

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1245311  
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: \_\_\_\_\_

1245311

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:  Yes  No

Date of First, Resumed Production, SWD or ENHR. \_\_\_\_\_ Producing Method:  
 Flowing  Pumping  Gas Lift  Other *(Explain)* \_\_\_\_\_

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> _____ <input type="checkbox"/> Commingled <i>(Submit ACO-4)</i>	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Nancy 2-4
Doc ID	1245311

All Electric Logs Run

DIL
DUCP
MEL
BHCS





*acct.  
Prod-MG*

# INVOICE

PO Box 93999  
Southlake, TX 76092

Invoice Number: 148309

Invoice Date: Jan 23, 2015

Page: 1

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

Federal Tax I.D.#: 20-8651475

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

Customer ID	Field Ticket #	Payment Terms	
Murfin	64873	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Oakley	Jan 23, 2015	2/22/15

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	Ruda C #1-13		
200.00	CEMENT MATERIALS	Class A Common	17.90	3,580.00
564.00	CEMENT MATERIALS	Chloride	1.10	620.40
210.00	CEMENT SERVICE	Cubic Feet Charge	2.48	520.80
464.64	CEMENT SERVICE	Ton Mileage Charge	2.75	1,277.76
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
48.00	CEMENT SERVICE	Pump Truck Mileage	7.70	369.60
1.00	CEMENT SERVICE	Swedge Manifold Rental	275.00	275.00
48.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	211.20
1.00	CEMENT SUPERVISOR	Andrew Forslund		
1.00	EQUIPMENT OPERATOR	Brandon Wilkinson		
1.00	EQUIPMENT OPERATOR	Darren Racette		

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

\$

ONLY IF PAID ON OR BEFORE

Subtotal	8,367.01
Sales Tax	331.83
Total Invoice Amount	8,698.84
Payment/Credit Applied	
<b>TOTAL</b>	<b>8,698.84</b>

*OK  
SR*

# ALLIED OIL & GAS SERVICES, LLC 064873

Federal Tax I.D. # 20-8651475

REMIT TO P.O. BOX 93999  
SOUTHLAKE, TEXAS 76092

SERVICE POINT: Ozblay

DATE <u>1-23-15</u>	SEC. <u>13</u>	TWP. <u>4S</u>	RANGE <u>33W</u>	CALLED OUT	ON LOCATION <u>7:00pm</u>	JOB START <u>8:00pm</u>	JOB FINISH <u>8:30pm</u>
LEASE <u>Ryda C.</u>	WELL# <u>1-13</u>	LOCATION <u>Colby 18 1/2 N 4E 2 1/2 W</u>		COUNTY <u>Reaslin</u>	STATE <u>TX</u>		
OLD OR NEW (Circle one)		<u>E into</u>					

CONTRACTOR <u>Murfin J</u>	OWNER <u>same</u>
TYPE OF JOB <u>Surface</u>	
HOLE SIZE <u>12 1/4</u>	T.D. <u>218'</u>
CASING SIZE <u>8 3/8</u>	DEPTH <u>218'</u>
TUBING SIZE	DEPTH
DRILL PIPE	DEPTH
TOOL	DEPTH
PRES. MAX	MINIMUM
MEAS. LINE	SHOE JOINT
CEMENT LEFT IN CSG. <u>15'</u>	
PERFS.	
DISPLACEMENT <u>12,93 BBL</u>	

CEMENT	AMOUNT ORDERED <u>200 SKS com</u>
	<u>3%cc</u>
COMMON <u>200 SKS</u>	@ <u>17.90</u> <u>3580.00</u>
POZMIX	@
GEL	@
CHLORIDE <u>564*</u>	@ <u>1.10</u> <u>620.40</u>
ASC	@

EQUIPMENT	
PUMP TRUCK # <u>431</u>	CEMENTER <u>Andrew Forslund</u>
BULK TRUCK # <u>818</u>	HELPER <u>Brandon Wilkinson</u>
BULK TRUCK #	DRIVER <u>Darren Racette</u>
BULK TRUCK #	DRIVER

Material total	<u>4200.40</u>
(1870.18/452)	@
	@
	@
	@
	@
HANDLING <u>210.00/ft.</u>	@ <u>2.48</u> <u>520.80</u>
MILEAGE <u>2.25</u>	@ <u>9.68</u> <u>21.78</u>

REMARKS:

Cement did circulate

Thank you

CHARGE TO: Murfin

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

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.

PRINTED NAME: Fred William

SIGNATURE: [Signature]

SERVICE	
DEPTH OF JOB <u>218'</u>	
PUMPTRUCK CHARGE	<u>1512.25</u>
EXTRA FOOTAGE	@
MILEAGE <u>48 miles</u>	@ <u>2.70</u> <u>369.60</u>
MANIFOLD <u>Swedge</u>	@ <u>225.00</u>
<u>Light vehicle</u>	@ <u>4.40</u> <u>211.20</u>
	@
(1874.97/452)	TOTAL <u>4,166.61</u>

PLUG & FLOAT EQUIPMENT	
	@
	@
	@
	@
	@
	@
	TOTAL <u>0</u>

SALES TAX (if Any) \_\_\_\_\_

TOTAL CHARGES 8,367.01

DISCOUNT 3,765.15 (45%) IF PAID IN 30 DAYS

4,601.85 Net

# ALLIED OIL & GAS SERVICES, LLC 064648

Federal Tax I.D. # 20-8651475

REMIT TO P.O. BOX 93999  
SOUTHLAKE, TEXAS 76092

SERVICE POINT: Dakley, TX

DATE <u>2-1-15</u>	SEC. <u>13</u>	TWP. <u>4</u>	RANGE <u>33</u>	CALLED OUT	ON LOCATION <u>4:00pm</u>	JOB START <u>6:30am</u>	JOB FINISH <u>7:15am</u>
LEASE <u>Rodac</u>	WELL# <u>1-13</u>	LOCATION <u>Colby (8Yard CH) 48220</u>		COUNTY <u>Rockwall</u>	STATE <u>TX</u>		
OLD OR NEW (Circle one) <u>NEW</u>				<u>2Yard, Excite</u>			

CONTRACTOR <u>Murfin</u>	OWNER <u>same</u>
TYPE OF JOB <u>PTA</u>	
HOLE SIZE <u>778</u>	T.D. <u>4504'</u>
CASING SIZE	DEPTH
TUBING SIZE	DEPTH
DRILL PIPE <u>4 1/2</u>	DEPTH <u>2712'</u>
TOOL	DEPTH
PRES. MAX	MINIMUM
MEAS. LINE	SHOE JOINT
CEMENT LEFT IN CSG.	
PERFS.	
DISPLACEMENT <u>8V8563</u>	
EQUIPMENT	
PUMP TRUCK CEMENTER <u>Lakene Erdanite</u>	<u>Personal 64#</u> @ <u>2.77</u> <u>190.08</u>
# <u>422</u> HELPER <u>Wayne McHugh</u>	
BULK TRUCK	<u>Material Total</u> @ <u>5074.68</u>
# <u>818/287</u> DRIVER <u>Wayne Massole</u>	<u>(2236.60/45#)</u>
BULK TRUCK	
#	DRIVER
	HANDLING <u>27357 57</u> @ <u>2.98</u> <u>628.20</u>
	MILEAGE <u>11.44km X 48 X 2.77</u> <u>1310.08</u>
	TOTAL _____

REMARKS:  
Mix 36 sks 2712'  
Mix 100 sks 21561  
Mix 50 sks 270'  
Mix 10 sks 401 w/ plug  
plug MH 1.5 sks  
plug RH 305 R

CHARGE TO: Murfin  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

SERVICE	
DEPTH OF JOB <u>2712'</u>	
PUMP TRUCK CHARGE	<u>2483.59</u>
EXTRA FOOTAGE	@ _____
MILEAGE <u>M.I. 48</u>	@ <u>7.70</u> <u>369.60</u>
MANIFOLD	@ _____
<u>M.I. 48</u>	@ <u>4.40</u> <u>211.20</u>
	@ _____
	<u>(2364.15/45#)</u> TOTAL <u>5,253.67</u>

PLUG & FLOAT EQUIPMENT	
<u>Wooden plug</u>	@ <u>110.00</u>
	@ _____
	@ _____
	@ _____
	@ _____
	TOTAL <u>110.00</u>

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.

PRINTED NAME Marcus Colson  
 SIGNATURE Marcus Colson

SALES TAX (if Any) \_\_\_\_\_  
 TOTAL CHARGES 10,378.35  
 DISCOUNT 4,620.75 (45%) IF PAID IN 30 DAYS  
5,757.59 Net

Ruda 'C' #1-13  
 330' FSL 330'FWL  
 Sec. 13-4S-33W  
 3010' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref		
Anhydrite	2694	+316	Flat	2700	+310	-6		
B/Anhydrite	2732	+278	-1	2736	+274	-5		
Topeka	3721	-711	-5	3721	-711	-5		
Heebner	3891	-881	-9	3889	-879	-7		
Lansing	3935	-925	-9	3932	-922	-6		
Stark	4115	-1105	-9	4112	-1102	-6		
BKC	4163	-1153	-8	4162	-1152	-7		
Pawnee	4289	-1279	-11	4292	-1282	-14		
Cherokee	4370	-1360	-16	4362	-1352	-8		
Mississippi	NR			NR				
RTD	4504							
LTD				4503				





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company, Inc**

250 N Water STE 300  
Wichita KS 67202-1216

ATTN: Tom Funk

**Nancy #2-4**

**4-13s-32w Logan,KS**

Start Date: 2014.11.20 @ 01:30:00

End Date: 2014.11.20 @ 10:58:00

Job Ticket #: 57300                      DST #: 1

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

Printed: 2014.11.26 @ 15:17:13



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 57300

**DST#: 1**

ATTN: Tom Funk

Test Start: 2014.11.20 @ 01:30:00

## GENERAL INFORMATION:

Formation: **LKC 'B'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:34:15

Time Test Ended: 10:58:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jace McKinney

Unit No: 75

**Interval: 4060.00 ft (KB) To 4096.00 ft (KB) (TVD)**

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4096.00 ft (KB) (TVD)

3038.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8675**

**Inside**

Press@RunDepth: 703.95 psig @ 4061.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.20

End Date:

2014.11.20

Last Calib.:

2014.11.20

Start Time:

01:30:15

End Time:

10:58:00

Time On Btm:

2014.11.20 @ 05:34:00

Time Off Btm:

2014.11.20 @ 08:36:45

## TEST COMMENT:

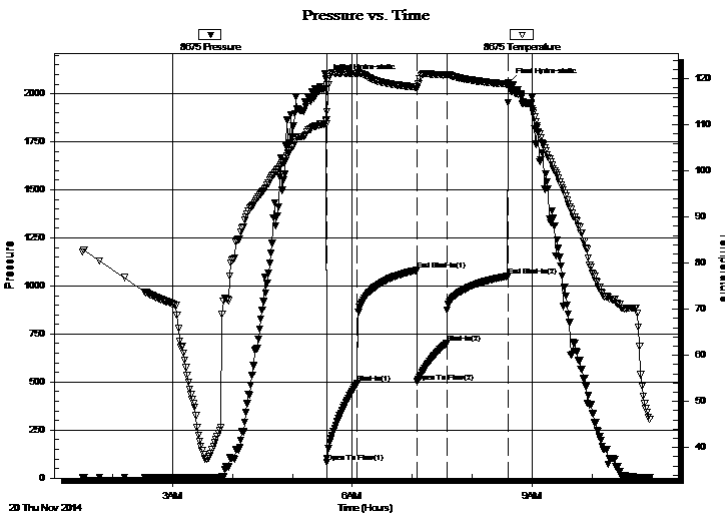
B.O.B. in 2 min.

Bled off for 5 min, No return blow

B.O.B. in 4 min.

Bled off for 5 min, No return blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2078.14	111.09	Initial Hydro-static
1	83.23	110.20	Open To Flow (1)
31	494.05	121.14	Shut-In(1)
91	1082.45	118.16	End Shut-In(1)
91	502.04	117.84	Open To Flow (2)
121	703.95	120.80	Shut-In(2)
182	1051.46	118.84	End Shut-In(2)
183	2057.27	118.44	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
654.00	100% Water	6.67
475.00	mcw 25%M 75%W	6.66
235.00	mcw 50%M 50%W	3.30

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 57300

**DST#: 1**

ATTN: Tom Funk

Test Start: 2014.11.20 @ 01:30:00

## Tool Information

Drill Pipe:	Length: 3774.43 ft	Diameter: 3.80 inches	Volume: 52.95 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 274.72 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 104000.0 lb
			<u>Total Volume: 54.30 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	9.15 ft			String Weight: Initial 80000.00 lb
Depth to Top Packer:	4060.00 ft			Final 84000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	36.00 ft			
Tool Length:	56.00 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			4041.00	
Shut In Tool	5.00			4046.00	
Hydraulic tool	5.00			4051.00	
Packer	5.00			4056.00	20.00 Bottom Of Top Packer
Packer	4.00			4060.00	
Stubb	1.00			4061.00	
Recorder	0.00	8675	Inside	4061.00	
Recorder	0.00	8650	Outside	4061.00	
perforations	32.00			4093.00	
Change Over Sub	0.00			4093.00	
Drill Pipe	0.00			4093.00	
Change Over Sub	0.00			4093.00	
Bullnose	3.00			4096.00	36.00 Bottom Packers & Anchor

**Total Tool Length: 56.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 57300

**DST#: 1**

ATTN: Tom Funk

Test Start: 2014.11.20 @ 01:30:00

## 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:

39000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
654.00	100% Water	6.671
475.00	mcw 25%M 75%W	6.663
235.00	mcw 50%M 50%W	3.296

Total Length: 1364.00 ft      Total Volume: 16.630 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .22 @ 60 F = 39,000

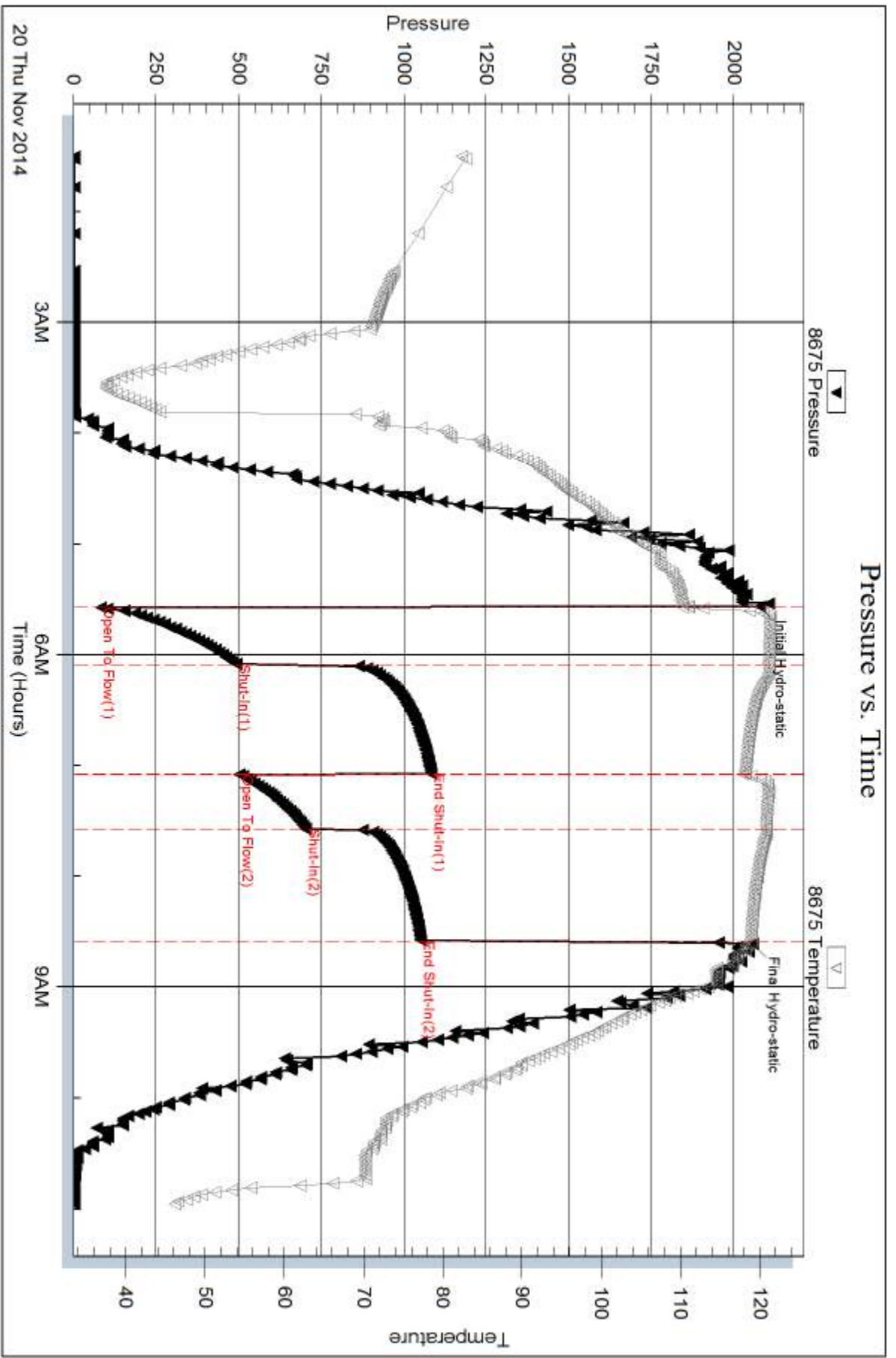
Serial #: 8675

Inside

Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 1

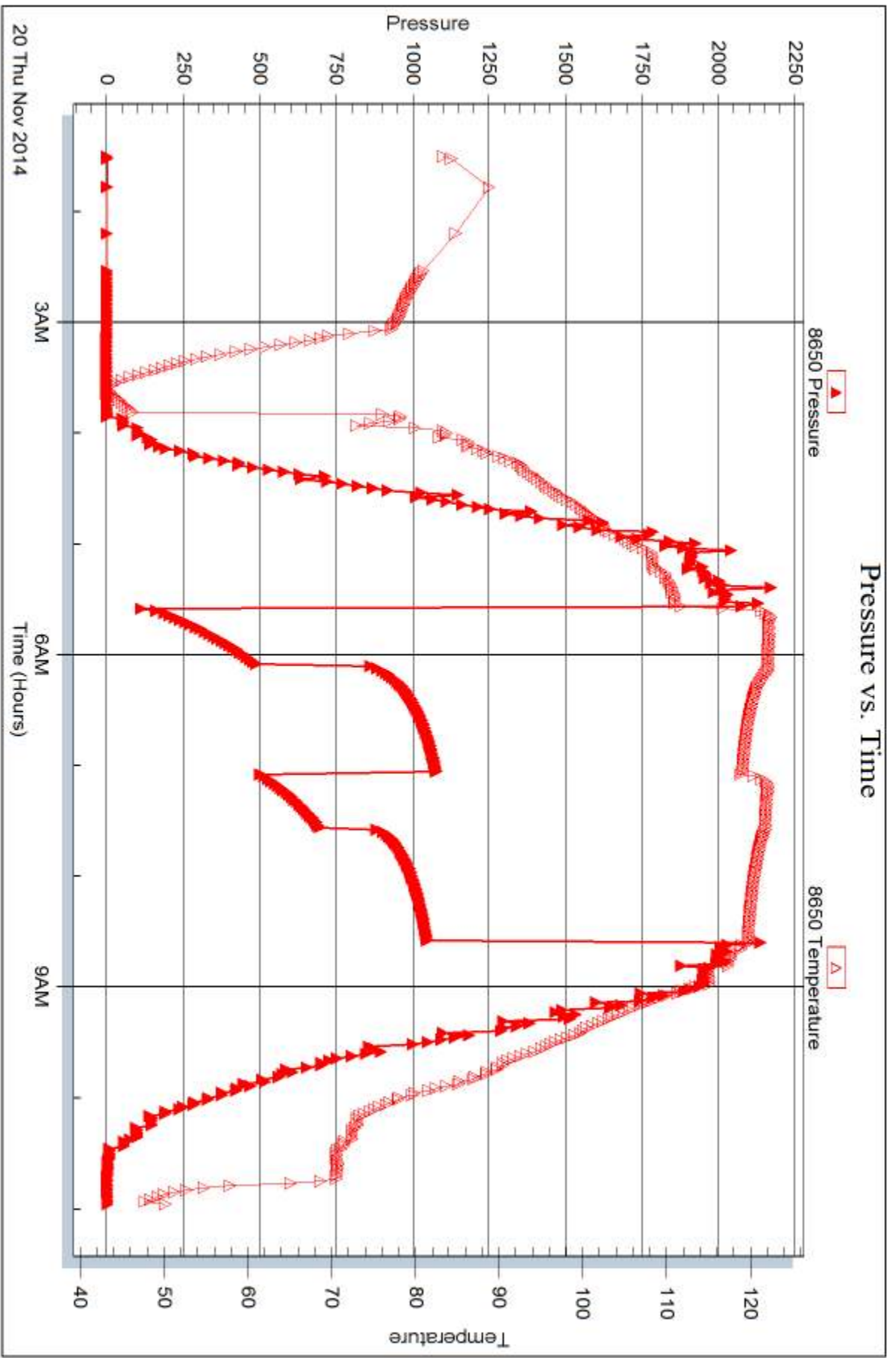


Serial #: 8650

Outside Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company, Inc**

250 N Water STE 300  
Wichita KS 67202-1216

ATTN: Tom Funk

**Nancy #2-4**

**4-13s-32w Logan,KS**

Start Date: 2014.11.21 @ 07:05:00

End Date: 2014.11.21 @ 15:24:15

Job Ticket #: 58501                      DST #: 2

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

Printed: 2014.11.26 @ 15:16:49





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58501

**DST#: 2**

ATTN: Tom Funk

Test Start: 2014.11.21 @ 07:05:00

## GENERAL INFORMATION:

Formation: **LKC I**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:17:45

Time Test Ended: 15:24:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

**Interval: 4220.00 ft (KB) To 4250.00 ft (KB) (TVD)**

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4250.00 ft (KB) (TVD)

3038.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8675**

**Inside**

Press@RunDepth: 209.40 psig @ 4221.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.21

End Date:

2014.11.21

Last Calib.:

2014.11.21

Start Time:

07:05:15

End Time:

15:24:15

Time On Btm:

2014.11.21 @ 09:17:30

Time Off Btm:

2014.11.21 @ 13:19:45

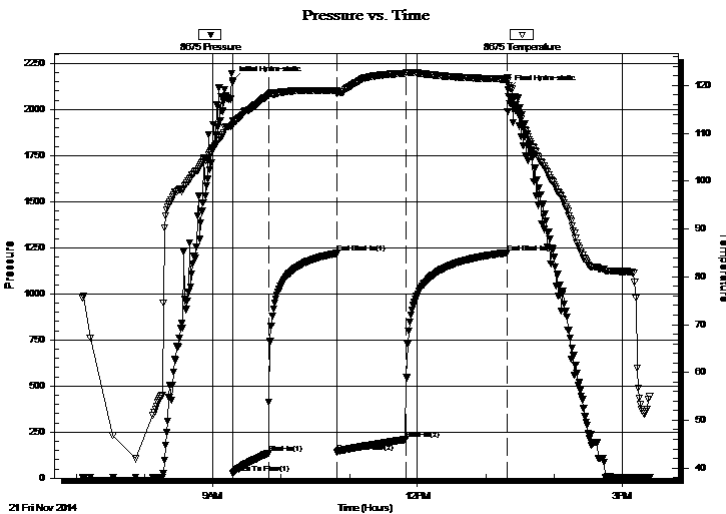
**TEST COMMENT:** B.O.B. in 28 min.

Bled off for 3 min, No return blow

B.O.B. in 57 min.

Bled off for 5 min, No return blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2154.22	112.58	Initial Hydro-static
1	26.65	111.82	Open To Flow (1)
32	135.00	117.93	Shut-In(1)
92	1219.24	118.96	End Shut-In(1)
92	141.21	118.27	Open To Flow (2)
152	209.40	122.55	Shut-In(2)
242	1222.59	121.32	End Shut-In(2)
243	2107.97	121.06	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
274.00	mcw 20%M 80%W	1.35
141.00	w cm 20%W 80%M	1.97

\* 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 Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58501

**DST#: 2**

ATTN: Tom Funk

Test Start: 2014.11.21 @ 07:05:00

## Tool Information

Drill Pipe:	Length: 3931.01 ft	Diameter: 3.80 inches	Volume: 55.14 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 274.72 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 102000.0 lb
			<u>Total Volume: 56.49 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.73 ft			String Weight: Initial 80000.00 lb
Depth to Top Packer:	4220.00 ft			Final 82000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	50.00 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			4201.00	
Shut In Tool	5.00			4206.00	
Hydraulic tool	5.00			4211.00	
Packer	5.00			4216.00	20.00 Bottom Of Top Packer
Packer	4.00			4220.00	
Stubb	1.00			4221.00	
Recorder	0.00	8675	Inside	4221.00	
Recorder	0.00	8650	Outside	4221.00	
perforations	26.00			4247.00	
Change Over Sub	0.00			4247.00	
Drill Pipe	0.00			4247.00	
Change Over Sub	0.00			4247.00	
Bullnose	3.00			4250.00	30.00 Bottom Packers & Anchor

**Total Tool Length: 50.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58501

**DST#: 2**

ATTN: Tom Funk

Test Start: 2014.11.21 @ 07:05:00

### 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:

36000 ppm

Viscosity: 44.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3500.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
274.00	mcw 20%M 80%W	1.347
141.00	w cm 20%W 80%M	1.971

Total Length: 415.00 ft      Total Volume: 3.318 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

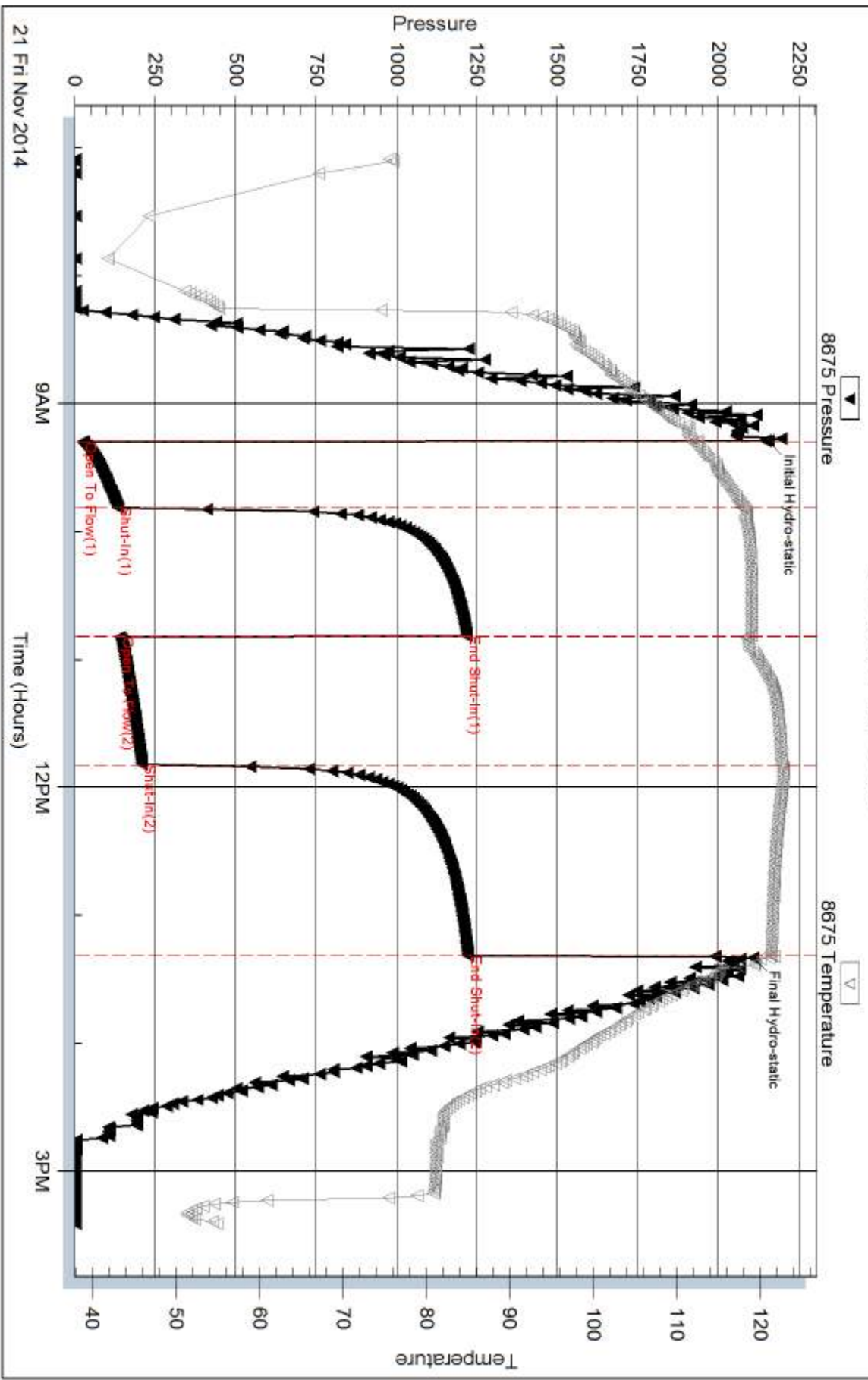
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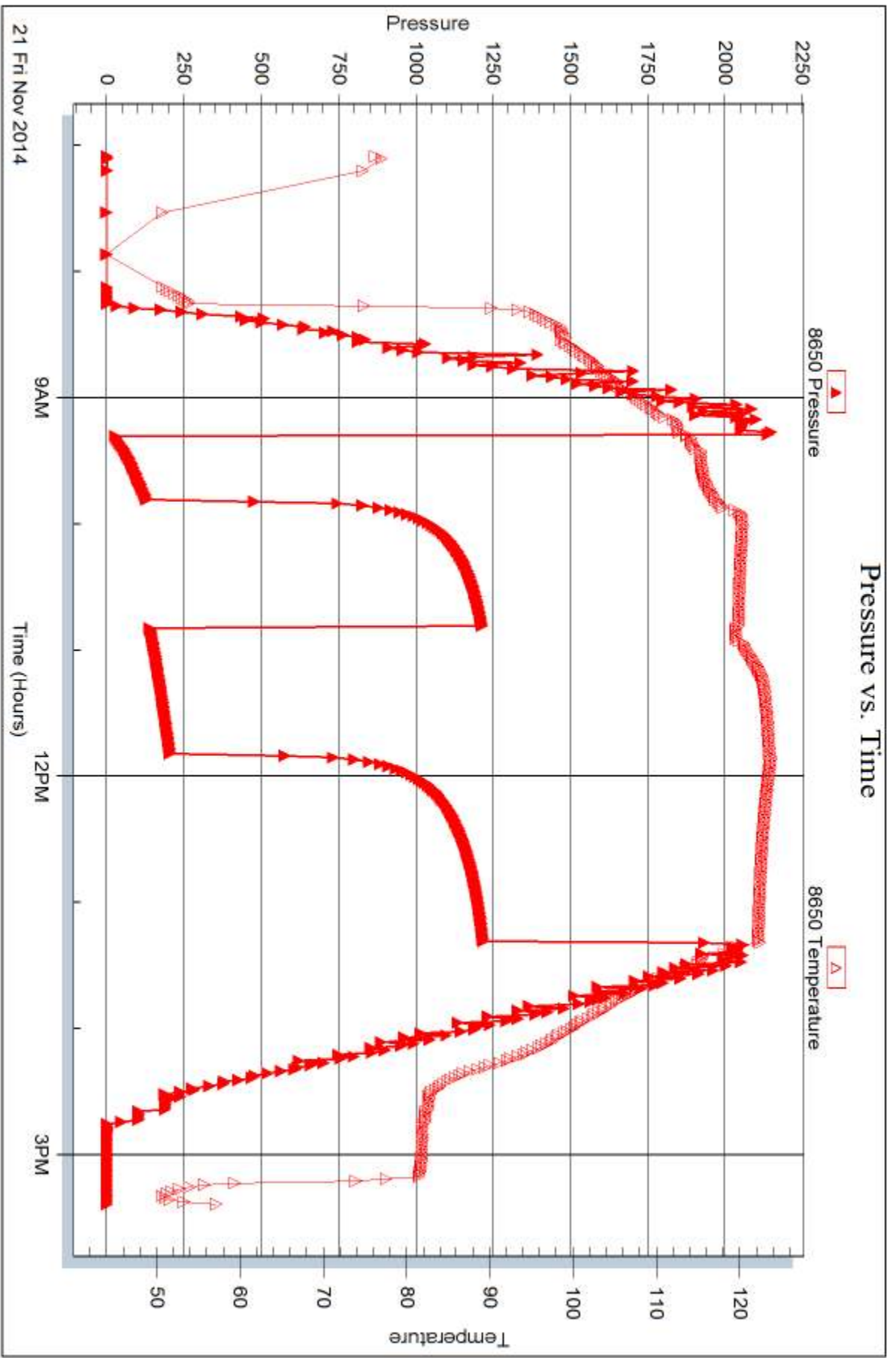
Laboratory Name:

Laboratory Location:

Recovery Comments: RW .22 @ 65 F = 36,000

### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company, Inc**

250 N Water STE 300  
Wichita KS 67202-1216

ATTN: Tom Funk

**Nancy #2-4**

**4-13s-32w Logan,KS**

Start Date: 2014.11.23 @ 06:45:00

End Date: 2014.11.23 @ 16:38:15

Job Ticket #: 58502                      DST #: 3

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

Printed: 2014.11.26 @ 15:16:26



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58502

**DST#: 3**

ATTN: Tom Funk

Test Start: 2014.11.23 @ 06:45:00

## GENERAL INFORMATION:

Formation: **Marmaton - Altamont**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:42:45

Time Test Ended: 16:38:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

**Interval: 4340.00 ft (KB) To 4465.00 ft (KB) (TVD)**

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4465.00 ft (KB) (TVD)

3038.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8675**

**Inside**

Press@RunDepth: 110.46 psig @ 4341.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.23

End Date:

2014.11.23

Last Calib.:

2014.11.23

Start Time: 06:45:15

End Time:

16:38:15

Time On Btm:

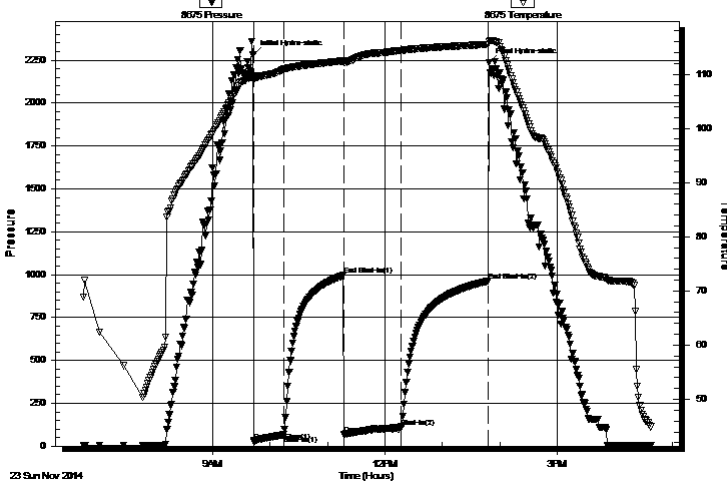
2014.11.23 @ 09:42:30

Time Off Btm:

2014.11.23 @ 13:48:30

**TEST COMMENT:** Built to 3 1/2" blow  
Bled off for 3 min, No return blow  
Built to 3" blow  
Bled off for 5 min, No return blow

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2284.82	109.73	Initial Hydro-static
1	27.07	108.78	Open To Flow (1)
32	65.65	110.89	Shut-In(1)
94	995.00	112.45	End Shut-In(1)
95	69.85	112.07	Open To Flow (2)
155	110.46	114.38	Shut-In(2)
245	961.61	115.50	End Shut-In(2)
246	2235.12	115.98	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
120.00	100% Mud with oil scum	0.59

## 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 Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58502

**DST#: 3**

ATTN: Tom Funk

Test Start: 2014.11.23 @ 06:45:00

## Tool Information

Drill Pipe:	Length: 4058.73 ft	Diameter: 3.80 inches	Volume: 56.93 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 274.72 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 102000.0 lb
			<u>Total Volume: 58.28 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	13.45 ft			String Weight: Initial 82000.00 lb
Depth to Top Packer:	4340.00 ft			Final 82000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	125.00 ft			
Tool Length:	145.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4321.00	
Shut In Tool	5.00			4326.00	
Hydraulic tool	5.00			4331.00	
Packer	5.00			4336.00	20.00 Bottom Of Top Packer
Packer	4.00			4340.00	
Stubb	1.00			4341.00	
Recorder	0.00	8675	Inside	4341.00	
Recorder	0.00	8650	Outside	4341.00	
perforations	4.00			4345.00	
Change Over Sub	1.00			4346.00	
Drill Pipe	95.00			4441.00	
Change Over Sub	1.00			4442.00	
Bullnose	23.00			4465.00	125.00 Bottom Packers & Anchor

**Total Tool Length: 145.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58502

**DST#: 3**

ATTN: Tom Funk

Test Start: 2014.11.23 @ 06:45:00

### 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:

bbbl

Water Loss: 0.00 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3400.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	100% Mud w ith oil scum	0.590

Total Length: 120.00 ft      Total Volume: 0.590 bbl

Num Fluid Samples: 0

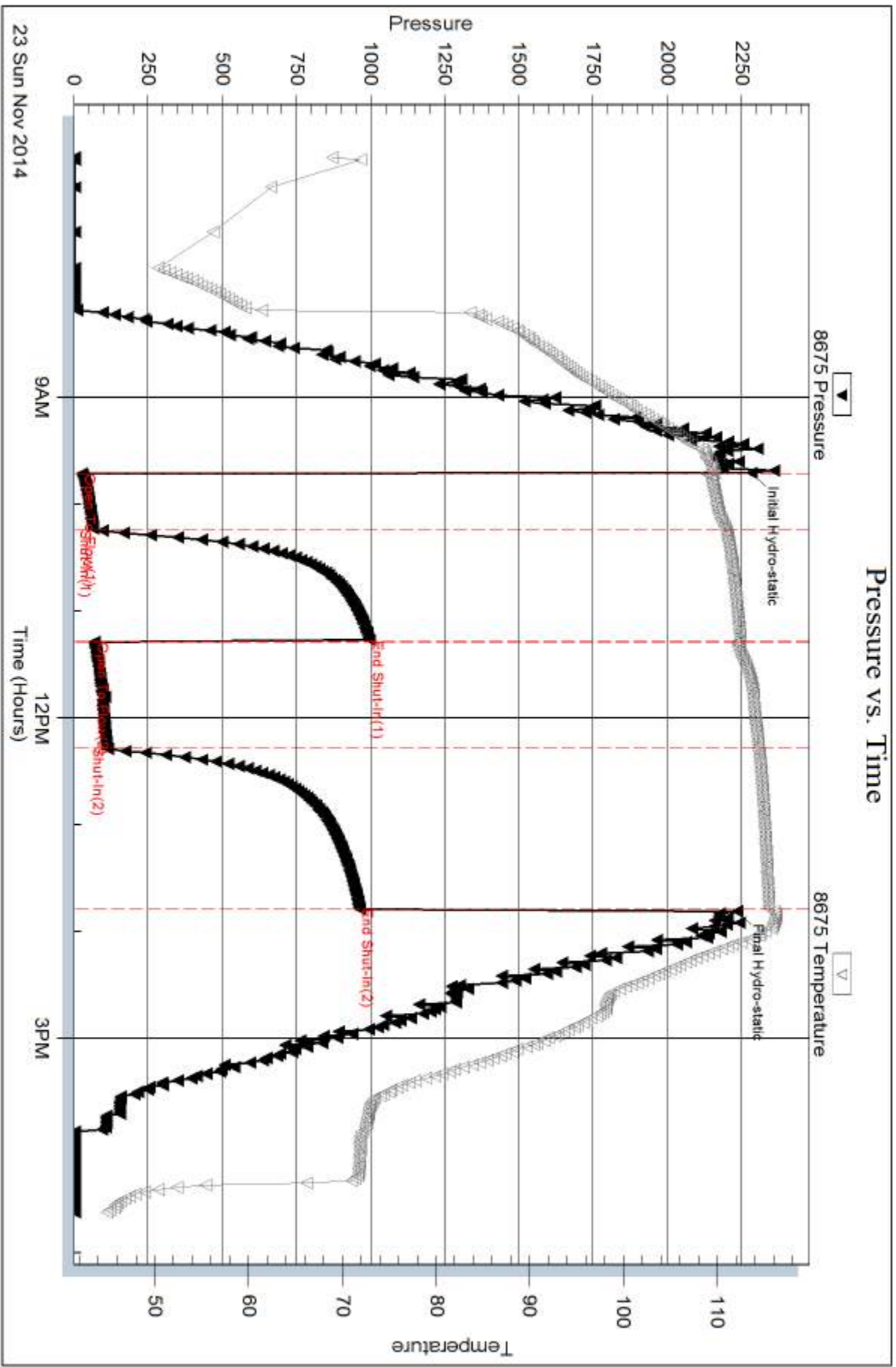
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

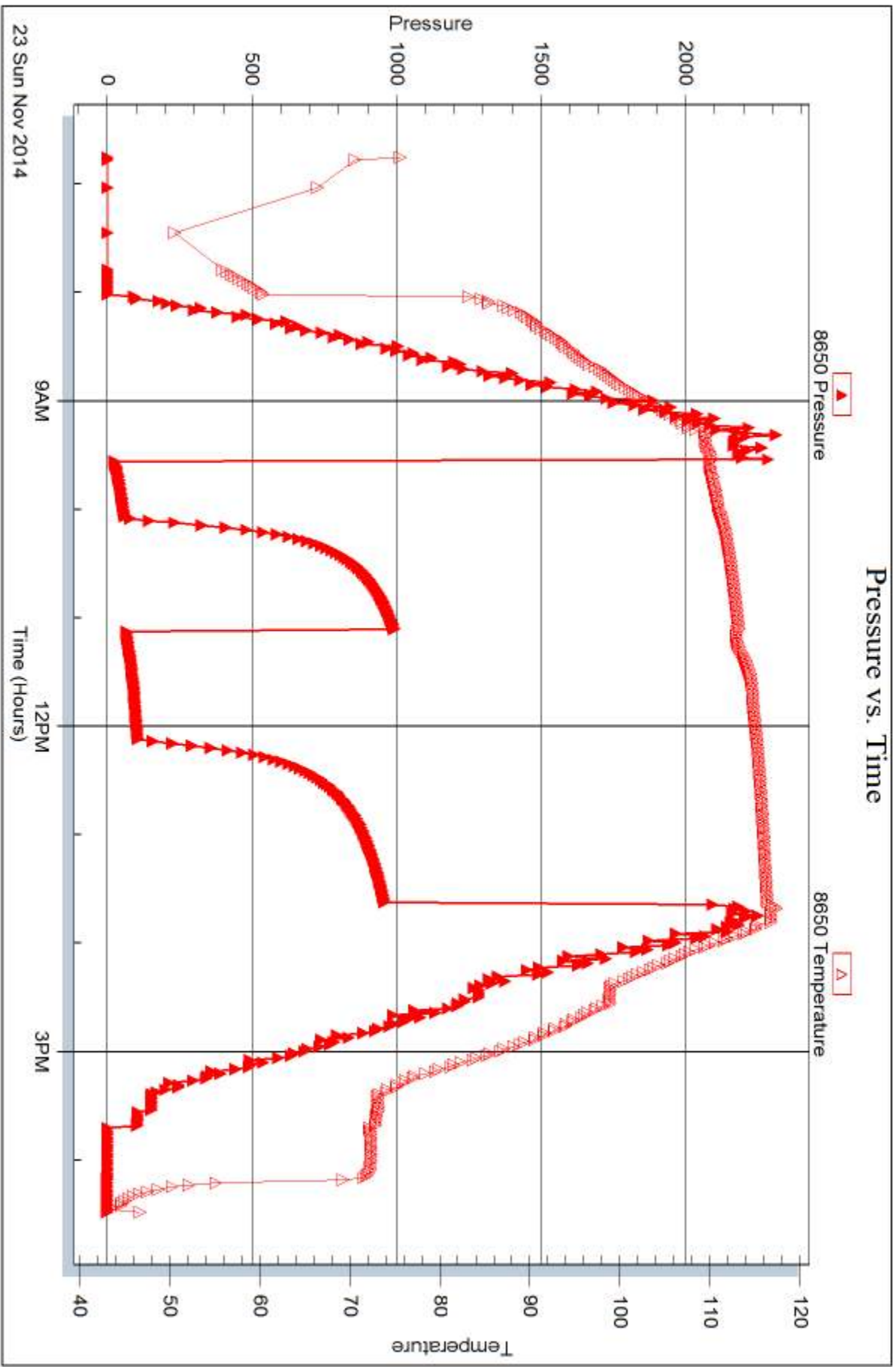


Serial #: 8650

Outside Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 3



23 Sun Nov 2014

Triobite Testing, Inc

Ref. No: 58502

Printed: 2014, 11, 26 @ 15:16:27



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company, Inc**

250 N Water STE 300  
Wichita KS 67202-1216

ATTN: Tom Funk

**Nancy #2-4**

**4-13s-32w Logan,KS**

Start Date: 2014.11.24 @ 08:50:00

End Date: 2014.11.24 @ 17:25:00

Job Ticket #: 58503                      DST #: 4

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

Printed: 2014.11.26 @ 15:16:02

Murfin Drilling Company, Inc  
4-13s-32w Logan,KS  
Nancy #2-4  
DST # 4  
Pawnee - Fort Scott  
2014.11.24



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58503

**DST#: 4**

ATTN: Tom Funk

Test Start: 2014.11.24 @ 08:50:00

## GENERAL INFORMATION:

Formation: **Pawnee - Fort Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:12:30

Time Test Ended: 17:25:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

**Interval: 4470.00 ft (KB) To 4560.00 ft (KB) (TVD)**

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4560.00 ft (KB) (TVD)

3038.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8675**

**Inside**

Press@RunDepth: 61.91 psig @ 4471.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.24

End Date:

2014.11.24

Last Calib.: 2014.11.24

Start Time: 08:50:15

End Time:

17:25:00

Time On Btm: 2014.11.24 @ 11:12:15

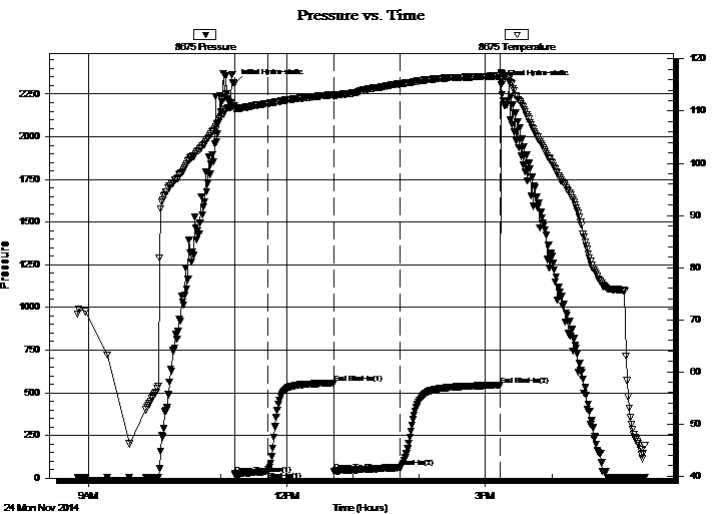
Time Off Btm: 2014.11.24 @ 15:14:30

TEST COMMENT: Built to 1 3/4" blow

No return blow

No blow

No return blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2310.21	111.00	Initial Hydro-static
1	23.47	110.18	Open To Flow (1)
31	39.32	111.46	Shut-In(1)
91	557.17	113.16	End Shut-In(1)
91	41.00	112.77	Open To Flow (2)
151	61.91	115.23	Shut-In(2)
242	544.76	116.77	End Shut-In(2)
243	2305.89	117.26	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
30.00	100% Mud with oil spots	0.15

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58503

**DST#: 4**

ATTN: Tom Funk

Test Start: 2014.11.24 @ 08:50:00

## Tool Information

Drill Pipe:	Length: 4185.34 ft	Diameter: 3.80 inches	Volume: 58.71 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 274.72 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 104000.0 lb
			<u>Total Volume: 60.06 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.06 ft			String Weight: Initial 84000.00 lb
Depth to Top Packer:	4470.00 ft			Final 84000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	90.00 ft			
Tool Length:	110.00 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			4451.00	
Shut In Tool	5.00			4456.00	
Hydraulic tool	5.00			4461.00	
Packer	5.00			4466.00	20.00 Bottom Of Top Packer
Packer	4.00			4470.00	
Stubb	1.00			4471.00	
Recorder	0.00	8675	Inside	4471.00	
Recorder	0.00	8650	Outside	4471.00	
perforations	9.00			4480.00	
Change Over Sub	1.00			4481.00	
Drill Pipe	63.00			4544.00	
Change Over Sub	1.00			4545.00	
Bullnose	15.00			4560.00	90.00 Bottom Packers & Anchor

**Total Tool Length: 110.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58503

**DST#: 4**

ATTN: Tom Funk

Test Start: 2014.11.24 @ 08:50:00

### 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:

bbbl

Water Loss: 7.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3400.00 ppm

Filter Cake: 2.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	100% Mud w ith oil spots	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:

Serial #: 8675

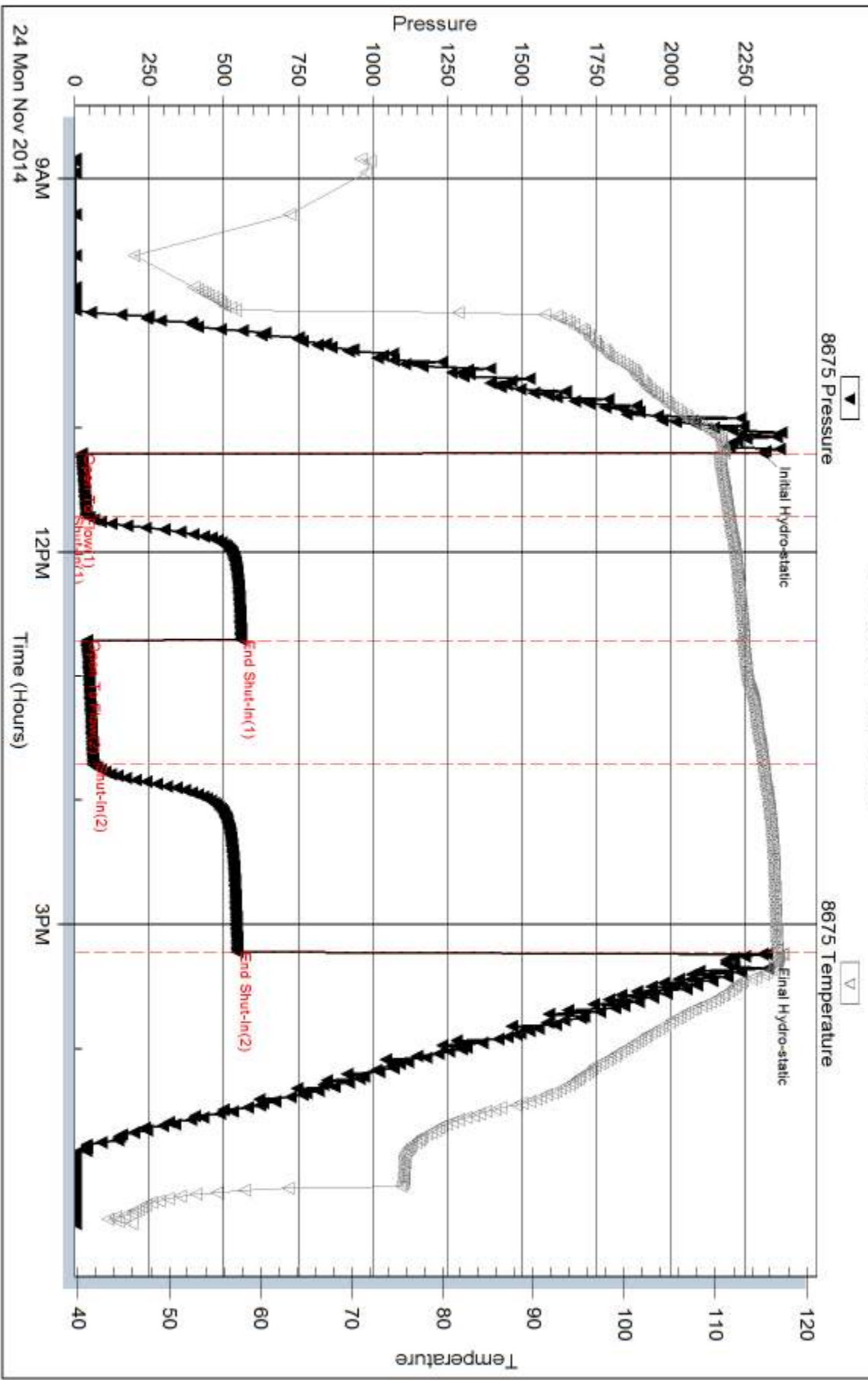
Inside

Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 4

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 58503

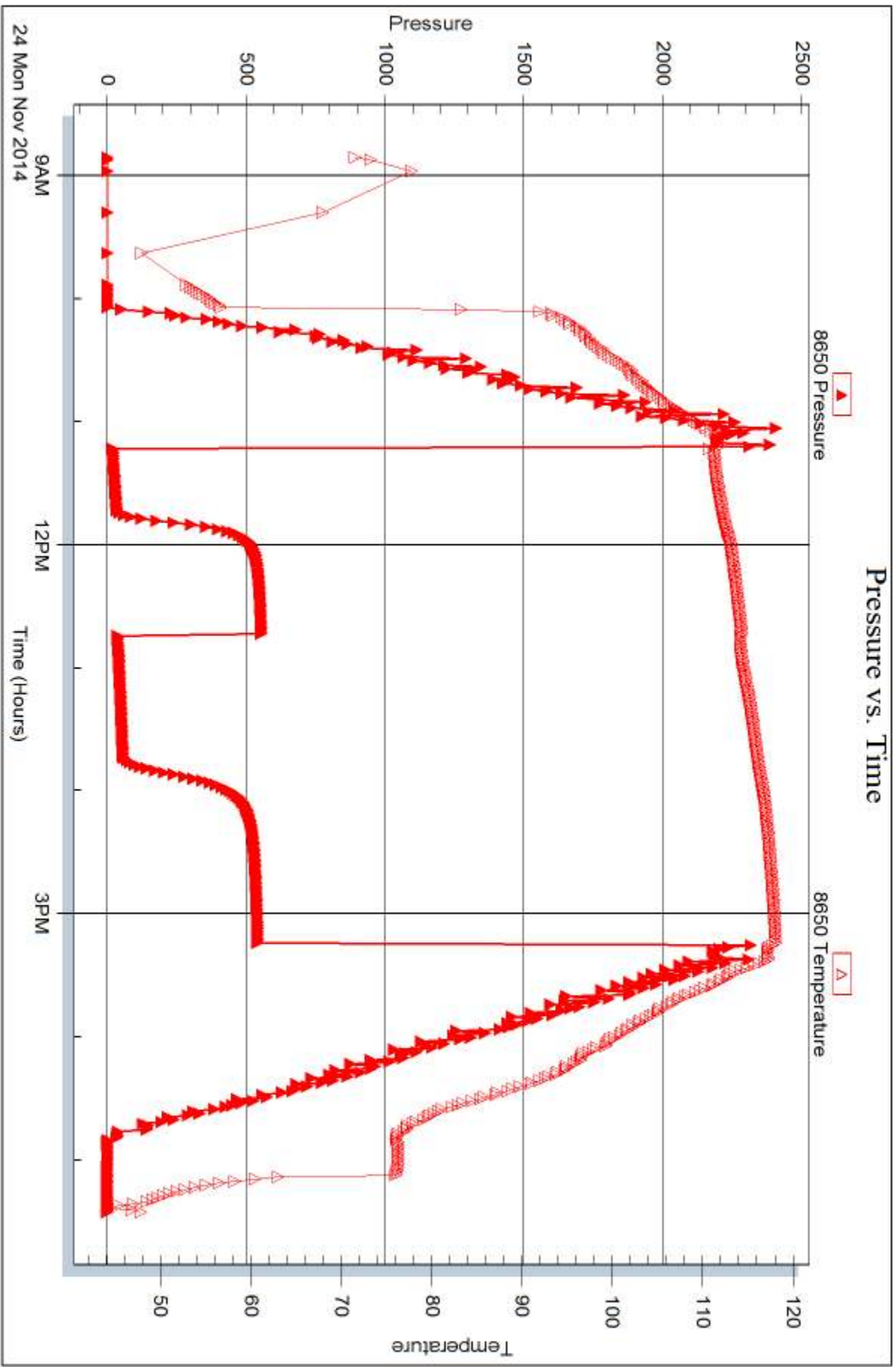
Printed: 2014.11.26 @ 15:16:03

Serial #: 8650

Outside Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 58503

Printed: 2014, 11, 26 @ 15:16:03



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Company, Inc**

250 N Water STE 300  
Wichita KS 67202-1216

ATTN: Tom Funk

**Nancy #2-4**

**4-13s-32w Logan,KS**

Start Date: 2014.11.25 @ 07:45:00

End Date: 2014.11.25 @ 17:03:45

Job Ticket #: 58504                      DST #: 5

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

Printed: 2014.11.26 @ 15:15:24



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58504

**DST#: 5**

ATTN: Tom Funk

Test Start: 2014.11.25 @ 07:45:00

## GENERAL INFORMATION:

Formation: **Johnson Zone**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:10:00

Time Test Ended: 17:03:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Jace McKinney

Unit No: 75

**Interval: 4581.00 ft (KB) To 4635.00 ft (KB) (TVD)**

Reference Elevations: 3049.00 ft (KB)

Total Depth: 4635.00 ft (KB) (TVD)

3038.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8675**

**Inside**

Press@RunDepth: 24.51 psig @ 4582.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.25 End Date: 2014.11.25

Last Calib.: 2014.11.25

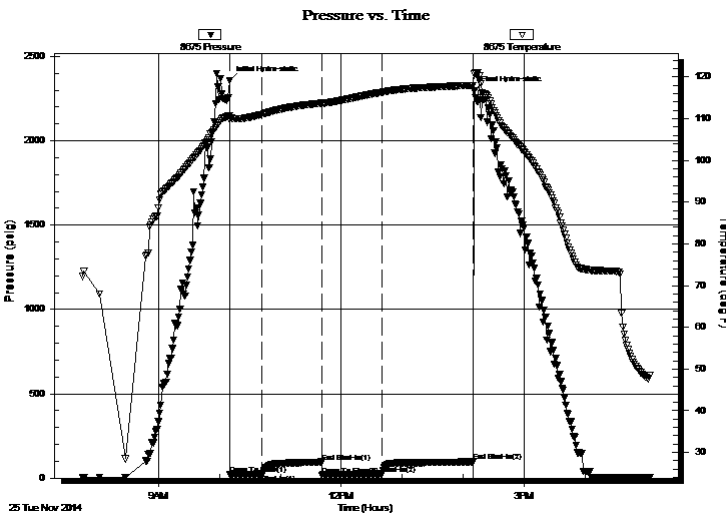
Start Time: 07:45:15 End Time: 17:03:45

Time On Btm: 2014.11.25 @ 10:09:45

Time Off Btm: 2014.11.25 @ 14:11:00

**TEST COMMENT:** Built to 10" blow  
Bled off for 3 min, Very weak surface return blow  
B.O.B. in 13 min.  
Bled off for 5 min, Weak surface return blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2355.23	110.72	Initial Hydro-static
1	20.28	109.82	Open To Flow (1)
32	22.28	111.01	Shut-In(1)
91	95.93	113.72	End Shut-In(1)
92	15.28	113.66	Open To Flow (2)
151	24.51	116.29	Shut-In(2)
241	97.04	117.97	End Shut-In(2)
242	2296.00	120.70	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
0.00	720 Feet Weak Gas In Pipe	0.00
30.00	100% Mud	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 Company, Inc

**4-13s-32w Logan, KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58504

**DST#: 5**

ATTN: Tom Funk

Test Start: 2014.11.25 @ 07:45:00

## Tool Information

Drill Pipe:	Length: 4312.22 ft	Diameter: 3.80 inches	Volume: 60.49 bbl	Tool Weight: 1500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 274.72 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 105000.0 lb
			<u>Total Volume: 61.84 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	25.94 ft			String Weight: Initial 84000.00 lb
Depth to Top Packer:	4581.00 ft			Final 85000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	54.00 ft			
Tool Length:	74.00 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			4562.00	
Shut In Tool	5.00			4567.00	
Hydraulic tool	5.00			4572.00	
Packer	5.00			4577.00	20.00 Bottom Of Top Packer
Packer	4.00			4581.00	
Stubb	1.00			4582.00	
Recorder	0.00	8675	Inside	4582.00	
Recorder	0.00	8650	Outside	4582.00	
perforations	9.00			4591.00	
Change Over Sub	1.00			4592.00	
Drill Pipe	32.00			4624.00	
Change Over Sub	1.00			4625.00	
Bullnose	10.00			4635.00	54.00 Bottom Packers & Anchor

**Total Tool Length: 74.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Company, Inc

**4-13s-32w Logan,KS**

250 N Water STE 300  
Wichita KS 67202-1216

**Nancy #2-4**

Job Ticket: 58504

**DST#: 5**

ATTN: Tom Funk

Test Start: 2014.11.25 @ 07:45:00

## 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: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3900.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	720 Feet Weak Gas In Pipe	0.000
30.00	100% Mud	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:

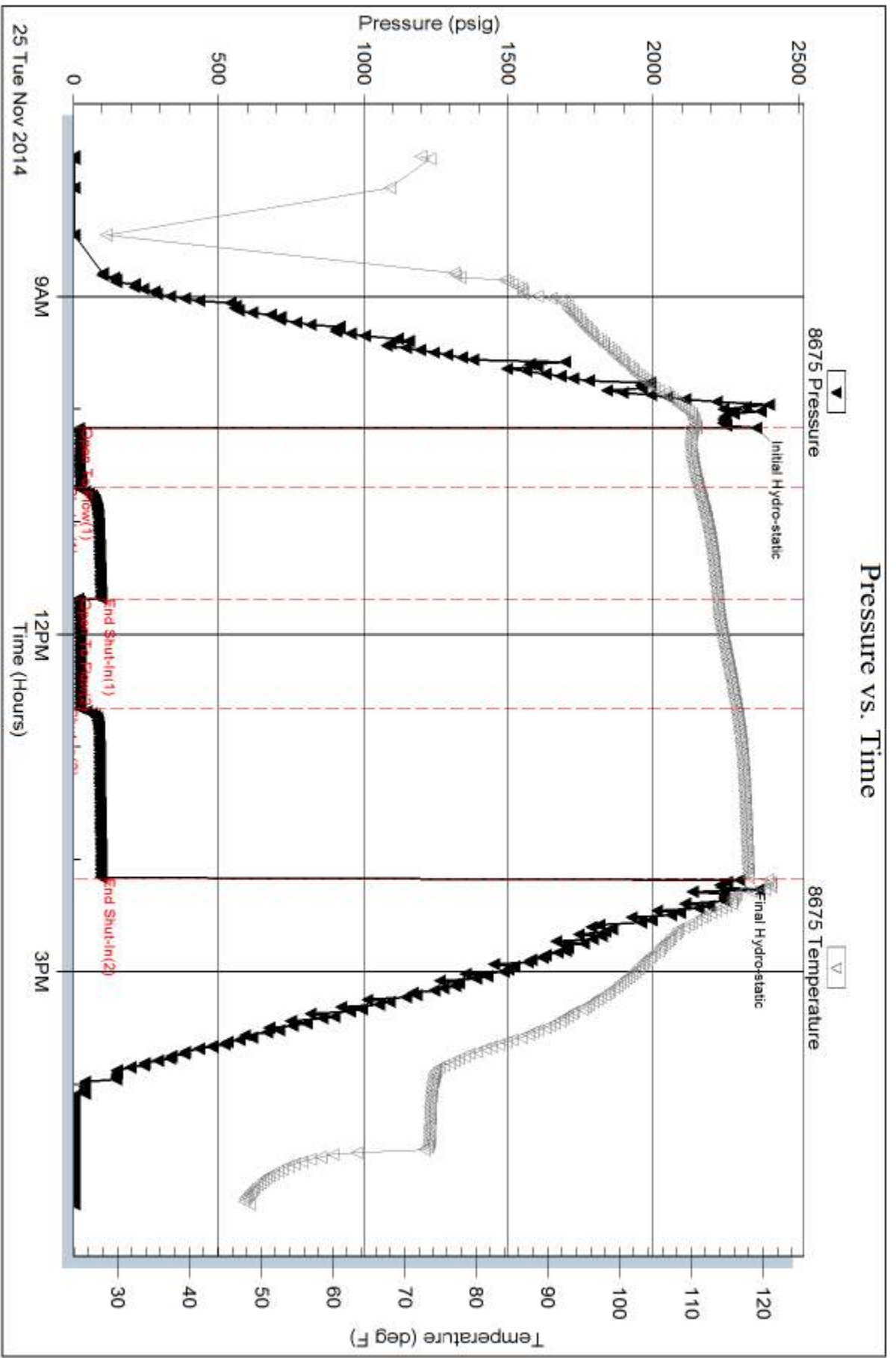
Serial #: 8675

Inside

Murfin Drilling Company, Inc

Nancy #2-4

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 58504

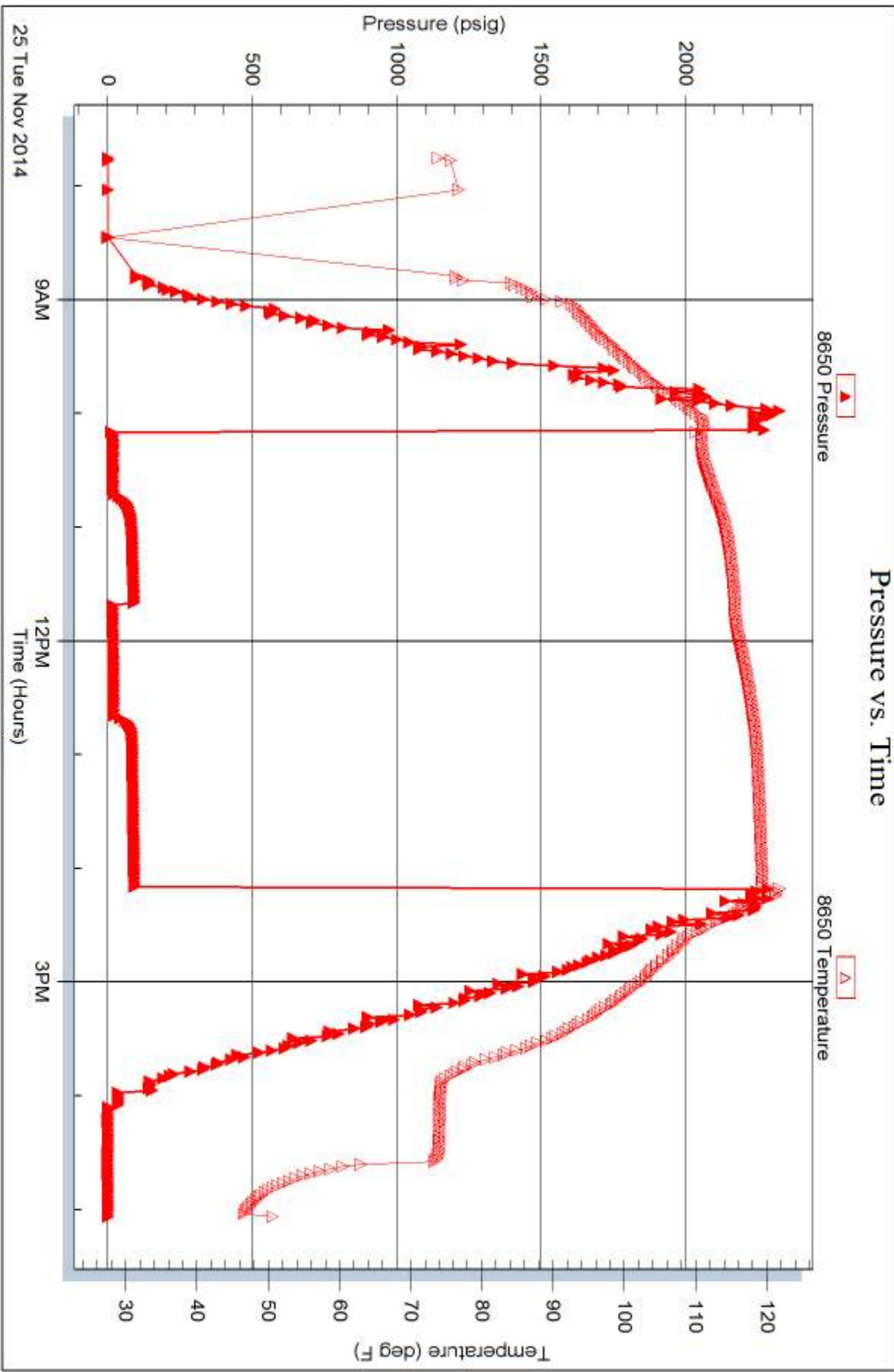
Printed: 2014.11.26 @ 15:15:25

Serial #: 8650

Outside Murfin Drilling Company, Inc

Nancy #2-4

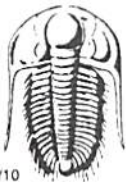
DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 58504

Printed: 2014.11.26 @ 15:15:25



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 57300

4/10

Well Name & No. Nancy 2-4 Test No. 1 Date 11/20/14  
 Company Murkin Drilling Company, Inc. Elevation 3049 KB 3038 GL  
 Address 250 N Water STE 300 Wichita KS 67202-1216  
 Co. Rep / Geo. Tom Funk Rig Murkin Rig 4  
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4060-4096 Zone Tested Lansing 'B' Zone  
 Anchor Length 36 Drill Pipe Run 3774.43 Mud Wt. 9.1  
 Top Packer Depth 4066 Drill Collars Run 274.72 Vis 52  
 Bottom Packer Depth 4060 Wt. Pipe Run \_\_\_\_\_ WL 7.2  
 Total Depth 4096 Chlorides 3,500 ppm System LCM 7#

Blow Description B.O.B. in 2 min.  
Bled off for 5 min. No return blow  
B.O.B. in 4 min.

Bled off for 6 min. No return blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>235</u>	<u>mcw</u>		<u>50</u>	<u>50</u>	
<u>475</u>	<u>mcw</u>		<u>75</u>	<u>25</u>	
<u>654</u>	<u>water</u>		<u>100</u>		

Rec Total 1364 BHT 119 Gravity \_\_\_\_\_ API RW 22 @ 60 °F Chlorides 39,000 ppm  
 (A) Initial Hydrostatic 2,078  Test 1250 T-On Location 00:30  
 (B) First Initial Flow 83  Jars \_\_\_\_\_ T-Started 01:30  
 (C) First Final Flow 494  Safety Joint \_\_\_\_\_ T-Open 05:34  
 (D) Initial Shut-In 1,082  Circ Sub n/c T-Pulled 08:34  
 (E) Second Initial Flow 502  Hourly Standby \_\_\_\_\_ T-Out 10:58  
 (F) Second Final Flow 704  Mileage 80 RT 124 Comments access same as  
 (G) Final Shut-In 1,051  Sampler \_\_\_\_\_ H2 Rigs  
 (H) Final Hydrostatic 2,059  Straddle \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 30  
 Final Shut-In 60  
 Sub Total 1374  
 Total 1374  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]  
 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. 58501

4/10

Well Name & No. Nancy 2-4 Test No. 2 Date 11/21/14  
 Company Martin Drilling Company, Inc Elevation 3049 KB 3038 GL  
 Address 260 N Water STE 300, Wichita KS 67202-1216  
 Co. Rep / Geo. Tom Funk Rig Martin Rig 4  
 Location: Sec. 4 Twp. 13S Rge. 32W Co. Logan County State KS

Interval Tested 4220-4250 Zone Tested Kansas City 'I' Zone  
 Anchor Length 30 Drill Pipe Run 3931.01 Mud Wt. 9.0  
 Top Packer Depth 4216 Drill Collars Run 274.72 Vis 44  
 Bottom Packer Depth 4220 Wt. Pipe Run \_\_\_\_\_ WL 6.4  
 Total Depth 4250 Chlorides 3,500 ppm System LCM 8 #

Blow Description B.O.B. in 28 min.  
Bled off for 3 min. No return below  
B.O.B. in 57 min.

Bled off for 5 min. No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>141</u>	<u>wcm</u>		<u>20</u>	<u>80</u>	
<u>274</u>	<u>mcw</u>		<u>80</u>	<u>20</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

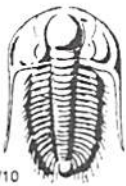
Rec Total 415 BHT 121 Gravity \_\_\_\_\_ API RW 0.22 @ 65 °F Chlorides 36,000 ppm

(A) Initial Hydrostatic 2,154  Test 1250 T-On Location 06:05  
 (B) First Initial Flow 27  Jars \_\_\_\_\_ T-Started 07:05  
 (C) First Final Flow 135  Safety Joint \_\_\_\_\_ T-Open 09:17  
 (D) Initial Shut-In 1,219  Circ Sub N/C T-Pulled 13:17  
 (E) Second Initial Flow 141  Hourly Standby \_\_\_\_\_ T-Out 15:24  
 (F) Second Final Flow 209  Mileage 80 RT 124 Comments \_\_\_\_\_  
 (G) Final Shut-In 1,223  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2,108  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 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 1374  
 Total 1374  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58502

Well Name & No. Nancy 2-4 Test No. 3 Date 11/22/14 11/23/14  
 Company Martin Drilling Company, Inc Elevation 3049 KB 3039 GL  
 Address 250 N Water STE 300, Wichita K.S, 67202-1216  
 Co. Rep / Geo. Tom Funk Rig Martin Rig 4  
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4340-4465 Zone Tested Marmaton - Altamont  
 Anchor Length 125 Drill Pipe Run 4058.73 Mud Wt. 9.02  
 Top Packer Depth 4336 Drill Collars Run 274.72 Vis 55  
 Bottom Packer Depth 4340 Wt. Pipe Run \_\_\_\_\_ WL 0.0  
 Total Depth 4465 Chlorides 3,400 ppm System LCM 8#

Blow Description Built to 3 1/2" below  
Bled off for 3 min. No return below  
Built to 3" below

Bled off for 5 min. No return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>120</u>	<u>Mud with oil seum</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

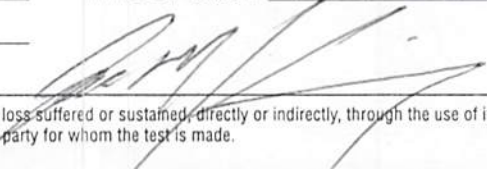
Rec Total 120 BHT 115 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2,285  Test 1250 T-On Location 13:05<sup>st</sup> fine 06:25  
 (B) First Initial Flow 27  Jars \_\_\_\_\_ T-Started 14:00 06:45  
 (C) First Final Flow 66  Safety Joint \_\_\_\_\_ T-Open 09:43  
 (D) Initial Shut-In 995  Circ Sub N/C T-Pulled 13:43  
 (E) Second Initial Flow 70  Hourly Standby Bover 24hour T-Out 16:30  
 (F) Second Final Flow 110  Mileage 80 RT X 2 248 Comments 3 hours standley  
 (G) Final Shut-In 962  Sampler \_\_\_\_\_ waiting on rig then said  
 (H) Final Hydrostatic 2,235  Straddle \_\_\_\_\_ they were going to change cokes  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_

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

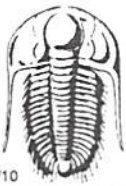
Shale Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby 1d 15h  
 Accessibility \_\_\_\_\_  
 Sub Total 1498

Sub Total 500  
 Total 1998  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative 

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

58503

NO.

4/10

Well Name & No. Nancy 2-4 Test No. 4 Date 11/24/14  
 Company Martin Drilling Company Inc Elevation 3049 KB 3038 GL  
 Address 250 N Water STE 300, Wichita KS, 67202-1216  
 Co. Rep / Geo. Tom Funk Rig Martin Rig 4  
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4470 - 4560 Zone Tested Pawnee - Fort Scott  
 Anchor Length 90 Drill Pipe Run 4185.34 Mud Wt. 9.4  
 Top Packer Depth 4466 Drill Collars Run 274.72 Vis 53  
 Bottom Packer Depth 4470 Wt. Pipe Run \_\_\_\_\_ WL 7.2  
 Total Depth 4560 Chlorides 3,400 ppm System LCM B#

Blow Description Built to 1 3/4" below  
Bled off for 3 min. no return below  
No below

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>Mud with oil spots</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

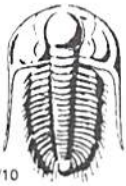
Rec Total 30 BHT 117 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 2,310  Test 1250 T-On Location 08:05  
 (B) First Initial Flow 23  Jars \_\_\_\_\_ T-Started 08:50  
 (C) First Final Flow 39  Safety Joint \_\_\_\_\_ T-Open 11:13  
 (D) Initial Shut-In 557  Circ Sub w/c T-Pulled 15:13  
 (E) Second Initial Flow 41  Hourly Standby \_\_\_\_\_ T-Out 17:25  
 (F) Second Final Flow 62  Mileage 80RT 124  
 (G) Final Shut-In 545  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2,306  Straddle \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 60  Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Flow 60  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 90  Day Standby \_\_\_\_\_ Total 1374  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1374

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 58504

4/10

Well Name & No. Nancy 2-4 Test No. 5 Date 11/25/14  
 Company Murfin Drilling Company, Inc Elevation 3049 KB 3038 GL  
 Address 250 N Water STE 300, Wichita KS, 67202-1216  
 Co. Rep / Geo. Tom Funk Rig Murfin Rig 4  
 Location: Sec. 4 Twp. 13s Rge. 32w Co. Logan County State KS

Interval Tested 4581-4635 Zone Tested Johnson Zone  
 Anchor Length 54 Drill Pipe Run 4312.22 Mud Wt. 9.4  
 Top Packer Depth 4577 Drill Collars Run 274.72 Vis 47  
 Bottom Packer Depth 4581 Wt. Pipe Run \_\_\_\_\_ WL 8.00  
 Total Depth 4635 Chlorides 3,900 ppm System LCM 8#

Blow Description Built to 10" below  
Bled off for 3 min. Very weak surface return below  
B.O.B. in 13 min.

Bled off for 5 min. Weak surface return below

Rec	Feet of	%gas	%oil	%water	%mud
<u>0</u>	<u>720 feet weak gas in pipe</u>				
<u>30</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 Total 30 BHT 118 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ ° F Chlorides \_\_\_\_\_ ppm  
 (A) Initial Hydrostatic 2,355  Test 1250 T-On Location 06:40  
 (B) First Initial Flow 20  Jars \_\_\_\_\_ T-Started 07:45  
 (C) First Final Flow 22  Safety Joint \_\_\_\_\_ T-Open 10:10  
 (D) Initial Shut-In 96  Circ Sub N/C T-Pulled 14:10  
 (E) Second Initial Flow 15  Hourly Standby \_\_\_\_\_ T-Out 17:03  
 (F) Second Final Flow 25  Mileage 80 RT x 2 248 Comments loaded tools  
 (G) Final Shut-In 97  Sampler \_\_\_\_\_ 12:00 11/26/14  
 (H) Final Hydrostatic 2,296  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1498  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1498

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

Approved By \_\_\_\_\_ Our Representative [Signature]

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Thomas J. Funk  
Petroleum Geologist

**Geologists Report  
Drilling Time and Sample Log**

OPERATOR **Murfin Drilling Co., Inc**

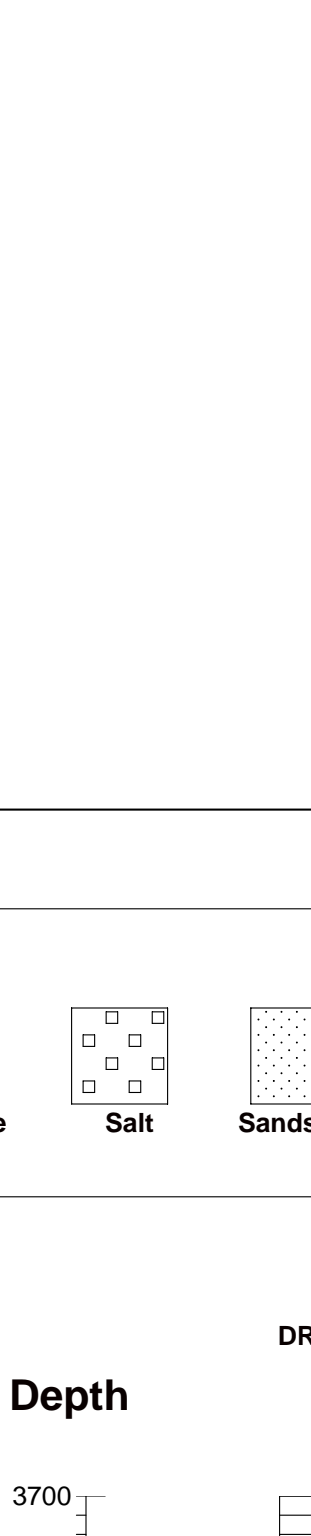
LEASE **Nancy** WELL NO #2-4  
FIELD **High Hat** API **15-109-21-369**  
LOCATION **2281' FNL & 392' FWL**  
SEC. **4** TWP **13S** RGE. **32W**  
COUNTY **Logan** STATE **Kansas**

ELEVATION  
KB **3049'**  
DF  
GL **3038'**  
Measurements Are All From **KB**

CASING RECORD  
SURFACE  
8 5/8" at 2251KB w/1705x

DRILLING TIME KEPT FROM 3700' TO 4780'  
SAMPLES EXAMINED FROM 3700' TO 4780'  
GEOLOGICAL SUPERVISION FROM 3850' TO 4780'  
MUD UP 3300' TYPE MUD Chemical

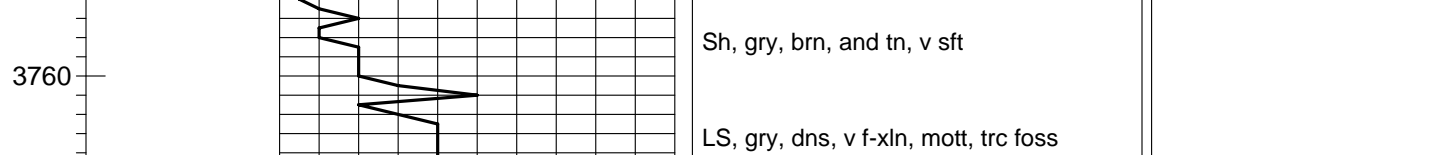
FORMATION	LOG	SAMPLE
	TOP DATUM	TOP DATUM
Anhydrite	2532 (+517)	2537 (+512)
Baryanhydrite	2556 (+493)	2559 (+490)
Toppekka	3777 (-728)	3781 (-732)
Heebner Sh	4002 (-953)	4006 (-957)
Lansing	4044 (-995)	4049 (-1000)
Muncie Creek	4189 (-1140)	4192 (-1143)
Start Sh	4274 (-1225)	4279 (-1230)
Marmaton	4375 (-1326)	4379 (-1330)
Pawnee	4476 (-1427)	4479 (-1425)
Cherokee Sh	4560 (-1511)	4565 (-1516)
Johnson Zone	4604 (-1555)	4607 (-1558)
Mississippian	4674 (-1625)	4680 (-1631)



Date	Daily Progress	NO	Stret	Make	Type	Depth	Out	Feet	Hours
11/15/14	Spud	1	12	1/4"	HTC	228		228	3
11/16/14		2	7	7/8"	HTC	DP506		3664	50
11/17/14		3	7	7/8"	HTC	GX20C		4635	66
11/18/14		4	7	7/8"	HTC	DP506		4780	145
11/19/14									4

Remarks And Recommendations:  
Based on sample examination, DST results, and log analysis casing was set to further test the #2-4 Nancy.  
Thomas Funk  
Petroleum Geologist

**LEGEND**



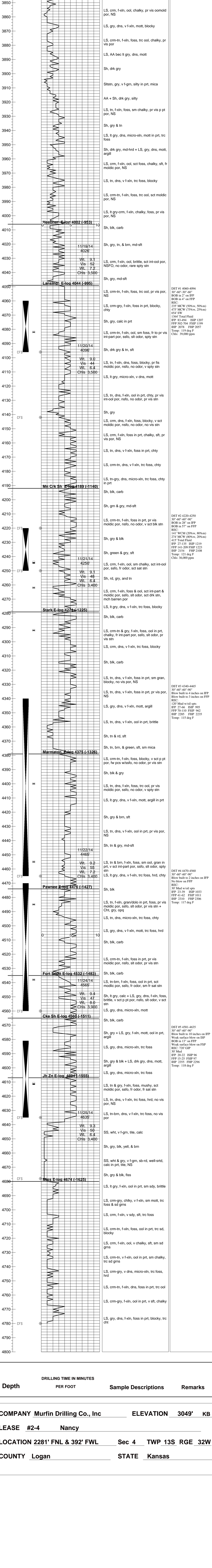
**Lithology**

**Depth**

**DRILLING TIME IN MINUTES PER FOOT**

**Sample Descriptions**

**Remarks**



**Lithology**

**Depth**

**DRILLING TIME IN MINUTES PER FOOT**

**Sample Descriptions**

**Remarks**

COMPANY **Murfin Drilling Co., Inc** ELEVATION **3049'** KB

LEASE **#2-4 Nancy**

LOCATION **2281' FNL & 392' FWL** Sec **4** TWP **13S** RGE **32W**

COUNTY **Logan** STATE **Kansas**