

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

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

Gas DH EOR

OG GSW

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 EOR Conv. to SWD
 Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

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

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical 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

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops 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.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

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 Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No 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
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

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> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Mai Oil Operations, Inc.
Well Name	RUGAN 1
Doc ID	1405491

All Electric Logs Run

CDNL
DIL
Micro
Sonic

Form	ACO1 - Well Completion
Operator	Mai Oil Operations, Inc.
Well Name	RUGAN 1
Doc ID	1405491

Tops

Name	Top	Datum
Anhydrite	469	+1301
Heebner	2920	-1150
Toronto	2937	-1167
Douglas	2951	-1181
Brown Lime	3045	-1181
Lansing	3064	-1294
Base Kansas City	3298	-1528
Arbuckle	3333	-1563

JAMES C. MUSGROVE

Petroleum Geologist, LLC
212 Main Street
P.O. Box 215
Claflin, KS 67525

Office (620) 588-4250

Res. Claflin (620) 587-3444

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

Page 1

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

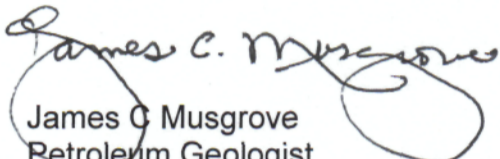
Mai Oil Operations
Rugan #1
NE-SW-NE-NW (745' FNL & 1734' FWL)
Section 2-21s-11w
Stafford County, Kansas

Page 5

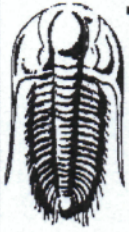
Recommendations:

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

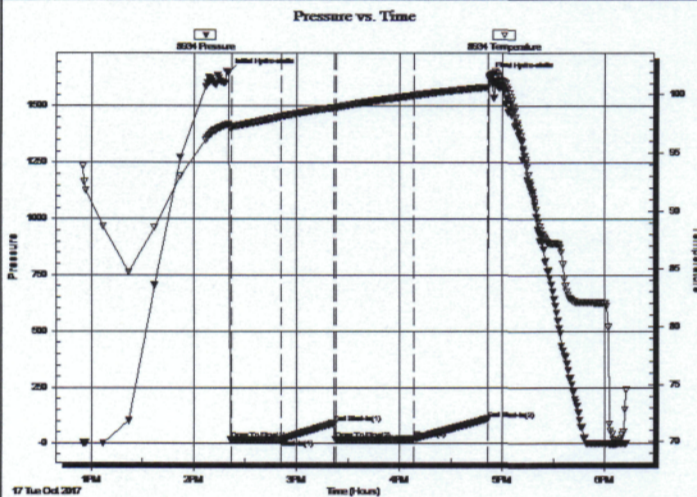
2-21S-11W Stafford KS
Rugan #1
 Job Ticket: 63046 **DST#: 1**
 Test Start: 2017.10.17 @ 12:55:00

GENERAL INFORMATION:

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

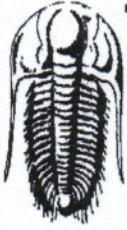
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1650.13	97.47	Initial Hydro-static
2	16.90	97.20	Open To Flow (1)
31	17.58	98.09	Shut-In(1)
62	90.76	98.88	End Shut-In(1)
63	16.08	98.88	Open To Flow (2)
108	18.91	99.92	Shut-In(2)
151	109.13	100.64	End Shut-In(2)
152	1635.40	101.41	Final Hydro-static

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

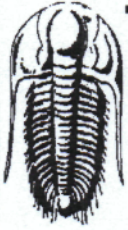
Tool Information

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



**TRILOBITE
TESTING, INC.**

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 in³

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

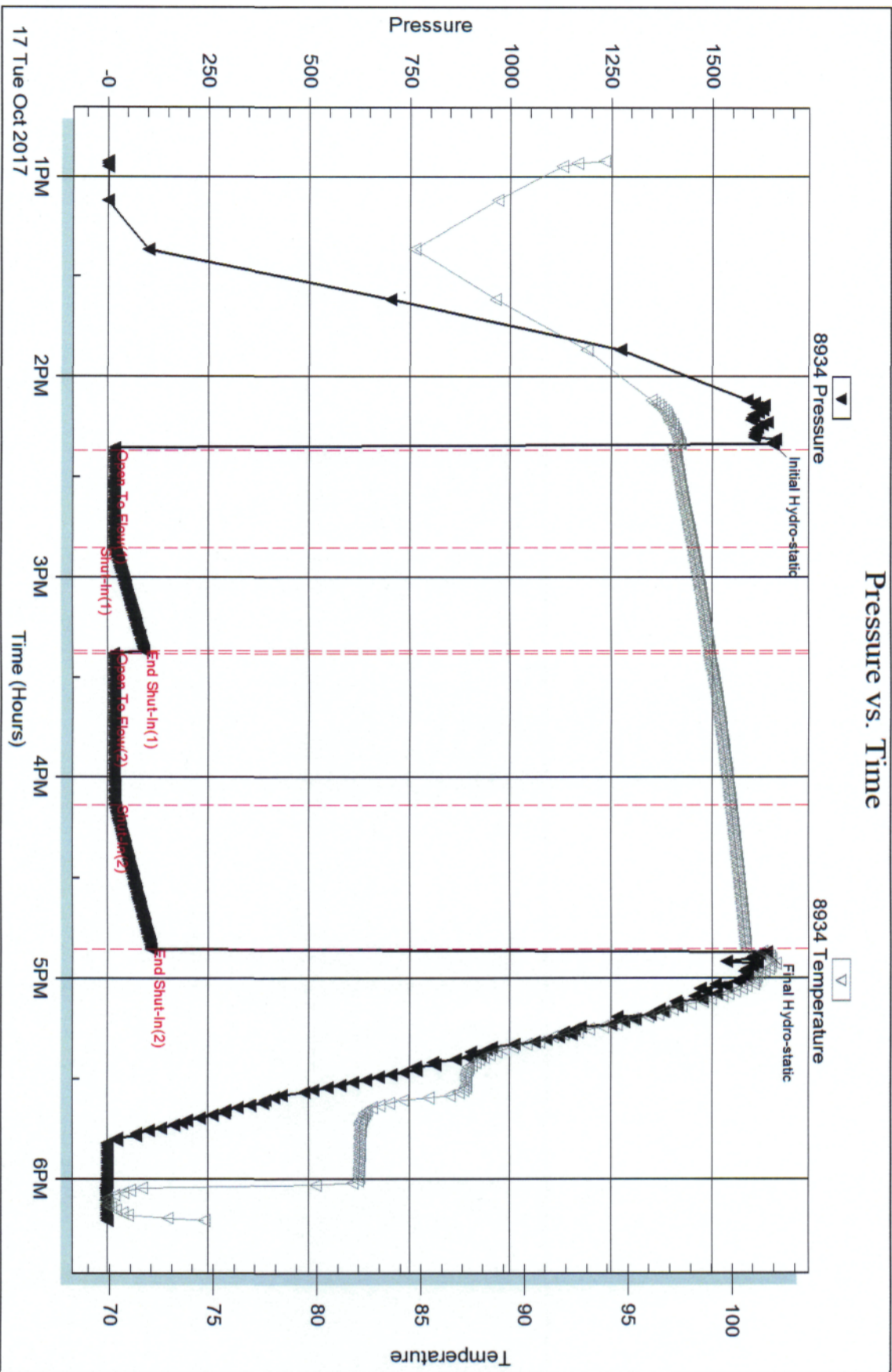
Inside

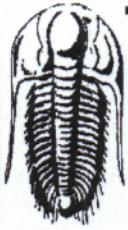
Mai Oil Operations, Inc.

Rugan #1

DST Test Number: 1

Pressure vs. Time





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

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

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
Total Tool Length:		90.00			



**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: 63047 **DST#: 2**
Test Start: 2017.10.18 @ 01:23:00

Mud and Cushion Information

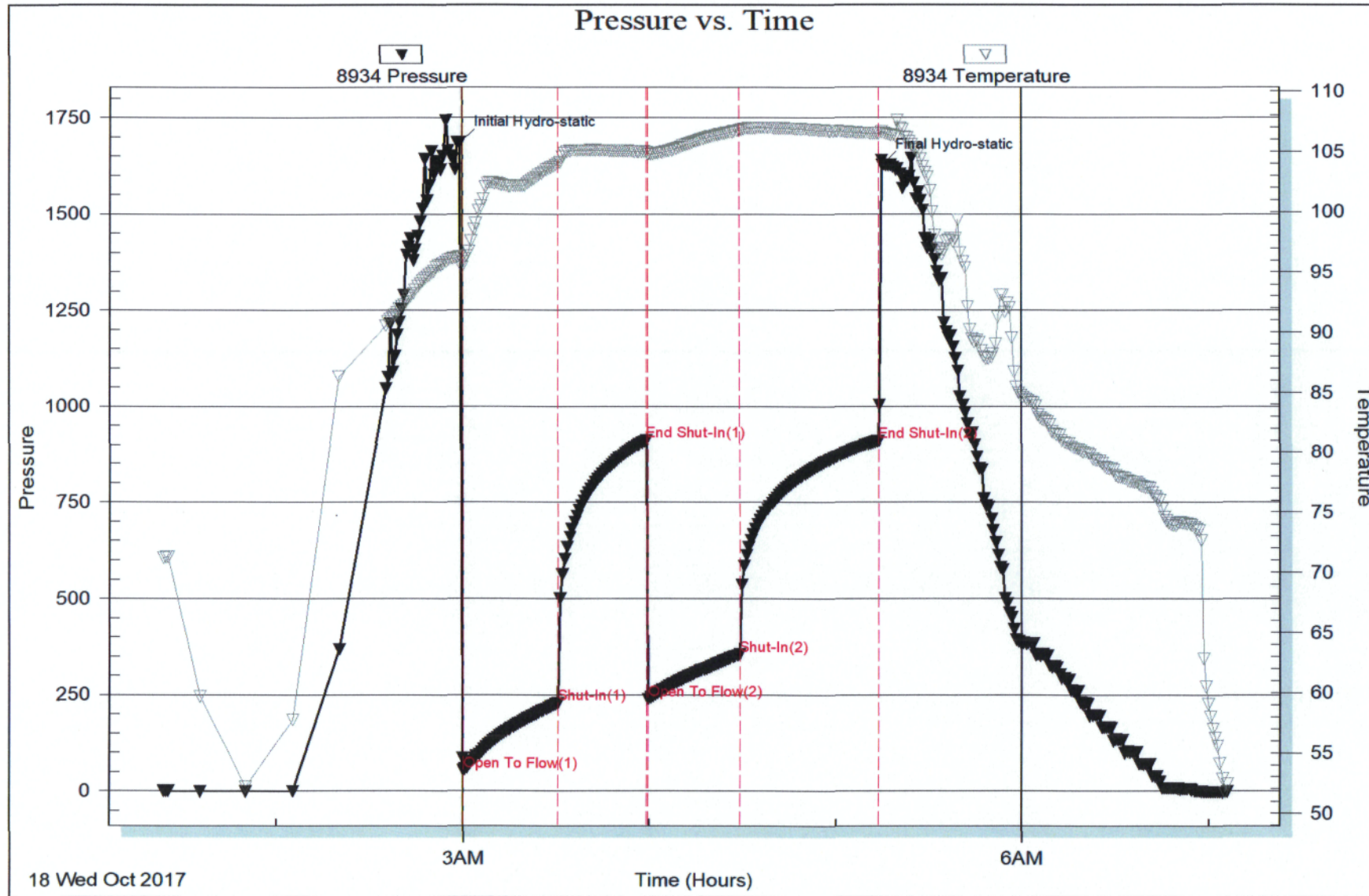
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	26000 ppm
Viscosity: 64.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5000.00 ppm			
Filter Cake: inches			

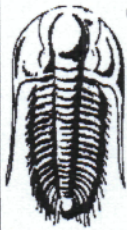
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
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 Serial #:
 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

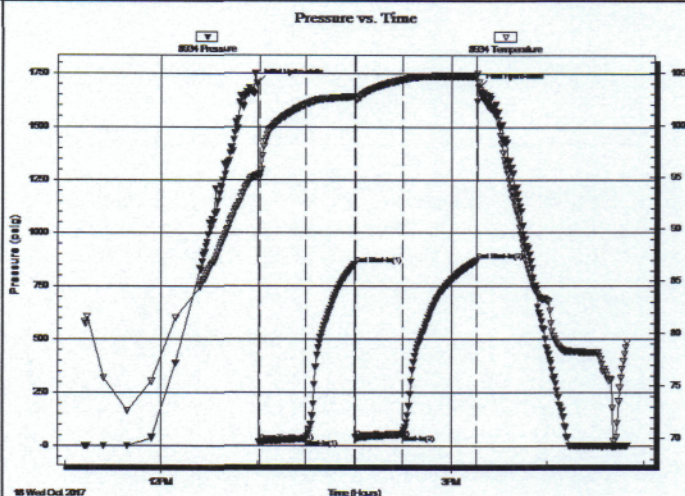
2-21S-11W Stafford KS
Rugan #1
 Job Ticket: 63048 **DST#: 3**
 Test Start: 2017.10.18 @ 11:12:00

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

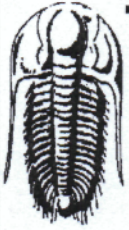
Recovery

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

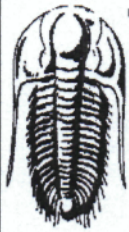
2-21S-11W Stafford KS
Rugan #1
Job Ticket: 63048 **DST#: 3**
Test Start: 2017.10.18 @ 11:12:00

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
			<u>Total Volume: 46.71 bbl</u>	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
Total Tool Length:	46.00				



**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

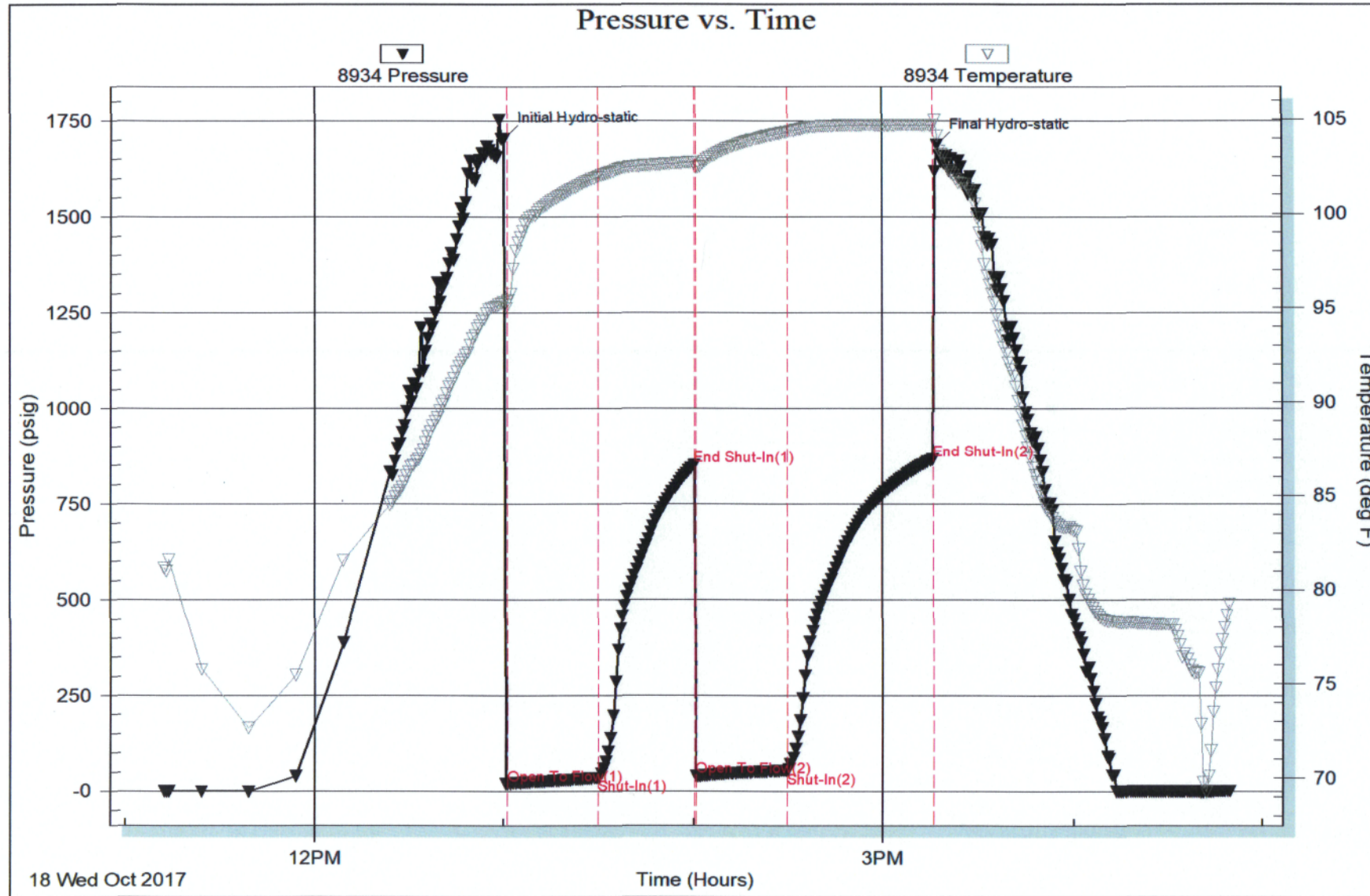
Mud Type: Gel Chem	Cushion Type:	Oil API: 51 deg API
Mud Weight: 10.00 lb/gal	Cushion Length: ft	Water Salinity: 23000 ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.99 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 6000.00 ppm		
Filter Cake: inches		

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.	#1	Owner	2 1/2 S W/4
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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.			
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Type Job	Surface	Charge To	Main oil operations
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Hole Size	12 1/4"	T.D.	473'
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Csg.	8 5/8"	Depth	473'
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Tbg. Size		Depth	
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Tool		Depth	
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Cement Left in Csg.	20'	Shoe Joint	20'	Cement Amount Ordered	500 60/40 9% CC 2% WJ
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Meas Line	Displace	28 3/4 BLS	1/2 H Flow-seal
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EQUIPMENT

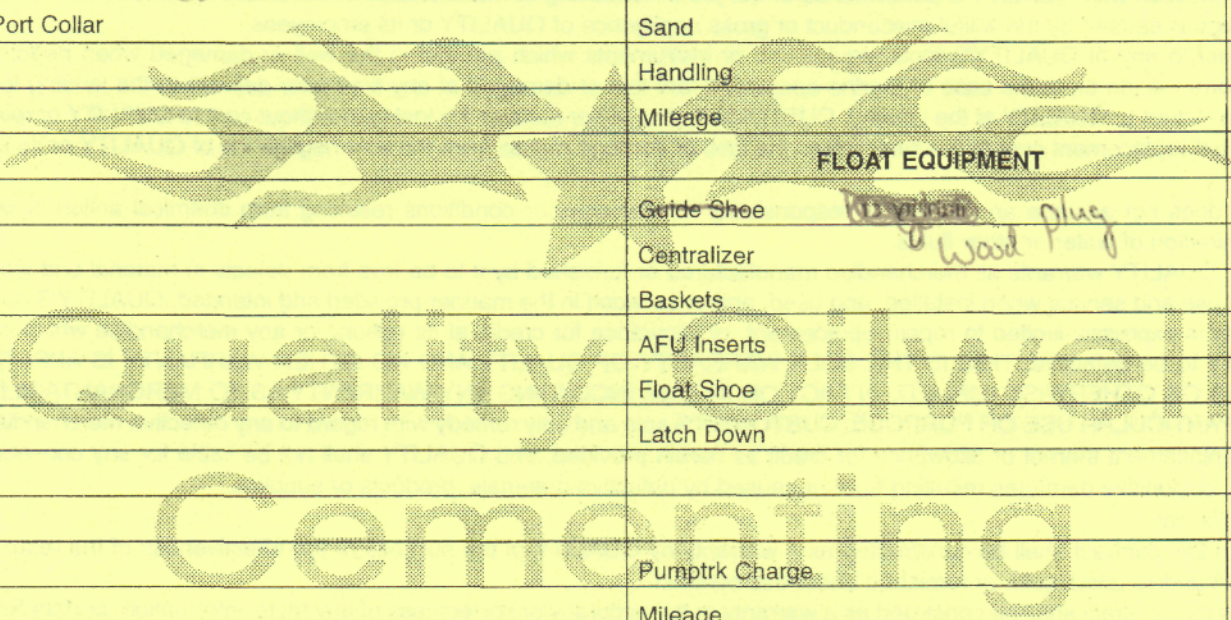
Pumptrk	18	No.	Cementer	Travis	Rick	Common
			Helper			Poz. Mix
Bulktrk	9	No.	Driver	David		Gel.
Bulktrk	3	No.	Driver	Doug		Calcium

JOB SERVICES & REMARKS

Remarks:	Cement did Circulate	Hulls
Rat Hole		Salt
Mouse Hole		Flowseal
Centralizers		Kol-Seal
Baskets	Mixed 450 SX	Mud CLR 48
D/V or Port Collar		CFL-117 or CD110 CAF 38

FLOAT EQUIPMENT

Guide Shoe	102 yd Wood Plug
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	



Pumptrk Charge	
Mileage	

Signature	Jay Wren	Tax	
		Discount	
		Total Charge	

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		745
Lease Ruggan				Well No. 1		Location Ellinwood 3 to 50 Rd, SE to 150 Rd	
Contractor Southwind #3		Owner 213 S 3rd Jct		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 Longstring		Charge To mai oil operations					
Hole Size 7 7/8"	T.D.	34170'		Street			
Csg. 5 1/2" 114# used	Depth	34631'		City			
Tbg. Size	Depth			State			
Tool	Depth			The above was done to satisfaction and supervision of owner agent or contractor.			
Cement Left in Csg. 31.92'	Shoe Joint 31.92'	Cement Amount Ordered 160 60/40 10% Salt 2% Gel 1/4# Fl					
Meas Line	Displace 83 3/4 Bcs	1000 gal mud Clar 48					
EQUIPMENT				Common			
Pumptrk 18	No. 1	Cementer Travis		Poz. Mix			
Bulktrk 14	No. 1	Driver Tony		Gel.			
Bulktrk p.u.	No. 1	Driver Rick		Calcium			
JOB SERVICES & REMARKS				Hulls			
Remarks:				Salt			
Rat Hole				Flowseal			
Mouse Hole				Kol-Seal			
Centralizers 1-9 11, 14+16				Mud CLR 48 1000 gal			
Baskets pipe on bottom break Circulation				CFL-117 or CD110 CAF 38			
DV or Port Collar pump 1000 gal mud Clar 48				Sand			
plug Rathole w/ 305# Cement 5 1/2"				Handling			
Casing w/ 1305# shut down work				Mileage			
pump + lines Displaced plug w/ 83 3/4 Bcs				FLOAT EQUIPMENT			
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			
X Signature [Signature]				Total Charge			