



PIONEER
Pioneer Energy Services

**DUAL INDUCTION
LOG**

Company FOSSIL ENERGY, LLC		Location:	API #: 15-009-26228-00-00	Other Services
Well	LEE #1	2016' FNL & 330' FWL		
Field	HEIZER	SEC 16 TWP 19S RGE 14W		
County	BARTON	State KANSAS		
State	KANSAS	Permanent Datum	GROUND LEVEL	Elevation 1894'
		Log Measured From	KELLY BUSHING	K.B. 1902'
		Drilling Measured From	KELLY BUSHING	D.F. N/A
				G.L. 1894'
Date	08/25/2018	Run Number	ONE	
Depth Driller	3600'	Depth Logger	3600'	
Bottom Logged Interval	3599'	Top Log Interval	795'	
Casing Driller	8.625" @ 840'	Casing Logger	838'	
Bit Size	7.875"	Type Fluid in Hole	CHEMICAL	
Salinity, ppm CL	4000	Density / Viscosity	9.3 53	
pH / Fluid Loss	9.0 9.2	Source of Sample	FLOWLINE	
Rm @ Meas. Temp	0.47 @ 96	Rmt @ Meas. Temp	0.35 @ 96	
Rmc @ Meas. Temp	0.63 @ 96	Source of Rmt / Rmc	CHARTS	
Rm @ BHT	0.40 @ 112	Operating Rig Time	3 HOURS	
Max Rec. Temp. F	112	Equipment Number	91	
Location	HAYS	Recorded By	C. PFEIFER	
Witnessed By	RANDY KILIAN			

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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.

HEIZER, KANSAS

GO SOUTH ON BLACKTOP FOR 1 AND A HALF MILES,
EAST INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

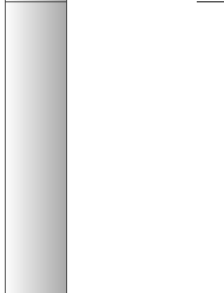
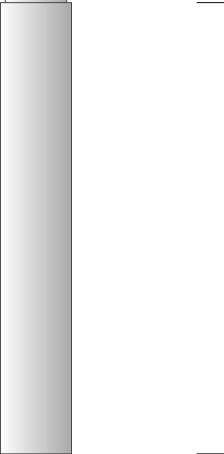
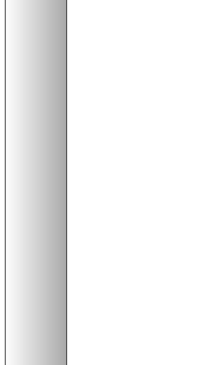
Engineer: C. PFEIFER
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: RANDY KILIAN
Secondary Witness:
Secondary Witness:
Secondary Witness:

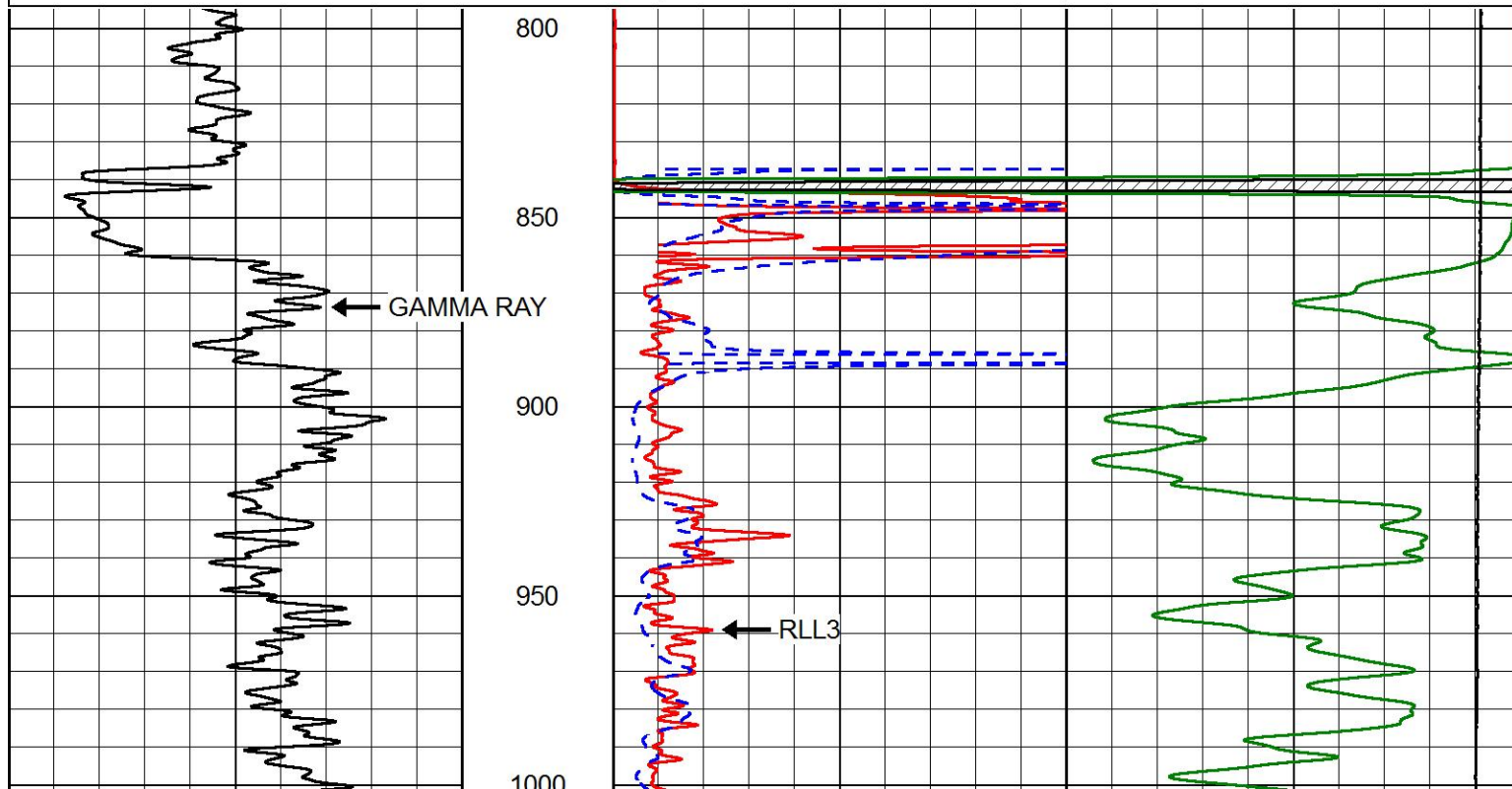
Top - Bottom

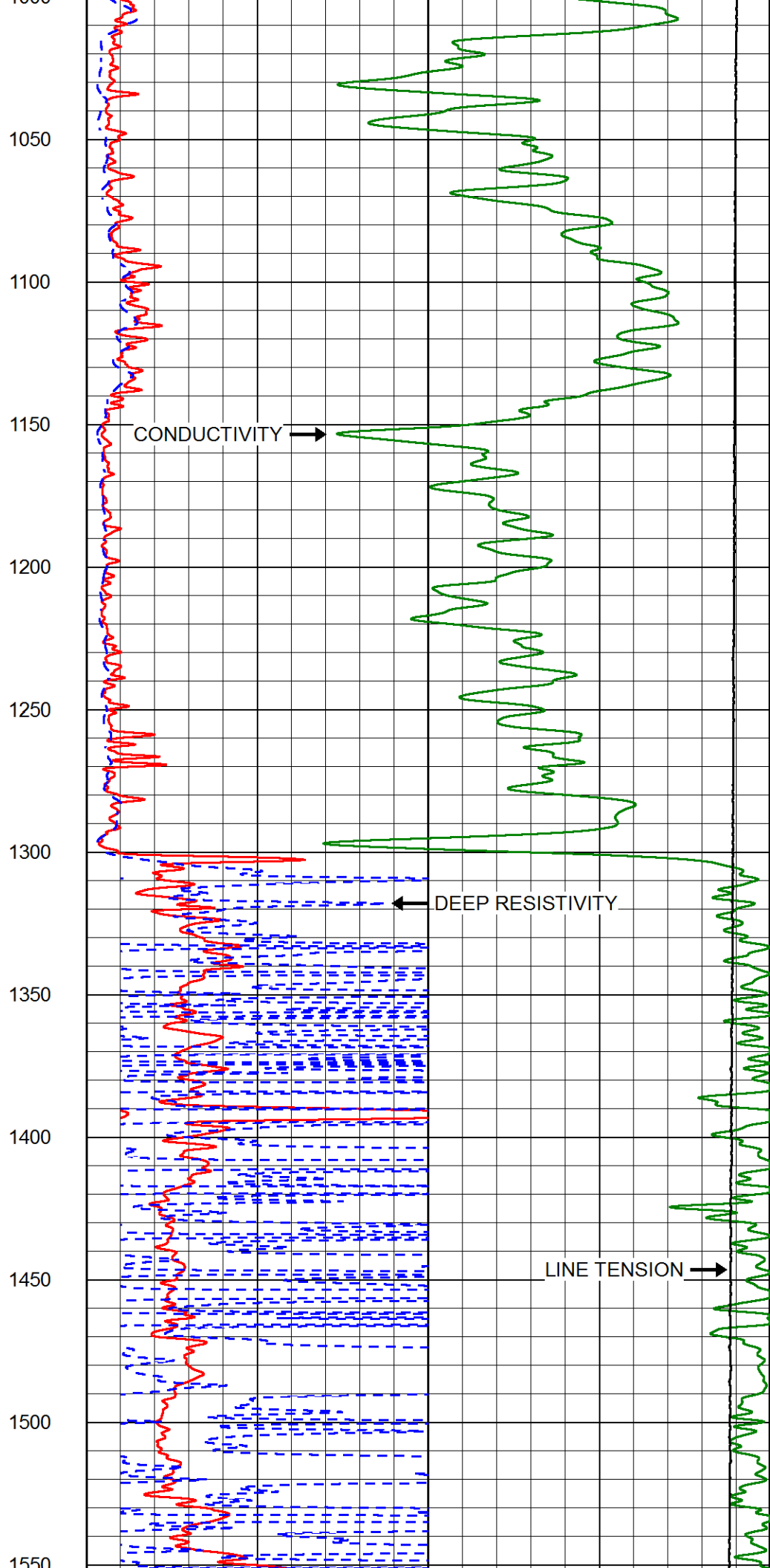
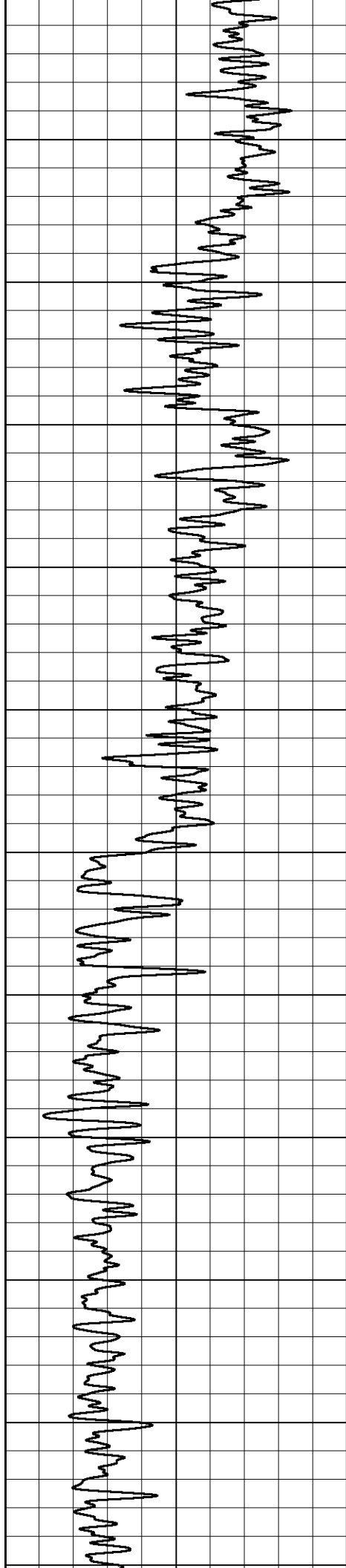
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	208	5
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
5	93	0	5.5	0	3600	112	7.875

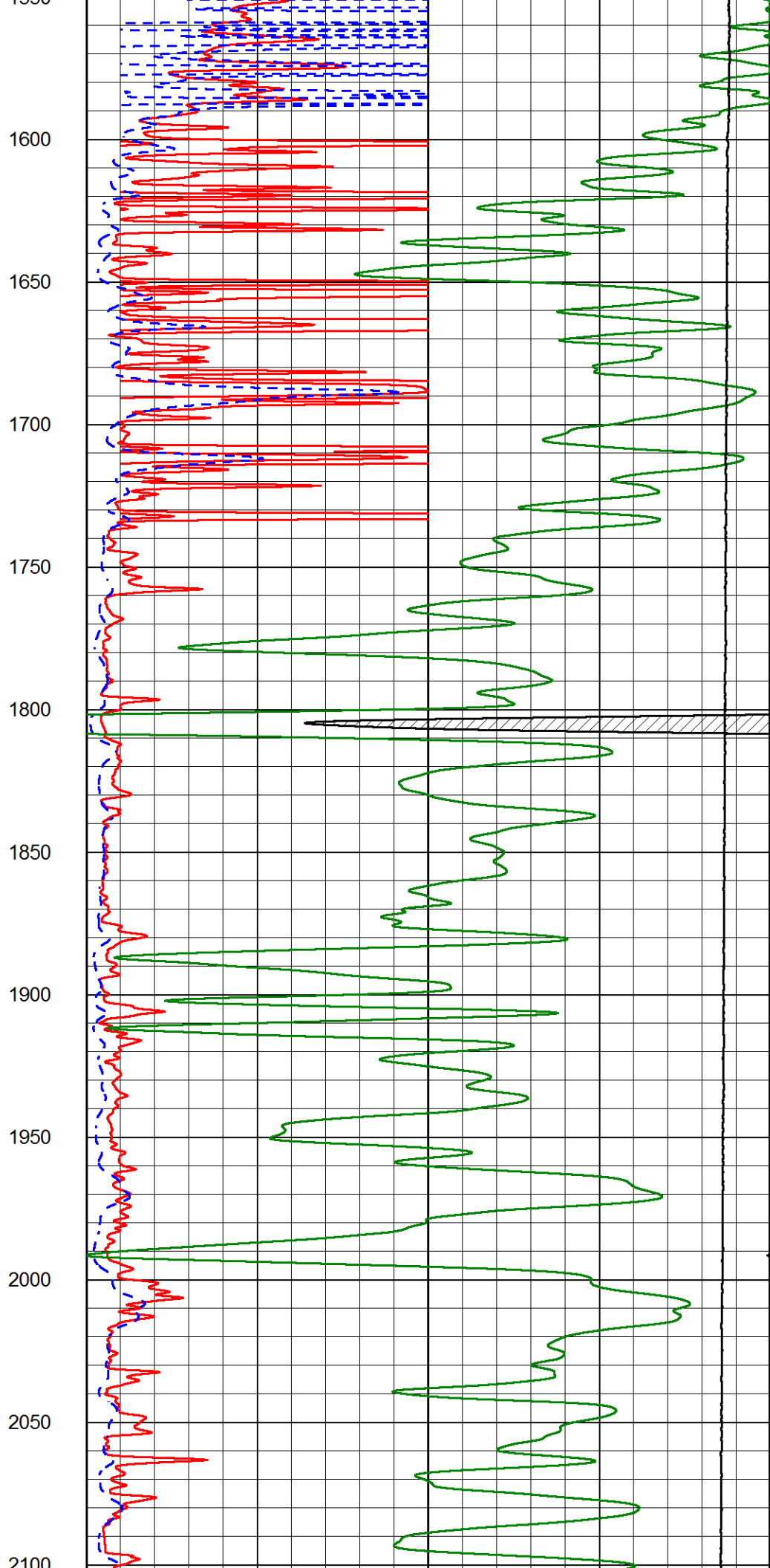
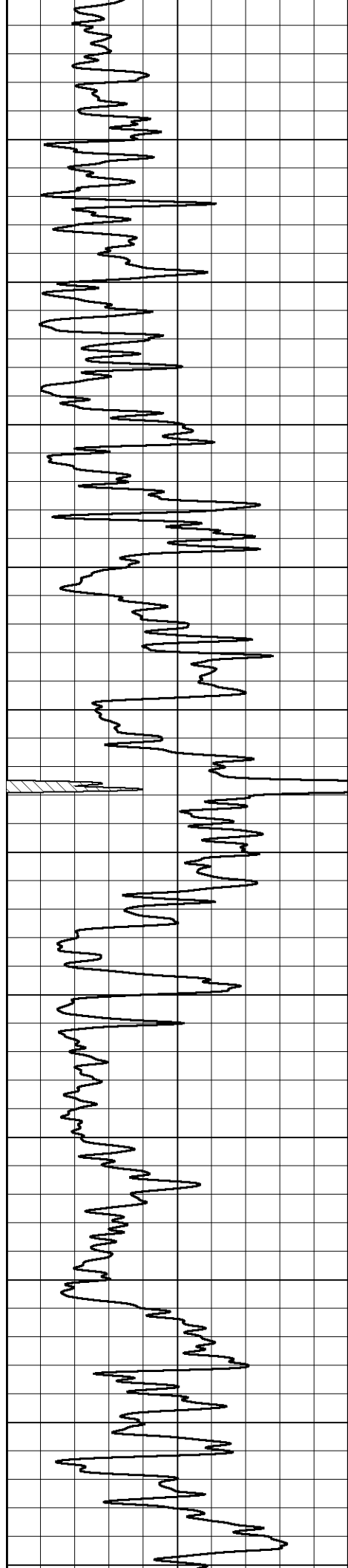
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (797-152)	8.50	4.00	250.00
RLL3F RLL3	15.80 15.80					
CILD	8.00		DIL-PSI HIGH TEMP (967 (HT))	18.50	3.50	220.00

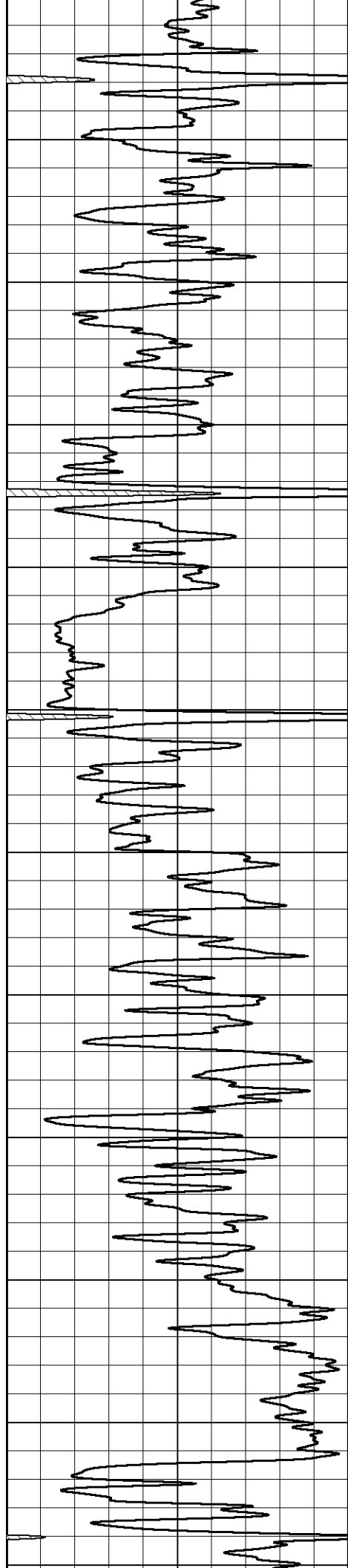
CILM	4.70								
SP	0.20								
Dataset: fossil_energy_lee_1.db: field/well/STK/pass4.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

		MAIN PASS	
Database File	fossil_energy_lee_1.db		
Dataset Pathname	STK/pass5.1		
Presentation Format	dil2in		
Dataset Creation	Sat Aug 25 19:01:30 2018		
Charted by	Depth in Feet scaled 1:600		
GAMMA RAY 0 (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	

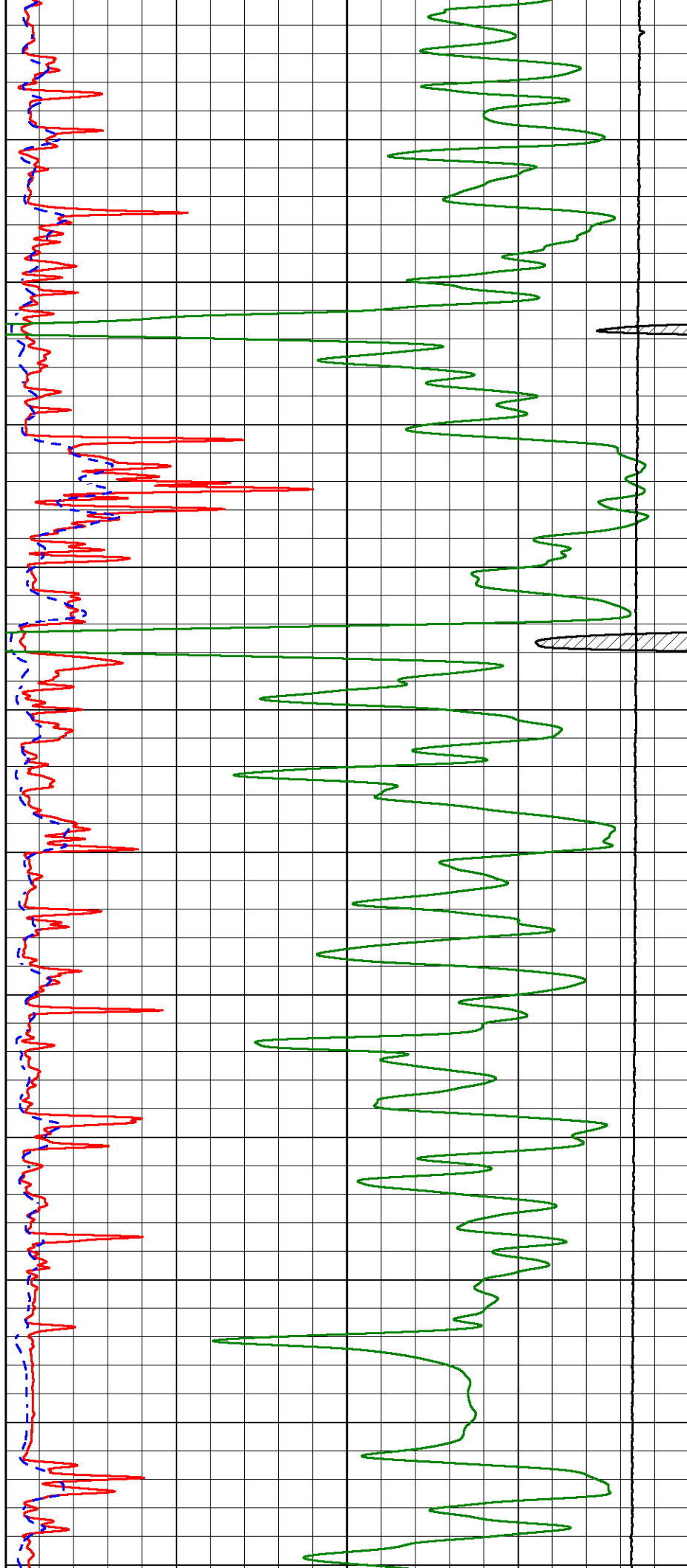


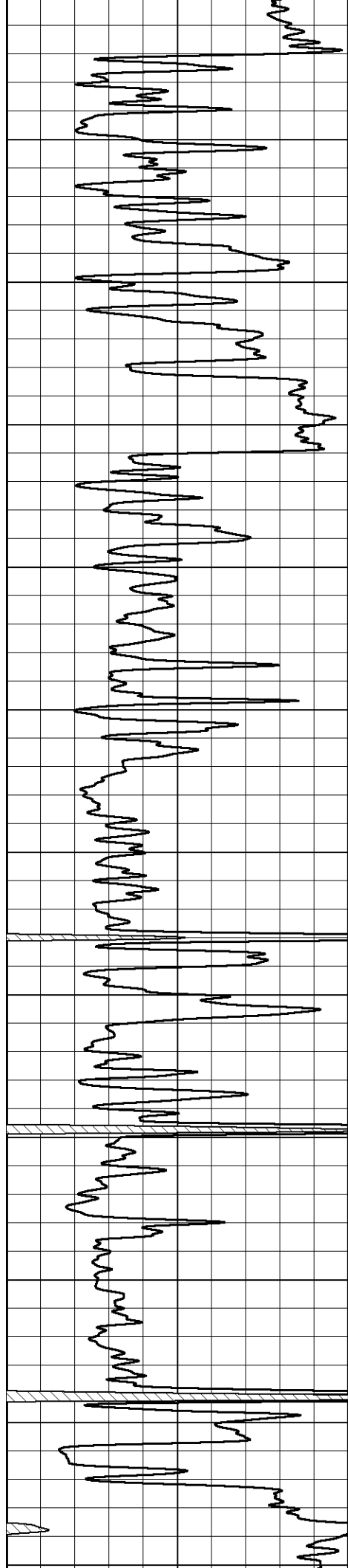




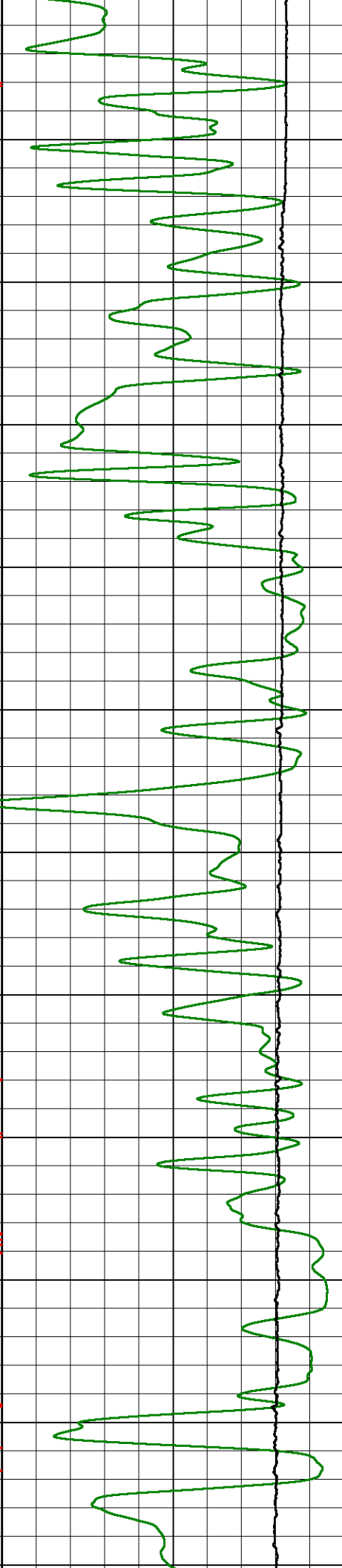
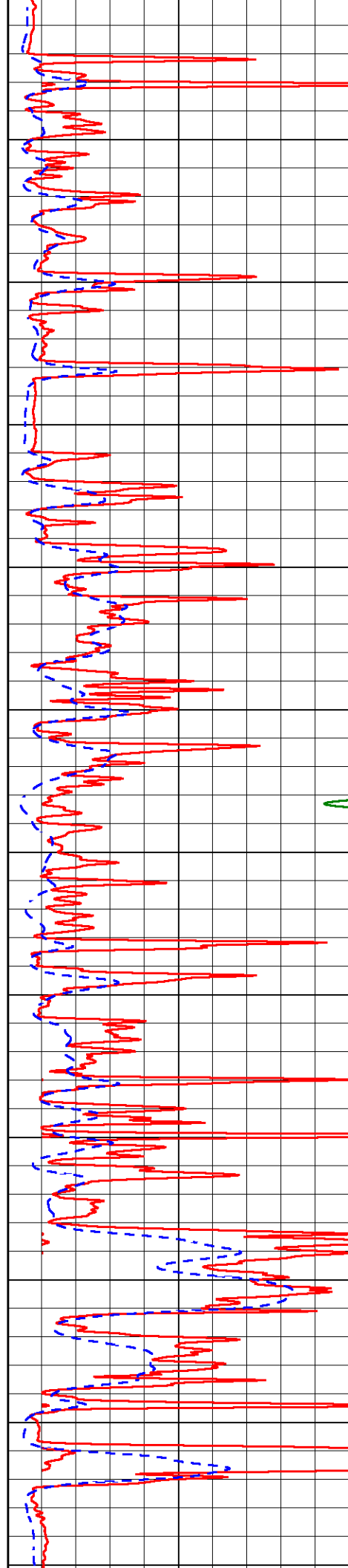


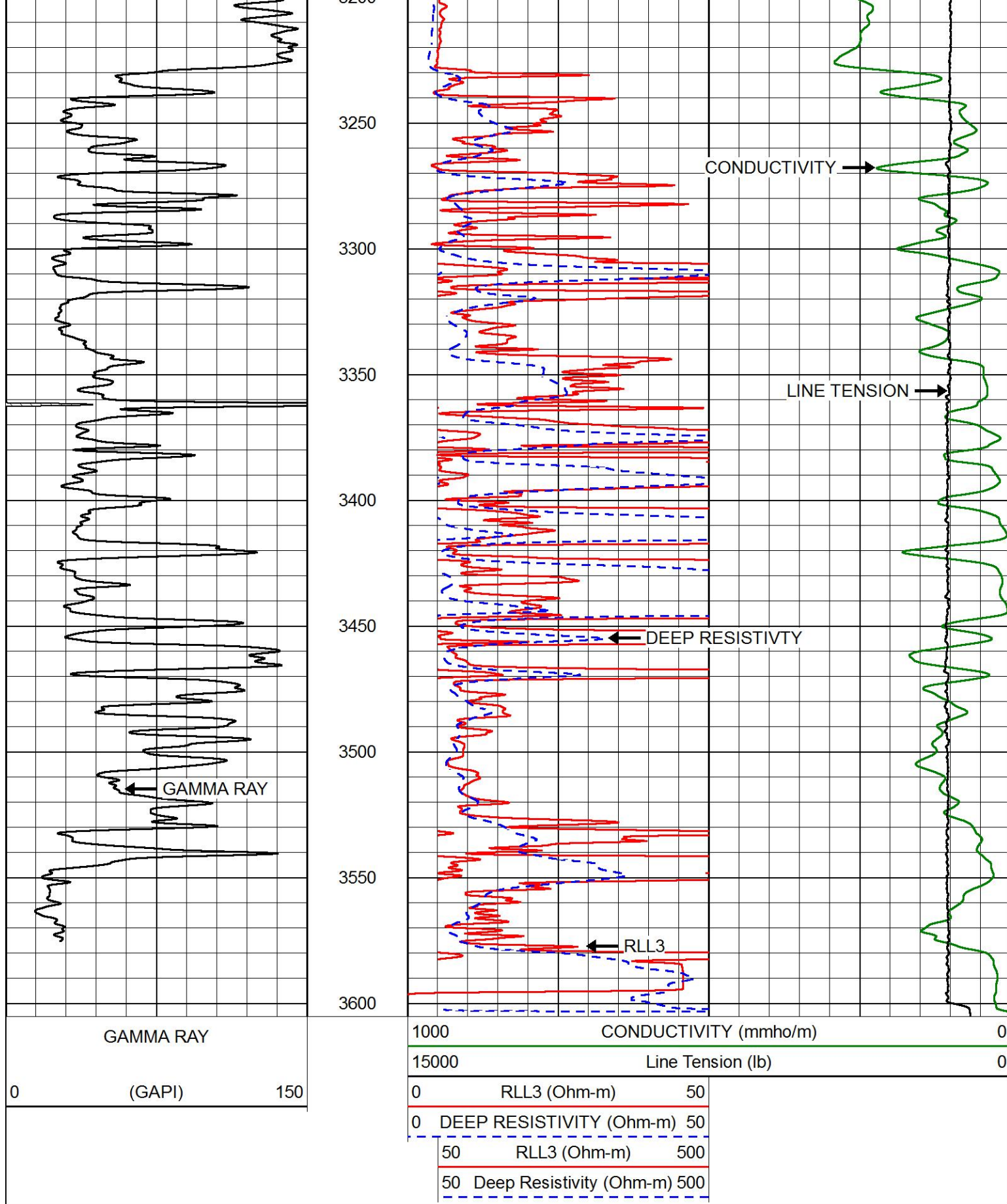
2100
2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650





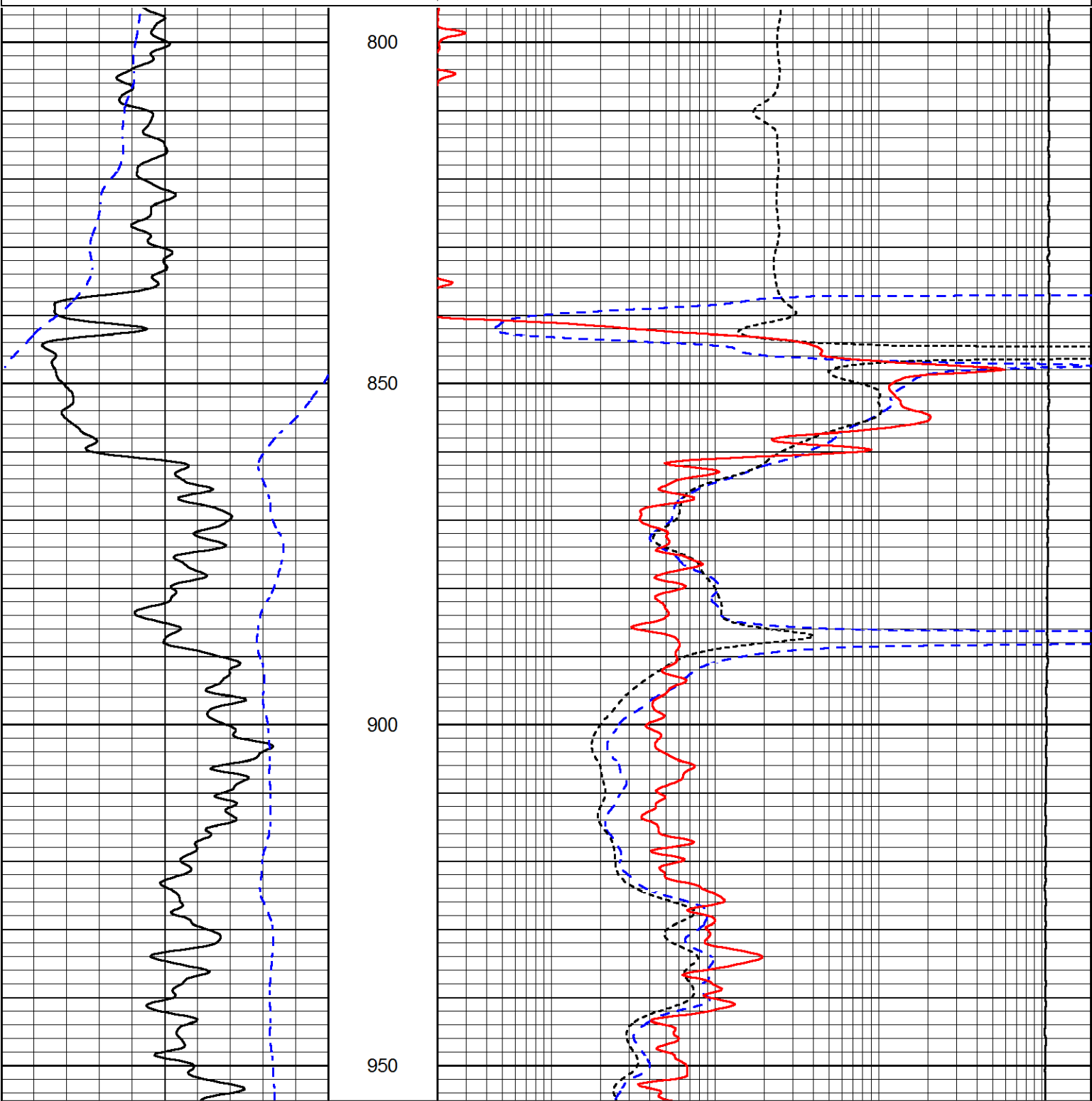
2600
2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200





Database File	lossil_energy_lee_1.db
Dataset Pathname	STK/pass5.1
Presentation Format	dil
Dataset Creation	Sat Aug 25 19:01:30 2018
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
			10000	LINE TENSION (lb)	0



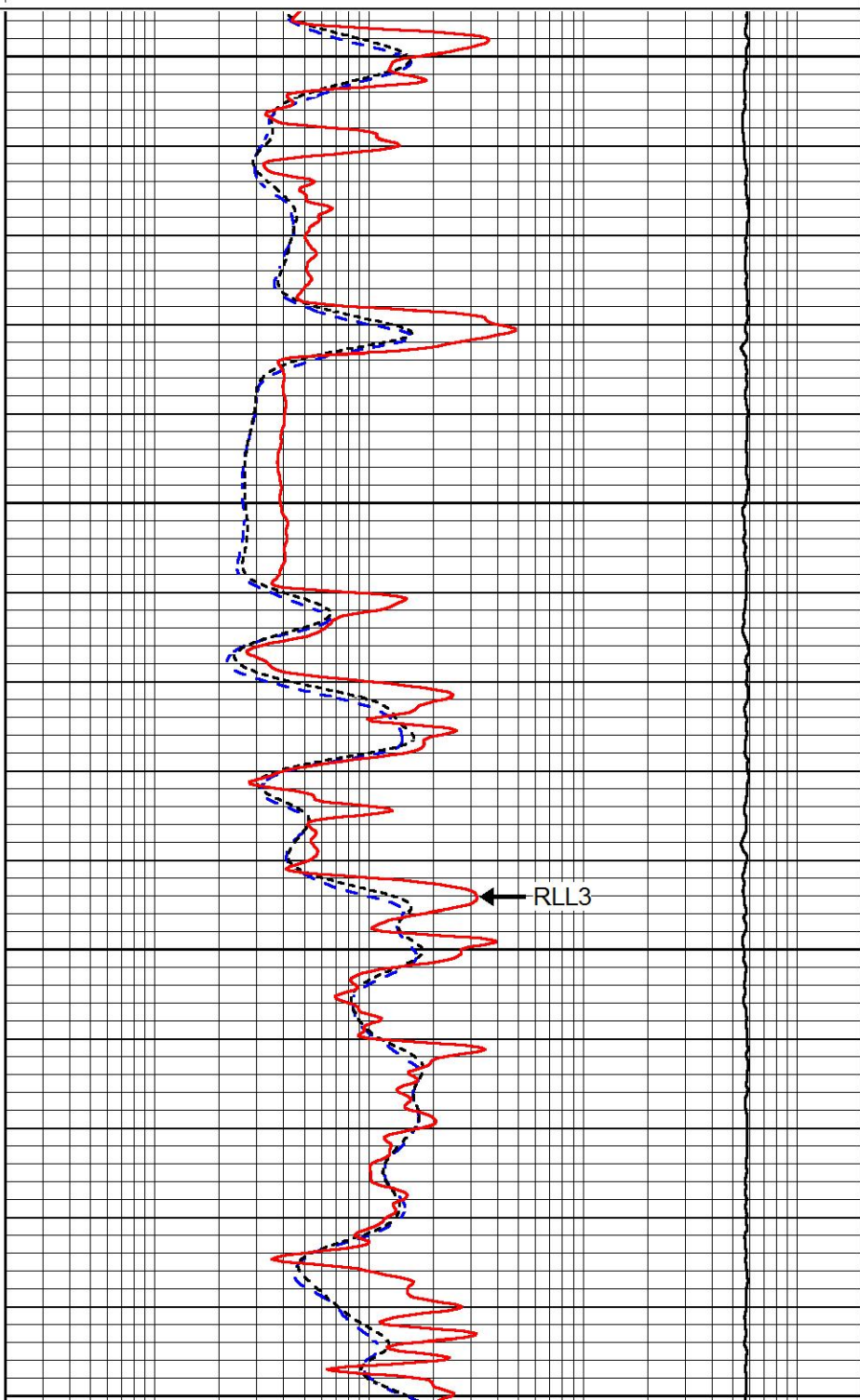
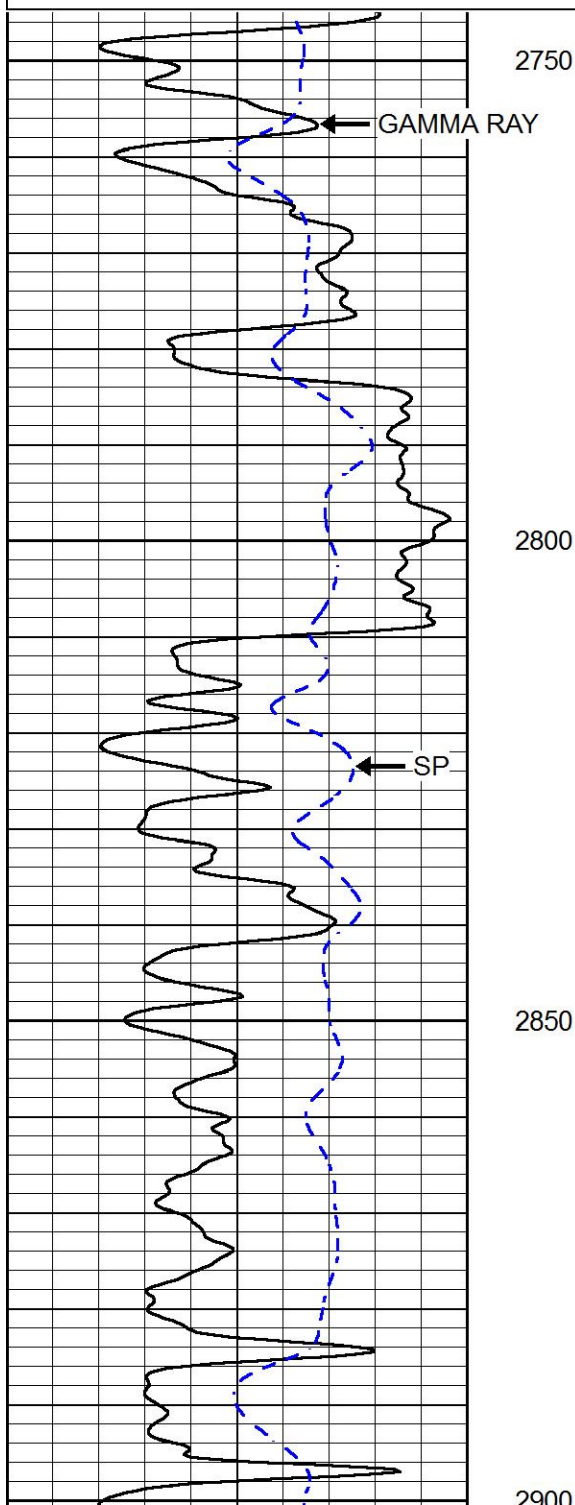
0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			10000	LINE TENSION (lb)	0

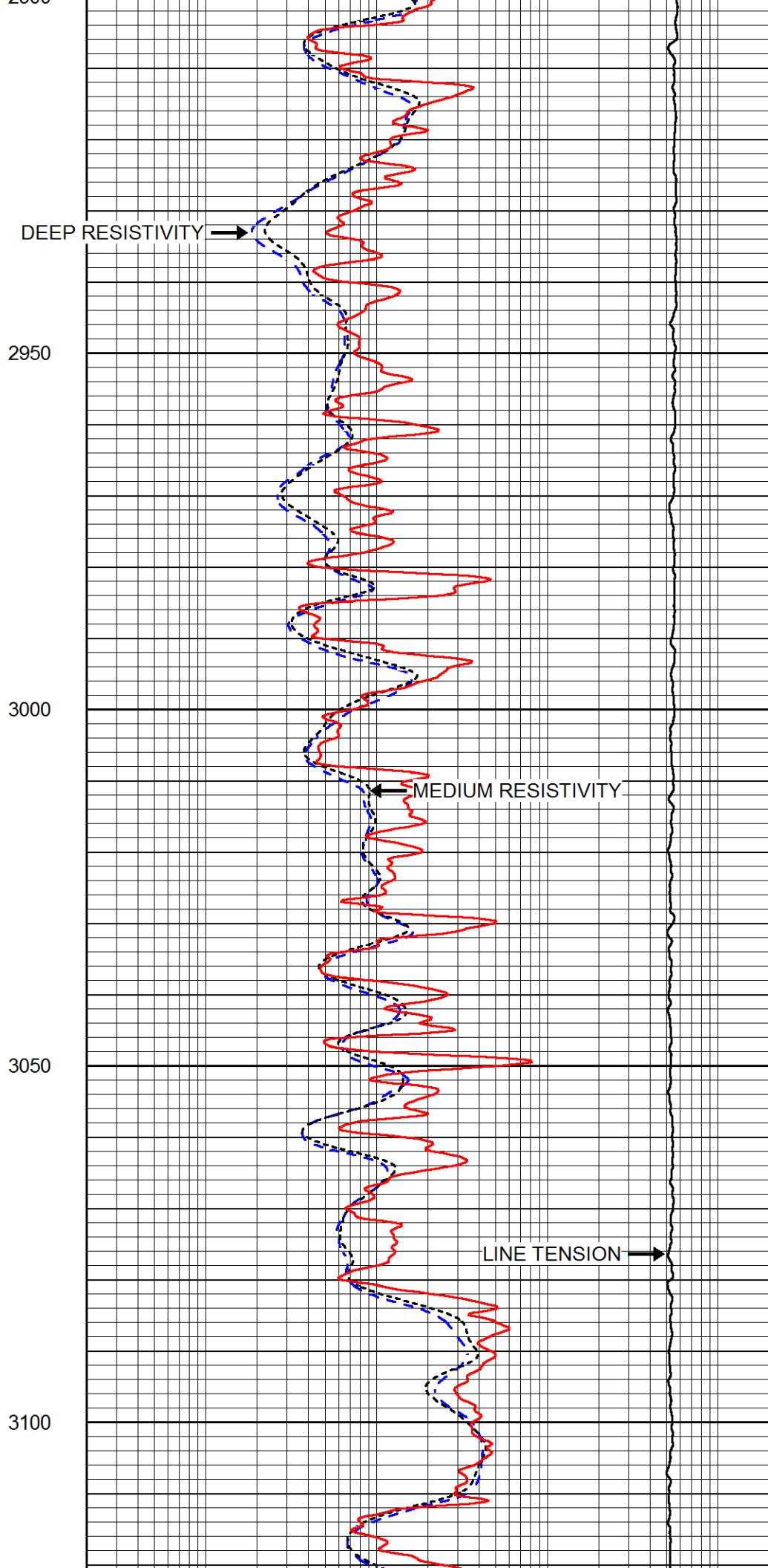
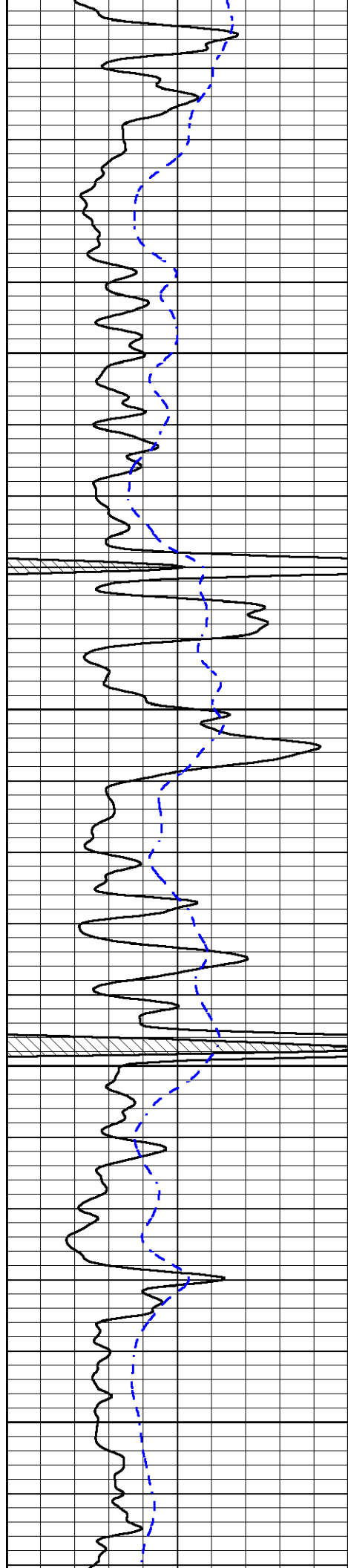
MAIN PASS

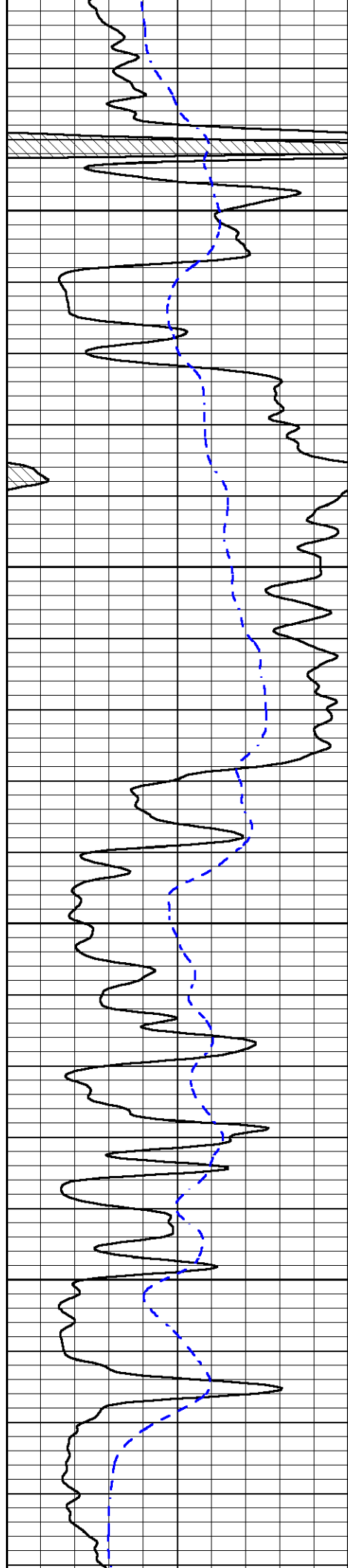
Database File fossil_energy_lee_1.db
Dataset Pathname STK/pass4.1
Presentation Format dil
Dataset Creation Sat Aug 25 18:29:07 2018
Charted by Depth in Feet scaled 1:240

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





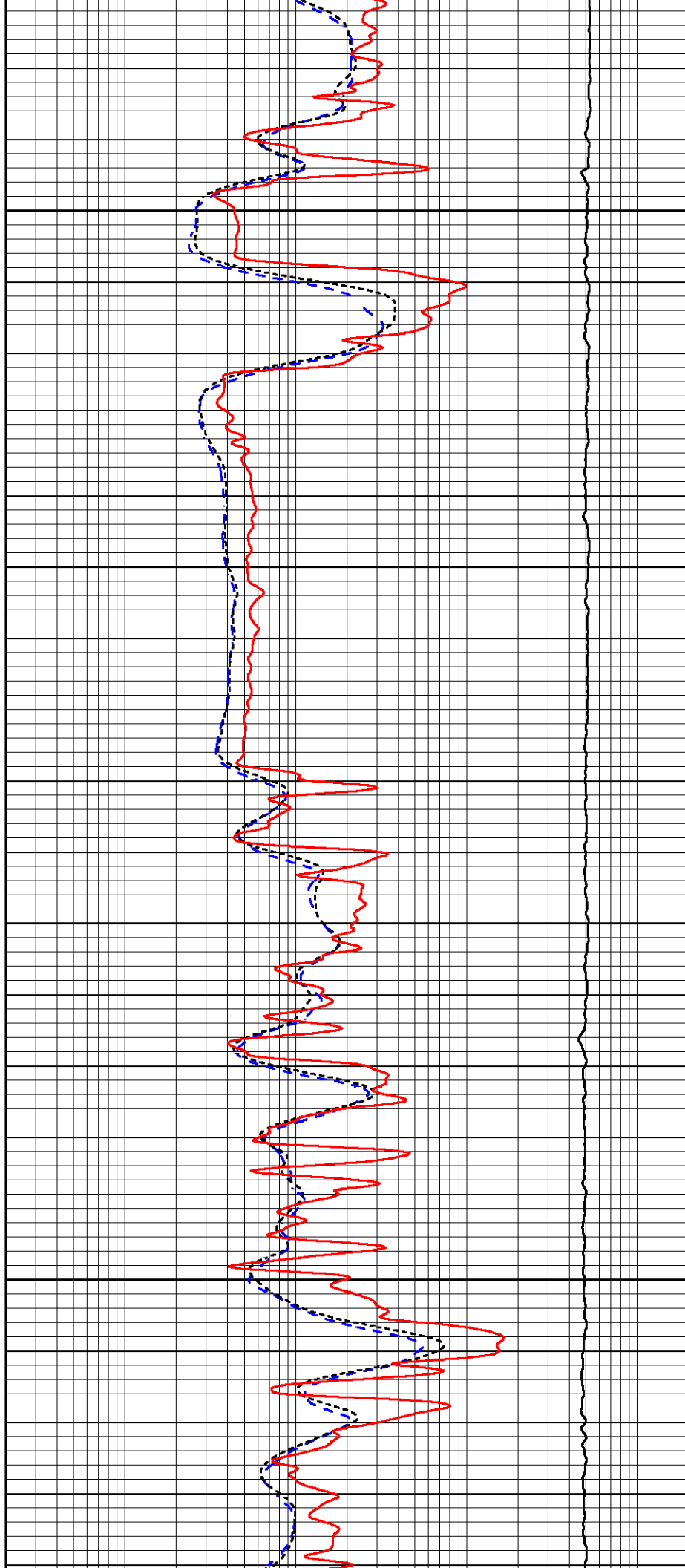


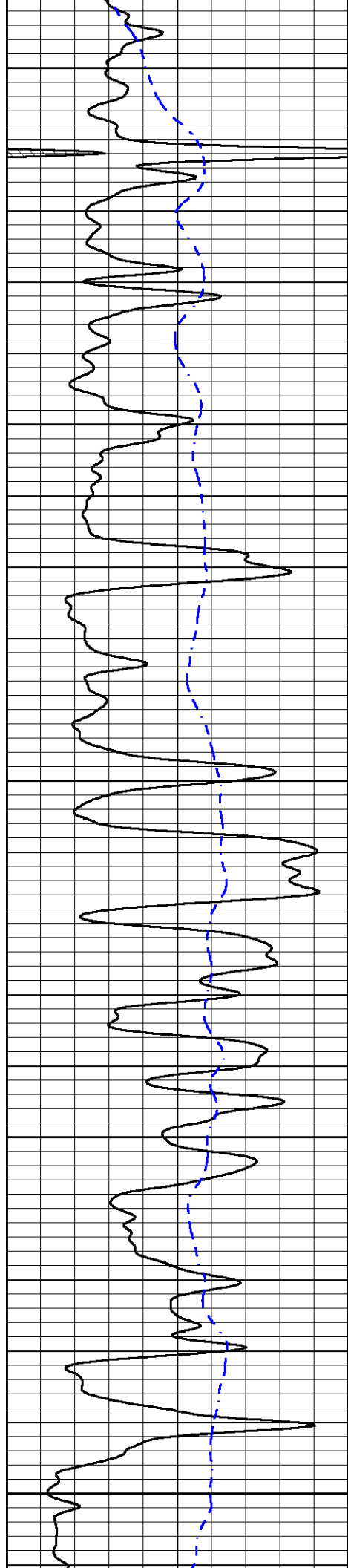
3150

3200

3250

3300





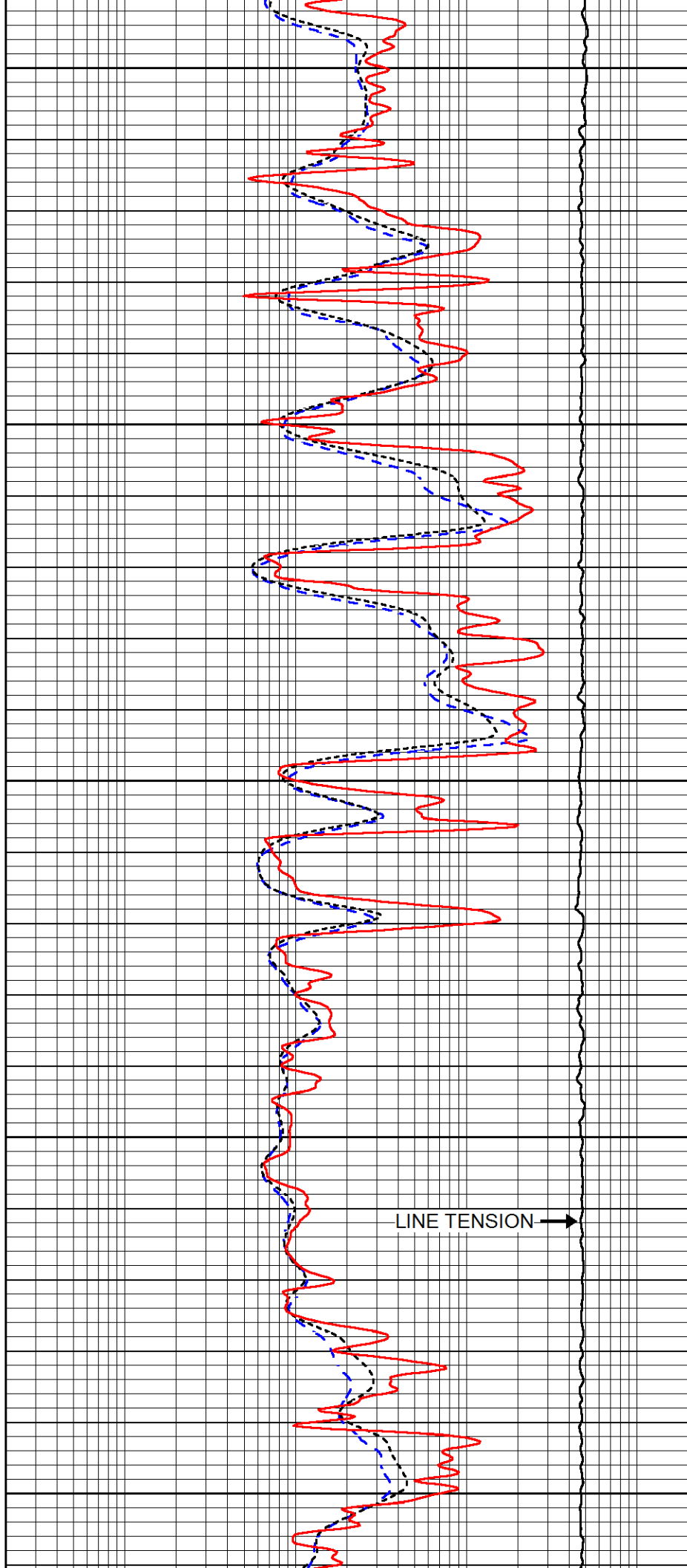
3350

3400

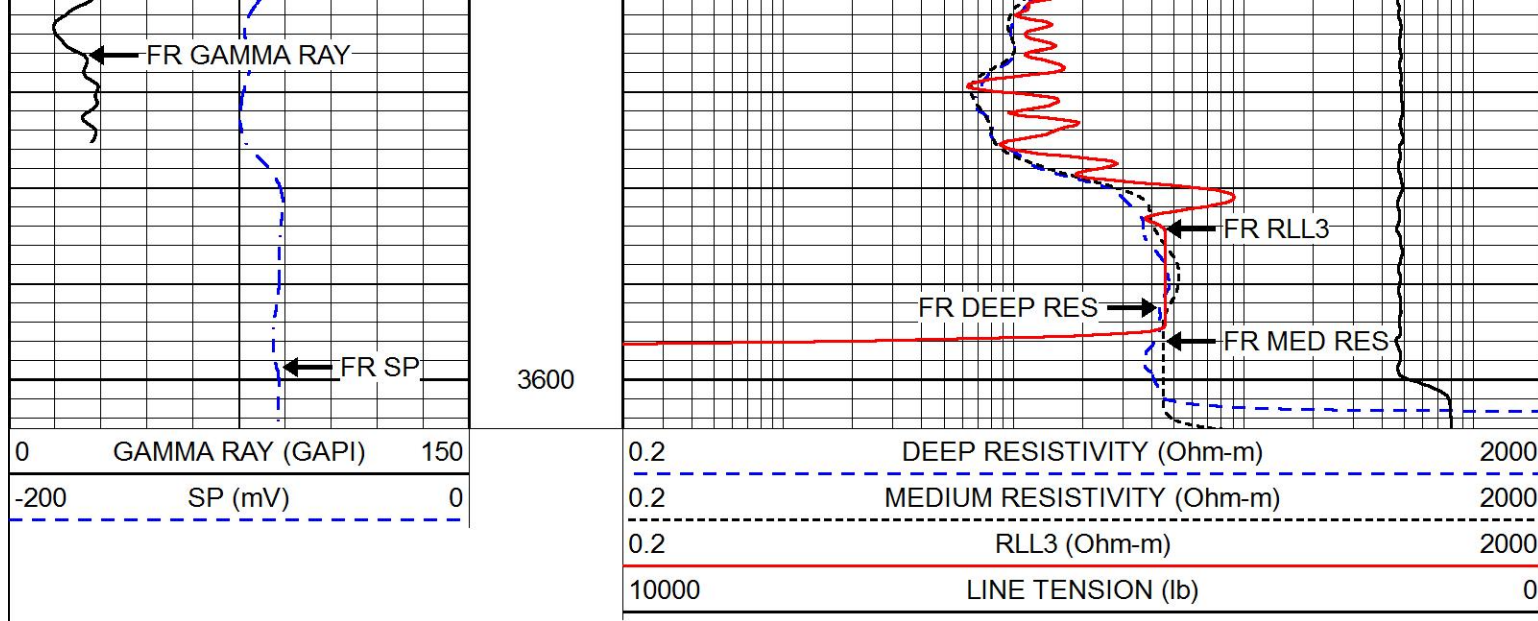
3450

3500

3550

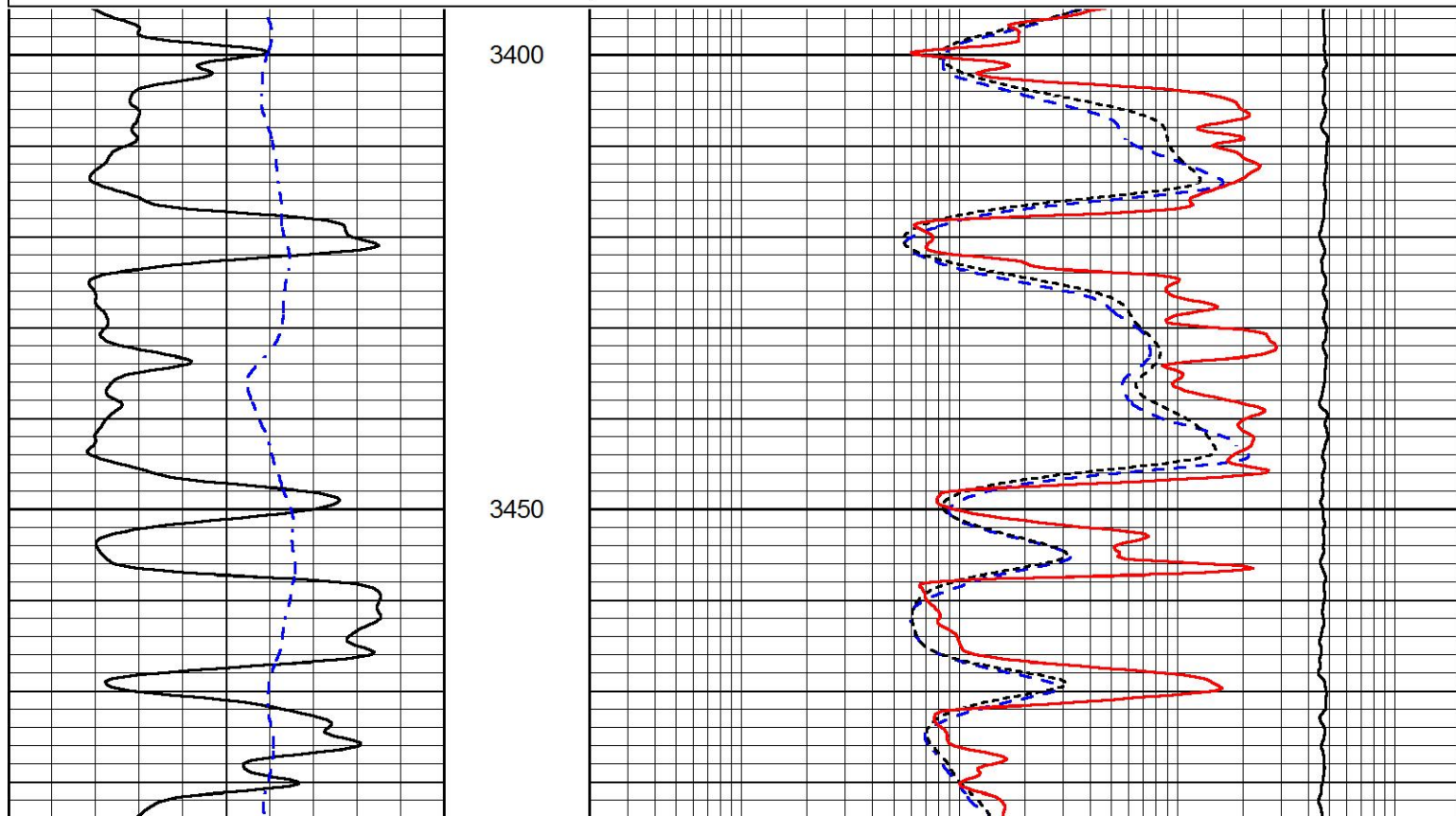
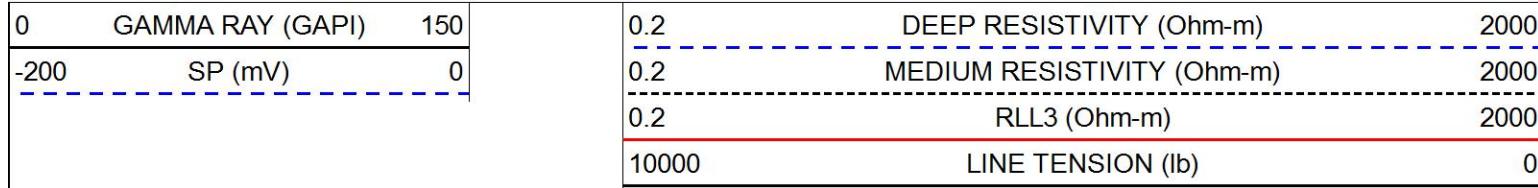


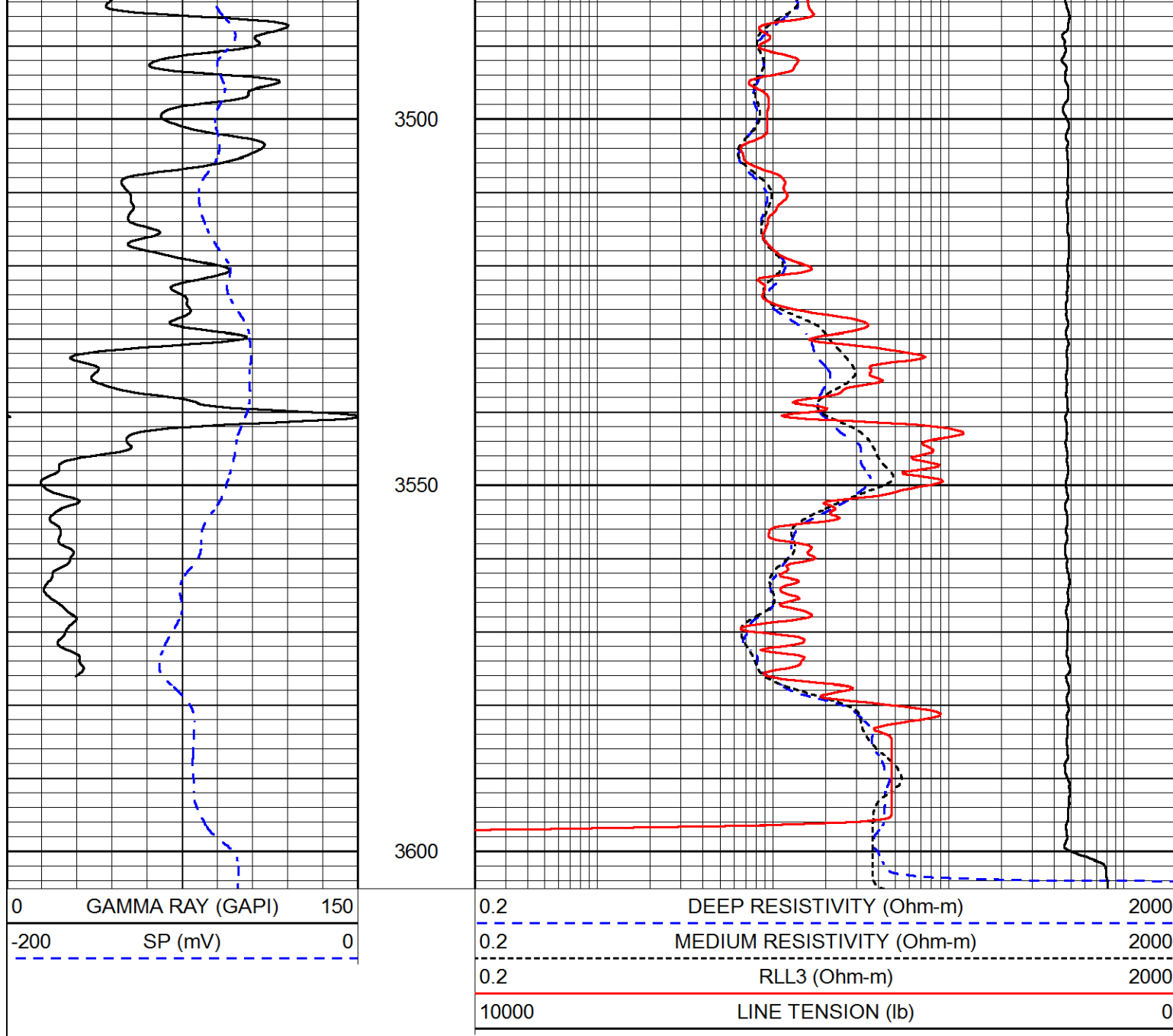
LINE TENSION →



REPEAT SECTION

Database File fossil_energy_lee_1.db
 Dataset Pathname STK/pass3.1
 Presentation Format dil
 Dataset Creation Sat Aug 25 18:54:50 2018
 Charted by Depth in Feet scaled 1:240





Calibration Report

Database File fossil_energy_lee_1.db
 Dataset Pathname STK/pass4.1
 Dataset Creation Sat Aug 25 18:29:07 2018

Dual Induction Calibration Report

Serial-Model: 967 (HT)-PSI HIGH TEMP
 Calibration Performed: Fri Aug 24 11:15:17 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-18.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

Compensated Density Calibration Report

Serial-Model: 797-152-M&W

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4933.40	5500.86	cps
Aluminum	2.640	g/cc	928.80	3521.29	cps
Spine Angle = 75.04			Density/Spine Ratio = 0.512		
	Size		Reading		
Small Ring	5.00	in	1.09		
Large Ring	15.00	in	1.03		

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: FRI AUG 24 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: Fri Aug 24 11:16:10 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company FOSSIL ENERGY, LLC
Well LEE #1
Field HEIZER
County BARTON
State KANSAS