



DUAL INDUCTION LOG

Company: CFA OIL COMPANY
 Well: RUDOLPH NO.1
 Field: WILDCAT
 County: RILEY
 State: KANSAS

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 Well: RUDOLPH NO.1
 Field: WILDCAT
 County: RILEY
 State: KANSAS

Location: API #: 15-161-20082-00-00
 330' FNL & 989' FEL
 E2-NW-NE-NE
 SEC 14 TWP 11S RGE 8E
 Permanent Datum: GROUND LEVEL Elevation 1169'
 Log Measured From: KELLY BUSHING
 Drilling Measured From: KELLY BUSHING
 Other Services: CNL/CDL
 Elevation: K.B. 1178', D.F. N/A, G.L. 1169'

Date	12/30/2018
Run Number	ONE
Depth Driller	2173'
Depth Logger	2165'
Bottom Logged Interval	2164'
Top Log Interval	300'
Casing Driller	8.625" @ 350'
Casing Logger	348'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	800
Density / Viscosity	9.7 39
pH / Fluid Loss	10 8.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	1.10 @ 50
Rmt @ Meas. Temp	0.83 @ 50
Rmc @ Meas. Temp	1.49 @ 50
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.56 @ 98
Operating Rig Time	3HR
Max Rec. Temp. F	98 DEG/F
Equipment Number	108
Location	HAYS
Recorded By	M. HISS
Witnessed By	KEVIN BAILEY
	DON CLARK

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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.
 I-70 EXIT 316 (DEEP CREEK RD)
 2.5 NORTH 1/2 EAST INTO

Log Measured From: KELLY BUSHING 9' 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: M. HISS	Operator:	Primary Witness: KEVIN BAILEY	Secondary Witness: DON CLARK
Operator:	Operator:	Secondary Witness:	Secondary Witness:

Core	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
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Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (934-5002)	8.50	4.00	250.00
RLL3 RLL3F	15.80 15.79		DIL-M&W (PSI 988)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					

Dataset: cfa_rudolph_1_2nd.db: field/well/STACK/pass1.5
 Total length: 35.50 ft
 Total weight: 620.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\cfa_rudolph_1_2nd.db
 Dataset field/well/STACK/pass1.5/_vars_

Top - Bottom

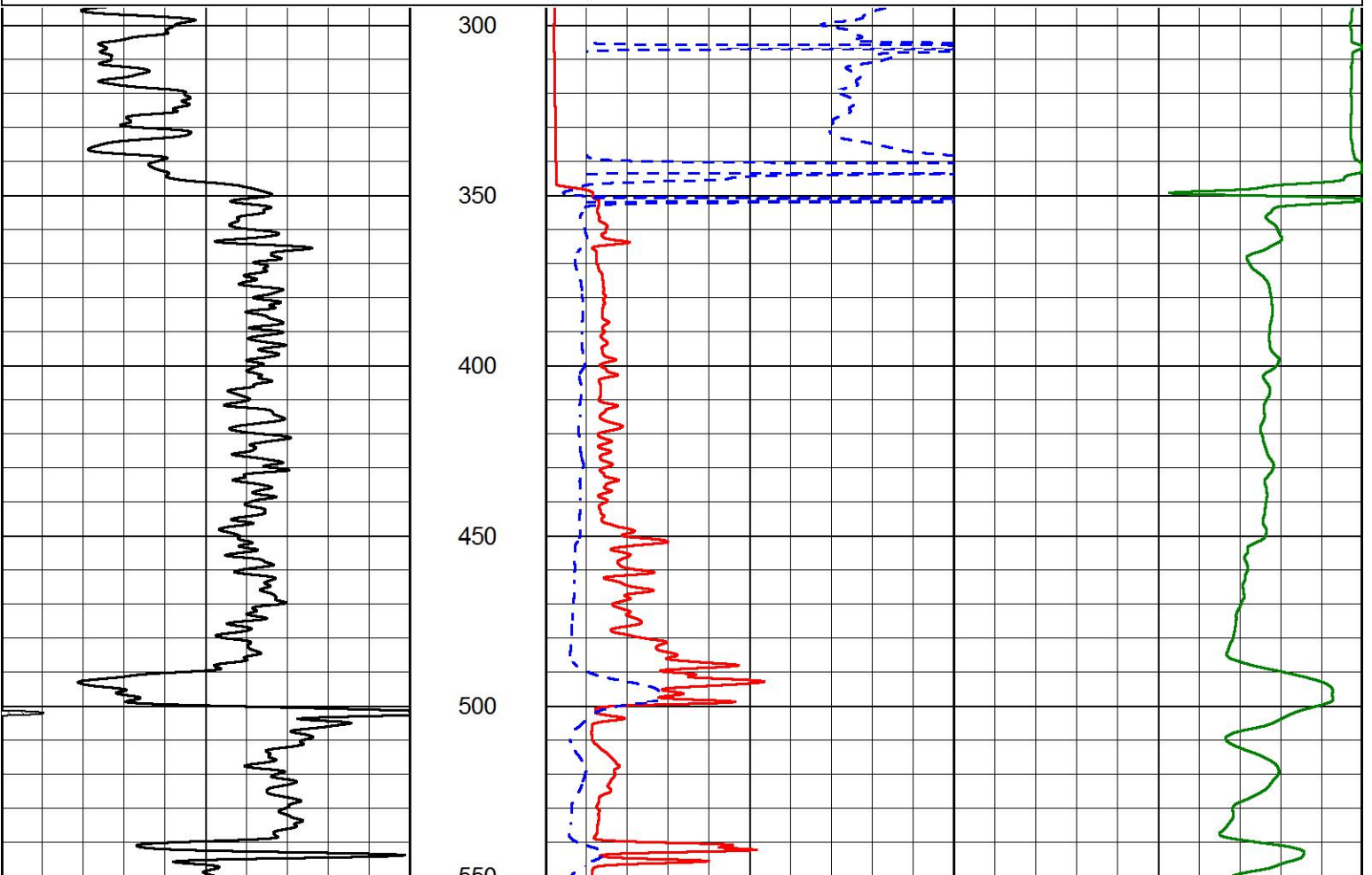
A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	98	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	262	40	Off	2165

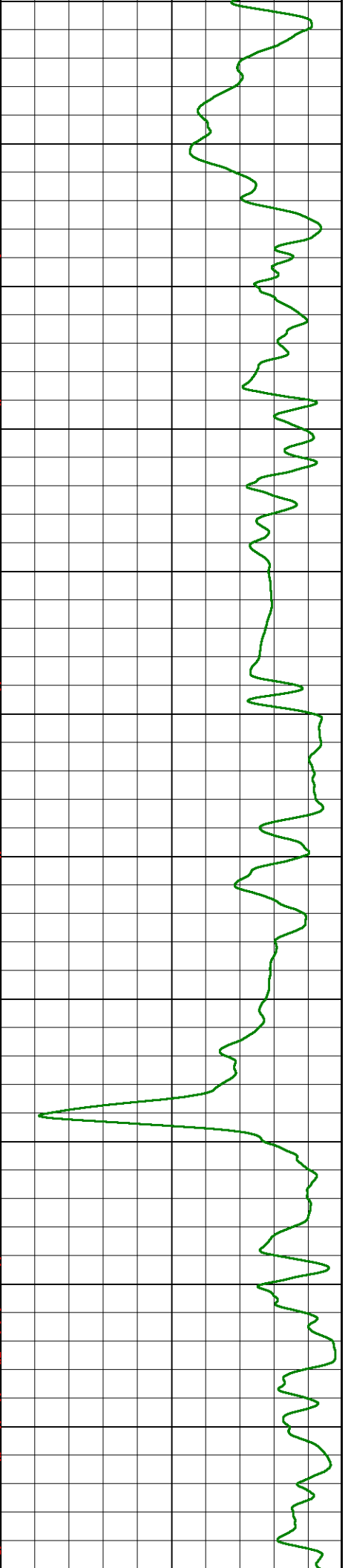
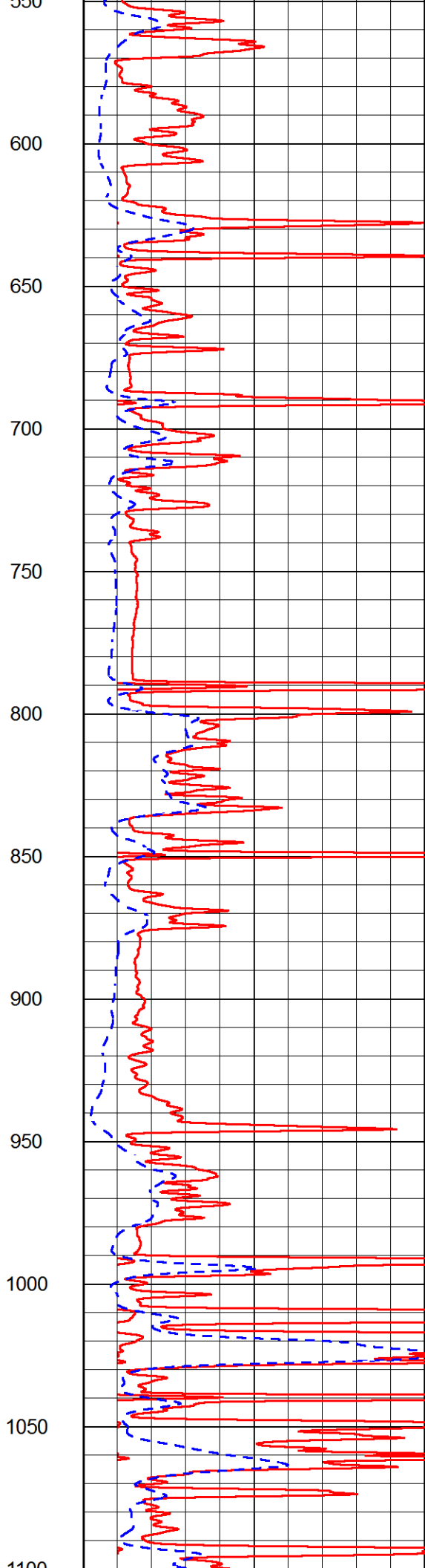
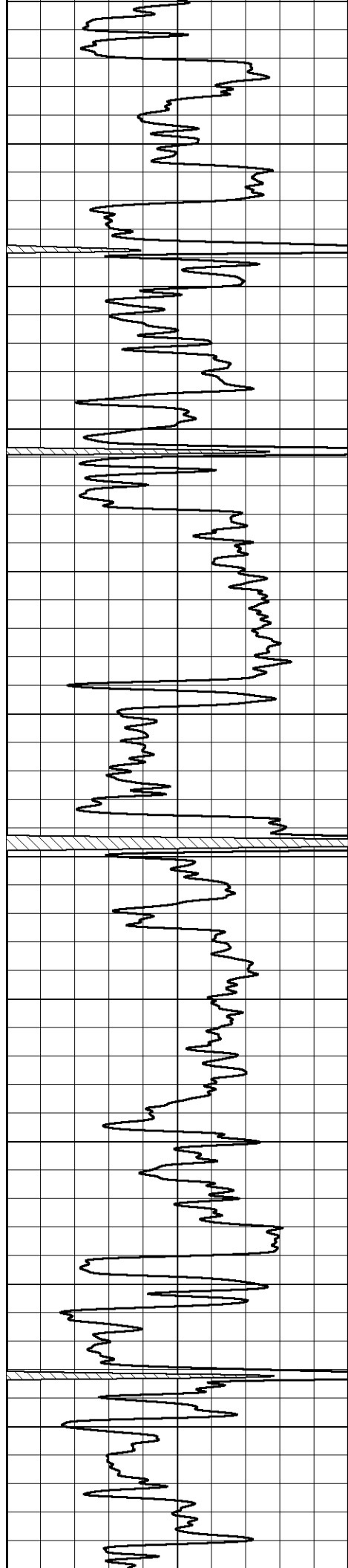


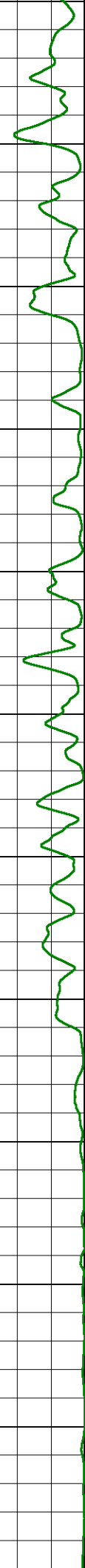
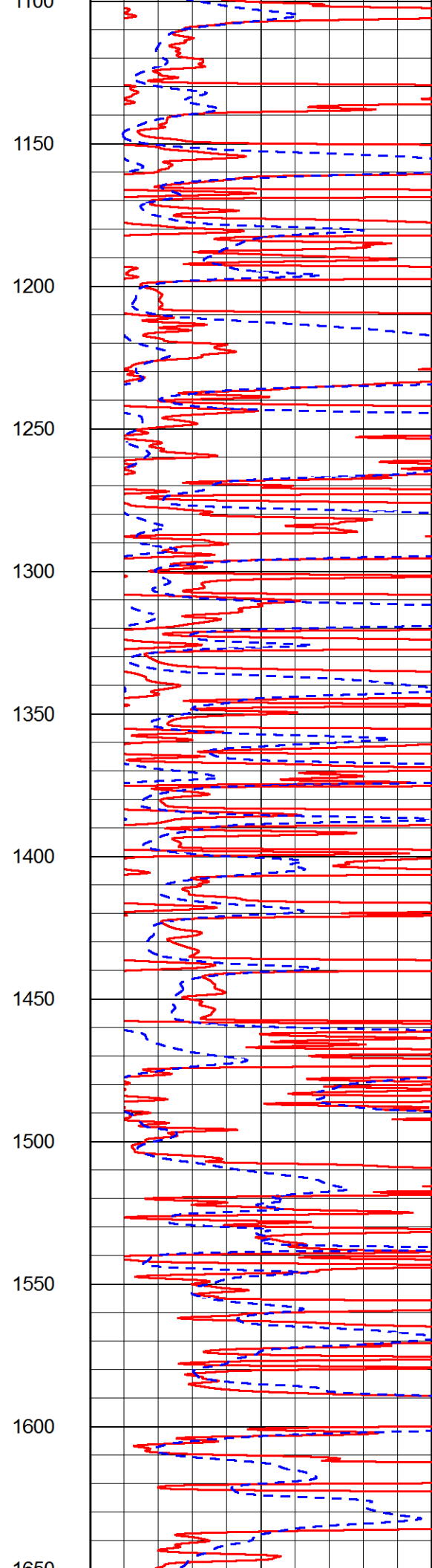
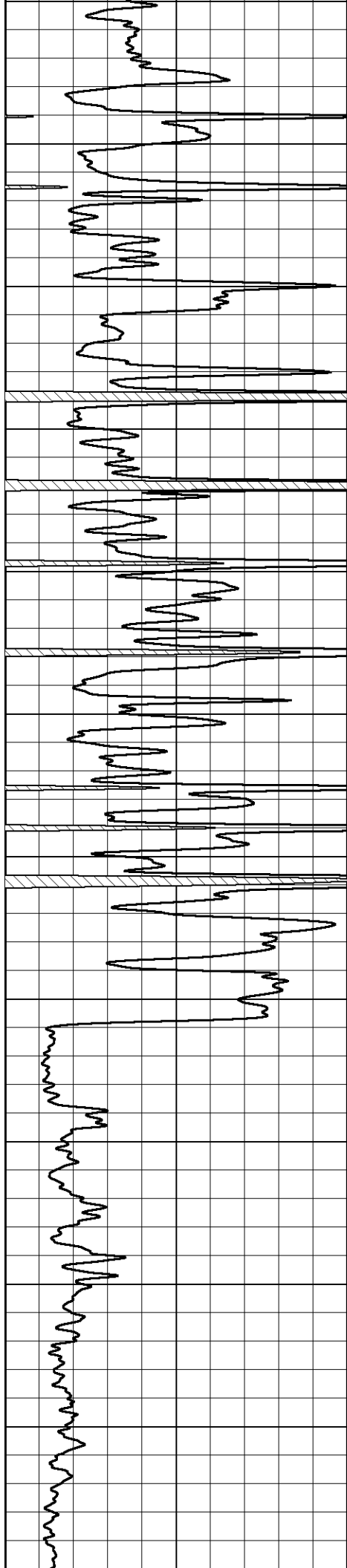
MAIN PASS

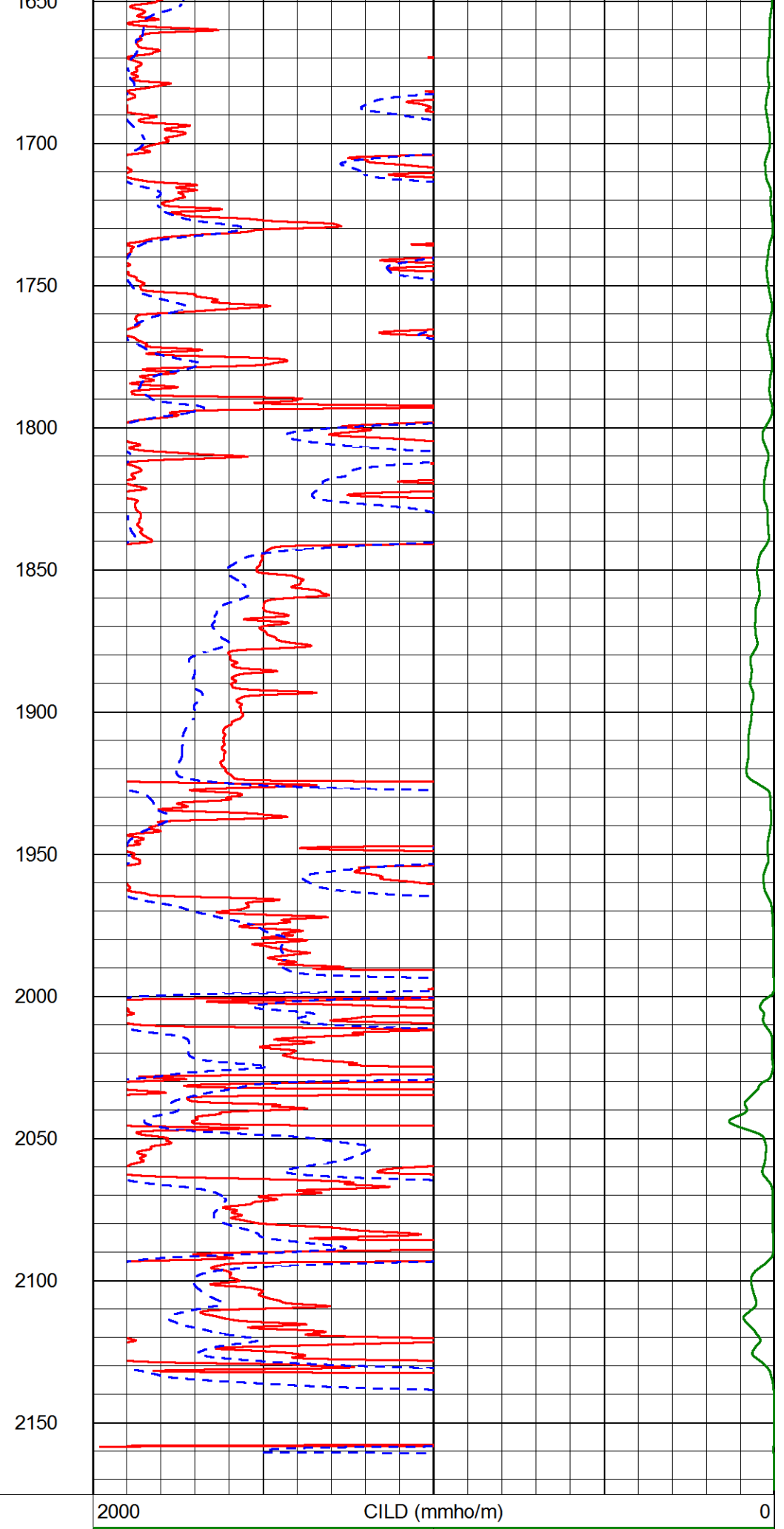
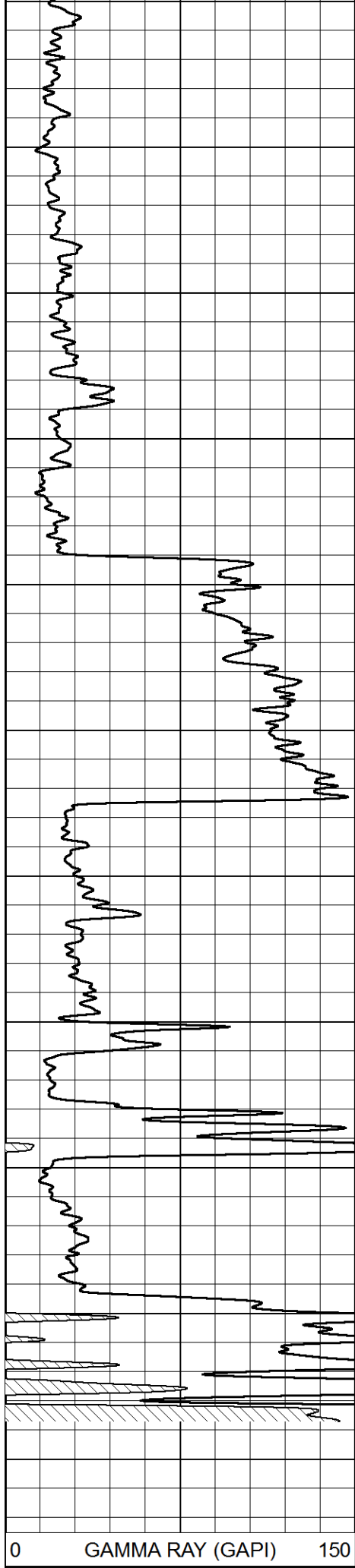
Database File cfa_rudolph_1_2nd.db
 Dataset Pathname STACK/pass1.1
 Presentation Format dil2in
 Dataset Creation Sun Dec 30 21:03:44 2018
 Charted by Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	150	2000	CILD (mmho/m)	0
			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
			50	RILD (Ohm-m)	500









0 GAMMA RAY (GAPI) 150

2000 CILD (mmho/m) 0

0 RLL3 (Ohm-m) 50

0	DEEP RESISTIVITY (Ohm-m)	50
50	RLL3 (Ohm-m)	500
50	RILD (Ohm-m)	500

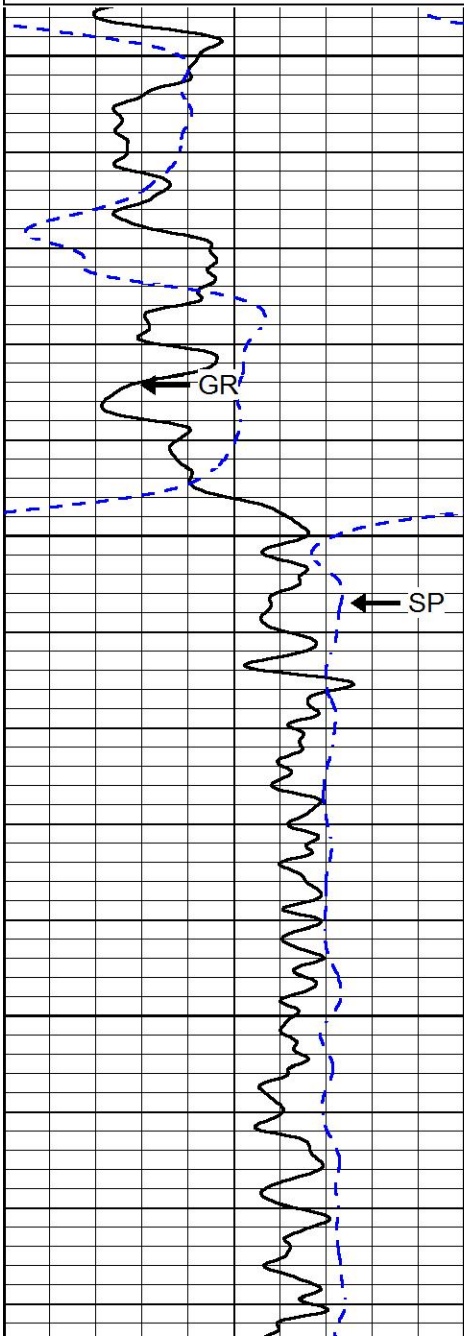


MAIN PASS

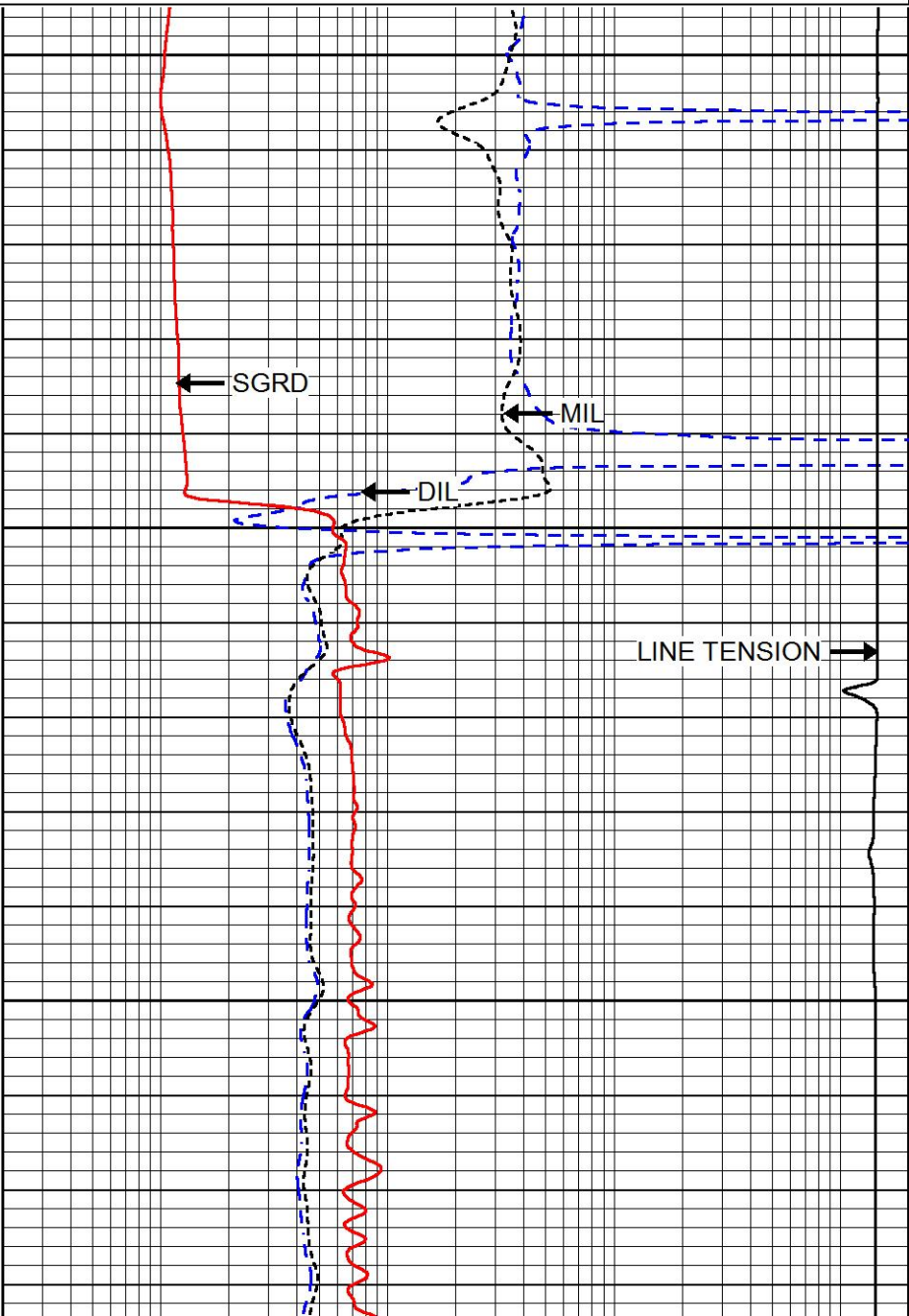
Database File: cfa_rudolph_1_2nd.db
 Dataset Pathname: STACK/pass1.1
 Presentation Format: dil
 Dataset Creation: Sun Dec 30 21:03:44 2018
 Charted by: Depth in Feet scaled 1:240

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

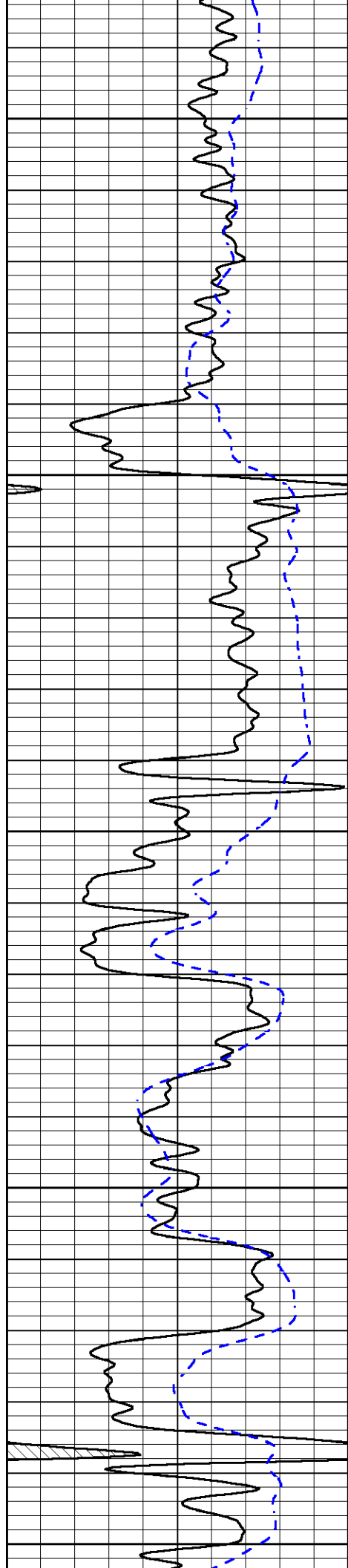
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0



300
350
400



LINE TENSION →



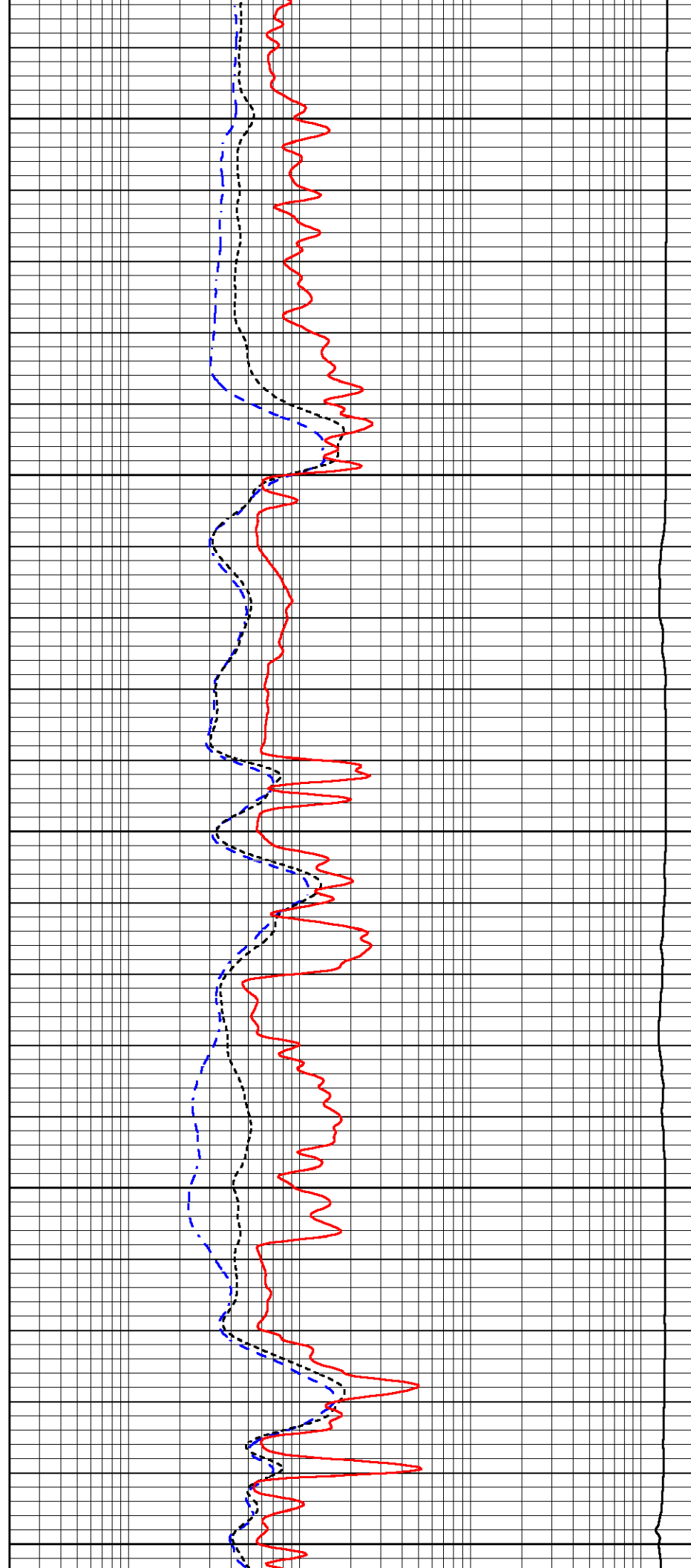
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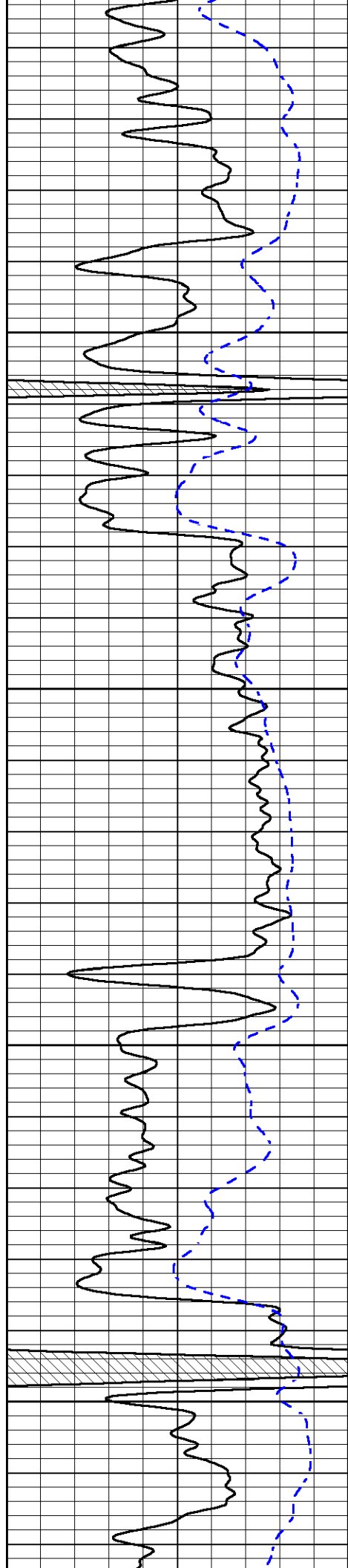
500

550

600

650



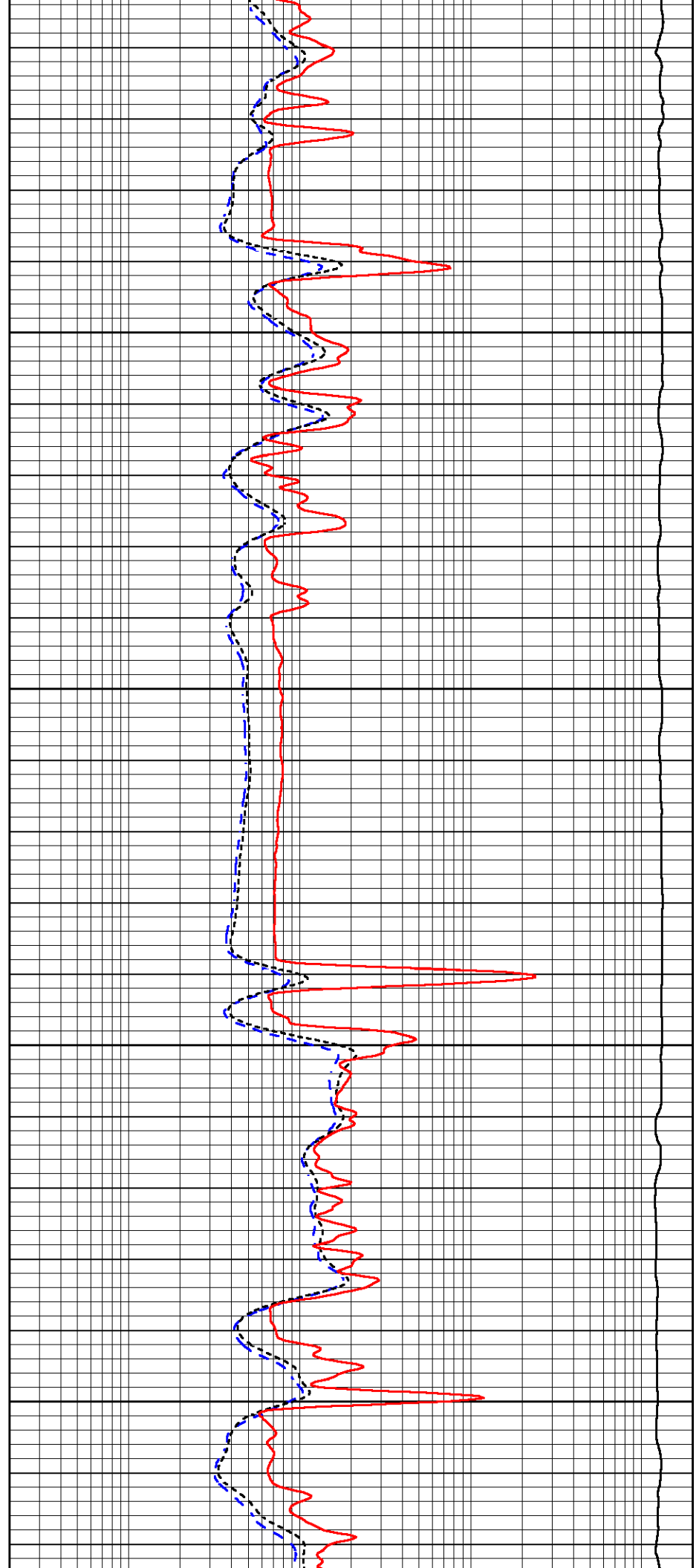


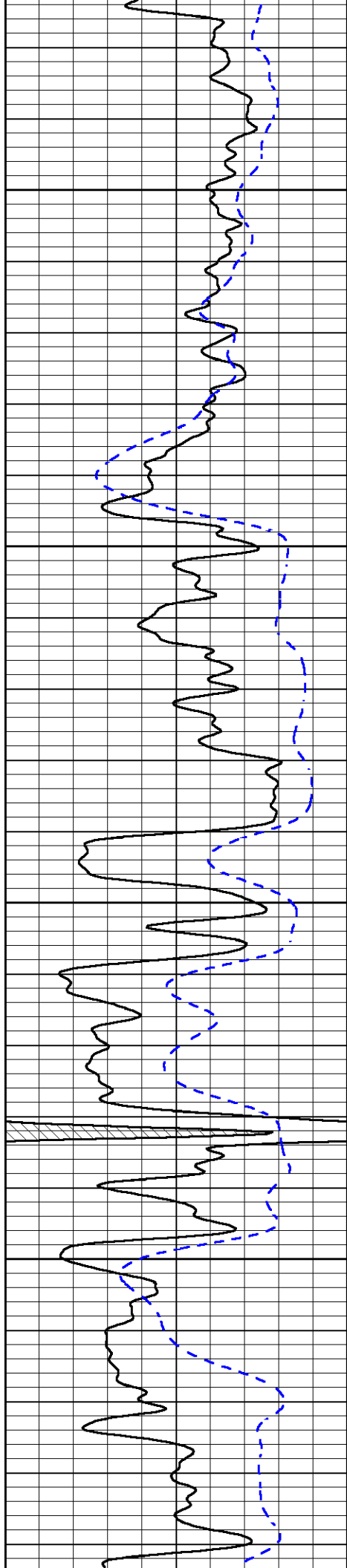
700

750

800

850



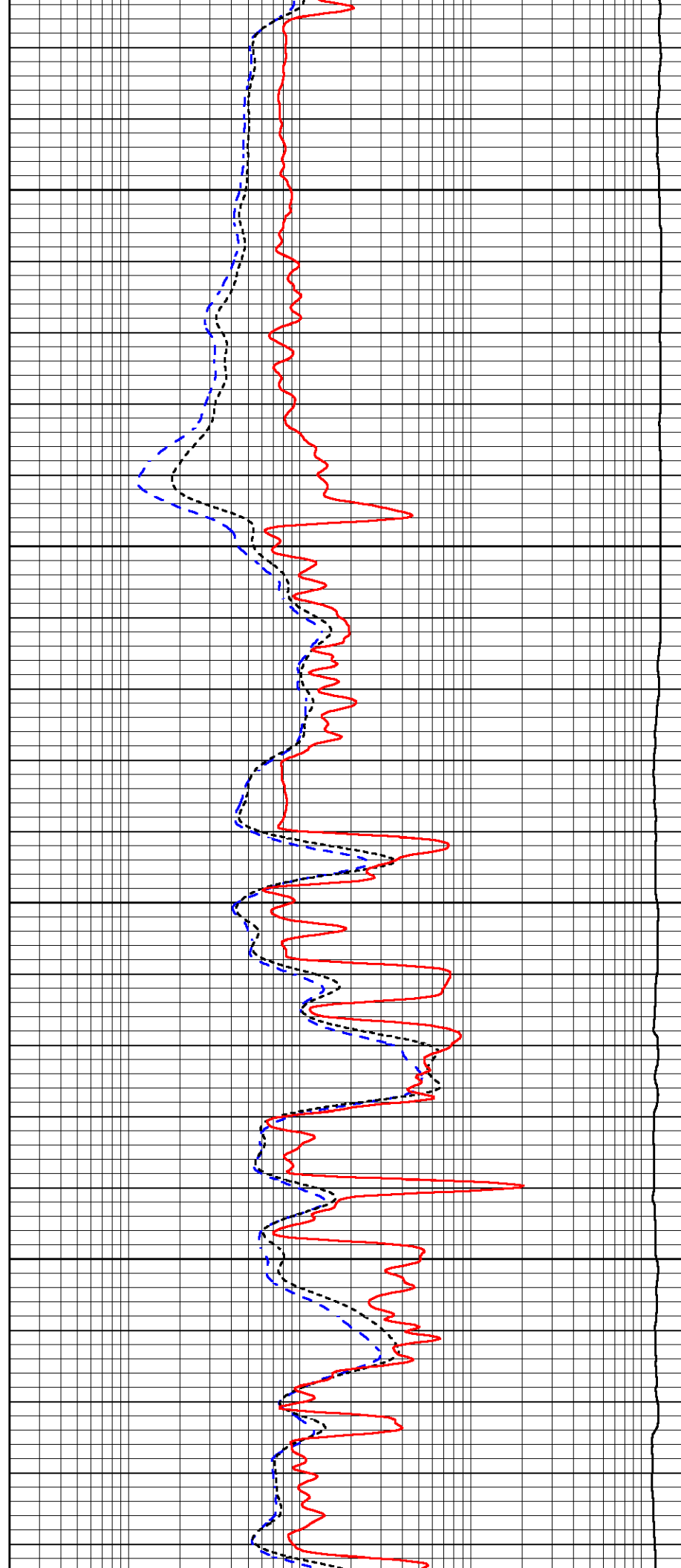


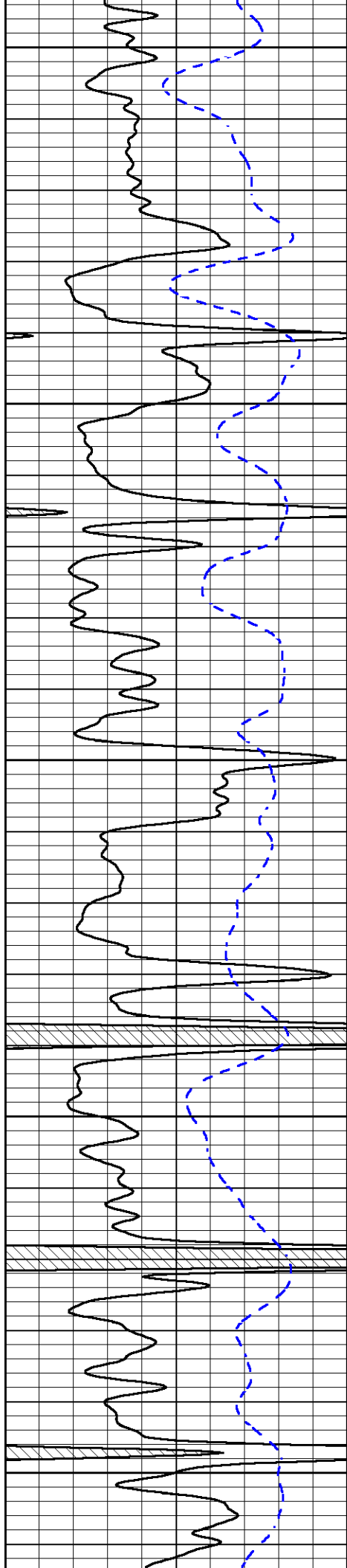
900

950

1000

1050





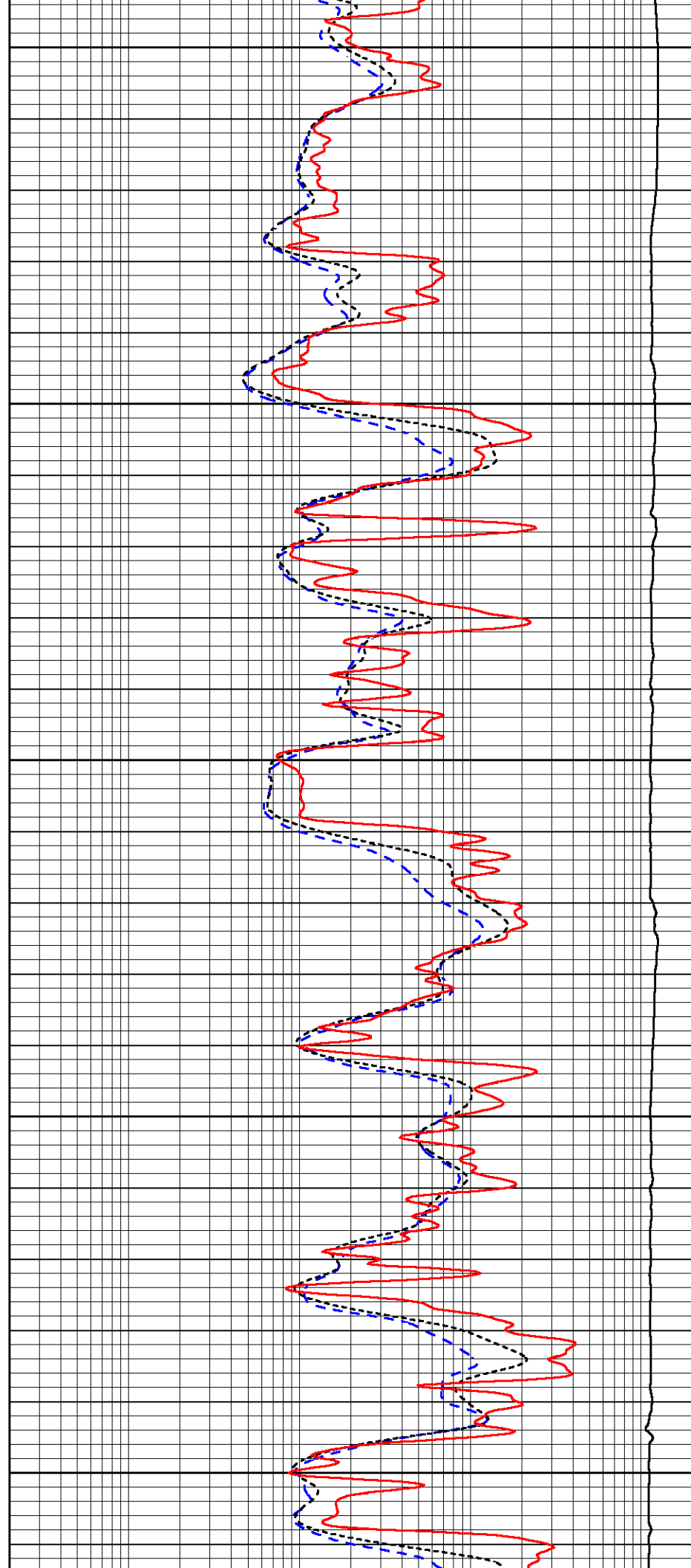
1100

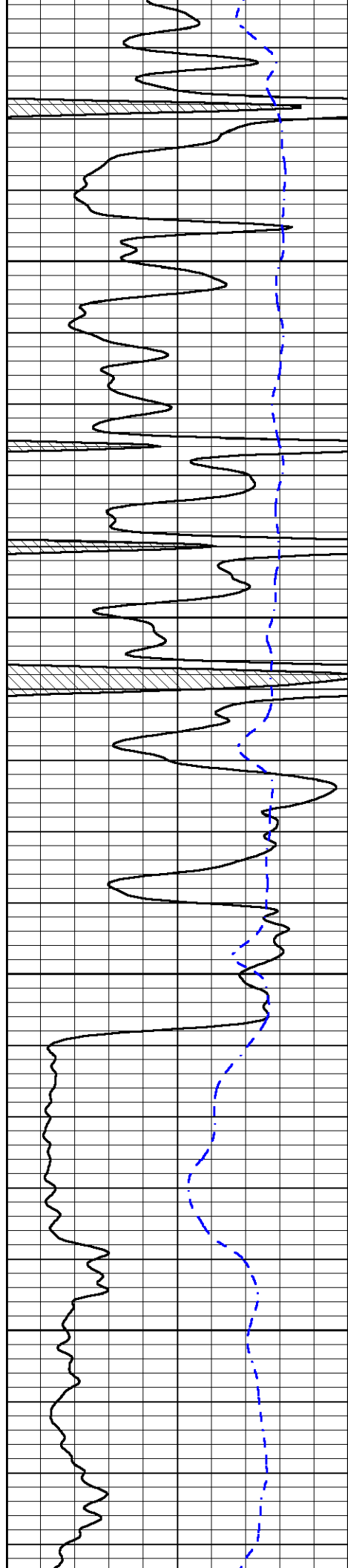
1150

1200

1250

1300



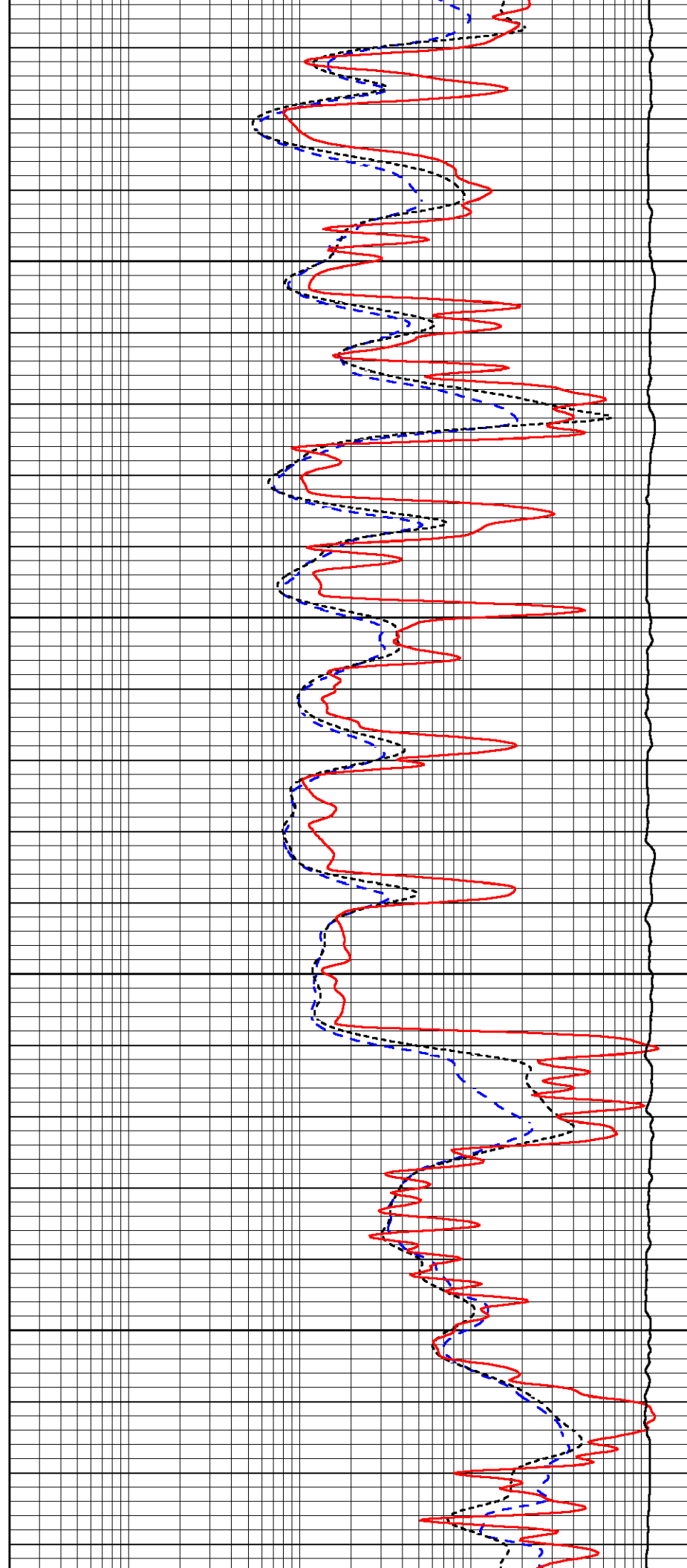


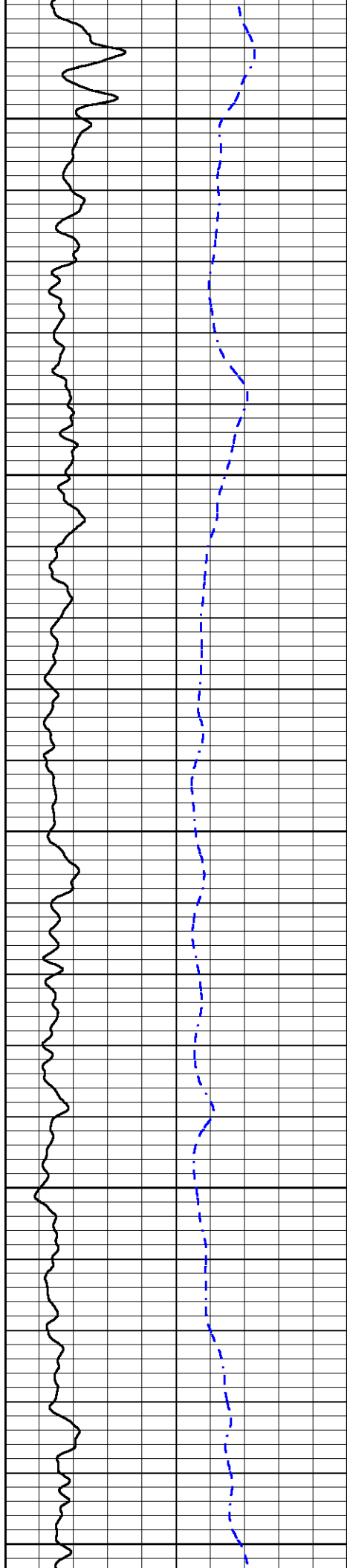
1350

1400

1450

1500





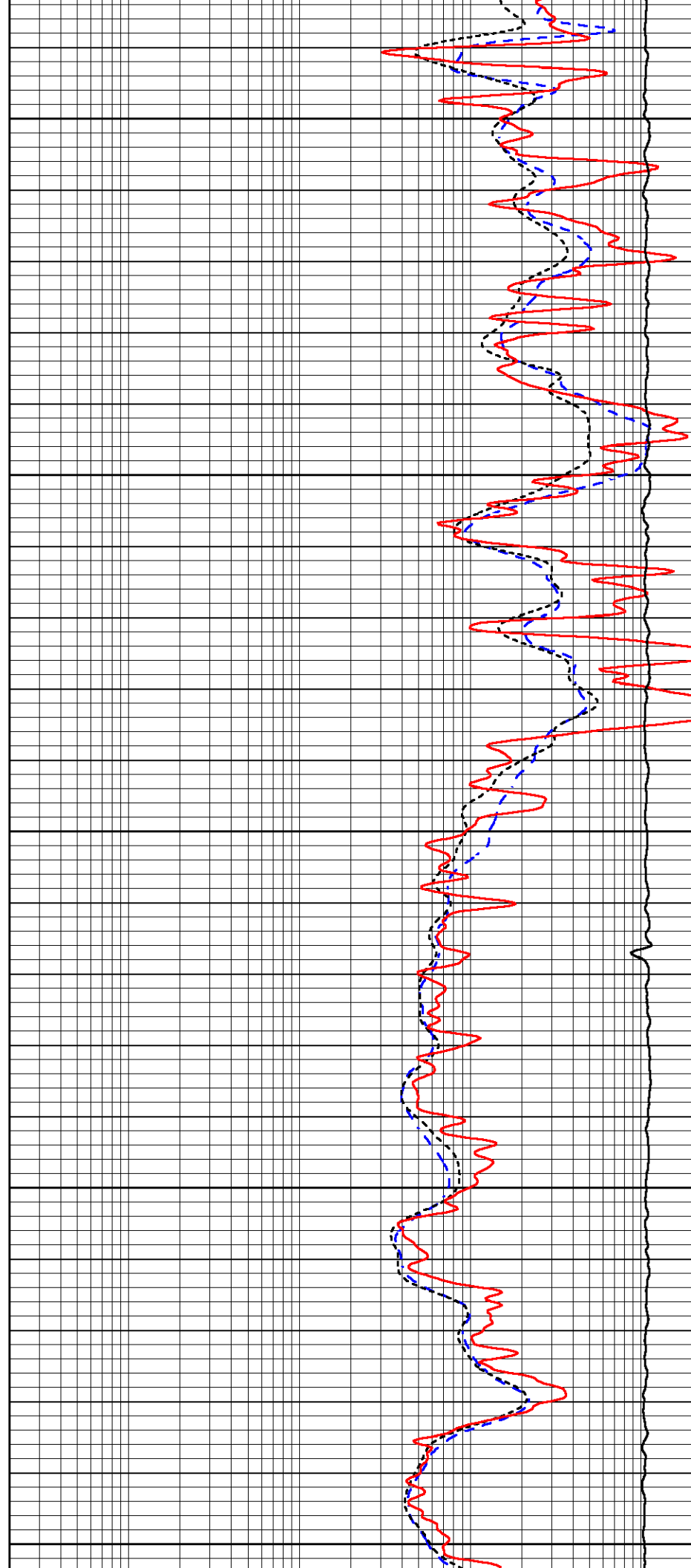
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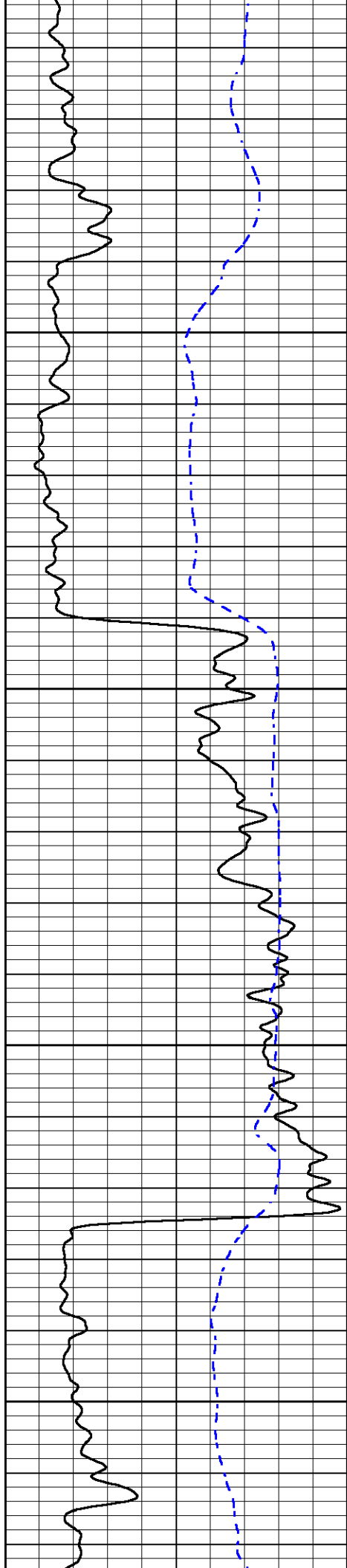
1600

1650

1700

1750



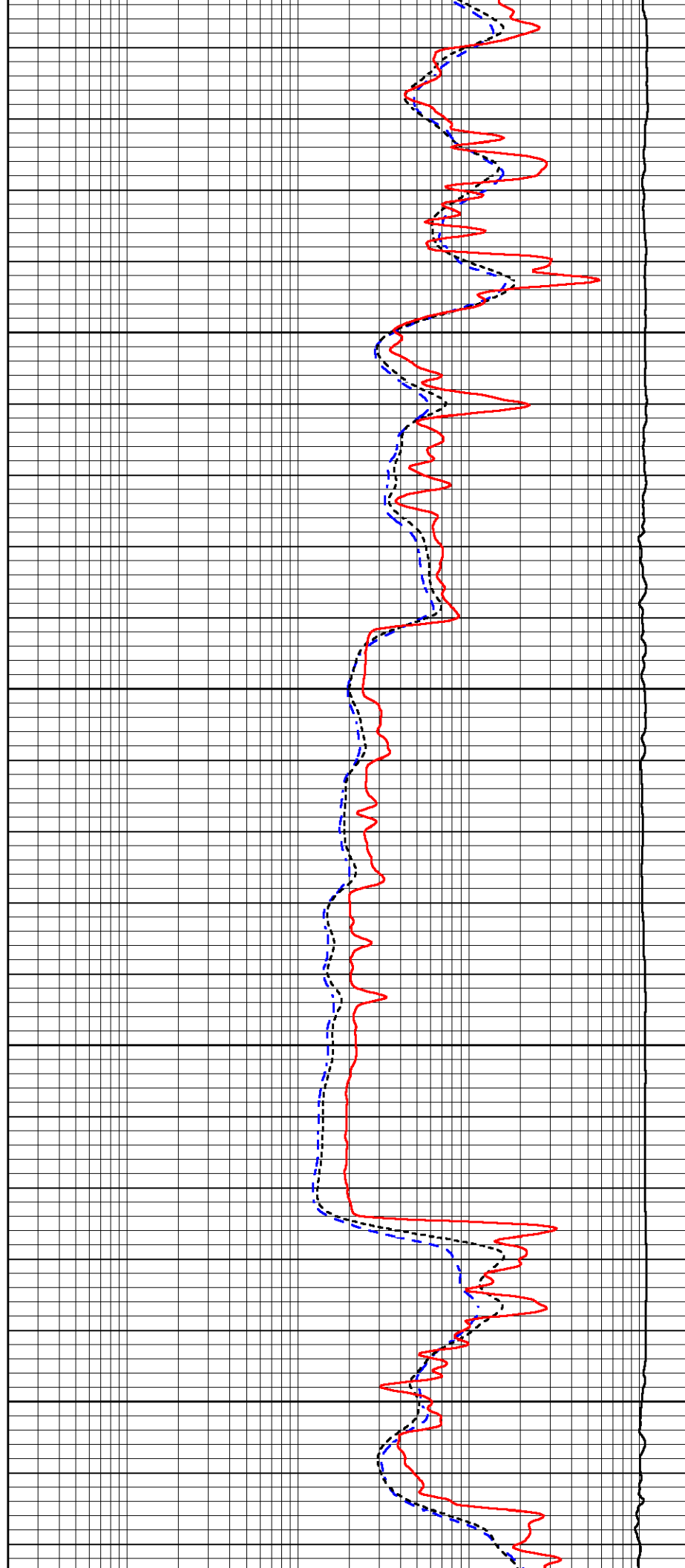


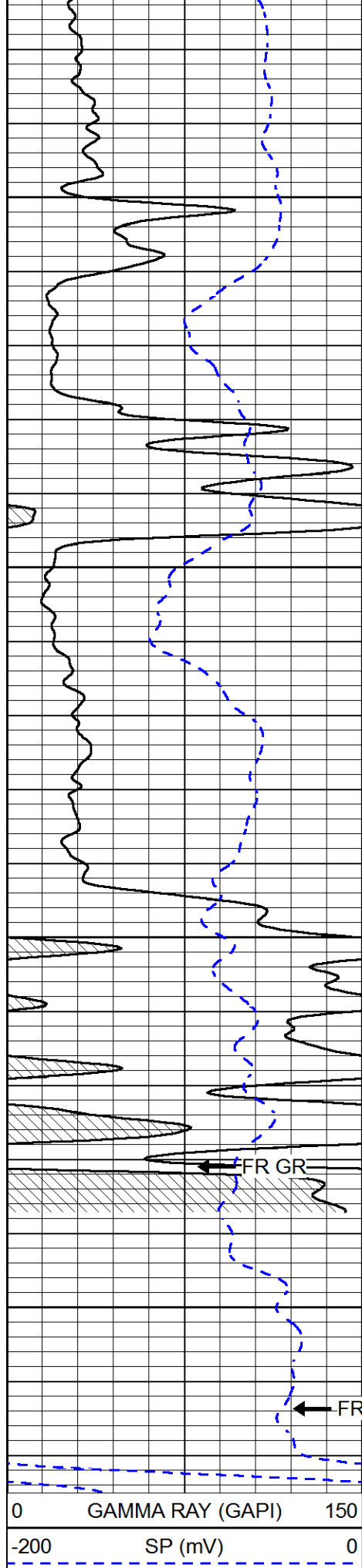
1800

1850

1900

1950





2000

2050

2100

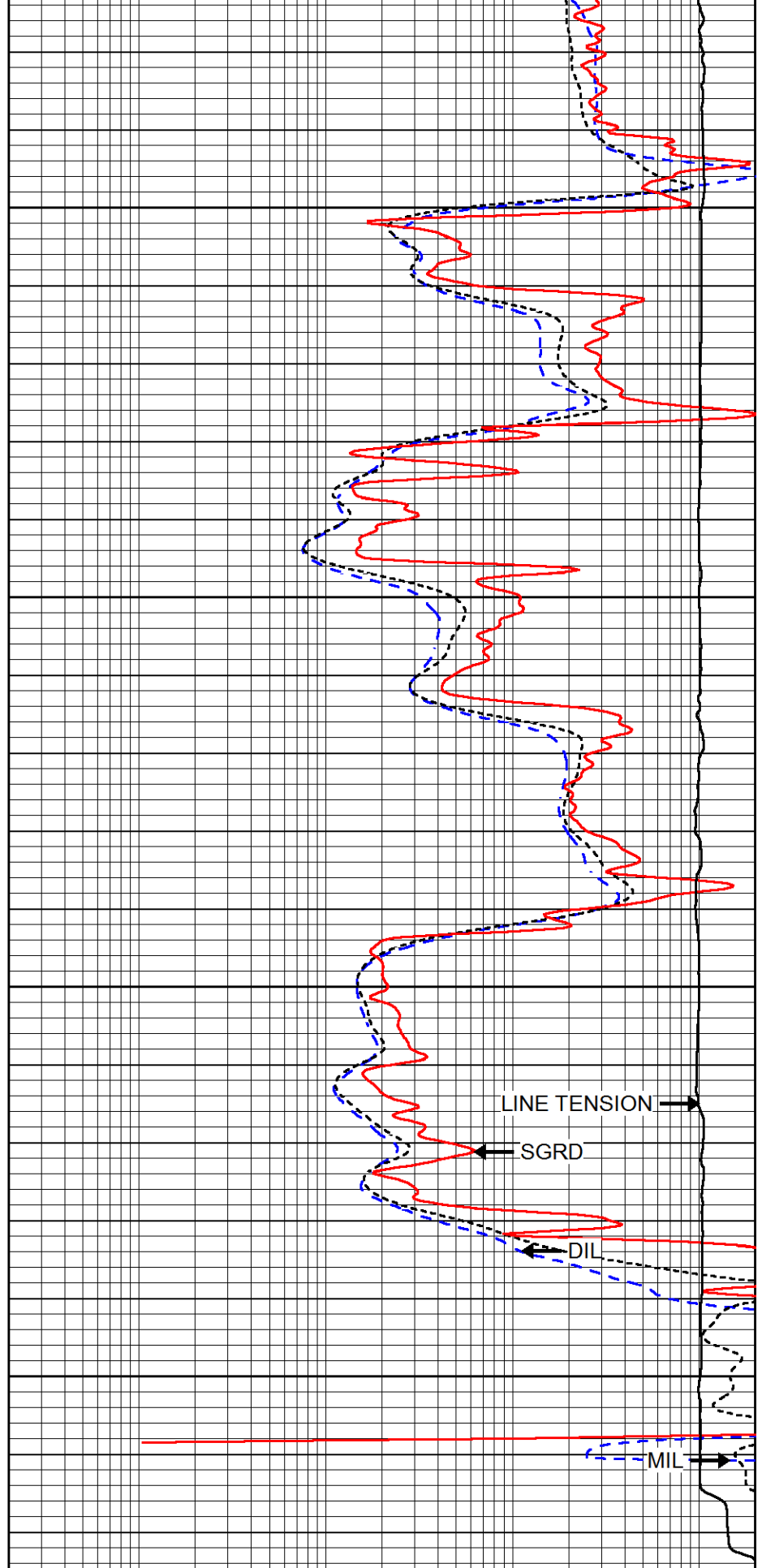
2150

0.2

0.2

0.2

15000



DEEP RESISTIVITY (Ohm-m) 2000

MEDIUM RESISTIVITY (Ohm-m) 2000

RLL3 (Ohm-m) 2000

LINE TENSION (lb) 0

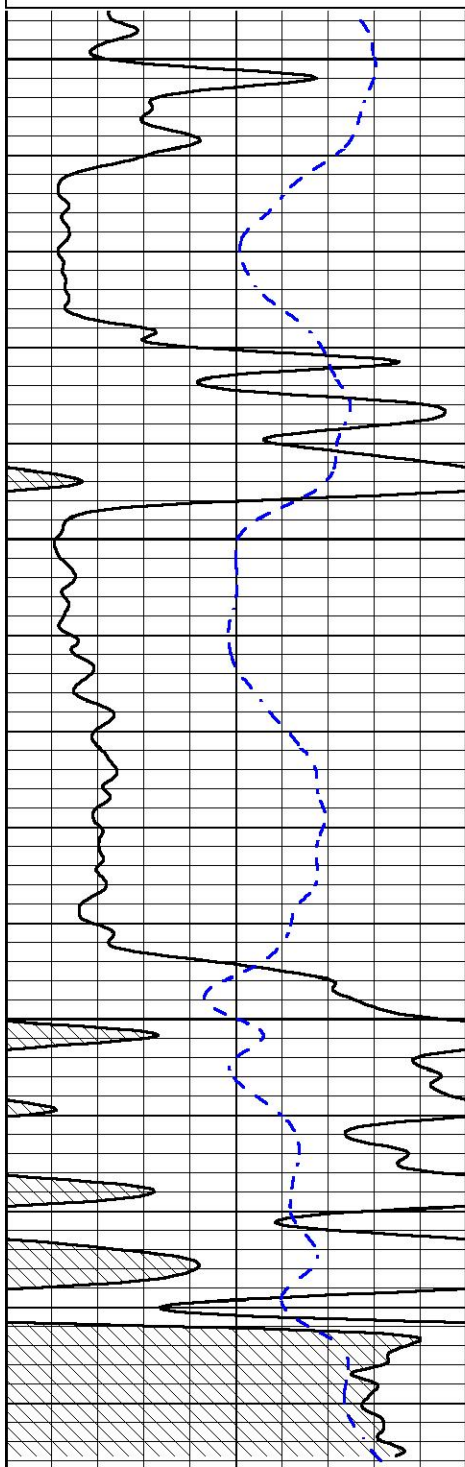


REPEAT SECTION

Database File cfa_rudolph_1.db
 Dataset Pathname STACK/pass2.3
 Presentation Format dil
 Dataset Creation Sun Dec 30 20:12:11 2018
 Charted by Depth in Feet scaled 1:240

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

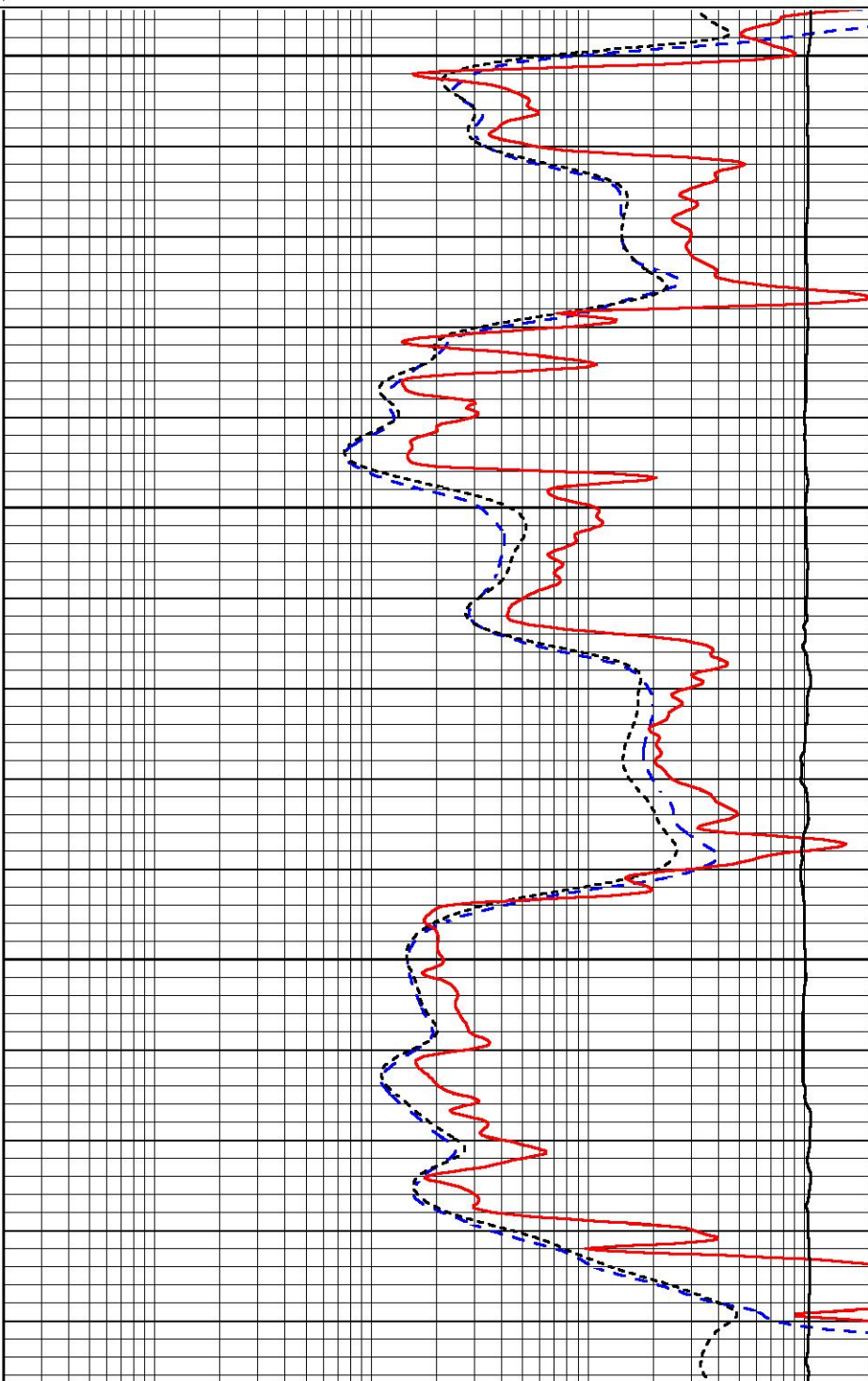
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

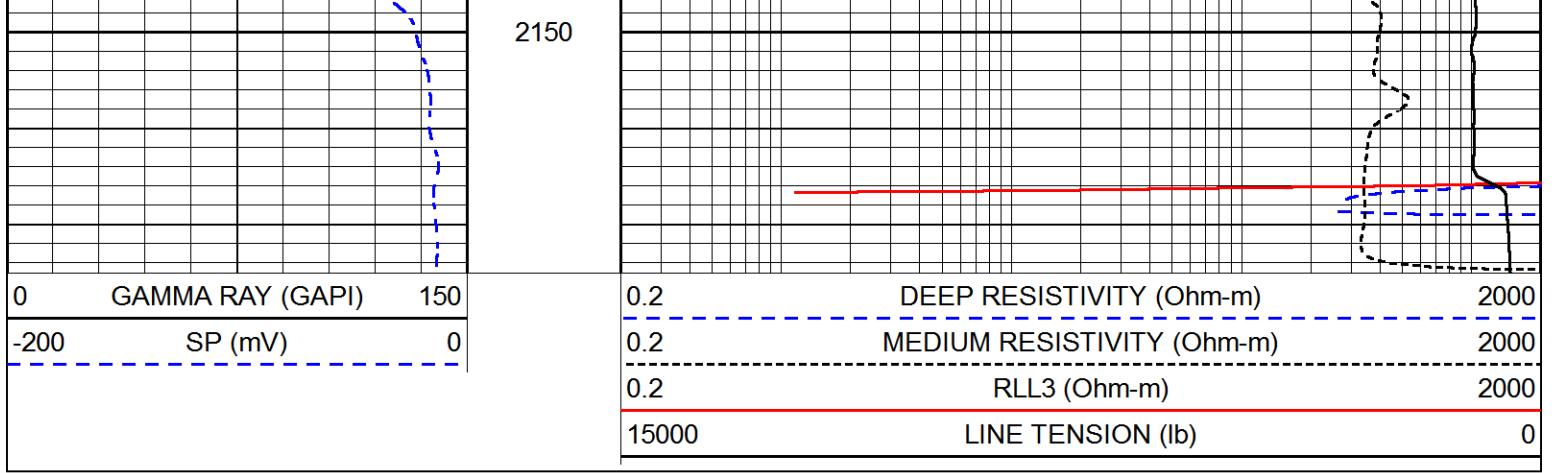


2000

2050

2100





Calibration Report

Database File cfa_rudolph_1_2nd.db
 Dataset Pathname STACK/pass1.5
 Dataset Creation Sun Dec 30 20:06:41 2018

Dual Induction Calibration Report

Serial-Model: PSI 988-M&W
 Calibration Performed: Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-43.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-20.500

Compensated Density Calibration Report

Serial-Model: 934-5002-M&W
 Source / Verifier: /
 Master Calibration Performed: Wed Aug 29 11:03:55 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3720.16	2661.79	cps
Aluminum	2.675	g/cc	696.57	1725.83	cps
Spine Angle = 75.50			Density/Spine Ratio = 0.532		
	Size		Reading		
Small Ring	4.00	in	1.16		
Large Ring	16.00	in	1.01		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
 Tool Model: M&W
 Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings	Target	Normalization
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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:	Tue Apr 11 17:08:01 2017	
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	CFA OIL COMPANY
Well	RUDOLPH NO.1
Field	WILDCAT
County	RILEY
State	KANSAS