

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) (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	Mai Oil Operations, Inc.
Well Name	KULTGEN 18
Doc ID	1482274

Tops

Name	Top	Datum
Anhydrite	610	1198
Heebner	2946	-1139
Toronto	2964	-1156
Douglas	2984	-1176
Lansing	3080	-1272
Base KC	3327	-1519
Conglomerate	3334	-1526
Arbuckle	3370	-1562

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 1706

Date	9.11.19	Sec.	12	Twp.	19	Range	12	County	Barton	State	KS	On Location		Finish	4:00 AM
Location														281 + Juco Rd, 9E to 90th Ave, 1N, 1/2E	

Lease	Kultgen	Well No.	18	Owner	S/ntb
Contractor	Southwind	#3	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.		
Type Job	Long string	Charge To			
Hole Size	7 7/8"	T.D.	3460'	mai oil operations	
Csg.	5 1/2" New 14#	Depth	3449.71'	Street	
Tbg. Size		Depth		City	
Tool		Depth		State	
Cement Left in Csg.	21.11'	Shoe Joint	21.11'	The above was done to satisfaction and supervision of owner agent or contractor.	
Meas Line		Displace	83 1/2 BCS	Cement Amount Ordered 160 60/40 10% Salt 2% Gel 1/4# Flo-sen	

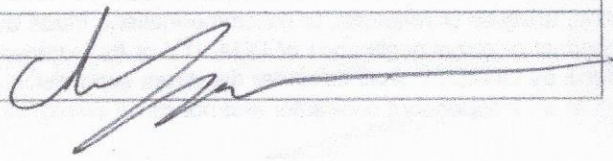
EQUIPMENT				Common	96
Pumptrk	16	No.	Cement Helper	Poz. Mix	64
			Tim		
Bulktrk	3	No.	Driver	Gel.	3
			Mike		
Bulktrk	P.u.	No.	Driver	Calcium	
			Rick		

JOB SERVICES & REMARKS				Hulls	
Remarks:				Salt	14
Rat Hole				Flowseal	40#
Mouse Hole				Kol-Seal	
Centralizers	1-9; 14, 15			Mud CLR 48	1000 Gal
Baskets				CFL-117 or CD110 CAF 38	
D/V or Port Collar	pipe on bottom break			Sand	
	Circulation pump 1000 gal mud			Handling	177
	Clear 48 Plug Rathole w/ 305x			Mileage	

FLOAT EQUIPMENT				Guide Shoe	
	Hook to 5 1/2" Casing + mix			Centralizer	11
	1305x Cement. Shut down wash			Baskets	
	pump + lines Displaced plug w/ 83 1/2 BCS			AFU Inserts	
	of H2o. Released + float held.			Float Shoe	1
	Lift pressure 760 #			Latch Down	1
	Land plug to 1700 #				

Thanks

Pumptrk Charge	15	proed string
Mileage	15	
Tax		
Discount		
Total Charge		

X Signature 



QUALITY OILWELL CEMENTING, INC.
 PO Box 32 - 740 WEST WICHITA AVE, RUSSELL KS 67665
 PHONE: 785-324-1041 FAX: 785-483-1087
 EMAIL: cementing@ruratel.net

Date: 9/4/2019
 Invoice # 1701

P.O.#:
 Due Date: 10/4/2019
 Division: Russell

Invoice

Contact:
 Mai Oil Operations
Address/Job Location:

8411 Preston Rd. Ste 800
 Dallas TX 75225-5520

Reference:
 KULTGEN 18 SEC 12-19-12

Description of Work:
 SURFACE JOB

Services / Items Included:

	Quantity	Price	Taxable	Item	Quantity	Price	Taxable
Labor		\$ 657.71	No				
Common-Class A	114	\$ 1,731.19	Yes				
POZ Mix-Standard	76	\$ 392.18	Yes				
Calcium Chloride	8	\$ 330.26	Yes				
Bulk Truck Matl-Material Service Charge	201	\$ 148.17	No				
Premium Gel (Bentonite)	3	\$ 64.13	Yes				
Pump Truck Mileage-Job to Nearest Camp	15	\$ 49.76	No				
Bulk Truck Mileage-Job to Nearest Bulk Plant	15	\$ 38.70	No				

Invoice Terms:

Net 30

	SubTotal:	\$ 3,412.11
	<i>Discount Available <u>ONLY</u> if Invoice is Paid & Received within listed terms of invoice:</i>	\$ (85.30)
<hr/>		
	SubTotal for Taxable Items:	\$ 2,454.82
	SubTotal for Non-Taxable Items:	\$ 871.99
<hr/>		
	Total:	\$ 3,326.81
	Tax:	\$ 184.11
	Amount Due:	\$ 3,510.92
	Applied Payments:	
	Balance Due:	\$ 3,510.92

7.50% Barton County Sales Tax

Thank You For Your Business!

Past Due Invoices are subject to a service charge (annual rate of 24%)
 This does not include any applicable taxes unless it is listed.
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QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 1701

Date	9-4-19	Sec.	12	Twp.	19	Range	12	County	Barton	State	Ks	On Location		Finish	1:15 AM
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Location **281 + Juco Rd, 9E to 90 Ave, 1N, 1/2E**

Lease	Kultagen		Well No.	#18	Owner	S/Inb
Contractor	Southwind	#3	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.			
Type Job	Surface		Charge To	Mai oil operations		
Hole Size	12 1/4"	T.D.	392'			
Csg.	8 5/8"	Depth	392'	Street		
Tbg. Size		Depth		City State		
Tool		Depth		The above was done to satisfaction and supervision of owner agent or contractor.		
Cement Left in Csg.	15'	Shoe Joint	15'	Cement Amount Ordered 190 60/40 4% CC 2% Gel		
Meas Line		Displace	24 BUS			

EQUIPMENT				Common	114
Pumptrk	17 No.	Cementer Helper	David	Poz. Mix	76
Bulktrk	3 No.	Driver	Lance	Gel.	3
Bulktrk	p.u. No.	Driver	Rick	Calcium	8

JOB SERVICES & REMARKS		Hulls
Remarks:	Cement did Circulate	Salt
Rat Hole		Flowseal
Mouse Hole		Kol-Seal
Centralizers		Mud CLR 48
Baskets		CFL-117 or CD110 CAF 38
D/V or Port Collar		Sand
		Handling 201
		Mileage

Thanks

FLOAT EQUIPMENT	
	Guide Shoe
	Centralizer
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down

Pumptrk Charge	Surface
Mileage	15

	Tax	
	Discount	
	Total Charge	

X Signature *Jay Shrew*



DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

Start Date: 2019.09.06 @ 11:11:11

End Date: 2019.09.06 @ 18:27:20

Job Ticket #: 65812 DST #: 1

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

Printed: 2019.09.11 @ 13:28:43



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65812 **DST#: 1**
Test Start: 2019.09.06 @ 11:11:11

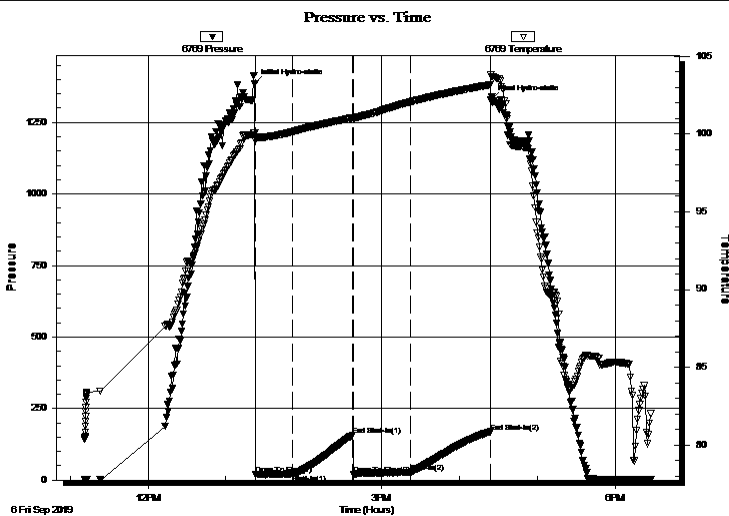
GENERAL INFORMATION:

Formation: **Topeka**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:22:41
Time Test Ended: 18:27:20
Interval: **2883.00 ft (KB) To 2915.00 ft (KB) (TVD)**
Total Depth: 2915.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Reference Elevations: 1809.00 ft (KB)
1800.00 ft (CF)
KB to GR/CF: 9.00 ft
Test Type: Conventional Bottom Hole (Initial)
Tester: Benny Mulligan
Unit No: 66

Serial #: 6769 Outside

Press@RunDepth: 26.68 psig @ 2884.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.09.06 End Date: 2019.09.06 Last Calib.: 2019.09.06
Start Time: 11:11:12 End Time: 18:27:21 Time On Btm: 2019.09.06 @ 13:22:21
Time Off Btm: 2019.09.06 @ 16:24:11

TEST COMMENT: IF-30- built to 3 1/2"
ISI-45- no blow back
FF-45- built to 5 1/2"
FSI-60- no blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1386.84	100.06	Initial Hydro-static
1	19.14	99.55	Open To Flow (1)
30	21.35	100.14	Shut-In(1)
76	156.38	101.04	End Shut-In(1)
76	18.63	101.00	Open To Flow (2)
120	26.68	102.07	Shut-In(2)
182	169.01	103.16	End Shut-In(2)
182	1330.11	103.83	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	socm 5% oil 95% mud	0.42

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65812 **DST#: 1**
Test Start: 2019.09.06 @ 11:11:11

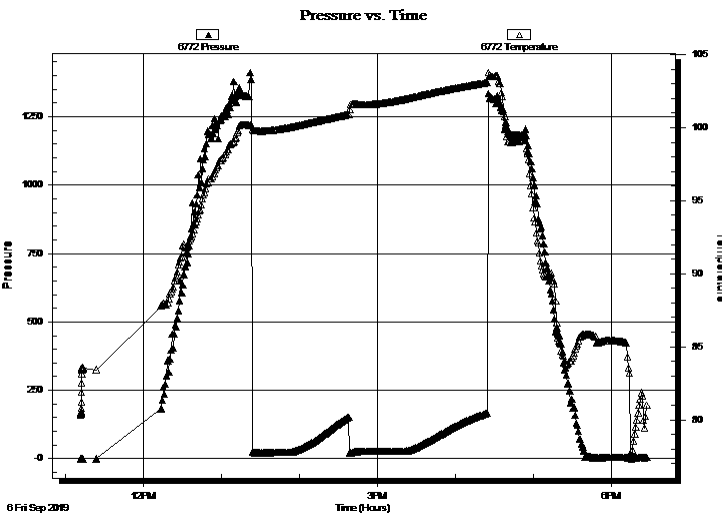
GENERAL INFORMATION:

Formation: Topeka	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Benny Mulligan
Time Tool Opened: 13:22:41	Unit No: 66
Time Test Ended: 18:27:20	Reference Elevations: 1809.00 ft (KB)
Interval: 2883.00 ft (KB) To 2915.00 ft (KB) (TVD)	1800.00 ft (CF)
Total Depth: 2915.00 ft (KB) (TVD)	KB to GR/CF: 9.00 ft
Hole Diameter: 7.88 inchesHole Condition: Fair	

Serial #: 6772 Inside

Press@RunDepth: psig @ 2884.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2019.09.06 End Date: 2019.09.06	Last Calib.: 1899.12.30
Start Time: 11:11:33 End Time: 18:27:12	Time On Btm:
	Time Off Btm:

TEST COMMENT: IF-30- built to 3 1/2"
ISI-45- no blow back
FF-45- built to 5 1/2"
FSI-60- no blow back



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

Recovery		
Length (ft)	Description	Volume (bbl)
30.00	socm 5% oil 95% mud	0.42

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65812

DST#: 1

ATTN: Jim Musgrove

Test Start: 2019.09.06 @ 11:11:11

Tool Information

Drill Pipe:	Length: 2878.00 ft	Diameter: 3.80 inches	Volume: 40.37 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 32000.00 lb
			<u>Total Volume: 40.37 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 30000.00 lb
Depth to Top Packer:	2883.00 ft			Final 30000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	32.00 ft			
Tool Length:	56.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			2860.00	
Shut In Tool	5.00			2865.00	
Hydraulic tool	5.00			2870.00	
E.M. tool	4.00			2874.00	
Packer	5.00			2879.00	24.00 Bottom Of Top Packer
Packer	4.00			2883.00	
Stubb	1.00			2884.00	
Recorder	0.00	6772	Inside	2884.00	
Recorder	0.00	6769	Outside	2884.00	
Perforations	28.00			2912.00	
Bullnose	3.00			2915.00	32.00 Bottom Packers & Anchor

Total Tool Length: 56.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65812

DST#: 1

ATTN: Jim Musgrove

Test Start: 2019.09.06 @ 11:11:11

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: 68.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.97 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	socm 5% oil 95% mud	0.421

Total Length: 30.00 ft Total Volume: 0.421 bbl

Num Fluid Samples: 0

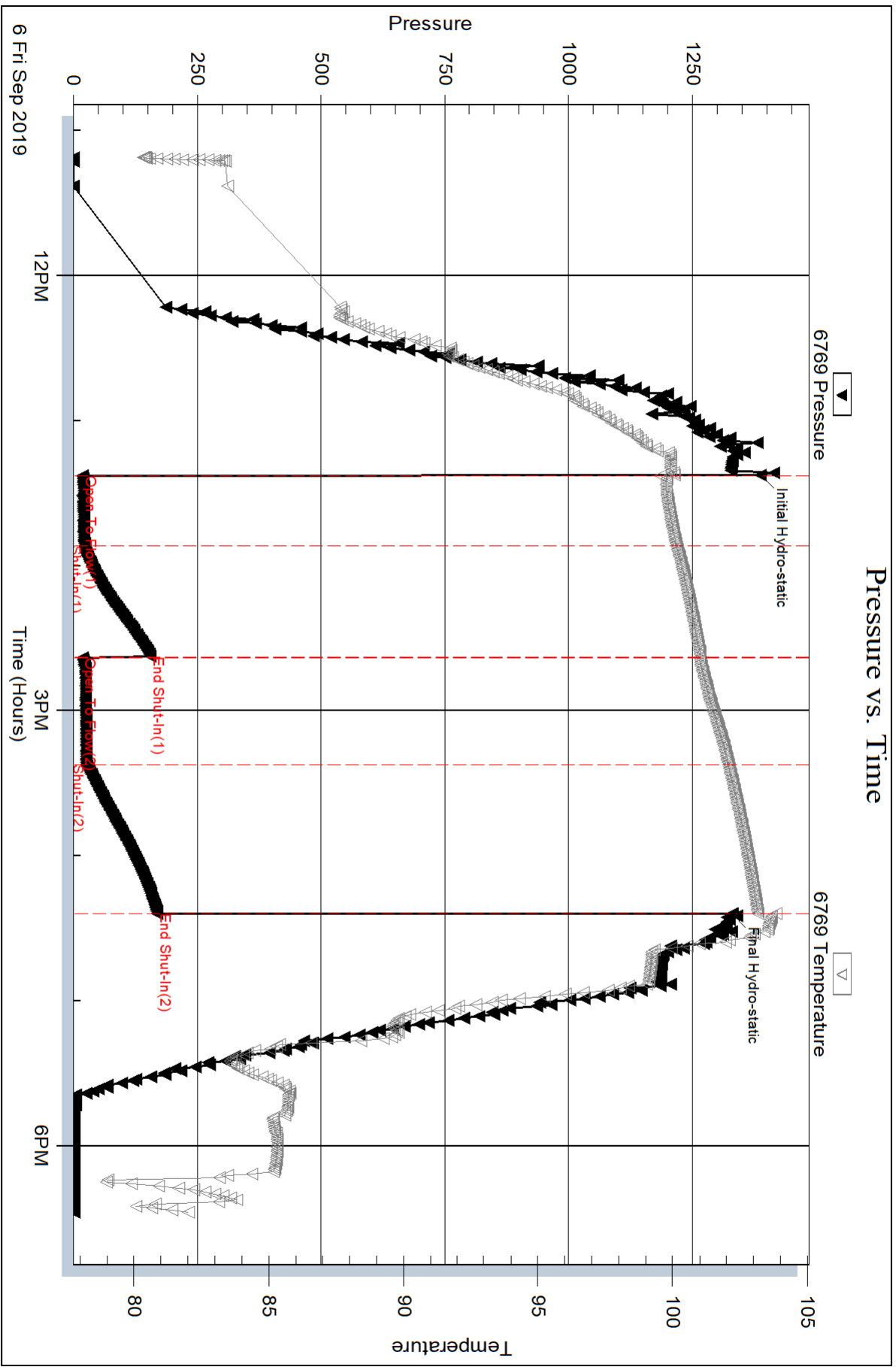
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



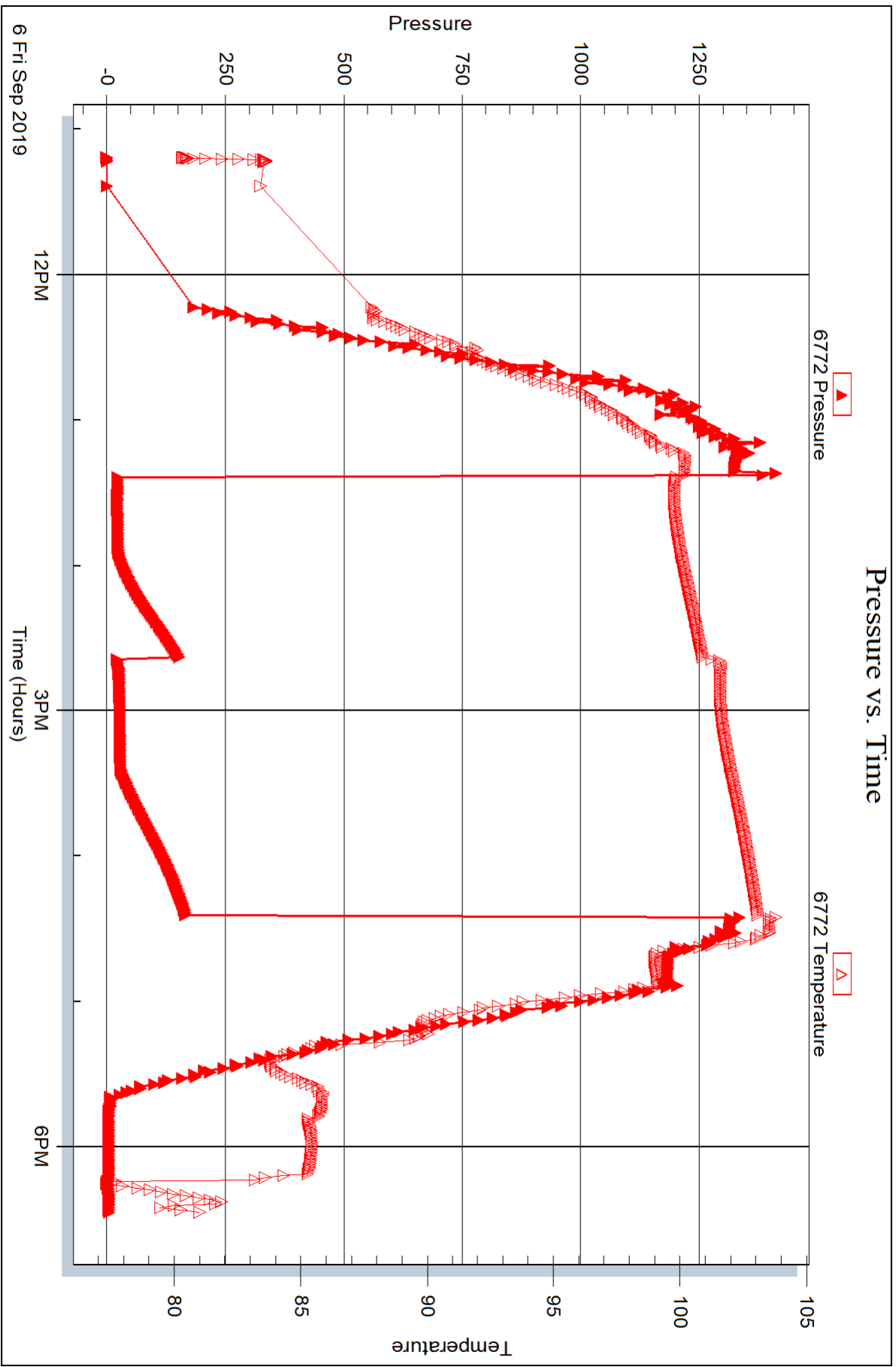
Serial #: 6772

Inside

Mai Oil Operations

Kulgen #18

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 65812

Printed: 2019.09.11 @ 13:28:44



DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

Start Date: 2019.09.07 @ 08:41:00

End Date: 2019.09.07 @ 13:07:09

Job Ticket #: 65813 DST #: 2

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

Printed: 2019.09.11 @ 13:24:06



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

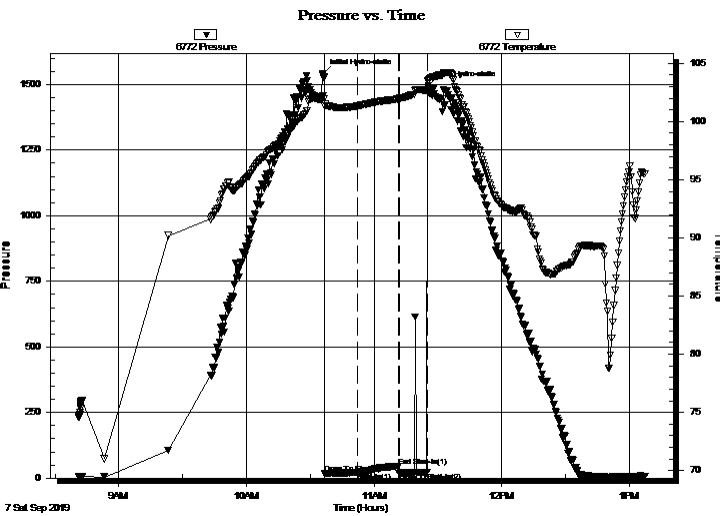
12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65813 **DST#: 2**
 Test Start: 2019.09.07 @ 08:41:00

GENERAL INFORMATION:

Formation: **LKC**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 10:36:50
 Time Test Ended: 13:07:09
Interval: 3092.00 ft (KB) To 3154.00 ft (KB) (TVD)
 Total Depth: 3154.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1809.00 ft (KB)
 1800.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 6772 Inside
 Press@RunDepth: 20.64 psig @ 3093.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.07 End Date: 2019.09.07 Last Calib.: 2019.09.07
 Start Time: 08:41:01 End Time: 13:07:10 Time On Btm: 2019.09.07 @ 10:36:00
 Time Off Btm: 2019.09.07 @ 11:25:30

TEST COMMENT: IF-15- weak surface blow
 IS-20- no blow back
 FF-15- was dead so pulled



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1542.54	102.23	Initial Hydro-static
1	18.61	101.33	Open To Flow (1)
17	20.64	101.35	Shut-In(1)
36	45.37	101.93	End Shut-In(1)
36	18.72	102.00	Open To Flow (2)
49	21.57	102.68	Shut-In(2)
50	1495.91	103.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.07

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

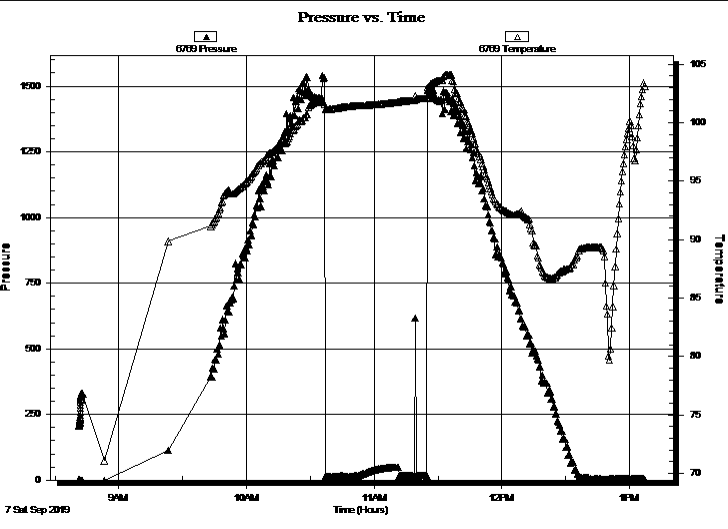
12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65813 **DST#: 2**
Test Start: 2019.09.07 @ 08:41:00

GENERAL INFORMATION:

Formation: **LKC**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 10:36:50 Tester: Benny Mulligan
Time Test Ended: 13:07:09 Unit No: 66
Interval: 3092.00 ft (KB) To 3154.00 ft (KB) (TVD) Reference Elevations: 1809.00 ft (KB)
Total Depth: 3154.00 ft (KB) (TVD) 1800.00 ft (CF)
Hole Diameter: 7.88 inchesHole Condition: Fair KB to GR/CF: 9.00 ft

Serial #: 6769 **Outside**
Press@RunDepth: psig @ 3093.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.09.07 End Date: 2019.09.07 Last Calib.: 2019.09.07
Start Time: 08:41:01 End Time: 13:07:10 Time On Btm:
Time Off Btm:

TEST COMMENT: IF-15- weak surface blow
ISI-20- no blow back
FF-15- w as dead so pulled



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

Recovery		
Length (ft)	Description	Volume (bbl)
5.00	Mud 100%M	0.07

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65813

DST#: 2

ATTN: Jim Musgrove

Test Start: 2019.09.07 @ 08:41:00

Tool Information

Drill Pipe:	Length: 3100.00 ft	Diameter: 3.80 inches	Volume: 43.48 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 2500.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 32000.00 lb
			<u>Total Volume: 43.48 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 29000.00 lb
Depth to Top Packer:	3092.00 ft			Final 29000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	82.00 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			3073.00	
Shut In Tool	5.00			3078.00	
Hydraulic tool	5.00			3083.00	
Packer	5.00			3088.00	20.00 Bottom Of Top Packer
Packer	4.00			3092.00	
Stubb	1.00			3093.00	
Recorder	0.00	6772	Inside	3093.00	
Recorder	0.00	6769	Outside	3093.00	
Perforations	24.00			3117.00	
Change Over Sub	1.00			3118.00	
Drill Pipe	32.00			3150.00	
Change Over Sub	1.00			3151.00	
Bullnose	3.00			3154.00	62.00 Bottom Packers & Anchor

Total Tool Length: 82.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65813

DST#: 2

ATTN: Jim Musgrove

Test Start: 2019.09.07 @ 08:41:00

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: 68.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100%M	0.070

Total Length: 5.00 ft Total Volume: 0.070 bbl

Num Fluid Samples: 0

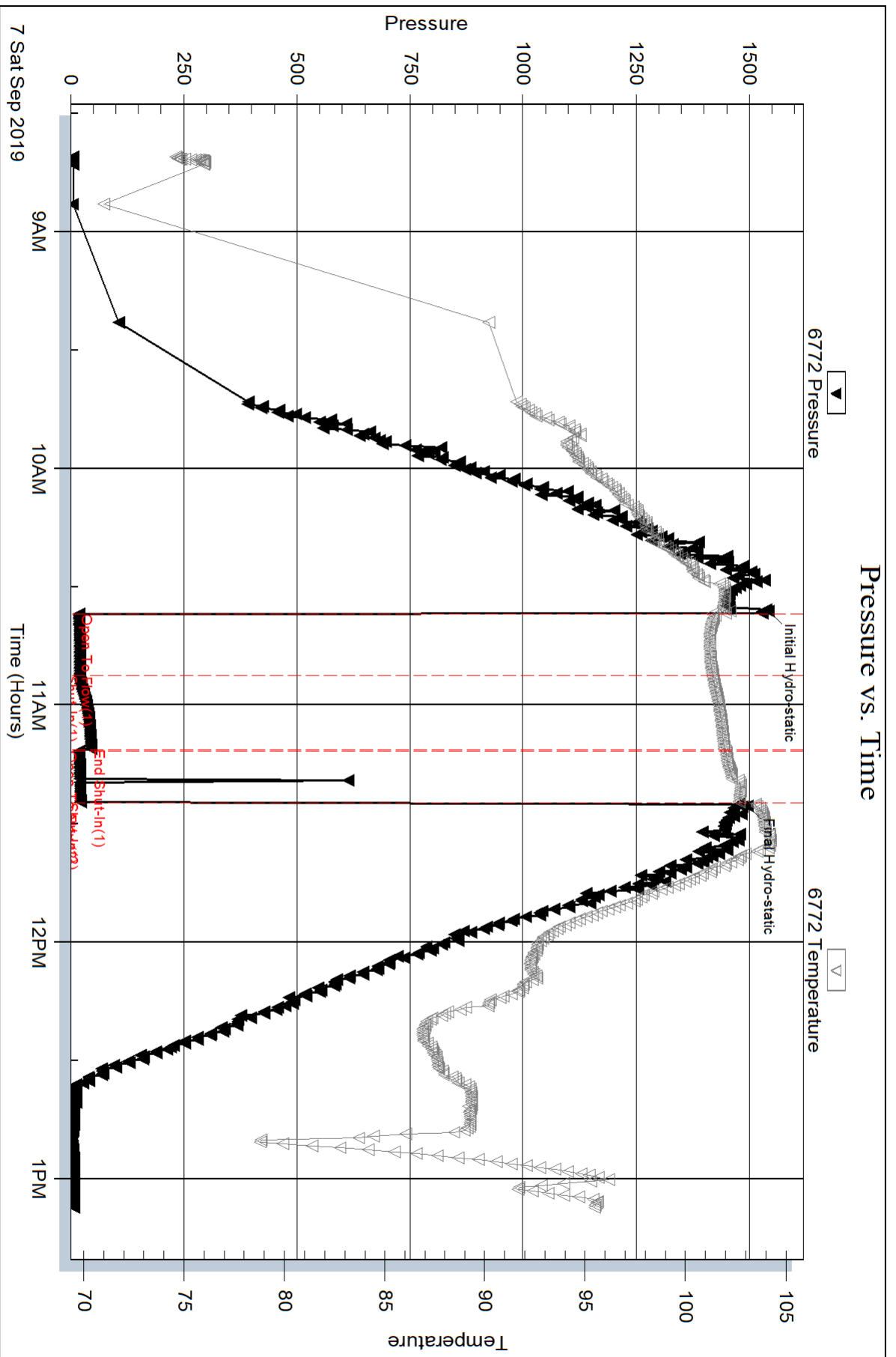
Num Gas Bombs: 0

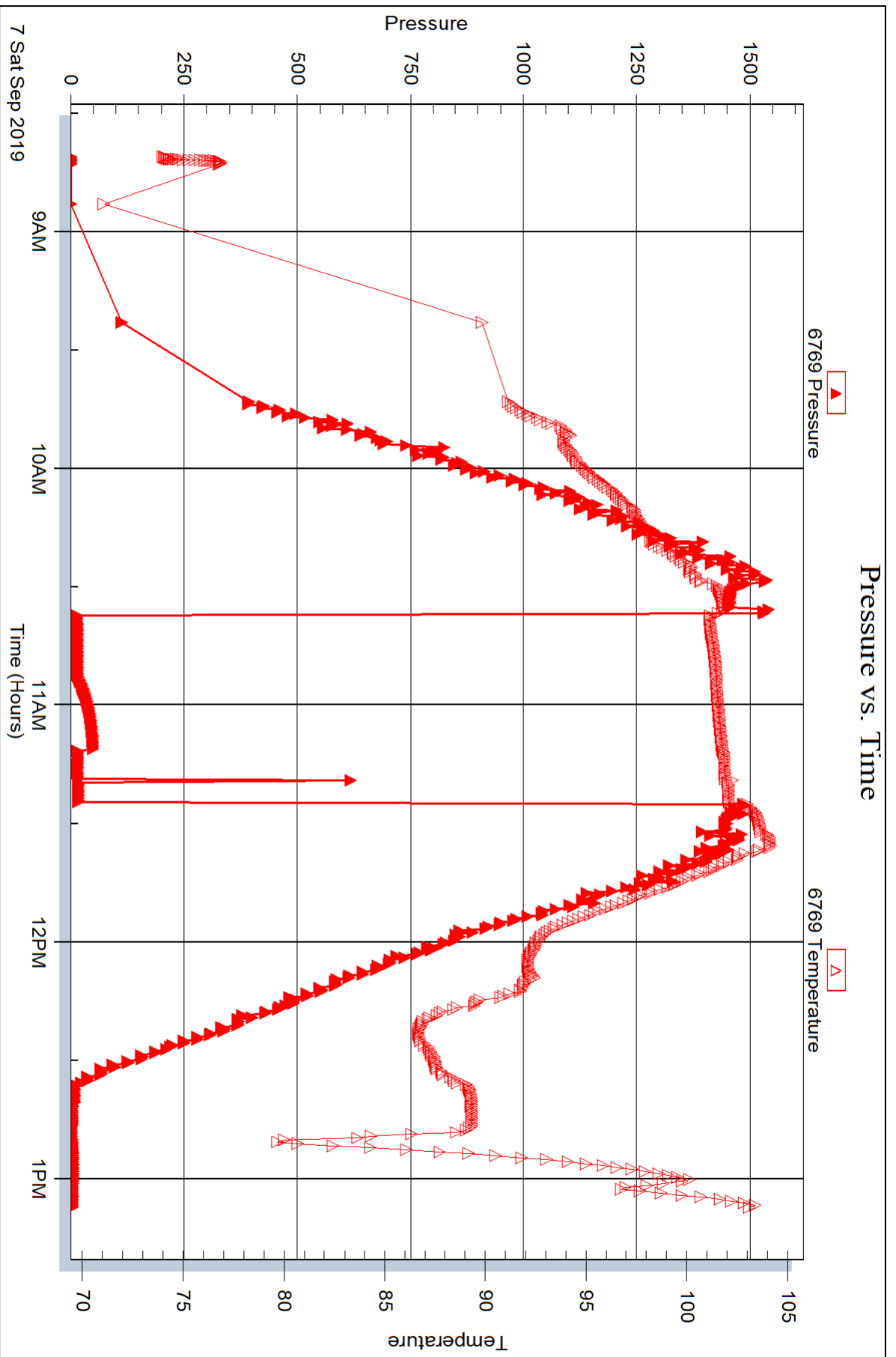
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

Start Date: 2019.09.07 @ 19:33:00

End Date: 2019.09.08 @ 01:43:00

Job Ticket #: 65814 DST #: 3

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

Printed: 2019.09.11 @ 13:21:53



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

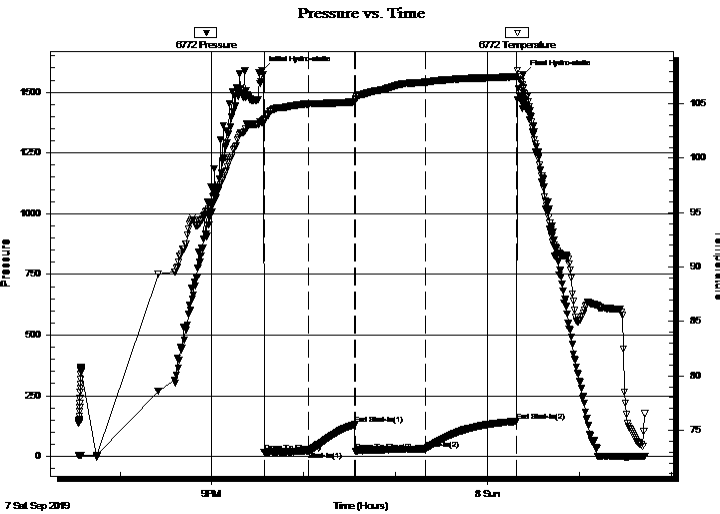
12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65814 **DST#: 3**
 Test Start: 2019.09.07 @ 19:33:00

GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 21:34:10
 Time Test Ended: 01:43:00
 Interval: **3146.00 ft (KB) To 3169.00 ft (KB) (TVD)**
 Total Depth: 3169.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1809.00 ft (KB)
 1800.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 6772 Inside
 Press@RunDepth: 31.61 psig @ 3147.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.07 End Date: 2019.09.08 Last Calib.: 2019.09.08
 Start Time: 19:33:01 End Time: 01:43:00 Time On Btm: 2019.09.07 @ 21:32:50
 Time Off Btm: 2019.09.08 @ 00:23:20

TEST COMMENT: IF-30- built to 8"
 ISI-30- no blow back
 FF-45- built to 9"
 FSI-60- no blow back



PRESSURE SUMMARY

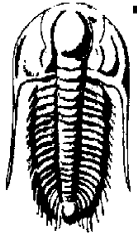
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1590.23	103.25	Initial Hydro-static
2	16.79	103.49	Open To Flow (1)
31	22.30	104.98	Shut-In(1)
61	130.93	105.16	End Shut-In(1)
62	20.80	105.39	Open To Flow (2)
107	31.61	106.98	Shut-In(2)
167	144.58	107.48	End Shut-In(2)
171	1574.51	106.47	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
40.00	O.S.M. 1%O 99%M	0.56

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65814 **DST#: 3**
 Test Start: 2019.09.07 @ 19:33:00

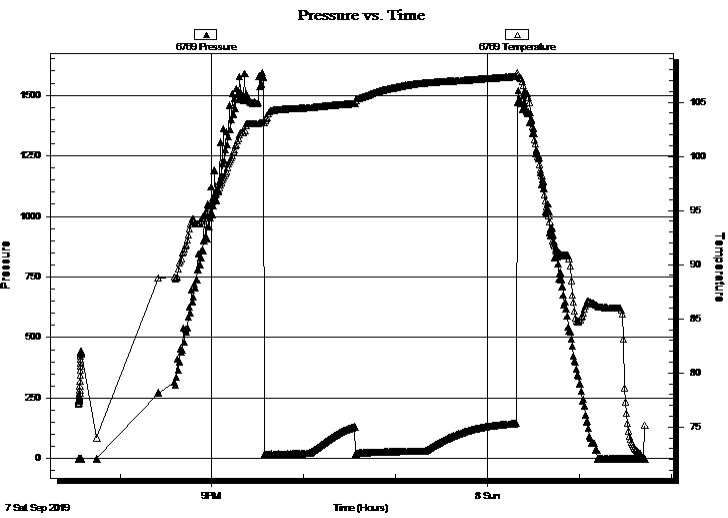
GENERAL INFORMATION:

Formation: **LKC "G"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 21:34:10
 Time Test Ended: 01:43:00
 Interval: **3146.00 ft (KB) To 3169.00 ft (KB) (TVD)**
 Total Depth: 3169.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1809.00 ft (KB)
 1800.00 ft (CF)
 KB to GR/CF: 9.00 ft

Serial #: 6769 Outside

Press@RunDepth:	psig @	3147.00 ft (KB)	Capacity:	8000.00 psig	
Start Date:	2019.09.07	End Date:	2019.09.08	Last Calib.:	2019.09.08
Start Time:	19:33:01	End Time:	01:43:00	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: IF-30- built to 8"
 ISI-30- no blow back
 FF-45- built to 9"
 FSI-60- no blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
40.00	O.S.M. 1%O 99%M	0.56

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65814 **DST#: 3**
Test Start: 2019.09.07 @ 19:33:00

Tool Information

Drill Pipe:	Length: 3131.00 ft	Diameter: 3.80 inches	Volume: 43.92 bbl	Tool Weight:	2000.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	36000.00 lb
			<u>Total Volume: 43.92 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	30000.00 lb
Depth to Top Packer:	3146.00 ft			Final	30000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	23.00 ft				
Tool Length:	43.00 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			3127.00	
Shut In Tool	5.00			3132.00	
Hydraulic tool	5.00			3137.00	
Packer	5.00			3142.00	20.00 Bottom Of Top Packer
Packer	4.00			3146.00	
Stubb	1.00			3147.00	
Recorder	0.00	6772	Inside	3147.00	
Recorder	0.00	6769	Outside	3147.00	
Perforations	19.00			3166.00	
Bullnose	3.00			3169.00	23.00 Bottom Packers & Anchor
Total Tool Length:	43.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65814

DST#: 3

ATTN: Jim Musgrove

Test Start: 2019.09.07 @ 19:33:00

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
40.00	O.S.M. 1%O 99%M	0.561

Total Length: 40.00 ft Total Volume: 0.561 bbl

Num Fluid Samples: 0

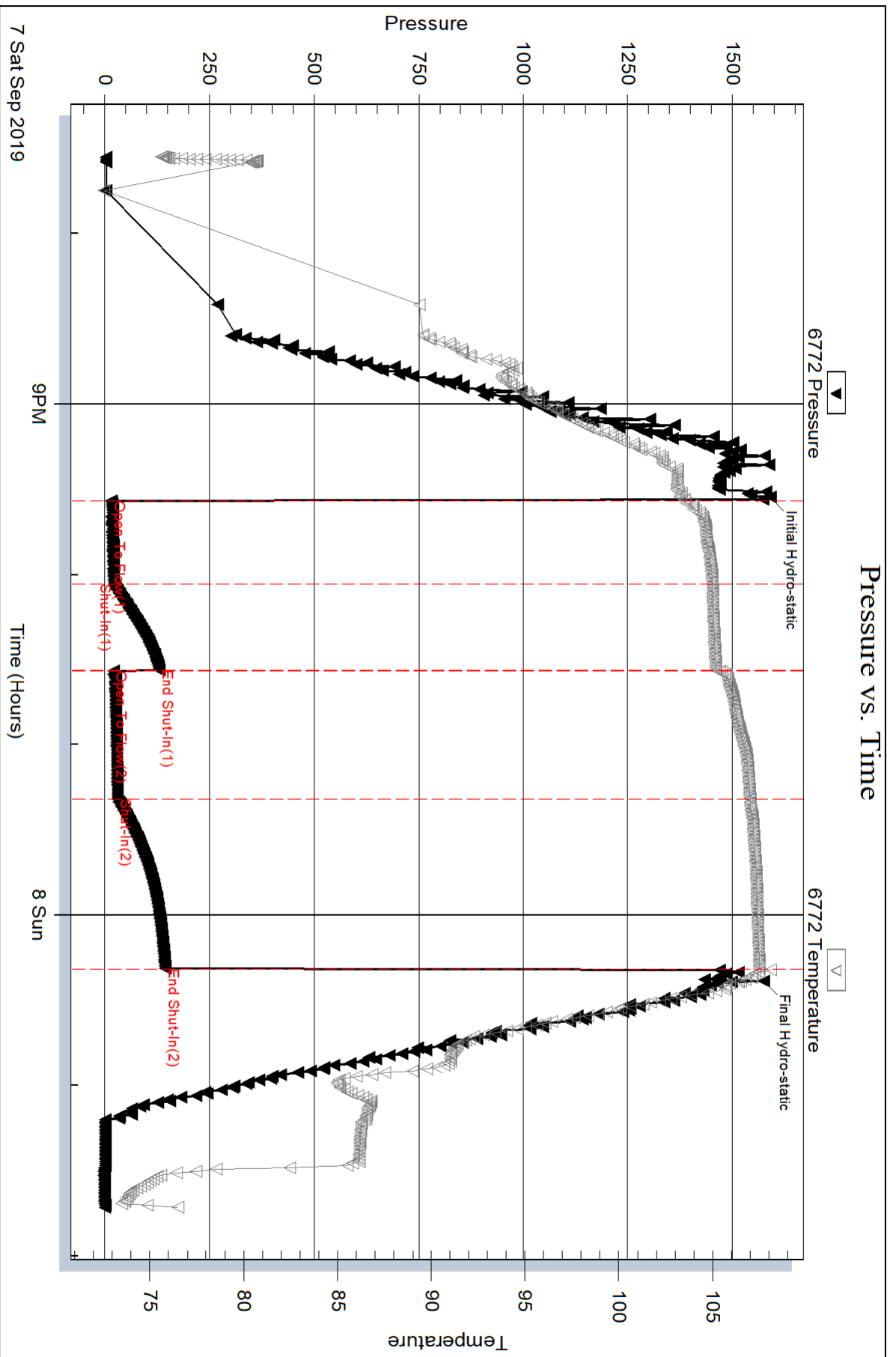
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

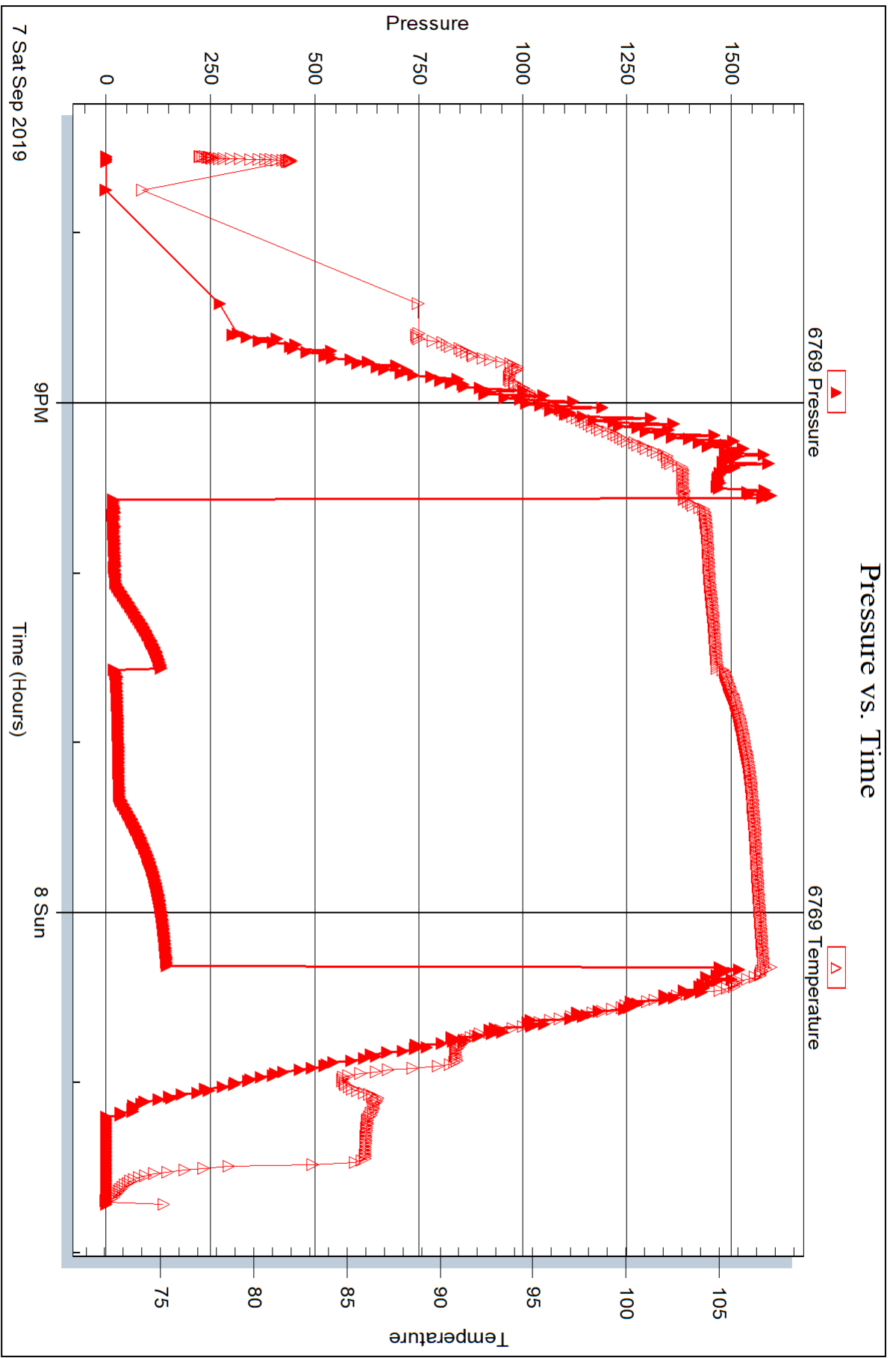


Serial #: 6769

Outside Mai Oil Operations

Kulgen #18

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 65814

Printed: 2019.09.11 @ 13:21:54



DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

Start Date: 2019.09.08 @ 14:08:00

End Date: 2019.09.08 @ 18:40:09

Job Ticket #: 65815 DST #: 4

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

Printed: 2019.09.11 @ 13:19:11



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

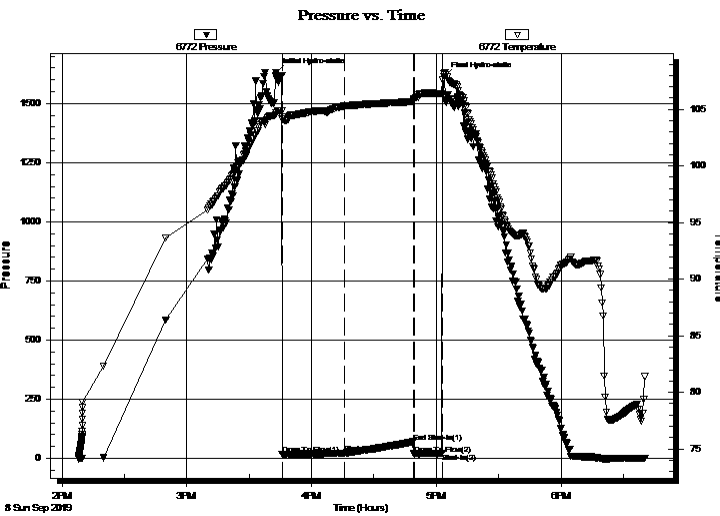
12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65815 **DST#: 4**
Test Start: 2019.09.08 @ 14:08:00

GENERAL INFORMATION:

Formation: **LKC H - K**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 15:45:50
Time Test Ended: 18:40:09
Interval: 3204.00 ft (KB) To 3300.00 ft (KB) (TVD)
Total Depth: 3300.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Initial)
Tester: Benny Mulligan
Unit No: 66
Reference Elevations: 1809.00 ft (KB)
1800.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 Inside
Press@RunDepth: 22.38 psig @ 3205.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.09.08 End Date: 2019.09.08 Last Calib.: 2019.09.08
Start Time: 14:08:01 End Time: 18:40:10 Time On Btm: 2019.09.08 @ 15:43:00
Time Off Btm: 2019.09.08 @ 17:03:40

TEST COMMENT: IF-30- built to 1 1/2 "
ISI-30- no blow back
FF-15- w as dead so pulled



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1629.37	104.65	Initial Hydro-static
3	17.25	104.12	Open To Flow (1)
33	22.38	105.28	Shut-In(1)
66	70.35	105.69	End Shut-In(1)
67	18.32	105.90	Open To Flow (2)
80	21.99	106.40	Shut-In(2)
81	1614.08	108.15	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	Mud 100%M	0.28

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

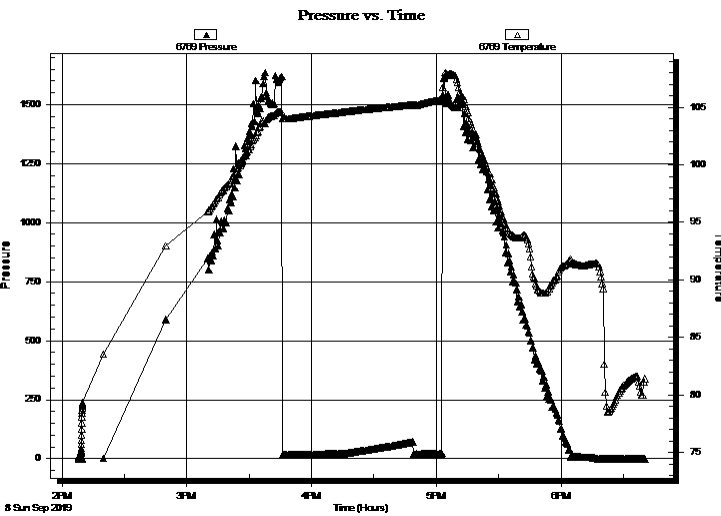
12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65815 **DST#: 4**
 Test Start: 2019.09.08 @ 14:08:00

GENERAL INFORMATION:

Formation: **LKC H - K**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 15:45:50 Tester: Benny Mulligan
 Time Test Ended: 18:40:09 Unit No: 66
 Interval: **3204.00 ft (KB) To 3300.00 ft (KB) (TVD)** Reference Elevations: 1809.00 ft (KB)
 Total Depth: 3300.00 ft (KB) (TVD) 1800.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 9.00 ft

Serial #: 6769 Outside
 Press@RunDepth: psig @ 3205.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.08 End Date: 2019.09.08 Last Calib.: 2019.09.08
 Start Time: 14:08:01 End Time: 18:40:10 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF-30- built to 1 1/2 "
 IS-30- no blow back
 FF-15- w as dead so pulled



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
20.00	Mud 100%M	0.28

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65815

DST#: 4

ATTN: Jim Musgrove

Test Start: 2019.09.08 @ 14:08:00

Tool Information

Drill Pipe:	Length: 3195.00 ft	Diameter: 3.80 inches	Volume: 44.82 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 40000.00 lb
			<u>Total Volume: 44.82 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 32000.00 lb
Depth to Top Packer:	3204.00 ft			Final 32000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	96.00 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			3185.00	
Shut In Tool	5.00			3190.00	
Hydraulic tool	5.00			3195.00	
Packer	5.00			3200.00	20.00 Bottom Of Top Packer
Packer	4.00			3204.00	
Stubb	1.00			3205.00	
Recorder	0.00	6772	Inside	3205.00	
Recorder	0.00	6769	Outside	3205.00	
Perforations	26.00			3231.00	
Change Over Sub	1.00			3232.00	
Drill Pipe	64.00			3296.00	
Change Over Sub	1.00			3297.00	
Bullnose	3.00			3300.00	96.00 Bottom Packers & Anchor

Total Tool Length: 116.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65815

DST#: 4

ATTN: Jim Musgrove

Test Start: 2019.09.08 @ 14:08:00

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: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.18 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 8000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	Mud 100%M	0.281

Total Length: 20.00 ft Total Volume: 0.281 bbl

Num Fluid Samples: 0

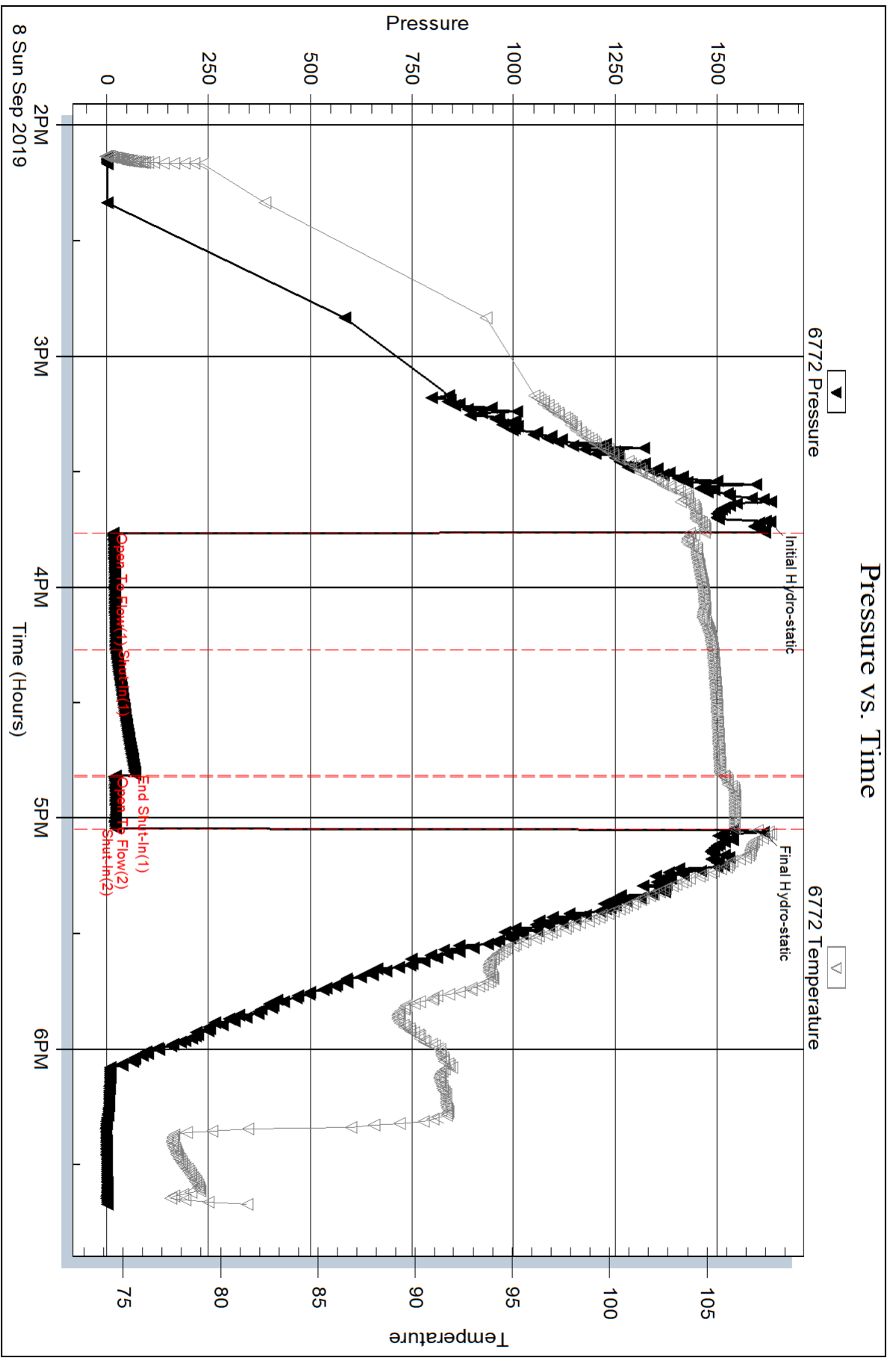
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

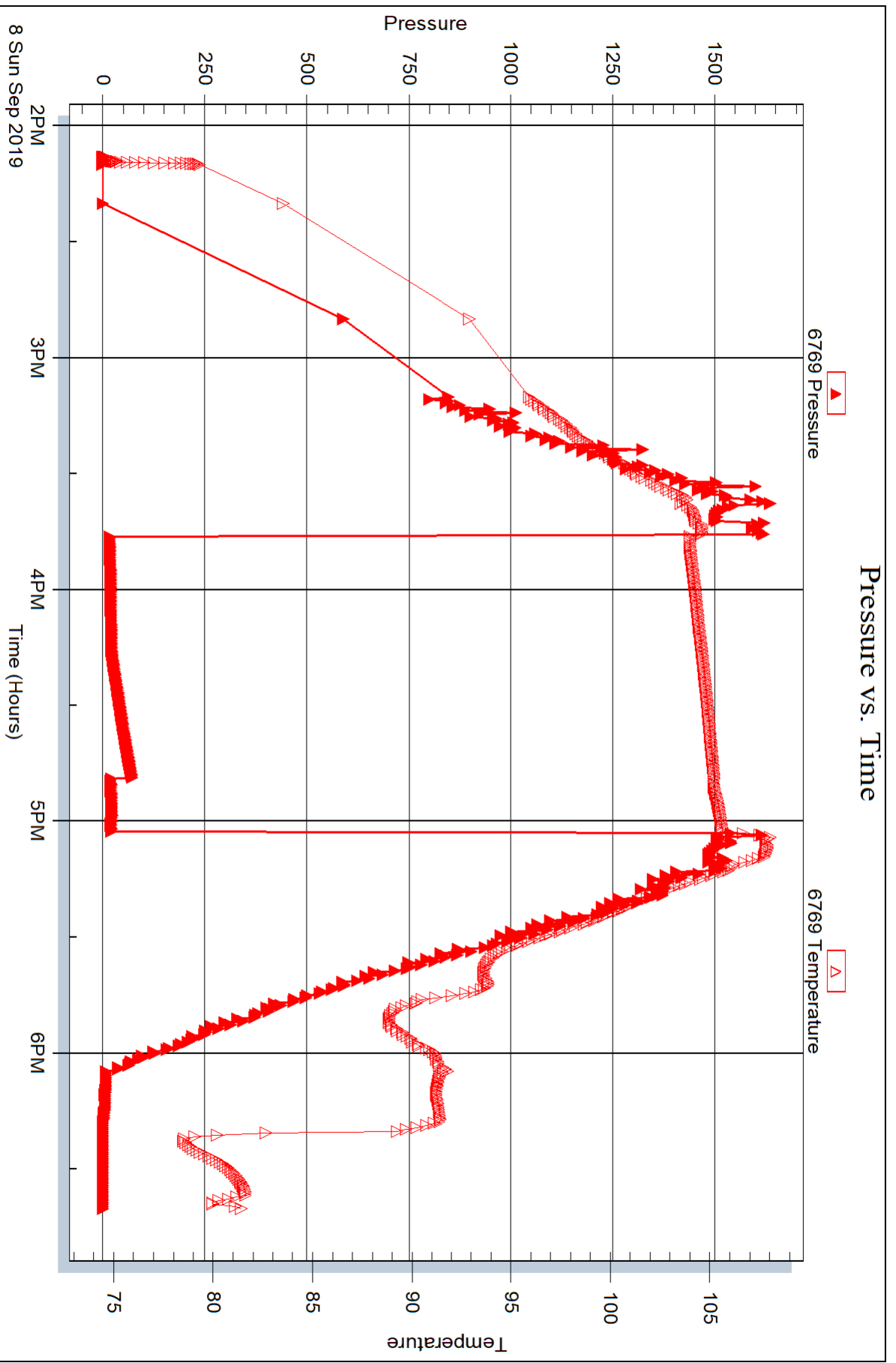


Serial #: 6769

Outside Mai Oil Operations

Kulgen #18

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

Start Date: 2019.09.09 @ 07:58:00

End Date: 2019.09.09 @ 15:20:00

Job Ticket #: 65816 DST #: 5

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

Printed: 2019.09.11 @ 13:16:20



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65816 **DST#: 5**
 Test Start: 2019.09.09 @ 07:58:00

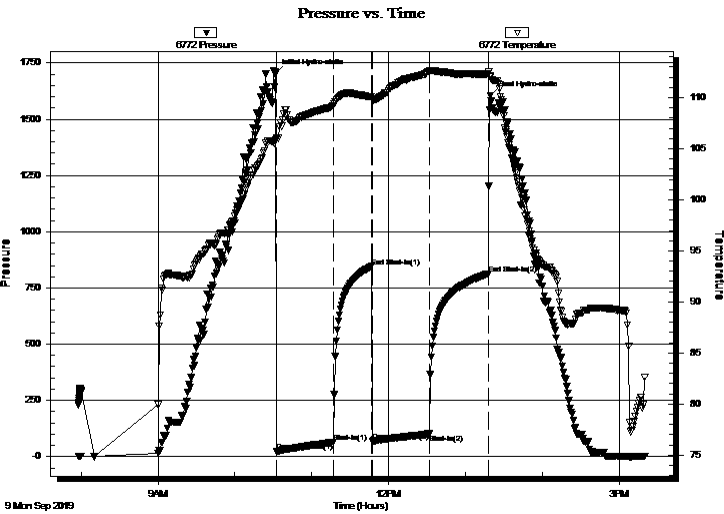
GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 10:32:20 Tester: Benny Mulligan
 Time Test Ended: 15:20:00 Unit No: 66
 Interval: **3330.00 ft (KB) To 3386.00 ft (KB) (TVD)** Reference Elevations: 1809.00 ft (KB)
 Total Depth: 3386.00 ft (KB) (TVD) 1800.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 9.00 ft

Serial #: 6772 Inside

Press@RunDepth: 101.37 psig @ 3331.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.09 End Date: 2019.09.09 Last Calib.: 2019.09.09
 Start Time: 07:58:01 End Time: 15:20:00 Time On Btm: 2019.09.09 @ 10:31:30
 Time Off Btm: 2019.09.09 @ 13:19:20

TEST COMMENT: IF-45- BOB 38 mins 30 secs total build of 13 1/2"
 ISI-30- no blow back
 FF-45- built to 7 1/2"
 FSI-45- no blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1701.21	105.67	Initial Hydro-static
1	21.90	105.94	Open To Flow (1)
46	64.14	109.23	Shut-In(1)
76	845.55	110.07	End Shut-In(1)
76	69.01	109.78	Open To Flow (2)
121	101.37	112.54	Shut-In(2)
167	813.72	112.33	End Shut-In(2)
168	1603.57	111.99	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	C.O. 100%O	0.21
165.00	S.O.C.M. 10%O 90%M	2.31

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd ste 800
 Dallas TX 75225+5570
 ATTN: Jim Musgrove

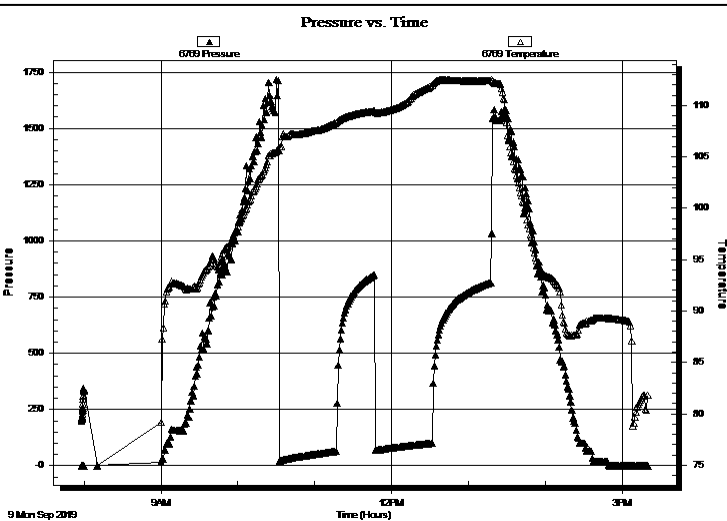
12-19s-12w Barton,KS
Kultgen #18
 Job Ticket: 65816 **DST#: 5**
 Test Start: 2019.09.09 @ 07:58:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 10:32:20 Tester: Benny Mulligan
 Time Test Ended: 15:20:00 Unit No: 66
Interval: 3330.00 ft (KB) To 3386.00 ft (KB) (TVD) Reference Elevations: 1809.00 ft (KB)
 Total Depth: 3386.00 ft (KB) (TVD) 1800.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 9.00 ft

Serial #: 6769 Outside
 Press@RunDepth: psig @ 3331.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.09.09 End Date: 2019.09.09 Last Calib.: 2019.09.09
 Start Time: 07:58:01 End Time: 15:20:00 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF-45- BOB 38 mins 30 secs total build of 13 1/2"
 ISI-30- no blow back
 FF-45- built to 7 1/2"
 FSI-45- no blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
15.00	C.O. 100%O	0.21
165.00	S.O.C.M. 10%O 90%M	2.31

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65816 **DST#: 5**
Test Start: 2019.09.09 @ 07:58:00

Tool Information

Drill Pipe:	Length: 3320.00 ft	Diameter: 3.80 inches	Volume: 46.57 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 38000.00 lb
			<u>Total Volume: 46.57 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 32000.00 lb
Depth to Top Packer:	3330.00 ft			Final 33000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	56.00 ft			
Tool Length:	76.00 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			3311.00	
Shut In Tool	5.00			3316.00	
Hydraulic tool	5.00			3321.00	
Packer	5.00			3326.00	20.00 Bottom Of Top Packer
Packer	4.00			3330.00	
Stubb	1.00			3331.00	
Recorder	0.00	6772	Inside	3331.00	
Recorder	0.00	6769	Outside	3331.00	
Perforations	19.00			3350.00	
Change Over Sub	1.00			3351.00	
Drill Pipe	31.00			3382.00	
Change Over Sub	1.00			3383.00	
Bullnose	3.00			3386.00	56.00 Bottom Packers & Anchor

Total Tool Length: 76.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65816

DST#: 5

ATTN: Jim Musgrove

Test Start: 2019.09.09 @ 07:58:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

39 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 10000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	C.O. 100%O	0.210
165.00	S.O.C.M. 10%O 90%M	2.315

Total Length: 180.00 ft

Total Volume: 2.525 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

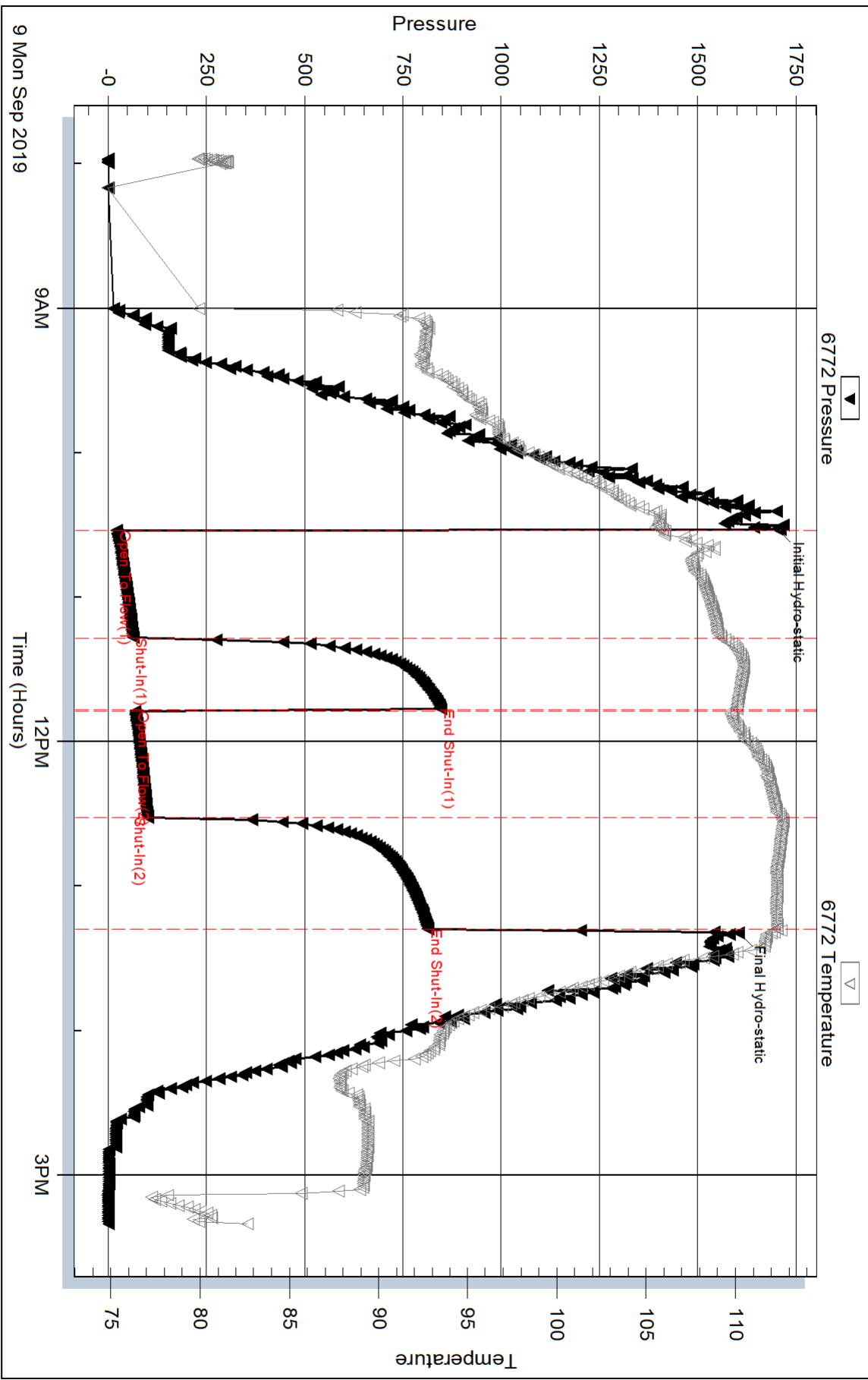
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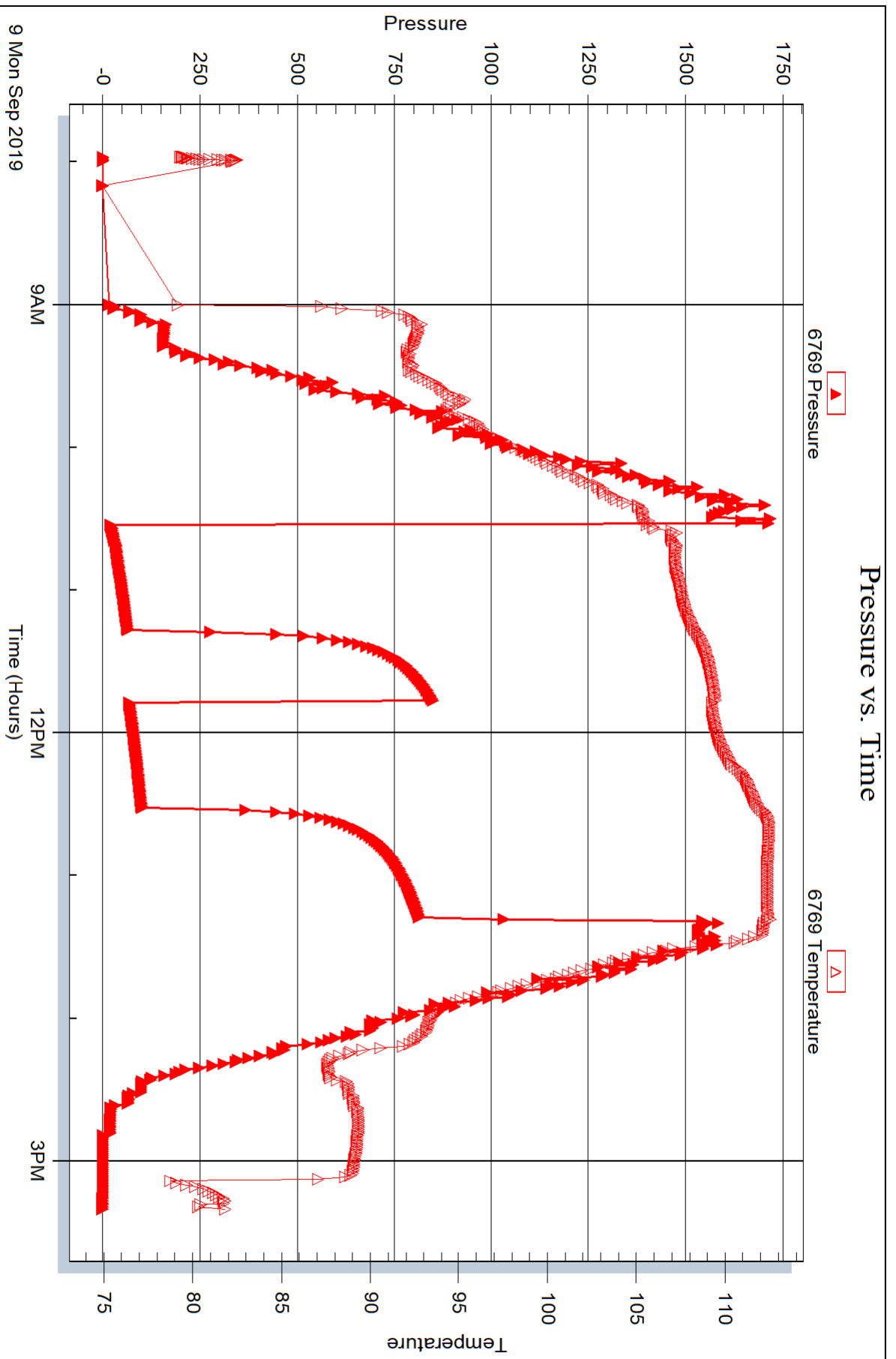
Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time







DRILL STEM TEST REPORT

Prepared For: **Mai Oil Operations**

8411 Preston Rd ste 800
Dallas TX 75225+5570

ATTN: Jim Musgrove

Kultgen #18

12-19s-12w Barton,KS

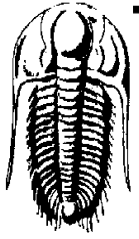
Start Date: 2019.09.09 @ 20:37:00

End Date: 2019.09.10 @ 03:52:50

Job Ticket #: 65817 DST #: 6

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

Printed: 2019.09.11 @ 13:15:41



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65817

DST#: 6

ATTN: Jim Musgrove

Test Start: 2019.09.09 @ 20:37:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:27:00

Time Test Ended: 03:52:50

Test Type: Conventional Bottom Hole (Initial)

Tester: Benny Mulligan

Unit No: 66

Interval: 3386.00 ft (KB) To 3396.00 ft (KB) (TVD)

Reference Elevations: 1809.00 ft (KB)

Total Depth: 3396.00 ft (KB) (TVD)

1800.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 9.00 ft

Serial #: 6772 Inside

Press@RunDepth: 645.30 psig @ 3387.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.09.09

End Date:

2019.09.10

Last Calib.: 2019.09.10

Start Time: 20:37:01

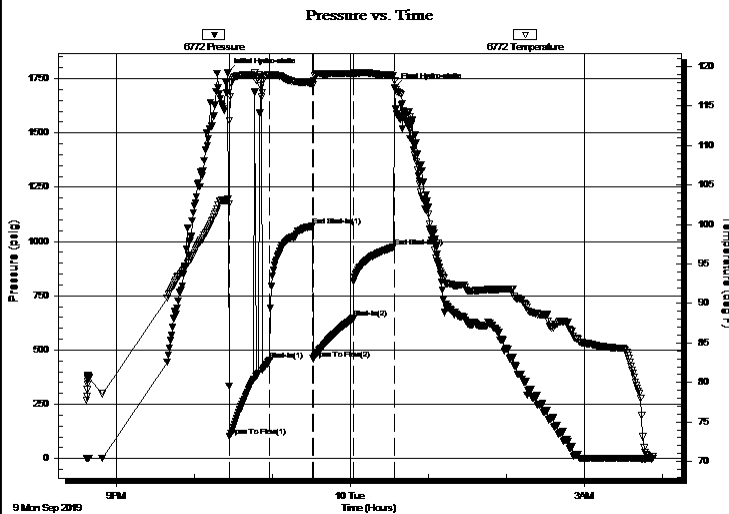
End Time:

03:52:50

Time On Btm: 2019.09.09 @ 22:25:20

Time Off Btm: 2019.09.10 @ 00:34:00

TEST COMMENT: IF-30- BOB 1min 20 secs total build of 87"
 ISI-30- no blow back
 FF-30- BOB 2mins 20 secs total build of 88"
 FSI-30- no blow back



PRESSURE SUMMARY

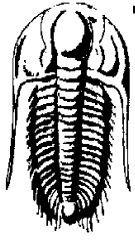
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1778.88	103.09	Initial Hydro-static
2	103.60	113.14	Open To Flow (1)
33	454.01	118.87	Shut-In(1)
66	1071.32	117.89	End Shut-In(1)
66	460.66	117.75	Open To Flow (2)
97	645.30	119.11	Shut-In(2)
128	975.08	118.88	End Shut-In(2)
129	1707.02	118.26	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
840.00	GV/SOCMW 5%G 5%O 10%M 80%W	11.78
360.00	GSOCW 10%G 10%O 80%W	5.05
180.00	W 100%W	2.52

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd ste 800
Dallas TX 75225+5570
ATTN: Jim Musgrove

12-19s-12w Barton,KS
Kultgen #18
Job Ticket: 65817 **DST#: 6**
Test Start: 2019.09.09 @ 20:37:00

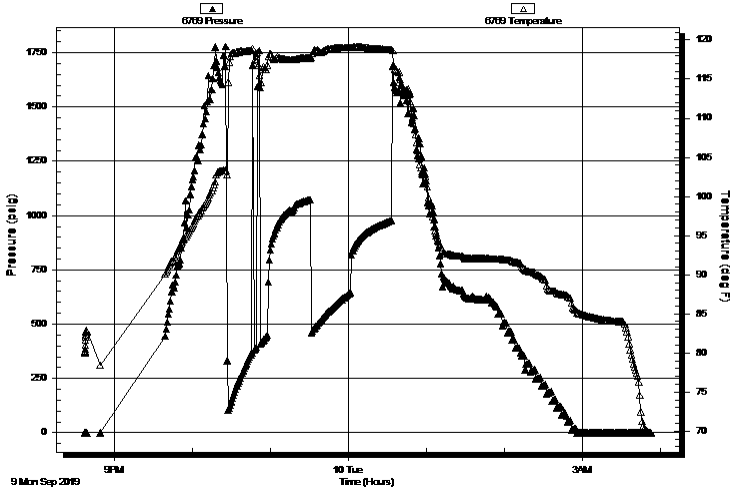
GENERAL INFORMATION:

Formation:	Arbuckle		
Deviated:	No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened:	22:27:00		Tester: Benny Mulligan
Time Test Ended:	03:52:50		Unit No: 66
Interval:	3386.00 ft (KB) To 3396.00 ft (KB) (TVD)		Reference Elevations: 1809.00 ft (KB)
Total Depth:	3396.00 ft (KB) (TVD)		1800.00 ft (CF)
Hole Diameter:	7.88 inches	Hole Condition: Fair	KB to GR/CF: 9.00 ft

Serial #: 6769	Outside				
Press@RunDepth:	psig @	3387.00 ft (KB)	Capacity:		8000.00 psig
Start Date:	2019.09.09	End Date:	2019.09.10	Last Calib.:	2019.09.10
Start Time:	20:37:01	End Time:	03:52:50	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: IF-30- BOB 1min 20 secs total build of 87"
ISI-30- no blow back
FF-30- BOB 2mins 20 secs total build of 88"
FSI-30- no blow back

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
840.00	GV/SOCMW 5%G 5%O 10%M 80%W	11.78
360.00	GSOCW 10%G 10%O 80%W	5.05
180.00	W 100%W	2.52

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65817

DST#: 6

ATTN: Jim Musgrove

Test Start: 2019.09.09 @ 20:37:00

Tool Information

Drill Pipe:	Length: 3384.00 ft	Diameter: 3.80 inches	Volume: 47.47 bbl	Tool Weight: 2000.00 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: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 39000.00 lb
			<u>Total Volume: 47.47 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 31000.00 lb
Depth to Top Packer:	3386.00 ft			Final 36000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	10.00 ft			
Tool Length:	30.00 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			3367.00	
Shut In Tool	5.00			3372.00	
Hydraulic tool	5.00			3377.00	
Packer	5.00			3382.00	20.00 Bottom Of Top Packer
Packer	4.00			3386.00	
Stubb	1.00			3387.00	
Recorder	0.00	6772	Inside	3387.00	
Recorder	0.00	6769	Outside	3387.00	
Perforations	6.00			3393.00	
Bullnose	3.00			3396.00	10.00 Bottom Packers & Anchor
Total Tool Length:	30.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

12-19s-12w Barton,KS

8411 Preston Rd ste 800
Dallas TX 75225+5570

Kultgen #18

Job Ticket: 65817

DST#: 6

ATTN: Jim Musgrove

Test Start: 2019.09.09 @ 20:37:00

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:

18000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.99 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 10000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
840.00	GVSOCMW 5%G 5%O 10%M 80%W	11.783
360.00	GSOCW 10%G 10%O 80%W	5.050
180.00	W 100%W	2.525

Total Length: 1380.00 ft Total Volume: 19.358 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

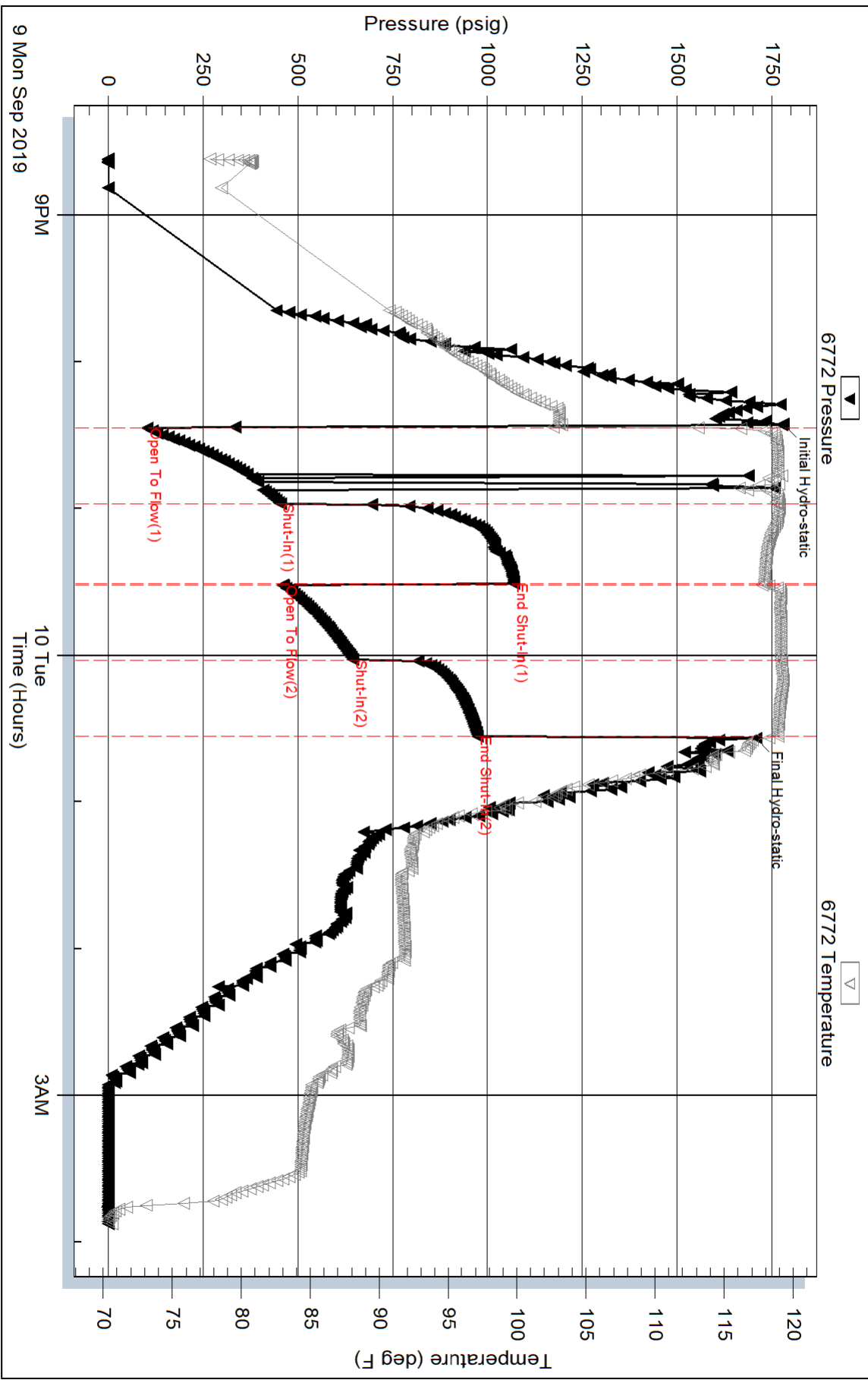
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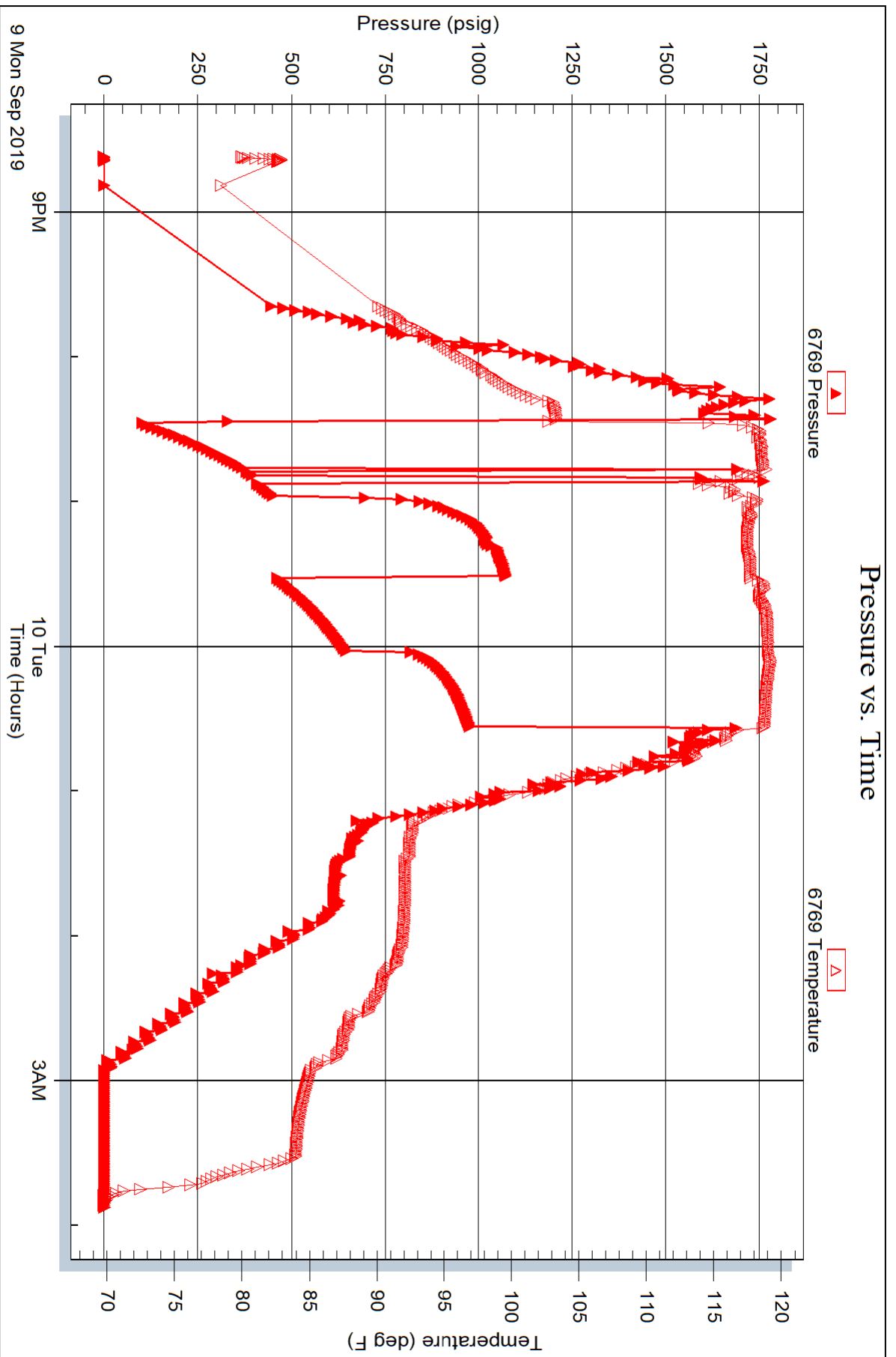
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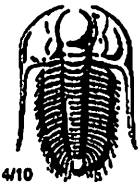
Laboratory Location:

Recovery Comments:

Pressure vs. Time







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65812

NO.

Well Name & No. Kuttgen #18 Test No. 1 Date 9-6-2019
 Company Mal Oil Operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd Ste 800 Dallas TX 75225+5570
 Co. Rep / Geo. Jim Musgrave Rig Southwind Rig 3
 Location: Sec. 12 Twp 19s Rge. 12w Co. Burton State KS

Interval Tested 2883-2915 Zone Tested Topeka
 Anchor Length 32' Drill Pipe Run _____ Mud Wt. 8.6
 Top Packer Depth 2878 Drill Collars Run _____ Vis 68
 Bottom Packer Depth 2883 Wt. Pipe Run _____ WL 8
 Total Depth 2915 Chlorides 4000 ppm System LCM 1#
 Blow Description ±F - built to 3 1/2"
IST - no blow back
FE - built to 5 1/2"
FST - no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>50cm</u>		<u>5</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 Total 30' BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1386</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>9:34 AM</u>
(B) First Initial Flow <u>19</u>	<input type="checkbox"/> Jars _____	T-Started <u>11:11 AM</u>
(C) First Final Flow <u>21</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>1:23 pm</u>
(D) Initial Shut-In <u>156</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>4:23</u>
(E) Second Initial Flow <u>18</u>	<input type="checkbox"/> Hourly Standby _____	T-Out _____
(F) Second Final Flow <u>26</u>	<input checked="" type="checkbox"/> Mileage <u>24mi RT</u> ²⁴	Comments _____
(G) Final Shut-In <u>169</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1330</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> EM Tool _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1224</u>
	Sub Total <u>1224</u>	MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan
 Triobite 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 65813

NO.

Well Name & No. Kultgen #18 Test No. 2 Date 9-7-2019
 Company Mai Oil Operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd Ste 800 Dallas TX 75225+5570
 Co. Rep / Geo. Jim Musgrove Rig Southwind Rig 3
 Location: Sec. 12 Twp 19s Rge. 12W Co. Barton State KS

Interval Tested 3092-3154 Zone Tested LKC A-C
 Anchor Length 62' Drill Pipe Run _____ Mud Wt. 8.6
 Top Packer Depth 3087 Drill Collars Run _____ Vis 68
 Bottom Packer Depth 3092 Wt. Pipe Run _____ WL 8
 Total Depth 3154 Chlorides 4,000 ppm System LCM 1#
 Blow Description IF - weak surface blow
EST - no blow back
FE - was dead pulled
FST -

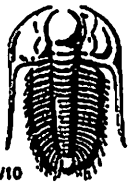
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5' BHT 103 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1542</u>	<input checked="" type="checkbox"/> Test 1200	T-On Location <u>8:25 AM</u>
(B) First Initial Flow <u>18</u>	<input type="checkbox"/> Jars _____	T-Started <u>8:41</u>
(C) First Final Flow <u>20</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>10:38</u>
(D) Initial Shut-In <u>45</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>11:27</u>
(E) Second Initial Flow <u>18</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>1:08 PM</u>
(F) Second Final Flow <u>21</u>	<input checked="" type="checkbox"/> Mileage <u>24 mi RT 24</u>	Comments _____
(G) Final Shut-In _____	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1495</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> EM Tool _____
Initial Open <u>15</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>20</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>15</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In _____	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1224</u>
	Sub Total <u>1224</u>	MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan

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 65814

NO.

Well Name & No. Kultgen #18 Test No. 3 Date 9-7-2019
 Company Meri Oil operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd Ste 800 Dallas TX 75225+5570
 Co. Rep / Geo. Jim Musgrove Rig Southwind Rig 3
 Location: Sec. 12 Twp 19S Rge. 12W Co. Barton State KS

Interval Tested 3146-3169 Zone Tested LKC "G"
 Anchor Length 23' Drill Pipe Run 3131 Mud Wt. 9.2
 Top Packer Depth 3141 Drill Collars Run _____ Vis 50
 Bottom Packer Depth 3146 Wt. Pipe Run _____ WL 8.8
 Total Depth 3169 Chlorides 6000 ppm System LCM 1#

Blow Description IF - built to 8"
ISE - no blow back
FF - built to 9"
FSE - no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>40'</u>	<u>0.5M.</u>	<u>1</u>		<u>99</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 40' BHT 106 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

- (A) Initial Hydrostatic 1590
- (B) First Initial Flow 16
- (C) First Final Flow 22
- (D) Initial Shut-In 130
- (E) Second Initial Flow 20
- (F) Second Final Flow 31
- (G) Final Shut-In 144
- (H) Final Hydrostatic 1574

- Test 1200
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 24mi RT 24
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1224

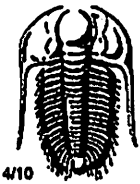
T-On Location 6:40 PM
 T-Started 7:33
 T-Open 9:34
 T-Pulled 12:19
 T-Out 1:43
 Comments _____
 EM Tool _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1224
 MP/DST Disc't _____

Initial Open 30
 Initial Shut-In 30
 Final Flow 45
 Final Shut-In 60

Approved By _____

Our Representative Benny Mulligan

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 65815

NO.

Well Name & No. Kultgen #18 Test No. 4 Date 9-8-2019
 Company Mai Oil operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd ste 800 Dallas TX 75225+5570
 Co. Rep / Geo. Jim Musgrave Rig Southwind Rig 3
 Location: Sec. 12 Twp 19S Rge. 12W Co. Barton State KS

Interval Tested 3204 - 3300 Zone Tested LKC H-K
 Anchor Length 96' Drill Pipe Run 3195 Mud Wt. 9.2
 Top Packer Depth 3199 Drill Collars Run _____ Vis 49
 Bottom Packer Depth 3204 Wt. Pipe Run _____ WL 9.2
 Total Depth 3300 Chlorides 8,000 ppm System LCM 1#

Blow Description IF - built to 1 1/2"
FST - ~~no blow back~~ no blow back
FF - was dead so pulled
FST -

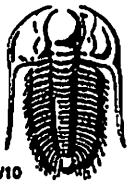
Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 201 BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1629</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>1:15 pm</u>
(B) First Initial Flow <u>17</u>	<input type="checkbox"/> Jars _____	T-Started <u>2:08</u>
(C) First Final Flow <u>22</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>2:46</u>
(D) Initial Shut-In <u>70</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>5:07</u>
(E) Second Initial Flow <u>18</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>6:41</u>
(F) Second Final Flow <u>21</u>	<input checked="" type="checkbox"/> Mileage <u>24mi RT 24</u>	Comments _____
(G) Final Shut-In _____	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1614</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> EM Tool _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>15</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In _____	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1224</u>
	Sub Total <u>1224</u>	MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan

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 65816

NO.

Well Name & No. Kultoen #18 Test No. 5 Date 9-9-2019
 Company Mari Oil Operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd Ste 800 Dallas TX 75225+5970
 Co. Rep / Geo. Jim Musgrove Rig Southwind Rig 3
 Location: Sec. 12 Twp 19S Rge. 12W Co. Barton State KS

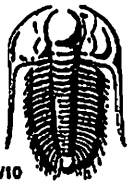
Interval Tested 3330-3386 Zone Tested Arbuckle
 Anchor Length 56' Drill Pipe Run 3320 Mud Wt. 9.2
 Top Packer Depth 3325 Drill Collars Run _____ Vls 50
 Bottom Packer Depth 3330 Wt. Pipe Run _____ WL 10
 Total Depth 3386 Chlorides 10,000 ppm System LCM 1/2 #
 Blow Description FF - BORS 38 mins 30 secs total build of 13 1/2"
EST - no blow back
FF - built to 7 1/2"
FST - no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>G.O.</u>	<u>100</u>			
<u>165</u>	<u>S.O.C.M.</u>	<u>10</u>		<u>90</u>	
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

Rec Total 180' BHT _____ Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>1701</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>7:36 AM</u>
(B) First Initial Flow <u>20</u>	<input type="checkbox"/> Jars _____	T-Started <u>7:58</u>
(C) First Final Flow <u>64</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>10:32</u>
(D) Initial Shut-In <u>845</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>1:17 PM</u>
(E) Second Initial Flow <u>69</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>3:20</u>
(F) Second Final Flow <u>101</u>	<input checked="" type="checkbox"/> Mileage <u>24mi RT</u> ₂₄	Comments _____
(G) Final Shut-In <u>813</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1603</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> EM Tool _____
Initial Open <u>45</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
Initial Shut-In <u>30</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
Final Shut-In <u>45</u>	<input type="checkbox"/> Day Standby _____	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility _____	Total <u>1224</u>
	Sub Total <u>1224</u>	MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65817

NO.

Well Name & No. Kultgen #18 Test No. 6 Date 9-9-2019
 Company Mal Oil Operations Elevation 1809 KB 1800 GL
 Address 8411 Preston Rd Ste 800 Dallas TX 75225+5570
 Co. Rep / Geo. Jim Musgrove Rig Southwind Rig 3
 Location: Sec. 12 Twp 19S Rge. 12w Co. Barton State KS

Interval Tested 3386-3396 Zone Tested Arbuckk
 Anchor Length 10' Drill Pipe Run 3384 Mud Wt. 9.2
 Top Packer Depth 3381 Drill Collars Run ————— Vls 50
 Bottom Packer Depth 3386 Wt. Pipe Run ————— WL 10
 Total Depth 3396 Chlorides 10000 ppm System LCM 1/2#
 Blow Description IF - BOB 1min 20secs total build of 87"
ISI - no blow back
FE - BOB 2min 20secs total build of 88"
FSE - no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>840</u>	<u>650 C.M.W.</u>	<u>5</u>	<u>5</u>	<u>80</u>	<u>10</u>
<u>360</u>	<u>650 CW</u>	<u>10</u>	<u>10</u>	<u>80</u>	<u> </u>
<u>180</u>	<u>W.</u>	<u> </u>	<u> </u>	<u>100</u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Rec Total 1380' BHT 118 Gravity API RW .382 @ 72.8° F Chlorides 18000 ppm

(A) Initial Hydrostatic 1778 Test 1200 T-On Location 8:18 PM.
 (B) First Initial Flow 103 Jars T-Started 8:37
 (C) First Final Flow 454 Safety Joint T-Open 10:26
 (D) Initial Shut-In 1071 Circ Sub T-Pulled 12:32 AM
 (E) Second Initial Flow 460 Hourly Standby T-Out 3:50 AM
 (F) Second Final Flow 645 Mileage 24mi RT 24 Comments Loaded tools after DST #6
 (G) Final Shut-In 975 Sampler
 (H) Final Hydrostatic 1707 Straddle EM Tool
 Shale Packer Ruined Shale Packer
 Extra Packer Ruined Packer
 Extra Recorder Extra Copies
 Day Standby Sub Total 0
 Accessibility Total 1224
 Sub Total 1224 MP/DST Disc't

Approved By Our Representative Benny Mulligan
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JAMES C. MUSGROVE

Petroleum Geologist, LLC
212 Main Street
P.O. Box 215
Claflin, KS 67525

Office (620) 588-4250

Res. Claflin (620) 786-0839

Mai Oil Operations Inc.
Kultgen #18
SW-SW-NE-NW (1280' FNL & 1350' FWL)
Section 12-19s-12w
Barton County, Kansas

Page 1

5 1/2" Production Casing Set

.Contractor: Southwind Drilling Co. (rig #3)
Commenced: September 3, 2019
Completed: September 11, 2019
Elevation: 1808' K.B., 1806' D.F., 1799' G.L.
Casing program: Surface; 8 5/8" @ 392'
Production, 5 1/2" @ 3449'
Sample: Samples saved and examined 2600' to the Rotary Total Depth.
Drilling time: One (1) foot drilling time recorded and kept 2600' to the Rotary Total Depth.
Measurements: All depths measured from the Kelly Bushing.
Drill Stem Tests: There were six (6) Drill Stem Tests ran by Trilobite Testing Co.
Electric Log: By Eli; Dual Induction, Compensated Density/Neutron and Micro Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	610	+1198
Base Anhydrite	635	+1173
Heebner	2947	-1139
Toronto	2964	-1156
Douglas	2984	-1176
Brown Lime	3063	-1255
Lansing	3080	-1272
Base Kansas City	3327	-1519
Conglomerate	3334	-1526
Arbuckle	3370	-1562
Rotary Total Depth	3460	-1652
Log Total Depth	3458	-1650

(All tops and zone(s) corrected to Electric Log Measurements)

SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

TOPEKA SECTION

2832-2850' Limestone, gray; highly fossiliferous; chalky; plus gray and white chalk.

- 2854-2864' Limestone, white, gray; finely crystalline, fossiliferous; few granular; fair porosity (barren)
- 2885-2900' Limestone, gray, white, fossiliferous, fine oomoldic/vuggy type porosity; good stain and saturation; show of free oil and good odor in fresh samples.

Drill Stem Test #1 **2883-2915**

Times: 30-45-45-60

Blow: Weak

**Recovery: 30' slightly oil cut mud
(5% oil; 95% mud)**

**Pressures: ISIP 156 psi
FSIP 169 psi
IFP 19-21 psi
FFP 19-27 psi
HSH 1386-1330 psi**

- 2920-2940' Limestone, tan, gray, finely crystalline, slightly cherty (dense); plus gray and tan chert.

TORONTO SECTION

- 2964-2972' Limestone, tan; finely crystalline, fossiliferous, cherty, poorly developed porosity, no shows.
- 2972-2980' Limestone, white, chalky; scattered pinpoint porosity, brown stain, no free oil and no odor in fresh samples.

LANSING SECTION

- 3071-3080' Limestone, white, cream, slightly cherty; poor porosity, trace brown edge staining, no free oil and no odor in fresh samples.
- 3090-3100' Limestone, white, gray, finely crystalline, chalky; no shows.
- 3106-3111' Limestone, white, gray, finely crystalline in part; chalky, poor visible porosity; golden brown stain, no show of free oil and faint odor in fresh samples.
- 3123-3131' Limestone, white and gray; fossiliferous/oolitic, poor to fair fossil cast and vuggy type porosity; fair brown stain and saturation, show of free oil and good door in fresh samples.
- 3141-3146' Limestone, white, finely crystalline; oolitic, sub-oomoldic, fair porosity, golden brown stain, show of free oil and fair odor in fresh samples.

Drill Stem Test #2

3092-3154

Times: 15-20-15-X

Blow: Weak

Recovery: 5' mud

**Pressures: ISIP 45 psi
FSIP X psi
IFP 18-20 psi
FFP 18-21 psi
HSH 1542-1495 psi**

3164-3169' Limestone, tan, oomoldic; fair oomoldic porosity; brown stain, show of free oil and faint odor in fresh samples.

Drill Stem Test #3

3146-3169

Times: 30-30-45-60

Blow: Good

**Recovery: 40' slightly oil cut mud
(1% oil; 99% mud)**

**Pressures: ISIP 130 psi
FSIP 144 psi
IFP 16-22 psi
FFP 20-31 psi
HSH 1590-1574 psi**

3170-3194' Limestone, as above, decreasing stain, show of free oil and fair odor in fresh samples.

3220-3227' Limestone, white, tan, oolitic, oomoldic, fair oomoldic porosity, fair stain and saturation, show of free oil and fair to good odor in fresh samples.

3238-3246' Limestone, white, gray oolitic, chalky, poor visible porosity, brown stain, show of free oil and no odor in fresh samples.

3250-3264' Limestone, gray; oolitic, sub-oomoldic, fair porosity; gray and black stain, trace of free oil and faint odor in fresh samples.

3272-3280' Limestone, gray and white, oolitic; oomoldic in part; chalky; poor visible porosity; trace poor stain, no free oil and no odor in fresh samples.

Drill Stem Test #4 **3204-3300**

Times: 30-30-15-X
Blow: Weak
Recovery: 20' mud
Pressures: ISIP 70 psi
FSIP X psi
IFP 17-22 psi
FFP 18-21 psi
HSH 1629-1614 psi

3300-3310' Limestone, gray; buff, finely crystalline; dense; slightly cherty
3315-3326' Limestone, white, medium crystalline; chalky

COMGLOMERATE SECTION

3337-3350' Limestone, white; medium crystalline, maroon tinted; chalky; plus red, gray, pink soft shale and tan/white chert.
3350-3370' Varied colored opaque chert in matrix of red/blood red soft shales.

ARBUCKLE SECTION

3370-3386' Dolomite gray; buff, sucrosic; scatted pinpoint porosity; light brown stain; show of free oil and faint odor.

Drill Stem Test #5 **3330-3386**

Times: 45-30-45-45
Blow: Good
Recovery: 15' clean oil
165' oil cut mud
(10% oil; 90% mud)
Pressures: ISIP 845 psi
FSIP 813 psi
IFP 20-69 psi
FFP 69-101 psi
HSH 1704-1603 psi

3386-3396' Dolomite, tan; fine to medium crystalline, fair inter-crystalline porosity; good stain and saturation; good show of free oil and strong odor in fresh samples.

Drill Stem Test #6 **3386-3396**

Times: 30-30-30-30

Blow: Strong

**Recovery: 840' Slightly oil and gas cut muddy water
(5% gas; 5% oil; 80% water; 10% mud)
360' oil and gas cut water
(10% gas; 10% oil; 80% water)**

**Pressures: ISIP 1071 psi
FSIP 975 psi
IFP 103-454 psi
FFP 460-645 psi
HSH 1778-1707 psi**

- 3396-3410' Dolomite, as above, decreasing stain, trace of free oil and fair odor in fresh samples; plus white; cream, finely crystalline, dolomitic, chalky luster.
- 3410-3420' Dolomite, buff; fine and medium crystalline; fair to good inter-crystalline porosity; spotty stain, trace of free oil and faint odor in fresh samples.
- 3420-3440' Dolomite, white, gray, medium crystalline, fair inter-crystalline porosity; a few good with good porosity, trace spotty gray and black stain, no show of free oil.
- 3440-3460' Dolomite as above, no shows.

**Rotary Total Depth: 3460 (-1652)
Log Total Depth: 3458 (-1650)**

Recommendations:

5 1/2" production casing was set and cemented on the Mai Oil Operations, Inc., Kultgen #18,

Respectfully yours,

James C. Musgrove
Petroleum Geologist