

ARRAY COMPENSATED  
TRUE RESISTIVITY  
LOG

Fold here

Service Ticket No.: 904838655				API No.: 05-073-06739-00-00				PGM Version: WL INSITE R5.6.3 (Build 4)						
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES								
Date	Sample No.					Type Log	Depth	Scale Up Hole		Scale Down Hole				
Depth-Driller														
Type Fluid in Hole														
Density	Viscosity													
Ph	Fluid Loss													
Source of Sample						RESISTIVITY EQUIPMENT DATA								
Rm @ Meas. Temp		@		@		Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other				
Rmf @ Meas. Temp.		@		@										
Rmc @ Meas. Temp.		@		@										
Source Rmf	Rmc													
Rm @ BHT		@		@										
Rmf @ BHT		@		@										
Rmc @ BHT		@		@										
EQUIPMENT DATA														
GAMMA			ACOUSTIC			DENSITY			NEUTRON					
Run No.				Run No.				Run No.						
Serial No.				Serial No.				Serial No.						
Model No.				Model No.				Model No.						
Diameter				No. of Cent.				Diameter						
Detector Model No.				Spacing				Log Type						
Type						Source Type		Source Type						
Length				LSA [Y/N]				Serial No.						
Distance to Source				FWDA [Y/N ]				Strength						
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	

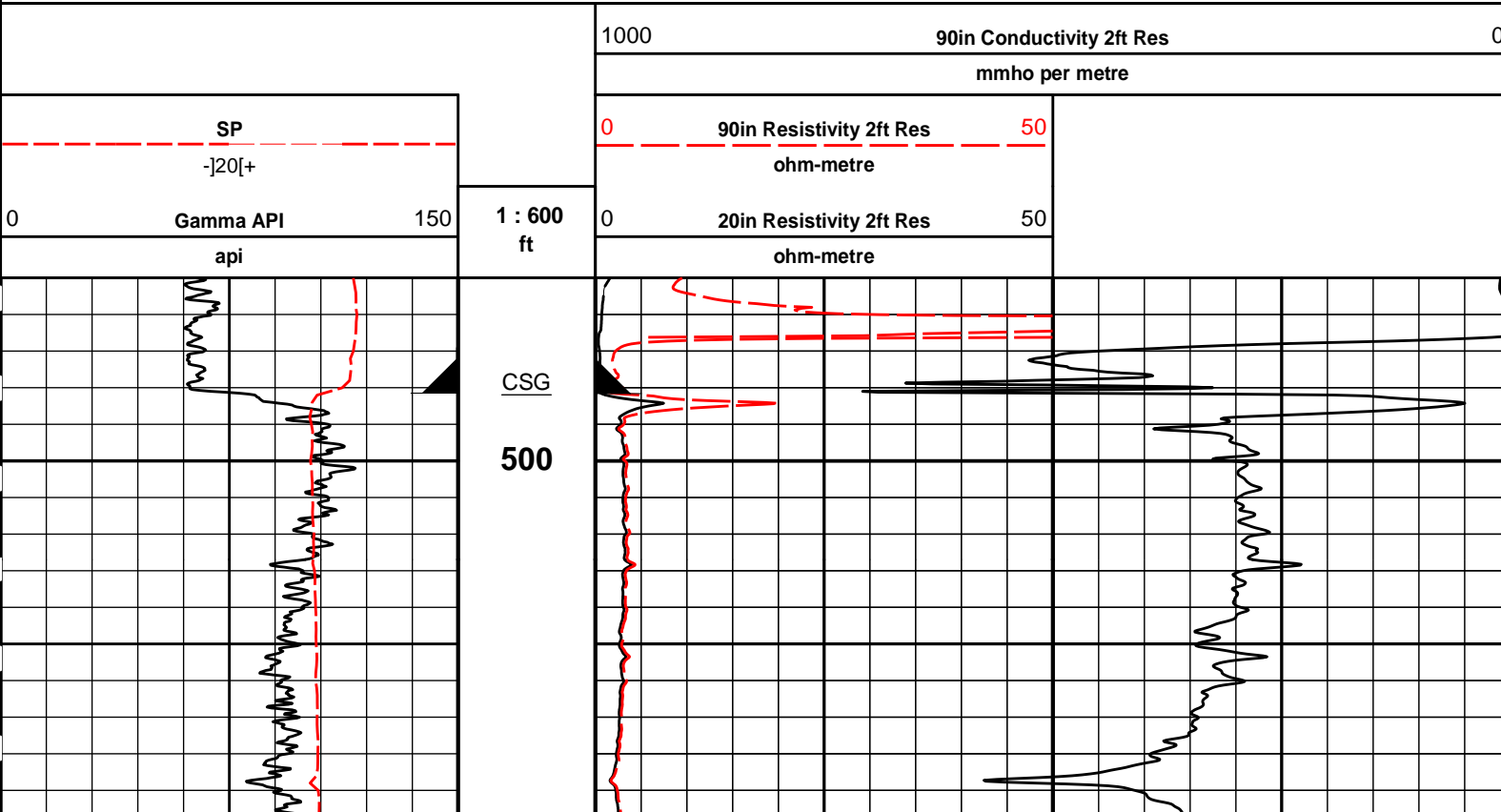
DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME														
MICROLOG EFFECTED BY HEAVY MUD CAKING ON AND AROUND THE MICROLOG PAD														
CREW: WHITLOCK, RICHARDSON, MANLEY, LANCASTER														
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.														
HALLIBURTON														

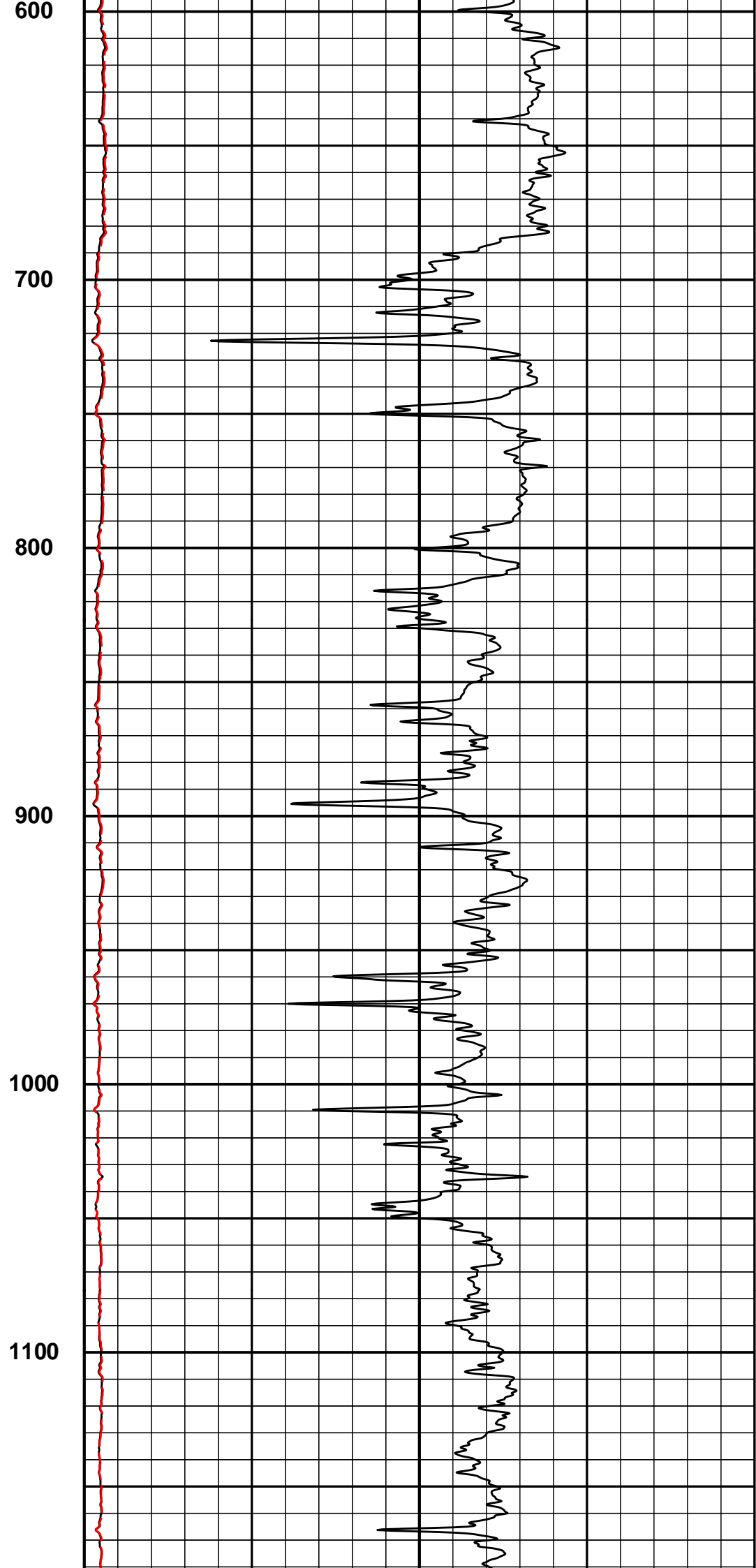
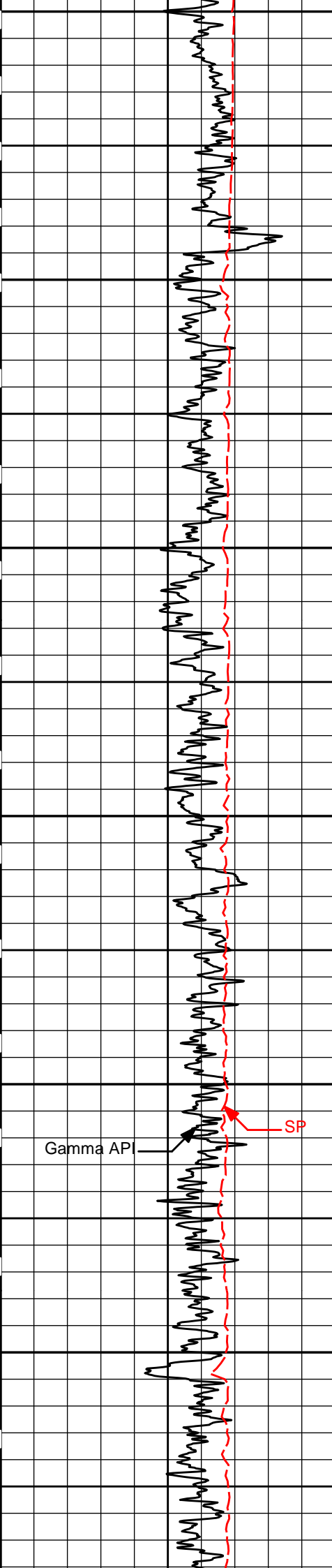
# HALLIBURTON

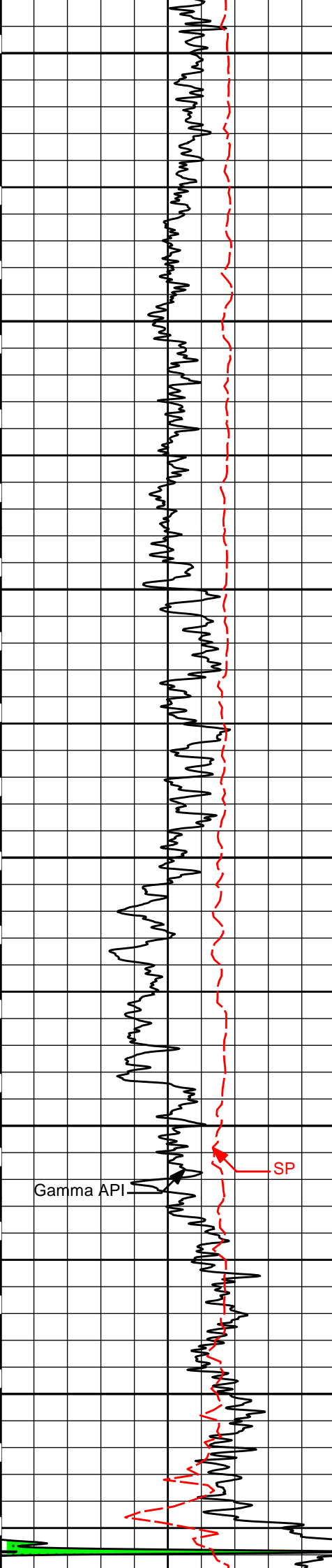
Plot Time: 24-May-18 09:46:48  
Plot Range: 450 ft to 7675.5 ft  
Data: K3\_JAMES\Well Based\DAQ-0001-005\  
Plot File: \\-LOCAL-K3\_JAMES\0001 RWCH GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT\_2\_main

## 2 INCH MAIN LOG

## 2 INCH MAIN LOG







1200

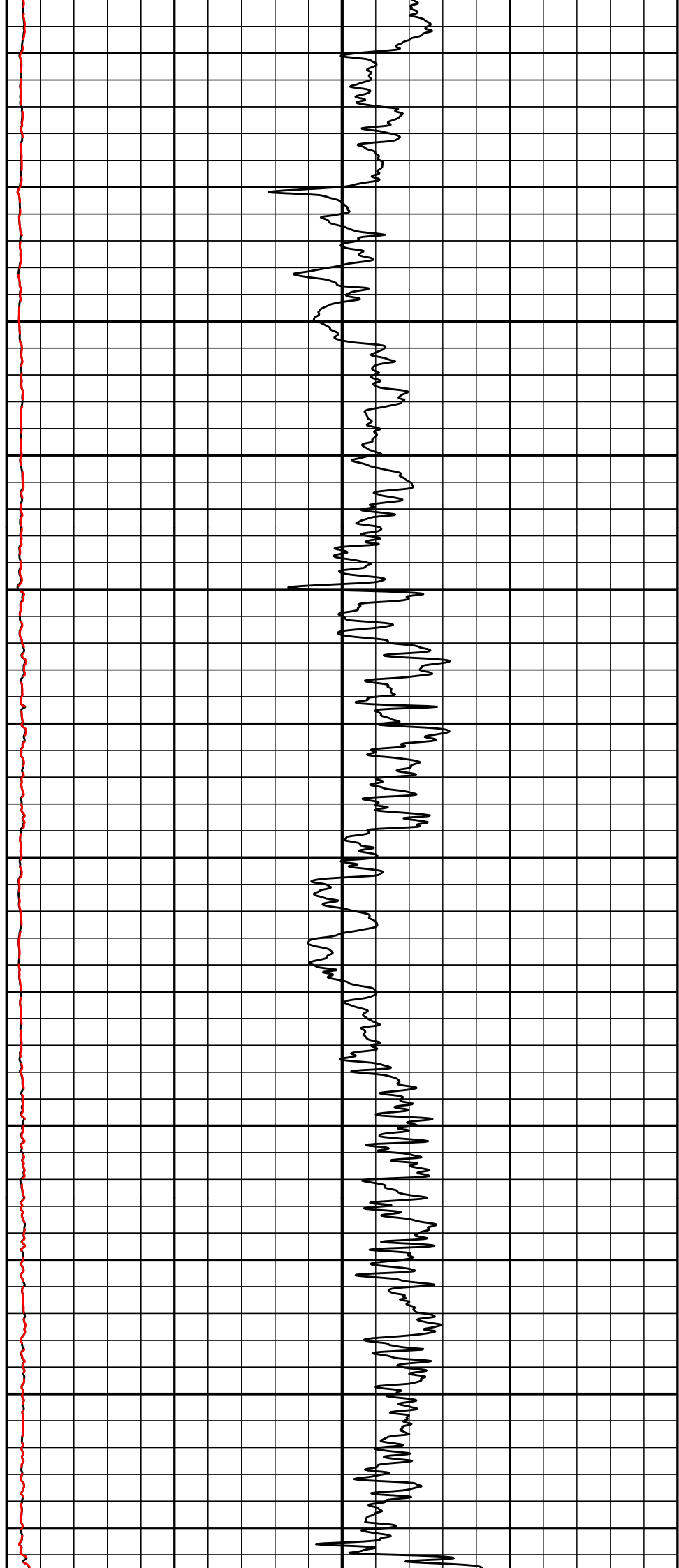
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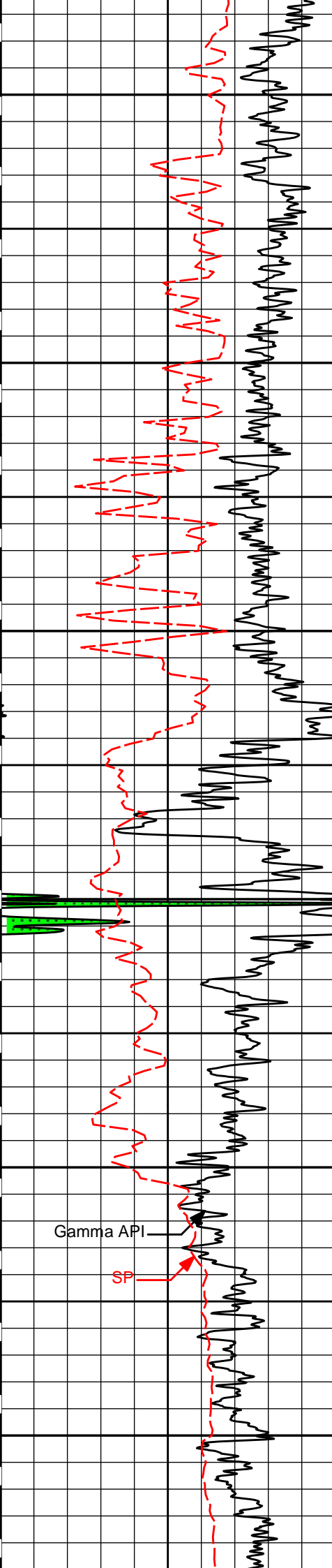
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1500

1600

1700





1800

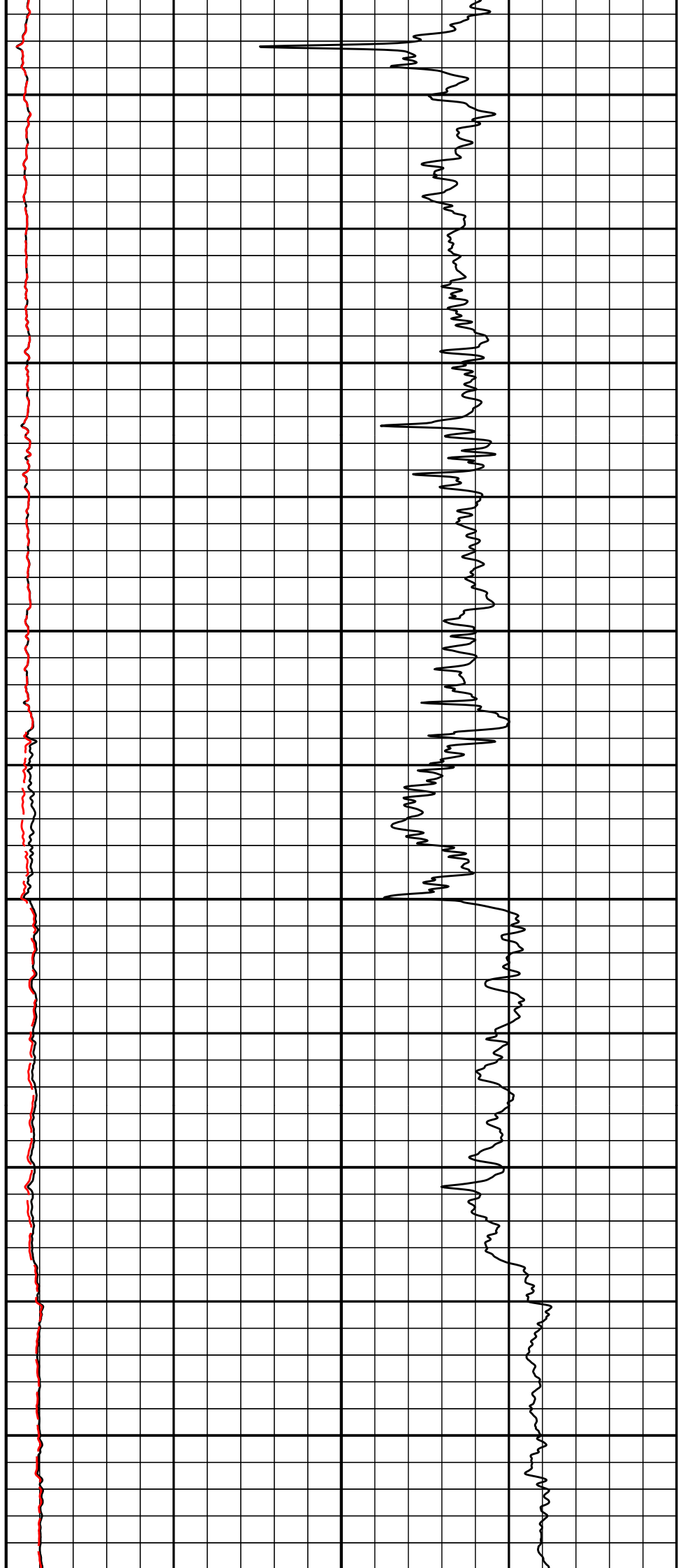
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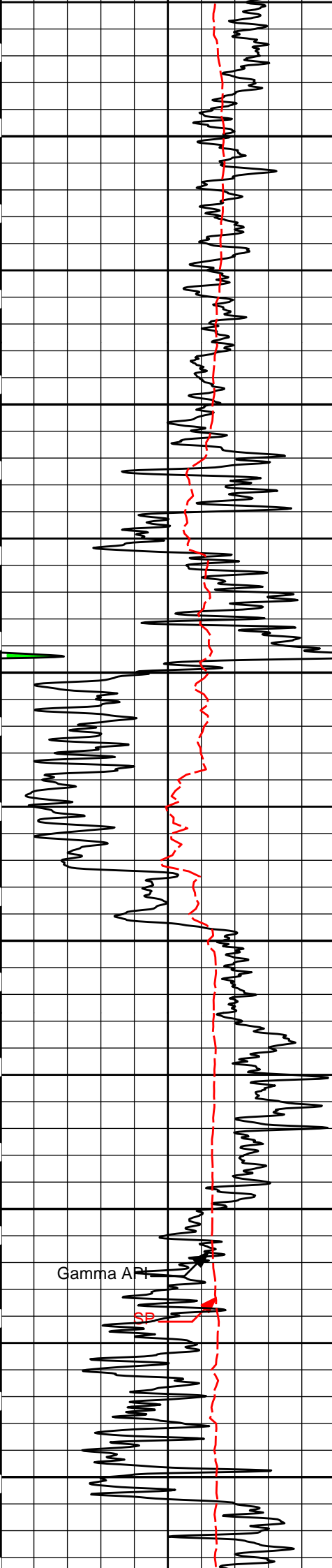
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2100

2200

2300





2400

2500

2600

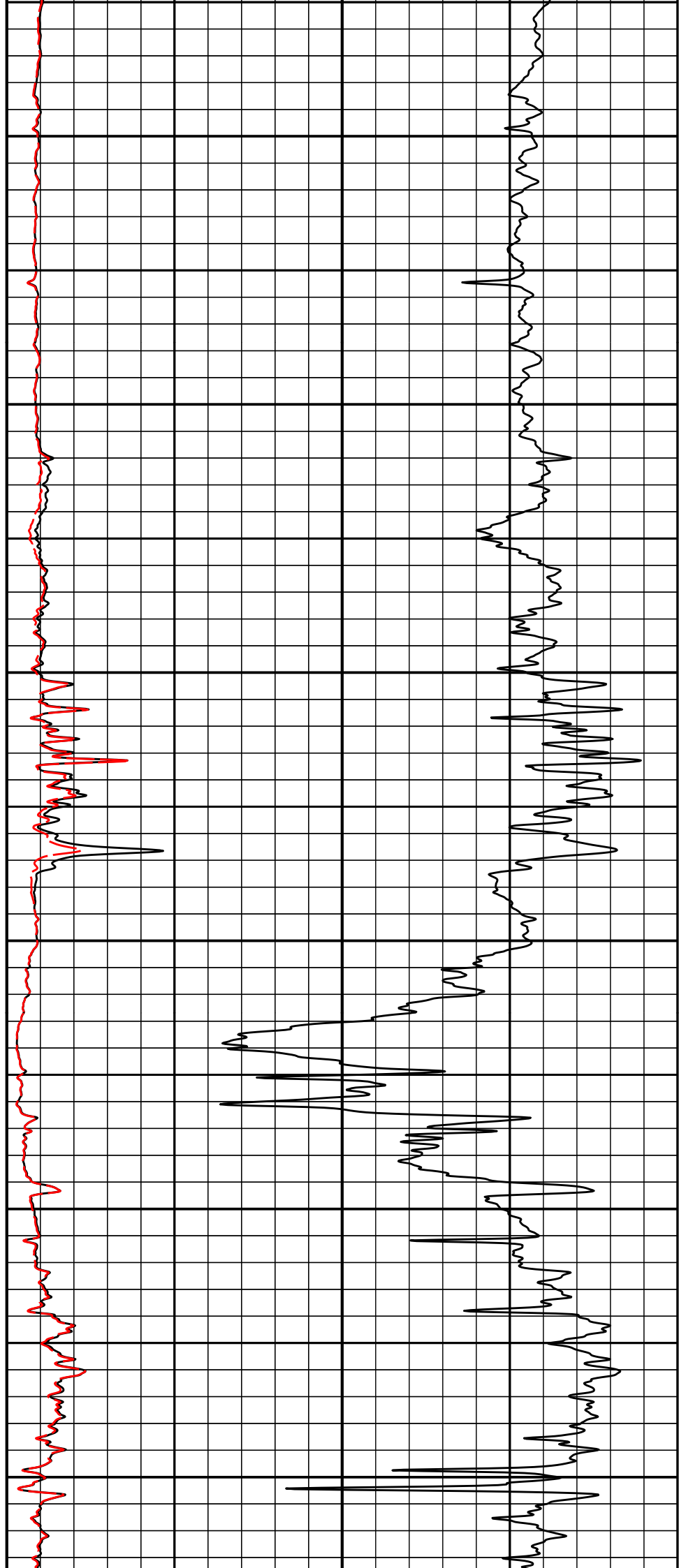
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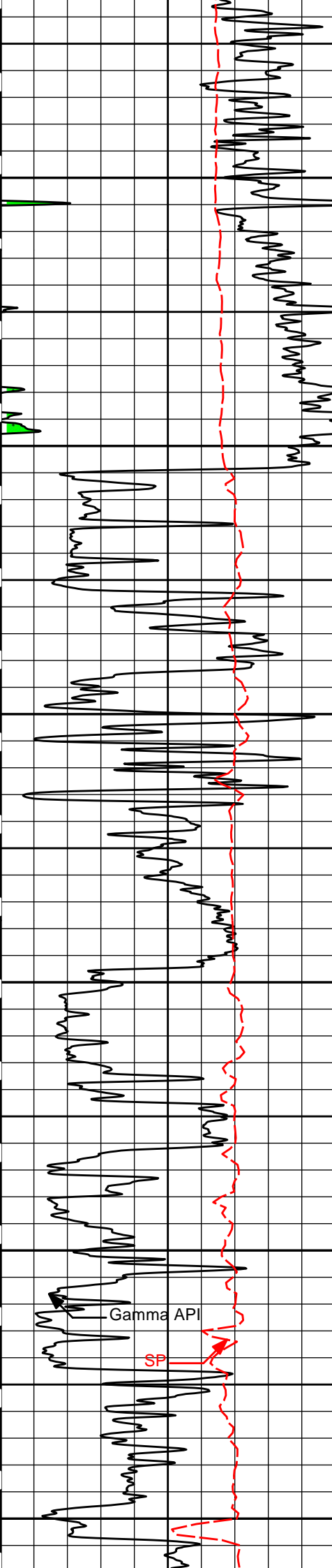
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2900

Gamma AP

SP





3000

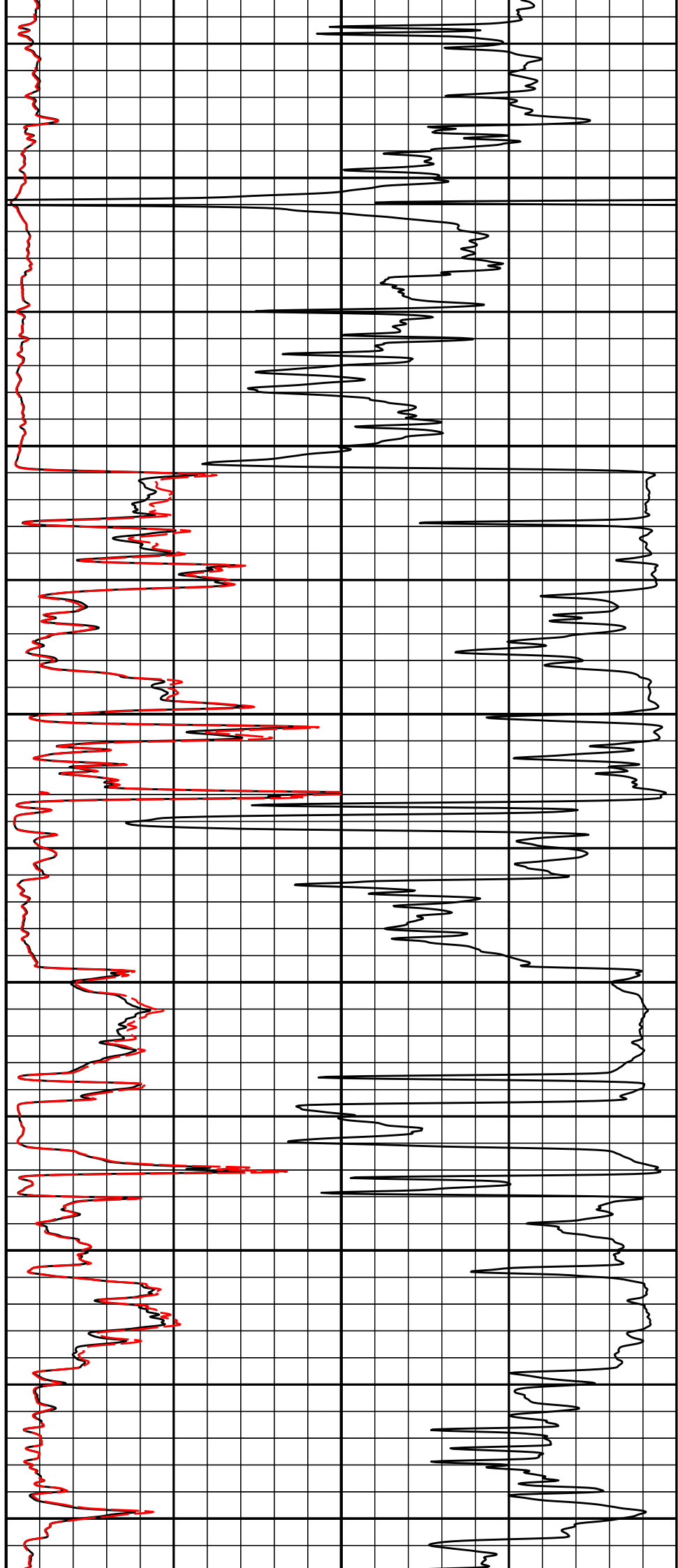
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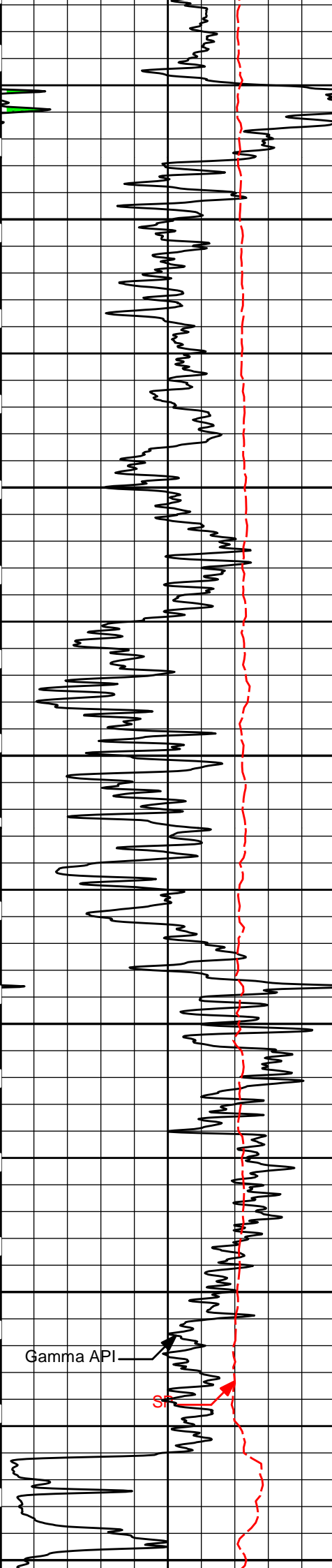
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3500





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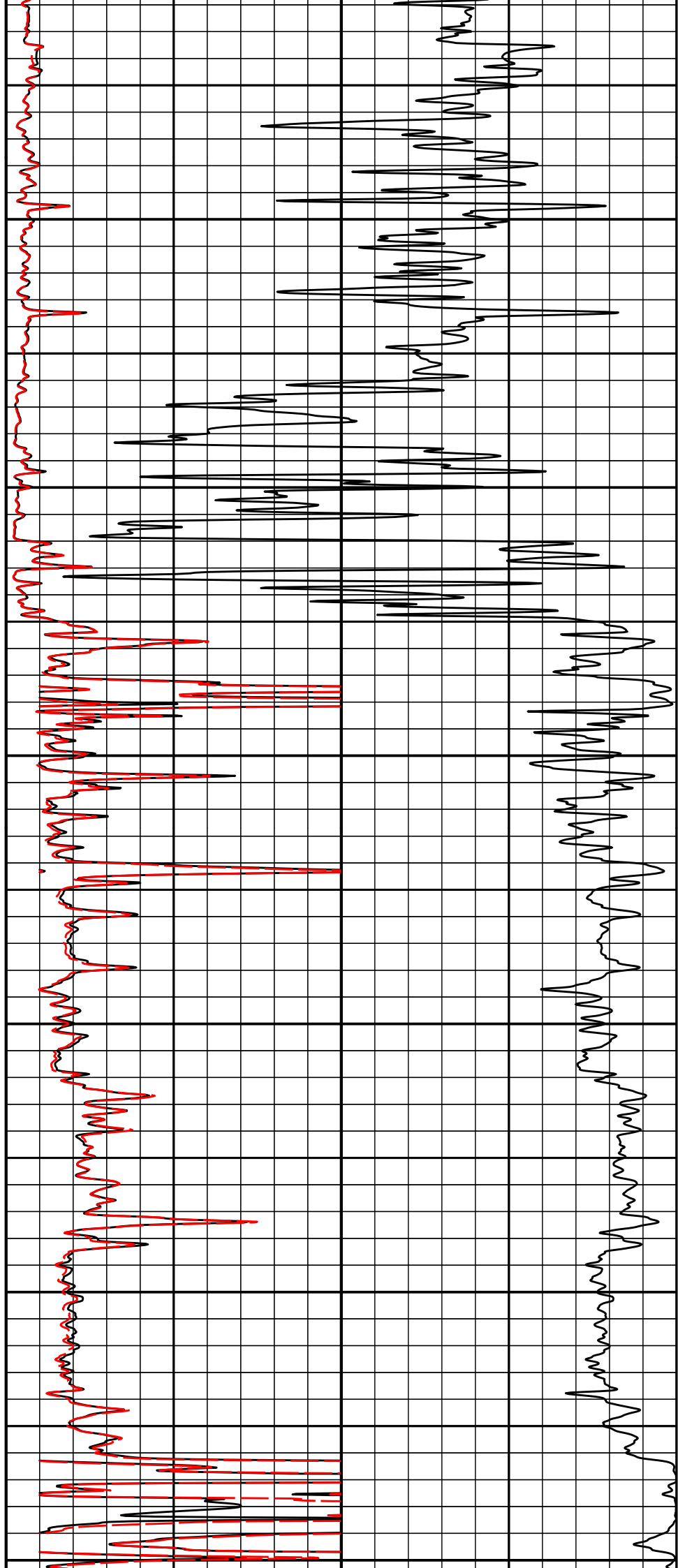
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3900

4000

4100







4200

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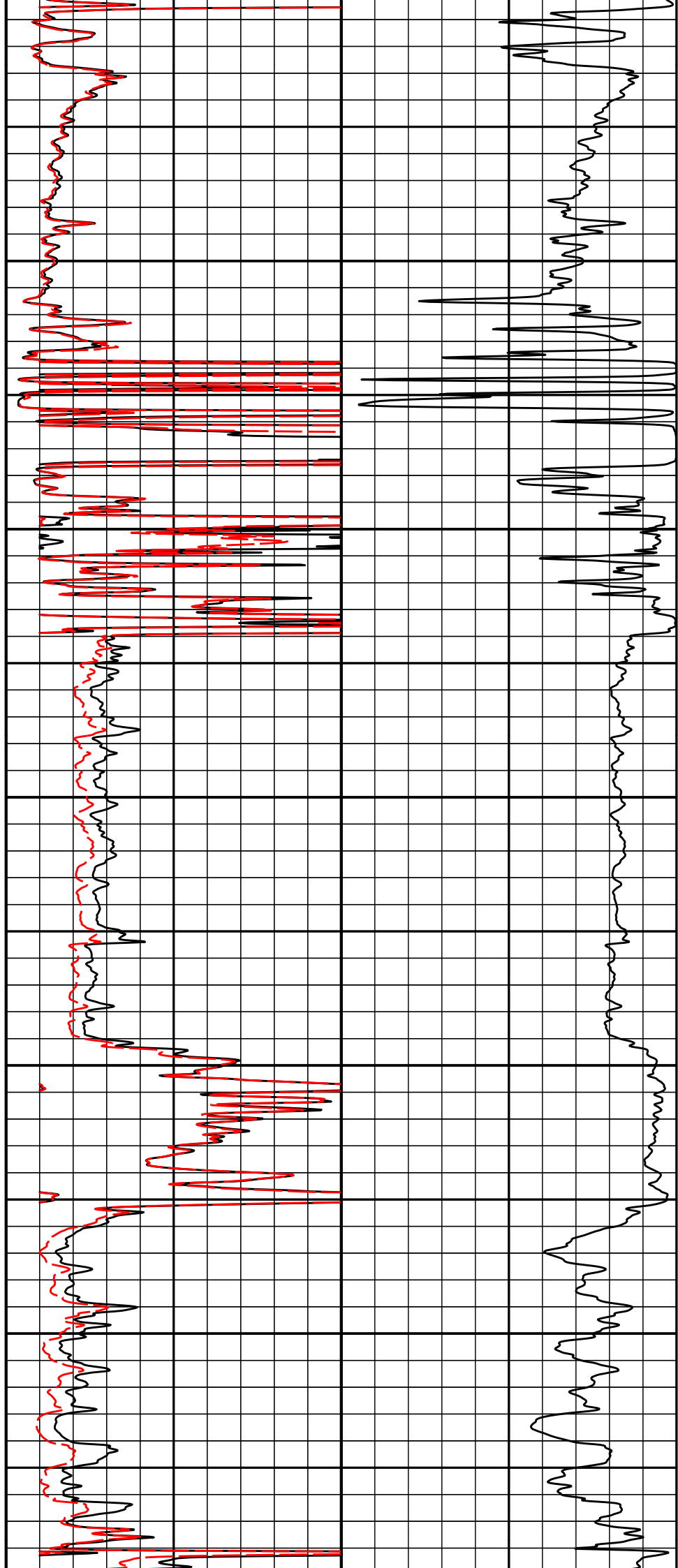
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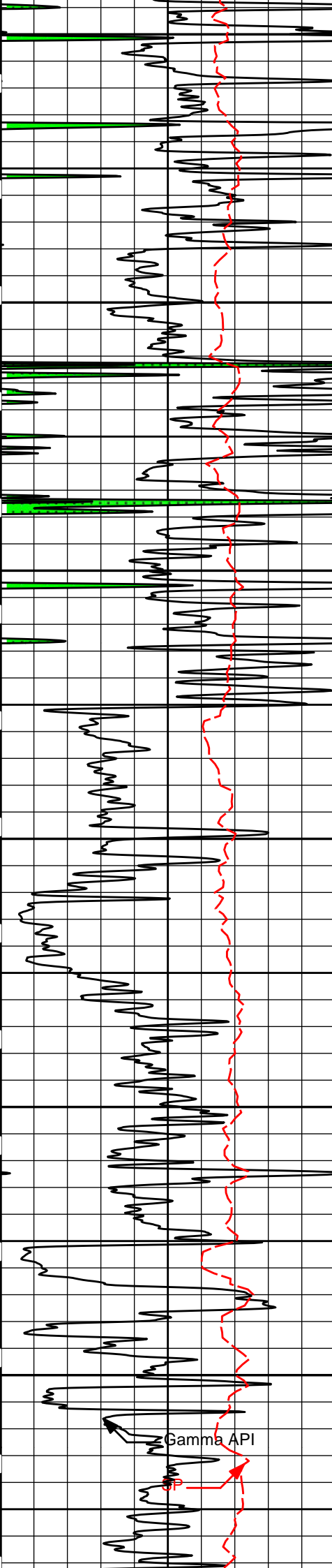
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Gamma API

SP





4700

4800

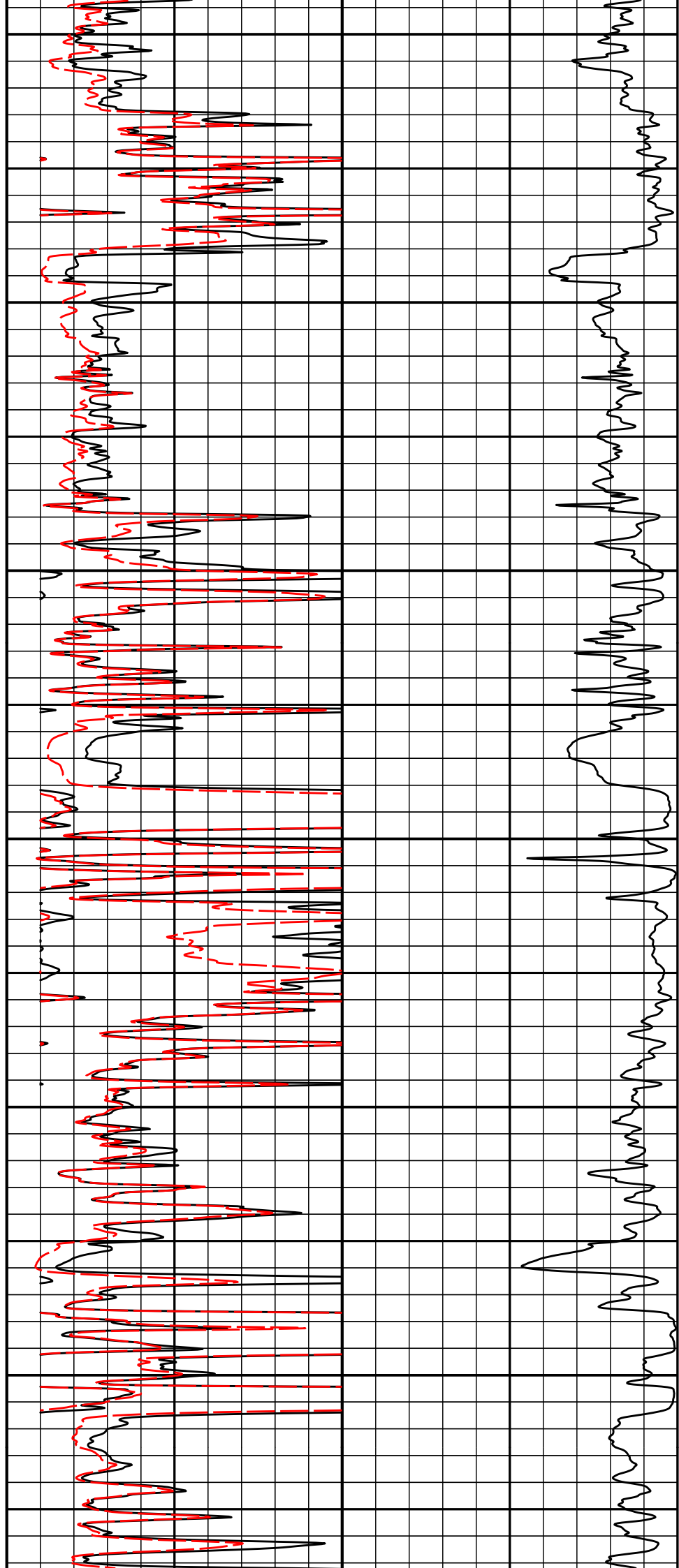
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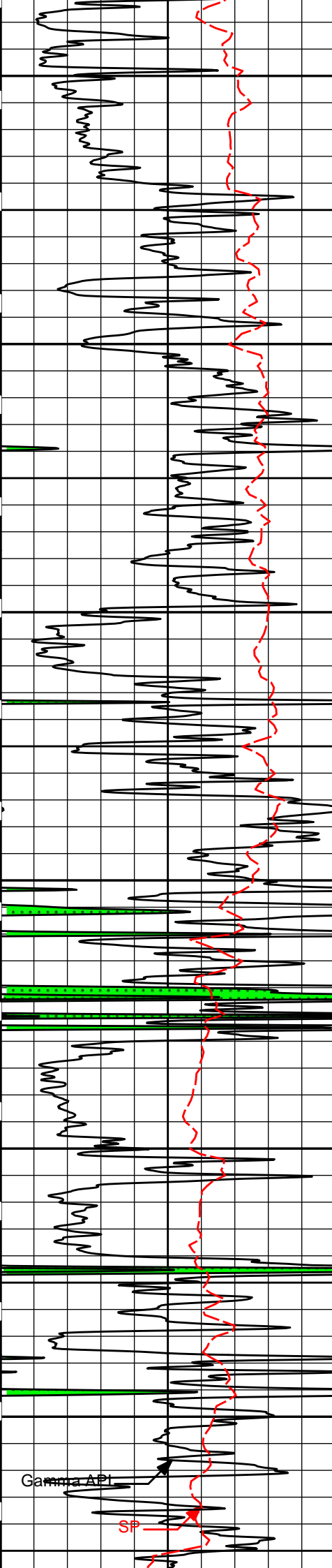
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Gamma API





5300

5400

5500

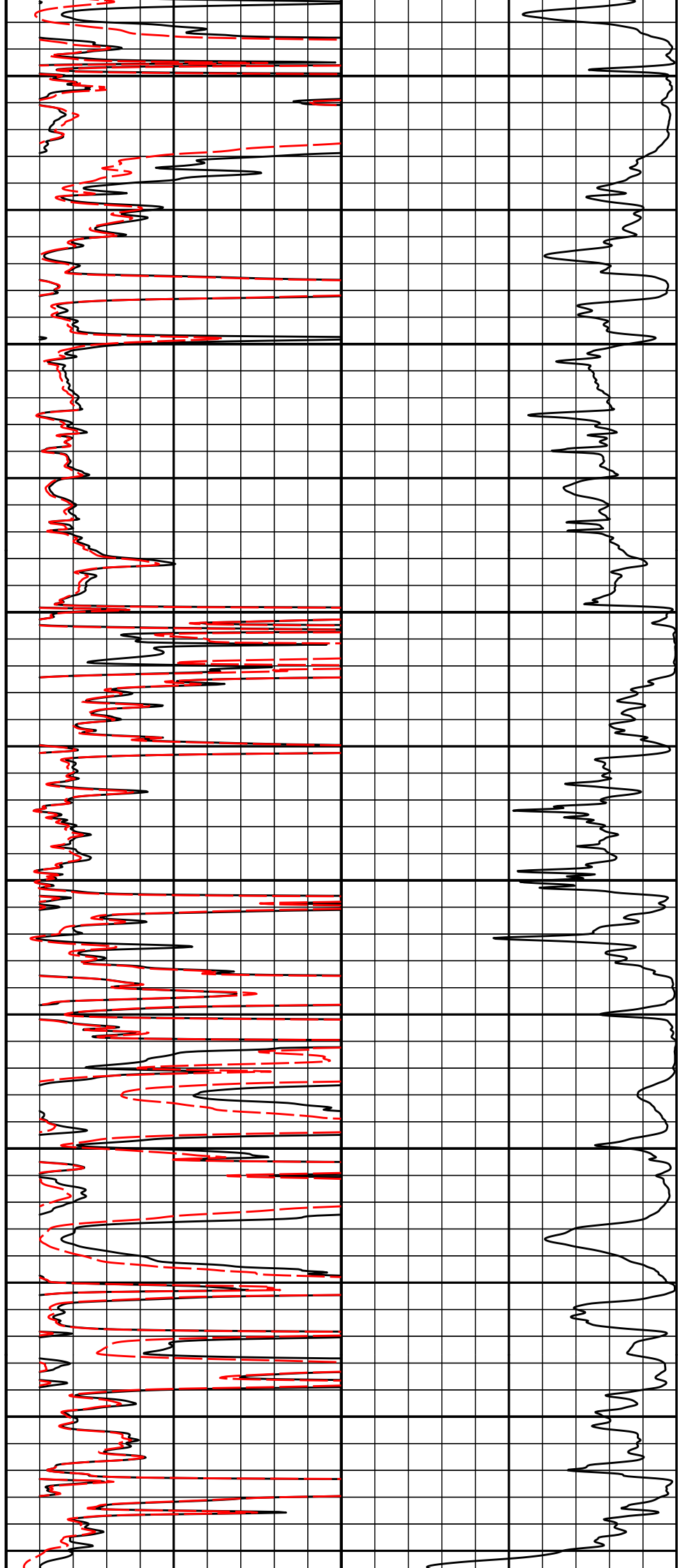
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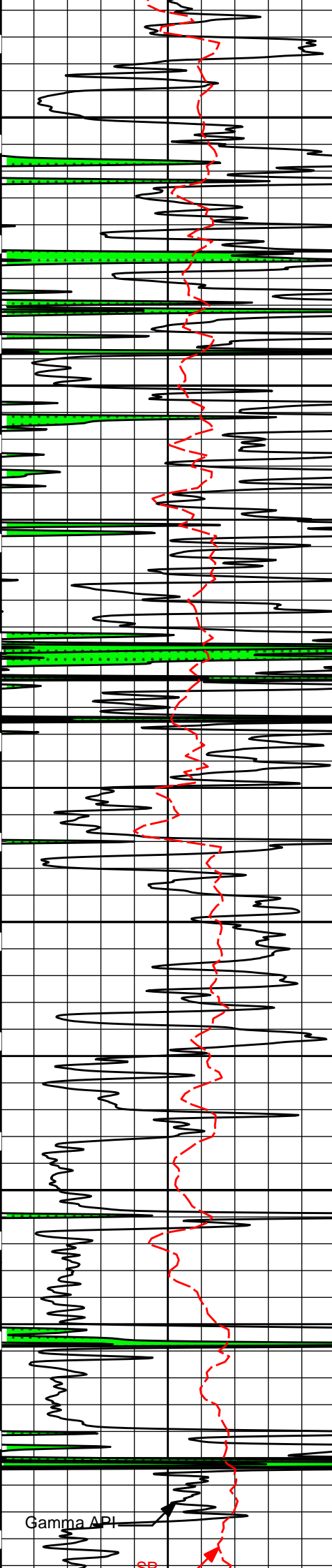
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5800

Gamma API

SP





5900

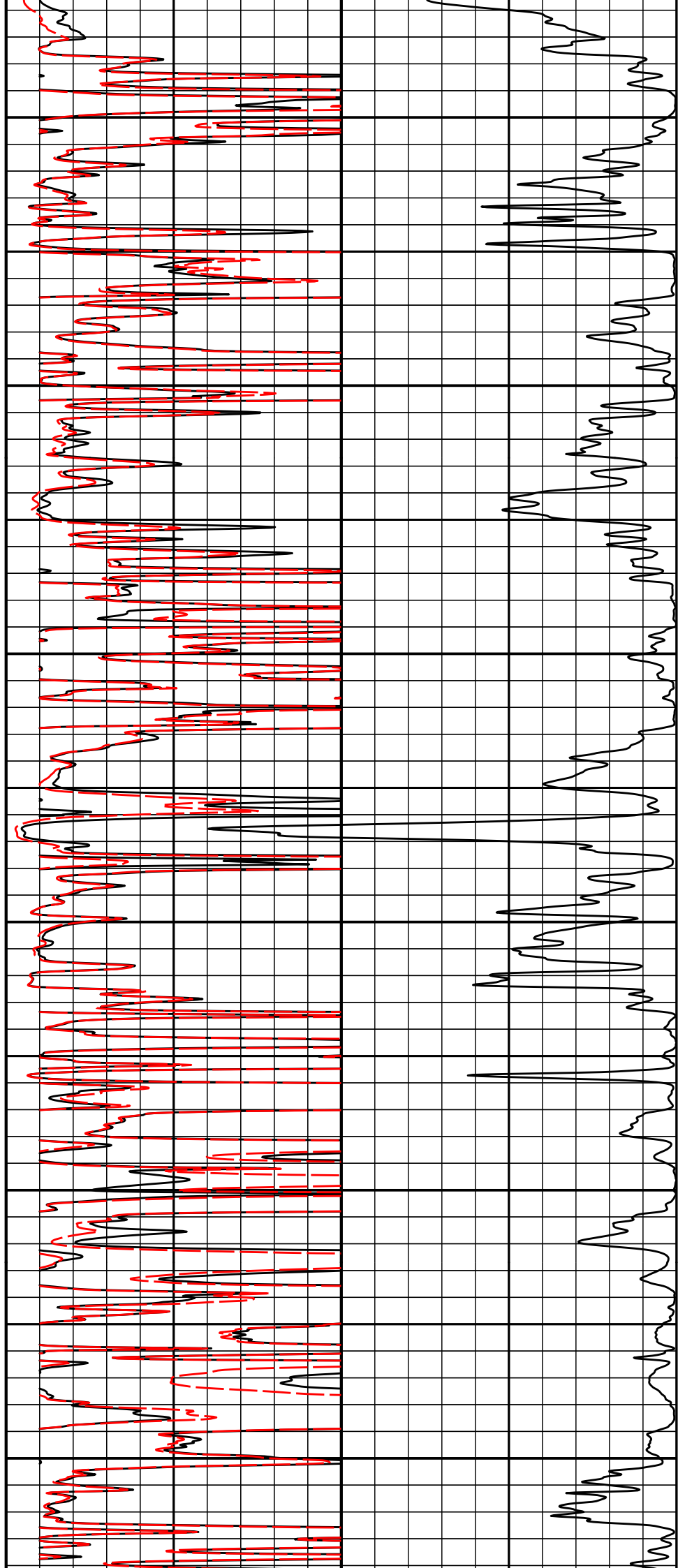
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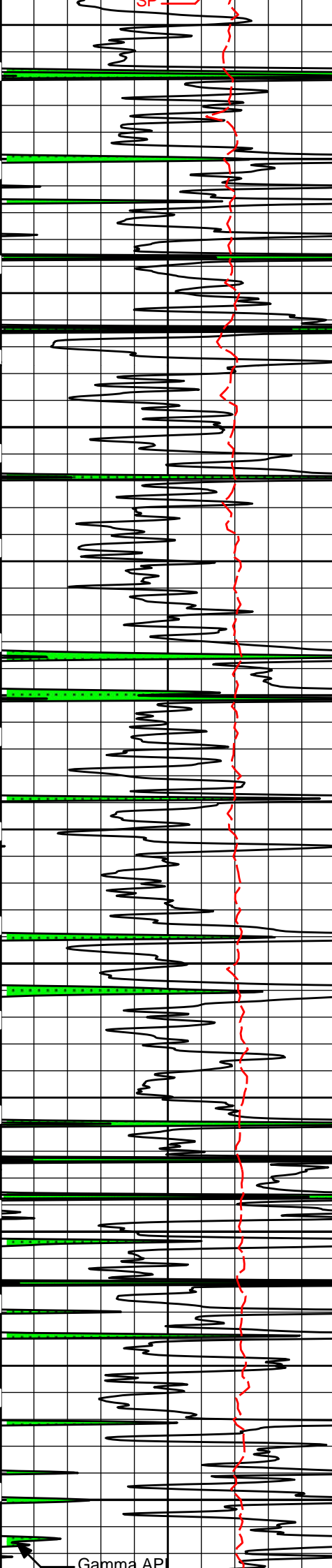
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6300

6400





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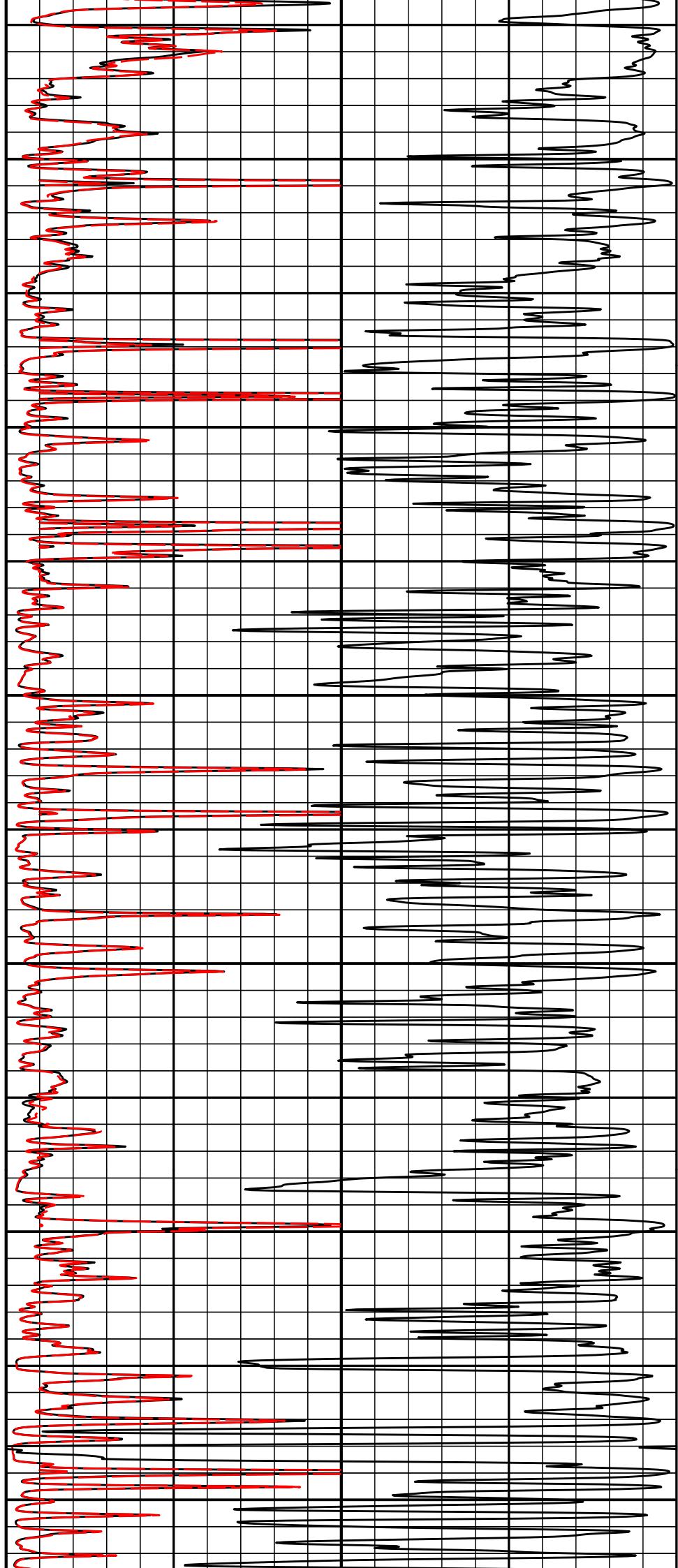
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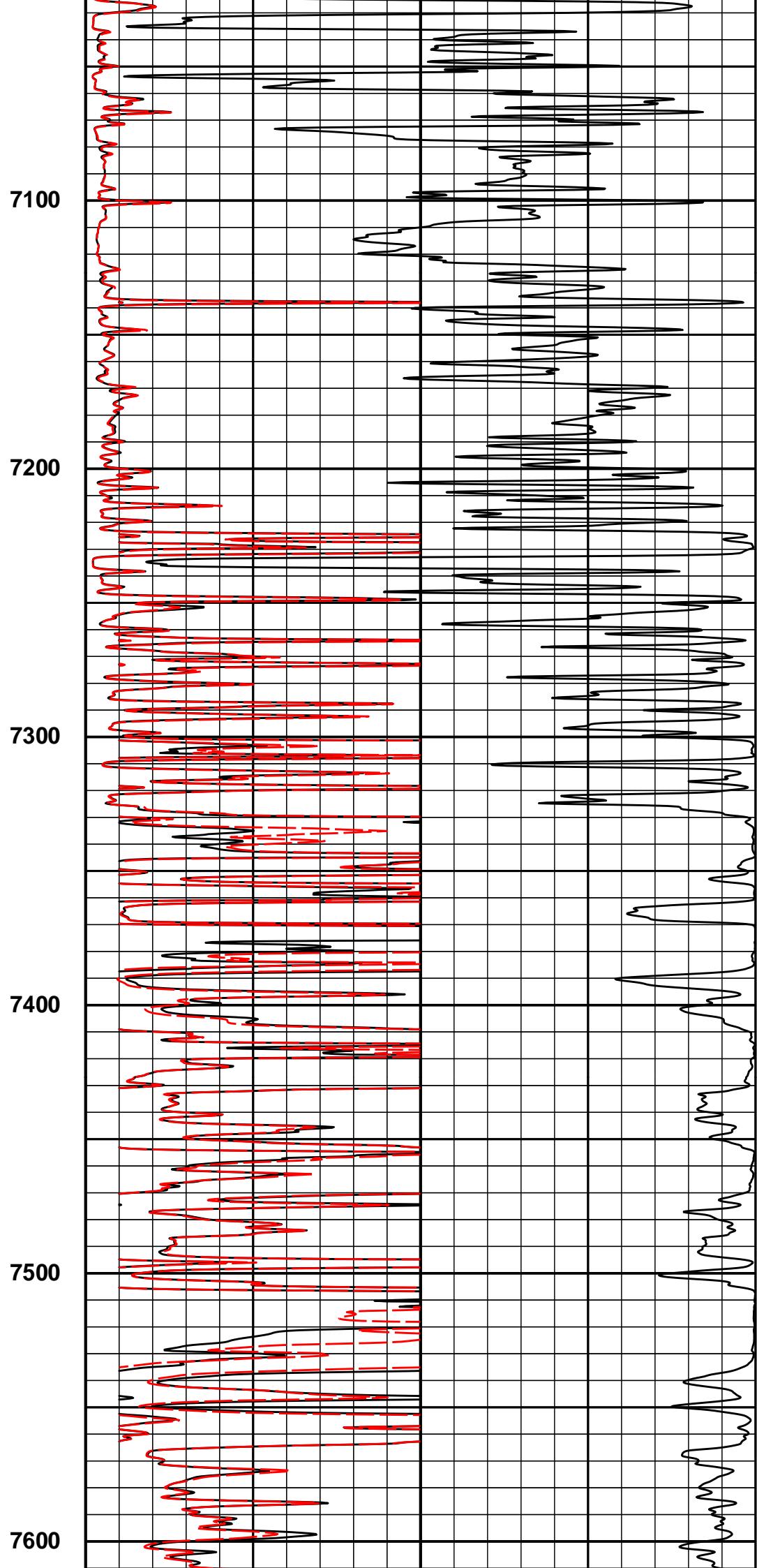
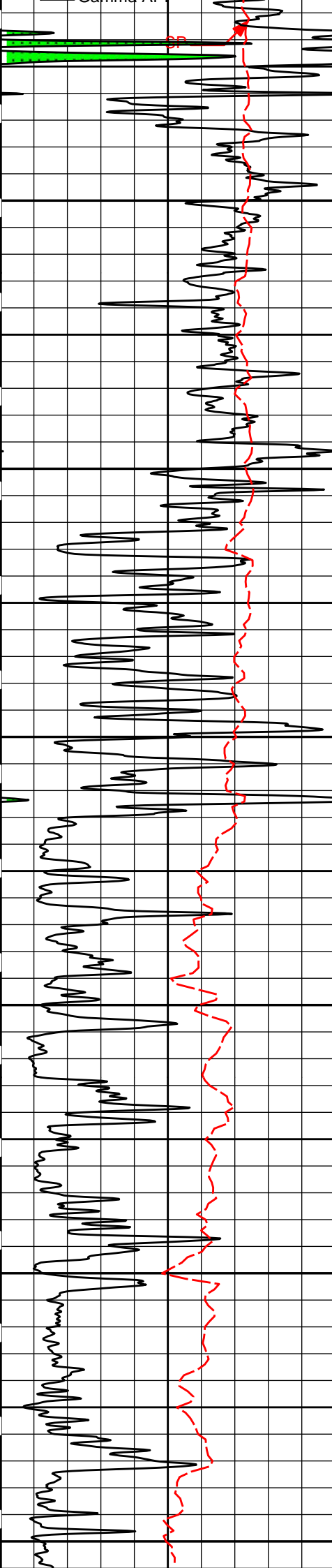
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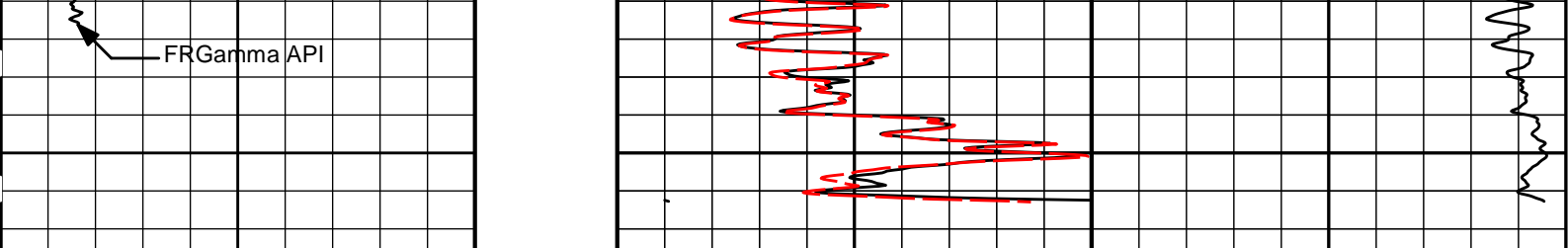
6900

7000



Gamma API





0Gamma API150			1 : 600 ft	020in Resistivity 2ft Res50			
api				ohm-metre			
SP				090in Resistivity 2ft Res50			
-]20[+				ohm-metre			
				100090in Conductivity 2ft Res0			
			mmho per metre				

HALLIBURTON

Plot Time: 24-May-18 09:46:51  
Plot Range: 450 ft to 7675.5 ft  
Data: K3\_JAMES\Well Based\DAQ-0001-005\  
Plot File: \\-LOCAL-K3\_JAMES\0001 RWCH\_GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT\_2\_main

2 INCH MAIN LOG

2 INCH MAIN LOG

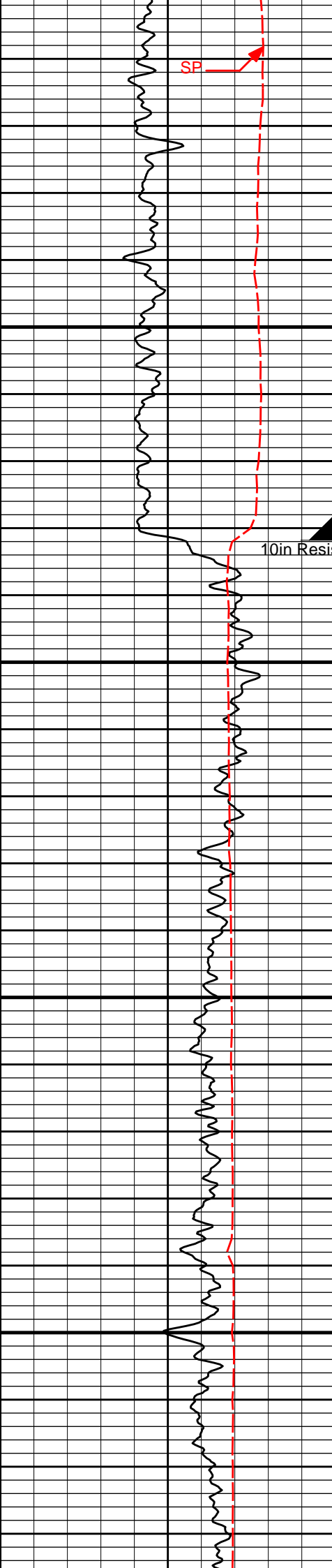
HALLIBURTON

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Plot Range: 400 ft to 7675.5 ft  
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Plot File: \\-LOCAL-K3\_JAMES\0001 RWCH\_GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT\_5inch\_main

5 INCH MAIN LOG

5 INCH MAIN LOG

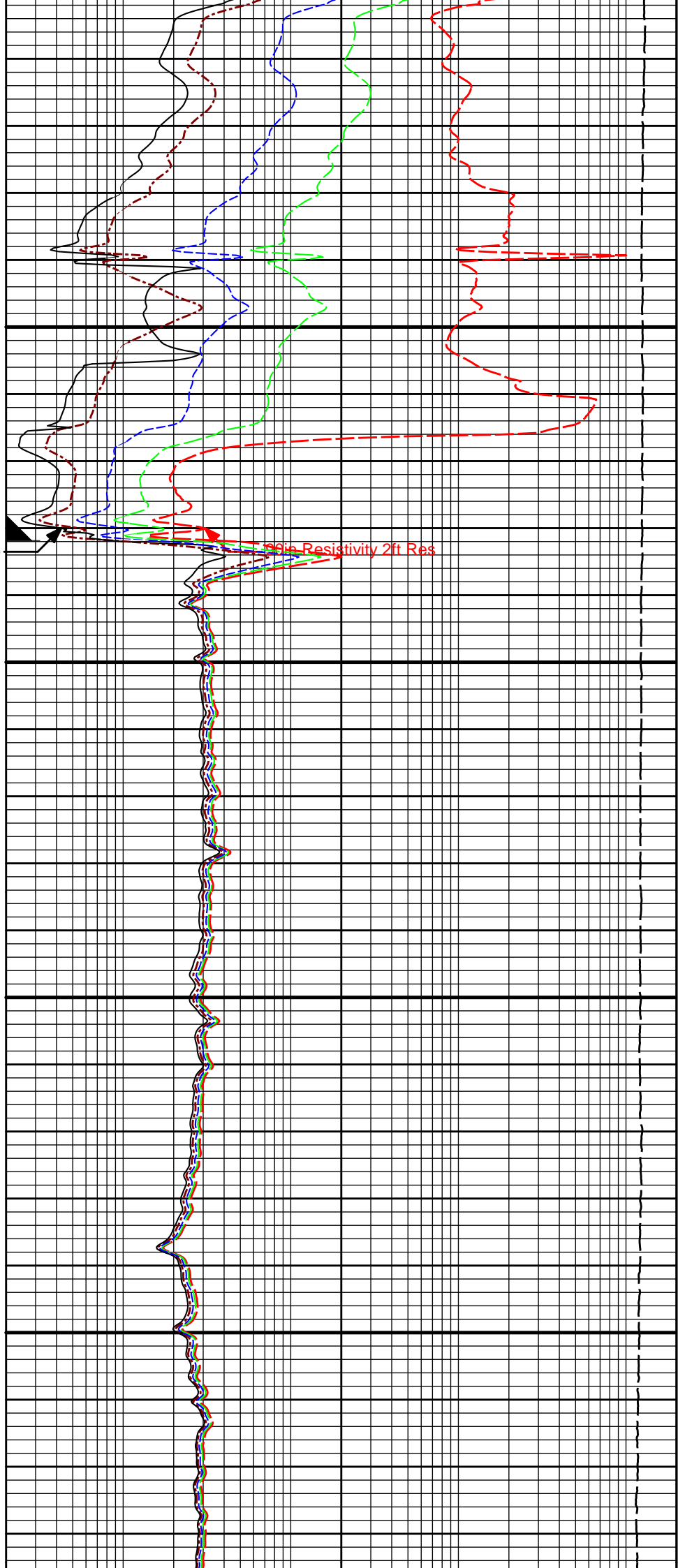
		0.2	10in Resistivity 2ft Res	2K
			ohmm	
		0.2	20in Resistivity 2ft Res	2000
			ohmm	
		0.2	30in Resistivity 2ft Res	2000
			ohm-metre	
SP -]20[+		0.2	60in Resistivity 2ft Res	2000
			ohmm	
Gamma API api		0.2	90in Resistivity 2ft Res	2K
			ohmm	
0Gamma API150			15K	Tension pounds0



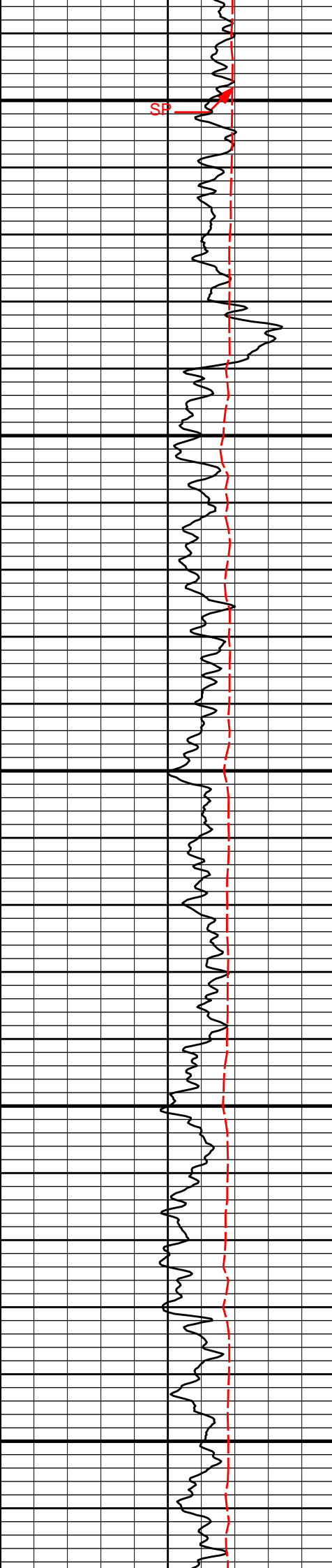
CSG

500

600



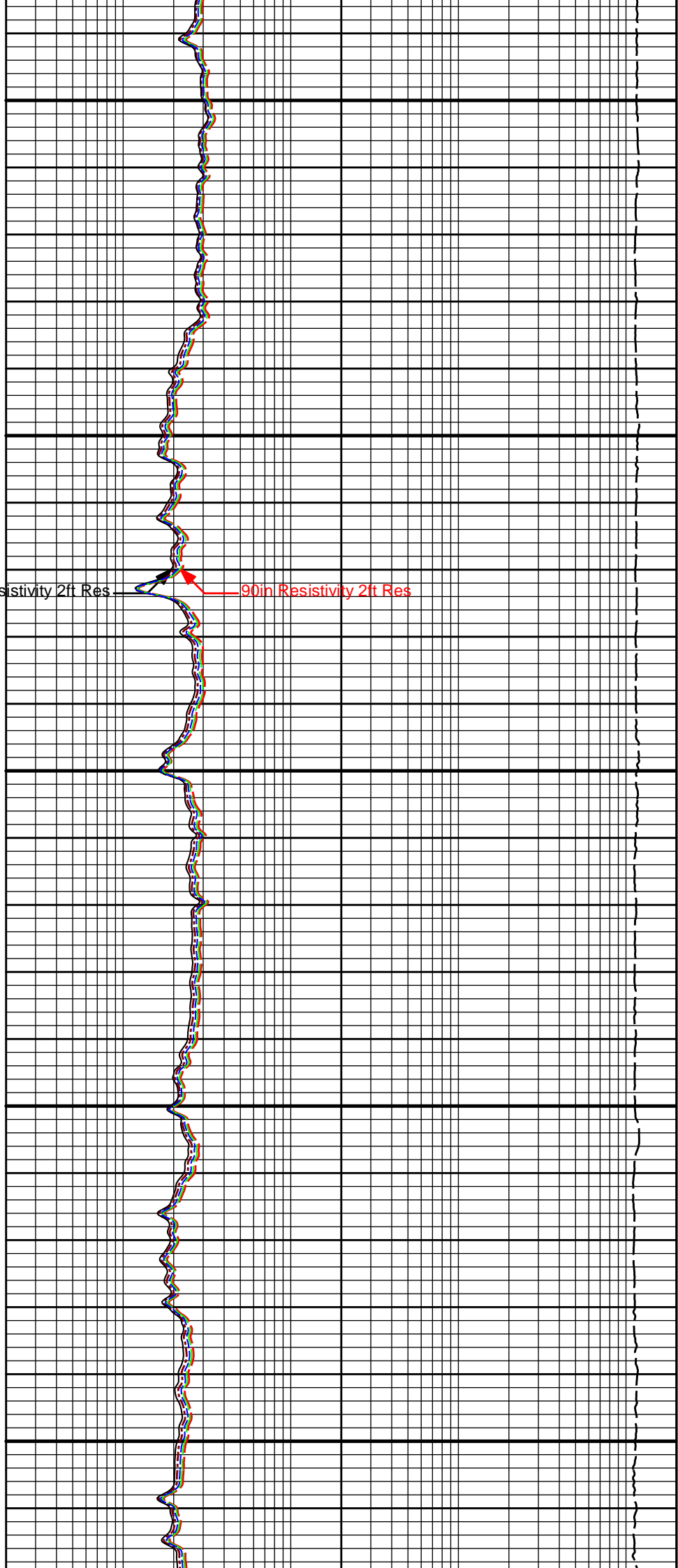




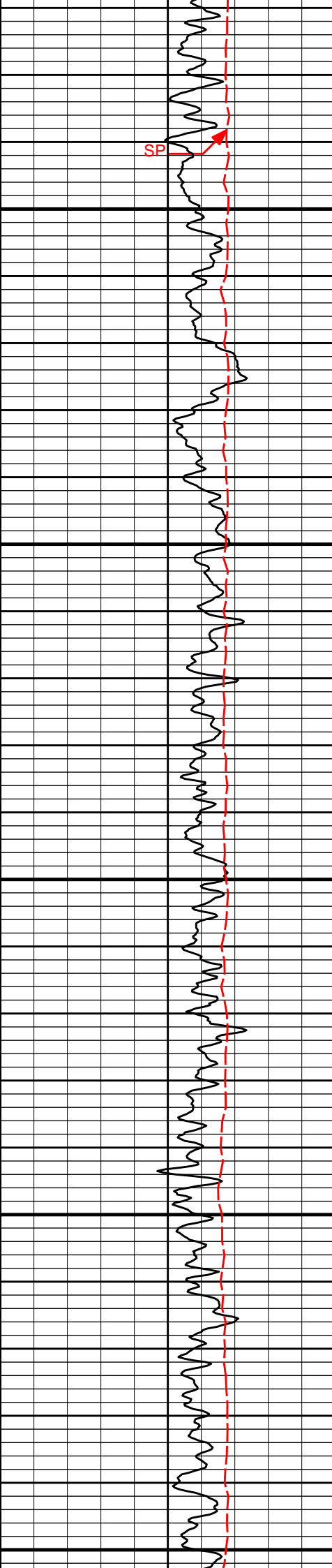
700

10in Resistivity 2ft Res

800



90in Resistivity 2ft Res



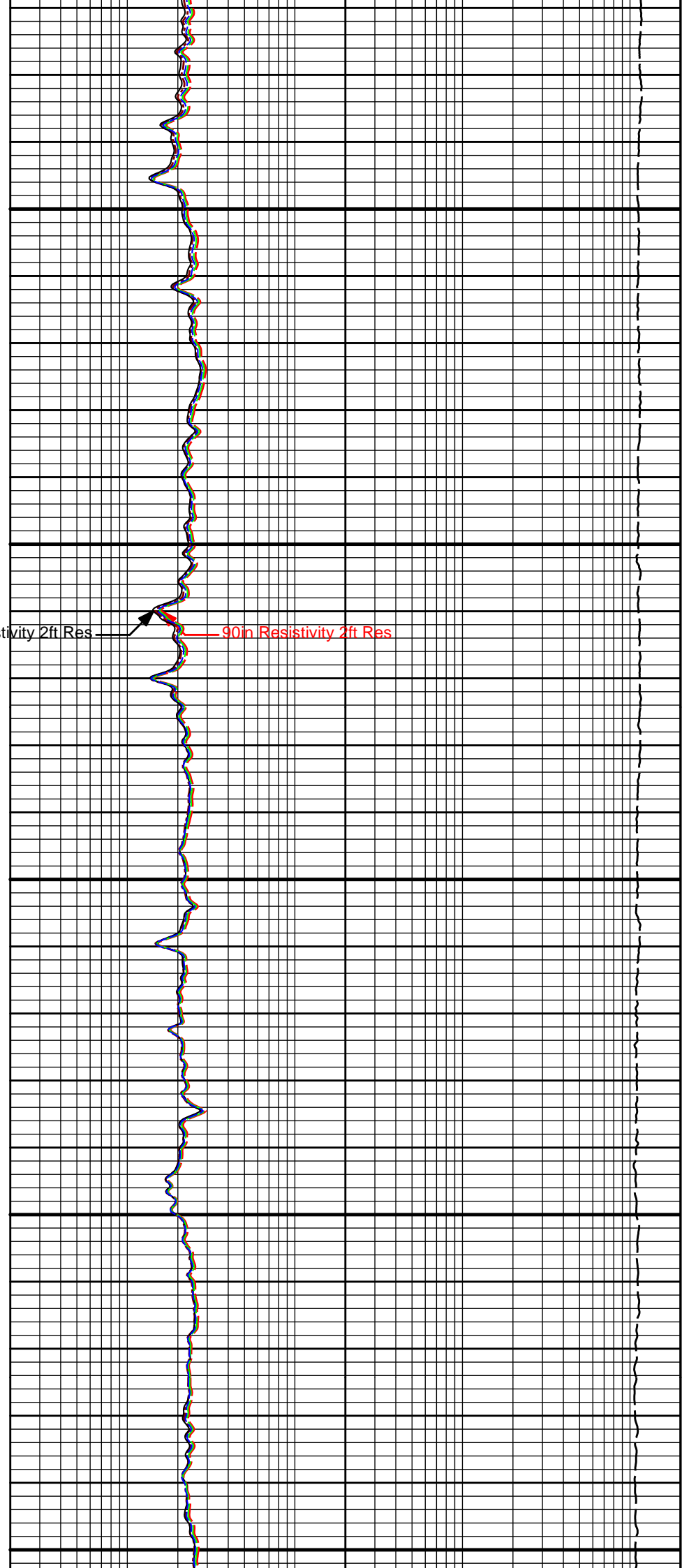
SP

900

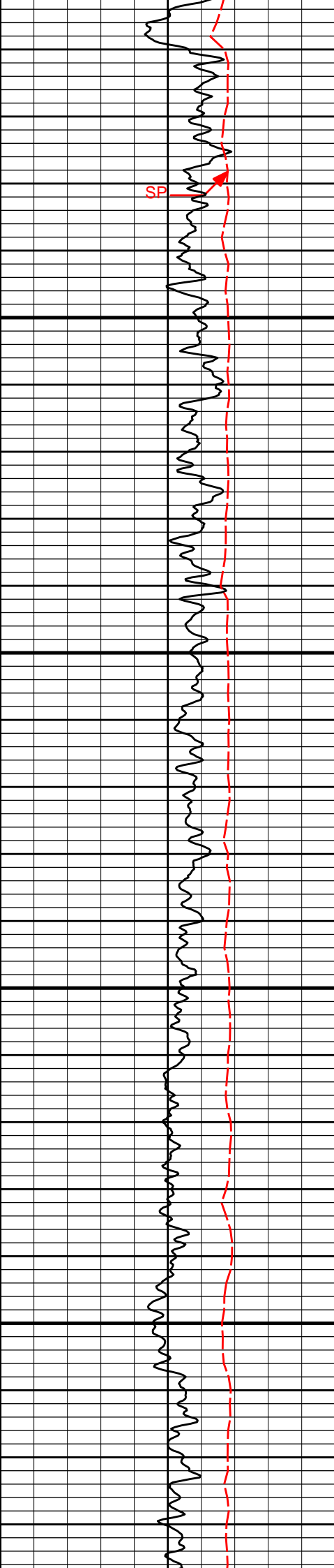
10in Resistivity 2ft Res

1000

1100



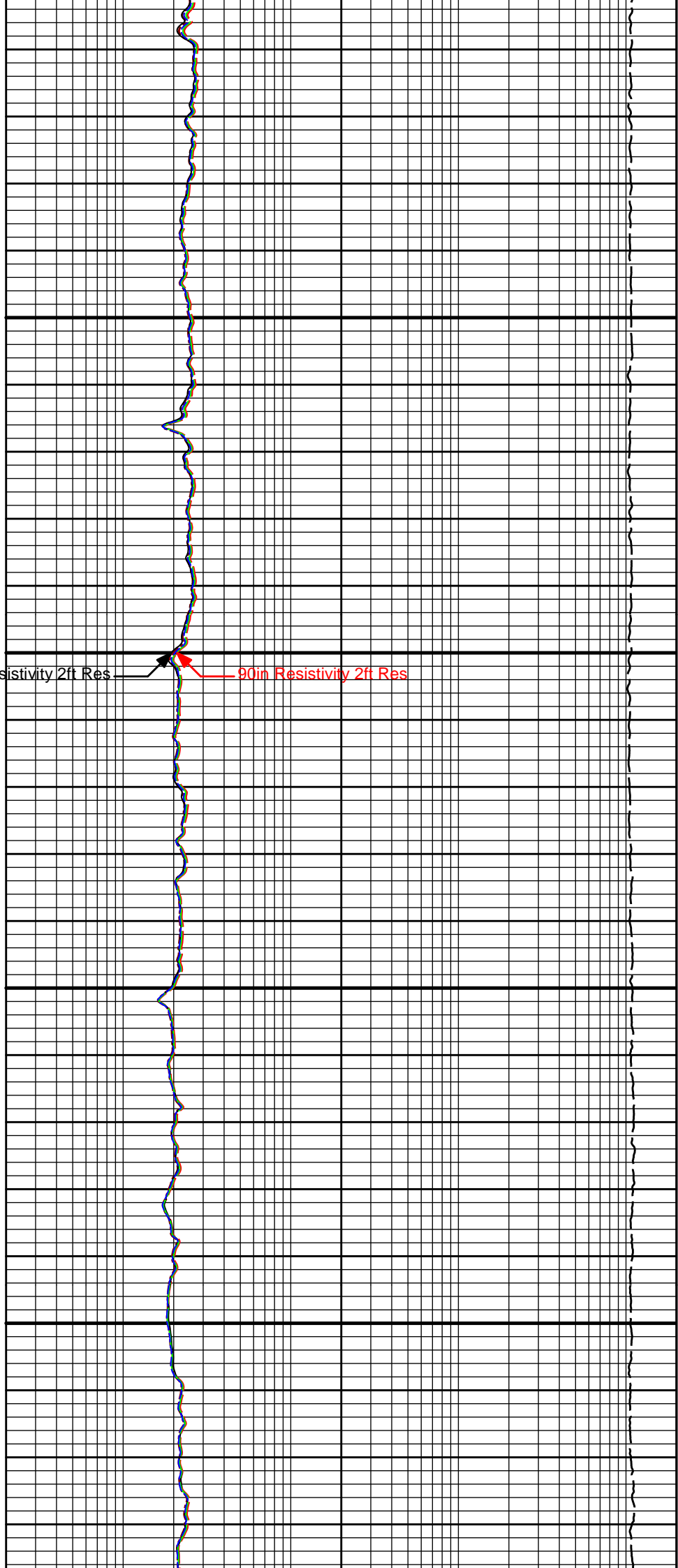
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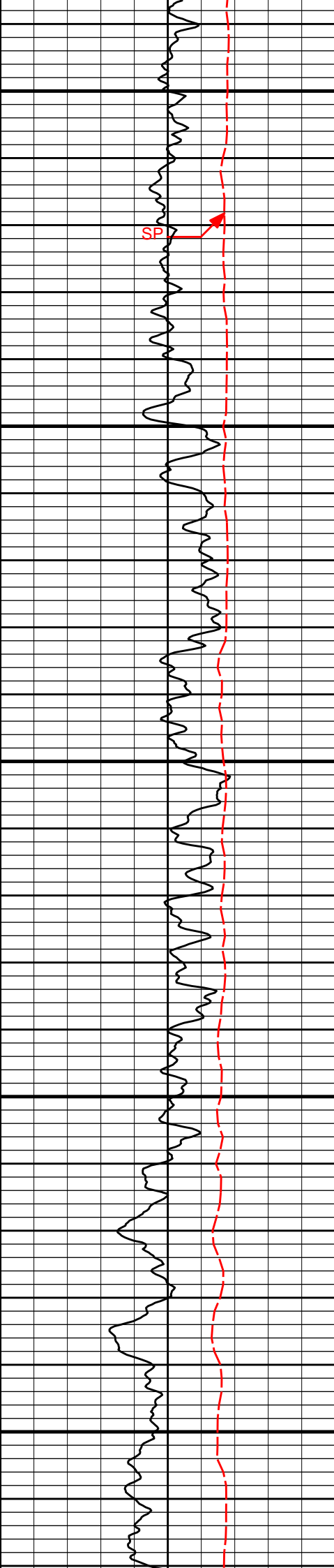


1200

10in Resistivity 2ft Res

1300

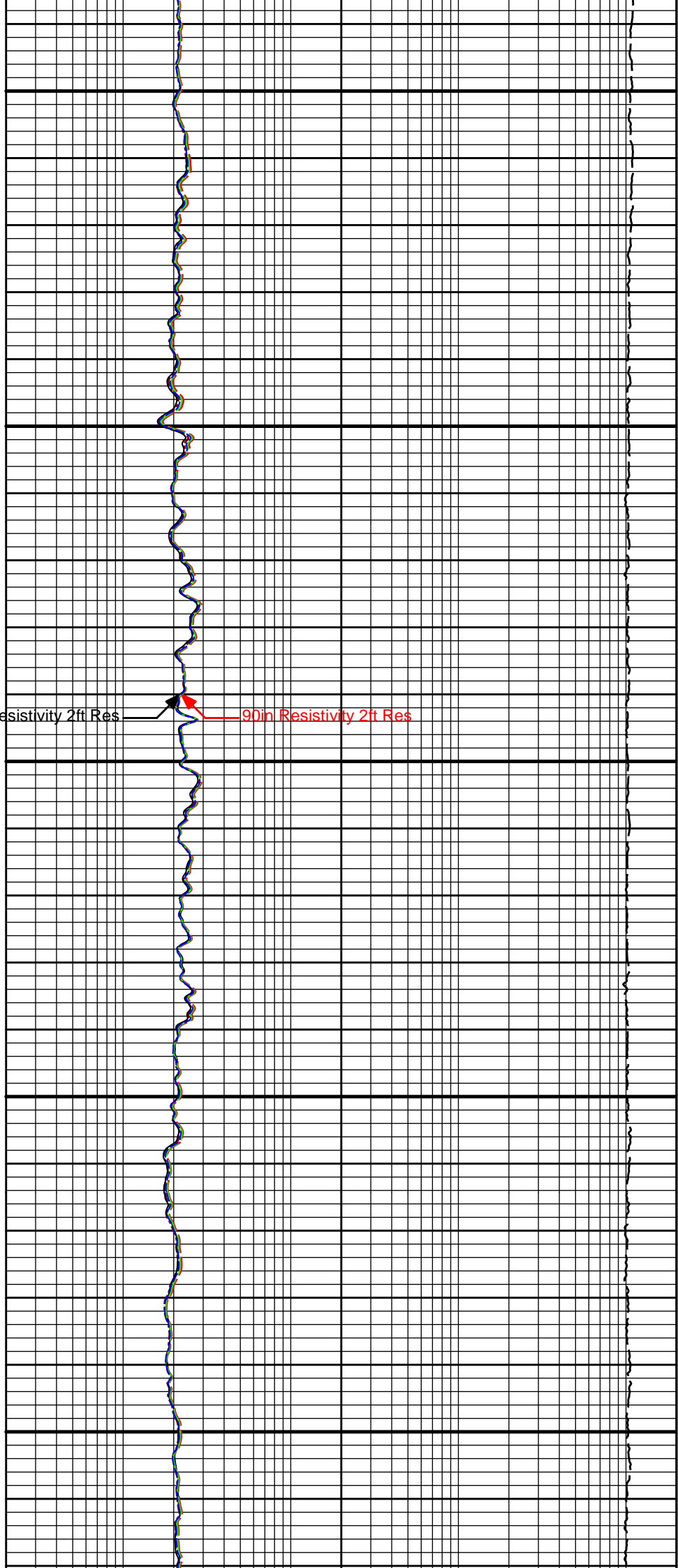


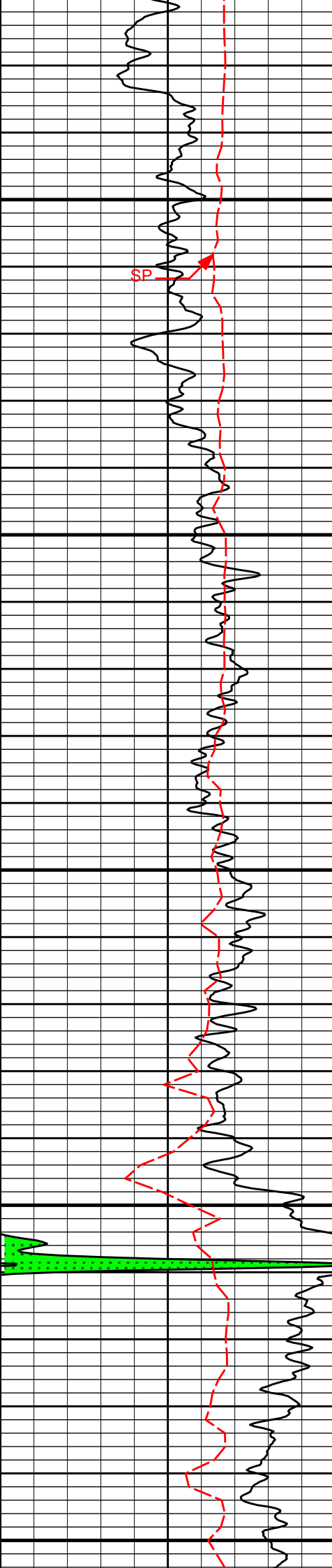


1400

10in Resistivity 2ft Res

1500





1600

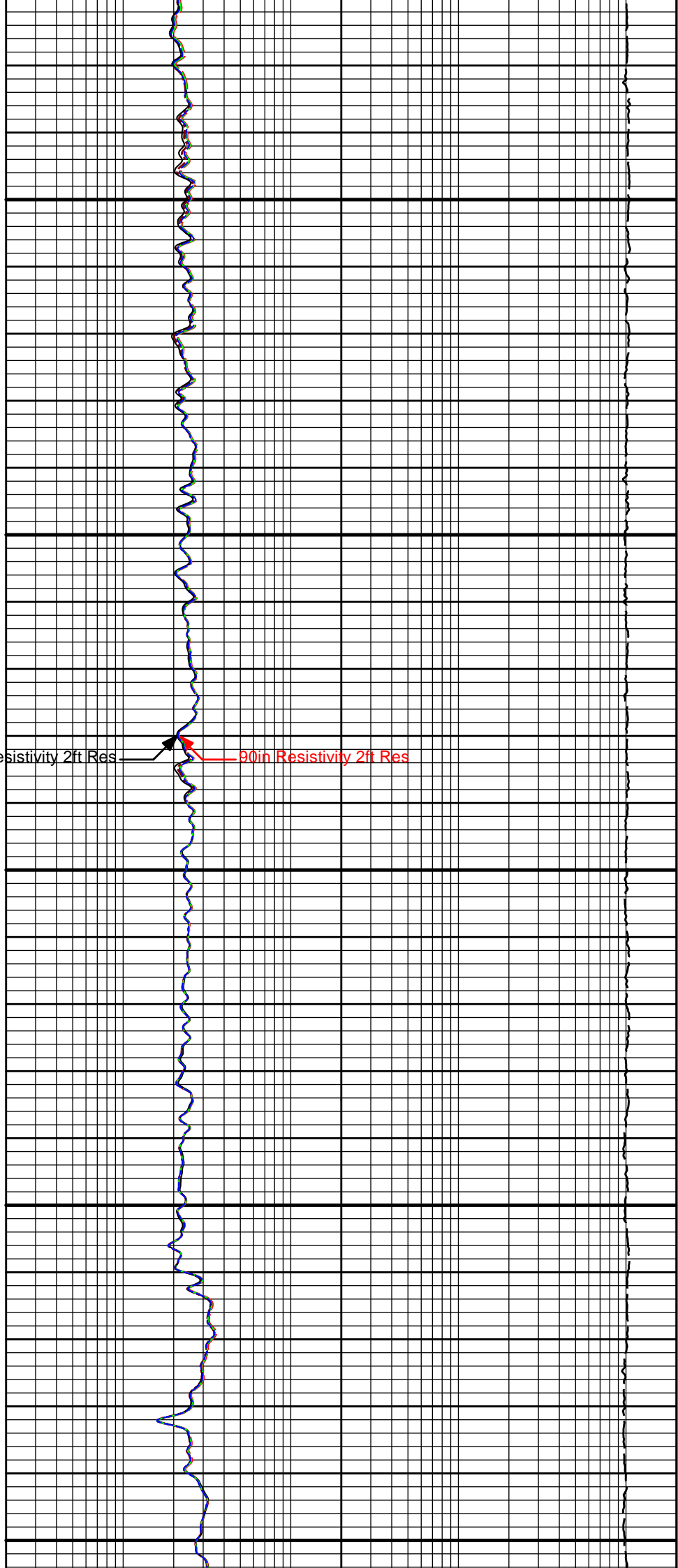
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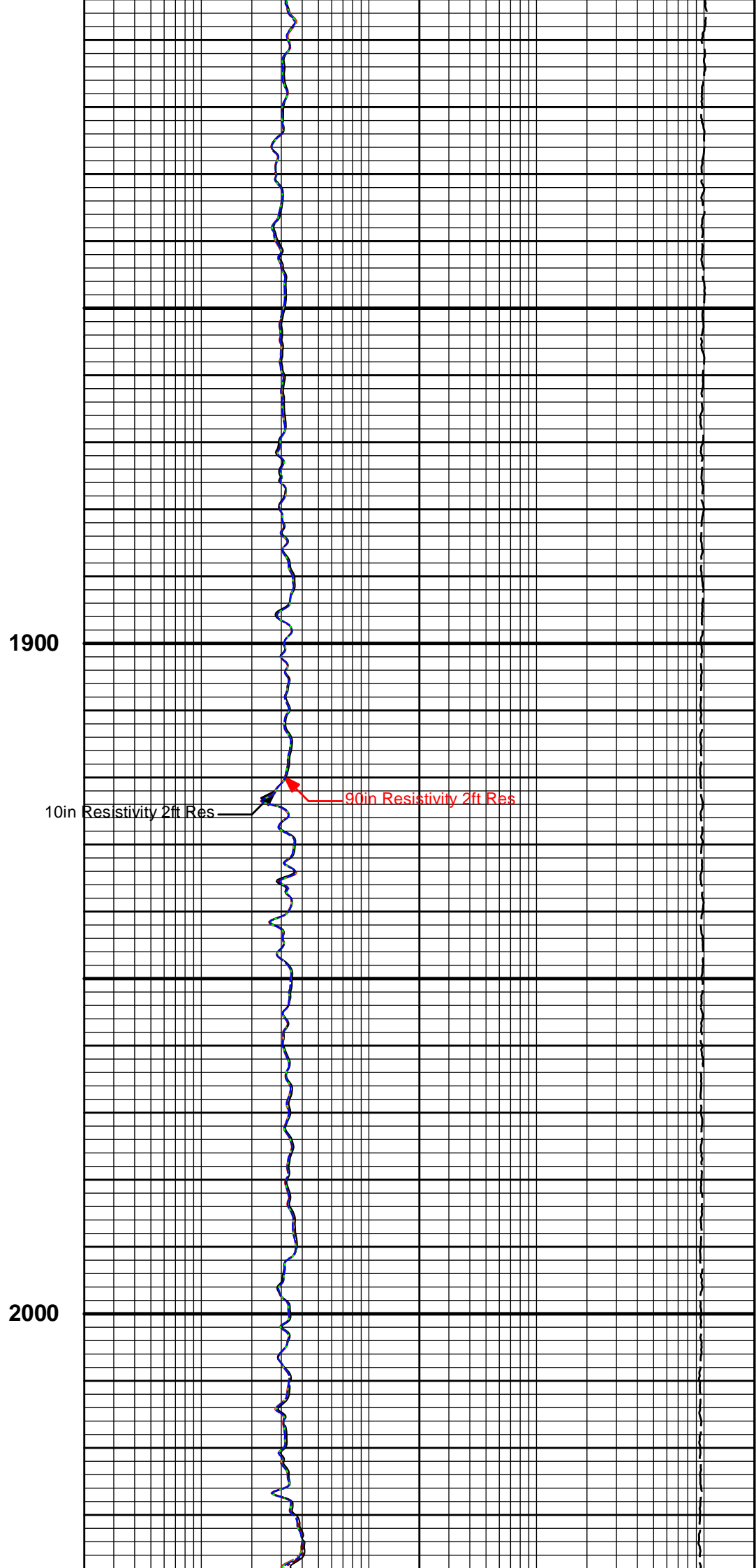
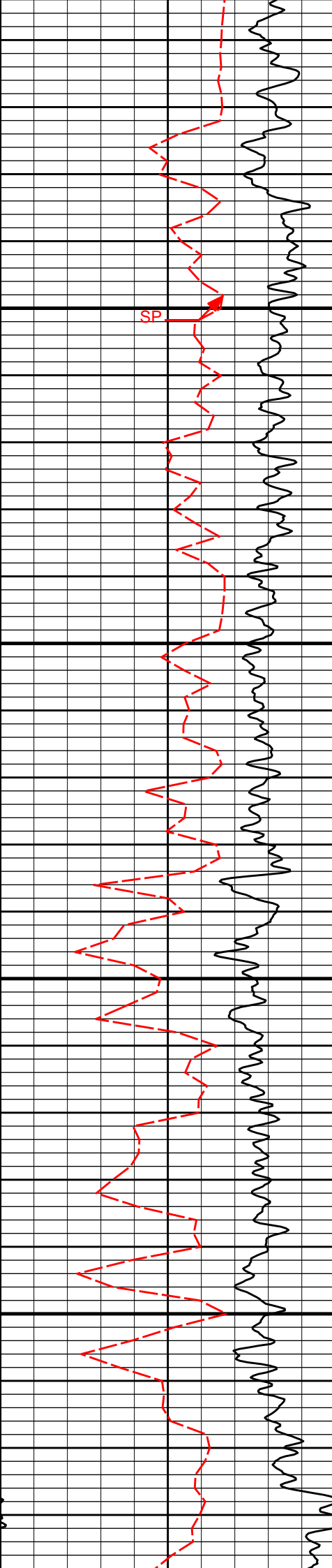
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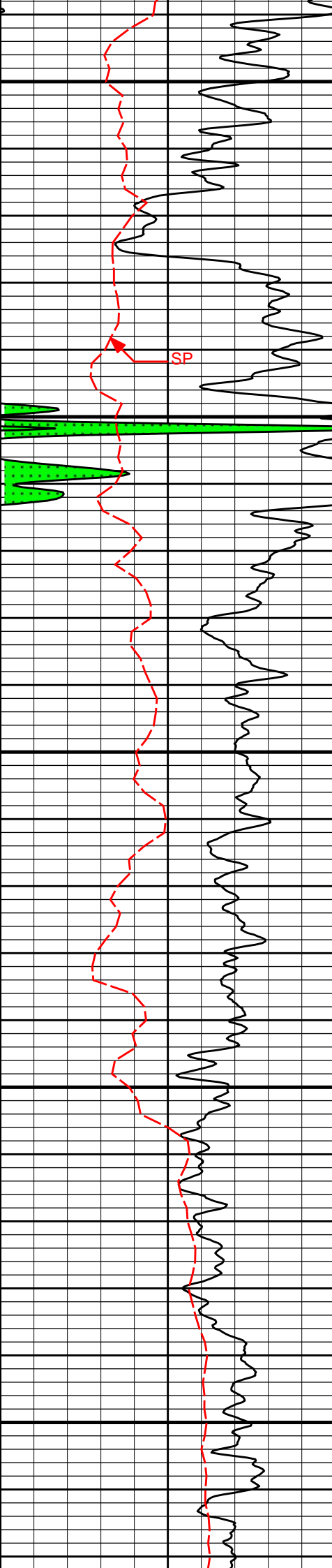
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10in Resistivity 2ft Res

90in Resistivity 2ft Res

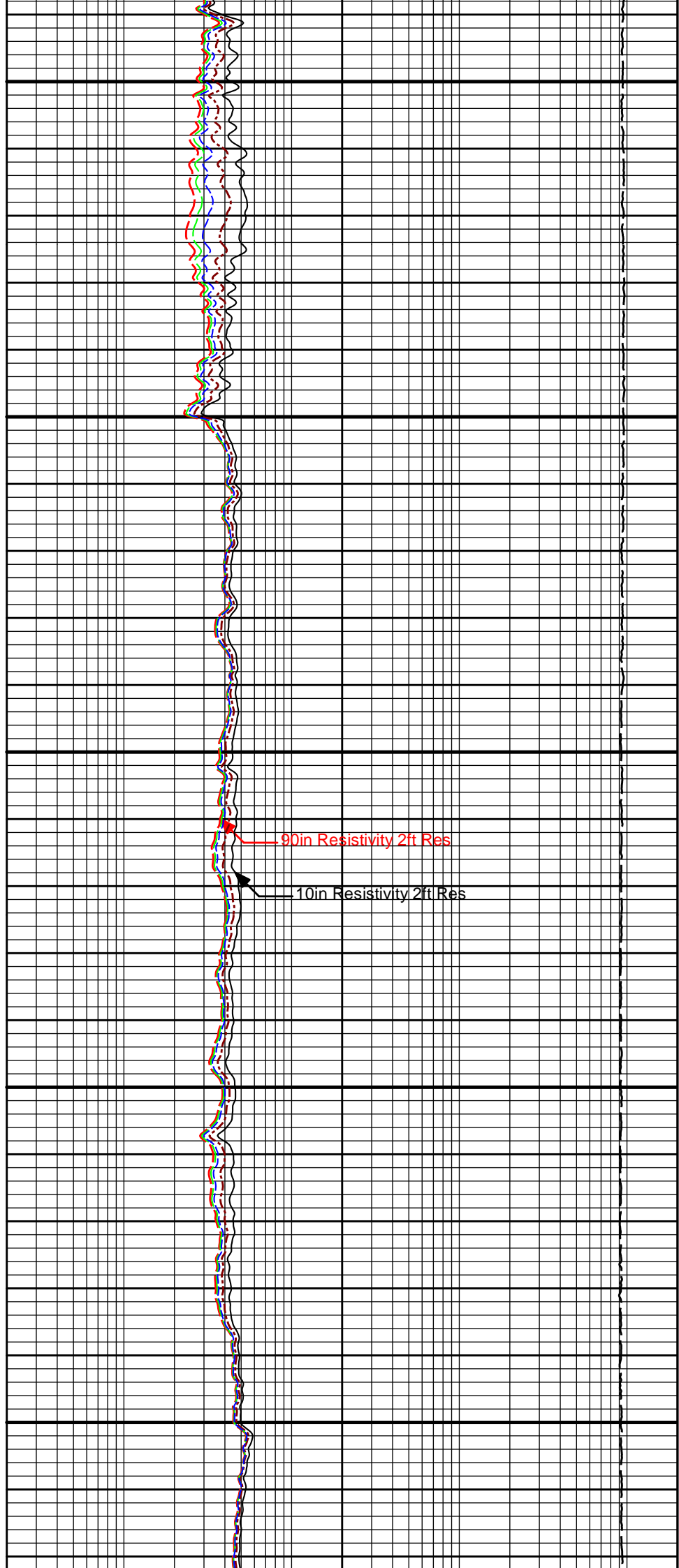






2100

2200



SP

2300

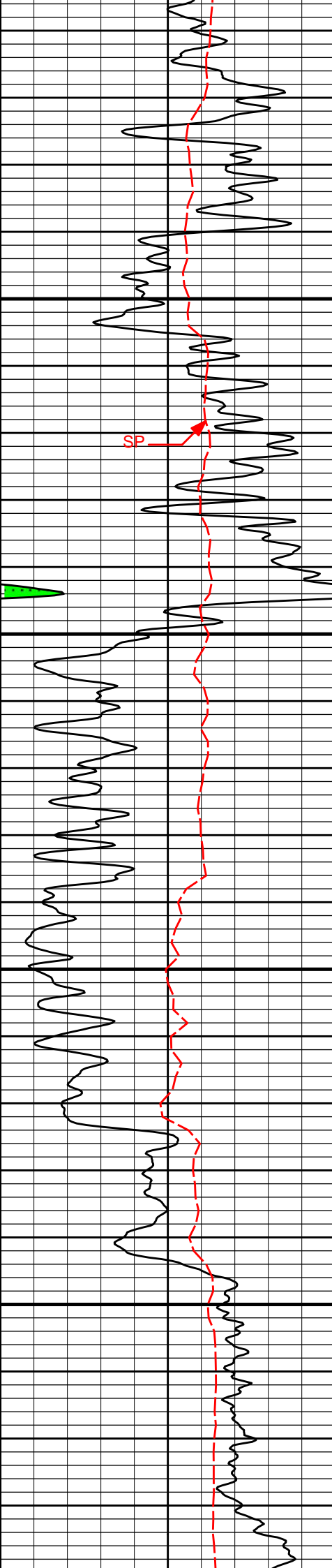
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2500

90in Resistivity 2ft Res

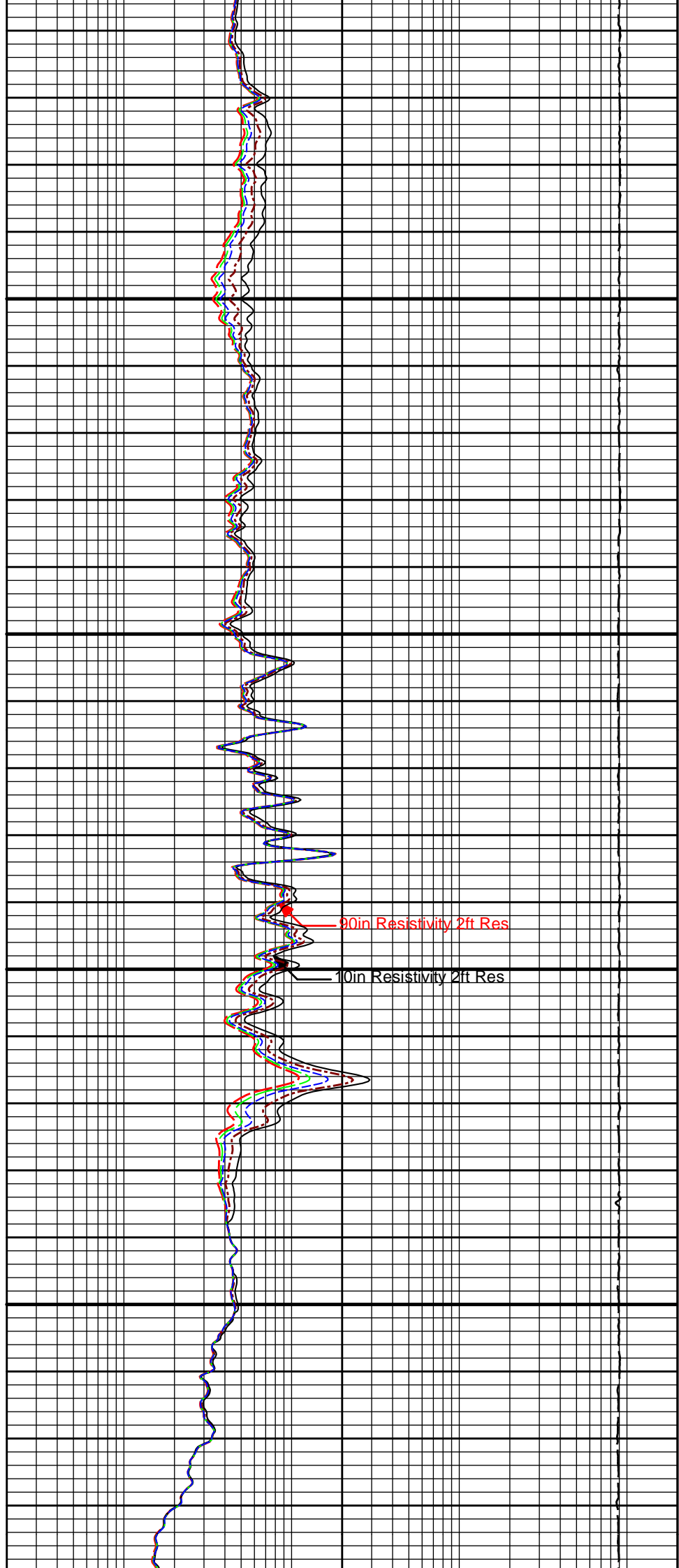
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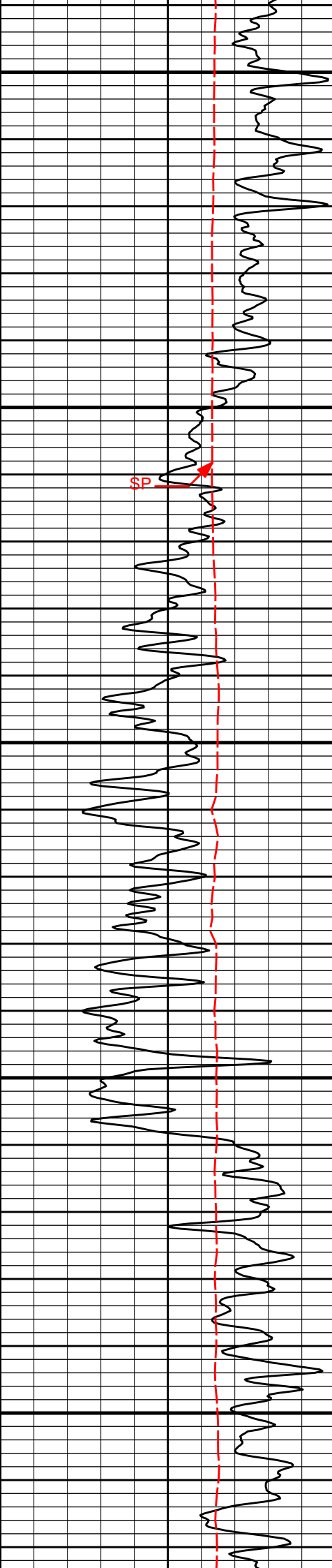




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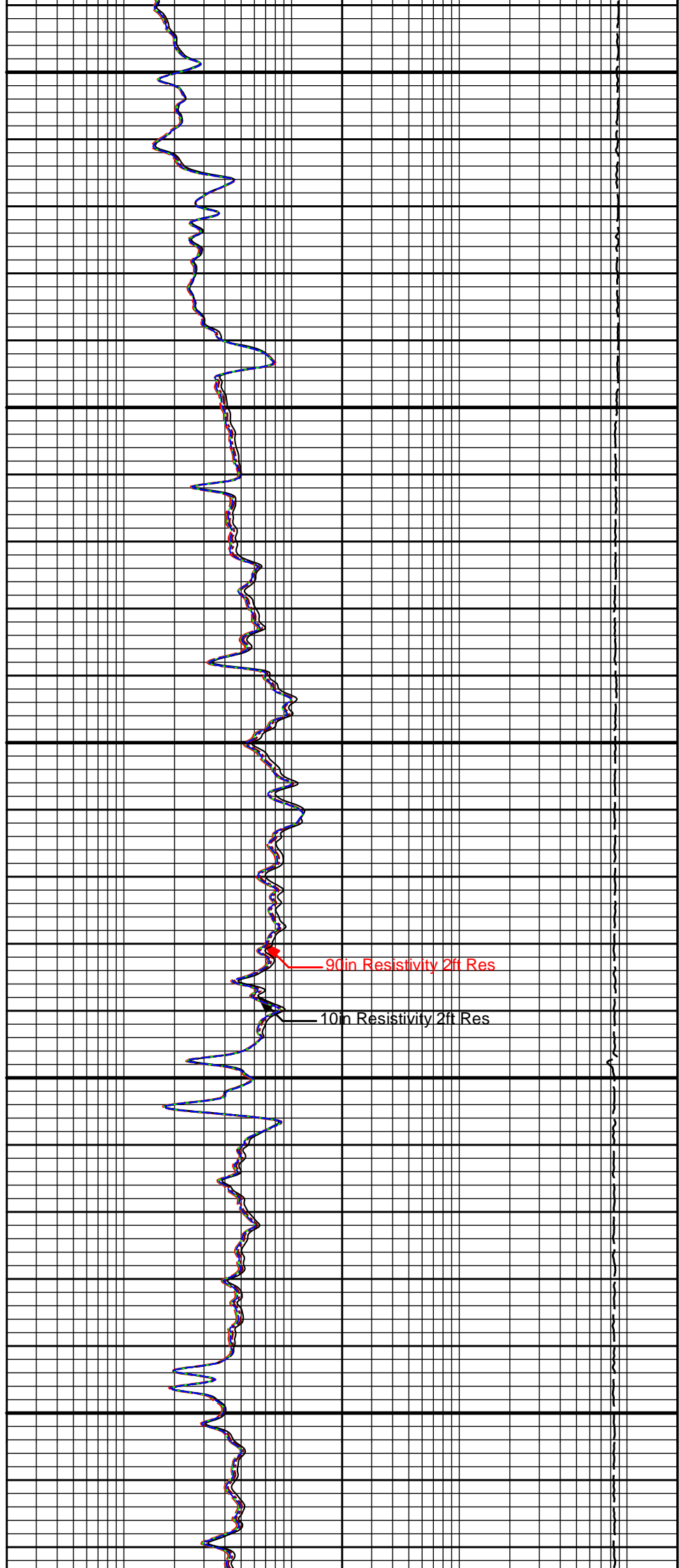
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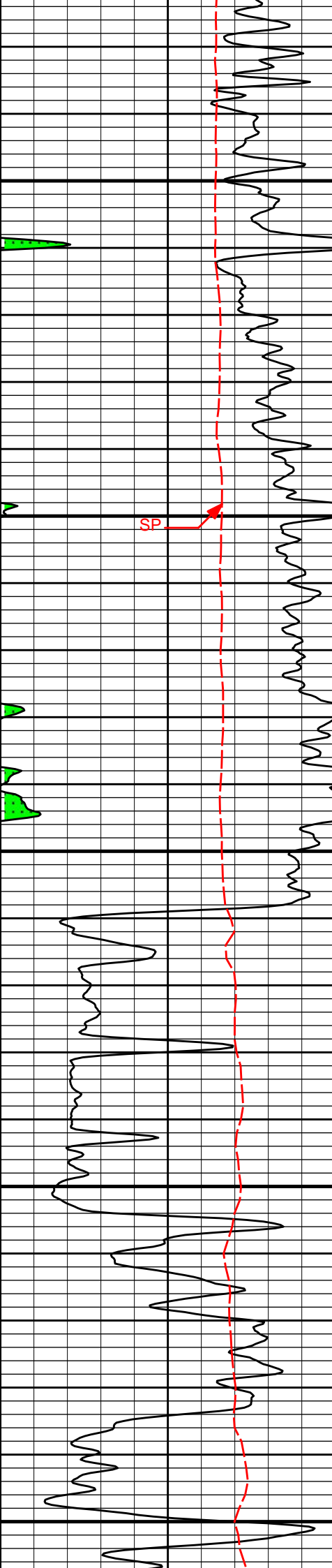




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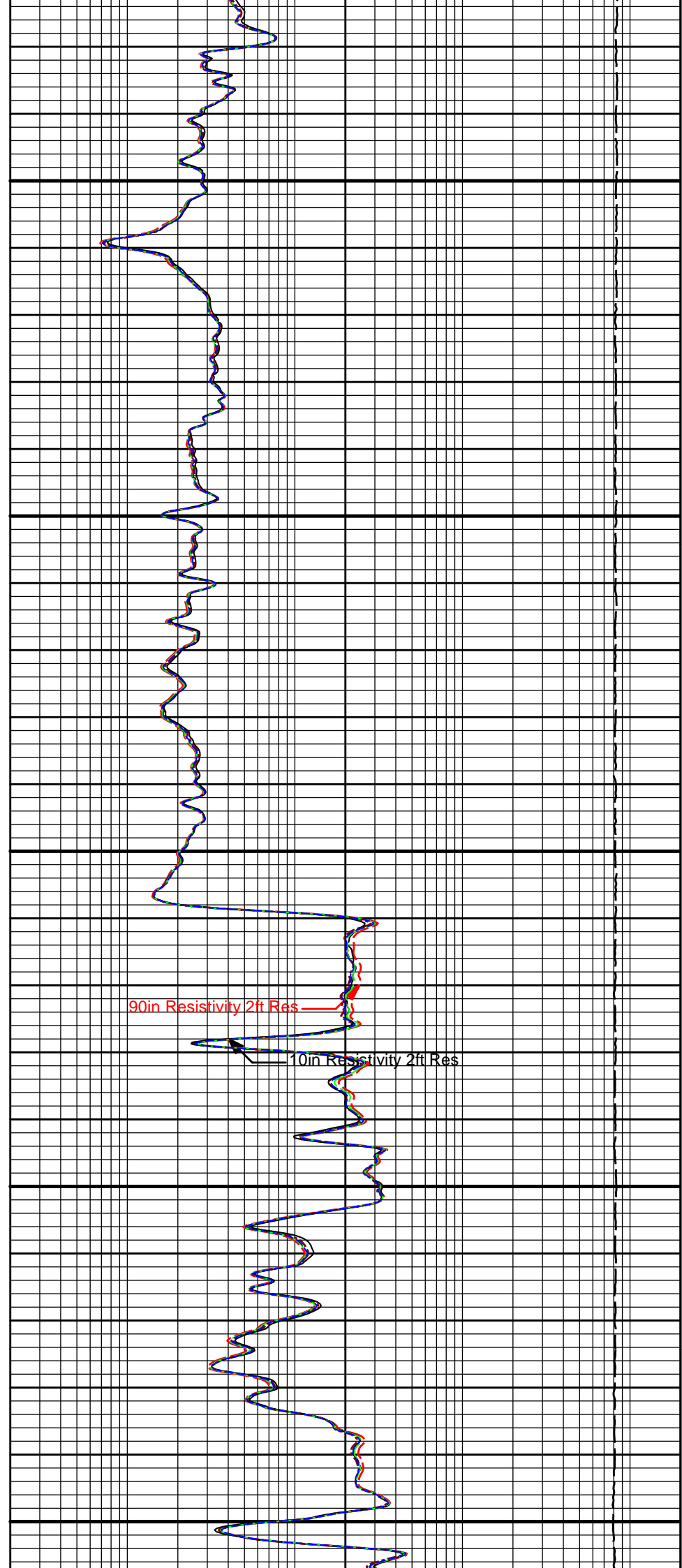




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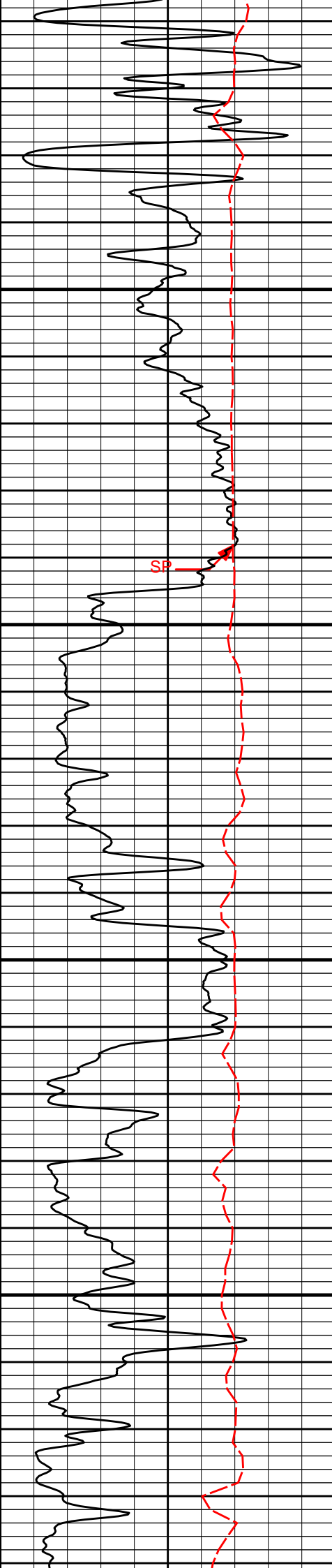
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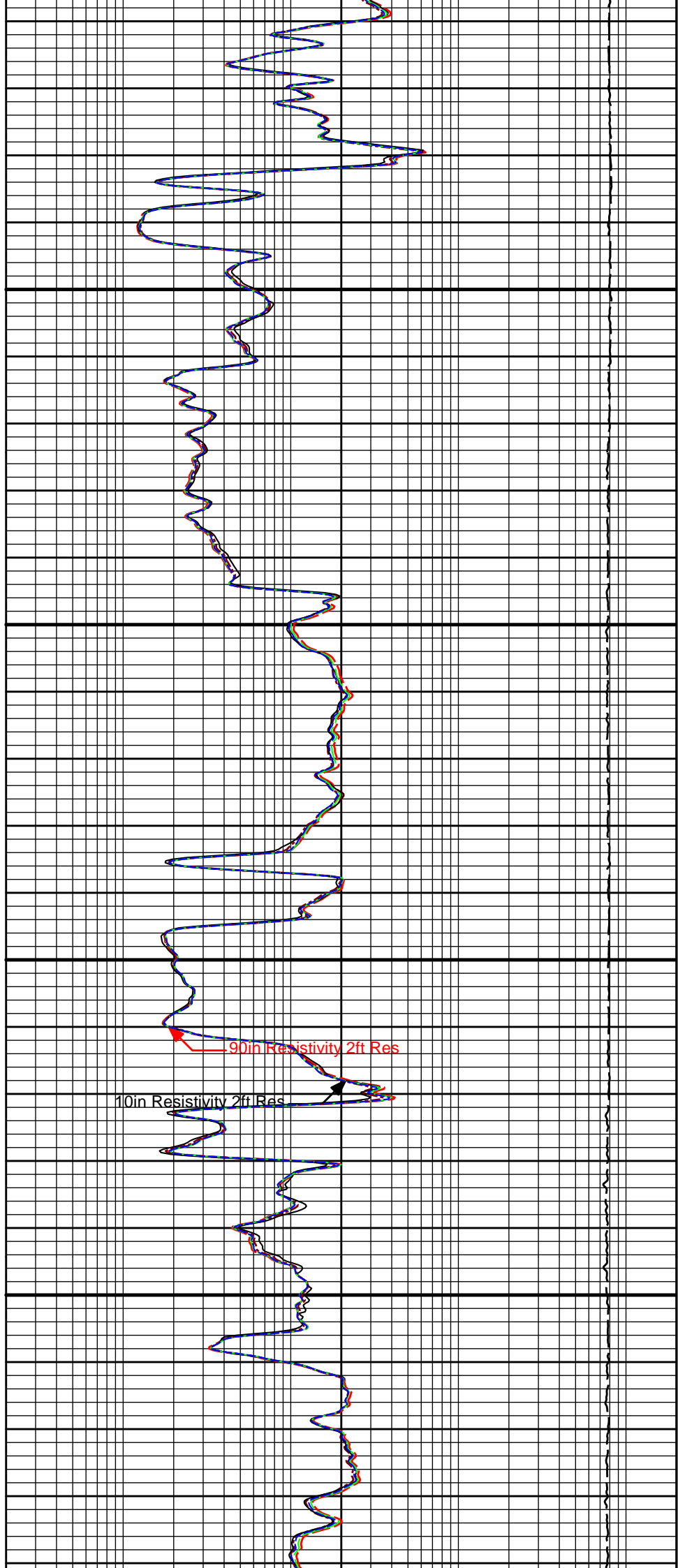
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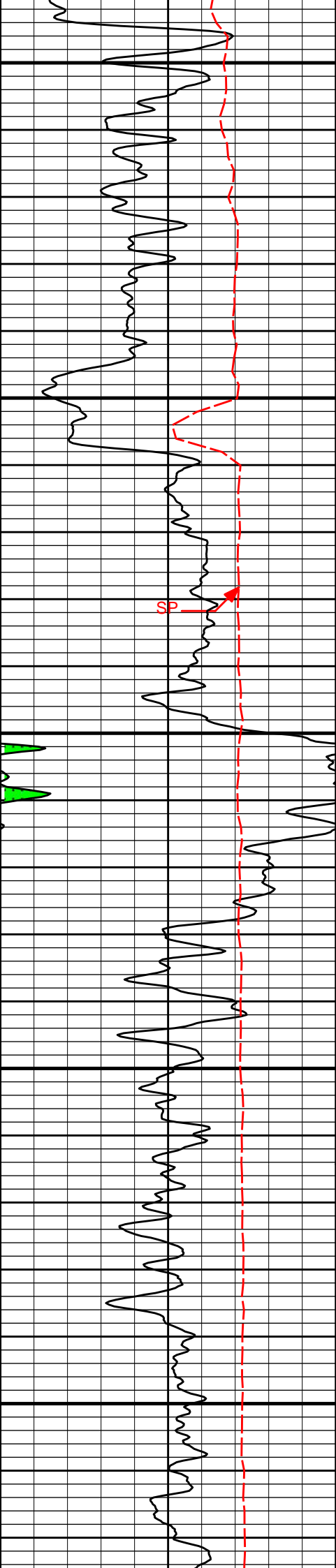
10in Resistivity 2ft Res



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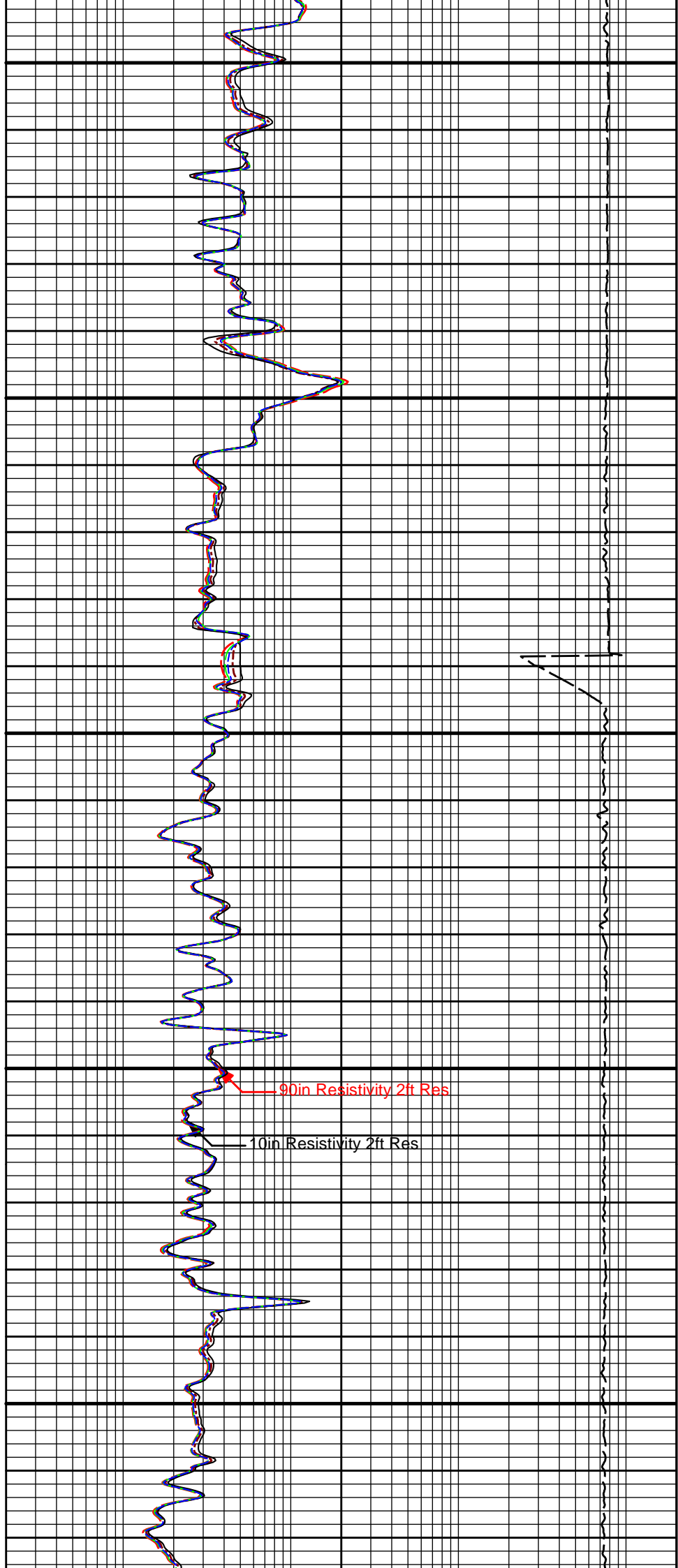
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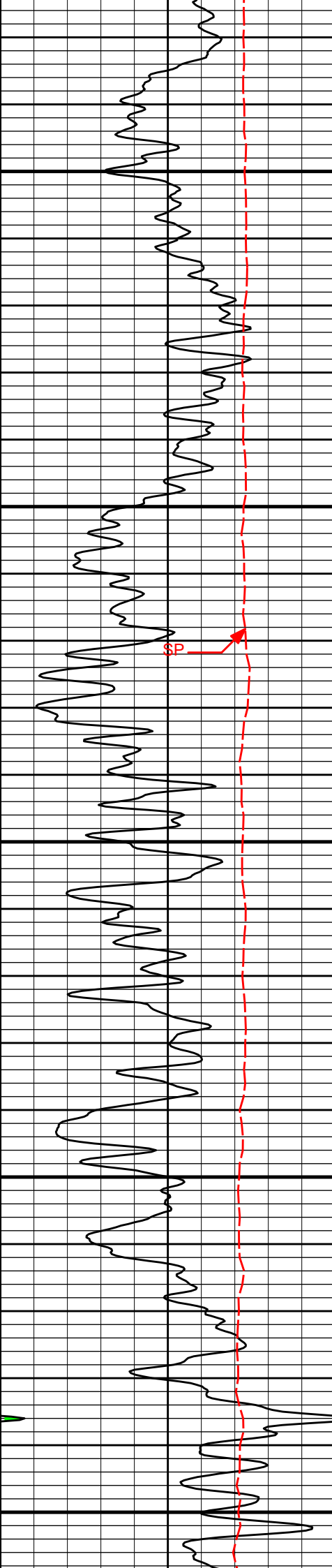




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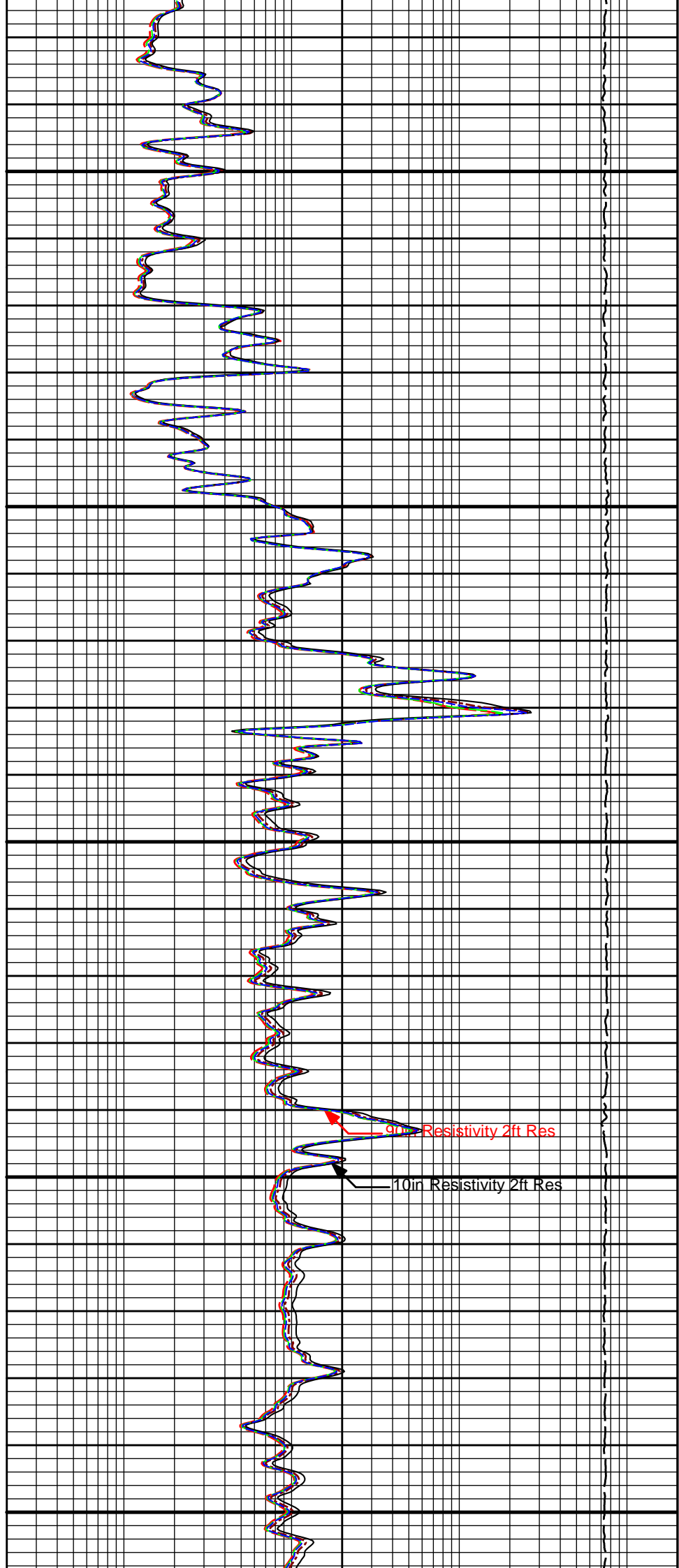


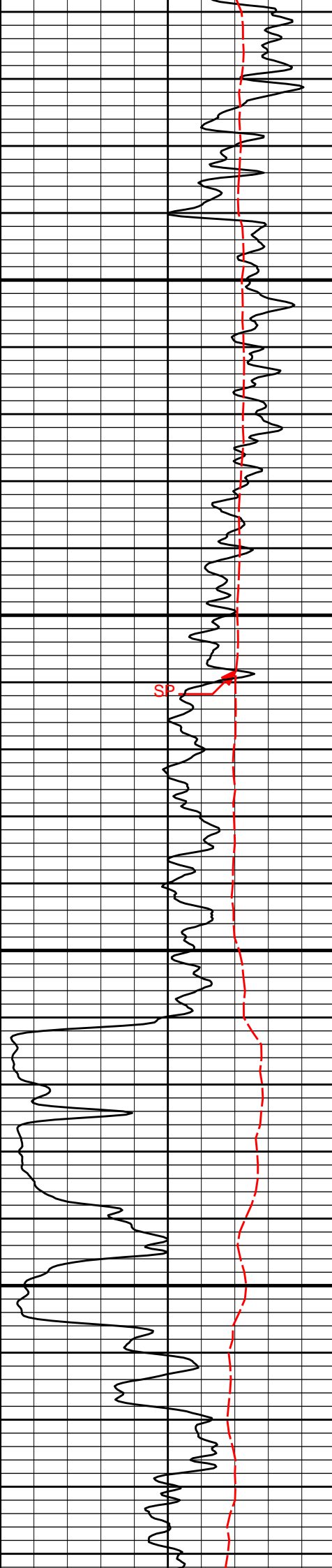


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3800

3900

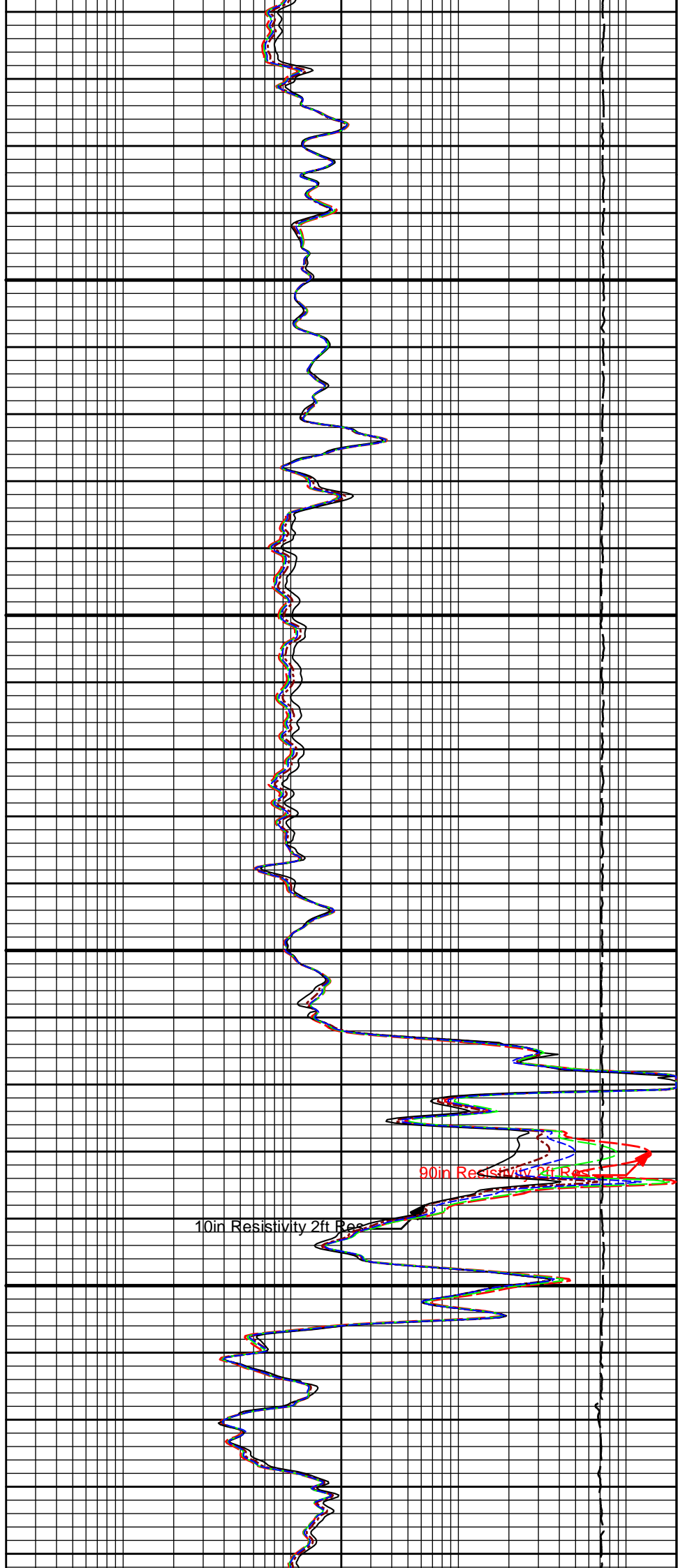




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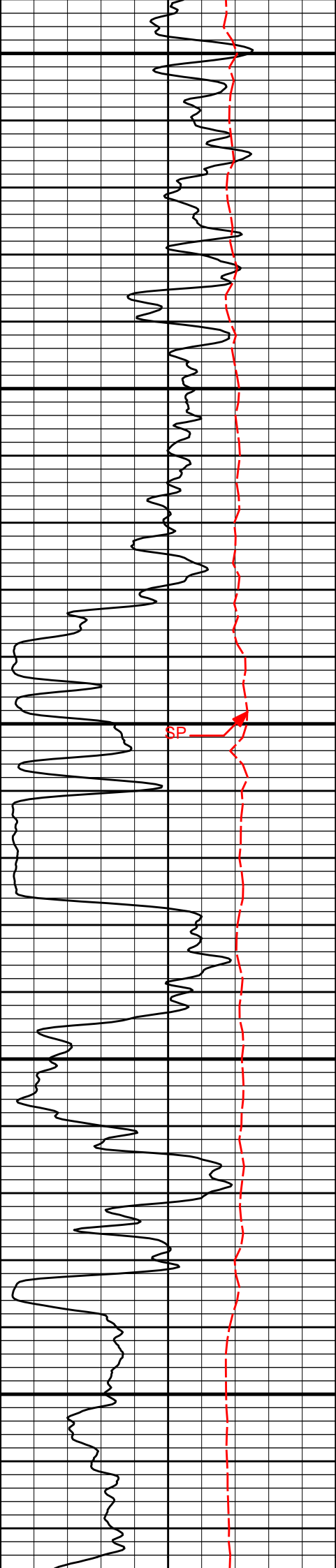
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SP



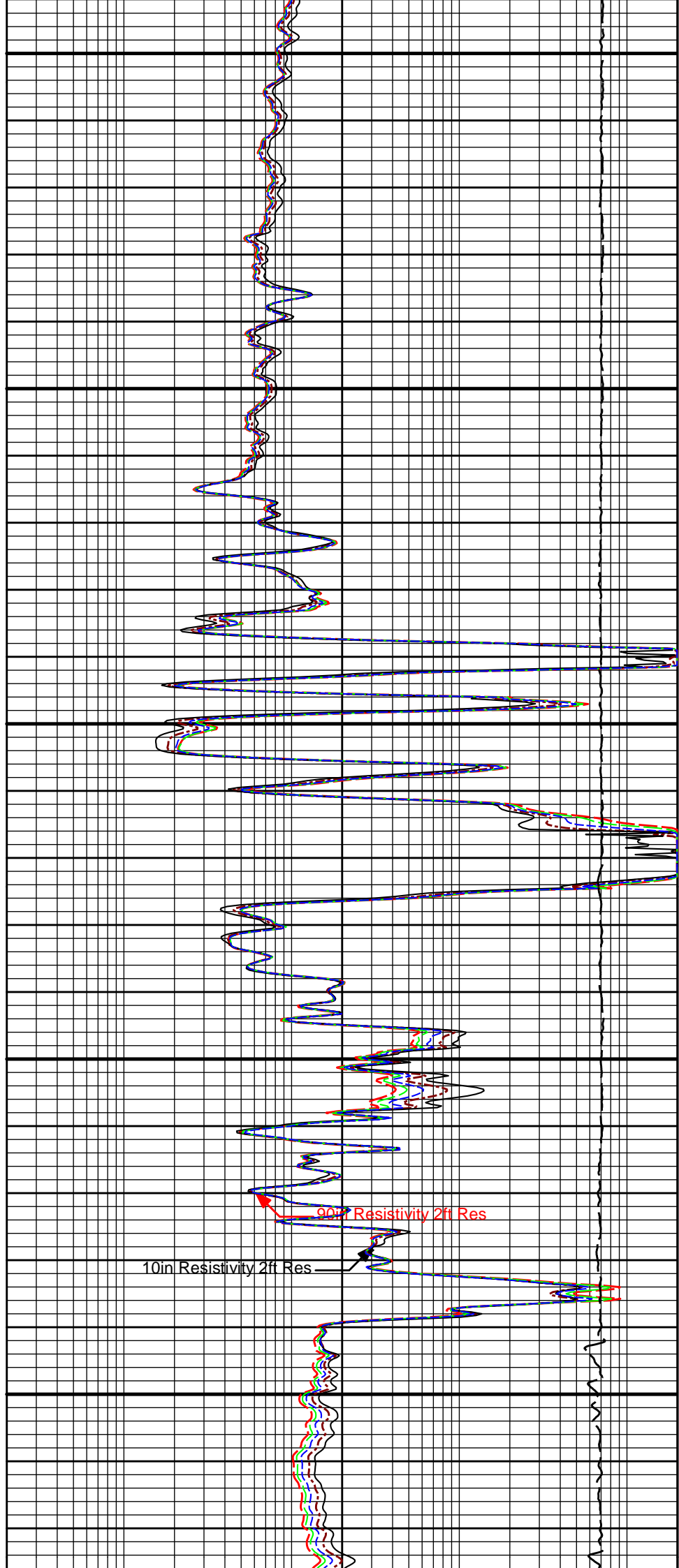
10in Resistivity 2ft Res

90in Resistivity 2ft Res

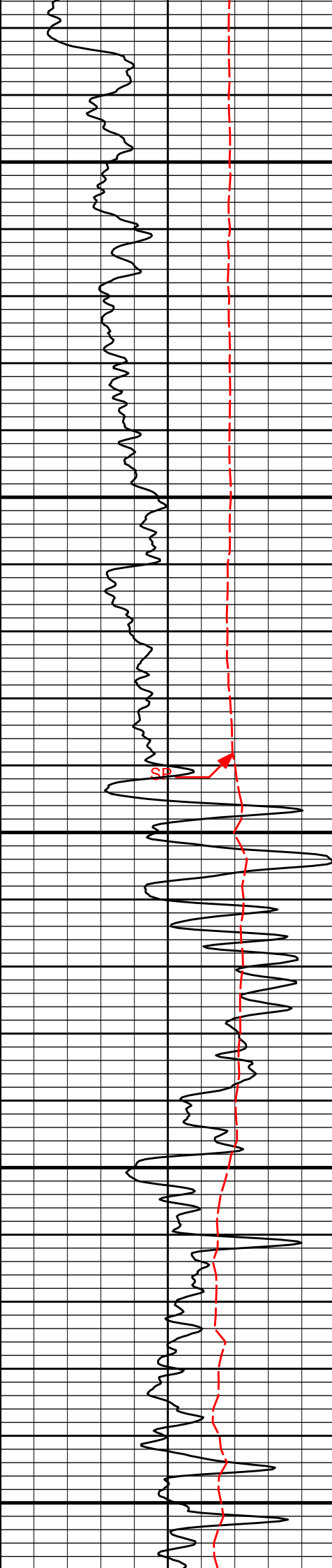


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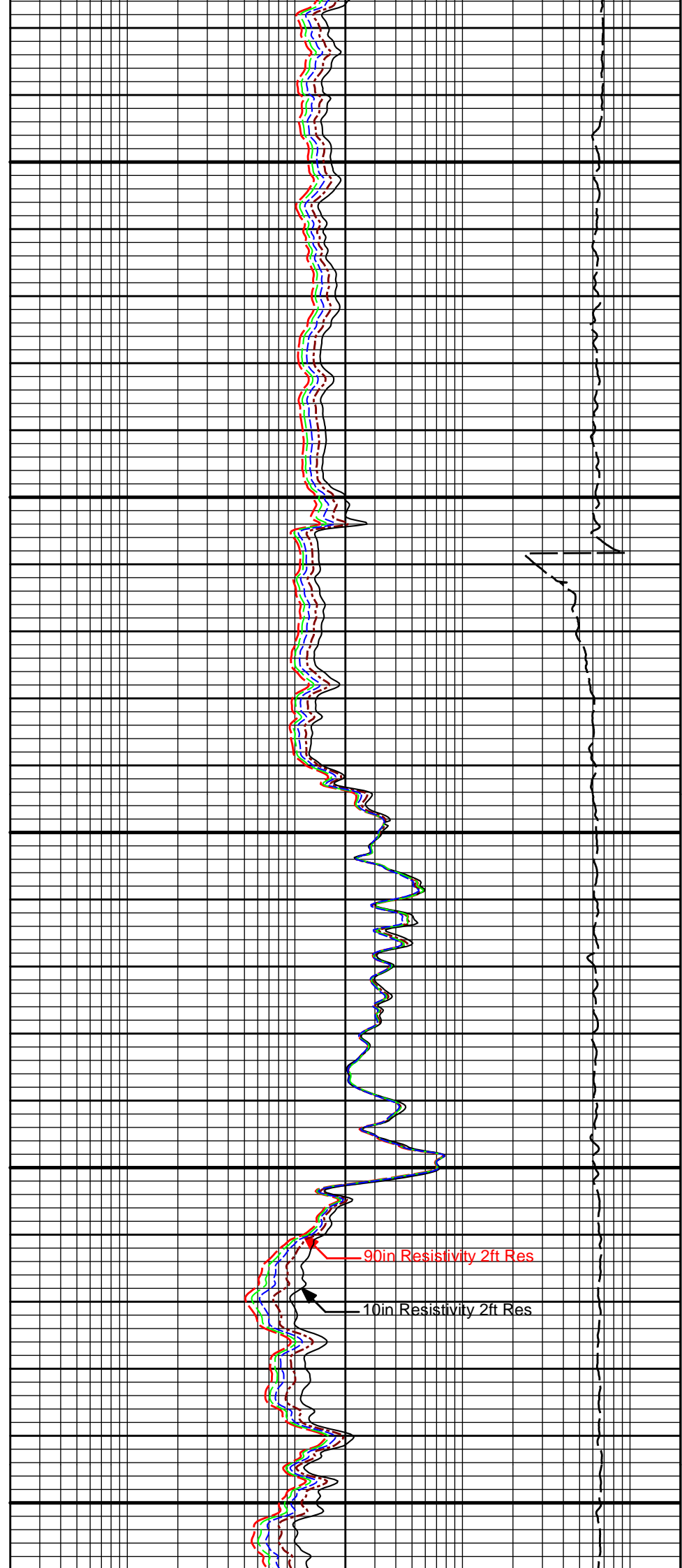




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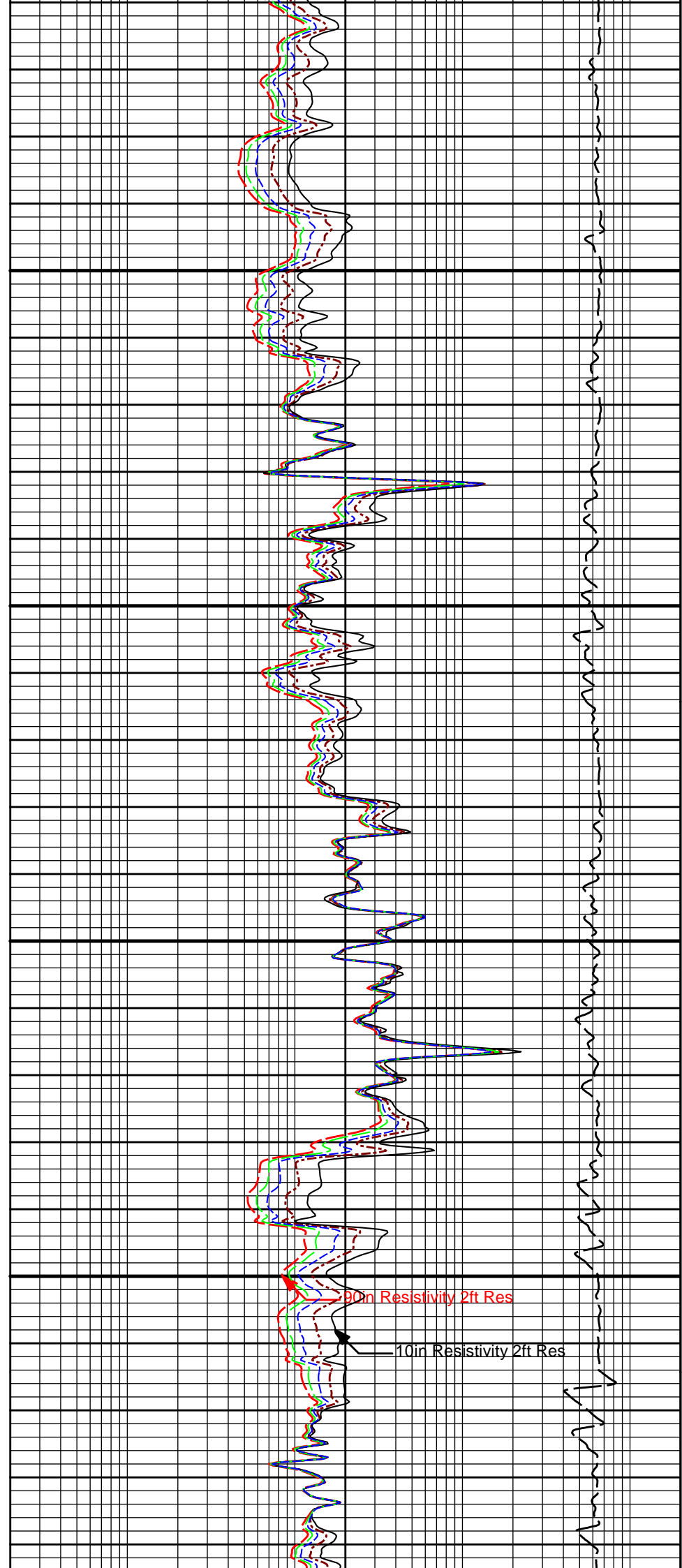
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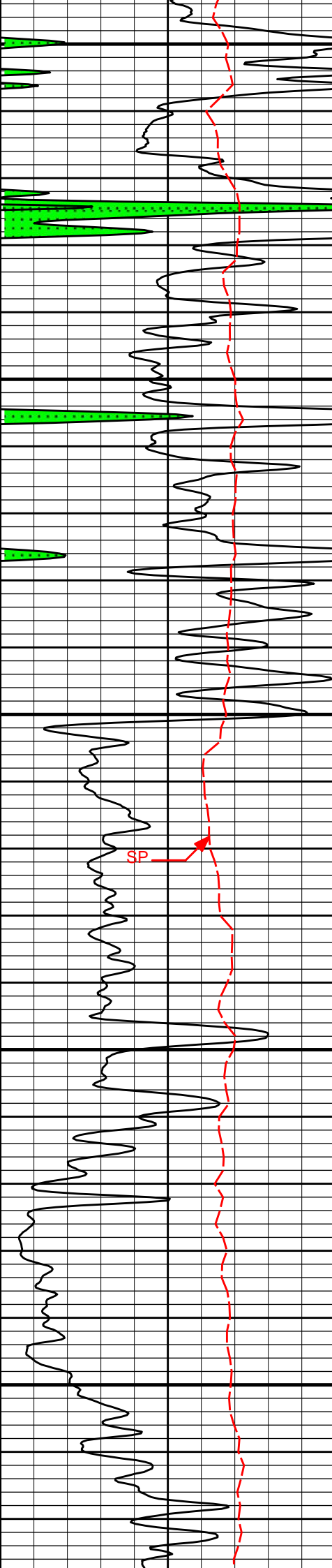




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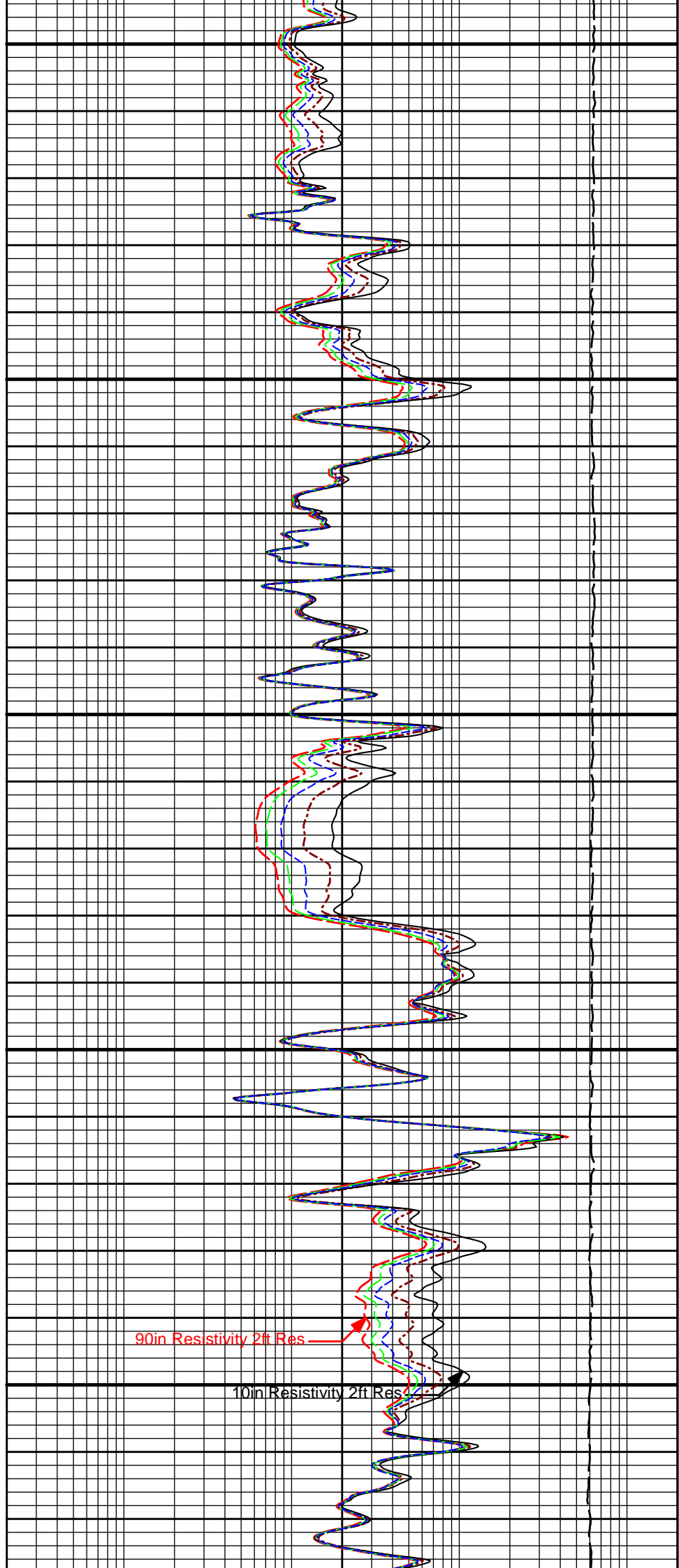
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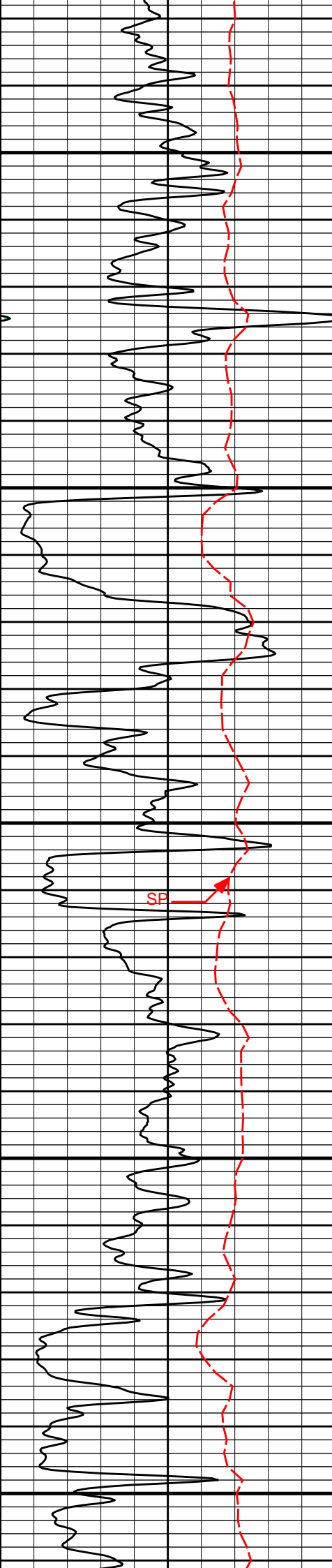
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5000



90in Resistivity 2ft Res

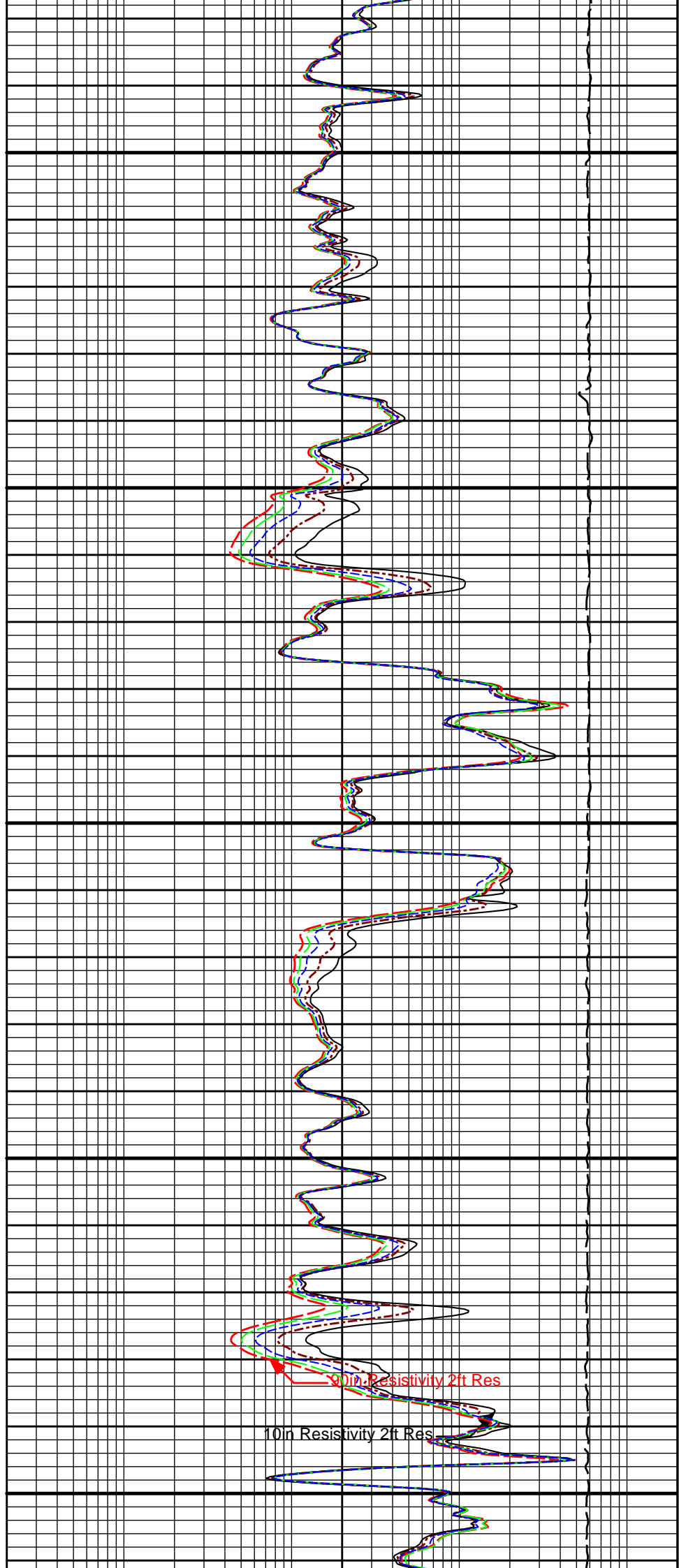
10in Resistivity 2ft Res

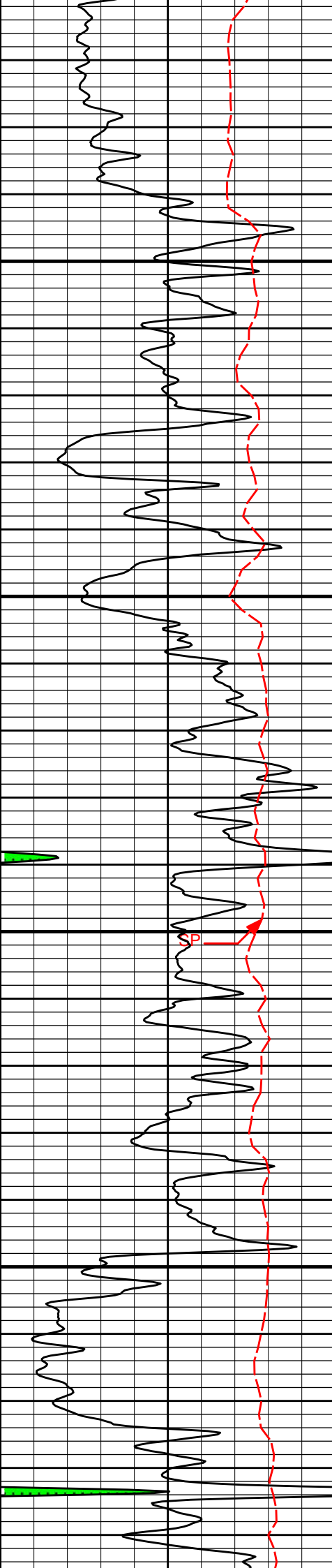


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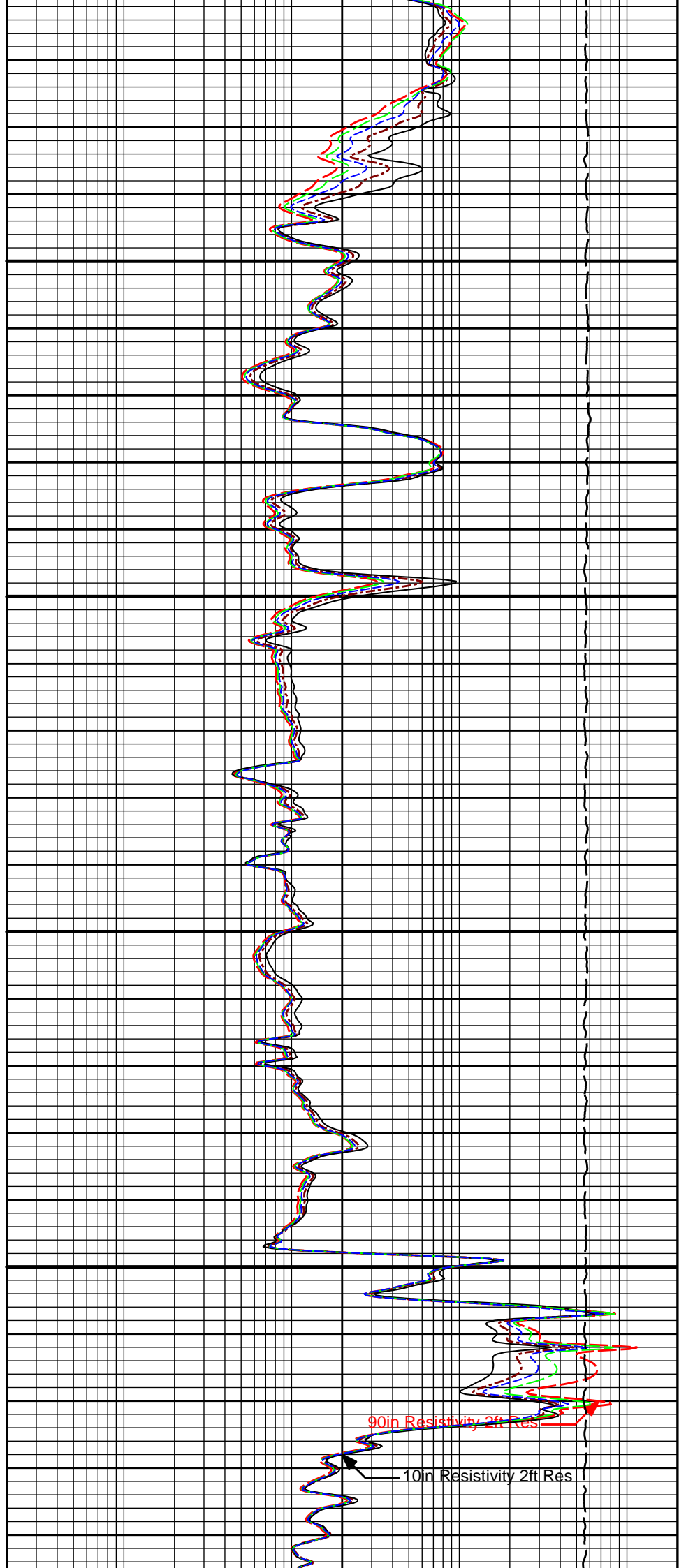
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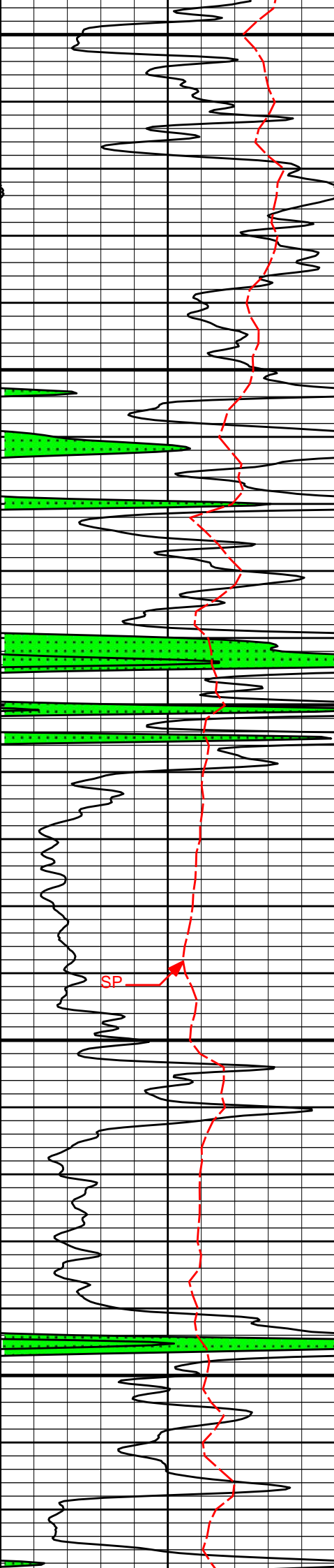




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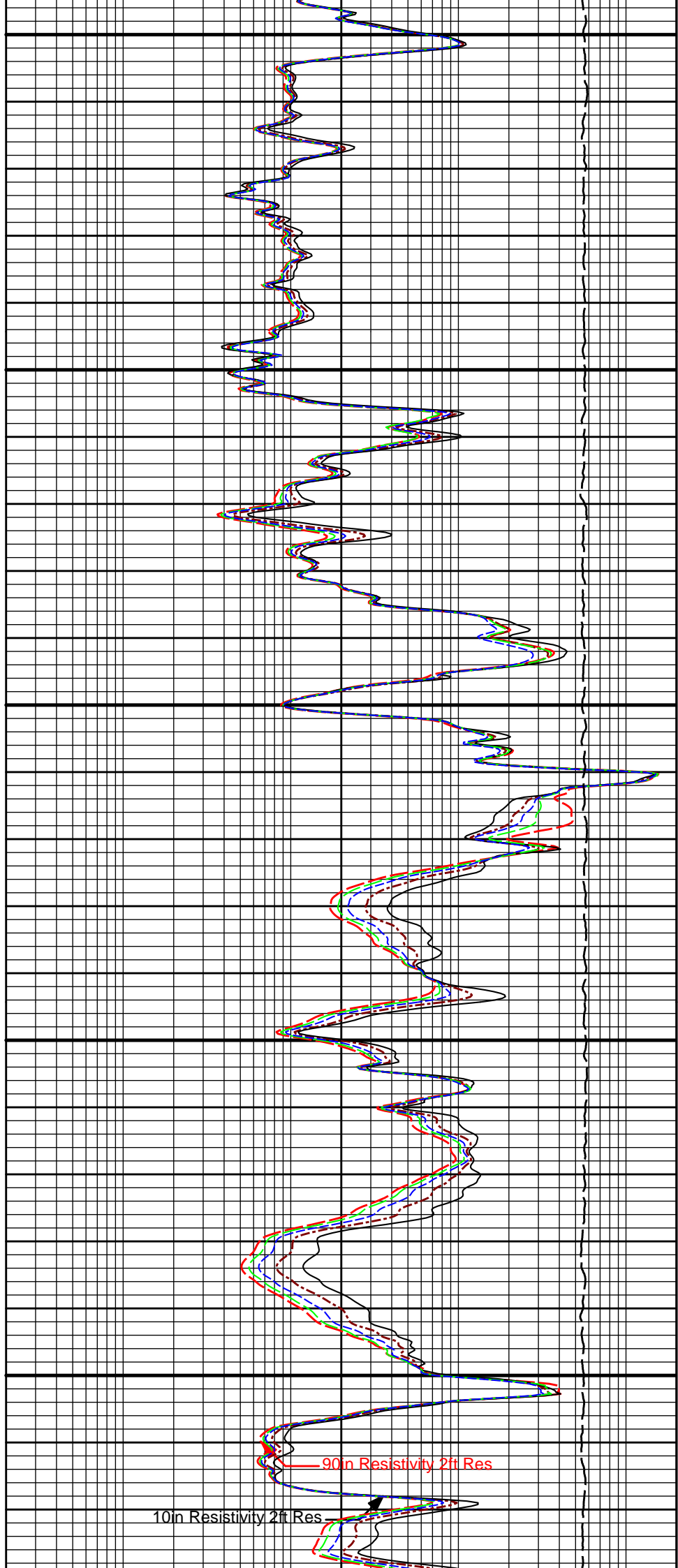
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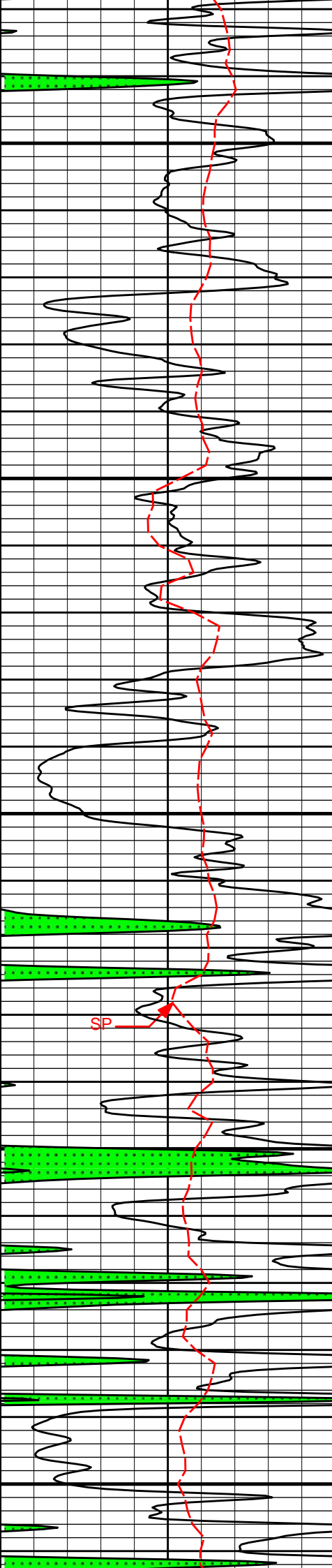




5600

5700

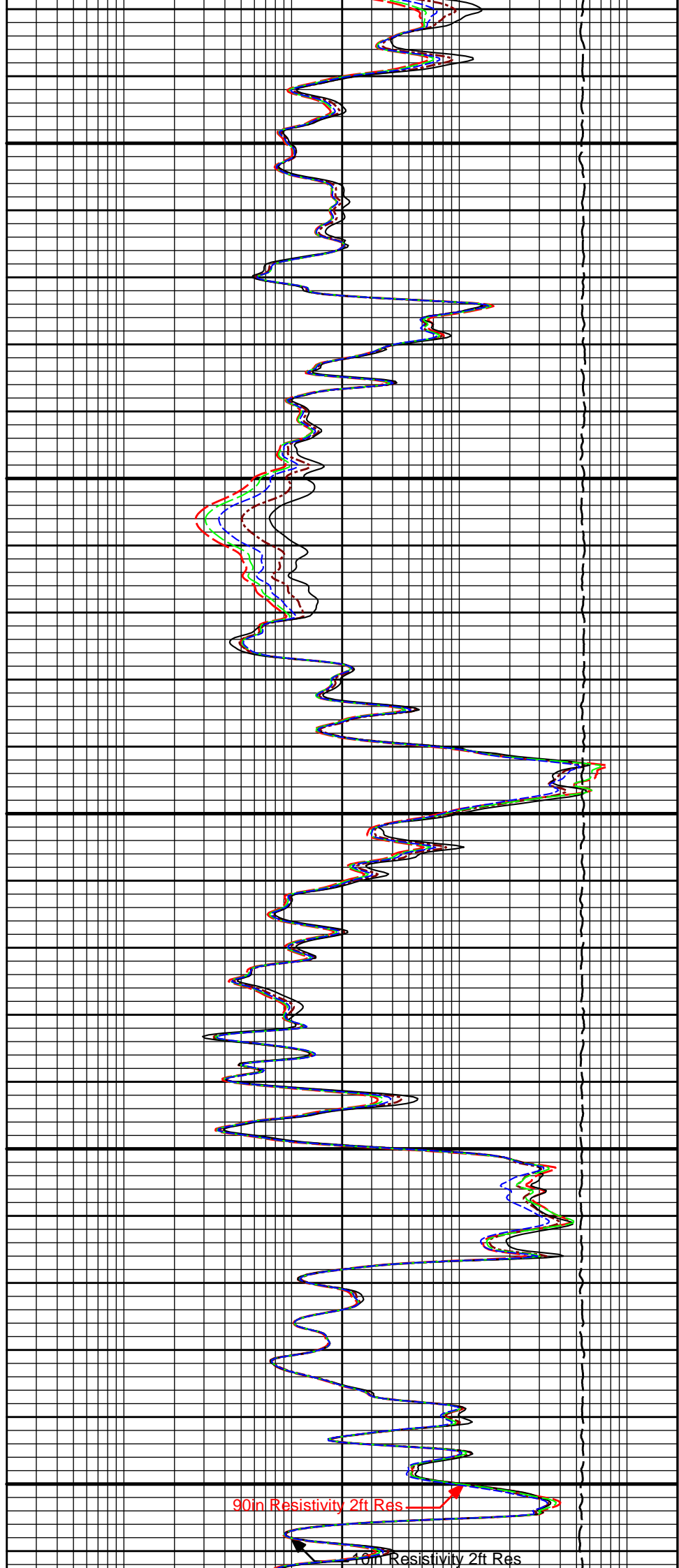




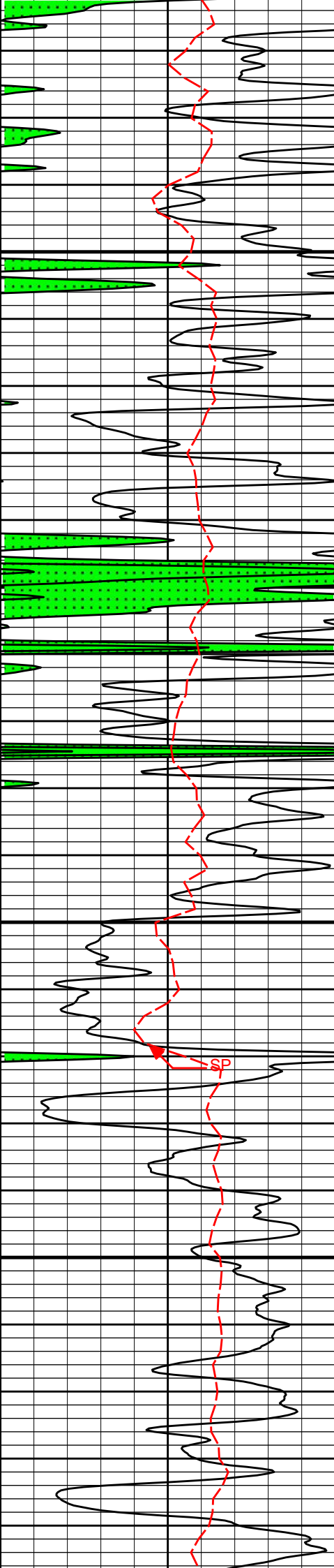
5800

5900

6000

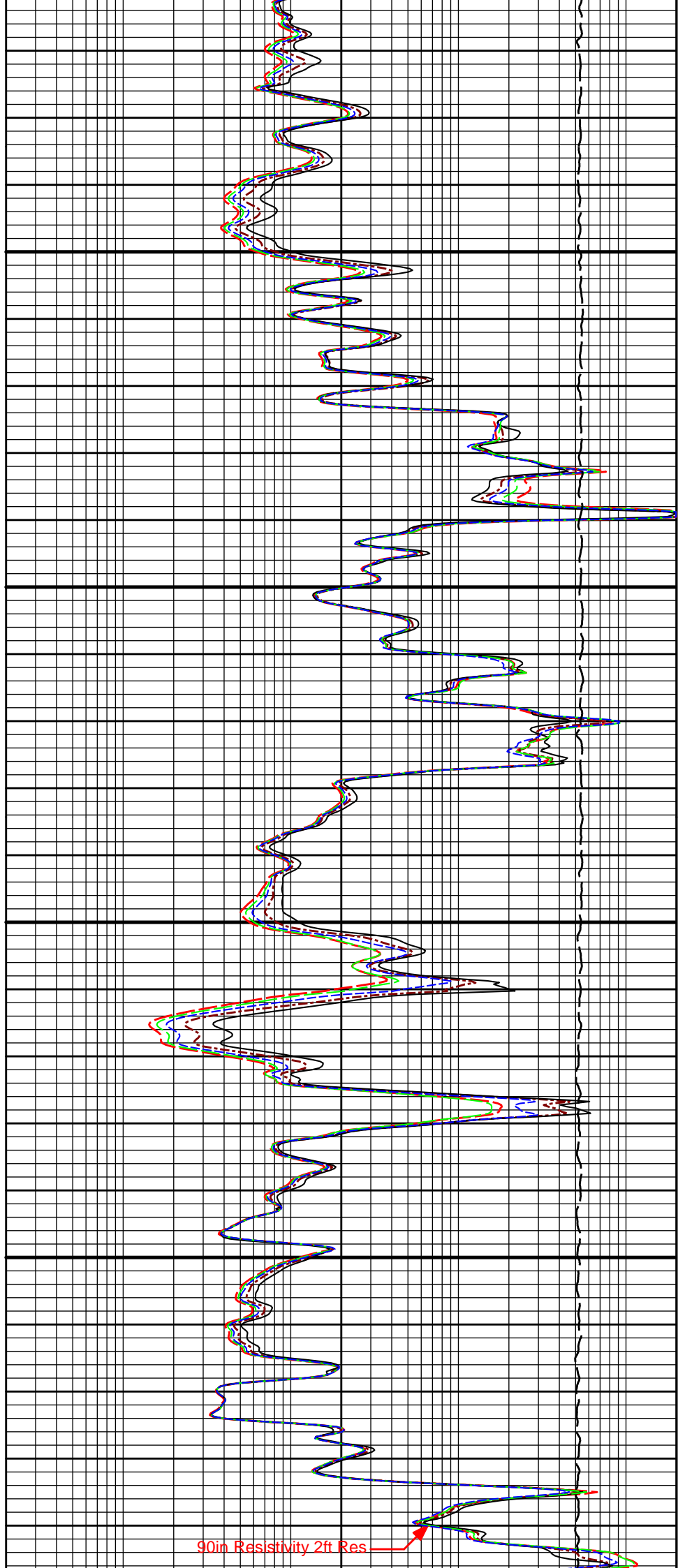






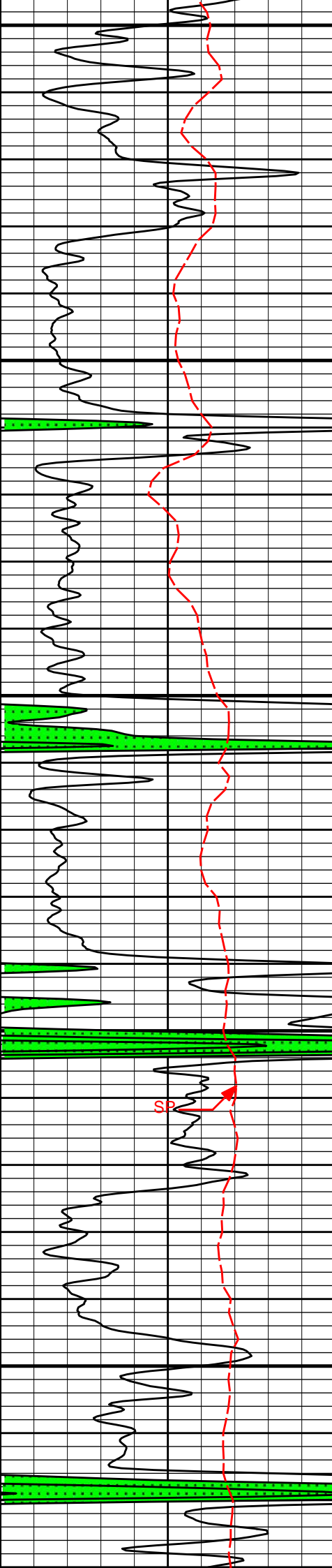
6100

6200



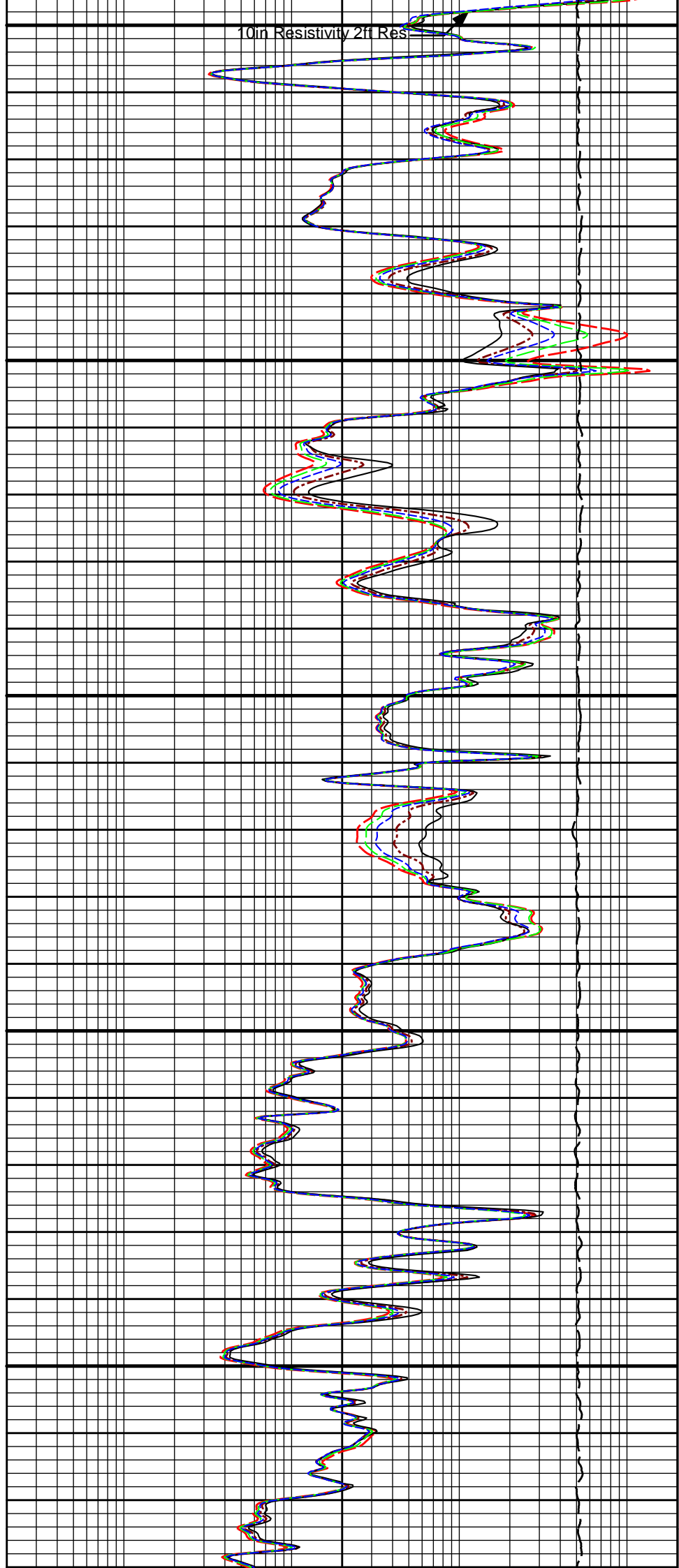
90in Resistivity 2ft Res

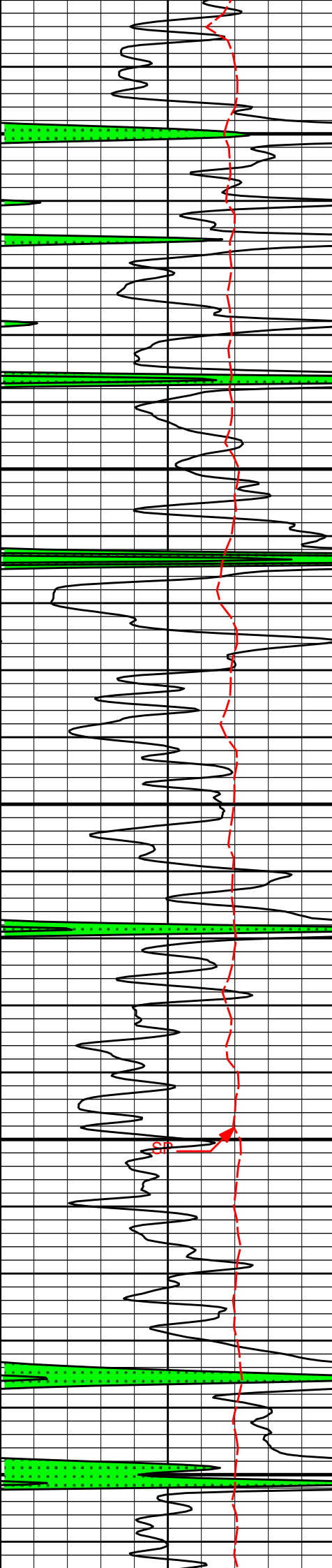




6300

6400

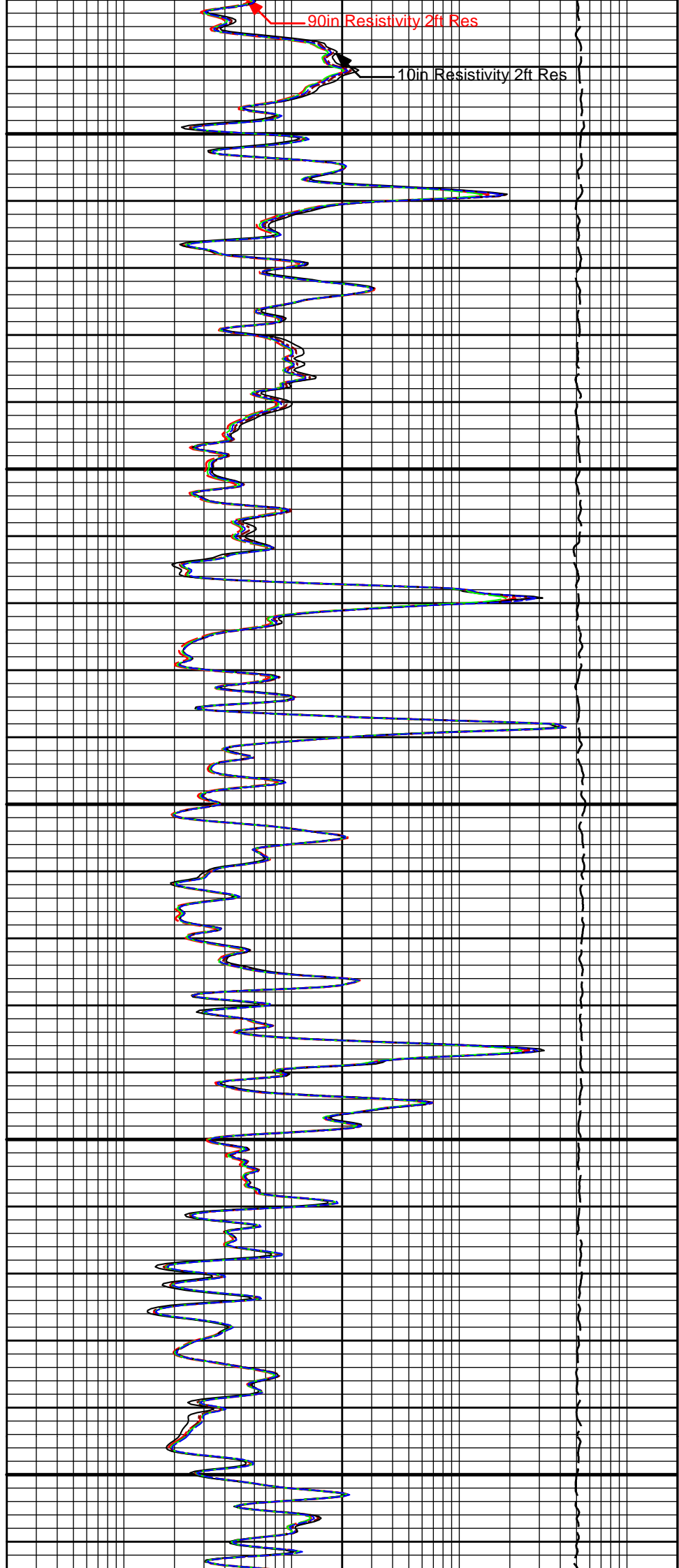




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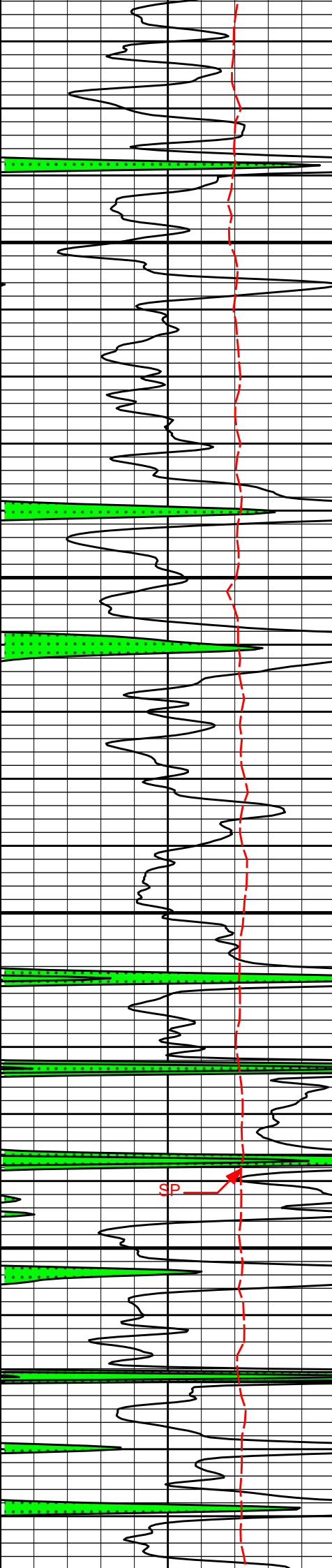
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6700



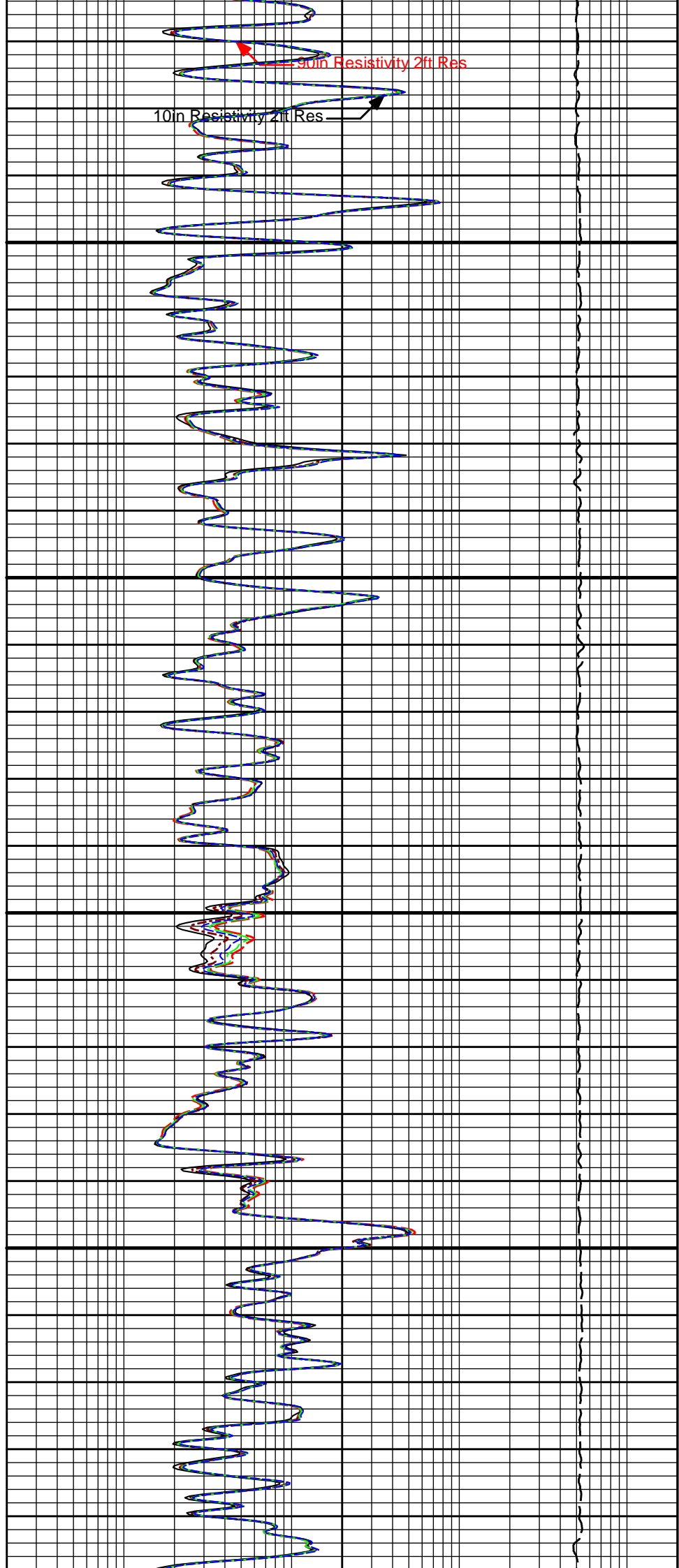
90in Resistivity 2ft Res

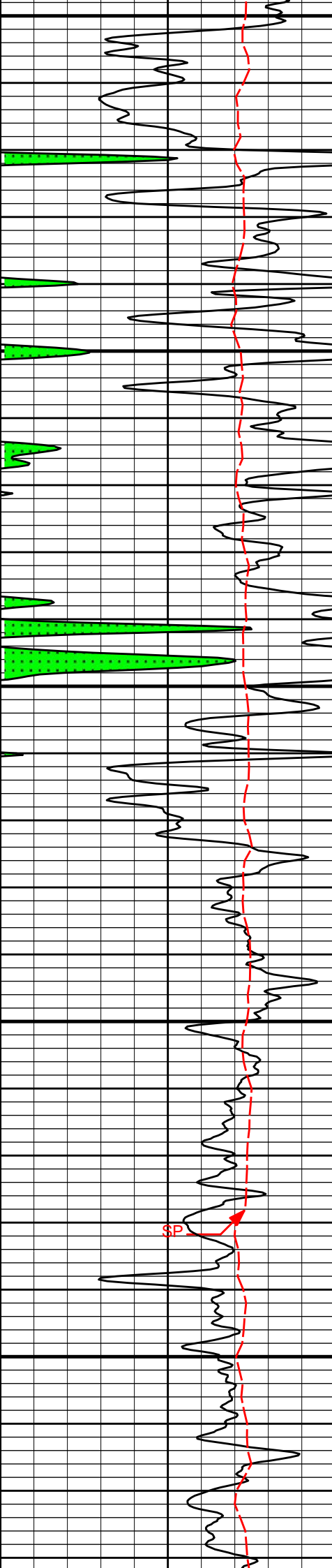
10in Resistivity 2ft Res



6800

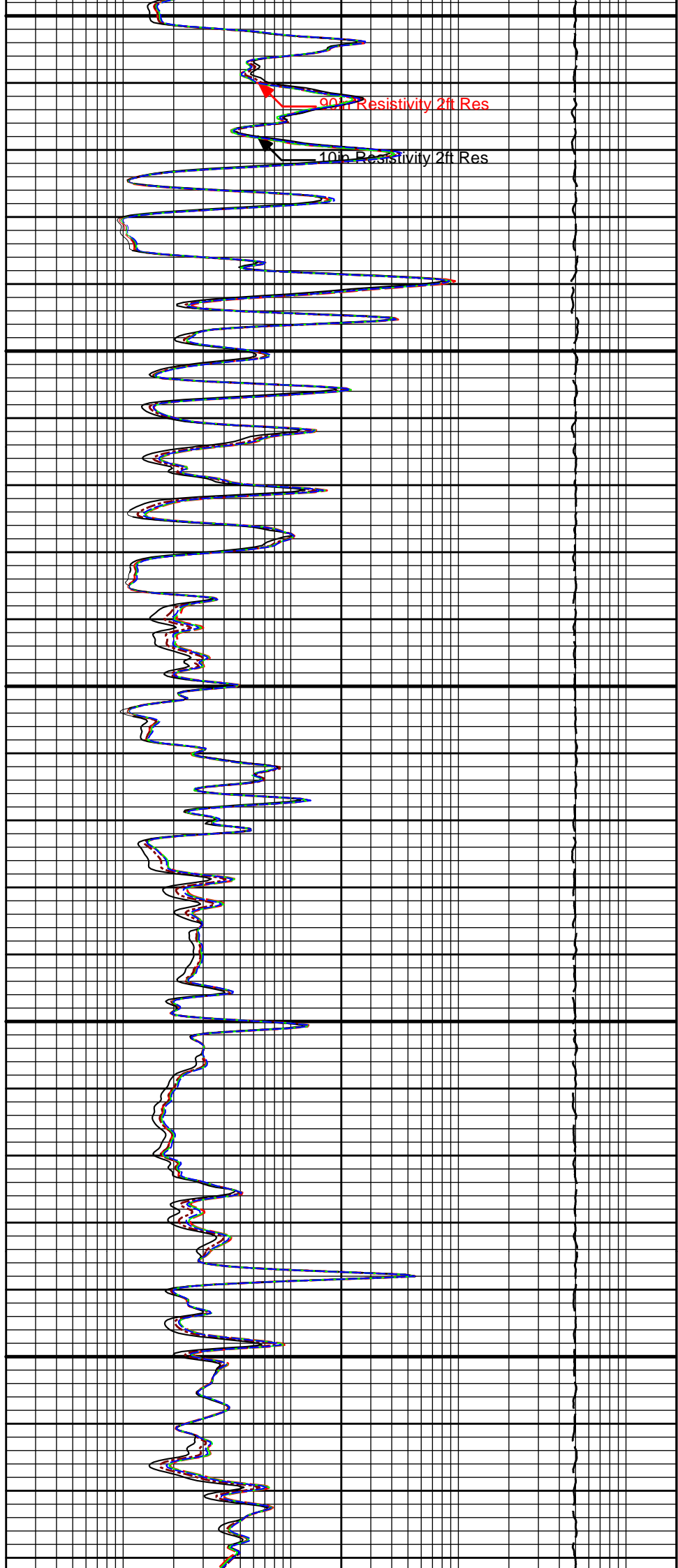
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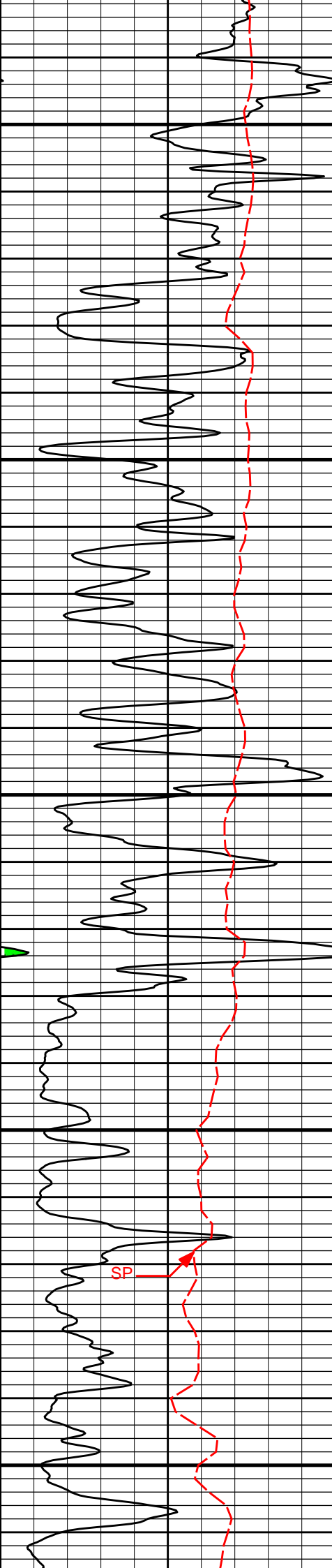




7000

7100

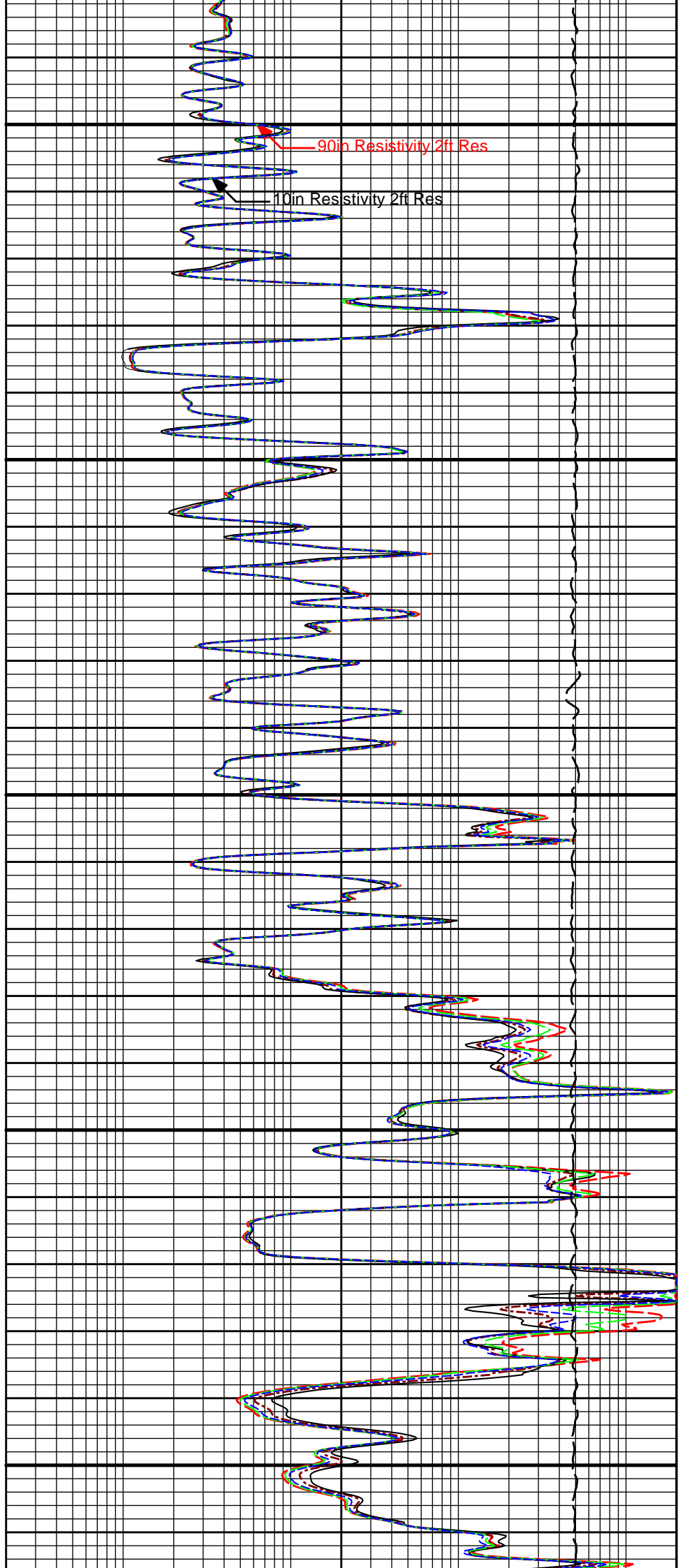


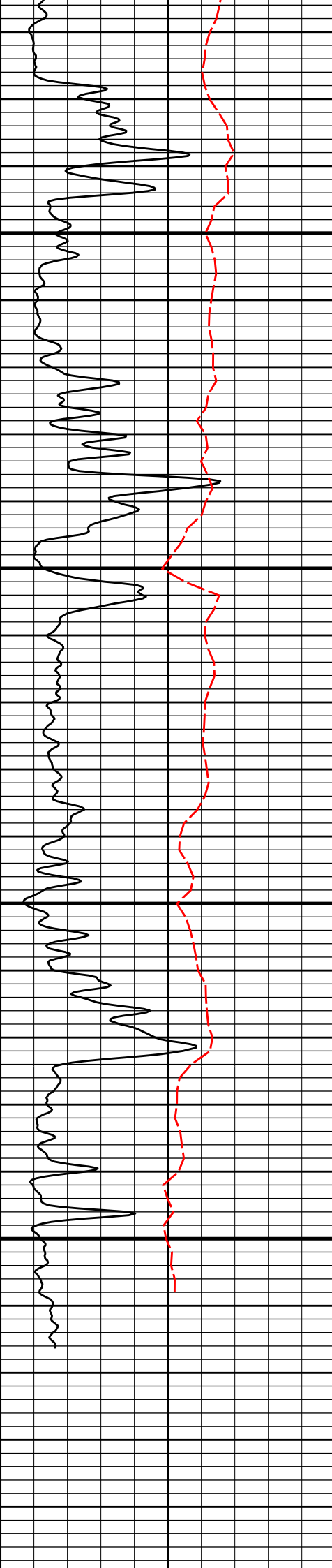


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7300

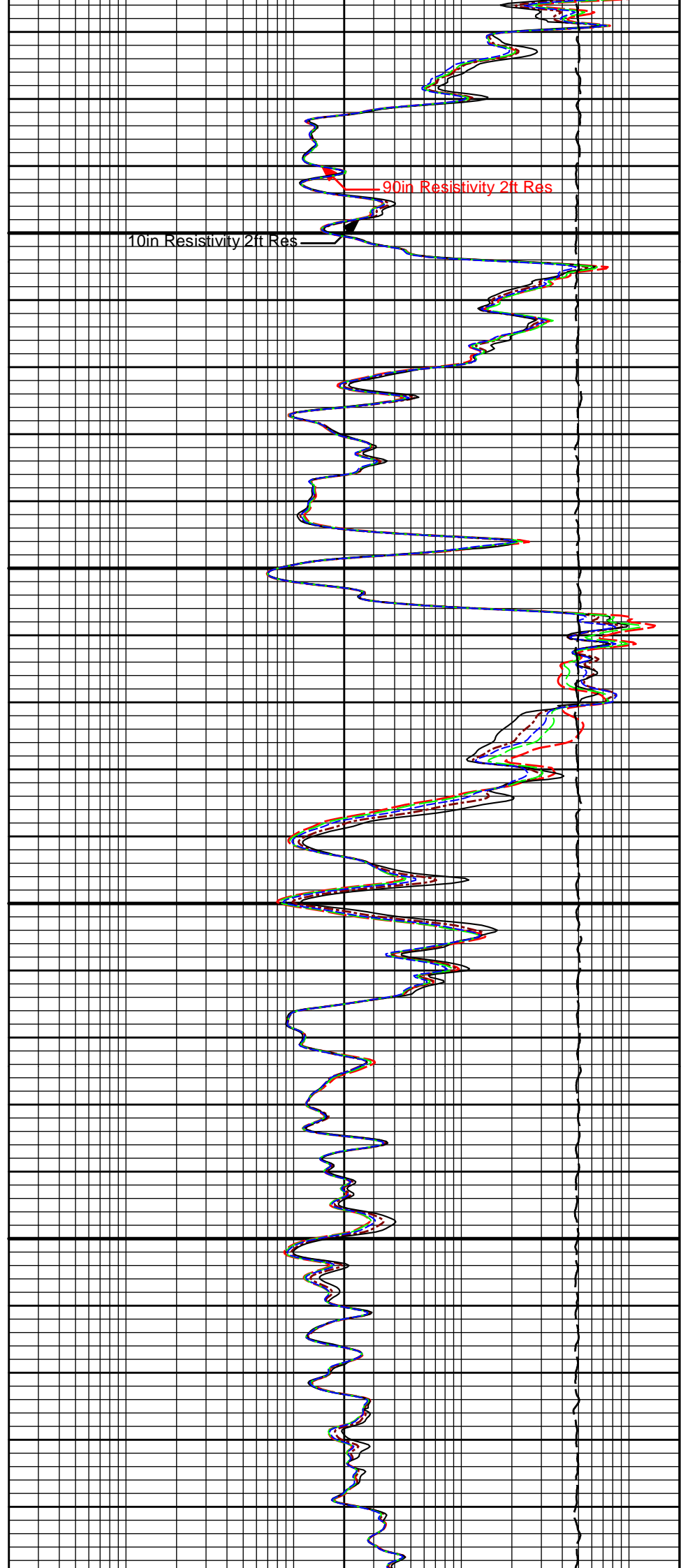
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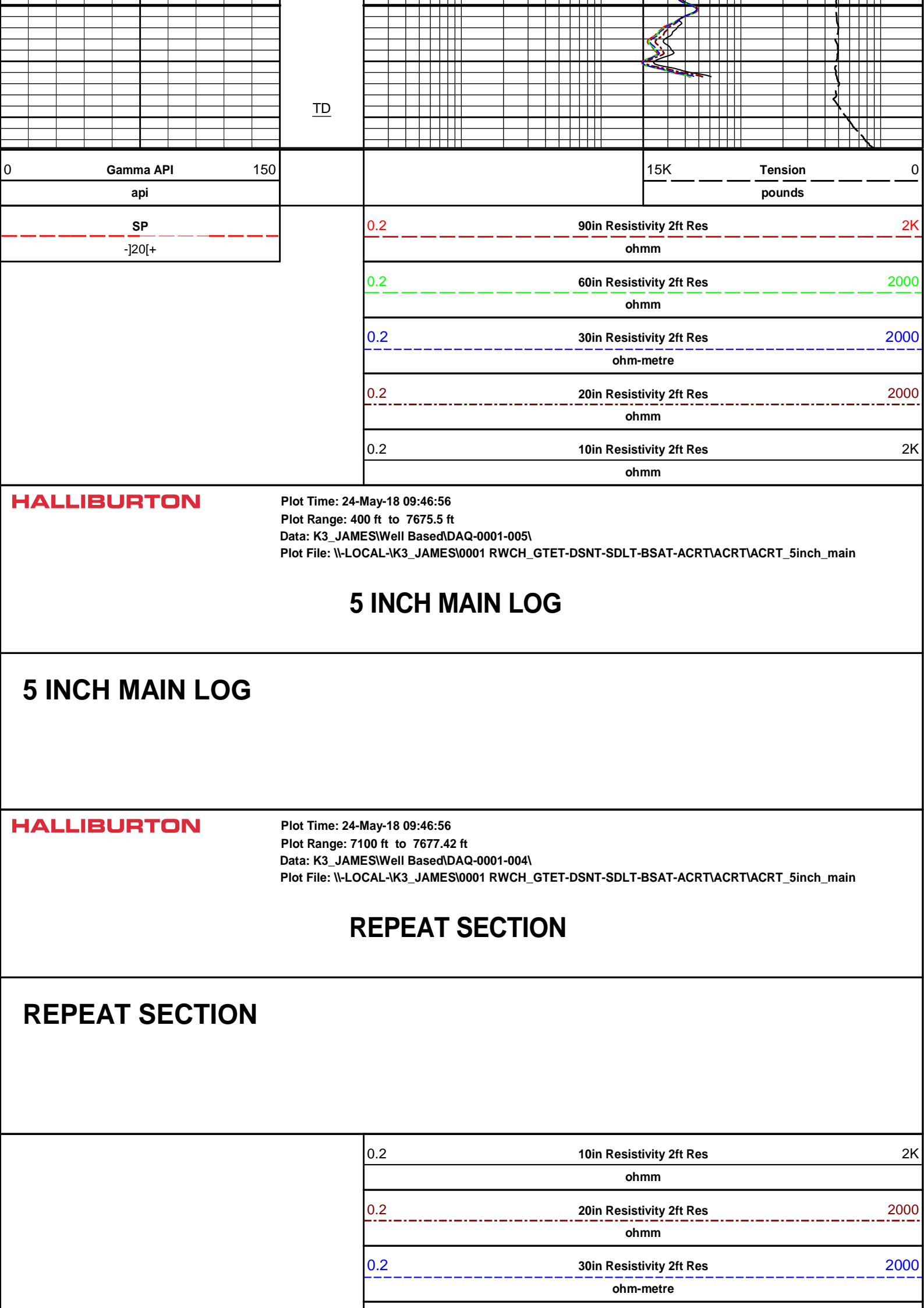


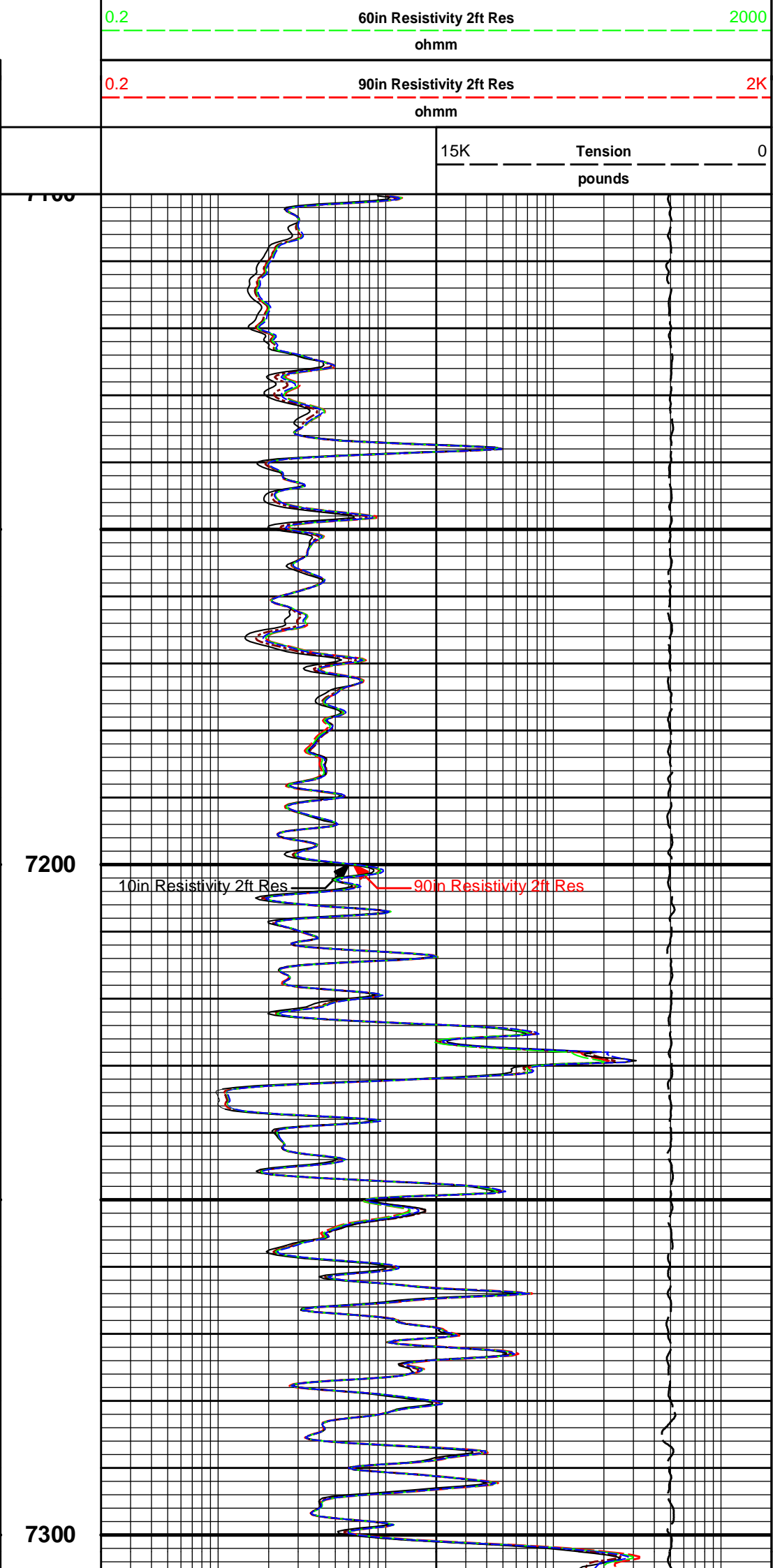
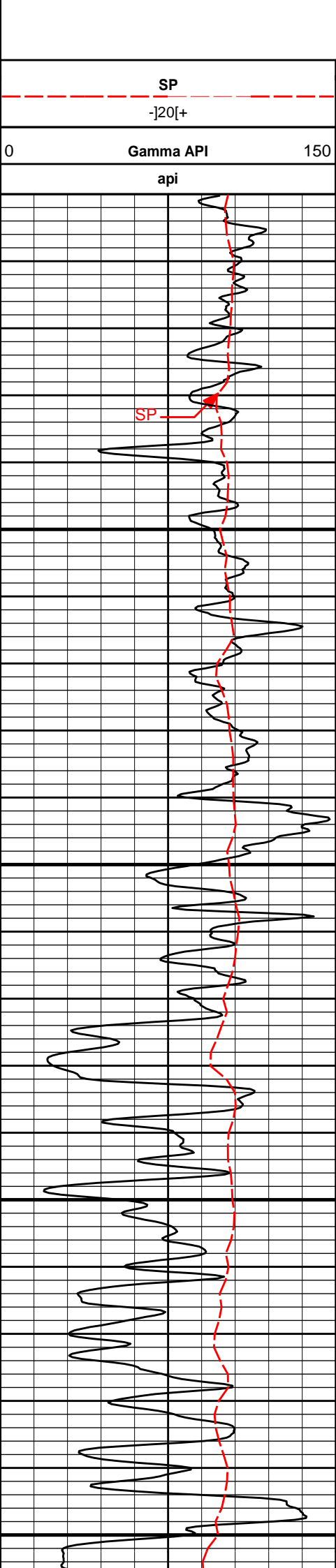


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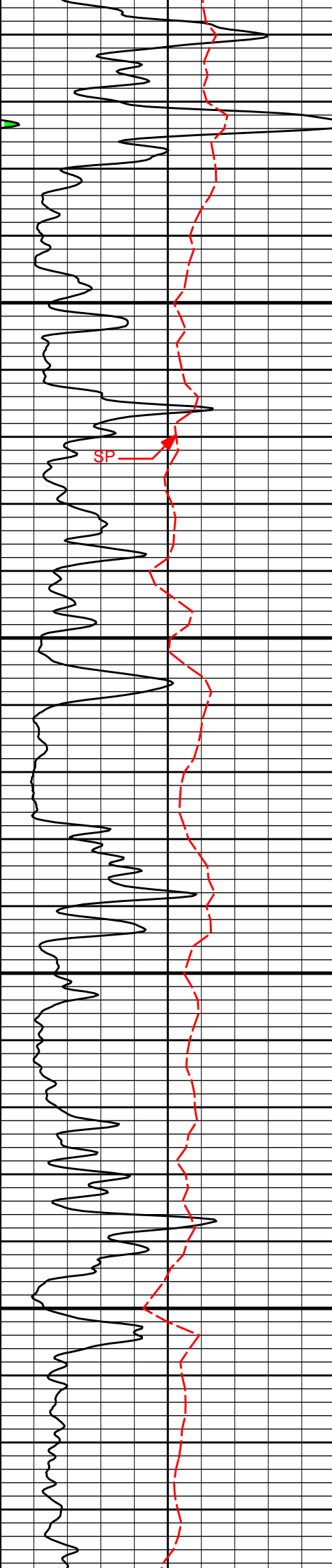
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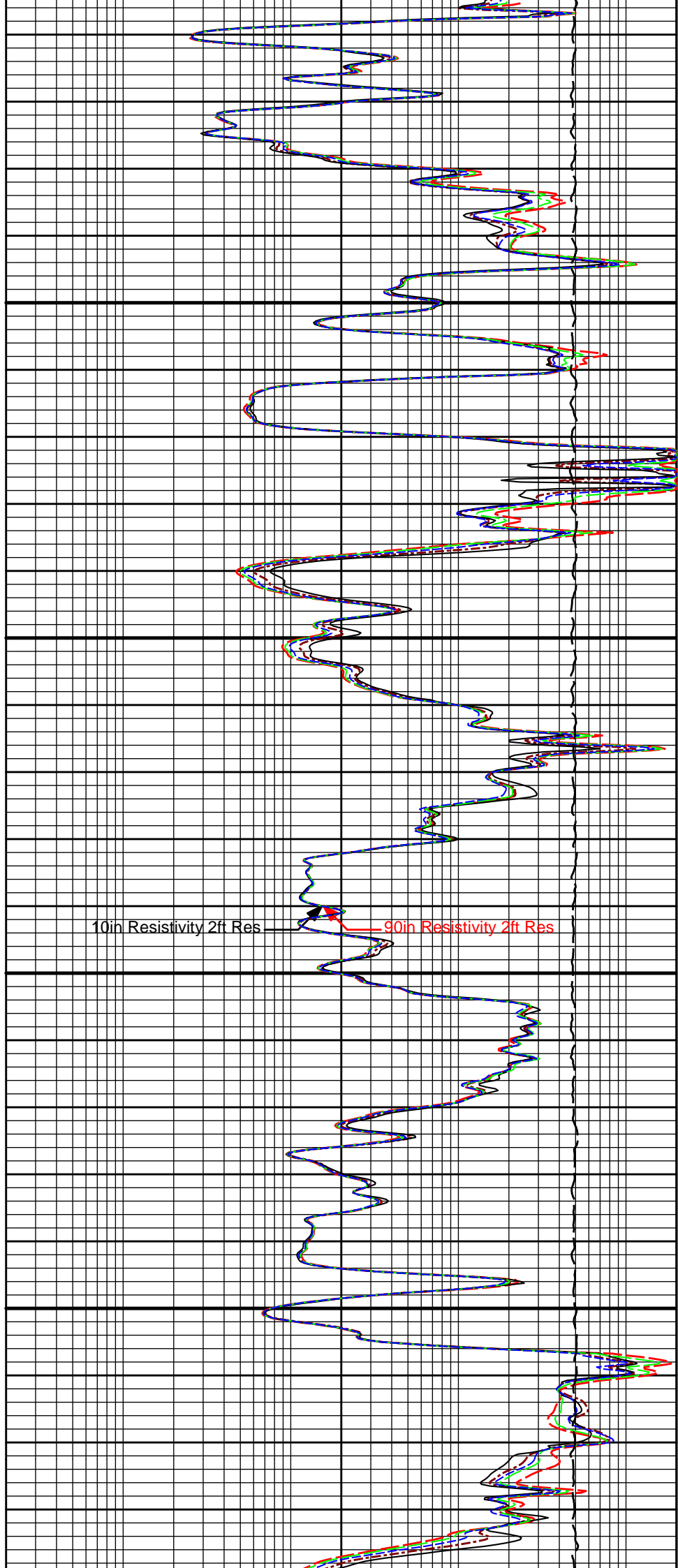


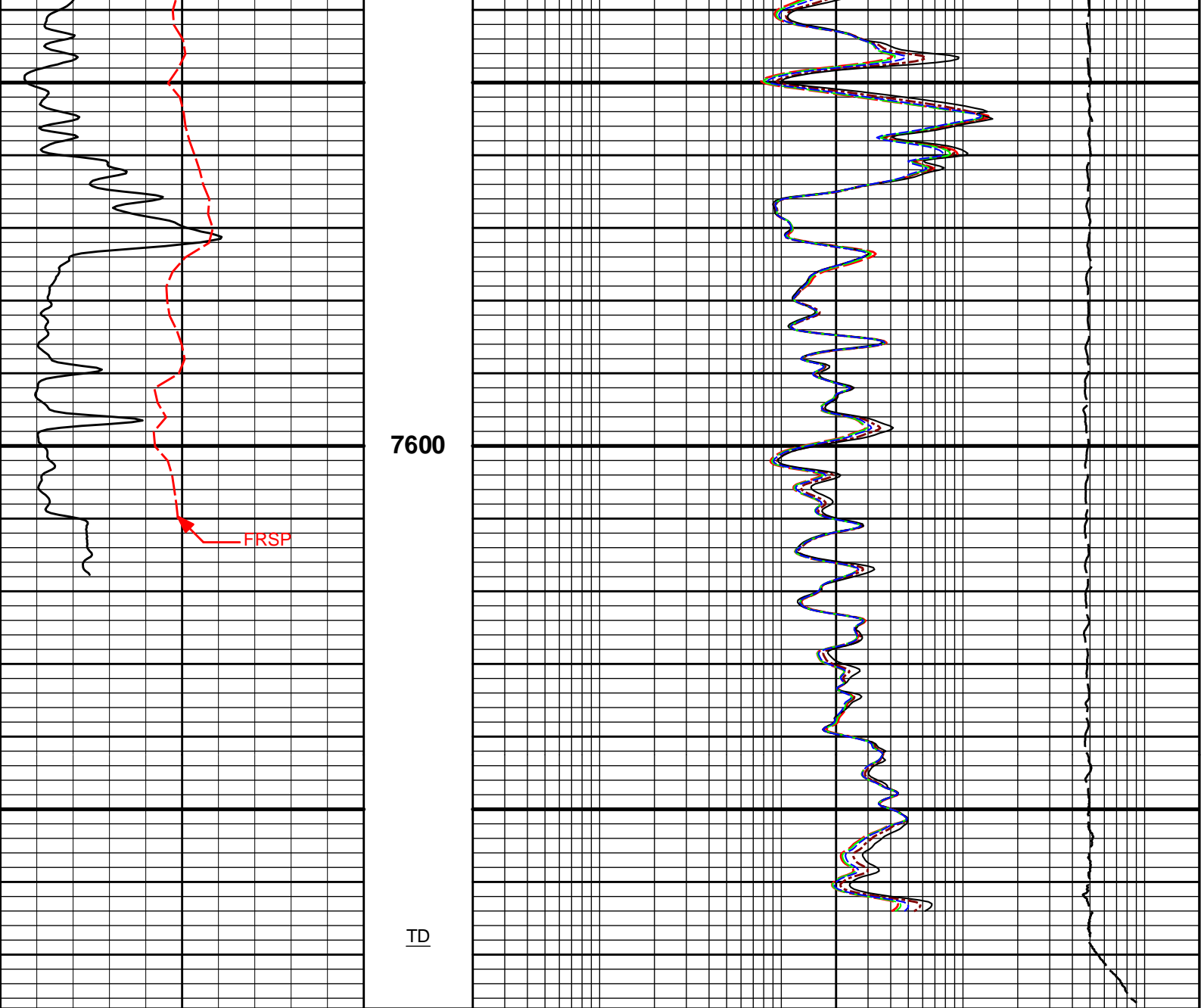




7400

7500





0	Gamma API	150		15K	Tension	0
	api				pounds	
	SP					
	-]20[+					
			0.2	90in Resistivity 2ft Res		2K
				ohmm		
			0.2	60in Resistivity 2ft Res		2000
				ohmm		
			0.2	30in Resistivity 2ft Res		2000
				ohm-metre		
			0.2	20in Resistivity 2ft Res		2000
				ohmm		
			0.2	10in Resistivity 2ft Res		2K
				ohmm		

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name: Depth Panel - 12345678

Reference Calibration Date: 15-May-18 17:45:06

Engineer: WHITLOCK

Calibration Date: 21-May-18 05:45:17

Software Version: WL INSITE R5.6.3 (Build 4)

Calibration Version: 1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10277.32	40.18	0.00	lbs
High	17587.73	7875.60	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 12345678

Reference Calibration Date: 28-Jun-15 10:00:47

Engineer: WHITLOCK

Calibration Date: 19-May-18 23:06:56

Software Version: WL INSITE R5.6.3 (Build 4)

Calibration Version: 1

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-2036.82	-131.27	0.00	lbs
High	8764.38	1007.52	3386.10	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11021139

Reference Calibration Date: 04-Apr-18 18:46:06

Engineer: WHITLOCK

Calibration Date: 01-May-18 15:06:27

Software Version: WL INSITE R5.6.3 (Build 4)

Calibration Version: 1

Calibrator Source S/N: TB-79  
Calibrator API Reference:222.00 api  
Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	24.0	24.6	api
Background + Calibrator	244.0	250.5	api
Calibrator	220.1	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11021139

Reference Calibration Date: 01-May-18 15:06:27

Engineer: WHITLOCK

Calibration Date: 18-May-18 09:25:19

Software Version: WL INSITE R5.6.3 (Build 4)

Calibration Version: 1

Calibrator Source S/N: TB-79  
Calibrator API Reference:222.00 api  
Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	24.6	24.4	api
Background + Calibrator	250.5	257.8	api
Calibrator	225.9	233.4	api

Shop	Field	Difference	Tolerance
225.9	233.4	-7.5	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11019643

Engineer: WHITLOCK

Software Version: WL INSITE R5.6.3 (Build 4)

Reference Calibration Date: 04-Apr-18 20:14:34

Calibration Date: 04-Apr-18 20:32:22

Calibration Version: 1

Logging Source S/N: DSN-436  
Tank Serial Number: EL RENO HWT  
Reference value assigned to Tank: 56.100  
Snow Block S/N: 12156883  
Calibration Tank Water Temperature: 68 degF  
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value

Gain:	1.02447	1.02018	0.900 - 1.100
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WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change

Porosity (decp):	0.2371	0.2358	0.0013	+/- 0.0020
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Calibrated Ratio:	10.6040	10.5595	0.044	+/- 0.050
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VERIFIER		
Measurement	Value	Control Limit

Snow-Block Porosity (decp):	0.0652	0.02000 - 0.09000
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PASS/FAIL SUMMARY	
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Background Check:	Passed
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Gain-Range Check:	Passed
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Snow-Block Check:	Passed
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DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11019643

Engineer: WHITLOCK

Software Version: WL INSITE R5.6.3 (Build 4)

Reference Calibration Date: 04-Apr-18 20:32:22

Calibration Date: 18-May-18 09:37:11

Calibration Version: 1

Logging Source S/N: DSN-436  
Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change

Snow-Block Porosity (decp):	0.0652	0.0776	0.0124	+/- 0.0150
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PASS/FAIL SUMMARY	
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Block Change Check:	Passed
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Snow Block Stat Check:	Passed
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Temperature Check:	Passed
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DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 12153526

Engineer: WHITLOCK

Software Version: WL INSITE R5.6.3 (Build 4)

Host Tool Name: DSNT - 11019643

Reference Calibration Date: 01-Jan-70 00:00:00

Calibration Date: 22-Apr-18 13:23:29

Calibration Version: 1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value

Pad Offset	-3193.91	-3193.91	-7000.00 - -1000.00
Pad Gain	0.0003882	0.0003882	0.0002000 - 0.0006000
Arm Offset	-1699.11	-1699.11	-5000.00 - 3000.00
Arm Gain	0.0005132	0.0005132	0.000300 - 0.000700
Arm Power	-0.000004611	-0.000004611	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed
PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name:	SDLT - 12153526	Reference Calibration Date:	22-Apr-18 13:23:29
Engineer:	WHITLOCK	Calibration Date:	18-May-18 08:13:34
Software Version:	WL INSITE R5.6.3 (Build 4)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.75	0.00	+/- 0.10
Ring Diameter	8.25	8.25	0.00	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

BSAT FIELD CASING CHECK

Tool Name:	BSAT - 10939049	Calibration Date:	30-Mar-17 10:01:32
Engineer:	HARRIS		
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1

Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
Delta-T Compensated	147.01	57.00	56.56	0.4400	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	ACRt Sonde - 11038385	Reference Calibration Date:	12-Sep-17 13:58:19
Engineer:	JORGE ORLANDO PEREZ	Calibration Date:	26-Mar-18 10:21:56
Software Version:	WL INSITE R5.6.3 (Build 4)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 11055059		

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0500	1.05	0.95	1.0229	1.05	0.95	1.0048	1.05
A2 (50")	0.95	1.0500	1.05	0.95	1.0261	1.05	0.95	1.0131	1.05

A3 (29")	0.95	1.0472	1.05	0.95	1.0179	1.05	0.95	1.0025	1.05
A4 (17")	0.95	1.0401	1.05	0.95	1.0093	1.05	0.95	0.9956	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0012	1.05	0.95	0.9839	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9883	1.05	0.95	0.9739	1.05
SONDE OFFSET									
Subarray	R12KHz			R36KHz			R72KHz		
(mmho/m)			(mmho/m)			(mmho/m)			
A1 (80")	1.490			-4.736			-6.418		
A2 (50")	-0.183			-4.133			-5.504		
A3 (29")	-12.250			-3.671			-3.367		
A4 (17")	-109.670			-32.737			-24.656		
A5 (10")	N/A			-82.133			-35.124		
A6 (6")	N/A			347.353			195.364		
TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION				
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)	
12K	0.6	0.86	1.3		Mud Cell	0.95	1.00	1.05	
36K	1.0	1.34	2.0						
72K	1.0	1.61	2.0						
PASS/FAIL SUMMARY									
GAIN RANGE CHK					PASS				
SONDE OFFSET CHK					PASS				
TOOL OK TO LOG									

QUALITY CHECK SHOP CALIBRATION			
Tool Name:	ACRt Sonde - 11038385	Reference Calibration Date:	12-Sep-17 14:00:57
Engineer:	WHITLOCK	Calibration Date:	15-Dec-17 10:50:30
Software Version:	WL INSITE R5.6.3 (Build 4)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 11055059		

STANDARD DEVIATIONS									
	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
AVERAGES									
	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.007	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.005	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.003	> -0.500	Pass
A4 (17")	-0.003	> -0.500	Pass	-0.008	> -0.500	Pass	-0.024	> -0.500	Pass
A5 (10")	-0.011	> -0.500	Pass	-0.018	> -0.500	Pass	-0.034	> -0.500	Pass
A6 (6")	0.016	< 0.500	Pass	0.078	< 0.500	Pass	0.183	< 0.500	Pass

GAIN TOLERANCE					
R12KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-220721488.000	-223155904.000	2434416.000	11157795.200	Pass
A2 (50")	-218488224.000	-220713888.000	2225664.000	11035694.400	Pass
A3 (29")	-214911568.000	-216614880.000	1703312.000	10830744.000	Pass
A4 (17")	-211434368.000	-214578320.000	3143952.000	10728916.000	Pass
A5 (10")	-211949376.000	-214986432.000	3037056.000	10749321.600	Pass
A6 (6")	-213895760.000	-214394544.000	498784.000	10719727.200	Pass
R36KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	59105928.000	60628184.000	1522256.000	3031409.200	Pass
A2 (50")	60252356.000	62049960.000	1797604.000	3102498.000	Pass
A3 (29")	52147940.000	53214172.000	1066232.000	2660708.600	Pass
A4 (17")	48569380.000	50561756.000	1992376.000	2528087.800	Pass
A5 (10")	50672468.000	52600244.000	1927776.000	2630012.200	Pass
A6 (6")	49458680.000	50656572.000	1197892.000	2532828.600	Pass
R72KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92108696.000	-92698504.000	589808.000	4634925.200	Pass
A2 (50")	-89118672.000	-89662344.000	543672.000	4483117.200	Pass
A3 (29")	-88812376.000	-89109216.000	296840.000	4455460.800	Pass
A4 (17")	-83501792.000	-84842648.000	1340856.000	4242132.400	Pass
A5 (10")	-82094160.000	-83337800.000	1243640.000	4166890.000	Pass
A6 (6")	-84269728.000	-84561904.000	292176.000	4228095.200	Pass
PASS/FAIL SUMMARY					
Std Deviation Verification				Pass	
Average Verification				Pass	
Gain Tolerance Verification				Pass	

MICRO LOG SHOP CALIBRATION			
Tool Name:	Microlog Pad - 12153526	Reference Calibration Date:	01-May-18 15:03:00
Engineer:	WHITLOCK	Calibration Date:	01-May-18 15:06:12
Software Version:	WL INSITE R5.6.3 (Build 4)	Calibration Version:	1
Host Tool Name:	DSNT - 11019643		

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.06	-0.06	0.00	-0.00	ohmm
Calibration Point #1	0.00	0.00	0.00	0.00	ohmm
Calibration Point #2	20.02	20.00	20.02	20.00	ohmm
Internal Reference	19.92	19.91	19.99	19.97	ohmm
Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
Tool Zero	3.81		1.61		V
Calibration Point #1	20.59		1.69		V
Calibration Point #2	5315.12		6955.08		V
Internal Reference	5290.49		6946.14		V

MICRO LOG FIELD CHECK			
Tool Name:	Microlog Pad - 12153526	Reference Calibration Date:	01-May-18 15:06:12

Engineer: WHITLOCK			Calibration Date: 18-May-18 09:22:07		
Software Version: WL INSITE R5.6.3 (Build 4)			Calibration Version: 1		
	Measurement	Micro Log Normal		Micro Log Lateral	
		Shop	Field	Shop	Field
					Units
	Tool Zero	-0.06	-0.08	-0.00	-0.00
	Internal Reference	19.91	19.89	19.97	19.95
					ohmm
					ohmm
	Summary				
	Signal	Shop	Field	Difference	Tolerance
	Microlog Normal	19.91	19.89	0.02	+/- 0.80
	Microlog Lateral	19.97	19.95	0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION					
Tool Name: SDLT Pad - 10865881			Reference Calibration Date: 31-Mar-18 12:17:01		
Engineer: MICHAEL RICHTER			Calibration Date: 31-Mar-18 12:34:56		
Software Version: WL INSITE R5.6.3 (Build 4)			Calibration Version: 1		

Logging Source S/N: 5155GW					
Aluminum Block S/N: EL RENO			Density: 2.581g/cc		Pe: 3.170
Magnesium Block S/N: EL RENO			Density: 1.687g/cc		Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0004	1.0422	0.90 - 1.10
Near Dens Gain	0.9786	0.9976	0.90 - 1.10
Near Peak Gain	0.9873	1.0060	0.90 - 1.10
Near Lith Gain	1.0231	1.0469	0.90 - 1.10
Far Bar Gain	1.0042	1.0067	0.90 - 1.10
Far Dens Gain	0.9904	0.9957	0.90 - 1.10
Far Peak Gain	0.9886	0.9924	0.90 - 1.10
Far Lith Gain	0.9669	0.9738	0.90 - 1.10
Near Bar Offset	0.4379	0.0618	NONE
Near Dens Offset	0.5880	0.4209	NONE
Near Peak Offset	0.5244	0.3712	NONE
Near Lith Offset	0.2356	0.0435	NONE
Far Bar Offset	0.2451	0.2219	NONE
Far Dens Offset	0.3471	0.2970	NONE
Far Peak Offset	0.3507	0.3169	NONE
Far Lith Offset	0.4844	0.4310	NONE
Near Bar Background	926.31	924.87	700 - 1450
Near Dens Background	309.66	308.97	230 - 480
Near Peak Background	133.93	133.56	100 - 210
Near Lith Background	162.42	164.06	125 - 260
Far Bar Background	597.87	600.80	450 - 900
Far Dens Background	235.10	233.03	175 - 345
Far Peak Background	91.27	91.89	70 - 140
Far Lith Background	95.76	95.30	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.686	1.687	0.001	+/- 0.015
Pe	2.563	2.553	-0.010	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.581	0.001	+/- 0.01500



Density (g/cc)	2.580	2.581	0.001	+/- 0.01500
Pe	3.154	3.125	-0.029	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0006	+/- 0.0110	0.0019	+/- 0.0140
Magnesium Block	-0.0013	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	0.0001	+/- 0.0110	0.0011	+/- 0.0140
Resolution	9.64	6.00 - 11.50	9.00	6.00 - 11.50
Internal Verifier(B+D+P+L)	1531	1200 - 2700	1021	800 - 1700

PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK			
Tool Name:	SDLT Pad - 10865881	Reference Calibration Date:	31-Mar-18 12:34:56
Engineer:	WHITLOCK	Calibration Date:	18-May-18 09:27:42
Software Version:	WL INSITE R5.6.3 (Build 4)	Calibration Version:	1

Pad Temperature: 82.3 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1531.458	1531.182	-0.276	15.758
Far (B+D+P+L) cps	1021.016	1020.580	-0.436	17.050
Near Resolution	9.64	9.75	0.110	0.50
Far Resolution	9.00	9.03	0.030	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-12345678						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
RWCH-12345678						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	3386.10	-----	-----	0.00	-----	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	233.4	-----	-7.5	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0652	0.0776	-----	-0.0124	+/- 0.0150	decp
SDLT-12153526						
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in

Ring Diameter	8.25	8.25	-----	0.00	+/-0.15	in
ACRt Sonde-11038385						
Mud Cell	1.00	-----	-----	0	-----	ohm-m
Microlog Pad-12153526						
MicroLog Normal	19.91	19.89	-----	0.02	+/-0.80	ohmm
MicroLog Lateral	19.97	19.95	-----	0.02	+/-0.80	ohmm
SDLT Pad-10865881						
Near(B+D+P+L)	1531.458	1531.182	-----	0.276	+/-15.758	cps
Far(B+D+P+L)	1021.016	1020.580	-----	0.436	+/-17.050	cps
Data: K3_JAMES\0001 RWCH_GTET-DSNT-SDLT-BSAT-ACRT\IDLE						
Date: 23-May-18 12:59:27						

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	8.900	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.250	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	7670.00	ft
	SHARED	BHT	Bottom Hole Temperature	152.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	CBM Temperature Master Tool	GTET	
	SHARED	SOCI	Source of Casing Information	Parameters	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	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	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	GTET	BHSM	Borehole Size Source Tool	SDLT	

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	DNTT	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	
DSNT	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog 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
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
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	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

BOTTOM

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-12345678 135.00 lbs  Weak Point 10000 lbs-12345678 0.01 lbs		Ø 2.310 in →  Ø 3.625 in →  Ø 0.010 in* →		← Fishing Neck @ 73.49 ft  ← Load Cell @ 70.68 ft ← BH Temperature @ 70.12 ft	74.37 ft  6.25 ft  68.12 ft	

SP-Sub-10904993  
60.00 lbs

Ø 3.625 in →

← SP @ 66.34 ft

3.74 ft

GTET-11021139  
165.00 lbs

Ø 3.625 in →

← Z-Accelerometer @ 63.93 ft

64.38 ft

8.52 ft

DSNT-11019643  
174.00 lbs

DSN Decentralizer-  
11660709  
6.60 lbs

Ø 5.000 in\* →

Ø 3.625 in →

← GammaRay @ 58.32 ft

55.86 ft

9.69 ft

SDLT-12153526  
360.00 lbs

SDLT Pad-10865881  
65.00 lbs  
Microlog Pad-12153526  
8.00 lbs  
RAM-Cs137-00005155  
1.00 lbs

Ø 4.500 in →

Ø 4.500 in\* →

Ø 4.750 in\* →

Ø 0.800 in\* →

← DSN Far @ 48.92 ft

← DSN Near @ 48.17 ft

46.17 ft

10.81 ft

Microlog @ 38.36 ft  
SDL Caliper @ 38.17 ft  
SDL @ 38.16 ft

35.36 ft

BSAT-10939049  
300.00 lbs

Ø 3.625 in →

Receiver Array @ 26.84 ft  
Sonic Receivers @ 26.84 ft

15.77 ft

19.58 ft

ACRt Instrument-  
11055059  
50.00 lbs

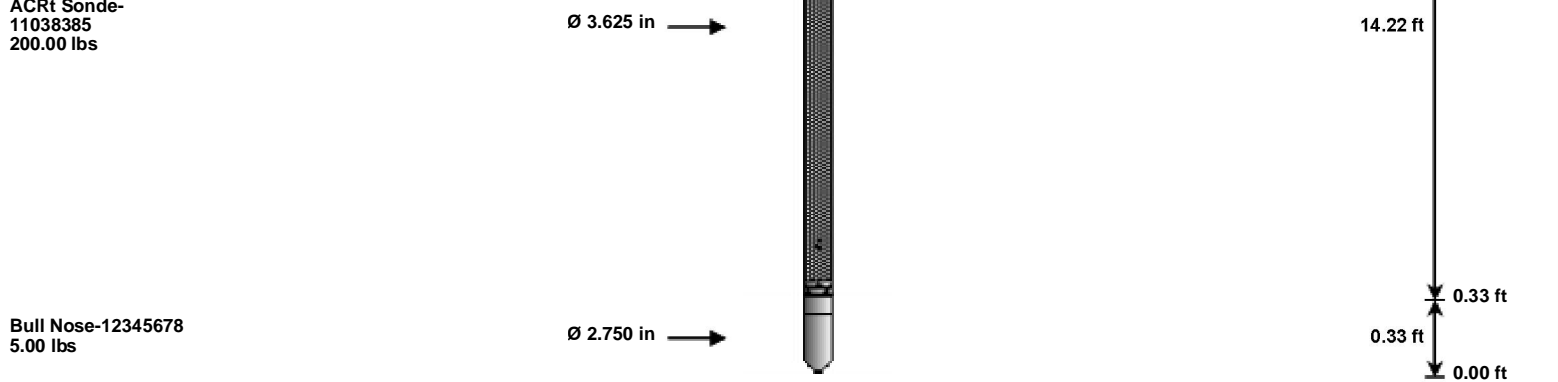
Ø 3.625 in →

5.03 ft

← Mud Resistivity @ 13.19 ft

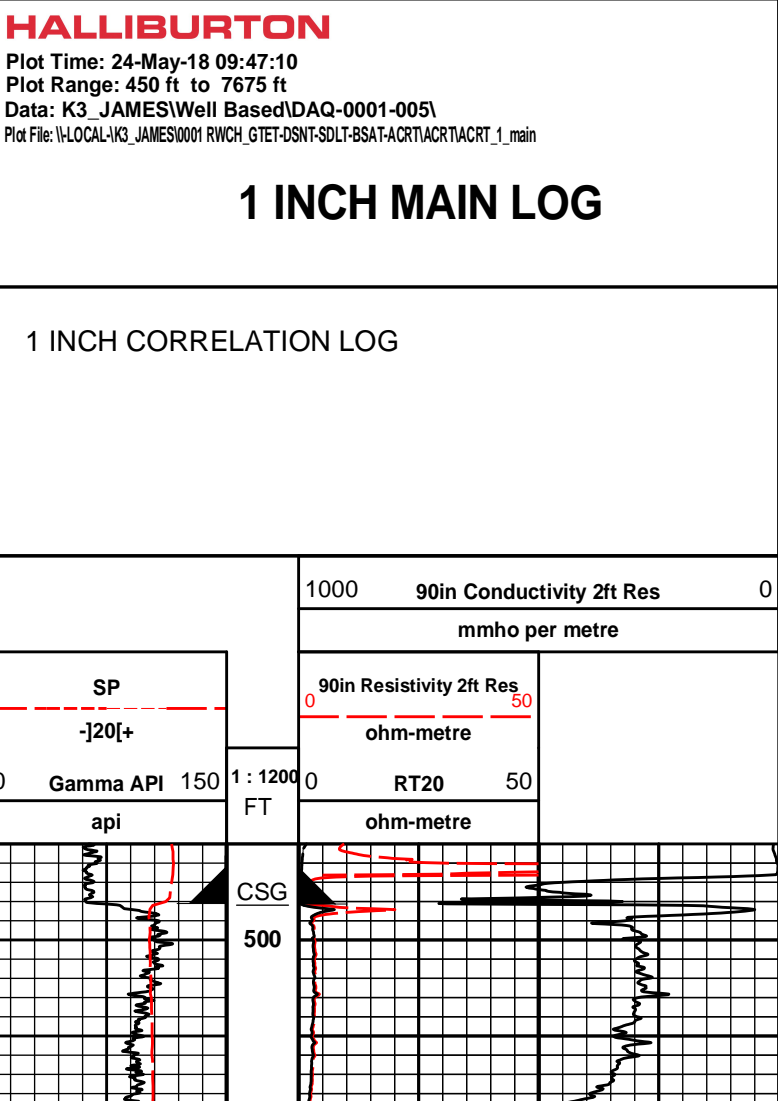
14.55 ft

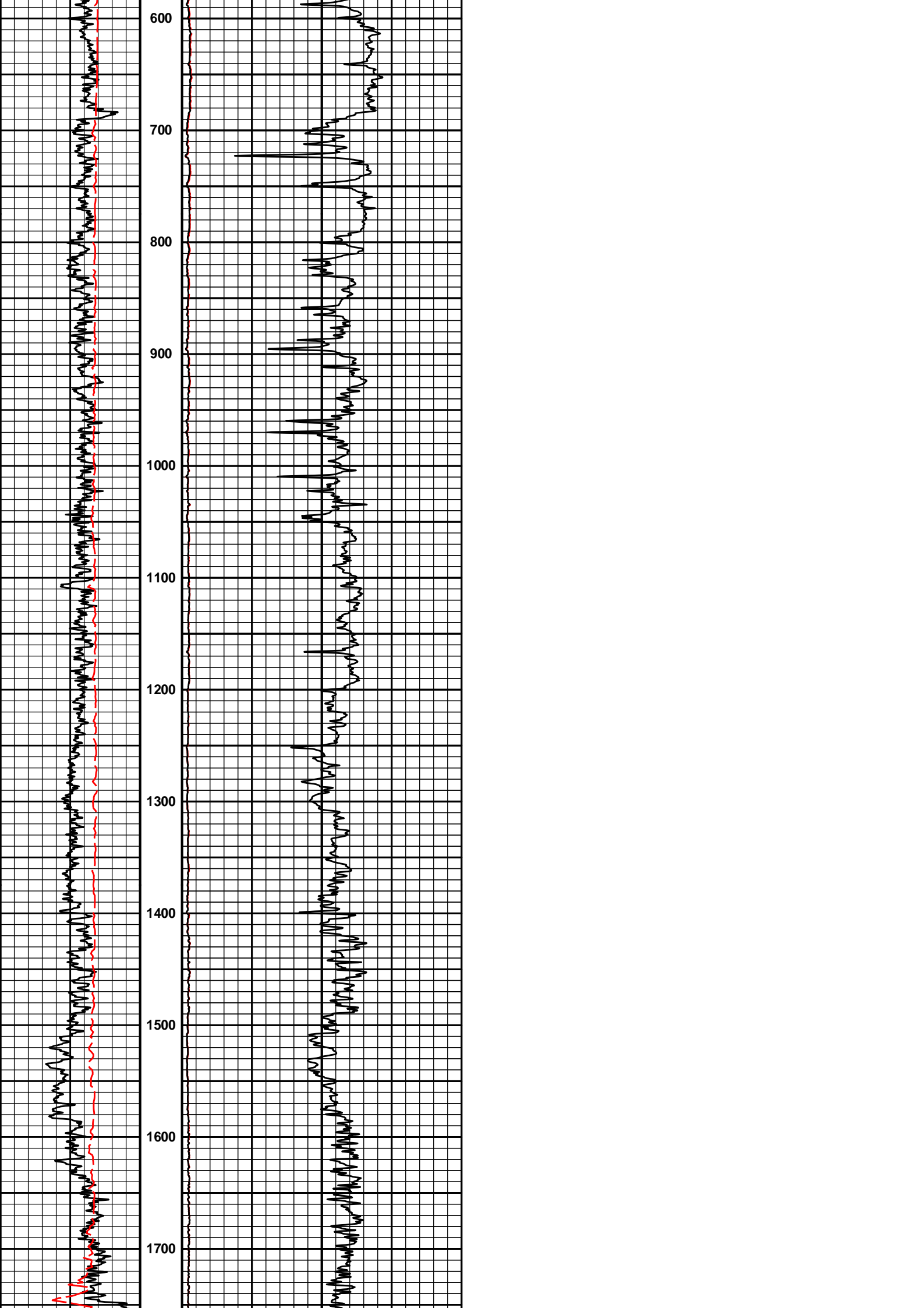
← ACRt @ 9.21 ft

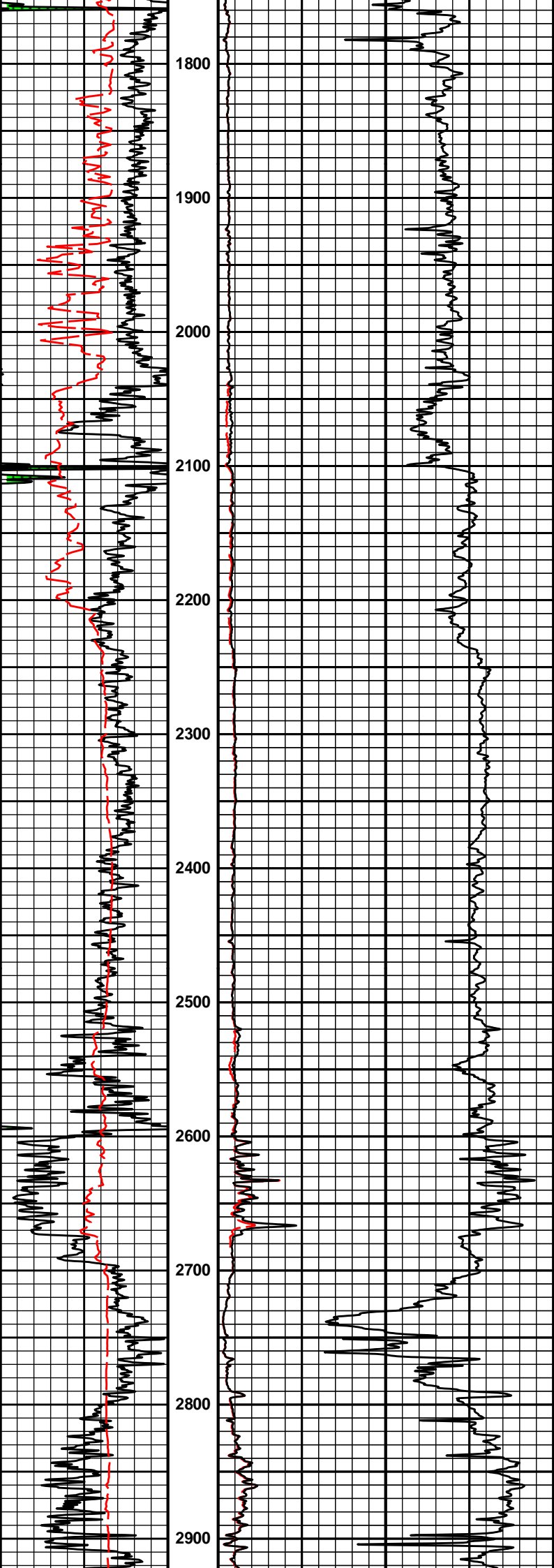


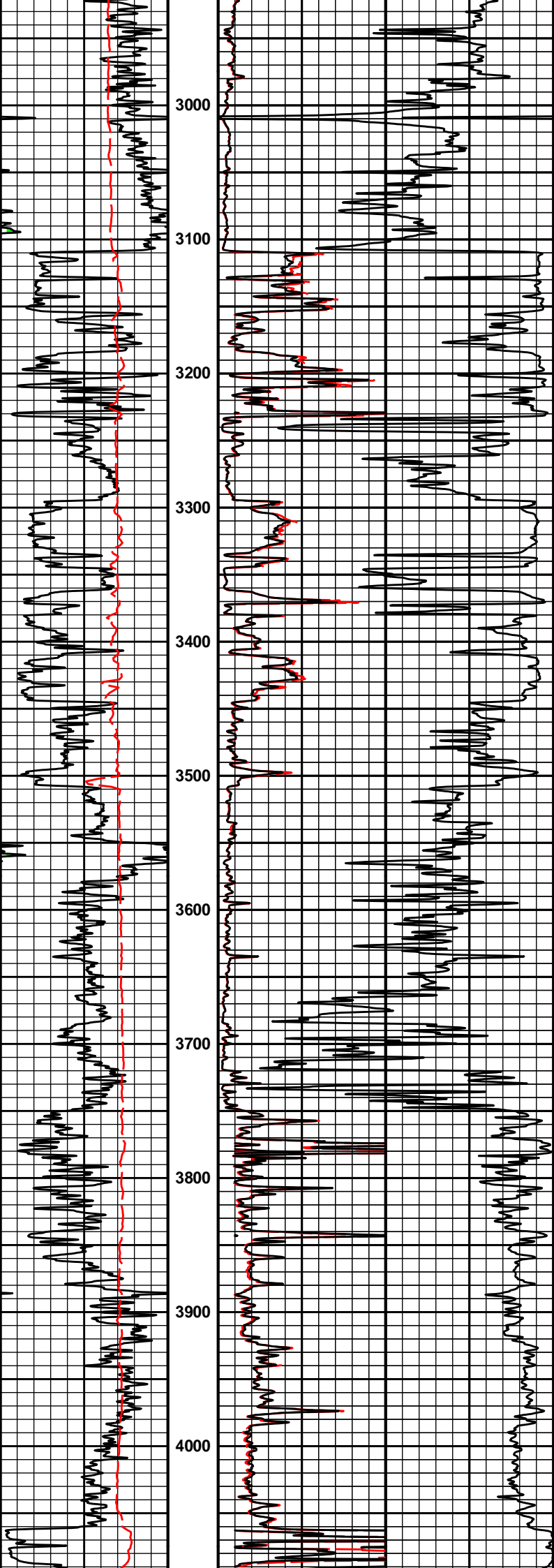
Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25	68.12	300.00
WP10K	Weak Point 10000 lbs	12345678	0.01	0.01	* 68.92	300.00
SP	SP Sub	10904995	60.00	3.74	64.38	300.00
GTET	Gamma Telemetry Tool	11021139	165.00	8.52	55.86	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69	46.17	60.00
DCNT	DSN Decentralizer	11660709	6.60	5.13	* 49.50	300.00
SDLT	Spectral Density Tool	12153526	360.00	10.81	35.36	60.00
SDLP	Density Insite Pad	10865881	65.00	2.55	* 37.57	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	00005155	1.00	0.80	* 37.80	300.00
MICP	Microlog Pad	12153526	8.00	1.00	* 37.86	60.00
BSAT	Borehole Sonic Array Tool	10939049	300.00	15.77	19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03	14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22	0.33	120.00
BLNS	Bull Nose	12345678	5.00	0.33	0.00	300.00

Total			1,529.61	74.37		
			* Not included in Total Length and Length Accumulation.			
Data: K3_JAMES\0001 RWCH_GTET-DSNT-SDLT-BSAT-ACRT\IDLE			Date: 23-May-18 13:03:53			

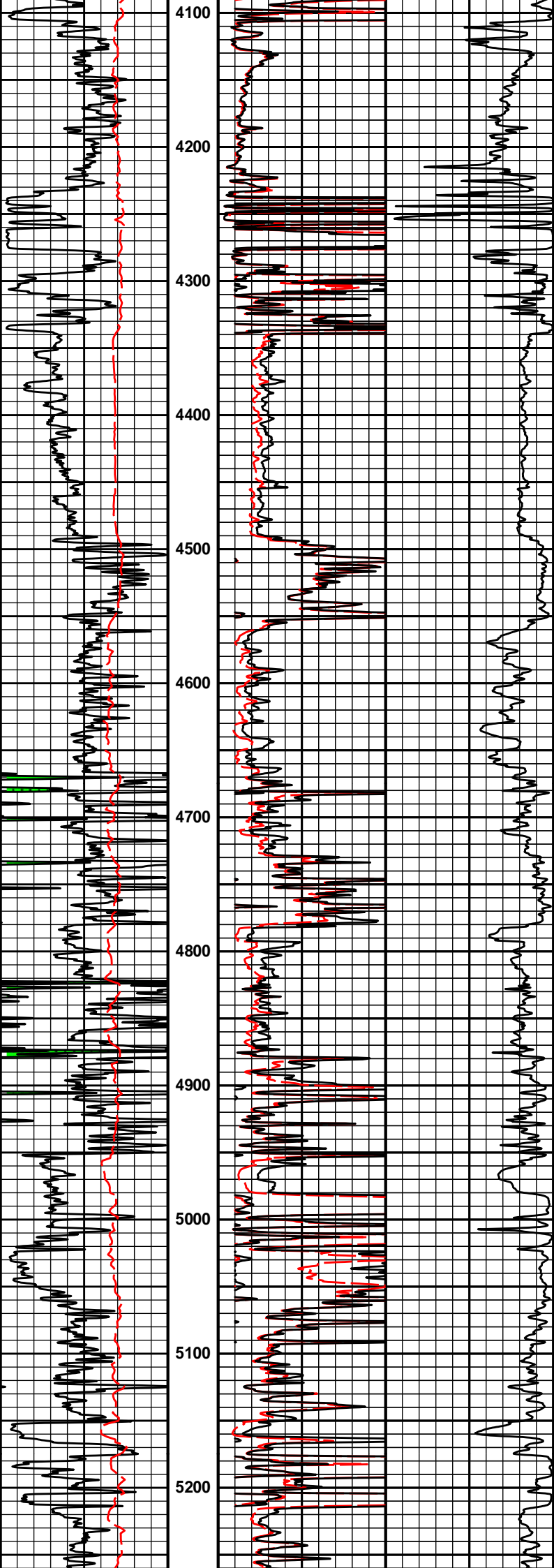


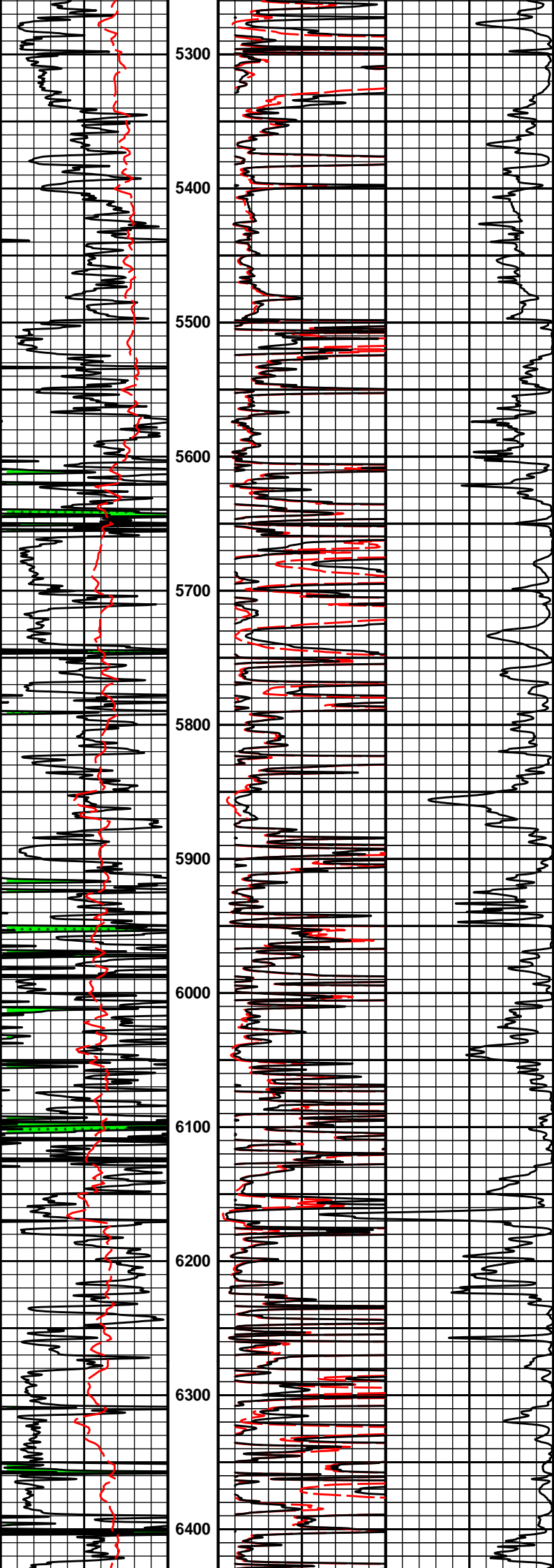


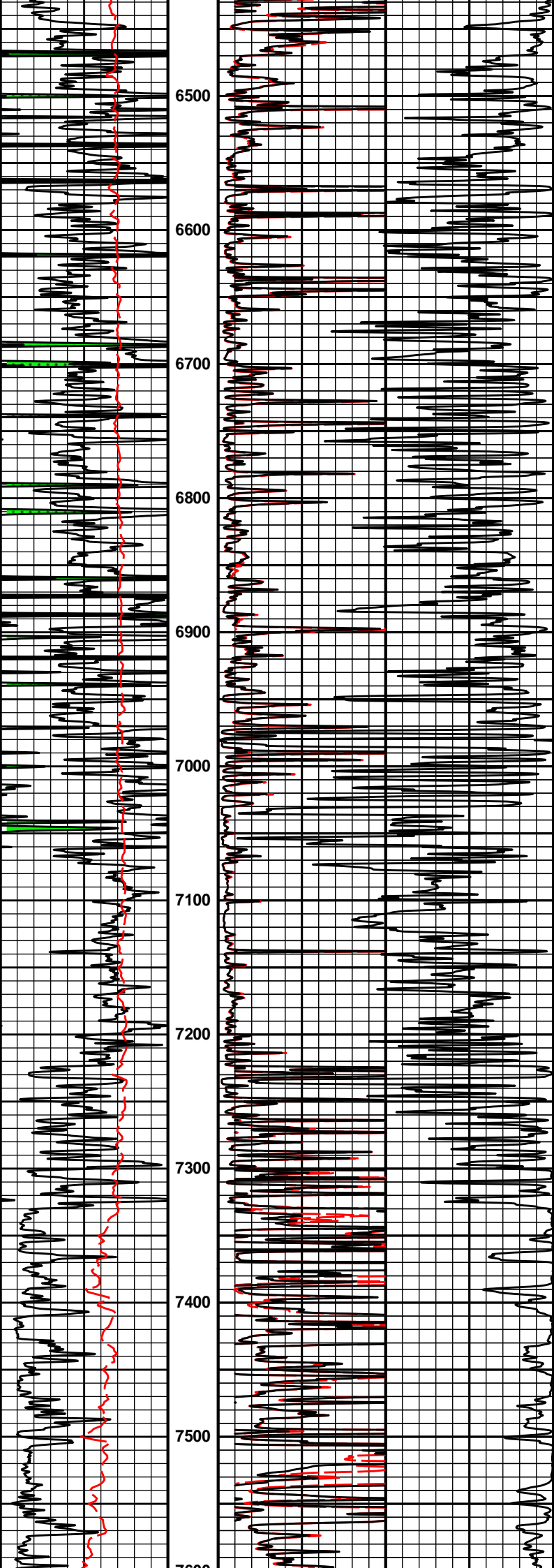


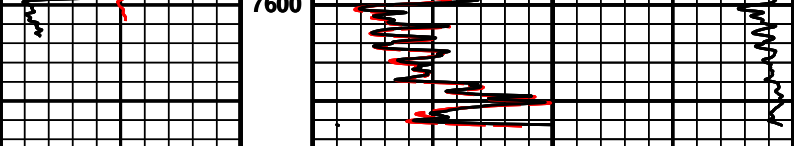












0	Gamma API	150	1 : 1200	0	RT20	50	
	api		FT		ohm-metre		
	SP				90in Resistivity 2ft Res		
	-]20[+				ohm-metre		
				1000	90in Conductivity 2ft Res	0	
					mmho per metre		

**HALLIBURTON**

Plot Time: 24-May-18 09:47:12  
Plot Range: 450 ft to 7675 ft  
Data: K3\_JAMES\Well Based\DAQ-0001-005\  
Plot File: \\LOCAL-I\K3\_JAMES\0001 RWCH\_GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT\_1\_main

**1 INCH MAIN LOG**

1 INCH CORRELATION LOG