

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1248221  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

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       SIOW
- Gas       D&A       ENHR       SIGW
- OG       GSW       Temp. Abd.
- 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 ENHR       Conv. to SWD
- Plug Back       Conv. to GSW       Conv. to Producer
- Commingled      Permit #: \_\_\_\_\_
- Dual Completion      Permit #: \_\_\_\_\_
- SWD      Permit #: \_\_\_\_\_
- ENHR      Permit #: \_\_\_\_\_
- GSW      Permit #: \_\_\_\_\_

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - \_\_\_\_\_

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
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

1248221

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  List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
--	---

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				

Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 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)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD:	Size:	Set At:	Packer At:	Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No
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Date of First, Resumed Production, SWD or ENHR.	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

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Sowers 1-19
Doc ID	1248221

All Electric Logs Run

DIL
DUCP
MEL
BHCS





PO Box 93999  
Southlake, TX 76092

Voice: (817) 546-7282  
Fax: (817) 246-3361

*acet  
Prod-MC*

# INVOICE

Invoice Number: 147515  
Invoice Date: Dec 6, 2014  
Page: 1

Federal Tax I.D.#: 20-8651475

<b>Bill To:</b>
Murfin Drfg. Co., Inc. 250 N. Water STE #300 Wichita, KS 67202

Customer ID	Field Ticket #	Payment Terms	
Murfin	64856	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Oakley	Dec 6, 2014	1/5/15

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	Sowers #1-19		
225.00	CEMENT MATERIALS	Class A Common	17.90	4,027.50
634.00	CEMENT MATERIALS	Chloride	1.10	697.40
236.25	CEMENT SERVICE	Cubic Feet Charge	2.48	585.90
980.09	CEMENT SERVICE	Ton Mileage Charge	2.75	2,695.25
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
90.00	CEMENT SERVICE	Pump Truck Mileage	7.70	693.00
1.00	CEMENT SERVICE	Manifold Head Rental	275.00	275.00
90.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	396.00
1.00	CEMENT SUPERVISOR	Andrew Forslund		
1.00	EQUIPMENT OPERATOR	Brandon Wilkinson		

ALL PRICES ARE NET, PAYABLE 30 DAYS FOLLOWING DATE OF INVOICE. 1 1/2% CHARGED THEREAFTER. IF ACCOUNT IS CURRENT, TAKE DISCOUNT OF

\$ 3,808.81 *35%*

ONLY IF PAID ON OR BEFORE

Jan 5, 2015

Subtotal	10,882.30
Sales Tax	385.08
Total Invoice Amount	11,267.38
Payment/Credit Applied	
<b>TOTAL</b>	<b>11,267.38</b>

*DK JR*

3,808.81  
7458.57

# ALLIED OIL & GAS SERVICES, LLC 064856

Federal Tax I.D. # 20-8651475

REMIT TO P.O. BOX 93999  
SOUTH LAKE, TEXAS 76092

SERVICE POINT:

Oakley

DATE <u>12-6-14</u>	SEC <u>19</u>	TWP. <u>1</u>	RANGE <u>37</u>	CALLED OUT	ON LOCATION <u>8:30 PM</u>	JOB START <u>11:00 PM</u>	JOB FINISH <u>11:30 PM</u>
LEASE <u>Sowers</u>	WELL # <u>1-19</u>	LOCATION <u>Bird city 13N 1 3/4 E N10</u>		COUNTY <u>Maguire</u>	STATE <u>KS</u>		
OLD OR NEW (Circle one)							

CONTRACTOR Murfin 20 OWNER Same

TYPE OF JOB Surface

HOLE SIZE 12 1/4 T.D. 225' CEMENT

CASING SIZE 8 5/8 DEPTH 225' AMOUNT ORDERED 225 sks com 3% ac

TUBING SIZE DEPTH

DRILL PIPE DEPTH

TOOL DEPTH

PRES. MAX MINIMUM

MEAS. LINE SHOE JOINT

CEMENT LEFT IN CSG. 15'

PERFS.

DISPLACEMENT 13.37

### EQUIPMENT

PUMP TRUCK CEMENTER Andrew Vorland Material total

# 431 HELPER Brandon Wilkins (1653.71 / 35%)

BULK TRUCK DRIVER Jeff (Tuss)

BULK TRUCK DRIVER

HANDLING 2.34 25 sks @ 2.48 585.90

MILEAGE 2.25 to site 10.89 @ 2695.27

### REMARKS:

TOTAL

Cement did circulate

Thank you

CHARGE TO: Murfin

STREET

CITY STATE ZIP

(2155.09 / 35%) TOTAL 6,457.47

### PLUG & FLOAT EQUIPMENT

	@	
	@	
	@	
	@	
	@	

TOTAL

To: Allied Oil & Gas Services, LLC.  
You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

SALES TAX (if Any)

TOTAL CHARGES 10,772.32

DISCOUNT 3,808.81 (35%) IF PAID IN 30 DAYS

PRINTED NAME BREB CORREY

SIGNATURE [Signature]

7,963.51 Net



P. O. Box 466  
Ness City, KS 67560  
Off: 785-798-2300



# Invoice

DATE	INVOICE #
12/16/2014	27010

BILL TO
Murfin Drilling Co Inc PO Box 661 Colby, KS 67701-0661
USED FOR <u>IC 103</u>
APPROVED <u>IT KK</u>

- Acidizing
- Cement
- Tool Rental

TERMS	Well No.	Lease	County	Contractor	Well Type	Well Category	Job Purpose	Operator
Net 30	#1-19	Sowers	Cheyenne	Company Rig	Oil	Development	Cement LongStri...	Don

PRICE REF.	DESCRIPTION	QTY	UM	UNIT PRICE	AMOUNT
575D	Mileage - 1 Way	170	Miles	6.00	1,020.00
579D	Pump Charge - Top To Bottom LongString - 4764 Feet	1	Job	2,000.00	2,000.00
221	Liquid KCL (Clayfix)	2	Gallon(s)	25.00	50.00T
281	Mud Flush	500	Gallon(s)	1.25	625.00T
290	D-Air	5	Gallon(s)	42.00	210.00T
403-5	5 1/2" Cement Basket	3	Each	300.00	900.00T
406-5	5 1/2" Latch Down Plug & Baffle	1	Each	275.00	275.00T
407-5	5 1/2" Insert Float Shoe With Auto Fill	1	Each	375.00	375.00T
409-5	5 1/2" Turbolizer	15	Each	90.00	1,350.00T
413-5	5 1/2" Roto Wall Scratcher	10	Each	40.00	400.00T
419-5	5 1/2" Rotating Head Rental	1	Each	200.00	200.00T
325	Standard Cement	200	Sacks	14.50	2,900.00T
276	Flocele	50	Lb(s)	2.50	125.00T
283	Salt	1,000	Lb(s)	0.20	200.00T
284	Calseal	10	Sack(s)	35.00	350.00T
285	CFR-1	141	Lb(s)	4.50	634.50T
330	Swift Multi-Density Standard (MIDCON II)	300	Sacks	18.50	5,550.00T
276	Flocele	75	Lb(s)	2.50	187.50T
581D	Service Charge Cement	500	Sacks	2.00	1,000.00
583D	Drayage	4,316.64	Ton Miles	1.00	4,316.64
	Subtotal				22,668.64
	Sales Tax Cheyenne County			8.15%	1,168.06

<p><b>Thank You For Your Business &amp; Best Wishes For A Wonderful Holiday Season!!</b></p>	<p><b>Total</b> \$23,836.70</p>
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CHARGE TO: Murphy Drilling Co.  
 ADDRESS  
 CITY, STATE, ZIP CODE

TICKET 27010

PAGE 1 OF 2

**Services, Inc.**

SERVICE LOCATIONS  
 1. Hays, KS WELLS/PROJECT NO. 1-19 LEASE Sewers COUNTY/PARISH Cherokee STATE KS DATE 12-16-14 OWNER  
 2. Ness City, KS WELLS/PROJECT NO. 2-19 LEASE Sewers COUNTY/PARISH Cherokee STATE KS ORDER NO.  
 3. Ness City, KS WELLS/PROJECT NO. 3-19 LEASE Sewers COUNTY/PARISH Cherokee STATE KS DELIVERED TO N/Build City, KS WELL LOCATION  
 4. Ness City, KS WELLS/PROJECT NO. 4-19 LEASE Sewers COUNTY/PARISH Cherokee STATE KS DELIVERED TO N/Build City, KS WELL LOCATION

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	LOC	ACCT	DF	DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
575		1			MILEAGE #113	170	mi			600	102000
579		1			Heavy Charge - RT Top to Bottom L.S.	1	hr	47 1/4	hr	20000	200000
281		1			Liquid KCL	2	gal			2500	5000
281		1			Mud Flush	5	gal			125	625
290		1			D-Air	3	ea	5 1/2	in	3000	9000
423		1			Cement Baskets	1	ea	5 1/2	in	27500	27500
426		1			Latex Duro Plug & Barrel	1	ea	5 1/2	in	27500	27500
427		1			Insect Fleat Shoe w/ Pads Full	1	ea	5 1/2	in	37500	37500
429		1			Turbolizers	15	ea	3 1/2	in	9000	135000
413		1			Robt LeDell Screens	10	ea	5	ft	4000	40000
419		1			Rotating Head Rental	1	ea	5 1/2	in	20000	20000

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS  
 DATE SIGNED 12-16-14 TIME SIGNED 1700  A.M.  P.M.

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY	AGREE	UN-DECIDED	DIS-AGREE	PAGE TOTAL	AMOUNT
OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?				81	740500
WE UNDERSTOOD AND MET YOUR NEEDS?				82	15263164
OUR SERVICE WAS PERFORMED WITHOUT DELAY?				Subtotal	22,668,654
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?				Cherokee tax	1,168,06
ARE YOU SATISFIED WITH OUR SERVICE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.15%	1,168,06
<input type="checkbox"/> CUSTOMER DID NOT WISH TO RESPOND				TOTAL	23,836,70

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.  
 SWIFT OPERATOR Allen Lemons APPROVAL  
 Thank You!





PO Box 466  
Ness City, KS 67560  
Off: 785.798.2300

TICKET CONTINUATION

TICKET No. 27010

CUSTOMER  
Munira Dry Co.

WELL  
L-19 Seavers

DATE  
12-16-14

PAGE 2 OF 2

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	WELL				UNIT PRICE	AMOUNT	
		LOC	ACCT	DF			QTY	U/M	QTY	U/M			
225						Standard Cement	EA-2	200 SKS	18800	165	14.50	2900.00	
276						Flocele	1/4" 1/sk	50	165	250	2.50	125.00	
283						Salt	10%	1000	165	30	3.00	300.00	
284						Calseal	5%	940	165	10	35.00	350.00	
285						CFB-1	3/4%	141	165	1	4.50	634.50	
330						SWD Cement		300	SKS	29718	165	18.50	5550.00
276						Flocele	1/4" 1/sk	75	165	2.50	187.50		
581						Cement		500	SKS	200	100.00	10000.00	
583						MILEAGE CHARGE	TOTAL WEIGHT	LOADED MILES	TON MILES		100	4316.64	
							50784	154	170	MI		4316.64	
CONTINUATION TOTAL											152103.64		

**JOB LOG**

**SWIFT Services, Inc.**

DATE 12-16-14 PAGE NO. 1

CUSTOMER Messersmith Co. WELL NO. 1-19 LEASE Sowers JOB TYPE Cut. Top To Bottom L.S. TICKET NO. 27010

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
12/16	1700					15.5 <sup>#</sup> / <sub>ft</sub>	5 1/2"	TD 4770' On location - Float Equip. Rig LDDP - Strip casing
	2120							Rig start running 5 1/2" 15.5 <sup>#</sup> / <sub>ft</sub> casing - 4764' Insert Float Shoe w/ Fill-up L.D. Baffle - SJ-23' @ 4741' = (112.8 BBL) 50' of Roto Wall Scrubbers Curt 1 thru 5 7 thru 11 - 14 - 16 - 18 - 37 - 62 Curt Baskets Fin each #17-38-63 Circulate half way in #58 - 30 min Drop ball up ball Fin new casing
	2240/2310							
	25100							
12/17	0010							Start circ / Rotate casing
	0115							Fin circ
			7/5					Plug RH-30 SKS SMD UH 20 SKS SMD
		5	12				450	Pump 500 gal Meel Flush
		6	20				500	Pump 20 BBL KLL Flush
		5					450	Start 250 SKS SMD cut @ 11.2 <sup>#</sup> / <sub>gal</sub>
			160					
		4					300	Start 200 SKS EA-2 cut @ 15.5 <sup>#</sup> / <sub>gal</sub>
			210				vac	Fin cut - Wash pump lines
		9					500	Drop L.D. Plug - Start Displ
		9	60				600	Caught lift press - slow rate
		8/7	75				1000	slow rate
		6	95				1300	slow rate (cut circ to pit)
			112				1500	Last circ press
	12300		(113)				1900	Plug Down - Hold - Release to Hold Job Complete Wash up & Pack up Tank. 30 SKS SMD @ 11.2 <sup>#</sup> / <sub>gal</sub> to pit
	12345							Man, Tom, Steve John, & Mester

MDCI  
 Sowers #1-19  
 330' FSL 1000' FEL  
 Sec. 19-T1S-R37W  
 3210' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3151	+59	+13	3151	+59	+13
B/Anhydrite	3185	+25	+9	3186	+24	+8
Neva	3609	-399	+11	3610	-400	+10
Red Eagle	3675	-465	+10	3675	-465	+10
Foraker	3726	-516	+10	3721	-511	+15
Topeka	3945	-735	+9	3947	-737	+7
Oread	4086	-876	+9	4082	-872	+13
Lansing	4161	-951	+9	4160	-950	+10
Stark	4385	-1175	+8	4382	-1172	+11
BKC	4444	-1234	+9	4439	-1229	+14
Pawnee	4566	-1356	+8	4558	-1348	+16
Cherokee	4649	-1439	+15	4648	-1438	+16
Mississippi						
RTD	4770					
LTD				4772		



## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Chuck Schmaltz

### **Sowers #1-19**

#### **19-1s-37w Cheyenne KS**

Start Date: 2014.12.12 @ 00:30:00

End Date: 2014.12.12 @ 09:25:00

Job Ticket #: 60833                      DST #: 1

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

Printed: 2014.12.17 @ 14:29:02



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60833

**DST#: 1**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 00:30:00

## GENERAL INFORMATION:

Formation: **LKC "A - D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 02:59:30  
 Time Test Ended: 09:25:00  
 Interval: **4112.00 ft (KB) To 4236.00 ft (KB) (TVD)**  
 Total Depth: 4236.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: James Winder  
 Unit No: 83  
 Reference Elevations: 3210.00 ft (KB)  
 3199.00 ft (CF)  
 KB to GR/CF: 11.00 ft

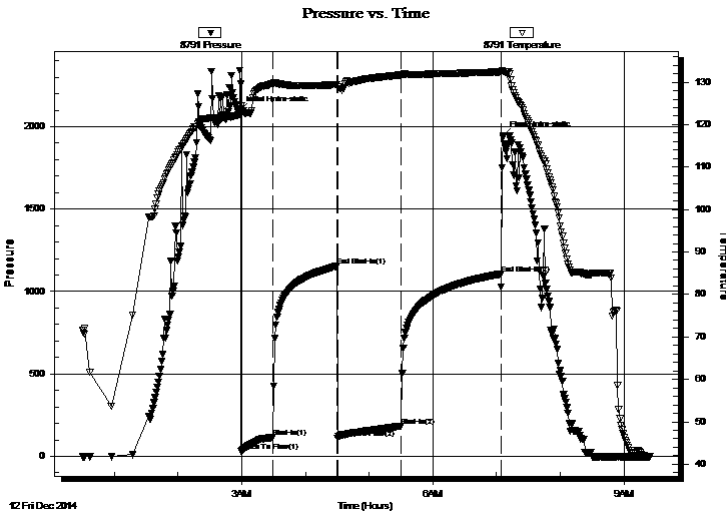
## Serial #: 8791

Inside

Press@RunDepth: 184.17 psig @ 4113.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.12.12 End Date: 2014.12.12 Last Calib.: 2014.12.12  
 Start Time: 00:30:05 End Time: 09:25:00 Time On Btm: 2014.12.12 @ 02:57:45  
 Time Off Btm: 2014.12.12 @ 07:06:00

TEST COMMENT: 30 - IF: Blow built to 9 1/4"  
 60 - IS: No blow back  
 60 - FF: Blow started at 1 1/2 min., built to BOB (11") at 53 min.  
 90 - FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.12	122.35	Initial Hydro-static
2	28.31	123.05	Open To Flow (1)
32	115.24	129.70	Shut-In(1)
92	1154.30	129.42	End Shut-In(1)
93	109.12	128.84	Open To Flow (2)
153	184.17	131.69	Shut-In(2)
247	1105.98	132.43	End Shut-In(2)
249	1947.12	132.57	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
123.00	OWCM 81%m, 11%w, 4%o, 4%g	0.60
242.00	OCM 92%m, 6%o, 2%g	2.83

## Gas Rates

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



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60833

**DST#: 1**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 00:30:00

## GENERAL INFORMATION:

Formation: **LKC "A - D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:59:30

Time Test Ended: 09:25:00

**Interval: 4112.00 ft (KB) To 4236.00 ft (KB) (TVD)**

Total Depth: 4236.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Reference Elevations: 3210.00 ft (KB)

3199.00 ft (CF)

KB to GR/CF: 11.00 ft

**Serial #: 8366 Outside**

Press@RunDepth: psig @ 4113.00 ft (KB)

Start Date: 2014.12.12 End Date: 2014.12.12

Start Time: 00:30:05 End Time: 09:24:30

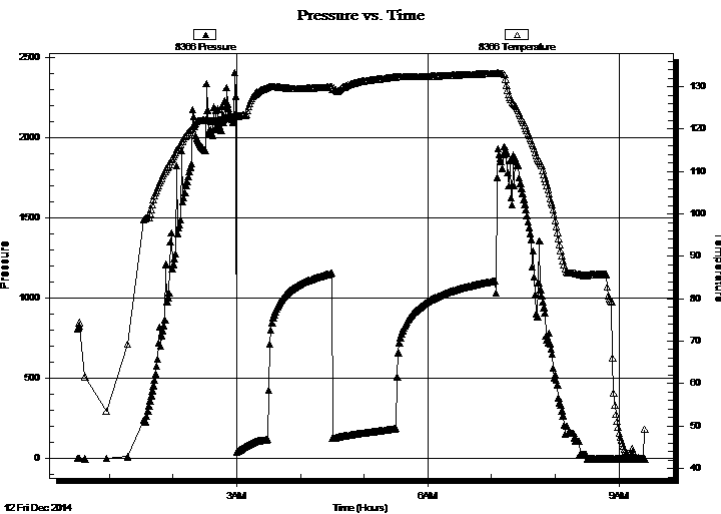
Capacity: 8000.00 psig

Last Calib.: 2014.12.12

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 - IF: Blow built to 9 1/4"  
60 - IS: No blow back  
60 - FF: Blow started at 1 1/2 min., built to BOB (11") at 53 min.  
90 - FS: No blow back



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
123.00	OWCM 81% <sub>m</sub> , 11% <sub>w</sub> , 4% <sub>o</sub> , 4% <sub>g</sub>	0.60
242.00	OCM 92% <sub>m</sub> , 6% <sub>o</sub> , 2% <sub>g</sub>	2.83

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60833

**DST#: 1**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 00:30:00

## Tool Information

Drill Pipe:	Length: 3922.00 ft	Diameter: 3.80 inches	Volume: 55.02 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 76000.00 lb
			<u>Total Volume: 55.93 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4112.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	124.00 ft			
Tool Length:	152.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Shut In Tool	5.00			4089.00	
Hydraulic tool	5.00			4094.00	
Jars	5.00			4099.00	
Safety Joint	3.00			4102.00	
Packer	5.00			4107.00	28.00 Bottom Of Top Packer
Packer	5.00			4112.00	
Stubb	1.00			4113.00	
Recorder	0.00	8791	Inside	4113.00	
Recorder	0.00	8366	Outside	4113.00	
Perforations	23.00			4136.00	
Blank Spacing	97.00			4233.00	
Bullnose	3.00			4236.00	124.00 Bottom Packers & Anchor

**Total Tool Length: 152.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60833

**DST#: 1**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 00:30:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.75 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
123.00	OWCM 81%m, 11%w, 4%o, 4%g	0.605
242.00	OCM 92%m, 6%o, 2%g	2.830

Total Length: 365.00 ft      Total Volume: 3.435 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

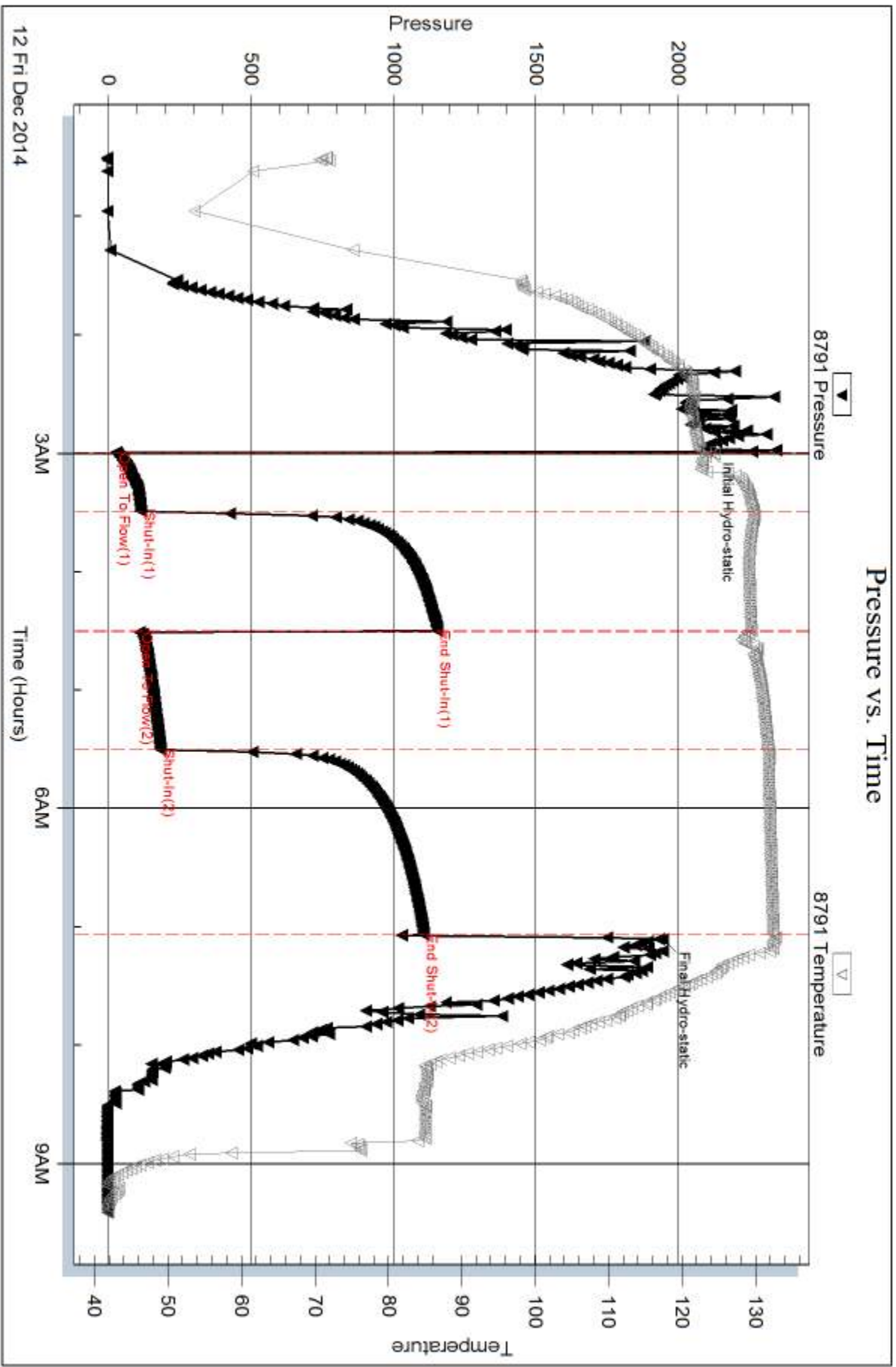
Serial #:

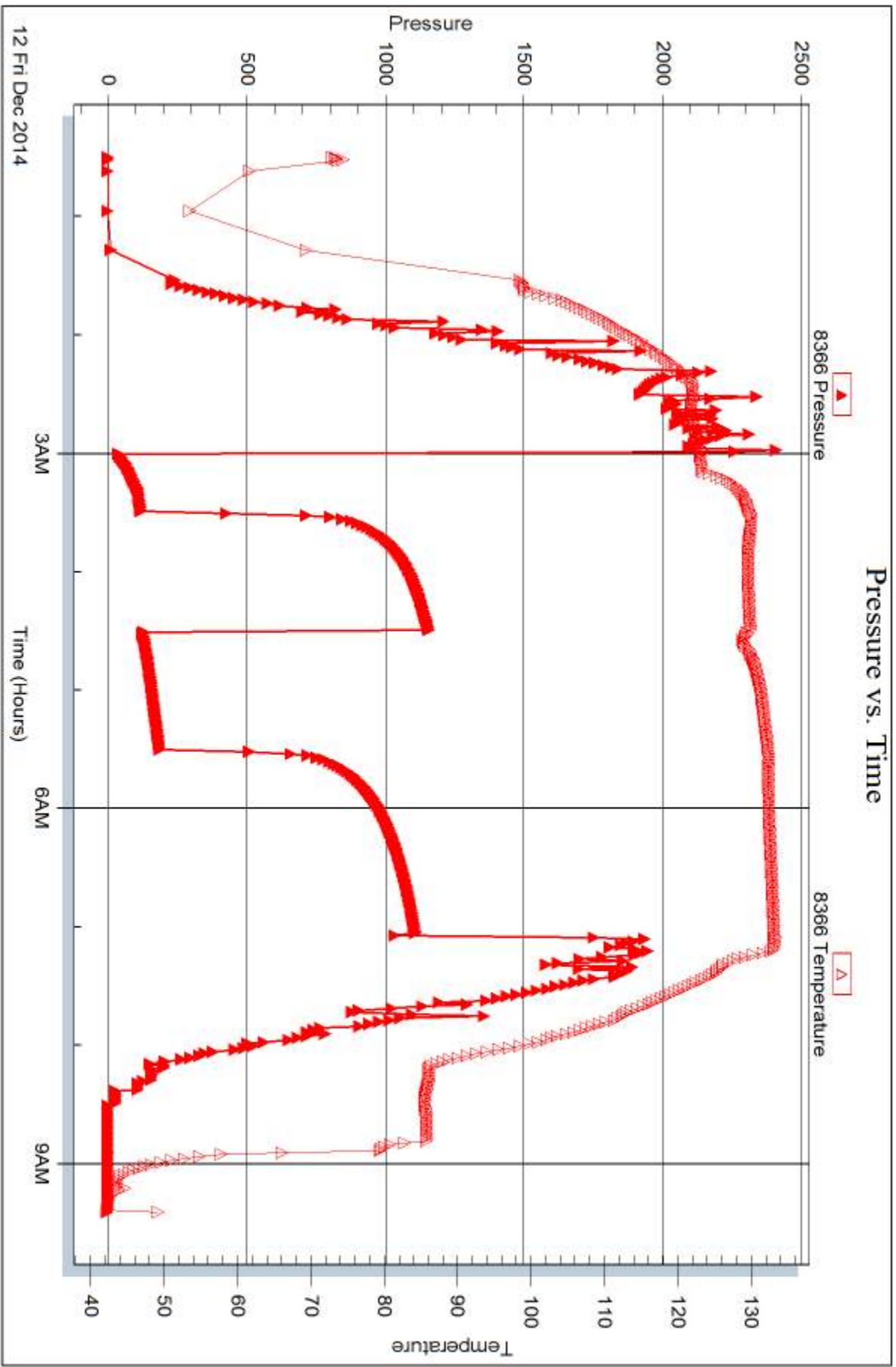
Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Chuck Schmaltz

### **Sowers #1-19**

#### **19-1s-37w Cheyenne KS**

Start Date: 2014.12.12 @ 18:46:00

End Date: 2014.12.13 @ 02:19:30

Job Ticket #: 60834                      DST #: 2

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

Printed: 2014.12.17 @ 14:28:38



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60834

**DST#: 2**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 18:46:00

## GENERAL INFORMATION:

Formation: **LKC "G"**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 21:21:45  
 Tester: James Winder  
 Time Test Ended: 02:19:30  
 Unit No: 83  
 Interval: **4244.00 ft (KB) To 4296.00 ft (KB) (TVD)**  
 Reference Elevations: 3210.00 ft (KB)  
 Total Depth: 4296.00 ft (KB) (TVD)  
 3199.00 ft (CF)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Fair  
 KB to GR/CF: 11.00 ft

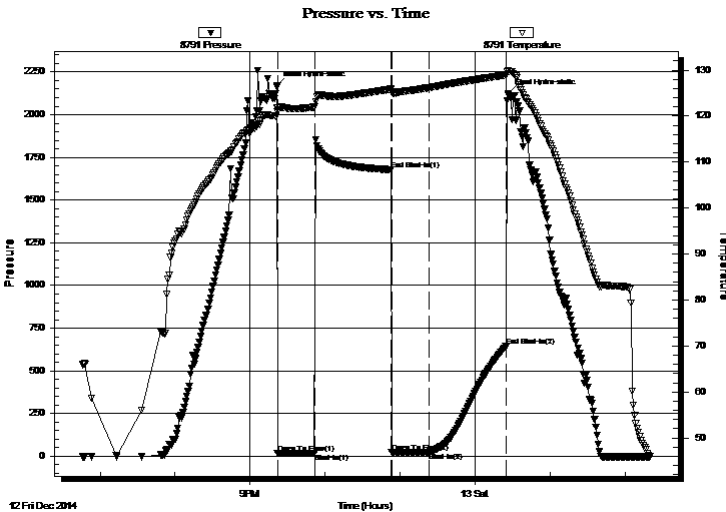
## Serial #: 8791

Inside

Press@RunDepth: 23.74 psig @ 4245.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.12.12 End Date: 2014.12.13 Last Calib.: 2014.12.13  
 Start Time: 18:46:05 End Time: 02:19:29 Time On Btm: 2014.12.12 @ 21:21:30  
 Time Off Btm: 2014.12.13 @ 00:26:00

TEST COMMENT: 30 - IF: Blow built to 1/2", died back, dead at 27 min.  
 60 - IS: No blow back  
 30 - FF: No blow  
 60 - FS: No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2167.36	121.75	Initial Hydro-static
1	17.06	121.02	Open To Flow (1)
30	19.58	121.98	Shut-In(1)
91	1677.75	125.88	End Shut-In(1)
92	22.05	125.23	Open To Flow (2)
122	23.74	126.18	Shut-In(2)
184	647.23	128.94	End Shut-In(2)
185	2122.63	129.94	Final Hydro-static

## Recovery

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

\* Recovery from multiple tests

## Gas Rates

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



# TRILOBITE TESTING, INC

## DRILL STEM TEST REPORT

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

**19-1s-37w Cheyenne KS**  
**Sowers #1-19**  
 Job Ticket: 60834      **DST#: 2**  
 Test Start: 2014.12.12 @ 18:46:00

### GENERAL INFORMATION:

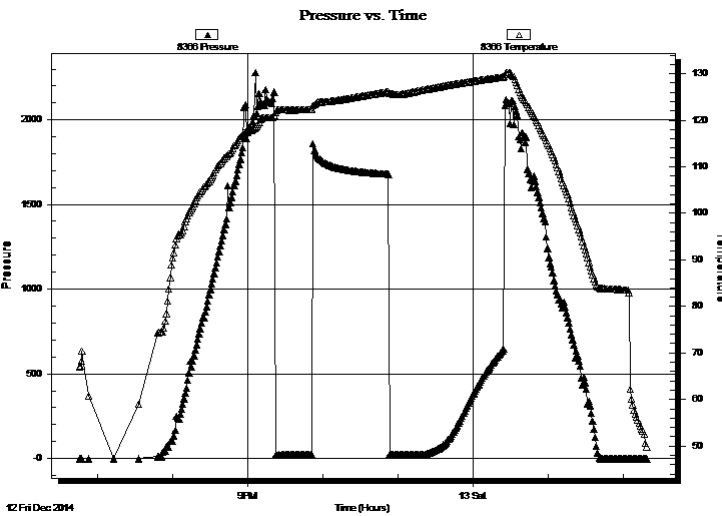
Formation: **LKC "G"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:21:45  
 Time Test Ended: 02:19:30  
**Interval: 4244.00 ft (KB) To 4296.00 ft (KB) (TVD)**  
 Total Depth: 4296.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: James Winder  
 Unit No: 83  
 Reference Elevations: 3210.00 ft (KB)  
 3199.00 ft (CF)  
 KB to GR/CF: 11.00 ft

### Serial #: 8366

Outside

Press@RunDepth: psig @ 4245.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.12.12      End Date: 2014.12.13      Last Calib.: 2014.12.13  
 Start Time: 18:46:05      End Time: 02:18:59      Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 30 - IF: Blow built to 1/2", died back, dead at 27 min.  
 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)
30.00	Mud w /trace of oil 100% m	0.15

### 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.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60834

**DST#: 2**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 18:46:00

## Tool Information

Drill Pipe:	Length: 4046.00 ft	Diameter: 3.80 inches	Volume: 56.75 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 74000.00 lb
		Total Volume: 57.66 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4244.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	52.00 ft			
Tool Length:	80.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: lost packer seat on ISI? (we pulled the slips and sat back down to weight after turning the tool) - driller pulled up too high when pulling the slips and I felt tool reopen as soon as he sat back down

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

Shut In Tool	5.00			4221.00	
Hydraulic tool	5.00			4226.00	
Jars	5.00			4231.00	
Safety Joint	3.00			4234.00	
Packer	5.00			4239.00	28.00 Bottom Of Top Packer
Packer	5.00			4244.00	
Packer - Shale	0.00			4244.00	
Stubb	1.00			4245.00	
Recorder	0.00	8791	Inside	4245.00	
Recorder	0.00	8366	Outside	4245.00	
Perforations	15.00			4260.00	
Blank Spacing	33.00			4293.00	
Bullnose	3.00			4296.00	52.00 Bottom Packers & Anchor

**Total Tool Length: 80.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60834

**DST#: 2**

ATTN: Chuck Schmaltz

Test Start: 2014.12.12 @ 18:46:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 10.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.95 in<sup>3</sup>

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
30.00	Mud w /trace of oil 100%m	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl

Num Fluid Samples: 0

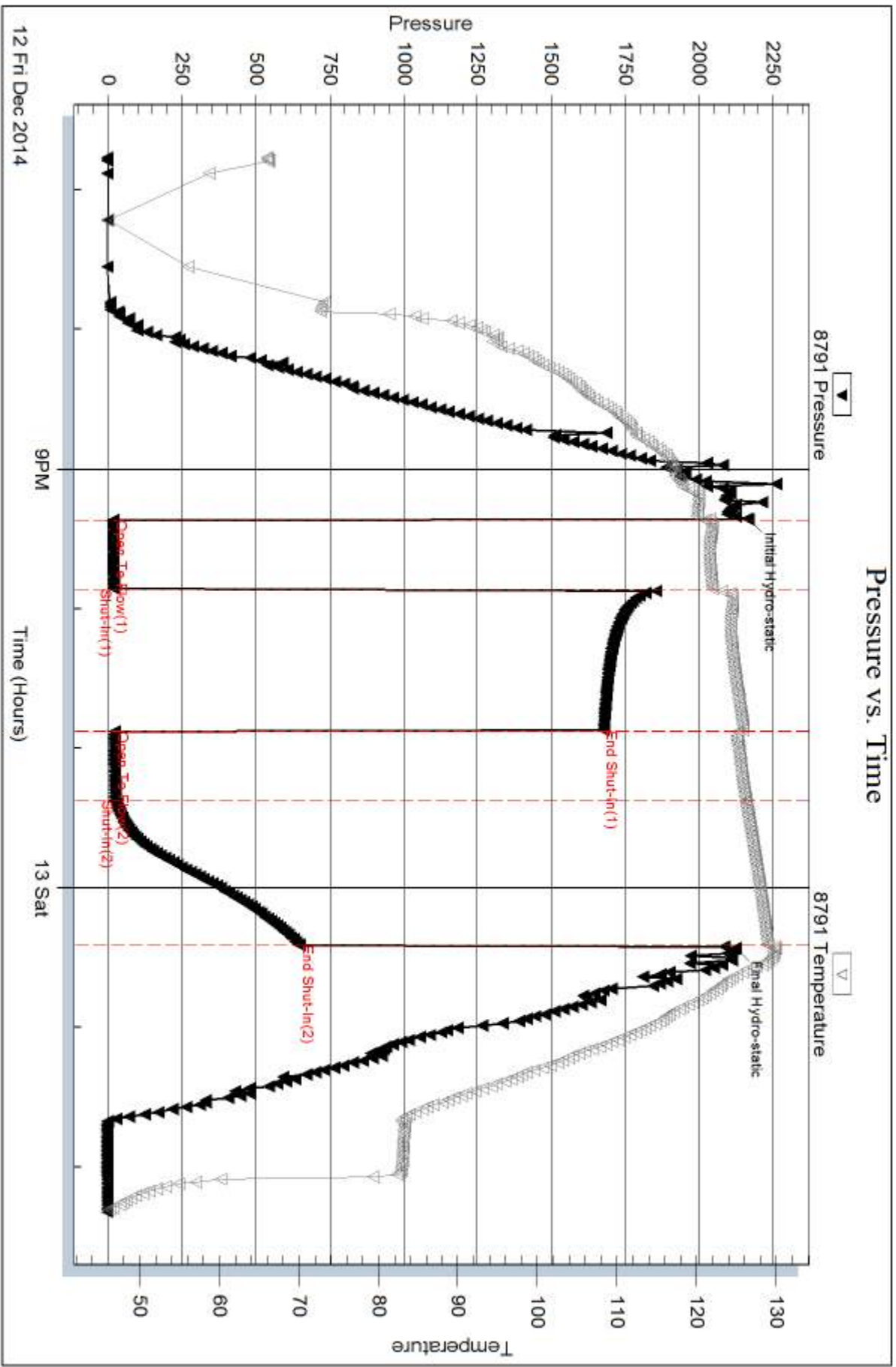
Num Gas Bombs: 0

Serial #:

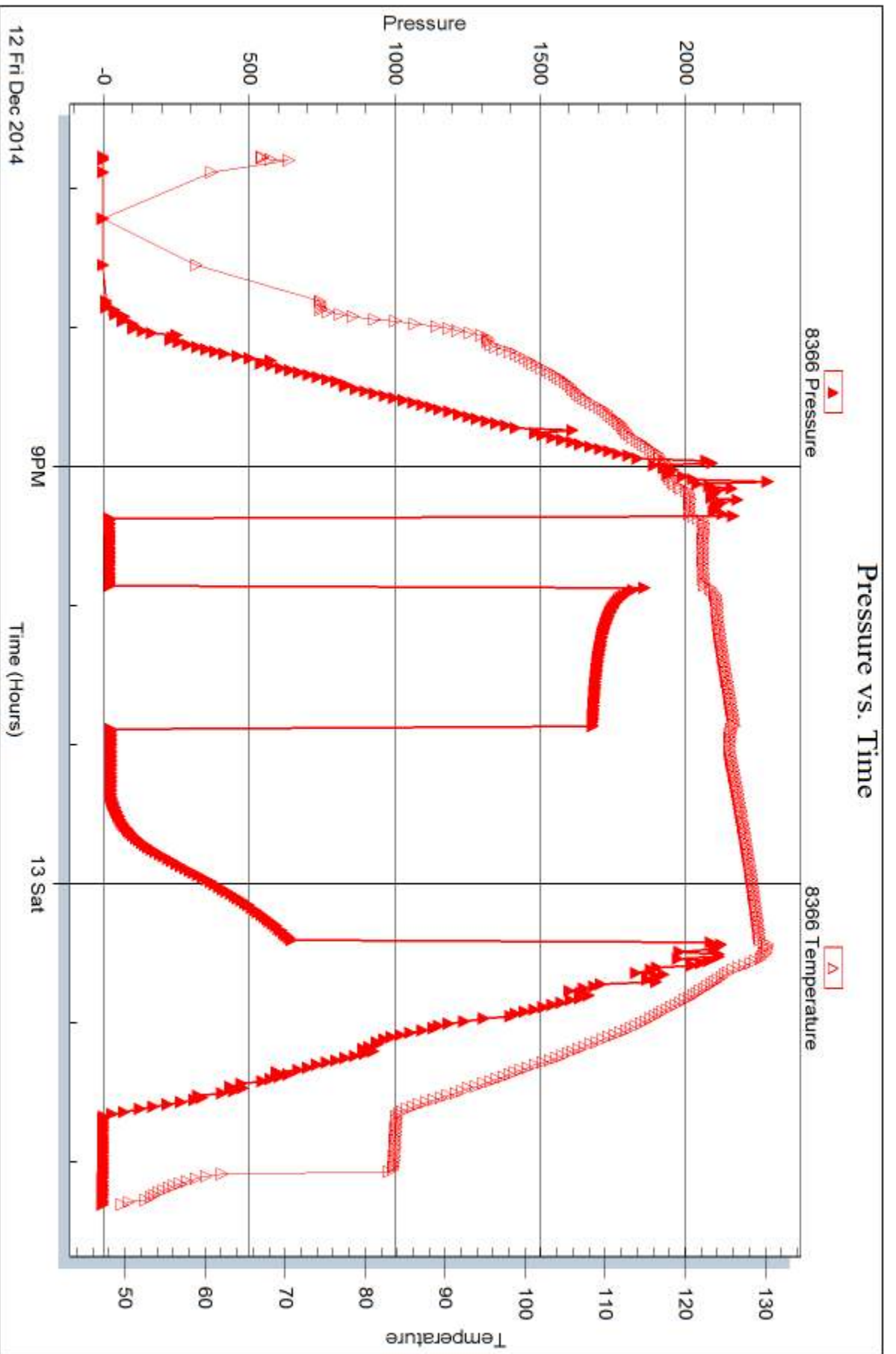
Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Chuck Schmaltz

### **Sowers #1-19**

#### **19-1s-37w Cheyenne KS**

Start Date: 2014.12.13 @ 16:40:00

End Date: 2014.12.14 @ 00:24:00

Job Ticket #: 60835                      DST #: 3

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

Printed: 2014.12.17 @ 14:19:27



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60835

**DST#: 3**

ATTN: Chuck Schmaltz

Test Start: 2014.12.13 @ 16:40:00

## GENERAL INFORMATION:

Formation: **LKC "H - J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:13:45

Time Test Ended: 00:24:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

**Interval: 4290.00 ft (KB) To 4390.00 ft (KB) (TVD)**

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4390.00 ft (KB) (TVD)

3199.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 8791**

**Inside**

Press@RunDepth: 24.56 psig @ 4291.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.13

End Date:

2014.12.14

Last Calib.: 2014.12.14

Start Time: 16:40:05

End Time:

00:23:59

Time On Btm: 2014.12.13 @ 19:13:30

Time Off Btm: 2014.12.13 @ 22:16:45

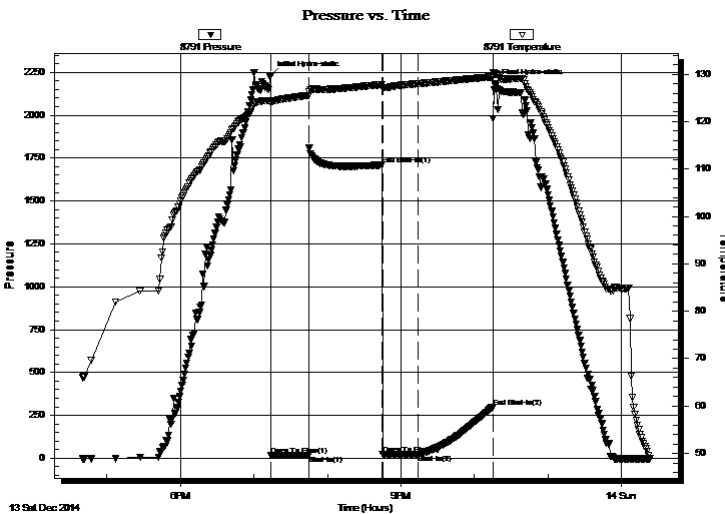
**TEST COMMENT:** 30 - IF: Blow built to 1/4", died back, dead at 18 min.

60 - IS: No blow

30 - FF: No blow

60 - FS: No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2231.33	124.49	Initial Hydro-static
1	15.74	123.98	Open To Flow (1)
32	18.32	125.53	Shut-In(1)
91	1709.49	127.80	End Shut-In(1)
92	21.56	126.94	Open To Flow (2)
121	24.56	128.00	Shut-In(2)
182	298.95	129.46	End Shut-In(2)
184	2181.27	130.06	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud 100%	0.07

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60835

**DST#: 3**

ATTN: Chuck Schmaltz

Test Start: 2014.12.13 @ 16:40:00

## GENERAL INFORMATION:

Formation: **LKC "H - J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:13:45  
 Time Test Ended: 00:24:00  
 Interval: **4290.00 ft (KB) To 4390.00 ft (KB) (TVD)**  
 Total Depth: 4390.00 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: 3210.00 ft (KB)  
 3199.00 ft (CF)  
 KB to GR/CF: 11.00 ft

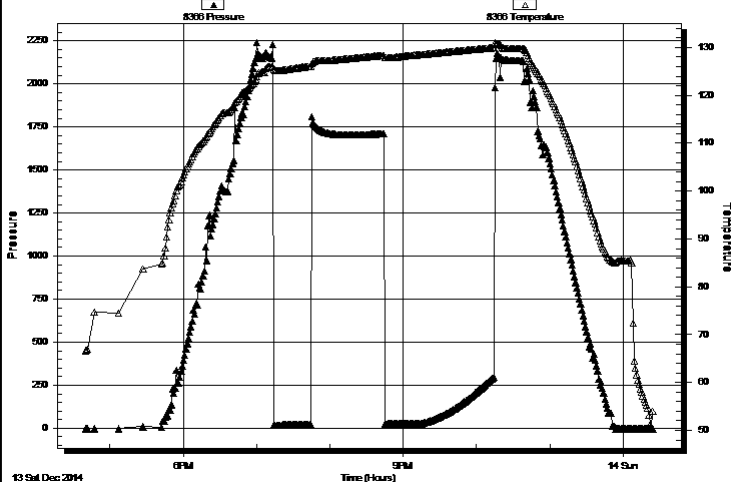
**Serial #: 8366**

**Outside**

Press@RunDepth: psig @ 4291.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.12.13 End Date: 2014.12.14 Last Calib.: 2014.12.14  
 Start Time: 16:40:05 End Time: 00:24:44 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to 1/4", died back, dead at 18 min.  
 60 - ISI: No blow  
 30 - FF: No blow  
 60 - FSI: No blow

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mud 100%	0.07

## 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.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60835

**DST#: 3**

ATTN: Chuck Schmaltz

Test Start: 2014.12.13 @ 16:40:00

## Tool Information

Drill Pipe:	Length: 4110.00 ft	Diameter: 3.80 inches	Volume: 57.65 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 58.56 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4290.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	100.00 ft			
Tool Length:	128.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: Same as last test - w hile pulling slips after turning tool at end of IF the driller pulled up too far and closed tool (I tried to w ave him off but it w as too late) - tool reopened as soon as he sat back dow n

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

Shut In Tool	5.00			4267.00	
Hydraulic tool	5.00			4272.00	
Jars	5.00			4277.00	
Safety Joint	3.00			4280.00	
Packer	5.00			4285.00	28.00 Bottom Of Top Packer
Packer	5.00			4290.00	
Stubb	1.00			4291.00	
Recorder	0.00	8791	Inside	4291.00	
Recorder	0.00	8366	Outside	4291.00	
Perforations	31.00			4322.00	
Blank Spacing	65.00			4387.00	
Bullnose	3.00			4390.00	100.00 Bottom Packers & Anchor

**Total Tool Length: 128.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60835

**DST#: 3**

ATTN: Chuck Schmaltz

Test Start: 2014.12.13 @ 16:40:00

## 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: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.57 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
15.00	Mud 100%	0.074

Total Length: 15.00 ft      Total Volume: 0.074 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

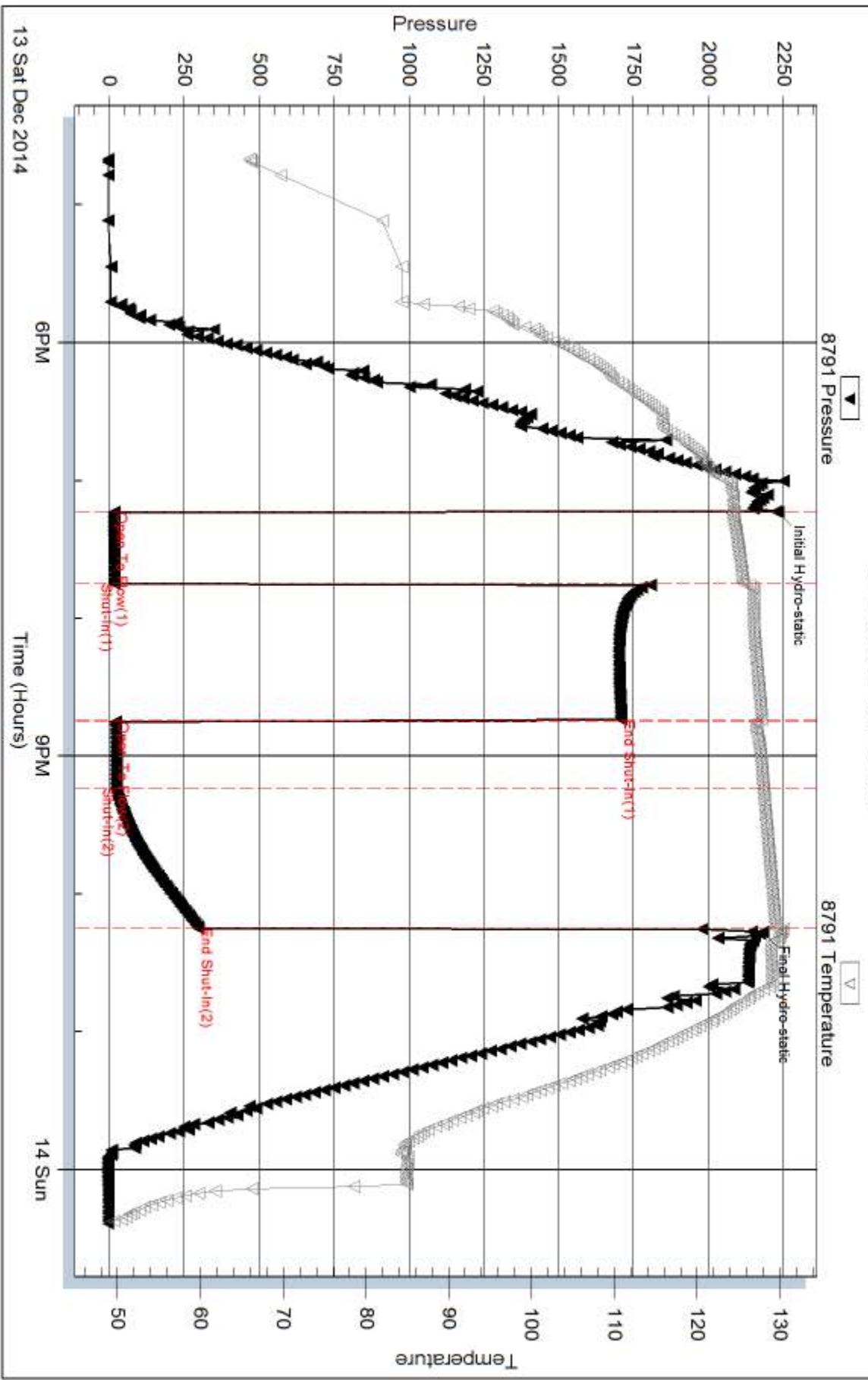
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time

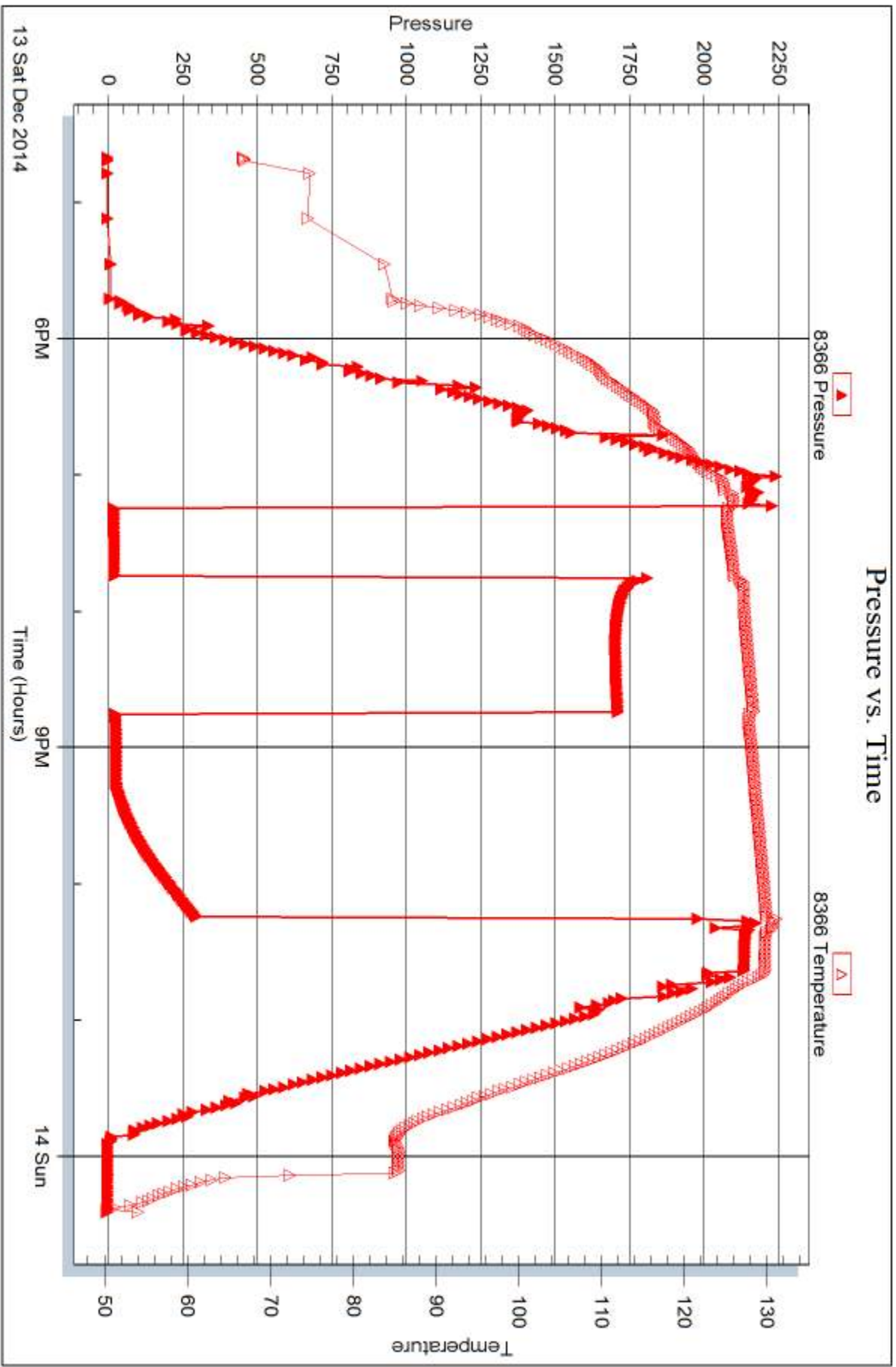


Serial #: 8366

Outside Murfin Drilling Co., Inc.

Sowers #1-19

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 60835

Printed: 2014.12.17 @ 14:19:30





## DRILL STEM TEST REPORT

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

250 N. Water STE 300  
Wichita, KS 67202

ATTN: Chuck Schmaltz

### **Sowers #1-19**

#### **19-1s-37w Cheyenne KS**

Start Date: 2014.12.14 @ 19:11:00

End Date: 2014.12.15 @ 04:11:30

Job Ticket #: 60836                      DST #: 4

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

Printed: 2014.12.17 @ 14:18:51



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60836

**DST#: 4**

ATTN: Chuck Schmaltz

Test Start: 2014.12.14 @ 19:11:00

## GENERAL INFORMATION:

Formation: **Upper Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:25:30

Time Test Ended: 04:11:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

**Interval: 4544.00 ft (KB) To 4575.00 ft (KB) (TVD)**

Reference Elevations: 3210.00 ft (KB)

Total Depth: 4575.00 ft (KB) (TVD)

3199.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

**Serial #: 8791**

**Inside**

Press@RunDepth: 87.49 psig @ 4545.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.14

End Date:

2014.12.15

Last Calib.:

2014.12.15

Start Time: 19:11:05

End Time:

04:11:30

Time On Btm:

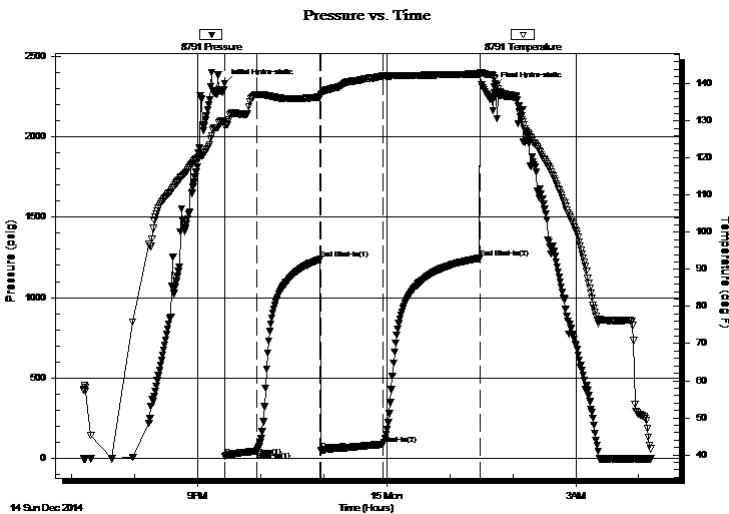
2014.12.14 @ 21:25:15

Time Off Btm:

2014.12.15 @ 01:42:30

**TEST COMMENT:** 30 - IF: Blow built to 4"  
60 - IS: No blow back  
60 - FF: Blow started at 7 min., built to 4"  
90 - FS: No blow back

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2329.43	129.80	Initial Hydro-static
1	14.89	128.59	Open To Flow (1)
31	45.33	137.17	Shut-In(1)
91	1238.04	136.45	End Shut-In(1)
93	50.26	137.02	Open To Flow (2)
151	87.49	142.16	Shut-In(2)
244	1245.04	142.70	End Shut-In(2)
258	2310.78	141.38	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	SO/WCM 63% <sub>m</sub> , 27% <sub>w</sub> , 6% <sub>g</sub> , 4% <sub>o</sub>	0.30
60.00	OCM 67% <sub>m</sub> , 26% <sub>o</sub> , 7% <sub>g</sub>	0.30
40.00	SMCO 94% <sub>o</sub> , 4% <sub>m</sub> , 2% <sub>g</sub>	0.20
0.00	GIP = 20'+	0.00

\* Recovery from multiple tests

## Gas Rates

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



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

# DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60836

**DST#: 4**

ATTN: Chuck Schmaltz

Test Start: 2014.12.14 @ 19:11:00

## GENERAL INFORMATION:

Formation: **Upper Pawnee**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:25:30  
 Time Test Ended: 04:11:30  
 Interval: **4544.00 ft (KB) To 4575.00 ft (KB) (TVD)**  
 Total Depth: 4575.00 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: 3210.00 ft (KB)  
 3199.00 ft (CF)  
 KB to GR/CF: 11.00 ft

**Serial #: 8366**

**Outside**

Press@RunDepth: psig @ 4545.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.12.14

End Date:

2014.12.15

Last Calib.:

2014.12.15

Start Time: 19:11:05

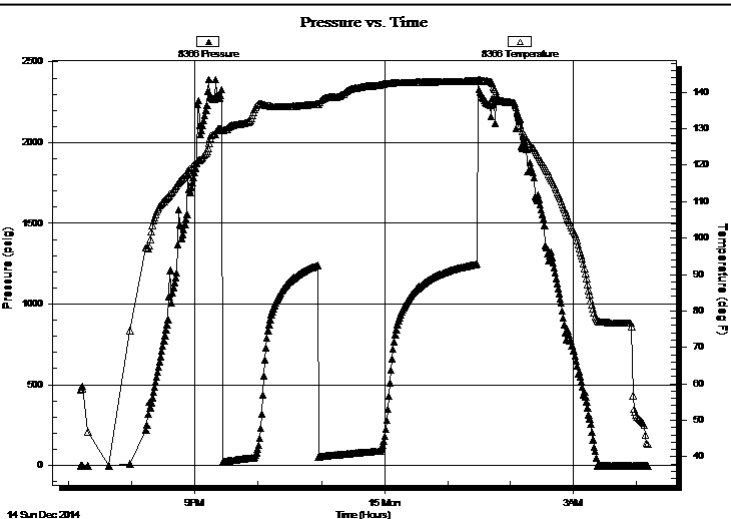
End Time:

04:10:45

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30 - IF: Blow built to 4"  
 60 - ISI: No blow back  
 60 - FF: Blow started at 7 min., built to 4"  
 90 - FSI: No blow back



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	SO/WCM 63% <sub>m</sub> , 27% <sub>w</sub> , 6% <sub>g</sub> , 4% <sub>o</sub>	0.30
60.00	OCM 67% <sub>m</sub> , 26% <sub>o</sub> , 7% <sub>g</sub>	0.30
40.00	SMCO 94% <sub>o</sub> , 4% <sub>m</sub> , 2% <sub>g</sub>	0.20
0.00	GIP = 20'+	0.00

## 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.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60836

**DST#: 4**

ATTN: Chuck Schmaltz

Test Start: 2014.12.14 @ 19:11:00

## Tool Information

Drill Pipe:	Length: 4361.00 ft	Diameter: 3.80 inches	Volume: 61.17 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 62.08 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	4544.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	31.00 ft			
Tool Length:	59.00 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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Shut In Tool	5.00			4521.00	
Hydraulic tool	5.00			4526.00	
Jars	5.00			4531.00	
Safety Joint	3.00			4534.00	
Packer	5.00			4539.00	28.00 Bottom Of Top Packer
Packer	5.00			4544.00	
Stubb	1.00			4545.00	
Recorder	0.00	8791	Inside	4545.00	
Recorder	0.00	8366	Outside	4545.00	
Perforations	27.00			4572.00	
Bullnose	3.00			4575.00	31.00 Bottom Packers & Anchor

**Total Tool Length: 59.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co., Inc.

**19-1s-37w Cheyenne KS**

250 N. Water STE 300  
Wichita, KS 67202

**Sowers #1-19**

Job Ticket: 60836

**DST#: 4**

ATTN: Chuck Schmaltz

Test Start: 2014.12.14 @ 19:11:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 50.00 sec/qt  
Water Loss: 7.59 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 700.00 ppm  
Filter Cake: 2.00 inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 35.4 deg API  
Water Salinity: 44000 ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	SO/WCM 63%m, 27%w, 6%g, 4%o	0.305
60.00	OCM 67%m, 26%o, 7%g	0.295
40.00	SMCO 94%o, 4%m, 2%g	0.197
0.00	GIP = 20'+	0.000

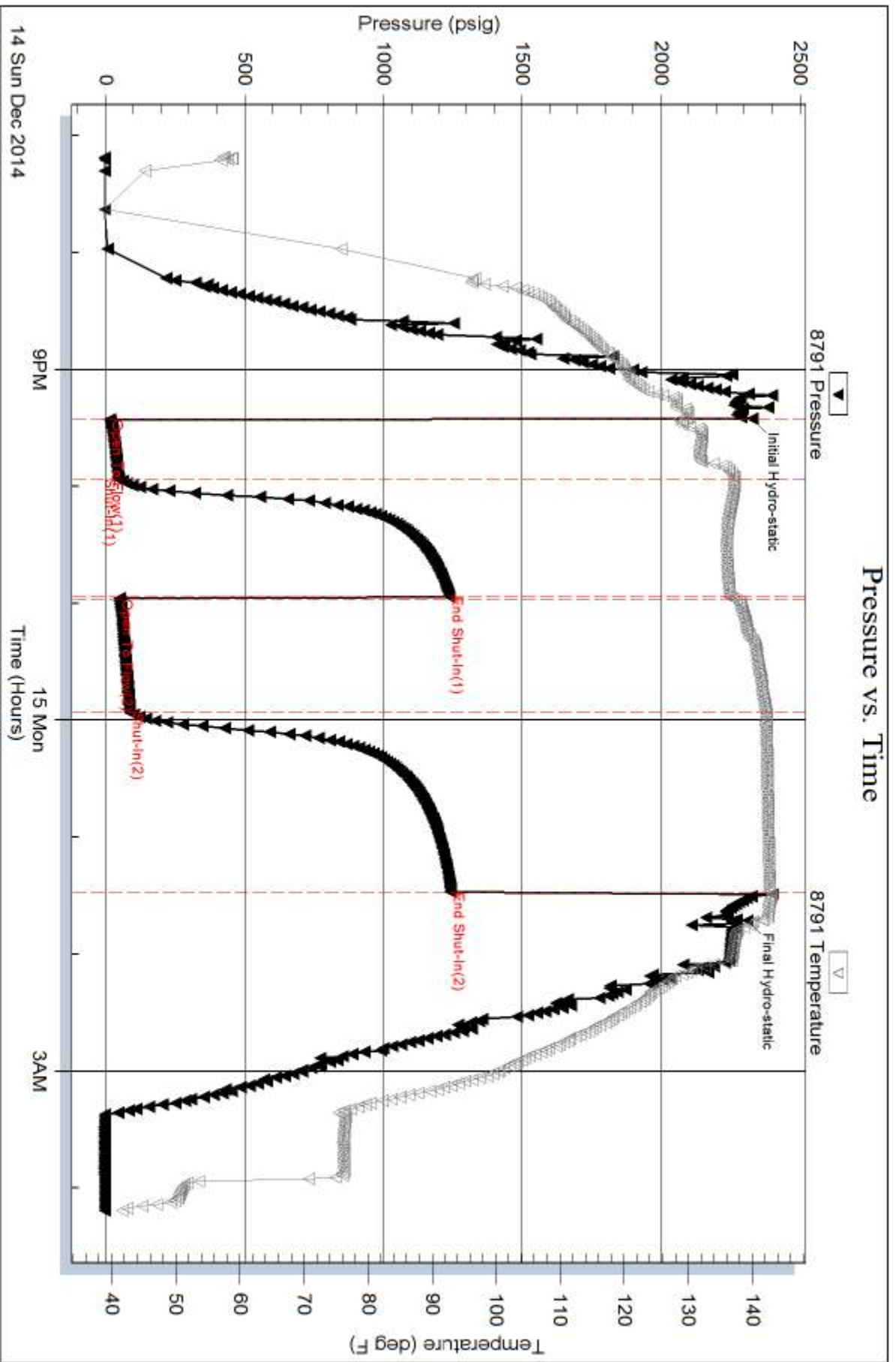
Total Length: 162.00 ft      Total Volume: 0.797 bbl

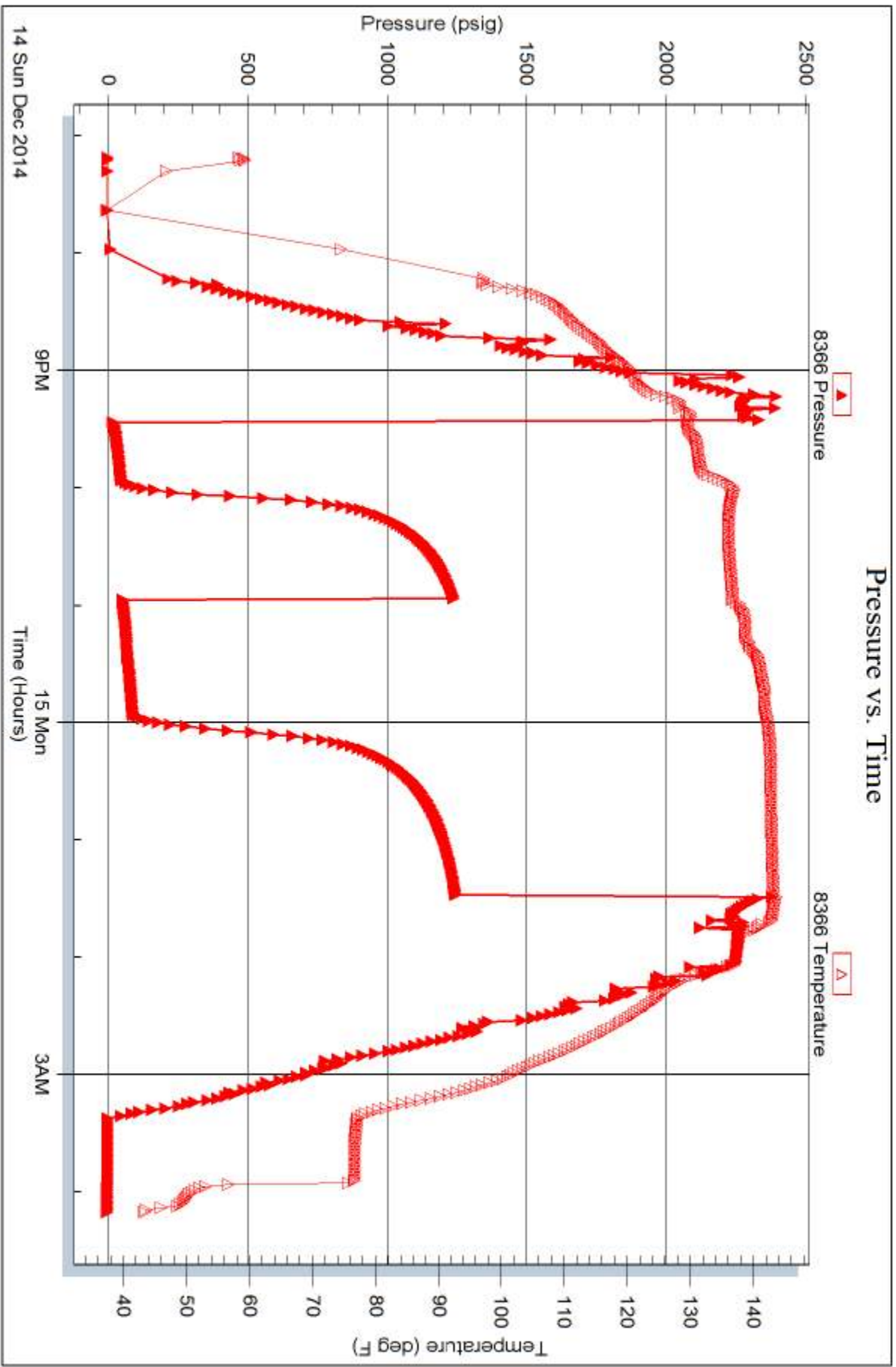
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: Gravity = 33 api @ 36 deg F Corrected Gravity = 35.4 api  
RW = .334 ohms @ 34.8 deg F Chlorides = 44,000 ppm

### Pressure vs. Time







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **60833**

Well Name & No. Sowers #1-19 Test No. 1 Date 12-12-14  
 Company Murfin Drilling Co. Inc Elevation 3210 KB 3199 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Chuck ~~22010~~ Schmaltz Rig Murfin #20  
 Location: Sec. 19 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4112 - 4236 Zone Tested Lans "A-D"  
 Anchor Length 124 Drill Pipe Run 3922 Mud Wt. 9.2  
 Top Packer Depth 4107 Drill Collars Run 185 Vis 52  
 Bottom Packer Depth 4112 Wt. Pipe Run - WL 6.8  
 Total Depth 4236 Chlorides 500 ppm System LCM 4

Blow Description IF: Blow built to 9 1/4"  
ISI: No blowback  
FF: Blow started at 1 1/2 min., built to BOB (11") at <sup>53</sup> min.  
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>242</u>	<u>00cm</u>	<u>2</u>	<u>6</u>	<u>-</u>	<u>92</u>
<u>123</u>	<u>0Wcm</u>	<u>4</u>	<u>4</u>	<u>11</u>	<u>81</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 365 BHT 132 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm  
 (A) Initial Hydrostatic 2100  Test 1250 T-On Location 23:35 12/11  
 (B) First Initial Flow 28  Jars 250 T-Started 00:30  
 (C) First Final Flow 115  Safety Joint 75 T-Open 2:59  
 (D) Initial Shut-In 1154  Circ Sub \_\_\_\_\_ T-Pulled 7:04  
 (E) Second Initial Flow 109  Hourly Standby \_\_\_\_\_ T-Out 9:10  
 (F) Second Final Flow 184  Mileage 152 RT 235.60 Comments \_\_\_\_\_  
 (G) Final Shut-In 1106  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1947  Straddle \_\_\_\_\_

Initial Open 30  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Ruined Packer 320  
 Final Flow 60  Extra Copies \_\_\_\_\_  
 Final Shut-In 90  Extra Recorder \_\_\_\_\_ Sub Total 320  
 Day Standby \_\_\_\_\_ Total 2130.60  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1810.60

Approved By *C. Schmaltz* Our Representative *James Winder*

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





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60834

Well Name & No. Sowers #1-19 Test No. 2 Date 12-12-14  
 Company Murfin Drilling Co. Inc. Elevation 3210 KB 3199 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Chuck Schmaltz Rig Murfin #20  
 Location: Sec. 19 Twp. 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4244 - 4296 Zone Tested Lans. "6"  
 Anchor Length 52 Drill Pipe Run 4046 Mud Wt. 9.5  
 Top Packer Depth 4239 Drill Collars Run 185 Vis 52  
 Bottom Packer Depth 4244 (shale) Wt. Pipe Run - WL 8.0  
 Total Depth 4296 Chlorides 700 ppm System LCM 4  
 Blow Description IF: Blow built to 1/2", died back, dead at 27 min.  
ISI: No blowback  
FF: No blow  
FSI: No blow

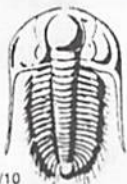
Rec	Feet of	%gas	%oil	%water	%mud
30	Mud w/trace of oil			100	

Rec Total 30 BHT 129 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm  
 (A) Initial Hydrostatic 2167  Test 1250 T-On Location 18:10 <sup>12/12</sup>  
 (B) First Initial Flow 17  Jars 250 T-Started 18:46  
 (C) First Final Flow 20  Safety Joint 75 T-Open 21:21  
 (D) Initial Shut-In 1678 (lost packer seat)  Circ Sub \_\_\_\_\_ T-Pulled 00:24  
 (E) Second Initial Flow 22  Hourly Standby \_\_\_\_\_ T-Out 2:15 <sup>12/13</sup>  
 (F) Second Final Flow 24  Mileage 152 RT 235.60 Comments \_\_\_\_\_  
 (G) Final Shut-In 647  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2123  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer 250  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 60  Day Standby \_\_\_\_\_ Total 2060.60  
 Final Flow 30  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 60 Sub Total 2060.60

Approved By [Signature]

Our Representative James Windley

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. **60835**

4/10

Well Name & No. Sowers #1-19 Test No. 3 Date 12-13-14  
 Company Murfin Drilling Co. Inc Elevation 3210 KB 3199 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Chuck ~~Q. A. A.~~ Schmalz Rig Murfin #20  
 Location: Sec. 19 Twp. 15 Rge. 37w Co. Cheyenne State KS

Interval Tested 4290 - 4390 Zone Tested Lans. "H-J"  
 Anchor Length 100 Drill Pipe Run 4110 Mud Wt. 9.2  
 Top Packer Depth 4285 Drill Collars Run 185 Vis 60  
 Bottom Packer Depth 4290 Wt. Pipe Run - WL 7.6  
 Total Depth 4390 Chlorides 600 ppm System LCM 4

Blow Description IF: Blow built to 1/4", died back, dead at 18 min.  
ISI: No blow  
FF: No blow  
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</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 15 BHT 129 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm  
 (A) Initial Hydrostatic 2231  Test 1250 T-On Location 15:45 12/13  
 (B) First Initial Flow 16  Jars 250 T-Started 16:40  
 (C) First Final Flow 18  Safety Joint 75 T-Open 19:13  
 (D) Initial Shut-In 1709 <sup>Towl pulled too far</sup>  Circ Sub \_\_\_\_\_ T-Pulled 22:15  
 (E) Second Initial Flow 22  Hourly Standby \_\_\_\_\_ T-Out 00:20 12/14  
 (F) Second Final Flow 25  Mileage 152 RT 235.60 Comments \_\_\_\_\_  
 (G) Final Shut-In 299  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2181  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 30  
 Final Shut-In 60  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1810.60  
 Total 1810.60  
 MP/DST Disc't \_\_\_\_\_

Approved By [Signature] Our Representative James Winkler

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 60836

4/10

Well Name & No. Sowers #1-19 Test No. 4 Date 12-14-14  
 Company Murfin Drilling Co. Inc Elevation 3210 KB 3199 GL  
 Address 250 N. Water STE 300 Wichita, KS 67202  
 Co. Rep / Geo. Chuck Schmalz Rig Murfin #20  
 Location: Sec. 19 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4544-4575 Zone Tested Upper Pawnee  
 Anchor Length 31 Drill Pipe Run 4361 Mud Wt. 9.0  
 Top Packer Depth 4539 Drill Collars Run 185 Vis 50  
 Bottom Packer Depth 4544 Wt. Pipe Run - WL 7.6  
 Total Depth 4575 Chlorides 700 ppm System LCM 3

Blow Description IF: Blow built to 4"  
ISI: No blowback  
FF: Blow started at 7min., built to 4"  
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>40</u>	<u>5MCO</u>	<u>2</u>	<u>94</u>	<u>-</u>	<u>4</u>
<u>60</u>	<u>OCM</u>	<u>7</u>	<u>26</u>	<u>-</u>	<u>67</u>
<u>62</u>	<u>50/WCM</u>	<u>6</u>	<u>4</u>	<u>27</u>	<u>63</u>
<u>    </u>	<u>GIP=20'</u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>
<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>

Rec Total 162 BHT 143 Gravity 35.4 API RW 334 @ 34.8 °F Chlorides 44,000 ppm

(A) Initial Hydrostatic 2329  Test 1250 T-On Location 18:55 12/14  
 (B) First Initial Flow 15  Jars 250 T-Started 19:11  
 (C) First Final Flow 45  Safety Joint 75 T-Open 21:25  
 (D) Initial Shut-In 1238  Circ Sub      T-Pulled 1:28  
 (E) Second Initial Flow 50  Hourly Standby      T-Out 4:05 12/15  
 (F) Second Final Flow 87  Mileage 152RT X2 235.60  
 (G) Final Shut-In 1245  Sampler      235.60  
 (H) Final Hydrostatic 2311  Straddle       
 Shale Packer       
 Extra Packer       
 Extra Recorder       
 Day Standby       
 Accessibility     

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

Sub Total 2046.20  
 Total 2046.20  
 MP/DST Disc't     

Approved By [Signature] Our Representative James Winder

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