



DUAL INDUCTION LOG

Company COBALT ENERGY LLC
 Well ELIZABETH A # 1-36
 Field WILDCAT
 County GRAHAM
 State KANSAS

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 Well ELIZABETH A # 1-36
 Field WILDCAT
 County GRAHAM State KANSAS

Location: API #: 15-065-24148-00-00
 590' FSL & 440' FEL
 NW - SE - SE - SE
 SEC 36 TWP 8S RGE 22W
 Permanent Datum GROUND LEVEL Elevation 2180'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING

Other Services
 CNL/CDL
 BHCS
 Elevation
 K.B. 2185'
 D.F. N/A
 G.L. 2180'

Date	7/17/2018
Run Number	ONE
Depth Driller	3825'
Depth Logger	3823'
Bottom Logged Interval	3822'
Top Log Interval	200'
Casing Driller	8.625" @ 217'
Casing Logger	216'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	3500
Density / Viscosity	9.0 60
pH / Fluid Loss	10.5 6.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.75 @ 85
Rmt @ Meas. Temp	0.56 @ 85
Rmc @ Meas. Temp	1.01 @ 85
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.56 @ 114
Operating Rig Time	4 HOURS
Max Rec. Temp. F	114
Equipment Number	91
Location	HAYS
Recorded By	IAN MABB
Witnessed By	LARRY NICHOLSON

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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.
 BOGUE, KS.
 2 MILE SOUTH & WEST FOLLOWING THE CURVE, ONE MILE SOUTH ON 350TH AVE TO N RD. WEST 1 MILES SOUTH TO M RD, WEST 1/4 NORTH INTO

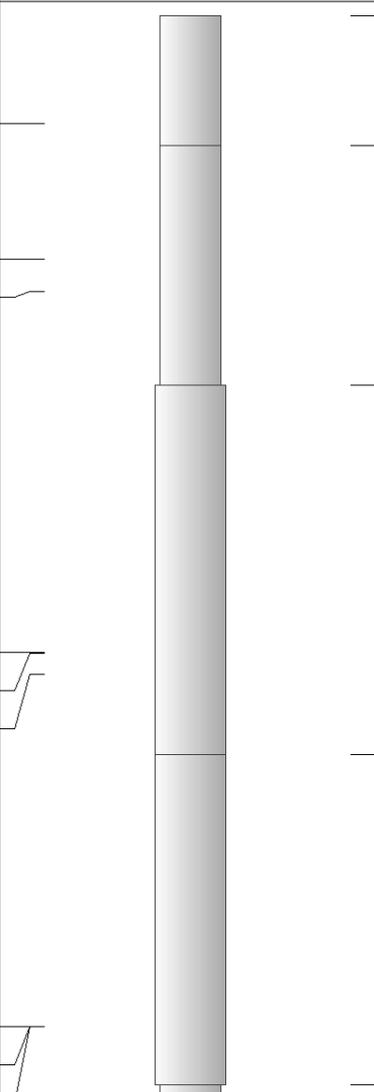
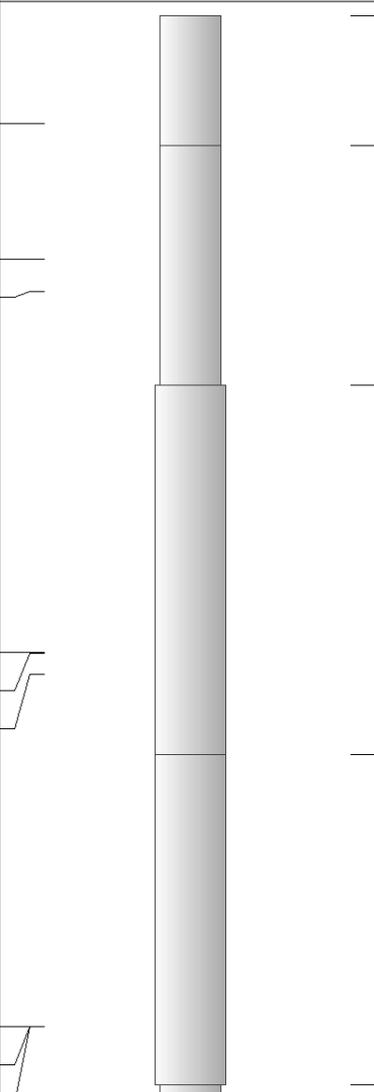
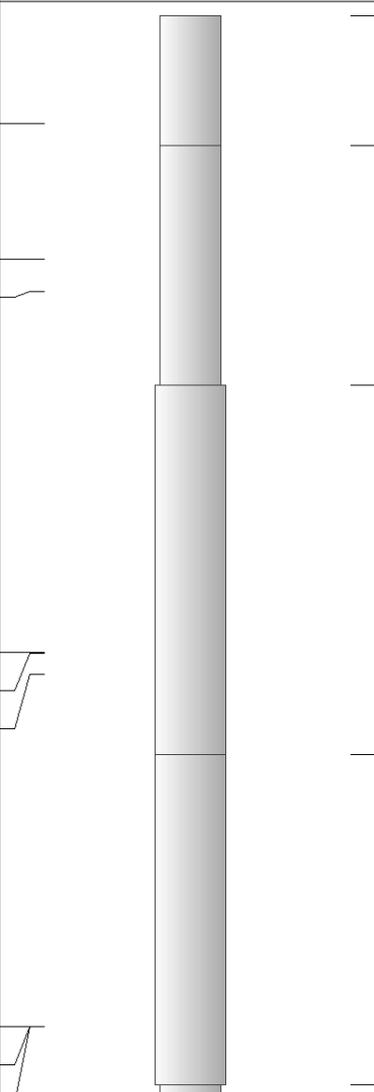
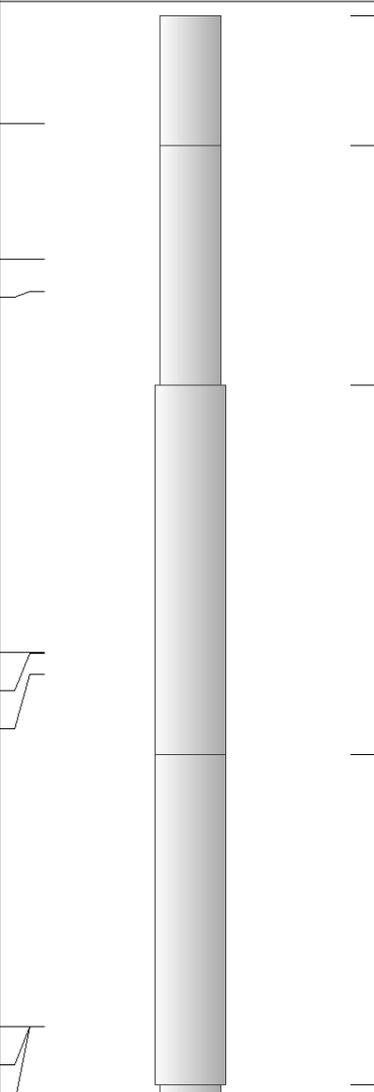
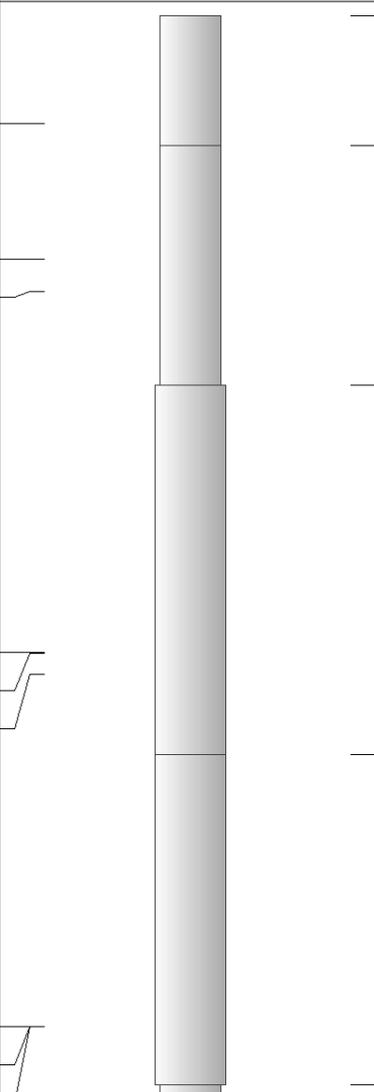
Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: IAN MABB	Primary Witness: LARRY NICHOLSON
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	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	-45	2
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	85	0	5.5	0	3823	114	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 (797-152)	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					

CILD 8.00

CILM 4.70

SP 0.20

DIL-PSI HIGH TEMP (933 (HT))

18.50

3.50

220.00

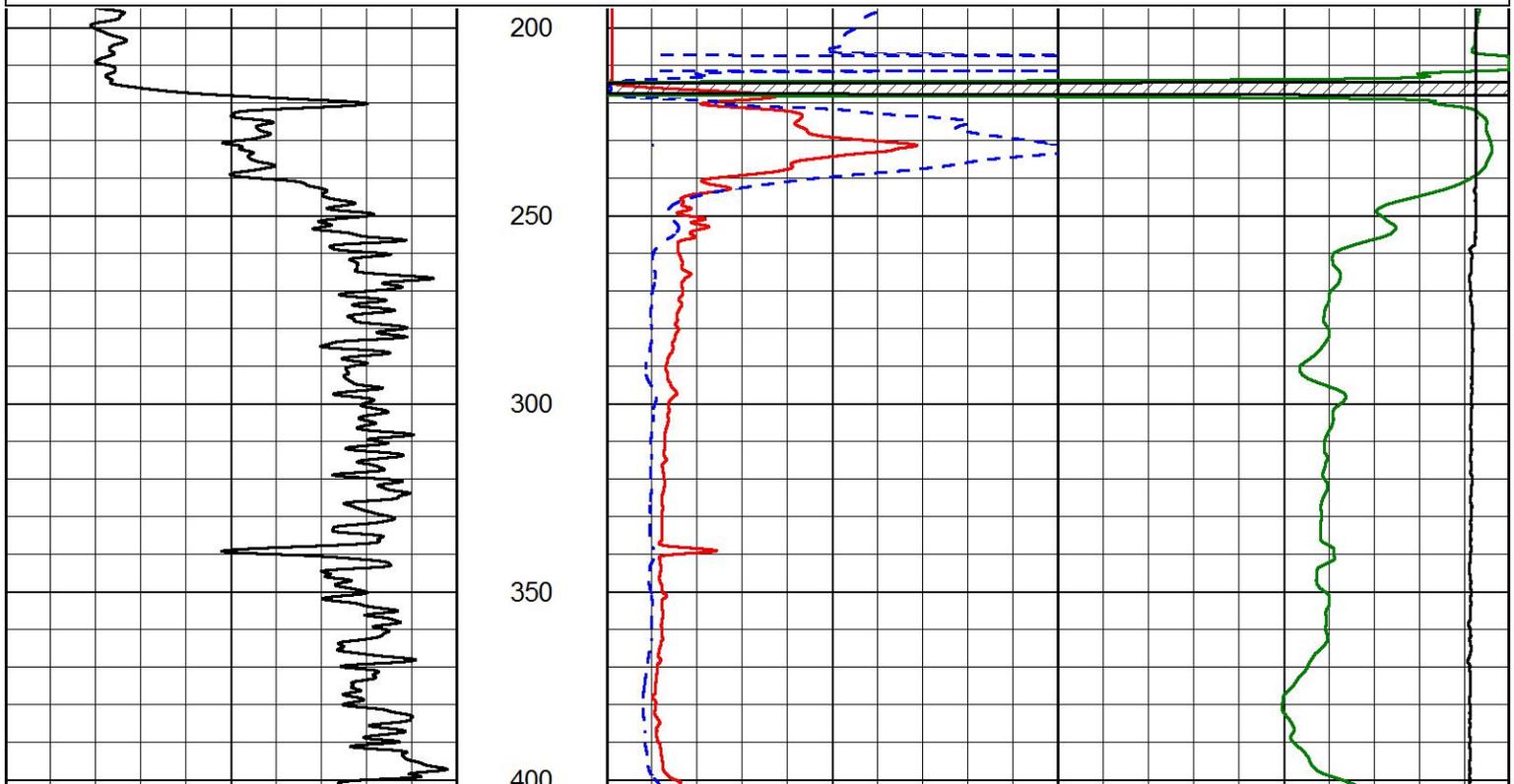
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 Total weight: 685.00 lb
 O.D.: 4.00 in

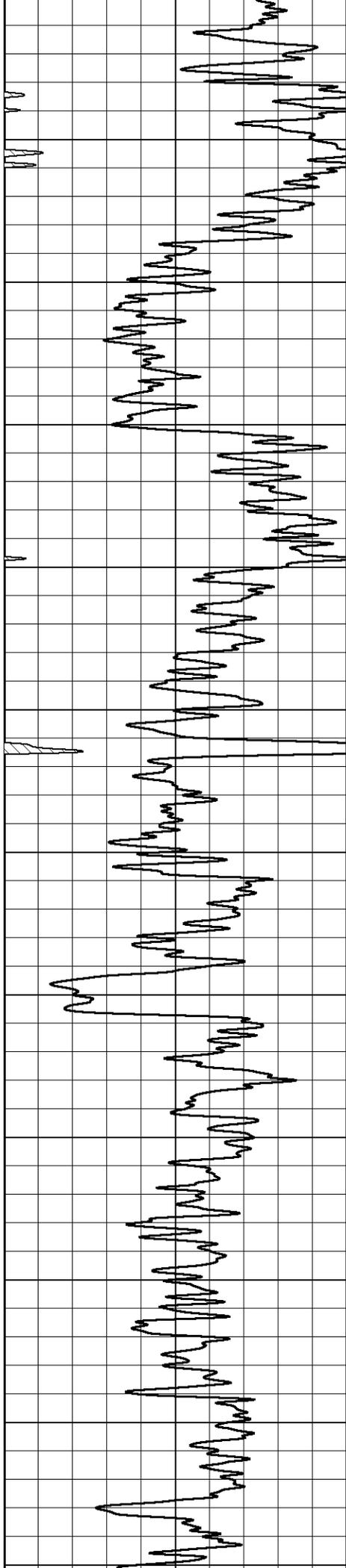


MAIN PASS

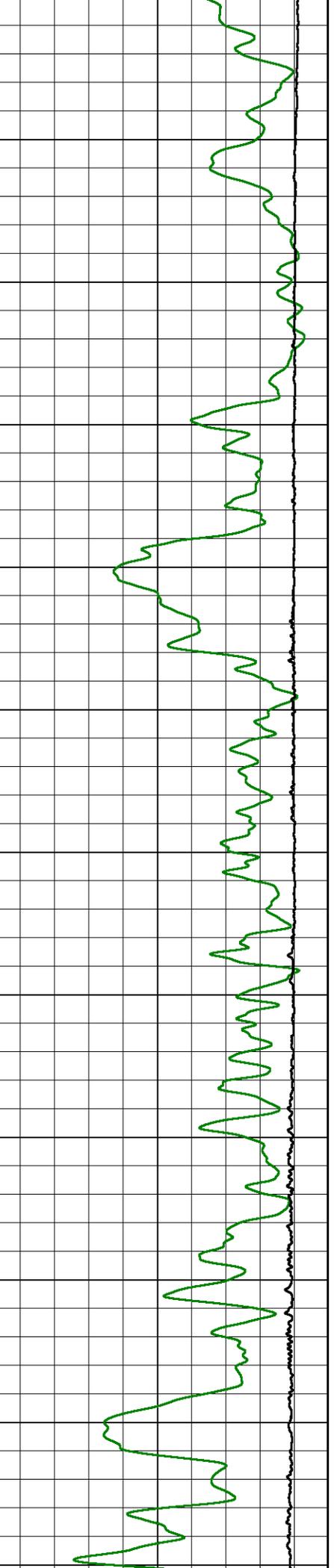
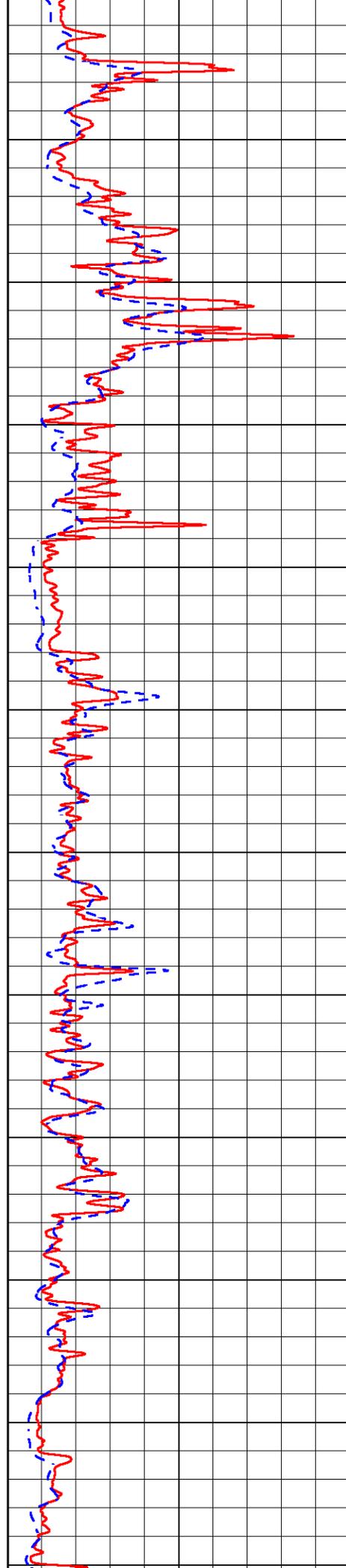
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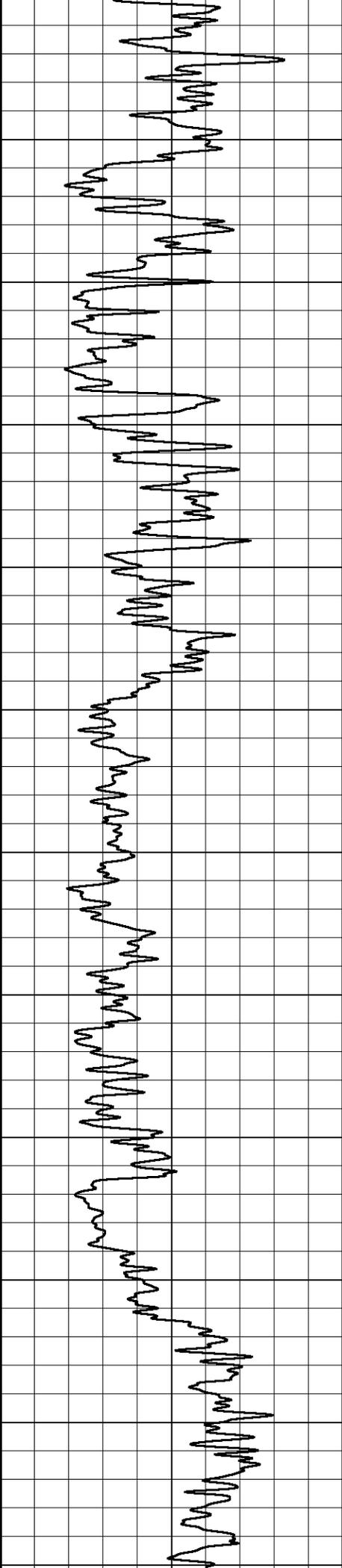
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	15000	Line Tension (lb)	0
	0	RLL3 (Ohm-m)	50
	0	DEEP RESISTIVITY (Ohm-m)	50
	50	RLL3 (Ohm-m)	500
	50	Deep Resistivity (Ohm-m)	500



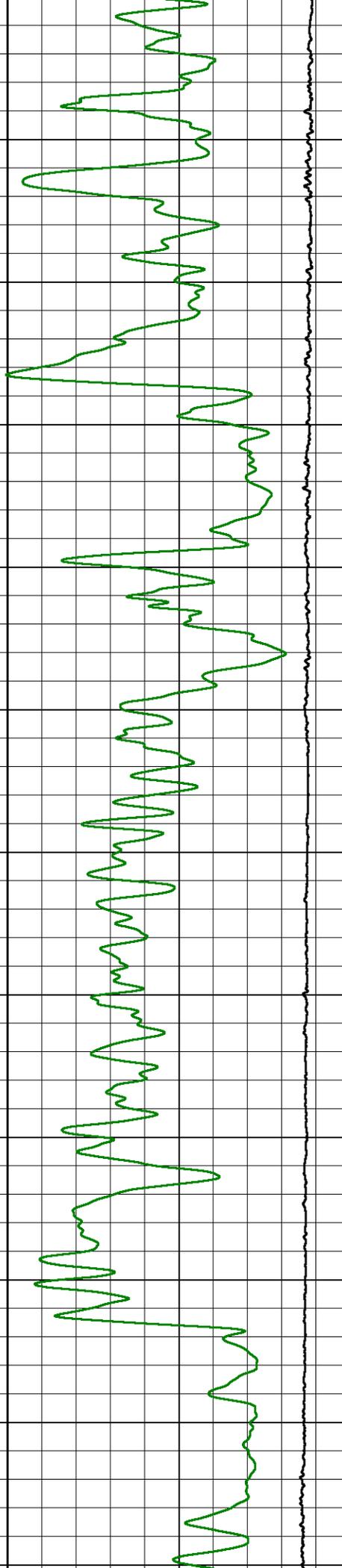
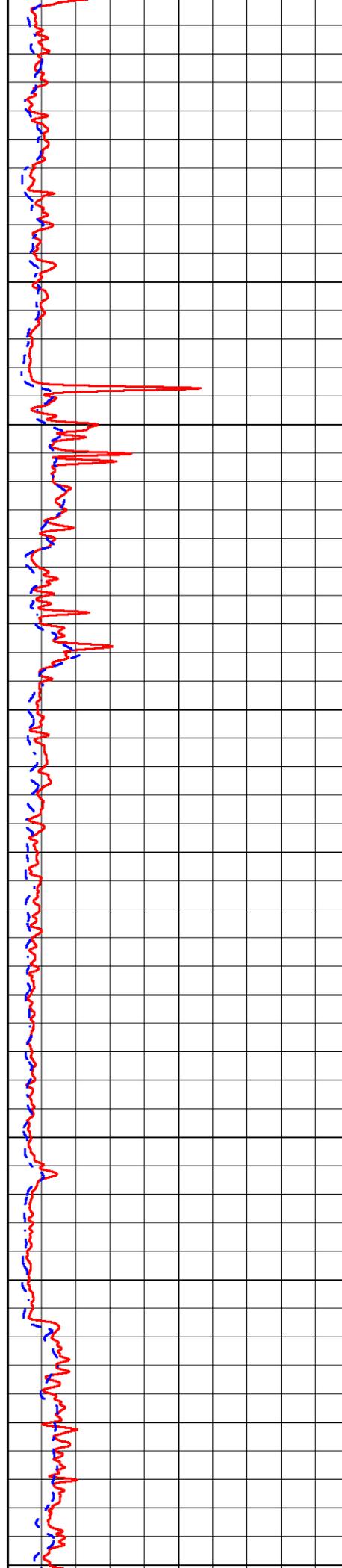


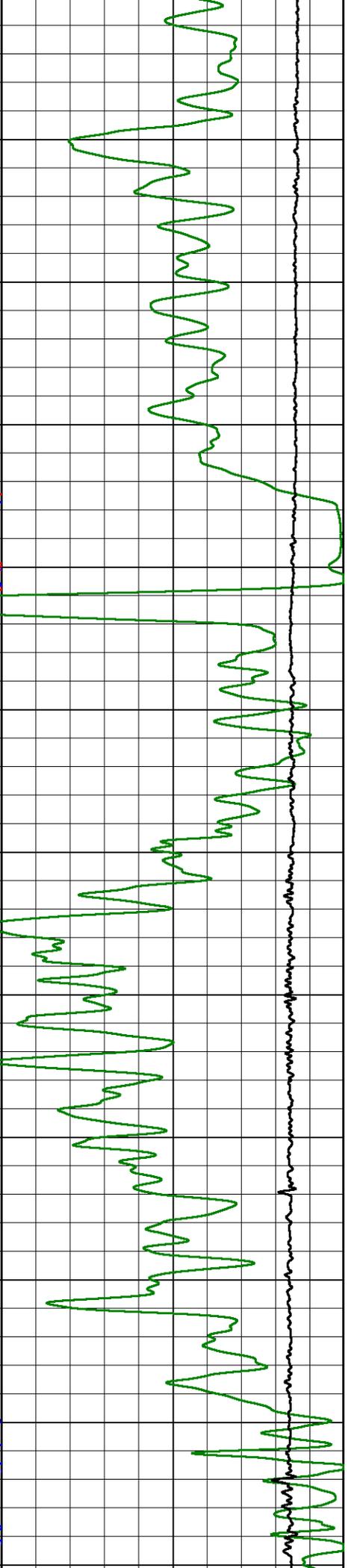
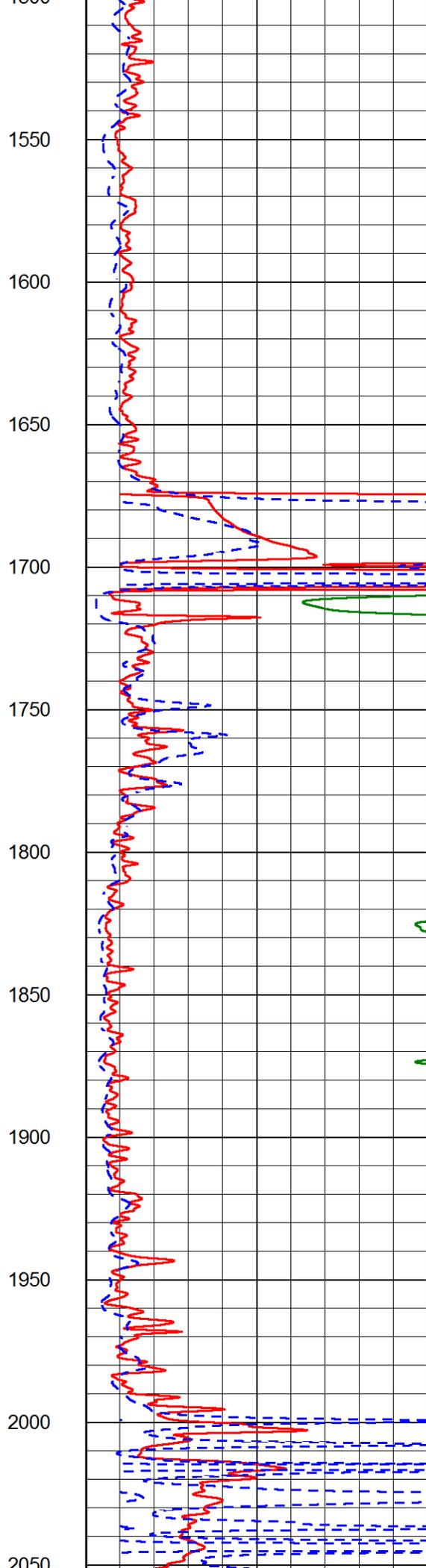
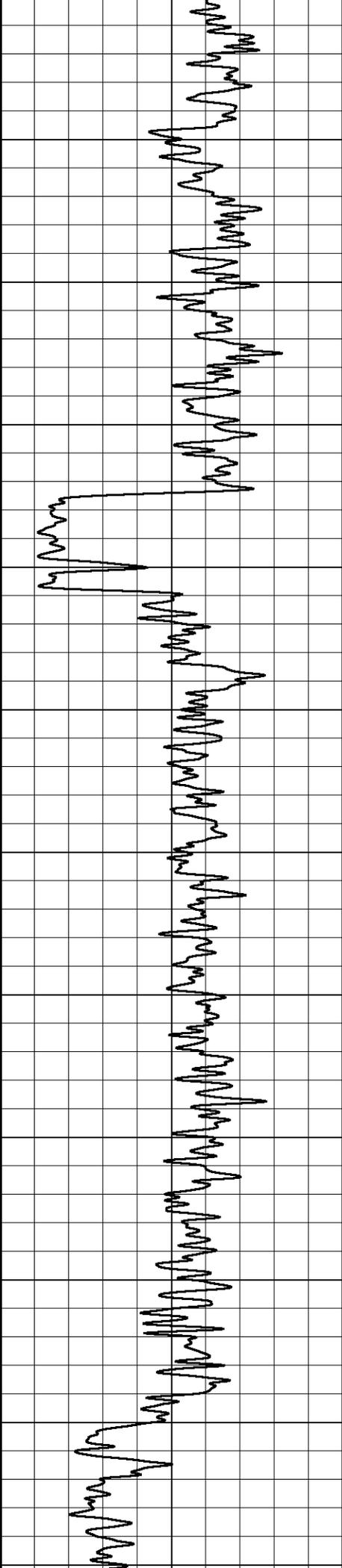
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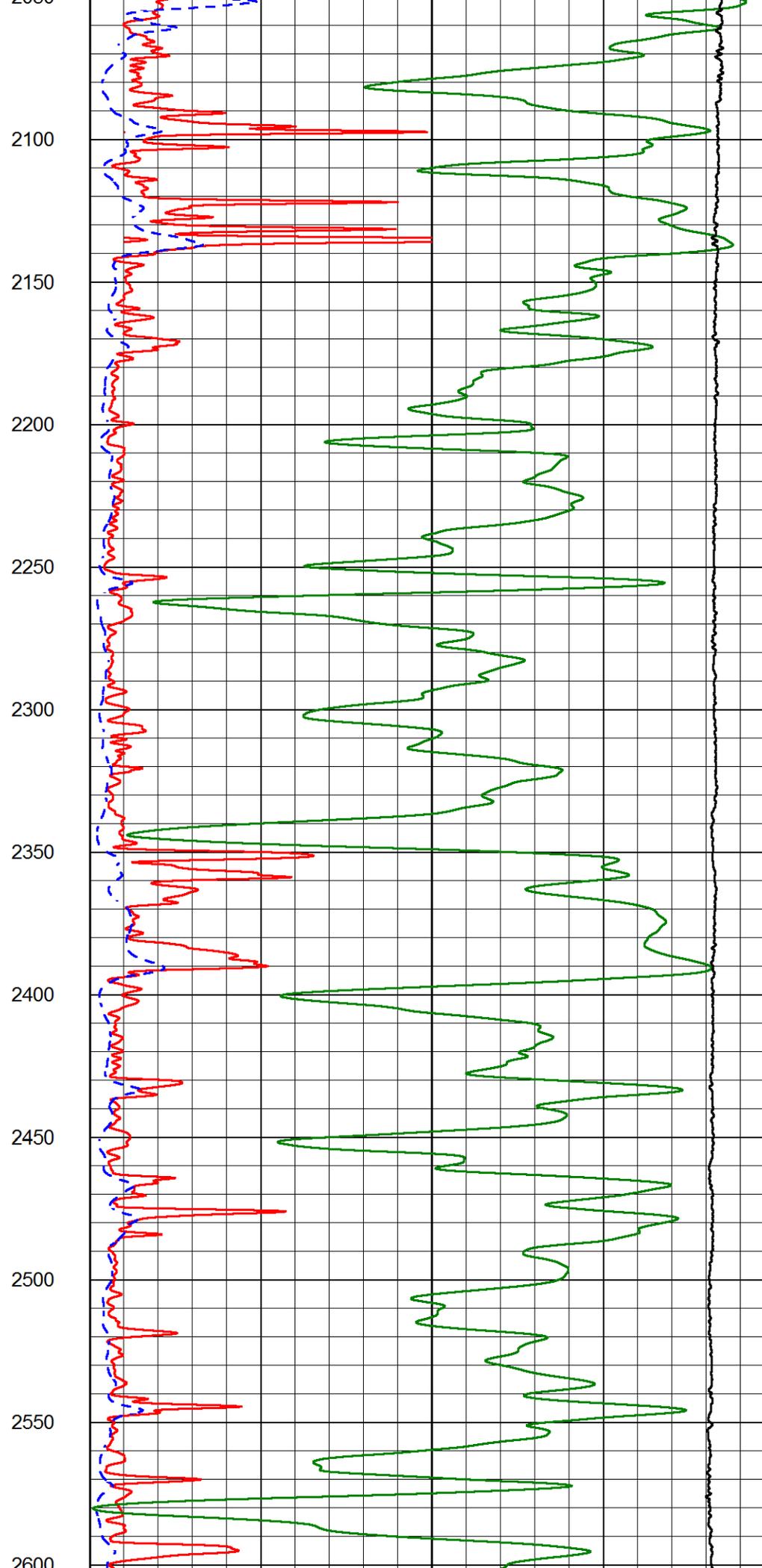
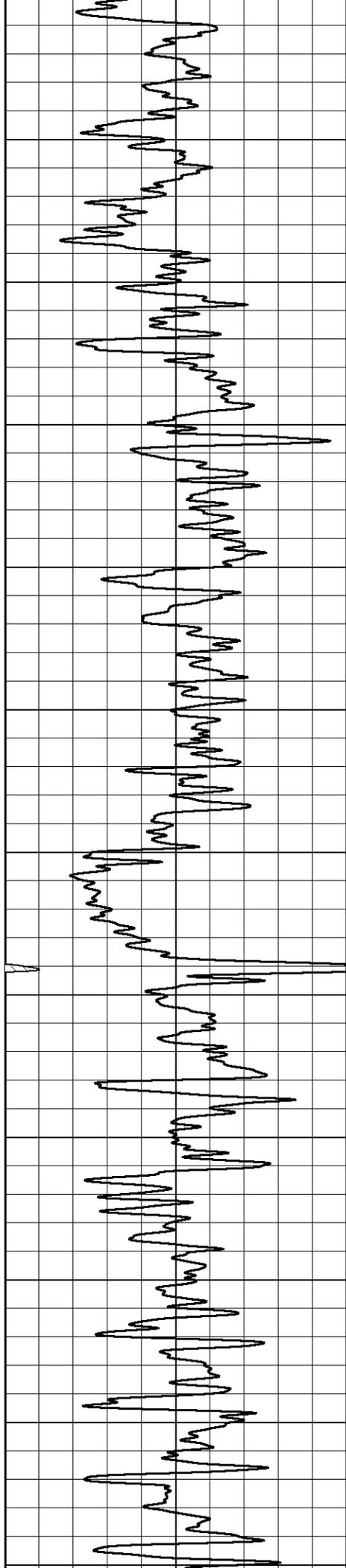


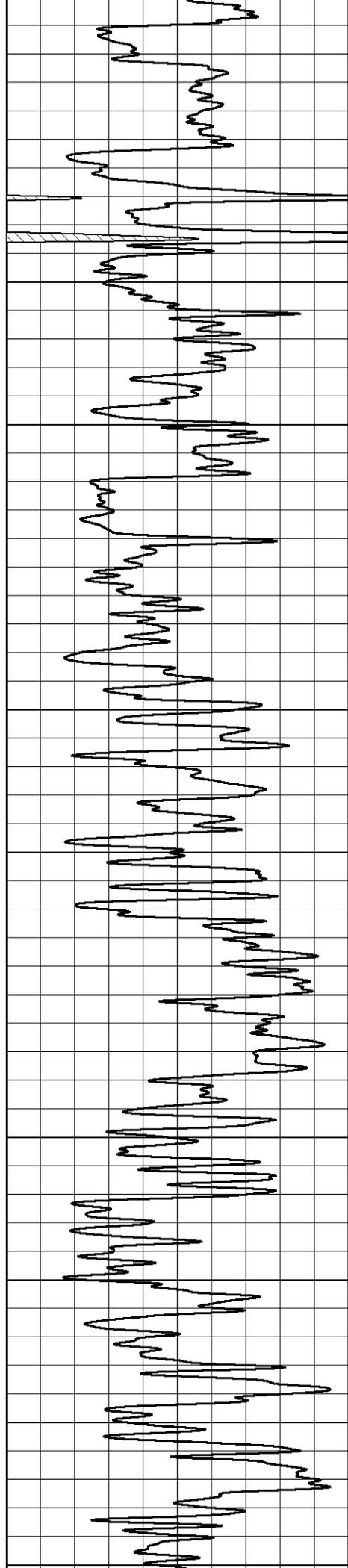


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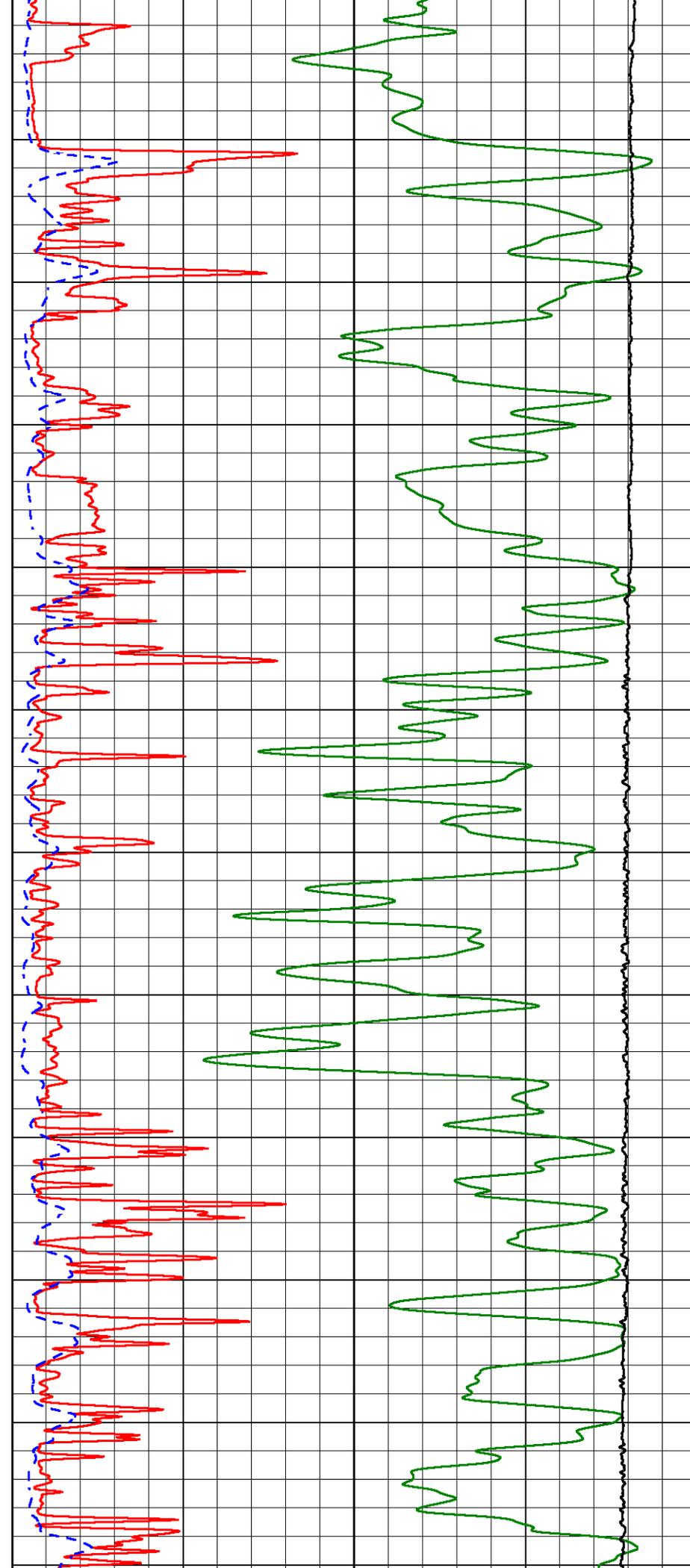


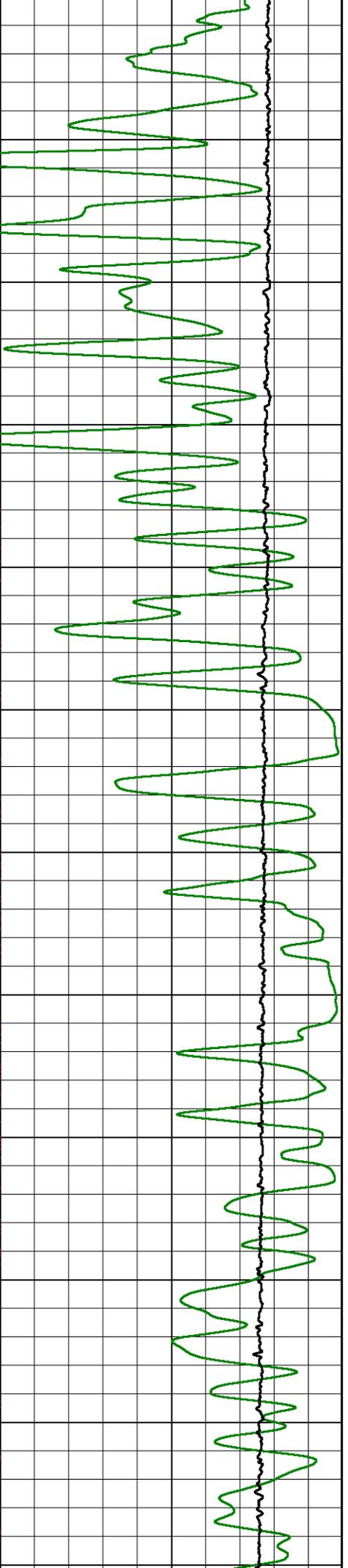
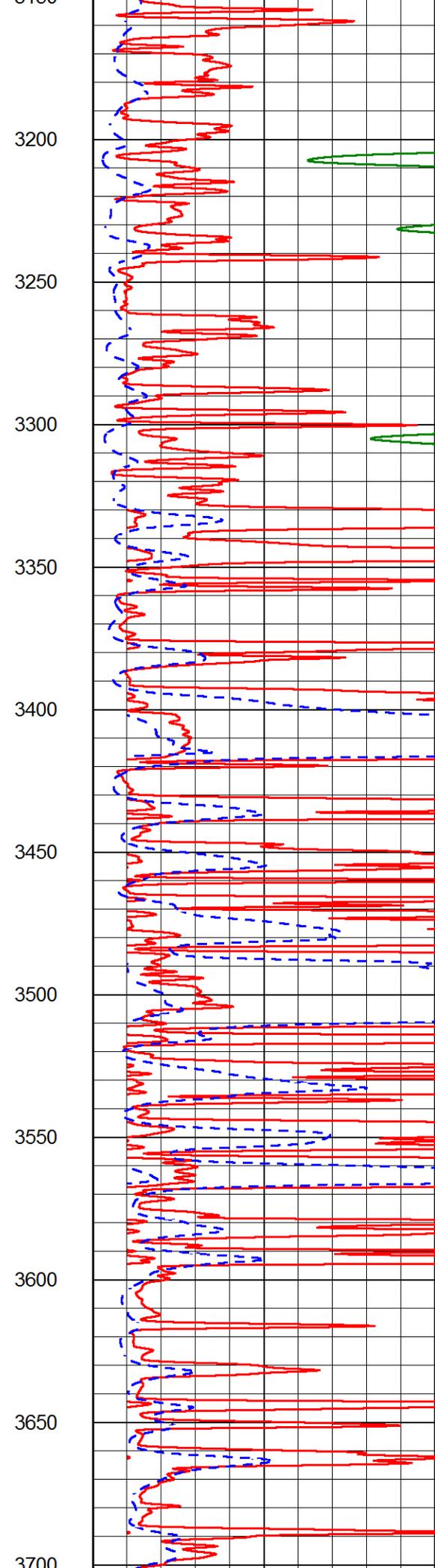
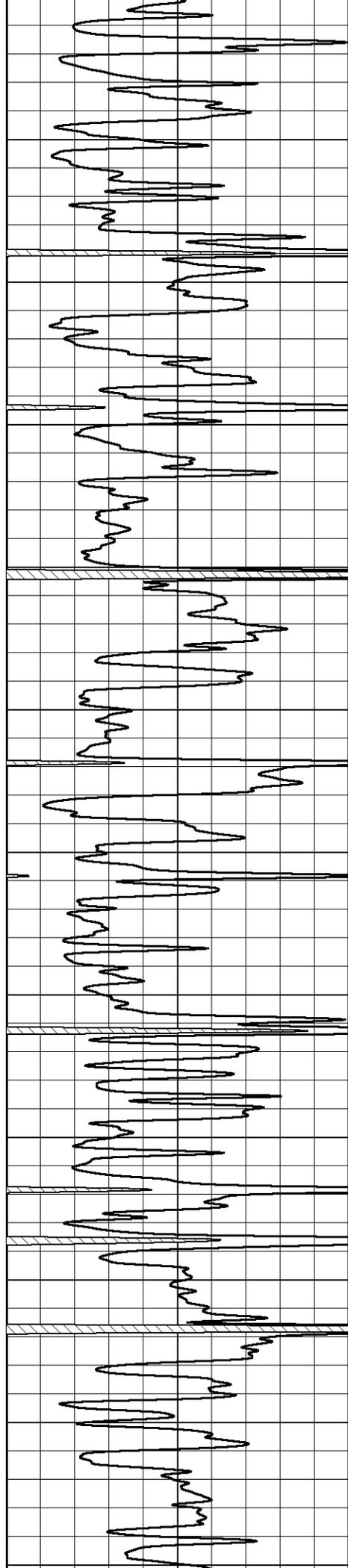


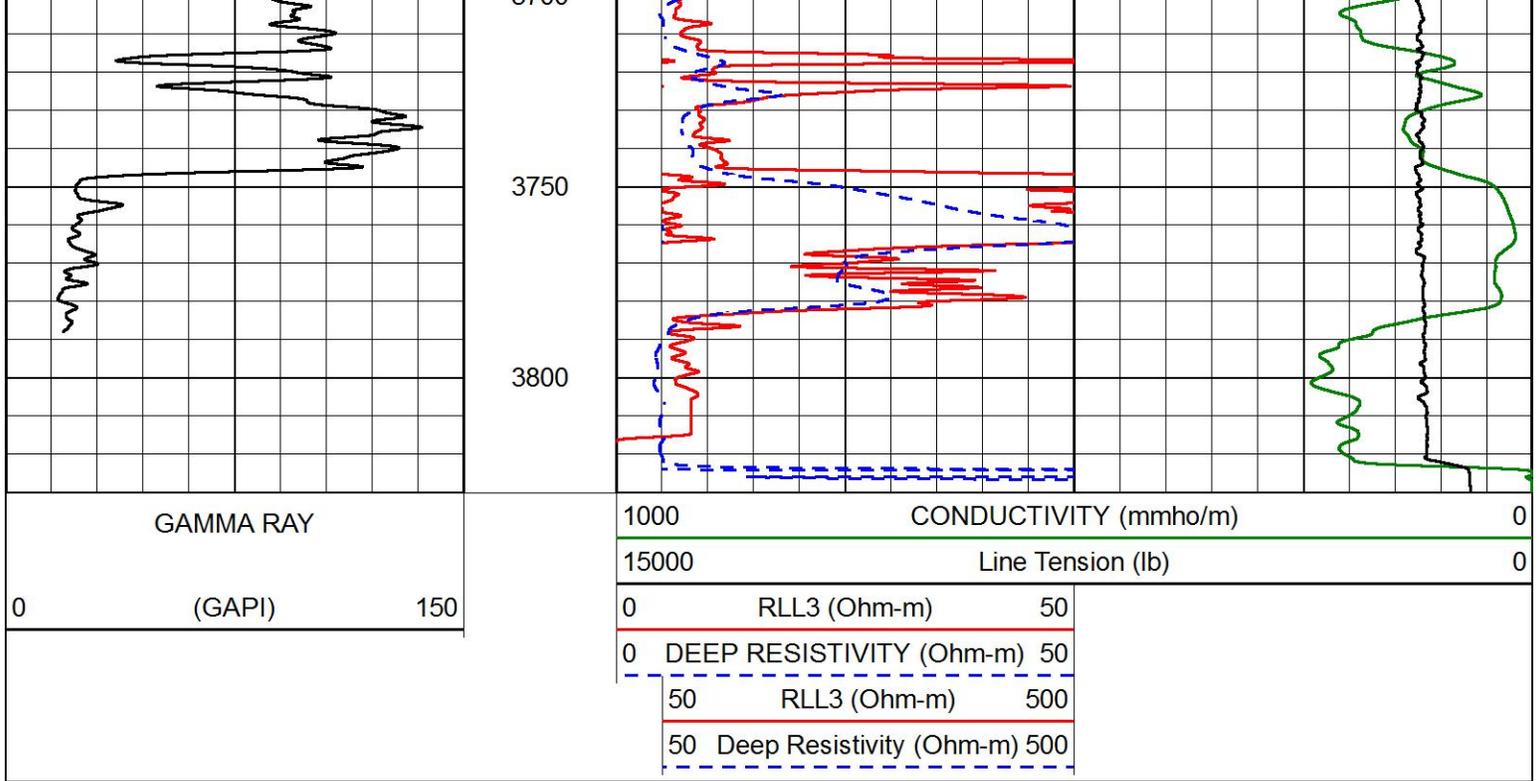




2650
2700
2750
2800
2850
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3000
3050
3100
3150

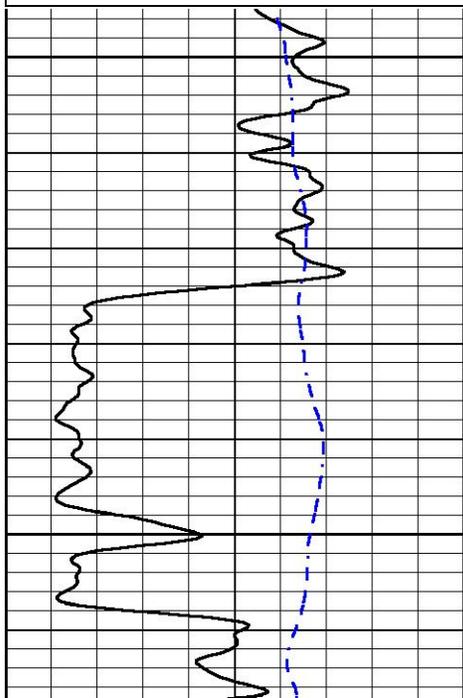
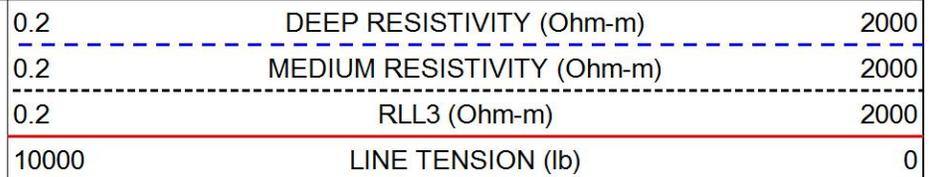
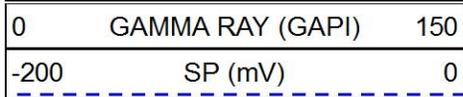






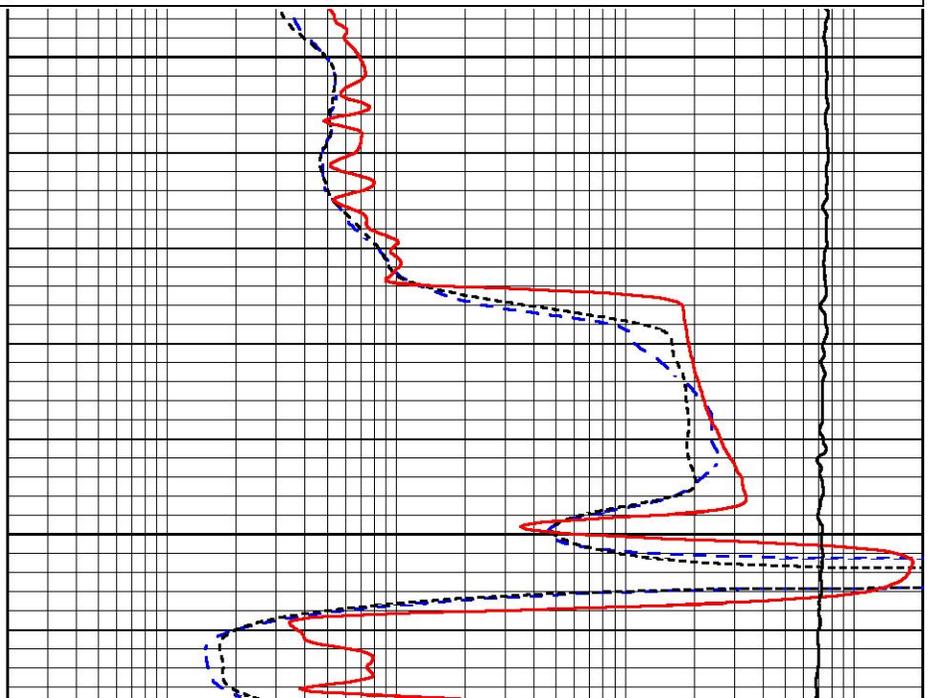
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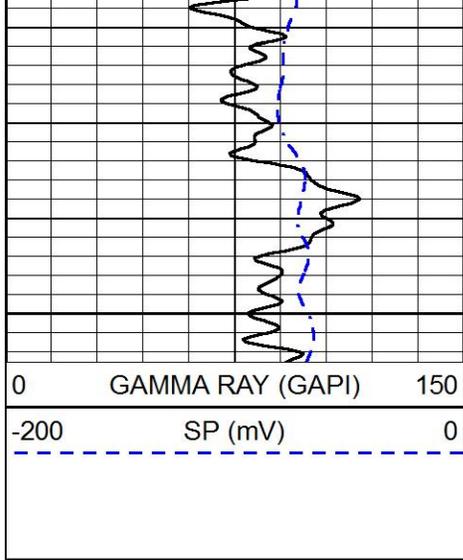
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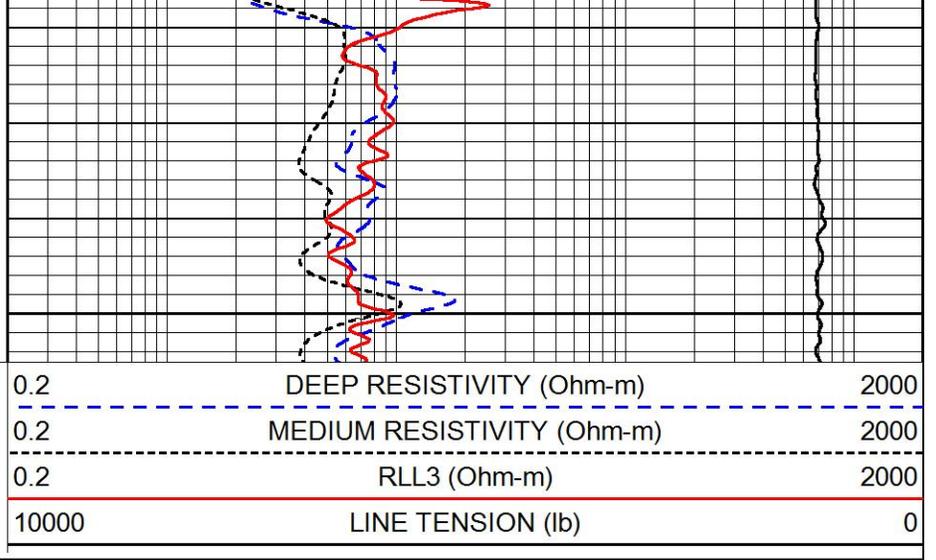
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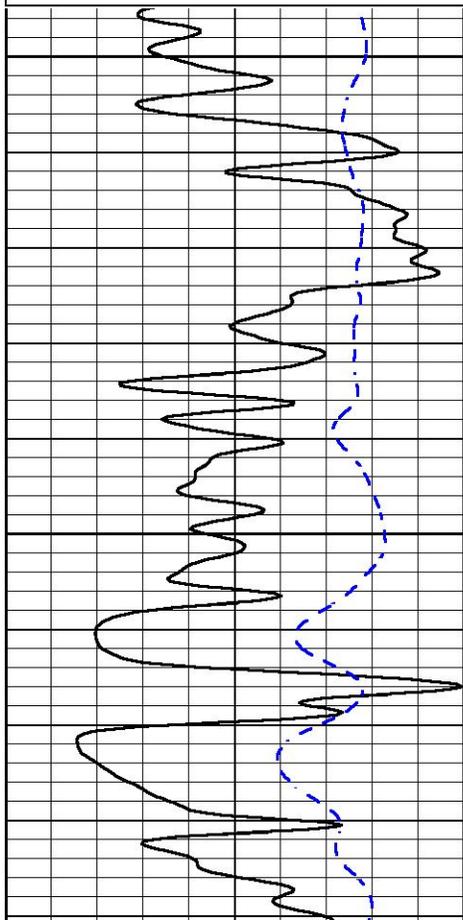
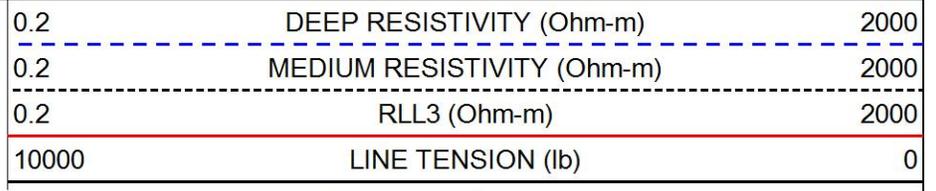
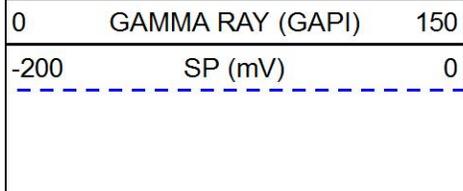


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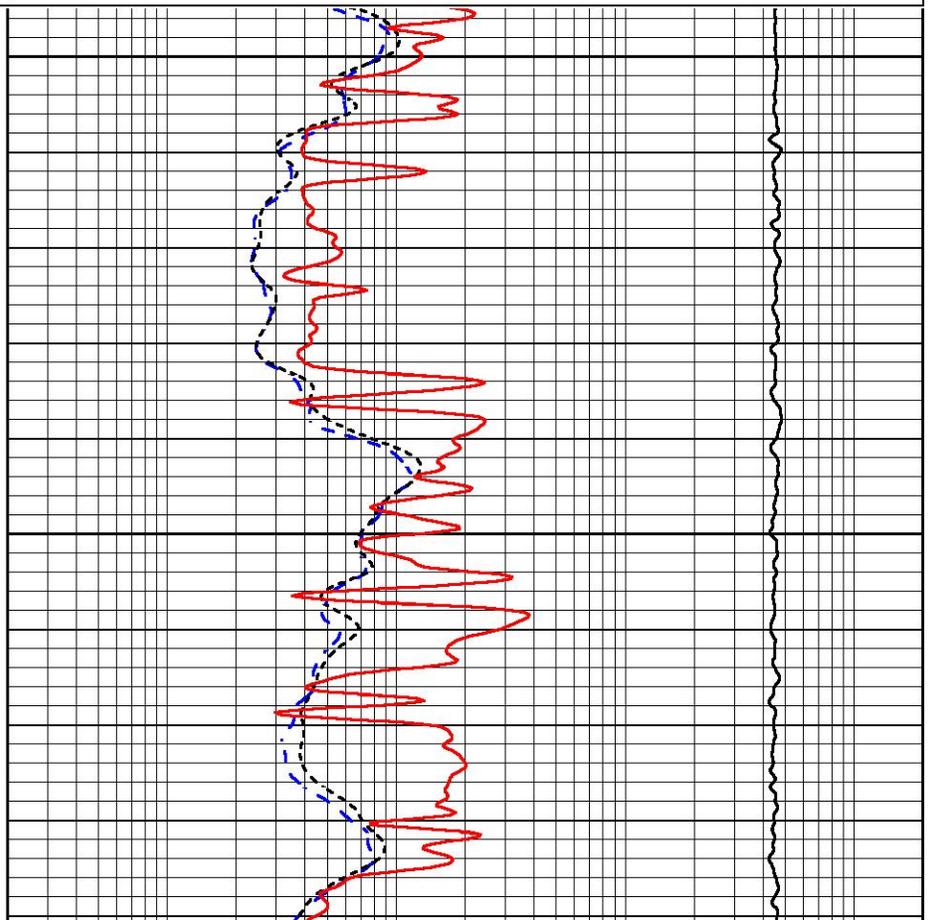
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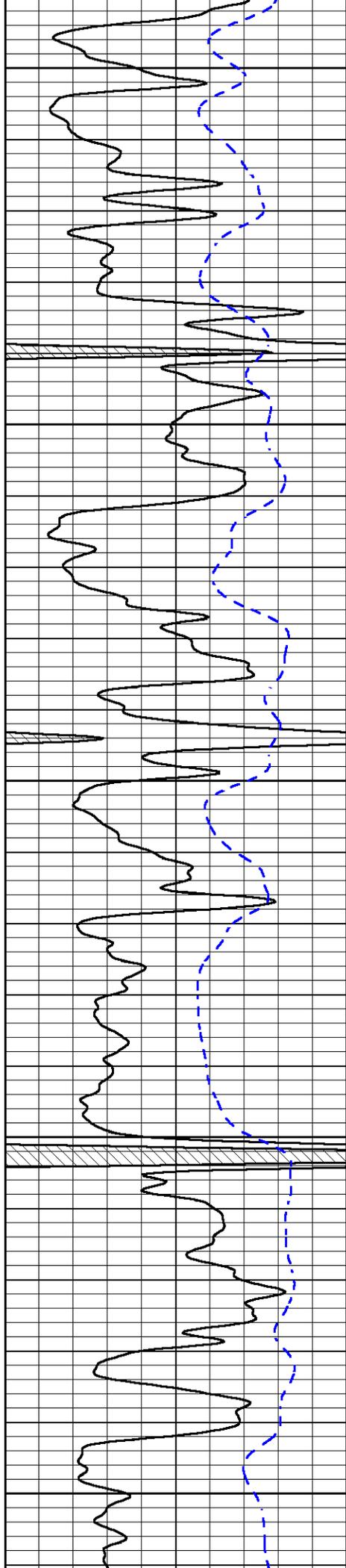
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3100

3150





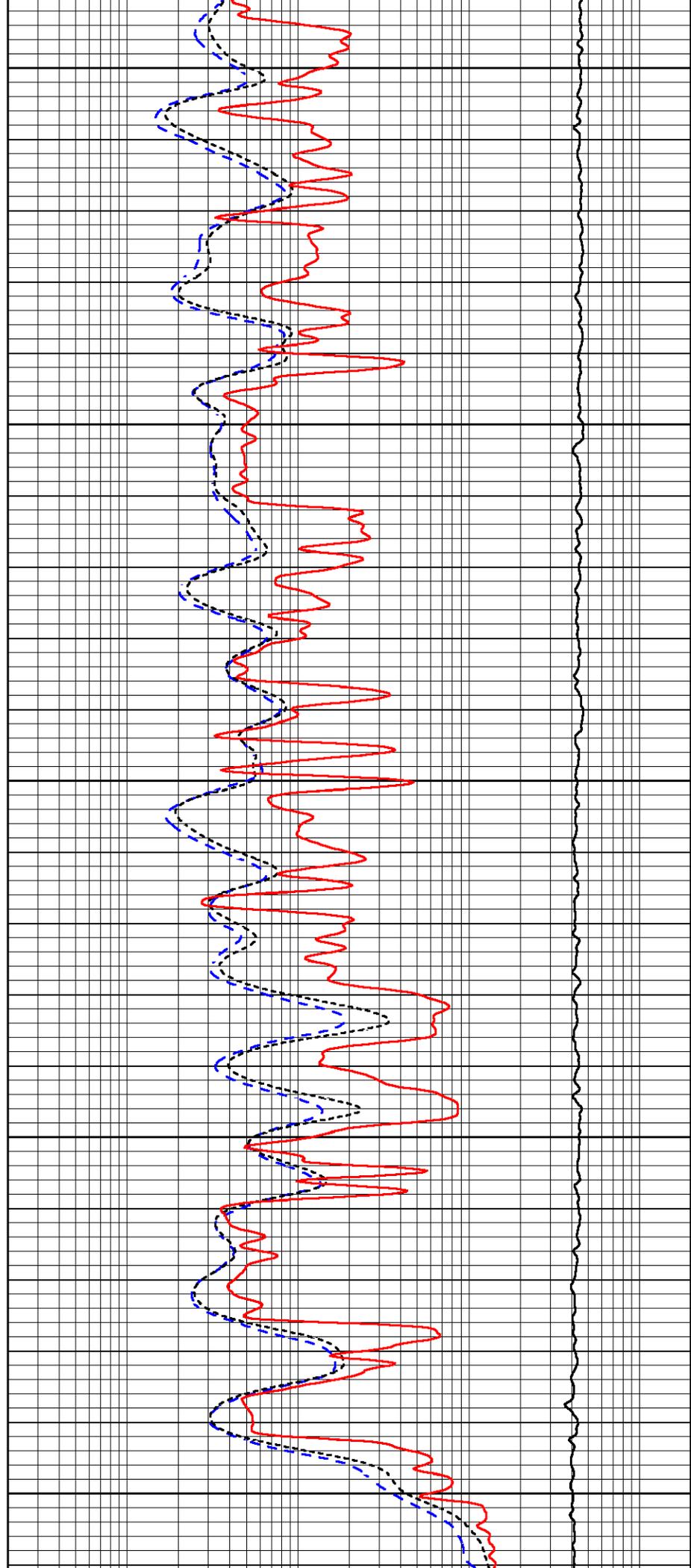
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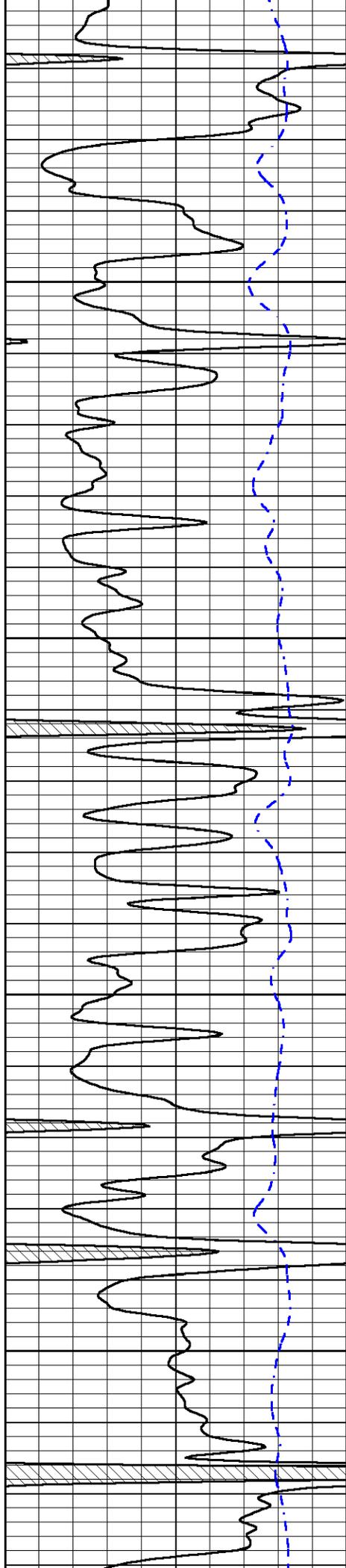
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3300

3350

3400



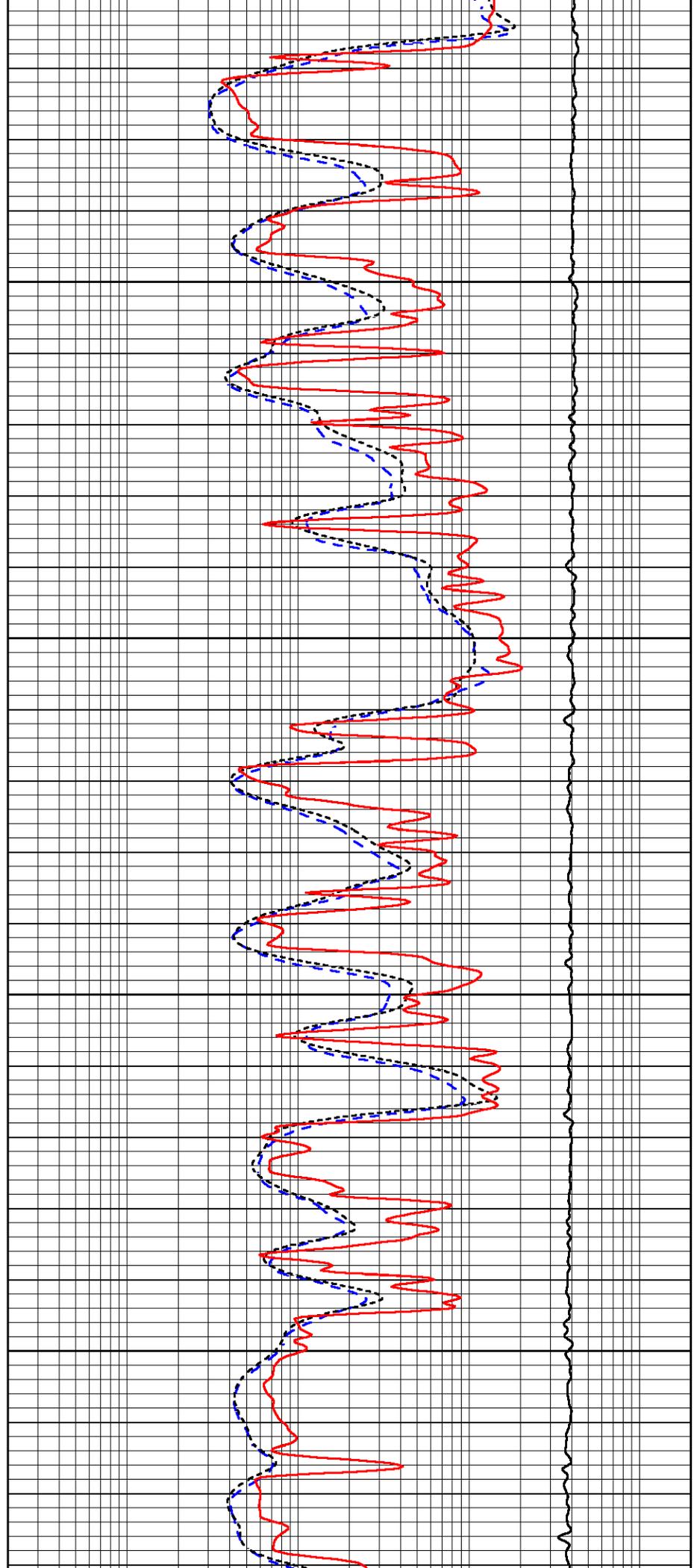


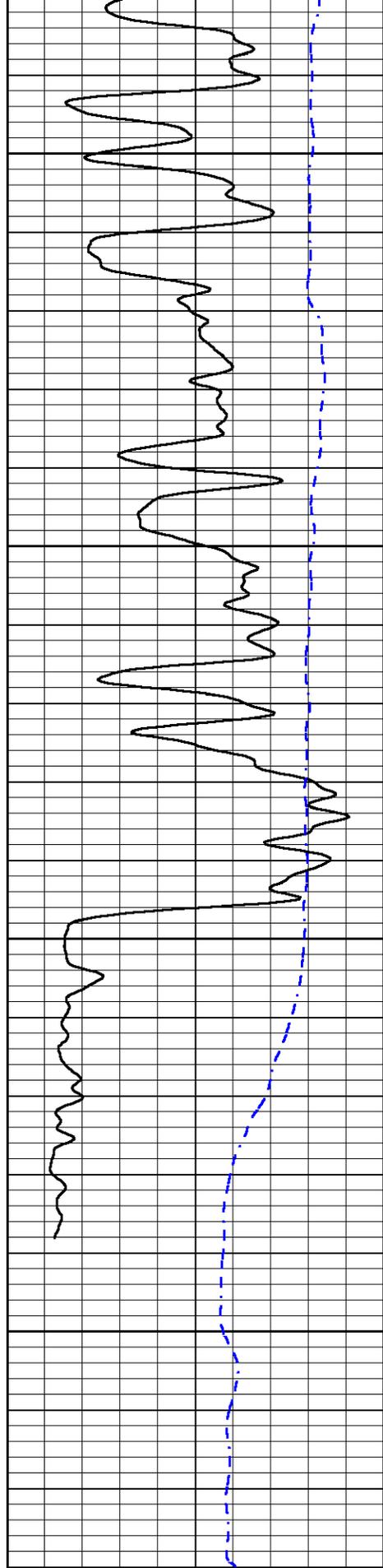
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3500

3550

3600





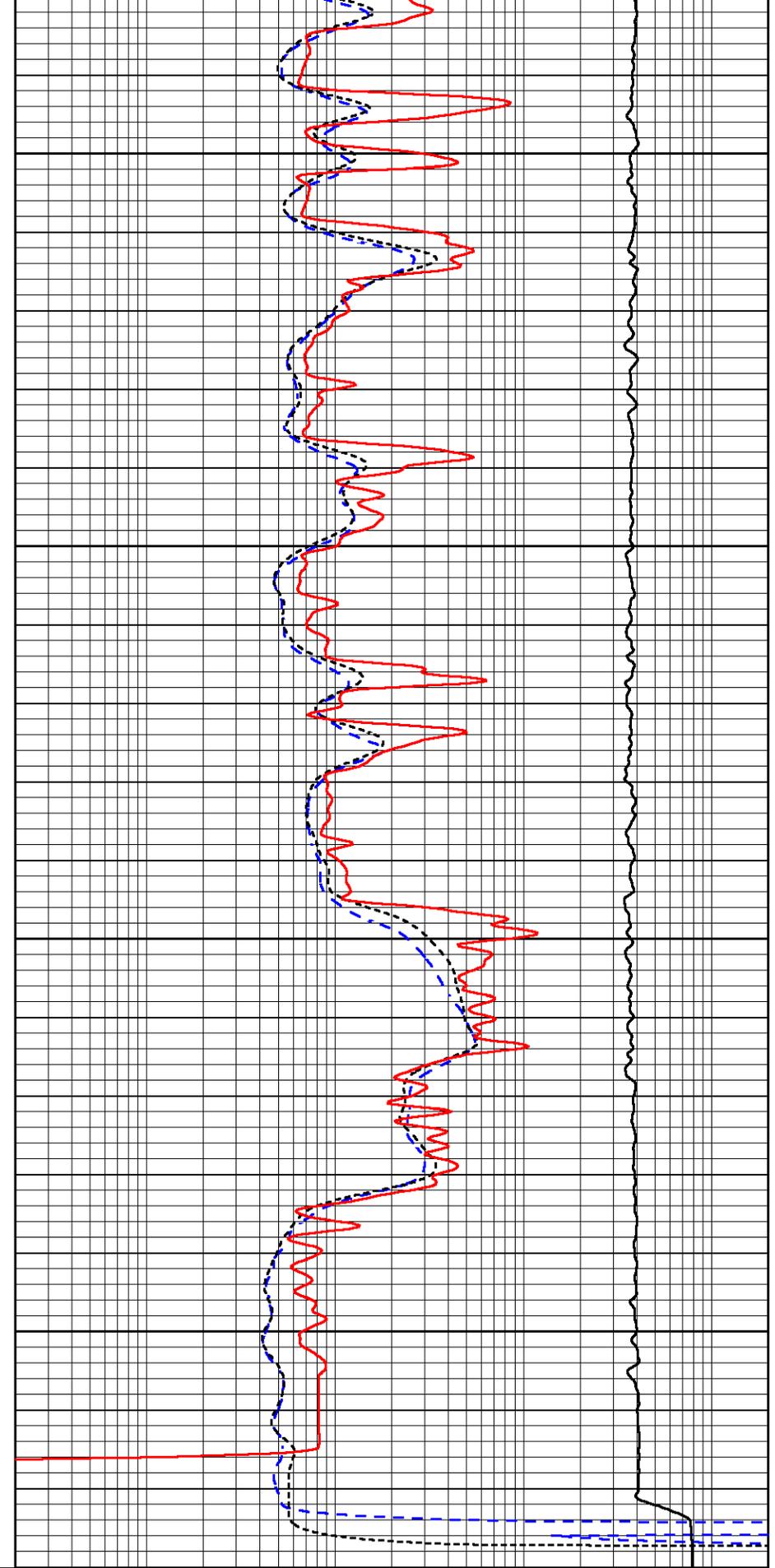
3650

3700

3750

3800

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

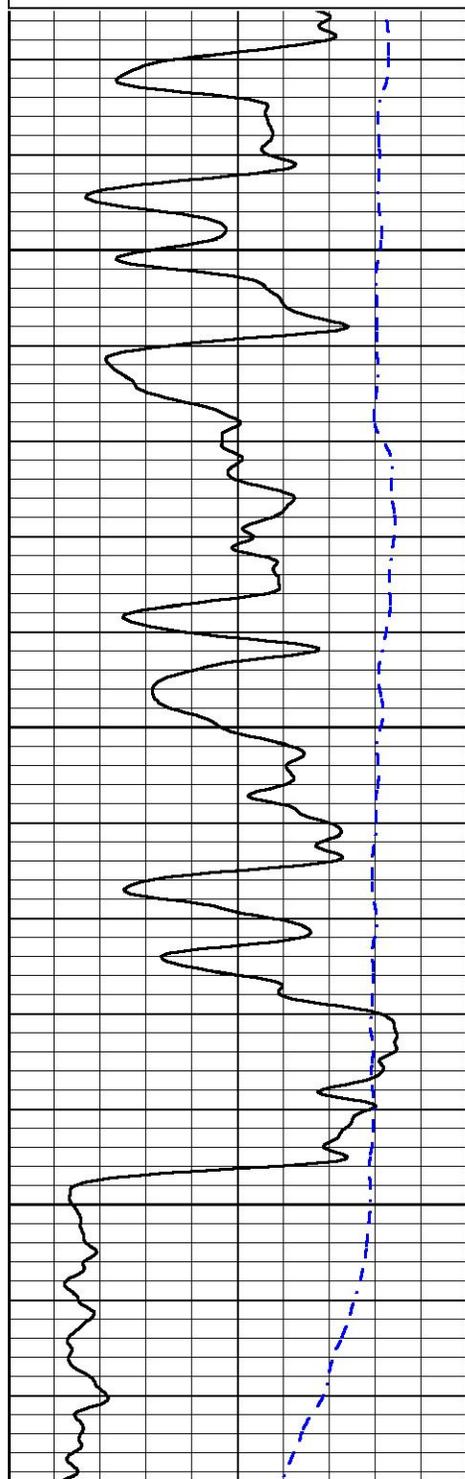


REPEAT SECTION

Database File cobalt_energy_a_1_36.db
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 Presentation Format dil
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0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

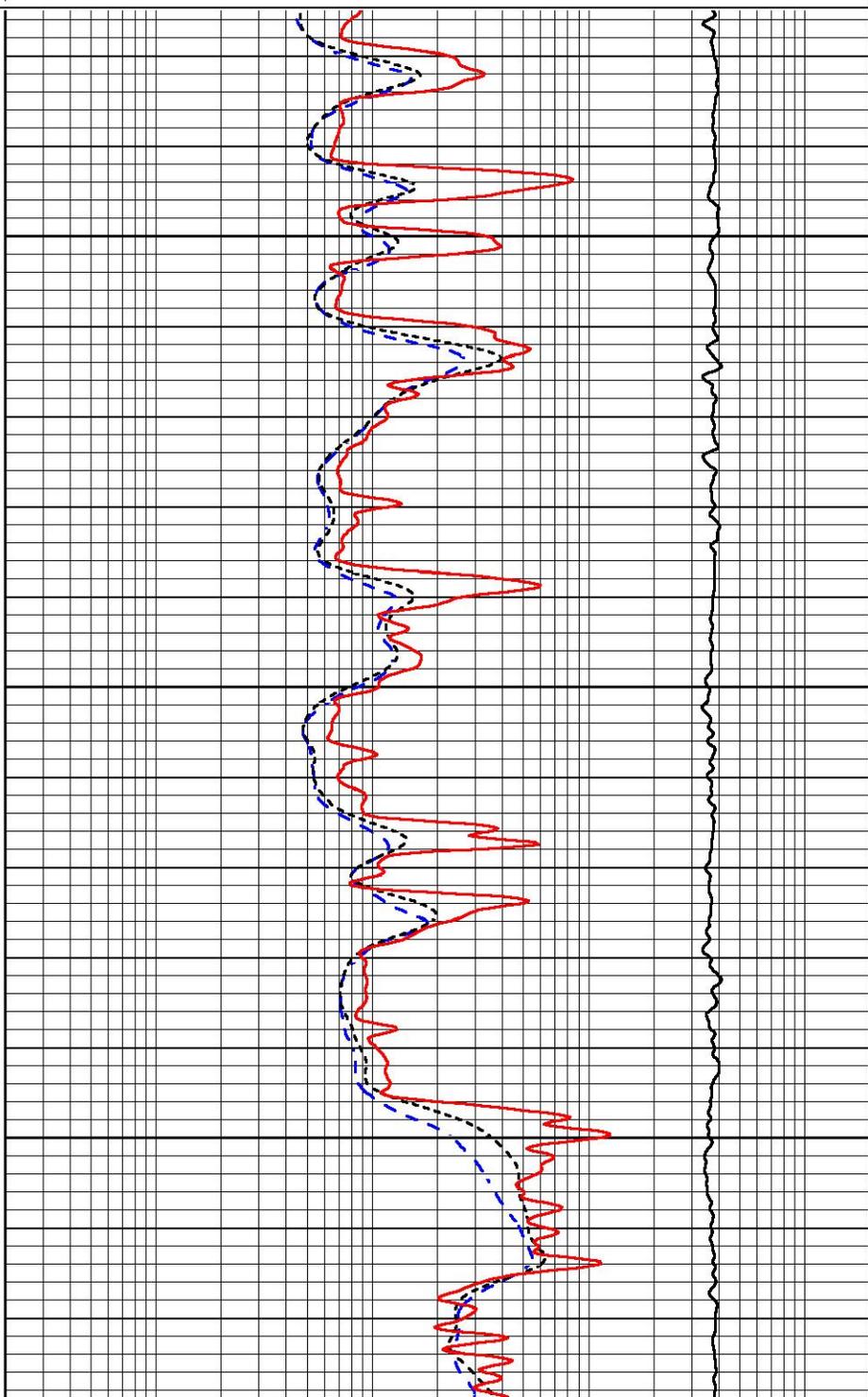
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

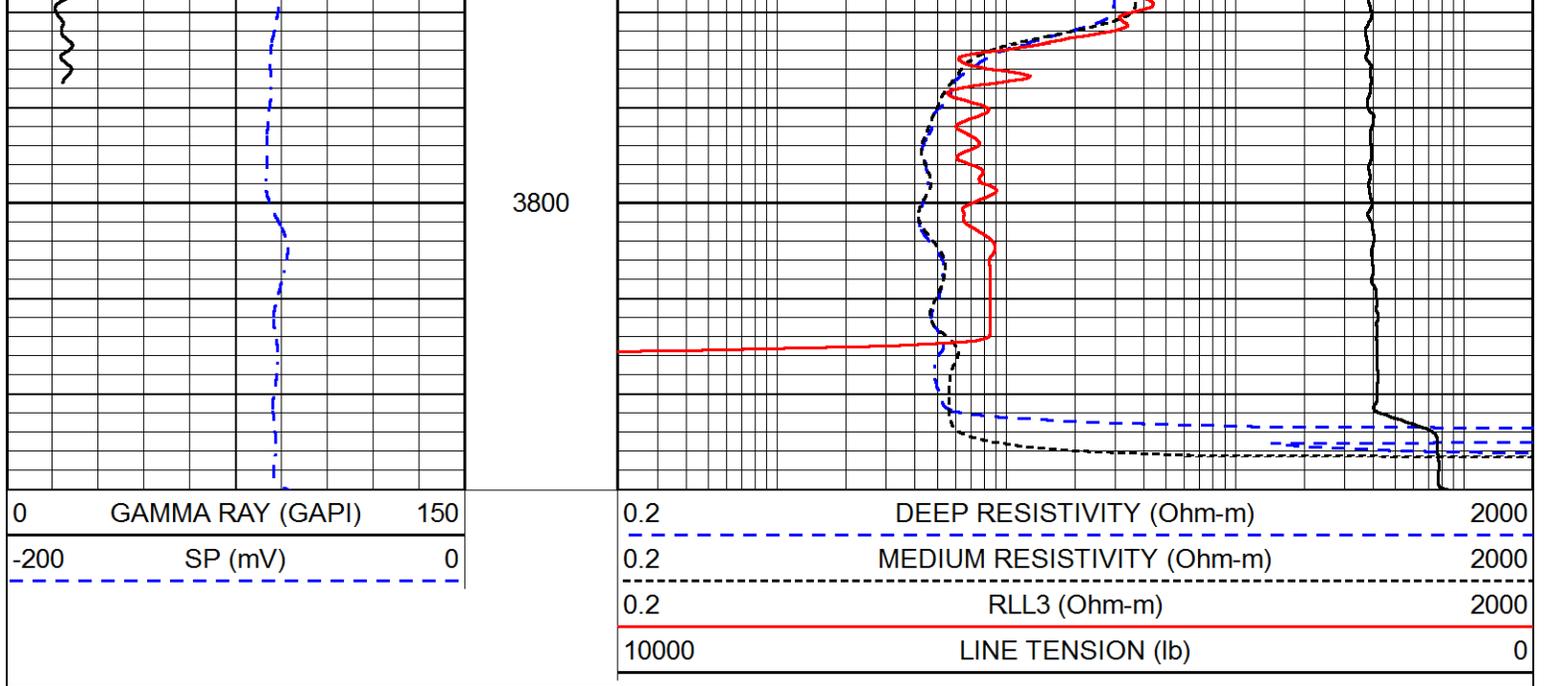


3650

3700

3750





Calibration Report

Database File cobalt_energy_a_1_36.db
 Dataset Pathname stackmel/pass3.1
 Dataset Creation Tue Jul 17 19:03:31 2018

Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP
 Calibration Performed: Sun Jul 15 05:36:29 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop	mmho/m	Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-17.000
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-60.500

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Sun Jul 15 07:40:28 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal	mmho/m	m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	24000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	30000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8500

Compensated Density Calibration Report

Serial-Model: 797-152-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Tue May 01 13:38:28 2018

Master Calibration

Density Far Detector Near Detector

Magnesium	1.755	g/cc	4933.40	5500.86	cps
Aluminum	2.650	g/cc	928.80	3521.29	cps

Spine Angle = 75.04

Density/Spine Ratio = 0.518

	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: SUN JUL 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: Sun Jul 15 05:37:08 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



PIONEER
 Pioneer Energy Services

Company COBALT ENERY LLC
 Well ELIZABETH A # 1-36
 Field WILDCAT
 County GRAHAM
 State KANSAS