

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
--	---

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

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

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

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

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

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

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

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

No. 1507

Date	7-22-19	Sec.	11	Twp.	17	Range	10	County	Lyons	State	KS	On Location		Finish	4:15pm	
Lease								Harder	Well No.	1	Owner					
Contractor								Discovery #2	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.							
Type Job								Surface	Charge To							
Hole Size								12 1/4	T.D.	221	To					
Csg.								8 5/8	Depth	220	Street					
Tbg. Size									Depth		City					
Tool									Depth		State					
Cement Left in Csg.								10	Shoe Joint		The above was done to satisfaction and supervision of owner agent or contractor.					
Meas Line									Displace	1331	Cement Amount Ordered					
EQUIPMENT									Common	160	Kascom 3-cc 2-1/2 Gal					
Pumptrk	16	No.		Cement		Helper		Poz. Mix								
Bulktrk		No.		Driver		Driver		Gel.								
Bulktrk	21	No.		Driver		Driver		Calcium								
JOB SERVICES & REMARKS									Hulls							
Remarks:									Salt							
Rat Hole									Flowseal							
Mouse Hole									Kol-Seal							
Centralizers									Mud CLR 48							
Baskets									CFL-117 or CD110 CAF 38							
D/V or Port Collar									Sand							
8 5/8 on bottom. Est. Circulation									Handling	169						
Mixed Koo sk x 3000 Hulls.									Mileage							
Cement Circulation									FLOAT EQUIPMENT							
									Guide Shoe							
									Centralizer							
									Baskets							
									AFU Inserts							
									Float Shoe							
									Latch Down							
									Pumptrk Charge	Surface						
									Mileage	80						
									Tax							
									Discount							
									Total Charge							
X Signature									[Signature]							

Thanks
[Signature]

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

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

No. 1481

Date	7-28-19	Sec.	11	Twp.	17	Range	10	County	Lyon	State	Ks	On Location		Finish	9.58.19
Lease	Harder			Well No.	#1			Location	Council Grove - 12 E to Americas Bldg						
Contractor	Discovery #2			Owner	45, 1/2 w, 3/4 into										
Type Job	plug			To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.											
Hole Size	7 7/8"			T.D.	3200'			Charge To	John O Farmer						
Csg.				Depth				Street							
Tbg. Size	4 1/2" D.P.			Depth	3155'			City	State						
Tool				Depth				The above was done to satisfaction and supervision of owner agent or contractor.							
Cement Left in Csg.				Shoe Joint				Cement Amount Ordered	225 6 1/4 4% bel 1/4 lb Flowseal						
Meas Line				Displace	H2O / mud										
EQUIPMENT								Common	135						
Pumptrk	16	No.		Cementor	David			Helper	90						
Bulktrk	21	No.		Driver	Tim			Driver	8						
Bulktrk	P.U.	No.		Driver	Rick			Driver	Calcium						
JOB SERVICES & REMARKS								Hulls							
Remarks:	3155' - 355x							Salt							
Rat Hole	2800' - 355x							Flowseal	50#						
Mouse Hole	2300' - 355x							Kol-Seal							
Centralizers	1400' - 355x							Mud CLR 48							
Baskets	270' - 355x							CFL-117 or CD110 CAF 38							
D/V or Port Collar	60' - 205x							Sand							
Rathole w/ 305x								Handling	233						
Cement did Circulate								Mileage							
								FLOAT EQUIPMENT							
								Guide Shoe							
								Centralizer							
								Baskets							
								AFU Inserts							
								Float Shoe							
								Latch Down							
								Pumptrk Charge	plug						
								Mileage	80						
X Signature								Tax							
								Discount							
								Total Charge							



Discovery Drilling

P.O. Box 763 • Hays, KS 67601 • OFFICE (785) 623-2920 • CELLULAR (785) 635-1511

DRILLER'S LOG

Operator: John O. Farmer, Inc. Lic# 5134 Contractor: Discovery Drilling Co., Inc. LIC#31548
370 West Wichita Avenue - P.O. Box 352 PO Box 763
Russell, KS 67665_0352 Hays, KS 67601

Lease: Harder # 1 Location: 1300 FNL - 2245 FWL
SW/SE/NE/NW
Section 11/ 17S/ 10E
Lyon County, KS

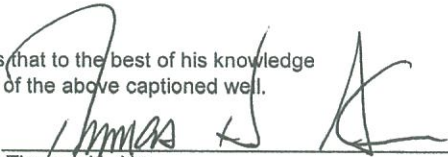
Loggers Total Depth: 3202' API#15- 111-20,547-00-00
 Rotary Total Depth: 3200' Elevation: 1320 GL - 1328 KB
 Commenced: 7/21/2019 Completed: 7/28/2019
 Casing: 8 5/8" @ 221' W/160sks Status: D & A
 KCC Contact: Larry Marchant - Mike Heffern
 Plugging Info: (1st Plug @ 3155'W/35sks)(2nd Plug @ 2800'W/35sks)
(3rd Plug @ 2300'W/35sks)(4th Plug @ 1400'W/35sks)
(5th Plug @ 270'W/35sks)(6th Plug @ 60'W/20sks)
(30sks In Rat Hole)(Total 225sks 60/40Poz 4%Gel-1/4#
FS/sk-By Quality Oilwell Cementing)(Completed @
9:15PM 7/28/2019)

DEPTHS & FORMATIONS (All from KB)

Surface Rock & Shale	<u>0'</u>	Arbuckle	<u>3156'</u>
Shale	<u>259'</u>	RTD	<u>3200'</u>
Shale & Lime	<u>940'</u>		
Mississippian	<u>2412'</u>		
Kinderhook	<u>2784'</u>		
Hunton	<u>2920'</u>		
Simpson	<u>3111'</u>		

STATE OF KANSAS)
) ss
 COUNTY OF ELLIS)

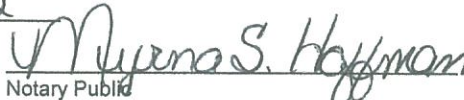
Thomas H. Alm of Discovery Drilling states that to the best of his knowledge the above and foregoing is a true and correct log of the above captioned well.


 Thomas H. Alm

Subscribed and sworn to before me on 7-31-2019

My Commission expires: 6-28-2022

(Place stamp or seal below)


 Notary Public





DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc**

PO Box 352
Russell KS 67665+0352

ATTN: Austin Klaus

Harder #1

11-17s-10e Lyon,KS

Start Date: 2019.07.26 @ 14:20:00

End Date: 2019.07.26 @ 19:56:45

Job Ticket #: 65800 DST #: 1

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

Printed: 2019.07.30 @ 10:35:59

John O Farmer Inc
11-17s-10e Lyon,KS
Harder #1
DST # 1
Hunton
2019.07.26



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

John O Farmer Inc
PO Box 352
Russell KS 67665+0352
ATTN: Austin Klaus

11-17s-10e Lyon,KS

Harder #1

Job Ticket: 65800

DST#: 1

Test Start: 2019.07.26 @ 14:20:00

GENERAL INFORMATION:

Formation: **Hunton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:19:35

Time Test Ended: 19:56:45

Test Type: Conventional Bottom Hole (Initial)

Tester: Benny Mulligan

Unit No: 66

Interval: 2916.00 ft (KB) To 2922.00 ft (KB) (TVD)

Reference Elevations: 1328.00 ft (KB)

Total Depth: 2922.00 ft (KB) (TVD)

1320.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6772

Inside

Press@RunDepth: 241.12 psig @ 2917.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.07.26

End Date:

2019.07.26

Last Calib.:

2019.07.26

Start Time: 14:20:01

End Time:

19:56:45

Time On Btm:

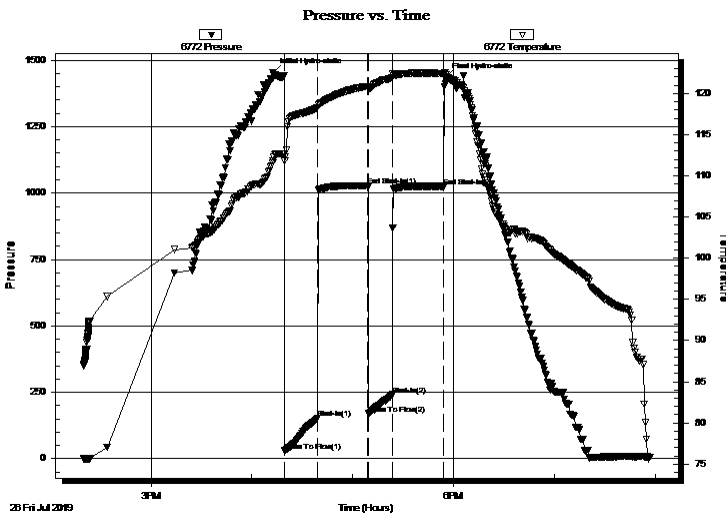
2019.07.26 @ 16:12:35

Time Off Btm:

2019.07.26 @ 17:55:15

TEST COMMENT: IF-20- BOB 7 mins 40 secs total build of 32"
ISI-30- no blow back
FF-15- BOB 7 mins 45 secs total build of 26"
FSI-30- no blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1453.84	111.88	Initial Hydro-static
7	29.92	111.86	Open To Flow (1)
27	152.32	118.31	Shut-In(1)
57	1027.48	120.89	End Shut-In(1)
57	169.68	120.59	Open To Flow (2)
71	241.12	121.95	Shut-In(2)
102	1025.02	122.42	End Shut-In(2)
103	1432.59	122.55	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
360.00	W 100% W	3.36
120.00	MW 40%M 60%W	1.68

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc
PO Box 352
Russell KS 67665+0352
ATTN: Austin Klaus

11-17s-10e Lyon,KS
Harder #1
Job Ticket: 65800 **DST#: 1**
Test Start: 2019.07.26 @ 14:20:00

Tool Information

Drill Pipe:	Length: 2687.00 ft	Diameter: 3.80 inches	Volume: 37.69 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 243.00 ft	Diameter: 2.70 inches	Volume: 1.72 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 54000.00 lb
			<u>Total Volume: 39.41 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	34.00 ft			String Weight: Initial 50000.00 lb
Depth to Top Packer:	2916.00 ft			Final 53000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	6.00 ft			
Tool Length:	26.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			2897.00	
Shut In Tool	5.00			2902.00	
Hydraulic tool	5.00			2907.00	
Packer	5.00			2912.00	20.00 Bottom Of Top Packer
Packer	4.00			2916.00	
Stubb	1.00			2917.00	
Recorder	0.00	6772	Inside	2917.00	
Recorder	0.00	6769	Outside	2917.00	
Perforations	2.00			2919.00	
Bullnose	3.00			2922.00	6.00 Bottom Packers & Anchor
Total Tool Length:	26.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc
PO Box 352
Russell KS 67665+0352
ATTN: Austin Klaus

11-17s-10e Lyon,KS
Harder #1
Job Ticket: 65800 **DST#: 1**
Test Start: 2019.07.26 @ 14:20:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	15000 ppm
Viscosity: 54.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 1000.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

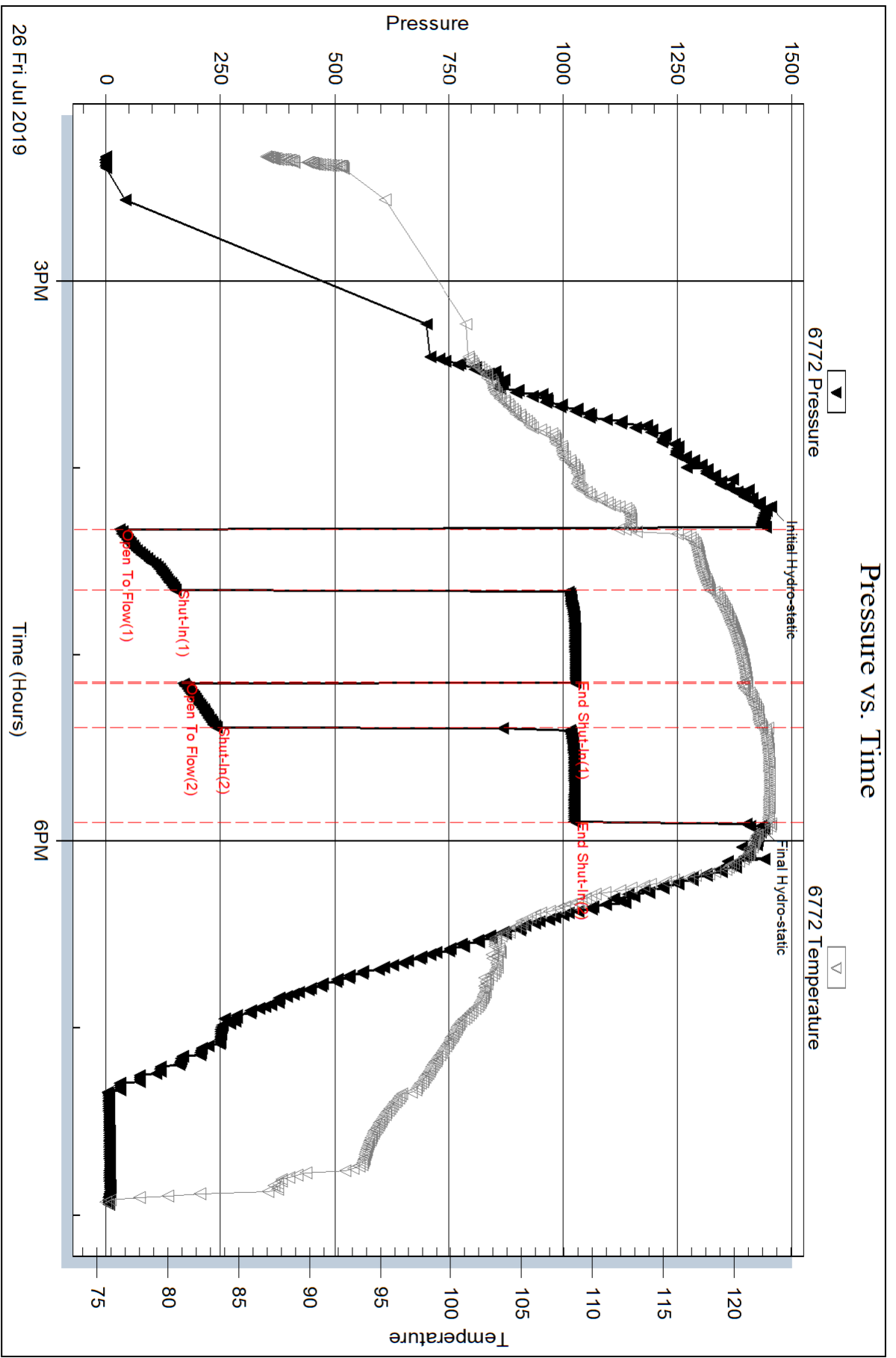
Length ft	Description	Volume bbl
360.00	W 100% W	3.362
120.00	MW 40%M 60%W	1.683

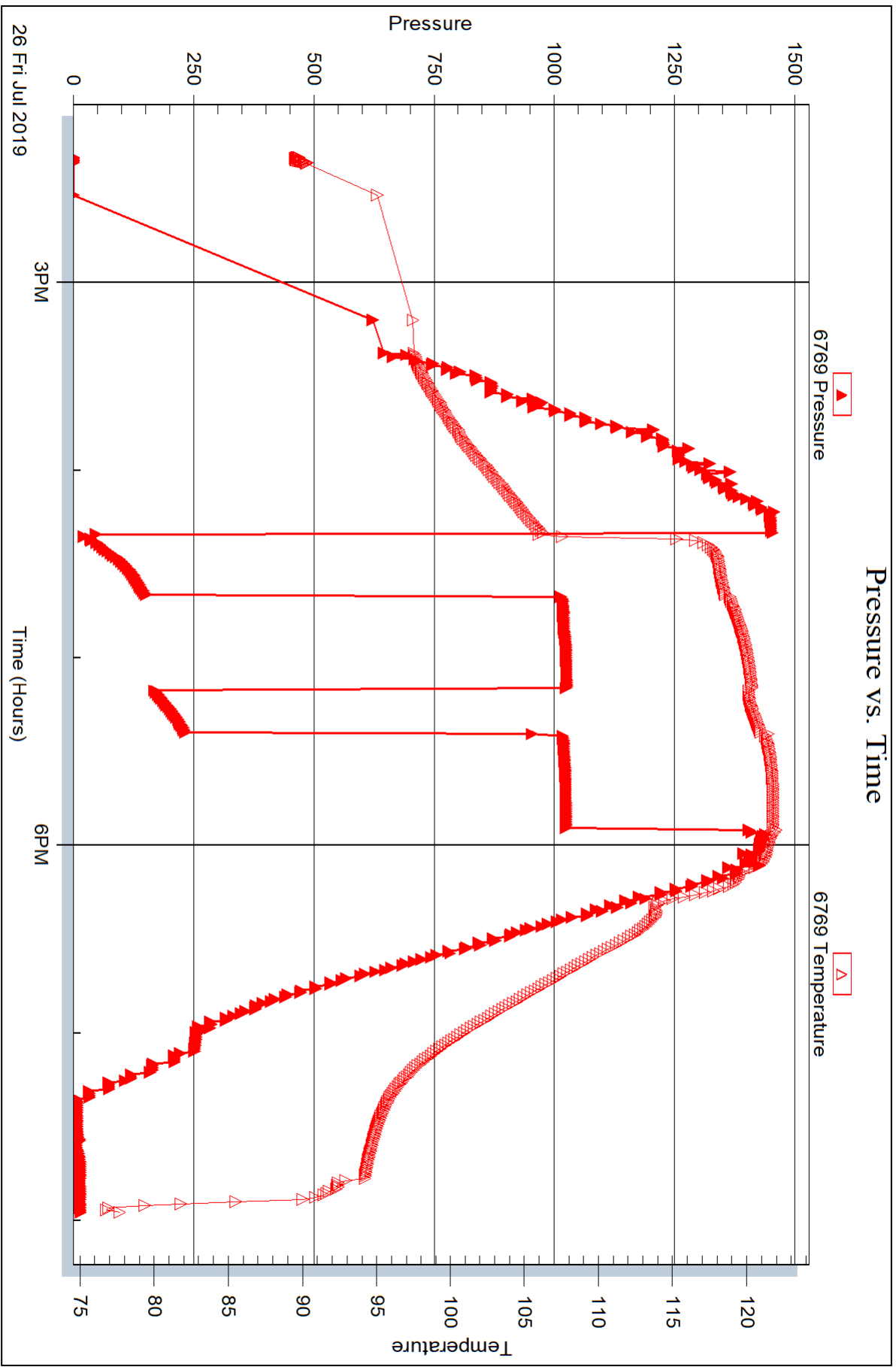
Total Length: 480.00 ft Total Volume: 5.045 bbl

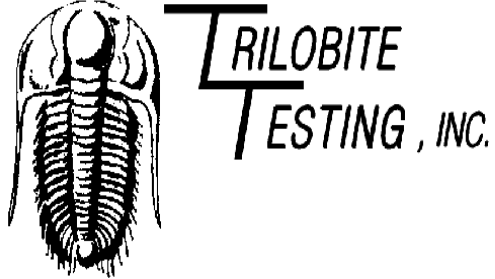
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc**

PO Box 352
Russell KS 67665+0352

ATTN: Austin Klaus

Harder #1

11-17s-10e Lyon,KS

Start Date: 2019.07.27 @ 18:23:00

End Date: 2019.07.27 @ 23:46:39

Job Ticket #: 65801 DST #: 2

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

Printed: 2019.07.30 @ 10:35:29



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc
 PO Box 352
 Russell KS 67665+0352
 ATTN: Austin Klaus

11-17s-10e Lyon,KS
Harder #1
 Job Ticket: 65801 **DST#: 2**
 Test Start: 2019.07.27 @ 18:23:00

GENERAL INFORMATION:

Formation: **Simpson Sand**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:33:40
 Time Test Ended: 23:46:39
 Interval: **3111.00 ft (KB) To 3120.00 ft (KB) (TVD)**
 Total Depth: 3120.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1328.00 ft (KB)
 1320.00 ft (CF)
 KB to GR/CF: 8.00 ft

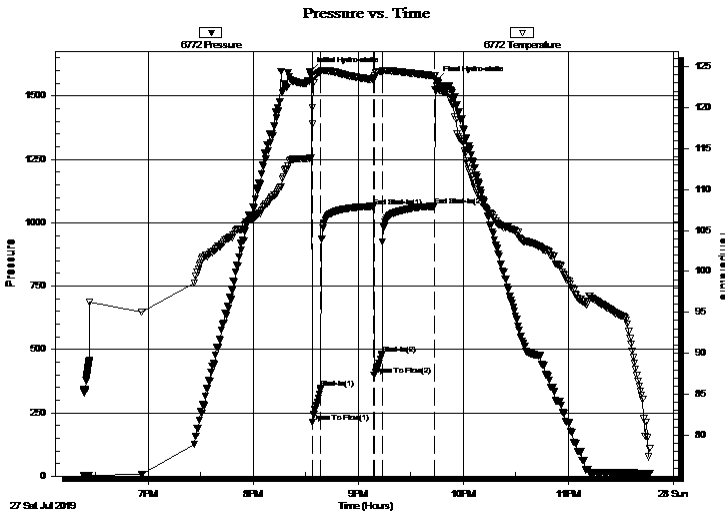
Serial #: 6772

Inside

Press@RunDepth: 482.61 psig @ 3112.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2019.07.27 End Date: 2019.07.27 Last Calib.: 2019.07.28
 Start Time: 18:23:01 End Time: 23:46:40 Time On Btm: 2019.07.27 @ 20:32:20
 Time Off Btm: 2019.07.27 @ 21:44:50

TEST COMMENT: IF-5-BOB 45 secs total build of 74"
 ISI-30- no blow back
 FF-5- BOB 35 secs total build of 65"
 FSI-30- no blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1595.69	113.80	Initial Hydro-static
2	212.05	117.94	Open To Flow (1)
7	345.76	124.32	Shut-In(1)
37	1064.42	123.36	End Shut-In(1)
37	398.20	123.61	Open To Flow (2)
42	482.61	124.37	Shut-In(2)
72	1065.54	123.85	End Shut-In(2)
73	1559.41	122.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
780.00	W 100% W	7.53
150.00	MW 40%M 60%W	2.10

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc
PO Box 352
Russell KS 67665+0352
ATTN: Austin Klaus

11-17s-10e Lyon,KS
Harder #1
Job Ticket: 65801 **DST#: 2**
Test Start: 2019.07.27 @ 18:23:00

Tool Information

Drill Pipe:	Length: 2878.00 ft	Diameter: 3.80 inches	Volume: 40.37 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 243.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight to Pull Loose:	58000.00 lb
			<u>Total Volume: 40.37 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial	54000.00 lb
Depth to Top Packer:	3111.00 ft			Final	56000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	9.00 ft				
Tool Length:	29.00 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			3092.00	
Shut In Tool	5.00			3097.00	
Hydraulic tool	5.00			3102.00	
Packer	5.00			3107.00	20.00 Bottom Of Top Packer
Packer	4.00			3111.00	
Stubb	1.00			3112.00	
Recorder	0.00	6772	Inside	3112.00	
Recorder	0.00	6769	Outside	3112.00	
Perforations	5.00			3117.00	
Bullnose	3.00			3120.00	9.00 Bottom Packers & Anchor
Total Tool Length:	29.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc

11-17s-10e Lyon,KS

PO Box 352
Russell KS 67665+0352

Harder #1

Job Ticket: 65801

DST#: 2

ATTN: Austin Klaus

Test Start: 2019.07.27 @ 18:23:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

8500 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
780.00	W 100% W	7.533
150.00	MW 40%M 60%W	2.104

Total Length: 930.00 ft Total Volume: 9.637 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

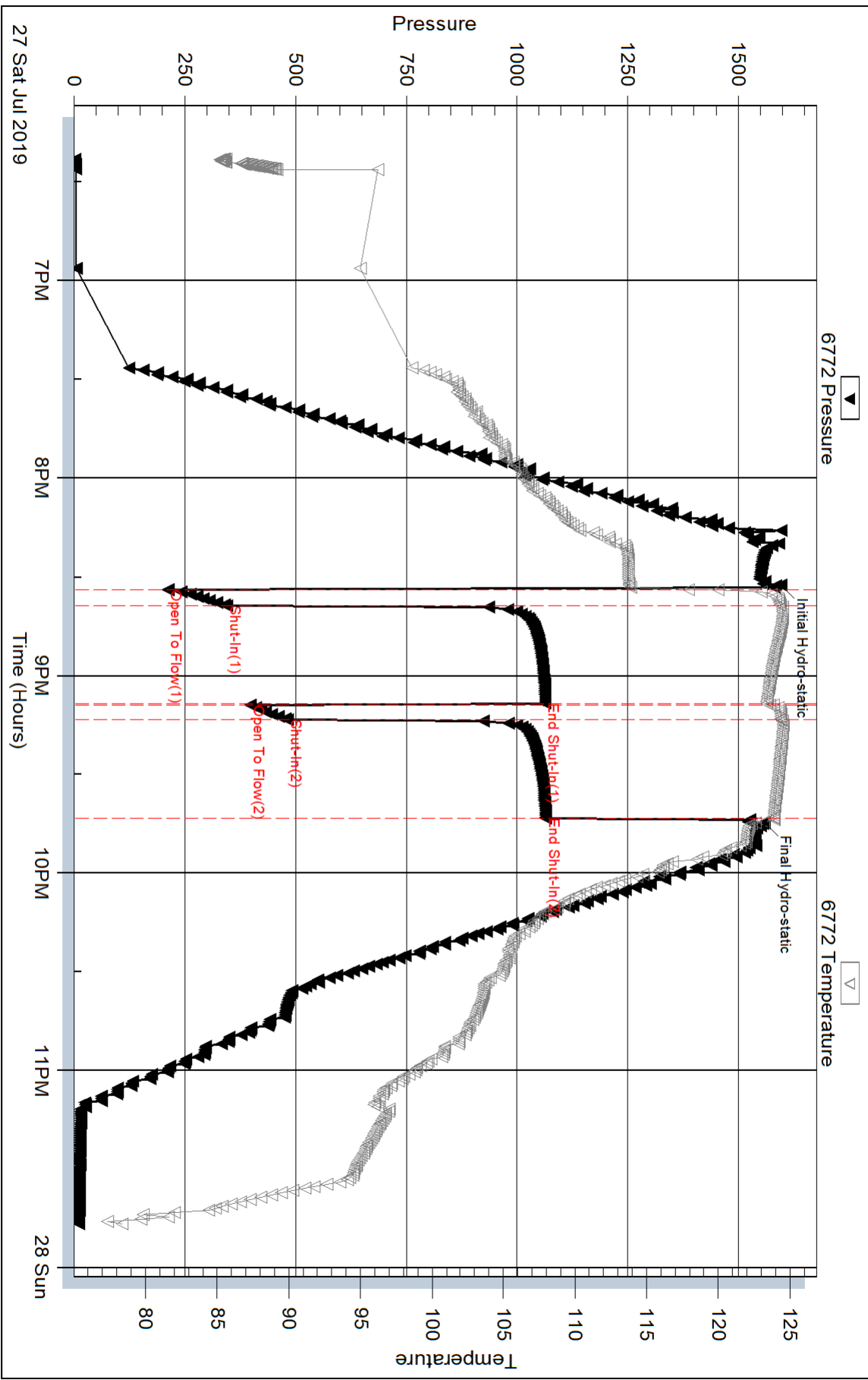
Serial #:

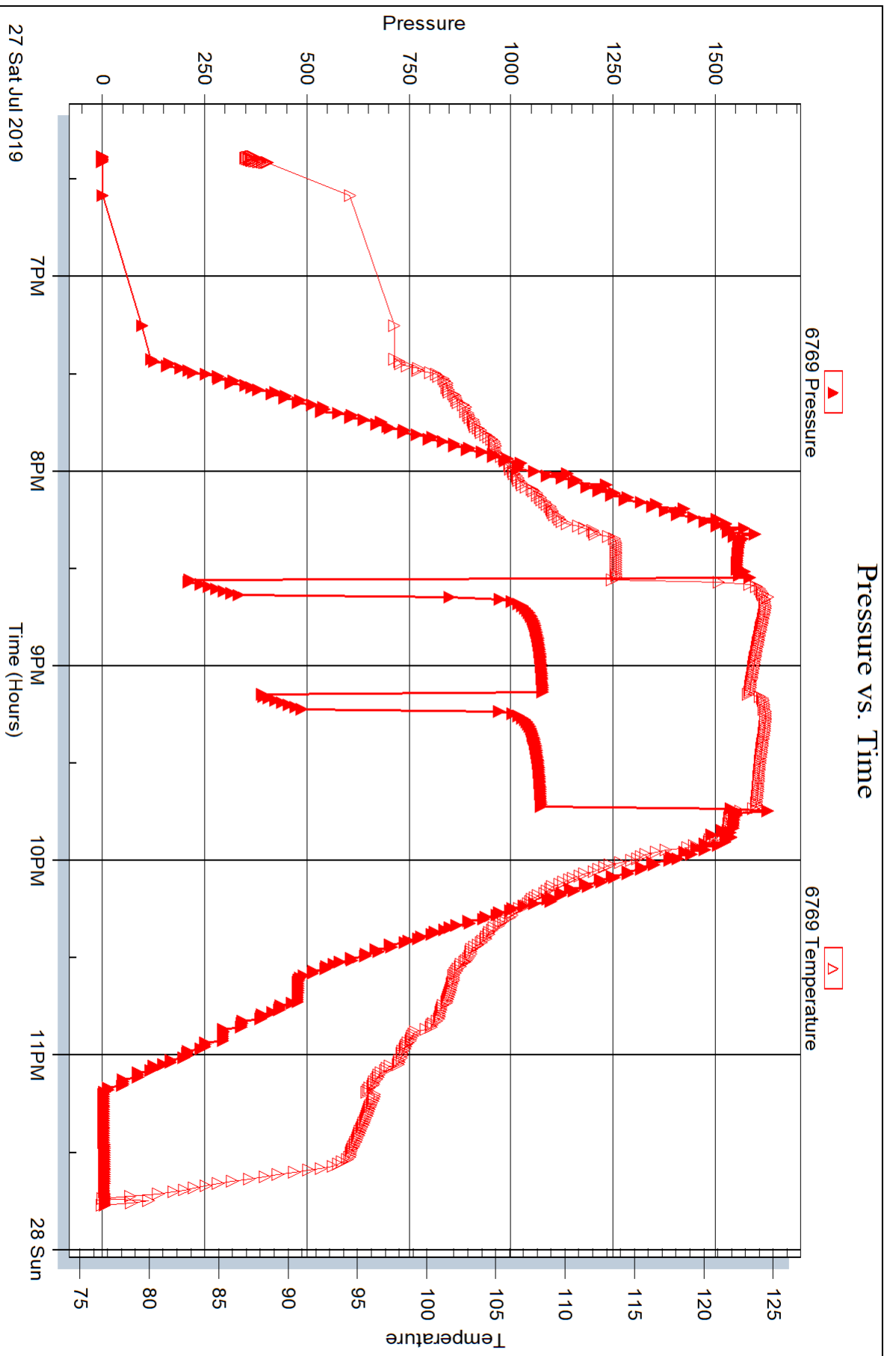
Laboratory Name:

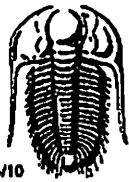
Laboratory Location:

Recovery Comments:

Pressure vs. Time







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65800

NO.

Well Name & No. Merder #1 Test No. 1 Date 7-26-2019
 Company John O Farmer Inc Elevation 1328 KB 1320 GL
 Address 370 W Wichita Ave P.O. box 352 Russell, KS 67665+0352
 Co. Rep / Geo. Austin Klaus Rig Disc Rig 2
 Location: Sec. 11 Twp 17s Rge. 10E Co. 4y0 State KS

Interval Tested 2916-2922 Zone Tested Horton
 Anchor Length 6' Drill Pipe Run _____ Mud Wt. 9.1
 Top Packer Depth 2911 Drill Collars Run _____ Vis 54
 Bottom Packer Depth 2916 Wt. Pipe Run 243 WL 7.2
 Total Depth 2922 Chlorides 1000 ppm System LCM 1.5#

Blow Description IF-BOB 7mins 40secs total build of 32"
ESI- no blow back
FF-BOB 7mins 45secs total build of 26"
FSE- no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>120</u>	<u>M.W.</u>		<u>60</u>	<u>40</u>	
<u>360</u>	<u>W</u>		<u>100</u>		
____	____				
____	____				

Rec Total 480' BHT _____ Gravity _____ API RW 0.356 @ 84.2°F Chlorides 15000 ppm

(A) Initial Hydrostatic <u>1453</u>	<input checked="" type="checkbox"/> Test <u>1200</u>	T-On Location <u>1:40 PM</u>
(B) First Initial Flow <u>29</u>	<input type="checkbox"/> Jars _____	T-Started <u>2:20</u>
(C) First Final Flow <u>152</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>4:20</u>
(D) Initial Shut-In <u>1027</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>5:56</u>
(E) Second Initial Flow <u>169</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>7:58</u>
(F) Second Final Flow <u>241</u>	<input checked="" type="checkbox"/> Mileage <u>308 mi RT 308</u>	Comments _____
(G) Final Shut-In <u>1025</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1432</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> EM Tool _____

Initial Open 20
 Initial Shut-In 30
 Final Flow 15
 Final Shut-In 30

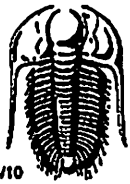
Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Sub Total 1508

Sub Total 0
 Total 1508
 MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 65801

NO.

Well Name & No. Harder #1 Test No. 2 Date 7-27-2019
 Company John O Farmer Inc Elevation 1328 KB 1300 GL
 Address 370 W. Wichita Ave P.O. box 352 Russell KS 67665+0352
 Co. Rep / Geo. Austin Klaus Rig Disco 2
 Location: Sec. 11 Twp 17s Rge. 10E Co. Lyons State KS

Interval Tested 3111 ~ 3120 Zone Tested Simpson Sand
 Anchor Length 9' Drill Pipe Run 2878 Mud Wt. 9.2
 Top Packer Depth 3106 Drill Collars Run --- Vis 49
 Bottom Packer Depth 3111 Wt. Pipe Run 243 WL 7.2
 Total Depth 3120 Chlorides 1000 ppm System LCM 1#

Blow Description IF - BOB 45 secs total build of 74"
ISI - no blow back
FF - BOB 35 secs total build of 65"
FSI - no blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>150'</u>	<u>m.w.</u>		<u>60</u>	<u>40</u>	
<u>780'</u>	<u>W</u>		<u>100</u>		
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 930' BHT 122 Gravity _____ API RW 0.290 @ 77 °F Chlorides 8500 ppm
 (A) Initial Hydrostatic 1595 Test 1200 T-On Location 5:57 PM
 (B) First Initial Flow 212 Jars _____ T-Started 6:25
 (C) First Final Flow 345 Safety Joint _____ T-Open 8:33
 (D) Initial Shut-In 1064 Circ Sub _____ T-Pulled 9:43
 (E) Second Initial Flow 398 Hourly Standby _____ T-Out 11:47
 (F) Second Final Flow 482 Mileage 308 RT 308+308 Comments Loaded tool
 (G) Final Shut-In 1065 Sampler _____ 7-28-2019 at
 (H) Final Hydrostatic 1559 Straddle _____ 2 p.m.

Initial Open 5 Shale Packer _____ EM Tool _____
 Initial Shut-In 30 Extra Packer _____ Ruined Shale Packer _____
 Final Flow 5 Extra Recorder _____ Ruined Packer _____
 Final Shut-In 30 Day Standby _____ Extra Copies _____
 Sub Total 1816 Accessibility _____ Sub Total 0
 Sub Total 1816 MP/DST Disc't _____

Approved By _____ Our Representative Benny Mulligan

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



AUSTIN B. KLAUS



Cell 785.650.3629
Work 785.483.3145
Ext 225

PO BOX 352
Russell, KS 67665
austin.klaus@johnofarmer.com

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Harder #1
Location: Lyon County
License Number: API #15-111-20547-0000
Spud Date: 7/21/2019
Surface Coordinates: Section 11, Township 17 South, Range 10 East
Bottom Hole Coordinates: Vertical well w/ minimal deviation, same as above
Ground Elevation (ft): 1,320
Logged Interval (ft): 2,300
Formation: Miss-Arbuckle
Type of Drilling Fluid: Chemical (Andy's Mud Co.)

Region: Kansas
Drilling Completed: 7/28/2019
1,300' FNL & 2,245' FWL
K.B. Elevation (ft): 1,328
Total Depth (ft): 3,200
To: RTD

Printed by STRIP.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

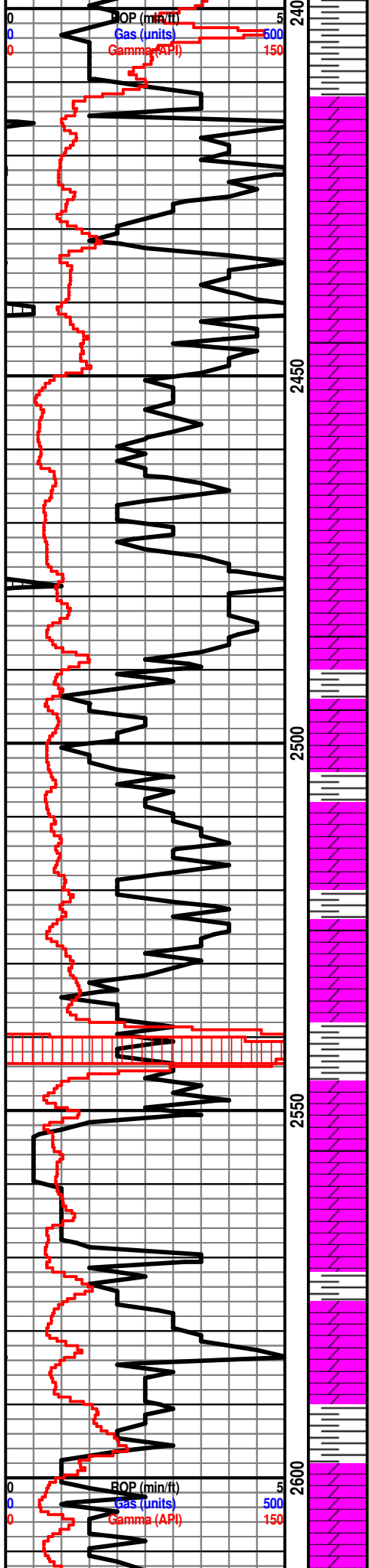
Company: John O. Farmer, Inc.
Address: 370 W. Wichita Ave.
Russell, KS 67665

Comments

The Harder #1 well was drilled by Discovery Drilling Rig #2 (Tool Pusher: Terry Wickham).

The location for the Harder #1 was discovered via 3D seismic. Rock samples were gathered and evaluated from 2,300' - 3,200'. Oil shows were encountered in the Hunton and Simpson Sand. Structurally, the Mississippian top was picked 11' low to the comparison well, Weller #1 (Woods Oil & Gas). Structural thinning occurred through the Mississippian, which resulted in a Kinderhook picked 13' high to the comparison well. The primary pay zone (Simpson Sand) was picked 8' high to the comparison well. Drill stem tests were conducted over the Hunton & Simpson Sand, both of which were negative. After evaluation of all oil shows, DST results, & electric logs, it was decided that the Harder #1 be plugged and abandoned on 7/28/2019.

Mississippian 2394' (-1066)



Dolo: off wh-tan, fn-sub xln, mostly DNS

Dolo: ala

Dolo: off wh-tan, fn xln, scat foss, poor int foss porosity, NSFO, scat qtz

Dolo: ala

Dolo: off wh-tan, fn-md xln, poor-fair int xln porosity, scat sh: lt-drk gry

Wt: 8.7

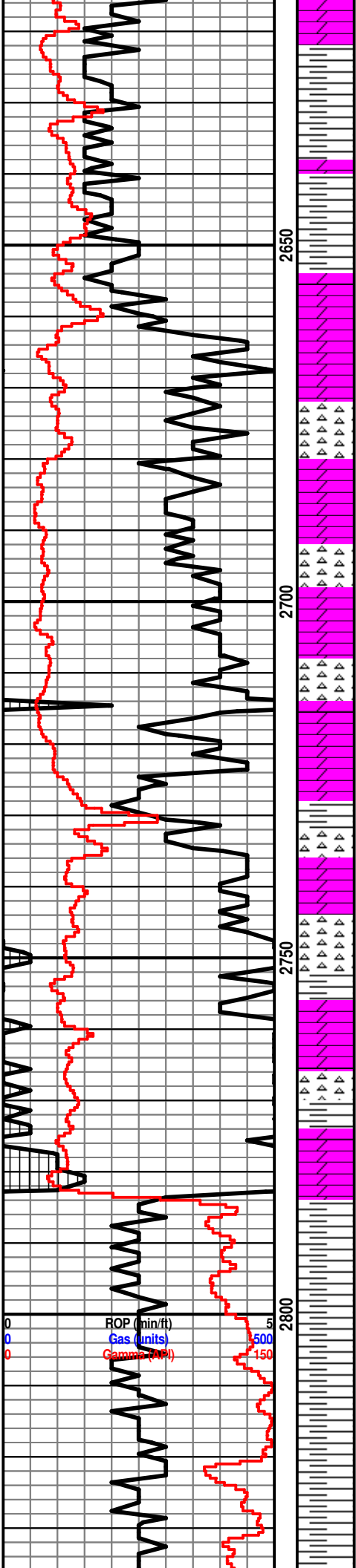
Vis: 49

Dolo: off wh-tan, fn-sub xln, mostly DNS, barren

Sh: drk gry-blk

Dolo: off wh-tan, fn-sub xln, mostly DNS

Sh: lt-drk gry-blk



Sh: ala

Sh: drk gry

Dolo: tan-gry, fn-sub xln, mostly DNS, barren, chert-off wh

Dolo: off wh-tan, fn-md xln, mostly DNS, barren, scat chert: off wh

Dolo: tan-gry, fn-sub xln, DNS, hvy chert-off wh, scat sh: drk gry

Dolo: ala

Dolo: off wh-tan-gry, fn xln, DNS, chert: off wh, scat sh: lt-drk gry

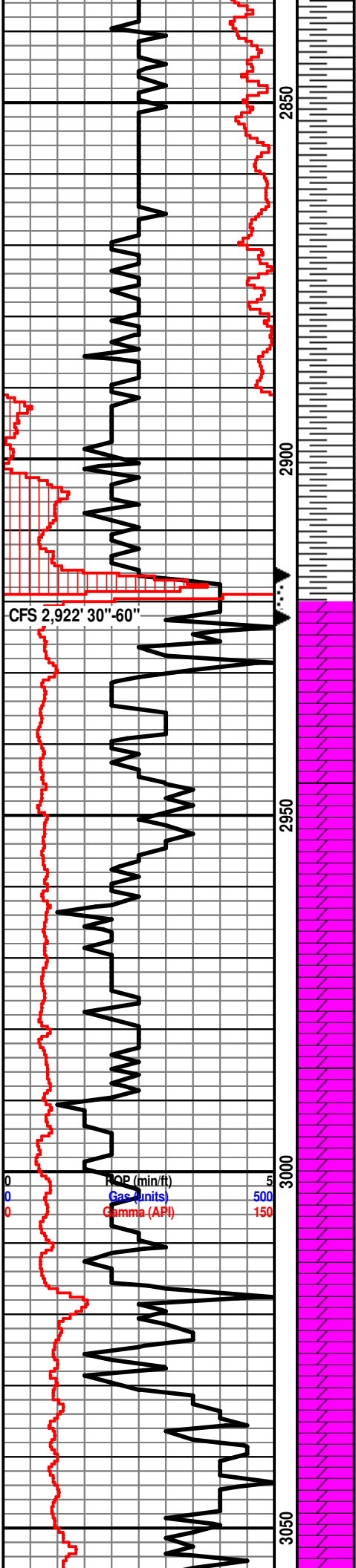
Kinderhook 2783' (-1455)

Sh: lt-drk gry

Sh: lt-drk gry-brn

Sh: lt gry

ROP (min/f) 5
 Gas (units) 500
 Gamma (API) 150



Sh: lt-drk gry, soft

Sh: ala

Sh: drk gry

Hunton 2917' (-1589)

Dolo: off wh-lt gry, fn-md xln, fair int xln & vuggy porosity, scat hvy oil stn in porosity, scat chert-off wh

Sh: lt-drk gry

Dolo: off wh-lt gry, fn xln, fair int xln & vuggy porosity, hvy tarry oil in porosity

Dolo: off wh-lt gry, fn-md xln, fair-good int xln porosity, barren

Dolo: ala

Dolo: off wh-lt gry, md xln, fair-good int xln porosity, barren

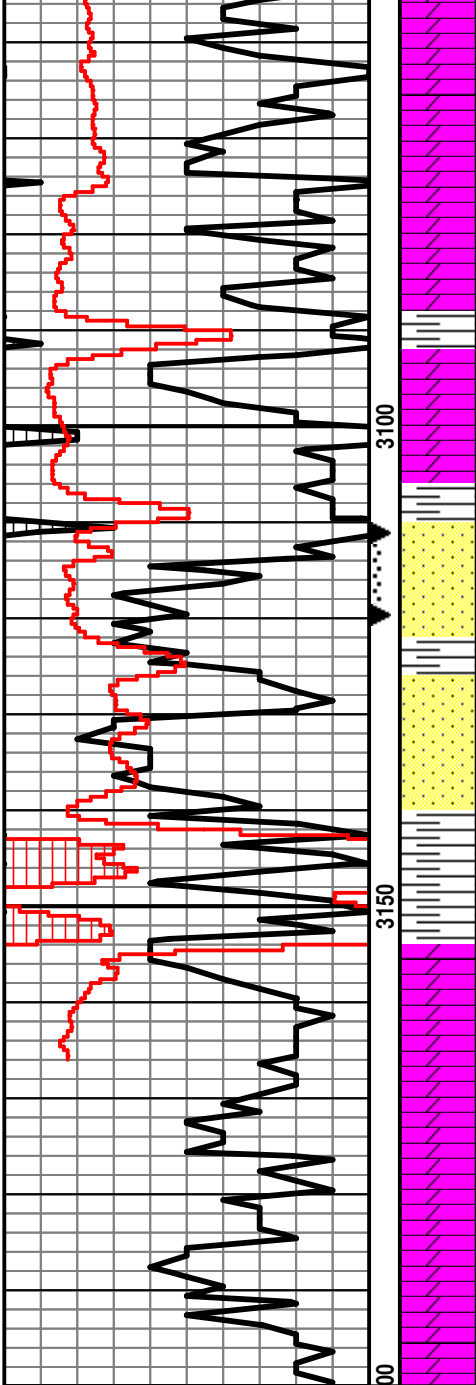
Dolo: ala

Viola 3017' (-1689)

Dolo: off wh-lt gry, fn-md xln, fair-good int xln porosity, barren, scat sh: drk gry

Dolo: tan-brn, fn-sub xln, mostly DNS, barren, scat sh: drk gry

Wt: 9.2
Vis: 49



Dolo: tan-brn, fn xln, scat int xln porosity, NSFO

Dolo: tan-brn, fn-md xln, scat-poor int xln porosity, barren, scat sh: drk gry

Simpson Dolo 3088' (-1760)

Dolo: tan-brn, fn xln, fair-good sucrosic xln porosity, fair oil stn, fair-good odor

Sh: drk gry-brn

Simpson Sand 3112' (-1784)

Ss: qtz, off wh-clr, vry fn-md grn, fairly well rnd, fair-poor sorting, poor-fair cement, fair-good int grn porosity, S-FSFO, hvy tarry oil in porosity, fair-good odor

Sh: lt-drk gry

Ss: qtz, off wh-clr, fn-md grn, rnd, poorly sorted, fairly well cemented, fair int grn porosity, fair odor, dead oil stn

Sh: lt-drk gry

Arbuckle 3156' (-1828)

Dolo: tan-brn, fn-sub xln, mostly DNS, barren, scat sh: drk gry

Dolo: tan-brn, fn-sub xln, mostly DNS, scat chert: off wh, scat sh: drk gry

Dolo: tan-brn, fn-sub xln, DNS, chert: off wh