



ThruBit
A Schlumberger Company

**ARRAY INDUCTION
GAMMA RAY
MEMORY LOG**

Company	SANDRIDGE ENERGY	Company	SANDRIDGE ENERGY
Well	LORI 3510 3-2H	Well	LORI 3510 3-2H
Field	GUDEMAN	Field	GUDEMAN
County	BARBER	County	BARBER
State	KANSAS	State	KANSAS
Location:	API #: 15-077-23969-01-00 200' FNL & 2130' FWL	Other Services THRUBIT PORTAL BIT	
Permanent Datum	SEC 11 TWP 35S RGE 10W G.L.	Elevation	
Log Measured From	K.B. 16' ABOVE PERM DATUM	K.B. 1328' D.F. 1328' G.L. 1312'	
Drilling Measured From	K.B.		
Date	11 DEC 2012		
Run Number	ONE		
Depth Driller	12255'		
Depth Logger	12239'		
Bottom Logged Interval	12228'		
Top Log Interval	3000'		
Casing Driller	7" @ 5298'		
Casing Logger	5298'		
Bit Size	6.125"		
Type Fluid in Hole	WBM		
Density / Viscosity	9.0 / 27		
pH / Fluid Loss	7.0 / 60		
Source of Sample	MUD SENSOR		
Rim @ Meas. Temp	0.36 OHM@65DEGF		
Rinf @ Meas. Temp	0.30 OHM@65DEGF		
Rmc @ Meas. Temp	0.45 OHM@65DEGF		
Source of Rinf / Rmc	CALCULATED		
Rim @ BHT	0.15 OHM@129DEGF		
Time Circulation Stopped	20:12 10 DEC 2012		
Time Logger on Bottom	21:29 10 DEC 2012		
Maximum Recorded Temperature	129 DEGF		
Equipment Number	T005		
Location	OKC, OK		
Recorded By	C. PARKER		
Witnessed By	D. BURT		

<<< Fold Here >>>

The use of and reliance upon this recorded-data by the herein named company (and any of its affiliates, partners, representatives, agents, consultants and employees) is subject to the terms and conditions agreed upon between ThruBit LLC and the company, including: (a) Restrictions on use of the recorded-data; (b) Disclaimers and waivers of warranties and representations regarding company's use of and reliance upon the recorded-data; and (c) Customer's full and sole responsibility for any inference drawn or decision made in connection with the use of this recorded-data.

Comments

SERVICE: HORIZONTAL PUMP DOWN MEMORY BIT DEPTH: 12180' LOG TO: 3000'
ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST
LIMESTONE MATRIX, 2.71 g/cc, USED FOR POROSITY MEASUREMENTS
TOOLS RAN WITH DECENTRALIZER AND SWIVEL
TBHV REPRESENTS TOTAL BOREHOLE VOLUME, ft3
ABHV REPRESENTS ANNULAR BOREHOLE VOLUME, ft3, CALCULATED FOR 4.5" CASING
USED RIGMINDER WITH PASON TO ACQUIRE LOG DEPTH
CORRELATED TO MWD LOG PROVIDED BY CUSTOMER

RIG: UNIT 9
CREW: C.PARKER R.WILSON I.HERNANDEZ

Service Ticket No.	1625	API No.	15-077-23969-01-00	PGM Ver	WARRIOR 7.0
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
GAMMA RAY		NEUTRON		INDUCTION	

Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	PS27T	Serial No.	ENP5N	Serial No.	PS44D	Serial No.	PS38R
Model No.	PS	Model No.	ENP	Model No.	PS	Model No.	PS
Diameter	2.125"	Diameter	2.125"	Diameter	2.125"	Diameter	2.125"
LOGGING DATA							
General Data							
Pass	Depths		Well Head	Speed	Logging Run Comments		
No.	From	To	Pressure	Ft/Min			
ONE	12228'	3000'		35 FPM			
	GAMMA RAY		NEUTRON		DENSITY		INDUCTION
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L
ONE	0 API	150 API	30 %	-10 %	30 %	-10 %	0.2 OHM-M 2000 OHM-M
DIRECTIONAL INFORMATION							
Maximum Deviation	93.8	deg. @	12255'	KOP	3912'		

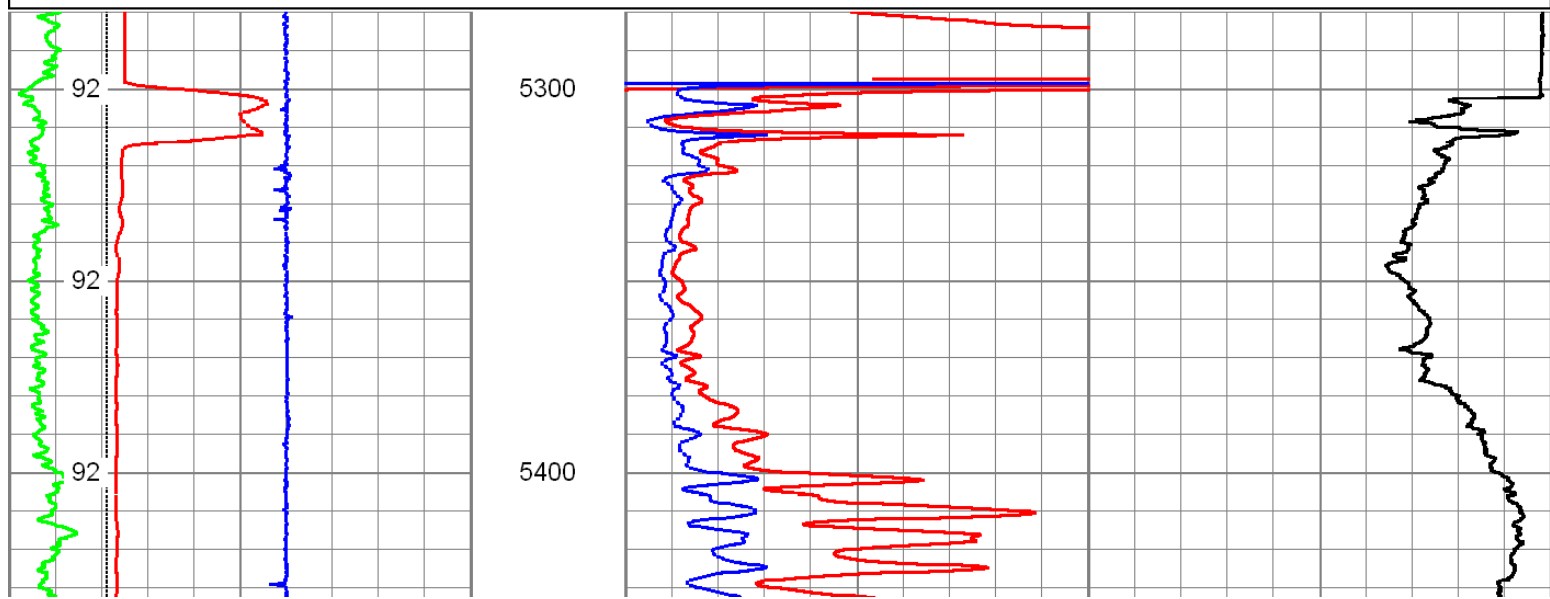


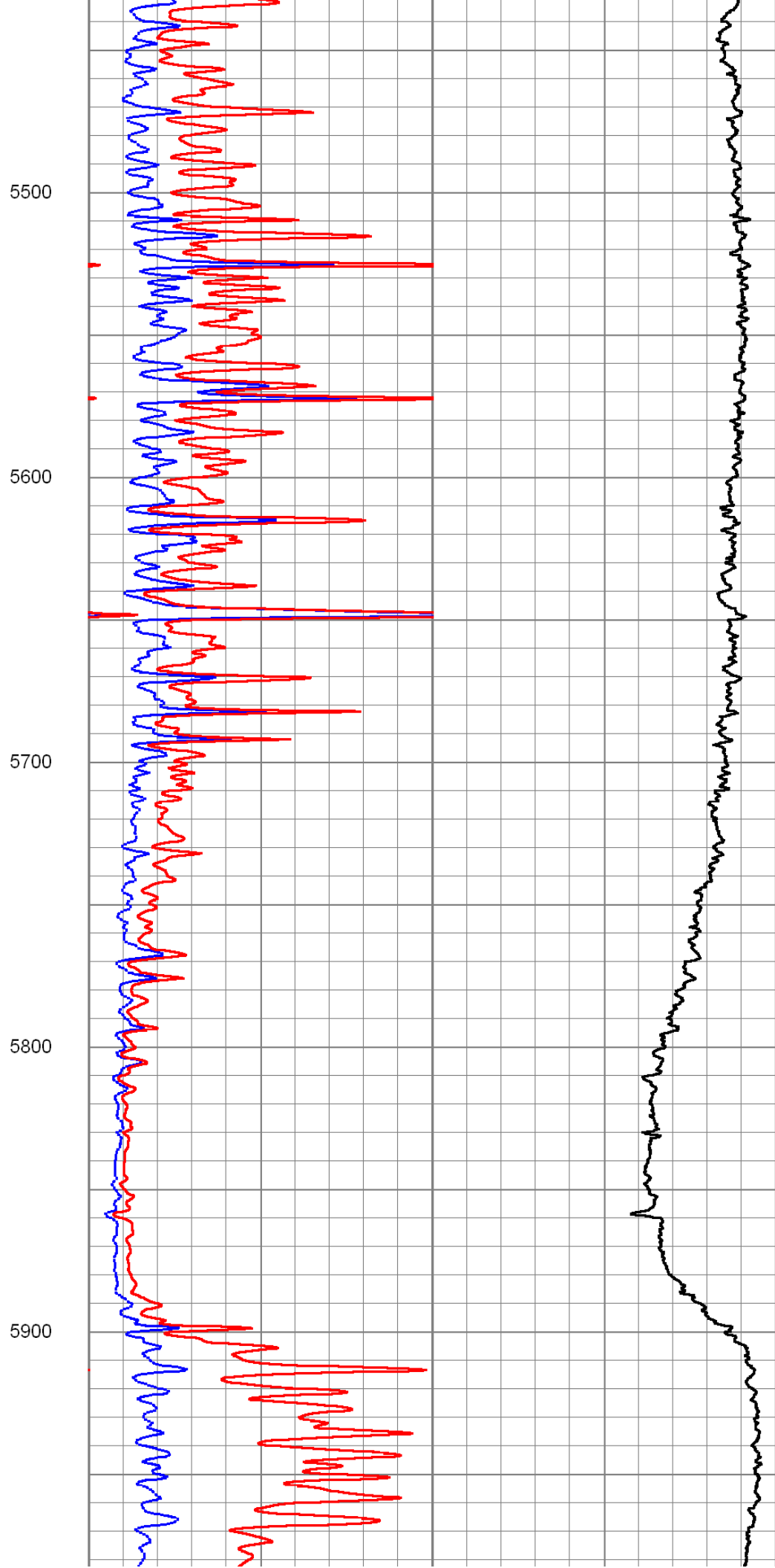
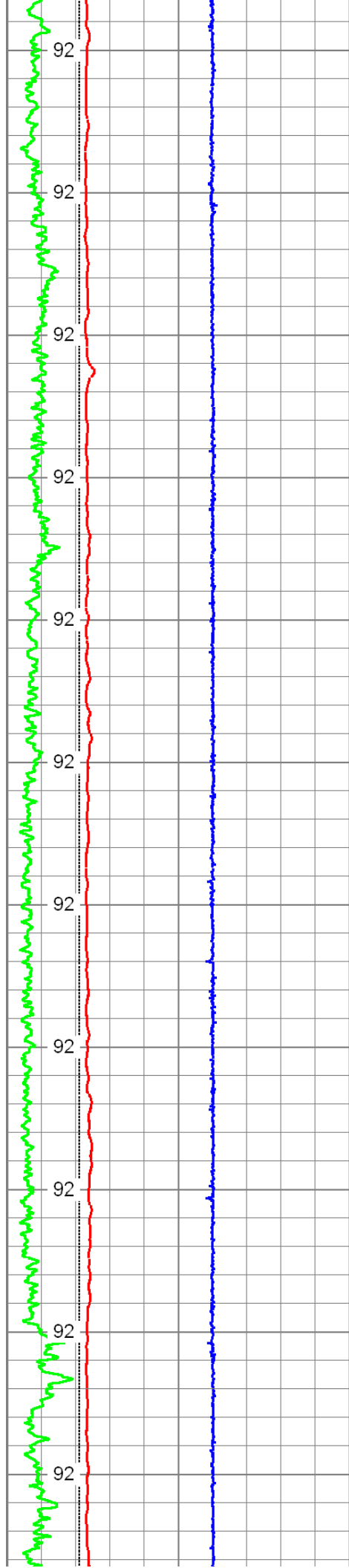
MAIN PASS

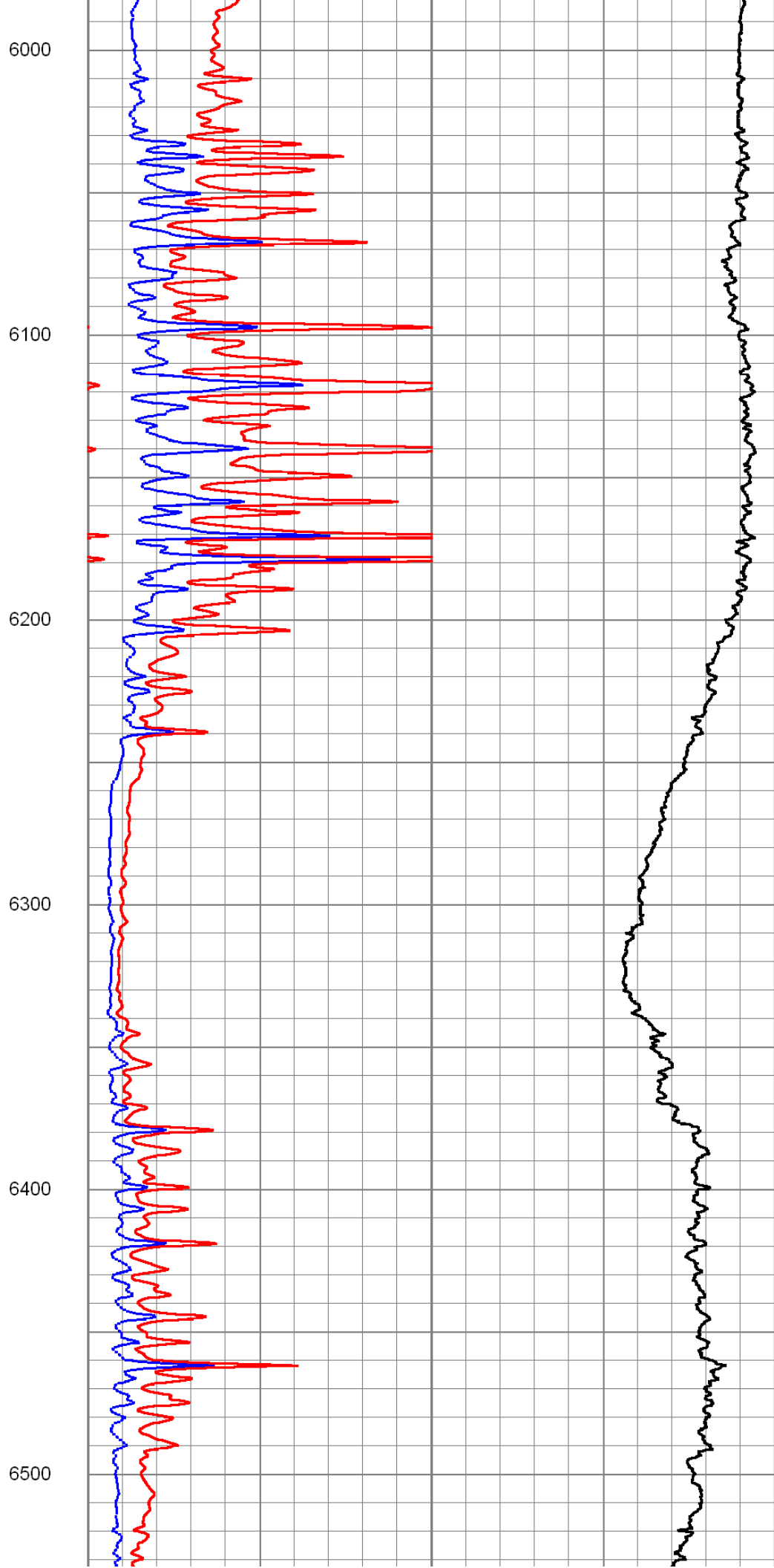
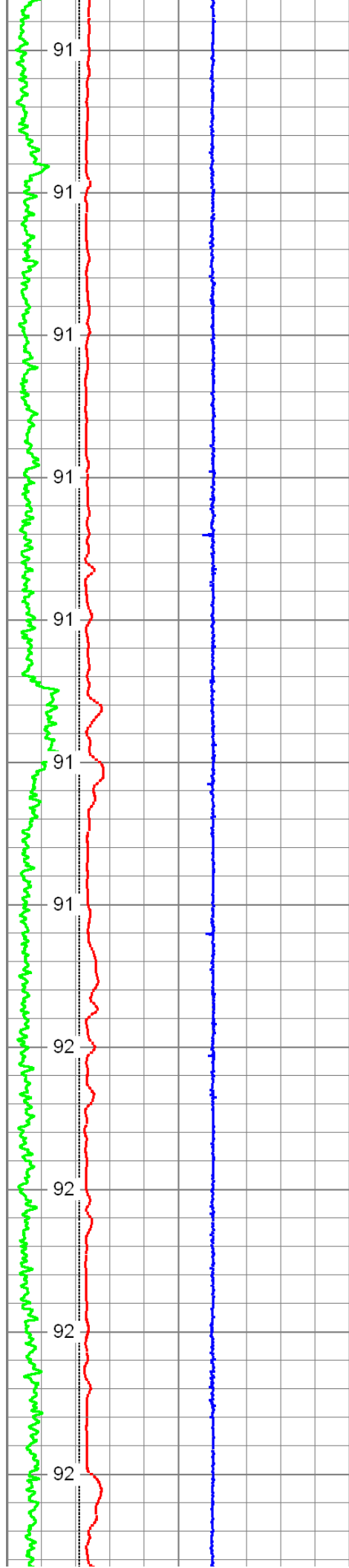
Database File: c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.db
 Dataset Pathname: proc1/pass1.3
 Presentation Format: 6_2r_chk
 Dataset Creation: Tue Dec 11 06:18:07 2012
 Charted by: Depth in Feet scaled 1:600

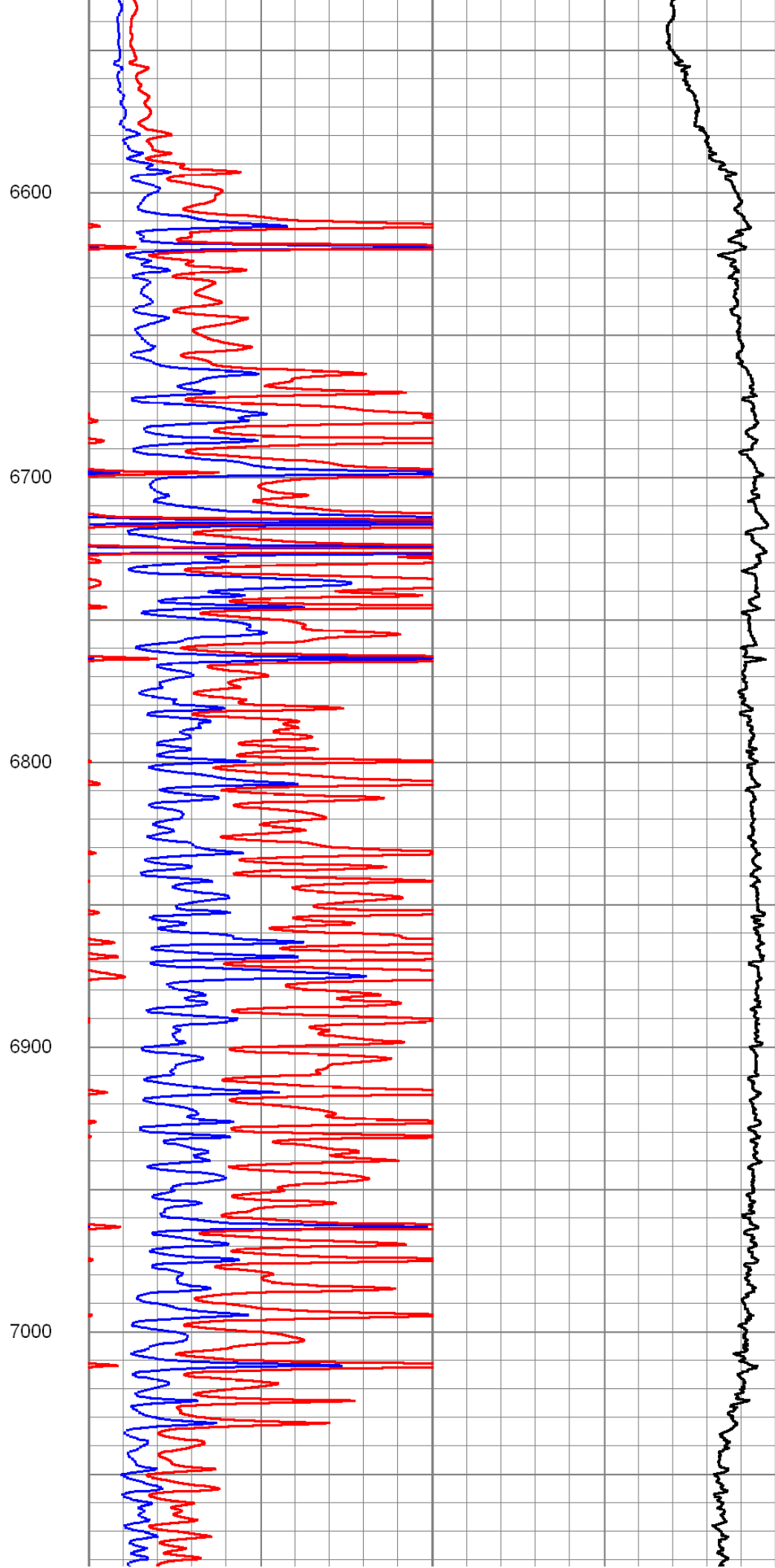
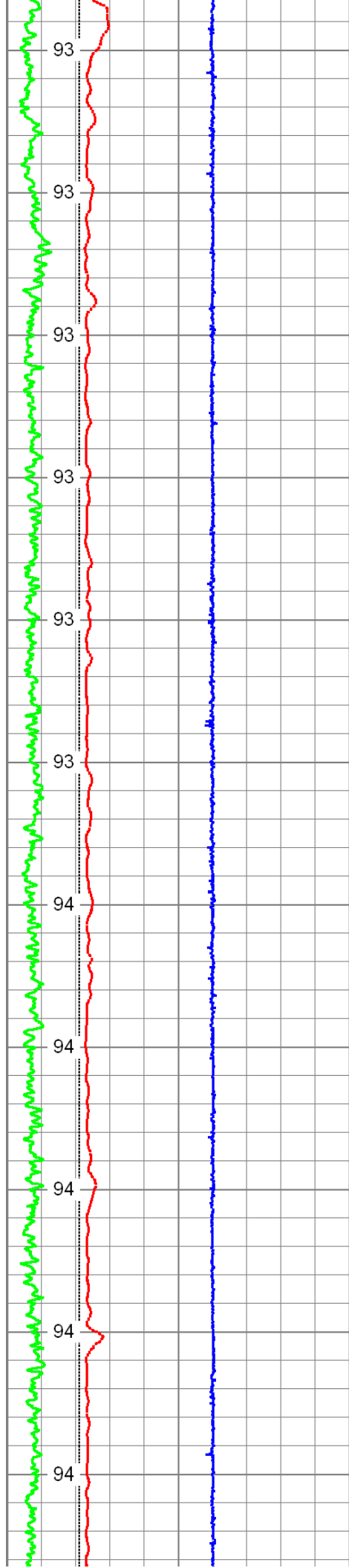
0	GR (GAPI)	150	50	20in 2ft Res (Ohm-m)	500
4	DCAL (in)	14	50	90in 2ft Res (Ohm-m)	500
-5	ACCY	5	1000	DEEP COND (mmho/m)	
4	BOREID (in)	14	0	20in 2ft Res (Ohm-m)	50
450	GR (GAPI)	600	0	90in 2ft Res (Ohm-m)	50

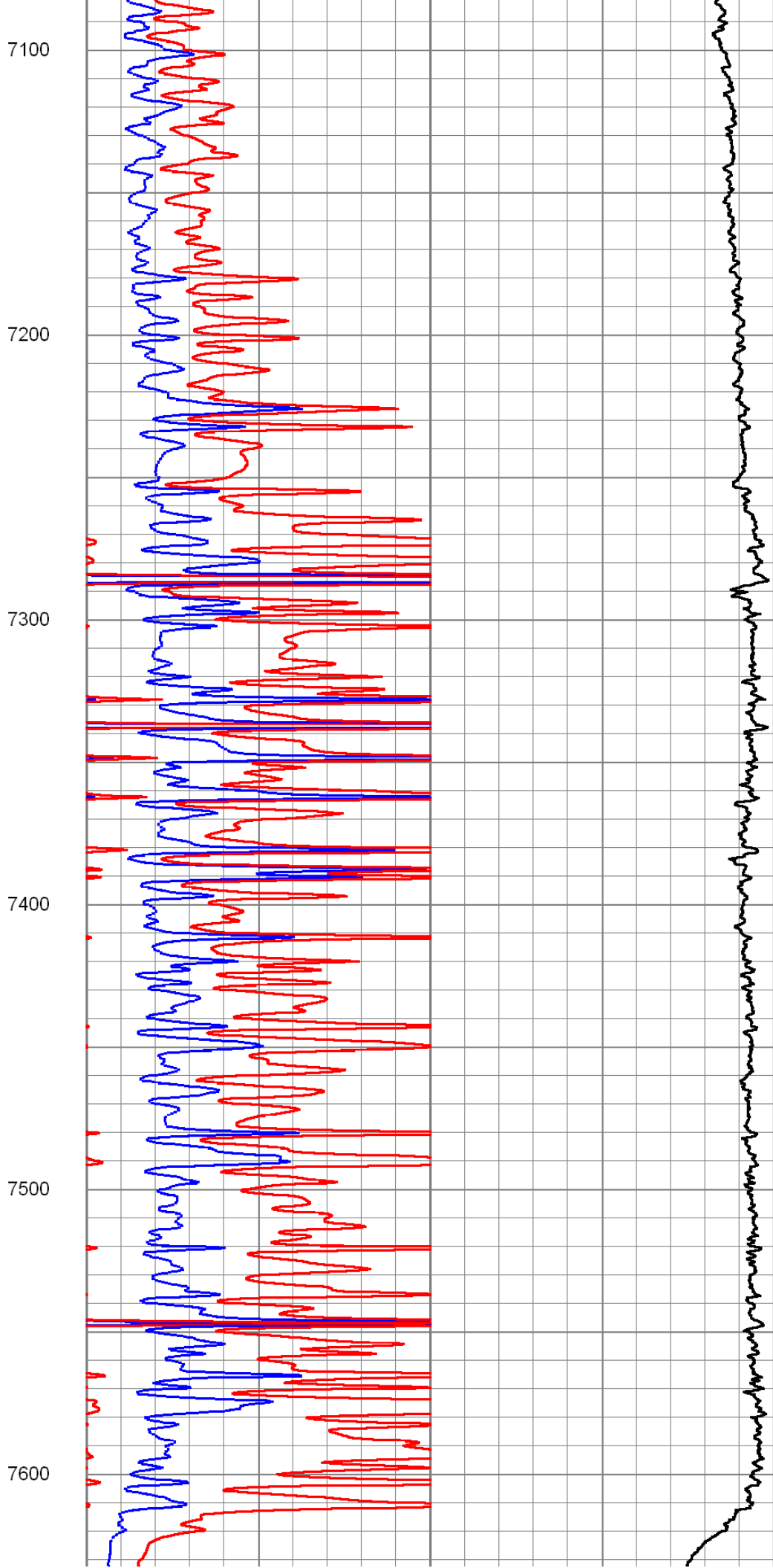
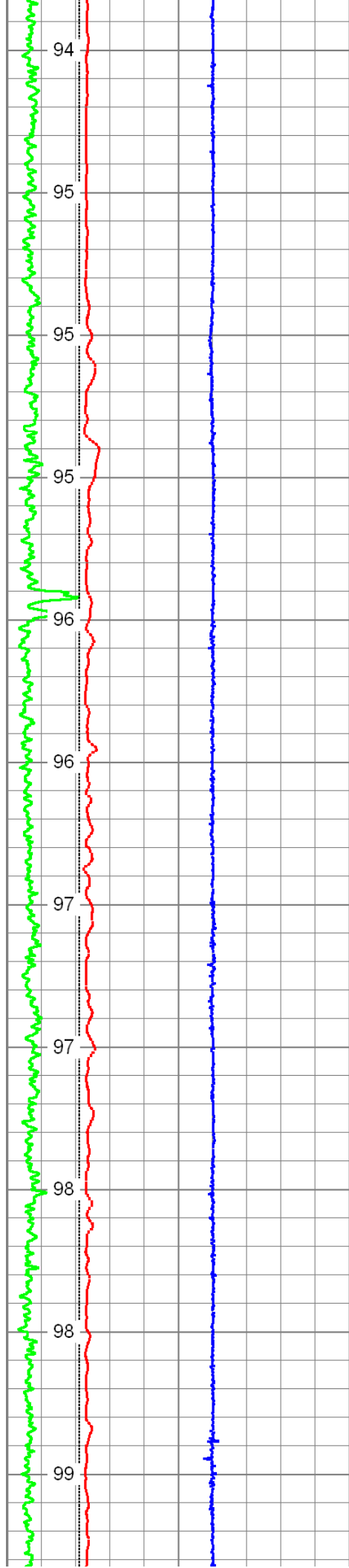
GRTEMP
(degF)

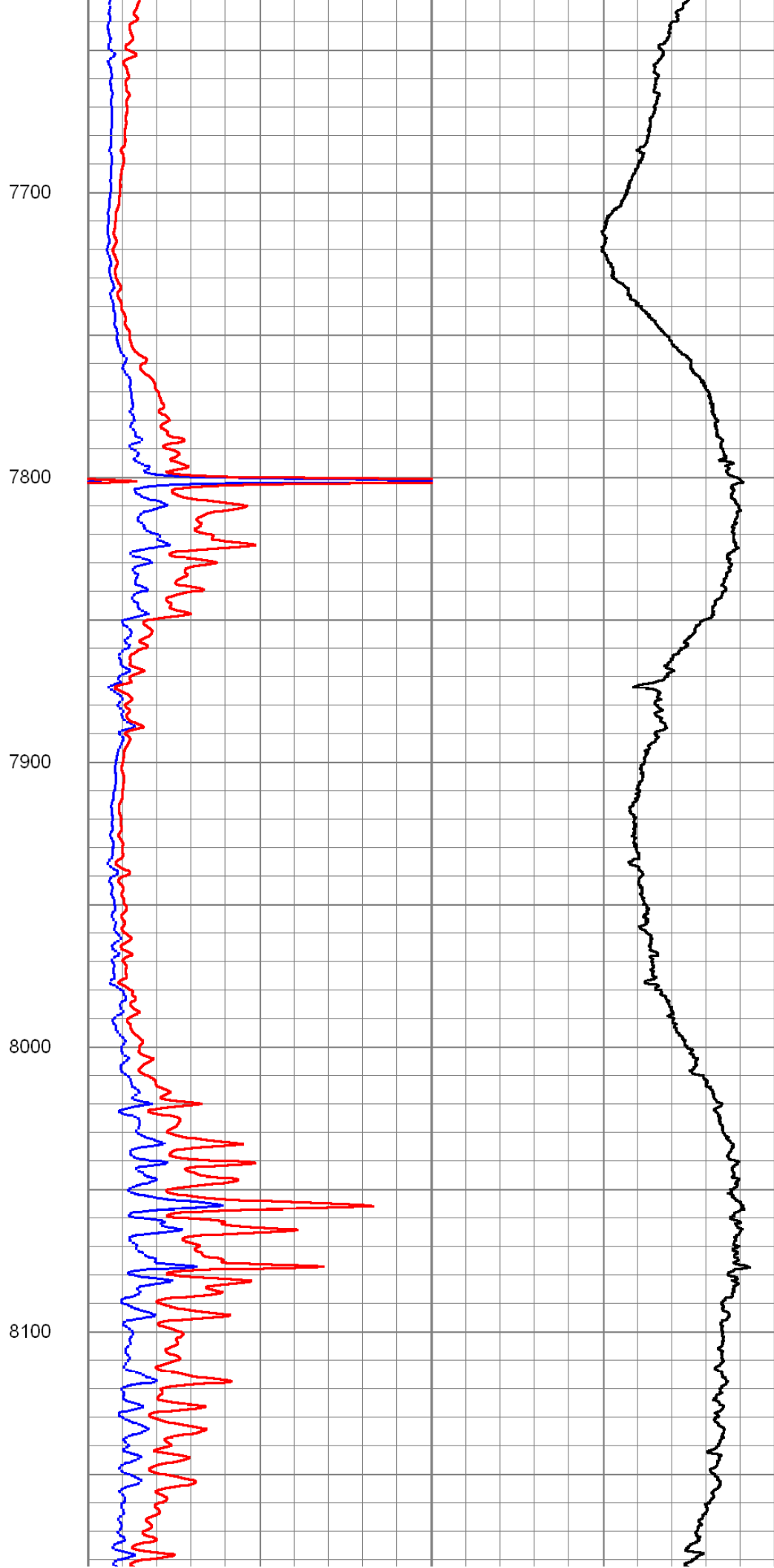
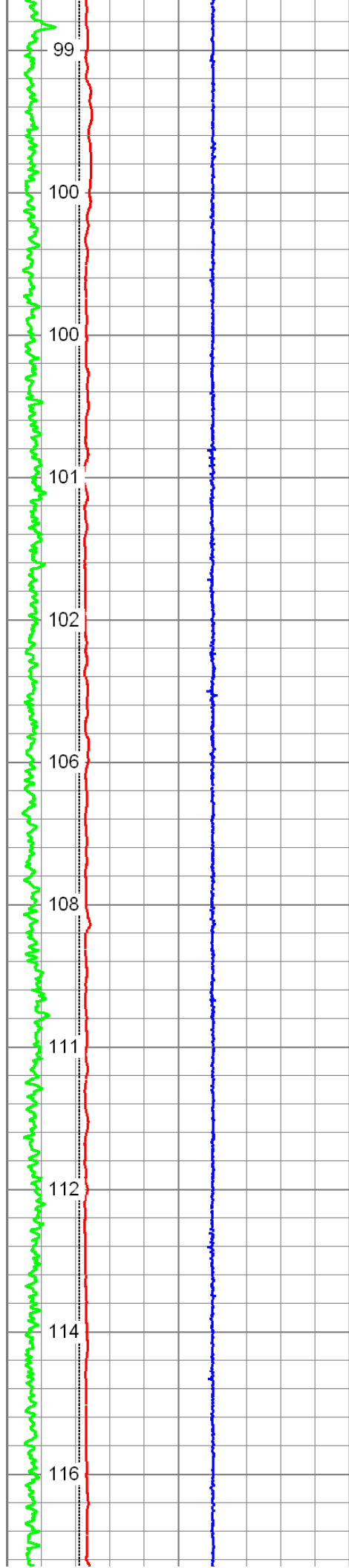


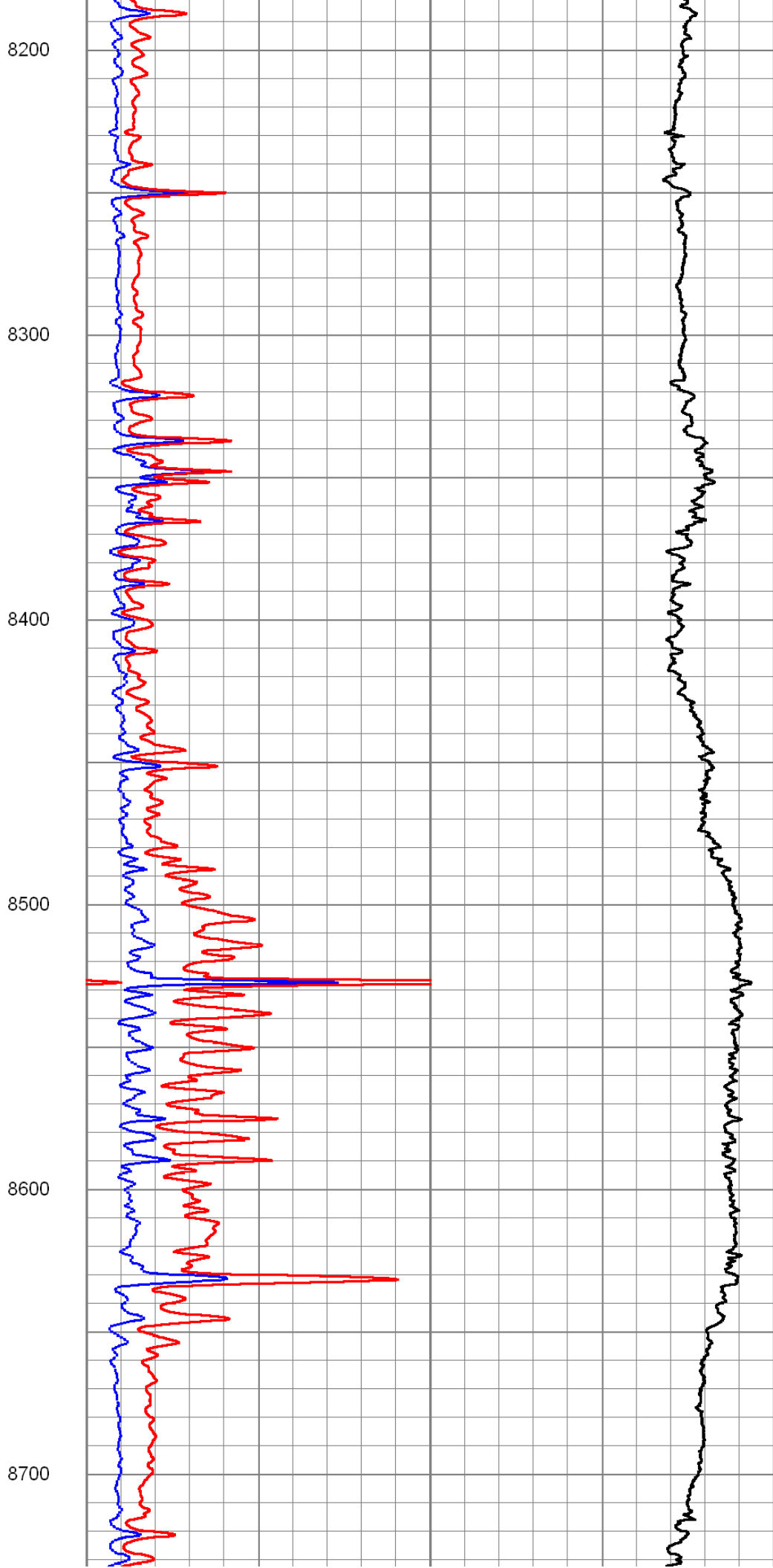
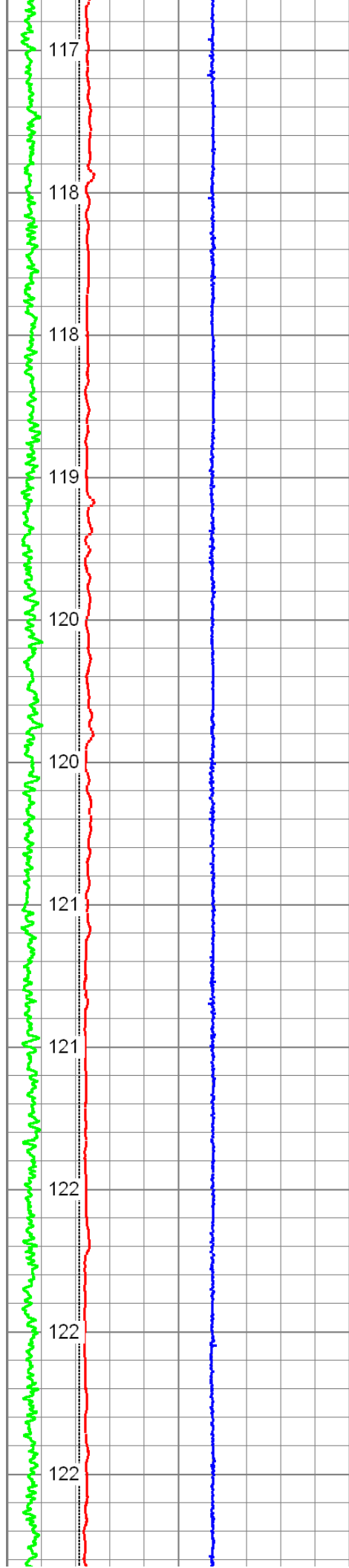


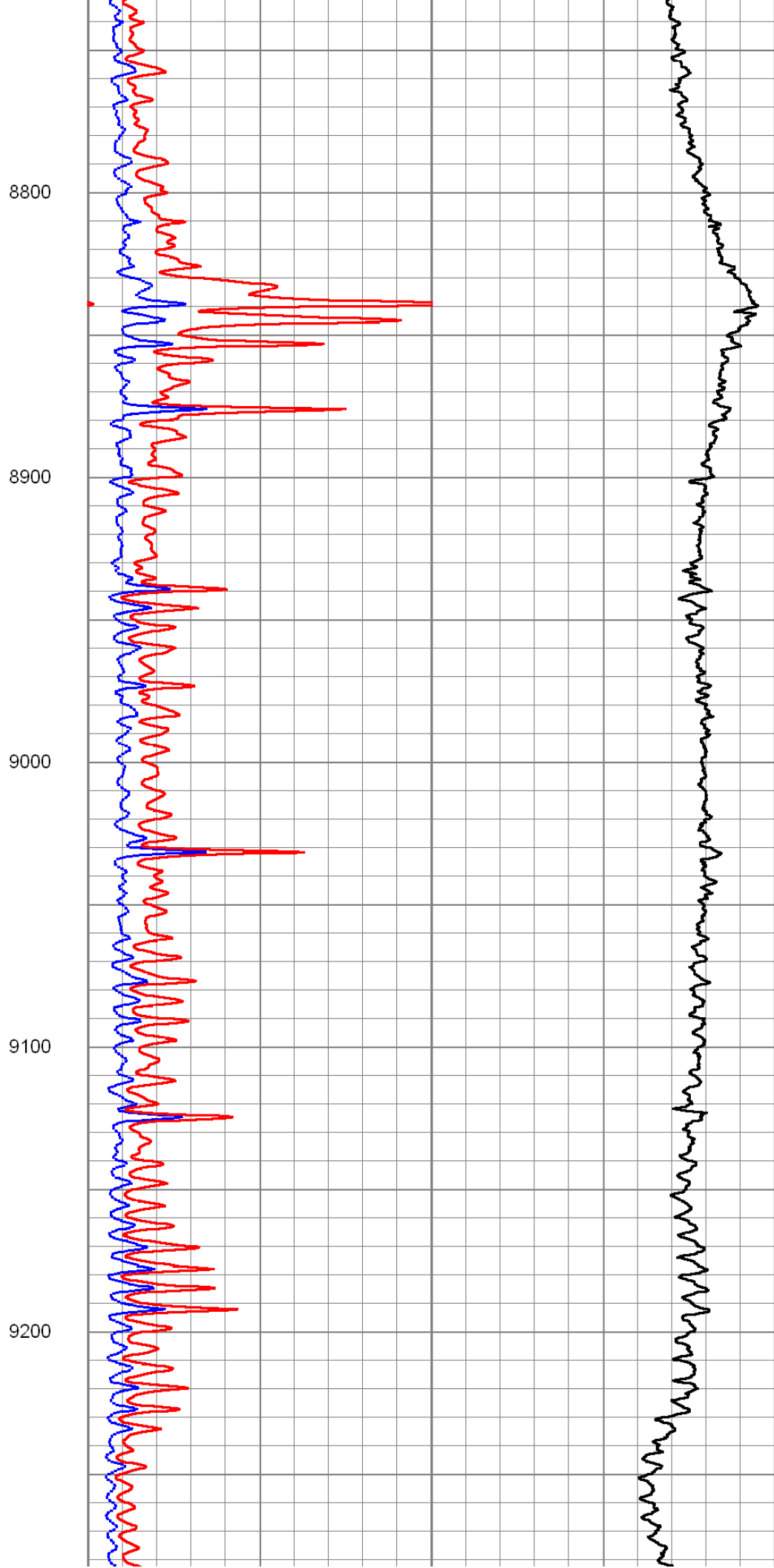
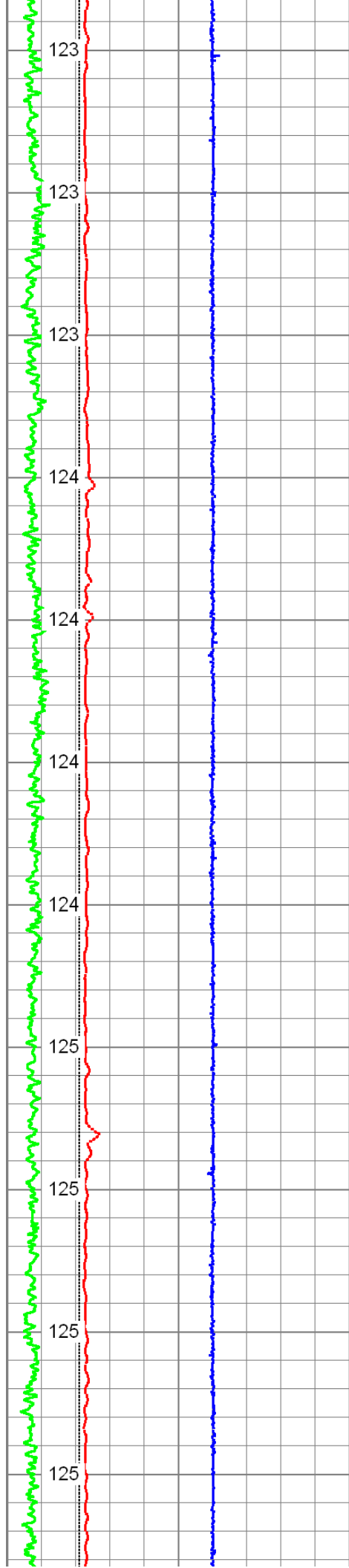


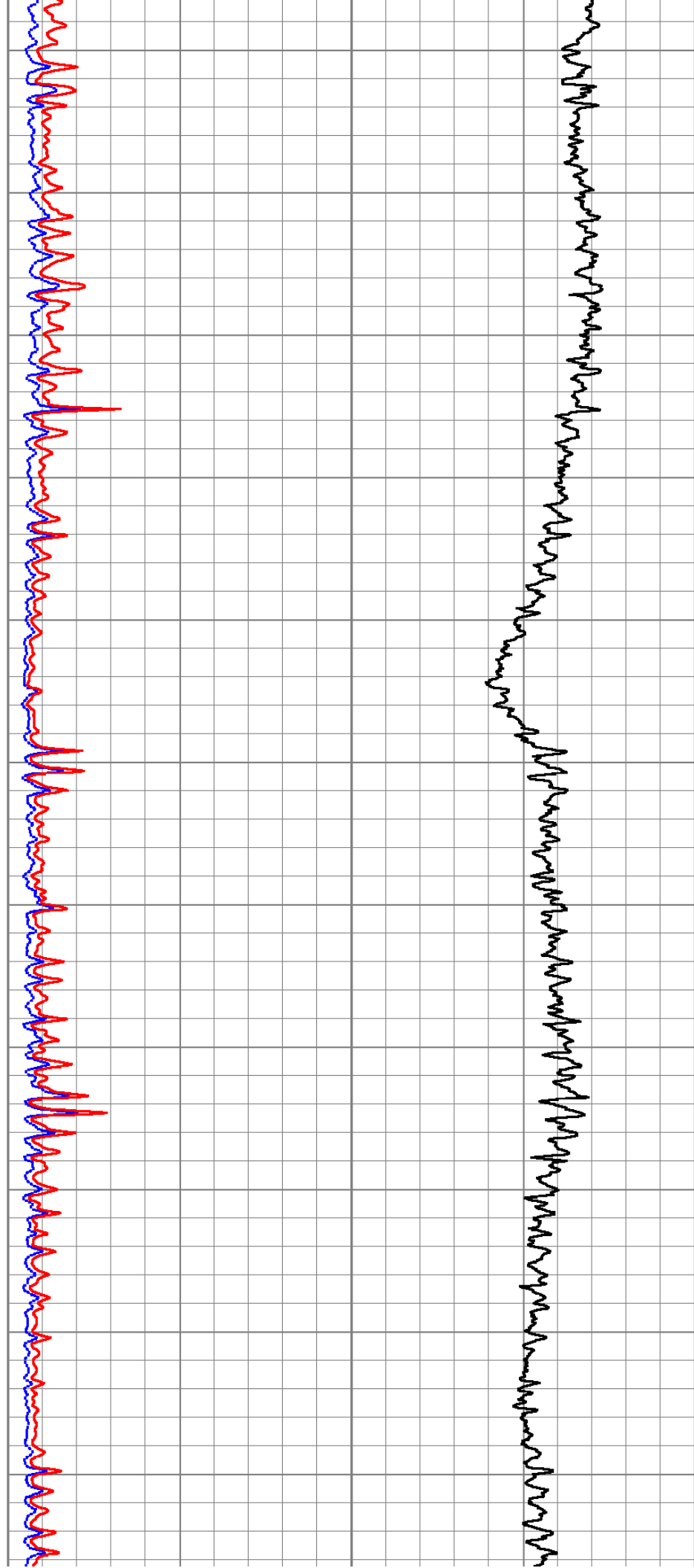
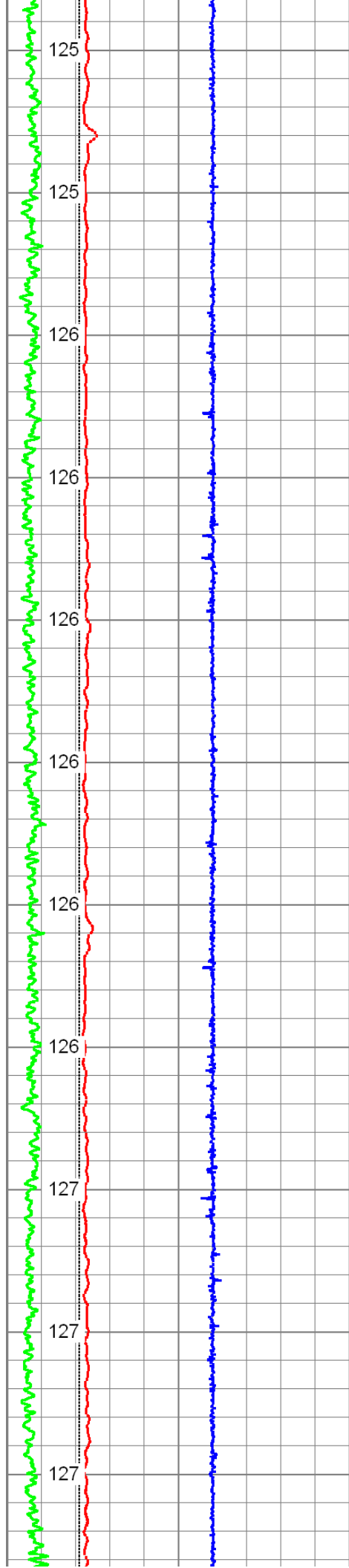


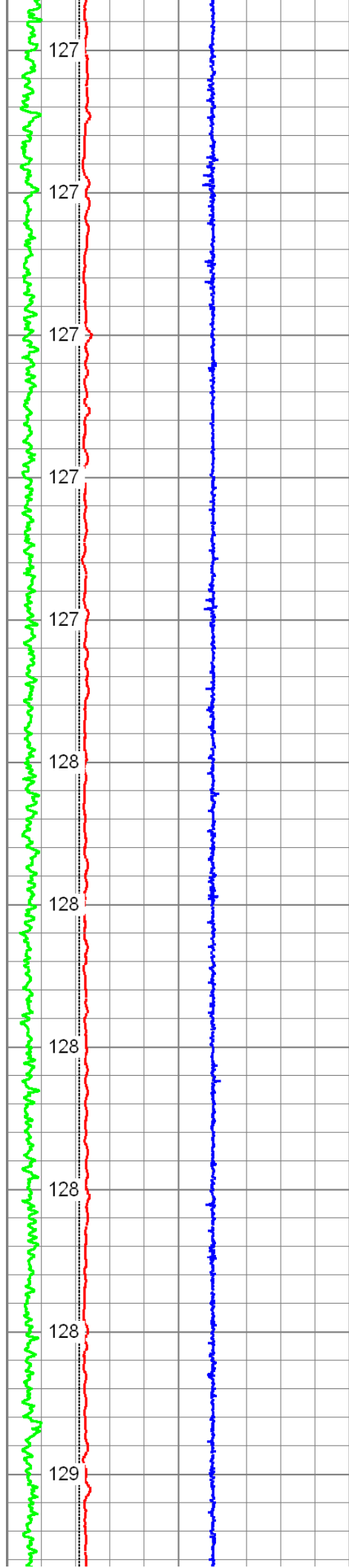












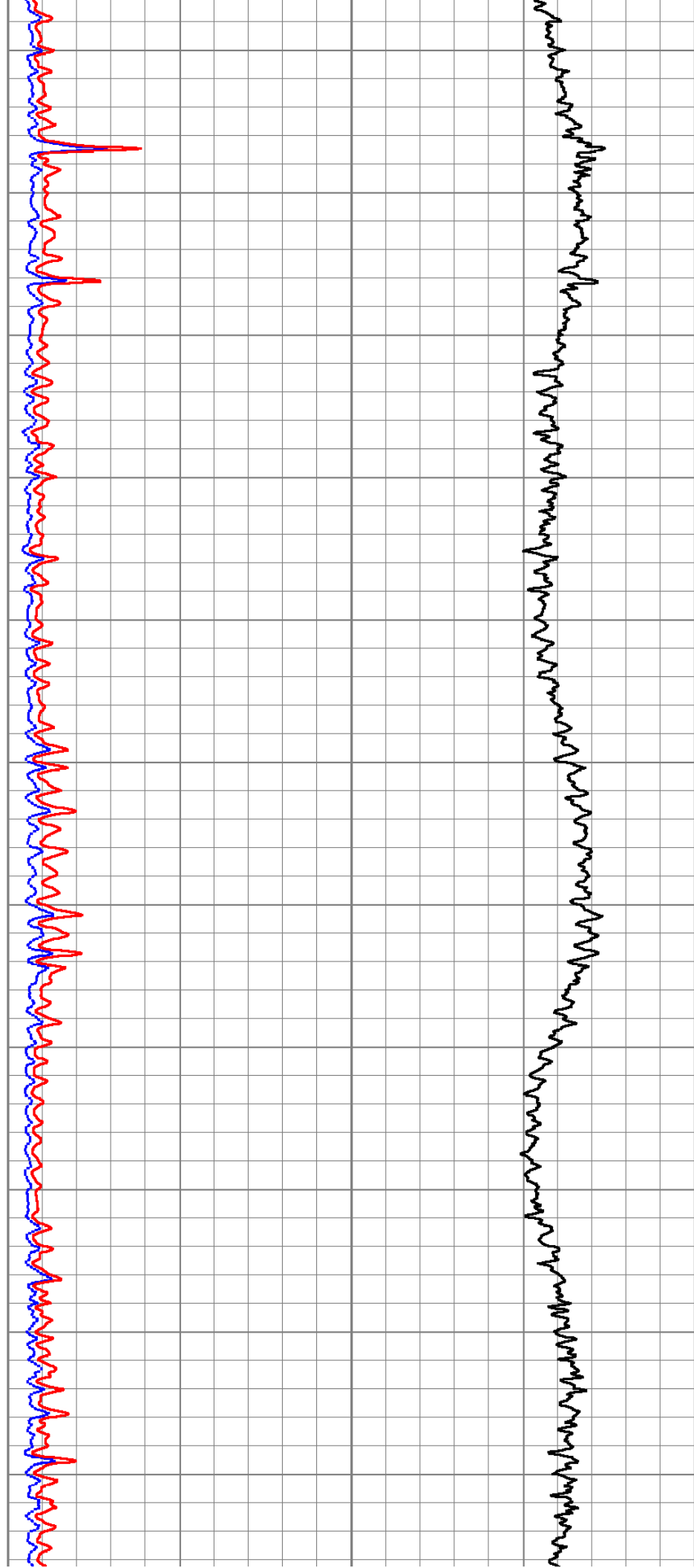
9900

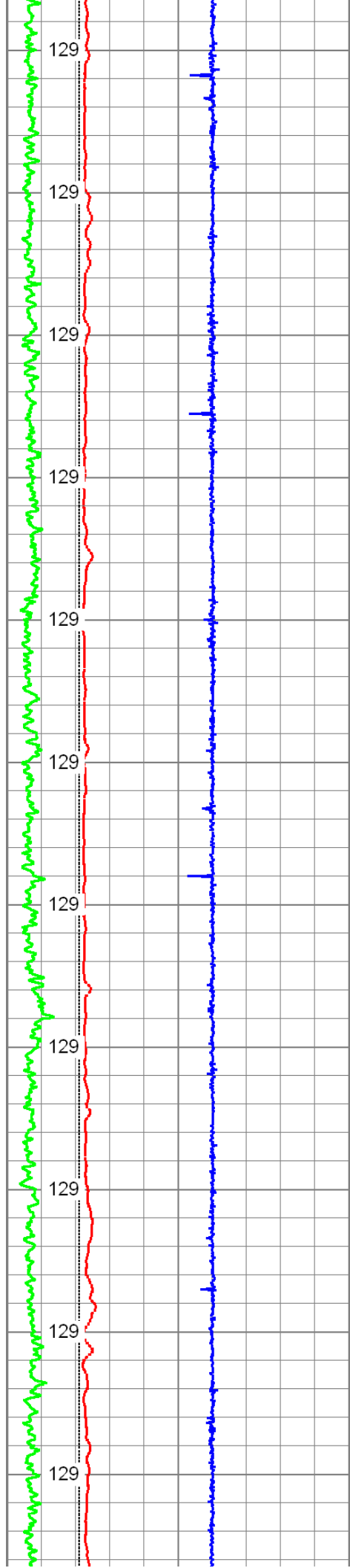
10000

10100

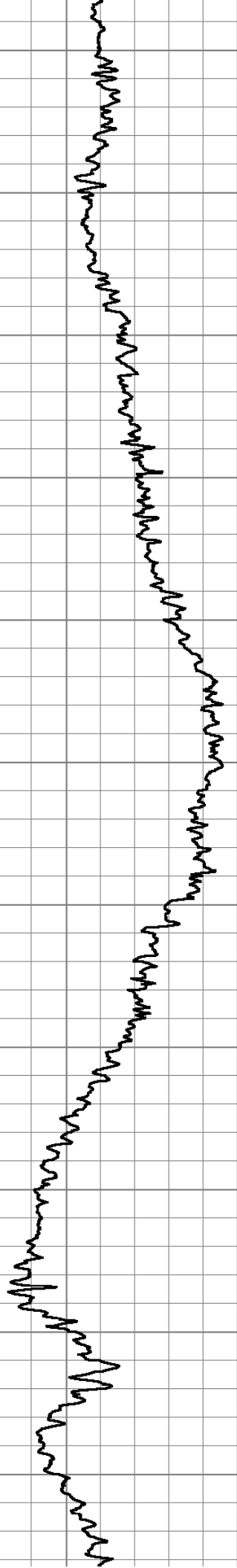
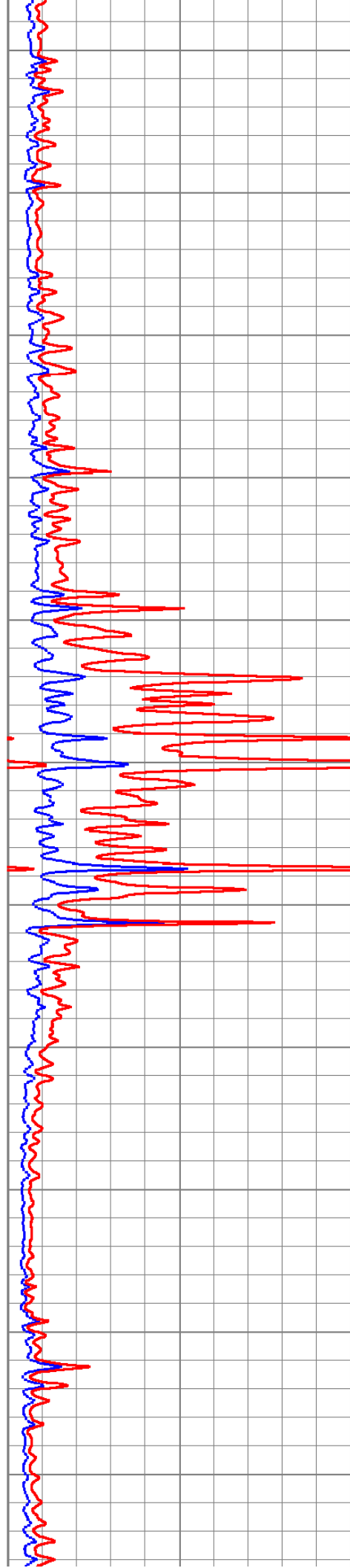
10200

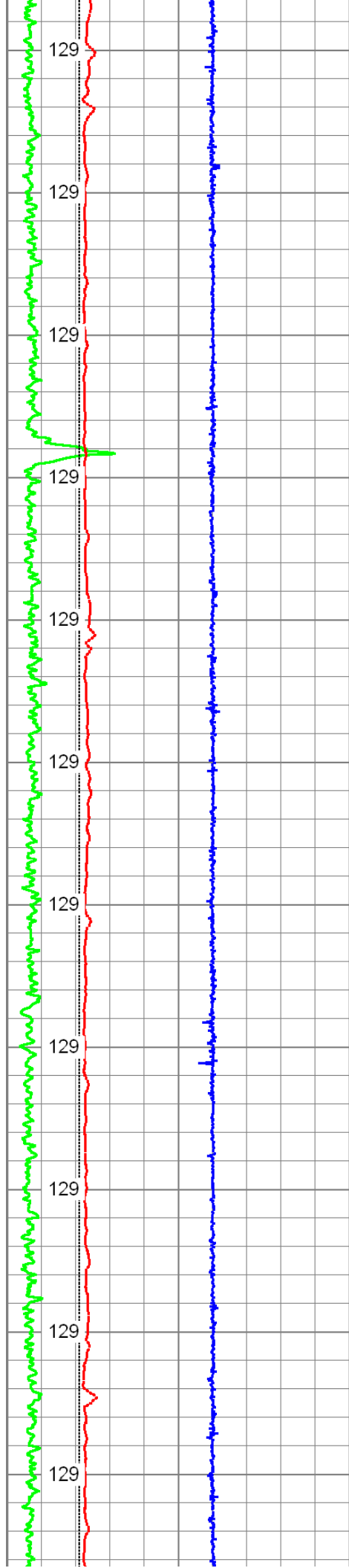
10300





10400
10500
10600
10700
10800
10900





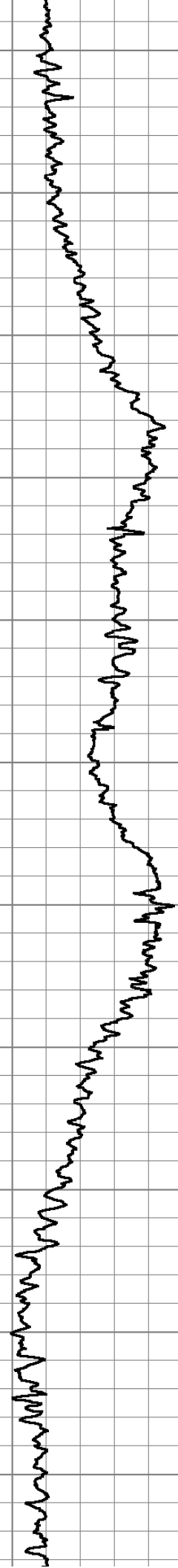
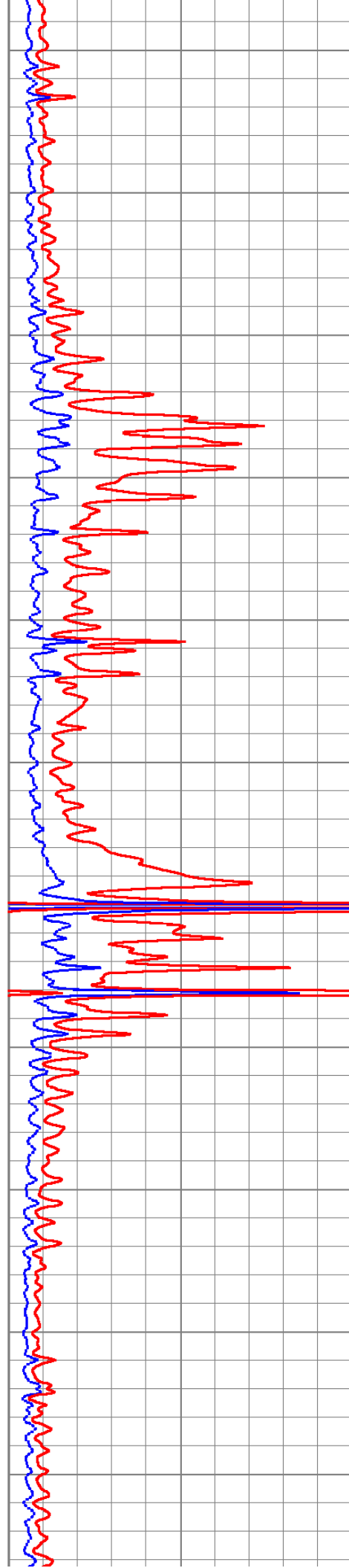
11000

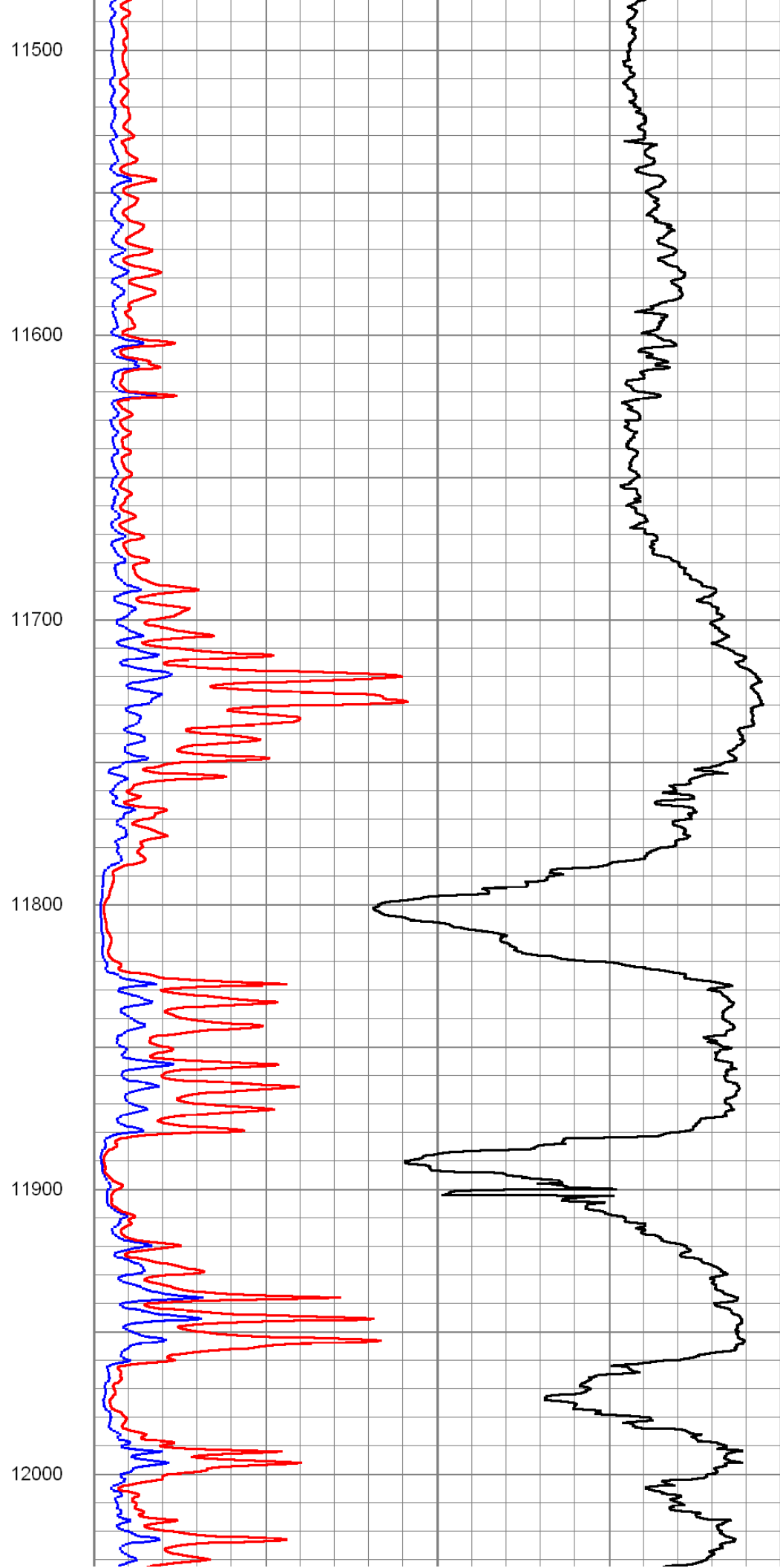
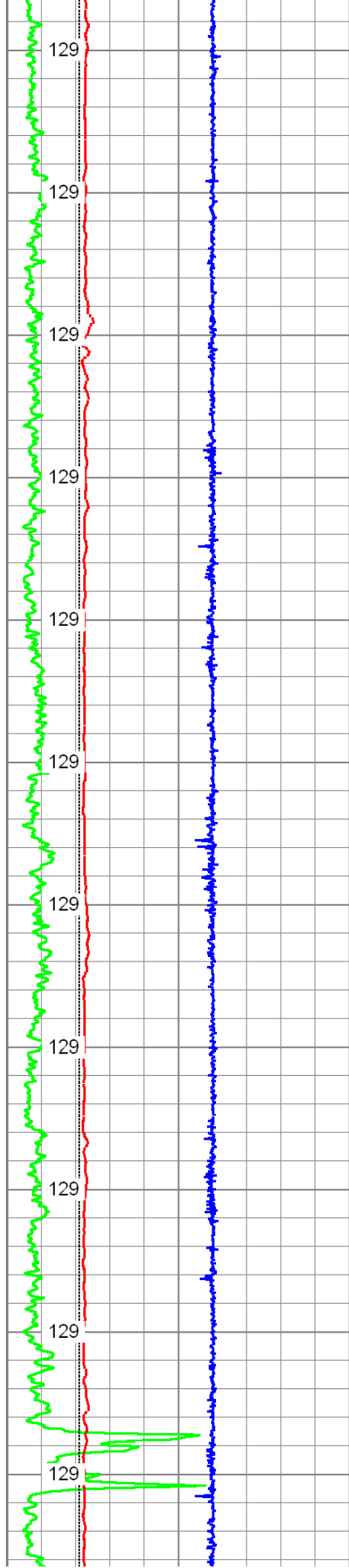
11100

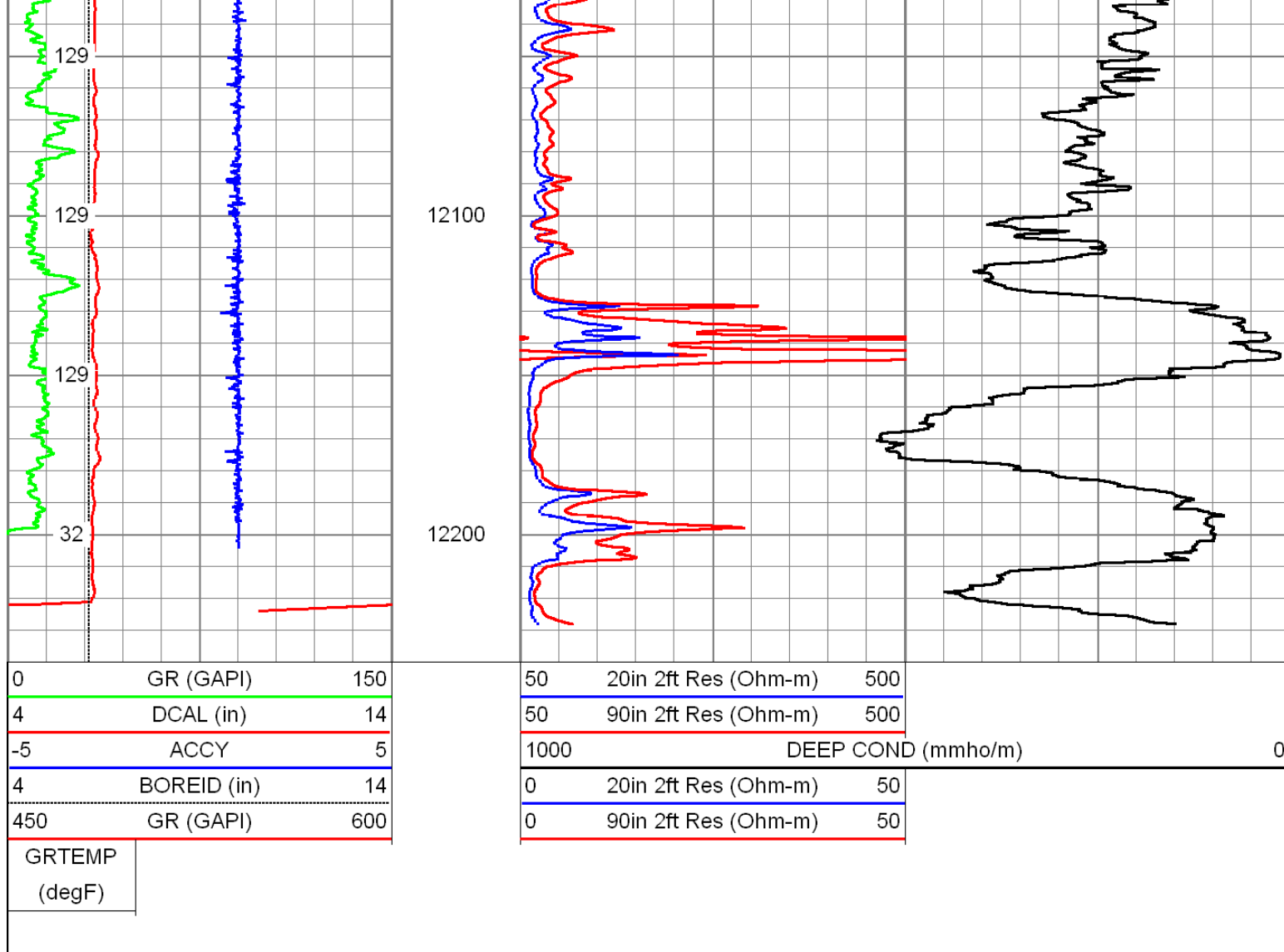
11200

11300

11400



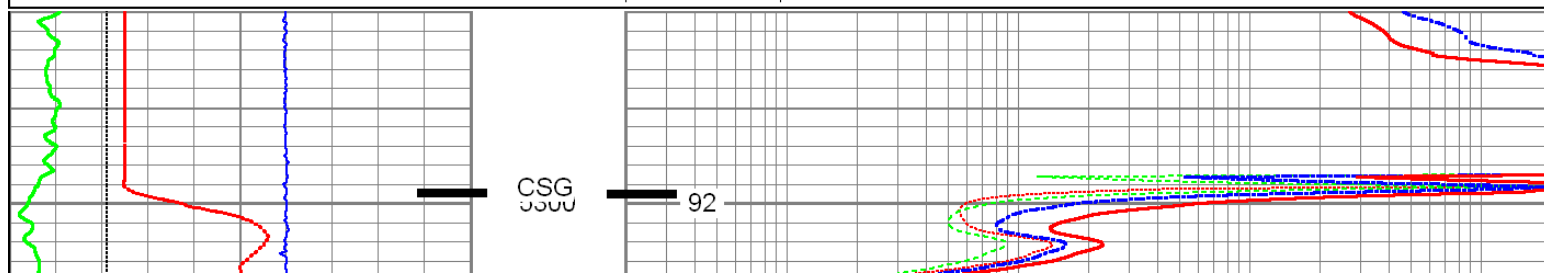


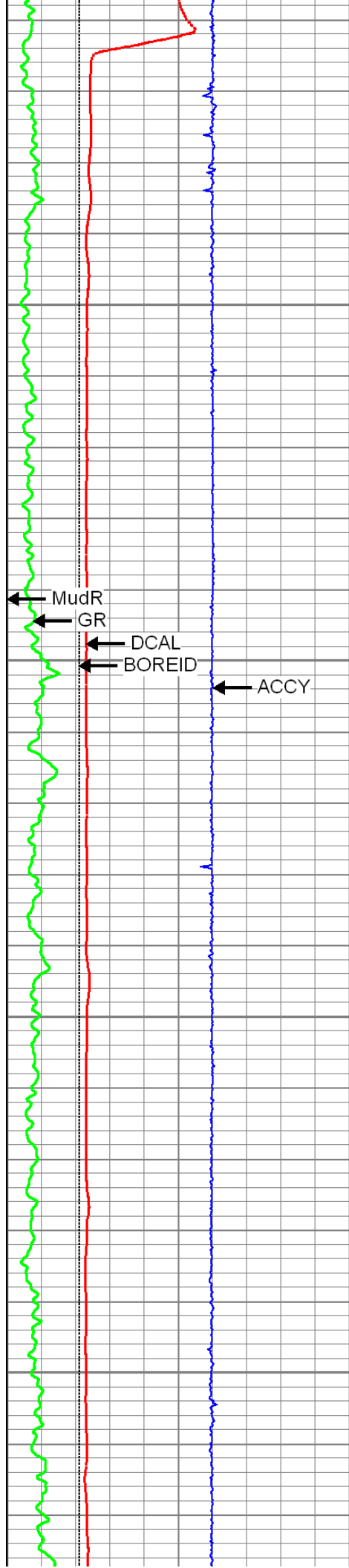


MAIN PASS

Database File: c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.db
 Dataset Pathname: proc1/pass1.3
 Presentation Format: 6_5r_chk
 Dataset Creation: Tue Dec 11 06:18:07 2012
 Charted by: Depth in Feet scaled 1:240

0	GR (GAPI)	150	0.2	20inRadial (Ohm-m)	2000
4	BOREID (in)	14	0.2	30inRadial (Ohm-m)	2000
4	DCAL (in)	14	0.2	60inRadial (Ohm-m)	2000
-5	ACCY	5	0.2	90inRadial (Ohm-m)	2000
0	MudR (Ohm-m)	100	GRTEMP (degF)		





5350

92

5400

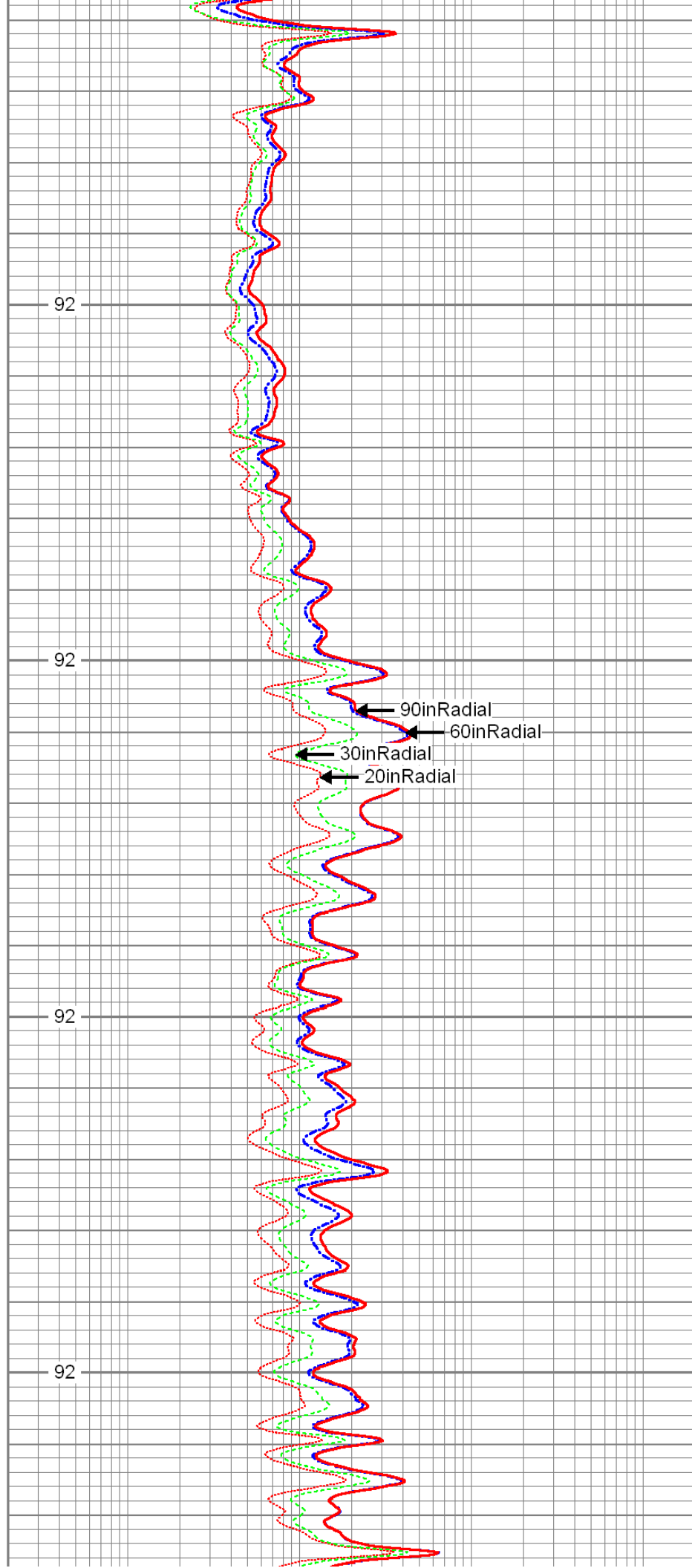
92

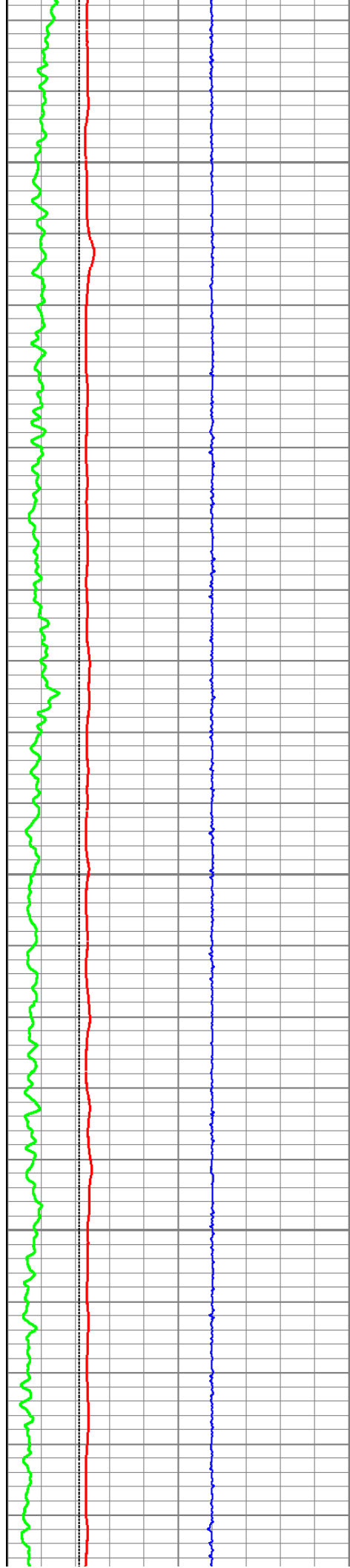
5450

92

5500

92





5550

5600

5650

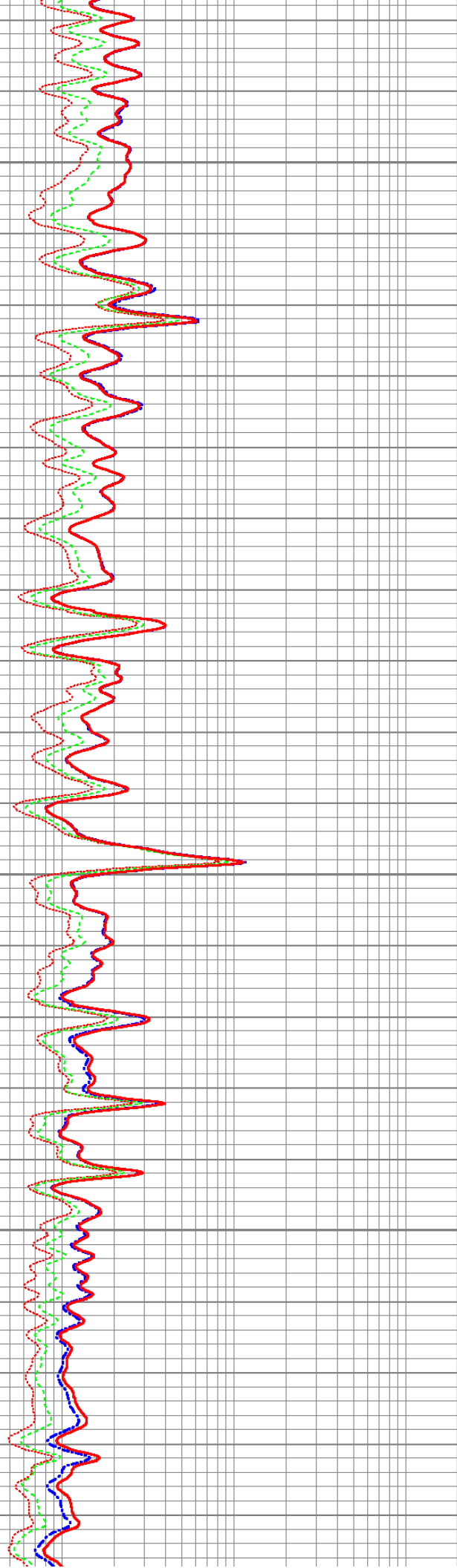
5700

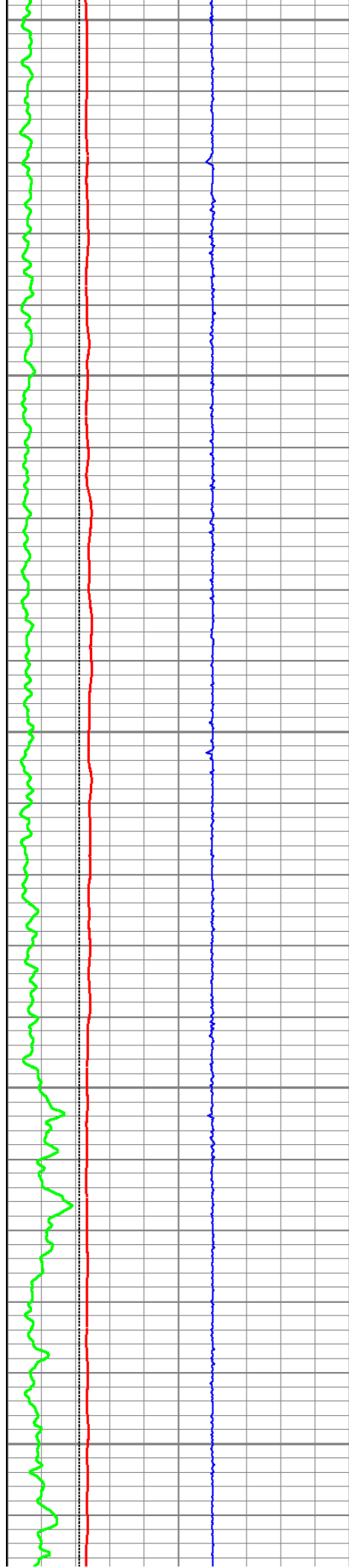
92

92

92

92





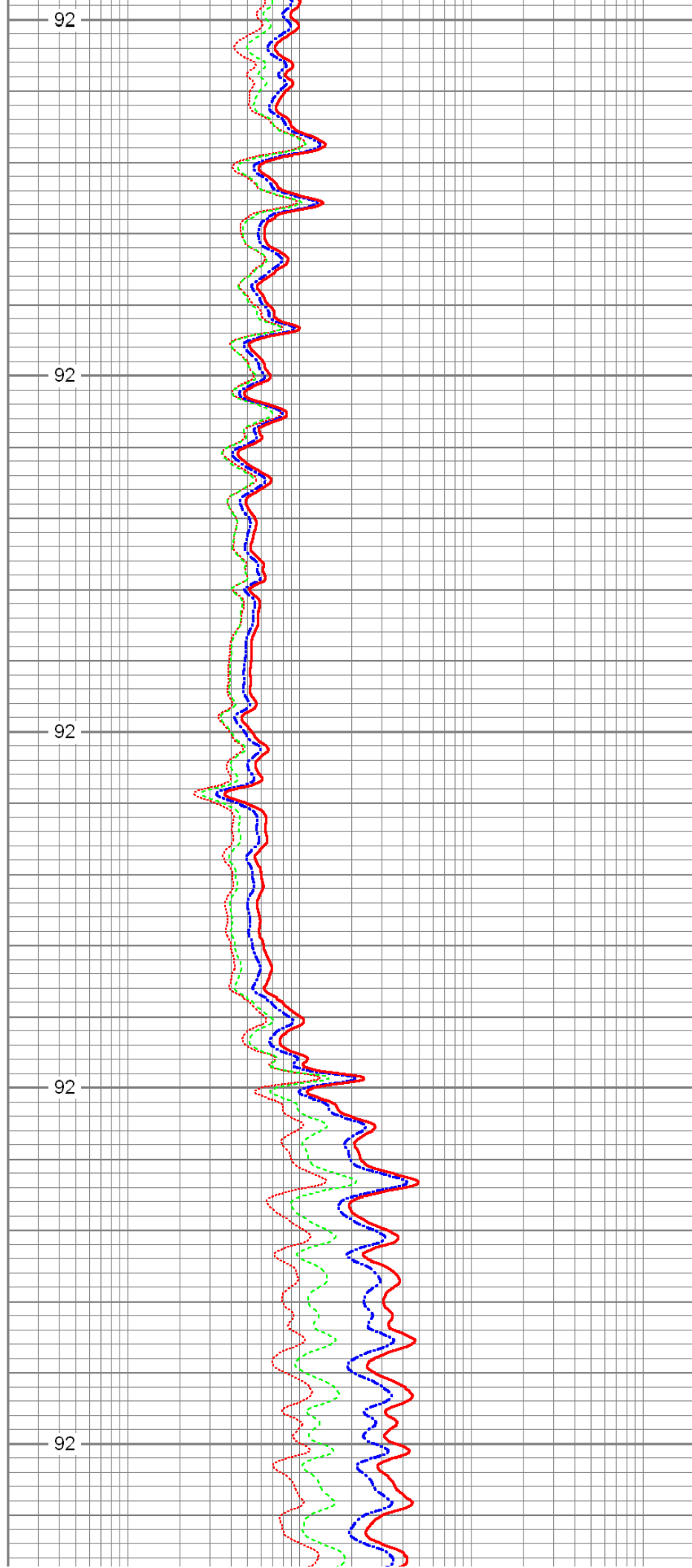
5750

5800

5850

5900

5950



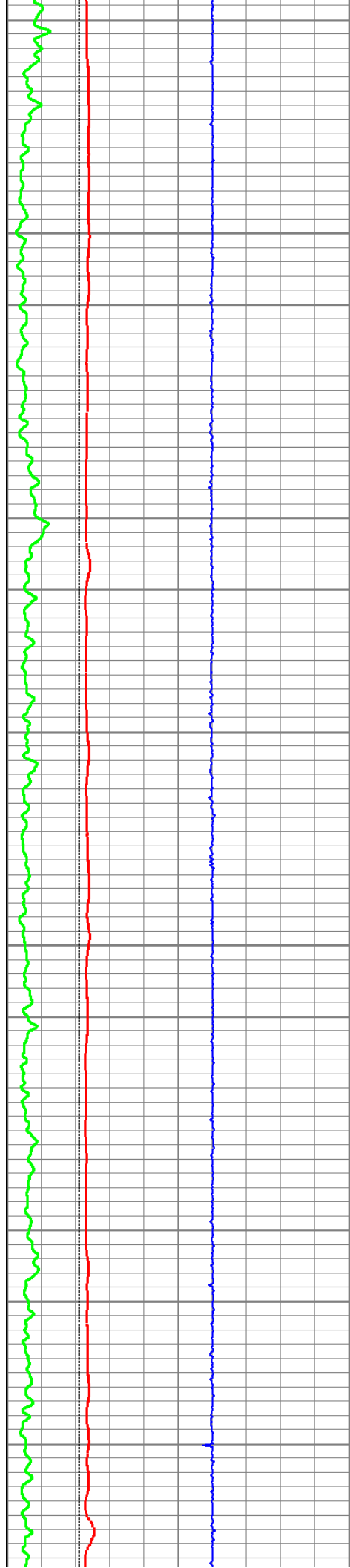
92

92

92

92

92



6000

6050

6100

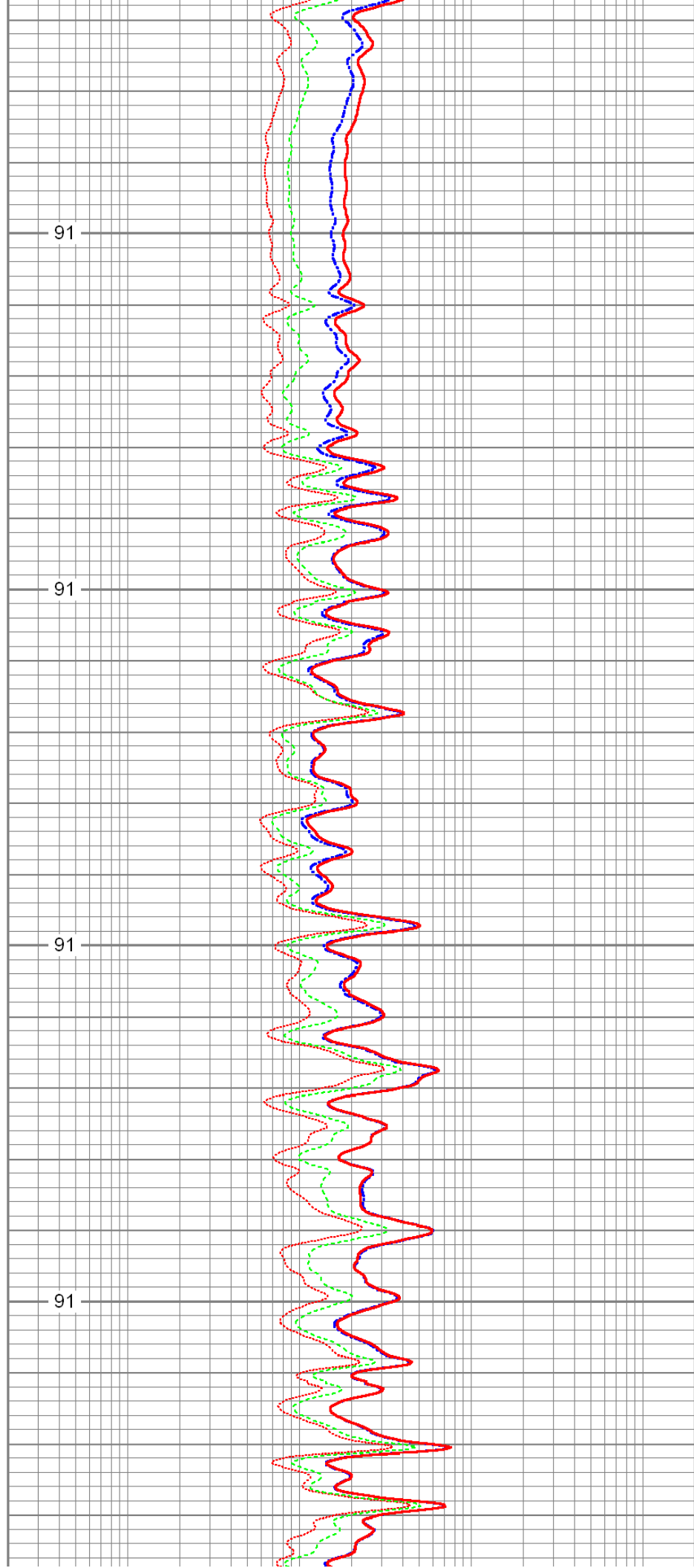
6150

91

91

91

91





6200

91

6250

91

6300

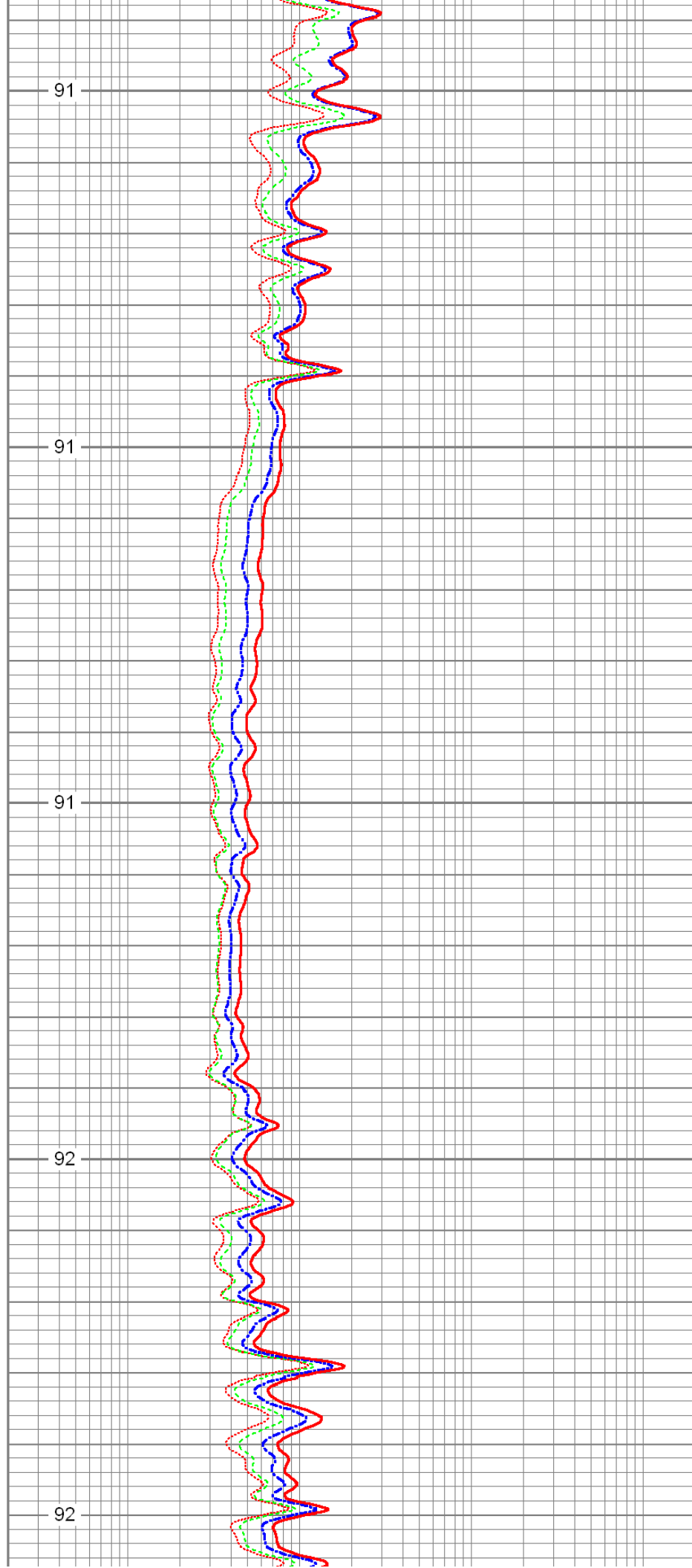
91

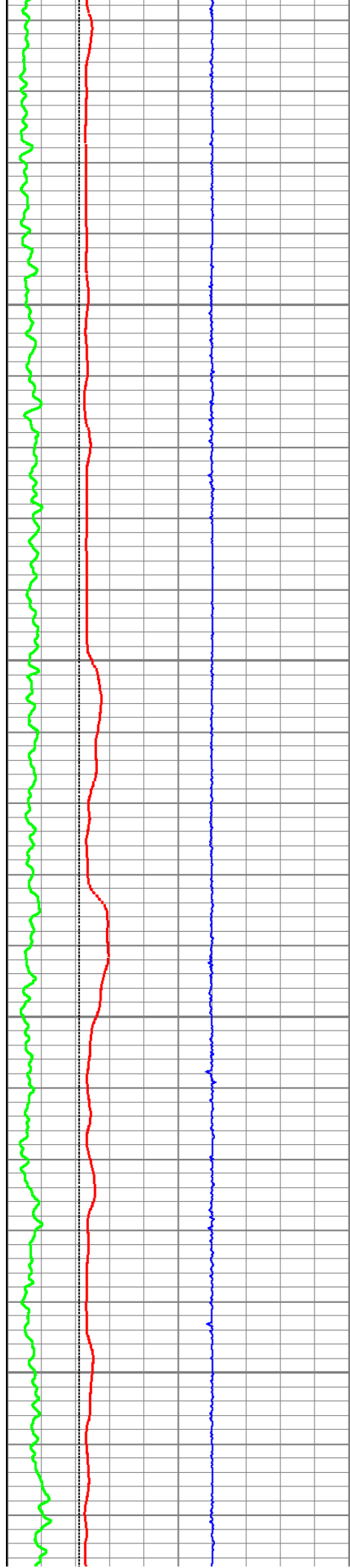
6350

92

6400

92





6450

6500

6550

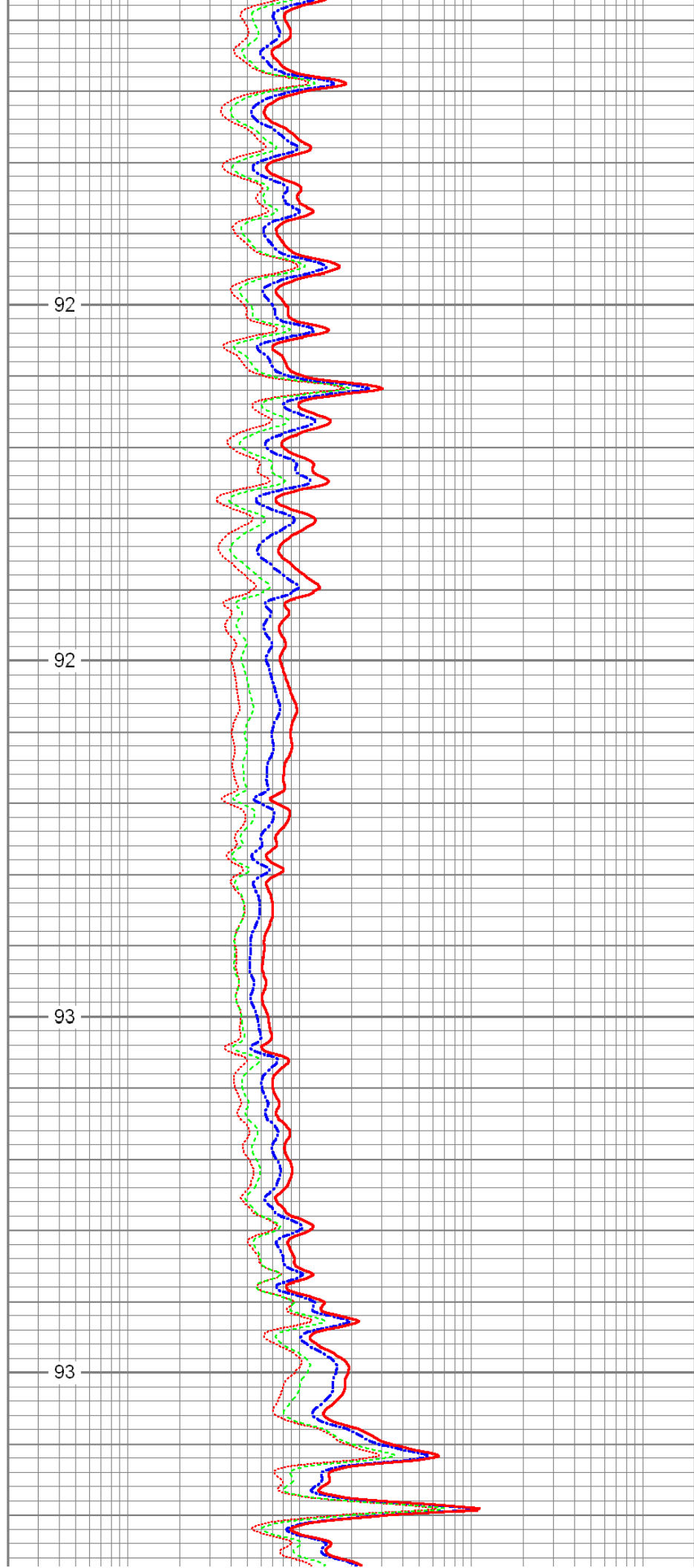
6600

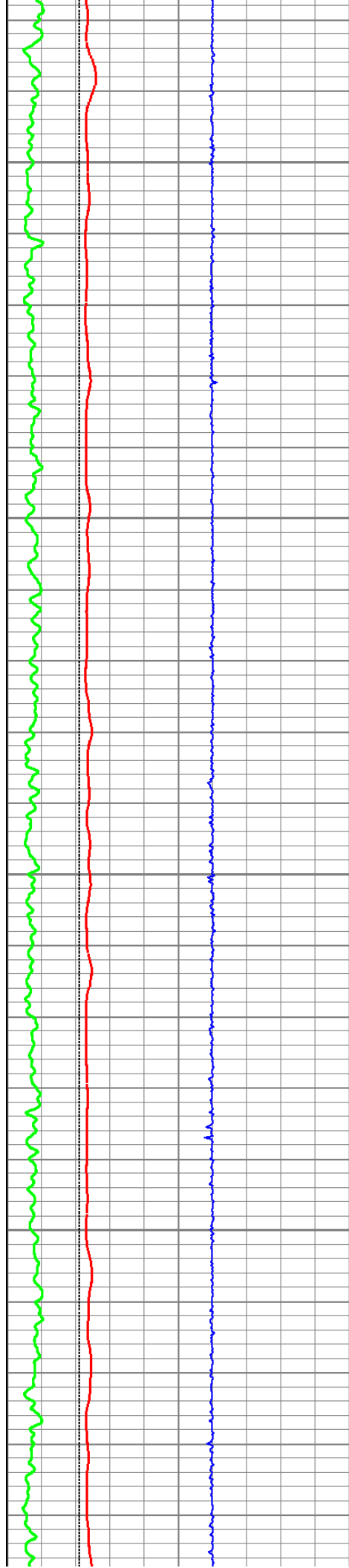
92

92

93

93





6650

6700

6750

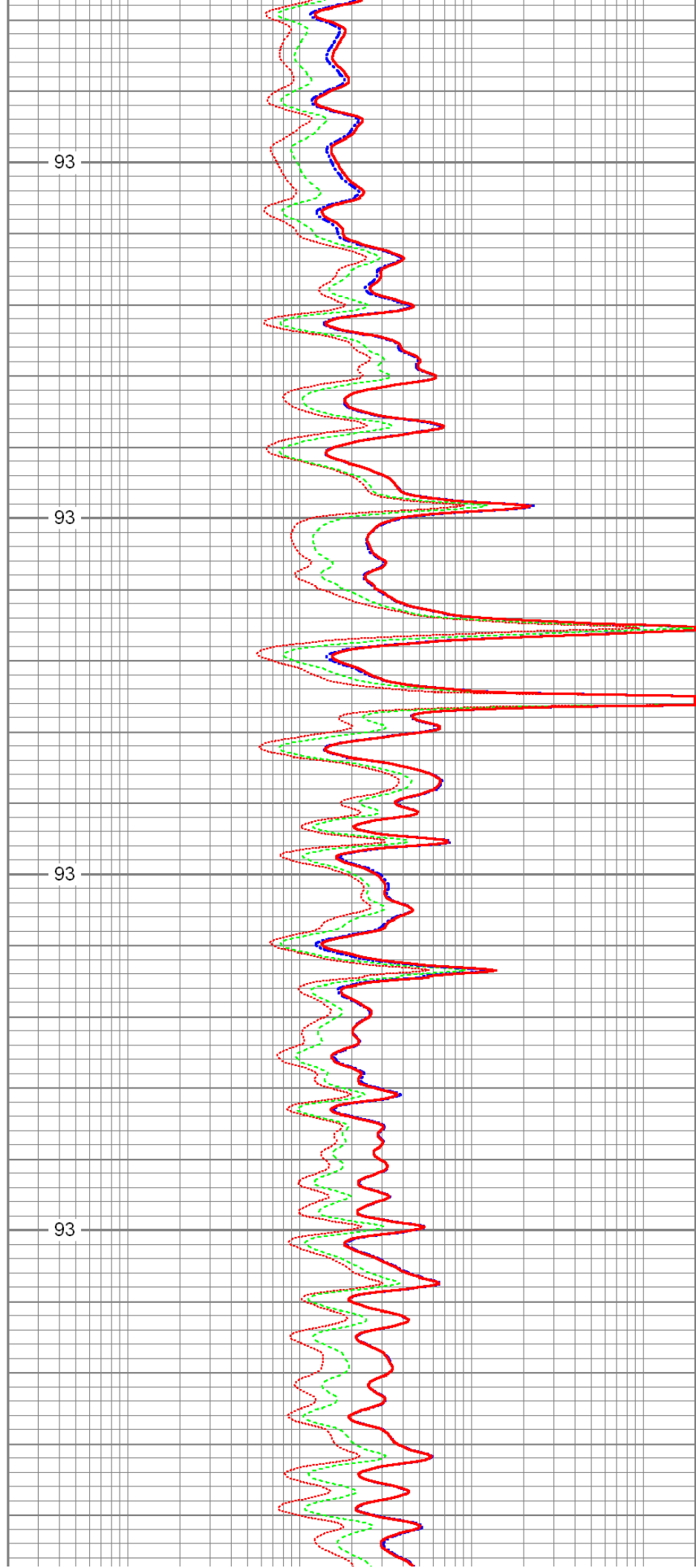
6800

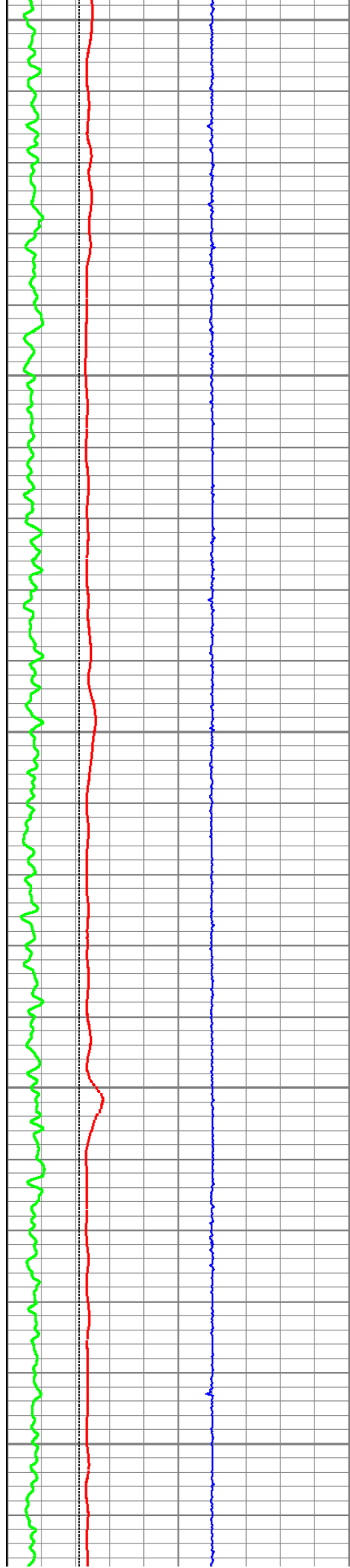
93

93

93

93





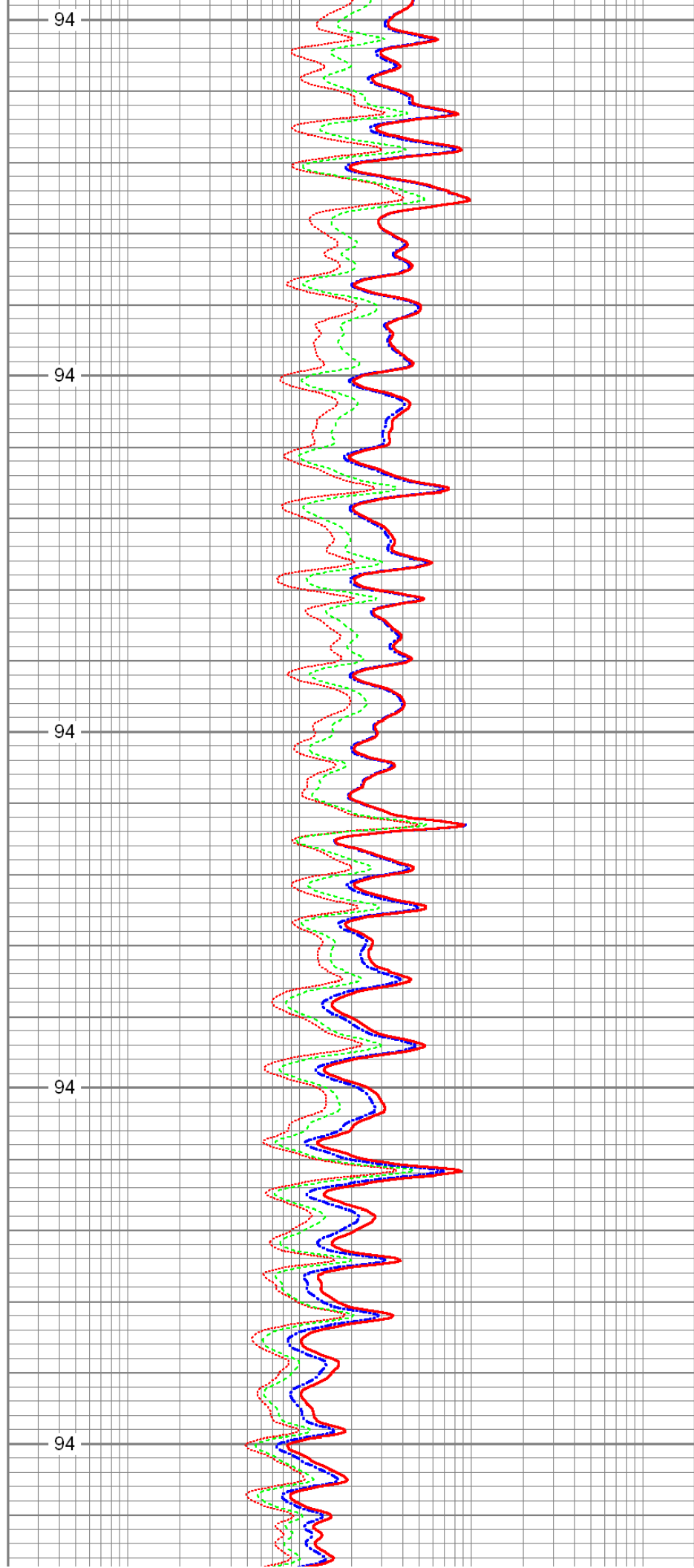
6850

6900

6950

7000

7050



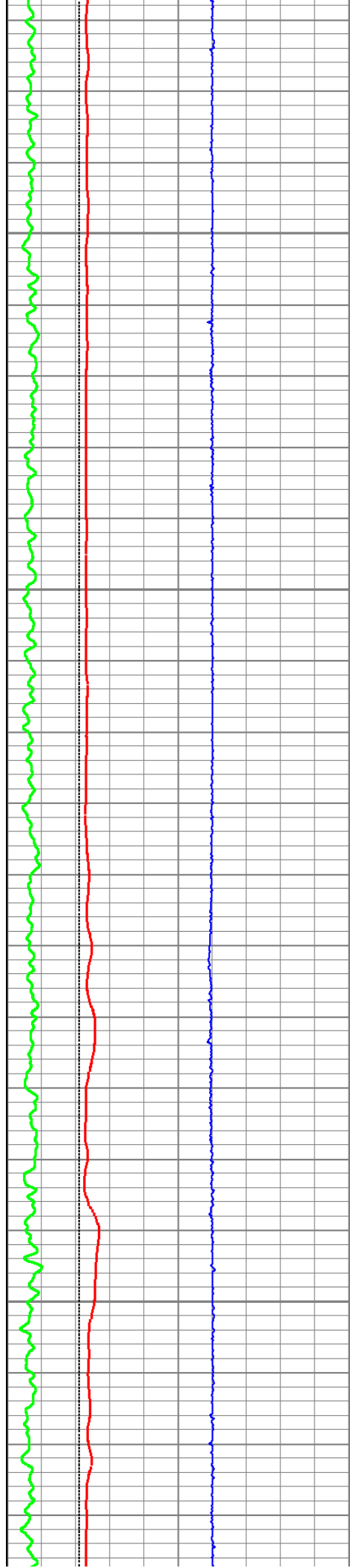
94

94

94

94

94



7100

7150

7200

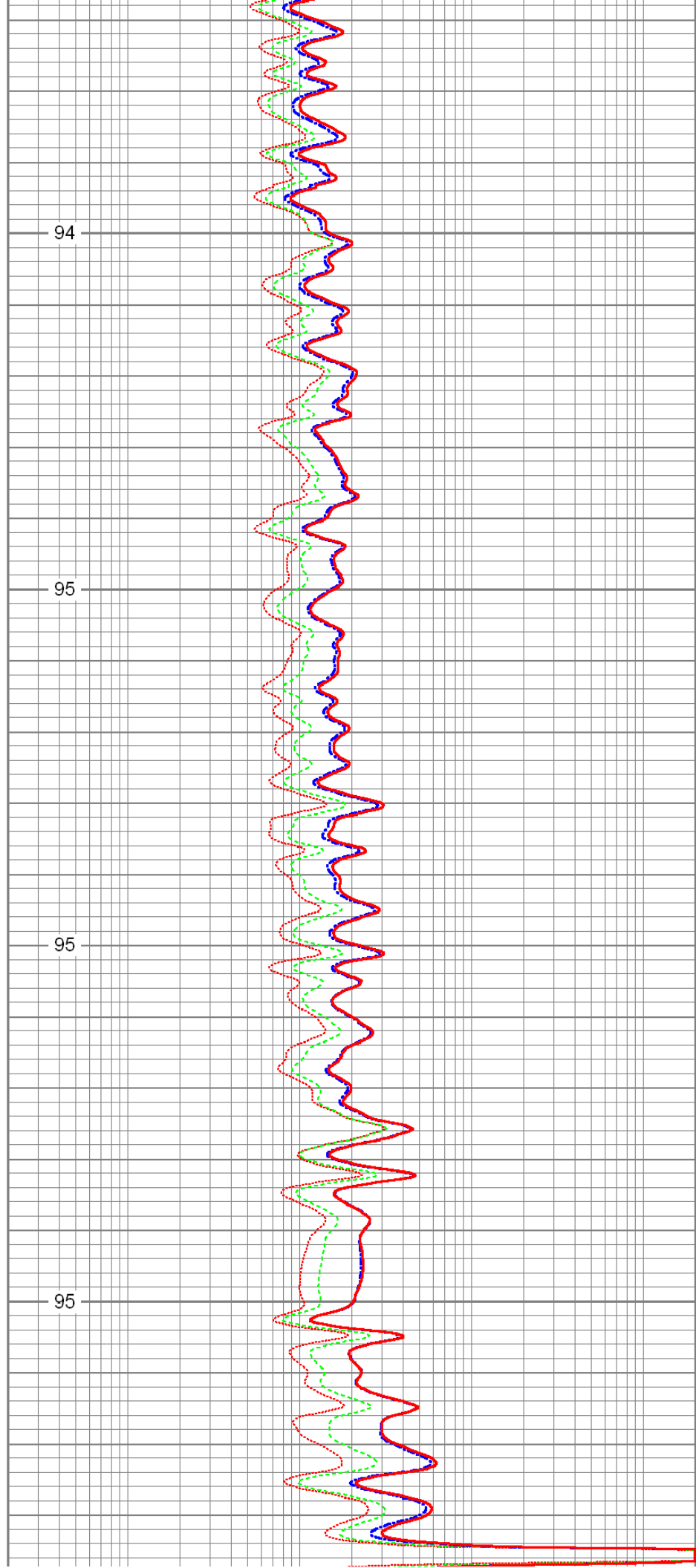
7250

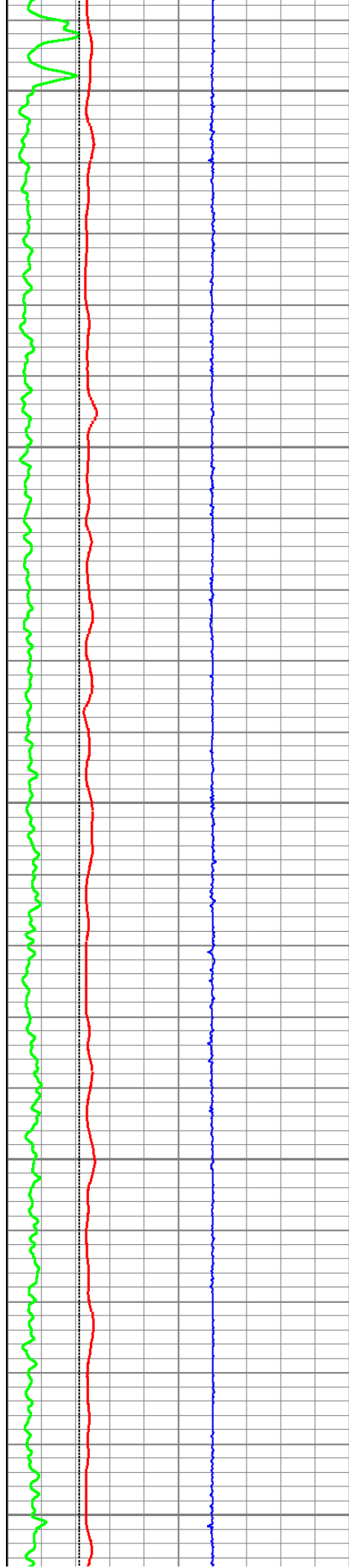
94

95

95

95





7300

7350

7400

7450

7500

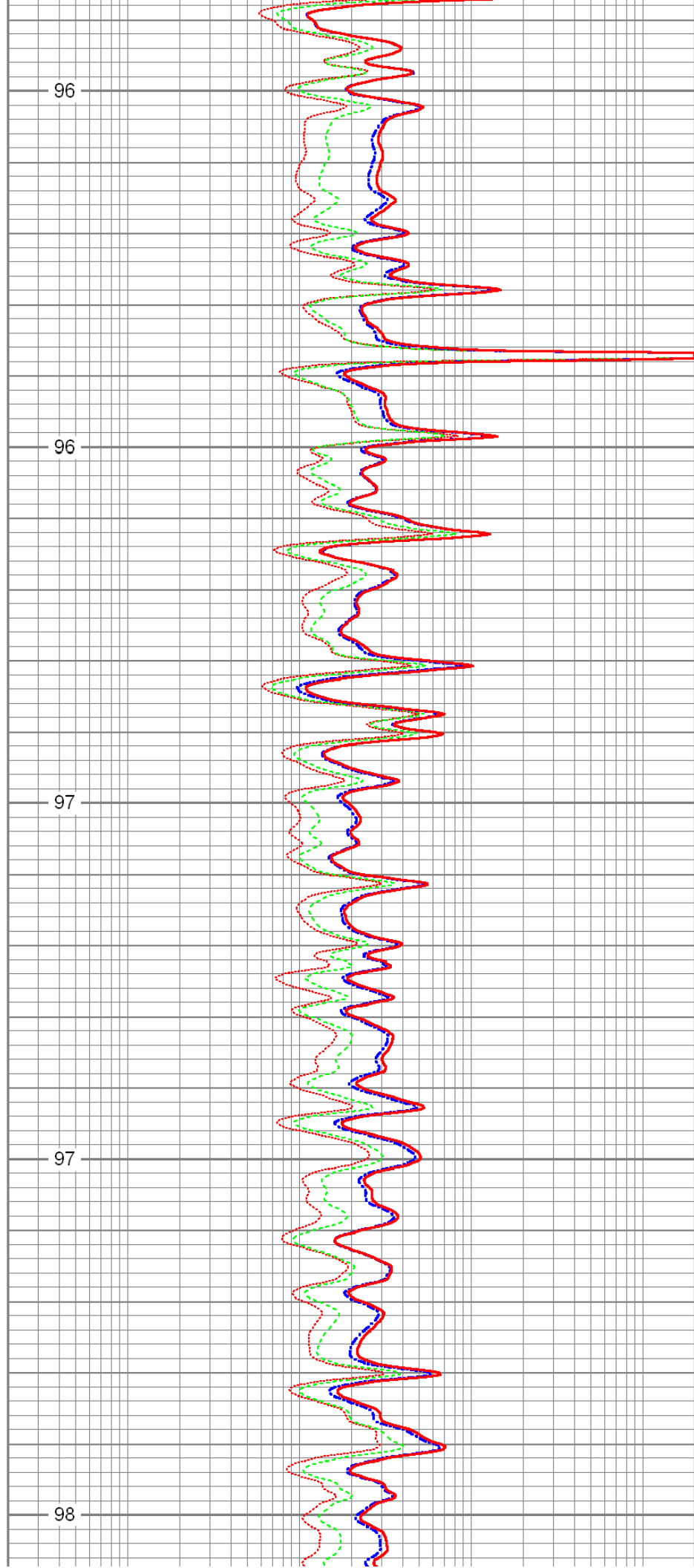
96

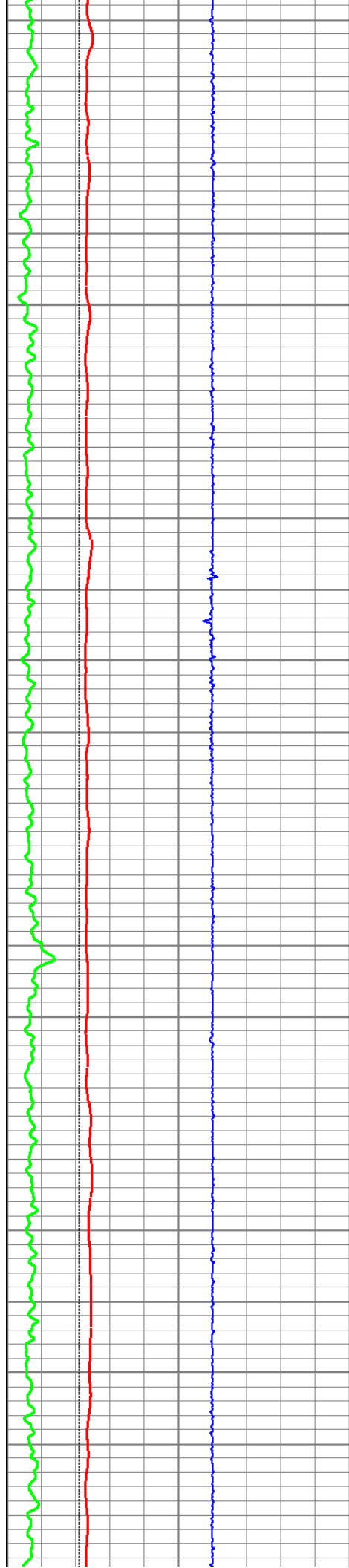
96

97

97

98





7550

7600

7650

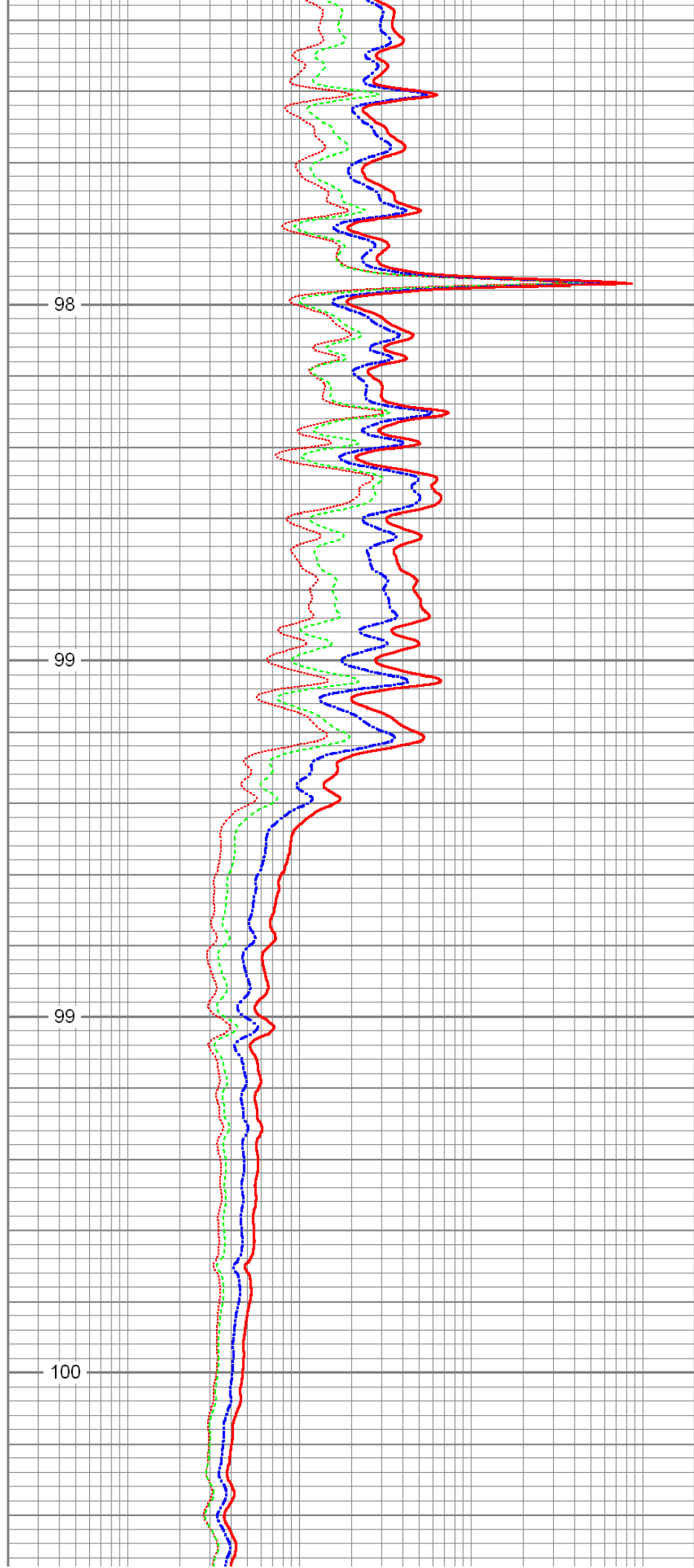
7700

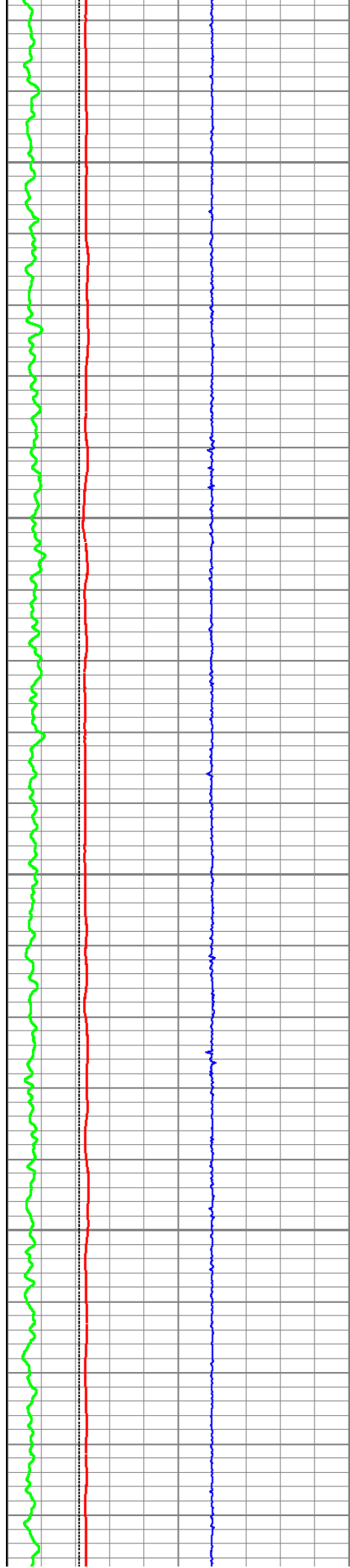
98

99

99

100





7750

7800

7850

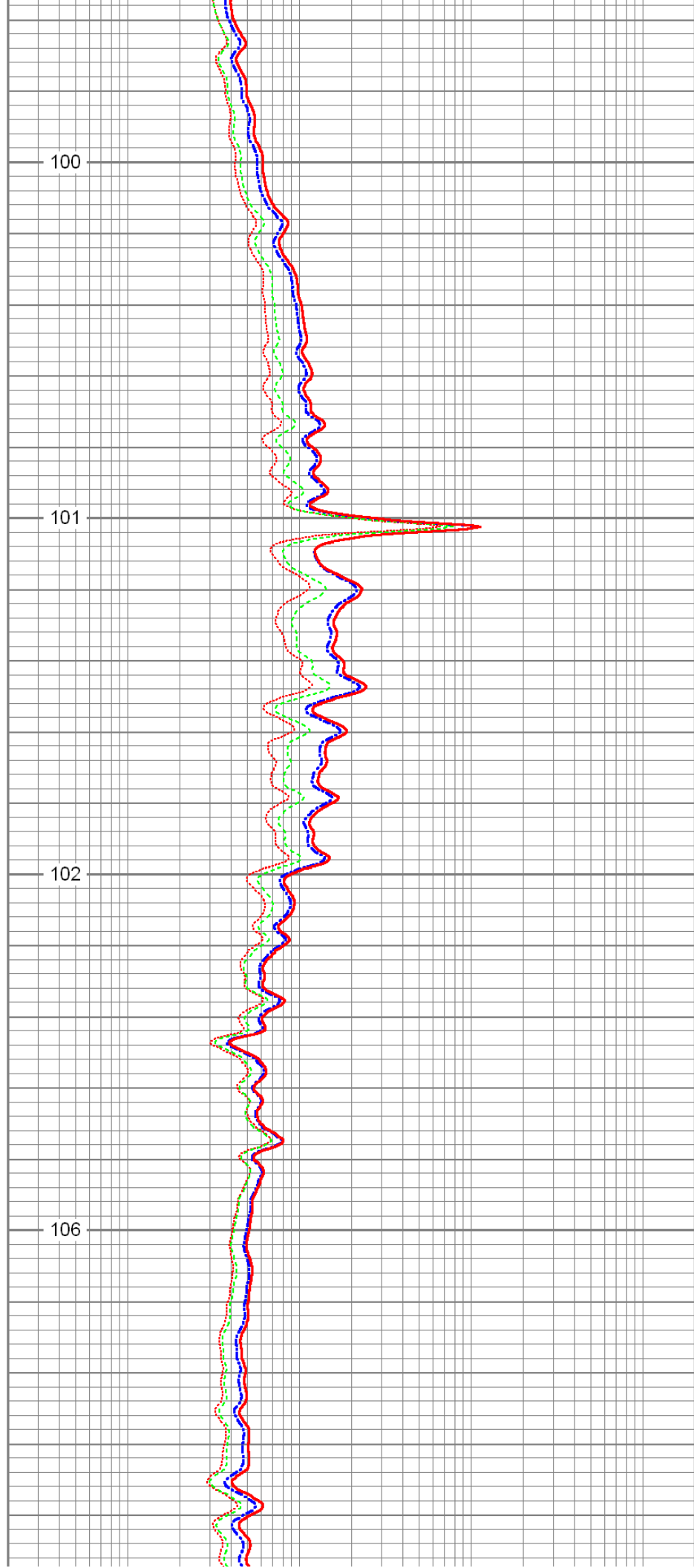
7900

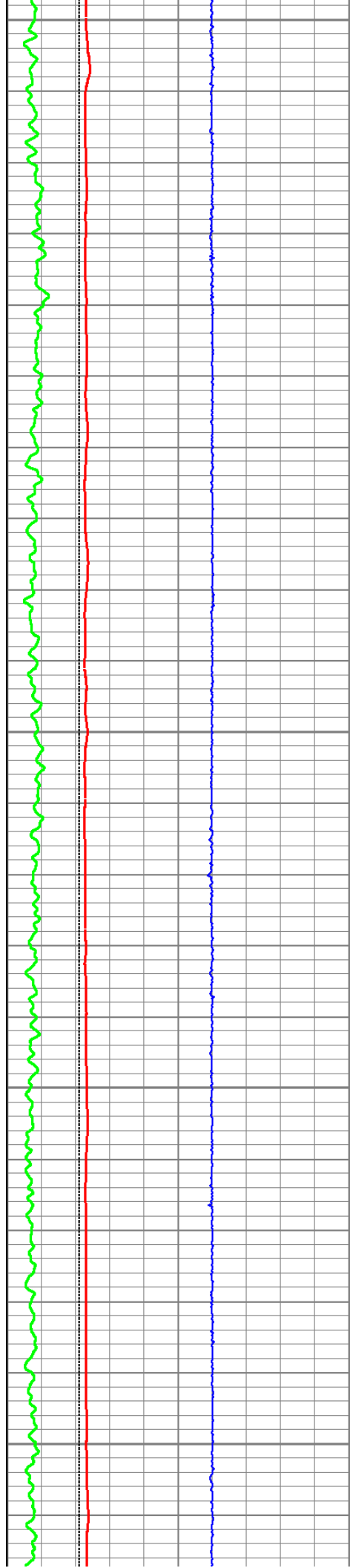
100

101

102

106





7950

8000

8050

8100

8150

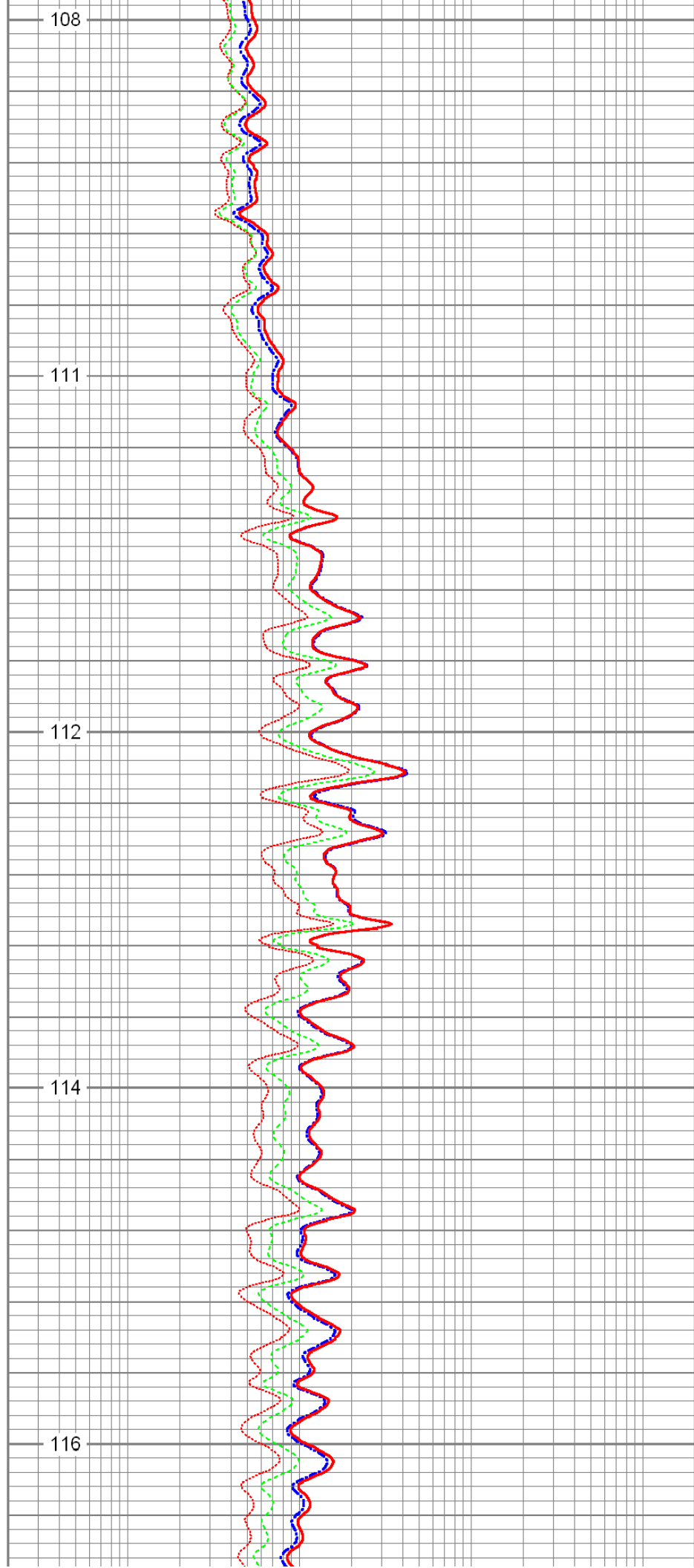
108

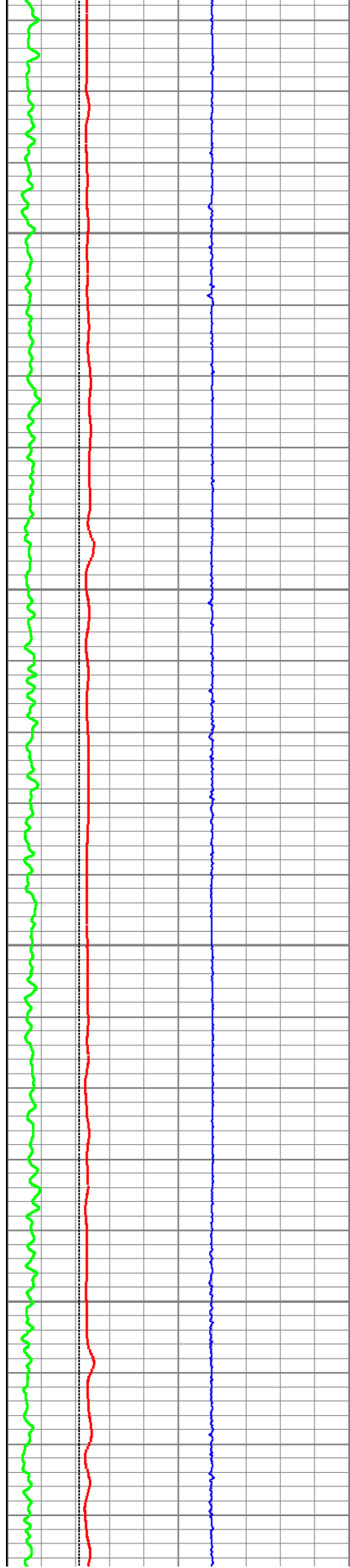
111

112

114

116





8200

117

8250

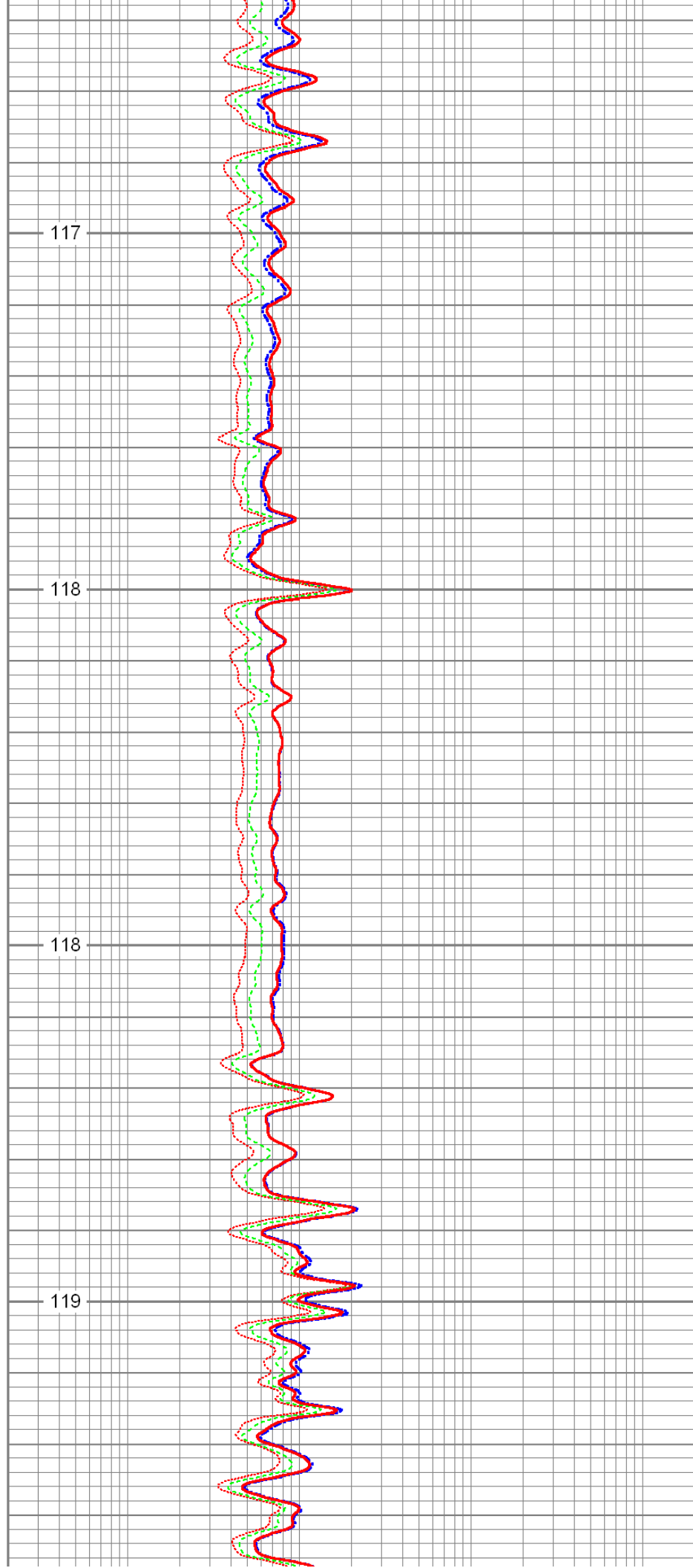
118

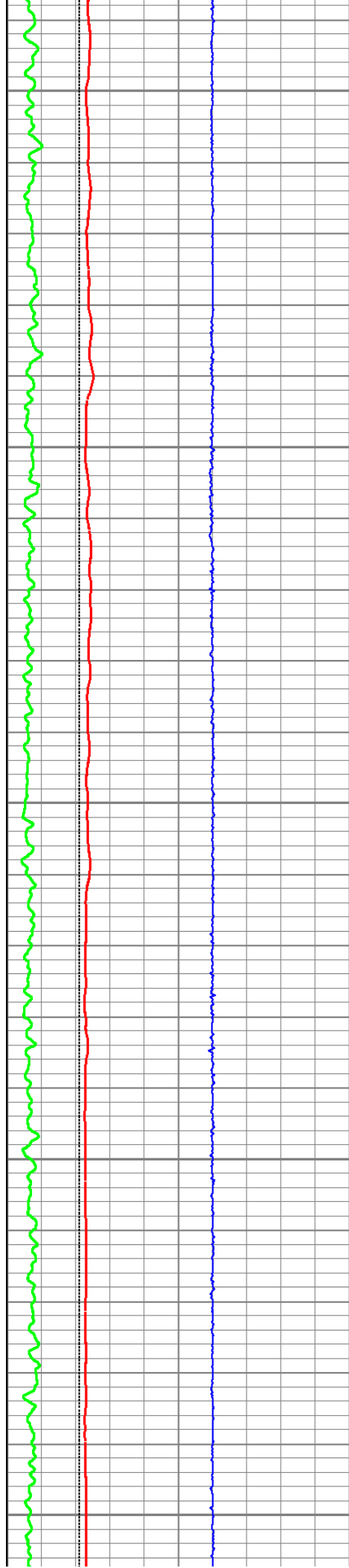
8300

118

8350

119





8400

8450

8500

8550

8600

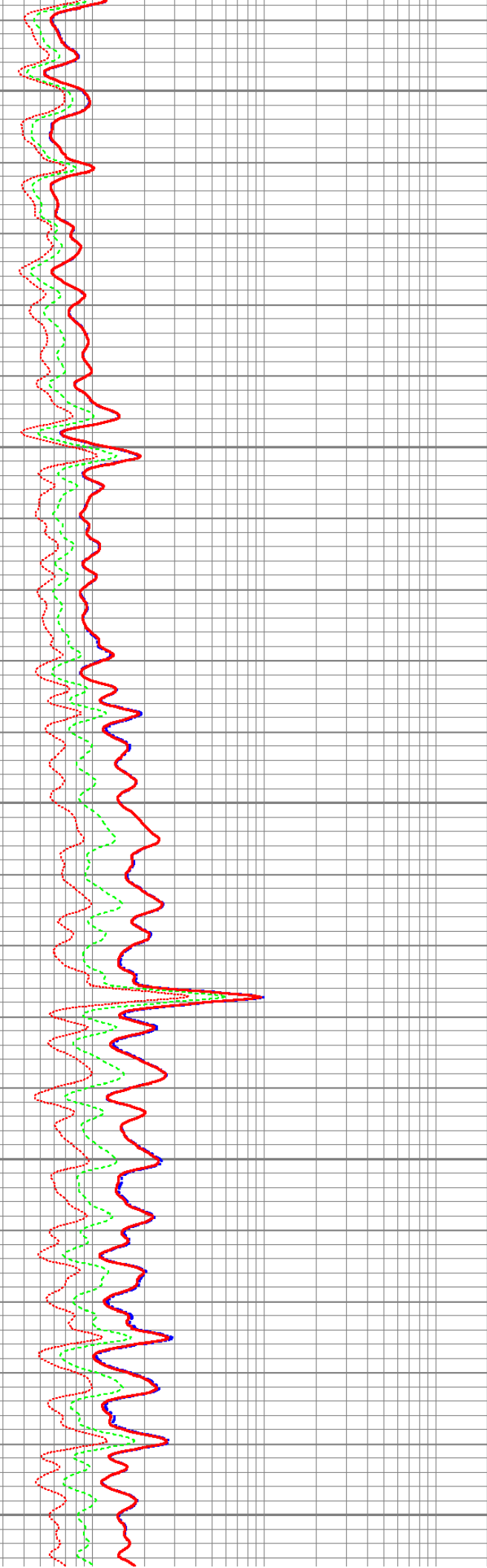
120

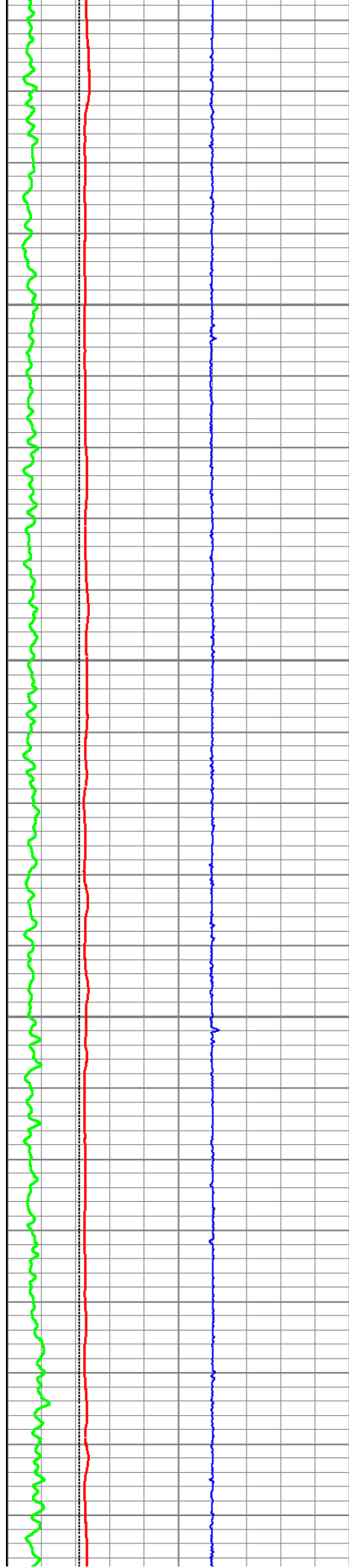
120

121

121

122





8650

8700

8750

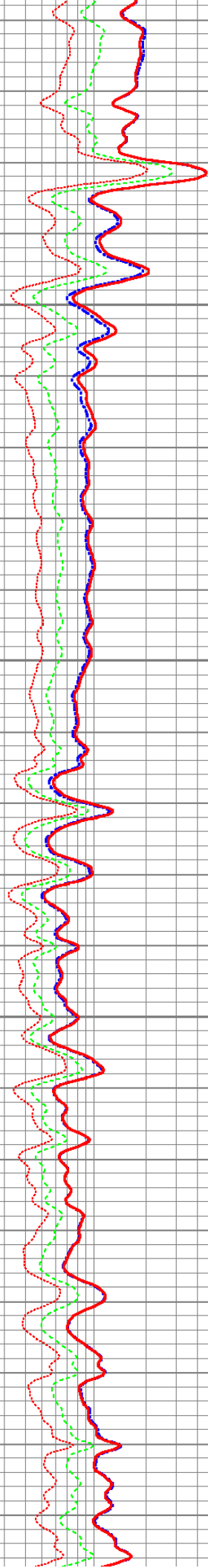
8800

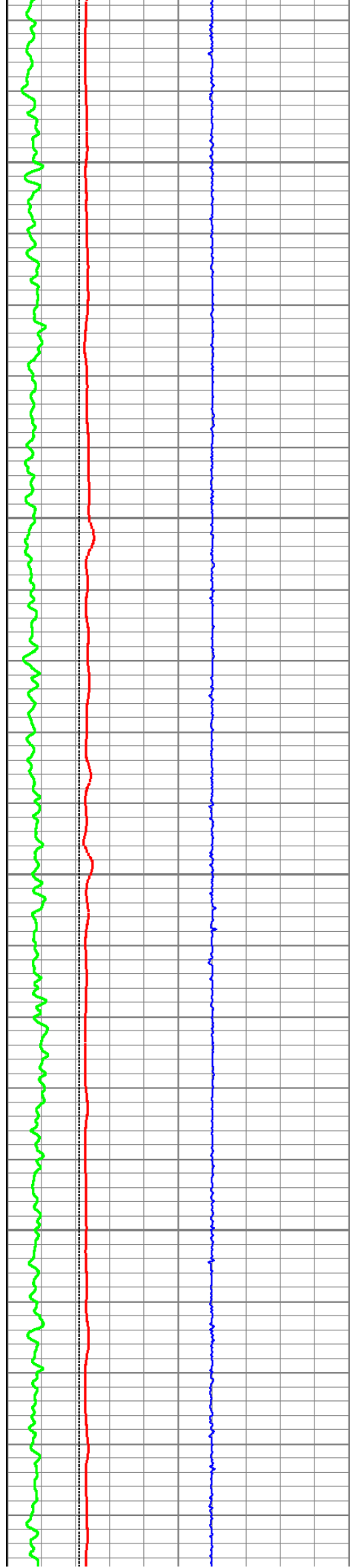
122

122

123

123





8850

8900

8950

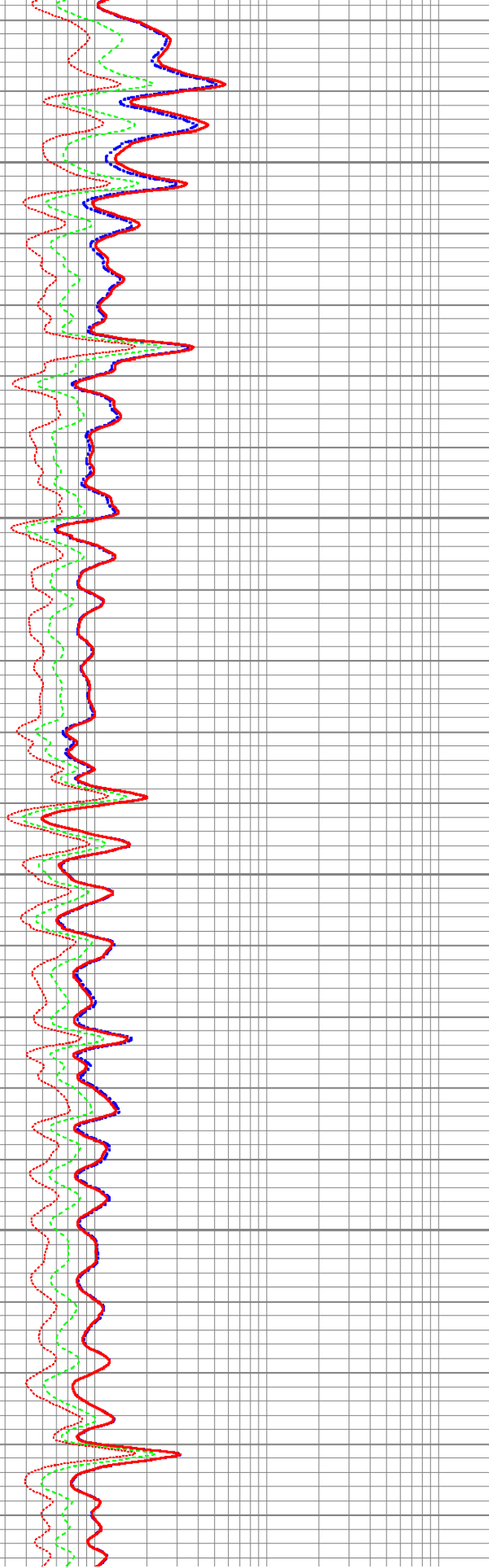
9000

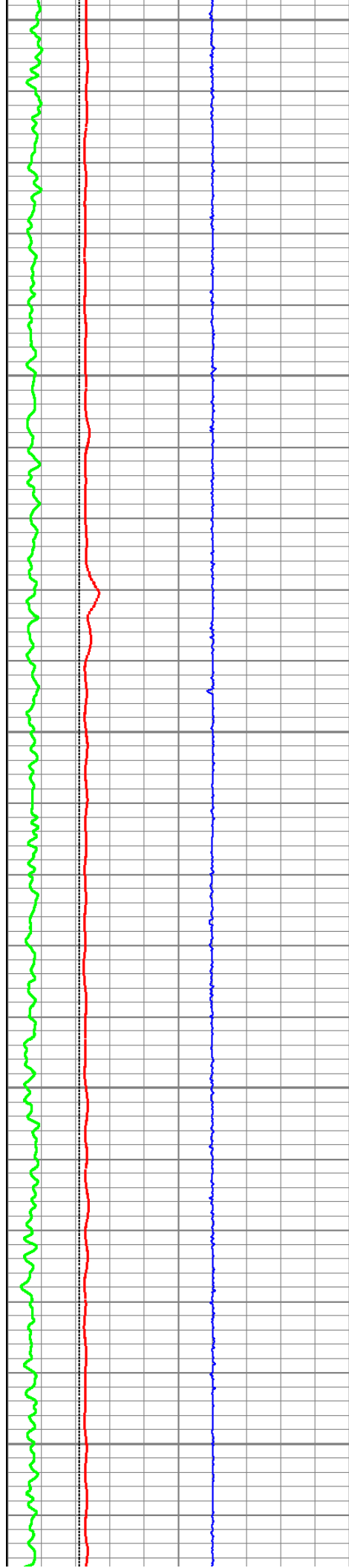
123

124

124

124





9050

9100

9150

9200

9250

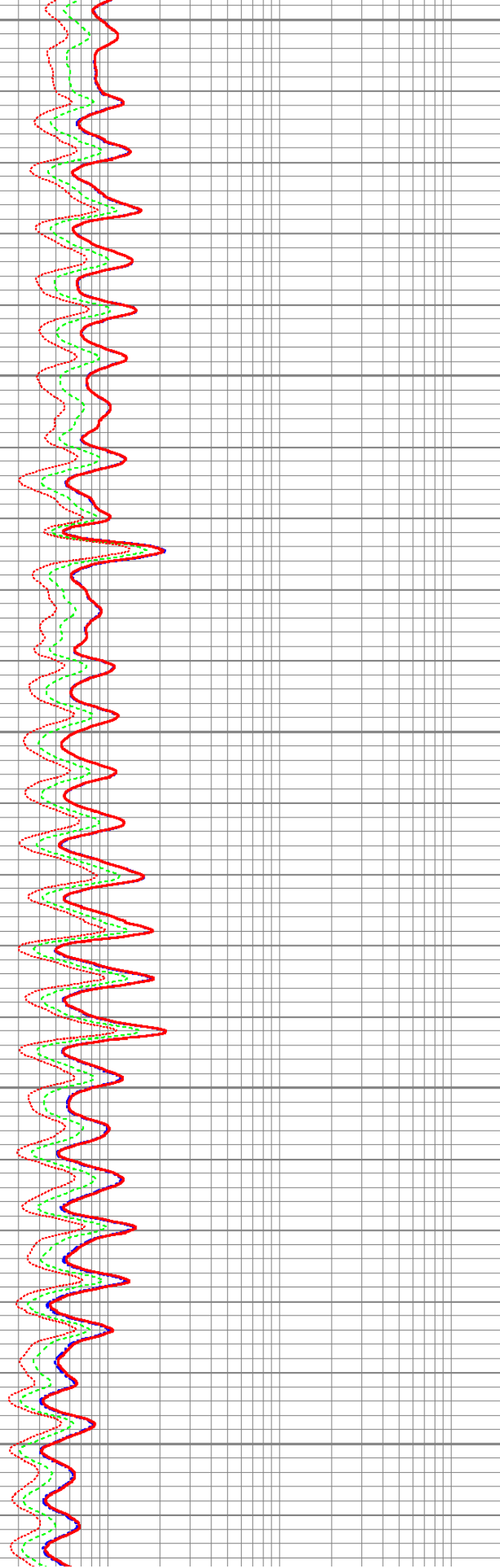
124

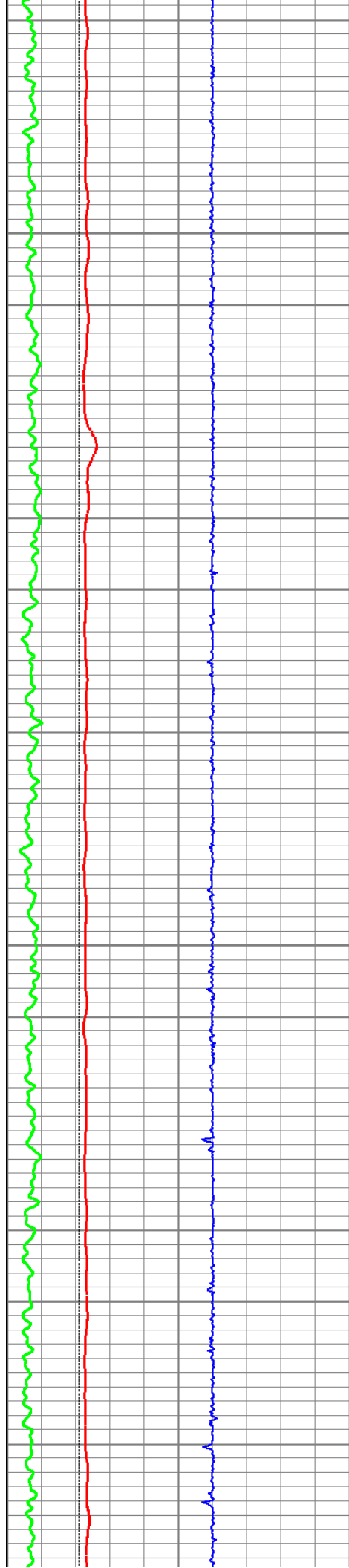
125

125

125

125





9300

9350

9400

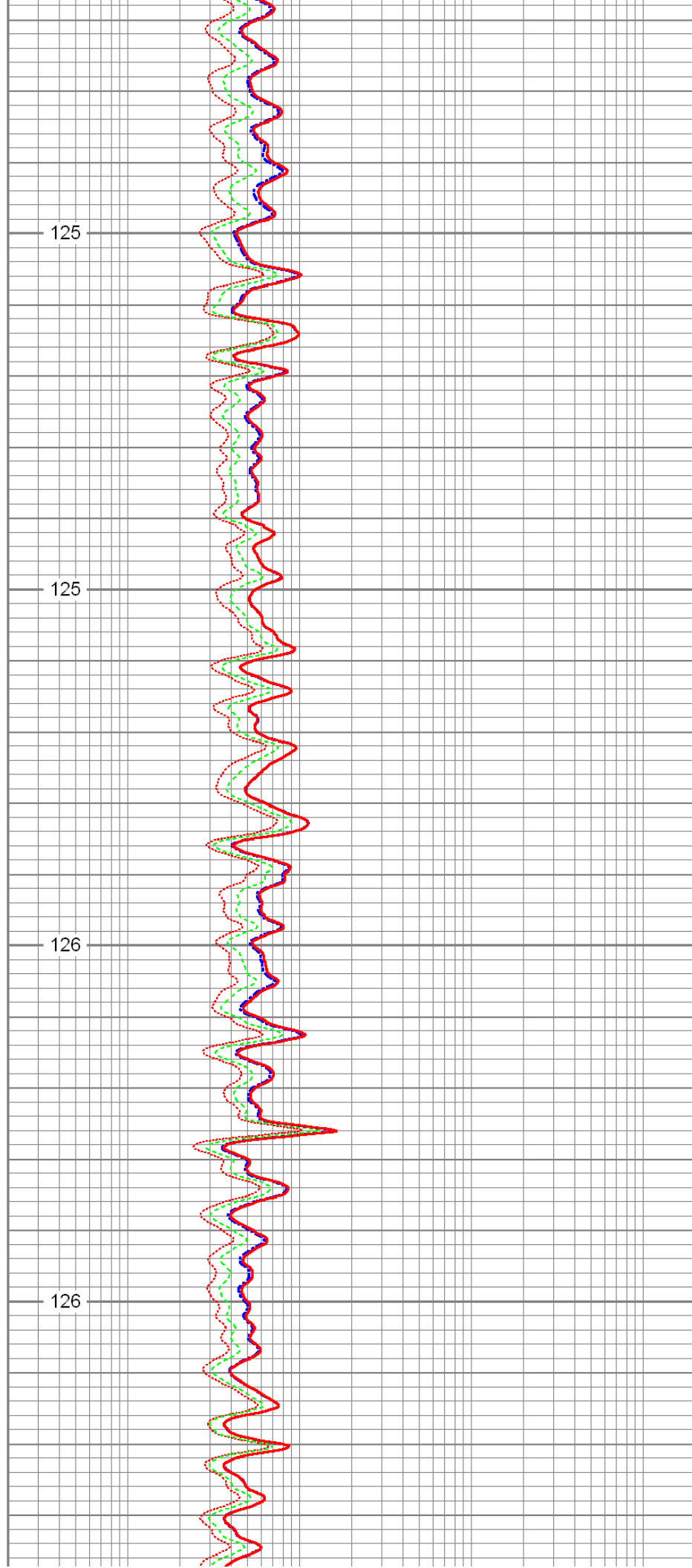
9450

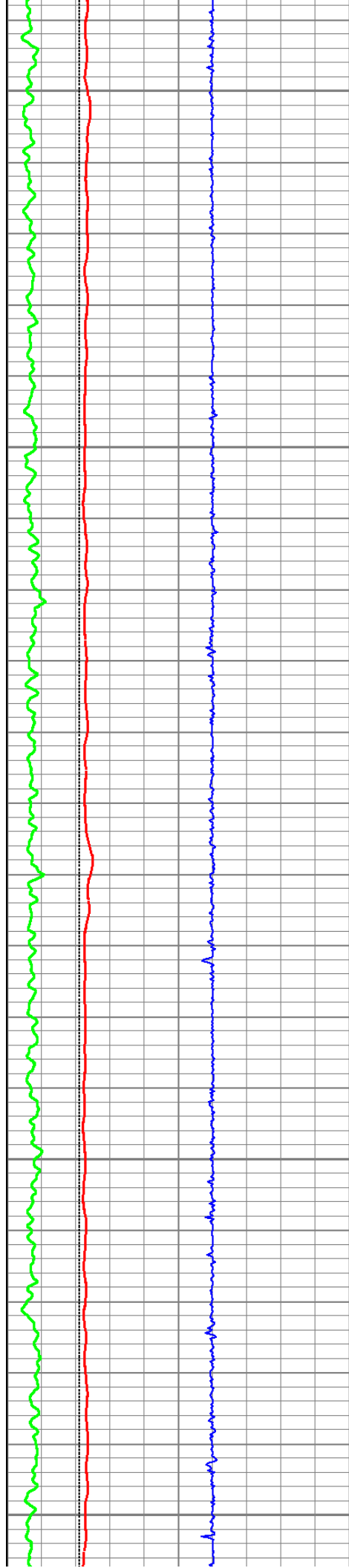
125

125

126

126





9500

9550

9600

9650

9700

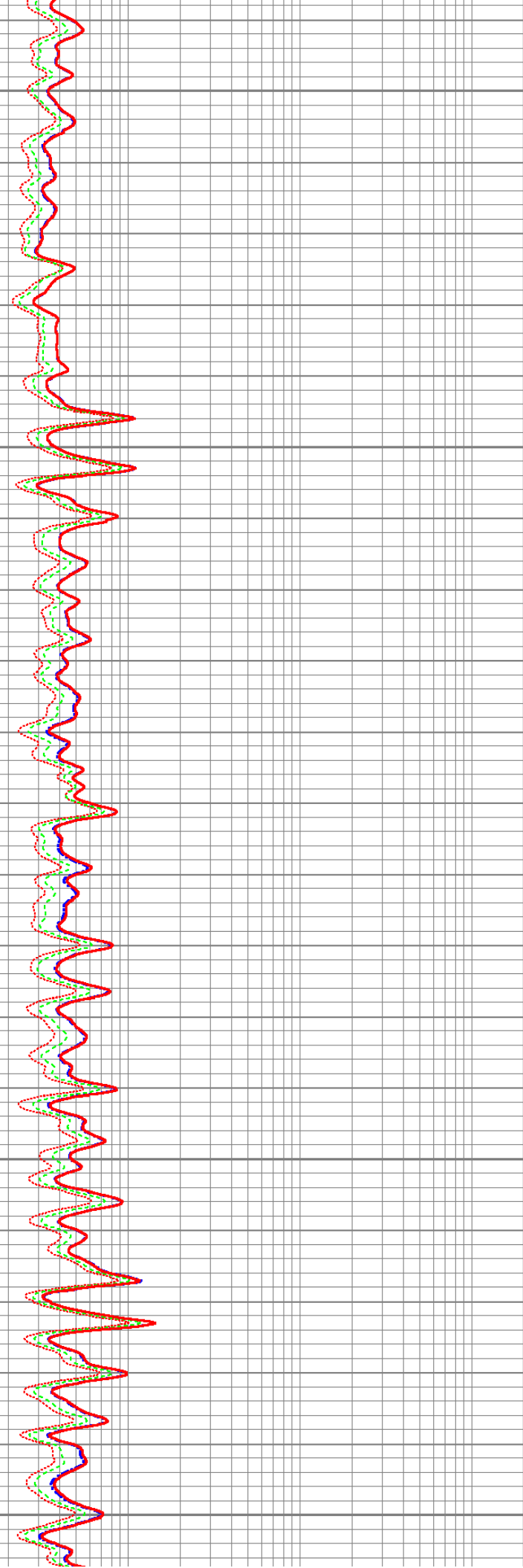
126

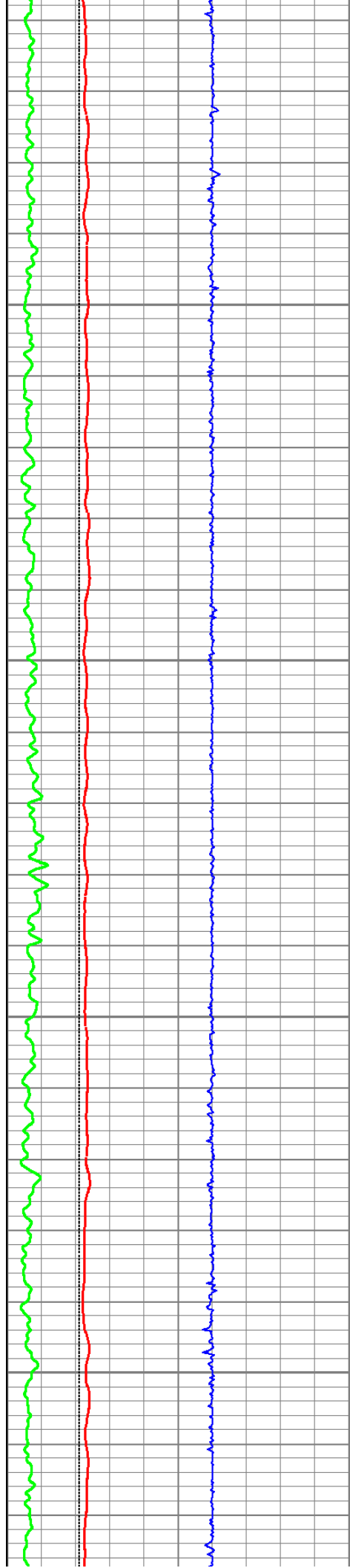
126

126

126

127





9750

9800

9850

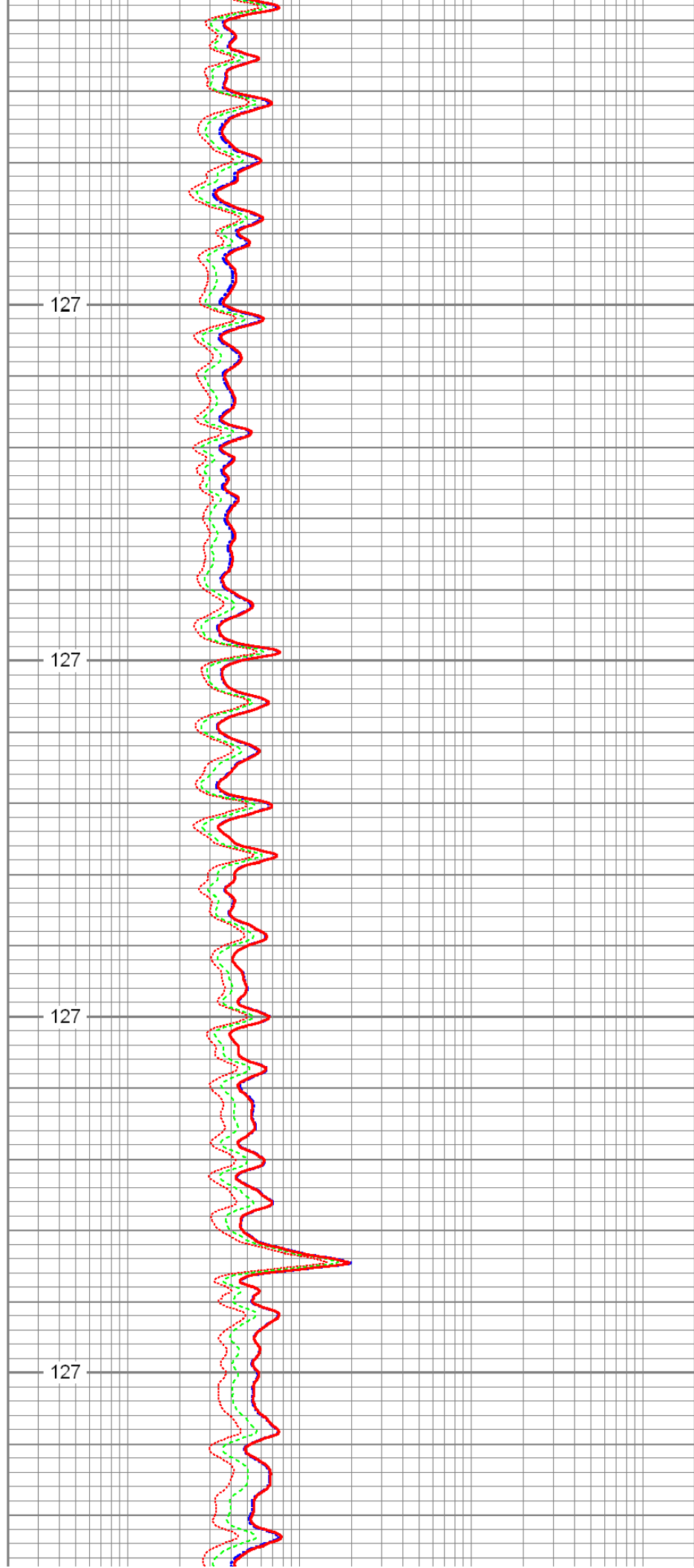
9900

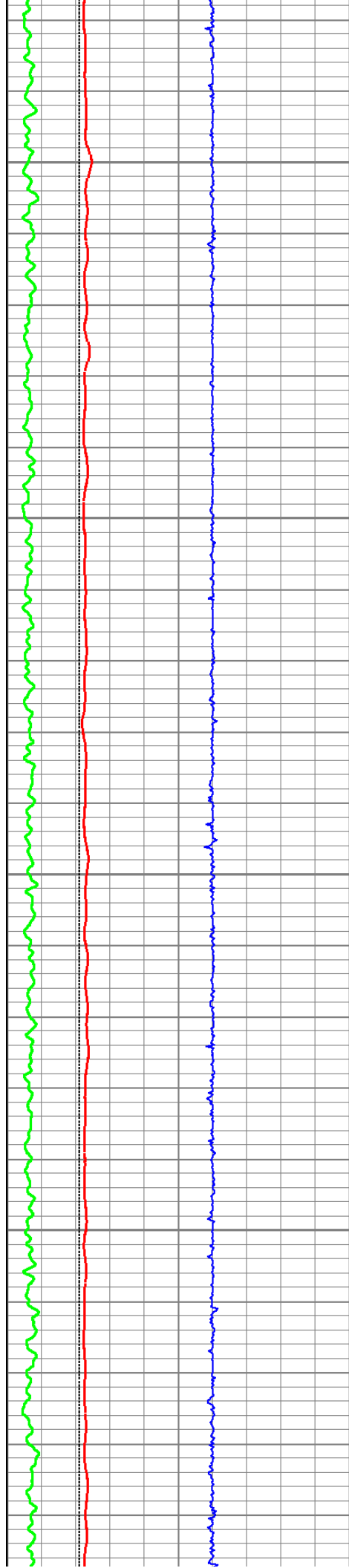
127

127

127

127





9950

127

10000

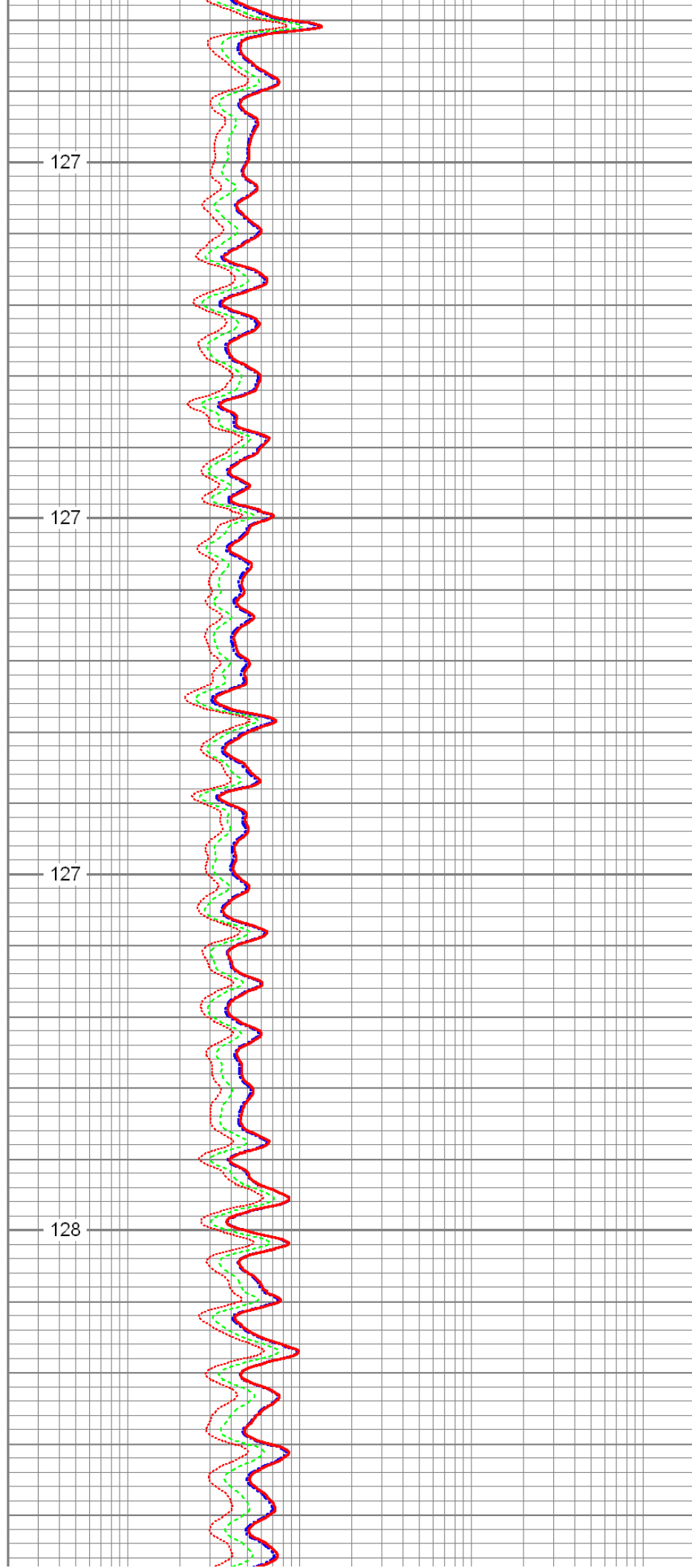
127

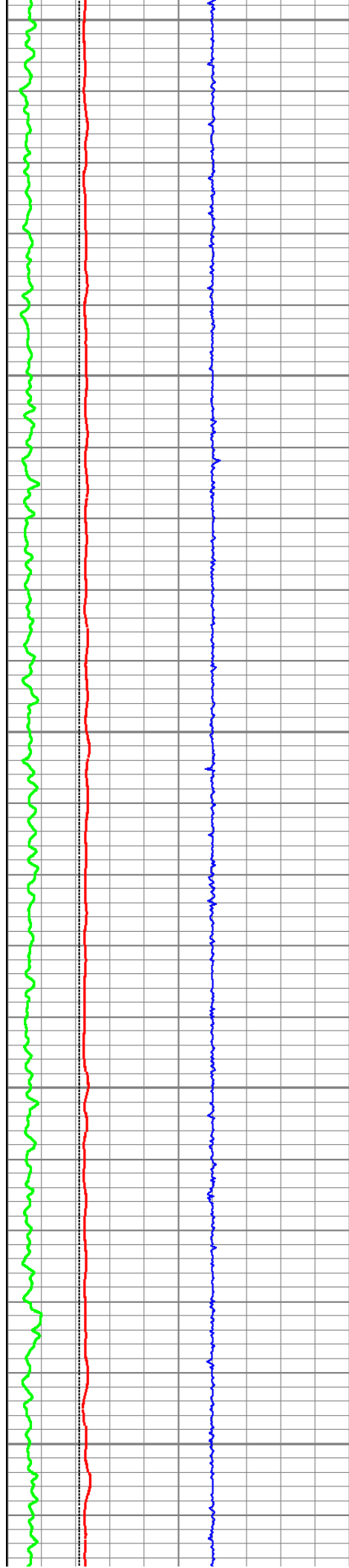
10050

127

10100

128





10150

10200

10250

10300

10350

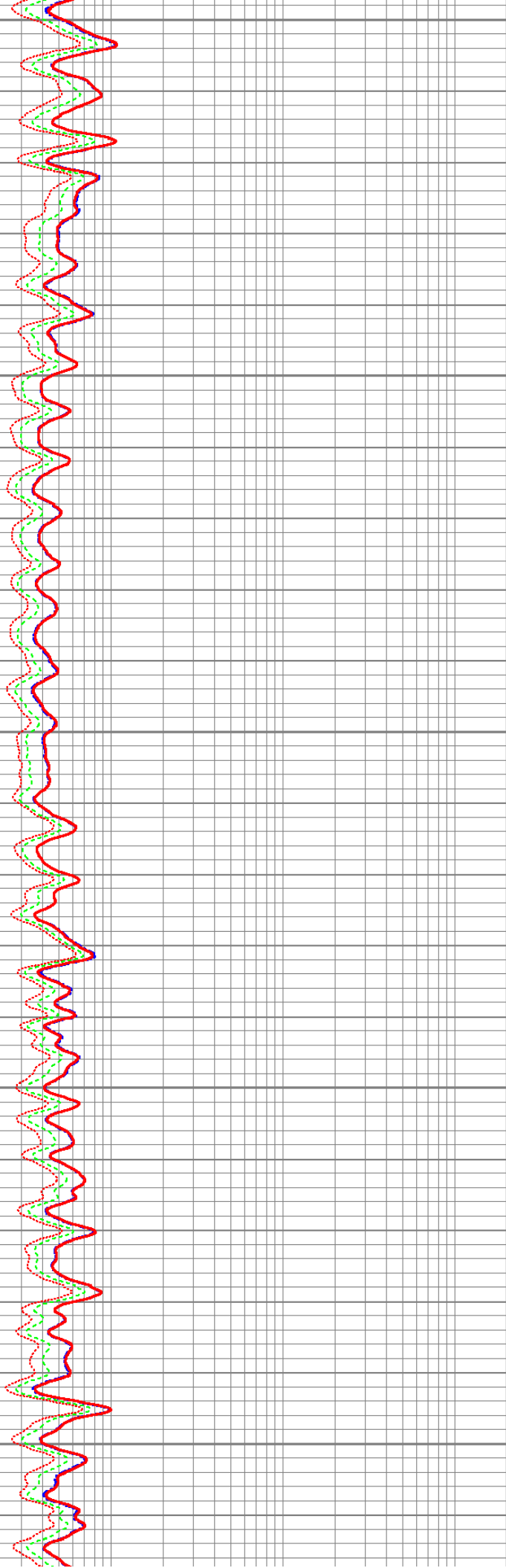
128

128

128

128

129





10400

10450

10500

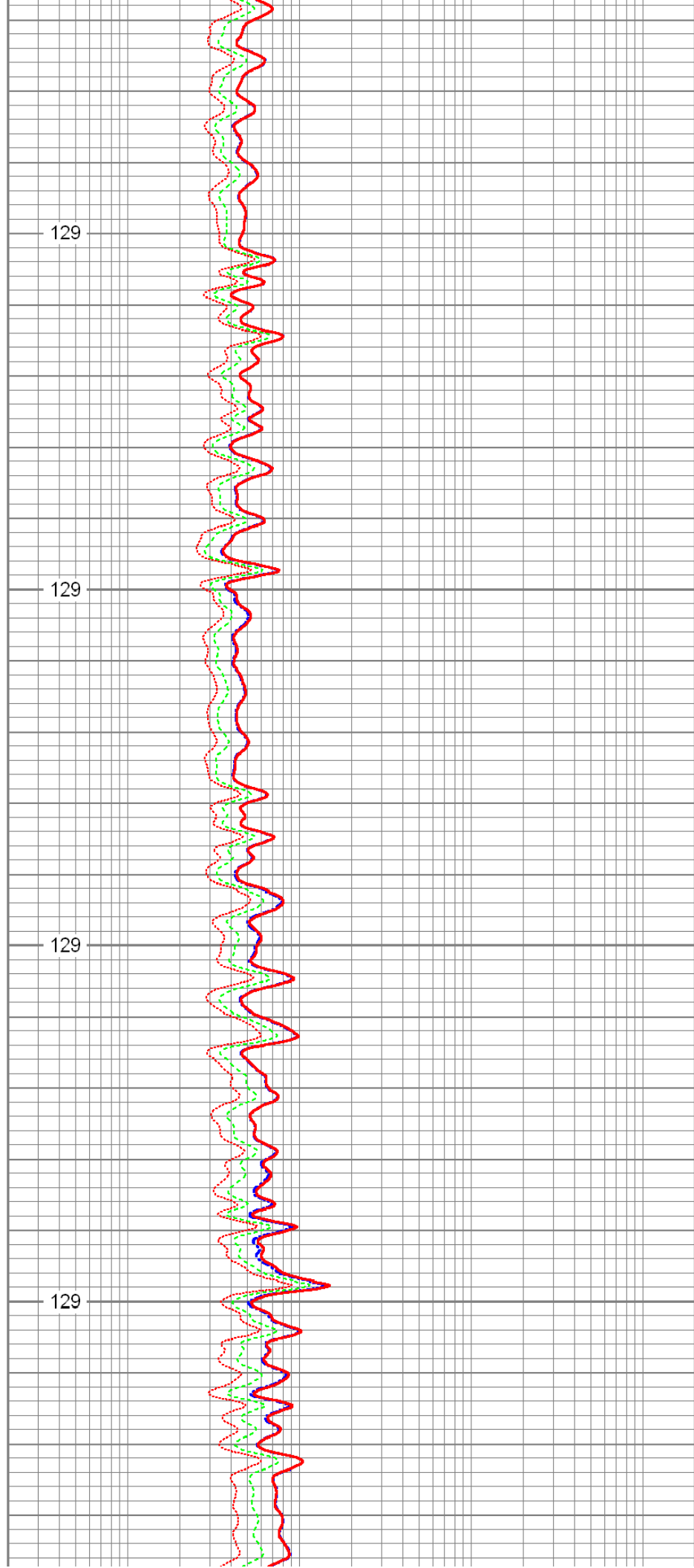
10550

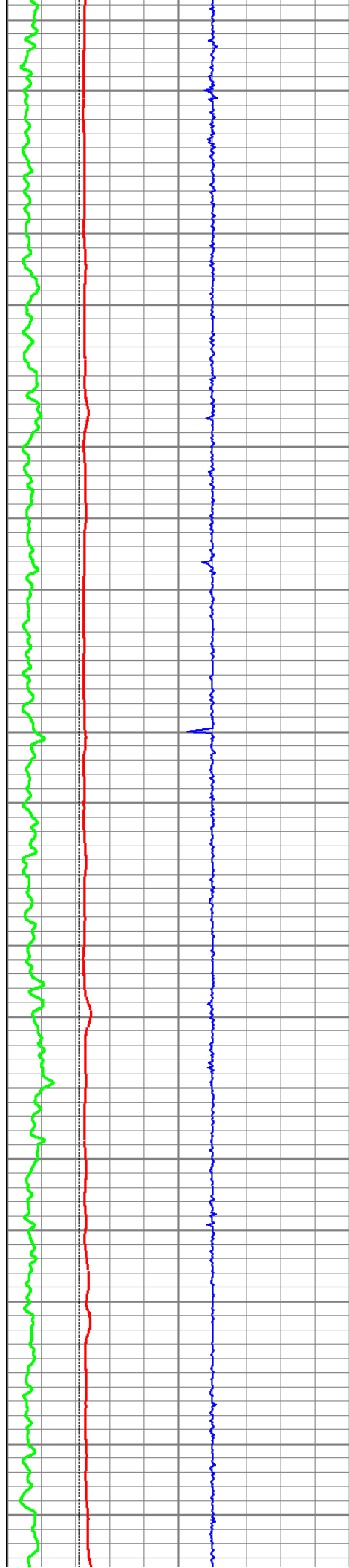
129

129

129

129





10600

10650

10700

10750

10800

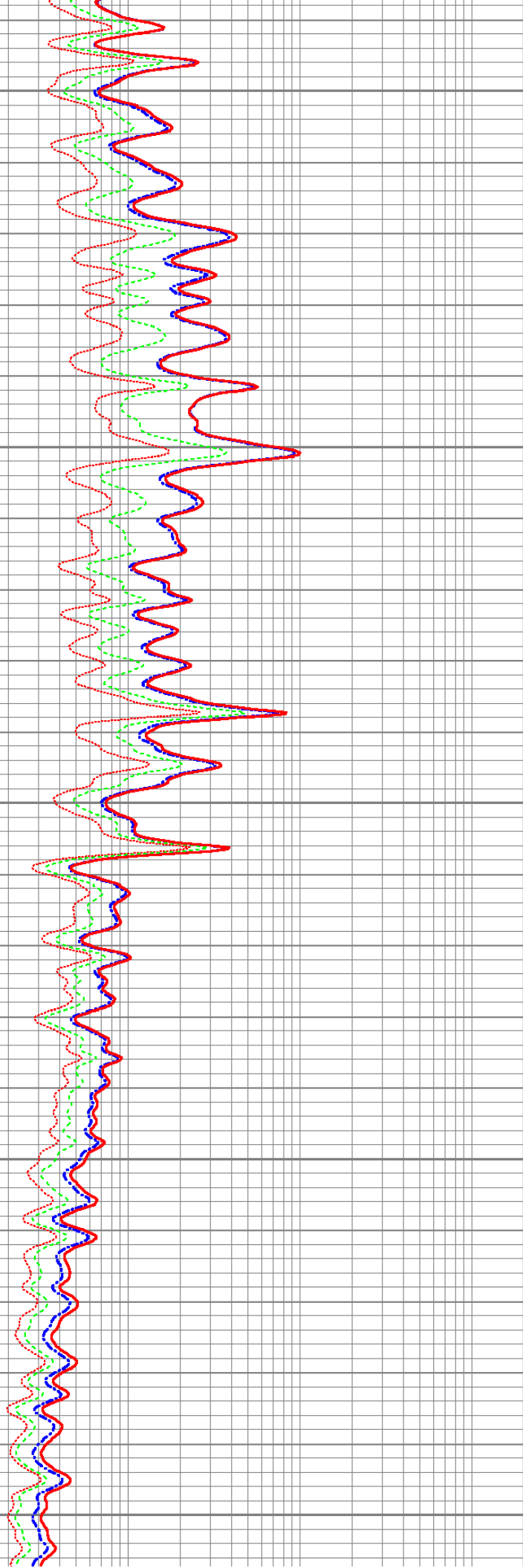
129

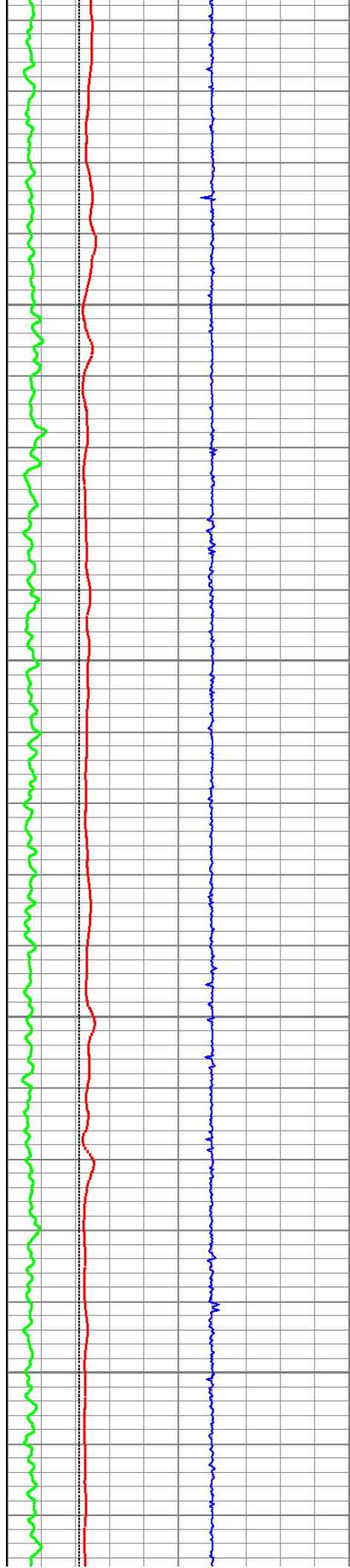
129

129

129

129





10850

10900

10950

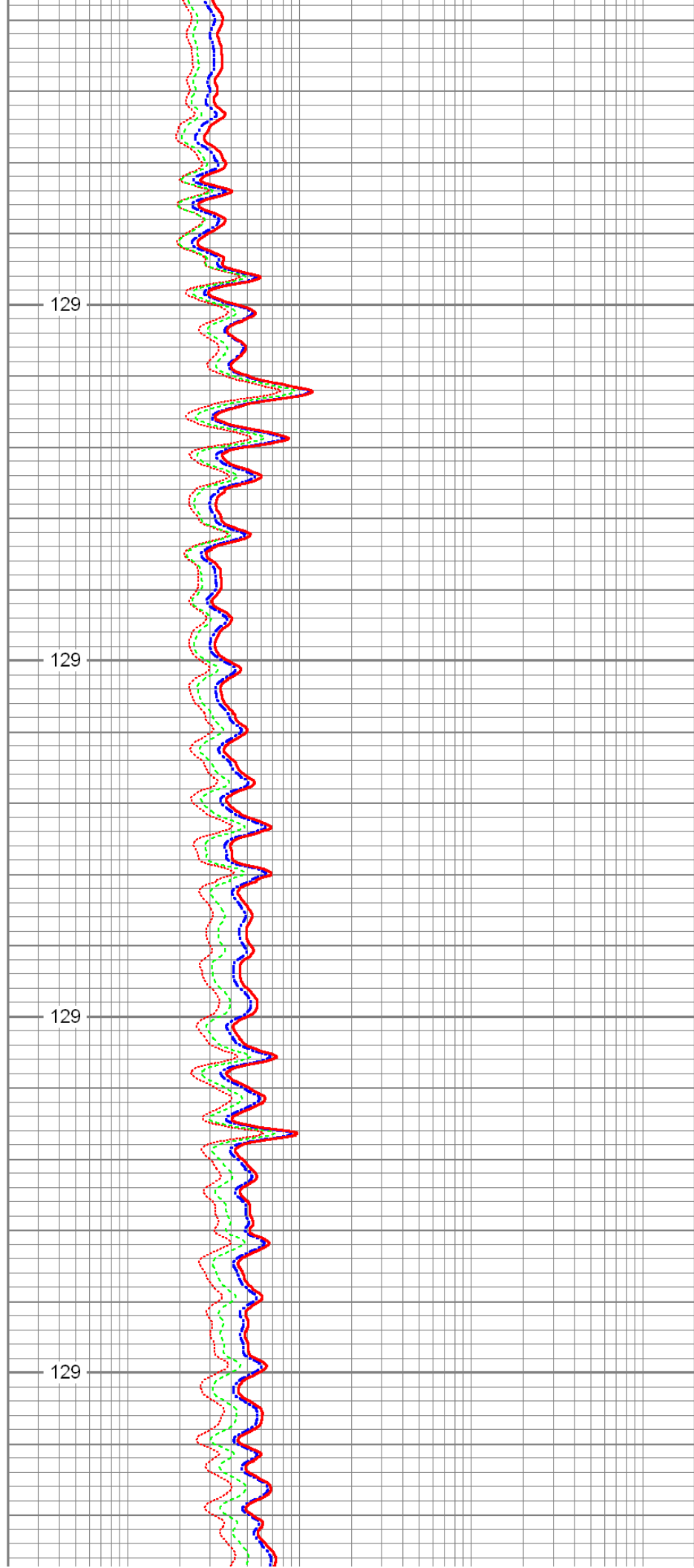
11000

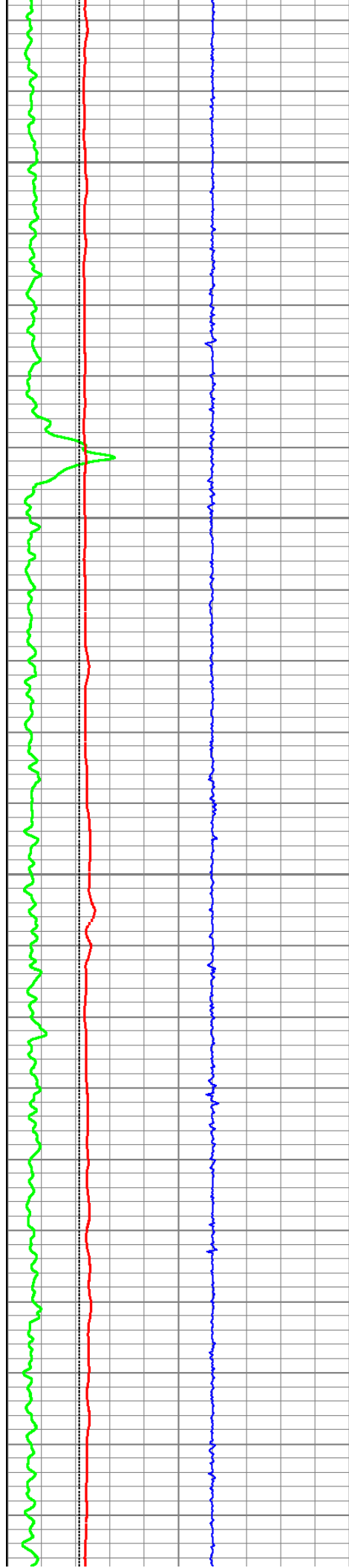
129

129

129

129





11050

11100

11150

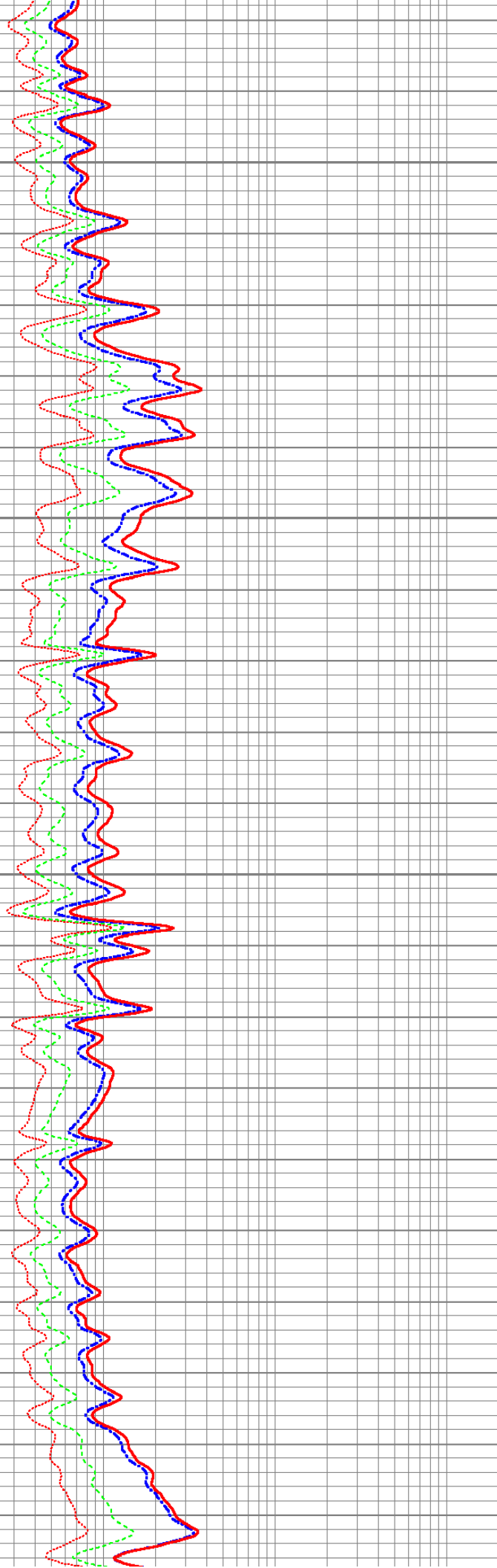
11200

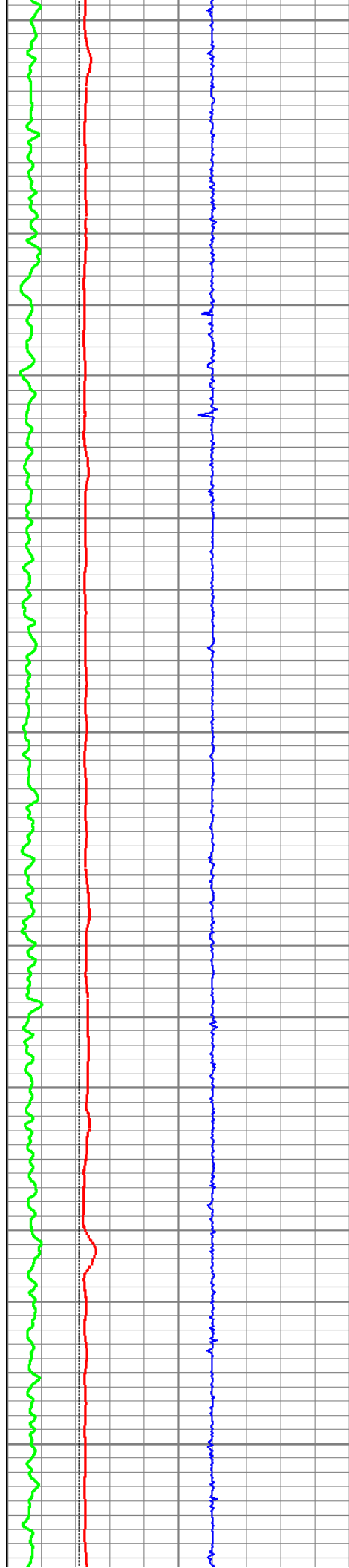
129

129

129

129





11250

11300

11350

11400

11450

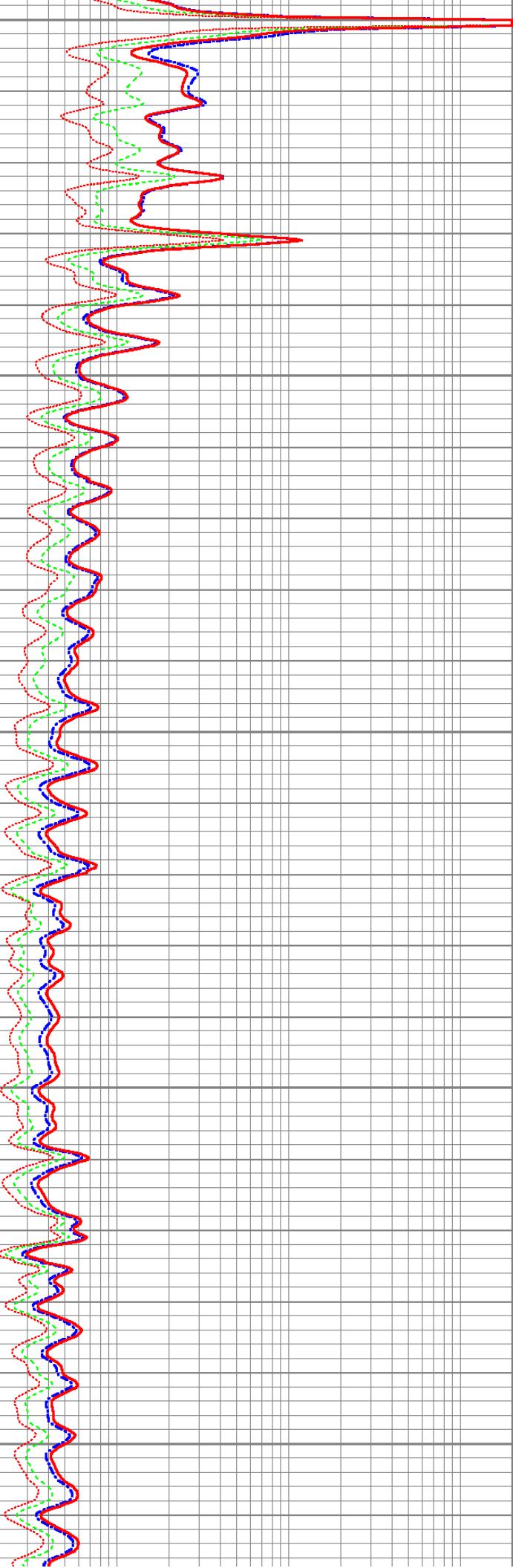
129

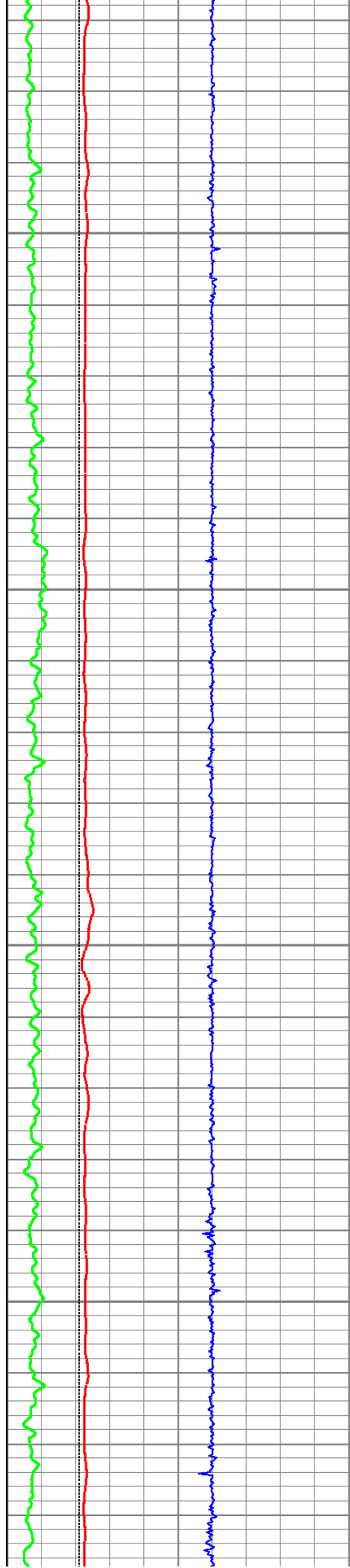
129

129

129

129





11500

11550

11600

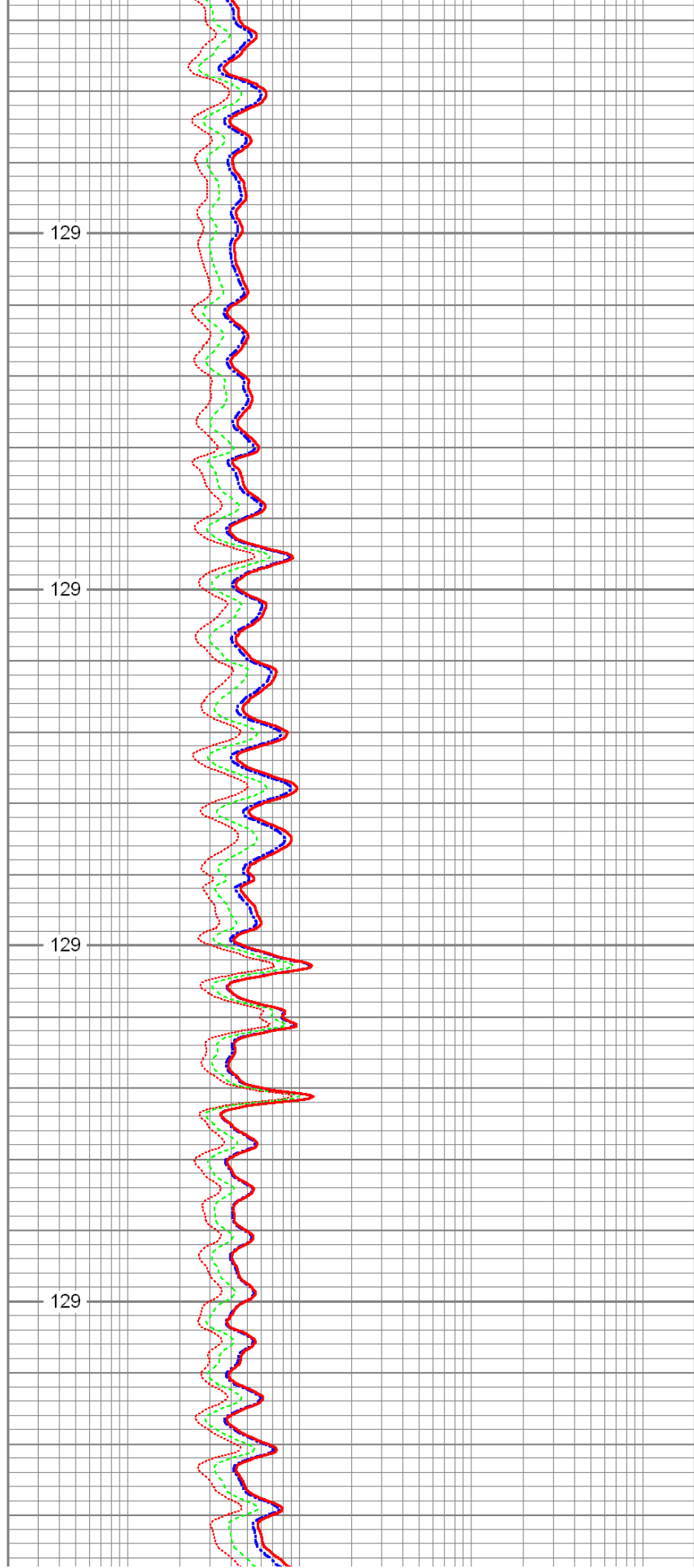
11650

129

129

129

129





11700

11750

11800

11850

11900

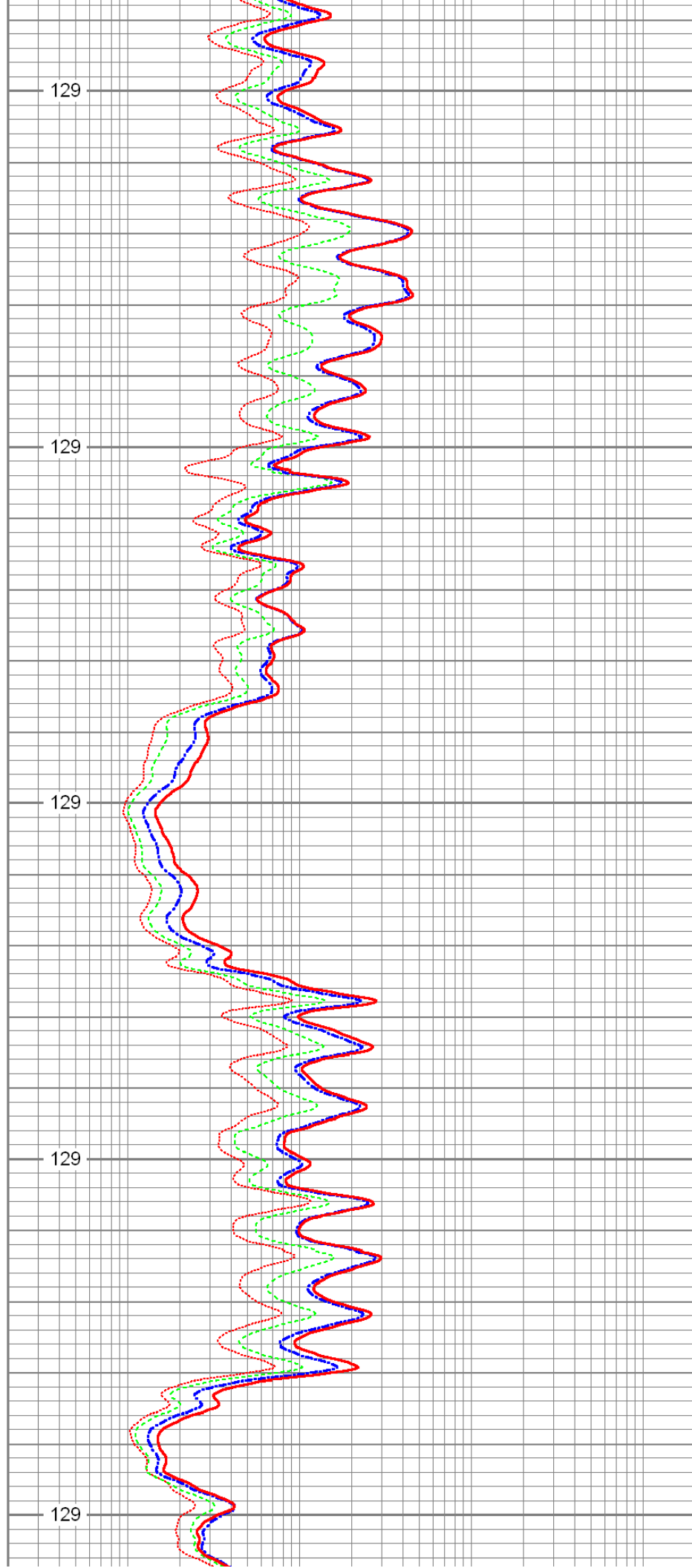
129

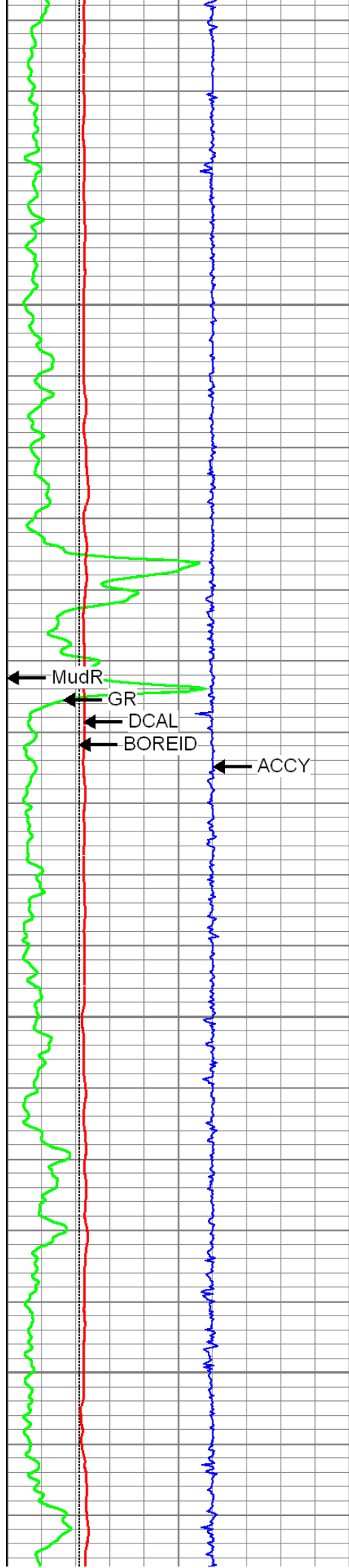
129

129

129

129





11950

129

12000

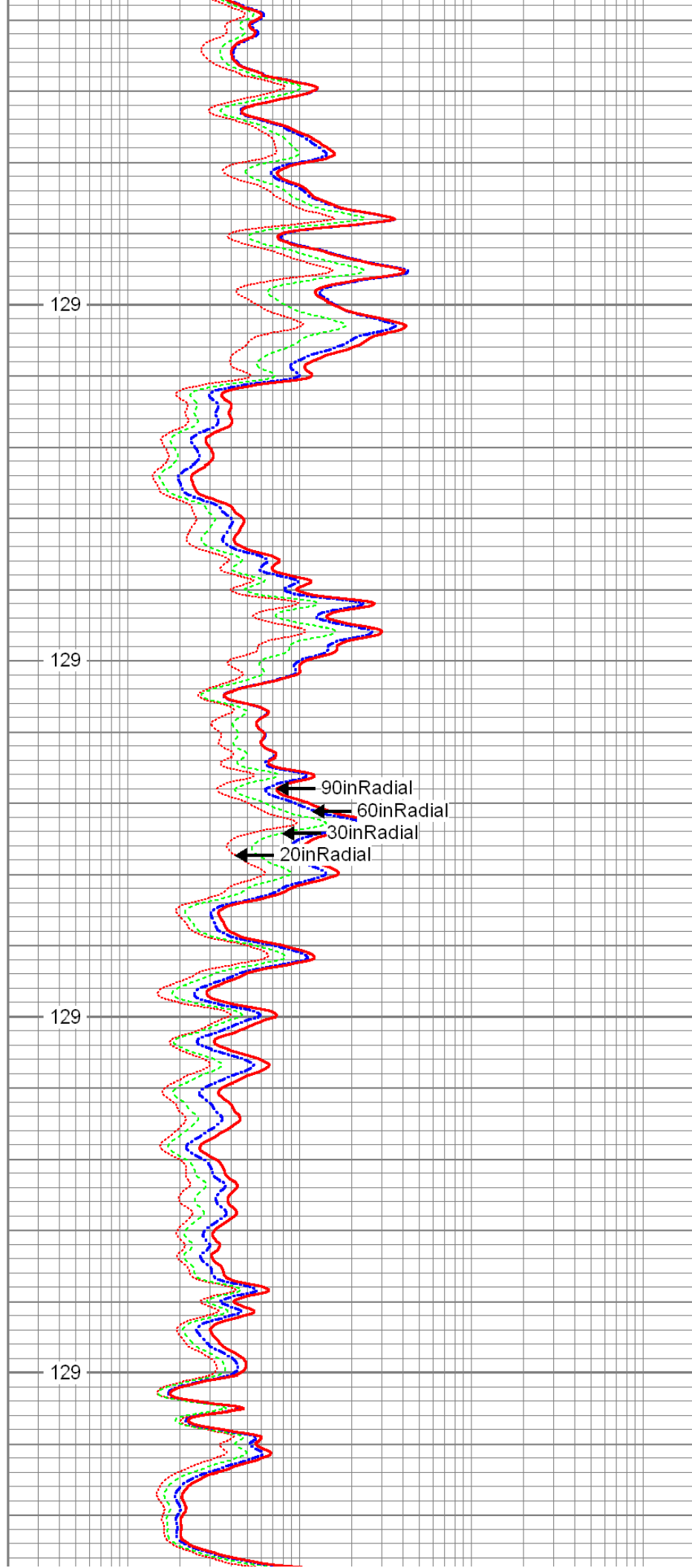
129

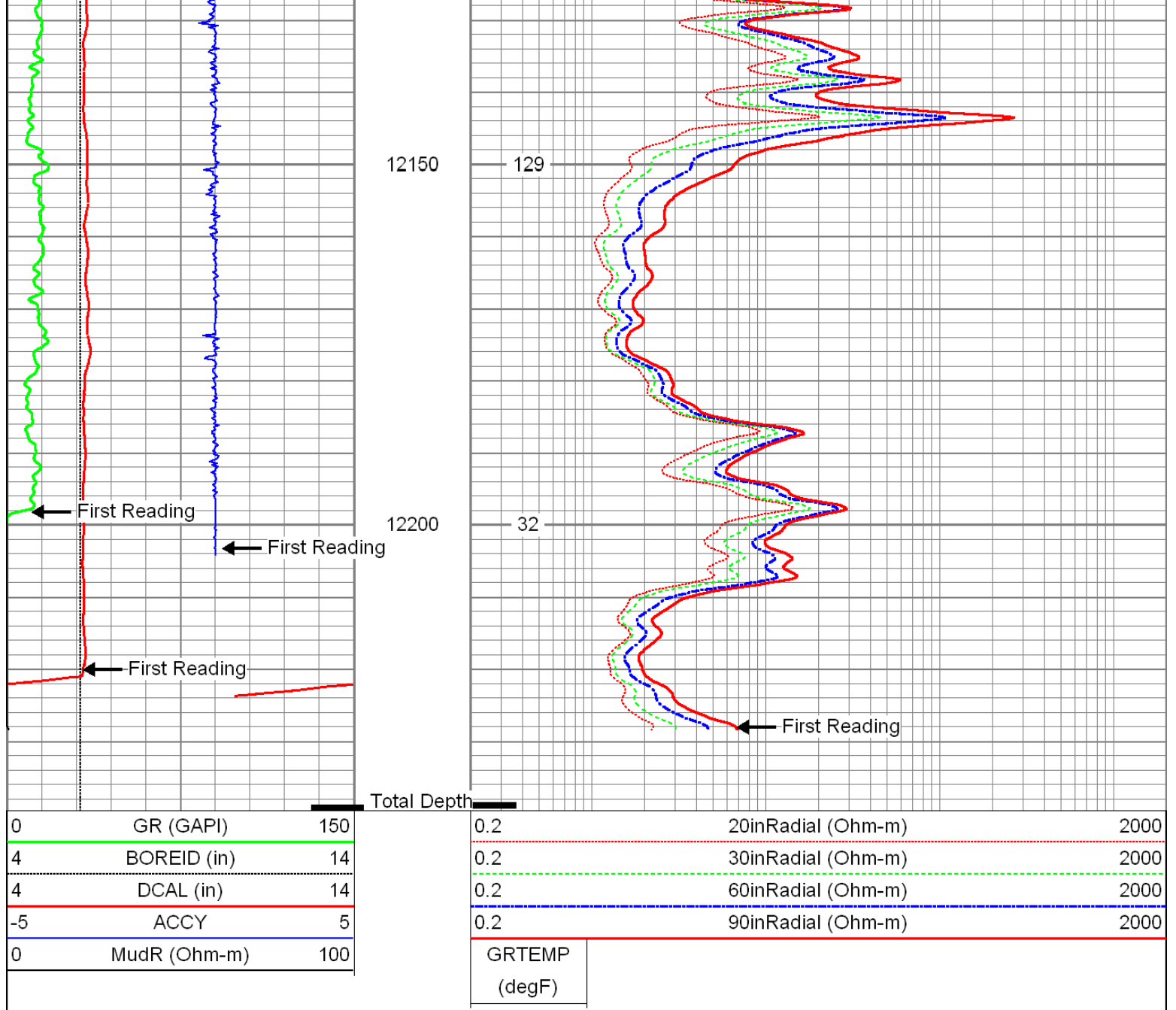
12050

129

12100

129





Log Variables

Database: c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.dkt
Dataset: field/well/proc1/pass1.3

Top - Bottom

BHCOR	BHFL_TYPE	BHFLRES Ohm-m	BHFLRESSRC	BHIDSRC	BOREID in	BOTTEMP degF
On	WBM	1	MUDCELL	CURVE	6.125	129
CASED?	CASEOD in	CASETHCK in	CEMWATERSA kppm	CMNTTHCK in	DPORSEL	FLUIDDEN g/cc
No	4.5	0	0	0	RHOB	1
FRMSALIN kppm	LATNOR	MATRXDEN g/cc	MUDSALIN kppm	MudWgt lb/gal	NPORSEL	PERFS
0	Off	2.71	84	9	Limestone	0
RESTMP SRC	SO in	SRFTEMP degF	SZCOR	TDEPTH ft	TMPCOR	TOOLPOS
INTERNAL	0.5	65	On	12255	On	Ec-centered
XXXX						

Calibration Report

Database File: c:\documents and settings\t006\desktop\lori 3510 3-2h\sandridge_lori_3510_3_2h_mem.db
 Dataset Pathname: proc1/pass1.3
 Dataset Creation: Tue Dec 11 06:18:07 2012

ThruBit Induction Calibration Report

Tool Model-Serial Number: PS-PS38R
 Shop Calibration Performed: Wed Sep 19 09:28:12 2012

BASELINE

	R	Expected	X	Expected
Freq 1				
A1	-478.6470	[-500.00, -400.00]	173.0000	[-500.00, 500.00]
A2	-136.1660	[-180.00, -100.00]	298.4330	[-500.00, 500.00]
A3	-26.9944	[-50.00, -10.00]	-68.1870	[-500.00, 500.00]
A4	-16.5753	[-30.00, -10.00]	252.8430	[-500.00, 500.00]
A5	-14.5693	[-30.00, -10.00]	150.3510	[-500.00, 500.00]
Freq 2				
A1	-252.6960	[-280.00, -180.00]	84.1946	[-500.00, 500.00]
A2	-87.5233	[-130.00, -50.00]	165.5460	[-500.00, 500.00]
A3	-19.5990	[-50.00, -10.00]	-97.2460	[-500.00, 500.00]
A4	-19.8898	[-30.00, -10.00]	75.3812	[-500.00, 500.00]
A5	-19.5554	[-30.00, -10.00]	-0.3546	[-500.00, 500.00]
Freq 3				
A1	-163.6960	[-180.00, -80.00]	-7.9103	[-500.00, 500.00]
A2	-67.0263	[-130.00, -30.00]	78.9750	[-500.00, 500.00]
A3	-16.3076	[-50.00, -10.00]	-130.2510	[-500.00, 500.00]
A4	-21.4341	[-30.00, -10.00]	-42.9782	[-500.00, 500.00]
A5	-22.0719	[-30.00, -10.00]	-109.4460	[-500.00, 500.00]
Freq 4				
A1	-91.5984	[-120.00, -40.00]	-163.9400	[-500.00, 500.00]
A2	-48.3989	[-110.00, -10.00]	-37.1792	[-500.00, 500.00]
A3	-13.2104	[-50.00, -10.00]	-195.2460	[-500.00, 500.00]
A4	-24.0555	[-30.00, -10.00]	-219.8520	[-500.00, 500.00]
A5	-26.9658	[-30.00, -10.00]	-291.9350	[-500.00, 500.00]

CALIBRATION COEFFICIENTS

	R	Expected	X	Expected
Freq 1				
A1	0.9932	[0.95, 1.05]	-0.0014	[-0.05, 0.05]
A2	0.9912	[0.95, 1.05]	0.0015	[-0.05, 0.05]
A3	1.0012	[0.95, 1.05]	-0.0059	[-0.05, 0.05]
A4	0.9886	[0.95, 1.05]	0.0041	[-0.05, 0.05]
A5	0.9941	[0.95, 1.05]	0.0005	[-0.05, 0.05]
Freq 2				
A1	0.9875	[0.95, 1.05]	-0.0069	[-0.05, 0.05]
A2	0.9856	[0.95, 1.05]	-0.0048	[-0.05, 0.05]
A3	0.9898	[0.95, 1.05]	-0.0048	[-0.05, 0.05]
A4	0.9843	[0.95, 1.05]	-0.0026	[-0.05, 0.05]
A5	0.9899	[0.95, 1.05]	-0.0066	[-0.05, 0.05]

Freq 3

Freq 5				
A1	0.9906	[0.95, 1.05]	-0.0084	[-0.05, 0.05]
A2	0.9890	[0.95, 1.05]	-0.0064	[-0.05, 0.05]
A3	0.9929	[0.95, 1.05]	-0.0065	[-0.05, 0.05]
A4	0.9861	[0.95, 1.05]	-0.0043	[-0.05, 0.05]
A5	0.9936	[0.95, 1.05]	-0.0085	[-0.05, 0.05]
Freq 4				
A1	0.9898	[0.95, 1.05]	-0.0038	[-0.05, 0.05]
A2	0.9878	[0.95, 1.05]	-0.0023	[-0.05, 0.05]
A3	0.9935	[0.95, 1.05]	-0.0043	[-0.05, 0.05]
A4	0.9844	[0.95, 1.05]	0.0001	[-0.05, 0.05]
A5	0.9985	[0.95, 1.05]	-0.0062	[-0.05, 0.05]
Temperature	26.7102 degC			

ThruBit Density Calibration Report	
Tool Model-Serial Number:	PS-PS44D
Source Number:	
Shop Calibration Performed:	Thu Nov 29 11:41:46 2012

REFERENCE			
	Density	Units	
Aluminium	2.607	g/cc	
Magnesium	1.752	g/cc	
READINGS			
Outputs	Counts	Units	Expected
SS1 Background	130.13	cps	[130.00, 170.00]
LS1 Background	146.20	cps	[130.00, 170.00]
LS4 Background	29.56	cps	[27.00, 35.00]
SS1 Aluminium	5613.30	cps	[4500.00, 5500.00]
LS1 Aluminium	950.33	cps	[750.00, 950.00]
LS4 Aluminium	1057.35	cps	[843.00, 1068.00]
SS1 Magnesium	9246.22	cps	[7000.00, 9000.00]
LS1 Magnesium	6219.22	cps	[5250.00, 6250.00]
LS1 Al + Fe	795.70	cps	[650.00, 800.00]
LS4 Al + Fe	456.59	cps	[382.00, 471.00]
RESULTS			
SS Slope	1.68		[1.52, 1.77]
LS Slope	0.42		[0.38, 0.45]
PEF K Factor	5.058		[3.510, 6.170]
PEF B Factor	-0.501		[-0.700, -0.410]

Caliper Shop Calibration performed:		Thu Nov 29 11:41:46 2012
RESULTS		
Reference	Reading	Units
12.00	1853.08	in
9.00	2007.18	in
6.00	2165.36	in

DENSITY PRE-SURVEY CHECK Performed:	Sun Dec 02 07:23:17 2012
-------------------------------------	--------------------------

Outputs	Counts	Units	Expected
SS1 Background	128.67	cps	[126.23, 134.04]
LS1 Background	145.78	cps	[141.82, 150.59]
LS4 Background	29.61	cps	[27.79, 31.34]
DENSITY POST-SURVEY CHECK Performed:		Wed Dec 31 18:00:00 1969	
Outputs	Counts	Units	Expected
SS1 Background	0.00	cps	[126.23, 134.04]
LS1 Background	0.00	cps	[141.82, 150.59]
LS4 Background	0.00	cps	[27.79, 31.34]
CALIPER PRE-SURVEY CHECK Performed:		Sun Dec 02 07:21:04 2012	
Reference	Readings	Units	Expected
9.00	8.89	in	[8.80, 9.20]
CALIPER POST-SURVEY CHECK Performed:		Wed Dec 31 18:00:00 1969	
Reference	Readings	Units	Expected
0.00	0.00	in	[-0.20, 0.20]

Compensated Neutron Calibration Report

Tool Model-Serial Number: Source Number:	ENP-ENP5N
Calibration Tank Temperature: Shop Calibration Performed:	63.7 degF Fri Nov 16 09:23:04 2012

BACKGROUND MEASUREMENT			
Outputs	Measured	Units	Expected
SS Counts	0.1	cps	<10
LS Counts	0.3	cps	<4

WATER TANK REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	875.1	cps	
LS Counts	29.6	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	29.5826	SS/LS	
Tank Ratio Gain	1.0465		[0.85, 1.15]

ALUMINUM SLEEVE REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	9775.7	cps	
LS Counts	925.1	cps	
Al Ratio Ref	10.797	SS/LS	

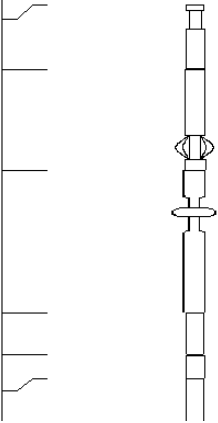
AI Ratio	11.059	SS/LS	
AI Ratio Gain	0.98		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed:		Sun Dec 02 07:20:40 2012	
Outputs	Measured	Units	Expected
SS Counts	0.1	cps	<10
LS Counts	0.5	cps	<4

POST-SURVEY BACKGROUND CHECK Performed:			
Outputs	Measured	Units	Expected
SS Counts	0.0	cps	<10
LS Counts	0.0	cps	<4

Gamma Ray Calibration Report			
Tool Model-Serial Number:	PS-PS27T		
Performed:	Thu Sep 27 07:45:16 2012		
Calibrator Value:	162.7	GAPI	
Background Reading:	65.1	cps	
Calibrator Reading:	402.7	cps	
Sensitivity:	0.3750	GAPI/cps	

Inclinometer Calibration Report					
Performed:	Sun Jun 13 14:33:21 1993				
	Low Read.	High Read.	Low Ref.	High Ref.	
X Accelerometer	0.00	1.00	0.00	1.00	gee
Y Accelerometer	0.00	1.00	0.00	1.00	gee
Z Accelerometer	0.00	1.00	0.00	1.00	gee

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
Thrubit	66.60		Cablehead-S	2.31	2.13	5.00
Thrubit	64.29		Solid Weakpoint			
			BDOT	3.54	2.25	35.00
Thrubit	60.75		HangOff_Tool	5.00	2.38	60.00
Thrubit	55.75		Universal Joint	1.46	2.06	15.00
Thrubit	54.29		10-1	0.88	2.13	3.95
TBBAT2	53.41					

TBBAT	47.29		TBBAT2-A (PS33B) ThruBit Battery	6.13	2.13	40.00
			TBBAT-A (PS34B) ThruBit Battery	6.13	2.13	38.20
TMG GR GRTEMP	41.16 41.04 40.20		TMG-PS (PS27T) ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
ThruBit	35.04		Decentralizer Decentralizer (Small)	4.50	2.13	70.00
CNLSC	28.60		TBN-ENP (ENP5N) ThruBit Neutron	4.77	2.13	63.00
			TBD-PS (PS44D) ThruBit Density	10.48	2.13	91.00
LSW1 DCAL	18.04 17.13					
A1_P A2_P A3_P A4_P A5_P	10.60 10.10 9.35 8.35 6.60		TBI-PS (PS38R) ThruBit Induction	15.29	2.13	94.00
Dataset: sandridge_lori_3510_3_2h_mem.db: field/well/proc1/pass1.3 Total Length: 66.60 ft Total Weight: 560.15 lb O.D. 2.38 in						

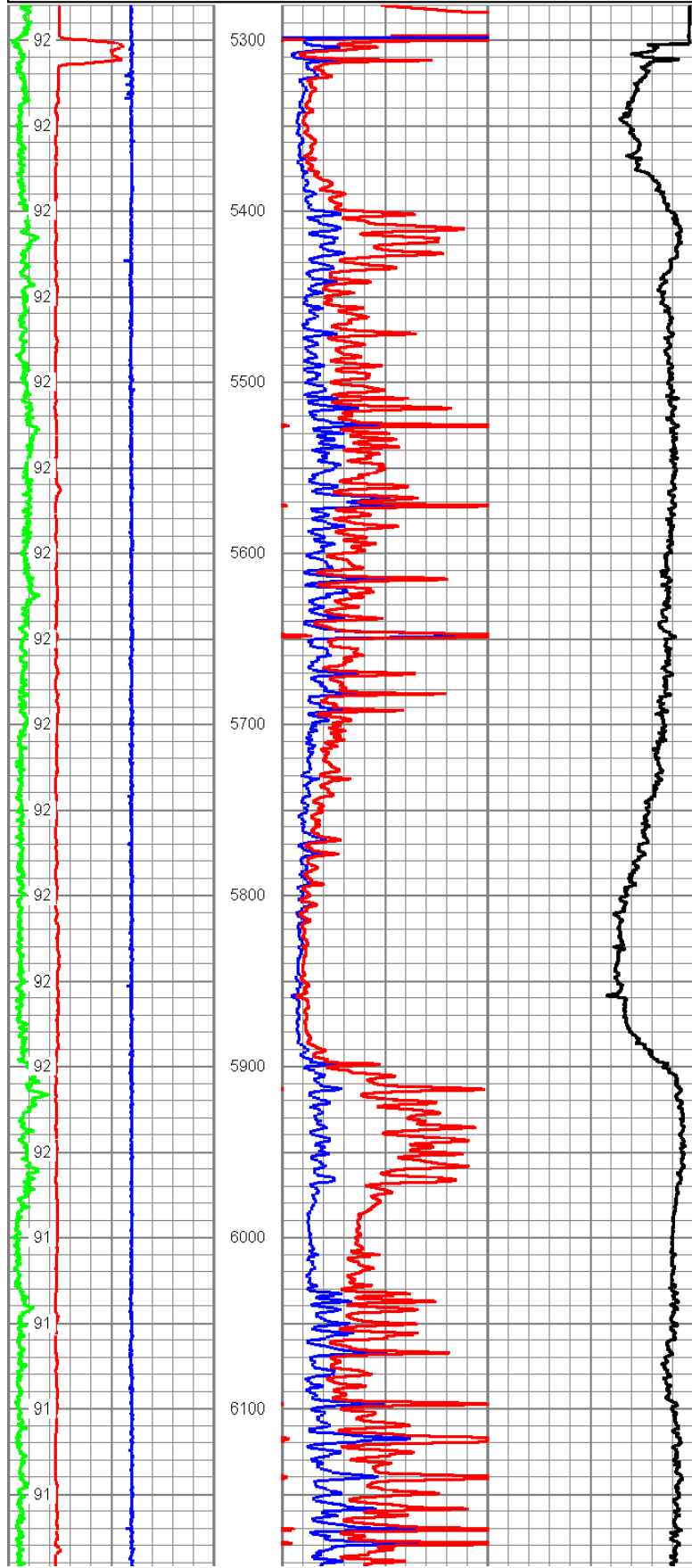


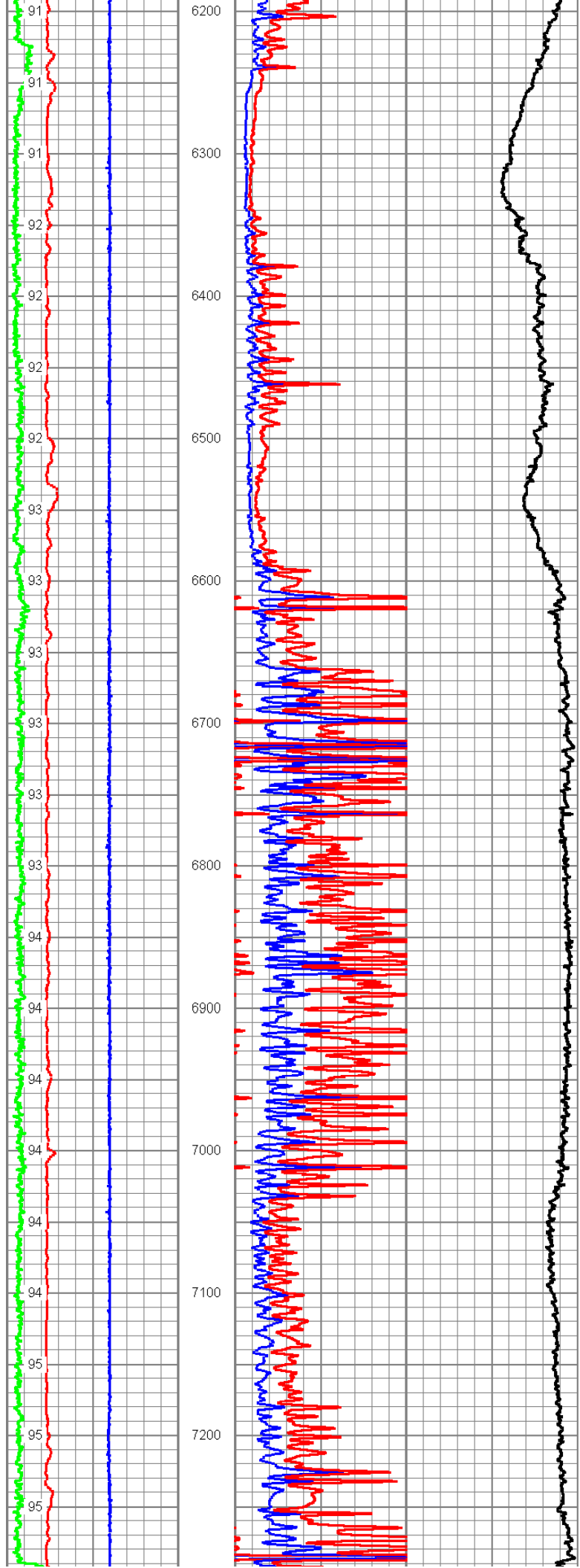
ThruBit
A Schlumberger Company

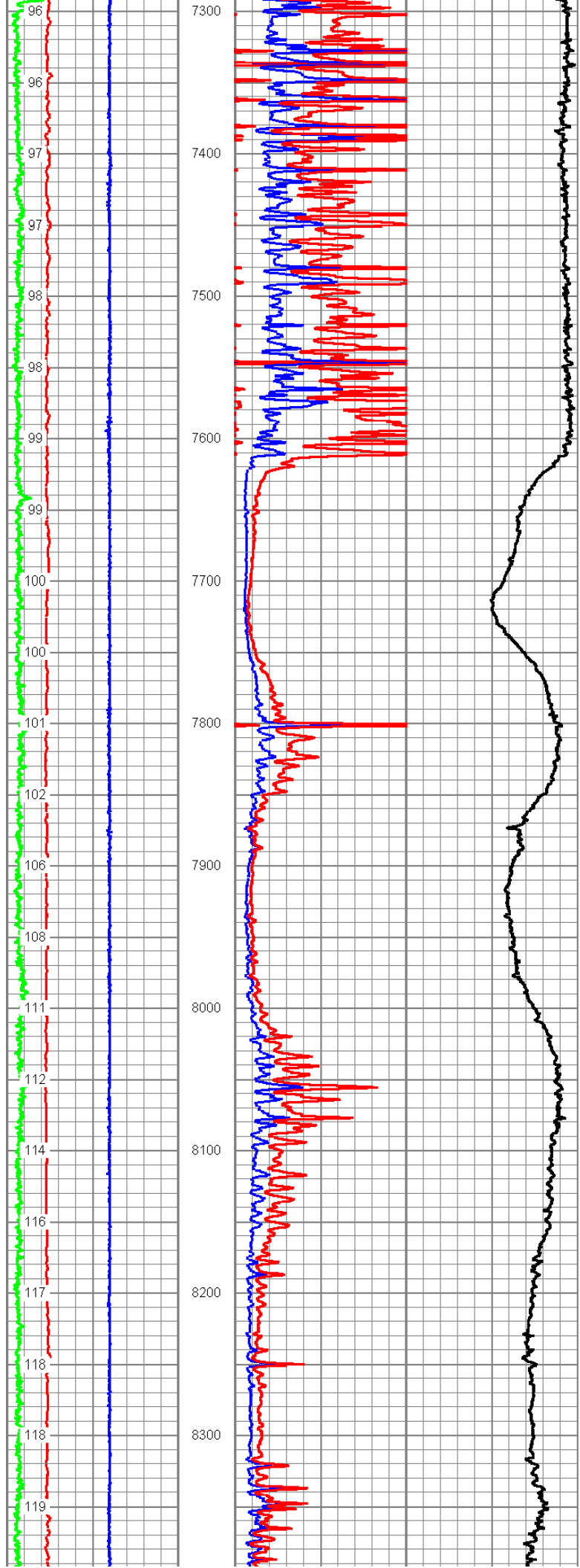
Company SANDRIDGE ENERGY
 Well LORI 3510 3-2H
 Field GUDEMAN
 County BARBER
 State KANSAS

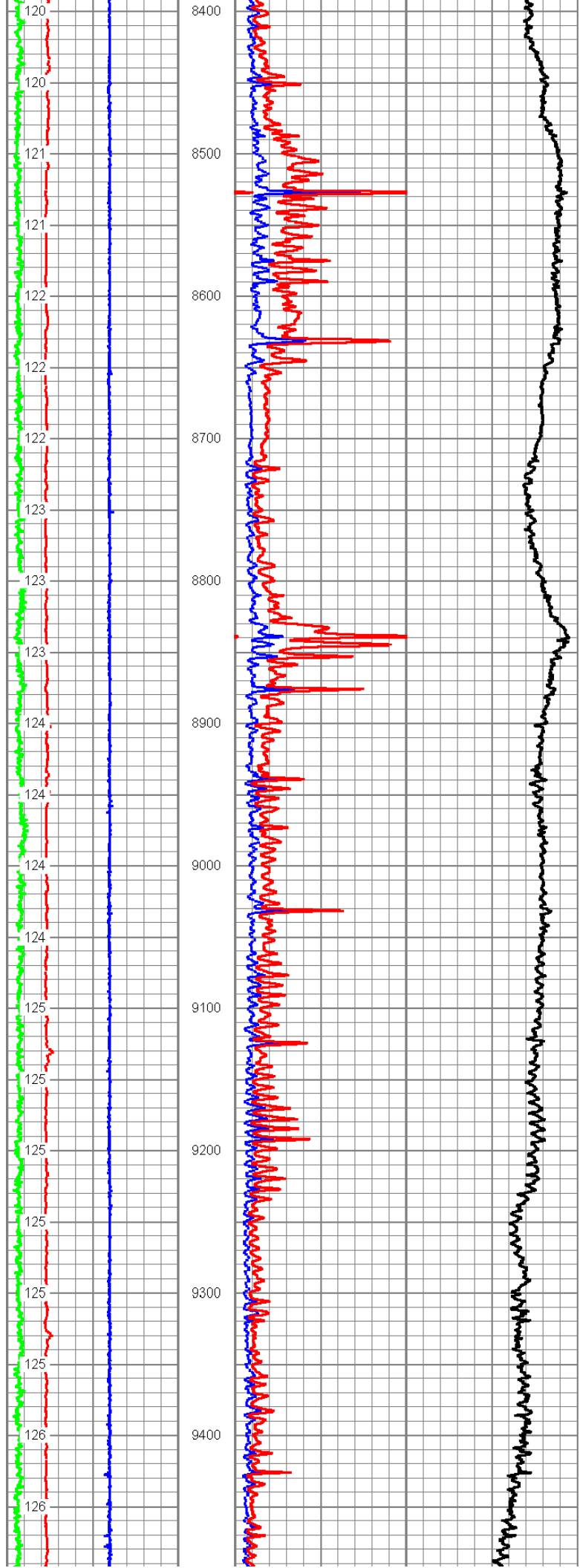
Database File: c:\documents and settings\l006\desktop\lori 3510 3-2h\sandridge_lori
Dataset Pathname: proc1/pass1.3
Presentation Format: 6_1r_chk
Dataset Creation: Tue Dec 11 06:18:07 2012
Charted by: Depth in Feet scaled 1:1200

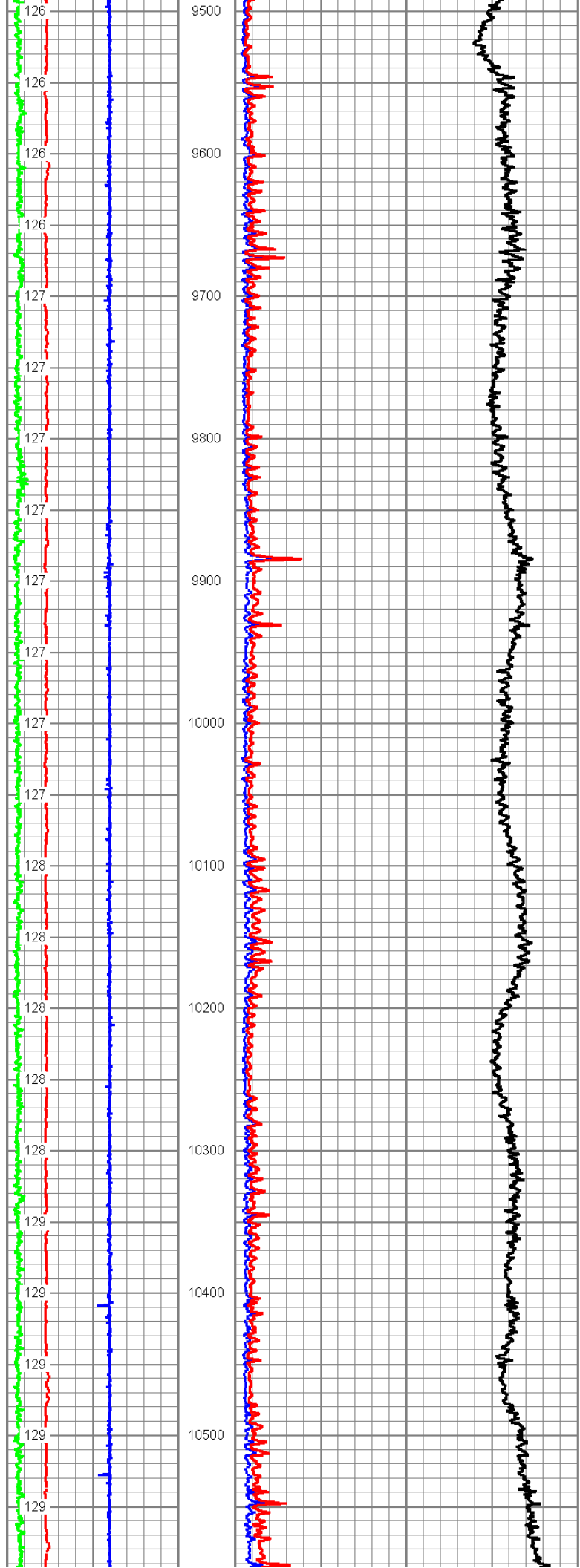
0	GR (GAPI)	150	20in 2ft Res	
4	DCAL (in)	14	(Ohm-m)	500
-5	ACCY	5	90in 2ft Res	
GRTEMP			(Ohm-m)	500
(degF)			1000	DEEP COND (mmho/m)
			0	
			0	20in 2ft Res (Ohm-m) 50
			0	90in 2ft Res (Ohm-m) 50

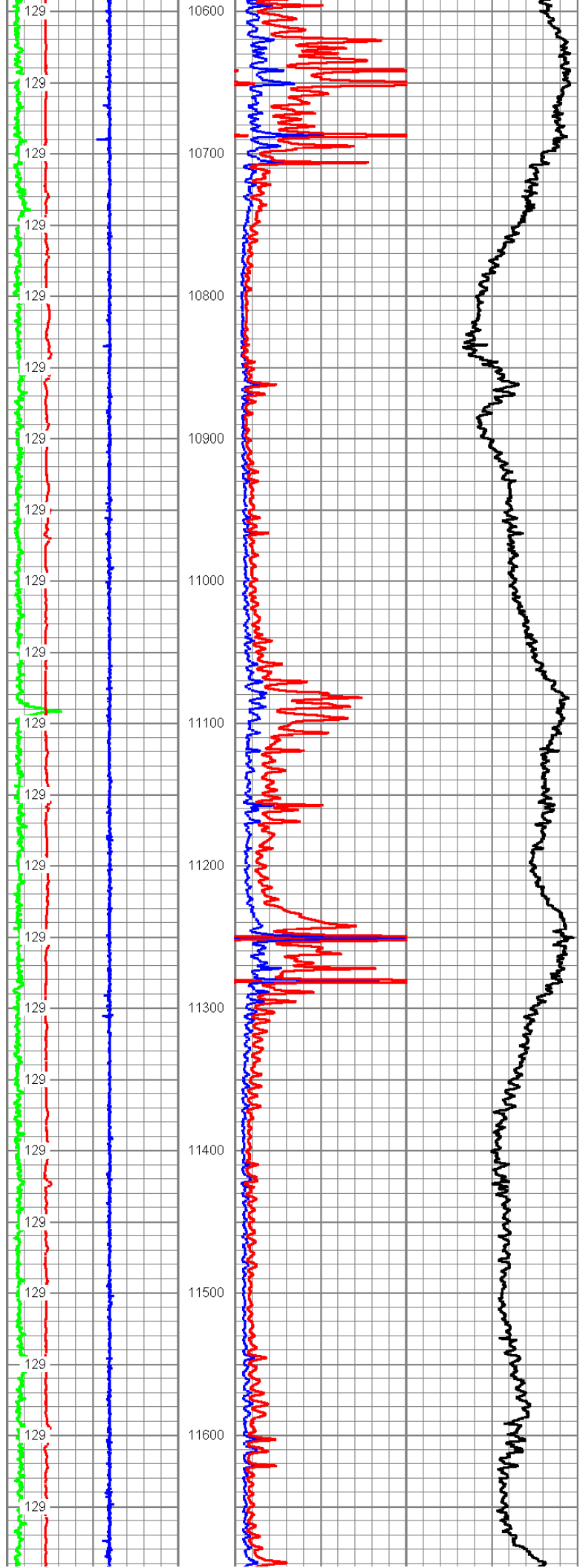


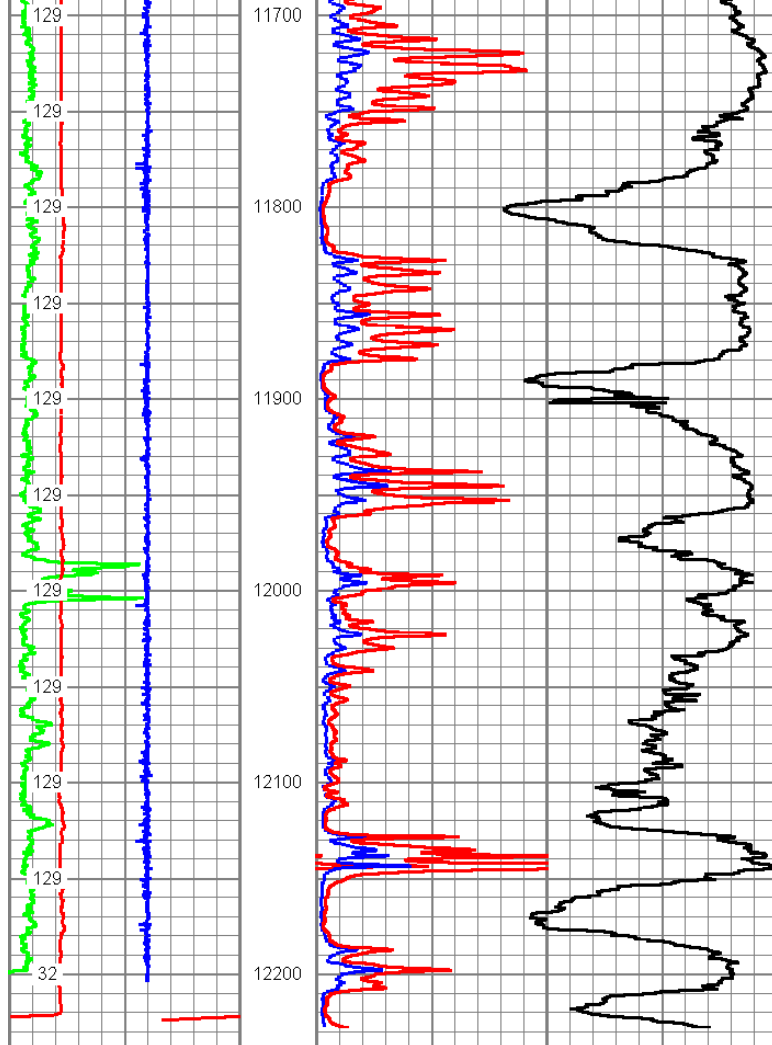












0	GR (GAPI)	150	20in 2ft Res	
4	DCAL (in)	14	(Ohm-m)	500
-5	ACCY	5	90in 2ft Res	
GRTEMP			(Ohm-m)	500
(degF)			1000	DEEP COND (mmho/m)
				0
			0	20in 2ft Res (Ohm-m) 50
			0	90in 2ft Res (Ohm-m) 50