

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	KOPRIVA 'A' 1-27
Doc ID	1419921

All Electric Logs Run

DIL
DUCP
MEL
BHCS

TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin drilling INC	Date:	7/20/2018	Ticket #:	ICT1224
Field Rep:	Greg Condren				
Address:	PO Box 861				
City, State:	Colby, KS				
County, Zip:	67701				

Field Order No.:		Open Hole:		Perf Depths (ft)	Perts
Well Name:	Kupriva A 1-27	Casing Depth:			
Location:	Bearsley, KS	Casing Size:			
Formation:		Tubing Depth:	3050		
Type of Service:	Plug to abandon	Tubing Size:			
Well Type:	OIL	Liner Depth:			
Age of Well:	New	Liner Size:			
Packer Type:		Liner Top:			
Packer Depth:		Liner Bottom:			
Treatment Via:	Cement	Total Depth:			
				Total Perts	0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (g/s)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
11:00 AM					Depart Oakley service center			
12:30 PM					Arrive on location			
12:45 PM					Safety meeting			
1:00 PM					Rig up equipment (drill pipe set at 3050')			
1:54 PM	2.5		100.0		Pump water spacer ahead			10.00
1:59 PM	4.0		200.0		Mix and pump 60 sacks at 13.8ppg			12.60
2:00 PM	4.0		200.0		Displace with fresh water			3.50
2:08 PM	9.3		200.0		Rig displaces with mud then pulls to 2250'			40.00
2:41 PM	3.0		100.0		Pump water spacer ahead			10.00
2:45 PM	6.0		130.0		Mix and pump 100 sacks at 13.8ppg			25.30
2:54 PM	3.0		10.0		Displace with fresh water			3.50
2:59 PM	5.3		200.0		Rig displaces with mud			28.50
3:00 PM					Rig pulls to 325'			
4:11 PM	4.0		30.0		Pump water spacer ahead			10.00
4:15 PM	3.4		10.0		Mix and pump 60 sacks at 13.8ppg			12.60
4:20 PM	3.0		10.0		Displace with fresh water			1.50
4:30 PM					Rig pulls to surface, Hls drops plug pushes it in to 40'			
5:15 PM					Mix and pump 10 sacks at 13.8ppg			2.60
TOTAL:								171.40

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
6.3	4.0	200.0	108.2

PRODUCTS USED

255 sacks 60/40 poz 4% gel, 1/4#/sk Flo seal

Treater: Glen Fisher

Customer: Greg Condren

MDCI
 Kopriva 'A' #1-27
 2310' FNL 1980'FWL
 Sec. 27-2S-35W
 3183' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	3001	+182	+8	2999	+184	+10
B/Anhydrite	3045	+138	+10	3043	+140	+12
Topeka	3898	-715	-5	3892	-709	+1
Oread	4004	-821	-7	4003	-820	-6
Lansing	4103	-920	-10	4102	-919	-9
Stark	4323	-1140	-10	4322	-1139	-9
Mound City	4371	-1188	-9	4369	-1186	-7
Ft Scott	4496	-1313	-6	4490	-1307	Flat
Oakley	4567	-1394	-5	4565	-1382	-3
Mississippi	4754	-1571	-5	4746	-1563	+3
RTD	4854	-1671				
LTD				4851	-1668	

Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

Murfin Drilling Company Inc.

ELEVATIONS

KB 3183'

LEASE Kopriva 'A' #1-27

FIELD Midcat

LOCATION 2310'fml & 1980'fml

SEC 27 TWP 2s R 35W

COUNTY Rawlins STATE Kansas

CONTRACTOR Murfin Drilling Co. Inc. Rid #3

SPUD 7/10/2018 COMP 7/20/2018

RTD 4854' LTD 4851'

MUD UP 3586' TYPE MUD Chemical

SAMPLES SAVED FROM 3790' TO TD

DRILLING TIME KEPT FROM 3790' TO TD

SAMPLES EXAMINED FROM 3790' TO TD

GEOLOGICAL SUPERVISION FROM 3630'

GEOLOGIST ON WELL Robert D. Hendrix

FORMATION TOPS

ANHYDRITE 2999 (+184)

TOPEKA 3892 (-709)

LANSING 4102 (-919)

STARK 4322 (-1139)

MOUND CITY 4371 (-1188)

FT SCOTT 4490 (-1307)

OAKLEY 4567 (-1384)

MISSISSIPPIAN 4746 (-1563)

ELECTRIC LOG

SAMPLE

3001 (+182)

4103 (-920)

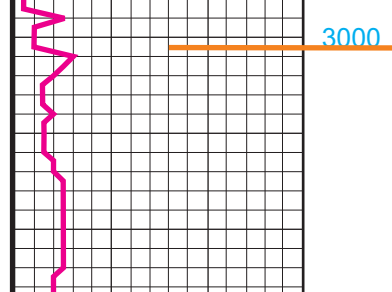
4323 (-1140)

4496 (-1313)

4567 (-1384)

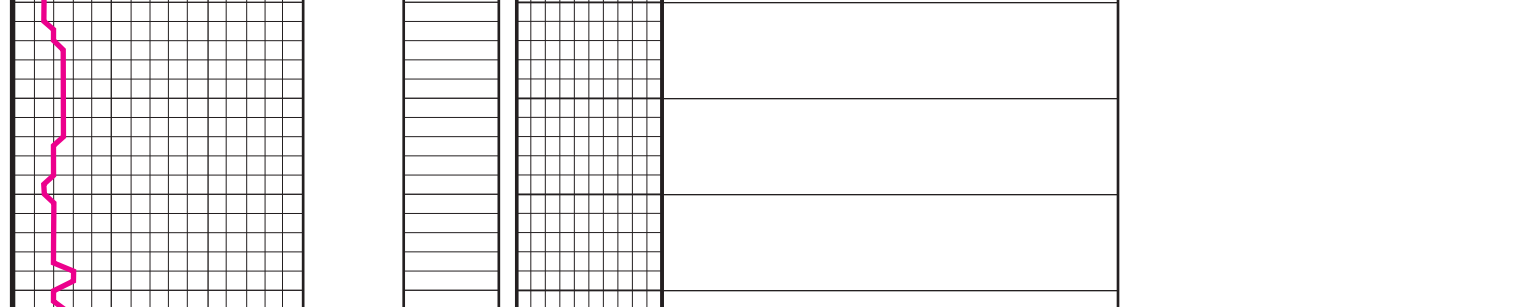
4754 (-1571)

AP# 15-153-21209



REMARKS:

LEGEND



DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
2980			Anhydrite 3001 (+182)
3000			Base Anhydrite 3045 (+138)
3070		Shale: gray, silty, hard Limestone: gray, fxl, no vis por	Geologist on location 3725' at 11:30 pm 7/13/2018 Bit Trip at 3679' to change from PDC to button. Strap out of hole was 0.35' long to board.
3800		Shale: gray, silty, hard Shale: red, silty Limestone: gray, fxl, sl cherty, sl chalky, fossiliferous, no vis por Shale: gray, red Limestone: gray, fxl, foss, no vis por Shale: gray, red Limestone: white to tan, f-mxin, sl chalky, fossiliferous, 5% sample no vis por, gd dark stain, nfo, no odor Limestone: white to tan, f-mxin, sl chalky, fossiliferous, oolitic, 5% sample no vis por, dark stain, nfo, no odor Shale: gray, red, silty Limestone: tan, f-mxin, sl chalky, fossiliferous, sl amt glauconite, 2 pieces sl vug por, dark stain, nfo, no odor Shale: dark red, gray, green Limestone: white to tan, f-mxin, chalky, fossiliferous, no vis por, ns Shale: red, brown, gray, silty Limestone: white to tan, fxl, granular, fossiliferous, oolitic, trace amount of glauconite, nfo, no odor Limestone: white, mxin, chalky, fossiliferous, no vis por, ns Shale: red, yellow, gray	8:00am, 7/14/2018 Topeka 3898 (-715) wt 8.6, vis. 82, lcm 3# Morgan Mud, Cade Lines
3900		Limestone: white, mxin, chalky, oolitic, sl chalky, sl fossiliferous, scattered black stain, nfo, no odor Limestone: white, m-bxn, chalky v-oolitic, sl chalky, 50% sample fr interxn por, gd dark sat stain, silfo, faint odor Limestone: white, fxl, granular, fr interxn por, ns Shale: red, soft, sandy	DST #1 3864-3920 30-60-30-60 1st open: wk blow built to 1 1/2" 2nd open: wk blow built to 1 1/2" no returns Rec: 10' mud 60' swcm 6/94 hydro: 1890-1853 psi lf: 18-32 psi ff: 36-48 psi sip: 1149-1112 psi bht: 128' F
4000		Limestone: tan to gray, f-mxin, sl chalky, oolitic, sl fossiliferous, sl amt pyrite, 25% sample fr gd vug por, 1pc black stain, nfo, no odor Limestone: gray, v-fxl, cherty, dense, no vis por Shale: gray, red Shale/Siltstone: gray, brown, gray, silty, blocky Shale: gray, green, red, brown, silty	8:00am, 7/15/2018 wt 8.9, vis. 73, lcm 3# Morgan Mud, Cade Lines
4100		Limestone: tan to gray, f-mxin, sl chalky, oolitic, sl fossiliferous, sl amt pyrite, 25% sample fr gd vug por, 1pc black stain, nfo, no odor Limestone: white, f-mxin, sl chalky, oolitic in part, 10% sample gd interxn por, dark sat stain, frso, gd odor Limestone: tan, v-fxl, dense, cherty, no vis por Limestone: lt gray to tan, v-fxl, dense, no vis por Limestone: tan to gray, v-fxl, dense, no vis por Shale: black, gray	DST #2 3962-4017 30-60-30-60 1st open: blow built to 2" 2nd open: wk blow built to 1" no returns Rec: 100' mud hydro: 1933-1914 psi lf: 18-40 psi ff: 42-63 psi sip: 1200-1176 psi bht: 129' F
4100		Shale: brown, gray, black, silty, sandy Sandstone/ Sandy Limestone: gray, fn-md gm, mod sorted, sub rnd to rnd, very compacted, calcareous, nfo, no vis por Sandstone: white to tan, fn gm, well sorted, rnd, friable, very compacted, 10% sample sl pp por, dead oil, nfo, no odor Shale: gray, sandy Shale: red, gray, pyritic Shale: red, green, gray, silty, sandy	Oread 4004 (-821) 8:00am, 7/16/2018 wt 9.0, vis. 59, lcm 3# Morgan Mud, Cade Lines
4100		Limestone: brown, v-fxl, dense, no vis por Limestone: brown, v-fxl, dense, sl foss, no vis por, 2 pcs black surface stain, nfo, no odor Limestone: brown, v-fxl, dense, sl foss, no vis por, 1% sample black surface stain, nfo, no odor	DST #3 4123-4175 30-60-30-60 1st open: bob 4 min 2nd open: bob 4 3/4 min no return Rec: 350' mcw 37/63 1525' smcw 5/95 hydro: 2035-2018 psi lf: 46-430 psi ff: 1099-1099 psi sip: 21,000ppm
4200		Sandstone: white to gray, vfn-fn gm, mod sorted, sub rnd, calcareous, friable, fr intergranular por, fr black sat stain, silfo on break, faint odor Shale: red, gray, silty, sandy Shale: red, gray, silty Limestone: white, fxl, sl chalky, sl foss, 5% sample fr interxn por, black spotty to sat stain, silfo, fr odor, grading to a small amt of glauconite deeper into the circulation time Limestone: white, fxl, sl chalky, sl foss, 5% sample gd pp to vug por (barrel), no show Shale: gray, green, red, black Shale: gray, red Limestone: white, f-mxin, chalky, foss, 2% sample pr vug to gd pp por, black spotty to sat stain, frso, no odor Limestone: gray, fxl, dense, no vis por, ns Shale: gray, red, brown Limestone: white to tan, f-mxin, chalky, fossiliferous, pyritic, some mineralized streaks, no vis por Shale: gray, red Limestone: tan, f-mxin, fossiliferous, oolitic, argillaceous, pyritic, no vis por, ns Shale: gray, red, silty Shale: red, gray, green, silty	8:00am, 7/17/2018 wt 9.1, vis. 45, lcm 3# Morgan Mud, Cade Lines
4300		Limestone: white to tan, f-mxin, oolitic, v-fossiliferous, pyritic, 30% sample fr pp to vug por, gd lt to dark sat stain, gd to exsfo light and dark with an oily sheen noted, good odor Shale: black, gray, red Shale: red, gray, silty Limestone: lt gray, v-fxl, chalky, fossiliferous, dense, no vis por, ns Shale: red, gray Limestone: tan, mxin, fossiliferous, argillaceous, no vis por	DST #4 4193-4242 30-60-30-60 1st open: bob 1min 2nd open: blow built to 1" died to 1/4" (Hydrostatic) no returns Rec: 350' wcm 28/72 950' smcw 4/96 hydro: 2040-2020 psi lf: 590-593 psi ff: 594-595 psi sip: 172-34 psi bht: 142' F chl: 25,000ppm
4300		Shale: gray, red, black cabonaceous Limestone: brown, fxl, dense, fossiliferous, no vis por, ns Shale: gray, red, brown Limestone: white to tan, f-mxin, chalky, fossiliferous, pyritic, some mineralized streaks, no vis por Shale: gray, red Limestone: tan, f-mxin, fossiliferous, oolitic, argillaceous, pyritic, no vis por, ns Shale: gray, red, silty Shale: red, gray, green, silty	8:00am, 7/19/2018 wt 9.1, vis. 56, lcm 4# Morgan Mud, Cade Lines
4400		Limestone: white to tan, f-mxin, oolitic, no vis por Shale: dark to light gray, brown, red Shale: brown, gray, red Shale: gray, red, brown Limestone: gray to green (olive), fxl, dense, sl cherty, no vis por Shale: red, silty Limestone: tan, fxl, oolitic, fossiliferous, scattered vug por Limestone: white, fxl, fossiliferous, no vis por Shale: gray, silty, sandy Shale: black, gray, red	Stark 4323 (-1140)
4400		Shale: red, gray, silty Limestone: lt gray, v-fxl, chalky, fossiliferous, dense, no vis por, ns Shale: red, gray Limestone: tan, mxin, fossiliferous, argillaceous, no vis por	Mound City 4371 (-1188)
4500		Shale: red, gray Limestone: tan to white, fxl, oolitic, fossiliferous, no vis por Shale: red, gray, green Limestone: white to tan, f-mxin, oolitic, no vis por Shale: dark to light gray, brown, red Shale: brown, gray, red Shale: gray, red, brown Limestone: gray to green (olive), fxl, dense, sl cherty, no vis por Shale: red, silty Limestone: tan, fxl, oolitic, fossiliferous, scattered vug por Limestone: white, fxl, fossiliferous, no vis por Shale: gray, silty, sandy Shale: black, gray, red	Ft Scott 4496 (-1313)
4500		Limestone: tan, fxl, sl cherty, oolitic, fossiliferous, no vis por Shale: black carbonaceous, gray Limestone: tan to gray, vfxin, dense, cherty, sl fossiliferous, no vis por Limestone: tan, fxl, dense, cherty, oolitic, no vis por Limestone: gray, vfxin, dense, sl fossiliferous, sl pyritic, no vis por Limestone: tan to gray, vfxin, dense, cherty, sl fossiliferous, no vis por Shale: black carbonaceous, gray Shale: gray, red, green Limestone: white to tan, vfxin, sl pyritic, dense, sl fossiliferous, no vis por Limestone: white to tan, fxl, sl chalky, dense, oolitic, fossiliferous, no vis por Shale: dark to lt gray, red, soft, silty	8:00am, 7/19/2018
4600		Limestone: tan to brown, vfxin, dense, no vis por Shale: red, gray, green, brown, sl sandy Limestone: tan to gray, vfxin, dense, fossiliferous, no vis por Sandstone: white to lt green, lt, biotitic, sl glauconitic, fn-md gm, poorly sorted, sub ang, very compacted, calcareous, pr intergm por Sandstone: lt vari-colored, lt, v-coarse gm, mod sorted, sub rnd, with some individual grains, good por, ns Limestone: white, f-mxin, chalky, oolitic, fossiliferous, no vis por Shale: gray, red, green, brown Limestone: white, m-bxn, fossiliferous, no vis por Shale: red, brown, gray/green Sandstone: white, fn-crs gm, poorly sorted, ang to sub ang, fr intergm por Shale: dark red, gray, green Limestone: white, lt, sl glauconitic, md gm, well sorted, sub md, no vis por Shale: dark red, gray, green Sandstone: yellow to clear, lt, v-coarse gm, well sorted, md, all disseminated grains, will assume ex-por, ns Shale: black, dark gray Shale: gray, green, red, v-sandy	Oakley 4567 (-1384)
4700		Sandstone: white to lt gray, fn-md gm, mod sorted, sub md, sl calcareous, pr intergm por, ns Conglomerate section lots of shale, ss, ls, dol, and chert Limestone: tan, fxl, fossiliferous, no vis por Dolomite: gray to tan, fxl, fr interxn por, ns Dolomite: white to tan, fxl, sl chert, fr interxn por, ns Dolomite: gray to tan, fxl, pyritic, cherty, fr interxn por, ns Dolomite: white, vfxin, dense, cherty, no vis por, ns Dolomite: tan, fxl, sl glauconitic, cherty, fr interxn por, ns Shale: red, gray Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, sl oolitic, no vis por Limestone: tan to brown, fxl, oolitic, cherty, no vis por	8:00am, 7/20/2018 wt 9.0, vis. 59, lcm 3# Morgan Mud, Cade Lines
4800		Limestone: tan, fxl, fossiliferous, no vis por Dolomite: gray to tan, fxl, fr interxn por, ns Dolomite: white to tan, fxl, sl chert, fr interxn por, ns Dolomite: gray to tan, fxl, pyritic, cherty, fr interxn por, ns Dolomite: white, vfxin, dense, cherty, no vis por, ns Dolomite: tan, fxl, sl glauconitic, cherty, fr interxn por, ns Shale: red, gray Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, sl oolitic, no vis por Limestone: tan to brown, fxl, oolitic, cherty, no vis por	Mississippian 4754 (-1571)
4900		Limestone: tan, fxl, fossiliferous, no vis por Dolomite: gray to tan, fxl, fr interxn por, ns Dolomite: white to tan, fxl, sl chert, fr interxn por, ns Dolomite: gray to tan, fxl, pyritic, cherty, fr interxn por, ns Dolomite: white, vfxin, dense, cherty, no vis por, ns Dolomite: tan, fxl, sl glauconitic, cherty, fr interxn por, ns Shale: red, gray Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, cherty, no vis por Limestone: brown, vfxin, dense, sl oolitic, no vis por Limestone: tan to brown, fxl, oolitic, cherty, no vis por	RTD 4854 (-1671) 8:00am, 7/20/2018 Geologist off location at 11:30am, 7/20/2018



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Kopriva 'A' #1-27

27-2s-35w Rawlins,KS

Start Date: 2018.07.14 @ 14:44:00

End Date: 2018.07.14 @ 21:40:00

Job Ticket #: 64205 DST #: 1

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

Printed: 2018.07.20 @ 08:40:38



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64205

DST#: 1

ATTN: Robert Hendrix

Test Start: 2018.07.14 @ 14:44:00

GENERAL INFORMATION:

Formation: **Topeka**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:50:15

Time Test Ended: 21:40:00

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 3864.00 ft (KB) To 3920.00 ft (KB) (TVD)

Reference Elevations: 3183.00 ft (KB)

Total Depth: 3920.00 ft (KB) (TVD)

3178.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 47.54 psig @ 3865.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.07.14

End Date:

2018.07.14

Last Calib.:

2018.07.14

Start Time:

14:44:05

End Time:

21:39:59

Time On Btm:

2018.07.14 @ 16:49:45

Time Off Btm:

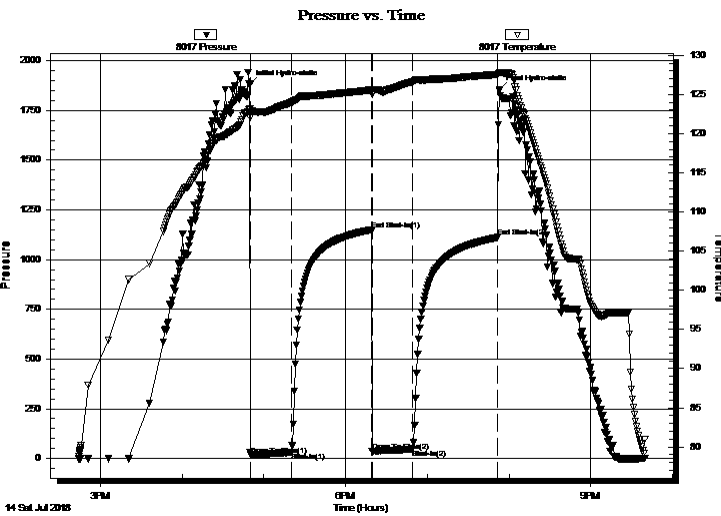
2018.07.14 @ 19:52:45

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 1 1/4"

60 - IS: No blow back

30 - FF: Blow built to 1/2"

60 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1880.04	123.13	Initial Hydro-static
1	18.43	122.61	Open To Flow (1)
31	31.66	123.96	Shut-In(1)
90	1149.35	125.57	End Shut-In(1)
90	35.57	124.98	Open To Flow (2)
120	47.54	126.60	Shut-In(2)
182	1111.75	127.56	End Shut-In(2)
183	1852.61	127.80	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	SWCM 94% m, 6% w	0.30
10.00	Mud 100%	0.05

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64205

DST#: 1

ATTN: Robert Hendrix

Test Start: 2018.07.14 @ 14:44:00

Tool Information

Drill Pipe:	Length: 3666.00 ft	Diameter: 3.80 inches	Volume: 51.42 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: 20000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 52.31 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3864.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	85.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			3836.00	
Shut In Tool	5.00			3841.00	
Hydraulic tool	5.00			3846.00	
Jars	5.00			3851.00	
Safety Joint	3.00			3854.00	
Packer	5.00			3859.00	29.00 Bottom Of Top Packer
Packer	5.00			3864.00	
Stubb	1.00			3865.00	
Recorder	0.00	6625	Inside	3865.00	
Recorder	0.00	8017	Outside	3865.00	
Perforations	19.00			3884.00	
Blank Spacing	33.00			3917.00	
Bullnose	3.00			3920.00	56.00 Bottom Packers & Anchor

Total Tool Length: 85.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64205

DST#: 1

ATTN: Robert Hendrix

Test Start: 2018.07.14 @ 14:44:00

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: 82.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.16 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	SWCM 94%m, 6%w	0.295
10.00	Mud 100%	0.049

Total Length: 70.00 ft Total Volume: 0.344 bbl

Num Fluid Samples: 0

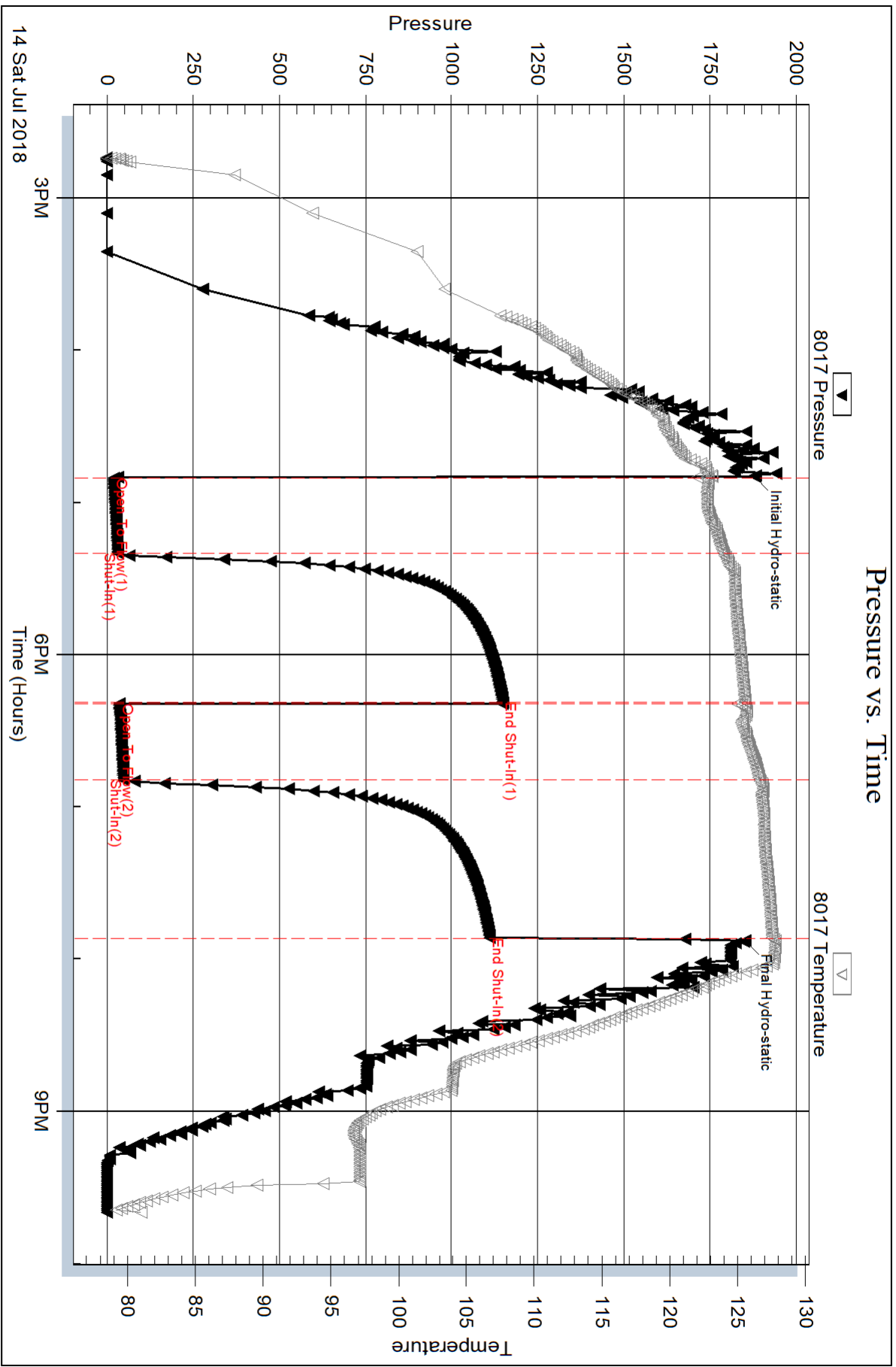
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



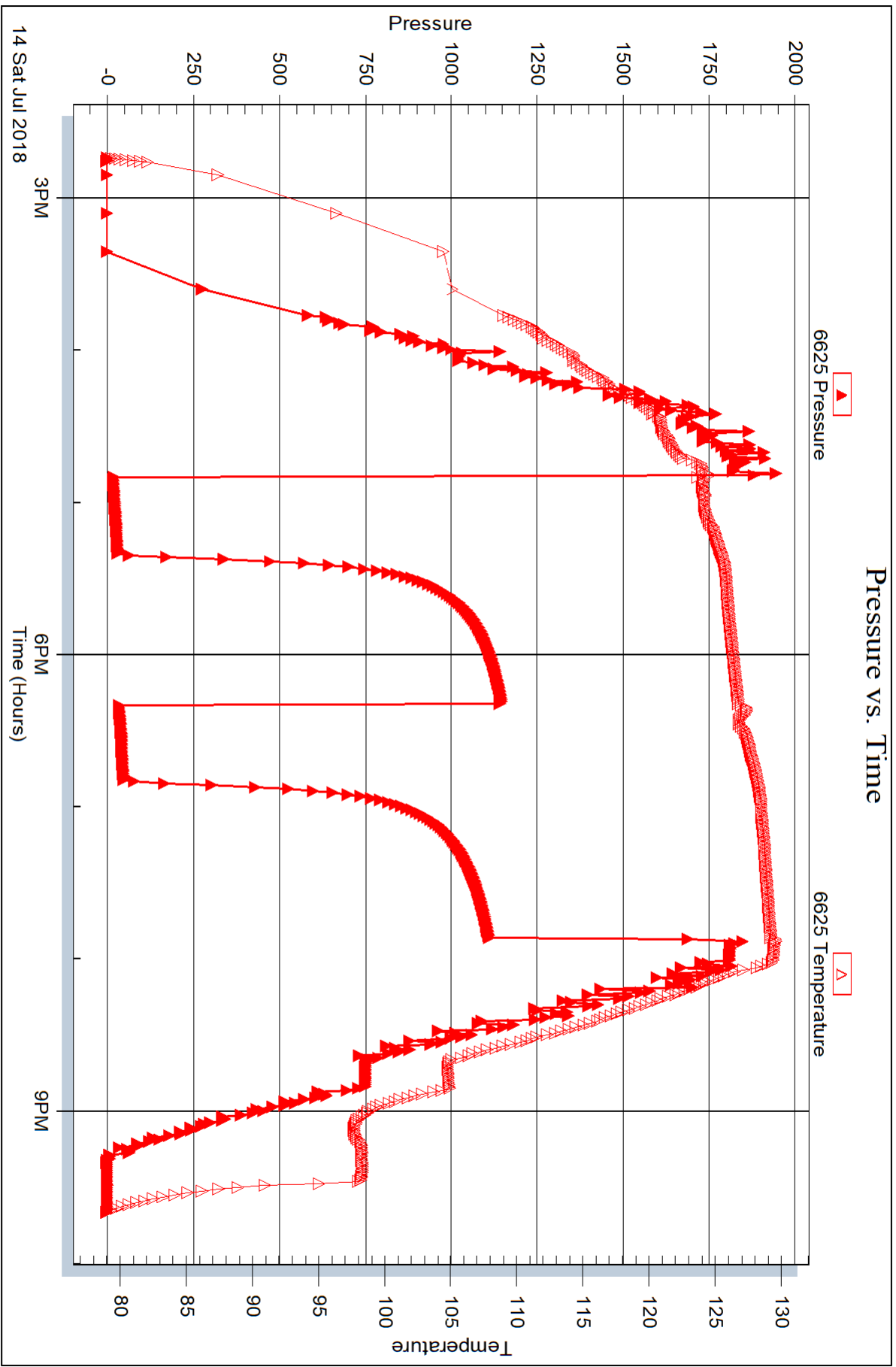
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Inside

Murfin Drilling Co., Inc

Kopriva 'A' #1-27

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 64205

Printed: 2018.07.20 @ 08:40:39



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Kopriva 'A' #1-27

27-2s-35w Rawlins,KS

Start Date: 2018.07.15 @ 09:16:00

End Date: 2018.07.15 @ 15:43:45

Job Ticket #: 64206 DST #: 2

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

Printed: 2018.07.20 @ 08:40:16



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64206

DST#: 2

ATTN: Robert Hendrix

Test Start: 2018.07.15 @ 09:16:00

GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:48:45

Time Test Ended: 15:43:45

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 3962.00 ft (KB) To 4017.00 ft (KB) (TVD)

Reference Elevations: 3183.00 ft (KB)

Total Depth: 4017.00 ft (KB) (TVD)

3178.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 62.54 psig @ 3963.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.07.15

End Date:

2018.07.15

Last Calib.:

2018.07.15

Start Time: 09:16:05

End Time:

15:43:44

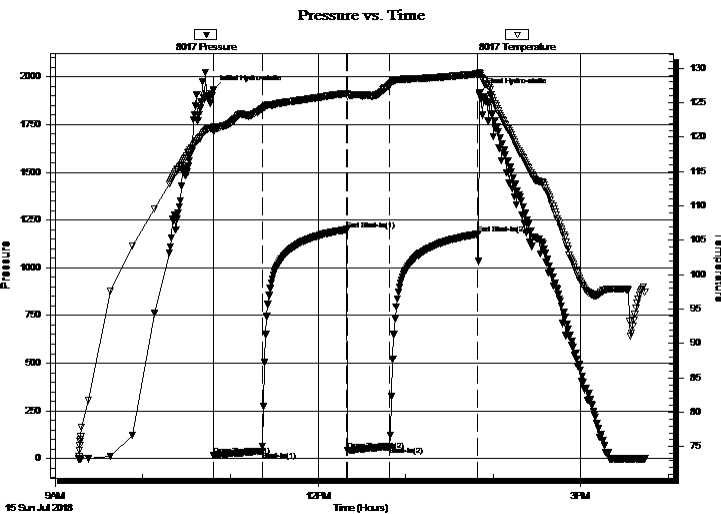
Time On Btm:

2018.07.15 @ 10:48:30

Time Off Btm:

2018.07.15 @ 13:50:45

TEST COMMENT: 30 - IF: Blow built to 2"
60 - IS: No blow back
30 - FF: Blow started at 3 min., built to 1"
60 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1933.33	121.48	Initial Hydro-static
1	17.60	120.83	Open To Flow (1)
34	40.02	124.11	Shut-In(1)
92	1200.39	126.35	End Shut-In(1)
92	42.33	125.96	Open To Flow (2)
121	62.54	127.56	Shut-In(2)
181	1176.42	129.16	End Shut-In(2)
183	1914.48	129.27	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
100.00	Mud 100%	0.49

* 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

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64206

DST#: 2

ATTN: Robert Hendrix

Test Start: 2018.07.15 @ 09:16:00

Tool Information

Drill Pipe:	Length: 3759.00 ft	Diameter: 3.80 inches	Volume: 52.73 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: 20000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 53.62 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3962.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	55.00 ft			
Tool Length:	84.00 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			3934.00	
Shut In Tool	5.00			3939.00	
Hydraulic tool	5.00			3944.00	
Jars	5.00			3949.00	
Safety Joint	3.00			3952.00	
Packer	5.00			3957.00	29.00 Bottom Of Top Packer
Packer	5.00			3962.00	
Stubb	1.00			3963.00	
Recorder	0.00	6625	Inside	3963.00	
Recorder	0.00	8017	Outside	3963.00	
Perforations	18.00			3981.00	
Blank Spacing	33.00			4014.00	
Bullnose	3.00			4017.00	55.00 Bottom Packers & Anchor

Total Tool Length: 84.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64206

DST#: 2

ATTN: Robert Hendrix

Test Start: 2018.07.15 @ 09:16:00

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: 73.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.37 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
100.00	Mud 100%	0.492

Total Length: 100.00 ft Total Volume: 0.492 bbl

Num Fluid Samples: 0

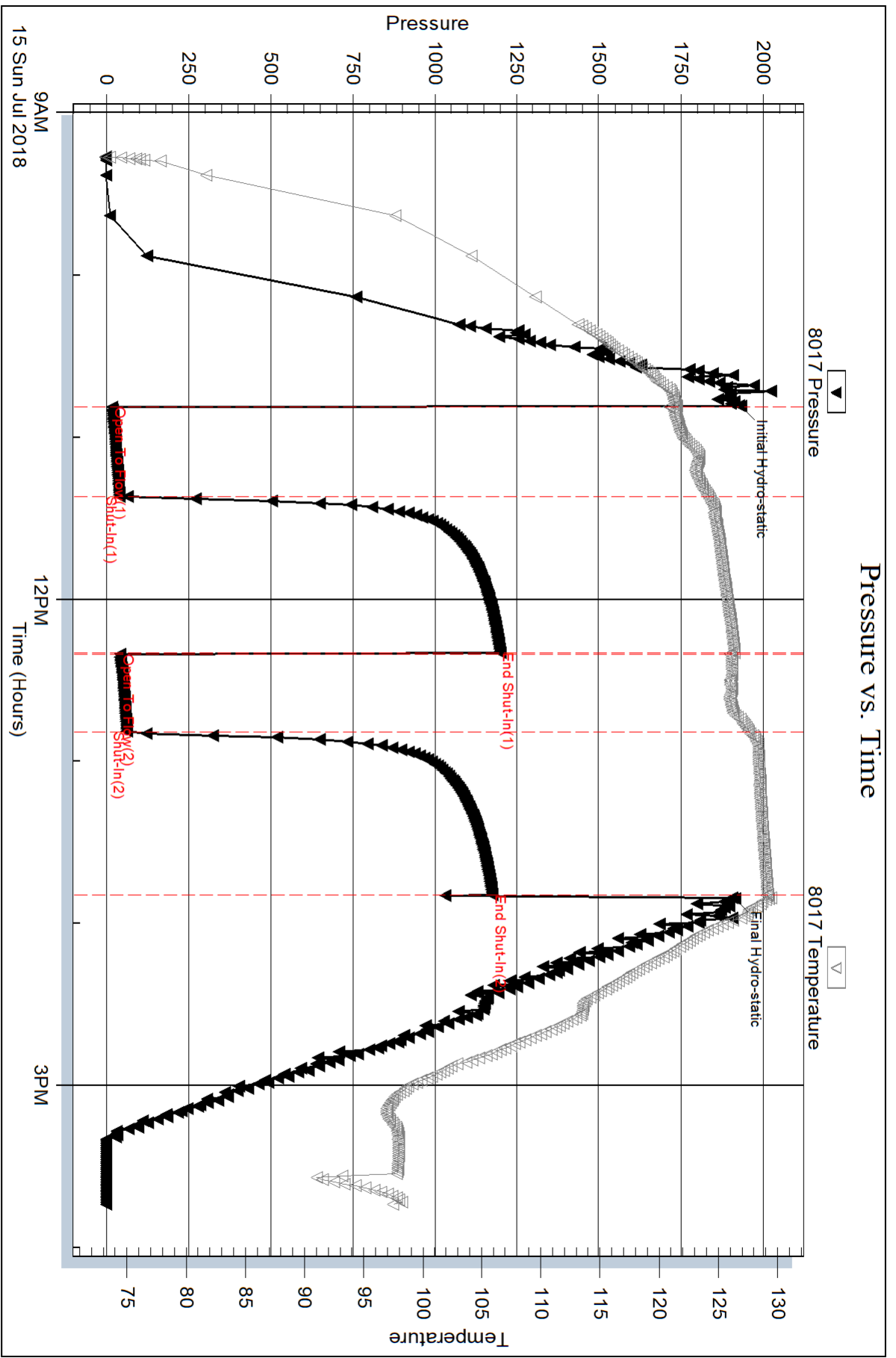
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



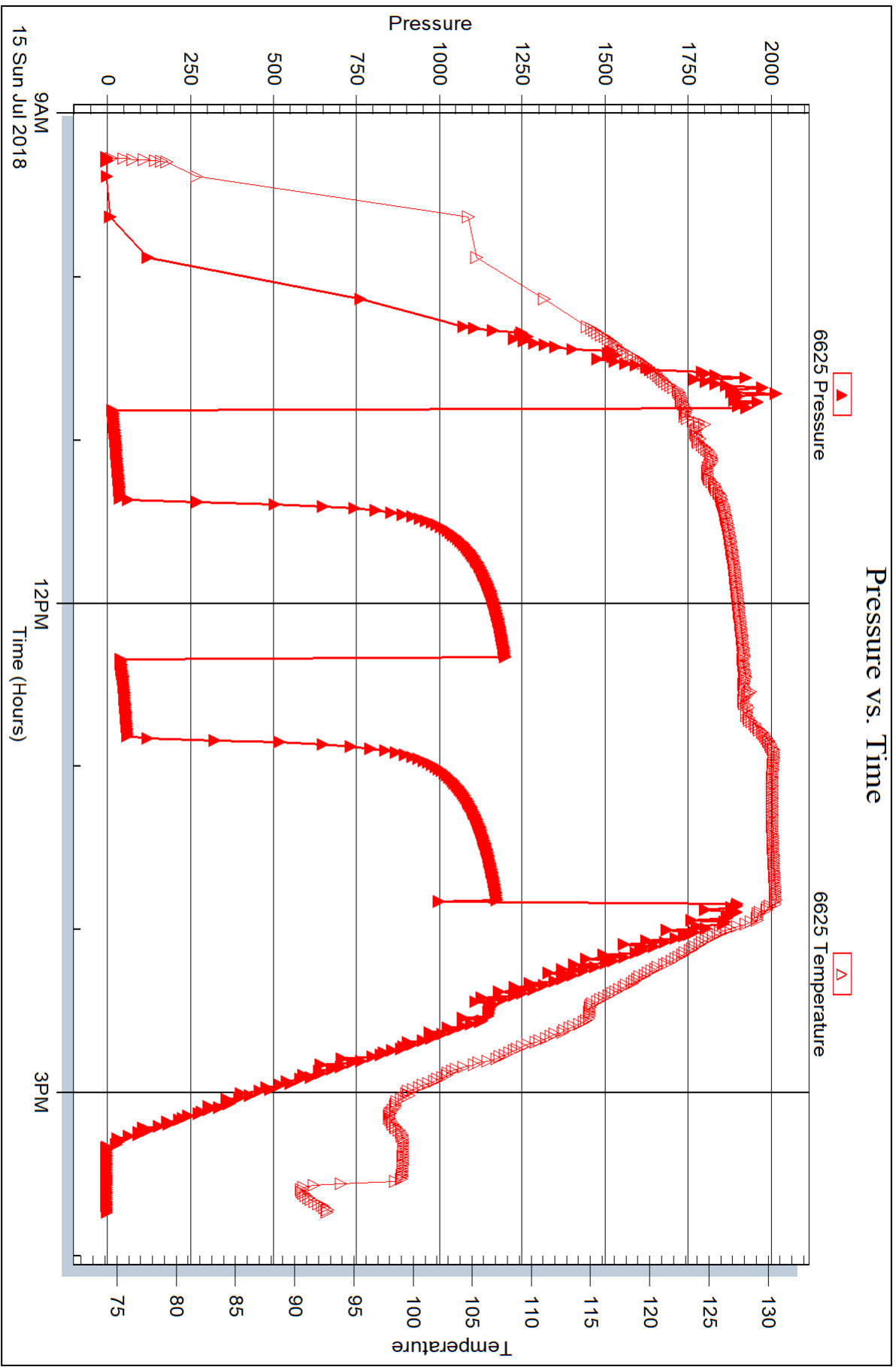
Serial #: 6625

Inside

Murfin Drilling Co., Inc

Kopriva 'A' #1-27

DST Test Number: 2





DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Kopriva 'A' #1-27

27-2s-35w Rawlins,KS

Start Date: 2018.07.16 @ 08:10:00

End Date: 2018.07.16 @ 16:30:15

Job Ticket #: 64207 DST #: 3

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

Printed: 2018.07.20 @ 08:39:53



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc

27-2s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64207

DST#: 3

ATTN: Robert Hendrix

Test Start: 2018.07.16 @ 08:10:00

GENERAL INFORMATION:

Formation: **LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:50:30

Time Test Ended: 16:30:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4123.00 ft (KB) To 4175.00 ft (KB) (TVD)

Reference Elevations: 3183.00 ft (KB)

Total Depth: 4175.00 ft (KB) (TVD)

3178.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 843.60 psig @ 4124.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.07.16

End Date:

2018.07.16

Last Calib.:

2018.07.16

Start Time: 08:10:05

End Time:

16:30:14

Time On Btm:

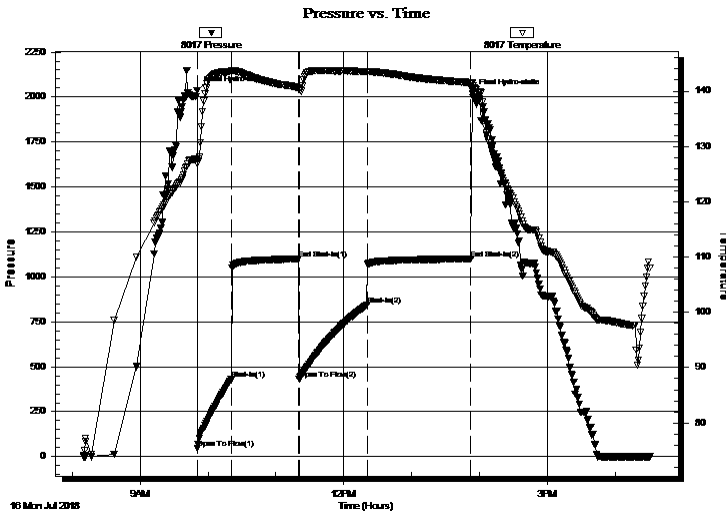
2018.07.16 @ 09:50:15

Time Off Btm:

2018.07.16 @ 13:53:30

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 4 min., built to 82"
60 - IS: No blow back
60 - FF: Blow built to BOB at 4 3/4 min., built to 132"
90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2035.49	127.76	Initial Hydro-static
1	46.31	126.83	Open To Flow (1)
31	429.78	143.53	Shut-In(1)
90	1098.79	140.64	End Shut-In(1)
91	431.63	140.39	Open To Flow (2)
151	843.60	143.50	Shut-In(2)
242	1099.17	141.54	End Shut-In(2)
244	2018.05	141.36	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1525.00	SMCW 95%w, 5%m	19.75
350.00	MCW 63%w, 37%m	4.91

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64207

DST#: 3

ATTN: Robert Hendrix

Test Start: 2018.07.16 @ 08:10:00

Tool Information

Drill Pipe:	Length: 3945.00 ft	Diameter: 3.80 inches	Volume: 55.34 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: 20000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 56.23 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4123.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	52.00 ft			
Tool Length:	81.00 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			4095.00	
Shut In Tool	5.00			4100.00	
Hydraulic tool	5.00			4105.00	
Jars	5.00			4110.00	
Safety Joint	3.00			4113.00	
Packer	5.00			4118.00	29.00 Bottom Of Top Packer
Packer	5.00			4123.00	
Stubb	1.00			4124.00	
Recorder	0.00	6625	Inside	4124.00	
Recorder	0.00	8017	Outside	4124.00	
Perforations	15.00			4139.00	
Blank Spacing	33.00			4172.00	
Bullnose	3.00			4175.00	52.00 Bottom Packers & Anchor

Total Tool Length: 81.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64207

DST#: 3

ATTN: Robert Hendrix

Test Start: 2018.07.16 @ 08:10:00

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:

21000 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
1525.00	SMCW 95%w , 5%m	19.752
350.00	MCW 63%w , 37%m	4.910

Total Length: 1875.00 ft Total Volume: 24.662 bbf

Num Fluid Samples: 0

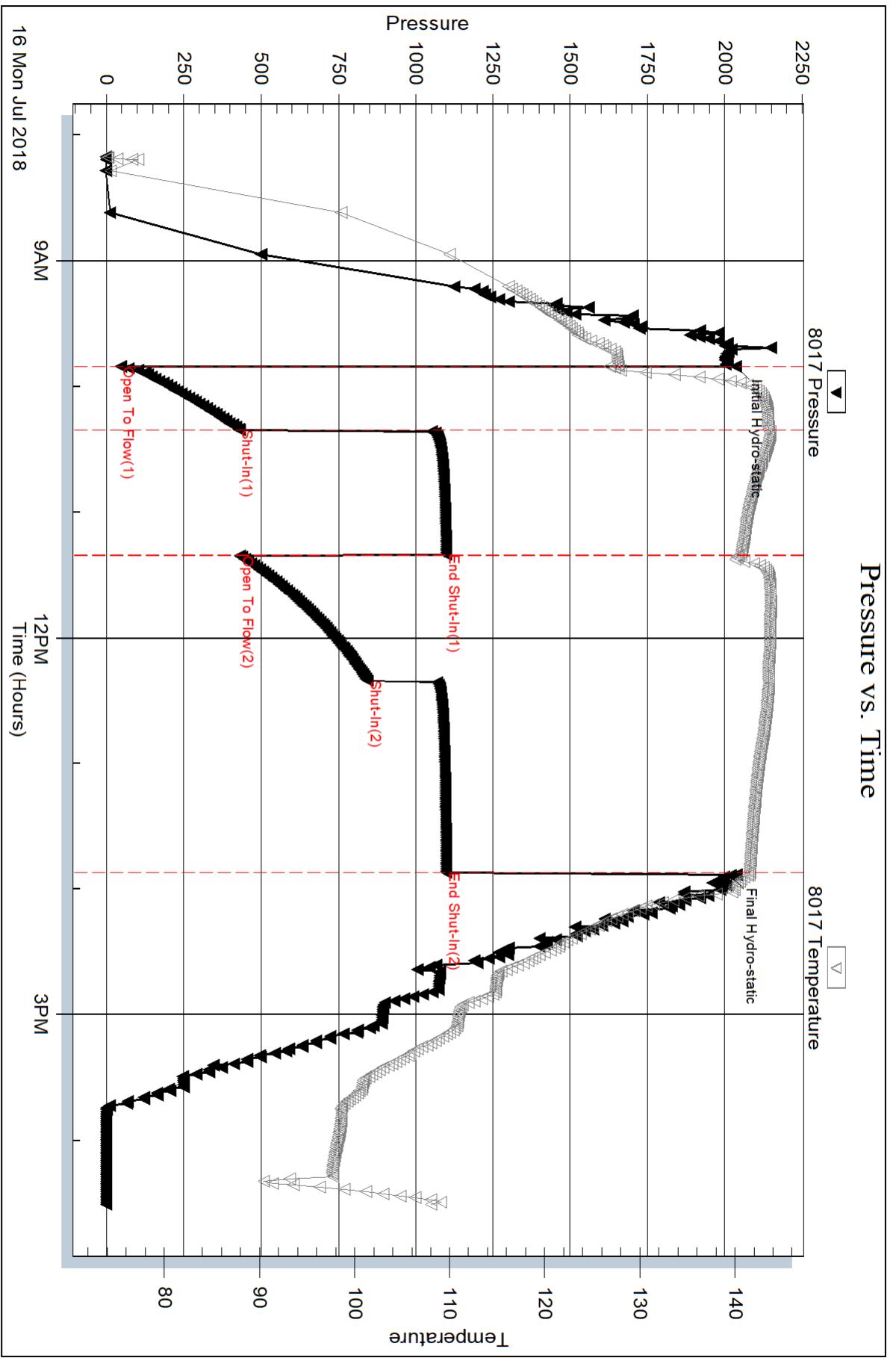
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .244 ohms @ 93 deg F Chlorides = 21,000 ppm



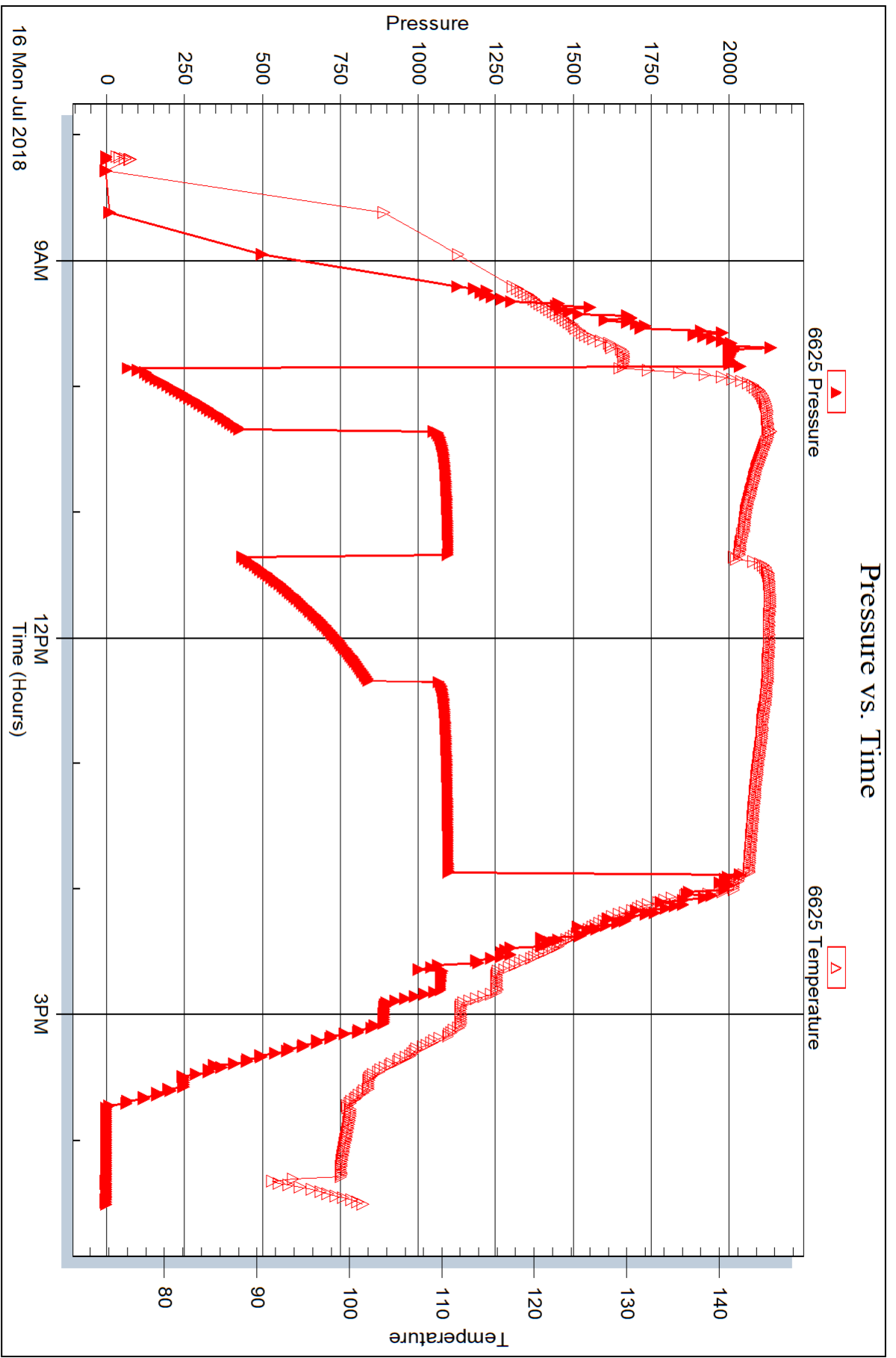
Serial #: 6625

Inside

Murfin Drilling Co., Inc

Kopriva 'A' #1-27

DST Test Number: 3





DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Kopriva 'A' #1-27

27-2s-35w Rawlins,KS

Start Date: 2018.07.17 @ 04:15:00

End Date: 2018.07.17 @ 11:56:45

Job Ticket #: 64208 DST #: 4

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

Printed: 2018.07.20 @ 08:39:24



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

27-2s-35w Rawlins, KS
Kopriva 'A' #1-27
 Job Ticket: 64208 **DST#: 4**
 Test Start: 2018.07.17 @ 04:15:00

GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 06:35:00
 Time Test Ended: 11:56:45
 Interval: **4193.00 ft (KB) To 4242.00 ft (KB) (TVD)**
 Total Depth: 4242.00 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: 3183.00 ft (KB)
 3178.00 ft (CF)
 KB to GR/CF: 5.00 ft

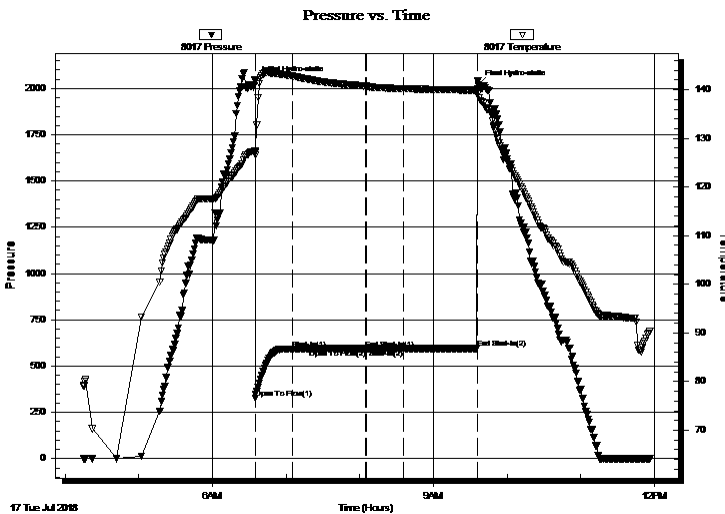
Serial #: 8017

Outside

Press@RunDepth: 594.46 psig @ 4194.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.07.17 End Date: 2018.07.17 Last Calib.: 2018.07.17
 Start Time: 04:15:05 End Time: 11:56:44 Time On Btm: 2018.07.17 @ 06:34:45
 Time Off Btm: 2018.07.17 @ 09:36:45

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 1 min., built to 133"
 60 - IS: No blow back
 30 - FF: Blow built to 1", died back to 1/4"
 60 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2040.20	127.36	Initial Hydro-static
1	328.08	126.54	Open To Flow (1)
31	592.88	142.80	Shut-In(1)
91	594.26	140.74	End Shut-In(1)
91	590.41	140.73	Open To Flow (2)
122	594.46	140.20	Shut-In(2)
181	594.57	139.91	End Shut-In(2)
182	2019.75	139.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
950.00	SMCW 96%w, 4%m	11.69
350.00	WCM 72%m, 28%w	4.91

* 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

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64208

DST#: 4

ATTN: Robert Hendrix

Test Start: 2018.07.17 @ 04:15:00

Tool Information

Drill Pipe:	Length: 4008.00 ft	Diameter: 3.80 inches	Volume: 56.22 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: 20000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 57.11 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4193.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	49.00 ft			
Tool Length:	78.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4165.00	
Shut In Tool	5.00			4170.00	
Hydraulic tool	5.00			4175.00	
Jars	5.00			4180.00	
Safety Joint	3.00			4183.00	
Packer	5.00			4188.00	29.00 Bottom Of Top Packer
Packer	5.00			4193.00	
Stubb	1.00			4194.00	
Recorder	0.00	6625	Inside	4194.00	
Recorder	0.00	8017	Outside	4194.00	
Perforations	12.00			4206.00	
Blank Spacing	33.00			4239.00	
Bullnose	3.00			4242.00	49.00 Bottom Packers & Anchor

Total Tool Length: 78.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64208

DST#: 4

ATTN: Robert Hendrix

Test Start: 2018.07.17 @ 04:15:00

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:

25000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
950.00	SMCW 96%w , 4%m	11.686
350.00	WCM 72%m, 28%w	4.910

Total Length: 1300.00 ft Total Volume: 16.596 bbl

Num Fluid Samples: 0

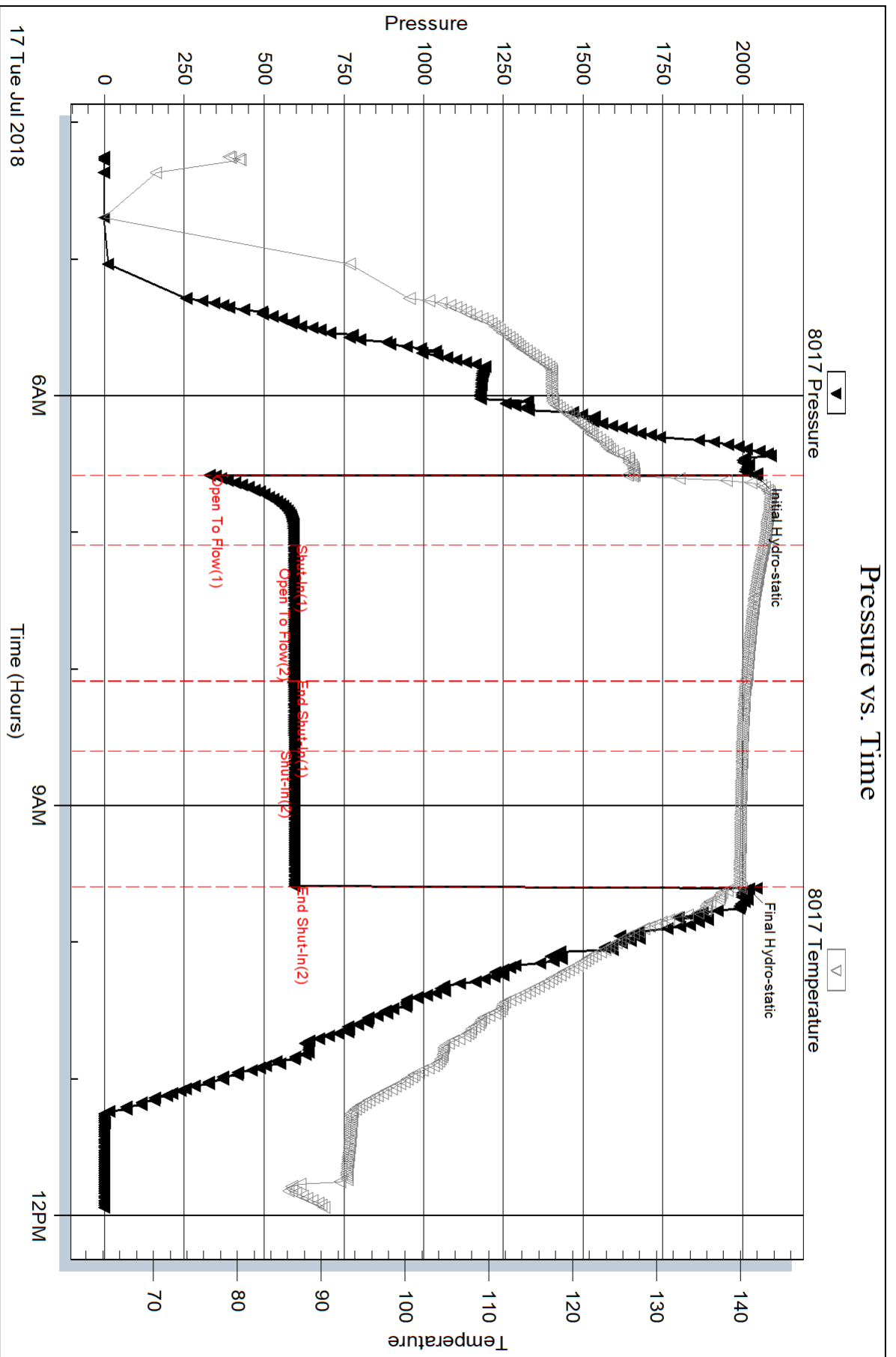
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW = .250 ohms @ 79.1 deg F Chlorides = 25,000 ppm



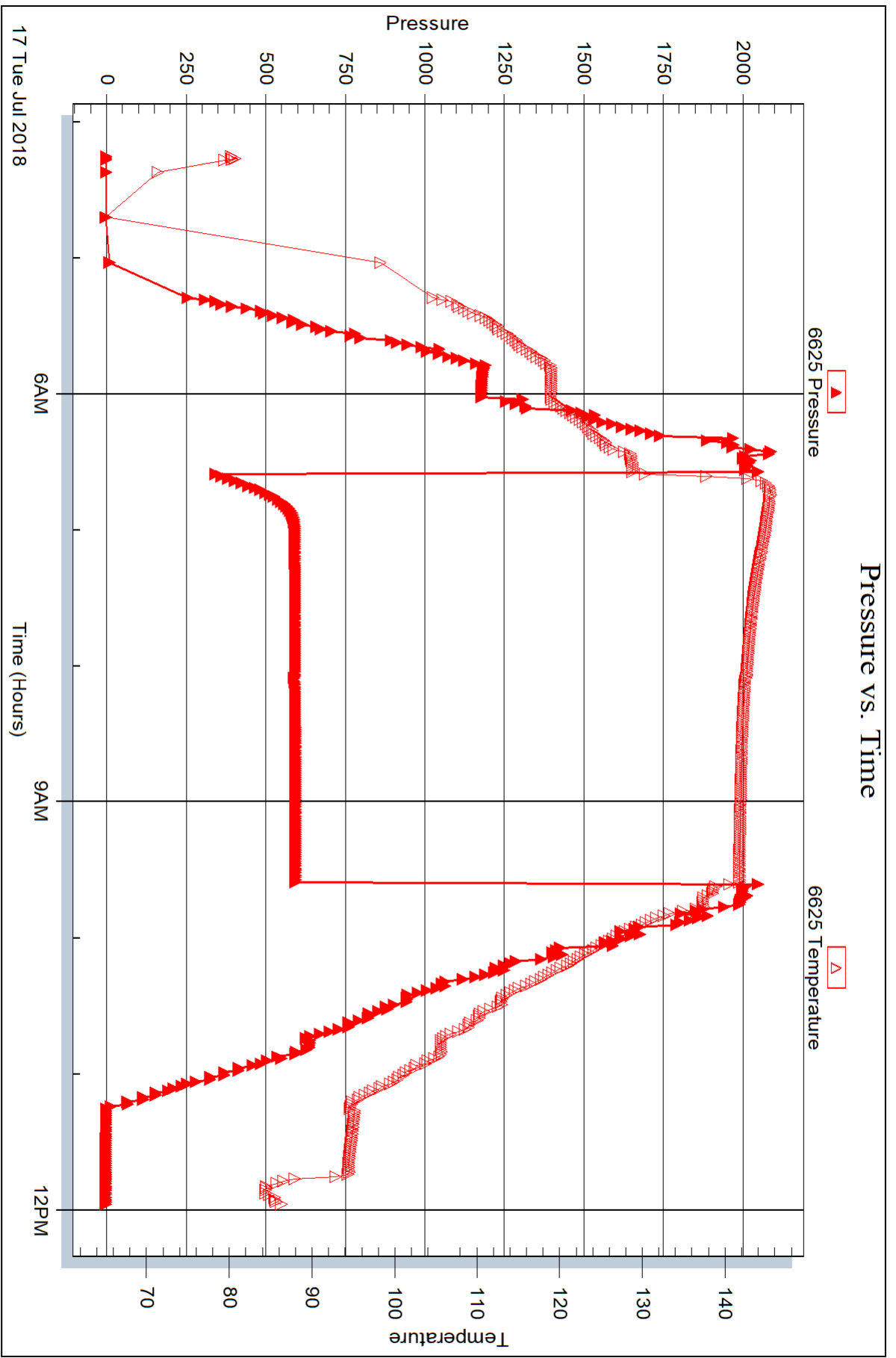
Serial #: 6625

Inside

Murfin Drilling Co., Inc

Kopriva 'A' #1-27

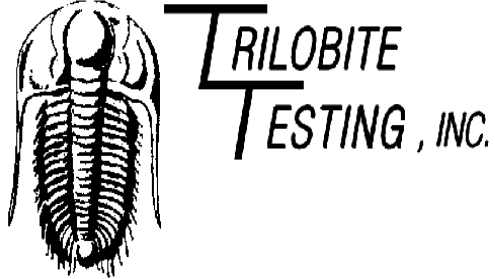
DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 64208

Printed: 2018.07.20 @ 08:39:25



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Kopriva 'A' #1-27

27-2s-35w Rawlins,KS

Start Date: 2018.07.18 @ 02:09:00

End Date: 2018.07.18 @ 09:07:00

Job Ticket #: 64209 DST #: 5

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

Printed: 2018.07.20 @ 08:37:34



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc

27-2s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64209

DST#: 5

ATTN: Robert Hendrix

Test Start: 2018.07.18 @ 02:09:00

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:13:00

Time Test Ended: 09:07:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4285.00 ft (KB) To 4322.00 ft (KB) (TVD)

Reference Elevations: 3183.00 ft (KB)

Total Depth: 4322.00 ft (KB) (TVD)

3178.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: 19.33 psig @ 4286.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.07.18 End Date: 2018.07.18

Last Calib.: 2018.07.18

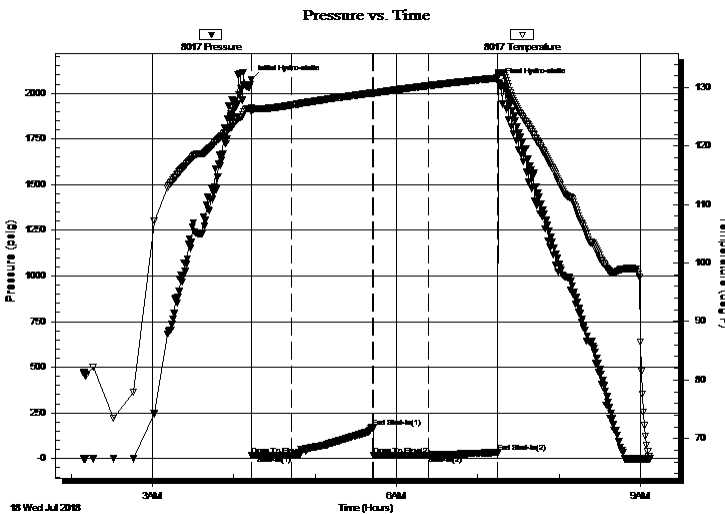
Start Time: 02:09:05 End Time: 09:06:59

Time On Btm: 2018.07.18 @ 04:12:45

Time Off Btm: 2018.07.18 @ 07:15:15

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 1/2", died back to 1/8" at close
60 - IS: No blow back
30 - FF: No blow
60 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2075.46	126.48	Initial Hydro-static
1	16.67	125.91	Open To Flow (1)
30	16.79	127.00	Shut-In(1)
90	171.53	129.09	End Shut-In(1)
91	17.46	129.01	Open To Flow (2)
131	19.33	130.32	Shut-In(2)
182	33.61	131.62	End Shut-In(2)
183	2058.75	132.14	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud 100%	0.01

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc

27-2s-35w Rawlins, KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

ATTN: Robert Hendrix

Job Ticket: 64209

DST#: 5

Test Start: 2018.07.18 @ 02:09:00

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:13:00

Time Test Ended: 09:07:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4285.00 ft (KB) To 4322.00 ft (KB) (TVD)

Reference Elevations: 3183.00 ft (KB)

Total Depth: 4322.00 ft (KB) (TVD)

3178.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: psig @ 4286.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.07.18 End Date: 2018.07.18

Last Calib.: 2018.07.18

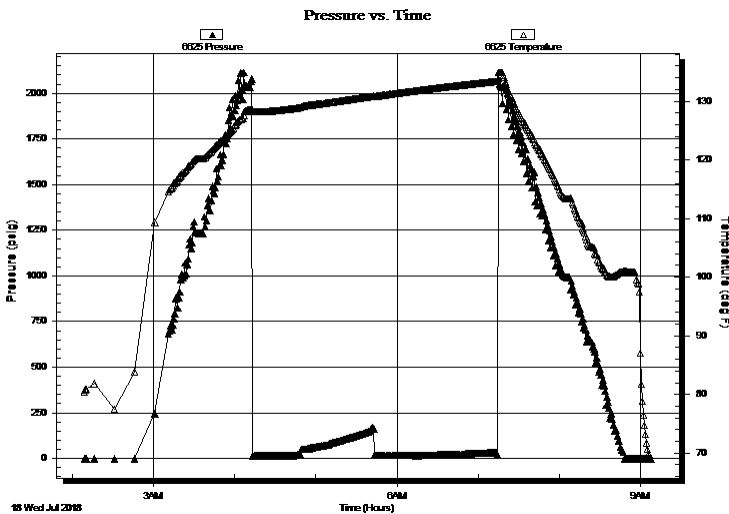
Start Time: 02:09:05 End Time: 09:07:29

Time On Btm:

Time Off Btm:

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 1/2", died back to 1/8" at close
60 - IS: No blow back
30 - FF: No blow
60 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud 100%	0.01

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64209

DST#: 5

ATTN: Robert Hendrix

Test Start: 2018.07.18 @ 02:09:00

Tool Information

Drill Pipe:	Length: 4101.00 ft	Diameter: 3.80 inches	Volume: 57.53 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: 20000.00 lb
Drill Collar:	Length: 180.00 ft	Diameter: 2.25 inches	Volume: 0.89 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 58.42 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4285.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	37.00 ft			
Tool Length:	66.00 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			4257.00	
Shut In Tool	5.00			4262.00	
Hydraulic tool	5.00			4267.00	
Jars	5.00			4272.00	
Safety Joint	3.00			4275.00	
Packer	5.00			4280.00	29.00 Bottom Of Top Packer
Packer	5.00			4285.00	
Stubb	1.00			4286.00	
Recorder	0.00	6625	Inside	4286.00	
Recorder	0.00	8017	Outside	4286.00	
Perforations	33.00			4319.00	
Bullnose	3.00			4322.00	37.00 Bottom Packers & Anchor

Total Tool Length: 66.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc

27-2s-35w Rawlins,KS

250 N. Water STE 300
Wichita, KS 67202

Kopriva 'A' #1-27

Job Ticket: 64209

DST#: 5

ATTN: Robert Hendrix

Test Start: 2018.07.18 @ 02:09:00

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: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud 100%	0.010

Total Length: 2.00 ft Total Volume: 0.010 bbl

Num Fluid Samples: 0

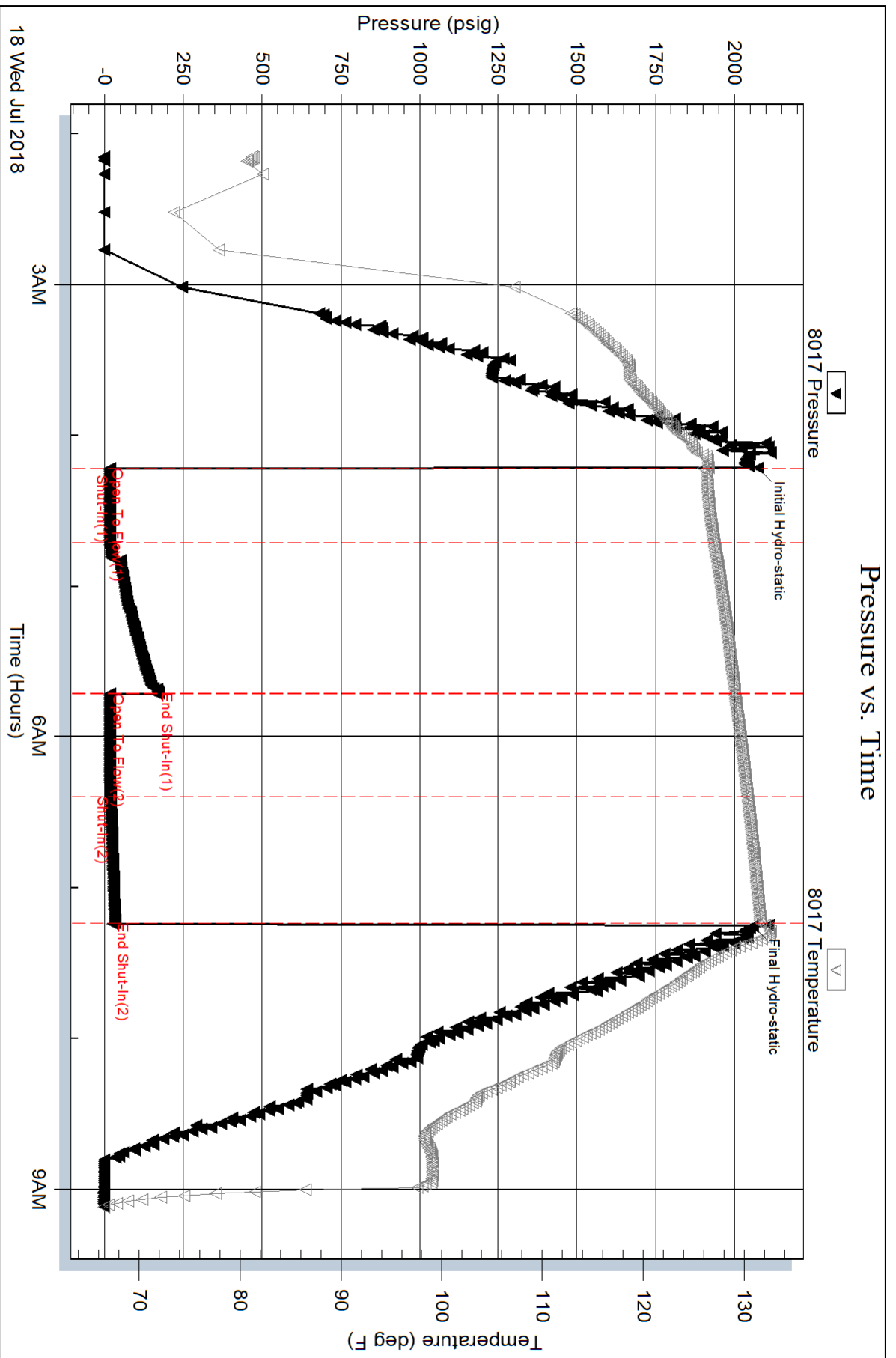
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



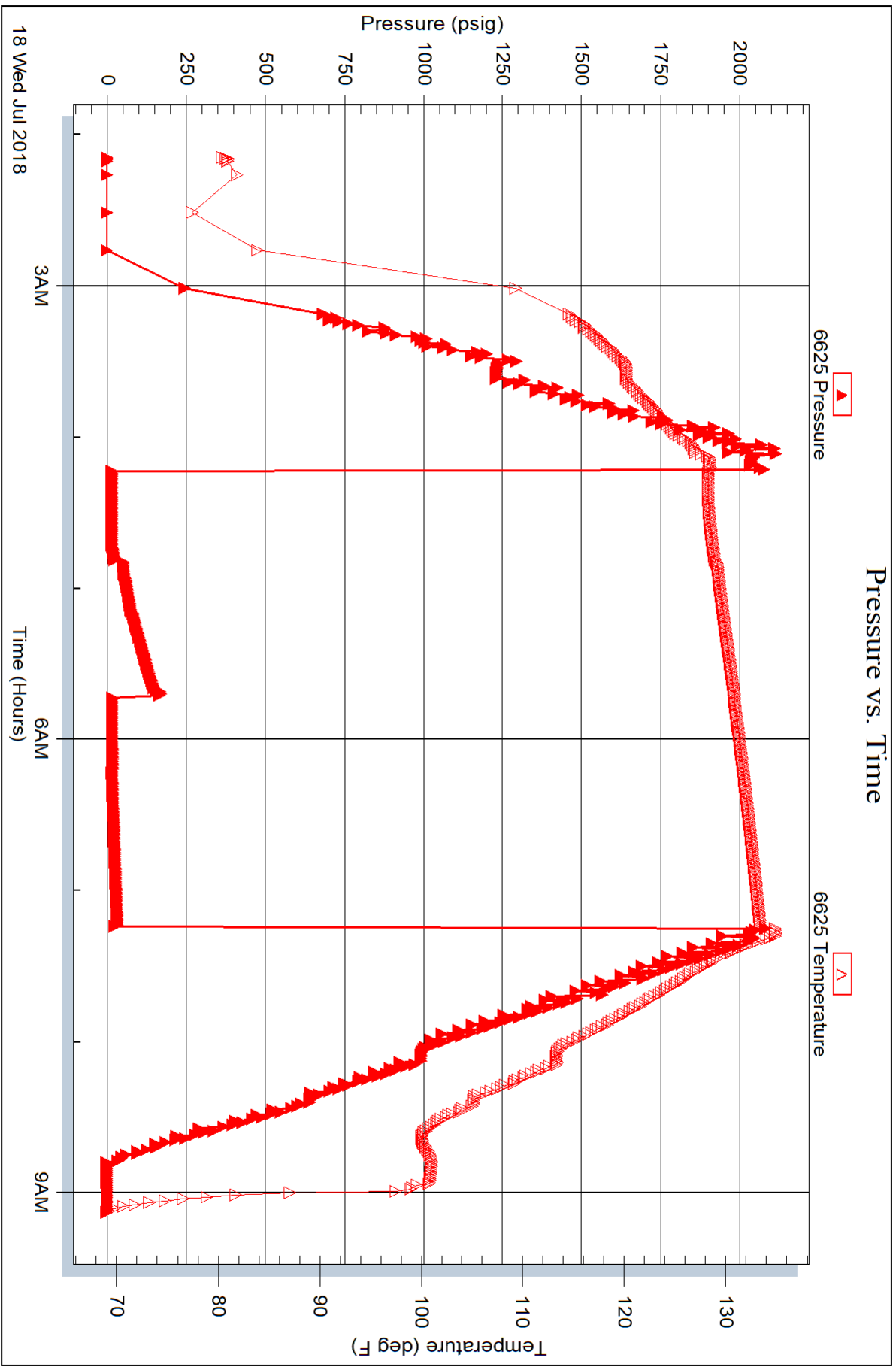
Serial #: 6625

Inside

Murfin Drilling Co., Inc

Kopriva 'A' #1-27

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64205

Well Name & No. Kopriva 'A' #1-27 Test No. 1 Date 7-14-18
 Company Murfin Drilling Co. Inc Elevation 3183 KB 3178 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3
 Location: Sec. 27 Twp 2s Rge. 35w Co. Rawlins State KS

Interval Tested 3864 - 3920 Zone Tested Topeka
 Anchor Length 56 Drill Pipe Run 3666 Mud Wt. 8.6
 Top Packer Depth 3859 Drill Collars Run 180 Vls 82
 Bottom Packer Depth 3864 Wt. Pipe Run - WL 7.2
 Total Depth 3920 Chlorides 900 ppm System LCM 3

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

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
<u>60</u>	<u>SWcm</u>		<u>6</u>	<u>94</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

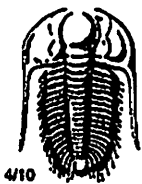
Rec Total 70 BHT 128 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm

(A) Initial Hydrostatic 1880 Test 1050 T-On Location 13:00
 (B) First Initial Flow 18 Jars 250 T-Started 14:41
 (C) First Final Flow 32 Safety Joint 75 T-Open 16:50
 (D) Initial Shut-In 1149 Circ Sub _____ T-Pulled 19:51
 (E) Second Initial Flow 36 Hourly Standby _____ T-Out 21:35
 (F) Second Final Flow 48 Mileage 86RT 86 Comments _____
 (G) Final Shut-In 1112 Sampler _____
 (H) Final Hydrostatic 1853 Straddle _____

Initial Open 30 Ruined Shale Packer _____
 Initial Shut-In 60 Ruined Packer _____
 Final Flow 30 Extra Copies _____
 Final Shut-In 60 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1461
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1461

Approved By [Signature] Our Representative James Vander

TriLOBITE TESTING INC. shall not be liable for damaged or 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. 64206

Well Name & No. Kopriva 'A' #1-27 Test No. 2 Date 7-15-18
 Company Murfin Drilling Co. Inc Elevation 3183 KB 3178 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3
 Location: Sec. 27 Twp 2s Rge. 35w co. Rawlins State KS

Interval Tested 3962 - 4017 Zone Tested Oread
 Anchor Length 55 Drill Pipe Run 3759 Mud Wt. 8.9
 Top Packer Depth 3957 Drill Collars Run 180 Vis 73
 Bottom Packer Depth 3962 Wt. Pipe Run - WL 6.4
 Total Depth 4017 Chlorides 700 ppm System LCM 3

Blow Description IF: Blow built to 2"
ISI: No blowback
FF: Blow started at 3 minutes, built to 1"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>100</u>	<u>Mud</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 100 BHT 129 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1933
 (B) First Initial Flow 18
 (C) First Final Flow 40
 (D) Initial Shut-In 1200
 (E) Second Initial Flow 42
 (F) Second Final Flow 63
 (G) Final Shut-In 1176
 (H) Final Hydrostatic 1914

Test 1150
 Jars 250
 Safety Joint 75
 Circ Sub _____
 Hourly Standby _____
 Mileage 86 RT 86
 Sampler _____
 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1561

T-On Location 8:35
 T-Started 9:16
 T-Open 10:48
 T-Pulled 13:49
 T-Out 15:40
 Comments _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1561
 MP/DST Disc't _____

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

Approved By _____

Our Representative Jama Windsor

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. 64207

Well Name & No. Kopriva 'A' #1-27 Test No. 3 Date 7-16-18
 Company Murfin Drilling Co. Inc Elevation 3183 KB 3178 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3
 Location: Sec. 27 Twp 2s Rge. 35w co. Rawlins State KS

Interval Tested 4123 - 4175 Zone Tested LKC "D"
 Anchor Length 52 Drill Pipe Run 3945 Mud Wt. 9.0
 Top Packer Depth 4118 Drill Collars Run 180 Vis 59
 Bottom Packer Depth 4123 Wt. Pipe Run - WL 6.8
 Total Depth 4175 Chlorides 800 ppm System LCM 3

Blow Description IF: Blow built to BOB (11") at 4 min., built to 82"
ISI: No blowback
FF: Blow built to BOB at 4 3/4 min., built to 132"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>350</u>	<u>mcw</u>		<u>63</u>	<u>37</u>	
<u>152.5</u>	<u>smcw</u>		<u>95</u>	<u>5</u>	

Rec Total 1875 BHT 142 Gravity _____ API RW 244 @ 93 °F Chlorides 21,000 ppm

(A) Initial Hydrostatic 2035 Test 1150 T-On Location 6:45
 (B) First Initial Flow 46 Jars 250 T-Started 8:10
 (C) First Final Flow 430 Safety Joint 75 T-Open 9:50
 (D) Initial Shut-In 1099 Circ Sub _____ T-Pulled 13:52
 (E) Second Initial Flow 432 Hourly Standby _____ T-Out 16:30
 (F) Second Final Flow 844 Mileage 86 RT 86 Comments _____
 (G) Final Shut-In 1099 Sampler _____
 (H) Final Hydrostatic 2018 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1561
 Final Flow 60 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 90 Sub Total 1561

Approved By

R. D. Wiley

Our Representative

James Winder

Triobite 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. 64208

Well Name & No. Kopriva 'A' # 1-27 Test No. 4 Date 7-17-18
 Company Murfin Drilling Co. Inc. Elevation 3183 KB 3178 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3
 Location: Sec. 27 Twp 2s Rge. 35w Co. Rawlins State KS

Interval Tested 4193 - 4242 Zone Tested Lans. "G"
 Anchor Length 49 Drill Pipe Run 4008 Mud Wt. 9.0
 Top Packer Depth 4188 Drill Collars Run 180 Vis 57
 Bottom Packer Depth 4193 Wt. Pipe Run - WL 6.8
 Total Depth 4242 Chlorides 800 ppm System LCM 5
 Blow Description IF: Blow built to BOB (11") at 1 min., built to 133"
ISI: No blowback
FF: Blow built to 1", died back to 1/4"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>350</u>	<u>WCM</u>		<u>28</u>	<u>72</u>	
<u>950</u>	<u>SMCW</u>		<u>96</u>	<u>4</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

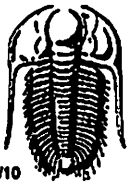
Rec Total 1300 BHT 140 Gravity _____ API RW 250 @ 79.1°F Chlorides 25,000 ppm

(A) Initial Hydrostatic 2040 Test 1150 T-On Location 2:35
 (B) First Initial Flow 328 Jars 250 T-Started 4:15
 (C) First Final Flow 593 Safety Joint 75 T-Open 6:35
 (D) Initial Shut-In 594 Circ Sub _____ T-Pulled 9:35
 (E) Second Initial Flow 590 Hourly Standby _____ T-Out 11:50
 (F) Second Final Flow 594 Mileage 86RT 86 Comments _____
 (G) Final Shut-In 595 Sampler _____
 (H) Final Hydrostatic 2020 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Initial Open 30 Extra Recorder _____ Sub Total 0
 Initial Shut-In 60 Day Standby _____ Total 1561
 Final Flow 30 Accessibility _____ MP/DST Disc't _____
 Final Shut-In 60 Sub Total 1561

Approved By R.L.D. [Signature]

Our Representative James Winder

Triobite 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.



TRIOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 64209

Well Name & No. Kopriva 'A' #1-27 Test No. 5 Date 7-18-18
 Company Murfin Drilling Co. Inc. Elevation 3183 KB 3178 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #3
 Location: Sec. 27 Twp 2s Rge. 35w Co. Rawlins State KS

Interval Tested 4285-4322 Zone Tested Lans. "J"
 Anchor Length 37 Drill Pipe Run 4101 Mud Wt. 9.0
 Top Packer Depth 4280 Drill Collars Run 180 Vis 57
 Bottom Packer Depth 4285 Wt. Pipe Run - WL 6.8
 Total Depth 4322 Chlorides 800 ppm System LCM 5
 Blow Description IF: 1/4" at open, built to 1/2", died back to 1/8" at close
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>Mud</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 <u>2</u>	BHT <u>132</u>	Gravity	API RW	@	F Chlorides

(A) Initial Hydrostatic <u>2075</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>1:20</u>
(B) First Initial Flow <u>17</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2:09</u>
(C) First Final Flow <u>17</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>4:13</u>
(D) Initial Shut-In <u>172</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>7:14</u>
(E) Second Initial Flow <u>17</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>9:00</u>
(F) Second Final Flow <u>19</u>	<input checked="" type="checkbox"/> Mileage <u>86 RT x 2</u> <u>172</u>	Comments
(G) Final Shut-In <u>34</u>	<input type="checkbox"/> Sampler	<u>loaded tools 7/19 10:00</u>
(H) Final Hydrostatic <u>2059</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input checked="" type="checkbox"/> Ruined Packer <u>320</u>
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>320</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Total <u>1967</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1647</u>	

Approved By _____ Our Representative James Winder

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