



# DUAL INDUCTION LOG

Company AMERICAN WARRIOR, INC.  
 Well DOWDY OWENS #4-36  
 Field SHUCK NW  
 County STEVENS  
 State KANSAS

Company AMERICAN WARRIOR, INC.  
 Well DOWDY OWENS #4-36  
 Field SHUCK NW  
 County STEVENS State KANSAS

Location: API #: 15-189-22,841-00-00  
 NE SW NE SW  
 1859' FSL & 1942' FWL  
 SEC 36 TWP 32S RGE 35W  
 Permanent Datum GROUND LEVEL Elevation 2927'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services  
 CNL/CDL  
 MEL  
 Elevation  
 K.B. 2939'  
 D.F. N/A  
 G.L. 2927'

Date	5/22/2016
Run Number	ONE
Depth Driller	6350'
Depth Logger	6325'
Bottom Logged Interval	6324'
Top Log Interval	1700'
Casing Driller	8.625" @ 1745'
Casing Logger	1741'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	6,700
Density / Viscosity	9.3 77
pH / Fluid Loss	9.0 10.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.59 @ 72
Rmt @ Meas. Temp	0.44 @ 72
Rmc @ Meas. Temp	0.80 @ 72
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.30 @ 140
Operating Rig Time	4 HOURS
Max Rec. Temp. F	140
Equipment Number	108
Location	COLBY
Recorded By	T. MARTIN
Witnessed By	KEVIN TIMSON

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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.

HUGOTON, 14.5 E TO 27 RD,  
 3.5 N, E INTO

Log Measured From: KELLY BUSHING 12 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

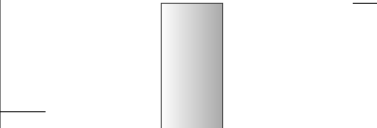
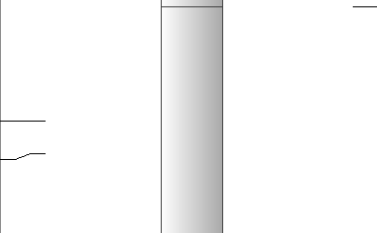
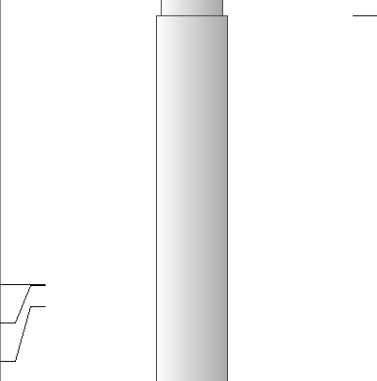
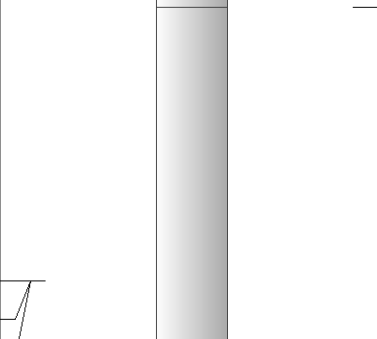
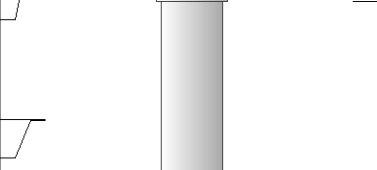
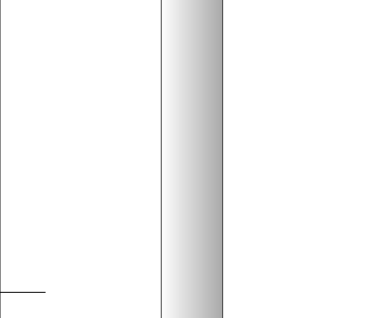
Your Pioneer Energy Services Crew Engineer: T. MARTIN Operator: Operator: Operator:	This Log Record Was Witnessed By Primary Witness: KEVIN TIMSON Secondary Witness: Secondary Witness: Secondary Witness:
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# Log Variables

DatabaseC:\ProgramData\Warrior\Data\lamwar\_dowdyowes\_#4-36.db  
Dataset field/well/stkml/pass3.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	140	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	-580	72	Off	6325

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (71-914)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (1987)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: amwar\_dowdyowes\_#4-36.db: field/well/stkml/pass3.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

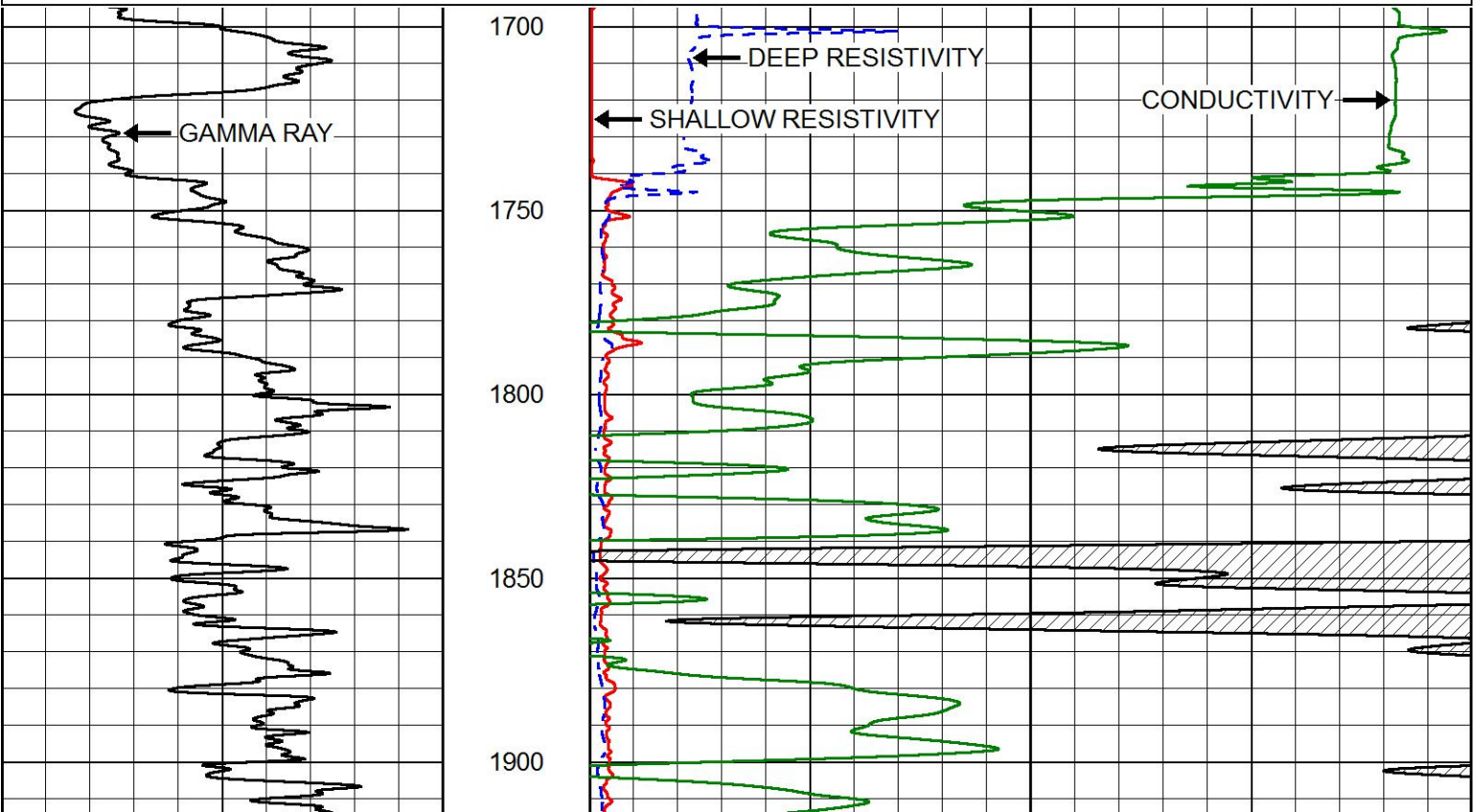


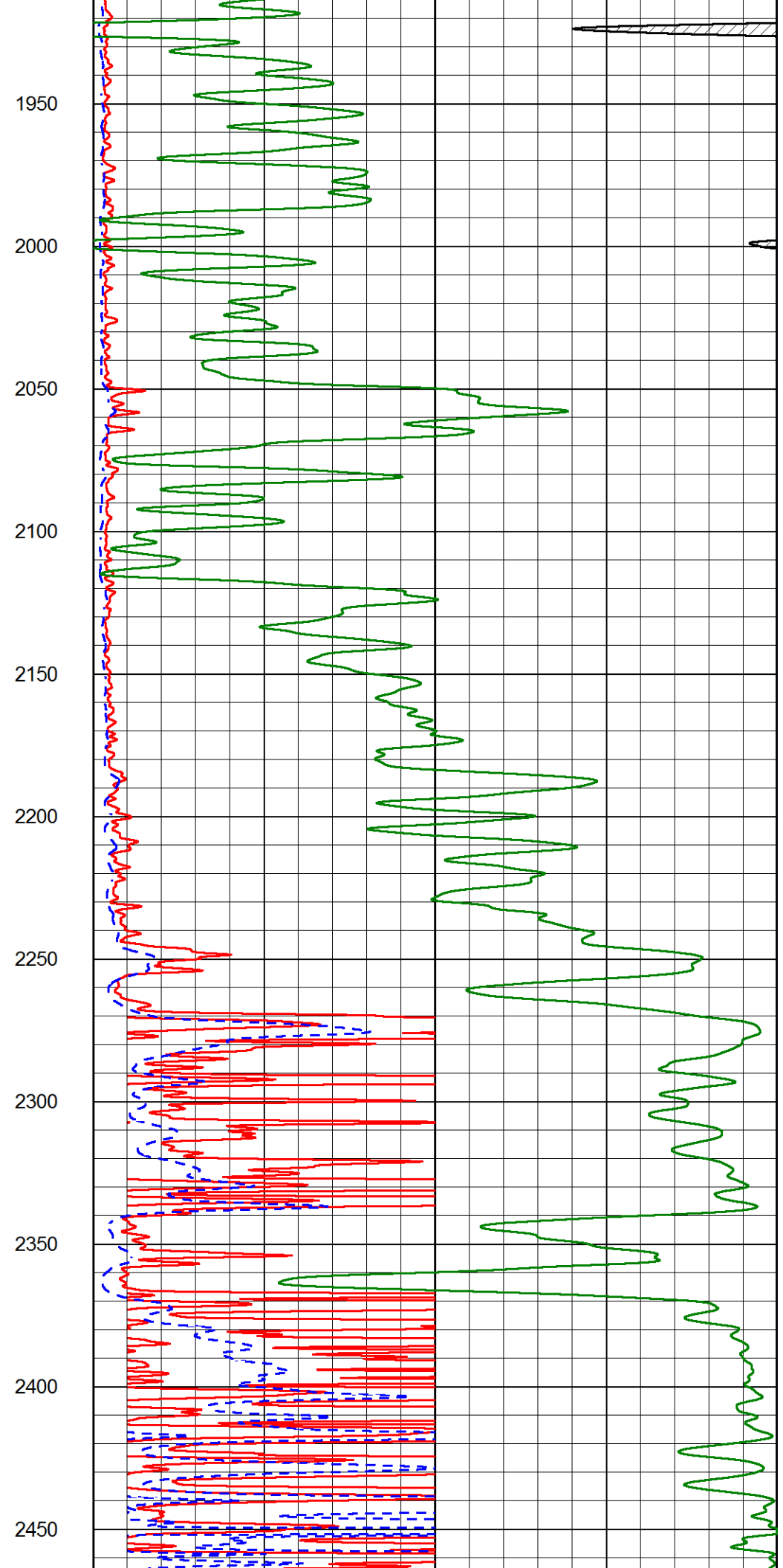
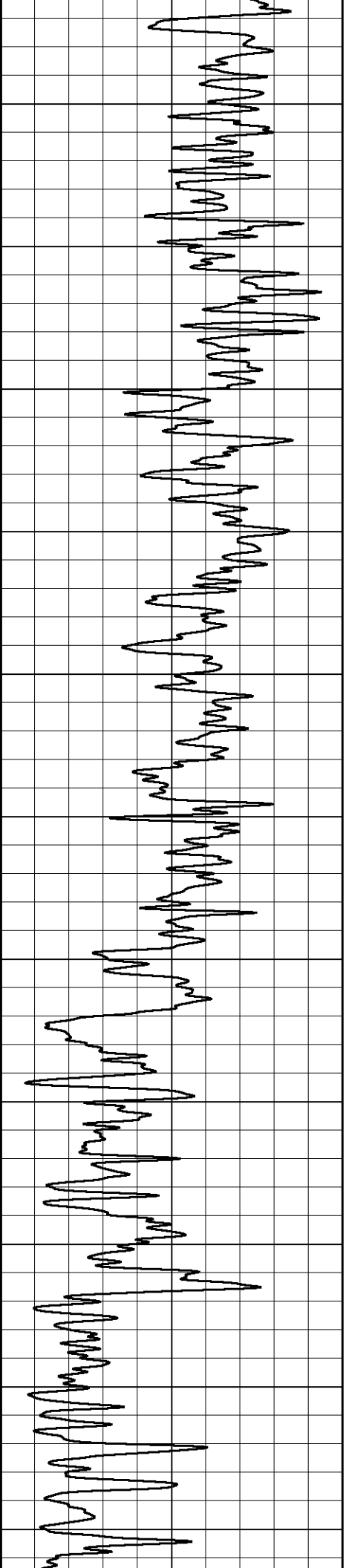
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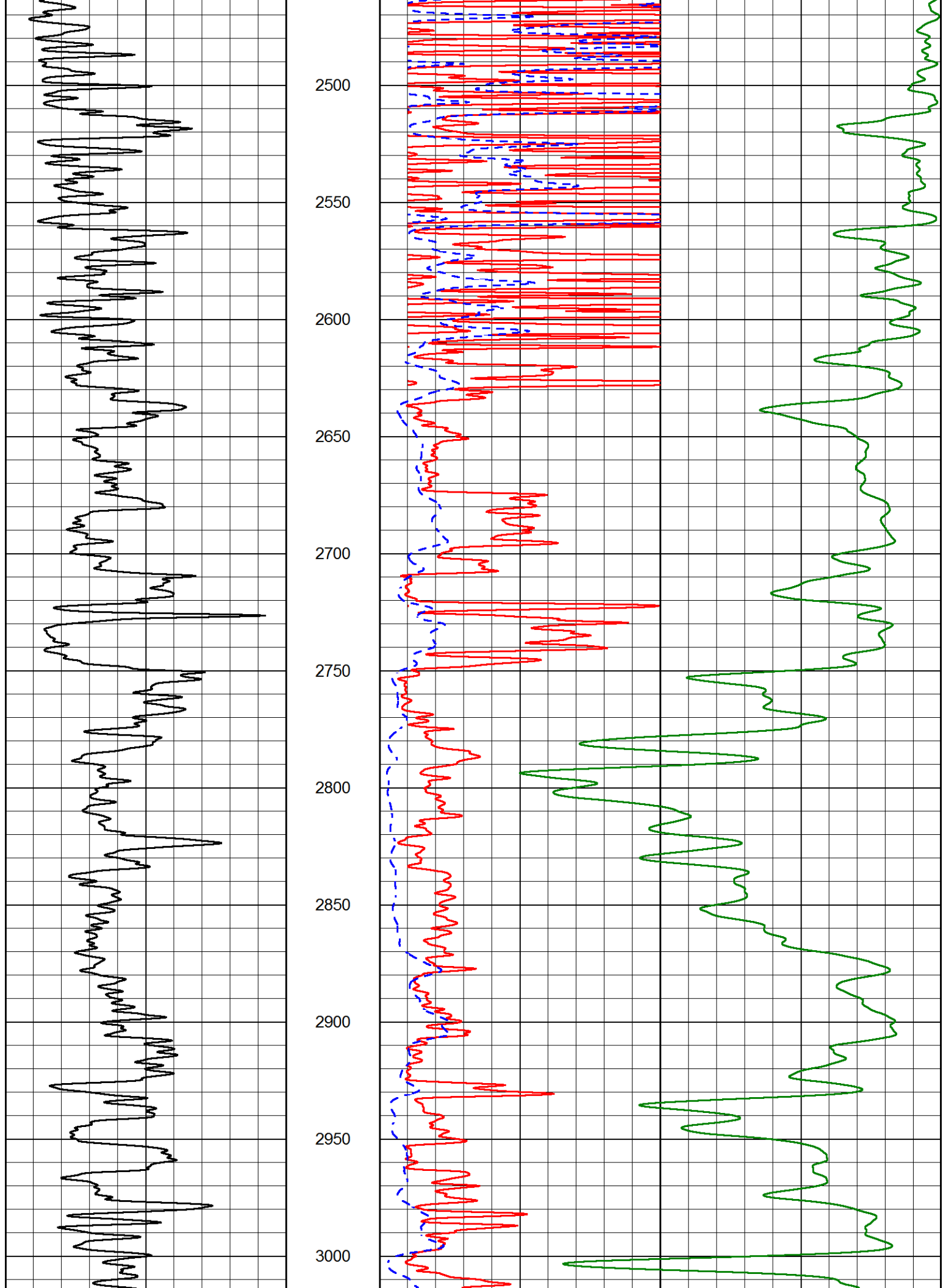
### MAIN PASS

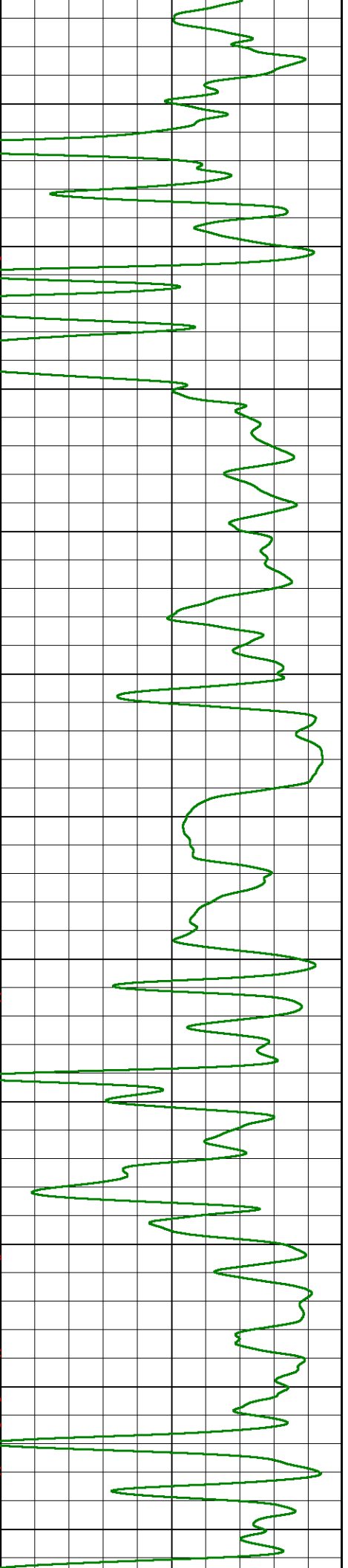
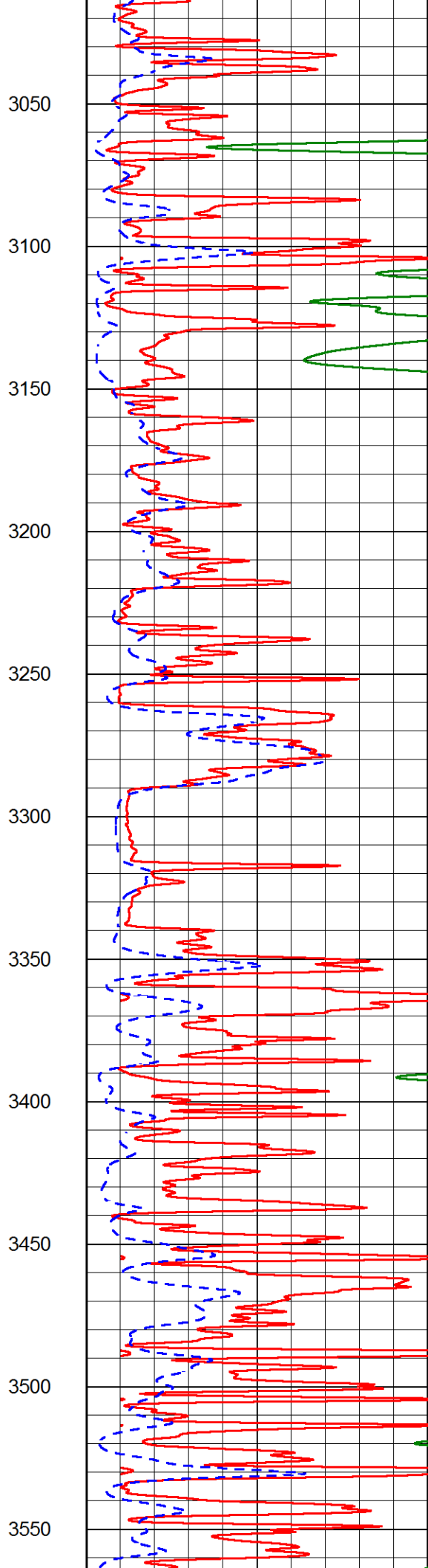
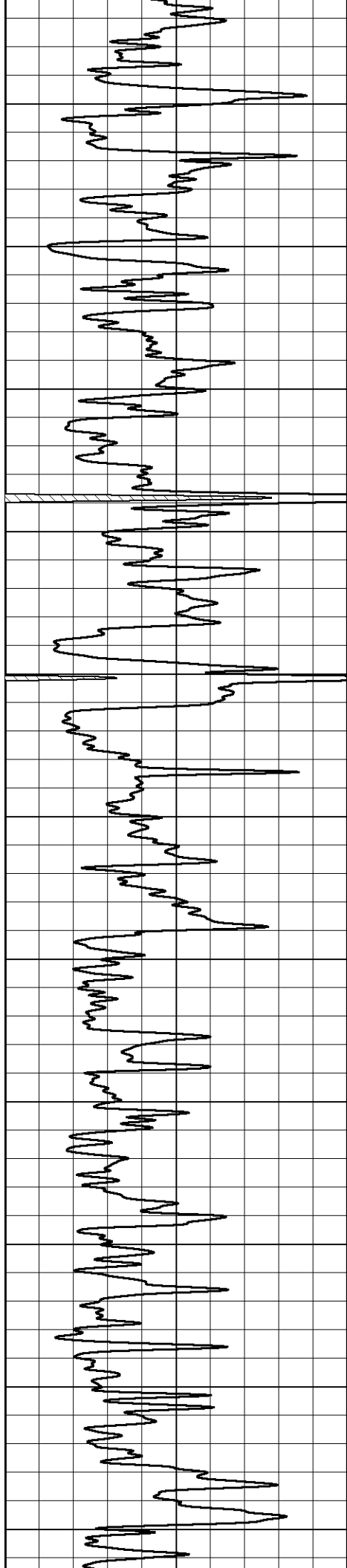
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 Presentation Format dil2in  
 Dataset Creation Sun May 22 07:13:48 2016  
 Charted by Depth in Feet scaled 1:600

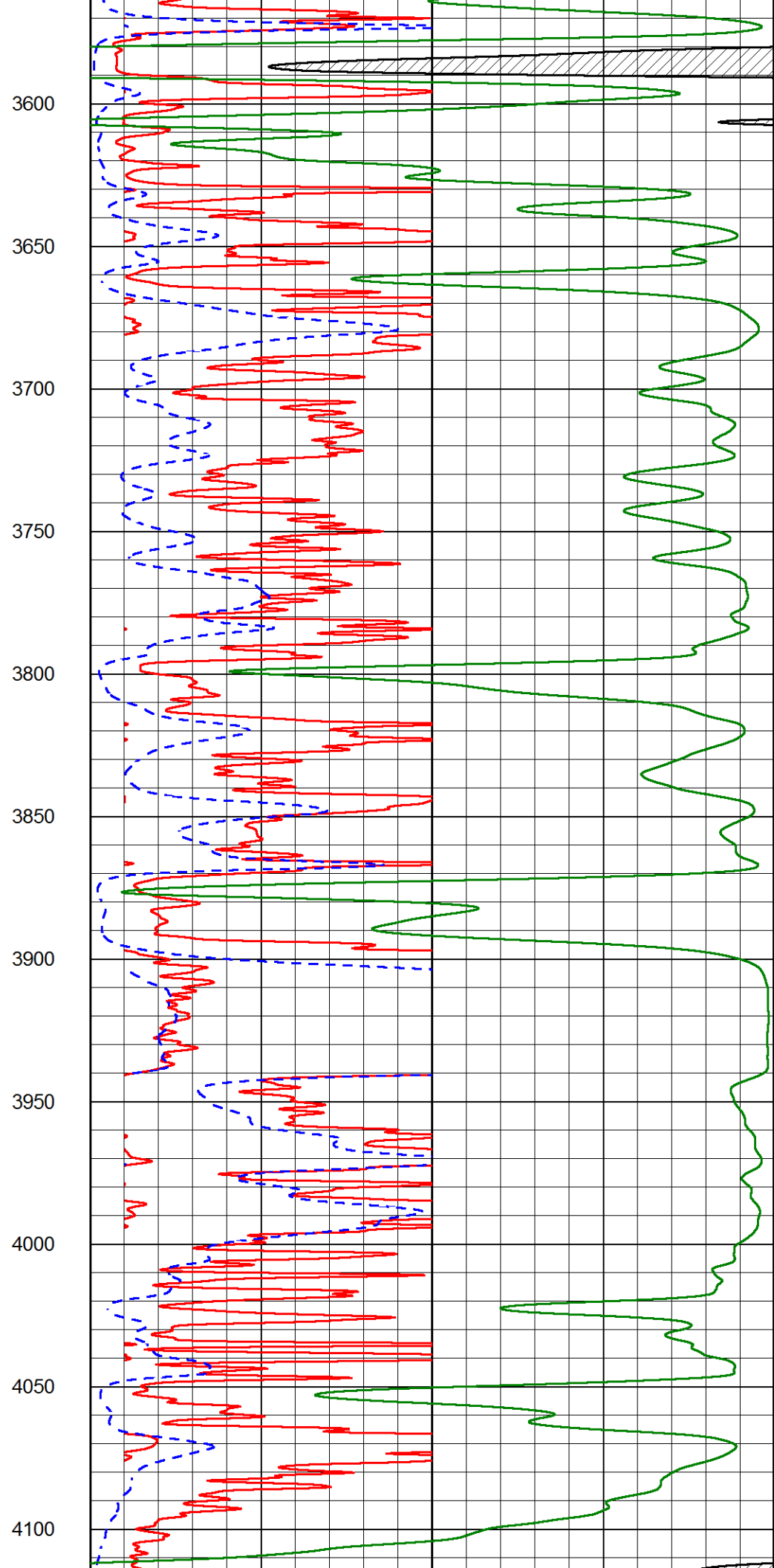
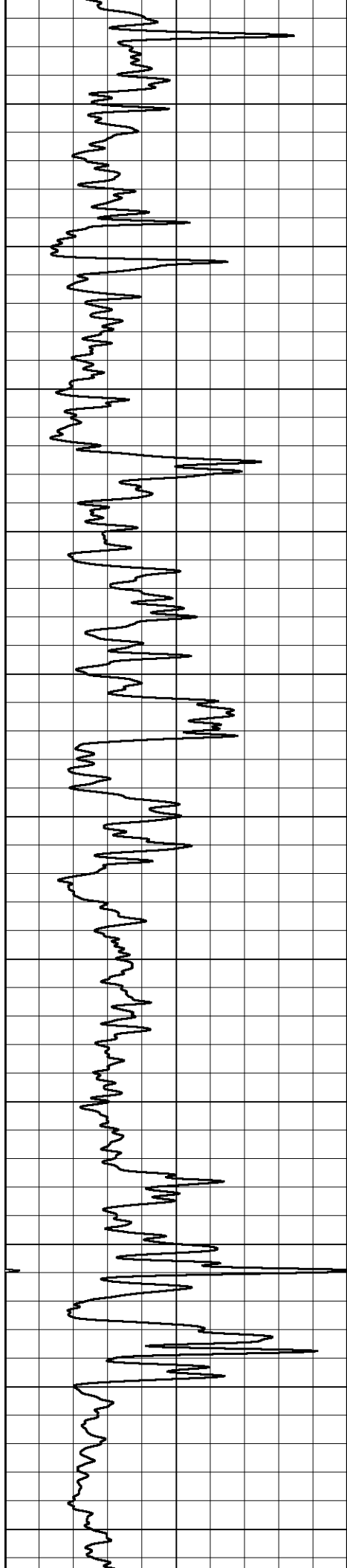
0	GAMMA RAY (GAPI)	150	1000	CONDUCTIVITY (mmho/m)	0
			SHALLOW RESISTIVITY		
			0	(Ohm-m)	50
			DEEP RESISTIVITY (Ohm-m) 50		
			SHALLOW RESISTIVITY		
			50	(Ohm-m)	500
			DEEP RESISTIVITY		
			50	(Ohm-m)	500

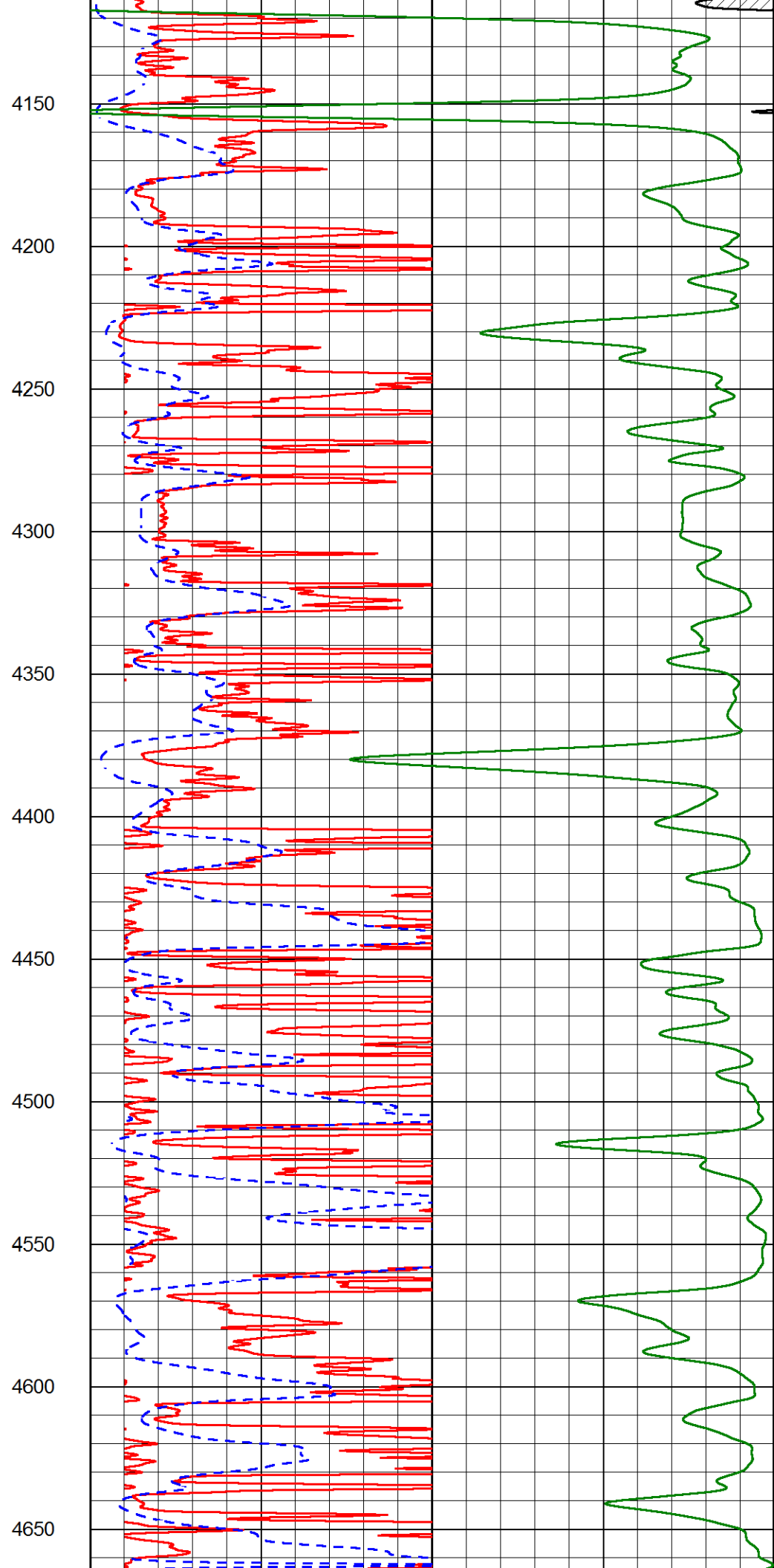
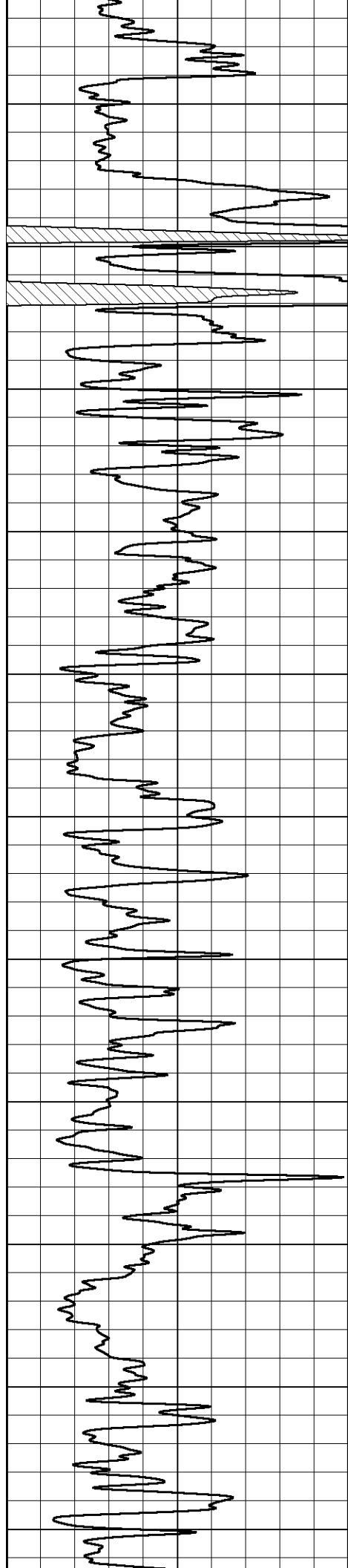


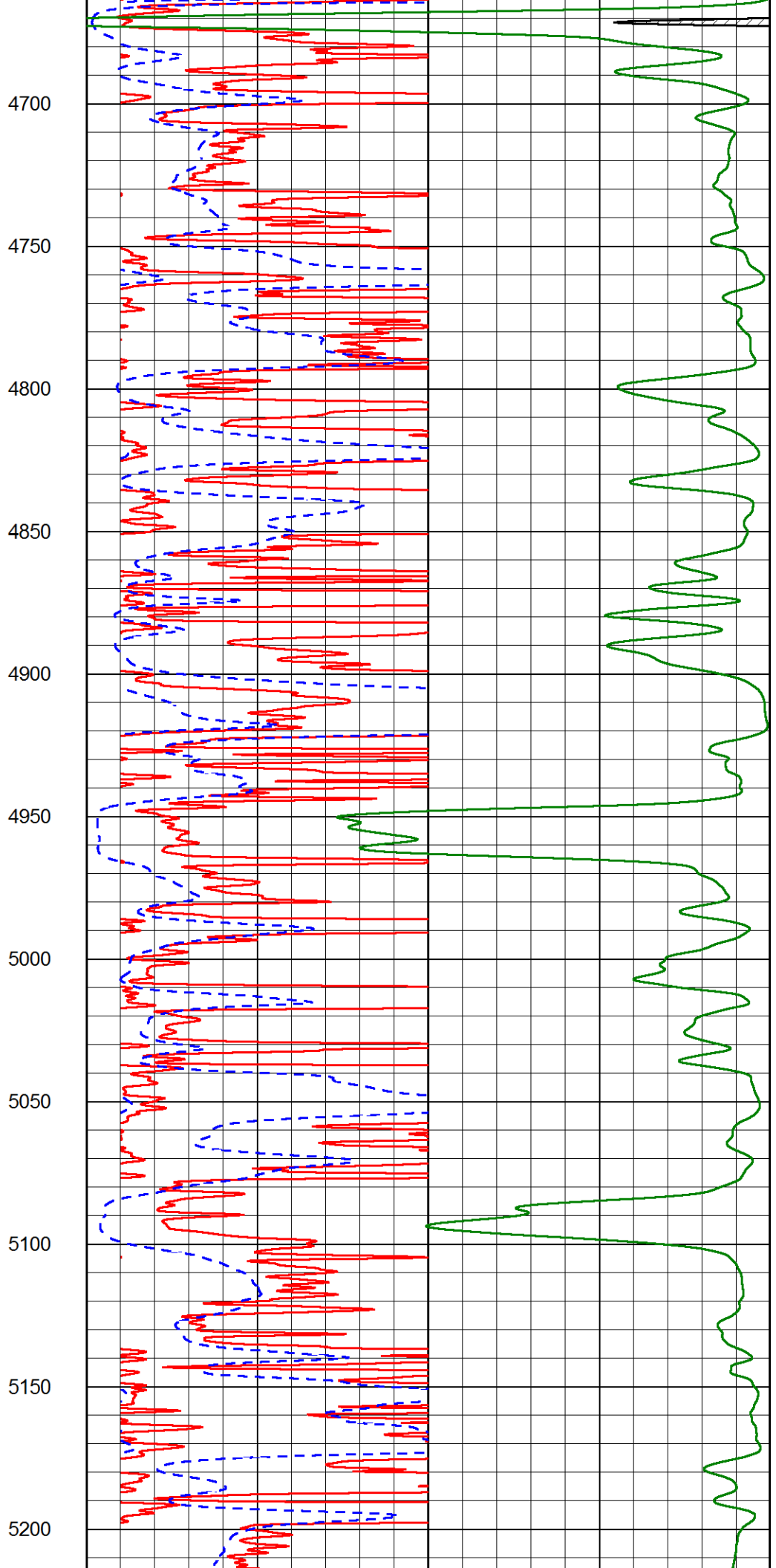
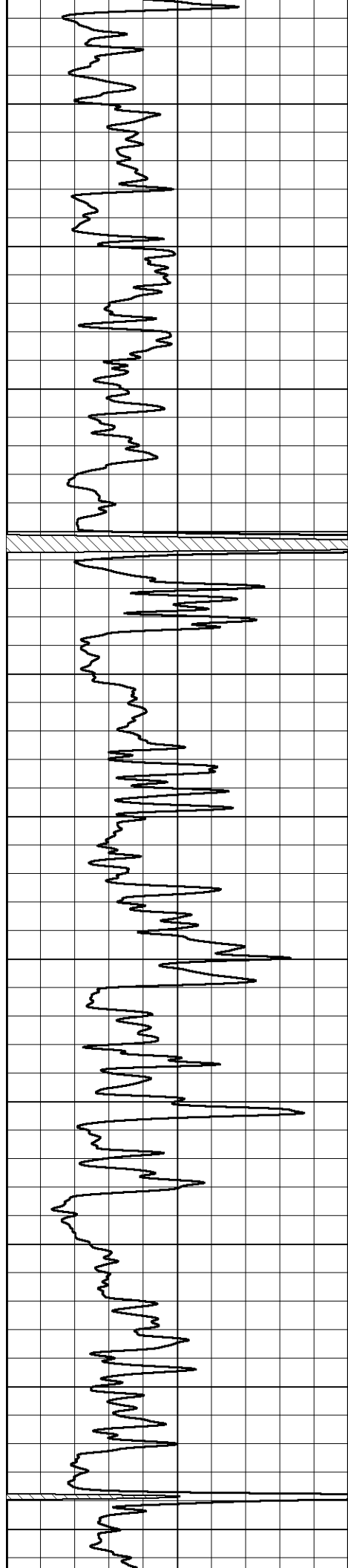


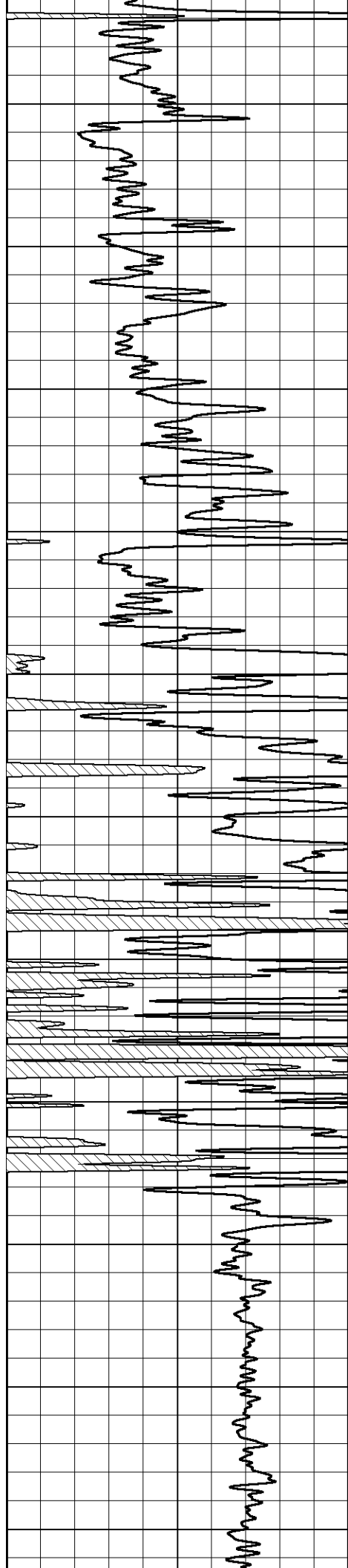












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5300

5350

5400

5450

5500

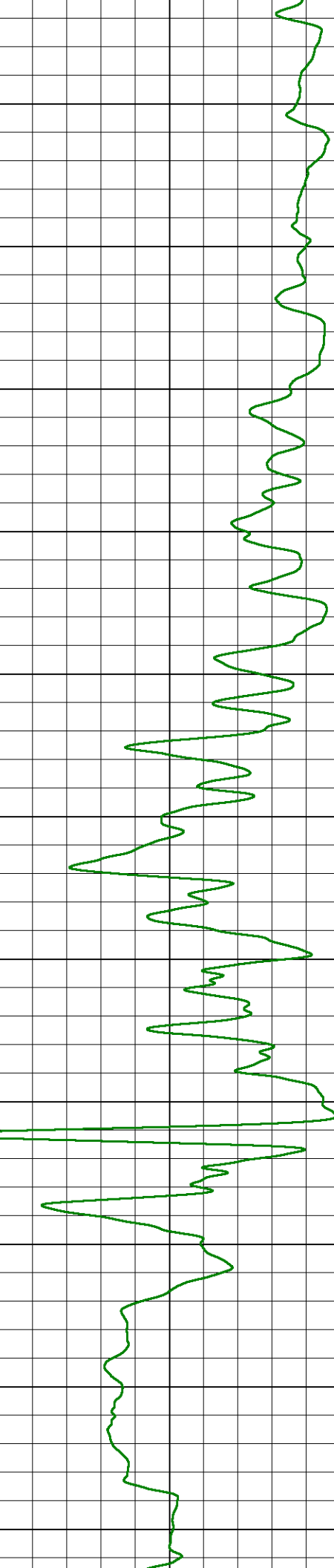
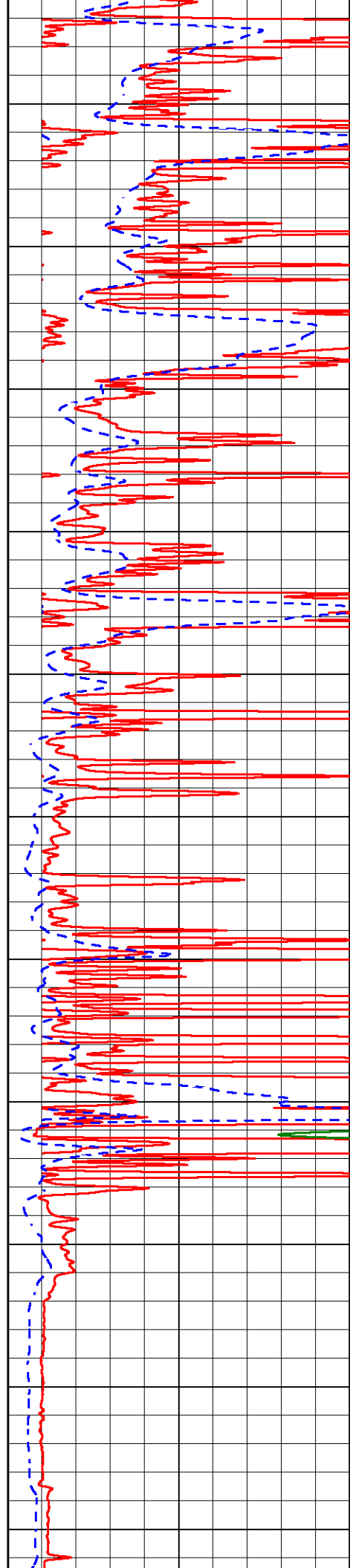
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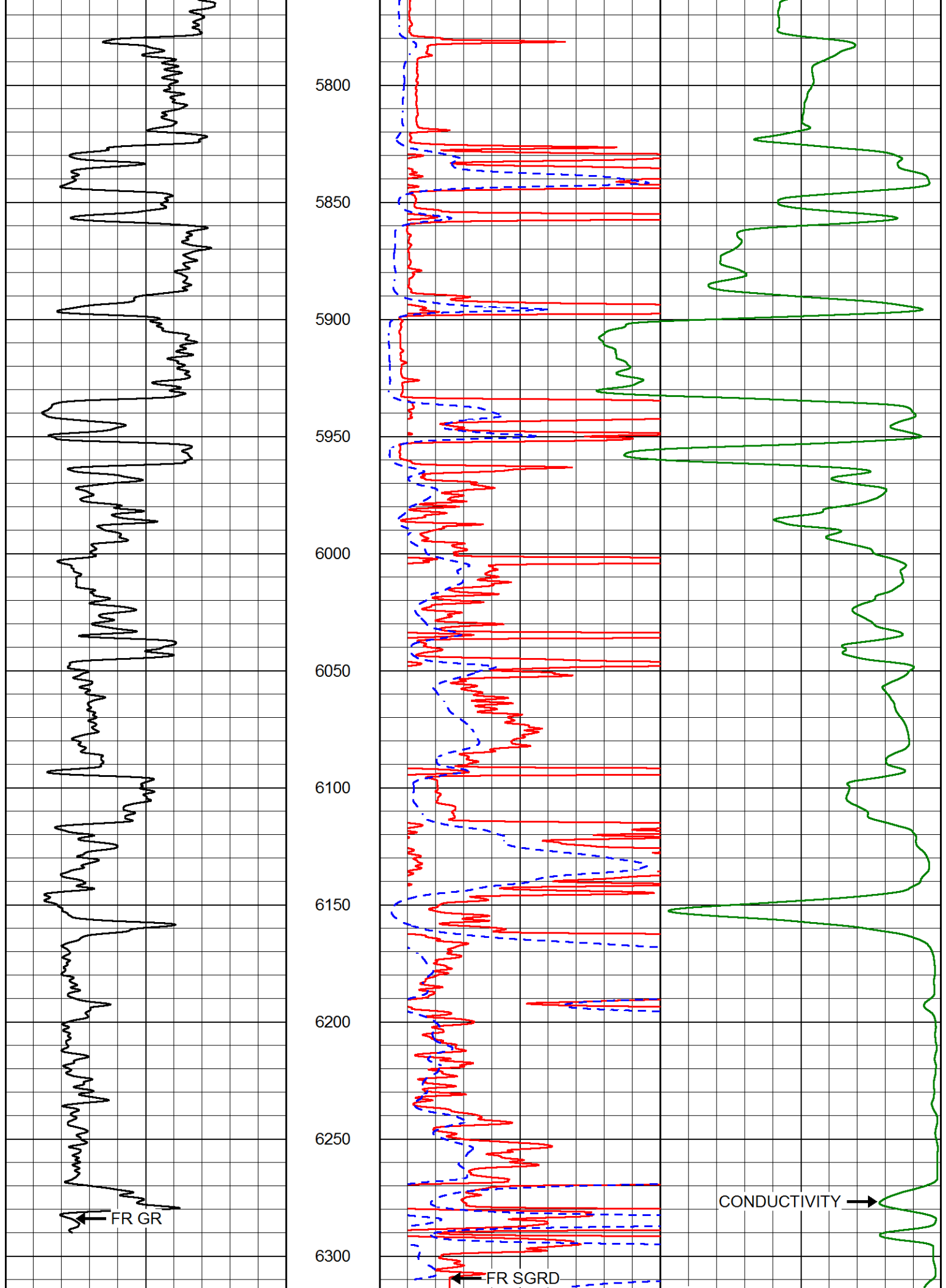
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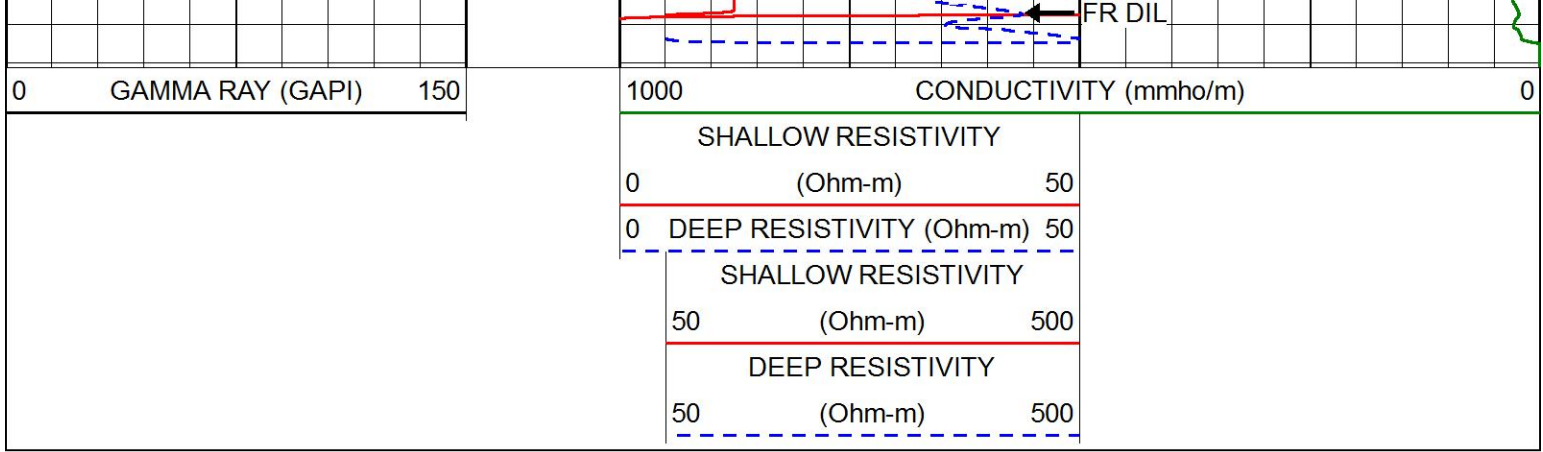
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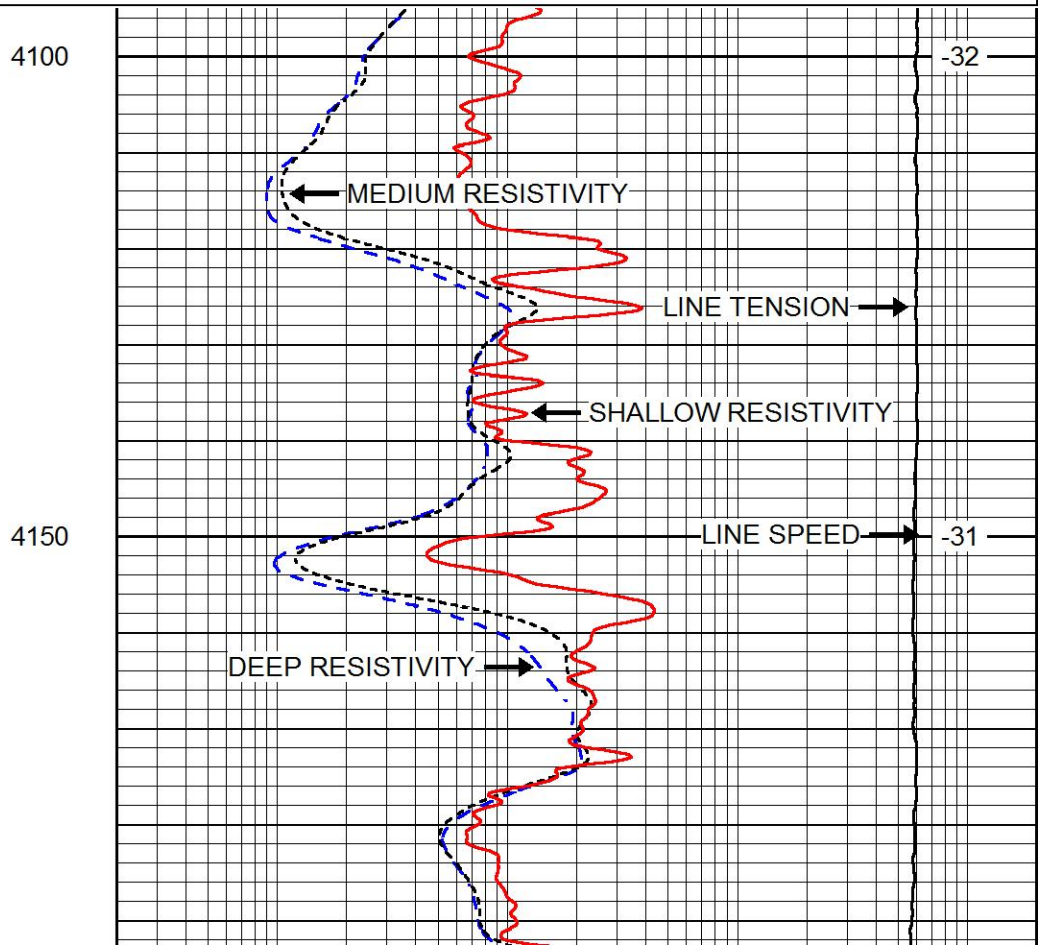
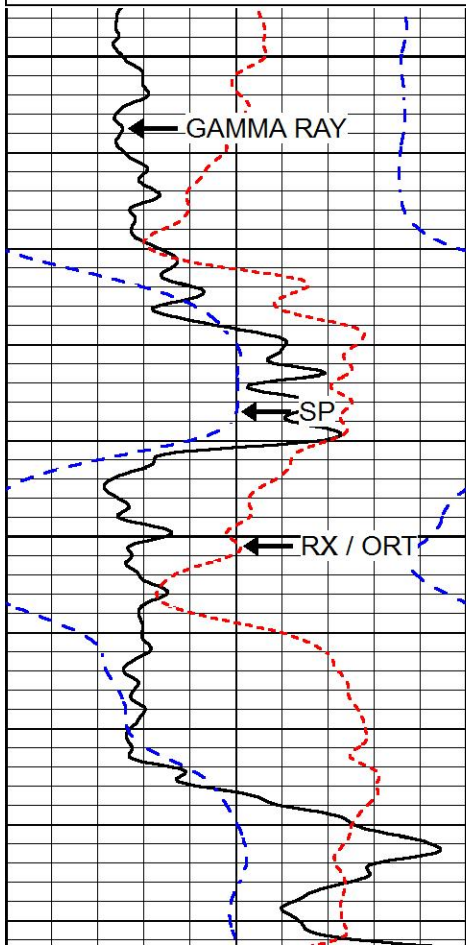
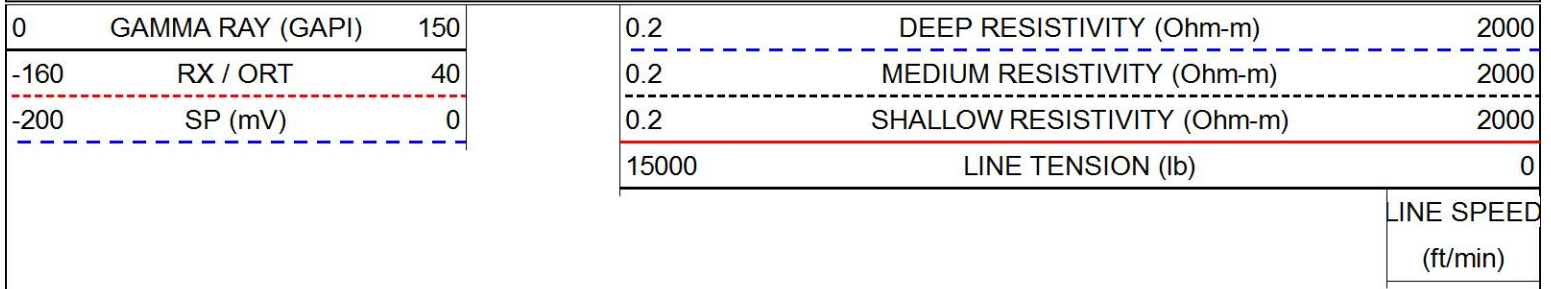


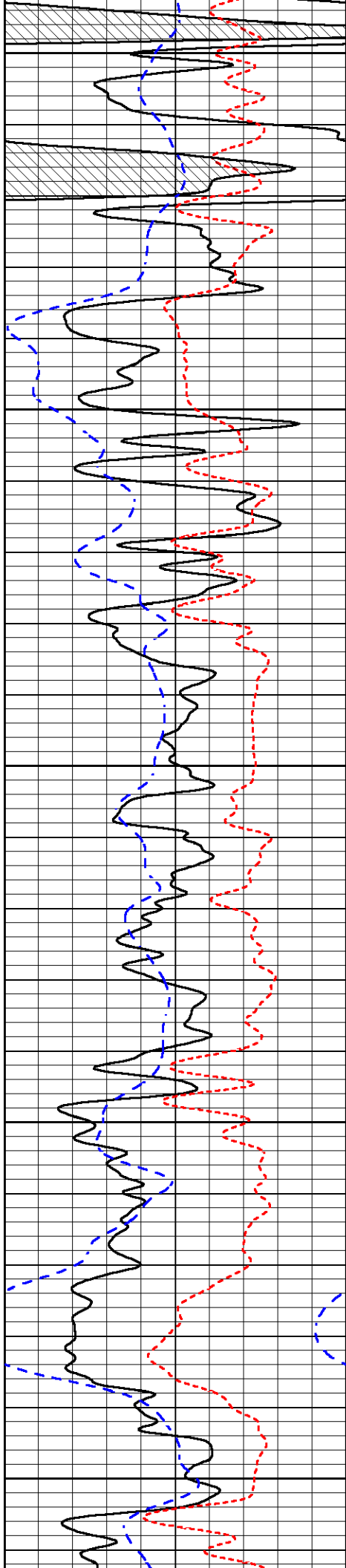




# MAIN PASS

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 Presentation Format dil  
 Dataset Creation Sun May 22 07:13:39 2016  
 Charted by Depth in Feet scaled 1:240





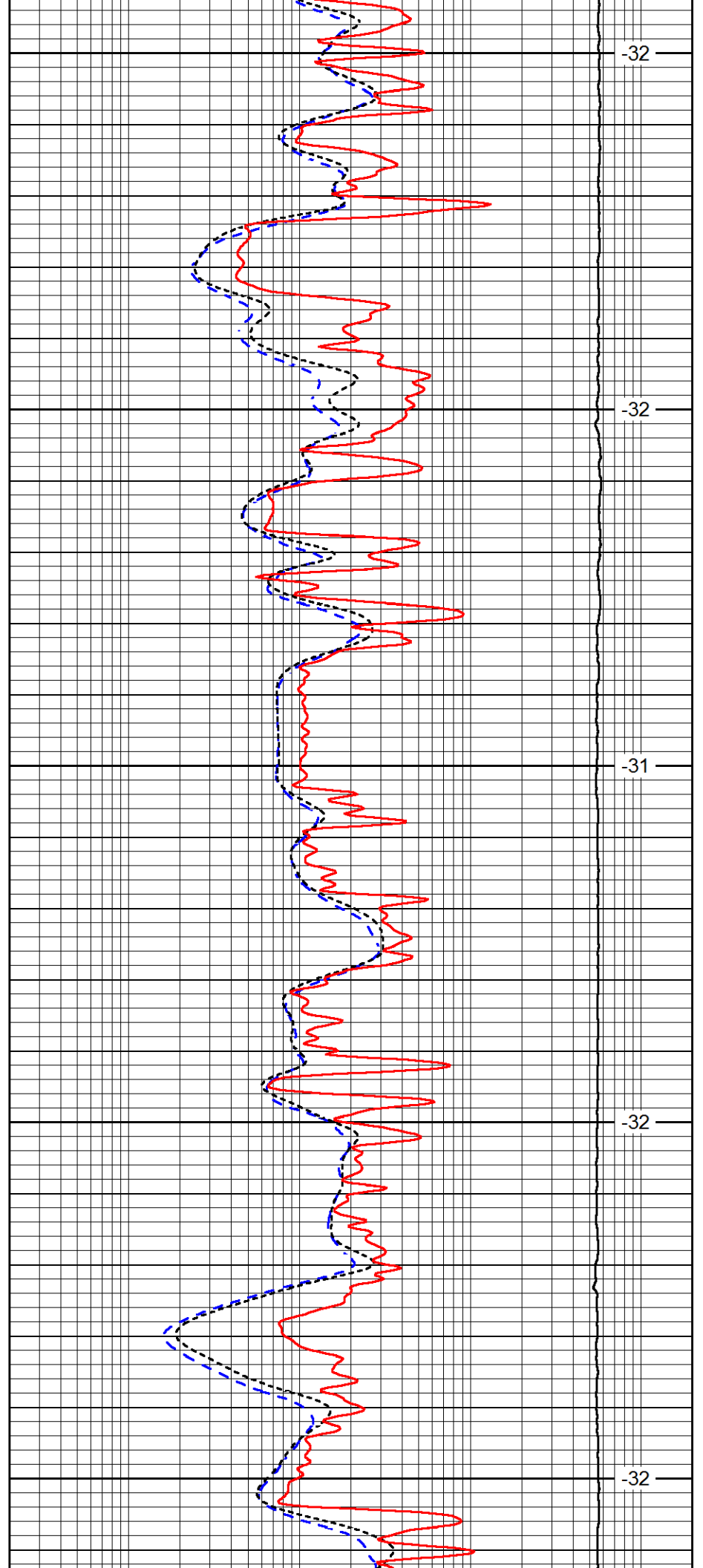
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4250

4300

4350

4400



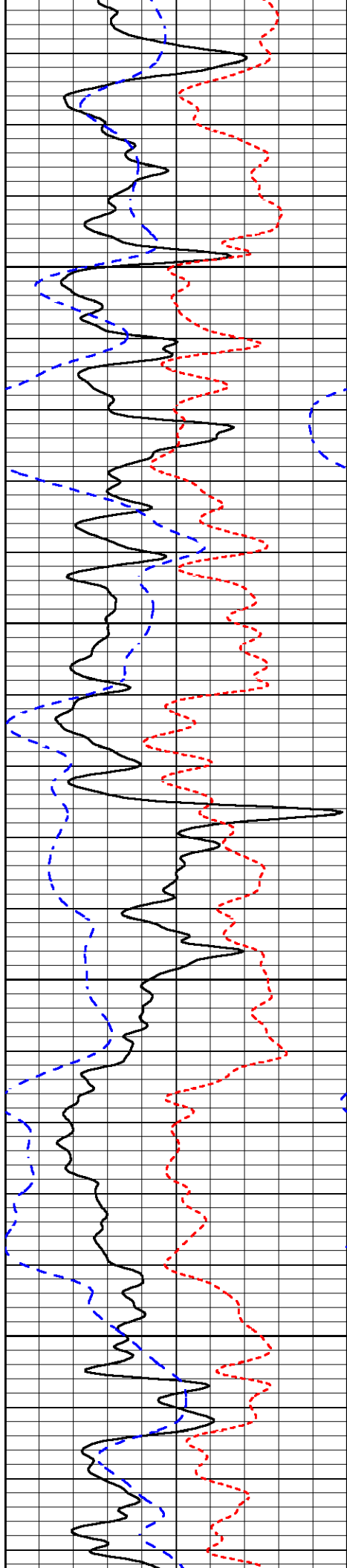
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-32

-32

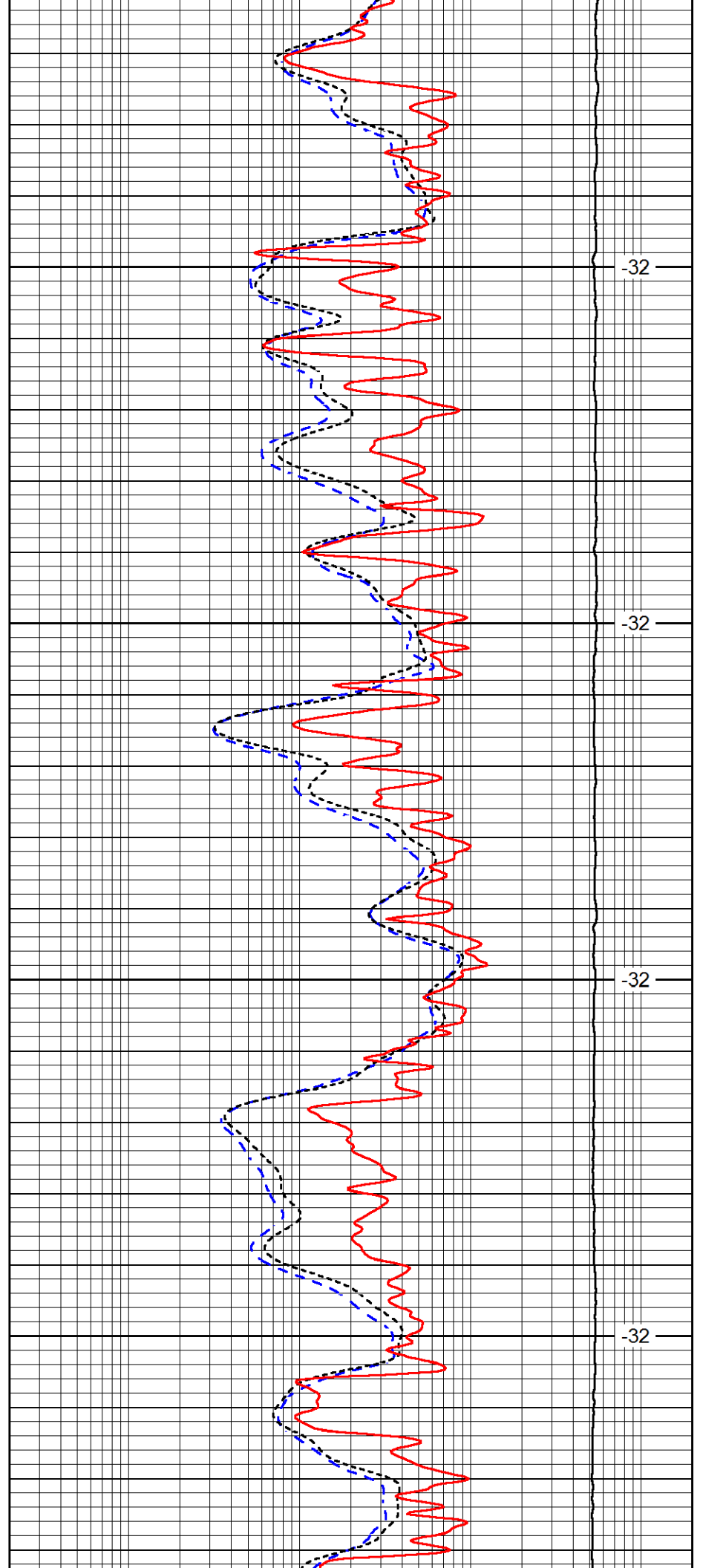


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4500

4550

4600

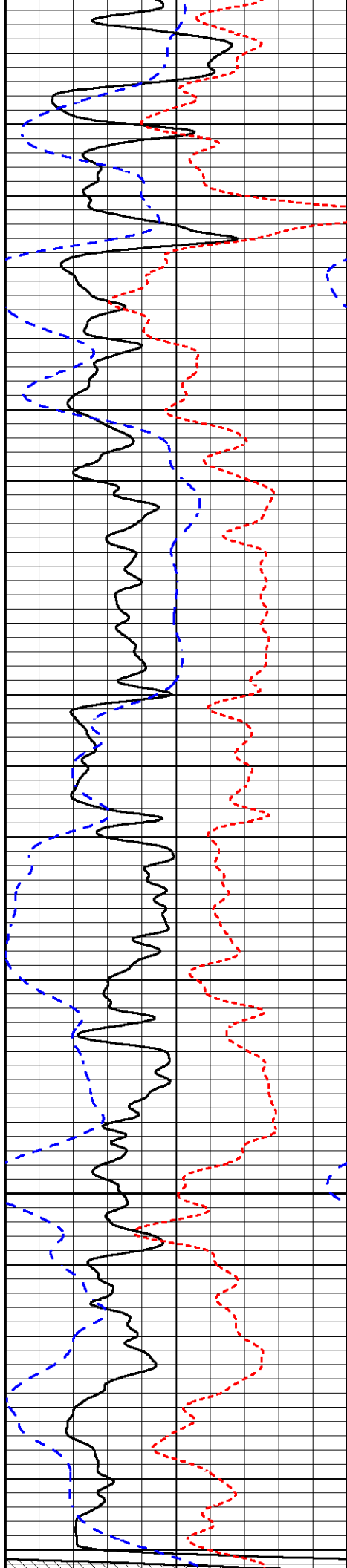


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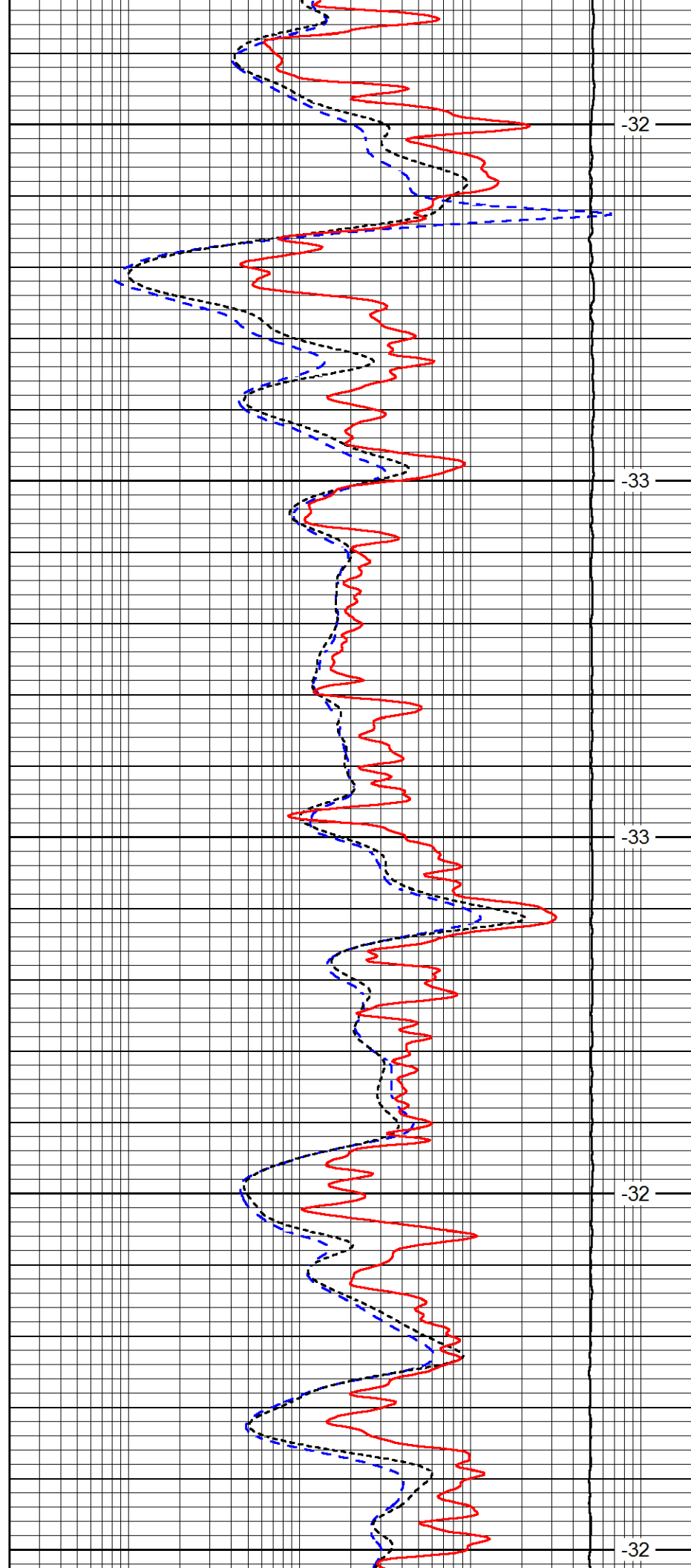
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4800

4850



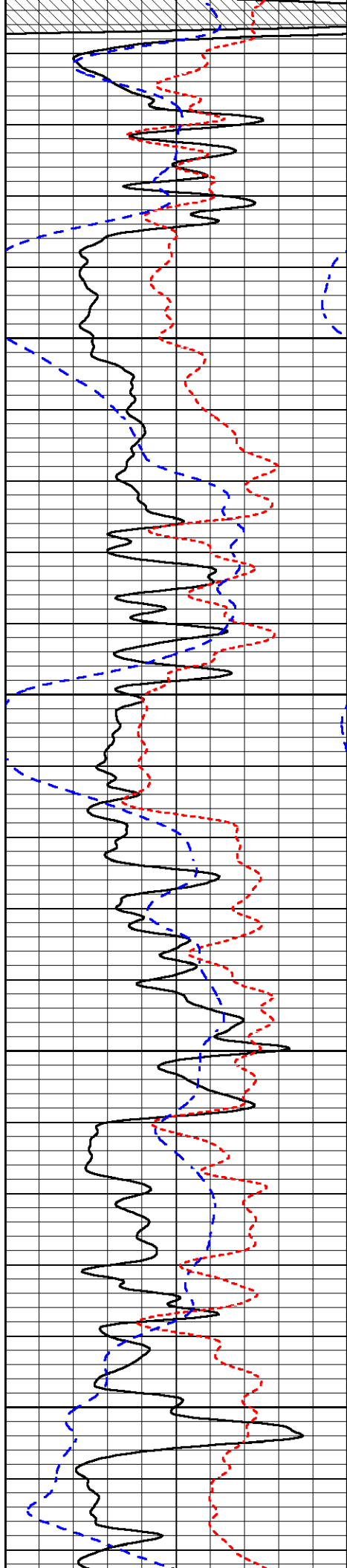
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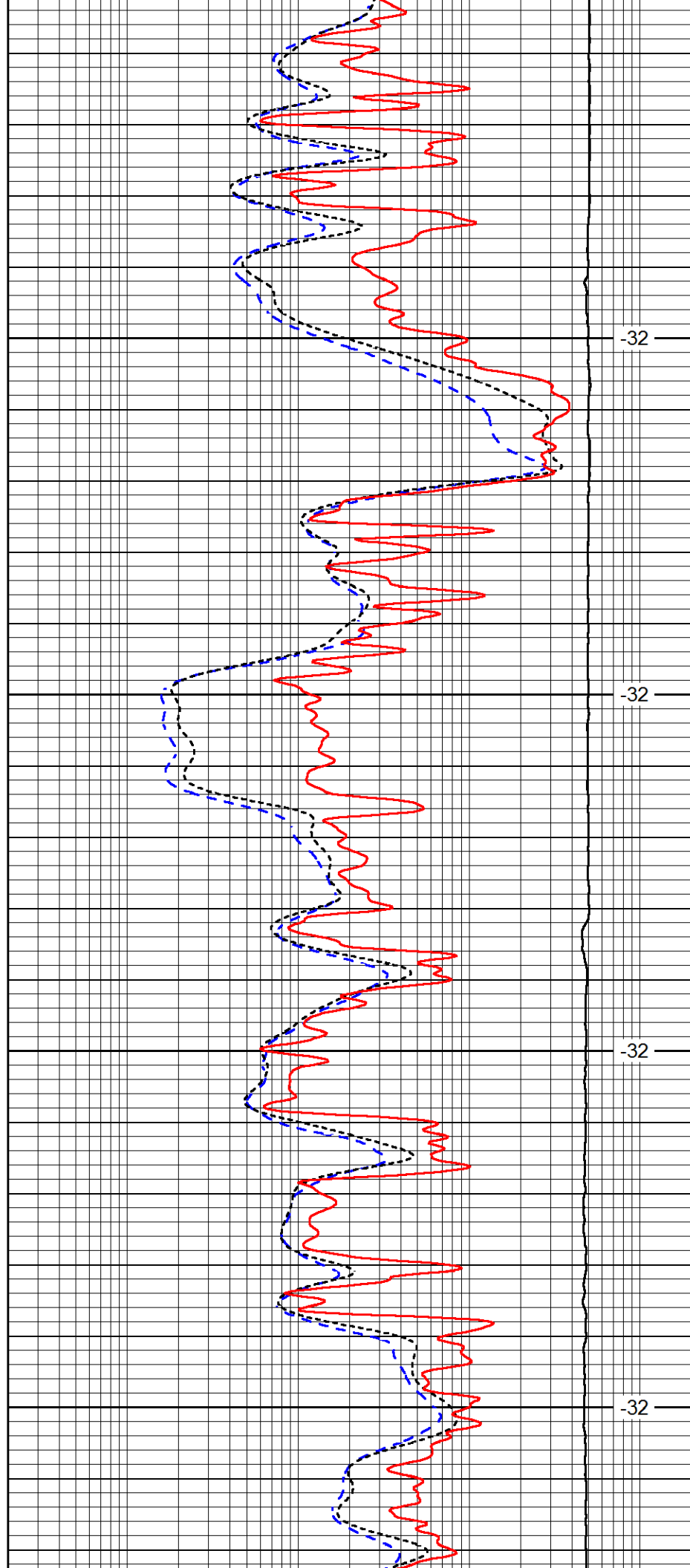


4900

4950

5000

5050

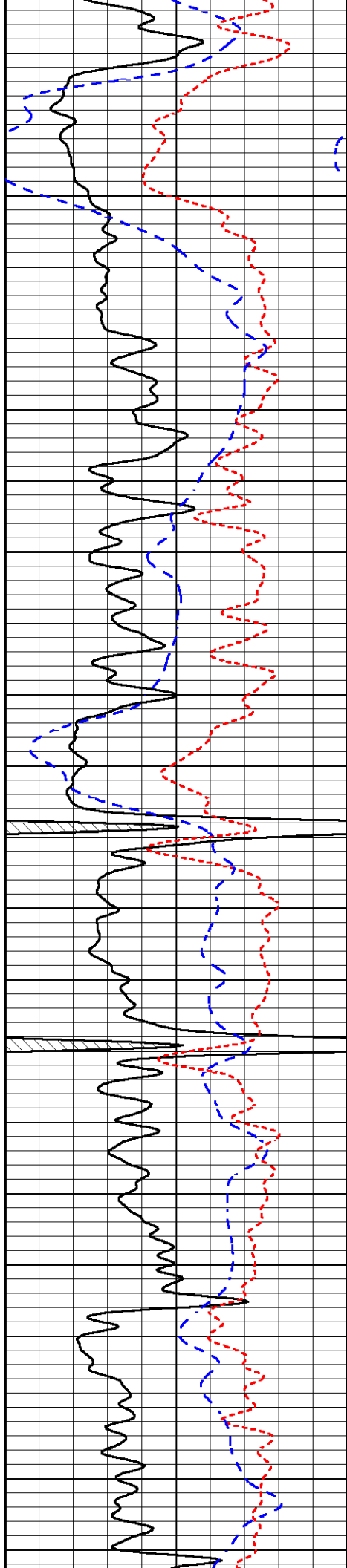


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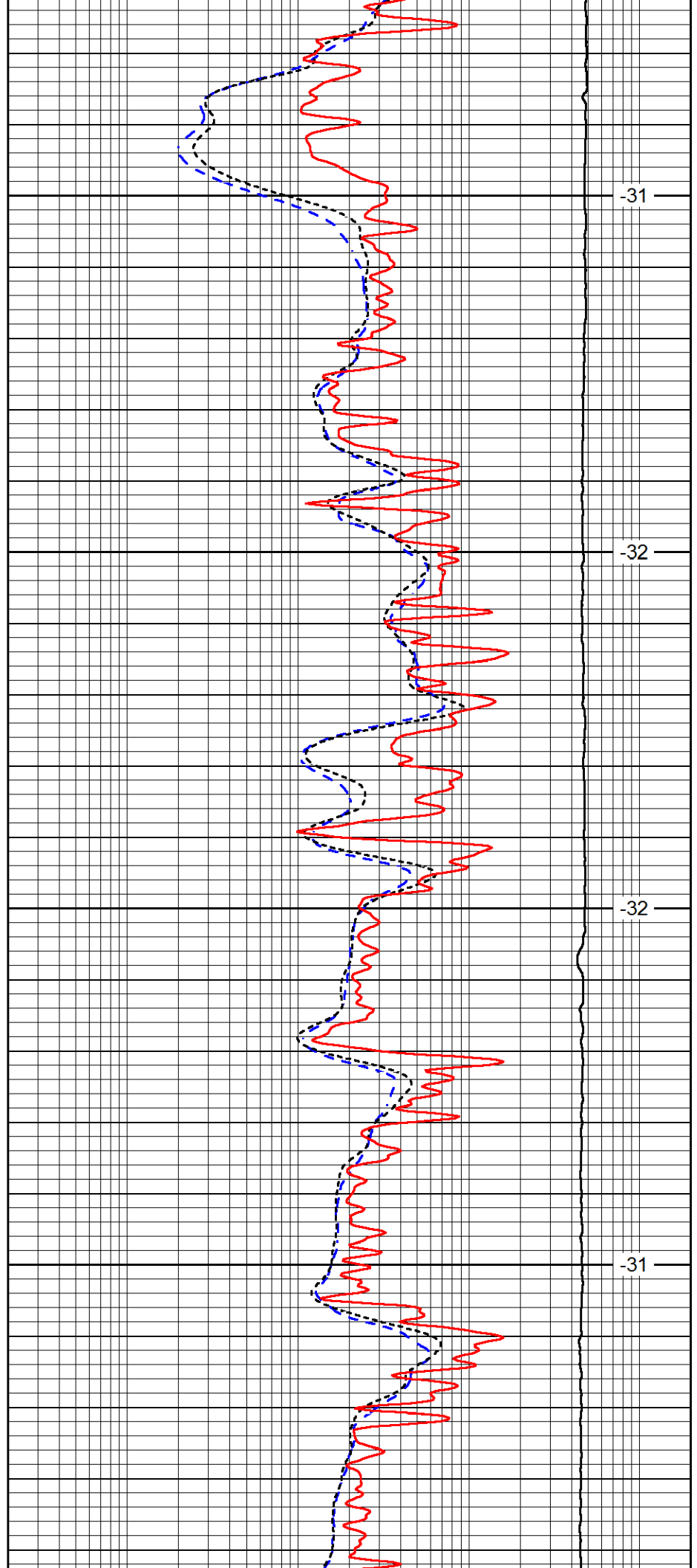


5100

5150

5200

5250

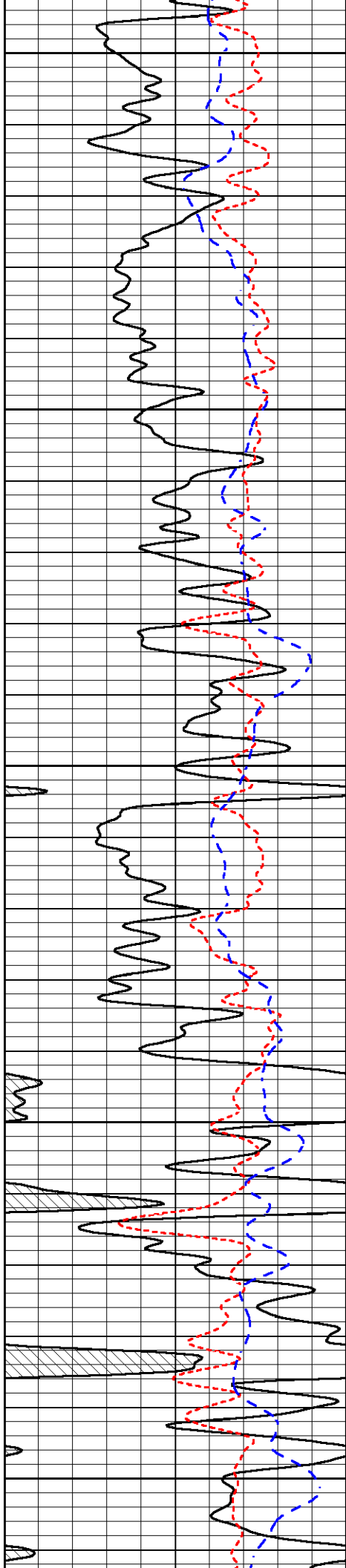


-31

-32

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-31



5300

5350

5400

5450

5500

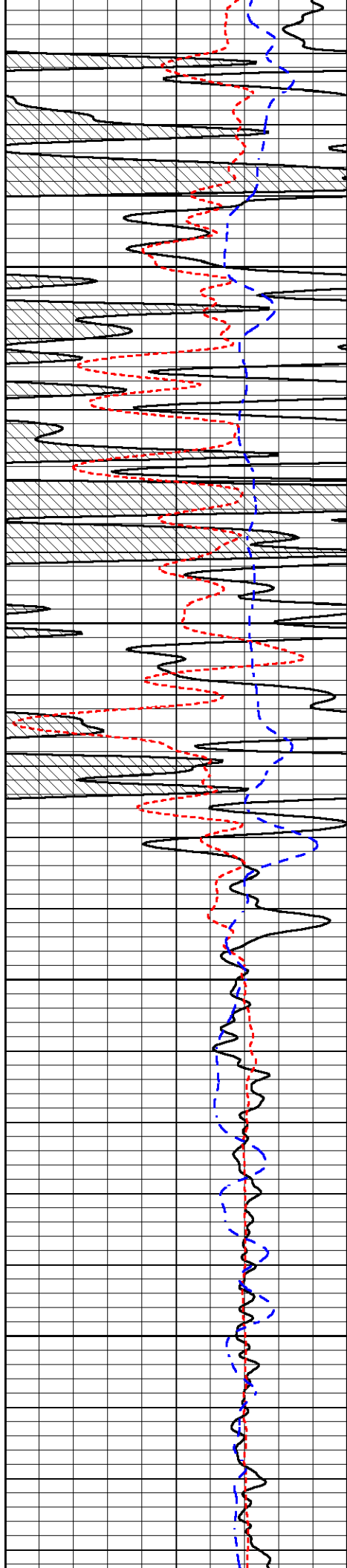
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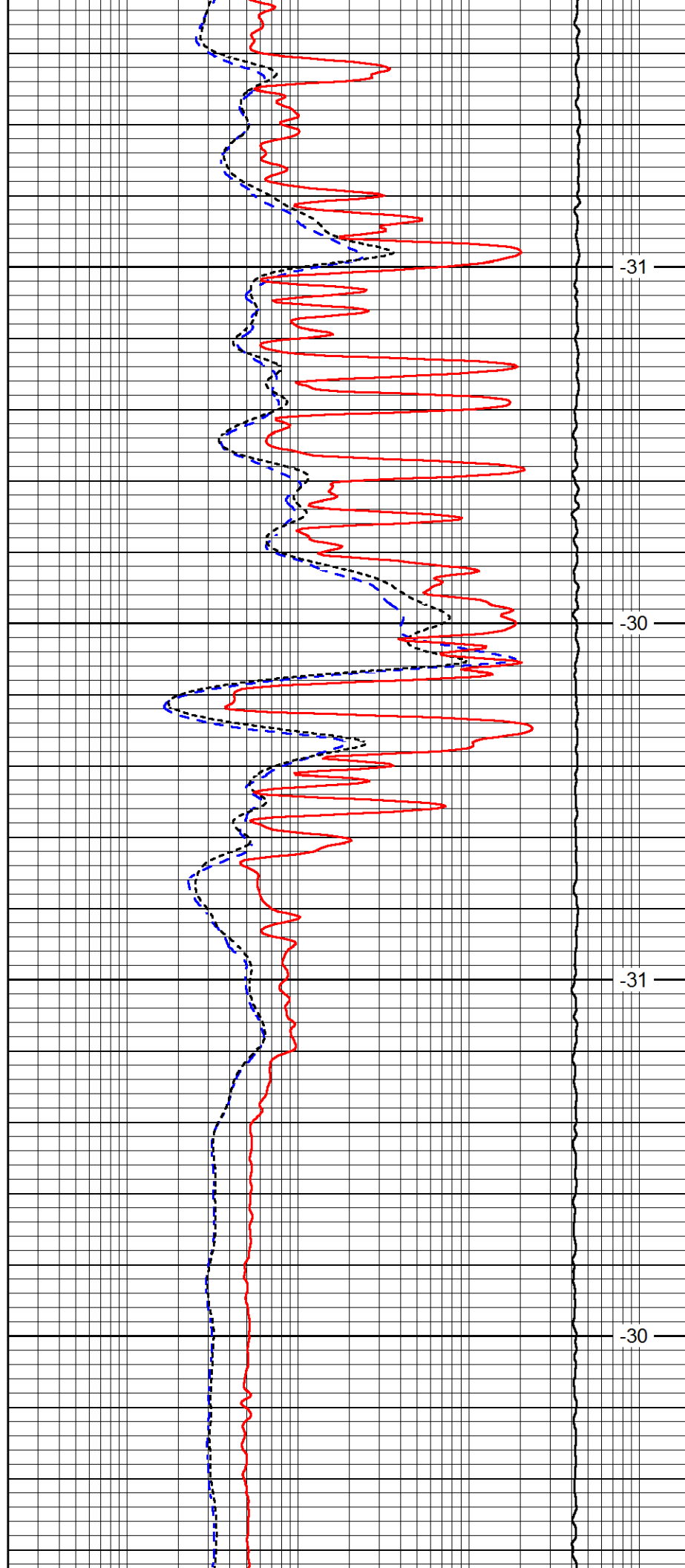


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5600

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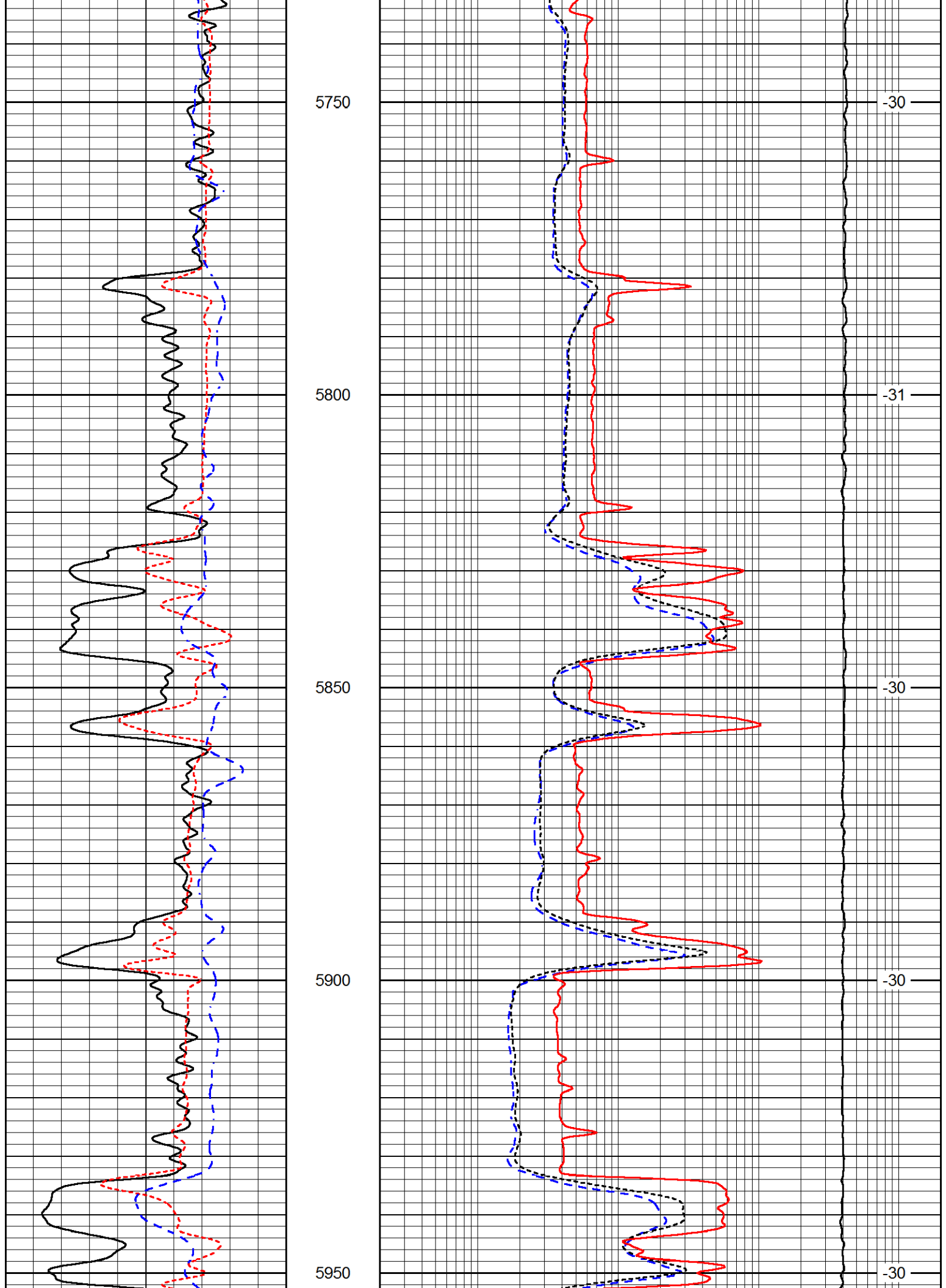


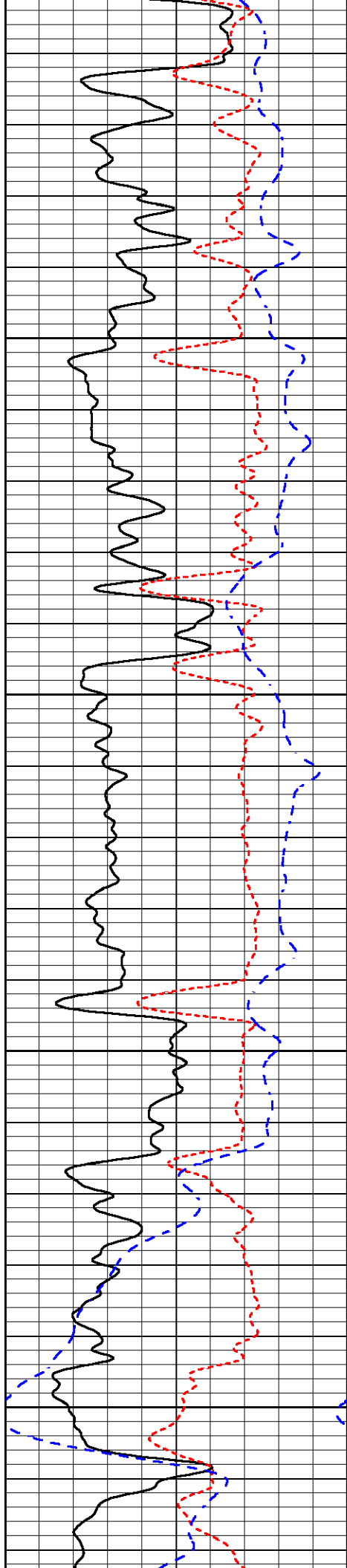
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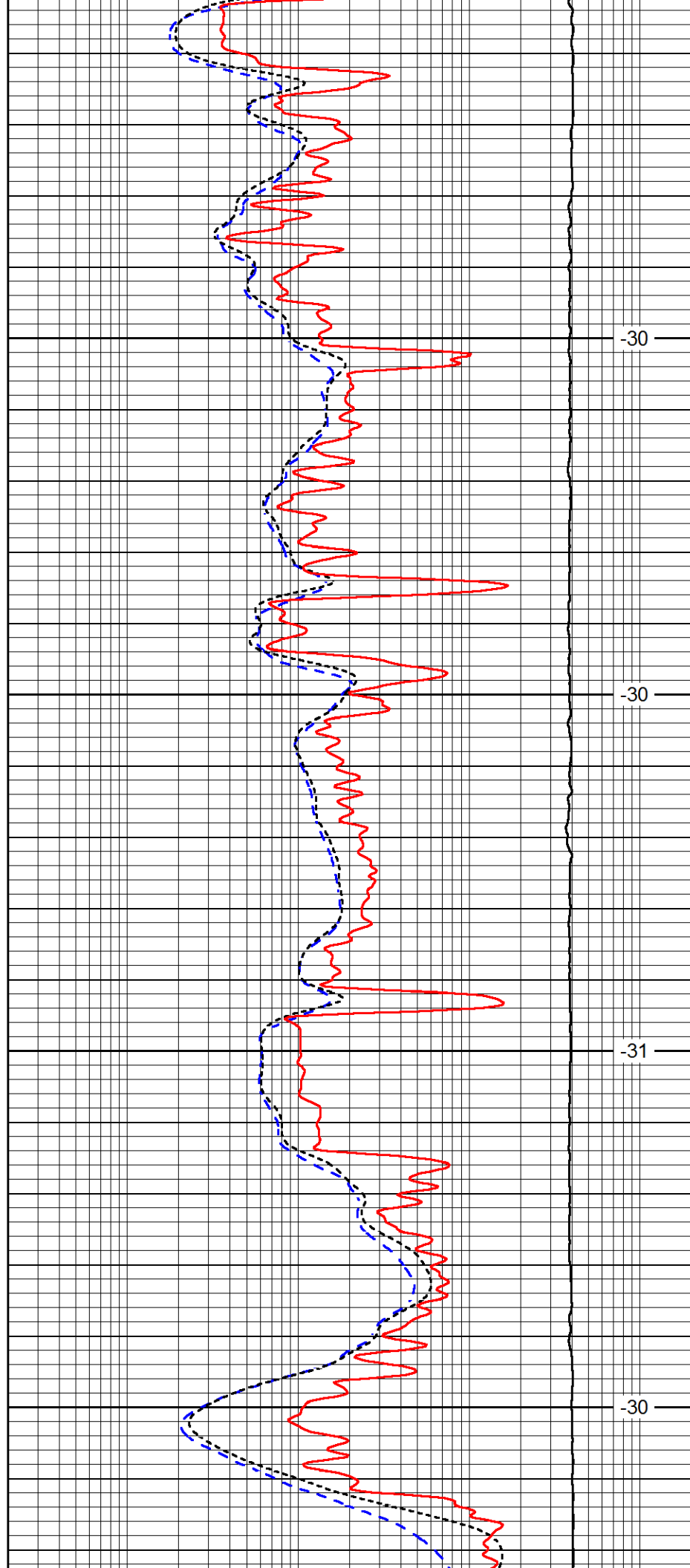


6000

6050

6100

6150

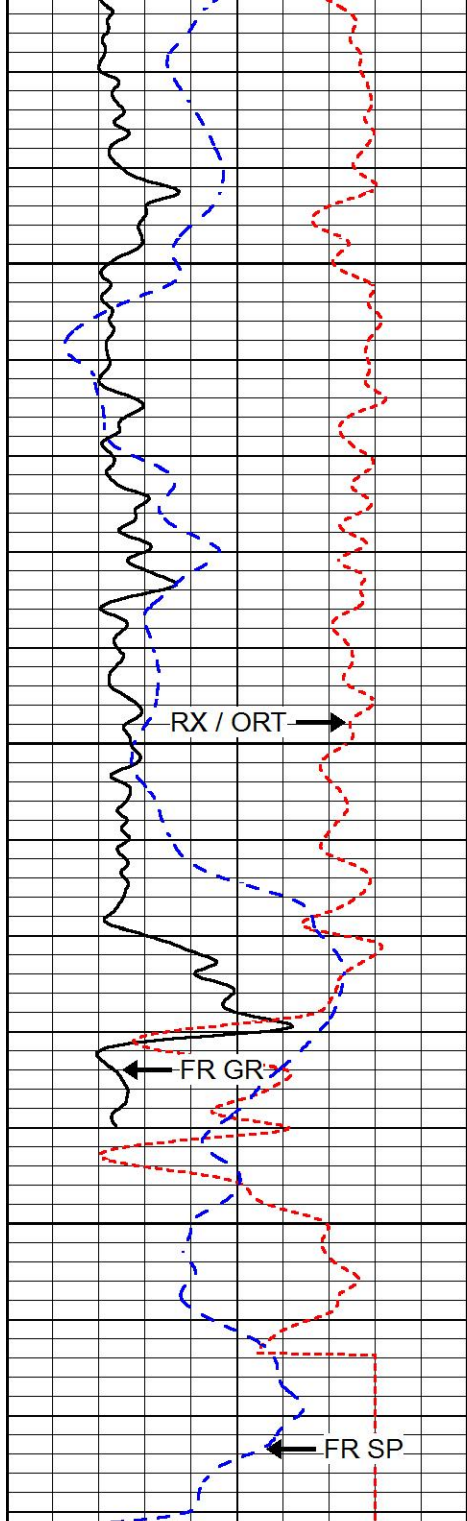


-30

-30

-31

-30



6200

6250

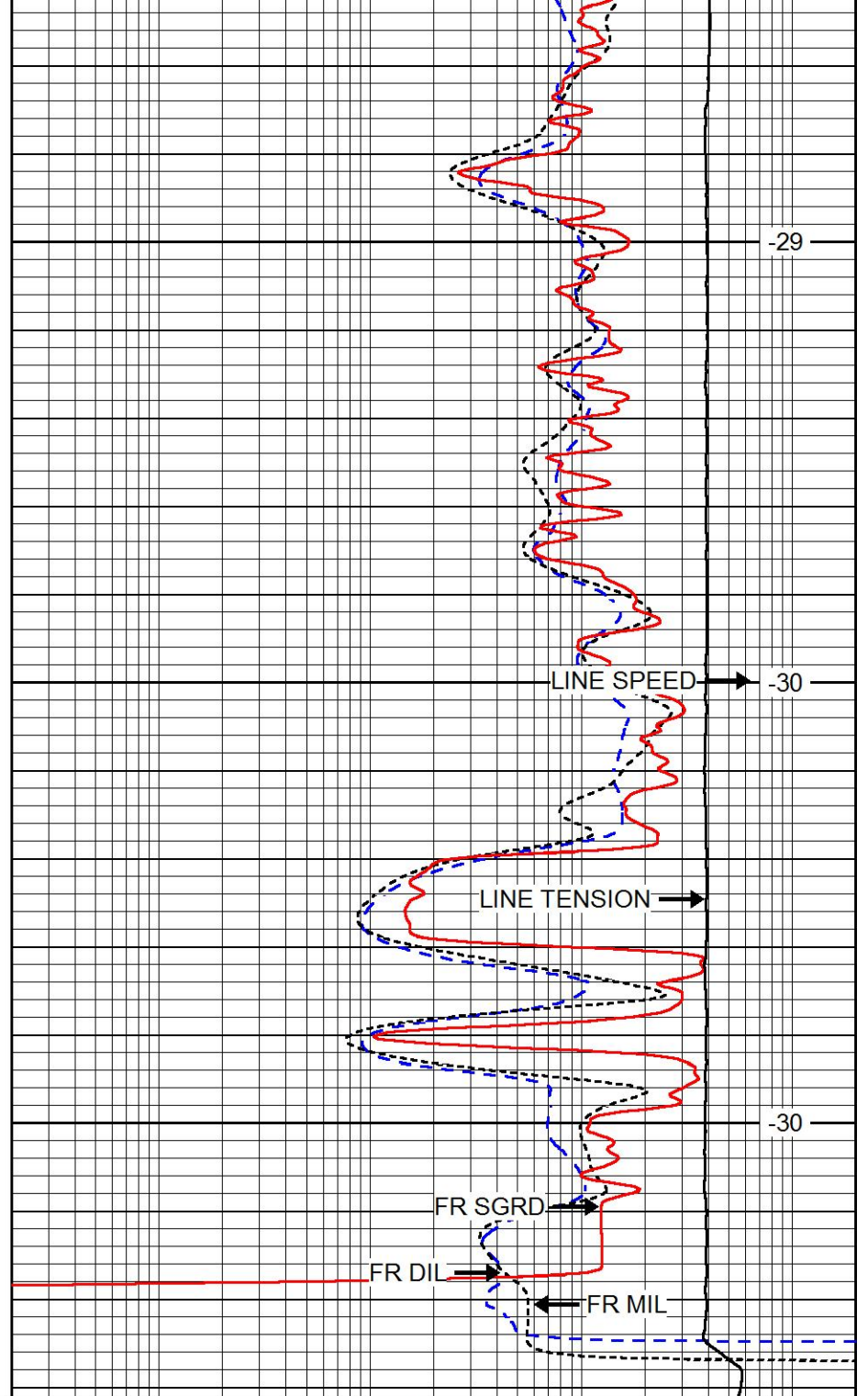
6300

RX / ORT →

← FR GR

← FR SP

0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0



-29

-30

-30

LINE SPEED →

LINE TENSION →

FR SGRD →

FR DIL →

← FR MIL

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

LINE SPEED  
(ft/min)



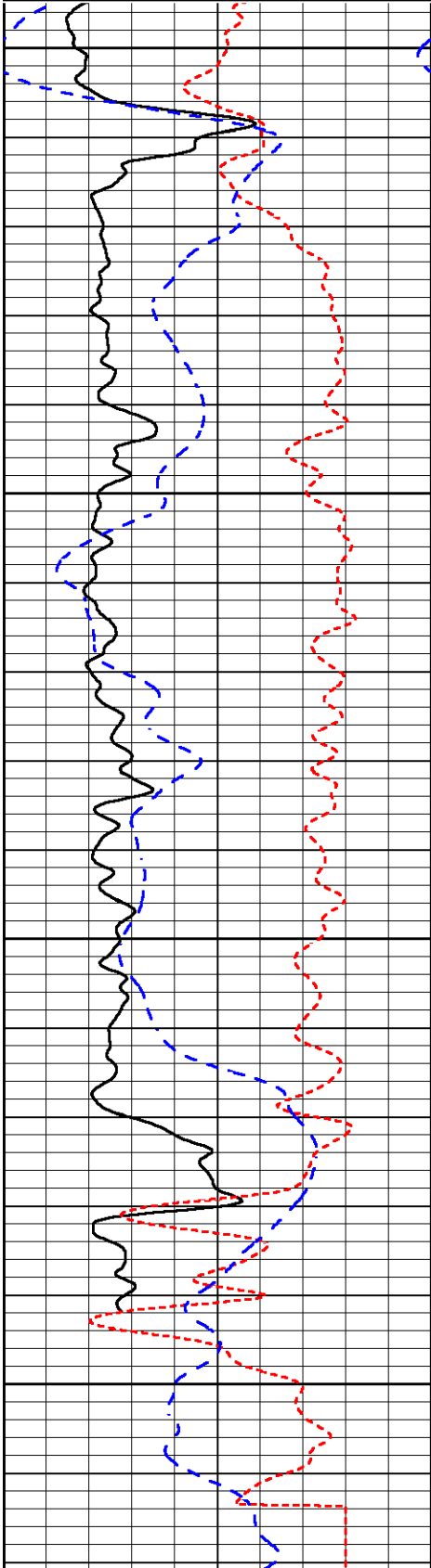
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 Dataset Creation Sun May 22 06:21:34 2016  
 Charted by Depth in Feet scaled 1:240

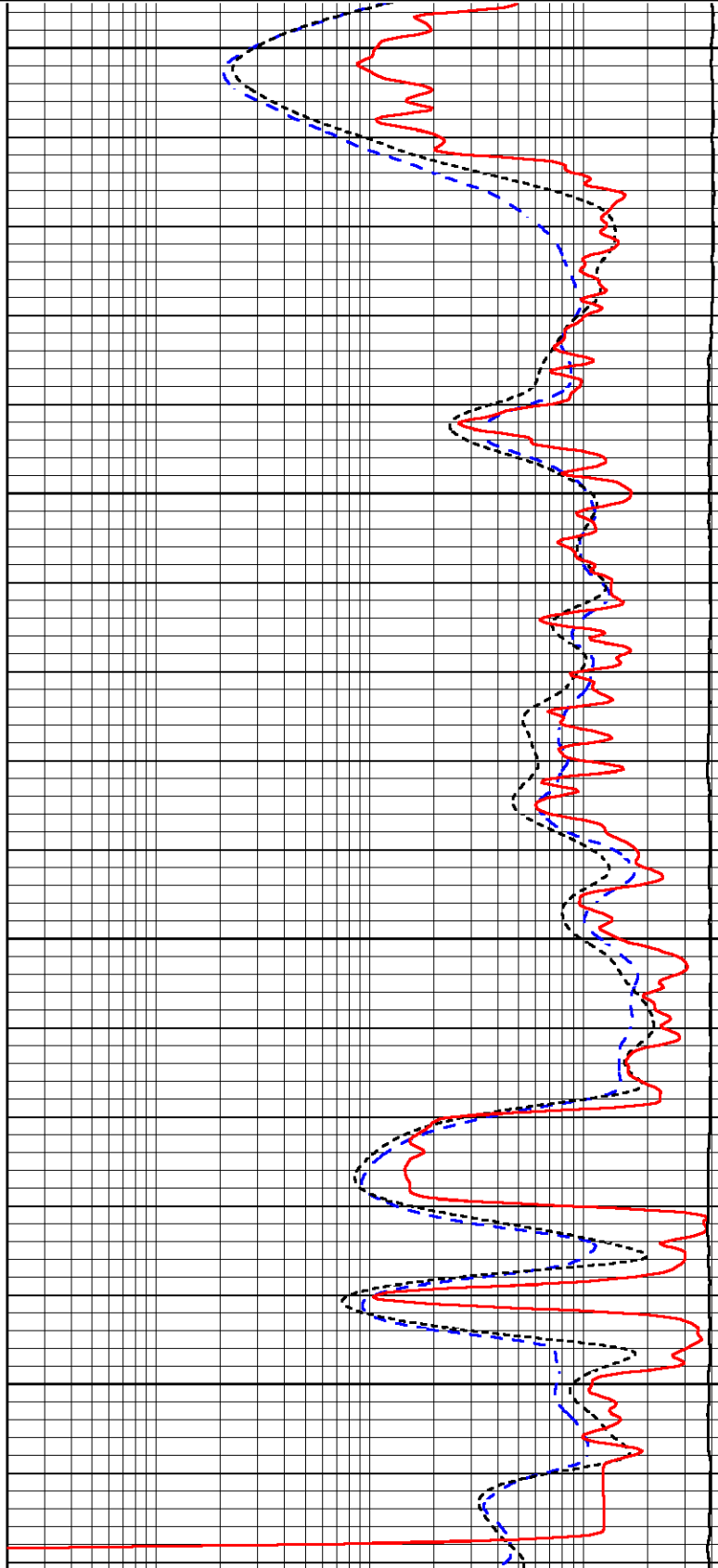
0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

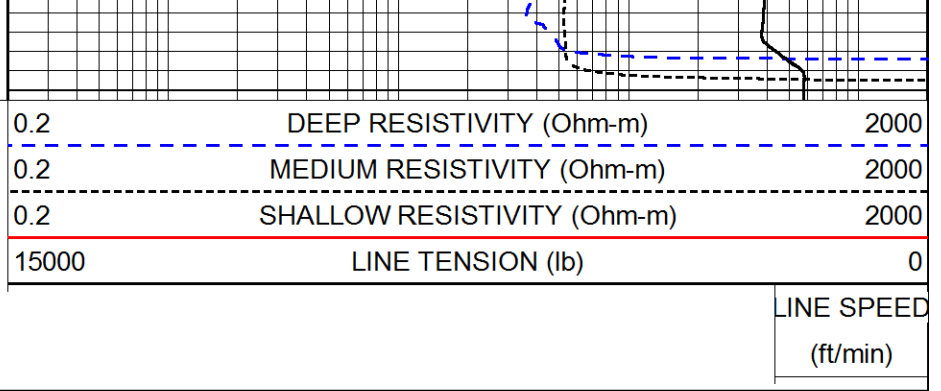
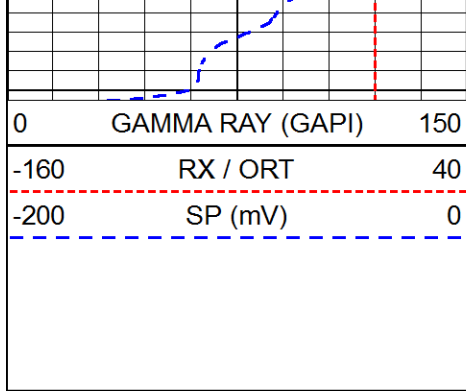
LINE SPEED  
 (ft/min)



6150  
 6200  
 6250  
 6300



-28  
 -28  
 -28  
 -28



LINE SPEED  
(ft/min)

Calibration Report

Database File amwar\_dowdyowes\_#4-36.db  
 Dataset Pathname stkml/pass3.1  
 Dataset Creation Sun May 22 07:13:39 2016

Dual Induction Calibration Report

Serial-Model: 1987-M&W  
 Calibration Performed: Thu May 05 13:07:05 2016

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-113.500

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML  
 Performed: Sun May 22 04:14:29 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	12508.9000	0.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	11967.3000	-0.0096
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.1500

Compensated Density Calibration Report

Serial-Model: 71-914-M&W  
 Source / Verifier: /  
 Master Calibration Performed: Thu Mar 31 16:30:19 2016

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4314.49	5307.52	cps
Aluminum	2.670	g/cc	822.19	3456.36	cps

Spine Angle = 75.49

Density/Spine Ratio = 0.534

	Size		Reading
Small Ring	4.00	in	1.16
Large Ring	14.00	in	1.57

## Compensated Neutron Calibration Report

Serial Number: tk10-MW  
 Tool Model: M&W  
 Calibration Performed: Wed May 4 11:04:05 2016

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-M&W  
 Tool Model: M&W  
 Calibration Performed: Sun May 22 04:14:23 2016

Calibrator Value: 1000.0 GAPI  
 Background Reading: 0.0 cps  
 Calibrator Reading: 6.2 cps  
 Sensitivity: 0.5200 GAPI/cps



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