



DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.06.30 @ 03:21:00

End Date: 2019.06.30 @ 10:32:45

Job Ticket #: 64680 DST #: 1

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

Printed: 2019.07.05 @ 15:12:40



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64680

DST#: 1

Test Start: 2019.06.30 @ 03:21:00

GENERAL INFORMATION:

Formation: **Toronto - LKC "A"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:43:00

Time Test Ended: 10:32:45

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: **3823.00 ft (KB) To 3945.00 ft (KB) (TVD)**

Reference Elevations: 3017.00 ft (KB)

Total Depth: 3945.00 ft (KB) (TVD)

3012.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8652 Outside

Press@RunDepth: 234.37 psig @ 3824.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.06.30

End Date: 2019.06.30

Last Calib.: 2019.06.30

Start Time: 03:21:05

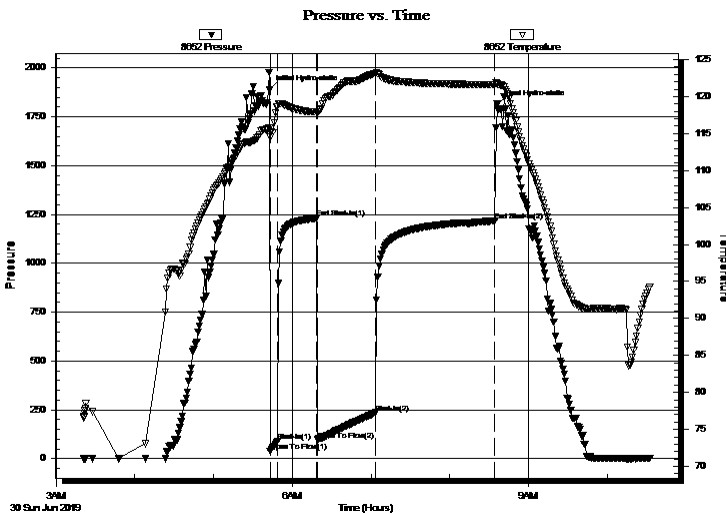
End Time: 10:32:44

Time On Btm: 2019.06.30 @ 05:42:45

Time Off Btm: 2019.06.30 @ 08:36:00

TEST COMMENT: 5 - IF: Blow built to 6"
 30 - IS: No blow back
 45 - FF: Blow built to BOB (11") at 13 min., built to 35"
 90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1887.04	115.71	Initial Hydro-static
1	35.86	114.51	Open To Flow (1)
6	89.45	118.66	Shut-In(1)
36	1229.84	117.93	End Shut-In(1)
37	96.36	117.71	Open To Flow (2)
81	234.37	123.15	Shut-In(2)
172	1216.53	121.62	End Shut-In(2)
174	1813.69	121.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
245.00	GMCW w/trace oil 67%w , 28%m, 5%g	2.36
125.00	GWCM w/oil spots 49%m, 44%w , 6%g	11.75
100.00	SO/WCM 73%m, 24%w , 3%o	1.40

Gas Rates

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



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Mull Drilling Co., Inc.
1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64680

DST#: 1

Test Start: 2019.06.30 @ 03:21:00

GENERAL INFORMATION:

Formation: **Toronto - LKC "A"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:43:00

Time Test Ended: 10:32:45

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 3823.00 ft (KB) To 3945.00 ft (KB) (TVD)

Reference Elevations: 3017.00 ft (KB)

Total Depth: 3945.00 ft (KB) (TVD)

3012.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: psig @ 3824.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.06.30

End Date: 2019.06.30

Last Calib.: 2019.06.30

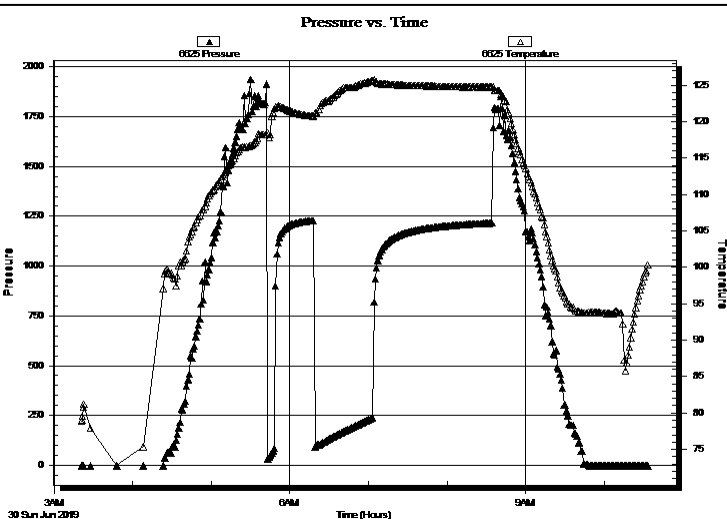
Start Time: 03:21:05

End Time: 10:33:14

Time On Btm:

Time Off Btm:

TEST COMMENT: 5 - IF: Blow built to 6"
30 - IS: No blow back
45 - FF: Blow built to BOB (11") at 13 min., built to 35"
90 - FS: No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
245.00	GMCW w/trace oil 67%w , 28%m, 5%g	2.36
125.00	GWCM w/oil spots 49%m, 44%w , 6%g	11.75
100.00	SO/WCM 73%m, 24%w , 3%o	1.40

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64680

DST#: 1

Test Start: 2019.06.30 @ 03:21:00

Tool Information

Drill Pipe:	Length: 3701.00 ft	Diameter: 3.80 inches	Volume: 51.92 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 64000.00 lb
			<u>Total Volume: 52.50 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 51000.00 lb
Depth to Top Packer:	3823.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	122.00 ft			
Tool Length:	150.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3796.00	
Shut In Tool	5.00			3801.00	
Hydraulic tool	5.00			3806.00	
EM Tool	4.00			3810.00	
Safety Joint	3.00			3813.00	
Packer	5.00			3818.00	28.00 Bottom Of Top Packer
Packer	5.00			3823.00	
Packer - Shale	0.00			3823.00	
Stubb	1.00			3824.00	
Recorder	0.00	6625	Inside	3824.00	
Recorder	0.00	8652	Outside	3824.00	
Perforations	20.00			3844.00	
Blank Spacing	96.00			3940.00	
Perforations	2.00			3942.00	
Bullnose	3.00			3945.00	122.00 Bottom Packers & Anchor

Total Tool Length: 150.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64680

DST#: 1

Test Start: 2019.06.30 @ 03:21:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 62.00 sec/qt
Water Loss: 7.17 in³
Resistivity: ohm.m
Salinity: 2000.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: deg API
Water Salinity: 30000 ppm

Recovery Information

Recovery Table

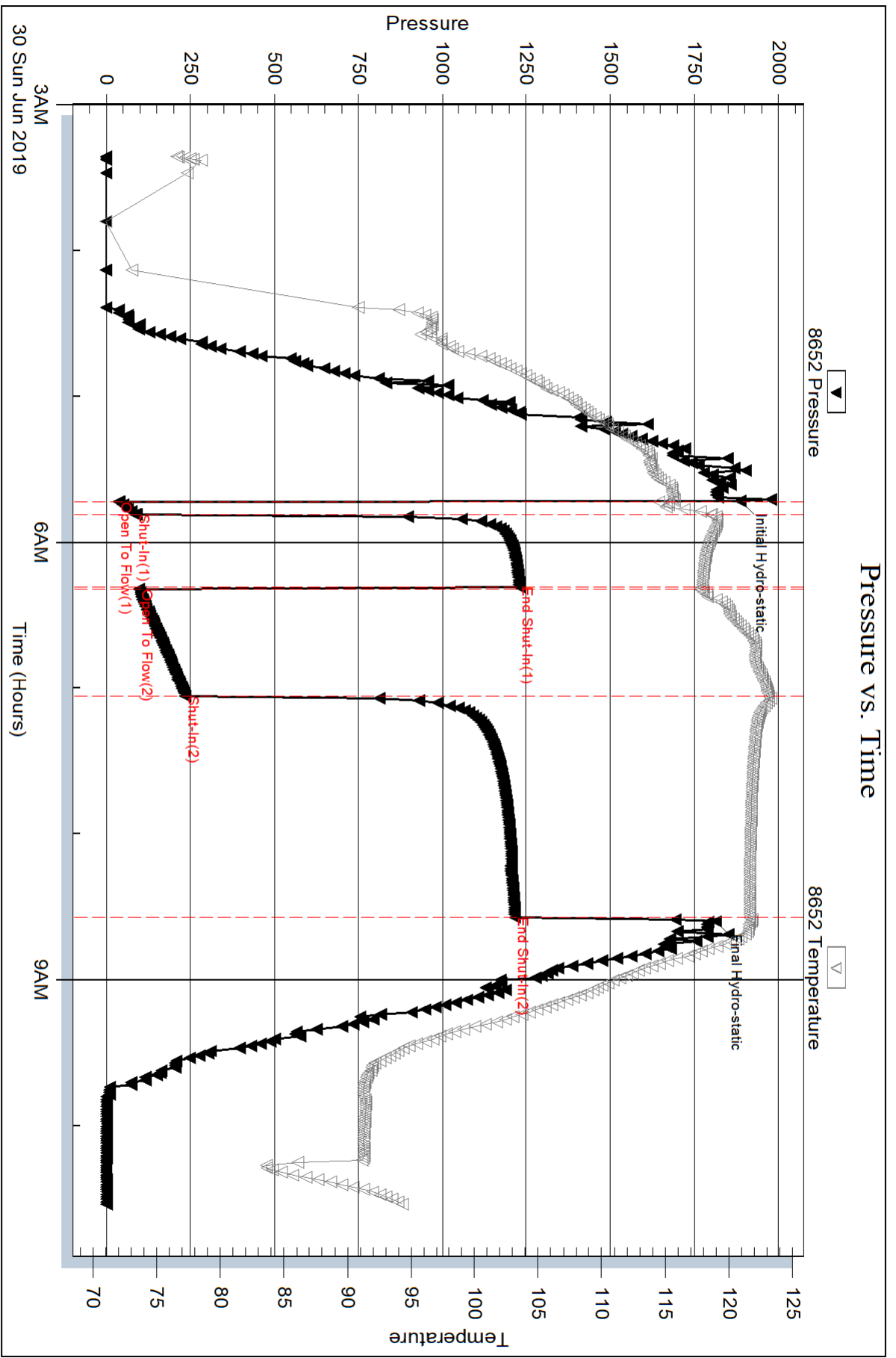
Length ft	Description	Volume bbl
245.00	GMCW w/trace oil 67%w , 28%m, 5%g	2.362
125.00	GWCM w/oil spots 49%m, 44%w , 6%g, 1%o	1.753
100.00	SO/WCM 73%m, 24%w , 3%o	1.403

Total Length: 470.00 ft Total Volume: 5.518 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW = .169 ohms @ 95 deg F Chlorides = 30,000 ppm



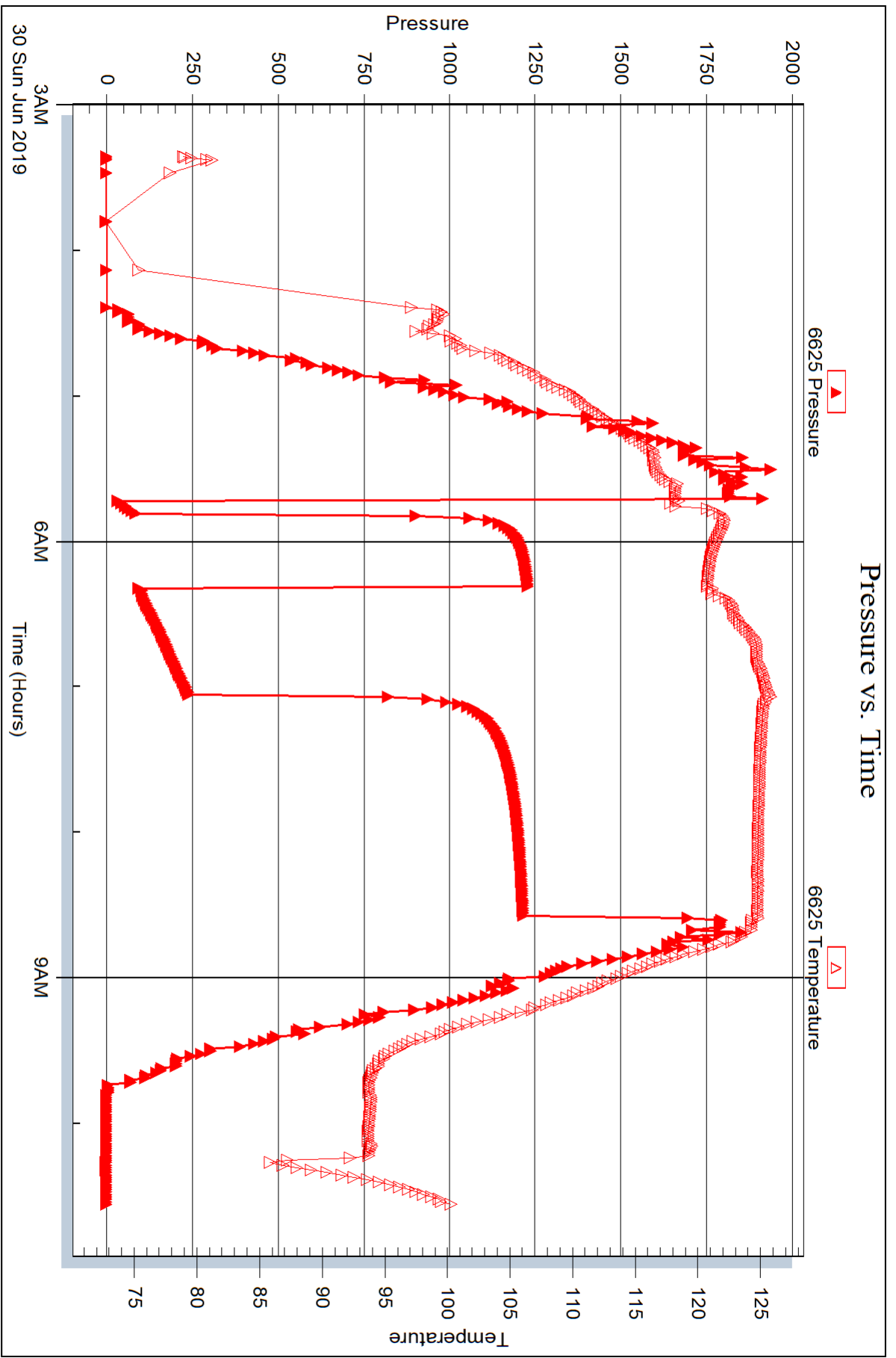
Serial #: 6625

Inside

Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 64680

Printed: 2019.07.05 @ 15:12:41



DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.06.30 @ 20:09:00

End Date: 2019.07.01 @ 00:43:15

Job Ticket #: 64681 DST #: 2

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

Printed: 2019.07.05 @ 15:05:55



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64681

DST#: 2

Test Start: 2019.06.30 @ 20:09:00

GENERAL INFORMATION:

Formation: **LKC "B - C"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:01:30

Time Test Ended: 00:43:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 3948.00 ft (KB) To 4010.00 ft (KB) (TVD)

Reference Elevations: 3017.00 ft (KB)

Total Depth: 4010.00 ft (KB) (TVD)

3012.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8652 Outside

Press@RunDepth: 20.72 psig @ 3949.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.06.30

End Date:

2019.07.01

Last Calib.:

2019.07.01

Start Time:

20:09:05

End Time:

00:43:14

Time On Btm:

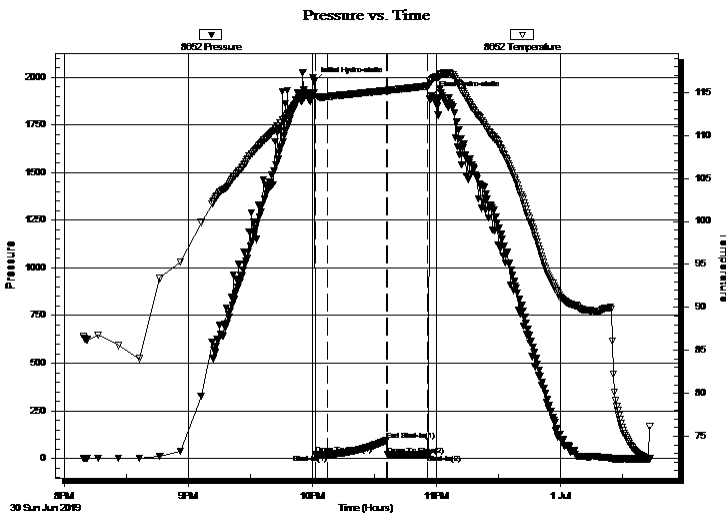
2019.06.30 @ 22:00:45

Time Off Btm:

2019.06.30 @ 22:57:45

TEST COMMENT: 5 - IF: Blow built to 1/8"
30 - IS: No blow back
20 - FF: No blow
Pulled tool

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1977.71	114.95	Initial Hydro-static
1	21.42	114.52	Open To Flow (1)
7	20.72	114.50	Shut-In(1)
35	95.28	115.23	End Shut-In(1)
36	19.81	115.23	Open To Flow (2)
55	20.57	115.76	Shut-In(2)
57	1902.23	116.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	Mud w /trace oil 100%m	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
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DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64681

DST#: 2

Test Start: 2019.06.30 @ 20:09:00

Tool Information

Drill Pipe:	Length: 3828.00 ft	Diameter: 3.80 inches	Volume: 53.70 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 54.28 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 52000.00 lb
Depth to Top Packer:	3948.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	90.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3921.00	
Shut In Tool	5.00			3926.00	
Hydraulic tool	5.00			3931.00	
EM Tool	4.00			3935.00	
Safety Joint	3.00			3938.00	
Packer	5.00			3943.00	28.00 Bottom Of Top Packer
Packer	5.00			3948.00	
Packer - Shale	0.00			3948.00	
Stubb	1.00			3949.00	
Recorder	0.00	6625	Inside	3949.00	
Recorder	0.00	8652	Outside	3949.00	
Perforations	23.00			3972.00	
Blank Spacing	33.00			4005.00	
Perforations	2.00			4007.00	
Bullnose	3.00			4010.00	62.00 Bottom Packers & Anchor

Total Tool Length: 90.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64681

DST#: 2

Test Start: 2019.06.30 @ 20:09:00

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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.17 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	Mud w /trace oil 100%m	0.005

Total Length: 1.00 ft Total Volume: 0.005 bbl

Num Fluid Samples: 0

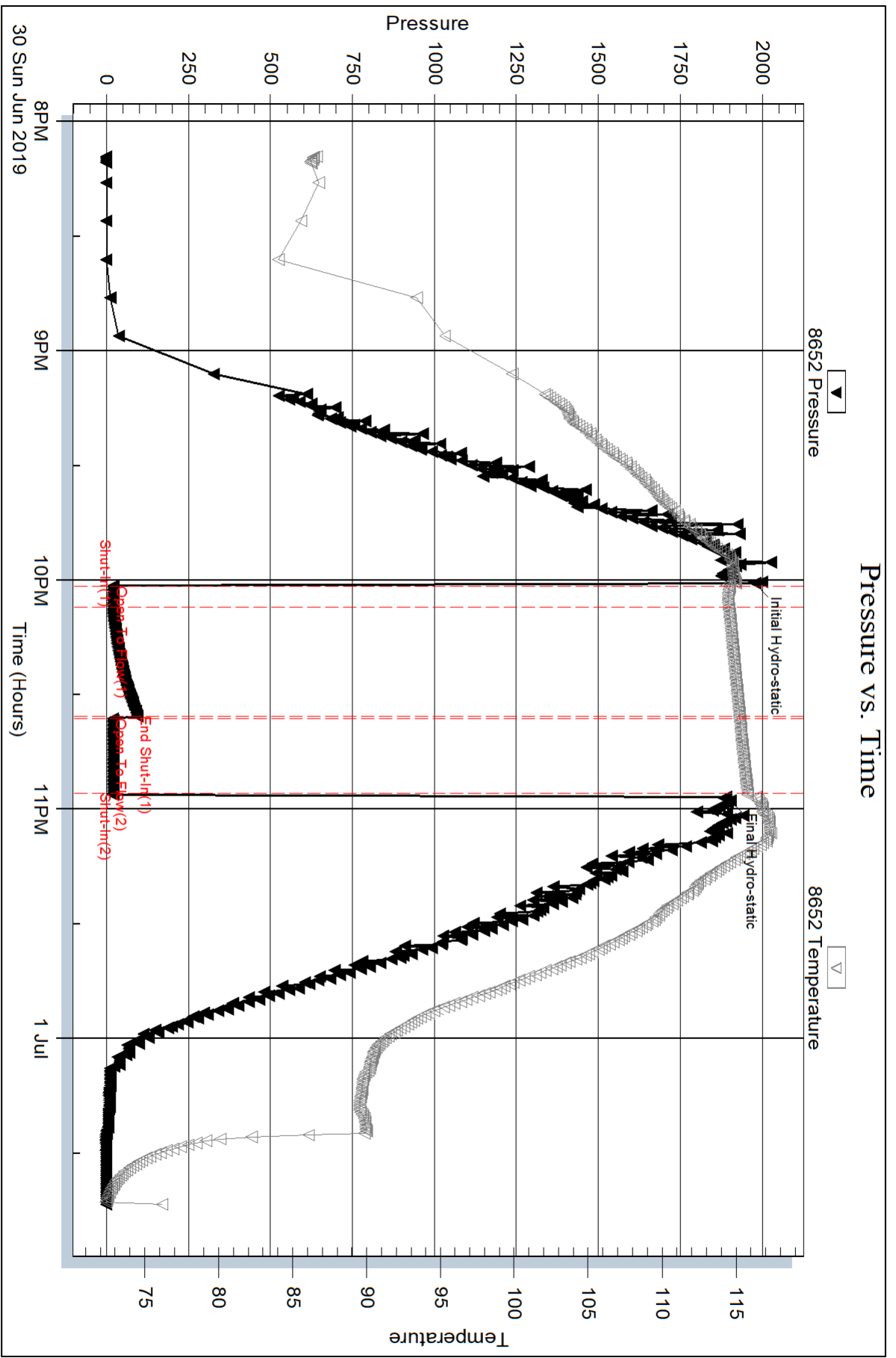
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



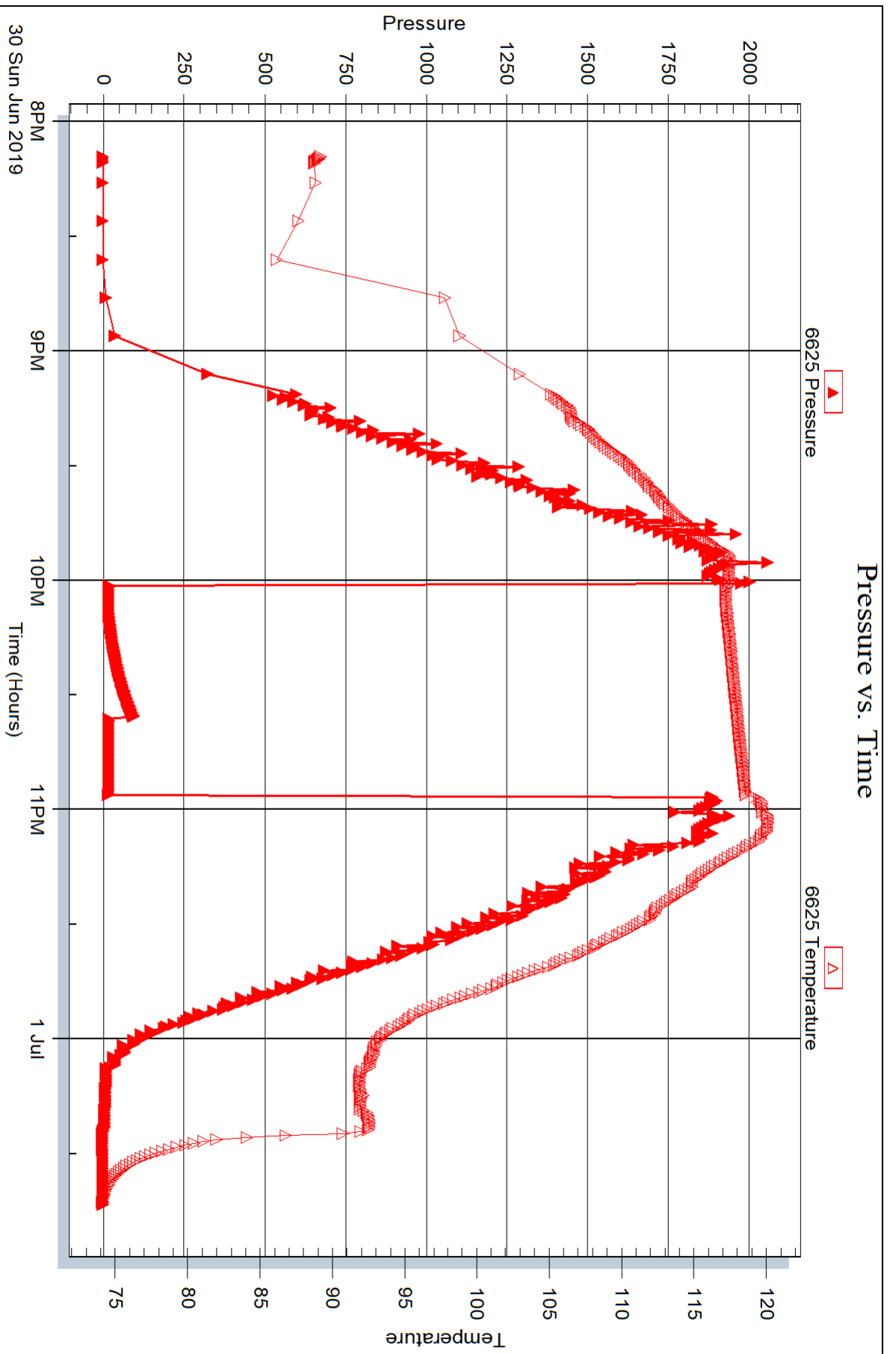
Serial #: 6625

Inside

Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 64681

Printed: 2019.07.05 @ 15:05:56



DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.07.01 @ 12:33:00

End Date: 2019.07.01 @ 18:57:45

Job Ticket #: 64682 DST #: 3

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

Printed: 2019.07.05 @ 15:05:15



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64682

DST#: 3

Test Start: 2019.07.01 @ 12:33:00

GENERAL INFORMATION:

Formation: **LKC "H - J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:24:30
 Time Test Ended: 18:57:45
 Interval: **4006.00 ft (KB) To 4090.00 ft (KB) (TVD)**
 Total Depth: 4090.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

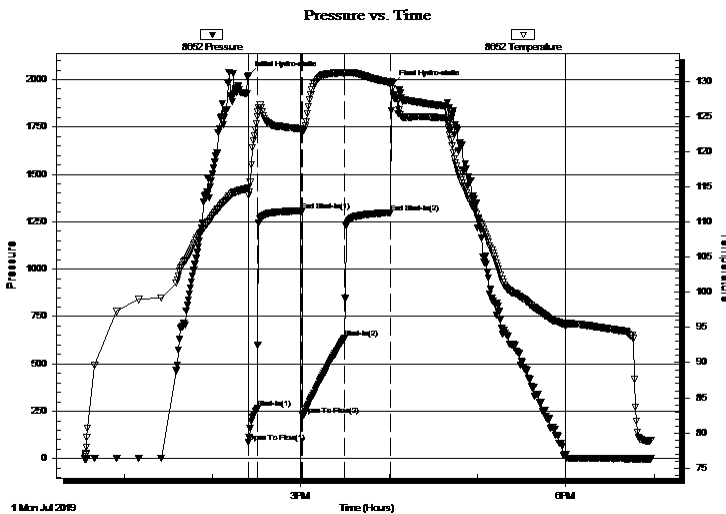
Serial #: 8652

Outside

Press@RunDepth: 635.98 psig @ 4007.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.01 End Date: 2019.07.01 Last Calib.: 2019.07.01
 Start Time: 12:33:05 End Time: 18:57:44 Time On Btm: 2019.07.01 @ 14:24:15
 Time Off Btm: 2019.07.01 @ 16:02:15

TEST COMMENT: 5 - IF: Blow built to BOB (11") at 2 1/2 min., built to 27"
 30 - IS: No blow back
 30 - FF: Blow built to BOB at 2 1/2 min., built to 129"
 30 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2021.61	114.87	Initial Hydro-static
1	87.65	113.83	Open To Flow (1)
7	264.03	124.99	Shut-In(1)
36	1306.95	123.30	End Shut-In(1)
37	226.77	122.97	Open To Flow (2)
66	635.98	131.22	Shut-In(2)
97	1297.79	129.81	End Shut-In(2)
98	1975.43	129.05	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
370.00	SMCW w/trace oil 95%w , 5%m	4.12
880.00	MCW w/trace oil 73%w , 27%m	12.34
80.00	MW w/trace oil 53%w , 47%m	1.12

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64682

DST#: 3

Test Start: 2019.07.01 @ 12:33:00

Tool Information

Drill Pipe:	Length: 3890.00 ft	Diameter: 3.80 inches	Volume: 54.57 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 55.15 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	4006.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	84.00 ft			
Tool Length:	112.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3979.00	
Shut In Tool	5.00			3984.00	
Hydraulic tool	5.00			3989.00	
EM Tool	4.00			3993.00	
Safety Joint	3.00			3996.00	
Packer	5.00			4001.00	28.00 Bottom Of Top Packer
Packer	5.00			4006.00	
Packer - Shale	0.00			4006.00	
Stubb	1.00			4007.00	
Recorder	0.00	6625	Inside	4007.00	
Recorder	0.00	8652	Outside	4007.00	
Perforations	15.00			4022.00	
Blank Spacing	64.00			4086.00	
Perforations	1.00			4087.00	
Bullnose	3.00			4090.00	84.00 Bottom Packers & Anchor

Total Tool Length: 112.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

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12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64682

DST#: 3

Test Start: 2019.07.01 @ 12:33:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 57.00 sec/qt
Water Loss: 7.98 in³
Resistivity: ohm.m
Salinity: 2400.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: deg API
Water Salinity: 26000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
370.00	SMCW w/trace oil 95%w , 5%m	4.115
880.00	MCW w/trace oil 73%w , 27%m	12.344
80.00	MW w/trace oil 53%w , 47%m	1.122

Total Length: 1330.00 ft Total Volume: 17.581 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW = .203 ohms @ 89.5 deg F Chlorides = 26,000 ppm

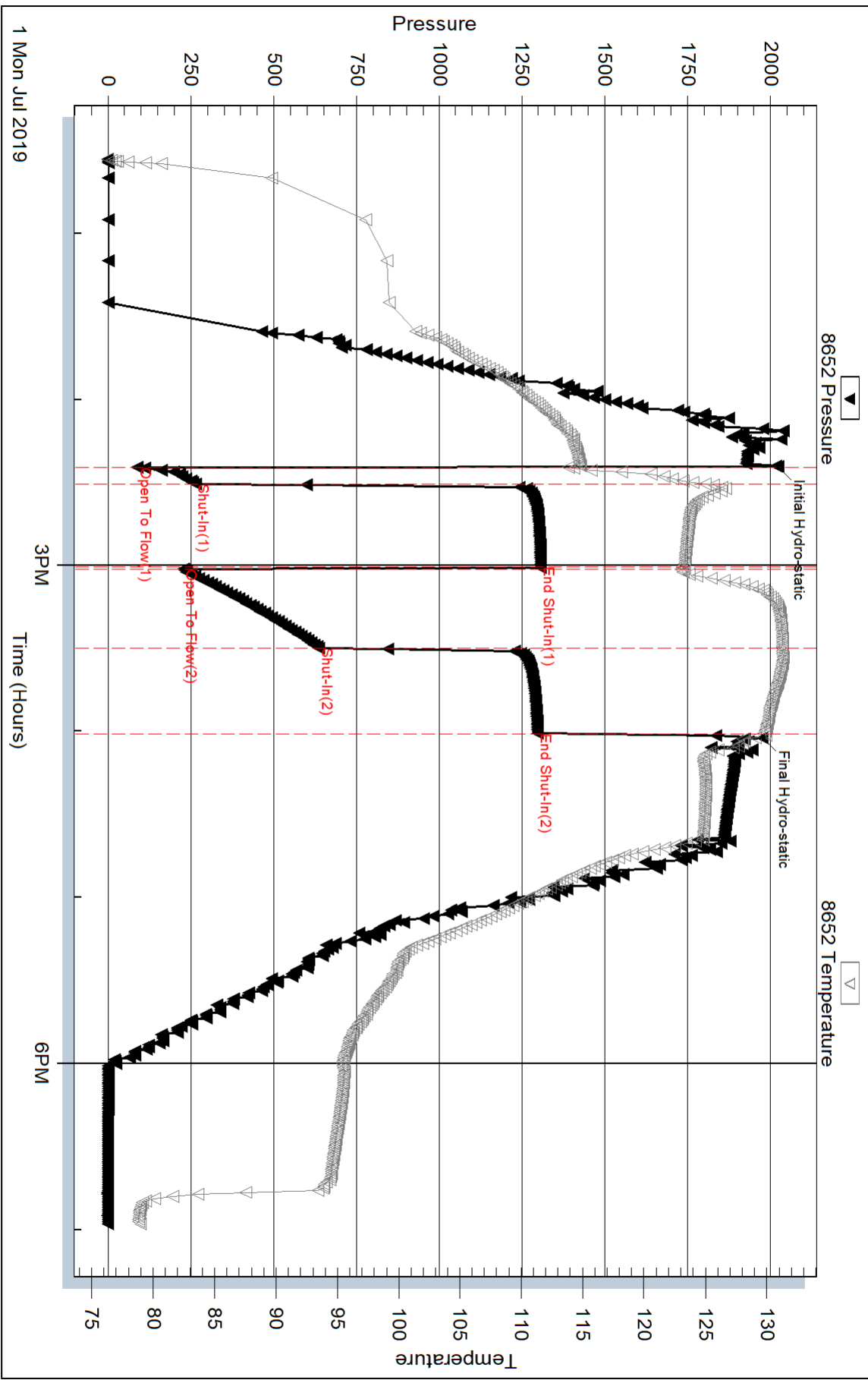
Serial #: 8652

Outside Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 3

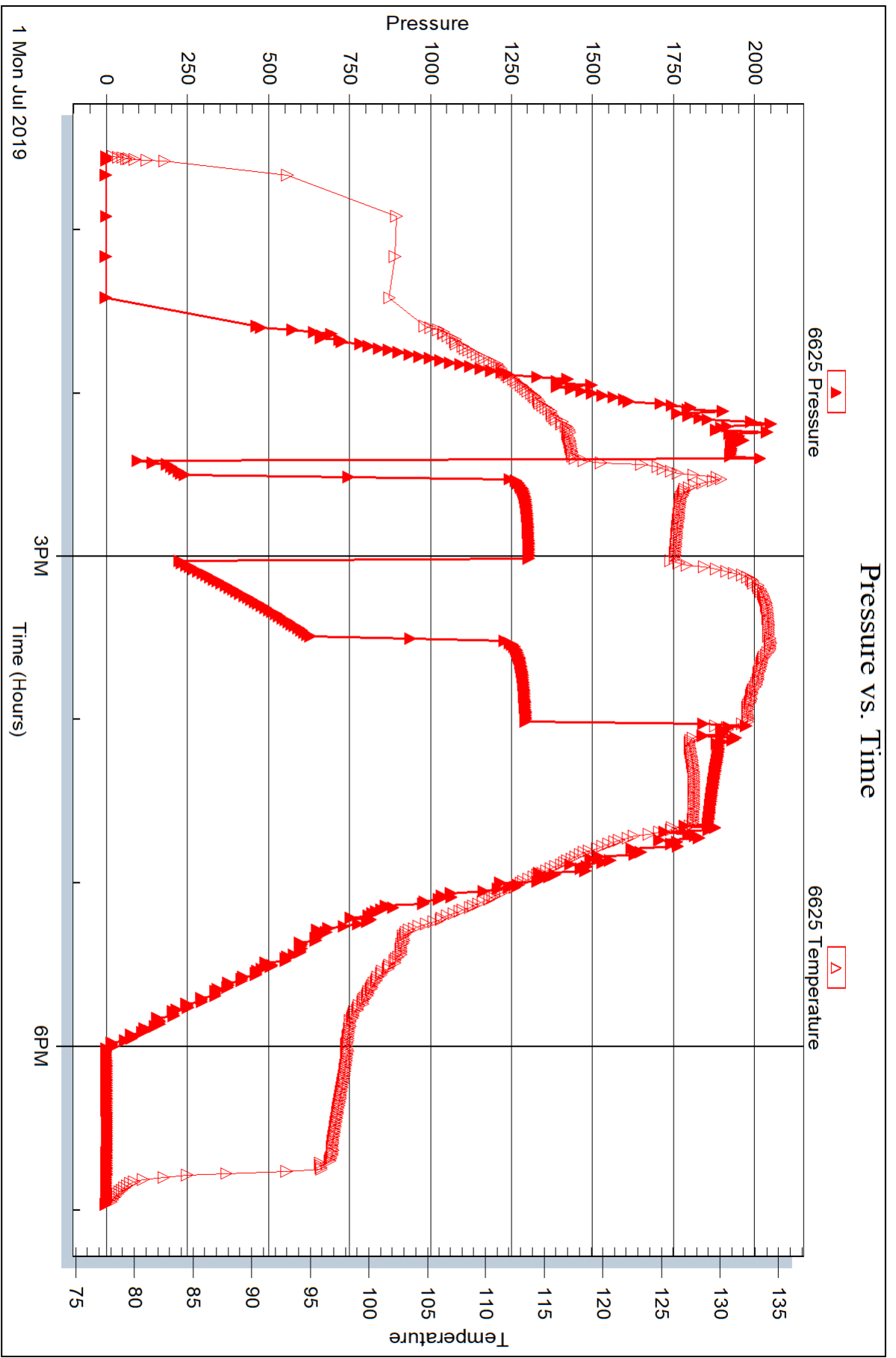
Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 64682

Printed: 2019.07.05 @ 15:05:16





DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.07.02 @ 02:19:00

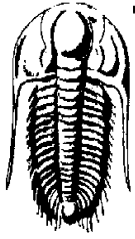
End Date: 2019.07.02 @ 10:29:00

Job Ticket #: 64683 DST #: 4

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

Printed: 2019.07.05 @ 15:04:43

Mull Drilling Co., Inc.
12-5s-33w Rawlins, KS
Cooper #1-12
DST # 4
LKC "K"
2019.07.02



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

12-5s-33w Rawlins, KS
Cooper #1-12
 Job Ticket: 64683 **DST#: 4**
 Test Start: 2019.07.02 @ 02:19:00

GENERAL INFORMATION:

Formation: **LKC "K"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:32:00
 Time Test Ended: 10:29:00
 Interval: **4097.00 ft (KB) To 4120.00 ft (KB) (TVD)**
 Total Depth: 4120.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

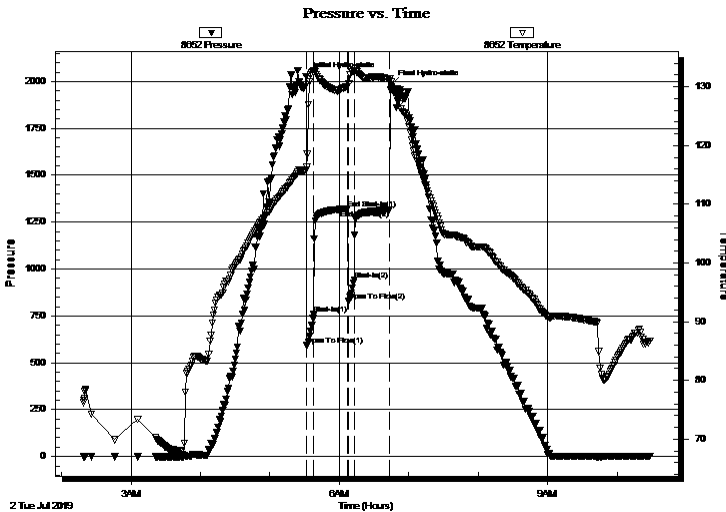
Serial #: 8652

Outside

Press@RunDepth: 942.81 psig @ 4098.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.02 End Date: 2019.07.02 Last Calib.: 2019.07.02
 Start Time: 02:19:05 End Time: 10:28:59 Time On Btm: 2019.07.02 @ 05:31:15
 Time Off Btm: 2019.07.02 @ 06:44:45

TEST COMMENT: 5 - IF: Blow built to BOB (11") at 30 sec., built to 163"
 30 - IS: No blow back
 5 - FF: Blow built to BOB at 30 sec., built to 115"
 30 - FS: Blow back built to 1/4"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2026.98	115.92	Initial Hydro-static
1	591.98	116.27	Open To Flow (1)
7	760.62	132.54	Shut-In(1)
36	1321.01	130.03	End Shut-In(1)
37	828.80	130.58	Open To Flow (2)
42	942.81	132.67	Shut-In(2)
73	1315.05	131.28	End Shut-In(2)
74	1983.99	130.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
430.00	SMSC w/trace oil 96%w , 4%m	4.96
30.00	SOMCW 77%w , 8%m, 8%g, 7%o	0.42
1570.00	SMGWCO 55%o, 25%w , 16%g, 4%m	22.02

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64683

DST#: 4

Test Start: 2019.07.02 @ 02:19:00

GENERAL INFORMATION:

Formation: **LKC "K"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:32:00
 Time Test Ended: 10:29:00
 Interval: **4097.00 ft (KB) To 4120.00 ft (KB) (TVD)**
 Total Depth: 4120.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

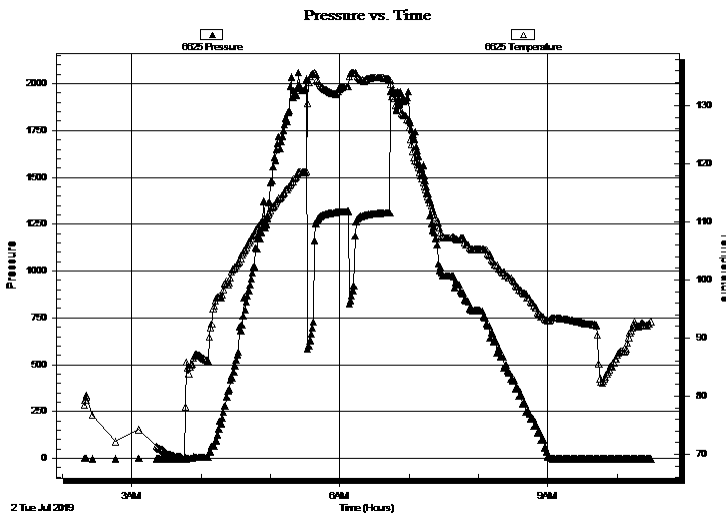
Serial #: 6625

Inside

Press@RunDepth: psig @ 4098.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.02 End Date: 2019.07.02 Last Calib.: 2019.07.02
 Start Time: 02:19:05 End Time: 10:29:14 Time On Btm:
 Time Off Btm:

TEST COMMENT: 5 - IF: Blow built to BOB (11") at 30 sec., built to 163"
 30 - IS: No blow back
 5 - FF: Blow built to BOB at 30 sec., built to 115"
 30 - FS: Blow back built to 1/4"

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
430.00	SMSC w/trace oil 96%w, 4%m	4.96
30.00	SOMCW 77%w, 8%m, 8%g, 7%o	0.42
1570.00	SM/GWCO 55%o, 25%w, 16%g, 4%m	22.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64683

DST#: 4

Test Start: 2019.07.02 @ 02:19:00

Tool Information

Drill Pipe:	Length: 3983.00 ft	Diameter: 3.80 inches	Volume: 55.87 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 82000.00 lb
			<u>Total Volume: 56.45 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	4097.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	23.00 ft			
Tool Length:	51.00 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			4070.00	
Shut In Tool	5.00			4075.00	
Hydraulic tool	5.00			4080.00	
EM Tool	4.00			4084.00	
Safety Joint	3.00			4087.00	
Packer	5.00			4092.00	28.00 Bottom Of Top Packer
Packer	5.00			4097.00	
Packer - Shale	0.00			4097.00	
Stubb	1.00			4098.00	
Recorder	0.00	6625	Inside	4098.00	
Recorder	0.00	8652	Outside	4098.00	
Perforations	19.00			4117.00	
Bullnose	3.00			4120.00	23.00 Bottom Packers & Anchor

Total Tool Length: 51.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64683

DST#: 4

Test Start: 2019.07.02 @ 02:19:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 50.00 sec/qt
Water Loss: 7.18 in³
Resistivity: ohm.m
Salinity: 2500.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: 29.6 deg API
Water Salinity: 19000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
430.00	SMSC w /trace oil 96%w , 4%m	4.957
30.00	SOMCW 77%w , 8%m, 8%g, 7%o	0.421
1570.00	SM/GWCO 55%o, 25%w , 16%g, 4%m	22.023

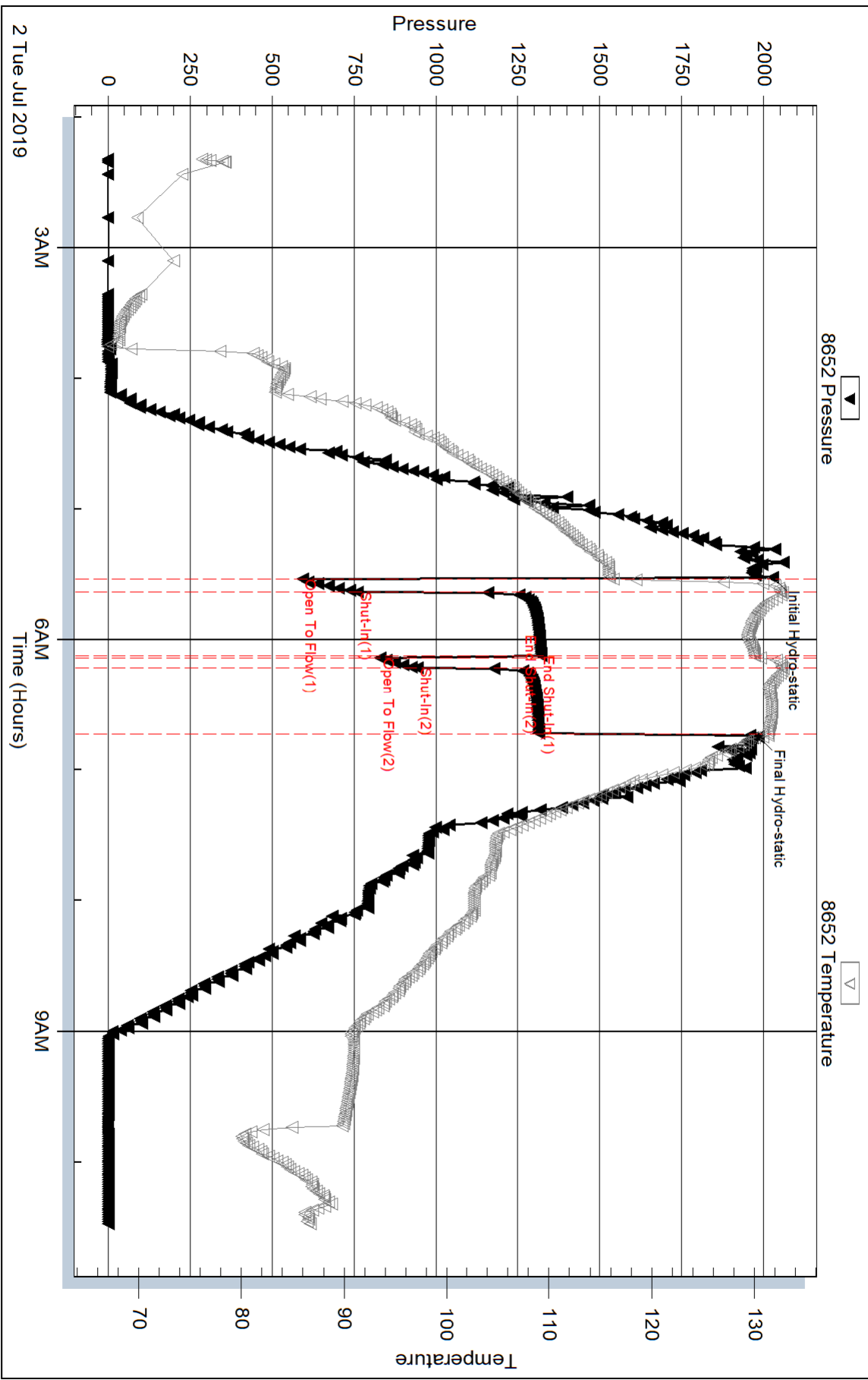
Total Length: 2030.00 ft Total Volume: 27.401 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: Gravity = 32.6 api @ 90 deg F Corrected Gravity = 29.6 api
RW = .332 ohms @ 74.8 deg F Chlorides = 19,000 ppm

Pressure vs. Time



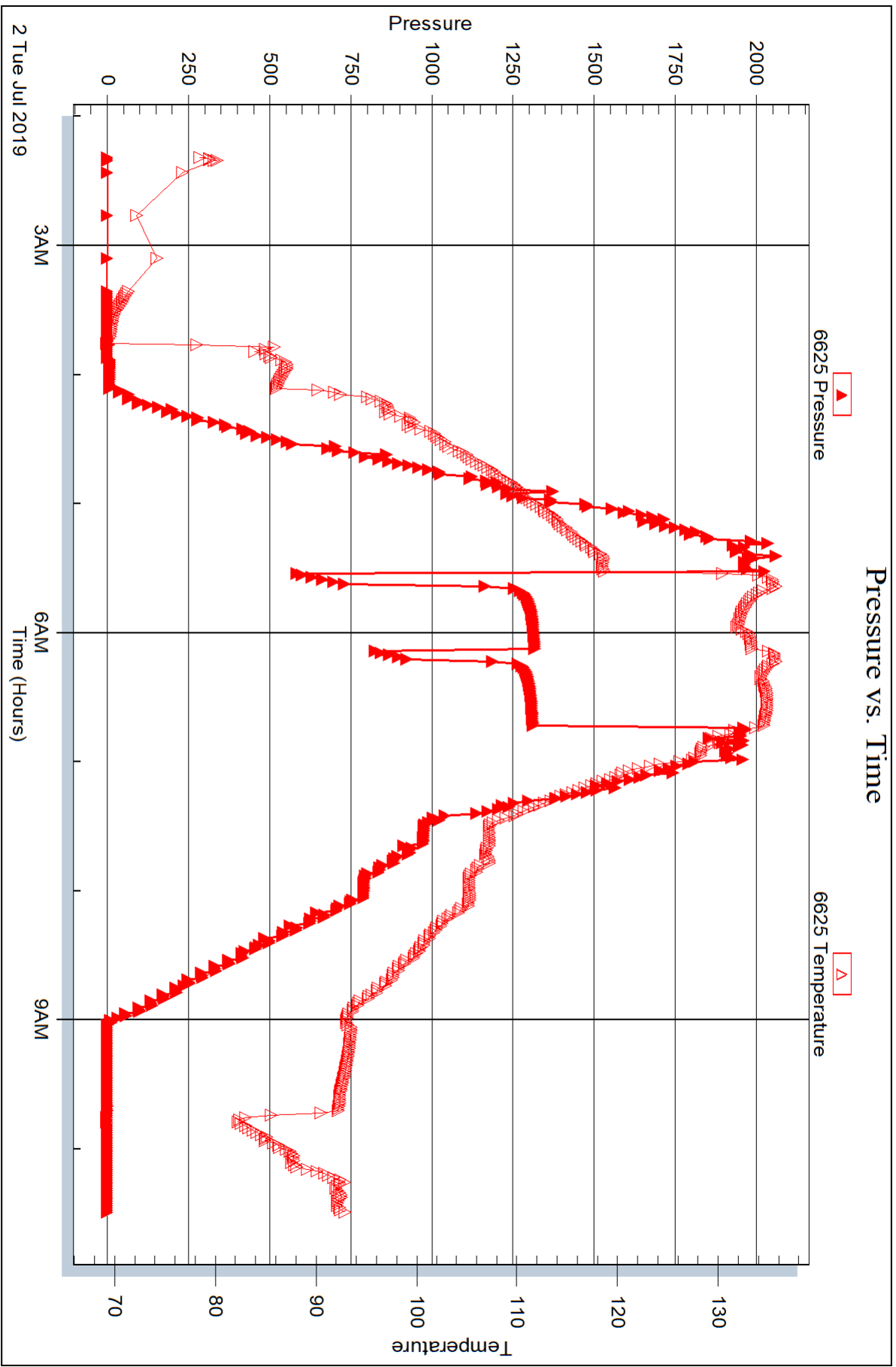
Serial #: 6625

Inside

Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 4



Triobite Testing, Inc

Ref. No: 64683

Printed: 2019.07.05 @ 15:04:44



DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.07.03 @ 11:50:00

End Date: 2019.07.03 @ 18:40:45

Job Ticket #: 64684 DST #: 5

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

Printed: 2019.07.05 @ 15:01:43



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

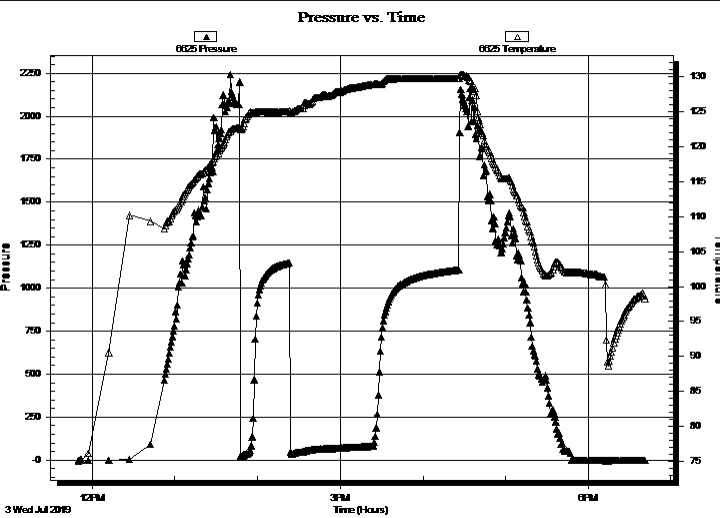
12-5s-33w Rawlins, KS
Cooper #1-12
 Job Ticket: 64684 **DST#: 5**
 Test Start: 2019.07.03 @ 11:50:00

GENERAL INFORMATION:

Formation: **Cherokee**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:47:30
 Time Test Ended: 18:40:45
 Interval: **4285.00 ft (KB) To 4350.00 ft (KB) (TVD)**
 Total Depth: 4350.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 6625 Inside
 Press@RunDepth: psig @ 4286.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.03 End Date: 2019.07.03 Last Calib.: 2019.07.03
 Start Time: 11:50:05 End Time: 18:40:59 Time On Btm:
 Time Off Btm:

TEST COMMENT: 5 - IF: Blow built to 2 1/4"
 30 - IS: No blow back
 60 - FF: Blow built to BOB (11") at 24 min., built to 26"
 60 - FS: Weak surface blow for around 20 min., then died off



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

Recovery		
Length (ft)	Description	Volume (bbl)
59.00	GMWCO 35%o, 26%m, 23%g, 16%w	0.29
59.00	GOCM 77%m, 23%o, 5%g	0.29
52.00	CGO 94%o, 6%g	0.73
0.00	GIP = 200'	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

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64684

DST#: 5

Test Start: 2019.07.03 @ 11:50:00

Tool Information

Drill Pipe:	Length: 4170.00 ft	Diameter: 3.80 inches	Volume: 58.49 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 66000.00 lb
			Total Volume: 59.07 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	4285.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	65.00 ft			
Tool Length:	93.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4258.00	
Shut In Tool	5.00			4263.00	
Hydraulic tool	5.00			4268.00	
EM Tool	4.00			4272.00	
Safety Joint	3.00			4275.00	
Packer	5.00			4280.00	28.00 Bottom Of Top Packer
Packer	5.00			4285.00	
Packer - Shale	0.00			4285.00	
Stubb	1.00			4286.00	
Recorder	0.00	6625	Inside	4286.00	
Recorder	0.00	8652	Outside	4286.00	
Perforations	27.00			4313.00	
Blank Spacing	33.00			4346.00	
Perforations	1.00			4347.00	
Bullnose	3.00			4350.00	65.00 Bottom Packers & Anchor

Total Tool Length: 93.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64684

DST#: 5

Test Start: 2019.07.03 @ 11:50:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 62.00 sec/qt
Water Loss: 9.59 in³
Resistivity: ohm.m
Salinity: 3000.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: 36.2 deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
59.00	GMWCO 35%o, 26%m, 23%g, 16%w	0.290
59.00	GOCM 77%m, 23%o, 5%g	0.290
52.00	CGO 94%o, 6%g	0.729
0.00	GIP = 200'	0.000

Total Length: 170.00 ft Total Volume: 1.309 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: Gravity = 39.4 api @ 92 deg F Corrected Gravity = 36.2 api

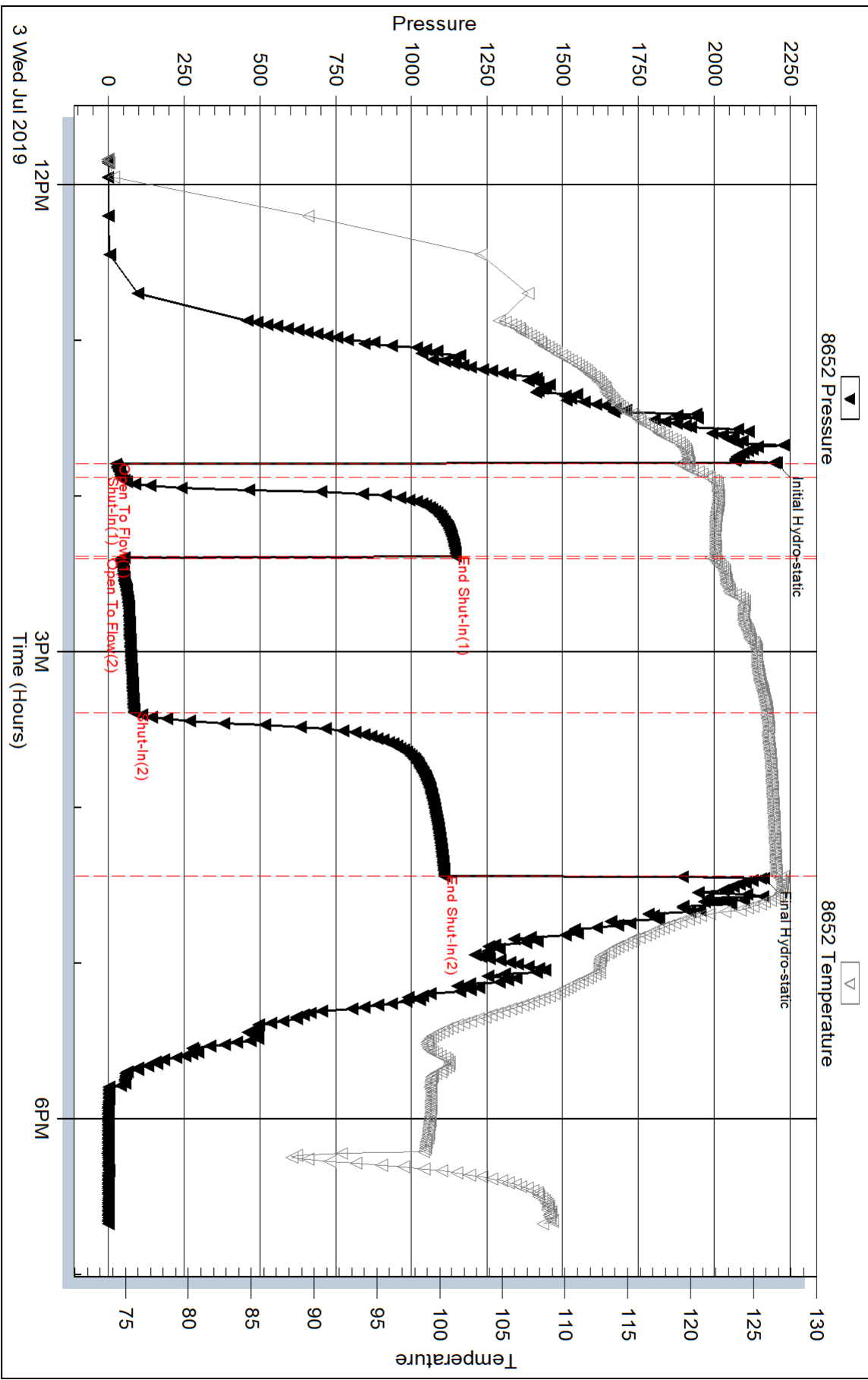
Serial #: 8652

Outside Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 5

Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 64684

Printed: 2019.07.05 @ 15:01:44

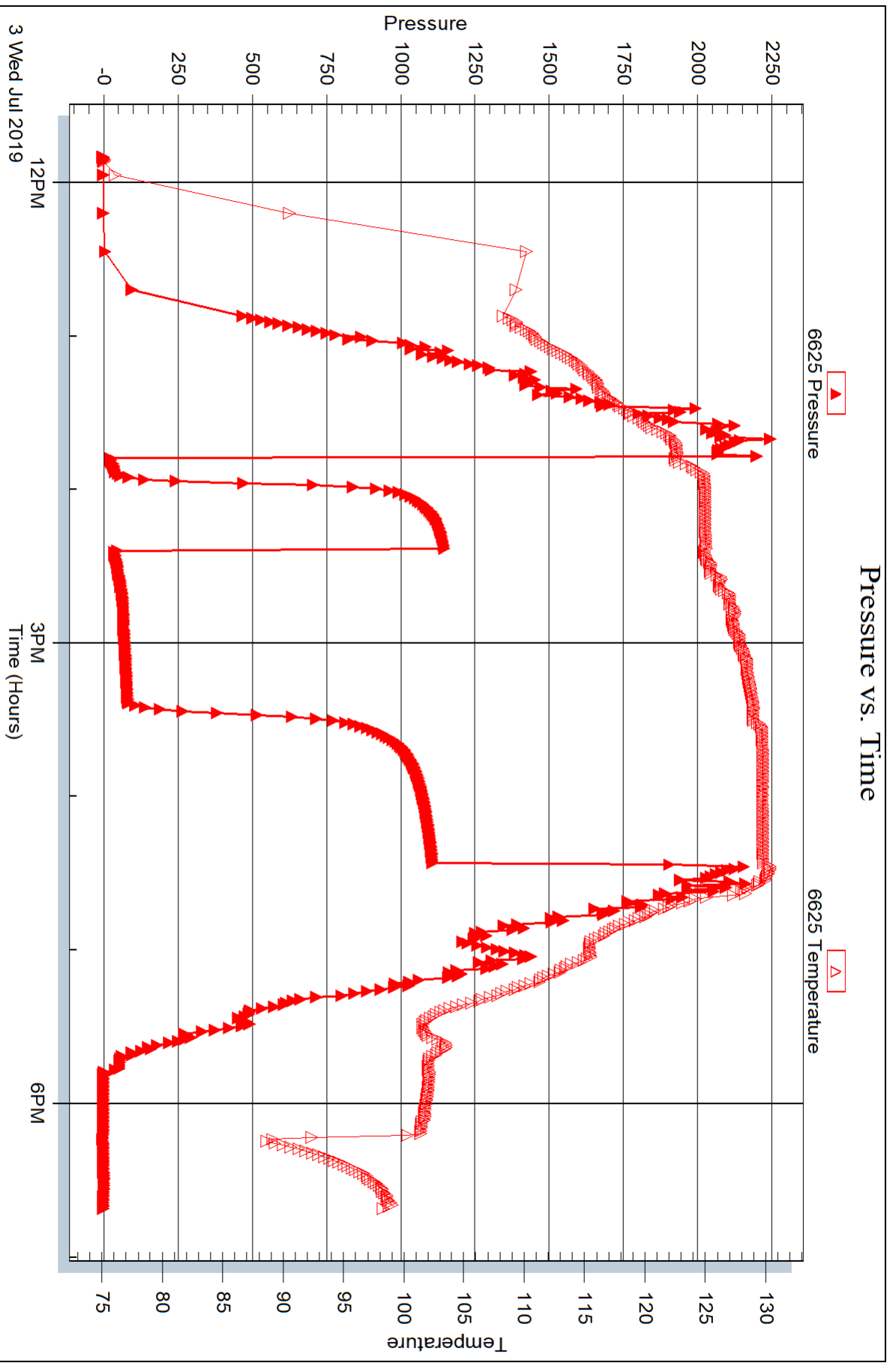
Serial #: 6625

Inside

Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206

ATTN: Rusty Mourning

Cooper #1-12

12-5s-33w Rawlins, KS

Start Date: 2019.07.04 @ 05:00:00

End Date: 2019.07.04 @ 13:05:30

Job Ticket #: 64685 DST #: 6

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

Printed: 2019.07.05 @ 14:53:55



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64685

DST#: 6

Test Start: 2019.07.04 @ 05:00:00

GENERAL INFORMATION:

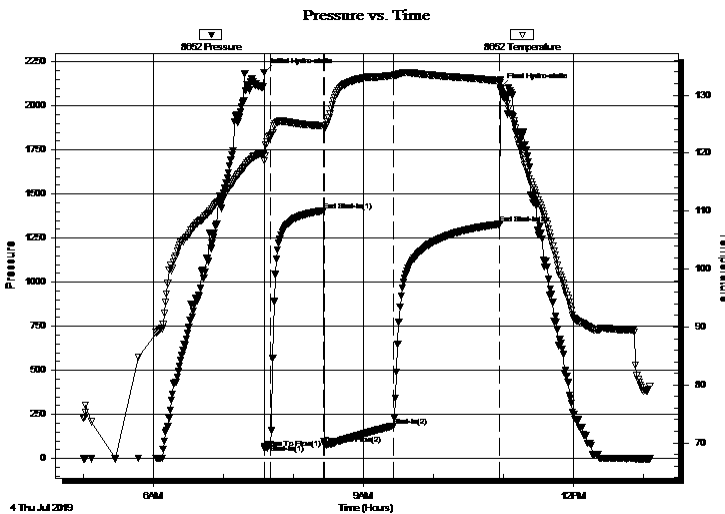
Formation: **Cherokee Sand**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:35:00
 Time Test Ended: 13:05:30
 Interval: **4348.00 ft (KB) To 4421.00 ft (KB) (TVD)**
 Total Depth: 4421.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8652 Outside

Press@RunDepth: 185.15 psig @ 4349.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.04 End Date: 2019.07.04 Last Calib.: 2019.07.04
 Start Time: 05:00:05 End Time: 13:05:29 Time On Btm: 2019.07.04 @ 07:34:45
 Time Off Btm: 2019.07.04 @ 10:57:30

TEST COMMENT: 5 - IF: Blow built to 6 1/2"
 30 - IS: No blow back
 60 - FF: Blow built to BOB (11") at 10 min., built to 50"
 90 - FS: Blow back built to 7"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2189.34	120.02	Initial Hydro-static
1	58.48	118.63	Open To Flow (1)
6	81.54	123.03	Shut-In(1)
51	1404.80	124.74	End Shut-In(1)
52	80.14	124.33	Open To Flow (2)
111	185.15	133.44	Shut-In(2)
202	1329.25	132.47	End Shut-In(2)
203	2103.59	132.20	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
59.00	GMCO 65%o, 25%m, 10%g	0.29
59.00	GSMCO 80%o, 12%g, 8%m	0.29
62.00	GHMCO 54%o, 40%m, 6%g	0.87
270.00	CGO 82%o, 18%g	3.79
0.00	GIP = 290'	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.
 1700 N. Waterfront Pkwy
 Bldg 1200
 Wichita, KS 67206
 ATTN: Rusty Mourning

12-5s-33w Rawlins, KS

Cooper #1-12

Job Ticket: 64685

DST#: 6

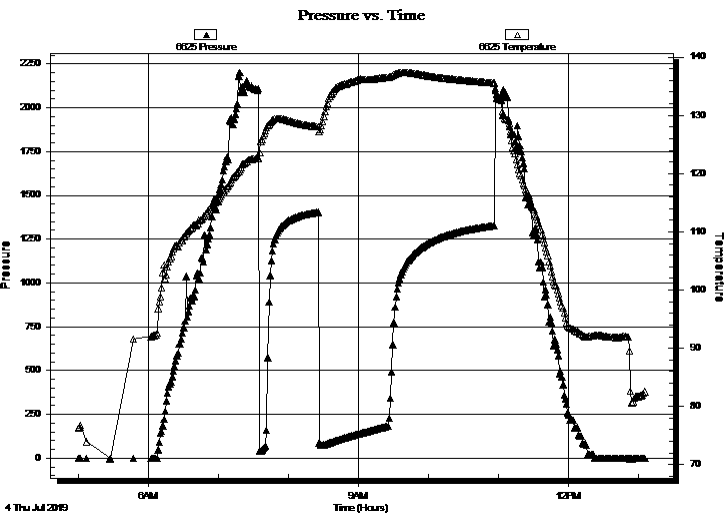
Test Start: 2019.07.04 @ 05:00:00

GENERAL INFORMATION:

Formation: **Cherokee Sand**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 07:35:00
 Time Test Ended: 13:05:30
 Interval: **4348.00 ft (KB) To 4421.00 ft (KB) (TVD)**
 Total Depth: 4421.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3017.00 ft (KB)
 3012.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 6625 Inside
 Press@RunDepth: psig @ 4349.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.04 End Date: 2019.07.04 Last Calib.: 2019.07.04
 Start Time: 05:00:05 End Time: 13:05:59 Time On Btm:
 Time Off Btm:

TEST COMMENT: 5 - IF: Blow built to 6 1/2"
 30 - IS: No blow back
 60 - FF: Blow built to BOB (11") at 10 min., built to 50"
 90 - FS: Blow back built to 7"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
59.00	GMCO 65%o, 25%m, 10%g	0.29
59.00	GSMCO 80%o, 12%g, 8%m	0.29
62.00	GHMCO 54%o, 40%m, 6%g	0.87
270.00	CGO 82%o, 18%g	3.79
0.00	GIP = 290'	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

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64685

DST#: 6

Test Start: 2019.07.04 @ 05:00:00

Tool Information

Drill Pipe:	Length: 4233.00 ft	Diameter: 3.80 inches	Volume: 59.38 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 118.00 ft	Diameter: 2.25 inches	Volume: 0.58 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 59.96 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 56000.00 lb
Depth to Top Packer:	4348.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	73.00 ft			
Tool Length:	101.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4321.00	
Shut In Tool	5.00			4326.00	
Hydraulic tool	5.00			4331.00	
EM Tool	4.00			4335.00	
Safety Joint	3.00			4338.00	
Packer	5.00			4343.00	28.00 Bottom Of Top Packer
Packer	5.00			4348.00	
Packer - Shale	0.00			4348.00	
Stubb	1.00			4349.00	
Recorder	0.00	6625	Inside	4349.00	
Recorder	0.00	8652	Outside	4349.00	
Perforations	5.00			4354.00	
Blank Spacing	64.00			4418.00	
Bullnose	3.00			4421.00	73.00 Bottom Packers & Anchor

Total Tool Length: 101.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

12-5s-33w Rawlins, KS

1700 N. Waterfront Pkwy
Bldg 1200
Wichita, KS 67206
ATTN: Rusty Mourning

Cooper #1-12

Job Ticket: 64685

DST#: 6

Test Start: 2019.07.04 @ 05:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

24.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.17 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3200.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
59.00	GMCO 65%o, 25%m, 10%g	0.290
59.00	GSMCO 80%o, 12%g, 8%m	0.290
62.00	GHMCO 54%o, 40%m, 6%g	0.870
270.00	CGO 82%o, 18%g	3.787
0.00	GIP = 290'	0.000

Total Length: 450.00 ft Total Volume: 5.237 bbl

Num Fluid Samples: 0

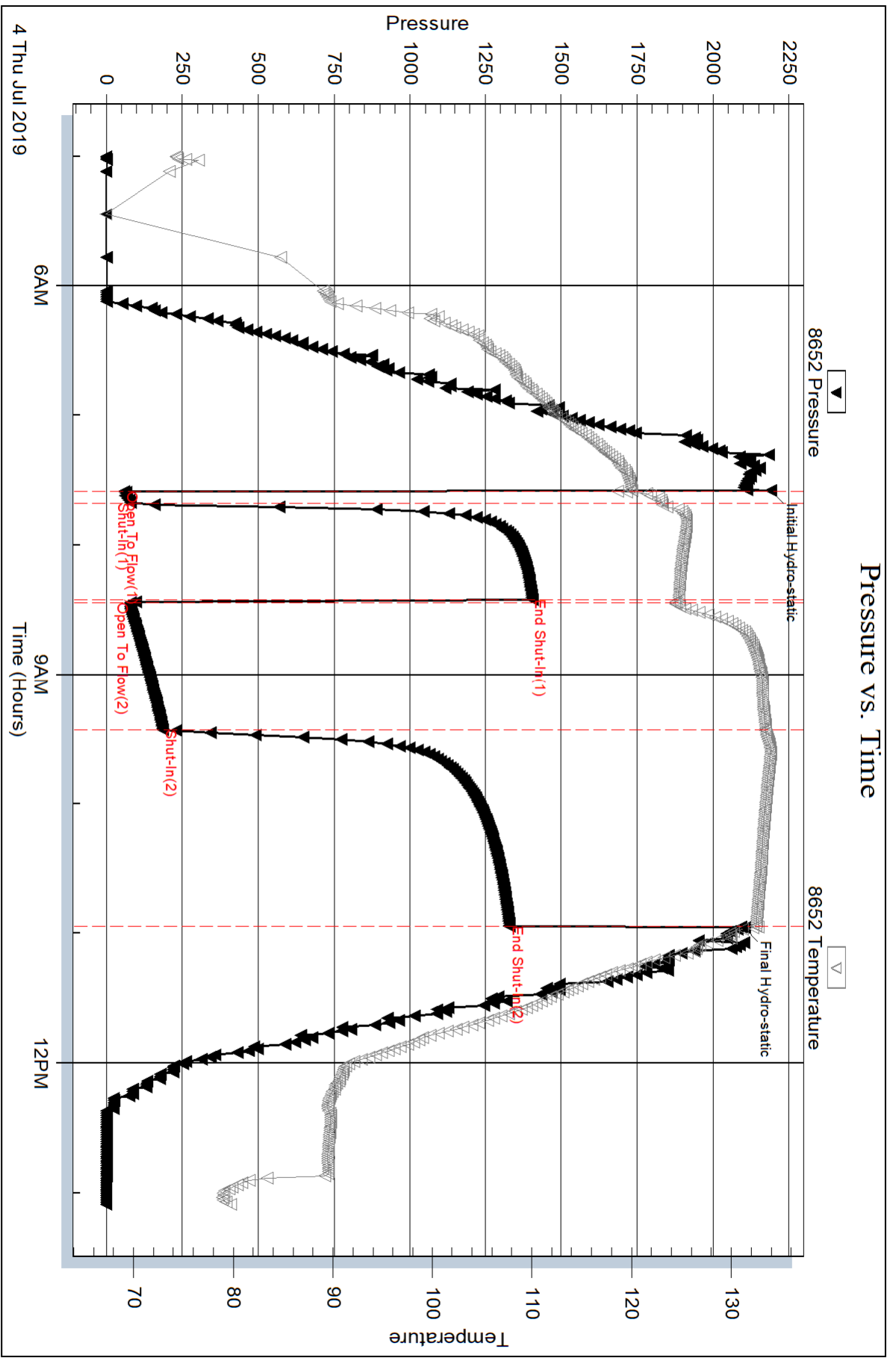
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 27 api @ 82 Deg F Corrected Gravity = 24.8 api



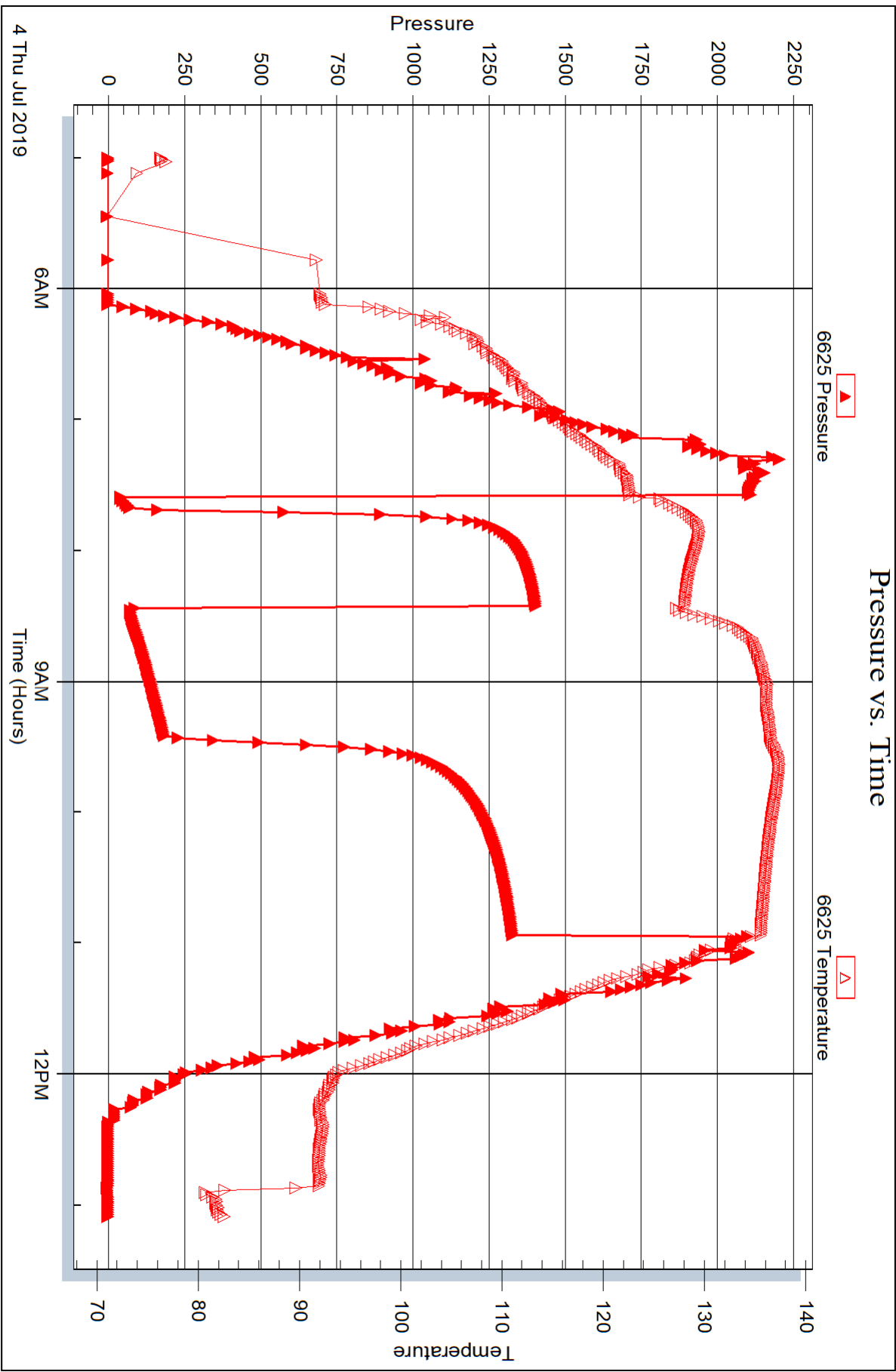
Serial #: 6625

Inside

Mull Drilling Co., Inc.

Cooper #1-12

DST Test Number: 6





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64680

Well Name & No. Cooper #1-12 Test No. 1 Date 6-30-19
 Company Mull Drilling Co. Inc. Elevation 3017 KB 3012 GL
 Address 1700 N. Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW #8
 Location: Sec. 12 Twp 5s Rge. 33w Co. Rawlins State KS

Interval Tested 3823 - 3945 Zone Tested Toronto - LKC "A"
 Anchor Length 122 Drill Pipe Run 3701 Mud Wt. 9.1
 Top Packer Depth 3818 Drill Collars Run 118 Vis 62
 Bottom Packer Depth 3823 (shale) Wt. Pipe Run - WL 7.2
 Total Depth 3945 Chlorides 2000 ppm System LCM 2
 Blow Description IF: Blow built to 6"
ISI: No blowback
FF: Blow built to BOB (11") at 13min, built to 35"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>100</u>	<u>50/WCM</u>	<u>3</u>	<u>24</u>	<u>73</u>	
<u>125</u>	<u>GWCM w/oil spots</u>	<u>6</u>	<u>44</u>	<u>49</u>	
<u>245</u>	<u>GMCW w/trace oil</u>	<u>5</u>	<u>67</u>	<u>28</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 470 BHT 122 Gravity API RW 169 @ 95 °F Chlorides 30,000 ppm
 (A) Initial Hydrostatic 1887 Test 1200 T-On Location 00:45
 (B) First Initial Flow 36 Jars _____ T-Started 3:21
 (C) First Final Flow 89 Safety Joint _____ T-Open 5:43
 (D) Initial Shut-In 1230 Circ Sub _____ T-Pulled 8:34
 (E) Second Initial Flow 96 Hourly Standby _____ T-Out 10:30
 (F) Second Final Flow 234 Mileage 92 RT 92 Comments _____
 (G) Final Shut-In 1217 Sampler _____ EM Tool 0
 (H) Final Hydrostatic 1814 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1542
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1542

Approved By _____ Our Representative James Winder
 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. 64681

Well Name & No. Cooper #1-12 Test No. 2 Date 6-30-19
 Company Mull Drilling Co. Inc Elevation 3017 KB 3012 GL
 Address 1700 N. Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW #8
 Location: Sec. 12 Twp 5s Rge. 33w Co. Rawlins State KS

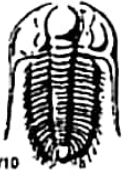
Interval Tested 3948 - 4010 Zone Tested LKC "B-C"
 Anchor Length 62 Drill Pipe Run 3828 Mud Wt. 9.1
 Top Packer Depth 3943 Drill Collars Run 118 Vls 62
 Bottom Packer Depth 3948 (shale) Wt. Pipe Run - WL 7.2
 Total Depth 4010 Chlorides 2000 ppm System LCM 2
 Blow Description IF: Blow built to 1/8"
ISI: No blowback
FF: No blow
Pulled Tool

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>mud w/trace oil</u>	<u>trace</u>		<u>100</u>	

Rec Total 1 BHT 116 Gravity API RW @ F Chlorides ppm
 (A) Initial Hydrostatic 1978 Test 1300 T-On Location 19:15 6/30
 (B) First Initial Flow 21 Jars T-Started 20:09
 (C) First Final Flow 21 Safety Joint T-Open 22:01
 (D) Initial Shut-In 95 Circ Sub T-Pulled 22:55
 (E) Second Initial Flow 20 Hourly Standby T-Out 00:40 7/1
 (F) Second Final Flow 21 Mileage 92 RT 92 Comments
 (G) Final Shut-In - Sampler Em Tool 350 Comped
 (H) Final Hydrostatic 1902 Straddle Ruined Shale Packer
 Shale Packer 250 Ruined Packer
 Extra Packer Extra Copies
 Extra Recorder Sub Total 0
 Day Standby Total 1642
 Accessibility MP/DST Disc't
 Sub Total 1642

Approved By _____ Our Representative James Winder

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TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64682

Well Name & No. Cooper #1-12 Test No. 3 Date 7-1-19
 Company Mull Drilling Co. Inc Elevation 3017 KB 3012 GL
 Address 1700 N Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW #8
 Location: Sec. 12 Twp 5s Rge. 33w Co. Rawlins State KS

Interval Tested 4006 - 4090 Zone Tested LKC "H-J"
 Anchor Length 84 Drill Pipe Run 3890 Mud Wt. 9.2
 Top Packer Depth 4001 Drill Collars Run 118 Vis 57
 Bottom Packer Depth 4006 (shale) Wt. Pipe Run - WL 8.0
 Total Depth 4090 Chlorides 2400 ppm System LCM 2
 Blow Description IF: Blow built to BOB @ 2 1/2 min, built to 27"
ISI: No blowback
EF: Blow built to BOB at 2 1/2 min, built to 129"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>80</u>	<u>mw w/trace of oil</u>	<u>trace</u>	<u>53</u>	<u>47</u>	<u></u>
<u>880</u>	<u>mcw w/trace of oil</u>	<u>trace</u>	<u>73</u>	<u>27</u>	<u></u>
<u>370</u>	<u>smcw w/trace of oil</u>	<u>trace</u>	<u>95</u>	<u>5</u>	<u></u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 1330 BHT 130 Gravity API RW .203 @ 89.5 F Chlorides 26,000 ppm
 (A) Initial Hydrostatic 2022 Test 1300 T-On Location 12:05
 (B) First Initial Flow 88 Jars T-Started 12:33
 (C) First Final Flow 264 Safety Joint T-Open 14:24
 (D) Initial Shut-In 1307 Circ Sub T-Pulled 16:01
 (E) Second Initial Flow 227 Hourly Standby T-Out 18:55
 (F) Second Final Flow 636 Mileage 92 RT 92 Comments
 (G) Final Shut-In 1298 Sampler Em Tool 0
 (H) Final Hydrostatic 1975 Straddle Ruined Shale Packer
 Shale Packer 250 Ruined Packer
 Extra Packer Extra Copies
 Extra Recorder Sub Total 0
 Day Standby Total 1642
 Accessibility MP/DST Disc't
 Sub Total 1642

Approved By _____ Our Representative James Winder
 Triobite 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, tests lost or damaged in the here shall be paid for at cost by the party for whom the test is made.



TRIBOLITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64683

Well Name & No. Cooper #1-12 Test No. 4 Date 7-2-19
 Company Mull Drilling Co. Inc Elevallon 3017 KB 3012 GL
 Address 1700 N. Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW#8
 Location: Sec. 12 Twp 5S Rge. 33W Co. Rawlins State KS

Interval Tested 4097 - 4120 Zone Tested LKC "K"
 Anchor Length 23 Drill Pipe Run 3983 Mud Wt. 9.1
 Top Packer Depth 4092 Drill Collars Run 118 Vis 50
 Bottom Packer Depth 4097 (Shale) Wt. Pipe Run - WL 7.2
 Total Depth 4120 Chlorides 2500 ppm System LCM 2

Blow Description IF: Blow built to BOB (11") at 30sec, built to 163"
ISI: No blowback
FF: Blow built to BOB at 30sec, built to 115"
FSI: Blowback built to 14"

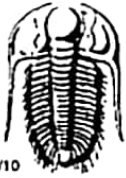
Rec	Feet of	%gas	%oil	%water	%mud
<u>1570</u>	<u>5m/6wco</u>	<u>16</u>	<u>55</u>	<u>25</u>	<u>4</u>
<u>30</u>	<u>SOMCW</u>	<u>8</u>	<u>7</u>	<u>77</u>	<u>8</u>
<u>430</u>	<u>smcw w/trace oil</u>	<u>trace</u>	<u>0</u>	<u>96</u>	<u>4</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2030 BHT 131 Gravity 29.6 API RW .332 @ 74.8°F Chlorides 19,000 ppm

(A) Initial Hydrostatic 2027 Test 1300 T-On Location 2:00
 (B) First Initial Flow 592 Jars _____ T-Started 2:19
 (C) First Final Flow 761 Safety Joint _____ T-Open 5:32
 (D) Initial Shut-In 1321 Circ Sub _____ T-Pulled 6:43
 (E) Second Initial Flow 829 Hourly Standby _____ T-Out 9:50
 (F) Second Final Flow 943 Mileage 92 RJ 92 Comments Rig repaired drive chain when on Bank
 (G) Final Shut-In 1315 Sampler _____ Em Tool 350
 (H) Final Hydrostatic 1984 Straddle _____ Ruined Shale Packer _____
 Shale Packer 250 Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 350
 Day Standby _____ Total 1992
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1642

Approved By _____ Our Representative James Nicks

Tribolite 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.



TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64684

Well Name & No. Cooper #1-12 Test No. 5 Date 7-3-19
 Company Mull Drilling Co. Inc Elevation 3017 KB 3012 GL
 Address 1700 N. Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW #8
 Location: Sec. 12 Twp 5S Rge. 33w Co. Rawlins State KS

Interval Tested 4285-4350 Zone Tested Cherokee
 Anchor Length 65 Drill Pipe Run 4170 Mud Wt. 9.3
 Top Packer Depth 4280 Drill Collars Run 118 Vis 62
 Bottom Packer Depth 4285 (shale) Wt. Pipe Run - WL 9.6
 Total Depth 4350 Chlorides 3000 ppm System LCM 2

Blow Description IF: Blow built to 2 1/4"
ISI: No blowback
FF: Blow built to BOB (11") at 24 min., built to 26"
FSI: Weak surface blow for around 20 min., then died off

Rec	Feet of	%gas	%oil	%water	%mud
<u>52</u>	<u>CGO</u>	<u>6</u>	<u>94</u>	<u>-</u>	<u>-</u>
<u>59</u>	<u>GOCM</u>	<u>5</u>	<u>23</u>	<u>-</u>	<u>77</u>
<u>59</u>	<u>GGMWCO</u>	<u>23</u>	<u>35</u>	<u>16</u>	<u>26</u>
<u>Rec</u>	<u>Feet of GIP = 200'</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>
<u>Rec</u>	<u>Feet of</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>

Rec Total 170 BHT 127 Gravity 36.2 API RW @ °F Chlorides ppm

- (A) Initial Hydrostatic 2204
- (B) First Initial Flow 26
- (C) First Final Flow 44
- (D) Initial Shut-In 1148
- (E) Second Initial Flow 41
- (F) Second Final Flow 85
- (G) Final Shut-In 1108
- (H) Final Hydrostatic 2163

- Test 1300
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 92RT 92
- Sampler
- Straddle
- Shale Packer 250
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1642

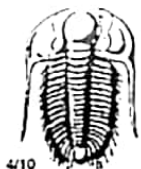
- T-On Location 11:05
- T-Started 11:50
- T-Open 13:47
- T-Pulled 16:26
- T-Out 18:30

- Comments
- EM Tool 350
- Ruined Shale Packer
- Ruined Packer
- Extra Copies
- Sub Total 350
- Total 1992
- MP/DST Disc't

Initial Open 5
 Initial Shut-In 30
 Final Flow 60
 Final Shut-In 60

Approved By _____ Our Representative Jamie Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64685

Well Name & No. Cooper #1-12 Test No. 6 Date 7-4-19
 Company Mull Drilling Co. Inc Elevation 3017 KB 3012 GL
 Address 1700 N. Waterfront PKWY Bldg 1200 Wichita, KS 67206
 Co. Rep / Geo. Rusty Mourning Rig WW#8
 Location: Sec. 12 Twp 5S Rge. 33W Co. Rawlins State KS

Interval Tested 4348-4421 Zone Tested Cherokee Sand
 Anchor Length 73 Drill Pipe Run 4233 Mud Wt. 9.1
 Top Packer Depth 4343 Drill Collars Run 118 Vis 59
 Bottom Packer Depth 4348 (Shale) Wt. Pipe Run - WL 7.2
 Total Depth 4421 Chlorides 3200 ppm System LCM 2
 Blow Description IF: Blow built to 6 1/2"
ISI: No blowback
FF: Blow built to BOB (11") at 10 min, built to 50"
FSI: Blowback built to 7"

Rec	Feet of	%gas	%oil	%water	%mud
270	C60	18	82	-	-
62	6HMCO	6	54	-	40
59	6SMCO	12	80	-	8
59	6MCO	10	65	-	25
	GIP=290'				

Rec Total 450 BHT 133 Gravity 24.8 API RW @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2189 Test 1300 T-On Location 4:15
 (B) First Initial Flow 58 Jars _____ T-Started 5:00
 (C) First Final Flow 82 Safety Joint _____ T-Open 7:35
 (D) Initial Shut-In 1405 Circ Sub _____ T-Pulled 10:56
 (E) Second Initial Flow 80 Hourly Standby _____ T-Out 13:00
 (F) Second Final Flow 185 Mileage 92RT 92 Comments _____
 (G) Final Shut-In 1329 Sampler _____
 (H) Final Hydrostatic 2104 Straddle _____ EM Tool 0
 Shale Packer 250 Ruined Shale Packer 350
 Extra Packer _____ Ruined Packer _____
 Extra Recorder _____ Sub Total 350
 Day Standby _____ Total 1992
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1642

Approved By _____ Our Representative James Winder
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