

ARRAY COMPENSATED
TRUE RESISTIVITY
LOG

COMPANY	HARTMAN OIL CO., INC.		
WELL	HEYEN #1-2		
FIELD/BLOCK	GRAY NORTH FIELD		
COUNTY	STAFFORD	STATE KANSAS	
API No.	15-185-23886-00-00	Other Services: MICROLOG BSAT DSNT, SDLT	
Location	(SHL) 1025' FNL & 1075' FEL SW-SW-NE-NE		
Sect. 2	Twp. 24S	Rge. 13W	

Fold here

Service Ticket No.: 901478501						API Serial No.: 15-185-23886-00-00						PGM Version: WL INSITE R4.2.0 (Build 2)											
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.				@				@				ONE		ACRT		N/A		CENT		N/A			
Rmc @ Meas. Temp.				@				@						I962_S909									
Source Rmf		Rmc																					
Rm @ BHT				@				@															
Rmf @ BHT				@				@															
Rmc @ BHT				@				@															
EQUIPMENT DATA																							
GAMMA						ACOUSTIC						DENSITY						NEUTRON					
Run No.		ONE				Run No.						Run No.						Run No.					
Serial No.		11048627				Serial No.						Serial No.						Serial No.					
Model No.		GTET				Model No.						Model No.						Model No.					
Diameter		3.625"				No. of Cent.						Diameter						Diameter					
Detector Model No.		T-102				Spacing						Log Type						Log Type					
Type		SCINT										Source Type						Source Type					
Length		8'				LSA [Y/N]						Serial No.						Serial No.					
Distance to Source		10'				FWDA [Y/N]						Strength						Strength					

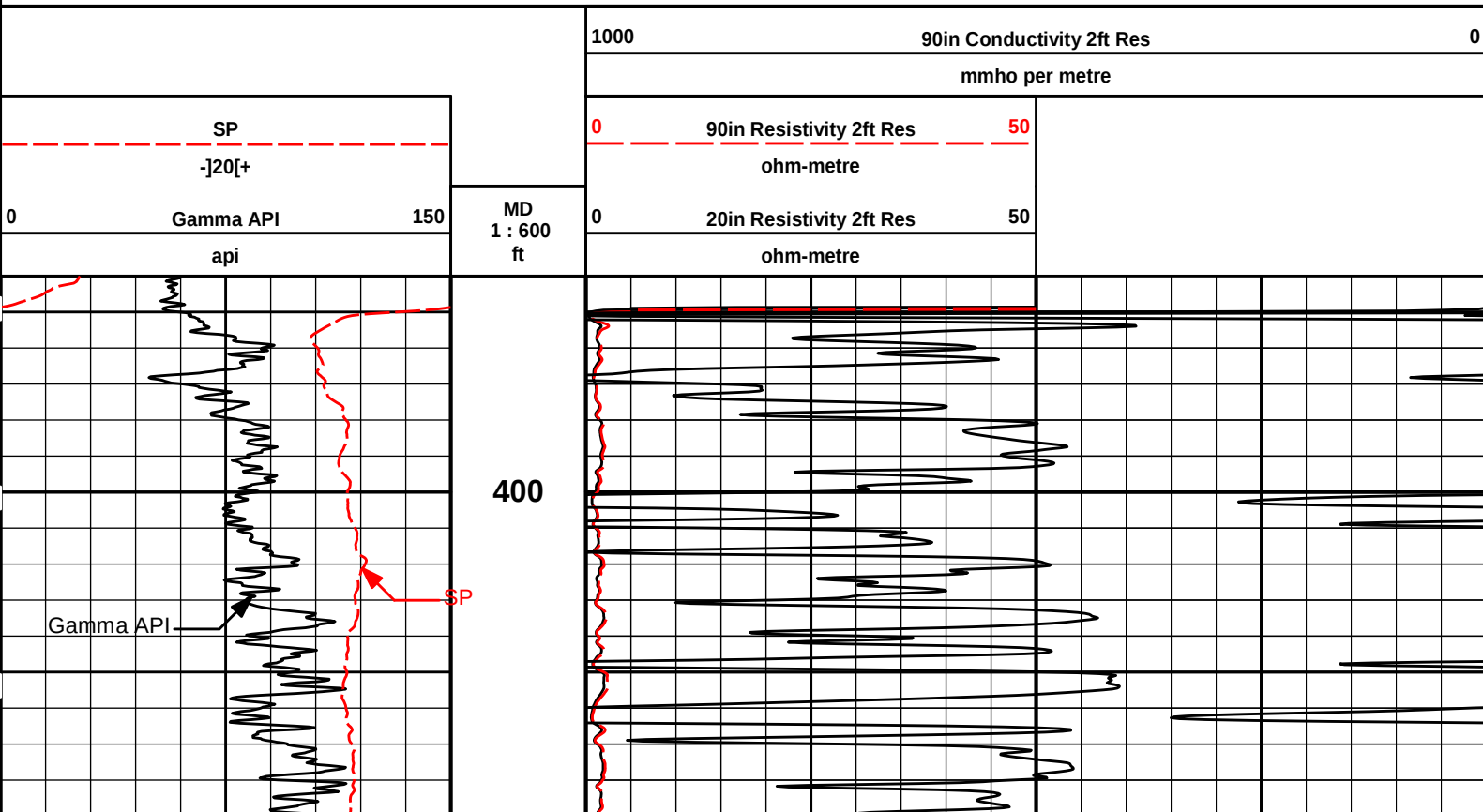
LOGGING DATA

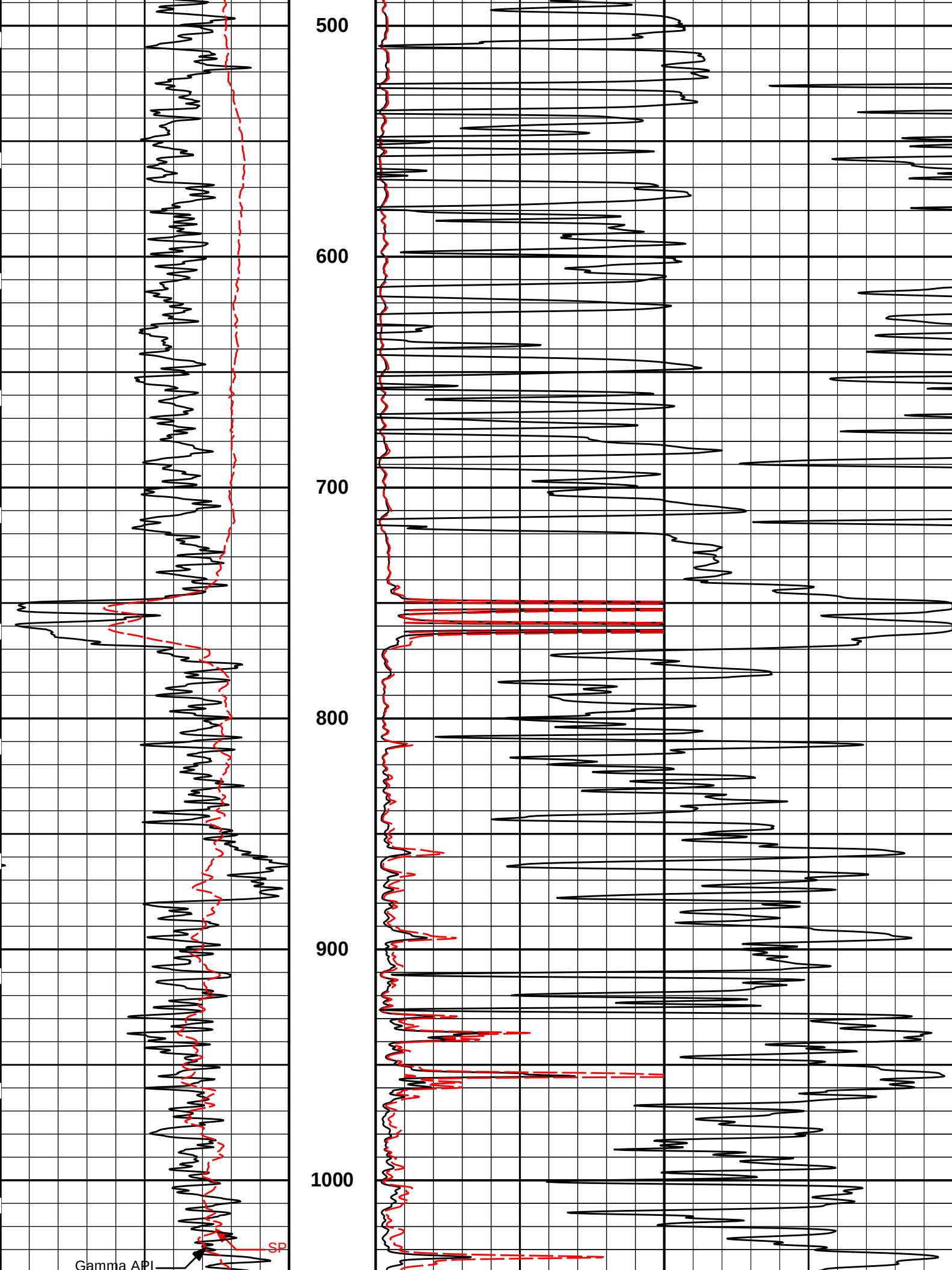
GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON			
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix	
No.	From	To	ft/min	L	R	L	R		L	R		L	R		
ONE	4090	352	REC	0	150										
DIRECTIONAL INFORMATION															
Maximum Deviation								@	KOP @						
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING															
CHLORIDES REPORTED AT 10,300 PPM															
GTET-DSNT-SDLT-BSAT-ACRT RUN IN COMBINATION															
TODAY'S CREW: K. PIDDINGTON, E. ZAPIEN, & D. MILLER															
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS. 620-624-8123															
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															

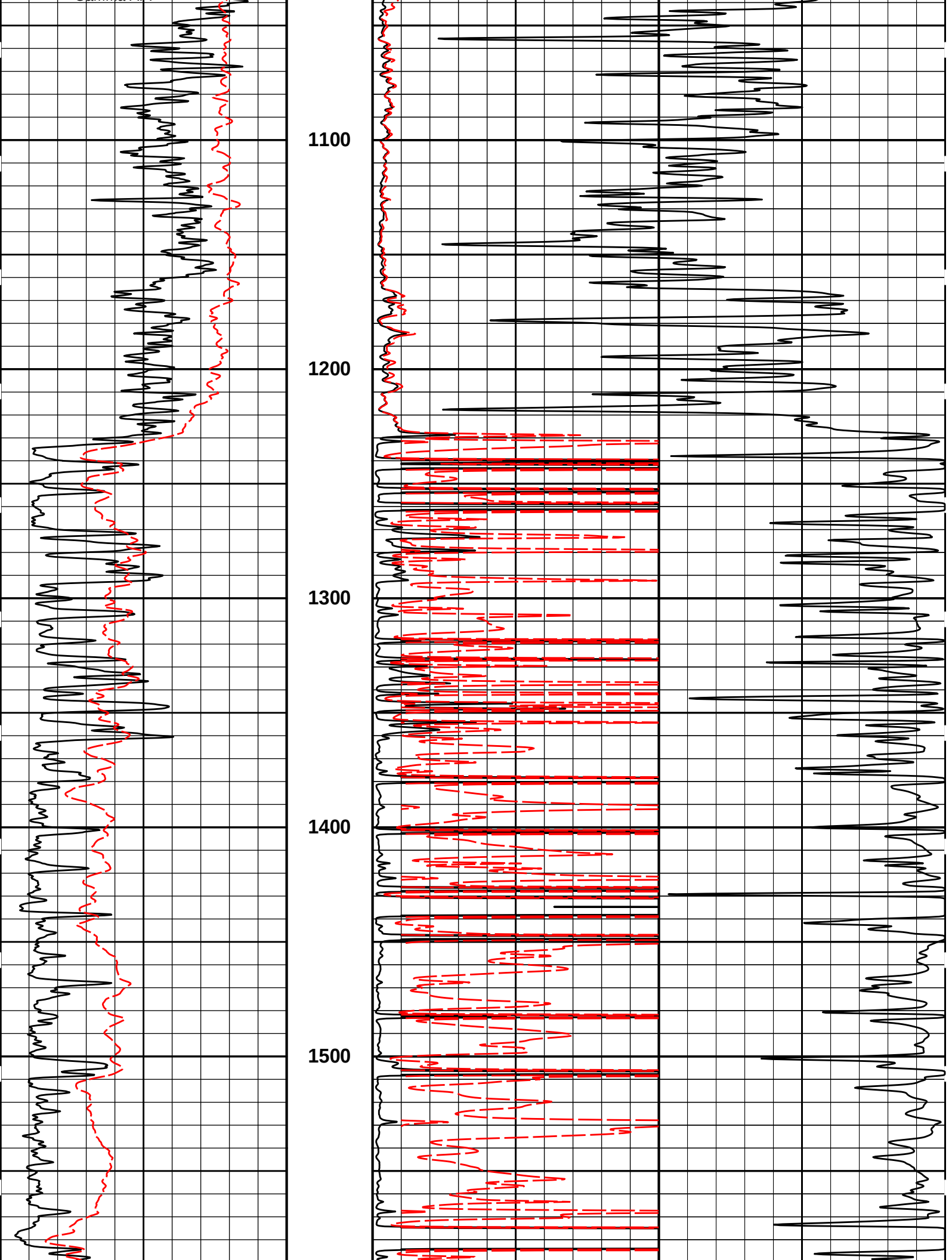
HALLIBURTON

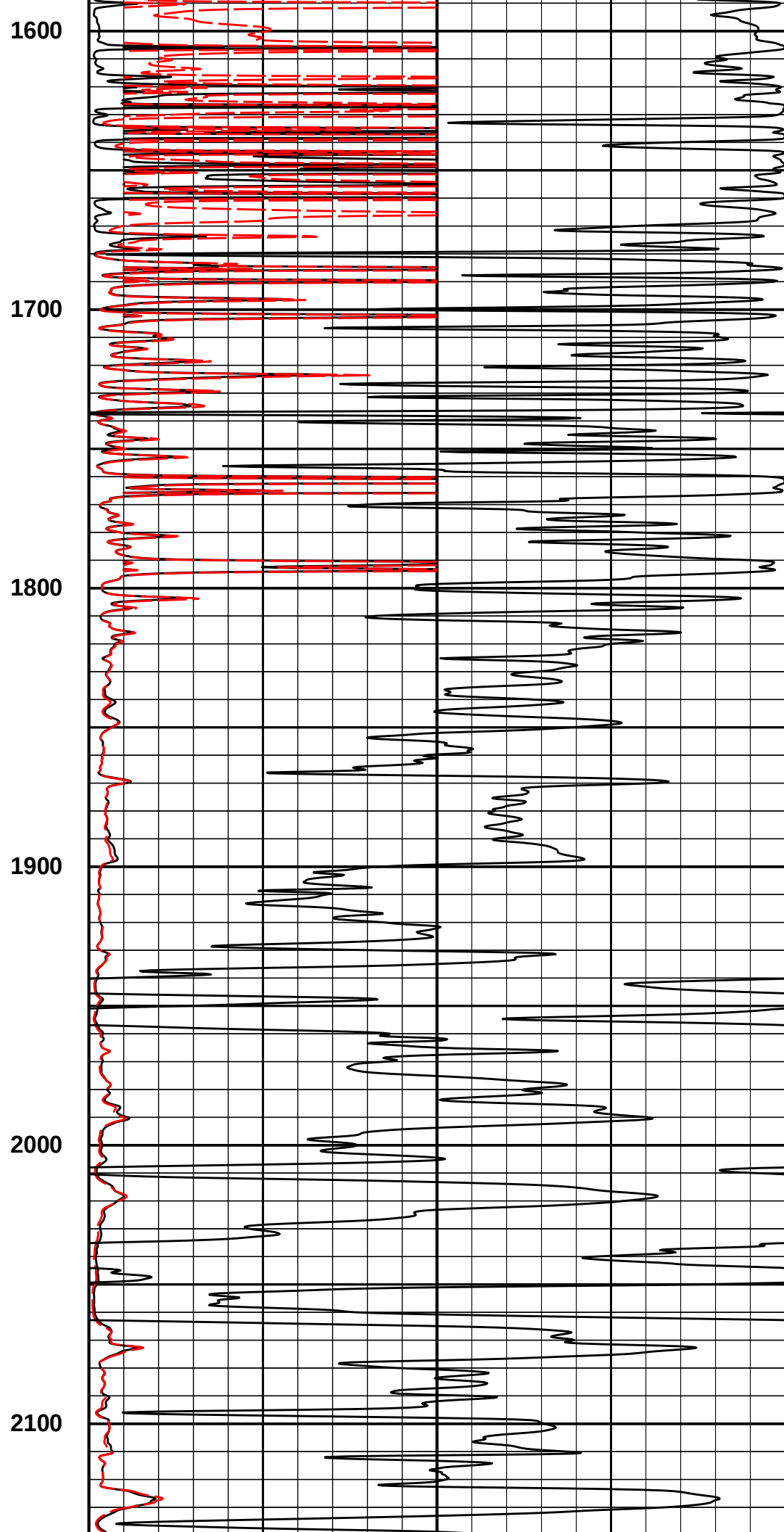
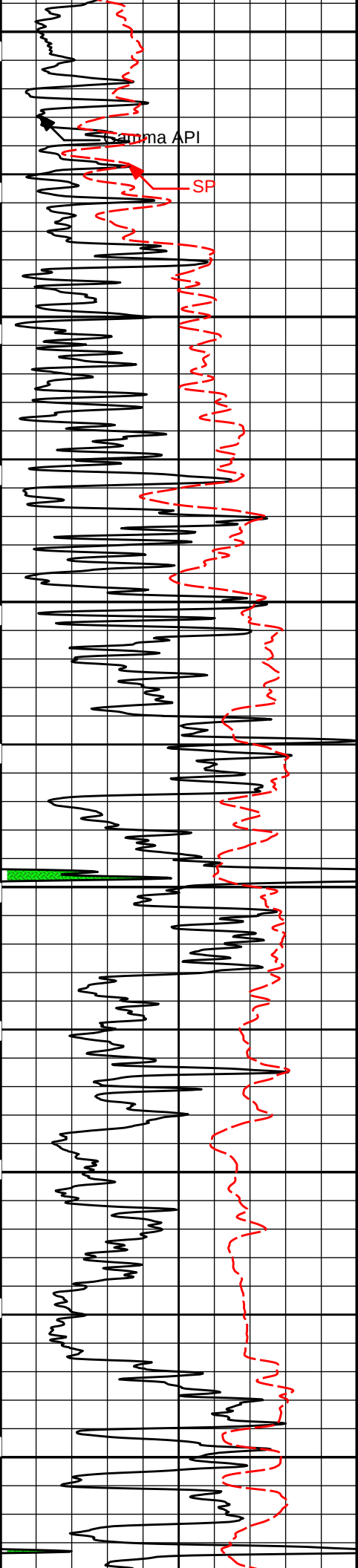
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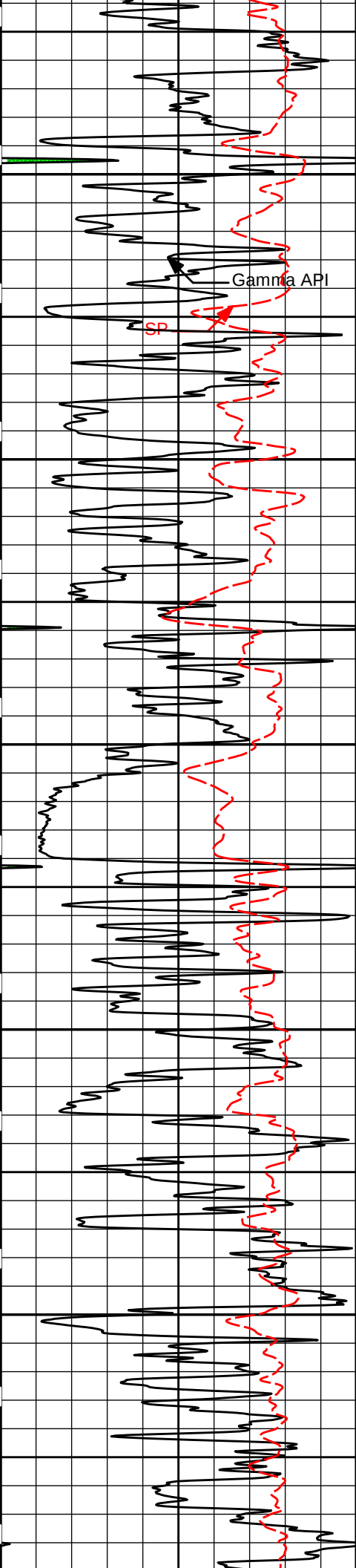
2 INCH MAIN LOG











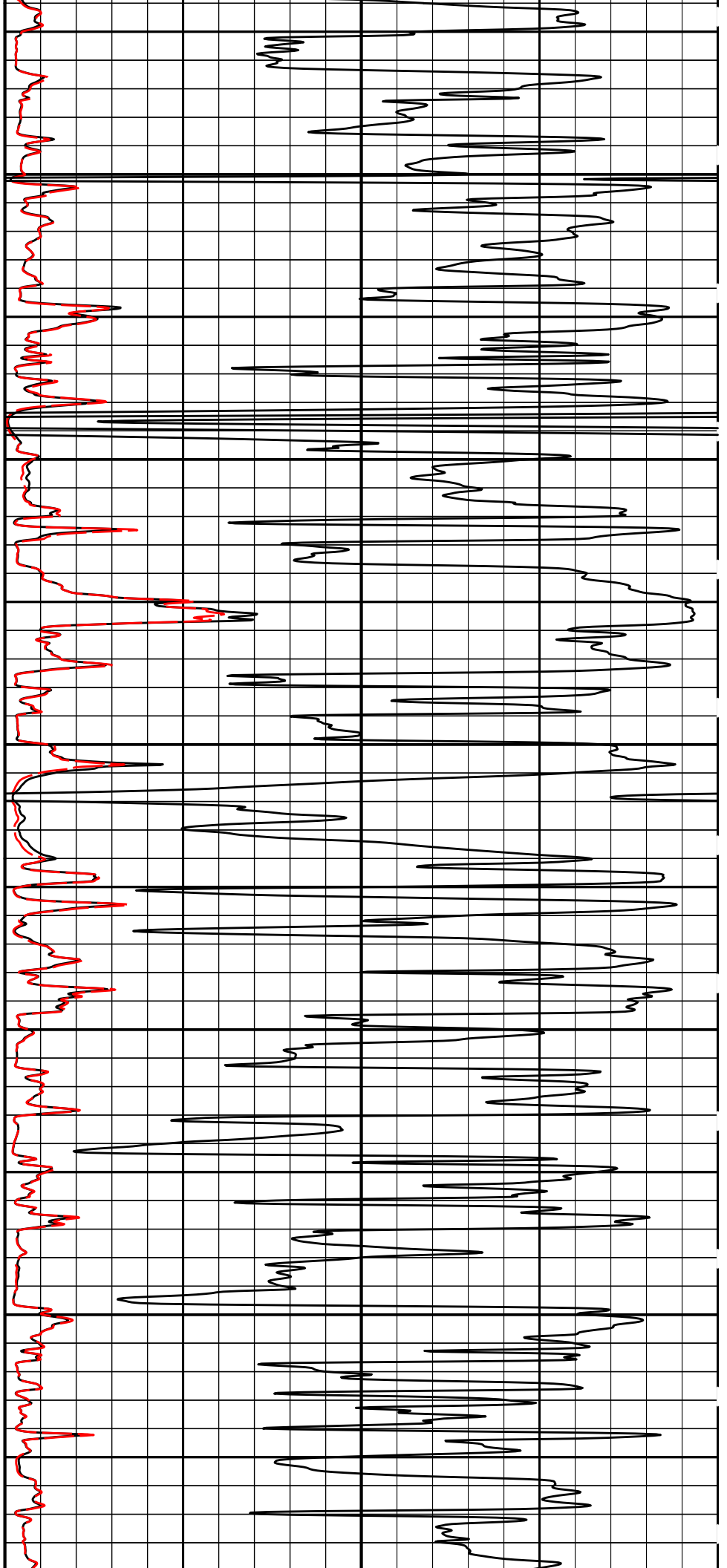
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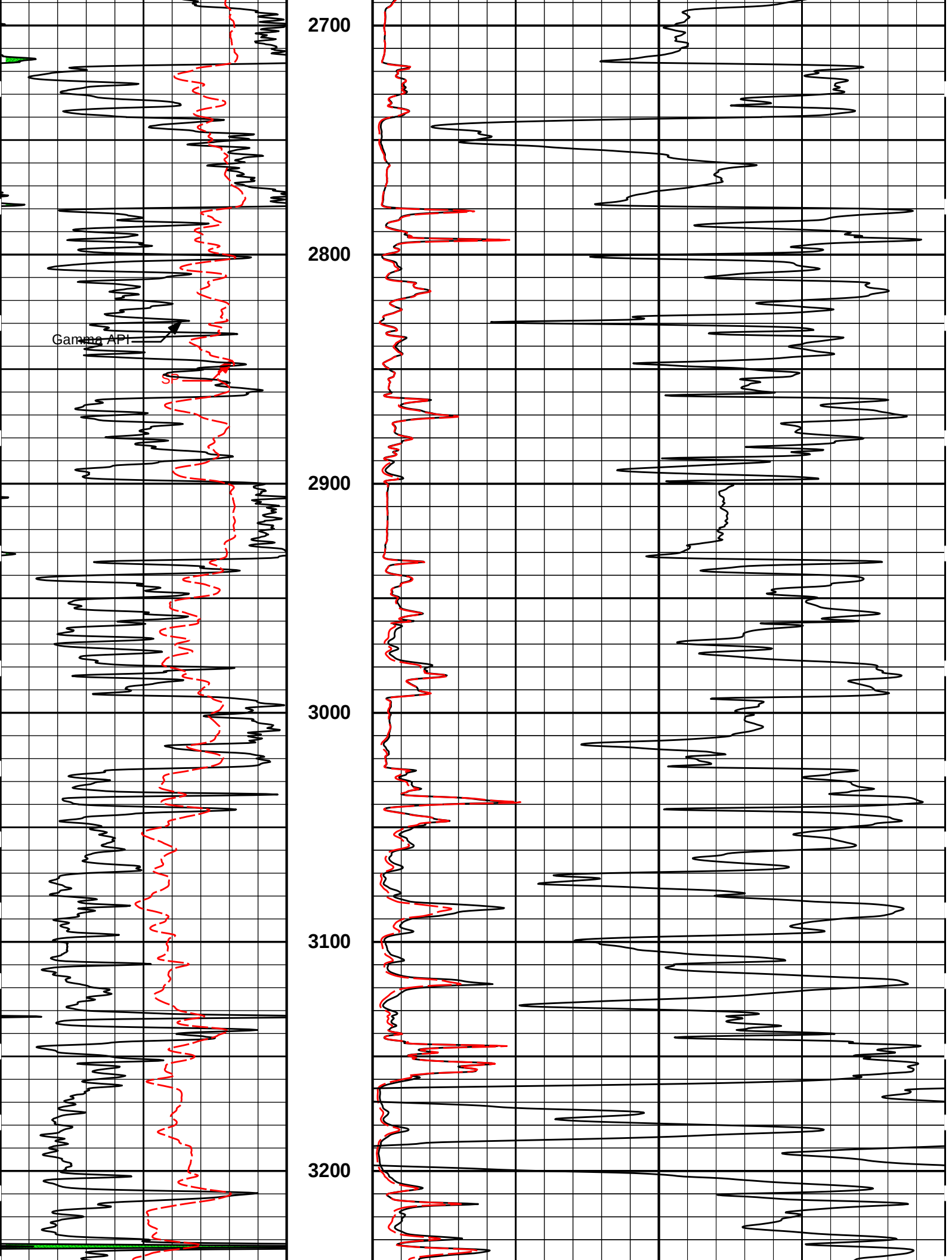
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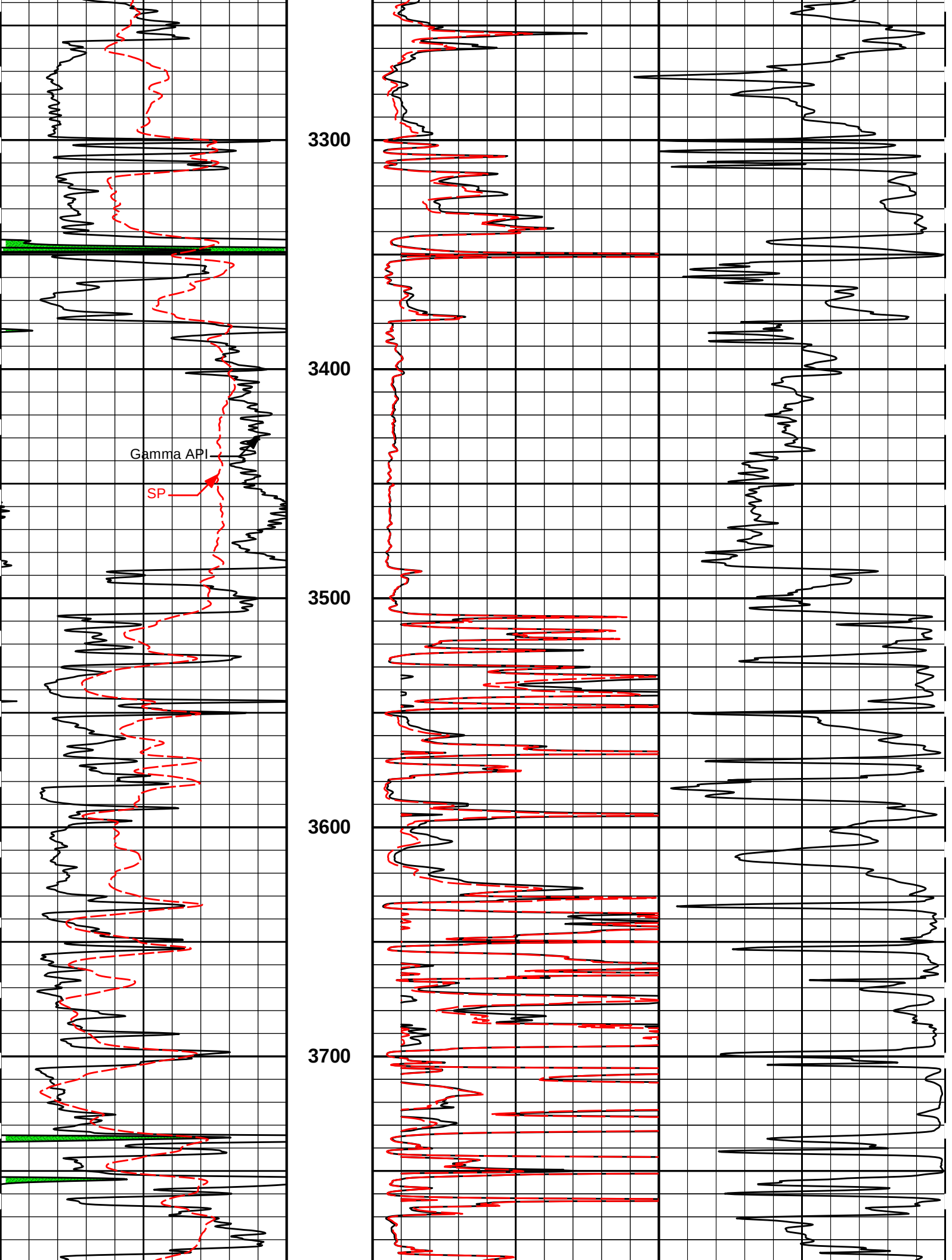
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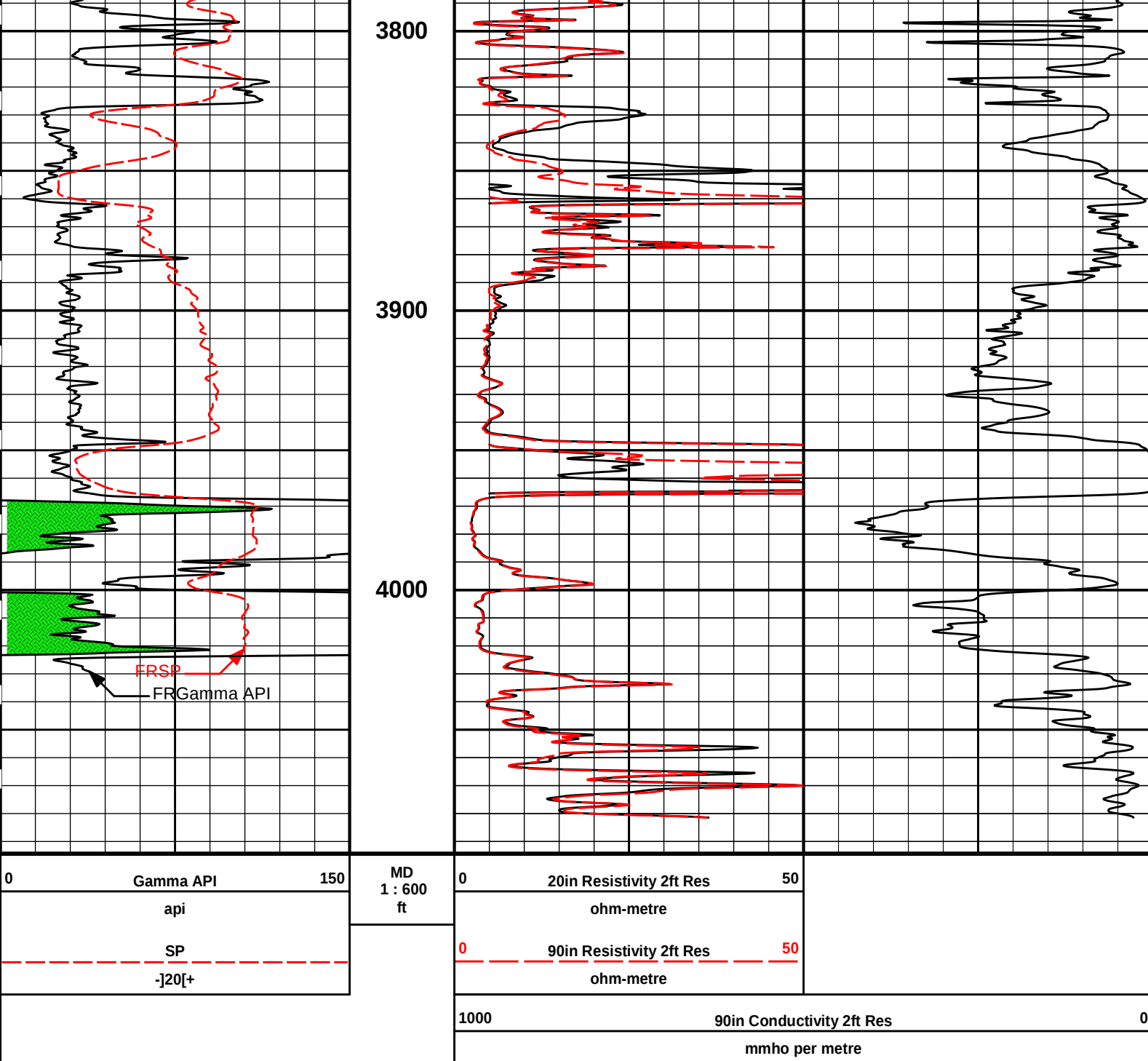
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2600









HALLIBURTON

Plot Time: 03-Jul-14 19:08:28
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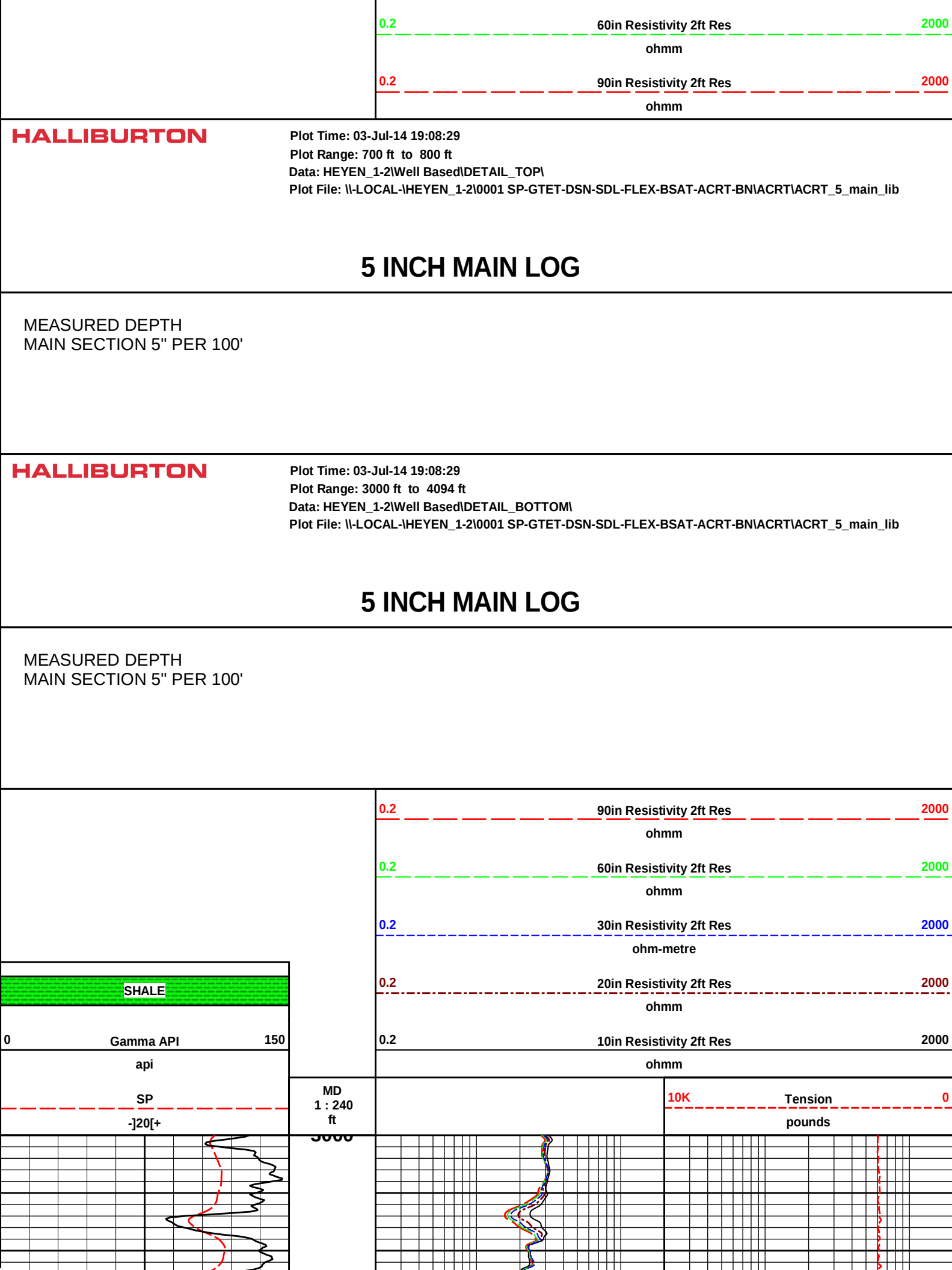
2 INCH MAIN LOG

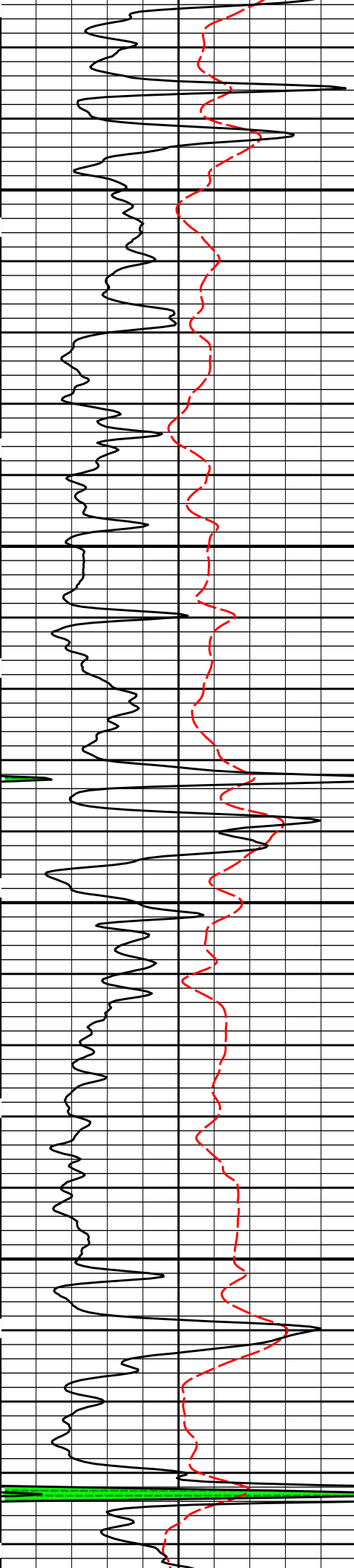
HALLIBURTON

Plot Time: 03-Jul-14 19:08:28
Plot Range: 700 ft to 800 ft
Data: HEYEN_1-2\Well Based\DETAIL_TOP\
Plot File: \\LOCAL-HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\ACRT\ACRT_5_main_lib

5 INCH MAIN LOG

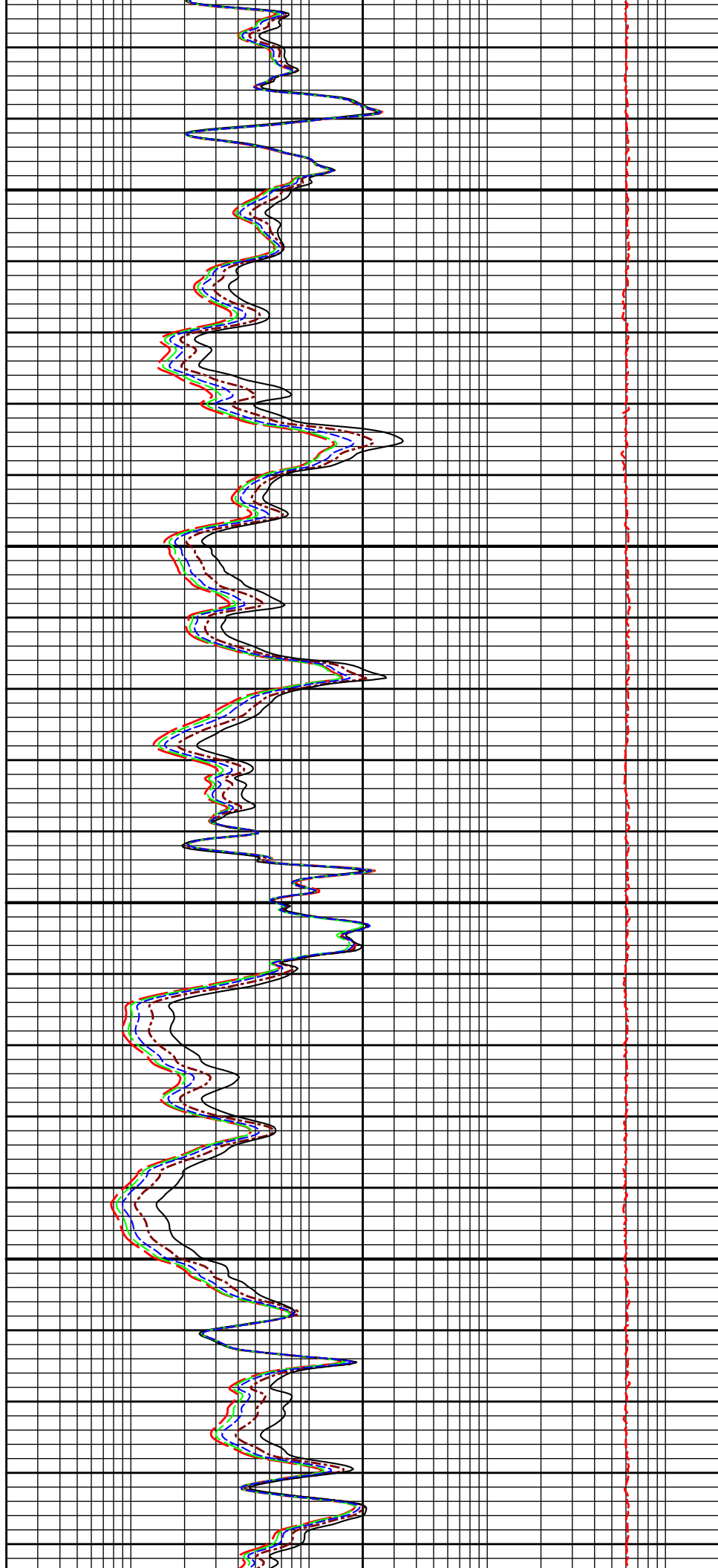
MEASURED DEPTH

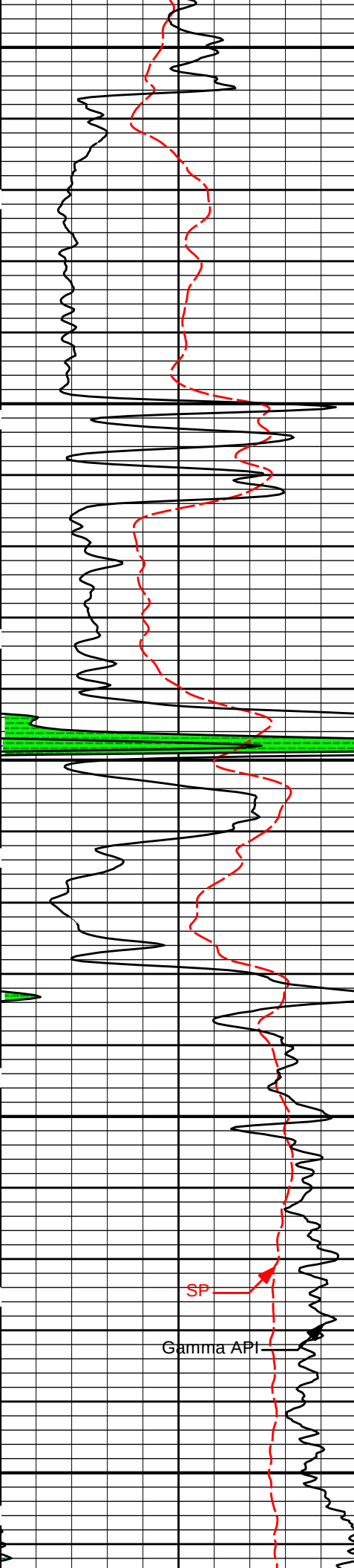




3100

3200

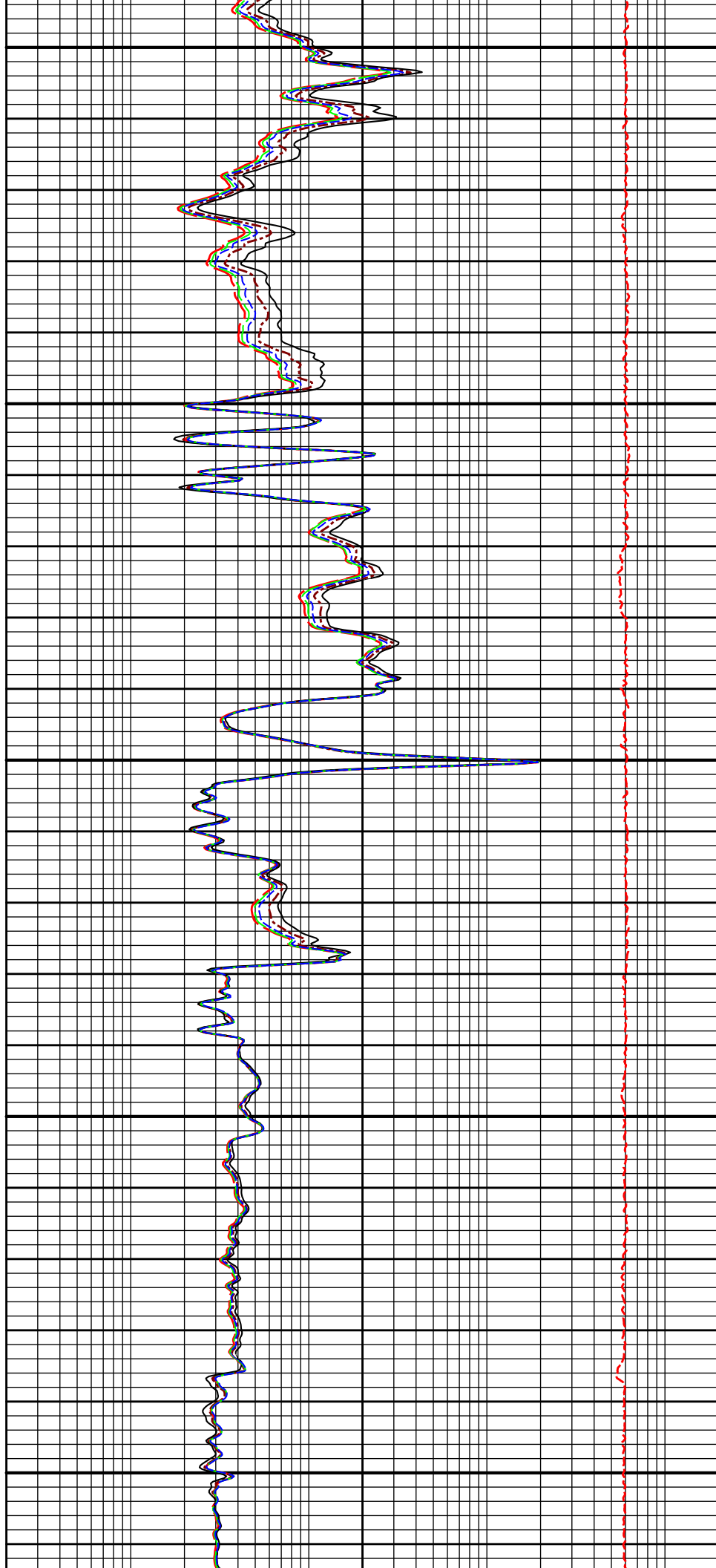


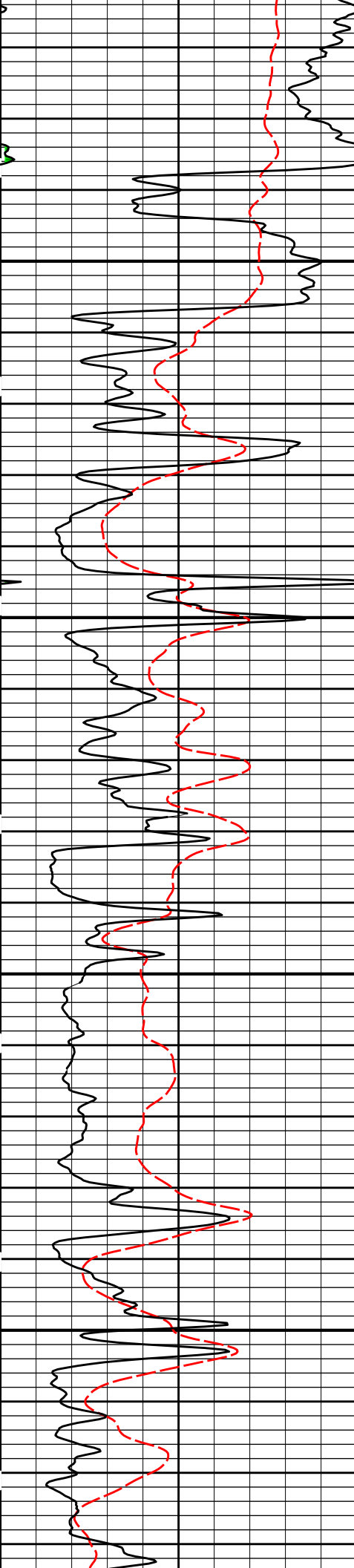


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3400

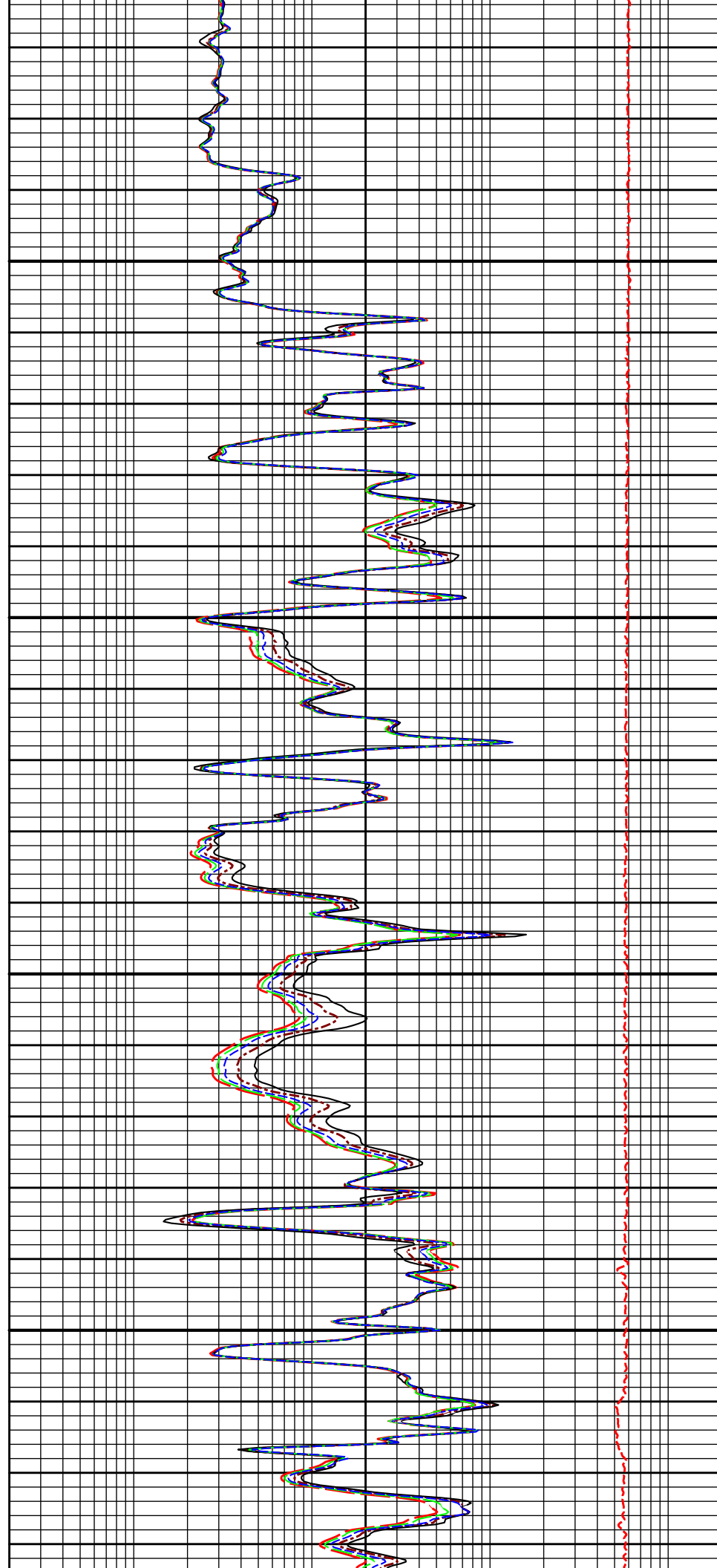
SP
Gamma API

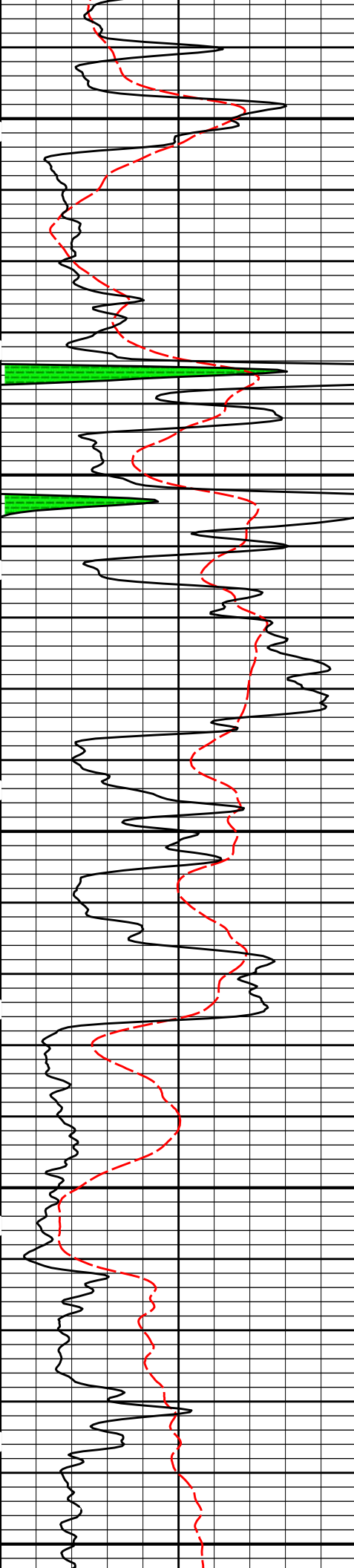




3500

3600

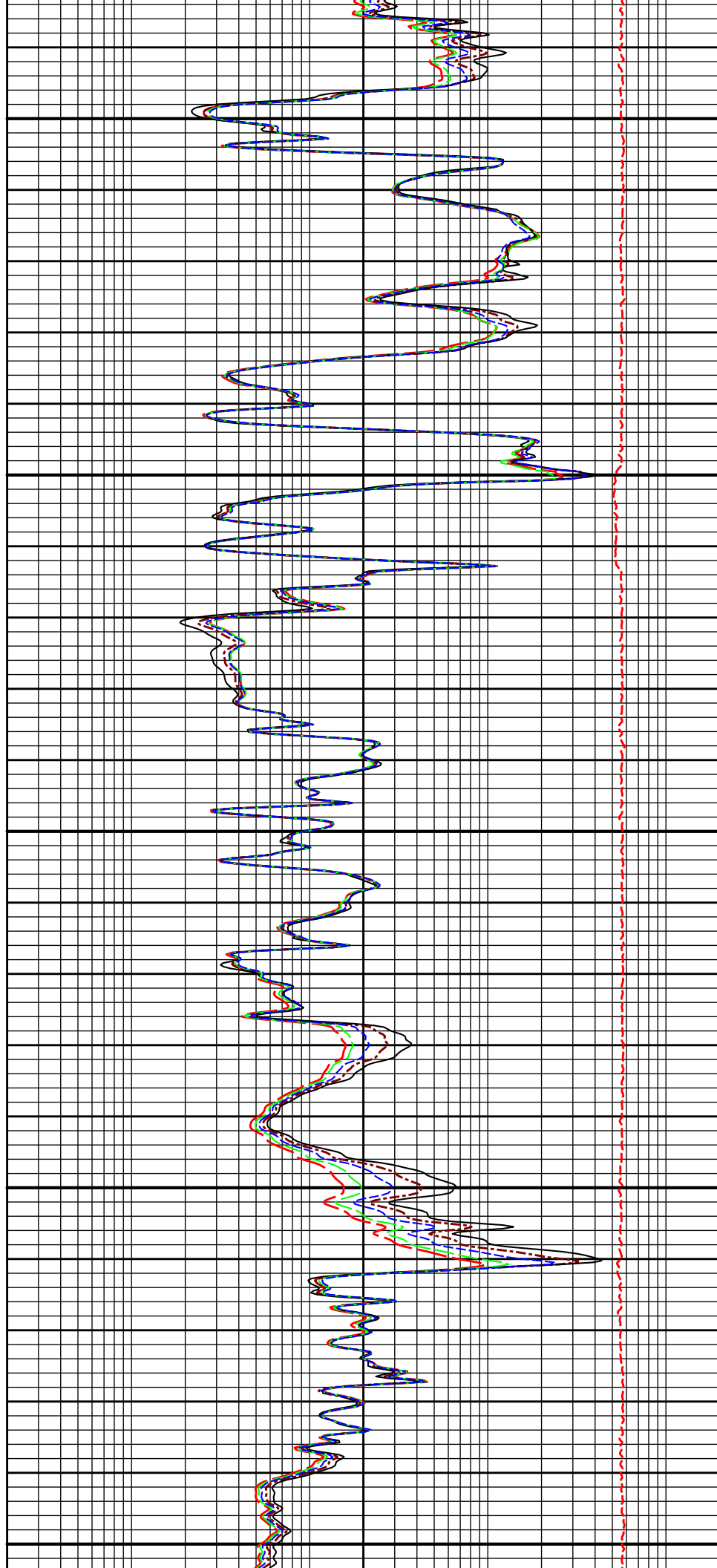


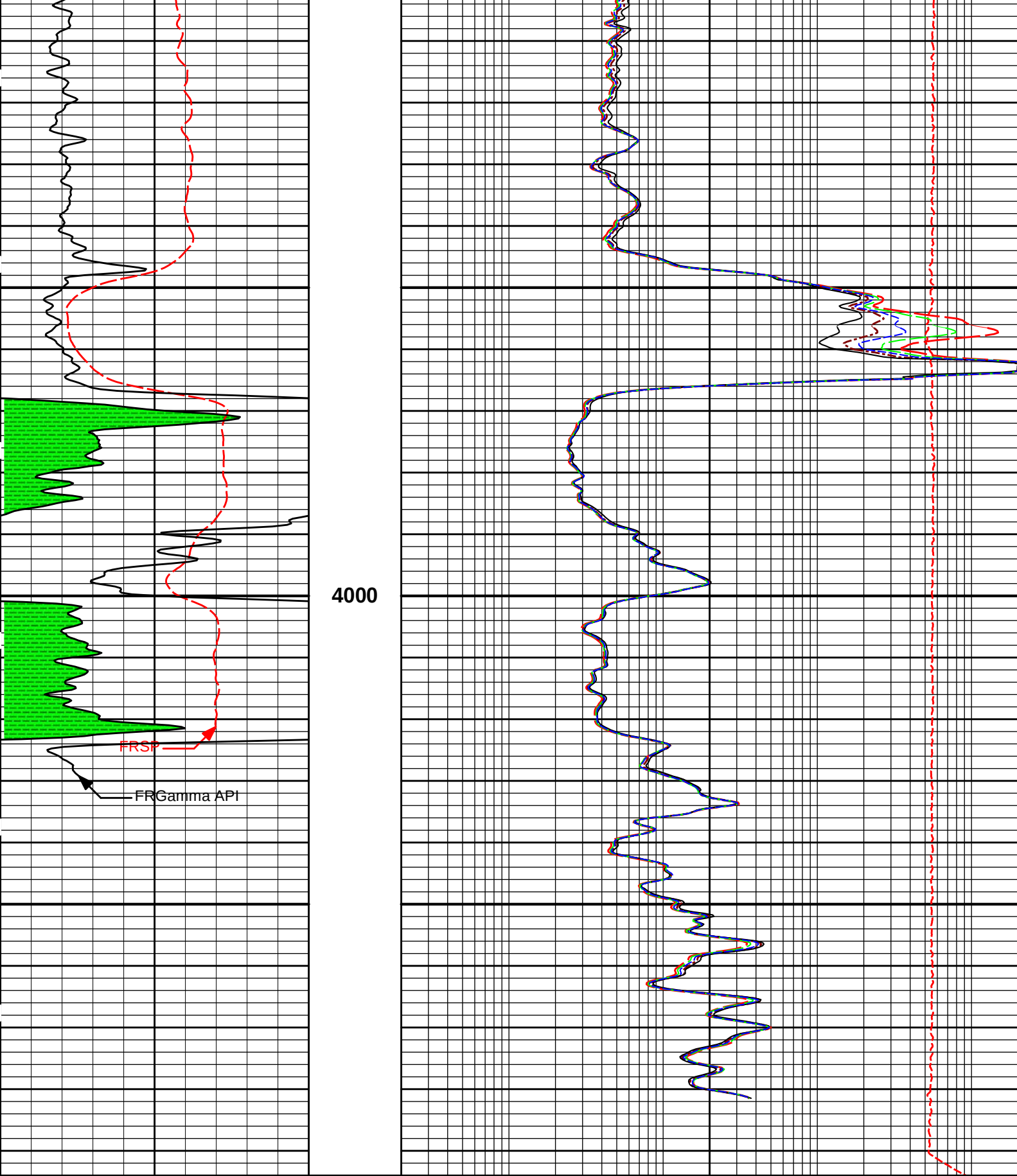


3700

3800

3900





SP -]20[+	MD 1 : 240 ft	10K	Tension pounds
0 Gamma API 150 api		0.2	10in Resistivity 2ft Res ohmm
SHALE		0.2	20in Resistivity 2ft Res ohmm

	0.2	30in 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: 03-Jul-14 19:08:31
Plot Range: 3000 ft to 4094 ft
Data: HEYEN_1-2\Well Based\DETAIL_BOTTOM\
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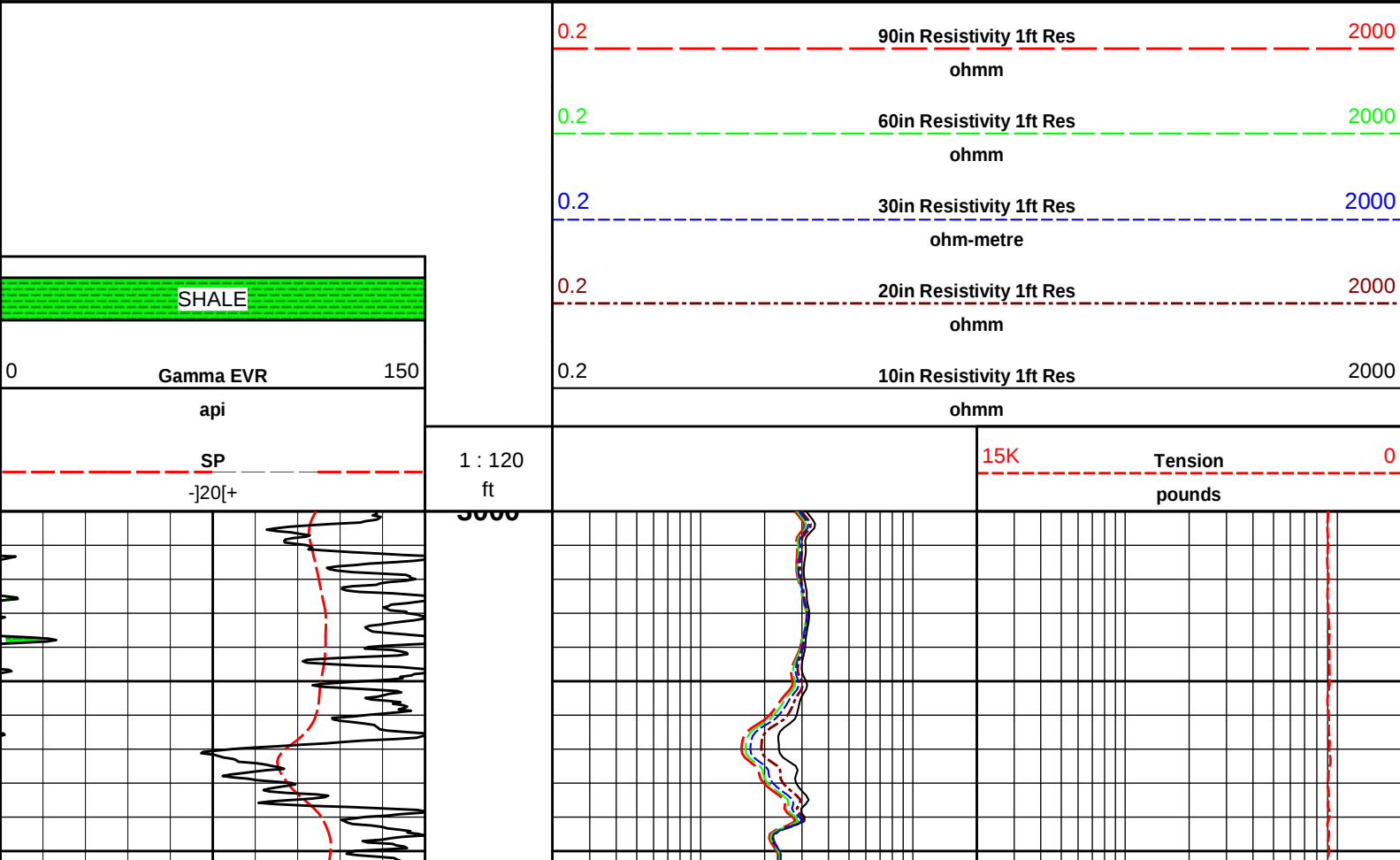
5 INCH MAIN LOG

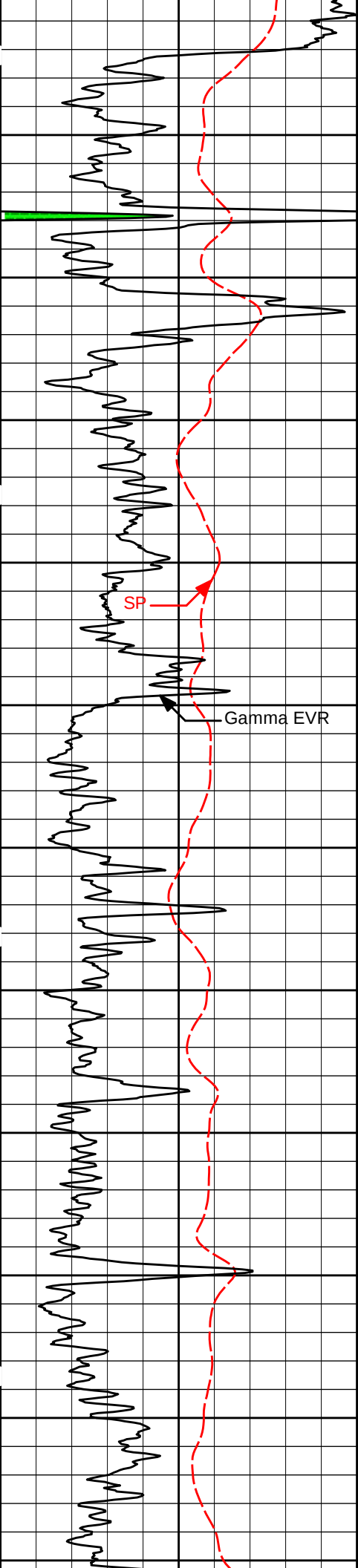
MEASURED DEPTH
MAIN SECTION 5" PER 100'

HALLIBURTON

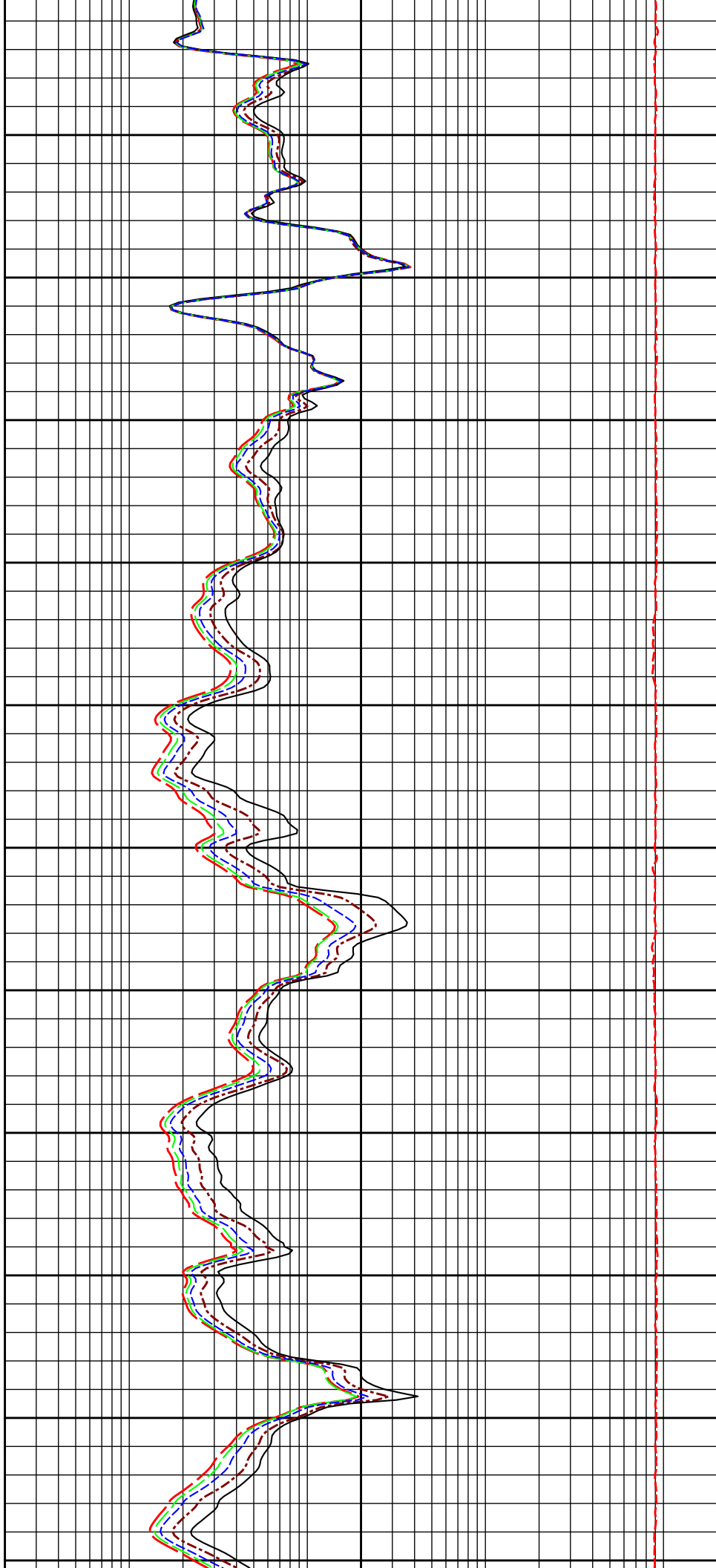
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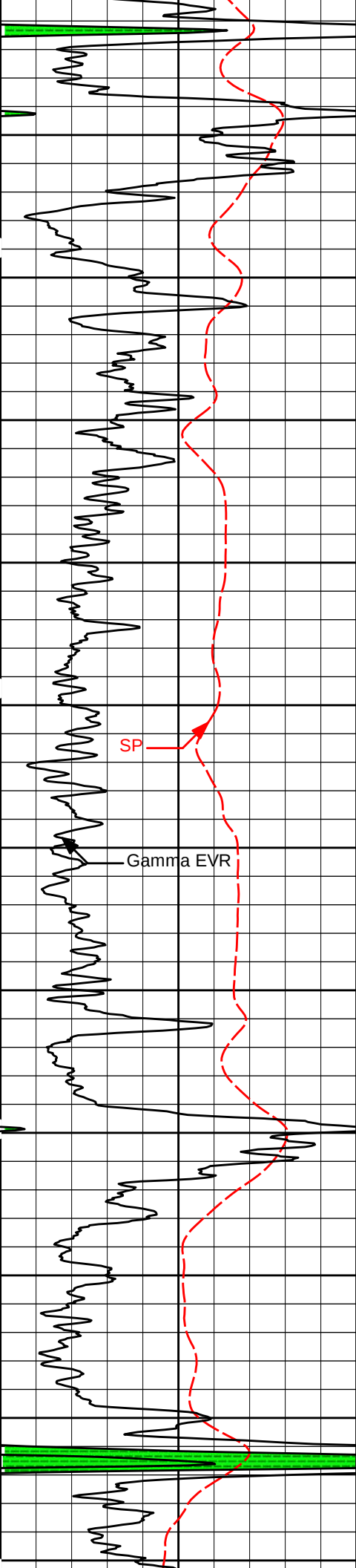
MAIN SECTION HIGH RES 10" PER 100'



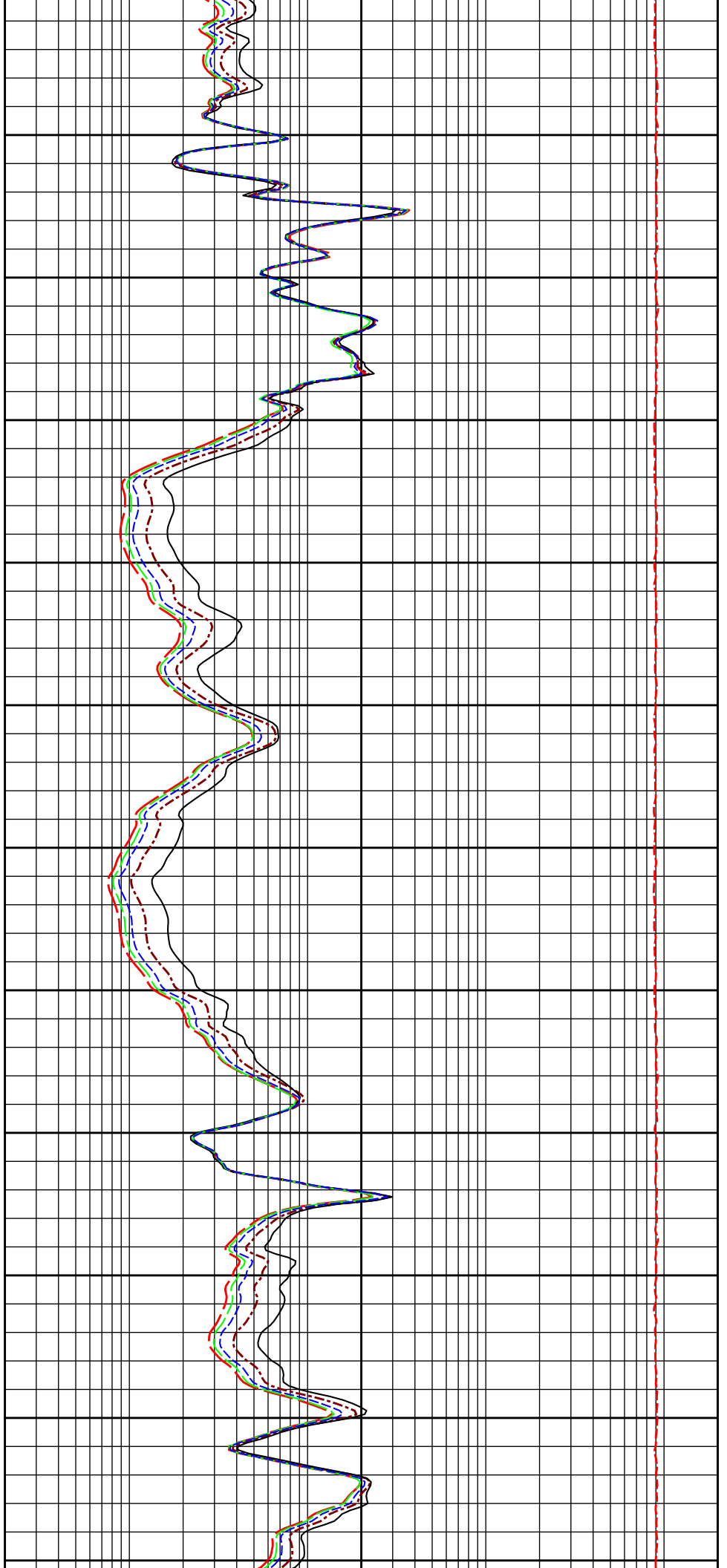


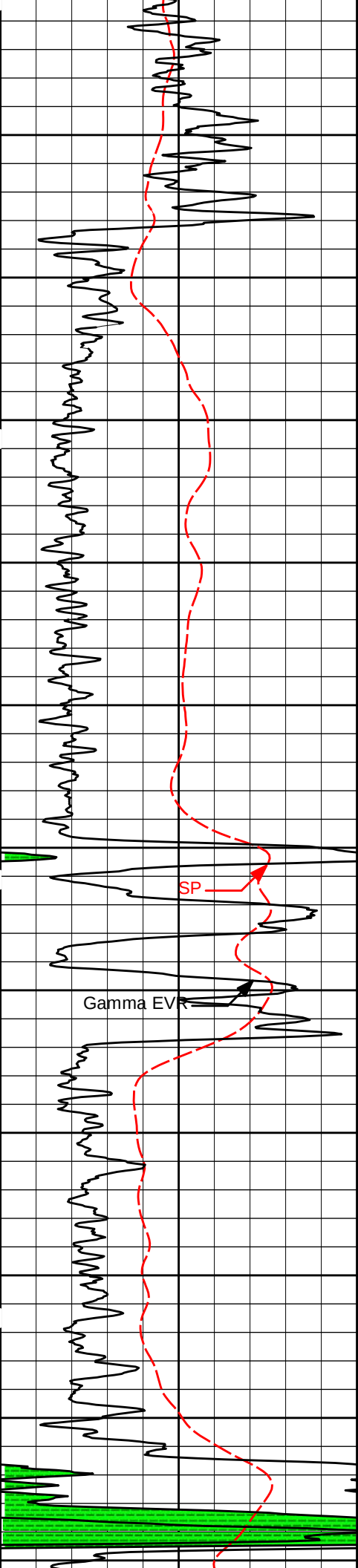
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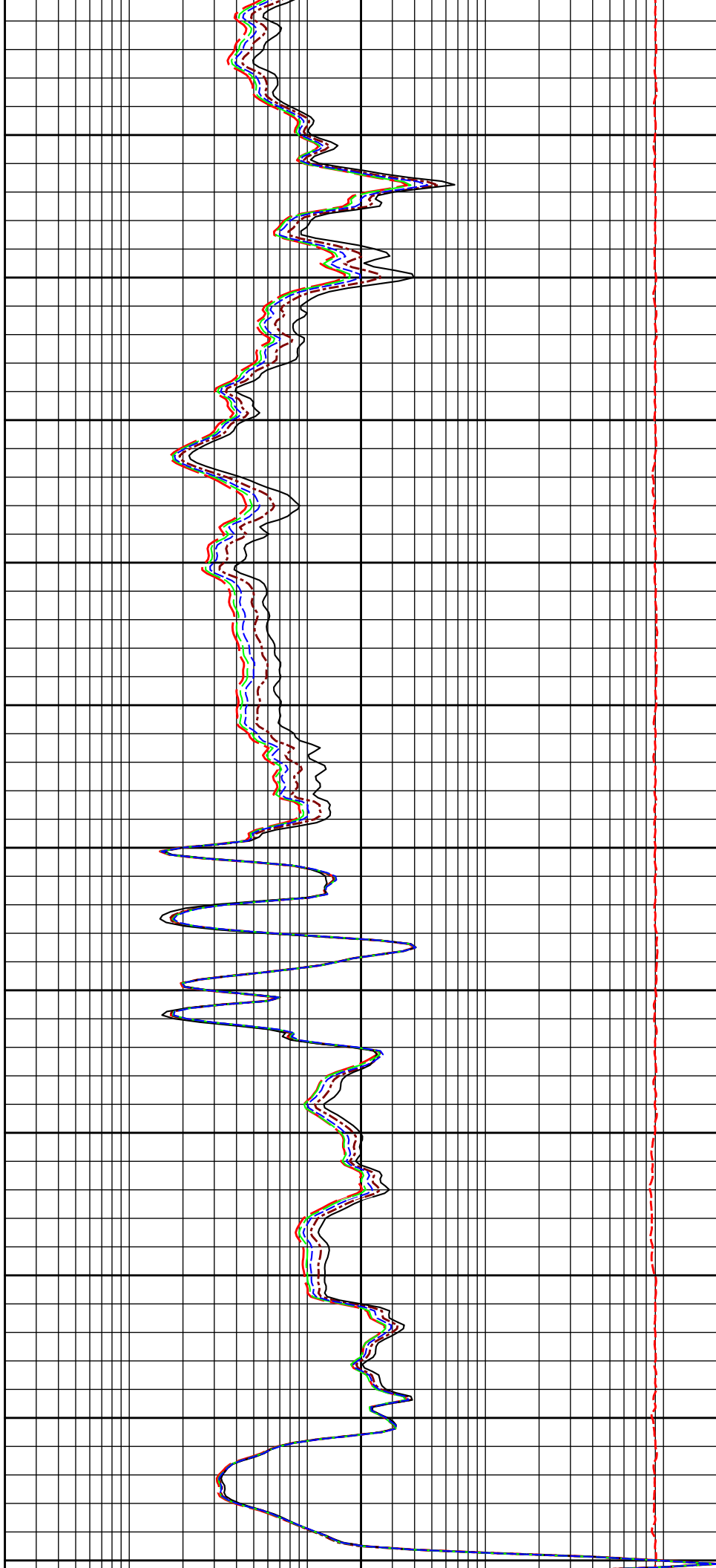


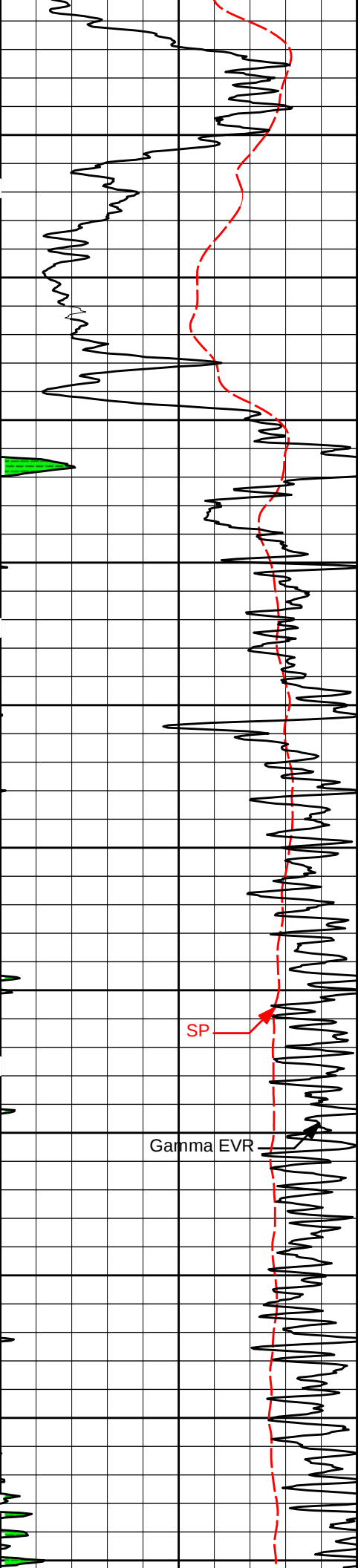
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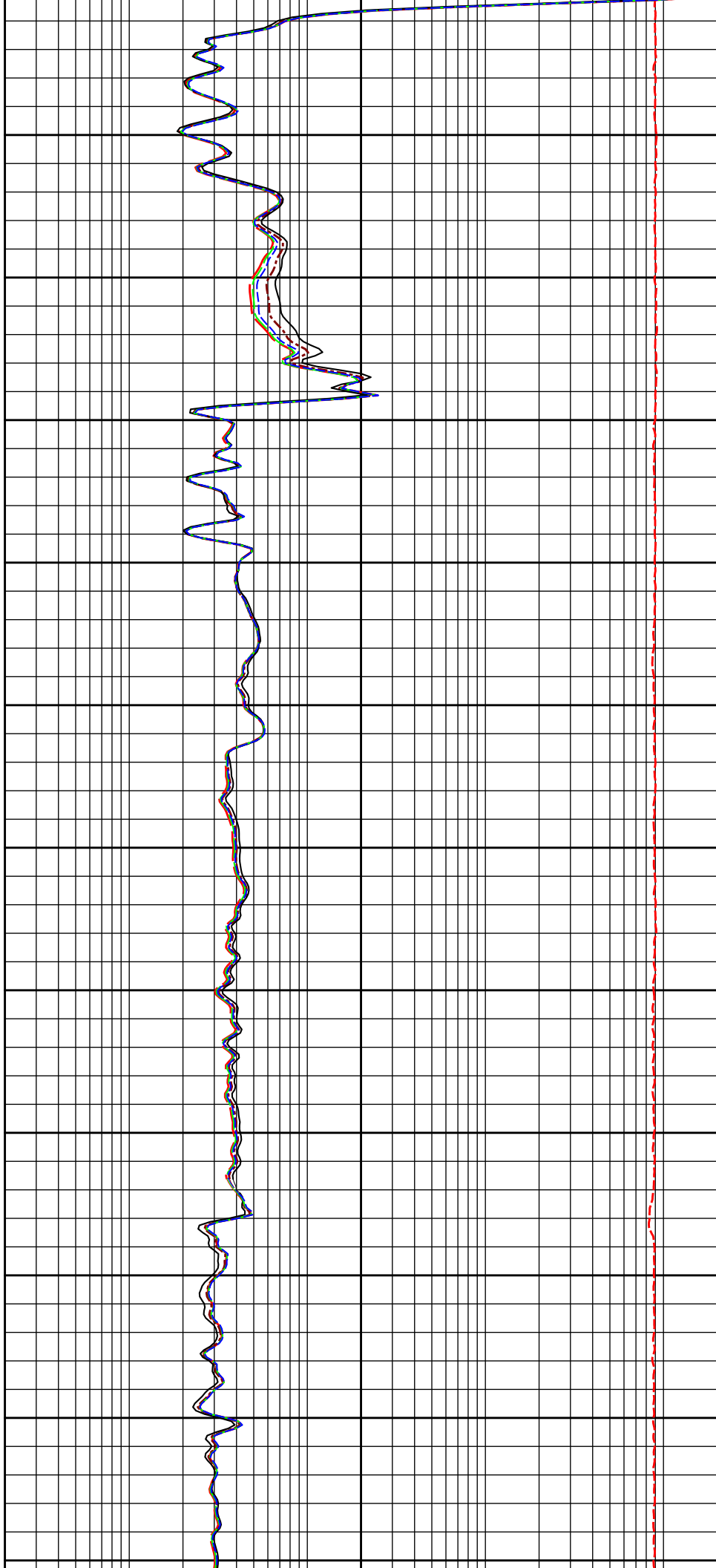


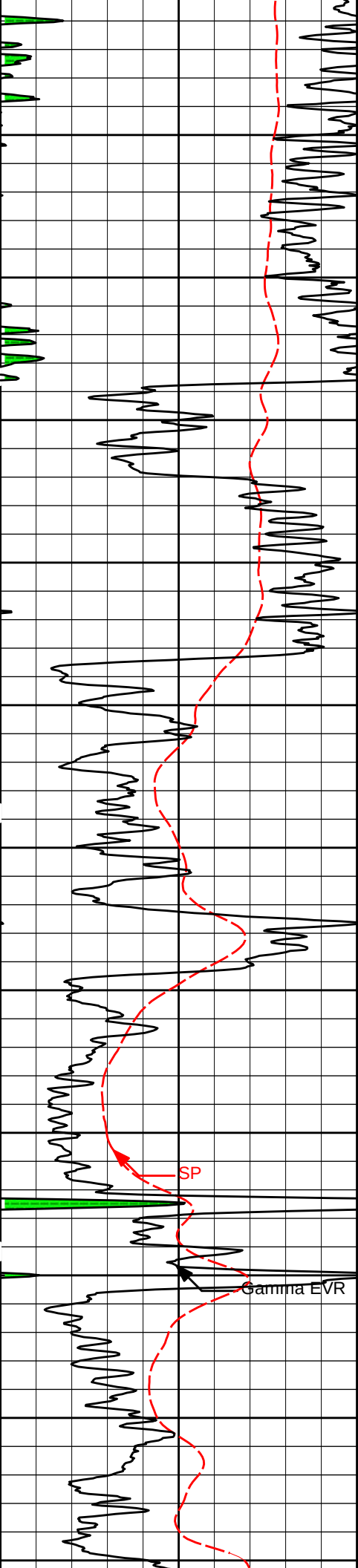
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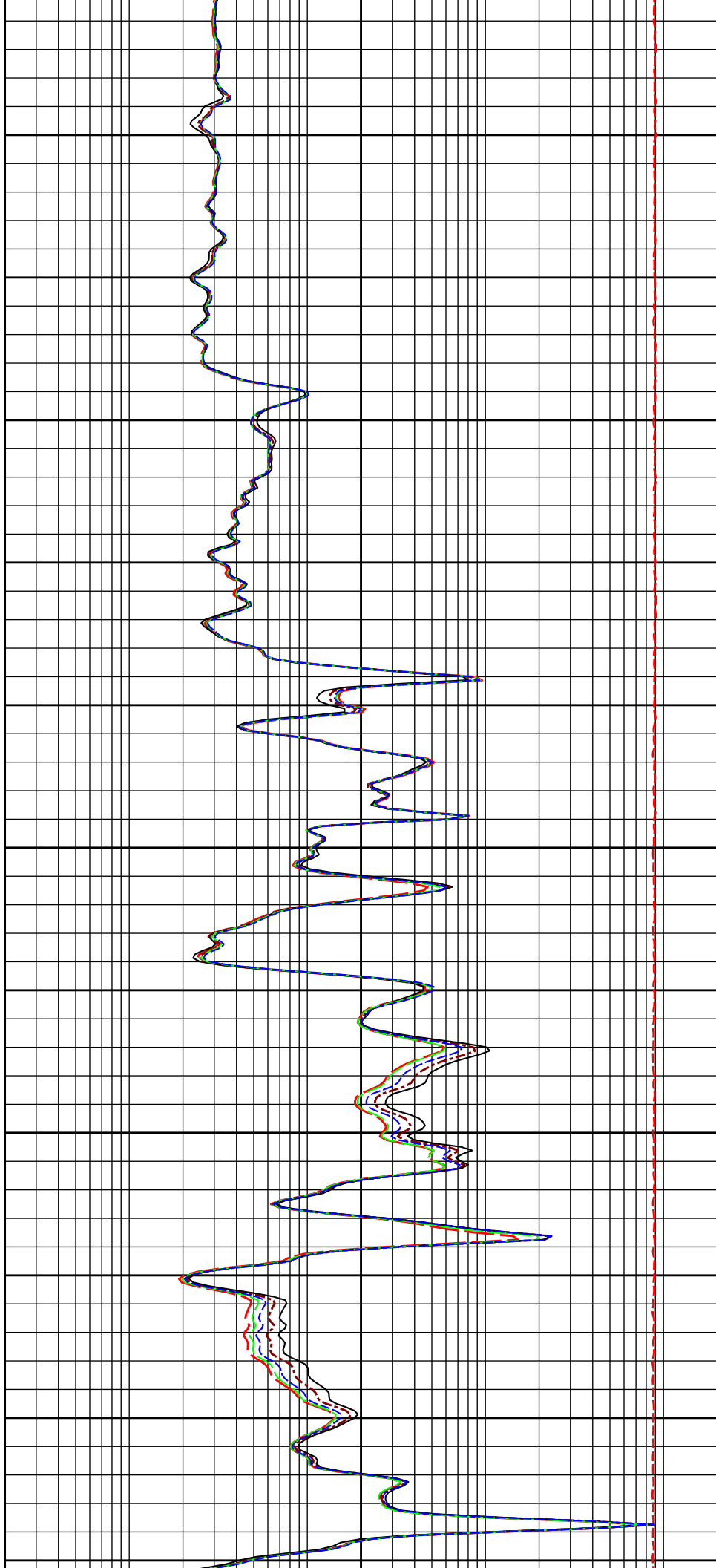


3400



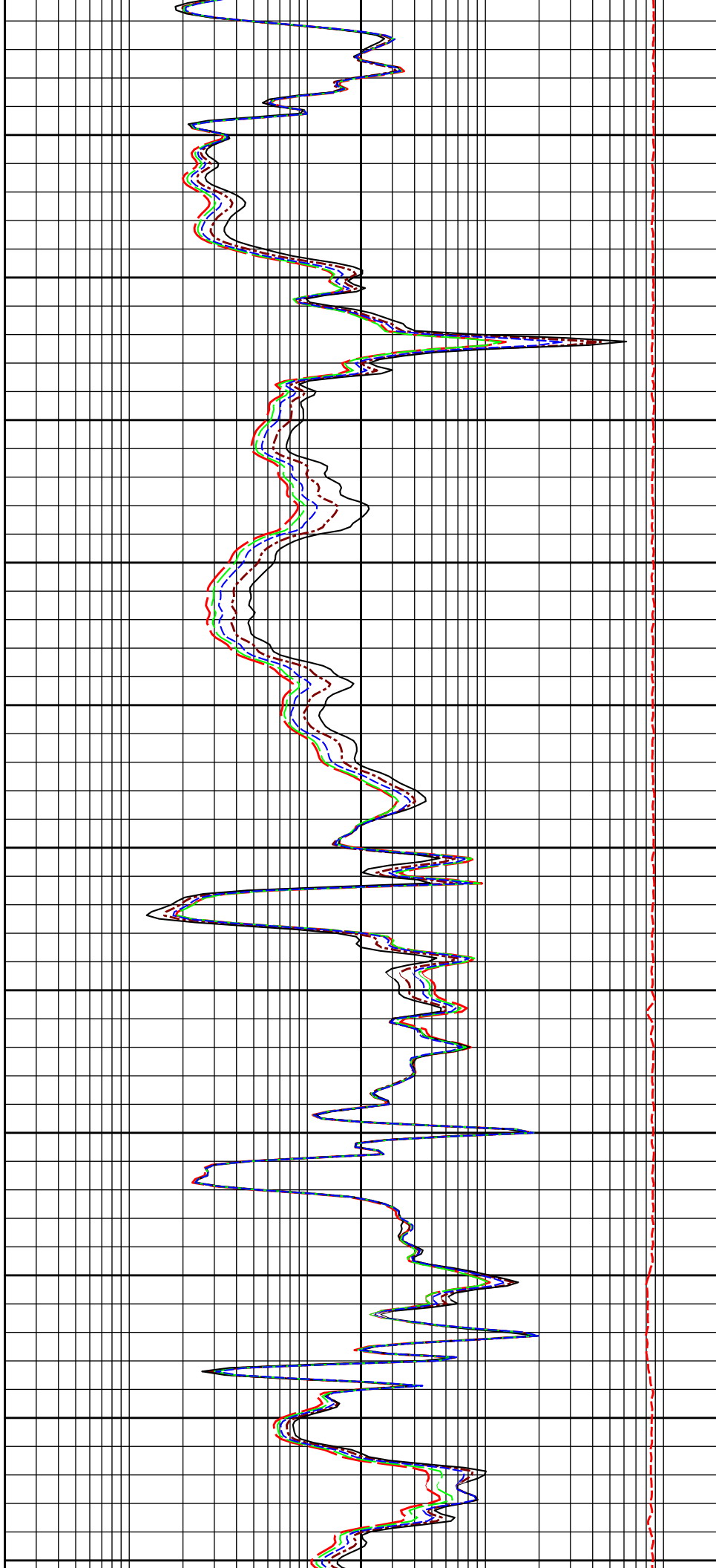


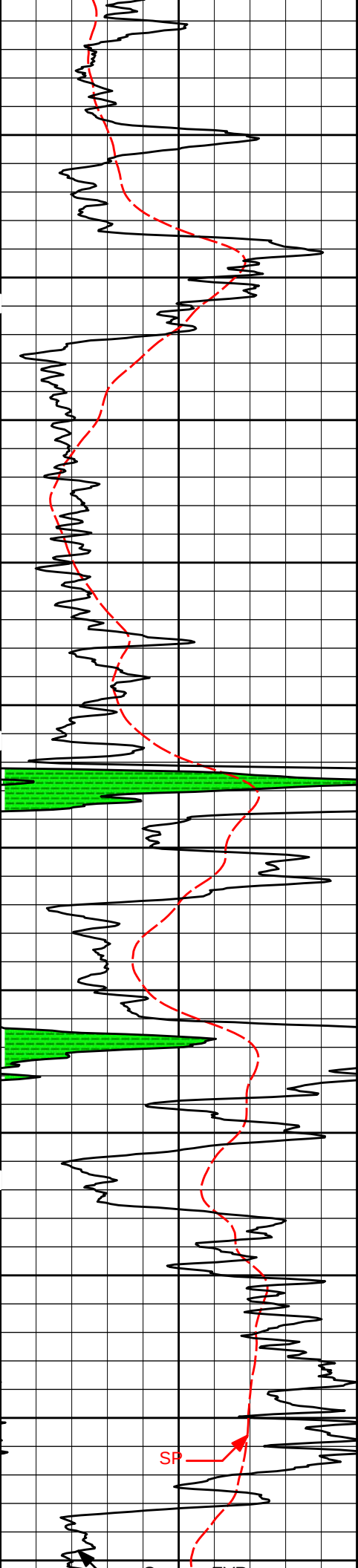
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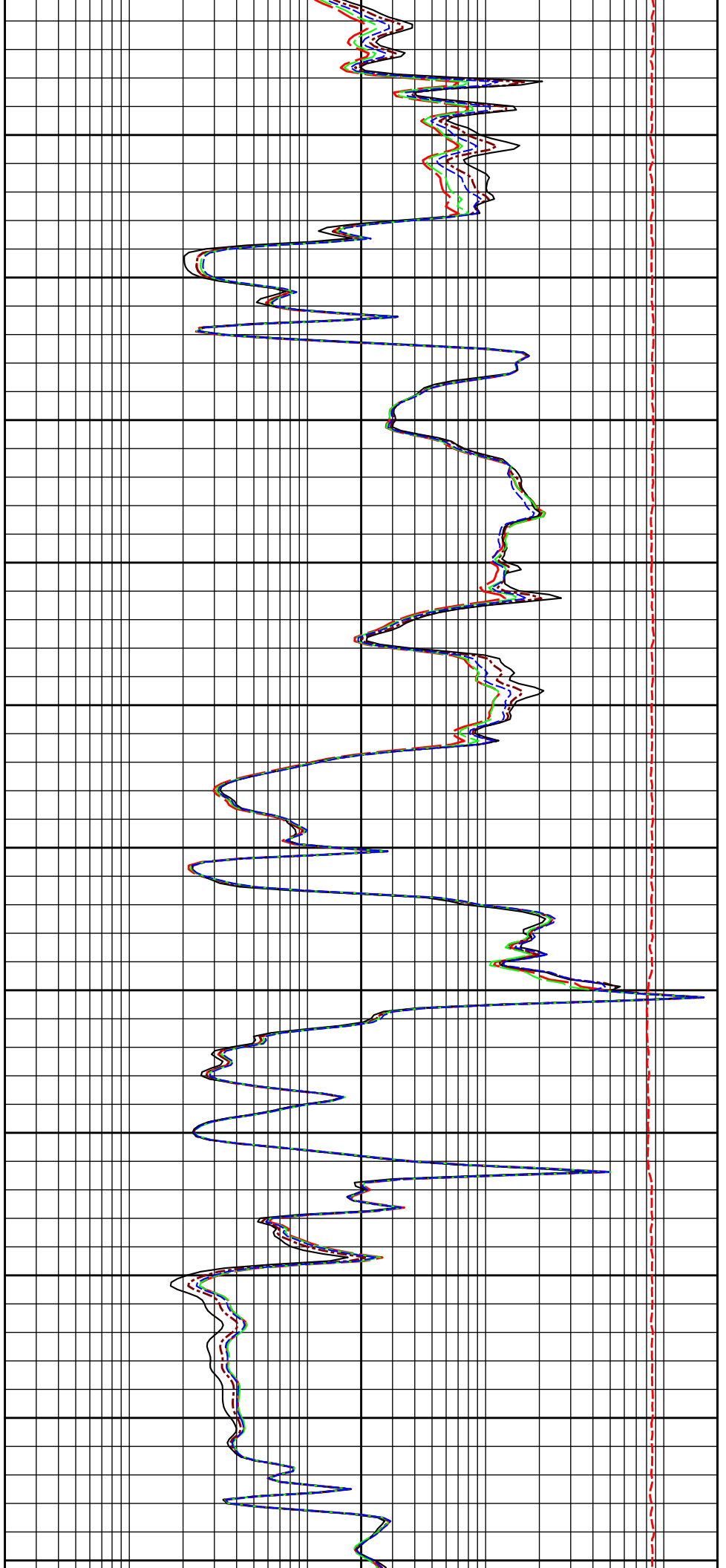


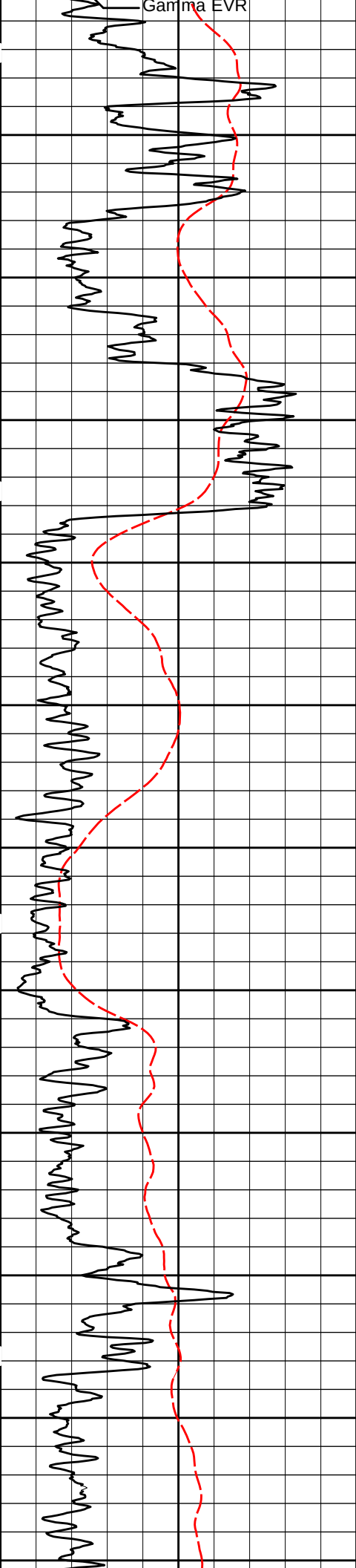
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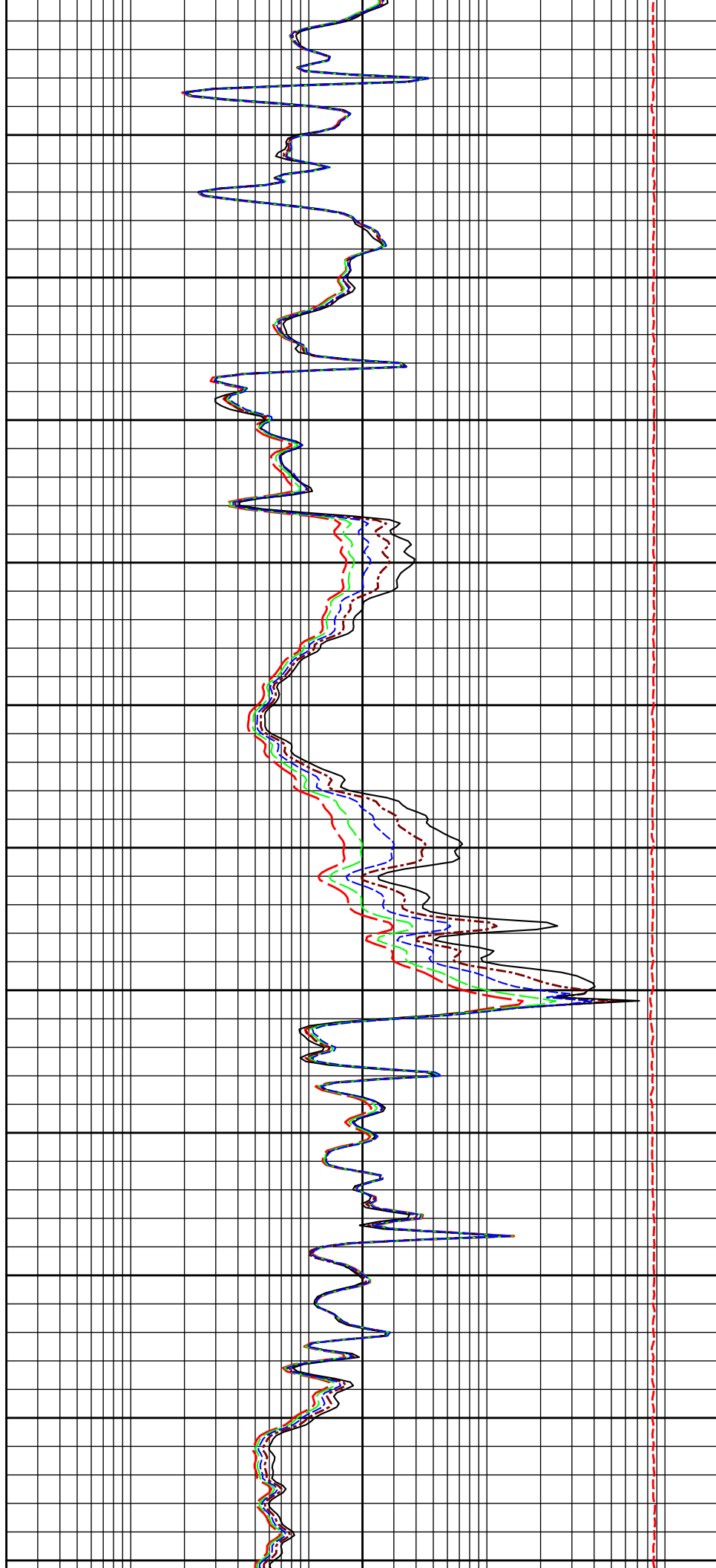
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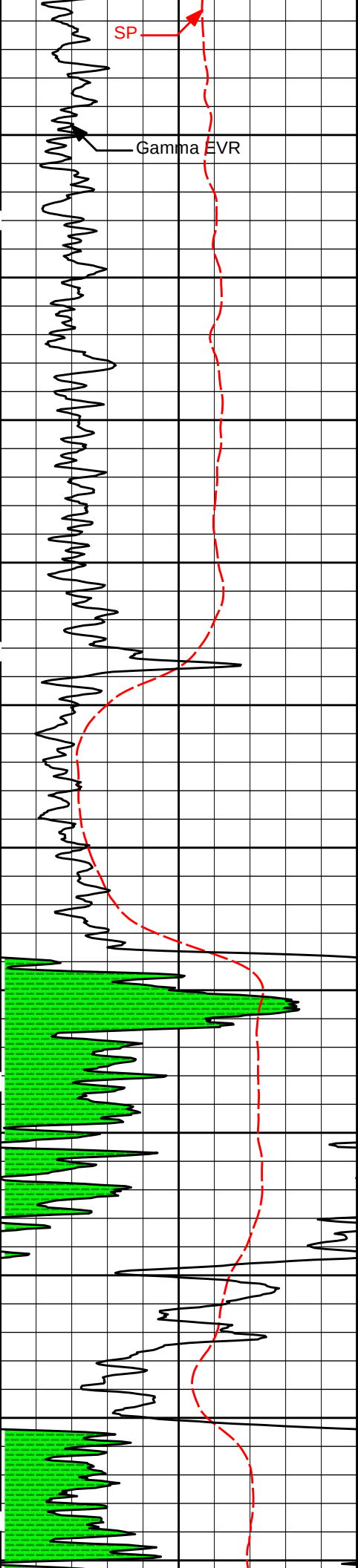




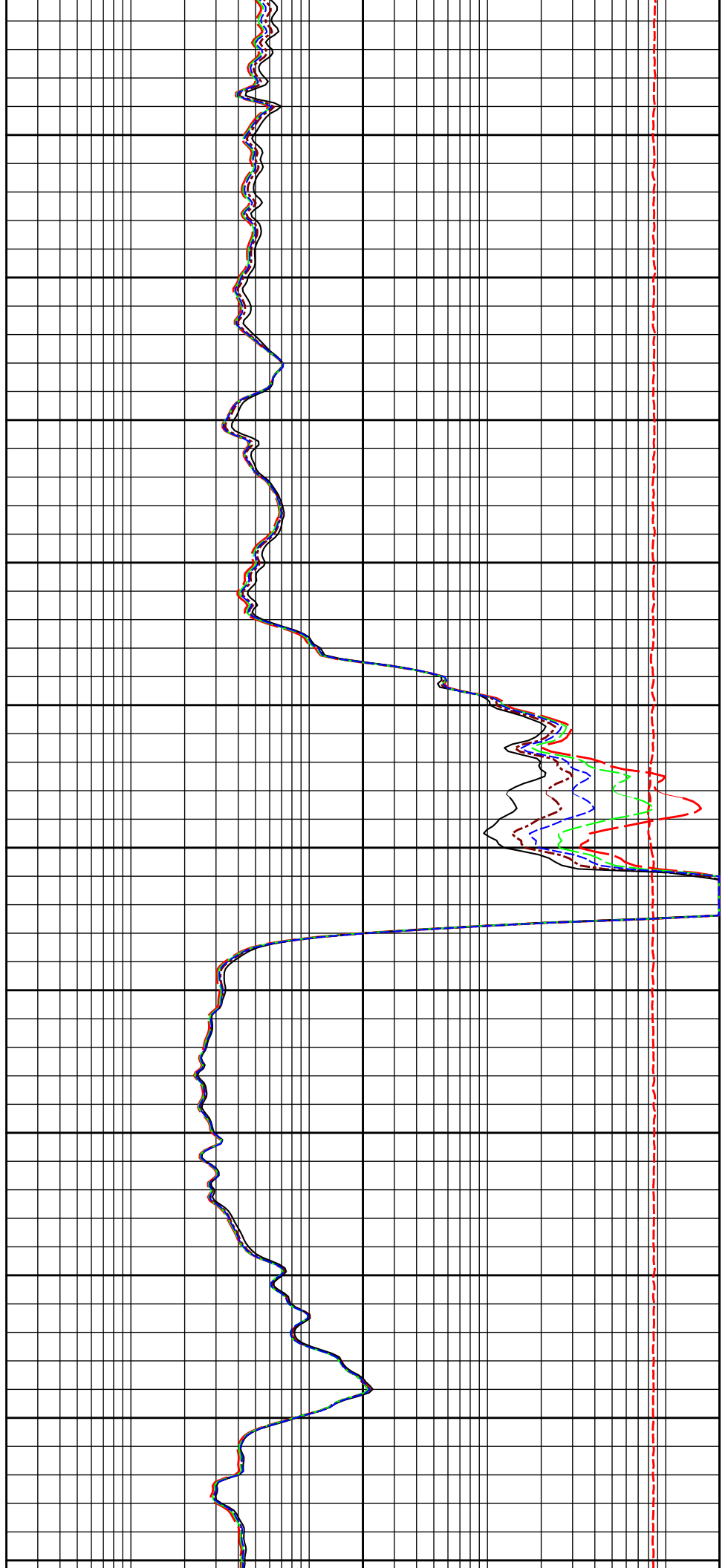
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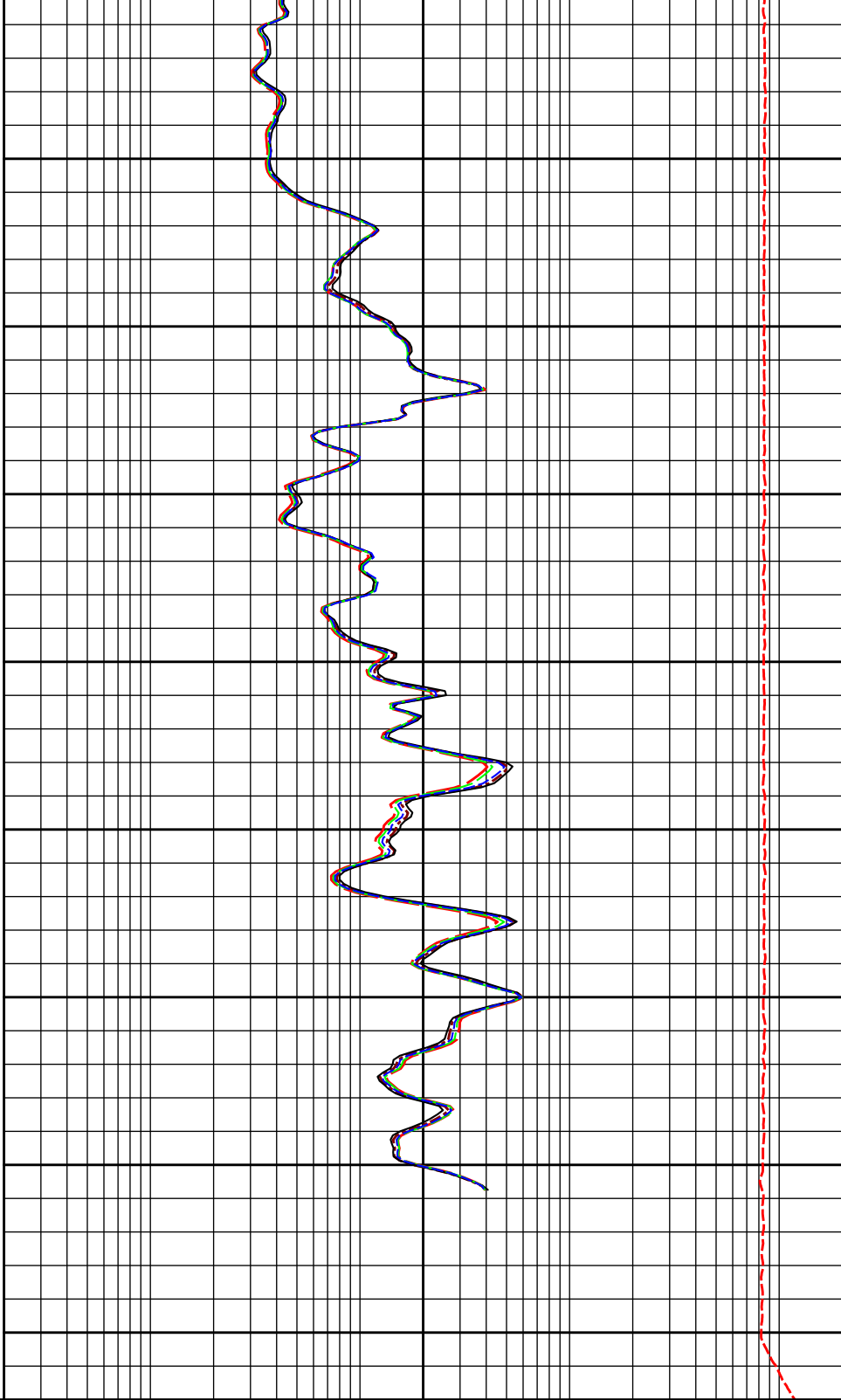
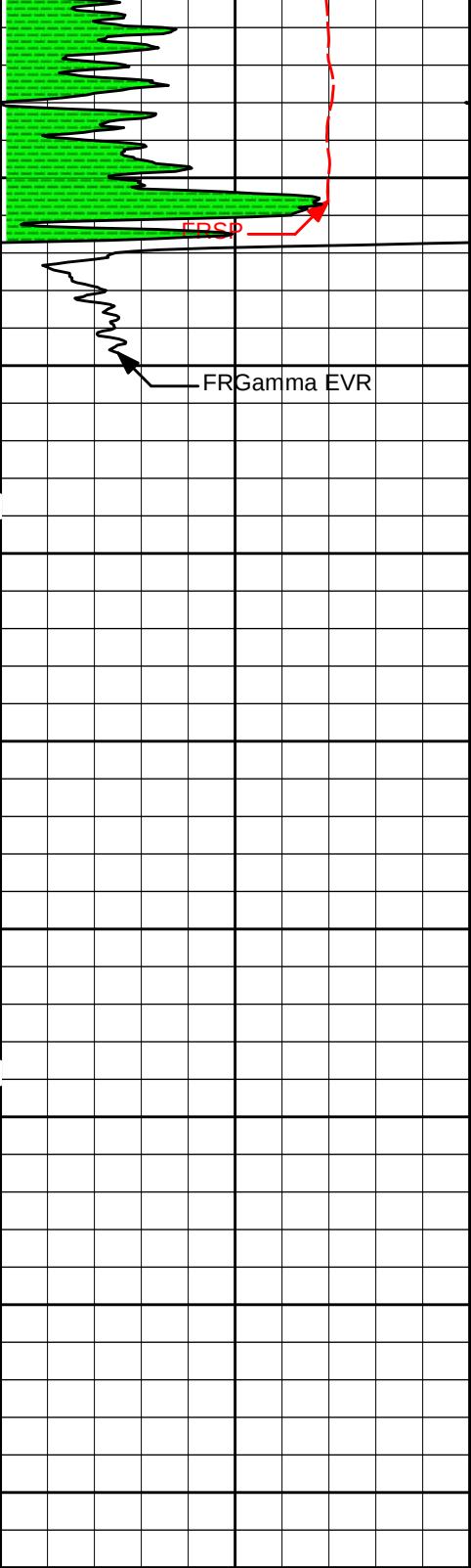
3900





4000





SP -]20[+		1 : 120 ft	15K Tension pounds	
0	Gamma EVR api		0	
SHALE		0.2	10in Resistivity 1ft Res ohmm	
			2000	
			0.2 20in Resistivity 1ft Res ohmm	
			2000	
			0.2 30in Resistivity 1ft Res ohm-metre	
		0.2	60in Resistivity 1ft Res ohmm	
			2000	

	0.2	90in Resistivity 1ft Res	2000
		ohmm	

HALLIBURTON

Plot Time: 03-Jul-14 19:08:33
Plot Range: 3000 ft to 4094 ft
Data: HEYEN_1-2\Well Based\DETAIL_BOTTOM\
Plot File: \\LOCAL\HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\ACRT\ACRT_10_EVR_LIB

MAIN SECTION HIGH RES 10" PER 100'

HALLIBURTON

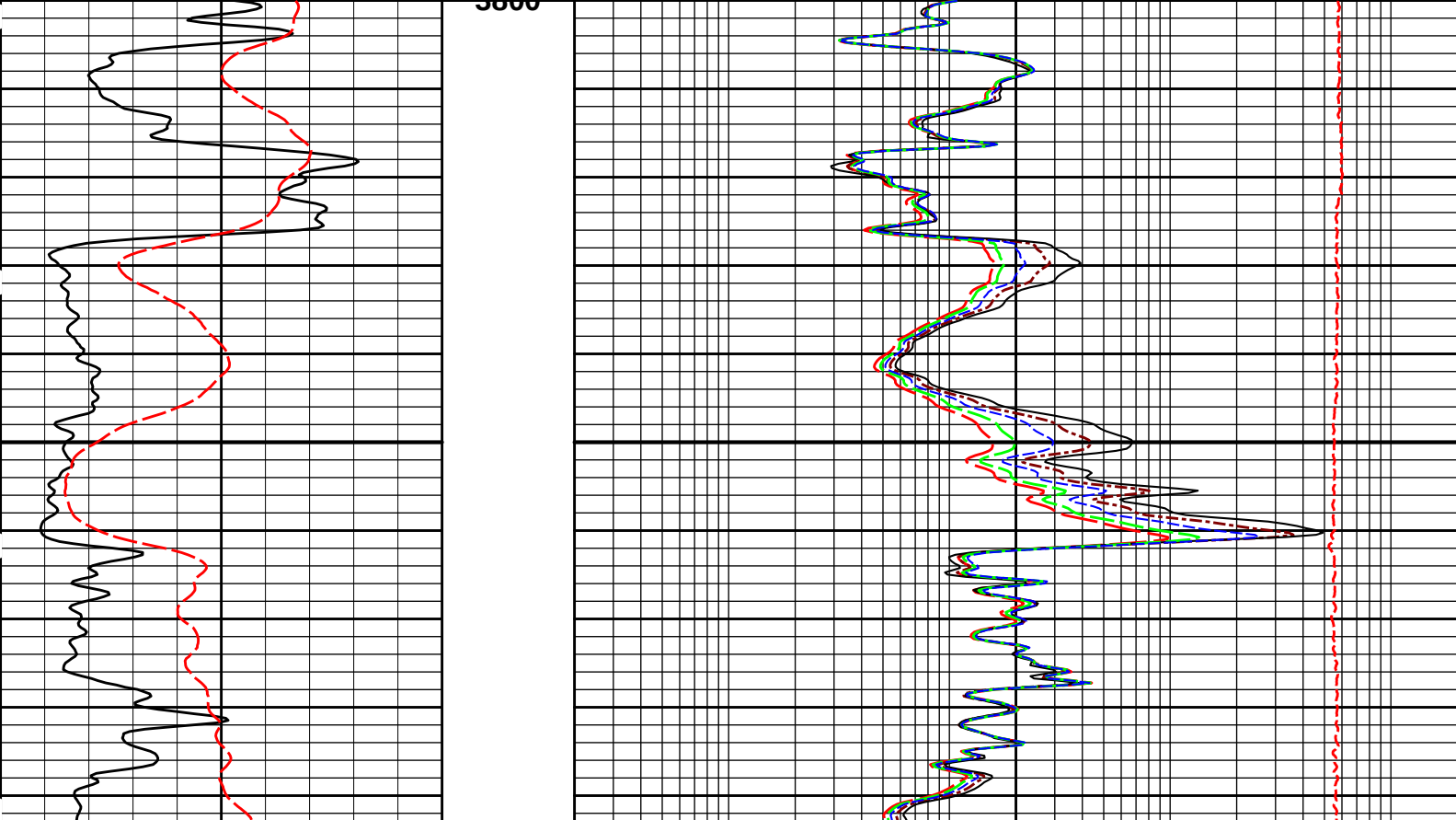
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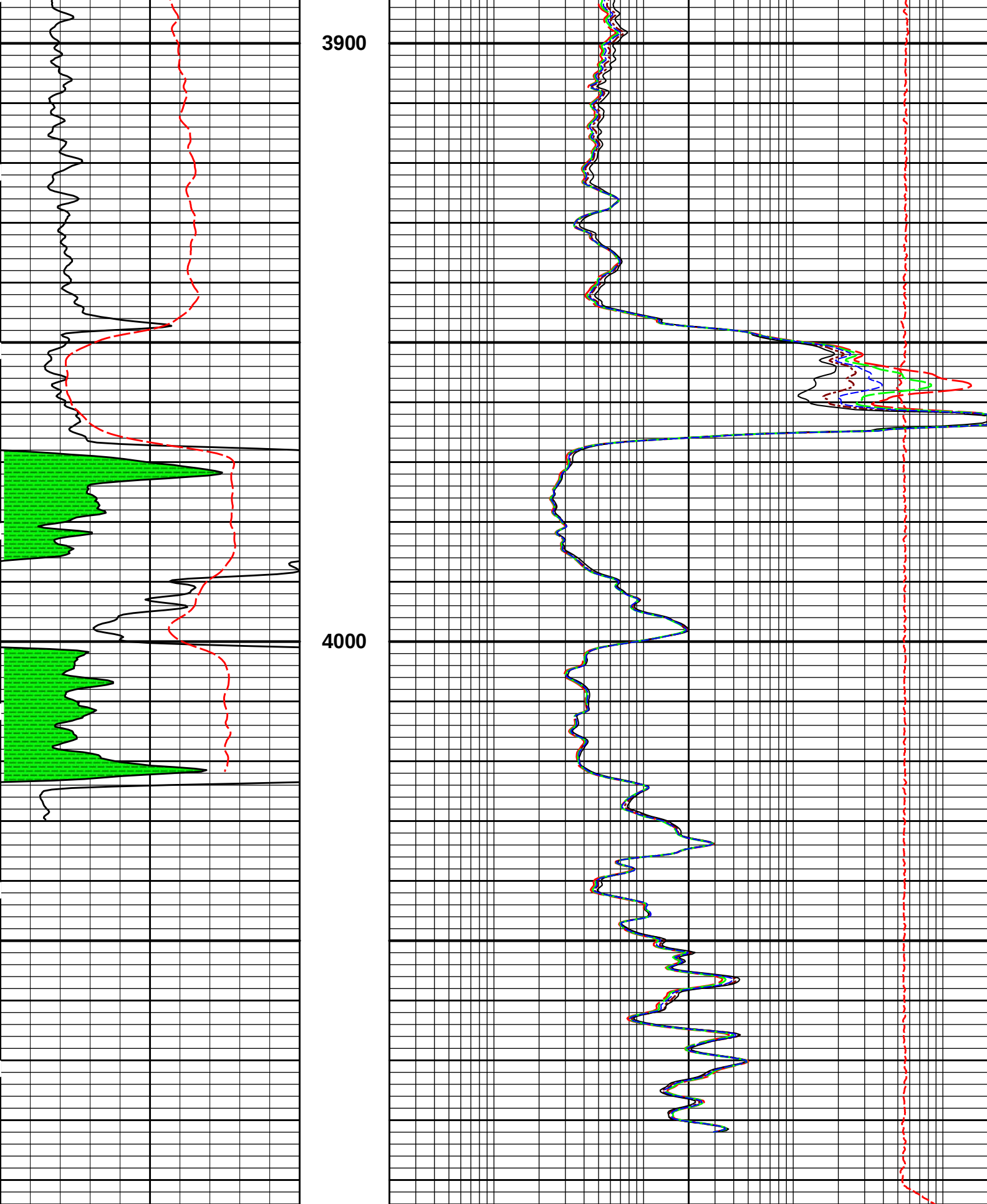
REPEAT SECTION

	0.2	90in Resistivity 2ft Res	2000
		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	2000
		ohmm	
		10K	Tension
			0
			pounds

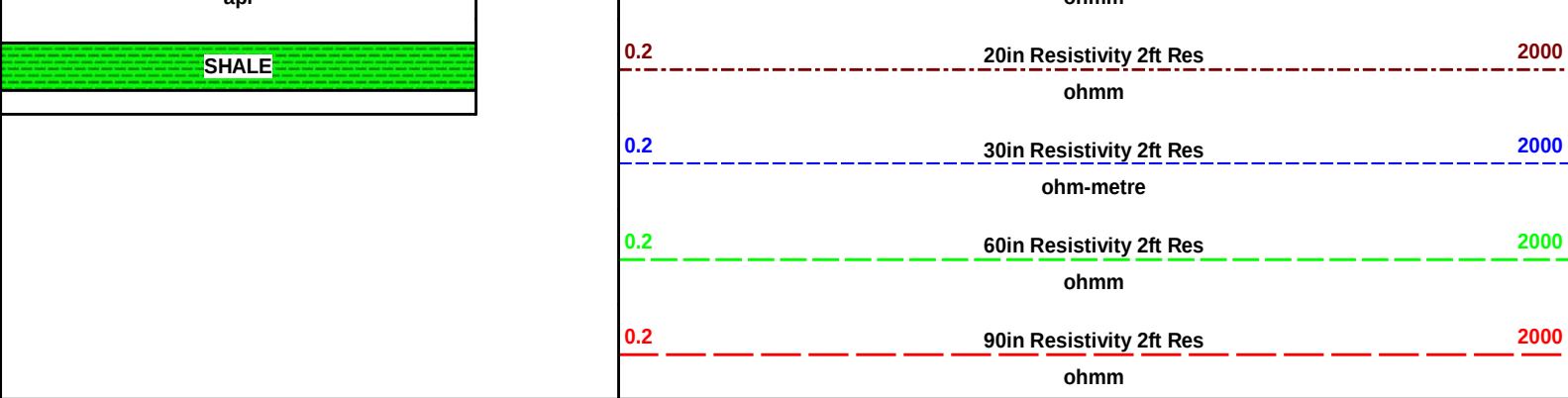
	SHALE	
0	Gamma API	150
	api	
	SP	
	-]20[+	

MD
1 : 240
ft





SP -]20[+ 0 Gamma API 150	MD 1 : 240 ft	10K 0.2 10in Resistivity 2ft Res 2000	Tension pounds 0
api		ohmm	



HALLIBURTON

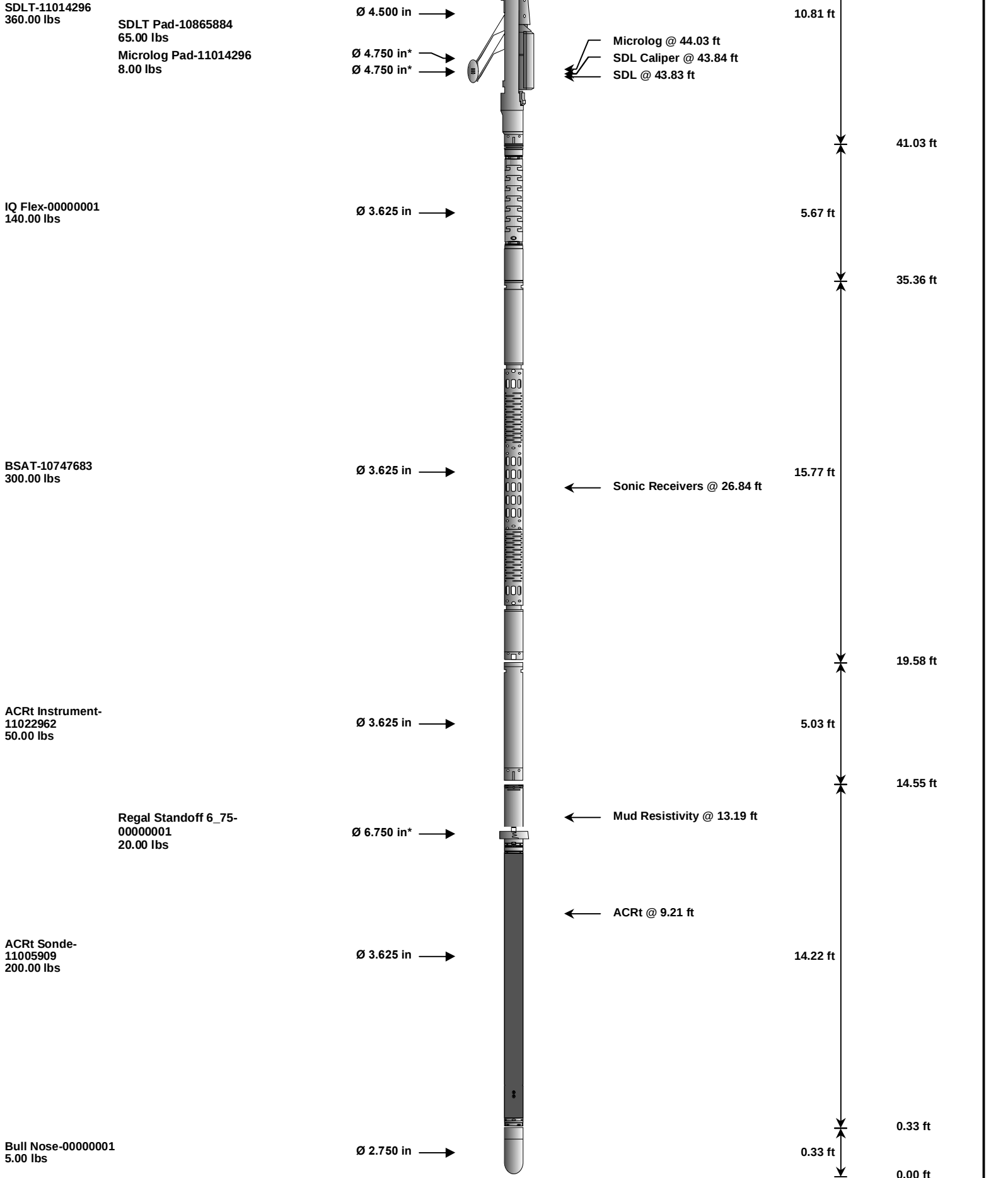
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Plot Range: 3800 ft to 4094.5 ft
Data: HEYEN_1-2\Well Based\REPEAT\
Plot File: \\LOCAL-HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\ACRT_5_repeat.lib

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-12156658 135.00 lbs		Ø 3.625 in →		Load Cell @ 76.35 ft BH Temperature @ 75.79 ft	6.25 ft	80.04 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		SP @ 72.01 ft	3.74 ft	73.79 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →		GammaRay @ 63.99 ft	8.52 ft	70.05 ft
DSNT-11055304 174.00 lbs		Ø 3.625 in →		DSN Far @ 54.59 ft DSN Near @ 53.84 ft	9.69 ft	61.53 ft
						51.84 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12156658	135.00	6.25	73.79	300.00

SP	SP Sub	12345678	60.00	3.74	70.05	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52	61.53	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	51.84	60.00
SDLT	Spectral Density Tool	11014296	360.00	10.81	41.03	60.00
SDLP	Density Insite Pad	10865884	65.00	2.55 *	43.24	60.00
MICP	Microlog Pad	11014296	8.00	1.00 *	43.53	60.00
IQF	IQ Flex tool	00000001	140.00	5.67	35.36	300.00
BSAT	Borehole Sonic Array Tool	10747683	300.00	15.77	19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11022962	50.00	5.03	14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11005909	200.00	14.22	0.33	120.00
RSOF	Regal Standoff 6.75in	00000001	20.00	0.52 *	12.25	300.00
BLNS	Bull Nose	00000001	5.00	0.33	0.00	300.00
Total			1,682.00	80.04		
* Not included in Total Length and Length Accumulation.						
Data: HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\IDLE					Date: 03-Jul-14 16:44:54	

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0305	1.05	0.95	1.0274	1.05	0.95	1.0219	1.05
A2 (50")	0.95	1.0255	1.05	0.95	1.0220	1.05	0.95	1.0179	1.05
A3 (29")	0.95	1.0180	1.05	0.95	1.0130	1.05	0.95	1.0063	1.05
A4 (17")	0.95	1.0291	1.05	0.95	1.0200	1.05	0.95	1.0147	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0039	1.05	0.95	0.9959	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9855	1.05	0.95	0.9787	1.05

SONDE OFFSET									
Subarray	R12KHz			R36KHz			R72KHz		
	(mmho/m)			(mmho/m)			(mmho/m)		
A1 (80")	0.291			-3.602			-5.523		
A2 (50")	-1.146			-3.581			-4.895		
A3 (29")	-14.577			-4.594			-3.092		
A4 (17")	-103.764			-31.050			-26.643		
A5 (10")	N/A			-100.391			-44.771		
A6 (6")	N/A			284.684			152.557		

TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION			
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.88	1.3		Mud Cell	0.95	1.00	1.05
36K	1.0	1.35	2.0					
72K	1.0	1.59	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
GTET-11048627						
Gamma Ray Calibrator	269.6	266.8	-----	2.8	+/- 9.00	api
ACRt Sonde-11005909						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m
Data: HEYEN_1-210001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BNIDLE					Date: 03-Jul-14 16:47:13	

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	Natural	ppg
	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	2.000	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	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4090.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	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	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in
	GTET	GEOK	Process Gamma Ray EVR?	Yes	
	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?	Yes	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DSNO	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	
	DSNT	BHSM	Borehole Size Source Tool	SDLT	
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	SDLT Pad	DNOK	Process Density?	Yes	
	SDLT Pad	DNOK	Process Density EVR?	Yes	
	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	
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
	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 Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	User define	
BSAT	DTMA	Delta -T Matrix	47.60	uspf
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	RMIN	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	
BOTTOM_____				
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HALLIBURTON INPUTS, DELAYS AND FILTERS TABLE				
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
Rwa / CrossPlot				
TPUL	Tension Pull	80.04	NO	
BS	Bit Size	80.04	NO	
HDIA	Measured Hole Diameter	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	72.01	NO	
SP	Spontaneous Potential	72.01	BLK	1.250
SPR	Raw Spontaneous Potential	72.01	NO	
SPO	Spontaneous Potential Offset	72.01	NO	
GTET				
TPUL	Tension Pull	63.99	NO	
GR	Natural Gamma Ray API	63.99	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	63.99	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	63.99	W	1.416 , 0.750
HDIA	Measured Hole Diameter	0.00	NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	53.74	NO	
RNDS	Near Detector Telemetry Counts	53.84	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.59	TRI	0.583

DNTT	DSN Tool Temperature	53.84	NO	
DSNS	DSN Tool Status	53.74	NO	
ERND	Near Detector Telemetry Counts EVR	53.84	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.59	BLK	0.000
ENTM	DSN Tool Temperature EVR	53.84	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT				
TPUL	Tension Pull	43.84	NO	
PCAL	Pad Caliper	43.84	TRI	0.250
ACAL	Arm Caliper	43.84	TRI	0.250
BSAT				
TPUL	Tension Pull	26.84	NO	
STAT	Status	26.84	NO	
DLYT	Delay Time	26.84	NO	
SI	Sample Interval	26.84	NO	
TXRX	Raw Telemetry 10 Receivers	26.84	NO	
FRMC	Tool Frame Count	26.84	NO	
GMOD	Gain processing mode	19.58	NO	
ACRt Sonde				
TPUL	Tension Pull	2.73	NO	
F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000

F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000
RMUD	Mud Resistivity	12.52	BLK	0.000
F1RT	Transmitter Reference 12 KHz Real Signal	2.73	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000
ITMP	Instrument Temperature	2.73	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.73	NO	
TIDV	Instrument Temperature Derivative	2.73	NO	
TUDV	Upper Temperature Derivative	2.73	NO	
TLDV	Lower Temperature Derivative	2.73	NO	
TRBD	Receiver Board Temperature	2.73	NO	
HDIA	Measured Hole Diameter	0.00	NO	

SDLT Pad

TPUL	Tension Pull	43.83	NO	
NAB	Near Above	43.66	BLK	0.920
NHI	Near Cesium High	43.66	BLK	0.920
NLO	Near Cesium Low	43.66	BLK	0.920
NVA	Near Valley	43.66	BLK	0.920
NBA	Near Barite	43.66	BLK	0.920
NDE	Near Density	43.66	BLK	0.920
NPK	Near Peak	43.66	BLK	0.920
NLI	Near Lithology	43.66	BLK	0.920
NBAU	Near Barite Unfiltered	43.66	BLK	0.250
NLIU	Near Lithology Unfiltered	43.66	BLK	0.250
FAB	Far Above	44.01	BLK	0.250
FHI	Far Cesium High	44.01	BLK	0.250
FLO	Far Cesium Low	44.01	BLK	0.250
FVA	Far Valley	44.01	BLK	0.250
FBA	Far Barite	44.01	BLK	0.250
FDE	Far Density	44.01	BLK	0.250
FPK	Far Peak	44.01	BLK	0.250
FLI	Far Lithology	44.01	BLK	0.250
PTMP	Pad Temperature	43.84	BLK	0.920
NHV	Near Detector High Voltage	43.24	NO	
FHV	Far Detector High Voltage	43.24	NO	
ITMP	Instrument Temperature	43.24	NO	
DDHV	Detector High Voltage	43.24	NO	
HDIA	Measured Hole Diameter	0.00	NO	

Microlog Pad

TPUL	Tension Pull	44.03	NO	
MINV	Microlog Lateral	44.03	BLK	0.750
MNOR	Microlog Normal	44.03	BLK	0.750

Data: HEYEN_1-210001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BNIDLE

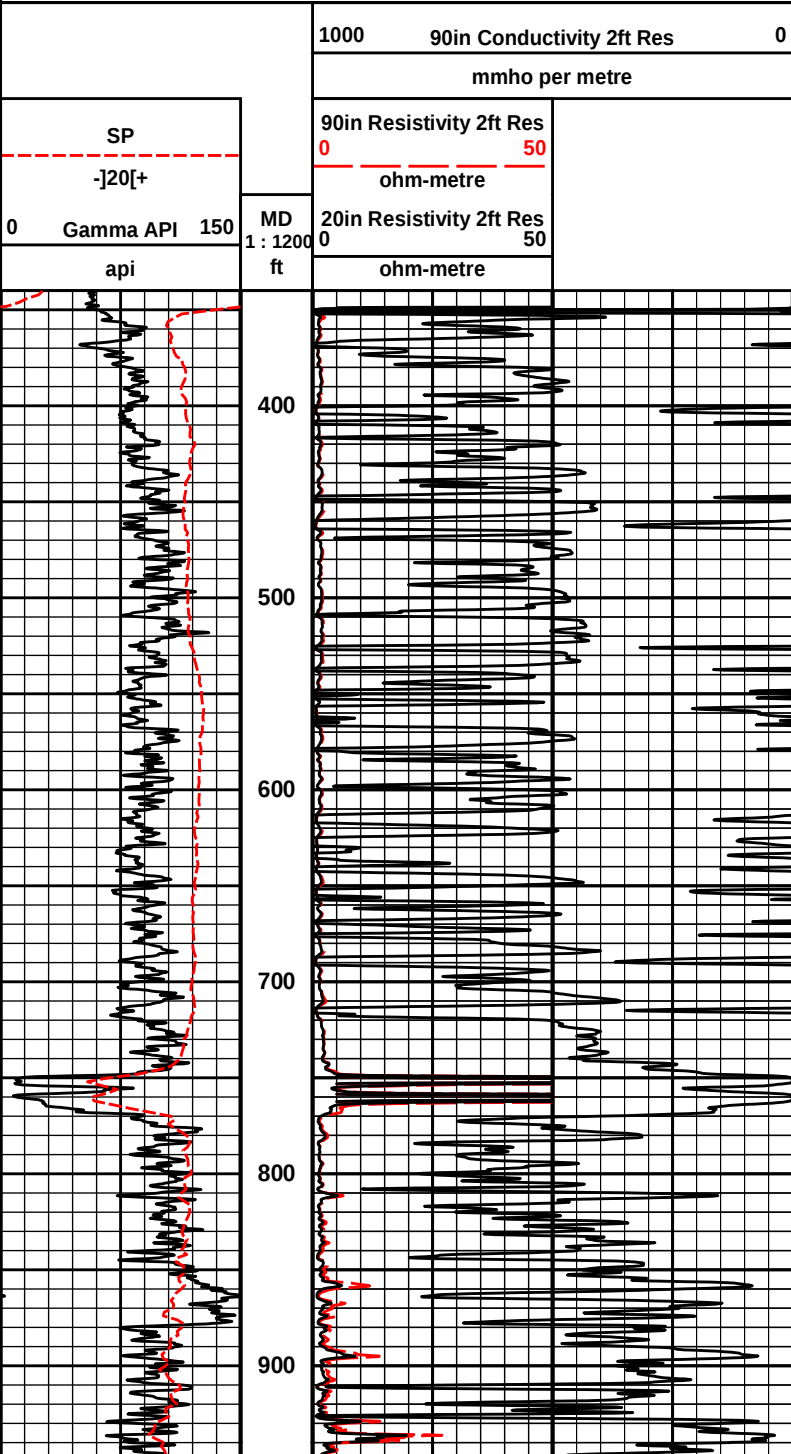
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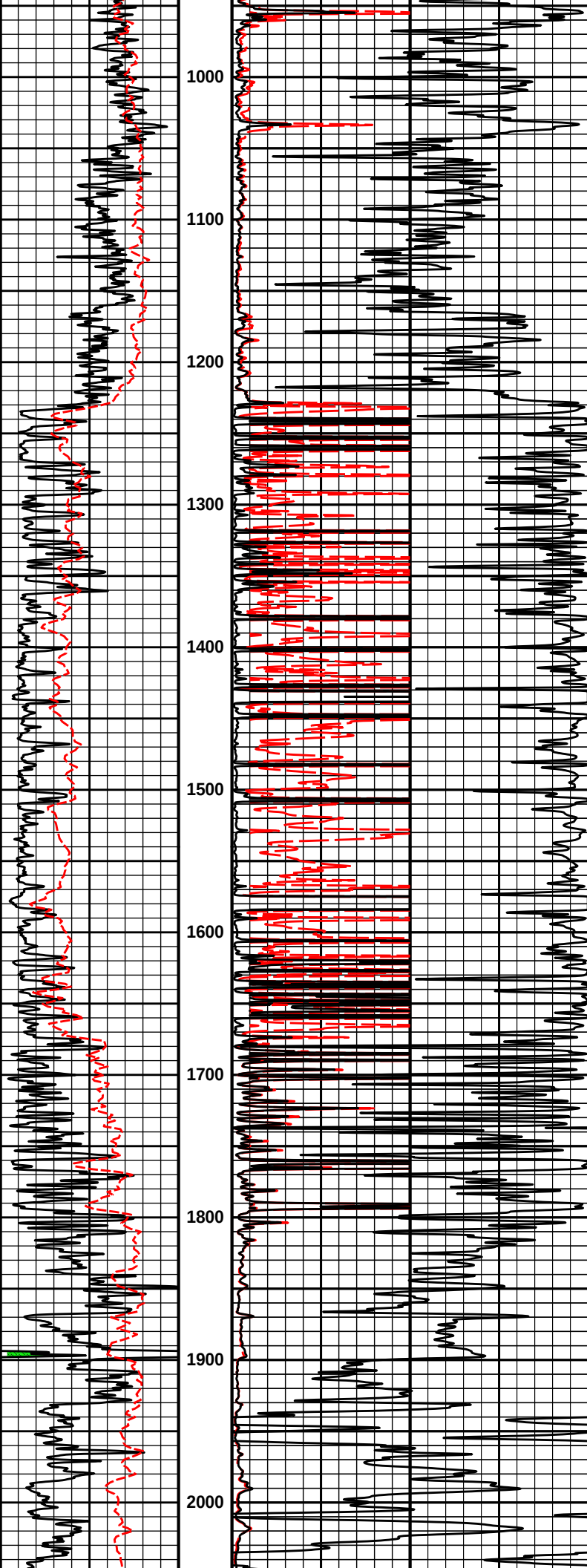
COMPANY HARTMAN OIL CO., INC.

WELL	HEYEN #1-2		
FIELD	GRAY NORTH FIELD		
COUNTY	STAFFORD	STATE	KANSAS
HALLIBURTON		ARRAY COMPENSATED TRUE RESISTIVITY LOG	

HALLIBURTON
Plot Time: 03-Jul-14 19:08:34
Plot Range: 340 ft to 4081.5 ft
Data: HEYEN_1-2\Well Based\CASING\
Plot File: \\LOCAL-HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BNL...ACRT_1.lib

1 INCH MAIN LOG





1000

1100

1200

1300

1400

1500

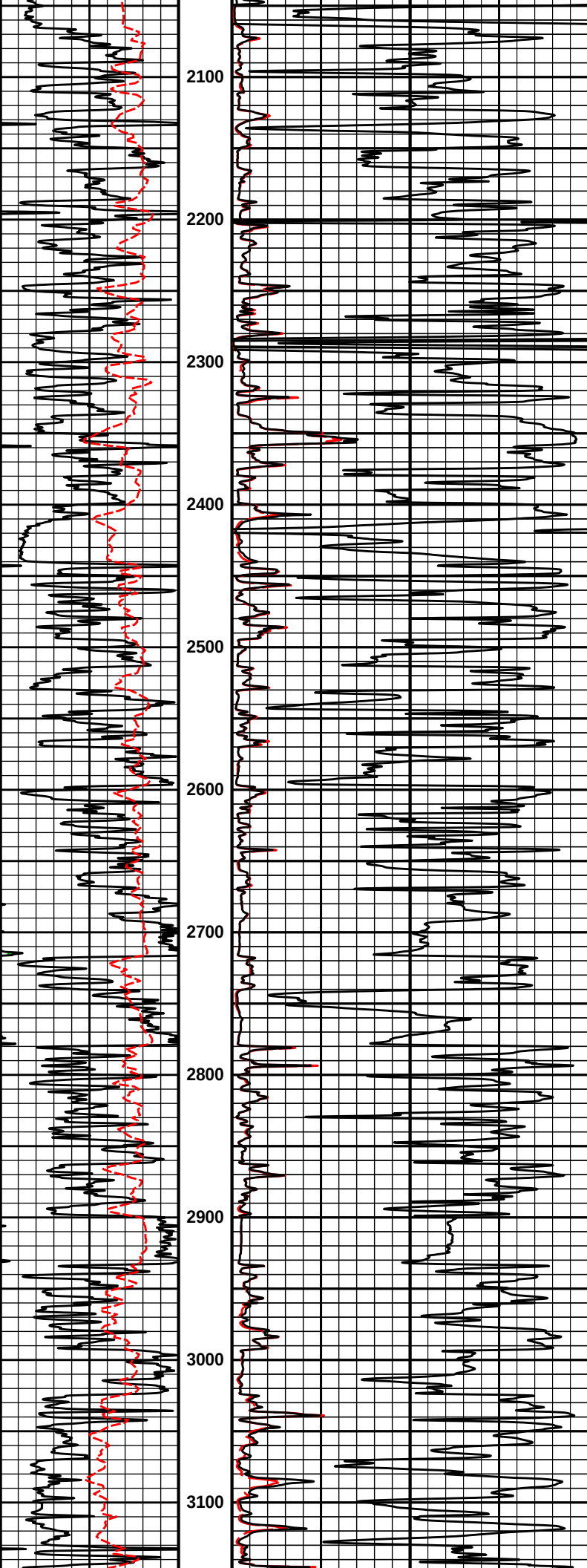
1600

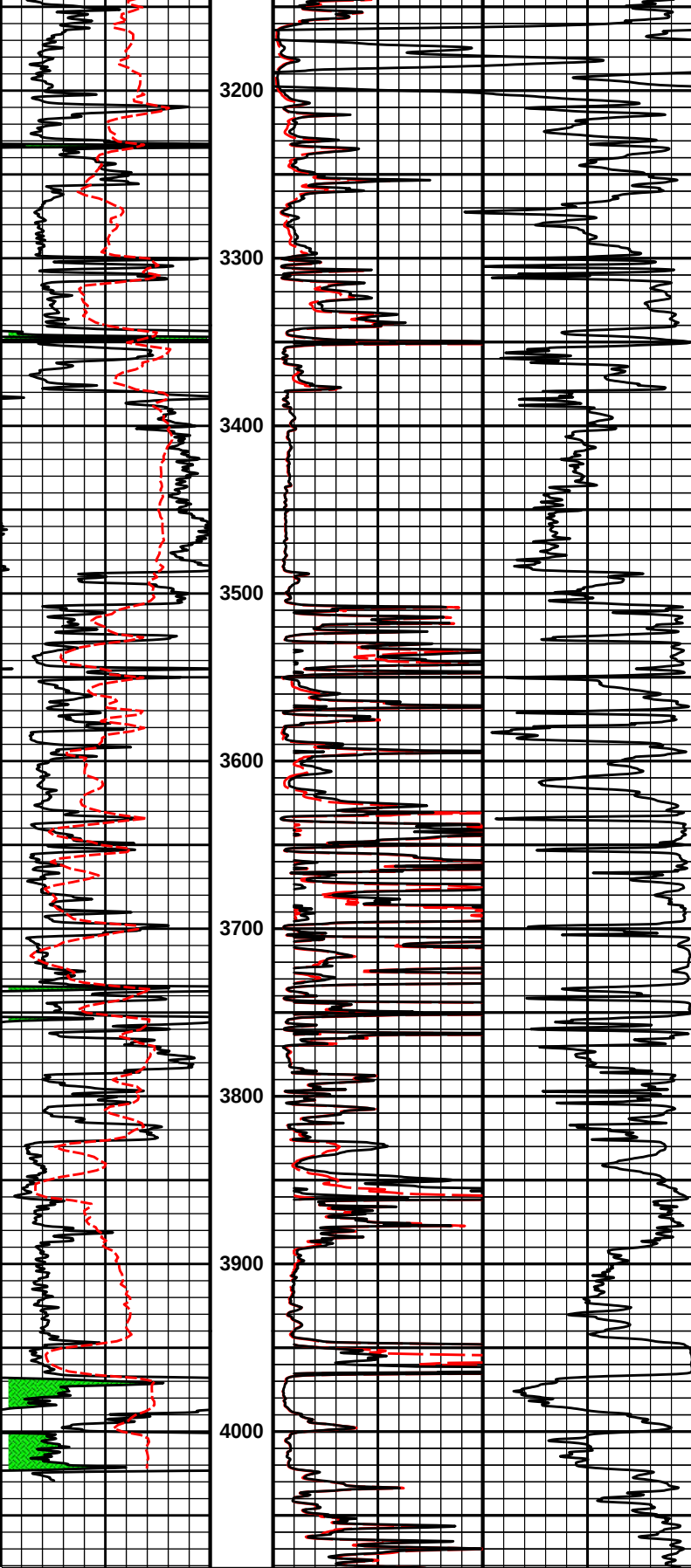
1700

1800

1900

2000





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

HALLIBURTON

Plot Time: 03-Jul-14 19:08:35

Plot Range: 340 ft to 4081.5 ft

Data: HEYEN_1-2\Well Based\CASING\

Plot File: \\LOCAL-HEYEN_1-2\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BNL...ACRT_1.lib

1 INCH MAIN LOG