

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 Recompletion Date _____ Date Reached TD _____ Completion Date or Recompletion Date _____

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite: _____

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

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

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

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

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom

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	Rama Operating Co., Inc.
Well Name	GRANT 10-4
Doc ID	1409835

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	2857-65		
	CIBP		3250

Customer <i>Rama Operating</i>		Lease No.		Date	
Lease <i>Grant</i>		Well # <i>10-4</i>		<i>5/18/18</i>	
Field Order # <i>16641</i>	Station <i>Pratt KS</i>	Casing <i>5 5/8</i>	Depth	County <i>Butler</i>	State <i>KS</i>
Type Job <i>5 5/8 Sucker Ppc</i>	<i>242</i>	Formation	Legal Description		

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid		RATE	PRESS	ISIP
<i>5 5/8</i>				Pre Pad		Max		5 Min.
Depth <i>507.15</i>	Depth	From	To	Pad		Min		10 Min.
Volume <i>19.25</i>	Volume	From	To	Frac		Avg		15 Min.
Max Press <i>500</i>	Max Press	From	To			HHP Used		Annulus Pressure
Well Connection <i>5 5/8</i>	Annulus Vol.	From	To	Flush		Gas Volume		Total Load
Plug Depth	Packer Depth	From	To					

Customer Representative <i>Lance Salyer</i>	Station Manager <i>Justin Wiedeman</i>	Treater <i>Scott Gruber</i>
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Service Units <i>27463</i>	<i>1992-9</i>	<i>KG15</i>						
Driver Names <i>Scott M. H. Chumac</i>								

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>3:15</i>					<i>On location Safety Meeting</i>
<i>5:40</i>					<i>Back Circulation</i>
<i>5:52</i>				<i>5</i>	<i>Pressure 1500</i>
<i>5:53</i>			<i>3</i>	<i>5</i>	<i>Shut Cement 525 gals 15.24</i>
<i>6:06</i>			<i>75.25</i>	<i>0</i>	<i>Shut down</i>
<i>6:09</i>				<i>-</i>	<i>Release Plug</i>
<i>6:10</i>				<i>4</i>	<i>Start Displacement</i>
<i>6:11</i>			<i>15</i>	<i>4</i>	<i>Cement Circulation to surface</i>
<i>6:15</i>			<i>3.3</i>	<i>0</i>	<i>Shut down</i>
					<i>Job complete</i>

BASIC

energy services, L.P.

TREATMENT REPORT

Customer <i>Kems Operations</i>	Lease No.	Date <i>5/14/2018</i>
Lease <i>Grnt</i>	Well # <i>10-4</i>	
Field Order # <i>16738</i>	Station <i>Prstt, ks</i>	Casing <i>5 1/2</i>
Type Job <i>242/5 1/2 Long String</i>	Depth <i>3321</i>	County <i>Barton</i>
	Formation <i>10-3310</i>	State <i>Ks</i>
		Legal Description <i>4-205-114</i>

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid		RATE	PRESS	ISIP
<i>3 1/2</i>								
Depth <i>3321</i>	Depth	From	To	Pre Pad	Max			5 Min.
Volume <i>81</i>	Volume	From	To	Pad	Min			10 Min.
Max Press <i>1500</i>	Max Press	From	To	Frac	Avg			15 Min.
Well Connection	Annulus Vol.	From	To		HHP Used			Annulus Pressure
Plug Depth <i>3279</i>	Packer Depth	From	To	Flush <i>Freshwater</i>	Gas Volume			Total Load

Customer Representative <i>Randy G. Nest</i>	Station Manager <i>Justin Westerman</i>	Treater <i>Darin Franklin</i>
Service Units <i>92911 84981 19843 19959 19918</i>		
Driver Names <i>Darin Ed Ed D.92 D.92</i>		

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>7:30pm</i>					<i>On location / safety meeting</i>
					<i>T-1,3,5,7,9 B-1</i>
					<i>1255K DA2 cement, 5% gypsum, 10% SPT</i>
					<i>5ppps gilsonite, 0.25ppps cellulose, 0.5% fluid loss, 0.5% defoamer</i>
					<i>15.2ppg, 1.38 v.oid, 5.68 water</i>
<i>1:45am</i>	<i>300</i>		<i>5</i>	<i>4</i>	<i>Pump 5 bbls water</i>
	<i>300</i>		<i>12</i>	<i>4</i>	<i>12 bbls mud flush</i>
	<i>300</i>		<i>5</i>	<i>4</i>	<i>5 bbls water</i>
	<i>300</i>		<i>31</i>	<i>4</i>	<i>mix 1255K cement - DA2</i>
					<i>Shut down</i>
					<i>Wash Pump & Lines & Release Plug</i>
	<i>200</i>		<i>0</i>	<i>5</i>	<i>Start displacement</i>
	<i>300</i>		<i>60</i>	<i>5</i>	<i>Lift Pressure</i>
	<i>400</i>		<i>70</i>	<i>3</i>	<i>Slow Rise</i>
	<i>1100</i>		<i>78</i>	<i>3</i>	<i>Bump Plug</i>
					<i>Flow - Hold</i>
			<i>7.5</i>	<i>3</i>	<i>Plug Ret & mouse holes</i>
<i>2:30</i>					<i>Job Complete / Darin & crew</i>
					<i>Thank You!!!</i>



Joshua R. Austin

Petroleum Geologist

Report for
RAMA Operating CO., Inc



COMPANY: RAMA Operating Company, Inc.

LEASE: GRANT # 10-4

FIELD: Chase-Silica

LOCATION: E2-SW-NE-SW (1650' FSL & 1780' FWL)

SEC: 4 TWSP: 20s RGE: 11w

COUNTY: Barton STATE: Kansas

KB: 1780' GL: 1769'

API # 15-009-26217-00-00

CONTRACTOR: Sterling Drilling (rig #4)

Spud: 05/07/2018 Comp: 05/13/2018

RTD: 3310' LTD: N/A

Mud Up: 2600' Type Mud: Chemical was displaced

Samples Saved From: 2700'-RTD

Drilling Time Kept From: 2700'- RTD

Samples Examined From: 2700' - RTD

Geological Supervision From: 2800' to RTD

Geologist on Well: Josh Austin

Surface Casing: 8 5/8" @ 307'

Production Casing: 5 1/2" @ 3302'

Electronic Surveys: None

NOTES

On the basis of the positive structural position, drill stem test and shows in the samples, it was recommended to run 5 1/2" production casing to further test the Arbuckle zone. No electric logs were ran. Before plugging the well the following zones should be tested:

Lansing 3190-92, 3053-55, Douglas Sand 2958-62, Toronto 2921-23, and the Platsmouth 2856-59.

RAMA Operating Co., Inc.
well comparison sheet

DRILLING WELL			COMPARISON WELL			COMPARISON WELL		
Grant 10-4			Grant 9-4			Grant 7-4		
1780 KB			1783 KB			1783 KB		
			Structural Relationship			Structural Relationship		
Formation	Sample	Sub-Sea	Log	Sub-Sea	Sample	Log	Sub-Sea	Sample
Heebner	2905	-1125	2908	-1125	0	2905	-1122	-3
Toronto	2918	-1138	2922	-1139	1	2921	-1138	0
Douglas	2939	-1159	2941	-1158	-1	2937	-1154	-5
Brown Lime	3028	-1248	3030	-1247	-1	3029	-1246	-2
Lansing	3048	-1268	3050	-1267	-1	3048	-1265	-3
Arbuckle	3295	-1515	3305	-1522	7	3300	-1517	2
Total Depth	3310	-1530	3309	-1526		3400	-1617	



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co

4-20S-11W Barton

101 S Main St
Stafford, KS 67578

Grant 10-4

ATTN: Josh Austin

Job Ticket: 59865

DST#: 1

Test Start: 2018.05.11 @ 08:00:44

GENERAL INFORMATION:

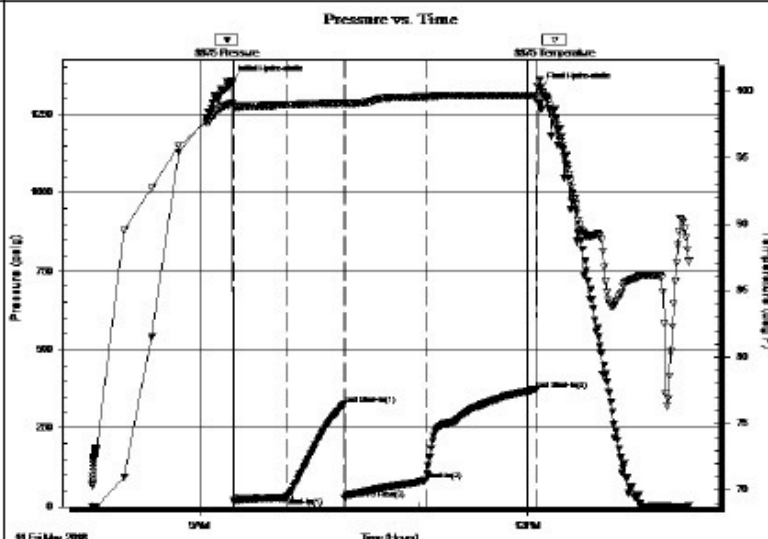
Formation: Topeka
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 09:18:16
 Time Test Ended: 13:28:46
 Interval: 2840.00 ft (KB) To 2870.00 ft (KB) (TVD)
 Total Depth: 2870.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1780.00 ft (KB)
 1769.00 ft (CF)
 KB to GR/CF: 11.00 ft

Serial #: 8875

Inside

Press@RunDepth: 83.15 psig @ 2841.00 ft (KB) Capacity: psig
 Start Date: 2018.05.11 End Date: 2018.05.11 Last Calib.: 2018.05.11
 Start Time: 08:00:45 End Time: 13:28:46 Time On Btm: 2018.05.11 @ 09:17:01
 Time Off Btm: 2018.05.11 @ 12:06:46

TEST COMMENT: IF: Strong Blow, BOB in 90 seconds, Built to 33 inches
 IS: No Blow Back
 FF: Strong Blow, BOB in 30 seconds, Built to 74 inches
 FSI: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1357.40	99.04	Initial Hydro-static
2	17.43	98.84	Open To Flow (1)
31	29.54	98.93	Shut-In(1)
62	325.87	99.07	End Shut-In(1)
63	24.20	99.06	Open To Flow (2)
108	83.15	99.56	Shut-In(2)
168	373.00	99.66	End Shut-In(2)
170	1332.49	100.86	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	1071 GIP	0.00
62.00	OMCW 5%O 20%M 75%W	0.30
94.00	GOMCW 10%G 20%O 30%M 40%W	0.46

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Rama Operating Co

4-20S-11W Barton

101 S Main St
Stafford, KS 67578

Grant 10-4

Job Ticket: 59866

DST#: 2

ATTN: Josh Austin

Test Start: 2018.05.12 @ 10:31:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: **No Whipstock:** ft (KB)

Time Tool Opened: 11:41:55

Time Test Ended: 15:17:40

Test Type: **Conventional Bottom Hole (Reset)**

Tester: **Leal Cason**

Unit No: **74**

Interval: **3290.00 ft (KB) To 3302.00 ft (KB) (TVD)**

Total Depth: **3302.00 ft (KB) (TVD)**

Hole Diameter: **7.88 inches** Hole Condition: **Good**

Reference Elevations: **1780.00 ft (KB)**

1769.00 ft (CF)

KB to GR/CF: **11.00 ft**

Serial #: 8875

Inside

Press@RunDepth: **254.32 psig @ 3291.00 ft (KB)**

Start Date: **2018.05.12**

End Date: **2018.05.12**

Capacity: psig

Last Calib.: **2018.05.12**

Start Time: **10:31:39**

End Time: **15:17:40**

Time On Btm: **2018.05.12 @ 11:38:25**

Time Off Btm: **2018.05.12 @ 13:55:25**

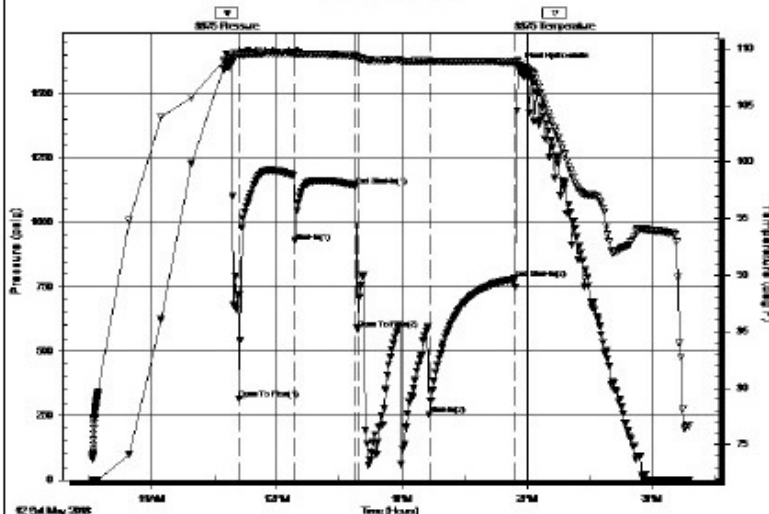
TEST COMMENT: **IF: Weak Blow , Built to 3 3/4 inch, Died Off to 2 3/4 inch - tool plugging**

IS: No Blow Back

FF: No Blow

FST: No Blow Back

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1623.38	109.11	Initial Hydro-static
4	315.29	109.41	Open To Flow (1)
31	927.70	109.59	Shut-In(1)
60	1144.03	109.37	End Shut-In(1)
61	587.49	109.24	Open To Flow (2)
95	254.32	108.94	Shut-In(2)
136	780.72	108.86	End Shut-In(2)
137	1602.81	108.92	Final Hydro-static

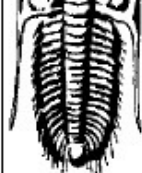


**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Rama Operating Co

4-20S-11W Barton, KS



TESTING, INC

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

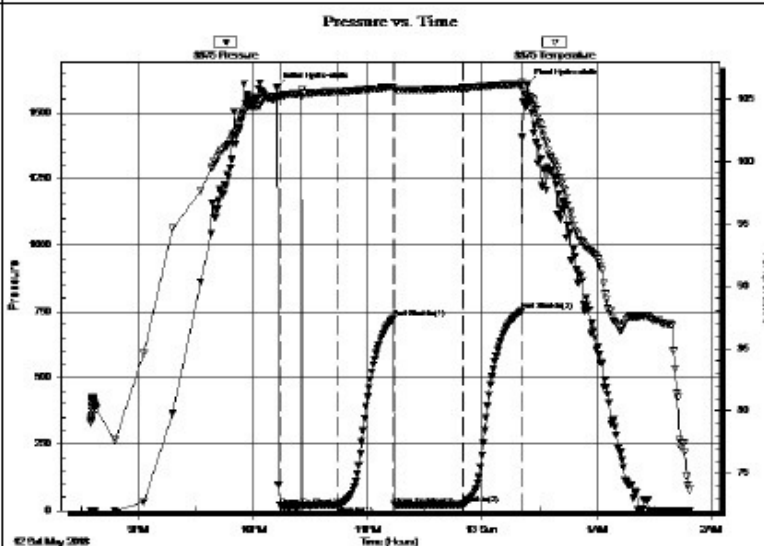
4-20S-11W Barton, KS
Grant #10-4
Job Ticket: 59867 DST#: 3
Test Start: 2018.05.12 @ 20:34:57

GENERAL INFORMATION:

Formation: Arbuckle
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:13:59
Time Test Ended: 01:48:59
Interval: 3290.00 ft (KB) To 3306.00 ft (KB) (TVD)
Total Depth: 3306.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good
Reference Elevations: 1780.00 ft (KB)
1769.00 ft (CF)
KB to GR/CF: 11.00 ft

Serial #: 8875 Inside
Press@RunDepth: 24.99 psig @ 3291.00 ft (KB) Capacity: psig
Start Date: 2018.05.12 End Date: 2018.05.13 Last Calib.: 2018.05.13
Start Time: 20:34:58 End Time: 01:48:59 Time On Btm: 2018.05.12 @ 22:12:29
Time Off Btm: 2018.05.13 @ 00:23:44

TEST COMMENT: IF: Weak Surface Blow, Dead @ 9 minutes, Flushed Tool, No Blow
IS: No Blow Back
FF: No Blow
FST: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1593.69	105.19	Initial Hydro-static
2	16.82	105.16	Open To Flow (1)
12	17.08	105.40	Flushed Tool
32	19.44	105.56	Shut-In(1)
61	725.84	105.86	End Shut-In(1)
62	20.71	105.76	Open To Flow (2)
98	24.99	105.85	Shut-In(2)
128	751.50	106.13	End Shut-In(2)
132	1604.89	105.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 20%O 80%M	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

4-20S-11W Barton, KS
Grant #10-4
Job Ticket: 59868 DST#: 4
Test Start: 2018.05.13 @ 06:51:25



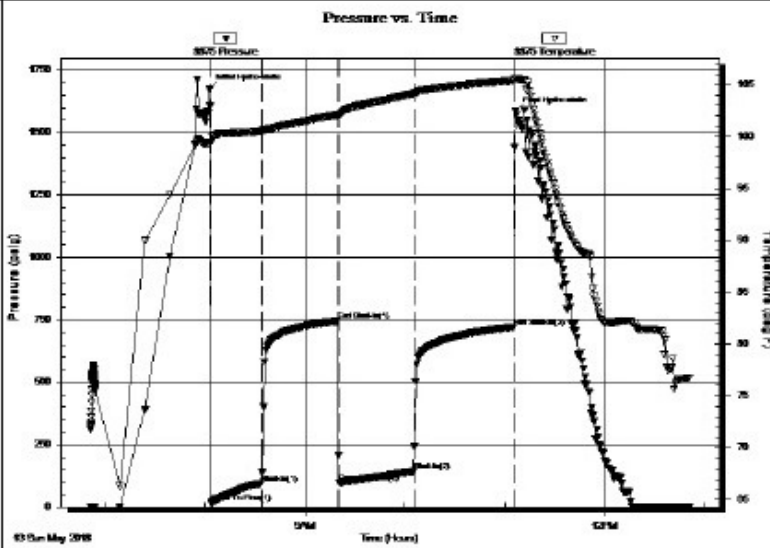
TRILOBITE TESTING, INC

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: **No Whipstock** ft (KB)
 Time Tool Opened: **08:03:42**
 Time Test Ended: **12:51:27**
 Interval: **3302.00 ft (KB) To 3310.00 ft (KB) (TVD)**
 Total Depth: **3310.00 ft (KB) (TVD)**
 Hole Diameter: **7.88 inches** Hole Condition: **Good**
 Test Type: **Conventional Bottom Hole (Reset)**
 Tester: **Leal Cason**
 Unit No: **74**
 Reference Elevations: **1780.00 ft (KB)**
1769.00 ft (CF)
 KB to GR/CF: **11.00 ft**

Serial #: 8875 **Inside**
 Press@RunDepth: **141.50 psig @ 3303.00 ft (KB)** Capacity: _____ psig
 Start Date: **2018.05.13** End Date: **2018.05.13** Last Calib.: **2018.05.13**
 Start Time: **06:51:26** End Time: **12:51:27** Time On Btm: **2018.05.13 @ 08:02:42**
 Time Off Btm: **2018.05.13 @ 11:06:42**

TEST COMMENT: IF: Fair Blow , BOB in 15 minutes, Built to 23"
 IS: No Blow Back
 FF: Fair Blow , BOB in 18 minutes, Built to 26"
 FS: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1672.20	99.40	Initial Hydro-static
1	15.58	99.40	Open To Flow (1)
32	93.41	100.52	Shut-In(1)
78	744.15	102.06	End Shut-In(1)
78	96.99	102.06	Open To Flow (2)
123	141.50	104.12	Shut-In(2)
183	720.41	105.40	End Shut-In(2)
184	1583.25	105.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	189 GIP	0.00
63.00	GMCO 5%G 35%M 60%O	0.31
315.00	GSY Oil 10%G 90%O	3.05

* Recovery from multiple tests

Gas Rates

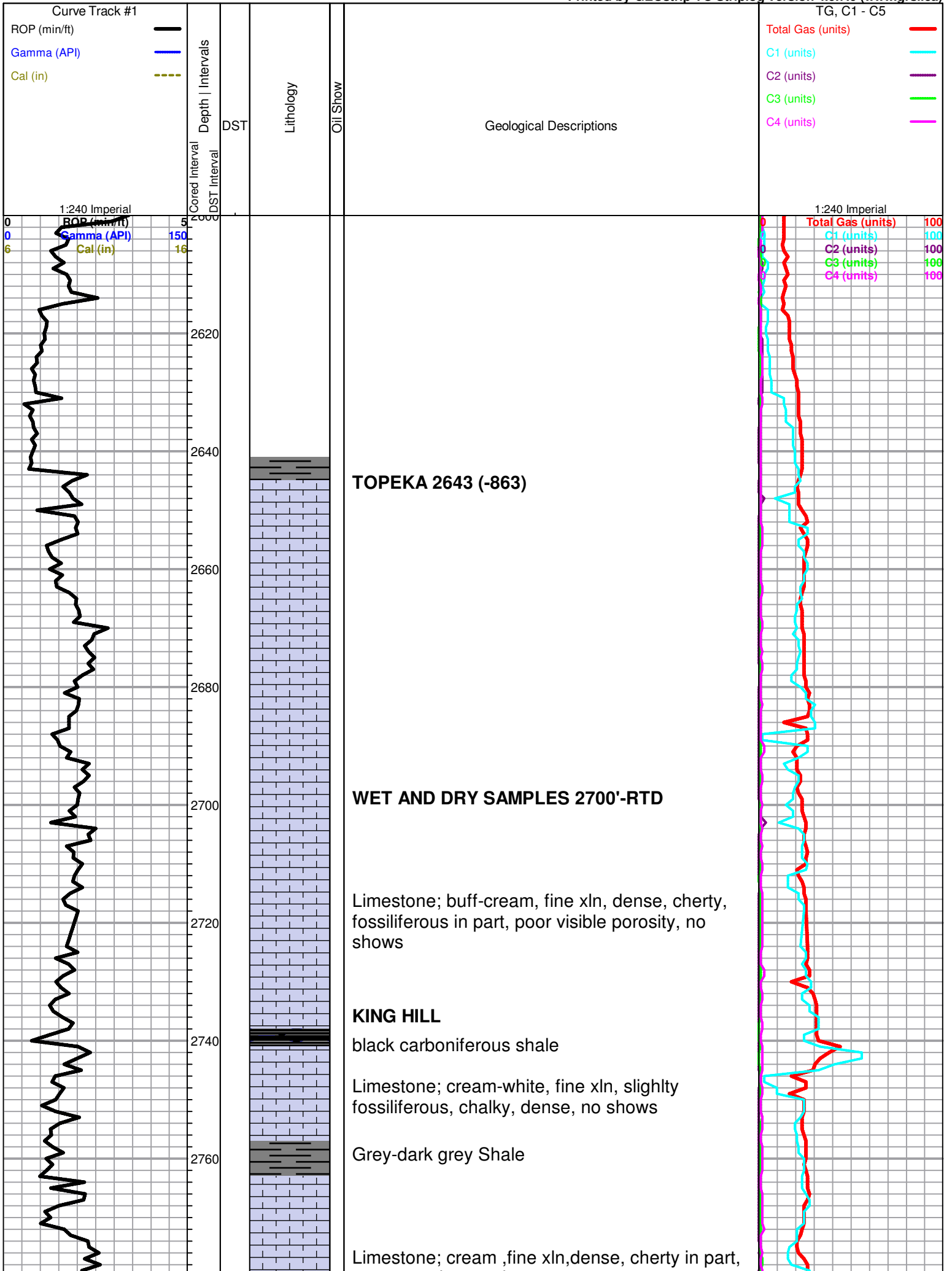
	Choke (inches)	Pressure (psig)	Gas Rate (MMcfd)

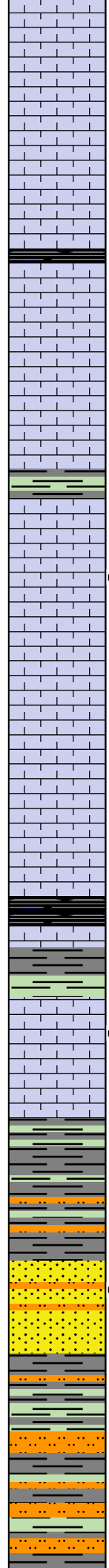
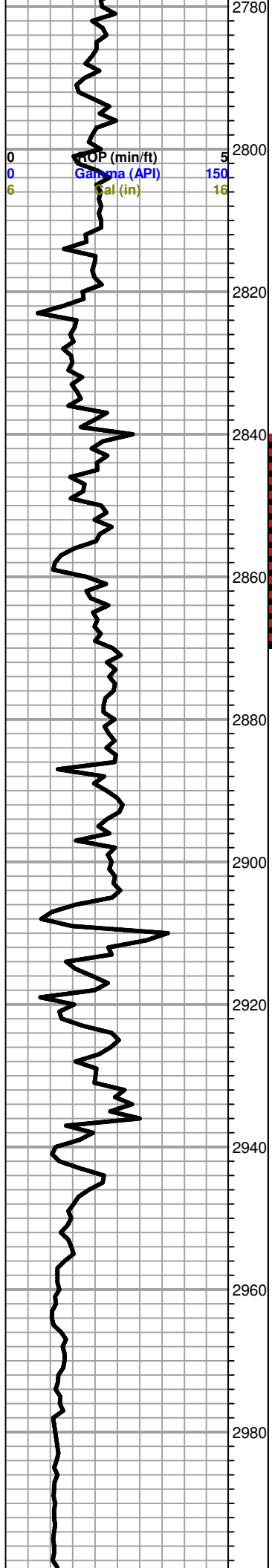
ROCK TYPES

Dolsec
 shale, grn
 shale, gr
 Carbon Sh
 shale, red
 Ss
 Slst

OTHER SYMBOLS

DST
 DST Int
 DST alt
 Core
 tail pipe





poor porosity, no shows

Limestone; cream-grey, fine xln, fossiliferous, granular, plus Chert; grey-dark grey, opaque, boney fossiliferous

QUEEN HILL

black carboniferous shale

Limestone; lt.grey-tan, fine xln, slightly granular, fossiliferous in part, dense, poor visible porosity, no shows

Shale; grey, green, brick red

Limestone; cream-grey, fine xln, fossiliferous, fair-good vuggy type porosity, dark brown stain, SFO, faint odor

Limestone; grey-cream, fine xln, dense, slightly cherty, few fossiliferous pieces, poor visible porosity, no shows

HEEBNER 2905 (-1125)

Black Carboniferous Shale

TORONTO 2918 (-1138)

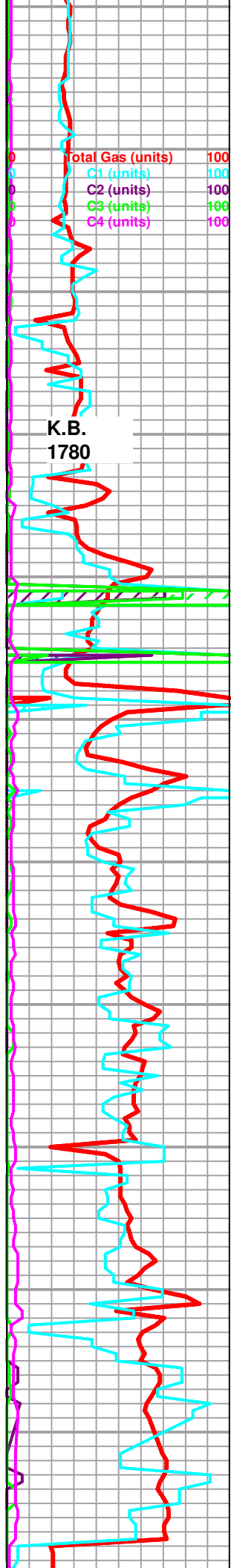
Limestone; cream-white, fine-medium xln, fair inter xln porosity, brown stain, spotty SFO, faint odor

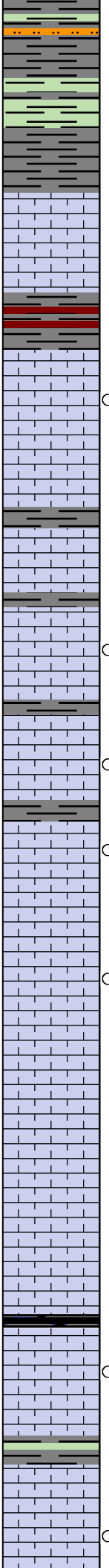
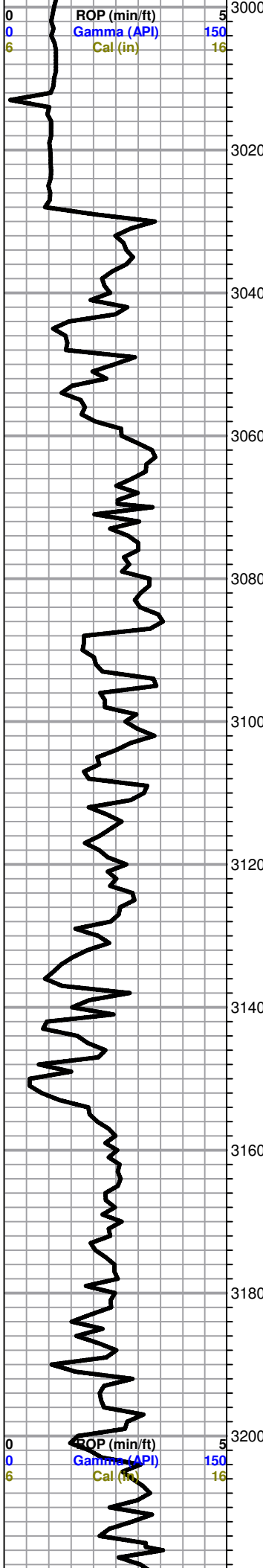
DOUGLAS 2939 (-1159)

Shale; grey-greyish green,

Sand; grey, sub rounded, sub angular, glauconitic, fair-good inter granular porosity, dark brown stain, spotty SFO, faint-fair odor

Shale grey-greyish green plus Sand; grey-greyish green micaceous, silty in part, trace free oil (possible uphole)





Shale; greyish green, soft, silty, micaceous in part

Shale as above

BROWN LIME 3028 (-1248)
Limestone; tan-buff, fine xln, fossiliferous, dense, cherty

Shale; grey-green-maroon

LANSING 3048 (-1268)
Limestone; cream, chalky, pin point-vuggy type porosity, brown stain, SFO, fair odor

Limestone; cream, tan, grey, fine xln, dense, cherty poor porosity, no shows

Limestone; as above plus Chert; cream

Limestone cream, fine-medium xln, fossiliferous, inter xln porosity, brown stain, NSFO, no odor

Limestone; cream-tan, highly fossiliferous, trace fossil cast porosity, brown stain, questionable trace free oil, vey faint odor

Limestone; grey-cream, highly fossiliferous/oolitic, dense, few scattered porosity, trace brown stain, trace free oil, faint odor

Limestone; cream, fine xln, chalky in part, sub oomoldic-vuggy porosity, golden brown stain, trace spotty free oil, very faint odor

Limestone; cream, chalky, sub oomoldic, fair oomoldic porosity, no shows

Limestone; cream, chalky in part, fossiliferous, poorly developed porosity, no shows

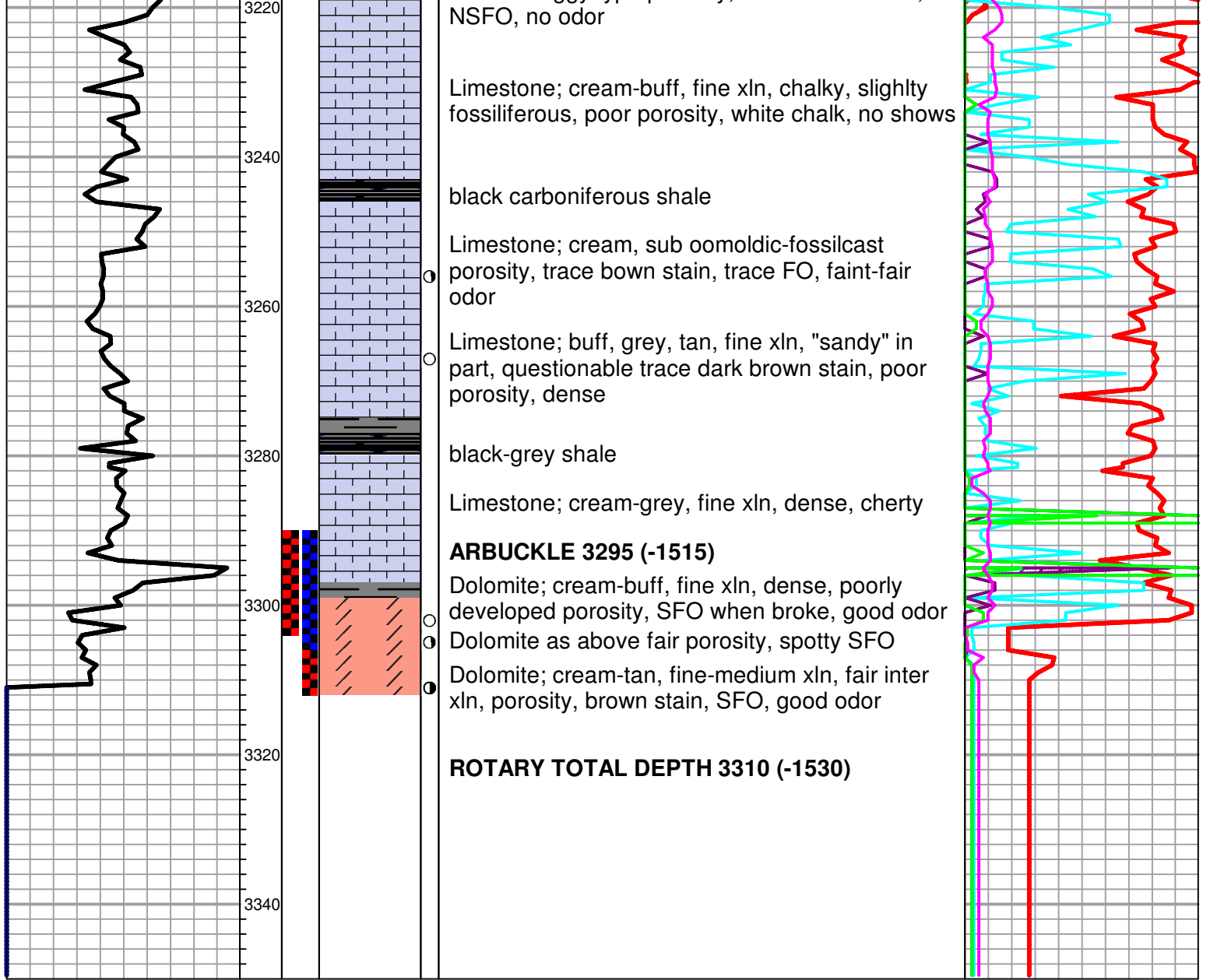
black carboniferous shale

Limestone; buff, cream, grey, fine xln, chalky in part, dense, cherty, trace porosity, trace spotty stain, questionable SFO, plus Chert; grey, boney

grey-green shale

Limestone; cream-buff-lt.grey, fine xln, fossiliferous/oolitic, dense, few scattered inter xln-few vuggy type porosity, trace brown stain,







DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co**

101 S Main St
Stafford, KS 67578

ATTN: Josh Austin

Grant #10-4

4-20S-11W Barton,KS

Start Date: 2018.05.11 @ 08:00:44

End Date: 2018.05.11 @ 13:28:46

Job Ticket #: 59865 DST #: 1

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

Printed: 2018.05.14 @ 15:22:12



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59865

DST#: 1

Test Start: 2018.05.11 @ 08:00:44

GENERAL INFORMATION:

Formation: **Topeka**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:18:16

Time Test Ended: 13:28:46

Test Type: Conventional Bottom Hole (Initial)

Tester: Leal Cason

Unit No: 74

Interval: 2840.00 ft (KB) To 2870.00 ft (KB) (TVD)

Reference Elevations: 1780.00 ft (KB)

Total Depth: 2870.00 ft (KB) (TVD)

1769.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 8875

Inside

Press@RunDepth: 83.15 psig @ 2841.00 ft (KB)

Capacity: psig

Start Date: 2018.05.11

End Date:

2018.05.11

Last Calib.:

2018.05.11

Start Time: 08:00:45

End Time:

13:28:46

Time On Btm:

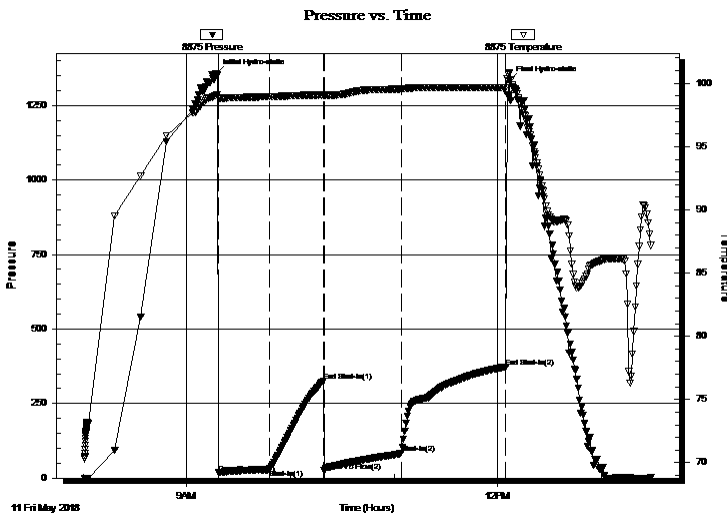
2018.05.11 @ 09:17:01

Time Off Btm:

2018.05.11 @ 12:06:46

TEST COMMENT: IF: Strong Blow , BOB in 90 seconds, Built to 33"
IS: No Blow Back
FF: Strong Blow , BOB in 30 seconds, Built to 74"
FS: No Blow Back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1357.40	99.04	Initial Hydro-static
2	17.43	98.84	Open To Flow (1)
31	29.54	98.93	Shut-In(1)
62	325.87	99.07	End Shut-In(1)
63	24.20	99.06	Open To Flow (2)
108	83.15	99.56	Shut-In(2)
168	373.00	99.66	End Shut-In(2)
170	1332.49	100.86	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	1071 GIP	0.00
62.00	OMCW 5%O 20%M 75%W	0.30
94.00	GOMCW 10%G 20%O 30%M 40%W	0.46

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59865

DST#: 1

ATTN: Josh Austin

Test Start: 2018.05.11 @ 08:00:44

Tool Information

Drill Pipe:	Length: 2613.00 ft	Diameter: 3.80 inches	Volume: 36.65 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 37.70 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 55000.00 lb
Depth to Top Packer:	2840.00 ft			Final 56000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	49.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			2826.00	
Hydraulic tool	5.00			2831.00	
Packer	5.00			2836.00	19.00 Bottom Of Top Packer
Packer	4.00			2840.00	
Stubb	1.00			2841.00	
Recorder	0.00	8875	Inside	2841.00	
Recorder	0.00	6749	Outside	2841.00	
Perforations	26.00			2867.00	
Bullnose	3.00			2870.00	30.00 Bottom Packers & Anchor
Total Tool Length:	49.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

4-20S-11W Barton,KS
Grant #10-4
Job Ticket: 59865 **DST#: 1**
Test Start: 2018.05.11 @ 08:00:44

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:	80000 ppm
Viscosity: 47.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5800.00 ppm			
Filter Cake: 0.02 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	1071 GIP	0.000
62.00	OMCW 5%O 20%M 75%W	0.305
94.00	GOMCW 10%G 20%O 30%M 40%W	0.462

Total Length: 156.00 ft Total Volume: 0.767 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: RW w as .08 @ 85 degrees

Serial #: 8875

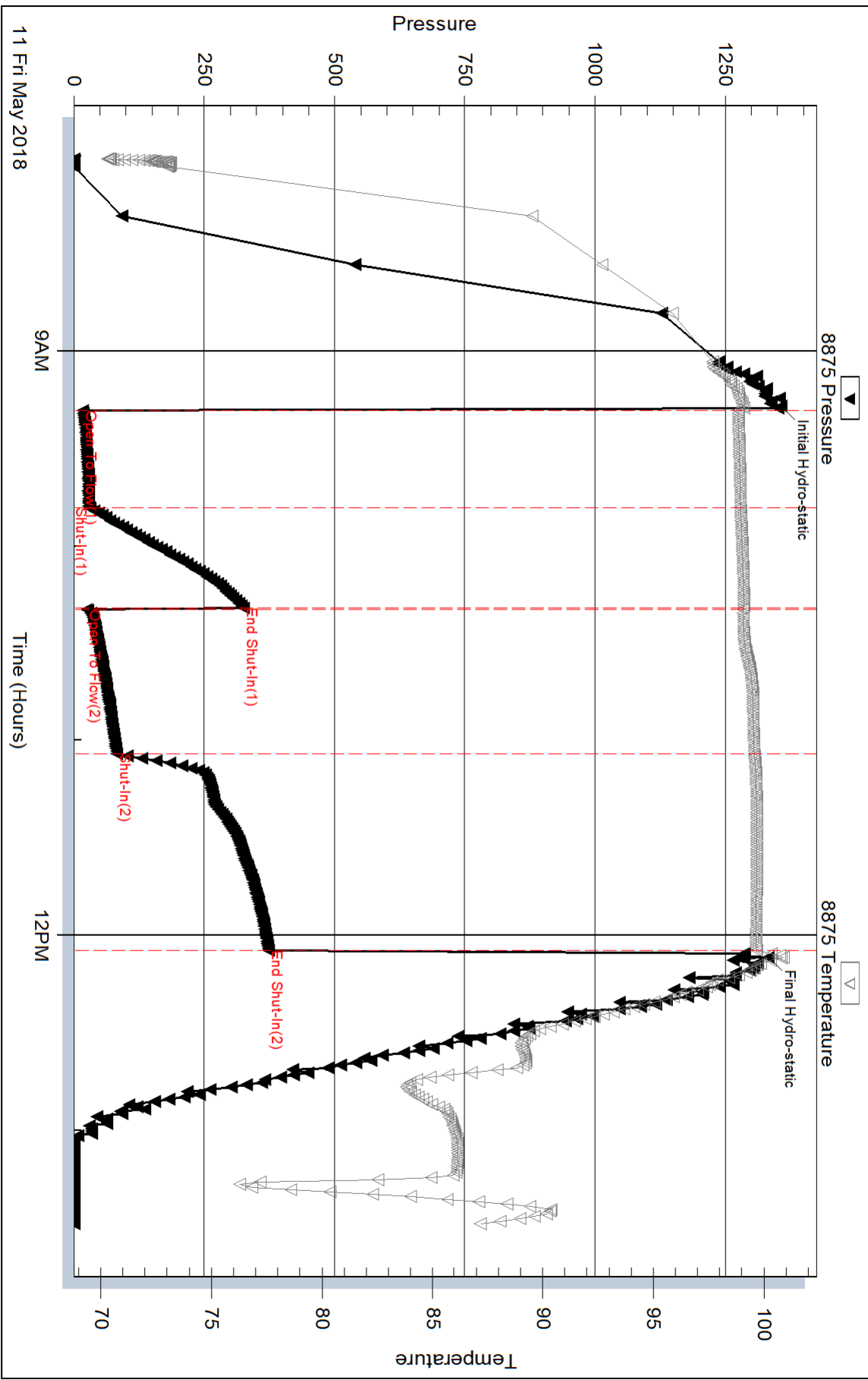
Inside

Rama Operating Co

Grant #10-4

DST Test Number: 1

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 59865

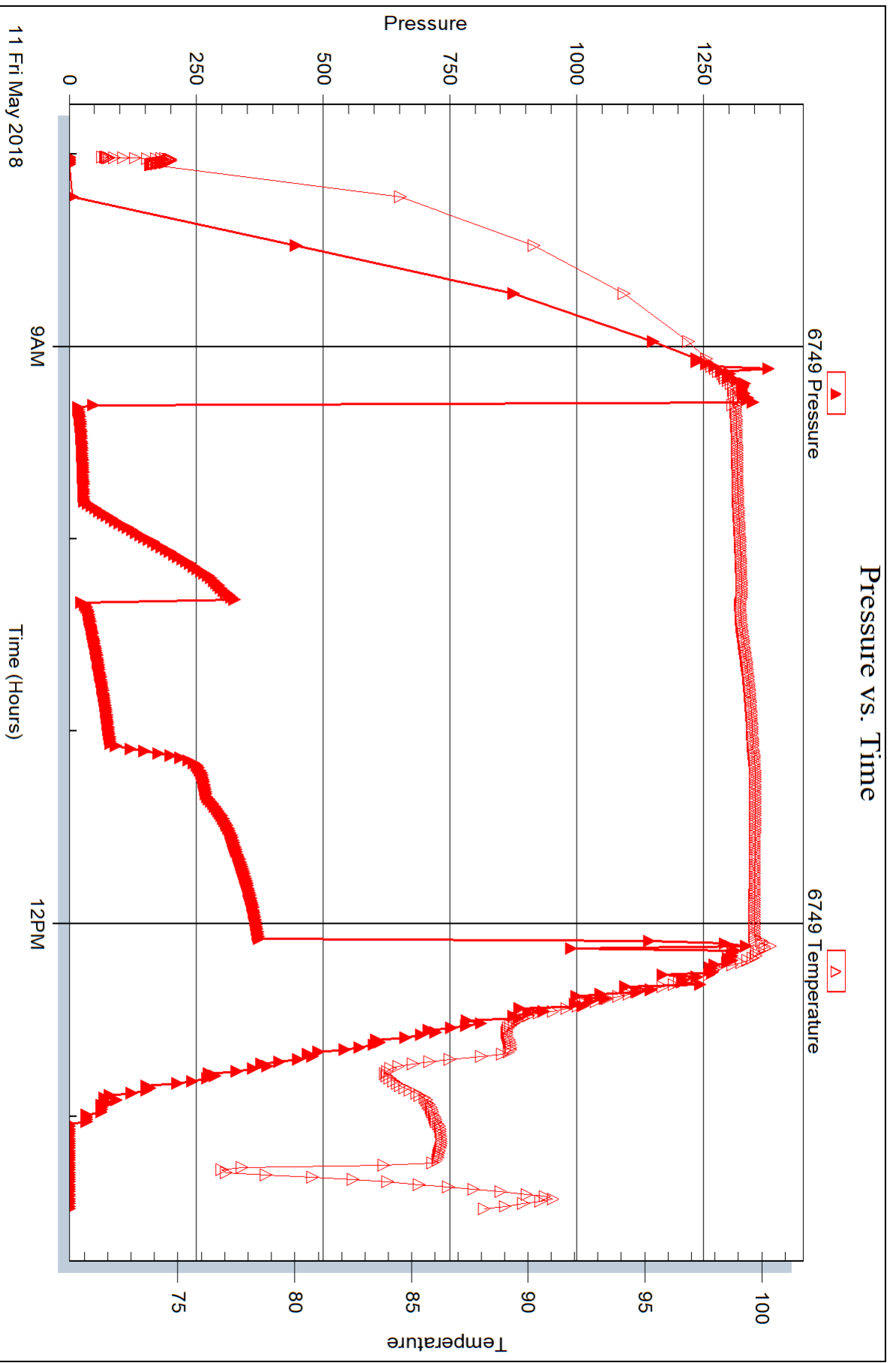
Printed: 2018.05.14 @ 15:22:12

Serial #: 6749

Outside Rama Operating Co

Grant #10-4

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co**

101 S Main St
Stafford, KS 67578

ATTN: Josh Austin

Grant #10-4

4-20S-11W Barton,KS

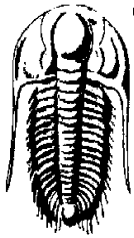
Start Date: 2018.05.12 @ 10:31:38

End Date: 2018.05.12 @ 15:17:40

Job Ticket #: 59866 DST #: 2

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

Printed: 2018.05.14 @ 15:21:48



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59866

DST#: 2

Test Start: 2018.05.12 @ 10:31:38

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:41:55
 Time Test Ended: 15:17:40
 Interval: **3290.00 ft (KB) To 3302.00 ft (KB) (TVD)**
 Total Depth: 3302.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1780.00 ft (KB)
 1769.00 ft (CF)
 KB to GR/CF: 11.00 ft

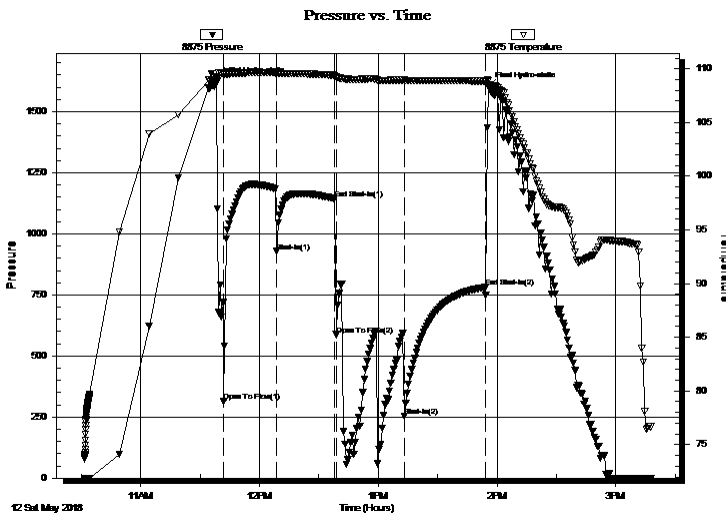
Serial #: 8875

Inside

Press@RunDepth: 254.32 psig @ 3291.00 ft (KB) Capacity: psig
 Start Date: 2018.05.12 End Date: 2018.05.12 Last Calib.: 2018.05.12
 Start Time: 10:31:39 End Time: 15:17:40 Time On Btm: 2018.05.12 @ 11:38:25
 Time Off Btm: 2018.05.12 @ 13:55:25

TEST COMMENT: IF: Weak Blow , Built to 3 3/4" Died Off to 2 3/4"
 IS: No Blow Back
 FF: No Blow
 FS: No Blow Back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1623.38	109.11	Initial Hydro-static
4	315.29	109.41	Open To Flow (1)
31	927.70	109.59	Shut-In(1)
60	1144.03	109.37	End Shut-In(1)
61	587.49	109.24	Open To Flow (2)
95	254.32	108.94	Shut-In(2)
136	780.72	108.86	End Shut-In(2)
137	1602.81	108.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	SGCM 2%G 98%M	0.30

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59866

DST#: 2

ATTN: Josh Austin

Test Start: 2018.05.12 @ 10:31:38

Tool Information

Drill Pipe:	Length: 3089.00 ft	Diameter: 3.80 inches	Volume: 43.33 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: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 44.38 bbl</u>	Tool Chased	8.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3290.00 ft			Final	58000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	12.00 ft				
Tool Length:	31.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3276.00	
Hydraulic tool	5.00			3281.00	
Packer	5.00			3286.00	19.00 Bottom Of Top Packer
Packer	4.00			3290.00	
Stubb	1.00			3291.00	
Recorder	0.00	8875	Inside	3291.00	
Recorder	0.00	6749	Outside	3291.00	
Perforations	8.00			3299.00	
Bullnose	3.00			3302.00	12.00 Bottom Packers & Anchor
Total Tool Length:	31.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59866

DST#: 2

ATTN: Josh Austin

Test Start: 2018.05.12 @ 10:31:38

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 47.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5800.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	SGCM 2%G 98%M	0.295

Total Length: 60.00 ft Total Volume: 0.295 bbl

Num Fluid Samples: 0

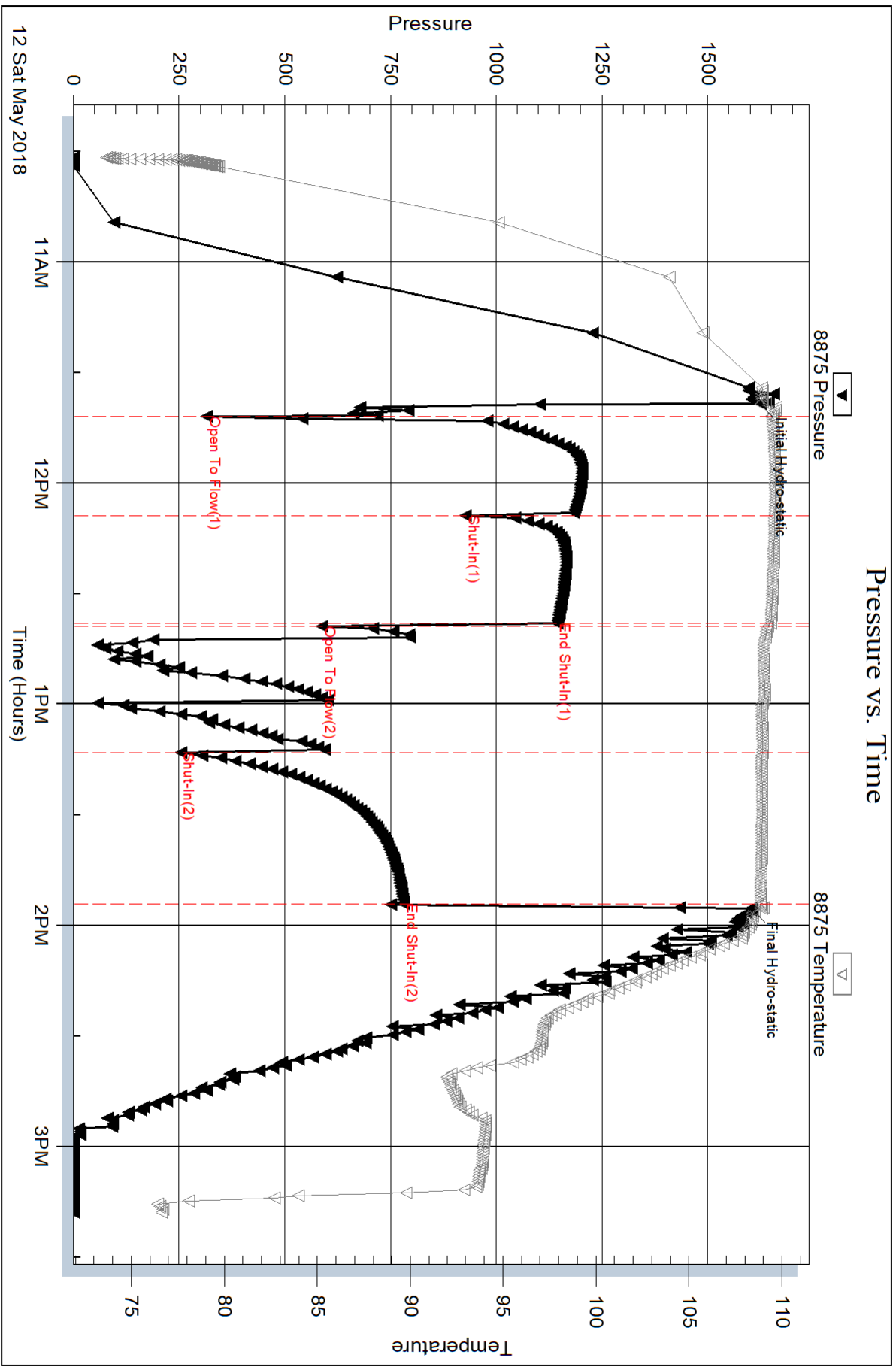
Num Gas Bombs: 0

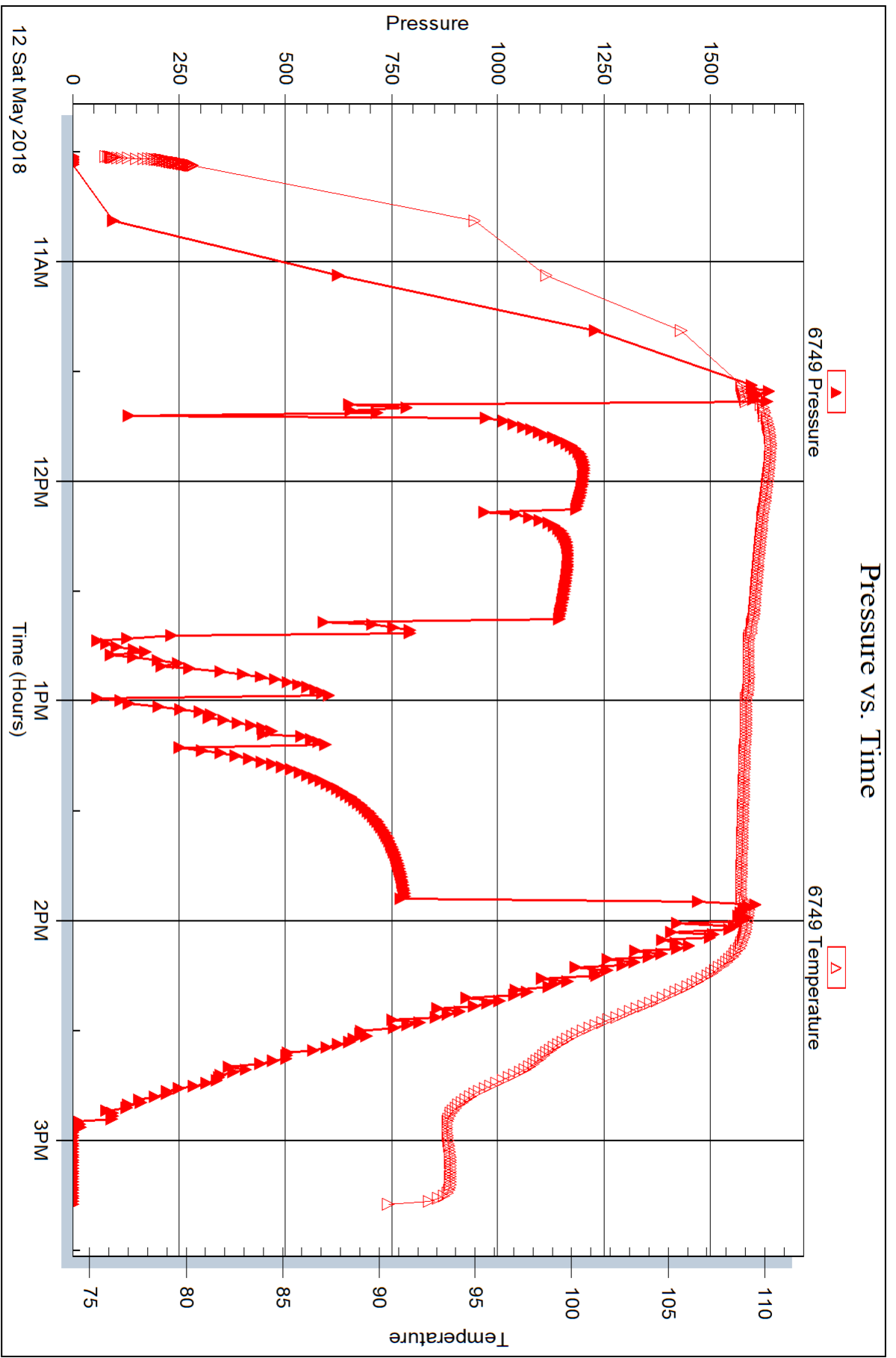
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co**

101 S Main St
Stafford, KS 67578

ATTN: Josh Austin

Grant #10-4

4-20S-11W Barton,KS

Start Date: 2018.05.12 @ 20:34:57

End Date: 2018.05.13 @ 01:48:59

Job Ticket #: 59867 DST #: 3

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

Printed: 2018.05.14 @ 15:21:26



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co
 101 S Main St
 Stafford, KS 67578
 ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59867

DST#: 3

Test Start: 2018.05.12 @ 20:34:57

GENERAL INFORMATION:

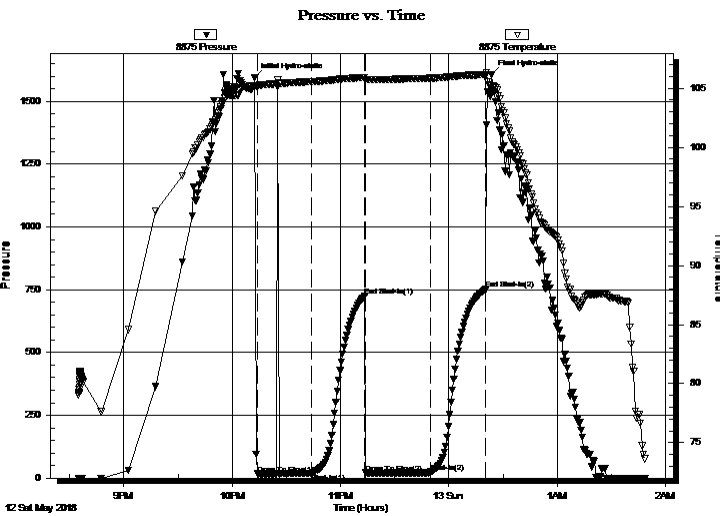
Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 22:13:59
 Tester: Leal Cason
 Time Test Ended: 01:48:59
 Unit No: 74
 Interval: **3290.00 ft (KB) To 3306.00 ft (KB) (TVD)**
 Reference Elevations: 1780.00 ft (KB)
 Total Depth: 3306.00 ft (KB) (TVD)
 1769.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Good
 KB to GR/CF: 11.00 ft

Serial #: 8875

Inside

Press@RunDepth: 24.99 psig @ 3291.00 ft (KB) Capacity: psig
 Start Date: 2018.05.12 End Date: 2018.05.13 Last Calib.: 2018.05.13
 Start Time: 20:34:58 End Time: 01:48:59 Time On Btm: 2018.05.12 @ 22:12:29
 Time Off Btm: 2018.05.13 @ 00:23:44

TEST COMMENT: IF: Weak Surface Blow , Dead @ 9 minutes, Flushed Tool, No Blow
 IS: No Blow Back
 FF: No Blow
 FS: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1593.69	105.19	Initial Hydro-static
2	16.82	105.16	Open To Flow (1)
12	17.08	105.40	Flushed Tool
32	19.44	105.56	Shut-In(1)
61	725.84	105.86	End Shut-In(1)
62	20.71	105.76	Open To Flow (2)
98	24.99	105.85	Shut-In(2)
128	751.50	106.13	End Shut-In(2)
132	1604.89	105.21	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 20%O 80%M	0.02

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59867

DST#: 3

ATTN: Josh Austin

Test Start: 2018.05.12 @ 20:34:57

Tool Information

Drill Pipe:	Length: 3061.00 ft	Diameter: 3.80 inches	Volume: 42.94 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: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 43.99 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	3.00 ft			String Weight: Initial	60000.00 lb
Depth to Top Packer:	3290.00 ft			Final	60000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	16.00 ft				
Tool Length:	35.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

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

Shut In Tool	5.00			3276.00	
Hydraulic tool	5.00			3281.00	
Packer	5.00			3286.00	19.00 Bottom Of Top Packer
Packer	4.00			3290.00	
Stubb	1.00			3291.00	
Recorder	0.00	8875	Inside	3291.00	
Recorder	0.00	6749	Outside	3291.00	
Perforations	12.00			3303.00	
Bullnose	3.00			3306.00	16.00 Bottom Packers & Anchor
Total Tool Length:	35.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59867

DST#: 3

ATTN: Josh Austin

Test Start: 2018.05.12 @ 20:34:57

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: 10.38 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5300.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OCM 20%O 80%M	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8875

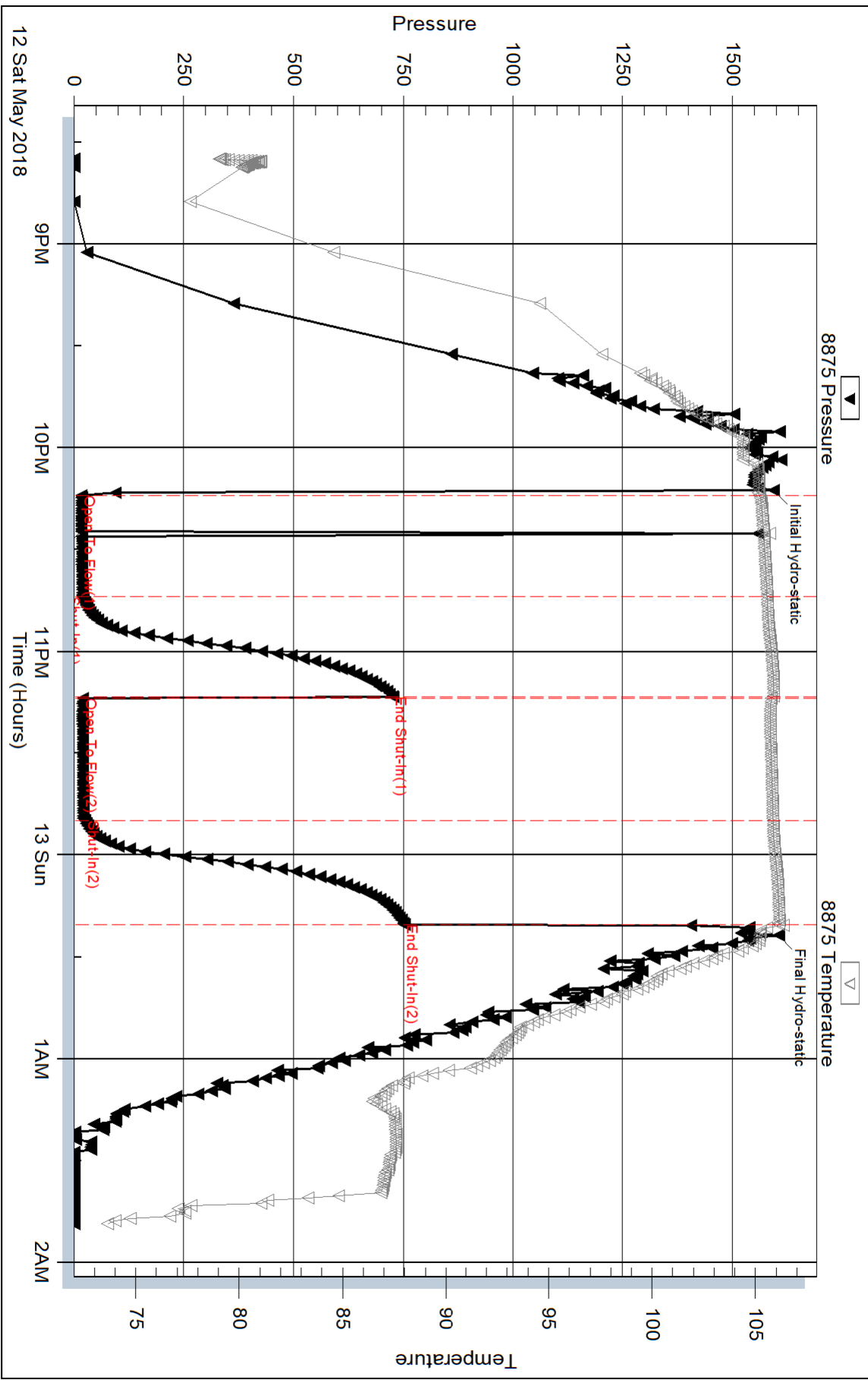
Inside

Rama Operating Co

Grant #10-4

DST Test Number: 3

Pressure vs. Time

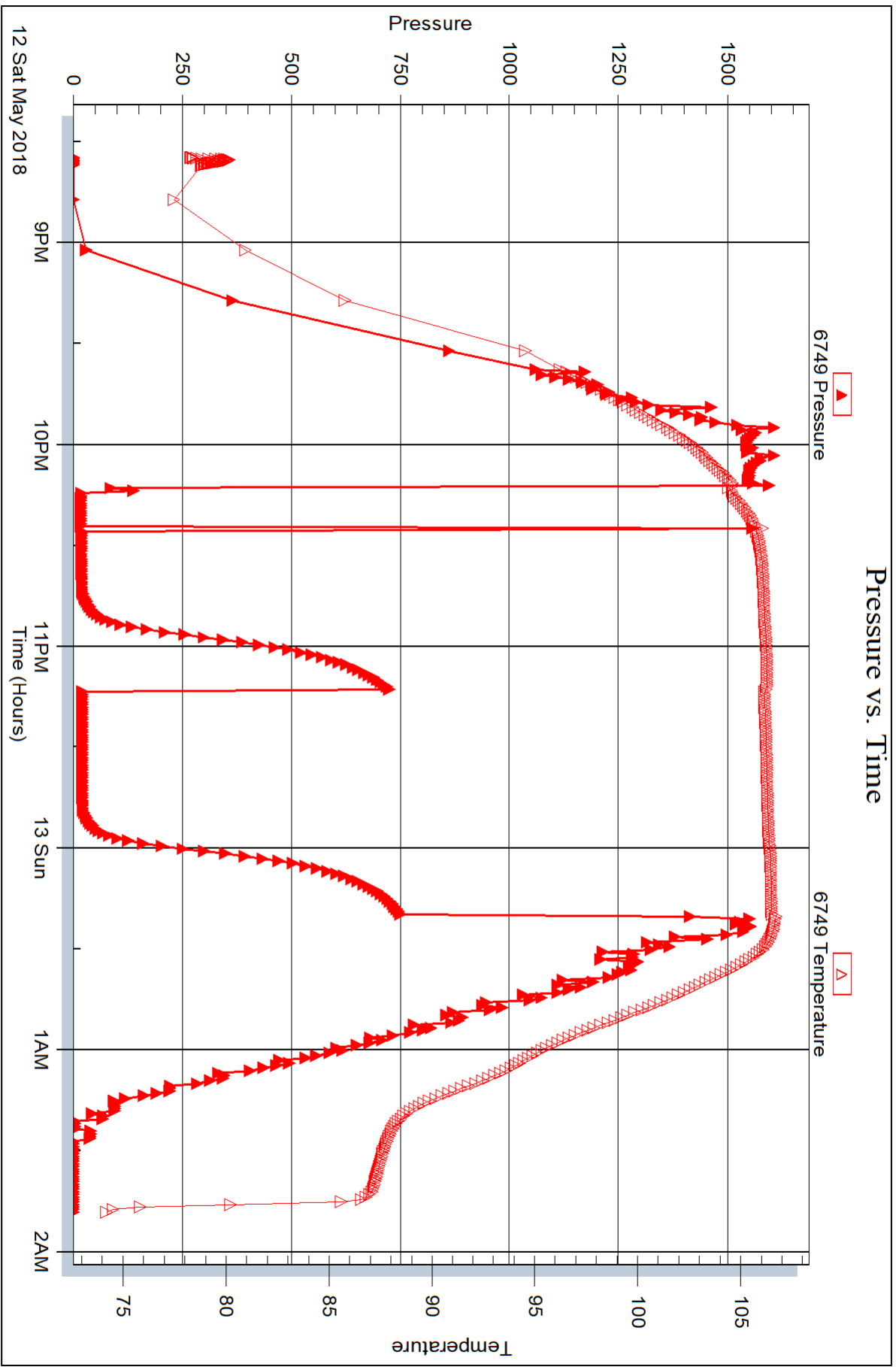


Serial #: 6749

Outside Rama Operating Co

Grant #10-4

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co**

101 S Main St
Stafford, KS 67578

ATTN: Josh Austin

Grant #10-4

4-20S-11W Barton,KS

Start Date: 2018.05.13 @ 06:51:25

End Date: 2018.05.13 @ 12:51:27

Job Ticket #: 59868 DST #: 4

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

Printed: 2018.05.14 @ 15:21:03



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co
 101 S Main St
 Stafford, KS 67578
 ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59868

DST#: 4

Test Start: 2018.05.13 @ 06:51:25

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 08:03:42
 Tester: Leal Cason
 Time Test Ended: 12:51:27
 Unit No: 74
 Interval: **3302.00 ft (KB) To 3310.00 ft (KB) (TVD)**
 Reference Elevations: 1780.00 ft (KB)
 Total Depth: 3310.00 ft (KB) (TVD)
 1769.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Good
 KB to GR/CF: 11.00 ft

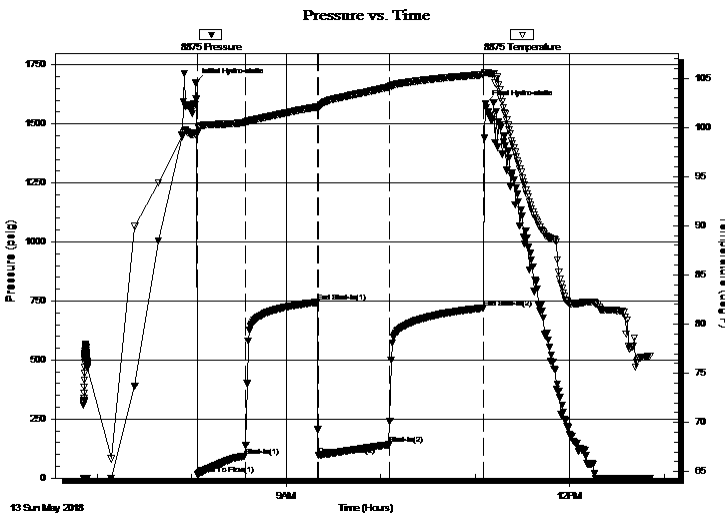
Serial #: 8875

Inside

Press@RunDepth: 141.50 psig @ 3303.00 ft (KB) Capacity: psig
 Start Date: 2018.05.13 End Date: 2018.05.13 Last Calib.: 2018.05.13
 Start Time: 06:51:26 End Time: 12:51:27 Time On Btm: 2018.05.13 @ 08:02:42
 Time Off Btm: 2018.05.13 @ 11:06:42

TEST COMMENT: IF: Fair Blow , BOB in 15 minutes, Built to 23"
 IS: No Blow Back
 FF: Fair Blow , BOB in 18 minutes, Built to 26"
 FS: No Blow Back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1672.20	99.40	Initial Hydro-static
1	15.58	99.40	Open To Flow (1)
32	93.41	100.52	Shut-In(1)
78	744.15	102.06	End Shut-In(1)
78	96.99	102.06	Open To Flow (2)
123	141.50	104.12	Shut-In(2)
183	720.41	105.40	End Shut-In(2)
184	1583.25	105.59	Final Hydro-static

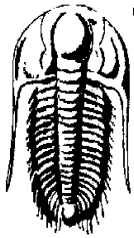
Recovery

Length (ft)	Description	Volume (bbl)
0.00	189 GIP	0.00
63.00	GMCO 5%G 35%M 60%O	0.31
315.00	GSY Oil 10%G 90%O	3.05

* Recovery from multiple tests

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Rama Operating Co
 101 S Main St
 Stafford, KS 67578
 ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59868

DST#: 4

Test Start: 2018.05.13 @ 06:51:25

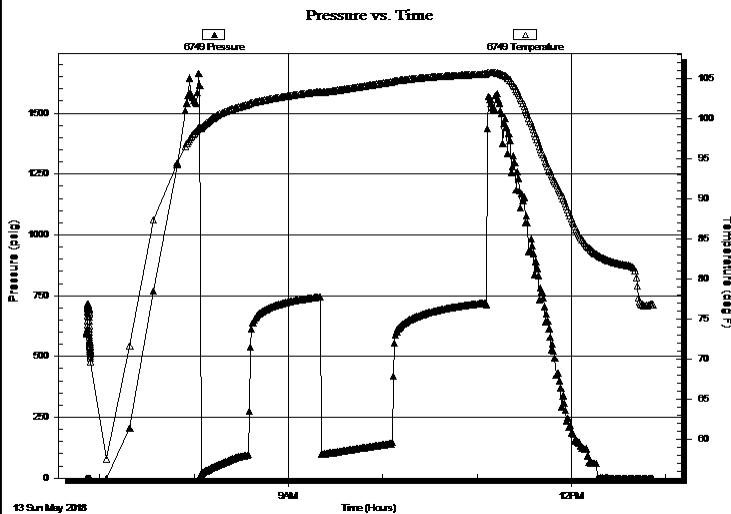
GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 08:03:42 Tester: Leal Cason
 Time Test Ended: 12:51:27 Unit No: 74
 Interval: **3302.00 ft (KB) To 3310.00 ft (KB) (TVD)** Reference Elevations: 1780.00 ft (KB)
 Total Depth: 3310.00 ft (KB) (TVD) 1769.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 11.00 ft

Serial #: 6749 Outside

Press@RunDepth: psig @ 3303.00 ft (KB) Capacity: psig
 Start Date: 2018.05.13 End Date: 2018.05.13 Last Calib.: 2018.05.13
 Start Time: 06:51:38 End Time: 12:51:39 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Fair Blow , BOB in 15 minutes, Built to 23"
 IS: No Blow Back
 FF: Fair Blow , BOB in 18 minutes, Built to 26"
 FS: No Blow Back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
0.00	189 GIP	0.00
63.00	GMCO 5%G 35%M 60%O	0.31
315.00	GSY Oil 10%G 90%O	3.05

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co

4-20S-11W Barton,KS

101 S Main St
Stafford, KS 67578

Grant #10-4

Job Ticket: 59868

DST#: 4

ATTN: Josh Austin

Test Start: 2018.05.13 @ 06:51:25

Tool Information

Drill Pipe:	Length: 3093.00 ft	Diameter: 3.80 inches	Volume: 43.39 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: 213.00 ft	Diameter: 2.25 inches	Volume: 1.05 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 44.44 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3302.00 ft			Final 61000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	8.00 ft			
Tool Length:	27.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3288.00	
Hydraulic tool	5.00			3293.00	
Packer	5.00			3298.00	19.00 Bottom Of Top Packer
Packer	4.00			3302.00	
Stubb	1.00			3303.00	
Recorder	0.00	8875	Inside	3303.00	
Recorder	0.00	6749	Outside	3303.00	
Perforations	4.00			3307.00	
Bullnose	3.00			3310.00	8.00 Bottom Packers & Anchor
Total Tool Length:	27.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co
101 S Main St
Stafford, KS 67578
ATTN: Josh Austin

4-20S-11W Barton,KS

Grant #10-4

Job Ticket: 59868

DST#: 4

Test Start: 2018.05.13 @ 06:51:25

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 50.00 sec/qt
Water Loss: 10.39 in³
Resistivity: ohm.m
Salinity: 5300.00 ppm
Filter Cake: 0.02 inches

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

Oil API: 43.4 deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	189 GIP	0.000
63.00	GMCO 5%G 35%M 60%O	0.310
315.00	GSY Oil 10%G 90%O	3.052

Total Length: 378.00 ft Total Volume: 3.362 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: Gravity w as 44.5 @ 71 degrees

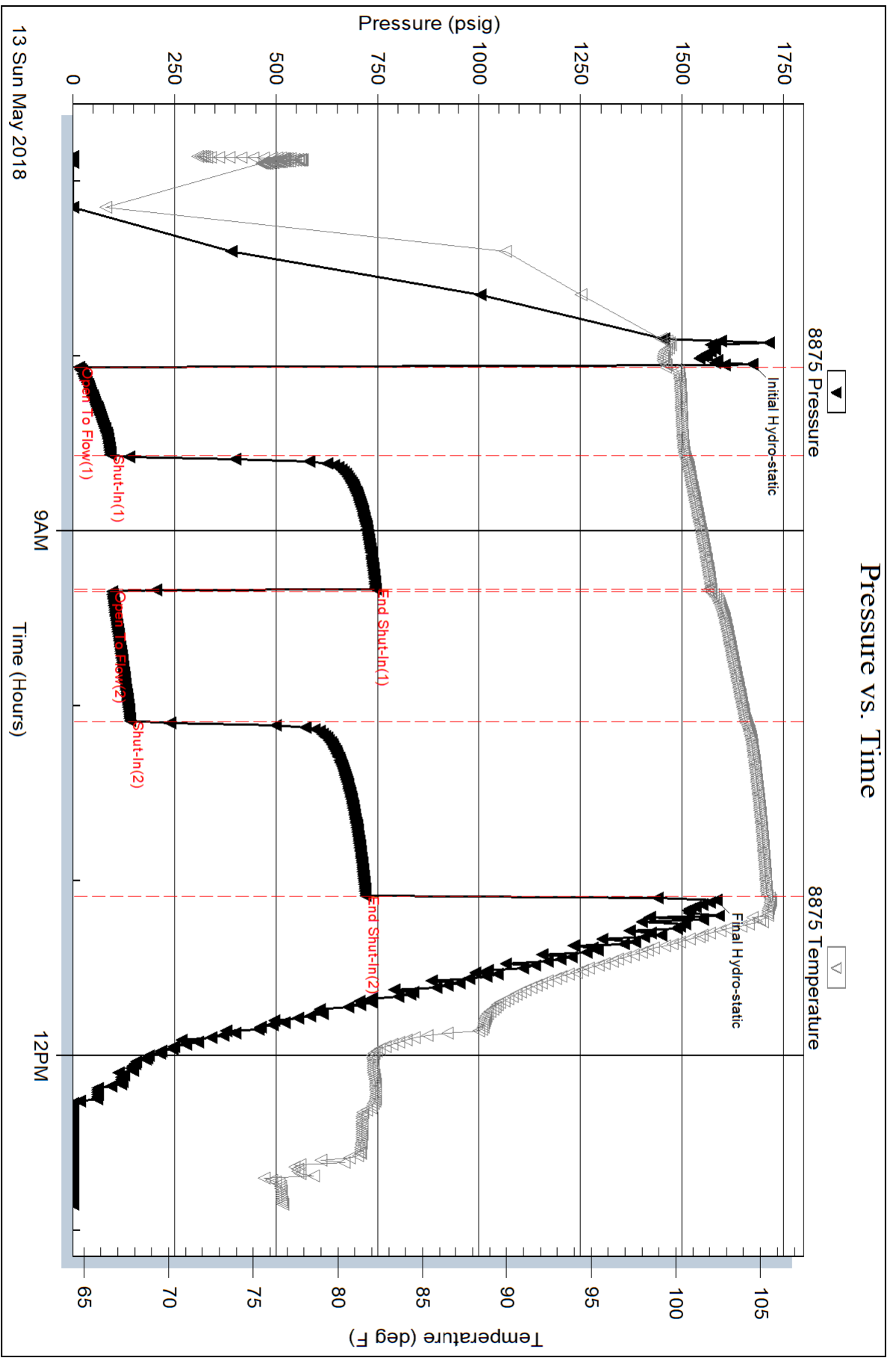
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Inside

Rama Operating Co

Grant #10-4

DST Test Number: 4



Triobite Testing, Inc

Ref. No: 59868

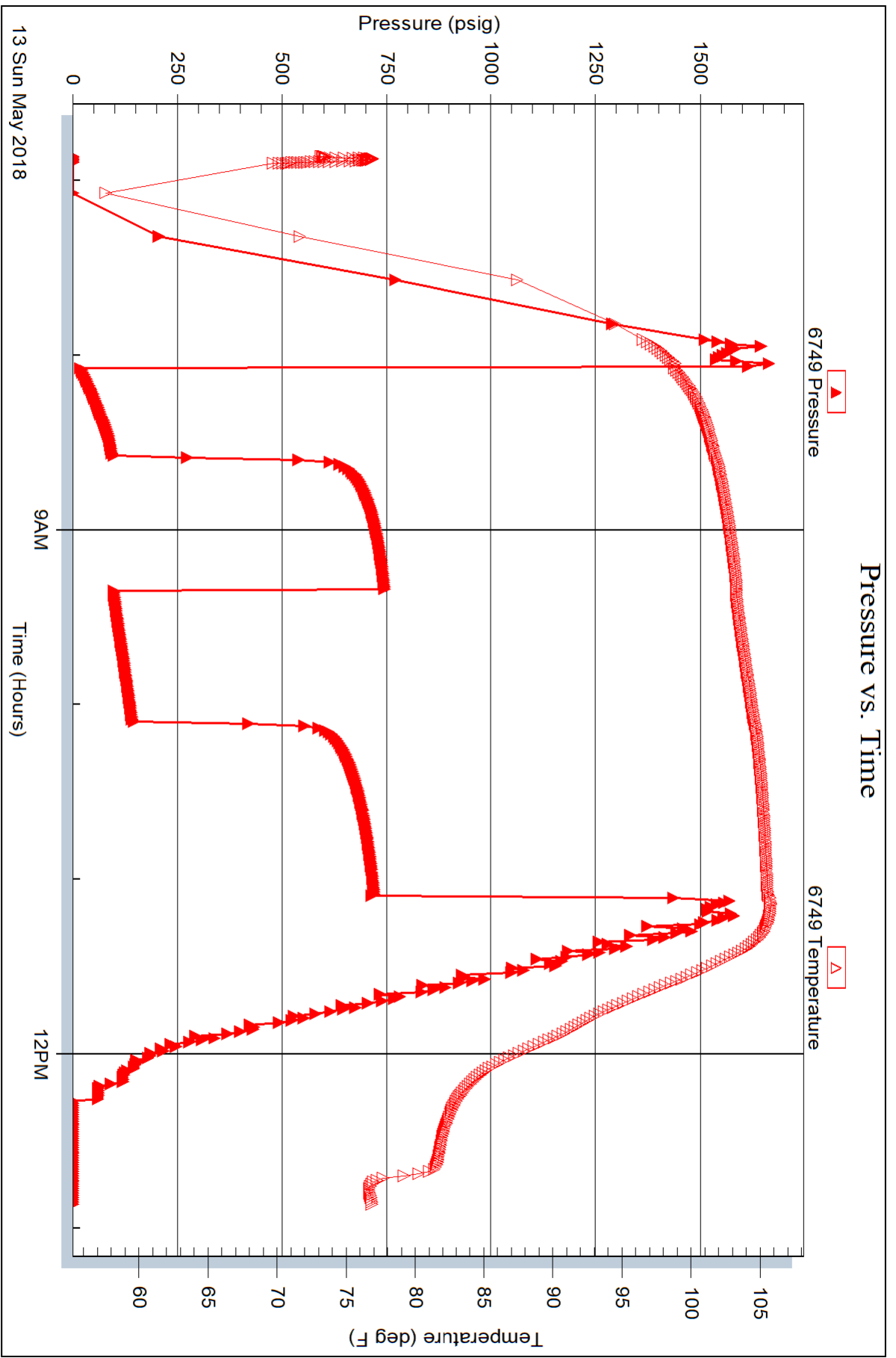
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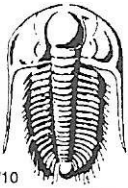
Serial #: 6749

Outside Rama Operating Co

Grant #10-4

DST Test Number: 4





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **59865**

Well Name & No. Grant 10-4 Test No. 1 Date 05/11/18
 Company Rama Operating Co Elevation 1780 KB 1769 GL
 Address 1015 Main St Stafford, KS 67578
 Co. Rep / Geo. Josh Austin Rig Sterling 4
 Location: Sec. 4 Twp. 20 Rge. 11 Co. Barton State KS

Interval Tested 2840 - 2870 Zone Tested Topeka
 Anchor Length 30 Drill Pipe Run 2613 Mud Wt. 8.9
 Top Packer Depth 2835 Drill Collars Run 213 Vis 47
 Bottom Packer Depth 2840 Wt. Pipe Run 0 WL 8.0
 Total Depth 2870 Chlorides 5800 ppm System LCM

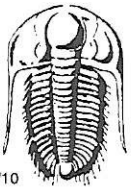
Blow Description IF: Strong Blow, BOB in 90 seconds, Built to 33 inches
ISI: NO Blow Back
FF: Strong Blow, BOB in 30 seconds, Built to 74 inches
FSI: NO Blow Back

Rec	Feet of	%gas	%oil	%water	%mud
<u>1071</u>	<u>GIP</u>				
<u>94</u>	<u>G OMCW</u>	<u>10</u>	<u>20</u>	<u>40</u>	<u>30</u>
<u>62</u>	<u>OMCW</u>	<u>5</u>	<u>75</u>	<u>20</u>	

Rec Total 156 BHT 100 Gravity N/C API RW .08 @ 85 °F Chlorides 80,000 ppm

(A) Initial Hydrostatic 1357 Test 1050 T-On Location 07:30
 (B) First Initial Flow 17 Jars _____ T-Started 08:00
 (C) First Final Flow 29 Safety Joint _____ T-Open 09:18
 (D) Initial Shut-In 326 Circ Sub _____ T-Pulled 12:04
 (E) Second Initial Flow 24 Hourly Standby _____ T-Out 13:28
 (F) Second Final Flow 83 Mileage 110m 30rt Comments _____
 (G) Final Shut-In 373 Sampler _____
 (H) Final Hydrostatic 1332 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1080
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1080

Approved By [Signature] Our Representative [Signature]
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59866

Well Name & No. GIANT 10-4 Test No. 2 Date 05/12/18
 Company Rama Operating CO Elevation 1780 KB 1769 GL
 Address 101 S. main St Stafford, KS 67578
 Co. Rep / Geo. Josh Austin Rig sterling 4
 Location: Sec. 4 Twp. 20S Rge. 11W Co. Barton State KS

Interval Tested 3290 - 3302 Zone Tested Arkwick 10
 Anchor Length 12 Drill Pipe Run 3089 Mud Wt. 8.9
 Top Packer Depth 3285 Drill Collars Run 213 Vis 47
 Bottom Packer Depth 3290 Wt. Pipe Run 0 WL 8.0
 Total Depth 3302 Chlorides 5800 ppm System LCM

Blow Description IF: weak blow, built to 3 3/4 inches, died off to 2 3/4 inches
EST: NO BLOW BACK

FF: NO BLOW

FST: NO BLOW BACK

Rec	Feet of	%gas	%oil	%water	%mud
<u>60</u>	<u>SGCM</u>	<u>2</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

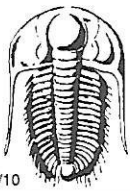
Rec Total 60 BHT 109 Gravity NIC API RW NIC @ NIC °F Chlorides NIC ppm

(A) Initial Hydrostatic 1623 Test 1050 T-On Location 10:15
 (B) First Initial Flow 315 Jars T-Started 10:31
 (C) First Final Flow 928 Safety Joint T-Open 11:41
 (D) Initial Shut-In 1144 Circ Sub T-Pulled 13:54
 (E) Second Initial Flow 587 Hourly Standby T-Out 15:17
 (F) Second Final Flow 254 Mileage 1100 30 Comments
 (G) Final Shut-In 781 Sampler
 (H) Final Hydrostatic 1602 Straddle Ruined Shale Packer
 Shale Packer Ruined Packer
 Extra Packer Extra Copies

Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 415
 Sub Total 1080
 Total 1080
 MP/DST Disc't

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59867

Well Name & No. Grant 10-4 Test No. 3 Date 05/12/18
 Company Rama Operating CO Elevation 1780 KB 1769 GL
 Address 101 S. Main St Stafford, KS 67578
 Co. Rep / Geo. Josh Austin Rig Sterling 4
 Location: Sec. 41 Twp. 20S Rge. 11W Co. Barton State KS

Interval Tested 3290 - 3306 Zone Tested Arbuckle
 Anchor Length 16 Drill Pipe Run 3061 Mud Wt. 9.3
 Top Packer Depth 3285 Drill Collars Run 213 Vis 50
 Bottom Packer Depth 3290 ~~3285~~ Wt. Pipe Run 0 WL 10.4
 Total Depth 3306 Chlorides 5300 ppm System LCM

Blow Description IF: WEAK SURFACE BLOW, DIED @ 9 minutes, FLUSHED TOOLS, NO BLOW
ISI: NO BLOW BACK

FF: NO BLOW

FSL: NO BLOW BACK

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>OCM</u>		<u>20</u>		<u>80</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

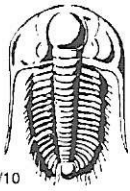
Rec Total 5 BHT 106 Gravity NIC API RW NIC @ NIC °F Chlorides NIC ppm

(A) Initial Hydrostatic 1593 Test 1050 T-On Location 20:15
 (B) First Initial Flow 16 Jars _____ T-Started 20:34
 (C) First Final Flow 19 Safety Joint _____ T-Open 22:13
 (D) Initial Shut-In 726 Circ Sub _____ T-Pulled 00:20
 (E) Second Initial Flow 21 Hourly Standby _____ T-Out 01:48
 (F) Second Final Flow 25 Mileage 1109 30 Comments _____
 (G) Final Shut-In 751 Sampler _____
 (H) Final Hydrostatic 1605 Straddle _____

Initial Open 30 Ruined Shale Packer _____
 Initial Shut-In 30 Ruined Packer _____
 Final Flow 30 Extra Packer _____
 Final Shut-In 30 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1080
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1080

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 59868

Well Name & No. Grant 10-4 Test No. 4 Date 05/13/18
 Company Rama Operating CO Elevation 1780 KB 1769 GL
 Address 101 S. Main St Stafford, KS 67578
 Co. Rep / Geo. Josh Austin Rig Sterling 4
 Location: Sec. 4 Twp. 20S Rge. 11W Co. Barton State KS

Interval Tested 3302 - 3310 Zone Tested Arbuckle
 Anchor Length 8 Drill Pipe Run 3093 Mud Wt. 9.3
 Top Packer Depth 3297 Drill Collars Run 213 Vis 50
 Bottom Packer Depth 3302 Wt. Pipe Run 0 WL 10.4
 Total Depth 3310 Chlorides 5300 ppm System LCM

Blow Description IF: Fair Blow, BOB in 15 minutes, Built to 23 inches
ISZ: NO Blow Back
FF: Fair Blow, BOB in 18 minutes, Built to 26 inches
FSI: NO Blow Back

Rec	Feet of	%gas	%oil	%water	%mud
<u>189</u>	<u>GIP</u>				
<u>315</u>	<u>GSY oil</u>	<u>10</u>	<u>90</u>		
<u>63</u>	<u>G MCO</u>	<u>5</u>	<u>60</u>		<u>35</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 378 BHT 105 Gravity 43.4 API RW NIC @ NIC °F Chlorides NIC ppm

(A) Initial Hydrostatic 1672 Test 1050 T-On Location 06:30
 (B) First Initial Flow 15 Jars _____ T-Started 06:51
 (C) First Final Flow 93 Safety Joint _____ T-Open 08:03
 (D) Initial Shut-In 744 Circ Sub _____ T-Pulled 11:05
 (E) Second Initial Flow 97 Hourly Standby _____ T-Out 12:51
 (F) Second Final Flow 141 Mileage 1102 30 Comments _____
 (G) Final Shut-In 720 Sampler _____
 (H) Final Hydrostatic 1583 Straddle _____ Ruined Shale Packer _____
 Shale Packer _____ Ruined Packer _____
 Extra Packer _____ Extra Copies _____
 Extra Recorder _____ Sub Total 0
 Day Standby _____ Total 1080
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1080

Approved By _____ Our Representative [Signature]

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