



DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

27-13S-21W Trego,KS

Mark Armbrister #1-27

Start Date: 2018.01.18 @ 10:41:00

End Date: 2018.01.18 @ 16:57:45

Job Ticket #: 63539 DST #: 1

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

Printed: 2018.01.22 @ 11:41:16

DNOC
Mark Armbrister #1-27
27-13S-21W Trego,KS
DST # 1
LKC:ER
2018.01.18



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

DNOC
 PO Box 1019
 Hays KS 67601
 ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
 Job Ticket: 63539 **DST#: 1**
 Test Start: 2018.01.18 @ 10:41:00

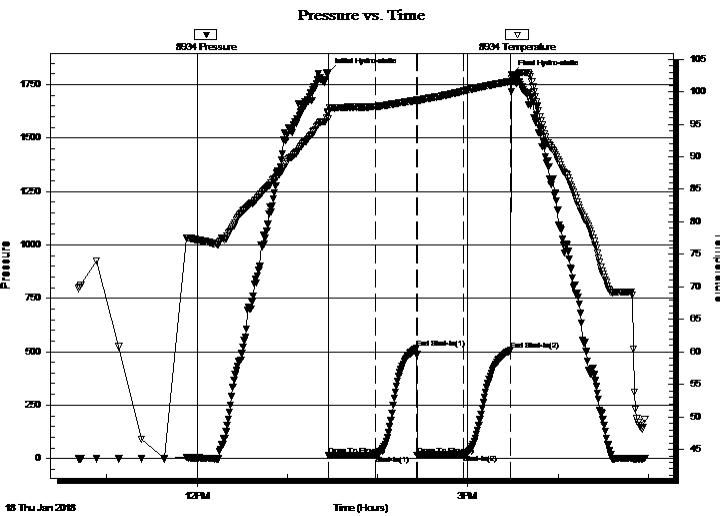
GENERAL INFORMATION:

Formation: **LKC 'E'**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:27:15
 Time Test Ended: 16:57:45
 Interval: **3767.00 ft (KB) To 3784.00 ft (KB) (TVD)**
 Total Depth: 3784.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Spencer J. Staab
 Unit No: 84
 Reference Elevations: 2367.00 ft (KB)
 2359.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8934 Outside

Press@RunDepth: 17.66 psig @ 3768.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.01.18 End Date: 2018.01.18 Last Calib.: 2018.01.18
 Start Time: 10:41:15 End Time: 16:57:45 Time On Btm: 2018.01.18 @ 13:27:00
 Time Off Btm: 2018.01.18 @ 15:28:45

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



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1805.87	96.89	Initial Hydro-static
1	14.89	95.92	Open To Flow (1)
32	15.58	97.73	Shut-In(1)
59	515.13	98.70	End Shut-In(1)
60	16.06	98.42	Open To Flow (2)
91	17.66	100.11	Shut-In(2)
122	506.05	101.59	End Shut-In(2)
122	1796.22	102.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.05
0.00	Oil spots on top of tool	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

DNOC

Mark Armbrister #1-27

PO Box 1019
Hays KS 67601

27-13S-21W Trego,KS

ATTN: Marc Downing

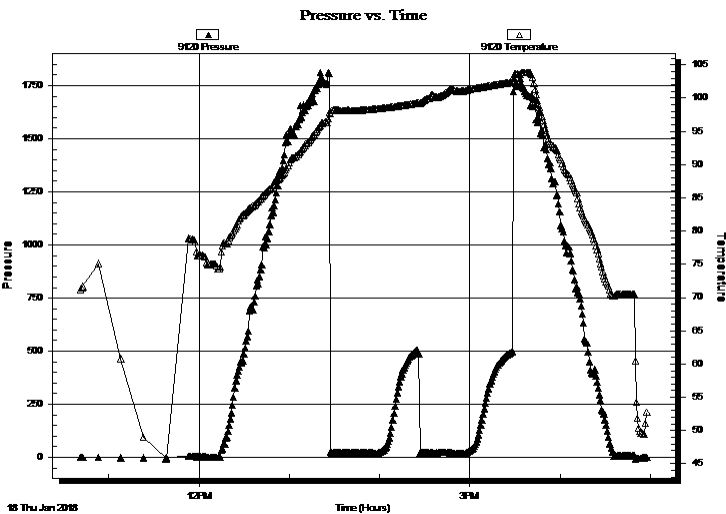
Job Ticket: 63539 **DST#: 1**
Test Start: 2018.01.18 @ 10:41:00

GENERAL INFORMATION:

Formation: **LKC 'E'**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:27:15 Test Type: Conventional Bottom Hole (Initial)
Time Test Ended: 16:57:45 Tester: Spencer J. Staab
Unit No: 84
Interval: 3767.00 ft (KB) To 3784.00 ft (KB) (TVD)
Reference Elevations: 2367.00 ft (KB)
Total Depth: 3784.00 ft (KB) (TVD) 2359.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 9120 Inside
Press@RunDepth: psig @ 3768.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2018.01.18 End Date: 2018.01.18 Last Calib.: 2018.01.18
Start Time: 10:41:15 End Time: 16:57:45 Time On Btm:
Time Off Btm:

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



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.05
0.00	Oil spots on top of tool	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

DNOC

Mark Armbrister #1-27

PO Box 1019
Hays KS 67601

27-13S-21W Trego,KS

ATTN: Marc Downing

Job Ticket: 63539

DST#: 1

Test Start: 2018.01.18 @ 10:41:00

Tool Information

Drill Pipe:	Length: 3740.00 ft	Diameter: 3.80 inches	Volume: 52.46 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose:	78000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	3767.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	17.00 ft				
Tool Length:	37.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3748.00	
Shut In Tool	5.00			3753.00	
Hydraulic tool	5.00			3758.00	
Packer	5.00			3763.00	20.00 Bottom Of Top Packer
Packer	4.00			3767.00	
Stubb	1.00			3768.00	
Recorder	0.00	9120	Inside	3768.00	
Recorder	0.00	8934	Outside	3768.00	
Perforations	12.00			3780.00	
Bullnose	4.00			3784.00	17.00 Bottom Packers & Anchor
Total Tool Length:	37.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

DNOG
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63539 **DST#: 1**
Test Start: 2018.01.18 @ 10:41:00

Mud and Cushion Information

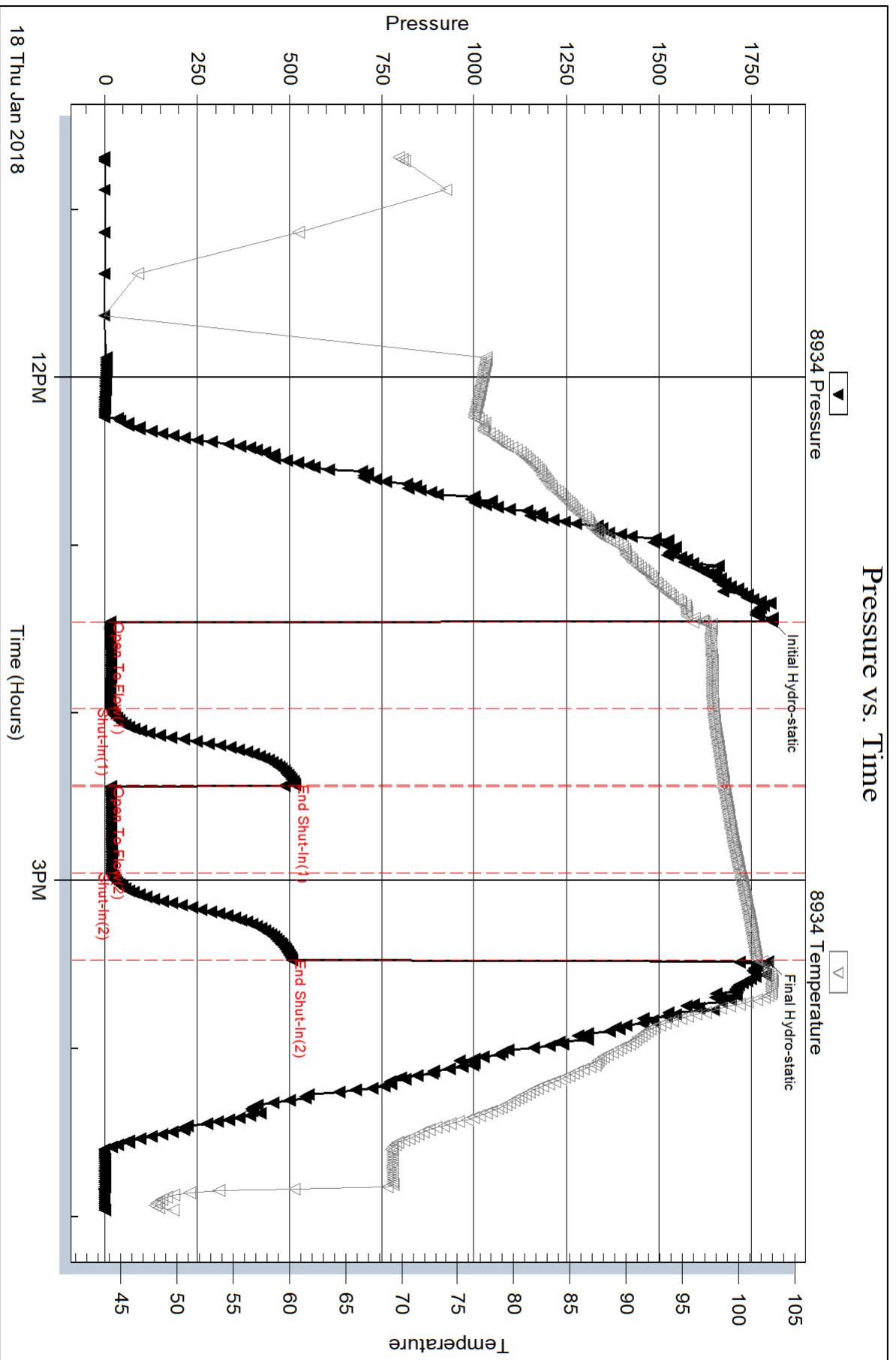
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 51.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 6500.00 ppm			
Filter Cake: inches			

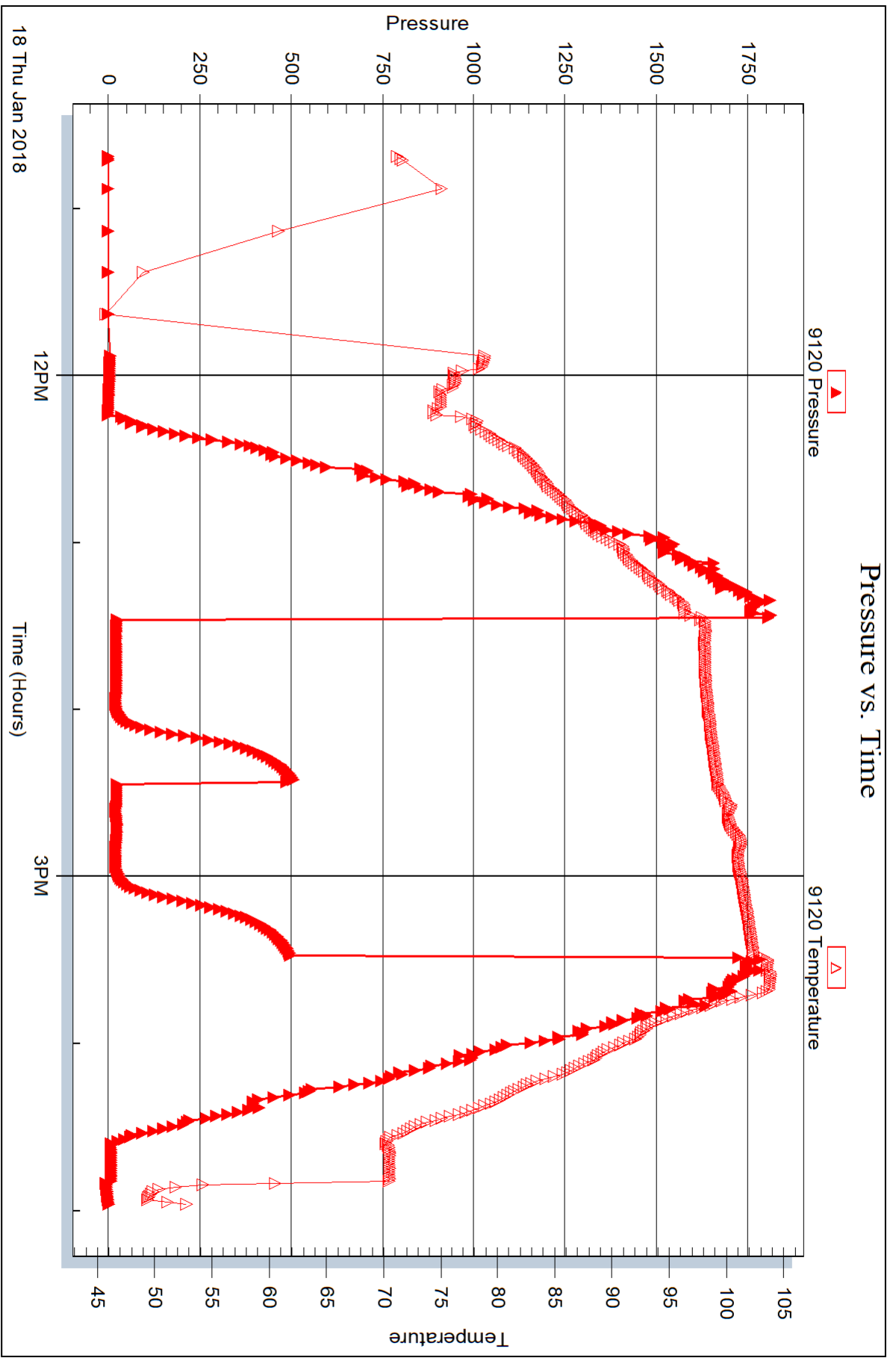
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud 100%M	0.049
0.00	Oil spots on top of tool	0.000

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: 1/2#LCM







DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

27-13S-21W Trego,KS

Mark Armbrister #1-27

Start Date: 2018.01.19 @ 14:18:00

End Date: 2018.01.19 @ 19:53:30

Job Ticket #: 63540 DST #: 2

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

Printed: 2018.01.22 @ 11:40:37

DNOC
Mark Armbrister #1-27
27-13S-21W Trego,KS
DST # 2
Marmaton
2018.01.19



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

DNOC
 PO Box 1019
 Hays KS 67601
 ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
 Job Ticket: 63540 **DST#: 2**
 Test Start: 2018.01.19 @ 14:18:00

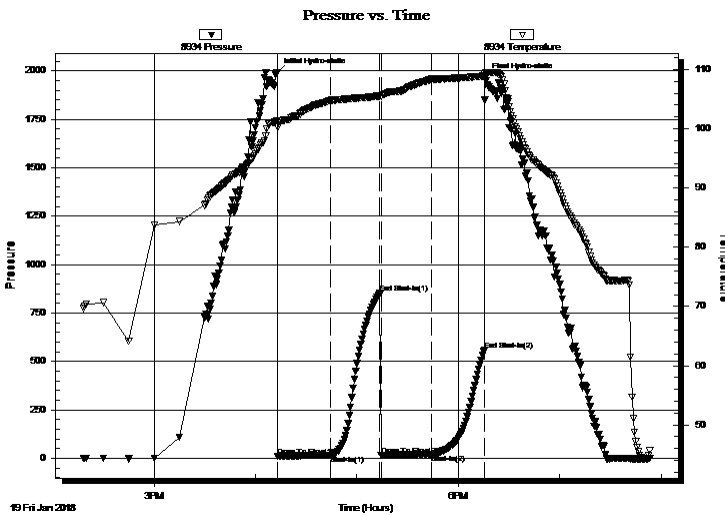
GENERAL INFORMATION:

Formation: **Marmaton**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 16:13:15 Tester: Spencer J. Staab
 Time Test Ended: 19:53:30 Unit No: 84
 Interval: **4030.00 ft (KB) To 4060.00 ft (KB) (TVD)** Reference Elevations: 2367.00 ft (KB)
 Total Depth: 4060.00 ft (KB) (TVD) 2359.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 8.00 ft

Serial #: 8934 Outside
 Press@RunDepth: 20.67 psig @ 4031.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.01.19 End Date: 2018.01.19 Last Calib.: 2018.01.19
 Start Time: 14:18:15 End Time: 19:53:30 Time On Btm: 2018.01.19 @ 16:13:00
 Time Off Btm: 2018.01.19 @ 18:16:00

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

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1991.33	101.43	Initial Hydro-static
1	11.68	100.25	Open To Flow (1)
32	15.60	104.75	Shut-In(1)
61	852.35	105.53	End Shut-In(1)
62	17.26	105.63	Open To Flow (2)
91	20.67	108.35	Shut-In(2)
123	557.43	108.91	End Shut-In(2)
123	1964.85	109.45	Final Hydro-static

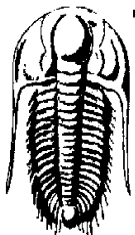
Recovery

Length (ft)	Description	Volume (bbl)
10.00	Oil Spotted Mud 100%M	0.05
0.00	Free Oil on Top of Tool	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

DNO
PO Box 1019
Hays KS 67601

ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63540 **DST#: 2**
Test Start: 2018.01.19 @ 14:18:00

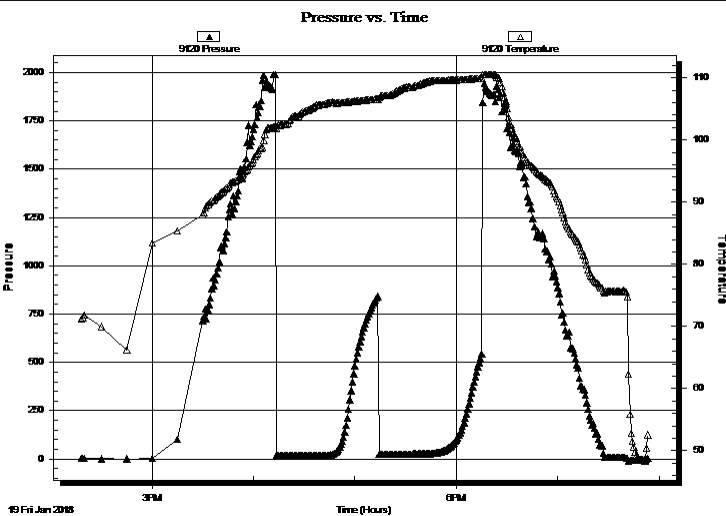
GENERAL INFORMATION:

Formation:	Marmaton		Test Type:	Conventional Bottom Hole (Reset)
Deviated:	No Whipstock:	ft (KB)	Tester:	Spencer J. Staab
Time Tool Opened:	16:13:15		Unit No:	84
Time Test Ended:	19:53:30		Reference Elevations:	2367.00 ft (KB)
Interval:	4030.00 ft (KB) To 4060.00 ft (KB) (TVD)			2359.00 ft (CF)
Total Depth:	4060.00 ft (KB) (TVD)		KB to GR/CF:	8.00 ft
Hole Diameter:	7.88 inches		Hole Condition:	Fair

Serial #: 9120 Inside

Press@RunDepth:	psig @ 4031.00 ft (KB)	Capacity:	8000.00 psig
Start Date:	2018.01.19 End Date: 2018.01.19	Last Calib.:	2018.01.19
Start Time:	14:18:15 End Time: 19:53:30	Time On Btm:	
		Time Off Btm:	

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



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Oil Spotted Mud 100%M	0.05
0.00	Free Oil on Top of Tool	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

DNOC

Mark Armbrister #1-27

PO Box 1019
Hays KS 67601

27-13S-21W Trego,KS

ATTN: Marc Downing

Job Ticket: 63540

DST#: 2

Test Start: 2018.01.19 @ 14:18:00

Tool Information

Drill Pipe:	Length: 3993.00 ft	Diameter: 3.80 inches	Volume: 56.01 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose:	61000.00 lb
			<u>Total Volume:</u>	Tool Chased	ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4030.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	30.00 ft				
Tool Length:	50.00 ft				
Number of Packers:	1	Diameter:	6.75 inches		
Tool Comments:					

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4011.00	
Shut In Tool	5.00			4016.00	
Hydraulic tool	5.00			4021.00	
Packer	5.00			4026.00	20.00 Bottom Of Top Packer
Packer	4.00			4030.00	
Stubb	1.00			4031.00	
Recorder	0.00	9120	Inside	4031.00	
Recorder	0.00	8934	Outside	4031.00	
Perforations	25.00			4056.00	
Bullnose	4.00			4060.00	30.00 Bottom Packers & Anchor
Total Tool Length:	50.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

DNOG
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63540 **DST#: 2**
Test Start: 2018.01.19 @ 14:18:00

Mud and Cushion Information

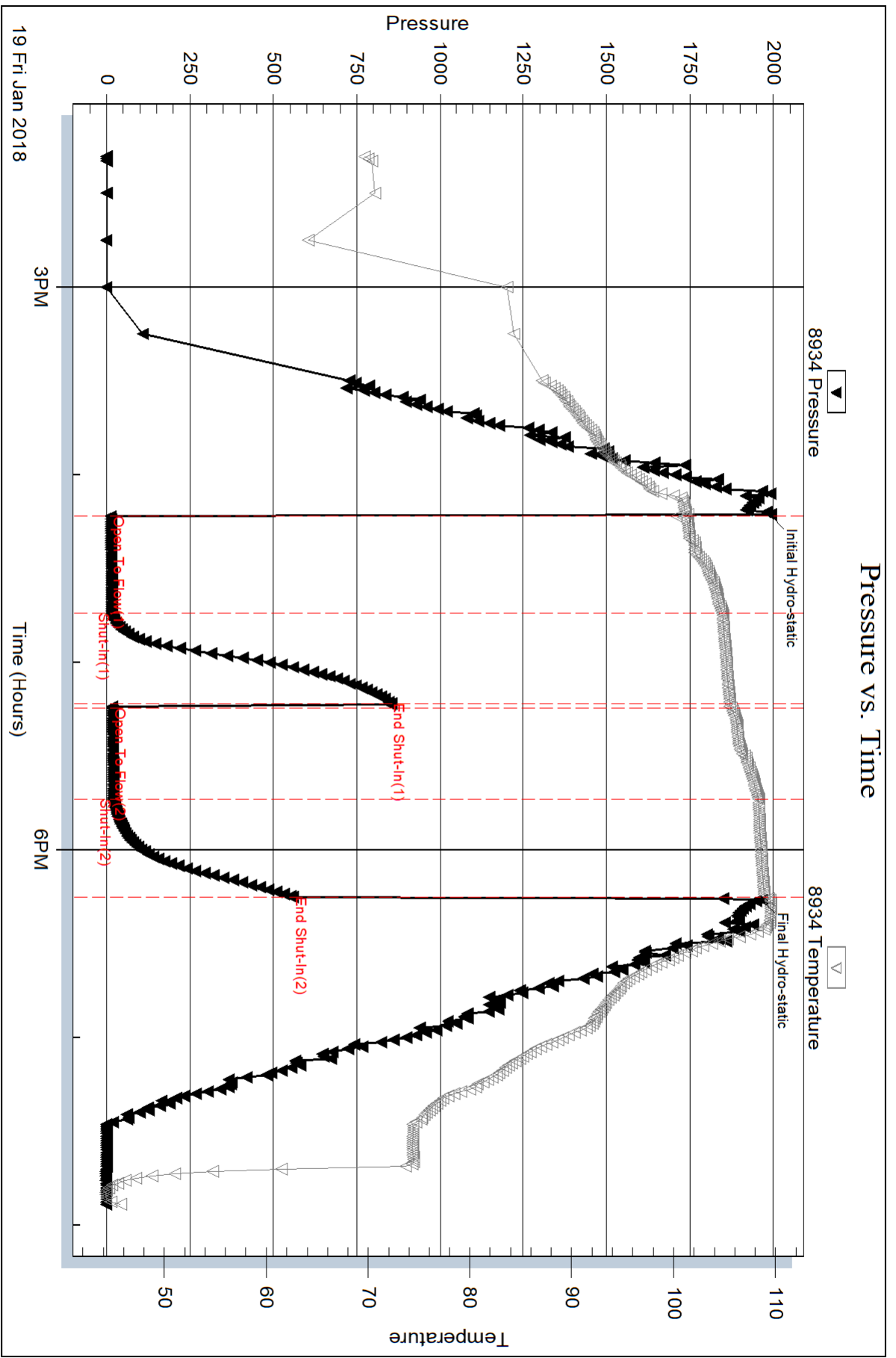
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.59 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 7500.00 ppm			
Filter Cake: inches			

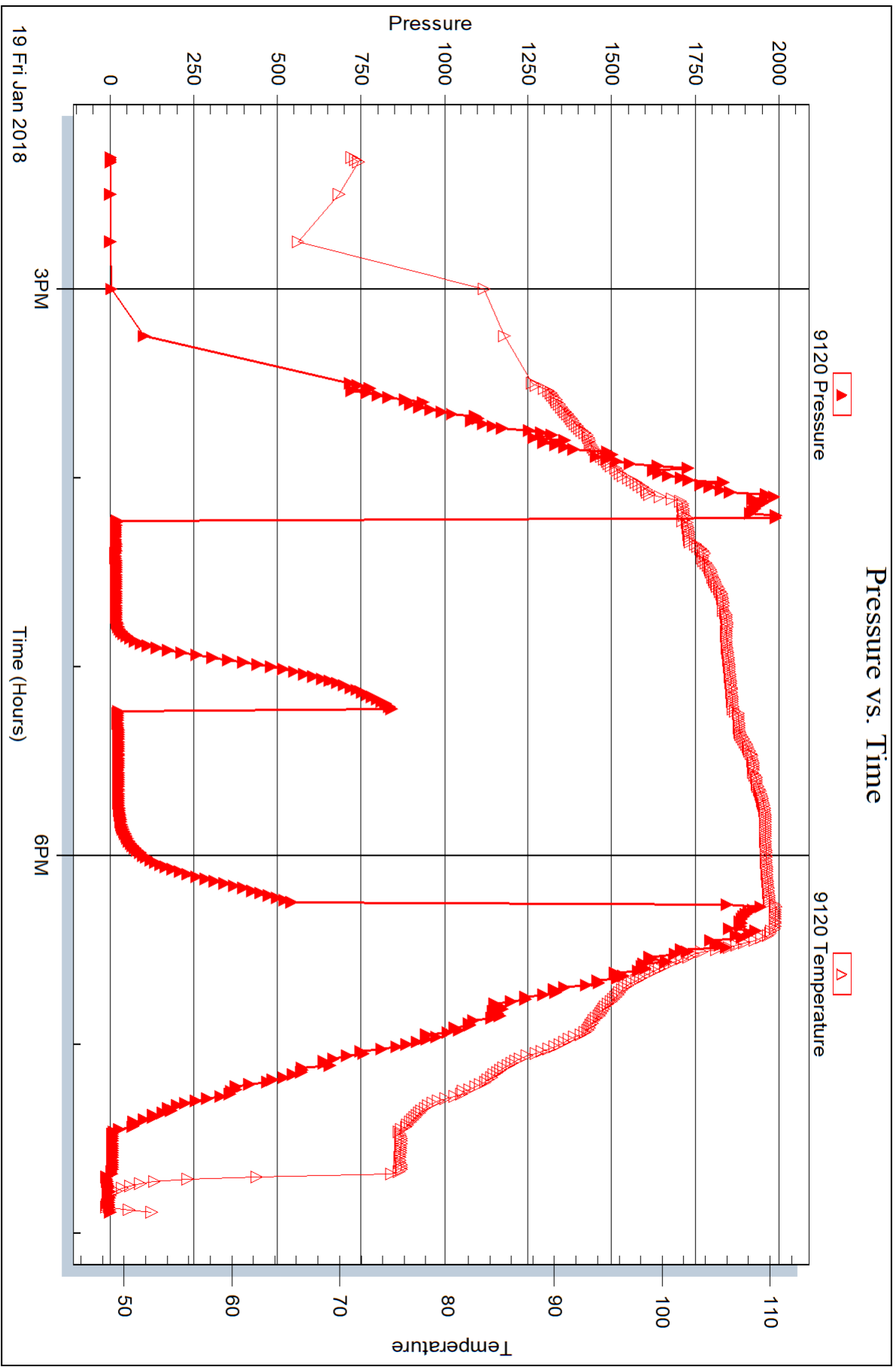
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Oil Spotted Mud 100%M	0.049
0.00	Free Oil on Top of Tool	0.000

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: 1/2#LCM







DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

27-13S-21W Trego,KS

Mark Armbrister #1-27

Start Date: 2018.01.20 @ 03:47:00

End Date: 2018.01.20 @ 10:37:45

Job Ticket #: 63541 DST #: 3

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

Printed: 2018.01.22 @ 11:40:11

DNOC
Mark Armbrister #1-27
27-13S-21W Trego,KS
DST # 3
Cherokee Sand
2018.01.20



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

DNOC
 PO Box 1019
 Hays KS 67601
 ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
 Job Ticket: 63541 **DST#: 3**
 Test Start: 2018.01.20 @ 03:47:00

GENERAL INFORMATION:

Formation: **Cherokee Sand**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:02:00
 Time Test Ended: 10:37:45
 Interval: **4057.00 ft (KB) To 4107.00 ft (KB) (TVD)**
 Total Depth: 4107.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Spencer J. Staab
 Unit No: 84
 Reference Elevations: 2367.00 ft (KB)
 2359.00 ft (CF)
 KB to GR/CF: 8.00 ft

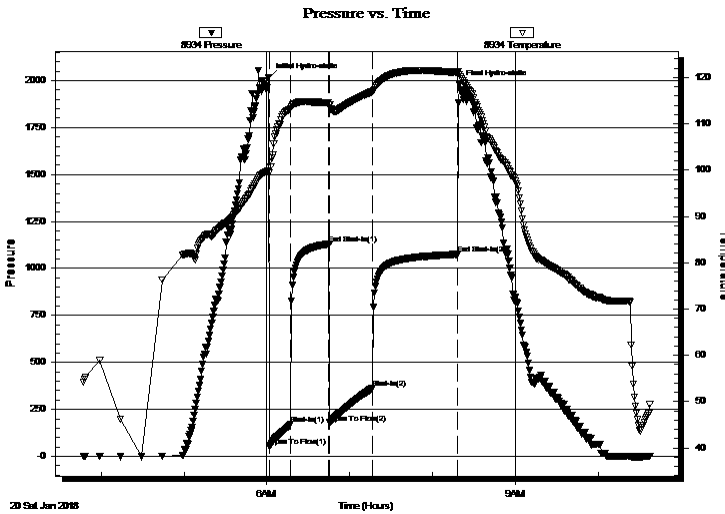
Serial #: 8934

Inside

Press@RunDepth: 362.72 psig @ 4061.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.01.20 End Date: 2018.01.20 Last Calib.: 2018.01.20
 Start Time: 03:47:15 End Time: 10:37:45 Time On Btm: 2018.01.20 @ 06:01:30
 Time Off Btm: 2018.01.20 @ 08:19:15

TEST COMMENT: 15-IF-Strong Blow ; BOB (11") in 2 1/2 min
 30-ISI-Fair Blow ; Built to 4"
 30-FF-Strong Blow ; BOB in 3 min
 60-FSI-Weak Blow ; Built to 1" Died back to surface

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2017.60	99.93	Initial Hydro-static
1	54.83	99.38	Open To Flow (1)
16	169.09	113.23	Shut-In(1)
43	1129.51	114.59	End Shut-In(1)
44	179.16	114.20	Open To Flow (2)
75	362.72	117.00	Shut-In(2)
137	1075.04	121.06	End Shut-In(2)
138	1979.44	120.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
370.00	GMCO 20%G 15%M 65%O	4.90
630.00	GO 20%G 80%O	8.84
0.00	210' GIP 100%G	0.00

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

DNOC
 PO Box 1019
 Hays KS 67601
 ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
 Job Ticket: 63541 **DST#: 3**
 Test Start: 2018.01.20 @ 03:47:00

GENERAL INFORMATION:

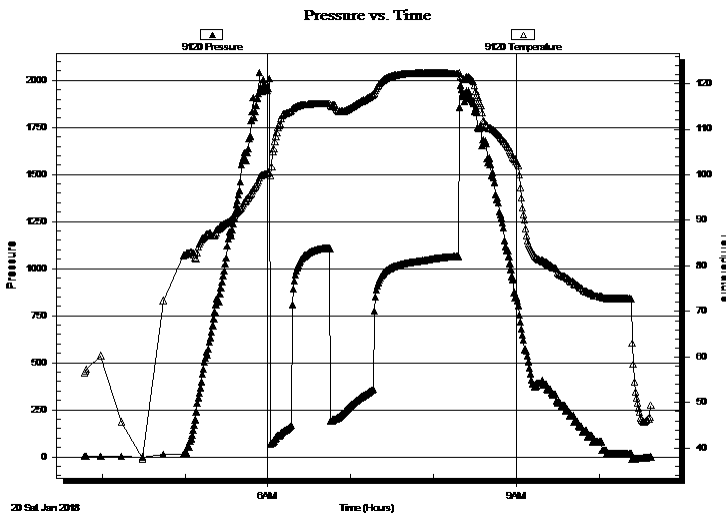
Formation: **Cherokee Sand**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:02:00
 Time Test Ended: 10:37:45
 Interval: **4057.00 ft (KB) To 4107.00 ft (KB) (TVD)**
 Total Depth: 4107.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Spencer J. Staab
 Unit No: 84
 Reference Elevations: 2367.00 ft (KB)
 2359.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 9120

Inside

Press@RunDepth: psig @ 4061.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.01.20 End Date: 2018.01.20 Last Calib.: 2018.01.20
 Start Time: 03:47:15 End Time: 10:37:45 Time On Btm:
 Time Off Btm:

TEST COMMENT: 15-IF-Strong Blow ; BOB (11") in 2 1/2 min
 30-ISI-Fair Blow ; Built to 4"
 30-FF-Strong Blow ; BOB in 3 min
 60-FSI-Weak Blow ; Built to 1" Died back to surface



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
370.00	GMCO 20%G 15%M 65%O	4.90
630.00	GO 20%G 80%O	8.84
0.00	210' GIP 100%G	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

DNOC

Mark Armbrister #1-27

PO Box 1019
Hays KS 67601

27-13S-21W Trego,KS

ATTN: Marc Downing

Job Ticket: 63541

DST#: 3

Test Start: 2018.01.20 @ 03:47:00

Tool Information

Drill Pipe:	Length: 4024.00 ft	Diameter: 3.80 inches	Volume: 56.45 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4057.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	70.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4038.00	
Shut In Tool	5.00			4043.00	
Hydraulic tool	5.00			4048.00	
Packer	5.00			4053.00	20.00 Bottom Of Top Packer
Packer	4.00			4057.00	
Stubb	1.00			4058.00	
Perforations	2.00			4060.00	
Change Over Sub	1.00			4061.00	
Recorder	0.00	9120	Inside	4061.00	
Recorder	0.00	8934	Inside	4061.00	
Drill Pipe	31.00			4092.00	
Change Over Sub	1.00			4093.00	
Perforations	10.00			4103.00	
Bullnose	4.00			4107.00	50.00 Bottom Packers & Anchor

Total Tool Length: 70.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

DNOC
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63541 **DST#: 3**
Test Start: 2018.01.20 @ 03:47:00

Mud and Cushion Information

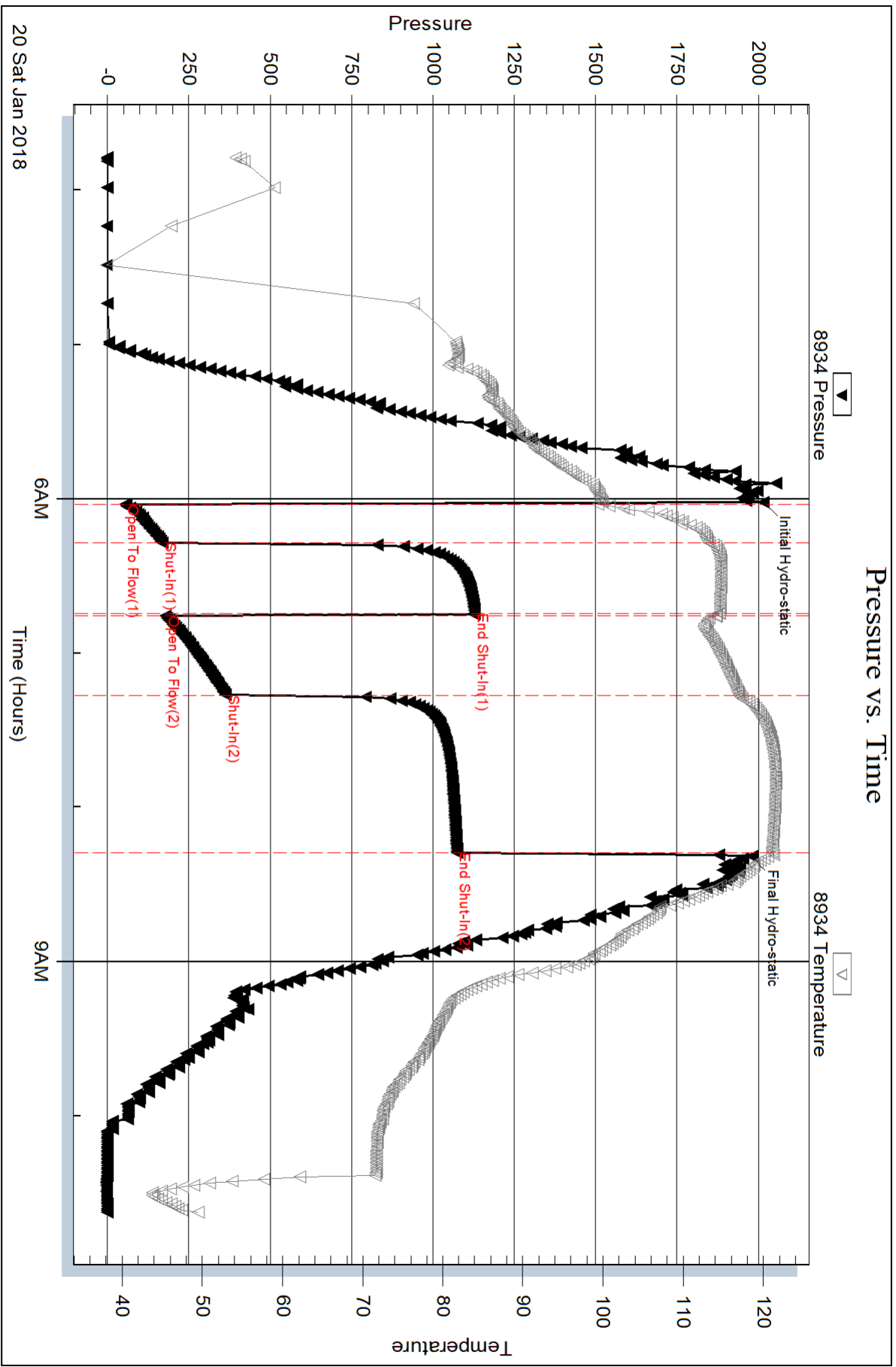
Mud Type: Gel Chem	Cushion Type:	Oil API: 31 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.59 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 7500.00 ppm		
Filter Cake: inches		

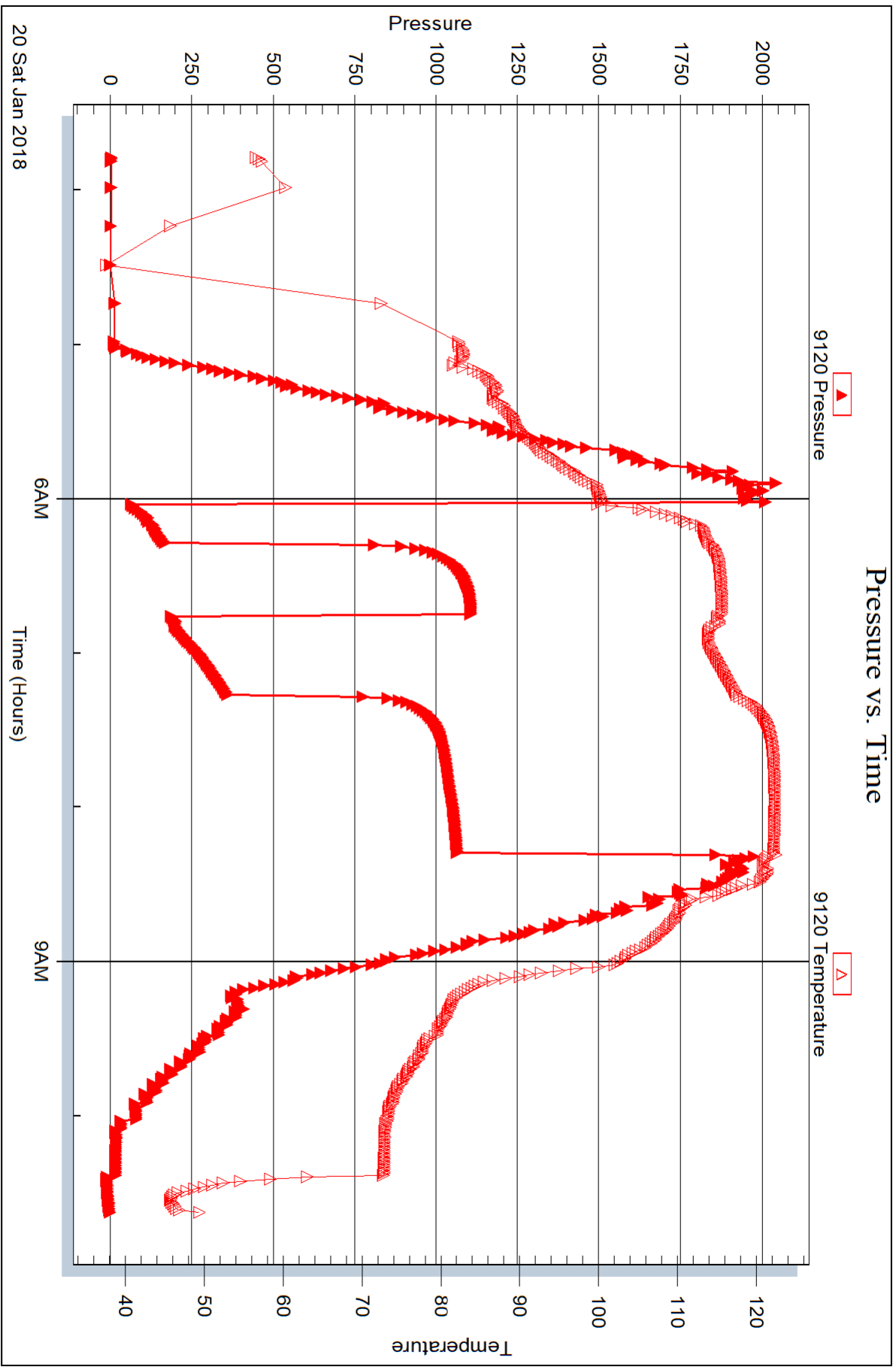
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
370.00	GMCO 20%G 15%M 65%O	4.899
630.00	GO 20%G 80%O	8.837
0.00	210' GIP 100%G	0.000

Total Length: 1000.00 ft Total Volume: 13.736 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: 1/2#LCM







DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019
Hays KS 67601

ATTN: Marc Downing

27-13S-21W Trego,KS

Mark Armbrister #1-27

Start Date: 2018.01.20 @ 16:29:00

End Date: 2018.01.20 @ 23:50:00

Job Ticket #: 63542 DST #: 4

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

Printed: 2018.01.22 @ 11:39:44

DNOC Mark Armbrister #1-27 27-13S-21W Trego,KS DST # 4 Conglomerate Sand 2018.01.20



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

DNOC
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

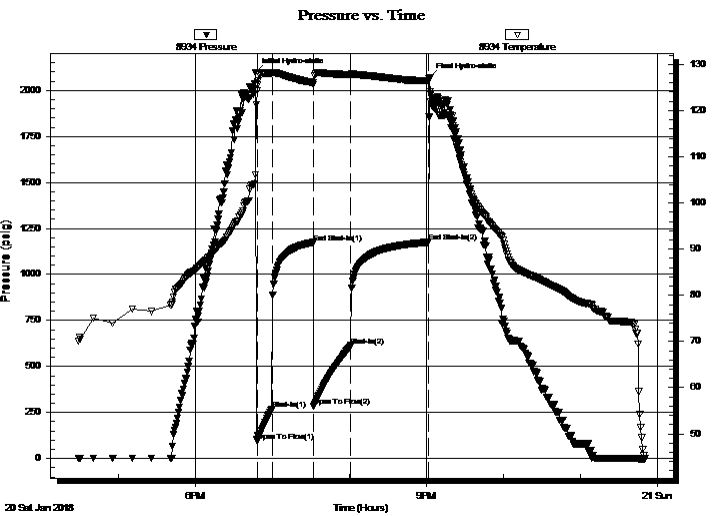
Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63542 **DST#: 4**
Test Start: 2018.01.20 @ 16:29:00

GENERAL INFORMATION:

Formation: **Conglomerate Sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 18:48:15
Time Test Ended: 23:50:00
Interval: **4113.00 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: Spencer J. Staab
Unit No: 84
Reference Elevations: 2367.00 ft (KB)
2359.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 8934 **Inside**
Press@RunDepth: 612.79 psig @ 4116.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2018.01.20 End Date: 2018.01.20 Last Calib.: 2018.01.20
Start Time: 16:29:15 End Time: 23:50:00 Time On Btm: 2018.01.20 @ 18:47:00
Time Off Btm: 2018.01.20 @ 21:02:45

TEST COMMENT: 15-IF-Strong Blow ; BOB(11") in 2 min
30-ISI-Weak Blow ; Built to 3/4"; died back to 1/2"
30-FF-Strong Blow ; BOB in 1 3/4 min
60-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2097.89	106.09	Initial Hydro-static
2	93.81	124.31	Open To Flow (1)
13	268.39	128.07	Shut-In(1)
45	1173.96	126.06	End Shut-In(1)
45	284.47	125.62	Open To Flow (2)
75	612.79	127.77	Shut-In(2)
135	1175.29	126.45	End Shut-In(2)
136	2067.57	124.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
800.00	GW 10%G 90%W	10.93
400.00	MWC 15%M 85%W	5.61
225.00	WCM 10%W 90%M	3.16

* Recovery from multiple tests

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

DNOC

Mark Armbrister #1-27

PO Box 1019
Hays KS 67601

27-13S-21W Trego,KS

ATTN: Marc Downing

Job Ticket: 63542 **DST#: 4**

Test Start: 2018.01.20 @ 16:29:00

GENERAL INFORMATION:

Formation: **Conglomerate Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:48:15

Time Test Ended: 23:50:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J. Staab

Unit No: 84

Interval: 4113.00 ft (KB) To 4120.00 ft (KB) (TVD)

Reference Elevations: 2367.00 ft (KB)

Total Depth: 4120.00 ft (KB) (TVD)

2359.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 9120 Inside

Press@RunDepth: psig @ 4116.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.01.20 End Date: 2018.01.20

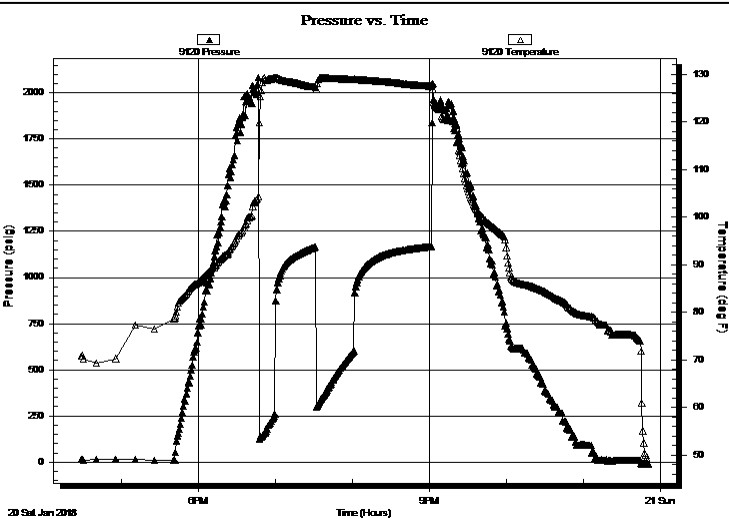
Last Calib.: 2018.01.20

Start Time: 16:29:15 End Time: 23:50:00

Time On Btm:

Time Off Btm:

TEST COMMENT: 15-IF-Strong Blow ; BOB(11") in 2 min
30-ISI-Weak Blow ; Built to 3/4"; died back to 1/2"
30-FF-Strong Blow ; BOB in 1 3/4 min
60-FSI-No Return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
800.00	GW 10%G 90%W	10.93
400.00	MWC 15%M 85%W	5.61
225.00	WCM 10%W 90%M	3.16

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

DNOC
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63542 **DST#: 4**
Test Start: 2018.01.20 @ 16:29:00

Tool Information

Drill Pipe:	Length: 4089.00 ft	Diameter: 3.80 inches	Volume: 57.36 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4113.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	7.00 ft			
Tool Length:	27.00 ft			
Number of Packers:	1	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			4094.00	
Shut In Tool	5.00			4099.00	
Hydraulic tool	5.00			4104.00	
Packer	5.00			4109.00	20.00 Bottom Of Top Packer
Packer	4.00			4113.00	
Stubb	1.00			4114.00	
Perforations	2.00			4116.00	
Recorder	0.00	9120	Inside	4116.00	
Recorder	0.00	8934	Inside	4116.00	
Bullnose	4.00			4120.00	7.00 Bottom Packers & Anchor
Total Tool Length:	27.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

DNOC
PO Box 1019
Hays KS 67601
ATTN: Marc Downing

Mark Armbrister #1-27
27-13S-21W Trego,KS
Job Ticket: 63542 **DST#: 4**
Test Start: 2018.01.20 @ 16:29:00

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:	50000 ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.59 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 7500.00 ppm			
Filter Cake: inches			

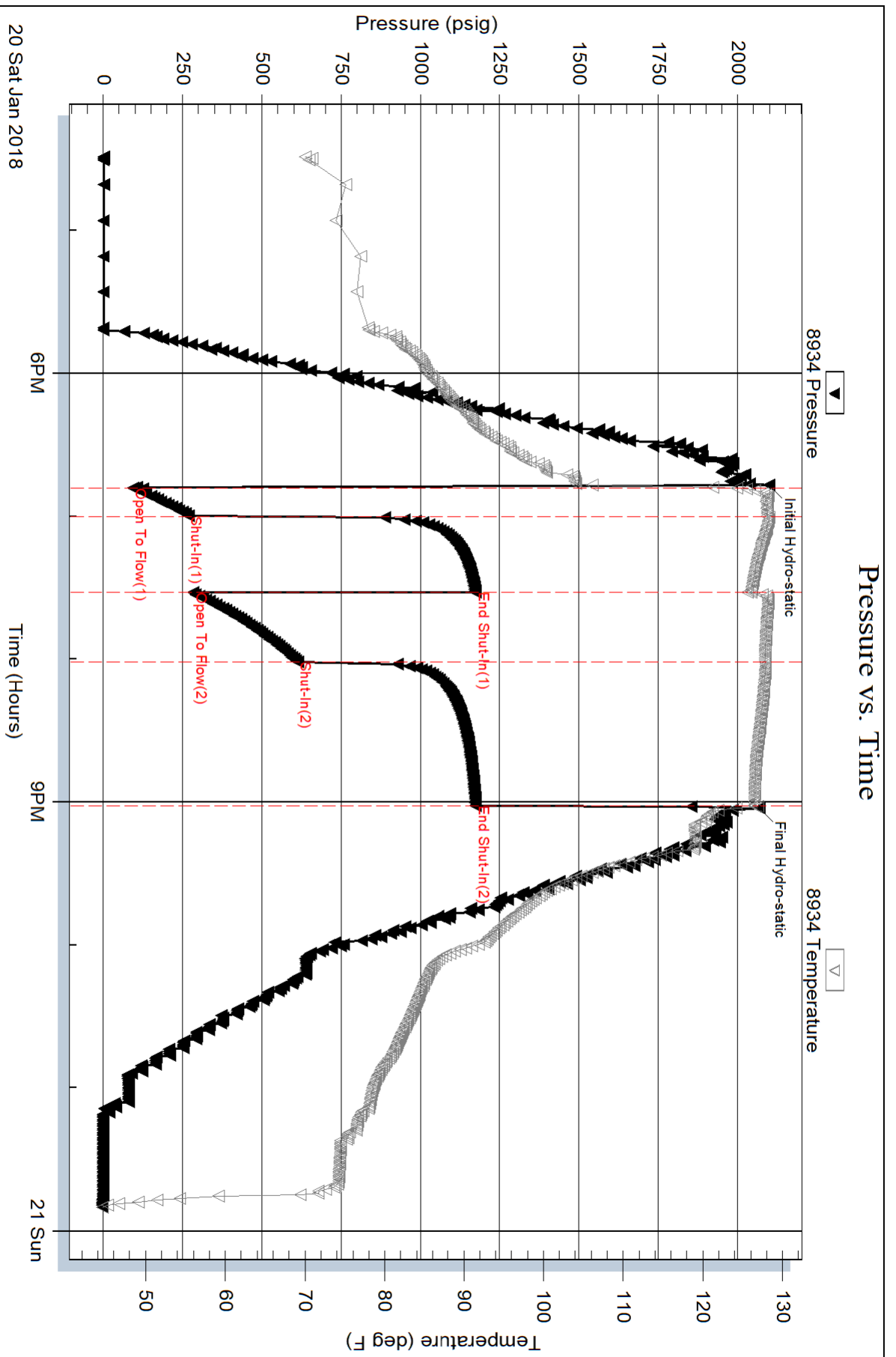
Recovery Information

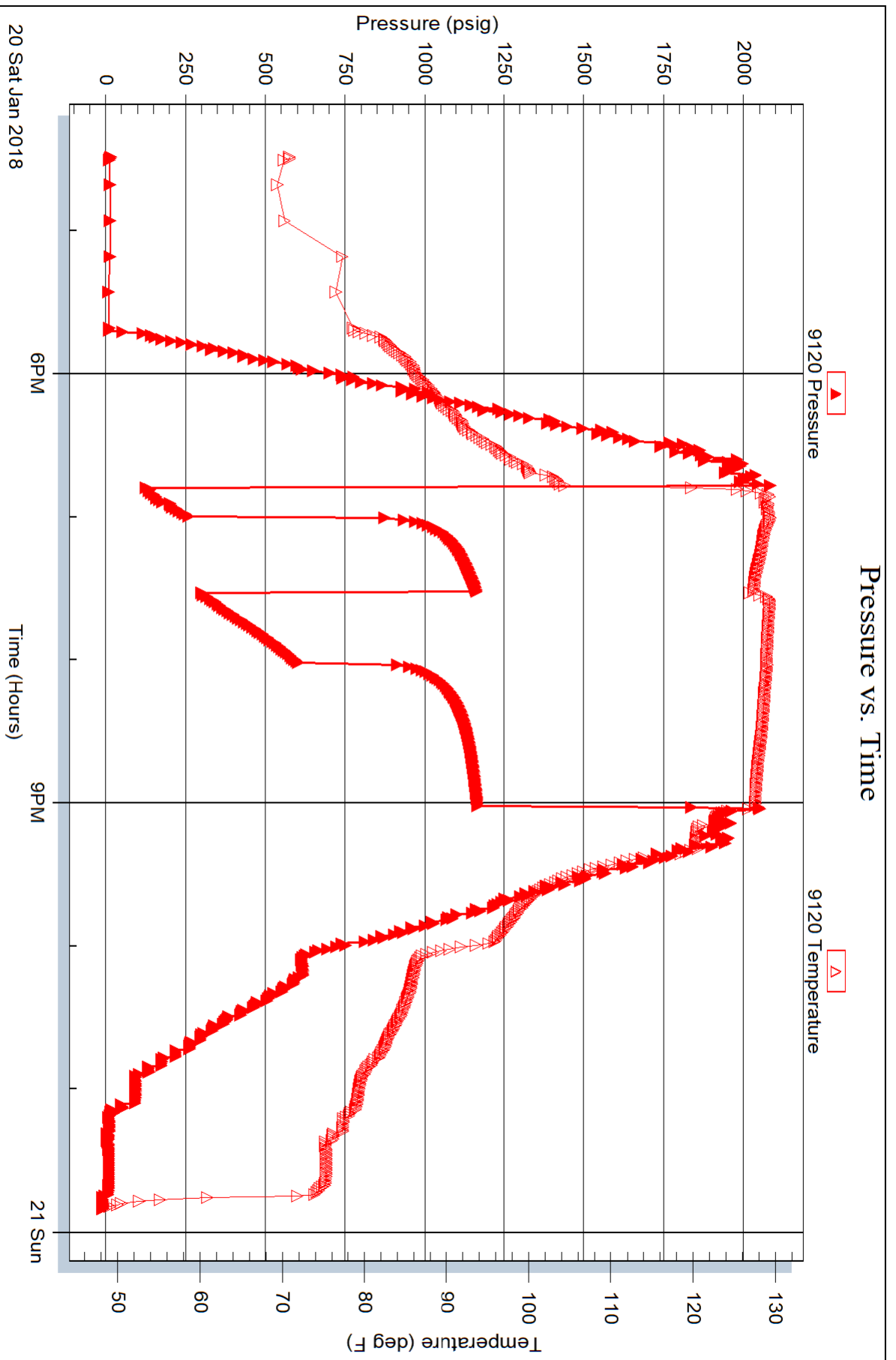
Recovery Table

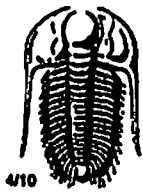
Length ft	Description	Volume bbl
800.00	GW 10%G 90%W	10.930
400.00	MWC 15%M 85%W	5.611
225.00	WCM 10%W 90%M	3.156

Total Length: 1425.00 ft Total Volume: 19.697 bbl
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: 1/2#LCM
RW=.296@36degrees

Pressure vs. Time







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63539

Well Name & No. Mark Armbrister #1-27 Test No. 1 Date 02/18/2018
 Company DNOC Elevation 2367 KB 2359 GL
 Address PO BOX 1019 Hays, Mo 67601
 Co. Rep / Geo. Marc Downing Rig Discovery #4
 Location: Sec. 27 Twp 13S Rge. 2W Co. Trego State Mo

Interval Tested 3767'-3784' Zone Tested LRC 'E'
 Anchor Length 17' Drill Pipe Run 3740' Mud Wt. 8.8
 Top Packer Depth 3762' Drill Collars Run 32' Vis 51
 Bottom Packer Depth 3767' Wt. Pipe Run - WL 7.2
 Total Depth 3784' Chlorides 6500 ppm System LCM 1/2#

Blow Description 17-Weak Blow; Built to 1"

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

Rec	Feet of	%gas	%oil	%water	%mud
<u>10'</u>	<u>Mud</u>			<u>100</u>	
	<u>Oil spots on top of tool</u>				

Rec Total 10' BHT 101° Gravity - API RW - @ - °F Chlorides - ppm
 (A) Initial Hydrostatic 1805 Test 1050 T-On Location 10:15
 (B) First Initial Flow 14 Jars _____ T-Started 10:41
 (C) First Final Flow 15 Safety Joint _____ T-Open 13:26
 (D) Initial Shut-In 515 Circ Sub _____ T-Pulled 15:26
 (E) Second Initial Flow 16 Hourly Standby _____ T-Out 16:56
 (F) Second Final Flow 17 Mileage 57 RM 42.75 Comments _____
 (G) Final Shut-In 506 Sampler _____
 (H) Final Hydrostatic 1796 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 30 Extra Packer _____
 Final Flow 30 Extra Recorder _____
 Final Shut-In 30 Day Standby _____
 Accessibility _____
 Sub Total 1092.75 Sub Total 0
 Total 1092.75 MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. Stahl Thanks

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.

785-259-0056



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63540

Well Name & No. Mark Armbrister #1-27 Test No. 2 Date 01/19/2018
 Company SNOCJ Elevation 2367 KB 2359 GL
 Address PO BOX 1019 Hays KS 67601
 Co. Rep / Geo. Marc Downing Rig Discovery #4
 Location: Sec. 27 Twp 13N Rge. Rur Co. Trego State Ks

Interval Tested 4030' - 4060' Zone Tested Marmaton
 Anchor Length 30' Drill Pipe Run 3993' Mud Wt. 9.1
 Top Packer Depth 4025' Drill Collars Run 32' Vis 57
 Bottom Packer Depth 4030' Wt. Pipe Run - WL 7.6
 Total Depth 4060' Chlorides 7500 ppm System LCM 1/2#

Blow Description 77-Weak Blow, Built to 1"

1st- No Return

77- No Blow

78- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10'</u>	<u>OSM</u>			<u>100</u>	
<u>0'</u>	<u>Oil on top of tool</u>				

Rec Total 10' BHT 108° Gravity - API RW - @ - °F Chlorides - ppm

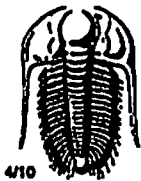
(A) Initial Hydrostatic 1991 Test 1150 T-On Location 13:48
 (B) First Initial Flow 11 Jars _____ T-Started 14:18
 (C) First Final Flow 15 Safety Joint _____ T-Open 16:12
 (D) Initial Shut-In 852 Circ Sub _____ T-Pulled 18:12
 (E) Second Initial Flow 17 Hourly Standby _____ T-Out 19:52
 (F) Second Final Flow 20 Mileage 57 RT 42.75 Comments _____
 (G) Final Shut-In 557 Sampler _____
 (H) Final Hydrostatic 1964 Straddle _____ Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 30 Extra Packer _____ Extra Copies _____
 Final Flow 30 Extra Recorder _____ Sub Total 0
 Final Shut-In 30 Day Standby _____ Total 1192.75
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1192.75

Approved By _____ Our Representative Spencer J. Paul Thanks!

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, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

7852590056



TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63541

Well Name & No. Mark Ambrister # 1-27 Test No. 3 Date 01/20/2018
 Company MCO Elevation 2367 KB 2359 GL
 Address PO BOX 1019 Hays KS 67601
 Co. Rep / Geo. Marc Downing Flg Discovery #4
 Location: Sec. 27 Twp 13S Rge. 2W Co. Trego State KS

Interval Tested 4057' - 4107' Zone Tested Cherokee Ss
 Anchor Length 50' Drill Pipe Run 4024' Mud Wt. 9.1
 Top Packer Depth 4052' Drill Collars Run 32' Vls 57
 Bottom Packer Depth 4057' Wt. Pipe Run - WL 7.6
 Total Depth 4107' Chlorides 7,500 ppm System LCM 1/2#

Blow Description 7- Strong Blow; BOB (11") in 2:30

1SD- Fair Blow; Built to 4"

77- Strong Blow; BOB in 3 mins

7SD- Weak Blow; Built to 1"; died back to surface

Rec 630' Feet of 110 20 %gas 80 %oil %water %mud

Rec 370' Feet of MCO 20 %gas 65 %oil %water 15 %mud

Rec _____ Feet of 210' M-P 100 %gas %oil %water %mud

Rec _____ Feet of _____ %gas %oil %water %mud

Rec _____ Feet of _____ %gas %oil %water %mud

Rec Total 1000' BHT 121° Gravity 31° API RW - @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2017

(B) First Initial Flow 54

(C) First Final Flow 169

(D) Initial Shut-In 1129

(E) Second Initial Flow 179

(F) Second Final Flow 362

(G) Final Shut-In 1075

(H) Final Hydrostatic 1979

Test 1150

Jars _____

Safety Joint _____

Circ Sub _____

Hourly Standby _____

Mileage 57R7 42.75

Sampler _____

Straddle _____

Shale Packer _____

Extra Packer _____

Extra Recorder _____

Day Standby _____

Accessibility _____

Sub Total 1192.75

T-On Location 03:27

T-Started 03:47

T-Open 06:01

T-Pulled 08:16

T-Out 10:35

Comments _____

Ruined Shale Packer _____

Ruined Packer _____

Extra Copies _____

Sub Total 0

Total 1192.75

MP/DST Disc't _____

Initial Open 15

Initial Shut-In 30

Final Flow 30

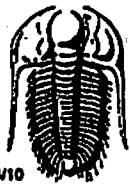
Final Shut-In 60

Approved By _____

Our Representative Spencer J. Ansel Thanks!

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, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

785-259-0056



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63542

Well Name & No. Mark Ambrister #1-27 Test No. 4 Date 01/20/2018
 Company MOCD Elevation 2367 KB 2359 GL
 Address PO BOX 1019 Hays KS 67601
 Co. Rep / Geo. Marc Downing Rig Discovery #4
 Location: Sec. 27 Twp 13s Rge. 2W Co. Trego State KS

Interval Tested 4113' - 4120' Zone Tested Cong Ss
 Anchor Length 7' Drill Pipe Run 4089' Mud Wt. 9.2
 Top Packer Depth 4108' Drill Collars Run 32' Vis 57
 Bottom Packer Depth 4113' Wt. Pipe Run - WL 7.6
 Total Depth 4120' Chlorides 7,500 ppm System LCM 1/2#

Blow Description 77- Strong Blow; BOB (11") in 2:00
1st - Weak Blow; Built to 3/4"; died back to 1/2"
77- Strong Blow; BOB in 1:45
78- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>800'</u>	<u>29W</u>	<u>10</u>	<u>90</u>		
<u>400'</u>	<u>MCW</u>		<u>8.5</u>	<u>15</u>	
<u>225'</u>	<u>WCM</u>		<u>10</u>	<u>90</u>	

Rec Total 1425' BHT 126° Gravity - API RW 296 @ 36 °F Chlorides 50,000 ppm

(A) Initial Hydrostatic 2097 Test 1150 T-On Location 16:05
 (B) First Initial Flow 93 Jars _____ T-Started 16:29
 (C) First Final Flow 268 Safety Joint _____ T-Open 18:46
 (D) Initial Shut-In 1173 Circ Sub _____ T-Pulled 21:00
 (E) Second Initial Flow 284 Hourly Standby _____ T-Out 23:48
 (F) Second Final Flow 612 Mileage 57R7 42.75 Comments _____
 (G) Final Shut-In 1175 Sampler _____
 (H) Final Hydrostatic 2067 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____

Initial Open 15
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 60
 Sub Total 1192.75
 Total 1192.75
 MP/DST Disc't _____

Approved By _____ Our Representative Spencer J. Strub Thanks!
 TriLOBITE TESTING INC. shall not be liable for damaged or 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.

785-259-0056