

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	Pickrell Drilling Company, Inc.
Well Name	STARRETT B 5
Doc ID	1453169

All Electric Logs Run

Dual Comp Porosity
Dual Induction
Microresistivity
Bond





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Pickrell Drilling Co

**12-17S-21W Ness,KS**

100 S Main Ste 605  
Wichita, KS 67202

**Starrett B #5**

Job Ticket: 57086

**DST#: 1**

ATTN: Aaron Young

Test Start: 2019.01.24 @ 15:58:00

## GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:14:30

Time Test Ended: 02:34:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Spencer Staab

Unit No: 67

**Interval: 4022.00 ft (KB) To 4054.00 ft (KB) (TVD)**

Reference Elevations: 2175.00 ft (KB)

Total Depth: 4054.00 ft (KB) (TVD)

2168.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 7.00 ft

**Serial #: 8018**

**Inside**

Press@RunDepth: 352.77 psig @ 4023.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2019.01.24

End Date:

2019.01.25

Last Calib.: 2019.01.24

Start Time: 15:58:00

End Time:

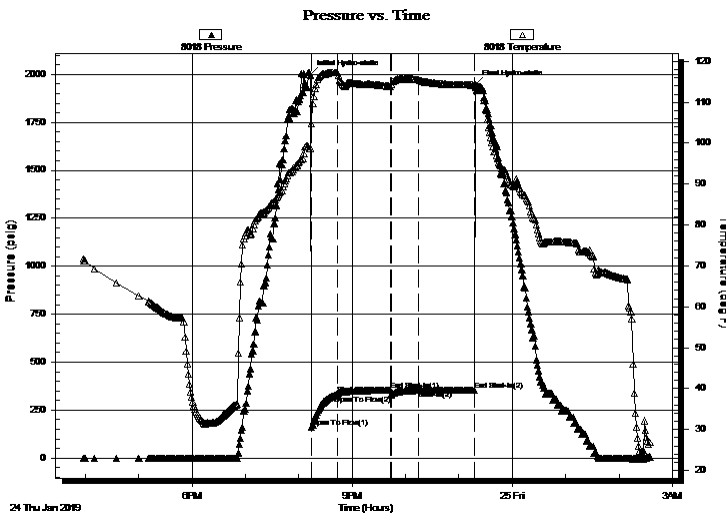
02:34:30

Time On Btm: 2019.01.24 @ 20:13:15

Time Off Btm: 2019.01.24 @ 23:18:15

**TEST COMMENT:** IFP 30 BOB in 1 min Built to 77"  
ISI 60 Blow back built to 7 1/2"  
FFP 30 Fair blow built to 9"  
FSi 60 Blow back built to 3"

## PRESSURE SUMMARY



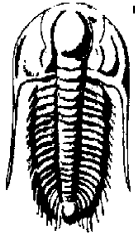
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1996.62	98.80	Initial Hydro-static
2	160.18	104.86	Open To Flow (1)
31	332.90	117.20	Shut-In(1)
90	353.94	113.89	End Shut-In(1)
91	329.72	113.86	Open To Flow (2)
121	352.77	115.51	Shut-In(2)
185	355.71	114.27	End Shut-In(2)
185	1946.27	113.51	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
315.00	MW 15%M 85%W	4.61
425.00	GMCOW 25%G 10%M 25%O 40%W	6.22
50.00	GO 10%G 90%O	0.73
0.00	180' GIP	0.00

## Gas Rates

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



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

Pickrell Drilling Co  
 100 S Main Ste 605  
 Wichita, KS 67202  
 ATTN: Aaron Young

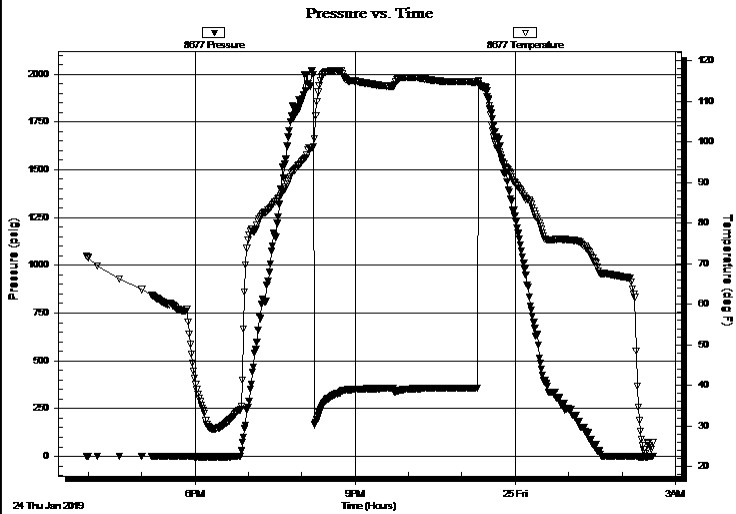
**12-17S-21W Ness, KS**  
**Starrett B #5**  
 Job Ticket: 57086      **DST#: 1**  
 Test Start: 2019.01.24 @ 15:58:00

**GENERAL INFORMATION:**

<b>Formation:</b> Cherokee		<b>Test Type:</b> Conventional Bottom Hole (Initial)
<b>Deviated:</b> No Whipstock:	ft (KB)	<b>Tester:</b> Spencer Staab
<b>Time Tool Opened:</b> 20:14:30		<b>Unit No:</b> 67
<b>Time Test Ended:</b> 02:34:30		
<b>Interval:</b> 4022.00 ft (KB) To 4054.00 ft (KB) (TVD)		<b>Reference Elevations:</b> 2175.00 ft (KB)
<b>Total Depth:</b> 4054.00 ft (KB) (TVD)		2168.00 ft (CF)
<b>Hole Diameter:</b> 7.88 inches	<b>Hole Condition:</b> Good	<b>KB to GR/CF:</b> 7.00 ft

<b>Serial #: 8677</b>	<b>Outside</b>		
<b>Press@RunDepth:</b> psig @ 4023.00 ft (KB)		<b>Capacity:</b> 8000.00 psig	
<b>Start Date:</b> 2019.01.24	<b>End Date:</b> 2019.01.25	<b>Last Calib.:</b> 1899.12.30	
<b>Start Time:</b> 15:58:00	<b>End Time:</b> 02:34:30	<b>Time On Btm:</b>	
		<b>Time Off Btm:</b>	

**TEST COMMENT:** IFP 30 BOB in 1 min Built to 77"  
 ISI 60 Blow back built to 7 1/2"  
 FFP 30 Fair blow built to 9"  
 FSi 60 Blow back built to 3"



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
315.00	MW 15%M 85%W	4.61
425.00	GMCOW 25%G 10%M 25%O 40%W	6.22
50.00	GO 10%G 90%O	0.73
0.00	180' GIP	0.00

**Gas Rates**

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Pickrell Drilling Co

**12-17S-21W Ness,KS**

100 S Main Ste 605  
Wichita, KS 67202

**Starrett B #5**

Job Ticket: 57086

**DST#: 1**

ATTN: Aaron Young

Test Start: 2019.01.24 @ 15:58:00

## Mud and Cushion Information

Mud Type:		Cushion Type:		Oil API:	31 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	91000 ppm
Viscosity:	66.00 sec/qt	Cushion Volume:	bbbl		
Water Loss:	12.80 in <sup>3</sup>	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	7500.00 ppm				
Filter Cake:	inches				

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
315.00	MW 15%M 85%W	4.607
425.00	GMCOV 25%G 10%M 25%O 40%W	6.215
50.00	GO 10%G 90%O	0.731
0.00	180' GIP	0.000

Total Length: 790.00 ft      Total Volume: 11.553 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Rw .263 @ 23 F

Serial #: 8018

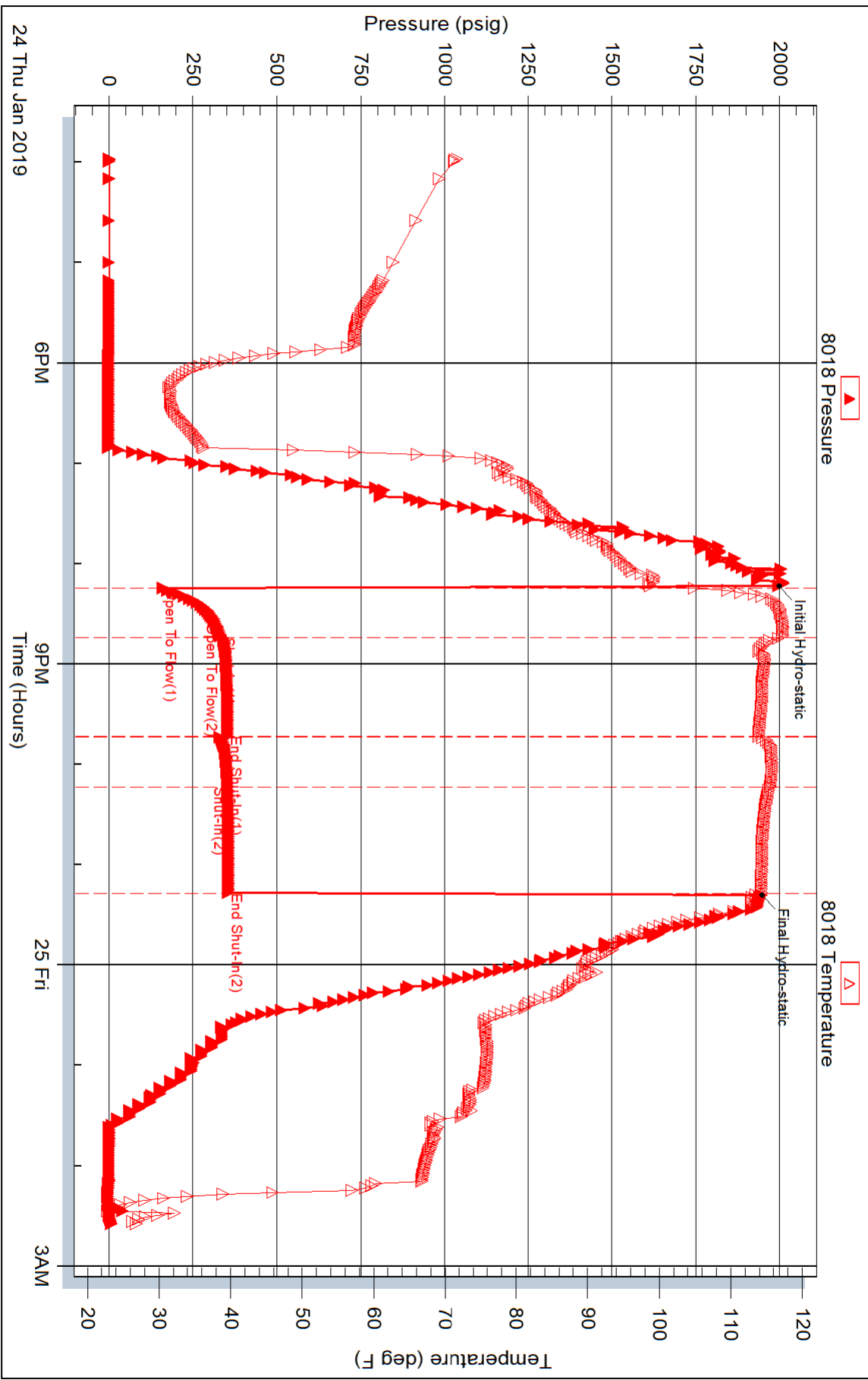
Inside

Pickrell Drilling Co

Starrett B#5

DST Test Number: 1

# Pressure vs. Time



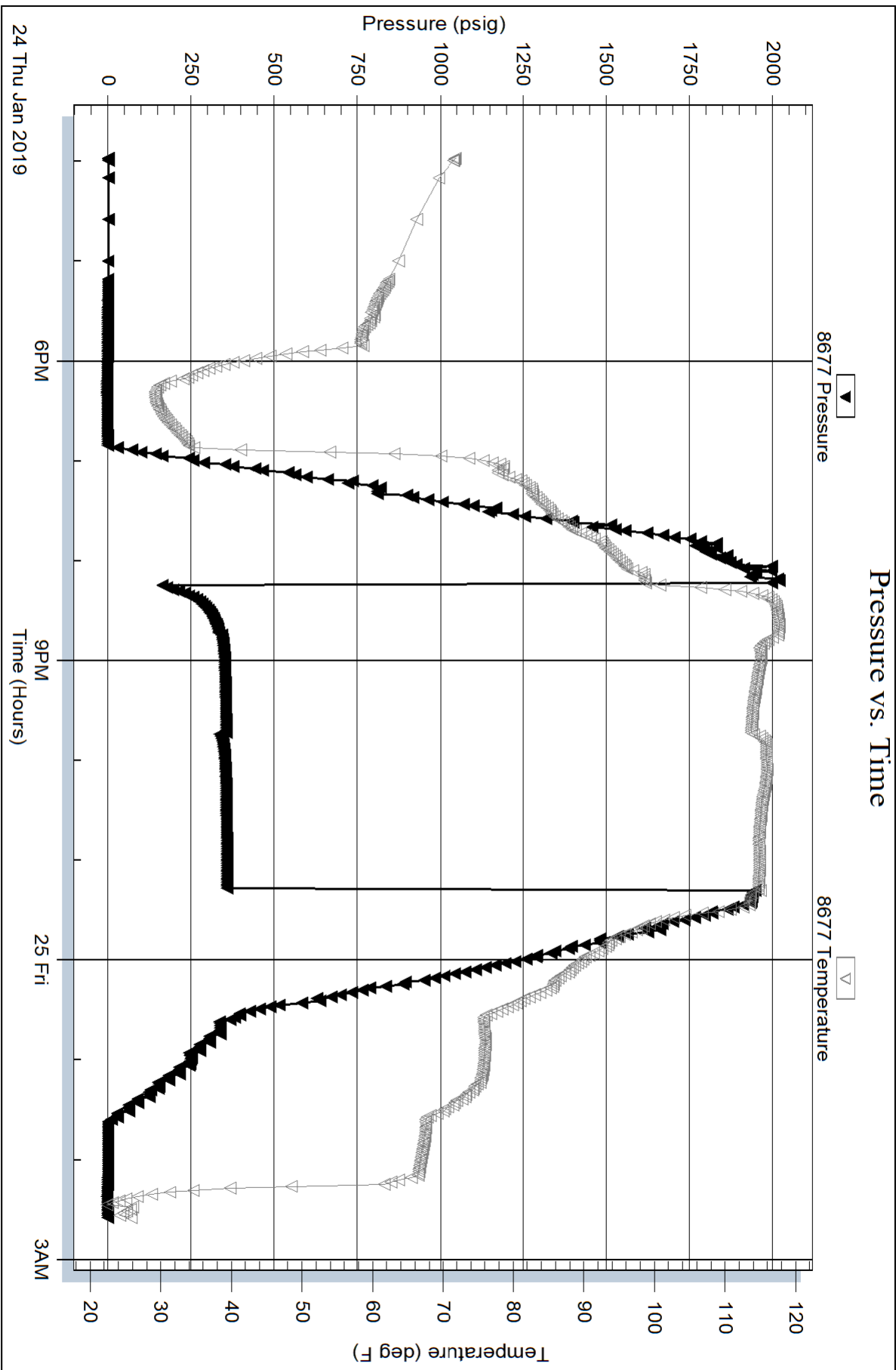


Serial #: 8677

Outside Pckrell Drilling Co

Starrett B#5

DST Test Number: 1





# DUAL COMP POROSITY LOG

Company PICKRELL DRILLING COMPANY, INC.  
 Well STARRETT B #5  
 Field START  
 County NESS  
 State KANSAS

Company PICKRELL DRILLING COMPANY, INC.  
 Well STARRETT B #5  
 Field START  
 County NESS  
 State KANSAS

Location: API #: 15-135-26044-00-00  
 1760' FNL & 2310' FEL  
 SEC 12 TWP 17S RGE 21W

Permanent Datum GROUND LEVEL Elevation 2168'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING

Other Services  
 DIL  
 MEL

Date	1/26/2019	
Run Number	ONE	
Type Log	CNL/CDL	
Depth Driller	4150'	
Depth Logger	4120'	
Bottom Logged Interval	4091'	
Top Logged Interval	3200'	
Type Fluid In Hole	CHEMICAL	
Salinity, PPM CL	7000	
Density	8.6	
Level	FULL	
Max. Rec. Temp. F	118 DEG/F	
Operating Rig Time	2 HOURS	
Equipment -- Location	108 HAYS	
Recorded By	J. HENRICKSON	
Witnessed By	AARON YOUNG	

Borehole Record				Casing Record			
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0	430'	8.625"	23#	0	430'
TWO	7.875"	430'	TD				

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

**Comments**  
 N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.  
 MCCRACKEN KANSAS  
 1 WEST ON ASH, 1/4 NORTH, 1/2 WEST, NORTH INTO

Log Measured From: KELLY BUSHING      7 Ft. Above Permanent Datum  
 THANK YOU FOR USING PIONEER ENERGY SERVICES  
 www.pioneerenergy.com      785-625-3858

<b>Your Pioneer Energy Services Crew</b> Engineer: J. HENRICKSON Operator: Operator: Operator:	<b>This Log Record Was Witnessed By</b> Primary Witness: AARON YOUNG Secondary Witness: Secondary Witness: Secondary Witness:
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# Log Variables

DatabaseC:\ProgramData\Warrior\Data\pickrell\_starrett\_b\_5.db  
Dataset field/well/stackml/pass2.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	118	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	110	43	Off	4120

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 988)	18.50	3.50	220.00

CILM 4.70

SP 0.20

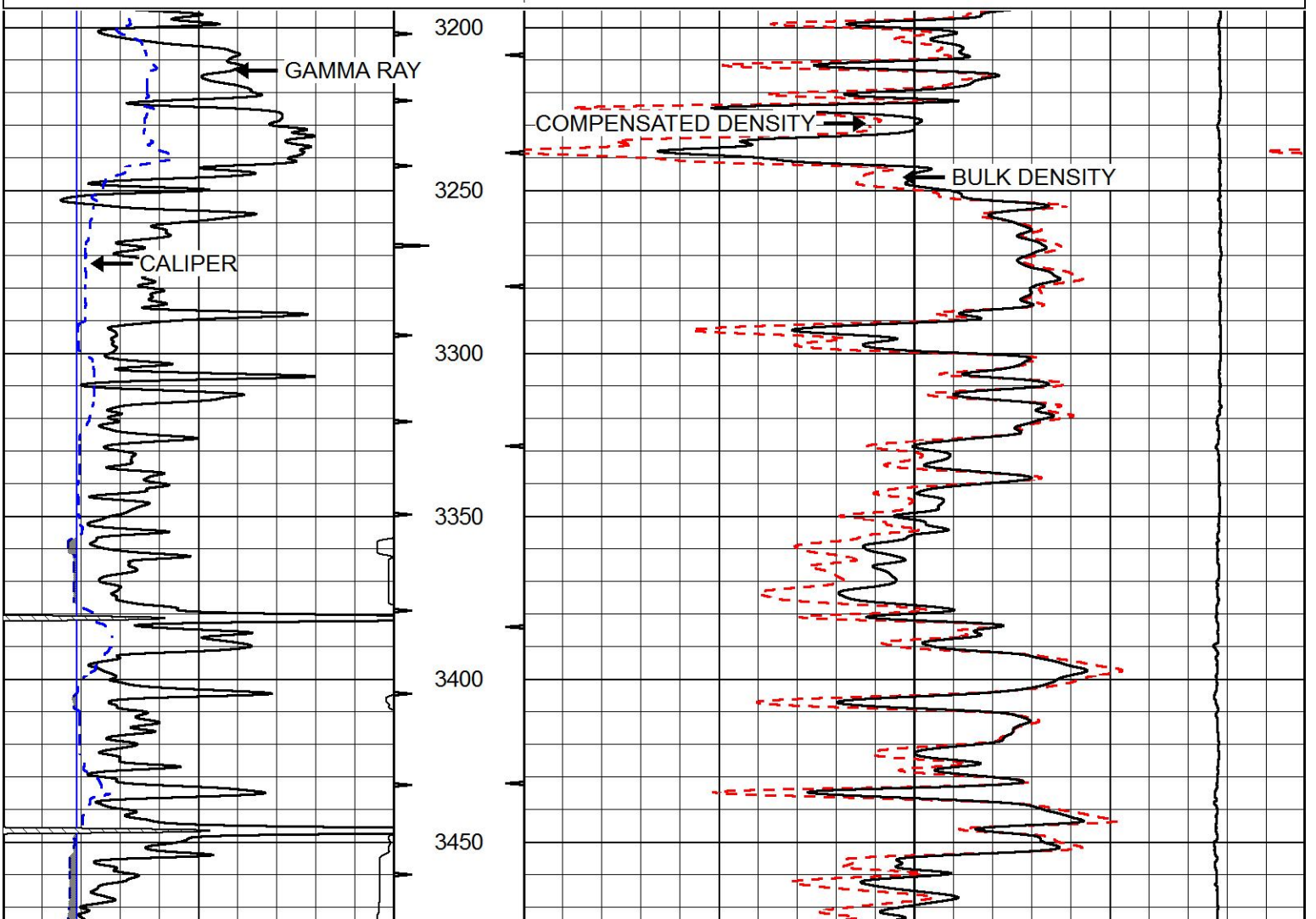
Dataset: pickrell\_starrett\_b\_5.db: field/well/stackml/pass2.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

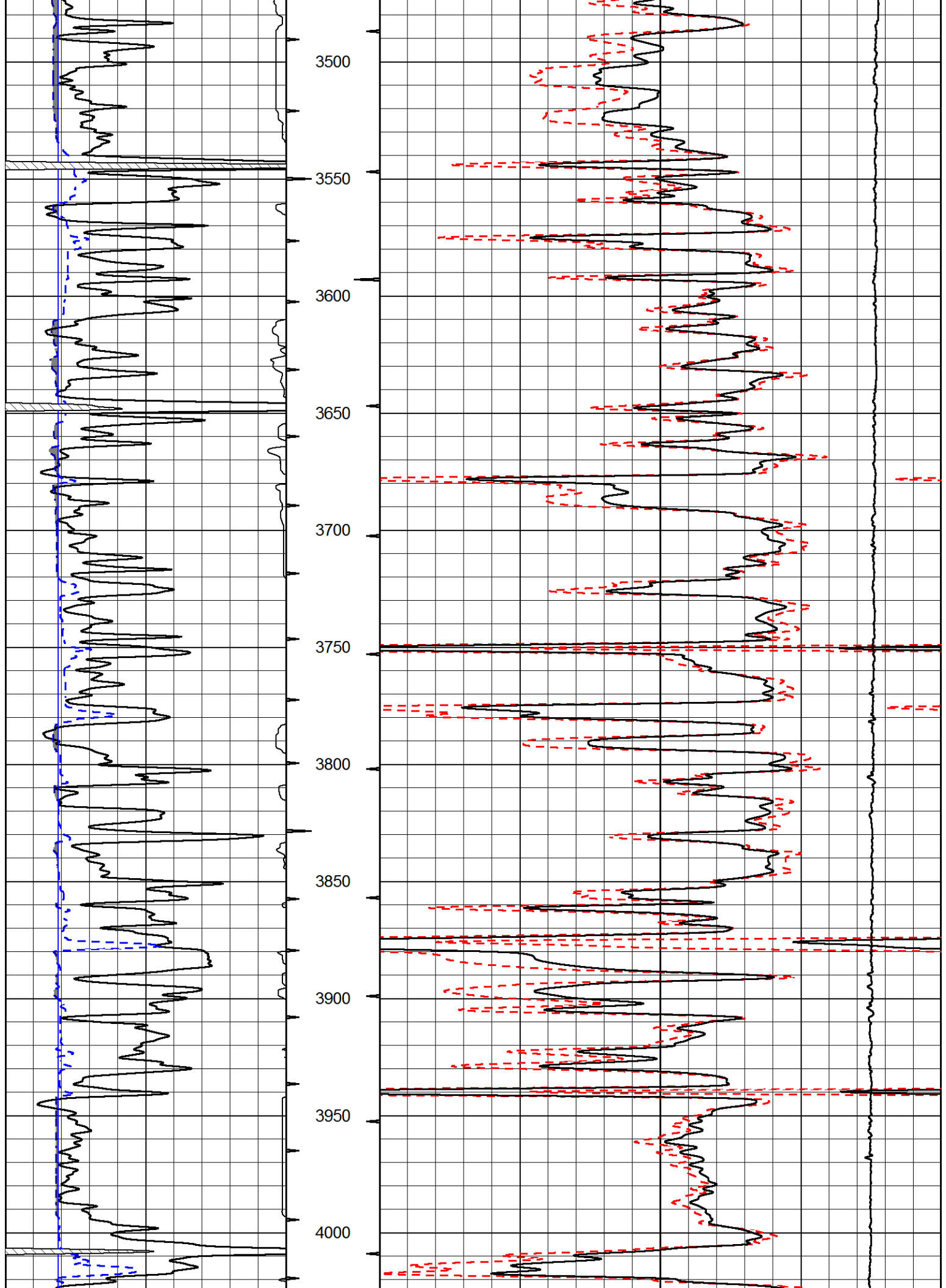


# MAIN PASS

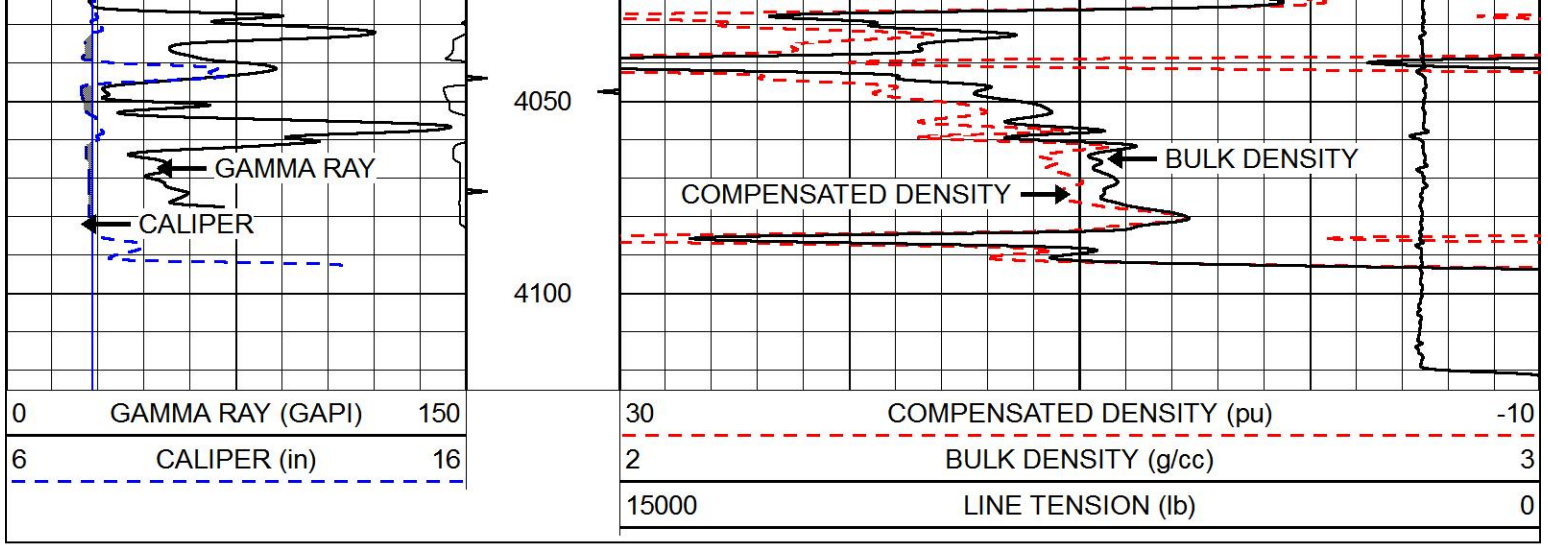
Database File pickrell\_starrett\_b\_5.db  
 Dataset Pathname stackml/pass2.1  
 Presentation Format cdl  
 Dataset Creation Sat Jan 26 12:53:03 2019  
 Charted by Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	150	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	2	BULK DENSITY (g/cc)	3
			15000	LINE TENSION (lb)	0





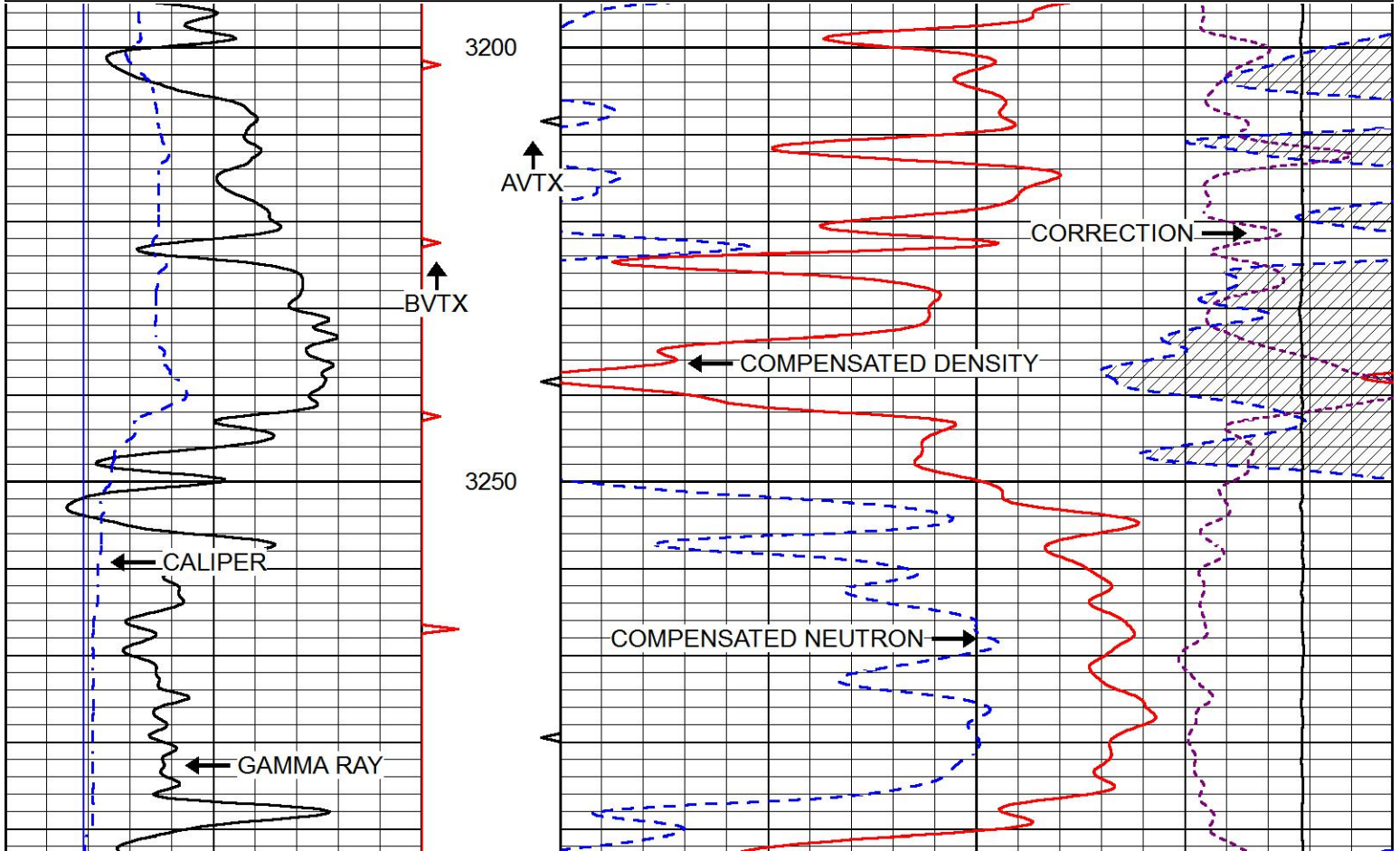


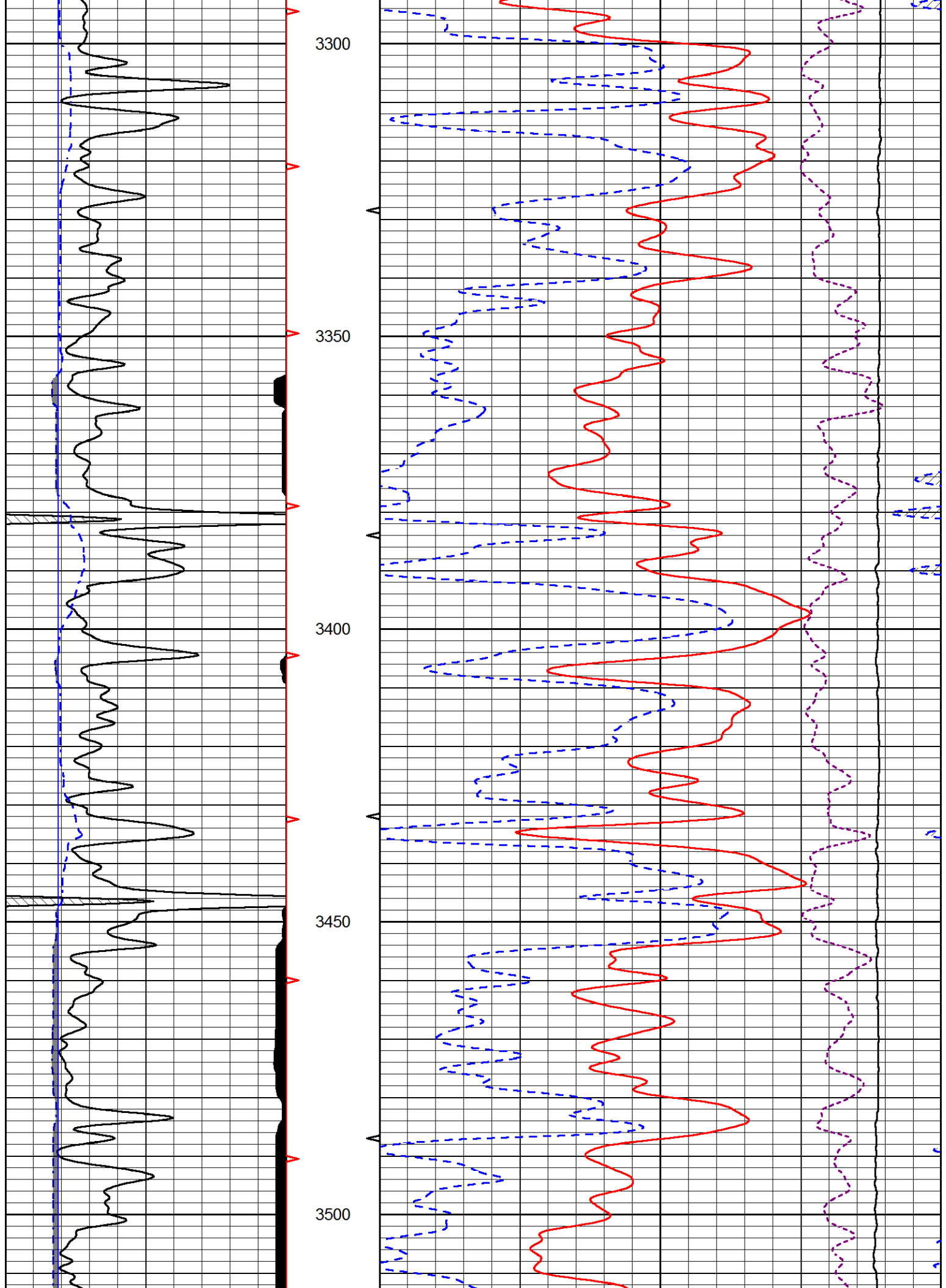


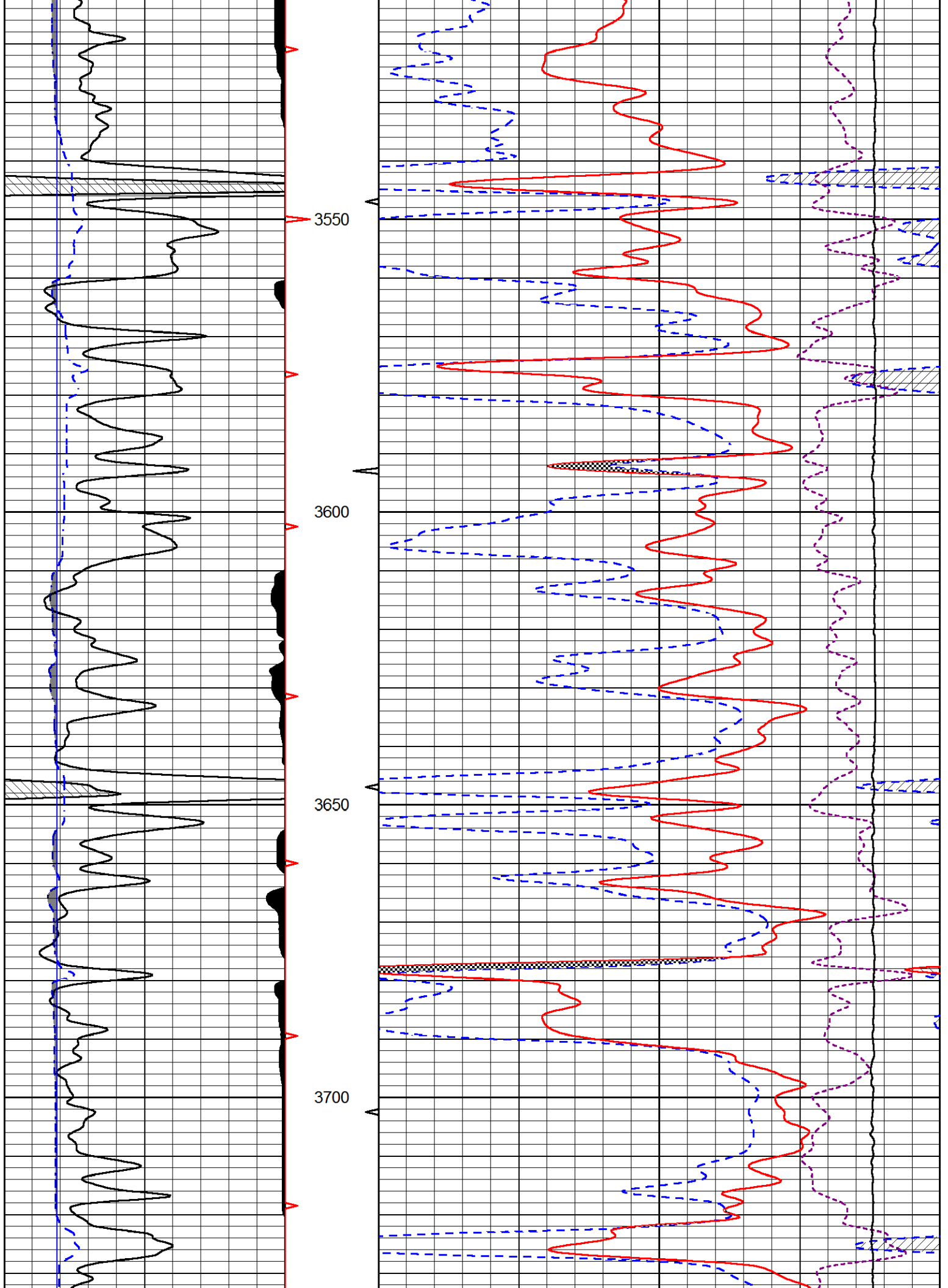
# MAIN PASS

Database File pickrell\_starrett\_b\_5.db  
 Dataset Pathname stackml/pass2.1  
 Presentation Format cndlspec  
 Dataset Creation Sat Jan 26 12:53:03 2019  
 Charted by Depth in Feet scaled 1:240

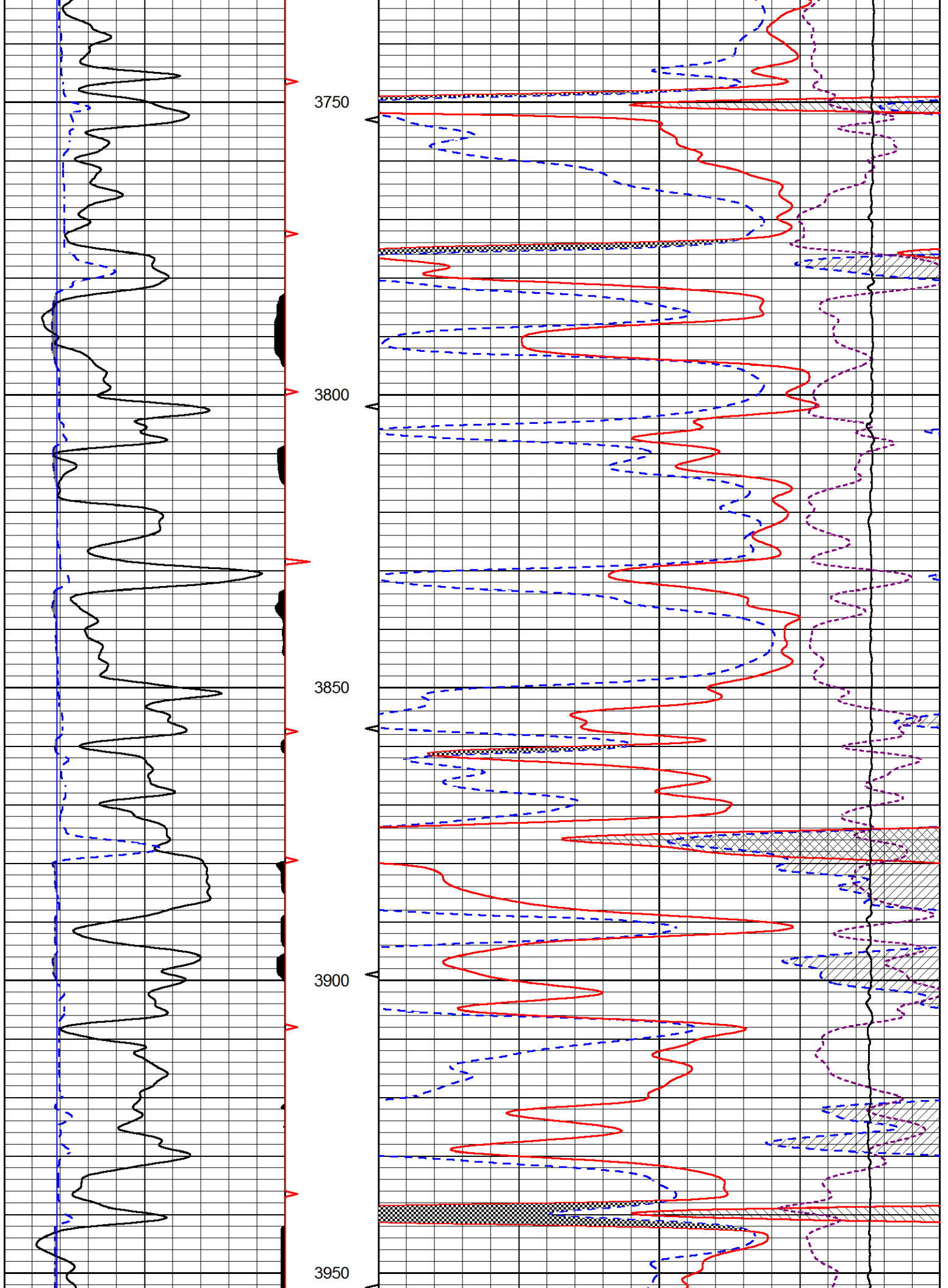
0	GAMMA RAY (GAPI)	150	30	CNLS (pu)	-10	
6	dcal (in)	16	30	DPOR (pu)	-10	
6	BIT SIZE (in)	16	15000	LINE TENSION (lb)	0	
				-0.25	RHOC (g/cc)	0.25

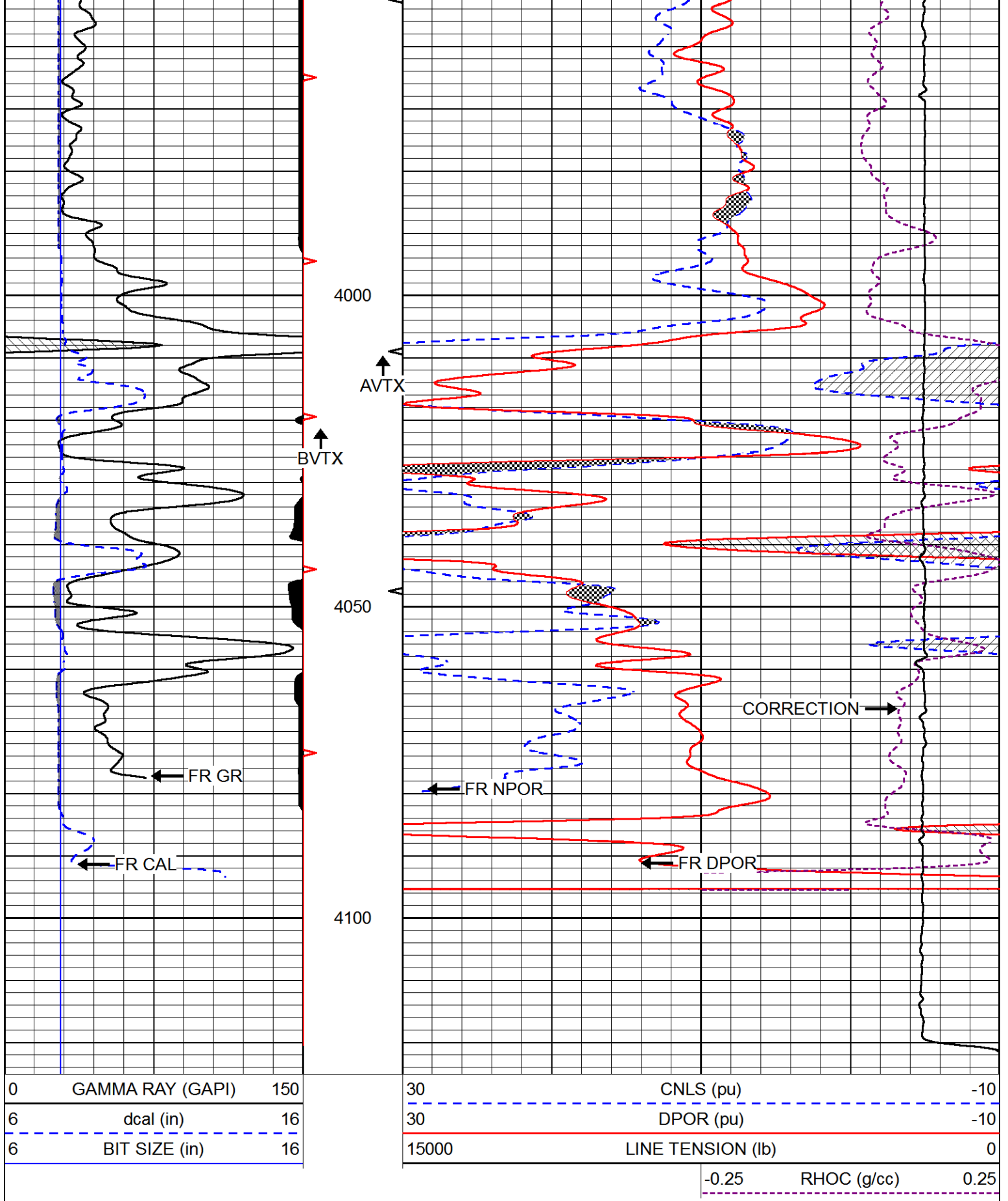












### Calibration Report

Database File pickrell\_starrett\_b\_5.db  
 Dataset Pathname stackml/pass2.1  
 Dataset Creation Sat Jan 26 12:53:03 2019

Serial-Model:  
Calibration Performed:

PSI 988-M&W  
Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

Microlog Calibration Report

Serial-Model:  
Performed:

PSI-01-PSI STKBL ML  
Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	20500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	23500.0000	-0.7000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.6000

Compensated Density Calibration Report

Serial-Model:  
Source / Verifier:  
Master Calibration Performed:

144-84-M&W  
/  
Mon Jan 07 15:00:31 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.675	g/cc	825.26	3443.46	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.538		
	Size		Reading		
Small Ring	4.00	in	0.69		
Large Ring	14.00	in	0.04		

Compensated Neutron Calibration Report

Serial Number: tk10-MW  
Tool Model: M&W  
Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025
Long Space	460.00 cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number: 89-M&W  
Tool Model: M&W  
Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0      CAPI

Calibrator Value:	1000.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	6.2	cps
Sensitivity:	0.5200	GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company	PICKRELL DRILLING COMPANY, INC.
Well	STARRETT B #5
Field	START
County	NESS
State	KANSAS



**DUAL INDUCTION  
LOG**

Company PICKRELL DRILLING COMPANY, INC.  
 Well STARRETT B #5  
 Field START  
 County NESS  
 State KANSAS

Company PICKRELL DRILLING COMPANY, INC.  
 Well STARRETT B #5  
 Field START  
 County NESS  
 State KANSAS

Location: API #: 15-135-26044-00-00  
 1760' FNL & 2310' FEL  
 SEC 12 TWP 17S RGE 21W

Permanent Datum GROUND LEVEL Elevation 2168'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING

Other Services  
 CNL/CDL  
 MEL

Elevation  
 K.B. 2175'  
 D.F. N/A  
 G.L. 2168'

Date	1/26/2019
Run Number	ONE
Depth Driller	4150'
Depth Logger	4120'
Bottom Logged Interval	4119'
Top Log Interval	400'
Casing Driller	8.625" @ 430'
Casing Logger	429'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	7000
Density / Viscosity	8.6 54
pH / Fluid Loss	10.0 12.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.58 @ 71
Rmt @ Meas. Temp	.44 @ 71
Rmc @ Meas. Temp	.78 @ 71
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.35 @ 118
Operating Rig Time	2 HOURS
Max Rec. Temp. F	118 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	AARON YOUNG

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.  
 MCCRACKEN KANSAS  
 1 WEST ON ASH, 1/4 NORTH, 1/2 WEST, NORTH INTO

Log Measured From: KELLY BUSHING      7    Ft. Above Permanent Datum

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[www.pioneerenergy.com](http://www.pioneerenergy.com)      785-625-3858



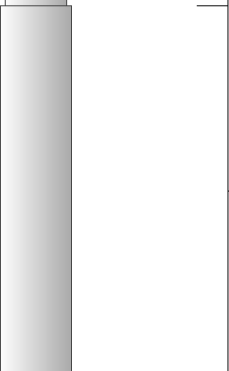
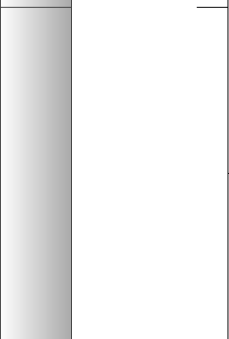

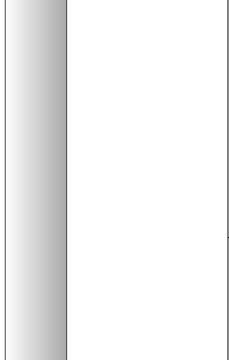
Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: J. HENRICKSON	Primary Witness: AARON YOUNG
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\pickrell\_starrett\_b\_5.db  
Dataset field/well/stackml/pass2.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	118	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	110	43	Off	4120

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79		DIL-M&W (PSI 988)	18.50	3.50	220.00
CILD	8.00					



CILM 4.70

SP 0.20

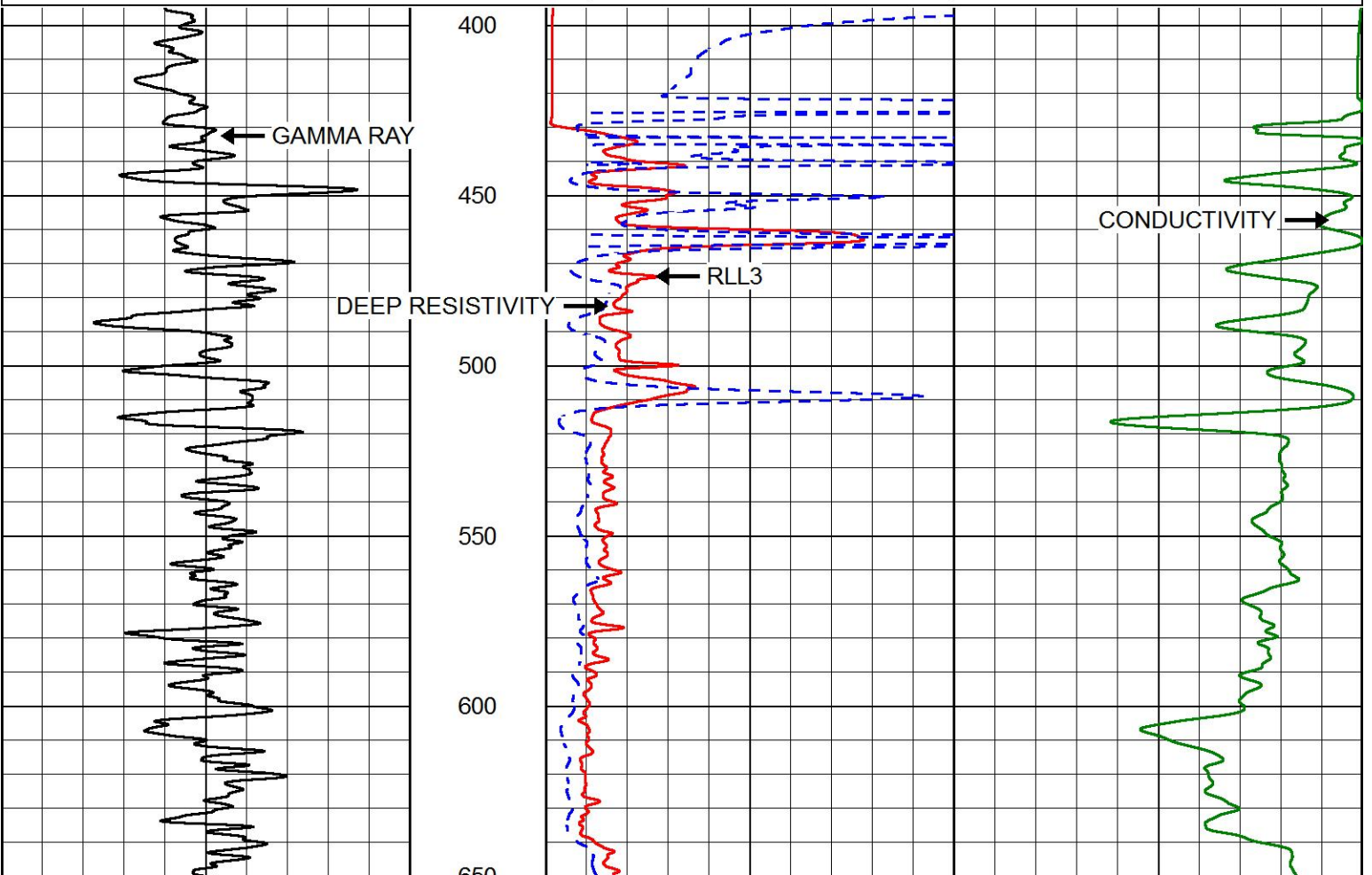
Dataset: pickrell\_starrett\_b\_5.db: field/well/stackml/pass2.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

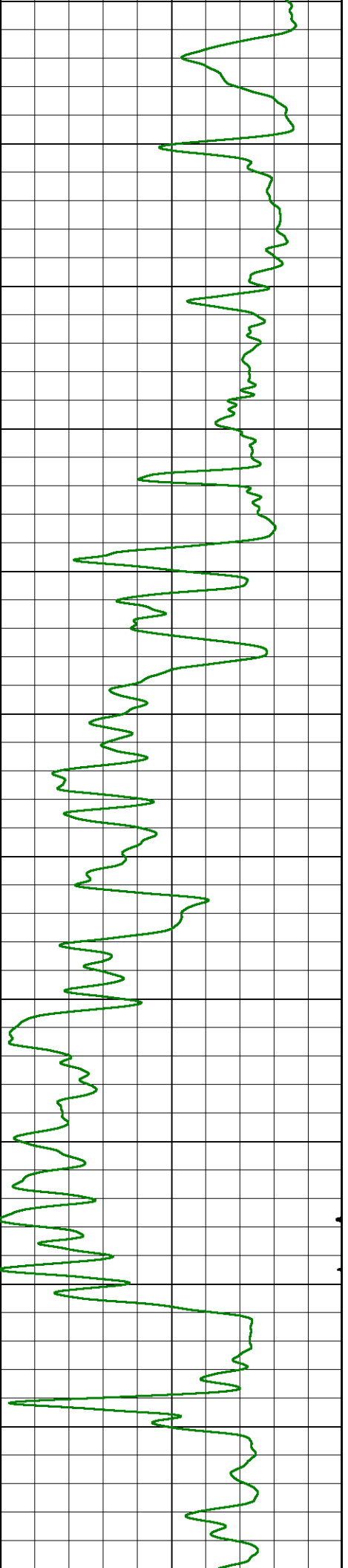
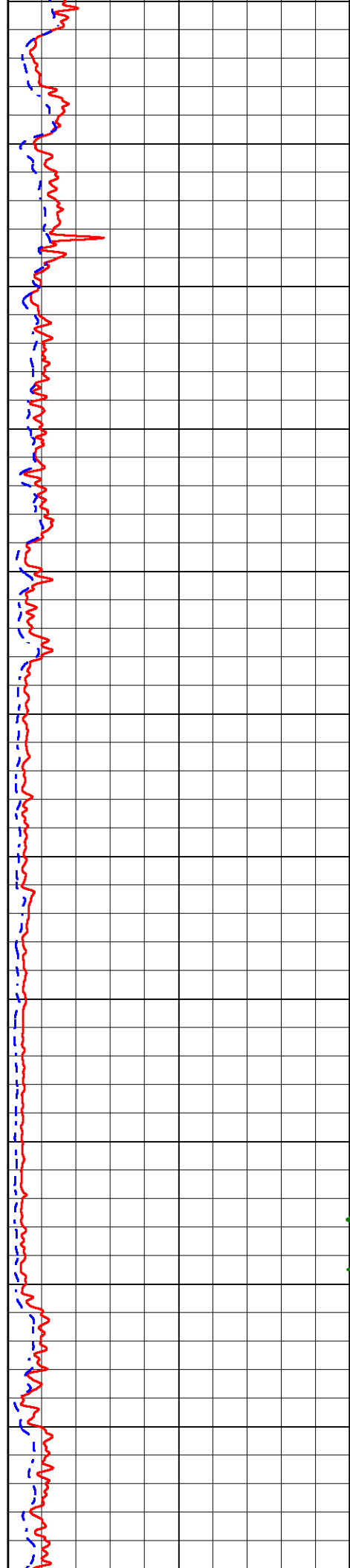
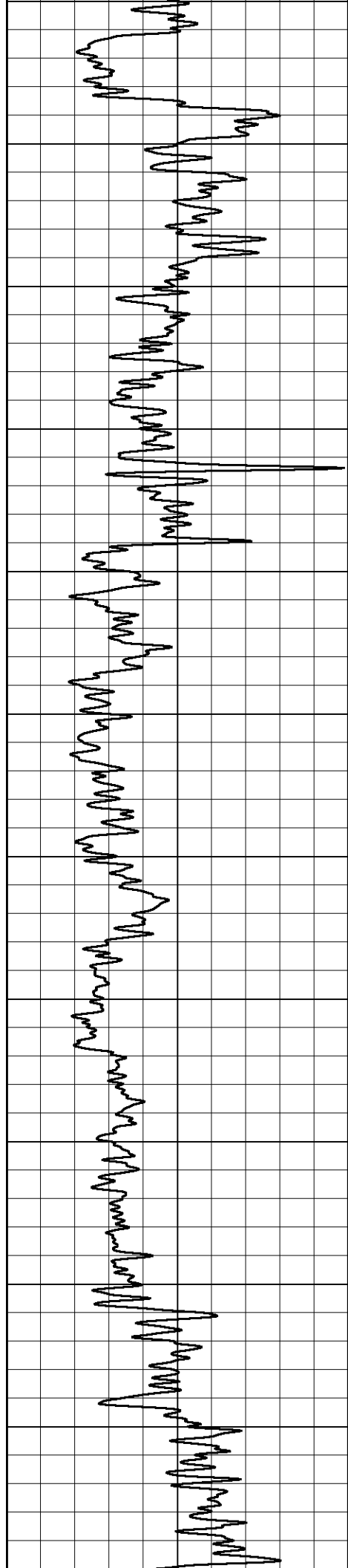


# MAIN PASS

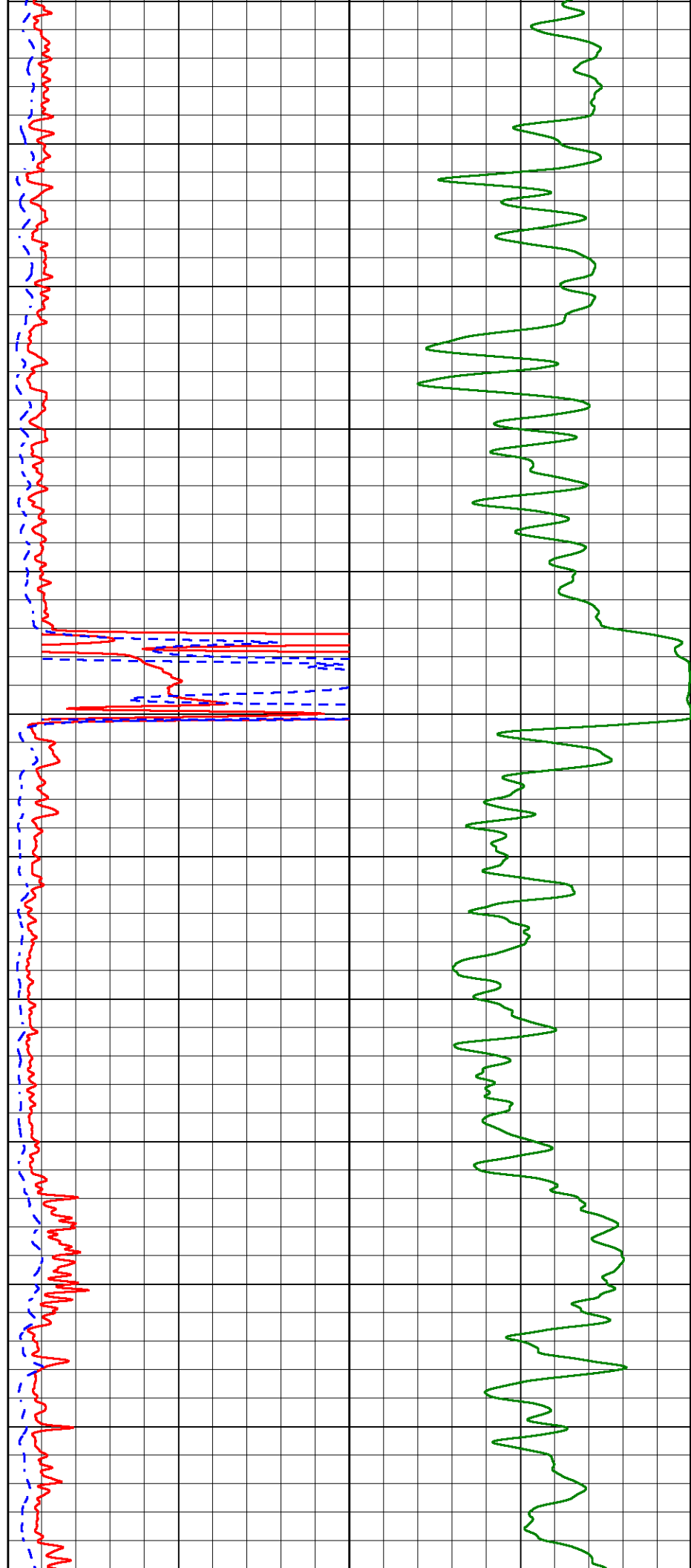
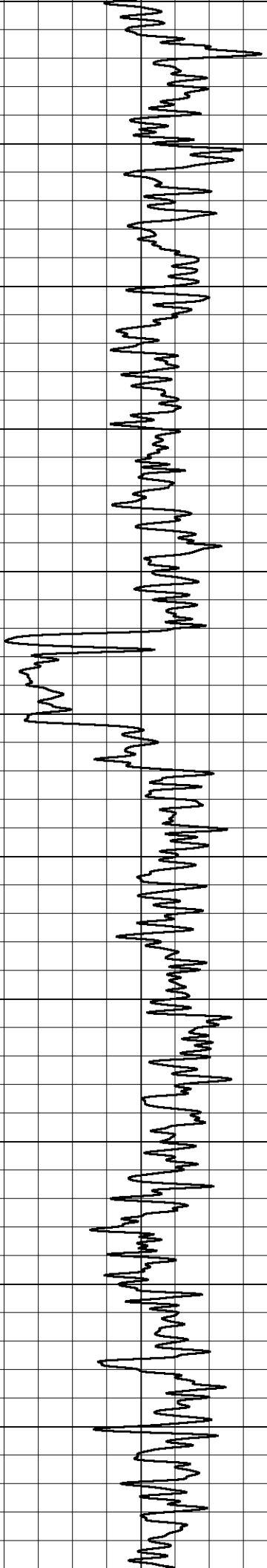
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 Presentation Format dil2in  
 Dataset Creation Sat Jan 26 12:53:03 2019  
 Charted by Depth in Feet scaled 1:600

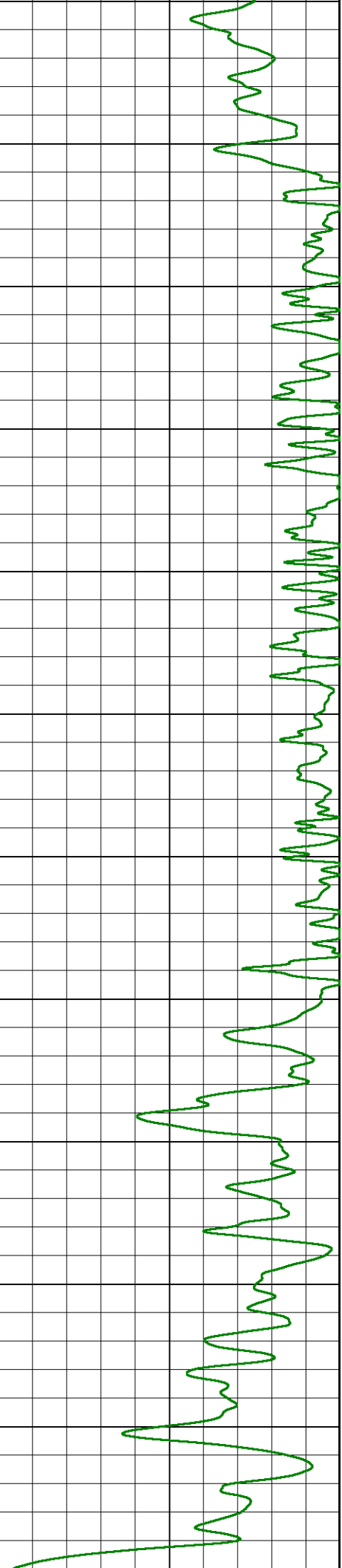
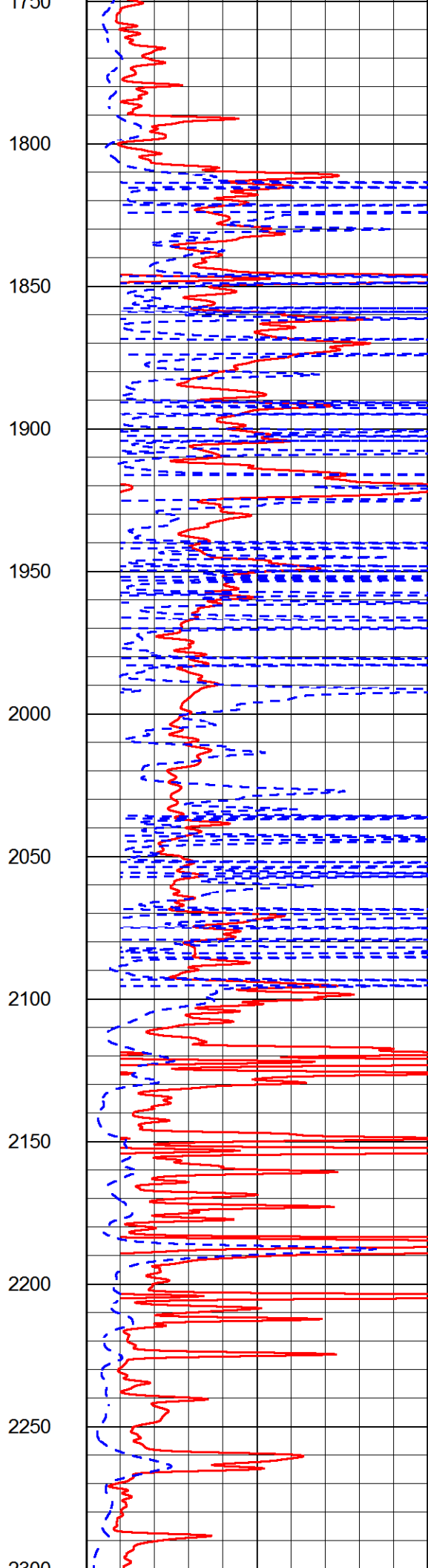
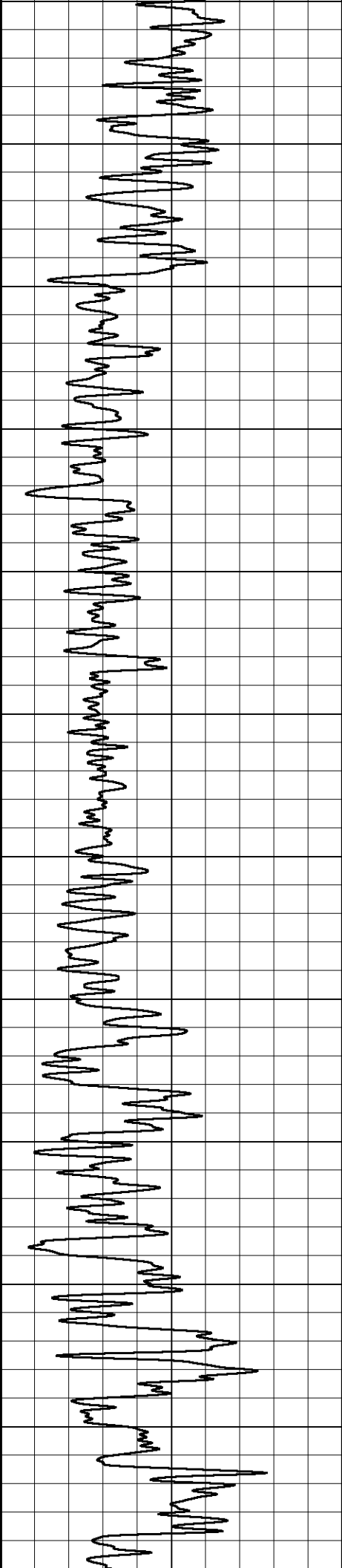
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			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	200
			50	RILD (Ohm-m)	200

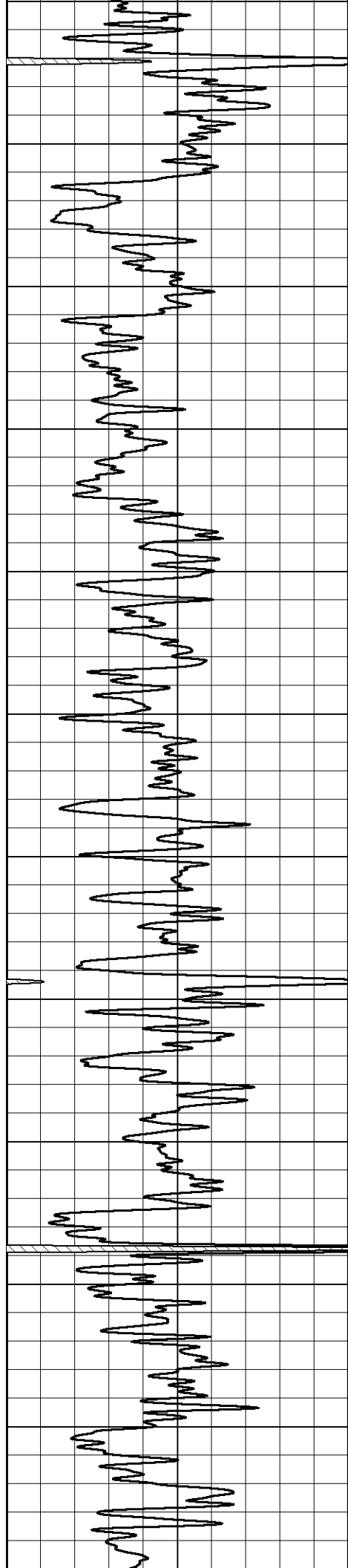




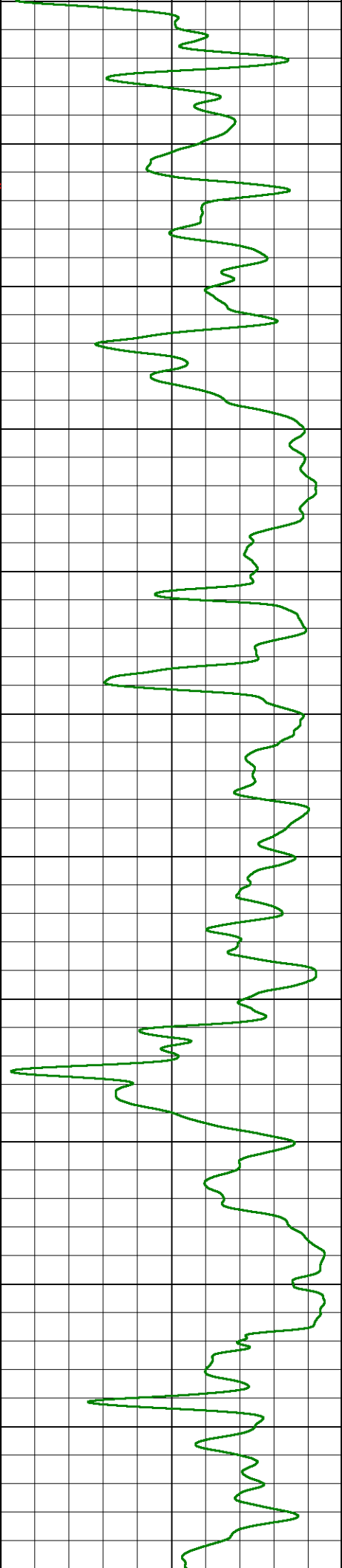
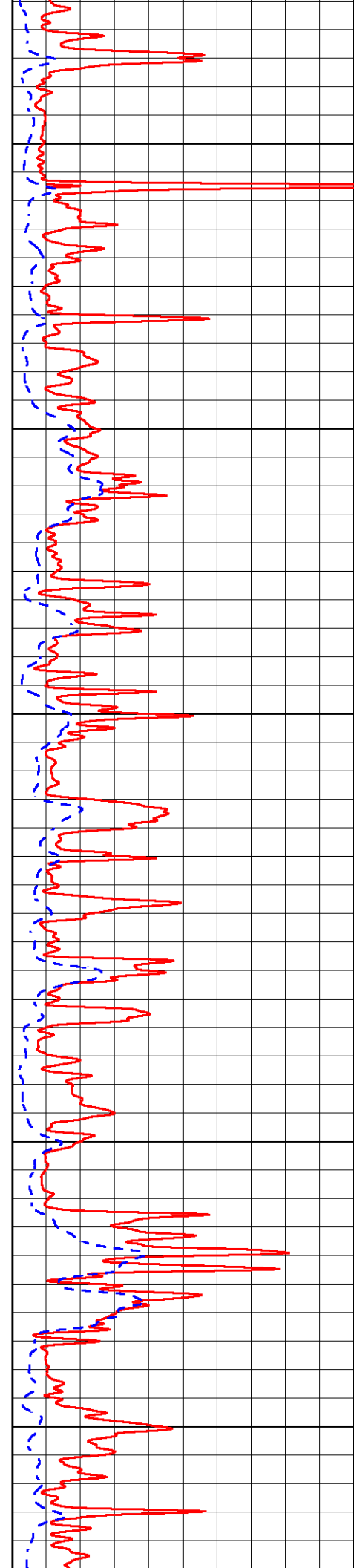


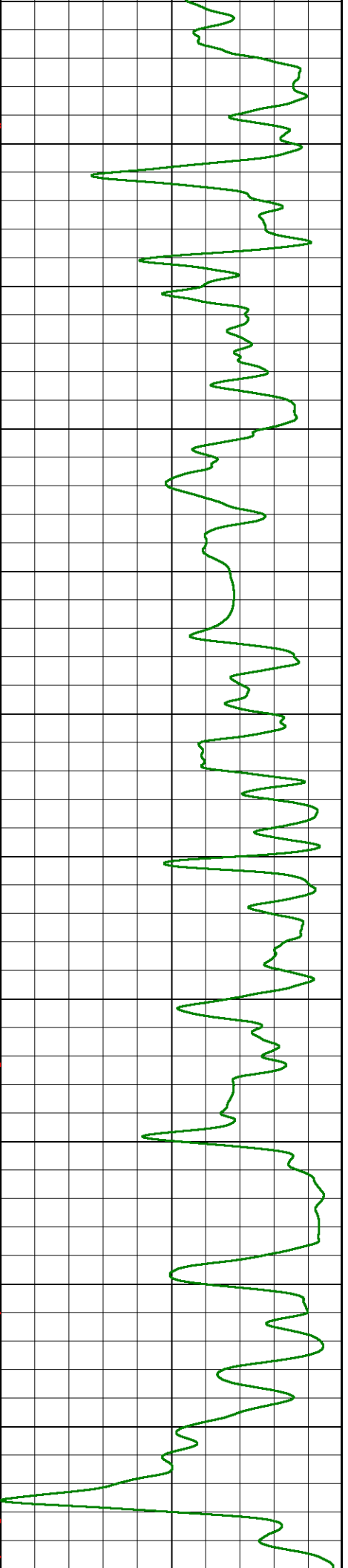
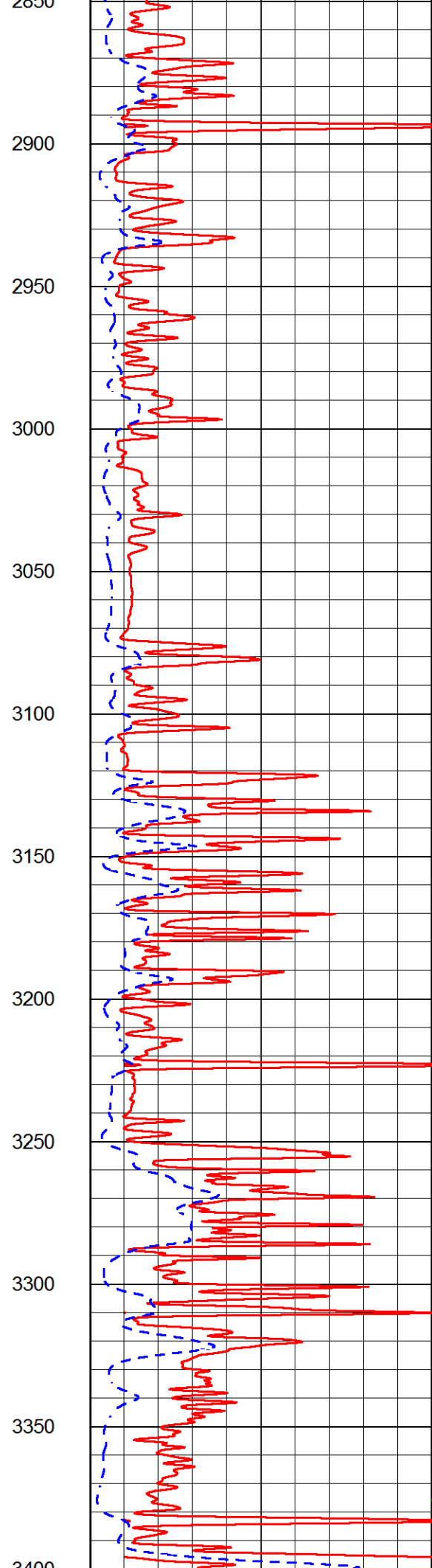
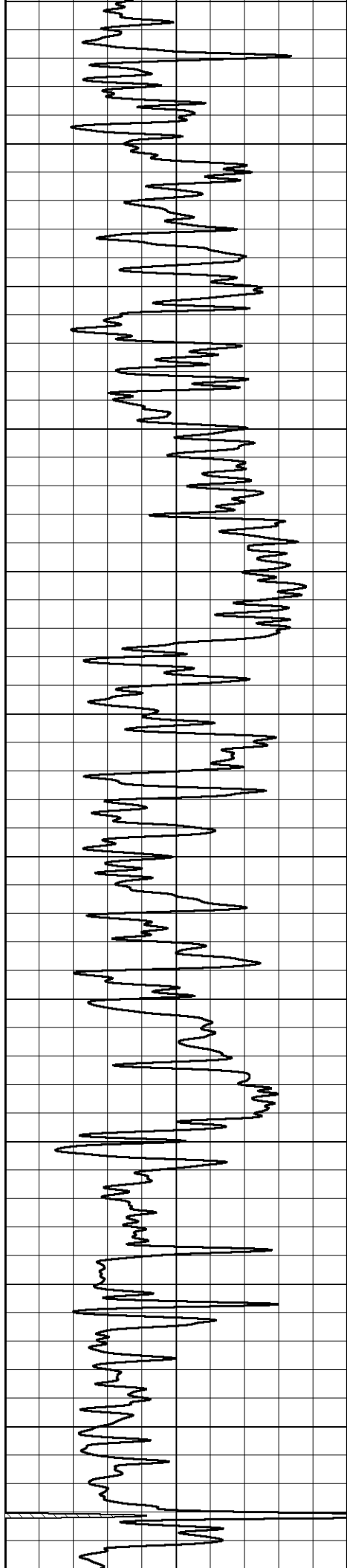


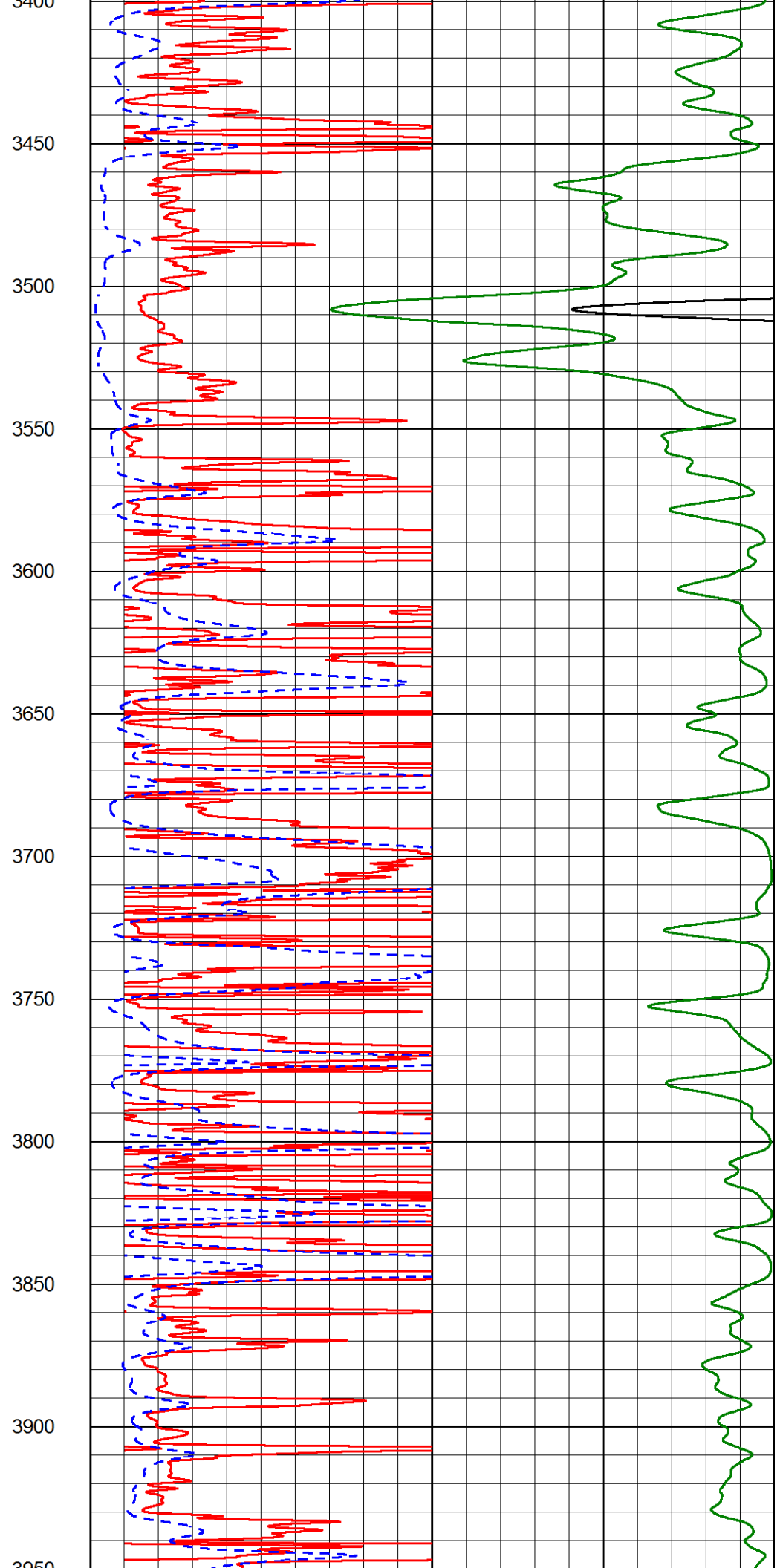
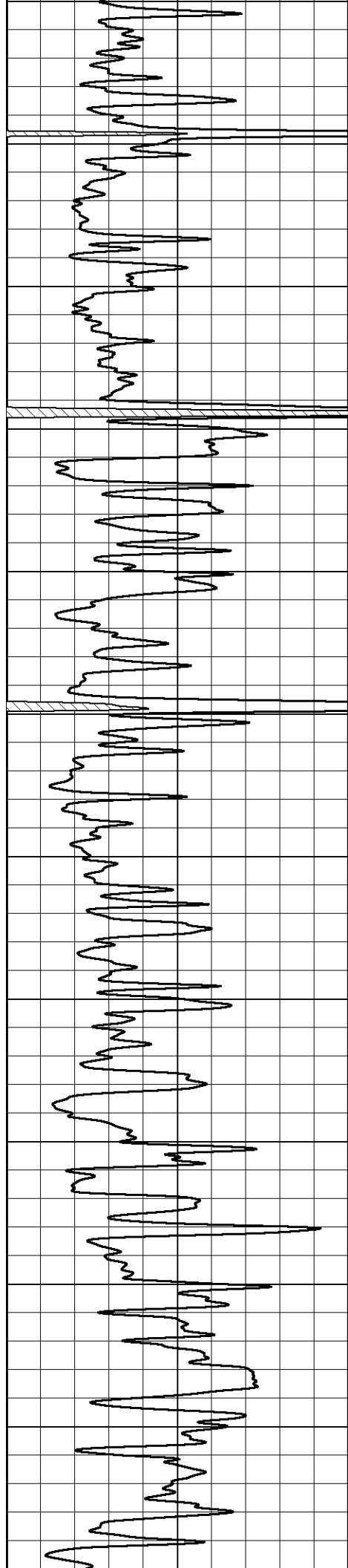


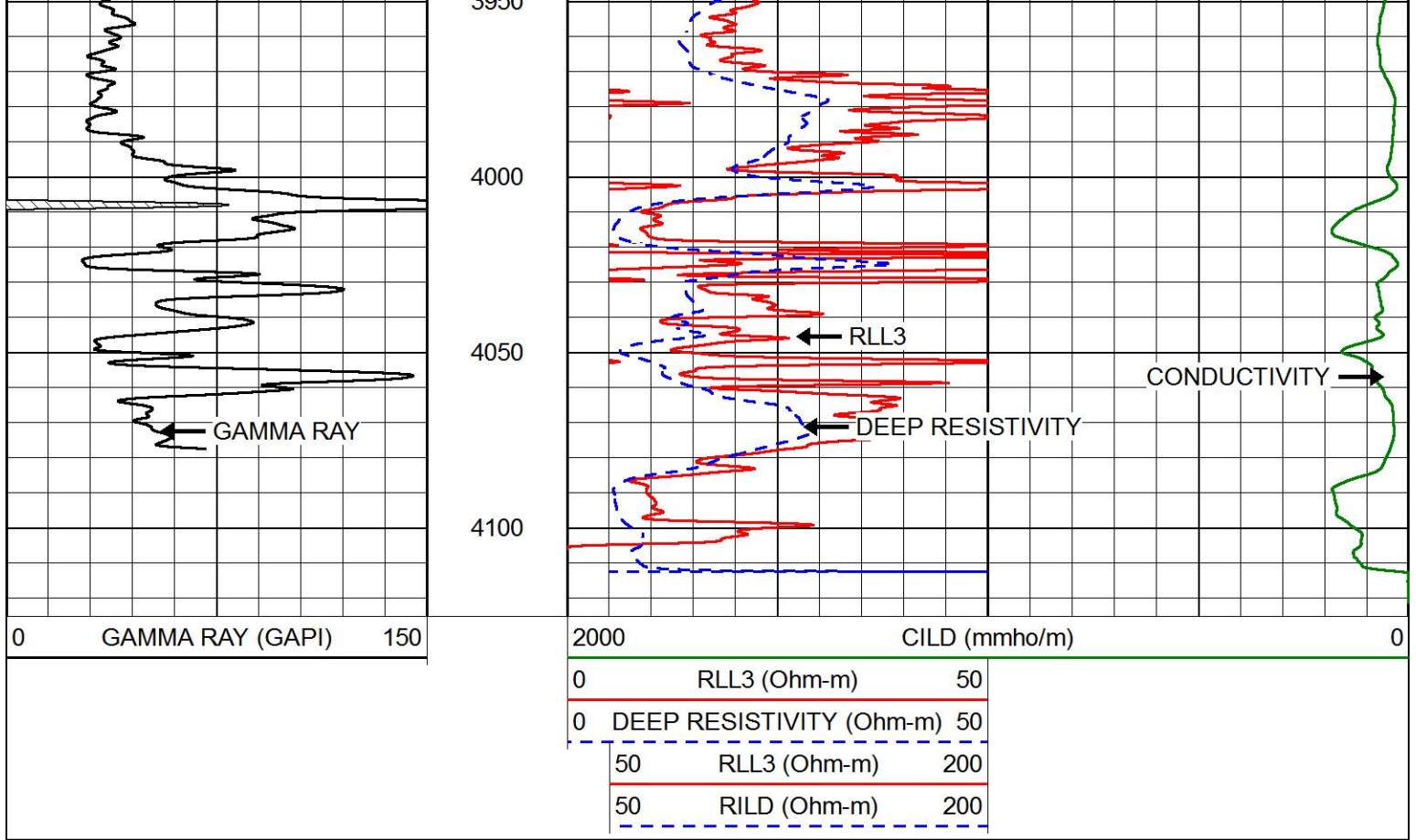


2300  
2350  
2400  
2450  
2500  
2550  
2600  
2650  
2700  
2750  
2800  
2850





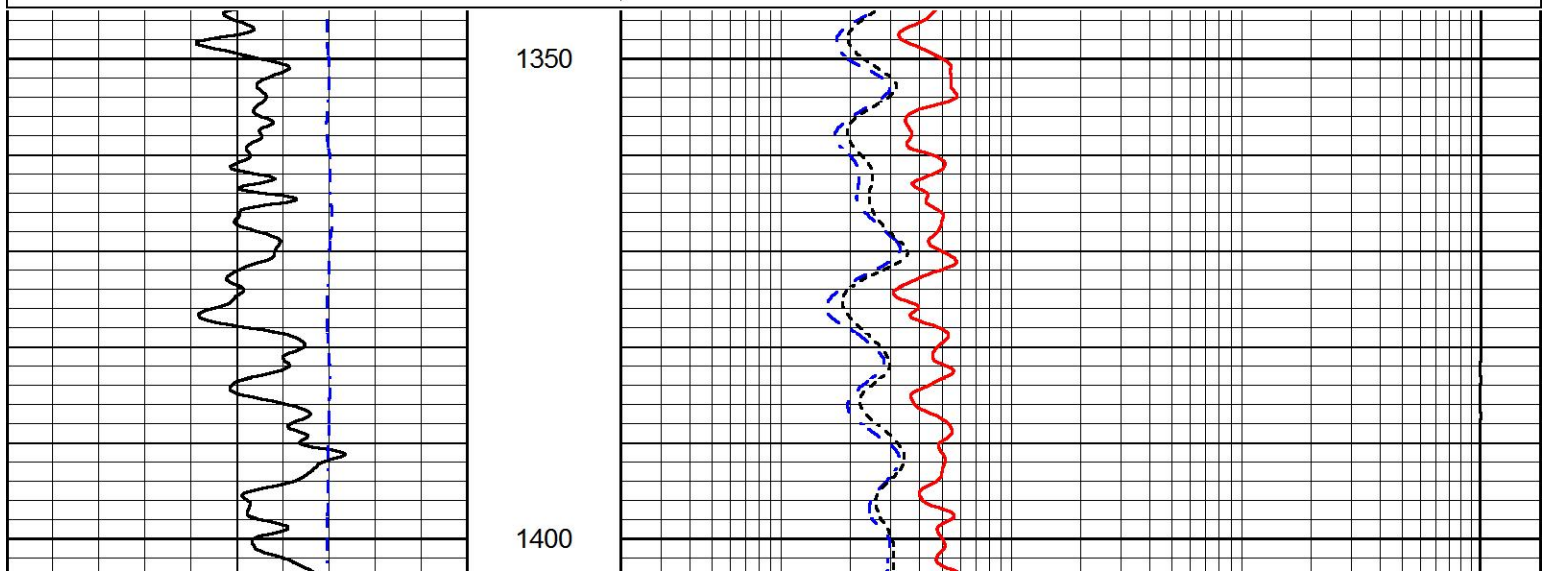




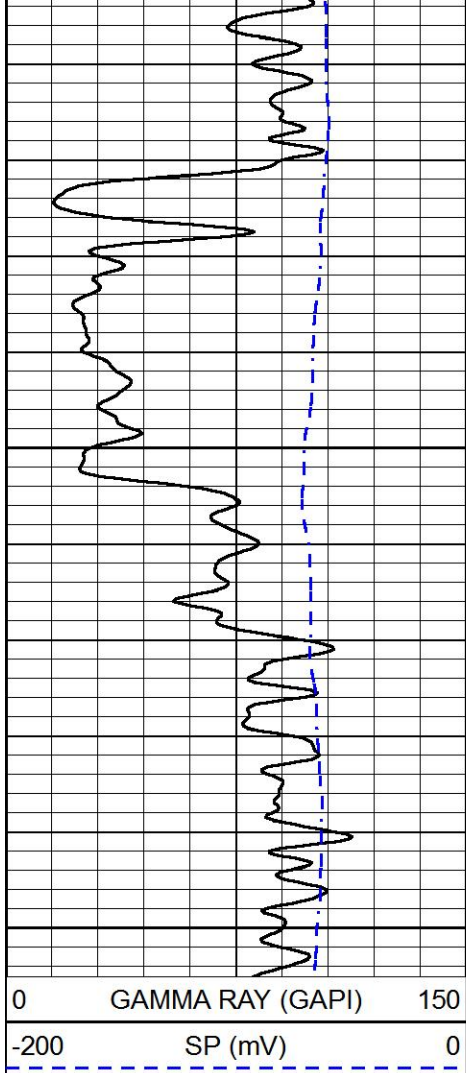
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 Dataset Pathname: stackml/pass2.1  
 Presentation Format: dil  
 Dataset Creation: Sat Jan 26 12:53:03 2019  
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			15000	LINE TENSION (lb)	0



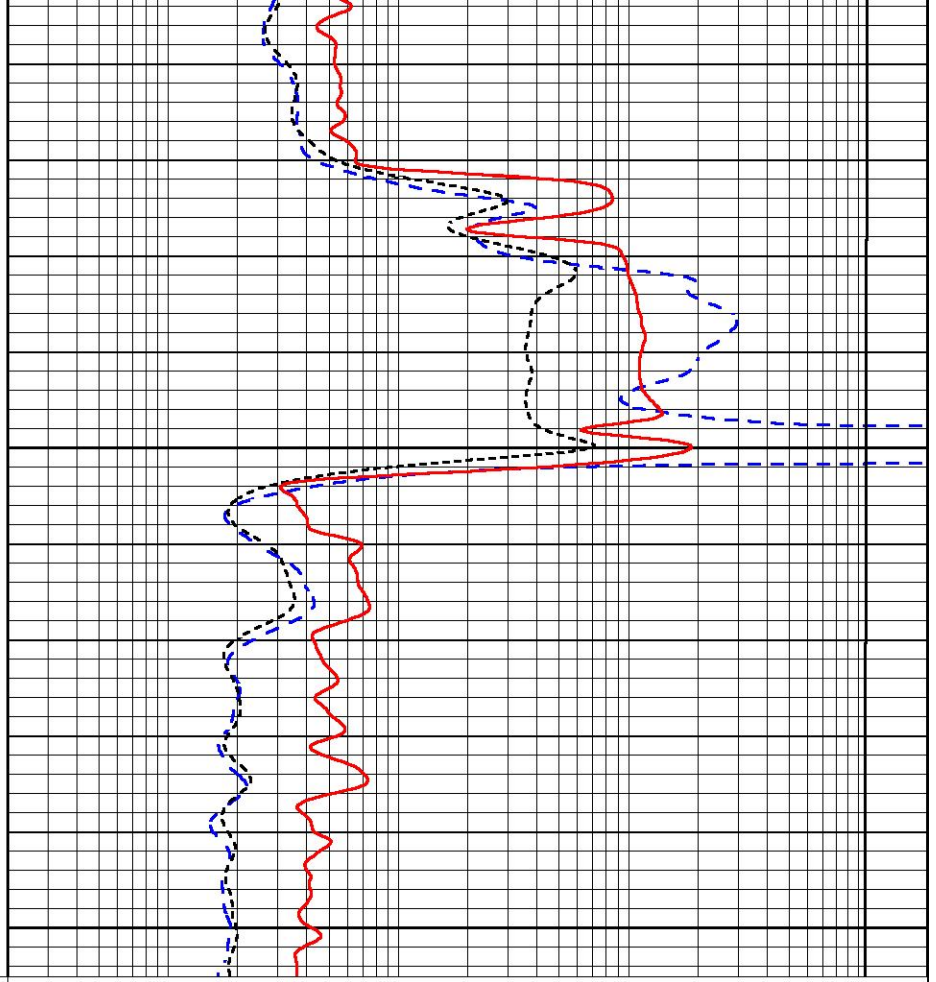




1450

1500

0 GAMMA RAY (GAPI) 150  
-200 SP (mV) 0



0.2 DEEP RESISTIVITY (Ohm-m) 2000  
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000  
0.2 RLL3 (Ohm-m) 2000  
15000 LINE TENSION (lb) 0

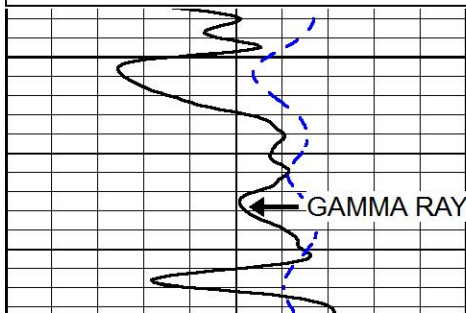


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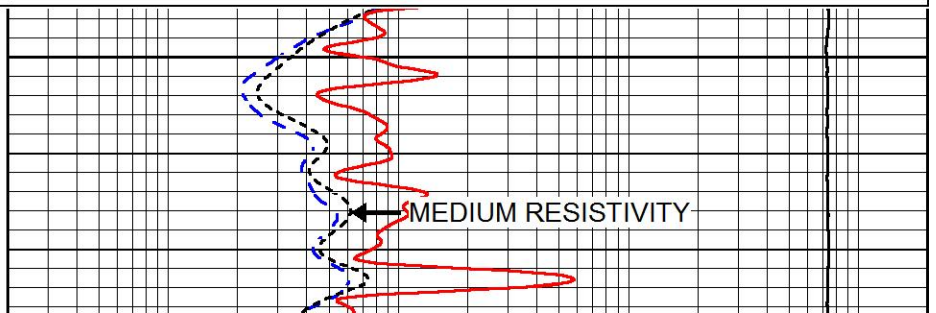
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Presentation Format dil  
Dataset Creation Sat Jan 26 12:53:03 2019  
Charted by Depth in Feet scaled 1:240

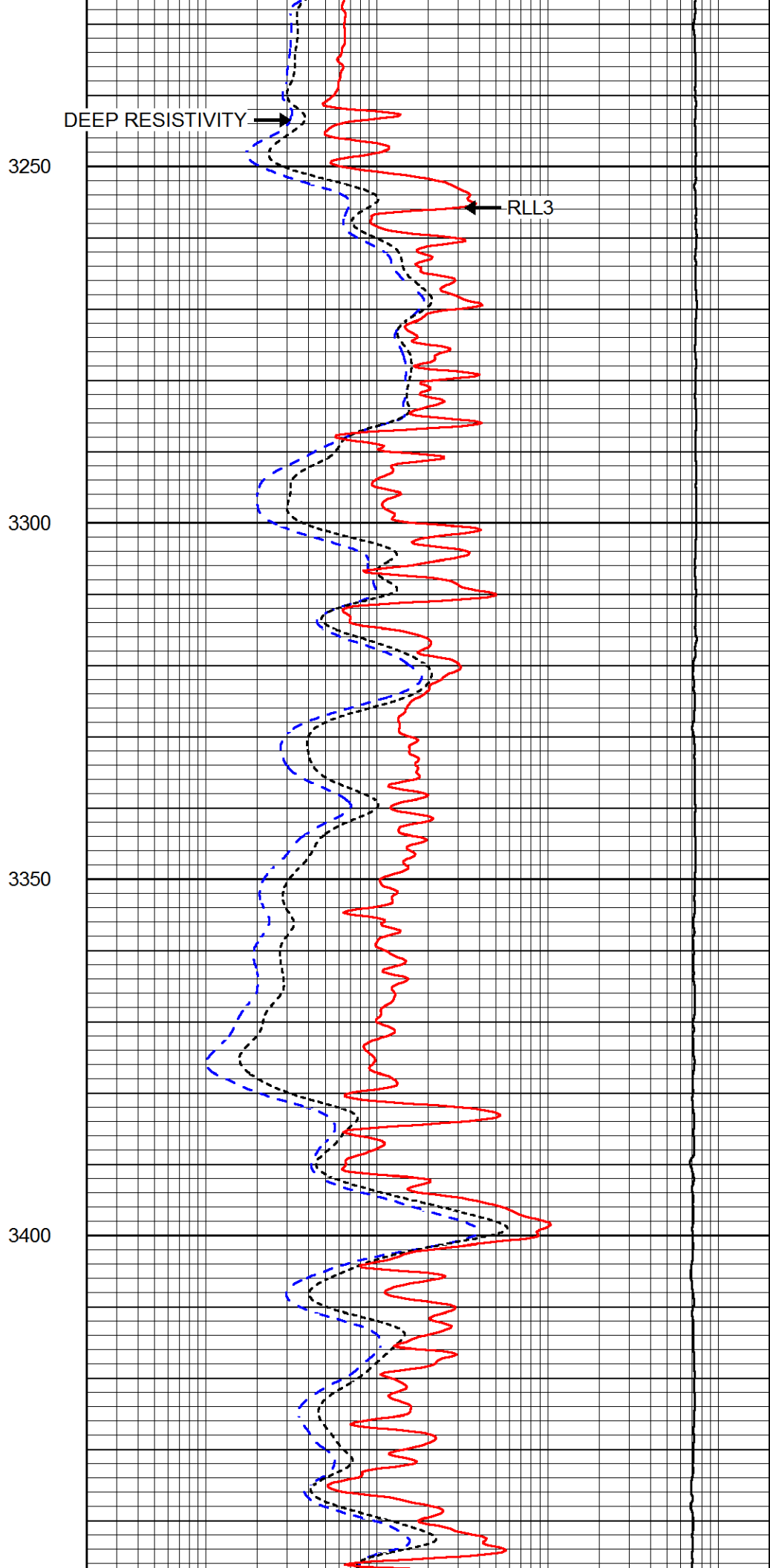
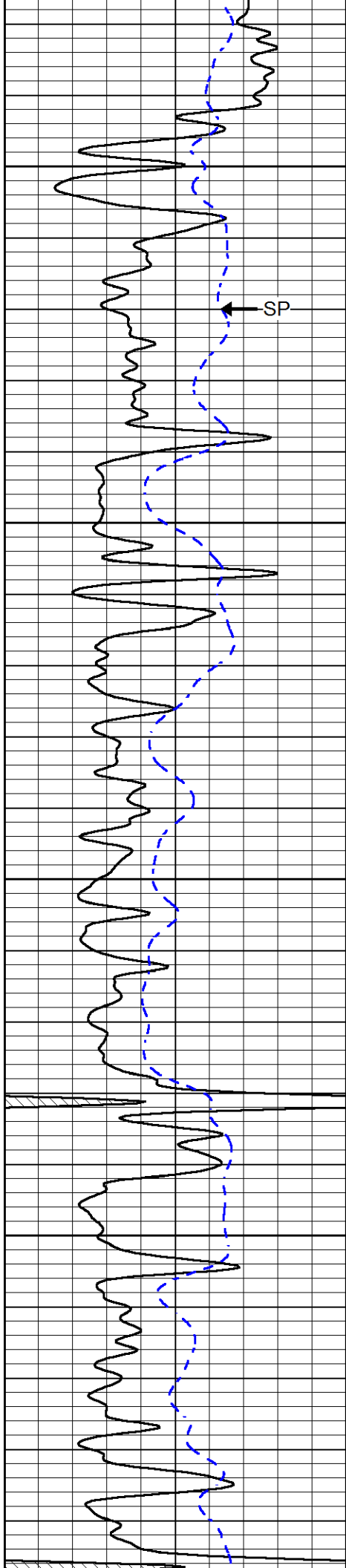
0 GAMMA RAY (GAPI) 150  
-200 SP (mV) 0

0.2 DEEP RESISTIVITY (Ohm-m) 2000  
0.2 MEDIUM RESISTIVITY (Ohm-m) 2000  
0.2 RLL3 (Ohm-m) 2000  
15000 LINE TENSION (lb) 0

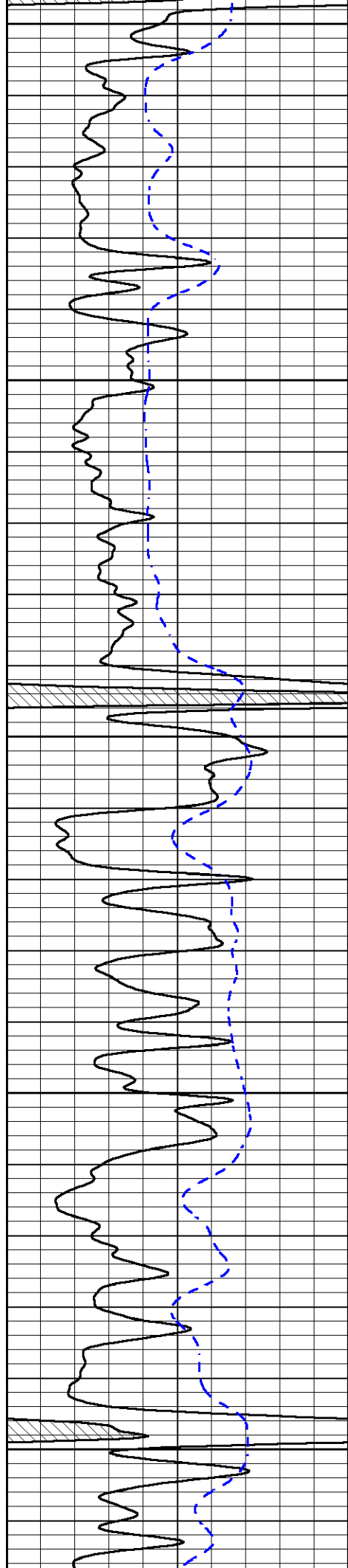


3200









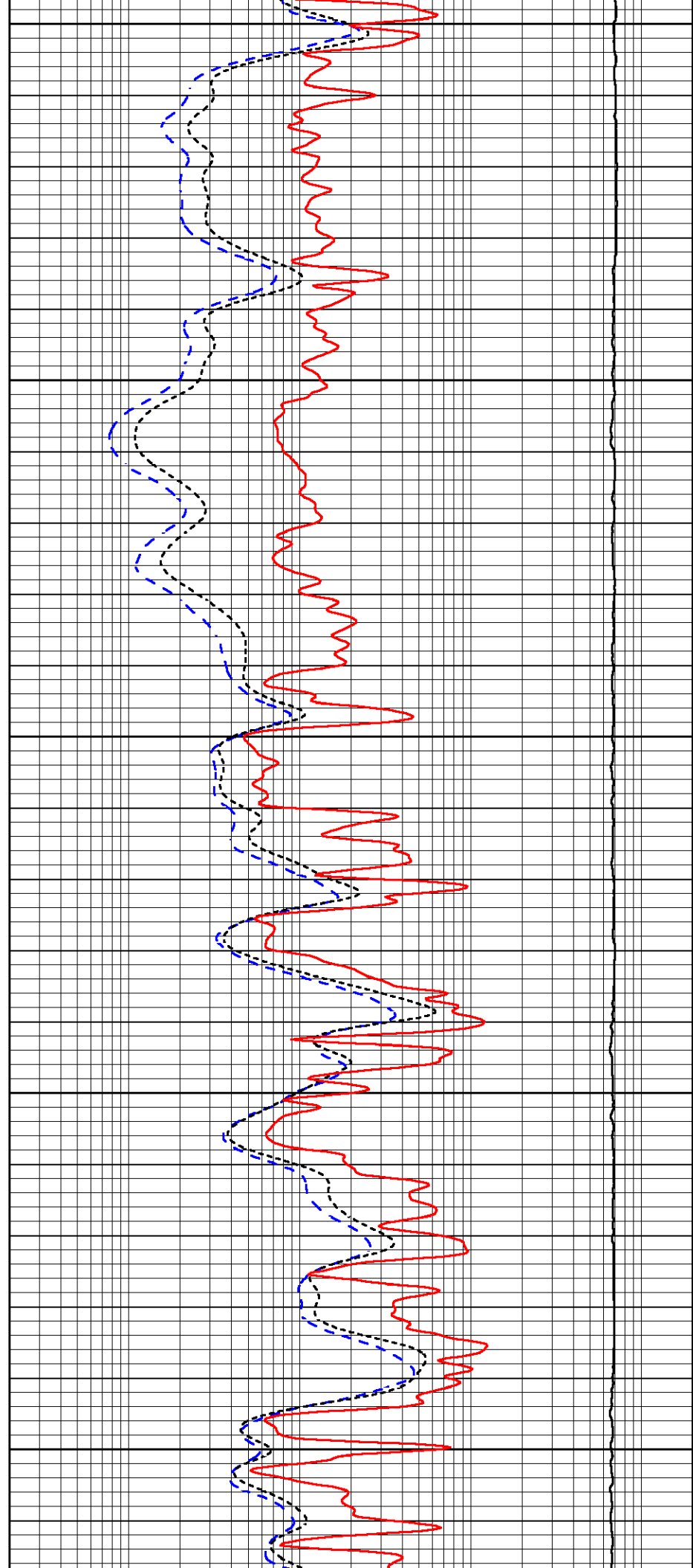
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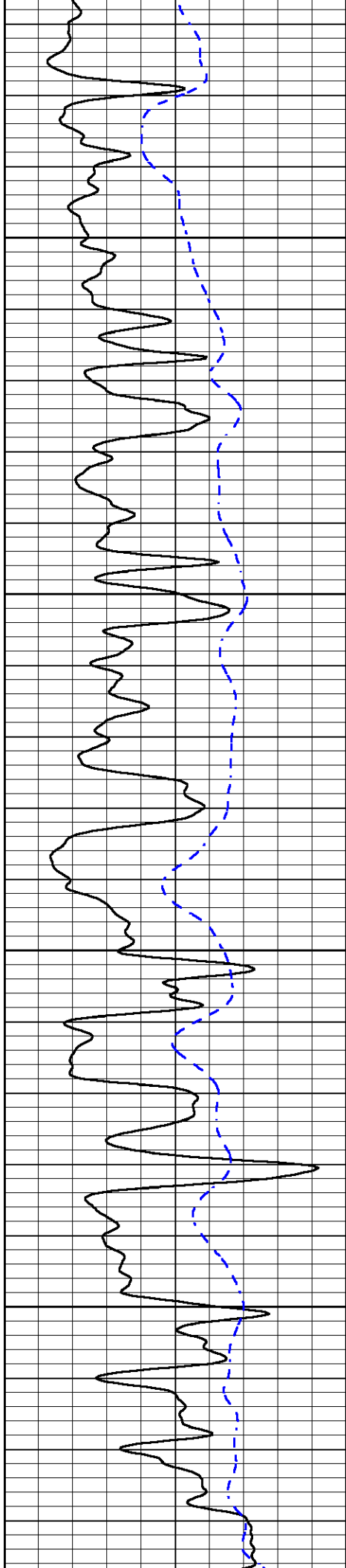
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3550

3600

3650



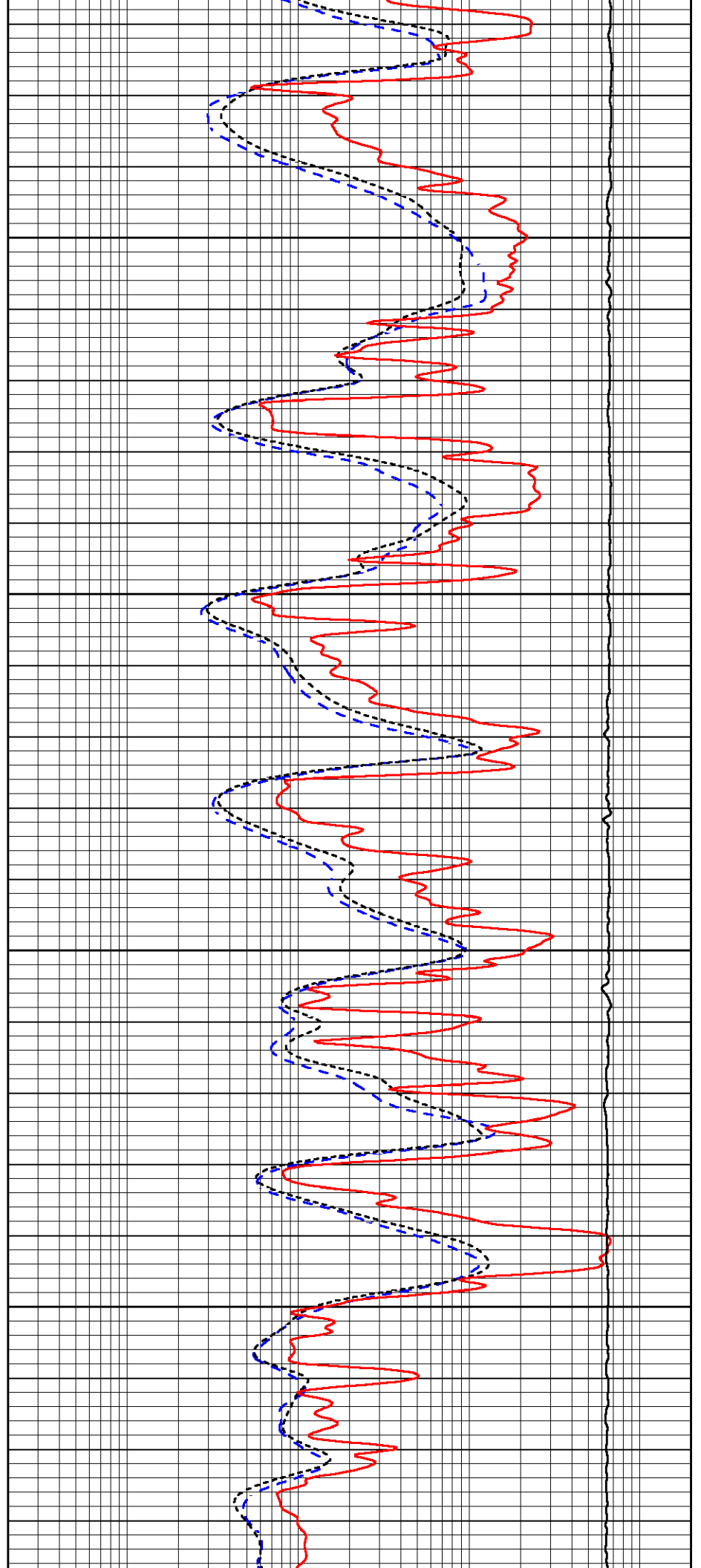


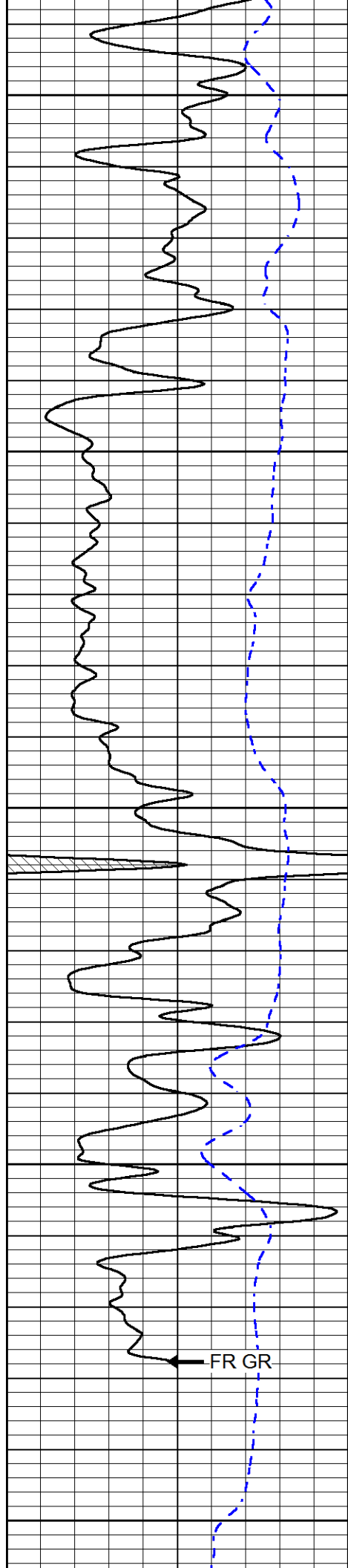
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3800

3850





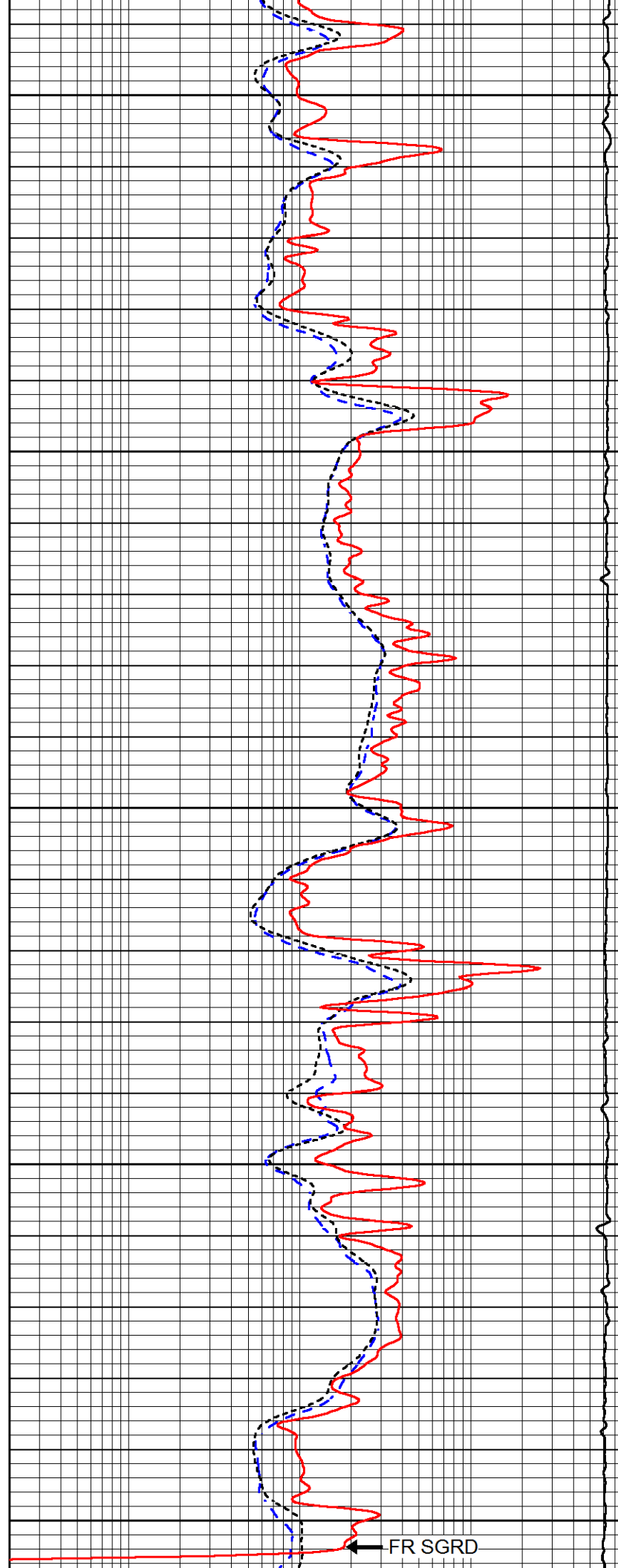
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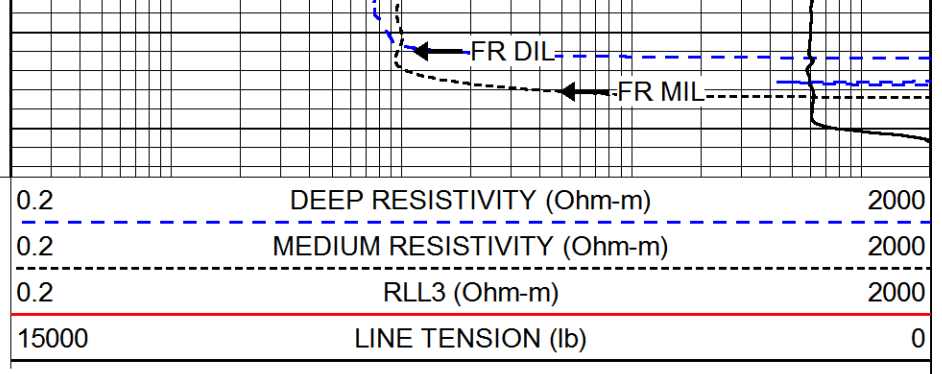
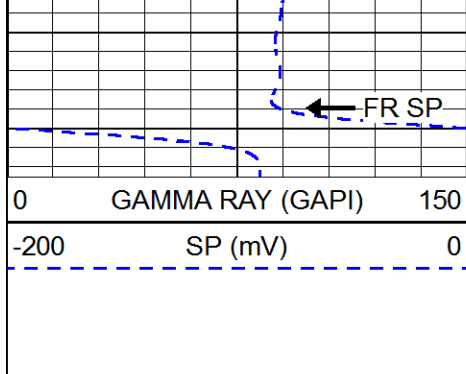
3950

4000

4050

4100





### Calibration Report

Database File pickrell\_starrett\_b\_5.db  
 Dataset Pathname stackml/pass2.1  
 Dataset Creation Sat Jan 26 12:53:03 2019

### Dual Induction Calibration Report

Serial-Model: PSI 988-M&W  
 Calibration Performed: Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

### Microlog Calibration Report

Serial-Model: PSI-01-PSI STKBL ML  
 Performed: Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	20500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	23500.0000	-0.7000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.6000

### Compensated Density Calibration Report

Serial-Model: 144-84-M&W  
 Source / Verifier: /  
 Master Calibration Performed: Mon Jan 07 15:00:31 2019

### Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.675	g/cc	825.26	3443.46	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.538		
	Size		Reading		
Small Ring	4.00	in	0.69		
Large Ring	14.00	in	0.04		

Compensated Neutron Calibration Report

Serial Number: tk10-MW  
Tool Model: M&W  
Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025
Long Space	460.00 cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number: 89-M&W  
Tool Model: M&W  
Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company PICKRELL DRILLING COMPANY, INC.  
Well STARRETT B #5  
Field START  
County NESS  
State KANSAS



**PIONEER**  
Pioneer Energy Services

**MICRORESISTIVITY  
LOG**

Company PICKRELL DRILLING COMPANY, INC.  
Well STARRETT B #5  
Field START  
County NESS  
State KANSAS

Company PICKRELL DRILLING COMPANY, INC.  
Well STARRETT B #5  
Field START  
County NESS  
State KANSAS

Location: API #: 15-135-26044-00-00  
1760' FNL & 2310' FEL  
SEC 12 TWP 17S RGE 21W  
Permanent Datum GROUND LEVEL Elevation 2168'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING  
Other Services  
CNL/CDL  
DIL  
Elevation  
K.B. 2175'  
D.F. N/A  
G.L. 2168'

Date	1/26/2019
Run Number	ONE
Depth Driller	4150'
Depth Logger	4120'
Bottom Logged Interval	4119'
Top Log Interval	3200'
Casing Driller	8.625" @ 430'
Casing Logger	429'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	7000
Density / Viscosity	8.6 54
pH / Fluid Loss	10.0 12.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.58 @ 71
Rmt @ Meas. Temp	.44 @ 71
Rmc @ Meas. Temp	.78 @ 71
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.35 @ 118
Operating Rig Time	2 HOURS
Max Rec. Temp. F	118 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	AARON YOUNG

<<< Fold Here >>>

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**Comments**

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.  
MCCRACKEN KANSAS  
1 WEST ON ASH, 1/4 NORTH, 1/2 WEST, NORTH INTO

Log Measured From: KELLY BUSHING 7 Ft. Above Permanent Datum

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www.pioneerenergy.com 785-625-3858

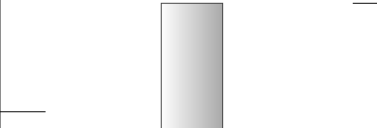
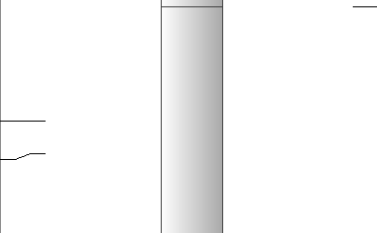
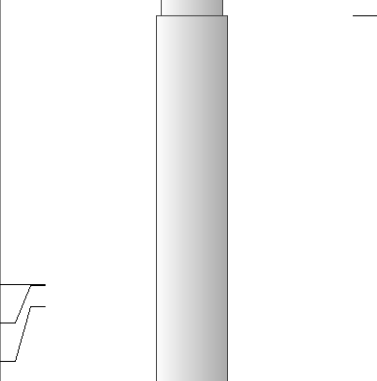
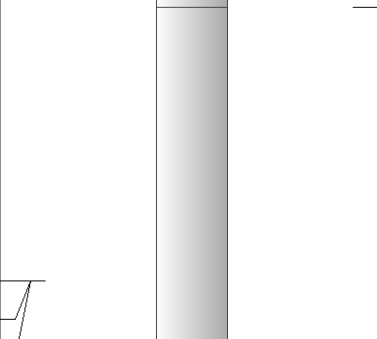
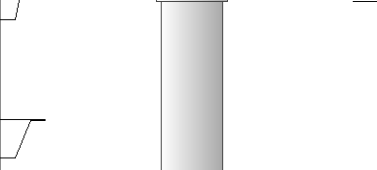
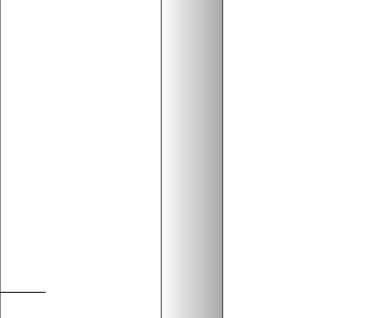
<b>Your Pioneer Energy Services Crew</b>	<b>This Log Record Was Witnessed By</b>
Engineer: J. HENRICKSON	Primary Witness: AARON YOUNG
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\pickrell\_starrett\_b\_5.db  
Dataset field/well/stackml/pass2.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	118	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	110	43	Off	4120

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 988)	18.50	3.50	220.00



CILM 4.70

SP 0.20

Dataset: pickrell\_starrett\_b\_5.db: field/well/stackml/pass2.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

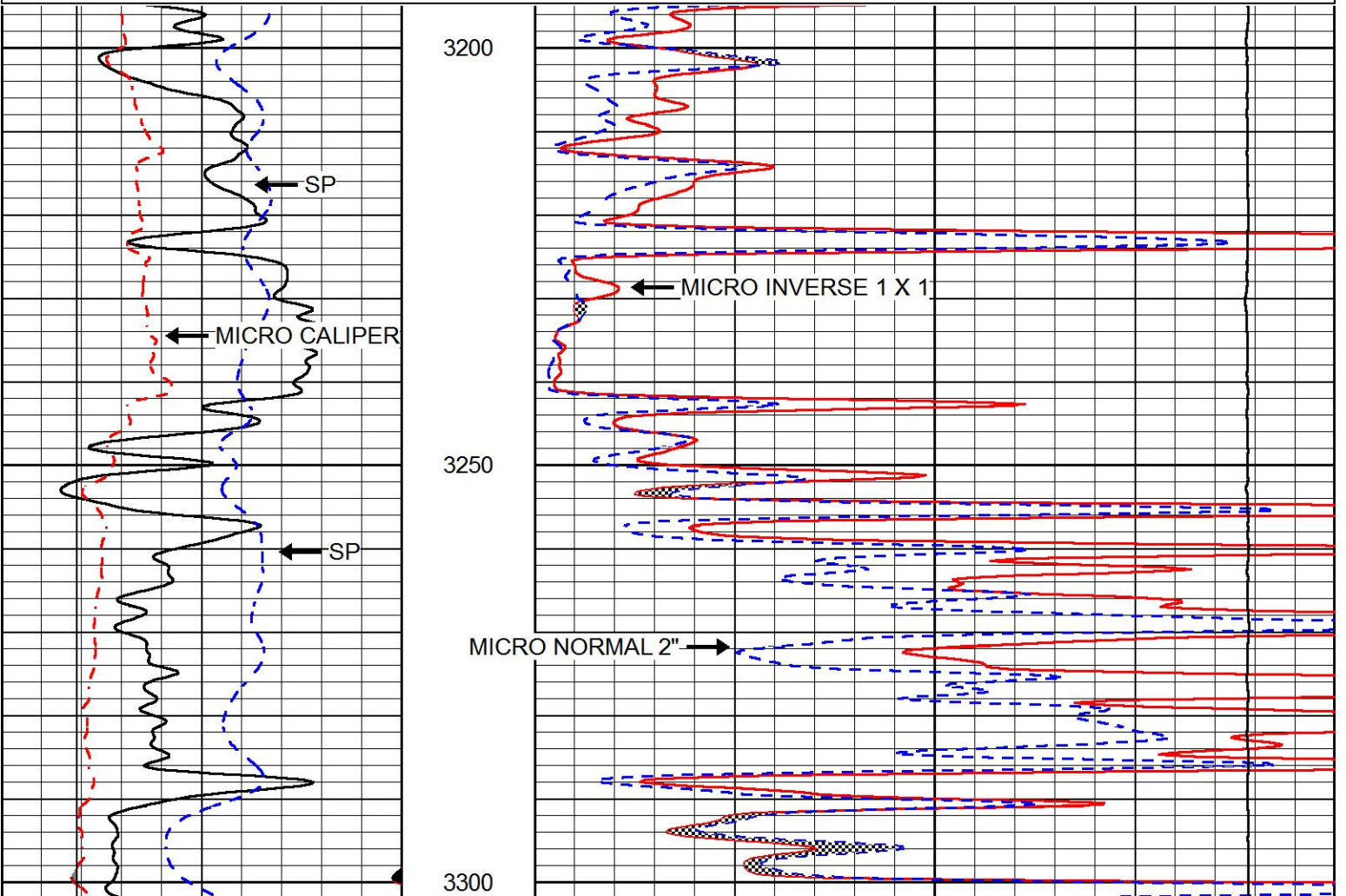


# MAIN PASS

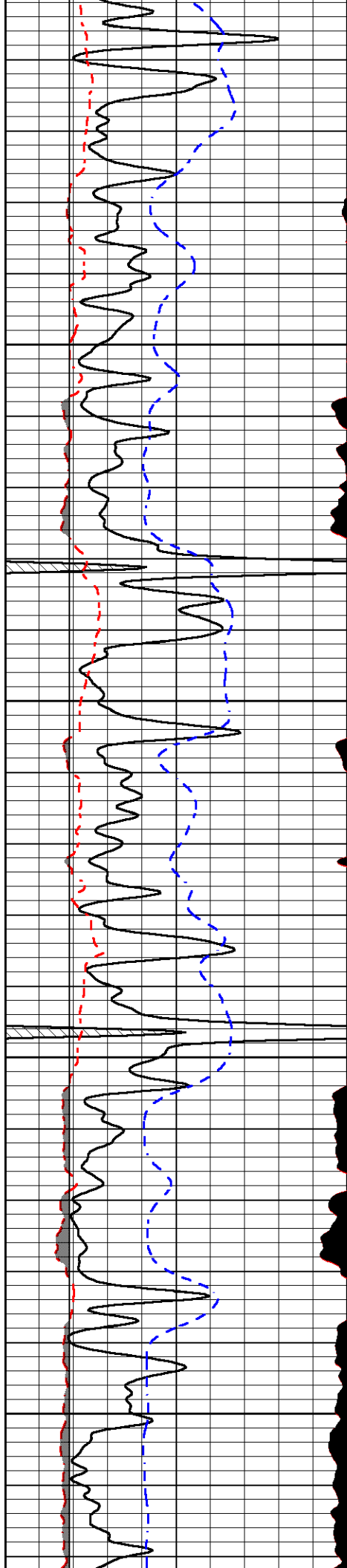
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 Dataset Pathname stackml/pass2.1  
 Presentation Format micro  
 Dataset Creation Sat Jan 26 12:53:03 2019  
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0





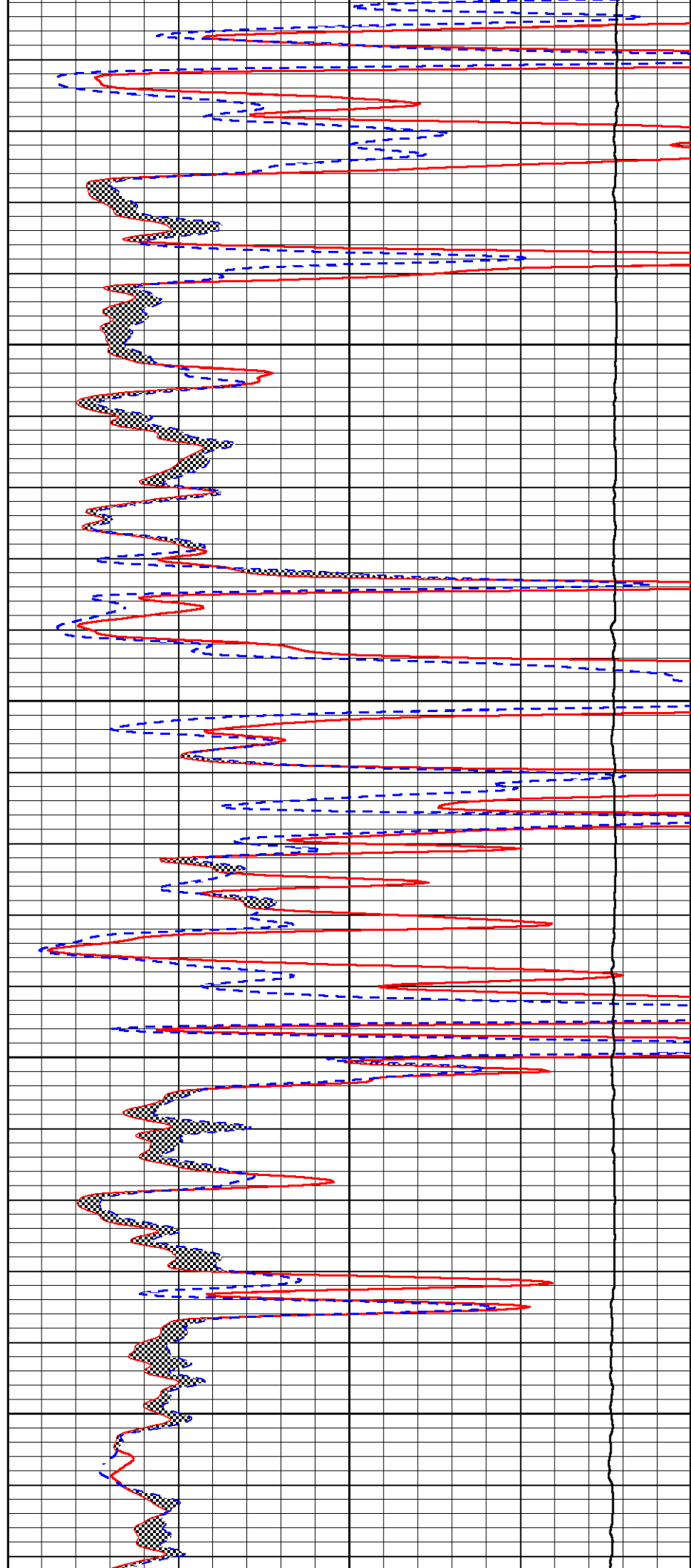


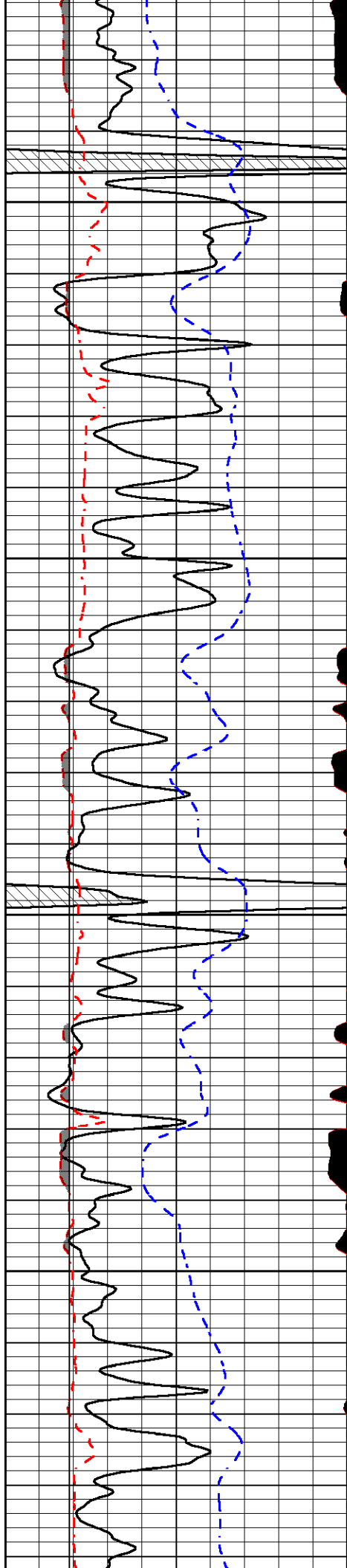
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3500



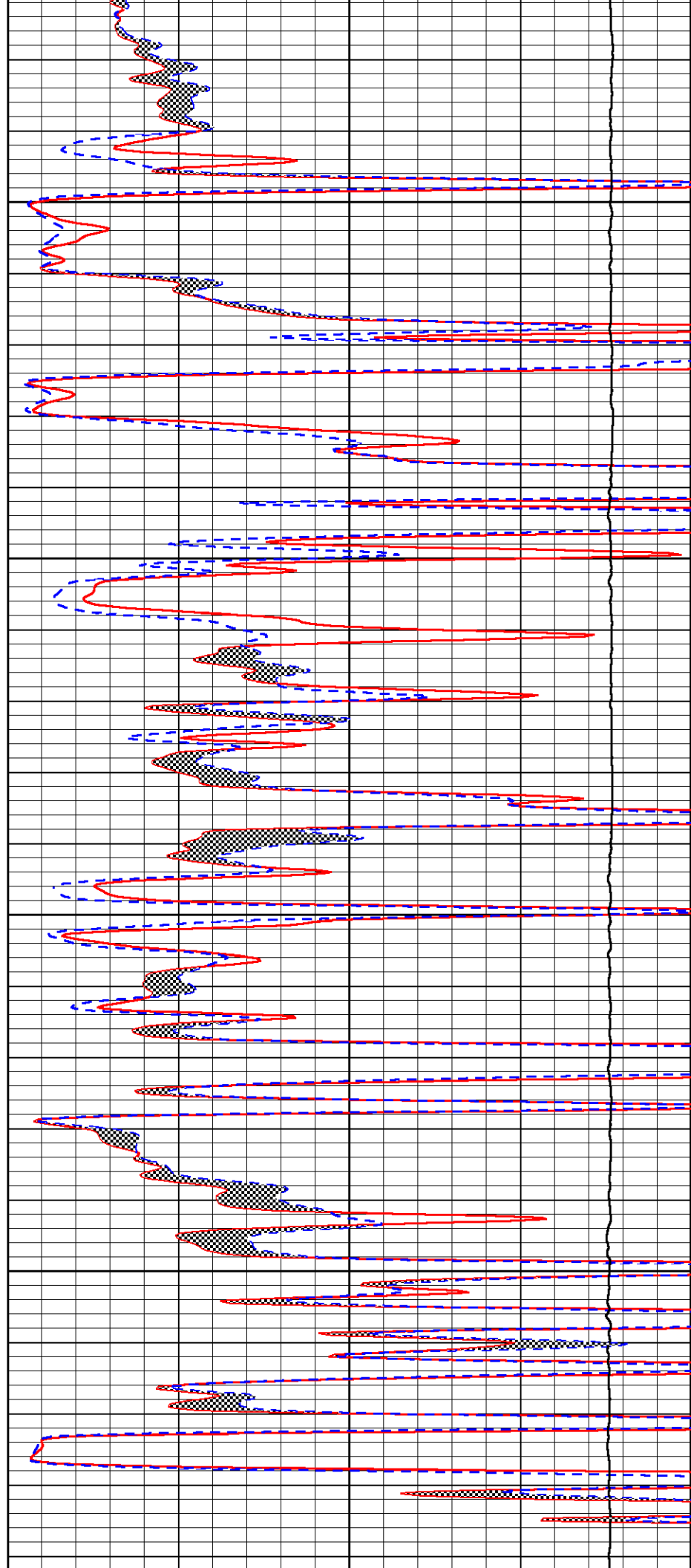


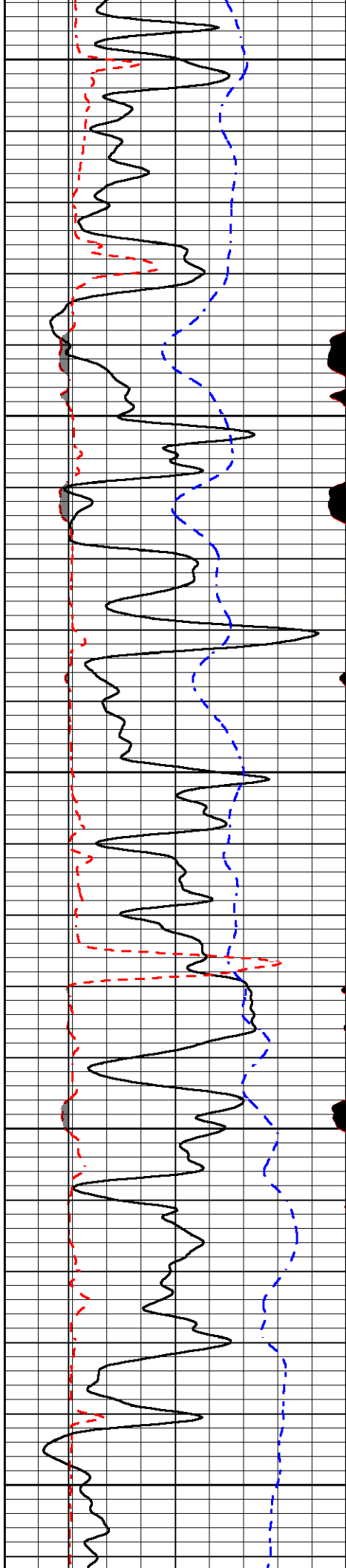
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3700





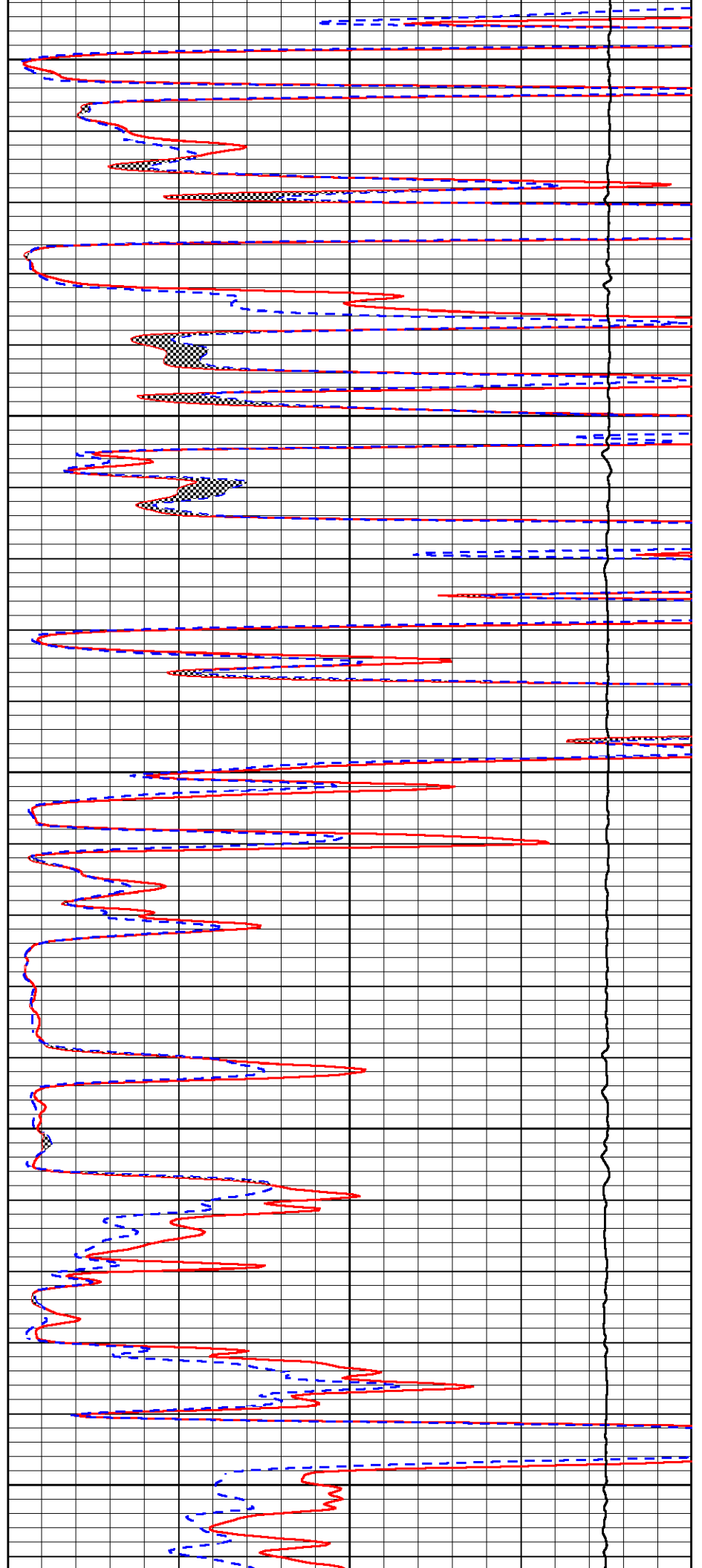
3750

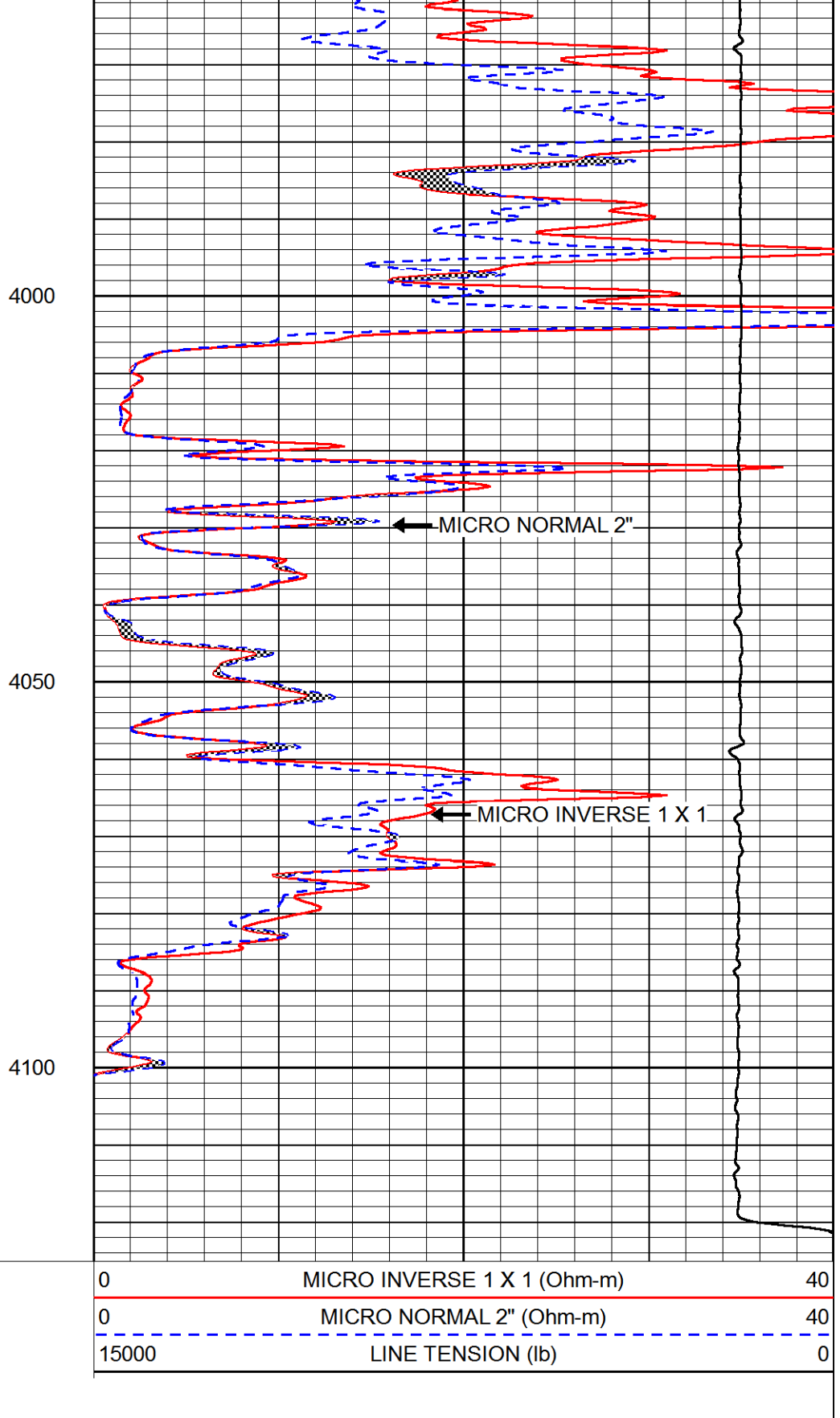
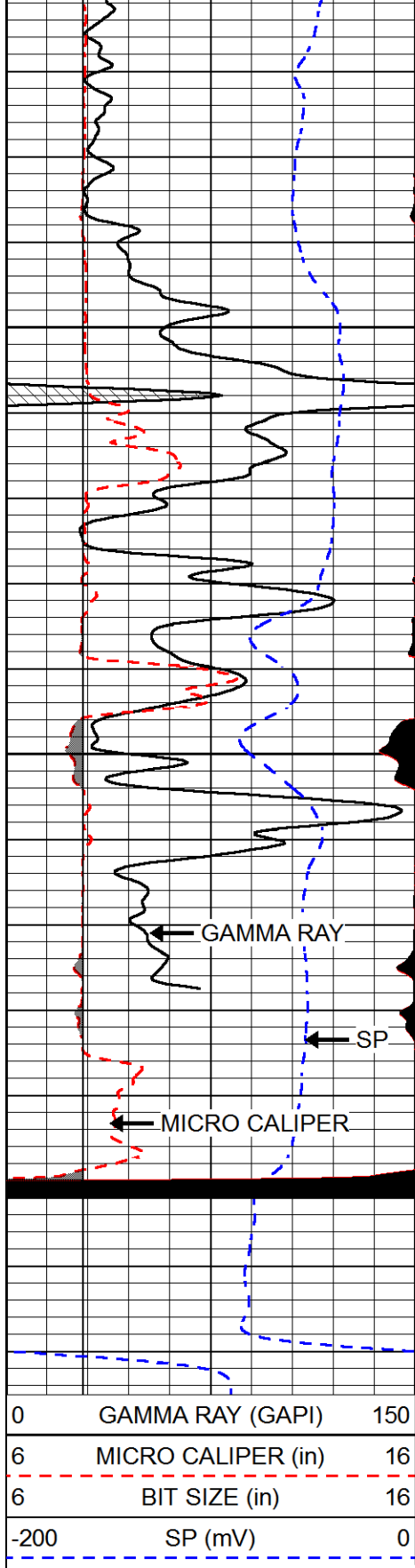
3800

3850

3900

3950





Calibration Report

Database File      pickrell\_starrett\_b\_5.db  
 Dataset Pathname      stackml/pass2.1  
 Dataset Creation      Sat Jan 26 12:53:03 2019

Dual Induction Calibration Report

Serial-Model:      PSI 988-M&W  
 Calibration Performed:      Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

**Microlog Calibration Report**

Serial-Model: PSI-01-PSI STKBL ML  
 Performed: Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	20500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	23500.0000	-0.7000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.6000

**Compensated Density Calibration Report**

Serial-Model: 144-84-M&W  
 Source / Verifier: /  
 Master Calibration Performed: Mon Jan 07 15:00:31 2019

**Master Calibration**

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.675	g/cc	825.26	3443.46	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.538		
	Size		Reading		
Small Ring	4.00	in	0.69		
Large Ring	14.00	in	0.04		

**Compensated Neutron Calibration Report**

Serial Number: tk10-MW  
 Tool Model: M&W  
 Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025
Long Space	460.00 cps	1000.00 cps	1.9500


**Gamma Ray Calibration Report**

Serial Number: 89-M&W  
 Tool Model: M&W  
 Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps

Calibrator Reading:	6.2	cps
Sensitivity:	0.5200	GAPI/cps

 <p><b>PIONEER</b> Pioneer Energy Services</p>	<table><tr><td>Company</td><td>PICKRELL DRILLING COMPANY, INC.</td></tr><tr><td>Well</td><td>STARRETT B #5</td></tr><tr><td>Field</td><td>START</td></tr><tr><td>County</td><td>NESS</td></tr><tr><td>State</td><td>KANSAS</td></tr></table>	Company	PICKRELL DRILLING COMPANY, INC.	Well	STARRETT B #5	Field	START	County	NESS	State	KANSAS
Company	PICKRELL DRILLING COMPANY, INC.										
Well	STARRETT B #5										
Field	START										
County	NESS										
State	KANSAS										

Geologic Report  
**Aaron L. Young**

Drilling Time and Sample Log

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

Well Name: Starrett "B" #5  
API: 15-135-26044  
Location: Section 12 - T17S - R21W  
License Number: 5128  
Spud Date: 01/17/19  
Surface Coordinates: 1760' FNL and 2310' FEL  
Approx. 100' S of NW - SW - NE  
Region: Ness Co., KS  
Drilling Completed: 01/25/19  
Bottom Hole Coordinates:  
Ground Elevation (ft): 2168' K.B. Elevation (ft): 2175'  
Logged Interval (ft): 3300' To: 4150' Total Depth (ft): 4150'  
Formation:  
Type of Drilling Fluid: Chemical - Mud-Co

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

**OPERATOR**

Company: Pickrell Drilling Company, Inc.  
Address: 100 S Main Ste 505  
Wichita, KS 67202+3738

**GEOLOGIST**

Name: Aaron L. Young, M.S.  
Company: Pickrell Drilling Company, Inc.  
Address: 100 S Main, Suite 505  
Wichita, Kansas 67202

**General Info**

**CONTRACTOR:** Pickrell Drilling, Rig #10

**BIT RECORD:**

No.	Size	Make	Jets	Out	Feet	Hours
1	12-1/4	JZ RR	15-15-15	433	426	4.00
2	7-7/8	HA517	15-15-15	4150	3717	110.50

**SURVEYS:** 433'-1, 1134'-.75, 1640'-1, 2145'-.75, 2651'-.75, 3314'-1.25, 4054'-.1

**GENERAL DRILLING AND PUMP INFORMATION:**

Drilling with 36,000 - 38,000 lbs. on bit and approx 70-80 RPM.  
Running 9 stands of collars; 526.26'  
Pumping approx 850 psi at standpipe.



## Daily Status

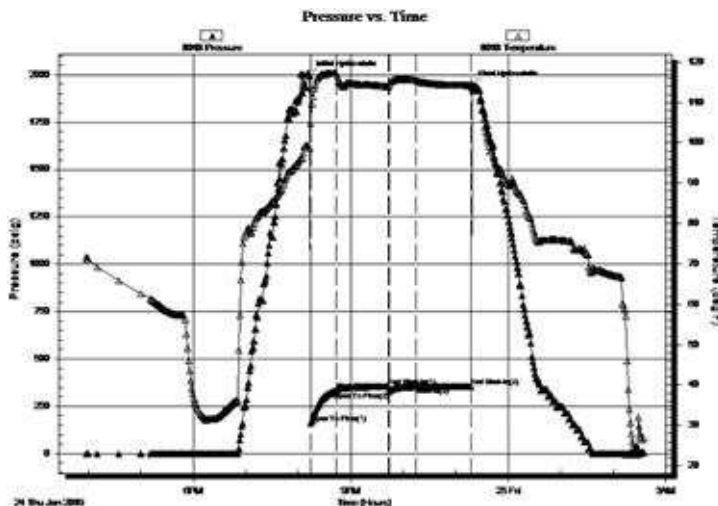
01/17/19 - Spud @ 6:00pm, drilled surface hole to 433', Ran 10 jts of new 8 5/8" 23# surface casing set @430'.  
 Cem w/ 275 sx common w/ 2% gel, 3% CC & 1/4# floseal/sx. PD @ 4:00am 1/18/19  
 01/18/19 - WOC @ 433'  
 01/19/19 - Drilling @ 1310'  
 01/20/19 - Drilling @ 2010'  
 01/21/19 - Drilling @ 2725'  
 01/22/19 - Displacing @ 3255'  
 01/23/19 - Drilling @ 3830'  
 01/24/19 - Drilling @ 3745', DST #1 4022'-4054'  
 01/25/19 - Drilling @ 4054', TD @ 4150, Lost Circulation. Spent most all evening getting circulation back.  
 01/26/19 - Got circulation back. Ran logs from 30' off bottom to avoid zone of lost circulation.  
 01/27/19 - Ran 98 jts of new 5 1/2" 14# production casing. Set @ 4126' w/ 145 sx EA-2 cement. PD @ 8:00am

**DST #1 Cherokee SS 4022' - 4054'**  
 30-60-30-60

IF - BOB in 1 min, built to 77"  
 ISI - Fair, built to 7 1/2"  
 FF - Fair, built to 9"  
 FSI - Weak, built to 3"

Rec'd: 315' MCW (15% M, 85% W), 425' GMCOW (25% G, 10% M, 25% O, 40% W), 50 GO (10% G, 90% O), 180' GIP (100% G)

SIP: 354-356#  
 FP: 160-333#, 331-353#  
 HP: 1997-1946#



## ROCK TYPES

	Anhy
	Bent
	Brec
	Cht
	Clyst
	Coal
	Congl
	Dol

	Gyp
	Igne
	Lmst
	Meta
	Mrlst
	Salt
	Shale
	Shcol

	Shgy
	Sltst
	Ss
	Till
	Carb sh
	Dol
	Dtd
	Gry sh

	Sandylms
	Shale
	Sltstn
	Shlyslts
	Sltlysh
	Lms

### ACCESSORIES

#### MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr

- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

#### FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram

- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- Fuss
- Oomold

#### STRINGER

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh

- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

#### TEXTURE

- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

### OTHER SYMBOLS

#### POROSITY TYPE

- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

#### SORTING

- Well
- Moderate
- Poor

#### ROUNDING

- Rounded
- Subrnd
- Subang
- Angular

#### OIL SHOWS

- Even
- Spotted
- Ques
- Dead
- Gas show

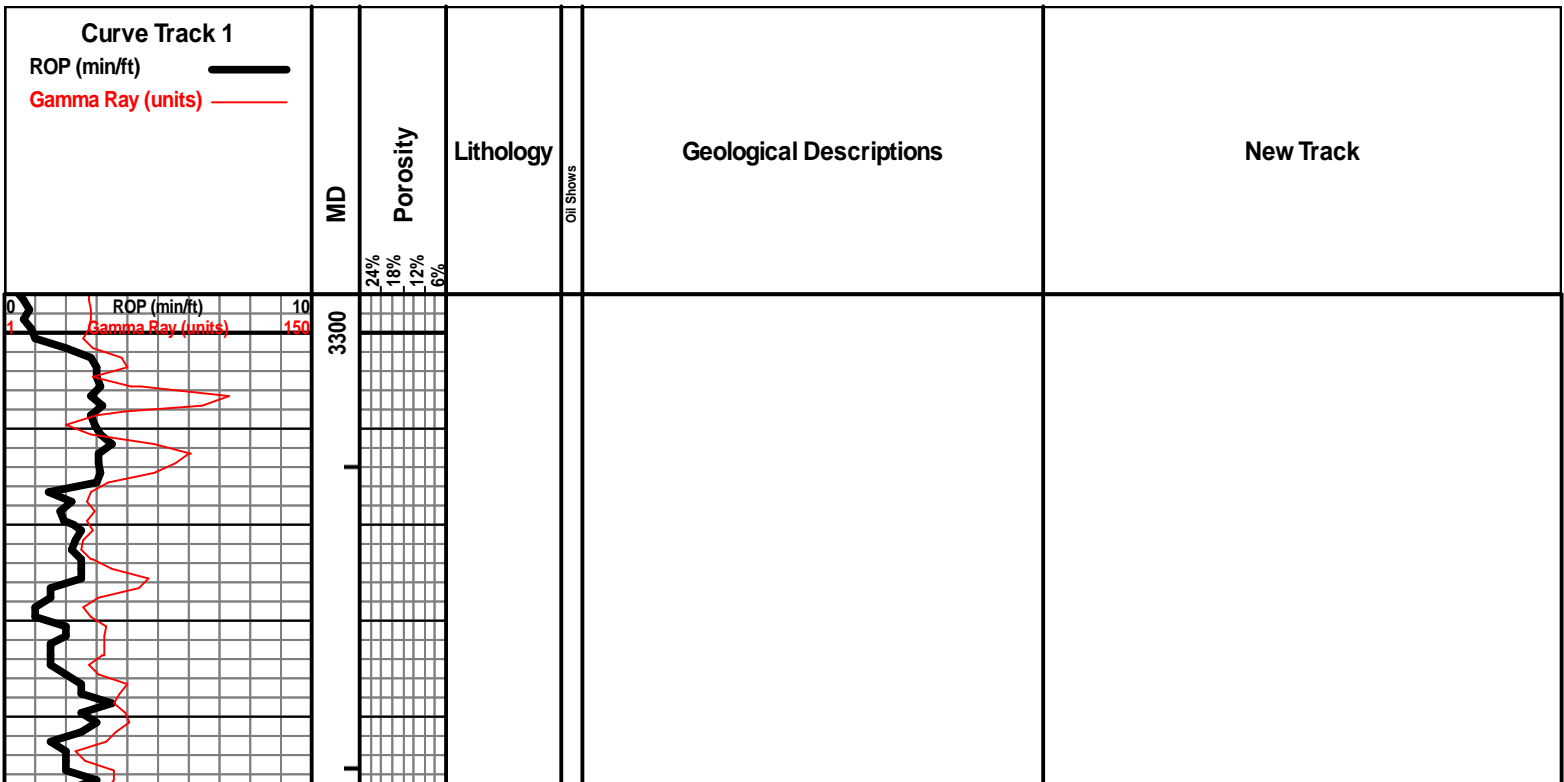
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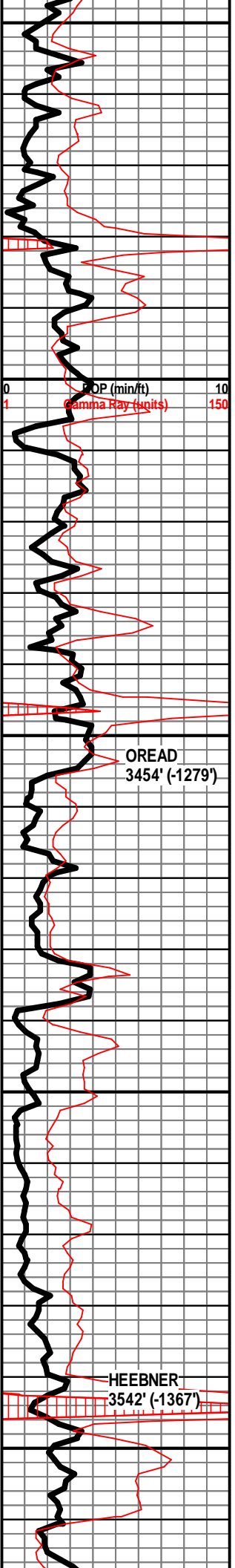
- Core
- Dst

- Dst

#### EVENTS

- Rft
- Sidewall
- Conn



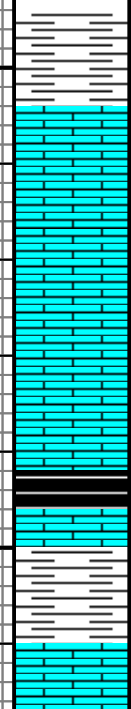


3350  
3400  
3450  
3500  
3550

OP (min/ft)  
Gamma Ray (ugits)

OREAD  
3454' (-1279')

HEEBNER  
3542' (-1367')



SH - LT BRN / RD / GRN, LT BRN IS V SOFT

LS - TAN / CRM, VF / F XLN, SUBCHKY

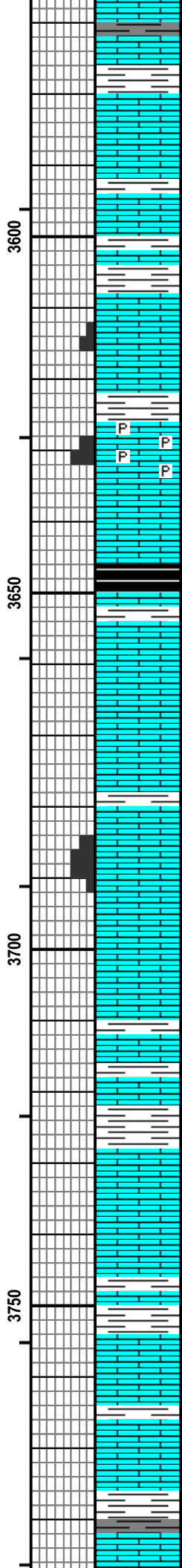
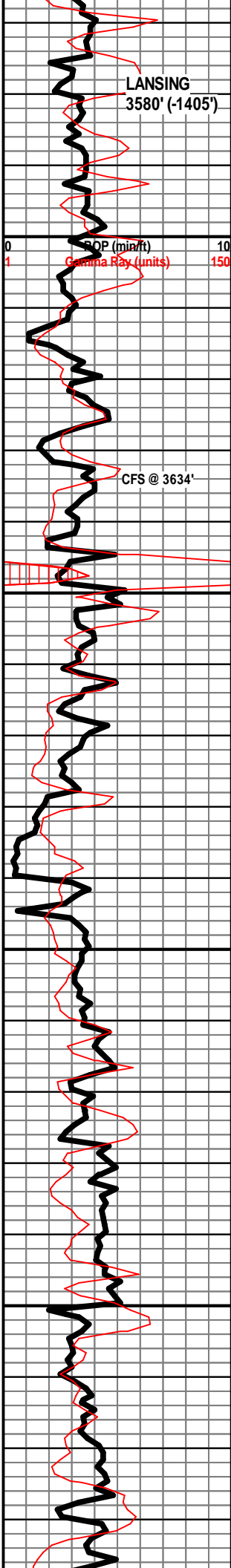
SH - BLK, SLI CARB, W/ LS - TAN / GY, F XLN, MOD DNS

SH - RD / GRN / GY, W/ LS / CRM / TAN, F XLN, MOD DSN / SUBCHKY

LS - TAN, F XLN, MOD DNS, FOSS, W/ SH - RD / GRN / GY V SOFT IN PT

WT 8.7  
VIS 45  
LCM 2#

WT 8.8  
VIS 46  
LCM 2#



LS - CRM / TAN, VF / F XLN, MOD DNS / SUBCHKY, FOSS IN PT, W/ SH - DK GY  
 SH - RD / GRN / GY  
 LS - CRM / TAN, F XLN, MOD DNS / DNS  
 LS - TAN / CRM, F XLN, MOD DNS, FOSS IN PT, W/ SH - RD-ORNG / GRN / GY  
 LS - TAN / GY, F XLN, DNS / V DNS, FOSS, W/ SH - GY / GRN  
 LS - CRM / TAN, F XLN, MOD DNS / SUBCHKY, P INTERXLN POR IN PT  
 LS - CRM / TAN, F XLN, P / F INTERXLN POR IN PT, FOSS, NS, NO ODOR, V PYRITIC  
 LS - WHT / CRM, VF XLN, SUBCHKY / CHKY  
 SH - BLK, CARB  
 LS - GY / TAN, F XLN, MOD DNS / DNS, FOSS IN PT, W/ SH - GY / GRN  
 LS - WHT / CRM, CHKY / V CHKY, SUBCHKY IN PT  
 LS - TAN / CRM, F XLN, MOD DNS, ABUND OF FOSS  
 SH - GY, W/ LS - TAN / CRM, VF / F XLN, V DNS, FOSS IN PT  
 LS - WHT / CRM, F XLN, F / G INTEROOLITIC & OOLMOLDIC POR, NS, NO ODOR  
 LS - WHT / CRM, VF XLN, SUBCHKY / CHKY, MOD DNS IN PT, FOSS IN PT  
 LS - CRM, VF XLN, SUBCHKY / CHKY, W/ SH - LT GY / DK GY  
 SH - RD / GRN, W/ LS - CRM / TAN / GY, F XLN, DNS, FOSS IN PT  
 LS - WHT / CRM, VF XLN, SUBCHKY / CHKY  
 LS - WHT / CRM, F XLN, MOD DNS / DNS, FOSS IN PT  
 LS - CRM / TAN, F XLN, MOD DNS, FOSS IN PT, W/ SH - GY / RD / GRN  
 LS - CRM / WHT, VF XLN, MOD DNS / SUBCHKY, CHKY IN PT, W/ FEW PIECES OF SH - RD / GRN / GY  
 LS - WHT / CRM, VF XLN, PRED SUBCHKY, CHKY IN PT, W/ SH - LT GY  
 SH - GRN / GY, W/ LS - CRM / WHT, VF XLN, SUBCHKY

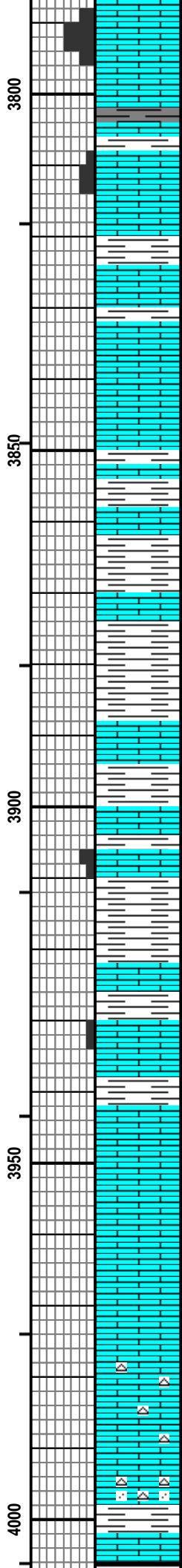
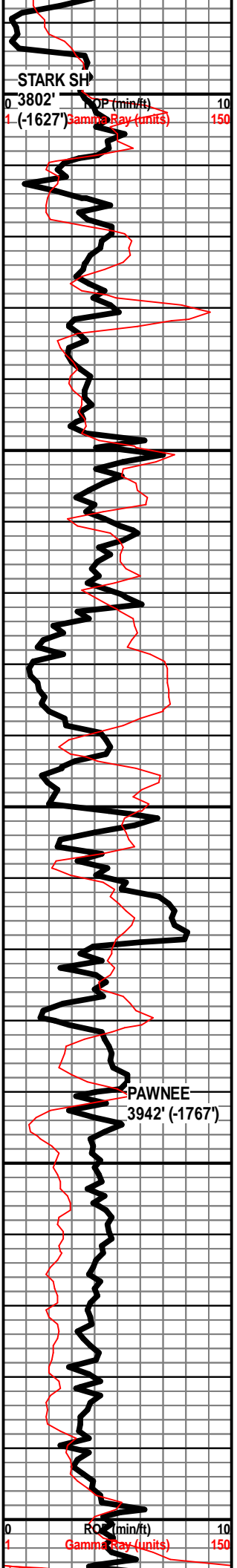
WT 8.9  
 VIS 45  
 LCM 2#

WT 8.7  
 VIS 49  
 LCM 1#

WT 8.9  
 VIS 53  
 LCM 1#

WT 8.8  
 VIS 54  
 LCM 1#

WT 8.8  
 VIS 58  
 LCM 1#



LS - CRM, F XLN, G OOLMOLDIC POR, NS, NO ODOR

SH - BLK, CARB, W/ LS - CRM / TAN / GY, F XLN, DNS, ABUND FOSS, SCAT OOLITES

LS - CRM / TAN, PRED DNS, P OOLMOLDIC POR IN PT, NS, FOSS

LS - CRM / TAN, F XLN, DNS, FOSS, W/ SH - GRN / GY

LS - PRED CRM / TAN, VF XLN, SUBCHKY / CHKY, W/ FEW PIECES LS - TAN / GY, F XLN, DNS, FOSS

LS - TAN / CRM, F XLN, DNS, FOSS IN PT

LS - CRM / TAN, VF XLN, SUBCHKY, W/ SH - GY / GRN / RD

SH - GY / GRN / RD, W/ LS - TAN / DK TAN / GY IN PT, F XLN, DNS, FOSS

SH - PRED GY, GRN / RD IN PT, W/ LS - CRM, VF XLN, SUBCHKY / CHKY

SH - GY / GRN / RD

SH - RD / GRN / GY, W/ LS - CRM / WHT, VF XLN, SUBCHKY / CHKY, MOD DNS IN PT

LS - CRM / TAN, VF / F XLN, PRED DNS, SUBCHKY IN PT, FOSS IN PT, W/ SH - RD / GRN / GY / RDISH-BRN, V SOFT IN PT

LS - CRM / TAN, F XLN, P OOLMOLDIC POR IN PT, NS

SH - RD / GRN / GY, W/ LS - TAN / GY, F / M XLN, DNS, FOSS

LS - CRM / TAN, VF / F XLN, MOD DNS / SUBCHKY, FOSS IN PT, P OOLMOLDIC POR IN PT, NS, W/ SH - GRN / GY / RD

SH - GRN / GY / RD / PURP, W/ LS - CRM / TAN / GY IN PT, F / M XLN, MOD DNS / DNS, FOSS IN PT

LS - CRM / TAN / GY IN PT, F XLN, MOD DNS / DNS, FOSS IN PT

LS - WHT / CRM, VF / F XLN, MOD DNS / SUBCHKY / CHKY, SCAT FOSS

LS - WHT / CRM, VF / F XLN, MOD DNS / SUBCHKY

LS - TAN, F XLN, MOD DNS / DNS

LS - CRM / TAN, F XLN, DNS, W/ CHT - TAN, OPAQ, FRSH

SH - GY / GRN / MAR, W/ CHT - TAN / ORNG, SLI TRANSLUCNT, FRSH, W/ FEW SS CLUSTERS - GY, VF GR, SUB-RND, V WELL CEM

WT 9.0  
VIS 58  
LCM 1/2#

WT 9.0  
VIS 60  
LCM 2#

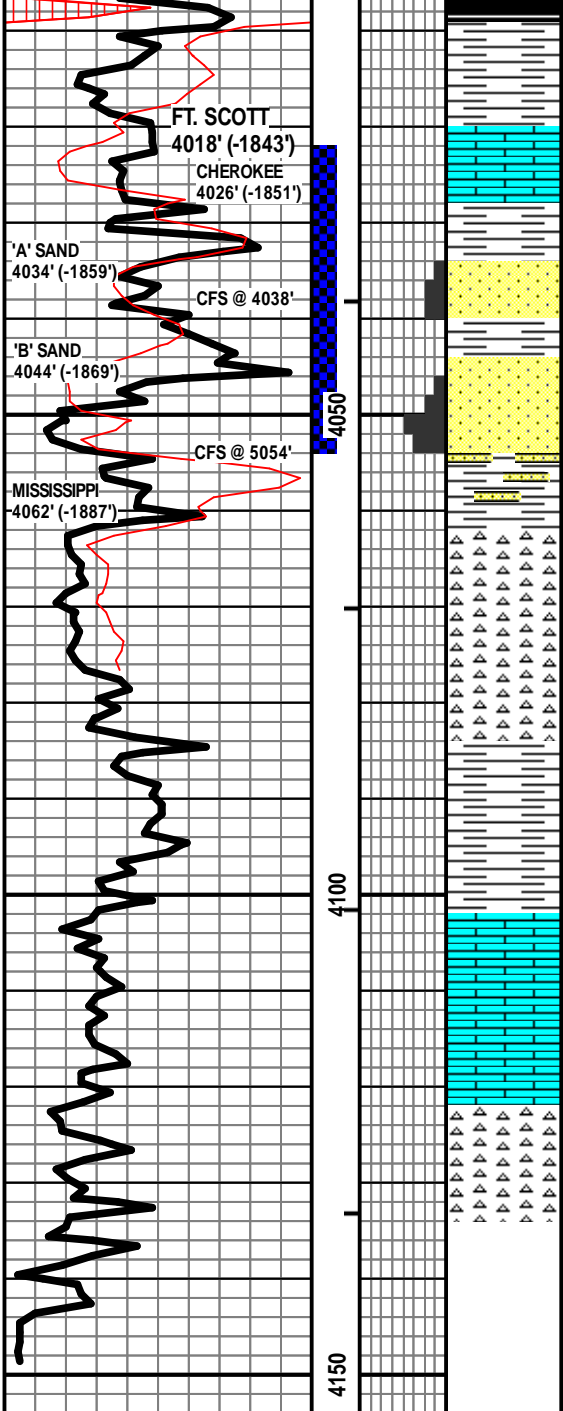
WT 9.0  
VIS 60  
LCM 2#

WT 9.0  
VIS 60  
LCM 2#

WT 9.0  
VIS 59  
LCM TRC

WT 9.0  
VIS 59  
LCM TRC

WT 9.0  
VIS 59  
LCM TRC



SH - BLK, CARB, W/ LS - TAN / GY, F XLN, DNS

SH - GY / GRN / RD / RD-ORNG / MAR / PURP

LS - TAN / GY, F XLN, DNS

SH - RD / GRN / GY

SS - CLR / GY, F / VF GR, VF GR IN PT, SUB-RND, P SRTD, P / F INTGR POR, SSFO, MOD / W CEM, MOD YEL-GRN FLUOR

SH - RD / GRN / GY

SS - CLR / TAN / GY, PRED F / M GR, VF GR IN PT, SUB-RND, P SRTD, MOD CEM, F / G INTERGR POR, GSFO WHEN BROKEN, MOD YEL-GRN FLUOR

SH - GY / GRN / YEL / RD, SNDY

CHT - ORNG / YEL / TAN, TRANSLUCNT, OPAQ IN PT, FRSH, NO VIS POR, NS

CHT - CRM / TAN / YEL / ORNG, PRED TRANSLUCNT, OPAQ IN PT, FRSH, FOSS IN PT

SH - RD / GRN / GY, CHTY IN PT, SNDY IN PT

LS - WHT, VF XLN, V CHKY

LS - WHT, VF XLN, SUBCHKY / CHKY

CHT - TAN / YEL-ORNG, TRANSLUCNT, FRSH, FOSS IN PT

NO SAMPLES DUE TO LOST CIRCULATION

RTD @ 4150'

WT 9.0  
VIS 60  
LCM TRC

DST #1  
Cherokee SS  
4022' - 4054'  
30-60-30-60

IF - BOB in 1 min, built to 77"  
ISI - Fair, built to 7 1/2"  
FF - Fair, built to 9"  
FSI - Weak, built to 3"

Rec'd: 315' MCW (15% M, 85% W), 425' GMCOW (25% G, 10 % M, 25% O, 40% W), 50 GO (10% G, 90% O), 180' GIP (100% G)

SIP: 354-356#  
FP: 160-333#, 331-353#  
HP: 1997-1946#

LOST CIRCULATION  
approx 175 bbls  
@ 4140'

LOST CIRCULATION COMPLETELY @ TD AFTER 30 MIN OF CIRCULATION.  
Ran logs from 30' off bottom to avoid area.

Drill time slid up 1' to match logs.

# Quality Well Service, Inc.

PO Box 468  
Pratt, KS 67124

# Invoice

Date	Invoice #
1/29/2019	C-1952

Bill To
Pickrell Drilling Company, Inc. 100 South Main, Suite 505 Wichita, KS 67202-3738

FEB 01 2019 2/20

QUA100 944  
VENDOR ESTIMATE

P.O. No.	Terms	Lease Name
		Starrett B-5

Description	Qty	Rate	Amount
8 5/8 Wooden Plug	1	85.00	85.00T
Common	275	15.50	4,262.50
Gel	5	22.00	110.00
Calcium	10	60.00	600.00
Flo-Seal	137.5	3.70	508.75
SFC 0-500'	1	600.00	600.00
Handling	290	2.10	609.00
.08 * sacks * miles	10,000	0.08	800.00
Service Supervisor	1	150.00	150.00
LMV	35	3.75	131.25
Heavy Equipment Mileage	70	8.00	560.00
Customer Discount		-2,693.28	-2,693.28
Discount Expires after 30 days from the date of the invoice		0.00	0.00
Starrett B-5 Ness Co.			

651000 111 #5

Thank You for your business!	<b>Subtotal</b>	\$5,723.22
	<b>Sales Tax (6.5%)</b>	\$5.53
	<b>Total</b>	\$5,728.75



# QUALITY WELL SERVICE, INC.

7049

Federal Tax I.D. # 481187368

Home Office 30060 N. Hwy 281, Pratt, KS 67124

Mailing Address P.O. Box 468

Office 620-727-3410

Fax 620-672-3663

Rich's Cell 620-727-3409

Brady's Cell 620-727-6964

Date	Sec.	Twp.	Range	County	State	On Location	Finish		
1-13-19	12	17S	21W	NESS	KS				
Lease	STARRETT		Well No.	B-5				Location	McCracken Co S side 1 W 1/2 N W. into
Contractor	Pickrell Drilling Rig #10			Owner				To Quality Well Service, Inc.	
Type Job	SURFACE			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	12 1/4	T.D.	433'		Charge To			Pickrell Drilling Co Inc.	
Csg.	8 5/8 23"	Depth	430'		Street				
Tbg. Size		Depth			City			State	
Tool		Depth			The above was done to satisfaction and supervision of owner agent or contractor.				
Cement Left in Csg.	30	Shoe Joint	30		Cement Amount Ordered			275 Sx Common	
Meas Line		Displace	25.6		EQUIPMENT			2 1/2" FEL 3 1/2" CL 1/2" PS.	
Pumptrk	8	No.	TJ		Common			275 Sx	
Bulktrk	10	No.	JAKE		Poz. Mix				
Bulktrk		No.			Gel.			5	
Pickup		No.			Calcium			10	
JOB SERVICES & REMARKS				Hulls					
Rat Hole				Salt					
Mouse Hole				Flowseal				137.5	
Centralizers				Kol-Seal					
Baskets				Mud CLR 48					
DV or Port Collar				CFL-117 or CD110 CAF 38					
Run 10 #1's 8 5/8 23" csg set @ 430				Sand					
csg on Bottom Hook w/ to Csg				Handling				290	
Break circ				Mileage				35	
Pump 10 Bbls H <sub>2</sub> O				3 5/8 FLOAT EQUIPMENT					
Mix 275 Sx Common				Guide Shoe					
2 1/2" FEL 3 1/2" CL 1/2" PS @ 14.8#/gal				Centralizer					
SHUT DOWN Release 8 5/8 Wooden Plug				Baskets					
Start Disp				AFU Inserts					
Plug down total 25.6 Bbls				Float Shoe				8 5/8 Wooden Plug	
Close Valve on Csg 200'				Latch Down					
Gogo Circ thru JOB				SERVICE SUPERVISOR					
Circ cut to R+ 20 Sx				LMU				35'	
Thank you				Pumptrk Charge				SURFACE	
PLEASE CALL AGAIN				Mileage				70	
TONG T S JAKE				Tax					
Signature				Discount					
				Total Charge					





TICKET 031716

CHARGE TO: **PECKRELL DRUG CO, INC**  
 ADDRESS  
 CITY, STATE, ZIP CODE

PAGE 1 OF 2

SERVICE LOCATIONS  
 1. **NESS DRUG, KS**  
 2. **B-S**  
 3. **Co TOOLS**  
 4. **OIL**

WELL/PROJECT NO. **STARRETT**  
 COUNTY/PARISH **NESS**  
 RIG NAME/NO.  
 CONTRACTOR **Co TOOLS**  
 WELLS CATEGORY **DEVELOPMENT**  
 JOB PURPOSE **Cement 5 1/2" LONGSTRING**

TICKET TYPE  SERVICE  SALES  
 WELLS TYPE **OIL**  
 INVOICE INSTRUCTIONS

STATE **KS**  
 CITY  
 DELIVERED TO **LOCATION**  
 WELL PERMIT NO.  
 WELL LOCATION **w/MCCREES, KS**  
 OWNER **SAME**  
 DATE **1-26-19**  
 ORDER NO.

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT							
575		1					30	MZ	5.00	150.00
578		1		MILEAGE #112			1	JOB	1300.00	1300.00
221		1		PUMP CHARGE - LONGSTRING*			2	GAL	25.00	50.00
281		1		STORIED KEY			500	GAL	1.50	750.00
402		1		MUDFLUSH			10	EA	70.00	700.00
403		1		CENTRALIZERS			2	EA	275.00	550.00
404		1		CEMENT BASKETS			1	EA	2500.00	2500.00
406		1		PORT COLLAR TOP JY #63			1	EA	250.00	250.00
407		1		LATCH DOWN PLUG - BAFFLE			1	EA	325.00	325.00
411		1		INDERY FLOAT SHOE w/AUTO FALL			1	EA	45.00	45.00
405		1		REPRO SCANNERS			1	EA	1350.00	1350.00
				TRZ-PLEX SHOE						

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS.  
 X *[Signature]*

DATE SIGNED **1-26-2019** TIME SIGNED **2:30**  A.M.  P.M.

REMIT PAYMENT TO:  
**SWIFT SERVICES, INC.**  
**P.O. BOX 466**  
**NESS CITY, KS 67560**  
**785-798-2300**

SURVEY  
 OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?  
 WE UNDERSTOOD AND MET YOUR NEEDS?  
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?  
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?  
 ARE YOU SATISFIED WITH OUR SERVICE?  
 YES  NO  CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL #1 **7600.00**  
 #2 **4342.25**  
**11942.25**  
 TAX **642.89**  
**12584.84**

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.  
 SWIFT OPERATOR **WAYNE WILSON** APPROVAL

Thank You!



PO Box 466  
Ness City, KS 67560  
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 031716

DATE 1-26-19 PAGE 2 OF 2

CUSTOMER PECKRELL DRAG. Co. WELL STARETT B-5

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		TIME	DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
		LOC	ACCT								
325		1			STANDARD CEMENT EA-2	175	SKS			13.00	2275.00
276		1			FLOCELE	50	LBS			2.50	125.00
283		1			SALT	900	LBS			.20	180.00
284		1			CALSEAL	8	SBS	800	LBS	35.00	280.00
292		1			HYDAD - 322	100	LBS			8.00	800.00
290		1			D-AIR	3	GAL			42.00	126.00
\$81		1			SERVICE CHARGE						
\$82		1			MILEAGE CHARGE	18300					
					TOTAL WEIGHT						
					LOADED MILES	30					
					CUBIC FEET			175		1.75	306.25
					TON MILES			274.5		250.00	250.00
					CONTINUATION TOTAL						4342.25

JOB LOG

SWIFT Services, Inc.

DATE 1-26-19 PAGE NO. 1

CUSTOMER PECKRELL DRUG CO. WELL NO. B-5 LEASE STARRETT JOB TYPE 5 1/2" LONGSTRING TICKET NO. 031716

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	2200							ON LOCATION
	0300							START CASING IN WELL
								TD-4150 RTD SET = 4126'
								TP-4126' 5 1/2" # 14
								ST-30.65'
								CENTRAIZERS-1, 3, 5, 7, 9, 11, 13, 15, 17, 62
								CMT BSPTS-6, 63
								PORT COLLAR = 1420' TOP JT # 63
	0520						900	DROP BALL - CIRCULATE REELOCATE
	0700	6	12		✓		350	PUMP 500 GAL MUDFLUSH - SET TRIPLEX SHOE
	0702	6	20		✓		350	PUMP 20 BBLs KCL FLUSH
	0710		7					PLUG RH (30 SKS)
	0715	4 1/4	35		✓		250	MIX CEMENT - 145 SKS EA-2 = 15.5 PPG
	0725							WASH OUT PUMP - LINES
	0725							RELEASE LATCH DOWN PLUG
	0730	6 1/2	0		✓			DISPLACE PLUG
		6	95				700	
	0747	5	99.9				1500	PLUG DOWN - PSE UP LATCH IN PLUG
	0750						OK	RELEASE PSE - HELD
								WASH TRUCK
	0900							JOB COMPLETE

THANK YOU  
WAYNE, PRESTON, KIRBY





TICKET 032078

CHARGE TO: Pickrell  
 ADDRESS  
 CITY, STATE, ZIP CODE

PAGE 1 OF 1

SERVICE LOCATIONS  
 1. Well 625  
 2. CONTRACTOR  
 3. TICKET TYPE:  SERVICE,  SALES  
 4. WELL TYPE: 011  
 WELL/PROJECT NO. 625  
 LEASE: Starrett  
 COUNTY/PARISH: Ness  
 RIG NAME/NO.  
 CITY: McCracken  
 STATE: KS  
 DATE: 11 Feb 19  
 ORDER NO.  
 OWNER  
 DELIVERED TO: location  
 WELL PERMIT NO.  
 WELL LOCATION

PRICE REFERENCE	SECONDARY REFERENCE/PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT							
575		1			30	mi			5.00	150.00
576D		1		TRX 114	1	ea	5 1/2	in	1300.00	1300.00
330		1		Pump Charge post collar	175	gk			16.25	2843.75
276		1		SMD cement	50	lb			2.50	125.00
290		1		Fluorel	2	gal			42.00	84.00
104		1		D-Are	5 1/2	in	1	ea	200.00	200.00
248		1		Post collar opening tool Rental	50	gal			30.00	1500.00
230		1		Acetic Acid	1	gal			25.00	25.00
235		1		Simb-3	1	gal			40.00	40.00
581		1		Simb-1	175	gk			1.75	306.25
582		1		Service charge (min)	1	ea			250.00	250.00
221				Drayage	3	gal			25.00	75.00
				KCL Liquid						

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MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS.

**X**

DATE SIGNED: \_\_\_\_\_ TIME SIGNED: \_\_\_\_\_

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY  
 OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?  DISAGREE  
 OUR SERVICE WAS MET YOUR NEEDS?  DISAGREE  
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?  DISAGREE  
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?  DISAGREE  
 ARE YOU SATISFIED WITH OUR SERVICE?  YES  NO  
 CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL: 6899.00  
 TOTAL: 7115.30

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR: \_\_\_\_\_ APPROVAL: \_\_\_\_\_

Thank You!

JOB LOG

SWIFT Services. Inc.

DATE 11 Feb 19 PAGE NO. 1

CUSTOMER Pickrel Drilling		WELL NO. B#5	LEASE Starrett	JOB TYPE cement port collar & acid	TICKET NO. 32078
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CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1000							175 sk SMD cement w/ 1/4" floccle 2 7/8" 5 1/2" port collar 143' 500 gal 10% acetic acid on loc TRK U4 test to 1000 psi - hold in 5 1/2" wait on welder
	1200					1000	1000	test to 1000 psi - held open port collar inj rate 3 @ 350
	1210	3 3/4		2		300		
		3 3/4		7		350		mix SMD cement @ 11.2 ppg → fluid to surface -
		3 3/4		94		450		→ cement to surface ←  <div style="border: 1px solid black; padding: 5px; display: inline-block;">                     { 175 sk mixed }                 </div>
				7 1/2				Displace 7 1/2 bbl H <sub>2</sub> O close port collar
	1250					1000	1000	test to 1000 psi - held
	1310							Run 4 joints wash truck
	1335							Reverse hole clean
	1320			20				- 2 cement flags - wash truck
	1335							Run 2 7/8" tubing to bottom
	1450	1		6		200		start acid - 6 bbl (10% acetic) start flush to push acid up casing Switch to 6 bbl acid to spot on bottom
		2		70				Displace w/ KCL H <sub>2</sub> O
	1630			76				Kickoff
	17			98				Backup job complete
	1650							Fluke Blower, Fluid & spuds