

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
--	---

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) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
---	--	------------------------------------

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:	
----------------	-------	---------	------------	--

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Munn 1-12
Doc ID	1309149

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Munn 1-12
Doc ID	1309149

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	4224-4230 LKC D	550g 20% MCA, 500g 20% MCA	
4	4280-4283 LKC G	550g 20% MCA, 500g 20% MCA	
4	4294-4297 LKC G		
4	4368-4373 LKC J	300g 20% MCA, 400g 20% MCA, 500g 20%MCA	
3	4558-4563 Pawnee	300g 20% MCA, 1000g 20% MCA	
3	4568-4573 Pawnee		



250 N. Water, Ste 200 - Wichita, Ks 67202

HURRICANE SERVICES INC

104 Prairie Plaza Parkway - Garnett, Ks 66032

Customer: Murfin Drilling Co.		Element Name:		Ticket No.: 100733		
Address:		AFE No.:		Date: 6/3/2016		
City, State, Zip:		Job type: Surface Pipe				
Service District: Garnett		Well Details: 260' of 12 1/4" Hole 266' of 8 5/8" casing (23 lb)				
Well name & No.: Munn #1-12		Well Location: 12-2a-38w		County: Cheyenne	State: Kansas	
Equipment #	Driver	Equipment #	Driver	Equipment #	Driver	Time
230	Tom					12:00 PM
240	J.P.					10:pm
242	Wes					2:15
30	Brad					3:00
RELEASED						3:30
MILES FROM STATION TO WELL						

Treatment Summary

Rig up to 8 5/8" casing, break circulation w/ 5 Bbls water ahead, mixed 250 sks Reg.cement w/ 2% gel and 3% caciz @ 14.8 lb per/gal Displaced cement with 16 Bbls water, final pumping 300 psi. Shut down - close casing in with good cement returns (3 Bbls slurry) Job Complete Wash up & tear down
"Thank You"

Product/Service Code	Description	Unit of Measure	Quantity	List Price/Unit	Gross Amount	Net Amount
c23001	Cement Pump	ea	1.00	\$790.00	\$790.00	\$474.00
c00101	Heavy Equip. One Way	mi	160.00	\$3.25	\$520.00	\$312.00
c00103	Ton Mileage - One way	mi	940.00	\$1.30	\$1,222.00	\$733.20
p01600	Regular - Class A Cement	sack	250.00	\$14.85	\$3,712.50	\$2,227.50
p01607	Gel - 2%	lb	470.00	\$0.30	\$141.00	\$84.60
p01608	Calcium - Chloride	lb	700.00	\$0.75	\$525.00	\$315.00
p01656	8 5/8 - Centralizer x 12 1/4	ea	2.00	\$90.00	\$180.00	\$113.40
c00102	Light Equip. One Way	mi	80.00	\$1.50	\$120.00	\$72.00
	Late Charge - 2 hours					(\$650.00)

TERMS: Cash in advance unless Hurricane Services Inc has approved credit prior to sale. Credit terms of sale for approved accounts are total invoice due on or before the 30th day from the date of invoice. Past due accounts may pay interest on the balance past due at the rate of 1 1/2% per month or the maximum allowable by applicable state or federal laws if such laws limit interest to a lesser amount. In the event it is necessary to employ an agency and/or attorney to effect the collection of said account, Customer hereby agrees to pay all fees directly or indirectly incurred for such collection. In the event that Customer's account with HSI becomes delinquent, HSI has the right to revoke any and all discounts previously applied in arriving at net invoice price. Upon revocation, the full invoice price without discount will become immediately due and owing and subject to collection. Authorization below acknowledges receipt and acceptance of all terms and conditions including the Standard Terms of Sale.

X _____
CUSTOMER AUTHORIZED AGENT

Customer Comments or Concerns:

Gross:		\$ 7,210.50	Net:	\$ 3,681.70
Total Taxable	\$2,740.50	Tax Rate:	8.150%	
Frac and Acid service treatments designed with intent to increase production on newly drilled or existing wells are not taxable.		Sale Tax:	\$ 223.35	
		Total:	\$ 3,905.05	

Date of Service: **6/3/2016**

HSI Representative: **Brad Butler**

Customer Representative:

ALLIED OFS, LLC

68001

P.O. BOX 205803
Dallas, TX 75320-5803

SERVICE POINT:

Ogkley

DATE <u>6-10-16</u>	SEC <u>12</u>	TWP. <u>25</u>	RANGE <u>38W</u>	CALLED OUT	ON LOCATION <u>1:00 AM</u>	JOB START <u>2:30 AM</u>	JOB FINISH <u>8:20</u>
Munn LEASE	WELL.# <u>1-12</u>	LOCATION <u>Bird city 9 1/2 N 3/4 E</u>		COUNTY <u>Cheyenne</u>	STATE <u>KS</u>		
OLD OR NEW (Circle one) <u>NEW</u>		Circle one					
		<u>YAN into</u>					

CONTRACTOR <u>Munn 3</u>	OWNER <u>Same</u>
TYPE OF JOB <u>Production</u>	
HOLE SIZE <u>7 7/8</u>	T.D. <u>4860'</u>
CASING SIZE <u>5 1/2</u>	DEPTH <u>4858'</u>
TUBING SIZE	DEPTH
DRILL PIPE	DEPTH
TOOL	DEPTH
PRES. MAX	MINIMUM
MEAS. LINE	SHOE JOINT <u>21.68</u>
CEMENT LEFT IN CSG.	
PERFS.	
DISPLACEMENT <u>112.20</u>	

EQUIPMENT

PUMP TRUCK # <u>431</u>	CEMENTER <u>Andrew Fairhead</u>	HELPER <u>Wayne Mahoney</u>
BULK TRUCK # <u>373</u>	DRIVER <u>Kevin Ryan</u>	
BULK TRUCK # <u>890</u>	DRIVER <u>Cory Brown</u>	

CEMENT <u>285 sks</u>	AMOUNT ORDERED <u>Allied multi-Density 285 sks</u>
	<u>285 sks 40 gal 1/2 float seal, 265 sks ASC</u>
	<u>285 sks 50 gal 285 gal 5" sk seal - see 1</u>
	<u>50 sks 40 gal 40 gal 12 1/2 Hivis</u>
COMMON	@
POZMIX	@
GEL	@
CHLORIDE	@
ASC <u>265 sks</u>	@ <u>27.50</u> <u>7277.50</u>
	@
Hivis <u>12 1/2</u>	@ <u>58.20</u> <u>704.40</u>
Allied multi-Density cement	@ <u>26.57</u> <u>7572.45</u>
Cellophane Flakes <u>72#</u>	@ <u>2.97</u> <u>213.84</u>
Kid-seal <u>1325#</u>	@ <u>1.98</u> <u>2623.50</u>
40 gal 40 gal <u>50 sks</u>	@ <u>18.92</u> <u>946.00</u>
	@
	@
TOTAL	<u>16,962.69</u>

DISCOUNT 60% 10,177.61

REMARKS:

Pump 12 1/2 Hivis, Plug mousehole 20 sks
cat hole 30 sks with 40 gal 1/2 mix 285
skt and followed by 265 sks ASC down
5 1/2 casing, wash pump and line clean
Release plug and Displace 1500' LIFT
Pressure and Plug 2500' Float held
Circulated approx 30 BBL TO FIT

Thank you

CHARGE TO: Munn
STREET _____
CITY _____ STATE _____ ZIP _____

SERVICE

HANDLING <u>728 cu/ft</u>	@ <u>2.48</u>	<u>1805.44</u>
MILEAGE <u>2.25 ton/mile</u>	<u>126.4</u>	<u>342.00</u>
DEPTH OF JOB <u>4858'</u>		
PUMP TRUCK CHARGE		<u>275.25</u>
EXTRA FOOTAGE	@	
HV MILEAGE <u>40 miles</u>	@ <u>7.70</u>	<u>308.00</u>
LV MILEAGE <u>40 miles</u>	@ <u>4.10</u>	<u>174.00</u>
Head manifold	@	<u>275.00</u>
	@	
TOTAL		<u>8806.19</u>
DISCOUNT <u>60%</u>		<u>5,283.71</u>

PLUG & FLOAT EQUIPMENT

<u>5 1/2</u>	1 AFU FLOAT shoe	@	<u>545.00</u>
	1 catch down plug Assy	@	<u>460.00</u>
	3 Baskets	@	<u>395.00</u> <u>1185.00</u>
	15 Turbo Lizers	@	<u>95.00</u> <u>1425.00</u>
	10 Rotating scratchers	@	<u>141.00</u> <u>1410.00</u>
	TOTAL		<u>5,225.00</u>
	DISCOUNT <u>60%</u>		<u>3,135.00</u>

To: Allied OFS, 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 _____
SIGNATURE [Signature]

SALES TAX (If Any) _____
TOTAL CHARGES 30,993.88
DISCOUNT 18,073.88 (60%) IF PAID IN 30 DAYS
NET TOTAL 12,920.00 IF PAID IN 30 DAYS

Bid

MDCI
Munn #1-12
1770' FSL 450' FEL
Sec. 12-T2S-R38W
3228' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3137	+91	+29	3135	+93	+31
B/Anhydrite	3172	+56	+24	3168	+60	+28
Neva	3610	-382	+19	3600	-372	+29
Red Eagle	3672	-444	+24	3666	-438	+30
Foraker	3720	-492	+27	3718	-490	+29
Topeka	3940	-712	+27	3938	-710	+29
Oread	4090	-862	+25	4085	-857	+30
Lansing	4156	-928	+28	4153	-925	+31
Stark	4385	-1157	+28	4383	-1155	+30
BKC	4436	-1208	+28	4432	-1204	+31
Pawnee	4564	-1336	+27	4559	-1331	+32
Cherokee	4638	-1410	+30	4640	-1412	+28
Mississippi	NR			NR		
RTD	4860	-1632				
LTD				4858	-1630	



DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

Munn #1-12

12-2s-38w Cheyenne KS

Start Date: 2016.06.07 @ 02:53:00

End Date: 2016.06.07 @ 11:15:00

Job Ticket #: 65347 DST #: 1

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

Printed: 2016.06.13 @ 15:51:17



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65347

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 02:53:00

GENERAL INFORMATION:

Formation: **LKC "A"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:18:30

Time Test Ended: 11:15:00

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 4116.00 ft (KB) To 4180.00 ft (KB) (TVD)

Reference Elevations: 3228.00 ft (KB)

Total Depth: 4180.00 ft (KB) (TVD)

3223.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6769

Inside

Press@RunDepth: 24.62 psig @ 4117.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.06.07 End Date: 2016.06.07

Last Calib.: 2016.06.07

Start Time: 02:53:05 End Time: 11:14:59

Time On Btm: 2016.06.07 @ 05:18:15

Time Off Btm: 2016.06.07 @ 08:21:00

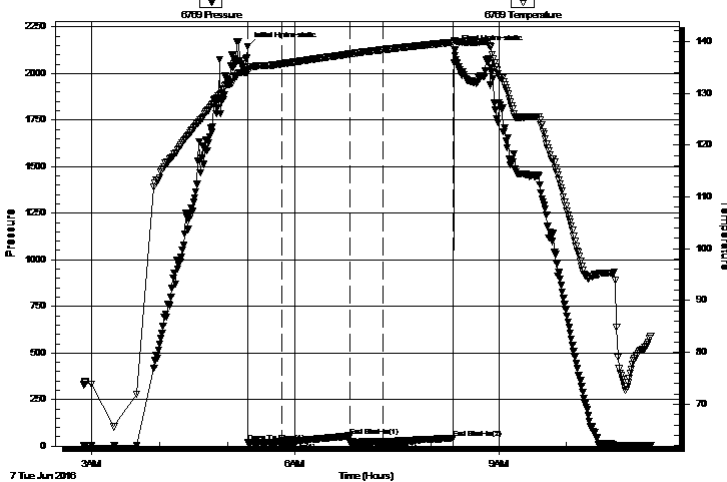
TEST COMMENT: 30 - IF: Blow built to 3/4" at 15 min., died back to 1/4" at close

60 - IS: No blow back

30 - FF: No blow

60 - FS: No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2145.16	134.42	Initial Hydro-static
1	20.16	134.22	Open To Flow (1)
30	22.79	135.65	Shut-In(1)
91	55.03	137.54	End Shut-In(1)
91	21.44	137.53	Open To Flow (2)
120	24.62	138.38	Shut-In(2)
181	42.73	139.81	End Shut-In(2)
183	2125.55	140.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
4.00	SOCM 96% m, 4% o	0.02

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65347

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 02:53:00

Tool Information

Drill Pipe:	Length: 3894.00 ft	Diameter: 3.80 inches	Volume: 54.62 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 208.00 ft	Diameter: 2.25 inches	Volume: 1.02 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 55.64 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 52000.00 lb
Depth to Top Packer:	4116.00 ft			Final 52000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	64.00 ft			
Tool Length:	93.00 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			4088.00	
Shut In Tool	5.00			4093.00	
Hydraulic tool	5.00			4098.00	
Jars	5.00			4103.00	
Safety Joint	3.00			4106.00	
Packer	5.00			4111.00	29.00 Bottom Of Top Packer
Packer	5.00			4116.00	
Stubb	1.00			4117.00	
Recorder	0.00	6769	Inside	4117.00	
Recorder	0.00	8366	Outside	4117.00	
Perforations	25.00			4142.00	
Blank Spacing	33.00			4175.00	
Perforations	2.00			4177.00	
Bullnose	3.00			4180.00	64.00 Bottom Packers & Anchor

Total Tool Length: 93.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65347

DST#: 1

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 02:53:00

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: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.36 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
4.00	SOCM 96% m, 4% o	0.020

Total Length: 4.00 ft Total Volume: 0.020 bbl

Num Fluid Samples: 0

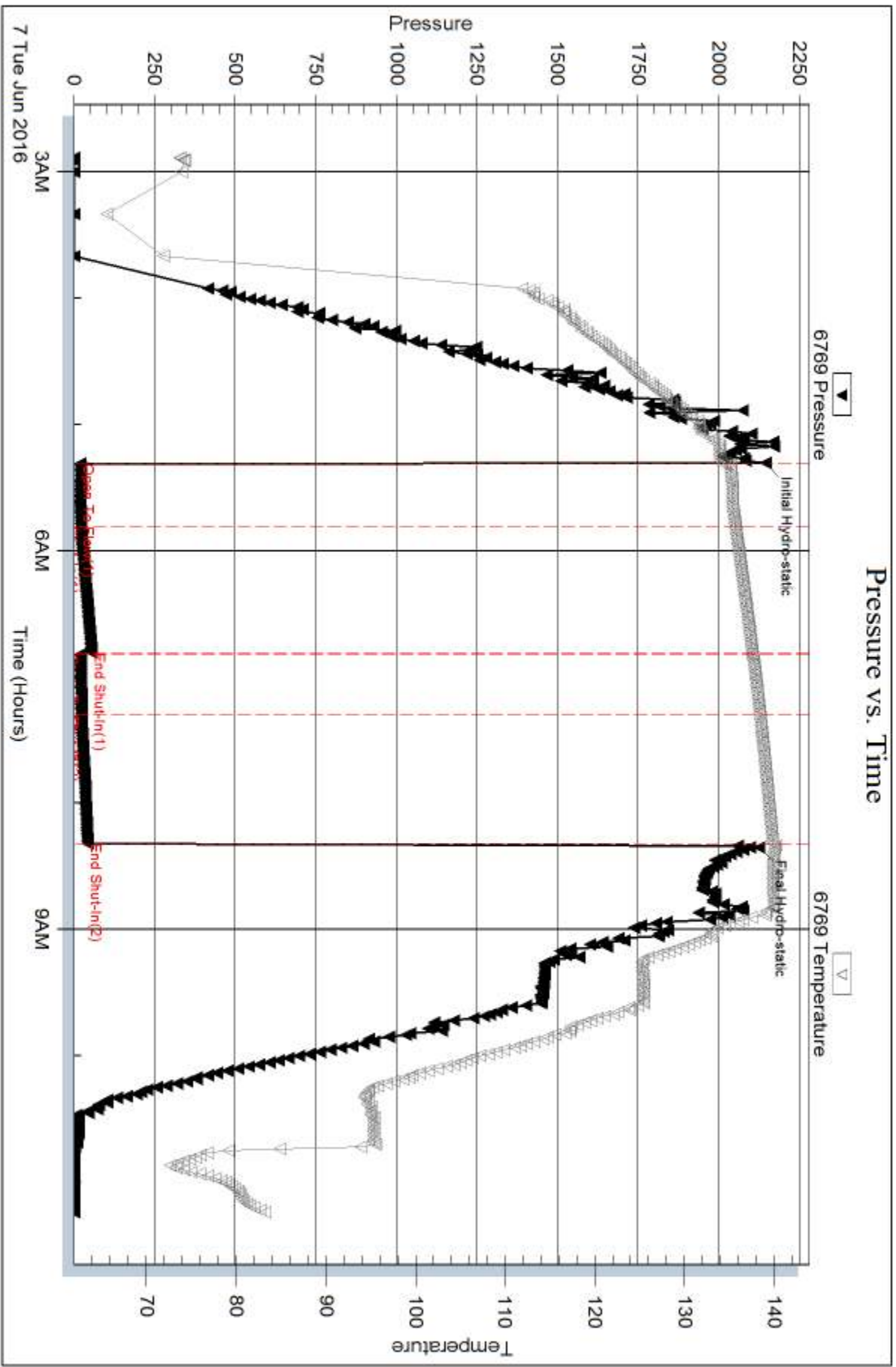
Num Gas Bombs: 0

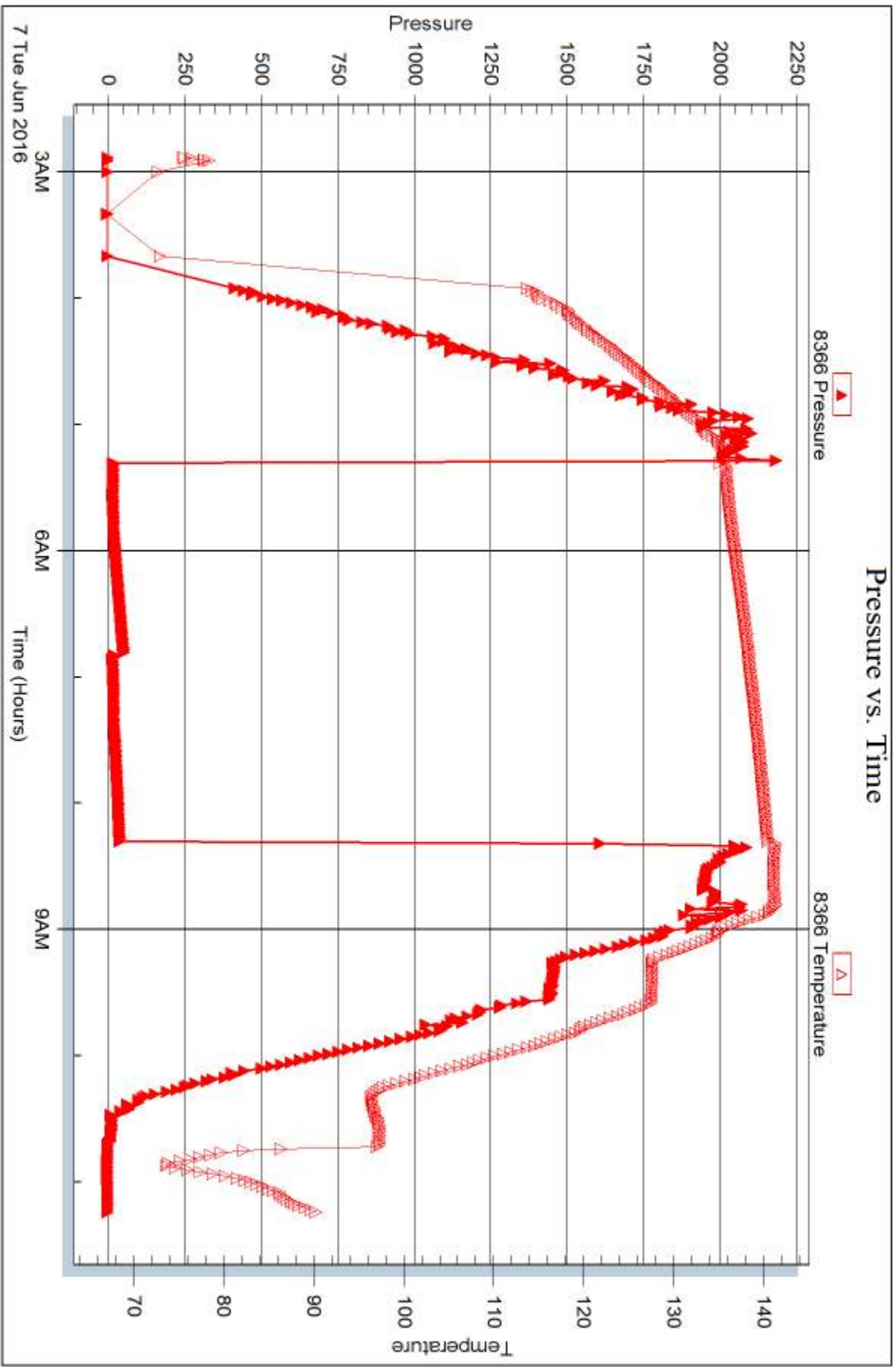
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

Munn #1-12

12-2s-38w Cheyenne KS

Start Date: 2016.06.07 @ 19:48:00

End Date: 2016.06.08 @ 04:00:00

Job Ticket #: 65348 DST #: 2

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

Printed: 2016.06.13 @ 15:49:58



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65348

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 19:48:00

GENERAL INFORMATION:

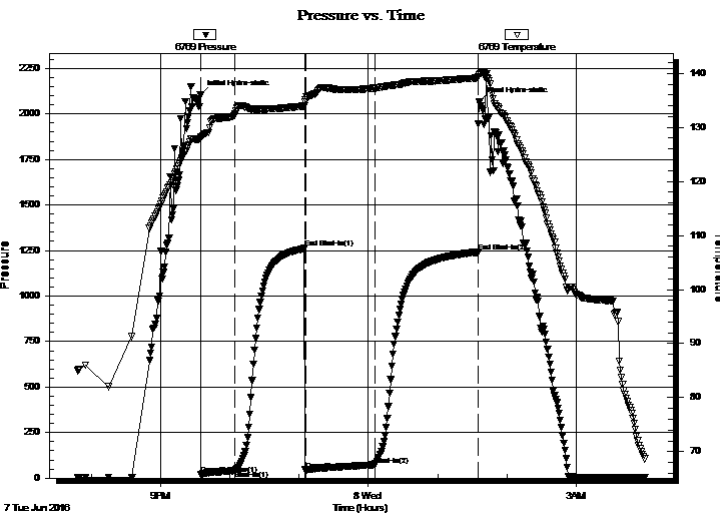
Formation: **LKC "D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 21:34:30
 Time Test Ended: 04:00:00
 Interval: **4178.00 ft (KB) To 4250.00 ft (KB) (TVD)**
 Total Depth: 4250.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: James Winder
 Unit No: 83
 Reference Elevations: 3228.00 ft (KB)
 3223.00 ft (CF)
 KB to GR/CF: 5.00 ft

Serial #: 6769

Inside

Press@RunDepth: 72.76 psig @ 4179.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.06.07 End Date: 2016.06.08 Last Calib.: 2016.06.08
 Start Time: 19:48:05 End Time: 03:59:59 Time On Btm: 2016.06.07 @ 21:34:15
 Time Off Btm: 2016.06.08 @ 01:36:15

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 4"
 60 - IS: No blow back
 60 - FF: Blow built to 8 3/4"
 90 - FS: No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2104.21	127.92	Initial Hydro-static
1	21.11	128.03	Open To Flow (1)
31	41.22	132.46	Shut-In(1)
91	1261.69	133.95	End Shut-In(1)
92	43.83	135.15	Open To Flow (2)
151	72.76	137.26	Shut-In(2)
241	1239.81	139.15	End Shut-In(2)
242	2064.83	139.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	OCM 58% _m , 39% _o , 3% _g	0.59
2.00	CO 98% _o , 1% _g , 1% _m	0.01
0.00	GIP = 125'	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.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65348

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 19:48:00

Tool Information

Drill Pipe:	Length: 3961.00 ft	Diameter: 3.80 inches	Volume: 55.56 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 208.00 ft	Diameter: 2.25 inches	Volume: 1.02 bbl	Weight to Pull Loose: 58000.00 lb
			<u>Total Volume: 56.58 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 55000.00 lb
Depth to Top Packer:	4178.00 ft			Final 55000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	72.00 ft			
Tool Length:	96.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4155.00	
Shut In Tool	5.00			4160.00	
Hydraulic tool	5.00			4165.00	
Safety Joint	3.00			4168.00	
Packer	5.00			4173.00	24.00 Bottom Of Top Packer
Packer	5.00			4178.00	
Stubb	1.00			4179.00	
Recorder	0.00	6769	Inside	4179.00	
Recorder	0.00	8366	Outside	4179.00	
Perforations	32.00			4211.00	
Blank Spacing	33.00			4244.00	
Perforations	3.00			4247.00	
Bullnose	3.00			4250.00	72.00 Bottom Packers & Anchor

Total Tool Length: 96.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65348

DST#: 2

ATTN: Paul Gunzelman

Test Start: 2016.06.07 @ 19:48:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 57.00 sec/qt
Water Loss: 8.35 in³
Resistivity: ohm.m
Salinity: 700.00 ppm
Filter Cake: 2.00 inches

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

Oil API: 31.2 deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	OCM 58% <i>m</i> , 39% <i>o</i> , 3% <i>g</i>	0.590
2.00	CO 98% <i>o</i> , 1% <i>g</i> , 1% <i>m</i>	0.010
0.00	GIP = 125'	0.000

Total Length: 122.00 ft Total Volume: 0.600 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

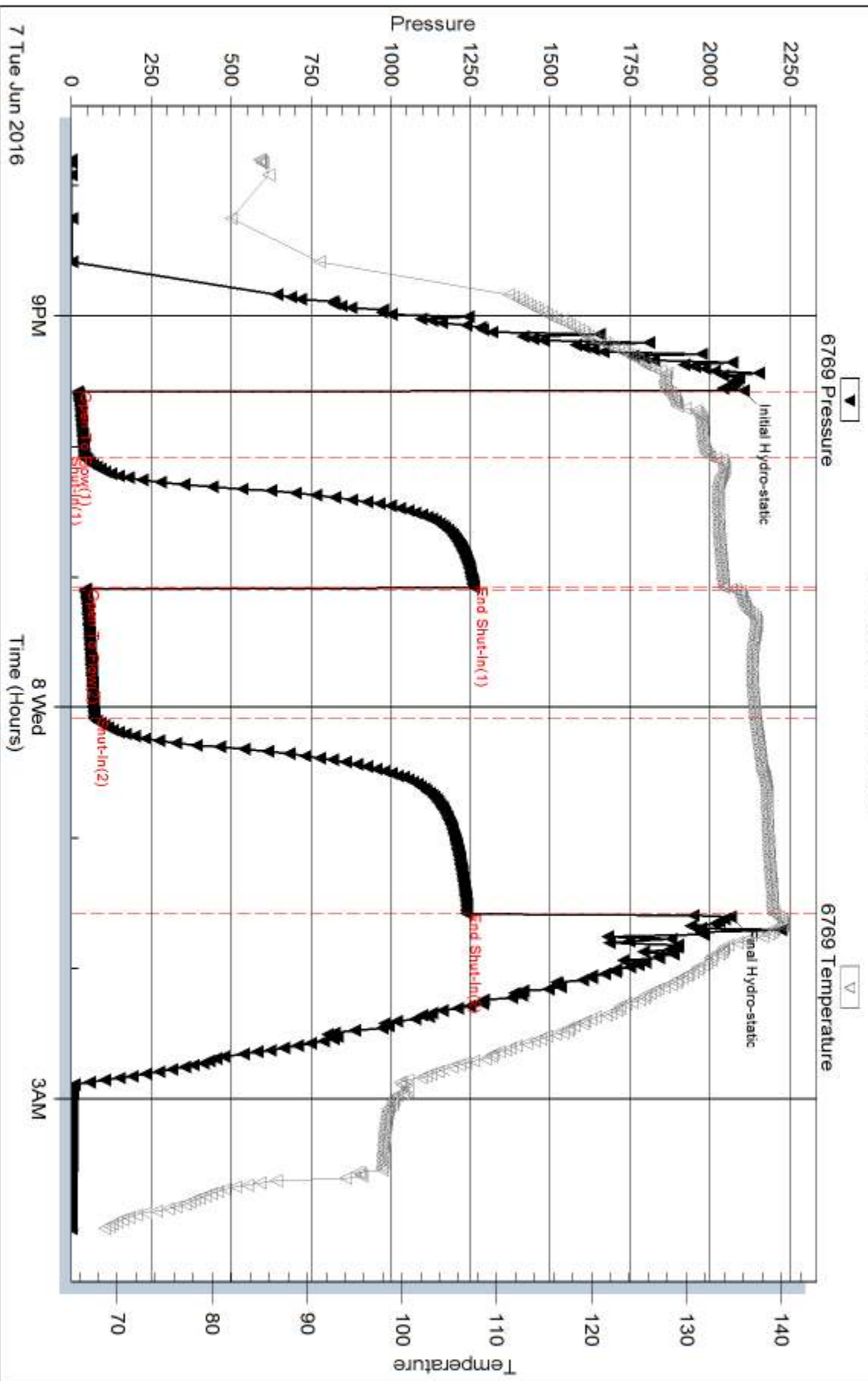
Serial #:

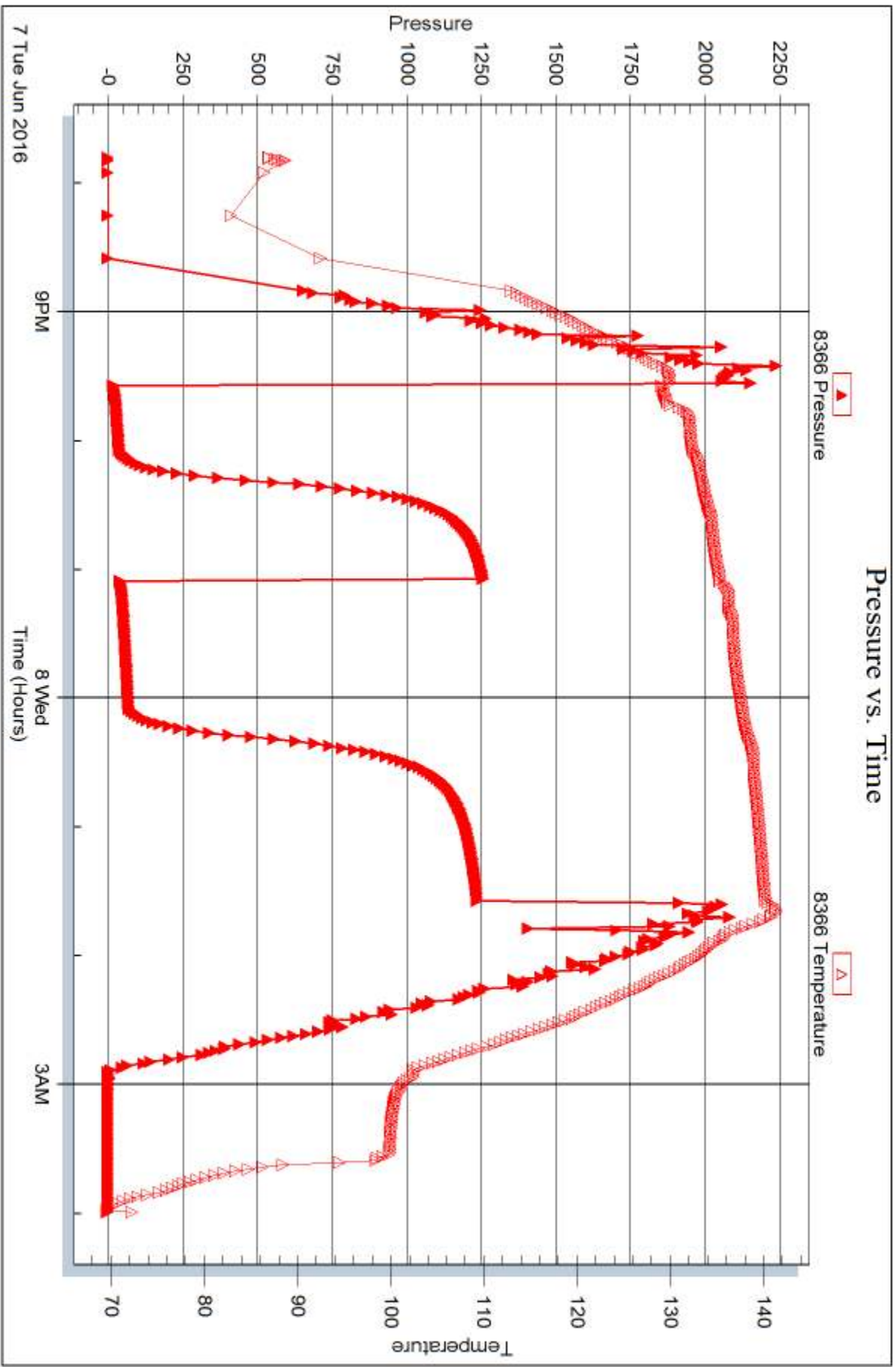
Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 32.4 api @ 72 deg F
Corrected Gravity = 31.2 api

Pressure vs. Time







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

Munn #1-12

12-2s-38w Cheyenne KS

Start Date: 2016.06.08 @ 12:33:05

End Date: 2016.06.08 @ 20:00:59

Job Ticket #: 65349 DST #: 3

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

Printed: 2016.06.13 @ 15:49:31



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65349

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2016.06.08 @ 12:33:05

GENERAL INFORMATION:

Formation: **LKC "G"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:38:45

Time Test Ended: 20:00:59

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4248.00 ft (KB) To 4298.00 ft (KB) (TVD)

Reference Elevations: 3228.00 ft (KB)

Total Depth: 4298.00 ft (KB) (TVD)

3223.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6769

Inside

Press@RunDepth: 186.69 psig @ 4249.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.06.08

End Date:

2016.06.08

Last Calib.:

2016.06.08

Start Time:

12:33:05

End Time:

20:00:59

Time On Btm:

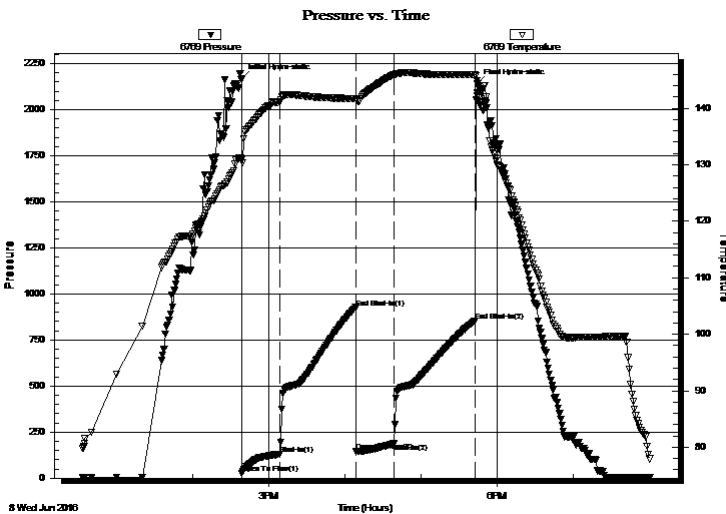
2016.06.08 @ 14:38:30

Time Off Btm:

2016.06.08 @ 17:44:29

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 9 1/2 min.
60 - IS: Blow back built to 7 1/2"
30 - FF: Blow built to BOB at 11 min.
60 - FS: Blow back built to BOB at 29 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2166.50	131.06	Initial Hydro-static
1	27.58	131.00	Open To Flow (1)
30	131.30	141.10	Shut-In(1)
90	925.74	141.72	End Shut-In(1)
91	145.78	141.65	Open To Flow (2)
120	186.69	145.90	Shut-In(2)
184	853.66	145.96	End Shut-In(2)
186	2139.53	142.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
208.00	GOCM 61% m, 23% o, 16% g	1.02
31.00	SMCO 90% o, 6% m, 4% g	0.43
203.00	SGO 72% o, 26% g, 2% m	2.85
0.00	GIP = 915'	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.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65349

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2016.06.08 @ 12:33:05

Tool Information

Drill Pipe:	Length: 4024.00 ft	Diameter: 3.80 inches	Volume: 56.45 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 208.00 ft	Diameter: 2.25 inches	Volume: 1.02 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 57.47 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 56000.00 lb
Depth to Top Packer:	4248.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	74.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4225.00	
Shut In Tool	5.00			4230.00	
Hydraulic tool	5.00			4235.00	
Safety Joint	3.00			4238.00	
Packer	5.00			4243.00	24.00 Bottom Of Top Packer
Packer	5.00			4248.00	
Stubb	1.00			4249.00	
Recorder	0.00	6769	Inside	4249.00	
Recorder	0.00	8366	Outside	4249.00	
Perforations	13.00			4262.00	
Blank Spacing	33.00			4295.00	
Bullnose	3.00			4298.00	50.00 Bottom Packers & Anchor

Total Tool Length: 74.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65349

DST#: 3

ATTN: Paul Gunzelman

Test Start: 2016.06.08 @ 12:33:05

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

29.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.36 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 bbbl
208.00	GOCM 61%m, 23%o, 16%g	1.023
31.00	SMCO 90%o, 6%m, 4%g	0.435
203.00	SGO 72%o, 26%g, 2%m	2.848
0.00	GIP = 915'	0.000

Total Length: 442.00 ft Total Volume: 4.306 bbl

Num Fluid Samples: 0

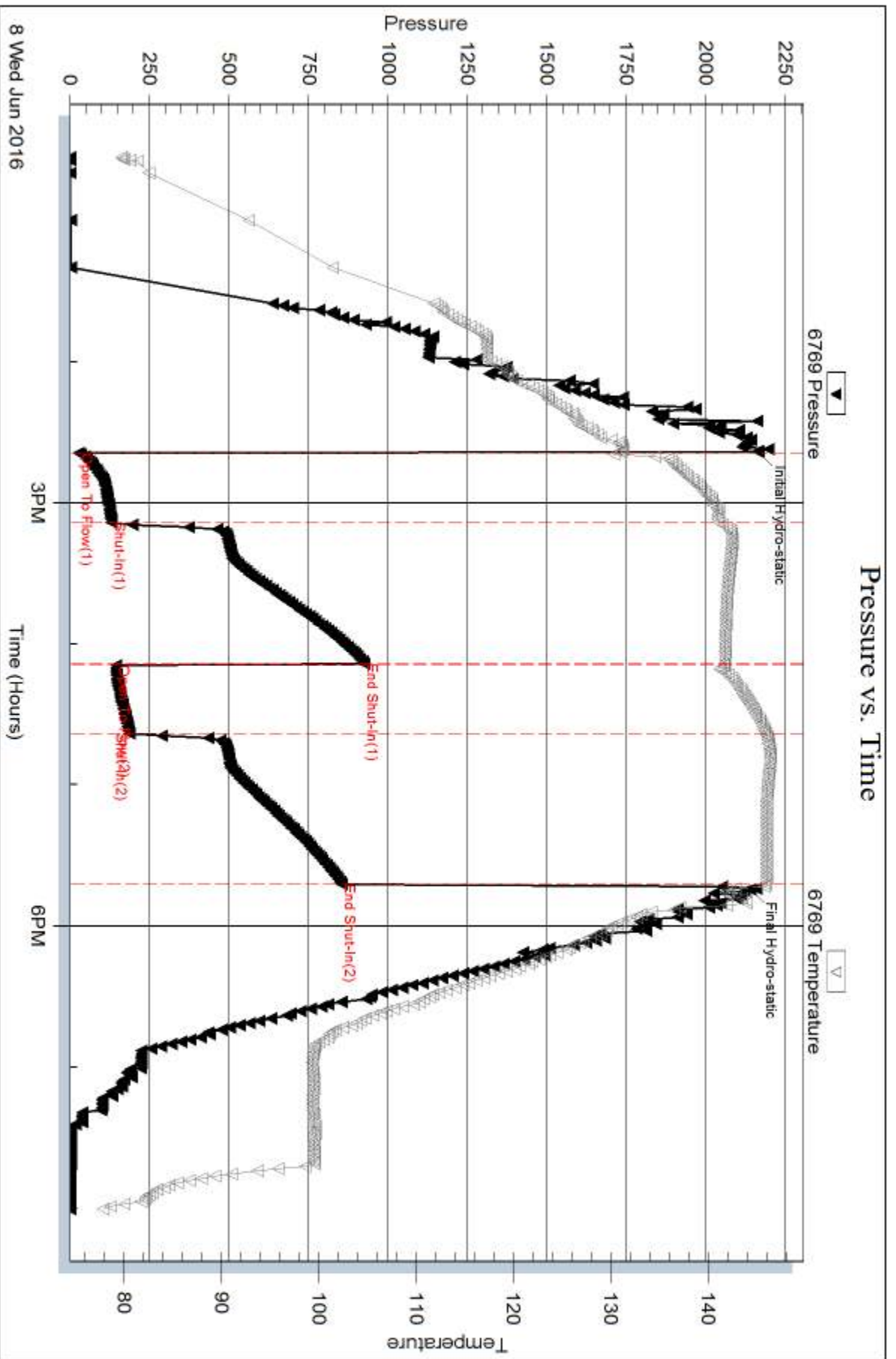
Num Gas Bombs: 0

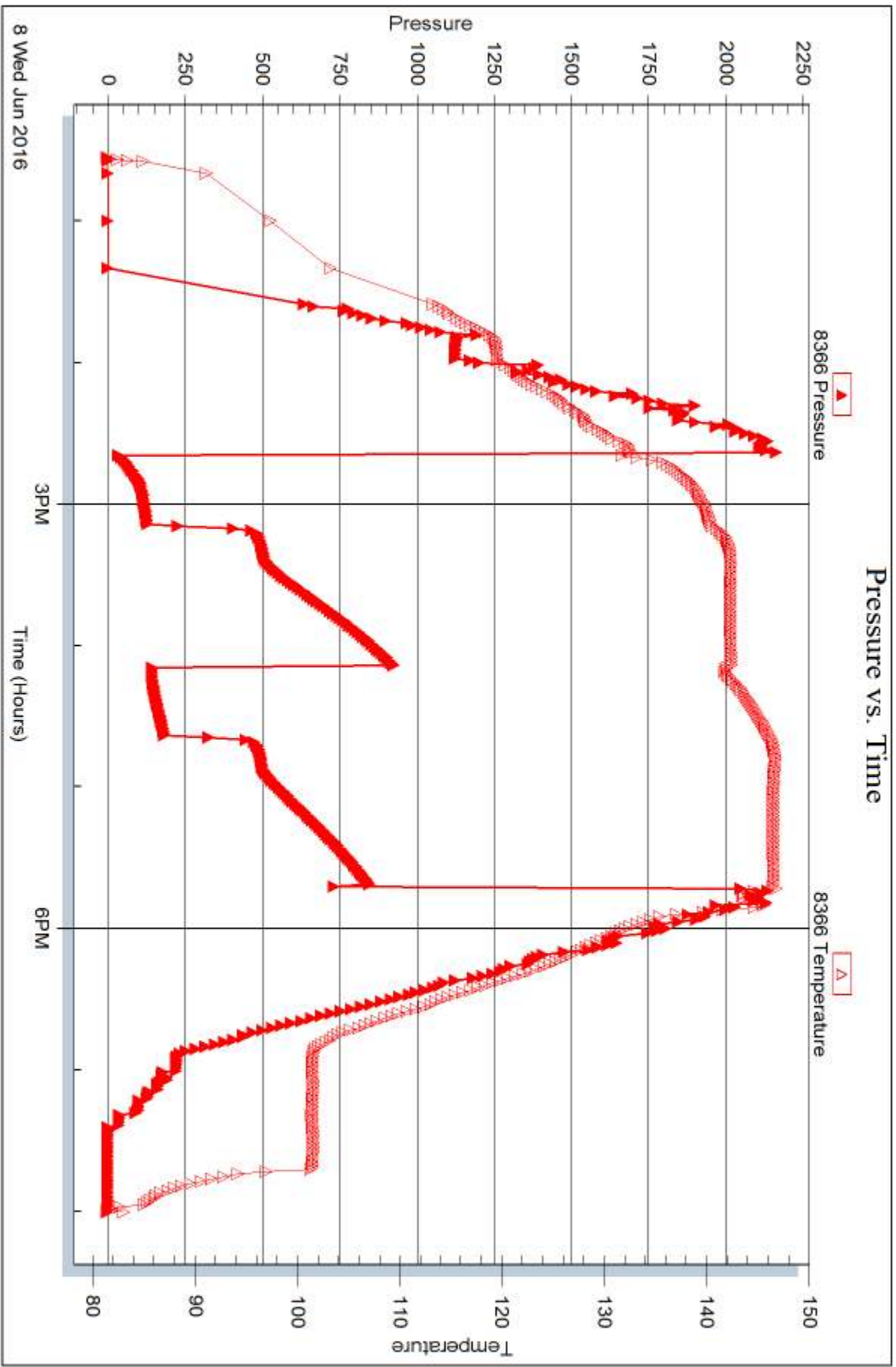
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 32.2 api @ 84 deg F
Corrected Gravity = 29.8 api







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

Munn #1-12

12-2s-38w Cheyenne KS

Start Date: 2016.06.09 @ 07:50:00

End Date: 2016.06.09 @ 16:16:00

Job Ticket #: 65350 DST #: 4

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

Printed: 2016.06.13 @ 15:43:38



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65350

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2016.06.09 @ 07:50:00

GENERAL INFORMATION:

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

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:48:45

Time Test Ended: 16:16:00

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4298.00 ft (KB) To 4385.00 ft (KB) (TVD)

Reference Elevations: 3228.00 ft (KB)

Total Depth: 4385.00 ft (KB) (TVD)

3223.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6769

Inside

Press@RunDepth: 149.96 psig @ 4299.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.06.09

End Date:

2016.06.09

Last Calib.:

2016.06.09

Start Time:

07:50:05

End Time:

16:15:59

Time On Btm:

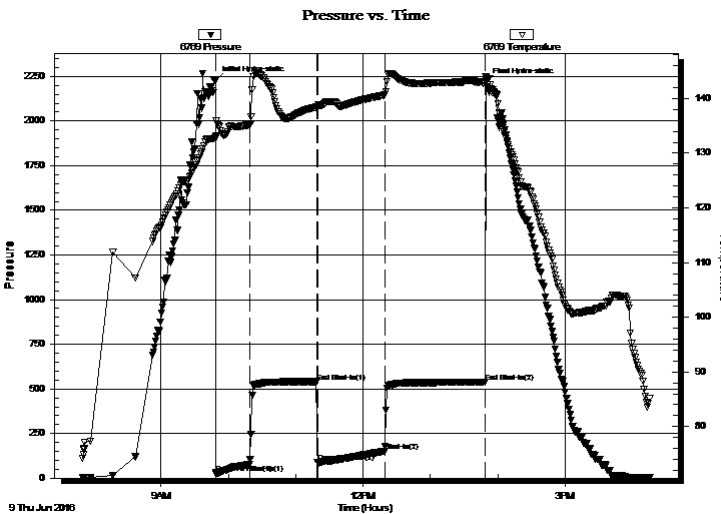
2016.06.09 @ 09:48:30

Time Off Btm:

2016.06.09 @ 13:49:30

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 12 min.
60 - IS: Blow back built to 6"
60 - FF: Blow built to BOB at 14 min.
90 - FS: Blow back built to BOB at 56 min.

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2227.39	132.92	Initial Hydro-static
1	27.07	133.17	Open To Flow (1)
31	77.15	135.20	Shut-In(1)
90	540.26	138.42	End Shut-In(1)
91	87.49	138.39	Open To Flow (2)
151	149.96	140.60	Shut-In(2)
240	537.29	142.72	End Shut-In(2)
241	2214.13	143.76	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	GOCM 70%o, 18%g, 12%g	0.22
134.00	SMCGO 84%o, 13%g, 3%m	0.66
311.00	CGO 76%o, 24%g	4.10
0.00	GIP = 870'	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.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65350

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2016.06.09 @ 07:50:00

Tool Information

Drill Pipe:	Length: 4081.00 ft	Diameter: 3.80 inches	Volume: 57.25 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 208.00 ft	Diameter: 2.25 inches	Volume: 1.02 bbl	Weight to Pull Loose: 64000.00 lb
			<u>Total Volume: 58.27 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 55000.00 lb
Depth to Top Packer:	4298.00 ft			Final 57000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	87.00 ft			
Tool Length:	116.00 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			4270.00	
Shut In Tool	5.00			4275.00	
Hydraulic tool	5.00			4280.00	
Jars	5.00			4285.00	
Safety Joint	3.00			4288.00	
Packer	5.00			4293.00	29.00 Bottom Of Top Packer
Packer	5.00			4298.00	
Stubb	1.00			4299.00	
Recorder	0.00	6769	Inside	4299.00	
Recorder	0.00	8366	Outside	4299.00	
Perforations	5.00			4304.00	
Blank Spacing	64.00			4368.00	
Perforations	14.00			4382.00	
Bullnose	3.00			4385.00	87.00 Bottom Packers & Anchor

Total Tool Length: 116.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65350

DST#: 4

ATTN: Paul Gunzelman

Test Start: 2016.06.09 @ 07:50:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

29.2 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 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 bbbl
45.00	GOCM 70% _m , 18% _o , 12% _g	0.221
134.00	SMCGO 84% _o , 13% _g , 3% _m	0.659
311.00	CGO 76% _o , 24% _g	4.098
0.00	GIP = 870'	0.000

Total Length: 490.00 ft Total Volume: 4.978 bbl

Num Fluid Samples: 0

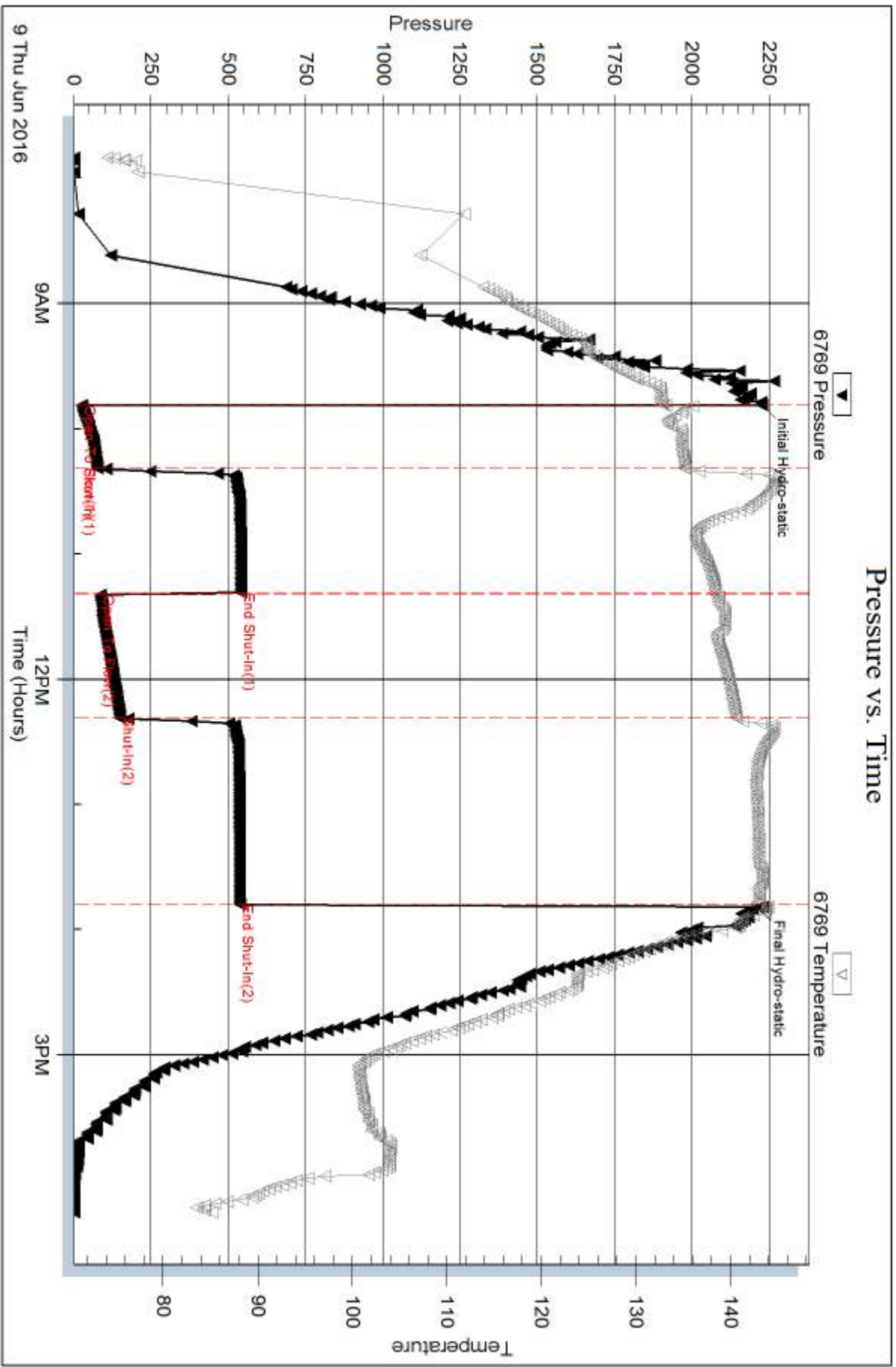
Num Gas Bombs: 0

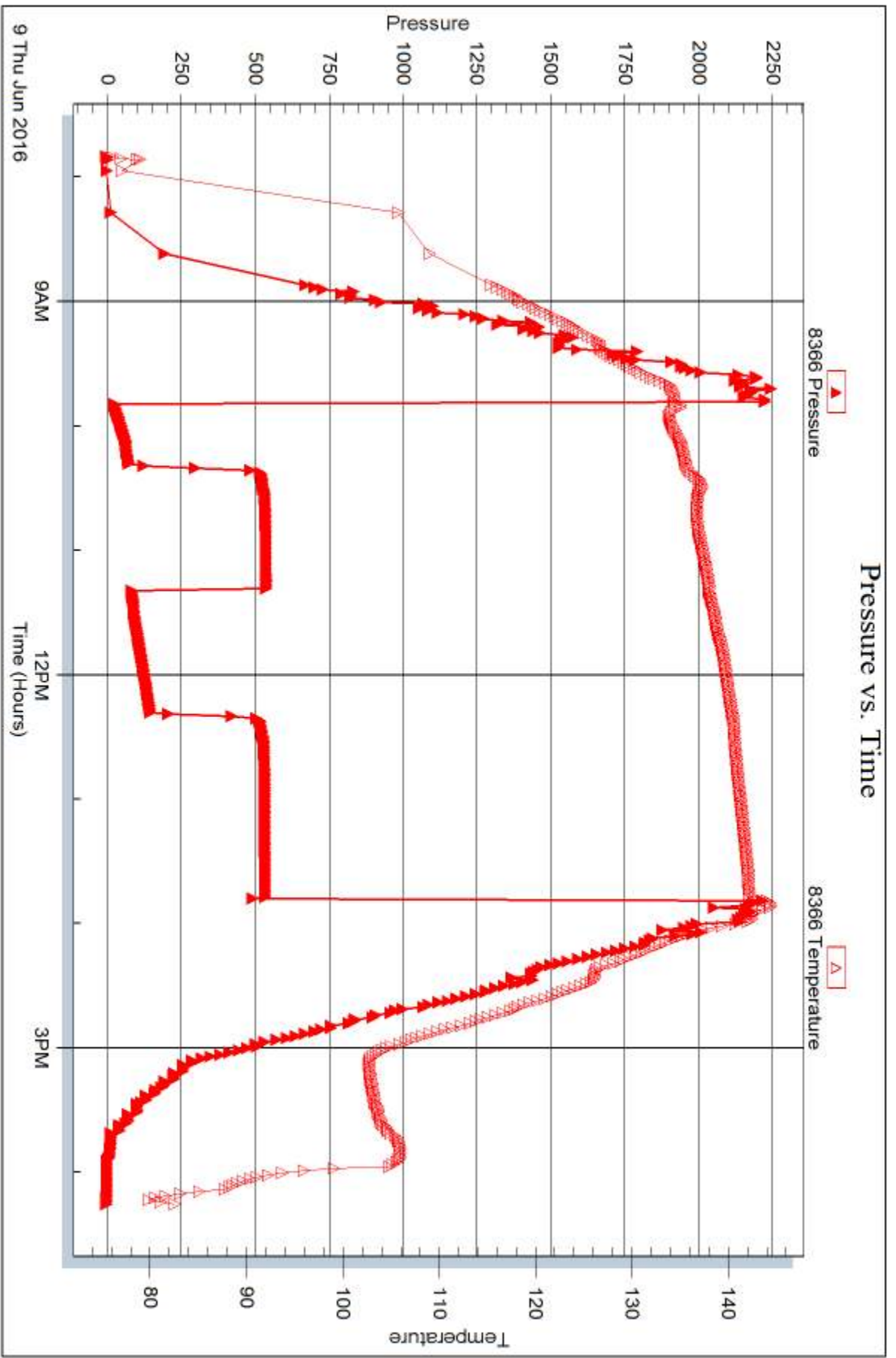
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 33.4 api @ 102 deg F
Corrected Gravity = 29.2 api







DRILL STEM TEST REPORT

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

250 N. Water STE 300
Wichita, KS 67202

ATTN: Paul Gunzelman

Munn #1-12

12-2s-38w Cheyenne KS

Start Date: 2016.06.10 @ 11:35:00

End Date: 2016.06.10 @ 20:17:15

Job Ticket #: 65378 DST #: 5

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

Printed: 2016.06.13 @ 15:42:55



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65378

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2016.06.10 @ 11:35:00

GENERAL INFORMATION:

Formation: **Pawnee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 14:01:45

Time Test Ended: 20:17:15

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4532.00 ft (KB) To 4588.00 ft (KB) (TVD)

Reference Elevations: 3228.00 ft (KB)

Total Depth: 4588.00 ft (KB) (TVD)

3223.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6769 Inside

Press@RunDepth: 105.46 psig @ 4533.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2016.06.10

End Date:

2016.06.10

Last Calib.:

2016.06.10

Start Time:

11:35:05

End Time:

20:17:15

Time On Btm:

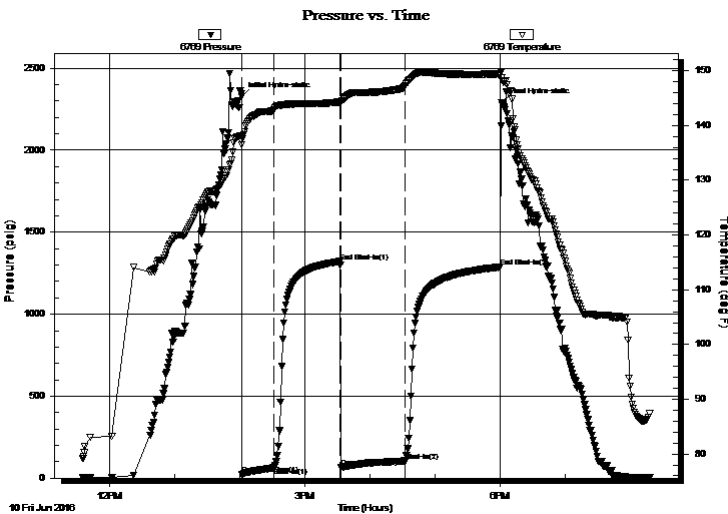
2016.06.10 @ 14:01:30

Time Off Btm:

2016.06.10 @ 18:01:00

TEST COMMENT: 30 - IF: Blow built to BOB (11") at 25 min.
60 - IS: No blow back
60 - FF: Blow built to BOB at 20 1/2 min.
90 - FS: Blow back built to 1" then died back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2327.29	137.26	Initial Hydro-static
1	20.86	136.55	Open To Flow (1)
30	63.49	142.89	Shut-In(1)
91	1321.56	144.31	End Shut-In(1)
92	67.26	144.24	Open To Flow (2)
151	105.46	147.24	Shut-In(2)
238	1287.65	149.39	End Shut-In(2)
240	2291.34	148.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	OM 52% _m , 39% _o , 9% _g	0.59
120.00	CO 91% _o , 7% _g , 2% _m	0.88
0.00	GIP = 500'	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.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65378

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2016.06.10 @ 11:35:00

Tool Information

Drill Pipe:	Length: 4304.00 ft	Diameter: 3.80 inches	Volume: 60.37 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 208.00 ft	Diameter: 2.25 inches	Volume: 1.02 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 61.39 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 57000.00 lb
Depth to Top Packer:	4532.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	80.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4509.00	
Shut In Tool	5.00			4514.00	
Hydraulic tool	5.00			4519.00	
Safety Joint	3.00			4522.00	
Packer	5.00			4527.00	24.00 Bottom Of Top Packer
Packer	5.00			4532.00	
Stubb	1.00			4533.00	
Recorder	0.00	6769	Inside	4533.00	
Recorder	0.00	8366	Outside	4533.00	
Perforations	5.00			4538.00	
Blank Spacing	33.00			4571.00	
Perforations	14.00			4585.00	
Bullnose	3.00			4588.00	56.00 Bottom Packers & Anchor

Total Tool Length: 80.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

12-2s-38w Cheyenne KS

250 N. Water STE 300
Wichita, KS 67202

Munn #1-12

Job Ticket: 65378

DST#: 5

ATTN: Paul Gunzelman

Test Start: 2016.06.10 @ 11:35:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

37 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	OM 52% <i>m</i> , 39% <i>o</i> , 9% <i>g</i>	0.590
120.00	CO 91% <i>o</i> , 7% <i>g</i> , 2% <i>m</i>	0.882
0.00	GIP = 500'	0.000

Total Length: 240.00 ft Total Volume: 1.472 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

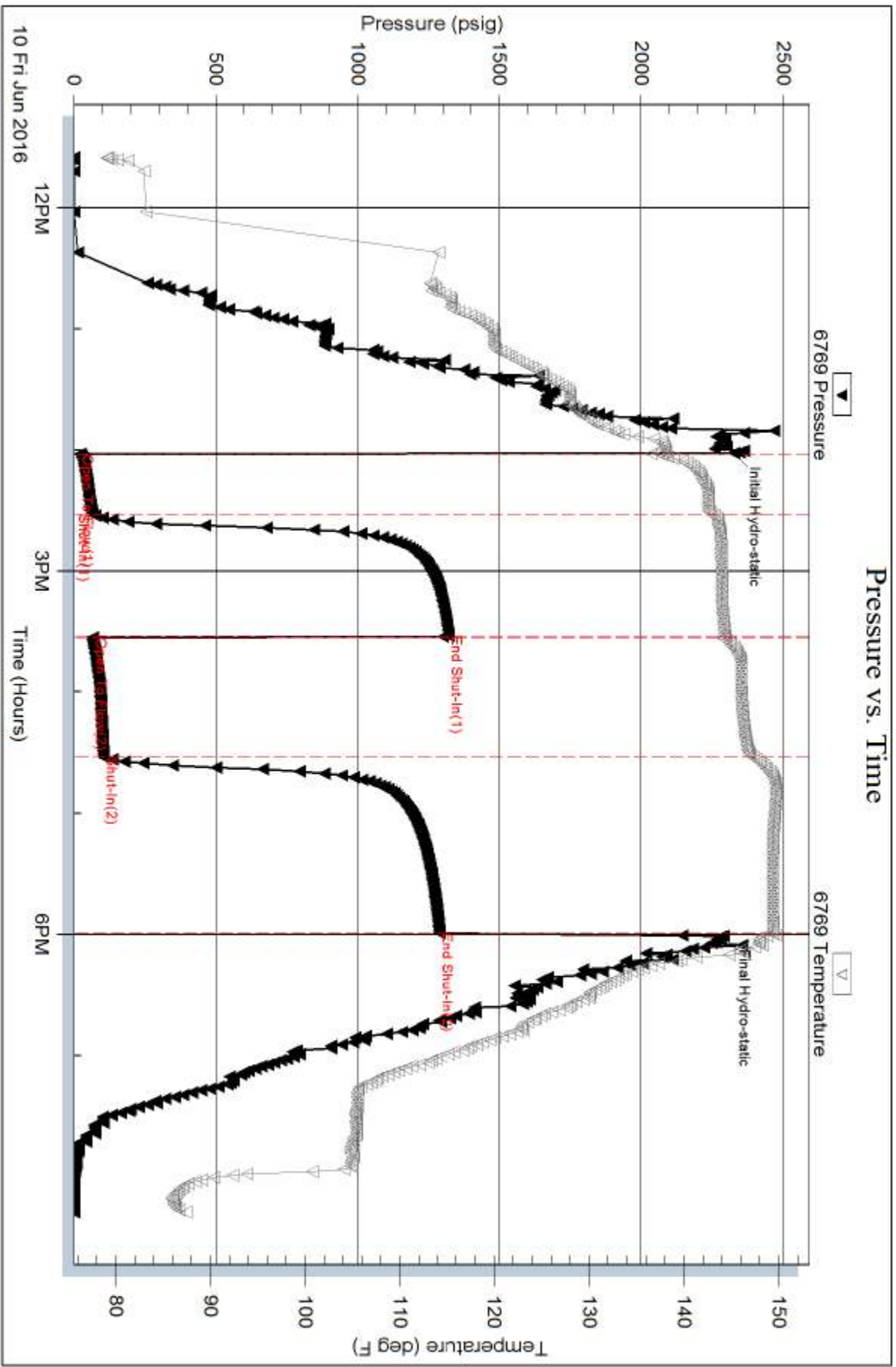
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity = 40.6 api @ 96 deg F

Corrected Gravity = 37 api

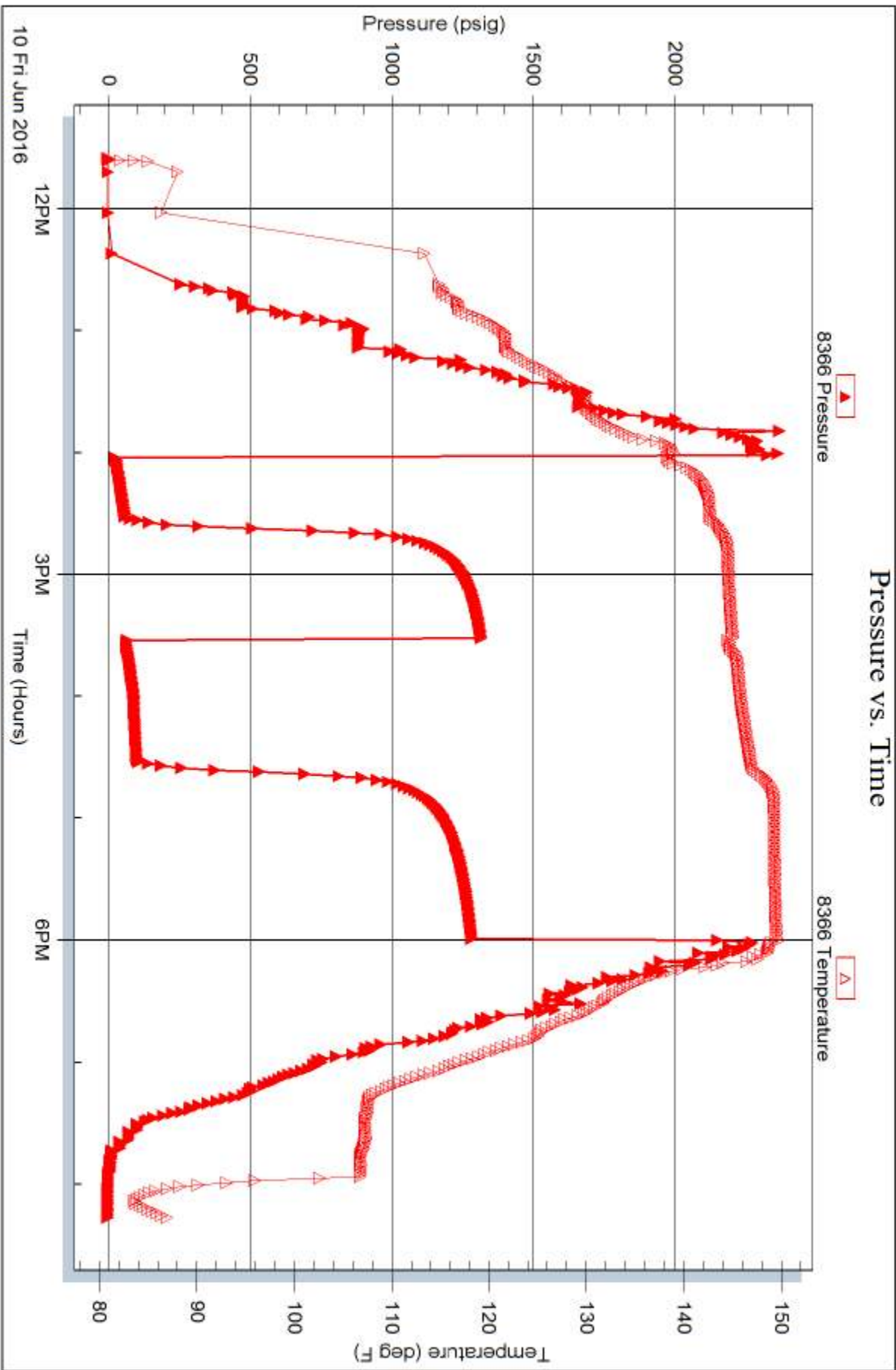


Serial #: 8366

Outside Murfin Drilling Co., Inc.

Munn #1-12

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **65347**

Well Name & No. Munn # 1-12 Test No. 1 Date 6-7-16
 Company Murfin Drilling Co. Inc. Elevation 3228 KB 3223 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #3
 Location: Sec. 12 Twp. 2s Rge. 38w Co. Cheyenne State KS

Interval Tested 4116 - 4180 Zone Tested Lans "A"
 Anchor Length 64 Drill Pipe Run 3894 Mud Wt. 9.3
 Top Packer Depth 4111 Drill Collars Run ~~179~~ 208 Vis 56
 Bottom Packer Depth 4116 Wt. Pipe Run - WL 8.4
 Total Depth 4180 Chlorides 700 ppm System LCM 2
 Blow Description IF: Blow built to 3/4" at 15 min., died back to 1/4" at close
ISI: No blowback
FF: No blow
FSI: No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>4</u>	<u>50CM</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 4 BHT 140 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2145 Test 1150 T-On Location 1:30
 (B) First Initial Flow 20 Jars 250 T-Started 2:53
 (C) First Final Flow 23 Safety Joint 75 T-Open 5:18
 (D) Initial Shut-In 55 Circ Sub _____ T-Pulled 8:19
 (E) Second Initial Flow 21 Hourly Standby _____ T-Out 10:50
 (F) Second Final Flow 25 Mileage 134RT 100.50 Comments _____
 (G) Final Shut-In 43 Sampler _____
 (H) Final Hydrostatic 2126 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1575.50

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

Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1575.50
 MP/DST Disc't _____

Approved By Paul Grayson

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. **65348**

Well Name & No. Munn #1-12 Test No. 2 Date 6-7-16
 Company Murfin Drilling Co. Inc Elevation 3228 KB 3223 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #3
 Location: Sec. 12 Twp. 2S Rge. 38W Co. Cheyenne State KS

Interval Tested 4178 - 4250 Zone Tested LKC "D"
 Anchor Length 72 Drill Pipe Run 3961 Mud Wt. 9.2
 Top Packer Depth 4173 Drill Collars Run 208 Vis 57
 Bottom Packer Depth 4178 Wt. Pipe Run - WL 8.4
 Total Depth 4250 Chlorides 700 ppm System LCM 2
 Blow Description IF: 1/4" Blow at open, built to 4"
ISI: No blowback
FF: Blow built to 8 3/4"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>CO</u>	<u>1</u>	<u>98</u>	<u>1</u>	<u>1</u>
<u>120</u>	<u>OCM</u>	<u>3</u>	<u>39</u>	<u>58</u>	<u>58</u>
<u>6IP=125'</u>					

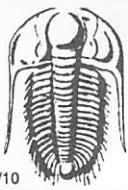
Rec Total 122 BHT 139 Gravity 31.2 API RW @ ° F Chlorides ppm

(A) Initial Hydrostatic 2104 Test 1150 T-On Location 18:40
 (B) First Initial Flow 21 Jars _____ T-Started 19:48
 (C) First Final Flow 41 Safety Joint 75 T-Open 21:34
 (D) Initial Shut-In 1262 Circ Sub _____ T-Pulled 1:34
 (E) Second Initial Flow 44 Hourly Standby _____ T-Out 3:50
 (F) Second Final Flow 73 Mileage 134 RT 100.50 Comments _____
 (G) Final Shut-In 1240 Sampler _____
 (H) Final Hydrostatic 2065 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1325.50 MP/DST Disc't _____

Approved By _____

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. **65349**

Well Name & No. Munn # 1-12 Test No. 3 Date 6-8-16
 Company Murfin Drilling Co. Inc Elevation 3228 KB 3223 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #3
 Location: Sec. 12 Twp. 2s Rge. 38w Co. Cheyenne State KS

Interval Tested 4248 - 4298 Zone Tested LKC "6"
 Anchor Length ~~40~~ 50 Drill Pipe Run 4024 Mud Wt. 9.3
 Top Packer Depth 4243 Drill Collars Run 208 Vis ~~46~~ 54
 Bottom Packer Depth 4248 Wt. Pipe Run - WL 8.4
 Total Depth 4298 Chlorides 700 ppm System LCM 2
 Blow Description IF: Blow built to BOB (11") at 9 1/2 min.
ISI: Blowback built to 7 1/2"
FF: Blow built to BOB at 11 min.
FSI: Blowback built to BOB at 29 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>203</u>	<u>CGO</u>	<u>26</u>	<u>72</u>	<u>-</u>	<u>2</u>
<u>31</u>	<u>smco</u>	<u>4</u>	<u>90</u>	<u>-</u>	<u>6</u>
<u>208</u>	<u>GOCm</u>	<u>16</u>	<u>23</u>	<u>-</u>	<u>61</u>
	<u>GIP = 915'</u>				

Rec Total 442 BHT 146 Gravity 29.8 API RW @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2167 Test 1150 T-On Location 11:45
 (B) First Initial Flow 28 Jars _____ T-Started 12:33
 (C) First Final Flow 131 Safety Joint 75 T-Open 14:38
 (D) Initial Shut-In 926 Circ Sub _____ T-Pulled 17:42
 (E) Second Initial Flow 146 Hourly Standby _____ T-Out 19:50
 (F) Second Final Flow 187 Mileage 134 RT 100.50 Comments _____
 (G) Final Shut-In 854 Sampler _____
 (H) Final Hydrostatic 2140 Straddle _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Initial Open 30 Shale Packer _____
 Initial Shut-In 60 Extra Packer _____
 Final Flow 30 Extra Recorder _____
 Final Shut-In 60 Day Standby _____
 Accessibility _____
 Sub Total 1325.50 Sub Total 1325.50 MP/DST Disc't _____

Approved By _____ 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 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. **65350**

Well Name & No. Munn #1-12 Test No. 4 Date 6-9-16
 Company Murfin Drilling Co. Inc Elevation 3228 KB 3223 GL
 Address 250 N. Water STE 300 Wichita, KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #3
 Location: Sec. 12 Twp. 2s Rge. 38w Co. Cheyenne State KS

Interval Tested 4298 - 4385 Zone Tested LKC "H-J"
 Anchor Length 87 Drill Pipe Run 4081 Mud Wt. 9.3
 Top Packer Depth 4293 Drill Collars Run 208 Vis 55
 Bottom Packer Depth 4298 Wt. Pipe Run - WL 7.2
 Total Depth 4385 Chlorides 700 ppm System LCM 2

Blow Description IF: Blow built to BOB (11") at 12 min.
ISI: Blowback built to 6"
FF: Blow built to BOB at 14 min.
FSI: Blowback built to BOB at 56 min

Rec	Feet of	%gas	%oil	%water	%mud
311 311	C60	24	76	-	-
134	SMC60	13	84	-	3
45	60cm	12	18	-	70
	GIP: 870'				

Rec Total 490 BHT 143 Gravity 29.2 API RW @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2227 Test 1150 T-On Location 6:30
 (B) First Initial Flow 27 Jars 250 T-Started 7:50
 (C) First Final Flow 77 Safety Joint 75 T-Open 9:48
 (D) Initial Shut-In 540 Circ Sub _____ T-Pulled 13:48
 (E) Second Initial Flow 87 Hourly Standby _____ T-Out 16:10
 (F) Second Final Flow 150 Mileage 134RT 100.50 Comments _____
 (G) Final Shut-In 537 Sampler _____
 (H) Final Hydrostatic 2214 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1575.50

Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1575.50
 MP/DST Disc't _____

Approved By _____ 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. **65378**

Well Name & No. Munn #1-12 Test No. 5 Date 6-10-16
 Company Murfin Drilling Co, Inc. Elevation 3228 KB 3223 GL
 Address 250 N. Water STE 300 Wichita KS 67202
 Co. Rep / Geo. Paul Gunzelman Rig Murfin #3
 Location: Sec. 12 Twp. 2s Rge. 38w Co. Cheyenne State KS

Interval Tested 4532-4588 Zone Tested Pawnee
 Anchor Length 56 Drill Pipe Run 4304 Mud Wt. 9.2
 Top Packer Depth 4527 Drill Collars Run 208 Vis 57
 Bottom Packer Depth 4532 Wt. Pipe Run - WL 6.8
 Total Depth 4588 Chlorides 700 ppm System LCM 2

Blow Description IF: Blow built to BOB (11") at 25 min.
ISI: No blowback
FF: Blow built to BOB at 20 1/2 min.
FSI: Blowback built to 1" then died back

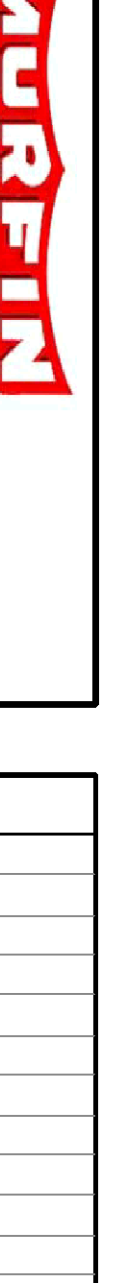
Rec	Feet of	%gas	%oil	%water	%mud
<u>120</u>	<u>CO</u>	<u>7</u>	<u>91</u>	<u>2</u>	
<u>120</u>	<u>OM</u>	<u>9</u>	<u>39</u>	<u>52</u>	
	<u>GIP=500'</u>				

Rec Total 240 BHT 149 Gravity 37 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 2327 Test 1150 T-On Location 9:20
 (B) First Initial Flow 21 Jars T-Started 11:35
 (C) First Final Flow 63 Safety Joint 75 T-Open 14:01
 (D) Initial Shut-In 1322 Circ Sub T-Pulled 17:59
 (E) Second Initial Flow 67 Hourly Standby T-Out 20:15
 (F) Second Final Flow 105 Mileage 134 RT 100.50 Comments Rig had to unload casing
 (G) Final Shut-In 1288 Sampler 100.50 Jim loaded tools 6/11 10:00
 (H) Final Hydrostatic 2291 Straddle
 Shale Packer Ruined Shale Packer
 Extra Packer Ruined Packer 320
 Extra Recorder Extra Copies
 Day Standby Sub Total 320
 Accessibility Total 1746
 Sub Total 1426 MP/DST Disc't

Approved By _____ Our Representative James Winden

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.



GEOLOGISTS' REPORT

OPERATOR **MURFIN DRILLING COMPANY, INC.**
LEASE **MUNN #1-12**
ELEVATIONS
KB **3228 Ft.**

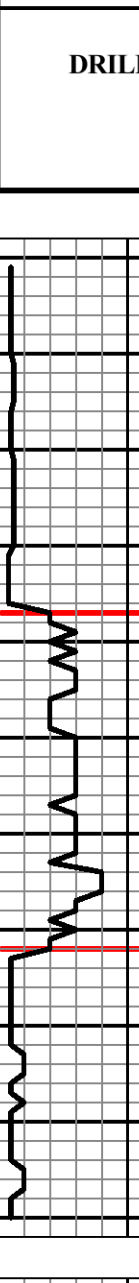
LOCATION **1770 FSL & 450 FEL**
SEC. **12** TWP **2S** RGE **38W**
COUNTY **CHEYENNE** STATE **KANSAS**
FIELD **SAWYER CANYON**

CONTRACTOR **Murfin Drilling Company** REG. NO. **3**
COMMENCED **1 June 2016** COMPLETED **12 June 2016**
MUD LOGGING AGENCY **3222 MUD TYPING Chemical**
SAMPLER **3520 TO 4860**
SAMPLER EXAMINED FROM **3478 TO 4860**

GEOLOGICAL SUPERVISION FROM **3478 TO 4860**
GEOLOGIST ON WELL **Paul Guzdalian**
FORMATION **TOG** SAMPLE
NAME **DT/UM** TOP **DT/UM** TOP **DT/UM**
Store Corral **3195 +89** **3172 +91**

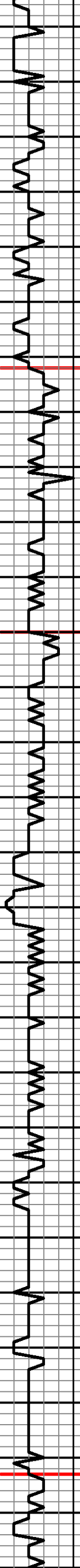
Base/Anhydrite	3198	+60	3172	+66
Foraker	3718	-490	3720	-492
Orhead	3938	-710	3940	-712
Lansing	4085	-925	4090	-928
Basel/Kansas City	4153	-925	4156	-928
Phaneroe	4432	-1204	4436	-1208
Cherokee	4559	-1331	4564	-1336
Total Depth	4630	-1412	4638	-1410
	4888	-1630	4890	-1632

PLANNED SURVEYS
Pioneer Energy Services
Geop. Neutron Density
Dual Induction
Micro-sensitivity
Comp. Sonic



REMARKS
API 15-023-21451-00-00
Drilling Fluids: Morgan Mud, Inc. (David Lines, engineer)
Drill Stem Testing: Triolite Testing, Inc. (James Winder, tester)
Gas Trailer: No Gas Trailer
Reserve Pit Chlorides: 700 PPM

DRILL TIME (MIN/FT)	DEPTH	LITHOLOGY	SAMPLE DESCRIPTIONS	REMARKS
---------------------	-------	-----------	---------------------	---------



STONE CORRAL
3172 (+91)
BASE/ANHYDRITE
3172 (+56)

3:25 PM, 5 June 2016

NEVA
3602 (-377)

RED EAGLE
3672 (-444)

FORAKER
3720 (-492)

STOTLER
3873 (-645)

TOPEKA
3940 (-712)

Morgan Mud check @ 3971'
Vis: 48, Wt: 9.0, WL: 8.4
Chlor: 700 ppm., LCM: 2#

OREAD
4090 (-862)

LANSING
4156 (-928)

DST # 1 4116 - 4180
30"-60"-60"-90"
IF: Weak 1/4 inch blow
FF: No Blow
RECOVERY:
4 Ft. Slightly Oil Cut Mud
(4% Oil, 96% Mud)
IHP: 2145 psi. FHP: 2126 psi.
IFP: 20-23 psi. ISIP: 55 psi.
FFP: 44-25 psi. FSIP: 43 psi.
BHT: 140 Deg. F.

DST # 2 4178 - 4250
30"-60"-60"-90"
IF: Weak blow, incr. to 4 inches
FF: Fair blow, BOB in 8 3/4 inches
RECOVERY:
125 Ft. Gas In Pipe
2 Ft. Clean Oil (31.2 grov. API)
120 Ft. Oil Cut Mud
(3% Gas, 39% Oil, 52% Mud)
IHP: 2104 psi. FHP: 2065 psi.
IFP: 21-41 psi. ISIP: 1262 psi.
FFP: 44-25 psi. FSIP: 1240 psi.
BHT: 139 Deg. F.

DST # 3 4248 - 4298
30"-60"-60"-90"
IF: Fair blow, BOB in 9 1/2 min.
ISI: 7 1/2 inch return blow
FF: Good blow, BOB in 11 min.
FF: BOB return blow in 29 min.
RECOVERY:
870 Ft. Gas
915 Ft. Gas In Pipe
203 Ft. Clean Oil (29.8 grov. API)
31 Ft. Slightly Mud Cut Oil
(4% Gas, 90% Oil)
120 Ft. Oil Cut Mud
(9% Gas, 39% Oil, 52% Mud)
IHP: 2167 psi. FHP: 2140 psi.
IFP: 27-77 psi. ISIP: 537 psi.
FFP: 67-150 psi. FSIP: 537 psi.
BHT: 143 Deg. F.

Morgan Mud check @ 4298'
Vis: 58, Wt: 9.2, WL: 7.2
Chlor: 700 ppm., LCM: 2#

Morgan Mud check @ 4385'
Vis: 55, Wt: 9.3, WL: 7.2
Chlor: 700 ppm., LCM: 2#

BASE/KANSAS CITY
4433 (-1205)

DST # 4 4298 - 4385
30"-60"-60"-90"
IF: Fair blow, BOB in 12 min.
ISI: 6 inch return blow
FF: Good blow, BOB in 14 min.
FF: BOB return blow in 56 min.
RECOVERY:
870 Ft. Gas In Pipe
311 Ft. Clean Oil (29.2 grov. API)
134 Ft. Slightly Mud Cut Gassy Oil
(13% Gas, 84% Oil)
45 Ft. Gas & Oil Cut Mud
(12% Gas, 18% Oil, 70% Mud)
IHP: 2227 psi. FHP: 2214 psi.
IFP: 27-77 psi. ISIP: 540 psi.
FFP: 67-150 psi. FSIP: 537 psi.
BHT: 143 Deg. F.

Morgan Mud check @ 4588'
Vis: 57, Wt: 9.2, WL: 6.8
Chlor: 700 ppm., LCM: 2#

PAWNEE
4560 (-1332)

DST # 5 4532 - 4588
30"-60"-60"-90"
IF: Fair blow, BOB in 25 min.
ISI: No return blow
FF: Fair blow, BOB in 20 min.
FF: Weak 1 inch return blow
RECOVERY:
900 Ft. Gas In Pipe
120 Ft. Clean Oil (37 grov. API)
120 Ft. Oil Cut Mud
(9% Gas, 39% Oil, 52% Mud)
IHP: 2327 psi. FHP: 2291 psi.
IFP: 21-63 psi. ISIP: 1322 psi.
FFP: 67-105 psi. FSIP: 1288 psi.
BHT: 149 Deg. F.

CHEROKEE
4638 (-1410)

Morgan Mud check @ 4795'
Vis: 53, Wt: 9.3, WL: 7.2
Chlor: 700 ppm., LCM: 4#

TOTAL DEPTH
4860 (-1632)

9:53 AM, 11 June 2016

Operator: **MURFIN DRILLING COMPANY, INC.**
Lease: **MUNN #1-12**
Location: **1770 FSL & 450 FEL** SEC. **12** TWP **2S** RGE **38W**
County: **CHEYENNE** State: **KANSAS**