 23 Safety Joint 75 T-Open 23:58
 (D) Initial Shut-In 888 Circ Sub _____ T-Pulled 02:58
 (E) Second Initial Flow 22 Hourly Standby _____ T-Out 05:16
 (F) Second Final Flow 26 Mileage 7817 78 Comments _____
 (G) Final Shut-In 876 Sampler _____
 (H) Final Hydrostatic 1646 Straddle _____ EM Tool _____
 Shale Packer _____ Ruined Shale Packer _____
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Extra Copies _____

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60
 Sub Total 1603
 Total 1603
 MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. Paul - Hards!
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket **65972**

NO.

Well Name & No. Stahl 'a' # 1-30 Test No. 5 Date 07/24/2019
 Company Murfin Drilling Company Inc Elevation 2163 KB 2158 GL
 Address 250 N Water STE 300 Wichita KS 67202 +1216
 Co. Rep / Geo. Paul Gungelman Rig Murfin #8
 Location: Sec. 30 Twp 9s Rge. 19w Co. Rooks State KS

Interval Tested 3446' - 3467' Zone Tested Lans 'E+7'
 Anchor Length 21' Drill Pipe Run 3247' Mud Wt. 9.25
 Top Packer Depth 3441' Drill Collars Run 185' Vis 0.59
 Bottom Packer Depth 3446' Wt. Pipe Run - WL 10.4
 Total Depth 3467' Chlorides 4500 ppm System LCM 1#

Blow Description 7-BOB; 45sec; Built to 343"
1st - Work Surface after 10mins; Died 40mins in
77-BOB /min; Built to 23"
7st No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>1690'</u>	<u>Water</u>		<u>100</u>		
<u>200</u>	<u>MW</u>		<u>50</u>	<u>50</u>	
<u>10'</u>	<u>OSM</u>			<u>100</u>	

Rec Total 1900' BHT 107° Gravity - API RW .069 @ 90° F Chlorides 86000 ppm

(A) Initial Hydrostatic <u>1734</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>11:13</u>
(B) First Initial Flow <u>351</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>11:30</u>
(C) First Final Flow <u>841</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>13:25</u>
(D) Initial Shut-In <u>891</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>16:10</u>
(E) Second Initial Flow <u>846</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>18:15</u>
(F) Second Final Flow <u>885</u>	<input checked="" type="checkbox"/> Mileage <u>7827</u> <u>78</u>	Comments
(G) Final Shut-In <u>894</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1647</u>	<input type="checkbox"/> Straddle	
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> EM Tool
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Ruined Packer
	<input type="checkbox"/> Day Standby	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Accessibility	Sub Total <u>0</u>
	Sub Total <u>1603</u>	Total <u>1603</u>

Approved By _____ Our Representative Spencer J. Paul Thanks
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 785-259-0056



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65973

NO.

Well Name & No. Stahl 'A' #1-30 Test No. 6 Date 07/25/2019
 Company Murphy Drilling Co - Inc Elevation 2163 KB 2158' GL
 Address 250 N Water STE 300 Wichita, KS 67202-1216
 Co. Rep / Geo. Paul Gumpelman Rig Murphy #8
 Location: Sec. 30 Twp 9S Rge. 19W Co. Rock State KS

Interval Tested 3496' - 3560' Zone Tested LHC
 Anchor Length 64' Drill Pipe Run _____ Mud Wt. 9.25
 Top Packer Depth 3491' Drill Collars Run 185' Vis 59
 Bottom Packer Depth 3496' Wt. Pipe Run _____ WL 10.4
 Total Depth 3560' Chlorides 4500 ppm System LCM 1#

Blow Description 17- Weak; Built to 4"; Died back to Surface

1st - No Return
77 - No Blow
75 - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>Mud</u>			<u>100</u>	
____	____				
____	____				
____	____				

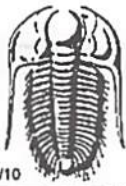
Rec Total 15' BHT 105° Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1815 Test 1200 T-On Location 04:57
 (B) First Initial Flow 30 Jars 250 T-Started 05:35
 (C) First Final Flow 32 Safety Joint 75 T-Open 07:28
 (D) Initial Shut-In 592 Circ Sub _____ T-Pulled 10:28
 (E) Second Initial Flow 32 Hourly Standby _____ T-Out 12:18
 (F) Second Final Flow 32 Mileage 78K7 78 Comments _____
 (G) Final Shut-In 399 Sampler _____
 (H) Final Hydrostatic 1672 Straddle _____

Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 30 Extra Recorder _____
 Final Shut-In 60 Day Standby _____
 Sub Total 1603 Accessibility _____
 Sub Total 1603 MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. Stahl - Thanks!
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785 259 0036



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65974

NO.

Well Name & No. Stahl 'A' # 1-30 Test No. 7 Date 07/25/2019
 Company Murfin Drilling Co Inc Elevation 2163 KB 2158 GL
 Address 250 N Water STE 300 Wichita Ks, 67202 +1216
 Co. Rep / Geo. Paul Jungelman Rig Murfin #8
 Location: Sec. 30 Twp 9N Rge. 19W Co. Roark State Ks

Interval Tested 3608' - 3650' Zone Tested Arbuckle
 Anchor Length 42' Drill Pipe Run 3467 Mud Wt. 9.4
 Top Packer Depth 3603' Drill Collars Run 185' Vis 41
 Bottom Packer Depth 3608' Wt. Pipe Run - WL 18.0
 Total Depth 3650' Chlorides 7,000 ppm System LCM 2#

Blow Description 17- Wash surface; Built to 4"; Dried back to surface

1SD - No Return
77 - No Blow
7SD - No Return

Rec	Feet of	%gas	%oil	%water	%mud
3	Mud			100	

Rec Total 3 BHT 108° Gravity - API RW - @ - F Chlorides - ppm

(A) Initial Hydrostatic 1803 Test 1200 T-On Location 23:15
 (B) First Initial Flow 24 Jars 250 T-Started 01:05 07/26/2019
 (C) First Final Flow 25 Safety Joint 75 T-Open 02:42
 (D) Initial Shut-In 68 Circ Sub _____ T-Pulled 05:42
 (E) Second Initial Flow 26 Hourly Standby _____ T-Out 07:38
 (F) Second Final Flow 24 Mileage 7827x2 78+78 Comments Loaded @ 20:00
 (G) Final Shut-In 39 Sampler _____ 07/26/2019
 (H) Final Hydrostatic 1757 Straddle _____ EM Tool _____

Initial Open 30 Extra Packer _____ Ruined Shale Packer _____
 Initial Shut-In 60 Extra Recorder _____ Ruined Packer _____
 Final Flow 30 Day Standby _____ Extra Copies _____
 Final Shut-In 60 Accessibility _____ Sub Total 0
 Sub Total 1681 Total 1681 MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. Paul Thanks!
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