



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **COBALT ENERGY, LLC**
Well **ELIZABETH A #2-36**
Field **WILDCAT**
County **Graham** State **KANSAS**

Location: API #: 15-065-24182-00-00

Other Services

947' FSL & 1016'
SE - NE - SW - SW

SEC 36 TWP 8S RGE 22W

Elevation

Permanent Datum GROUND LEVEL Elevation 2160'

Log Measured From KELLY BUSHING

Drilling Measured From KELLY BUSHING

K.B. 2165'
D.F. N/A
G.L. 2160'

Date 02/25/2020

Run Number ONE

Depth Driller 3800'

Depth Logger 3801'

Bottom Logged Interval 3800'

Top Log Interval 200'

Casing Driller 8.625" @ 220'

Casing Logger 220'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 3200

Density / Viscosity 9.3 59

pH / Fluid Loss 10.0 604

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.70 @ 60

Rmt @ Meas. Temp 0.53 @ 60

Rmc @ Meas. Temp 0.95 @ 60

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.37 @ 114

Operating Rig Time 3 HOURS

Max Rec. Temp. F 114

Equipment Number P-24

Location HAYS

Recorded By IAN MABB

Witnessed By LARRY NICHOLSON

<<< 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.

BOGUE, KS.

SOUTH 3 MILES TO L RD, WEST TO RD 340,
NORTH 1 MILE & EAST INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: LARRY NICHOLSON
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 100	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 0	mV 0	degF 0	Off	ft 3801

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58			GR-M&W (233-M&W)	3.00	3.50	50.00
CNLSC	37.48			CNT-M&W (207-MW)	5.50	3.50	100.00
CNSSC	36.73						
LSD	28.43			CDL-M&W (817-947)	8.50	4.00	250.00
	28.42						
	27.93						
MCAL	19.83			ML-PSIML (PSI-01)	7.58	4.00	65.00
	19.83			GO Micro log tools converted to Simplec electronics			
	19.83						
RLL3F	15.80						
RLL3	15.80						
CILD	8.00			DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00

CILM

4.70

SP

0.20

Dataset: cobalt_elizabeth_a_2_36.db: field/well/stackmel/pass3
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

Database File cobalt_elizabeth_a_2_36.db
Dataset Pathname stackmel/pass4.1
Presentation Format _dil2in
Dataset Creation Tue Feb 25 00:23:17 2020
Charted by Depth in Feet scaled 1:600

GAMMA RAY

0 (GAPI) 150

2000 CONDUCTIVITY (mmho/m) 0

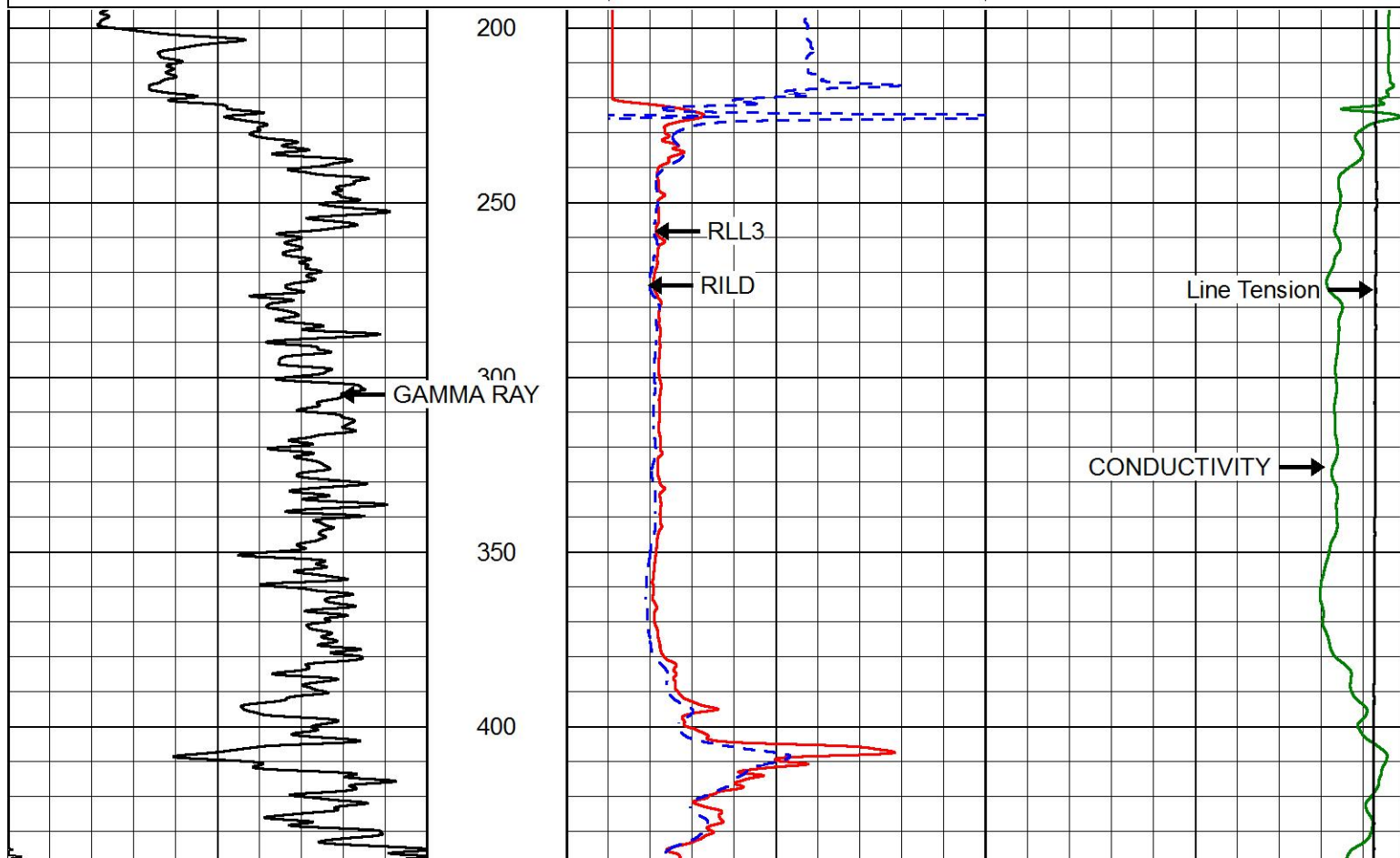
15000 Line Tension (lb) 0

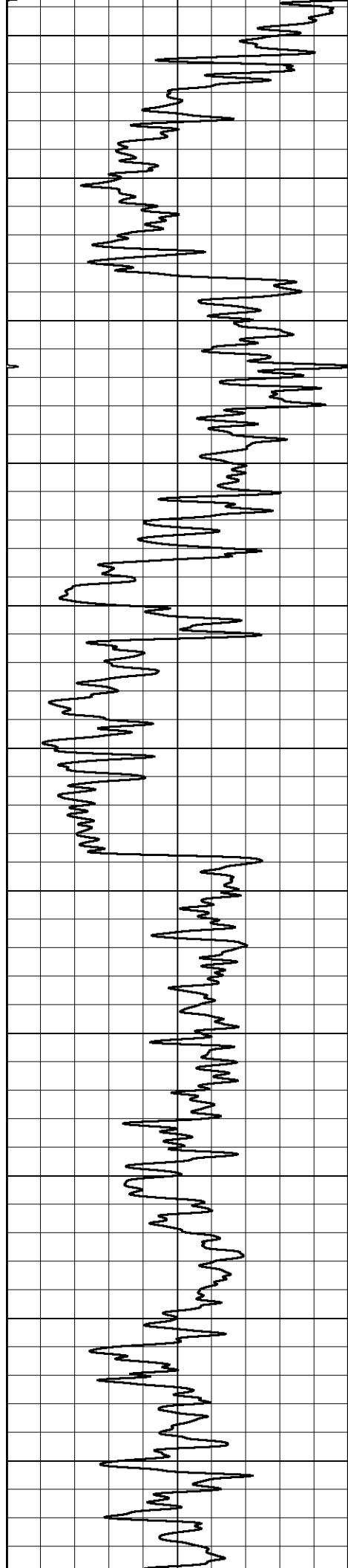
0 RLL3 (Ohm-m) 50

50 RLL3 (Ohm-m) 200

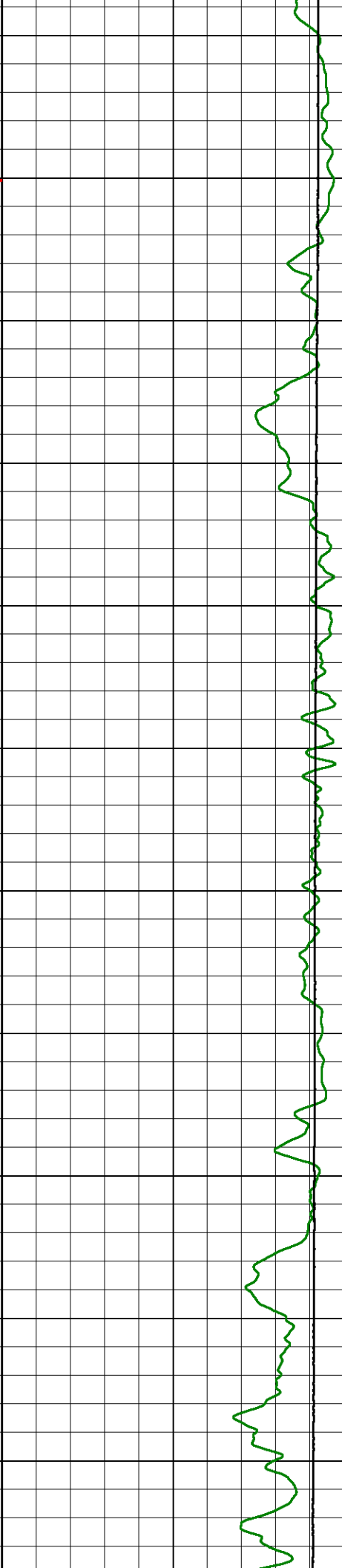
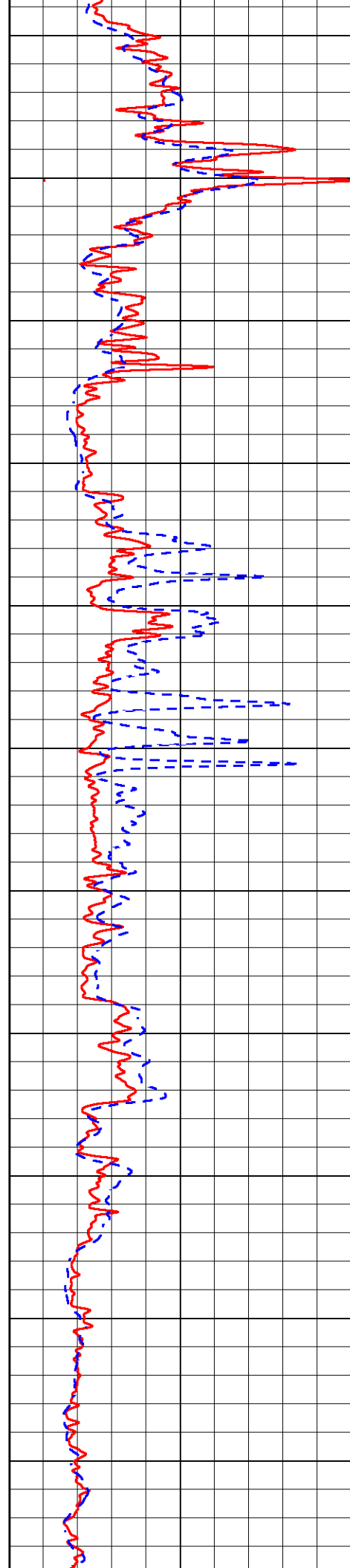
0 RILD (Ohm-m) 50

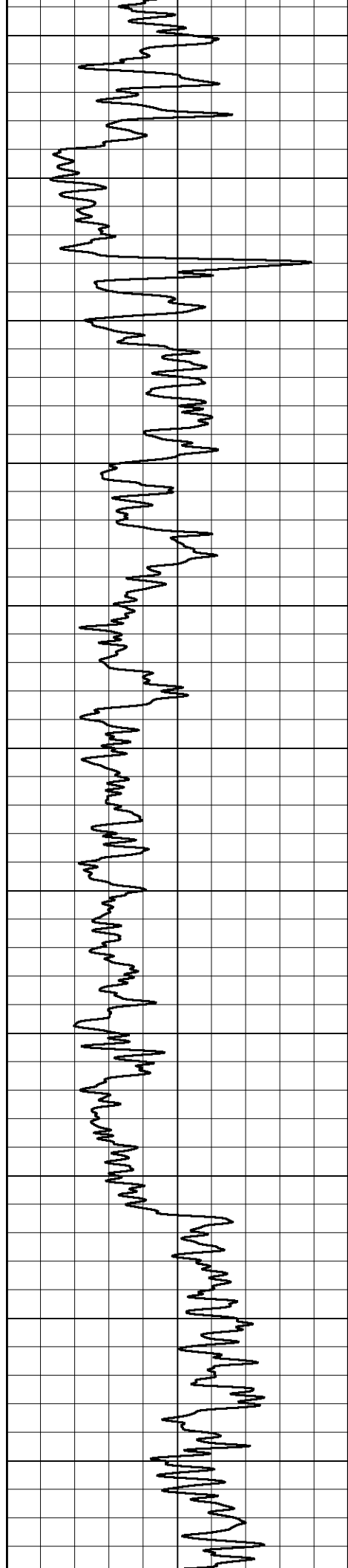
50 Deep Resistivity (Ohm-m) 200





450
500
550
600
650
700
750
800
850
900
950





1000

1050

1100

1150

1200

1250

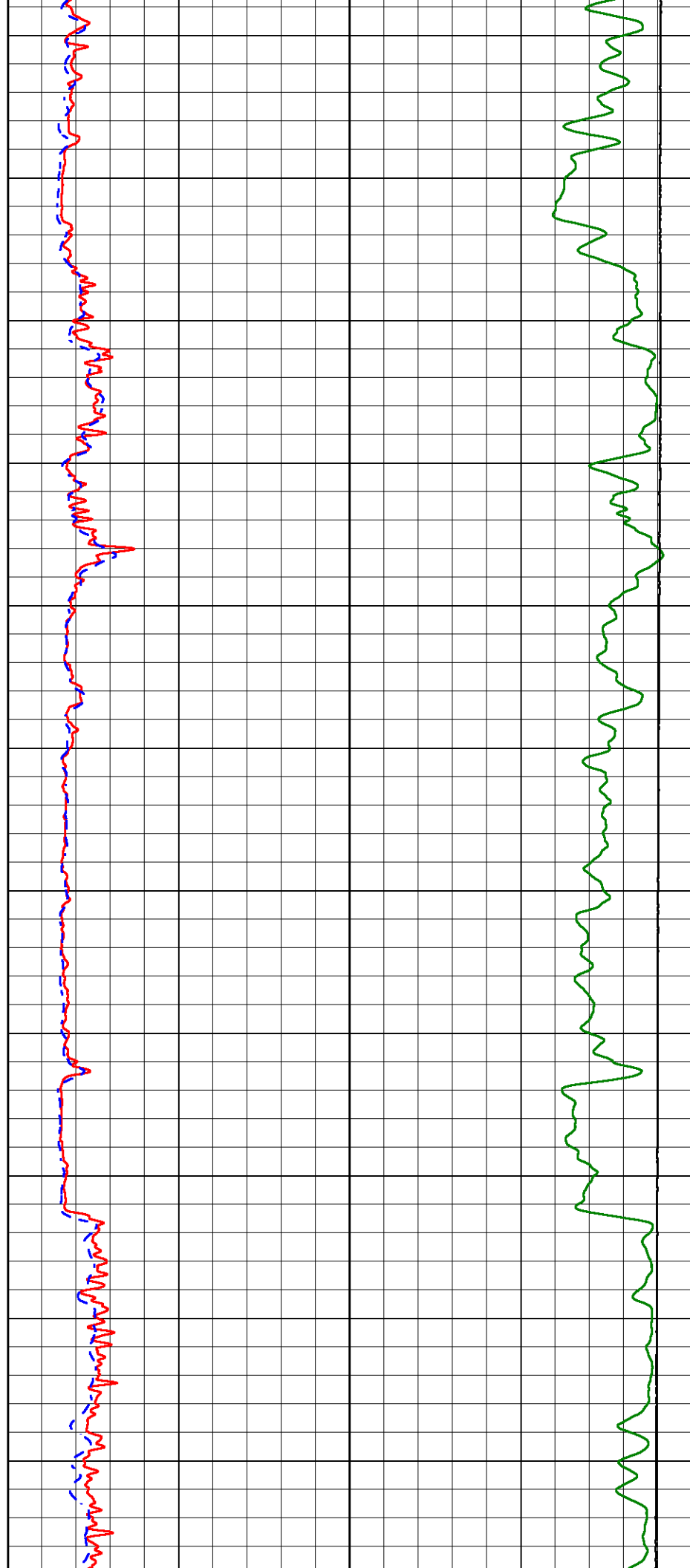
1300

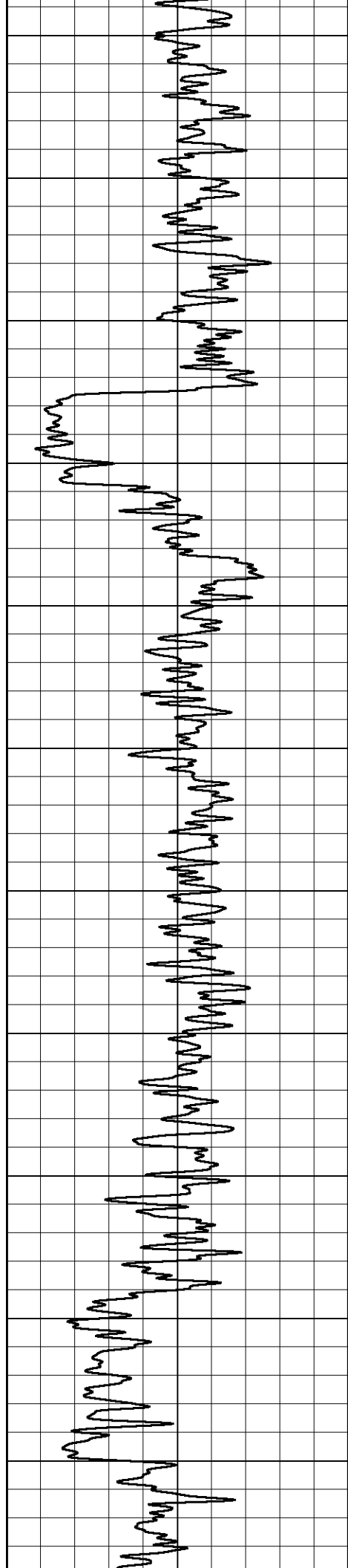
1350

1400

1450

1500





1550

1600

1650

1700

1750

1800

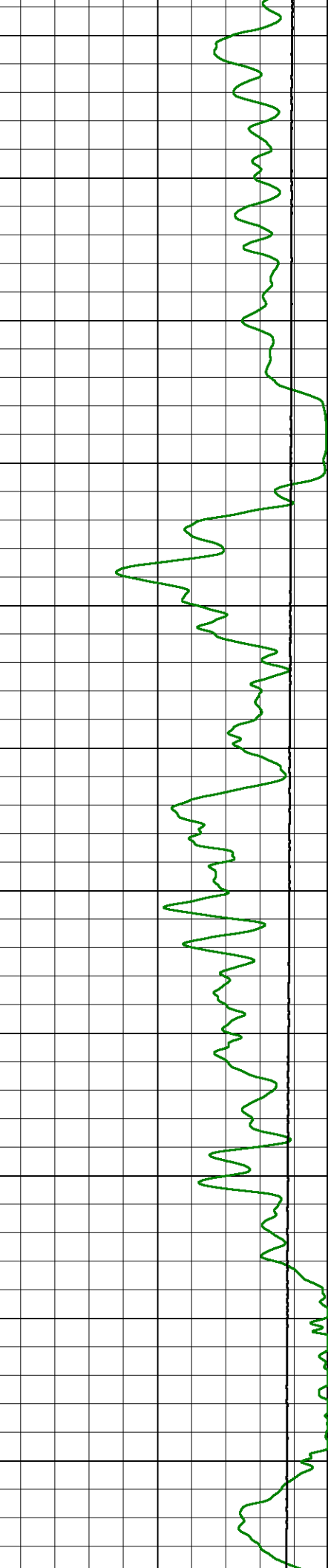
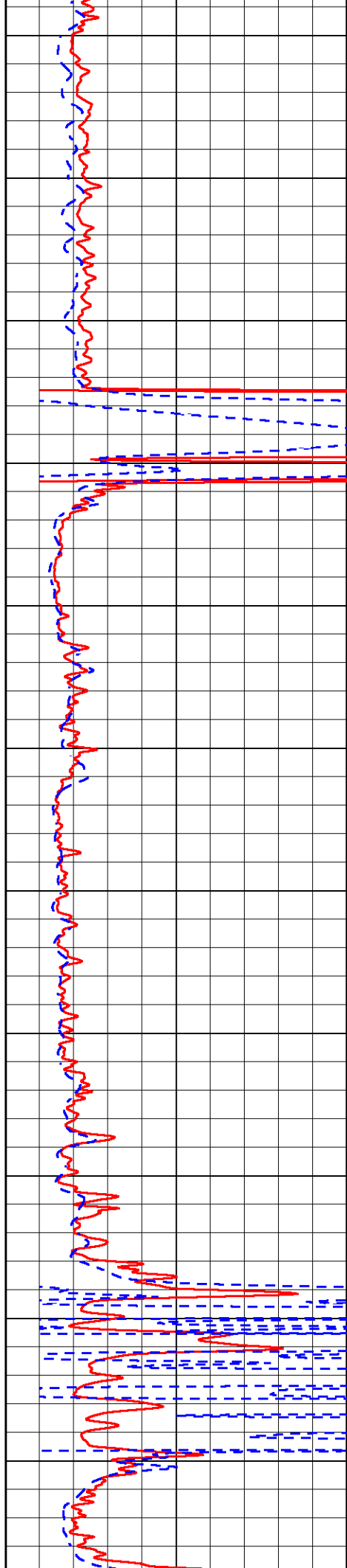
1850

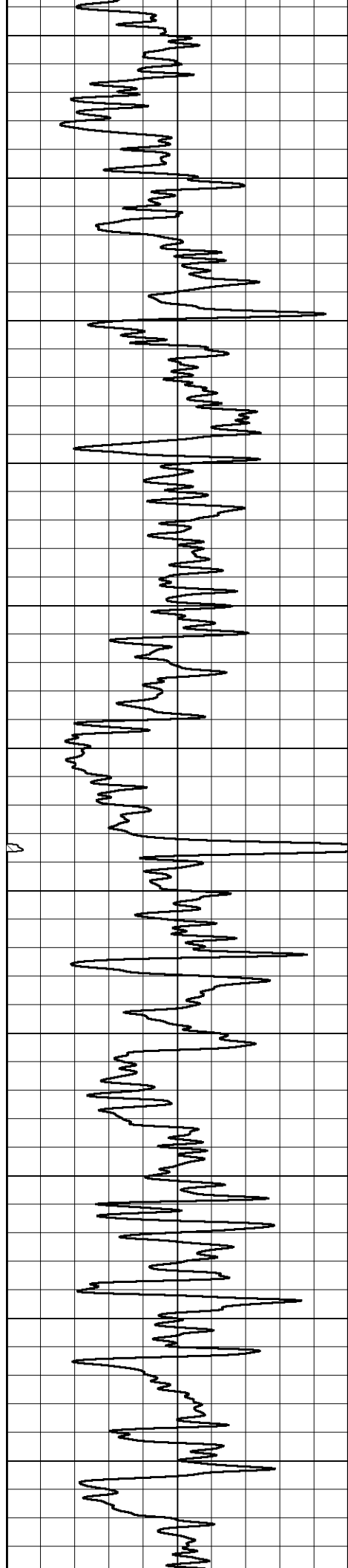
1900

1950

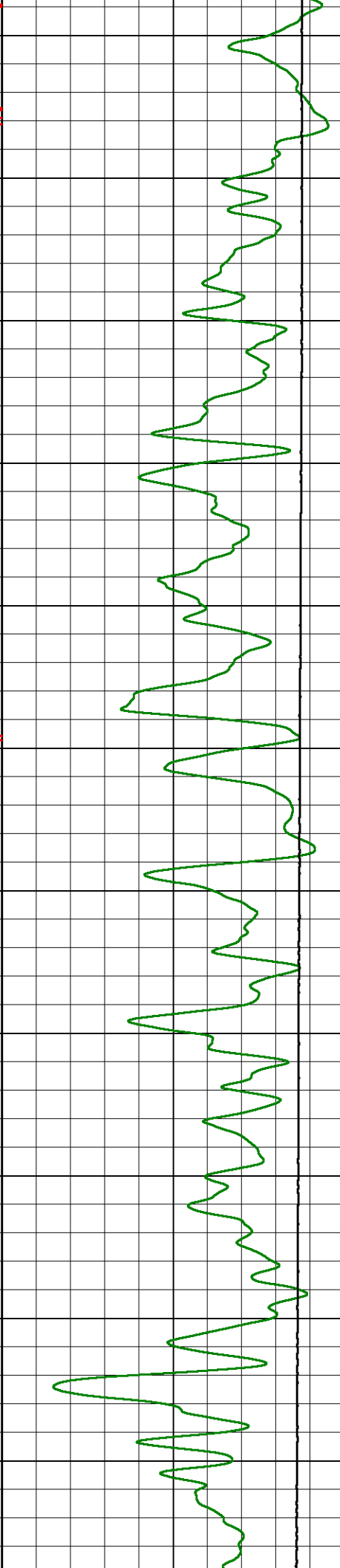
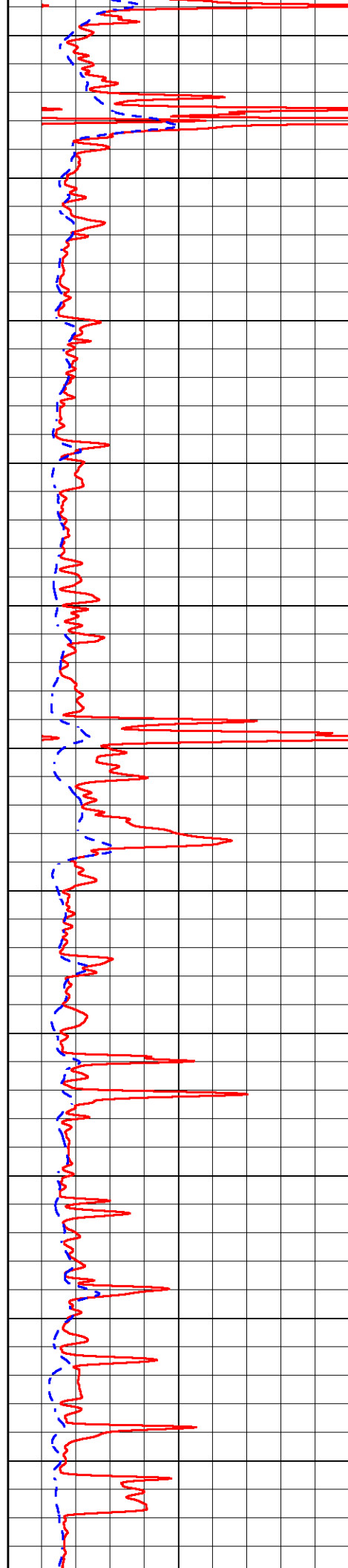
2000

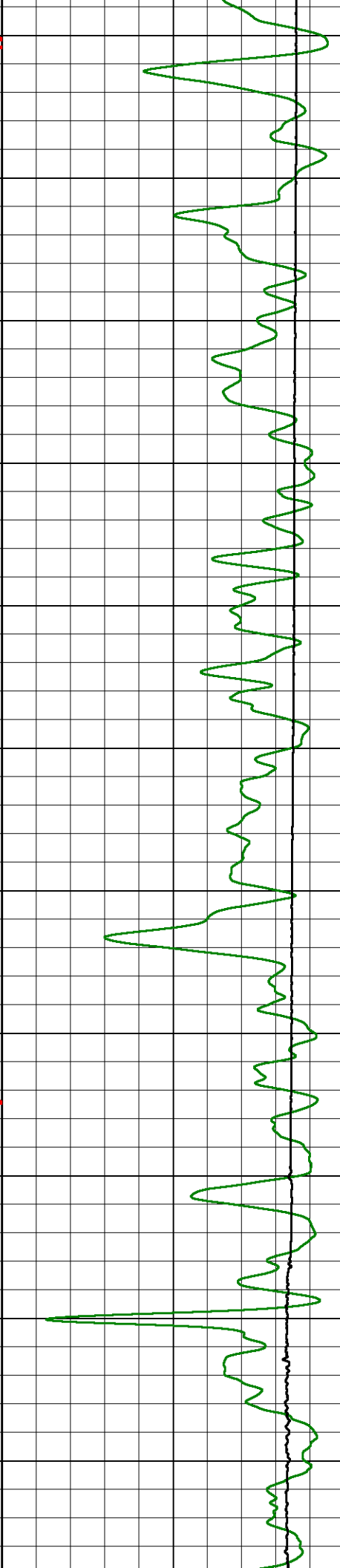
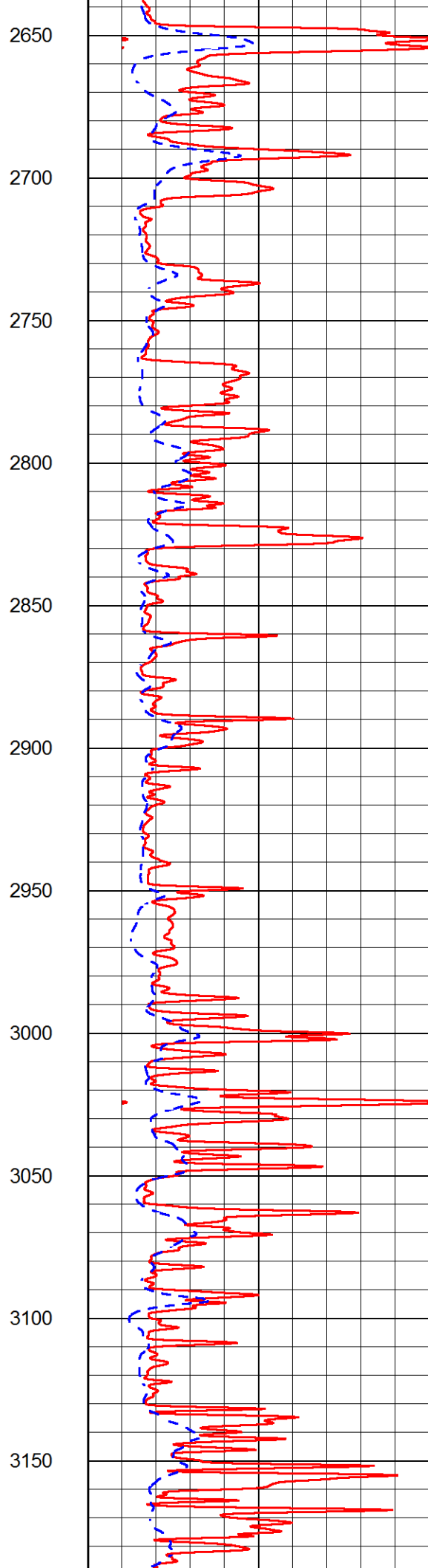
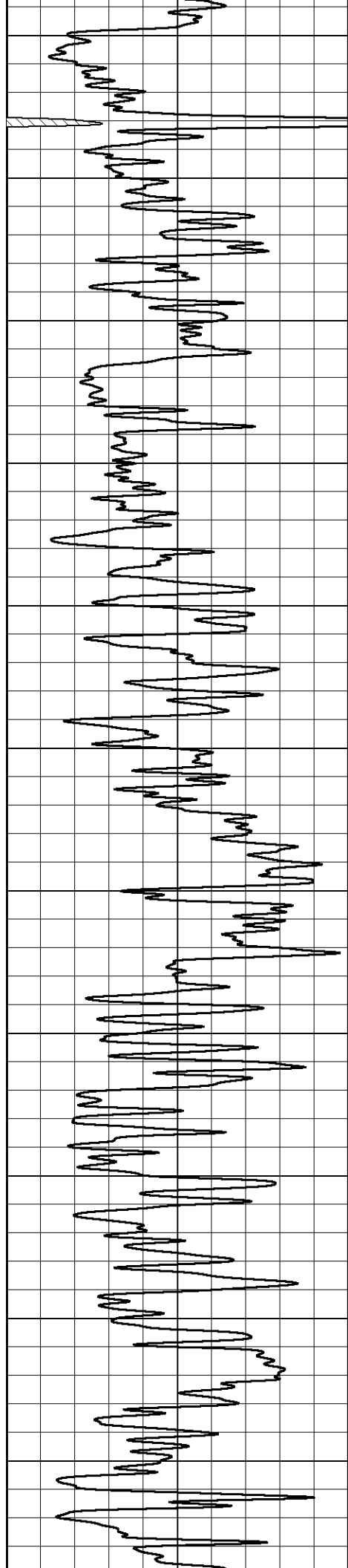
2050

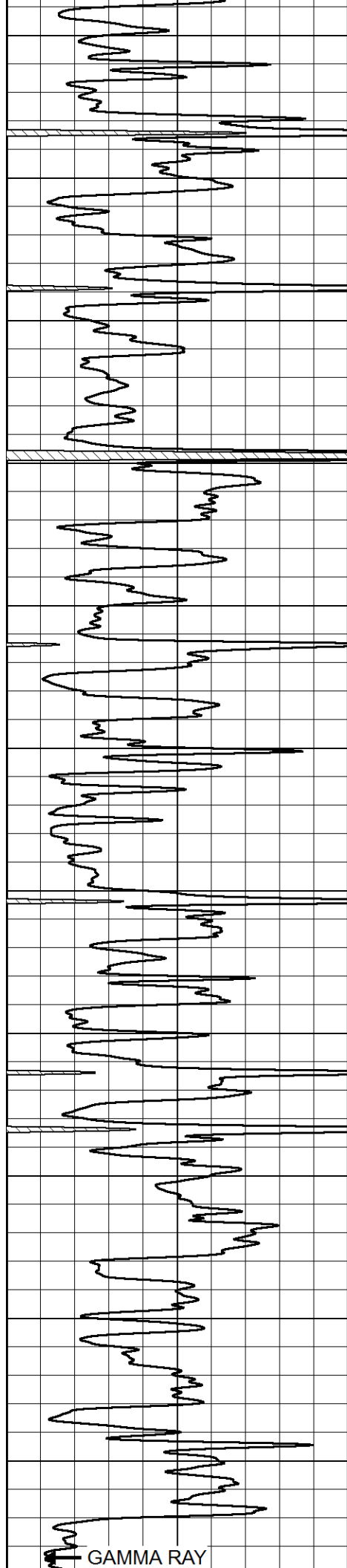




2100
2150
2200
2250
2300
2350
2400
2450
2500
2550
2600







3200

3250

3300

3350

3400

3450

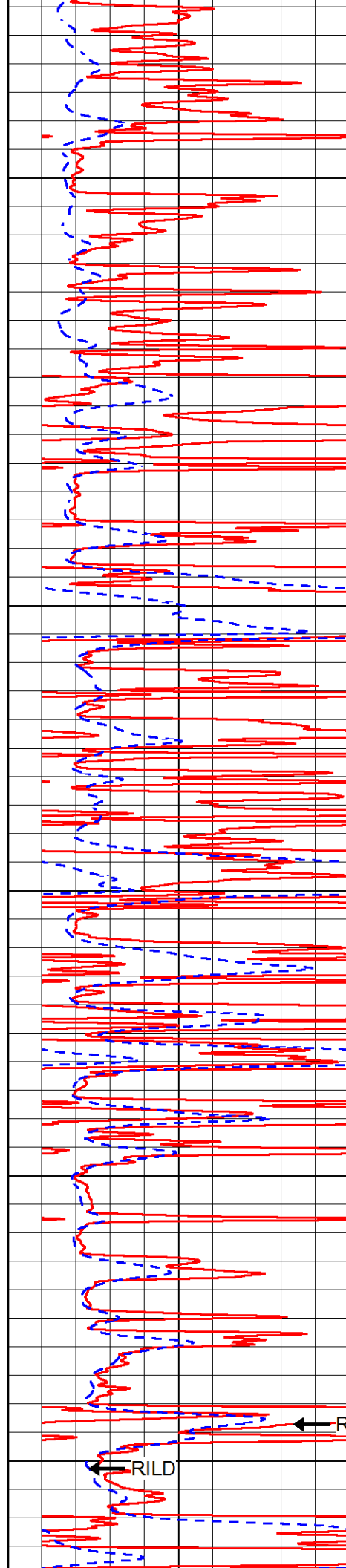
3500

3550

3600

3650

3700

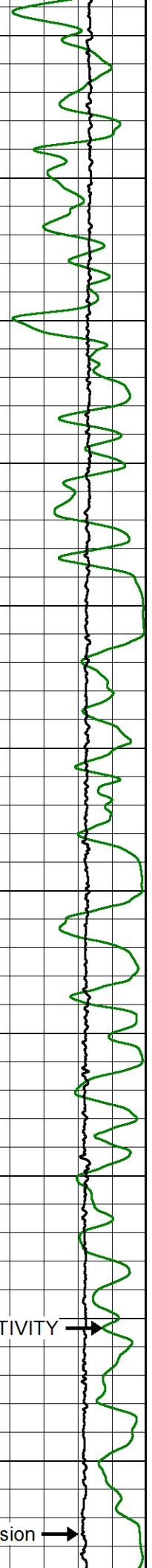


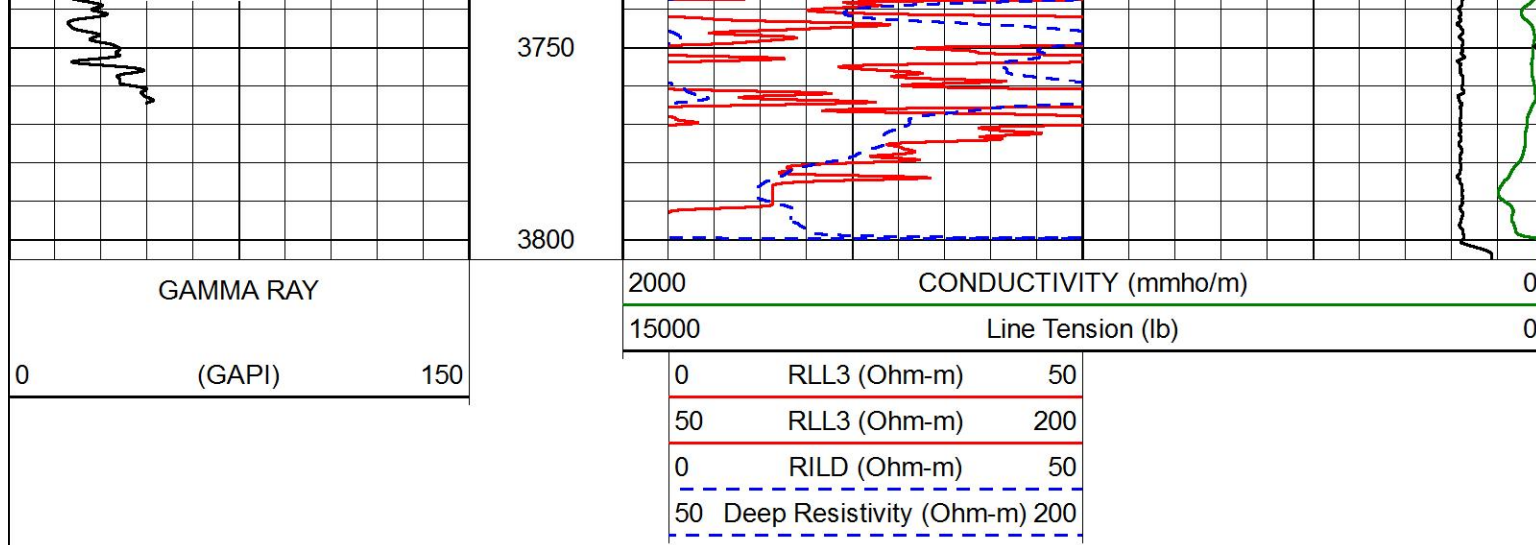
RLL3

RILD

CONDUCTIVITY

Line Tension

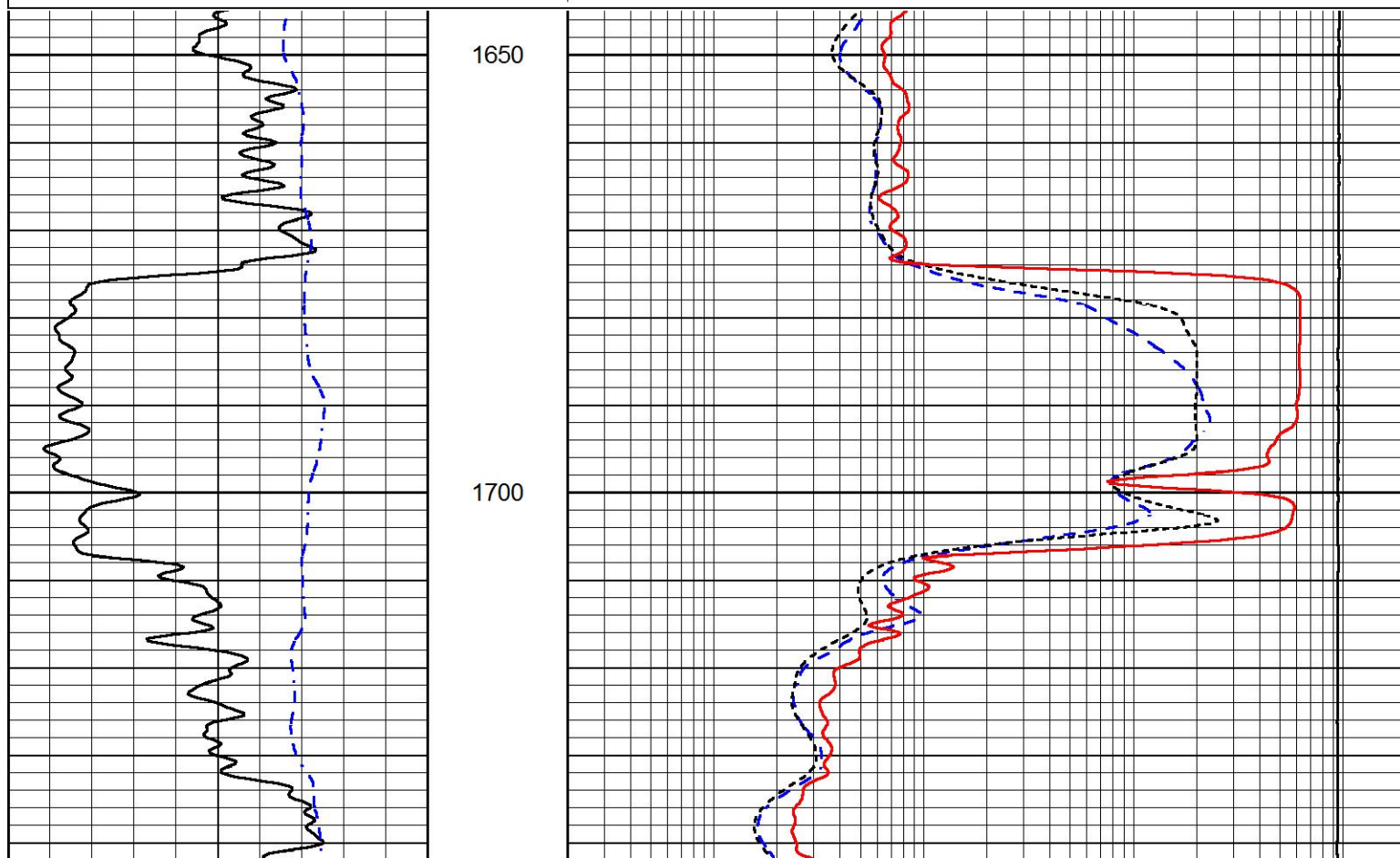
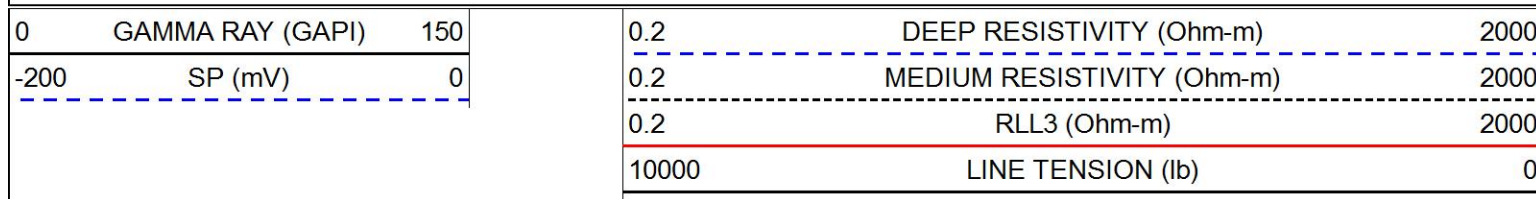


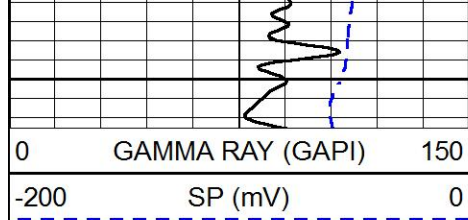




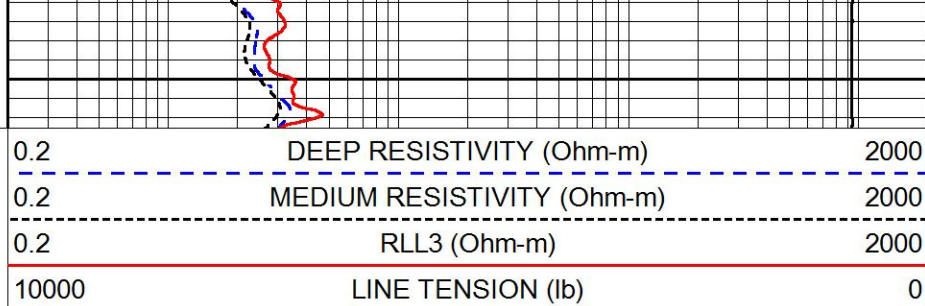
MAIN PASS

Database File	cobalt_elizabeth_a_2_36.db
Dataset Pathname	stackmel/pass4.1
Presentation Format	_dil
Dataset Creation	Tue Feb 25 00:23:17 2020
Charted by	Depth in Feet scaled 1:240



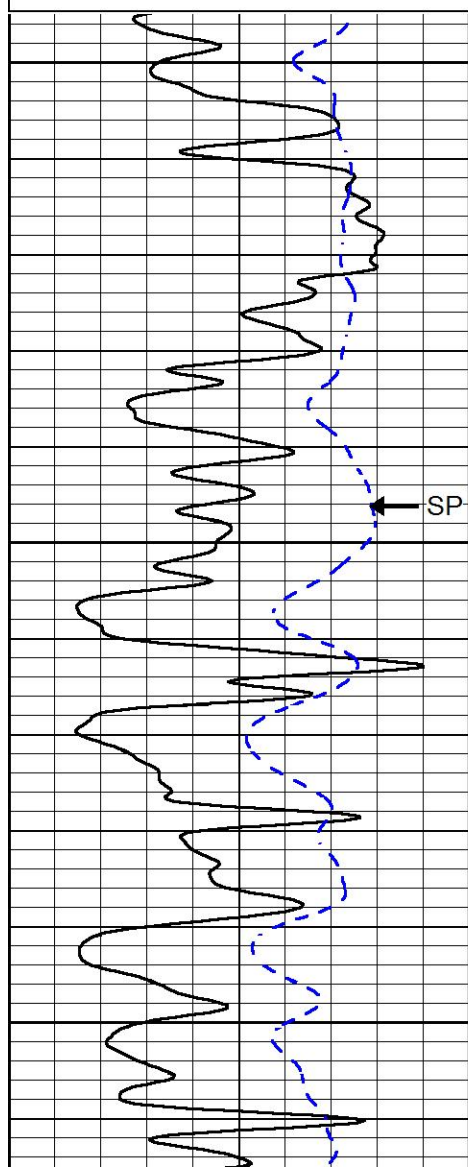
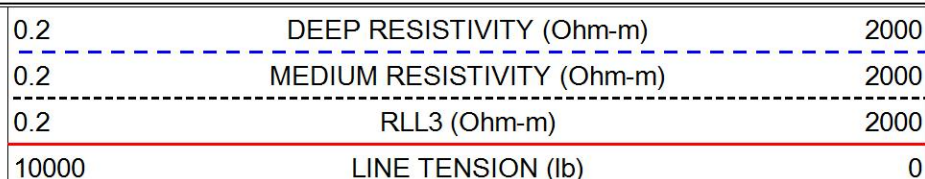
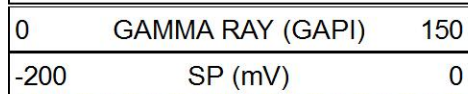


1750



MAIN PASS

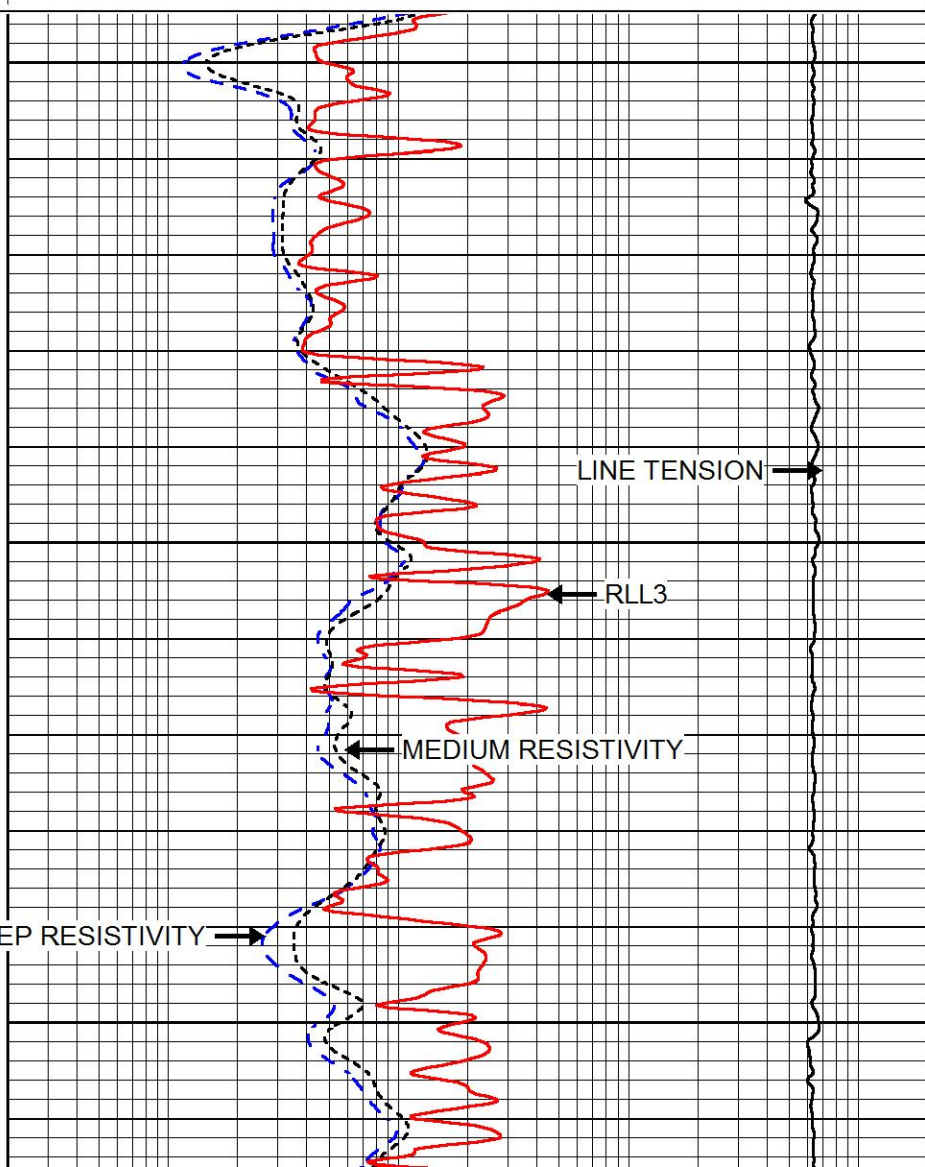
Database File cobalt_elizabeth_a_2_36.db
 Dataset Pathname stackmel/pass3.1
 Presentation Format _dil
 Dataset Creation Mon Feb 24 23:57:53 2020
 Charted by Depth in Feet scaled 1:240

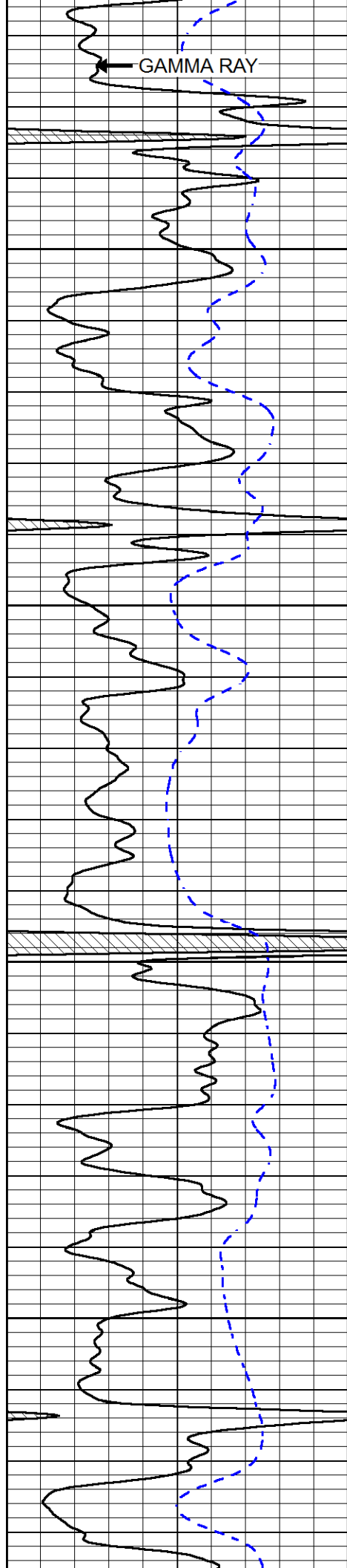


3100

3150

3200





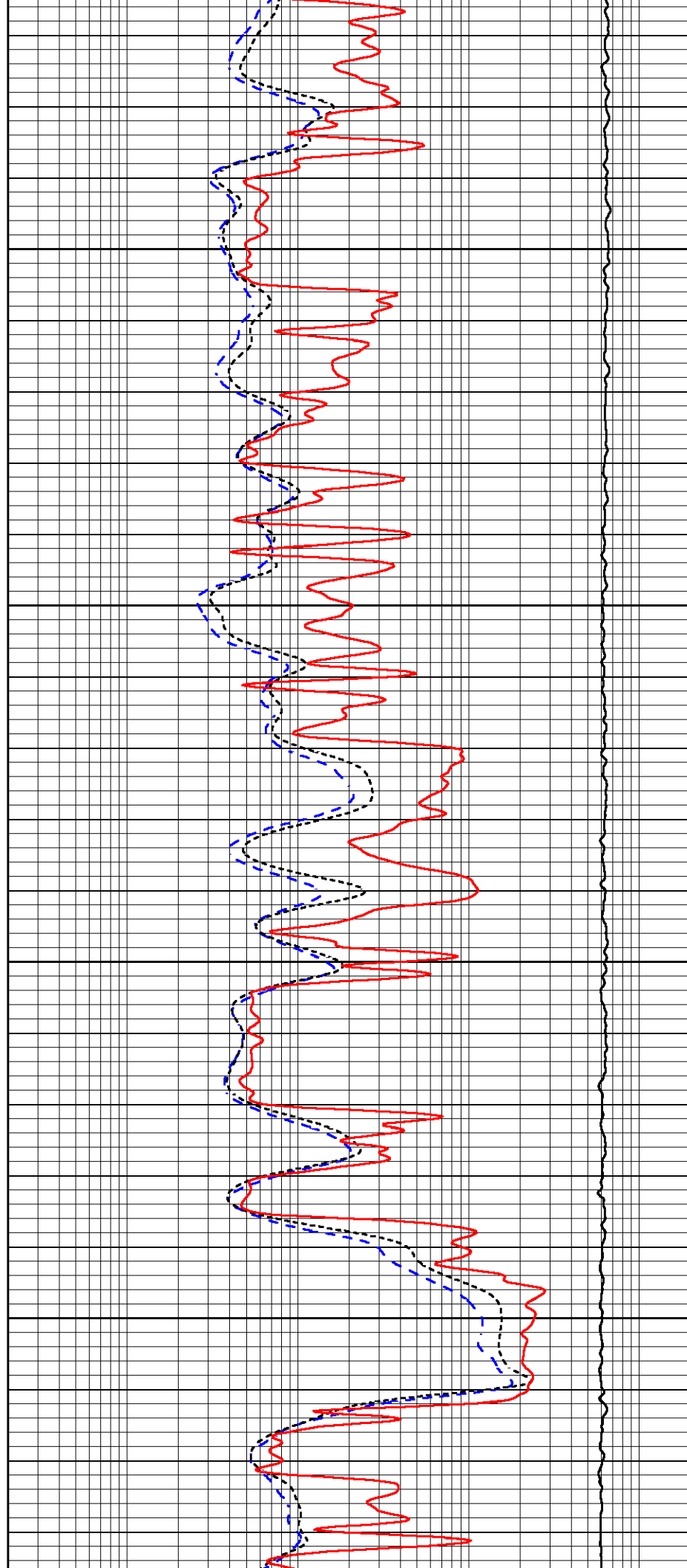
GAMMA RAY

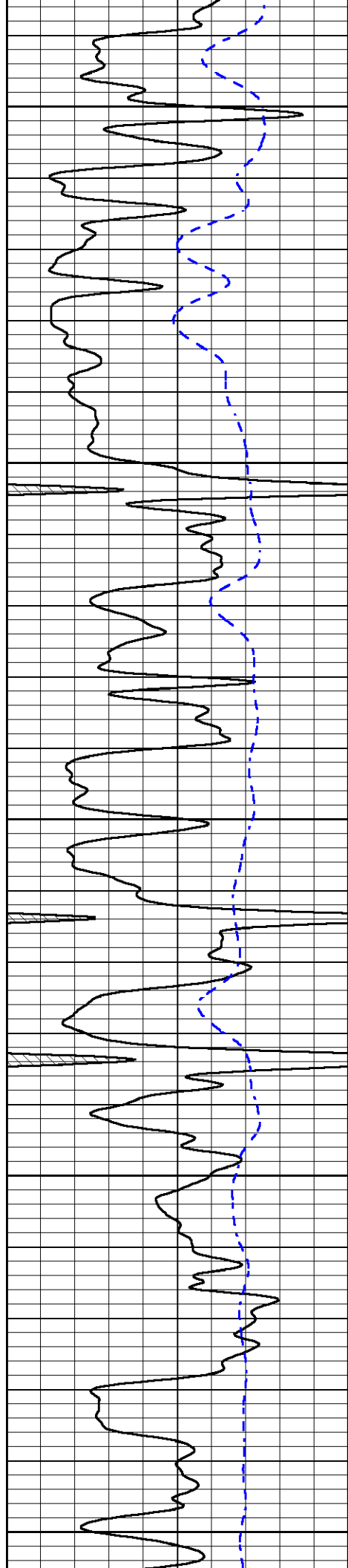
3250

3300

3350

3400





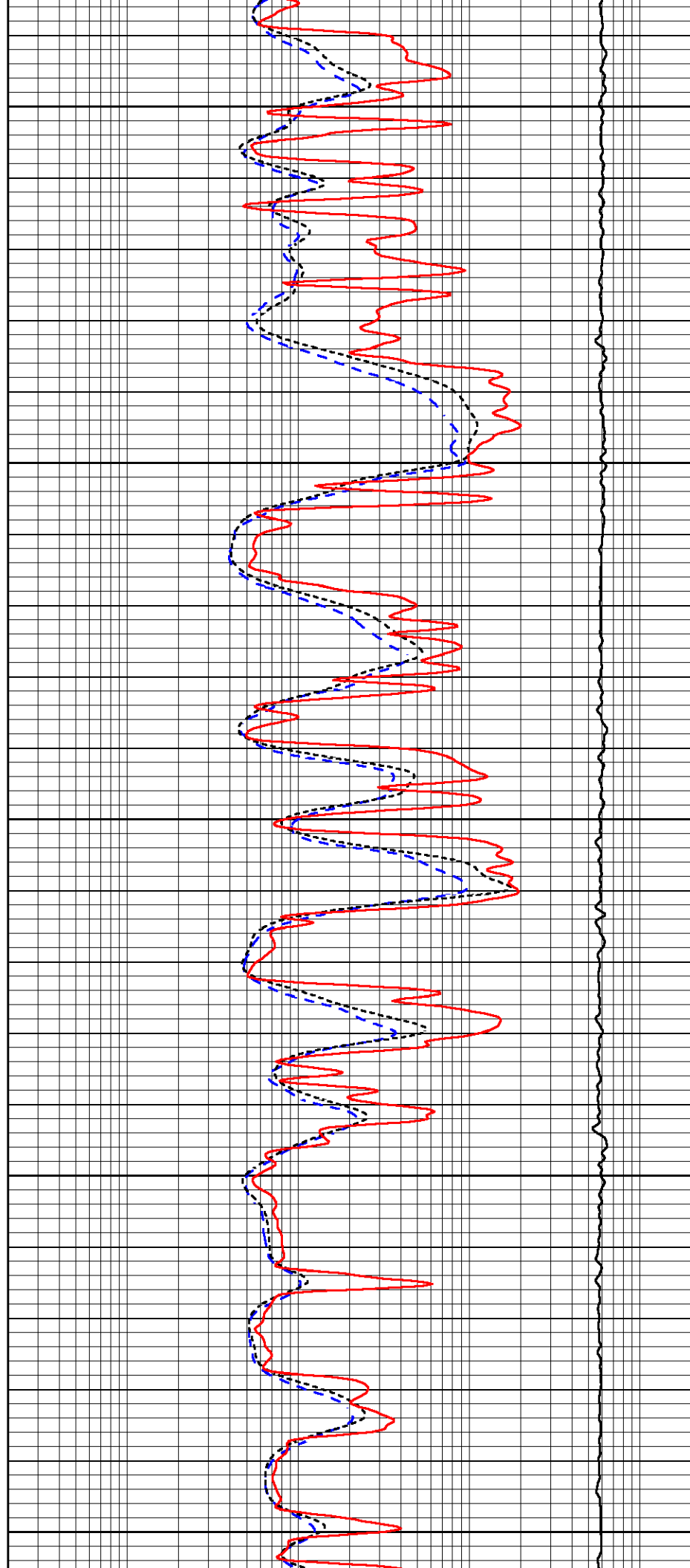
3450

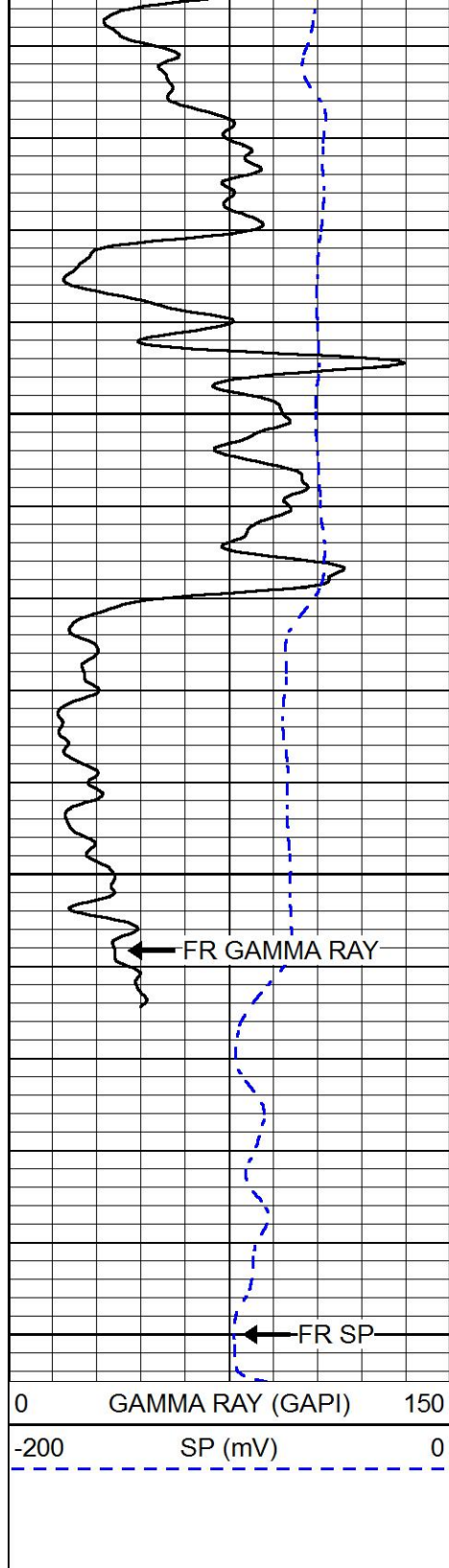
3500

3550

3600

3650

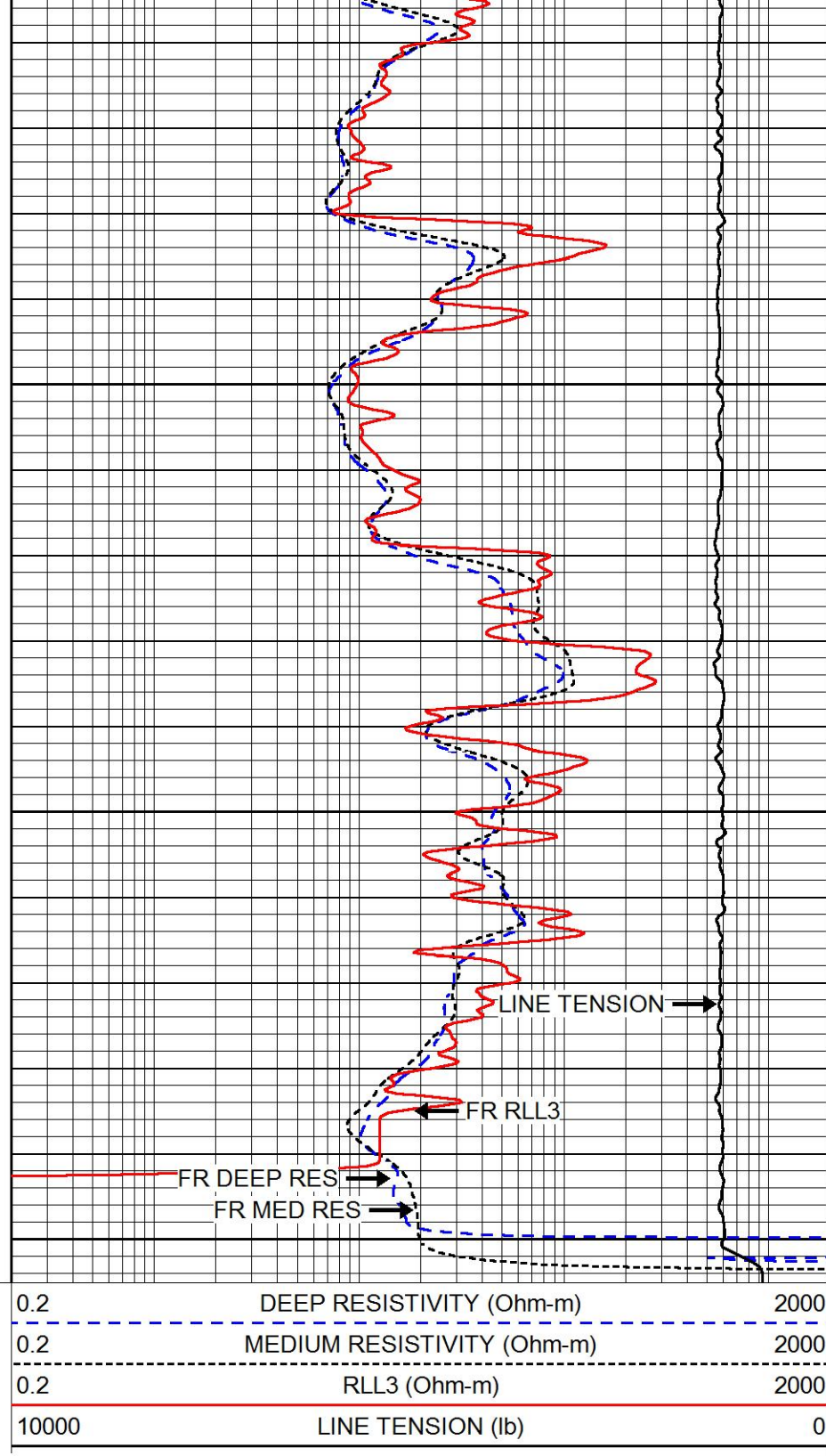




3700

3750

3800



REPEAT SECTION

Database File cobalt_elizabeth_a_2_36.db
 Dataset Pathname stackmel/pass2.1
 Presentation Format _dil
 Dataset Creation Mon Feb 24 23:42:51 2020
 Charted by Depth in Feet scaled 1:240

0 GAMMA RAY (GAPI) 150

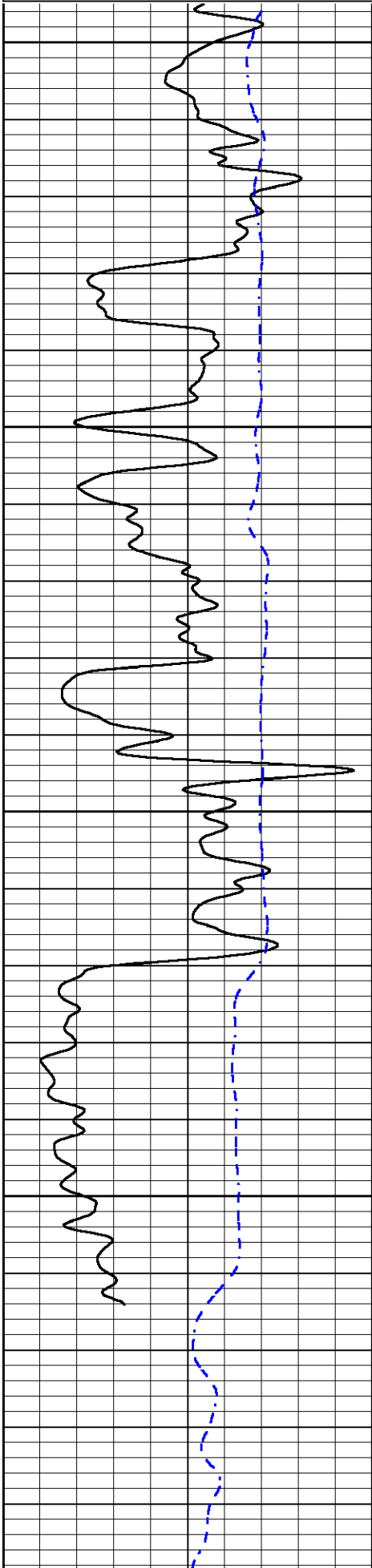
0.2 DEEP RESISTIVITY (Ohm-m) 2000

-200 SP (mV) 0

0.2 MEDIUM RESISTIVITY (Ohm-m) 2000

0.2 RLL3 (Ohm-m) 2000

10000 LINE TENSION (lb) 0

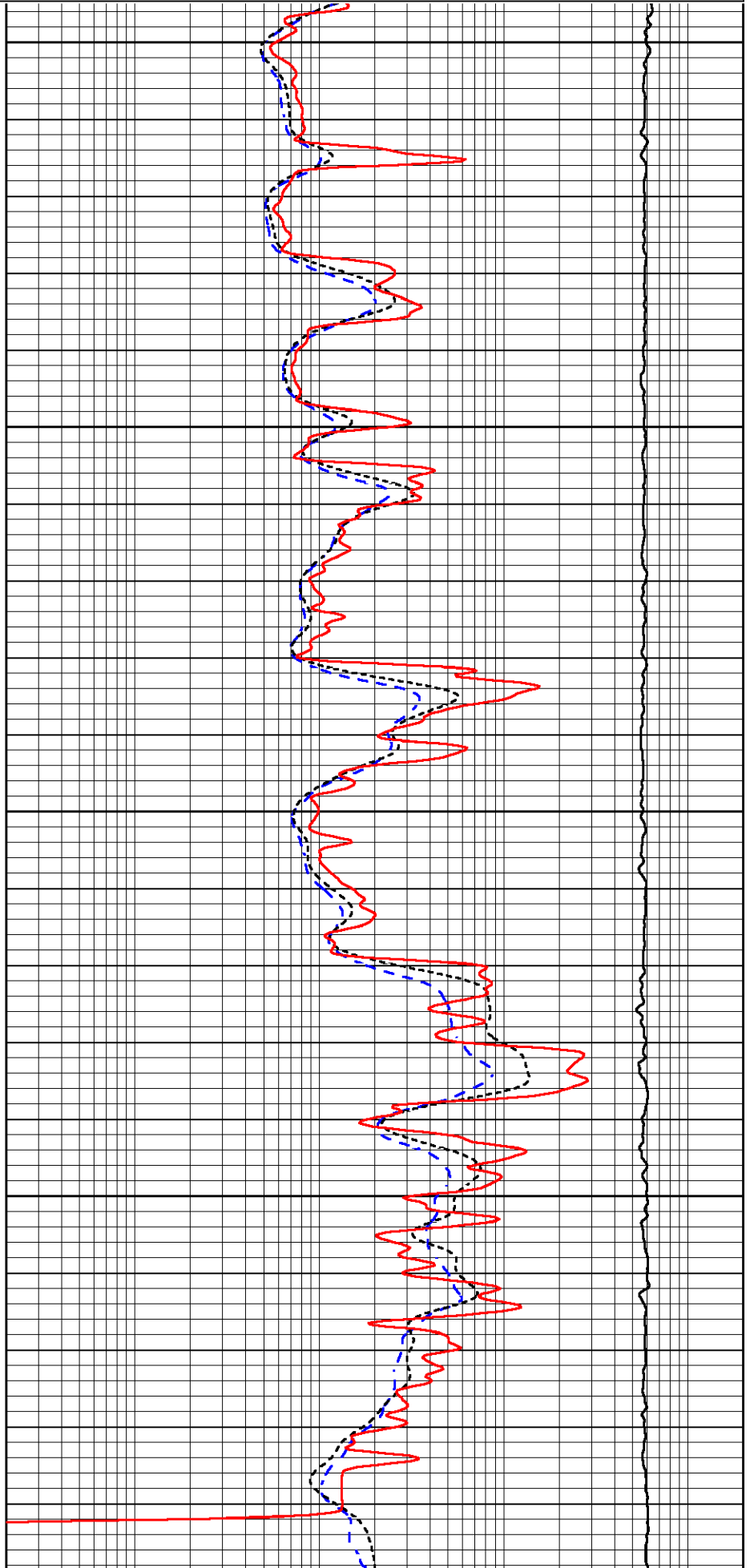


3600

3650

3700

3750



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

Database File	cobalt_elizabeth_a_2_36.db
Dataset Pathname	stackmel/pass3.1
Dataset Creation	Mon Feb 24 23:57:53 2020

Serial-Model: 952-828-PSI HIGH TEMP
Calibration Performed: Wed Oct 09 13:38:53 2019

		Readings		References		Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.400	-27.500
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.275	-27.000

Serial-Model: PSI-01-PSIML
Performed: Sat Feb 01 06:29:21 2020

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	11000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	15000.0000	-1.3000
Caliper	1.0000	1.0827	5.0000	16.5000	in	139.1950	-135.8000

Serial-Model: 817-947-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Tue Sep 24 21:18:50 2019

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	6127.15	5922.31	cps
Aluminum	2.680	g/cc	1141.85	3762.09	cps
Spine Angle = 74.89			Density/Spine Ratio = 0.532		
	Size		Reading		
Small Ring	4.50	in	1.02		
Large Ring	15.00	in	1.33		

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: WED FEB 13 10:30:30 2019

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:	233-M&W
Tool Model:	M&W
Calibration Performed:	Fri Feb 07 01:42:40 2014
Calibrator Value:	1.0 GAPI
Background Reading:	0.0 cps
Calibrator Reading:	1.0 cps
Sensitivity:	0.5500 GAPI/cps



Company	COBALT ENERGY, LLC
Well	ELIZABETH A #2-36
Field	WILDCAT
County	Graham
State	KANSAS