



PIONEER
Pioneer Energy Services

**DUAL INDUCTION
LOG**

Company **AMERICAN PATRIOT OIL, LLC**
Well **APO #18 WALLER LOWRY #1**
Field **WILDCAT**
County **ROOKS** State **KANSAS**

Company **AMERICAN PATRIOT OIL, LLC**
Well **APO #18 WALLER LOWRY #1**
Field **WILDCAT**
County **ROOKS**
State **KANSAS**

Location: **API #: 15-163-24312-00-00**
1,670' FNL & 931' FWL
SEC 31 TWP 8S RGE 19W
Permanent Datum **GROUND LEVEL Elevation 2040'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**
Other Services
**CNL/CDL
MEL**
Elevation
K.B. 2048'
D.F. N/A
G.L. 2040'

Date	4/28/2016
Run Number	ONE
Depth Driller	3578'
Depth Logger	3576'
Bottom Logged Interval	3575'
Top Log Interval	00'
Casing Driller	8.625" @ 263'
Casing Logger	262'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	4800
Density / Viscosity	9.4 62
pH / Fluid Loss	10.5 7.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.75 @ 65
Rmt @ Meas. Temp	.56 @ 65
Rmc @ Meas. Temp	1.01 @ 65
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.44 @ 112
Operating Rig Time	2 1/2 HOURS
Max Rec. Temp. F	112
Equipment Number	108
Location	COLBY
Recorded By	J. LONG
Witnessed By	MARC DOWNING

<<< 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.
DAMAR, 5 EAST, 1/4 SOUTH, 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	This Log Record Was Witnessed By
Engineer: J. LONG	Primary Witness: MARC DOWNING
Operator: T. MARTIN	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\lmpatriot_apo_18_wallerlowry_1.db
 Dataset field/well/stackmel/pass4.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	112	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	-620	54	Off	3576

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: ampatriot_apo_18_wallerlowry_1.db: field/well/stackmel/pass4.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in



MAIN PASS

2" SCALE RESISTIVITY

Database File ampatriot_apo_18_wallerlowry_1.db
 Dataset Pathname stackmel/pass4.2
 Presentation Format dil2in
 Dataset Creation Thu Apr 28 17:01:04 2016
 Charted by Depth in Feet scaled 1:600

0 GAMMA RAY (GAPI) 150
 -200 SP (mV) 0

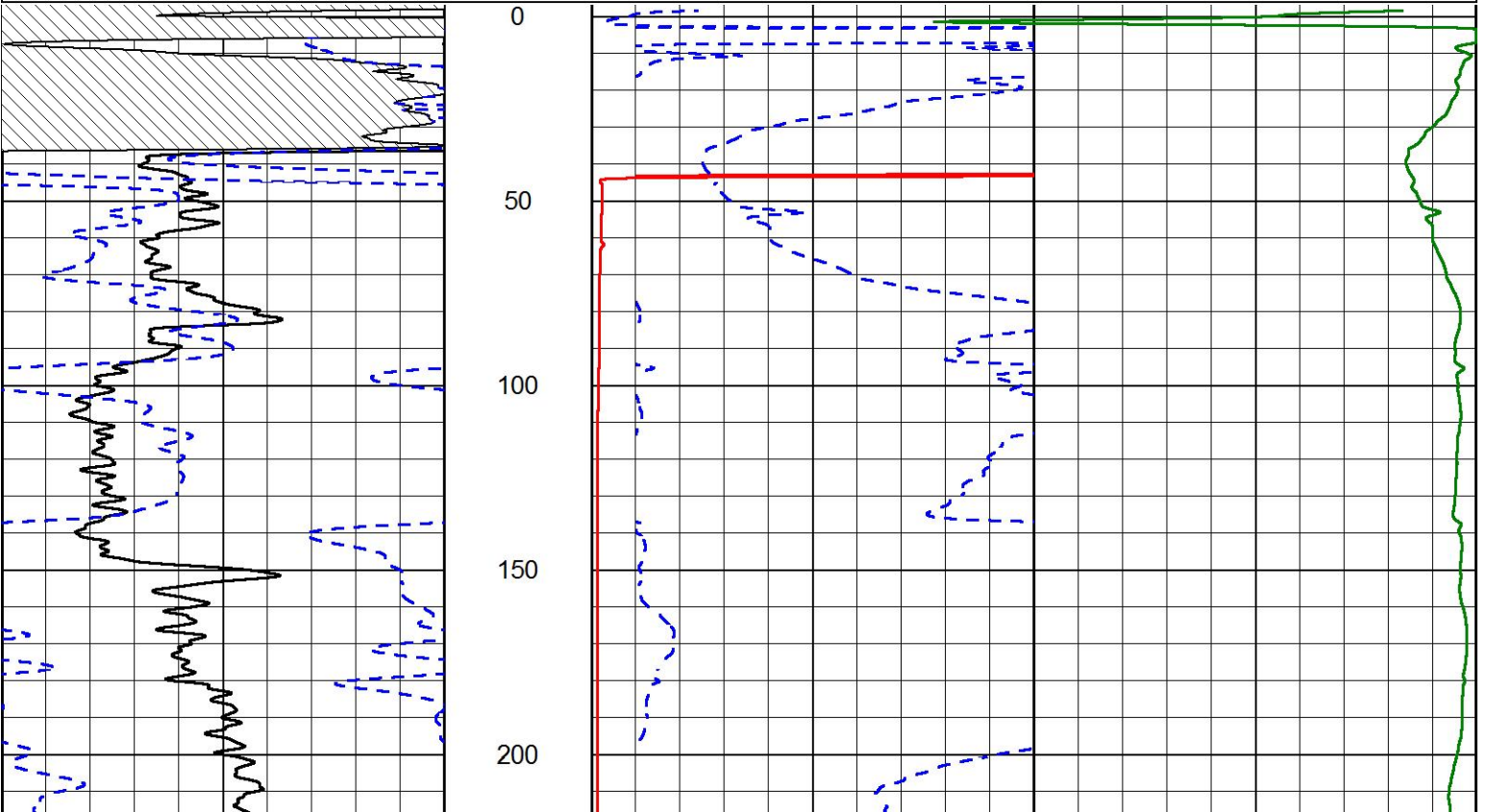
1000 CONDUCTIVITY (mmho/m) 0

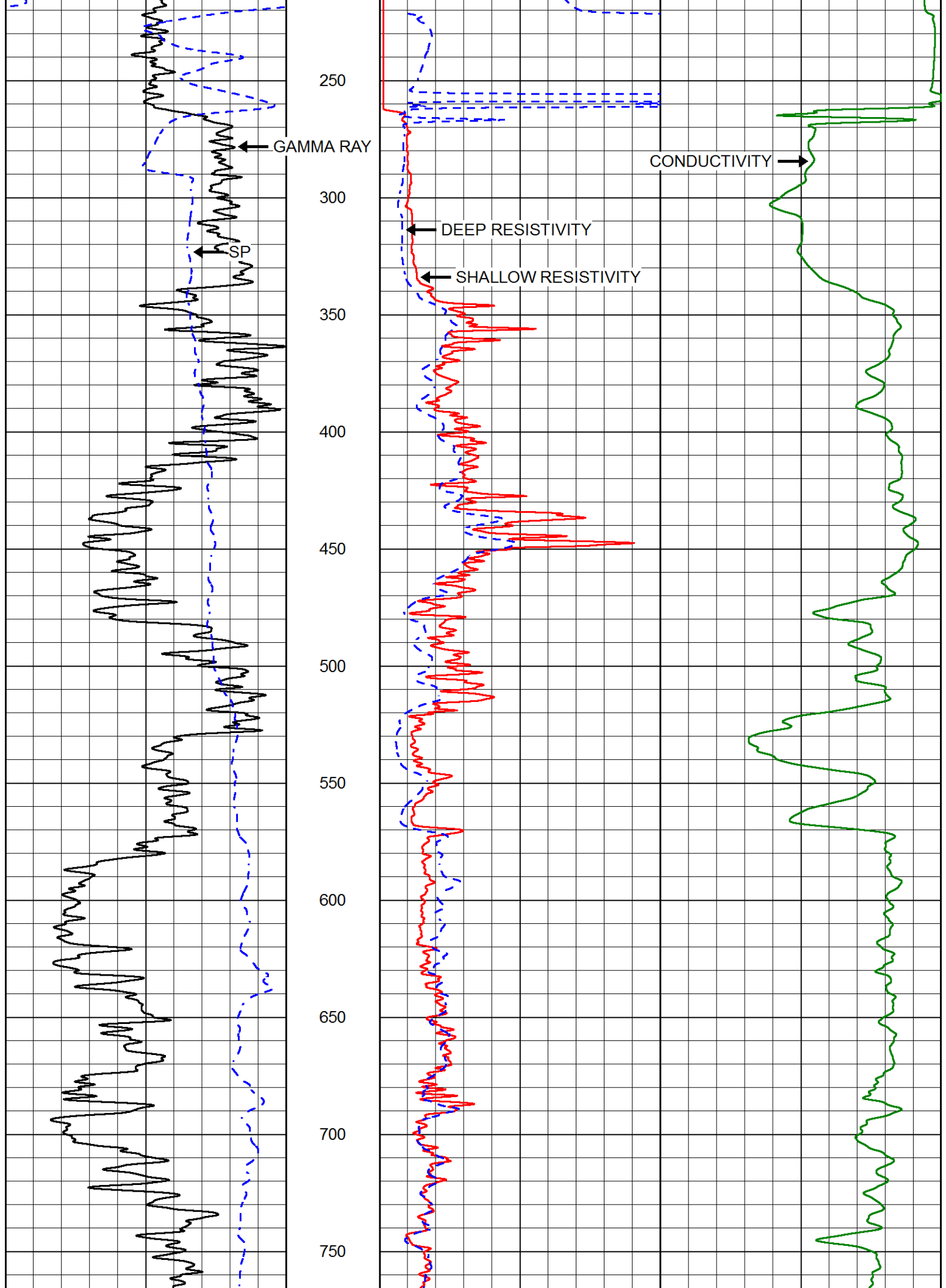
SHALLOW RESISTIVITY
 0 (Ohm-m) 50

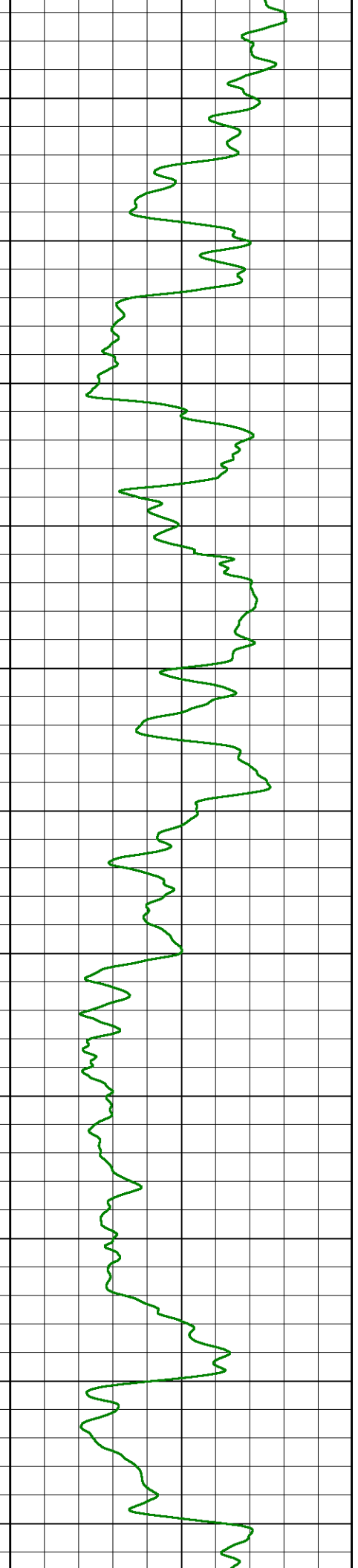
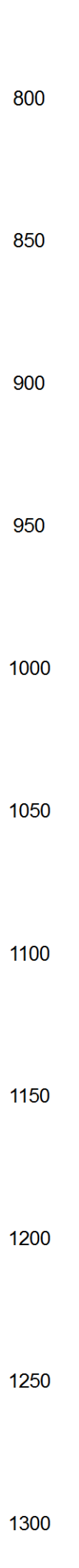
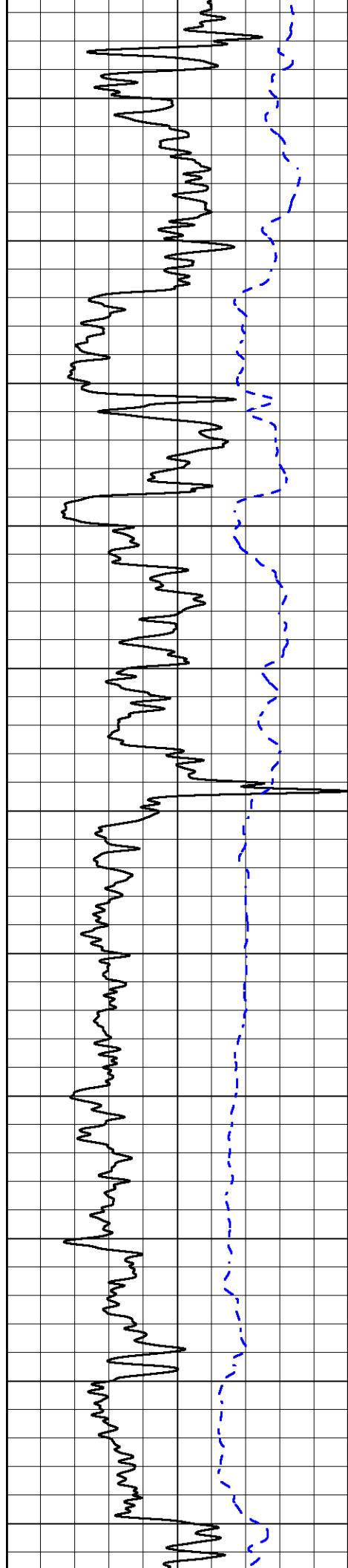
DEEP RESISTIVITY (Ohm-m) 50

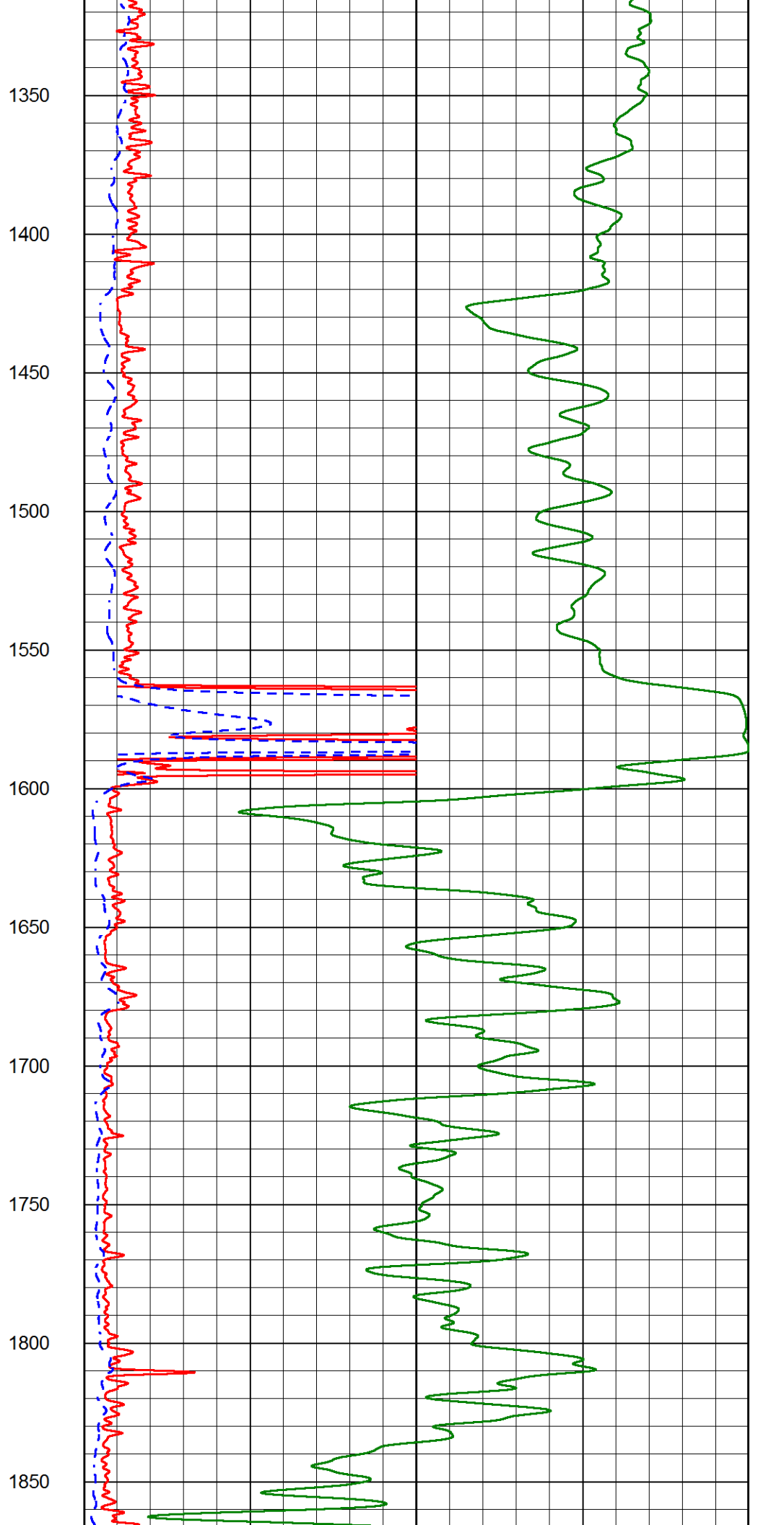
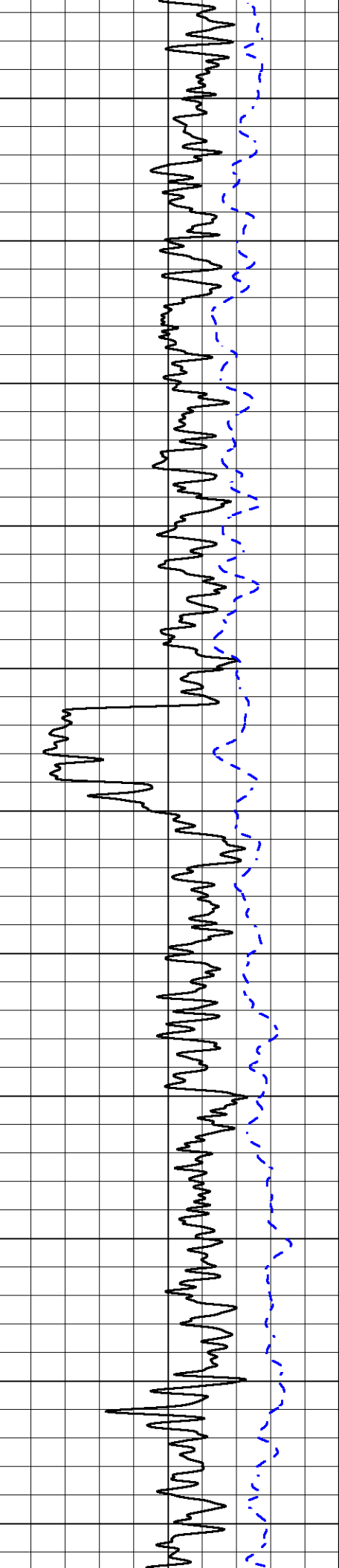
SHALLOW RESISTIVITY
 50 (Ohm-m) 500

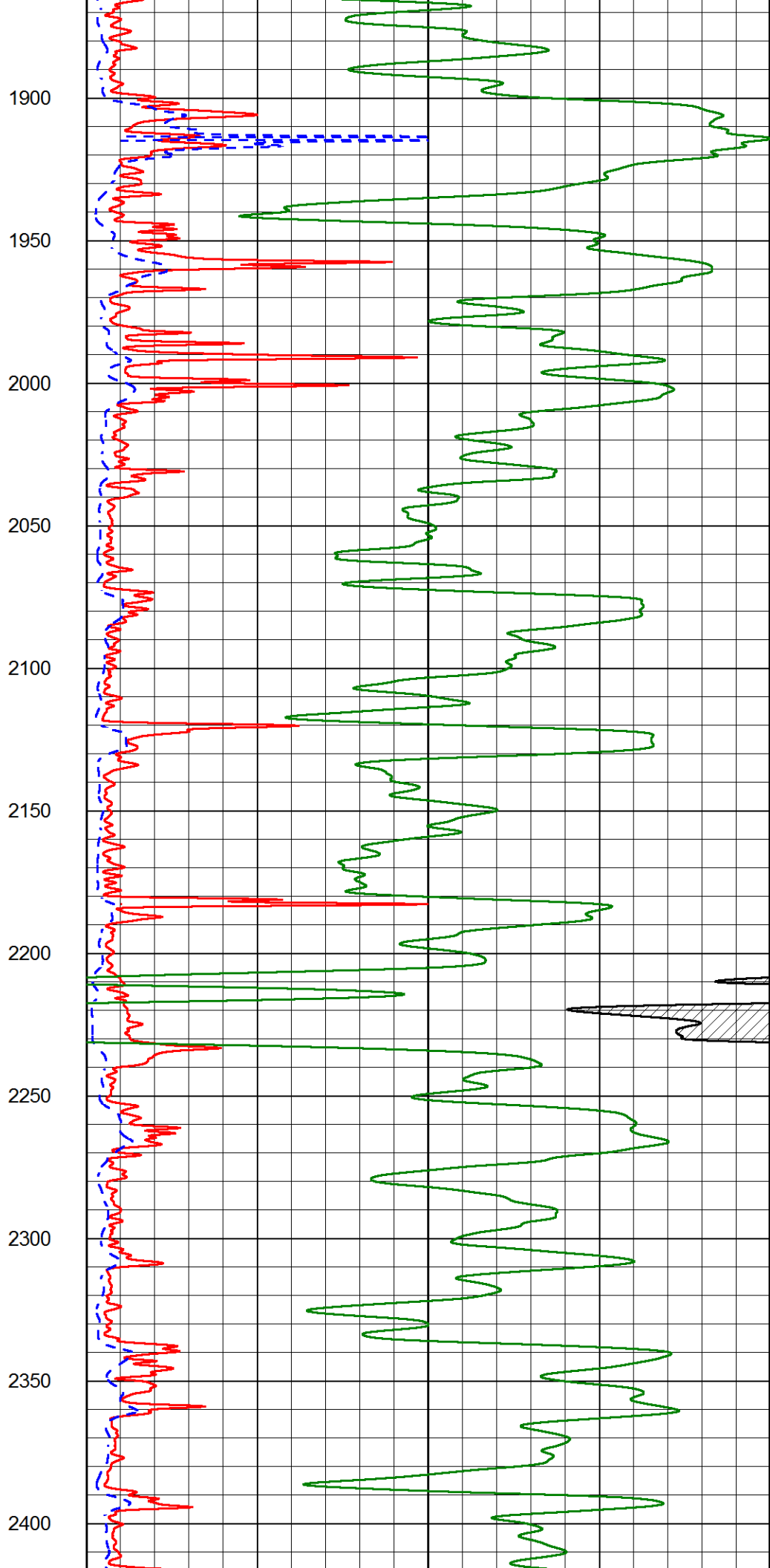
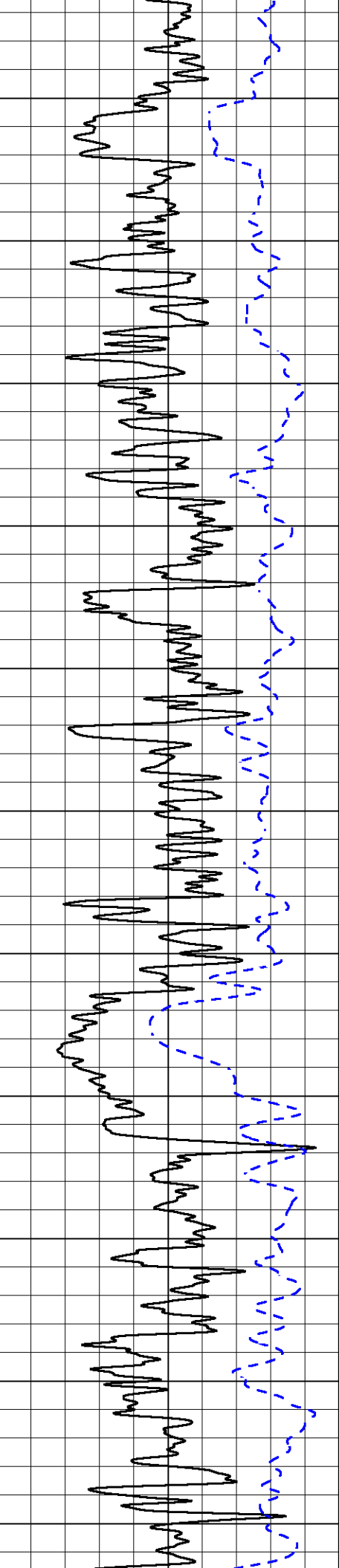
DEEP RESISTIVITY
 50 (Ohm-m) 500

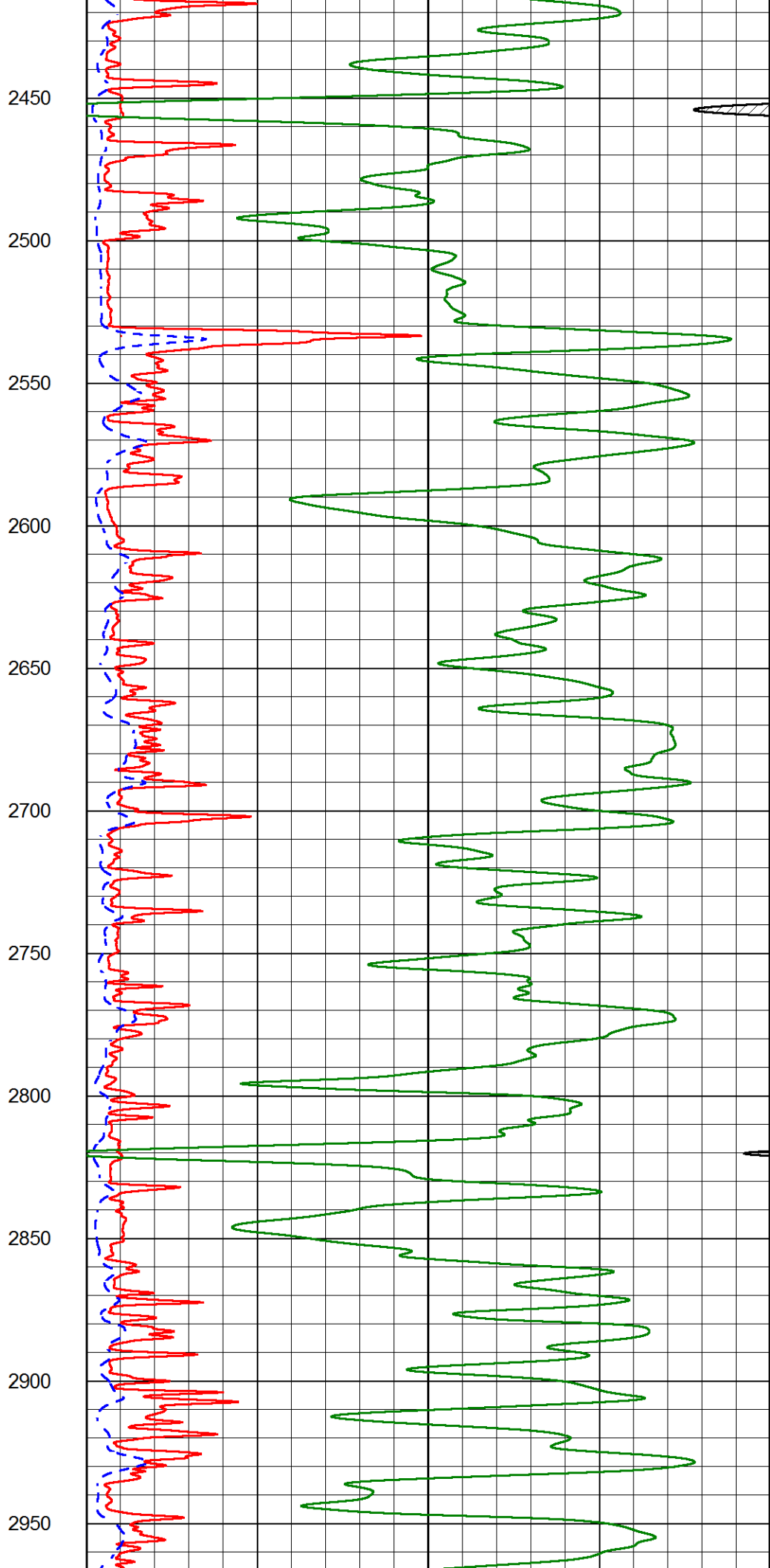
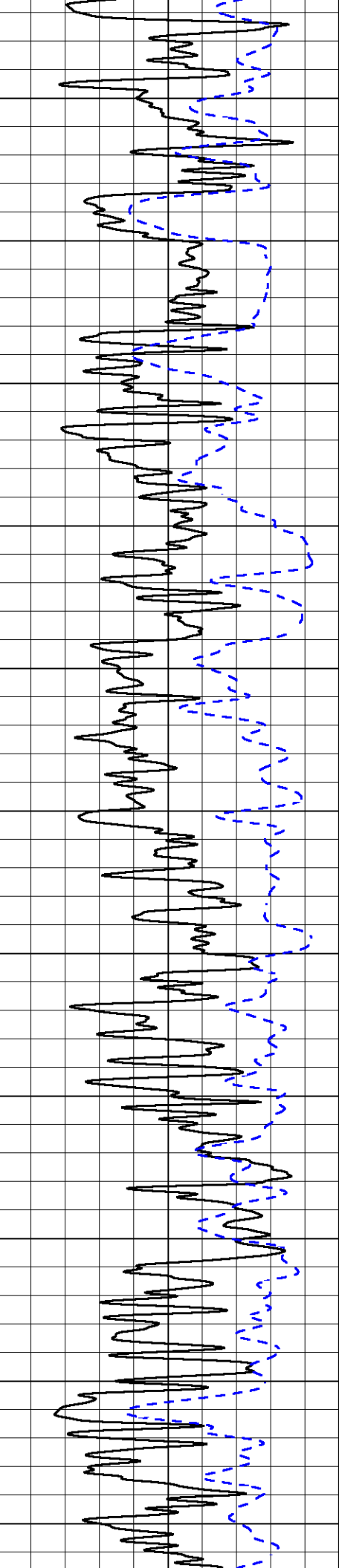


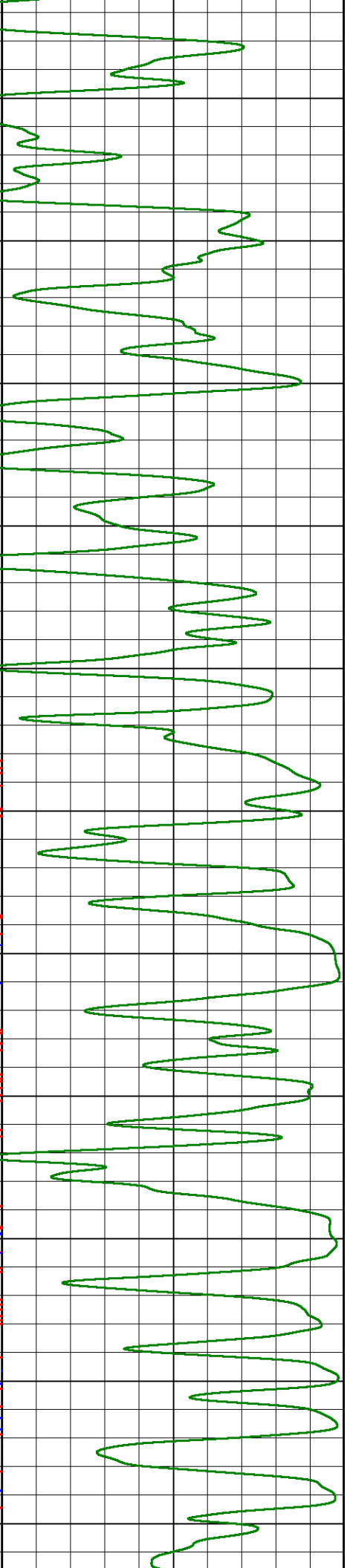
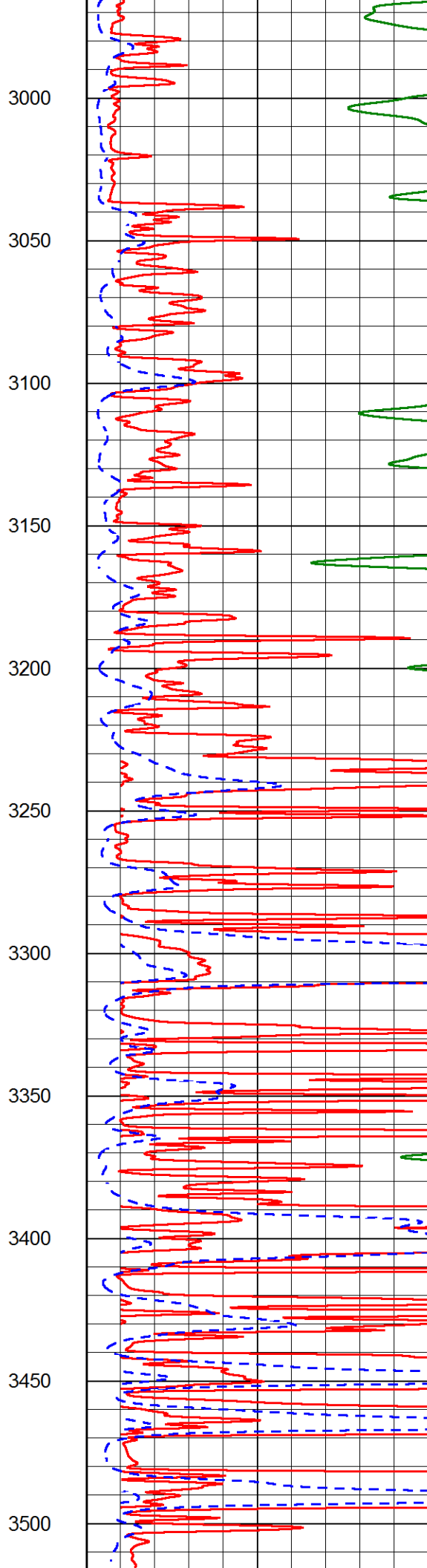
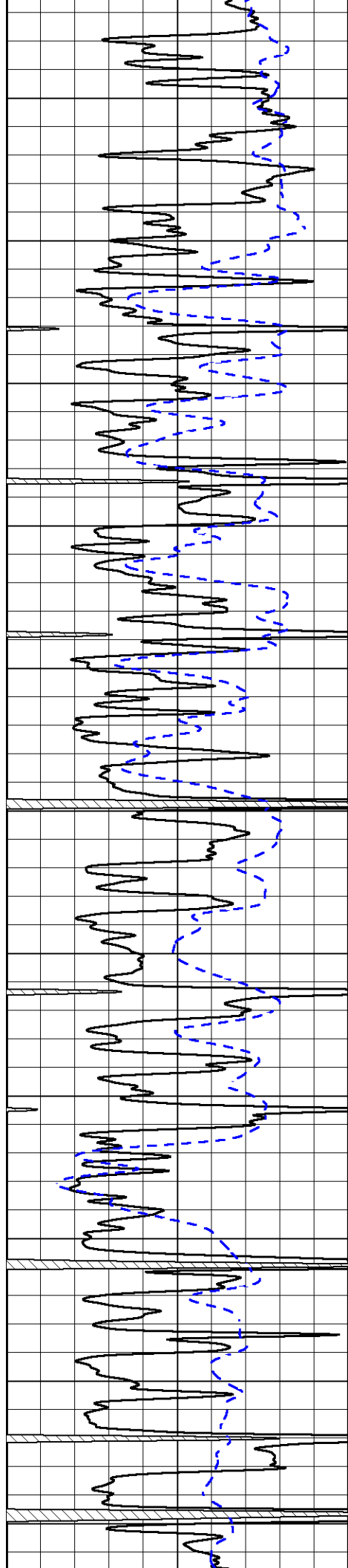


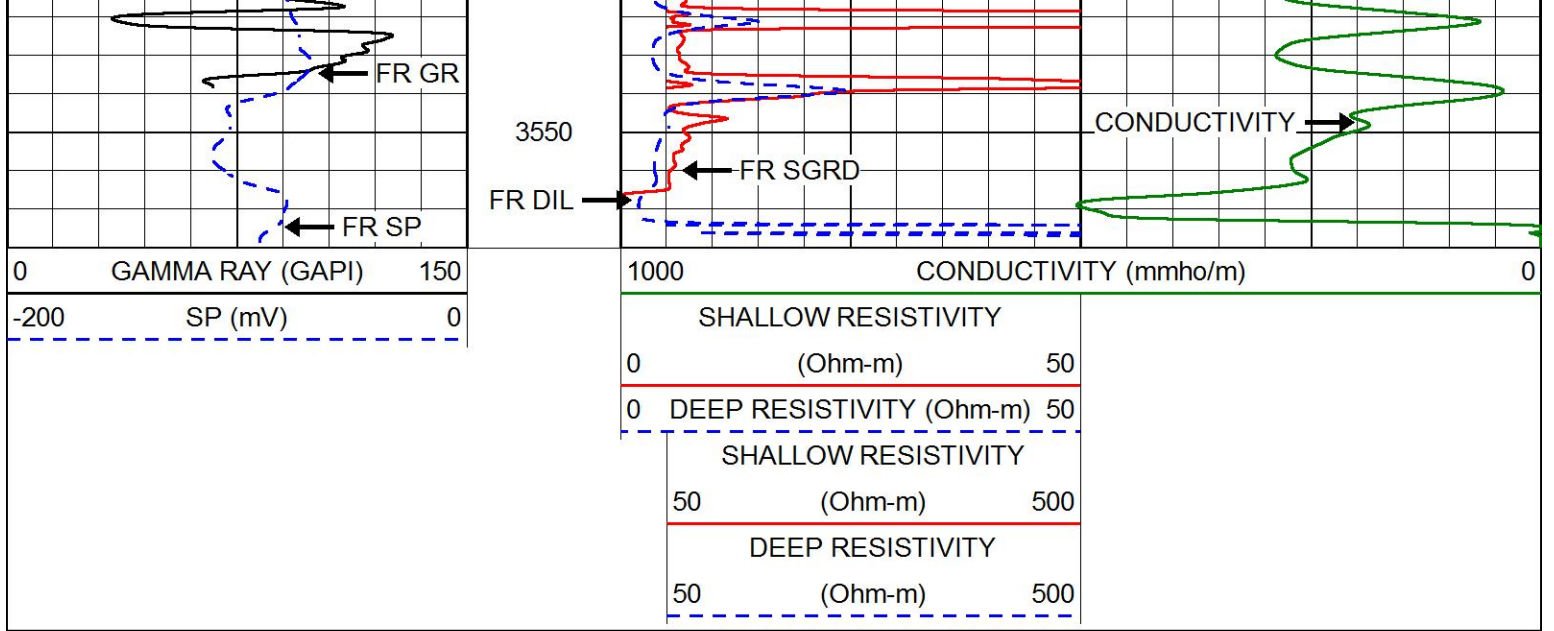






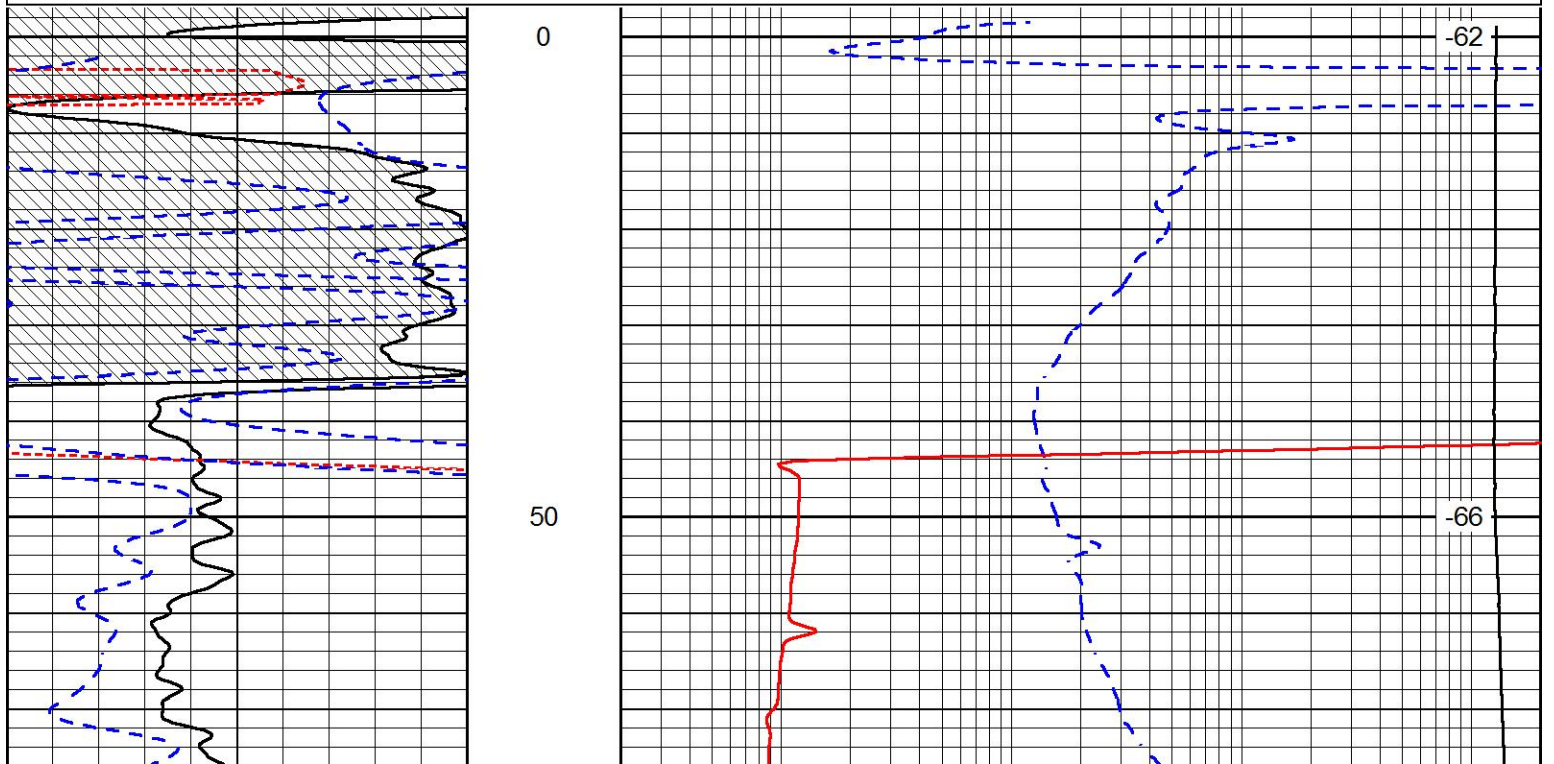
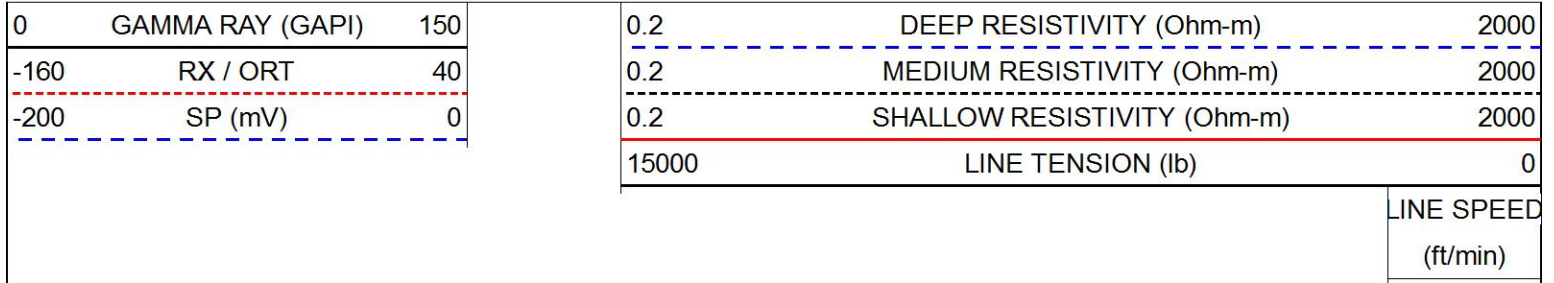


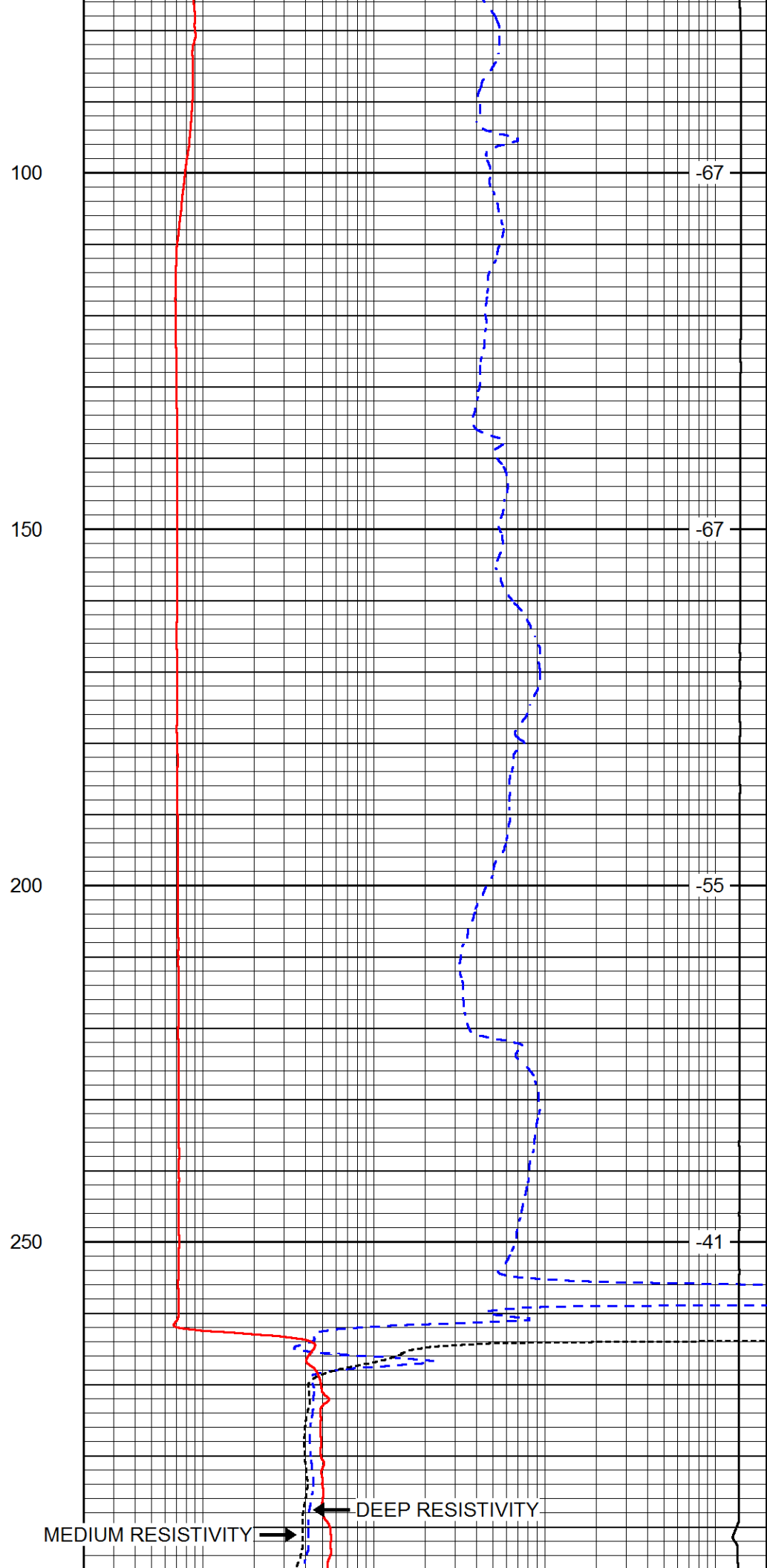
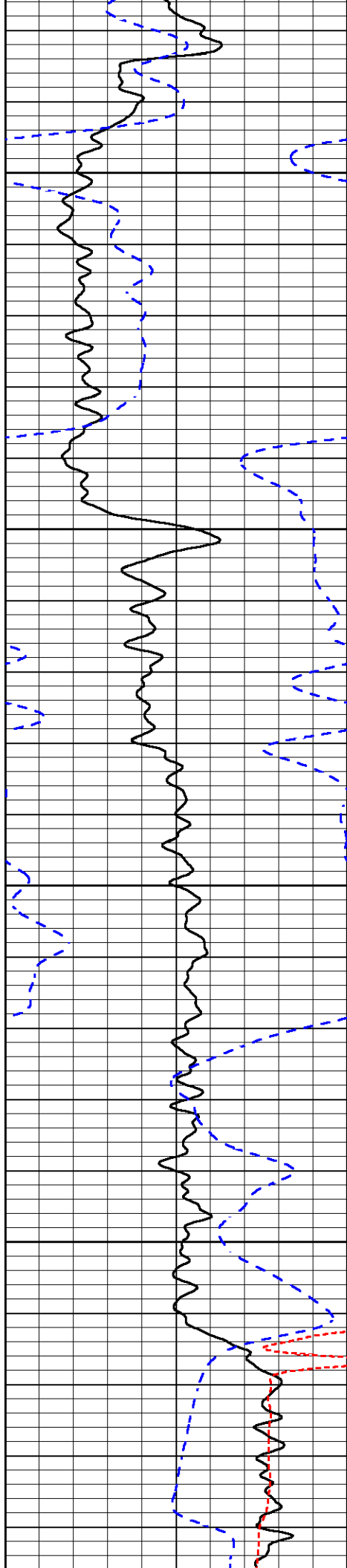


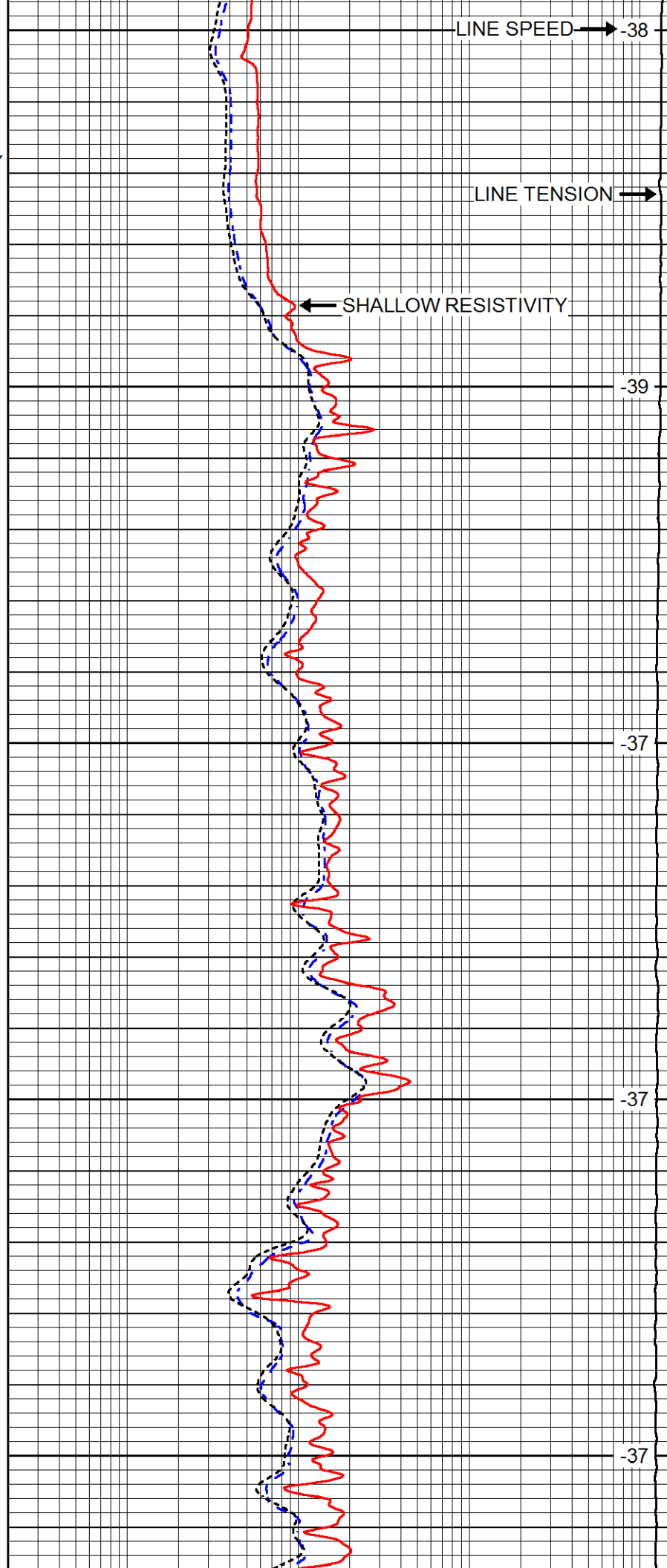
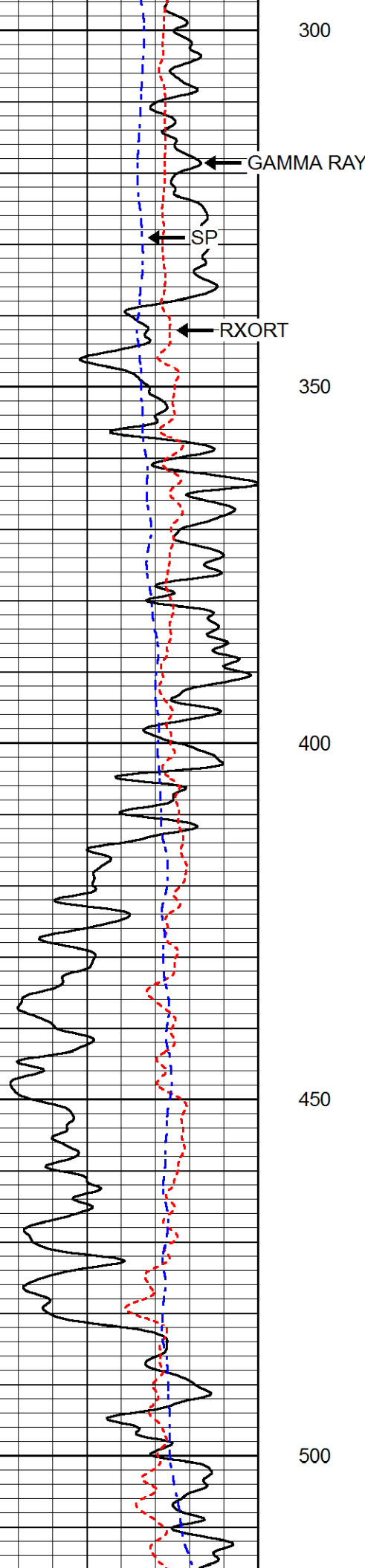


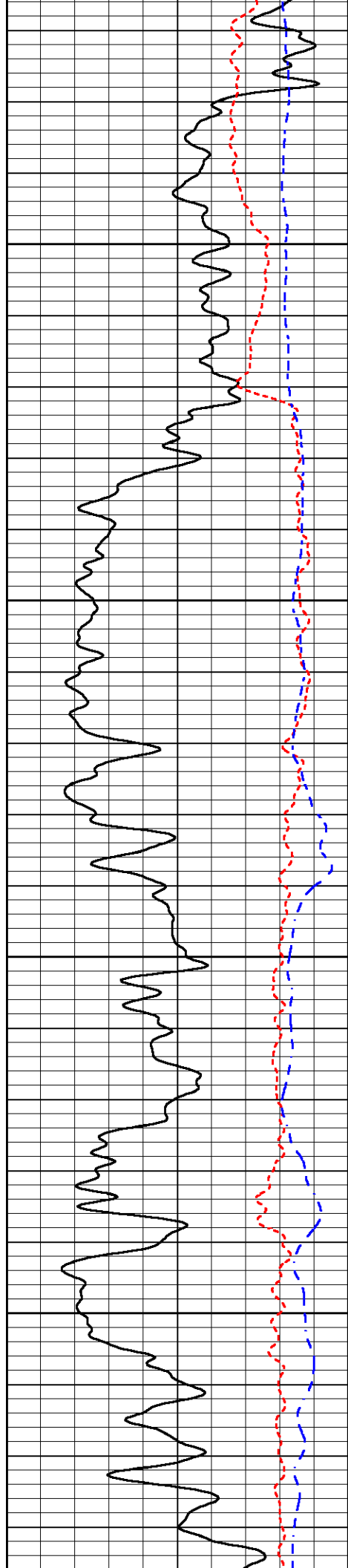
MAIN PASS

Database File: ampatriot_apo_18_wallerlowry_1.db
 Dataset Pathname: stackmel/pass4.1
 Presentation Format: dil
 Dataset Creation: Thu Apr 28 17:00:34 2016
 Charted by: Depth in Feet scaled 1:240







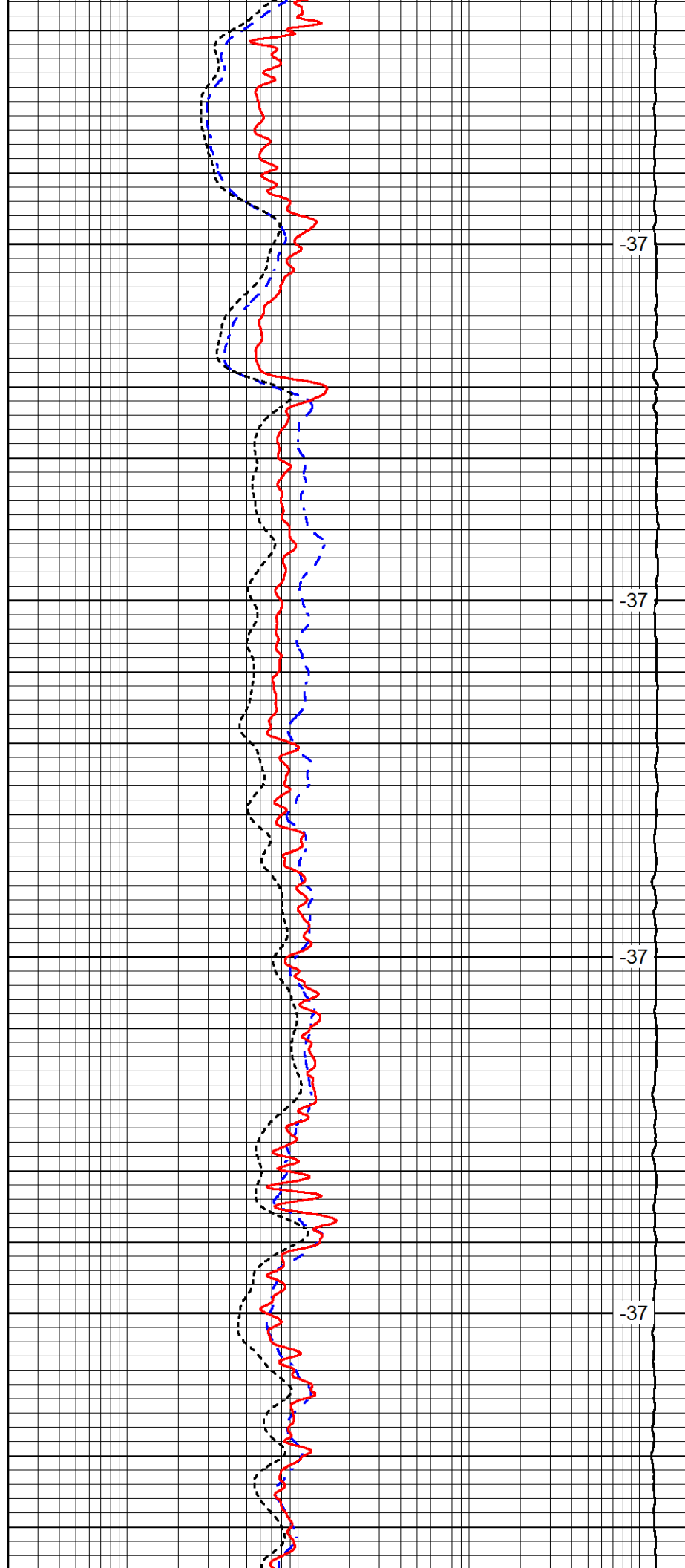


550

600

650

700

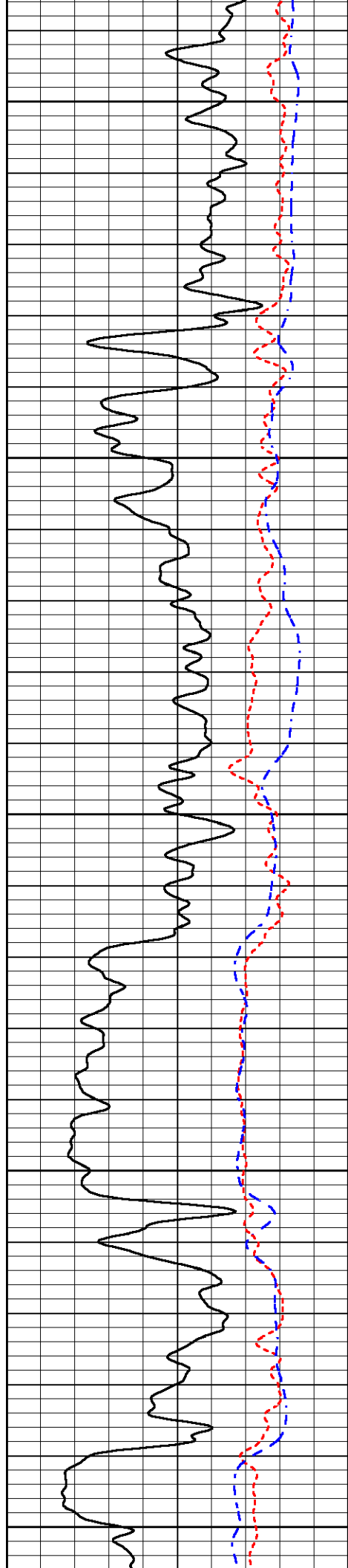


-37

-37

-37

-37



750

800

850

900

950

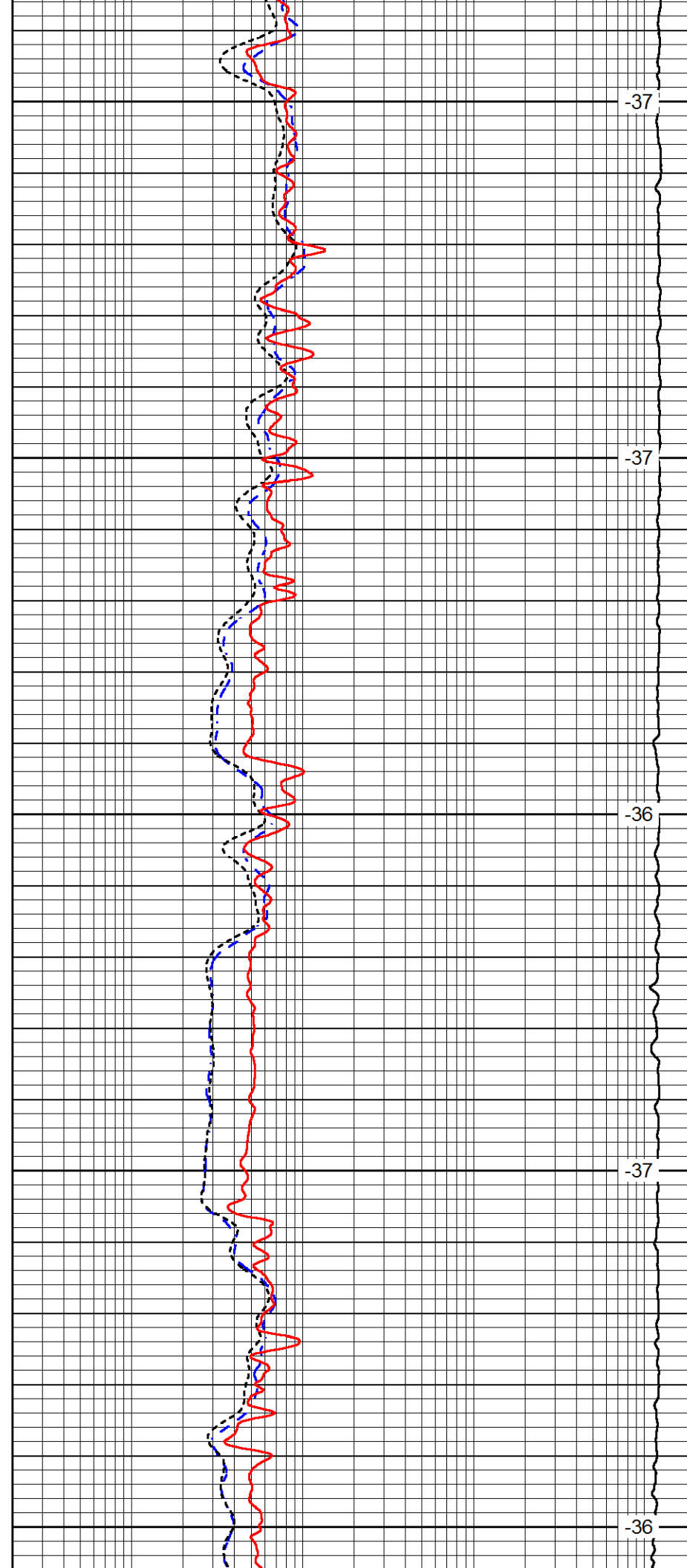
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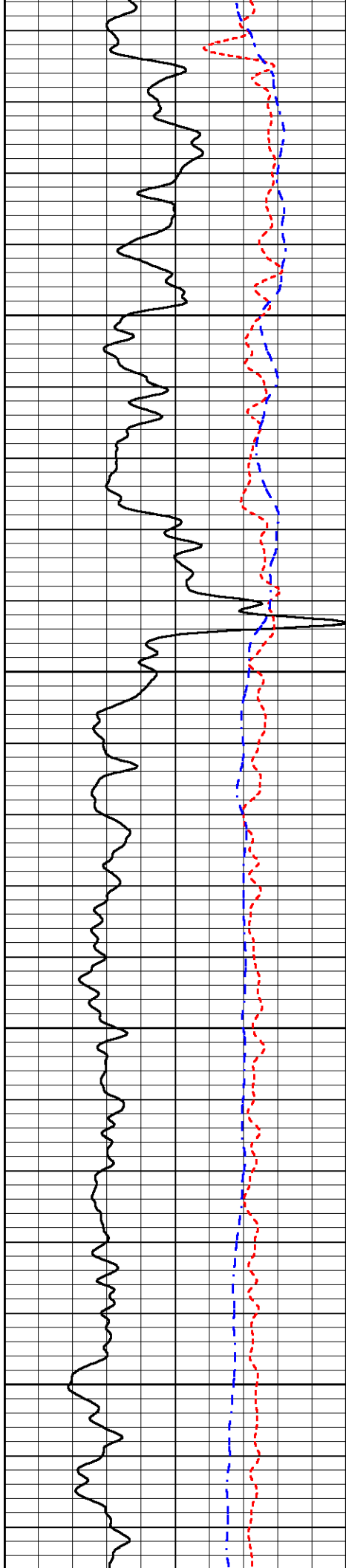
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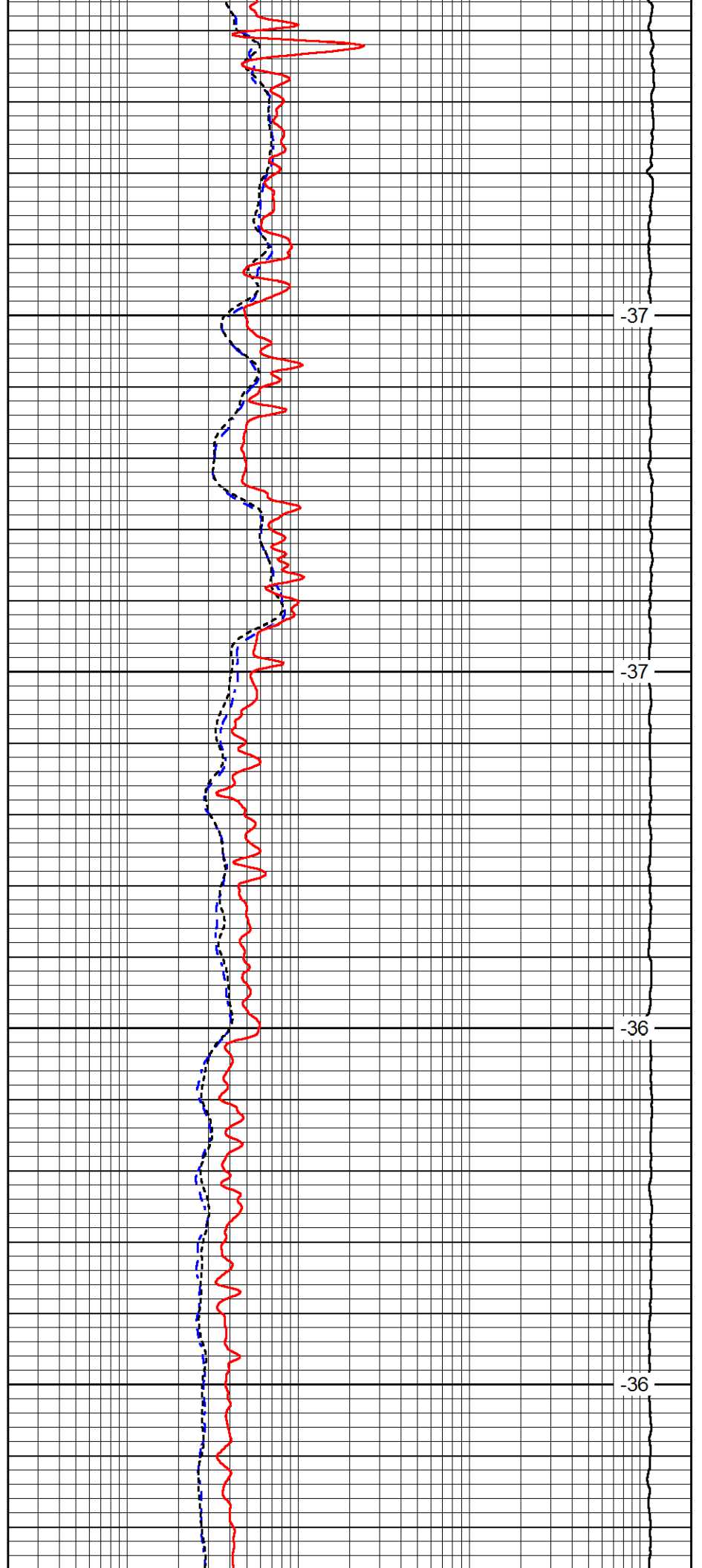


1000

1050

1100

1150

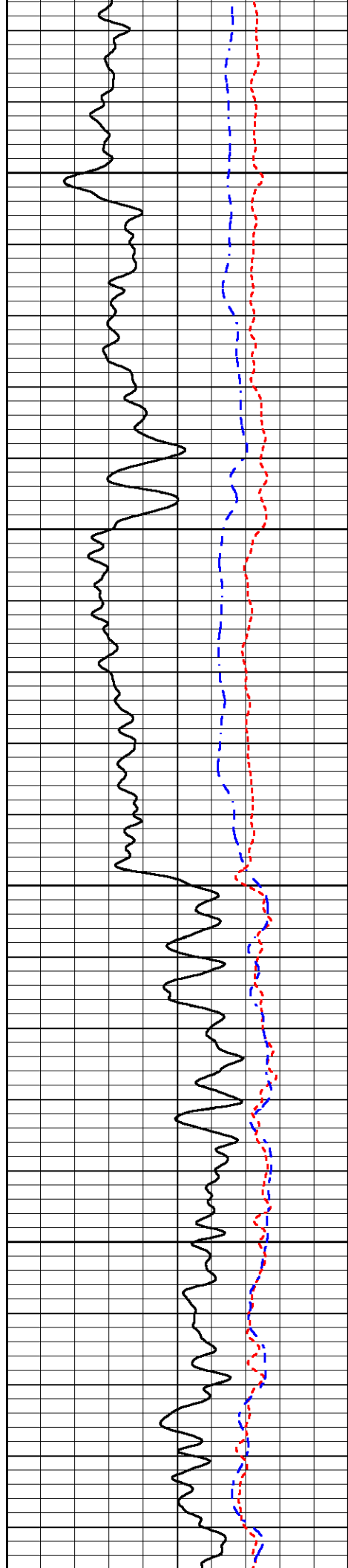


-37

-37

-36

-36



1200

-35

1250

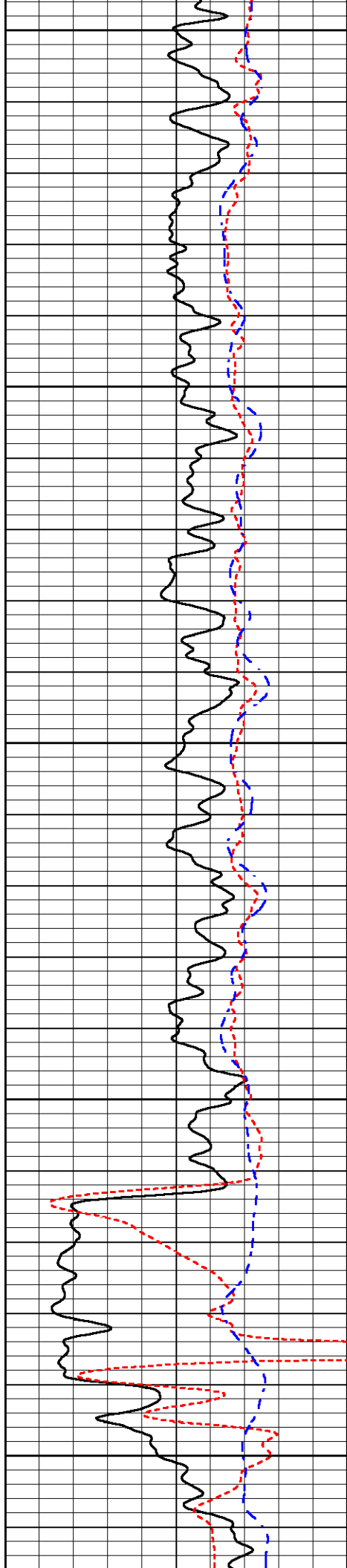
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1300

-36

1350

-36



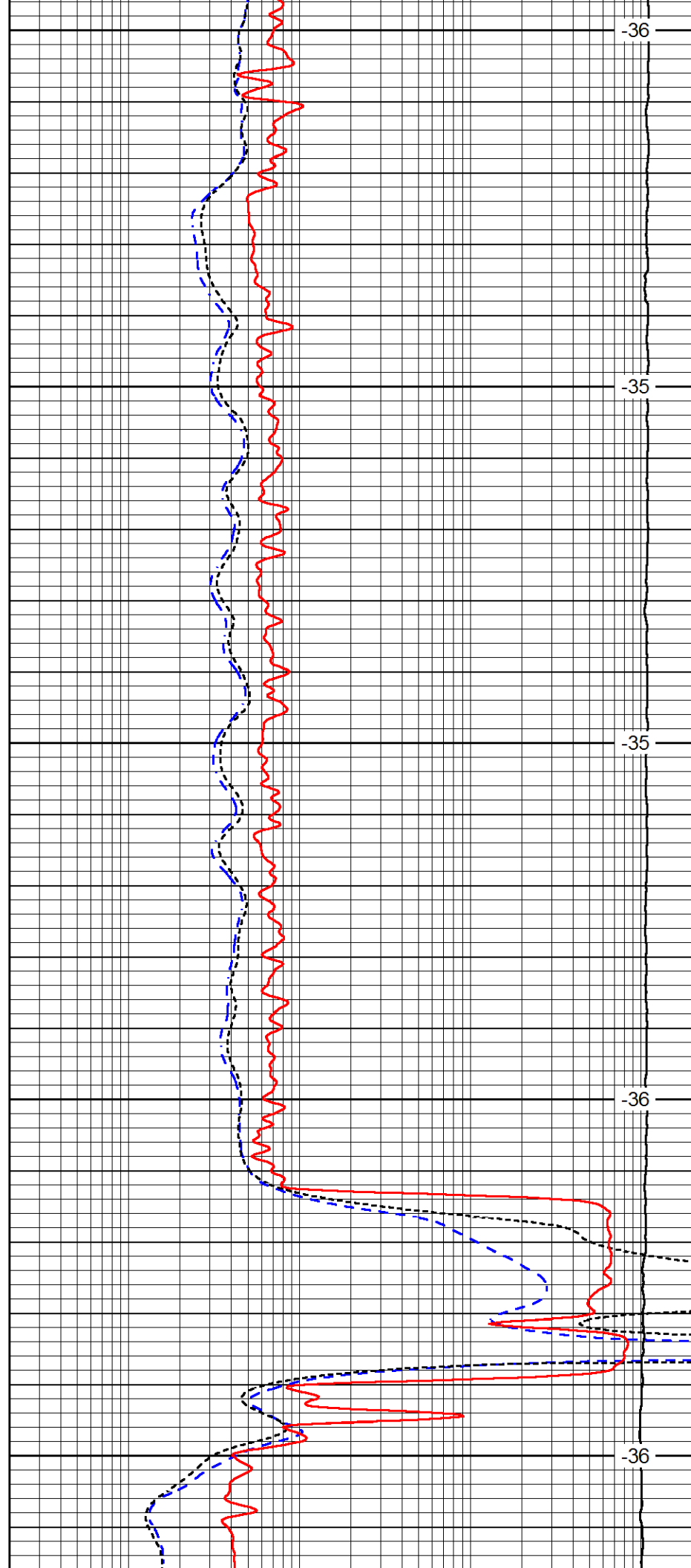
1400

1450

1500

1550

1600



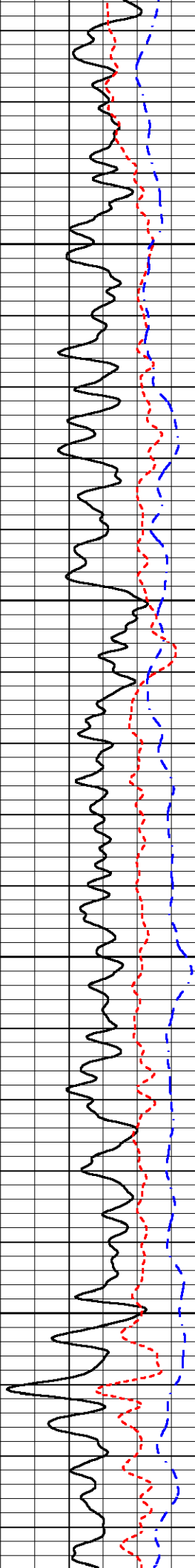
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-36

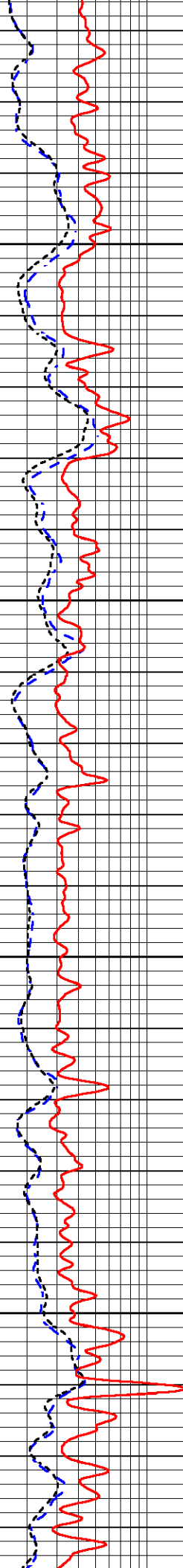


1650

1700

1750

1800

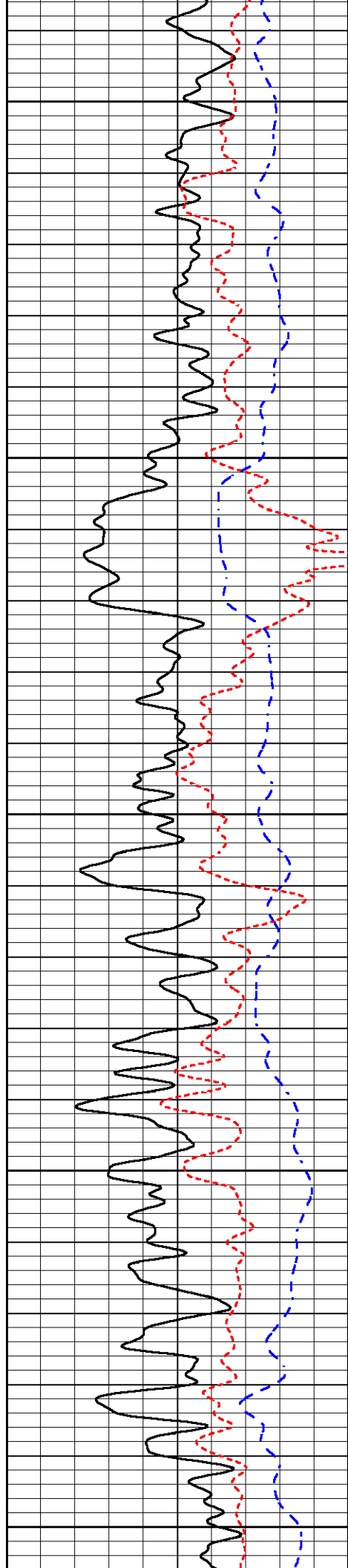


-35

-35

-35

-35



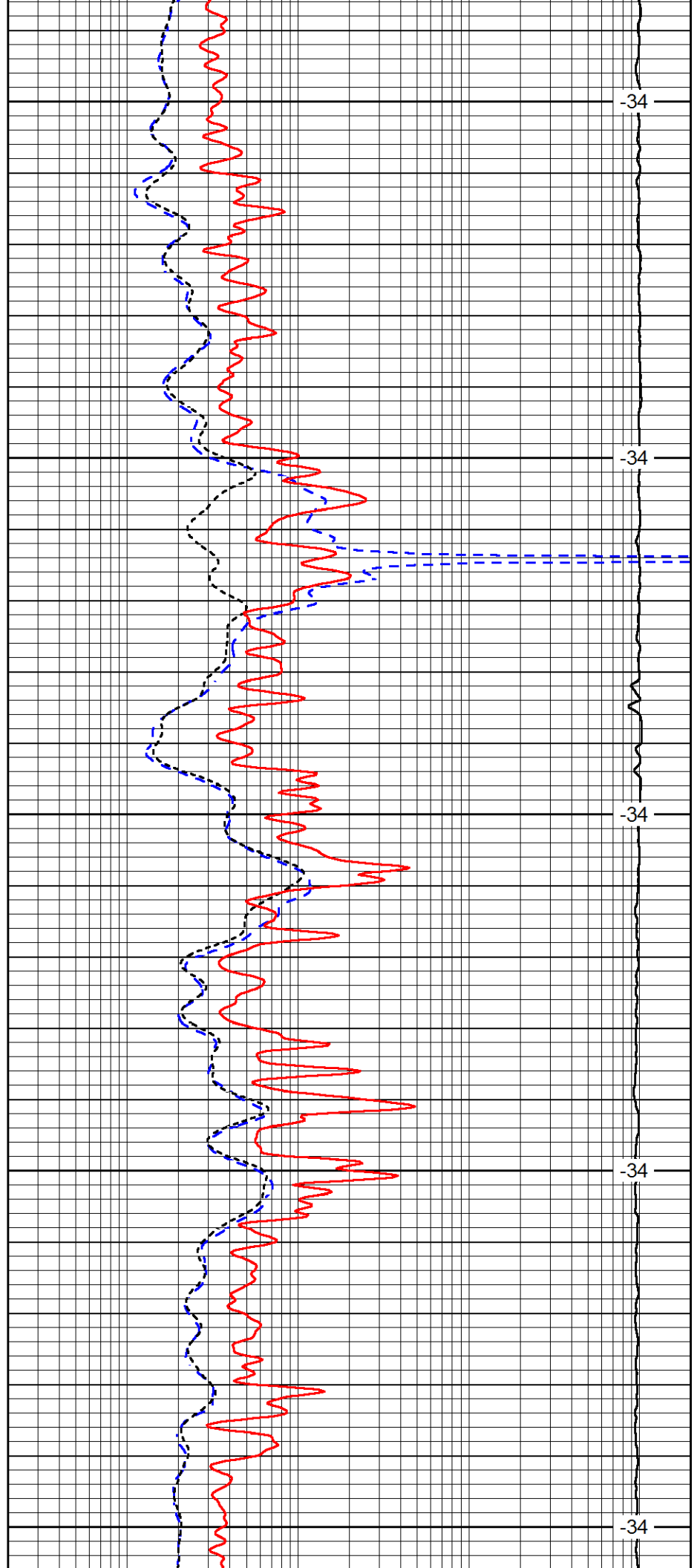
1850

1900

1950

2000

2050



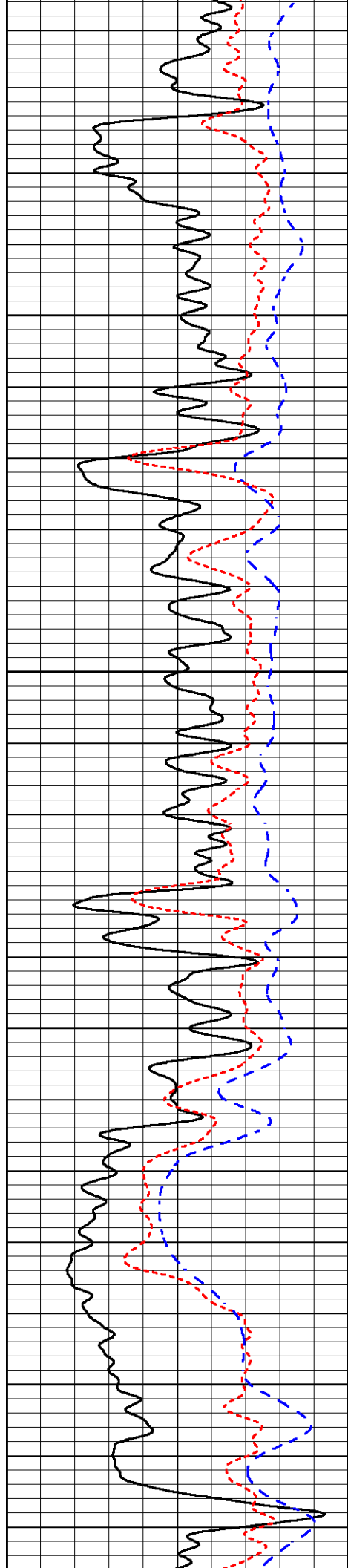
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-34

-34

-34

-34

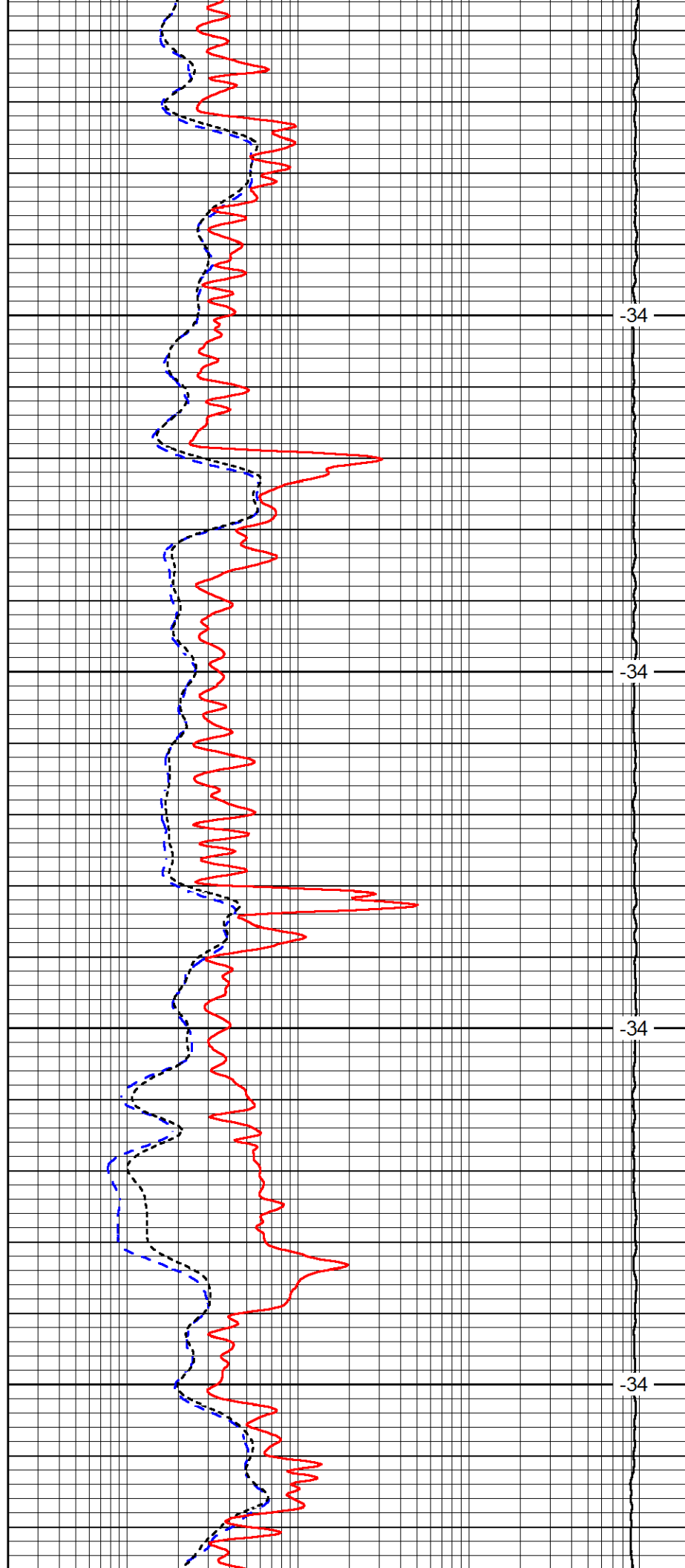


2100

2150

2200

2250

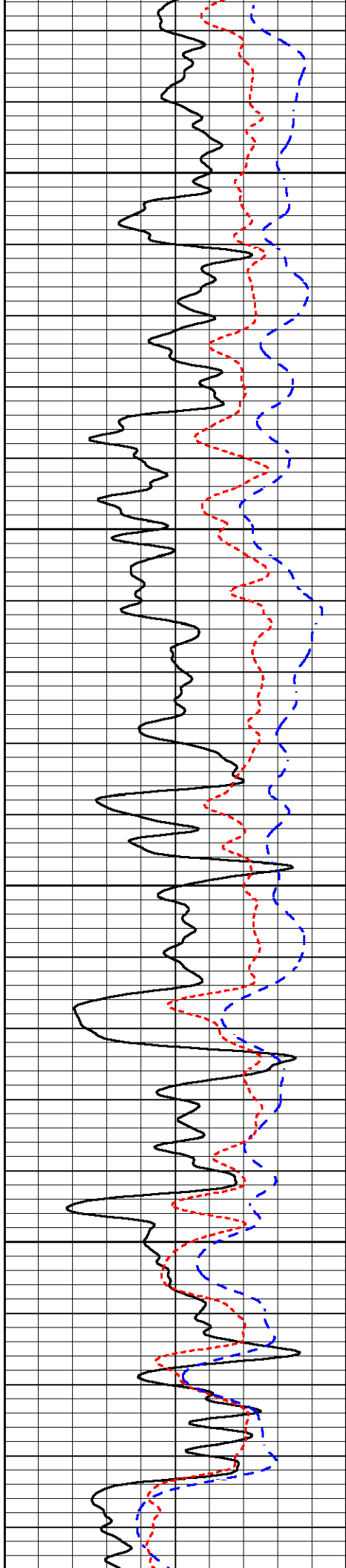


34

34

34

34

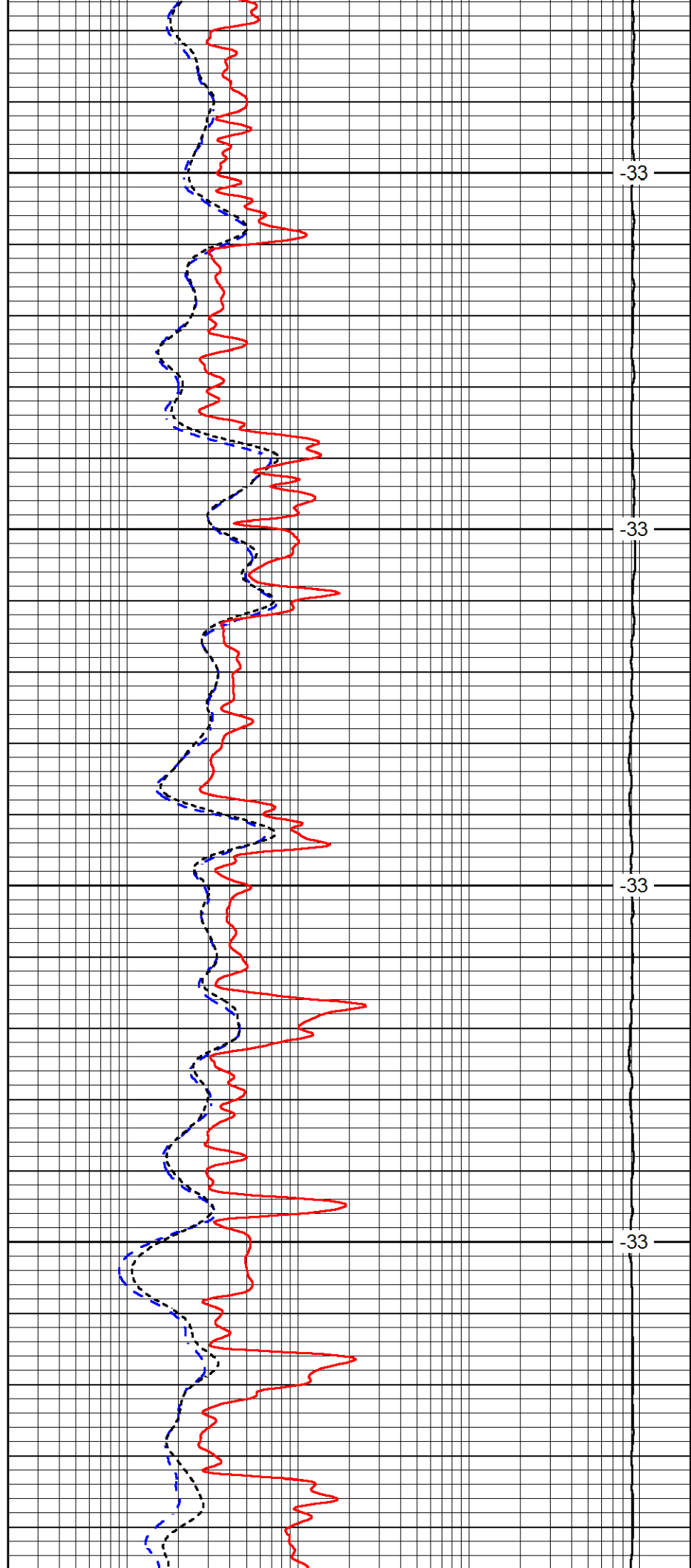


2300

2350

2400

2450

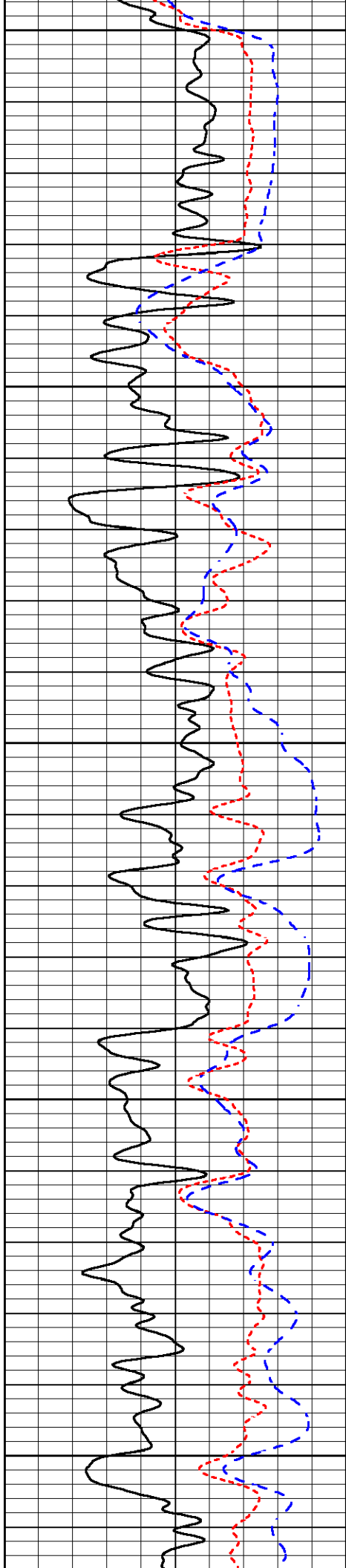


-33

-33

-33

-33



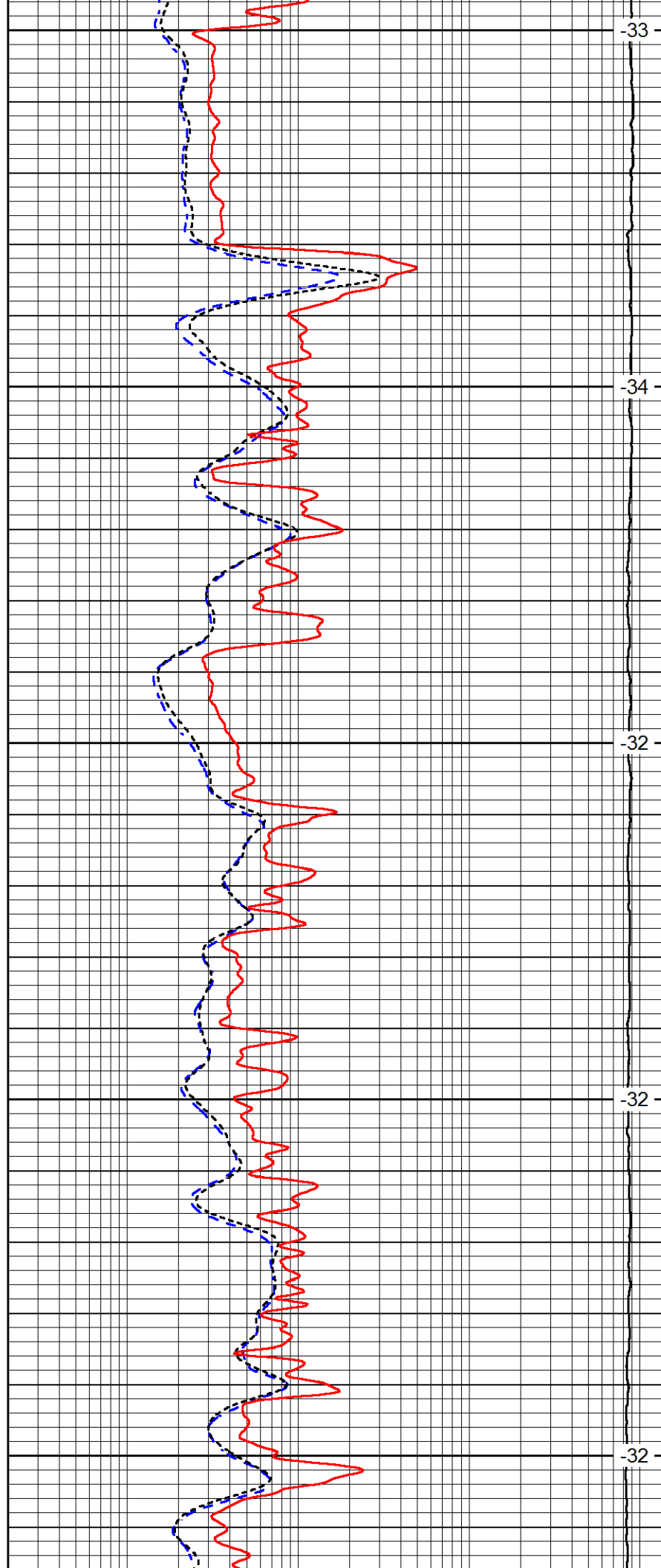
2500

2550

2600

2650

2700



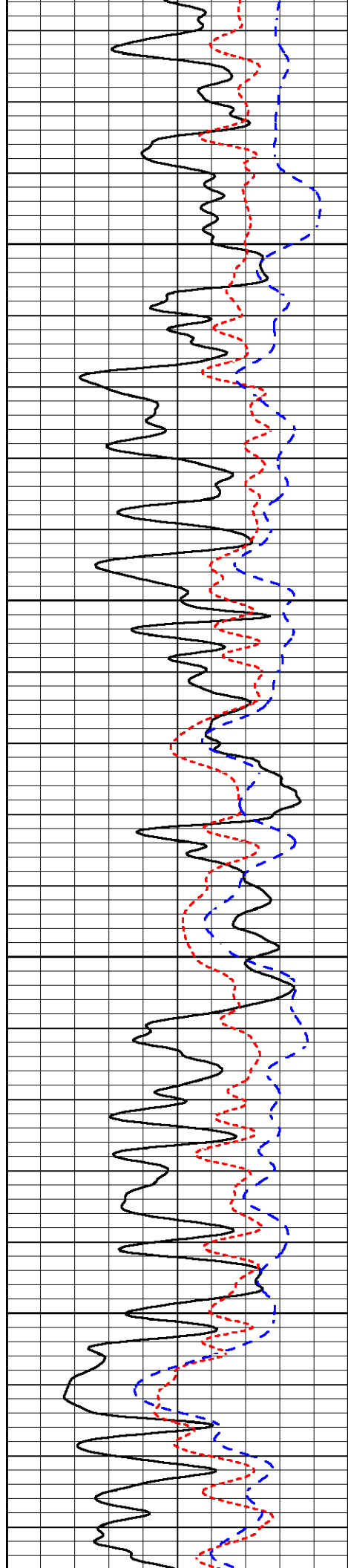
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-32

-32

-32

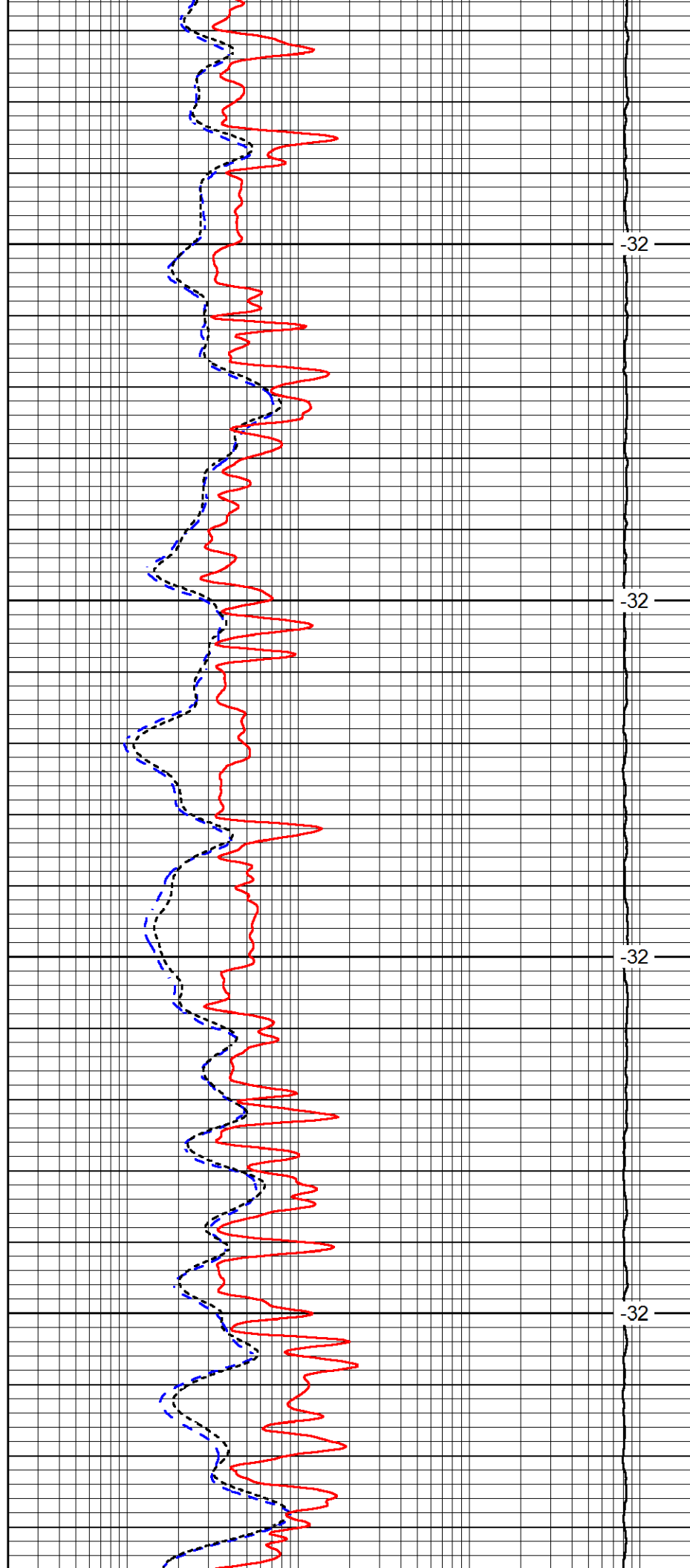


2750

2800

2850

2900

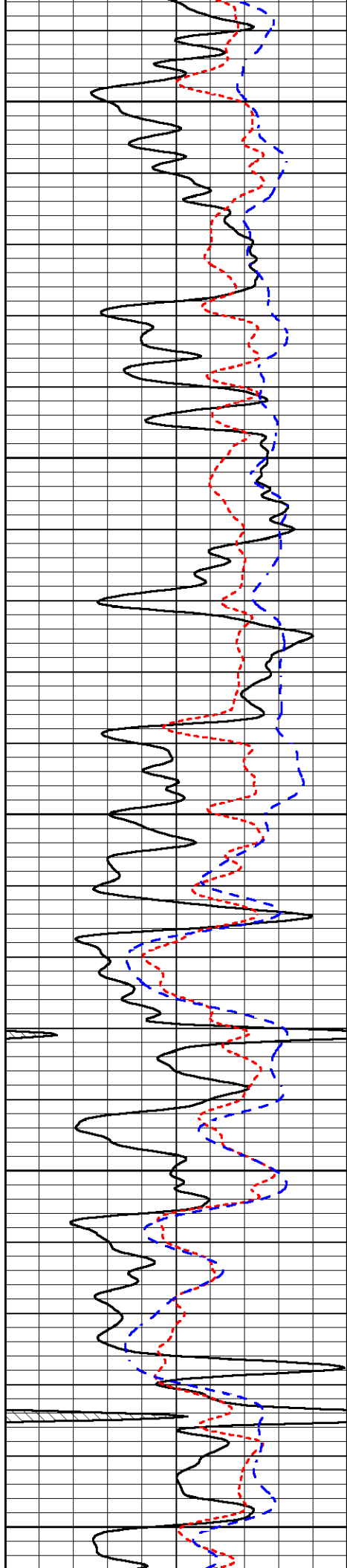


-32

-32

-32

-32



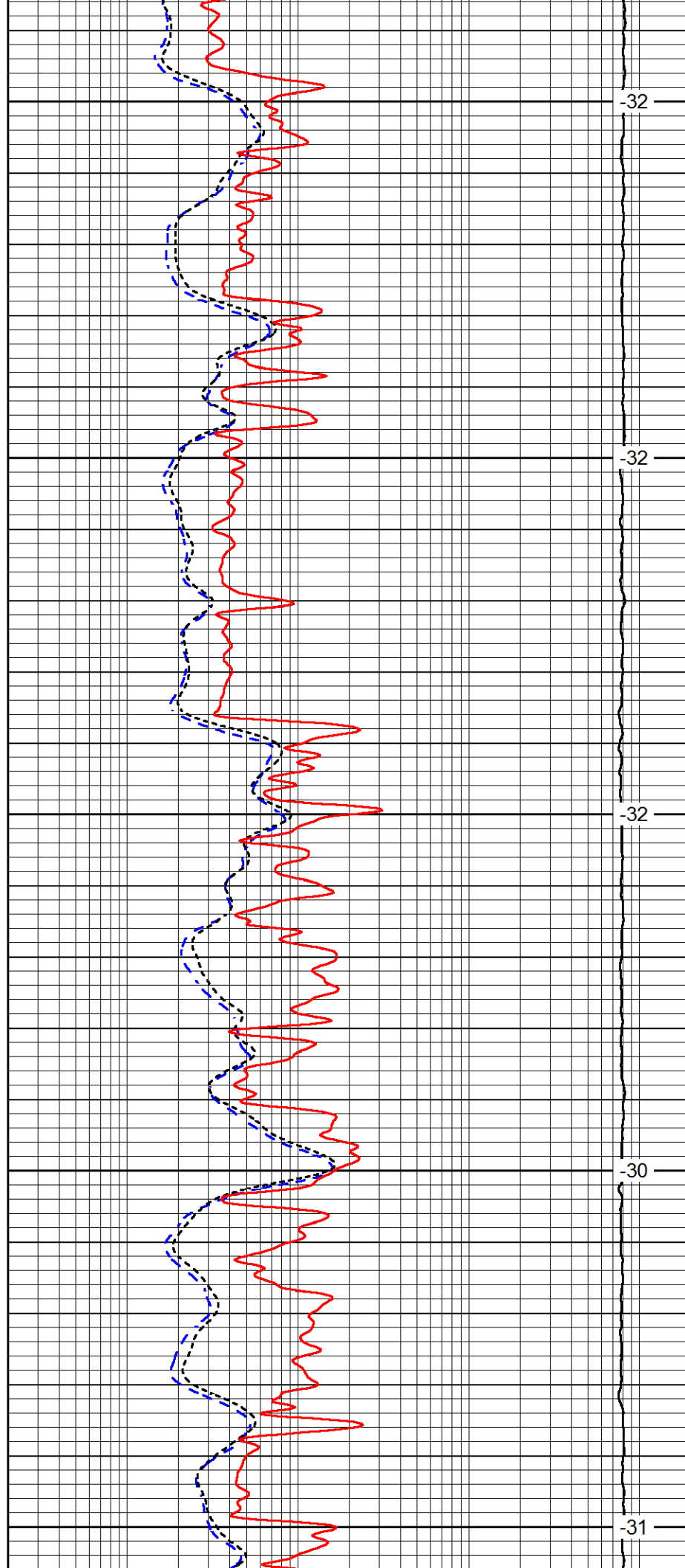
2950

3000

3050

3100

3150



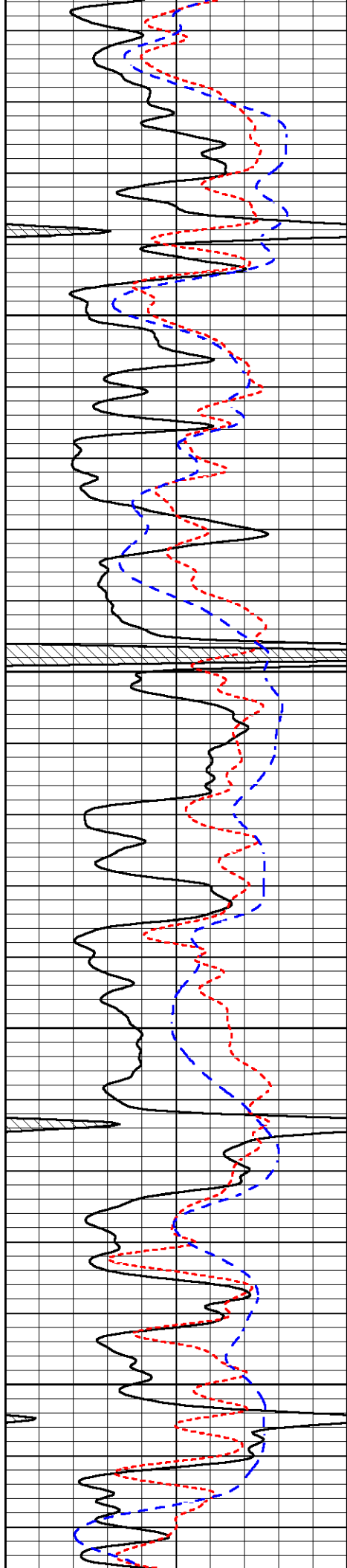
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-32

-32

-30

-31

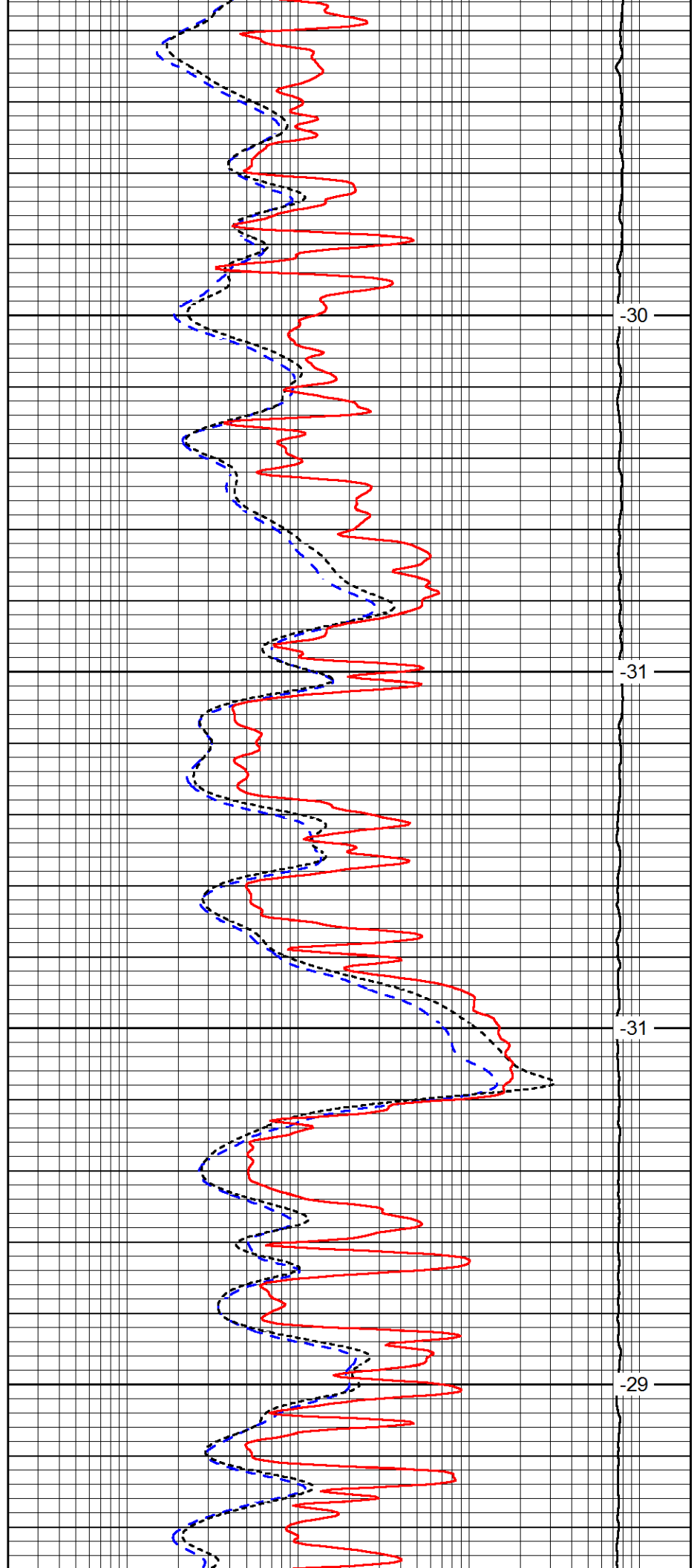


3200

3250

3300

3350

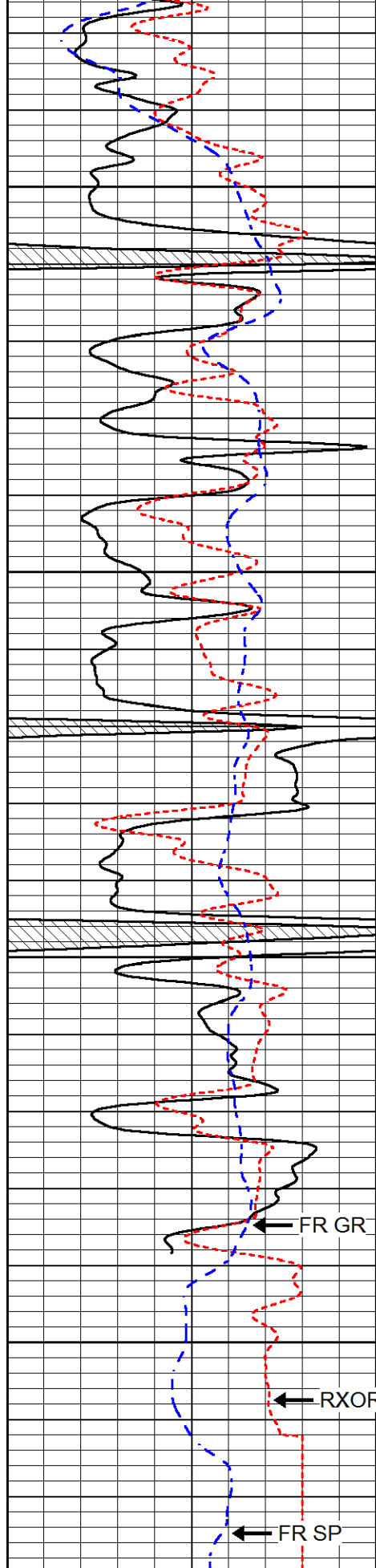


-30

-31

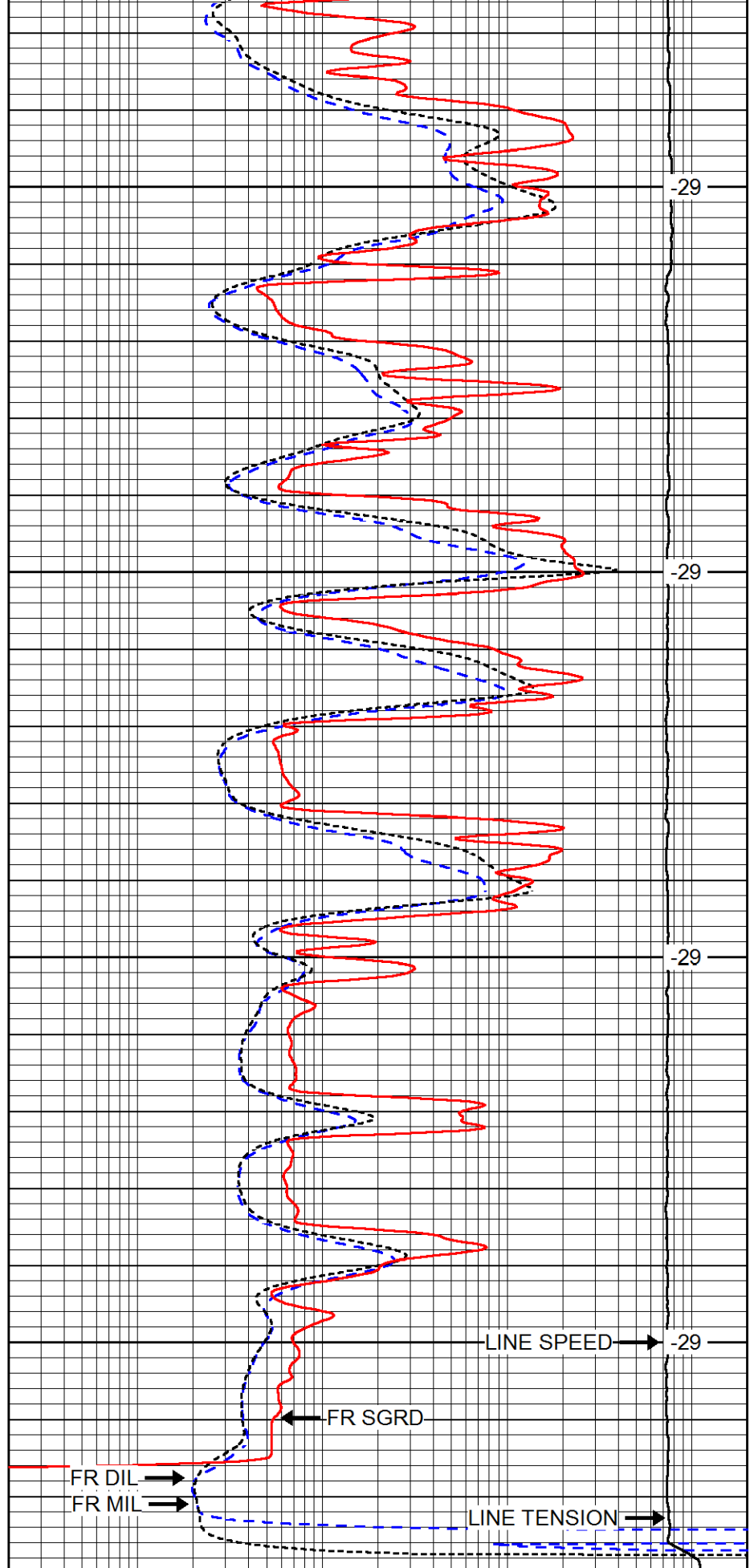
-31

-29



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

3400
3450
3500
3550



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)



REPEAT SECTION

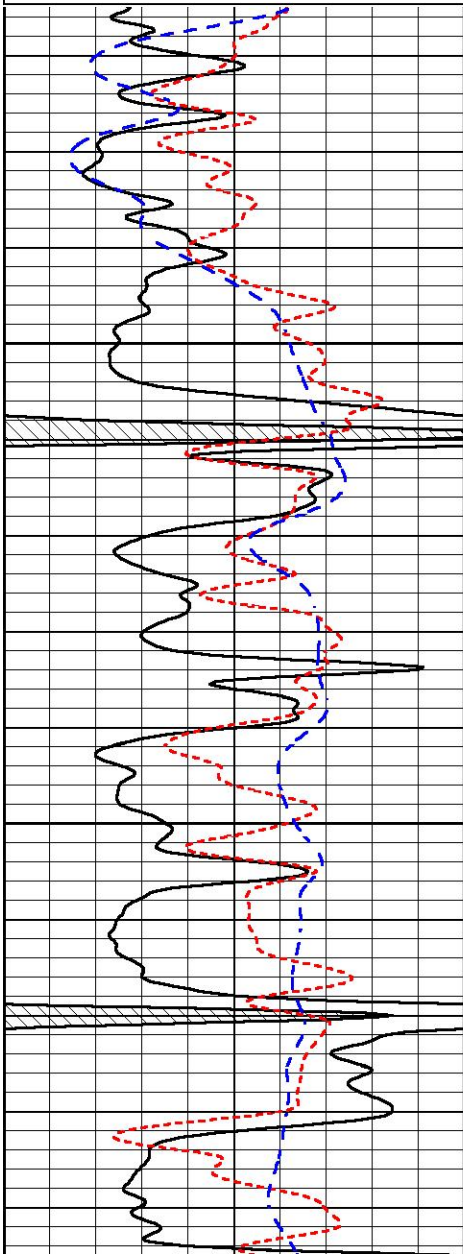
Database File ampatriot_apo_18_wallerlowry_1.db
 Dataset Pathname stackmel/pass3.1
 Presentation Format dil
 Dataset Creation Thu Apr 28 15:55:11 2016
 Charted by Depth in Feet scaled 1:240

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

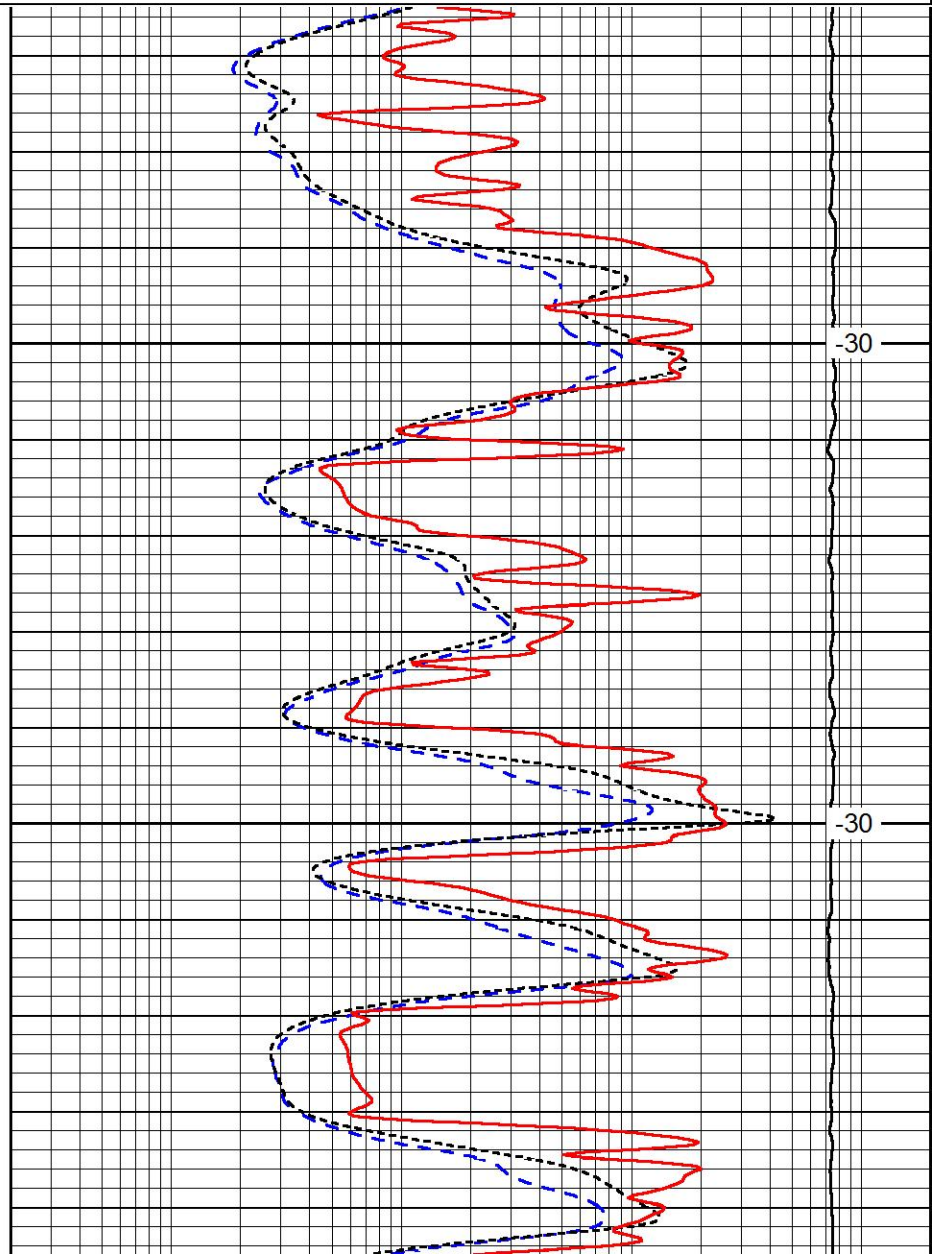
LINE SPEED

(ft/min)



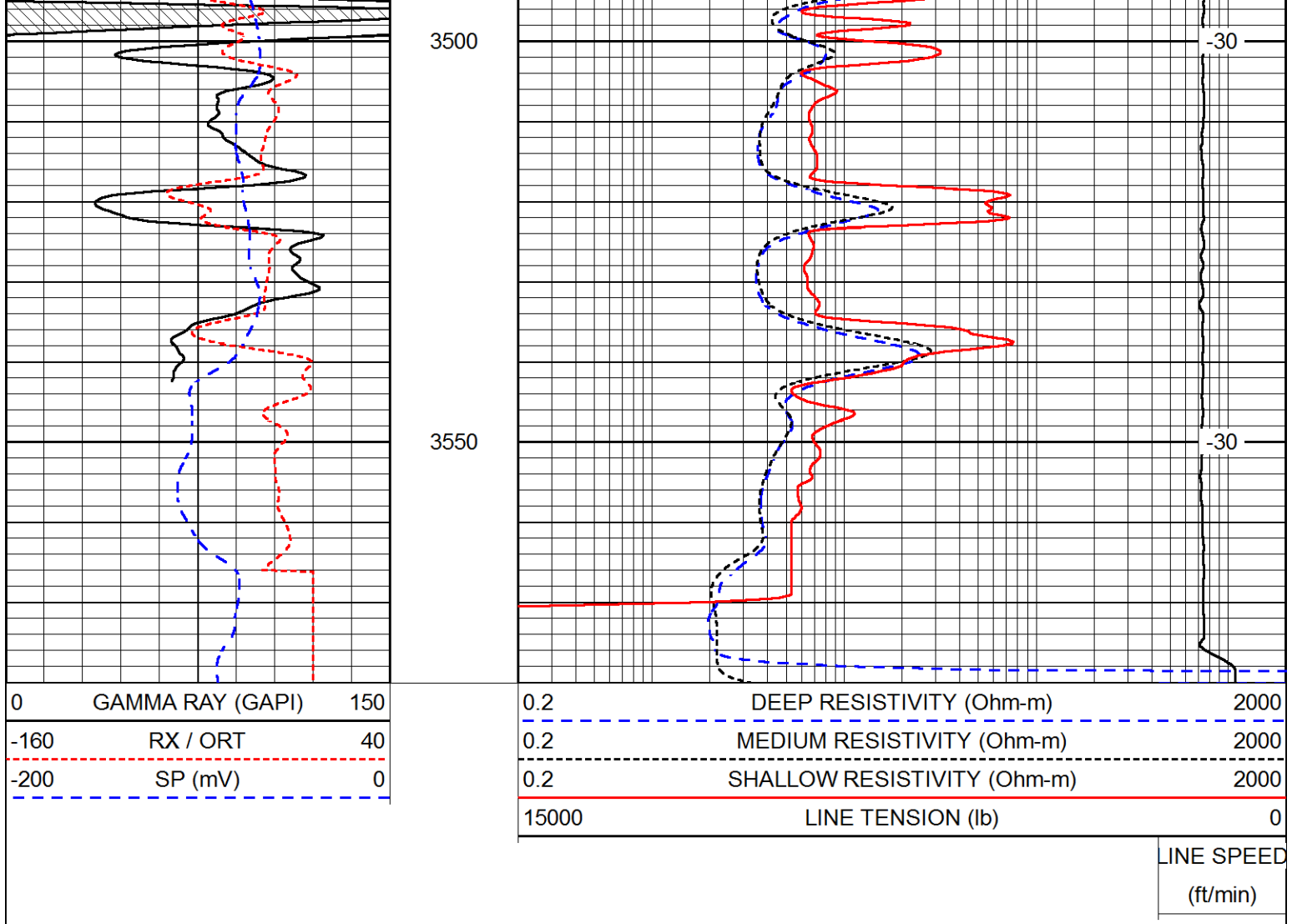
3400

3450



30

30



Calibration Report

Database File: ampatriot_apo_18_wallerlowry_1.db
 Dataset Pathname: stackmel/pass4.1
 Dataset Creation: Thu Apr 28 17:00:34 2016

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Thu Mar 31 15:53:34 2016

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop	mmho/m	Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-38.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Thu Apr 14 22:34:04 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal	Ohm-m	m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	10308.9000	-0.2000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	7967.2700	0.4000

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 Mar 30 10:04:05 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: Thu Mar 31 15:29:33 2016

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company AMERICAN PATRIOT OIL, LLC
 Well APO #18 WALLER LOWRY #1
 Field WILDCAT
 County ROOKS
 State KANSAS