



MICRORESISTIVITY LOG

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
 GROUND LEVEL Elevation 2927'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING

Other Services
 CNL/CDL
 DIL
 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	4100'
Casing Driller	8.625" @ 1745'
Casing Logger	1741'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	6,700
Density / Viscosity	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

<<< 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.
 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 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

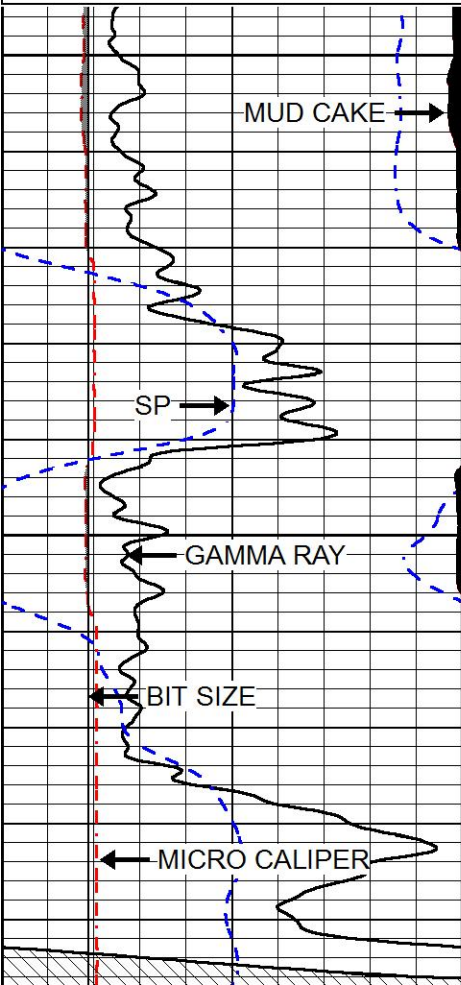


MAIN PASS

Database File amwar_dowdyowes_#4-36.db
 Dataset Pathname stkml/pass3.1
 Presentation Format micro
 Dataset Creation Sun May 22 07:13:39 2016
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0
	LINE SPEED (ft/min)	



4100

MUD CAKE →

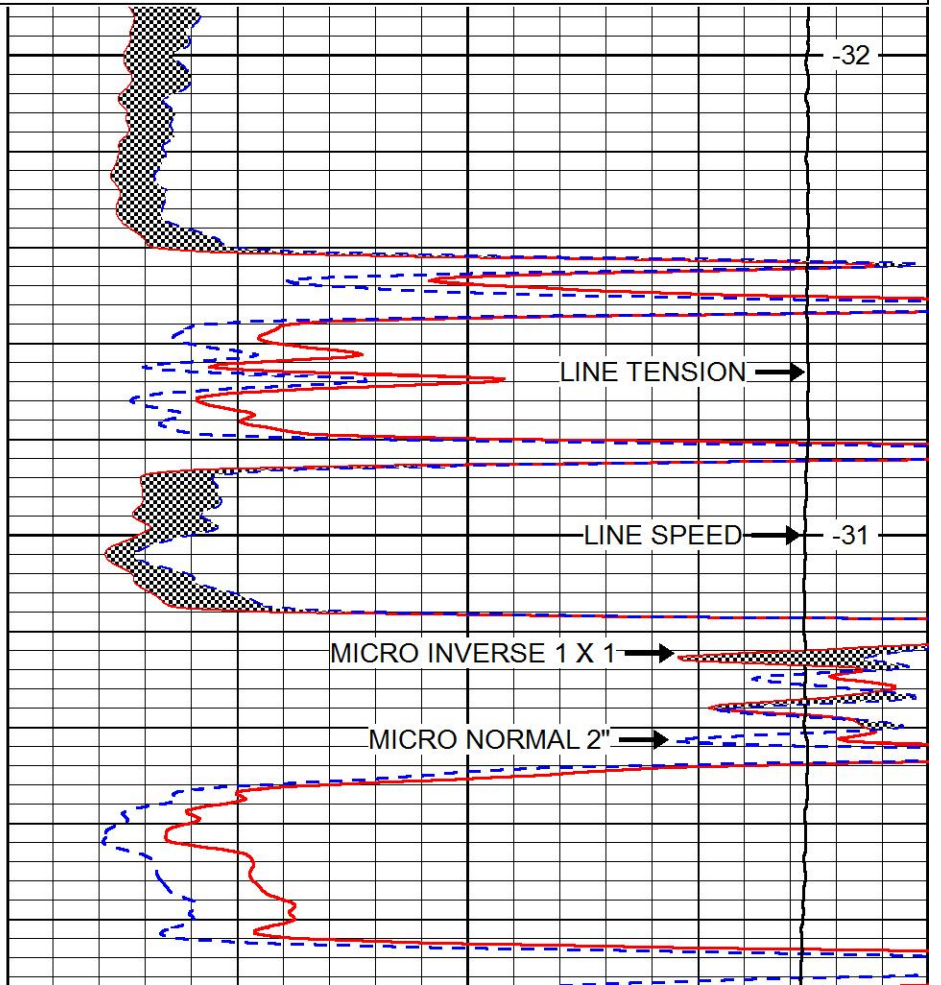
SP →

GAMMA RAY →

BIT SIZE →

MICRO CALIPER →

4150



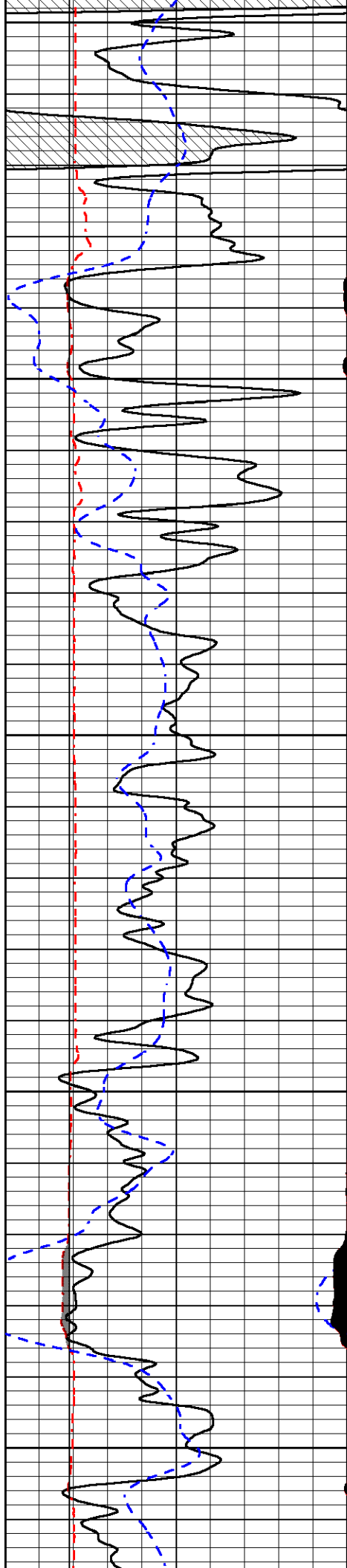
-32

LINE TENSION →

LINE SPEED → -31

MICRO INVERSE 1 X 1 →

MICRO NORMAL 2" →



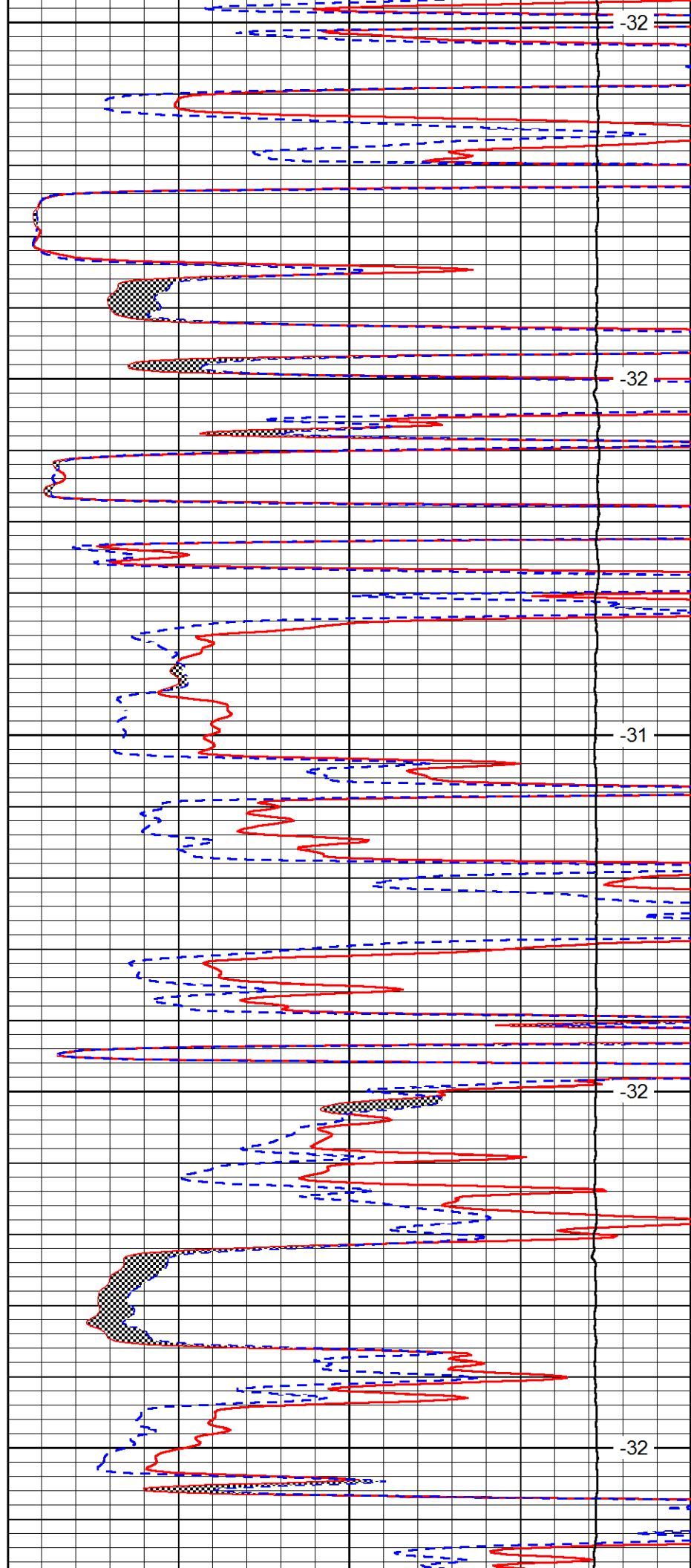
4200

4250

4300

4350

4400



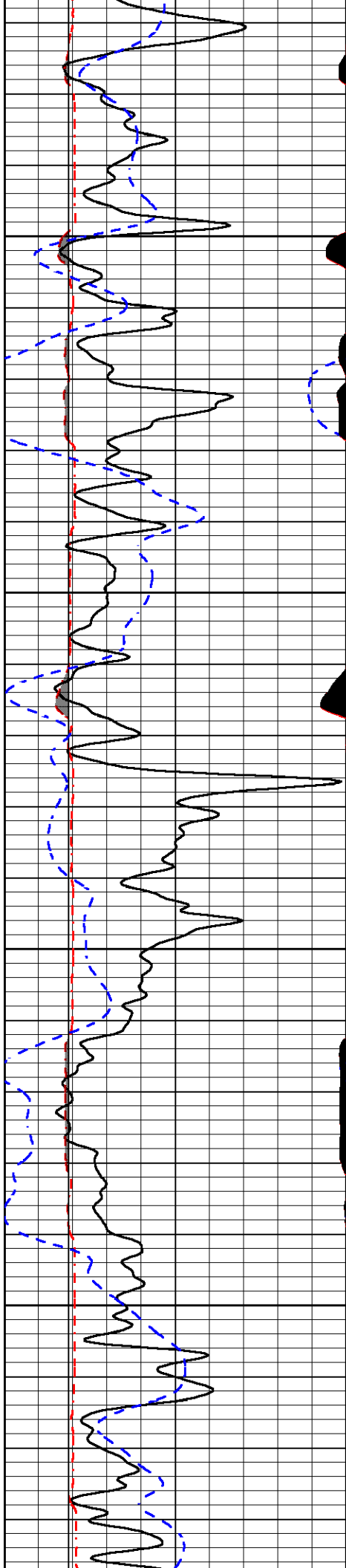
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-32

-31

-32

-32

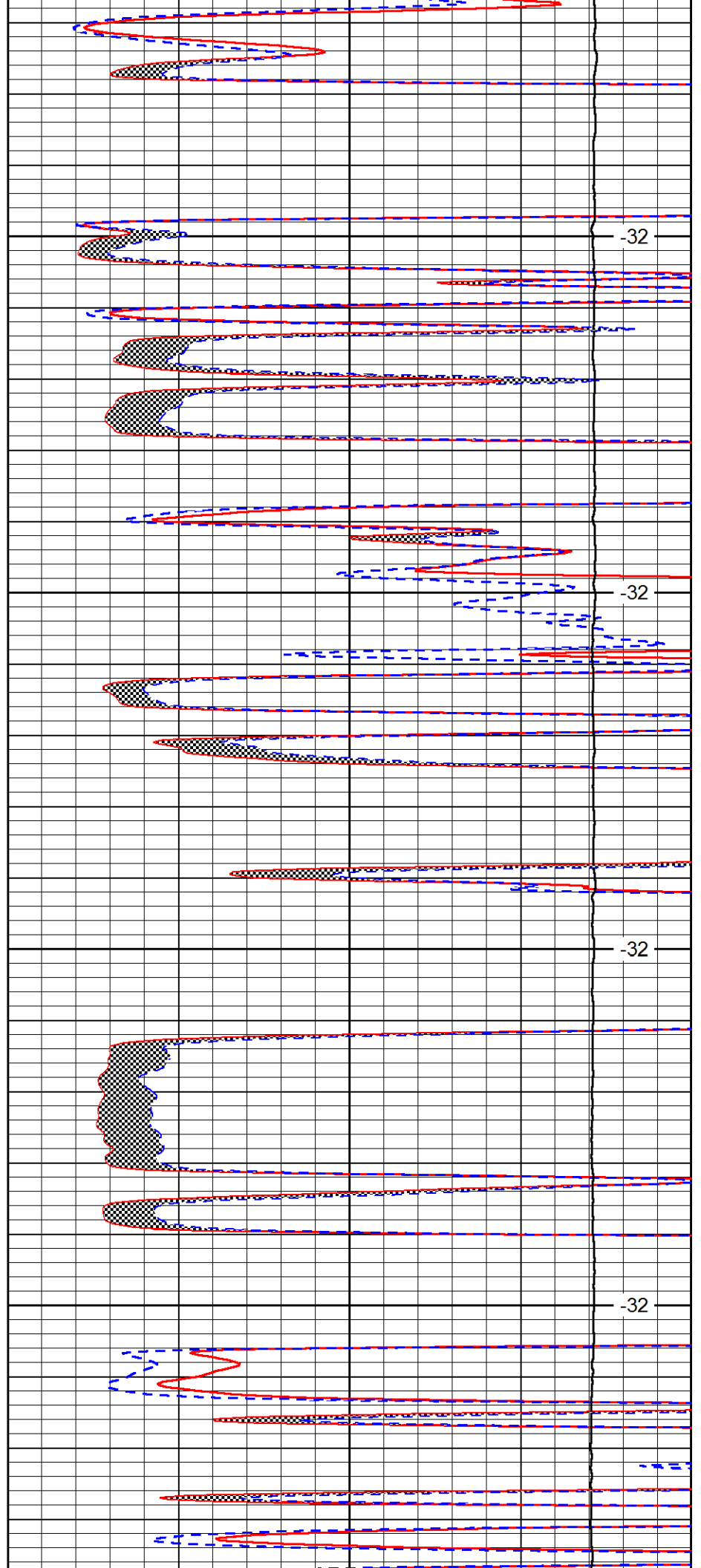


4450

4500

4550

4600

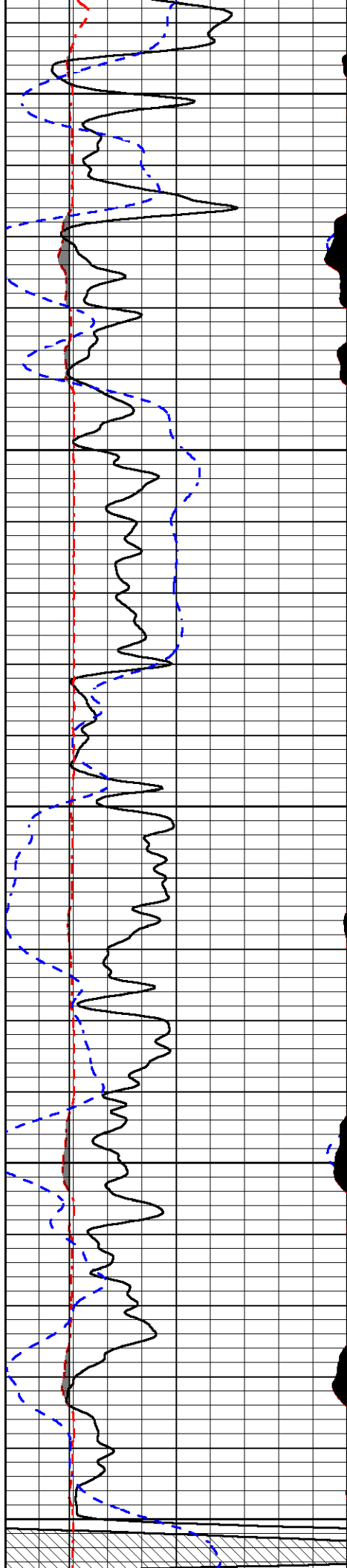


-32

-32

-32

-32



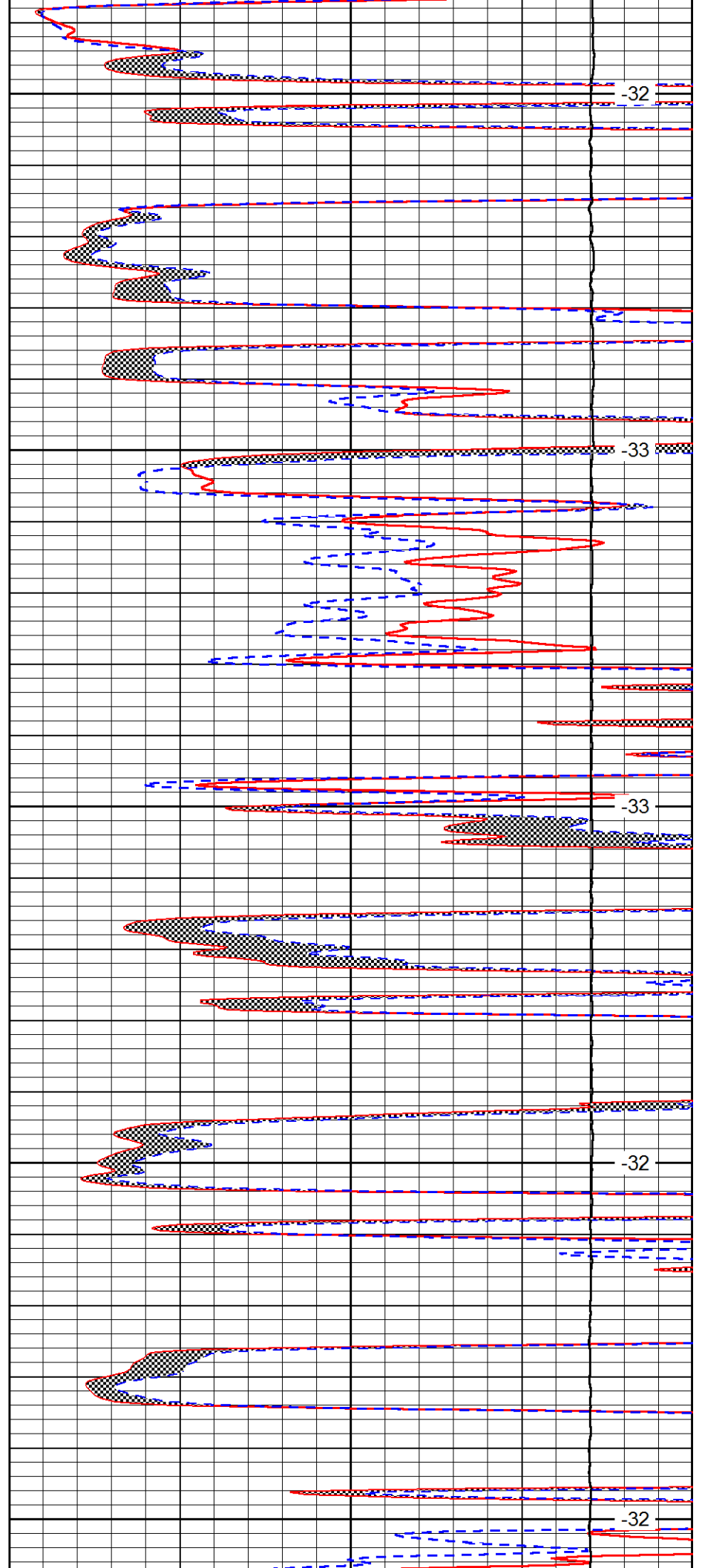
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4700

4750

4800

4850



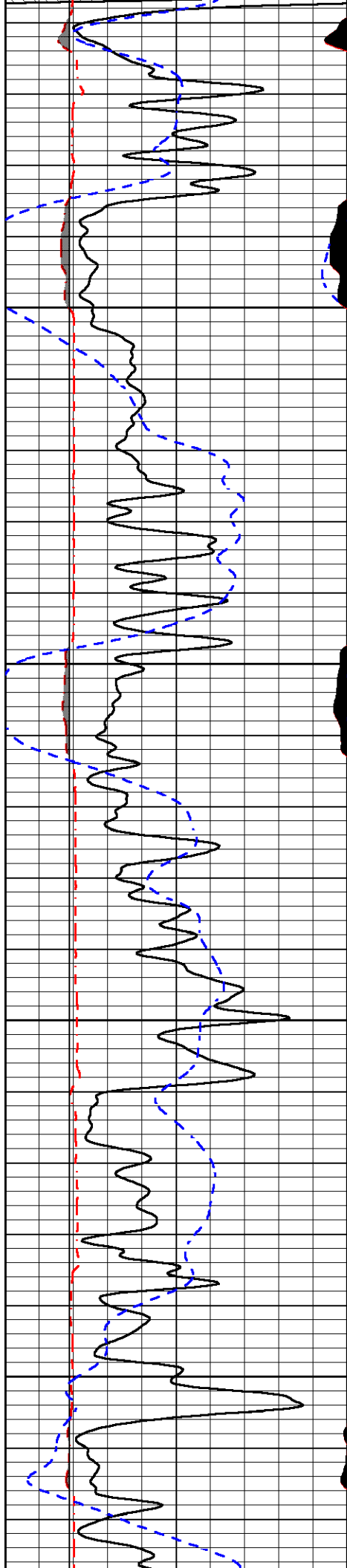
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-33

-33

-32

-32

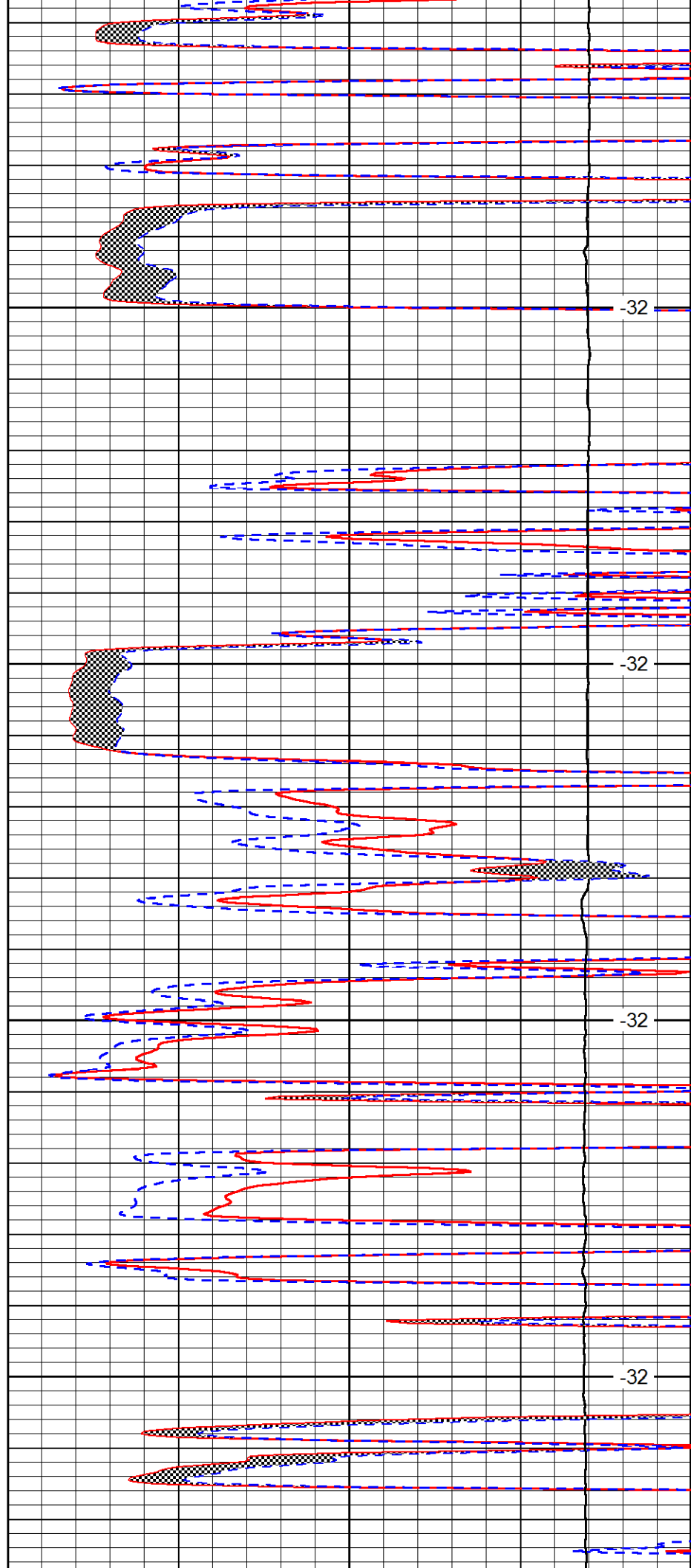


4900

4950

5000

5050

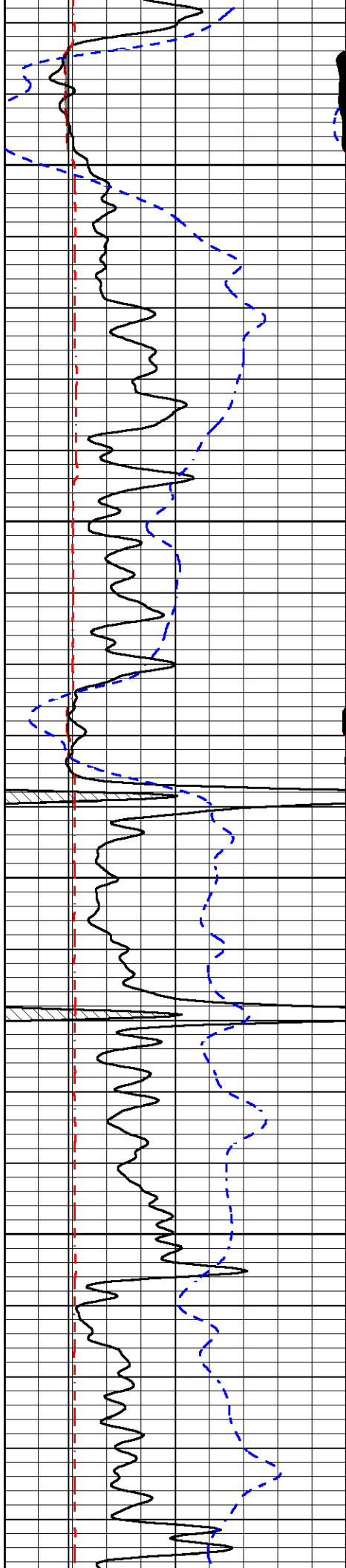


-32

-32

-32

-32

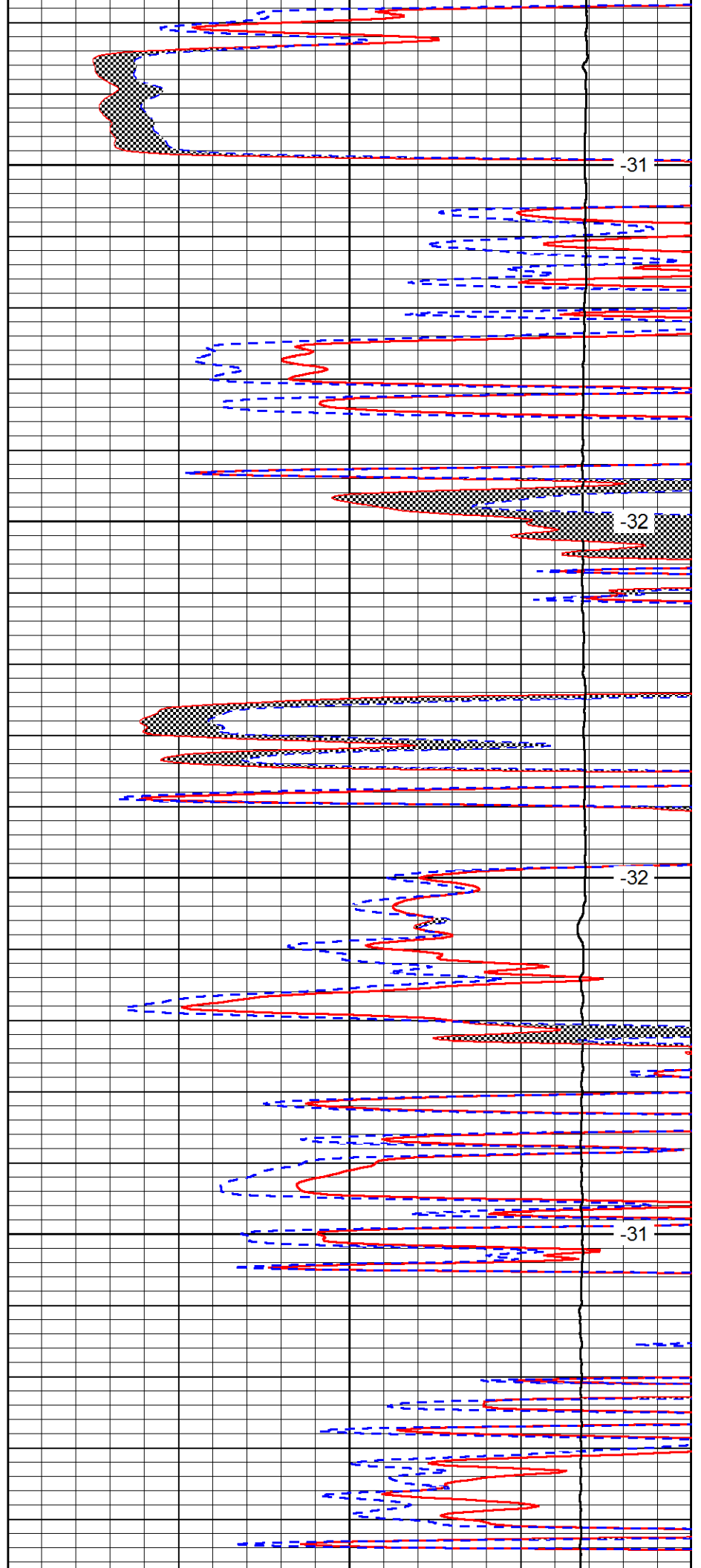


5100

5150

5200

5250

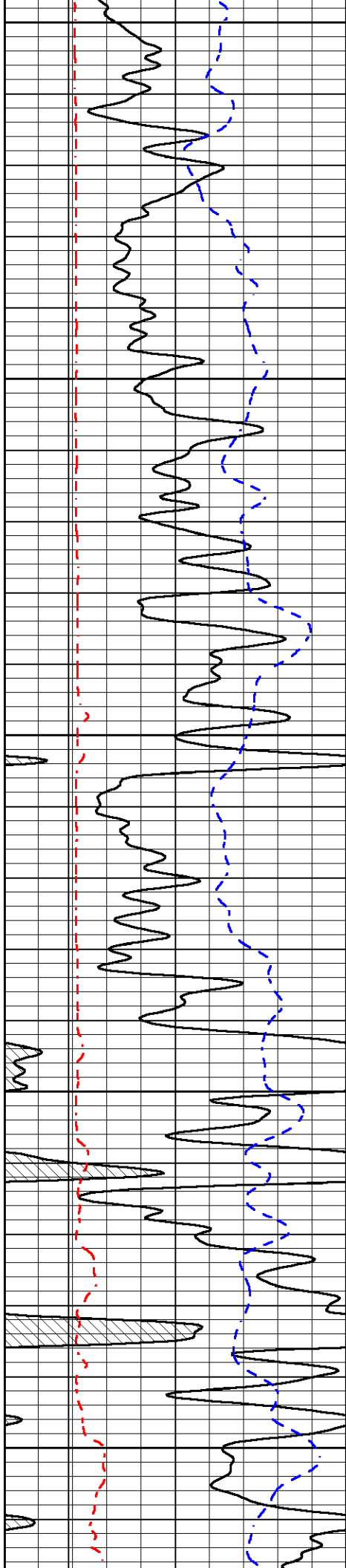


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-32

-32

-31



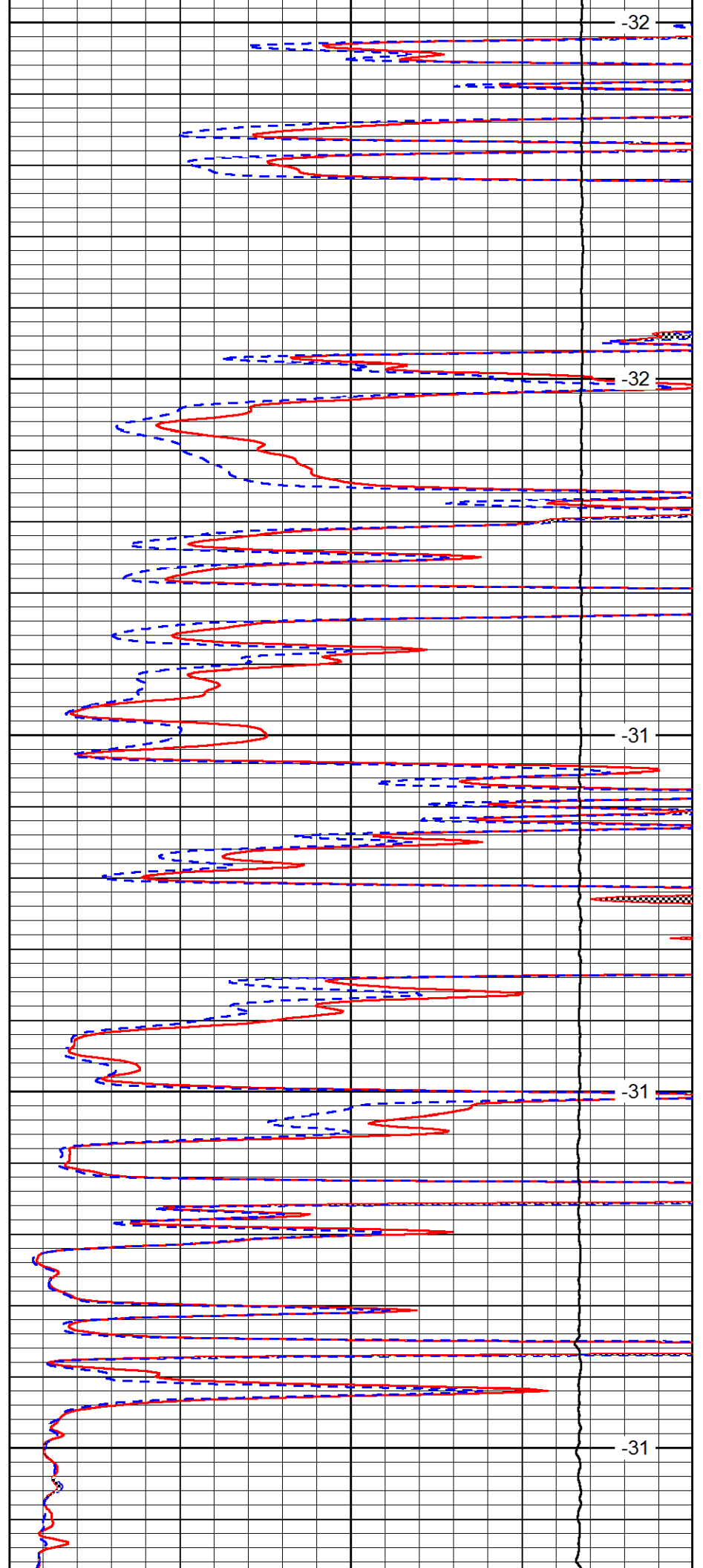
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5350

5400

5450

5500



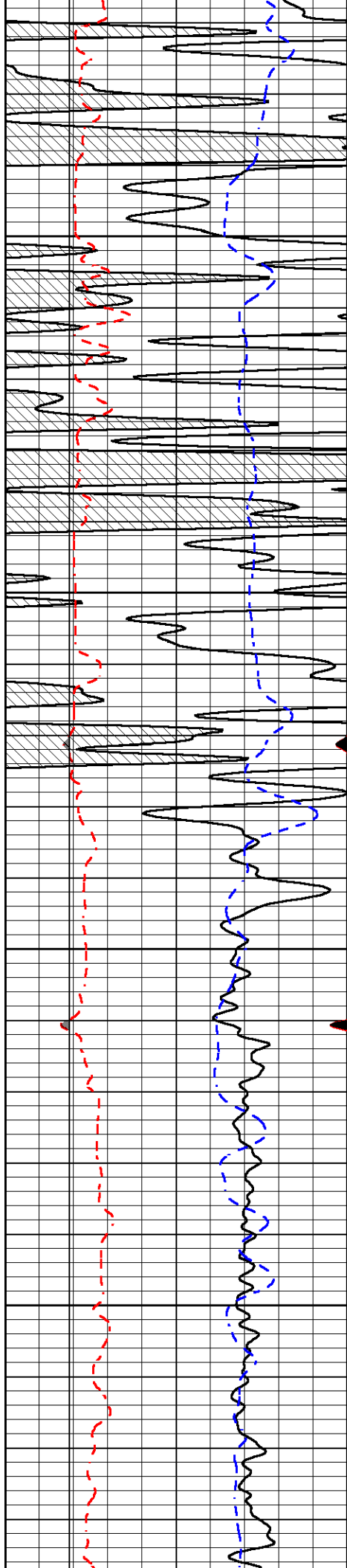
-32

-32

-31

-31

-31

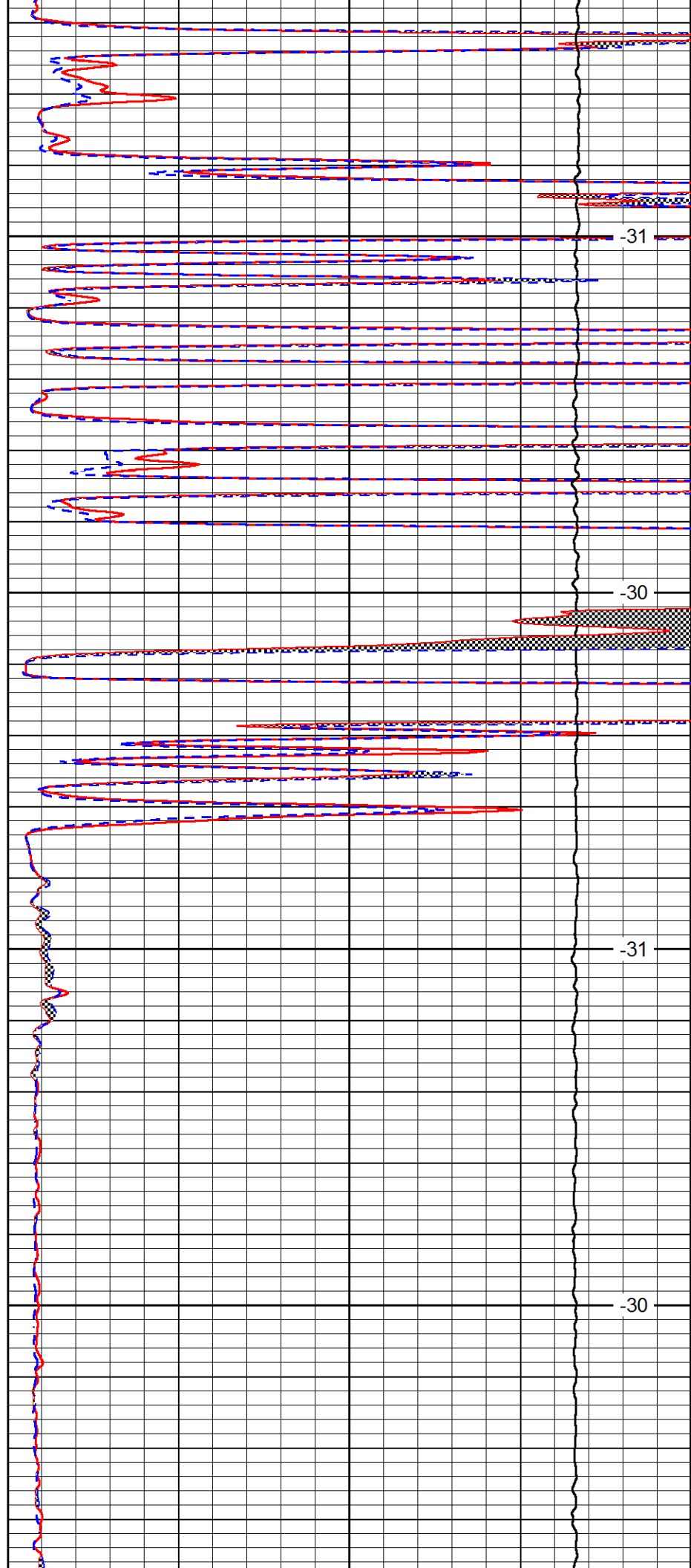


5550

5600

5650

5700

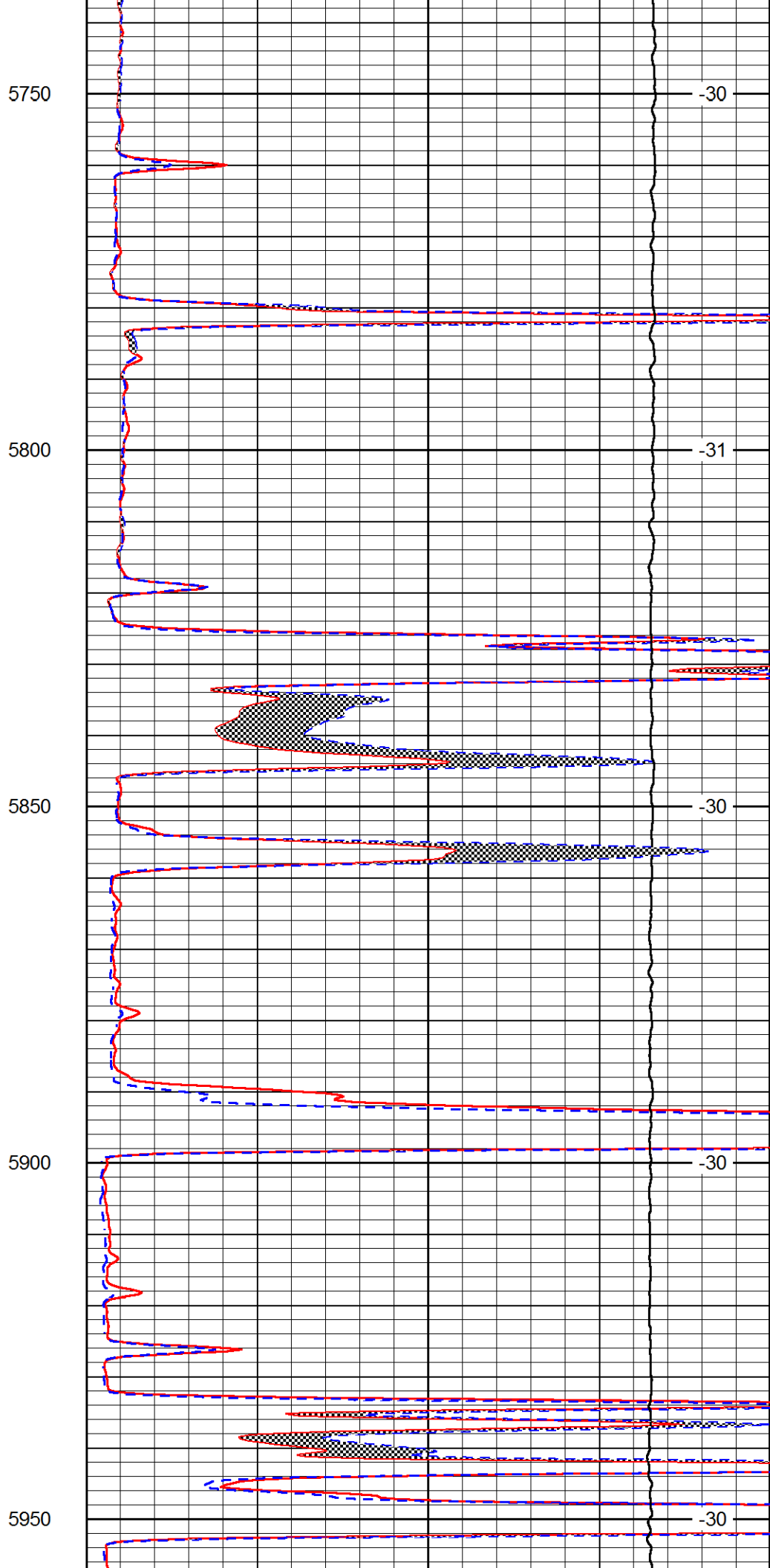
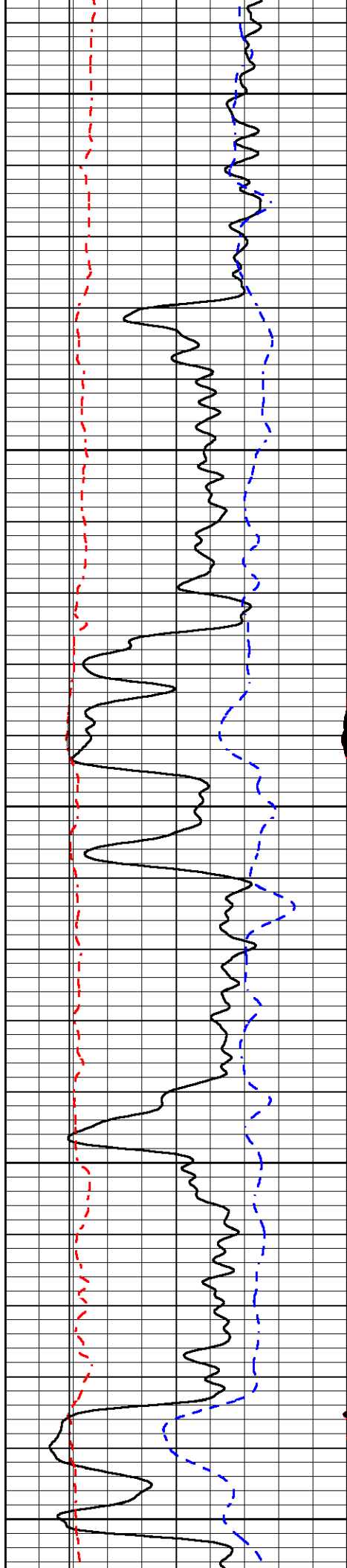


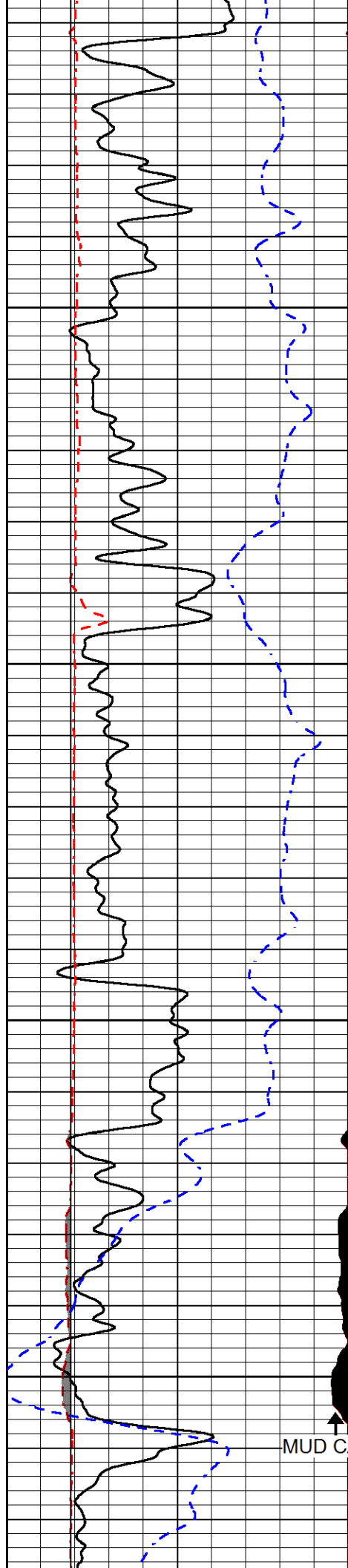
-31

-30

-31

-30





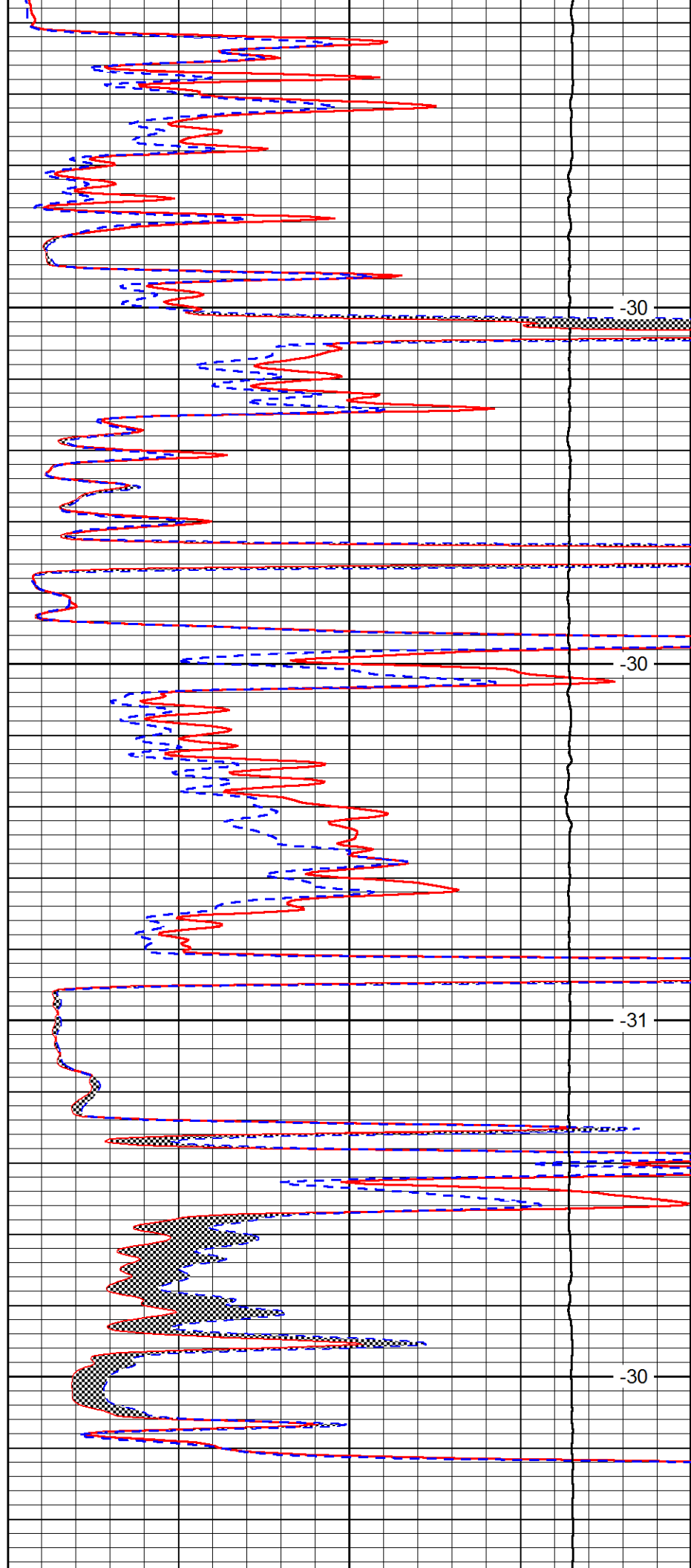
6000

6050

6100

6150

MUD CAKE

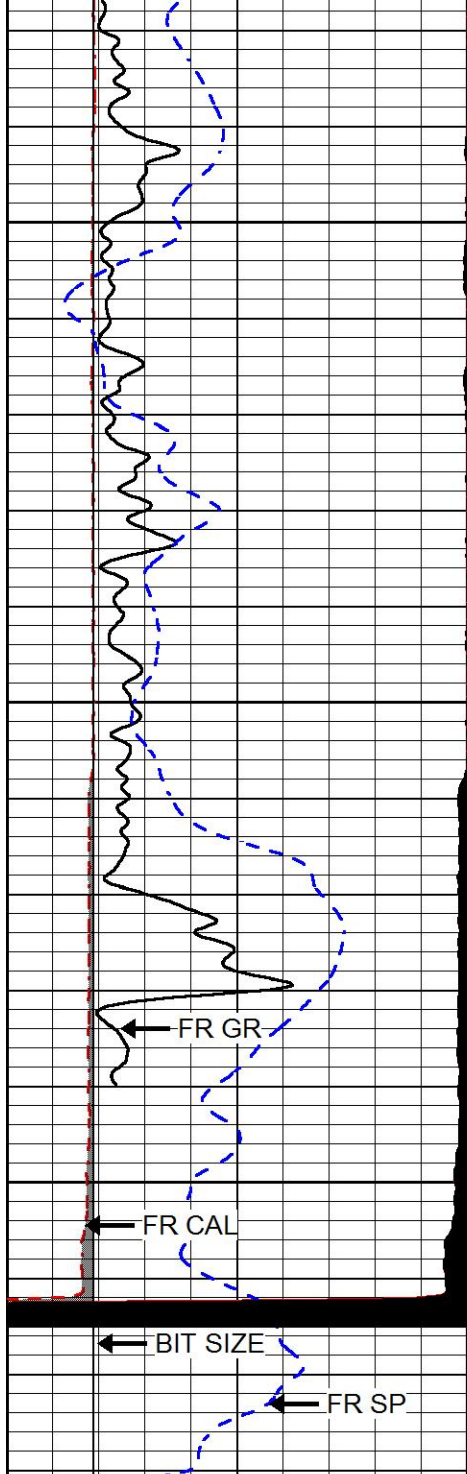


-30

-30

-31

-30



6200

6250

6300

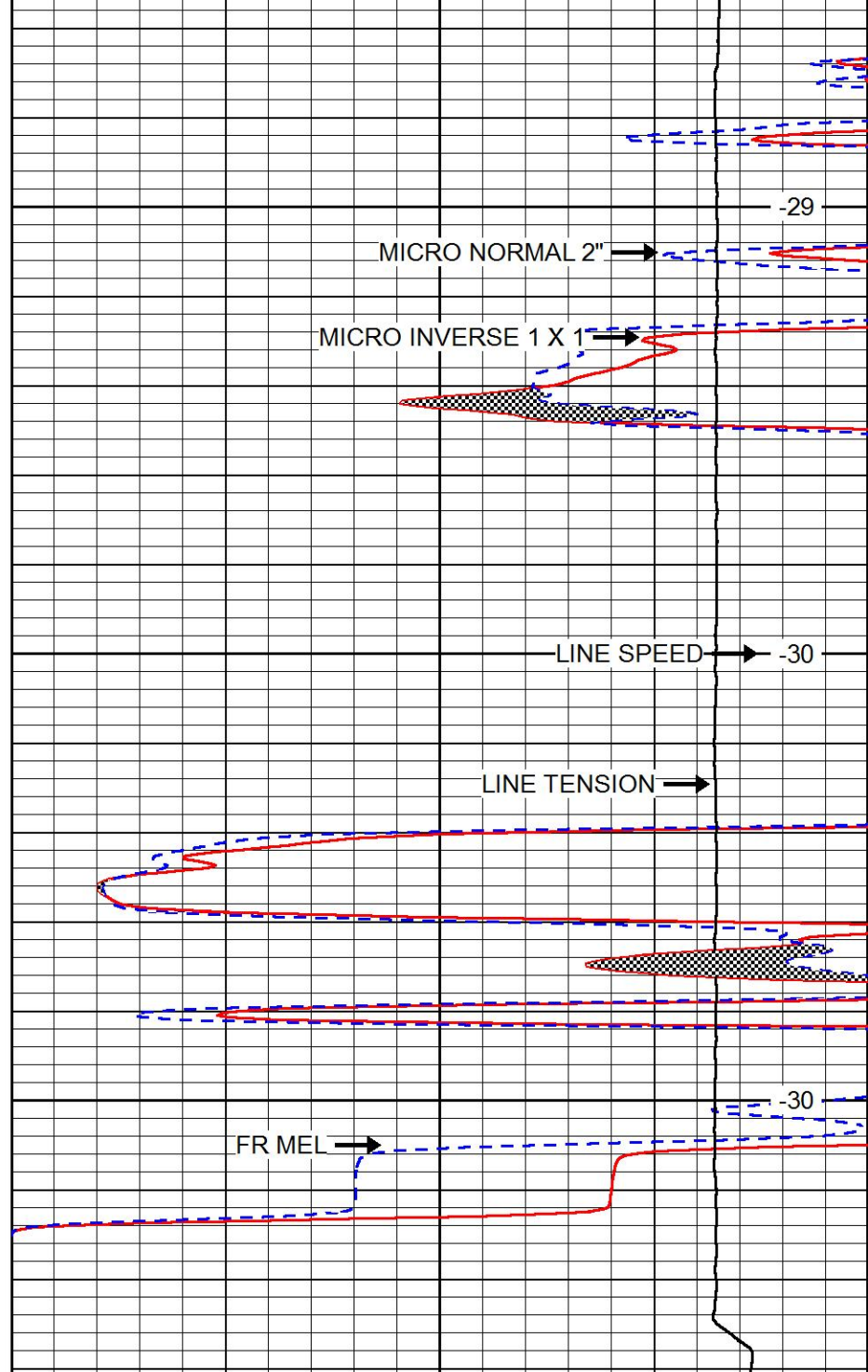
FR GR

FR CAL

BIT SIZE

FR SP

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0



-29

-30

-30

MICRO NORMAL 2"

MICRO INVERSE 1 X 1

LINE SPEED

LINE TENSION

FR MEL

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

LINE SPEED
(ft/min)

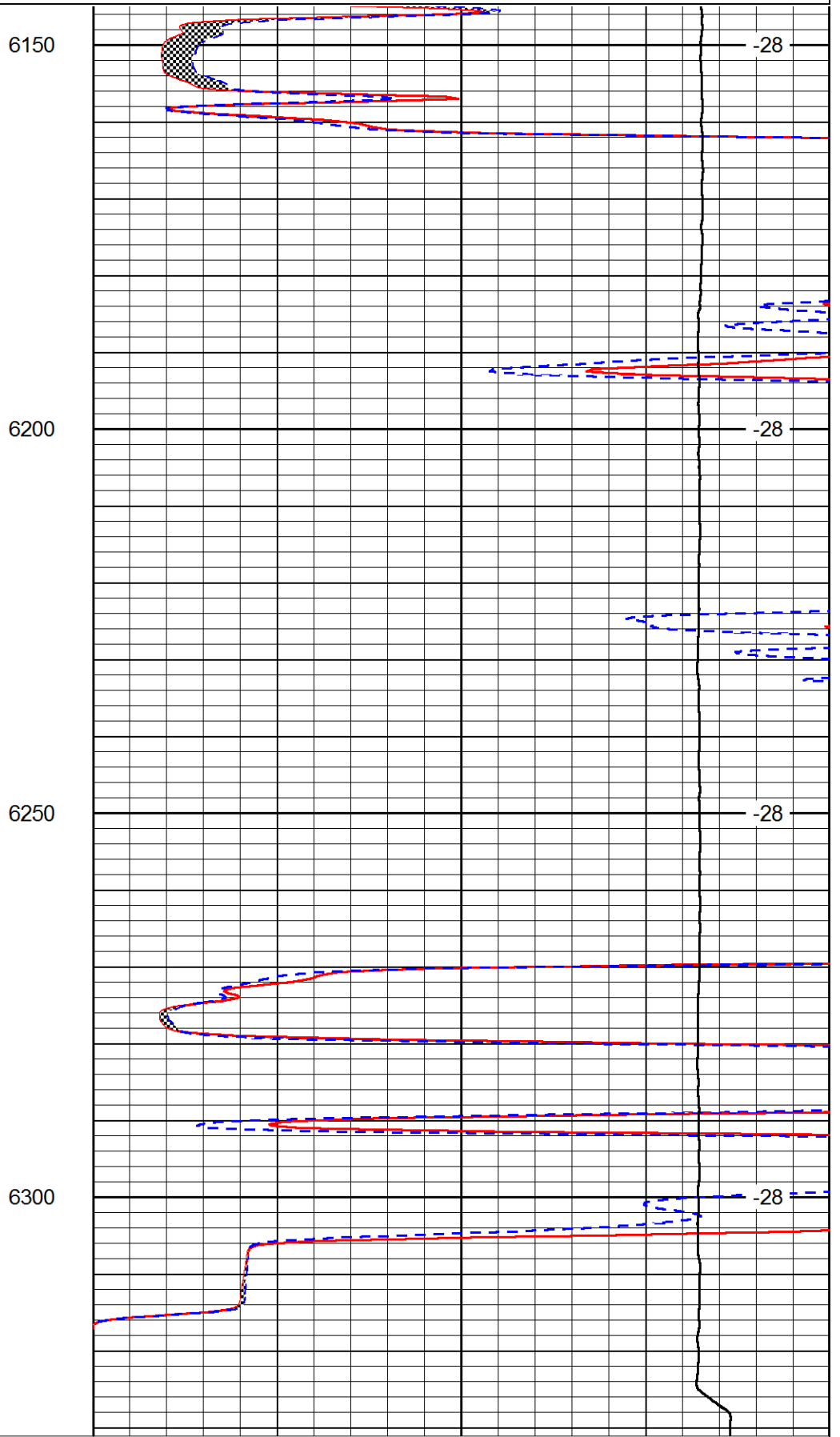
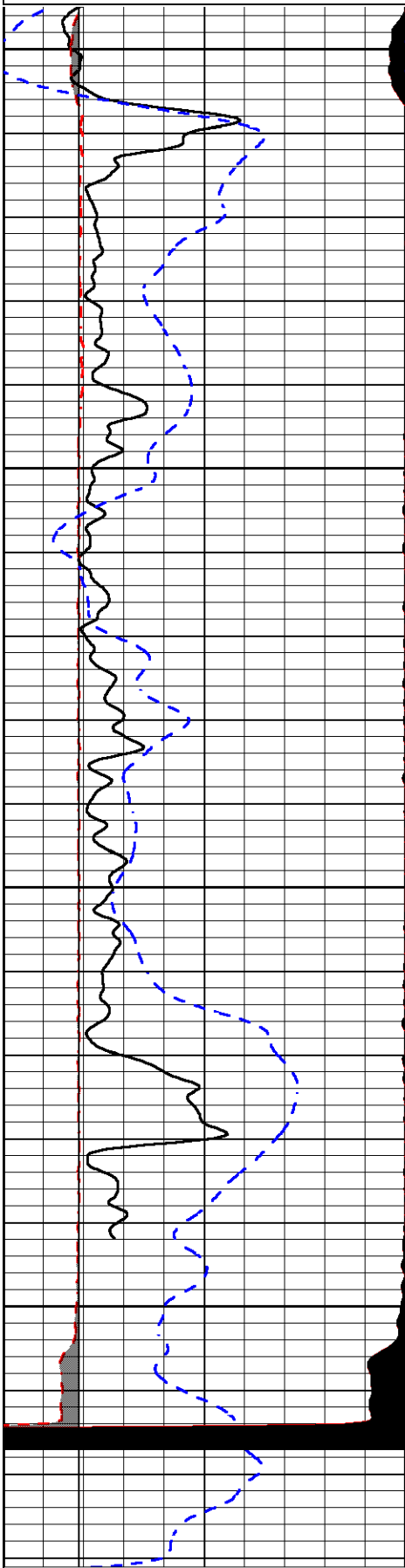


REPEAT SECTION

Database File amwar_dowdyowes_#4-36.db
 Dataset Pathname stkml/pass2.1
 Presentation Format micro
 Dataset Creation Sun May 22 06:21:34 2016

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0
		LINE SPEED (ft/min)



0 GAMMA RAY (GAPI) 150

0 MICRO INVERSE 1 X 1 (Ohm-m) 40

6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0
	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	
		g/cc			cps
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



PIONEER
Pioneer Energy Services

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