

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	OLIVE 1-21
Doc ID	1481786

All Electric Logs Run

DIL
DUCP
MEL
BHCS



MDCI  
Olive #1-21  
550' FNL 2205'FWL  
Sec. 21-2S-37W  
3345' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref
Anhydrite	3242	+103	-12	3244	+101	-14
B/Anhydrite	3272	+73	-11	3272	+73	-11
Topeka	4052	-707	-5	4060	-715	-13
Oread	4195	-850	-3	4197	-852	-5
Lansing	4270	-925	-1	4272	-927	-3
Stark	4495	-1150	-3	4504	-1159	-12
Mound City	4550	-1205	-7	4557	-1212	-14
Ft Scott	4674	-1329	-3	4682	-1337	-11
Oakley	4750	-1405	-5	4759	-1414	-14
Mississippian	4972	-1627	-3	4971	-1626	-2
RTD	5050					
LTD				5052		



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

Well Name: Olive #1-21 - Murfin Drilling Company, Inc.  
API: 15-023-21522-00-00  
Location: SW-NE-NE-NW, Section 21-02S-37W  
License Number: KCC #30606  
Spud Date: September 23, 2019  
Surface Coordinates: 550' FNL & 225' FEL,  
of Section  
Bottom Hole Vertical Wellbore  
Coordinates:  
Ground Elevation (ft): 3340 Ft.  
Logged Interval (ft): 3900 Ft. To: 5050 Ft. Total Depth (ft): RTD 5050 Ft. LTD 5052 Ft.  
Formation: Mississippian at Total Depth  
Type of Drilling Fluid: Chemical

Region: Cheyenne Co., Kansas  
Drilling Completed: October 04, 2019  
Results: D & A  
Field: Wildcat

K.B. Elevation (ft): 3345 Ft.

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

Operator

Company: Murfin Drilling Company, Inc.  
Address: 250 North Water, Suite 300  
Wichita, Kansas 67202-1216

Geologist

Name: M. Bradford Rine  
Company: Consulting Geologist, Kansas Lic. #204, Wyo #189, AAPG Cert. #2647  
Address: 100 South Main, Suite #320A  
Wichita, Kansas 67202

Remarks

Based on sample observations, drill stem test results, and electric log evaluation, it was the decision of the Operator, to plug and abandon the "Olive #1-21", on October 04, 2019.

Respectfully submitted,  
M. Bradford Rine, geologist

## Drilling Information

**Rig:** Murfin Drlg. Co. Rig #3  
**Pump:** Emsco D-375 6 x 14  
**Drawworks:** Ideco H35  
**Collars:** 534' 2-1/4" x 6-1/4"  
**Drillpipe:** 4-1/2" 16.6# XH  
**Toolpusher:** Jay Ruzicka

**Mud:** Morgan (Dave Lines)  
**Gas Detector:** None  
**Drill Stem Tests:** Trilobite (Shawn Wheelbarger)  
**Logs:** Pioneer (Ian Mabb)  
**Water:** Frisbie Fresh Water Pit (HSI Tank)  
**Company Representatives:**  
**Office:** Michel Runnion  
**Field:** None

## Daily Drilling Status

<b>Date:</b>	<b>Operations/Depth/Comments</b>
09-23-19	MIRT, RU, Spud @ 0'
09-24-19	Drilling @ 455'
09-25-19	Drilling @ 2395'
09-26-19	Drilling @ 3650'
09-27-19	Drilling @ 4125'
09-28-19	Drilling @ 4255'
09-29-19	Trip Out of Hole for DST #3 @ 4370'
09-30-19	Trip Out of Hole with DST #4 @ 4420'
10-01-19	Trip in Hole after DST #5 @ 4500'
10-02-19	Circulating for Samples @ 4783'
10-03-19	Drilling @ 4900'
10-04-19	Plugging @ 5050'

	Results:	D & A		(Well A)	Oil	
	Murfin Drilling Co., Inc.			Murfin Drilling Co., Inc.		
	Olive #1-21			Smith "A" #2-21		
	550' FNL & 2205' FEL			2310' FSL & 330' FEL		
	Sec. 21-02S-37W			Sec. 21-02S-37W		
	KB 3345			KB 3416		Well A
Formations	Sample	E-Log	Datum	E-Log	Datum	Comp
Anhydrite	3242	3244	101	3301	115	-14
B/Anhydrite	3272	3272	73	3332	84	-11
Topeka	4056	4060	-715	4118	-702	-13
Oread	4195	4197	-852	4263	-847	-5
Lansing	4270	4272	-927	4340	-924	-3
Stark Sh.	4502	4503	-1158	4563	-1147	-11
Mound City	4555	4557	-1212	4614	-1198	-14
Ft. Scott	4680	4683	-1338	4742	-1326	-12
Oakley	4756	4759	-1414	4816	-1400	-14
Mississippian	4969	4971	-1626	5040	-1624	-2
Total Depth	5050	5052	-1707	5103	-1687	-20



## Casing, Bits, Surveys, Pipe Straps, Mudup

### CASING:

Conductor: None

Surface: Ran 7 jts, 8-5/8" 23# casing, set @ 302'. (HSI) Cement with 275 sx Class A, 3%CC, 2% gel. Plug down at 8:45 PM, September 23, 2019. Cement did circulate.

Production: Plugged as follows: (HSI) Cement with 225sx 60/40 POZ, 4% gel, 1/4# floreal: 50sx @ 3250', 100sx @ 2500', 50sx @ 350', 10sx @ 40', 30sx in RH, 15sx in MH.

### BITS:

No.	Size	Make	Model	Depth In	Depth Out	Hours
1	12-1/4	HTC	B37DX	0	302	03.25
2	7-7/8	Smith	MADi516	302	3900	49.50
3	7-7/8	Smith	F124	3900	5050	67.75

### DEVIATION SURVEYS:

Deviation:	Depth:	Deviation:	Depth:	Deviation:	Depth:
0.75*	302'	0.75*	2864'	1.00*	4783'
0.25*	1212'	1.00*	4235'	1.50*	5050'
0.75*	2241'	0.75*	4500'		

### PIPE STRAPS:

Difference:	Depth:
4.22 ft Short	4235'
3.22 ft long	4300'
2.73 ft long	4370'

### Displace and Mudup:

Displace @ 3600'  
Complete @ 3613'

**DST #1: 4146-4235 (Oread)**

**Times: 30-60-30-60**

**Initial Open: Wk Blow, Built to 1/4" i.b.,  
weakened and died in 18 min.**

**Final Open: No Blow**

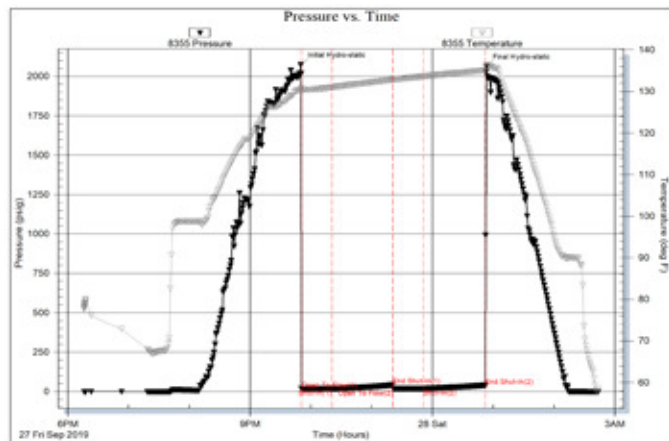
**Rec: 5' mud**

**IHP: 2071 FHP: 2060**

**IFP: 18-18 FFP: 17-18**

**ISIP: 42 FSIP: 38**

**BHT: 136°F**



**DST #2: 4219-4300 (Lans A)**

**Times: 30-60-30-60**

**Initial Open: Wk Blow built to 2-3/4" i.b.,  
died back to 2-1/2" i.b.**

**Final Open: No Blow**

**Rec: 59' mud**

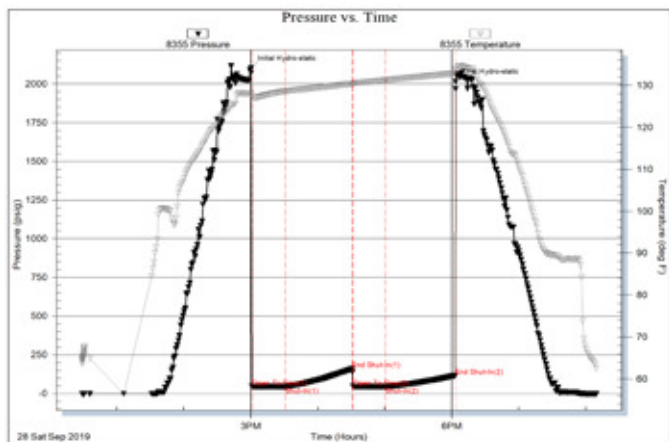
**IHP: 2101 FHP: 2014**

**IFP: 45-46 FFP: 45-46**

**ISIP: 159 FSIP: 114**

**BHT: 134°F**

**(Slid tool 4 ft!)**



**DST #3: 4291-4370 (Lans D)**

**Times: 30-60-30-60**

**Initial Open: Wk Blow, built to 1-1/4"**

**Final Open: No Blow**

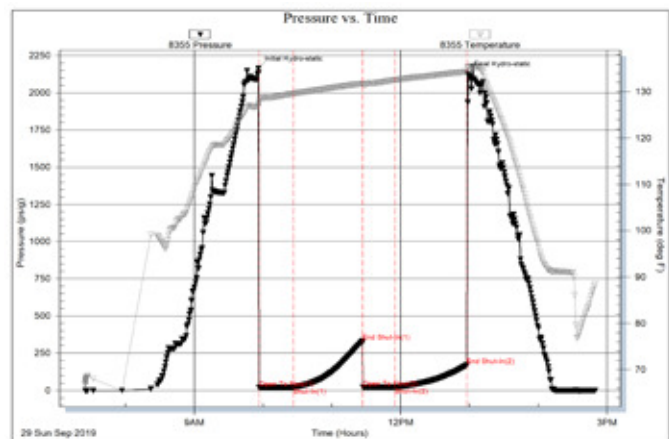
**Rec: 5' mud**

**IHP: 2163 FHP: 2127**

**IFP: 19-20 FFP: 21-22**

**ISIP: 332 FSIP: 169**

**BHT: 135°F**



**DST #4: 4352-4420 (Lans G)**

**Times: 30-60-30-60**

**Initial Open: Wk Blow, built to 2-3/4" i.b.**

**Final Open: Wk Blow, built to 1-1/4" i.b.**

**Rec: 128' SGCM with oil spots,**

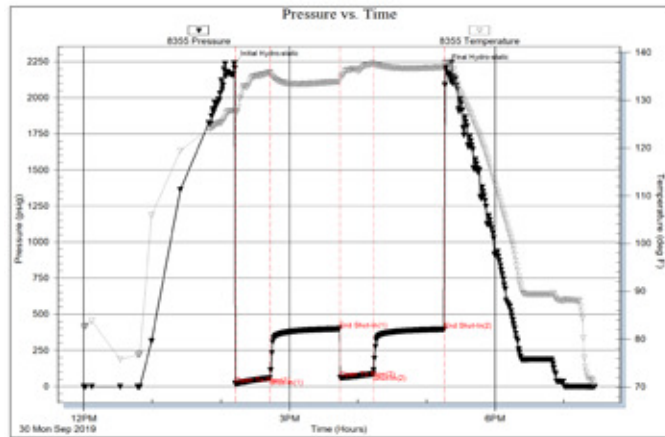
**08% gas, 92% mud**

**IHP: 2237 FHP: 2211**

**IFP: 18-57 FFP: 59-87**

**ISIP: 398 FSIP: 395**

**BHT: 138°F**



**DST #5: 4407-4500 (LKC H,J)**

**Times: 30-60-60-90**

**Initial Open: Wk Blow, built to 3" i.b.**

**Final Open: Fr Blow, built to 4-1/2" i.b.**

**Rec: 190' Total Fluid**

**13' SGMCO: 10%g 85%o 05%m**

**177' GOWCM: 09%g 18%o 21%w 52%**

**(Oil Gravity 21.3 API)**

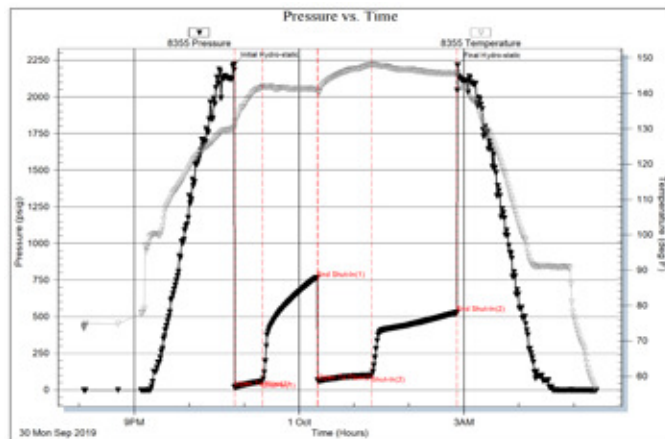
**(Chl/Wtr 14000 ppm Chl/Mud 1100 ppm)**

**IHP: 2219 FHP: 2214**

**IFP: 17-60 FFP: 61-100**

**ISIP: 763 FSIP: 527**

**BHT: 146°F**



**DST #6: 4657-4783 (Ft Scott,**

**Lower Ft. Scott, Breezy Hill, Celia)**

**Times: 30-60-30-60**

**Initial Open: Wk Blow, built to 1-1/4" i.b.**

**Final Open: No Blow**

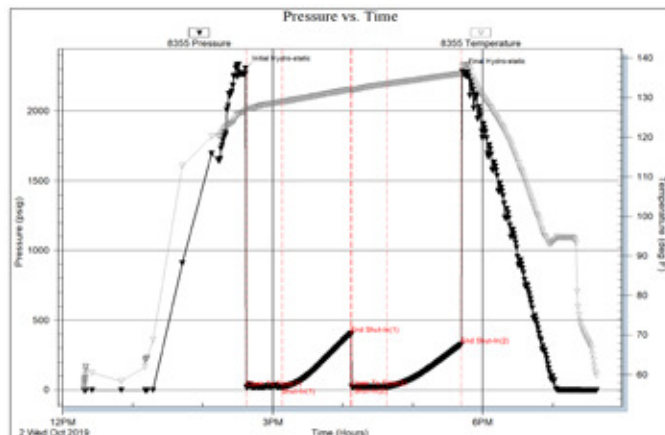
**Rec: 10'mud**

**IHP: 2304 FHP: 2283**







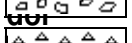

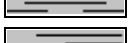
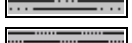

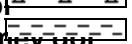

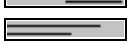
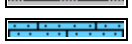
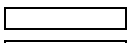
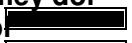





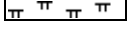





**IFP: 20-21 FFP: 23-23**

**ISIP: 404 FSIP: 325**

























































**BHT: 138°F**



### Rock Types

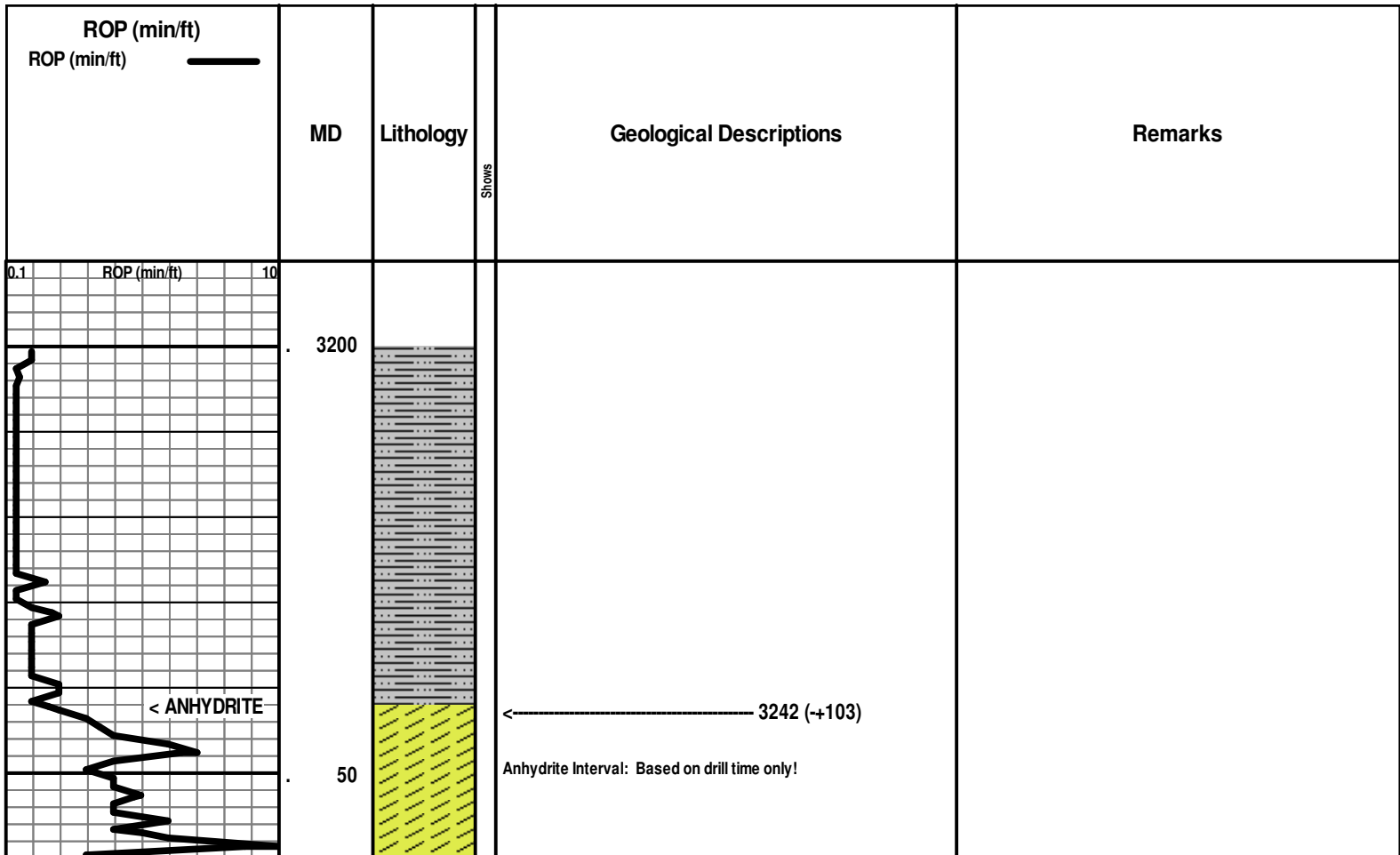
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	dol ls limey		Brec		Gyp		Shale		Siltysh
	New symbol		Cht		Igne		Shcol		Shlysiltst
	Dolom ls limey		Clyst		Lmst		Shgy		Sandyls
	New symbol		Black shale/coal		Meta		Siltst		
	Anhy		Congl		Mrlst		Ss		

### Accessories

<b>MINERAL</b>		Gyp	<b>FOSSIL</b>		Ostra		Siltstrg
	Anhy		Hvymin		Algae		Ssstrg
	Arggrn		Kaol		Amph		
	Arg		Marl		Belm		
	Bent		Minxl		Bioclst	<b>TEXTURE</b>	
	Bit		Nodule		Brach		Boundst
	Brecfrag		Phos		Bryozoa		Chalky
	Calc		Pyr		Cephal		Cryxln
	Carb		Salt		Coral		Earthy
	Chtdk		Sandy		Crin		Finexln
	Chtlt		Silt		Echin		Grainst
	Dol		Sil		Fish		Lithogr
	Feldspar		Sulphur		Foram		Microxln
	Ferrpel		Tuff		Fossil		Mudst
	Ferr				Gastro		Packst
	Glau				Oolite		Wackest
						<b>STRINGER</b>	
							Anhy
							Shale
							Bent
							Coal
							Dol
							Gyp
							Ls
							Mrst

### Other Symbols

<b>OIL SHOW</b>		Even		Dead	<b>INTERVAL</b>		Core
	Oil & gas show		Spotted		Gas		Dst
	Gas show		Trace or questionable				



< B/ANHYDRITE

3272 (+73)

0.1 ROP (min/ft) 10

3300

Displace & Complete  
Mudup @ 3600-3613 ft!

Mud Check: Drlg @ 3765':

Vis	Wt	WL	LCM	PV	YP
54	8.6	6.0	4.0	17	18
Chl	Hd	pH	Solids		
600	10	11.5	2.2		

\*\*\* Depth Break \*\*\*

3900

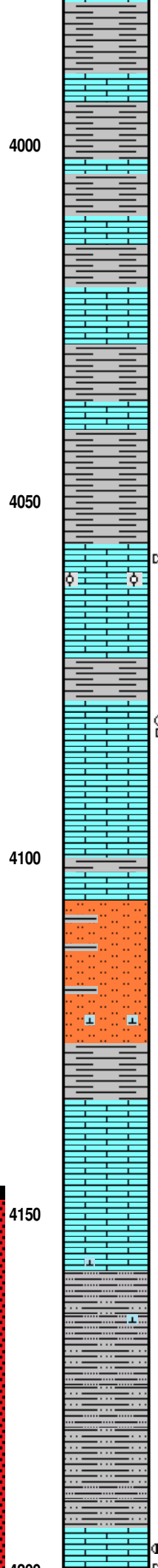
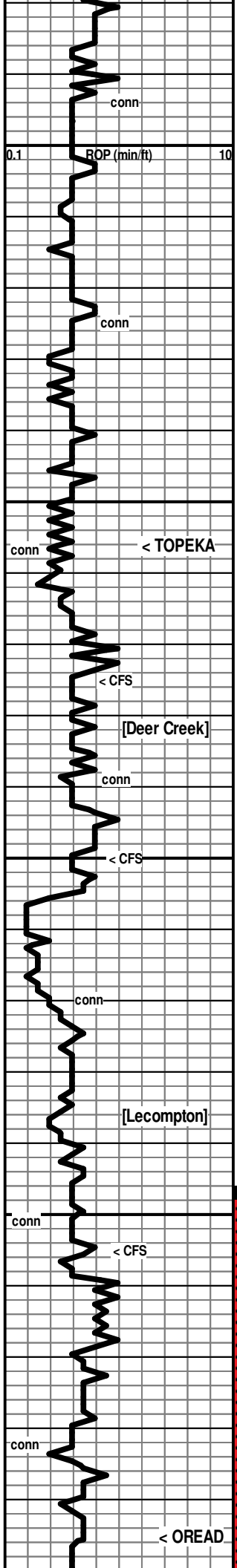
conn

3950

conn

Ls cr-gy. fn xln, dns, foss in pt

Sh red-gy-grn, subsilty text in pt (washes red)



Ls red-gy, fn xln, dns, abund foss

Ls cr-gy, fn xln, dns, abund foss

Sh red-gy-grn, subsilty text in pt (washes red)

Sh red-gy-grn, subsilty text in pt (washes red)

Ls wh-cr-gy, fn xln, dns, foss in pt; with abund shale, mostly red, some gm, silty in pt (washes red)

Spls 90% Ls wh-cr-tan, fn xln, mostly dns-some pr xln por, abund foss

50% Sh mostly red, some gy-grn, subsilty in pt; 50% Ls cr, fn xln, pr xln por, foss to abund foss (washes red)

← 4056 (-711)

Ls wh-cr-gy, fn xln, mostly pr xln por, some scatt pp pores, some dns, abund foss, some ool with scatt interool pores, Ls becomes more dns or chalky with depth with scatt vugs

[No Odor, No Fluor, scatt blk Tarry Dead Oil and gils stn, NSFO]

Sh mostly red, some gm, subsilty in pt

Ls wh-cr, fn-md xln, pr-fr xln por in pt with scatt vugs, abund foss, many pcs filled with red shale/clay

[No Odor, No Fluor, V Rr pcs with black tarry dead stn, NSFO]

Sh mostly red, some gm-gy, subsilty in pt

Siltstone with some vfn sd, shale to calc, mostly red with some gy-grnish (washes red)

Sh red-grn-dk gy, silty

Ls wh-cr-gy, fn xln, por xln por in pt, scatt pp pores, dns in pt, some chalky & soft, foss-abund foss

Shaley Siltstone, gy to lav.

4170' spl: Mix of abund siltstone, gy-dk gy, calc siltstone, shaley siltstone, and gy silty Ls

Shaley Siltstone to Silty Shale, gy-red, calc in pt

← 4195 (-850)

4200 & 4210 spls: Ls wh-cr, fn xln, subchalky in pt, pr vis xln por, some scatt. Dfs&scatls, abund foss

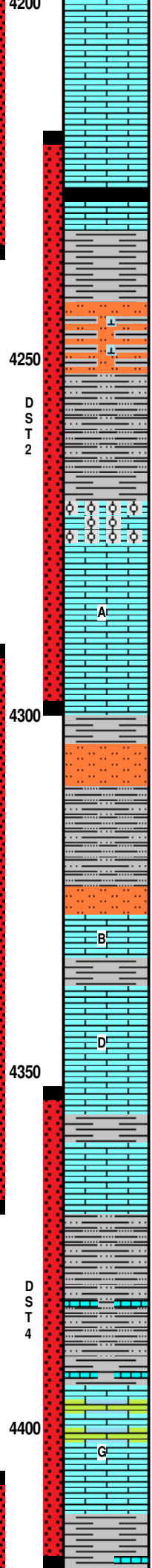
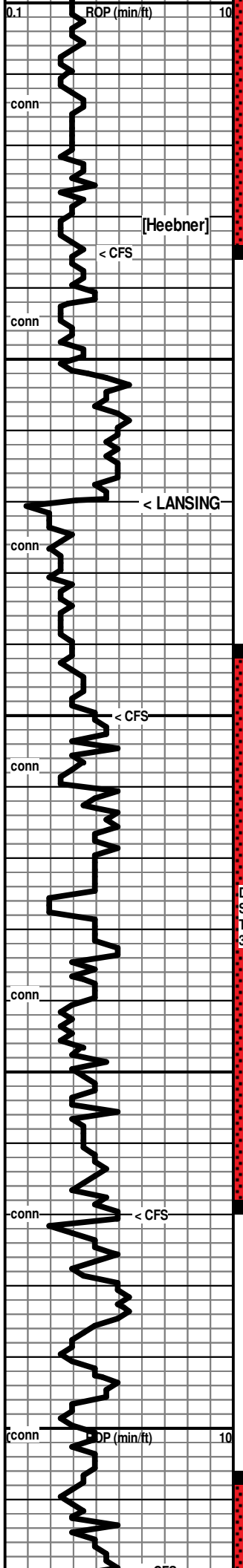
7:00 AM, September 27, 2019

DST #1: 4146-4235 (Oread)  
 Times: 30-60-30-60  
 Initial Open: Wk Blow, Built to 1/4" i.b., weakened and died in 18 min.  
 Final Open: No Blow  
 Rec: 5' mud  
 IHP: 2071 FHP: 2060  
 IFP: 18-18 FFP: 17-18  
 ISIP: 42 FSIP: 38  
 BHT: 136°F

Mud Check: Drlg @ 4164':

Vis	Wt	WL	LCM	PV	YP
55	9.0	6.0	4.0	17	17
Chl	Hd	pH	Solids		
600	10	11.0	5.0		

[4200' & 4210' spls: No Odor, Scatt dull Fluor, Mod am't of pcs with spotty to patchy dk brn to black stn, with thick dk brn dead oil and tarry black Oil,



Rr pp pores, Rr foss molds, abund foss  
 Show Descr. —————>  
 4220' spl: Ls wh-cr-tan, fn xln, dns in pt, chalky in pt, Rr pr xln por with some foss pores  
 Show Descr. —————>  
 4230' & 4240' spls: Ls mostly cr-tan, vfn-fn xln, dns, some chalky and white  
 Show Descr. —————>  
 Sh dk gy-black, carb in pt  
 Spls still contaminated with trip slough: Ls cr-tan, vfn-fn xln, dns, Shales: mostly gy-dk gy  
 Siltstone wh-gy, shaley in pt, abund calc cem in pt  
 [No Odor, No Fluor, scatt patches of blk resid/gilson stn, NSFO]  
 Sh red, silty-mushy-earthy (washes red)  
 Sh red, mostly silty-mushy-earthy (washes red), some cgl of sd, pyrite & silt & clay  
 Sh grn, subwaxy-subbrittle text  
 <----- 4270 (-925)  
 Ls cr-tan, fn xln, pr xln por, ool-oom: ool pcs mostly well-cem, oom pcs pr-fr oom por  
 Show Descr. —————>  
 Ls wh-cr-tan, vfn-fn xln, mostly dns & hard, some softer & chalky  
 Ls wh-cr-tan-pl gy, mostly dns with scatt patches of pr xln por, subchalky in pt, sli foss in pt  
 [No Odor, Rr spotty dull fluor, Rr trace to v sli show of brn NVL oil & FO on brk, scatt patches of blk, gilson. stn]  
 Siltstone, wh-gy, abund calc cem  
 [No Odor, No fluor, abund blk resid/gilson stn, NSFO]  
 Shaley Siltstone to silty shale, red, mushy to soft (washes red)  
 Siltstone, wh-red  
 Ls cr-tan-gy, vfn-fn xln, pr xln por-dns, silty in pt  
 [No Odor, No fluor, scatt blk gilson/resid stn]  
 Sh gy-red, silty in pt  
 Ls wh-cr, fn-md xln, pr xln por, mod amt of vugs & pp pores, some pcs v. vuggy, foss in pt  
 [V. Fnt Odor, scatt dull-mod fluor, trace-sli shows of brn FO, fr-gd shows of dk brn to blk hvy NVL oil & thick tarry oil]  
 Ls wh-cr, fn xln, dns, some subchalky & softer  
 Sh gy-red  
 Ls wh-cr-tan,fn xln, pr xln por, scatt vugs, foss in pt  
 [No Odor, No fluor, vugs stn'd with dk brn-blk hvy tarry oil and resid DO]  
 Silty Shale & Shaley Siltstone mostly red, some gy-grn. mushy-soft-subfirm (washes red)  
 Sh-shaley siltstone-silty shale red-gy-grn, some Ls wh-cr, fn xln, dns, sli foss  
 Ls wh-cr, fn xln, mostly pr xln por with patches of pp por, some pcs with fr xln por, scatt sm vugs, foss, grainy/dol text in pt, pr-fr crush, becoming more dns to chalky with depth  
 [Fnt Odor, abund dull-mod fluor, abund pcs with brn-dk brn spotty to patchy to some even to dk sat stn, abund mix of sli-fr shows of brn FO & dk brn NVL oil on crush, a few pcs v sli gassy]  
 Sh gy-grnish, silty in pt

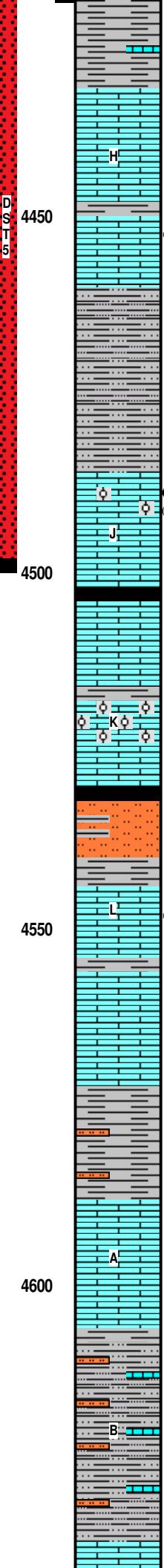
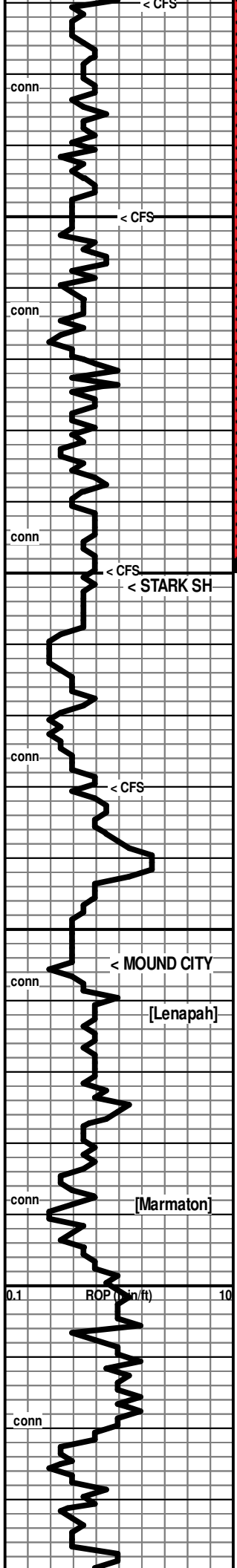
sli gils stn in pt, Mod % pcs with dull fluor, sli shows of brn FO & dk brn NVL oil]  
 [4220' spl: No Odor, Rr dull fluor, Low % pcs with mixed shows as above]  
 [4230' & 4240' spls: No Odor, No Fluor, v low % pcs with patches & spots of blk gilson stn, NSFO]  
 \* Pipe Strap @ 4235': 4.22 ft Short!  
**DST #2: 4219-4300 (Lans A)**  
 Times: 30-60-30-60  
 Initial Open: Wk Blow built to 2-3/4" i.b., died back to 2-1/2" i.b.  
 Final Open: No Blow  
 Rec: 59' mud  
 IHP: 2101 FHP: 2014  
 IFP: 45-46 FFP: 45-46  
 ISIP: 159 FSIP: 114  
 BHT: 134°F  
 (Slid tool 4 ft!)  
 7:00 AM, September 28, 2019  
 [V Fnt Odor, Abund mod patchy-even fluor, high % pcs with patchy to even mixed Stn of: tan-brn-dk brn-black, Sli shows tan-brn FO in mod amt of pcs, abund pcs with dk, hvy brn NVL oil & DO, some barren pcs]  
 Mud Check: TOOH for DST2 @ 4300':  

Vis	Wt	WL	LCM	PV	YP
59	9.0	6.4	2.0	18	18
Chl	Hd	pH	Solids		
800	10	11.0	5.0		

 \* Pipe Strap @ 4300': 3.22 ft long!  
**DST #3: 4291-4370 (Lans D)**  
 Times: 30-60-30-60  
 Initial Open: Wk Blow, built to 1-1/4" i.b.  
 Final Open: No Blow  
 Rec: 5' mud  
 IHP: 2163 FHP: 2127  
 IFP: 19-20 FFP: 21-22  
 ISIP: 332 FSIP: 169  
 BHT: 135°F  
 \* Pipe Strap @ 4370': 2.73' long!  
 7:00 AM, September 29, 2019  
 Mud Check: OB/DST3 @ 4370':  

Vis	Wt	WL	LCM	PV	YP
53	9.2	6.8	3.0	16	17
Chl	Hd	pH	Solids		
1100	10	10.5	6.4		

**DST #4: 4352-4420 (Lans G)**  
 Times: 30-60-30-60  
 Initial Open: Wk Blow, built to 2-3/4" i.b.  
 Final Open: Wk Blow, built to 1-1/4" i.b.  
 Rec: 128' SGCM/oil spots: 08% g 92% m  
 IHP: 2237 FHP: 2211  
 IFP: 18-57 FFP: 59-87  
 ISIP: 398 FSIP: 395  
 BHT: 138°F  
 7:00 AM, September 30, 2019



Sh red-gy-grn, silty in pt, mic in pt, some dns wh ls in spls

Ls wh-cr-gy, fn xln, subchalky in pt, mostly dns with scatt patches of pr xln por & Rr pp pores, sli foss in pt; becoming more dns with depth

Sh gy-grn, subsilty-subwaxy text

Ls wh-cr-tan, vfn-fn xln, dns in pt, chalky in pt  
**[No Odor, No fluor, scatt scant spotty-patchy blk resid stn]**

Silty Shale to Shaley Siltstone red-gy-grn-lav with scatt calc cem, soft to subfirm

Silty Shale mostly shades of red, some calc siltstone

Ls wh-cr, fn xln, abund pr xln por, some fr xln pr in patches and pcs, scatt foss moldic por, foss to abund foss, ool in pt, pr-fr crush

Ls wh-cr-tan, fn xln, dns  
 Sh dk gy-dk grn-red, carb in pt?  
 30% Ls wh-cr-tan, fn xln, soft & chalky-subchalky, to dns & hard, Rr pr vis xln por, sli foss in pt; 70% Shales mostly red, some gy-grnish  
**[No Odor, No Fluor, in chalky-subchalky pcs: scatt fnt spotty-patchy stn with trace shows of micro-drops of dk FO & tan film on crush]**  
 CFS: 70% Ls wh-cr, fn xln, pr-fr xln pr, packed ool with scatt fr interool pores, fr-gd crush, some mushy & chalky (NS); 30% Shales as above

Sh red-gy; siltstone wh-gy, calc in pt, shaley in pt; Ls cr-gy, dns

Siltstone gy-red  
 Abund red shale (washes red)  
 Ls wh-cr-tan, fn xln, chalky & soft in pt, dns to pr xln por in pt, sli foss in pt, some micro-ool pcs  
**[4560' spl: No Odor, few pcs total with dull spotty fluor and scant spotty stn with trace show of micro-drops of FO on crush]**

Ls wh-cr-gy, fn xln, dns, foss, some red shale inclusions

Sh red-gy earthy to subsilty text, scatt silty patches; abund cr-tan vfn-fn xln ls, dns, subchalky in pt

Ls wh-cr-tan-gy, fn xln, subsucr/silty text in pt, chalky in patches & pcs, dns in pt, Rr foss

4620' spl: 75% Silty shales to shaley siltstone red-gy-lav-tan; 25% Ls wh-cr-tan, fn xln, dns

75% Silty shales to shaley siltstone red-gy-lav-tan; 25% Ls wh-cr-tan, fn xln, dns

Ls wh-cr, fn xln, dns in pt, abund foss-moldic in pt, abund foss

Mud Check: TIH after DST4 @ 4420':  
 Vis Wt WL LCM PV YP  
 75 9.4 7.2 2.0 18 31  
 Chl Hd pH Solids  
 1100 30 10.0 7.8

\* Add Premix!

[4450' spl: No Odor, low % pcs with spotty-patchy dull to mod fluor, spotty-patchy tan-brn stn in low % pcs, some v dk spots, Rr trace-sli shows of v sli gassy lt brn FO, some v sli shows of dk NVL oil & Dead oil; 4450' 20-min spl: only a couple of pcs per tray with trace shows]

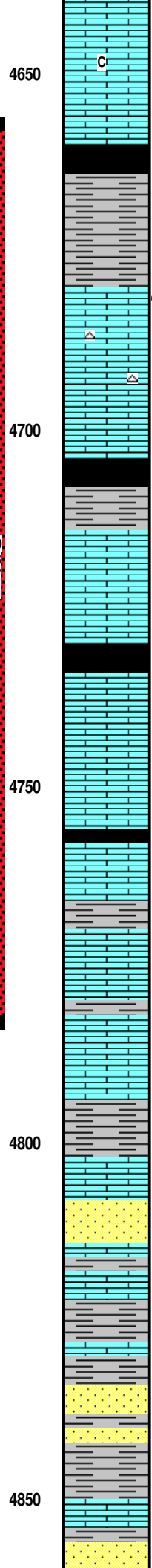
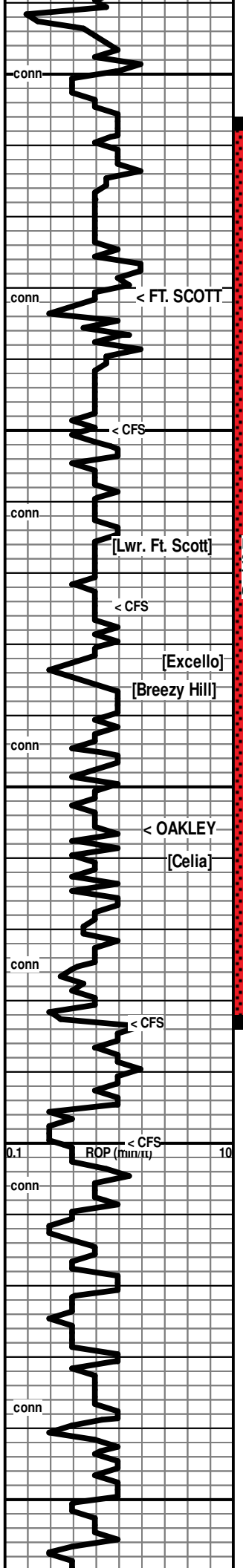
[No Odor, moderate am't of mod fluor, with spotty-patchy-even brn to dk brn stn with trace to sli shows of brn to dk brn sli gassy FO on crush]

7:00 AM, October 01, 2019

DST #5: 4407-4500 (LKC H,J)  
 Times: 30-60-60-90  
 Initial Open: Wk Blow, built to 3" i.b.  
 Final Open: Fr Blow, built to 4-1/2" i.b.  
 Rec: 190' Total Fluid  
 13' SGMCO: 10%g 85%o 05%  
 177' GOWCM: 09%g 18%o 21%w 52%  
 (Oil Gravity 21.3 API)  
 (Chl/Wtr: 14000 ppm Chl/Mud: 1100 ppm)  
 IHP: 2219 FHP: 2214  
 IFP: 17-60 FFP: 61-100  
 ISIP: 763 FSIP: 527  
 BHT: 146°F

Mud Check: Drlg @ 4518':  
 Vis Wt WL LCM PV YP  
 57 9.1 6.0 5.0 18 18  
 Chl Hd pH Solids  
 1000 10 11.5 7.1





some chalky & soft pcs

Ls wh-cr, fn xln, dns in pt, abund foss in pt, abund foss, some chalky & soft pcs

Ls cr-pl gy, fn xln, silty text in pt, chalky in pt

Ls gy, fn xln, silty text, dns

Sh black,carb (repres in 4630 ft spl)

Sh red-gy-dk gy, subsilty text in pt

Sh gy-dk gy

← 4680 (-1335)

Ls wh-cr-tan, fn xln, mostly pr vis xln por with Rr patches of fr xln por, scatt pp pores, few vugs, foss, some subchalky, mod am't dns, foss (is break a shale or Ls porosity?)

Show Descr. →

Ls wh-cr-tan-gy, fn xln, chalky in pt, pr xln por to dns in pt, foss to abund foss, chert: fresh, tan, foss, transl

Show Descr. →

Ls cr-brn-gy, vfn-fn xln, dns, foss

Sh black, carb

Ls wh-cr-tan, fn xln, dns & hard to softer & chalky, foss

[No Odor, few pcs with patches of fluor, with patches of spots of dk stn with trace shows of brn micro-drops FO on crush]

Ls wh-cr-tan, fn xln, dns & hard to softer & chalky, foss

Sh black, carb (some in 4740', abund repres in 4750' spl)

Ls cr-tan-gy-dk gy, vfn-fn xln, dns, foss in pt

Ls wh-cr, fn xln, subchaky-chalky in pt, dns in pt, sli foss

[No Odor, No Fluor, Rr patches of blk resid stn, NSFO]

← 4756 (-1411)

Sh black, carb (poorly repres in spls)

Ls cr-tan-gy, fn xln, subchalky in pt, mostly dns & hard, foss

Ls wh-cr-tan-gy, fn xln, pr xln por in pt, subchalky in pt, dns in pt, foss

Ls wh-cr-tan, fn xln, pr xln por in pt, subchalky in pt, dns in pt, foss

[No Odor, No Fluor, Rr chalky pcs with trace of patchy blk resid stn, NSFO]

Sh gy-red

Sh gy-grnish-grn-turq grn, sdy in pt, subwaxy in pt

50% Ls wh-cr-tan, vnf-fn xln, dns; 50% Shales red-gy-grn

40% Ls wh-cr-tan, vfn-fn xln, dns; 40% Shales red-gy-grn, silty-sdy in pt; 20% Sd tan-gy, fn grn, gd sort, subrd, pr-fr fri, some v hard

45% Ls wh-cr-tan-gy, vfn-fn xln, mostly dns & hard, some softer & chalky; 50% Shales red-gy-grn-lav, subwaxy to silty text; 05% Sd gy-lav, fn grn, gd sort, subrd, pr-fr fri, shaley in pt, calc in pt

75% Shale red-gy-grn, sdy in pt, subwaxy in pt; 20% Sd wh-gy, fn-md grn, pr-fr sort, subangl-subrd, pr-fr fri, sharp to subrd clusters; 05% Ls wh-cr-tan, dns to chalky (washes red)

05% Shale red-gy-grn, sdy in pt, subwaxy in pt; 20% Sd wh-gy, fn-md grn, pr-fr sort, subangl-subrd, pr-fr fri, sharp to subrd clusters; 05% Ls wh-cr-tan, dns to chalky (washes red)

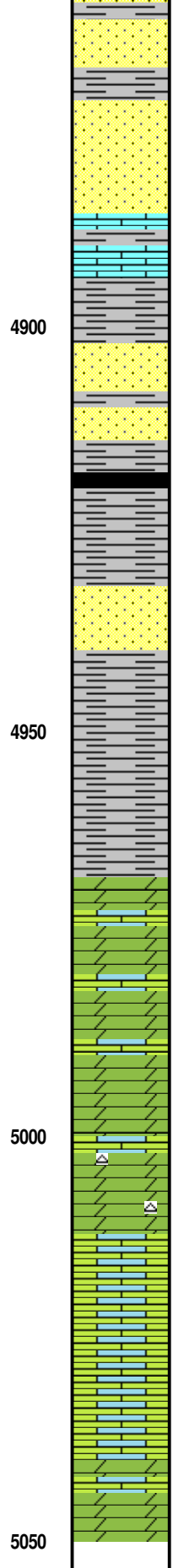
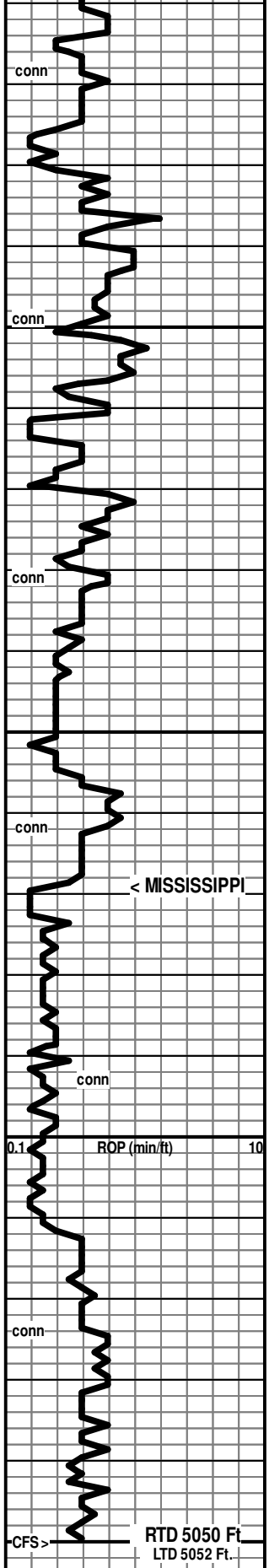
[4690' spl: Fnt Odor, mod am't of dull fluor, abund pcs with spotty-patchy brn stn with mostly sli shows of Lt brn-brn FO-sli gassy in pt, some pcs with Fr shows of sli gassy brn FO]

[No Odor, No fluor, few pcs with patches of blk spotted stn, NSFO]

DST #6: 4657-4783 (Ft Scott, Lower Ft. Scott, Breezy Hill, Celia)  
 Times: 30-60-30-60  
 Initial Open: Wk Blow, built to 1-1/4" i.b.  
 Final Open: No Blow  
 Rec: 10'mud  
 IHP: 2304 FHP: 2283  
 IFP: 20-21 FFP: 23-23  
 ISIP: 404 FSIP: 325  
 BHT: 138°F

7:00 AM, October 02, 2019

Mud Check: CTCH for DST6 @ 4783':  
 Vis Wt WL LCM PV YP  
 72 9.3 6.4 4.0 20 25  
 Chl Hd pH Solids  
 1000 10 11.5 7.1



25% Shale red-gy-grn, sdy in pt, subwaxy in pt; 70% Sd wh-gy, fn-md gm, pr-fr sort, subangl-subrd, pr-fr fri, sharp to subrd clusters; 05% Ls wh-cr-tan, dns to chalky (washes red)

60% Shale mostly red, some gy-grn, sdy in pt to shaley Sd; 20% Sd red, abund shaley, subrd, fn gm, gd sort, fr-gd fri; 20% Ls wh-cr, fn xln, dns & firm to softer and chalky

20% Shale mostly red, some gy-grn, sdy in pt to shaley Sd; 20% Sd red, abund shaley, subrd, fn gm, gd sort, fr-gd fri; 60% Ls wh-cr, fn xln, dns & firm to softer and chalky

33% Sd glassy-gy, fn-md-crs gm, pr sort, rd-subrd-subanglr-anglr, pr-gd fri; 33% Ls wh-cr-tan, fn xln, dns & firm to softer & chalky; 33% Shale red-grn-gy, silty in pt, sdy in pt

40% Sd glassy-gy, fn-md-crs gm, pr sort, rd-subrd-subanglr-anglr, pr-gd fri; 40% Ls wh-cr-tan, fn xln, dns & firm to softer & chalky; 20% Shale red-grn-gy, silty in pt, sdy in pt, pyritic in pt

50% Shales red-gy-dk gy-grm, sdy, pyr, calc; 25% Sd glassy-gy-tan, fn-md gm, pr-fr sort, subrd-subanglr, calc in pt, shaley in pt

80% Shales mostly gy-dk gy, some gm-red, silty in pt, soft to subfirm; 10% Sdy shale to shaley sd with some clean sd as above; 10% Ls wh-cr, fn xln, dns; pyritic

90% Shales mostly gy-dk gy, some gm-red, silty in pt, soft to subfirm; 05% Sdy shale to shaley sd with some clean sd as above; 05% Ls wh-cr, fn xln, dns; pyritic

<----- 4969 (-1624)

4990' spl: Abund pcs as above, with additton of Dol: wh, vfn-fn xln, sucrosic, pr-fr vis xln por

5000' spl: 85% Dol & chalk, Dol, wh-cr-tan, fn xln, pr-fr xln por, sucrosic, scatt pp pores & sm vugs, scatt gm glauc specks, with Wh mushy chalk (spl washes white); 15% shales as above

Dol cr-tan-gy, fn xln, pr-fr-gd xln por, sucr text, scatt pp pores & sm vugs, scatt gm glauc specks

Dol cr-tan-gy-dk gy, fn xln, pr-fr-gd xln por, sucr text, scatt pp pores & sm vugs, scatt gm glauc specks, some white mushy chalk, few pcs of salmon-orange fresh chert, trans; still some shale & sdy pcs in spls

5030' spl: 80% Dol tan, fn xln, sucr, pr-fr xln por, 15% Ls wh, vfn-fn xln, dns, with dk foss specks; 05% shales

Dol Ls to Limey Dol wh-cr-gy, vnf-fnxln, dns ot pr vis xln por, silty to subsucr text to sucr., some white mushy chalky pcs

Dol Ls to Limey Dol wh-cr-gy, vfn-fnxln, dns ot pr vis xln por, silty to subsucr to sucr text

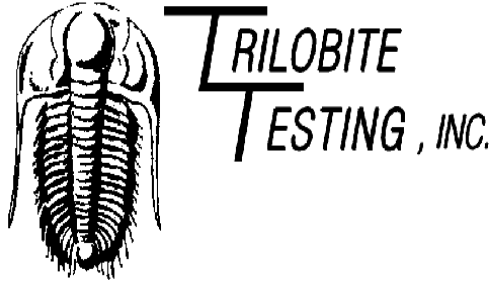
7:00 AM, October 03, 2019

Mud Check: Drlg @ 4948':

Vis	Wt	WL	LCM	PV	YP
62	9.2	6.4	4.0	19	21
Chl	Hd	pH	Solids		
900	10	11.5	6.4		

RTD 5050 Ft. Reached at 2:15 PM, October 03, 2019!





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.09.27 @ 18:16:00

End Date: 2019.09.28 @ 02:43:30

Job Ticket #: 66037                      DST #: 1

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

Printed: 2019.10.04 @ 15:32:09



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66037

**DST#: 1**

Test Start: 2019.09.27 @ 18:16:00

## GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:50:20

Time Test Ended: 02:43:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Shaw n Wheelbarger

Unit No: 76

**Interval: 4146.00 ft (KB) To 4235.00 ft (KB) (TVD)**

Reference Elevations: 3345.00 ft (KB)

Total Depth: 4235.00 ft (KB) (TVD)

3340.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 18.12 psig @ 4147.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.09.27

End Date:

2019.09.28

Last Calib.:

2019.09.28

Start Time: 18:16:01

End Time:

02:43:30

Time On Btm:

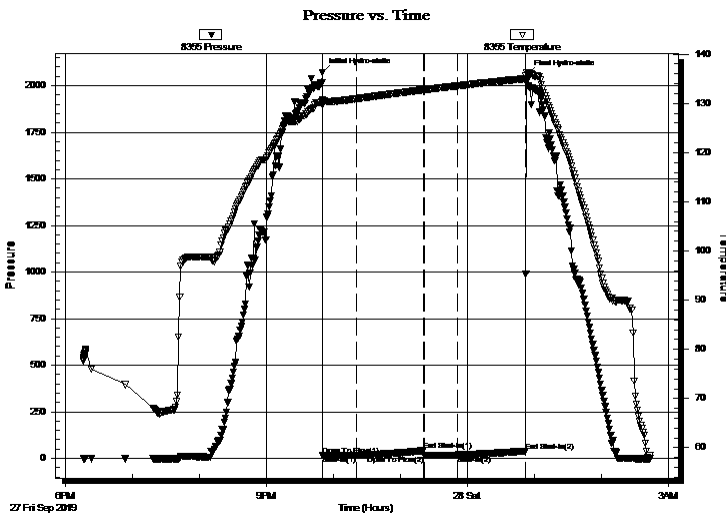
2019.09.27 @ 21:49:50

Time Off Btm:

2019.09.28 @ 00:53:20

**TEST COMMENT:** 30-IF-1/4" blow @ open declined to surface blow @ 10 mins died @ 18 mins  
60-ISI-No blow back  
30-FF-No blow  
60-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2071.07	130.53	Initial Hydro-static
1	18.09	129.70	Open To Flow (1)
31	17.53	130.94	Shut-In(1)
91	41.62	132.76	End Shut-In(1)
92	17.03	132.76	Open To Flow (2)
121	18.12	133.56	Shut-In(2)
183	38.00	135.02	End Shut-In(2)
184	2060.07	136.29	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.02

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66037      **DST#: 1**  
Test Start: 2019.09.27 @ 18:16:00

**Tool Information**

Drill Pipe:	Length: 3950.00 ft	Diameter: 3.80 inches	Volume: 55.41 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 56.28 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4146.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	89.00 ft			
Tool Length:	117.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			4119.00	
Shut In Tool	5.00			4124.00	
Hydraulic tool	5.00		Inside	4129.00	
Jars	5.00			4134.00	
Safety Joint	2.00			4136.00	
Packer	5.00			4141.00	28.00      Bottom Of Top Packer
Packer	5.00			4146.00	
Stubb	1.00			4147.00	
Recorder	0.00	8355	Outside	4147.00	
Recorder	0.00	8645	Inside	4147.00	
Perforations	20.00			4167.00	
Change Over Sub	1.00			4168.00	
Drill Pipe	63.00			4231.00	
Change Over Sub	1.00			4232.00	
Bullnose	3.00			4235.00	89.00      Bottom Packers & Anchor

**Total Tool Length: 117.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66037      **DST#: 1**  
Test Start: 2019.09.27 @ 18:16:00

### 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: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.98 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 600.00 ppm			
Filter Cake: 2.00 inches			

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%M	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:

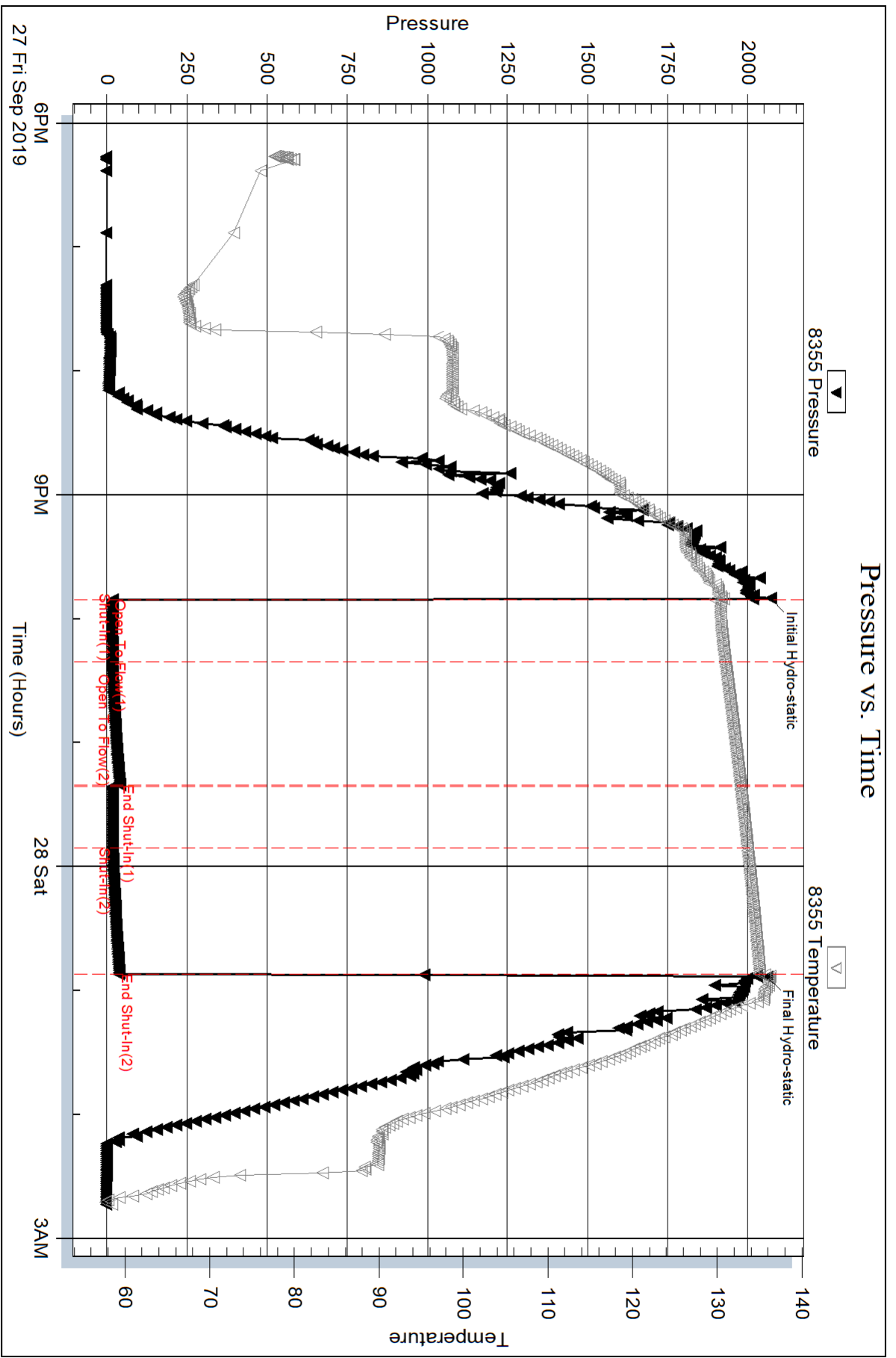


Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 66037

Printed: 2019.10.04 @ 15:32:10

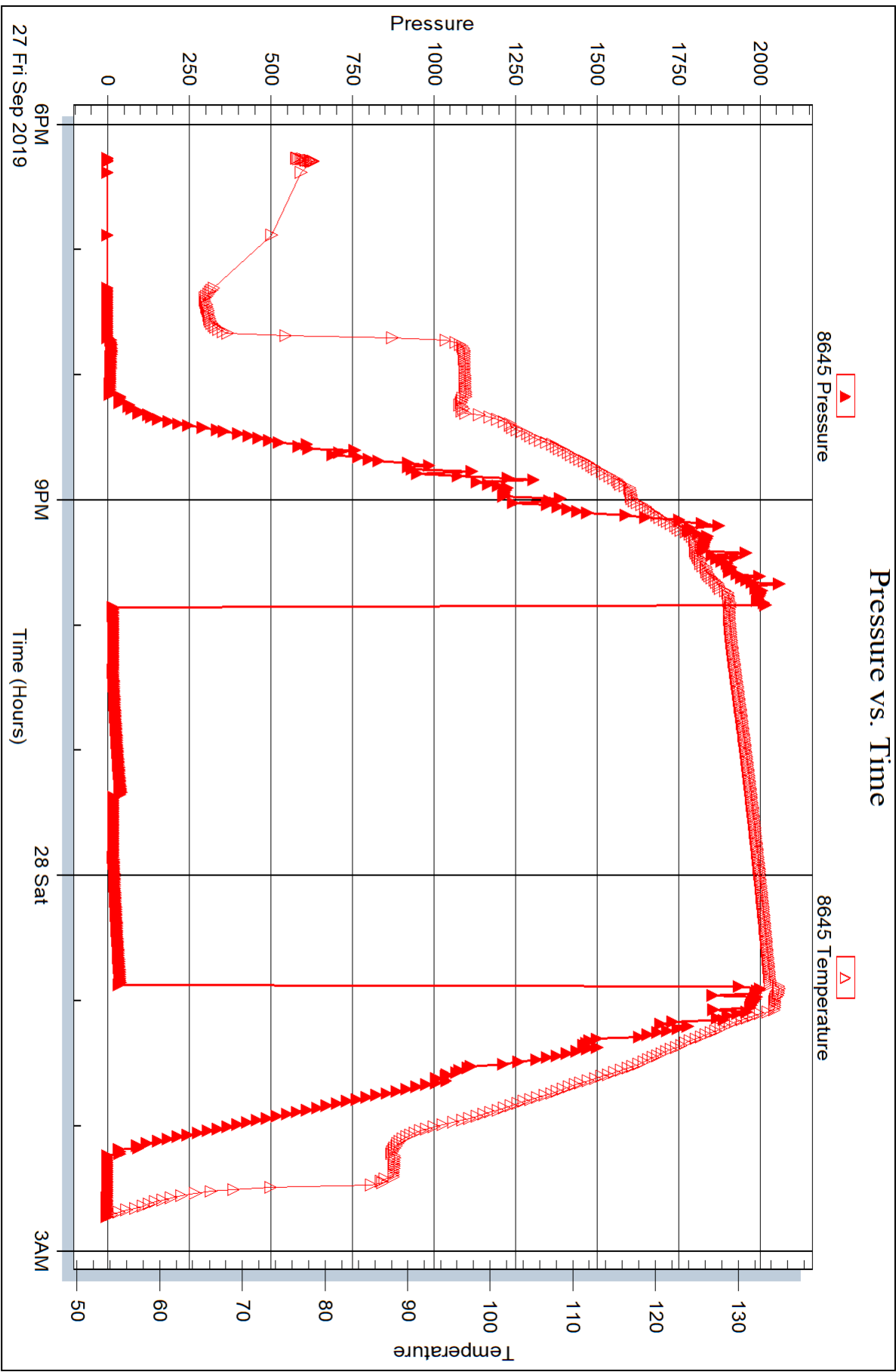
Serial #: 8645

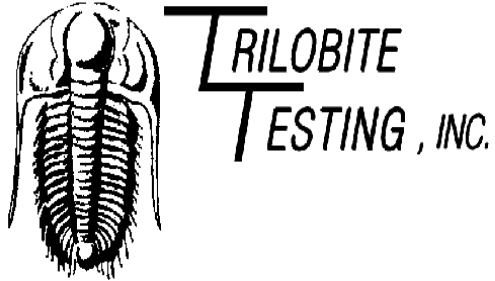
Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.09.28 @ 12:29:00

End Date: 2019.09.28 @ 20:09:39

Job Ticket #: 66038                      DST #: 2

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

Printed: 2019.10.04 @ 15:31:25



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N Water STE 300  
 Wichita KS 67202  
 ATTN: Brad Rine

**21-2s-37w Cheyenne, KS**

**Olive #1-21**

Job Ticket: 66038

**DST#: 2**

Test Start: 2019.09.28 @ 12:29:00

## GENERAL INFORMATION:

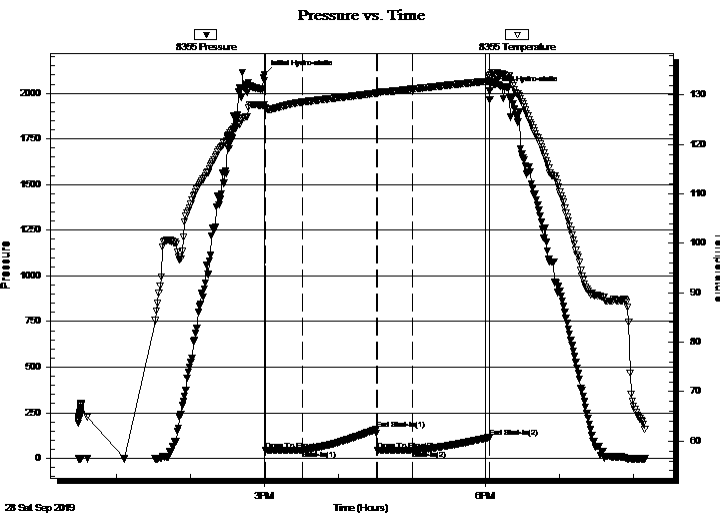
Formation: **LKC A**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 15:00:50  
 Time Test Ended: 20:09:39  
 Interval: **4219.00 ft (KB) To 4300.00 ft (KB) (TVD)**  
 Total Depth: 4300.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Shawn Wheelbarger  
 Unit No: 76  
 Reference Elevations: 3345.00 ft (KB)  
 3340.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8355**

**Outside**

Press@RunDepth: 45.78 psig @ 4220.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2019.09.28 End Date: 2019.09.28 Last Calib.: 2019.09.28  
 Start Time: 12:29:01 End Time: 20:09:40 Time On Btm: 2019.09.28 @ 15:00:00  
 Time Off Btm: 2019.09.28 @ 18:03:20

**TEST COMMENT:** 30-IF-2" Blow @ open built to 2 3/4" in 15 mins declined to 2 1/2"  
 60-ISI-No blow back  
 30-FF-No blow  
 60-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.96	128.11	Initial Hydro-static
1	44.71	127.48	Open To Flow (1)
31	45.63	128.56	Shut-In(1)
91	159.12	130.35	End Shut-In(1)
92	44.70	130.33	Open To Flow (2)
121	45.78	131.20	Shut-In(2)
183	114.02	132.83	End Shut-In(2)
184	2013.62	133.58	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
59.00	Mud 100%M	0.29

\* 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  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66038      **DST#: 2**  
Test Start: 2019.09.28 @ 12:29:00

## Tool Information

Drill Pipe:	Length: 4044.00 ft	Diameter: 3.80 inches	Volume: 56.73 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: 25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 78000.00 lb
			<u>Total Volume: 57.60 bbl</u>	Tool Chased 4.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4219.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	81.00 ft			
Tool Length:	109.00 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			4192.00	
Shut In Tool	5.00			4197.00	
Hydraulic tool	5.00		Inside	4202.00	
Jars	5.00			4207.00	
Safety Joint	2.00			4209.00	
Packer	5.00			4214.00	28.00      Bottom Of Top Packer
Packer	5.00			4219.00	
Stubb	1.00			4220.00	
Recorder	0.00	8355	Outside	4220.00	
Recorder	0.00	8645	Inside	4220.00	
Perforations	12.00			4232.00	
Change Over Sub	1.00			4233.00	
Drill Pipe	63.00			4296.00	
Change Over Sub	1.00			4297.00	
Bullnose	3.00			4300.00	81.00      Bottom Packers & Anchor

**Total Tool Length: 109.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66038      **DST#: 2**  
Test Start: 2019.09.28 @ 12:29:00

## Mud and Cushion Information

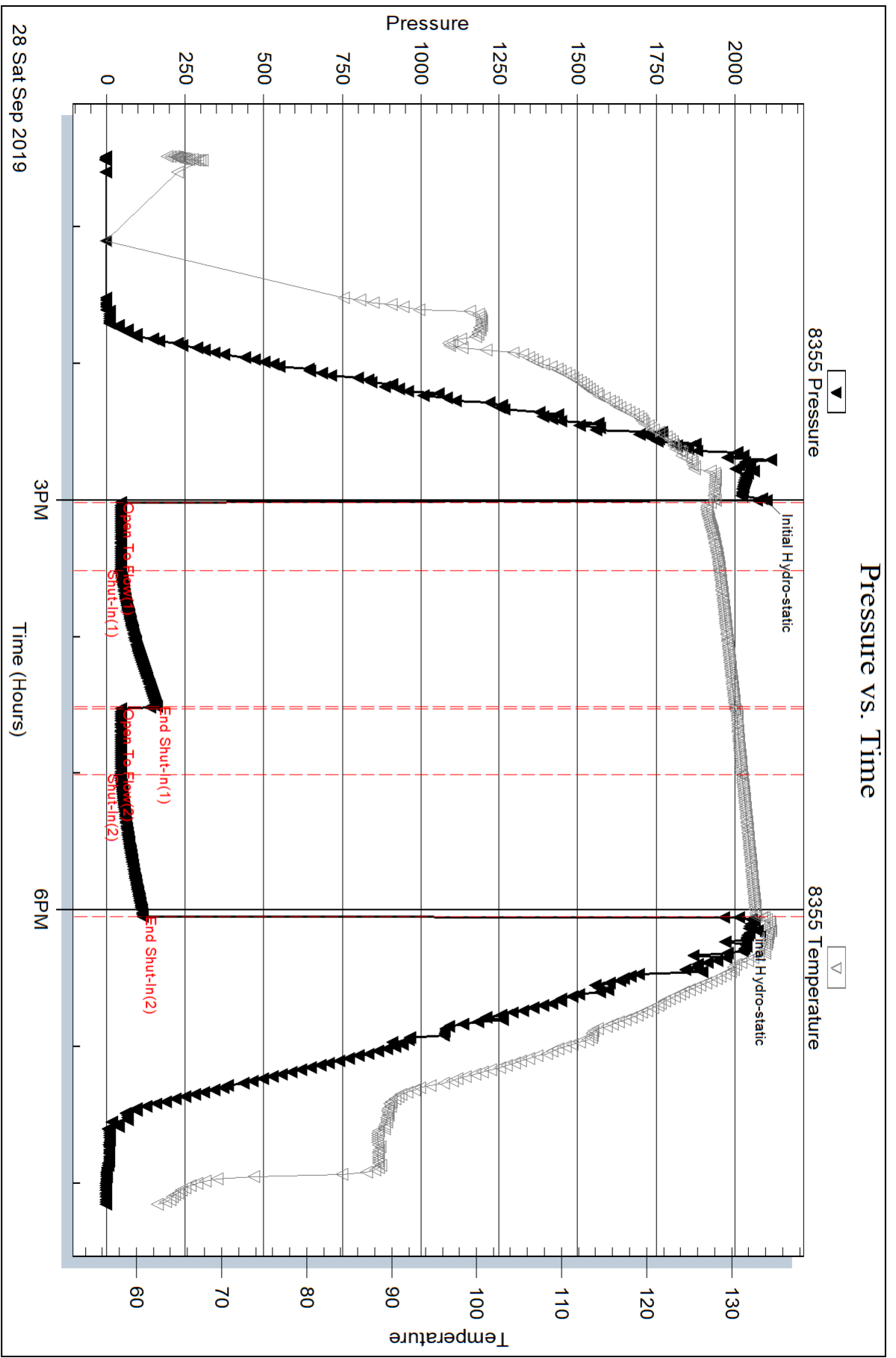
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.38 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 800.00 ppm			
Filter Cake: 2.00 inches			

## Recovery Information

Recovery Table

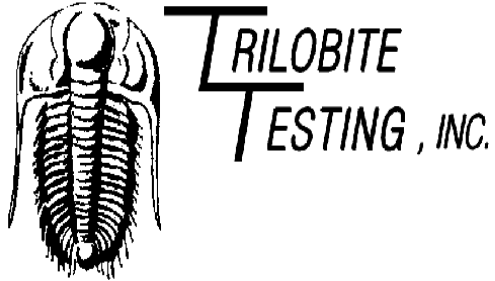
Length ft	Description	Volume bbl
59.00	Mud 100%M	0.290

Total Length: 59.00 ft      Total Volume: 0.290 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.09.29 @ 07:25:00

End Date: 2019.09.29 @ 14:49:30

Job Ticket #: 66039                      DST #: 3

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

Printed: 2019.10.04 @ 15:29:59



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66039

**DST#: 3**

Test Start: 2019.09.29 @ 07:25:00

## GENERAL INFORMATION:

Formation: **Lansing D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:56:30

Time Test Ended: 14:49:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shawn Wheelbarger

Unit No: 76

**Interval: 4291.00 ft (KB) To 4370.00 ft (KB) (TVD)**

Total Depth: 4370.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3345.00 ft (KB)

3340.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8355 Outside**

Press@RunDepth: 21.95 psig @ 4292.00 ft (KB)

Start Date: 2019.09.29

End Date:

2019.09.29

Start Time: 07:25:01

End Time:

14:49:30

Capacity: 8000.00 psig

Last Calib.: 2019.09.29

Time On Btm: 2019.09.29 @ 09:55:50

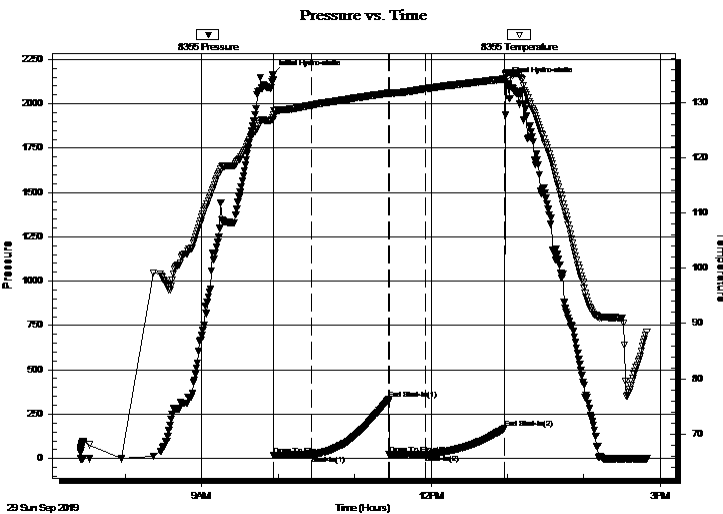
Time Off Btm: 2019.09.29 @ 12:58:20

**TEST COMMENT:** 30-IF-1/2" Blow @ open built to 1 1/4"

60-ISI-No blow back

30-FF-No blow

60-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2162.61	126.96	Initial Hydro-static
1	19.00	127.81	Open To Flow (1)
31	20.05	129.55	Shut-In(1)
91	331.83	131.72	End Shut-In(1)
92	21.42	131.67	Open To Flow (2)
120	21.95	132.50	Shut-In(2)
182	169.10	134.29	End Shut-In(2)
183	2126.52	135.09	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%	0.02

## 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  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66039

**DST#: 3**

Test Start: 2019.09.29 @ 07:25:00

## Tool Information

Drill Pipe:	Length: 4107.00 ft	Diameter: 3.80 inches	Volume: 57.61 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 58.48 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	21.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4291.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	79.00 ft			
Tool Length:	107.00 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			4264.00	
Shut In Tool	5.00			4269.00	
Hydraulic tool	5.00		Inside	4274.00	
Jars	5.00			4279.00	
Safety Joint	2.00			4281.00	
Packer	5.00			4286.00	28.00 Bottom Of Top Packer
Packer	5.00			4291.00	
Stubb	1.00			4292.00	
Recorder	0.00	8355	Outside	4292.00	
Recorder	0.00	8645	Inside	4292.00	
Perforations	10.00			4302.00	
Change Over Sub	1.00			4303.00	
Drill Pipe	63.00			4366.00	
Change Over Sub	1.00			4367.00	
Bullnose	3.00			4370.00	79.00 Bottom Packers & Anchor

**Total Tool Length: 107.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66039      **DST#: 3**  
Test Start: 2019.09.29 @ 07:25:00

### 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: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.78 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1100.00 ppm			
Filter Cake: 2.00 inches			

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

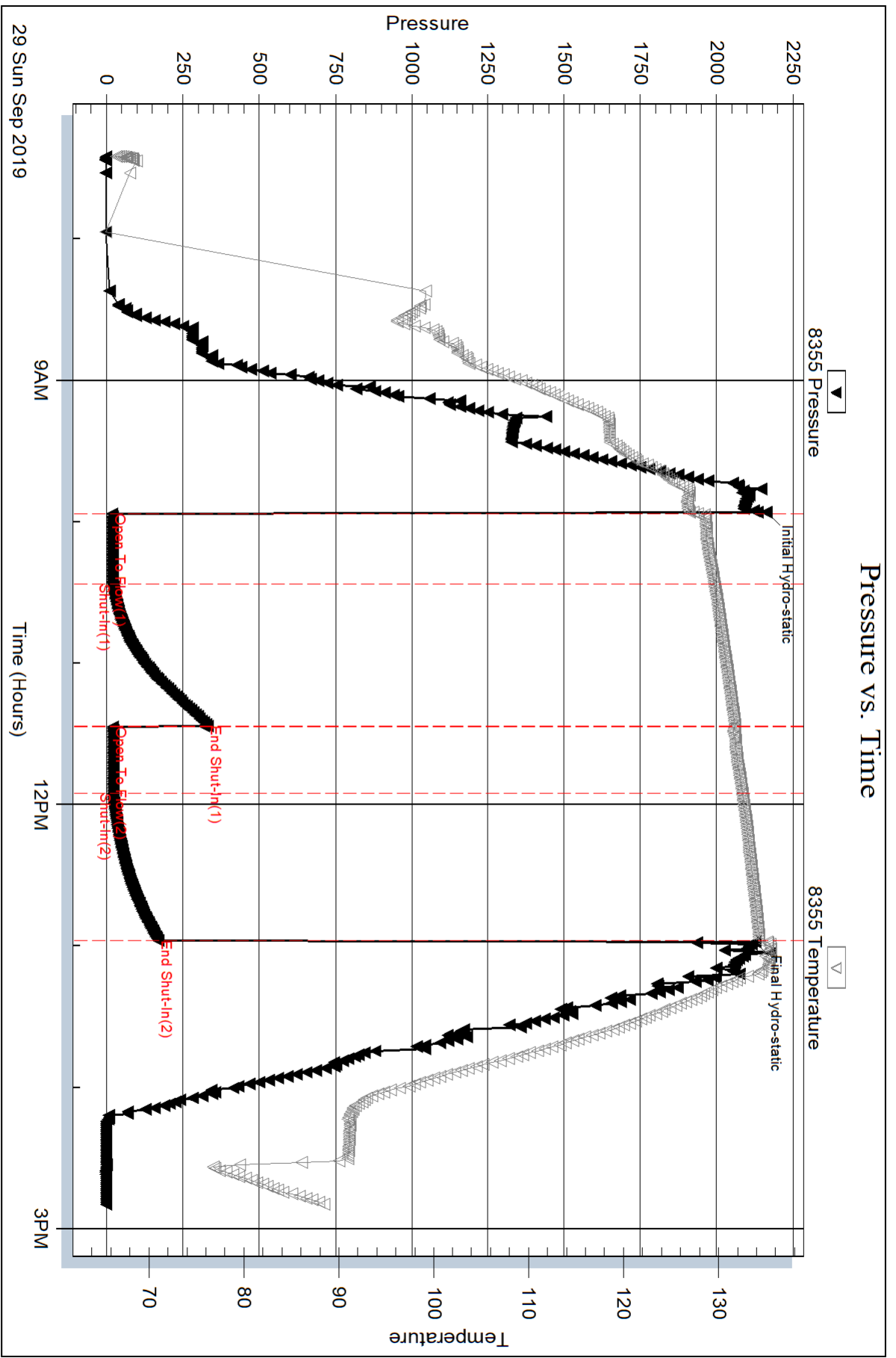
Recovery Comments:

Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 3



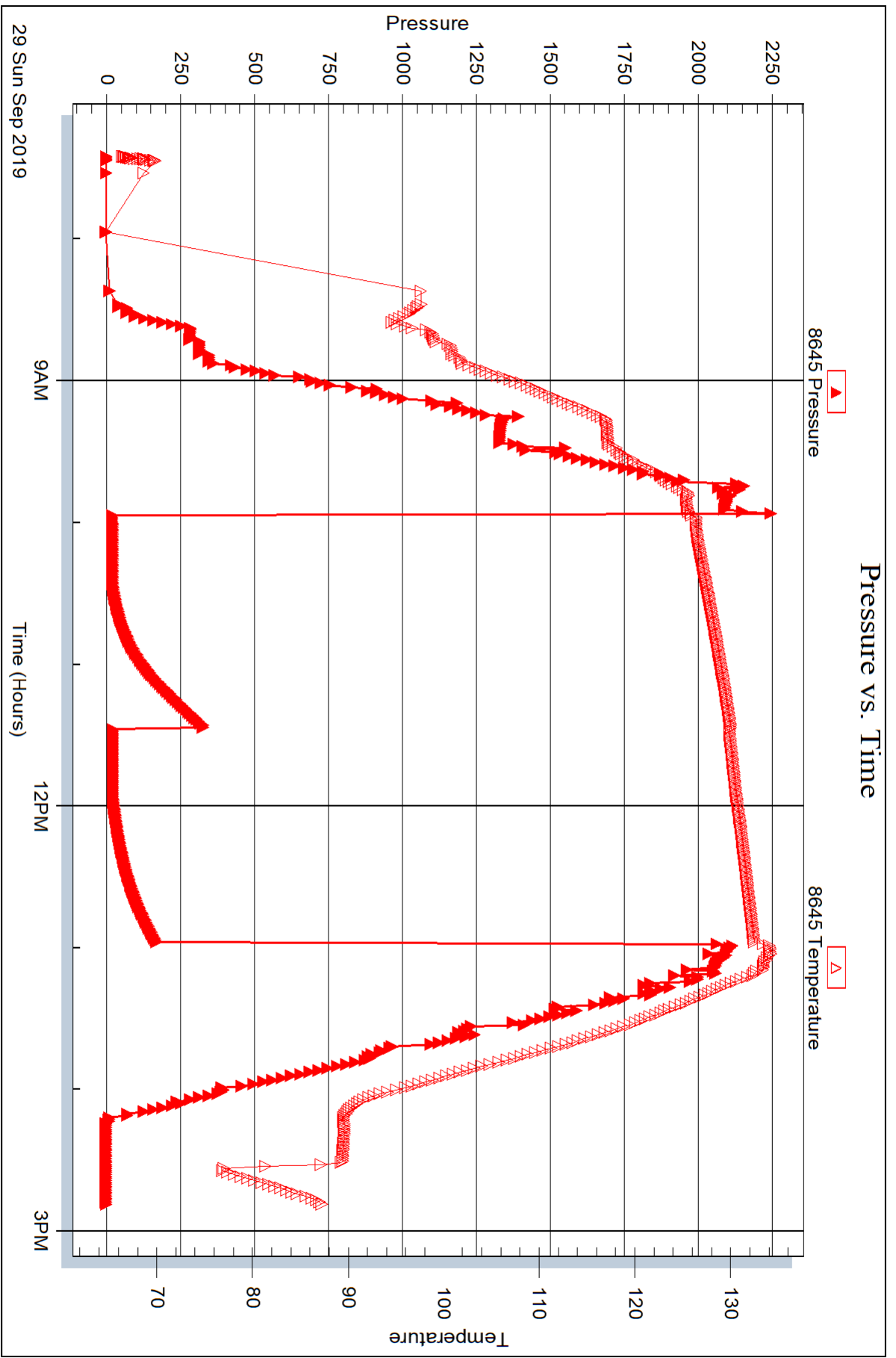
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 3







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.09.30 @ 12:00:00

End Date: 2019.09.30 @ 19:27:32

Job Ticket #: 66040                      DST #: 4

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

Printed: 2019.10.04 @ 15:29:36



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66040

**DST#: 4**

Test Start: 2019.09.30 @ 12:00:00

## GENERAL INFORMATION:

Formation: **LKC G**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:12:32  
 Time Test Ended: 19:27:32  
 Interval: **4352.00 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: Shawn Wheelbarger  
 Unit No: 76  
 Reference Elevations: 3345.00 ft (KB)  
 3340.00 ft (CF)  
 KB to GR/CF: 5.00 ft

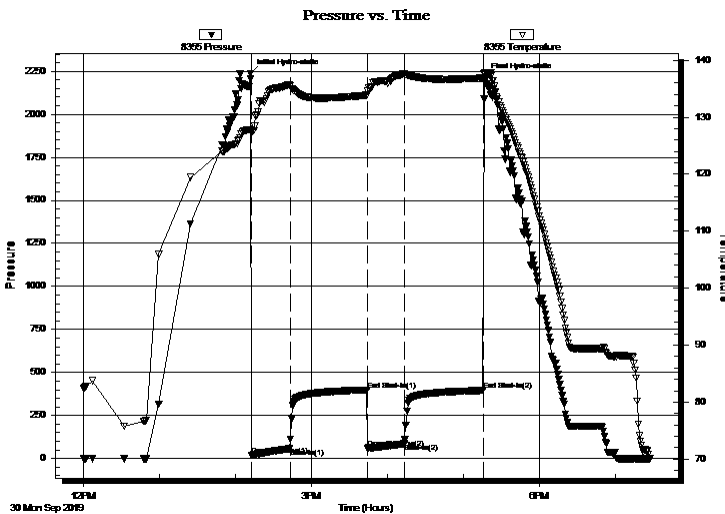
**Serial #: 8355**

**Outside**

Press@RunDepth: 86.55 psig @ 4353.00 ft (KB)  
 Start Date: 2019.09.30 End Date: 2019.09.30  
 Start Time: 12:00:01 End Time: 19:27:32  
 Capacity: 8000.00 psig  
 Last Calib.: 2019.09.30  
 Time On Btm: 2019.09.30 @ 14:11:42  
 Time Off Btm: 2019.09.30 @ 17:16:42

**TEST COMMENT:** 30-IF-1/4" Blow @ open built to 2 3/4"  
 60-ISI-No blow back  
 30-FF-Weak surface blow built to 1 1/4"  
 60-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2237.09	127.87	Initial Hydro-static
1	17.63	127.35	Open To Flow (1)
32	56.90	135.78	Shut-In(1)
92	397.94	133.87	End Shut-In(1)
93	59.16	134.60	Open To Flow (2)
122	86.55	137.65	Shut-In(2)
184	395.13	136.88	End Shut-In(2)
186	2210.98	137.86	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
128.00	SGCM W/ Oil spots 8%G, 92%M	0.63

\* 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  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66040      **DST#: 4**  
Test Start: 2019.09.30 @ 12:00:00

**Tool Information**

Drill Pipe:	Length: 4169.00 ft	Diameter: 3.80 inches	Volume: 58.48 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 59.35 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4352.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	68.00 ft			
Tool Length:	96.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			4325.00	
Shut In Tool	5.00			4330.00	
Hydraulic tool	5.00		Inside	4335.00	
Jars	5.00			4340.00	
Safety Joint	2.00			4342.00	
Packer	5.00			4347.00	28.00 Bottom Of Top Packer
Packer	5.00			4352.00	
Stubb	1.00			4353.00	
Recorder	0.00	8355	Outside	4353.00	
Recorder	0.00	8645	Inside	4353.00	
Perforations	31.00			4384.00	
Change Over Sub	1.00			4385.00	
Drill Pipe	31.00			4416.00	
Change Over Sub	1.00			4417.00	
Bullnose	3.00			4420.00	68.00 Bottom Packers & Anchor

**Total Tool Length: 96.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66040      **DST#: 4**  
Test Start: 2019.09.30 @ 12:00:00

**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: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.79 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1100.00 ppm			
Filter Cake: 2.00 inches			

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
128.00	SGCM W/ Oil spots 8%G, 92%M	0.629

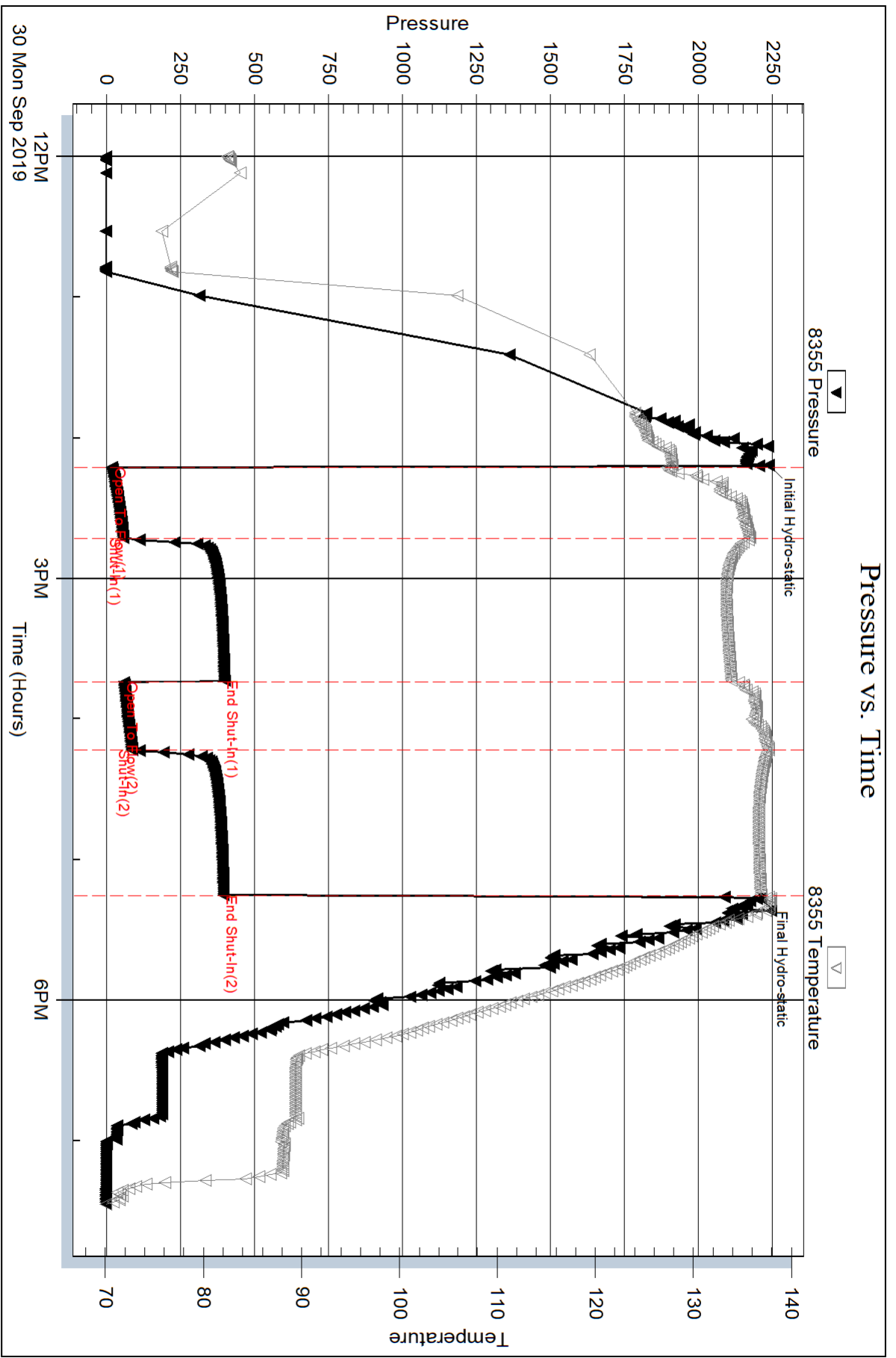
Total Length: 128.00 ft      Total Volume: 0.629 bbl  
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
Laboratory Name:      Laboratory Location:  
Recovery Comments:

Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 4



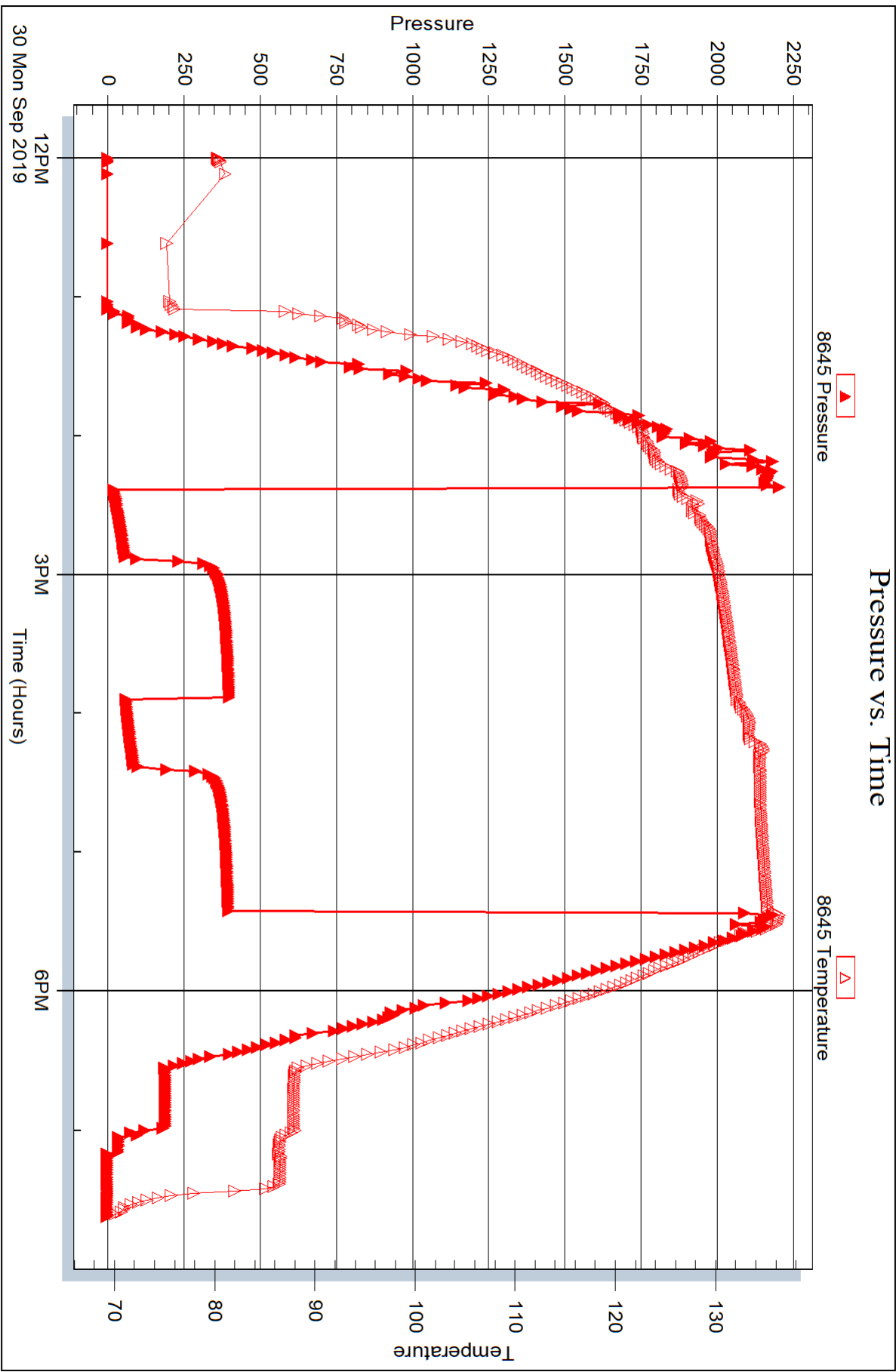
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 4





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.09.30 @ 20:05:00

End Date: 2019.10.01 @ 05:24:40

Job Ticket #: 66041                      DST #: 5

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

Printed: 2019.10.04 @ 15:29:08





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N Water STE 300  
 Wichita KS 67202  
 ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66041

**DST#: 5**

Test Start: 2019.09.30 @ 20:05:00

## GENERAL INFORMATION:

Formation: **LKC H-J**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 22:49:20  
 Time Test Ended: 05:24:40  
 Interval: **4407.00 ft (KB) To 4500.00 ft (KB) (TVD)**  
 Total Depth: 4500.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Shawn Wheelbarger  
 Unit No: 76  
 Reference Elevations: 3345.00 ft (KB)  
 3340.00 ft (CF)  
 KB to GR/CF: 5.00 ft

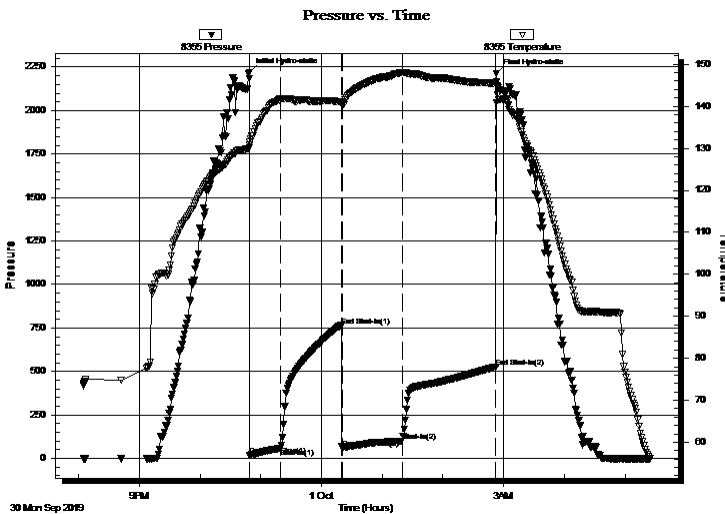
## Serial #: 8355

**Outside**

Press@RunDepth: 99.66 psig @ 4408.00 ft (KB)  
 Start Date: 2019.09.30 End Date: 2019.10.01  
 Start Time: 20:05:01 End Time: 05:24:40  
 Capacity: 8000.00 psig  
 Last Calib.: 2019.10.01  
 Time On Btm: 2019.09.30 @ 22:49:00  
 Time Off Btm: 2019.10.01 @ 02:53:00

**TEST COMMENT:** 30-IF-1/4" Blow @ open built to 3"  
 60-ISI-No blow back  
 60-FF-Blow built to 4 1/2"  
 90-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2218.69	130.69	Initial Hydro-static
1	17.36	131.43	Open To Flow (1)
31	59.73	141.83	Shut-In(1)
91	762.92	141.10	End Shut-In(1)
92	61.13	140.30	Open To Flow (2)
151	99.66	148.05	Shut-In(2)
244	526.79	145.51	End Shut-In(2)
244	2213.93	145.59	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
177.00	SGOCWM 9%G, 18%O, 21%W, 52%M	0.87
13.00	SGMO 10%G, 85%O, 5%M	0.18

\* 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  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**

**Olive #1-21**

Job Ticket: 66041

**DST#: 5**

Test Start: 2019.09.30 @ 20:05:00

## Tool Information

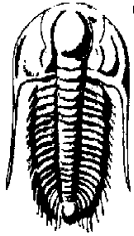
Drill Pipe:	Length: 4231.00 ft	Diameter: 3.80 inches	Volume: 59.35 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose:	70000.00 lb
			<u>Total Volume: 60.22 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	4407.00 ft			Final	61000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	93.00 ft				
Tool Length:	121.00 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			4380.00	
Shut In Tool	5.00			4385.00	
Hydraulic tool	5.00		Inside	4390.00	
Jars	5.00			4395.00	
Safety Joint	2.00			4397.00	
Packer	5.00			4402.00	28.00 Bottom Of Top Packer
Packer	5.00			4407.00	
Stubb	1.00			4408.00	
Recorder	0.00	8355	Outside	4408.00	
Recorder	0.00	8645	Inside	4408.00	
Perforations	24.00			4432.00	
Change Over Sub	1.00			4433.00	
Drill Pipe	63.00			4496.00	
Change Over Sub	1.00			4497.00	
Bullnose	3.00			4500.00	93.00 Bottom Packers & Anchor

**Total Tool Length: 121.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66041      **DST#: 5**  
Test Start: 2019.09.30 @ 20:05:00

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 21.3 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 14000 ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 1100.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

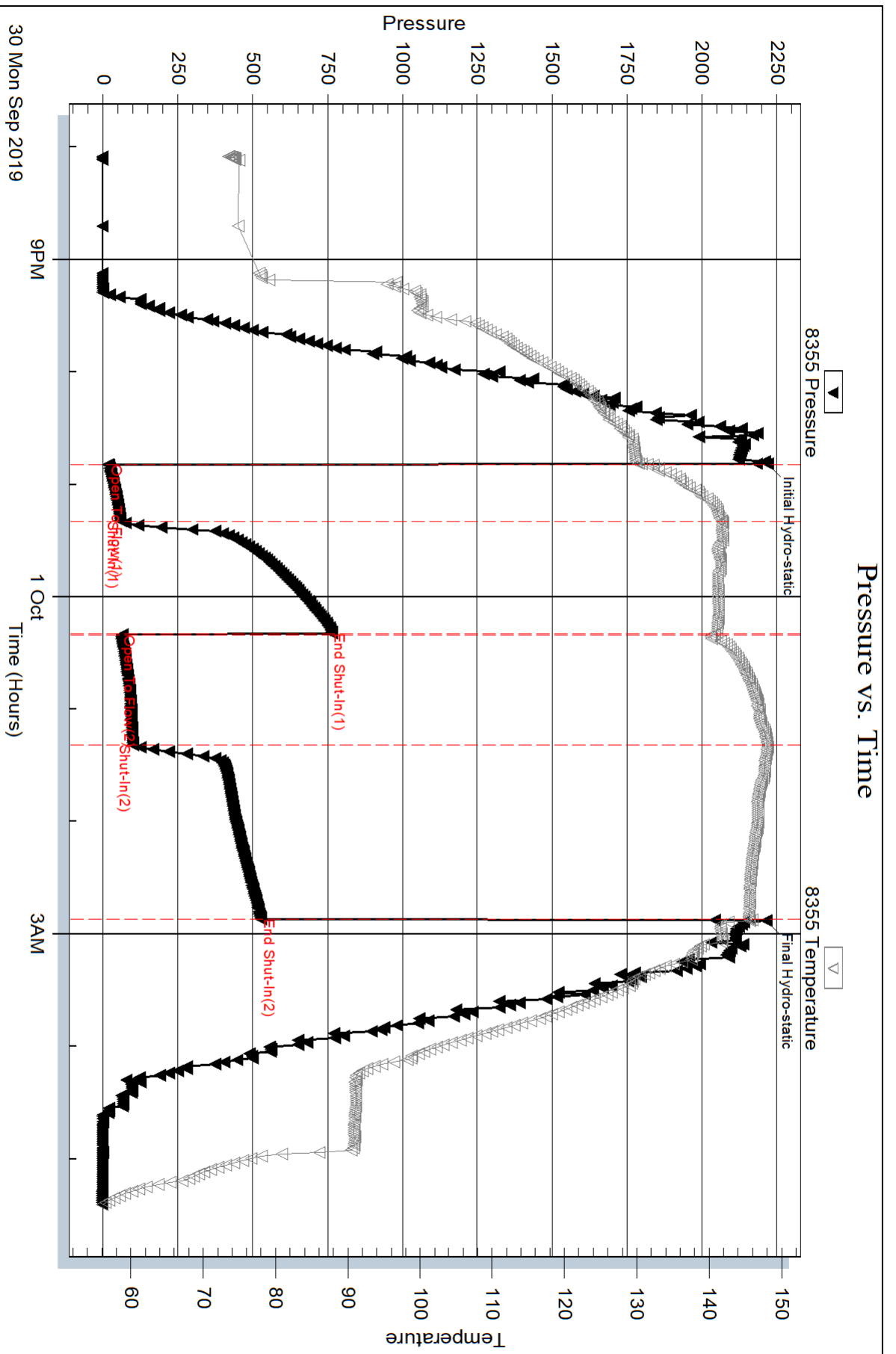
Length ft	Description	Volume bbl
177.00	SGOCWM 9%G, 18%O, 21%W, 52%M	0.870
13.00	SGMO 10%G, 85%O, 5%M	0.182

Total Length: 190.00 ft      Total Volume: 1.052 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: Oil API 21.6@90 DEG F Adjusted to 21.3  
RW .620@53.9 DEG F Chlorides 14000 PPM



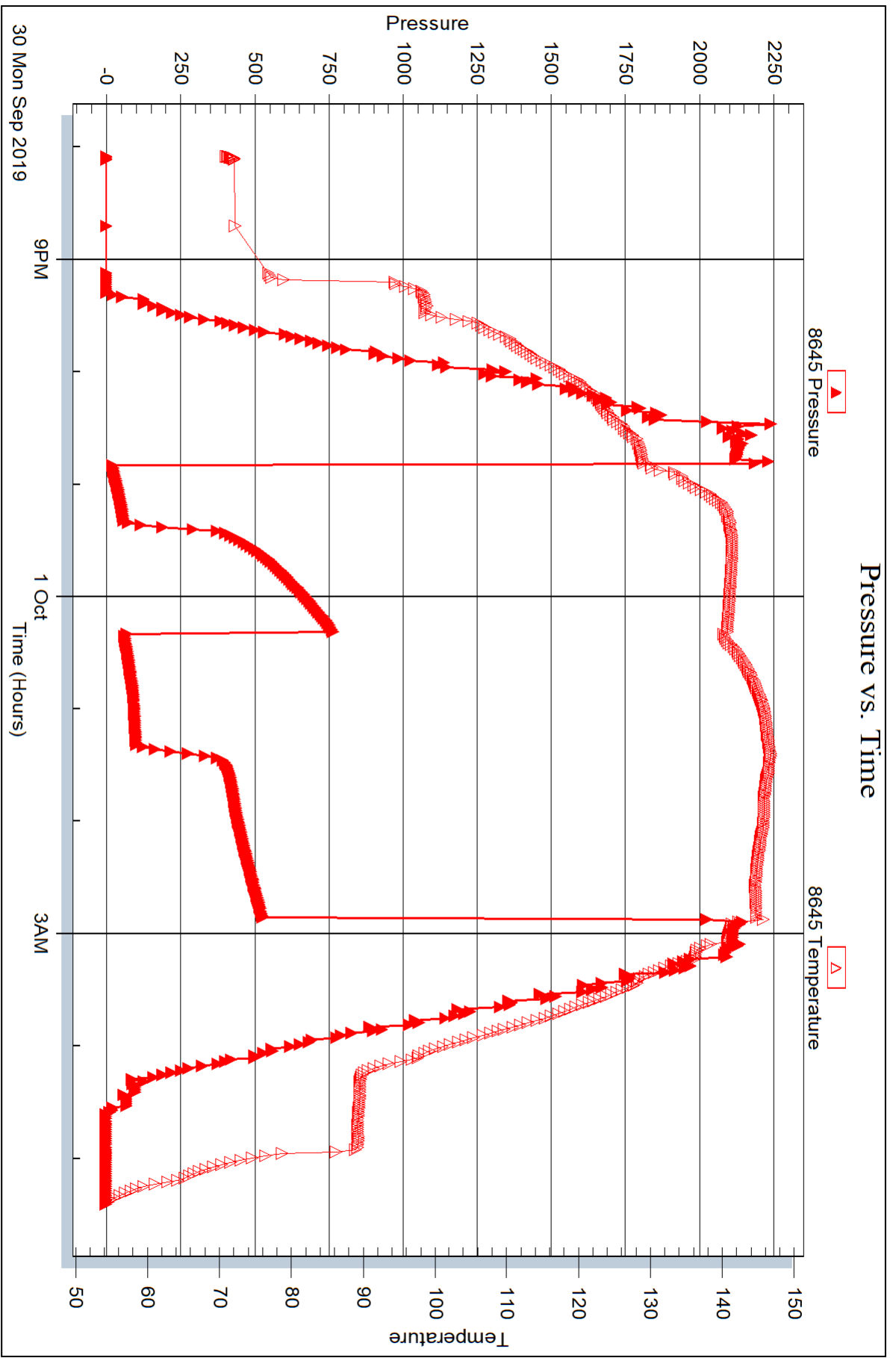
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 66041

Printed: 2019.10.04 @ 15:29:09



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water STE 300  
Wichita KS 67202

ATTN: Brad Rine

### **Olive #1-21**

#### **21-2s-37w Cheyenne,KS**

Start Date: 2019.10.02 @ 12:18:00

End Date: 2019.10.02 @ 19:37:12

Job Ticket #: 66042                      DST #: 6

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

Printed: 2019.10.04 @ 15:28:38

Murfin Drilling Co Inc  
21-2s-37w Cheyenne,KS  
Olive #1-21  
DST # 6  
Ft Scott - Cella  
2019.10.02



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N Water STE 300  
 Wichita KS 67202  
 ATTN: Brad Rine

**21-2s-37w Cheyenne, KS**

**Olive #1-21**

Job Ticket: 66042

**DST#: 6**

Test Start: 2019.10.02 @ 12:18:00

## GENERAL INFORMATION:

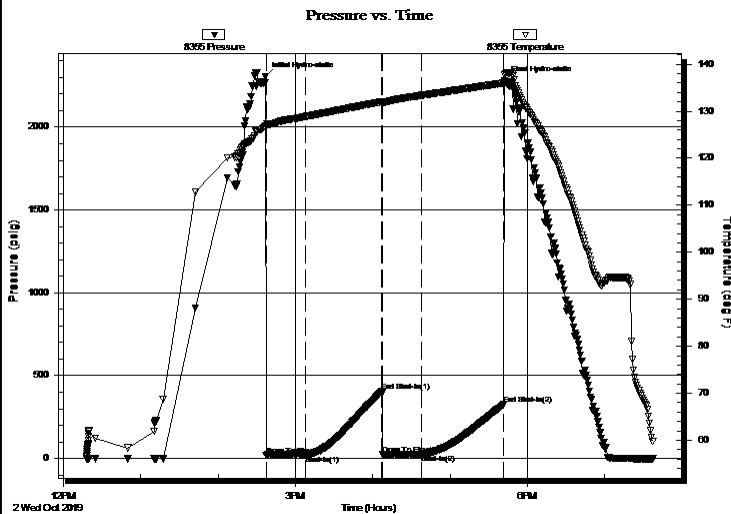
Formation: **Ft Scott - Celia**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:37:12  
 Time Test Ended: 19:37:12  
 Interval: **4657.00 ft (KB) To 4783.00 ft (KB) (TVD)**  
 Total Depth: 4783.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Shawn Wheelbarger  
 Unit No: 76  
 Reference Elevations: 3345.00 ft (KB)  
 3340.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8355**

**Outside**

Press@RunDepth: 23.42 psig @ 4658.00 ft (KB)  
 Start Date: 2019.10.02 End Date: 2019.10.02  
 Start Time: 12:18:01 End Time: 19:37:11  
 Capacity: 8000.00 psig  
 Last Calib.: 2019.10.02  
 Time On Btm: 2019.10.02 @ 14:36:32  
 Time Off Btm: 2019.10.02 @ 17:42:12

TEST COMMENT: 30-IF-1/2" blow @ open built to 1 1/4"  
 60-ISI-No blow back  
 30-FF-No blow  
 60-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2304.34	126.70	Initial Hydro-static
1	20.36	126.81	Open To Flow (1)
32	20.95	128.85	Shut-In(1)
91	403.78	132.01	End Shut-In(1)
91	23.05	131.92	Open To Flow (2)
122	23.42	133.38	Shut-In(2)
185	325.14	135.98	End Shut-In(2)
186	2282.56	137.70	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud 100%M	0.05

\* 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  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66042      **DST#: 6**  
Test Start: 2019.10.02 @ 12:18:00

**Tool Information**

Drill Pipe:	Length: 4480.00 ft	Diameter: 3.80 inches	Volume: 62.84 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: 177.00 ft	Diameter: 2.25 inches	Volume: 0.87 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 63.71 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4657.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	126.00 ft			
Tool Length:	154.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			4630.00	
Shut In Tool	5.00			4635.00	
Hydraulic tool	5.00		Inside	4640.00	
Jars	5.00			4645.00	
Safety Joint	2.00			4647.00	
Packer	5.00			4652.00	28.00      Bottom Of Top Packer
Packer	5.00			4657.00	
Stubb	1.00			4658.00	
Recorder	0.00	8355	Outside	4658.00	
Recorder	0.00	8645	Inside	4658.00	
Perforations	26.00			4684.00	
Change Over Sub	1.00			4685.00	
Drill Pipe	94.00			4779.00	
Change Over Sub	1.00			4780.00	
Bullnose	3.00			4783.00	126.00      Bottom Packers & Anchor

**Total Tool Length: 154.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc  
250 N Water STE 300  
Wichita KS 67202  
ATTN: Brad Rine

**21-2s-37w Cheyenne,KS**  
**Olive #1-21**  
Job Ticket: 66042      **DST#: 6**  
Test Start: 2019.10.02 @ 12:18:00

## 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: 72.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.39 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
10.00	Mud 100%M	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments:

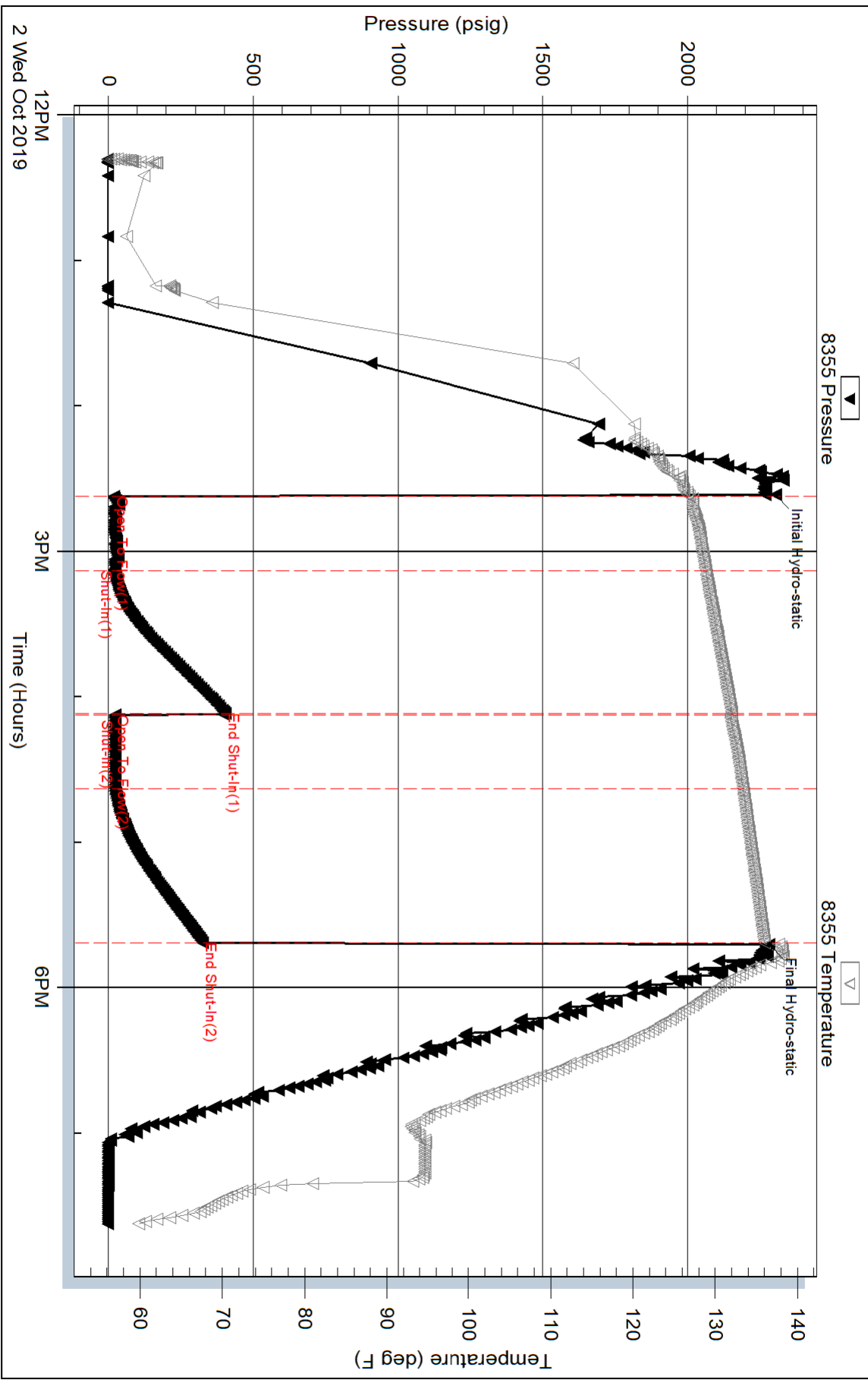
Serial #: 8355

Outside Murfin Drilling Co Inc

Olive #1-21

DST Test Number: 6

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 66042

Printed: 2019.10.04 @ 15:28:39

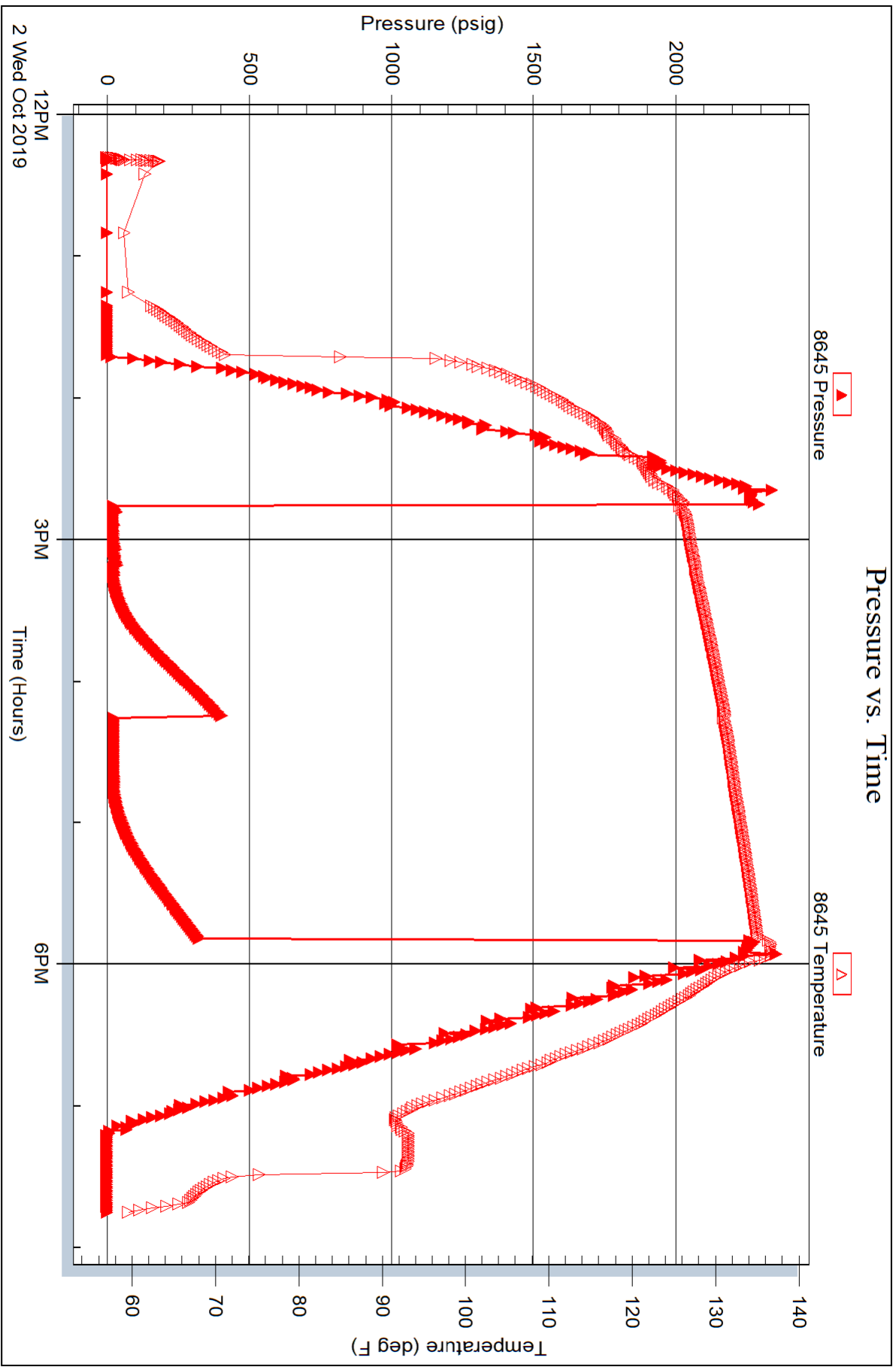
Serial #: 8645

Inside

Murfin Drilling Co Inc

Olive #1-21

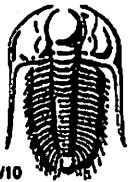
DST Test Number: 6



Trilobite Testing, Inc

Ref. No: 66042

Printed: 2019.10.04 @ 15:28:39



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66037

NO.

Well Name & No. Olive #1-21 Test No. 1 Date 9-27-19  
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Brad Rine Rig Murfin #3  
 Location: Sec. 21 Twp 23 Rge. 37W Co. Cheyenne State KS

Interval Tested 4146 - 4235 Zone Tested Oread  
 Anchor Length 89 Drill Pipe Run 3950 Mud Wt. 8.9  
 Top Packer Depth 4141 Drill Collars Run 177 Vis 55  
 Bottom Packer Depth 4146 Wt. Pipe Run — WL 6  
 Total Depth 4235 Chlorides 600 ppm System LCM 4  
 Blow Description IF 1/4" Blow @ open declined to surface blow @ 10m's died @ 18  
IST No blow back  
FF No blow  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	

Rec Total 5 BHT 136 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2071</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>16:33</u>
(B) First Initial Flow <u>18</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>18:16</u>
(C) First Final Flow <u>18</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>21:50</u>
(D) Initial Shut-In <u>42</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>00:50 9-28</u>
(E) Second Initial Flow <u>17</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>2:38 9-28</u>
(F) Second Final Flow <u>18</u>	<input checked="" type="checkbox"/> Mileage <u>120 RT</u>	Comments
(G) Final Shut-In <u>38</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2060</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1745</u>
	Sub Total <u>1745</u>	MP/DST Disc

Approved By Brad Rine Our Representative Shawn Deebarger

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 66038

NO.

Well Name & No. Olive #1-21 Test No. 2 Date 9-28-19  
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Brad Rine Rig Murfin #3  
 Location: Sec. 21 Twp 2s Rge. 37W Co. Cherokee State KS

Interval Tested 4219 - 4300 Zone Tested Lansing A  
 Anchor Length 81 Drill Pipe Run 4044 Mud Wt. 9  
 Top Packer Depth 4214 Drill Collars Run 177 Vls 59  
 Bottom Packer Depth 4219 Wt. Pipe Run - WL 6.4  
 Total Depth 4300 Chlorides 800 ppm System LCM 2  
 Blow Description IF 2" Blow @ open built to 2 3/4" in 15 mins declined to 2 1/2"  
ISI No blow back

FF No blow  
FSI No blow

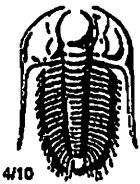
Rec	Feet of	%gas	%oil	%water	%mud
<u>59</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 59 BHT 134 Gravity - API RW - @ - °F Chlorides - ppm  
 (A) Initial Hydrostatic 2101  Test 1300 T-On Location 11:46  
 (B) First Initial Flow 45  Jars 250 T-Started 12:29  
 (C) First Final Flow 46  Safety Joint 75 T-Open 15:01  
 (D) Initial Shut-In 159  Circ Sub \_\_\_\_\_ T-Pulled 18:01  
 (E) Second Initial Flow 45  Hourly Standby \_\_\_\_\_ T-Out 20:08  
 (F) Second Final Flow 46  Mileage 120 RT Comments Tool slid 4" to bottom  
 (G) Final Shut-In 114  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2014  Straddle \_\_\_\_\_  EM Tool \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1745  
 Sub Total 1745 MP/DST Disc't \_\_\_\_\_

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

Approved By Brad Rine Our Representative Shawn Weelbarren

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 66039

NO.

Well Name & No. Olive #1-21 Test No. 3 Date 9-29-19  
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water St E 300 Wichita KS 67202  
 Co. Rep / Geo. Brad Pine Rig Murfin #3  
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State KS

Interval Tested 4291-4370 Zone Tested Lansing D  
 Anchor Length 79 Drill Pipe Run 4107 Mud Wt. 9.2  
 Top Packer Depth 4286 Drill Collars Run 177 Vis 53  
 Bottom Packer Depth 4291 Wt. Pipe Run - WL 6.8  
 Total Depth 4370 Chlorides 1100 ppm System LCM 3

Blow Description IF 1/2" Blow @ open built to 1 1/4"  
ISI No blow back  
FF No blow  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	

Rec Total 5 BHT 135 Gravity - API RW - @ - °F Chlorides - ppm

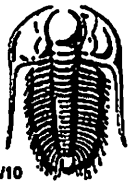
(A) Initial Hydrostatic 2163  Test 1300 T-On Location 5:52  
 (B) First Initial Flow 19  Jars 250 T-Started 7:25  
 (C) First Final Flow 20  Safety Joint 75 T-Open 09:57  
 (D) Initial Shut-In 332  Circ Sub \_\_\_\_\_ T-Pulled 00:57  
 (E) Second Initial Flow 21  Hourly Standby \_\_\_\_\_ T-Out 14:43  
 (F) Second Final Flow 22  Mileage 120 RT Comments \_\_\_\_\_  
 (G) Final Shut-In 169  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2127  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  EM Tool \_\_\_\_\_  
 Initial Shut-In 60  Ruined Shale Packer \_\_\_\_\_  
 Final Flow 30  Ruined Packer \_\_\_\_\_  
 Final Shut-In 60  Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1745  
 Sub Total 1745 MP/DST Disc't \_\_\_\_\_

Approved By Brad Pine Our Representative Shawn Wedbarger

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 66040

NO.

Well Name & No. Olive #1-21 Test No. 4 Date 9-29-19  
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Brad Rine Rig Murfin #3  
 Location: Sec. 21 Twp 23 Rge. 37W Co. Cherokee State NE

Interval Tested 4352 - 4420 Zone Tested Lansing 6  
 Anchor Length 68 Drill Pipe Run 4169 Mud Wt. 9.8  
 Top Packer Depth 4347 Drill Collars Run 177 Vis 55  
 Bottom Packer Depth 4352 Wt. Pipe Run - WL 6.8  
 Total Depth 4420 Chlorides 1100 ppm System LCM 3  
 Blow Description IF 1/4" Blow @ open built to 2 3/4"  
ISI No blowback  
FF Weak surface blow built to 1 1/4"  
FSI No blow

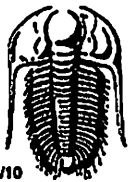
Rec	Feet of	%gas	%oil	%water	%mud
<u>128</u>	<u>SGCM w/oil spots 8</u>			<u>92</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 126 BHT 138 Gravity - API RW - @ - °F Chlorides - ppm  
 (A) Initial Hydrostatic 2237  Test 1300 T-On Location 23:34 9-29  
 (B) First Initial Flow 18  Jars 250 T-Started 00 00  
 (C) First Final Flow 57  Safety Joint 75 T-Open 2:22  
 (D) Initial Shut-In 398  Circ Sub \_\_\_\_\_ T-Pulled 5:22  
 (E) Second Initial Flow 59  Hourly Standby \_\_\_\_\_ T-Out 7:32  
 (F) Second Final Flow 87  Mileage 120 RT Comments \_\_\_\_\_  
 (G) Final Shut-In 395  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2211  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 30  
 Final Shut-In 60  
 Sub Total 1745  
 Total 1745  
 MP/DST Disc't \_\_\_\_\_

Approved By Brad Rine Our Representative Shawn Wheelbarger

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66041

NO.

Well Name & No. Olive #1-21 Test No. 5 Date 9-30-19  
 Company Murfin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Brad Rine Rig Murfin #3  
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State NE

Interval Tested 4407 - 4500 Zone Tested Lansing 4-1  
 Anchor Length 93 Drill Pipe Run 4231 Mud Wt. 9  
 Top Packer Depth 4402 Drill Collars Run 177 Vis 55  
 Bottom Packer Depth 4407 Wt. Pipe Run - WL 7.2  
 Total Depth 4500 Chlorides 1100 ppm System LCM 5  
 Blow Description IF 1/4" Blow @ open built to 3"  
ISI No blow back  
FF Blow built to 4 1/2"  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>13</u>	<u>560MO</u>	<u>10</u>	<u>85</u>	<u>5</u>	
<u>177</u>	<u>560CWM</u>	<u>9</u>	<u>18</u>	<u>21</u>	<u>52</u>
		%gas	%oil	%water	%mud
		%gas	%oil	%water	%mud
		%gas	%oil	%water	%mud

Rec Total 190 BHT 146 Gravity 21.3 API RW 620 @ 53.9 °F Chlorides 14000 ppm

(A) Initial Hydrostatic 2219  
 (B) First Initial Flow 17  
 (C) First Final Flow 60  
 (D) Initial Shut-In 763  
 (E) Second Initial Flow 61  
 (F) Second Final Flow 100  
 (G) Final Shut-In 527  
 (H) Final Hydrostatic 2214

Test 1300  
 Jars 250  
 Safety Joint 75  
 Circ Sub  
 Hourly Standby  
 Mileage 120 RT  
 Sampler  
 Straddle  
 Shale Packer  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility  
 Sub Total 1745

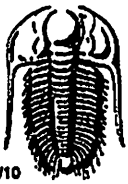
T-On Location 18:50  
 T-Started 20:05  
 T-Open 22:50  
 T-Pulled 2:50 10-1  
 T-Out 5:10 10-1

Comments \_\_\_\_\_  
 EM Tool  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1745  
 MP/DST Disc't \_\_\_\_\_

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

Approved By Brad Rine Our Representative Shawn Wheelbarger

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66042

NO.

Well Name & No. Olive #1-21 Test No. 6 Date 10-2-19  
 Company Murkin Drilling Co Inc Elevation 3345 KB 3340 GL  
 Address 250 N Water STE 300 Wichita KS 67202  
 Co. Rep / Geo. Brad Rine Rig Murkin #3  
 Location: Sec. 21 Twp 2S Rge. 37W Co. Cheyenne State KS

Interval Tested 4657-4783 Zone Tested Ft Scott - Celia  
 Anchor Length 126 Drill Pipe Run 4480 Mud Wt. 9.3  
 Top Packer Depth 4652 Drill Collars Run 177 Vls 72  
 Bottom Packer Depth 4657 Wt. Pipe Run - WL 6.4  
 Total Depth 4783 Chlorides 1000 ppm System LCM 4  
 Blow Description IF 1/2" Blow @ open built to 1 1/4"  
ISI No blow back  
FF No blow  
FSI No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</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 10 BHT 138 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2304  Test 1300 T-On Location 11:14  
 (B) First Initial Flow 20  Jars 250 T-Started 12:18  
 (C) First Final Flow 21  Safety Joint 75 T-Open 14:40  
 (D) Initial Shut-In 404  Circ Sub \_\_\_\_\_ T-Pulled 17:40  
 (E) Second Initial Flow 23  Hourly Standby \_\_\_\_\_ T-Out 19:35  
 (F) Second Final Flow 23  Mileage 120 RT Comments \_\_\_\_\_  
 (G) Final Shut-In 325  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2283  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  EM Tool \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Shut-In 60  Day Standby \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Sub Total 1745  Accessibility \_\_\_\_\_ Sub Total 0  
 Sub Total 1745  MP/DST Disch \_\_\_\_\_ Total 1745

Approved By Brad Rine Our Representative Shawn Wheelburger  
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**CEMENT TREATMENT REPORT**

Customer: <b>Murfin Drilling</b>	Well: <b>Olive 1-21</b>	Ticket: <b>ICT 2520</b>
City, State:	County: <b>Cheyenne</b>	Date: <b>10/4/2019</b>
Field Rep:	S-T-R: <b>21-2S-37W</b>	Service:

Downhole Information	
Hole Size:	<b>7 7/8</b>
Hole Depth:	<b>5050</b>
Casing Size:	<b>in</b>
Casing Depth:	<b>ft</b>
Tubing / Liner:	<b>in</b>
Depth:	<b>ft</b>
Tool / Packer:	
Depth:	<b>ft</b>
Displacement:	<b>bbbls</b>

Slurry	
Weight:	<b>13.5 # / sx</b>
Water / Sx:	<b>6 8/9 gal / sx</b>
Yield:	<b>1 3/7 ft³ / sx</b>
Bbls / Ft.:	
Depth:	<b>ft</b>
Volume:	<b>bbbls</b>
Excess:	<b>%</b>
Total Slurry:	<b>bbbls</b>
Total Sacks:	<b>255 sx</b>

Cement Blend		
Product	%	#
Class A	<b>60.0</b>	
Gel	<b>4.0</b>	
CaCl		
Metso		
KolSeal		
PhenoSeal		
Salt		
Pozmix	<b>40.0</b>	
Total		<b>-</b>

TIME	RATE	PSI	BBLs	REMARKS	TIME	RATE	PSI	BBLs	REMARKS
430A				ON LOCATION					
440A				SAFETY MEETING					
450A				RIG UP					
548A	3.0	150.0	5.0	H2O AHEAD					
551A	4.0	150-100	12.6	CEMENT 50 SKS @ 3250 FT					
555A	4.0	100.0	5.0	DISPLACE H2O					
600A				DISPLACE MUD (RIG PUMP)					
646A	4.0	150.0	5.0	H2O AHEAD					
648A	4.0	150-75	25.2	CEMENT 100 SKS @ 2500 FT					
655A	4.0	75.0	28.9	DISPLACE H2O					
763A	3.0	125.0	5.0	H2O AHEAD					
766A	3.0	125-75	12.6	CEMENT 50 SKS @ 350 FT					
800A	3.0	75.0	1.8	DISPLACE H2O					
840A	3.0	50.0	2.5	CEMENT 10 SKS @ 40 FT					
850A	3.0	50.0	3.0	CEMENT 15 SKS MOUSEHOLE					
900A	3.0	50.0	7.6	CEMENT 30 SKS RATHOLE					
910A				WASH UP					
920A				RIG DOWN					
940A				LEFT LOCATION					

CREW		UNIT	SUMMARY		
Cementer:			Average Rate	Average Pressure	Total Fluid
Pump Operator:			3.41667 bpm	91.57 psi	114.95 bbls
Bulk #1:					
Bulk #2:					