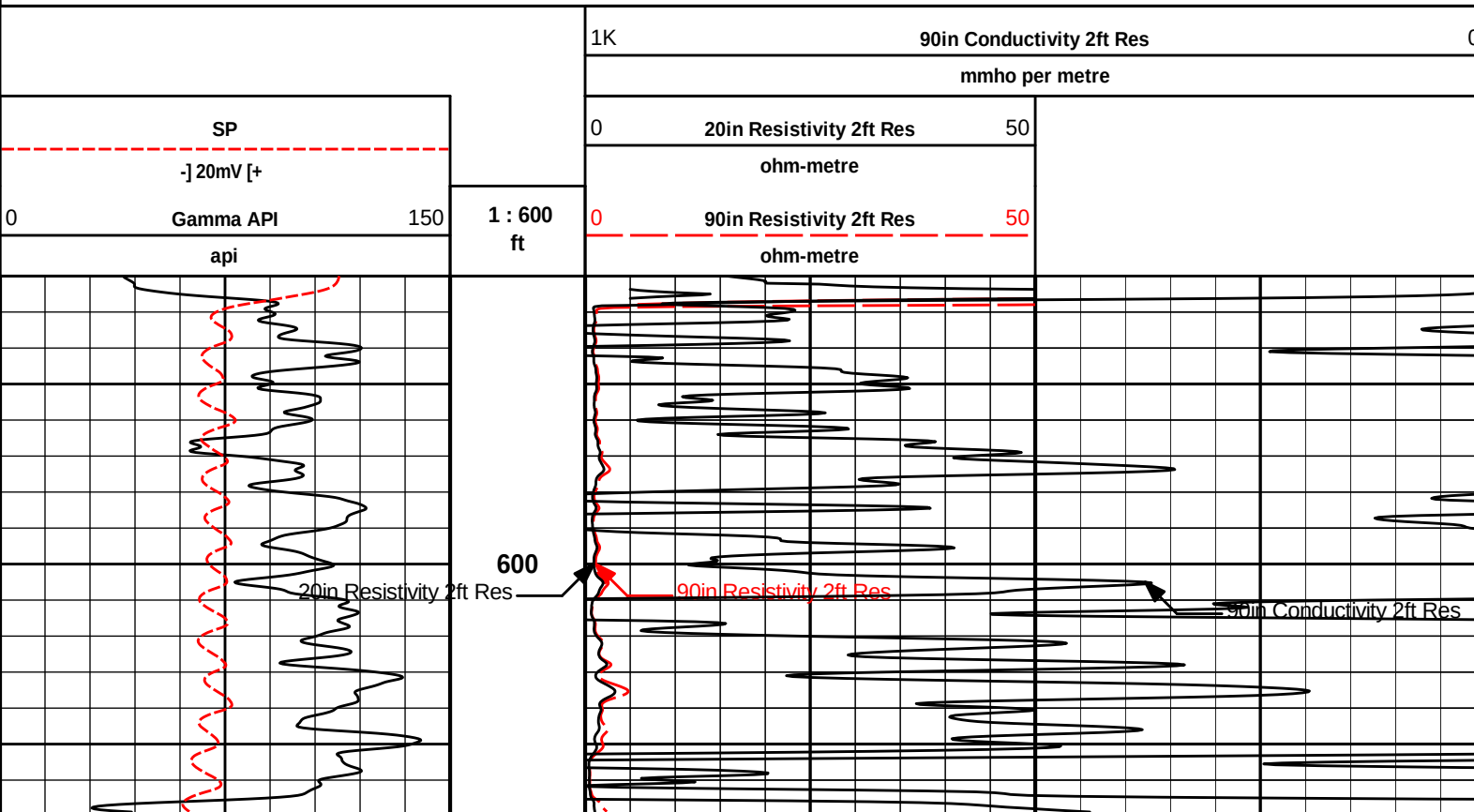


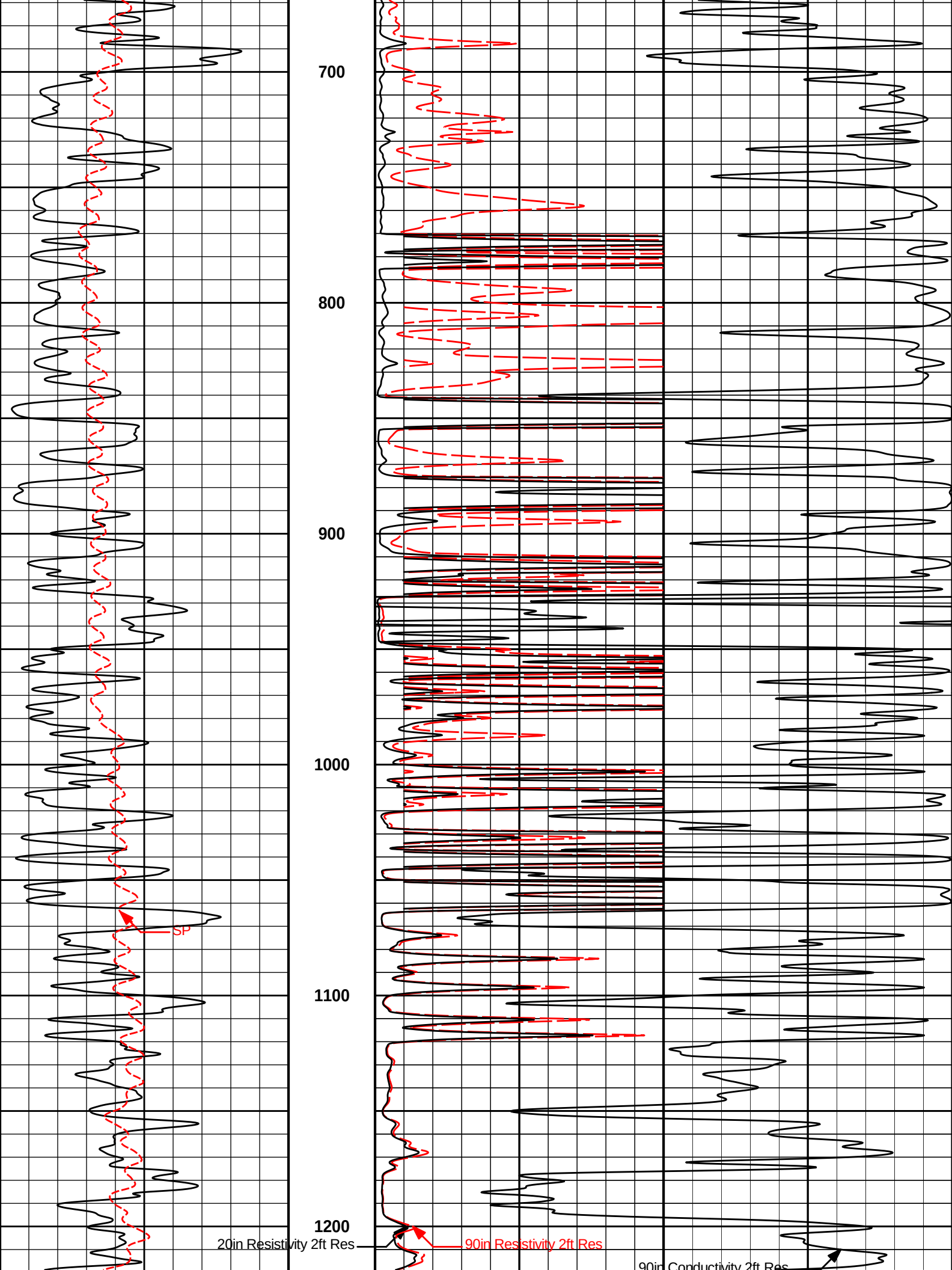
ARRAY COMPENSATED
RESISTIVITY
LOG

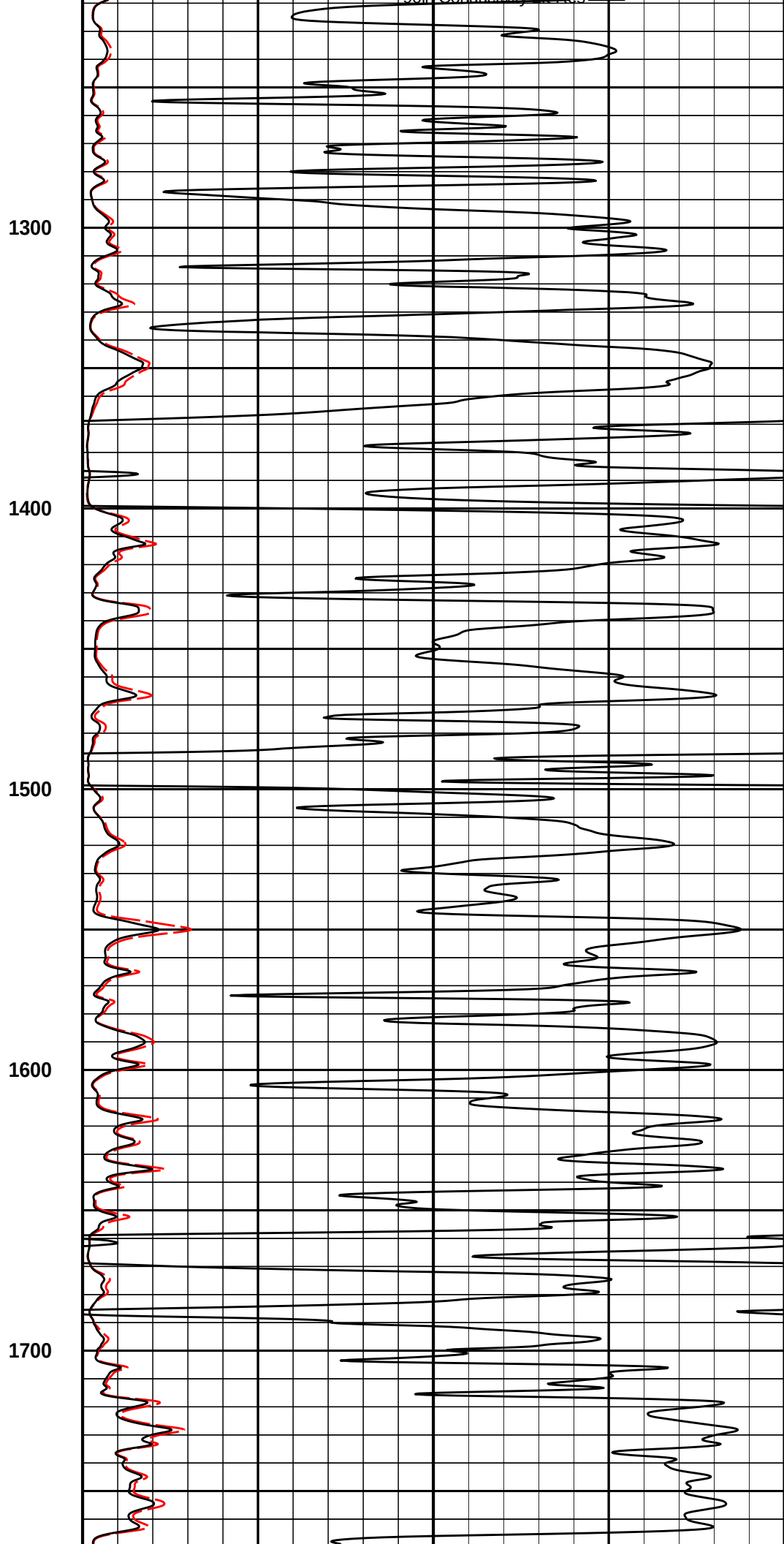
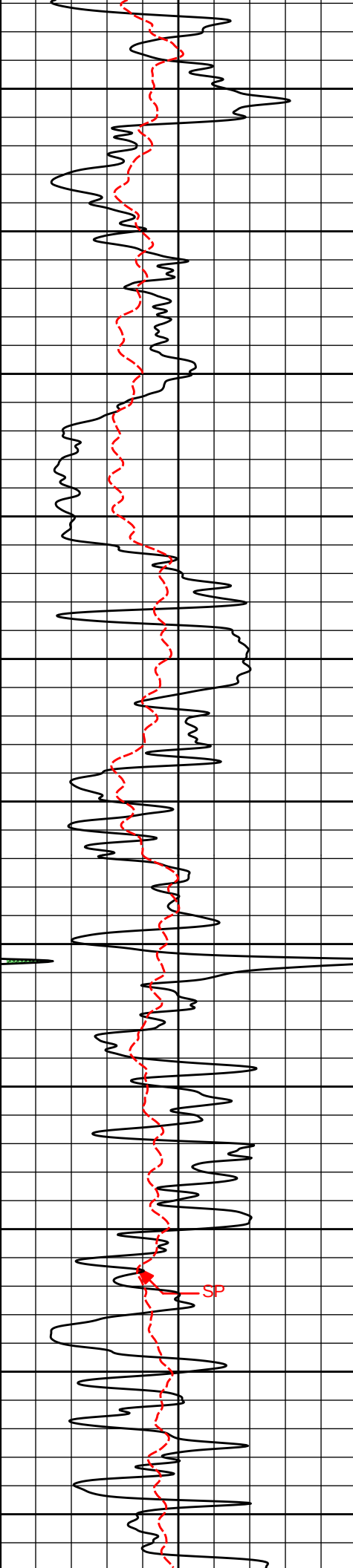
----- Fold here -----

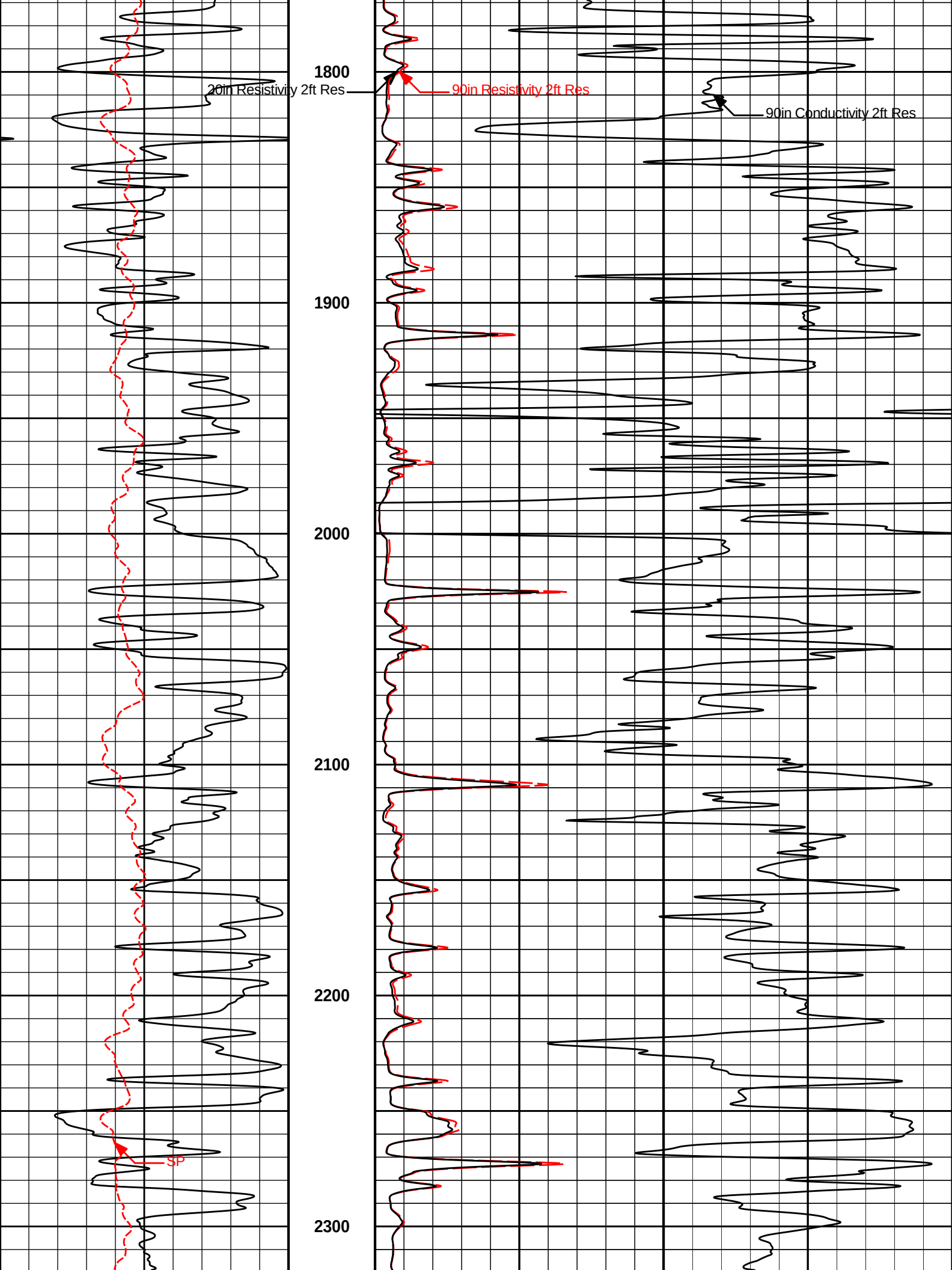
LOGGING DATA

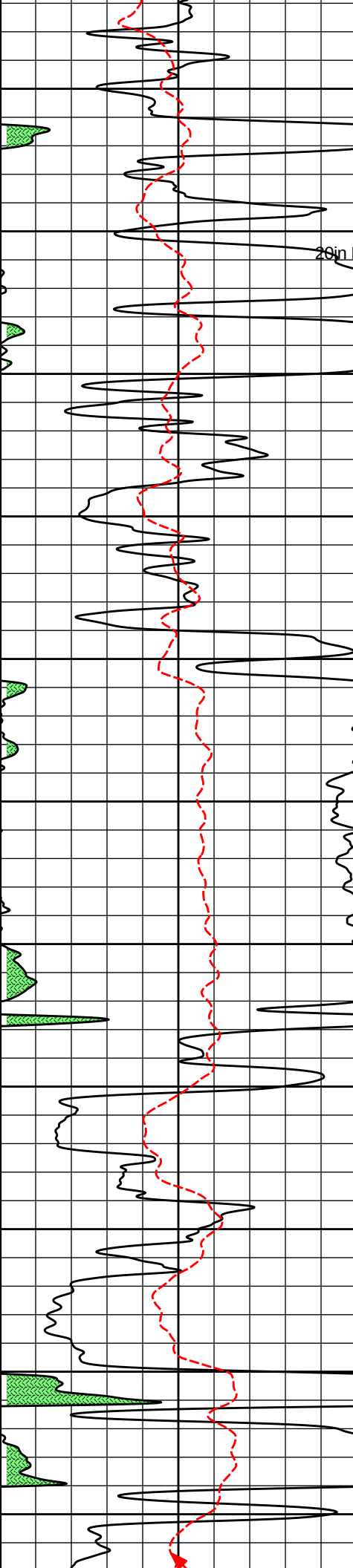
GENERAL			GAMMA		ACOUSTIC			DENSITY			NEUTRON			
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	TD	CSG	REC	0	150				30	-10	2.71	30	-10	LIME
DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
Remarks: THANKS FOR USING HALLIBUTON ENERGY SERVICES.														
ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH CASING														











2400

20in Resistivity 2ft Res

90in Resistivity 2ft Res

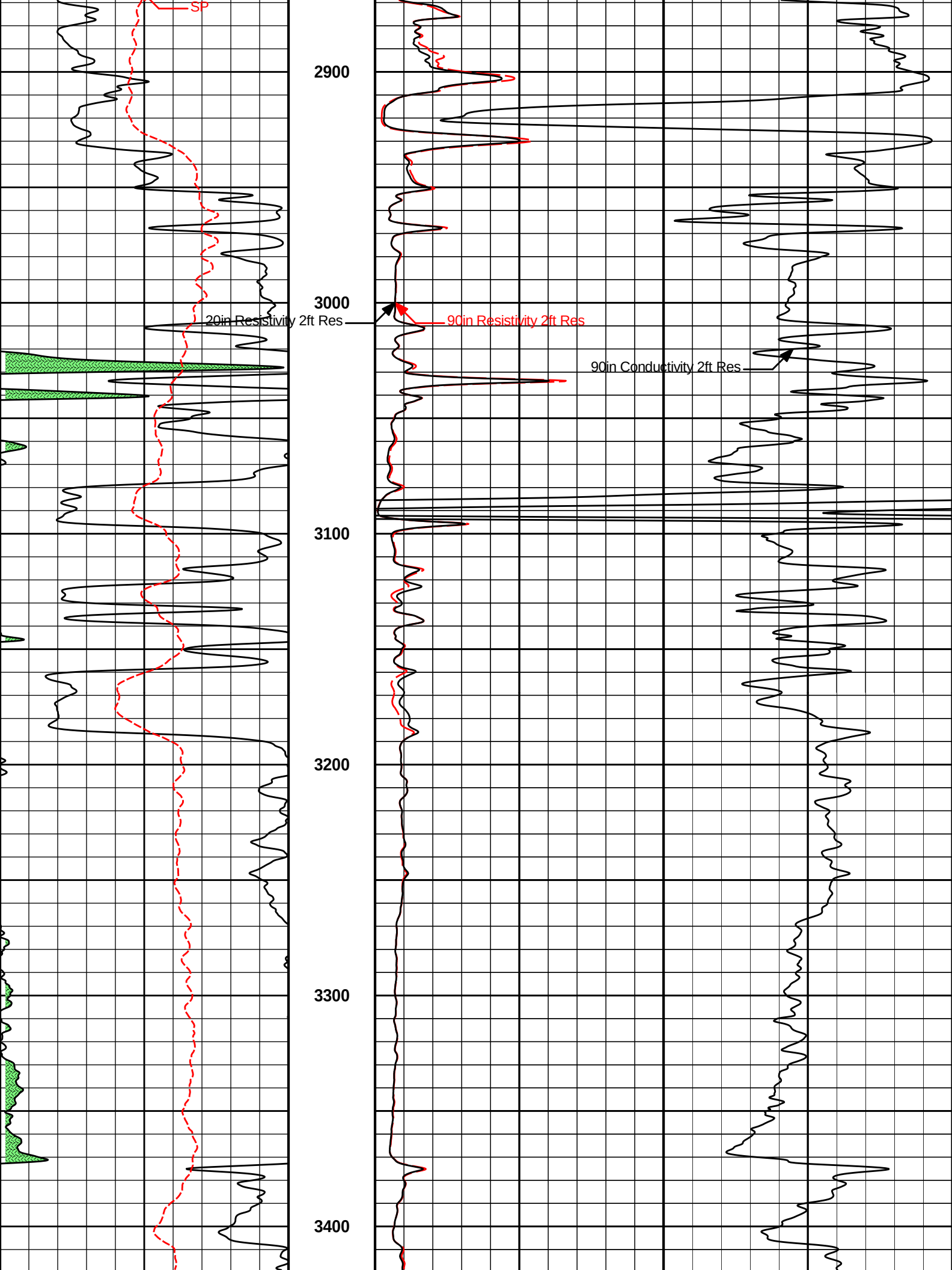
90in Conductivity 2ft Res

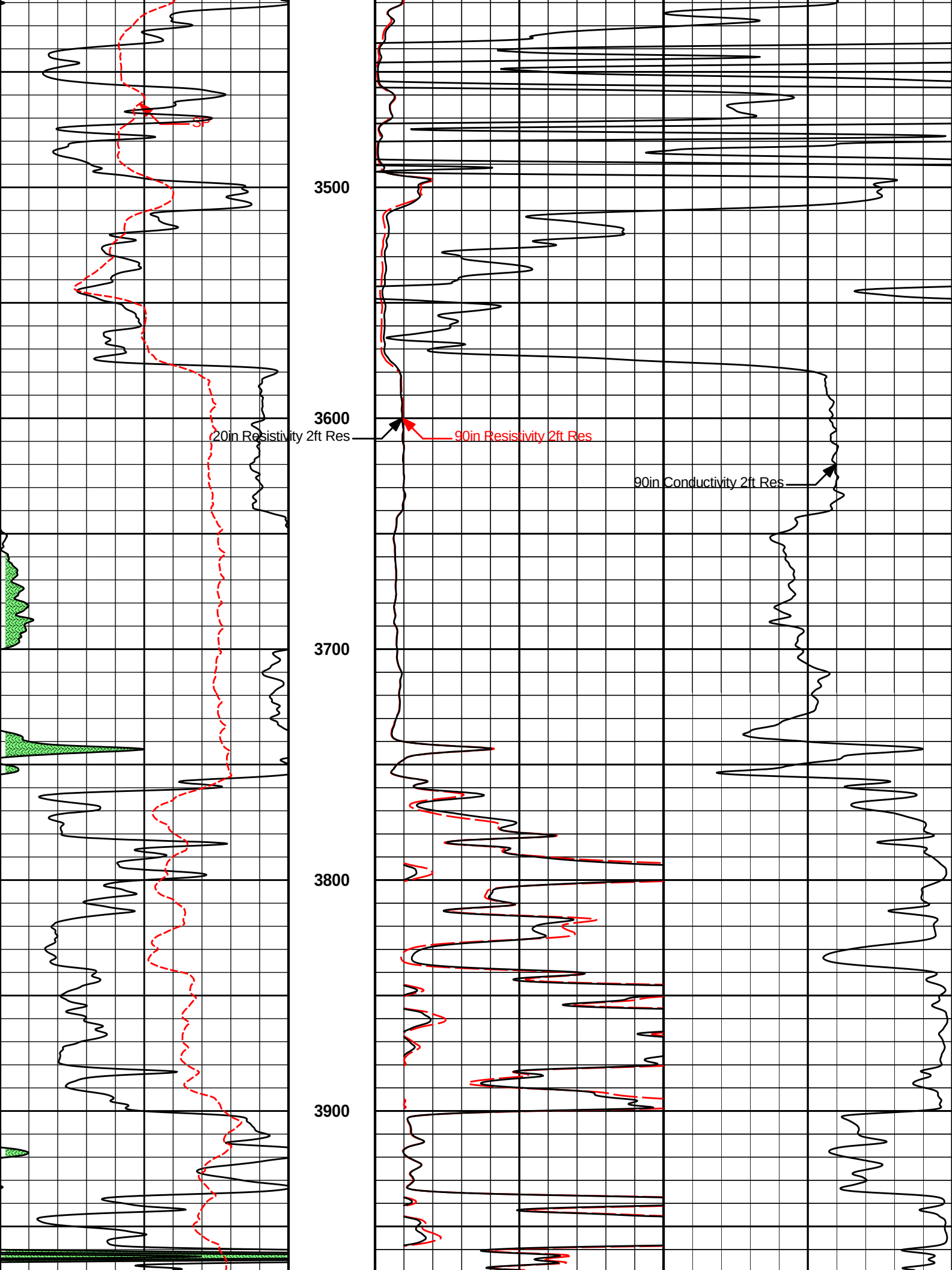
2500

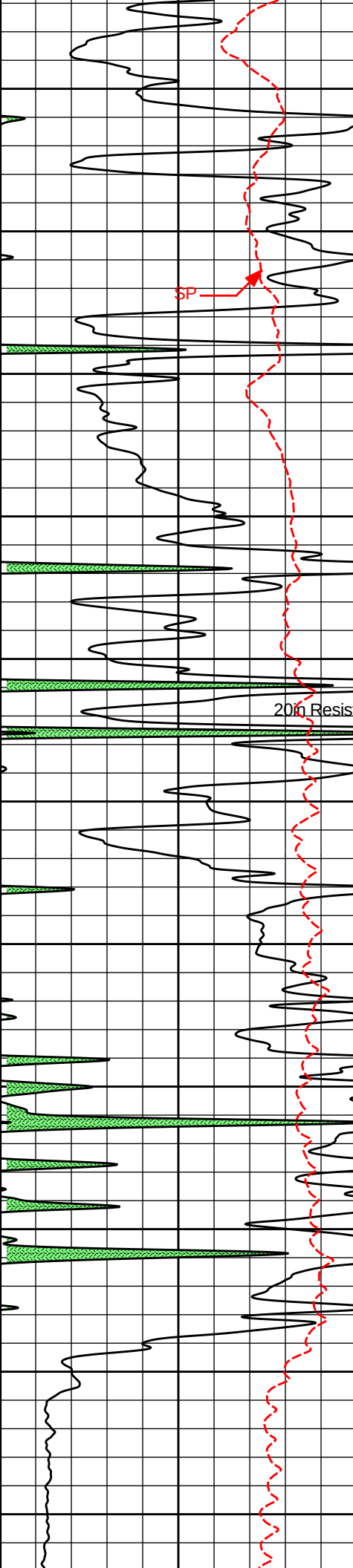
2600

2700

2800







4000

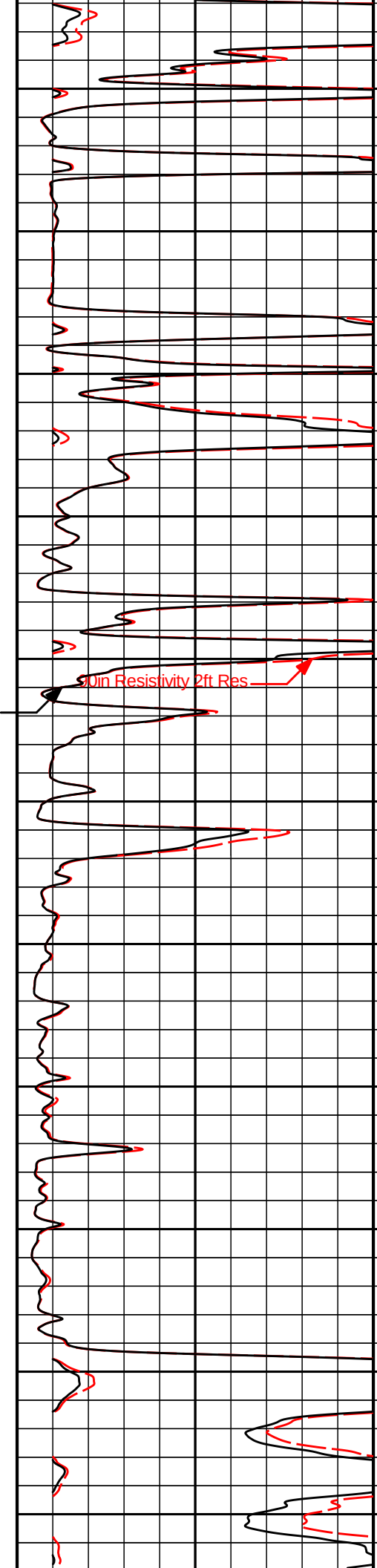
4100

4200

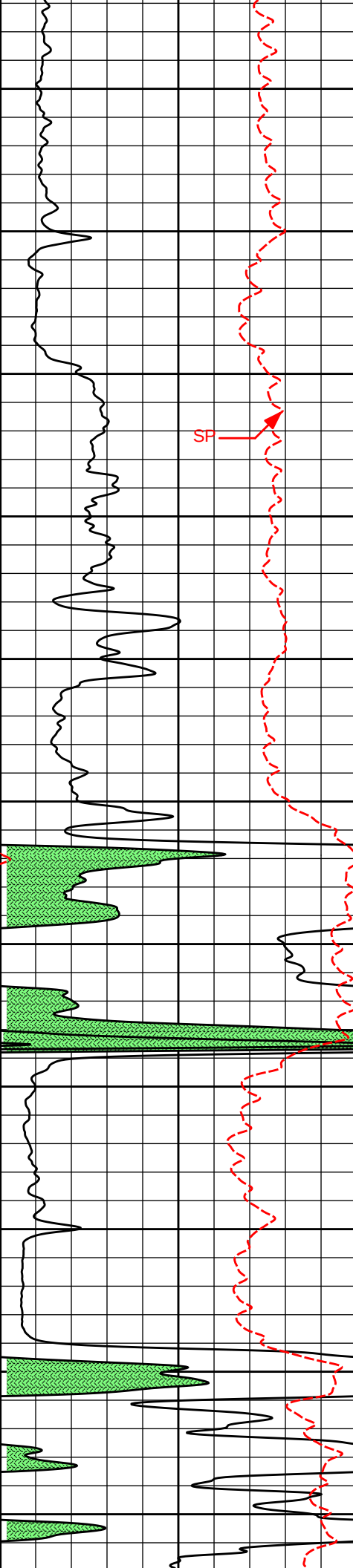
4300

4400

4500



90in Conductivity 2ft Res



4600

4700

4800

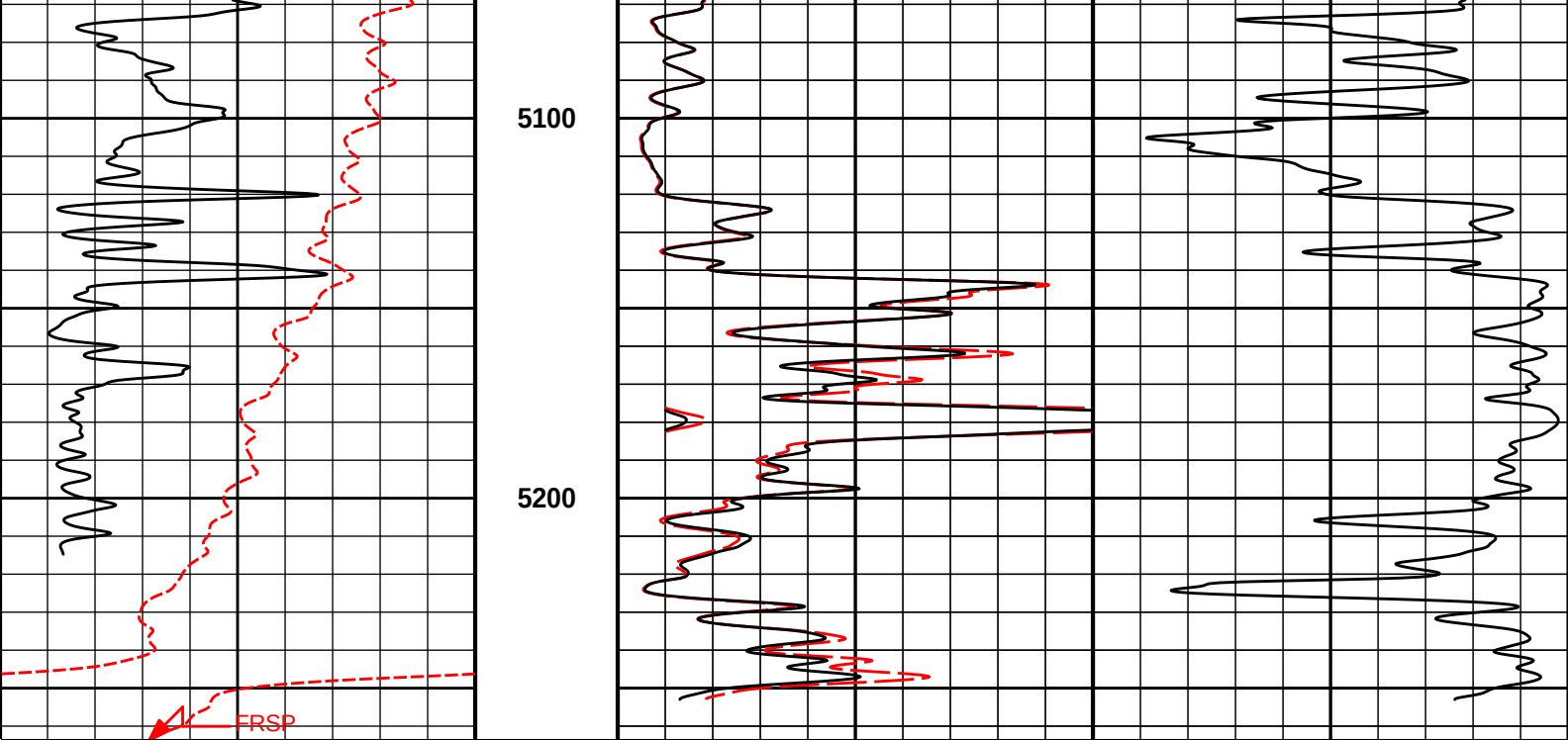
4900

5000

SP

90in Resistivity 2ft Res

90in Conductivity 2ft Res



0	Gamma API	150	1 : 600 ft	0	90in Resistivity 2ft Res	50
					ohm-metre	
				0	20in Resistivity 2ft Res	50
					ohm-metre	
				1K	90in Conductivity 2ft Res	0
					mmho per metre	
	api					
	SP					
	-] 20mV [+]					

HALLIBURTON

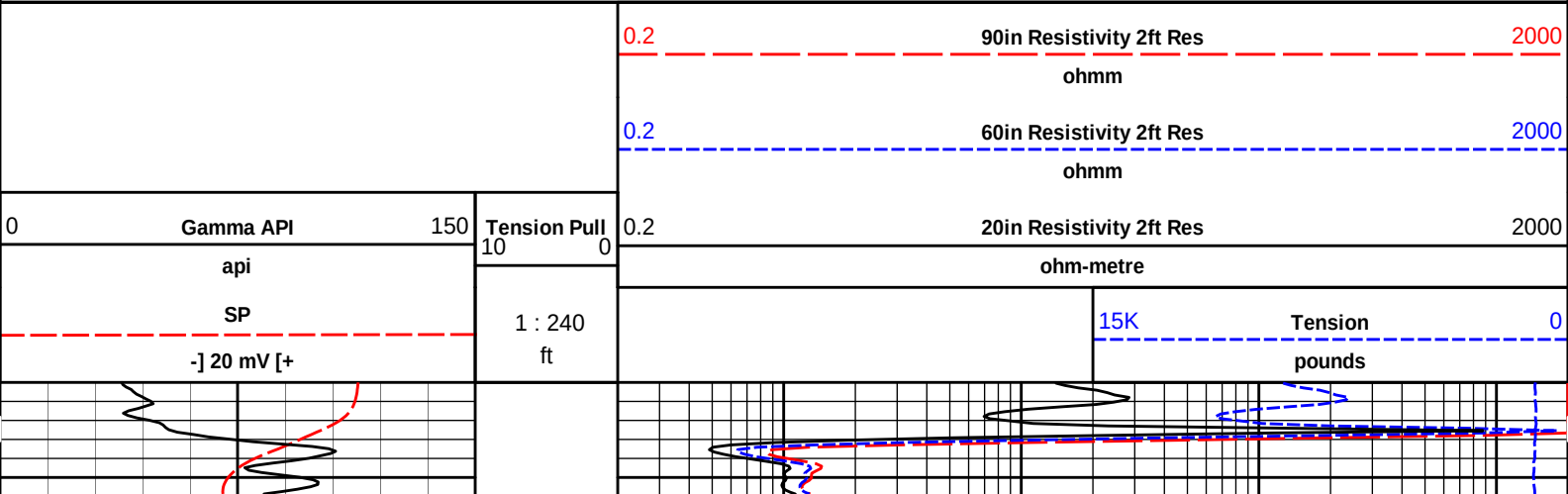
Plot Time: 15-Mar-14 03:24:13
Plot Range: 520 ft to 5263.75 ft
Data: {ActiveWell}\Well Based*\nPlot File: \\-LOCAL-(not saved)1_ACRT_2inx

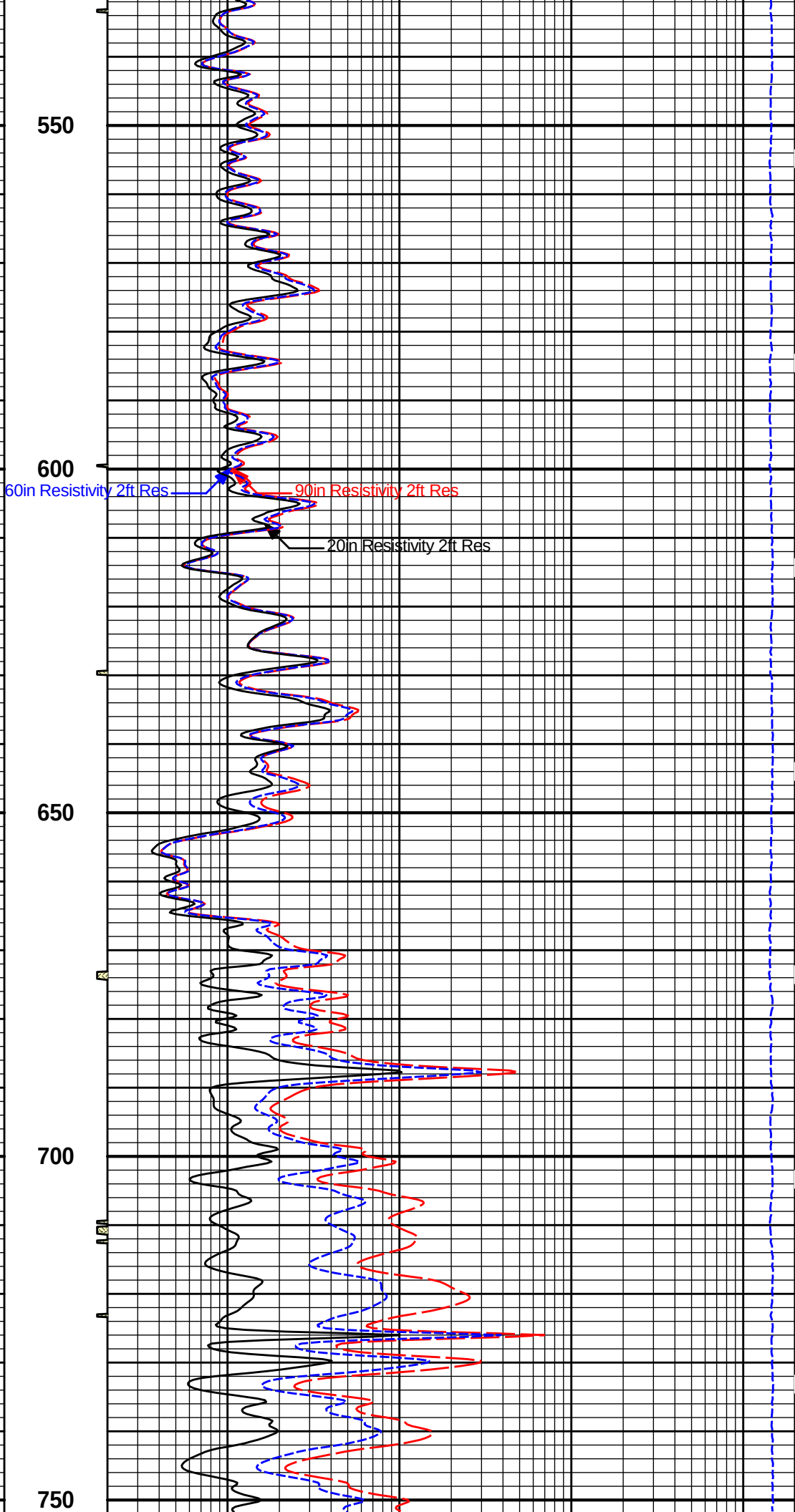
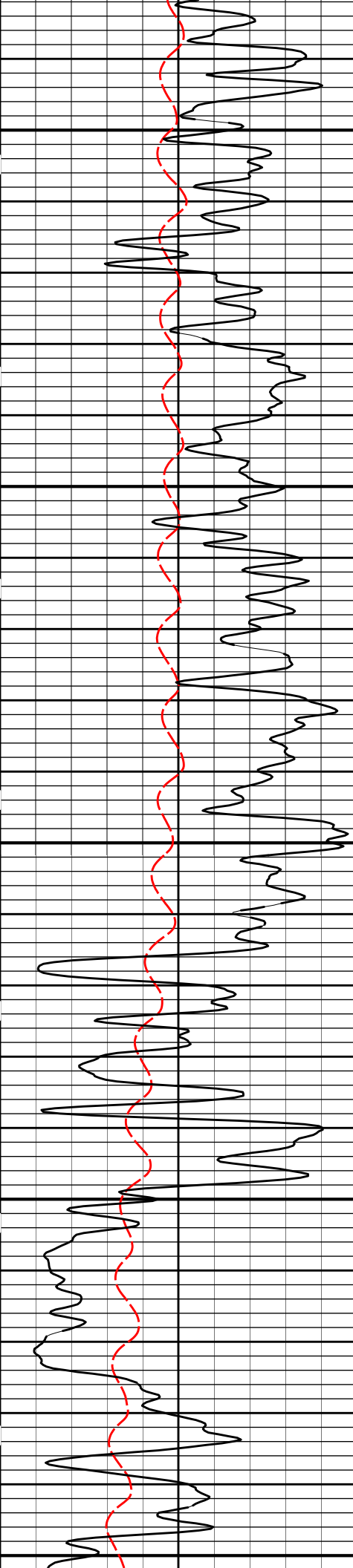
2 INCH MAIN LOG

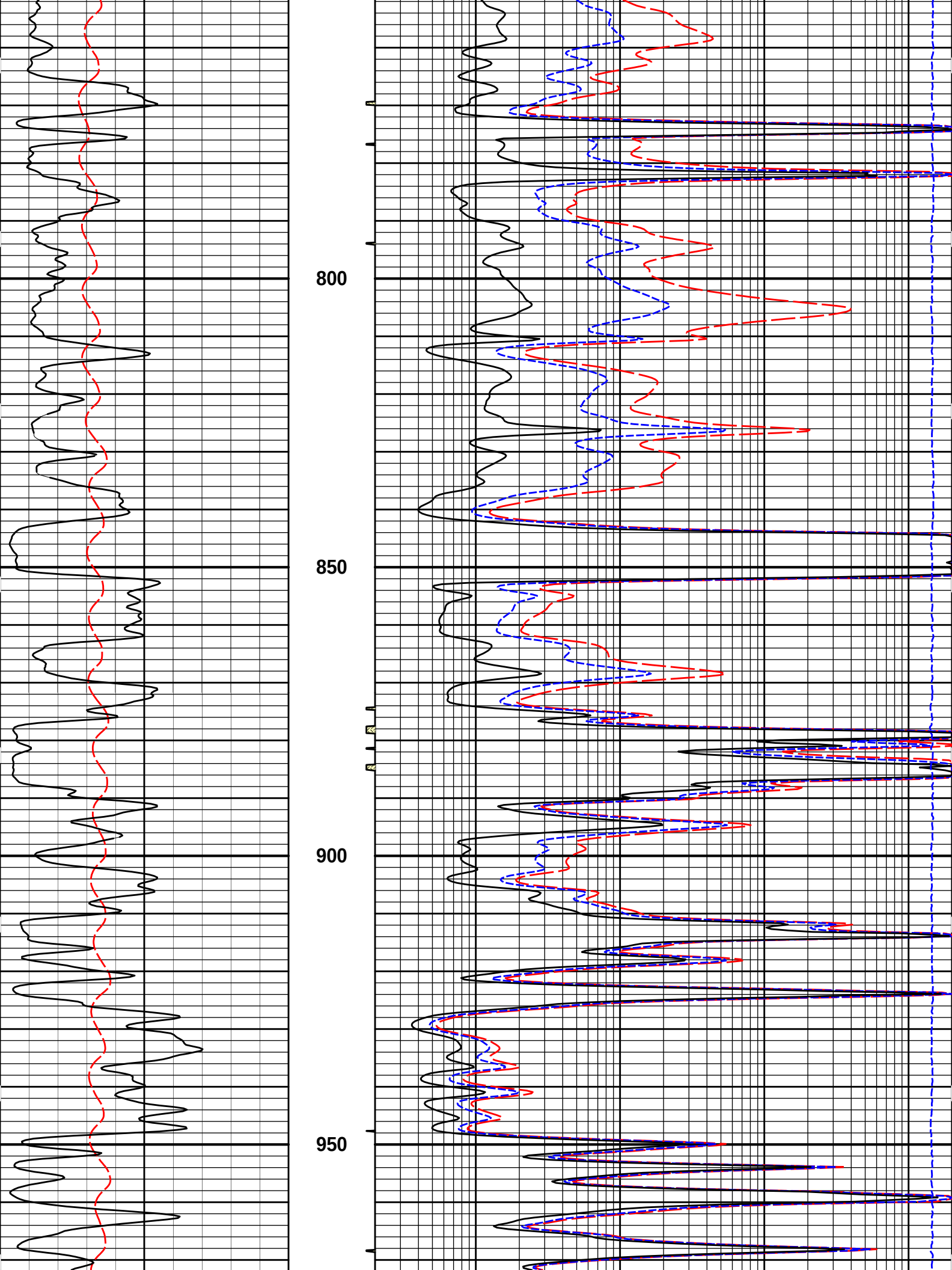
HALLIBURTON

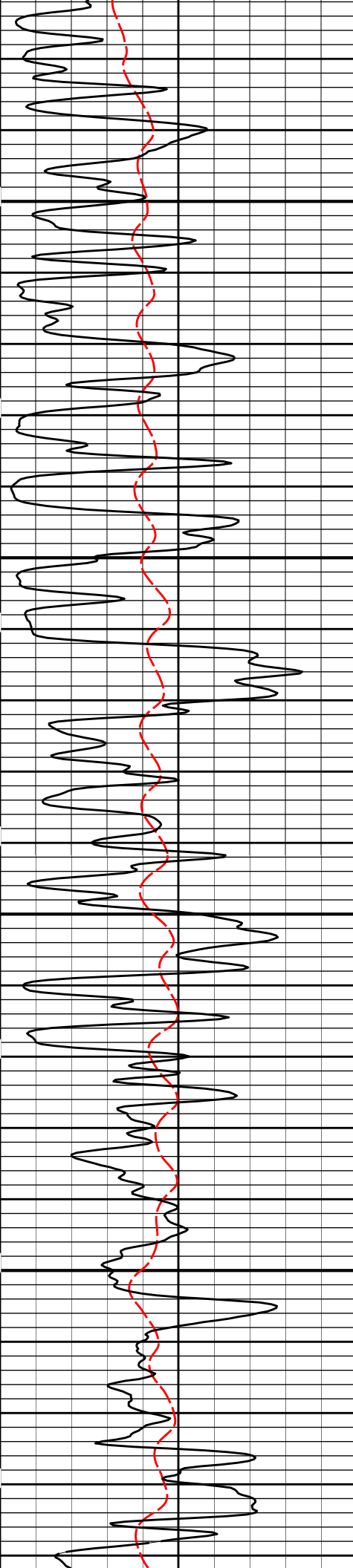
Plot Time: 15-Mar-14 03:24:13
Plot Range: 520 ft to 5266.67 ft
Data: {ActiveWell}\Well Based*\nPlot File: \\-LOCAL-(not saved)1_ACRT_5_mainx

5 INCH MAIN LOG







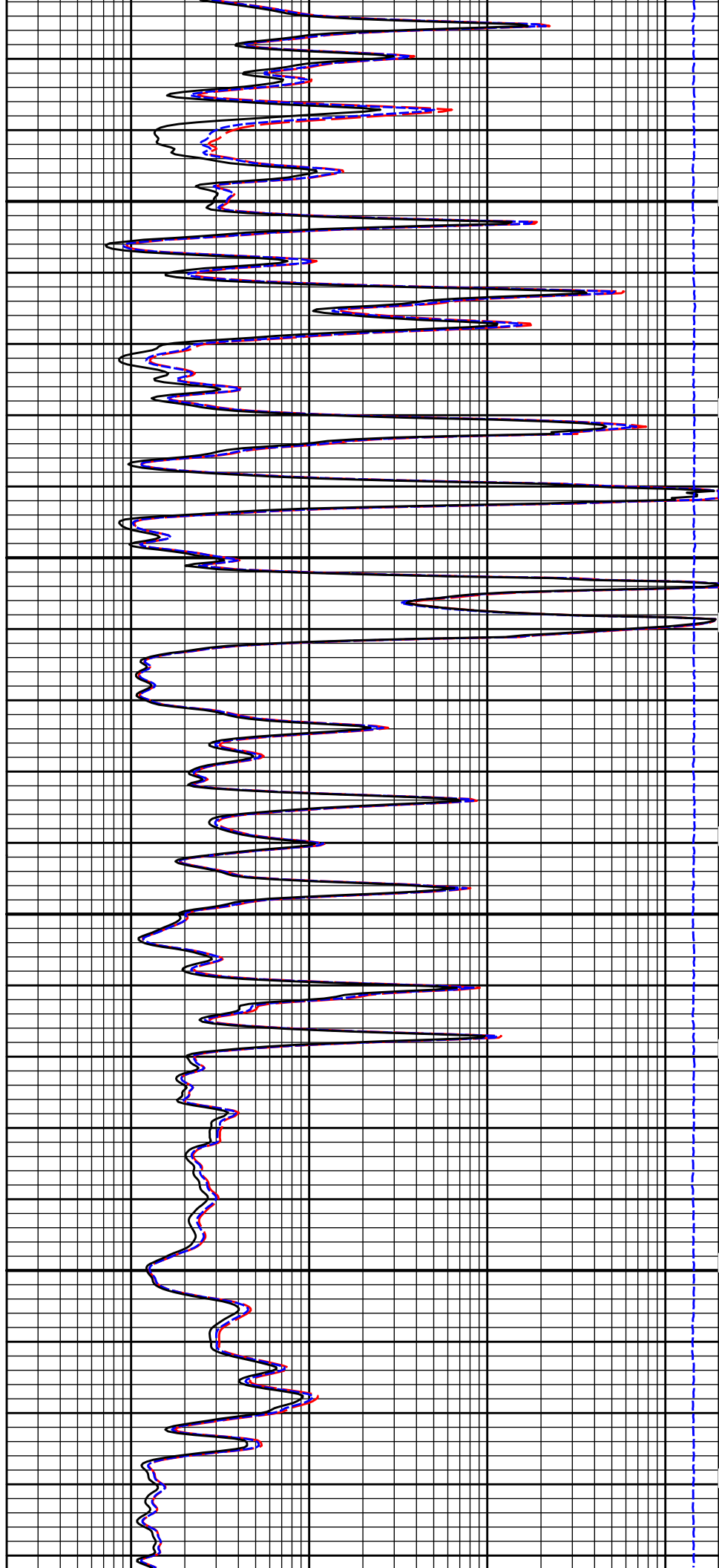


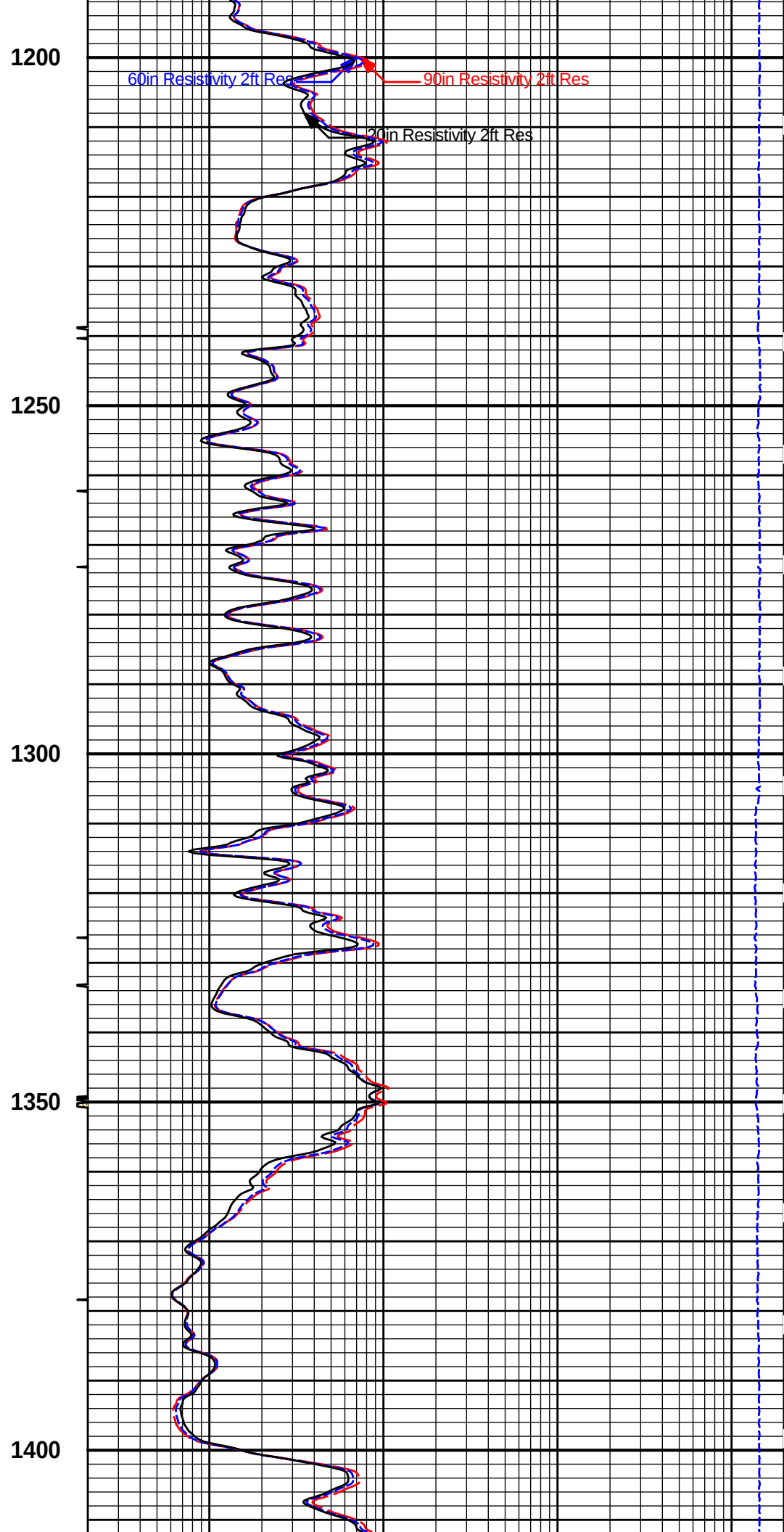
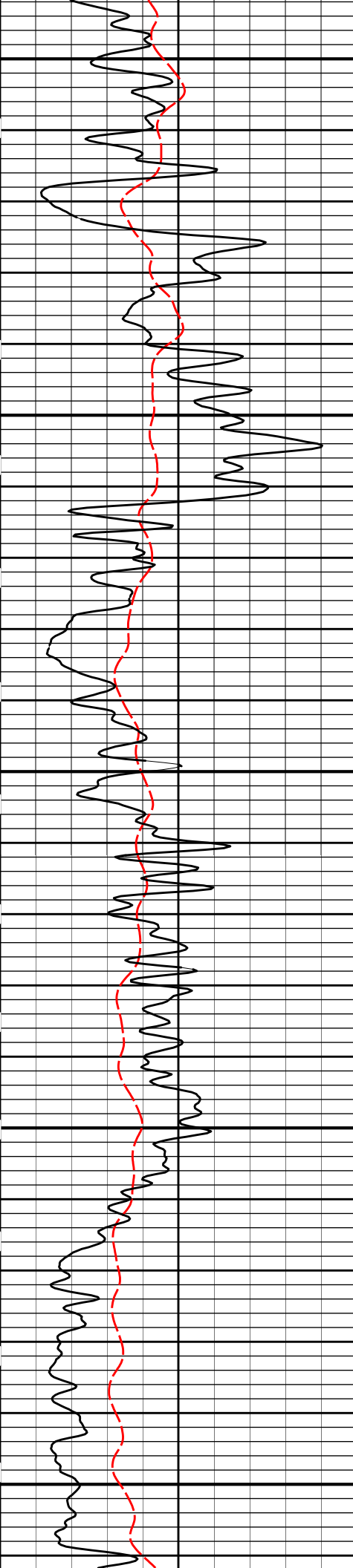
1000

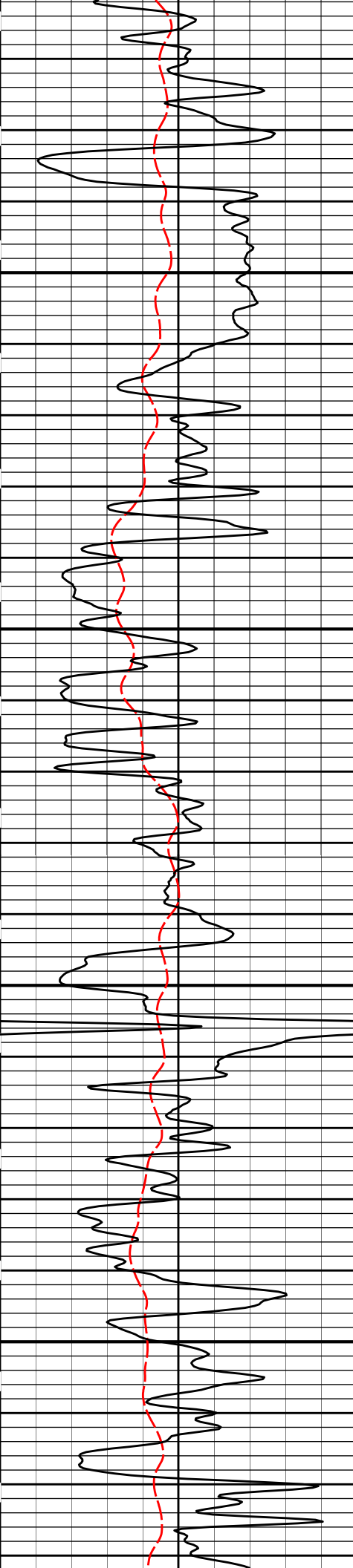
1050

1100

1150





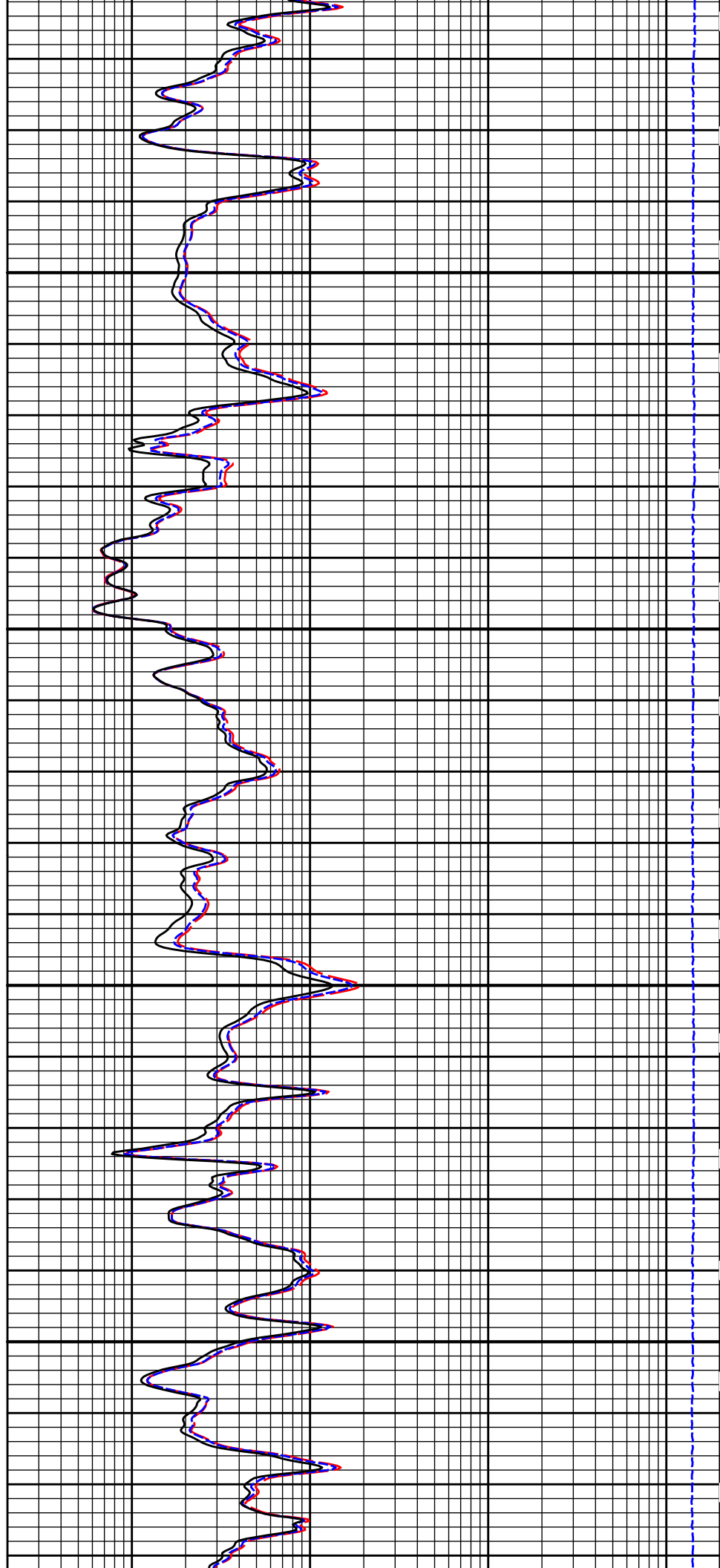


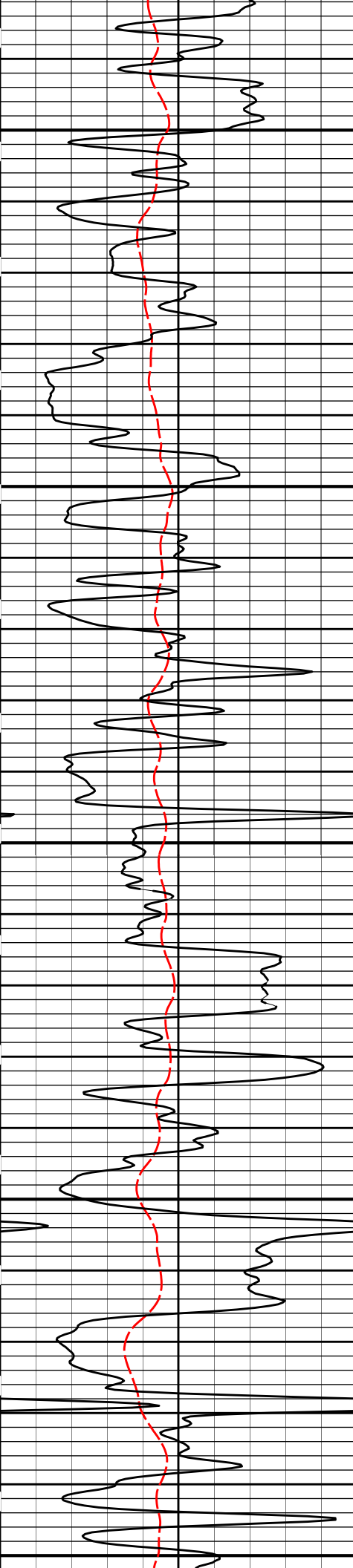
1450

1500

1550

1600





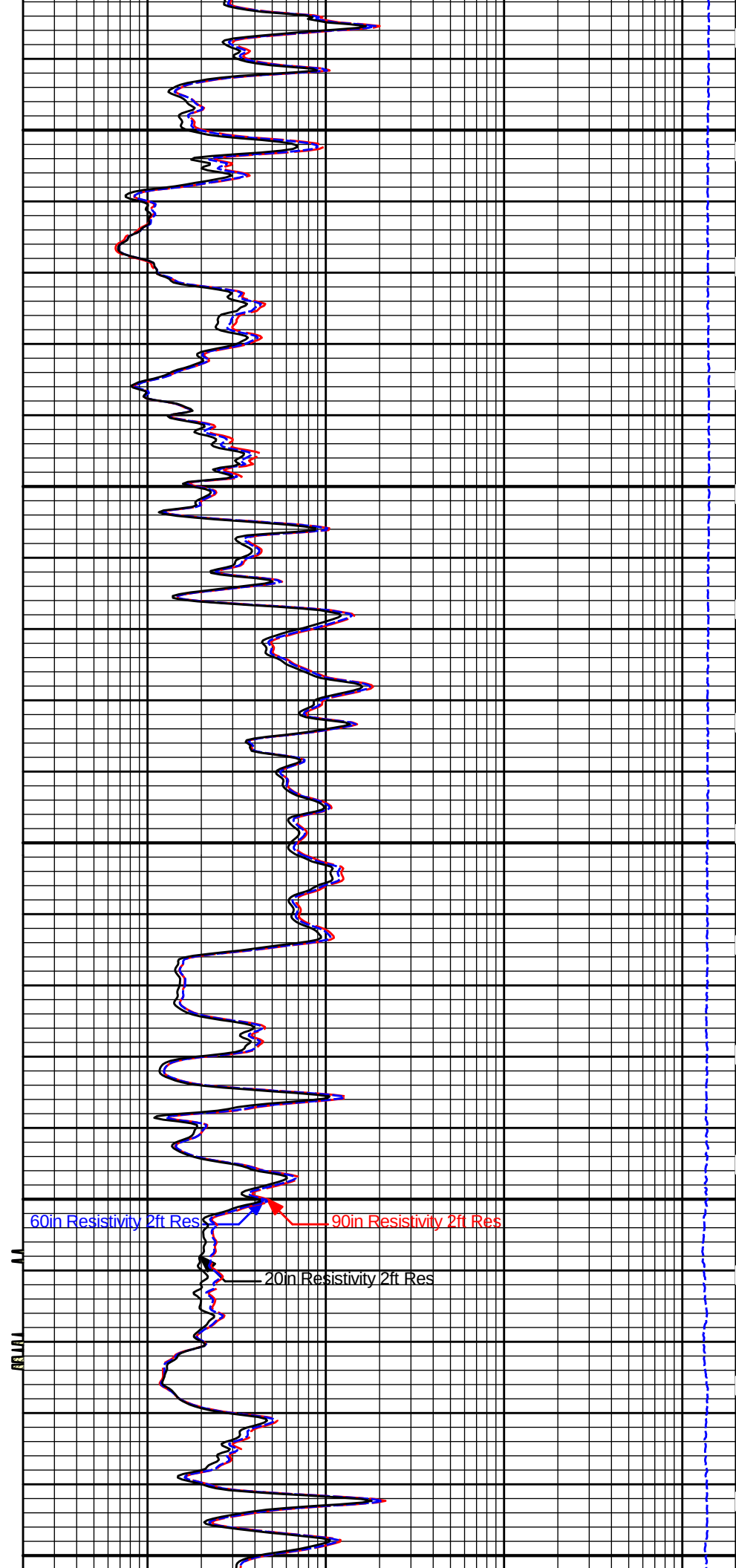
1650

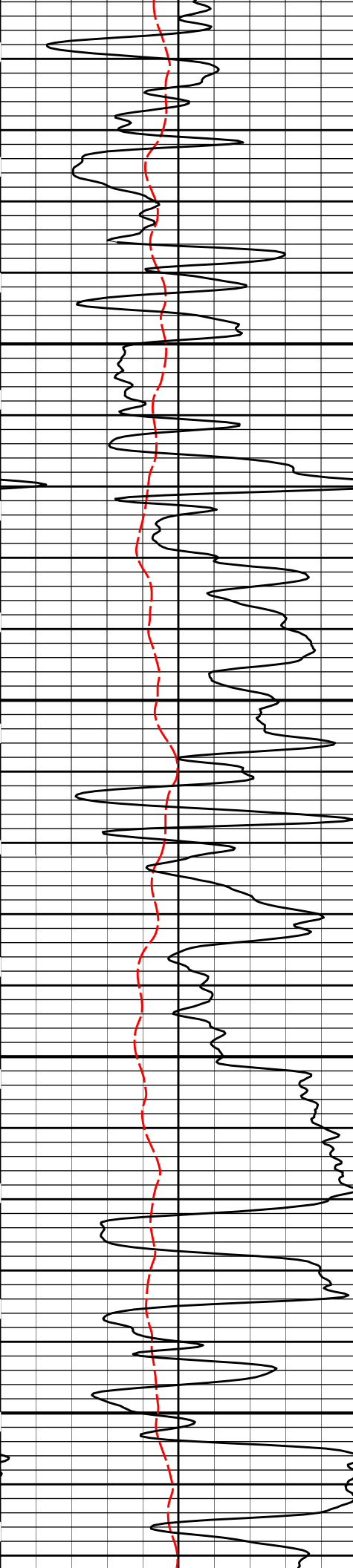
1700

1750

1800

1850



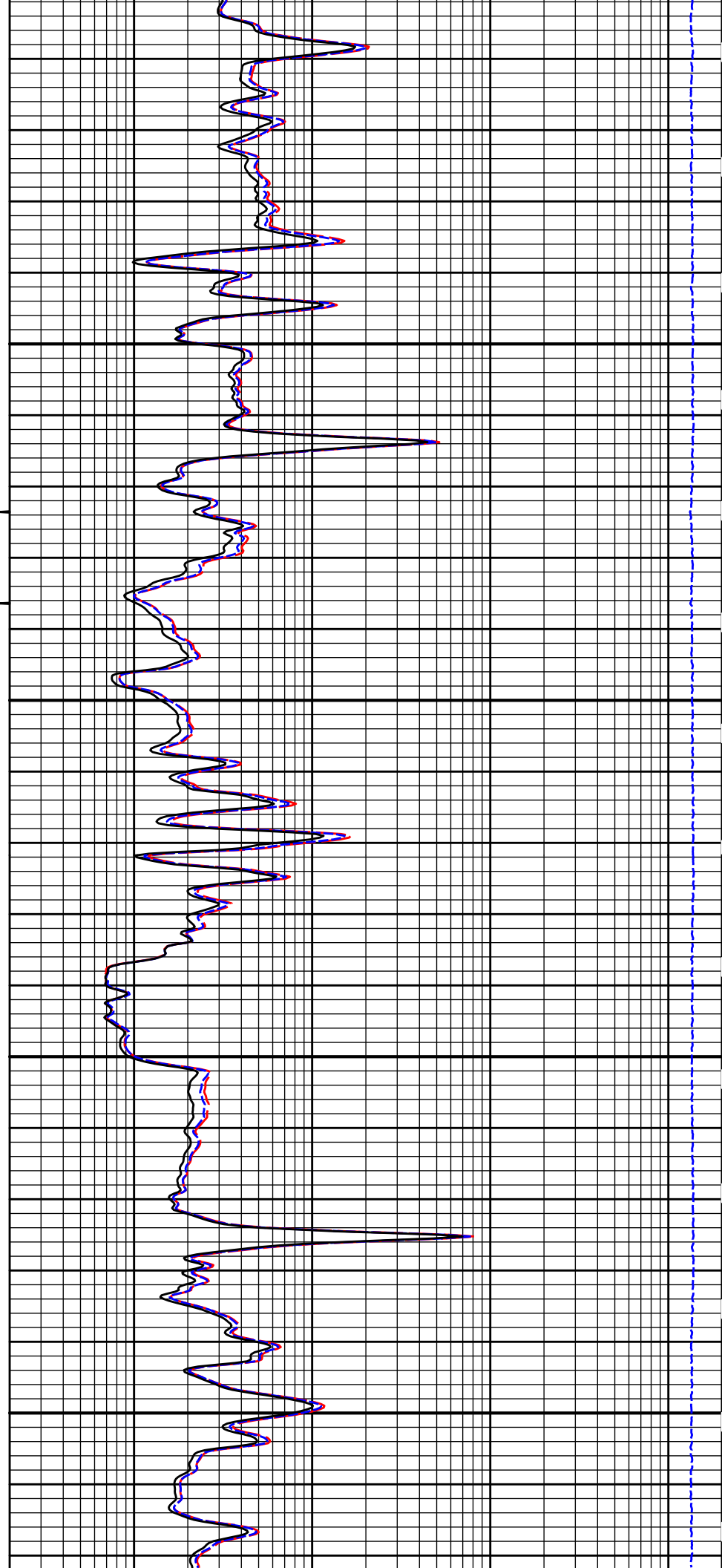


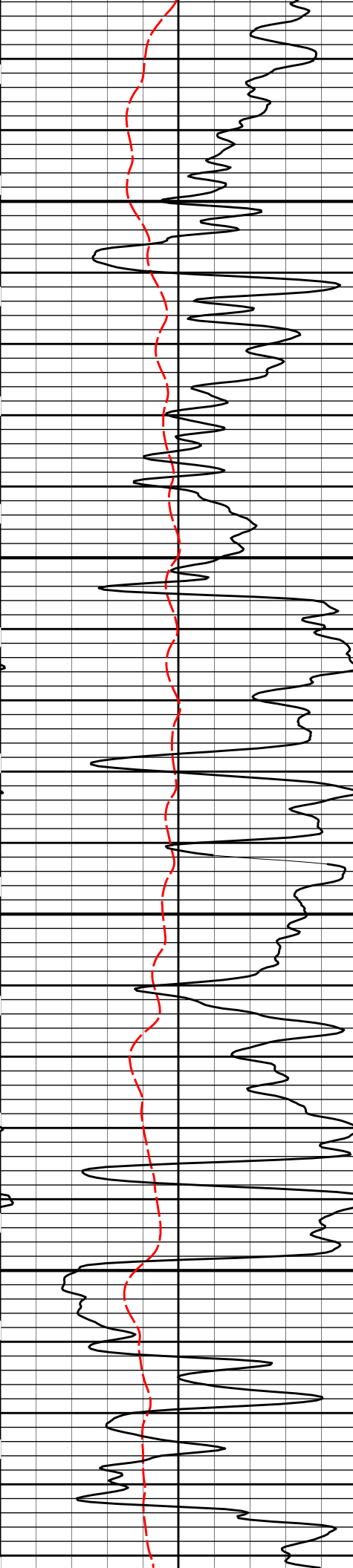
1900

1950

2000

2050



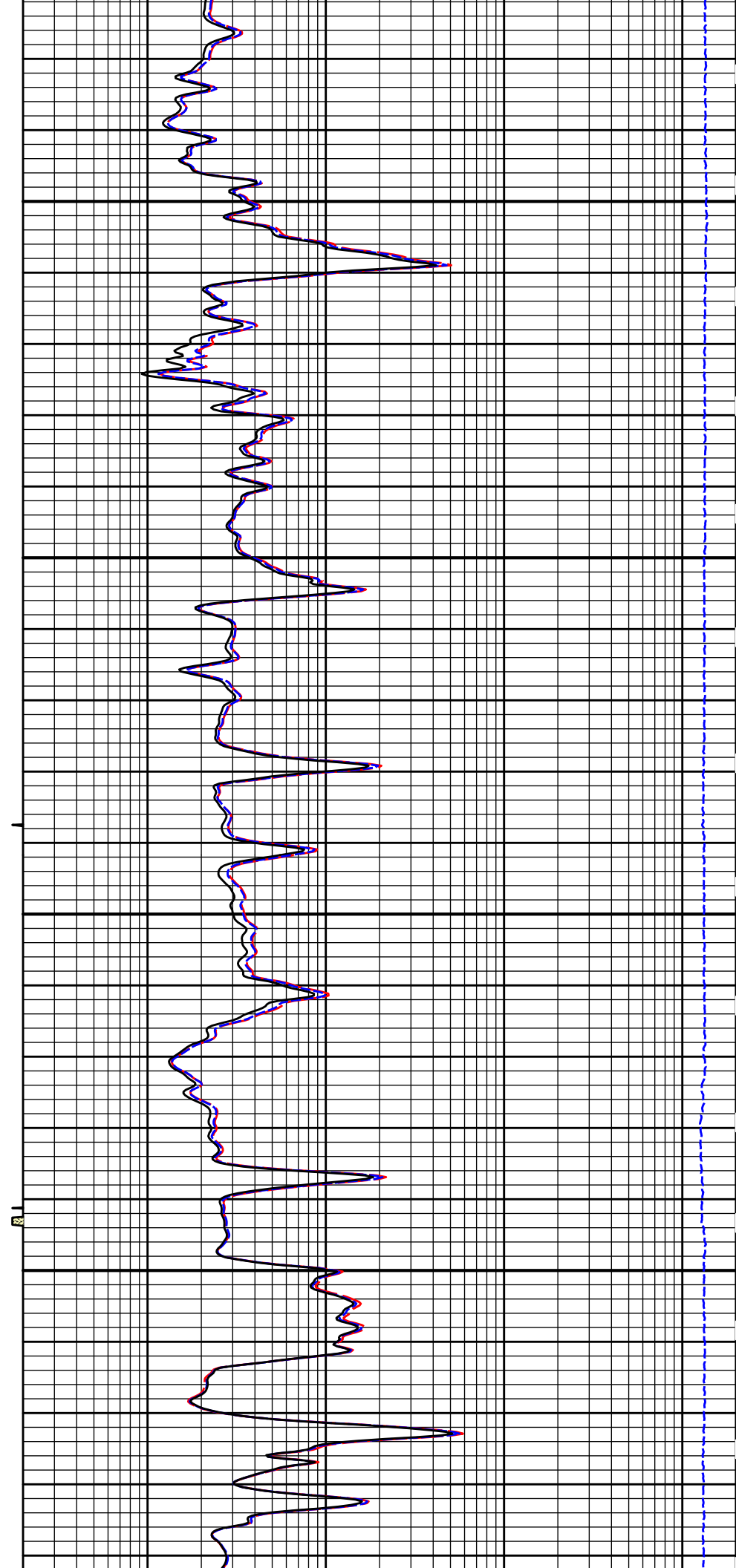


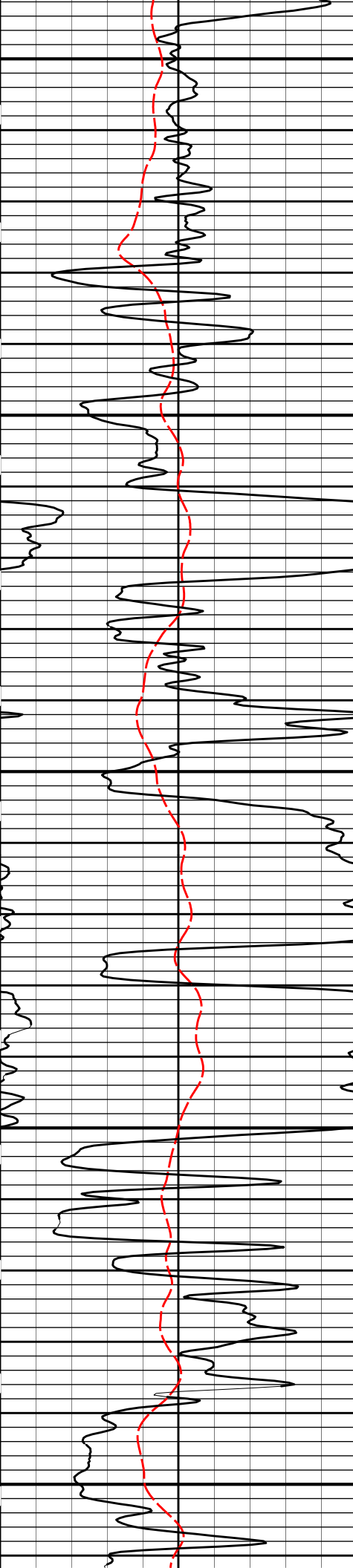
2100

2150

2200

2250





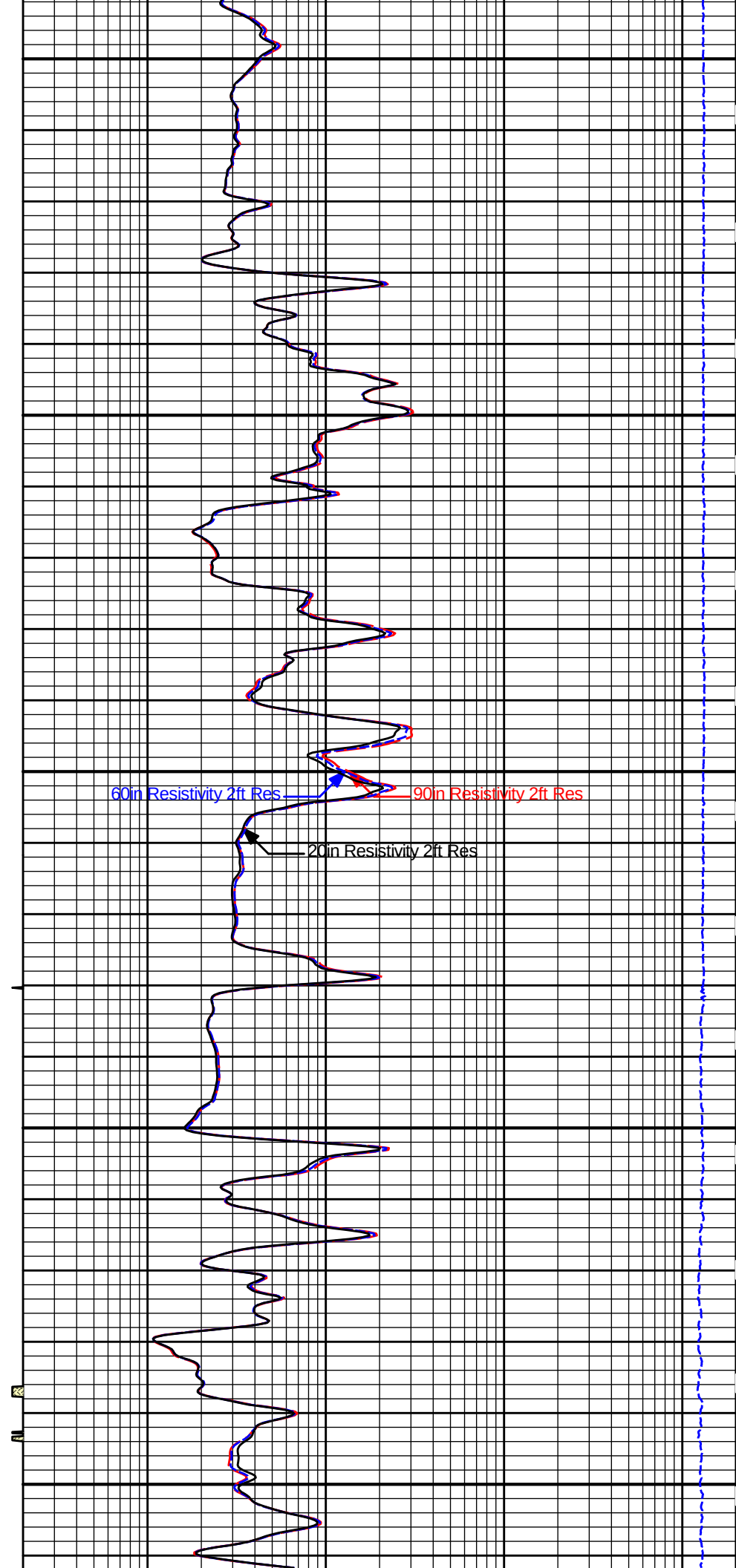
2300

2350

2400

2450

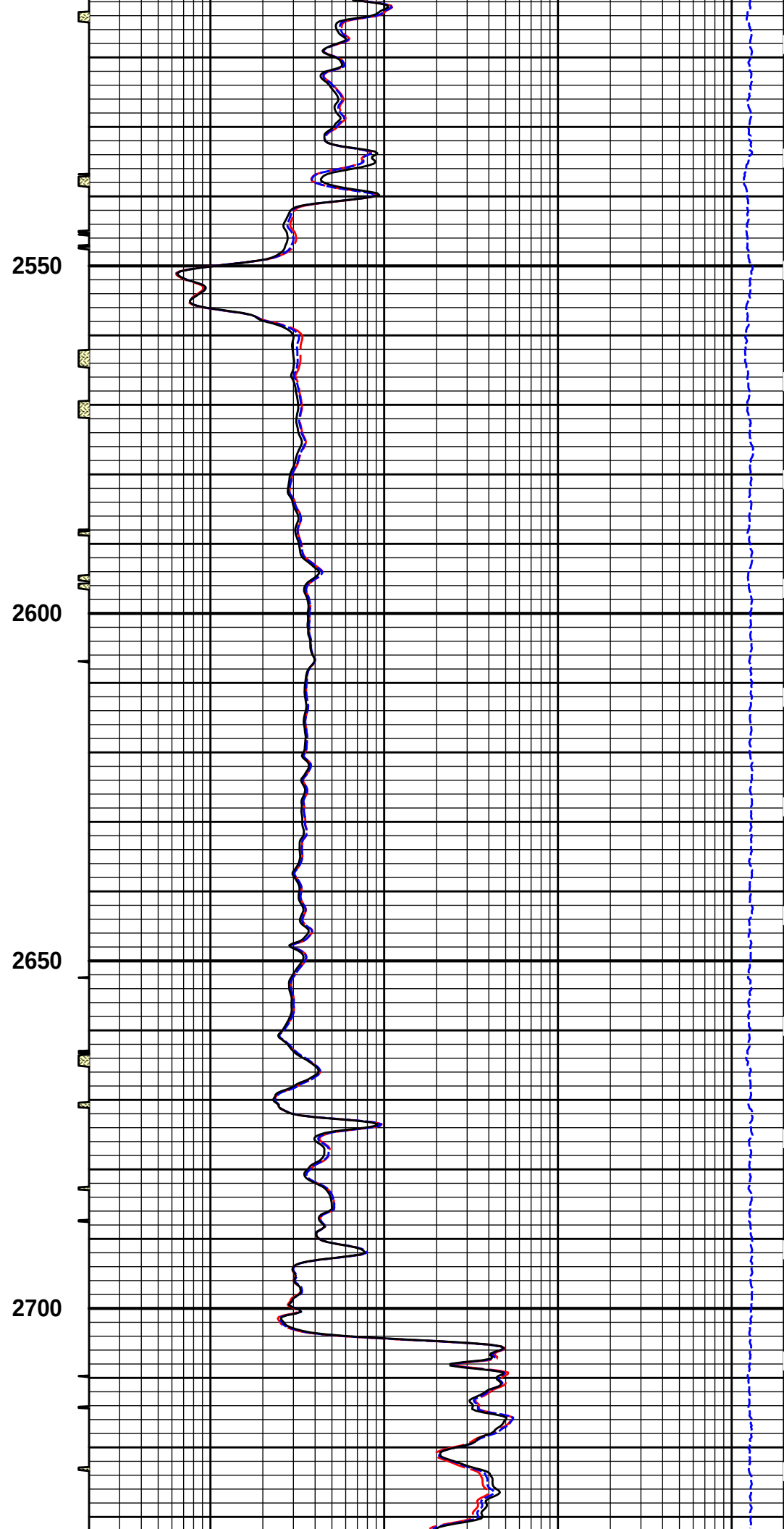
2500

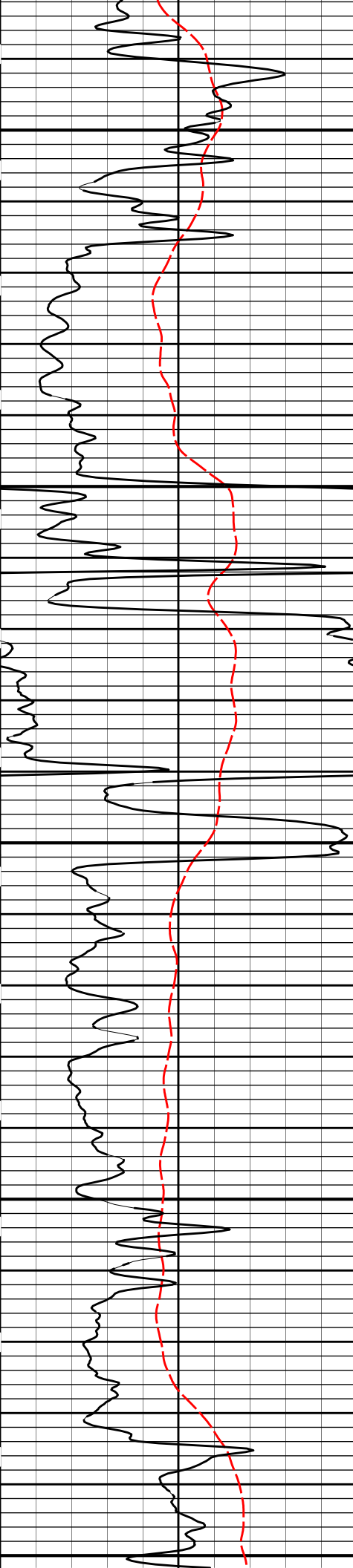


60in Resistivity 2ft Res

90in Resistivity 2ft Res

20in Resistivity 2ft Res





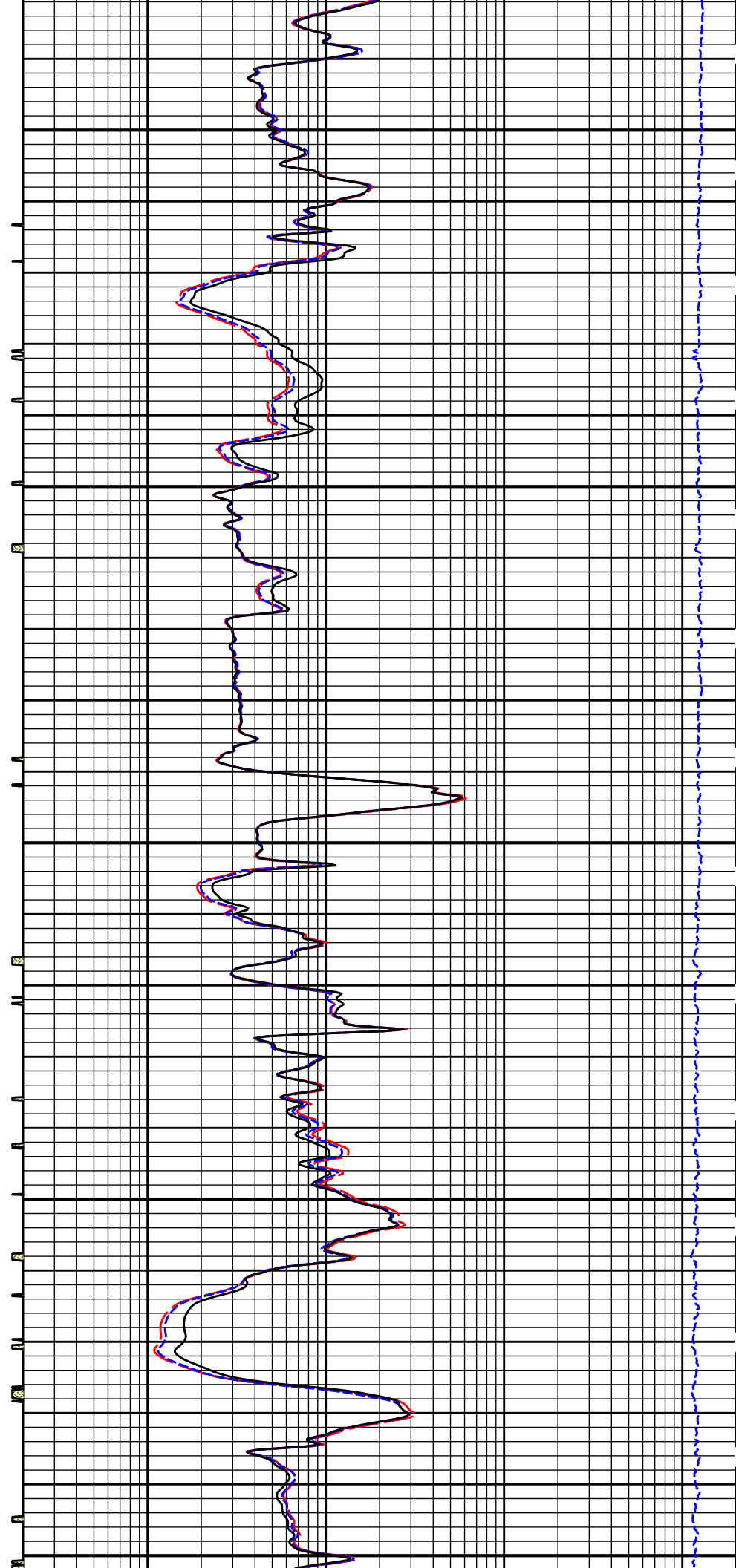
2750

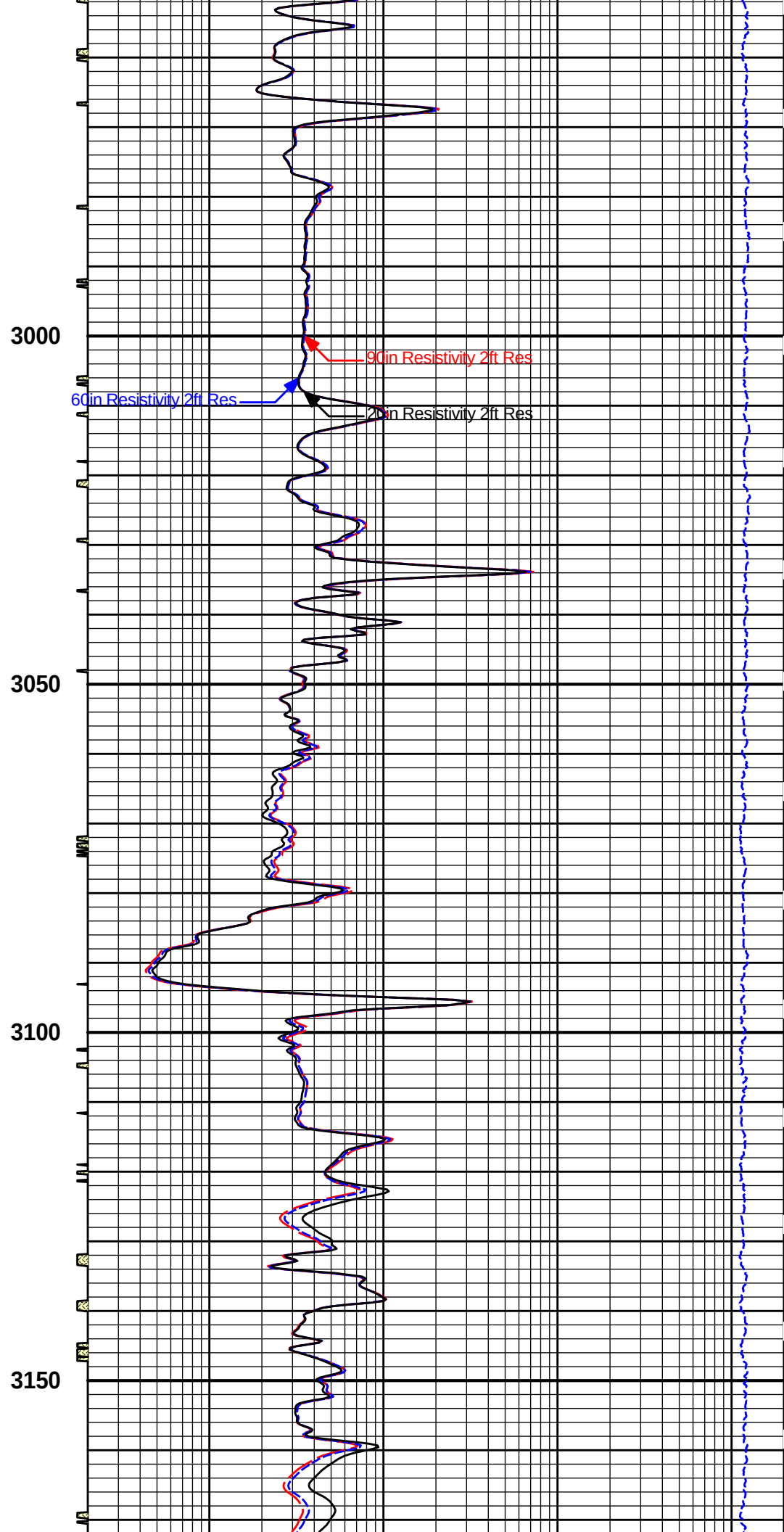
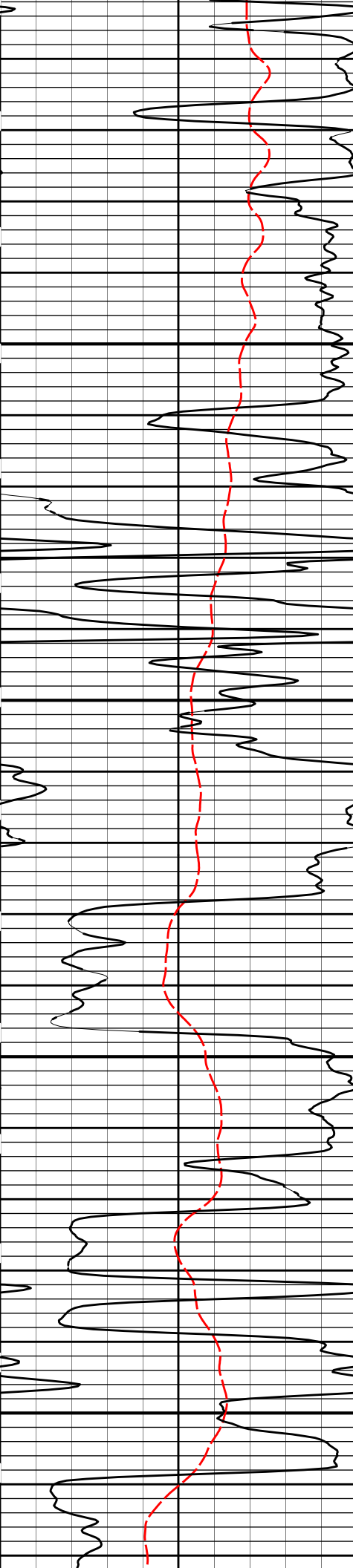
2800

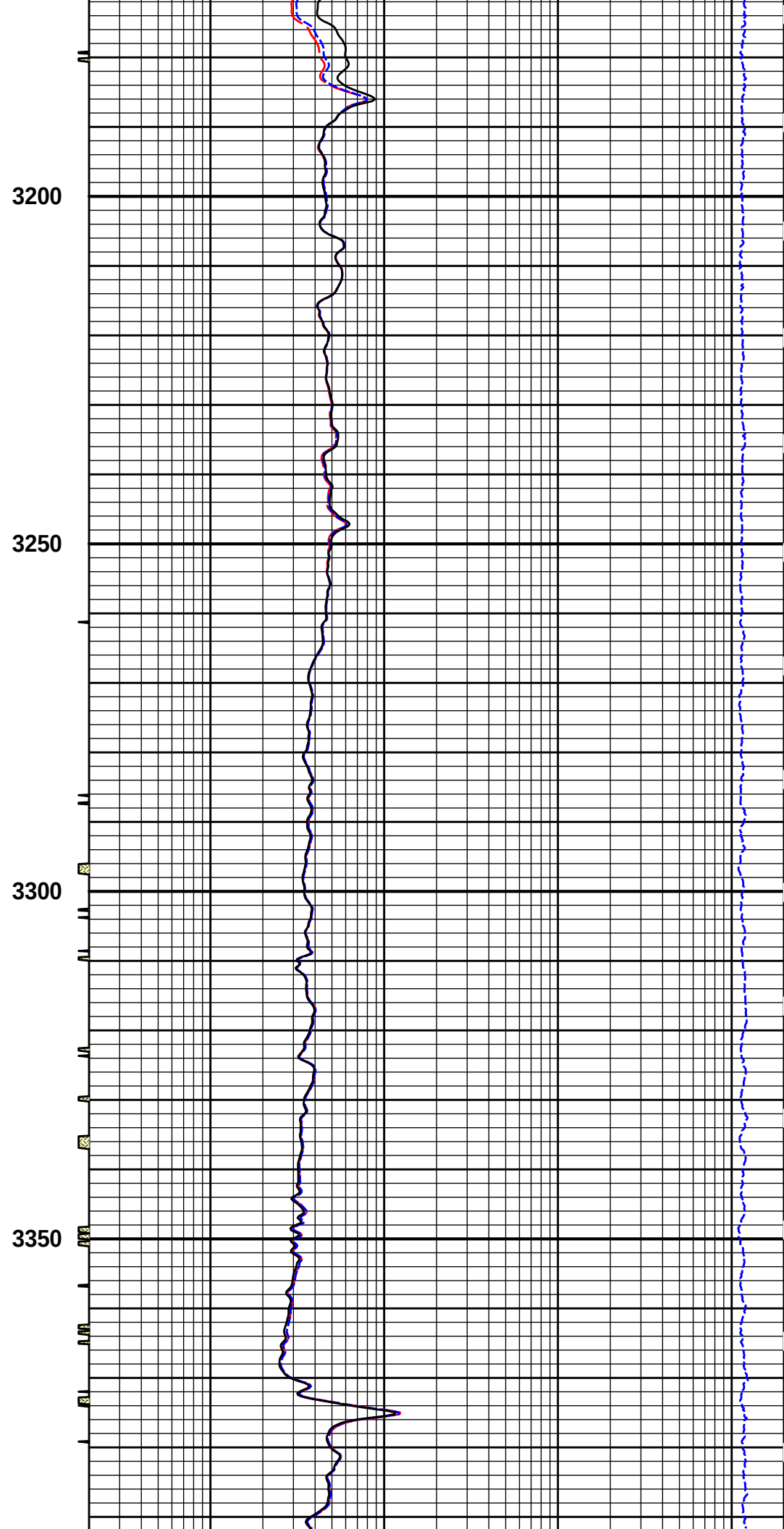
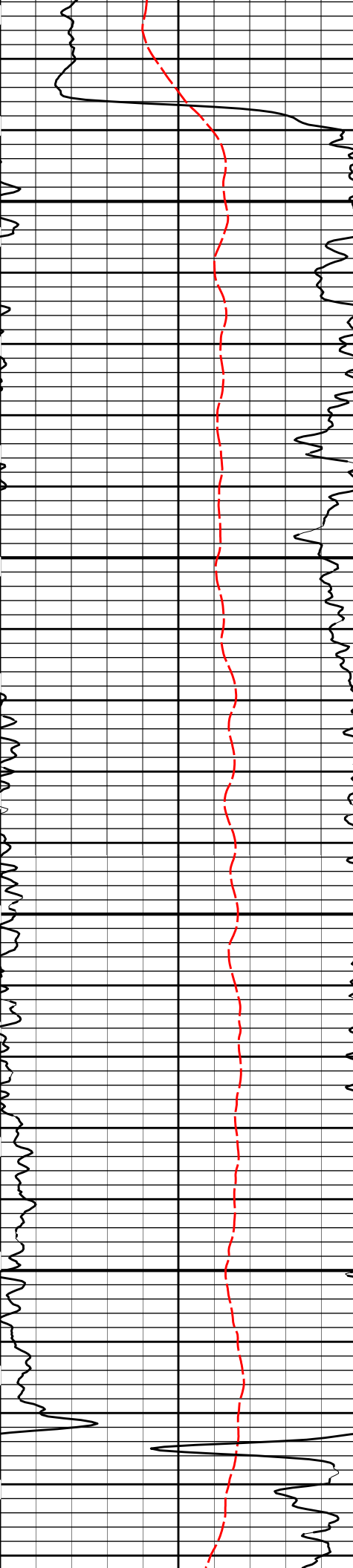
2850

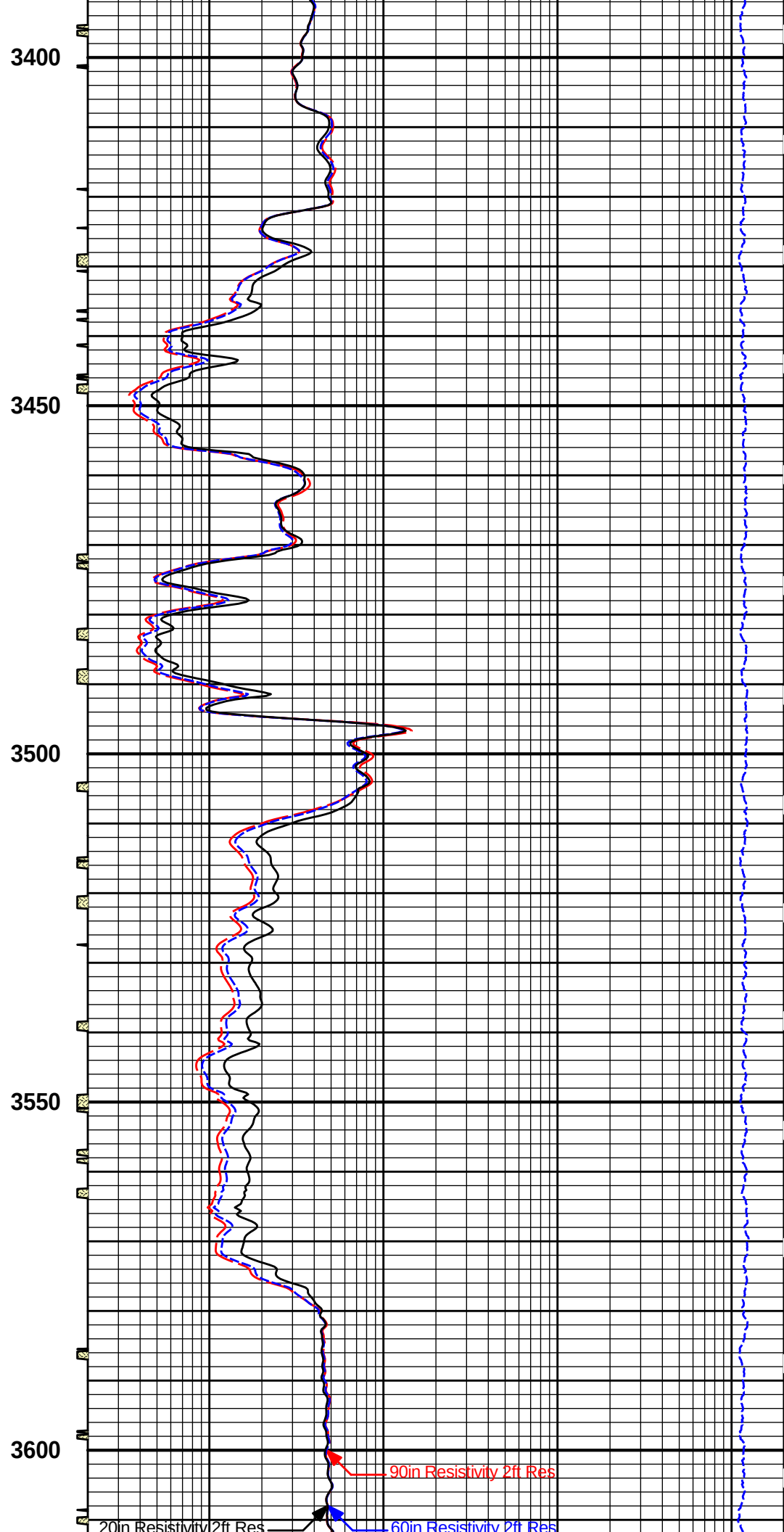
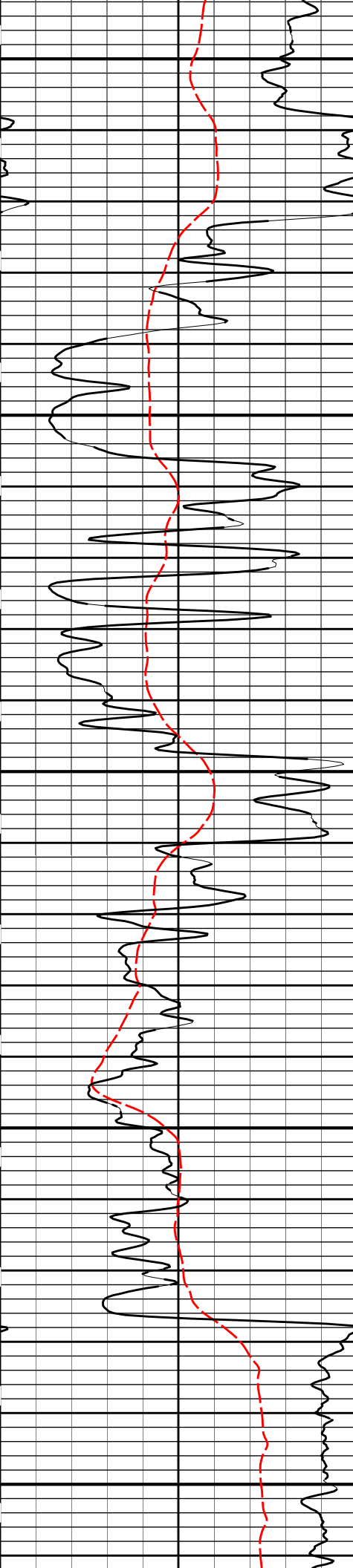
2900

2950







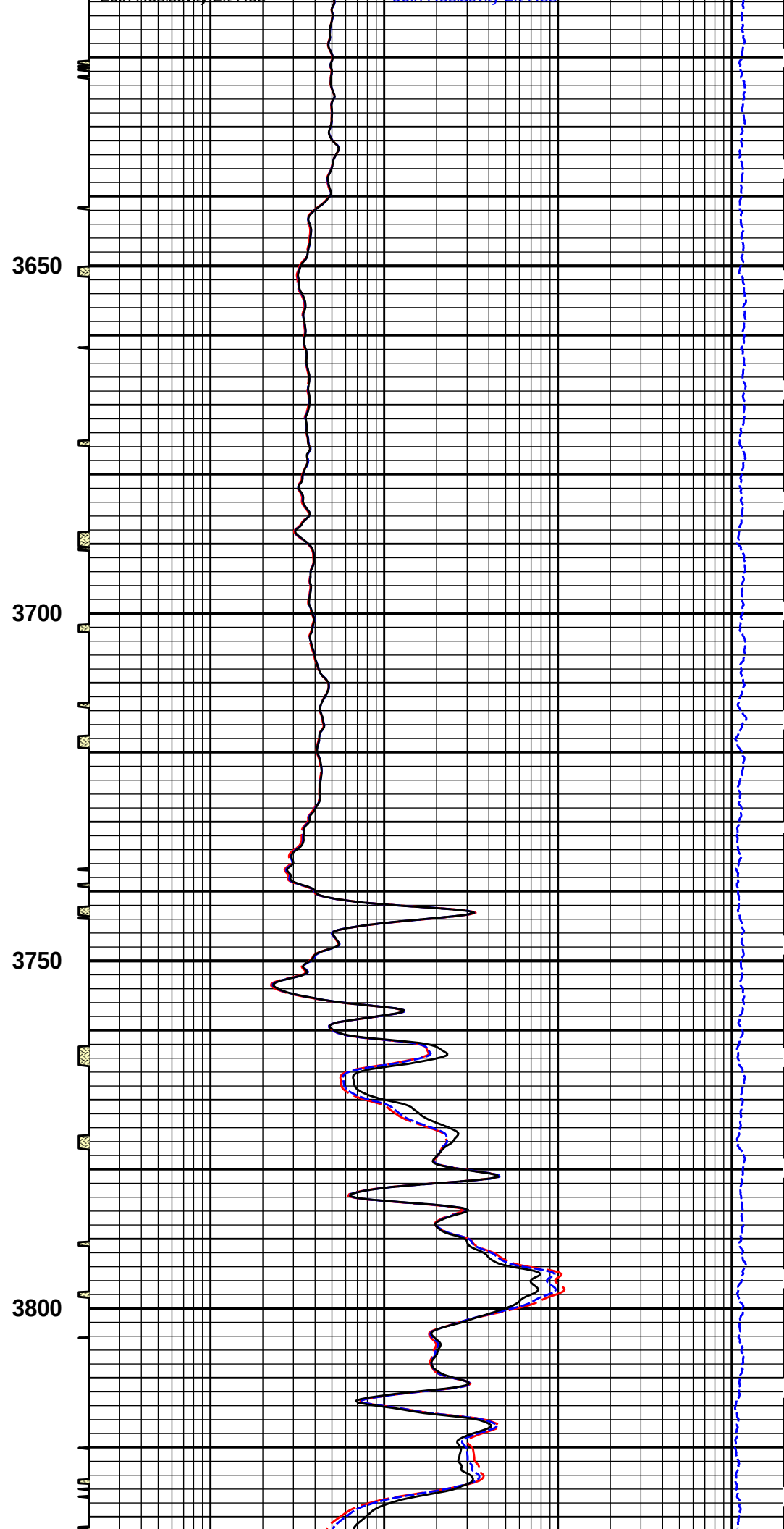
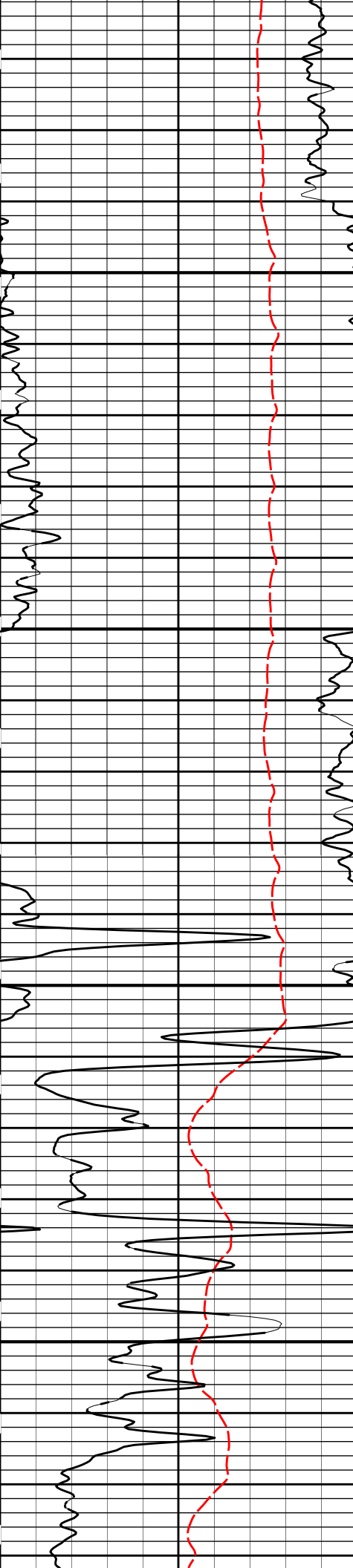


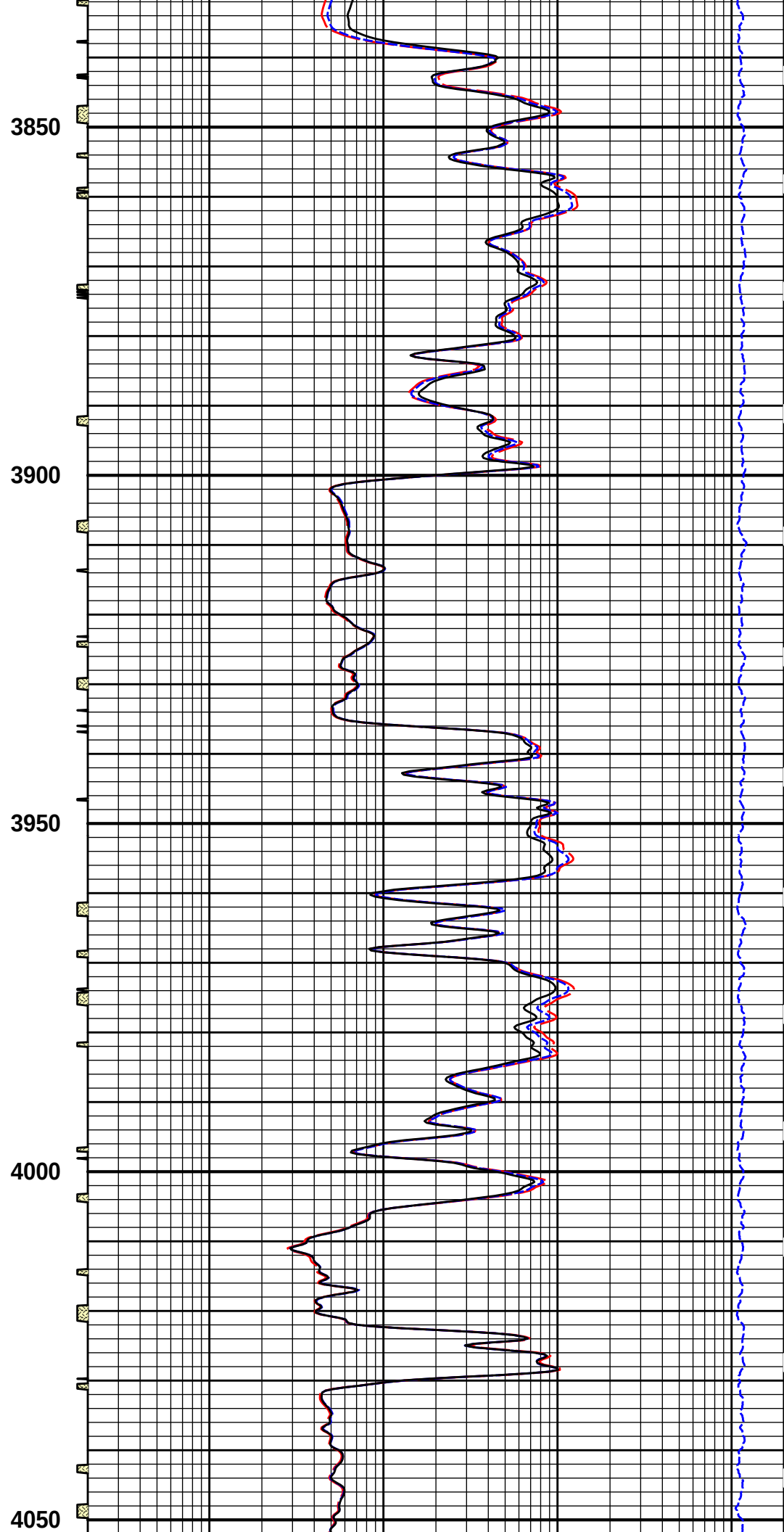
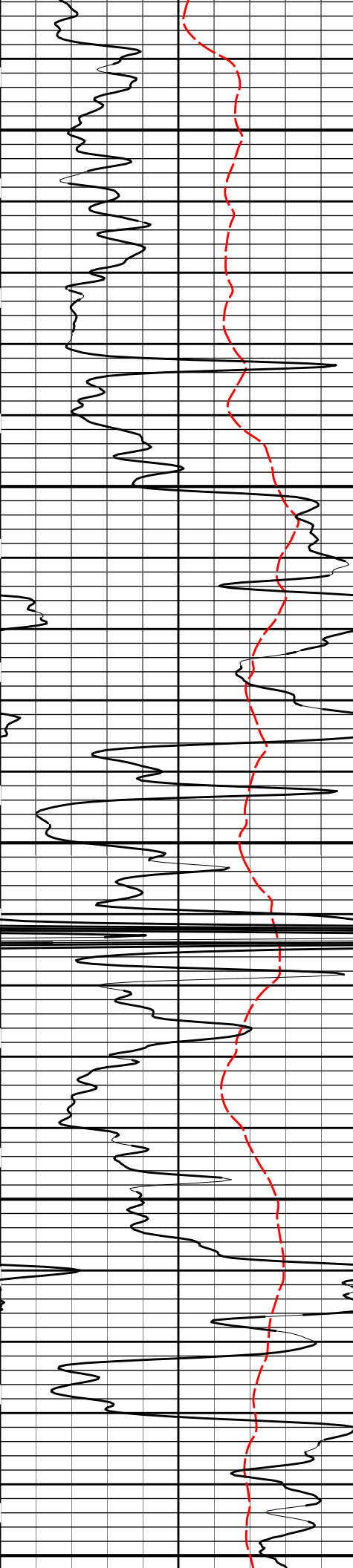
3400
3450
3500
3550
3600

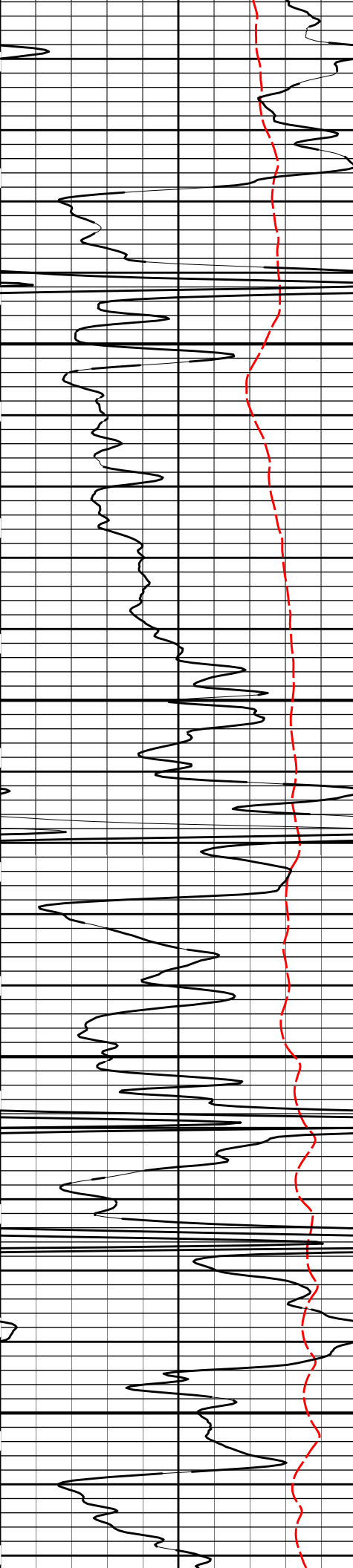
20in Resistivity 2ft Res

90in Resistivity 2ft Res

60in Resistivity 2ft Res





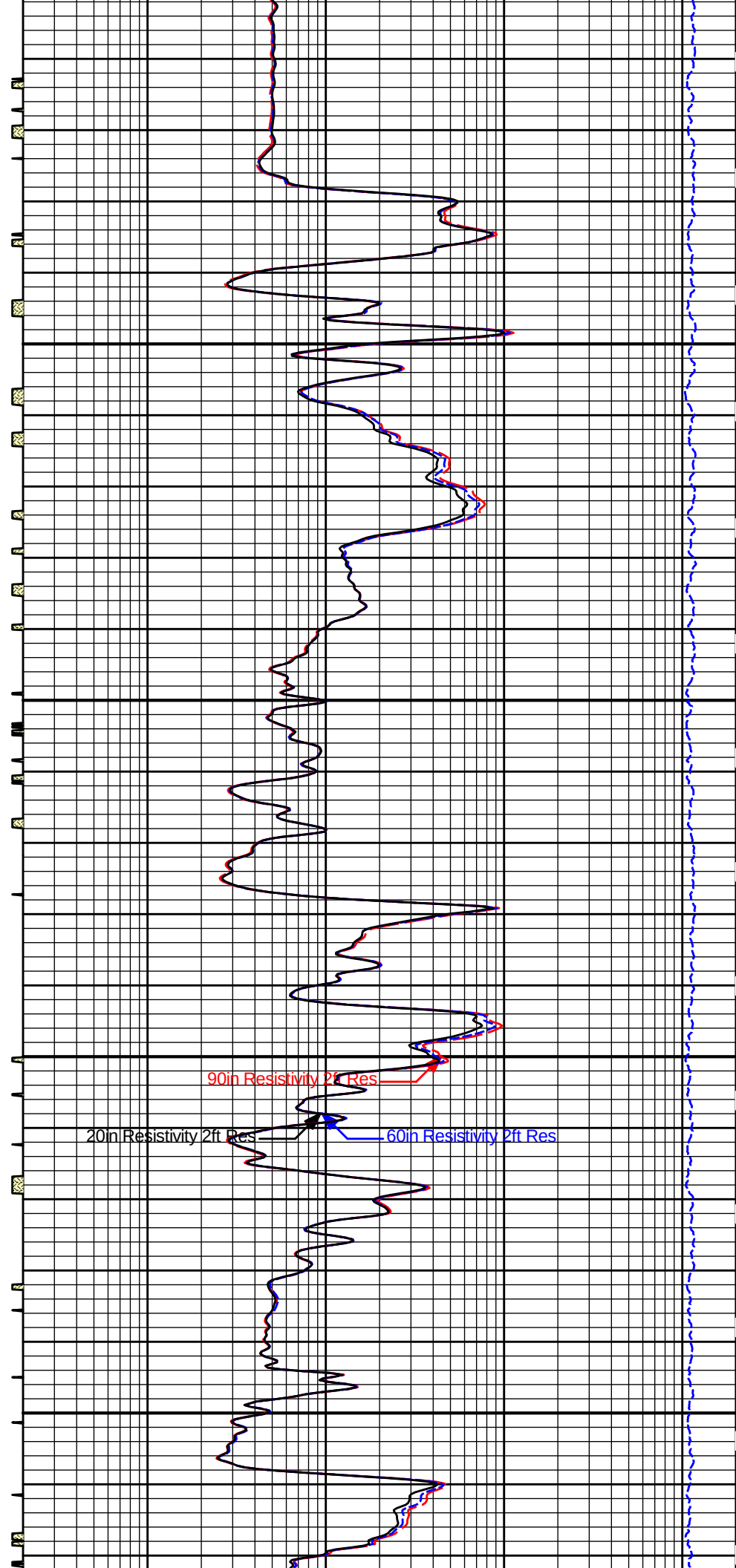


4100

4150

4200

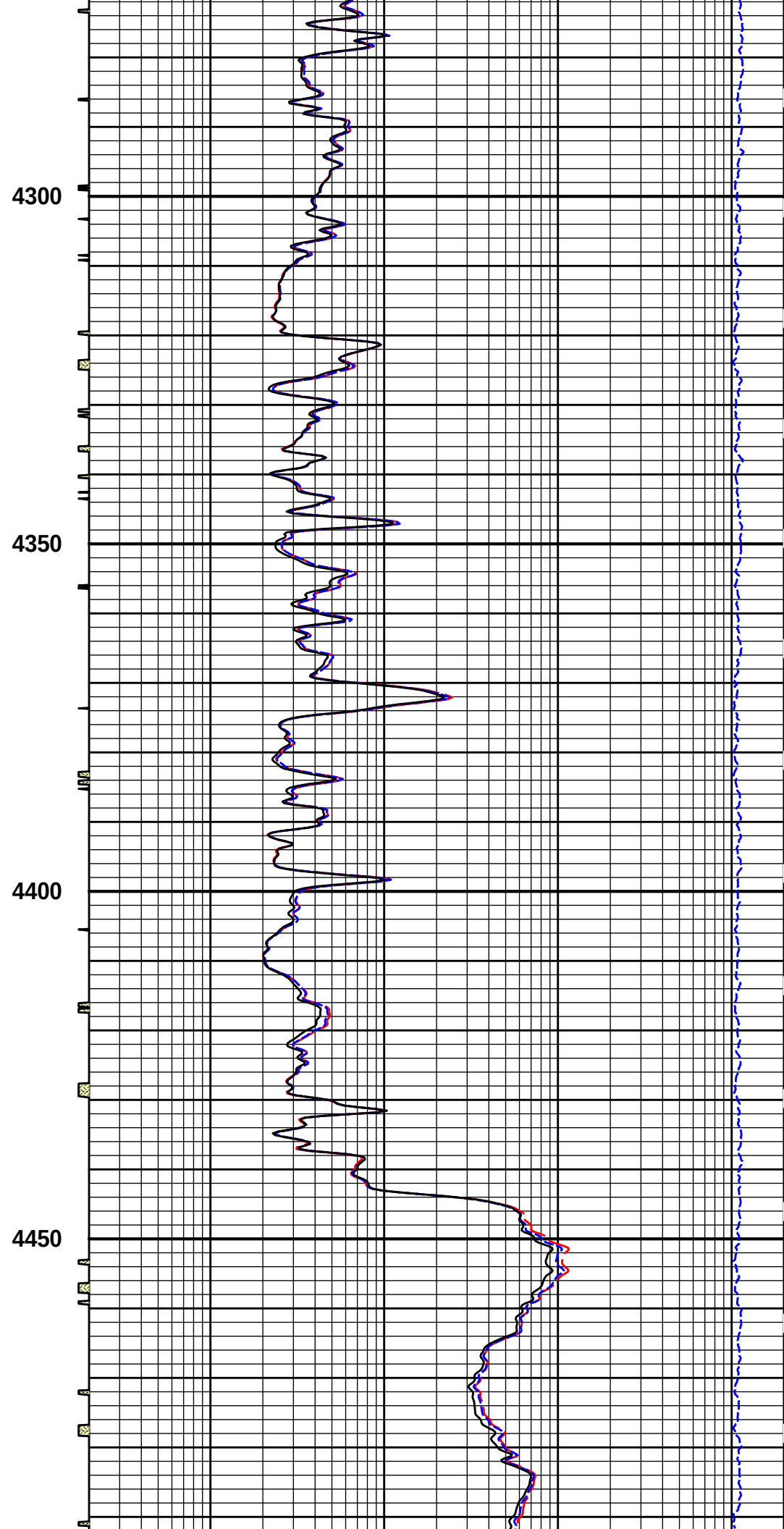
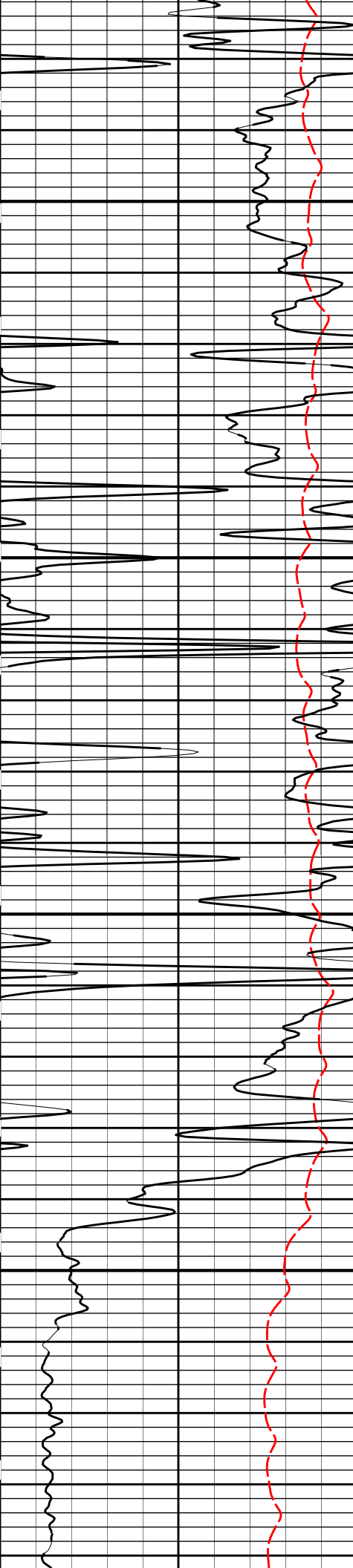
4250

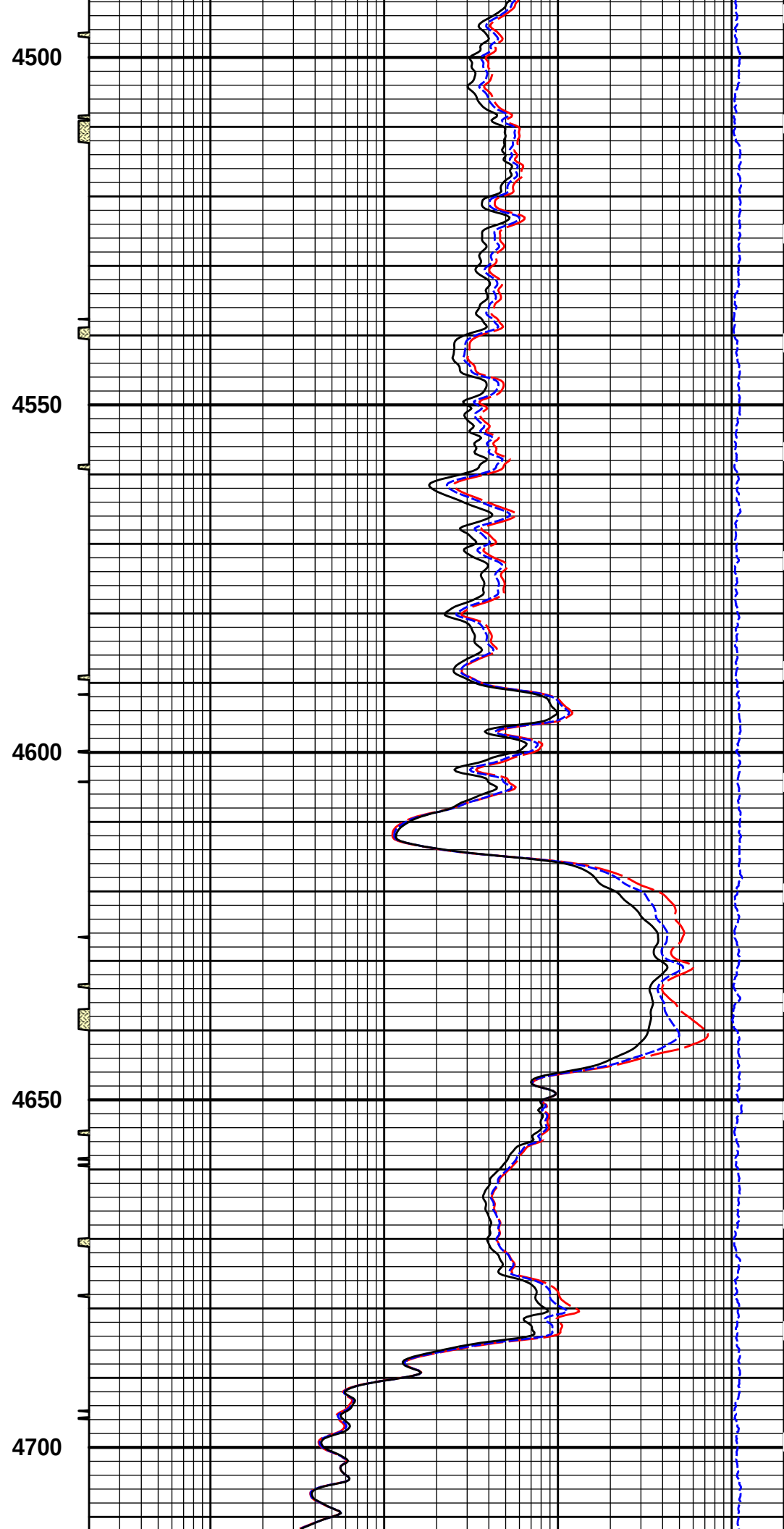
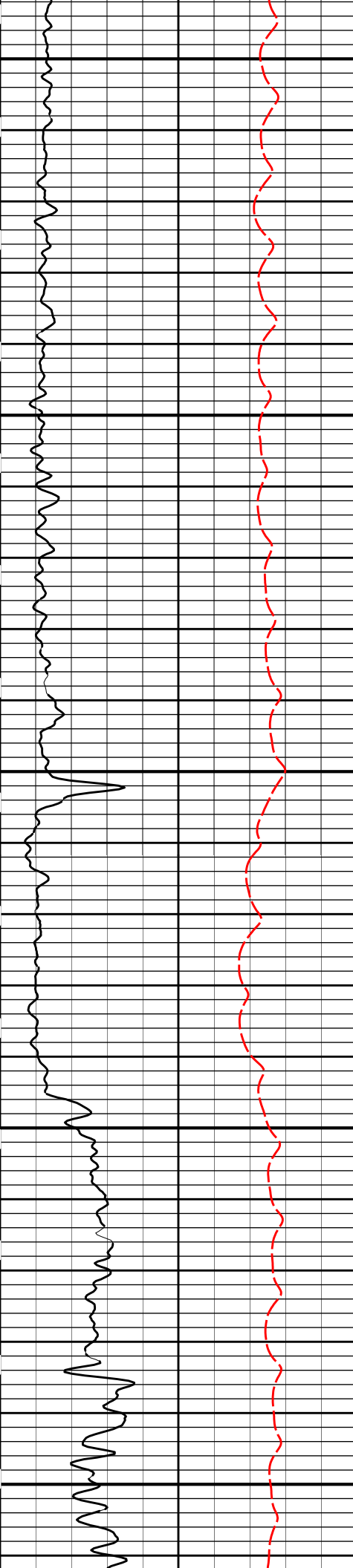


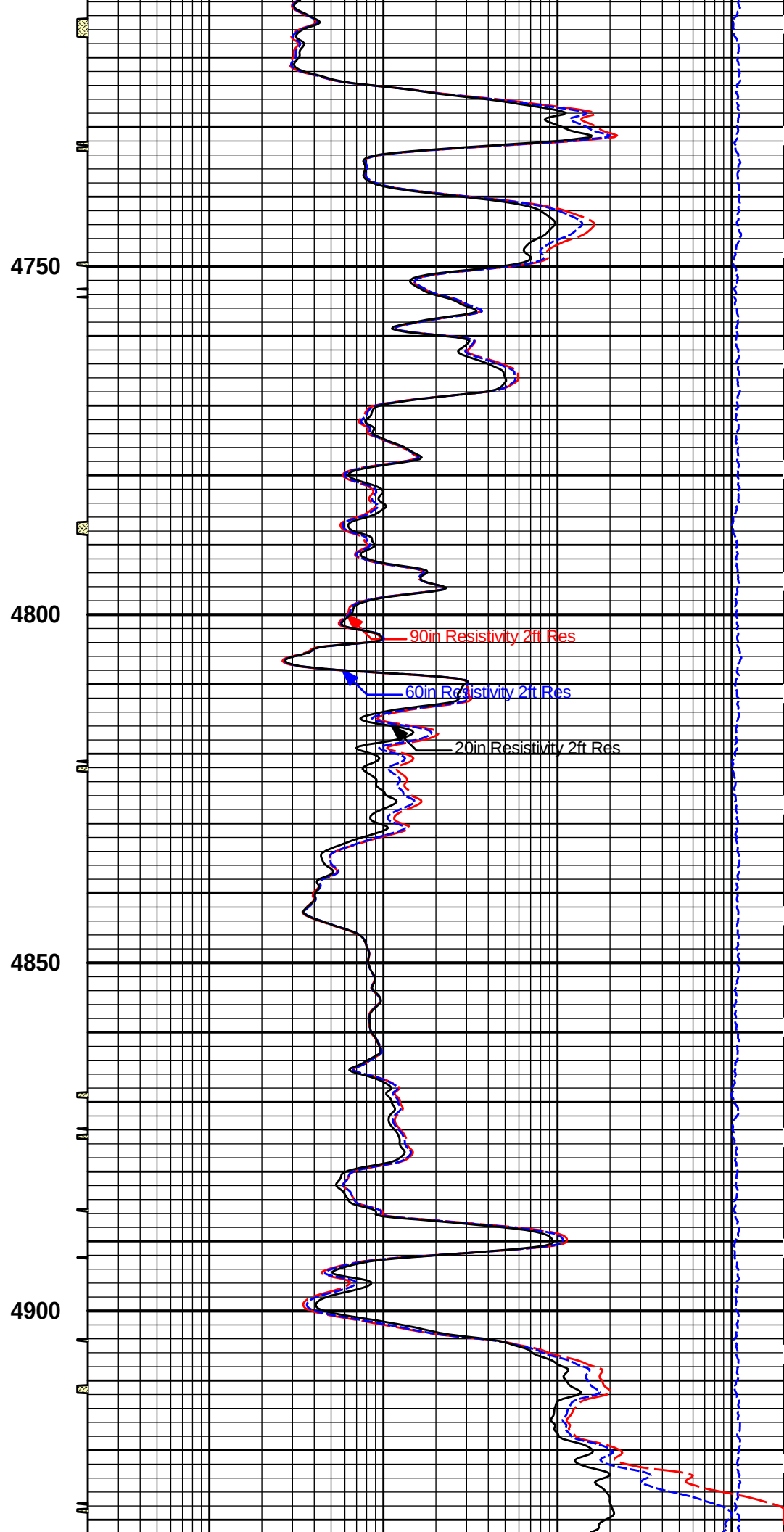
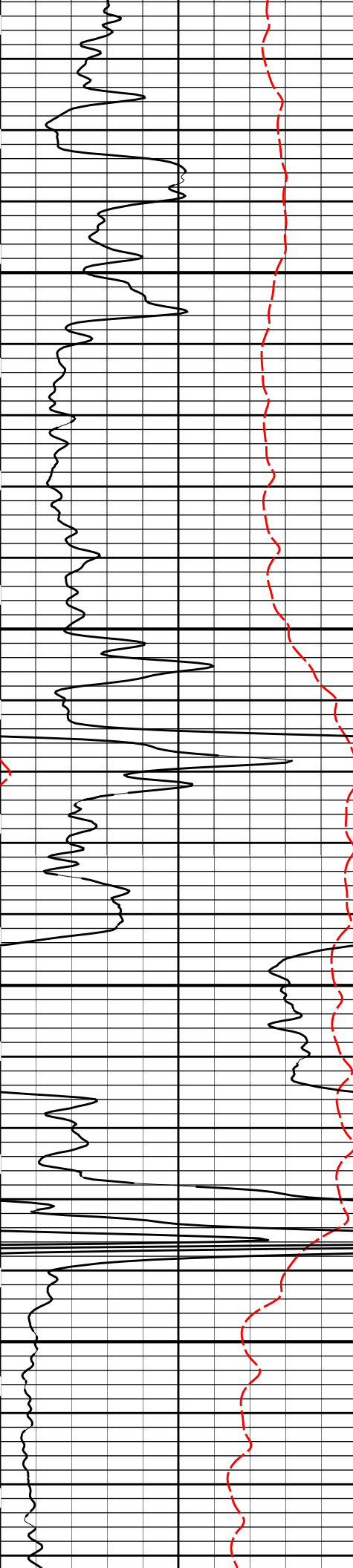
90in Resistivity 2ft Res

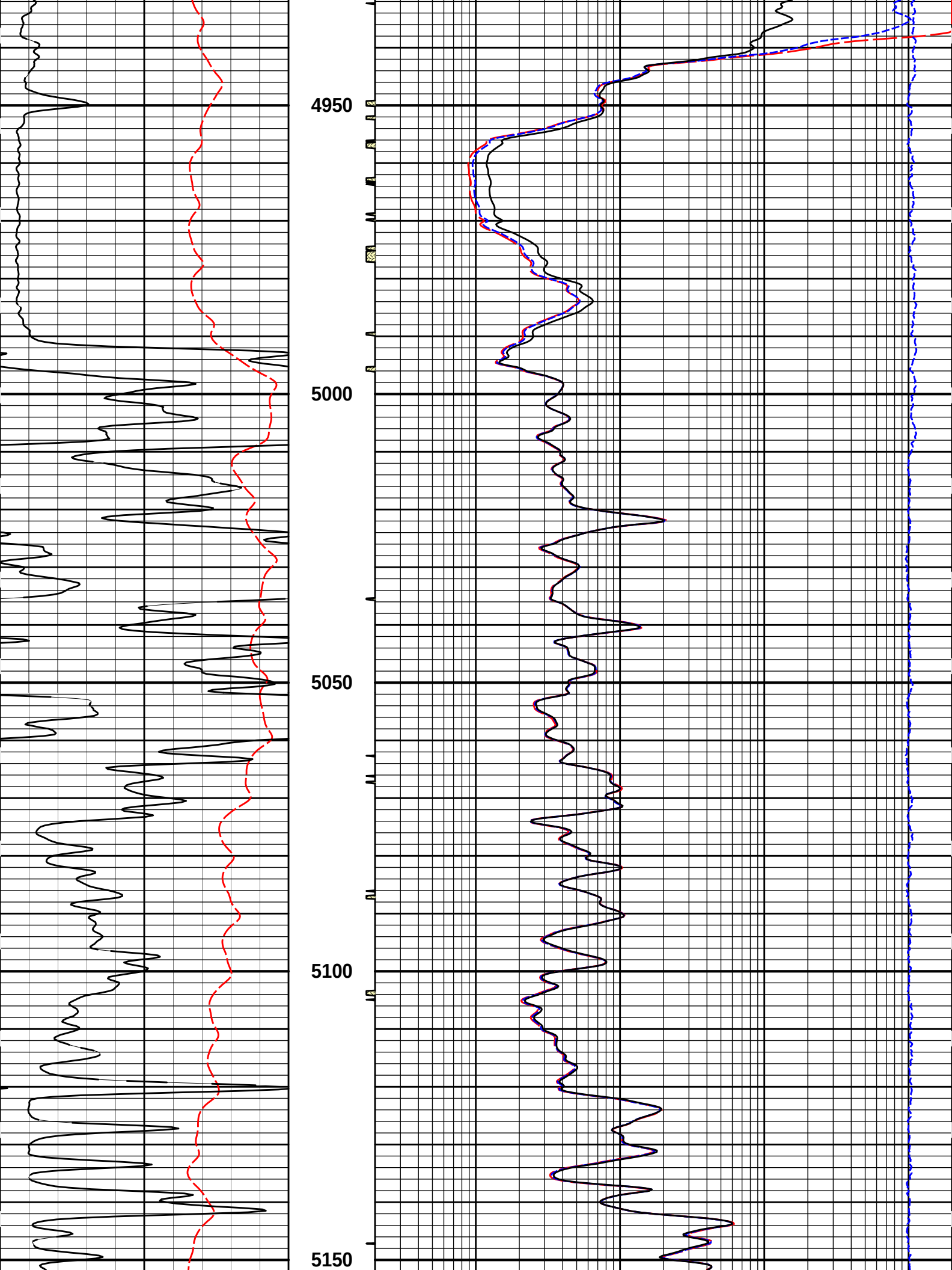
20in Resistivity 2ft Res

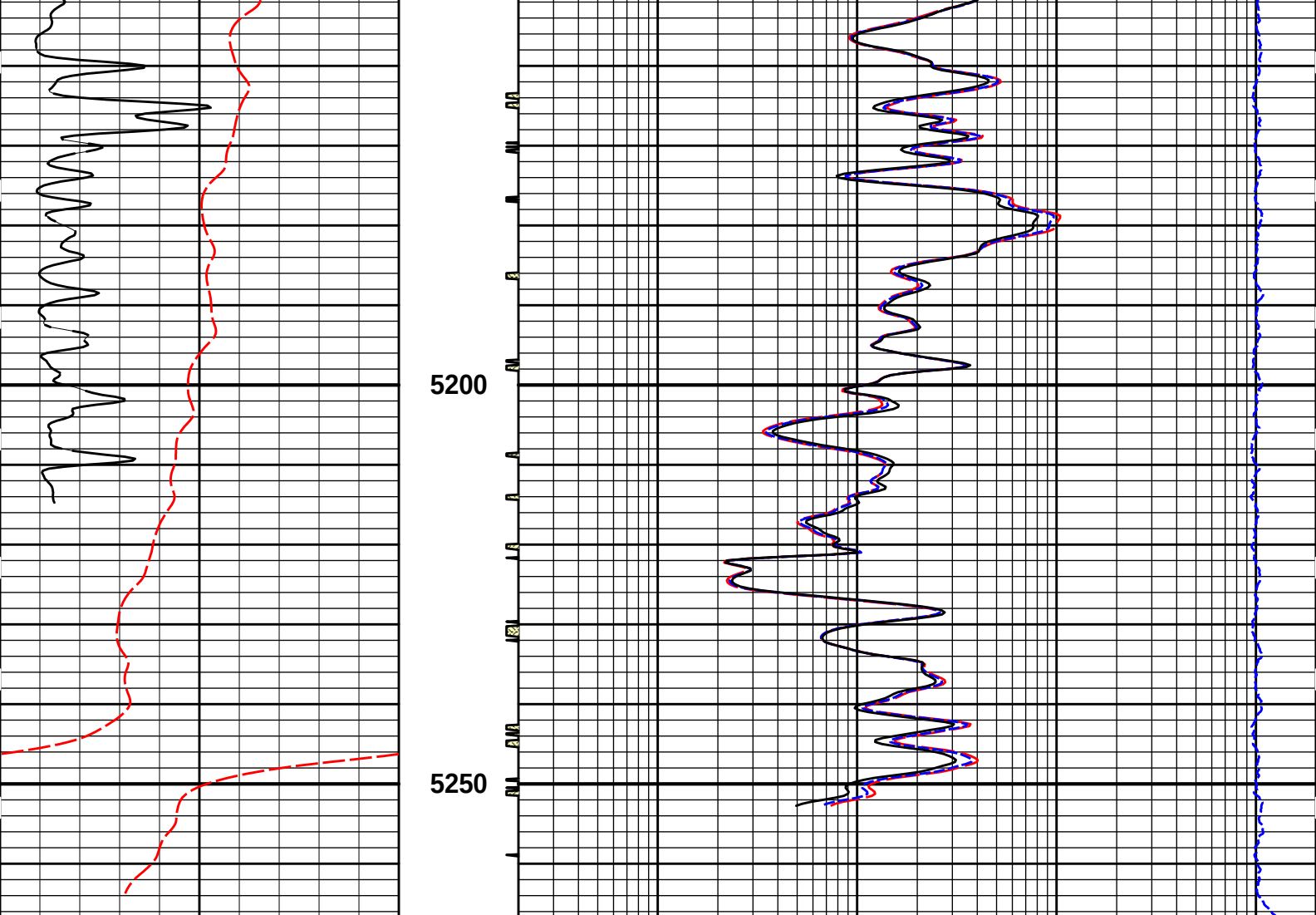
60in Resistivity 2ft Res











SP -] 20 mV [+ 0 Gamma API 150 api		1 : 240 ft Tension Pull 10 0		15K Tension 0 pounds	
		0.2		20in Resistivity 2ft Res 2000	
				ohm-metre	
		0.2		60in Resistivity 2ft Res 2000	
				ohmm	
		0.2		90in Resistivity 2ft Res 2000	
				ohmm	

HALLIBURTON

Plot Time: 15-Mar-14 03:24:16
Plot Range: 520 ft to 5266.67 ft
Data: {ActiveWell}\Well Based*
Plot File: \\-LOCAL-(not saved)\1_ACRT_5_mainx

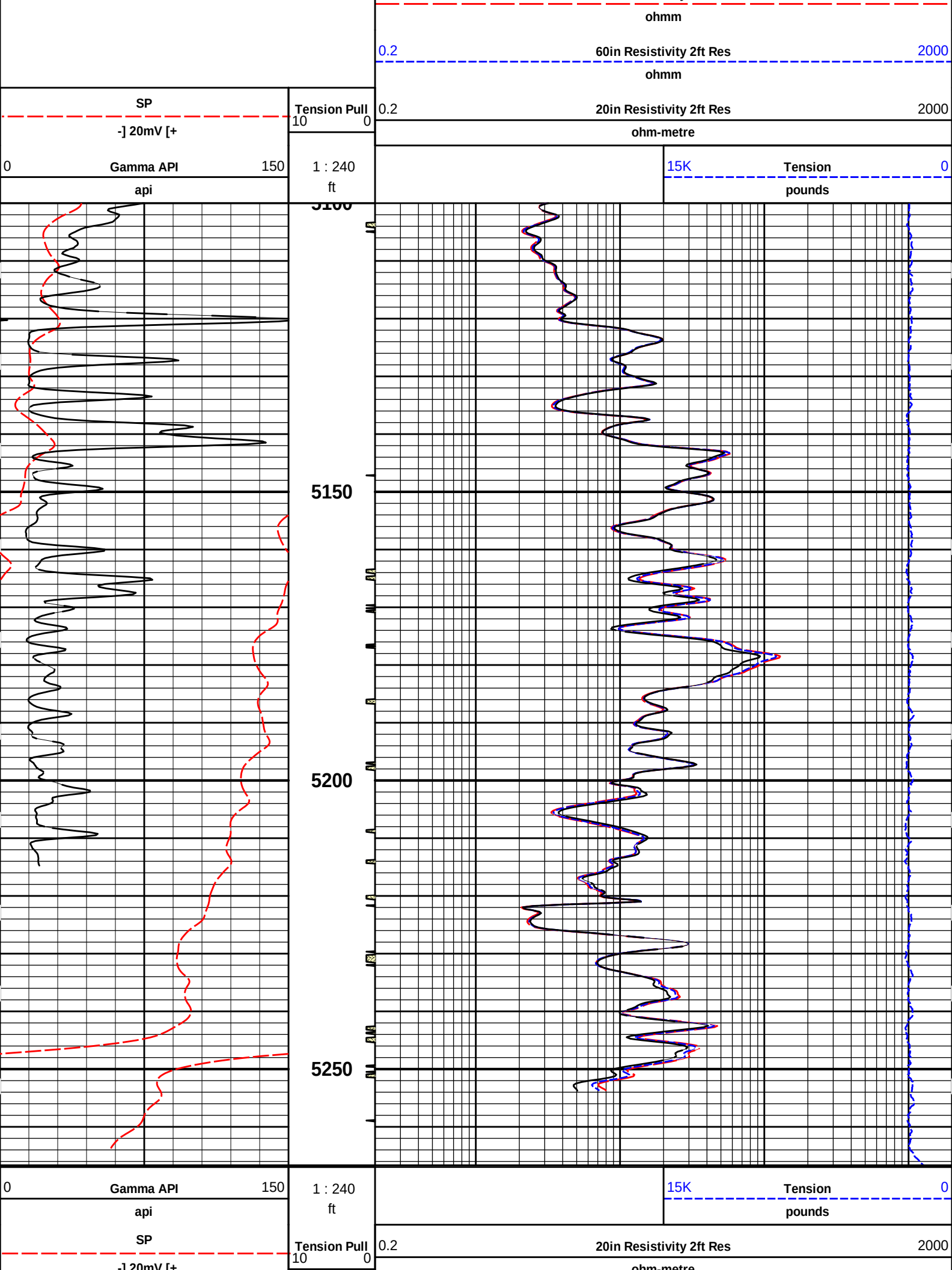
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 15-Mar-14 03:24:16
Plot Range: 5100 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\REPEAT_PASS_RUN#1\
Plot File: \\-LOCAL-(not saved)\1_ACRT_5_rptx

REPEAT SECTION

0.2		90in Resistivity 2ft Res		2000
-----	--	--------------------------	--	------



		0.2		60in Resistivity 2ft Res		2000
				ohmm		
		0.2		90in Resistivity 2ft Res		2000
				ohmm		
HALLIBURTON Plot Time: 15-Mar-14 03:24:18 Plot Range: 5100 ft to 5266.67 ft Data: {ActiveWell}\Well Based\REPEAT_PASS_RUN#1\ Plot File: \\-LOCAL-(not saved)\1_ACRT_5_rptx						
REPEAT SECTION						
HALLIBURTON PARAMETERS REPORT						
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units	
TOP						
	SHARED	BS	Bit Size	7.875	in	
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No		
	SHARED	MDBS	Mud Base	Water		
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg	
	SHARED	WAGT	Weighting Agent	Barite		
	SHARED	BSAL	Borehole salinity	0.00	ppm	
	SHARED	FSAL	Formation Salinity NaCl	1200.00	ppm	
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%	
	SHARED	RMUD	Mud Resistivity	2.000	ohmm	
	SHARED	TRM	Temperature of Mud	75.0	degF	
	SHARED	CSD	Logging Interval is Cased?	No		
	SHARED	ICOD	AHV Casing OD	4.500	in	
	SHARED	ST	Surface Temperature	75.0	degF	
	SHARED	TD	Total Well Depth	5258.00	ft	
	SHARED	BHT	Bottom Hole Temperature	110.0	degF	
	SHARED	SVTM	Navigation and Survey Master Tool	NONE		
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET		
	SHARED	TEMM	Temperature Master Tool	NONE		
	SHARED	BHSM	Borehole Size Master Tool	NONE		
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes		
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic		
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200		
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500		
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm	
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF	
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm	
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No		
	GTET	GROK	Process Gamma Ray?	Yes		
	GTET	GRSO	Gamma Tool Standoff	0.000	in	
	GTET	GEOK	Process Gamma Ray EVR?	No		
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered		

CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
BOTTOM				
Data: BLITZBERG_1_30I0001 TRIPLE_CSNGI002 14-Mar-14 21:50 Up @5267.0f			Date: 15-Mar-14 02:00:37	

HALLIBURTON CALIBRATION REPORT									
ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION Tool Name: ACRt Sonde - 11335202 Reference Calibration Date: 30-Jul-13 16:37:19 Engineer: J.COTHREN Calibration Date: 21-Nov-13 11:15:06 Software Version: WL INSITE R3.8.12 (Build 3) Calibration Version: 1 Host Tool Name: ACRt Instrument - 11302822									
TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.04	1.05	0.95	1.02	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.05	1.05	0.95	1.03	1.05	0.95	1.02	1.05
A3 (20")	0.95	1.05	1.05	0.95	1.03	1.05	0.95	1.02	1.05

A3 (29")	0.95	1.05	1.05	0.95	1.03	1.05	0.95	1.03	1.05
A4 (17")	0.95	1.05	1.05	0.95	1.02	1.05	0.95	1.02	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.00	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.00	1.05

SONDE OFFSET									
Subarray	R12KHz			R36KHz			R72KHz		
	(mmho/m)			(mmho/m)			(mmho/m)		
A1 (80")	3.49			-2.86			-5.83		
A2 (50")	0.44			-4.08			-4.40		
A3 (29")	-11.62			-4.10			-3.19		
A4 (17")	-102.25			-31.67			-26.09		
A5 (10")	N/A			-102.11			-49.23		
A6 (6")	N/A			328.92			165.91		

TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION			
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.85	1.3		Mud Cell	0.95	1.00	1.05
36K	1.0	1.82	2.0					
72K	1.0	1.08	2.0					

PASS/FAIL SUMMARY

GAIN RANGE CHK

PASS

SONDE OFFSET CHK

PASS

TOOL OK TO LOG

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
ACRt Sonde-11335202						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

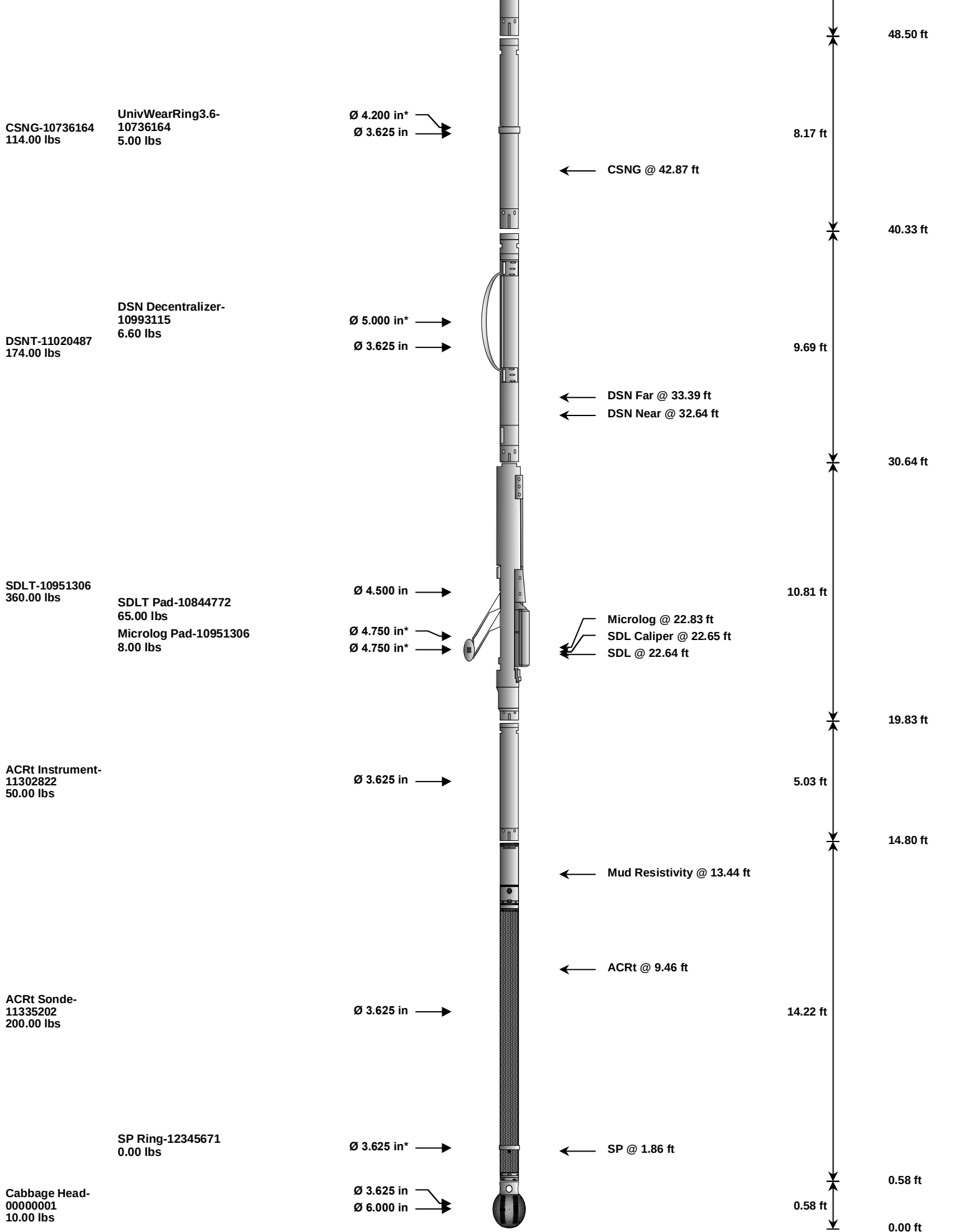
Data: BLITZBERG_1_30\0001 TRIPLE_CSNG\IDLE

Date: 15-Mar-14 02:01:43

HALLIBURTON

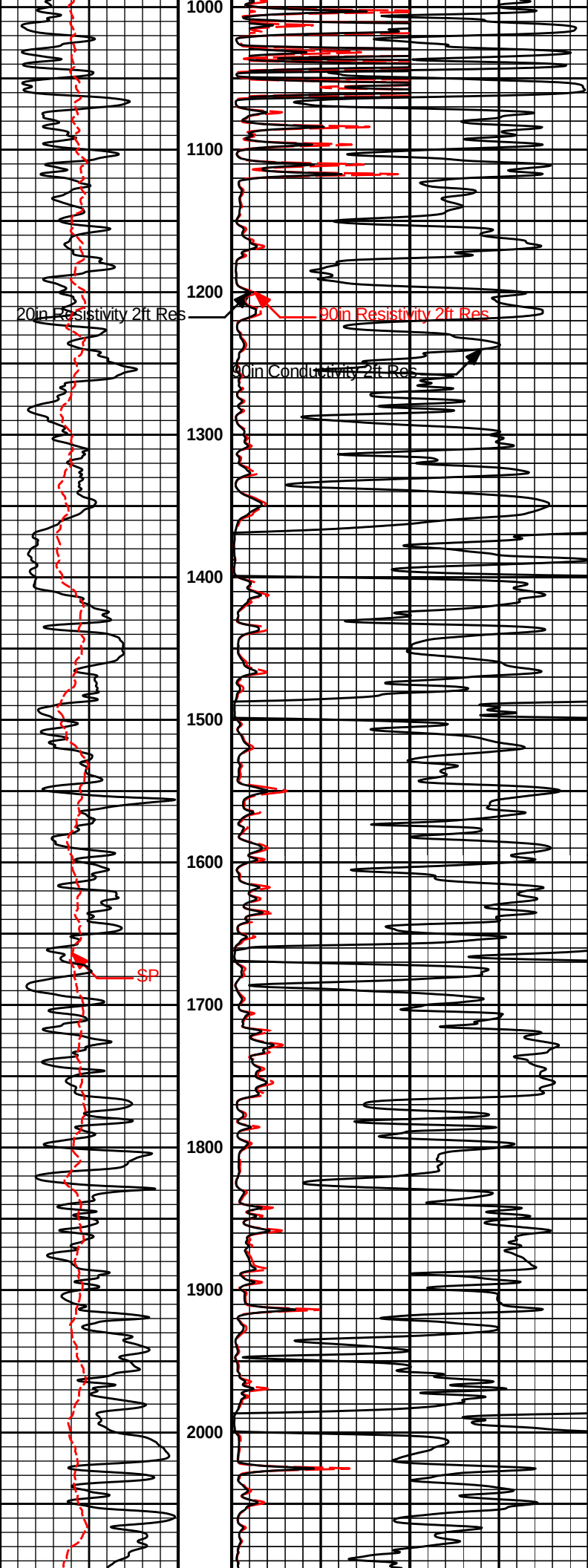
TOOL STRING DIAGRAM REPORT

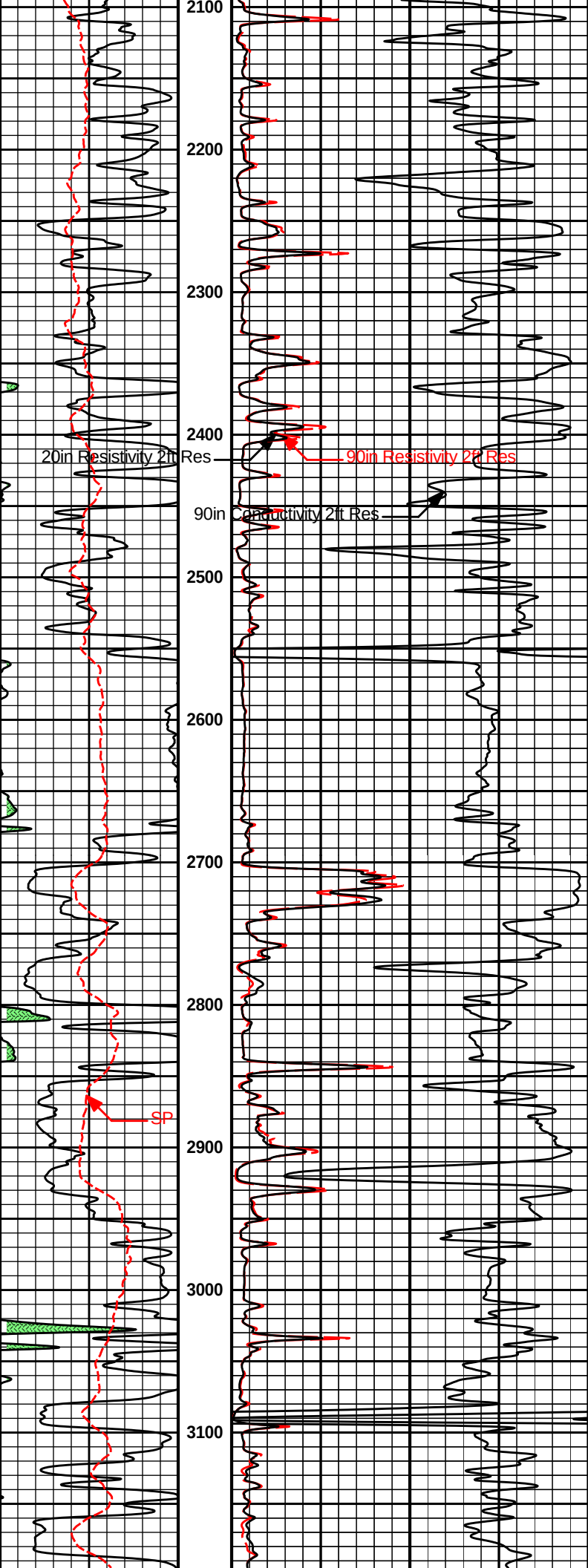
Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-RED 37.50 lbs		Ø 2.750 in →		← Temperature @ 59.97 ft	3.03 ft	60.99 ft
XOHD-00000001 20.00 lbs		Ø 2.750 in → Ø 3.625 in →			0.95 ft	57.97 ft
GTET-11013114 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.95 ft	8.52 ft	57.02 ft

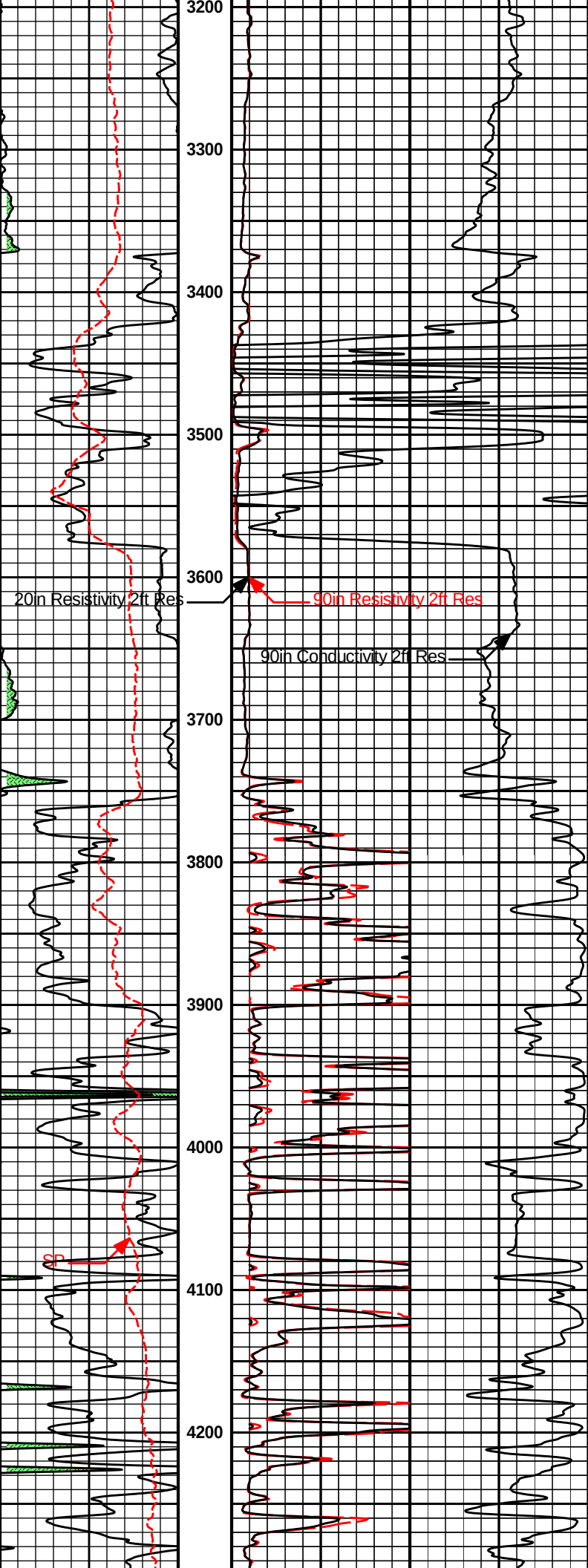


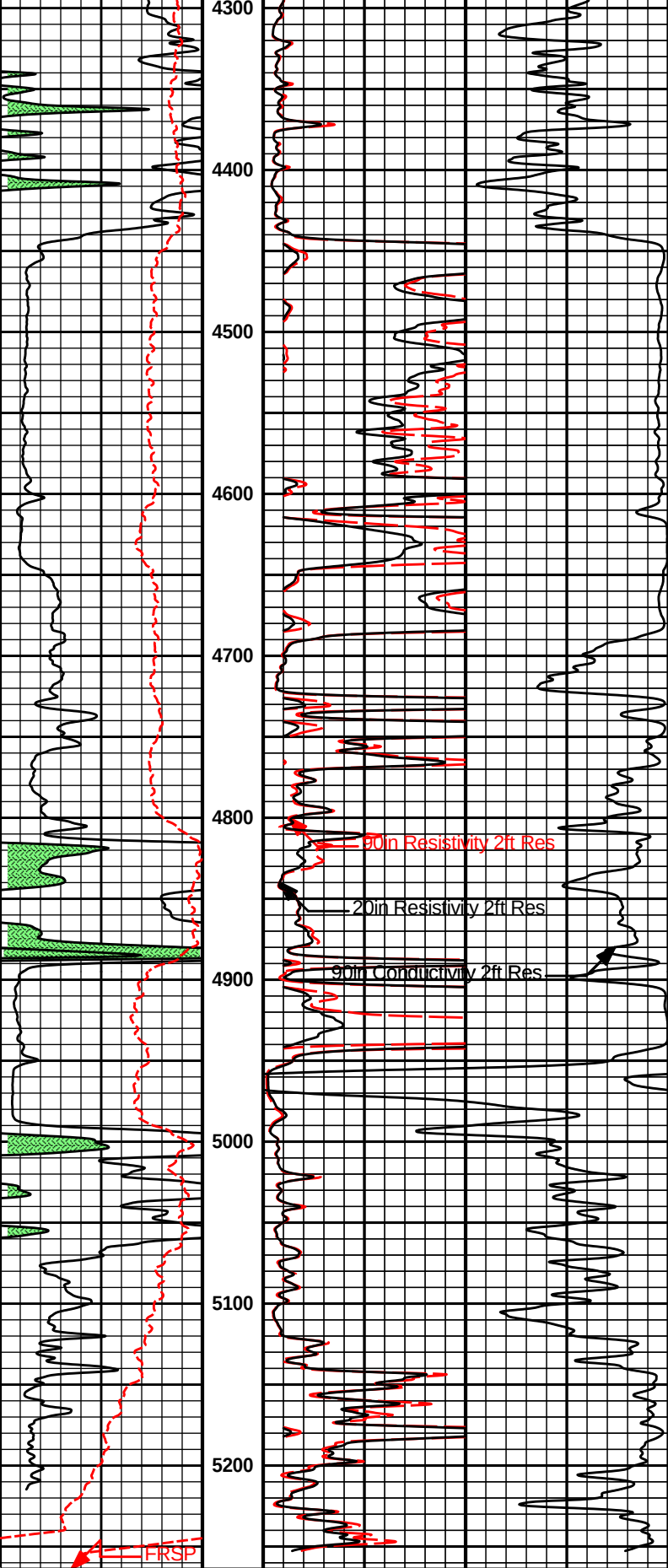
Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	RED	37.50	3.03	57.97	300.00

XOHD	Hostile to Dits Cross Over	00000001	20.00	0.95	57.02	300.00
GTET	Gamma Telemetry Tool	11013114	165.00	8.52	48.50	60.00
CSNG	Compensated Spectral Natural Gamma	10736164	114.00	8.17	40.33	15.00
UWR3P6	Universal Wear Ring 3 5-8 inch	10736164	5.00	0.35 *	44.41	300.00
DSNT	Dual Spaced Neutron	11020487	174.00	9.69	30.64	60.00
DCNT	DSN Decentralizer	10993115	6.60	5.13 *	33.97	300.00
SDLT	Spectral Density Tool	10951306	360.00	10.81	19.83	60.00
MICP	Microlog Pad	10951306	8.00	1.00 *	22.33	60.00
SDLP	Density Insite Pad	10844772	65.00	2.55 *	22.04	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11302822	50.00	5.03	14.80	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11335202	200.00	14.22	0.58	300.00
SP	SP Ring	12345671	0.00	0.25 *	1.86	300.00
CBHD	Cabbage Head	00000001	10.00	0.58	0.00	300.00
Total			1,215.10	60.99		
* Not included in Total Length and Length Accumulation.						
Data: BLITZBERG_1_300001 TRIPLE_CSNG\MIDDLE Date: 14-Mar-14 21:17:26						









0	Gamma API	150	1 : 1200	0	20in Resistivity 2ft Res	50	
	api		ft		ohm-metre		
	SP				90in Resistivity 2ft Res	0	50
	-] 20mV [+]				ohm-metre		
				1K	90in Conductivity 2ft Res		0

	mmho per metre
HALLIBURTON	Plot Time: 15-Mar-14 03:24:20 Plot Range: 520 ft to 5263.75 ft ...{ActiveWell}\Well Based*\ Plot File: \\...\\1_ACRT_1inx
1 INCH MAIN LOG	

COMPANY	SANDRIDGE		
WELL	BLITZBERG SWD 3404 1-30		
FIELD	NW CALDWELL		
COUNTY	SUMNER	STATE	KANSAS
HALLIBURTON		ARRAY COMPENSATED RESISTIVITY LOG	