

**JAMES C. MUSGROVE**

Petroleum Geologist, LLC  
212 Main Street  
P.O. Box 215  
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Office (620) 588-4250

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Mai Oil Operations  
Wilborn 'A' #1  
NE-SW-NW-NW (715' FNL & 440' FWL)  
Section 28-16s-13w  
Barton County, Kansas

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

**Contractor:** Southwind Drilling Co. (rig #3)  
**Commenced:** July 8, 2015  
**Completed:** July 14, 2015  
**Elevation:** 1961' K.B., 1959' D.F., 1953' G.L.  
**Casing program:** Surface; 8 5/8" @ 514'  
Production, 5 1/2" @ 3472'  
**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 Log and Micro.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	891	+1070
Base Anhydrite	921	+1040
Heebner	3073	-1112
Toronto	3090	-1129
Douglas	3102	-1141
Brown Lime	3153	-1192
Lansing	3161	-1200
Base Kansas City	3389	-1428
Arbuckle	3398	-1437
Rotary Total Depth	3475	-1514
Log Total Depth	3475	-1514

All tops and zones corrected to Electric Log Measurement

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

**TOPEKA SECTION**

3020-3040' Limestone, gray, white, fossiliferous, few sub-oomoldic, fair porosity, no shows.

**TORONTO SECTION**

3090-3096' Limestone, white, tan, finely crystalline, slightly cherty, poor porosity; plus white, chalky, limestone, no shows.

**LANSING SECTION**

3154-3160' Limestone, tan, oomoldic, fair oomoldic porosity, brown stain, trace of free oil and faint odor in fresh samples.

3190-3197' Limestone, gray, white, oomoldic, scattered oomoldic porosity, brown stain, trace of free oil and faint odor in fresh samples.

3211-3214' Limestone, white, finely crystalline, chalky, scattered pin point porosity, trace brown stain, show of free oi and no odor in fresh samples.

3228-3236' Limestone, tan, oomoldic in part, good oomoldic porosity, good golden brown stain, show of free oil and faint to fair odor in fresh samples.

**Drill Stem Test #1 3158-3236**

**Times: 30-30-45-60**

**Blow: Strong**

**Recovery: 1450' gas in pipe  
 262' heavily oil and gas cut mud, trace of water  
 (40% gas; 25% oil; 5% water; 30% mud)  
 63' muddy gassy watery oil  
 (40% gas; 40% oil; 10% water; 10% mud)  
 63' muddy water**

**Pressures: ISIP 586 psi  
 FSIP 569 psi  
 IFP 37-86 psi  
 FFP 56-156 psi  
 HSH 1534-1529 psi**

3248-3260' Limestone, tan, oomoldic, fair oomoldic porosity, plus white oolitic chert, no shows.

3293-3300' Limestone, cream, gray, tan, oolitic, oomoldic, fair oomoldic porosity, fair stain and saturation, show of free oi and fair odor in fresh samples.

3312-3320' Limestone, white, finely crystalline, few fossiliferous, chalky, poor visible porosity, trace brown stain, trace of free oil and no odor.

3331-3340' Limestone, tan, oolitic, chalky, trace poor stain, no show of free oil and no odor in fresh samples.

3358-3363' Limestone, cream, white, tan, fine and medium crystalline chalky in part, no shows.

**Drill Stem Test #2** **3286-3363**

**Times:** 30-30-45-60

**Blow:** Strong

**Recovery:** 2115' gas in pipe  
160' muddy gassy oil  
(45% gas; 50% oil; 5% mud)  
63' heavily oil cut mud  
(30% oil; 70% mud)

**Pressures:** ISIP 1055 psi  
FSIP 1042 psi  
IFP 37-54 psi  
FFP 63-98 psi  
HSH 1596-1575 psi

3370-3390' Limestone, tan, gray, finely crystalline, chalky increasingly cherty, poor porosity, trace iron pyrite.

**ARBUCKLE SECTION**

3398-3403' Dolomite, cream, white, medium crystalline, poor visible porosity, trace stain, no show of free oil and questionable odor.

3403-3413' Dolomite, as above, increase in porosity, few with fair inter-crystalline porosity, brown spotty stain, show of free oil and faint odor in fresh samples.

**Drill Stem Test #3** **3386-3413**

**Times:** 30-30-45-60

**Blow:** Strong

**Recovery:** 50' clean oil  
820' oil and gas cut muddy water  
(5% gas; 25% oil; 60% water; 10% mud)  
570' muddy water, trace of oil

**Pressures:** ISIP 1035 psi  
FSIP 1022 psi  
IFP 85-360 psi  
FFP 367-645 psi  
HSH 1635-1003 psi

3413-3426' Dolomite, gray, white, medium crystalline, fair to good inter-crystalline porosity, brown stain, show of free oil and faint to fair odor in fresh samples.

Mai Oil Operations  
Wilburn 'A' #1  
NE-SW-NW-NW (715' FNL & 440' FWL)  
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Barton County, Kansas

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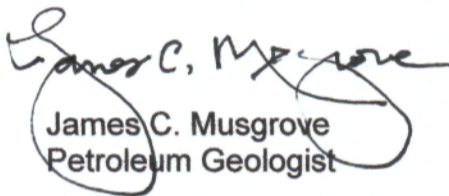
3426-3440'	Dolomite, as above, fair stain and saturation, show of free oil and faint/fair odor in fresh samples.
3440-3460'	Dolomite, white, gray, medium to coarse crystalline, fair inter-crystalline to vuggy type porosity, brown stain, show of free oil and fair odor in fresh samples.
3460-3475'	Dolomite, gray, white, finely crystalline, few cherty, plus white chert, no shows.

<b>Rotary Total Depth</b>	<b>3475</b>
<b>Log Total Depth</b>	<b>3475</b>

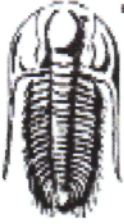
**Recommendations:**

The 5 1/2" production casing was set and cemented on Mai Oil Operations Inc., Wilburn 'A' #1.

Respectfully yours,

  
James C. Musgrove  
Petroleum Geologist





**TRILOBITE TESTING, INC**

## DRILL STEM TEST REPORT

Mai Oil Operations  
 8411 Preston Road Suite 800  
 Dallas TX 75225+5520  
 ATTN: Jim Musgrove

**28-16s-13w Barton,KS**  
**Wilborn A #1**  
 Job Ticket: 63039      **DST#: 1**  
 Test Start: 2015.07.11 @ 17:31:00

### GENERAL INFORMATION:

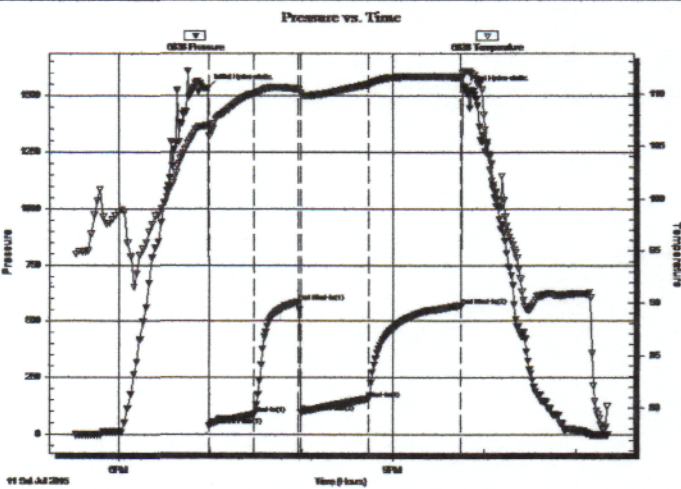
Formation: **LKC A-F**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 18:59:30  
 Time Test Ended: 23:20:30  
 Interval: **3158.00 ft (KB) To 3236.00 ft (KB) (TVD)**  
 Total Depth: 3236.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Ken Swinney  
 Unit No: 58  
 Reference Elevations: 1963.00 ft (KB)  
 1953.00 ft (CF)  
 KB to GR/CF: 10.00 ft

### Serial #: 6838

Inside

Press@RunDepth: 156.18 psig @ 3232.19 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2015.07.11      End Date: 2015.07.11      Last Calib.: 2015.07.11  
 Start Time: 17:32:00      End Time: 23:20:30      Time On Btm: 2015.07.11 @ 18:58:30  
 Time Off Btm: 2015.07.11 @ 21:47:00

TEST COMMENT: IFF 30 Minutes BOB in 8 min  
 ISI 30 Minutes Blow back built to 1 1/2" died after 20 min  
 FFP 45 Minutes BOBT in 3 1/2 min  
 FSI 60 Minutes Blow back built to 10" then died to weak surface and remained throughout



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1534.77	106.88	Initial Hydro-static
1	37.69	105.94	Open To Flow (1)
31	86.65	109.96	Shut-In(1)
60	586.03	110.40	End Shut-In(1)
61	96.02	110.02	Open To Flow (2)
106	156.18	110.89	Shut-In(2)
166	569.69	111.54	End Shut-In(2)
169	1529.91	112.10	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
0.00	1449' GIP	0.00
262.00	GWOCM Water 5% Oil 25% Mud 30% Gas 3.68%	
63.00	GVMCO Water 10% Mud 10% Gas 40% 0.88%	
63.00	GMV Gas 5% Mud 15% Water 80% 0.88	

### Gas Rates

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



**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

Mai Oil Operations  
8411 Preston Road Suite 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

**28-16s-13w Barton,KS**  
**Wilborn A #1**  
Job Ticket: 63040      **DST#: 2**  
Test Start: 2015.07.12 @ 10:58:00

### GENERAL INFORMATION:

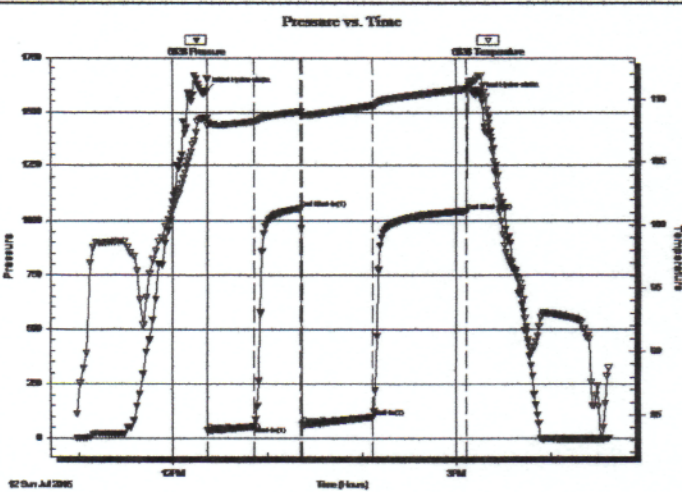
Formation: **LKC H-K**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 12:22:00  
Time Test Ended: 16:37:00  
Interval: **3286.00 ft (KB) To 3363.00 ft (KB) (TVD)**  
Total Depth: 3363.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Ken Swinney  
Unit No: 58  
Reference Elevations: 1963.00 ft (KB)  
1953.00 ft (CF)  
KB to GR/CF: 10.00 ft

### Serial #: 6838

Inside

Press@RunDepth: 98.69 psig @ 3359.19 ft (KB)  
Start Date: 2015.07.12 End Date: 2015.07.12  
Start Time: 10:59:00 End Time: 16:37:00  
Capacity: 8000.00 psig  
Last Calib.: 2015.07.12  
Time On Btm: 2015.07.12 @ 12:21:00  
Time Off Btm: 2015.07.12 @ 15:12:00

TEST COMMENT: FFP 30 Minutes BOB in 4 1/2 min  
ISI 30 Minutes Surface blow back throughout  
FFP 45 Minutes BOB in 1 1/2 min  
FSI 60 Minutes Surface blow back throughout



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1596.05	108.45	Initial Hydro-static
1	37.00	107.84	Open To Flow (1)
31	54.92	108.19	Shut-In(1)
60	1055.64	109.02	End Shut-In(1)
61	63.09	108.75	Open To Flow (2)
106	98.69	109.52	Shut-In(2)
166	1042.68	110.86	End Shut-In(2)
171	1575.16	111.51	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
0.00	2111' GIP	0.00
157.00	VGMCO Mud 5% Gas 45% Oil 50%	2.20
63.00	OCM Oil 30 % Mud 70%	0.88

### Gas Rates

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



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# DRILL STEM TEST REPORT

Mai Oil Operations  
 8411 Preston Road Suite 800  
 Dallas TX 75225+5520  
 ATTN: Jim Musgrove

**28-16s-13w Barton,KS**  
**Wilborn A #1**  
 Job Ticket: 63041      **DST#: 3**  
 Test Start: 2015.07.13 @ 02:43:00

## GENERAL INFORMATION:

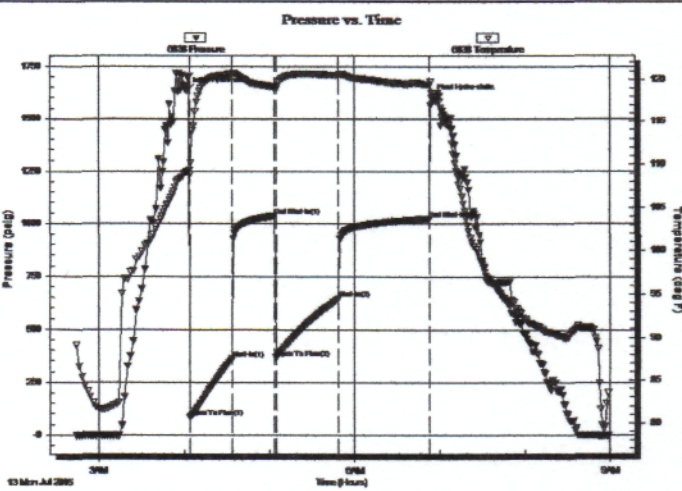
Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:04:00  
 Time Test Ended: 08:58:30  
 Interval: **3386.00 ft (KB) To 3413.00 ft (KB) (TVD)**  
 Total Depth: 3413.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Ken Swinney  
 Unit No: 58  
 Reference Elevations: 1963.00 ft (KB)  
 1953.00 ft (CF)  
 KB to GR/CF: 10.00 ft

## Serial #: 6838

Inside

Press@RunDepth: 645.30 psig @ 3409.00 ft (KB)  
 Start Date: 2015.07.13 End Date: 2015.07.13  
 Start Time: 02:44:00 End Time: 08:58:30  
 Capacity: 8000.00 psig  
 Last Calib.: 2015.07.13  
 Time On Btm: 2015.07.13 @ 04:02:00  
 Time Off Btm: 2015.07.13 @ 06:54:00

TEST COMMENT: FFP 30 Minutes BOB in 3 minutes  
 ISI 30 Minutes No blow back  
 FFP 45 Minutes BOB in 4 1/2 minutes  
 FSI 60 Minutes No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1635.37	109.24	Initial Hydro-static
2	85.31	108.86	Open To Flow (1)
32	360.84	120.57	Shut-In(1)
62	1035.90	119.11	End Shut-In(1)
63	367.48	118.87	Open To Flow (2)
107	645.30	120.50	Shut-In(2)
171	1022.97	119.44	End Shut-In(2)
172	1603.31	118.44	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
50.00	CGO Gas 5% Oil 95%	0.70
819.00	GMCOW Gas 5% Mud 10% Oil 25% Water	11.49
567.00	MW w/show of oil Mud 10% Water 90%	7.95

## 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. 1840

Date	7-8-15	Sec.	28	Twp.	16	Range	13	County	Barton	State	Ks	On Location	Finish	7:45 PM
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Lease Wilborn A Location Susank, Ks - 100 yds E + 54th

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 3	Charge To	Maar oil operations
Type Job	Surface	Street	
Hole Size	12 1/4"	T.D.	514'
Csg.	8 5/8"	Depth	514'
Tbg. Size		City	
Tool		State	
Cement Left in Csg.	20'	The above was done to satisfaction and supervision of owner agent or contractor.	
Shoe Joint	20'	Cement Amount Ordered 250 60/40 3%CC 2 1/2 Gal	
Meas Line	Displace 31 1/2 BLS		

**EQUIPMENT**

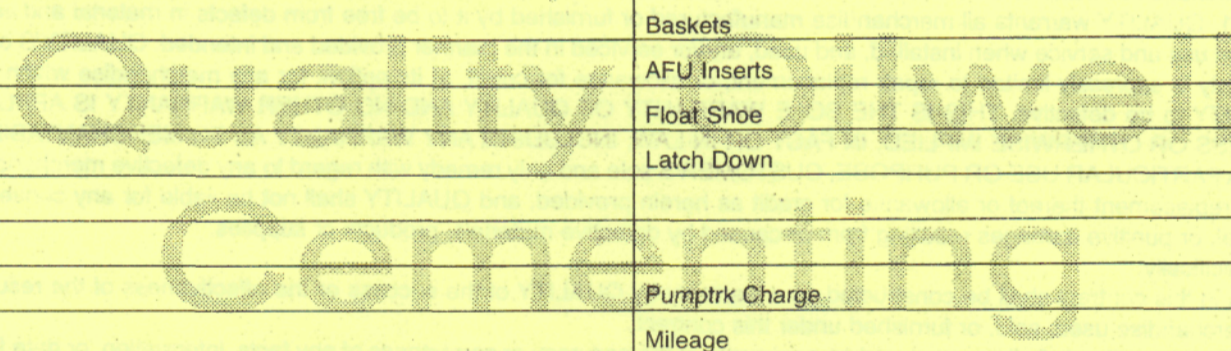
Pumptrk	17	No.	Cementer	Helper	Lennie	Common
Bulktrk	3	No.	Driver	Doug		Poz. Mix
Bulktrk	P.W.	No.	Driver	Rick		Gel.
			Driver			Calcium

**JOB SERVICES & REMARKS**

Remarks:	Cement did Circulate
Rat Hole	
Mouse Hole	
Centralizers	
Baskets	
D/V or Port Collar	

**FLOAT EQUIPMENT**

Guide Shoe	Rubber plug
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	



Pumptrk Charge	
Mileage	
	Tax
	Discount
	Total Charge
X Signature <u>Joy Druce</u>	



# QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

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

No. 1842

Cell 785-324-1041

Date	7-14-15	Sec.	28	Twp.	16	Range	13	County	Barber	State	Ks	On Location		Finish	4:00 AM
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Location Susank, Ks - 1/8 E 54th

Lease Wilborn A Well No. 1 Owner

Contractor Southward #3 To Quality Oilwell Cementing, Inc.

Type Job Production You are hereby requested to rent cementing equipment and furnish

Hole Size 7 7/8" T.D. 3475' Charge To Maui oil operations

Csg. 14# New 5 1/2" Depth 3472' 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. 22.25' Shoe Joint 22.25' Cement Amount Ordered 160 60/40 10% Salt 2% Gel

Meas Line Displace 84 B/S 1/4# Flowseal 1000 gal Mud Clear 48

**EQUIPMENT**

Pumptrk 20 No. Cementer N/D Helper N/D Common

Bulktrk 3 No. Driver Chad Poz. Mix

Bulktrk pu No. Driver Rick Gel.

Calcium

**JOB SERVICES & REMARKS**

Remarks: Hulls

Rat Hole Salt

Mouse Hole Flowseal

Centralizers 1-9, 11 Mud CLR 48

Baskets CFL-117 or CD110 CAF 38

D/V or Port Collar Sand

Circulation pump 1000 gal mud Handling

Clear 48 plug 1000 gal mud Mileage

Hook 15 1/2" + mix 13oz Cement

Shut down wash pump + lines

Released plug + Displaced oil 84 B/S

of H<sub>2</sub>O. Released + held

Lost pressure 7000 psi

Land plug 1,500 #

Pumptrk Charge

Mileage

Tax

Discount

Total Charge

Signature [Signature]

