



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company PICKRELL DRILLING COMPANY, INC.
Well DUFF A #1
Field NONE
County LOGAN
State KANSAS

Company PICKRELL DRILLING COMPANY, INC.
Well DUFF A #1
Field NONE
County LOGAN
State KANSAS

Location: API #: 15-109-21537-00-00
1683' FNL & 2233' FWL
SEC 9 TWP 15S RGE 32W
Permanent Datum GROUND LEVEL Elevation 2672'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING
Other Services
CNL/CDL
MEL
Elevation
K.B. 2679'
D.F. N/A
G.L. 2672'

Date	3/8/2018
Run Number	ONE
Depth Driller	4380'
Depth Logger	4382'
Bottom Logged Interval	4381'
Top Log Interval	200'
Casing Driller	8.625" @ 221'
Casing Logger	218'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	4000
Density / Viscosity	9.4 54
pH / Fluid Loss	10.0 8.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.60 @ 40
Rmt @ Meas. Temp	0.45 @ 40
Rmc @ Meas. Temp	0.81 @ 40
Source of Rmt / Rmc	CHARTS
Rm @ BHT	0.20 @ 120
Operating Rig Time	3 HOURS
Max Rec. Temp. F	120
Equipment Number	91
Location	HAYS
Recorded By	D. SCHMIDT
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.

OAKLEY,
24 SOUTH ON HWY 83 TO GOLD RD, 1 SOUTH,
2 WEST TO LOCATION

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

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

Your Pioneer Energy Services Crew

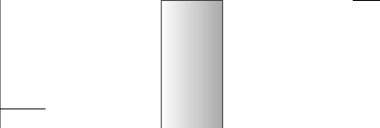
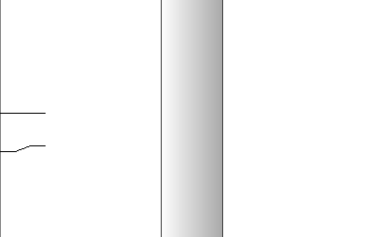
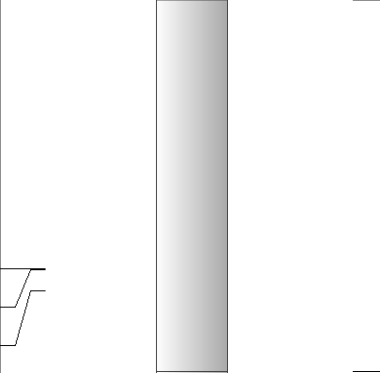
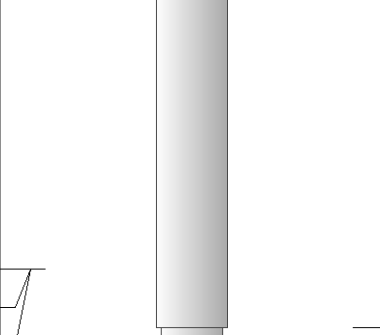
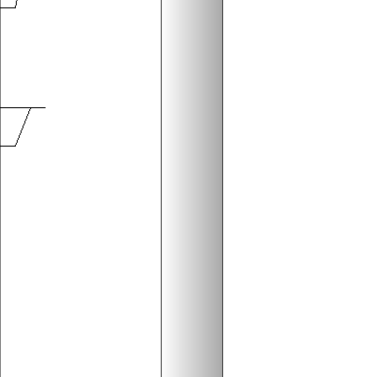
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: AARON YOUNG
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-130	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	20	0	5.5	0	4382	120	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (182-152)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

			DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: pickrell_duff a 1.db: field/well/STKML/pass4.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



MAIN PASS

Database File

pickrell_duff a 1.db

Dataset Pathname

STKML/pass4.1

Presentation Format

dil2in

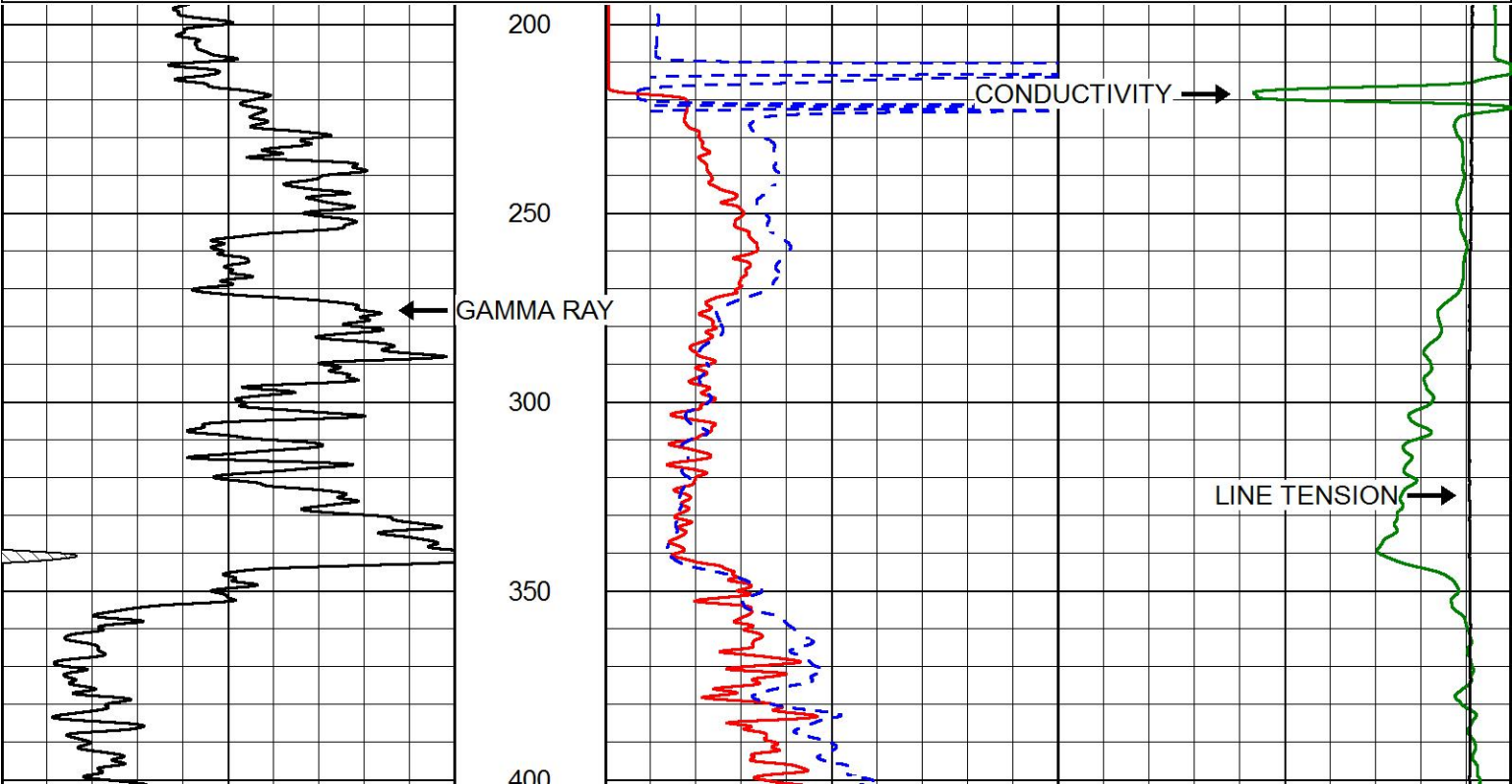
Dataset Creation

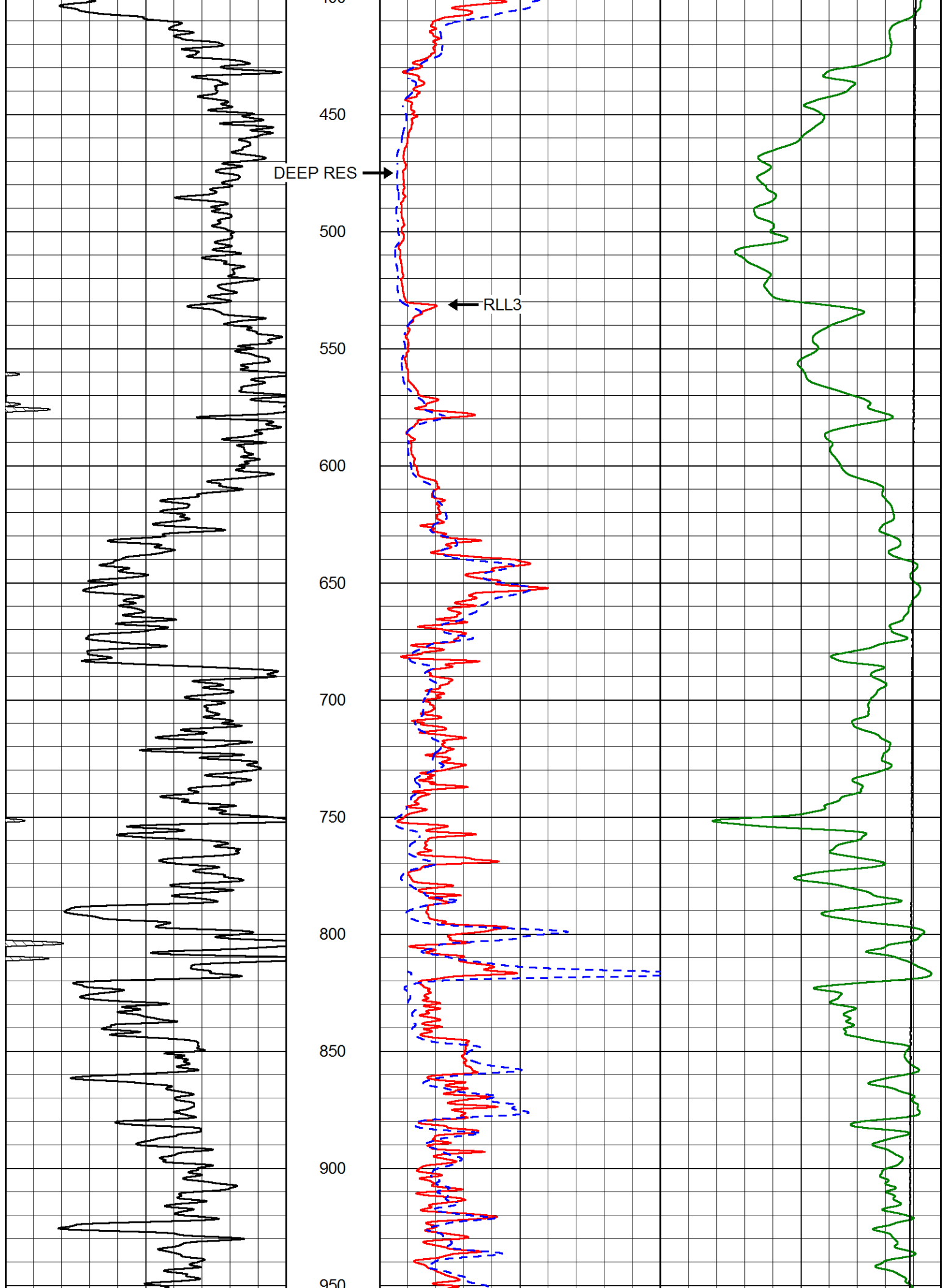
Thu Mar 08 06:40:33 2018

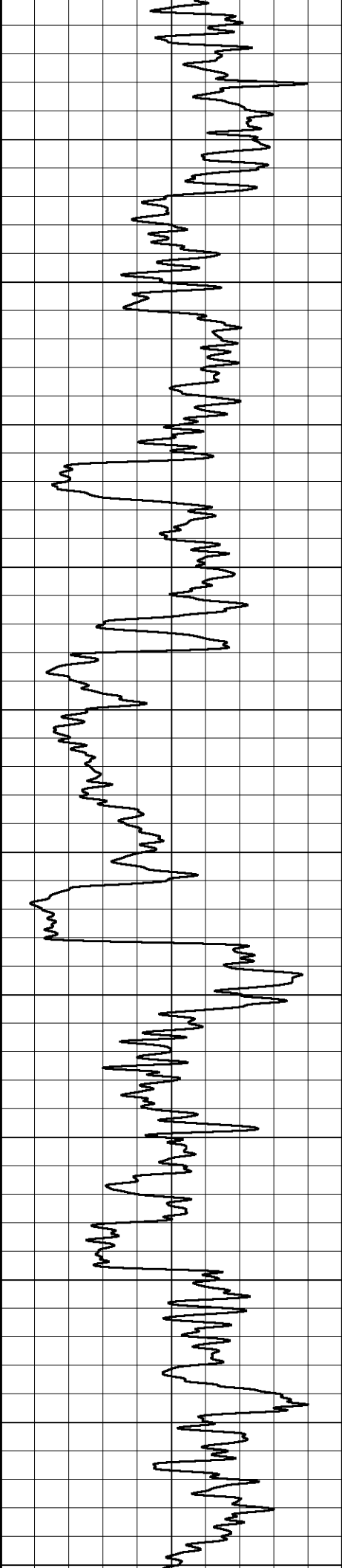
Charted by

Depth in Feet scaled 1:600

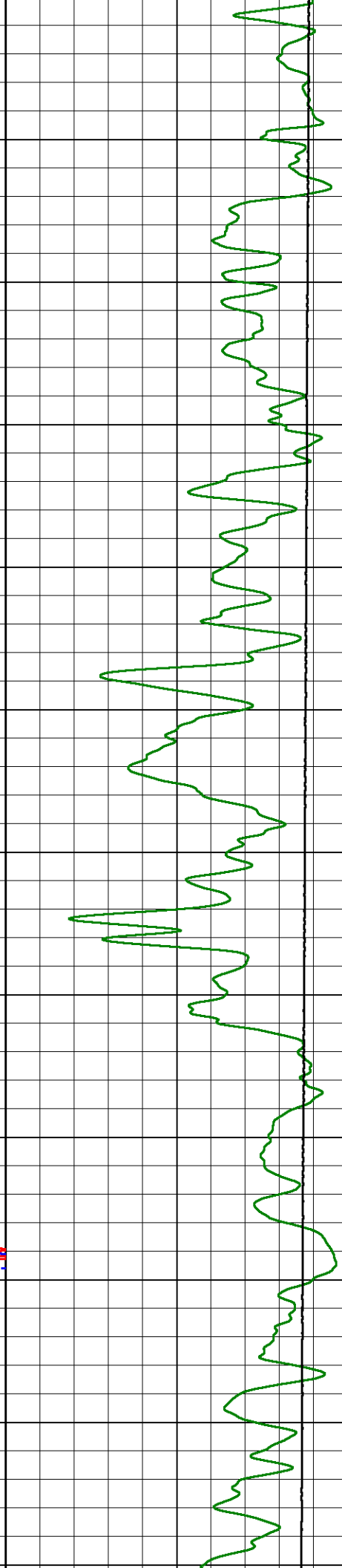
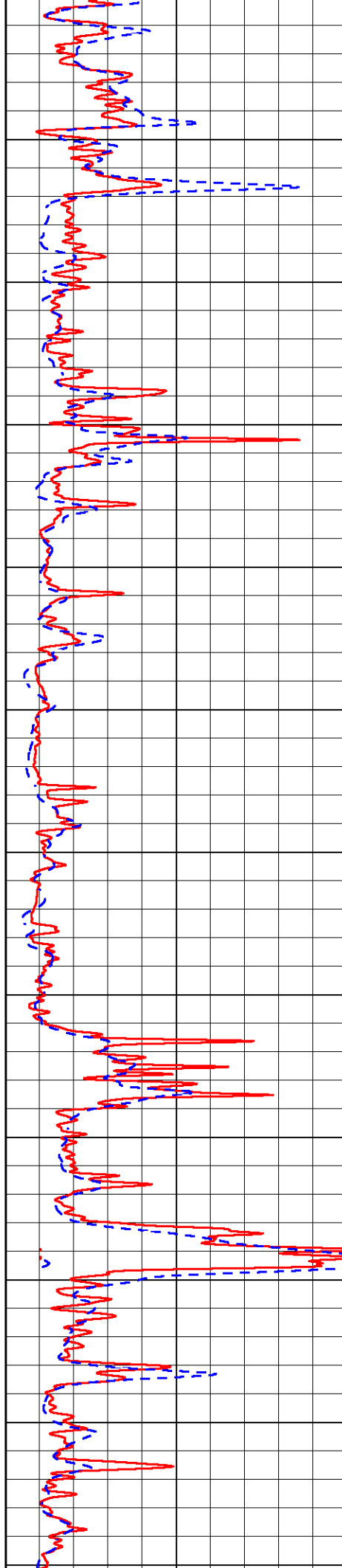
0	Gamma Ray (GAPI)	150
1000	Conductivity (mmho/m)	0
15000	Line Tension (lb)	0
0	RLL3 (Ohm-m)	50
0	Deep Resistivity (Ohm-m)	50
50	RLL3 (Ohm-m)	500
50	Deep Resistivity (Ohm-m)	500

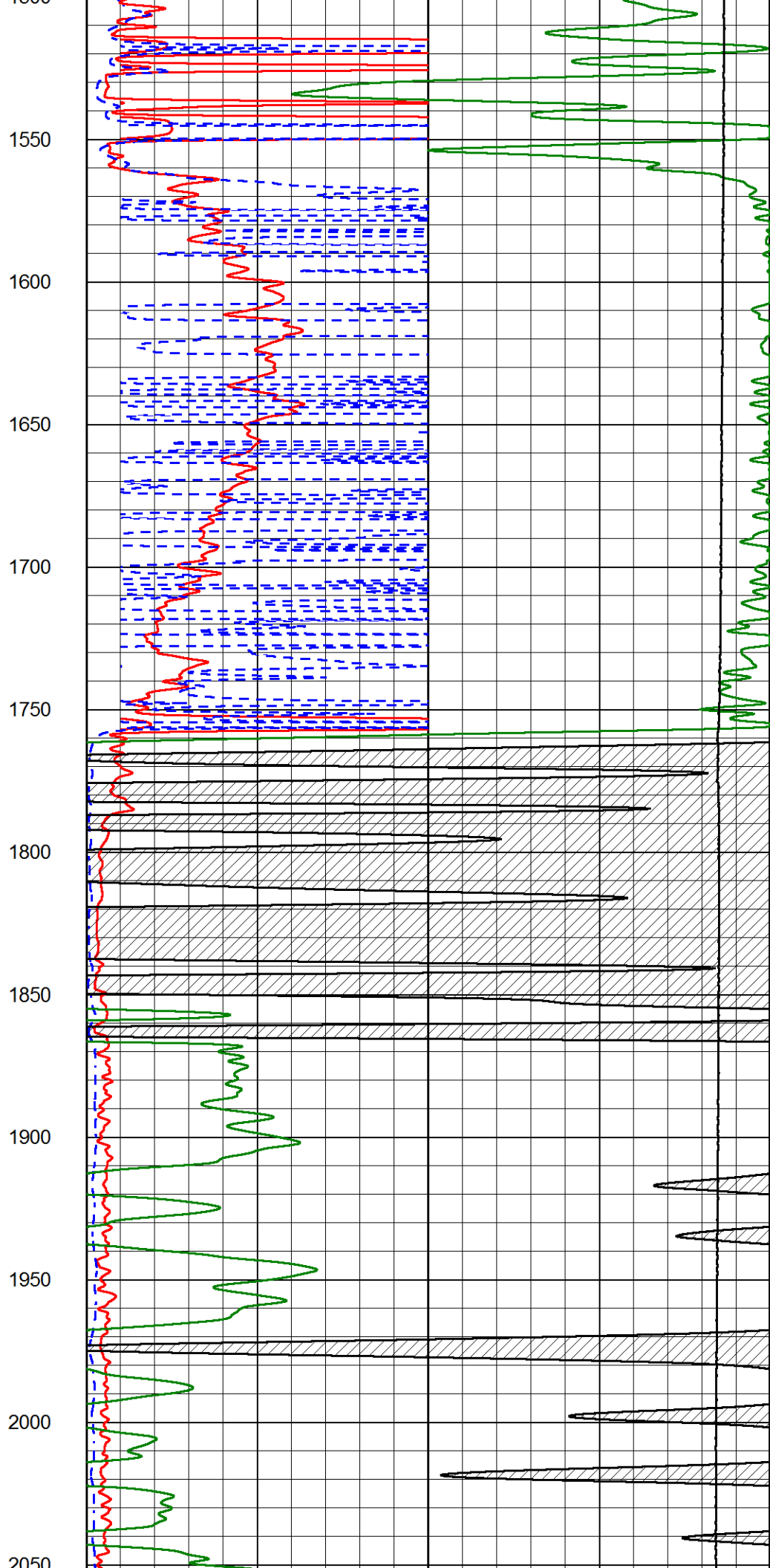
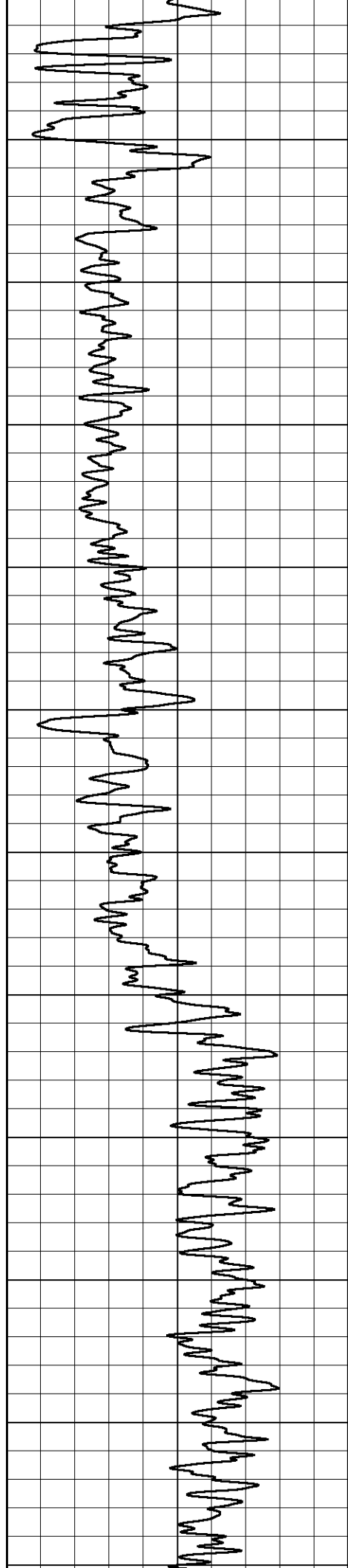


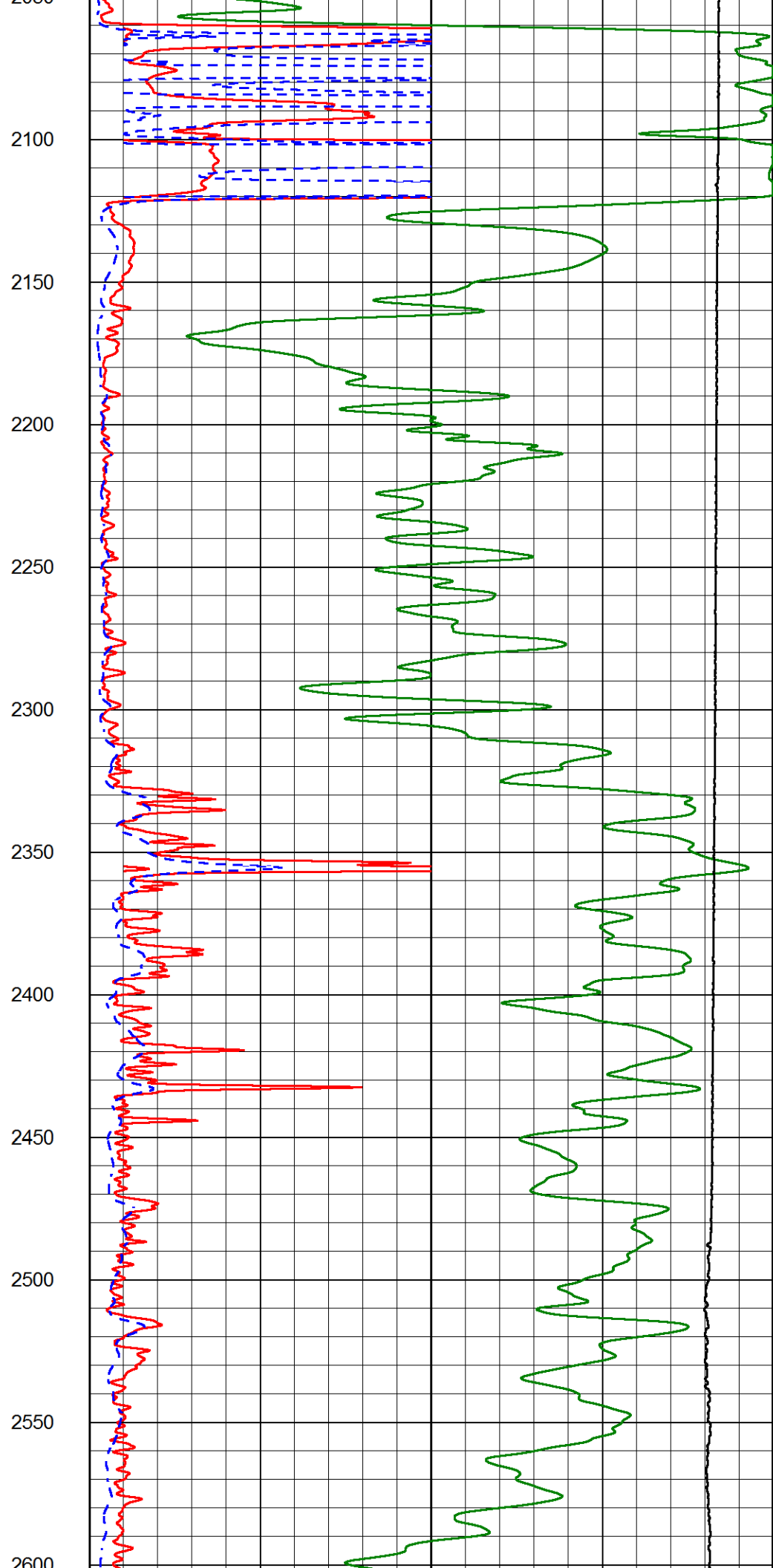
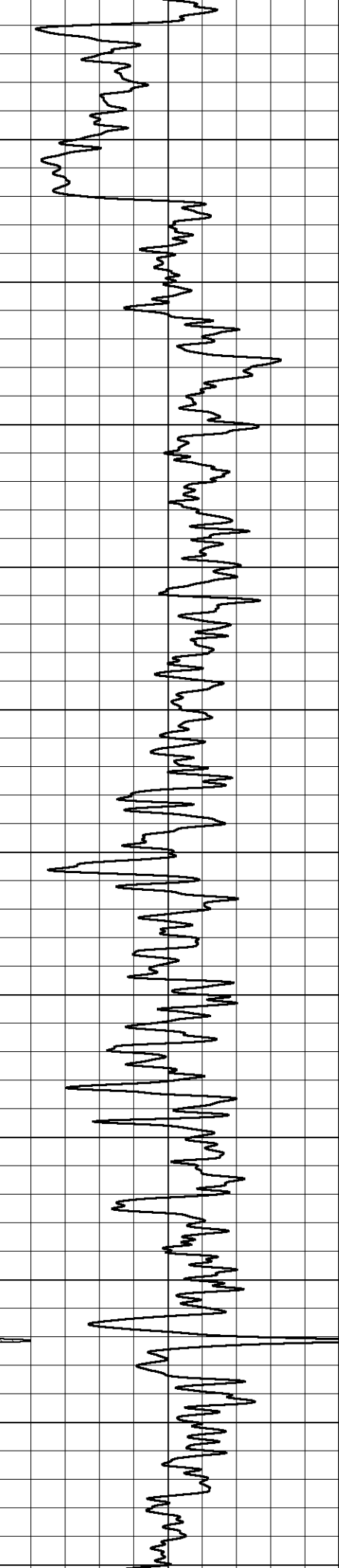


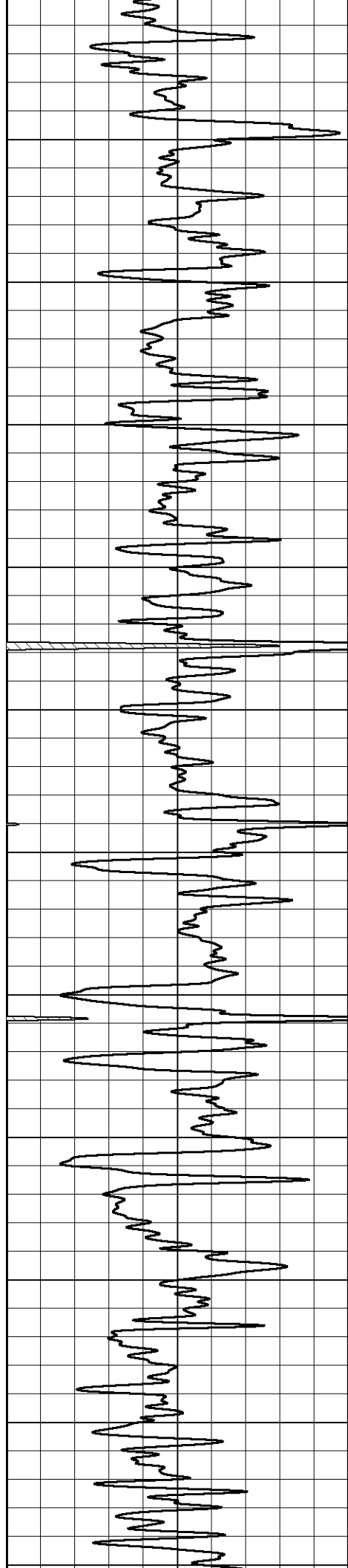


950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500

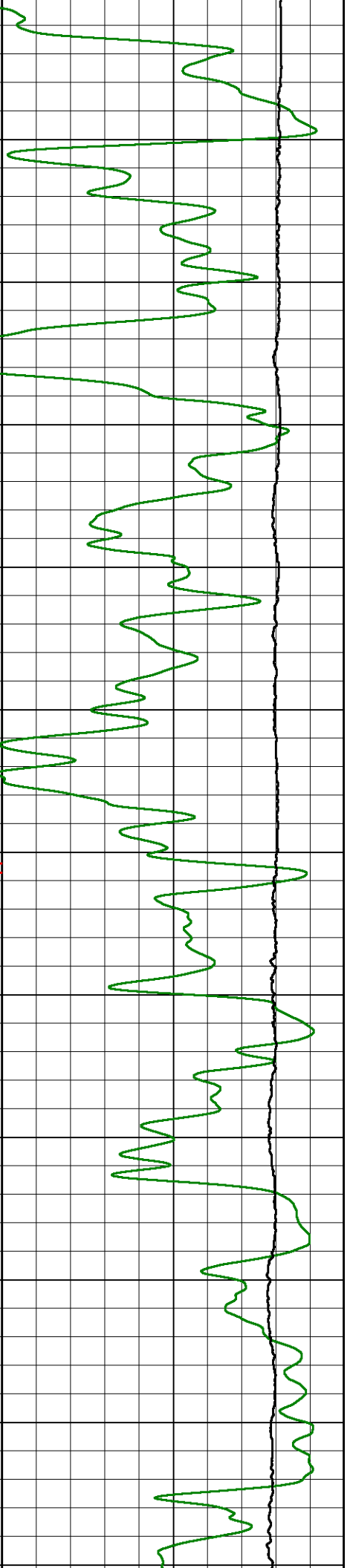
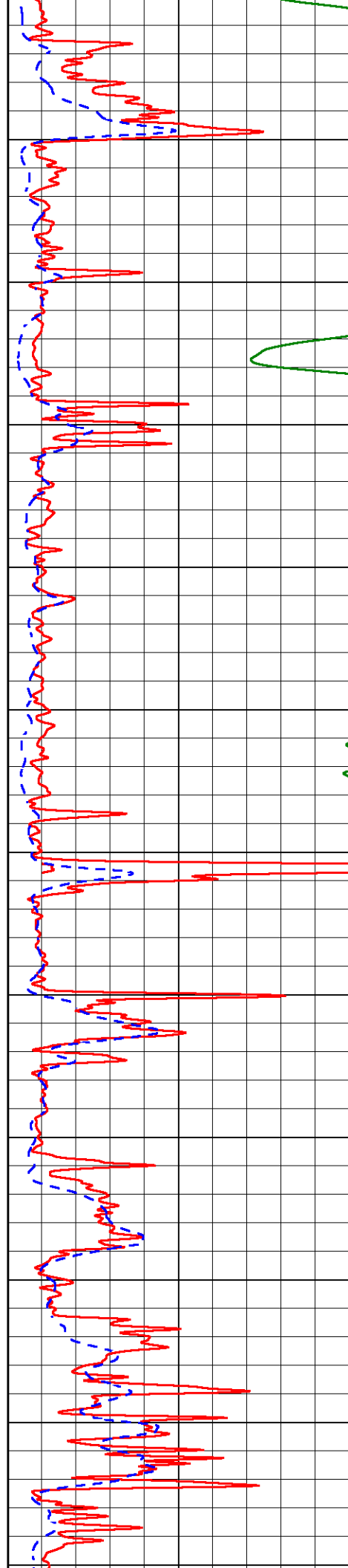


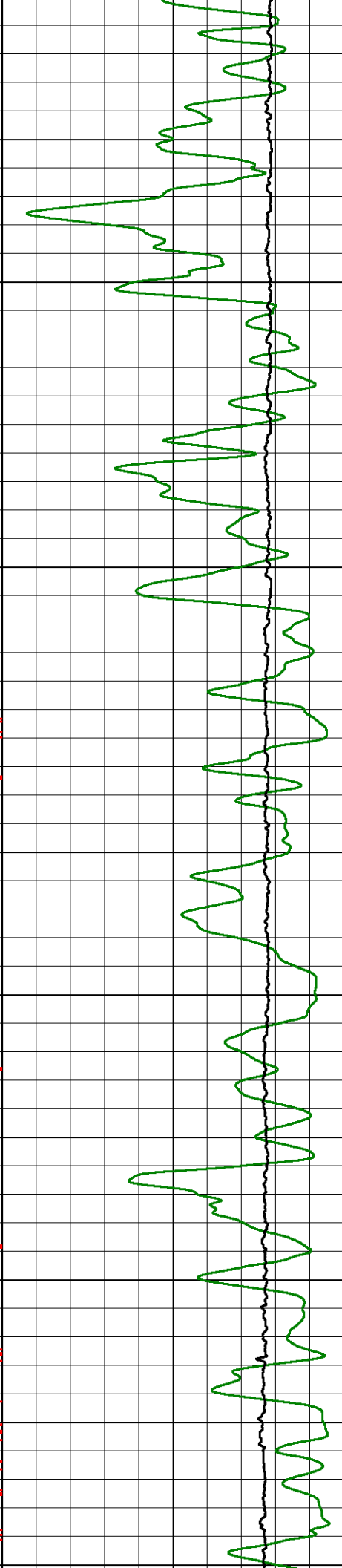
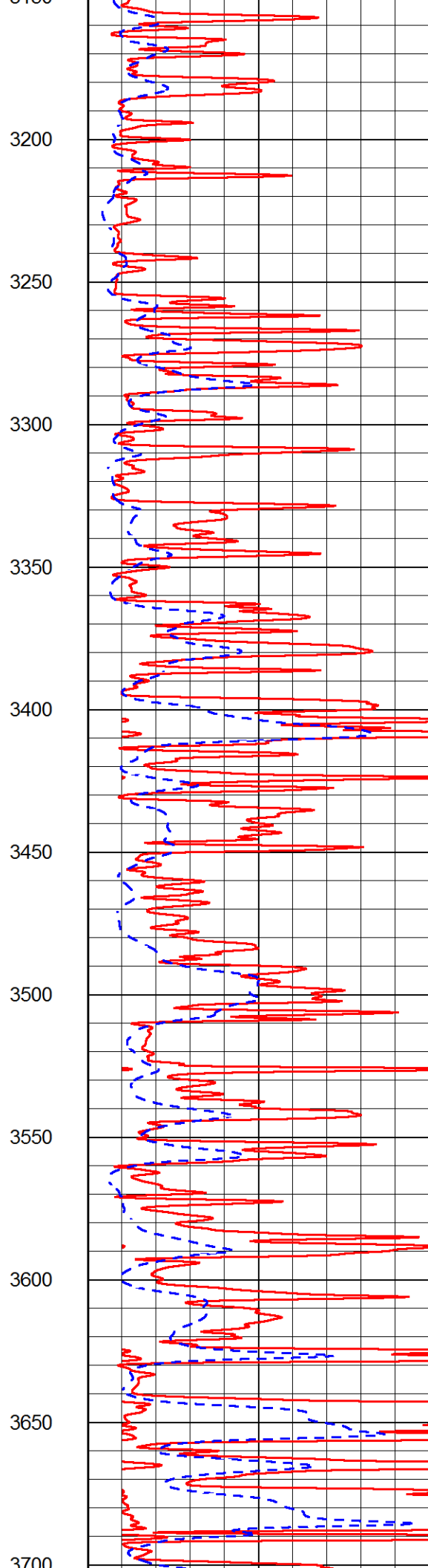
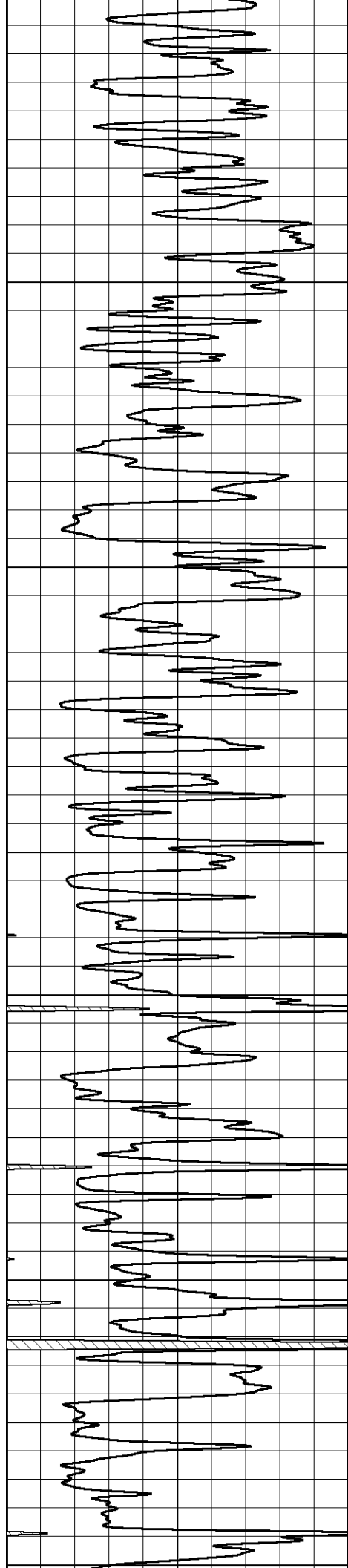


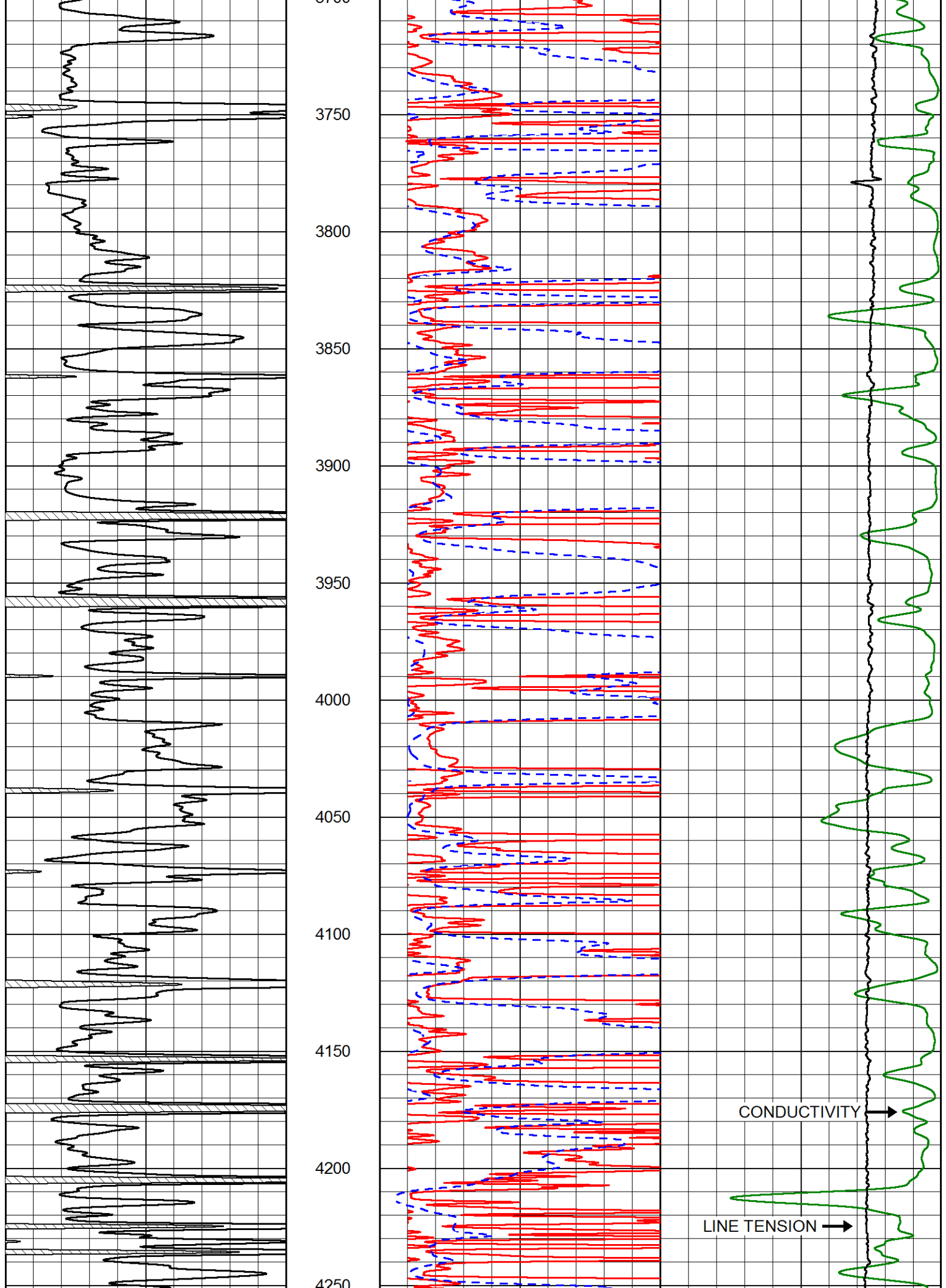


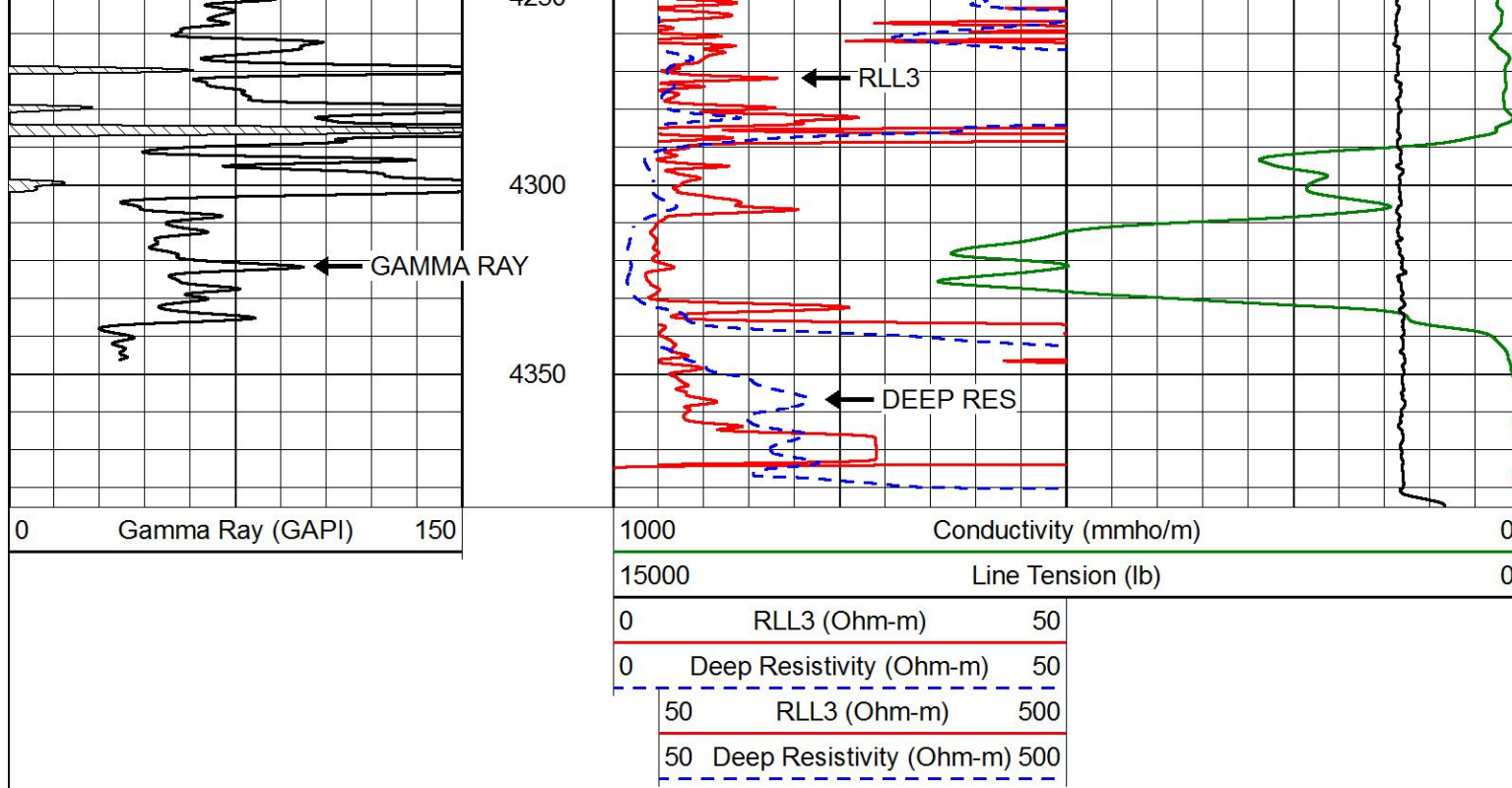


2650
2700
2750
2800
2850
2900
2950
3000
3050
3100
3150



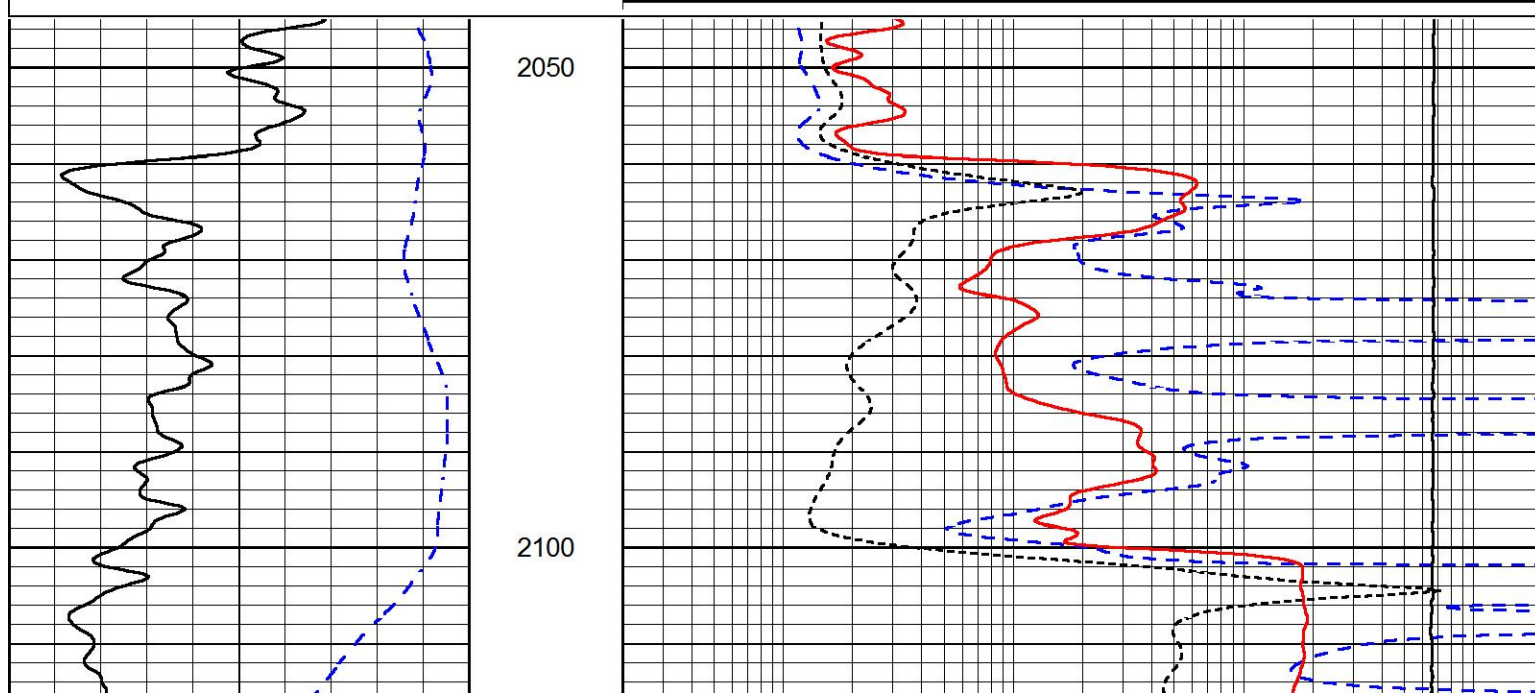


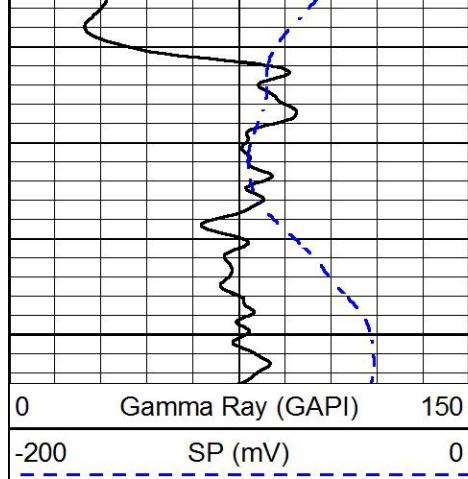




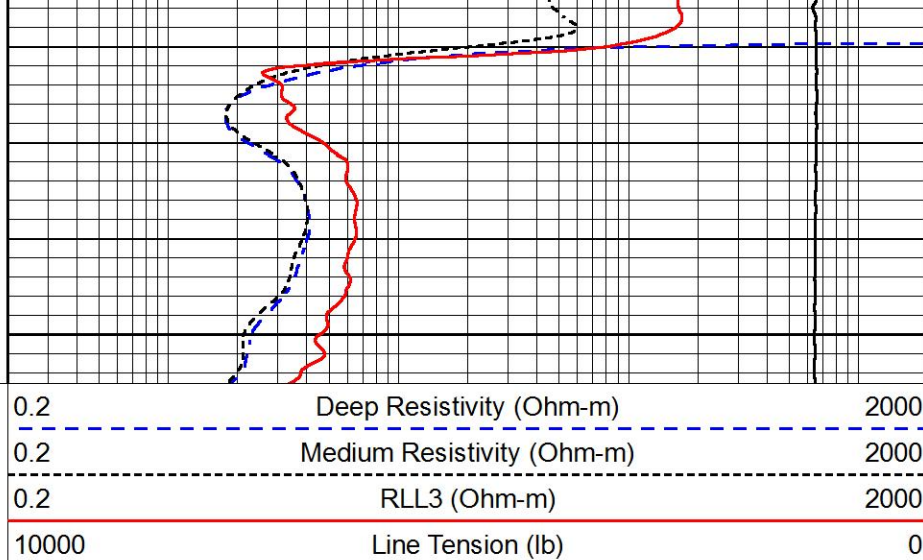
MAIN PASS

Database File	pickrell_duff a 1.db
Dataset Pathname	STKML/pass4.1
Presentation Format	dil
Dataset Creation	Thu Mar 08 06:40:33 2018
Charted by	Depth in Feet scaled 1:240





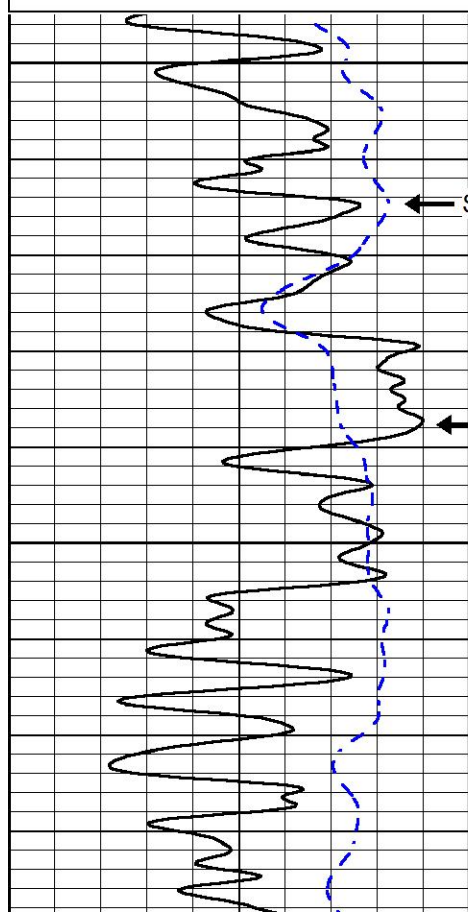
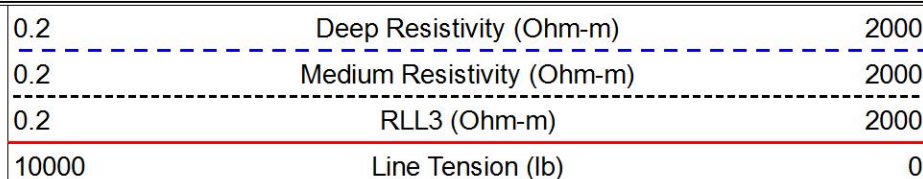
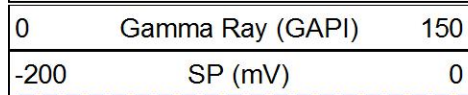
2150



PIONEER
Pioneer Energy Services

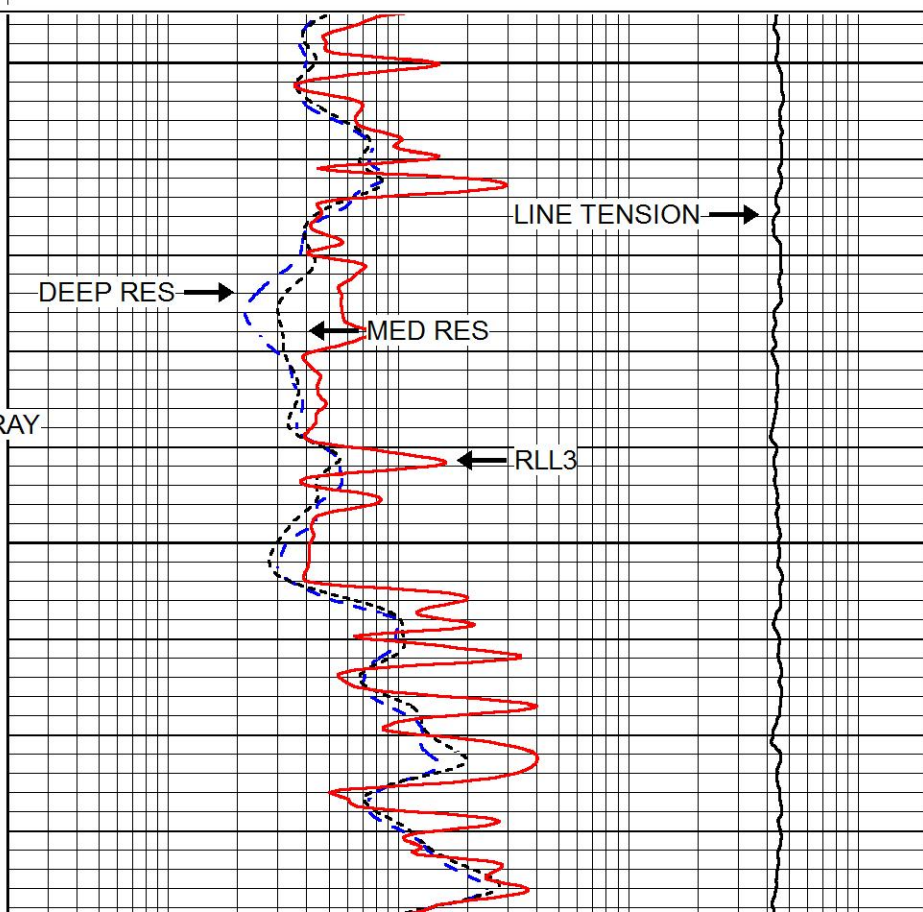
MAIN PASS

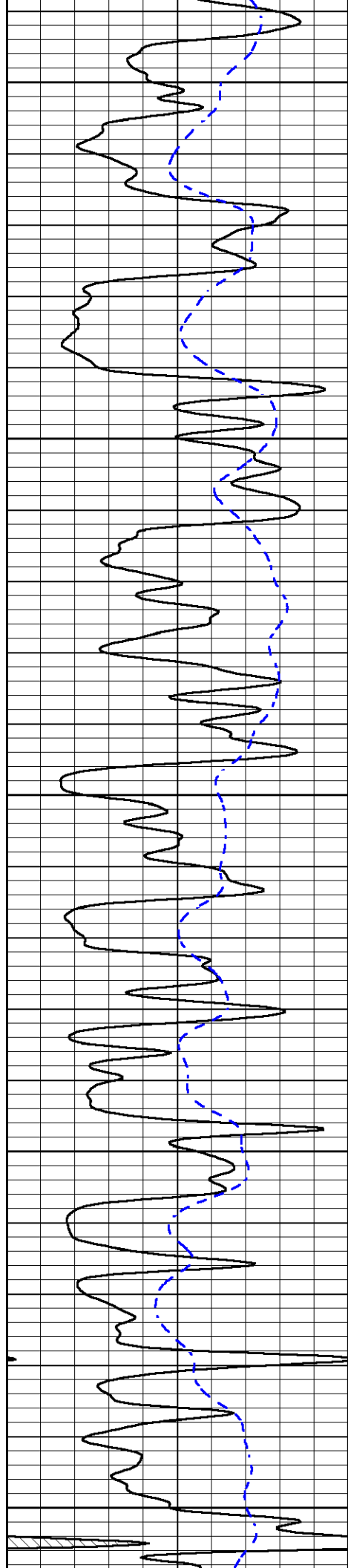
Database File pickrell_duff a 1.db
Dataset Pathname STKML/pass4.1
Presentation Format dil
Dataset Creation Thu Mar 08 06:40:33 2018
Charted by Depth in Feet scaled 1:240



3200

3250





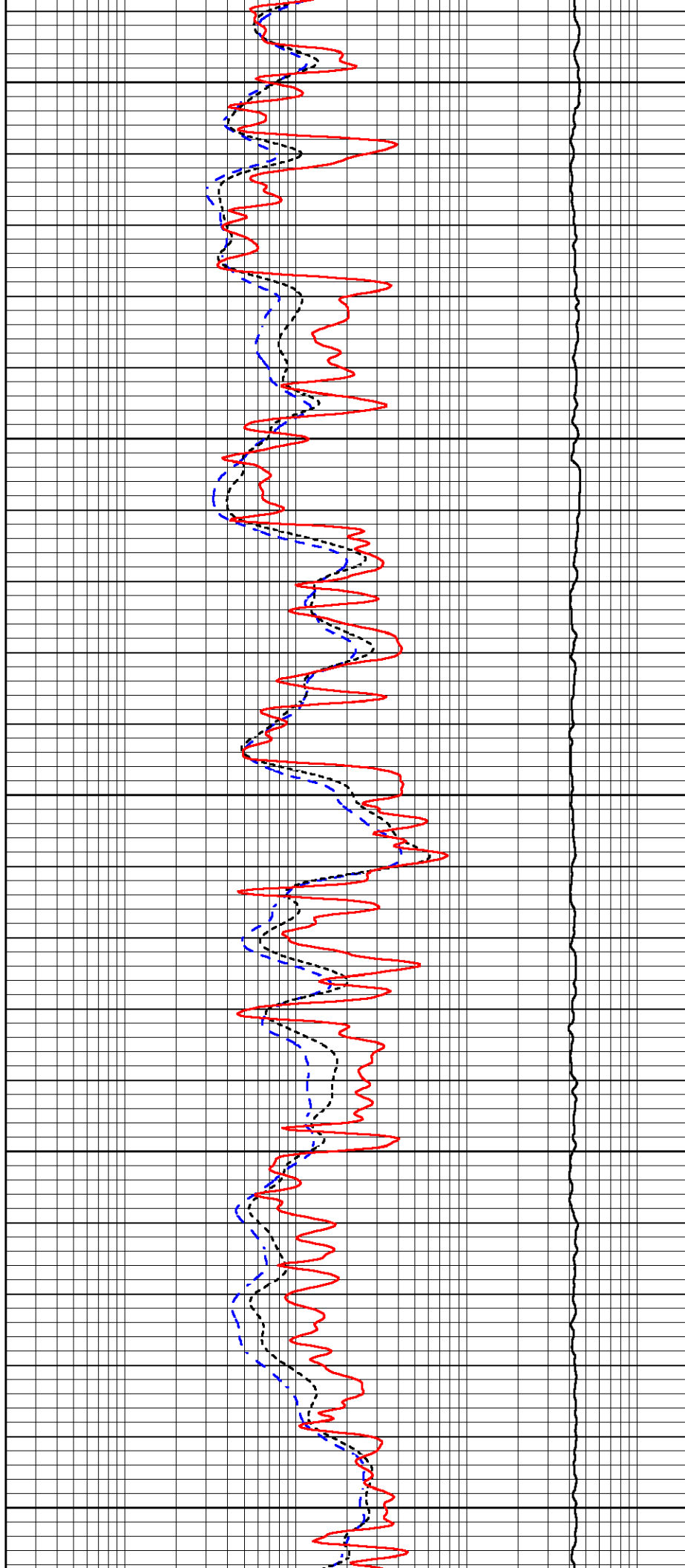
3300

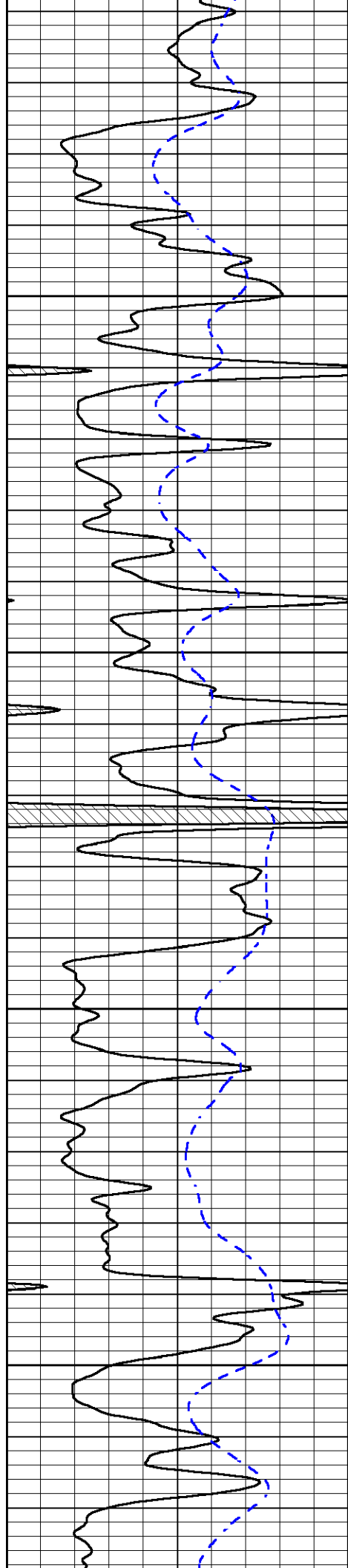
3350

3400

3450

3500



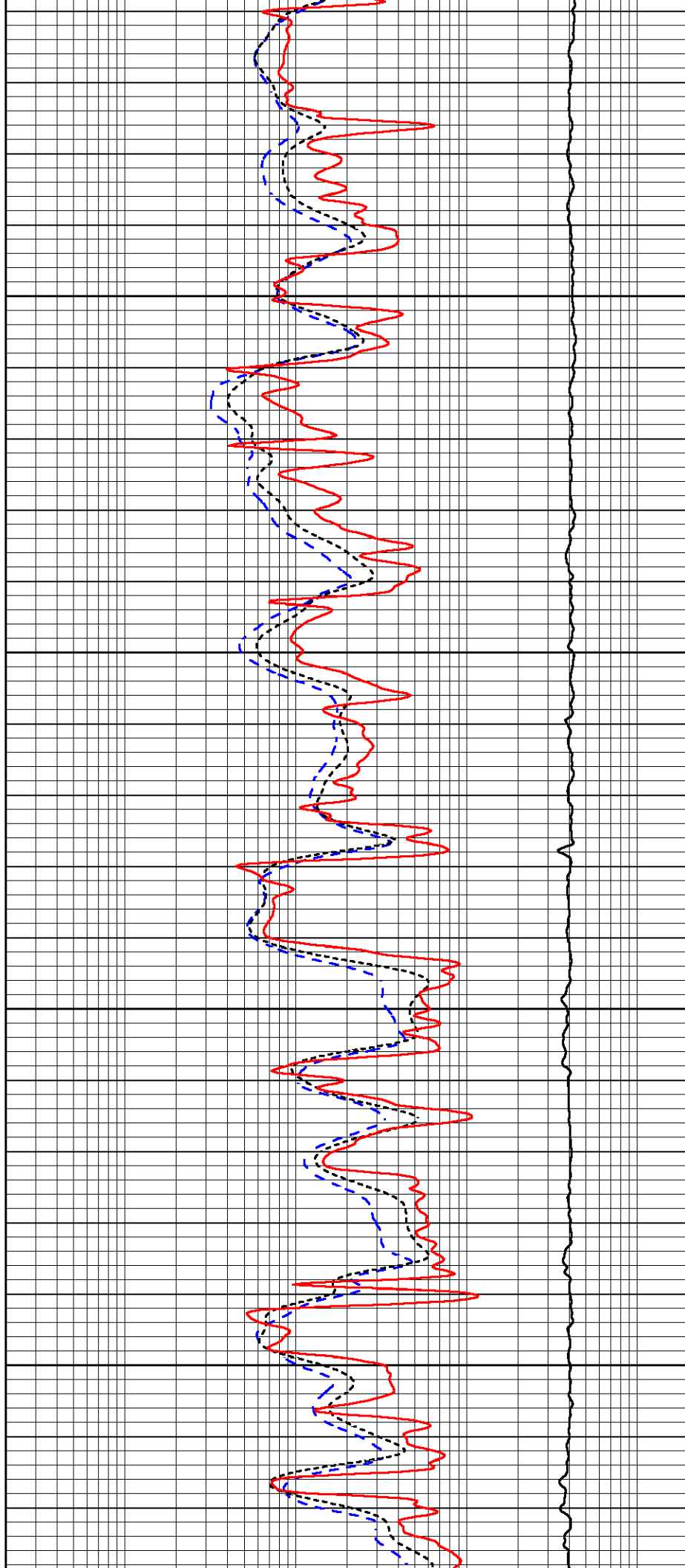


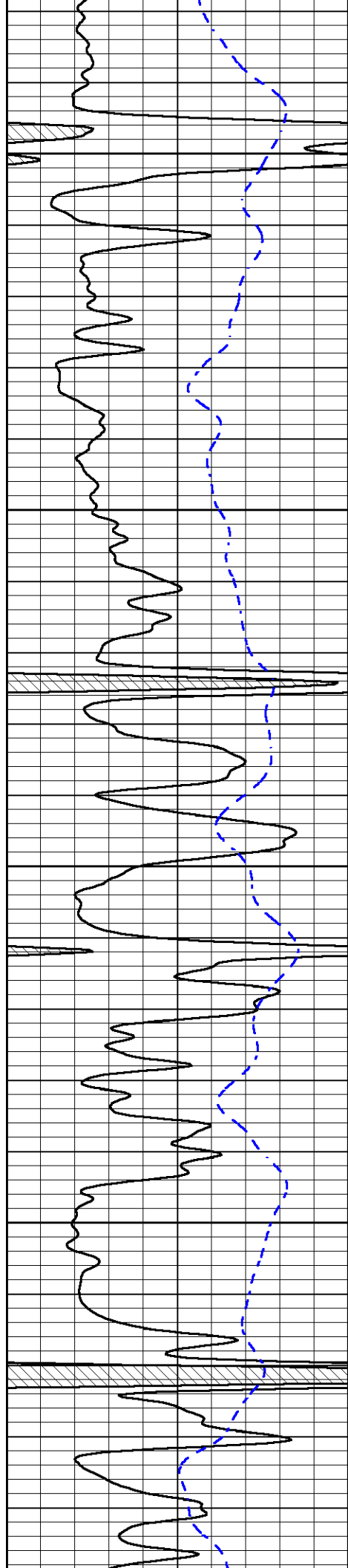
3550

3600

3650

3700



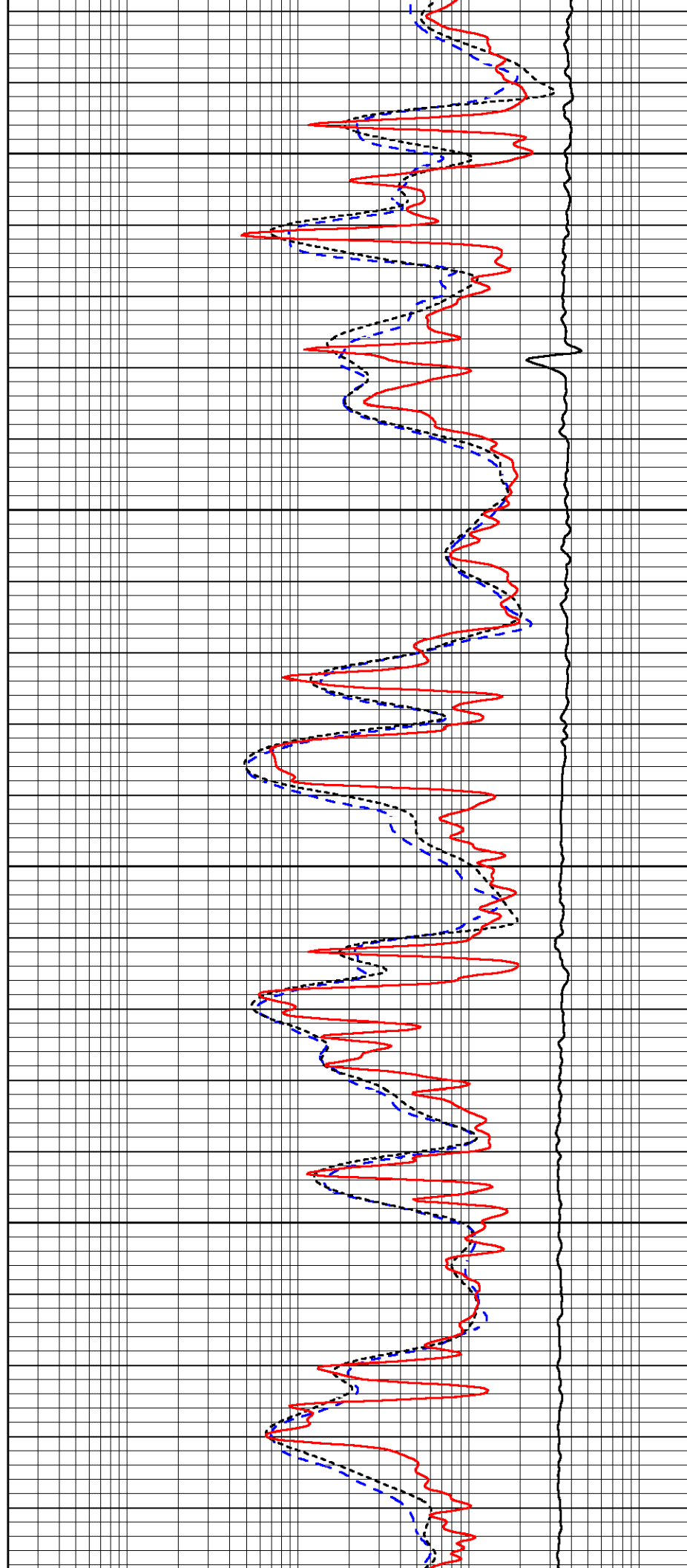


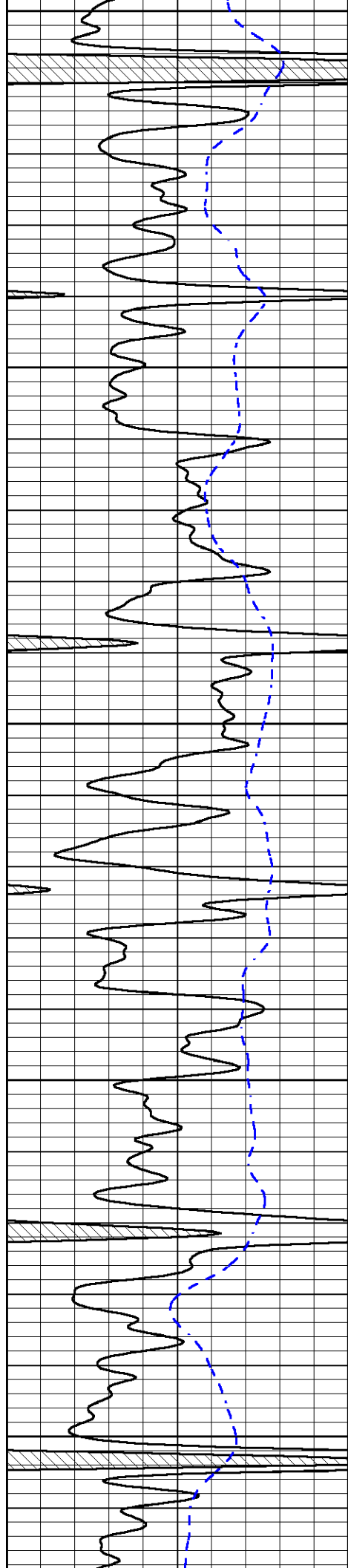
3750

3800

3850

3900





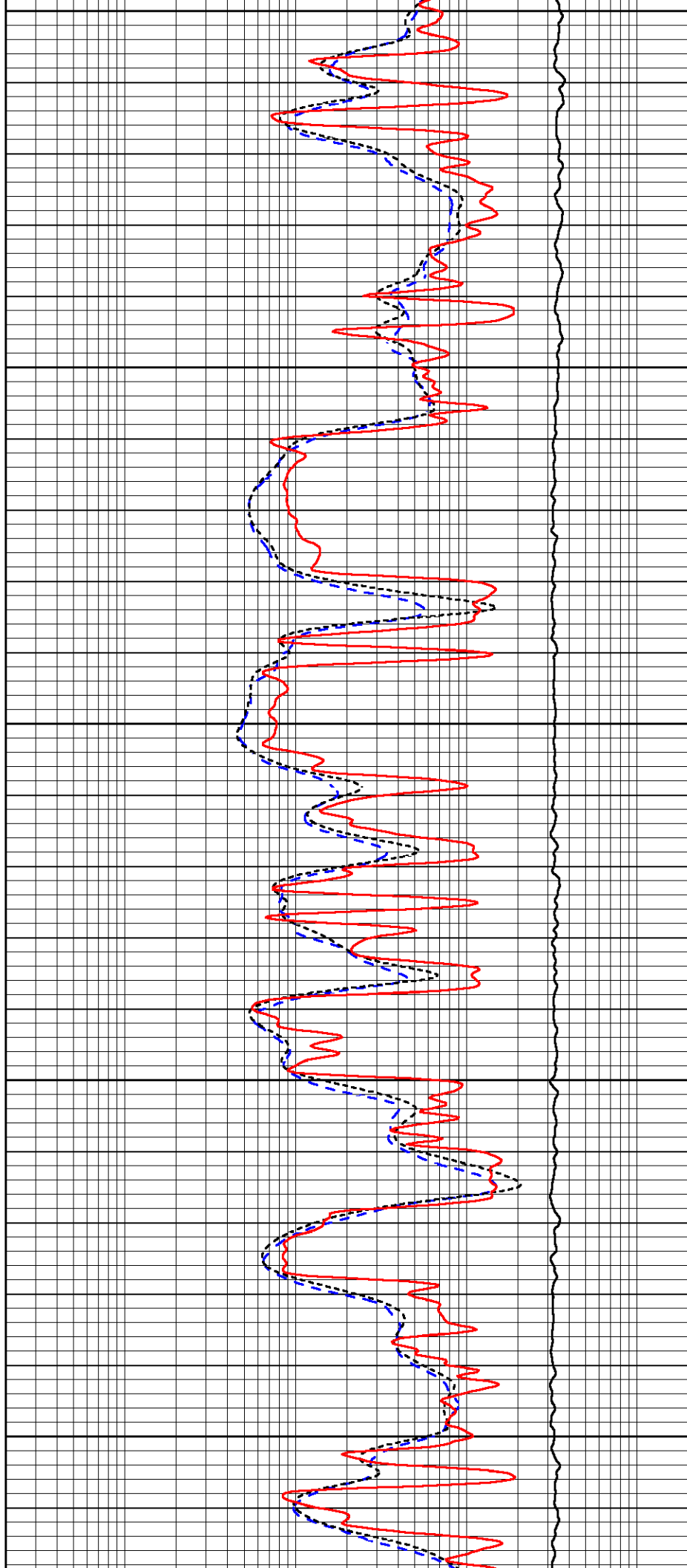
3950

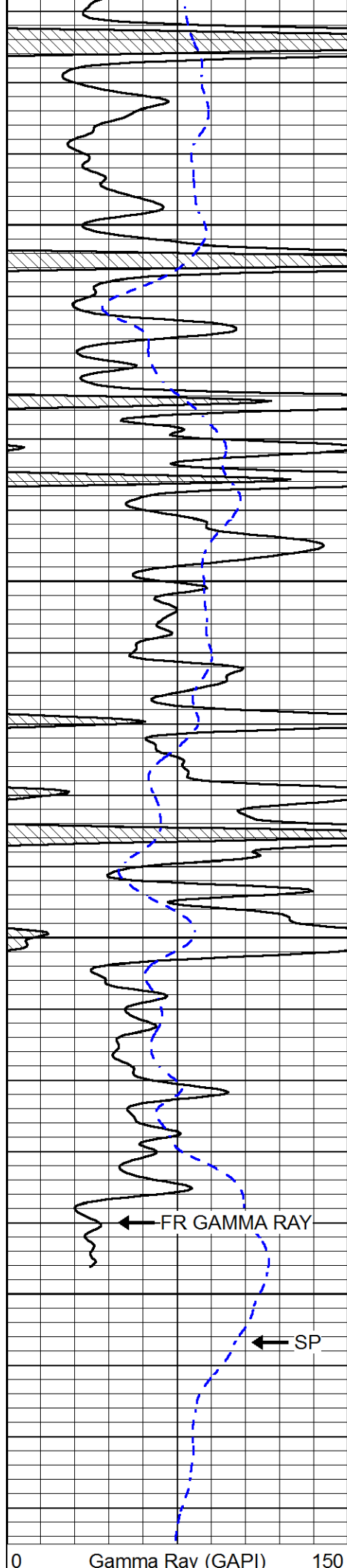
4000

4050

4100

4150



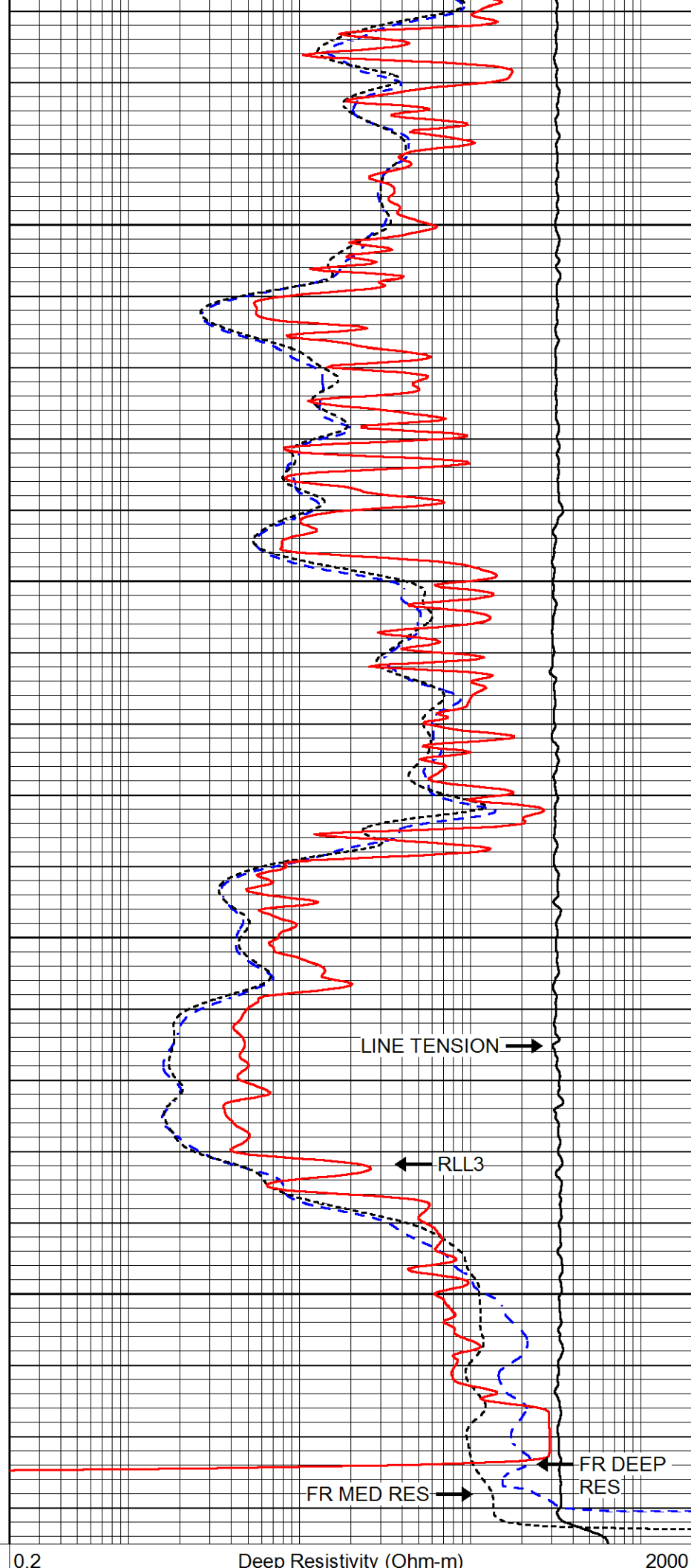


4200

4250

4300

4350



-200	SP (mV)	0

0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0

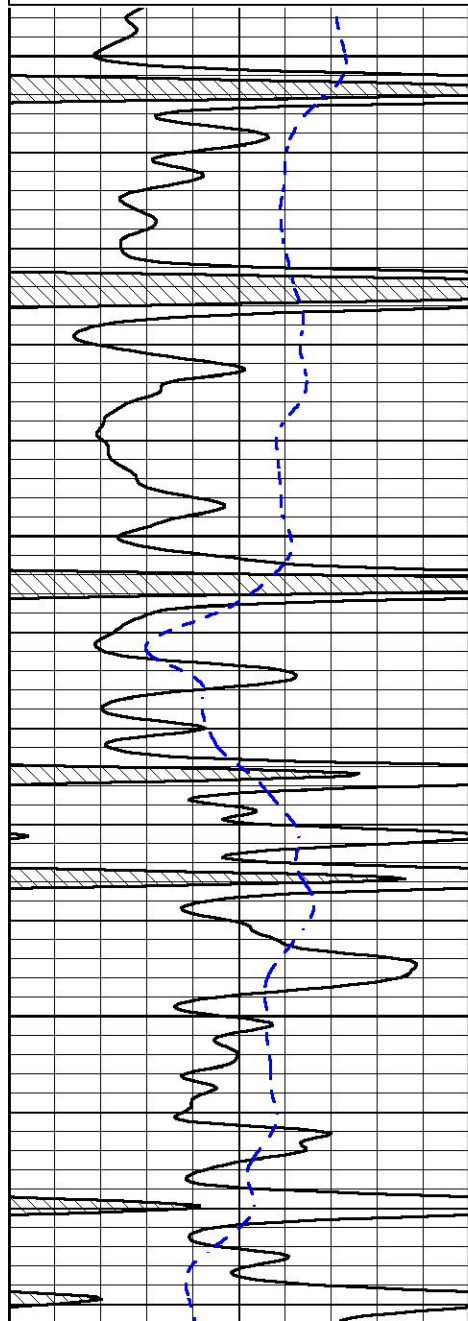


REPEAT SECTION

Database File pickrell_duff a 1.db
Dataset Pathname STKML/pass2.1
Presentation Format dil
Dataset Creation Thu Mar 08 06:28:42 2018
Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

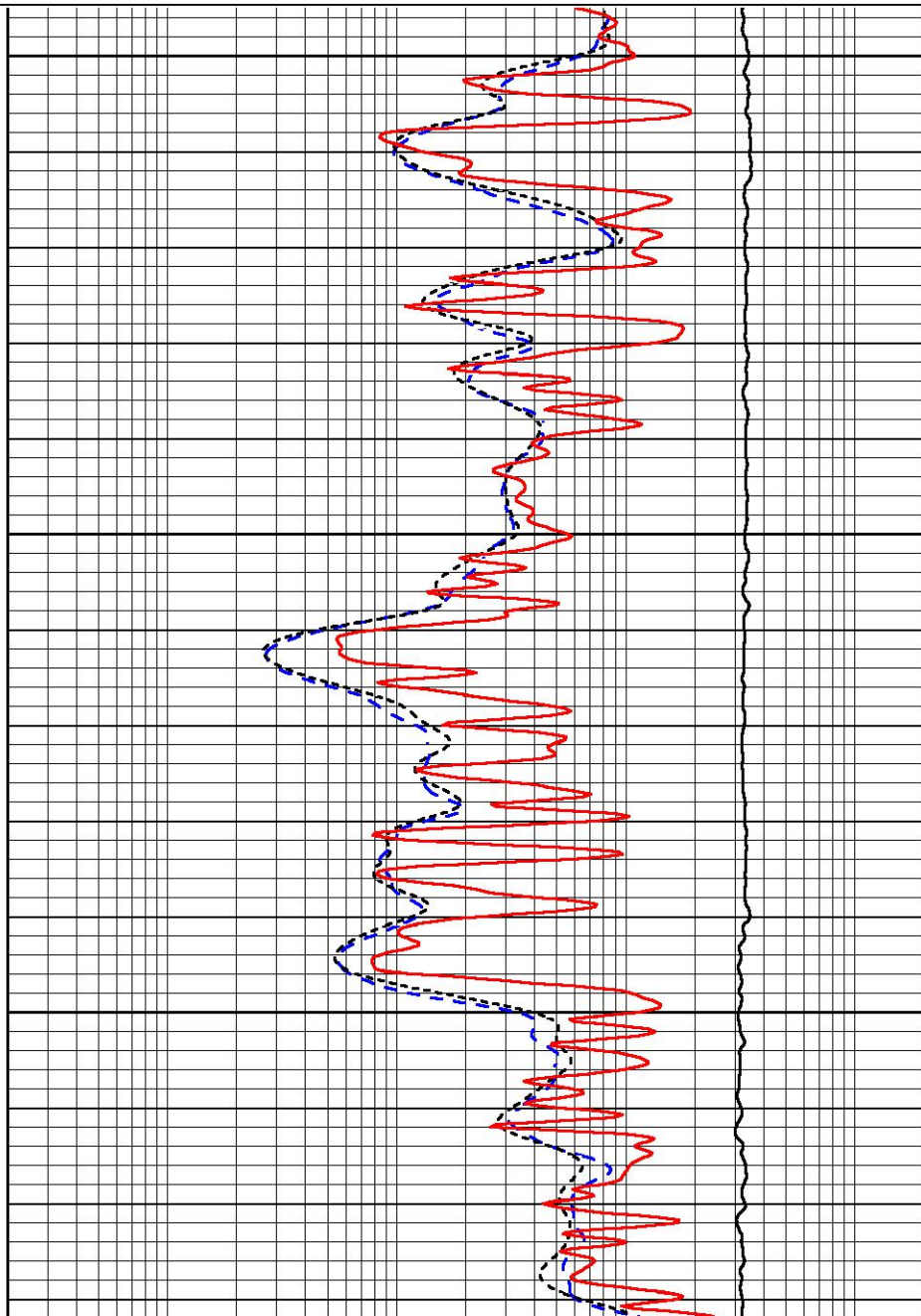
0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0

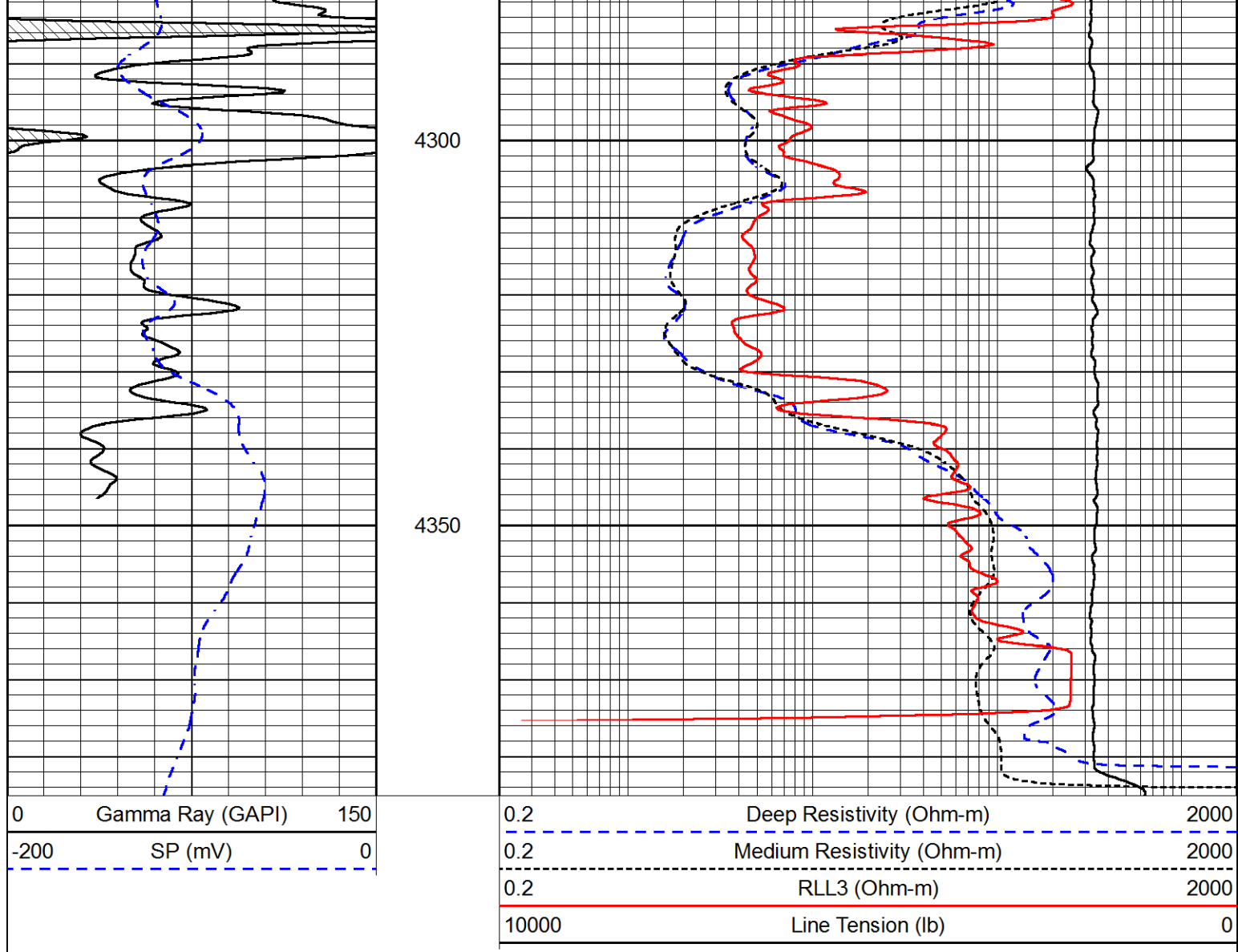


4150

4200

4250





Calibration Report

Database File pickrell_duff a 1.db
 Dataset Pathname STKML/pass4.1
 Dataset Creation Thu Mar 08 06:40:33 2018

Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP
 Calibration Performed: Sun Feb 18 17:32:17 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-18.350
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-61.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Mon Jan 15 11:19:55 2018

Readings		References		Results	
Zero	Cal	Zero	Cal	m	b

Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	30000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	38000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.7500

Compensated Density Calibration Report

Serial-Model:	182-152-M&W
Source / Verifier:	16955B / 2ci
Master Calibration Performed:	Thu Mar 08 04:54:58 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4992.81	6098.44	cps
Aluminum	2.645	g/cc	945.67	3945.60	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.517		
	Size		Reading		
Small Ring	4.50	in	1.09		
Large Ring	15.00	in	1.03		

Compensated Neutron Calibration Report

Serial Number:	207-MW
Tool Model:	M&W
Calibration Performed:	MON JAN 15 10:30:30 2018

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	
Tool Model:	M&W	
Calibration Performed:	Mon Jan 15 11:20:44 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



Company	PICKRELL DRILLING COMPANY, INC.
Well	DUFF A #1
Field	NONE
County	LOGAN
State	KANSAS