

JAMES C. MUSGROVE

Petroleum Geologist, LLC
212 Main Street
P.O. Box 215
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Mai Oil Operations
L&N Miller #1
SW-NE-SW-NW
Section 16-20s-22w
Ness County, Kansas

Page 1

5 1/2" Production Casing Set

Contractor: Southwind Drilling Co. (rig #3)
Commenced: June 19, 2017
Completed: June 26, 2017
Elevation: 2209' K.B., 2207' D.F., 2201' G.L.
Casing program: Surface; 8 5/8" @ 251'
Production, 5 1/2" @ 4446'
Sample: Samples saved and examined 3600' to the Rotary Total Depth.
Drilling time: One (1) foot drilling time recorded and kept 3600' to the Rotary Total Depth.
Measurements: All depths measured from the Kelly Bushing.
Drill Stem Tests: There were three (3) Drill Stem Tests ran by Trilobite Testing Co.
Electric Log: By Eli Wireline Services, Dual Induction, Compensated Density/Neutron and Micro Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	1436	+773
Base Anhydrite	1477	+732
Heebner	3702	-1493
Toronto	3716	-1507
Lansing	3749	-1540
Stark	4006	-1797
Base Kansas City	4076	-1867
Marmaton	4116	-1907
Pawnee	4196	-1987
Ft. Scott	4268	-2059
Cherokee Shale	4294	-2085
Mississippian	4352	-2143
Mississippi Osage	4364	-2155
Rotary Total Depth	4450	-2241
Log Total Depth	4453	-2244

(All tops and zones corrected to Electric Log Measurement)

SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

TOPEKA through LANSING/KANSAS CITY SECTIONS

3600-4076' There were several zones of well-developed porosity encountered in the drilling of the Topeka, Toronto, , Lansing, and Kansas City Sections, but no shows of oil and/or gas was noted. (See attached geologist sample log)

MARMATON SECTION

4116-4126' Limestone, tan, brown, finely crystalline, poor scattered pinpoint porosity, no shows.

4148-4170' Limestone, white, cream, finely crystalline, chalky, scattered inter-crystalline porosity, no shows.

4174-4193' Limestone, cream, white, finely crystalline, poor visible porosity, (dense), no shows.

PAWNEE SECTION

4206-4230' Limestone, cream, white, finely crystalline; chalky in part, poor visible porosity, no shows.

4230-4264' Limestone, cream, white, gray, chalky, shaley with depth, no shows.

FT SCOTT SECTION

4268-4280' Limestone, cream white, finely crystalline, chalky in part, poor scattered pinpoint type porosity, trace spotty black stain, no free oil and no odor in fresh samples.

CHEROKEE SECTION

4298-4314' Limestone, cream, white, finely crystalline, few fossiliferous, dense, trace chert; white, oolitic, boney, no shows.

4323-4330' Limestone, white, cream, finely crystalline, poor visible porosity, chalky, no shows.

4330-4353' Limestone, white, cream, few fossiliferous, poor to fair vuggy to pinpoint type porosity, chalky, no shows plus gray and green shale.

MISSISSIPPIAN SECTION

4353-4364' Dolomite, white, finely crystalline, poorly developed pinpoint type porosity, trace brown stain, no free oil and faint odor in fresh sample, trace chert white, few orange, opaque, no shows

OSAGE SECTION

4363-4370' Chert; white, opaque, fair, finely vuggy type porosity, black stain, show of free oil and strong odor in fresh samples.

Drill Stem Test #1 **4335-4370**

Times: 30-30-30-30

Blow: Weak

Recovery: 5' oil cut mud

Pressures: ISIP 969 psi
FSIP 909 psi
IFP 17-18 psi
FFP 20-23 psi
HSH 2185-2153 psi

4370-4381; Chert, white; scattered vuggy porosity, brown stain, show of free oil and strong odor in fresh samples.

Drill Stem Test #2 **4334-4389**

Times: 30-30-45-60

Blow: Strong

Recovery: 30' clean oil
496' slightly oil cut muddy water
(57% oil; 85% water; 10% mud)
265' oil cut muddy water
(10% oil; 40% water; 50% mud)

Pressures: ISIP 1381 psi
FSIP 1382 psi
IFP 28-205 psi
FFP 209-373 psi
HSH 2173-2095 psi

4389-4400' Chert; as above

4400-4420' Dolomite, white, finely crystalline, poor inter-crystalline porosity, trace light brown stain, weak show of free oil and faint to fair odor in fresh samples; plus trace sand; white, fine to medium grained; sub-rounded, friable, no shows.

4420-4450' Chert and dolomite, as above, no shows.

Mai Oil Operations
L&N Miller #1
SW-NE-SW-NW
Section 16-20s-22w
Ness County, Kansas

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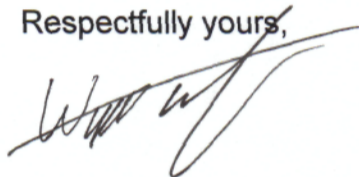
Rotary Total Depth **4450 -2241**

Log Total Depth **4453 -2243**

Recommendations:

5 ½' production casing was set and cemented on the Mai Oil Operations, L&N Miller #1.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'Wyatt Urban', written over a horizontal line.

Wyatt Urban
Petroleum Geologist



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Road Suite 800
 Dallas, TX 75225+5520
 ATTN: Wyatt Urban

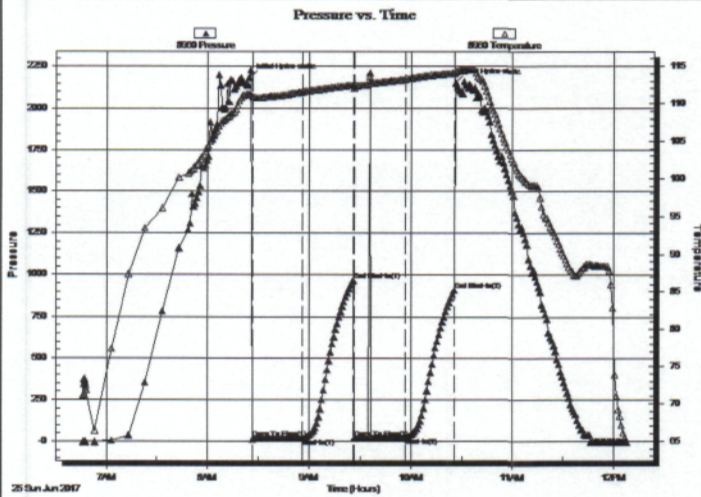
16-20S-22W Ness,KS
L & N Miller #1
 Job Ticket: 64792 **DST#: 1**
 Test Start: 2017.06.25 @ 06:46:00

GENERAL INFORMATION:

Formation: **Mississippi**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 08:26:30
 Time Test Ended: 12:08:00
 Interval: **4335.00 ft (KB) To 4370.00 ft (KB) (TVD)**
 Total Depth: 4370.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Ken Swinney
 Unit No: 72
 Reference Elevations: 2209.00 ft (KB)
 2201.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8960 **Outside**
 Press@RunDepth: 909.20 psig @ 4367.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.06.25 End Date: 2017.06.25 Last Calib.: 2017.06.25
 Start Time: 06:46:05 End Time: 12:07:59 Time On Btm: 2017.06.25 @ 08:24:30
 Time Off Btm: 2017.06.25 @ 10:26:30

TEST COMMENT: IFP 30 minutes Blow built to 1/4" in 10 minutes then died after 20 minutes
 ISI 30 minutes No blow back
 FFP 30 minutes Dead no blow / Flush tool no help
 FSI 30 minutes No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2183.34	111.27	Initial Hydro-static
2	15.59	110.92	Open To Flow (1)
32	17.91	111.57	Shut-In(1)
62	969.48	112.49	End Shut-In(1)
62	19.46	112.10	Open To Flow (2)
92	23.36	113.26	Shut-In(2)
121	909.20	114.07	End Shut-In(2)
122	2152.23	114.30	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Oil cut Mud w /thin layer of oil in pipe	0.02
0.00	Oil 10% Mud 90%	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Road Suite 800
Dallas, TX 75225+5520
ATTN: Wyatt Urban

16-20S-22W Ness,KS
L & N Miller #1
Job Ticket: 64792 **DST#: 1**
Test Start: 2017.06.25 @ 06:46:00

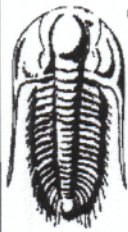
Tool Information

Drill Pipe:	Length: 4275.00 ft	Diameter: 3.80 inches	Volume: 59.97 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length: 60.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose:	48000.00 lb
			<u>Total Volume: 60.27 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial	43000.00 lb
Depth to Top Packer:	4335.00 ft			Final	43000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	35.00 ft				
Tool Length:	55.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut-In Tool	5.00			4320.00	
Hydraulic tool	5.00			4325.00	
Top Packer	5.00			4330.00	
Packer	5.00			4335.00	20.00 Bottom Of Top Packer
Anchor	30.00			4365.00	
Recorder	1.00	8354	Inside	4366.00	
Recorder	1.00	8960	Outside	4367.00	
Bullnose	3.00			4370.00	35.00 Anchor Tool

Total Tool Length: 55.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

16-20S-22W Ness,KS

8411 Preston Road Suite 800
Dallas, TX 75225+5520

L & N Miller #1

Job Ticket: 64792

DST#: 1

ATTN: Wyatt Urban

Test Start: 2017.06.25 @ 06:46:00

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: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 71.78 in³

Gas Cushion Type:

Gas Cushion Pressure:

psig

Resistivity: ohm.m

Salinity: 7600.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Oil cut Mud w /thin layer of oil in pipe	0.025
0.00	Oil 10% Mud 90%	0.000

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 #: 8354

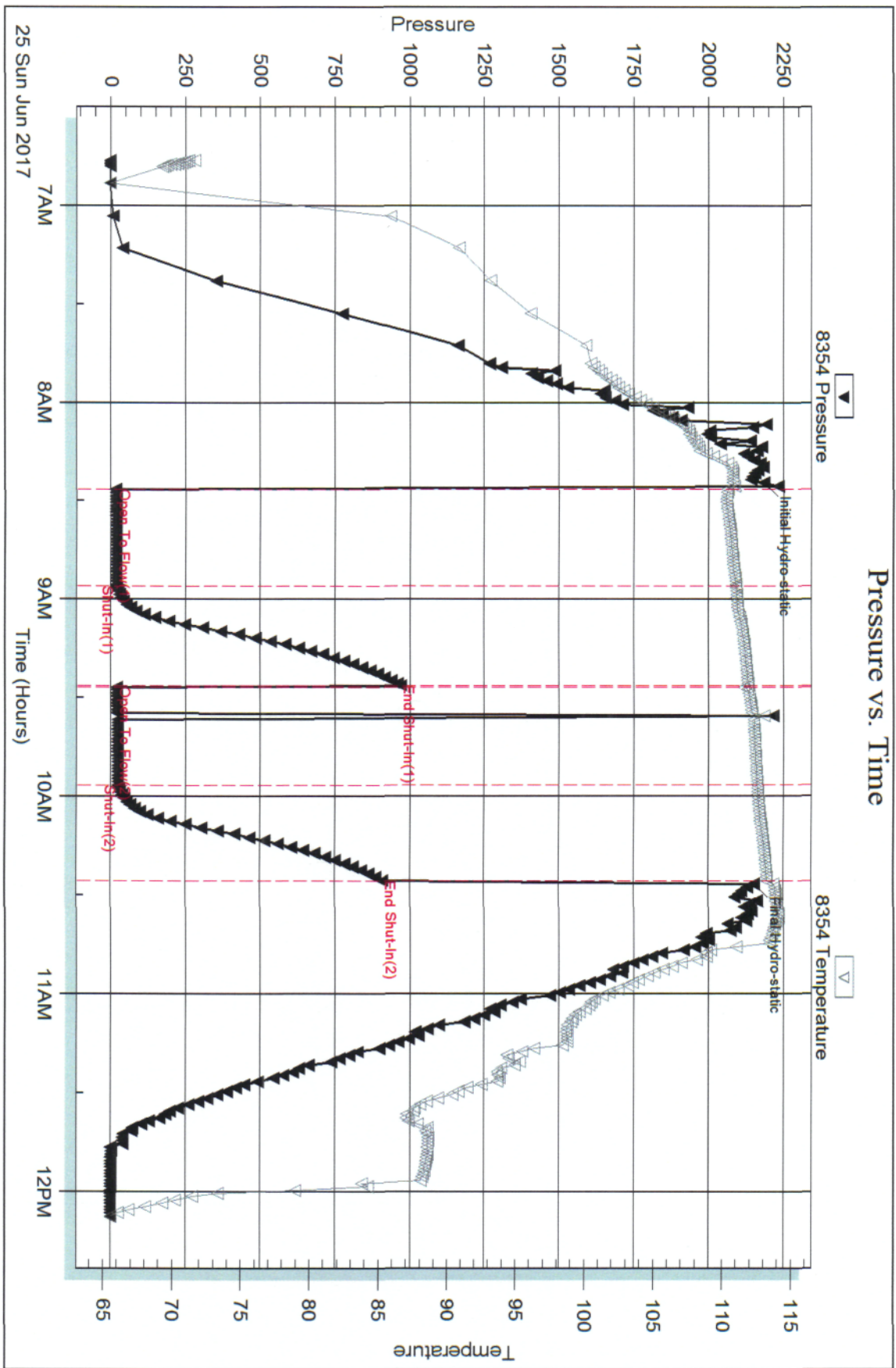
Inside

Mai Oil Operations

L & N Miller #1

DST Test Number: 1

Pressure vs. Time





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations

16-20S-22W Ness,KS

8411 Preston Road Suite 800
Dallas, TX 75225+5520

L & N Miller #1

Job Ticket: 64793

DST#: 2

ATTN: Wyatt Urban

Test Start: 2017.06.25 @ 19:33:00

GENERAL INFORMATION:

Formation: **Mississippi**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:11:30

Time Test Ended: 02:01:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Sw inney

Unit No: 72

Interval: **4334.00 ft (KB) To 4381.00 ft (KB) (TVD)**

Reference Elevations: 2209.00 ft (KB)

Total Depth: 4381.00 ft (KB) (TVD)

2201.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GRVCF: 8.00 ft

Serial #: 8960

Outside

Press@RunDepth: 1347.51 psig @ 4336.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.06.25

End Date:

2017.06.26

Last Calib.:

2017.06.26

Start Time: 19:33:05

End Time:

02:01:29

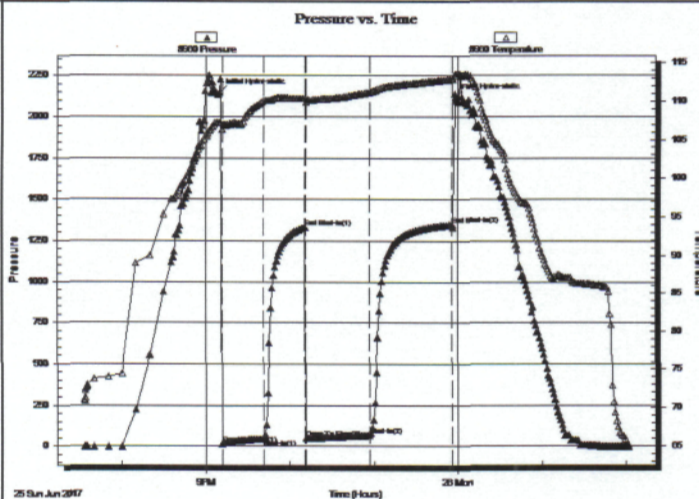
Time On Btm:

2017.06.25 @ 21:09:30

Time Off Btm:

2017.06.25 @ 23:58:00

TEST COMMENT: IFP 30 minutes Blow built to 3 1/2"
ISI 30 minutes No blow back
FFP 45 minutes Blow built to 4 inches
FSI 60 minutes No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2146.57	107.23	Initial Hydro-static
2	14.67	106.35	Open To Flow (1)
32	44.14	110.10	Shut-In(1)
62	1331.21	110.41	End Shut-In(1)
62	47.74	109.94	Open To Flow (2)
107	63.97	111.16	Shut-In(2)
167	1347.51	112.89	End Shut-In(2)
169	2118.10	113.49	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	OCM Oil 15% Mud 85%	0.72
30.00	Clean Oil 100%	0.42

Gas Rates

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



**TRILOBITE
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DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

16-20S-22W Ness,KS

8411 Preston Road Suite 800
Dallas, TX 75225+5520

L & N Miller #1

Job Ticket: 64793

DST#: 2

ATTN: Wyatt Urban

Test Start: 2017.06.25 @ 19:33:00

Tool Information

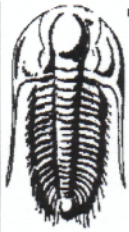
Drill Pipe:	Length: 4275.00 ft	Diameter: 3.80 inches	Volume: 59.97 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 60.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose: 52000.00 lb
			<u>Total Volume: 60.27 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	4334.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.23 ft			
Tool Length:	67.23 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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Shut-In Tool	5.00			4319.00	
Hydraulic tool	5.00			4324.00	
Top Packer	5.00			4329.00	
Packer	5.00			4334.00	20.00 Bottom Of Top Packer
Recorder	1.00	8354	Inside	4335.00	
Recorder	1.00	8960	Outside	4336.00	
Anchor	9.00			4345.00	
Change Over Sub	1.00			4346.00	
Drill Pipe	31.23			4377.23	
Change Over Sub	1.00			4378.23	
Bullnose	3.00			4381.23	47.23 Anchor Tool

Total Tool Length: 67.23



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

16-20S-22W Ness,KS

8411 Preston Road Suite 800
Dallas, TX 75225+5520

L & N Miller #1

Job Ticket: 64793

DST#: 2

ATTN: Wyatt Urban

Test Start: 2017.06.25 @ 19:33:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

37 deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 48.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	OCM Oil 15% Mud 85%	0.716
30.00	Clean Oil 100%	0.421

Total Length: 120.00 ft Total Volume: 1.137 bbl

Num Fluid Samples: 0

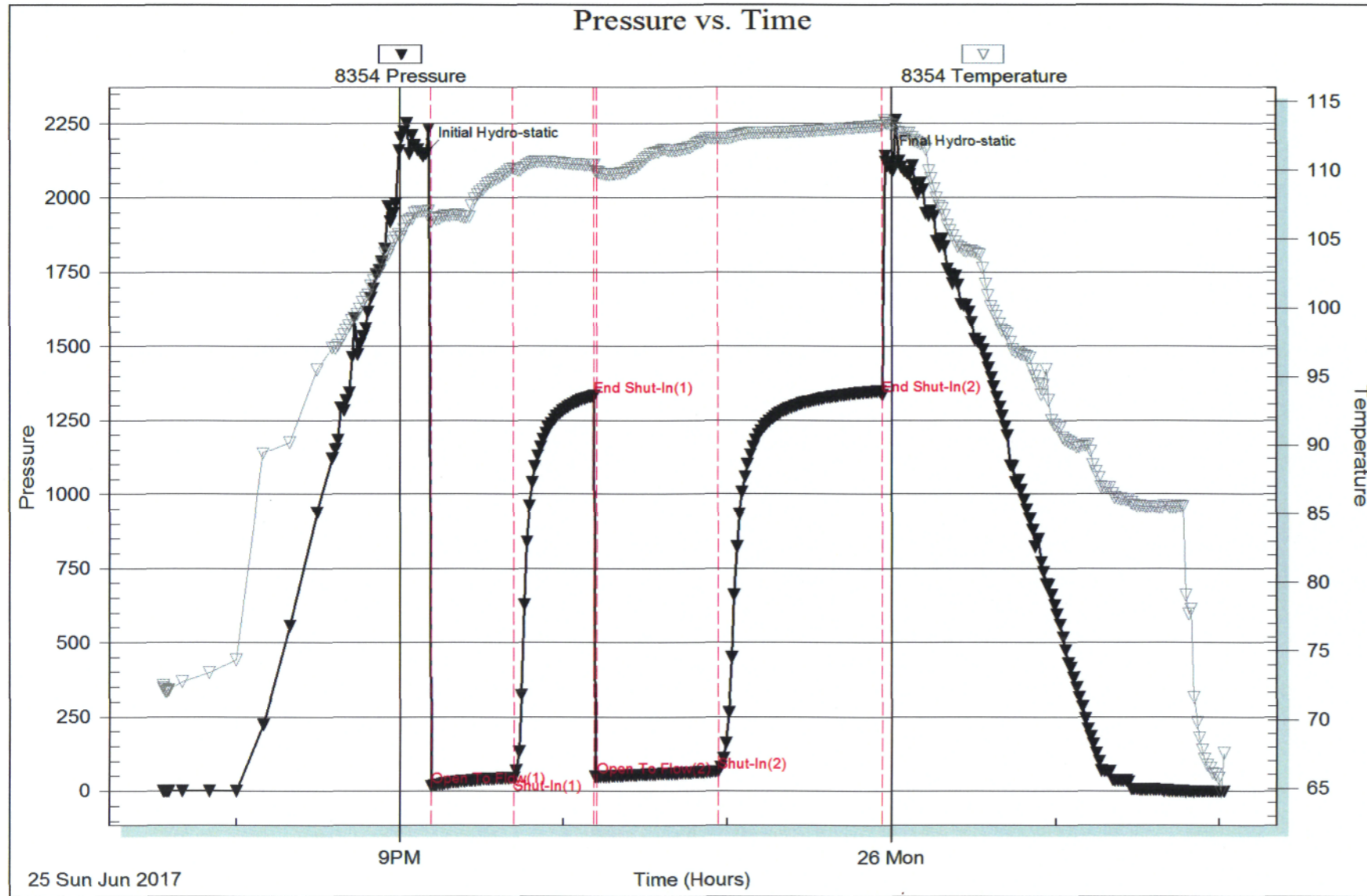
Num Gas Bombs: 0

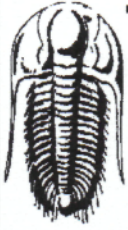
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Road Suite 800
Dallas, TX 75225+5520
ATTN: Wyatt Urban

16-20S-22W Ness,KS
L & N Miller #1
Job Ticket: 64794 **DST#: 3**
Test Start: 2017.06.26 @ 08:21:00

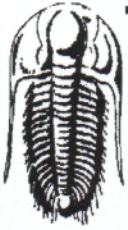
Tool Information

Drill Pipe:	Length: 4275.00 ft	Diameter: 3.80 inches	Volume: 59.97 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 60.00 ft	Diameter: 2.25 inches	Volume: 0.30 bbl	Weight to Pull Loose: 62000.00 lb
		<u>Total Volume: 60.27 bbl</u>		Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	4334.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.23 ft			
Tool Length:	75.23 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut-In Tool	5.00			4319.00	
Hydraulic tool	5.00			4324.00	
Top Packer	5.00			4329.00	
Packer	5.00			4334.00	20.00 Bottom Of Top Packer
Recorder	1.00	8354	Inside	4335.00	
Recorder	1.00	8960	Outside	4336.00	
Anchor	17.00			4353.00	
Change Over Sub	1.00			4354.00	
Drill Pipe	31.23			4385.23	
Change Over Sub	1.00			4386.23	
Bullnose	3.00			4389.23	55.23 Anchor Tool

Total Tool Length: 75.23



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

16-20S-22W Ness,KS

8411 Preston Road Suite 800
Dallas, TX 75225+5520

L & N Miller #1

Job Ticket: 64794

DST#: 3

ATTN: Wyatt Urban

Test Start: 2017.06.26 @ 08:21:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

14000 ppm

Viscosity: 48.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 7000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
496.00	OCMV Oil 5% Mud 10% Water 85%	6.411
265.00	OCVM Oil 10% Water 40% Mud 50%	3.717
30.00	Clean Oil 100%	0.421

Total Length: 791.00 ft Total Volume: 10.549 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

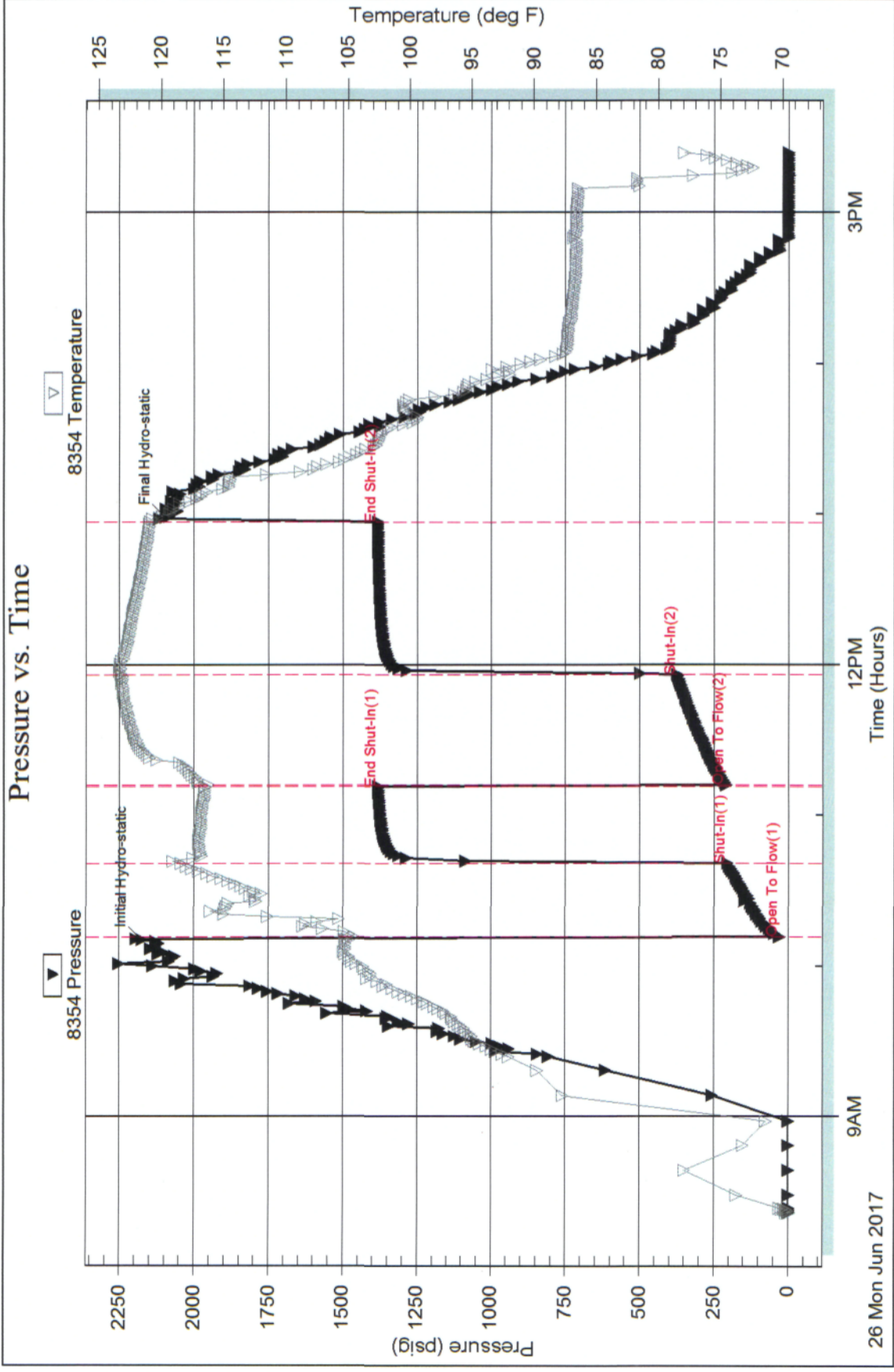
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Recovery Resistivity .35 ohms @ 88 deg.

Pressure vs. Time



QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 192

Date	6-20-17	Sec.	16	Twp.	20	Range	22	County	Ness	State	Ks	On Location		Finish	12:00 AM
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Lease **L+N Miller** Location **Bazine 95, 4W to 2 Rd, 1/4 S, E/S**

Well No. **1** Owner **To Quality Oilwell Cementing, Inc.**

Contractor **Southwind #3** You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Type Job **Surface** Charge To **Main oil operations**

Hole Size **12 1/4"** T.D. **251'** Csg. **8 5/8"** Depth **251'** Street

Tbg. Size Depth City State

Tool Depth The above was done to satisfaction and supervision of owner agent or contractor.

Cement Left in Csg. **15'** Shoe Joint **15'** Cement Amount Ordered **160 60/40 4% CC 2% Gel**

Meas Line Displace **15 BLS**

EQUIPMENT			
16	No.	Cementer	Common 96
9	No.	Helper Rick Travis	Poz. Mix 64
9	No.	Driver Jordan	Gel. 3
4	No.	Driver	Calcium 7

JOB SERVICES & REMARKS

Remarks: **Cement did Circulate.**

Rat Hole

Mouse Hole

Centralizers

Baskets

D/V or Port Collar

Handling **1070**

Mileage

Slide Shoe

Centralizer

Baskets

AF Inserts

Float Shoe

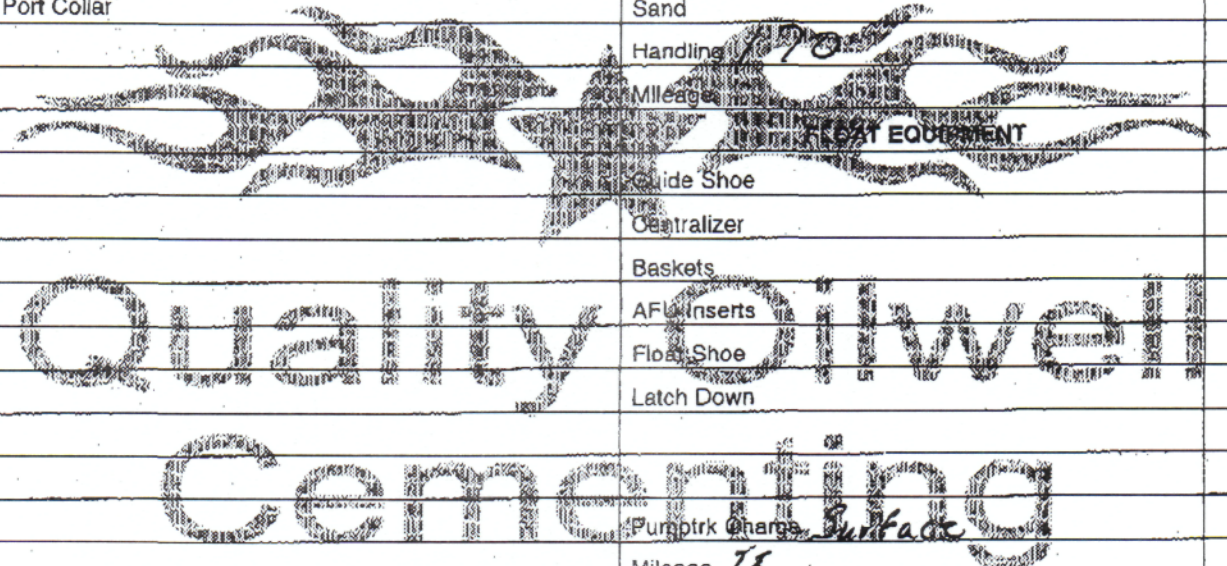
Latch Down

Pumptrk Charge **Surface**

Mileage **25**

Signature **Jay Miller**

Tax
Discount
Total Charge



QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 197

Date	6-27-17	Sec.	16	Twp.	20	Range	22	County	Ness	State	Ks	On Location		Finish	1:45 PM			
Lease	L+N Miller							Well No.	1	Owner	V/S, E Hnto							
Contractor	Southwind #3							To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.										
Type Job	Longstring							Charge To	Main oil operations									
Hole Size	7 7/8"							T.D.	4450'									
Csg.	5 1/2" New 14#							Depth	4446'									
Tbg. Size								Depth										
Tool	Port Collar							Depth	1377'									
Cement Left in Csg.	20.93'							Shoe Joint	20.93'									
Meas Line	Displace 108 BLS							1/4# Fl. seal - 1000 gal Mud Clear 48										
EQUIPMENT																		
Pumptrk	16	No.	Cementer		Helper		Tavis									Common	96	
Bulktrk	15	No.	Driver		Driver		Doug									Poz. Mix	60 64	
Bulktrk	P.U.	No.	Driver		Driver		Rick									Gel.	3	
JOB SERVICES & REMARKS																		
Remarks:	Hulls																	
Rat Hole	Salt 18																	
Mouse Hole	Flowseal 40#																	
Centralizers	1-5 #74																	
Baskets	Half up on #74																	
D/V or Port Collar	Port Collar @ 1377' 5#75																	
Pipe on bottom break Circulation pump down and mud plug rather w/ 205x													Mud CLR 48 1000 gal					
Casing + mix 1505x Cement. Shut wash pump + lines Displaced plug w/ BLS of water. Released + held													CFL-117 or CD110 CAF 38					
Lift pressure 800 #													Sand					
Load plug to 2500 #													Handling 16					
Quality Oilwell Cementing													FLOAT EQUIPMENT					
													Mileage 25					
X Signature <i>Hnt</i>													Mileage 25					
													Pumptrk Charge paid \$400					
													Tax					
													Discount					
													Total Charge					