

**JAMES C. MUSGROVE**

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Mai Oil Operations  
Berry #5  
NE-SE-NE-NE (750' FNL & 250' FEL)  
Section 33-15s-13w  
Russell County, Kansas

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

**Contractor:** Southwind Drilling Co. (rig #3)  
**Commenced:** September 18, 2014  
**Completed:** September 24, 2014  
**Elevation:** 1900' K.B., 1898' D.F., 1892' G.L.  
**Casing program:** Surface; 8 5/8" @ 514'  
Production, 5 1/2" @ 3414'  
**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 three (3) Drill Stem Tests ran by Diamond 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	856	+1044
Base Anhydrite	888	+1012
Grand Haven	2422	-522
1 <sup>st</sup> Tarkio Sand	2437	-537
Dover	2446	-546
2 <sup>nd</sup> Tarkio Sand	2456	-556
Tarkio Lime	2494	-594
Willard Sand	2517	-617
Howard	2698	-798
Topeka	2772	-872
Heebner	3004	-1104
Toronto	3021	-1121
Lansing	3083	-1183
Base Kansas City	3288	-1388
Arbuckle	3341	-1441
Quartzite	3410	-1510
Rotary Total Depth	3593	-1577
Log Total Depth	3414	-1514

All tops and zones corrected to Electric Log Measurement.

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

**TARKIO SECTION**

2437-2443' No shows of oil and/or gas was noted in the drilling of the Tarkio Sand(s)  
2456-2470' (see attached sample log/geologist report)  
2577-2526'  
2532-2544'

**TORONTO SECTION**

3021-3030' Limestone, cream, tan, finely crystalline, chalky, poor visible porosity, no shows.

**LANSING SECTION**

3083-3088' Limestone, brown, finely crystalline, slightly cherty, poor porosity, no shows.  
3090-3100' Limestone, tan, brown, oomoldic, poorly developed porosity, chalky in part, golden brown stain, trace of free oil and no odor in fresh samples.  
3114-3126' Limestone, as above, few fossiliferous, brown stain, poor show of free oil and no odor.

**Drill Stem Test #1 3104-3140**

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

**Blow: Fair**

**Recovery: 150' muddy water**

**Pressures:** ISIP 736 psi  
FSIP 694 psi  
IFP 79-74 psi  
FFP 97-106 psi  
HSH 1579-1505 psi

3140-3150' Limestone, cream, buff finely crystalline, chalky, poor visible porosity, no shows.



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- 3152-3160' Limestone, cream, white, finely crystalline chalky, poor scattered porosity, no shows.
- 3165-3182' Limestone, tan, oomoldic, chalky, poor to fair oomoldic porosity, light brown to black stain, show of free oil and faint odor in fresh samples.
- 3195-3216' Limestone, tan, few oomoldic, chalky; poorly scattered porosity, light brown stain, trace of free oil and faint odor in fresh samples.
- 3224-3230' Limestone, tan, brown, finely crystalline, poor visible porosity, no shows.
- 3246-3250' Limestone, tan, brown, finely crystalline, oolitic, poor visible porosity, slightly cherty, black stain, no free oil and no odor in fresh samples.
- 3263-3270' Limestone, cream, white, tan, finely crystalline, dense, poor black stain, no free oil and no odor in fresh samples.
- 3295-3310' Limestone, white, tan finely crystalline, chalky, few cherty; plus trace white chert.

### **ARBUCKLE SECTION**

- 3341-3347' Dolomite, white, finely crystalline, sandy, poor to fair porosity, trace spotty stain, show of free oil; plus loose unconsolidated quartz grains.

#### **Drill Stem Test #2**

**3312-3347**

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

**Blow: Strong**

**Recovery: 210' gas in pipe  
210' slightly oil cut muddy water  
(5% oil, 75% water, 20% mud)  
240' oil cut muddy water  
(20% oil; 60% water; 20% mud)**

**Pressures: ISIP 1095           psi  
FSIP 1093           psi  
IFP 82-131           psi  
FFP 159-238       psi  
HSH       1657-1635   psi**

- 3347-3359' Dolomite, white, gray, medium crystalline, sandy; good inter-crystalline porosity, brown stain, show of free oil and good odor, plus iron pyrite.

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**Drill Stem Test #3** **3349-3359**

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**Times:** 15-15-30-30

**Blow:** Strong

**Recovery:** 2250' water

**Pressures:** ISIP 1075 psi  
FSIP 1081 psi  
IFP 329-645 psi  
FFP 649-1010 psi  
HSH 1743-1592 psi

3359-3380' Dolomite, white, gray finely crystalline, poor to fair inter-crystalline porosity, no shows.

3380-3410' Dolomite, gray, finely crystalline, fair inter-crystalline porosity, no shows.

**QUARTZITE SECTION**

3410-3415' Quartzite, clear, angular, heavily fractured, dolomitic, plus gray, dense dolomite, no shows.

**Rotary Total Depth** 3415  
**Log Total Depth** 3414

**Recommendations:**

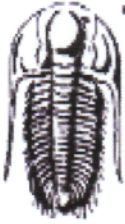
The 5 1/2" production casing set and cemented on the Mai Oil Operations Inc., Berry #5.

Respectfully yours,



Wyatt Urban  
Petroleum Geologist





**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

Mai Oil Operation Inc

33-15s-13w Russell, KS

8411 Preston RD Ste 800 Dallas TX 75225+5520

**Berry #5**

Job Ticket: 60440

DST#: 1

ATTN: Wyatt Urban

Test Start: 2014.09.21 @ 23:30:00

### GENERAL INFORMATION:

Formation: **LKC A-C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:00:00

Time Test Ended: 04:55:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Jared Scheck

Unit No: S5

Interval: **3104.00 ft (KB) To 3140.00 ft (KB) (TVD)**

Reference Elevations: 1900.00 ft (KB)

Total Depth: 3140.00 ft (KB) (TVD)

1894.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 6.00 ft

**Serial #: 8400**

Inside

Press@RunDepth: 106.14 psig @ 3105.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2014.09.21

End Date:

2014.09.22

Last Calib.:

2014.09.22

Start Time: 23:31:00

End Time:

04:55:30

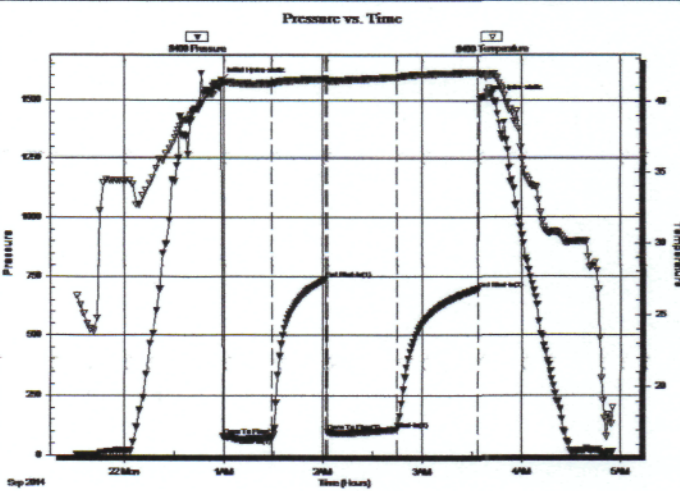
Time On Btmr

2014.09.22 @ 00:58:30

Time Off Btmr

2014.09.22 @ 03:34:30

TEST COMMENT: IFF-30 Fair blow built 9"  
ISIP-30 No blow back  
FFP-45 Fair blow built 6"  
FSIP-45 No blow back



### PRESSURE SUMMARY

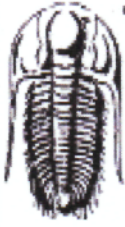
Time (Min.)	Pressure (psig)	Temp (deg C)	Annotation
0	1579.76	41.39	Initial Hydro-static
2	79.09	41.34	Open To Flow (1)
31	74.22	41.24	Shut-In(1)
63	736.00	41.55	End Shut-In(1)
64	97.27	41.41	Open To Flow (2)
106	106.14	41.66	Shut-In(2)
155	694.52	41.99	End Shut-In(2)
156	1505.77	41.90	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
150.00	MW 30% mud 70% water	2.10

### Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Mai Oil Operation Inc

**33-15s-13w Russell,KS**

8411 Preston RD Ste 800 Dallas TX 75225+5520

**Berry #5**

Job Ticket: 60441

**DST#: 2**

ATTN: Wyatt Urban

Test Start: 2014.09.22 @ 23:31:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:42:30

Time Test Ended: 05:12:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Jared Scheck

Unit No: S5

Interval: **3312.00 ft (KB) To 3347.00 ft (KB) (TVD)**

Reference Elevations: 1900.00 ft (KB)

Total Depth: 3347.00 ft (KB) (TVD)

1894.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 6.00 ft

## Serial #: 8400

Inside

Press@RunDepth: 238.55 psig @ 3313.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2014.09.22

End Date:

2014.09.23

Last Calib.: 2014.09.23

Start Time: 23:31:00

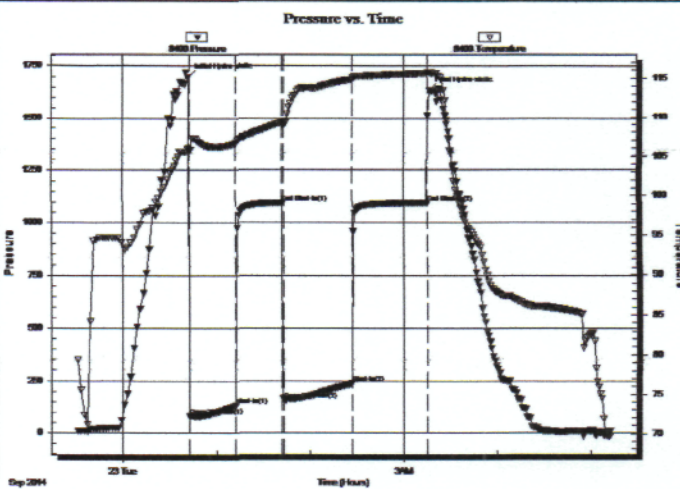
End Time:

05:12:30

Time On Btm: 2014.09.23 @ 00:42:00

Time Off Btm: 2014.09.23 @ 03:16:30

TEST COMMENT: IFP- BOB in 12 minutes  
 ISIP-No blow back  
 FFP-BOB in 12 minutes  
 FSP-1" blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg C)	Annotation
0	1697.39	106.00	Initial Hydro-static
1	82.75	105.64	Open To Flow (1)
31	131.11	106.55	Shut-In(1)
60	1095.32	109.26	End Shut-In(1)
61	159.84	109.00	Open To Flow (2)
105	238.55	114.79	Shut-In(2)
153	1093.78	115.56	End Shut-In(2)
155	1635.96	115.71	Final Hydro-static

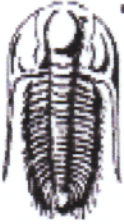
## Recovery

Length (ft)	Description	Volume (bbl)
210.00	OWM 5%oil 75%water20%mud	2.95
240.00	OWM 20%oil 60%w 20%m	3.37
0.00	210 gas in pipe	0.00

## Gas Rates

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





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Mai Oil Operation Inc

**33-15s-13w Russell,KS**

8411 Preston RD Ste 800 Dallas TX 75225+5520

**Berry #5**

Job Ticket: 60442

**DST#: 3**

ATTN: Wyatt Urban

Test Start: 2014.09.23 @ 11:35:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:46:00

Time Test Ended: 15:55:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jared Scheck

Unit No: S5

Interval: **3349.00 ft (KB) To 3359.00 ft (KB) (TVD)**

Reference Elevations: 1900.00 ft (KB)

Total Depth: 3359.00 ft (KB) (TVD)

1894.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 6.00 ft

**Serial #: 8938**

**Inside**

Press@RunDepth: 1010.09 psig @ 3355.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2014.09.23

End Date:

2014.09.23

Last Calib.: 2014.09.23

Start Time: 11:36:00

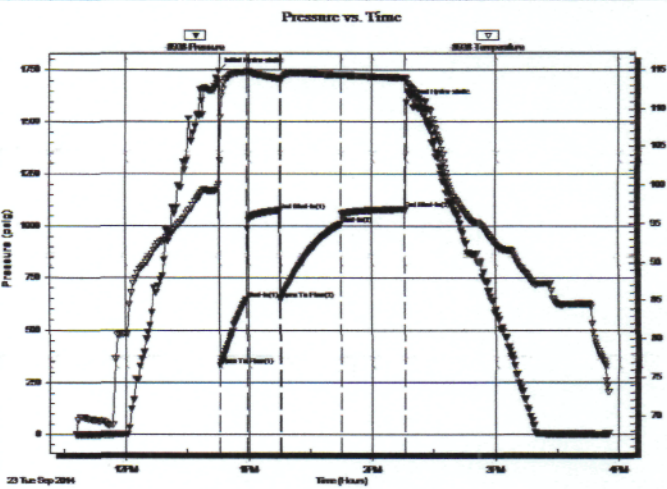
End Time:

15:55:00

Time On Btm: 2014.09.23 @ 12:45:30

Time Off Btm: 2014.09.23 @ 14:17:00

TEST COMMENT: IFP-15 BOB in 1 minute  
ISIP-15 No blow back  
FFP-30 BOB in 1 minute  
FSIP-30 No blow back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg C)	Annotation
0	1743.92	100.16	Initial Hydro-static
1	329.78	103.15	Open To Flow (1)
14	645.44	114.74	Shut-In(1)
30	1075.05	113.93	End Shut-In(1)
30	649.30	113.74	Open To Flow (2)
60	1010.09	114.36	Shut-In(2)
91	1081.98	114.03	End Shut-In(2)
92	1592.52	113.81	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2220.00	MW 80%water 20%mud	31.14
30.00	MW 85%water15%mud	0.42

## 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. 856

Date	Sec.	Twp.	Range	County	State	On Location	Finish
9-24-14	33	15	13	Russell	KS		12:15PM

Location 291 & Michaelis, 4 1/2 E, Sn 2

Lease	Well No.	Owner
Berry	5	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		Charge To
Southwind #3		Mai Oil
Type Job	T.D.	
long string	3415	
Hole Size	Depth	Street
7 7/8	3411	
Csg.	Tbg. Size	City
5 1/2 14 #		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
	18.48	160 sx 60/40, 10% salt, 2% gel
Meas Line	Displace	
	82 3/4 bbl	1/4" Flow

**EQUIPMENT**

Pumptrk	No.	Cementer	Common
17		Helper Lennie	Poz. Mix
Bulktrk	No.	Driver	Gel.
1		Driver Chad	Calcium
Bulktrk	No.	Driver	
1		Driver Travis	

**JOB SERVICES & REMARKS**

Remarks:	Hulls
Rat Hole 30 sx	Salt
Mouse Hole	Flowseal
Centralizers 1-10	Kol-Seal
Baskets	Mud CLR 48 1000 gal
D/V or Port Collar	CFL-117 or CD110 CAF 38
Pipe on bottom broke circulation, Pumped 1000 gal Mud CLR 48 with 10 bbl fw behind it. Plugged Rat hole with 30 sx. Hooked to 5 1/2 and Mixed 130 sx 60/40, 10% salt, 2% gel, 1/4" Flow. Shut down washed pump and lines. Released plug and displaced with 82 3/4 bbl. Plug landed and held.	Sand
lift pressure 800 psi	Handling
Plug landed at 1400 psi	Mileage

**FLOAT EQUIPMENT**

	Guide Shoe
	Centralizer 10 turbo's
	Baskets
	AFU Inserts
	Float Shoe 1
	Latch Down 1
	Pumptrk Charge
	Mileage

X Signature

*[Handwritten Signature]*

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. 641

Date	9-18-14	Sec.	33	Twp.	15	Range	13	County	Russell	State	KS	On Location		Finish	7:30pm
Lease								Well No.		Location					
Berry								5		281 Michealis 4 1/2 E. Sinto					
Contractor								3		Owner					
Southwind										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					
surface										Main oil operations					
Hole Size				T.D.				Charge To							
12 1/4				514				Main oil operations							
Csg.				Depth				Street							
8 5/8				514											
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							
15				15				250 00/40 37cc 29gel							
Meas Line				Displace											
				3 13/4											
<b>EQUIPMENT</b>								Common							
Pumptrk		No.		Cementer		Helper		Poz. Mix							
16				Billy											
Bulktrk		No.		Driver		Driver		Gel.							
1				Lennie M											
Bulktrk		No.		Driver		Driver		Calcium							
Pu				Rick											
<b>JOB SERVICES &amp; REMARKS</b>								Hulls							
Remarks:								Salt							
cement d.e. 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							
								Centralizer							
								Baskets							
								AFU Inserts							
								Float Shoe							
								Latch Down							
								Rubber plug							
								Pumptrk Charge							
								Mileage							
								Tax							
								Discount							
								Total Charge							
X Signature															
Jay Brown															