



KANSAS CORPORATION COMMISSION 1066008  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

June 2009

Form Must Be Typed  
Form must be Signed  
All blanks must be Filled

**WELL COMPLETION FORM**  
**WELL HISTORY - DESCRIPTION OF WELL & LEASE**

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

- New Well       Re-Entry       Workover
- Oil       WSW       SWD       SIOW
- Gas       D&A       ENHR       SIGW
- OG       GSW       Temp. Abd.
- CM (Coal Bed Methane)
- Cathodic       Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

- Deepening       Re-perf.       Conv. to ENHR       Conv. to SWD
- Conv. to GSW
- Plug Back: \_\_\_\_\_ Plug Back Total Depth \_\_\_\_\_
- Commingled      Permit #: \_\_\_\_\_
- Dual Completion      Permit #: \_\_\_\_\_
- SWD      Permit #: \_\_\_\_\_
- ENHR      Permit #: \_\_\_\_\_
- GSW      Permit #: \_\_\_\_\_

Spud Date or Recompletion Date      Date Reached TD      Completion Date or Recompletion Date

API No. 15 - \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE       NW       SE       SW

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

**Drilling Fluid Management Plan**

(Data must be collected from the Reserve Pit)

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite: \_\_\_\_\_

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

**AFFIDAVIT**

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

**KCC Office Use ONLY**

- Letter of Confidentiality Received  
Date: \_\_\_\_\_
- Confidential Release Date: \_\_\_\_\_
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_



1066008

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops and base of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Submitted Electronically <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(If no, Submit Copy)</i>  List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
_____ Perforate _____ Protect Casing _____ Plug Back TD _____ Plug Off Zone				

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD:      Size: \_\_\_\_\_ Set At: \_\_\_\_\_ Packer At: \_\_\_\_\_ Liner Run:  Yes  No

Date of First, Resumed Production, SWD or ENHR. \_\_\_\_\_ Producing Method:  Flowing  Pumping  Gas Lift  Other *(Explain)* \_\_\_\_\_

Estimated Production Per 24 Hours	Oil Bbbs.	Gas Mcf	Water Bbbs.	Gas-Oil Ratio	Gravity
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DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Mai Oil Operations, Inc.
Well Name	Ludwig 1
Doc ID	1066008

Tops

Name	Top	Datum
Anhydrite	863	+1035
Topeka	2832	-934
Heebner	3067	-1169
Toronto	3076	-1178
Brown Lime	3128	-1230
Lansing	3138	-1240
Base Kansas City	3352	-1454
Arbuckle	3384	-1486

# STEVEN P. MURPHY, P.G.

*Petroleum Geologist (KS #228)*



Cell 620.639.3030

Fax 785.387.2400

RR#1, Box 69

Otis, Kansas 67565

geomurphy@gbta.net

Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: Ludwig #1

Location: Barton County

License Number: API #15-009-25579-00-00

Spud Date: 8/13/11

Surface Coordinates: 700' FSL & 1375' FWL (SW NW SE SW)

Section 28-T17S-R14W

Region: Kansas

Drilling Completed: 8/21/11

Bottom Hole Coordinates: Vertical well w/minimal deviation, same as above

Ground Elevation (ft): 1888'

K.B. Elevation (ft): 1898'

Logged Interval (ft): 2750'

To: 3460'

Total Depth (ft): 3460'

Formation: Topeka through Arbuckle

Type of Drilling Fluid: Chemical - Mudco (Mud Engineer - Rick Hughes)

Printed by STRIP.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

## OPERATOR

Company: Mai Oil Operations, Inc.

Address: 8411 Preston Rd

Suite 800

Dallas, TX 75225-5520

## GEOLOGIST

Name: Steven P. Murphy, PG (KS License #228)

Company: Consulting Petroleum Geologist

Address: 3365 CR 390

Otis, KS 67565

620-639-3030 (Cell)



LogTops (Datum)

Open hole logging was performed by Jason Cappellucci with Superior Logging (Hays, KS shop). The following are log tops:

Top Anhydrite - 863(+1035)  
Base Andydrite - 892(+1006)  
Topeka - 2832 (-934)  
Heebner - 3067 (-1169)  
Toronto - 3076 (-1169)  
Br. Lime - 3128 (-1230)  
Lansing - 3138 (-1240)  
Muncie Crk - 3278 (-1380)  
BKC - 3352 (-1454)  
Arbuckle - 3384 (-1486)

DRILL STEM TESTS #1-4

The following drillstem tests were performed by Jeff Brown w/Trilobite Testing from the Hays, KS shop:

DST #1 3136-3166 (LKC "A-C")  
Tagged bottom approx 10' early, probably fill, misrun, packer failure

DST #2 3152-3166 (LKC "A-C")  
45:45:45:45  
IF: Built to 3-1/8 in, no return  
FF: Wk blow built to 1/2 in, no return  
Recovery: 50' Watery mud w/oil spots  
IHP: 1567 FHP: 1481  
IFP: 22-31 ISIP: 554  
FFP: 33-41 FSIP: 523  
BHT - 106 F

DST #3 3190-3232 (LKC "E,F,G")  
15:30:15:30  
IF: Wk surface blow, no return  
FF: No blow, no return  
Recovery: 5' Mud  
IHP: 1586 FHP: 1517  
IFP: 22-22 ISIP: 89  
FFP: 24-24 FSIP: 76  
BHT - 103 F

DST #4 3278-3326 (LKC "H,I,J")  
45:45:15:45  
IF: Built to 1-1/2", no return  
FF: Dead, flushed tool, Dead; no return  
Recovery: 15' Mud  
IHP: 1637 FHP: 1614  
IFP: 27-27 ISIP: 72  
FFP: 29-39 FSIP: 46  
BHT - 107 F

**DRILL STEM TESTS #5-7**

**DST #5 3378-3390 (Arbuckle)**  
 Hit bridge @ approx. 2700', couldn't go through it (Misrun)

**DST #6 3378-3390 (Arbuckle)**  
 30:30:30:30  
 IF: Wk blow built to 3", no return  
 FF: Wk blow built to 1-1/2", no return  
 Recovery: 5' Oil, 25' OCM (17% O, 83% M)  
 IHP: 1694 FHP: 1635  
 IFP: 55-49 ISIP: 944  
 FFP: 46-45 FSIP: 827  
 BHT - 107'  
 Oil Gravity - 38

**DST #7 3388-3400 (Arbuckle)**  
 45:45:45:45  
 IF: Blow built to 8-1/2", no return  
 FF: Blow built to 11", no return  
 Recovery: 157' GIP, 43' MCO (60% O, 40%M),  
 30' Free Oil  
 IHP: 1687 FHP: 1639  
 IFP: 32-39 ISIP: 1063  
 FFP: 44-52 FSIP: 1028  
 BHT - 109 F  
 Oil Gravity - 38





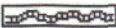
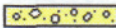

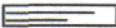


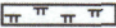





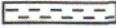

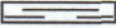

**COMMENTS**

Based on the results of DST #6 & #7, as well as sample & log analysis, it was recommended that 5-1/2" production casing be set to produce the Arbuckle.

Respectfully submitted,

Steven P. Murphy, PG  
 Consulting Petroleum Geologist

**ROCK TYPES**

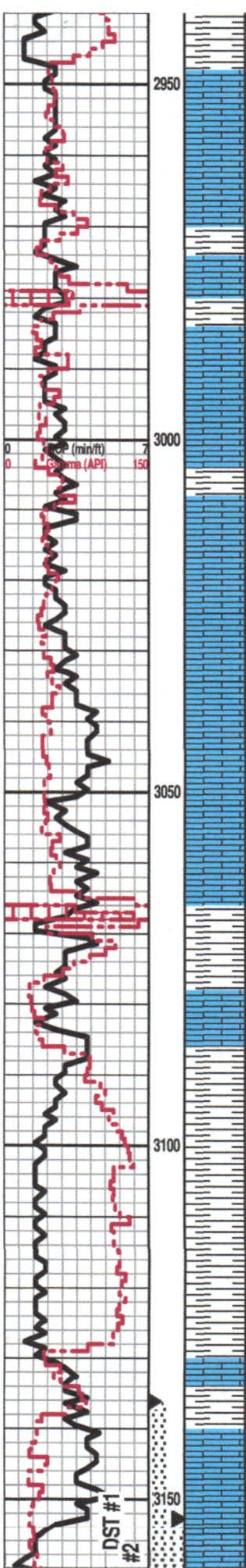
 Anhy	 Coal	 Lmst	 Shcol
 Bent	 Congl	 Meta	 Shgy
 Brec	 Dol	 Mrlst	 Sltst
 Cht	 Gyp	 Salt	 Ss
 Clyst	 Igne	 Shale	 Till

**OTHER SYMBOLS**

<b>OIL SHOW</b>	 Dead	<b>INTERVAL</b>	<b>EVENT</b>
 Even	 Gas	 Core	 Conn
 Spotted		 Dst	 Rft
 Ques			 Sidewall



Curve Track 1 ROP (min/ft) Gamma (API)	Depth	Lithology	Oil Shows	Geological Descriptions	REMARKS
	2750 2800 2850 2900		<p>Start samples @ 2810'</p> <p>LS: crm-gry, vfxdn, dense, NS</p> <p>SH: gry</p> <p>SH: gry</p> <p>LS: wh-tan, vfxdn, sl foss, dense, NS</p> <p>SH: gry-grn-brn-red</p> <p>LS: crm-tan-gry, vfxdn, sl foss, dense, NS</p> <p>LS: LS: crm-tan-gry, vfxdn, sl foss, dense, NS</p> <p>LS: LS: crm-tan-gry, vfxdn, sl foss, dense, NS</p> <p>LS: LS: crm-tan-gry, vfxdn, sl chalky, sl foss, dense, NS</p> <p>LS: LS: crm-tan-gry, vfxdn, sl chalky, sl foss, dense, NS</p> <p>LS: LS: crm-tan-gry, vfxdn, sl chalky, sl foss, dense, NS</p> <p>SH: blk-gry</p> <p>SH: gry-red</p> <p>LS: wh-tan-gry, vfxdn, dense, NS</p>	<p>The following are sample formation tops &amp; associated datums (with KB of 1898'). Please refer to the main header for electric log tops &amp; datums:</p> <p>NOTES:</p> <p>8-5/8" Surface casing set @ 870' w/350 sacks cement Deviation survey @ 870' -3/4 degree</p> <p>Partially lost circulation @ 2560', displaced @ 2560, good returns.</p> <p>Geologist on location @ 2:30 PM on 8/16/11 @ depth of 2780'</p> <p>TOPEKA 2831 (-933)</p>	



SH: gry

LS: wh-tan-gry, vfxn, sl chalky, dense, NS

LS: wh-tan-gry, vfxn, sl chalky, dense, NS

SH: gry-grn-red

SH: blk

LS: crm-tan, fxdn, chalky, sl foss, dense, NS

LS: crm-gry, fxdn, sl ool., fr inxdn por, vssfo, spotty str, sl odor

LS: crm-tan, fxdn, ool, fr-gd inxdn & vug por, sso, even str, fr odor

LS: crm-tan, vfxn, sl foss, chalky, dense, NS

SH: gry-grn-blk

LS: crm-tan, vfxn, dense, chalky, cherty, NS

LS: crm-tan-gry, vfxn, dense, chiky, NS

LS: wh-tan, vfxn, dense, chalky, NS

SH: blk

SH: gry-grn-blk

LS: wh-tan, vfxn, dense, NS

SH: gry

SH: gry

SH: gry

LS: brn, vfxn, dense, NS

SH: gry-grn

LS: wh-tan, fxdn, foss, fr-gd inxdn & vug por, fsfo, even sat str, fr odor

LS: wh-tan, fxdn, ool in pt, foss, gd inxdn & vug por, fsfo, even sat str, fr odor

HEEBNER 3067 (-1169)

TORONTO 3074 (-1176)

Pipe strapped @ 3166' - 0.99' short to board  
Deviation survey @ 3166' - 1-1/4 degrees

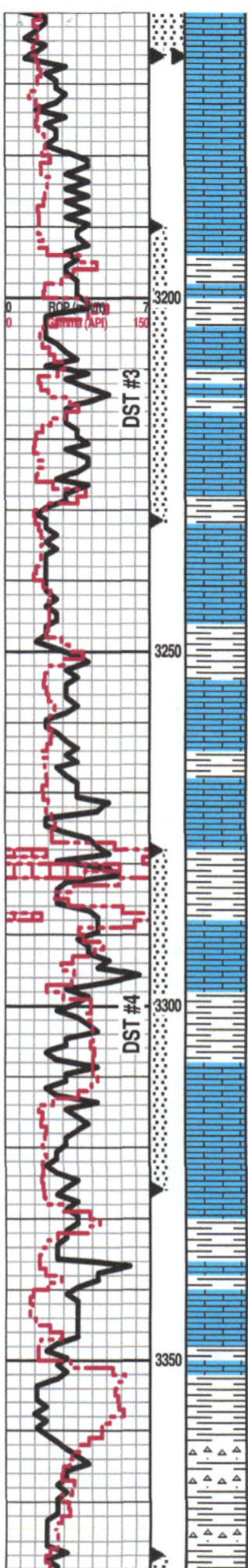
BROWN LIME 3131 (-1233)

LANSING 3140 (-1242)

DST #1 3136-3166 (LKC "A-C")  
Tagged bottom approx 10' early, probably fill, misrun, packer failure

DST #2 3152-3100 (LKC "A-C")  
45:45:45  
IC Built to 2 1/2 in. no return





SH: gry-grn-red  
 LS: crm-tan, vhdn, dense, sl chalky, NS  
 LS: crm-tan, vhdn, dense, sl chalky, NS  
 LS: crm-gry, vhdn, dense, NS  
 SH: gry  
 LS: crm-tan-gry, fhdn, oolic, fr-gd vug por, ssfo, spotty lite str, sl odor  
 LS: crm-brn, fhdn, foss, sl chalky, fr-gd inxdn por, ssfo, even sat str, fr odor  
 LS: wh-tan, fhdn, foss, sl chalky, fr-gd inxdn por, fsfo, even sat str, fr odor  
 LS: wh-tan, fhdn, oolic, pr-fr inxdn por, chalky, nsfo, spotty str, sl odor  
 LS: wh-tan-gry, vhdn, sl oolic, mostly dense, chalky, nsfo, quest str, no odor  
 LS: crm-tan-brn, vhdn, sl chalky, dense, NS  
 LS: crm-tan-brn, vhdn, sl chalky, dense, NS  
 SH: blk-gry  
 LS: crm-tan, fhdn, foss, sl chalky, pr-fr inxdn por, ssfo, spotty str, sl odor  
 SH: gry-grn  
 LS: wh-tan-brn, fhdn, foss, sl chalky, ssfo, spotty str w/live oil, fr odor  
 LS: wh-t brn, fhdn, ool in pt, sl foss, fr-gd inxdn & vug por, fsfo, gsy on brk, even sat str, str odor  
 LS: crm-tab, vhdn, dense, sl chalky (w/abund gry-grn-brn shale)  
 LS: wh-t. brn, vhdn, dense, sl chalky, nsfo, spotty str, sl odor  
 SH: gry-grn-brn-red  
 Multic SH & Cht  
 Multic SH & Cht

CFS @ 3165

FF: Wk blow built to 1/2 in, no return  
 Recovery: 50' Watery mud w/oil spots  
 IHP: 1567 FHP: 1481  
 IFP: 22-31 ISIP: 554  
 FFP: 33-41 FSIP: 523  
 BHT - 106 F

DST #3 3190-3232 (LKC "E,F,G")  
 15:30:15:30  
 IF: Wk surface blow, no return  
 FF: No blow, no return  
 Recovery: 5' Mud  
 IHP: 1586 FHP: 1517  
 IFP: 22-22 ISIP: 89  
 FFP: 24-24 FSIP: 76  
 BHT - 103 F

CFS @ 3232

**MUNCIE CREEK 3278 (-1380)**

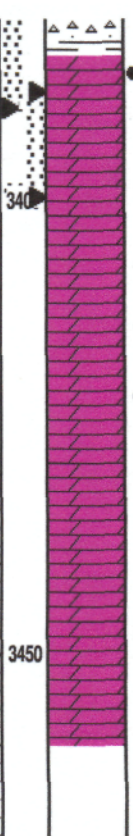
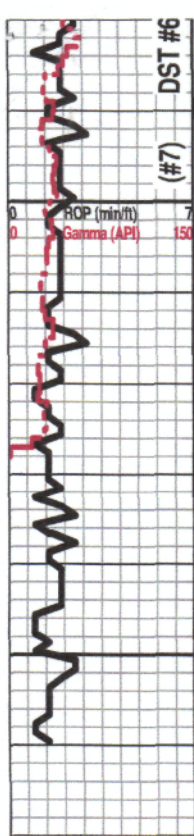
DST #4 3278-3326 (LKC "H,I,J")  
 45:45:15:45  
 IF: Built to 1-1/2", no return  
 FF: Dead, flushed tool, Dead; no return  
 Recovery: 15' Mud  
 IHP: 1637 FHP: 1614  
 IFP: 27-27 ISIP: 72  
 FFP: 29-39 FSIP: 46  
 BHT - 107 F

DST #5 3378-3390 (Arbuckle)  
 Hit bridge @ approx. 2700', couldn't go through it (Misrun)

**BKC 3352 (-1454)**

DST #6 3378-3390 (Arbuckle)  
 30:30:30:30  
 IF: Wk blow built to 3", no return  
 FF: Wk blow built to 1-1/2", no return  
 Recovery: 5' Oil, 25' OCM (17% O, 83% M)  
 IHP: 1694 FHP: 1635  
 IFP: 55-49 ISIP: 944  
 FFP: 46-45 FSIP: 827  
 BHT - 107





DOL: wh-tan, f-mxn, pr-fr inxn & rare vug por, fsfb, some even sat stn w/much spotty stn, str odor

DOL: wh-tan, f-mxn, much dense, rare fr inxn por, ssfo, spotty stn, str odor

DOL: wh-tan, f-mxn, fr inxn por, rhombic in pt, fsfo, even sat stn, str odor

DOL: wh-tan, f-mxn, fr inxn por, rhombic in pt, rare sucrosic, stsfb, spotty stn, str odor

DOL: as above w/sharp fresh chert

DOL: wh-tan, mxn, fr-gd inxn por, much sucrosic & minor rhombic, fsfo, even sat stn, str odor

DOL: wh-tan, mxn, fr-gd inxn por, much sucrosic & minor rhombic, fsfo, even sat stn, str odor

DOL: wh-tan, m-cdn, fr-gd inxn por, primarily rhombic, vssfb, minor stn (dead gilsonite), sl odor

DOL: wh-tan, m-cdn, fr-gd inxn por, primarily rhombic, vssfb, minor stn (dead gilsonite), sl odor (minor chert)

DOL: wh-crn, m-cdn, rhombic, gd inxn por, nso, tr gilsonites, no odor

**RTD @ 3460'**

Oil Gravity - 38  
**ARBUCKLE 3383 (-1485)**

CFS @ 3380' DST #7 3388-3400 (Arbuckle)  
 45:45:45:45

CFS @ 3386' IF: Blow built to 8-1/2", no return

CFS @ 3400' FF: Blow built to 11", no return  
 Recovery: 157 GIP, 43' MCO (60% O, 40%M),  
 30' Free Oil  
 IHP: 1687 FHP: 1639  
 IFP: 32-39 ISIP: 1063  
 FFP: 44-52 FSIP: 1028  
 BHT - 109 F  
 Oil Gravity - 38

CTCH 1.5 hrs @ 3460'

Deviation survey @ 3460' - 1-3/4 degrees



**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

Mai Oil Operations  
8411 Preston Rd Ste 800  
Dallas TX 75225+5520  
ATTN: Allen Bangert

**Ludwig #1**  
**28-17s-14w Barton,KS**  
Job Ticket: 039734 **DST#: 1**  
Test Start: 2011.08.17 @ 14:18:34

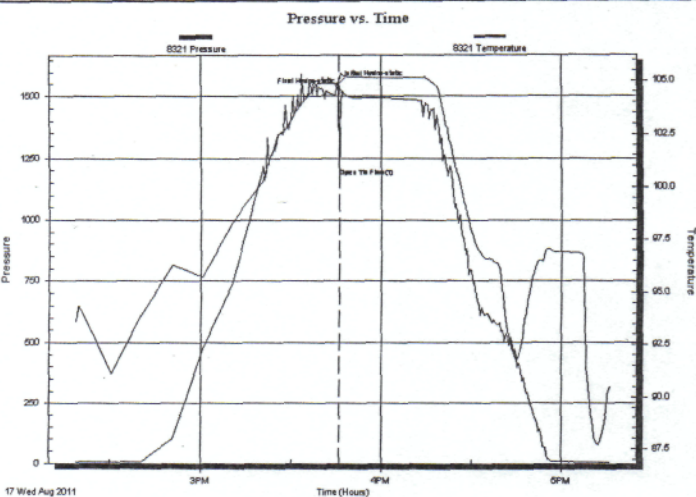
### GENERAL INFORMATION:

Formation: **LKC-A-B-C**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 15:46:04  
Time Test Ended: 17:17:34  
Test Type: Conventional Bottom Hole  
Tester: Jeff Brown  
Unit No: 44  
Interval: **3136.00 ft (KB) To 3166.00 ft (KB) (TVD)**  
Reference Elevations: 1898.00 ft (KB)  
Total Depth: 3166.00 ft (KB) (TVD) 1890.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 8.00 ft

### Serial #: 8321 Inside

Press@RunDepth: psig @ 3138.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2011.08.17 End Date: 2011.08.17 Last Calib.: 2011.08.17  
Start Time: 14:18:35 End Time: 17:16:34 Time On Btmr: 2011.08.17 @ 15:45:34  
Time Off Btmr: 2011.08.17 @ 15:47:04

TEST COMMENT: Ms-Run



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1548.93	104.89	Initial Hydro-static
1	1172.22	104.96	Open To Flow (1)
2	1514.71	105.31	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud	0.14

### Gas Rates

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





**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations  
 8411 Preston Rd Ste 800  
 Dallas TX 75225+5520  
 ATTN: Allen Bangert

**Ludwig #1**  
**28-17s-14w Barton,KS**  
 Job Ticket: 039735 DST#: 2  
 Test Start: 2011.08.17 @ 21:04:59

**GENERAL INFORMATION:**

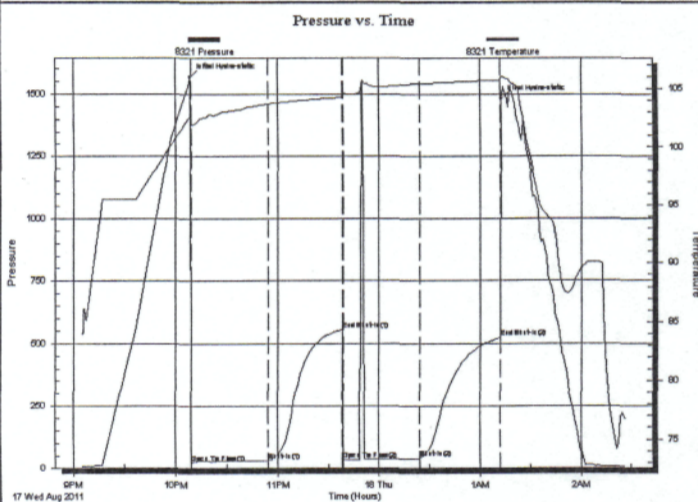
Formation: **LKC-A-B-C**  
 Deviated: **No** Whipstock: **ft (KB)**  
 Time Tool Opened: 22:08:59  
 Time Test Ended: 02:27:59  
 Interval: **3152.00 ft (KB) To 3166.00 ft (KB) (TVD)**  
 Total Depth: **3166.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Jeff Brown**  
 Unit No: **44**  
 Reference Elevations: **1898.00 ft (KB)**  
**1890.00 ft (CF)**  
 KB to GR/CF: **8.00 ft**

**Serial #: 8321**

**Inside**

Press@RunDepth: **41.42 psig @ 3153.00 ft (KB)**  
 Start Date: **2011.08.17** End Date: **2011.08.18**  
 Start Time: **21:05:00** End Time: **02:26:59**  
 Capacity: **8000.00 psig**  
 Last Calib.: **2011.08.18**  
 Time On Btm: **2011.08.17 @ 22:08:29**  
 Time Off Btm: **2011.08.18 @ 01:12:29**

TEST COMMENT: IFP-Weak blow built to 3 1/8 in  
 ISI-Dead no blow back  
 FFP-Weak blow built to 1/2 in  
 FSI-Dead no blow back



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1566.56	102.50	Initial Hydro-static
1	22.09	101.97	Open To Flow (1)
46	30.72	103.70	Shut-In(1)
90	554.47	104.26	End Shut-In(1)
91	33.33	104.37	Open To Flow (2)
136	41.42	105.45	Shut-In(2)
184	522.70	105.70	End Shut-In(2)
184	1480.66	106.01	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
50.00	VM with oil spots 7%W93%M	0.70

**Gas Rates**

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



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations  
 8411 Preston Rd Ste 800  
 Dallas TX 75225+5520  
 ATTN: Allen Bangert

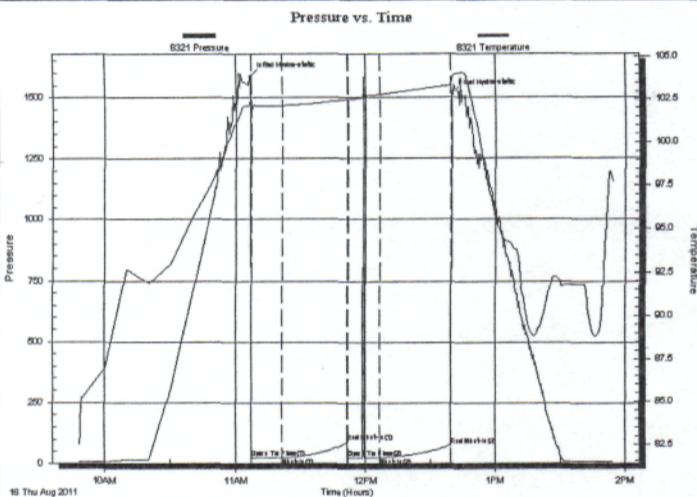
**Ludwig #1**  
**28-17s-14w Barton,KS**  
 Job Ticket: 039736 **DST#: 3**  
 Test Start: 2011.08.18 @ 09:48:28

**GENERAL INFORMATION:**

Formation: **LKC-E-F-G**  
 Deviated: **No Whipstock** ft (KB)  
 Time Tool Opened: 11:07:28  
 Time Test Ended: 13:54:28  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Jeff Brown**  
 Unit No: **44**  
 Interval: **3190.00 ft (KB) To 3232.00 ft (KB) (TVD)**  
 Reference Elevations: **1898.00 ft (KB)**  
**1890.00 ft (CF)**  
 Total Depth: **3232.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 KB to GR/CF: **8.00 ft**

**Serial #: 8321** **Inside**  
 Press@RunDepth: **23.77 psig @ 3196.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2011.08.18** End Date: **2011.08.18** Last Calib.: **2011.08.18**  
 Start Time: **09:48:29** End Time: **13:54:28** Time On Btm: **2011.08.18 @ 11:06:58**  
 Time Off Btm: **2011.08.18 @ 12:39:28**

**TEST COMMENT:** IFP-Weak surface blow  
 ISI-Dead no blow back  
 FFP-Dead no blow  
 FSI-Dead no blow back



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1586.38	102.41	Initial Hydro-static
1	22.08	101.88	Open To Flow (1)
15	22.27	102.15	Shut-In(1)
45	88.53	102.52	End Shut-In(1)
45	24.48	102.48	Open To Flow (2)
60	23.77	102.81	Shut-In(2)
92	75.93	103.35	End Shut-In(2)
93	1517.21	103.69	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
5.00	Mud	0.07

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





**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

Mai Oil Operations  
 8411 Preston Rd Ste 800  
 Dallas TX 75225+5520  
 ATTN: Allen Bangert

**Ludwig #1**  
**28-17s-14w Barton, KS**  
 Job Ticket: 039737 **DST#: 4**  
 Test Start: 2011.08.18 @ 23:20:39

**GENERAL INFORMATION:**

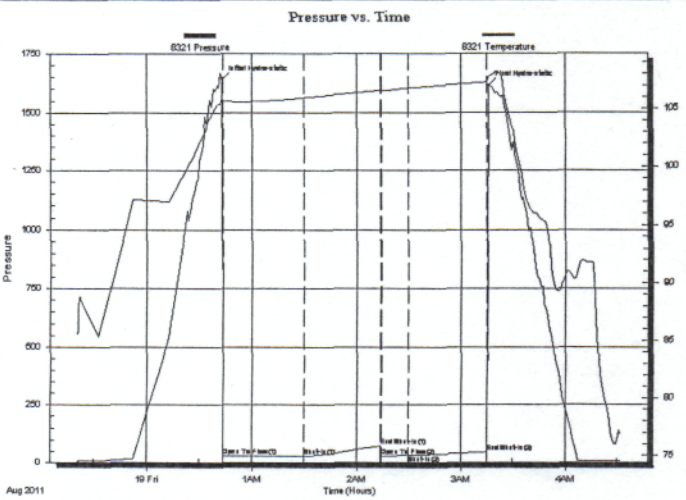
Formation: **LKC-H-I-J**  
 Deviated: **No Whipstock:** ft (KB)  
 Time Tool Opened: 00:43:39  
 Time Test Ended: 04:32:09  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Jeff Brown**  
 Unit No: **44**  
 Interval: **3278.00 ft (KB) To 3326.00 ft (KB) (TVD)**  
 Total Depth: **3326.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Reference Elevations: **1898.00 ft (KB)**  
**1890.00 ft (CF)**  
 KB to GR/CF: **8.00 ft**

**Serial #: 8321**

**Inside**

Press@RunDepth: **30.39 psig @ 3285.00 ft (KB)**  
 Start Date: **2011.08.18** End Date: **2011.08.19** Capacity: **8000.00 psig**  
 Start Time: **23:20:40** End Time: **04:32:09** Last Calib.: **2011.08.19**  
 Time On Btrm: **2011.08.19 @ 00:43:09**  
 Time Off Btrm: **2011.08.19 @ 03:16:09**

**TEST COMMENT:** IFF-Weak blow built to 1 1/4 in died back to 3/4 in  
 ISI-Dead no blow back  
 FFP-Dead no blow  
 FSI-Dead no blow back



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1639.38	105.72	Initial Hydro-static
1	26.67	105.58	Open To Flow (1)
47	26.51	105.94	Shut-In(1)
91	72.19	106.59	End Shut-In(1)
92	29.03	106.58	Open To Flow (2)
107	30.39	106.77	Shut-In(2)
152	46.47	107.31	End Shut-In(2)
153	1613.60	107.74	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
15.00	Mud	0.21

**Gas Rates**

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





**TRILOBITE TESTING, INC**

## DRILL STEM TEST REPORT

Mai Oil Operations  
 8411 Preston Rd Ste 800  
 Dallas TX 75225+5520  
 ATTN: Allen Bangert

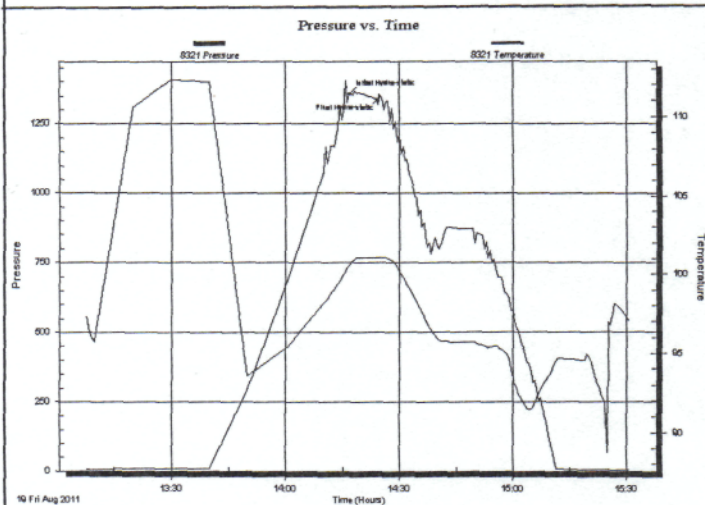
**Ludwig #1**  
**28-17s-14w Barton,KS**  
 Job Ticket: 039738 DST#: 5  
 Test Start: 2011.08.19 @ 13:07:54

### GENERAL INFORMATION:

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened:  
 Time Test Ended: 15:30:54  
 Interval: **3378.00 ft (KB) To 3390.00 ft (KB) (TVD)**  
 Total Depth: 3390.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole  
 Tester: Jeff Brown  
 Unit No: 44  
 Reference Elevations: 1898.00 ft (KB)  
 1890.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 8321** Inside  
 Press@RunDepth: psig @ 3379.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2011.08.19 End Date: 2011.08.19 Last Calib.: 2011.08.19  
 Start Time: 13:07:55 End Time: 15:30:54 Time On Btm: 2011.08.19 @ 14:16:54  
 Time Off Btm: 2011.08.19 @ 14:24:54

TEST COMMENT: Stacked out on a bridge @ 2750-Mis-Run



### PRESSURE SUMMARY

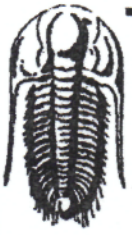
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1355.93	100.58	Initial Hydro-static
8	1349.31	101.07	Final Hydro-static

### Recovery

Length (ft)	Description	Volume (bbl)

### Gas Rates

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



**TRILOBITE  
TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations  
8411 Preston Rd Ste 800  
Dallas TX 75225+5520  
ATTN: Allen Bangert

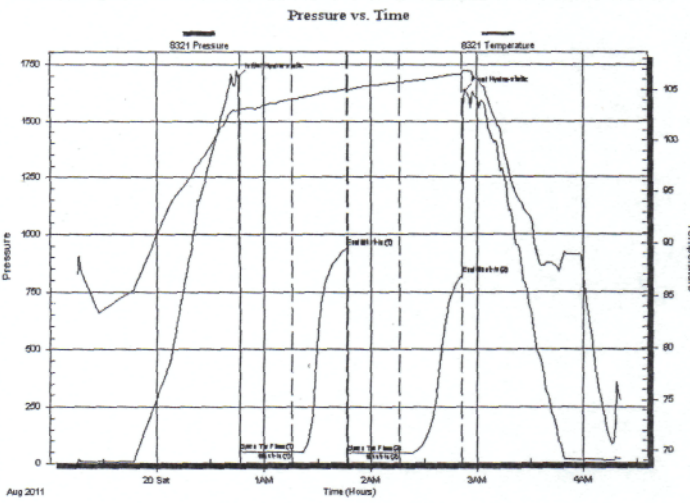
**Ludwig #1**  
**28-17s-14w Barton,KS**  
Job Ticket: 039739 **DST#: 6**  
Test Start: 2011.08.19 @ 23:15:26

**GENERAL INFORMATION:**

Formation: **Arbuckle**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 00:46:26  
Time Test Ended: 04:21:56  
Test Type: Conventional Bottom Hole  
Tester: Jeff Brown  
Unit No: 44  
Interval: **3378.00 ft (KB) To 3390.00 ft (KB) (TVD)**  
Total Depth: 3390.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Reference Elevations: 1898.00 ft (KB)  
1890.00 ft (CF)  
KB to GR/CF: 8.00 ft

**Serial #: 8321** Inside  
Press@RunDepth: 44.64 psig @ 3379.00 ft (KB)  
Start Date: 2011.08.19 End Date: 2011.08.20  
Start Time: 23:15:27 End Time: 04:20:56  
Capacity: 8000.00 psig  
Last Calib.: 2011.08.20  
Time On Btrr: 2011.08.20 @ 00:45:56  
Time Off Btrr: 2011.08.20 @ 02:52:56

**TEST COMMENT:** IFF-Weak blow built to 3 in  
IS-Dead  
FFP-Weak blow built to 1 1/2 in  
FS-Dead



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1694.21	102.96	Initial Hydro-static
1	55.22	102.86	Open To Flow (1)
30	48.60	104.10	Shut-In(1)
61	944.21	105.07	End Shut-In(1)
61	45.93	104.87	Open To Flow (2)
90	44.64	105.74	Shut-In(2)
126	826.64	106.54	End Shut-In(2)
127	1635.20	106.91	Final Hydro-static

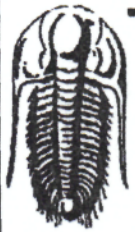
**Recovery**

Length (ft)	Description	Volume (bbl)
25.00	OCM 17%O83%M	0.35
5.00	Free Oil	0.07

**Gas Rates**

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





**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Mai Oil Operations  
 8411 Preston Rd Ste 800  
 Dallas TX 75225+5520  
 ATTN: Allen Bangert

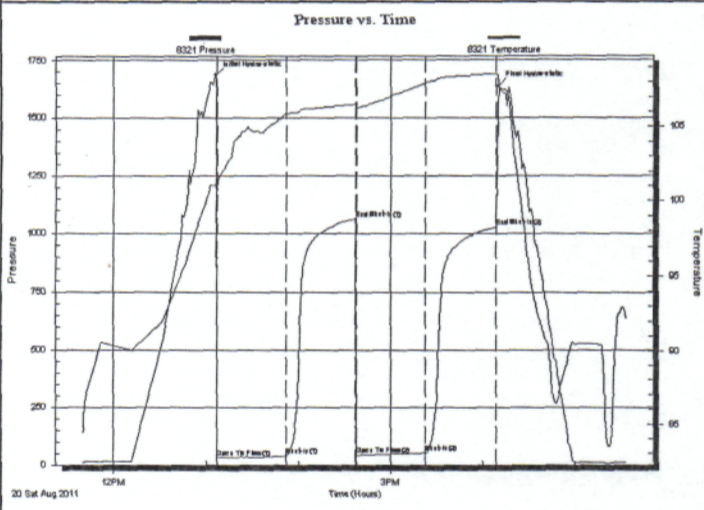
**Ludwig #1**  
**28-17s-14w Barton,KS**  
 Job Ticket: 039740 **DST#: 7**  
 Test Start: 2011.08.20 @ 11:40:07

**GENERAL INFORMATION:**

Formation: **Arbuckle**  
 Deviated: **No Whipstock:** ft (KB)  
 Time Tool Opened: 13:06:37  
 Time Test Ended: 17:34:37  
 Interval: **3388.00 ft (KB) To 3400.00 ft (KB) (TVD)**  
 Total Depth: **3400.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Good**  
 Test Type: **Conventional Bottom Hole**  
 Tester: **Jeff Brown**  
 Unit No: **44**  
 Reference Elevations: **1898.00 ft (KB)**  
**1890.00 ft (CF)**  
 KB to GRV/CF: **8.00 ft**

**Serial #: 8321 Inside**  
 Press@RunDepth: **51.61 psig @ 3389.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2011.08.20** End Date: **2011.08.20** Last Calib.: **2011.08.20**  
 Start Time: **11:40:08** End Time: **17:33:37** Time On Btmr: **2011.08.20 @ 13:06:07**  
 Time Off Btmr: **2011.08.20 @ 16:10:07**

**TEST COMMENT:** IFF-Fair blow built to 8 1/2 in  
 ISI-Dead no blow back  
 FFP-Good blow built to 11 in  
 FSI-Dead no blow back



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1686.67	101.20	Initial Hydro-static
1	32.04	100.73	Open To Flow (1)
46	38.94	105.88	Shut-In(1)
91	1063.21	106.50	End Shut-In(1)
91	43.86	106.29	Open To Flow (2)
136	51.61	107.92	Shut-In(2)
183	1028.36	108.54	End Shut-In(2)
184	1638.96	107.87	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
43.00	MCO 40%/M60%O	0.60
30.00	Free Oil	0.42
0.00	157 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. 5270

Date	8/14/11	Sec.	28	Twp.	17	Range	14	County	Barton	State	KS	On Location	Finish	8:30 AM
------	---------	------	----	------	----	-------	----	--------	--------	-------	----	-------------	--------	---------

Lease	Ludwig	Well No.	1	Location	Hwy 281 + Hwy 4, 2 W, 1/4 N E into
-------	--------	----------	---	----------	------------------------------------

Contractor	Southwind Drilling Rig #3	Owner	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.	870'
Csg.	8 5/8"	Depth	870'
Tbg. Size		Depth	
Tool		Depth	
Cement Left in Csg.	23'	Shoe Joint	23'
Meas Line		Displace	54 Bbls.
		Cement Amount Ordered	350 sx 60/40 3% CC 2% gel

**EQUIPMENT**

Pumptrk	9	No.	Cementer	Paul	Common	210
			Helper			
Bulktrk	7	No.	Driver	Matt	Poz. Mix	140
			Driver			
Bulktrk	A	No.	Driver	Cory	Gel.	6
			Driver			
<b>JOB SERVICES &amp; REMARKS</b>					Calcium	14

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
Est Circ.	Sand
Mix 350 sx	Handling 370
Displace	Mileage
Land Plug	<b>FLOAT EQUIPMENT</b>
Cement Circulated	Guide Shoe
	Centralizer
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down
	Baffle Plate + Rubber Plug
	Head + manifold
	Pumptrk Charge
	Mileage 19

Thank You!!

X Signature

Tax	
Discount	
<b>Total Charge</b>	



# ALLIED CEMENTING CO., LLC. 038241

Federal Tax I.D.# 20-5975804

REMIT TO P.O. BOX 31  
RUSSELL, KANSAS 67665

SERVICE POINT:

Russell

DATE <u>8/21/11</u>	SEC <u>28</u>	TWP <u>17</u>	RANGE <u>14</u>	CALLED OUT	ON LOCATION	JOB START <u>2:00 P</u>	JOB FINISH <u>3:15 P</u>
LEASE <u>Ludwig</u>	WELL# <u>1</u>	LOCATION <u>Hay 201 + Hay 4 2W</u>		COUNTY <u>Barton</u>	STATE <u>KS</u>		
OLD OR NEW (Circle one)		<u>1/2 N E 1/4</u>					

CONTRACTOR Southern Drilling #3 OWNER \_\_\_\_\_  
 TYPE OF JOB Production String  
 HOLE SIZE 5 7/8 T.D. 2960'  
 CASING SIZE 5 7/8 DEPTH 3458'  
 TUBING SIZE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 DRILL PIPE \_\_\_\_\_ DEPTH \_\_\_\_\_  
 TOOL \_\_\_\_\_ DEPTH \_\_\_\_\_  
 PRES. MAX 1700 psi MINIMUM \_\_\_\_\_  
 MEAS. LINE \_\_\_\_\_ SHOE JOINT 19.46  
 CEMENT LEFT IN CSG. 19.46  
 PERFS. \_\_\_\_\_  
 DISPLACEMENT 83,90 661

CEMENT AMOUNT ORDERED 160 69% 10% Salt 2261  
14 # F16  
1000 Gal WFR-2

COMMON	<u>96</u>	@ <u>16.25</u>	<u>1848.00</u>
POZMIX	<u>64</u>	@ <u>8.50</u>	<u>544.00</u>
GEL	<u>3</u>	@ <u>21.25</u>	<u>63.75</u>
CHLORIDE		@	
ASC		@	
Salt	<u>14</u>	@ <u>25.95</u>	<u>335.30</u>
WFR-2 1000 Gal		@ <u>1.10</u>	<u>N-C</u>
FloSed 40 #		@ <u>2.70</u>	<u>108.00</u>
		@	
		@	
		@	
		@	
		@	
HANDLING	<u>177</u>	@ <u>2.25</u>	<u>398.25</u>
MILEAGE	<u>111/2/mile</u>		<u>222.58</u>
			TOTAL <u>3569.88</u>

EQUIPMENT

PUMP TRUCK CEMENTER Shane, Heath  
 # 409 HELPER Todd  
 BULK TRUCK  
 # 378 DRIVER Tony  
 BULK TRUCK  
 # \_\_\_\_\_ DRIVER \_\_\_\_\_

REMARKS:

Rat Hole Jokers  
Insert @ 3438.54  
Mixed 7000 Gal WFR-2  
Mixed 13000 Gal 5 7/8  
Shut down washed pipe + Casing  
Re-barment plug + displaced  
83,966 Cement @ 1200psi  
Float Head

SERVICE

DEPTH OF JOB			
PUMP TRUCK CHARGE			<u>2225.00</u>
EXTRA FOOTAGE	@		
MILEAGE	<u>28</u>	@ <u>7.00</u>	<u>196.00</u>
MANIFOLD	@		
CUR	<u>28</u>	@ <u>4.00</u>	<u>112.00</u>
	@		
			TOTAL <u>2533.00</u>

CHARGE TO: Main Oil Operations  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PLUG & FLOAT EQUIPMENT

	@		
8 Turbolizers	@ <u>58.00</u>		<u>464.00</u>
Float Shoe	@		<u>245.00</u>
Catchdown	@		<u>194.00</u>
	@		
			TOTAL <u>903.00</u>

To Allied Cementing Co., LLC.  
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES 9005.88  
 DISCOUNT 50/20 IF PAID IN 30 DAYS

PRINTED NAME \_\_\_\_\_  
 SIGNATURE [Signature]

Thanks!



Conservation Division  
Finney State Office Building  
130 S. Market, Rm. 2078  
Wichita, KS 67202-3802



Phone: 316-337-6200  
Fax: 316-337-6211  
<http://kcc.ks.gov/>

Mark Sievers, Chairman  
Ward Loyd, Commissioner  
Thomas E. Wright, Commissioner

Sam Brownback, Governor

October 24, 2011

Allen Bangert  
Mai Oil Operations, Inc.  
8411 PRESTON RD STE 800  
DALLAS, TX 75225-5520

Re: ACO1  
API 15-009-25579-00-00  
Ludwig 1  
SW/4 Sec.28-17S-14W  
Barton County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,  
Allen Bangert