



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.09.27 @ 18:16:00

End Date: 2019.09.28 @ 02:43:30

Job Ticket #: 66037 DST #: 1

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

Printed: 2019.10.04 @ 15:32:09



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66037

DST#: 1

Test Start: 2019.09.27 @ 18:16:00

GENERAL INFORMATION:

Formation: **Oread**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 21:50:20
 Time Test Ended: 02:43:30
 Interval: **4146.00 ft (KB) To 4235.00 ft (KB) (TVD)**
 Total Depth: 4235.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

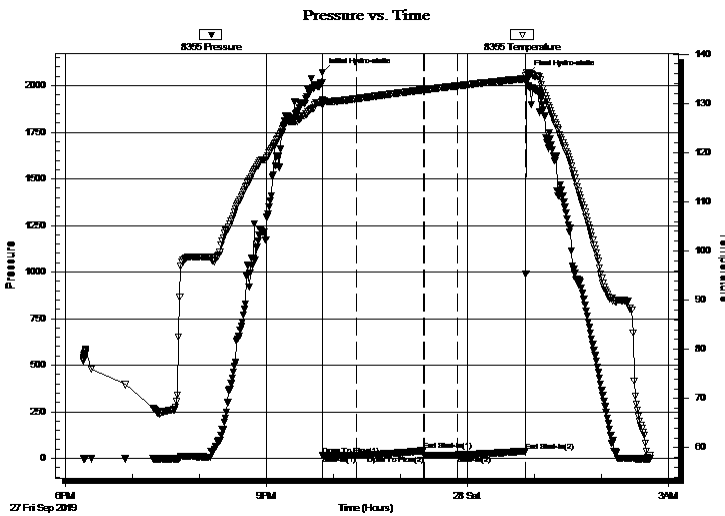
Serial #: 8355

Outside

Press@RunDepth: 18.12 psig @ 4147.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.27 End Date: 2019.09.28 Last Calib.: 2019.09.28
 Start Time: 18:16:01 End Time: 02:43:30 Time On Btm: 2019.09.27 @ 21:49:50
 Time Off Btm: 2019.09.28 @ 00:53:20

TEST COMMENT: 30-IF-1/4" blow @ open declined to surface blow @ 10 mins died @ 18 mins
 60-ISI-No blow back
 30-FF-No blow
 60-FSI-No blow

PRESSURE SUMMARY



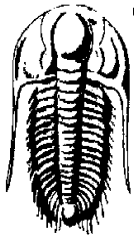
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2071.07	130.53	Initial Hydro-static
1	18.09	129.70	Open To Flow (1)
31	17.53	130.94	Shut-In(1)
91	41.62	132.76	End Shut-In(1)
92	17.03	132.76	Open To Flow (2)
121	18.12	133.56	Shut-In(2)
183	38.00	135.02	End Shut-In(2)
184	2060.07	136.29	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.02

Gas Rates

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



**TRILOBITE
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DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66037

DST#: 1

Test Start: 2019.09.27 @ 18:16:00

GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:50:20

Time Test Ended: 02:43:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4146.00 ft (KB) To 4235.00 ft (KB) (TVD)

Total Depth: 4235.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3345.00 ft (KB)

3340.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8645 Inside

Press@RunDepth: psig @ 4147.00 ft (KB)

Start Date: 2019.09.27

End Date:

2019.09.28

Start Time: 18:16:01

End Time:

02:43:30

Capacity: 8000.00 psig

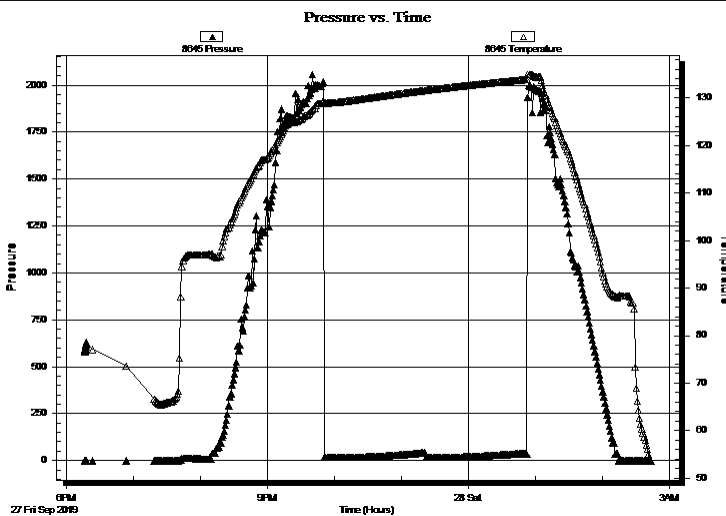
Last Calib.:

2019.09.28

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IF-1/4" blow @ open declined to surface blow @ 10 mins died @ 18 mins
60-ISI-No blow back
30-FF-No blow
60-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.02

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66037 **DST#: 1**
Test Start: 2019.09.27 @ 18:16:00

Tool Information

Drill Pipe:	Length: 3950.00 ft	Diameter: 3.80 inches	Volume: 55.41 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:	25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose:	74000.00 lb
			<u>Total Volume: 56.28 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4146.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	89.00 ft				
Tool Length:	117.00 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			4119.00	
Shut In Tool	5.00			4124.00	
Hydraulic tool	5.00		Inside	4129.00	
Jars	5.00			4134.00	
Safety Joint	2.00			4136.00	
Packer	5.00			4141.00	28.00 Bottom Of Top Packer
Packer	5.00			4146.00	
Stubb	1.00			4147.00	
Recorder	0.00	8355	Outside	4147.00	
Recorder	0.00	8645	Inside	4147.00	
Perforations	20.00			4167.00	
Change Over Sub	1.00			4168.00	
Drill Pipe	63.00			4231.00	
Change Over Sub	1.00			4232.00	
Bullnose	3.00			4235.00	89.00 Bottom Packers & Anchor

Total Tool Length: 117.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66037 **DST#: 1**
Test Start: 2019.09.27 @ 18:16:00

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: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 600.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%M	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

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

Laboratory Name: Laboratory Location:

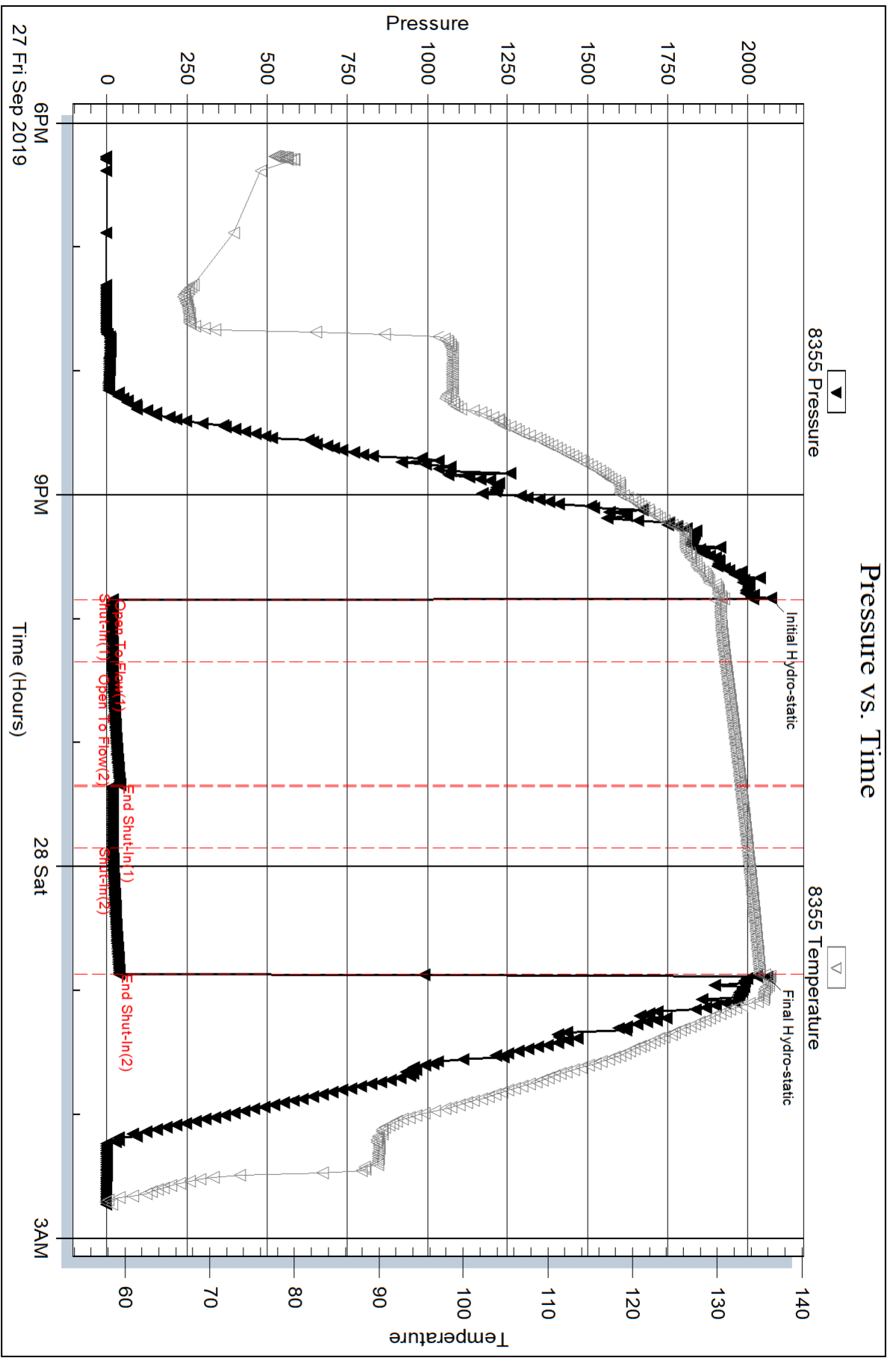
Recovery Comments:

Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 66037

Printed: 2019.10.04 @ 15:32:10

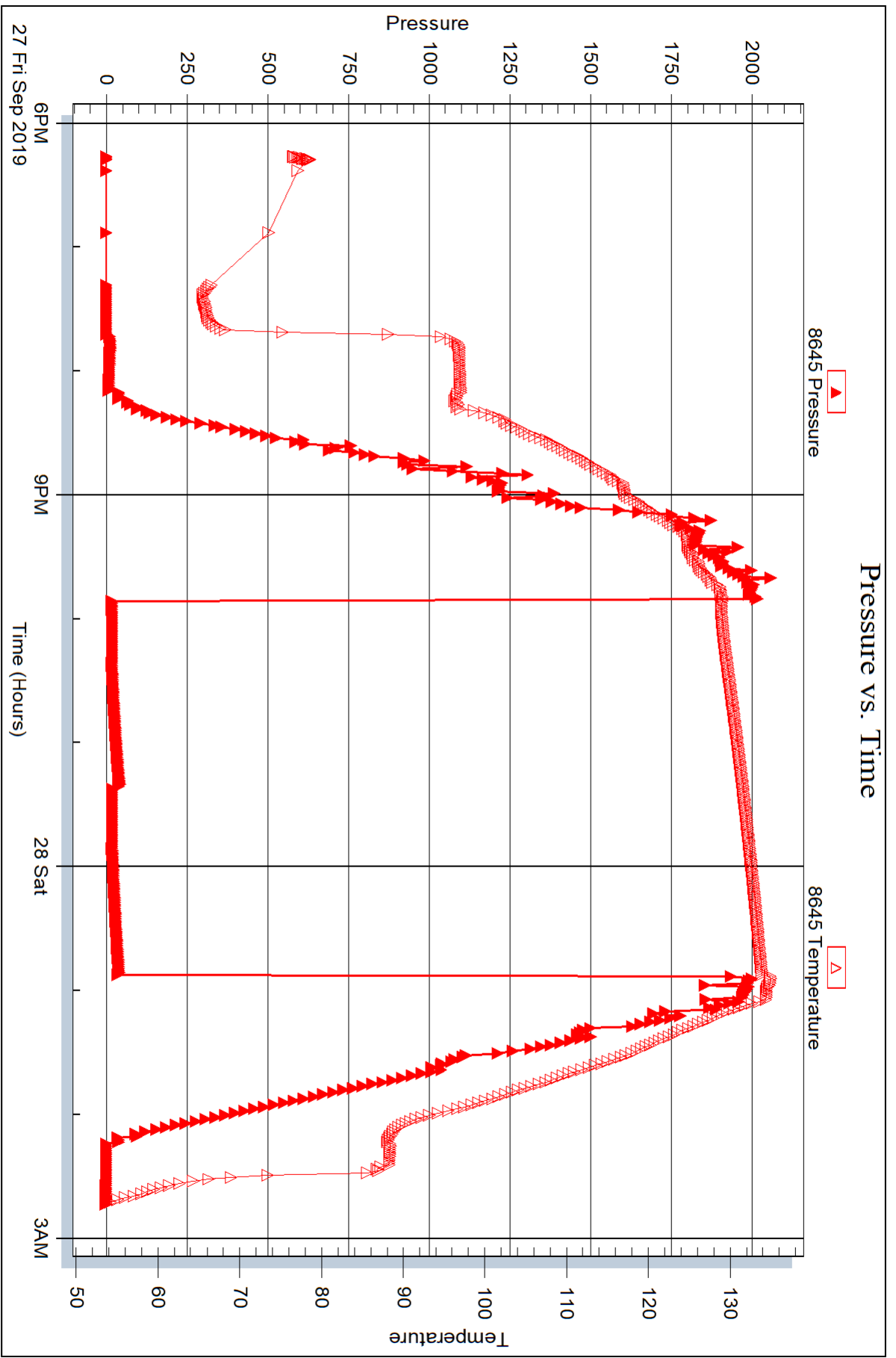
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 66037

Printed: 2019.10.04 @ 15:32:10



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.09.28 @ 12:29:00

End Date: 2019.09.28 @ 20:09:39

Job Ticket #: 66038 DST #: 2

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

Printed: 2019.10.04 @ 15:31:25



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne, KS

Olive #1-21

Job Ticket: 66038

DST#: 2

Test Start: 2019.09.28 @ 12:29:00

GENERAL INFORMATION:

Formation: **LKC A**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 15:00:50
 Time Test Ended: 20:09:39
 Interval: **4219.00 ft (KB) To 4300.00 ft (KB) (TVD)**
 Total Depth: 4300.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

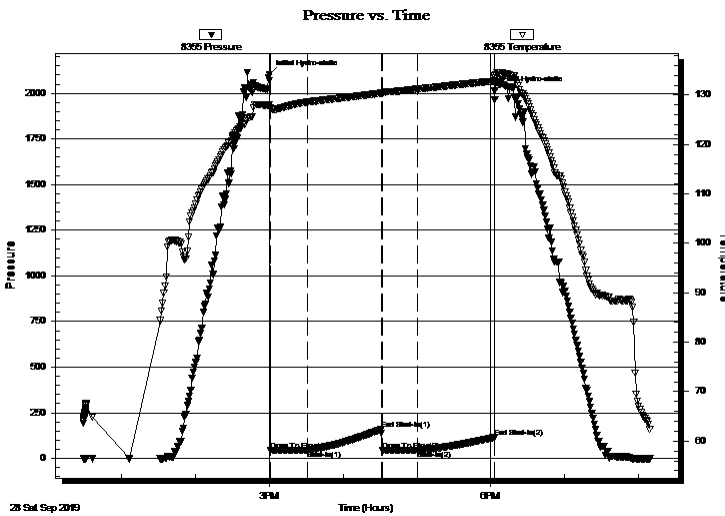
Serial #: 8355

Outside

Press@RunDepth: 45.78 psig @ 4220.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.28 End Date: 2019.09.28 Last Calib.: 2019.09.28
 Start Time: 12:29:01 End Time: 20:09:40 Time On Btm: 2019.09.28 @ 15:00:00
 Time Off Btm: 2019.09.28 @ 18:03:20

TEST COMMENT: 30-IF-2" Blow @ open built to 2 3/4" in 15 mins declined to 2 1/2"
 60-ISI-No blow back
 30-FF-No blow
 60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.96	128.11	Initial Hydro-static
1	44.71	127.48	Open To Flow (1)
31	45.63	128.56	Shut-In(1)
91	159.12	130.35	End Shut-In(1)
92	44.70	130.33	Open To Flow (2)
121	45.78	131.20	Shut-In(2)
183	114.02	132.83	End Shut-In(2)
184	2013.62	133.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
59.00	Mud 100%M	0.29

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66038

DST#: 2

Test Start: 2019.09.28 @ 12:29:00

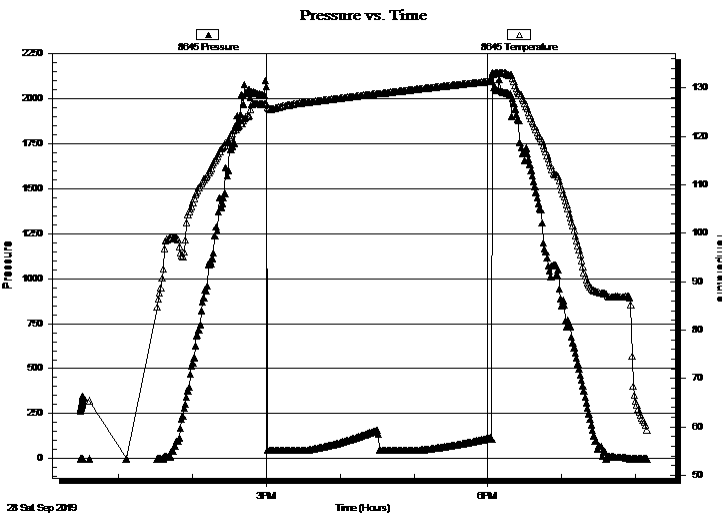
GENERAL INFORMATION:

Formation: **LKC A**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 15:00:50
Time Test Ended: 20:09:39
Interval: **4219.00 ft (KB) To 4300.00 ft (KB) (TVD)**
Total Depth: 4300.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches
Hole Condition: Fair
Test Type: Conventional Bottom Hole (Reset)
Tester: Shawn Wheelbarger
Unit No: 76
Reference Elevations: 3345.00 ft (KB)
3340.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8645 Inside

Press@RunDepth: psig @ 4220.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.09.28 End Date: 2019.09.28 Last Calib.: 2019.09.28
Start Time: 12:29:01 End Time: 20:09:30 Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IF-2" Blow @ open built to 2 3/4" in 15 mins declined to 2 1/2"
60-ISI-No blow back
30-FF-No blow
60-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
59.00	Mud 100%M	0.29

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc

21-2s-37w Cheyenne,KS

250 N Water STE 300
Wichita KS 67202

Olive #1-21

Job Ticket: 66038

DST#: 2

ATTN: Brad Rine

Test Start: 2019.09.28 @ 12:29:00

Tool Information

Drill Pipe:	Length: 4044.00 ft	Diameter: 3.80 inches	Volume: 56.73 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: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 57.60 bbl</u>	Tool Chased 4.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4219.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	81.00 ft			
Tool Length:	109.00 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			4192.00	
Shut In Tool	5.00			4197.00	
Hydraulic tool	5.00		Inside	4202.00	
Jars	5.00			4207.00	
Safety Joint	2.00			4209.00	
Packer	5.00			4214.00	28.00 Bottom Of Top Packer
Packer	5.00			4219.00	
Stubb	1.00			4220.00	
Recorder	0.00	8355	Outside	4220.00	
Recorder	0.00	8645	Inside	4220.00	
Perforations	12.00			4232.00	
Change Over Sub	1.00			4233.00	
Drill Pipe	63.00			4296.00	
Change Over Sub	1.00			4297.00	
Bullnose	3.00			4300.00	81.00 Bottom Packers & Anchor

Total Tool Length: 109.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66038 **DST#: 2**
Test Start: 2019.09.28 @ 12:29:00

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: bbl		
Water Loss: 6.38 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 800.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

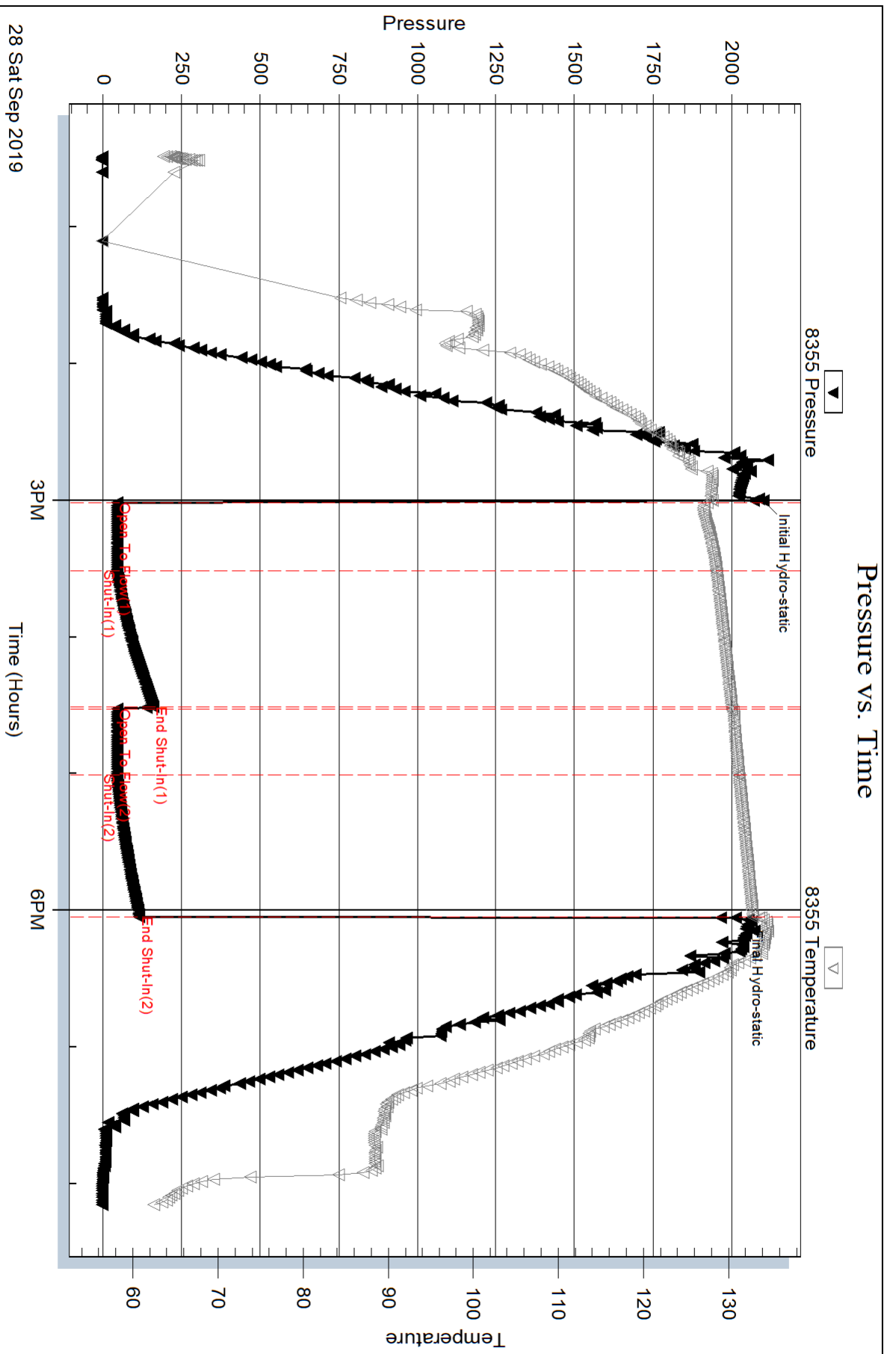
Length ft	Description	Volume bbl
59.00	Mud 100%M	0.290

Total Length: 59.00 ft Total Volume: 0.290 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:



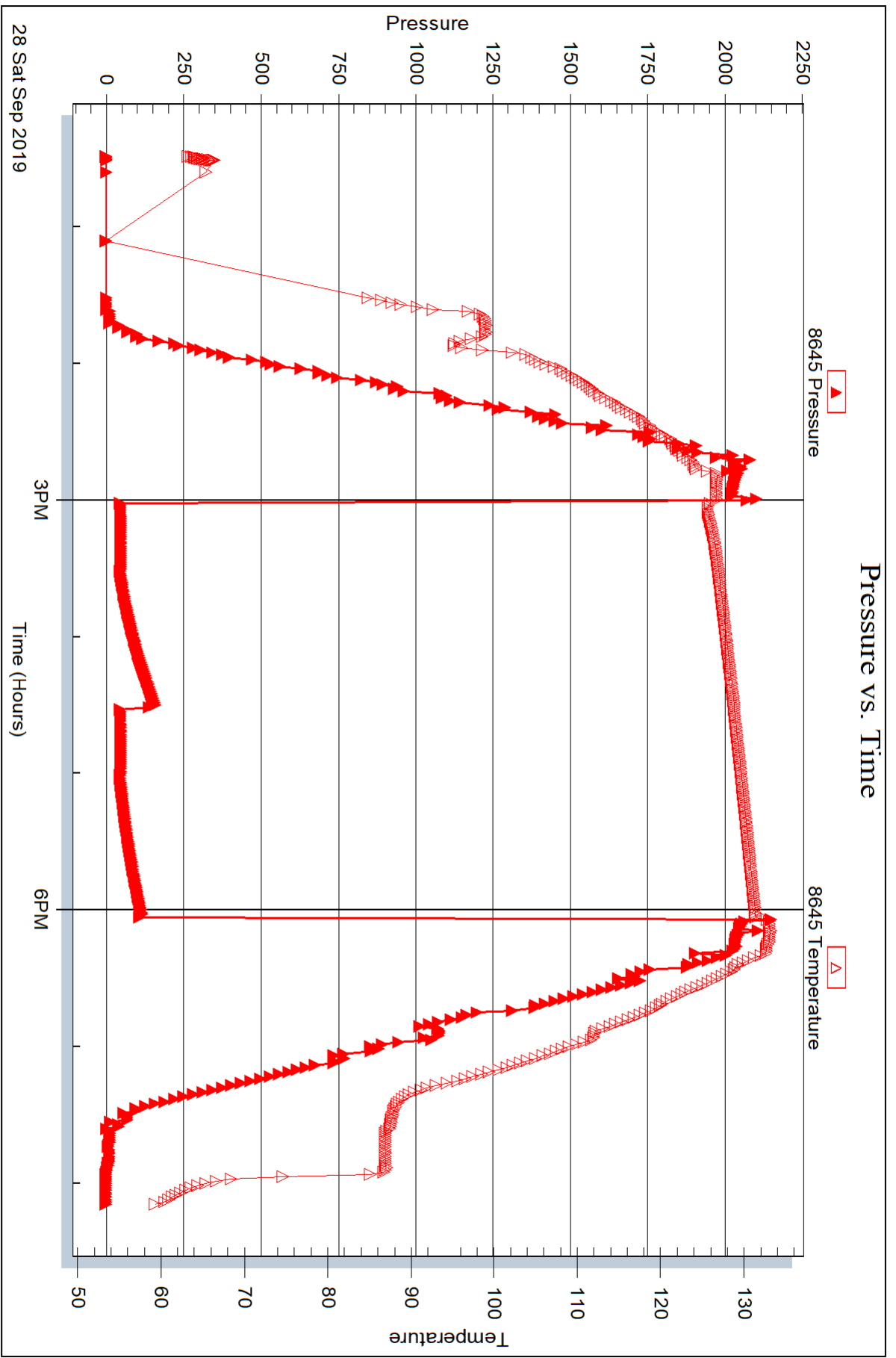
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 66038

Printed: 2019.10.04 @ 15:31:26



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.09.29 @ 07:25:00

End Date: 2019.09.29 @ 14:49:30

Job Ticket #: 66039 DST #: 3

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

Printed: 2019.10.04 @ 15:29:59



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne, KS

Olive #1-21

Job Ticket: 66039

DST#: 3

Test Start: 2019.09.29 @ 07:25:00

GENERAL INFORMATION:

Formation: **Lansing D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:56:30

Time Test Ended: 14:49:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

Interval: 4291.00 ft (KB) To 4370.00 ft (KB) (TVD)

Total Depth: 4370.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3345.00 ft (KB)

3340.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8355 Outside

Press@RunDepth: 21.95 psig @ 4292.00 ft (KB)

Start Date: 2019.09.29

End Date:

2019.09.29

Start Time: 07:25:01

End Time:

14:49:30

Capacity: 8000.00 psig

Last Calib.: 2019.09.29

Time On Btm: 2019.09.29 @ 09:55:50

Time Off Btm: 2019.09.29 @ 12:58:20

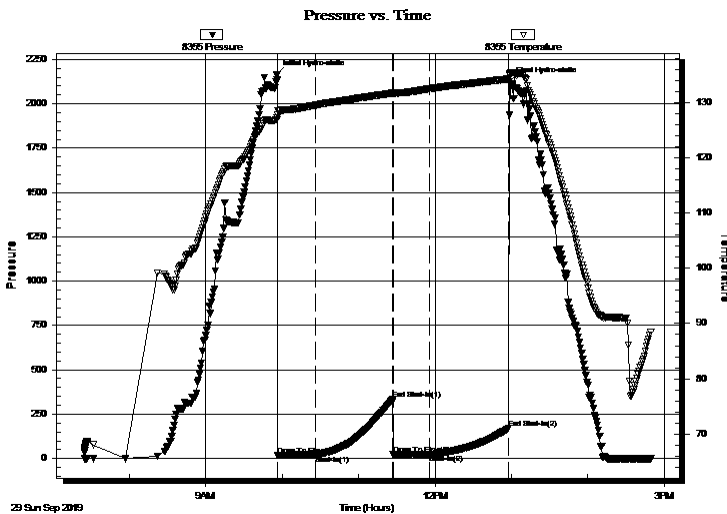
TEST COMMENT: 30-IF-1/2" Blow @ open built to 1 1/4"

60-ISI-No blow back

30-FF-No blow

60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2162.61	126.96	Initial Hydro-static
1	19.00	127.81	Open To Flow (1)
31	20.05	129.55	Shut-In(1)
91	331.83	131.72	End Shut-In(1)
92	21.42	131.67	Open To Flow (2)
120	21.95	132.50	Shut-In(2)
182	169.10	134.29	End Shut-In(2)
183	2126.52	135.09	Final Hydro-static

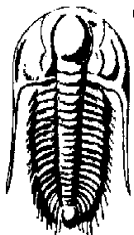
Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%	0.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne, KS

Olive #1-21

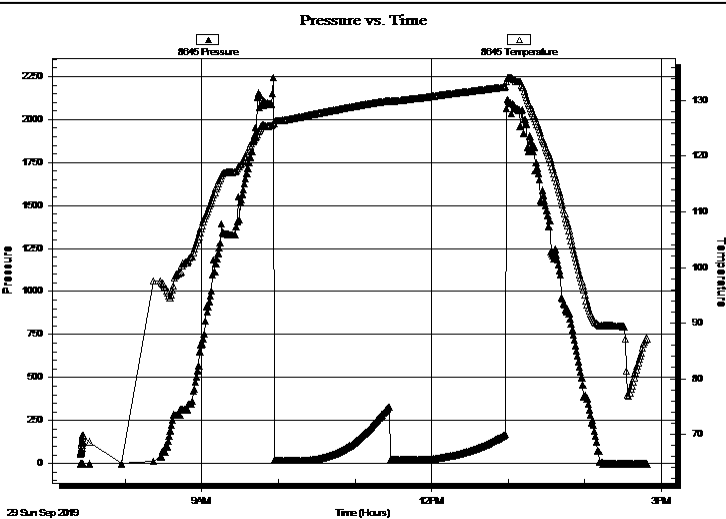
Job Ticket: 66039 **DST#: 3**
Test Start: 2019.09.29 @ 07:25:00

GENERAL INFORMATION:

Formation: Lansing D		
Deviated: No Whipstock: ft (KB)		Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 09:56:30		Tester: Shaw n Wheelbarger
Time Test Ended: 14:49:30		Unit No: 76
Interval: 4291.00 ft (KB) To 4370.00 ft (KB) (TVD)		Reference Elevations: 3345.00 ft (KB)
Total Depth: 4370.00 ft (KB) (TVD)		3340.00 ft (CF)
Hole Diameter: 7.88 inches	Hole Condition: Fair	KB to GR/CF: 5.00 ft

Serial #: 8645	Inside				
Press@RunDepth: psig @ 4292.00 ft (KB)		Capacity: 8000.00 psig			
Start Date: 2019.09.29 End Date: 2019.09.29		Last Calib.: 1899.12.30			
Start Time: 07:25:01 End Time: 14:49:00		Time On Btm:			
		Time Off Btm:			

TEST COMMENT: 30-IF-1/2" Blow @ open built to 1 1/4"
60-ISI-No blow back
30-FF-No blow
60-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%	0.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66039 **DST#: 3**
Test Start: 2019.09.29 @ 07:25:00

Tool Information

Drill Pipe:	Length: 4107.00 ft	Diameter: 3.80 inches	Volume: 57.61 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: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 58.48 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4291.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	79.00 ft			
Tool Length:	107.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4264.00	
Shut In Tool	5.00			4269.00	
Hydraulic tool	5.00		Inside	4274.00	
Jars	5.00			4279.00	
Safety Joint	2.00			4281.00	
Packer	5.00			4286.00	28.00 Bottom Of Top Packer
Packer	5.00			4291.00	
Stubb	1.00			4292.00	
Recorder	0.00	8355	Outside	4292.00	
Recorder	0.00	8645	Inside	4292.00	
Perforations	10.00			4302.00	
Change Over Sub	1.00			4303.00	
Drill Pipe	63.00			4366.00	
Change Over Sub	1.00			4367.00	
Bullnose	3.00			4370.00	79.00 Bottom Packers & Anchor

Total Tool Length: 107.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66039 **DST#: 3**
Test Start: 2019.09.29 @ 07:25:00

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: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1100.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%	0.025

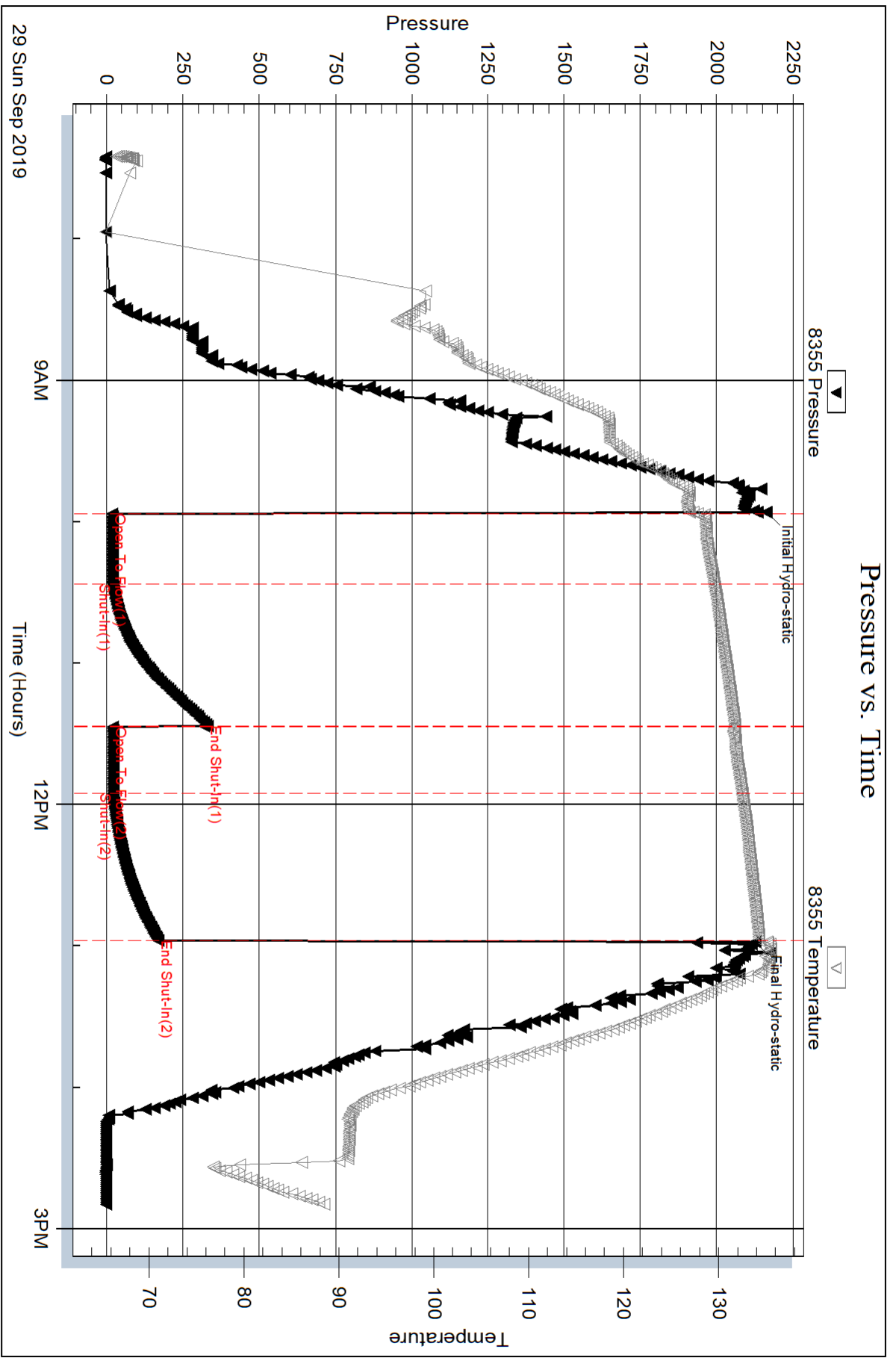
Total Length: 5.00 ft Total Volume: 0.025 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 3



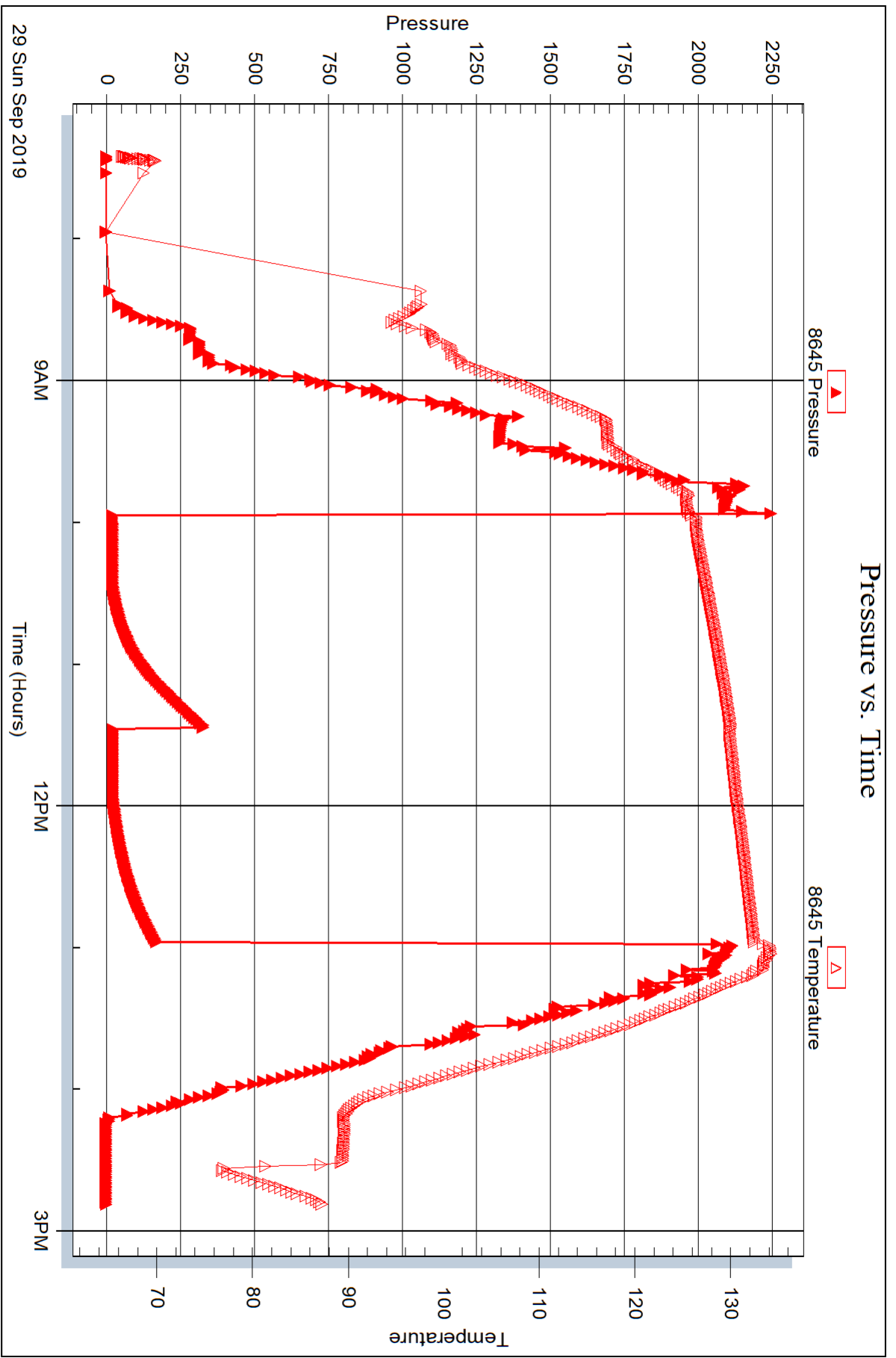
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.09.30 @ 12:00:00

End Date: 2019.09.30 @ 19:27:32

Job Ticket #: 66040 DST #: 4

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

Printed: 2019.10.04 @ 15:29:36



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66040

DST#: 4

Test Start: 2019.09.30 @ 12:00:00

GENERAL INFORMATION:

Formation: **LKC G**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:12:32
 Time Test Ended: 19:27:32
 Interval: **4352.00 ft (KB) To 4420.00 ft (KB) (TVD)**
 Total Depth: 4420.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

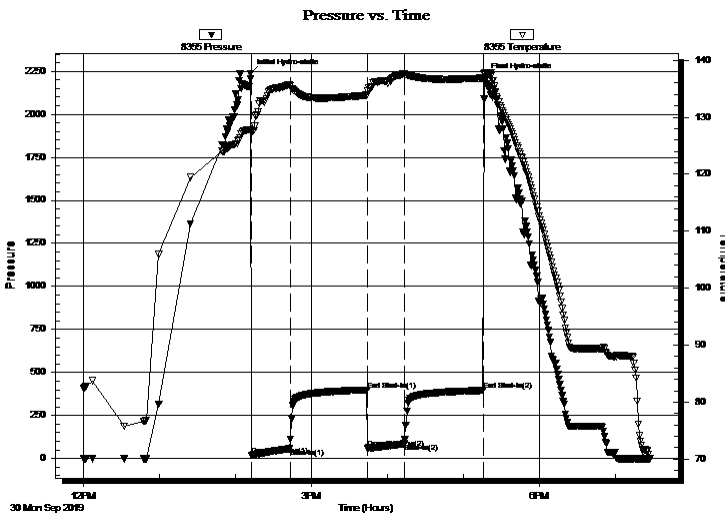
Serial #: 8355

Outside

Press@RunDepth: 86.55 psig @ 4353.00 ft (KB)
 Start Date: 2019.09.30 End Date: 2019.09.30
 Start Time: 12:00:01 End Time: 19:27:32
 Capacity: 8000.00 psig
 Last Calib.: 2019.09.30
 Time On Btm: 2019.09.30 @ 14:11:42
 Time Off Btm: 2019.09.30 @ 17:16:42

TEST COMMENT: 30-IF-1/4" Blow @ open built to 2 3/4"
 60-ISI-No blow back
 30-FF-Weak surface blow built to 1 1/4"
 60-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2237.09	127.87	Initial Hydro-static
1	17.63	127.35	Open To Flow (1)
32	56.90	135.78	Shut-In(1)
92	397.94	133.87	End Shut-In(1)
93	59.16	134.60	Open To Flow (2)
122	86.55	137.65	Shut-In(2)
184	395.13	136.88	End Shut-In(2)
186	2210.98	137.86	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
128.00	SGCM W/ Oil spots 8%G, 92%M	0.63

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66040

DST#: 4

Test Start: 2019.09.30 @ 12:00:00

GENERAL INFORMATION:

Formation: LKC G		Test Type: Conventional Bottom Hole (Reset)
Deviated: No Whipstock: ft (KB)		Tester: Shaw n Wheelbarger
Time Tool Opened: 14:12:32		Unit No: 76
Time Test Ended: 19:27:32		
Interval: 4352.00 ft (KB) To 4420.00 ft (KB) (TVD)		Reference Elevations: 3345.00 ft (KB)
Total Depth: 4420.00 ft (KB) (TVD)		3340.00 ft (CF)
Hole Diameter: 7.88 inches	Hole Condition: Fair	KB to GR/CF: 5.00 ft

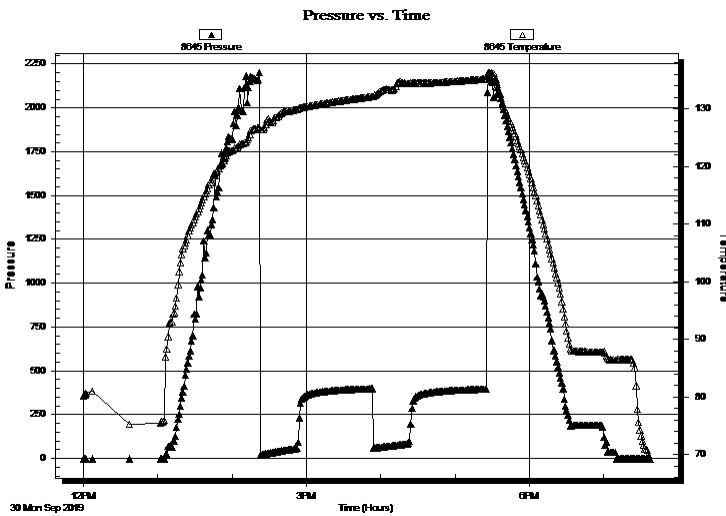
Serial #: 8645

Inside

Press@RunDepth: psig @ 4353.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2019.09.30	End Date: 2019.09.30
Start Time: 12:00:01	End Time: 19:37:30
	Last Calib.: 2019.09.30
	Time On Btm:
	Time Off Btm:

TEST COMMENT: 30-IF-1/4" Blow @ open built to 2 3/4"
60-ISI-No blow back
30-FF-Weak surface blow built to 1 1/4"
60-FSI-No blow

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
128.00	SGCM W/ Oil spots 8%G, 92%M	0.63

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66040 **DST#: 4**
Test Start: 2019.09.30 @ 12:00:00

Tool Information

Drill Pipe:	Length: 4169.00 ft	Diameter: 3.80 inches	Volume: 58.48 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: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 59.35 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4352.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	68.00 ft			
Tool Length:	96.00 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			4325.00	
Shut In Tool	5.00			4330.00	
Hydraulic tool	5.00		Inside	4335.00	
Jars	5.00			4340.00	
Safety Joint	2.00			4342.00	
Packer	5.00			4347.00	28.00 Bottom Of Top Packer
Packer	5.00			4352.00	
Stubb	1.00			4353.00	
Recorder	0.00	8355	Outside	4353.00	
Recorder	0.00	8645	Inside	4353.00	
Perforations	31.00			4384.00	
Change Over Sub	1.00			4385.00	
Drill Pipe	31.00			4416.00	
Change Over Sub	1.00			4417.00	
Bullnose	3.00			4420.00	68.00 Bottom Packers & Anchor

Total Tool Length: 96.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66040 **DST#: 4**
Test Start: 2019.09.30 @ 12:00:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.79 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1100.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

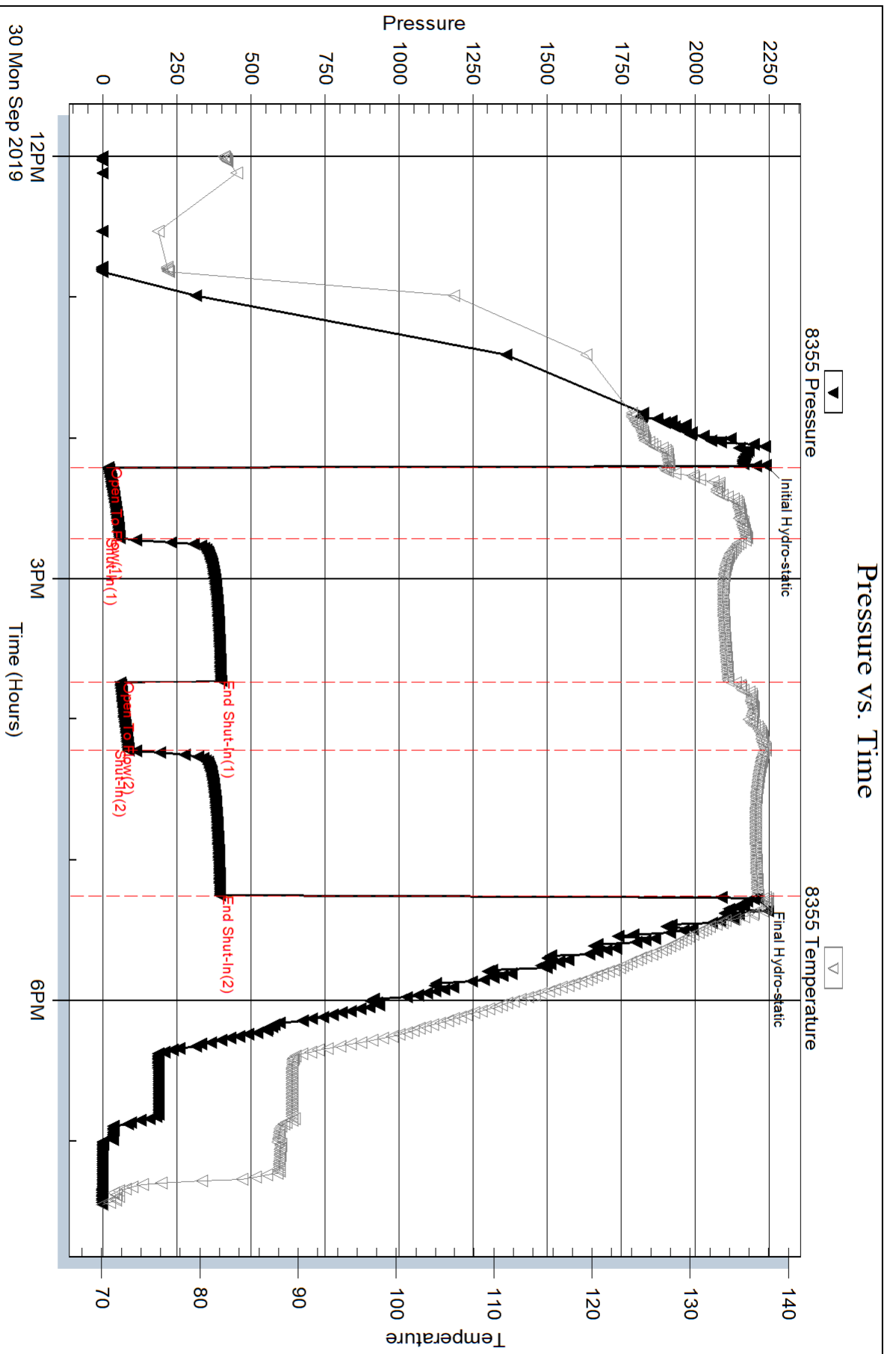
Length ft	Description	Volume bbl
128.00	SGCM W/ Oil spots 8%G, 92%M	0.629

Total Length: 128.00 ft Total Volume: 0.629 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:



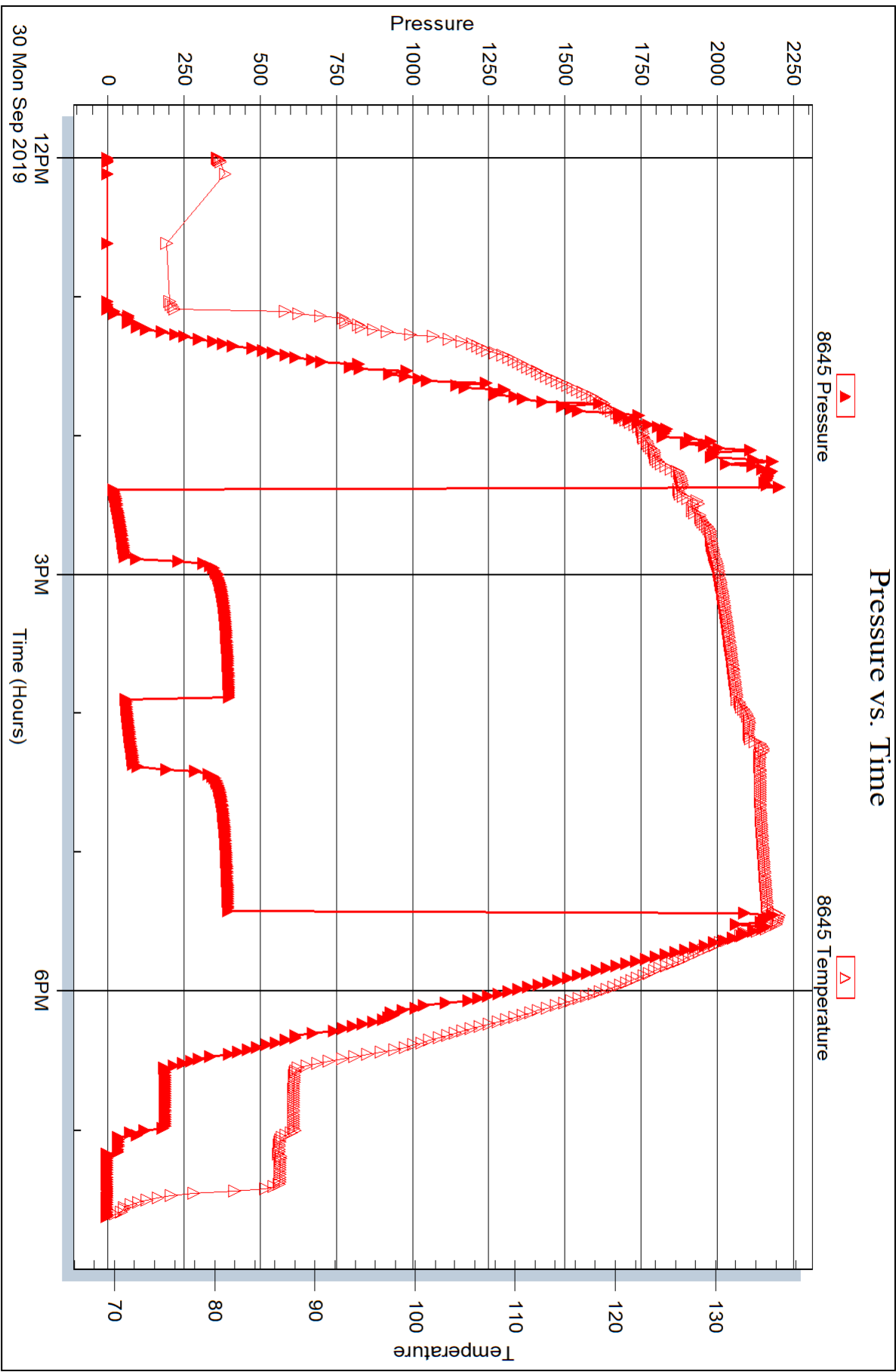
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

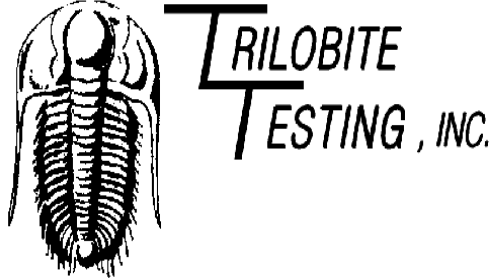
DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 66040

Printed: 2019.10.04 @ 15:29:37



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.09.30 @ 20:05:00

End Date: 2019.10.01 @ 05:24:40

Job Ticket #: 66041 DST #: 5

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

Printed: 2019.10.04 @ 15:29:08



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66041

DST#: 5

Test Start: 2019.09.30 @ 20:05:00

GENERAL INFORMATION:

Formation: **LKC H-J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:49:20
 Time Test Ended: 05:24:40
 Interval: **4407.00 ft (KB) To 4500.00 ft (KB) (TVD)**
 Total Depth: 4500.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

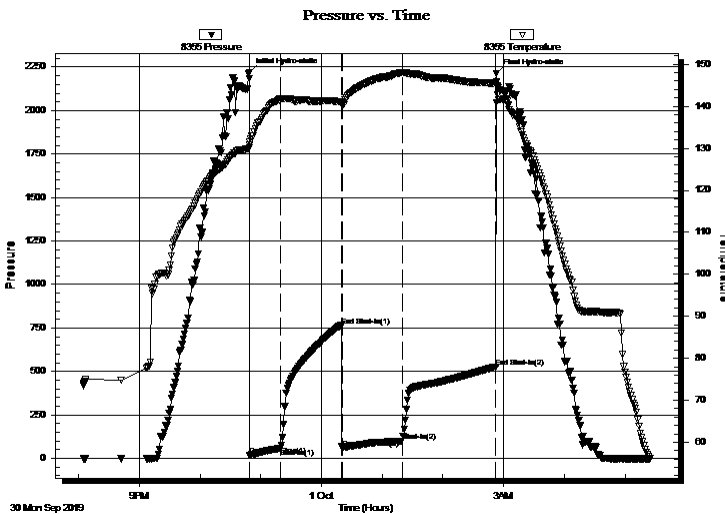
Serial #: 8355

Outside

Press@RunDepth: 99.66 psig @ 4408.00 ft (KB)
 Start Date: 2019.09.30 End Date: 2019.10.01
 Start Time: 20:05:01 End Time: 05:24:40
 Capacity: 8000.00 psig
 Last Calib.: 2019.10.01
 Time On Btm: 2019.09.30 @ 22:49:00
 Time Off Btm: 2019.10.01 @ 02:53:00

TEST COMMENT: 30-IF-1/4" Blow @ open built to 3"
 60-ISI-No blow back
 60-FF-Blow built to 4 1/2"
 90-FSI-No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2218.69	130.69	Initial Hydro-static
1	17.36	131.43	Open To Flow (1)
31	59.73	141.83	Shut-In(1)
91	762.92	141.10	End Shut-In(1)
92	61.13	140.30	Open To Flow (2)
151	99.66	148.05	Shut-In(2)
244	526.79	145.51	End Shut-In(2)
244	2213.93	145.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
177.00	SGOCWM 9%G, 18%O, 21%W, 52%M	0.87
13.00	SGMO 10%G, 85%O, 5%M	0.18

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
 Job Ticket: 66041 **DST#: 5**
 Test Start: 2019.09.30 @ 20:05:00

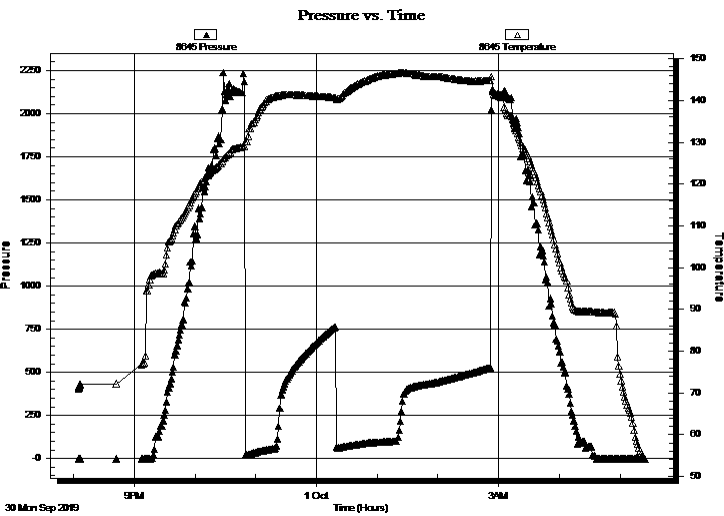
GENERAL INFORMATION:

Formation: **LKC H-J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:49:20
 Time Test Ended: 05:24:40
Interval: 4407.00 ft (KB) To 4500.00 ft (KB) (TVD)
 Total Depth: 4500.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8645 Inside
 Press@RunDepth: psig @ 4408.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.30 End Date: 2019.10.01 Last Calib.: 2019.10.01
 Start Time: 20:05:01 End Time: 05:25:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30-IF-1/4" Blow @ open built to 3"
 60-ISI-No blow back
 60-FF-Blow built to 4 1/2"
 90-FSI-No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
177.00	SGOCWM 9%G, 18%O, 21%W, 52%M	0.87
13.00	SGMO 10%G, 85%O, 5%M	0.18

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66041 **DST#: 5**
Test Start: 2019.09.30 @ 20:05:00

Tool Information

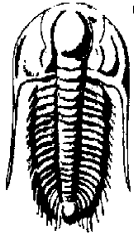
Drill Pipe:	Length: 4231.00 ft	Diameter: 3.80 inches	Volume: 59.35 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 60.22 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4407.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	93.00 ft			
Tool Length:	121.00 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			4380.00	
Shut In Tool	5.00			4385.00	
Hydraulic tool	5.00		Inside	4390.00	
Jars	5.00			4395.00	
Safety Joint	2.00			4397.00	
Packer	5.00			4402.00	28.00 Bottom Of Top Packer
Packer	5.00			4407.00	
Stubb	1.00			4408.00	
Recorder	0.00	8355	Outside	4408.00	
Recorder	0.00	8645	Inside	4408.00	
Perforations	24.00			4432.00	
Change Over Sub	1.00			4433.00	
Drill Pipe	63.00			4496.00	
Change Over Sub	1.00			4497.00	
Bullnose	3.00			4500.00	93.00 Bottom Packers & Anchor

Total Tool Length: 121.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66041

DST#: 5

Test Start: 2019.09.30 @ 20:05:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 55.00 sec/qt
Water Loss: 7.19 in³
Resistivity: ohm.m
Salinity: 1100.00 ppm
Filter Cake: 2.00 inches

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

Oil API: 21.3 deg API
Water Salinity: 14000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
177.00	SGOCWM 9%G, 18%O, 21%W, 52%M	0.870
13.00	SGMO 10%G, 85%O, 5%M	0.182

Total Length: 190.00 ft Total Volume: 1.052 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

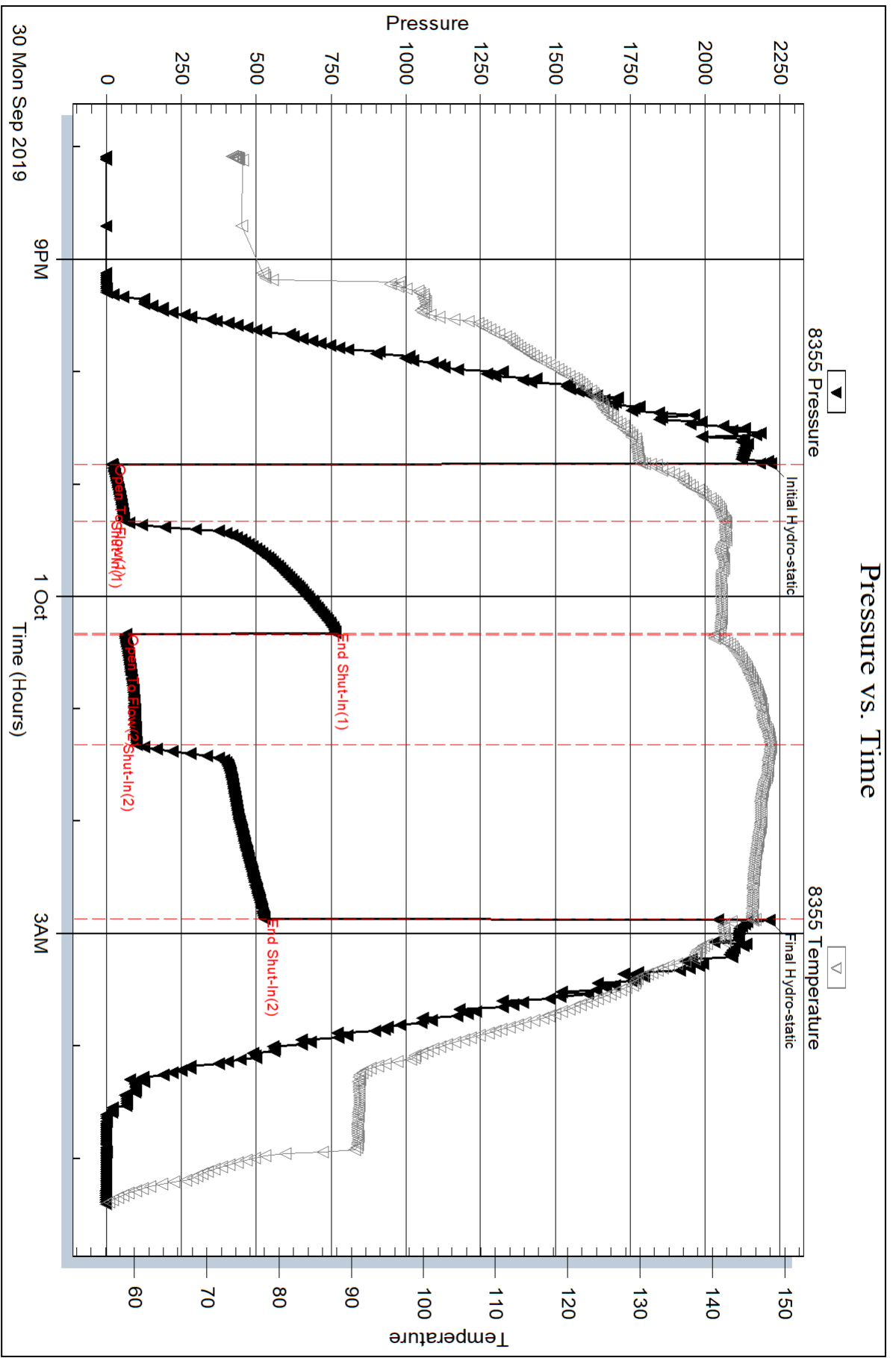
Recovery Comments: Oil API 21.6@90 DEG F Adjusted to 21.3
RW .620@53.9 DEG F Chlorides 14000 PPM

Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 66041

Printed: 2019.10.04 @ 15:29:09

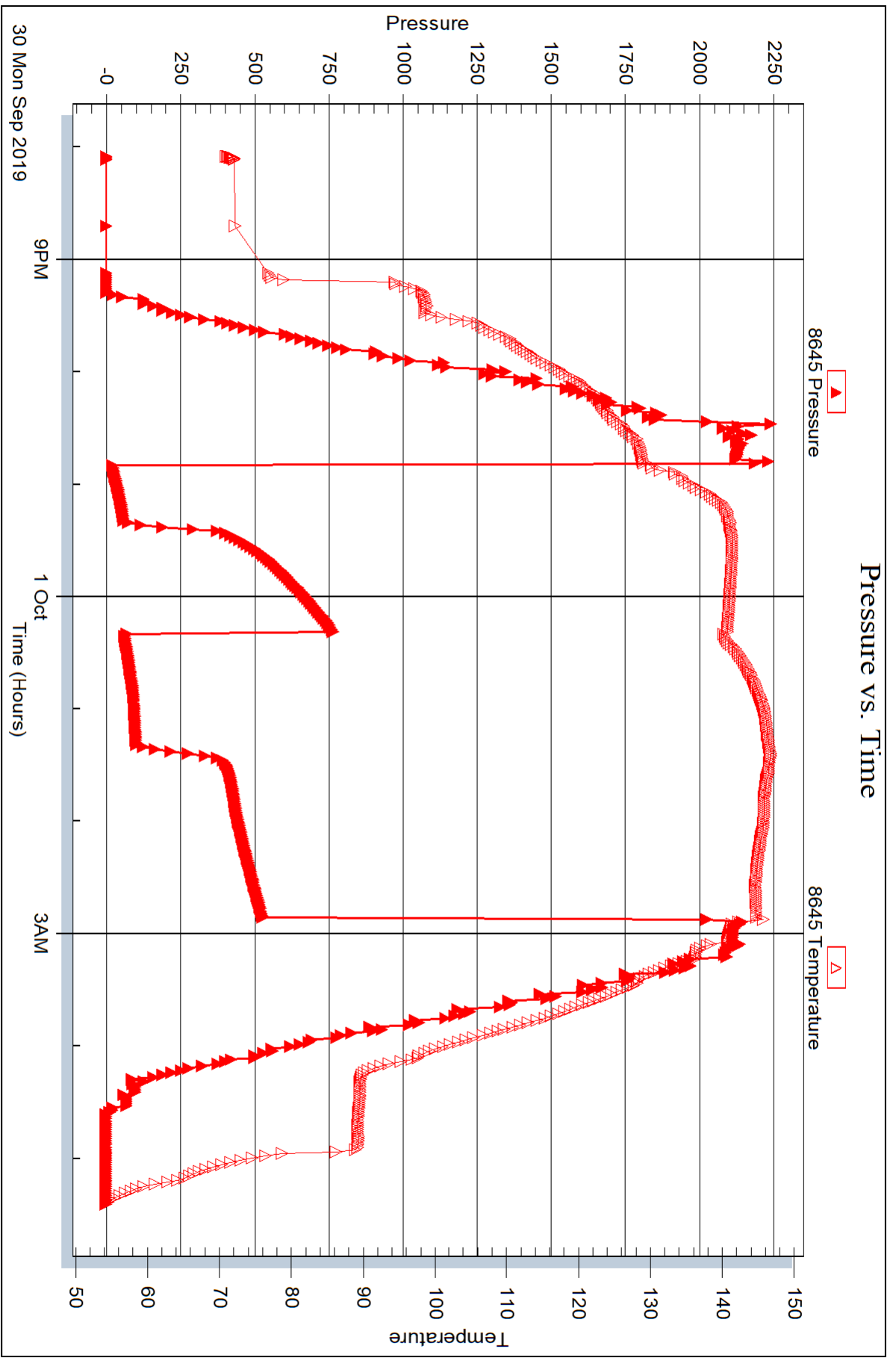
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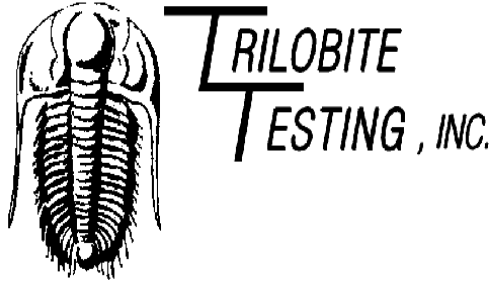
Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Olive #1-21

21-2s-37w Cheyenne,KS

Start Date: 2019.10.02 @ 12:18:00

End Date: 2019.10.02 @ 19:37:12

Job Ticket #: 66042 DST #: 6

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

Printed: 2019.10.04 @ 15:28:38

Murfin Drilling Co Inc
21-2s-37w Cheyenne,KS
Olive #1-21
DST # 6
Ft Scott - Cella
2019.10.02



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
 250 N Water STE 300
 Wichita KS 67202
 ATTN: Brad Rine

21-2s-37w Cheyenne, KS

Olive #1-21

Job Ticket: 66042

DST#: 6

Test Start: 2019.10.02 @ 12:18:00

GENERAL INFORMATION:

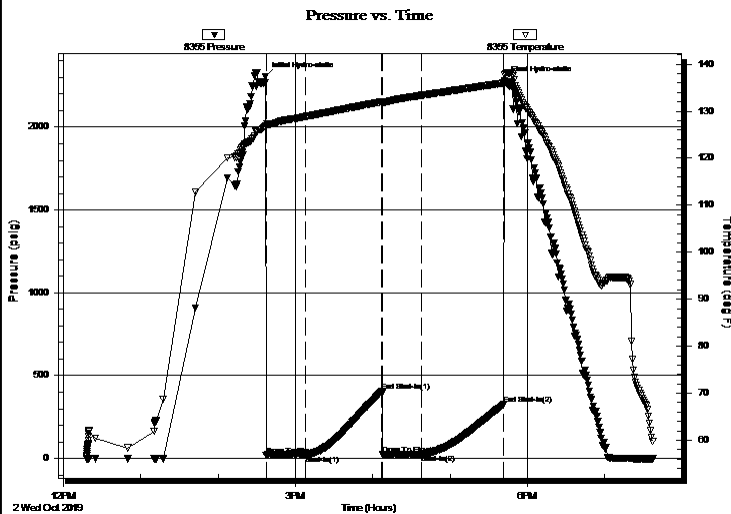
Formation: **Ft Scott - Celia**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 14:37:12
 Time Test Ended: 19:37:12
 Interval: **4657.00 ft (KB) To 4783.00 ft (KB) (TVD)**
 Total Depth: 4783.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Shawn Wheelbarger
 Unit No: 76
 Reference Elevations: 3345.00 ft (KB)
 3340.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 8355

Outside

Press@RunDepth: 23.42 psig @ 4658.00 ft (KB)
 Start Date: 2019.10.02 End Date: 2019.10.02
 Start Time: 12:18:01 End Time: 19:37:11
 Capacity: 8000.00 psig
 Last Calib.: 2019.10.02
 Time On Btm: 2019.10.02 @ 14:36:32
 Time Off Btm: 2019.10.02 @ 17:42:12

TEST COMMENT: 30-IF-1/2" blow @ open built to 1 1/4"
 60-ISI-No blow back
 30-FF-No blow
 60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2304.34	126.70	Initial Hydro-static
1	20.36	126.81	Open To Flow (1)
32	20.95	128.85	Shut-In(1)
91	403.78	132.01	End Shut-In(1)
91	23.05	131.92	Open To Flow (2)
122	23.42	133.38	Shut-In(2)
185	325.14	135.98	End Shut-In(2)
186	2282.56	137.70	Final Hydro-static

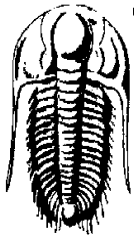
Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS

Olive #1-21

Job Ticket: 66042

DST#: 6

Test Start: 2019.10.02 @ 12:18:00

GENERAL INFORMATION:

Formation: **Ft Scott - Celia**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:37:12

Time Test Ended: 19:37:12

Test Type: Conventional Bottom Hole (Reset)

Tester: Shaw n Wheelbarger

Unit No: 76

Interval: 4657.00 ft (KB) To 4783.00 ft (KB) (TVD)

Total Depth: 4783.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3345.00 ft (KB)

3340.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8645 Inside

Press@RunDepth: psig @ 4658.00 ft (KB)

Start Date: 2019.10.02

End Date:

2019.10.02

Start Time: 12:18:01

End Time:

19:44:50

Capacity: 8000.00 psig

Last Calib.:

2019.10.02

Time On Btm:

Time Off Btm:

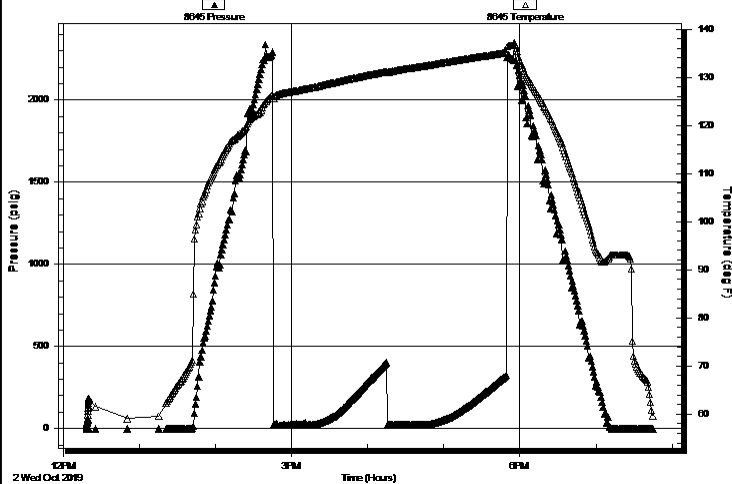
TEST COMMENT: 30-IF-1/2" blow @ open built to 1 1/4"

60-ISI-No blow back

30-FF-No blow

60-FSI-No blow

Pressure vs. Time



PRESSURE SUMMARY

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

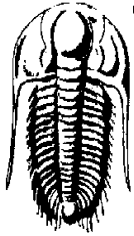
Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.05

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66042 **DST#: 6**
Test Start: 2019.10.02 @ 12:18:00

Tool Information

Drill Pipe:	Length: 4480.00 ft	Diameter: 3.80 inches	Volume: 62.84 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: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 63.71 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4657.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	126.00 ft			
Tool Length:	154.00 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			4630.00	
Shut In Tool	5.00			4635.00	
Hydraulic tool	5.00		Inside	4640.00	
Jars	5.00			4645.00	
Safety Joint	2.00			4647.00	
Packer	5.00			4652.00	28.00 Bottom Of Top Packer
Packer	5.00			4657.00	
Stubb	1.00			4658.00	
Recorder	0.00	8355	Outside	4658.00	
Recorder	0.00	8645	Inside	4658.00	
Perforations	26.00			4684.00	
Change Over Sub	1.00			4685.00	
Drill Pipe	94.00			4779.00	
Change Over Sub	1.00			4780.00	
Bullnose	3.00			4783.00	126.00 Bottom Packers & Anchor

Total Tool Length: 154.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc
250 N Water STE 300
Wichita KS 67202
ATTN: Brad Rine

21-2s-37w Cheyenne,KS
Olive #1-21
Job Ticket: 66042 **DST#: 6**
Test Start: 2019.10.02 @ 12:18:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 72.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.39 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1000.00 ppm			
Filter Cake: 2.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud 100%M	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:

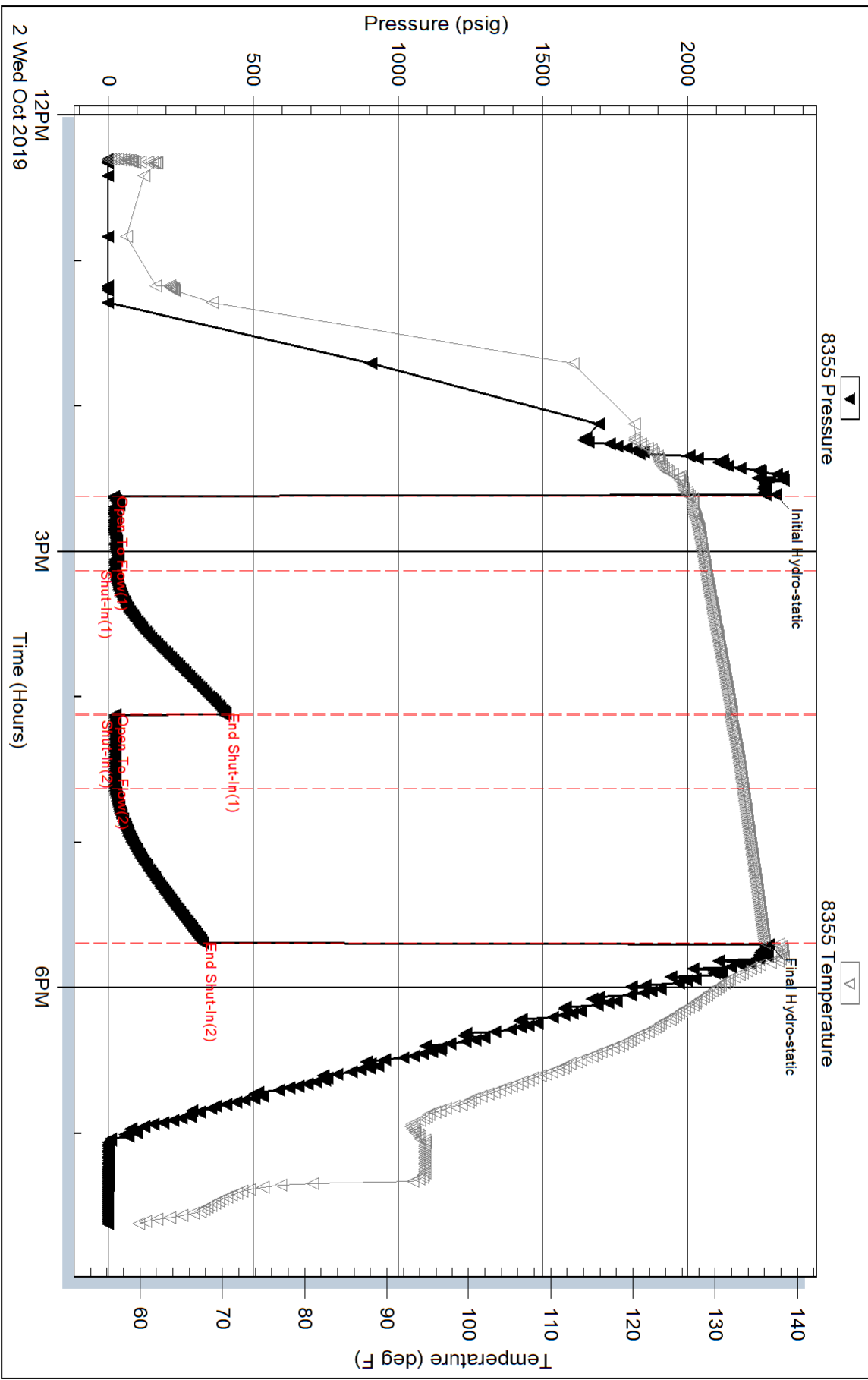
Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 6

Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 66042

Printed: 2019.10.04 @ 15:28:39

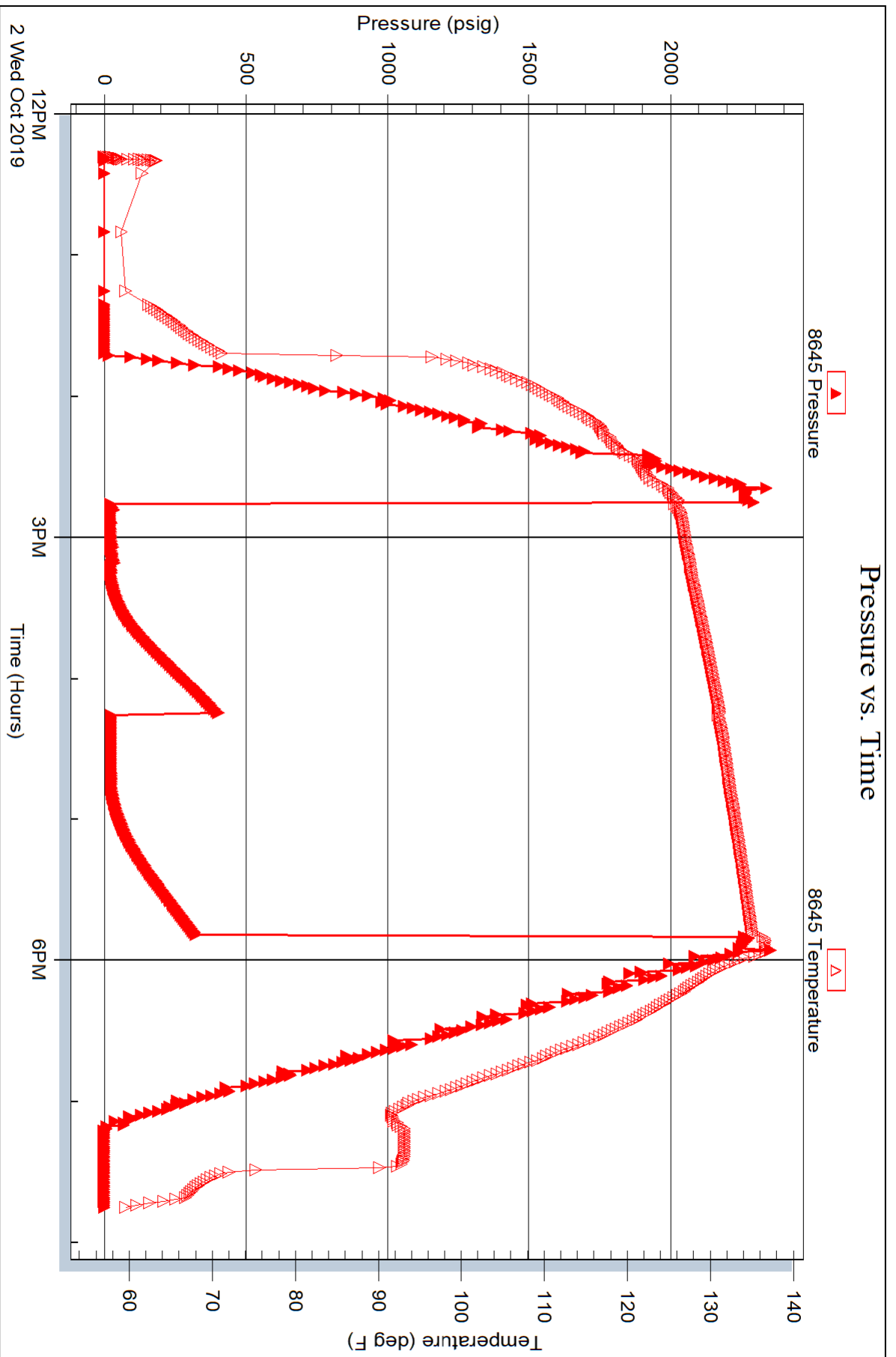
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

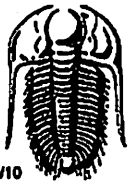
DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 66042

Printed: 2019.10.04 @ 15:28:39



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66037

NO.

Well Name & No. Olive #1-21 Test No. 1 Date 9-27-19
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Brad Rine Rig Murfin #3
 Location: Sec. 21 Twp 23 Rge. 37W Co. Cheyenne State KS

Interval Tested 4146 - 4235 Zone Tested Oread
 Anchor Length 89 Drill Pipe Run 3950 Mud Wt. 8.9
 Top Packer Depth 4141 Drill Collars Run 177 Vis 55
 Bottom Packer Depth 4146 Wt. Pipe Run — WL 6
 Total Depth 4235 Chlorides 600 ppm System LCM 4
 Blow Description IF 1/4" Blow @ open declined to surface blow @ 10 min died @ 18
IST No blow back
FF No blow
FSI No blow

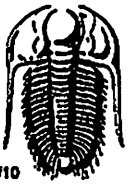
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	

Rec Total 5 BHT 136 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2071</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>16:33</u>
(B) First Initial Flow <u>18</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>18:16</u>
(C) First Final Flow <u>18</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>21:50</u>
(D) Initial Shut-In <u>42</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>00:50 9-28</u>
(E) Second Initial Flow <u>17</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>2:38 9-28</u>
(F) Second Final Flow <u>18</u>	<input checked="" type="checkbox"/> Mileage <u>120 RT</u>	Comments
(G) Final Shut-In <u>38</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2060</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>1745</u>
	Sub Total <u>1745</u>	MP/DST Disc#

Approved By Brad Rine Our Representative Shawn Deebarger

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 66038

NO.

Well Name & No. Olive #1-21 Test No. 2 Date 9-28-19
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Brad Rine Rig Murfin #3
 Location: Sec. 21 Twp 2s Rge. 37W Co. Cherokee State KS

Interval Tested 4219 - 4300 Zone Tested Lansing A
 Anchor Length 81 Drill Pipe Run 4044 Mud Wt. 9
 Top Packer Depth 4214 Drill Collars Run 177 Vls 59
 Bottom Packer Depth 4219 Wt. Pipe Run - WL 6.4
 Total Depth 4300 Chlorides 800 ppm System LCM 2
 Blow Description IF 2" Blow @ open built to 2 3/4" in 15 mins declined to 2 1/2"
ISI No blow back
FF No blow
FSI No blow

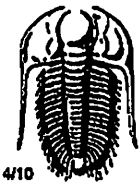
Rec	Feet of	%gas	%oil	%water	%mud
<u>59</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 59 BHT 134 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>2101</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>11:46</u>
(B) First Initial Flow <u>45</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:29</u>
(C) First Final Flow <u>46</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>15:01</u>
(D) Initial Shut-In <u>159</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>18:01</u>
(E) Second Initial Flow <u>45</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>20:08</u>
(F) Second Final Flow <u>46</u>	<input checked="" type="checkbox"/> Mileage <u>120 RT</u>	Comments <u>Tool slid 4" to bottom</u>
(G) Final Shut-In <u>114</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2014</u>	<input type="checkbox"/> Straddle	
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> EM Tool
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Shale Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Ruined Packer
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Accessibility	Sub Total <u>0</u>
	Sub Total <u>1745</u>	Total <u>1745</u>

Approved By Brad Rine Our Representative Shawn Weeber

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66039

NO.

Well Name & No. Olive #1-21 Test No. 3 Date 9-29-19
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Brad Pine Rig Murfin #3
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State KS

Interval Tested 4291-4370 Zone Tested Lansing D
 Anchor Length 79 Drill Pipe Run 4107 Mud Wt. 9.2
 Top Packer Depth 4286 Drill Collars Run 177 Vis 53
 Bottom Packer Depth 4291 Wt. Pipe Run - WL 6.8
 Total Depth 4370 Chlorides 1100 ppm System LCM 3

Blow Description IF 1/2" Blow @ open built to 1 1/4"
ISI No blow back
FF No blow
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	

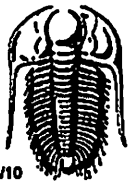
Rec Total 5 BHT 135 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2163 Test 1300 T-On Location 5:52
 (B) First Initial Flow 19 Jars 250 T-Started 7:25
 (C) First Final Flow 20 Safety Joint 75 T-Open 09:57
 (D) Initial Shut-In 332 Circ Sub _____ T-Pulled 00:57
 (E) Second Initial Flow 21 Hourly Standby _____ T-Out 14:43
 (F) Second Final Flow 22 Mileage 120 RT Comments _____
 (G) Final Shut-In 169 Sampler _____
 (H) Final Hydrostatic 2127 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30 EM Tool _____
 Initial Shut-In 60 Ruined Shale Packer _____
 Final Flow 30 Ruined Packer _____
 Final Shut-In 60 Extra Copies _____
 Sub Total 0
 Total 1745
 Sub Total 1745 MP/DST Disc't _____

Approved By Brad Pine Our Representative Shawn Wedbarger

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66040

NO.

Well Name & No. Olive #1-21 Test No. 4 Date 9-29-19
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Brad Rine Rig Murfin #3
 Location: Sec. 21 Twp 23 Rge. 37W Co. Cherokee State NE

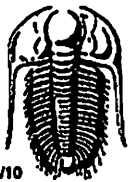
Interval Tested 4352 - 4420 Zone Tested Lansing 6
 Anchor Length 68 Drill Pipe Run 4169 Mud Wt. 9.8
 Top Packer Depth 4347 Drill Collars Run 177 Vls 55
 Bottom Packer Depth 4352 Wt. Pipe Run - WL 6.8
 Total Depth 4420 Chlorides 1100 ppm System LCM 3
 Blow Description IF 1/4" Blow @ open built to 2 3/4"
ISI No blowback
FF Weak surface blow built to 1 1/4"
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>128</u>	<u>SGCM w/oil spots 8</u>			<u>92</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 126 BHT 138 Gravity - API RW - @ - °F Chlorides - ppm
 (A) Initial Hydrostatic 2237 Test 1300 T-On Location 23:34 9-29
 (B) First Initial Flow 18 Jars 250 T-Started 00 00
 (C) First Final Flow 57 Safety Joint 75 T-Open 2:22
 (D) Initial Shut-In 398 Circ Sub _____ T-Pulled 5:22
 (E) Second Initial Flow 59 Hourly Standby _____ T-Out 7:32
 (F) Second Final Flow 87 Mileage 120 RT Comments _____
 (G) Final Shut-In 395 Sampler _____
 (H) Final Hydrostatic 2211 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 1745
 Total 1745
 MP/DST Disc't _____

Approved By Brad Rine Our Representative Shawn Wheelbarger
 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 66041

NO.

Well Name & No. Olive #1-21 Test No. 5 Date 9-30-19
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Brad Rine Rig Murfin #3
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State NE

Interval Tested 4407-4500 Zone Tested Lansing 4-1
 Anchor Length 93 Drill Pipe Run 4231 Mud Wt. 9
 Top Packer Depth 4402 Drill Collars Run 177 Vis 55
 Bottom Packer Depth 4407 Wt. Pipe Run - WL 7.2
 Total Depth 4500 Chlorides 1100 ppm System LCM 5
 Blow Description IF 1/4" Blow @ open built to 3"
TSI No blow back
FF Blow built to 4 1/2"
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>13</u>	<u>560MO</u>	<u>10</u>	<u>85</u>	<u>5</u>	
<u>177</u>	<u>560CWM</u>	<u>9</u>	<u>18</u>	<u>21</u>	<u>52</u>
		%gas	%oil	%water	%mud
		%gas	%oil	%water	%mud
		%gas	%oil	%water	%mud

Rec Total 190 BHT 146 Gravity 21.3 API RW 620 @ 53.9 °F Chlorides 14000 ppm

(A) Initial Hydrostatic 2219
 (B) First Initial Flow 17
 (C) First Final Flow 60
 (D) Initial Shut-In 763
 (E) Second Initial Flow 61
 (F) Second Final Flow 100
 (G) Final Shut-In 527
 (H) Final Hydrostatic 2214

Test 1300
 Jars 250
 Safety Joint 75
 Circ Sub
 Hourly Standby
 Mileage 120 RT
 Sampler
 Straddle
 Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby
 Accessibility
 Sub Total 1745

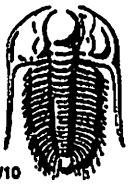
T-On Location 18:50
 T-Started 20:05
 T-Open 22:50
 T-Pulled 2:50 10-1
 T-Out 5:10 10-1

Comments _____
 EM Tool
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1745
 MP/DST Disc't _____

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

Approved By Brad Rine Our Representative Shawn Wheelbarger

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66042

NO.

Well Name & No. Olive #1-21 Test No. 6 Date 10-2-19
 Company Murkin Drilling Co Inc Elevation 3345 KB 3340 GL
 Address 250 N Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Brad Rine Rig Murkin #3
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State KS

Interval Tested 4657-4783 Zone Tested Ft Scott - Celia
 Anchor Length 126 Drill Pipe Run 4480 Mud Wt. 9.3
 Top Packer Depth 4652 Drill Collars Run 177 Vls 72
 Bottom Packer Depth 4657 Wt. Pipe Run - WL 6.4
 Total Depth 4783 Chlorides 1000 ppm System LCM 4
 Blow Description IF 1/2" Blow @ open built to 1 1/4"
ISI No blow back
FF No blow
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 138 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>2304</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>11:14</u>
(B) First Initial Flow <u>20</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>12:18</u>
(C) First Final Flow <u>21</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>14:40</u>
(D) Initial Shut-In <u>404</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>17:40</u>
(E) Second Initial Flow <u>23</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>19:35</u>
(F) Second Final Flow <u>23</u>	<input checked="" type="checkbox"/> Mileage <u>120 RT</u>	Comments
(G) Final Shut-In <u>325</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2283</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1745</u>
	Sub Total <u>1745</u>	

Approved By Brad Rine Our Representative Shawn Wheelburger MP/DST Disch -

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