

JAMES C. MUSGROVE

Petroleum Geologist, LLC

212 Main Street

P.O. Box 215

Clafin, KS 67525

Office (620) 588-4250

Res. Clafin (620) 587-3444

Mai Oil Operations
Wayne Krug #1
E/2-NW-NE-NW (330' FNL & 1750' FWL)
Section 15-15s-14w
Russell County, Kansas

Page 1

5 1/2" Production Casing Set

Contractor: Southwind Drilling Co. (rig #3)

Commenced: July 2, 2014

Completed: July 11, 2014

Elevation: 1781' K.B., 1779' D.F., 1773' G.L.

Casing program: Surface; 8 5/8" @ 332'
Production, 5 1/2 @ 3299"

Sample: Samples saved and examined 2300' to the Rotary Total Depth.

Drilling time: One (1) foot drilling time recorded and kept 2300 ft. to the Rotary Total Depth.

Measurements: All depths measured from the Kelly Bushing.

Drill Stem Tests: There were four (4) Drill Stem Tests ran by Trilobite Testing Co.

Electric Log: By Nabors; Dual Induction, Compensated Density/Neutron Log and Micro Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	780	+1001
Base Anhydrite	812	+969
Grand Haven	2337	-556
1 st Tarkio Sand	2348	-567
Dover	2362	-581
2 nd Tarkio Sand	2371	-590
Tarkio Lime	2407	-626
Elmont	2470	-689
Howard	2607	-826
Heebner	2908	-1127
Toronto	2925	-1144
Lansing	2970	-1189
Base Kansas City	3172	-1391
Arbuckle	3216	-1435
Rotary Total Depth	3300	-1519
Log Total Depth	3298	-1517

All tops and zones corrected to Electric Log Measurement.

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

1ST TARKIO SAND

2348-2356' Poorly developed section, no true sand development.

2nd TARKIO SAND

2371-2385' Sand, gray; grayish green, fine grained; well sorted, micaeous, friable; light brown stain, show of free oil and no odor in fresh samples.

Drill Stem Test #1 **2336-2412**

Times: 30-30-30-30

Blow: Weak

Recovery: 3' very slightly oil cut mud
(2% oil; 98% mud)
120' muddy water

Pressures: ISIP 663 psi
FSIP 624 psi
IFP 18-45 psi
FFP 50-71 psi
HSH 1112-1080 psi

TOPEKA SECTION

2854-2870' Limestone, cream, tan, fine and medium crystalline, chalky; few fossiliferous, scattered porosity, no shows.

2870-2890' Limestone, cream, tan, finely crystalline, few fossiliferous, chalky poor scattered porosity, trace black stain, no free oil and no odor in fresh samples.

TORONTO SECTION

2924-2936' Limestone, cream, tan, finely crystalline, dense, poor porosity, no shows.

LANSING SECTION

2971-2981' Limestone, white, light gray, finely crystalline, few medium crystalline, chalky, trace dark brown stain, no free oils and no odor in fresh samples.

2990-3000' Limestone, white, cream, finely crystalline, oolitic, chalky, dense.

- 3000-3010' Limestone, cream, tan, finely crystalline, oolitic, sub-oomoldic, chalky, poorly developed oomoldic porosity, trace stain, no free oil and no odor in fresh samples.
- 3010-3020' Limestone, white, cream, finely crystalline, chalky, poor visible porosity.
- 3020-3030 Limestone, cream, white, tan, finely crystalline, oolitic, oomoldic, poor scattered oomoldic porosity, plus white/gray boney chert.
- 3042-3050' Limestone, white, cream, finely crystalline, oolitic, oomoldic, fair oomoldic porosity, no shows plus chert, white/cream, boney.
- 3061-3070' Limestone, cream, white, tan, finely crystalline, oolitic, oomoldic, fair oomoldic porosity, no shows.
- 3090-3100' Limestone, as above, fair porosity.
- 3110-3120' Limestone, tan, gray, finely crystalline, dense, poor visible porosity.
- 3130-3140' Limestone, cream, white, tan, finely crystalline, oolitic, few fossiliferous, chalky, oomoldic in part, no shows.
- 3143-3160' Limestone, cream, tan, finely crystalline, oolitic, fossiliferous; poor visible porosity, cherty in part.

ARBUCKLE SECTION

- 3216-3230' Dolomite, cream, white, fine and medium crystalline, poor to fair inter-crystalline porosity, golden brown stain, trace of free oil and good odor in fresh samples.

Drill Stem Test #2 3179-3230

-MISRUN-

- 3230-3242' Dolomite, cream, white, tan, fine and medium crystalline, fair to good inter-crystalline and vuggy type porosity, scattered golden brown to dark brown stain, trace of free oil and good odor in fresh samples.

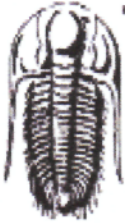
Drill Stem Test #3 3226-3242

Times: 30-30-45-60

**Blow: Weak; flushed tool
 Strong blow**

**Recovery: 125' muddy water
 2140' water**

**Pressures: ISIP plugged psi
 FSIP 1085 psi
 IFP plugged psi
 FFP 415-1042 psi
 HSH 1542-1508 psi**



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Mai Oil Operations, Inc.

15-15s-14w Russell, KS

8411 Preston RD Ste 800
Dallas, TX 75225

Wayne Krug #1

Job Ticket: 59387

DST#: 1

ATTN: Wyatt Urban/ Allen B

Test Start: 2014.07.07 @ 21:44:00

GENERAL INFORMATION:

Formation: **Tarkio Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:45:15

Time Test Ended: 04:39:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Phillip Gage

Unit No: 59

Interval: **2336.00 ft (KB) To 2412.00 ft (KB) (TVD)**

Total Depth: 2412.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1781.00 ft (KB)

1773.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: **8957**

Outside

Press@RunDepth: 71.49 psig @ 2413.00 ft (KB)

Start Date: 2014.07.07

End Date:

2014.07.08

Start Time: 21:44:05

End Time:

04:39:14

Capacity: 8000.00 psig

Last Calib.: 2014.07.08

Time On Btmr: 2014.07.08 @ 00:45:00

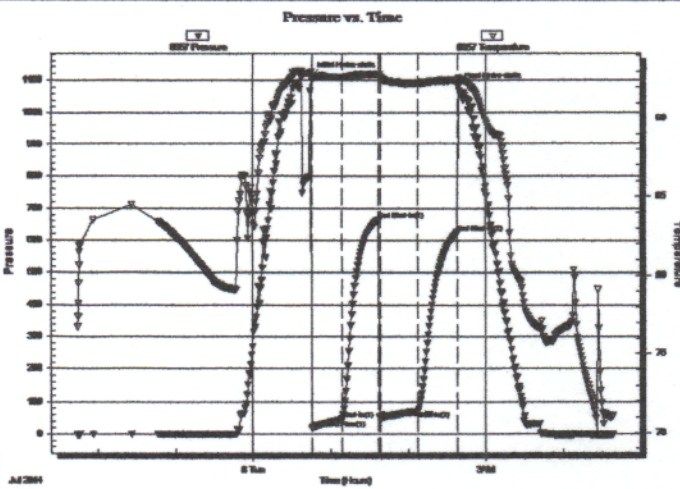
Time Off Btmr: 2014.07.08 @ 02:38:45

TEST COMMENT: 30-IF-Weak Surface Blow, Died in 2 mins, Flushed Tool, Built to 3"

30-ISI-No Return

30-FF-Built to 2 1/4"

30-FSI-No Return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1112.52	92.94	Initial Hydro-static
1	18.19	92.45	Open To Flow (1)
24	45.78	92.62	Shut-In(1)
53	663.06	92.83	End Shut-In(1)
54	50.44	92.57	Open To Flow (2)
83	71.49	92.28	Shut-In(2)
113	624.55	92.44	End Shut-In(2)
114	1080.03	92.54	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	SWCM, 10%w, 90%o, with oil spots	0.63
3.00	VSOCM, 2%o, 98%o	0.04

Gas Rates

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



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Mai Oil Operations, Inc.

15-15s-14w Russell, KS

8411 Preston RD Ste 800
Dallas, TX 75225

Wayne Krug #1

Job Ticket: 59389

DST#: 3

ATTN: Wyatt Urban/ Allen B

Test Start: 2014.07.10 @ 04:20:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:26:15

Time Test Ended: 13:21:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Phillip Gage/Brett D

Unit No: 59

Interval: **3226.00 ft (KB) To 3242.00 ft (KB) (TVD)**

Total Depth: 3242.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1781.00 ft (KB)

1773.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: **8957**

Outside

Press@RunDepth: 1041.78 psig @ 3227.00 ft (KB)

Start Date: 2014.07.10

End Date:

2014.07.10

Start Time: 04:20:05

End Time:

13:21:30

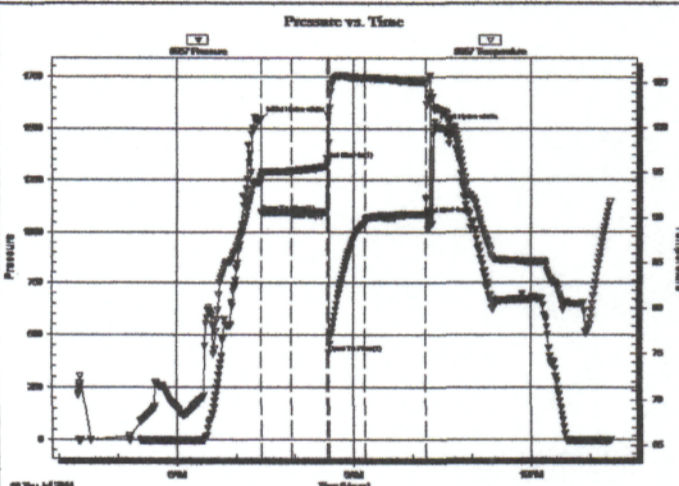
Capacity: 8000.00 psig

Last Calib.: 2014.07.10

Time On Btm: 2014.07.10 @ 07:25:15

Time Off Btm: 2014.07.10 @ 10:22:15

TEST COMMENT: 30-F-Built to 1/4"
30-ISI-No Return
45-FF-No Blow, Flushed Tool, BOB in 1 min.
60-FSI-No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1542.35	94.19	Initial Hydro-static
1	1093.96	94.66	Open To Flow (1)
32	1096.02	95.14	Shut-In(1)
68	1348.13	96.03	End Shut-In(1)
70	415.22	98.33	Open To Flow (2)
106	1041.78	105.50	Shut-In(2)
168	1084.83	105.05	End Shut-In(2)
177	1507.91	102.11	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2140.00	Water	28.96
125.00	MCW 25%M 75%W	1.75

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations, Inc.

15-15s-14w Russell,KS

8411 Preston RD Ste 800
Dallas, TX 75225

Wayne Krug #1

Job Ticket: 59390

DST#: 4

ATTN: Wyatt Urban/ Allen B

Test Start: 2014.07.11 @ 02:10:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:15:45

Time Test Ended: 09:21:30

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

Interval: **3218.00 ft (KB) To 3228.00 ft (KB) (TVD)**

Total Depth: 3298.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1781.00 ft (KB)

1773.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8957

Inside

Press@RunDepth: 910.58 psig @ 3219.00 ft (KB)

Start Date: 2014.07.11

End Date:

2014.07.11

Start Time: 02:10:05

End Time:

09:21:29

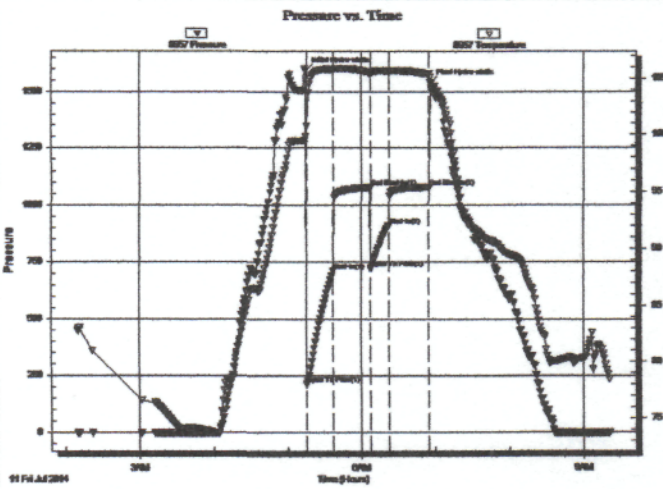
Capacity: 8000.00 psig

Last Calib.: 2014.07.11

Time On Btmr: 2014.07.11 @ 05:14:45

Time Off Btmr: 2014.07.11 @ 06:55:45

TEST COMMENT: F-BOB in 45 sec
IS-No blow
FF-BOB in 1 min
FSI-weak surface blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1590.86	99.76	Initial Hydro-static
1	210.92	100.68	Open To Flow (1)
22	709.11	105.71	Shut-In(1)
53	1078.87	105.47	End Shut-In(1)
53	722.74	105.32	Open To Flow (2)
68	910.58	105.59	Shut-In(2)
100	1079.78	105.35	End Shut-In(2)
101	1538.51	105.04	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1245.00	Water	17.46
125.00	OS Water 100%	1.75
185.00	SOCW 5%O 95%W	2.60
125.00	GSOCW 10%G 10%O 80%W	1.75
250.00	GOCW 10%G 30%O 60%W	3.51
125.00	GMVCO 10%G 35%O 30%W 25%M	1.75

* Recovery from multiple tests

Gas Rates

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

Trilobite Testing, Inc

Ref. No: 59390

Printed: 2014.07.15 @ 08:11:42

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. 551

Date	7-2-14	Sec.	15	Twp.	15	Range	14	County	Russell	State	KANSAS	On Location		Finish	12:15 AM
								Location							
								Russell KS, S. To MITCHEL RD.							

Lease	WAYNE KRUG	Well No.	#1	Owner	3/4 W 1/4 S INTO
Contractor	SOUTHWIND DRILLING RIG #3 "JAY"	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	LONG SURFACE				
Hole Size	12" x 4"	T.D.	514-336	Charge To	MAI OIL OPERATIONS INC.
Csg.	8 5/8 23#	Depth	514-336	Street	
Tbg. Size		Depth	DISP TO	City	State
Tool		Depth	(321)	The above was done to satisfaction and supervision of owner agent or contractor.	
Cement Left in Csg.	15-20'	Shoe Joint	15-20'	Cement Amount Ordered	250 sx 40 (USED 180 SX)
Meas Line	20.45 BBL	Displace	31 3/4 BBL	28 GEL	38 CC

EQUIPMENT

Pumptrk	18	No.	Cementer	GLENY G.	Common
			Helper	CODY B.	Poz. Mix
Bulktrk	15	No.	Driver	CLAYTON B.	Gel.
			Driver		Calcium

JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
	Sand
	Handling
	Mileage

FLOAT EQUIPMENT

Ran in New JOINTS OF 23 #	Guide Shoe
8 5/8 Csg. Set @ 514	Centralizer
Received CIRCULATION	Baskets
Cement w/ 180 SX 40 2+3	AFU Inserts
Release WOODEN WIPER PLUG &	Float Shoe
Displaced as TOTAL OF BBL	Latch Down
BEHIND Cement. SHUT IN @	K2 CUP WOODEN PLUG
350 #	
Cement DID CIRCULATE	Pumptrk Charge
TO SURFACE	Mileage

THANK'S

X Signature *Jay Ivier*

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. 538

Date	Sec.	Twp.	Range	County	State	On Location	Finish
7-11-2014	15	15	14	Russell	Kansas		6:45 PM
Location							

Lease	Wayne KRUG	Well No.	#1	Owner	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.
Contractor	SOUTHWIND DRILLING RIG #3 "Jay"				
Type Job	PRODUCTION STRING				
Hole Size	7 7/8	T.D.	3301	Charge To	MAT OIL OPERATIONS INC.
Csg.	5 1/2 NEW	Depth	3298	Street	
Tbg. Size	# CSG.	Depth		City	State
Tool	LATCH DOWN PLUG ASSY	Depth @	3278	The above was done to satisfaction and supervision of owner agent or contractor.	
Cement Left in Csg.		Shoe Joint	19.8	Cement Amount Ordered 100 SX 40 10% SALT 2% GEL 1/4" # F10-500 L	
Meas Line		Displace	80 / BBL	100 SX 40 18% SALT 2% GEL 1/4" # F10-500 L	

EQUIPMENT

Pumptrk	18	No.	Cementor	GLENN G.	Common
			Helper	CODY B.	
Bulktrk	1	No.	Driver		Poz. Mix
			Driver		Gel.
Bulktrk	14	No.	Driver		Calcium
			Driver		

JOB SERVICES & REMARKS

Remarks:		Hulls
Rat Hole	30 SX	Salt
Mouse Hole		Flowseal
Centralizers	1-8 10 22 25 60	Kol-Seal
Baskets	#11 #61 pc	Mud CLR 48 1,000 Gal
D/V or Port Collar	#61 (286)	CFL-117 or CD110 CAF 38
		Sand
		Handling
		Mileage

FLOAT EQUIPMENT

Drop AFU BALL @ CIRCULATE 3/4 HR.	Guide Shoe
Pump 1000 GAL MUD-CLAR, 1 Cement	Centralizer 12
W/ 70 SX 40 18% SALT, Followed	Baskets 2
By 100 SX 40 10% SALT, use	AFU Inserts
Clear-line, Release LATCH	Float Shoe 1
Down Plug, & Displaced A TOTAL	Latch Down 1
OF 80% / BBL H ₂ O, LAND	
Plug @ 1500 #.	
Release Pressure & "AFU"	
& LATCH DOWN PLUG (HELD)	

THANK'S.		Pumptrk Charge	
Signature		Mileage	
			Tax
			Discount
			Total Charge