

**JAMES C. MUSGROVE**

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Mai Oil Operations  
Rugan #1  
NE-SW-NE-NW (745' FNL & 1734' FWL)  
Section 2-21s-11w  
Stafford County, Kansas

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

**Contractor:** Southwind Drilling Co. (rig #3)  
**Commenced:** October 12, 2017  
**Completed:** October 19, 2017  
**Elevation:** 1770' K.B., 1768' D.F., 1762' G.L.  
**Casing program:** Surface; 8 5/8" @ 474'  
Production, 5 1/2" @ 3469'  
**Sample:** Samples saved and examined 2800' to the Rotary Total Depth.  
**Drilling time:** One (1) foot drilling time recorded and kept 2800' 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 Eli Wireline Services, Dual Induction, Compensated Density/Neutron;  
Micro; and Sonic Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	469	+1301
Base Anhydrite	491	+1279
Heebner	2920	-1150
Toronto	2937	-1167
Douglas	2951	-1181
Brown Lime	3045	-1275
Lansing	3064	-1294
Base Kansas City	3298	-1528
Conglomerate Chert	3321	-1551
Arbuckle	3333	-1563
Rotary Total Depth	3470	-1700
Log Total Depth	3471	-1701

(All tops and zones corrected to Electric Log Measurement)

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

**TOPEKA SECTION**

- 2826-2852' Limestone, white, cream, slightly fossiliferous, fair porosity (barren).  
2883-2910' Limestone, tan, fossiliferous, few medium crystalline, chalky in part, no shows.

**TORONTO SECTION**

- 2937-2950' Limestone, tan, few fossiliferous, sparry calcite cement, poorly developed porosity, trace black spotty stain at base, no free oil and no odor.

**LANSING SECTION**

- 3064-3071' Limestone, tan, fossiliferous, slightly cherty, poorly developed porosity, no shows.  
3079-3088' Limestone, as above, plus tan oolitic limestone, dense, no shows.  
3093-3103' Limestone, white, cream, slightly fossiliferous, chalky, poor porosity, no shows.  
3110-3120' Limestone, gray, oolitic, chalky, poor porosity, gray and black spotty stain, no free oil and no odor in fresh samples.  
3130-3135' Limestone, gray, white, oolitic/fossiliferous, chalky in part, trace light brown edge staining; no free oil and no odor in fresh samples.  
3140-3150' Limestone, as above no shows.  
3154-3170' Limestone, white, oolitic, sub-oomoldic, chalky, poorly developed porosity, no shows.  
3200-3205' Limestone white, cream and tan, finely crystalline; few oolitic, sub-oomoldic; poor visible porosity, black spotty stain, no free oil and no odor in fresh samples.  
3220-3230' Limestone, white, oomoldic, poorly developed porosity (barren).  
3240-3254' Limestone, tan, fine to medium crystalline, chalky, fossiliferous in part, trace brown and golden stain, show of free oil and no odor in fresh samples.  
3265-3270' Limestone, gray, tan, finely crystalline; slightly cherty (dense)  
3276-3290' Limestone, as above, increase in porosity, trace brown stain, trace of free oil and no odor in fresh samples.

**Drill Stem Test #1** **3226-3310**

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

**Blow:** Weak increasing to fair

**Recovery:** 150' gas in pipe  
10' mud, show of oil  
(1% oil; 99% mud)

**Pressures:** ISIP 90 psi  
FSIP 109 psi  
IFP 16-17 psi  
FFP 16-18 psi  
HSH 1650-1635 psi

**CONGLOMERATE SECTION**

3321-3326' Chert, white, gray, trace orange boney; few opaque; no shows.

**ARBUCKLE SECTION**

3333-3335' Dolomite, tan, finely crystalline, dense

3335-3350' Dolomite, tan, fine and medium crystalline, sucrosic, fair crystalline, sucrosic, fair, inter-crystalline and vuggy type porosity, brown and golden brown stain, show of free oil and good odor.

3350-3360' Dolomite, as above, good porosity, golden brown stain, show of free oil and good odor in fresh samples.

**Drill Stem Test #2** **3290-3360**

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

**Blow:** Strong

**Recovery:** 290' gas in pipe  
15' slightly oil and gas cut mud  
(5% gas; 5% oil; 90% mud)  
60' oil and gas cut mud  
(73% gas; 7% oil; 20% mud)  
260' very slightly oil and gas cut mud  
(48% gas; 2% oil; 50% mud)  
390' muddy water

**Pressures:** ISIP 911 psi  
FSIP 910 psi  
IFP 52-228 psi  
FFP 238-345 psi  
HSH 1658-1627 psi

**Drill Stem Test #3** **3334-3344**  
**(Straddle)**

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

**Blow: Strong**

**Recovery: 1070' gas in pipe**  
**5' clean gassy oil**  
**15' gassy muddy oil**  
**(5% gas; 87% oil; 8% mud)**  
**20' oil and gas cut watery mud**  
**(70% gas; 14% oil; 2% water; 14% mud)**  
**30' oil and gas cut watery mud**  
**(5% gas; 5% oil; 20% water; 70% mud)**  
**30' oil and gas cut watery mud**  
**(20% gas; 20% oil; 10% water; 5% mud)**

**Pressures: ISIP 851 psi**  
**FSIP 867 psi**  
**IFP 18-34 psi**  
**FFP 37-53 psi**  
**HSH 1704-1687 psi**

- 3360-3370' Dolomite, as above, plus white, gray chert.
- 3370-3380' Dolomite, white, tan, fine and medium crystalline, fair to good porosity, light brown to golden brown stain, show of free oil and good odor in fresh samples.
- 3380-3400' Dolomite, white, cream, pink, finely crystalline, slightly cherty, black stain, no free oil and fair to good odor in fresh samples.
- 3400-3420' Dolomite, white, finely crystalline, finely oomoldic, fair oomoldic and vuggy type porosity, no stain, no free oil, fair odor in fresh samples.
- 3420-3440' Dolomite, as above, white, and tan, opaque chert.
- 3440-3460' Dolomite, white, cream, tan, fine and medium crystalline, fair porosity (barren); plus white, chert.

**Rotary Total Depth 3470**  
**Log Total Depth 3471**

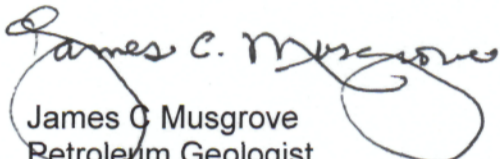
Mai Oil Operations  
Rugan #1  
NE-SW-NE-NW (745' FNL & 1734' FWL)  
Section 2-21s-11w  
Stafford County, Kansas

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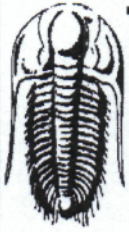
**Recommendations:**

5 ½' production casing was set and cemented on the Mai Oil Operations, Rugan #1.

Respectfully yours,

  
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

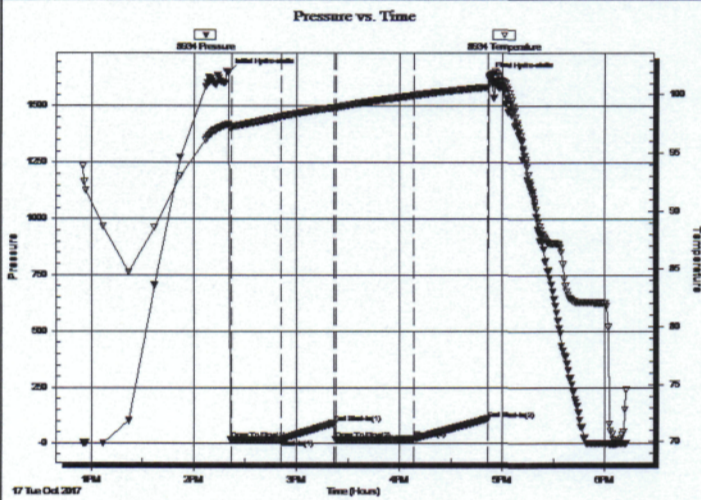
**2-21S-11W Stafford KS**  
**Rugan #1**  
 Job Ticket: 63046 **DST#: 1**  
 Test Start: 2017.10.17 @ 12:55:00

**GENERAL INFORMATION:**

Formation: **LKC 'I-K'**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:22:00  
 Time Test Ended: 18:12:15  
 Interval: **3226.00 ft (KB) To 3310.00 ft (KB) (TVD)**  
 Total Depth: 3310.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 1770.00 ft (KB)  
 1762.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 8934** Inside  
 Press@RunDepth: 18.91 psig @ 3229.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.10.17 End Date: 2017.10.17 Last Calib.: 2017.10.17  
 Start Time: 12:55:15 End Time: 18:12:15 Time On Btm: 2017.10.17 @ 14:20:15  
 Time Off Btm: 2017.10.17 @ 16:52:00

**TEST COMMENT:** 30-IF-Weak Surface Blow ; Built to 1 1/2"  
 30-IS-No Return  
 45-FF-Fair Blow ; Built to 8"  
 45-FSI-No Return



**PRESSURE SUMMARY**

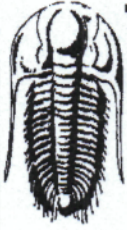
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1650.13	97.47	Initial Hydro-static
2	16.90	97.20	Open To Flow (1)
31	17.58	98.09	Shut-In(1)
62	90.76	98.88	End Shut-In(1)
63	16.08	98.88	Open To Flow (2)
108	18.91	99.92	Shut-In(2)
151	109.13	100.64	End Shut-In(2)
152	1635.40	101.41	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
10.00	Mud w/show oil 1%O 99%M	0.14
0.00	150' GIP	0.00

**Gas Rates**

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



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**TOOL DIAGRAM**

Mai Oil Operations, Inc.  
8411 Preston Rd STE 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

**2-21S-11W Stafford KS**  
**Rugan #1**  
Job Ticket: 63046      **DST#: 1**  
Test Start: 2017.10.17 @ 12:55:00

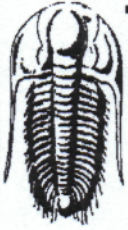
**Tool Information**

Drill Pipe:	Length: 3234.00 ft	Diameter: 3.80 inches	Volume: 45.36 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 31000.00 lb
			<u>Total Volume: 45.36 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 29000.00 lb
Depth to Top Packer:	3226.00 ft			Final 29000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	84.00 ft			
Tool Length:	104.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3207.00	
Shut In Tool	5.00			3212.00	
Hydraulic tool	5.00			3217.00	
Packer	5.00			3222.00	20.00      Bottom Of Top Packer
Packer	4.00			3226.00	
Stubb	1.00			3227.00	
Perforations	1.00			3228.00	
Change Over Sub	1.00			3229.00	
Recorder	0.00	9120	Inside	3229.00	
Recorder	0.00	8934	Inside	3229.00	
Drill Pipe	63.00			3292.00	
Change Over Sub	1.00			3293.00	
Perforations	13.00			3306.00	
Bullnose	4.00			3310.00	84.00      Bottom Packers & Anchor

**Total Tool Length: 104.00**



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**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Mai Oil Operations, Inc.

**2-21S-11W Stafford KS**

8411 Preston Rd STE 800  
Dallas TX 75225+5520

**Rugan #1**

Job Ticket: 63046

**DST#: 1**

ATTN: Jim Musgrove

Test Start: 2017.10.17 @ 12:55:00

**Mud and Cushion Information**

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: inches

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud w/show oil 1%O 99%M	0.140
0.00	150' GIP	0.000

Total Length: 10.00 ft      Total Volume: 0.140 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 1#LCM



Serial #: 8934

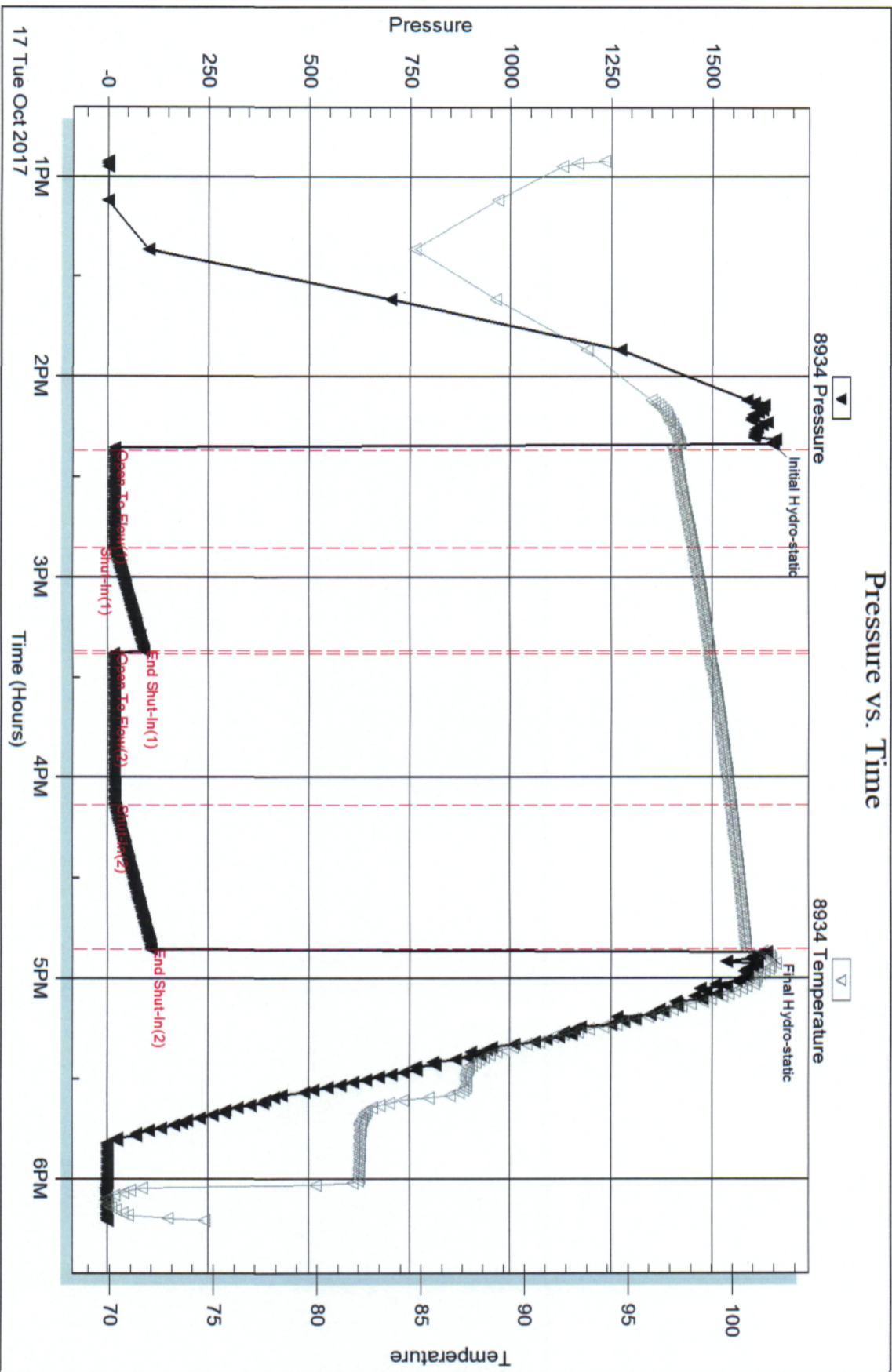
Inside

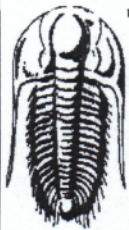
Mai Oil Operations, Inc.

Rugan #1

DST Test Number: 1

### Pressure vs. Time





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## DRILL STEM TEST REPORT

Mai Oil Operations, Inc.  
8411 Preston Rd STE 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

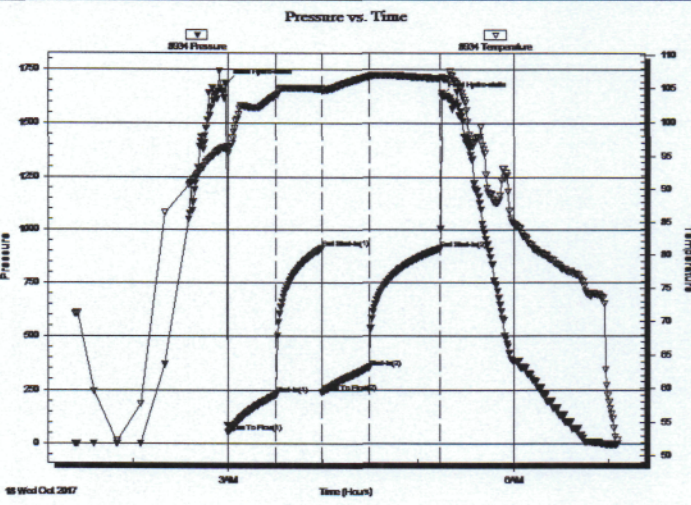
**2-21S-11W Stafford KS**  
**Rugan #1**  
Job Ticket: 63047      **DST#: 2**  
Test Start: 2017.10.18 @ 01:23:00

### GENERAL INFORMATION:

Formation: **Arbuckle**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 03:00:00  
Time Test Ended: 07:06:00  
Interval: **3290.00 ft (KB) To 3360.00 ft (KB) (TVD)**  
Total Depth: 3360.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Reference Elevations: 1770.00 ft (KB)  
1762.00 ft (CF)  
KB to GR/CF: 8.00 ft

**Serial #: 8934**      **Inside**  
Press@RunDepth: 354.38 psig @ 3293.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.10.18      End Date: 2017.10.18      Last Calib.: 2017.10.18  
Start Time: 01:23:15      End Time: 07:06:00      Time On Btm: 2017.10.18 @ 02:59:15  
Time Off Btm: 2017.10.18 @ 05:15:00

TEST COMMENT: 30-IF-Strong Blow ; BOB in 3 mins  
30-ISI-No Return  
30-FF-Strong Blow ; BOB in 5 mins  
45-FSI-Weak Surface Blow : Built to 1 1/4"



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1685.29	96.33	Initial Hydro-static
1	52.80	95.85	Open To Flow (1)
32	228.00	104.02	Shut-In(1)
60	911.85	104.97	End Shut-In(1)
61	238.28	104.73	Open To Flow (2)
90	354.38	106.74	Shut-In(2)
135	910.65	106.48	End Shut-In(2)
136	1627.02	106.59	Final Hydro-static

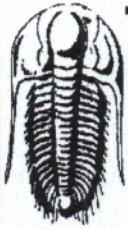
### Recovery

Length (ft)	Description	Volume (bbl)
390.00	MV 30%M 70%W	5.47
260.00	OCGM 2%O 48%G 50%M	3.65
60.00	OCGM 7%O 20%M 73%G	0.84
15.00	GOCM 5%G 5%O 90%M	0.21
0.00	290' GIP 100%G	0.00

\* Recovery from multiple tests

### Gas Rates

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



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**TOOL DIAGRAM**

Mai Oil Operations, Inc.  
8411 Preston Rd STE 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

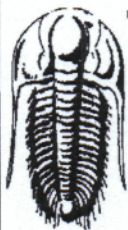
**2-21S-11W Stafford KS**  
**Rugan #1**  
Job Ticket: 63047      **DST#: 2**  
Test Start: 2017.10.18 @ 01:23:00

**Tool Information**

Drill Pipe:	Length: 3299.00 ft	Diameter: 3.80 inches	Volume: 46.28 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 30000.00 lb
			<u>Total Volume: 46.28 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial 28000.00 lb
Depth to Top Packer:	3290.00 ft			Final 30000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	70.00 ft			
Tool Length:	90.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3271.00	
Shut In Tool	5.00			3276.00	
Hydraulic tool	5.00			3281.00	
Packer	5.00			3286.00	20.00      Bottom Of Top Packer
Packer	4.00			3290.00	
Stubb	1.00			3291.00	
Perforations	1.00			3292.00	
Change Over Sub	1.00			3293.00	
Recorder	0.00	9120	Inside	3293.00	
Recorder	0.00	8934	Inside	3293.00	
Drill Pipe	62.00			3355.00	
Change Over Sub	1.00			3356.00	
Bullnose	4.00			3360.00	70.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>		<b>90.00</b>			



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## DRILL STEM TEST REPORT

**FLUID SUMMARY**

Mai Oil Operations, Inc.

**2-21S-11W Stafford KS**

8411 Preston Rd STE 800  
Dallas TX 75225+5520

**Rugan #1**

Job Ticket: 63047

**DST#: 2**

ATTN: Jim Musgrove

Test Start: 2017.10.18 @ 01:23:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

26000 ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
390.00	MW 30%M 70%W	5.471
260.00	OCGM 2%O 48%G 50%M	3.647
60.00	OCGM 7%O 20%M 73%G	0.842
15.00	GOCM 5%G 5%O 90%M	0.210
0.00	290' GIP 100%G	0.000

Total Length: 725.00 ft      Total Volume: 10.170 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

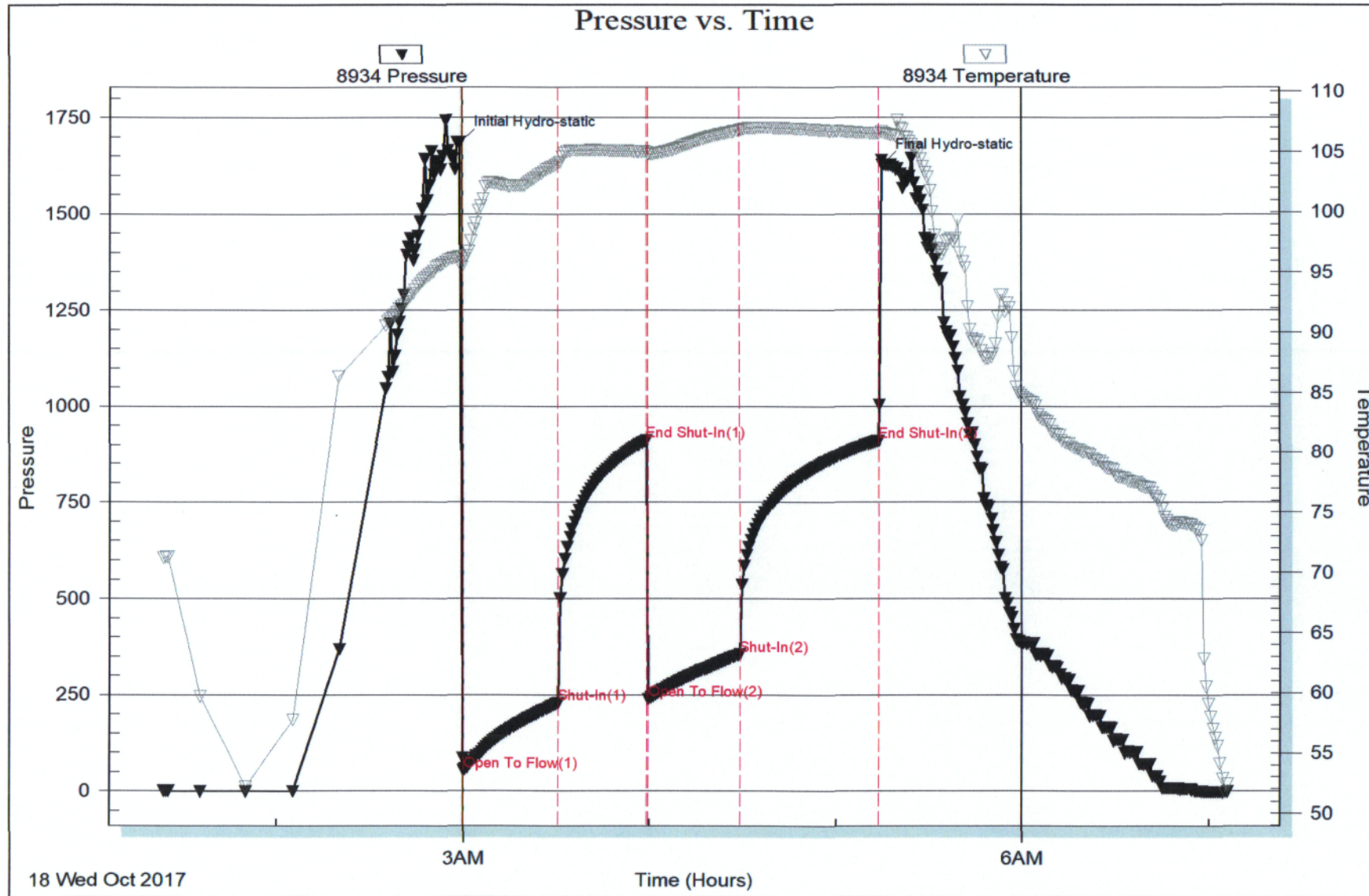
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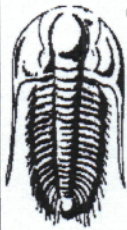
Laboratory Name:

Laboratory Location:

Recovery Comments: 1#LCM

RW=.48@49degrees





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Mai Oil Operations, Inc.  
 8411 Preston Rd STE 800  
 Dallas TX 75225+5520  
 ATTN: Jim Musgrove

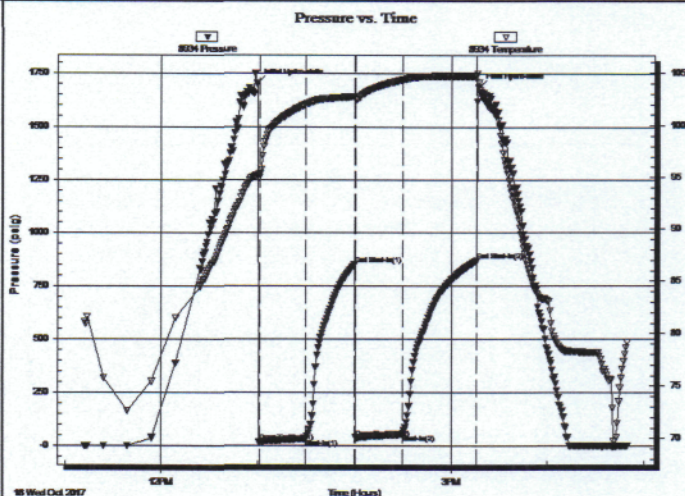
**2-21S-11W Stafford KS**  
**Rugan #1**  
 Job Ticket: 63048 **DST#: 3**  
 Test Start: 2017.10.18 @ 11:12:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 13:01:15  
 Time Test Ended: 16:49:45  
 Interval: **3334.00 ft (KB) To 3344.00 ft (KB) (TVD)**  
 Total Depth: 3344.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Straddle (Reset)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 1770.00 ft (KB)  
 1762.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 8934** **Outside**  
 Press@RunDepth: 53.88 psig @ 3335.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.10.18 End Date: 2017.10.18 Last Calib.: 2017.10.18  
 Start Time: 11:12:15 End Time: 16:49:45 Time On Btm: 2017.10.18 @ 13:00:15  
 Time Off Btm: 2017.10.18 @ 15:17:15

**TEST COMMENT:** 30-IF-Fair Blow ; BOB in 8 mins  
 30-ISI-Weak Blow ; Built to 6"  
 30-FF-Strong Blow ; BOB in 4 mins  
 45-FSI-Fair Blow ; Built to 7"



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1704.45	95.33	Initial Hydro-static
1	18.73	95.32	Open To Flow (1)
30	34.77	101.95	Shut-In(1)
60	851.69	102.71	End Shut-In(1)
61	39.31	102.42	Open To Flow (2)
90	53.88	104.33	Shut-In(2)
136	867.92	104.68	End Shut-In(2)
137	1687.40	104.10	Final Hydro-static

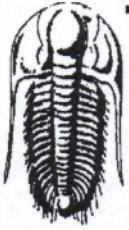
## Recovery

Length (ft)	Description	Volume (bbl)
20.00	GMCO 5%G 8%O 87%M	0.28
20.00	WCMGO 2%W 14%M 70%G 14%O	0.28
30.00	GOCWM 5%G 5%O 20%W 70%M	0.42
30.00	WGOCM 10%W 20%G 20%O 50%M	0.42
0.00	1070' GIP 100%G	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**TOOL DIAGRAM**

Mai Oil Operations, Inc.  
8411 Preston Rd STE 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

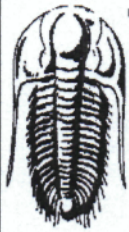
**2-21S-11W Stafford KS**  
**Rugan #1**  
Job Ticket: 63048      **DST#: 3**  
Test Start: 2017.10.18 @ 11:12:00

**Tool Information**

Drill Pipe: Length: 3330.00 ft	Diameter: 3.80 inches	Volume: 46.71 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe: Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar: Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 41000.00 lb
	Total Volume: 46.71 bbl		Tool Chased ft
Drill Pipe Above KB: 16.00 ft			String Weight: Initial 29000.00 lb
Depth to Top Packer: 3334.00 ft			Final 31000.00 lb
Depth to Bottom Packer: 3344.00 ft			
Interval between Packers: 10.00 ft			
Tool Length: 46.00 ft			
Number of Packers: 1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3315.00	
Shut In Tool	5.00			3320.00	
Hydraulic tool	5.00			3325.00	
Packer	5.00			3330.00	20.00      Bottom Of Top Packer
Packer	4.00			3334.00	
Stubb	1.00			3335.00	
Recorder	0.00	9120	Inside	3335.00	
Recorder	0.00	8934	Outside	3335.00	
Perforations	5.00			3340.00	
Blank Off Sub	1.00			3341.00	
top of s.packer	3.00			3344.00	10.00      Tool Interval
Packer	0.00			3344.00	
Stubb	1.00			3345.00	
Perforations	1.00			3346.00	
Recorder	0.00	8368	Below	3346.00	
Perforations	10.00			3356.00	
Bullnose	4.00			3360.00	16.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>46.00</b>				



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Mai Oil Operations, Inc.  
8411 Preston Rd STE 800  
Dallas TX 75225+5520  
ATTN: Jim Musgrove

**2-21S-11W Stafford KS**  
**Rugan #1**  
Job Ticket: 63048      **DST#: 3**  
Test Start: 2017.10.18 @ 11:12:00

**Mud and Cushion Information**

Mud Type: Gel Chem	Cushion Type:	Oil API: 51 deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity: 23000 ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.99 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 6000.00 ppm		
Filter Cake: inches		

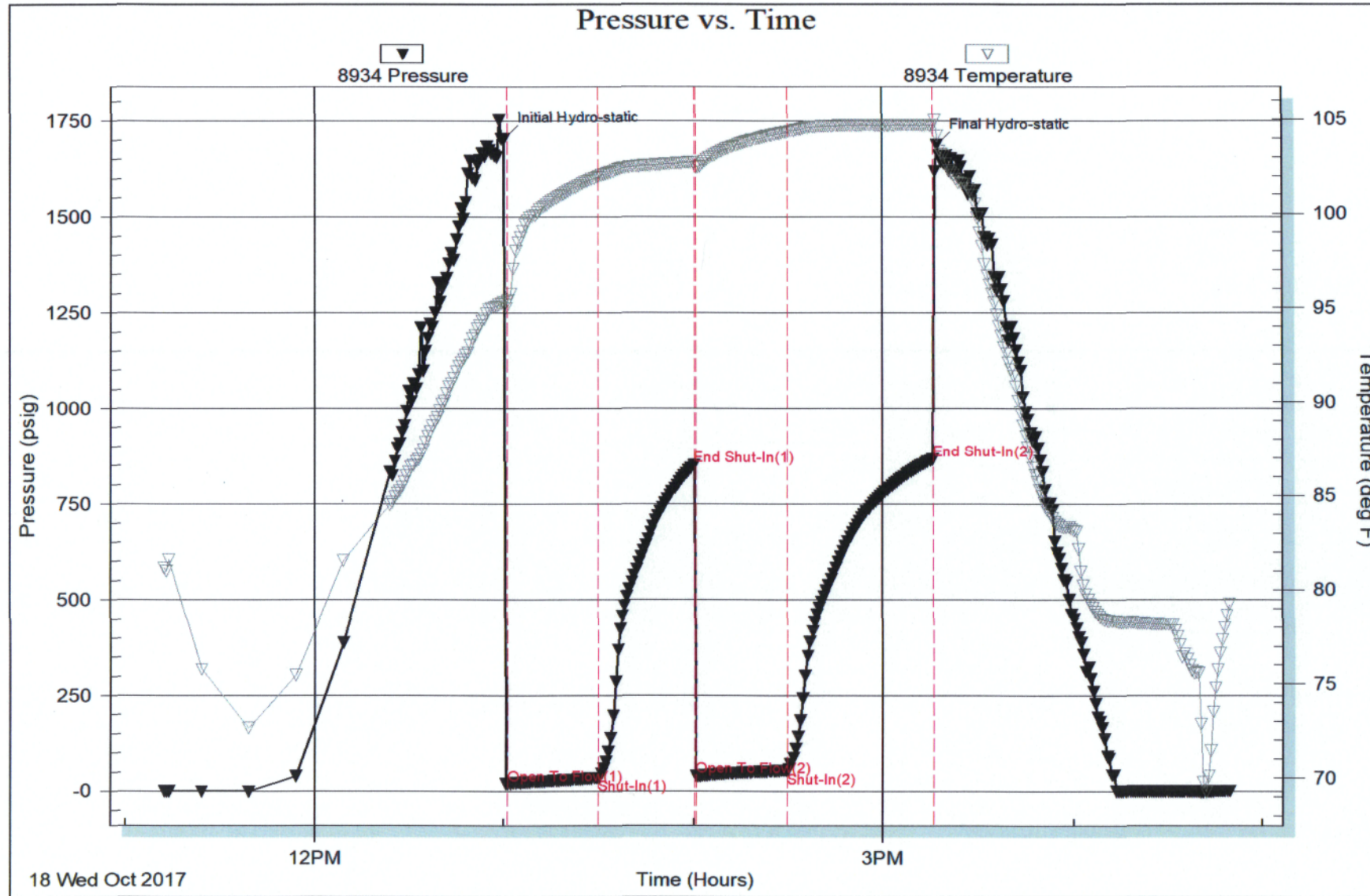
**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
20.00	GMCO 5%G 8%O 87%M	0.281
20.00	WCMGO 2%W 14%M 70%G 14%O	0.281
30.00	GOCMM 5%G 5%O 20%W 70%M	0.421
30.00	WGOCM 10%W 20%G 20%O 50%M	0.421
0.00	1070' GIP 100%G	0.000

Total Length: 100.00 ft      Total Volume: 1.404 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 1#LCM  
                                  RW=.30@68degrees





# 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. 425

Date	10-14-17	Sec.	2	Twp.	21	Range	11	County	Stafford	State	Ks	On Location		Finish	1:00 AM
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Lease Rugan Well No. 31 Location Elliswood - 55 to 50 rd SE to 150 Ave

Contractor Southwind #3 Owner 2 1/2 S w/s  
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 Surface Charge To Main oil operations

Hole Size 12 1/4" T.D. 473' Street

Csg. 8 5/8" Depth 473' City State

Tbg. Size Depth City State

Tool Depth The above was done to satisfaction and supervision of owner agent or contractor.

Cement Left in Csg. 20' Shoe Joint 20' Cement Amount Ordered 500 60/40 9% CC 2% WJ

Meas Line Displace 28 3/4 BLS 1/2 H Flow-seal

**EQUIPMENT**

Pumptrk	18	No.	Cementer		Common
			Helper	<u>Travis</u>	
Bulktrk	9	No.	Driver	<u>Rick</u>	Poz. Mix
			Driver	<u>David</u>	Gel.
Bulktrk	3	No.	Driver	<u>Doug</u>	Calcium
			Driver		

**JOB SERVICES & REMARKS**

Remarks: Cement did Circulate

Rat Hole

Mouse Hole

Centralizers

Baskets Mixed 450 SX

D/V or Port Collar

**FLOAT EQUIPMENT**

Guide Shoe 102 yd run

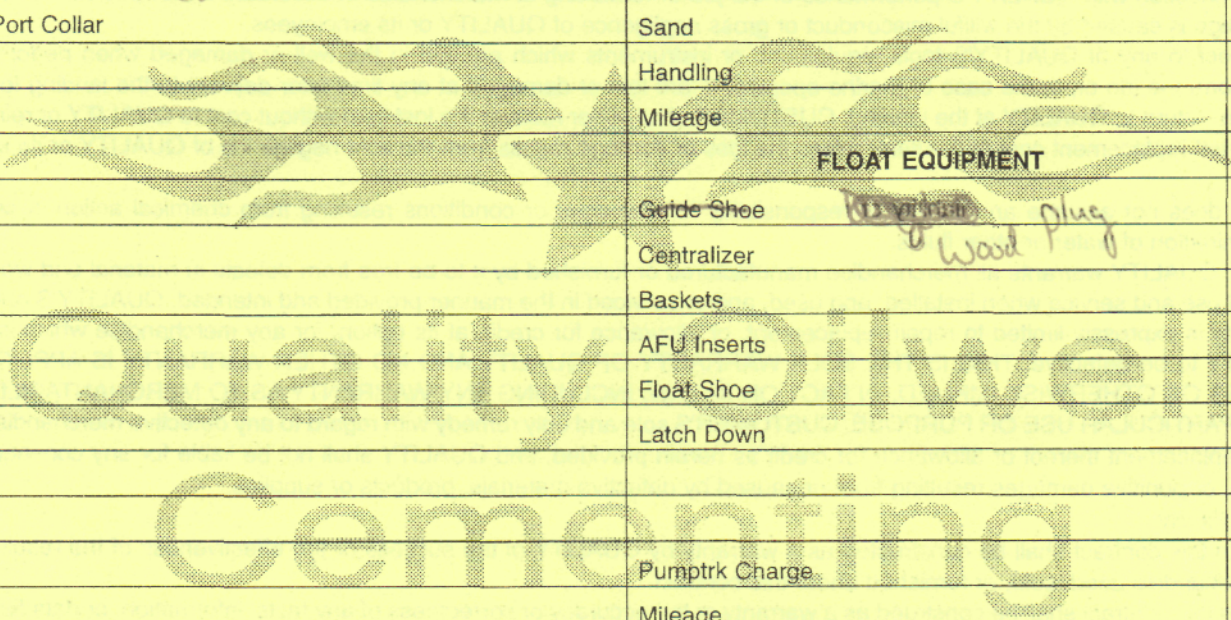
Centralizer Wood Plug

Baskets

AFU Inserts

Float Shoe

Latch Down



Pumptrk Charge

Mileage

Tax

Discount

Total Charge

X Signature Jay Wren

# QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

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

No. 429

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
10-19-17	2	21	11	Stafford	Ks		7 45
Lease				Location			
Ruggan				Ellinwood 3 to 50 Rd, SE to 150 Rd			
Contractor			Well No.	Owner			
Southwind #3			1	To Quality Oilwell Cementing, Inc.			
Type Job			You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.				
Longstring							
Hole Size	T.D.	Charge To					
7 7/8"	34170'	mai oil operations					
Csg.	Depth	Street					
5 1/2" 114 used	34631						
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					
31.92'	31.92'	160 60/40 10% Salt 2% Gel 1/4 #Fl					
Meas Line	Displace	Common					
	83 3/4 Bcs	1000 gal mud Clar 48					
<b>EQUIPMENT</b>							
Pumptrk	No.	Cementer					
18		Helper					
Bulktrk	No.	Driver					
14		Driver					
Bulktrk	No.	Driver					
p.u.		Driver					
<b>JOB SERVICES &amp; REMARKS</b>							
Remarks:				Salt			
Rat Hole				Flowseal			
Mouse Hole				Kol-Seal			
Centralizers				Mud CLR 48 1000 gal			
Baskets				CFL-117 or CD110 CAF 38			
DV or Port Collar				Sand			
plug Rathole				Handling			
Casing w/ 1305x				Mileage			
pump + lines Displaced plug w/ 83 3/4 Bcs				<b>FLOAT EQUIPMENT</b>			
of H2O. Released & held.				Guide Shoe			
lift pressure 475 #				Centralizer 12			
Land plug to 1400 #.				Baskets			
				AFU Inserts			
				Float Shoe 1			
				Latch Down 1			
				Pumptrk Charge			
				Mileage			
				Tax			
				Discount			
				Total Charge			
Signature							