

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	Murfin Drilling Co., Inc.
Well Name	JONES 'A' 4-17
Doc ID	1483564

All Electric Logs Run

DIL
DUCP
MEL
BHCS



MDCI  
 Jones A #4-17  
 1980' FSL 1980' FEL  
 Sec. 17-T1S-R37W  
 3230' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3191	+39	-2	3192	+38	-3
B/Anhydrite	3222	+8	+2	3221	+9	+3
Neva	3642	-412	Flat	3641	-411	+1
Red Eagle				3706	-476	+2
Foraker				3758	-528	+3
Stotler				3903	-673	+2
Topeka	3977	-747	+2	3979	-749	Flat
Oread	4116	-886	+2	4116	-886	+2
Lansing	4191	-961	+1	4193	-963	-1
Stark	4415	-1185	-1	4414	-1184	Flat
Mound City	4471	-1241	Flat	4470	-1240	+1
Ft Scott	4587	-1357	+11	4592	-1362	+6
Oakley	4680	-1450	+4	4678	-1448	+6
RTD	4770	-1540				
LTD				4771	-1541	



**CEMENT TREATMENT REPORT**

Customer: <b>Murfin Drilling Co</b>	Well: <b>Jones 'A' #4-17</b>	Ticket: <b>ICT2392</b>
City, State: <b>Wichita</b>	County: <b>Cheyenne, KS</b>	Date: <b>9/12/2019</b>
Field Rep: <b>Jay</b>	S-T-R: <b>Sec17 - T1S - R37W</b>	Service: <b>Surface</b>

Downhole Information	
Hole Size:	12 1/4 in
Hole Depth:	295 ft
Casing Size:	8 5/8 in
Casing Depth:	295 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Depth:	ft
Displacement:	17.6 bbls

Calculated Slurry	
Weight:	275 # / sx
Water / Sx:	6.88 gal / sx
Yield:	1.41 ft <sup>3</sup> / sx
Bbls / Ft.:	0.0735
Depth:	295 ft
Annular Volume:	21.68 bbls
Excess:	220%
Total Slurry:	69.1 bbls
Total Sacks:	275 sx

Product	% / #	#
Class A	100.00	25850
Poz		
Gel	2.00	517
CaCl	3.00	776
Gypsum		
Metso		
Koi Seal		
Flo Seal	0.25	65
Salt (bww)		

				<b>Total</b>	<b>27,207</b>
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TIME	RATE	PSI	BBLs	REMARKS
13:45				Called for Job
15:00				Depart Oakley yard
17:00				Arrive on locn
17:05				JSA, discuss moving on, spotting & rigging up equipment
17:10				Move on, spot & rig up equipment
17:30				Rig-up complete. Rig TD 12 1/4" OH @ 295', circulate & condition hole.
18:00				Rig TOH w/ DP
18:40				Rig RIH w/ csg
19:20				Casing @ setting depth
19:25	6.5	75.0		Circulate & condition hole
19:39	3.5	85.0	5.0	Pump water
19:42	3.3	180.0	69.1	Mix & pump 200sx @ 14.8ppg. Y - 1.41cuft/sk, MW - 6.88g/sk
20:09	4.4	190.0		Displace w/ water
20:10	4.4	200.0	3.0	Cement returns to surface Note: 14bbls / 55sx of cement circulated to surface.
20:13			17.6	Shutdown & shut-in
20:15				Wash-up pumps & lines
20:25				JSA, discuss rigging down & racking up equipment
20:30				Rig down & rack up equipment
20:55				JSA, discuss journey management
21:00				Depart locn
				Thanks for calling Hurricane Services Inc

CREW		UNIT	SUMMARY		
Cementer:	Scott Green	74	Average Rate	Average Pressure	Total Fluid
Pump Operator:	Jesse Jones	230	4.42 bpm	146 psi	95 bbls
Bulk #1:	Neil	242			
Bulk #2:	Josh Mosier				



**CEMENT TREATMENT REPORT**

Customer: <b>Murfin Drilling Co</b>	Well: <b>Jones 'A' #4-17</b>	Ticket: <b>ICT2445</b>
City, State: <b>Wichita, KS</b>	County: <b>Cheyenne, KS</b>	Date: <b>9/21/2019</b>
Field Rep: <b>Jay / Nathan</b>	S-T-R: <b>Sec17 - T1S - R37W</b>	Service: <b>Production</b>

Downhole Information	
Hole Size:	7.875 in
Hole Depth:	4770 ft
Casing Size:	5.5 in
Casing Depth:	4761.08 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packoff:	
Depth:	ft
Displacement:	112.8 bbls

Calculated Slurry - Lead	
Weight:	12.00 # / sx
Water / Sk:	15.46 gal / sx
Yield:	2.56 ft <sup>3</sup> / sx
Bbls / Ft.:	0.0309
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	137.0 bbls
Total Sacks:	300 sx

Product	% / #	#
Class A	100.00	28200
Poz		
Gel		
CaCl	3.00	846
Gypsum	2.00	564
Metso	2.00	564
PhenoSeal	0.25	75
Flo Seal		
Sal (bww)		
<b>Total</b>		<b>30,249</b>

Calculated Slurry - Tail	
Weight:	14.80 # / sx
Water / Sk:	6.61 gal / sx
Yield:	1.60 ft <sup>3</sup> / sx
Bbls / Ft.:	0.0309
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	63.0 bbls
Total Sacks:	200 sx

Product	% / #	#
Class A	100.00	18800
Poz		
Gel	1.00	188
CAF-38	0.25	47
Gypsum	5.00	940
CAL-160	0.60	113
Kel Seal		
Gilsonite	5.00	1000
Sal (bww)	10.00	1101
<b>Total</b>		<b>22,189</b>

TIME	RATE	PSI	BBLs	REMARKS
6:00				Call out
10:30				Depart Oakley yard
12:45				Arrive on locn. Rig TOH w/ DP & laying down same
12:50				JSA, discuss moving on, spotting & rigging up equipment
13:00				Move on, spot & rig-up equipment
13:30				Rig-up complete. Wait on rig.
15:25				Rig laydown kelly, rathole & mousehole
16:05				Rig-up casing crew
16:30				Start to RH w/ 5.5" 15.5# casing
18:30				Casing @ setting depth
18:50	6.5	300.0		Circulate & condition hole
19:32	3.0	200.0	5.0	Pump H2O ahead
19:35		2,750.0		Pressure test
19:37	4.0	200.0	10.0	Pump mudflush spacer
19:39	3.0	220.0	5.0	Pump H2O spacer
19:44			13.0	Plug rathole w/ 30sx cement @ 12.0ppg
19:48			9.0	Plug mousehole w/ 20sx cement @ 12.0ppg
19:53	4.5	250.0	137.0	Mix & pump 300sx lead slurry @ 12.0ppg. Y - 2.56cuft/sk; MR - 15.46g/sk
20:25	4.5	250.0	55.0	Mix & pump 200sx tail slurry @ 14.8ppg. Y - 1.60cuft/sk; MR - 6.61g/sk
20:45				Shutdown. Wash-up pumps & lines. Release latchdown plug
20:50	5.6	200.0		Pump displacement
21:10	2.5	1,200.0	100.0	Slow rate
21:16		2,050.0	112.8	Bump plug
21:18				Bleed off. Plug latched. 1/2bbl back. Cement returns to cellar
21:20				Wash-up pumps & lines to pit
21:35				JSA, discuss rigging down & racking up equipment
21:40				Rig down & rack up equipment
22:10				JSA, discuss journey management
22:15				Depart locn
				Thanks for calling Hurricane Services Inc

CREW	UNIT	SUMMARY		
Operator: Scott Green	74	Average Rate	Average Pressure	Total Fluid
Pump Operator: Michael Rebarehek	230	4.2 bpm	770 psi	447 bbls
Tool J: Neil White	104 / 256			
Unit #2: Kale Ochs	742			



**WESLEY D. HANSEN Consulting Petroleum Geologist**

212 N. Market, Suite 257, Wichita, KS 67202

Cellular 316.772.6188  
whansen4651@sbcglobal.net

KGS  
AAPG #799479  
Kansas License #418



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

Well Name: Murfin Drilling Company, Inc. #4-17 Jones "A"

API: 15-023-21516

Location: 1980' FSL, 1980' FEL of Section 17-1S-37W

License Number: 30606

Region: Cheyenne Co, KS

Spud Date: 9-12-2019

Drilling Completed: 9-21-2019

Surface Coordinates: 1980' FSL, 1980' FEL of Section 17-1S-37W

Bottom Hole Vertical hole

Coordinates:

Ground Elevation (ft): 3225'

K.B. Elevation (ft): 3230'

Logged Interval (ft): 3870' To: RTD

Total Depth (ft): 4770'

Formation: Cherokee at RTD

Type of Drilling Fluid: Chemical - displaced at 3500'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

#### OPERATOR

Company: Murfin Drilling Co., Inc.

Address: 250 N. Water

Suite 300

Wichita, KS 67202

#### GEOLOGIST

Name: Wesley D. Hansen

Company: Wesley D. Hansen - Consulting Petroleum Geologist

Address: 212 N. Market, Suite 257

Wichita, KS 67202

Cellular: 316-772-6188



## COMMENTS

Contractor: Murfin Drilling Co., Inc. Rig #3  
Pusher: Jay Ruzicka

Surface Casing: 8 5/8" set at 298' w/275 sx  
Production Casing: 5 1/2" set at +/- 4770'

Mud by: Morgan Mud - Dave and Cade Lines were the engineers.

DST's by: Trilobite - James Winder was the tester.

Logs by: Pioneer Wireline (DIL, CN-CD, MEL, BHCS) - Ian Mabb was the engineer.

Deviation Surveys: 1 deg. @295'; 1/4 deg. @1650'; 1/2 deg. @2148'; 1/2 deg. @2647'; 1/4 deg. @3403'; 1 1/4 deg. @4264'; 3/4 deg. @4420'; 1 1/2 deg. @4770'

## BIT RECORD

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC	B37DX	295'	295'	4
2	7 7/8"	HTC	T506	3403'	3105'	42 1/2
3	7 7/8"	Smith	F12Y	4770'	1367'	73 1/4

## FORMATION TOPS AND STRUCTURAL COMPARISON

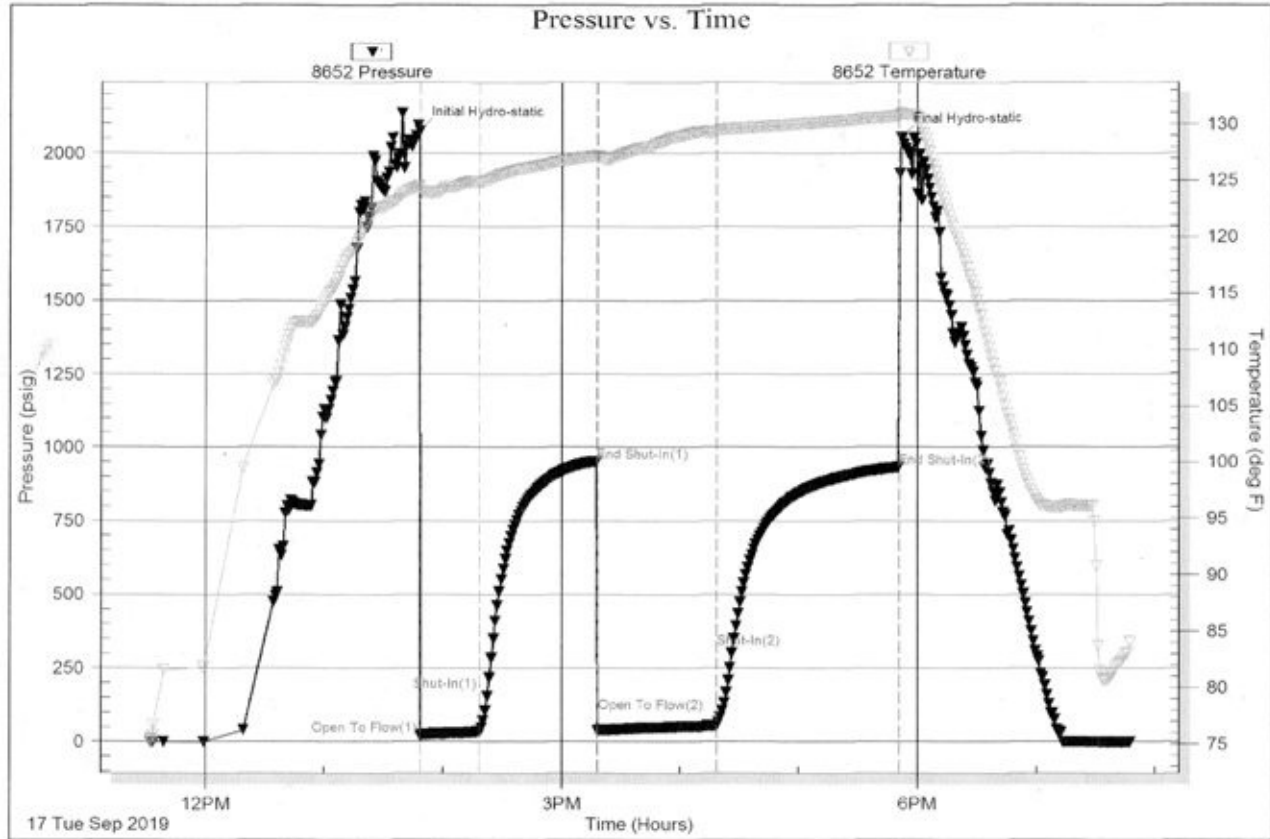
FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL Berexco Vada #1-17 1980' FSL, 1980' FWL Sec. 17-1S-37W 3216' KB
	Depth	Datum	Depth	Datum	
Anhydrite	3191'	+39	3192'	+38	3175' +41
B/Anhydrite	3222'	+8	3221'	+9	3210' +6
Neva (est.)	3642'	-412	3641'	-411	3628' -412
Red Eagle	not picked		3706'	-476	3694' -478
Foraker	not picked		3758'	-528	3747' -531
Stotler	not picked		3903'	-673	3891' -675
Topeka	3977'	-747	3979'	-749	3965' -749
Oread	4116'	-886	4116'	-886	4104' -888
Lansing	4191'	-961	4193'	-963	4178' -962
Stark Shale	4415'	-1185	4414'	-1184	4400' -1184
Mound City	4471'	-1241	4470'	-1240	4457' -1241
Fort Scott	4587'	-1357	4592'	-1362	4584' -1368
Oakley	4680'	-1450	4678'	-1448	4670' -1454
RTD	4770'	-1540			
LTD			4771'	-1541	

# DRILL STEM TESTS

DST No. 1 Lansing "A" and "D"  
Interval: 4148'-4264'  
Times: 30-60-60-90  
Recovery: 70' SOCM (3g, 6o, 91m)  
FP: 21-34/37-53 SIP: 952-931  
HP: 2075-2053 BHT: 131 deg. F

IFP: 1/2 inch blow built to 1 1/2 inches  
ISIP: no return blow  
FFP: blow built to 1/4 inch  
FSIP: no return blow

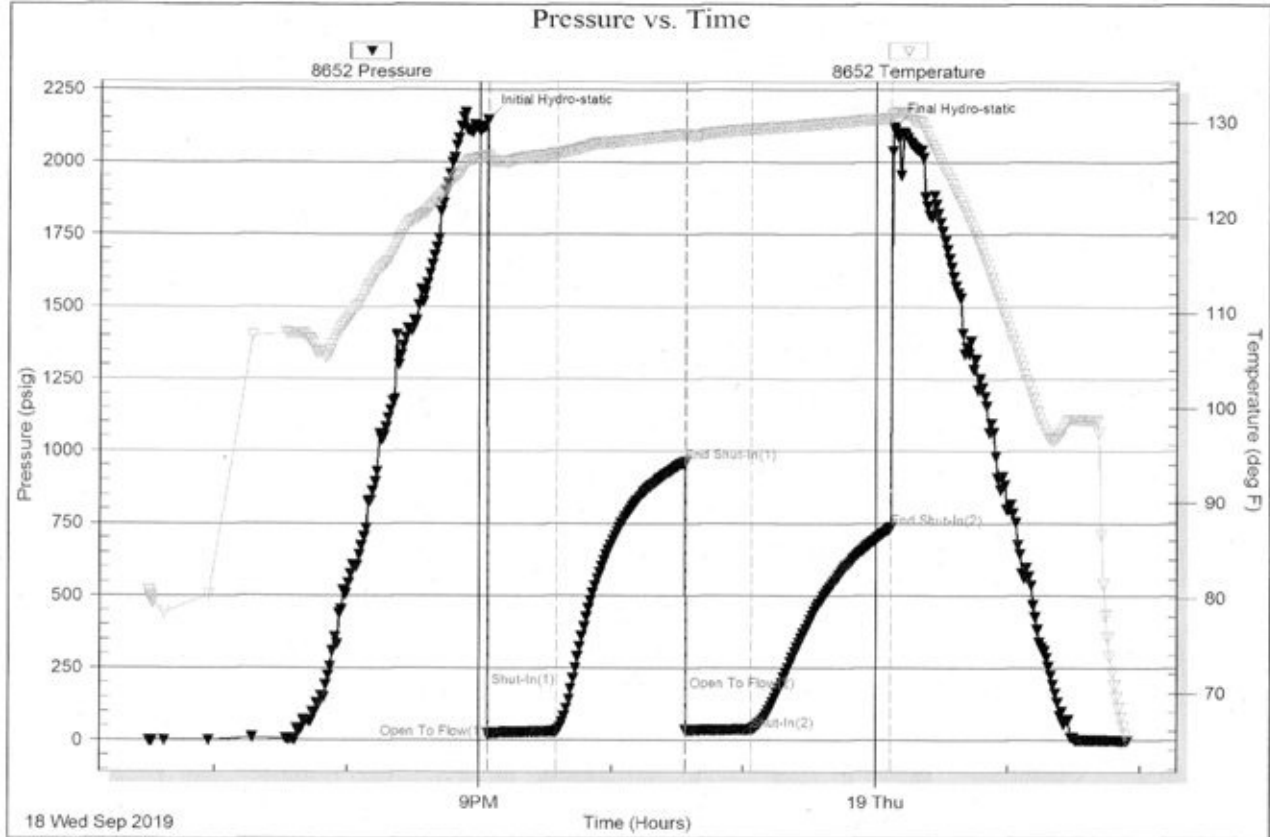
Serial #: 8652      Outside      Murfin Drilling Co., Inc.      Jones 'A' #4-17      DST Test Number: 1



# DRILL STEM TESTS

DST No. 2 Lansing "G" - "H" - "J"  
Interval: 4262'-4420'  
Times: 30-60-30-60  
Recovery: 30' mud w/trace oil  
FP: 23-30/34-37 SIP: 962-735  
HP: 2147-2118 BHT: 130 deg. F

IFP: weak blow built to 1 1/4 inch  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow

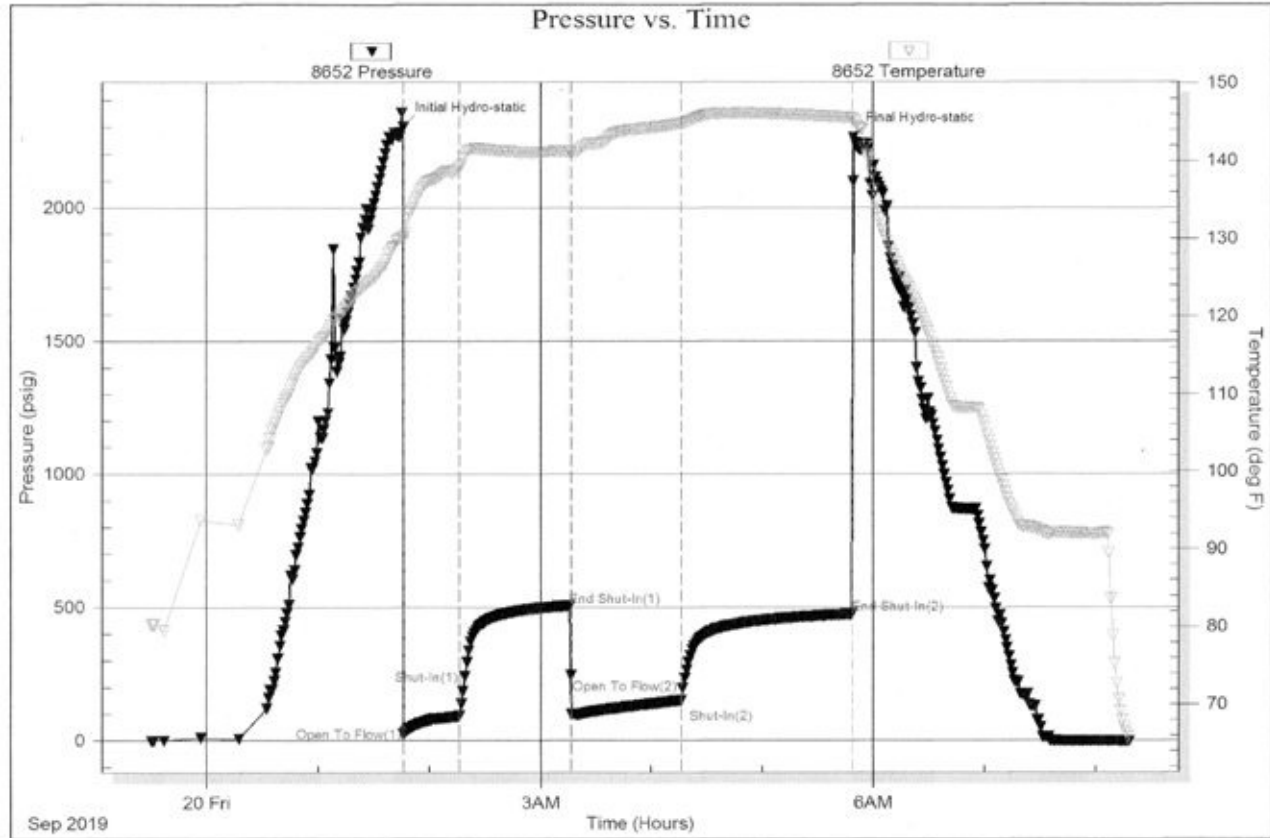


# DRILL STEM TESTS

DST No. 3 Fort Scott  
 Interval: 4573'-4611'  
 Times: 30-60-60-90  
 Recovery: 500' GIP, 145' CGO (34g, 66o); 225'  
 G&MCO (20g, 24m, 56o)  
 FP: 24-92/98-151 SIP: 505-474  
 HP: 2302-2263 BHT: 146 deg. F

IFP: blow built to B.O.B. in 14.75 minutes,  
 total of 23.25 inches  
 ISIP: blow built to 1/4 inch then died back  
 FFP: blow built to B.O.B. in 10.25 minutes,  
 total of 43.75 inches  
 FSIP: blow built to 2 inches, then slowly died  
 back

Serial #: 8652      Outside      Murfin Drilling Co., Inc.      Jones 'A' #4-17      DST Test Number: 3












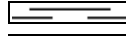




Triobite Testing, Inc



Ref. No. 65586

Printed: 2019.09.20 @ 08:37:56

## ROCK TYPES

 Congl  
 Igne  
 Anhy  
 Cht  
 Coal  
 Congl  
 Gyp

 Lmst  
 Salt  
 Shale  
 Shcol  
 Siltstone  
 red sst  
 Sst

 Carb sh  
 Dol  
 Dtd  
 Grayshale  
 Sandylms  
 Redshale  
 Greenshale

 Sltstn  
 Shlyslts  
 Sndy/siltyshale  
 Silty dolo  
 Shy dolo  
 Shaly ls  
 Dolomite

### ACCESSORIES

#### FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant

- Strom
- Fuss
- Oomold

#### MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp

- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- red shale
- green shale
- Sltstn

#### STRINGER

- Anhy
- Arg

### OTHER SYMBOLS

#### INTERVALS

- Core
- Dst
- Dst

#### EVENTS

- Rft
- Dst top & bottom

#### OIL SHOWS

- Even
- Spotted
- Quest.

- Trace
- Dead
- Gas show

Curve Track 1 ROP (min/ft)	Depth	Lithology	Geological Descriptions	Remarks
	<p>3150</p> <p>3200</p>		<p style="text-align: center;">Oil Shows</p>	<p><b>Report Depth and Activity</b></p> <p>9-12-2019 MIRT, Spud at 1:30 PM, surface set at 298'</p> <p>9-13 Drlg. @ 450'</p> <p>9-14 Drlg. @ 2240'</p> <p>9-15 Bit trip @ 3403'</p> <p>9-16 Drlg. @ 3865'</p> <p>9-17 Short trip at 4264' for DST #1</p> <p>9-18 Drlg. @ 4345'</p> <p>9-19 Drlg. @ 4445' post DST #2</p> <p>9-20 DST #3 @ 4611'</p> <p>9-21 RTD @ 4770', logging complete, prepare to run 5 1/2" casing</p> <p><b>Anhydrite 3191' (+39)</b></p>

Base/Anhydrite  
3222' (+8)

Base/Anhydrite 3222' (+8)

3250

Depth Change

ROP (min/ft) 0 10

3800

3850

CONN

CONN

CONN

3900

Sh: red, silty IP, firm to occ soft and mushy; minor tan, offwhite frxn Ls

very pred. Sh: AA, some gray; Ls: some red tinted dense

influx Ls: tan, lt gray gran., NVP, N.S.; decr. shale %

Ls: tan, lt brn, gray gran. NVP; influx gray dense, silty and shaly

Ls: various tan, gray, brn pred. gran. with poor-NVP, with spotty dead black, gilsonitic stain IP; some gray, brn more cryptoxln; Sh: red AA, some more soft mushy

Sh: influx red, incr. soft mushy; decr. Ls %

flood Ls: common tan, offwhite gran. with spotty dead stain AA, occ tarry, nfo, no odor; influx offwhite, tan mic-vfxln dense and white chalky; much decr. Sh %, some lt-med gray

Ls: mix AA with spotty dead stain; Sh: incr. % silty red, lt to med gray; scatt. micac. and pyritic Siltst

Ls: various gran. AA with spotty dead stain; more lt gray, tan mic-vfxln dense, NVP, N.S.; occ chips with subsat. black tarry stain, nfo, no odor; Sh: red, gray

Tripped PDC bit at 3403'  
Strap was 1.33' long to board at 3403'

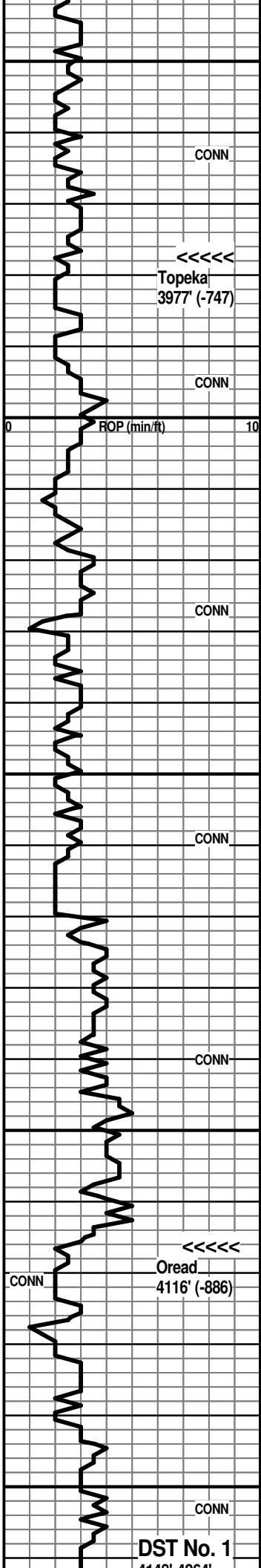
start 1' drilling time

7:00 AM at 3865' on 9-16-2019

start 10' samples

Morgan Mud Check at 3921'  
9:35 AM on 9-16-2019

wt	vis	wl	pH	chl
8.9	62	6.8	11.5	600
PV	YP	GelS	lcm	solids
19	21	13/29	3#	4.3%



3950

CONN

TOPEKA 3977' (-747)

CONN

ROP (min/ft)

4000

CONN

4050

CONN

4100

CONN

Oread 4116' (-886)

CONN

4150

CONN

DST No. 1

flood Ls: tan, offwhite fn-vfxln and gran with patchy to subsat. tarry stain, nfo, no odor; much decr. Sh %

Ls: mix AA with shows AA; some new gray, tan cryptoxln, NVP; Sh: incr. % red, some silty, some soft mushy, lt gray

flood Sh: soft mushy red; trace offwhite vfg dolomitic Sst; very minor Ls %

very pred. shale AA; minor tan, gray gran. to cryptoxln

flood Ls: various tan, lt brn, lt gray vf-cryptoxln. some gran., poor-NVP, N.S.; decr. red shale

Ls: various dense AA; some offwhite mic-vfxln dense; Sh: incr. % red, red-brn

Ls: mix tan, lt gray cryptoxln; lesser offwhite, tan mic-vfxln dense; Sh: AA

Ls: flood tan cryptoxln; lesser offwhite mic-vfxln dense, subchalky to chalky; minor shale

Ls: mix AA with some greenish-gray cryptoxln; Sh: influx red, red-brn, some lt gray

Ls: pred. tan, lt gray cryptoxln; some tan, offwhite gran., poor-NVP, N.S.; influx Sst: lt red vfg calcar.; Sh: red

flood Sst: lt red, offwhite, lt gray vfg, N.S.; tight cryptoln Ls's AA

decr. Sst AA; Ls: tan, cryptoxln; tan, lt gray gran. poor-NVP, N.S.; 2-3 chips tan gran. with patchy tarry stain (new??); Sh: incr. red, red-brn

Ls: influx tan, lt gray, lt brn cryptoxln, NVP; 2 chips offwhite gran. with spotty tarry stain (new??)

Ls: influx brn, gray silty/shaly

mix various cryptoxln AA; brn, gray silty/shaly AA; Sh: red, red-brn;

Sh: red, red-brn silty IP; Ls: lt to med brn, gray, tan cryptoxln, mottled yellow/brn gran., NVP; 1-2 chips with patchy, tarry stain AA, (cavings?)

pred. Sh: red, red-brn silty and shaly Siltst; much decr. Ls %

Ls: influx offwhite, tan fnxln, some ppt por. with speckled black dead stain; lesser lt to med brn cryptoxln

flood Ls: lt to med brn, lt gray pred. cryptoxln, NVP, N.S.

Ls: various cryptoxln AA; some offwhite subchalky

Ls: more gray, lt brn cryptoxln, NVP; Sh: sl influx red, red-brn, some gray

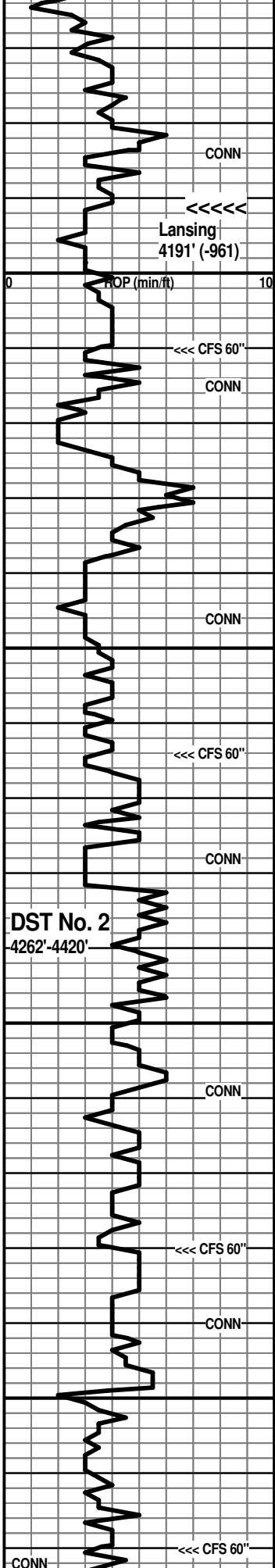
Ls: lt gray, tan, lt brn pred. cryptoxln, NVP; Sh: AA

Topeka 3977' (-747)

Oread 4116' (-886)

4148'-4264'

D  
S  
T  
#  
1



Lansing  
4191' (-961)

CONN

ROP (min/ft)

<<<<<<  
CFS 60"

CONN

CONN

<<<<<<  
CFS 60"

CONN

DST No. 2  
4262'-4420'

CONN

<<<<<<  
CFS 60"

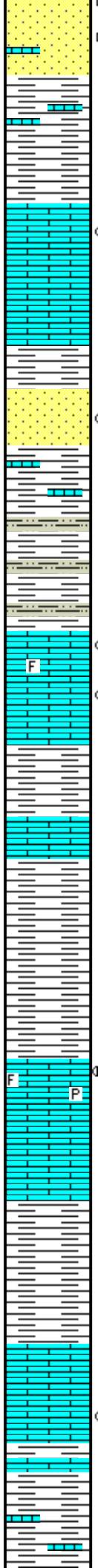
CONN

D  
S  
T  
#  
2

4350

<<<<<<  
CFS 60"

CONN



Sst: good influx offwhite, lt gray vfg calcar., many clusters with spotty dead stain, nfo, no odor; decr. Ls and shale

Sh: abund. red, red-brn silty IP; decr. Sst AA; still common various cryptoxln Ls's AA

pred. Sh: red, dark red-brn, some mushy red, vc gray

flood Ls: pred. tan, lt gray cryptoxln, NVP; lesser offwhite mic-vfxln dense, N.S.; scatt. tan gran. with some inter-particle and ppt por. with spotty brn stain, vsf sfo; occ tan cryptoxln with stain in fract. and on chip edge

Ls: tan, lt brn cryptoxln, NVP; incr. offwhite mic-vfxln dense, subchalky

Sh: red-brn

Sst: offwhite, lt gray vfg with spotty to sat. black dead stain, nfo, no odor

Sh: red, red-brn, occ lt gray, gray-green; common Ls: tan, lt to med brn cryptoxln

Sh: red-brn, silty IP; with red-brn Siltst, vf sandy and micac.; occ gray, lt green shale

Shale and Siltst AA

Ls: tan, lt gray cryptoxln to gran. with poor inter-particle and vug. por. with brn to black stain;

Ls: offwhite, tan gran., sl foss. with vug. and some fossil moldic por. with patchy brn to black stain, vsf sfo; other tan cryptoxln and offwhite subchalky to chalky with N.S.

Sh: red, red-brn, silty IP; lt to med gray

Ls: influx offwhite mic-vfxln dense

Sh: red, red-brn, some soft and mushy; lt to med gray

Sh: flood red-brn soft, mushy

Ls: offwhite, tan fvxln, foss. IP with poor-fair inter-particle and vug. por. with spotty brn to black stain, sl sfo, no odor, occ finely pyritic; common offwhite mic-vfxln dense subchalky, some with spotty black stain

Ls: influx offwhite subchalky to chalky with more tan, lt gray vf-cryptoxln, NVP, N.S.

Ls: mix tan, lt brn, lt gray cryptoxln, lesser offwhite dense AA; N.S.

Ls: lt gray cryptoxln and lt gray vfxln, dense, shaly; Sh: lt to med gray

Sh: good influx red, red-brn, lt to med gray

Sh: AA; some lt green and soft, mushy red

Ls: mix tan, lt brn cryptoxln to sl gran. and offwhite, tan mic-vfxln dense, NVP, N.S.

Ls: mix AA; rare offwhite vf-cryptoxln with spotty black stain, nfo, no odor; Sh: incr. % lt to med gray, gray-green, red-brn

flood Sh: red, red-brn; lesser med gray; some Ls: pred. tan, lt brn, lt gray cryptoxln, NVP, N.S.

### Lansing 4191' (-961)

DST No. 1 Lansing "A" and "D"  
Interval: 4148'-4264'  
Times: 30-60-60-90  
IFP: 1/2 inch blow built to 1 1/2 inches  
ISIP: no return blow  
FFP: blow built to 1/4 inch  
FSIP: no return blow  
Recovery: 70' SOCM (3g, 6o, 91m)  
FP: 21-34/37-53 SIP: 952-931  
HP: 2075-2053 BHT: 131 deg. F

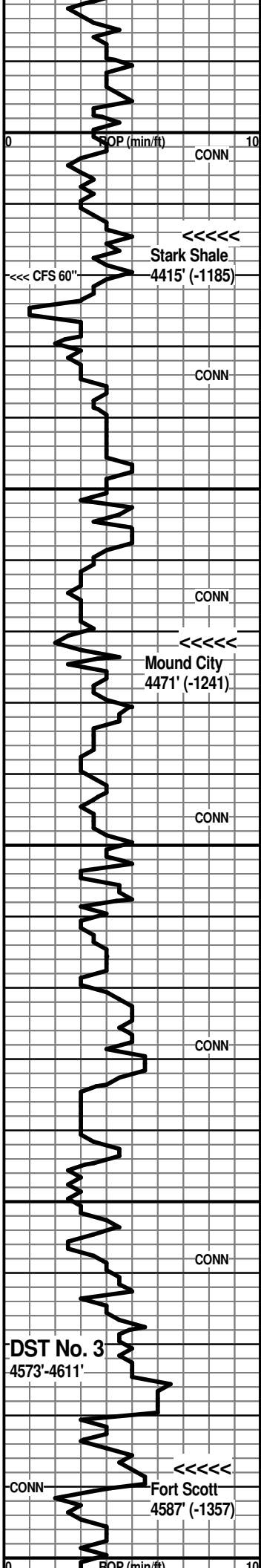
7:00 AM at 4264' on 9-17-2019

Morgan Mud Check at 4264'  
11:00 AM on 9-17-2019  
wt vis wl pH chl  
9.0 80 7.2 11.0 1000  
PV YP GelS lcm solids  
26 22 13/34 2# 5.0%

7:00 AM at 4345' on 9-18-2019

DST No. 2 Lansing "G" - "H" - "J"  
Interval: 4262'-4420'  
Times: 30-60-30-60  
IFP: weak blow built to 1 1/4 inch  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow  
Recovery: 30' mud w/trace oil  
FP: 23-30/34-37 SIP: 962-735  
HP: 2147-2118 BHT: 130 deg. F





Sh: very pred. red, red-brn

very shaly AA with sl influx Ls: tan, offwhite fnxn with patchy to sat. brn stain, vsl sfo, no odor, gen. poor visible por.

Ls: flood offwhite, tan mic-vfxln dense, subchalky to chalky IP; lesser tan, lt gray cryptoxln, NVP, N.S.

Sh: med to dark gray, some black; red-brn; Sst: offwhite, lt gray vfg calcar., N.S.

Sh: influx red-brn silty to vfg sandy; other vc gray, green, red

Sh: mix AA

Ls: flood offwhite, lt gray mic-vfxln dense; lesser lt gray, lt brn cryptoxln; Sh: red-brn silty, sandy AA

Ls: lt gray, tan, lt brn cryptoxln; lesser offwhite mic-vfxln dense, subchalky to occ chalky; one chip tan cryptoxln with stain (likely cave)

Sh: red, red-brn, vc gray; silty, vf sandy red-brn; Ls: tan, lt gray cryptoxln and offwhite fn gran. to dense

flood Ls: mix tan, lt brn cryptoxln and offwhite mic-vfxln dense, subchalky to chalky, N.S.

Ls: various dense AA; Sh: influx pred. red-brn, some red-maroon; lt to med gray

flood Ls: lt gray, tan, lt brn cryptoxln; lesser offwhite, lt gray mic-vfxln dense, N.S.

Ls: mix various AA; Sh: red, red-brn, red-maroon, purplish-gray; trace bryozoan foss. fragments

Ls/Sh mix AA

various shales AA; Ls: mix offwhite, lt gray vfxln to dense subchalky

Sh: strong influx red-brn, red-maroon, some silty

Sh: various AA, silty to vf sandy; minor Ls

Sh: very pred. red silty to vf sandy; minor tan, lt gray cryptoxln Ls

Ls: influx tan, lt brn, lt gray sl gran., NVP; other offwhite chalky; decr. Sh % AA

Ls: flood lt gray mic-vfxln dense, silty and shaly

Ls: lt gray silty and shaly AA; other lt gray, brn cryptoxln; Sh: good influx med to dark gray

4600' spl - Sh: vc gray, red-brn, green-gray; Ls: several chips tan fn gran., finely oolitic IP with ppt brn stain, sl sfo, no odor

10' spl - Ls: more tan fn gran., oolitic IP with some inter-particle and inter-oolitic por., with ppt to subsat. stain sl to fair sfo, no odor; flood lt to med gray vf-cryptoxln,

**Morgan Mud Check at 4391'**  
 11:00 AM on 9-18-2019  
 wt vis wl pH chl  
 9.1 62 7.2 10.5 1300  
 PV YP GelS lcm solids  
 22 20 10/38 3# 5.7%

**Stark Shale 4415' (-1185)**

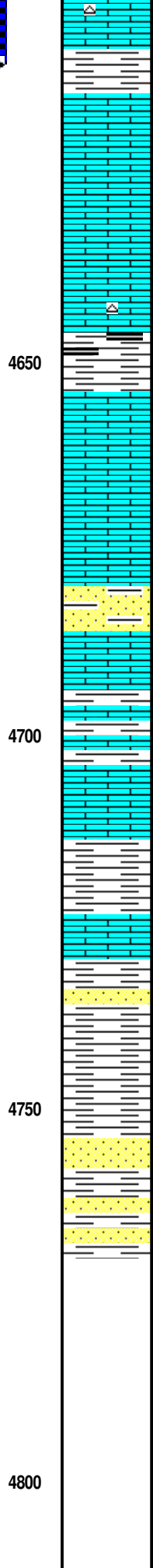
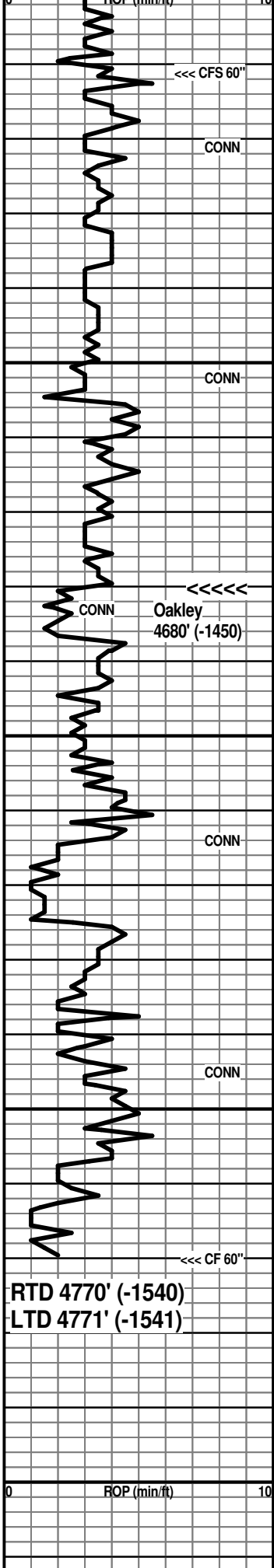
7:00 AM at 4445' on 9-19-2019

**Mound City 4471' (-1241)**

**Morgan Mud Check at 4498'**  
 10:45 AM on 9-19-2019  
 wt vis wl pH chl  
 8.9 63 6.8 11.5 1000  
 PV YP GelS lcm solids  
 23 22 13/42 3# 4.3%

DST No. 3 Fort Scott  
 Interval: 4573'-4611'  
 Times: 30-60-60-90  
 IFP: blow built to B.O.B. in 14.75 minutes, total of 23.25 inches  
 ISIP: blow built to 1/4 inch then died back  
 FFP: blow built to B.O.B. in 10.25 minutes, total of 43.75 inches  
 FSIP: blow built to 2 inches, then slowly died back  
 Recovery: 500' GIP, 145' CGO (34g, 66o); 225' G&MCO (20g, 24m, 56o)  
 FP: 24-92/98-151 SIP: 505-474  
 HP: 2302-2263 BHT: 146 deg. F

**Fort Scott 4587' (-1357)**



NVP, N.S.; scatt. mottled tan/orange chert

Sh: lt to med gray, lesser red-brn, red-maroon; Ls: sl influx offwhite, tan, lt brn gran., poor-NVP, N.S.

flood Ls: offwhite, lt gray mic-vfxln dense, NVP, N.S.

Ls: offwhite, lt gray mic-vfxln dense AA; with lt gray, tan cryptoxln

Ls: mix AA; trace lt brn opq chert; Sh: sl influx dark gray to black

Ls: various tan, gray, brn gran. and cryptoxln, poor-NVP, N.S.; Sh: fairly minor red-brn, med gray

Ls: mix AA with new offwhite, tan mic-vfxln dense, subchalky to occ chalky

Ls: various cryptoxln, gran. and dense AA; Sh: sl incr. dark gray

Sst: tan, lt gray vfg well cemented, quartzitic IP, silica to dolomitic cement; some offwhite, lt gray vfg, calcar.; Ls: tan, offwhite sl gran. to cryptoxln

Ls: lt gray, tan, lt brn gran. IP, pred. cryptoxln; lesser offwhite subchalky; Sh: sl influx mushy red

Ls: mix lt to med brn, lt gray cryptoxln

Ls: various AA; Sh: sl incr. red-brn, med to dark gray, some black, dark red-maroon

Sh: red-brn, red-maroon, lt to med gray, lt maroon; Ls: influx offwhite subchalky to chalky

Ls: gray, gray-brn cryptoxln, NVP; offwhite, lt gray mic-vfxln dense, some chalky; Sh: mix AA; Sst: occ offwhite vfg calcar.

Sh: good influx dark red-brn, dark red-maroon, lt to med gray; decr. Ls %; Sst: scatt. offwhite, lt gray fg calcar., N.S.

Sst: tan, offwhite, lt gray quartzitic, hard, NVP;

Sst: flood dark red-brn, brn vfg shaly to sandy shale; with vc shales AA

Because of the positive results of DST No. 3, 5 1/2" casing was set for completion.

Respectfully submitted,

Wesley D. Hansen  
Petroleum Geologist  
Kansas License No. 418

7:00 AM at 4611' on 9-20-2019  
Morgan Mud Check at 4611'  
10:05 AM on 9-20-2019  
wt vis wl pH chl  
9.1 75 6.4 10.5 1000  
PV YP GelS lcm solids  
25 24 12/38 2# 5.7%

**Oakley 4680' (-1450)**

RTD reached at 8:50 CDT - CFS 60" - CTCH total of 90" - Survey - TOFL



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Wes Hansen

### **Jones 'A' #4-17**

#### **17-1s-37w Cheyenne,KS**

Start Date: 2019.09.17 @ 11:32:00

End Date: 2019.09.17 @ 19:47:15

Job Ticket #: 65584                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2019.09.23 @ 14:27:57

Murfin Drilling Co., Inc.  
17-1s-37w Cheyenne,KS  
Jones 'A' #4-17  
DST # 1  
LKC "A - D"  
2019.09.17



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
 250 N. Water STE 300  
 Wichita, KS 67202  
 ATTN: Wes Hansen

**17-1s-37w Cheyenne, KS**  
**Jones 'A' #4-17**  
 Job Ticket: 65584      **DST#: 1**  
 Test Start: 2019.09.17 @ 11:32:00

## GENERAL INFORMATION:

Formation: **LKC "A - D"**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 13:48:15 Tester: James Winder  
 Time Test Ended: 19:47:15 Unit No: 83  
 Interval: **4148.00 ft (KB) To 4264.00 ft (KB) (TVD)** Reference Elevations: 3230.00 ft (KB)  
 Total Depth: 4264.00 ft (KB) (TVD) 3225.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

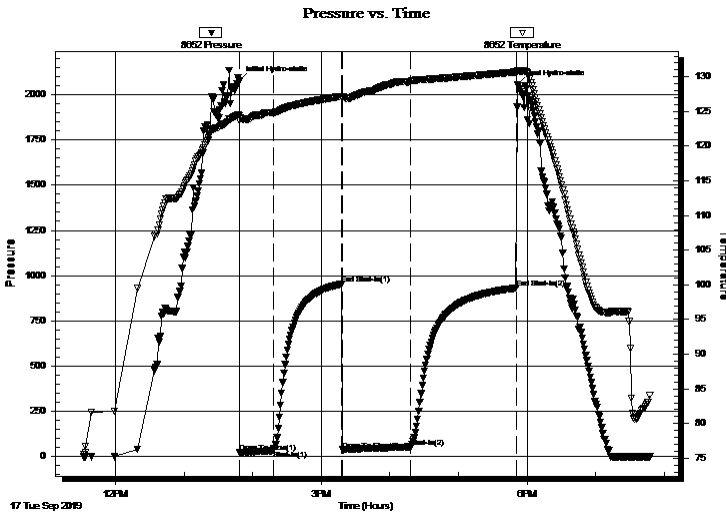
## Serial #: 8652

Outside

Press@RunDepth: 53.45 psig @ 4149.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2019.09.17 End Date: 2019.09.17 Last Calib.: 2019.09.17  
 Start Time: 11:32:05 End Time: 19:47:14 Time On Btm: 2019.09.17 @ 13:48:00  
 Time Off Btm: 2019.09.17 @ 17:51:45

TEST COMMENT: 30 - IF: 1/2" Blow at open, built to 1 1/2"  
 60 - IS: No blow back  
 60 - FF: Blow built to 1/4"  
 90 - FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2075.28	124.45	Initial Hydro-static
1	21.25	Open To Flow (1)	
31	33.58	124.82	Shut-In(1)
90	952.46	127.19	End Shut-In(1)
91	36.65	127.02	Open To Flow (2)
151	53.45	129.35	Shut-In(2)
243	931.19	130.69	End Shut-In(2)
244	2053.05	130.92	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
70.00	SOCM 91% m, 6% o, 3% g	0.34

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65584

**DST#: 1**

ATTN: Wes Hansen

Test Start: 2019.09.17 @ 11:32:00

## Tool Information

Drill Pipe:	Length: 3951.00 ft	Diameter: 3.80 inches	Volume: 55.42 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 22000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 84000.00 lb
			<u>Total Volume: 56.30 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4148.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	116.00 ft			
Tool Length:	145.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4120.00	
Shut In Tool	5.00			4125.00	
Hydraulic tool	5.00			4130.00	
Jars	5.00			4135.00	
Safety Joint	3.00			4138.00	
Packer	5.00			4143.00	29.00 Bottom Of Top Packer
Packer	5.00			4148.00	
Stubb	1.00			4149.00	
Recorder	0.00	6625	Inside	4149.00	
Recorder	0.00	8652	Outside	4149.00	
Perforations	15.00			4164.00	
Blank Spacing	95.00			4259.00	
Perforations	2.00			4261.00	
Bullnose	3.00			4264.00	116.00 Bottom Packers & Anchor

**Total Tool Length: 145.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65584

**DST#: 1**

ATTN: Wes Hansen

Test Start: 2019.09.17 @ 11:32:00

## 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: 80.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
70.00	SOCM 91%m, 6%o, 3%g	0.344

Total Length: 70.00 ft      Total Volume: 0.344 bbl

Num Fluid Samples: 0

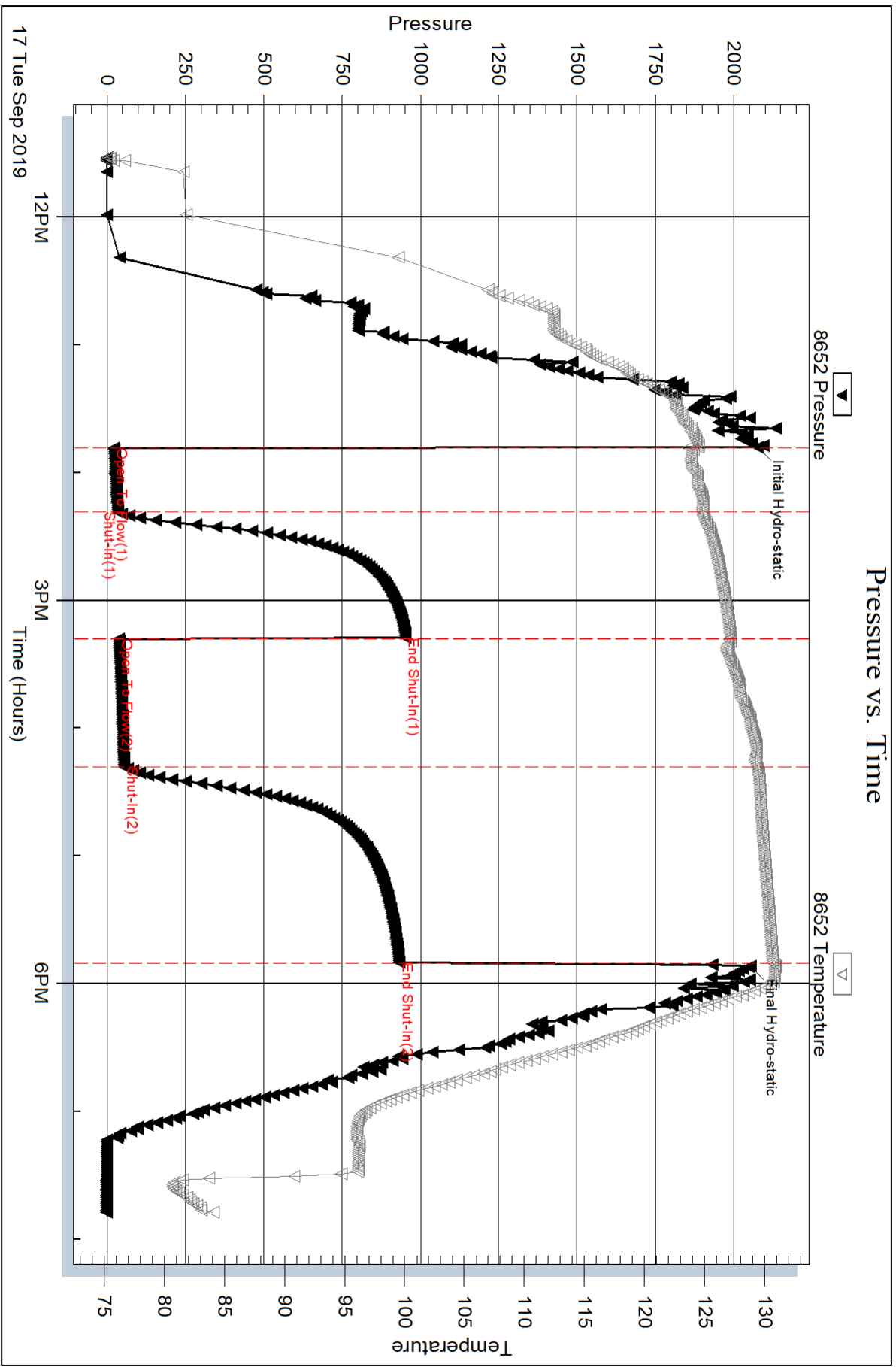
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





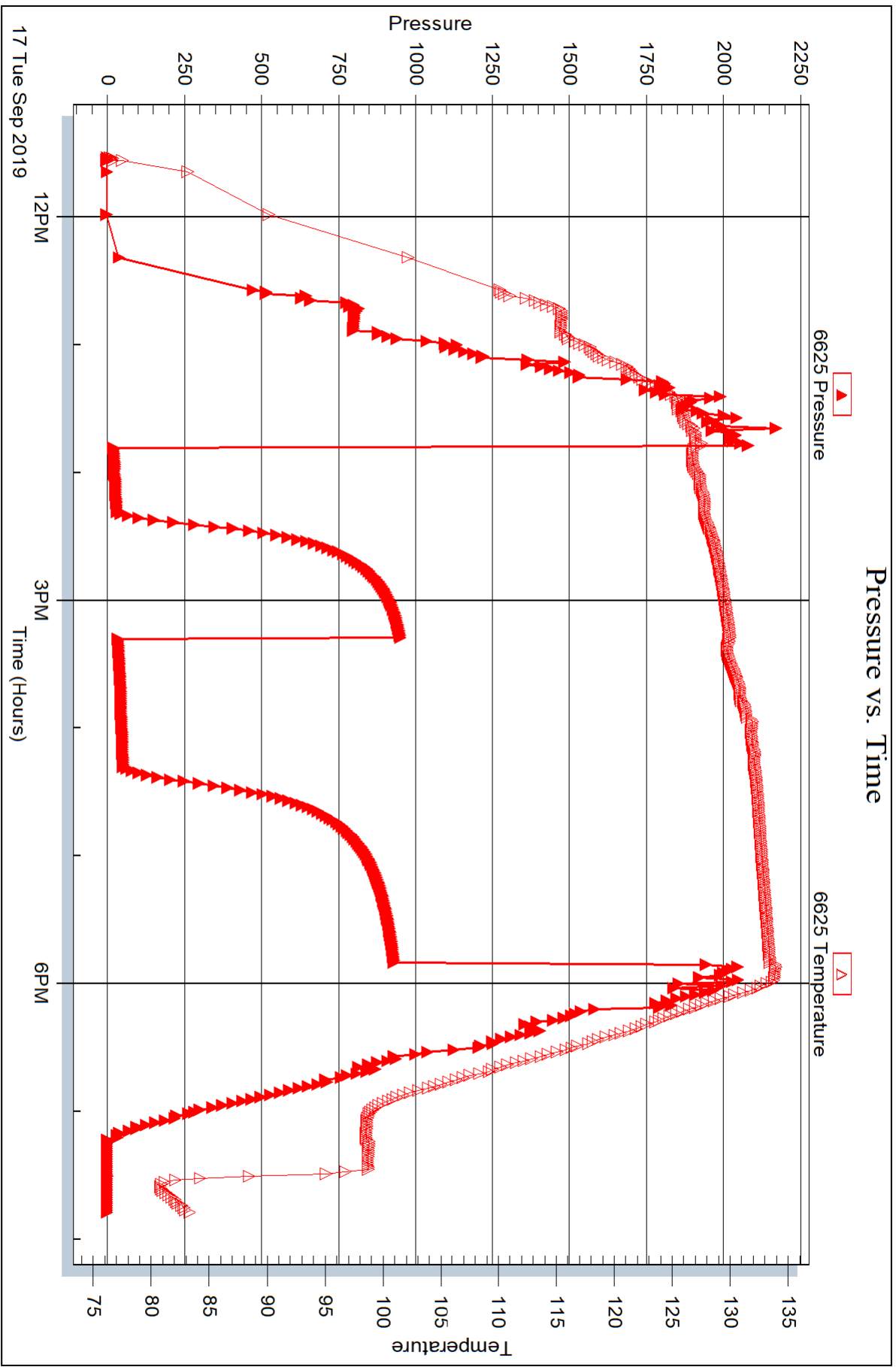
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Jones 'A' #4-17

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 65584

Printed: 2019.09.23 @ 14:27:58



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Wes Hansen

### **Jones 'A' #4-17**

#### **17-1s-37w Cheyenne,KS**

Start Date: 2019.09.18 @ 18:30:00

End Date: 2019.09.19 @ 01:55:00

Job Ticket #: 65585                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2019.09.23 @ 14:23:49



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N. Water STE 300  
Wichita, KS 67202  
ATTN: Wes Hansen

**17-1s-37w Cheyenne, KS**  
**Jones 'A' #4-17**  
Job Ticket: 65585      **DST#: 2**  
Test Start: 2019.09.18 @ 18:30:00

## GENERAL INFORMATION:

Formation: **LKC "G - J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 21:03:45  
Time Test Ended: 01:55:00  
Interval: **4262.00 ft (KB) To 4420.00 ft (KB) (TVD)**  
Total Depth: 4420.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: James Winder  
Unit No: 83  
Reference Elevations: 3230.00 ft (KB)  
3225.00 ft (CF)  
KB to GR/CF: 5.00 ft

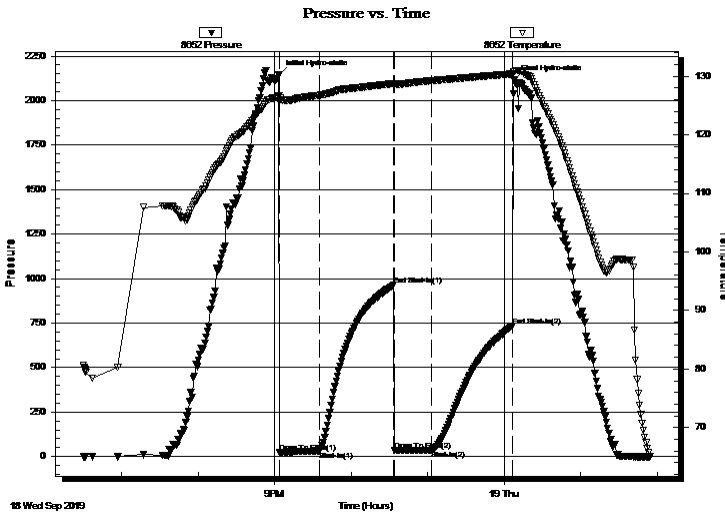
## Serial #: 8652

Outside

Press@RunDepth: 36.56 psig @ 4263.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2019.09.18      End Date: 2019.09.19      Last Calib.: 2019.09.19  
Start Time: 18:30:05      End Time: 01:54:59      Time On Btm: 2019.09.18 @ 21:03:30  
Time Off Btm: 2019.09.19 @ 00:08:00

TEST COMMENT: 30 - IF: 1/2" Blow at open, built to 1 1/4"  
60 - IS: No blow back  
30 - FF: No blow  
60 - FS: No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2147.20	126.62	Initial Hydro-static
1	22.66	125.70	Open To Flow (1)
32	29.94	126.72	Shut-In(1)
90	962.06	128.75	End Shut-In(1)
91	33.94	128.45	Open To Flow (2)
120	36.56	129.23	Shut-In(2)
184	735.01	130.39	End Shut-In(2)
185	2118.25	130.80	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud w /trace oil 100% m	0.15

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65585

**DST#: 2**

ATTN: Wes Hansen

Test Start: 2019.09.18 @ 18:30:00

## Tool Information

Drill Pipe:	Length: 4074.00 ft	Diameter: 3.80 inches	Volume: 57.15 bbl	Tool Weight: 2500.00 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: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 58.03 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4262.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	158.00 ft			
Tool Length:	187.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4234.00	
Shut In Tool	5.00			4239.00	
Hydraulic tool	5.00			4244.00	
Jars	5.00			4249.00	
Safety Joint	3.00			4252.00	
Packer	5.00			4257.00	29.00 Bottom Of Top Packer
Packer	5.00			4262.00	
Stubb	1.00			4263.00	
Recorder	0.00	6625	Inside	4263.00	
Recorder	0.00	8652	Outside	4263.00	
Perforations	24.00			4287.00	
Blank Spacing	128.00			4415.00	
Perforations	2.00			4417.00	
Bullnose	3.00			4420.00	158.00 Bottom Packers & Anchor

**Total Tool Length: 187.00**



**TRILOBITE**  
**TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65585

**DST#: 2**

ATTN: Wes Hansen

Test Start: 2019.09.18 @ 18:30:00

## 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: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1300.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	Mud w /trace oil 100%m	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl

Num Fluid Samples: 0

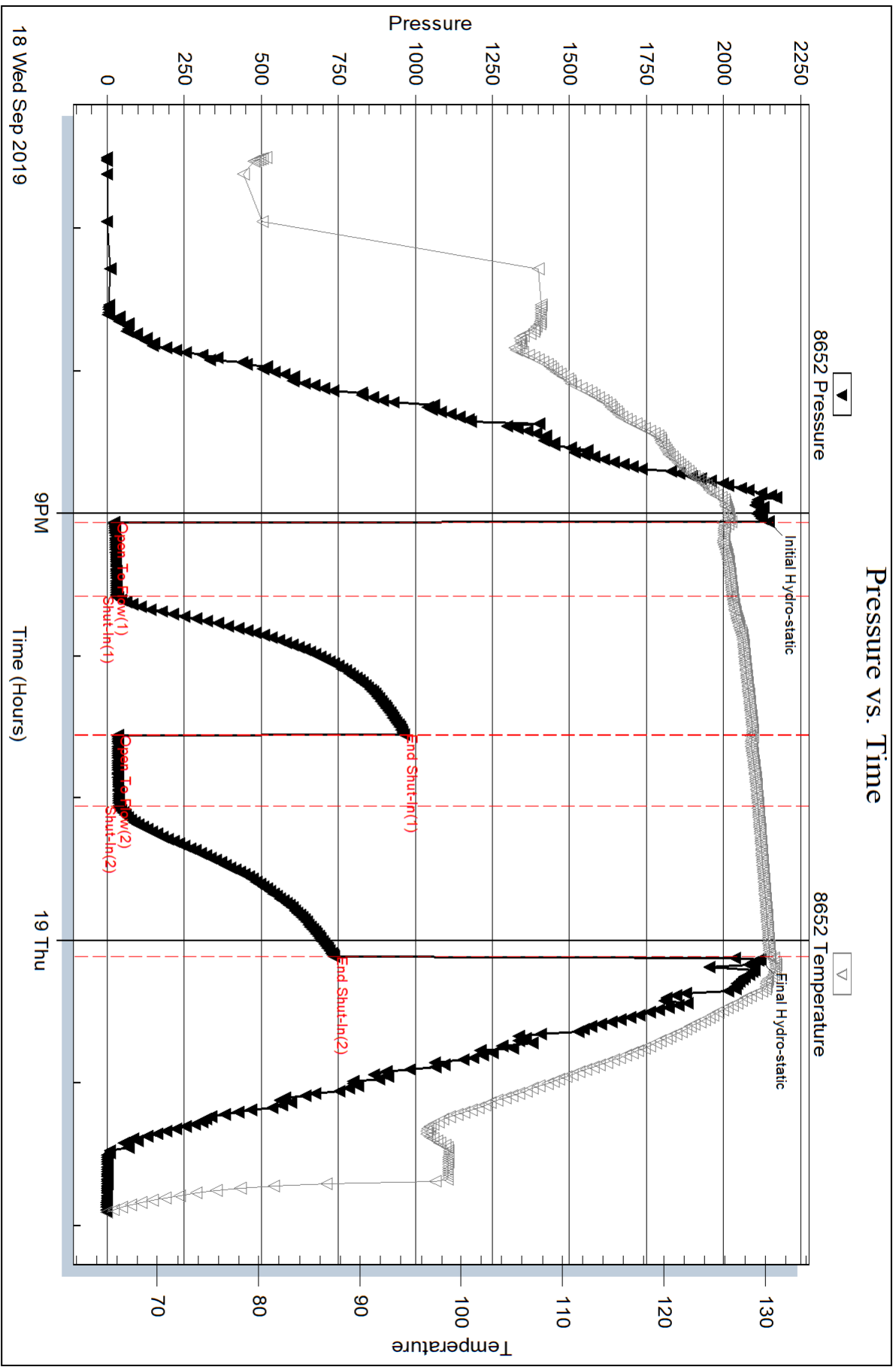
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



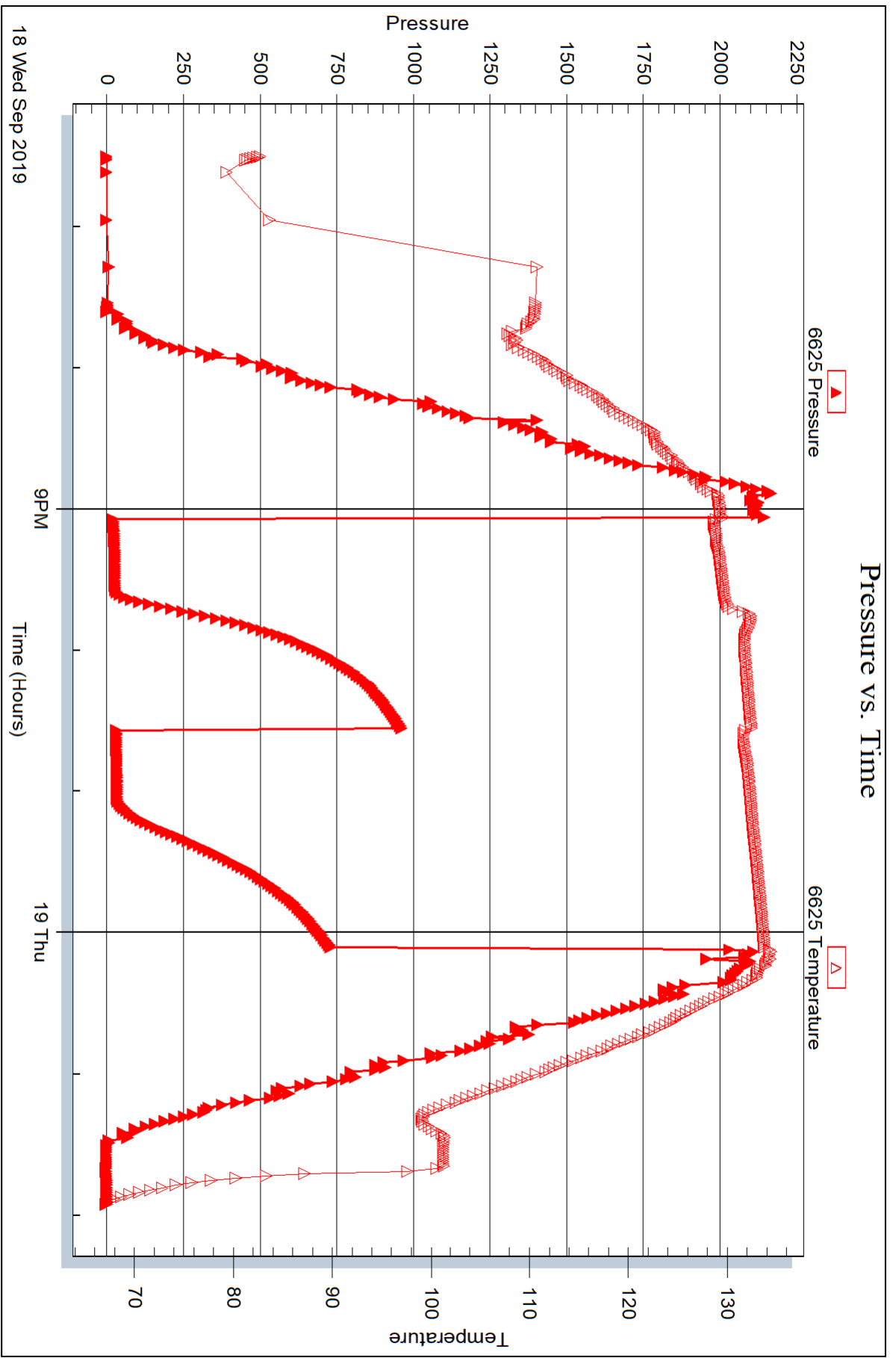
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Inside

Murfin Drilling Co., Inc.

Jones 'A' #4-17

DST Test Number: 2







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co., Inc.**

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Wes Hansen

### **Jones 'A' #4-17**

#### **17-1s-37w Cheyenne,KS**

Start Date: 2019.09.19 @ 23:30:00

End Date: 2019.09.20 @ 08:18:45

Job Ticket #: 65586                      DST #: 3

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2019.09.23 @ 14:22:56



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.  
250 N. Water STE 300  
Wichita, KS 67202  
ATTN: Wes Hansen

**17-1s-37w Cheyenne, KS**

**Jones 'A' #4-17**

Job Ticket: 65586

**DST#: 3**

Test Start: 2019.09.19 @ 23:30:00

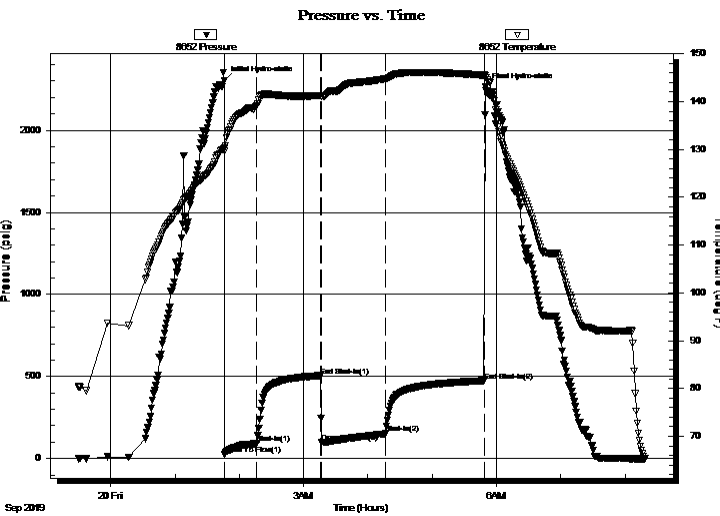
## GENERAL INFORMATION:

Formation: **Ft. Scott**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 01:46:15  
 Time Test Ended: 08:18:45  
 Interval: **4573.00 ft (KB) To 4611.00 ft (KB) (TVD)**  
 Total Depth: 4611.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: James Winder  
 Unit No: 83  
 Reference Elevations: 3230.00 ft (KB)  
 3225.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8652 Outside**

Press@RunDepth: 150.57 psig @ 4574.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2019.09.19 End Date: 2019.09.20 Last Calib.: 2019.09.20  
 Start Time: 23:30:05 End Time: 08:18:45 Time On Btm: 2019.09.20 @ 01:46:00  
 Time Off Btm: 2019.09.20 @ 05:49:30

**TEST COMMENT:** 30 - IF: Blow built to BOB (11") at 14 3/4 min., built to 23 1/4"  
 60 - IS: Blow back built to 1/4" then died back  
 60 - FF: Blow built to BOB at 10 1/4 min., built to 43 3/4"  
 90 - FS: Blow back built to 2" then slowly died back



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2302.00	130.30	Initial Hydro-static
1	23.79	129.67	Open To Flow (1)
31	92.19	139.18	Shut-In(1)
90	504.68	141.25	End Shut-In(1)
91	98.25	141.14	Open To Flow (2)
151	150.57	144.79	Shut-In(2)
243	474.18	145.54	End Shut-In(2)
244	2262.61	145.46	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
225.00	GOCM 56%o, 24%m, 20%g	1.53
145.00	CGO 66%o, 34%g	2.03
0.00	GIP = 500'	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**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65586

**DST#: 3**

ATTN: Wes Hansen

Test Start: 2019.09.19 @ 23:30:00

## Tool Information

Drill Pipe:	Length: 4387.00 ft	Diameter: 3.80 inches	Volume: 61.54 bbl	Tool Weight: 2500.00 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: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 62.42 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4573.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	67.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4545.00	
Shut In Tool	5.00			4550.00	
Hydraulic tool	5.00			4555.00	
Jars	5.00			4560.00	
Safety Joint	3.00			4563.00	
Packer	5.00			4568.00	29.00 Bottom Of Top Packer
Packer	5.00			4573.00	
Stubb	1.00			4574.00	
Recorder	0.00	6625	Inside	4574.00	
Recorder	0.00	8652	Outside	4574.00	
Perforations	34.00			4608.00	
Bullnose	3.00			4611.00	38.00 Bottom Packers & Anchor

**Total Tool Length: 67.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**17-1s-37w Cheyenne,KS**

250 N. Water STE 300  
Wichita, KS 67202

**Jones 'A' #4-17**

Job Ticket: 65586

**DST#: 3**

ATTN: Wes Hansen

Test Start: 2019.09.19 @ 23:30:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

35.2 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
225.00	GOCM 56%o, 24%m, 20%g	1.535
145.00	CGO 66%o, 34%g	2.034
0.00	GIP = 500'	0.000

Total Length: 370.00 ft      Total Volume: 3.569 bbl

Num Fluid Samples: 0

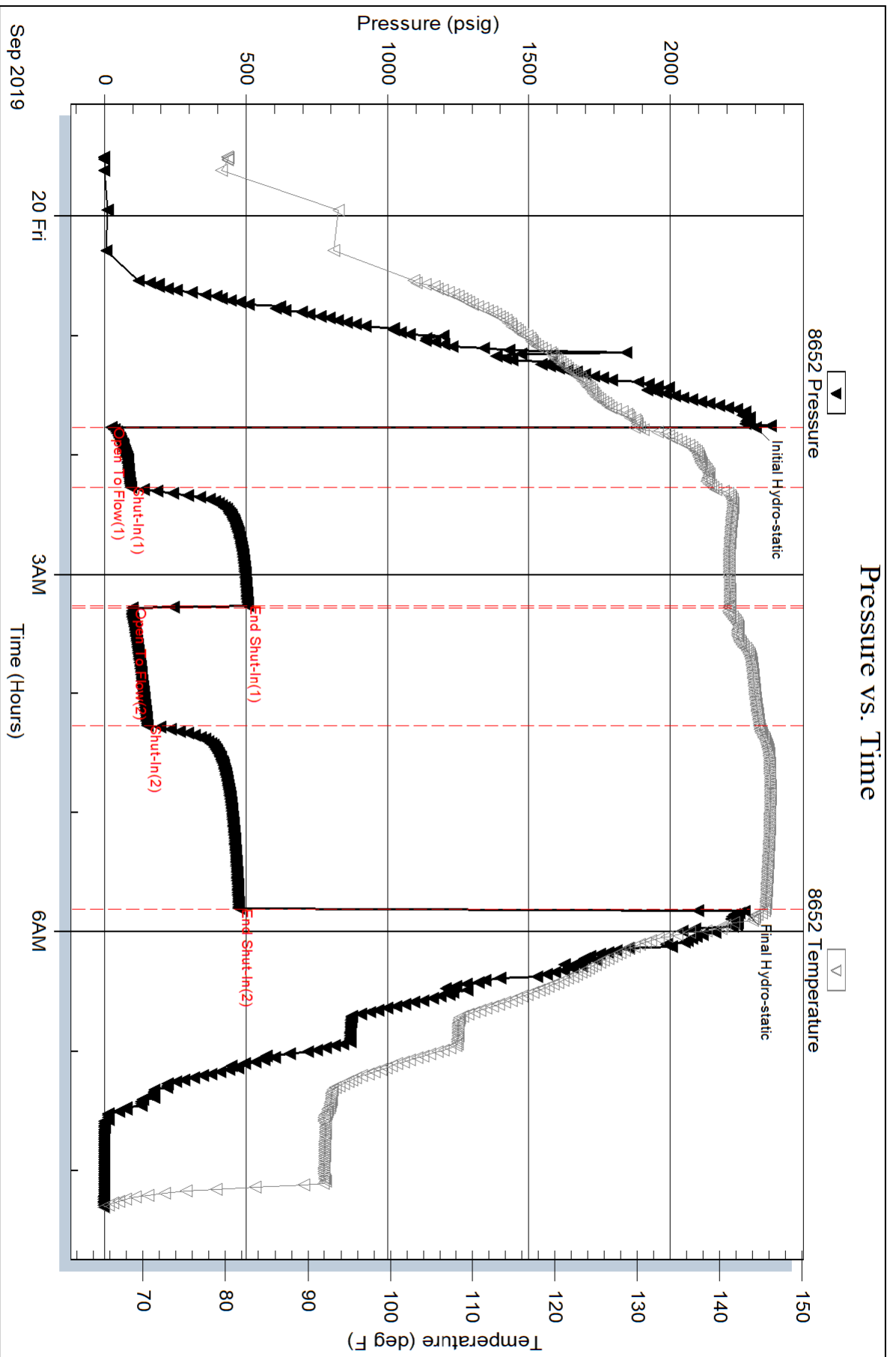
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 36 api @ 68 deg F Corrected Gravity = 35.2 api



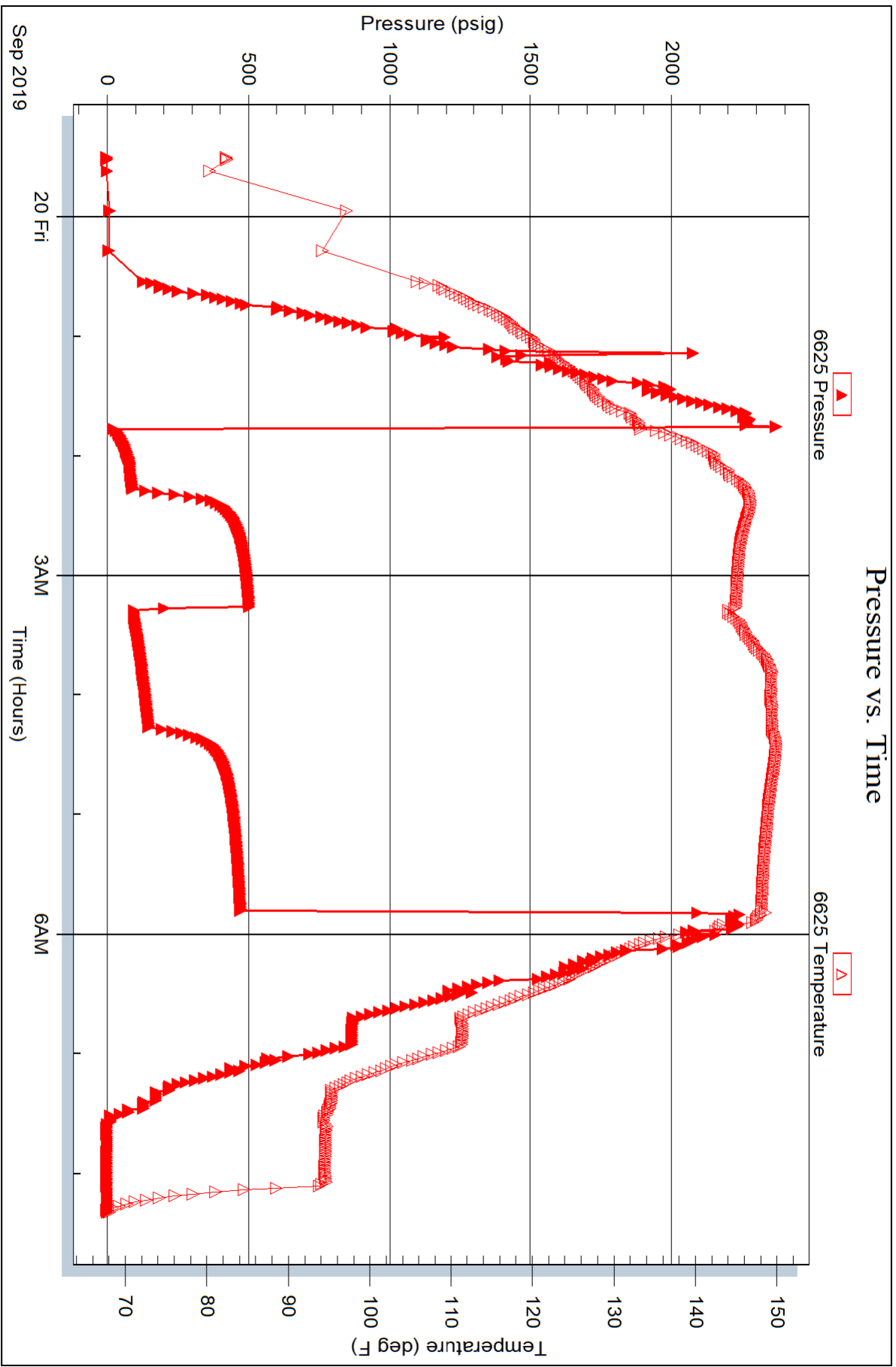
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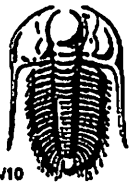
Inside

Murfin Drilling Co., Inc.

Jones 'A' #4-17

DST Test Number: 3





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65584

Well Name & No. Jones 'A' # 4-17 Test No. 1 Date 9-17-19  
 Company Murfin Drilling Co Inc Elevation 3230 KB 3225 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Wes Hansen Rig Murfin #3  
 Location: Sec. 17 Twp 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4148 - 4264 Zone Tested Lans "A-D"  
 Anchor Length 116 Drill Pipe Run 3951 Mud Wt. 9.0  
 Top Packer Depth 4143 Drill Collars Run 178 Vls 80  
 Bottom Packer Depth 4148 Wt. Pipe Run - WL 7.2  
 Total Depth 4264 Chlorides 1000 ppm System LCM 2

Blow Description IF: 1/2" Blow at open, built to 1 1/2"  
ISI: No blowback  
FF: Blow built to 1/4"  
FST: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>70</u>	<u>50CM</u>	<u>3</u>	<u>6</u>	<u>91</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 70 BHT 131 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

- (A) Initial Hydrostatic 2075
- (B) First Initial Flow 21
- (C) First Final Flow 34
- (D) Initial Shut-In 952
- (E) Second Initial Flow 37
- (F) Second Final Flow 53
- (G) Final Shut-In 931
- (H) Final Hydrostatic 2053

- Test 1300
- Jars 250
- Safety Joint 75
- Circ Sub \_\_\_\_\_
- Hourly Standby \_\_\_\_\_
- Mileage 148RT 148
- Sampler \_\_\_\_\_
- Straddle \_\_\_\_\_
- Shale Packer \_\_\_\_\_
- Extra Packer \_\_\_\_\_
- Extra Recorder \_\_\_\_\_
- Day Standby \_\_\_\_\_
- Accessibility \_\_\_\_\_
- Sub Total 1773

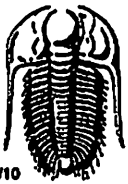
- T-On Location 9:00
- T-Started 11:32
- T-Open 13:48
- T-Pulled 17:50
- T-Out 19:45
- Comments \_\_\_\_\_
- EM Tool \_\_\_\_\_
- Ruined Shale Packer \_\_\_\_\_
- Ruined Packer \_\_\_\_\_
- Extra Copies \_\_\_\_\_
- Sub Total 0
- Total 1773
- MP/DST Disc't \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90

Approved By Wes Hansen Our Representative James Murfin

TriLOBITE Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65585

Well Name & No. Jones 'A' #4-17 Test No. 2 Date 9-18-19  
 Company Murfin Drilling Co. Inc Elevation 3230 KB 3225 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Wes Hansen Rlg Murfin #3  
 Location: Sec. 17 Twp 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4262 - 4420 Zone Tested Lans. "6-J"  
 Anchor Length 158 Drill Pipe Run 4074 Mud Wt. 9.1  
 Top Packer Depth 4257 Drill Collars Run 178 Vis 62  
 Bottom Packer Depth 4262 Wt. Pipe Run - WL 7.2  
 Total Depth 4420 Chlorides 1300 ppm System LCM 3

Blow Description IF: Blow built to 1 1/4" (1/2" Blow at open)  
ISI: No blowback  
FF: No blow  
FSD: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>Mud w/trace oil</u>	<u>trace</u>		<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 130 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

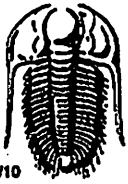
(A) Initial Hydrostatic 2147  Test 1300  
 (B) First Initial Flow 23  Jars 250  
 (C) First Final Flow 30  Safety Joint 75  
 (D) Initial Shut-In 962  Circ Sub \_\_\_\_\_  
 (E) Second Initial Flow 34  Hourly Standby \_\_\_\_\_  
 (F) Second Final Flow 37  Mileage 148RT 148  
 (G) Final Shut-In 735  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2118  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  
 Final Shut-In 60  Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1773

T-On Location 17:25  
 T-Started 18:30  
 T-Open 21:03  
 T-Pulled 00:06  
 T-Out 1:55  
 Comments \_\_\_\_\_  
 EM Tool \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1773  
 MP/DST Disc't \_\_\_\_\_

Approved By Wes Hansen Our Representative James Nixen

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 65586

Well Name & No. Jones 'A' #4-17 Test No. 3 Date 9-19-19  
 Company Murfin Drilling Co. Inc Elevation 3230 KB 3225 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Wes Hansen Rig Murfin #3  
 Location: Sec. 17 Twp 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4573 - 4611 Zone Tested Ft Scott  
 Anchor Length 38 Drill Pipe Run 4387 Mud Wt. 9.0  
 Top Packer Depth 4568 Drill Collars Run 178 Vis 65  
 Bottom Packer Depth 4573 Wt. Pipe Run - WL 6.8  
 Total Depth 4611 Chlorides 1000 ppm System LCM 2

Blow Description IF: Blow built to BOB (1") at 14 3/4 min, blow built to 23 1/4"  
ISI: Blowback built to 1/4" then died back  
FF: Blow built to BOB at 10 1/4 min, built to 43 3/4"  
FBI: Blowback built to 2" then slowly died back

Rec	Feet of	%gas	%oil	%water	%mud
<u>145</u>	<u>C60</u>	<u>34</u>	<u>66</u>	<u>-</u>	<u>-</u>
<u>225</u>	<u>GMCO</u>	<u>20</u>	<u>56</u>	<u>-</u>	<u>24</u>
<u>Rec</u>	<u>Feet of</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>
<u>Rec</u>	<u>Feet of</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>

Rec Total 370 BHT 146 Gravity 35.2 API RW @ ° F Chlorides ppm  
 (A) Initial Hydrostatic 2302  Test 1300 T-On Location 20:10 9/19  
 (B) First Initial Flow 24  Jars 250 T-Started 23:30  
 (C) First Final Flow 92  Safety Joint 75 T-Open 1:46  
 (D) Initial Shut-In 505  Circ Sub \_\_\_\_\_ T-Pulled 5:48  
 (E) Second Initial Flow 98  Hourly Standby \_\_\_\_\_ T-Out 8:15 9/20  
 (F) Second Final Flow 151  Mileage 148 RT 148 Comments Went to rig early  
 (G) Final Shut-In 474  Sampler \_\_\_\_\_ in case of rain  
 (H) Final Hydrostatic 2263  Straddle \_\_\_\_\_  EM Tool \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1773  
 Sub Total 1773 MP/DST Disc't \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 60  
 Final Shut-In 90

Approved By Wesley Hansen Our Representative James Winder

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.