

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	CAROLYN 'A' 1-24
Doc ID	1351004

All Electric Logs Run

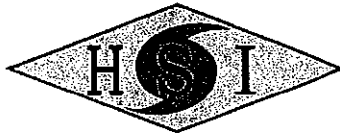
DIL
DUCP
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	CAROLYN 'A' 1-24
Doc ID	1351004

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
3	3823-3836 Foraker	1300g, 20% MCA	
3	4324-4334 LKC D	300g 20% MCA	
4	4467-4474 LKC J	1050g, 20% MCA	

TREATMENT REPORT



HURRICANE SERVICES INC

Customer:	Murfin Drillind Company	Date:	3/23/2017	Ticket No.:	100726
Field Rep:	Arturo Cabezas				
Address:					
City, State:					
County, Zip:					

Field Order No.:	100726
Well Name:	Carolyn A #1-24
Location:	McDondald
Formation:	
Type of Service:	Conductor
Well Type:	Oil
Age of Well:	New
Packer Type:	
Packer Depth:	
Treatment Via:	Casing

Open Hole:	
Casing Depth:	242'
Casing Size:	13 3/8 54.4
Tubing Depth:	
Tubing Size:	
Liner Depth:	
Liner Size:	
Liner Top:	
Liner Bottom:	
Total Depth:	250'

Perf Depths (ft)	Perfs
Total Perfs	0

TIME	INJECTION RATE FLUID	N2/CO2	PRESSURE STP	ANNULUS	REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
5:00 PM					Called Out 3-22-17			
10:00 PM					On Location W/Trucks Hold Safety Meeting			
					Spot & Set Up Trucks			
					TD=250' TP=242 Leave 15' in Casing			
1:00 AM					Start Casing 3-23-17			
					Casing wouldn't go Pull Casing go back in with Drill Bit			
					Tried Several Times Declide get Reamer			
					3-24-17 TP=242'			
6:00 AM					Start Casing 3-24-17			
8:15 AM					Casing on Botom			
8:25 AM					Hook Up to Casing Break Ciculation WRig			
8:40 AM	4.0		150.0		Strat Pumping H2O			5.00
	4.0		250.0		Start Mix & Pump 400 Sx Common 2%Gel3%CC1/4#/SxPS			101.00
					14.8#/Gal			
	4.0		250.0		Start Displacement H2O			
9:15 AM			300.0		Close Vavle on Casing			35.00
					Good Circulation During Job			
					Circulate 50 Sx to pit			
TOTAL:						-	-	141.00

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
4.0	4.0	300.0	237.5

PRODUCTS USED

400 Sx Common 2%Gel 3%CC 1/4#/Sx Pheno-Seal

Treater: Todd Seba

Customer: Arturo Cabezas

TREATMENT REPORT



HURRICANE SERVICES INC

Customer: MURFIN	Date: 4/9/2017	Ticket No.: 50969
Field Rep: GLEN		
Address:		
City, State:		
County, Zip:		

Field Order No.:		Open Hole:	5076' 7 7/8"	Perf Depths (ft)		Perfs
Well Name:	CAROLYN A 1-24	Casing Depth:	5069.39			
Location:	MCDONALD, KS	Casing Size:	5.5" 15.5 #			
Formation:		Tubing Depth:				
Type of Service:	LONGSTRING	Tubing Size:				
Well Type:		Liner Depth:				
Age of Well:	NEW	Liner Size:				
Packer Type:		Liner Top:				
Packer Depth:		Liner Bottom:				
Treatment Via:	CASING	Total Depth:				
				Total Perfs		0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
12:00 PM					ON LOCATION TO RUN FLOAT EQUIPMENT			
					RUN 119 JTS 15.5# 5.5 CASING WITH FLOAT EQUIPMENT			
					TRUCKS ON LOCATION			
					SAFETY MEETING, SPOT IN, AND RIG UP			
4:00 AM					CIRCULATE ON BOTTOM			
5:00 AM					HOOK UP TO CEMENT			
	5.0		500.0		PUMP 5 BBL WATER			5.00
	5.0		500.0		PUMP 12 BBL MUDFLUSH			12.00
	5.0		500.0		PUMP 5 BBL WATER			5.00
	2.0		150.0		PLUG RAT HOLE			7.58
	2.0		150.0		PLUG MOUSE HOLE			5.00
	5.0		470.0		MIX AND PUMP LEAD CEMENT			156.00
	5.0		200.0		MIX AND PUMP TAIL CEMENT			54.00
					STOP			
					WASH PUMP AND LINES			
6:00 AM					RELEASE PLUG			
	6.0		200.0		START DISPLACEMENT			
	6.0		300.0		FIRST 50 BBL 2% KCL WATER			50.00
TOTAL:								416.58

SUMMARY			
Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
6.0	4.4	2,000.0	555.8

PRODUCTS USED

300 SACKS H-CON AND 200 SACKS H-LONG

Treater: JAKE HEARD

Customer: GLEN

MDCI
 Carolyn 'A' #1-24
 400' FSL 600' FEL
 Sec. 24-T1S-R37W
 3342' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3242	+100	+25	3236	+106	+31
B/Anhydrite	3281	+61	+20	3272	+70	+29
Neva	3717	-375	+25	3710	-368	+32
Red Eagle	3781	-439	+25	3775	-433	+31
Foraker	3832	-490	+26	3823	-481	+35
Stoller	3981	-639	+28	3978	-636	+31
Topeka	4051	-709	+27	4052	-710	+26
Oread	4181	-839	+28	4181	-839	+28
Lansing	4264	-922	+32	4263	-921	+33
Stark	4477	-1135	+35	4479	-1137	+33
Mound City	4533	-1191	+35	4533	-1191	+34
Ft Scott	4658	-1315	+28	4651	-1309	+34
Oakley	4740	-1398	+31	4738	-1396	+33
Mississippi	4976	-1634	+26	4969	-1627	+33
RTD	5076	-1734				
LTD				5078	-1736	

Robert D. Hendrix

Petroleum Geologist

GEOLOGISTS REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY: **Murfin Drilling Company, Inc.**

LEASE: **Carolyn 'A' #1-24**

FIELD: **Wildcat**

LOCATION: **400' E1 & 600' T41**

SEC: **24** TWP: **15** RGE: **37W**

COUNTY: **Cheyenne** STATE: **Kansas**

CONTRACTOR: **Wurfin Drilling Co. Inc. #24**

SPUD: **3/22/2017** COMP: **4/9/2017**

R/D: **5076'** LTD: **5078'**

M/D UP: **5076'** TYP MUD: **Chemical**

SAMPLES SAVED FROM: **3640'** TO: **TD**

DRILLING TIME KEPT FROM: **3640'** TO: **TD**

SAMPLES EXAMINED FROM: **3640'** TO: **TD**

GEOLOGICAL SUPERVISION FROM: **3594'**

GEOLOGIST ON WELL: **Robert D. Hendrix**

DATE: **4/15/2017**

WELL: **3342'**

DF: **3337'**

GL: **3337'**

Measurements Are All From **Kelly Bushing**

CASING: **CONDUCOR SURFACE 13-3/8" @ 242' PRODUCTION 5-1/2" @ 5069'**

ELEVATIONS

FORMER TOPS: **3236 (+106)** **3242 (+100)**

ANHYDRITE: **3710 (-376)** **3717 (-376)**

NEVA: **3823 (-481)** **3822 (-490)**

FORAKER: **4032 (-700)** **4031 (-659)**

OREAD: **4181 (-839)** **4181 (-839)**

LANSING: **4253 (-920)** **4254 (-922)**

BKC: **4533 (-1191)** **4533 (-1191)**

CHEROKEE SHALE: **4738 (-1397)** **4740 (-1398)**

MISSISSIPPIAN: **4976 (-1634)** **4976 (-1634)**

API# 15-023-21463

REMARKS:

DEPTH	DRILLING TIME IN MINUTES PER FOOT	Rate of Penetration	DEPTH	DRILLING TIME IN MINUTES PER FOOT	Rate of Penetration
3200	5	10	3200	5	10
3300	5	10	3300	5	10
3400	5	10	3400	5	10
3500	5	10	3500	5	10
3600	5	10	3600	5	10
3700	5	10	3700	5	10
3800	5	10	3800	5	10
3900	5	10	3900	5	10
4000	5	10	4000	5	10
4100	5	10	4100	5	10
4200	5	10	4200	5	10
4300	5	10	4300	5	10
4400	5	10	4400	5	10
4500	5	10	4500	5	10
4600	5	10	4600	5	10
4700	5	10	4700	5	10
4800	5	10	4800	5	10
4900	5	10	4900	5	10
5000	5	10	5000	5	10
5100	5	10	5100	5	10

DEPTH	DRILLING TIME IN MINUTES PER FOOT	Rate of Penetration	DEPTH	DRILLING TIME IN MINUTES PER FOOT	Rate of Penetration
3200	5	10	3200	5	10
3300	5	10	3300	5	10
3400	5	10	3400	5	10
3500	5	10	3500	5	10
3600	5	10	3600	5	10
3700	5	10	3700	5	10
3800	5	10	3800	5	10
3900	5	10	3900	5	10
4000	5	10	4000	5	10
4100	5	10	4100	5	10
4200	5	10	4200	5	10
4300	5	10	4300	5	10
4400	5	10	4400	5	10
4500	5	10	4500	5	10
4600	5	10	4600	5	10
4700	5	10	4700	5	10
4800	5	10	4800	5	10
4900	5	10	4900	5	10
5000	5	10	5000	5	10
5100	5	10	5100	5	10

Murfin Drilling Co Inc
 Carolyn #1-24
 400' E1 & 600' T41
 24-1-37W, Cheyenne County, Kansas
 KB=3342', GL=3337'
 API: 15-023-21463



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.03.31 @ 15:30:00

End Date: 2017.04.01 @ 01:38:00

Job Ticket #: 65429 DST #: 1

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:16:02



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65429

DST#: 1

ATTN: Robert Hendrix

Test Start: 2017.03.31 @ 15:30:00

GENERAL INFORMATION:

Formation: **Foraker**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:48:15

Time Test Ended: 01:38:00

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 3793.00 ft (KB) To 3861.00 ft (KB) (TVD)

Reference Elevations: 3342.00 ft (KB)

Total Depth: 3861.00 ft (KB) (TVD)

3337.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: 782.52 psig @ 3794.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.03.31

End Date:

2017.04.01

Last Calib.:

2017.04.01

Start Time:

15:30:05

End Time:

01:38:00

Time On Btm:

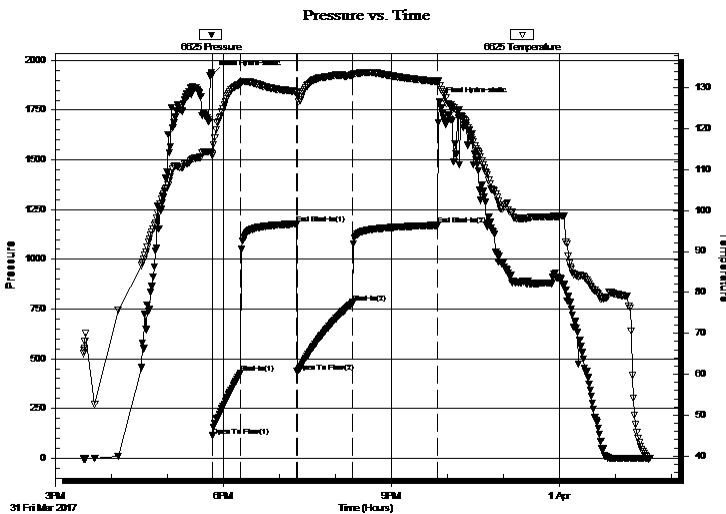
2017.03.31 @ 17:47:45

Time Off Btm:

2017.03.31 @ 21:52:00

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 2 min.
60 - IS: Blow back built to BOB at 47 min.
60 - FF: Blow built to BOB at 3 1/4 min.
90 - FS: Blow back built to 1 1/2"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1927.99	113.77	Initial Hydro-static
1	112.69	113.39	Open To Flow (1)
31	426.48	130.92	Shut-In(1)
91	1178.10	129.13	End Shut-In(1)
92	434.72	128.71	Open To Flow (2)
151	782.52	133.17	Shut-In(2)
243	1170.94	131.52	End Shut-In(2)
245	1791.66	130.49	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
58.00	GMCO 47%g, 35%o, 18%m	0.29
58.00	GOCM 44%m, 32%g, 24%o	0.29
1679.00	REV OUT CGO 77%o, 21%g, 2%m	22.74
180.00	CGO 85%o, 13%g, 2%m	2.52
0.00	GIP = 250'	0.00

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: Robert Hendrix

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65429

DST#: 1

Test Start: 2017.03.31 @ 15:30:00

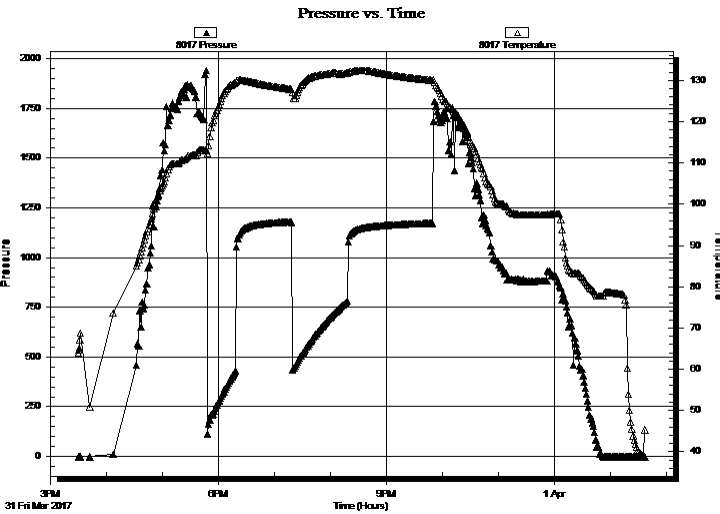
GENERAL INFORMATION:

Formation: **Foraker**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 17:48:15 Tester: James Winder
 Time Test Ended: 01:38:00 Unit No: 83
 Interval: **3793.00 ft (KB) To 3861.00 ft (KB) (TVD)** Reference Elevations: 3342.00 ft (KB)
 Total Depth: 3861.00 ft (KB) (TVD) 3337.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: psig @ 3794.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.03.31 End Date: 2017.04.01 Last Calib.: 2017.04.01
 Start Time: 15:30:05 End Time: 01:37:15 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 2 min.
 60 - IS: Blow back built to BOB at 47 min.
 60 - FF: Blow built to BOB at 3 1/4 min.
 90 - FS: Blow back built to 1 1/2"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
58.00	GMCO 47%g, 35%o, 18%m	0.29
58.00	GOCM 44%m, 32%g, 24%o	0.29
1679.00	REV OUT CGO 77%o, 21%g, 2%m	22.74
180.00	CGO 85%o, 13%g, 2%m	2.52
0.00	GIP = 250'	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65429

DST#: 1

ATTN: Robert Hendrix

Test Start: 2017.03.31 @ 15:30:00

Tool Information

Drill Pipe:	Length: 3586.00 ft	Diameter: 3.80 inches	Volume: 50.30 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 51.31 bbl</u>	Tool Chased 4.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3793.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	68.00 ft			
Tool Length:	97.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: Tool chased 4' to bottom at open - no mud loss

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3765.00	
Shut In Tool	5.00			3770.00	
Hydraulic tool	5.00			3775.00	
Jars	5.00			3780.00	
Safety Joint	3.00			3783.00	
Packer	5.00			3788.00	29.00 Bottom Of Top Packer
Packer	5.00			3793.00	
Stubb	1.00			3794.00	
Recorder	0.00	6625	Inside	3794.00	
Recorder	0.00	8017	Outside	3794.00	
Perforations	30.00			3824.00	
Blank Spacing	33.00			3857.00	
Perforations	1.00			3858.00	
Bullnose	3.00			3861.00	68.00 Bottom Packers & Anchor

Total Tool Length: 97.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65429

DST#: 1

ATTN: Robert Hendrix

Test Start: 2017.03.31 @ 15:30:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

26.2 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.34 in³

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
58.00	GMCO 47%g, 35%o, 18%m	0.285
58.00	GOCM 44%m, 32%g, 24%o	0.285
1679.00	REV OUT CGO 77%o, 21%g, 2%m	22.741
180.00	CGO 85%o, 13%g, 2%m	2.525
0.00	GIP = 250'	0.000

Total Length: 1975.00 ft Total Volume: 25.836 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

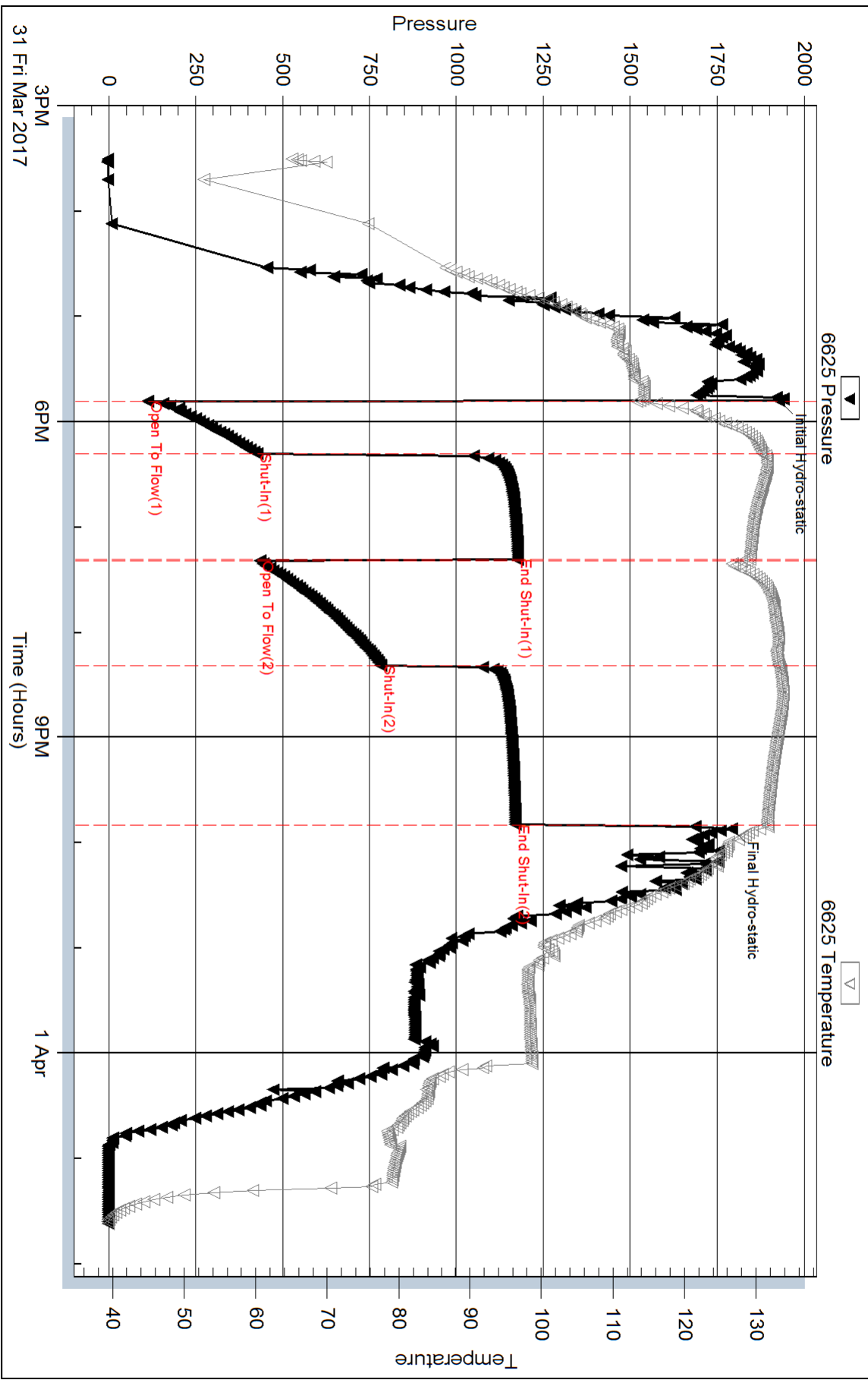
Laboratory Name:

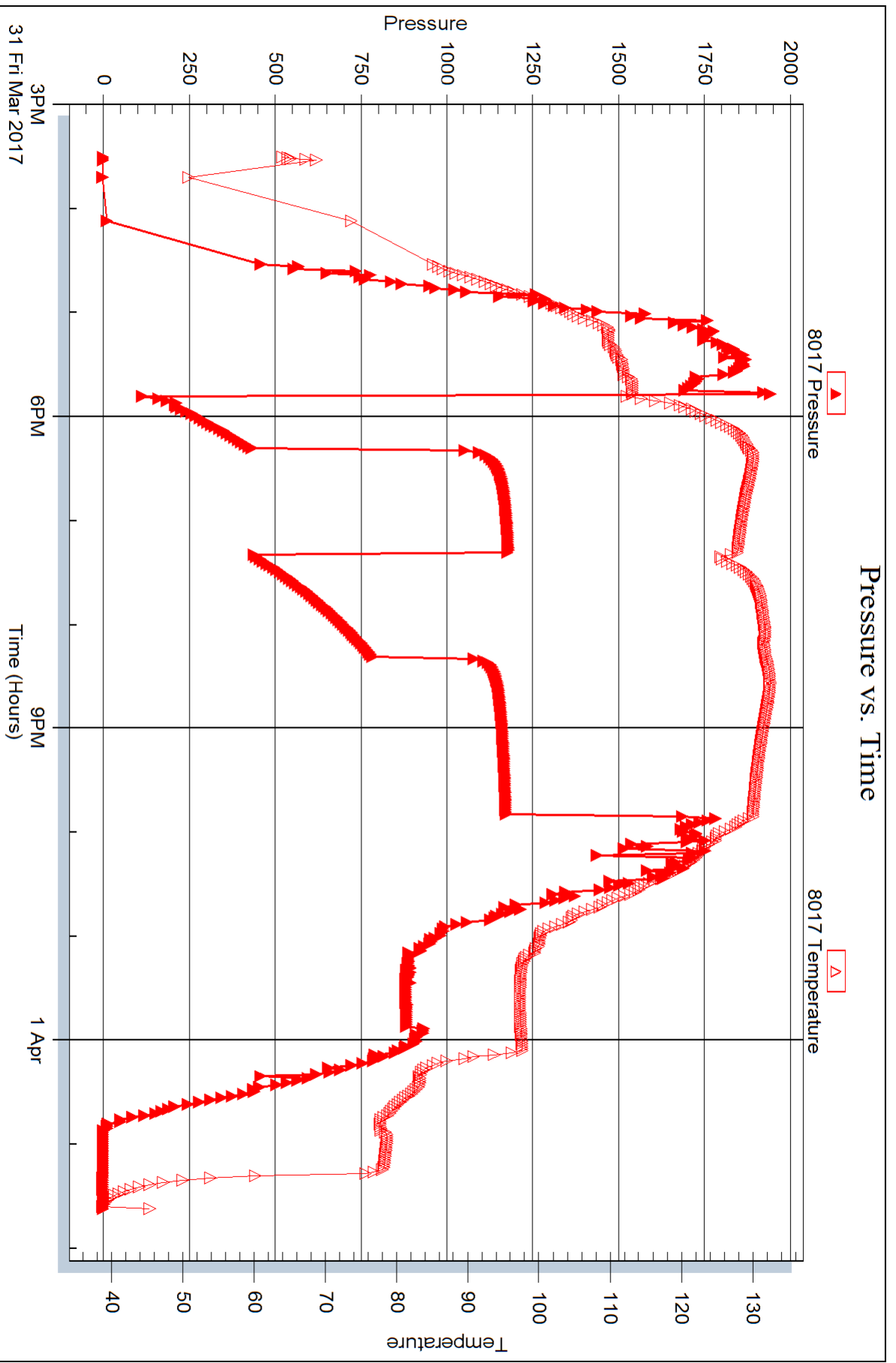
Laboratory Location:

Recovery Comments: Gravity = 25 api @ 48 deg F

Corrected Gravity = 26.2 api

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.02 @ 01:39:00

End Date: 2017.04.02 @ 08:54:00

Job Ticket #: 65430 DST #: 2

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:14:52



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65430

DST#: 2

ATTN: Robert Hendrix

Test Start: 2017.04.02 @ 01:39:00

GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:49:30

Time Test Ended: 08:54:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4128.00 ft (KB) To 4194.00 ft (KB) (TVD)

Reference Elevations: 3342.00 ft (KB)

Total Depth: 4194.00 ft (KB) (TVD)

3337.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625

Inside

Press@RunDepth: 19.42 psig @ 4129.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.04.02

End Date:

2017.04.02

Last Calib.: 2017.04.02

Start Time: 01:39:05

End Time:

08:53:59

Time On Btm: 2017.04.02 @ 03:49:15

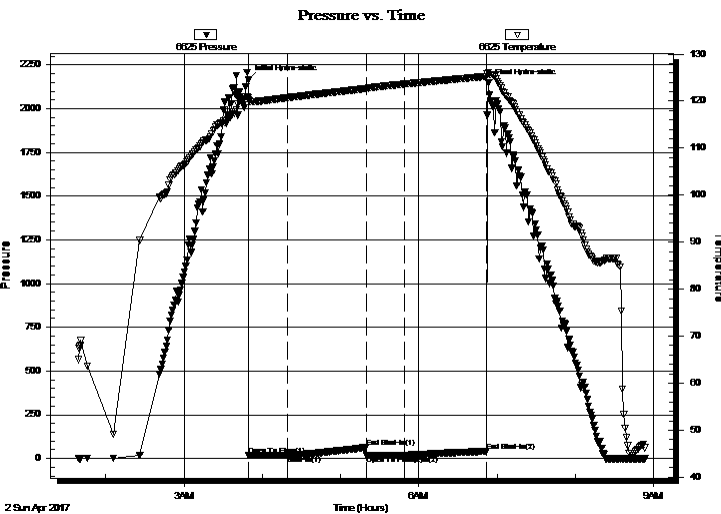
Time Off Btm: 2017.04.02 @ 06:53:15

TEST COMMENT: 30 - IF: Weak surface blow, dead at 25 min.

60 - IS: No blow

30 - FF: No blow

60 - FS: No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2164.08	120.69	Initial Hydro-static
1	16.89	120.21	Open To Flow (1)
30	17.59	120.72	Shut-In(1)
91	62.05	122.67	End Shut-In(1)
91	17.56	122.69	Open To Flow (2)
120	19.42	123.63	Shut-In(2)
183	39.95	125.25	End Shut-In(2)
184	2145.45	126.10	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	Mud w /Oil spots 95%m, 3%o, 2%g	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65430

DST#: 2

ATTN: Robert Hendrix

Test Start: 2017.04.02 @ 01:39:00

Tool Information

Drill Pipe:	Length: 3899.00 ft	Diameter: 3.80 inches	Volume: 54.69 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 66000.00 lb
			<u>Total Volume: 55.70 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4128.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	66.00 ft			
Tool Length:	95.00 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			4100.00	
Shut In Tool	5.00			4105.00	
Hydraulic tool	5.00			4110.00	
Jars	5.00			4115.00	
Safety Joint	3.00			4118.00	
Packer	5.00			4123.00	29.00 Bottom Of Top Packer
Packer	5.00			4128.00	
Stubb	1.00			4129.00	
Recorder	0.00	6625	Inside	4129.00	
Recorder	0.00	8017	Outside	4129.00	
Perforations	29.00			4158.00	
Blank Spacing	33.00			4191.00	
Bullnose	3.00			4194.00	66.00 Bottom Packers & Anchor

Total Tool Length: 95.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65430

DST#: 2

ATTN: Robert Hendrix

Test Start: 2017.04.02 @ 01:39:00

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: 64.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.76 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbf
1.00	Mud w /Oil spots 95% <i>m</i> , 3% <i>o</i> , 2% <i>g</i>	0.005

Total Length: 1.00 ft Total Volume: 0.005 bbf

Num Fluid Samples: 0

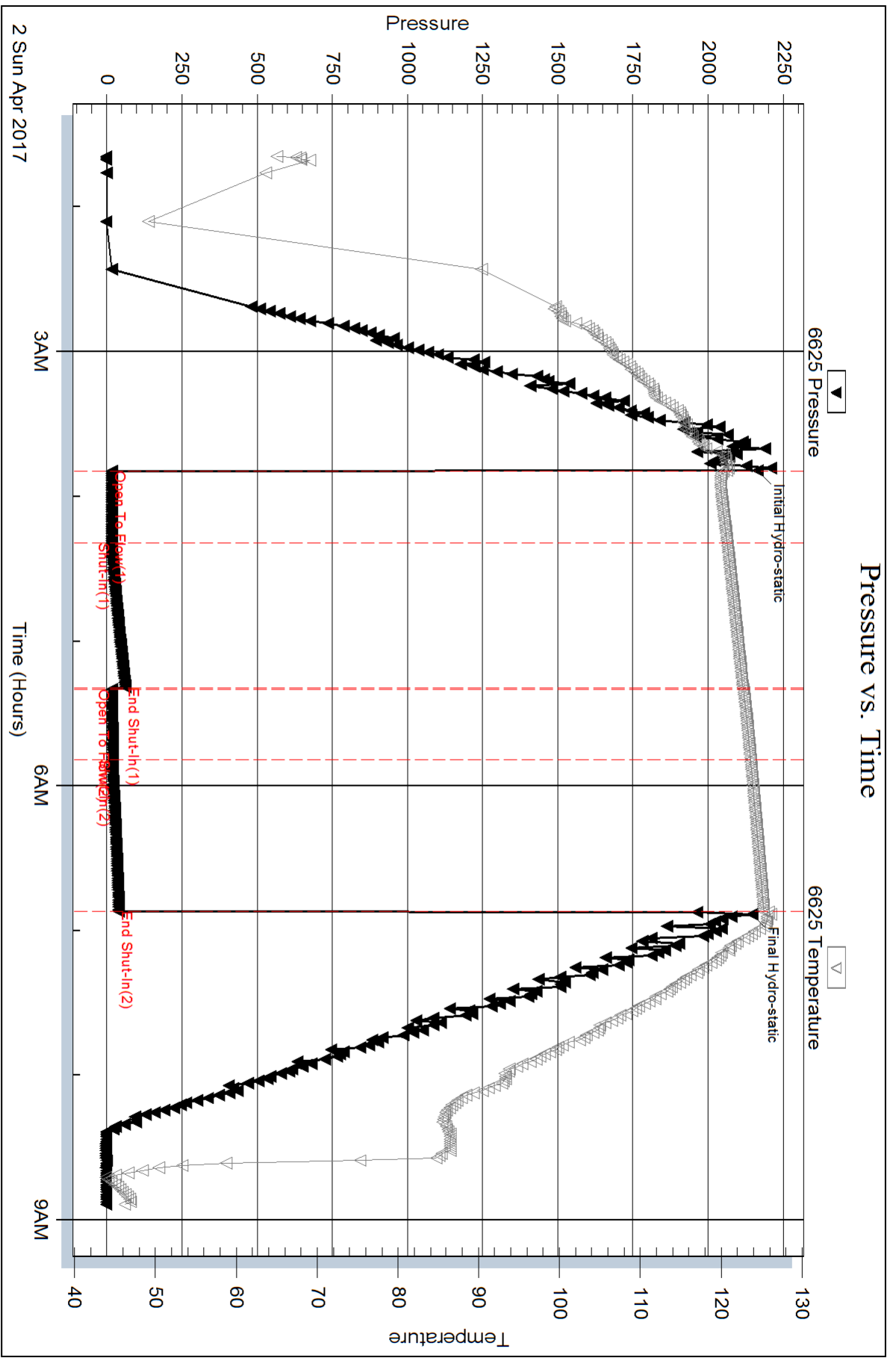
Num Gas Bombs: 0

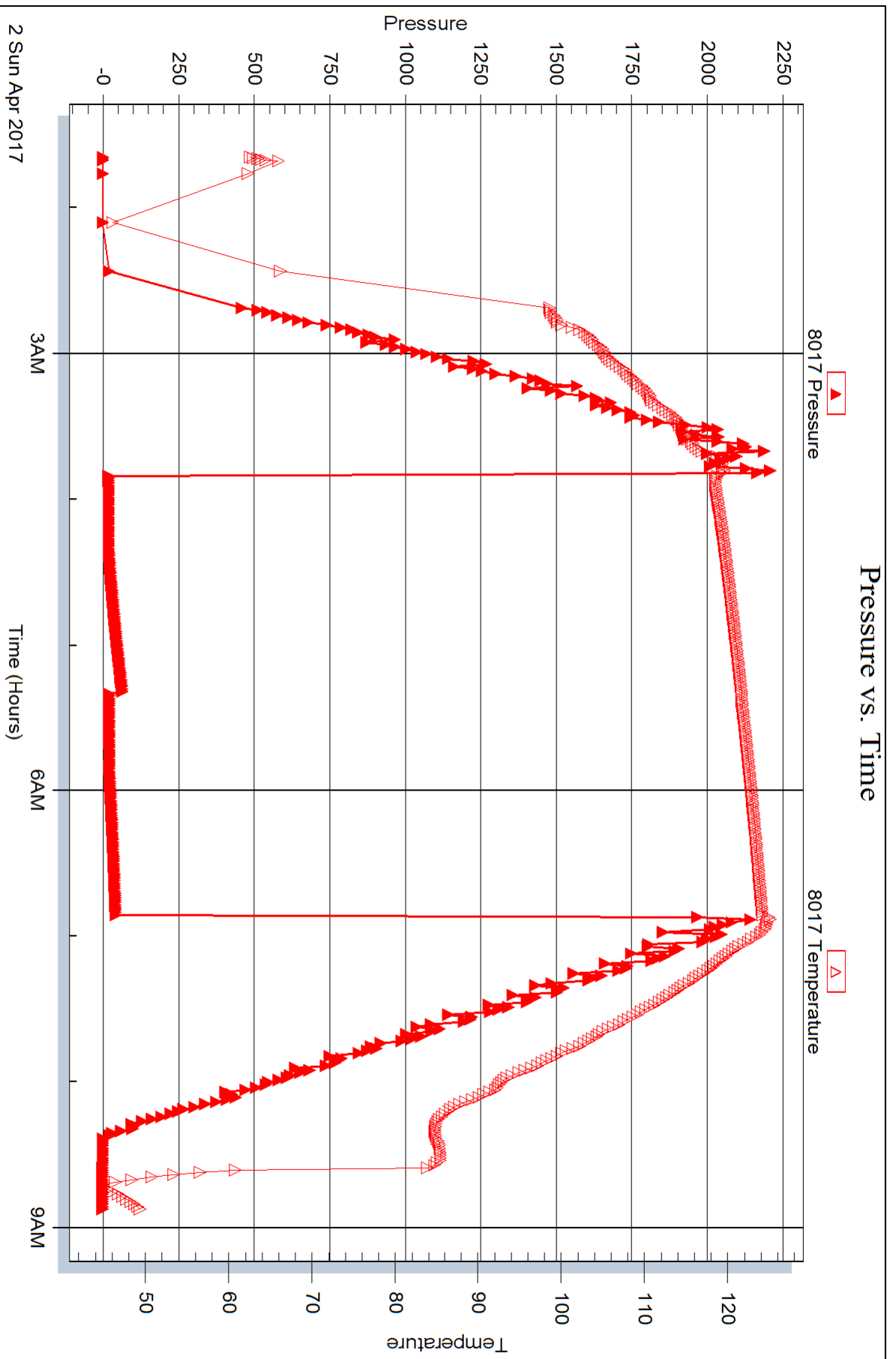
Serial #:

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: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.02 @ 21:38:00

End Date: 2017.04.03 @ 05:03:15

Job Ticket #: 65431 DST #: 3

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:14:26

Murfin Drilling Co., Inc. 24-1s-37w Cheyenne KS Carolyn 'A' #1-24 DST # 3 LKC 'A' 2017.04.02



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

ATTN: Robert Hendrix

Job Ticket: 65431

DST#: 3

Test Start: 2017.04.02 @ 21:38:00

GENERAL INFORMATION:

Formation: **LKC "A"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 23:50:30
 Time Test Ended: 05:03:15
 Interval: **4228.00 ft (KB) To 4285.00 ft (KB) (TVD)**
 Total Depth: 4285.00 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: 3342.00 ft (KB)
 3337.00 ft (CF)
 KB to GR/CF: 5.00 ft

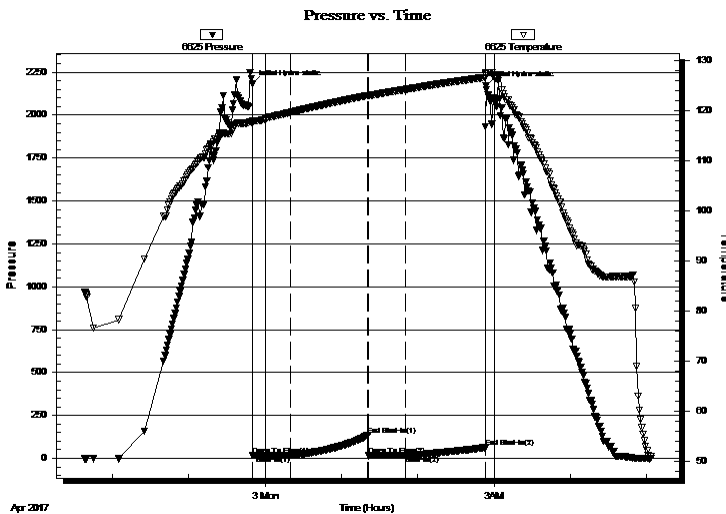
Serial #: 6625

Inside

Press@RunDepth: 18.04 psig @ 4229.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.04.02 End Date: 2017.04.03 Last Calib.: 2017.04.03
 Start Time: 21:38:05 End Time: 05:03:14 Time On Btm: 2017.04.02 @ 23:50:15
 Time Off Btm: 2017.04.03 @ 02:53:45

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

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2180.65	117.88	Initial Hydro-static
1	17.64	117.67	Open To Flow (1)
30	17.12	119.62	Shut-In(1)
91	134.49	122.97	End Shut-In(1)
91	15.39	122.98	Open To Flow (2)
120	18.04	124.16	Shut-In(2)
183	62.34	126.58	End Shut-In(2)
184	2170.11	127.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud w /Oil spots 96%m, 4%o	0.01

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65431

DST#: 3

ATTN: Robert Hendrix

Test Start: 2017.04.02 @ 21:38:00

Tool Information

Drill Pipe:	Length: 4022.00 ft	Diameter: 3.80 inches	Volume: 56.42 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 57.43 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4228.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	57.00 ft			
Tool Length:	86.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4200.00	
Shut In Tool	5.00			4205.00	
Hydraulic tool	5.00			4210.00	
Jars	5.00			4215.00	
Safety Joint	3.00			4218.00	
Packer	5.00			4223.00	29.00 Bottom Of Top Packer
Packer	5.00			4228.00	
Stubb	1.00			4229.00	
Recorder	0.00	6625	Inside	4229.00	
Recorder	0.00	8017	Outside	4229.00	
Perforations	20.00			4249.00	
Blank Spacing	33.00			4282.00	
Bullnose	3.00			4285.00	57.00 Bottom Packers & Anchor

Total Tool Length: 86.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65431

DST#: 3

ATTN: Robert Hendrix

Test Start: 2017.04.02 @ 21:38:00

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 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud w /Oil spots 96% _m , 4% _o	0.010

Total Length: 2.00 ft Total Volume: 0.010 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

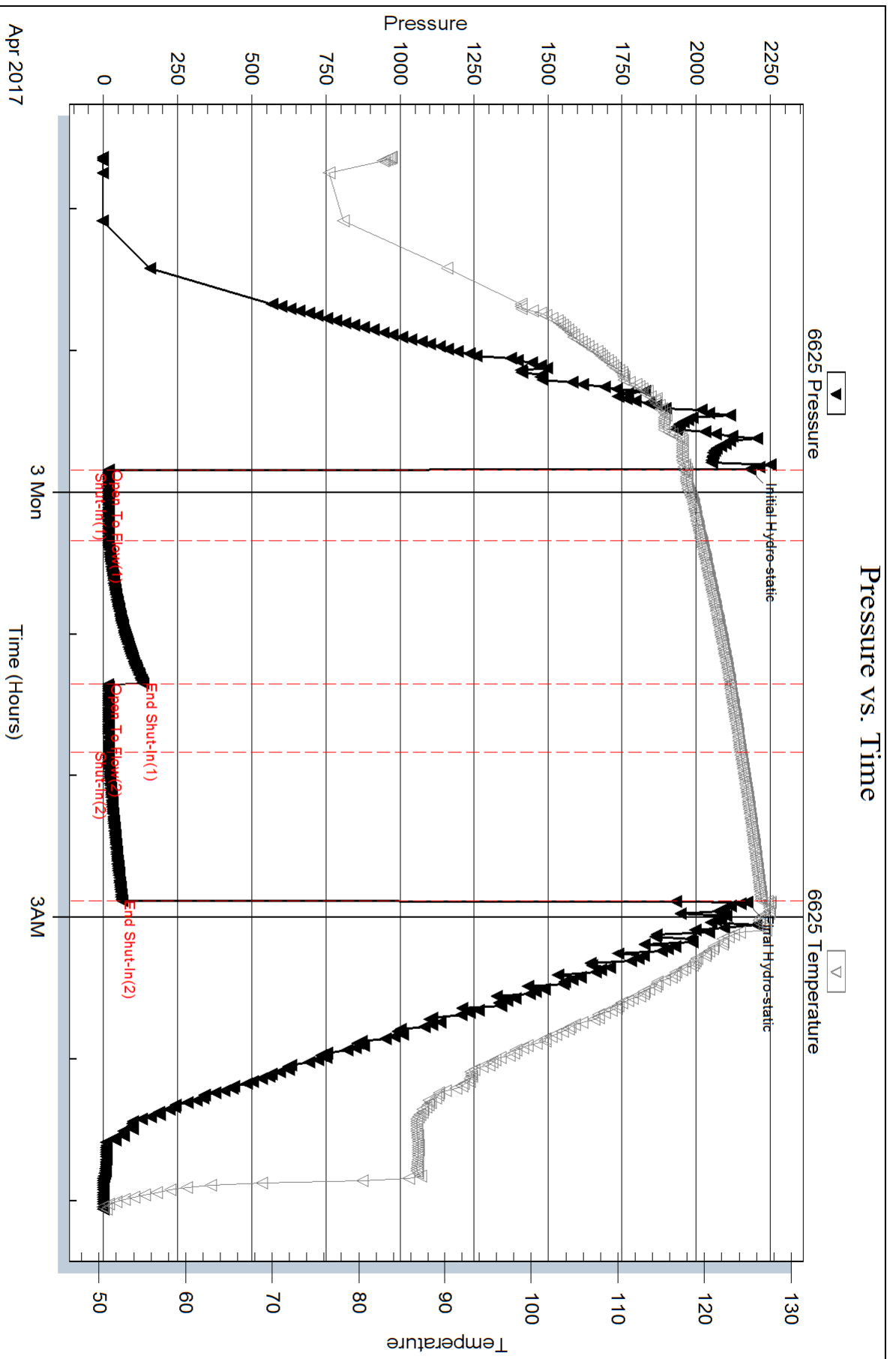
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Carolyn 'A' #1-24

DST Test Number: 3

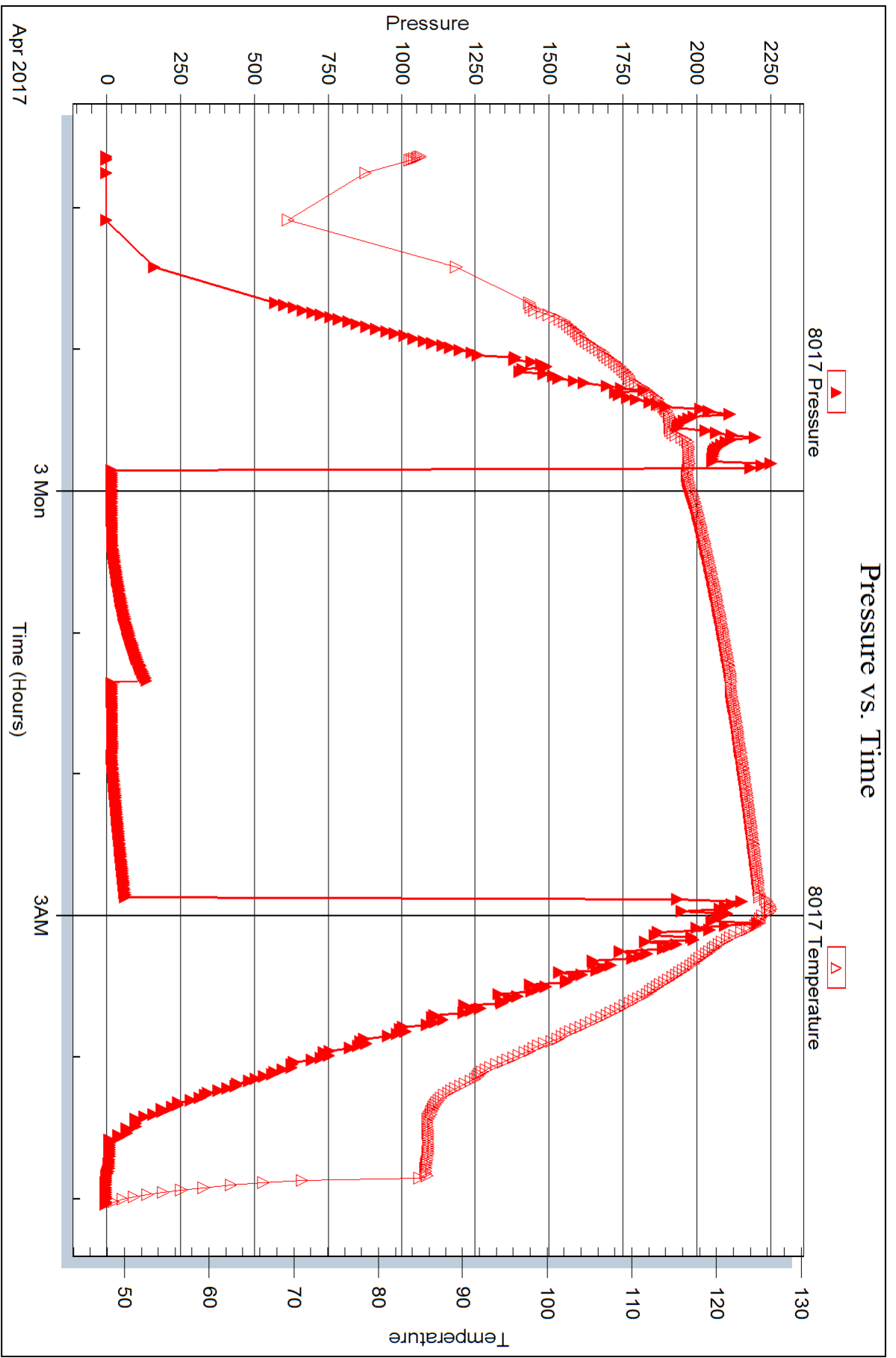


Serial #: 8017

Outside Murfin Drilling Co., Inc.

Carolyn 'A' #1-24

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 65431

Printed: 2017.04.10 @ 10:14:27



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.03 @ 16:55:00

End Date: 2017.04.04 @ 02:08:45

Job Ticket #: 65432 DST #: 4

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:13:57

Murfin Drilling Co., Inc.
24-1s-37w Cheyenne KS
Carolyn 'A' #1-24
DST # 4
LKC "D"
2017.04.03



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65432

DST#: 4

Test Start: 2017.04.03 @ 16:55:00

GENERAL INFORMATION:

Formation: **LKC "D"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 18:57:30 Tester: James Winder
 Time Test Ended: 02:08:45 Unit No: 83
 Interval: **4280.00 ft (KB) To 4340.00 ft (KB) (TVD)** Reference Elevations: 3342.00 ft (KB)
 Total Depth: 4340.00 ft (KB) (TVD) 3337.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

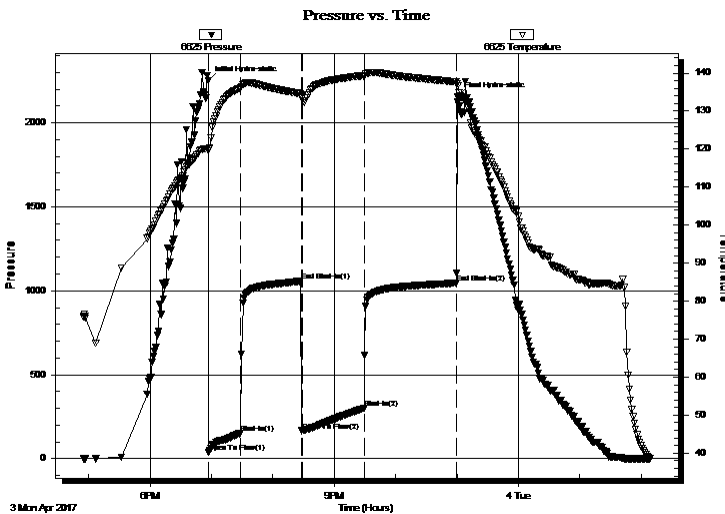
Serial #: 6625

Inside

Press@RunDepth: 299.94 psig @ 4281.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.04.03 End Date: 2017.04.04 Last Calib.: 2017.04.04
 Start Time: 16:55:05 End Time: 02:08:45 Time On Btm: 2017.04.03 @ 18:57:00
 Time Off Btm: 2017.04.03 @ 23:00:30

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 9 3/4 min.
 60 - IS: Blow back built to 4"
 60 - FF: Blow built to BOB at 14 1/4 min.
 90 - FS: Blow back built to 2"

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2253.17	119.53	Initial Hydro-static
1	37.15	120.15	Open To Flow (1)
32	152.57	136.04	Shut-In(1)
91	1057.79	134.46	End Shut-In(1)
92	165.28	133.68	Open To Flow (2)
152	299.94	139.23	Shut-In(2)
243	1046.64	137.68	End Shut-In(2)
244	2156.96	137.24	Final Hydro-static

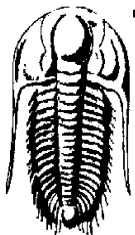
Recovery

Length (ft)	Description	Volume (bbl)
58.00	GOCM 55%m, 30%o, 15%g	0.29
117.00	GMCO 73%o, 14%m, 13%g	0.58
80.00	GOCM 65%m, 25%o, 10%g	0.85
665.00	CGO 77%o, 23%g	9.33
0.00	GIP = 190'	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.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

ATTN: Robert Hendrix

Job Ticket: 65432

DST#: 4

Test Start: 2017.04.03 @ 16:55:00

GENERAL INFORMATION:

Formation: LKC "D"

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:57:30

Time Test Ended: 02:08:45

Interval: 4280.00 ft (KB) To 4340.00 ft (KB) (TVD)

Total Depth: 4340.00 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: 3342.00 ft (KB)

3337.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: psig @ 4281.00 ft (KB)

Start Date: 2017.04.03

End Date:

Start Time: 16:55:05

End Time:

Capacity: 8000.00 psig

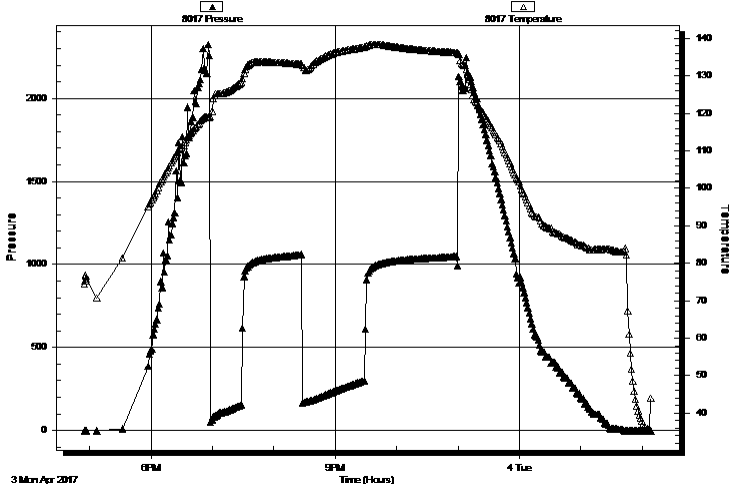
Last Calib.: 2017.04.04

Time On Btm:

Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 9 3/4 min.
60 - IS: Blow back built to 4"
60 - FF: Blow built to BOB at 14 1/4 min.
90 - FS: Blow back built to 2"

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
58.00	GOCM 55% m, 30% o, 15% g	0.29
117.00	GMCO 73% o, 14% m, 13% g	0.58
80.00	GOCM 65% m, 25% o, 10% g	0.85
665.00	CGO 77% o, 23% g	9.33
0.00	GIP = 190'	0.00

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65432

DST#: 4

ATTN: Robert Hendrix

Test Start: 2017.04.03 @ 16:55:00

Tool Information

Drill Pipe:	Length: 4053.00 ft	Diameter: 3.80 inches	Volume: 56.85 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 57.86 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	7.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4280.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	89.00 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			4252.00	
Shut In Tool	5.00			4257.00	
Hydraulic tool	5.00			4262.00	
Jars	5.00			4267.00	
Safety Joint	3.00			4270.00	
Packer	5.00			4275.00	29.00 Bottom Of Top Packer
Packer	5.00			4280.00	
Stubb	1.00			4281.00	
Recorder	0.00	6625	Inside	4281.00	
Recorder	0.00	8017	Outside	4281.00	
Perforations	20.00			4301.00	
Blank Spacing	33.00			4334.00	
Perforations	3.00			4337.00	
Bullnose	3.00			4340.00	60.00 Bottom Packers & Anchor

Total Tool Length: 89.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65432

DST#: 4

ATTN: Robert Hendrix

Test Start: 2017.04.03 @ 16:55:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

24.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 79.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
58.00	GOCM 55% <i>m</i> , 30% <i>o</i> , 15% <i>g</i>	0.285
117.00	GMCO 73% <i>o</i> , 14% <i>m</i> , 13% <i>g</i>	0.575
80.00	GOCM 65% <i>m</i> , 25% <i>o</i> , 10% <i>g</i>	0.849
665.00	CGO 77% <i>o</i> , 23% <i>g</i>	9.328
0.00	GIP = 190'	0.000

Total Length: 920.00 ft Total Volume: 11.037 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 23 api @ 42 deg F

Corrected Gravity = 24.8 api

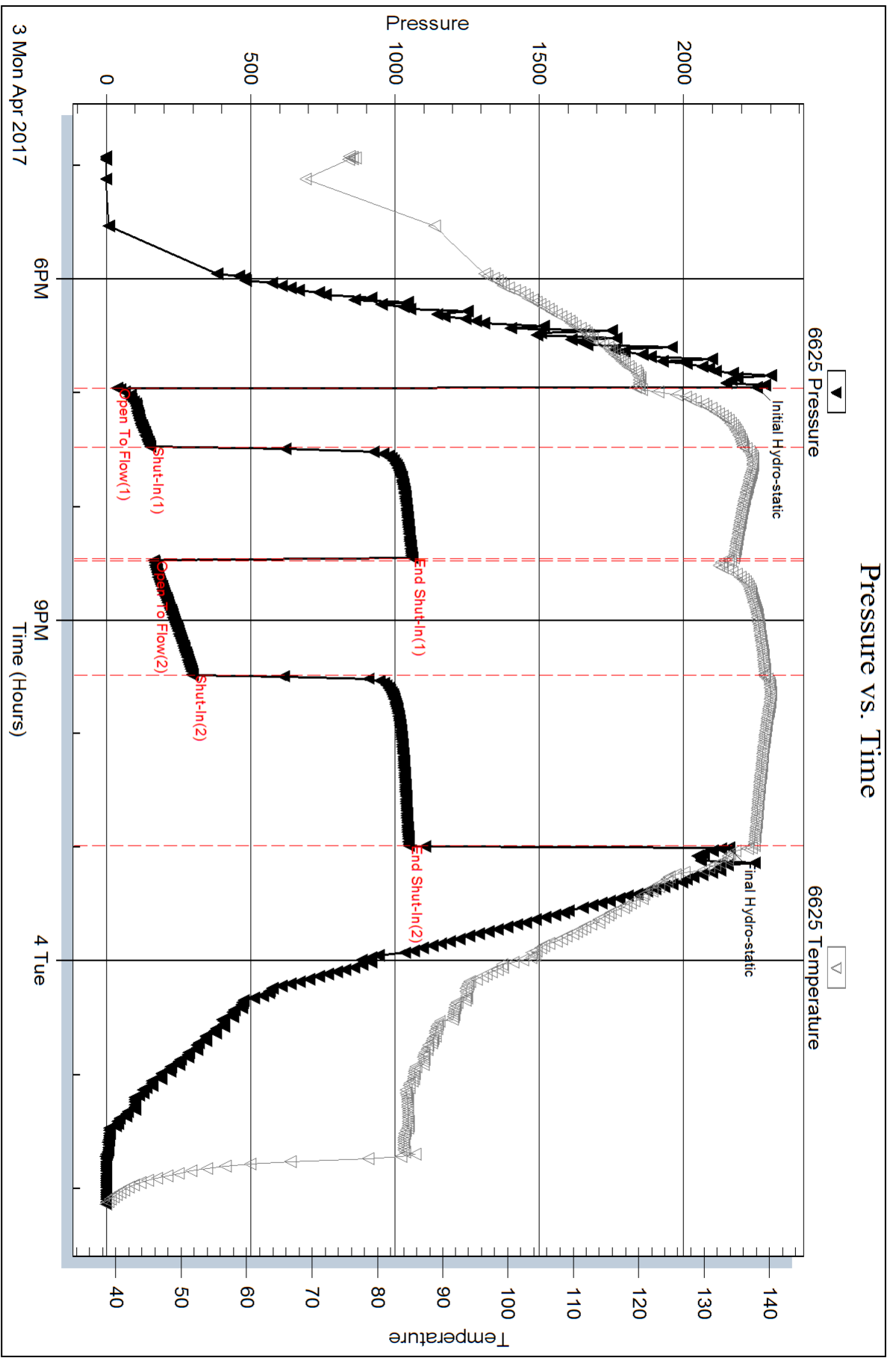
Serial #: 6625

Inside

Murfin Drilling Co., Inc.

Carolyn 'A' #1-24

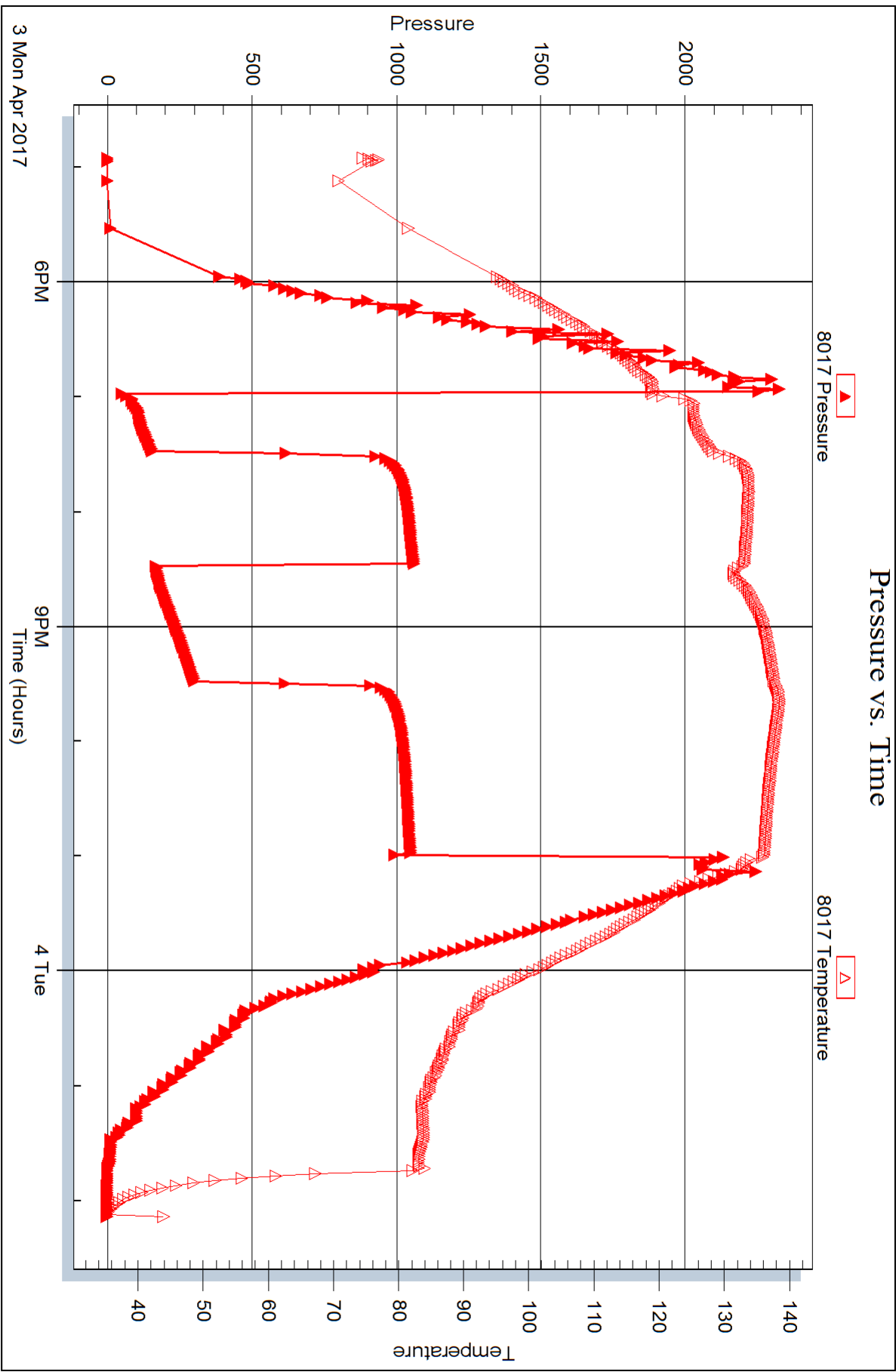
DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 65432

Printed: 2017.04.10 @ 10:14:00





DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.04 @ 13:08:00

End Date: 2017.04.04 @ 21:15:45

Job Ticket #: 65433 DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:13:20

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

DST # 5

LKC "G"

2017.04.04



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

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

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65433

DST#: 5

Test Start: 2017.04.04 @ 13:08:00

GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 14:56:15 Tester: James Winder
 Time Test Ended: 21:15:45 Unit No: 83
 Interval: **4348.00 ft (KB) To 4396.00 ft (KB) (TVD)** Reference Elevations: 3342.00 ft (KB)
 Total Depth: 4396.00 ft (KB) (TVD) 3337.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

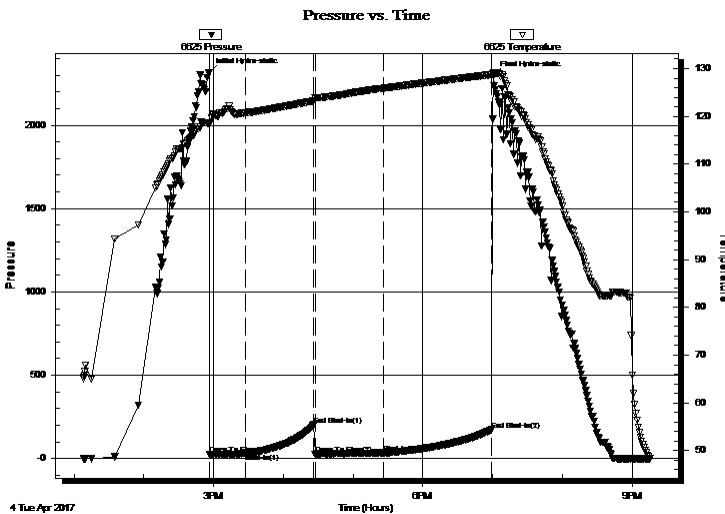
Serial #: 6625

Inside

Press@RunDepth: 33.80 psig @ 4349.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.04.04 End Date: 2017.04.04 Last Calib.: 2017.04.04
 Start Time: 13:08:05 End Time: 21:15:44 Time On Btm: 2017.04.04 @ 14:56:00
 Time Off Btm: 2017.04.04 @ 19:01:00

TEST COMMENT: 30 - IF: Blow built to 1 3/4"
 60 - IS: No blow back
 60 - FF: Weak surface blow on/off through open
 90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2316.88	118.49	Initial Hydro-static
1	23.32	118.21	Open To Flow (1)
31	30.13	120.72	Shut-In(1)
91	202.63	123.24	End Shut-In(1)
92	26.18	123.98	Open To Flow (2)
150	33.80	125.87	Shut-In(2)
244	172.25	128.74	End Shut-In(2)
245	2298.84	129.18	Final Hydro-static

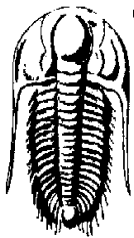
Recovery

Length (ft)	Description	Volume (bbl)
30.00	OCM 90% m, 10% o	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: Robert Hendrix

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65433

DST#: 5

Test Start: 2017.04.04 @ 13:08:00

GENERAL INFORMATION:

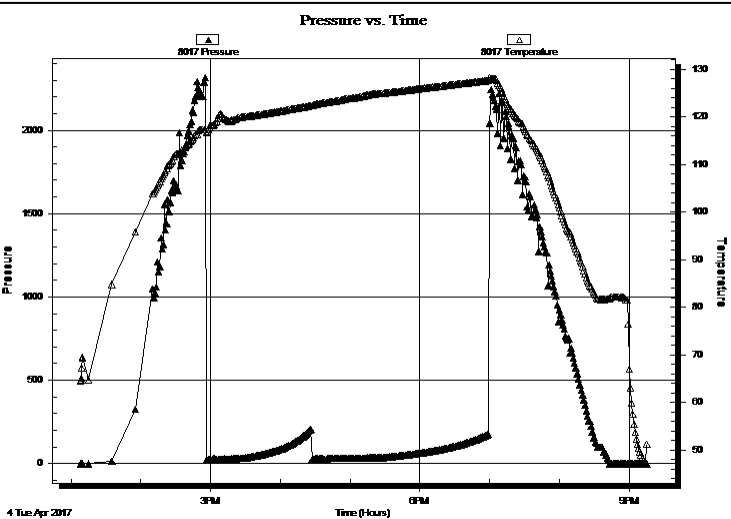
Formation:	LKC "G"			Test Type:	Conventional Bottom Hole (Reset)
Deviated:	No	Whipstock:	ft (KB)	Tester:	James Winder
Time Tool Opened:	14:56:15			Unit No:	83
Time Test Ended:	21:15:45			Reference Elevations:	3342.00 ft (KB)
Interval:	4348.00 ft (KB) To 4396.00 ft (KB) (TVD)				3337.00 ft (CF)
Total Depth:	4396.00 ft (KB) (TVD)			KB to GR/CF:	5.00 ft
Hole Diameter:	7.88 inches	Hole Condition:	Fair		

Serial #: 8017

Outside

Press@RunDepth:	psig @	4349.00 ft (KB)	Capacity:	8000.00 psig	
Start Date:	2017.04.04	End Date:	2017.04.04	Last Calib.:	2017.04.04
Start Time:	13:08:05	End Time:	21:15:14	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: 30 - IF: Blow built to 1 3/4"
60 - IS: No blow back
60 - FF: Weak surface blow on/off through open
90 - FS: No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
30.00	OCM 90% m, 10% o	0.15

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65433

DST#: 5

ATTN: Robert Hendrix

Test Start: 2017.04.04 @ 13:08:00

Tool Information

Drill Pipe:	Length: 4118.00 ft	Diameter: 3.80 inches	Volume: 57.76 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 58.77 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4348.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	48.00 ft			
Tool Length:	77.00 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			4320.00	
Shut In Tool	5.00			4325.00	
Hydraulic tool	5.00			4330.00	
Jars	5.00			4335.00	
Safety Joint	3.00			4338.00	
Packer	5.00			4343.00	29.00 Bottom Of Top Packer
Packer	5.00			4348.00	
Stubb	1.00			4349.00	
Recorder	0.00	6625	Inside	4349.00	
Recorder	0.00	8017	Outside	4349.00	
Perforations	10.00			4359.00	
Blank Spacing	33.00			4392.00	
Perforations	1.00			4393.00	
Bullnose	3.00			4396.00	48.00 Bottom Packers & Anchor

Total Tool Length: 77.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65433

DST#: 5

ATTN: Robert Hendrix

Test Start: 2017.04.04 @ 13:08:00

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: 65.00 sec/qt

Cushion Volume: bbl

Water Loss: 8.33 in³

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
30.00	OCM 90% _m , 10% _o	0.148

Total Length: 30.00 ft Total Volume: 0.148 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

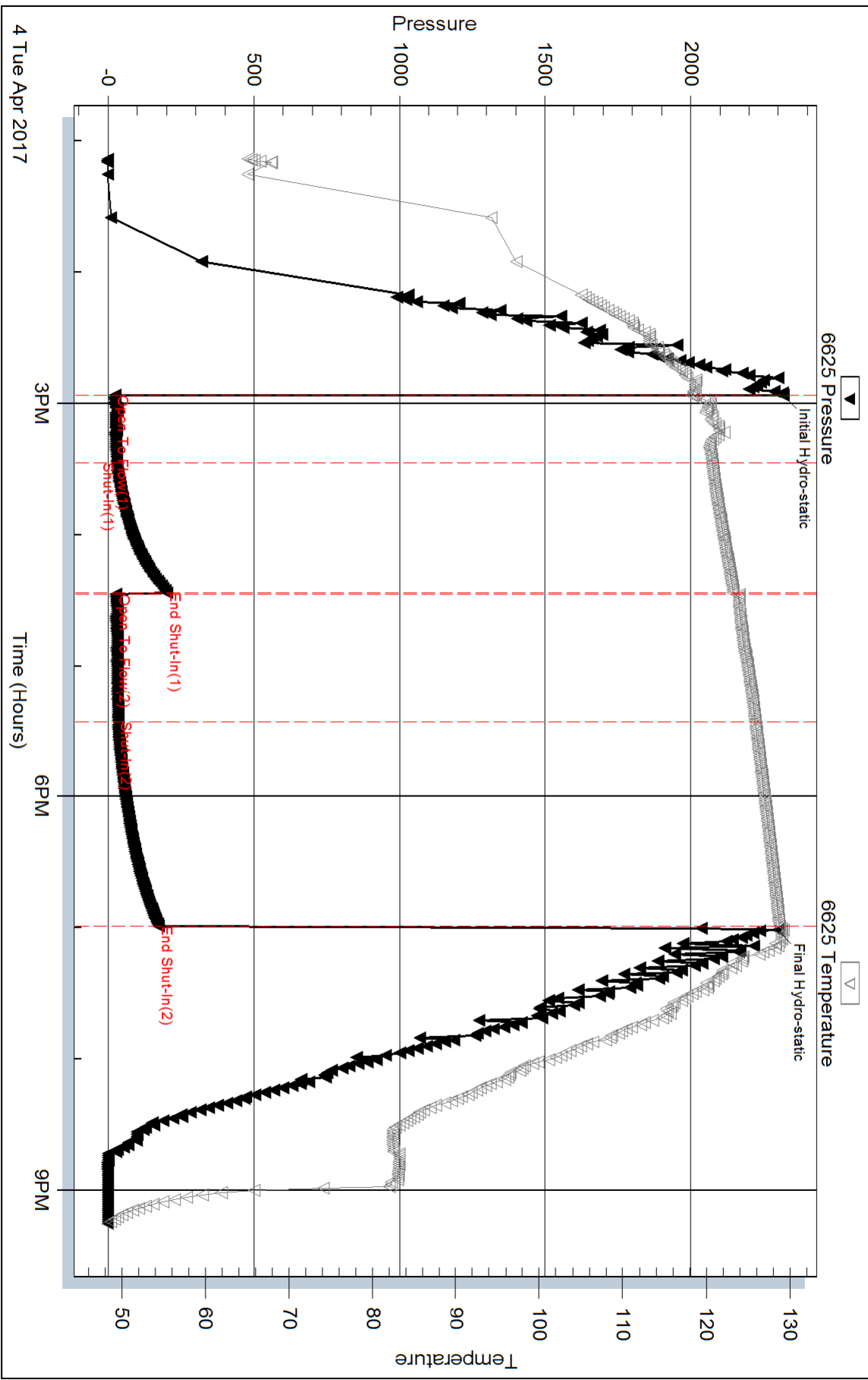
Serial #:

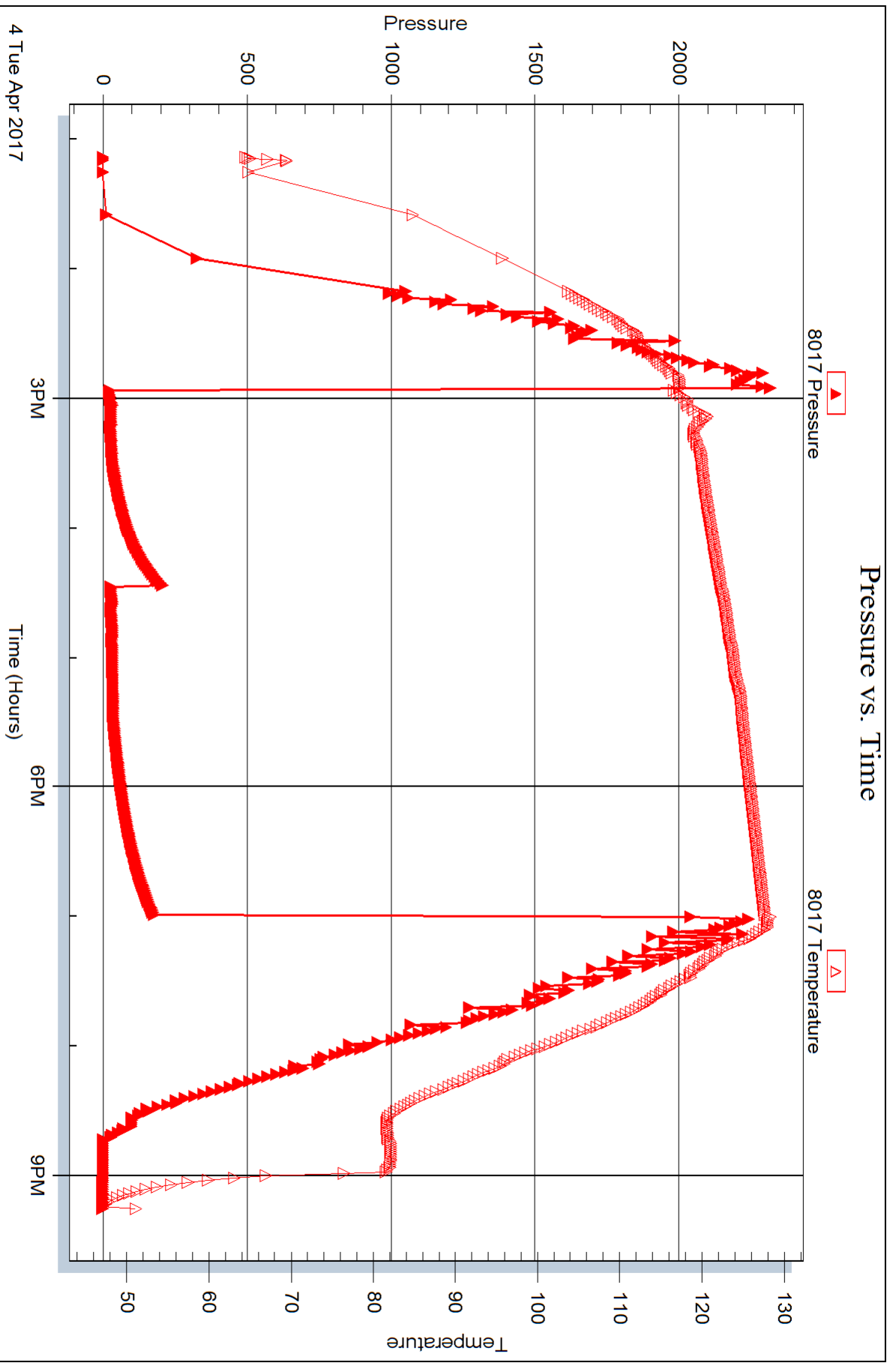
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.05 @ 11:23:00

End Date: 2017.04.05 @ 21:03:15

Job Ticket #: 65434 DST #: 6

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:12:54

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

DST # 6

LKC "J"

2017.04.05



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65434 **DST#: 6**
 Test Start: 2017.04.05 @ 11:23:00

GENERAL INFORMATION:

Formation: **LKC "J"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:08:15
 Time Test Ended: 21:03:15
 Interval: **4422.00 ft (KB) To 4482.00 ft (KB) (TVD)**
 Total Depth: 4482.00 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: 3342.00 ft (KB)
 3337.00 ft (CF)
 KB to GR/CF: 5.00 ft

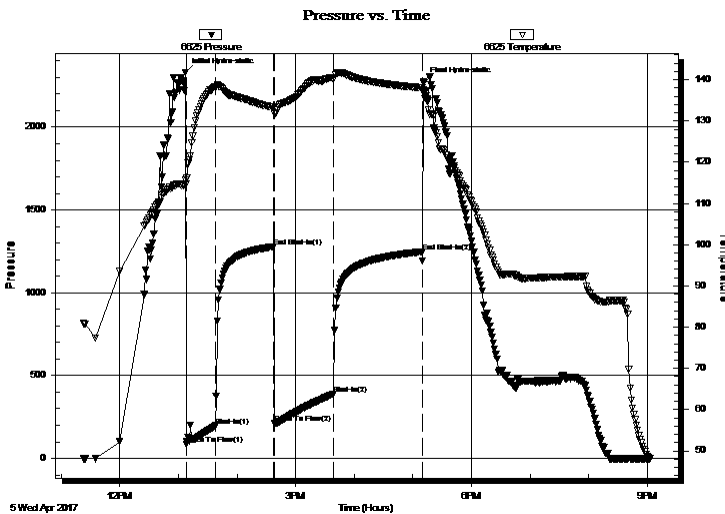
Serial #: 6625

Inside

Press@RunDepth: 389.49 psig @ 4423.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.04.05 End Date: 2017.04.05 Last Calib.: 2017.04.05
 Start Time: 11:23:05 End Time: 21:03:15 Time On Btm: 2017.04.05 @ 13:07:45
 Time Off Btm: 2017.04.05 @ 17:11:00

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 5 1/4 min.
 60 - IS: Blow back built to BOB at 50 min.
 60 - FF: Blow built to BOB at 6 3/4 min.
 90 - FS: Blow back built to BOB at 22 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2330.55	115.75	Initial Hydro-static
1	85.49	114.70	Open To Flow (1)
31	196.68	138.28	Shut-In(1)
90	1278.82	133.38	End Shut-In(1)
91	210.37	131.65	Open To Flow (2)
152	389.49	139.97	Shut-In(2)
242	1248.02	138.04	End Shut-In(2)
244	2275.29	137.62	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
58.00	SOCGM 55% m, 40% g, 5% o	0.29
117.00	GOCM 53% m, 28% o, 19% g	0.58
685.00	REV OUT CGO 92% o, 8% g	9.34
165.00	CGO 82% o, 18% g	2.31
0.00	GIP = 1200'	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.

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65434

DST#: 6

Test Start: 2017.04.05 @ 11:23:00

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:08:15

Time Test Ended: 21:03:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4422.00 ft (KB) To 4482.00 ft (KB) (TVD)

Total Depth: 4482.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3342.00 ft (KB)

3337.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: psig @ 4423.00 ft (KB)

Start Date: 2017.04.05

End Date:

2017.04.05

Capacity: 8000.00 psig

Last Calib.:

2017.04.05

Start Time: 11:23:05

End Time:

21:02:45

Time On Btm:

Time Off Btm:

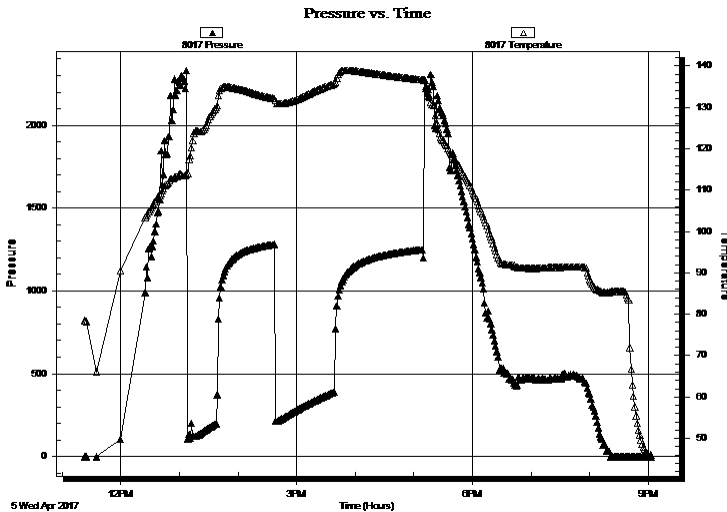
TEST COMMENT: 30 - IF: Blow built to BOB (11") at 5 1/4 min.

60 - IS: Blow back built to BOB at 50 min.

60 - FF: Blow built to BOB at 6 3/4 min.

90 - FS: Blow back built to BOB at 22 min.

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
58.00	SOCGM 55% m, 40% g, 5% o	0.29
117.00	GOCM 53% m, 28% o, 19% g	0.58
685.00	REV OUT CGO 92% o, 8% g	9.34
165.00	CGO 82% o, 18% g	2.31
0.00	GIP = 1200'	0.00

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65434

DST#: 6

ATTN: Robert Hendrix

Test Start: 2017.04.05 @ 11:23:00

Tool Information

Drill Pipe:	Length: 4210.00 ft	Diameter: 3.80 inches	Volume: 59.06 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 60.07 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4422.00 ft			Final 72000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	89.00 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			4394.00	
Shut In Tool	5.00			4399.00	
Hydraulic tool	5.00			4404.00	
Jars	5.00			4409.00	
Safety Joint	3.00			4412.00	
Packer	5.00			4417.00	29.00 Bottom Of Top Packer
Packer	5.00			4422.00	
Stubb	1.00			4423.00	
Recorder	0.00	6625	Inside	4423.00	
Recorder	0.00	8017	Outside	4423.00	
Perforations	20.00			4443.00	
Blank Spacing	33.00			4476.00	
Perforations	3.00			4479.00	
Bullnose	3.00			4482.00	60.00 Bottom Packers & Anchor

Total Tool Length: 89.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65434

DST#: 6

ATTN: Robert Hendrix

Test Start: 2017.04.05 @ 11:23:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

33.6 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 84.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.39 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
58.00	SOCGM 55% <i>m</i> , 40% <i>g</i> , 5% <i>o</i>	0.285
117.00	GOCM 53% <i>m</i> , 28% <i>o</i> , 19% <i>g</i>	0.575
685.00	REV OUT CGO 92% <i>o</i> , 8% <i>g</i>	9.335
165.00	CGO 82% <i>o</i> , 18% <i>g</i>	2.315
0.00	GIP = 1200'	0.000

Total Length: 1025.00 ft Total Volume: 12.510 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 33.4 api @ 58 deg F

Corrected Gravity = 33.6 api

Serial #: 6625

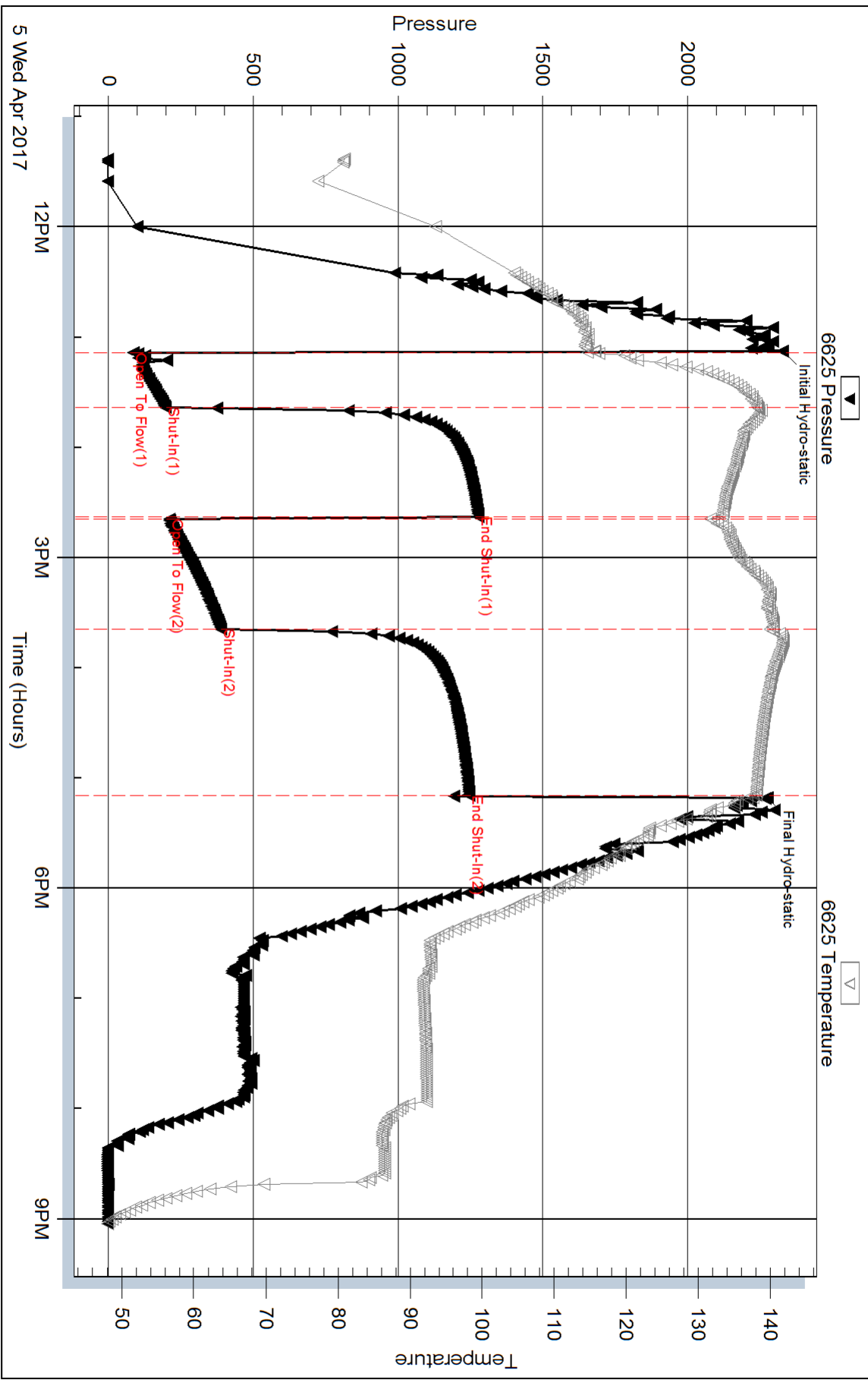
Inside

Murfin Drilling Co., Inc.

Carolyn 'A' #1-24

DST Test Number: 6

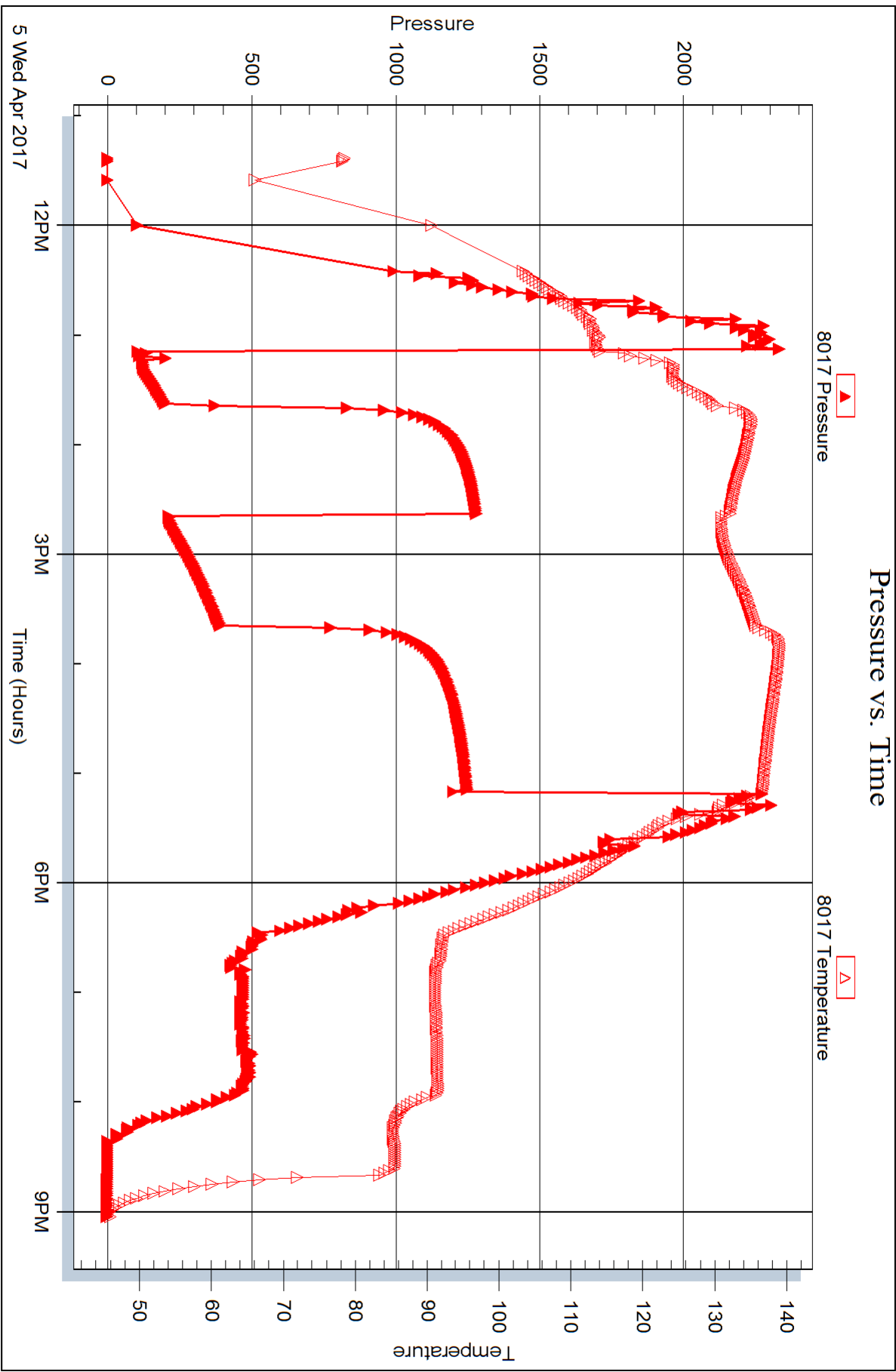
Pressure vs. Time



Triobite Testing, Inc

Ref. No: 65434

Printed: 2017.04.10 @ 10:12:55





DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Carolyn 'A' #1-24

24-1s-37w Cheyenne KS

Start Date: 2017.04.07 @ 00:35:00

End Date: 2017.04.07 @ 09:08:30

Job Ticket #: 65435 DST #: 7

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.04.10 @ 10:12:15



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

ATTN: Robert Hendrix

Job Ticket: 65435

DST#: 7

Test Start: 2017.04.07 @ 00:35:00

GENERAL INFORMATION:

Formation: **Ft. Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:55:15

Time Test Ended: 09:08:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4632.00 ft (KB) To 4706.00 ft (KB) (TVD)

Total Depth: 4706.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 3342.00 ft (KB)

3337.00 ft (CF)

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: 22.50 psig @ 4633.00 ft (KB)

Start Date: 2017.04.07

End Date:

2017.04.07

Start Time: 00:35:05

End Time:

09:08:30

Capacity: 8000.00 psig

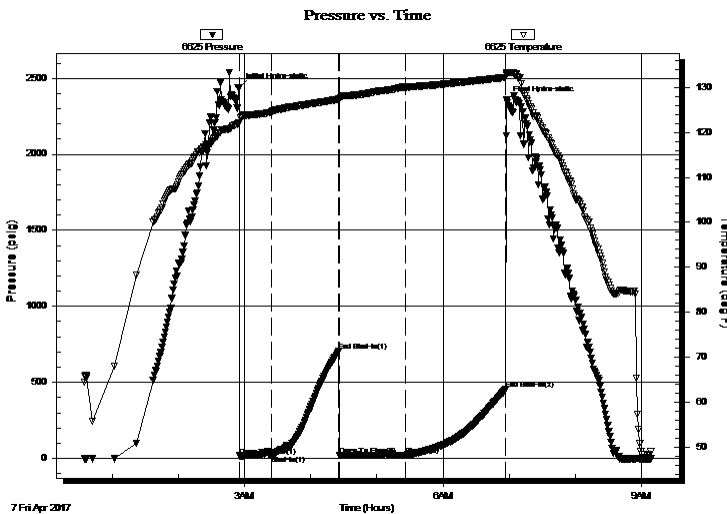
Last Calib.: 2017.04.07

Time On Btm: 2017.04.07 @ 02:55:00

Time Off Btm: 2017.04.07 @ 06:57:45

TEST COMMENT: 30 - IF: Blow built to just over 1"
60 - IS: No blow back
60 - FF: Surface blow through open
90 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2436.53	122.17	Initial Hydro-static
1	16.65	122.08	Open To Flow (1)
30	20.65	124.66	Shut-In(1)
91	704.27	127.36	End Shut-In(1)
91	19.52	127.35	Open To Flow (2)
152	22.50	130.05	Shut-In(2)
242	453.24	132.21	End Shut-In(2)
243	2355.33	133.23	Final Hydro-static

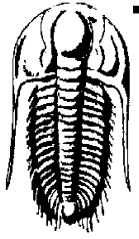
Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud w /Oil spots 98%m, 2%o	0.05

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

24-1s-37w Cheyenne KS

Carolyn 'A' #1-24

Job Ticket: 65435

DST#: 7

Test Start: 2017.04.07 @ 00:35:00

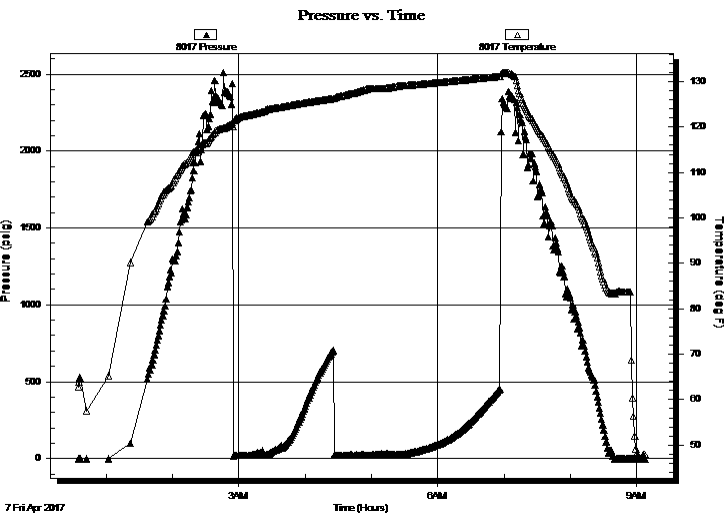
GENERAL INFORMATION:

Formation: **Ft. Scott**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 02:55:15 Tester: James Winder
 Time Test Ended: 09:08:30 Unit No: 83
 Interval: **4632.00 ft (KB) To 4706.00 ft (KB) (TVD)** Reference Elevations: 3342.00 ft (KB)
 Total Depth: 4706.00 ft (KB) (TVD) 3337.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 5.00 ft

Serial #: 8017 Outside

Press@RunDepth: psig @ 4633.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.04.07 End Date: 2017.04.07 Last Calib.: 2017.04.07
 Start Time: 00:35:05 End Time: 09:08:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: 30 - IF: Blow built to just over 1"
 60 - IS: No blow back
 60 - FF: Surface blow through open
 90 - FS: No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
10.00	Mud w /Oil spots 98%m, 2%o	0.05

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65435

DST#: 7

ATTN: Robert Hendrix

Test Start: 2017.04.07 @ 00:35:00

Tool Information

Drill Pipe:	Length: 4425.00 ft	Diameter: 3.80 inches	Volume: 62.07 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 205.00 ft	Diameter: 2.25 inches	Volume: 1.01 bbl	Weight to Pull Loose: 76000.00 lb
			<u>Total Volume: 63.08 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4632.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	74.00 ft			
Tool Length:	103.00 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			4604.00	
Shut In Tool	5.00			4609.00	
Hydraulic tool	5.00			4614.00	
Jars	5.00			4619.00	
Safety Joint	3.00			4622.00	
Packer	5.00			4627.00	29.00 Bottom Of Top Packer
Packer	5.00			4632.00	
Stubb	1.00			4633.00	
Recorder	0.00	6625	Inside	4633.00	
Recorder	0.00	8017	Outside	4633.00	
Perforations	5.00			4638.00	
Blank Spacing	65.00			4703.00	
Bullnose	3.00			4706.00	74.00 Bottom Packers & Anchor

Total Tool Length: 103.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

24-1s-37w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Carolyn 'A' #1-24

Job Ticket: 65435

DST#: 7

ATTN: Robert Hendrix

Test Start: 2017.04.07 @ 00:35:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 80.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 800.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	Mud w /Oil spots 98% _m , 2% _o	0.049

Total Length: 10.00 ft Total Volume: 0.049 bbl

Num Fluid Samples: 0

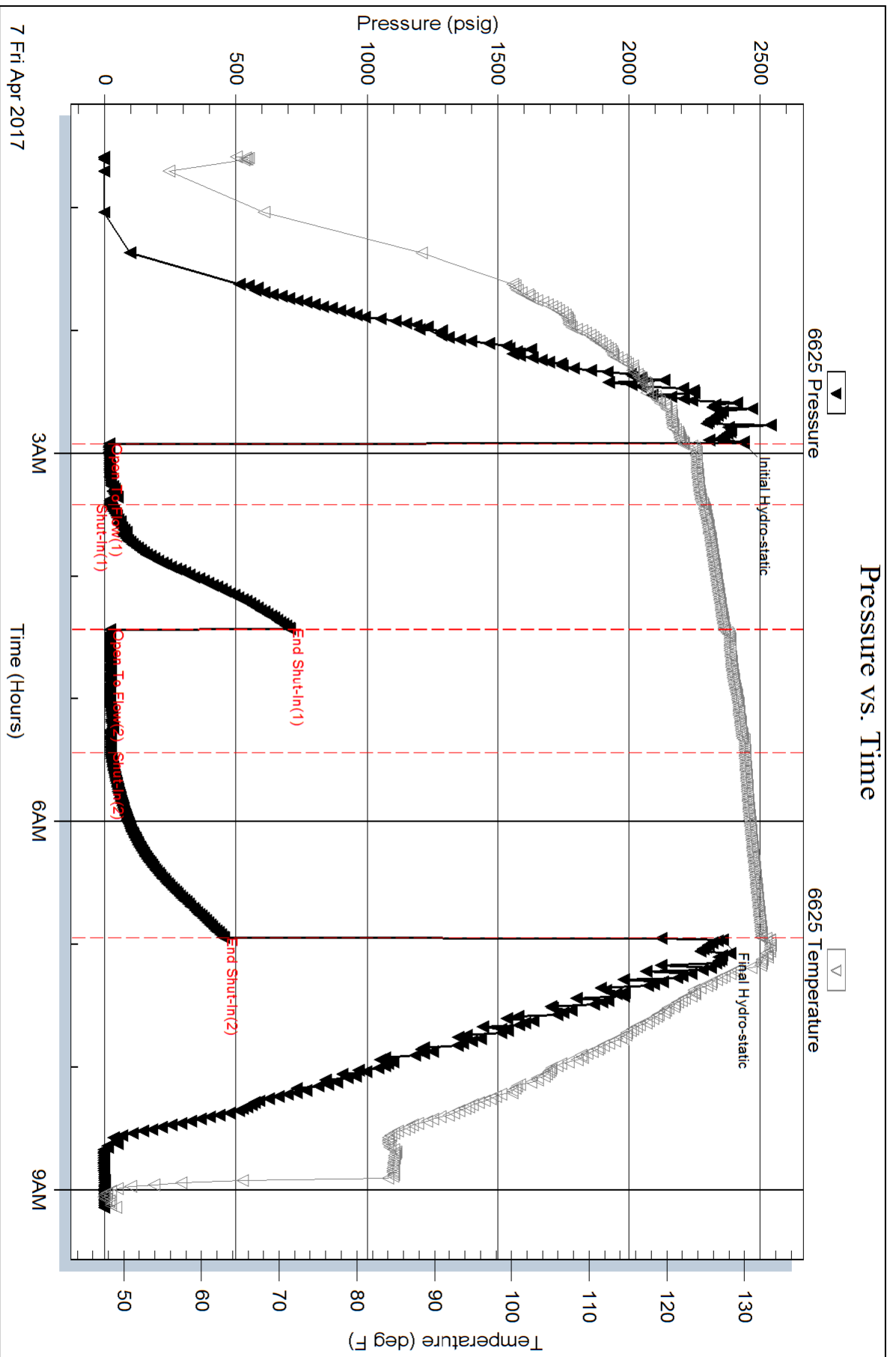
Num Gas Bombs: 0

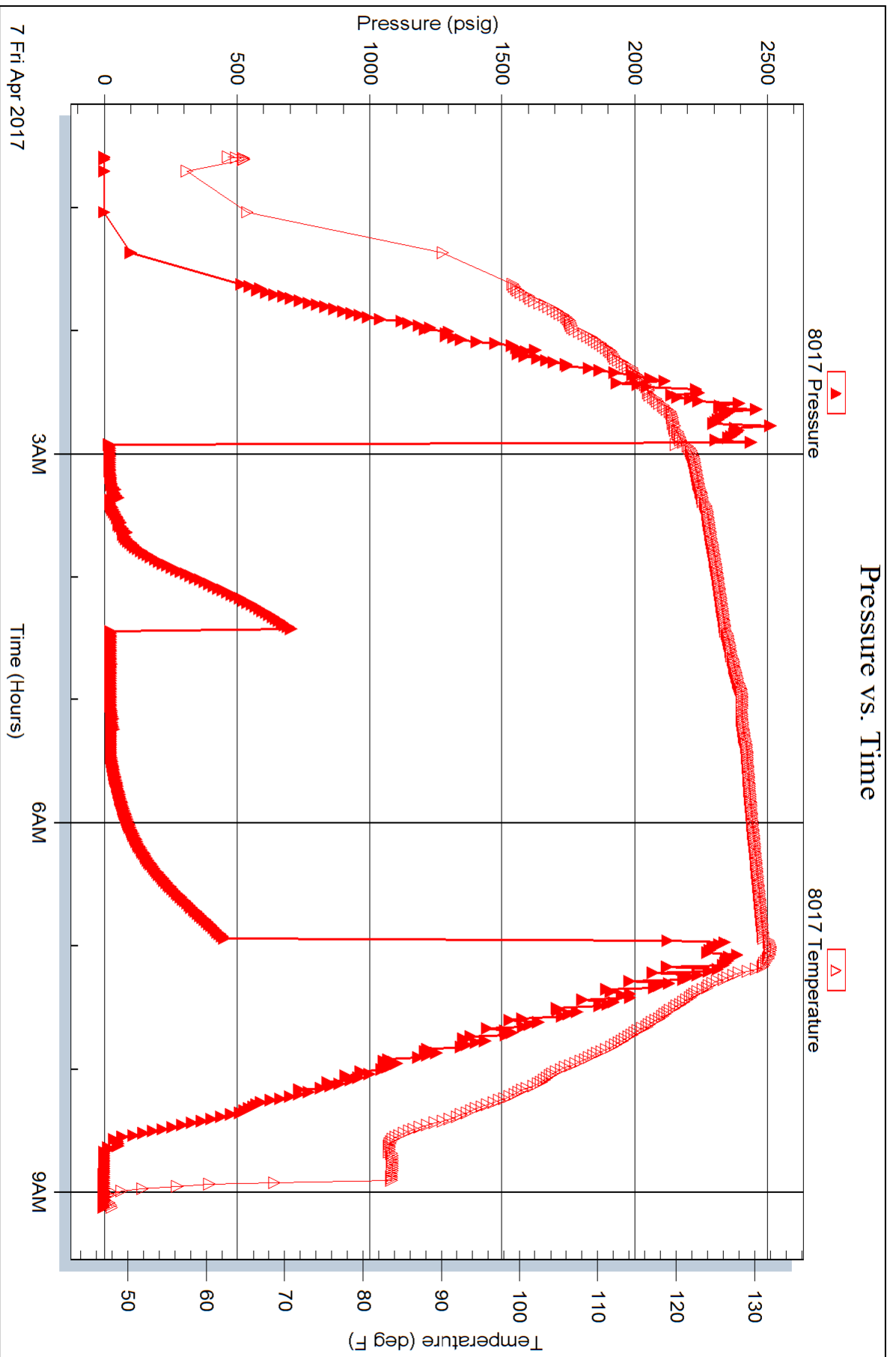
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65429**

Well Name & No. Carolyn 'A' #1-24 Test No. 1 Date 3-31-17
 Company Murfin Drilling Co. Inc. Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1 S Rge. 37 W Co. Cheyenne State KS

Interval Tested 3793 - 3861 Zone Tested Foraker
 Anchor Length 68 Drill Pipe Run 3586 Mud Wt. 8.8
 Top Packer Depth 3788 Drill Collars Run 205 Vis 65
 Bottom Packer Depth 3793 Wt. Pipe Run - WL 8.4
 Total Depth 3861 Chlorides 600 ppm System LCM 11
 Blow Description IF: Blow built to BOB (11") at 2 min.
ISI: Blowback built to
FF: Blow built to BOB at 3 1/4 min.
FSI: Blowback built to 1 1/2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>180</u>	<u>C60</u>	<u>13</u>	<u>85</u>	<u>2</u>	<u>2</u>
Rev Out <u>167A</u>	<u>C60</u>	<u>21</u>	<u>77</u>	<u>2</u>	<u>2</u>
<u>58</u>	<u>GOCM</u>	<u>32</u>	<u>24</u>	<u>44</u>	<u>44</u>
<u>58</u>	<u>GMCO</u>	<u>47</u>	<u>35</u>	<u>18</u>	<u>18</u>
Rec	Feet of <u>6IP = 250'</u>	%gas	%oil	%water	%mud

Rec Total 1975 BHT 132 Gravity 26.2 API RW @ ° F Chlorides ppm

(A) Initial Hydrostatic 1928 Test 1050 T-On Location 14:00 3/31
 (B) First Initial Flow 113 Jars 250 T-Started 15:30
 (C) First Final Flow 426 Safety Joint 75 T-Open 17:48
 (D) Initial Shut-In 1178 Circ Sub Prop Bar 50 T-Pulled 21:50
 (E) Second Initial Flow 435 Hourly Standby _____ T-Out 1:30 4/1
 (F) Second Final Flow 783 Mileage 122 RT + 91.50 Comments Extra mileage for 1st
 (G) Final Shut-In 1171 Sampler mileage 3/28-29 511mi 383.25 attempt at test - stuck in mud
 (H) Final Hydrostatic 1792 Straddle _____ 114RT x 3 Truck 76 169RT Truck 83
 Shale Packer _____ Tool chased 4' to bottom
 Extra Packer _____ Ruined Shale Packer _____
 Extra Recorder _____ Ruined Packer _____
 Day Standby _____ Extra Copies _____
 Accessibility _____ Sub Total 0
 Sub Total 1899.75 Total 1899.75 MP/DST Disc't _____

Approved By [Signature]

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. **65430**

Well Name & No. Carolyn 'A' #1-24 Test No. 2 Date 4-2-17
 Company Murfin Drilling Co. Inc. Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1 S Rge. 37w Co. Cheyenne State KS

Interval Tested 4128-4194 Zone Tested Oread
 Anchor Length 66 Drill Pipe Run 3899 Mud Wt. 9.1
 Top Packer Depth 4123 Drill Collars Run 205 Vis 64
 Bottom Packer Depth 4128 Wt. Pipe Run - WL 6.8
 Total Depth 4194 Chlorides 800 ppm System LCM 10

Blow Description IF: Weak surface blow, dead at 25 min.
ISI: No blow
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>1</u>	<u>Mud w oil spots</u>	<u>2</u>	<u>3</u>	<u>95</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 1 BHT 125 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2164 Test 1150 T-On Location 23:45 4/1
 (B) First Initial Flow 17 Jars 250 T-Started 1:39
 (C) First Final Flow 18 Safety Joint 75 T-Open 3:49
 (D) Initial Shut-In 62 Circ Sub _____ T-Pulled 6:52
 (E) Second Initial Flow 18 Hourly Standby _____ T-Out 8:45 4/2
 (F) Second Final Flow 19 Mileage 122 RT 91.50
 (G) Final Shut-In 40 Sampler _____
 (H) Final Hydrostatic 2145 Straddle _____

Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Extra Packer _____
 Initial Shut-In 60 Extra Recorder _____
 Final Flow 30 Day Standby _____
 Final Shut-In 60 Accessibility _____
 Sub Total 1566.50

Approved By Rh D Why Our Representative James Windes

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. **65431**

Well Name & No. Carolyn 'A' #1-24 Test No. 3 Date 4-2-17
 Company Murfin Drilling Co. Inc Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4228 - 4285 Zone Tested Lans. "A"
 Anchor Length 57 Drill Pipe Run 4022 Mud Wt. 9.1
 Top Packer Depth 4223 Drill Collars Run 205 Vis 60
 Bottom Packer Depth 4228 Wt. Pipe Run - WL 7.6
 Total Depth 4285 Chlorides 700 ppm System LCM 10
 Blow Description IF: 1/4" Blow at open, built to 1/2", died back to weak surface blow
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>mud w/oil spots</u>		<u>4</u>		<u>96</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 2 BHT 127 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2181 Test 1150 T-On Location 20:40 4/2
 (B) First Initial Flow 18 Jars 250 T-Started 21:38
 (C) First Final Flow 17 Safety Joint 75 T-Open 23:50
 (D) Initial Shut-In 134 Circ Sub _____ T-Pulled 2:53
 (E) Second Initial Flow 15 Hourly Standby _____ T-Out 5:00
 (F) Second Final Flow 18 Mileage 9122 RT 91.50 Comments _____
 (G) Final Shut-In 62 Sampler _____
 (H) Final Hydrostatic 2170 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

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

Sub Total 1566.50

Sub Total 1566.50

MP/DST Disc't _____

Approved By: [Signature] 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. **65432**

Well Name & No. Carolyn 'A' #1-24 Test No. 4 Date 4-3-17
 Company Murfin Drilling Co. Inc Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1s Rge. 37W Co. Cheyenne State KS

Interval Tested 4280 - 4340 Zone Tested Lans "D"
 Anchor Length 60 Drill Pipe Run 4053 Mud Wt. 9.0
 Top Packer Depth 4275 Drill Collars Run 205 Vis 79
 Bottom Packer Depth 4280 Wt. Pipe Run - WL 6.8
 Total Depth 4340 Chlorides 700 ppm System LCM 11

Blow Description IF: Blow built to BOB (11") at 9 3/4 min.
ISI: Blowback built to 4"
FF: Blow built to BOB at 14 1/4 min
FSI: Blowback built to 2"

Rec	Feet of	%gas	%oil	%water	%mud
<u>665</u>	<u>C60</u>	<u>23</u>	<u>77</u>	<u>-</u>	<u>-</u>
<u>80</u>	<u>60cm</u>	<u>10</u>	<u>25</u>	<u>-</u>	<u>65</u>
<u>117</u>	<u>6mco</u>	<u>13</u>	<u>73</u>	<u>-</u>	<u>14</u>
<u>58</u>	<u>60cm</u>	<u>15</u>	<u>30</u>	<u>-</u>	<u>55</u>
<u>Rec</u>	<u>Feet of GIP = 190'</u>	<u>%gas</u>	<u>%oil</u>	<u>%water</u>	<u>%mud</u>

Rec Total 920 BHT 138 Gravity 24.8 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2253 Test 1150 T-On Location 14:20 4/3
 (B) First Initial Flow 37 Jars 250 T-Started 16:55
 (C) First Final Flow 153 Safety Joint 75 T-Open 18:57
 (D) Initial Shut-In 1058 Circ Sub _____ T-Pulled 22:59
 (E) Second Initial Flow 165 Hourly Standby 1.75h 140 T-Out 2:00 4/4
 (F) Second Final Flow 300 Mileage 122 RT 91.50 Comments Rig unloaded casing during trip out w/bit
 (G) Final Shut-In 1047 Sampler _____
 (H) Final Hydrostatic 2157 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 1706.50

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. **65433**

Well Name & No. Carolyn 'A' # 1-24 Test No. 5 Date 4-4-17
 Company Murfin Drilling Co. Inc. Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 15 Rge. 37w Co. Cheyenne State KS

Interval Tested 4348 - 4396 Zone Tested Lans "G"
 Anchor Length 48 Drill Pipe Run 4118 Mud Wt. 9.2
 Top Packer Depth 4343 Drill Collars Run 205 Vis 90
 Bottom Packer Depth 4348 Wt. Pipe Run - WL 7.2
 Total Depth 4396 Chlorides 800 ppm System LCM 11

Blow Description IF: Blow built to 1 3/4"
ISI: No blowback
FF: Weak surface blow, on/off through open
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>0cm</u>	<u>-</u>	<u>10</u>	<u>90</u>	<u>0</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

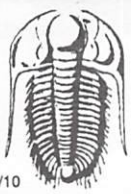
Rec Total 30 BHT 129 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2317 Test 1150 T-On Location 12:20
 (B) First Initial Flow 23 Jars 250 T-Started 13:08
 (C) First Final Flow 30 Safety Joint 75 T-Open 14:56
 (D) Initial Shut-In 203 Circ Sub _____ T-Pulled 18:59
 (E) Second Initial Flow 26 Hourly Standby _____ T-Out 21:15
 (F) Second Final Flow 34 Mileage 122 RT 91.50 Comments some tool
 (G) Final Shut-In 172 Sampler _____ plugging on both
 (H) Final Hydrostatic 2299 Straddle _____ opens

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 1566.50
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1566.50

Approved By [Signature] Our Representative James Winkler

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65434**

Well Name & No. Carolyn 'A' #1-24 Test No. 6 Date 4-5-17
 Company Murfin Drilling Co Inc. Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4422 - 4482 Zone Tested Lans "J"
 Anchor Length 60 Drill Pipe Run 4210 Mud Wt. 9.2
 Top Packer Depth 4417 Drill Collars Run 205 Vis 84
 Bottom Packer Depth 4422 Wt. Pipe Run - WL 6.4
 Total Depth 4482 Chlorides 800 ppm System LCM 11
 Blow Description IF: Blow built to BOB at 5 1/4 min
ISI: Blowback built to BOB at 50 min.
FF: Blow built to BOB at 6 3/4 min
FSI: Blowback built to BOB at ~~22~~ 22 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>165</u>	<u>C60</u>	<u>18</u>	<u>82</u>	<u>-</u>	<u>-</u>
<u>REV out 685'</u>	<u>C60</u>	<u>8</u>	<u>92</u>	<u>-</u>	<u>-</u>
<u>117</u>	<u>60CM</u>	<u>19</u>	<u>28</u>	<u>-</u>	<u>53</u>
<u>58</u>	<u>50CM</u>	<u>40</u>	<u>5</u>	<u>-</u>	<u>55</u>
	<u>GIP = 1200'</u>				
Rec Total	<u>1025</u>	BHT	<u>138</u>	Gravity	<u>33.6</u>
				API RW	@ <u> </u> °F Chlorides <u> </u> ppm

(A) Initial Hydrostatic 2331 Test 1150 T-On Location 10:20
 (B) First Initial Flow 85 Jars 250 T-Started 11:23
 (C) First Final Flow 197 Safety Joint 75 T-Open 13:08
 (D) Initial Shut-In 1279 Circ Sub Drop Bar 50 T-Pulled 17:09
 (E) Second Initial Flow 210 Hourly Standby T-Out 21:00
 (F) Second Final Flow 389 Mileage 122RT 91.50 Comments
 (G) Final Shut-In 1248 Sampler
 (H) Final Hydrostatic 2275 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies
 Extra Recorder Sub Total 0
 Day Standby Total 1616.50
 Accessibility MP/DST Disc't
 Sub Total 1616.50

Approved By R.D. [Signature]

Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65435**

Well Name & No. Carolyn 'A' #1-24 Test No. 7 Date 4-7-17
 Company Murfin Drilling Co. Inc. Elevation 3342 KB 3337 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #24
 Location: Sec. 24 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4632 - 4706 Zone Tested Ft. Scott
 Anchor Length 74 Drill Pipe Run 4425 Mud Wt. 9.0
 Top Packer Depth 4627 Drill Collars Run 205 Vis 80
 Bottom Packer Depth 4632 Wt. Pipe Run - WL 6.8
 Total Depth 4706 Chlorides 800 ppm System LCM 10

Blow Description IF: Blow built to just over 1"
ISI: No blowback
FF ~~ISI~~ Surface blow through open
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>mud w/oil spots</u>		<u>2</u>		<u>98</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 132 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2437</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>00:15</u>
(B) First Initial Flow <u>17</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>00:35</u>
(C) First Final Flow <u>21</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>2:55</u>
(D) Initial Shut-In <u>704</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>6:56</u>
(E) Second Initial Flow <u>20</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>9:00</u>
(F) Second Final Flow <u>23</u>	<input checked="" type="checkbox"/> Mileage <u>122 RT x 2</u> 183	Comments <u>Some plugging on both opens</u>
(G) Final Shut-In <u>453</u>	<input type="checkbox"/> Sampler _____	
(H) Final Hydrostatic <u>2355</u>	<input type="checkbox"/> Straddle _____	
	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1658</u>
	Sub Total <u>1658</u>	MP/DST Disc't _____

Approved By [Signature] Our Representative James Winder

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