

**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  
Barnes Trust #1  
NW-SW-NW-SE (1765' FSL & 2455' FEL)  
Section 33-17s-15w  
Barton County, Kansas

Page 1

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

**Contractor:** Southwind Drilling Co. (rig #3)  
**Commenced:** October 29, 2015  
**Completed:** November 4, 2015  
**Elevation:** 1998' K.B., 1996' D.F., 1990' G.L.  
**Casing program:** Surface; 8 5/8" @ 1019'  
Production, 5 1/2" @ 3594'  
**Sample:** Samples saved and examined 3000' to the Rotary Total Depth.  
**Drilling time:** One (1) foot drilling time recorded and kept 3000' 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 Casedhole Solutions, Dual Induction, Compensated Density/Neutron Log, Micro and Sonic.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	1023	+975
Base Anhydrite	1048	+950
Topeka	2980	-982
Heebner	3210	-1212
Toronto	3224	-1226
Douglas	3238	-1240
Lansing	3274	-1276
Base Kansas City	3494	-1496
Arbuckle	3534	-1527
Rotary Total Depth	3600	-1602
Log Total Depth	3602	-1604

All tops and zones corrected to Electric Log Measurement

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

**TOPEKA SECTION**

3130-3150' Limestone, cream, tan, light gray, finely crystalline, few fossiliferous, poor visible porosity, plus white/gray boney chert.

- 3154-3160' Limestone, cream tan, fine and medium crystalline, scattered inter-crystalline porosity, trace black spotty stain, no free oil and no odor in fresh samples.
- 3160-3180' Limestone, cream, tan, finely crystalline, few fossiliferous, poorly developed pinpoint type porosity, trace dark brown stain, no show of free oil and no odor in fresh samples.

**TORONTO SECTION**

- 3224-3234' Limestone, white, finely crystalline, few fossiliferous, poor scattered pinpoint porosity, chalky, trace spotty brown stain, no free oil and no odor in fresh samples.

**LANSING SECTION**

- 3274-3282' Limestone, cream, tan, finely crystalline, slightly oolitic, poor porosity, dense.
- 3290-3295' Limestone, cream, tan, finely crystalline, oolitic/fossiliferous, poor to fair inter-crystalline porosity, golden brown stain, show of free oil and fair odor in fresh samples.
- 3305-3319' Limestone, white, cream, finely crystalline, oolitic, scattered vuggy type porosity, dark brown stain, show of free oil and fair odor in fresh samples.
- 3340-3352' Limestone, white, cream, finely crystalline, oolitic, poor visible pinpoint type porosity, chalky in part, spotty stain, no free oil and no odor.
- 3362-3368' Limestone, cream, white, finely crystalline, oolitic, oomoldic, fair oomoldic porosity, golden to light brown stain, show of free oil and fair odor in fresh samples.

**Drill Stem Test #1 3274-3390**

**Times:** 6-45-45-60

**Blow:** Strong; gas to surface in 5 mins, gas gauged as follows:  
 Initial Flow: Gas to surface (no gauge)  
 Final Flow: 5 mins 3,576,000  
 10 mins 3,863,000  
 20 mins 4,151,000  
 30 mins 3,863,000  
 40 mins 3,863,000  
 45 mins 3,863,000

**Recovery:** 30' mud, with oil spots

**Pressures:** ISIP 1127 psi  
 FSIP 1124 psi  
 IFP 791-896 psi  
 FFP 772-806 psi  
 HSH 1663-1601 psi

- 3422-3430' Limestone, cream, white, finely crystalline, scattered porosity, no shows.
- 3436-3450' Limestone, cream, white, finely crystalline, poorly developed pinpoint type porosity, dark brown stain, trace of free oil and faint odor in fresh samples.
- 3456-3470' Limestone, cream, white, finely crystalline, poor pin point porosity, dark brown stain, trace of free oil and fair odor in fresh samples.
- 3471-3480' Limestone, cream, tan, finely crystalline, oolitic, poor visible porosity, brown stain, trace of free oil and faint odor in fresh sample.

**Drill Stem Test #2 3406-3500**

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

**Blow: Strong**

**Recovery: 186' oil and gas cut mud  
(50% gas; 20% oil; 30% mud)  
30' slightly oil and gas cut mud  
(20% gas; 10% oil; 70% mud)**

**Pressures: ISIP 1105 psi  
FSIP 1103 psi  
IFP 51-54 psi  
FFP 106-125 psi  
HSH 1731-1672 psi**

**ARBUCKLE SECTION**

- 3525-3531' Dolomite, white, finely crystalline, fair medium crystalline, scattered inter-crystalline porosity, golden brown to dark brown stain, show of free oil and good odor in fresh samples.

**Drill Stem Test #3 3492-3529  
(Log Measurements 3494-3531)**

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

**Blow: Strong**

**Recovery: 1054' gassy oil  
248' slightly oil and gas cut mud  
(35% gas; 5% oil; 60% mud)**

**Pressures: ISIP 1044 psi  
FSIP 1053 psi  
IFP 64-204 psi  
FFP 225-393 psi  
HSH 1745-1737 psi**

- 3531-3540' Dolomite, white/cream, fine and medium crystalline, good inter-crystalline porosity golden brown to dark brown stain good show of free oil and good odor in fresh samples.

**Drill Stem Test #4** **3530-3538**  
(Log Measurement **3532-3540**)

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

**Blow:** Strong

**Recovery:** 1406' gassy oil  
20' very slightly oil cut mud  
(5% oil; 95% mud)

**Pressures:** ISIP 1066 psi  
FSIP 1066 psi  
IFP 48-232 psi  
FFP 249-257 psi  
HSH 1747-1641 psi

- 3538-3550' Dolomite, white, light gray, fine to medium crystalline, fair inter-crystalline porosity, dark brown stain, show of free oil and fair odor in fresh samples.
- 3550-3560' Dolomite, white, medium crystalline, fair inter-crystalline, dark brown stain, trace of free oil and faint odor, plus chert; white/gray, boney.
- 3560-3580' Dolomite, white, medium crystalline, fair to good porosity, dark brown to black stain, no show of free oil and faint odor in fresh samples.
- 3580-3602' Dolomite, white, fine to medium crystalline, poor visible porosity, black stain, no free oil and faint odor, plus white/gray boney chert.

**Rotary Total Depth** 3600 - 1602  
**Log Total Depth** 3602 - 1604

**Recommendations:**

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

Respectfully yours,

Kurt Talbott  
Petroleum Geologist



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Mai Oil Operations Inc  
8411 Preston Rd STE 800  
Dallas TX, 75225  
ATTN: Kurt Talbott

**33-17s-15w Barton,KS**  
**Barnes Trust #1**  
Job Ticket: 62448      **DST#: 1**  
Test Start: 2015.11.02 @ 11:15:00

## GENERAL INFORMATION:

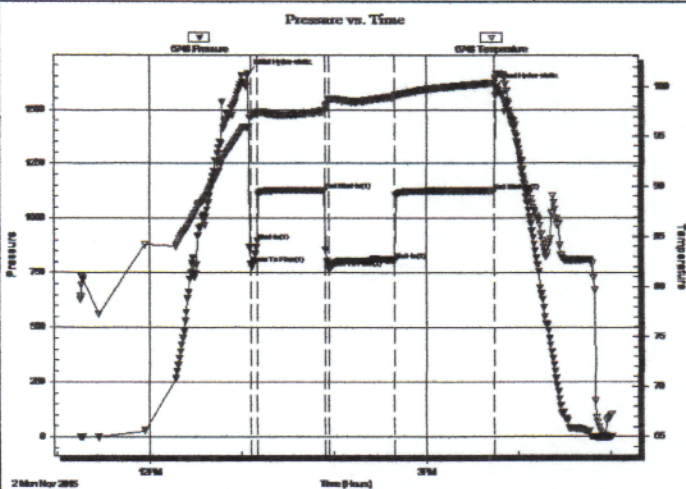
Formation: **LKC "A-F"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 13:06:00  
Time Test Ended: 17:01:15  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Cody Bloedorn  
Unit No: 73  
Interval: **3274.00 ft (KB) To 3390.00 ft (KB) (TVD)**  
Total Depth: 3390.00 ft (KB) (TVD)  
Reference Elevations: 1998.00 ft (KB)  
1990.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
KB to GR/CF: 8.00 ft

## Serial #: 6748

Inside

Press@RunDepth: 806.90 psig @ 3278.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2015.11.02      End Date: 2015.11.02      Last Calib.: 2015.11.02  
Start Time: 11:15:05      End Time: 17:01:14      Time On Btm: 2015.11.02 @ 13:04:30  
Time Off Btm: 2015.11.02 @ 15:44:45

TEST COMMENT: 06 - IF- B.O.B. instantly, G.T.S. in 5 minutes  
45 - IS- Bled off throughout shutin  
45 - FF- B.O.B. instantly, G.T.S. in 3 minutes - Gauging  
60 - FS- Bled off for 33 minutes, shut in, no return.



## PRESSURE SUMMARY

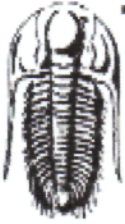
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1663.31	95.89	Initial Hydro-static
2	791.23	97.44	Open To Flow (1)
6	896.05	97.30	Shut-In(1)
50	1127.41	97.51	End Shut-In(1)
52	772.84	98.70	Open To Flow (2)
96	806.90	99.08	Shut-In(2)
160	1124.96	100.37	End Shut-In(2)
161	1601.66	100.71	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud - Oil spots, 100%M	0.42

## Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	1.00	110.00	3576.35
Last Gas Rate	1.00	120.00	3863.84
Max. Gas Rate	1.00	130.00	4151.33



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Mai Oil Operations Inc  
 8411 Preston Rd STE 800  
 Dallas TX, 75225  
 ATTN: Kurt Talbott

**33-17s-15w Barton,KS**  
**Barnes Trust #1**  
 Job Ticket: 62449      **DST#: 2**  
 Test Start: 2015.11.03 @ 03:30:00

**GENERAL INFORMATION:**

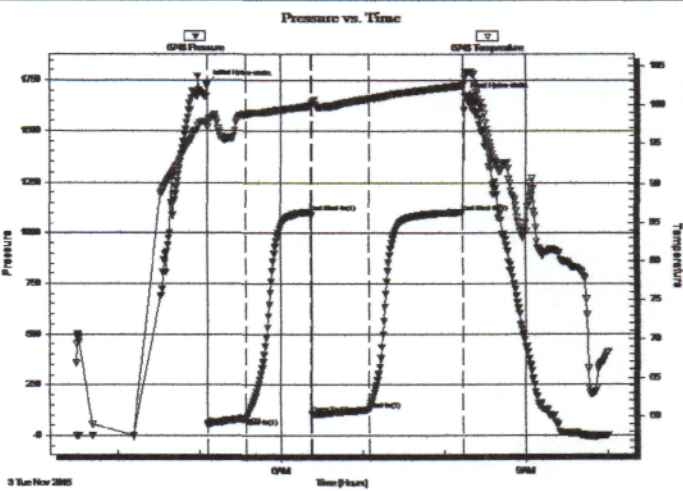
Formation: **LKC "H-J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 05:06:30  
 Time Test Ended: 10:00:30  
 Interval: **3406.00 ft (KB) To 3500.00 ft (KB) (TVD)**  
 Total Depth: 3500.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Cody Bloedorn  
 Unit No: 73  
 Reference Elevations: 1998.00 ft (KB)  
 1990.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 6748**

**Inside**

Press@RunDepth: 125.64 psig @ 3410.00 ft (KB)  
 Start Date: 2015.11.03 End Date: 2015.11.03  
 Start Time: 03:30:05 End Time: 10:00:29  
 Capacity: 8000.00 psig  
 Last Calib.: 2015.11.03  
 Time On Btm: 2015.11.03 @ 05:06:15  
 Time Off Btm: 2015.11.03 @ 08:15:15

**TEST COMMENT:** 30 - IF- B.O.B. in 3 minutes  
 45 - IS- No return  
 45 - FF- B.O.B. instantly  
 60 - FS- Surface return, died in 47 minutes.



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1731.04	97.77	Initial Hydro-static
1	51.66	97.05	Open To Flow (1)
29	84.83	98.80	Shut-In(1)
76	1105.15	99.90	End Shut-In(1)
77	106.15	100.08	Open To Flow (2)
119	125.64	100.79	Shut-In(2)
188	1103.25	102.51	End Shut-In(2)
189	1672.75	103.74	Final Hydro-static

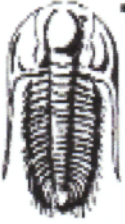
**Recovery**

Length (ft)	Description	Volume (bbl)
186.00	GOCM, 20%O, 30%M, 50%G	2.61
30.00	GSOCM, 10%O, 20%G, 70%M	0.42
0.00	3282' of G.I.P.	0.00

\* 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  
ATTN: Kurt Talbott

**33-17s-15w Barton,KS**  
**Barnes Trust #1**  
Job Ticket: 62450      **DST#: 3**  
Test Start: 2015.11.03 @ 16:25:00

## GENERAL INFORMATION:

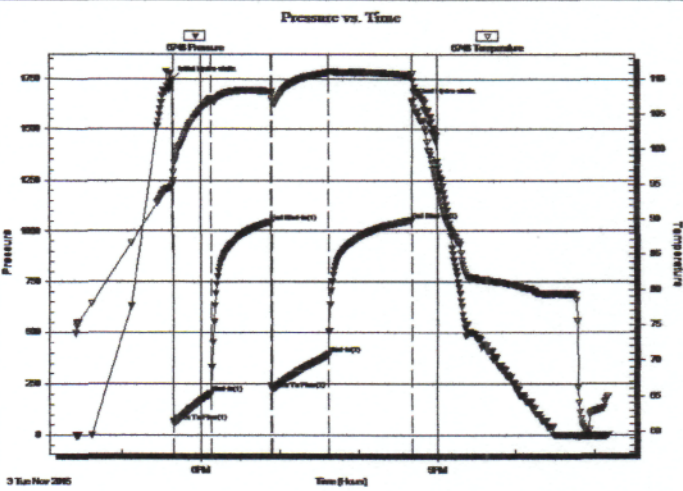
Formation: **Arbuckle**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 17:39:30  
Time Test Ended: 23:10:15  
Interval: **3492.00 ft (KB) To 3529.00 ft (KB) (TVD)**  
Total Depth: 3529.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Cody Bloedorn  
Unit No: 73  
Reference Elevations: 1998.00 ft (KB)  
1990.00 ft (CF)  
KB to GR/CF: 8.00 ft

## Serial #: 6748

Inside

Press@RunDepth: 393.43 psig @ 3499.00 ft (KB)  
Start Date: 2015.11.03 End Date: 2015.11.03  
Start Time: 16:25:05 End Time: 23:10:14  
Capacity: 8000.00 psig  
Last Calib.: 2015.11.03  
Time On Btm: 2015.11.03 @ 17:38:30  
Time Off Btm: 2015.11.03 @ 20:41:15

TEST COMMENT: 30 - IF- B.O.B. in 2 minutes  
45 - IS- Surface return  
45 - FF- B.O.B. in 2 minutes  
60 - FS- 1/2" return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1745.49	94.84	Initial Hydro-static
1	64.77	96.65	Open To Flow (1)
30	204.46	107.15	Shut-In(1)
76	1044.78	108.22	End Shut-In(1)
77	225.39	107.20	Open To Flow (2)
119	393.43	110.92	Shut-In(2)
183	1053.44	110.52	End Shut-In(2)
183	1637.81	110.74	Final Hydro-static

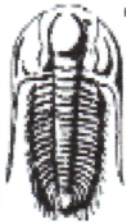
## Recovery

Length (ft)	Description	Volume (bbl)
248.00	GSOCM, 5%O, 35%G, 60%M	3.48
868.00	GO, 40%G, 60%O	12.18
186.00	GO, 20%G, 80%O	2.61
0.00	992' G.I.P.	0.00

\* 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  
 ATTN: Kurt Talbott

**33-17s-15w Barton,KS**  
**Barnes Trust #1**  
 Job Ticket: 64876      **DST#: 4**  
 Test Start: 2015.11.04 @ 04:36:00

**GENERAL INFORMATION:**

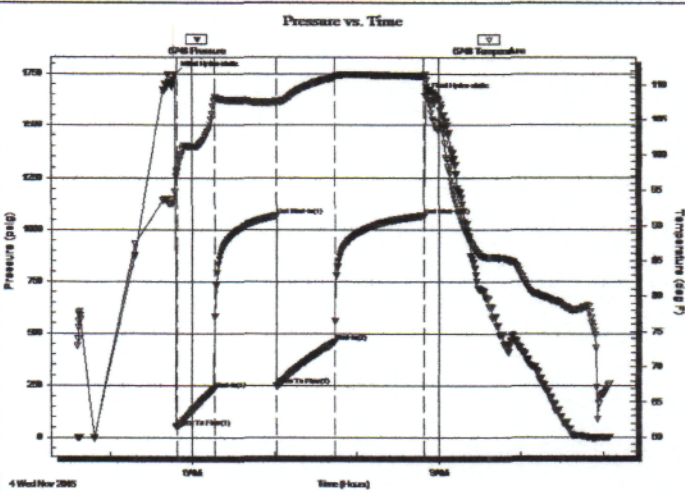
Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 05:48:30  
 Time Test Ended: 11:05:00  
 Interval: **3530.00 ft (KB) To 3538.00 ft (KB) (TVD)**  
 Total Depth: 3538.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Cody Bloedorn  
 Unit No: 73  
 Reference Elevations: 1998.00 ft (KB)  
 1990.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 6748**

**Inside**

Press@RunDepth: 457.41 psig @ 3535.00 ft (KB)  
 Start Date: 2015.11.04 End Date: 2015.11.04  
 Start Time: 04:36:05 End Time: 11:04:59  
 Capacity: 8000.00 psig  
 Last Calib.: 2015.11.04  
 Time On Btm: 2015.11.04 @ 05:47:15  
 Time Off Btm: 2015.11.04 @ 08:50:15

TEST COMMENT: 30 - IF- B.O.B. in 1 minute  
 45 - ISL- 1 1/2" return  
 45 - FF- B.O.B. in 2 minutes  
 60 - FSI- 1 1/2" return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1747.75	94.82	Initial Hydro-static
2	48.83	97.62	Open To Flow (1)
29	232.39	107.75	Shut-In(1)
74	1066.34	107.68	End Shut-In(1)
75	249.52	107.29	Open To Flow (2)
117	457.41	111.07	Shut-In(2)
183	1066.46	111.23	End Shut-In(2)
183	1641.26	111.41	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
20.00	VSOCM, 5%O, 95%M	0.28
290.00	GO, 20%G, 70%O	4.07
1116.00	GO, 50%G, 50%O	15.65
0.00	806' G.I.P.	0.00

\* Recovery from multiple tests

**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. 1648

Date	10-30-15	Sec.	33	Twp.	17	Range	15	County	Barton	State	Ks	On Location		Finish	5:15 AM
------	----------	------	----	------	----	-------	----	--------	--------	-------	----	-------------	--	--------	---------

Lease Barnes Trust Location Olmitz, Ks + K4 Hwy - 2W, 1S, 12W

Well No. 1 Owner N/S

Contractor Southwind 3 To Quality Oilwell Cementing, Inc.

Type Job Surface 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 12 1/4" T.D. 1019' Charge To Main oil operations

Csg. 8 5/8" Depth 1019' 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. 30' Shoe Joint 30' Cement Amount Ordered 400 6 3/4 3% cc 2% gel

Meas Line Displace 63 BLS

**EQUIPMENT**

Pumptrk 18 No. Cementer Travis Common

Helper Driver Billy Poz. Mix

Bulktrk 4 No. Driver Driver Gel.

Driver Driver Calcium

Driver Driver

**JOB SERVICES & REMARKS**

Remarks: Cement did Circulate Hulls

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

Guide Shoe Rubber plug

Centralizer

Baskets

AFU Inserts

Float Shoe

Latch Down

Pumptrk Charge

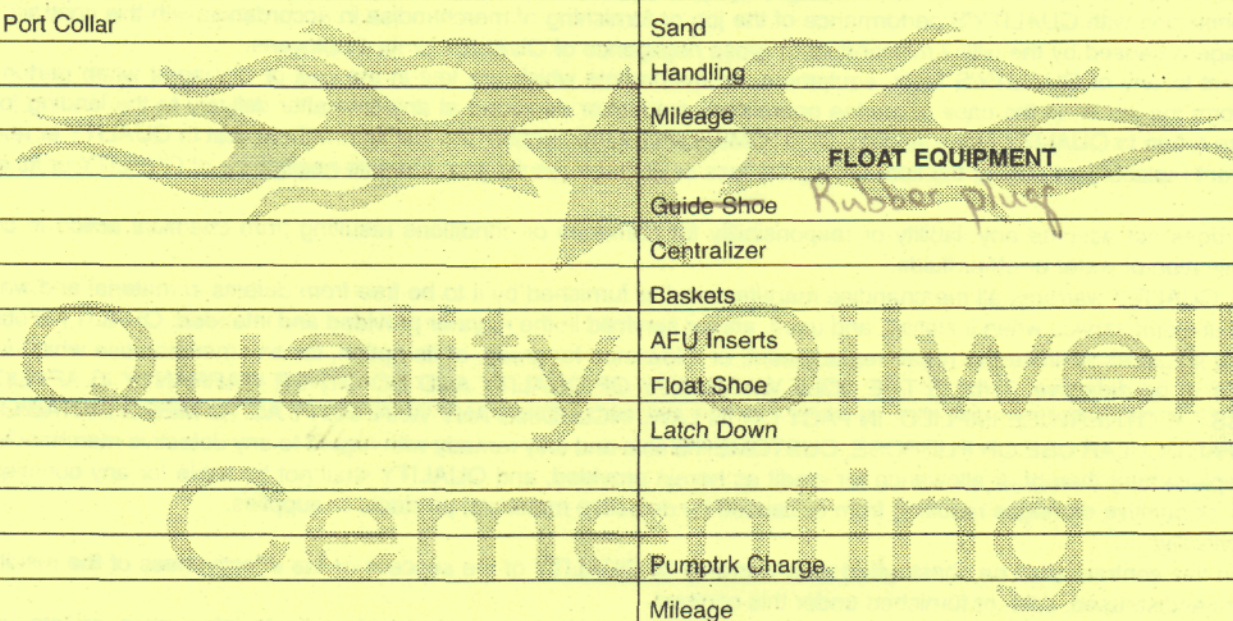
Mileage

Tax

Discount

Total Charge

X Signature



# 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. 1286

Date	11-5-15	Sec.	33	Twp.	17	Range	15	County	Barton	State	Ks	On Location		Finish	7:00 AM
Lease Barnes Trust								Location		Olmitz Rd + Hwy 4-2w, 15 1/2w					
Well No.	1		Owner		N/S										
Contractor	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	Production		Charge To												
Hole Size	7 7/8"		T.D.		3600'										
Csg.	5 1/2" 14# New		Depth		3594'										
Tbg. Size			Depth		Street										
Tool			Depth		City State										
Cement Left in Csg.	22.66'		Shoe Joint		22.66'										
Meas Line	Displace		87 BLS		Cement Amount Ordered 160 60/40 10% Salt 2% Gel 1/4#										
EQUIPMENT								Common							
Pumptrk	5	No.	Cementer	Brett		Poz. Mix									
Bulktrk	3	No.	Helper	Doug		Gel.									
Bulktrk	p.u.	No.	Driver	Rick		Calcium									
JOB SERVICES & REMARKS								Hulls							
Remarks:	Salt														
Rat Hole	Flowseal														
Mouse Hole	Kol-Seal														
Centralizers	1-10		Mud CLR 48 1000 gal												
Baskets	pipe on bottom, break CFL-117 or CD110 CAF 38														
D/V or Port Collar	Sand														
gal mud clear 48 plug bathole								Handling							
w/ 30 wt cement 5 1/2" casing w/ 130								Mileage							
sr. shut down wash pump +								FLOAT EQUIPMENT							
lines Released plug + Displaced								Guide Shoe							
w/ 87 BLS of H <sub>2</sub> O. Released +								Centralizer 10							
thold.								Baskets							
Lift pressure 700 #								AFU Inserts							
Land plug to 1500 #								Float Shoe 1							
								Latch Down 1							
								Pumptrk Charge							
								Mileage							
								Tax							
								Discount							
X Signature <i>Kent</i>								Total Charge							