

**JAMES C. MUSGROVE**

Petroleum Geologist, LLC  
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Mai Oil Operations  
Hammeke "M" #10  
W/2-E/2-W/2-SW (1320' FSL & 725' FWL)  
Section 22-21s-12w  
Stafford County, Kansas

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**5 1/2" Production Casing Set**

**Contractor:** Southwind Drilling Co. (rig #3)  
**Commenced:** June 3, 2015  
**Completed:** June 9, 2015  
**Elevation:** 1849' K.B., 1847' D.F., 1841' G.L.  
**Casing program:** Surface; 8 5/8" @ 638'  
Production, 5 1/2" @ 3699'  
**Sample:** Samples saved and examined 2900' to the Rotary Total Depth.  
**Drilling time:** One (1) foot drilling time recorded and kept 2900' 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 Nabors, Dual Induction, Compensated Density/Neutron and Micro Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	637	+1212
Base Anhydrite	656	+1193
Heebner	3104	-1255
Toronto	3122	-1273
Douglas	3136	-1287
Brown Lime	3237	-1388
Lansing	3244	-1395
Base Kansas City	3474	-1625
Viola	3482	-1633
Simpson Shale	3512	-1663
Arbuckle	3561	-1712
Rotary Total Depth	3711	-1851
Log Total Depth	3698	-1849

All tops and zones corrected to Electric Log Measurement

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

**TOPEKA SECTION**

2900-3104' No shows of oil and/or gas was noted (see attached Geologist Report/Sample Log.

**TORONTO SECTION**

3122-3136' Limestone, tan, finely crystalline, sucrosic scattered porosity; chalky in part; no shows and no odor in fresh samples.

**LANSING SECTION**

3244-3254' Limestone, cream, finely crystalline, fossiliferous, poor scattered porosity, no shows.

3267-3275' Limestone, tan, fine and medium crystalline, few fossiliferous, poor to fair porosity, poor inter-crystalline porosity, few cherty in part; trace black stain, no show of free oil and questionable odor in fresh samples.

3286-3292' Limestone, tan, brown, finely crystalline, fossiliferous, poor scattered porosity, chalky, trace brown stain, trace of free oil and faint odor in fresh samples.

3305-3311' Limestone, cream, tan, finely crystalline, poor visible porosity, few cherty, light brown stain, no show of free oil and faint odor in fresh samples.

3316-3325' Limestone, tan, brown, finely crystalline, dense, poor visible porosity, trace pyrite, no stain, no free oil and no odor in fresh samples.

3334-3352' Limestone, cream, finely crystalline, scattered vuggy porosity, light brown spotty stain, light brown stain, show of free oil and faint odor in fresh samples.

3374-3384' Limestone, cream, oomoldic, chalky in part, good oomoldic and vuggy type porosity, light brown and black stain, show of free oil and faint odor in fresh samples.

3393-3396' Limestone, cream, finely crystalline, dense, poor porosity, no shows and questionable odor in fresh samples.

3411-3410' Limestone, cream, white, finely crystalline, poor to fair inter-crystalline and oomoldic porosity, light brown stain, show of free oil and strong odor in fresh samples.

3433-3440' Limestone, cream, tan, oomoldic, poorly developed oomoldic porosity, light brown stain, light brown satin, show of free oil and faint odor in fresh samples.

3454-3462' Limestone, cream, oomoldic, scattered oomoldic and vuggy type porosity, light brown stain, show of free oil and faint odor in fresh samples.

**Drill Stem Test #1** **3360-3470**

**Times:** 30-30-30-30  
**Blow:** Weak  
**Recovery:** 300' gas in pipe  
75' slightly oil cut mud  
(10% oil; 90% mud)  
**Pressures:** ISIP 764 psi  
FSIP 632 psi  
IFP Invalid psi  
FFP Invalid psi  
HSH 1874-1639 psi

(Remarks: Slid Tool 10', all pressures questionable)

**VIOLA SECTION**

3481-3490' Chert, varied colored; boney, no shows.  
3490-3510' Chert, as above, boney; spotty light brown stain, no show of free oil and no odor in fresh samples.

**ARBUCKLE SECTION**

3560-3568' Dolomite, tan, sucrosic, finely crystalline, poor visible porosity, light brown stain, show of free oil and faint odor in fresh samples.  
3570-3596' Dolomite, tan, finely crystalline, poor to fair scattered vuggy type porosity, brown stain, show of free oil and strong odor in fresh samples.

**Drill Stem Test #2** **3506-3596**

**Times:** 30-30-45-60  
**Blow:** Strong  
**Recovery:** 2520' gas in pipe  
60' oil and gas cut mud  
(15% oil; 20% mud; 65% gas)  
60' oil and gas cut mud  
(15% oil; 15% mud; 70% gas)  
90' gassy oil  
(20% gas; 80% oil)  
**Pressures:** ISIP 875 psi  
FSIP 891 psi  
IFP 108-227 psi  
FFP 111-179 psi  
HSH 1791-1597 psi

3596-3610' Dolomite, tan, finely crystalline, poor visible porosity, black spotty oil flakes and stain, and strong odor in fresh samples.

3610-3617' Dolomite, tan, scattered vuggy porosity, black stain, show of free oil and fair odor in fresh samples.

**Drill Stem Test #3**

**3596-3617**

**Times: 30-30-45-45**

**Blow: Strong**

**Recovery: 3367' gas in pipe  
130' oil and gas cut mud  
(20% oil; 20% mud; 60% gas)  
120' gassy oil  
(20% gas; 80% oil)**

**Pressures: ISIP 383 psi  
FSIP 405 psi  
IFP 162-73 psi  
FFP 87-117 psi  
HSH 1804-1747 psi**

3620-3640' Dolomite, tan, finely crystalline, poorly developed porosity, few cherty, light brown spotty stain, show of free oil and strong odor in fresh samples.

3640-3650' Dolomite, cream, tan, finely crystalline, cherty in part, scattered vuggy type porosity, light brown spotty stain, show of free and strong odor in fresh samples.

3650-3660' Dolomite, tan, cream, finely crystalline, poor to fair inter-crystalline porosity, brown stain, show of free oil and strong odor in fresh samples.

3660-3670' Dolomite, tan, finely crystalline, slightly cherty, no show of oil and strong odor in fresh samples.

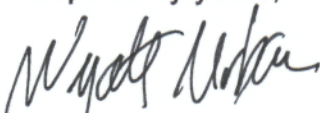
3670-3680' Dolomite, tan, finely crystalline, cherty, poor visible porosity, no show of oil and faint odor in fresh samples.

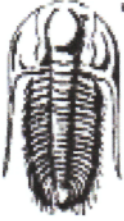
**Rotary Total Depth 3700  
Log Total Depth 3698**

**Recommendations:**

The 5 1/2" production casing was set and cemented on Mai Oil Operation Inc., Hammeke "M" #10.

Respectfully yours,

  
Wyatt Urban  
Petroleum Geologist



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations Inc

**22-21s-12w Stafford,KS**

8411 Preston RD STE 806 Dallas TX 75225+5520

**Hammeke M #10**

Job Ticket: 62924

**DST#: 1**

ATTN: Wyatt Urban

Test Start: 2015.06.07 @ 08:44:00

**GENERAL INFORMATION:**

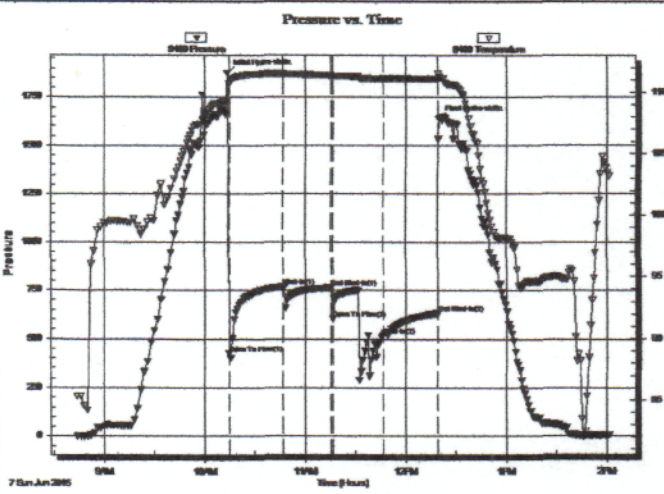
Formation: **Lower Lansing**  
 Deviated: **No Whipstock:** ft (KB)  
 Time Tool Opened: 10:14:30  
 Time Test Ended: 14:01:30  
 Test Type: **Conventional Bottom Hole (Initial)**  
 Tester: **Jared Scheck**  
 Unit No: **55**  
 Interval: **3360.00 ft (KB) To 3470.00 ft (KB) (TVD)**  
 Total Depth: **3470.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Poor**  
 Reference Elevations: **1857.00 ft (KB)**  
**1849.00 ft (CF)**  
 KB to GR/CF: **8.00 ft**

**Serial #: 8400**

**Inside**

Press@RunDepth: **517.03 psig @ 3466.00 ft (KB)** Capacity: **5000.00 psig**  
 Start Date: **2015.06.07** End Date: **2015.06.07** Last Calib.: **2015.06.07**  
 Start Time: **08:44:00** End Time: **14:01:30** Time On Btm: **2015.06.07 @ 10:13:30**  
 Time Off Btm: **2015.06.07 @ 12:20:00**

**TEST COMMENT:** IFF-30 Minutes-Weak blow built 3 1/2"  
 ISIP-30 Minutes-No blow back  
 FFP-30 Minutes-Weak blow built to 3" started die off flushed tool good surge  
 FSP-30 Minutes-No blow back



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1874.69	109.37	Initial Hydro-static
1	426.09	110.74	Open To Flow (1)
34	768.87	111.51	Shut-In(1)
62	764.06	111.37	End Shut-In(1)
63	603.09	111.32	Open To Flow (2)
93	517.03	111.13	Shut-In(2)
126	632.41	111.10	End Shut-In(2)
127	1639.96	111.29	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
75.00	Oil Mud 10%oil 90%mud	1.05
0.00	300 feet gas in pipe	0.00

**Gas Rates**

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



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations Inc

22-21s-12w Stafford,KS

8411 Preston RD STE 806 Dallas TX 75225+5520

**Hammeke M #10**

ATTN: Wyatt Urban

Job Ticket: 62925

DST#: 2

Test Start: 2015.06.08 @ 02:20:00

**GENERAL INFORMATION:**

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:54:30

Time Test Ended: 08:46:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jared Scheck

Unit No: 55

Interval: **3506.00 ft (KB) To 3596.00 ft (KB) (TVD)**

Total Depth: 3596.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1857.00 ft (KB)

1849.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8400**

Inside

Press@RunDepth: 179.64 psig @ 3575.00 ft (KB)

Start Date: 2015.06.08

End Date:

2015.06.08

Start Time: 02:21:00

End Time:

08:46:00

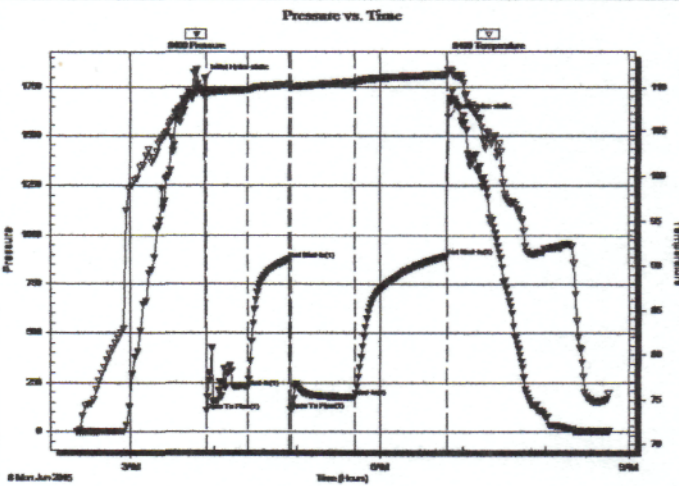
Capacity: 0.00 psig

Last Calib.: 2015.06.08

Time On Btm: 2015.06.08 @ 03:53:30

Time Off Btm: 2015.06.08 @ 06:49:30

TEST COMMENT: FFP-30 Minutes BOB in 8 minutes  
ISP=30 Minutes No blow back  
FFP-45 Minutes- BOB in 2 minutes  
FSIP-60 Minutes-9" blow back



**PRESSURE SUMMARY**

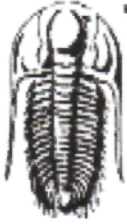
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1791.31	109.72	Initial Hydro-static
1	108.66	109.15	Open To Flow (1)
31	227.17	109.72	Shut-In(1)
61	875.75	110.30	End Shut-In(1)
63	111.70	110.01	Open To Flow (2)
109	179.64	110.59	Shut-In(2)
175	891.64	111.38	End Shut-In(2)
176	1597.19	111.95	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
60.00	15%oil 20%mud 65%gas	0.84
60.00	15%oil 15%mud 70%gas	0.84
90.00	20%Gas80%oil	1.26
0.00	2520 feet gas in pipe	0.00

**Gas Rates**

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



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations Inc

**22-21s-12w Stafford,KS**

8411 Preston RD STE 806 Dallas TX 75225+5520

**Hammeke M #10**

Job Ticket: 62926

**DST#: 3**

ATTN: Wyatt Urban

Test Start: 2015.06.08 @ 14:00:00

**GENERAL INFORMATION:**

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:11:00

Time Test Ended: 19:31:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jared Scheck

Unit No: 55

Interval: **3596.00 ft (KB) To 3617.00 ft (KB) (TVD)**

Reference Elevations: 1857.00 ft (KB)

Total Depth: 32617.00 ft (KB) (TVD)

1849.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

**Serial #: 8400**

**Inside**

Press@RunDepth: 117.06 psig @ 3597.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2015.06.08

End Date:

2015.06.08

Last Calib.: 2015.06.08

Start Time: 14:01:00

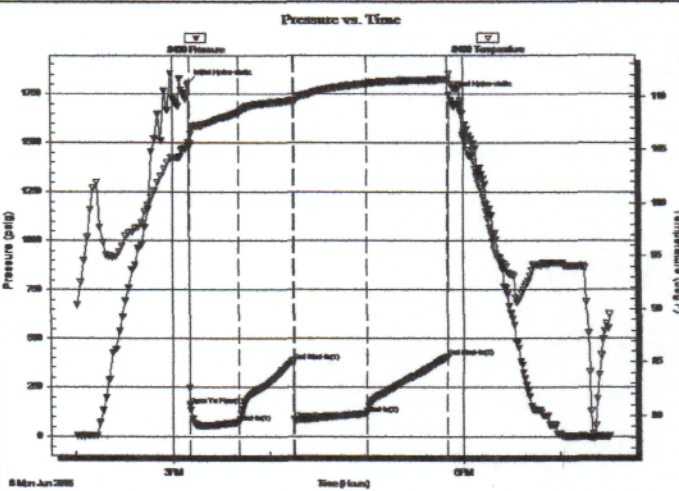
End Time:

19:31:00

Time On Btmr: 2015.06.08 @ 15:10:00

Time Off Btmr: 2015.06.08 @ 17:51:30

**TEST COMMENT:** IFP-30 Minutes BOB in 2 minutes  
 ISIP-30 Minutes No blow back  
 FF-45 Minutes BOB in 7 minutes  
 FSIP-45 Minutes-9" blow back



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1804.01	105.63	Initial Hydro-static
1	162.28	105.57	Open To Flow (1)
31	73.08	108.51	Shut-In(1)
65	383.51	109.60	End Shut-In(1)
66	87.02	109.56	Open To Flow (2)
110	117.06	111.17	Shut-In(2)
161	405.14	111.57	End Shut-In(2)
162	1747.32	112.12	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbf)
130.00	VGMO 20%oil 20%mud 60%gas	1.82
120.00	GO 20%gas 80%oil	1.68
0.00	3367' GIP	0.00

**Gas Rates**

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

# QUALITY OILWELL CEMENTING, INC.

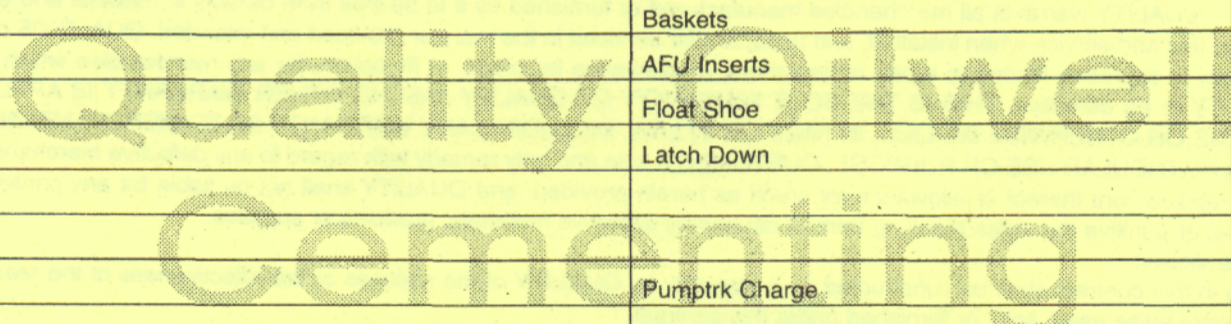
Federal Tax I.D.# 20-2886107

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

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

No. 1819

Date	6-3-15	Sec.	22	Twp.	21	Range	12	County	Stafford	State	Ks	On Location		Finish	8:00 PM
Lease								Location		Great Bend Ks - 115 to 170 Rd, 6 1/2 E					
Hammeke M								Well No.		10					
Contractor								Owner		N. H. to W. 1 to R. 1					
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								Charge To		Main oil operations					
Surface															
Hole Size								T.D.		638'					
12 1/4"															
Csg.								Depth		638'					
8 5/8"															
Tbg. Size								Depth		City					
										State					
Tool								Depth		The above was done to satisfaction and supervision of owner agent or contractor.					
Cement Left in Csg.								Shoe Joint		Cement Amount Ordered					
20'								20'		400 60/40 3%cc 2%gel 1/2#-15 seal					
Meas Line								Displace		39 1/2 BLS					
<b>EQUIPMENT</b>								Common							
Pumptrk								No.		Cementer					
5										Helper					
Bulktrk								No.		Driver					
19										Driver					
Bulktrk								No.		Driver					
pu.										Driver					
<b>JOB SERVICES &amp; REMARKS</b>								Hulls							
Remarks:								Salt							
Cement did Circulate															
Rat Hole								Flowseal							
Mouse Hole								Kol-Seal							
Centralizers								Mud CLR 48							
Baskets								CFL-117 or CD110 CAF 38							
D/V or Port Collar								Sand							
								Handling							
								Mileage							
<b>FLOAT EQUIPMENT</b>															
								Guide Shoe		Rubber plug					
								Centralizer							
								Baskets							
								AFU Inserts							
								Float Shoe							
								Latch Down							
								Pumptrk Charge							
								Mileage							
										Tax					
										Discount					
X Signature								Joy Hru		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. 1824

Date	6-9-15	Sec.	22	Twp.	21	Range	12	County	Stafford	State	Ks	On Location		Finish	7:30 PM
Lease	Hammeke "M"							Location	Dartmouth, Ks - 115 to 170 Rd, 2 1/2 E						
Well No.	10							Owner	N/into west to Rig						
Contractor	Southwind # 3							To Quality Oilwell Cementing, Inc.							
Type Job	<del>Long string</del> long string							You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.							
Hole Size	7 7/8"			T.D.	3700'			Charge To	mai oil operations						
Csg.	5 1/2" New 14#			Depth	3697.52'			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.	22.11'			Shoe Joint	22.11'			Cement Amount Ordered	160 60/40 10% Salt 2% Gel						
Meas Line				Displace	89 1/2 BLS			1/4# Flow seal - 1000 gal Mud Clean	48						
<b>EQUIPMENT</b>								<b>Common</b>							
Pumptrk	18	No.	Cementer Helper		Cody			Poz. Mix							
Bulktrk		No.	Driver		Glen			Gel.							
Bulktrk	AN	No.	Driver		Rick			Calcium							
<b>JOB SERVICES &amp; REMARKS</b>								<b>Hulls</b>							
Remarks:								Salt							
Rat Hole								Flowseal							
Mouse Hole								Kol-Seal							
Centralizers								12, 3, 5, 6, 7, 8, 9, 10, 11, 14, 15							
Baskets								CFL-117 or CD110 CAF 38							
D/V or Port Collar								pipe on bottom break							
Circulation								pump 500 gal Mud Clean							
48 plug								Rathole w/ 3000 lb Hook to							
Casing + Mix								3000 Cement							
Shut down								released plug wash pump + line, Displaced with 800 BLS Released + hold							
Lift pressure								750 #							
Land plug								1500 #							
								<b>FLOAT EQUIPMENT</b>							
								Guide Shoe							
								Centralizer 12							
								Baskets							
								AFU Inserts							
								Float Shoe							
								Latch Down							
								Pumptrk Charge							
								Tax							
								Discount							
X Signature								Total Charge							