

**JAMES C. MUSGROVE**

Petroleum Geologist  
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Mai Oil Operations Inc.  
Wagner #1  
S/2-SW-NW-NW (1185' FNL & 330' FWL)  
Section 7-17s-14w  
Barton County, KS  
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**5 1/2" Production Casing Set**

**Contractor:** Southwind Drilling Company (Rig #3)  
**Commenced:** September 19, 2013  
**Completed:** September 26, 2013  
**Elevation:** 1966' K.B; 1964' D.F; 1958' G.L.  
**Casing program:** Surface; 8 5/8" @ 948'  
Production 5 1/2" @ \_\_\_\_\_'  
**Sample:** Samples saved and examined 2900' to the Rotary Total Depth.  
**Drilling time:** One (1) foot drilling time recorded and kept 2900 ft 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 Completion and Production Services Co., Dual Induction, Compensated Density/Neutron and Micro.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	947	+1019
Base Anhydrite	975	+991
Topeka	2908	-942
Heebner	3140	-1174
Toronto	3156	-1190
Lansing	3205	-1239
Base Kansas City	3411	-1445
Conglomerate	3424	-1458
Arbuckle	3443	-1477
Rotary Total Depth	3520	-1554
Log Total Depth	3522	-1556

(All tops and zones corrected to Electric Log measurements).

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

**TOPEKA SECTION**

3055-3077' Limestone; gray, tan, granular/fossiliferous, chalky in part, plus gray chert.  
3083-3100' Limestone; gray, fossiliferous, chalky, poor visible porosity, gray and brown and black stain, no show of free oil and no odor.

**TORONTO SECTION**

3157-3170' Limestone; white/cream, chalky, few fossiliferous, no shows.

**LANSING SECTION**

3206-3212' Limestone; gray/white and tan, finely crystalline, few fossiliferous, poor porosity, no show.

3221-3230' Limestone; gray, fossiliferous, scattered vuggy type porosity, trace gray and brown stain, weak show of free oil and no odor in fresh samples.

3238-3250' Limestone; gray, white, oomoldic, fair oomoldic porosity, brown and golden brown stain, trace of free oil and questionable odor in fresh samples.

**Drill Stem Test #1 3208-3248'**

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

**Blow:** Fair

**Recovery:** 10' slightly oil cut mud  
(3% oil, 97% mud)  
62' muddy water, trace of oil

**Pressures:** ISIP 728 psi  
FSIP 709 psi  
IFP 14-27 psi  
FFP 37-47 psi  
HSH 1559-1479 psi

3278-3286' Limestone; tan, oolitic, fair vuggy porosity, fair brown/golden brown stain, show of free oil and faint odor.

3290-3295' Limestone; white, gray, oolitic, fossiliferous, chalky, gray and brown stain, trace of free oil and no odor in fresh samples.

**Drill Stem Test #2 3258-3300'**

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

**Blow:** Strong

**Recovery:** 1' clean oil  
330' muddy water

**Pressures:** ISIP 614 psi  
FSIP 572 psi  
IFP 21-102 psi  
FFP 106-175 psi  
HSH 1600-1563 psi

3320-3336' Limestone; tan/gray, chalky increasingly cherty, (dense).

3343-3350' Limestone; gray, tan, finely crystalline, oolitic in part, poorly developed porosity, questionable edge staining, no free oil and no odor.



- 3360-3370' Limestone; white/gray, oolitic, chalky, poor visible porosity, gray and black stain, no free oil and no odor.
- 3377-3384' Limestone; gray, white, oolitic, chalky, black and brown stain, no free oil and no odor.
- 3400-3410' Limestone; white, gray, chalky, poor porosity, trace black stain, no free oil and no odor.

**CONGLOMERATE SECTION**

- 3424-3447' Varied colored shale and blood red soft shale.

**ARUBCKLE SECTION**

- 3443-3451' Dolomite; gray, cream, medium crystalline, good intercrystalline, golden brown and light brown stain, show of free oil and good odor.

**Drill Stem Test #3 3387-3451'**

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

**Blow:** Strong

**Recovery:** 278' gas in pipe  
 92' clean oil  
 124' mud cut oil  
 (85% oil, 15% mud)  
 186' mud cut watery oil  
 (75% oil, 15% water, 10% mud)  
 62' oil cut muddy water  
 (20% oil, 40% water, 40% mud)

**Pressures:** ISIP 1000 psi  
 FSIP 970 psi  
 IFP 18-120 psi  
 FFP 124-194 psi  
 HSH 1694-1620 psi

- 3451-3470' Dolomite; as above, few sandy, brown stain, show of free oil and faint/fair odor in fresh samples.
- 3470-3480' Dolomite; as above, fair to good vuggy porosity, brown and golden brown stain, show of free oil and good odor in fresh samples.
- 3480-3500' Dolomite; as above, increasingly cherty, trace iron pyrite, brown stain, show of free oil and faint odor.
- 3500-3510' Dolomite; as above, sandy.
- 3510-3520' Dolomite; white/gray, medium crystalline, highly sandy, glauconitic, plus white, boney chert, no shows.

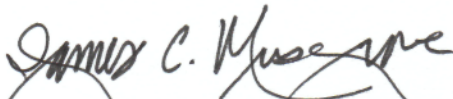
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**Rotary Total Depth**            **3520 (-1554)**  
**Log Total Depth**            **3522 (-1556)**

**Recommendations:**

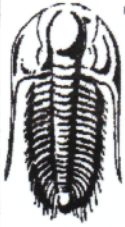
5 ½" production casing was set and cemented on the Wagner #1.

Respectfully submitted;



James C. Musgrove,  
Petroleum Geologist





**TRILOBITE TESTING, INC.**

## DRILL STEM TEST REPORT

Mai Oil Operations Inc  
 8411 Preston Rd Ste 800  
 Dallas TX 75225-5520  
 ATTN: Jim Musgrove

**7 17s 14w Barton, KS**  
**Wagner #1**  
 Job Ticket: 50474      **DST#: 1**  
 Test Start: 2013.09.23 @ 19:50:00

### GENERAL INFORMATION:

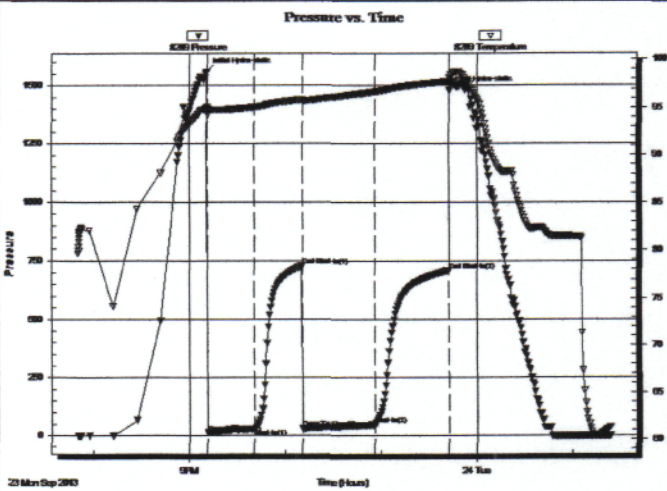
Formation: **LKC " C "**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:11:00  
 Time Test Ended: 01:23:00  
 Interval: **3208.00 ft (KB) To 3248.00 ft (KB) (TVD)**  
 Total Depth: 3248.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Jim Svaty  
 Unit No: 54  
 Reference Elevations: 1965.00 ft (KB)  
 1958.00 ft (CF)  
 KB to GR/CF: 7.00 ft

### Serial #: 8289

### Outside

Press@RunDepth: 47.18 psig @ 3212.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2013.09.23      End Date: 2013.09.24      Last Calib.: 2013.09.24  
 Start Time: 19:50:02      End Time: 01:23:00      Time On Btm: 2013.09.23 @ 21:10:45  
 Time Off Btm: 2013.09.23 @ 23:42:30

TEST COMMENT: 30-IFP- Surface Blow Building to 7"  
 30-ISIP- No Blow  
 45-FFP- Surface Blow Building to 5"  
 45-FSIP- No Blow



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1559.13	95.06	Initial Hydro-static
1	14.34	94.22	Open To Flow (1)
30	27.95	95.04	Shut-In(1)
60	728.07	95.86	End Shut-In(1)
60	31.35	95.65	Open To Flow (2)
105	47.18	96.68	Shut-In(2)
152	709.82	97.75	End Shut-In(2)
152	1479.72	98.16	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
10.00	OCM 3%o 97% m Small Oil Cap	0.14
62.00	MCW 40% m 60% w Show of Oil	0.87

### Gas Rates

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



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

Mai Oil Operations Inc  
 8411 Preston Rd Ste 800  
 Dallas TX 75225-5520  
 ATTN: Jim Musgrove

**7 17s 14w Barton,KS**  
**Wagner #1**  
 Job Ticket: 50475      **DST#: 2**  
 Test Start: 2013.09.24 @ 08:28:00

**GENERAL INFORMATION:**

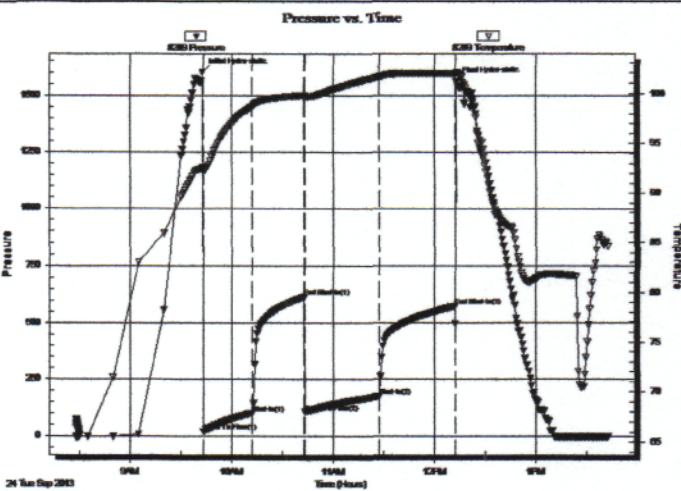
Formation: **LKC " E & F "**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 09:43:15  
 Time Test Ended: 13:43:00  
 Interval: **3258.00 ft (KB) To 3300.00 ft (KB) (TVD)**  
 Total Depth: 3300.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Jim Svaty  
 Unit No: 54  
 Reference Elevations: 1965.00 ft (KB)  
 1958.00 ft (CF)  
 KB to GR/CF: 7.00 ft

**Serial #: 8289**

**Outside**

Press@RunDepth: 174.65 psig @ 3263.00 ft (KB)  
 Start Date: 2013.09.24 End Date: 2013.09.24  
 Start Time: 08:28:02 End Time: 13:42:45  
 Capacity: 8000.00 psig  
 Last Calib.: 2013.09.24  
 Time On Btm: 2013.09.24 @ 09:43:00  
 Time Off Btm: 2013.09.24 @ 12:13:00

TEST COMMENT: 30-IFP- BOB in 10 min.  
 30-ISIP- No Blow  
 45-FFP- BOB in 21 min.  
 45-FSIP- Bo Blow



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1600.35	92.55	Initial Hydro-static
1	21.00	92.11	Open To Flow (1)
30	101.95	98.72	Shut-In(1)
60	613.74	99.78	End Shut-In(1)
61	106.28	99.60	Open To Flow (2)
105	174.65	101.63	Shut-In(2)
149	572.56	101.93	End Shut-In(2)
150	1562.98	102.07	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
330.00	MCW 20%w 80%w Small Oil Cap	4.63

\* 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  
8411 Preston Rd Ste 800  
Dallas TX 75225-5520  
ATTN: Jim Musgrove

**7 17s 14w Barton,KS**  
**Wagner #1**  
Job Ticket: 52251      **DST#: 3**  
Test Start: 2013.09.25 @ 10:30:00

## GENERAL INFORMATION:

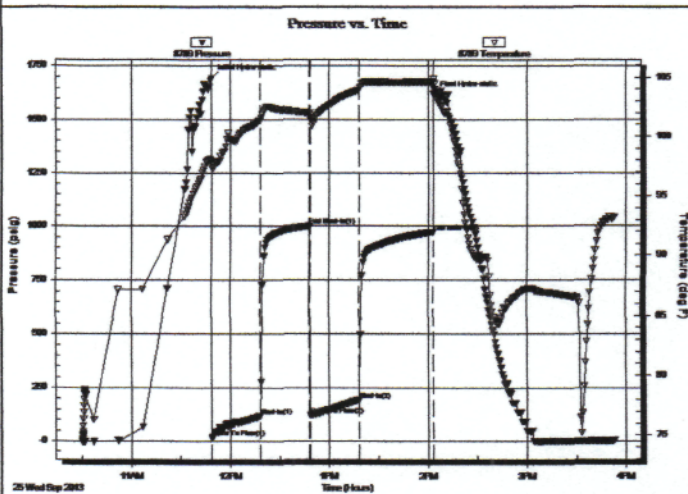
Formation: **Arbuckle**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 11:48:45  
Time Test Ended: 15:53:00  
Interval: **3387.00 ft (KB) To 3451.00 ft (KB) (TVD)**  
Total Depth: 3451.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Jim Svaty-Tim Philli  
Unit No: 54  
Reference Elevations: 1965.00 ft (KB)  
1958.00 ft (CF)  
KB to GR/CF: 7.00 ft

## Serial #: 8789

Inside

Press@RunDepth: 194.31 psig @ 3414.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2013.09.25      End Date: 2013.09.25      Last Calib.: 2013.09.25  
Start Time: 10:30:02      End Time: 15:53:00      Time On Btm: 2013.09.25 @ 11:48:30  
Time Off Btm: 2013.09.25 @ 14:03:15

TEST COMMENT: IFP-30-surface blow in 6 min to BOB in 9 minutes  
ISI-30- surface blow built to 2" in 9 min died back in 14 min  
FF-30- BOB in 7 min  
FSI-45-Built to 2 3/4" in 14 min, died back in 28 min



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1693.25	97.95	Initial Hydro-static
1	18.25	97.37	Open To Flow (1)
30	119.88	101.36	Shut-In(1)
60	1000.64	101.98	End Shut-In(1)
60	124.05	101.52	Open To Flow (2)
90	194.31	103.96	Shut-In(2)
135	970.85	104.61	End Shut-In(2)
135	1619.99	104.91	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	OWCM-20%o 40%w 40%m	0.87
186.00	MWCO-10%m 15%w 75%o	2.61
124.00	MCO-15%m 85%o	1.74
92.00	CO-100%	1.29
0.00	278 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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







