



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **TDI, INC.**
Well **VIRGINIA #2**
Field **VIRGINIA**
County **ELLIS** State **KANSAS**

Location: API #: 15-051-26878-00-00

1005' FNL & 755' FEL

SEC 16 TWP 15S RGE 19W

Permanent Datum **GROUND LEVEL** Elevation **2009'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Other Services
CNL/CDL
MEL
Elevation
K.B. 2019'
D.F. N/A
G.L. 2009'

Date 7/17/2017

Run Number ONE

Depth Driller 3638'

Depth Logger 3637'

Bottom Logged Interval 3636'

Top Log Interval 1250'

Casing Driller 8.625" @ 1250'

Casing Logger 1251'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 5700

Density / Viscosity 9.1 52

pH / Fluid Loss 10.5 6.8

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.55 @ 80

Rmt @ Meas. Temp 0.41 @ 80

Rmc @ Meas. Temp 0.74 @ 80

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.39 @ 112

Operating Rig Time 3 1/2 HOURS

Max Rec. Temp. F 112

Equipment Number 91

Location HAYS

Recorded By D. SCHMIDT

Witnessed By TOM DENNING

HERB DEINES

<<< 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.

ANTONINO,
2 WEST, 2 SOUTH, 1/8 WEST,
SOUTH INTO

Log Measured From: KELLY BUSHING

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: TOM DENNING

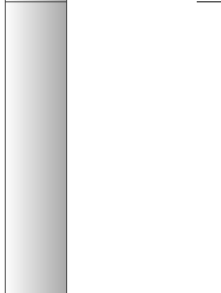
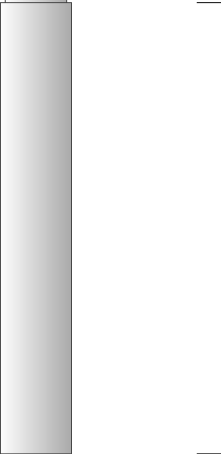
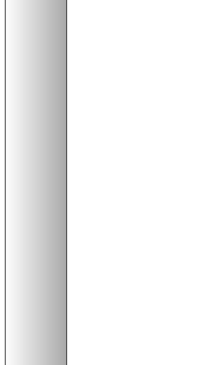
Secondary Witness: HERB DEINES

Secondary Witness:

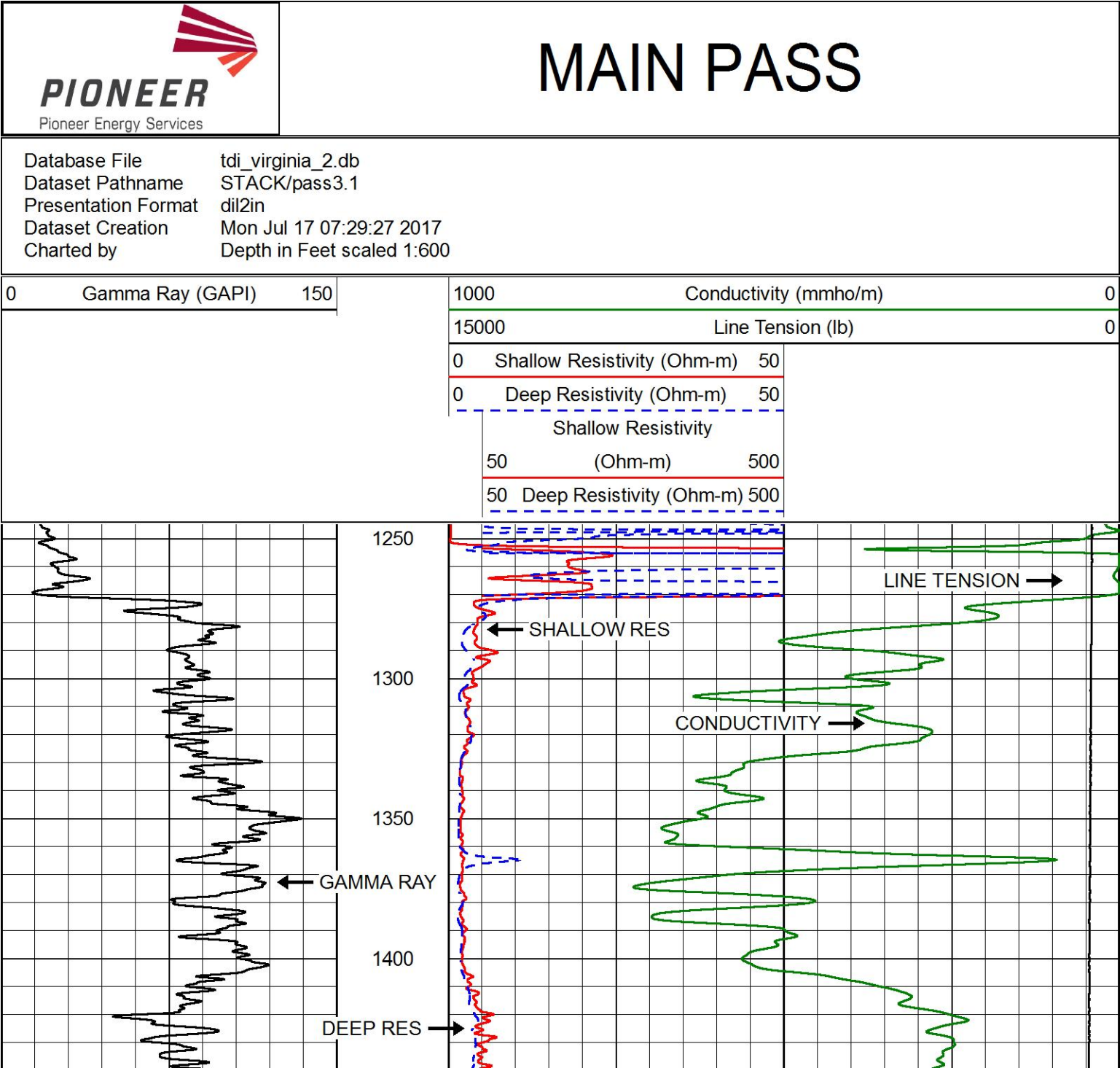
Secondary Witness:

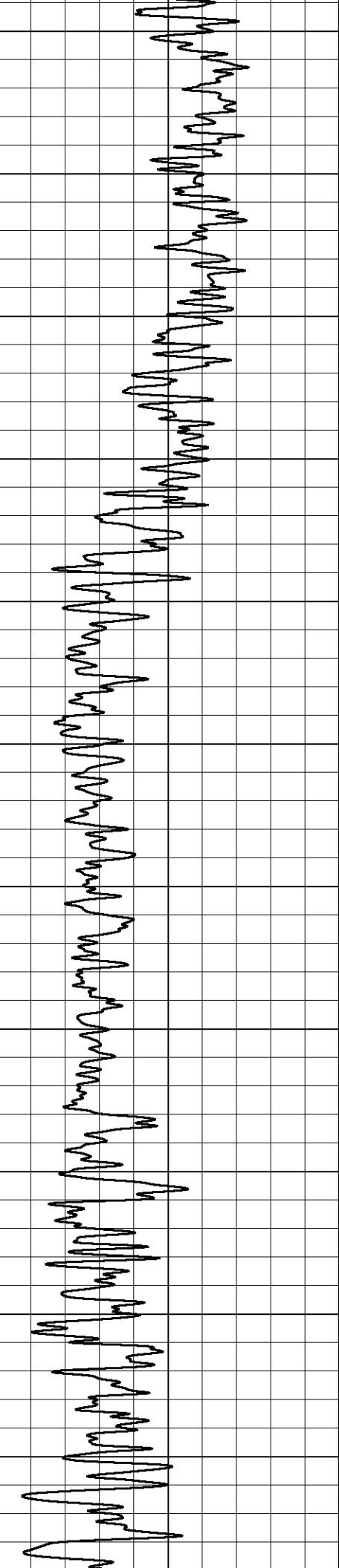
Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	105	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	80	0	5.5	0	3637	112	7.875

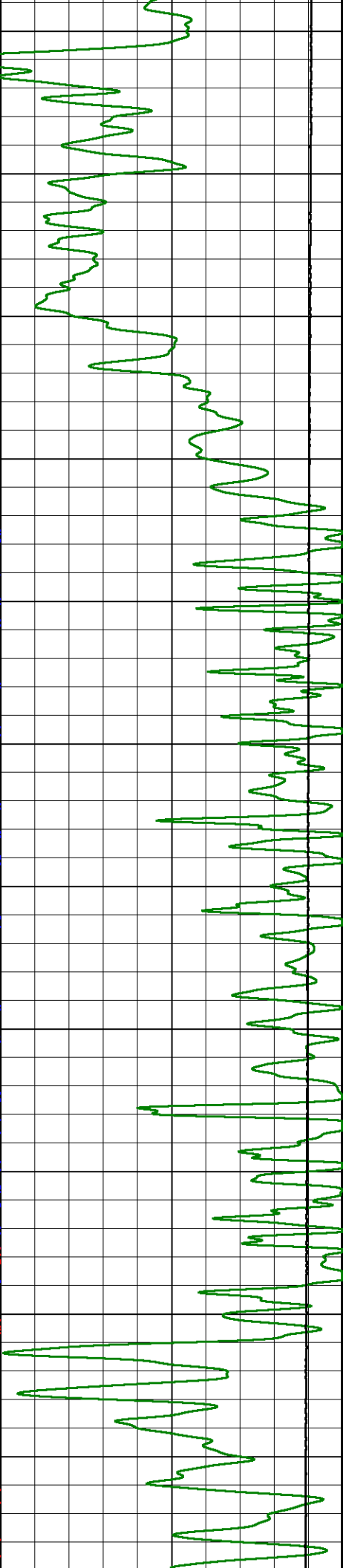
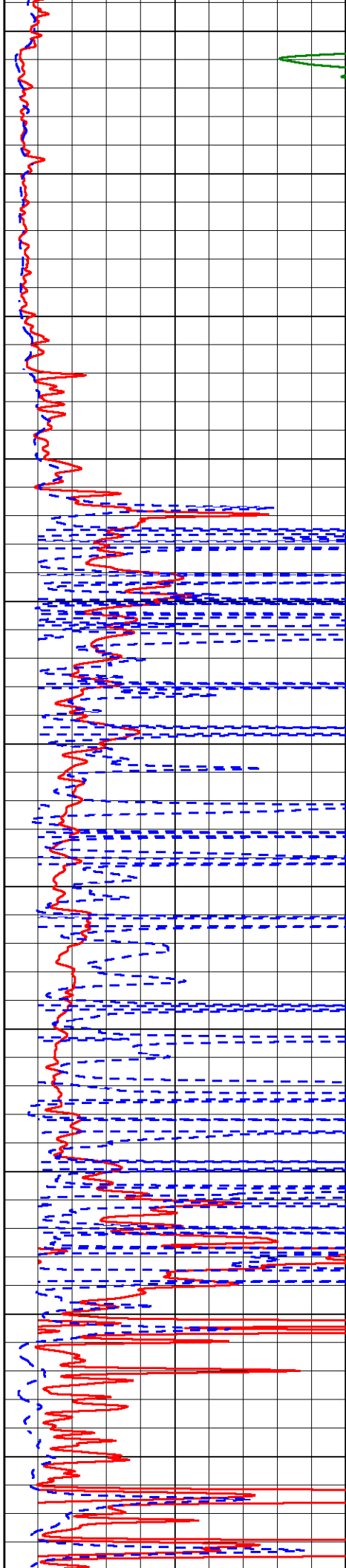
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (90-1031)	8.50	4.00	250.00
RLL3F RLL3	15.80 15.80					
CILD	8.00		DIL-M&W (PSI 91)	18.50	3.50	220.00

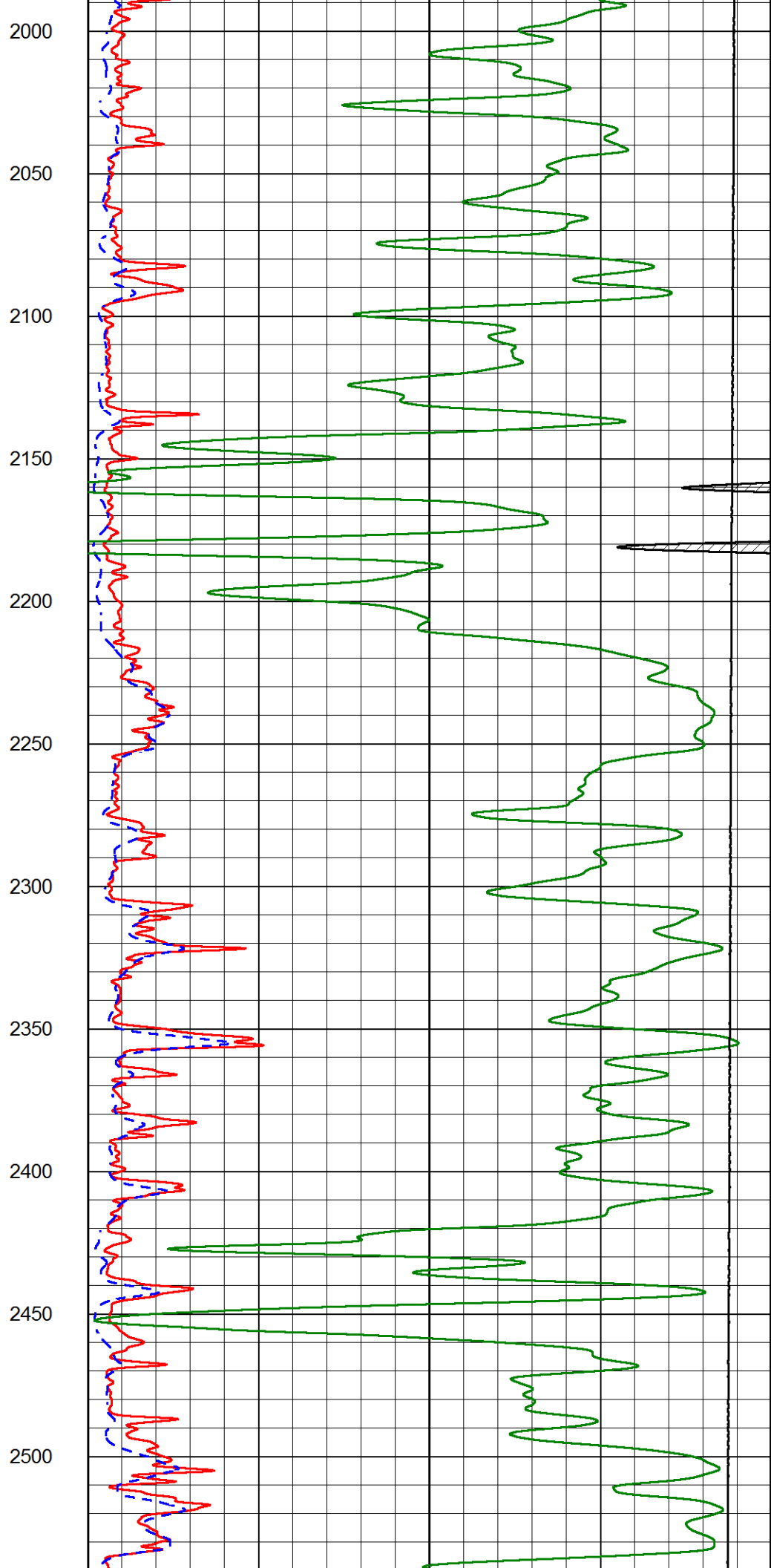
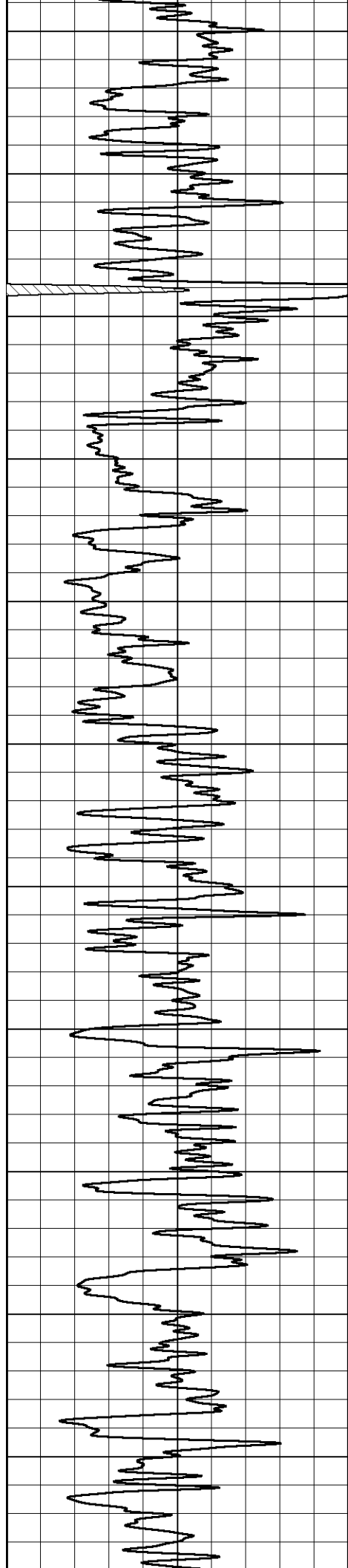
CILM	4.70								
SP	0.20								
Dataset: tdi_virginia_2.db: field/well/STACK/pass3.5 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

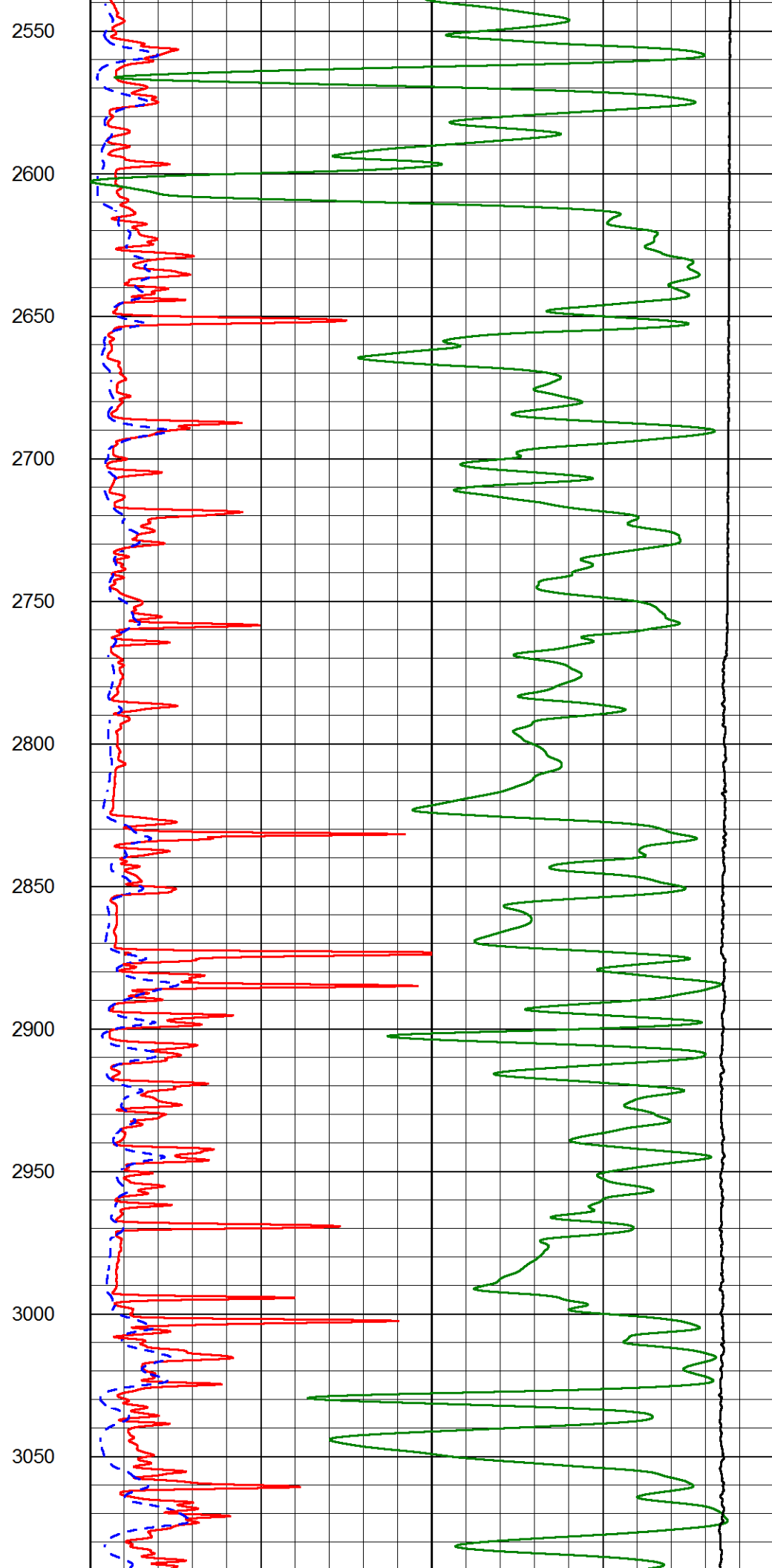
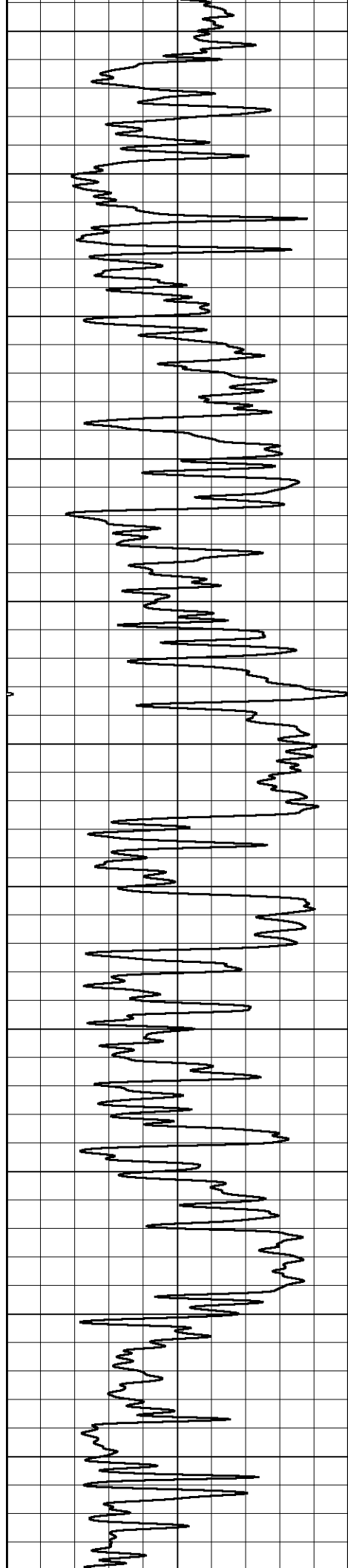


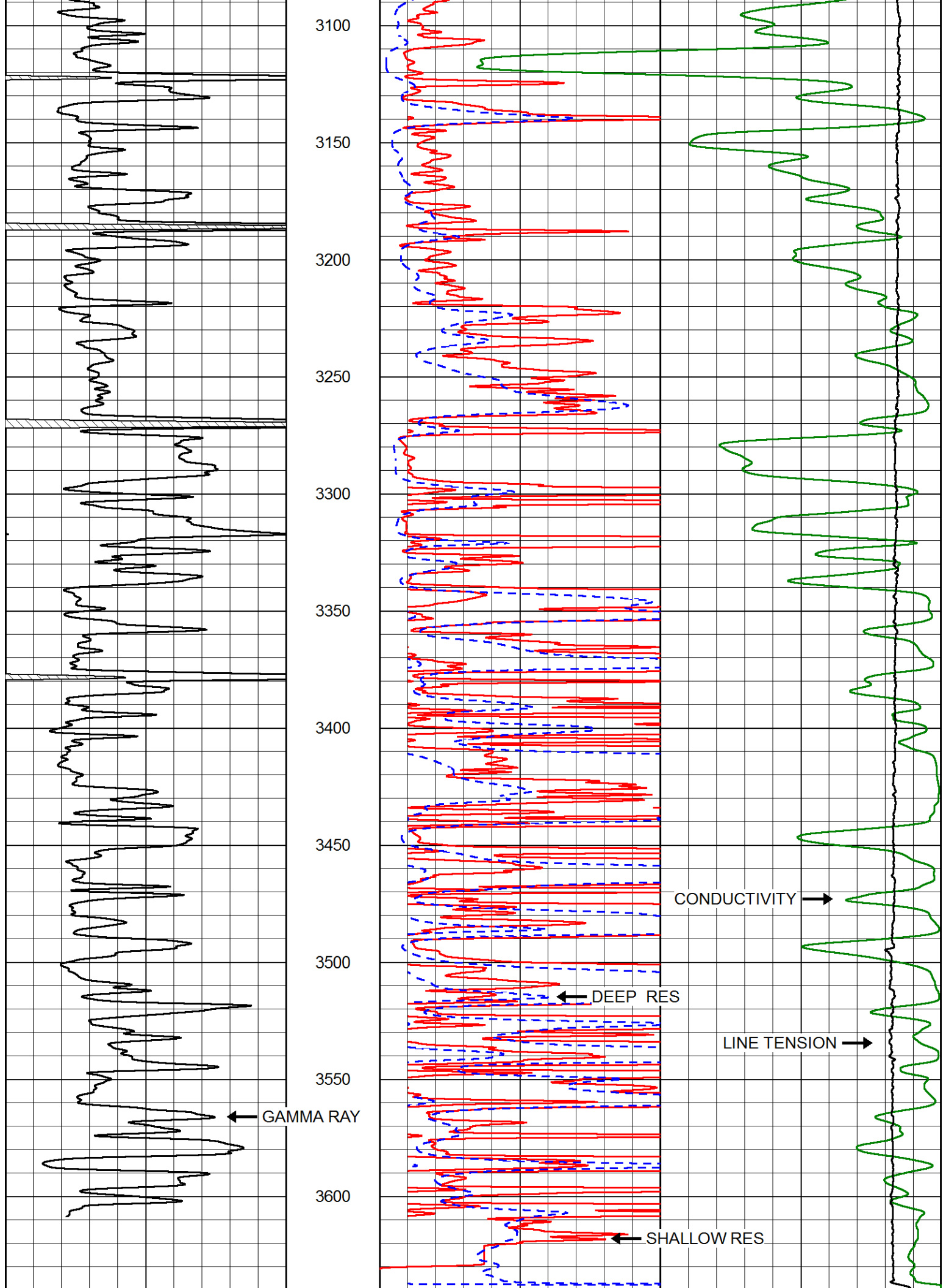


1450
1500
1550
1600
1650
1700
1750
1800
1850
1900
1950









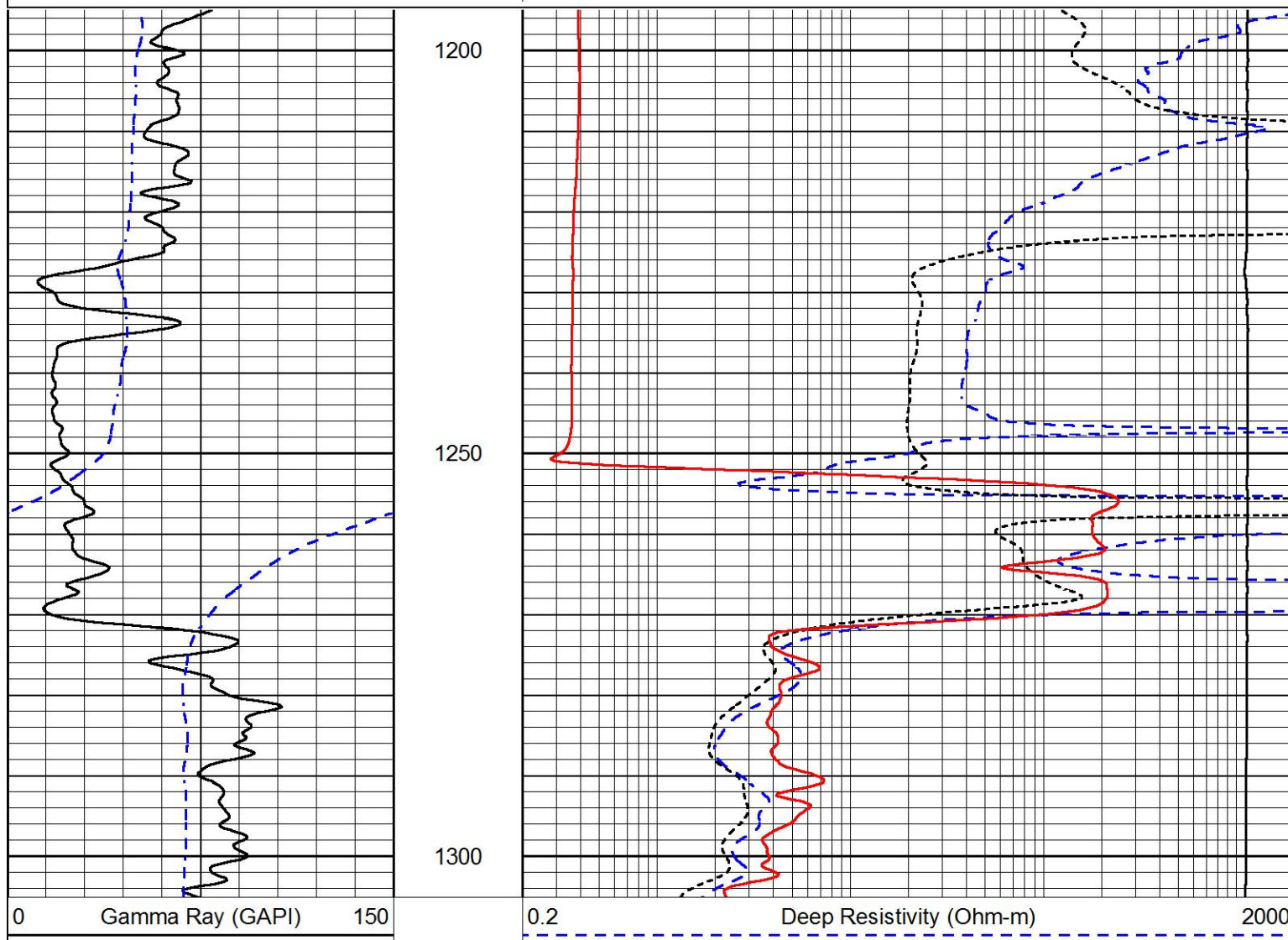
0	Gamma Ray (GAPI)	150	1000	Conductivity (mmho/m)	0
			15000	Line Tension (lb)	0
			0	Shallow Resistivity (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50
				Shallow Resistivity	
			50	(Ohm-m)	500
			50	Deep Resistivity (Ohm-m)	500



MAIN PASS

Database File tdi_virginia_2.db
Dataset Pathname STACK/pass3.1
Presentation Format dil
Dataset Creation Mon Jul 17 07:29:27 2017
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



-200	SP (mV)	0

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

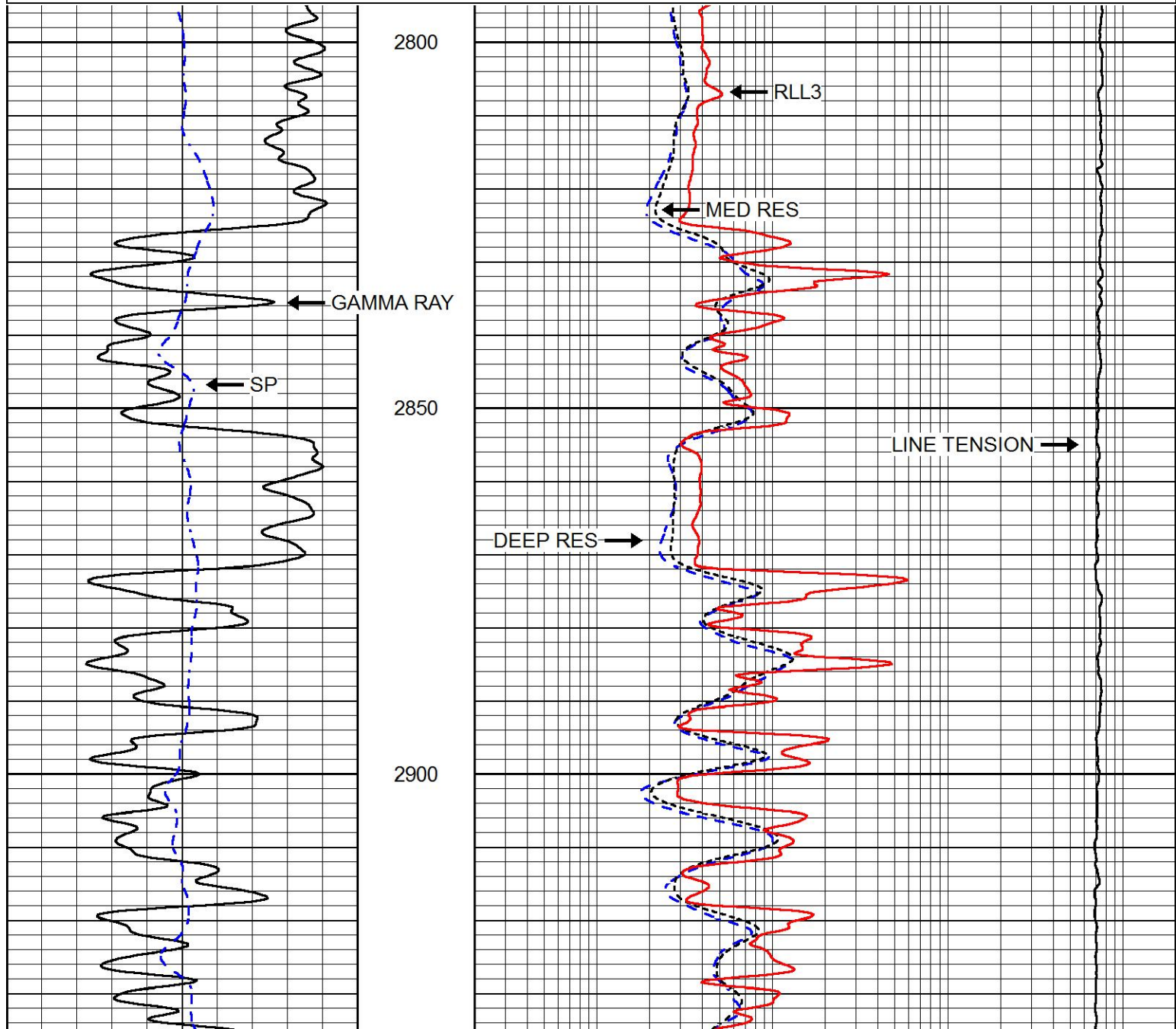


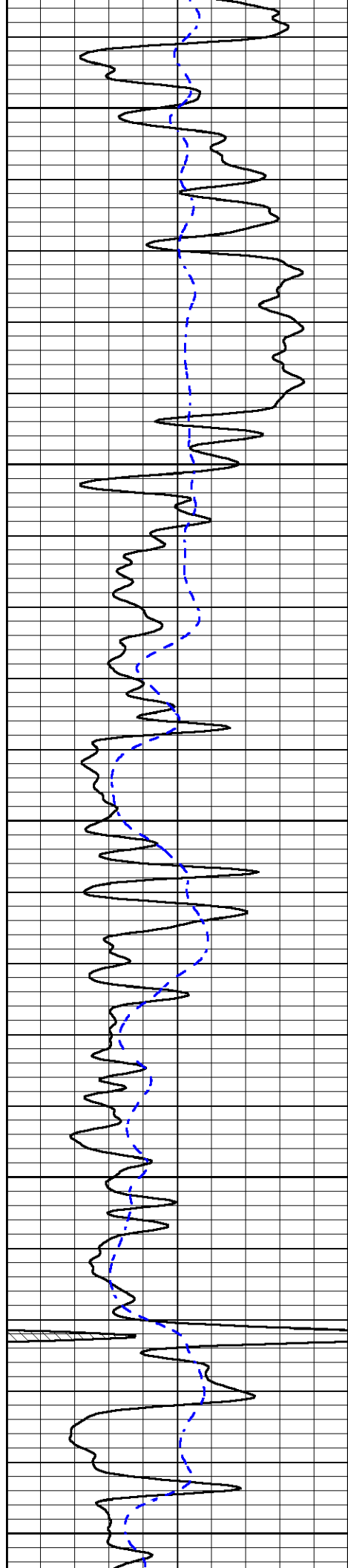
MAIN PASS

Database File	tdi_virginia_2.db
Dataset Pathname	STACK/pass3.1
Presentation Format	dil
Dataset Creation	Mon Jul 17 07:29:27 2017
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





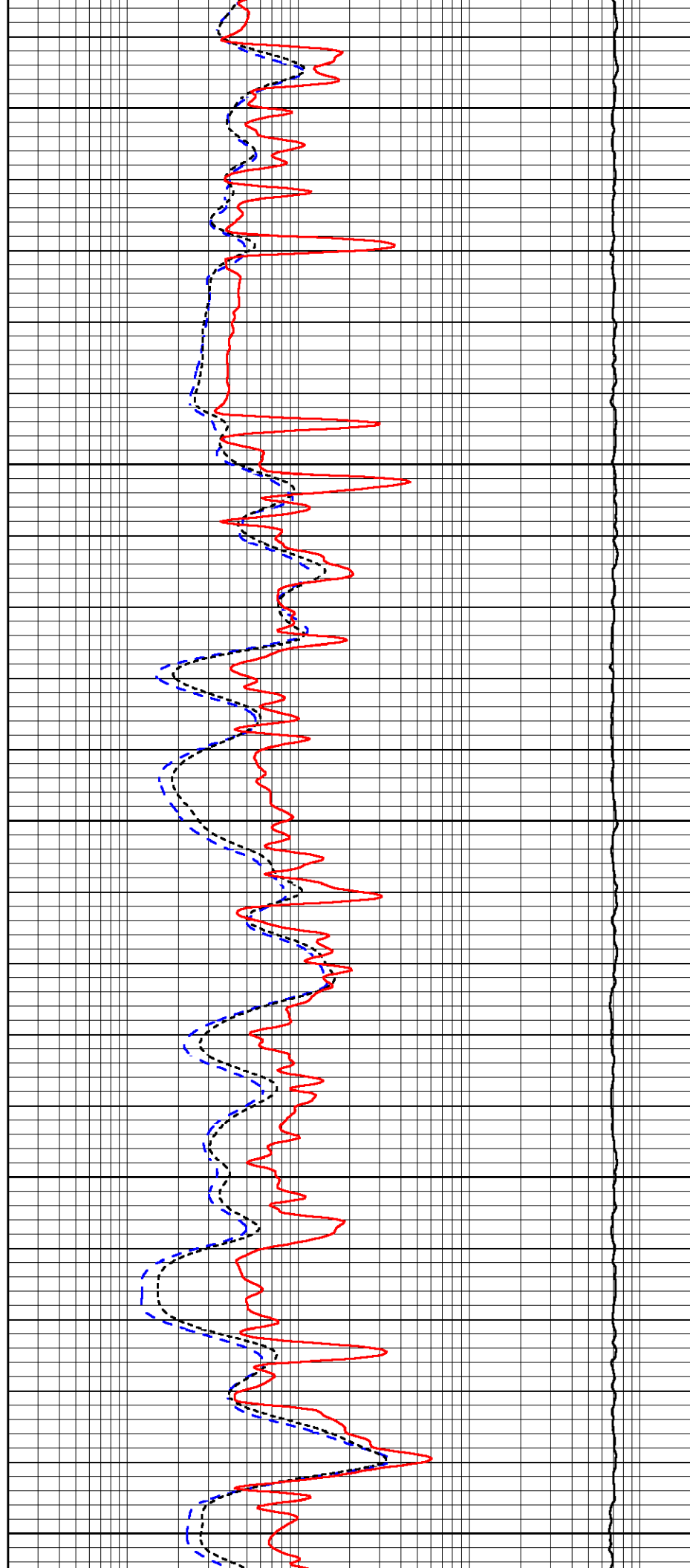
2950

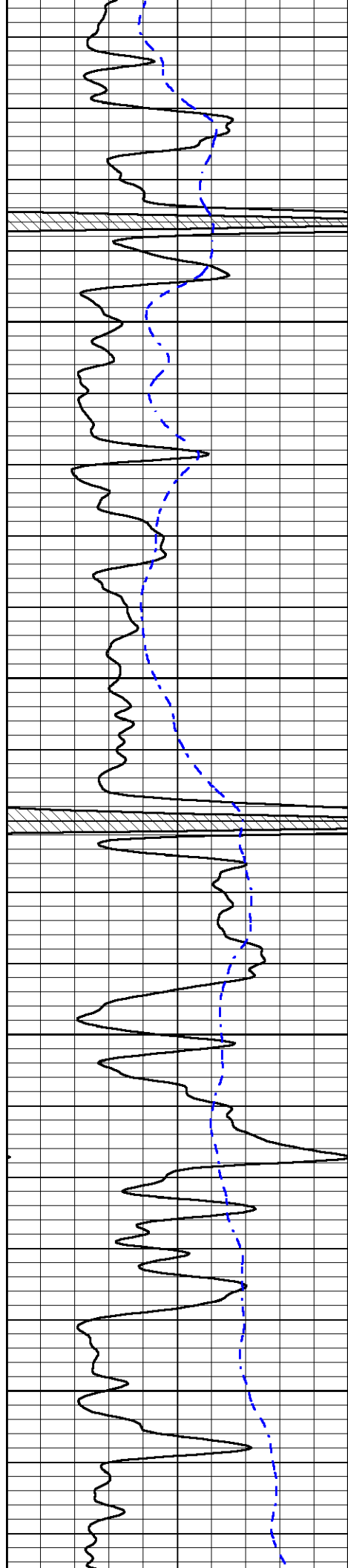
3000

3050

3100

3150



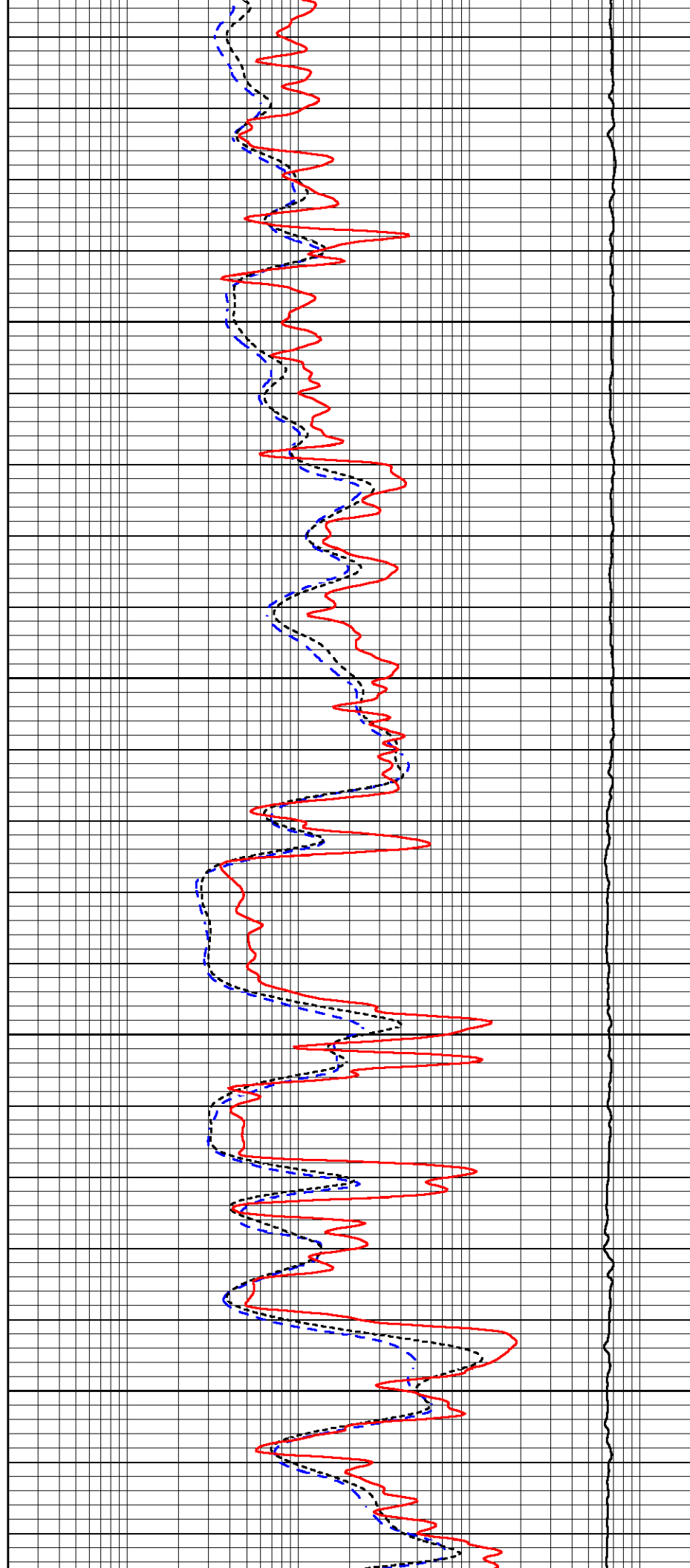


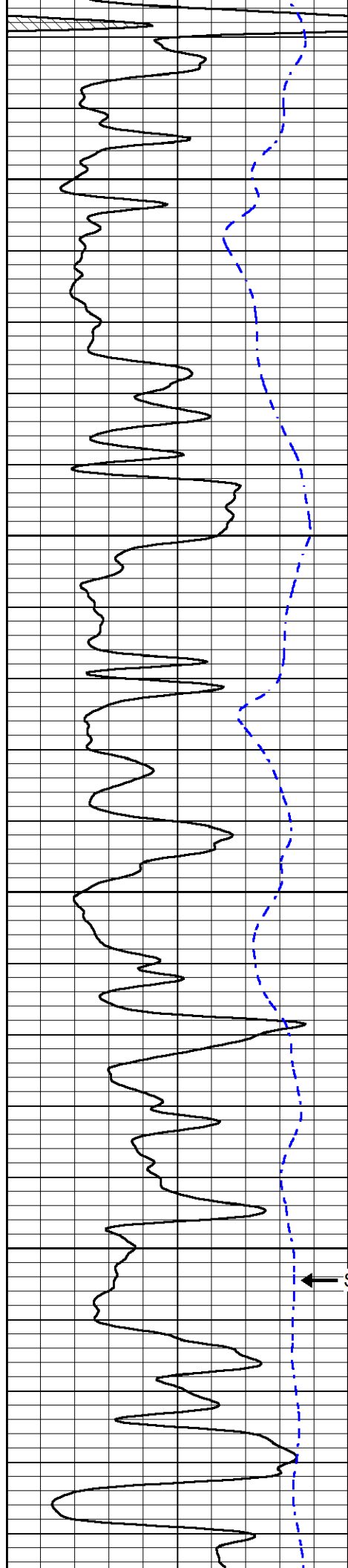
3200

3250

3300

3350





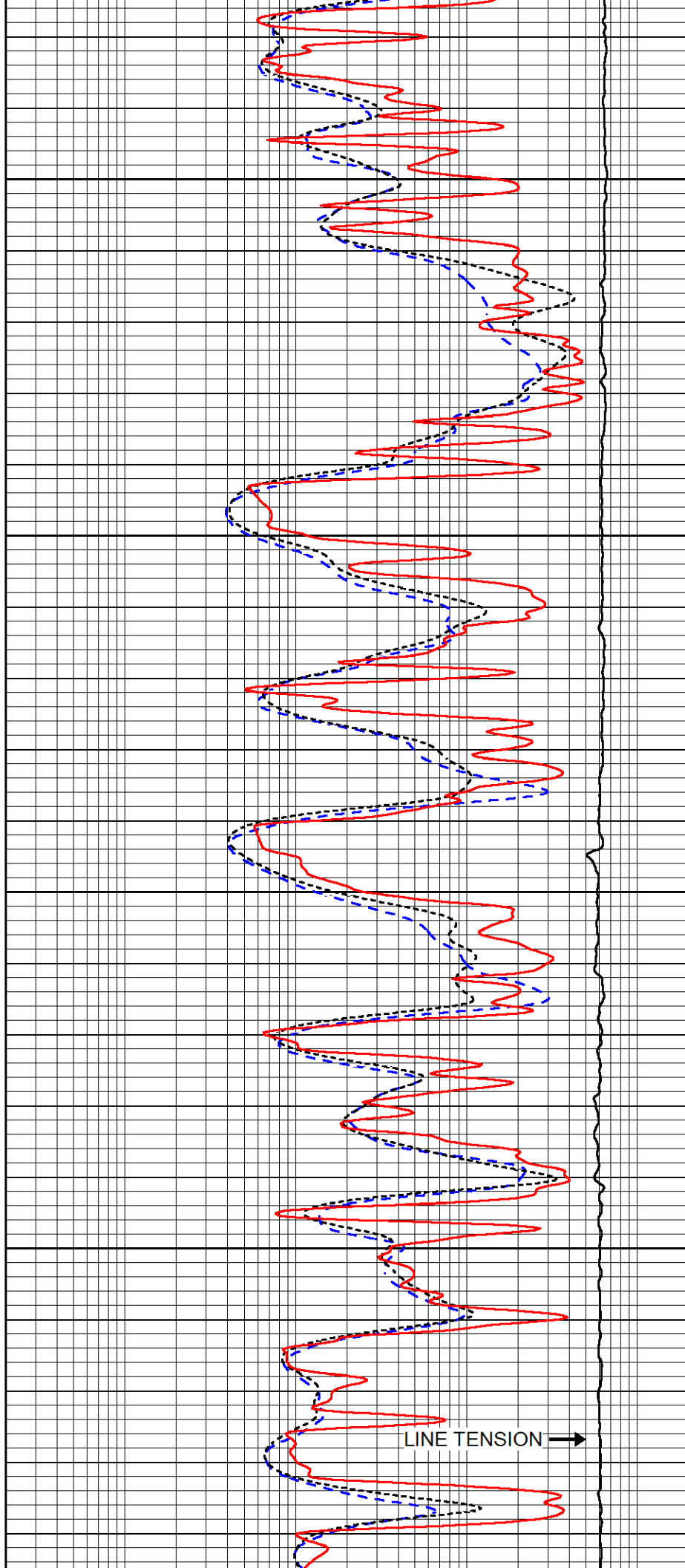
3400

3450

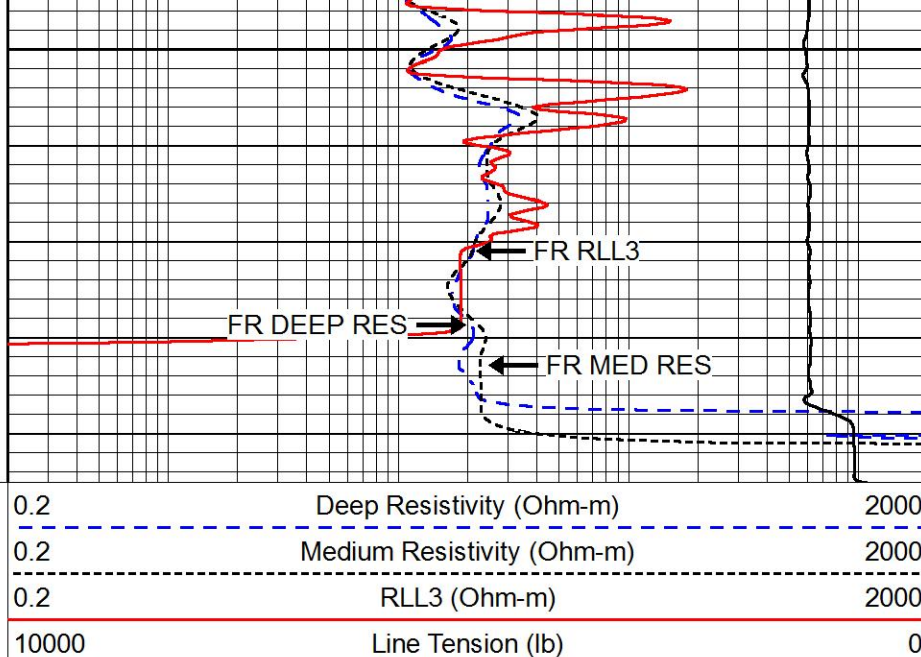
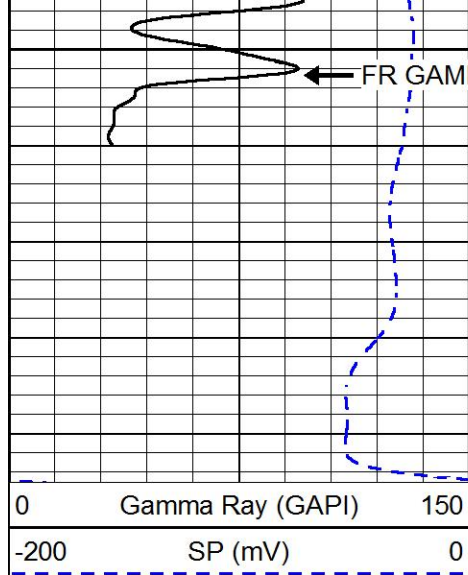
3500

3550

← SP

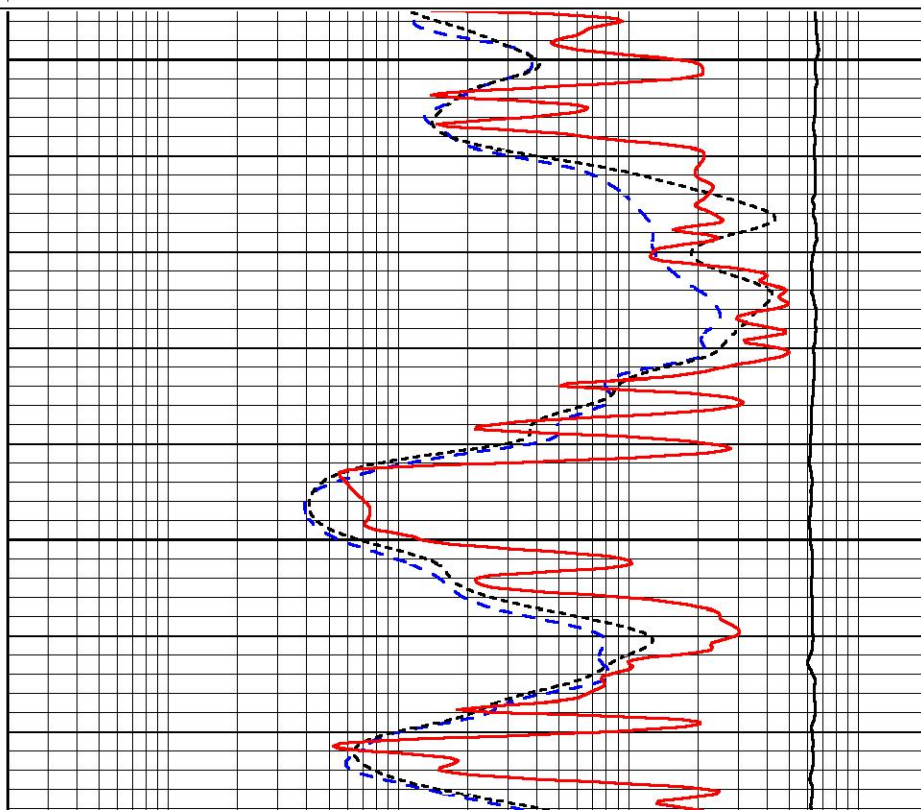
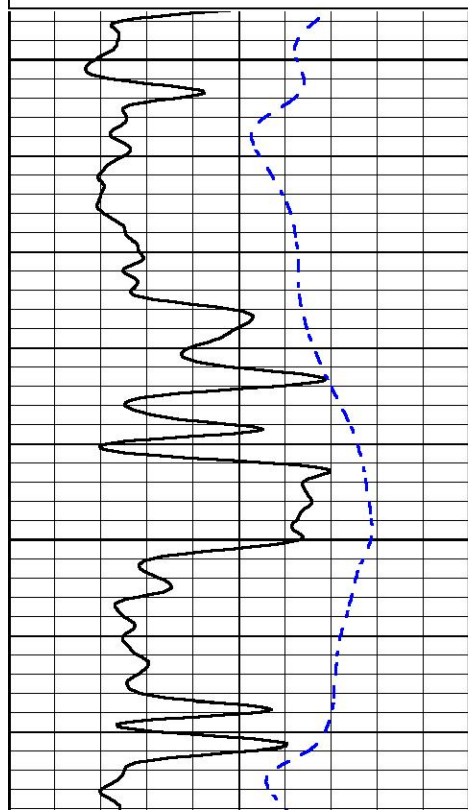
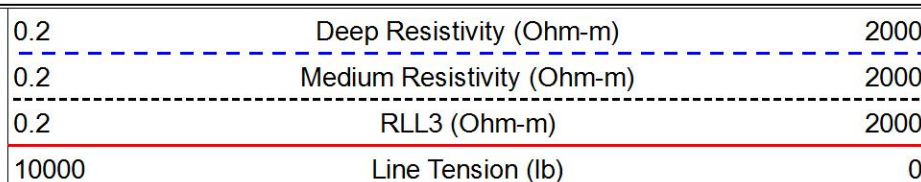
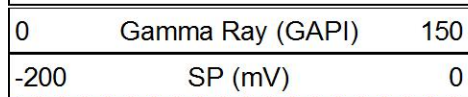


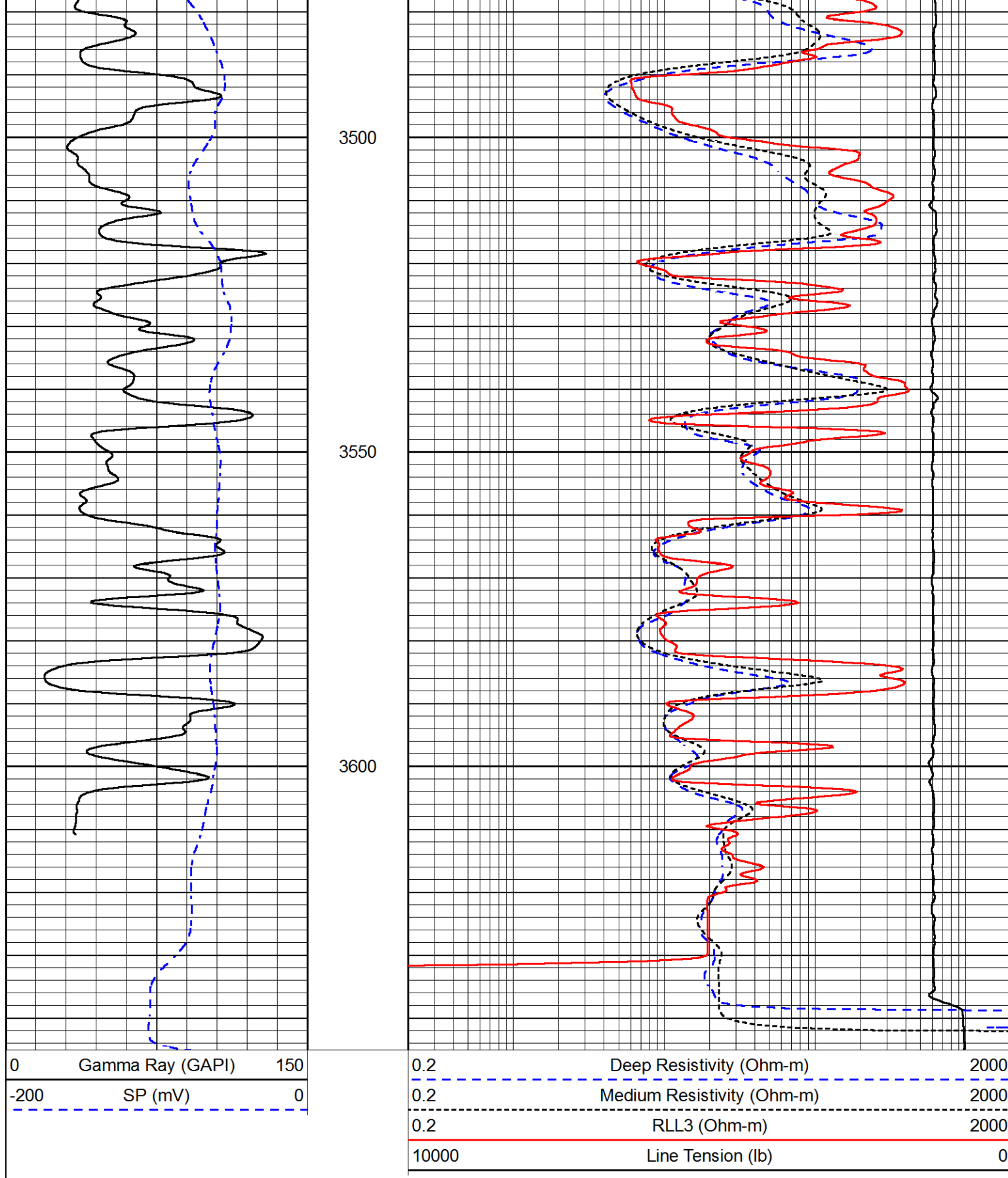
LINE TENSION →



REPEAT SECTION

Database File tdi_virginia_2.db
 Dataset Pathname STACK/pass2.4
 Presentation Format dil
 Dataset Creation Mon Jul 17 07:16:41 2017
 Charted by Depth in Feet scaled 1:240





Calibration Report

Database File tdi_virginia_2.db
Dataset Pathname STACK/pass3.5
Dataset Creation Mon Jul 17 07:15:58 2017

Dual Induction Calibration Report

Serial-Model:

PSI 91-M&W

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.430	-32.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-31.000

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Thu Jul 13 13:00:48 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4903.44	6153.79	cps
Aluminum	2.675	g/cc	934.50	4021.31	cps
Spine Angle = 75.61			Density/Spine Ratio = 0.538		
	Size		Reading		
Small Ring	8.00	in	1.84		
Large Ring	22.00	in	1.46		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: Sat Jun 17 10:30:30 2017

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: Thu Jul 13 13:01:02 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company TDI, INC.
 Well VIRGINIA #2
 Field VIRGINIA
 County ELLIS
 State KANSAS

Heat Energy Services

[illegible]