

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018

Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD
 Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

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

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Rama Operating Co., Inc.
Well Name	HJB 1-20
Doc ID	1583499

Tops

Name	Top	Datum
Heebner	3103	-1236
Brown Lime	3232	-1365
Lansing	3247	-1380
Base Lansing	3466	-1599
Viola	3469	-1602
Simpson Shale	3474	-1607
Arbuckle	3537	-1670
RTD	3700	-1833



MENT TREATMENT REPORT

Customer:	Rama Operating	Well:	HJB 1-20	Ticket:	wp 1596
City, State:	Seward Kansas	County:	Stafford Kansas	Date:	7/15/2021
Field Rep:	Lanny Saloga	S-T-R:	20 21s 12w	Service:	8.625

Downhole Information	
Hole Size:	12 1/4 in
Hole Depth:	334 ft
Casing Size:	8 5/8 in
Casing Depth:	331 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Tool Depth:	ft
Displacement:	19.8 bbbls

Calculated Slurry - Lead	
Blend:	60/40 2 & 3
Weight:	14.8 ppg
Water / Sx:	5.1 gal / sx
Yield:	1.21 ft ³ / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0.0 bbbls
Excess:	
Total Slurry:	70.0 bbbls
Total Sacks:	325 sx

Calculated Slurry - Tail	
Blend:	
Weight:	ppg
Water / Sx:	gal / sx
Yield:	ft ³ / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0 bbbls
Excess:	
Total Slurry:	0.0 bbbls
Total Sacks:	0 sx

TIME	RATE	PSI	BBLs	TOTAL BBLs	REMARKS
1:00 AM			-	-	on location spot trucks and rig up
2:15 AM				-	start casing in the hole
3:15 AM				-	casing on bottom and circulate
6:40 AM				-	start cement
	3.0	300.0	3.0	3.0	fresh water
	3.0	300.0	70.0	73.0	mix 325 sacks cement
7:05 AM					cement in
7:06 AM	3.0	300.0			start displacement
7:15 AM			19.8	19.8	displacement in and close in well
					cement did circulate
					pump truck went down and brought out differnt pump

CREW		UNIT	SUMMARY		
Cementer:	M Brungardt	918	Average Rate	Average Pressure	Total Fluid
Pump Operator:	M Mattel	267	3.0 bpm	300 psi	93 bbbls
Bulk #1:	R Valdez	523/256			
Bulk #2:					



CEMENT TREATMENT REPORT

Customer: Rama Operating	Well: HJB 1-20	Ticket: wp 1621
City, State: Seward Kansas	County: Stafford	Date: 7/21/2021
Field Rep: Randy Ginest	S-T-R: 20-21s-12w	Service: 5.5

Downhole Information	
Hole Size:	7 7/8 In
Hole Depth:	3700 ft
Casing Size:	5 1/2 In
Casing Depth:	3695 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Tool Depth:	ft
Displacement:	bbls

Calculated Slurry - Lead	
Blend:	H-Long
Weight:	15.0 ppg
Water / Sx:	6.0 gal / sx
Yield:	1.42 ft ³ / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0.0 bbls
Excess:	
Total Slurry:	25.2 bbls
Total Sacks:	100 sx

Calculated Slurry - Tail	
Blend:	H-Plug
Weight:	13.7 ppg
Water / Sx:	6.9 gal / sx
Yield:	1.43 ft ³ / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	12.7 bbls
Total Sacks:	50 sx

	STAGE	TOTAL			REMARKS
TIME	RATE	PSI	BBLs	BBLs	
11:15 AM			-	-	on location job and safety
11:30 AM			-	-	spot trucks and rig up
			-	-	
			-	-	centralizers 1,3,6,9,12
1:50 PM			-	-	start casing in the hole
4:10 PM			-	-	casing on bottom and circulate
			-	-	
4:55 PM			-	-	start flush
	4.5	350.0	5.0	5.0	5bbls fresh
	4.5	350.0	11.0	16.0	11 bbls flush
	4.5	350.0	5.0	21.0	5 bbla fresh
5:05 PM	2.0	-	12.7		plug rat hole 30 sacks.....mouse hole 20 sacks
5:20 PM					start cement down hole
5:30 PM	6.0	450.0	25.0		cement in.....mixed 100 sacks h-long
					wash pump and lines
5:40 PM					star displacement
	6.0	350.0	10.0		
	6.0	350.0	50.0		
	3.0	250.0	75.0		slow rate to 3bpm
6:00 PM	3.0	350.0	88.8		plug down float did hold
					350psi to 750 psi

CREW		UNIT	SUMMARY		
Cementer:	M Brungardt	916	Average Rate	Average Pressure	Total Fluid
Pump Operator:	R Osborn	179/522	4.4 bpm	311 psi	283 bbls
Bulk #1:	J Travino	181/256			
Bulk #2:					



Joshua R. Austin

Petroleum Geologist

report for

RAMA OPERATING CO., INC



COMPANY: RAMA OPERATING COMPANY INC.

LEASE: HJB # 1-20

FIELD: Mueller

LOCATION: SE-NE-NW-NW
595' FNL & 1233' FWL

SEC: 20 **TWSP:** 21s **RGE:** 12w

COUNTY: Stafford **STATE:** Kansas

KB: 1867' **GL:** 1856'

API # 15-185-24082-00-00

CONTRACTOR: Sterling Drilling Co (Rig #4)

Spud: 07-14-2021 **Comp:** 07-21-2021

RTD: 3700' **LTD:** 3700'

Mud Up: 2588' **Type Mud:** Chemical was displaced

Samples Saved From: 2700' to RTD

Drilling Time Kept From: 2500' to RTD

Samples Examined From: 2700' to RTD

Geological Supervision From: 2900 to RTD

Geologist on Well: Josh Austin

Surface Casing: 8 5/8" @ 330'

Production Casing: 5 1/2" @ 3699'

Electronic Surveys: Midwest Wireline

NOTES

On the basis of the drill stem test, shows in the samples and after reviewing the electric logs, it was recommended by all parties involved in the HJB #1-20 to set 5 1/2" production casing to further test the Arbuckle and Lansing zones. See typed geo report for recommendations.

Respectfully submitted,
Josh Austin

RAMA Operating Co., Inc.
well comparison sheet

COMPARISON WELL HJB #1-20					COMPARISON WELL Hall #4 NW NW NW Sec. 20 Twp. 21s Rge 12w				COMPARISON WELL Hall #2 N2 N2 NW Sec. 20 Twp. 21s Rge 12w				COMPARISON WELL Hall #1 C SE NW NW Sec. 20 Twp. 21s Rge 12w				
1867 KB					1868 KB				1862 KB				1873 KB				
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Log	Sample	Log	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Anhydrite	683	1184	669	1198													
B/ Anhydrite	690	1177	688	1179													
Heebner	3106	-1239	3103	-1236	3110	-1242	3	6	3103	-1241	2	5	3114	-1241	2	5	
Toronto	3126	-1259	3121	-1254	3129	-1261	2		3123	-1261	2	7					
Douglas	3140	-1273	3137	-1270													
Brown Lime	3235	-1368	3232	-1365	3238	-1370	2	5	3232	-1370	2	5	3241	-1368	0	3	
Lansing	3250	-1383	3247	-1380	3254	-1386	3	6	3250	-1388	5	8	3256	-1383	0	3	
BKC	3471	-1604	3466	-1599													
Viola	3476	-1609	3469	-1602	3481	-1613	4	11	3469	-1607	-2	5	3472	-1599	-10	-3	
Simpson Shale	3484	-1617	3474	-1607	3492	-1624	7	17	3478	-1616	-1	9	3477	-1604	-13	-3	
Arbuckle	3535	-1668	3537	-1670	3546	-1678	10	8	3526	-1664	-4	-6	3533	-1660	-8	-10	
Total Depth	3700	-1833	3700	-1833	3561	-1693			3550	-1688			3542	-1669			



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford Co

P.O. Box 159
Stafford, Ks. 67578

HJB 1-20

Job Ticket: 67156

DST#: 1

ATTN: Josh Austin

Test Start: 2021.07.19 @ 03:51:25

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:38:40

Time Test Ended: 10:05:10

Test Type: Conventional Bottom Hole (Initial)

Tester: Matt Smith

Unit No: 68

Interval: **3464.00 ft (KB) To 3540.00 ft (KB) (TVD)**

Total Depth: 3540.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1867.00 ft (KB)

1856.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8788

Inside

Press@RunDepth: 263.81 psig @ 3465.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2021.07.19 End Date: 2021.07.19

Last Calib.: 2021.07.19

Start Time: 03:51:30 End Time: 10:05:09

Time On Btm: 2021.07.19 @ 05:34:10

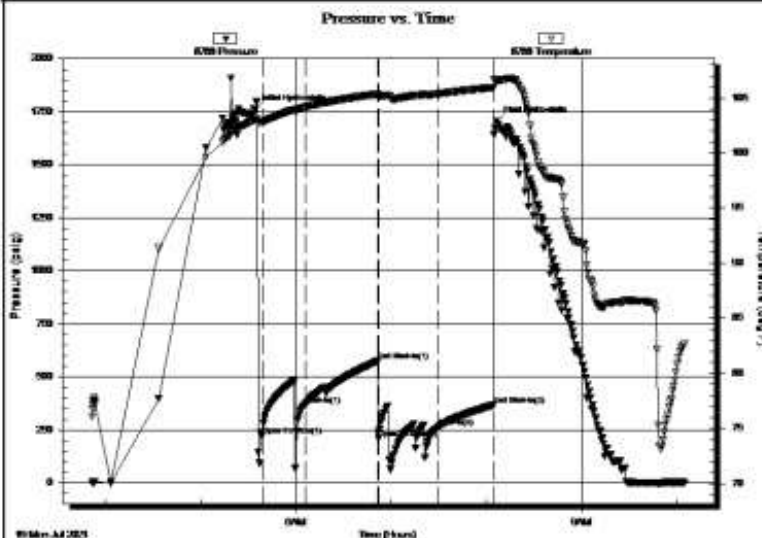
Time Off Btm: 2021.07.19 @ 08:06:25

TEST COMMENT: F: Weak Blow . Built to 1 1/2". (30)

IS: No Blow . (45)

FF: No Blow . (30)

FS: No Blow . (45)



PRESSURE SUMMARY

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1757.23	103.03	Initial Hydro-static
5	222.58	102.79	Open To Flow (1)
32	367.89	104.17	Shut-In(1)
77	573.49	105.34	End Shut-In(1)
78	208.80	105.19	Open To Flow (2)
116	263.81	105.38	Shut-In(2)
151	367.48	105.95	End Shut-In(2)
153	1703.47	106.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	GOSM 5%g 95%m	0.23
0.00	62' GIP 100%g	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford Co

P.O. Box 159
Stafford, Ks. 67578

HJB 1-20

Job Ticket: 67157

DST#: 2

ATTN: Josh Austin

Test Start: 2021.07.19 @ 16:34:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:30:23

Time Test Ended: 23:42:38

Test Type: Conventional Bottom Hole (Reset)

Tester: Matt Smith

Unit No: 68

Interval: 3540.00 ft (KB) To 3555.00 ft (KB) (TVD)

Total Depth: 3555.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1867.00 ft (KB)

1856.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8788

Inside

Press@RunDepth: 65.06 psig @ 3541.00 ft (KB)

Start Date: 2021.07.19

End Date: 2021.07.19

Capacity: 8000.00 psig

Last Calib.: 2021.07.20

Start Time: 16:34:43

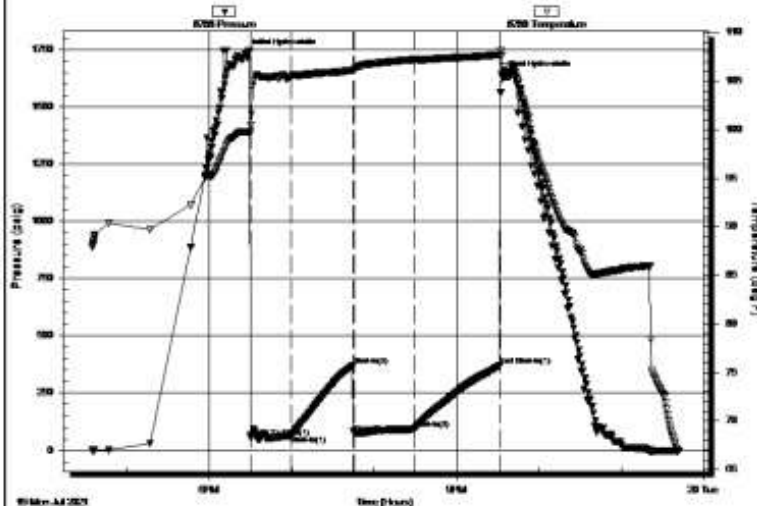
End Time: 23:42:37

Time On Btm: 2021.07.19 @ 18:26:23

Time Off Btm: 2021.07.19 @ 21:33:08

TEST COMMENT: F: Strong Blow . B.O.B. in 6 mins. Built to 31.16". (30)
IS: No Blow . (45)
FF: Strong Blow . B.O.B. in 7 mins. Built to 37.29". (45)
FS: Weak Blow . Built to 1 1/2". (60)

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1732.26	99.81	Initial Hydro-static
4	56.63	100.43	Open To Flow (1)
34	65.06	105.48	Shut-In(1)
79	369.92	106.12	Shut-In(2)
80	74.72	106.19	Open To Flow (2)
123	92.18	107.23	Shut-In(3)
186	369.93	107.71	End Shut-In(1)
187	1638.19	107.57	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GOW/M 35%g 25%o 20%w 20%m	0.17

Gas Rates

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

62.00	GOWCM 33%g 25%o 20%w 20%am	0.47
61.00	GOMCW 57%g 28%o 4%m 11%w	0.46
61.00	GOCM 47%g 28%o 25%m	0.46
5.00	GHOCM 20%g 25%o 55%m	0.04
0.00	824' GIP 100%g	0.00

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford Co

P.O. Box 159
Stafford, Ks. 67578

HJB 1-20

Job Ticket: 67158

DST#: 3

ATTN: Josh Austin

Test Start: 2021.07.20 @ 06:12:19

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:09:19

Time Test Ended: 13:22:34

Test Type: Conventional Bottom Hole (Reset)

Tester: Matt Smith

Unit No: 68

Interval: **3555.00 ft (KB) To 3575.00 ft (KB) (TVD)**

Total Depth: 3575.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 1867.00 ft (KB)

1856.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8788

Inside

Press@RunDepth: 468.15 psig @ 3556.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2021.07.20

End Date: 2021.07.20

Last Calib.: 2021.07.20

Start Time: 06:12:24

End Time: 13:22:33

Time On Btm: 2021.07.20 @ 08:07:04

Time Off Btm: 2021.07.20 @ 10:12:04

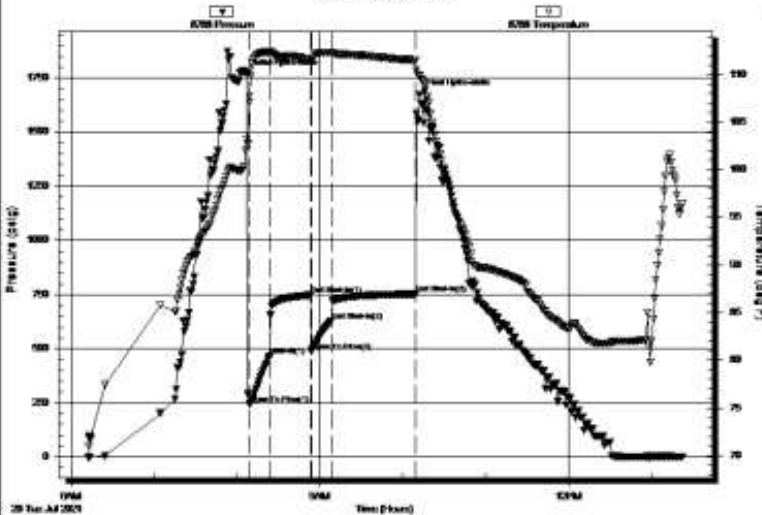
TEST COMMENT: F: Strong Blow . B.O.B. in 45 secs. Built to 178.93". (15)

IS: Strong Blow . B.O.B. in 18 mins. Built to 28.16". (30)

FF: Strong Blow . B.O.B. in 1 min. Built to 121.17". (15)

FS: Strong Blow . B.O.B. in 12 mins. Built to 94.87". (60)

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1766.91	103.06	Initial Hydro-static
3	242.49	107.75	Open To Flow (1)
17	468.15	112.34	Shut-In(1)
46	746.96	111.53	End Shut-In(1)
47	487.24	111.40	Open To Flow (2)
61	628.04	112.25	End Shut-In(2)
122	751.99	111.45	End Shut-In(3)
125	1671.32	109.80	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
442.00	GOSMCW 1%g 1%m 98%w	4.80
512.00	GOMCW 2%g 5%o 2%m 91%w	7.18
512.00	GOMCW 65%g 20%o 4%m 11%w	7.18
0.00	1472 GIP 100%g	0.00

Gas Rates

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

* Recovery from multiple tests

ROCK TYPES

Cht	Congl	Lmst fw<7	Ss	Shcol
Coal	Dolsec	Lmst fw>7	Shgy	

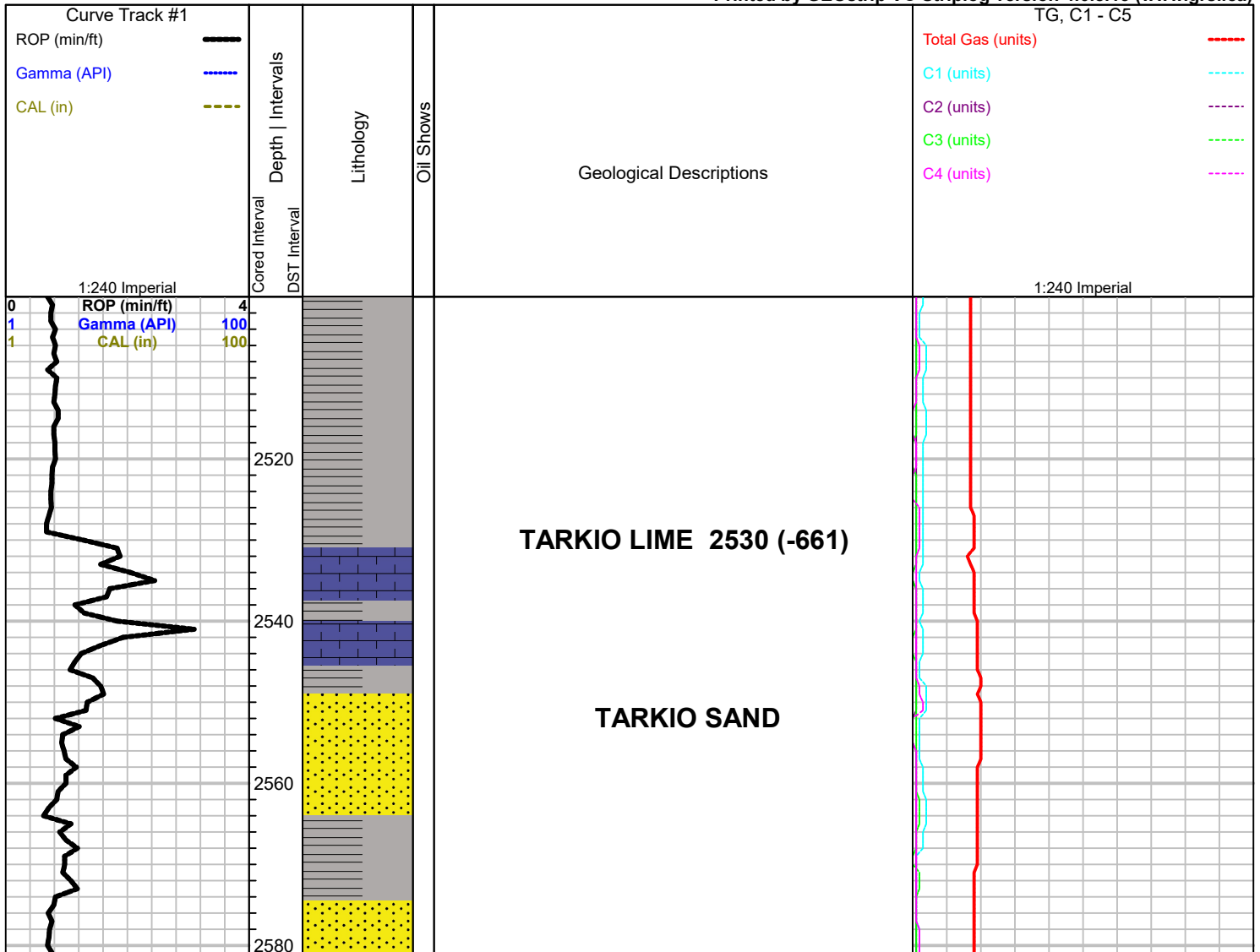
ACCESSORIES

STRINGER
 Chert

OTHER SYMBOLS

OIL SHOWS	INTERVALS
● Even Stn	■ Core
● Spotted Stn 50 - 75 %	· DST
● Spotted Stn 25 - 50 %	
● Spotted Stn 1 - 25 %	
○ Questionable Stn	
D Dead Oil Stn	
■ Fluorescence	

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)



ELMONT 2593 (-724)

2600

2620

2640

2660

2680

2700

2720

2740

2760

2780

2800

Wet and Dry Samples 2700' to RTD

Siltstone; grey, very fine grained, micaceous in part, plus Shale; grey-dark grey

HOWARD 2740 (-871)

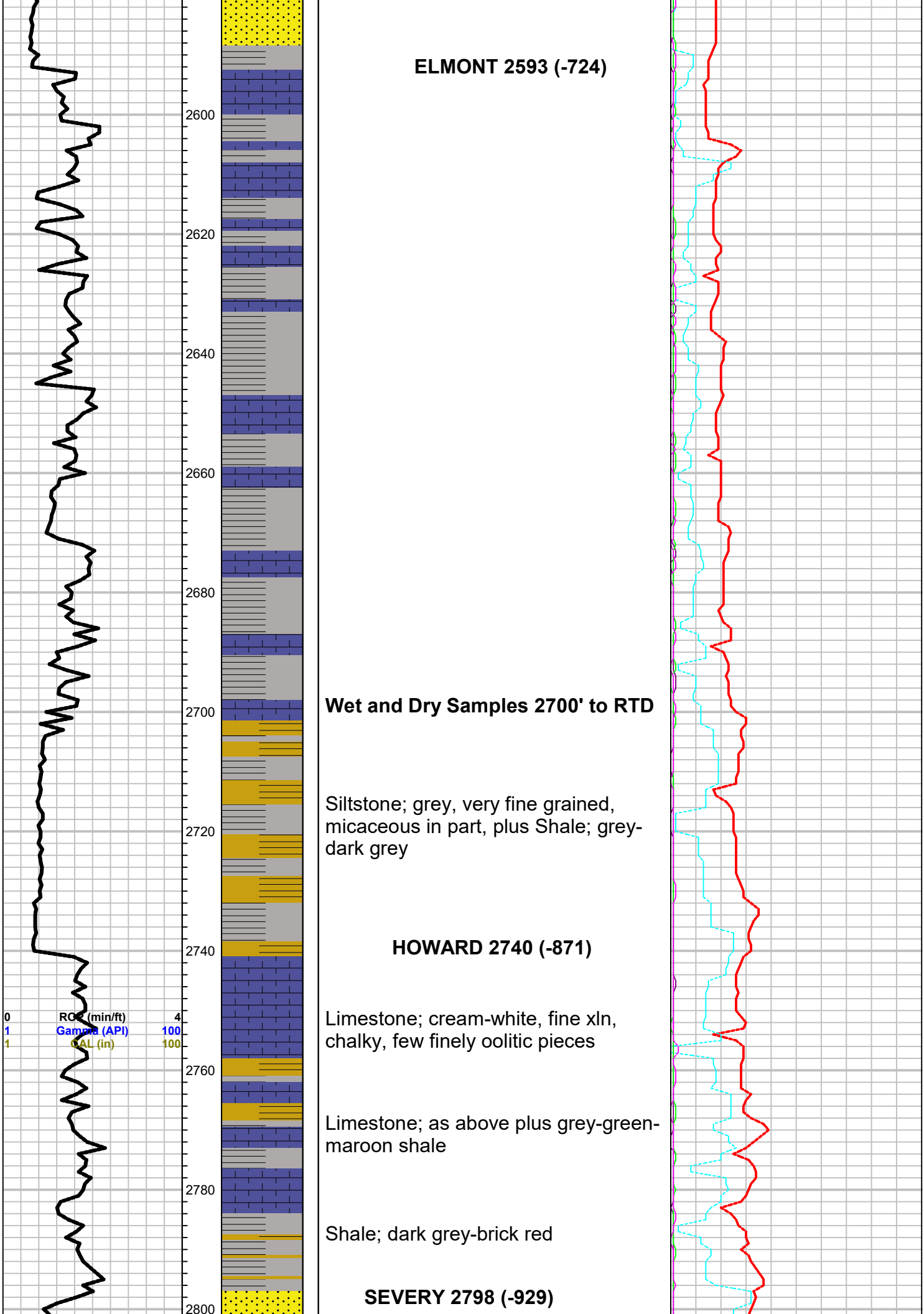
Limestone; cream-white, fine xln, chalky, few finely oolitic pieces

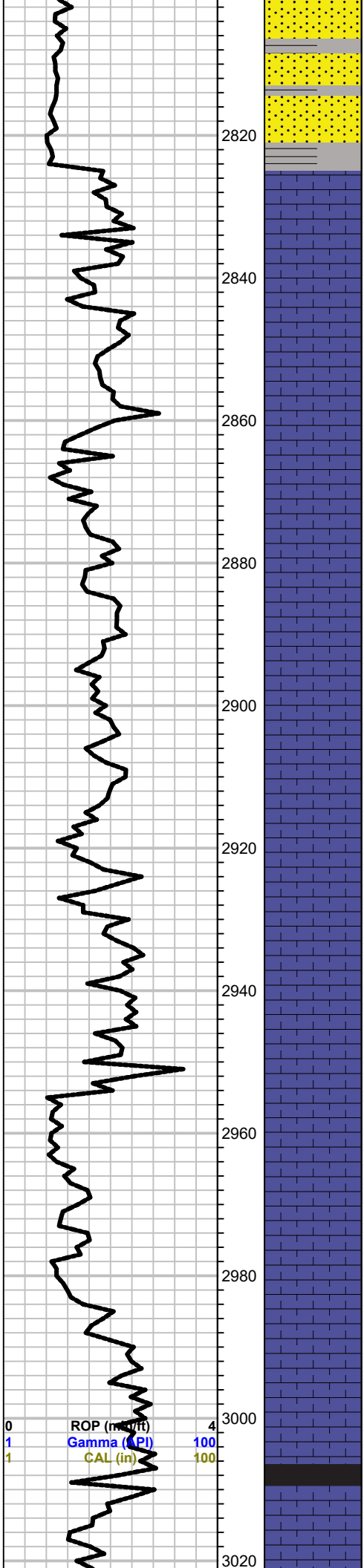
Limestone; as above plus grey-green-maroon shale

Shale; dark grey-brick red

SEVERY 2798 (-929)

0 RC (min/ft) 4
1 Gamma (API) 100
1 GAI (in) 100





Sand; grey, very fine grained, silty, micaceous, plus grey-dark grey silty micaceous shale

TOPEKA 2824 (-955)

Limestone; grey-cream, fine xln, fossiliferous, dense, plus Chert; tan, fossiliferous, no shows

Limestone; white-cream, fine xln, chalky, silty / granular, no shows

Limestone; grey-tan, fine xln, fossiliferous, dense, cherty, plus grey-tan, fossiliferous Chert

Limestone; tan, cream, fine xln, chalky in part, few calcite inclusions, scattered inter xln porosity, no shows

Limestone; cream, fine-medium xln, chalky in part, inter xln porosity in part, few granular pieces, no shows

Limestone; grey-tan, fine xln, dense, cherty, plus Chert; fossiliferous, boney

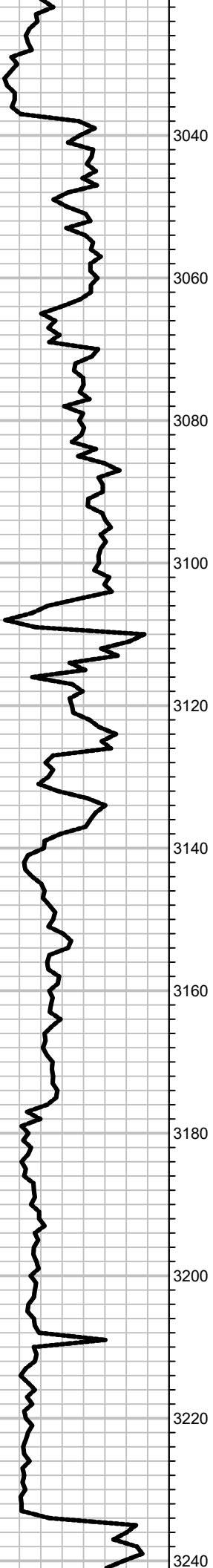
Limestone; cream-white-lt. grey, granular, finely oolitic, fossil cast type porosity, no shows

Limestone; cream, fine xln, chalky, dense, fossiliferous in part

Shale; black-dark grey

Limestone; cream buff, fossiliferous/

ROP (m/min) 4
 Gamma (API) 100
 CAL (in) 100



3040
3060
3080
3100
3120
3140
3160
3180
3200
3220
3240

Limestone; cream-buff, fossiliferous/oolitic, chalky, scattered porosity, no shows, plus white chalk

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

Limestone; as above plus Chert; white, boney

Limestone; tan-cream, fine xln, dense, cherty, no shows

HEEBNER 3106 (-1237)

Black Carboniferous Shale

Shale; grey-green

TORONTO 3126 (-1257)

Limestone; cream-white, fine xln, chalky, pin point porosity in part, no shows

DOUGLAS 3140 (-1271)

Shale; grey-greyish green, silty in part

Shale; as above micaceous

Sand; grey, very fine grained, silty, micaceous, friable, no shows

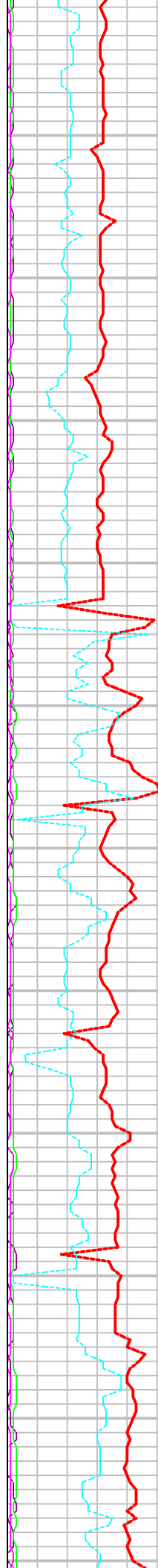
as above

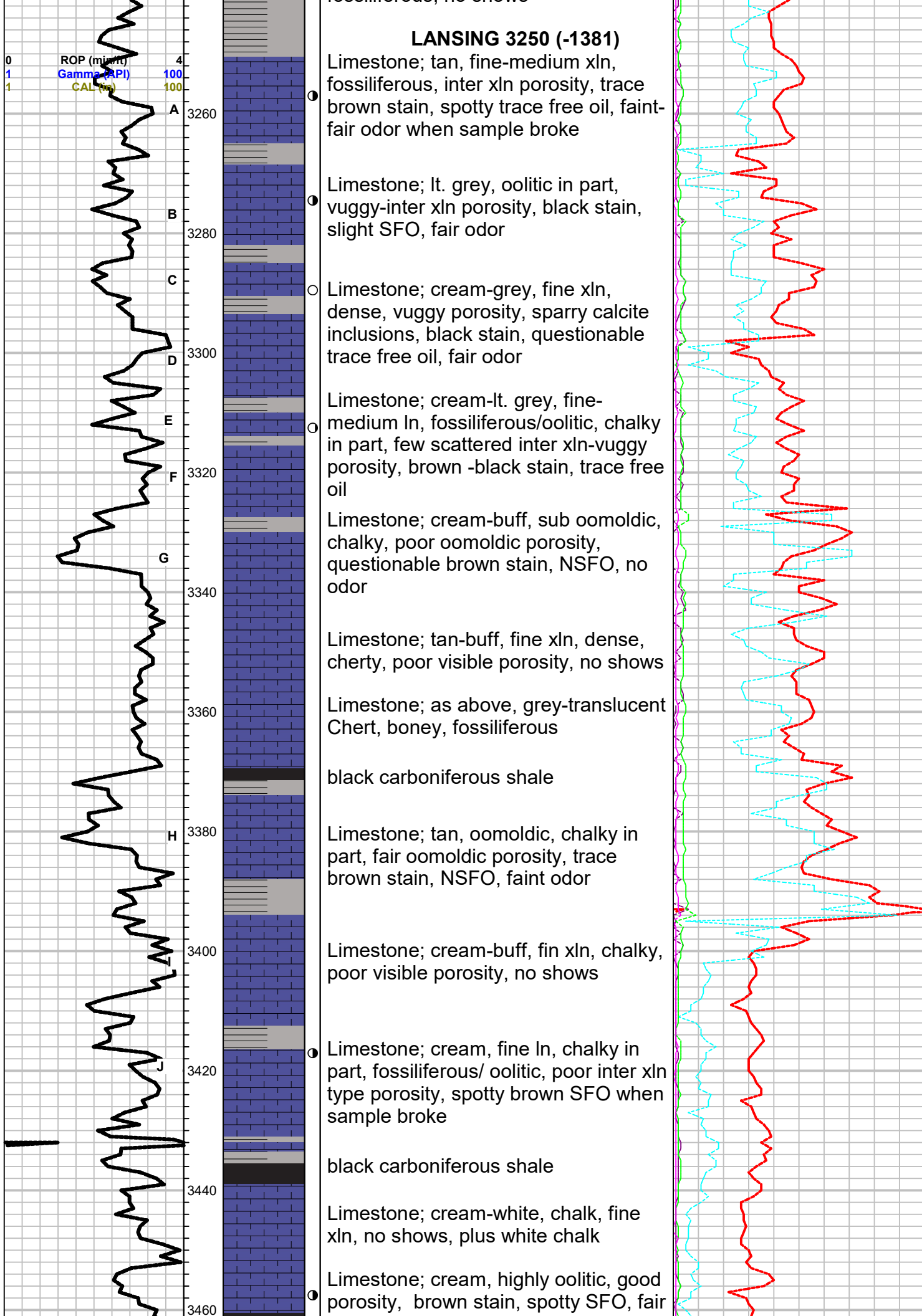
Shale; grey-dark grey, soft, silty

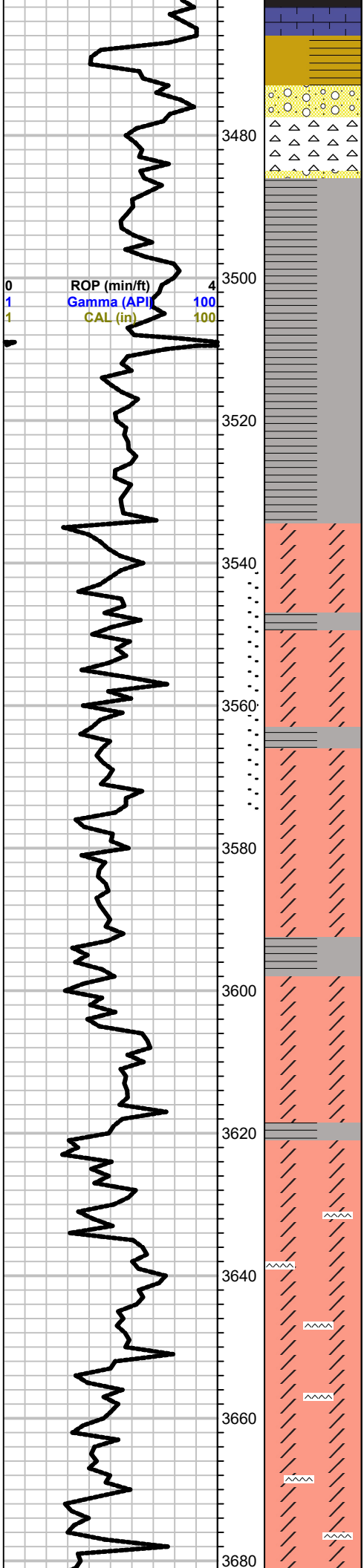
Shale as above

BROWN LIME 3235 (-1366)

Limestone; tan-brown, fine xln, dense, fossiliferous. no shows







odor

BKC 3471 (-1602)
Shale; grey-greish green

VIOLA 3476 (-1607)
Chert; lt. grey, mustard, orange, boney, no shows Plus Limestone; cream-grey, fine xln, dense

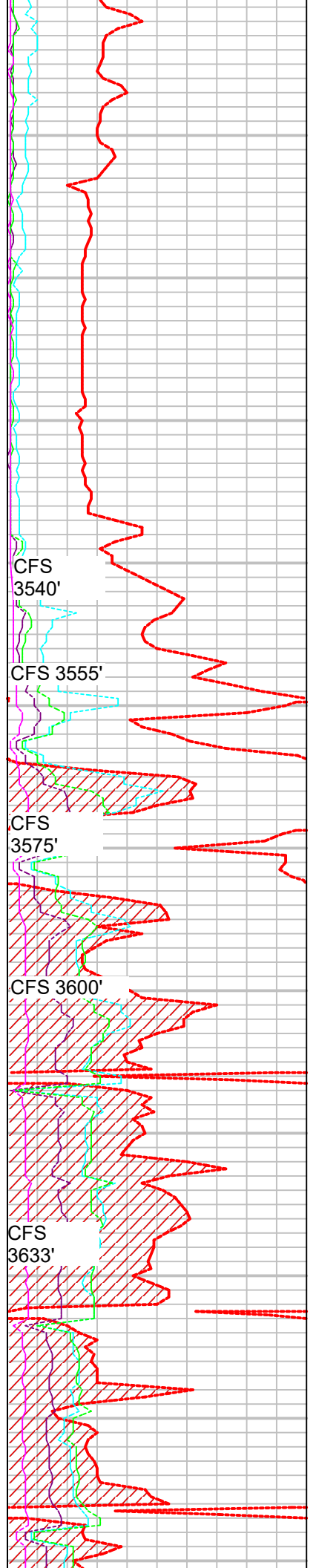
SIMPSON SHALE 3484 (-1615)
Shale; green waxey

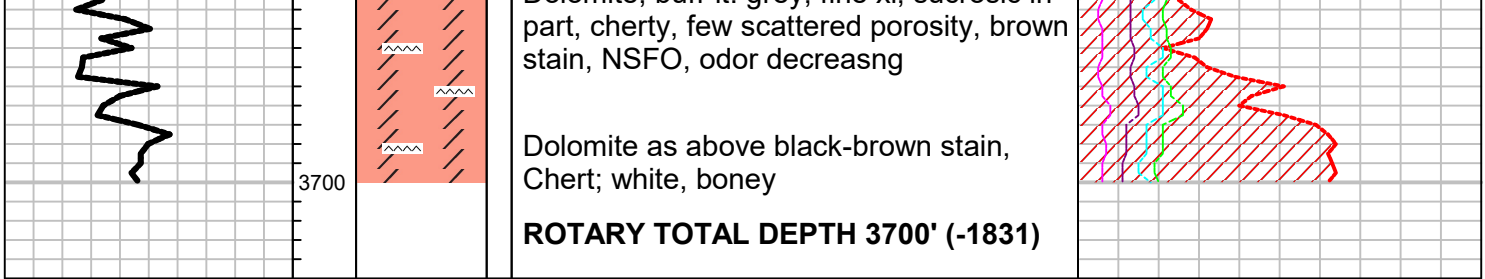
abundant Shale variety of colors

Shale; grey-green, maroon, waxey in part

ARBUCKLE 3535 (-1666)

- Dolomite; tan, fine xln, sucrosic, brown, stain, SFO, good-strong odor
- Dolomite; lt. grey-tan, medium xln, rhombic in part, inter xln porosity, brown stain, SFO, strong odor
- Dolomite; tan-grey, fine xln, dense in part, few scattered inter xln porosity, brown stain, SFO/SAT when sample broke good-strong gassy odor
- Dolomite; tan, dense, vuggy porosity, brown stain, SFO, good-strong gassy odor, plus white Chert
- Dolomite; buff-tan, fine-medium xln, rhombic, inter xln-vuggy porosity, cherty in part, brown stain, SFO, SAT in part, good-strong gassy odor
- Dolomite; tan-buff, fine xln, dense, cherty, few scattered porosity, trace brown stain, trace free oil, fair-good odor
- Dolomite; cream-lt.grey-buff, fine xln, dense, cherty, sucrosic in part, few inter xln porosity, brown stain, SFO, fair-good odor plus white Chert
- Dolomite; grey-tan, dense, cherty
- Dolomite; tan-brown, fine-medium xln, brown stain, trace free oil, fair odor
- Dolomite; tan-buff, fine xln, dense, cherty, few inter xln porosity, brown stain, trace free oil, fair odor
- Dolomite; buff-lt grey fine xl sucrosic in







DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co., Inc.**

PO Box 159
Stafford, KS 67578

ATTN: Josh Austin

HJB #1-20

20-21s-12w Stafford,KS

Start Date: 2021.07.19 @ 03:51:25

End Date: 2021.07.19 @ 10:05:10

Job Ticket #: 67156 DST #: 1

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

Printed: 2021.07.21 @ 16:46:25



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67156

DST#: 1

ATTN: Josh Austin

Test Start: 2021.07.19 @ 03:51:25

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:38:40

Time Test Ended: 10:05:10

Test Type: Conventional Bottom Hole (Initial)

Tester: Matt Smith

Unit No: 68

Interval: 3464.00 ft (KB) To 3540.00 ft (KB) (TVD)

Reference Elevations: 1867.00 ft (KB)

Total Depth: 3540.00 ft (KB) (TVD)

1856.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

Serial #: 8788

Inside

Press@RunDepth: 263.81 psig @ 3465.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2021.07.19

End Date:

2021.07.19

Last Calib.:

2021.07.19

Start Time: 03:51:30

End Time:

10:05:09

Time On Btm:

2021.07.19 @ 05:34:10

Time Off Btm:

2021.07.19 @ 08:06:25

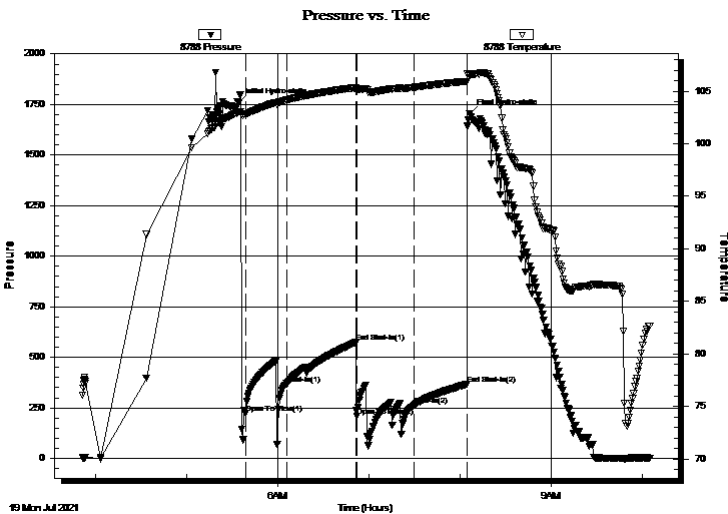
TEST COMMENT: IF: Weak Blow . Built to 1 1/2". (30)

IS: No Blow . (45)

FF: No Blow . (30)

FS: No Blow . (45)

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1757.23	103.03	Initial Hydro-static
5	222.58	102.79	Open To Flow (1)
32	367.89	104.17	Shut-In(1)
77	573.49	105.34	End Shut-In(1)
78	208.80	105.19	Open To Flow (2)
116	263.81	105.38	Shut-In(2)
151	367.48	105.95	End Shut-In(2)
153	1703.47	106.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	GOSM 5%g 95%m	0.23
0.00	62' GIP 100%g	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67156

DST#: 1

ATTN: Josh Austin

Test Start: 2021.07.19 @ 03:51:25

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:38:40

Time Test Ended: 10:05:10

Test Type: Conventional Bottom Hole (Initial)

Tester: Matt Smith

Unit No: 68

Interval: 3464.00 ft (KB) To 3540.00 ft (KB) (TVD)

Total Depth: 3540.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1867.00 ft (KB)

1856.00 ft (CF)

KB to GR/CF: 11.00 ft

Serial #: 8737 Outside

Press@RunDepth: psig @ 3465.00 ft (KB)

Start Date: 2021.07.19

End Date: 2021.07.19

Start Time: 03:51:47

End Time: 10:05:26

Capacity: 8000.00 psig

Last Calib.: 2021.07.19

Time On Btm:

Time Off Btm:

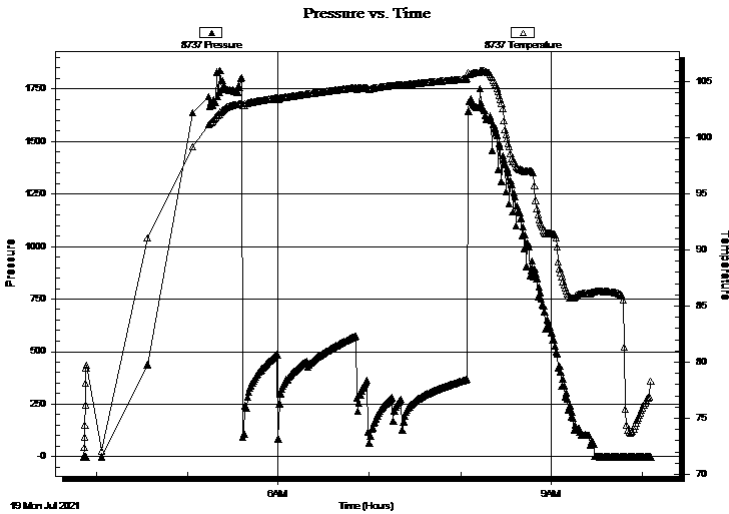
TEST COMMENT: IF: Weak Blow . Built to 1 1/2". (30)

IS: No Blow . (45)

FF: No Blow . (30)

FS: No Blow . (45)

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
30.00	GOSM 5%g 95%m	0.23
0.00	62' GIP 100%g	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67156

DST#: 1

ATTN: Josh Austin

Test Start: 2021.07.19 @ 03:51:25

Tool Information

Drill Pipe:	Length: 3248.00 ft	Diameter: 3.80 inches	Volume: 45.56 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 24000.00 lb
Drill Collar:	Length: 218.00 ft	Diameter: 2.80 inches	Volume: 1.66 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 47.22 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	3464.00 ft			Final 64000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	76.00 ft			
Tool Length:	104.00 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			3437.00	
Shut In Tool	5.00			3442.00	
Hydraulic tool	5.00			3447.00	
Jars	5.00			3452.00	
Safety Joint	3.00			3455.00	
Packer	4.00			3459.00	28.00 Bottom Of Top Packer
Packer	5.00			3464.00	
Stubb	1.00			3465.00	
Recorder	0.00	8788	Inside	3465.00	
Recorder	0.00	8737	Outside	3465.00	
Perforations	5.00			3470.00	
Change Over Sub	1.00			3471.00	
Blank Spacing	32.00			3503.00	
Change Over Sub	1.00			3504.00	
Perforations	33.00			3537.00	
Bullnose	3.00			3540.00	76.00 Bottom Packers & Anchor
Total Tool Length:	104.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67156

DST#: 1

ATTN: Josh Austin

Test Start: 2021.07.19 @ 03:51:25

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:

10000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.98 in³

Gas Cushion Type:

Resistivity: 10000.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: ppm

Filter Cake: 0.20 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
30.00	GOSM 5%g 95%m	0.228
0.00	62' GIP 100%g	0.000

Total Length: 30.00 ft Total Volume: 0.228 bbl

Num Fluid Samples: 0

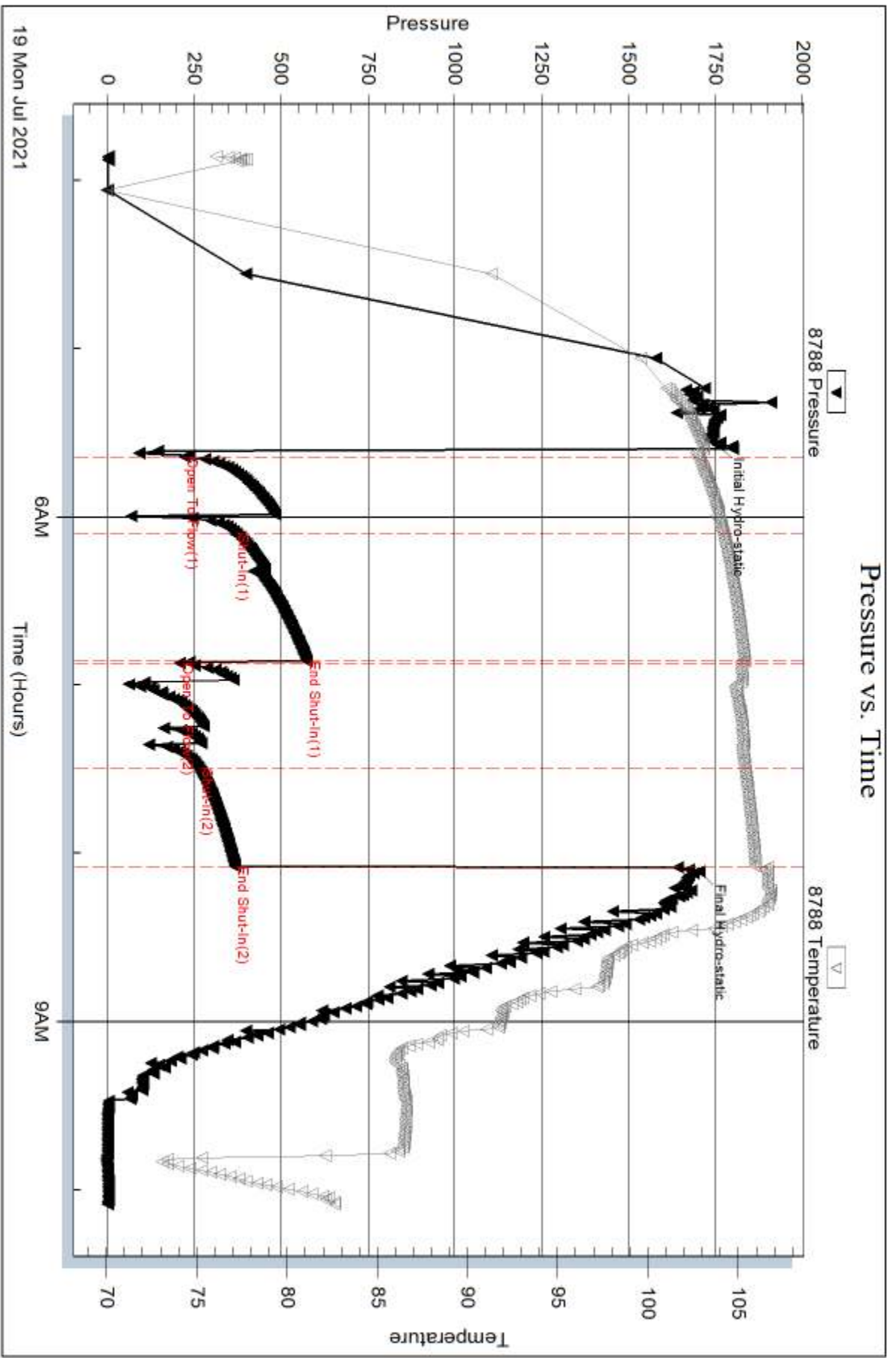
Num Gas Bombs: 0

Serial #: None

Laboratory Name:

Laboratory Location:

Recovery Comments: 62 Feet Of Gas in Pipe.

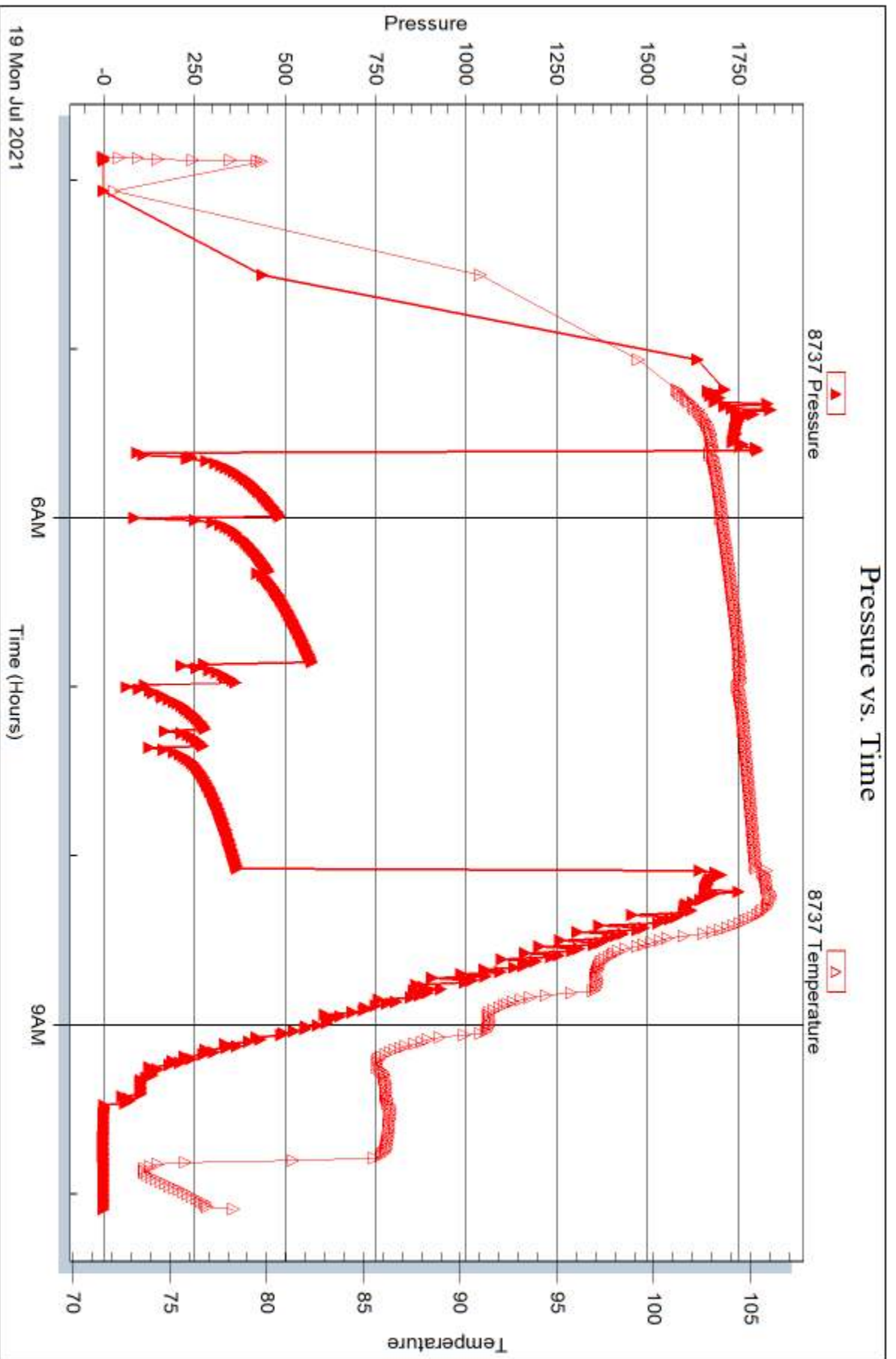


Serial #: 8737

Outside Rama Operating Co., Inc.

HUB #1-20

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 67156

Printed: 2021.07.21 @ 16:46:26



DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co., Inc.**

PO Box 159
Stafford, KS 67578

ATTN: Josh Austin

HJB #1-20

20-21s-12w Stafford,KS

Start Date: 2021.07.19 @ 16:34:38

End Date: 2021.07.19 @ 23:42:38

Job Ticket #: 67157 DST #: 2

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

Printed: 2021.07.21 @ 16:45:16



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67157

DST#: 2

ATTN: Josh Austin

Test Start: 2021.07.19 @ 16:34:38

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:30:23

Time Test Ended: 23:42:38

Test Type: Conventional Bottom Hole (Reset)

Tester: Matt Smith

Unit No: 68

Interval: 3540.00 ft (KB) To 3555.00 ft (KB) (TVD)

Reference Elevations: 1867.00 ft (KB)

Total Depth: 3555.00 ft (KB) (TVD)

1856.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 8788

Inside

Press@RunDepth: 92.18 psig @ 3541.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2021.07.19 End Date: 2021.07.19

Last Calib.: 2021.07.20

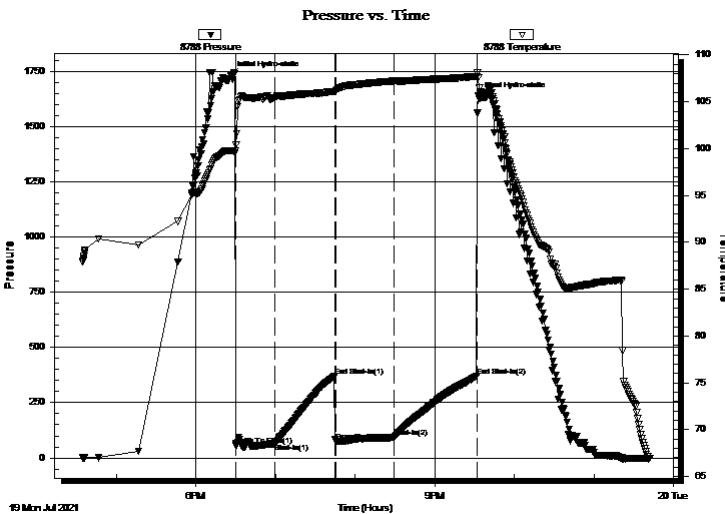
Start Time: 16:34:43 End Time: 23:42:37

Time On Btm: 2021.07.19 @ 18:26:23

Time Off Btm: 2021.07.19 @ 21:33:08

TEST COMMENT: IF: Strong Blow . B.O.B. in 6 mins. Built to 31.16". (30)
IS: No Blow . (45)
FF: Strong Blow . B.O.B. in 7 mins. Built to 37.29". (45)
FS: Weak Blow . Built to 1 1/2". (60)

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1732.26	99.81	Initial Hydro-static
4	56.63	100.43	Open To Flow (1)
34	65.06	105.48	Shut-In(1)
79	369.92	106.12	End Shut-In(1)
80	74.72	106.19	Open To Flow (2)
123	92.18	107.23	Shut-In(2)
186	369.93	107.71	End Shut-In(2)
187	1638.19	107.57	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GOWCM 35%g 25%o 20%w 20%m	0.47
61.00	GOMCW 57%g 28%o 4%m 11%w	0.46
61.00	GOCM 47%g 28%o 25%m	0.46
5.00	GHOCM 20%g 25%o 55%m	0.04
0.00	824' GIP 100%g	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67157

DST#: 2

ATTN: Josh Austin

Test Start: 2021.07.19 @ 16:34:38

GENERAL INFORMATION:

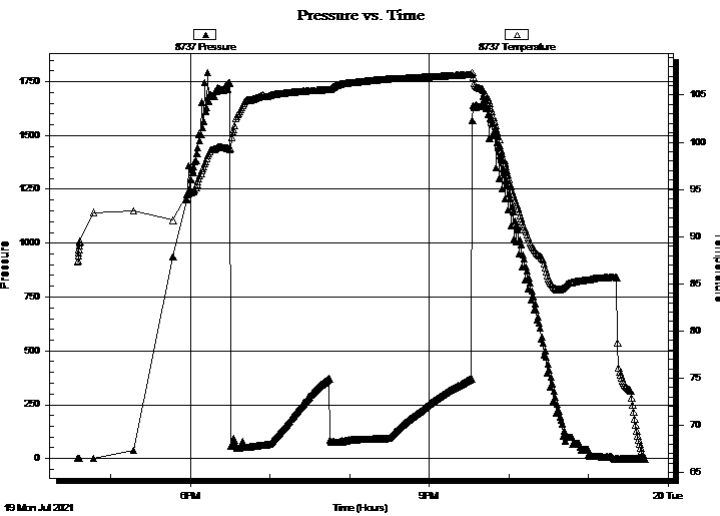
Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Reset)
 Time Tool Opened: 18:30:23
 Tester: Matt Smith
 Time Test Ended: 23:42:38
 Unit No: 68
 Interval: **3540.00 ft (KB) To 3555.00 ft (KB) (TVD)**
 Reference Elevations: 1867.00 ft (KB)
 Total Depth: 3555.00 ft (KB) (TVD)
 1856.00 ft (CF)
 Hole Diameter: 7.88 inches
 Hole Condition: Fair
 KB to GR/CF: 11.00 ft

Serial #: 8737

Outside

Press@RunDepth: psig @ 3541.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2021.07.19 End Date: 2021.07.19 Last Calib.: 2021.07.20
 Start Time: 16:34:54 End Time: 23:42:48 Time On Btm:
 Time Off Btm:

TEST COMMENT: IF: Strong Blow . B.O.B. in 6 mins. Built to 31.16". (30)
 IS: No Blow . (45)
 FF: Strong Blow . B.O.B. in 7 mins. Built to 37.29". (45)
 FS: Weak Blow . Built to 1 1/2". (60)



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GOWCM 35%g 25%o 20%w 20%m	0.47
61.00	GOMCW 57%g 28%o 4%m 11%w	0.46
61.00	GOCM 47%g 28%o 25%m	0.46
5.00	GHOCM 20%g 25%o 55%m	0.04
0.00	824' GIP 100%g	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67157

DST#: 2

ATTN: Josh Austin

Test Start: 2021.07.19 @ 16:34:38

Tool Information

Drill Pipe:	Length: 3312.00 ft	Diameter: 3.80 inches	Volume: 46.46 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 24000.00 lb
Drill Collar:	Length: 218.00 ft	Diameter: 2.80 inches	Volume: 1.66 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 48.12 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	18.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	3540.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	15.00 ft			
Tool Length:	43.00 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			3513.00	
Shut In Tool	5.00			3518.00	
Hydraulic tool	5.00			3523.00	
Jars	5.00			3528.00	
Safety Joint	3.00			3531.00	
Packer	4.00			3535.00	28.00 Bottom Of Top Packer
Packer	5.00			3540.00	
Stubb	1.00			3541.00	
Recorder	0.00	8788	Inside	3541.00	
Recorder	0.00	8737	Outside	3541.00	
Perforations	11.00			3552.00	
Bullnose	3.00			3555.00	15.00 Bottom Packers & Anchor

Total Tool Length: 43.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67157

DST#: 2

ATTN: Josh Austin

Test Start: 2021.07.19 @ 16:34:38

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:

7000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: 7000.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: ppm

Filter Cake: 0.20 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
62.00	GOWCM 35%g 25%o 20%w 20%m	0.472
61.00	GOMCW 57%g 28%o 4%m 11%w	0.465
61.00	GOCM 47%g 28%o 25%m	0.465
5.00	GHOCM 20%g 25%o 55%m	0.038
0.00	824' GIP 100%g	0.000

Total Length: 189.00 ft Total Volume: 1.440 bbl

Num Fluid Samples: 0

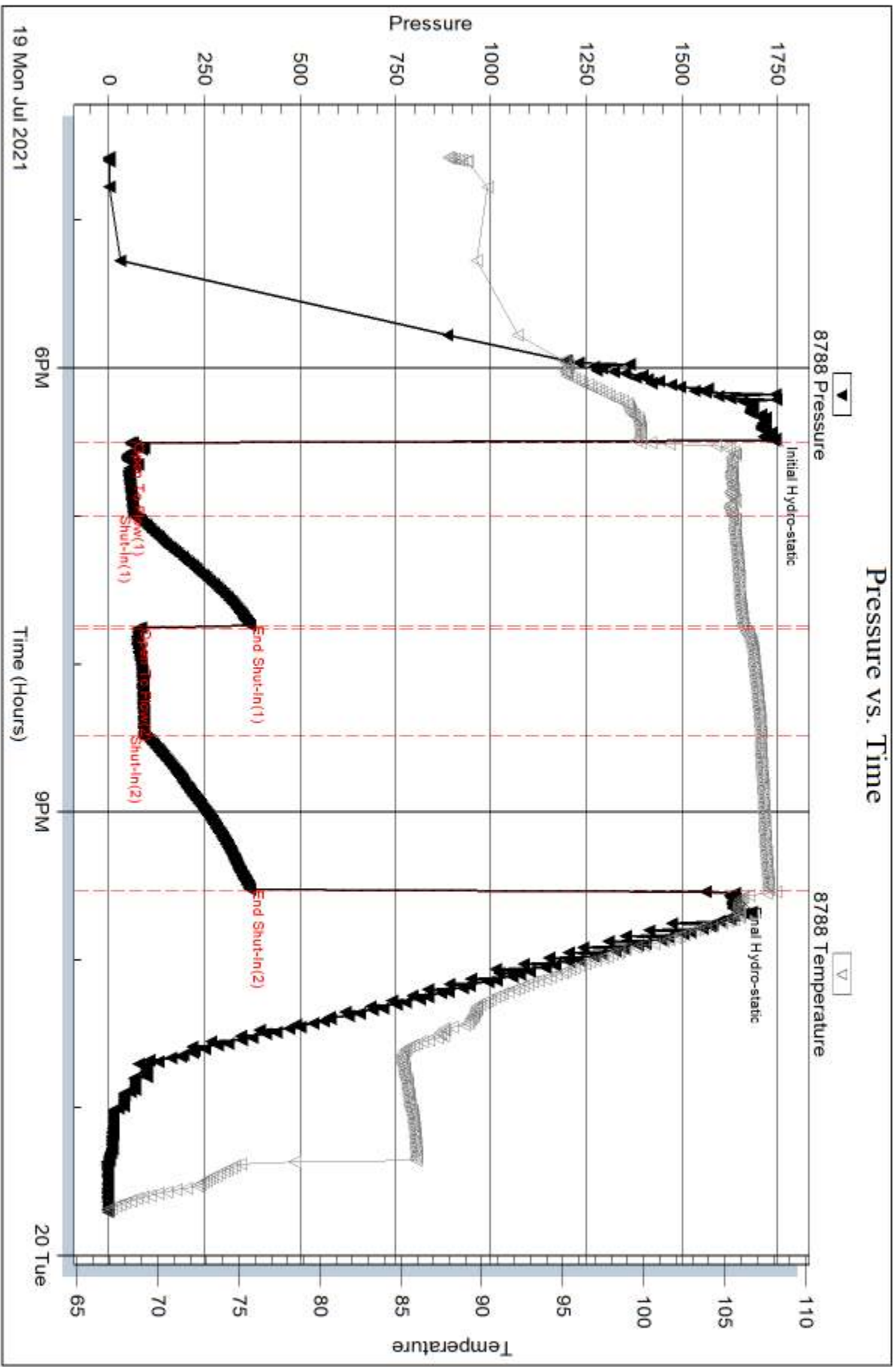
Num Gas Bombs: 0

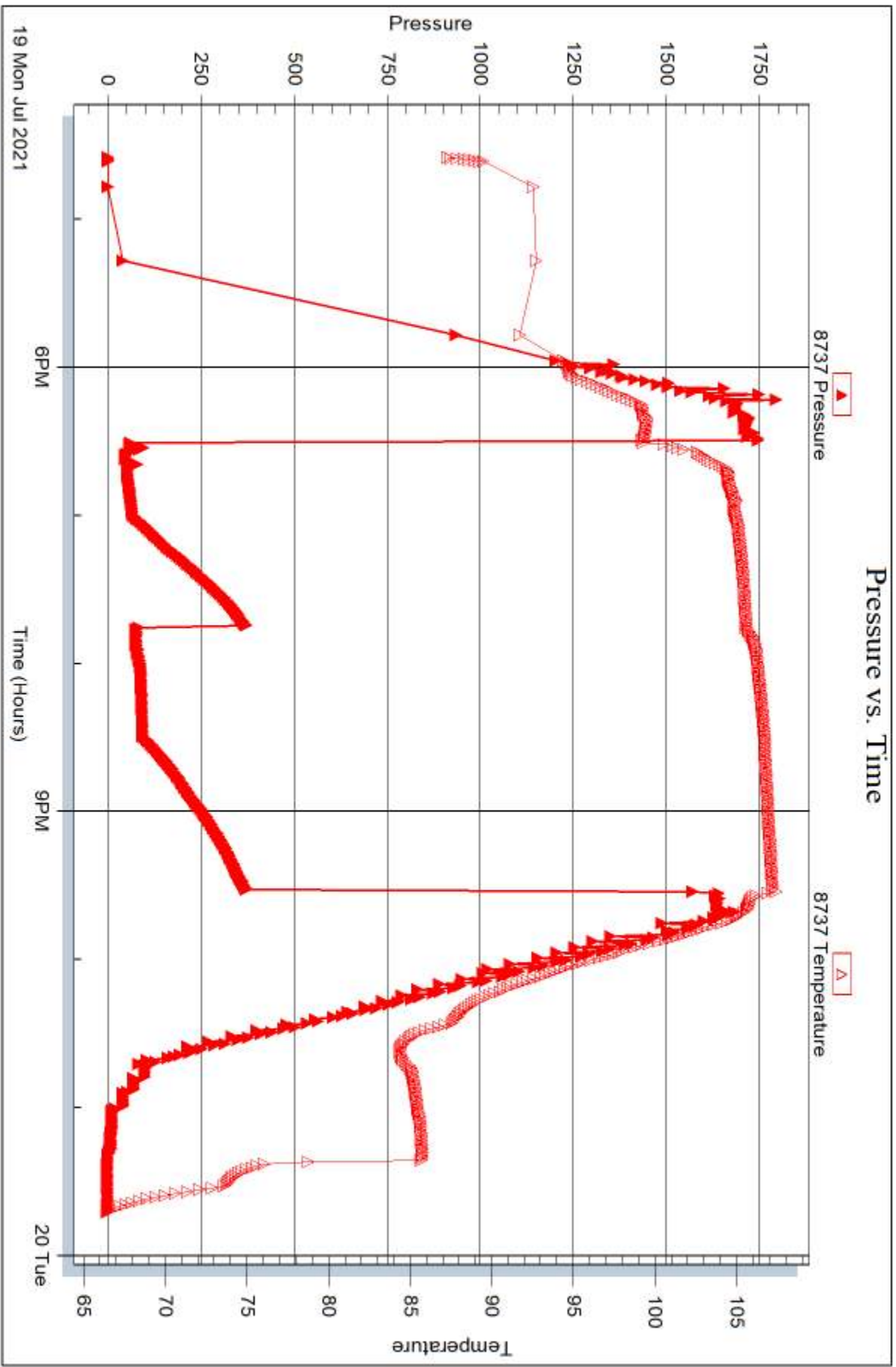
Serial #: None

Laboratory Name:

Laboratory Location:

Recovery Comments: 824 Feet of Gas In Pipe.







DRILL STEM TEST REPORT

Prepared For: **Rama Operating Co., Inc.**

PO Box 159
Stafford, KS 67578

ATTN: Josh Austin

HJB #1-20

20-21s-12w Stafford,KS

Start Date: 2021.07.20 @ 06:12:19

End Date: 2021.07.20 @ 13:22:34

Job Ticket #: 67158 DST #: 3

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

Printed: 2021.07.21 @ 16:43:38



TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67158

DST#: 3

ATTN: Josh Austin

Test Start: 2021.07.20 @ 06:12:19

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:09:19

Time Test Ended: 13:22:34

Test Type: Conventional Bottom Hole (Reset)

Tester: Matt Smith

Unit No: 68

Interval: 3555.00 ft (KB) To 3575.00 ft (KB) (TVD)

Reference Elevations: 1867.00 ft (KB)

Total Depth: 3575.00 ft (KB) (TVD)

1856.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 11.00 ft

Serial #: 8788 Inside

Press@RunDepth: 628.04 psig @ 3556.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2021.07.20 End Date: 2021.07.20

Last Calib.: 2021.07.20

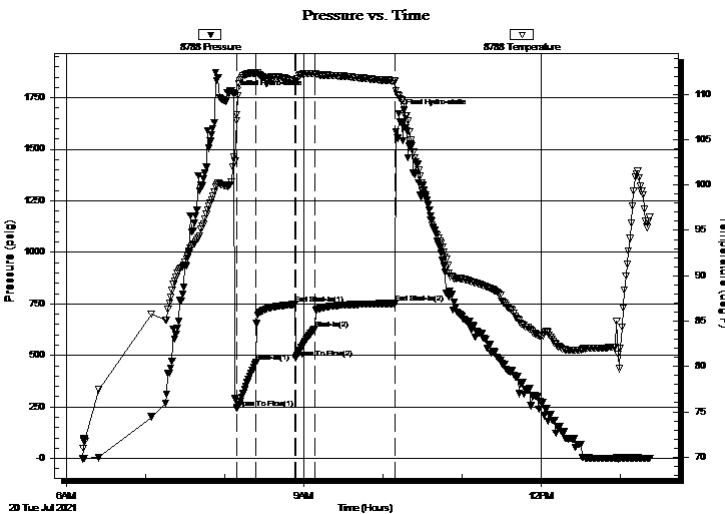
Start Time: 06:12:24 End Time: 13:22:33

Time On Btm: 2021.07.20 @ 08:07:04

Time Off Btm: 2021.07.20 @ 10:12:04

TEST COMMENT: IF: Strong Blow . B.O.B. in 45 secs. Built to 178.93". (15)
IS: Strong Blow . B.O.B. in 18 mins. Built to 28.16". (30)
FF: Strong Blow . B.O.B. in 1 min. Built to 121.17". (15)
FS: Strong Blow . B.O.B. in 12 mins. Built to 94.87". (60)

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1766.91	103.06	Initial Hydro-static
3	242.49	107.75	Open To Flow (1)
17	468.15	112.34	Shut-In(1)
46	746.96	111.53	End Shut-In(1)
47	487.24	111.40	Open To Flow (2)
61	628.04	112.25	Shut-In(2)
122	751.99	111.45	End Shut-In(2)
125	1671.32	109.80	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
442.00	GOSMCW 1%g 1%m 98%w	4.21
512.00	GOMCW 2%g 5%o 2%m 91%w	7.18
512.00	GOMCW 65%g 20%o 4%m 11%w	7.18
0.00	1472 GIP 100%g	0.00

* Recovery from multiple tests

Gas Rates

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



DRILL STEM TEST REPORT

Rama Operating Co., Inc.

20-21s-12w Stafford, KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67158

DST#: 3

ATTN: Josh Austin

Test Start: 2021.07.20 @ 06:12:19

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)

Time Tool Opened: 08:09:19 Tester: Matt Smith

Time Test Ended: 13:22:34 Unit No: 68

Interval: **3555.00 ft (KB) To 3575.00 ft (KB) (TVD)** Reference Elevations: 1867.00 ft (KB)

Total Depth: 3575.00 ft (KB) (TVD) 1856.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 11.00 ft

Serial #: 8737

Outside

Press@RunDepth: psig @ 3556.00 ft (KB) Capacity: 8000.00 psig

Start Date: 2021.07.20 End Date: 2021.07.20 Last Calib.: 2021.07.20

Start Time: 06:12:29 End Time: 13:22:38 Time On Btm:

Time Off Btm:

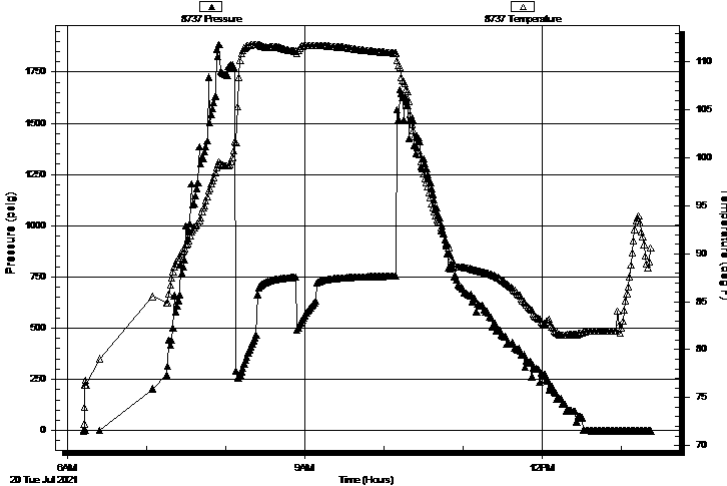
TEST COMMENT: IF: Strong Blow . B.O.B. in 45 secs. Built to 178.93". (15)

IS: Strong Blow . B.O.B. in 18 mins. Built to 28.16". (30)

FF: Strong Blow . B.O.B. in 1 min. Built to 121.17". (15)

FS: Strong Blow . B.O.B. in 12 mins. Built to 94.87". (60)

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
442.00	GOSMCW 1%g 1%m 98%w	4.21
512.00	GOMCW 2%g 5%o 2%m 91%w	7.18
512.00	GOMCW 65%g 20%o 4%m 11%w	7.18
0.00	1472 GIP 100%g	0.00

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67158

DST#: 3

ATTN: Josh Austin

Test Start: 2021.07.20 @ 06:12:19

Tool Information

Drill Pipe:	Length: 3312.00 ft	Diameter: 3.80 inches	Volume: 46.46 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 24000.00 lb
Drill Collar:	Length: 218.00 ft	Diameter: 2.25 inches	Volume: 1.07 bbl	Weight to Pull Loose: 82000.00 lb
			<u>Total Volume: 47.53 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	3.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	3555.00 ft			Final 70000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	48.00 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			3528.00	
Shut In Tool	5.00			3533.00	
Hydraulic tool	5.00			3538.00	
Jars	5.00			3543.00	
Safety Joint	3.00			3546.00	
Packer	4.00			3550.00	28.00 Bottom Of Top Packer
Packer	5.00			3555.00	
Stubb	1.00			3556.00	
Recorder	0.00	8788	Inside	3556.00	
Recorder	0.00	8737	Outside	3556.00	
Perforations	16.00			3572.00	
Bullnose	3.00			3575.00	20.00 Bottom Packers & Anchor

Total Tool Length: 48.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Rama Operating Co., Inc.

20-21s-12w Stafford,KS

PO Box 159
Stafford, KS 67578

HJB #1-20

Job Ticket: 67158

DST#: 3

ATTN: Josh Austin

Test Start: 2021.07.20 @ 06:12:19

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:

46000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in³

Gas Cushion Type:

Resistivity: 7000.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: ppm

Filter Cake: 0.20 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
442.00	GOSMCW 1%g 1%m 98%w	4.214
512.00	GOMCW 2%g 5%o 2%m 91%w	7.182
512.00	GOMCW 65%g 20%o 4%m 11%w	7.182
0.00	1472 GIP 100%g	0.000

Total Length: 1466.00 ft Total Volume: 19.166 bbl

Num Fluid Samples: 0

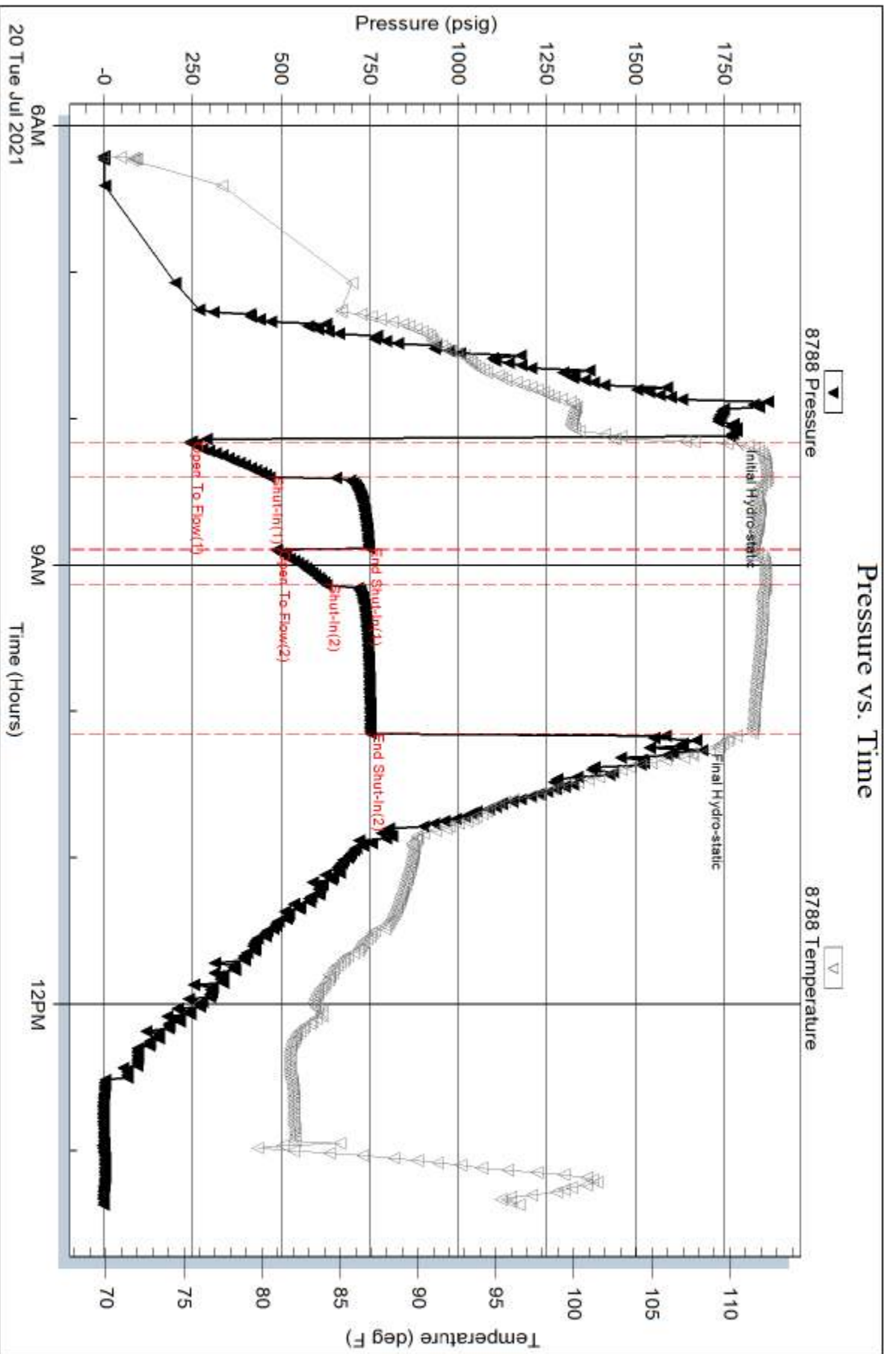
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW is .13 @ 91 Degrees = 46,000 Chlorides.

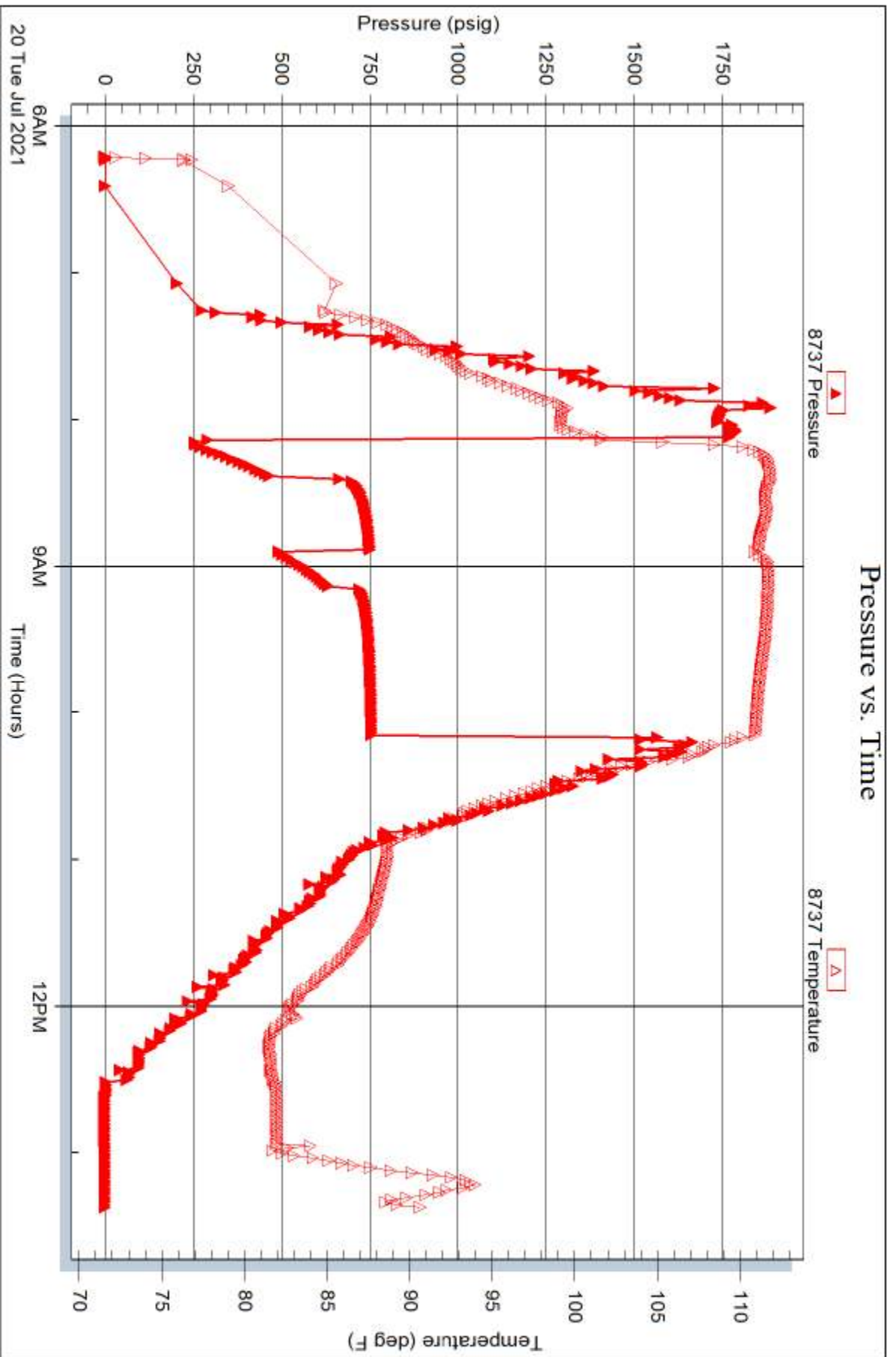


Serial #: 8737

Outside Rama Operating Co., Inc.

HUB #1-20

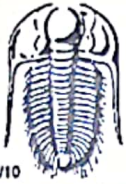
DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 67158

Printed: 2021.07.21 @ 16:43:38



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 67156

Well Name & No. HJB #1-20 Test No. 1 Date 7/19/21
 Company Rama Operating Co., Inc. Elevation 1867 KB 1856 GL
 Address P.O. Box 159 Stafford, Ks. 67578
 Co. Rep / Geo. Josh Austin Rig Sterling #4
 Location: Sec. 20 Twp 21S Rge. 12W Co. Stafford State KS.

Interval Tested 3464 - 3540 Zone Tested Arbuckle
 Anchor Length 76' Drill Pipe Run 218 3248 Mud Wt. 9.2
 Top Packer Depth 3459 Drill Collars Run 218 Vls 54
 Bottom Packer Depth 3464 Wt. Pipe Run 2 WL 10.0
 Total Depth 3540 Chlorides 10,000 ppm System LCM 2nd

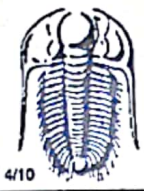
Blow Description IF: Weak Blow. Built to 1 1/2"
ISI! No Blow.
FF: No Blow.
FSI! No Blow.

Rec	Feet of	%gas	%oil	%water	%mud
<u>62</u>	<u>G.I.P.</u>	<u>100</u>			
<u>30</u>	<u>GOSM</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' Fluid BHT 103° Gravity N/A API RW N/A @ — °F Chlorides 10,000 ppm

(A) Initial Hydrostatic <u>1757</u>	<input checked="" type="checkbox"/> Test <u>950</u>	T-On Location <u>0215</u>
(B) First Initial Flow <u>223</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0351</u>
(C) First Final Flow <u>368</u>	<input type="checkbox"/> Safety Joint	T-Open <u>0538</u>
(D) Initial Shut-In <u>573</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0815</u>
(E) Second Initial Flow <u>209</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1005</u>
(F) Second Final Flow <u>264</u>	<input checked="" type="checkbox"/> Mileage <u>(80) Pratt 100</u>	Comments
(G) Final Shut-In <u>367</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1703</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>30</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>1300</u>
	Sub Total <u>1300</u>	MP/DST Disc't

Approved By _____ Our Representative Matthew Smith
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 67157

Well Name & No. HJB # 1-20 Test No. 2 Date 7/19/21
 Company Rama Operating Co., Inc. Elevation 1867 KB 1856 GL
 Address P.O. Box 159 Stafford, KS. 67578
 Co. Rep / Geo. Josh Austin Rig Sterling #4
 Location: Sec. 20 Twp 21S Rge. 12W Co. Stafford State KS

Interval Tested 3540 - 3555 Zone Tested Akbuclt
 Anchor Length 15' Drill Pipe Run 3312 Mud Wt. 8.9
 Top Packer Depth 3535 Drill Collars Run 218 Vis 57
 Bottom Packer Depth 3540 Wt. Pipe Run 8 WL 10.4
 Total Depth 3555 Chlorides 7000 ppm System LCM 2"

Blow Description IF: Strong Blow. B.O.B. in 6-mins. Built to 31.16'
ISI: No Blow.
FF: Strong Blow. B.O.B. in 7-mins Built to 37.29'
FSI: Weak Blow. Built to 1 1/2"

Rec	Feet of	100% gas	%oil	%water	%mud
824	G.I.P.				
5	GHOcm	20%	25%		55%
61	GOCM	47%	28%		25%
61	GOMCW	57%	28%	11%	4%
62	GOWCM	35%	25%	20%	20%

Rec Total 189' Fluid BHT 100' Gravity N/A API RW N/A @ - °F Chlorides 7000 ppm

(A) Initial Hydrostatic 1732 Test 1200 T-On Location 1555
 (B) First Initial Flow 57 Jars 250 T-Started 1634
 (C) First Final Flow 65 Safety Joint T-Open 1830
 (D) Initial Shut-In 370 Circ Sub T-Pulled 2135
 (E) Second Initial Flow 75 Hourly Standby T-Out 2342
 (F) Second Final Flow 92 Mileage (80) Pratt 100 Comments _____
 (G) Final Shut-In 370 Sampler _____
 (H) Final Hydrostatic 1638 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1550 EM Tool _____
 Ruined Shale Packer _____
 Ruined Packer _____
 Extra Copies _____
 Sub Total 0
 Total 1550
 MP/DST Disc't _____

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

Approved By _____ Our Representative Matthew A. Smith
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **67158**

Well Name & No. HJB # 1-20 Test No. 3 Date 7/20/21
 Company PAMA Operating Co., Inc. Elevation 1867 KB 1856 GL
 Address P.O. Box 159 Stafford, KS, 67578
 Co. Rep / Geo. Josh Austin Rig Sterling #4
 Location: Sec. 20 Twp 21S Rge. 12W Co. Stafford State KS.

Interval Tested 3555 - 3575 Zone Tested Arbuckle
 Anchor Length 20' Drill Pipe Run 3312 Mud Wt. 8.9
 Top Packer Depth 3550 Drill Collars Run 218 Vis 57
 Bottom Packer Depth 3555 Wt. Pipe Run 2 WL 10.4
 Total Depth 3575 Chlorides 7000 ppm System LCM 2"

Blow Description IF: Strong Blow. B.O.B. in 45 secs. Built to 178.93"
ISI: Strong Blow. B.O.B. in 18 mins. Built to 28.16"
FF: Strong Blow. B.O.B. in 1 min. Built to 121.17"
FSI: Strong Blow. B.O.B. in 12 mins. Built to 94.57"

Rec	Feet of	%gas	%oil	%water	%mud
<u>1472</u>	<u>G.I.P.</u>	<u>100</u>			
<u>512</u>	<u>GOMCW</u>	<u>65</u>	<u>20</u>	<u>11</u>	<u>4</u>
<u>512</u>	<u>GOMCW</u>	<u>2</u>	<u>5</u>	<u>89</u>	<u>2</u>
<u>442</u>	<u>GOSMCW</u>	<u>1</u>		<u>98</u>	<u>1</u>

Rec Total 1466' Fluid BHT 107° Gravity N/A API RW .13 @ 91 °F Chlorides 46000 ppm

(A) Initial Hydrostatic 1767 Test 1200 T-On Location 0553
 (B) First Initial Flow 242 Jars 250 T-Started 0612
 (C) First Final Flow 468 Safety Joint T-Open 0809
 (D) Initial Shut-In 747 Circ Sub T-Pulled 1015
 (E) Second Initial Flow 487 Hourly Standby T-Out 1322
 (F) Second Final Flow 628 Mileage (80) PRATT 100 Comments _____
 (G) Final Shut-In 752 Sampler _____
 (H) Final Hydrostatic 1671 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 15
 Initial Shut-In 30
 Final Flow 15
 Final Shut-In 60
 Sub Total 1550 MP/DST Disc't _____
 Total 1550

Approved By _____ Our Representative Matthew J. Smith

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