HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY LOG

RAYDON EXPLORATION, INC. | ROCK #2-27 | KISMET | SEWARD | KANSAS

COMPANY | WELL | FIELD/BLOCK | COUNTY | STATE

COMPANY **RAYDON EXPLORATION, INC.**

WELL **ROCK #2-27**

FIELD/BLOCK **KISMET**

COUNTY **SEWARD** STATE **KANSAS**

API No. 15-175-22271-00-00

Location

(SHL) NE SE SE SW
425' FSL & 2490' FWL

Sect. 27 Twp. 33S Rge. 31W

Other Services:

ACRT
SDL-DSN
MICROLOG
SONIC

Permanent Datum	GL	Elev. 2733.0 ft	Elev.: K.B. 2744.0 ft
Log measured from	KB	, 11.0 ft above perm. Datum	D.F. 2742.0 ft
Drilling measured from	KB		G.L. 2733.0 ft

Date		01-Oct-19					
Run No.		1					
Depth - Driller		5830.0 ft					
Depth - Logger		5828.0 ft					
Bottom - Logged Interval		5818					
Top - Logged Interval		1640					
Casing - Driller		8.625 in	@ 1641.0 ft	@		@	
Casing - Logger		1640.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	8.80 g/cc	53.00 s/qt				
PH	Fluid Loss	10.00 pH	6.2 cptm				
Source of Sample		MUDPIT					
Rm @ Meas. Temperature		0.85 ohmm	@ 78.00 degF	@		@	
Rmf @ Meas. Temperature		0.68 ohmm	@ 75.00 degF	@		@	
Rmc @ Meas. Temperature		1.03 ohmm	@ 75.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.48 ohmm	@ 142.0 degF	@		@	
Time Since Circulation		17:00 hr					
Time on Bottom		01-Oct-19 19:34					
Max. Rec. Temperature		142.00 degF	@ 5828.0 ft	@		@	
Equipment	Location	12147634	EL RENO, OK				
Recorded By		WHITLOCK					
Witnessed By		ED GRIEVES					

Fold here

Service Ticket No.: 905981124

API No.: 15-175-22271-00-00

PGM Version: WL INSITE R6.2.7 (Build 7)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

	Date	Depth-Driller	Type Fluid in Hole	Density	Ph	Source of Sample	Rm @ Meas. Temp	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Source Rmf	Rm @ BHT	Rmf @ BHT	Rmc @ BHT
Sample No.													
Viscosity													
Fluid Loss													

RESISTIVITY SCALE CHANGES

	Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Source of Sample					
Rm @ Meas. Temp	@	@	@	@	@
Rmf @ Meas. Temp.	@	@	@	@	@
Rmc @ Meas. Temp.	@	@	@	@	@
Source Rmf	Rmc				
Rm @ BHT	@	@	@	@	@
Rmf @ BHT	@	@	@	@	@
Rmc @ BHT	@	@	@	@	@

EQUIPMENT DATA

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.				
Serial No.				
Model No.				
Diameter				
Detector Model No.		No. of Cent.		
Type		Spacing	Log Type	Log Type
Length		LSA [Y/N]	Source Type	Source Type
Distance to Source		FWDA [Y/N]	Serial No.	Serial No.
			Strength	Strength

LOGGING DATA

	GENERAL				GAMMA		ACOUSTIC		DENSITY		NEUTRON	
	Run No.	Depth From	Depth To	Speed ft/min	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R
Matrix												
Run No.												
Serial No.												
Model No.												
Diameter												
Log Type												
Source Type												
Serial No.												
Strength												

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

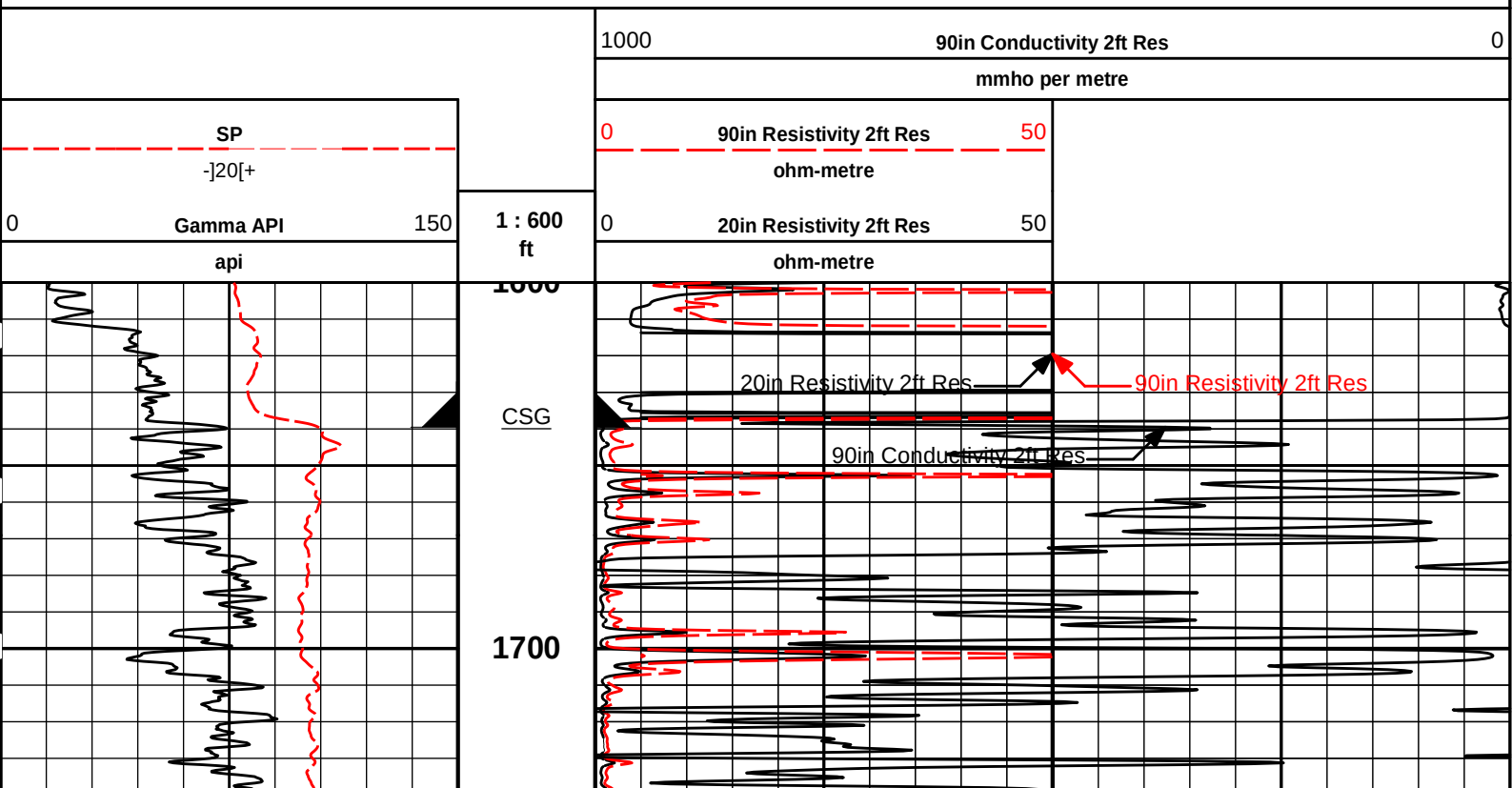
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

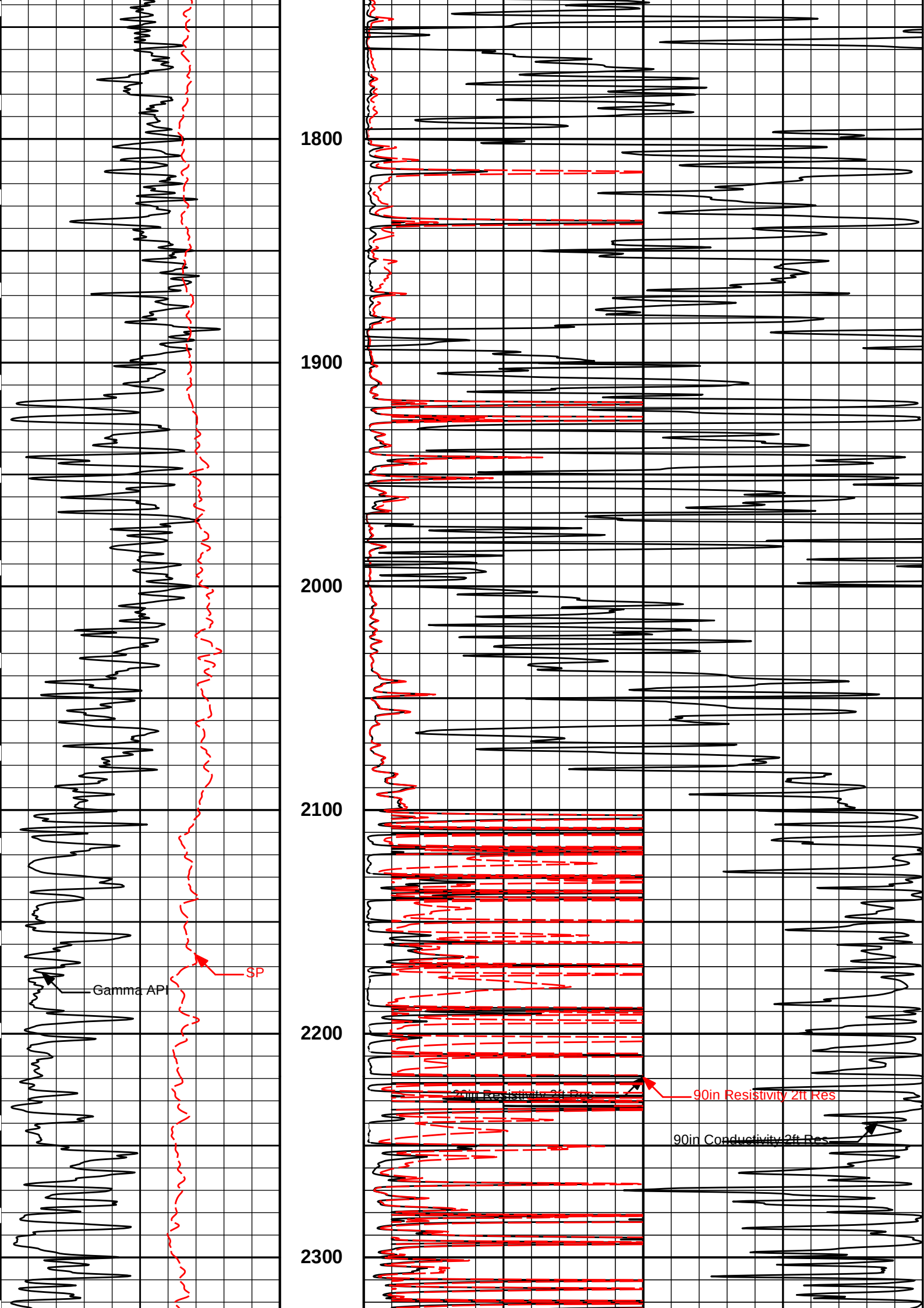
HALLIBURTON

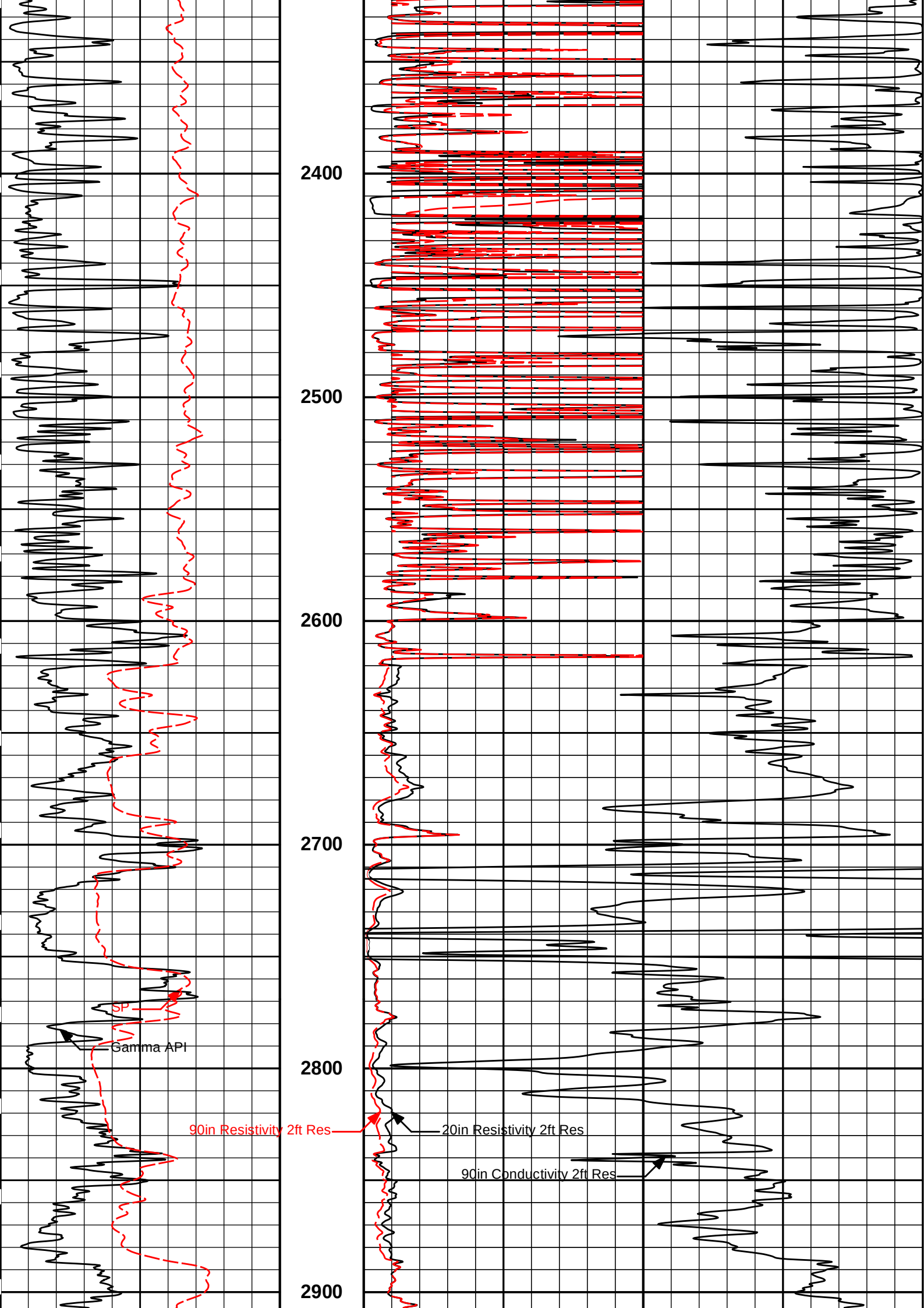
Plot Time: 01-Oct-19 23:32:48
Plot Range: 1600 ft to 5832.5 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_2_main

2 INCH MAIN LOG

2 INCH MAIN LOG




1800
1900
2000
2100
2200
2300
SP
Gamma API
90in Resistivity 2ft Res
90in Conductivity 2ft Res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2800
2900
SP
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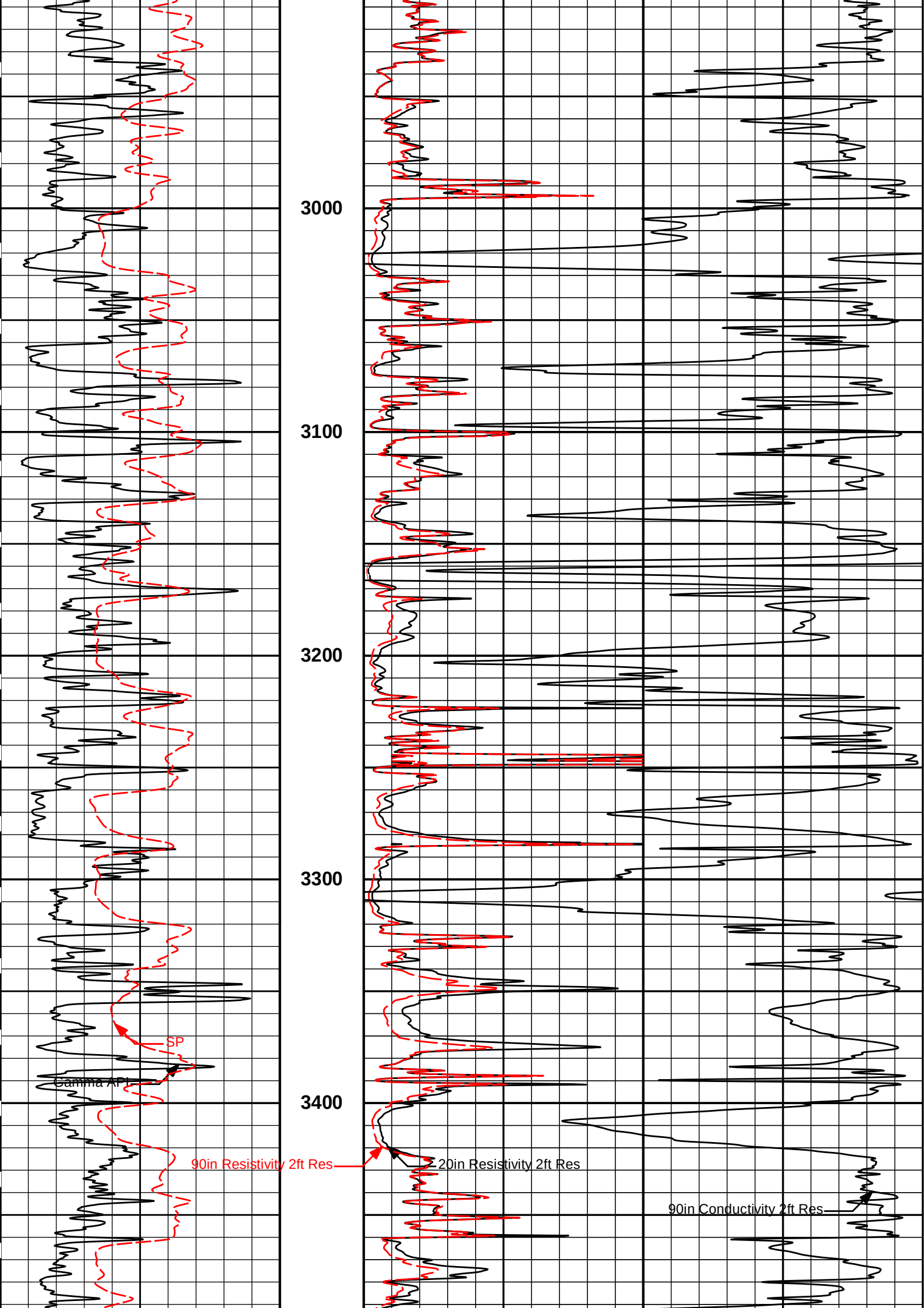
20in Resistivity 2ft Res
90in Conductivity 2ft Res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20in Resistivity 2ft Res
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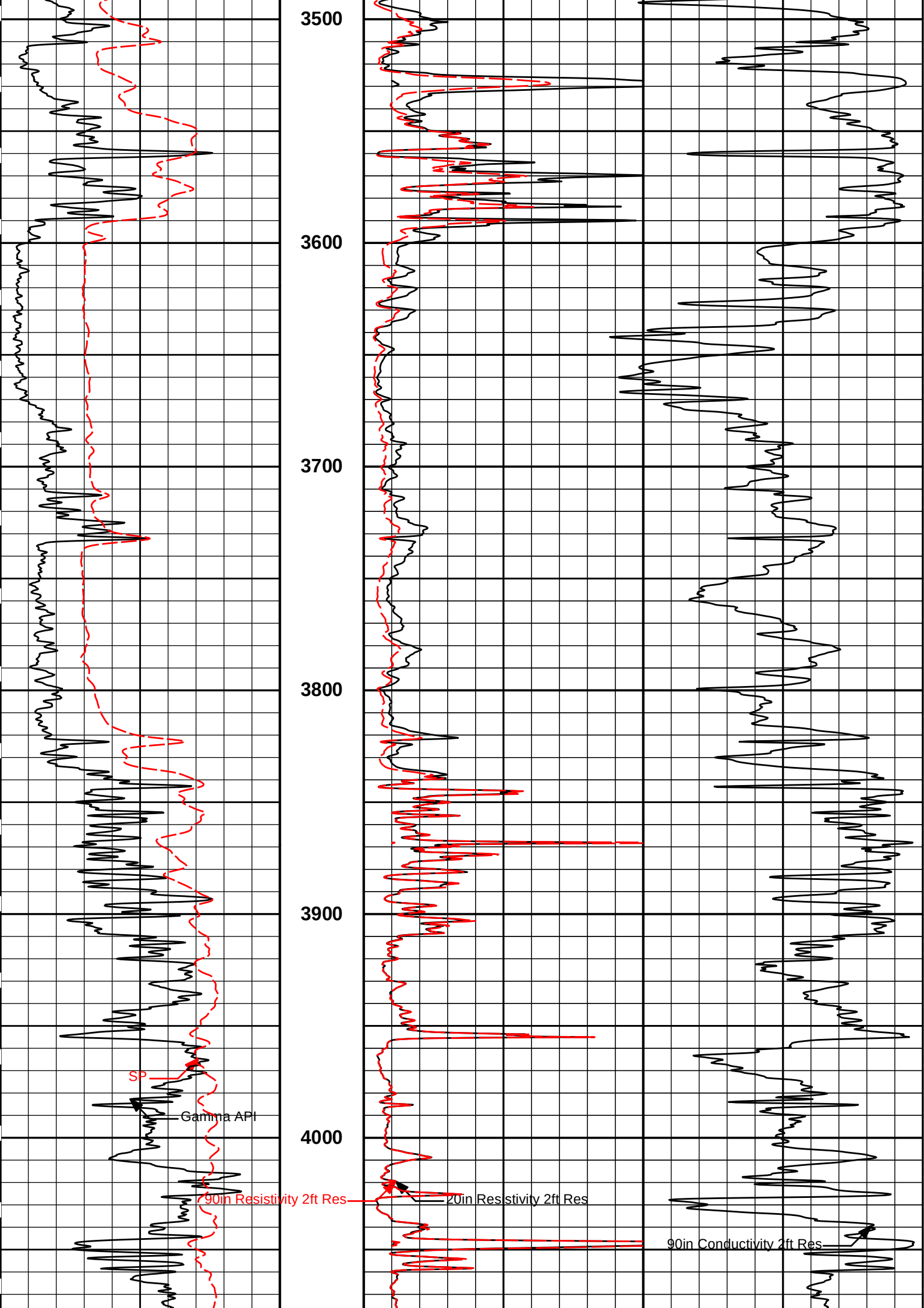
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3600
3700
3800
3900
4000
SP
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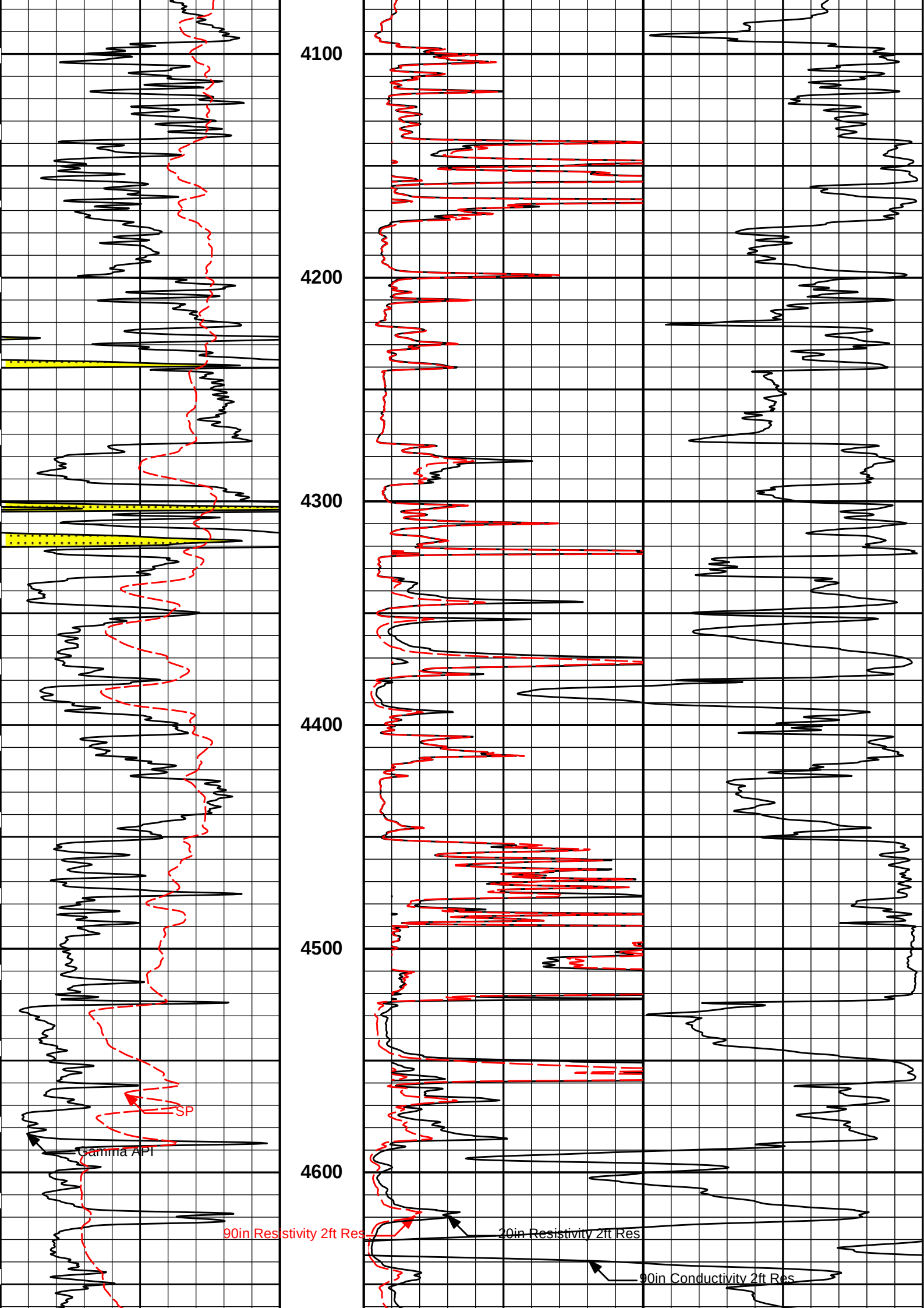
20in Resistivity 2ft Res
90in Conductivity 2ft Res


4100
4200
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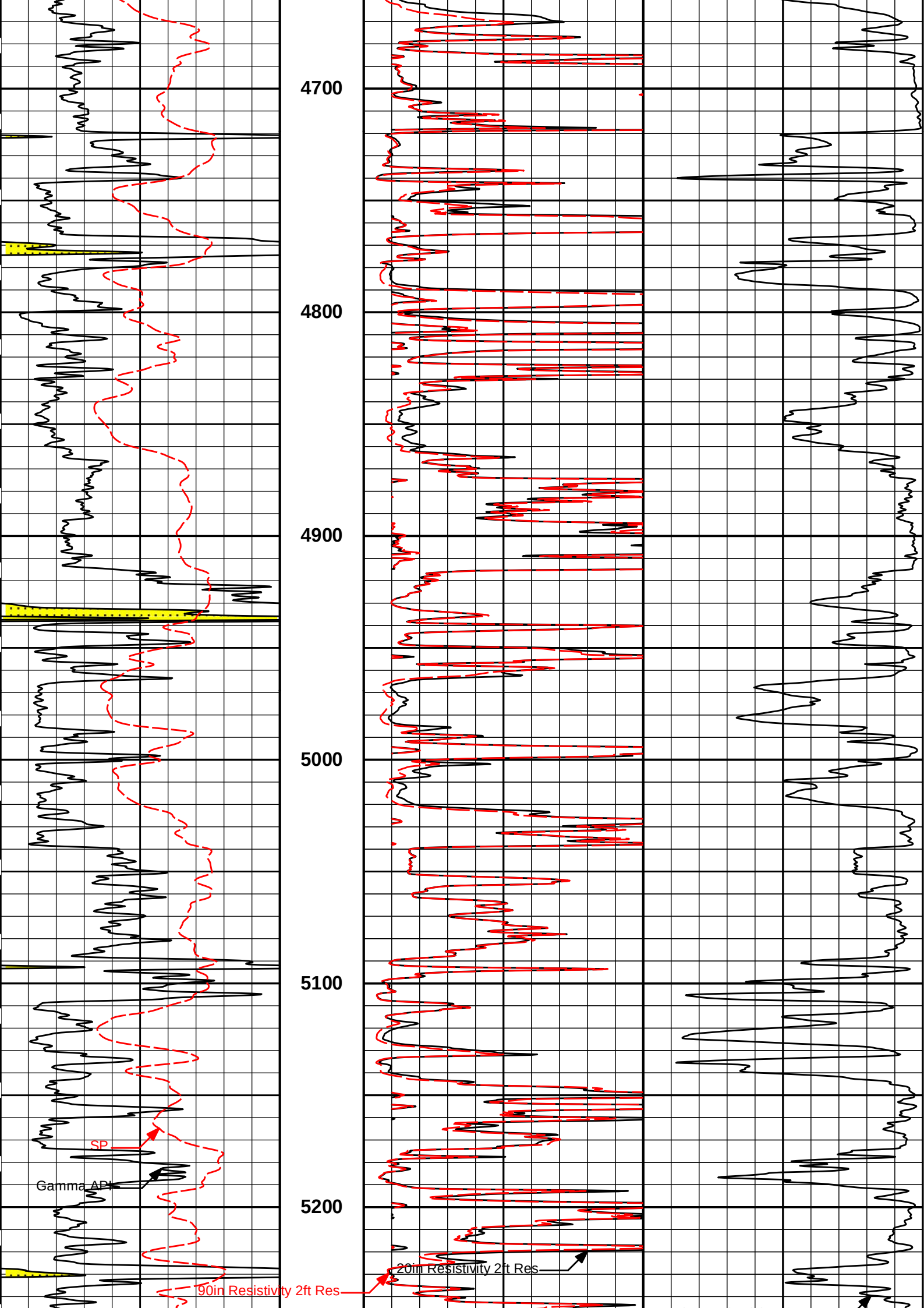
4400
4500
4600
SP
Gamma API
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res


4700
4800
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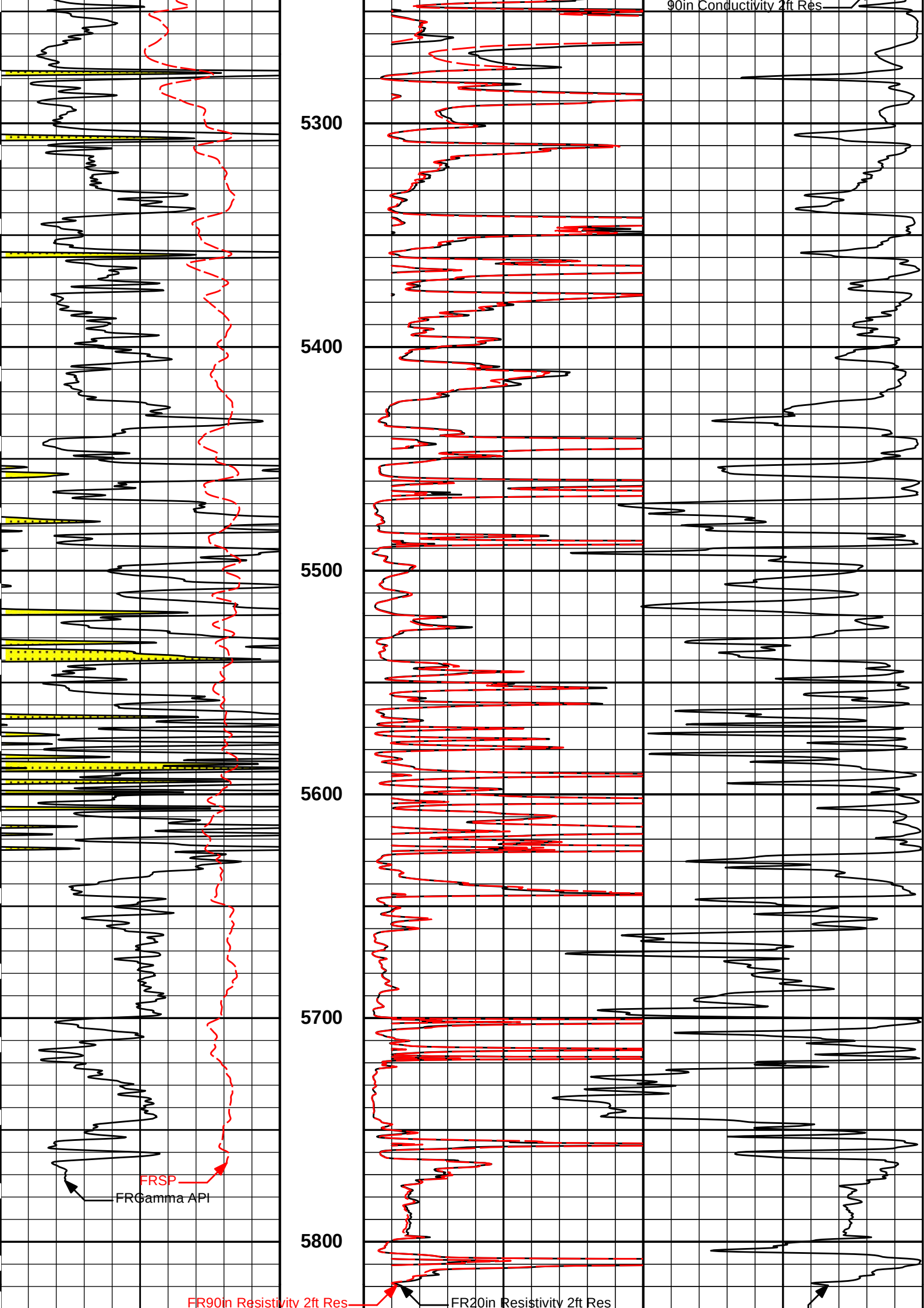
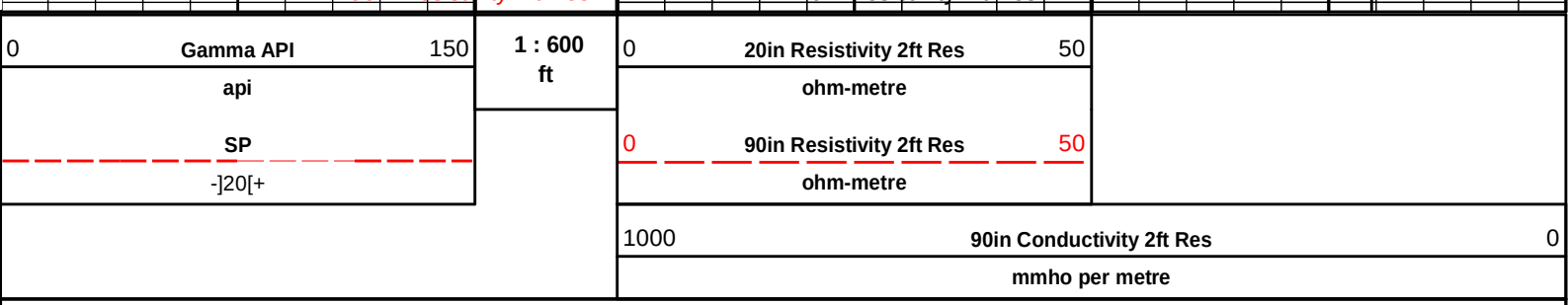
5000
5100
5200
SP
Gamma API
90in Resistivity 2ft Res
20in Resistivity 2ft Res


90in Conductivity 2ft Res
5300
5400
5500
5600
5700
5800
FRSP
FRGamma API
FR90in Resistivity 2ft Res
FR20in Resistivity 2ft Res



HALLIBURTON

Plot Time: 01-Oct-19 23:32:50
Plot Range: 1600 ft to 5832.5 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_2_main

2 INCH MAIN LOG

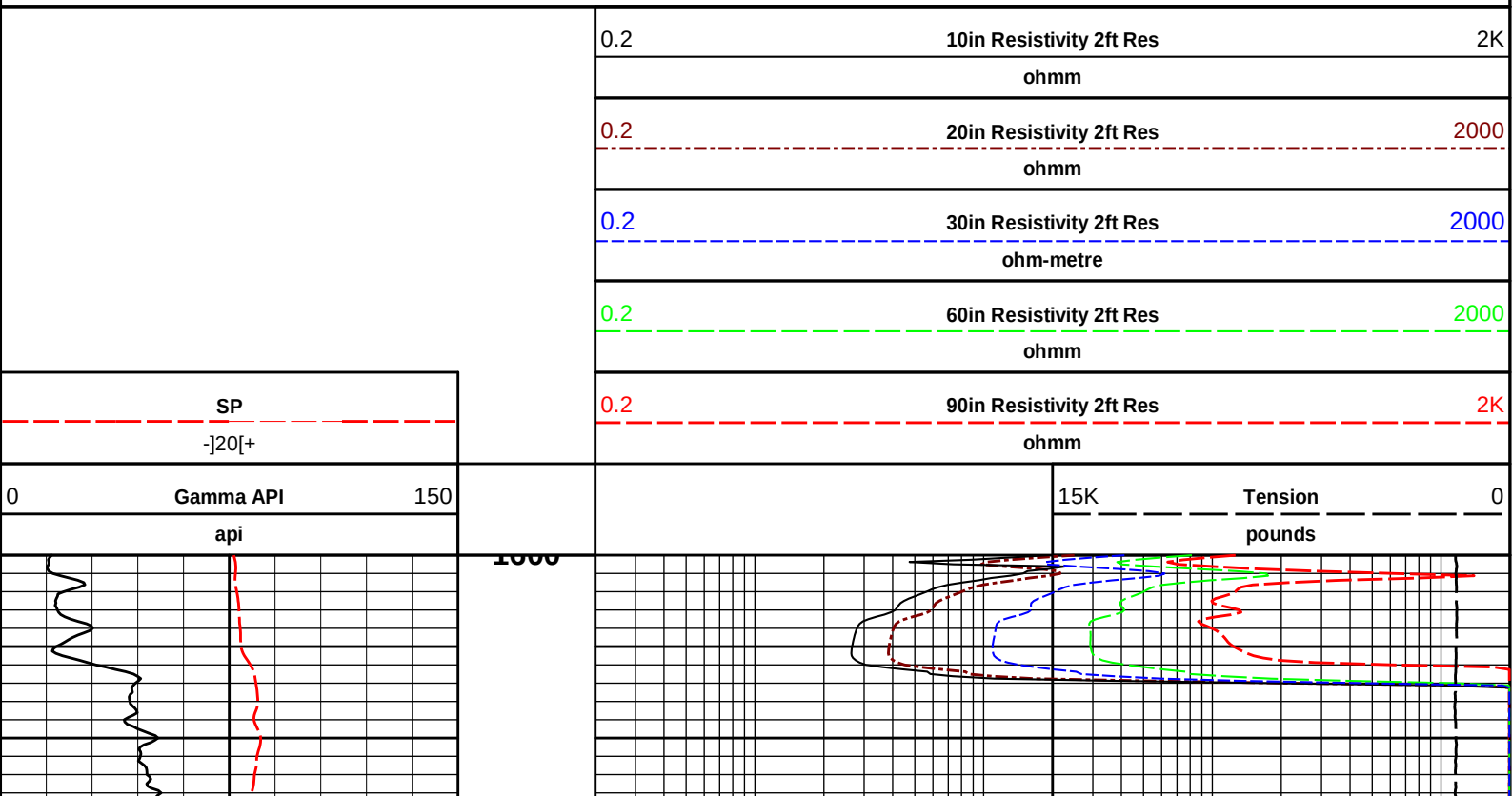
2 INCH MAIN LOG

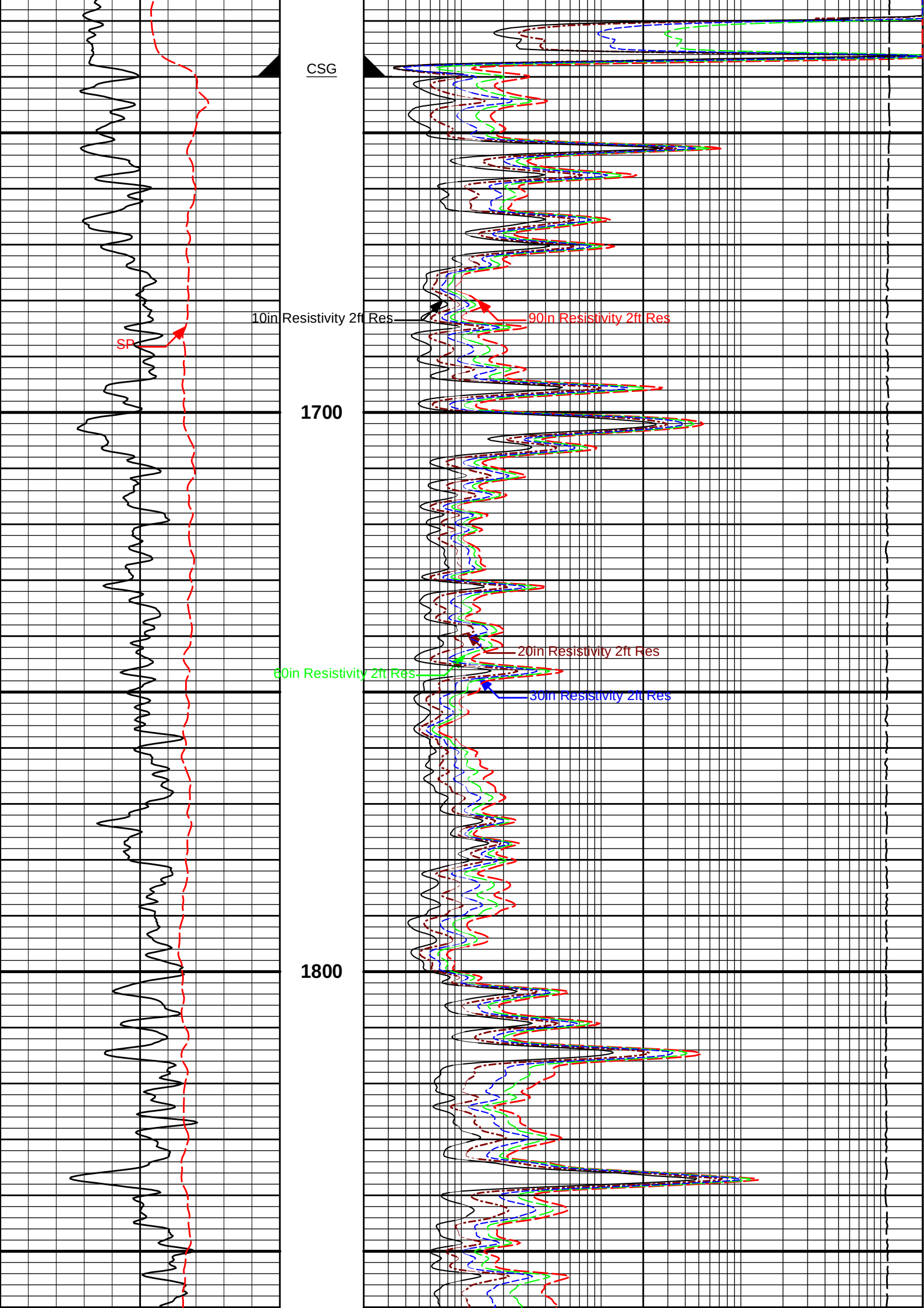
HALLIBURTON

Plot Time: 01-Oct-19 23:32:50
Plot Range: 1600 ft to 5832.5 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

5 INCH MAIN LOG

5 INCH MAIN LOG




CSG
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90in Resistivity 2ft Res
SP
1700
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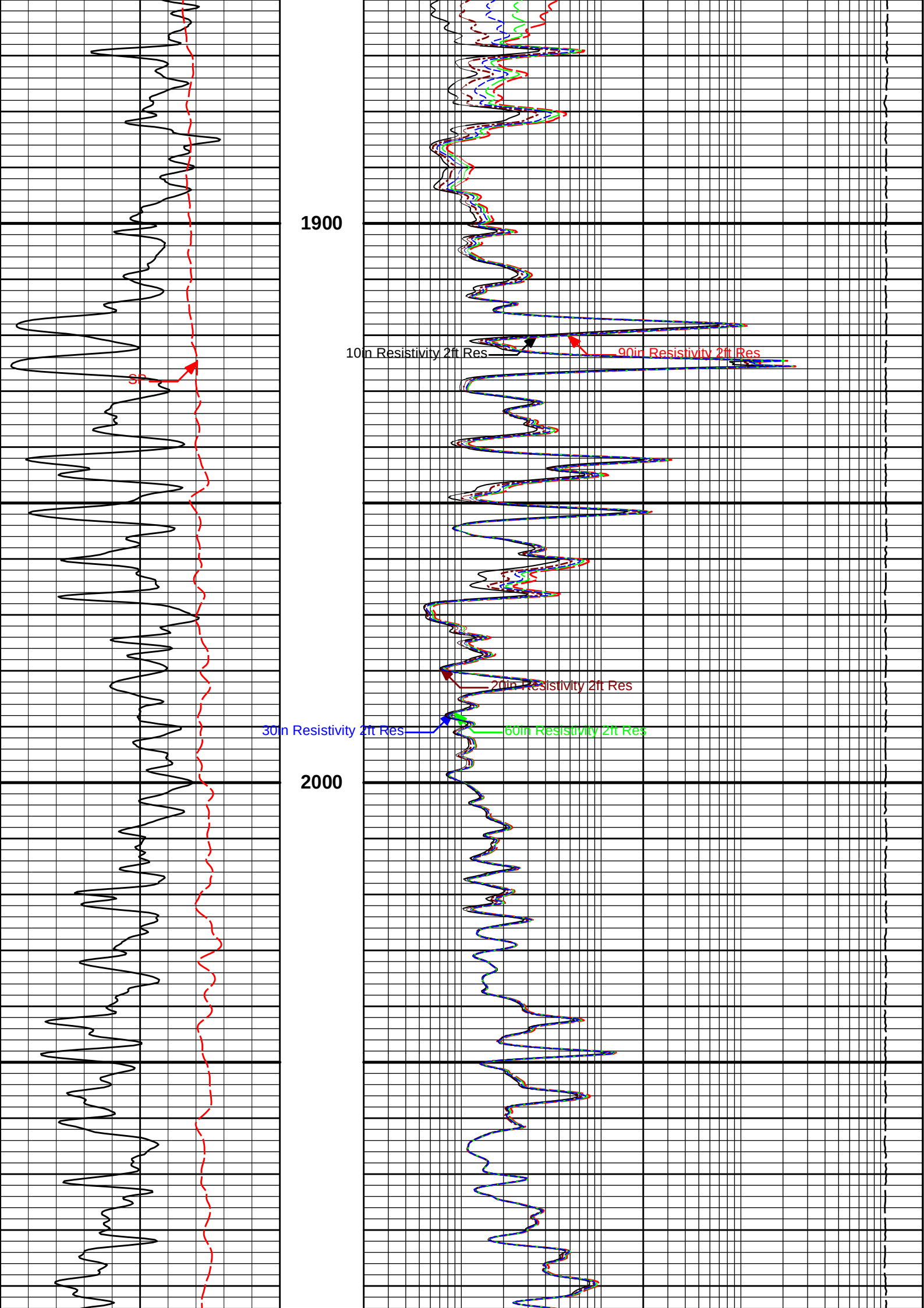
60in Resistivity 2ft Res
30in Resistivity 2ft Res
1800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90in Resistivity 2ft Res
SP
20in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
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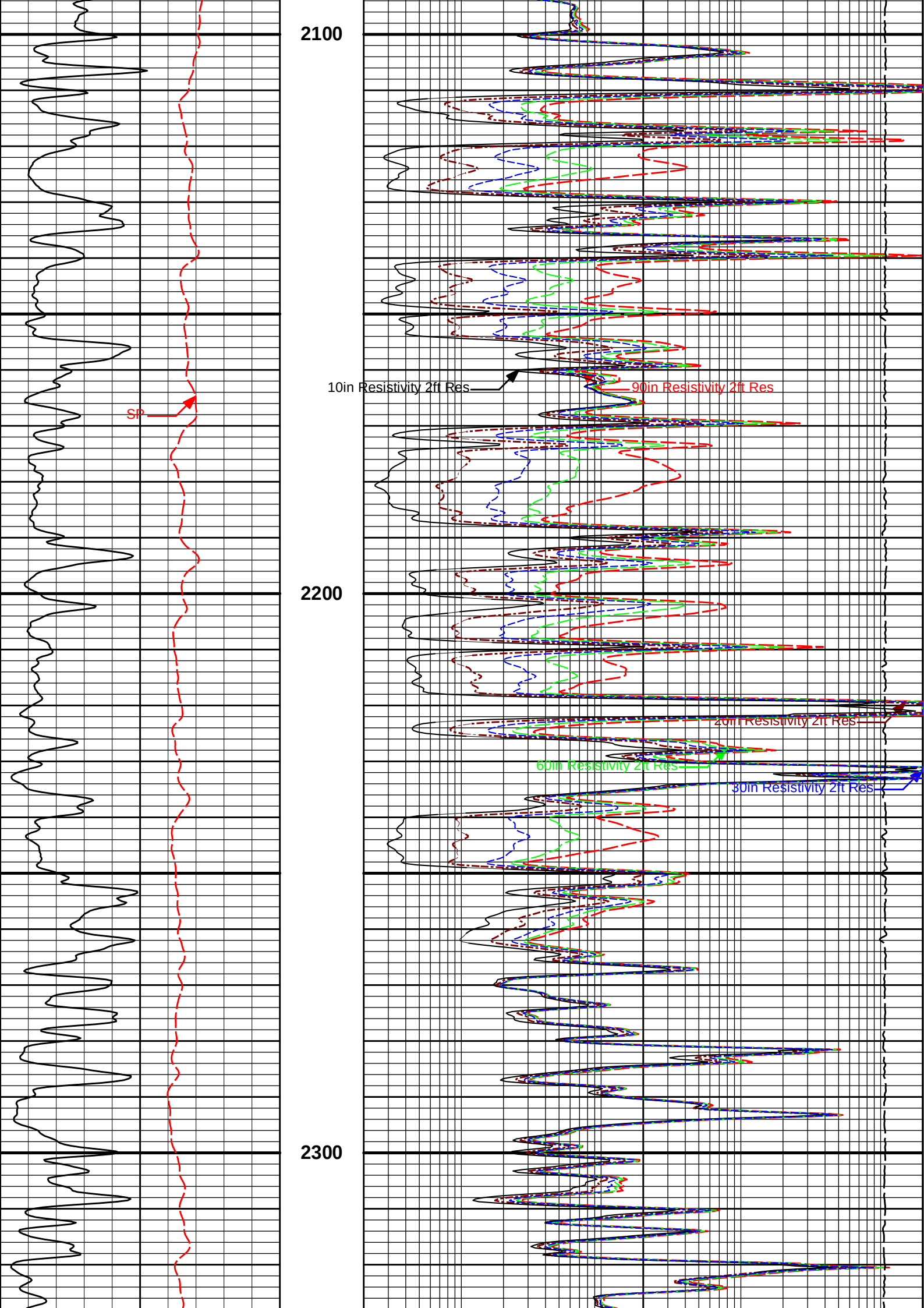
2100
2200
2300
SP
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60in Resistivity 2ft Res
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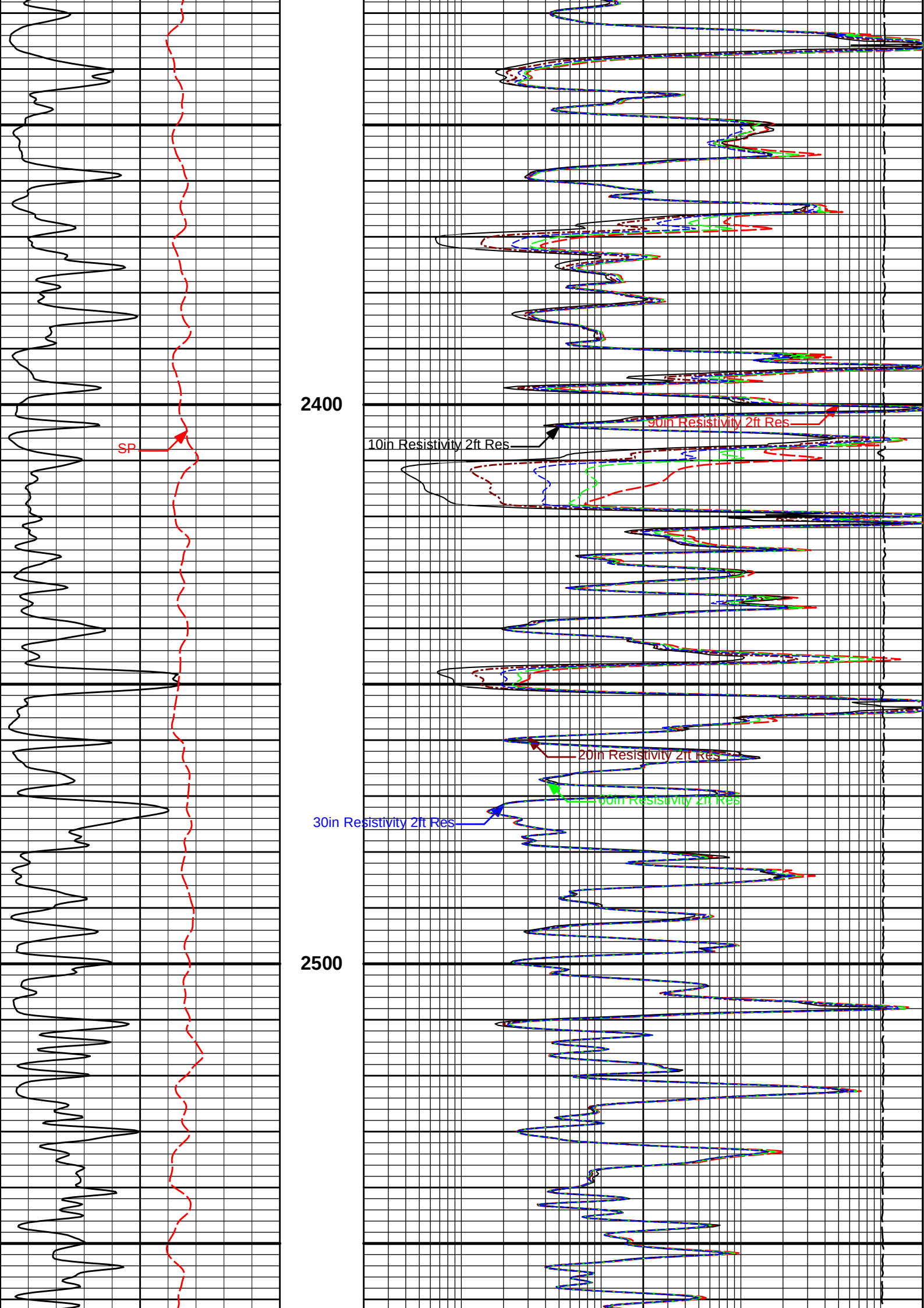
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SP
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20in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
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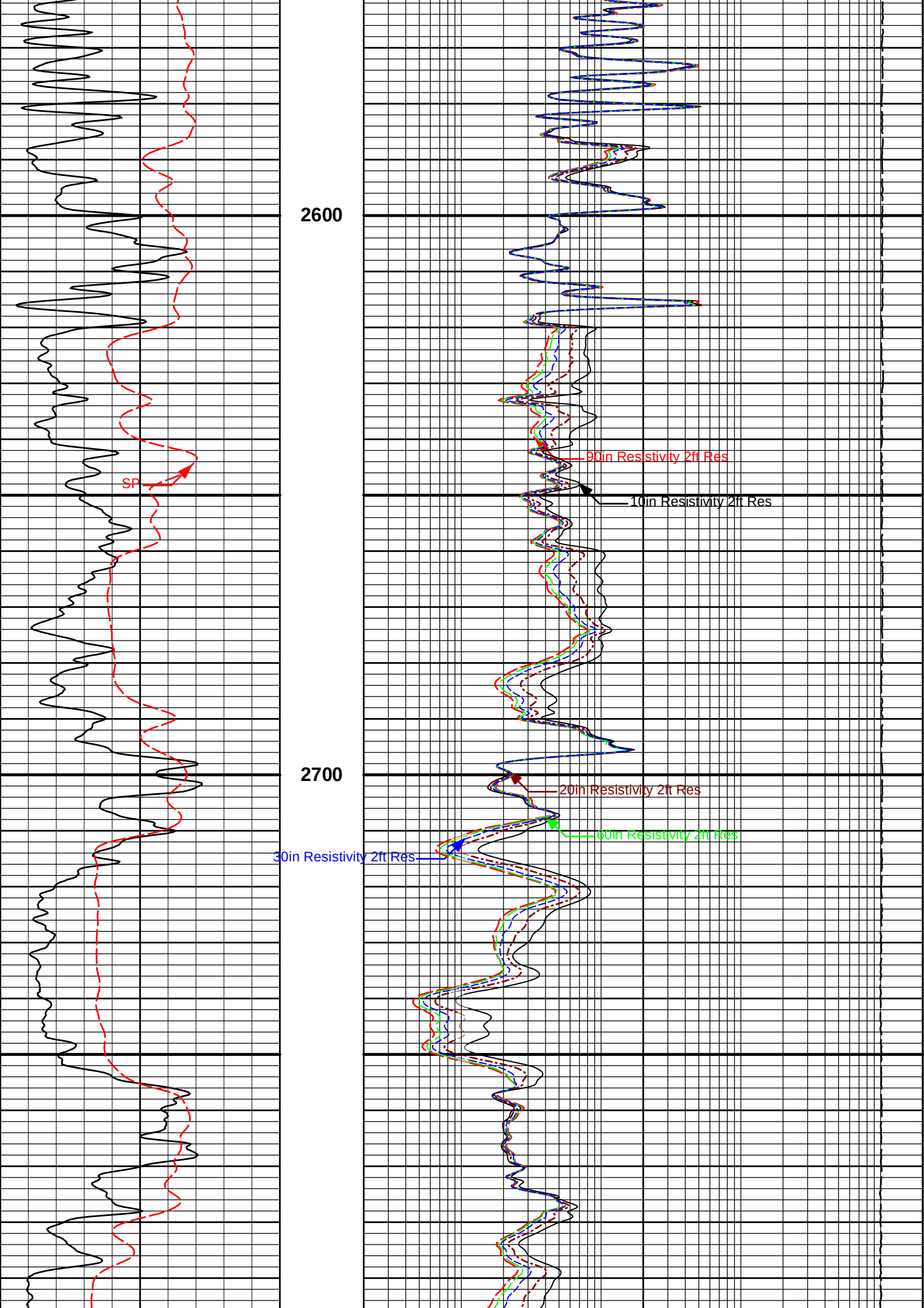
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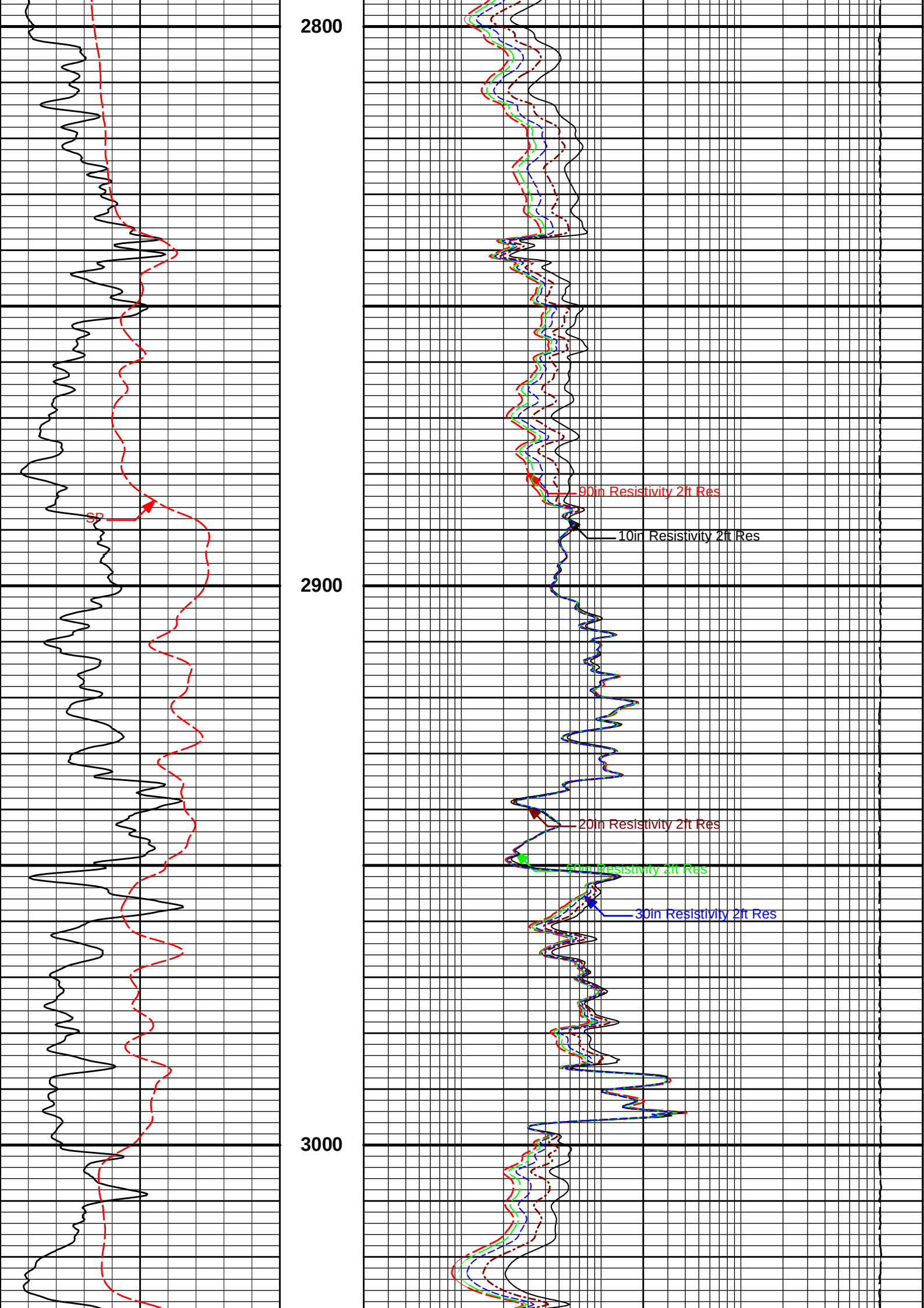
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2900
3000
SP
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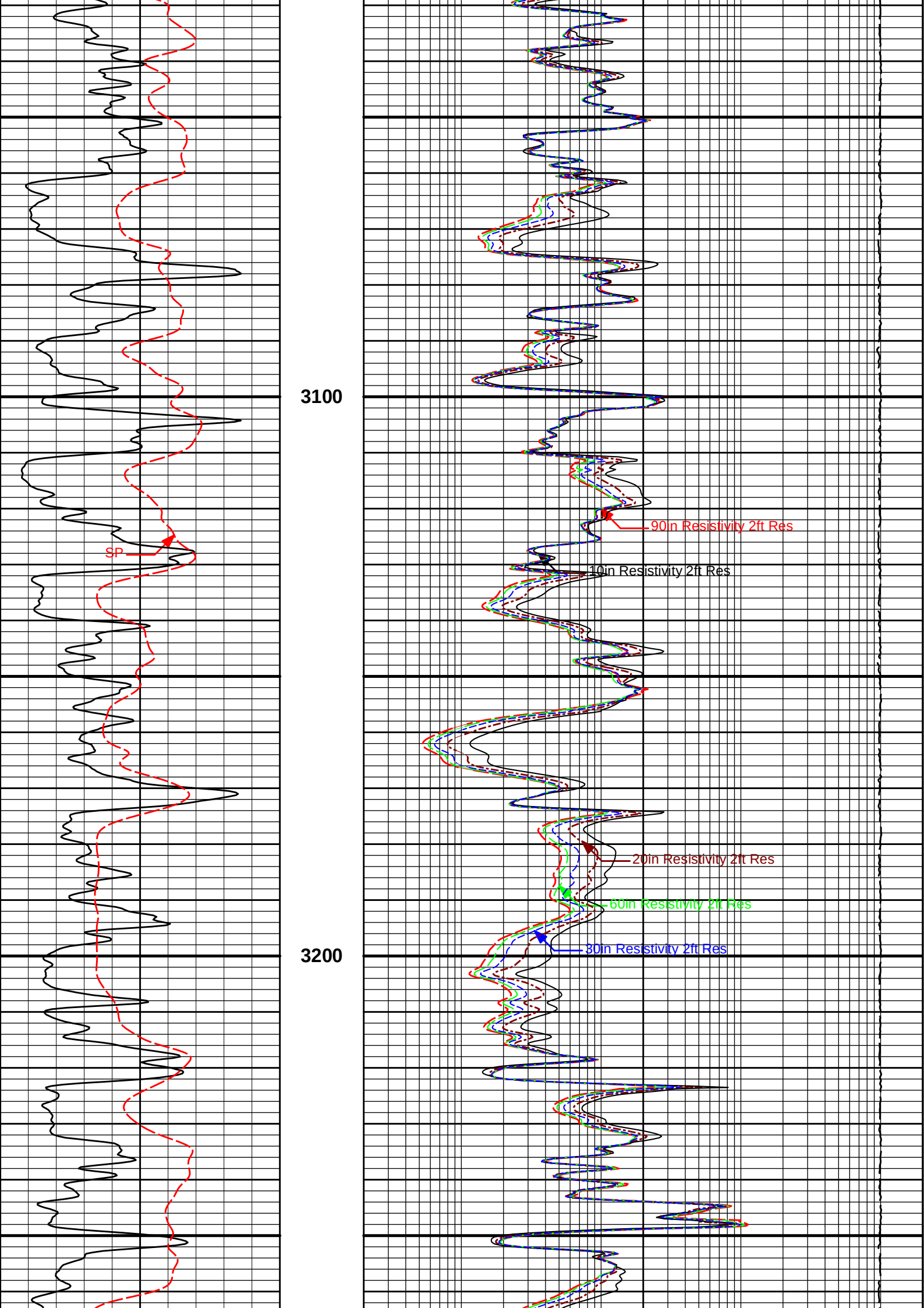
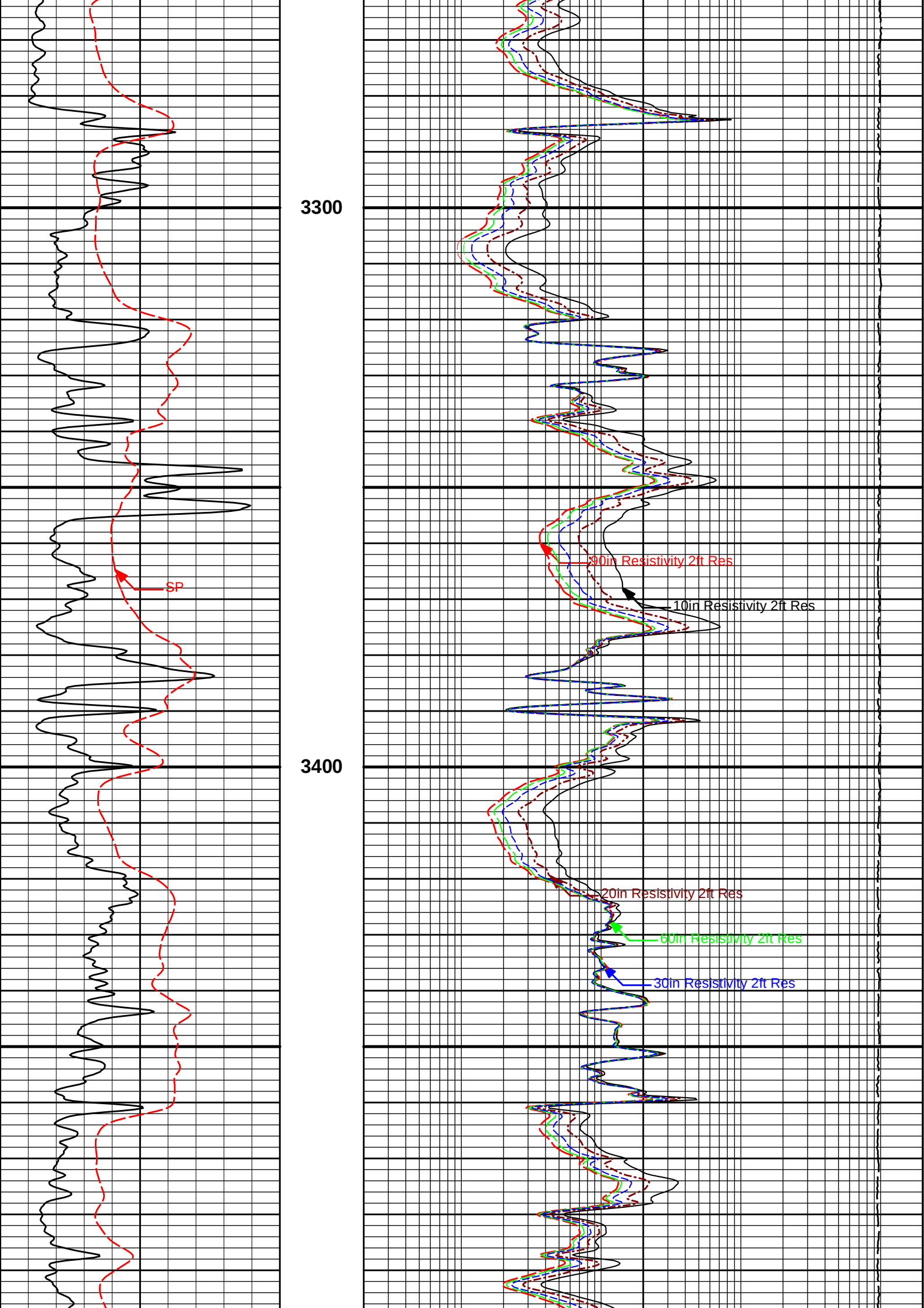
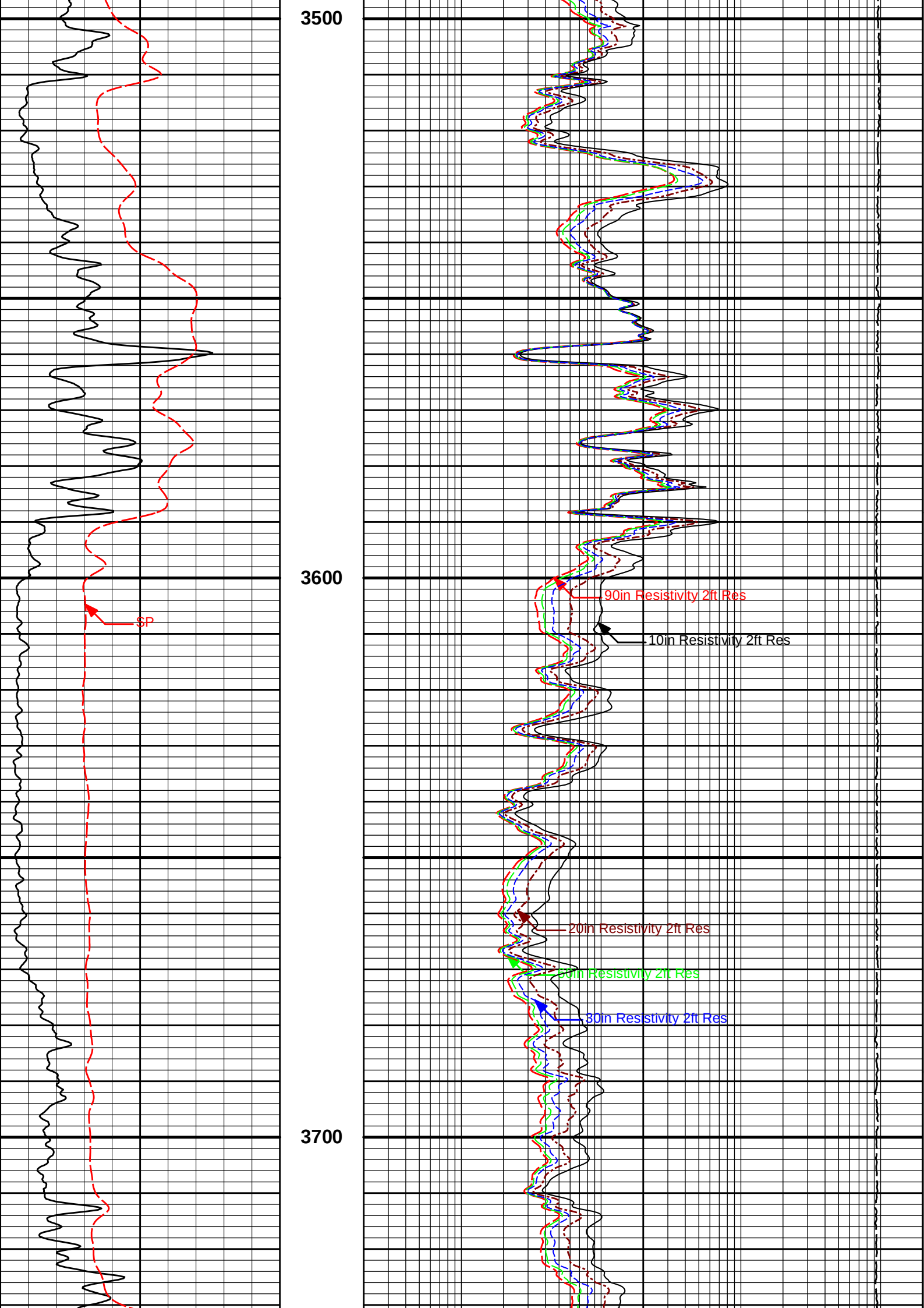
10in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res


3100
3200
SP
90in Resistivity 2ft Res
10in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res


3300
3400
SP
90in Resistivity 2ft Res
10in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res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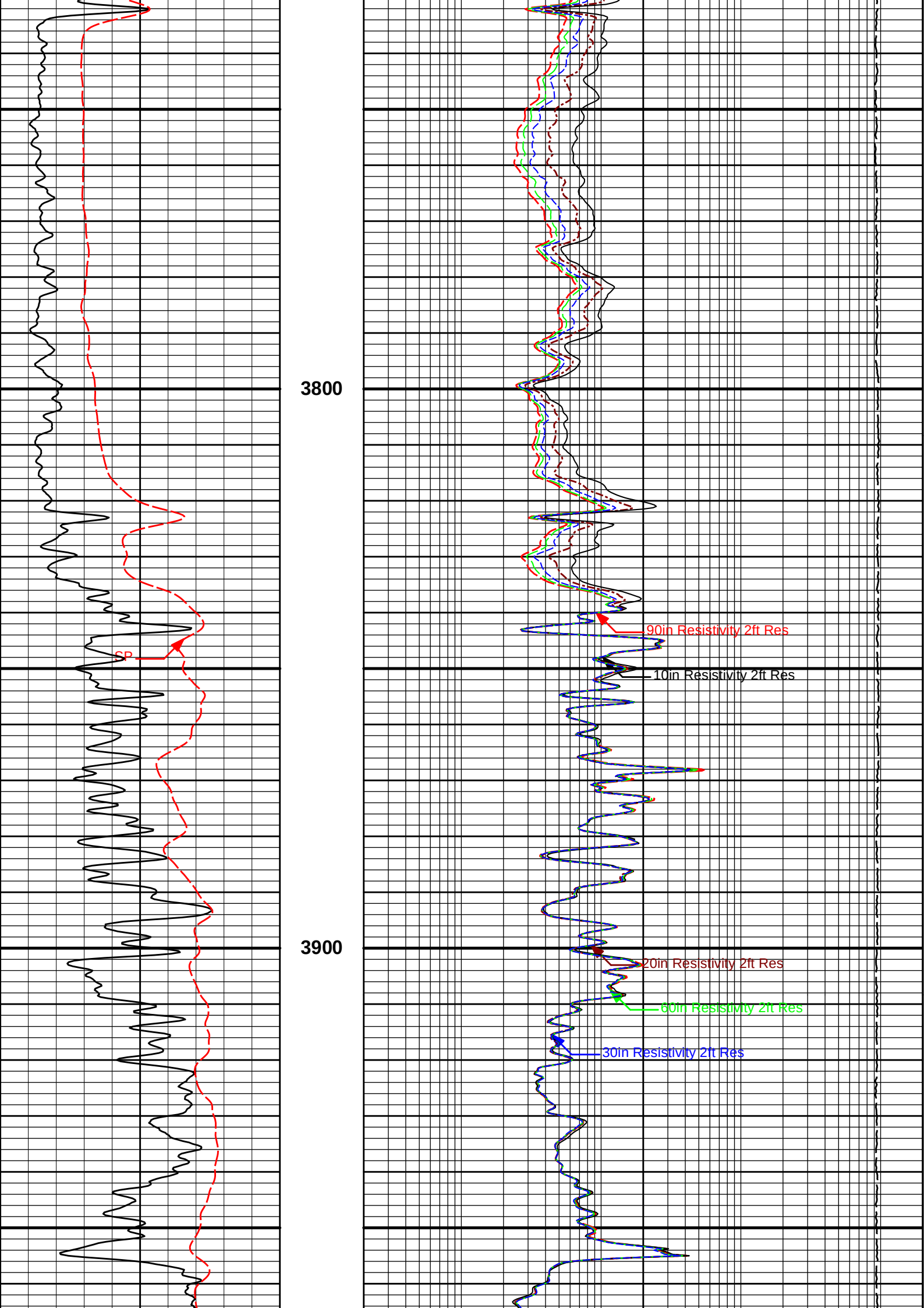
10in Resistivity 2ft Res
20in Resistivity 2ft Res
30in Resistivity 2ft Res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10in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res
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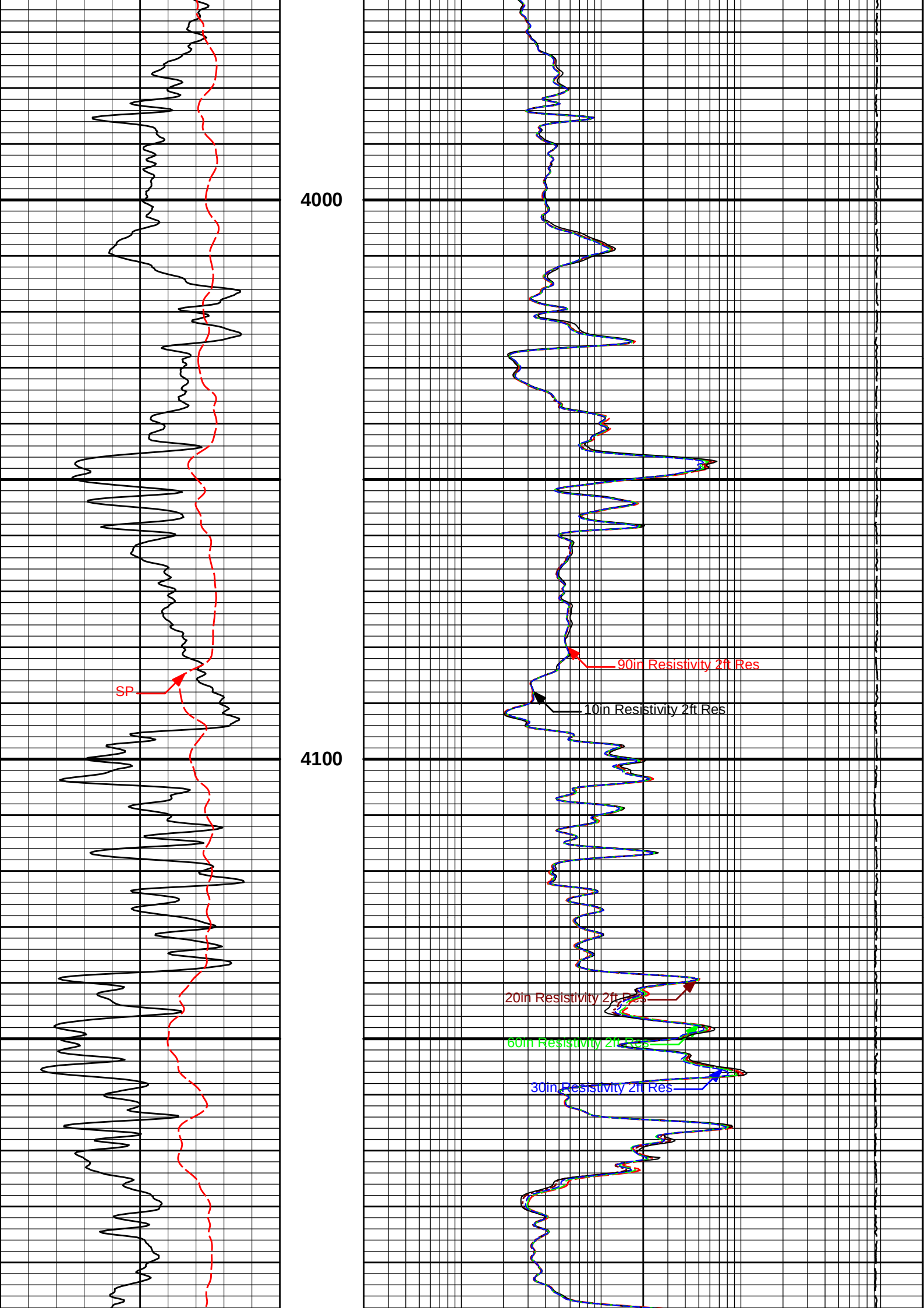
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10in Resistivity 2ft Res
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60in Resistivity 2ft Res
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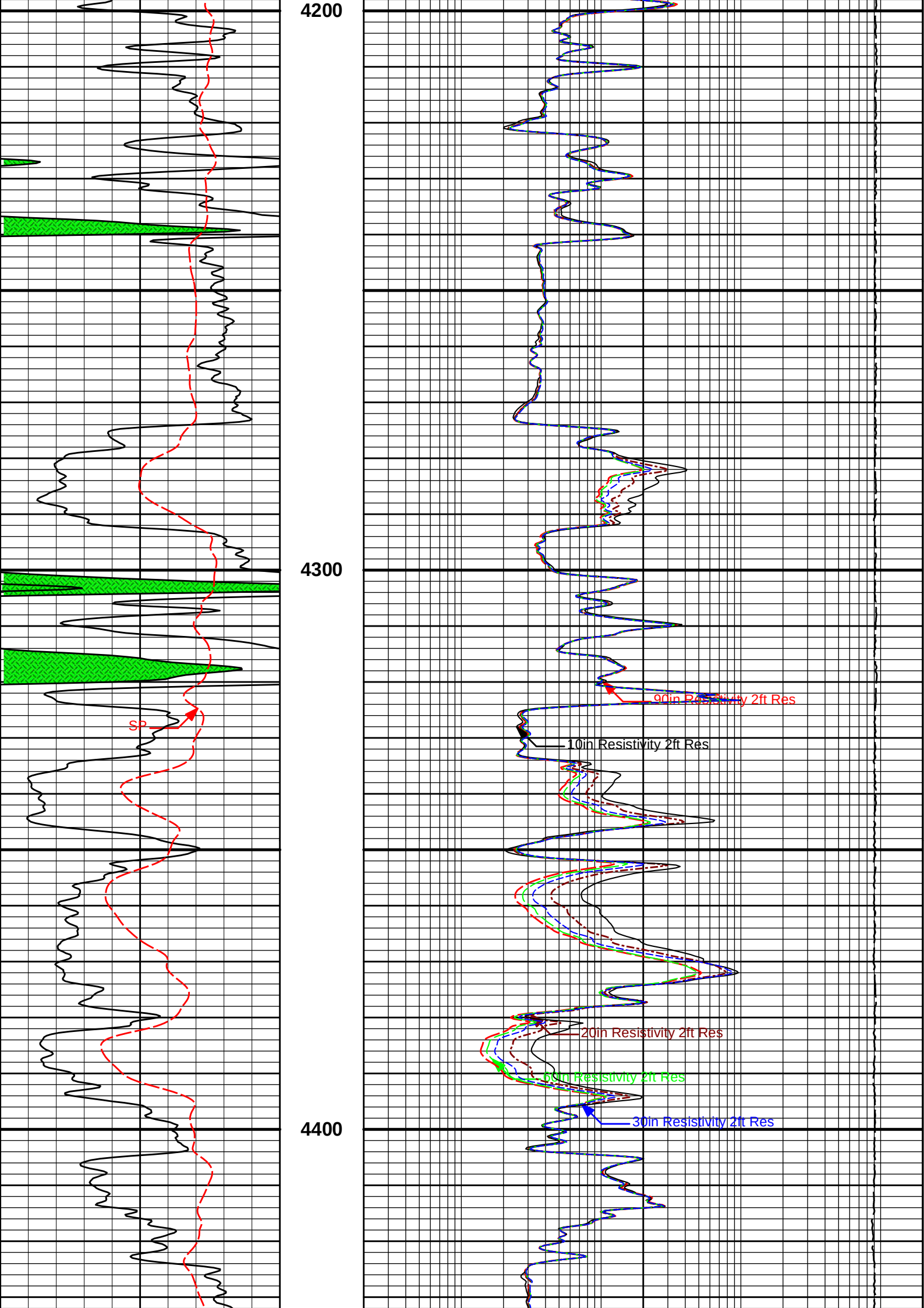
4200
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10in Resistivity 2ft Res
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60in Resistivity 2ft Res
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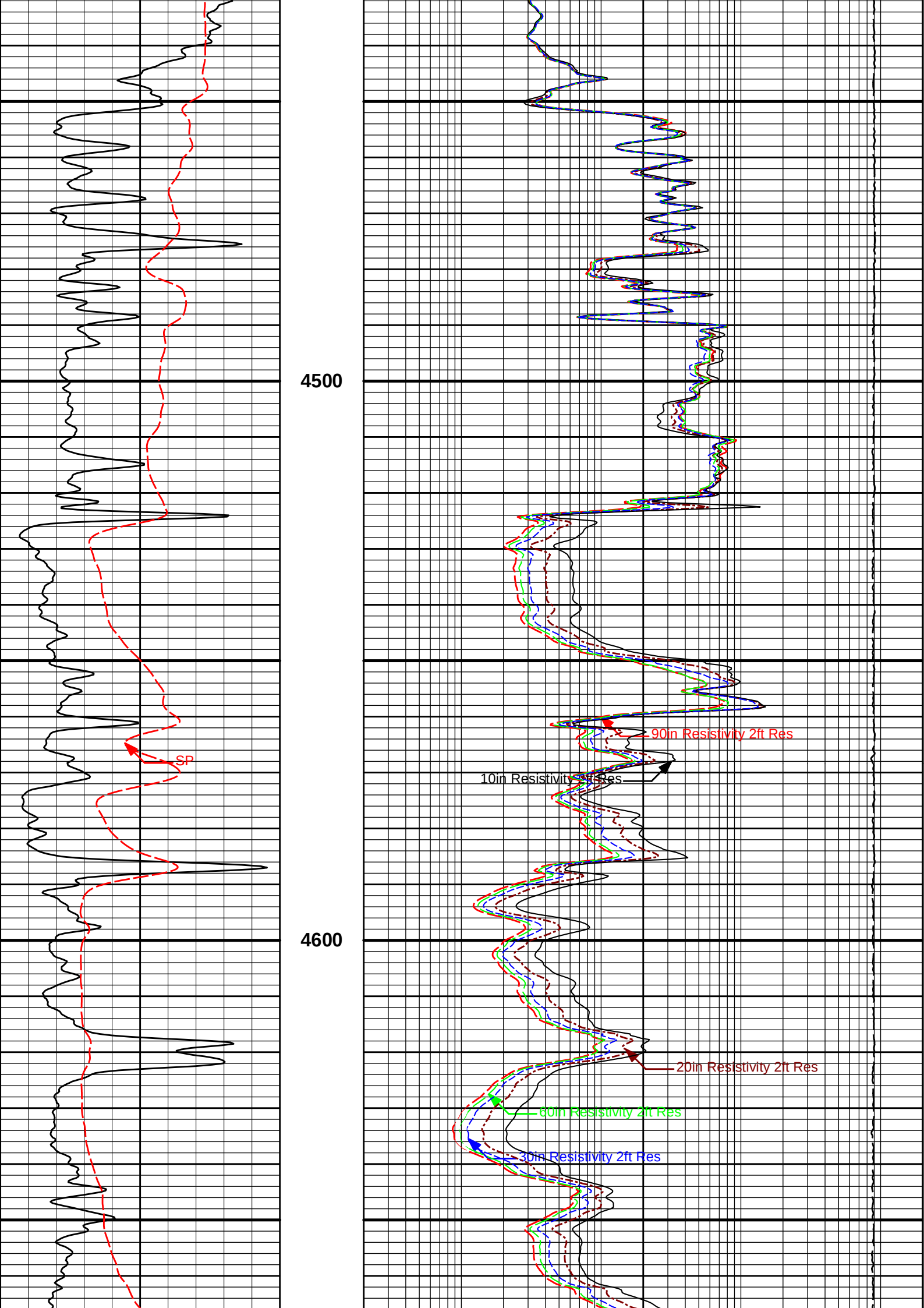
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20in Resistivity 2ft Res
60in Resistivity 2ft Res
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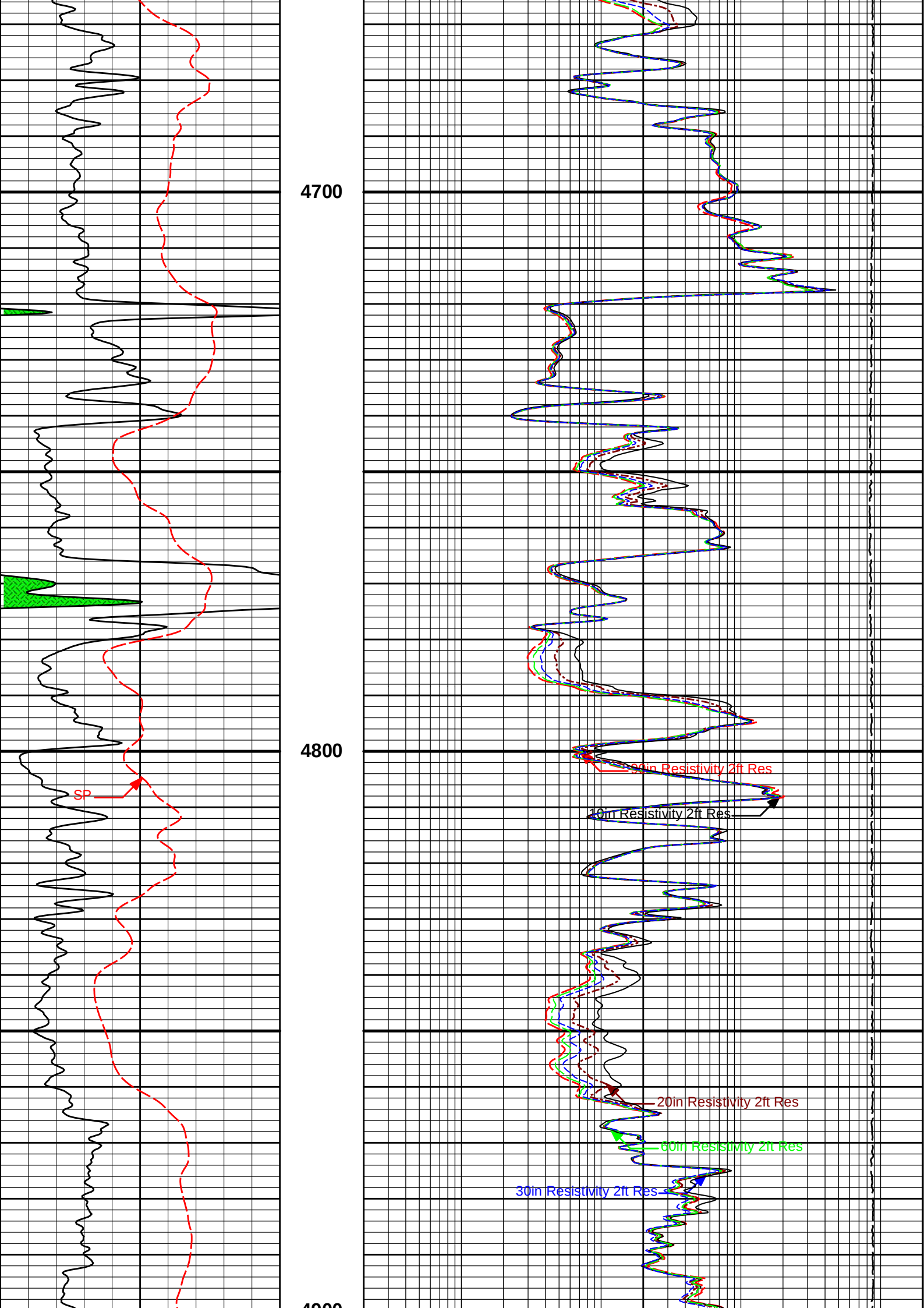
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60in Resistivity 2ft Res
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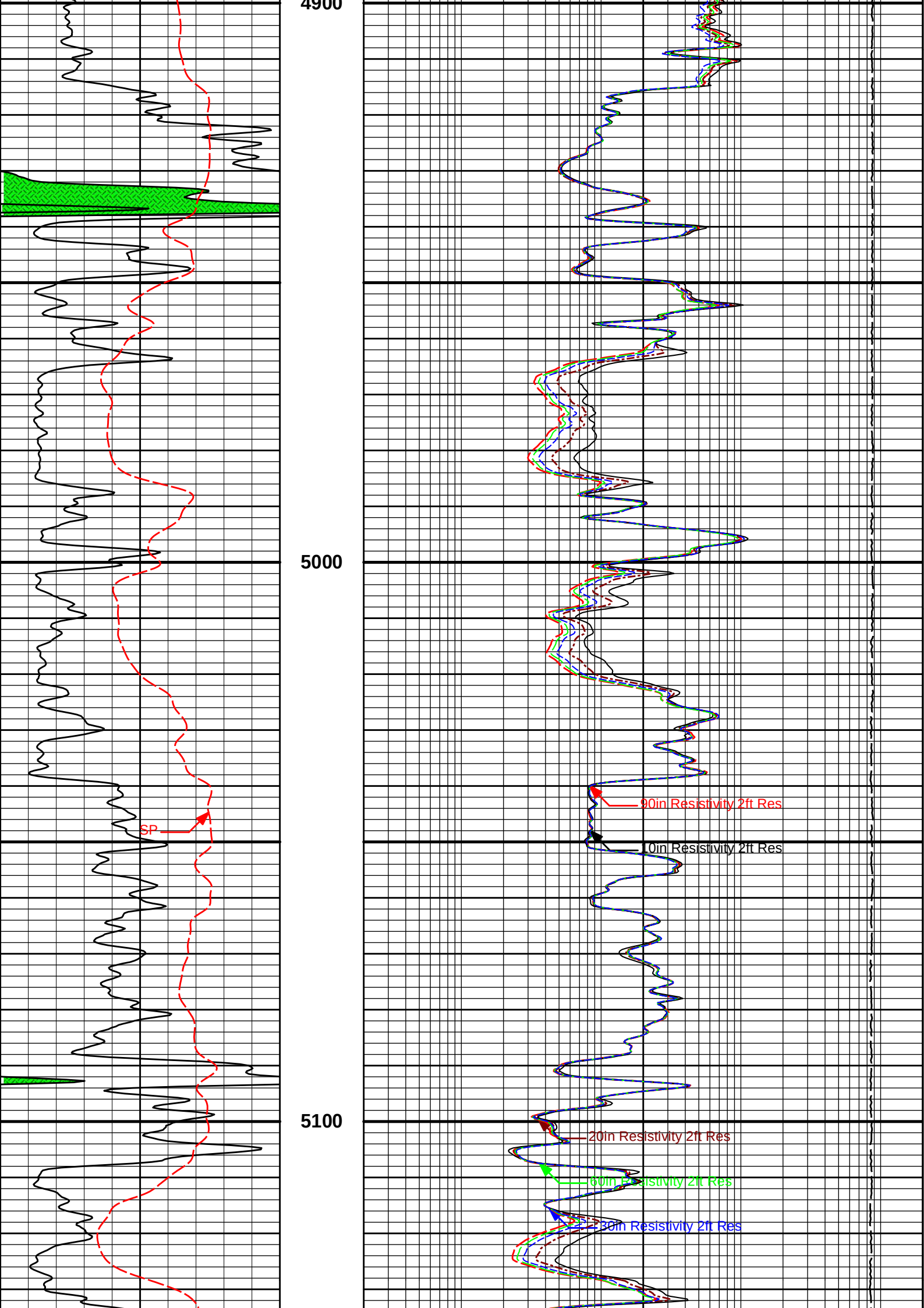
4900
5000
5100
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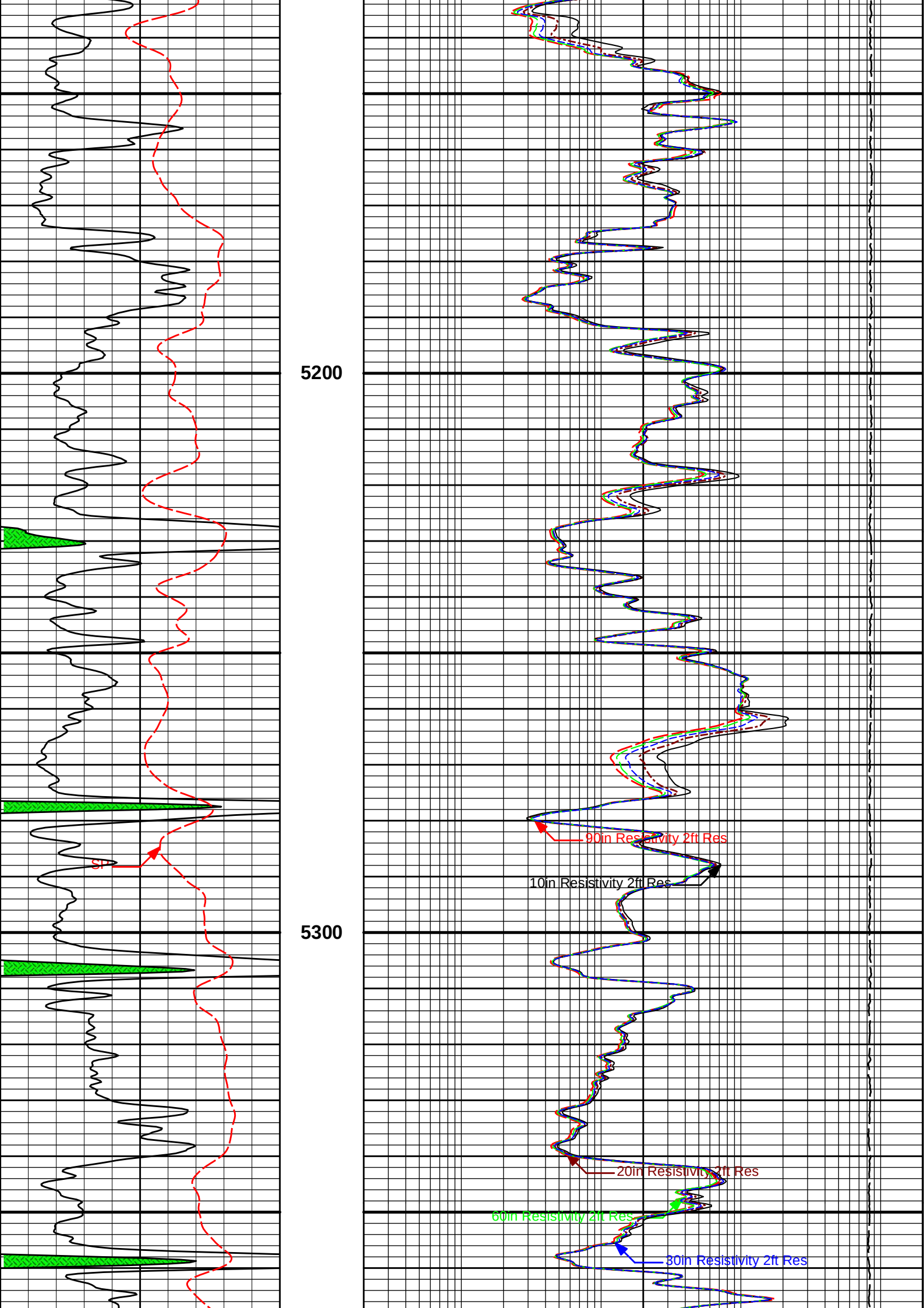
5200
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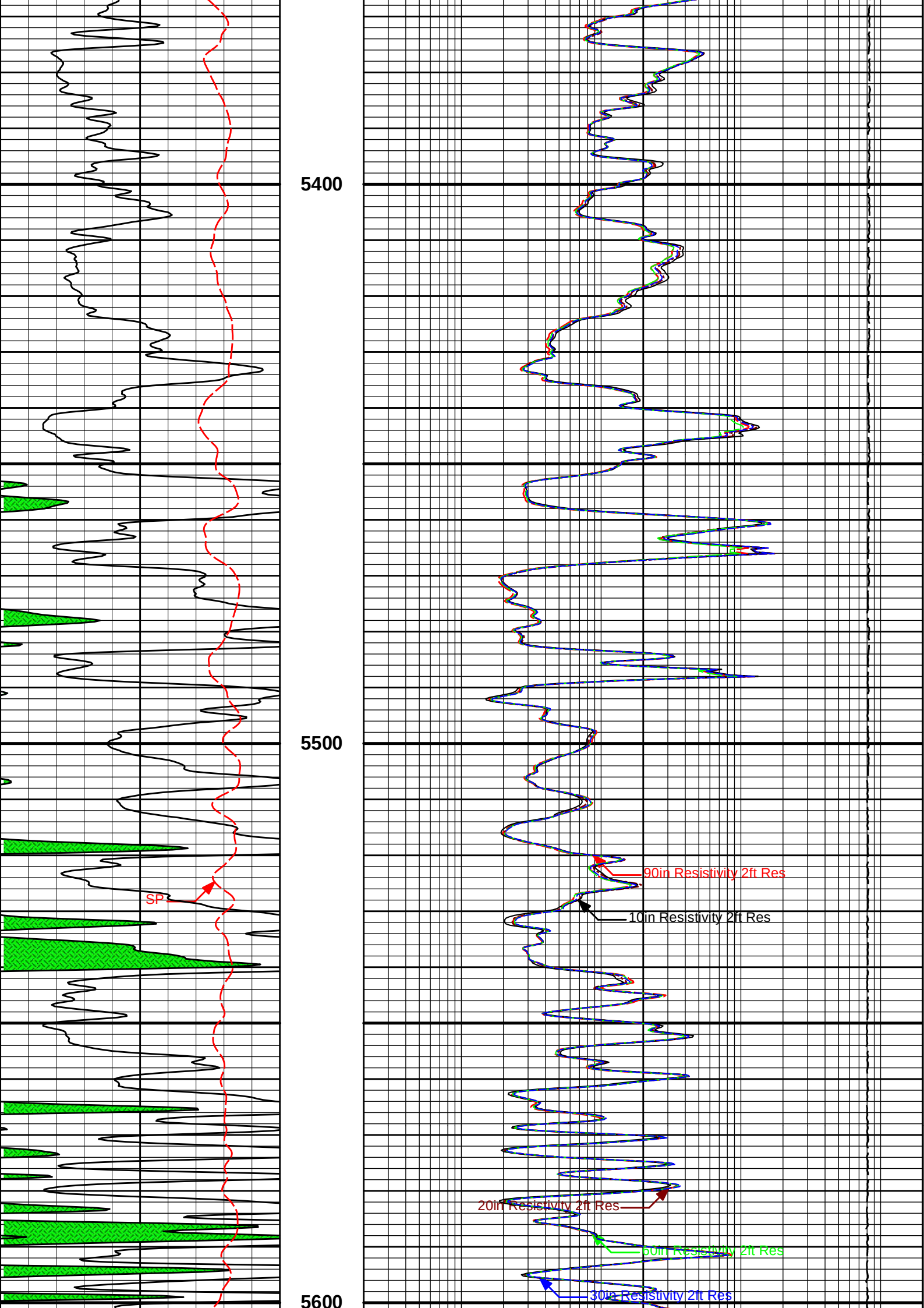
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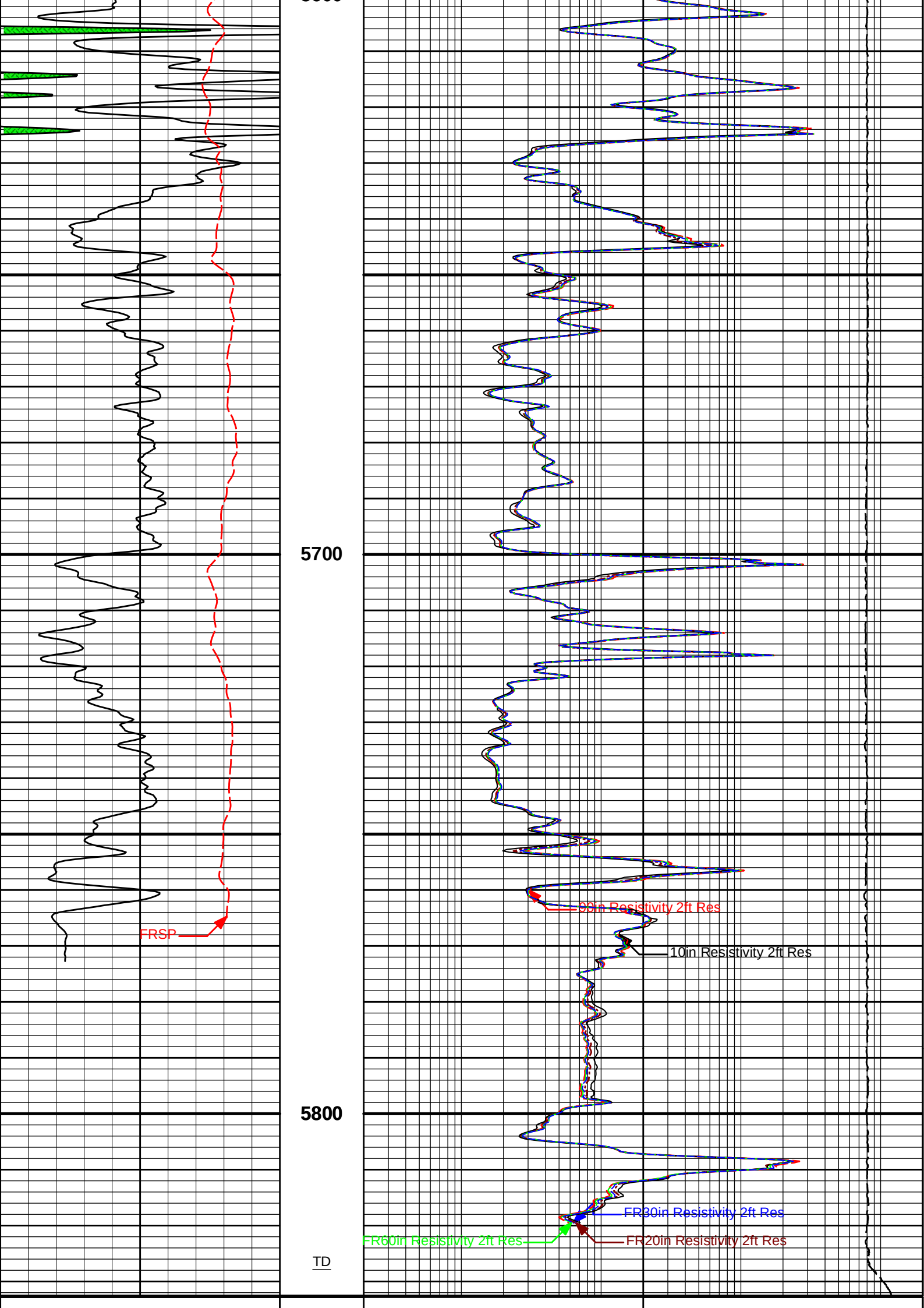

5700
5800
TD
FRSP
90in Resistivity 2ft Res
10in Resistivity 2ft Res
FR30in Resistivity 2ft Res
FR60in Resistivity 2ft Res
FR20in Resistivity 2ft Res

0	Gamma API	150
	api	

15K	Tension	0
	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	

HALLIBURTON

Plot Time: 01-Oct-19 23:32:53
Plot Range: 1600 ft to 5832.5 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

5 INCH MAIN LOG

5 INCH MAIN LOG

HALLIBURTON

Plot Time: 01-Oct-19 23:32:53
Plot Range: 5340 ft to 5833.67 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-002
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION

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	

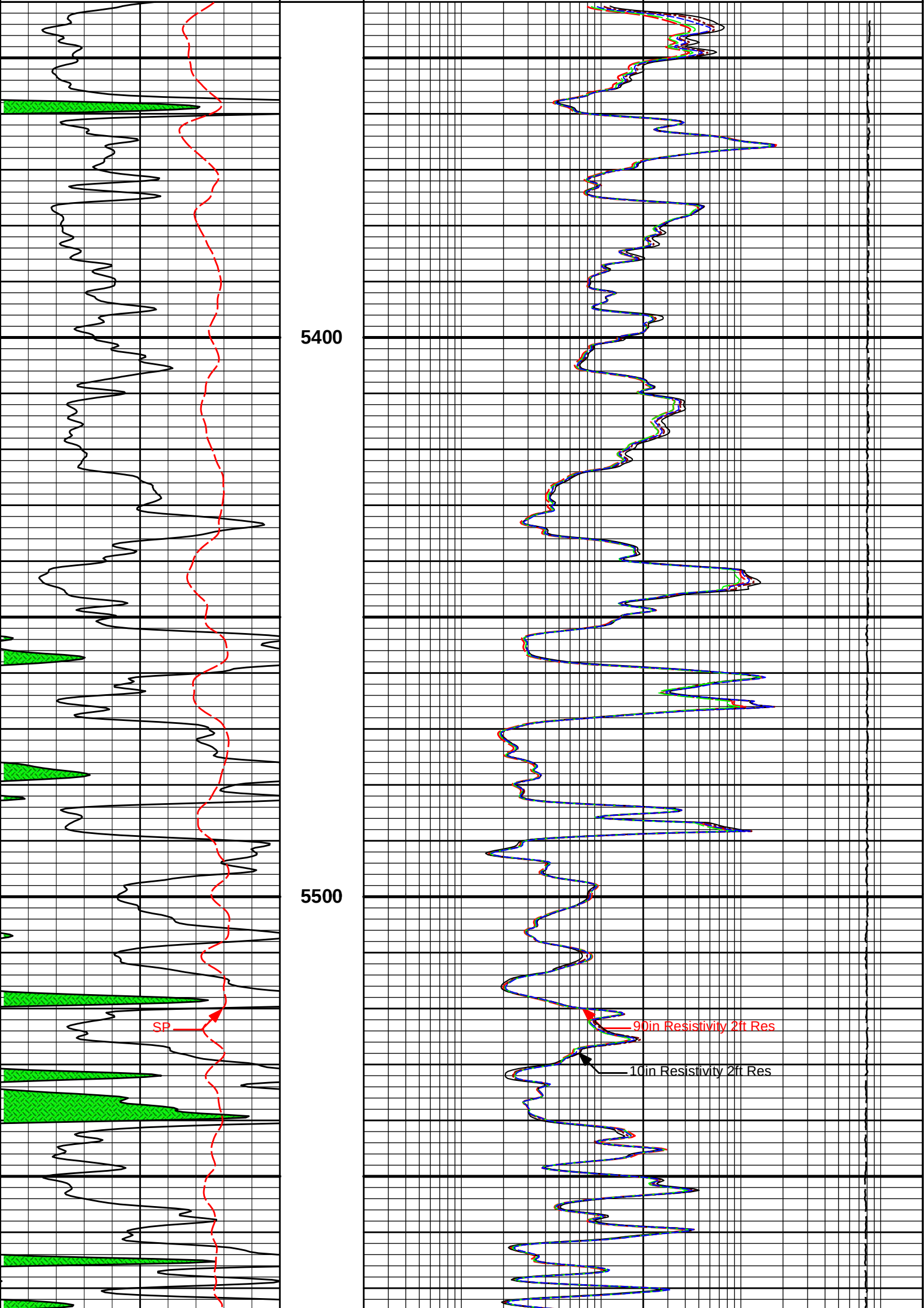
0.2	60in Resistivity 2ft Res	2000
	ohmm	

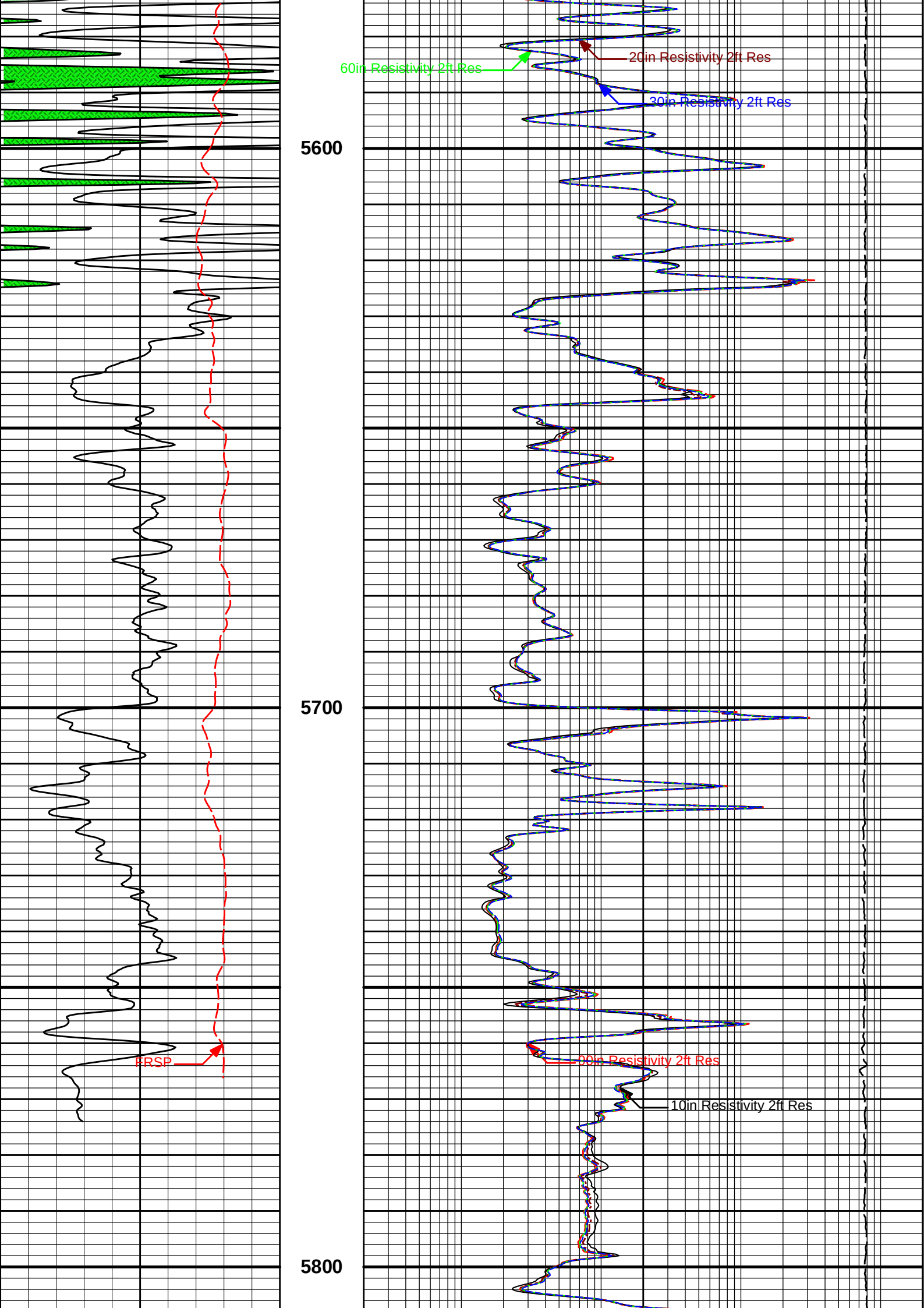
	SP	
	-]20[+	

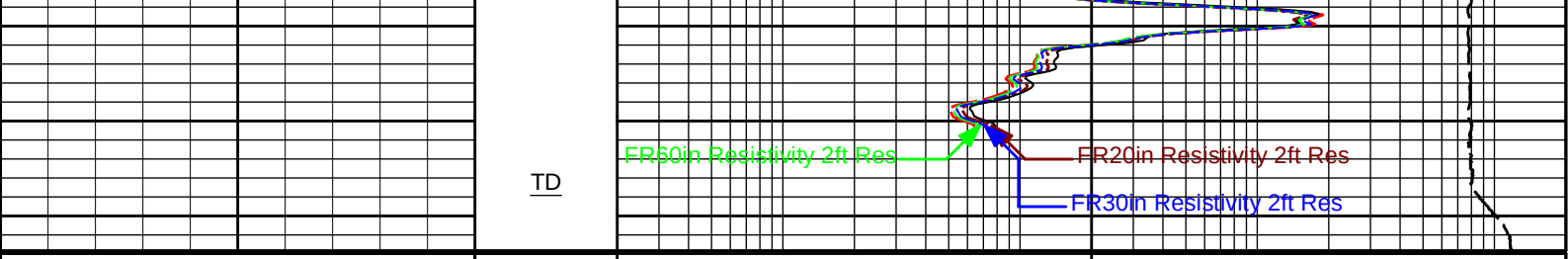
0.2	90in Resistivity 2ft Res	2K
	ohmm	

0	Gamma API	150
	api	

15K	Tension	0
	pounds	


5400
5500
SP
90in Resistivity 2ft Res
10in Resistivity 2ft Res


60in Resistivity 2ft Res
20in Resistivity 2ft Res
30in Resistivity 2ft Res
5600
5700
RRSP
90in Resistivity 2ft Res
10in Resistivity 2ft Res
5800



0 Gamma API 150		15K Tension 0
api		pounds
SP	0.2 90in Resistivity 2ft Res 2K	
-]20[+	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	

HALLIBURTON

Plot Time: 01-Oct-19 23:32:55
Plot Range: 5340 ft to 5833.67 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	Depth Panel - 00000032	Reference Calibration Date:	07-Sep-19 17:01:41
Engineer:	JORGE ORLANDO PEREZ	Calibration Date:	21-Sep-19 08:46:46
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	11285.25	67.24	0.00	lbs
High	17912.38	7904.98	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	RWCH - 12027542	Reference Calibration Date:	26-Sep-19 11:43:38
Engineer:	WHITLOCK	Calibration Date:	27-Sep-19 22:47:03
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-1906.82	-151.36	0.00	lbs

Low	-1906.82	-151.36	0.00	lbs
High	4059.39	1909.28	1450.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11958947 **Reference Calibration Date:** 15-Jun-19 10:46:40

Engineer: JORGE ORLANDO PEREZ **Calibration Date:** 20-Aug-19 09:32:18

Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Calibrator Source S/N: TB-146

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Measurement	Measured	Calibrated	Units
Background	23.6	23.3	api
Background + Calibrator	256.4	252.2	api
Calibrator	232.7	228.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11958947 **Reference Calibration Date:** 20-Aug-19 09:32:18

Engineer: JORGE ORLANDO PEREZ **Calibration Date:** 23-Sep-19 09:56:20

Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Calibrator Source S/N: TB-146

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Field Verification	Shop	Field	Units
Background	23.3	21.5	api
Background + Calibrator	252.2	250.5	api
Calibrator	228.9	229.0	api

Shop	Field	Difference	Tolerance
228.9	229.0	-0.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11019643 **Reference Calibration Date:** 03-Jul-19 12:35:14

Engineer: JORGE ORLANDO PEREZ **Calibration Date:** 03-Jul-19 12:51:50

Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN-424

Tank Serial Number: 12345678

Reference value assigned to Tank: 56.100

Snow Block S/N: 12345678

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:	1.01617	1.01686	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2355	0.2358	0.0002	+/- 0.0020
Calibrated Ratio:	10.5523	10.5595	0.007	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0724	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	**DSNT - 11019643**	**Reference Calibration Date:**	**03-Jul-19 12:51:50**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**23-Sep-19 11:24:45**
Software Version:	**WL INSITE R6.2.7 (Build 7)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-424

Snow Block S/N: 12345678

NEUTRON FIELD-CHECK SUMMARY				
	Shop	**Field**	**Difference**	**Control Limit On Change**
Snow-Block Porosity (decp):	0.0724	0.0581	-0.0142	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 12153520**	**Reference Calibration Date:**	**03-Jul-19 11:09:41**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**03-Jul-19 11:14:00**
Software Version:	**WL INSITE R6.2.1 (Build 2)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11019643**		

CALIBRATION COEFFICIENTS			
Measurement	**Previous Value**	**New Value**	**Control Limit On New Value**
Pad Offset	-4924.00	-5180.12	-7000.00 - -1000.00
Pad Gain	0.0003783	0.0003877	0.0002000 - 0.0006000
Arm Offset	-4124.71	-3912.92	-5000.00 - 3000.00
Arm Gain	0.0004835	0.0004947	0.000300 - 0.000700
Arm Power	-0.000003595	-0.000004486	-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)	2.05	2.00	-0.05	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.46	6.50	0.04	+/- 0.20
Medium Ring (in)	8.19	8.25	0.06	+/- 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 - 12153520**	**Reference Calibration Date:**	**03-Jul-19 11:14:00**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**03-Jul-19 11:15:37**

Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.76	0.01	+/- 0.10
Ring Diameter	8.25	8.18	-0.07	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

BSAT FIELD CASING CHECK

Tool Name: BSAT - 10747686 **Calibration Date:** 26-Mar-14 12:42:00

Engineer: HOFKAMP

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
Delta-T Compensated	153.78	57.00	56.99	0.0100	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 12109515 **Reference Calibration Date:** 22-Oct-18 10:49:55

Engineer: WHITLOCK **Calibration Date:** 30-May-19 15:30:22

Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Host Tool Name: ACRt Instrument - 12109517

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0445	1.05	0.95	1.0220	1.05	0.95	1.0152	1.05
A2 (50")	0.95	1.0411	1.05	0.95	1.0340	1.05	0.95	1.0311	1.05
A3 (29")	0.95	1.0390	1.05	0.95	1.0188	1.05	0.95	1.0136	1.05
A4 (17")	0.95	1.0372	1.05	0.95	1.0168	1.05	0.95	1.0129	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0165	1.05	0.95	1.0111	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9978	1.05	0.95	0.9930	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	1.339	-4.365	-5.632
A2 (50")	-0.632	-4.127	-4.876
A3 (29")	-13.611	-4.650	-3.361
A4 (17")	-110.831	-34.163	-25.608
A5 (10")	N/A	-93.889	-41.507
A6 (6")	N/A	305.702	156.920

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.95	1.3
36K	1.0	1.92	2.0
72K	1.0	1.19	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.00	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 12109515**	**Reference Calibration Date:**	**22-Oct-18 10:51:40**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**22-Oct-18 10:52:51**
Software Version:	**WL INSITE R5.6.0 (Build 2)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 12109517**		

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	-0.006	> -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	-0.026	> -0.500	Pass
A5 (10")	-0.012	> -0.500	Pass	-0.021	> -0.500	Pass	-0.040	> -0.500	Pass
A6 (6")	0.015	< 0.500	Pass	0.067	< 0.500	Pass	0.144	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-213571760.000	-213557040.000	14720.000	10677852.000	Pass
A2 (50")	-216483264.000	-216468096.000	15168.000	10823404.800	Pass
A3 (29")	-208602304.000	-208589536.000	12768.000	10429476.800	Pass
A4 (17")	-206792240.000	-206770736.000	21504.000	10338536.800	Pass
A5 (10")	-202998704.000	-202978400.000	20304.000	10148920.000	Pass
A6 (6")	-208316864.000	-208294896.000	21968.000	10414744.800	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	58445244.000	58432960.000	12284.000	2921648.000	Pass
A2 (50")	54700280.000	54687980.000	12300.000	2734399.000	Pass
A3 (29")	47287512.000	47272796.000	14716.000	2363639.800	Pass
A4 (17")	36497232.000	36481916.000	15316.000	1824095.800	Pass
A5 (10")	32014552.000	32001312.000	13240.000	1600065.600	Pass
A6 (6")	37168108.000	37152904.000	15204.000	1857645.200	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-90832120.000	-90826936.000	5184.000	4541346.800	Pass
A2 (50")	-87633424.000	-87632144.000	1280.000	4381607.200	Pass
A3 (29")	-85509320.000	-85505200.000	4120.000	4275260.000	Pass
A4 (17")	-86394448.000	-86393240.000	1208.000	4319662.000	Pass
A5 (10")	-87099680.000	-87096752.000	2928.000	4354837.600	Pass
A6 (6")	-86173632.000	-86168880.000	4752.000	4308444.000	Pass

PASS/FAIL SUMMARY	
Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - 12153520
Reference Calibration Date: 03-Jul-19 11:50:06
Engineer: WHITLOCK
Calibration Date: 12-Sep-19 09:38:48
Software Version: WL INSITE R6.2.7 (Build 7)
Calibration Version: 1
Host Tool Name: DSNT - 11019643

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.15	-0.18	0.00	-0.00	ohmm
Calibration Point #1	0.02	0.00	0.00	0.00	ohmm
Calibration Point #2	20.14	20.00	19.99	20.00	ohmm
Internal Reference	19.98	19.84	19.98	19.99	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.16	0.42	V
Calibration Point #1	46.79	0.48	V
Calibration Point #2	5332.76	6950.58	V
Internal Reference	5290.54	6946.40	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 12153520
Reference Calibration Date: 12-Sep-19 09:38:48
Engineer: WHITLOCK
Calibration Date: 30-Sep-19 15:13:43
Software Version: WL INSITE R6.2.7 (Build 7)
Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.18	-0.17	-0.00	-0.00	ohmm
Internal Reference	19.84	19.84	19.99	19.99	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.84	19.84	0.00	+/- 0.80
Microlog Lateral	19.99	19.99	0.00	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10844781
Reference Calibration Date: 03-Jul-19 10:27:49
Engineer: JORGE ORLANDO PEREZ
Calibration Date: 03-Jul-19 10:47:36
Software Version: WL INSITE R6.2.1 (Build 2)
Calibration Version: 1

Logging Source S/N: 5471GW
Aluminum Block S/N: EL RENO STD ALUMINUM — 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	0.9935	1.0210	0.90 - 1.10
Near Dens Gain	0.9974	1.0023	0.90 - 1.10
Near Peak Gain	1.0148	1.0153	0.90 - 1.10
Near Lith Gain	1.0205	1.0205	0.90 - 1.10

Far Bar Gain	1.0074	1.0103	0.90 - 1.10
Far Dens Gain	0.9966	0.9984	0.90 - 1.10
Far Peak Gain	0.9948	0.9952	0.90 - 1.10
Far Lith Gain	0.9746	0.9795	0.90 - 1.10

Near Bar Offset	0.1648	-0.0889	NONE
Near Dens Offset	0.0958	0.0523	NONE
Near Peak Offset	-0.0751	-0.0757	NONE
Near Lith Offset	-0.1330	-0.1304	NONE
Far Bar Offset	-0.0073	-0.0324	NONE
Far Dens Offset	0.0749	0.0600	NONE
Far Peak Offset	0.0667	0.0632	NONE
Far Lith Offset	0.1925	0.1523	NONE

Near Bar Background	839.23	835.22	700 - 1450
Near Dens Background	273.43	272.01	230 - 480
Near Peak Background	119.51	119.25	100 - 210
Near Lith Background	146.81	146.64	125 - 260
Far Bar Background	657.45	656.19	450 - 900
Far Dens Background	259.37	258.53	175 - 345
Far Peak Background	103.14	103.80	70 - 140
Far Lith Background	106.24	106.22	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.685	1.687	0.002	+/- 0.015
Pe	2.562	2.561	-0.001	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.580	0.000	+/- 0.01500
Pe	3.164	3.134	-0.030	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0022	+/- 0.0110	0.0018	+/- 0.0140
Magnesium Block	0.0004	+/- 0.0110	-0.0007	+/- 0.0140
Aluminum Block	-0.0005	+/- 0.0110	0.0013	+/- 0.0140
Resolution	9.63	6.00 - 11.50	8.72	6.00 - 11.50
Internal Verifier(B+D+P+L)	1373	1200 - 2700	1125	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 - 10844781 **Reference Calibration Date:** 03-Jul-19 10:47:36

Engineer: WHITLOCK **Calibration Date:** 30-Sep-19 15:16:12

Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Pad Temperature: 89.3 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1373.120	1369.409	-3.711	14.975
Far (B+D+P+L) cps	1124.751	1117.884	-6.867	17.648
Near Resolution	9.63	9.75	0.120	0.50
Far Resolution	8.72	8.74	0.020	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-00000032						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
RWCH-12027542						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1450.00	----------	----------	0.00	----------	lbs
GTET-11958947						
Gamma Ray Calibrator	228.9	229.0	----------	-0.1	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0724	0.0581	----------	0.0143	+/- 0.0150	decp
SDLT-12153520						
Pad Extension	3.75	3.76	----------	-0.01	+/-0.10	in
Ring Diameter	8.25	8.18	----------	0.07	+/-0.15	in
ACRt Sonde-12109515						
Mud Cell	1.00	----------	----------	0	----------	ohm-m
Microlog Pad-12153520						
MicroLog Normal	19.84	19.84	----------	0.00	+/-0.80	ohmm
MicroLog Lateral	19.99	19.99	----------	0.00	+/-0.80	ohmm
SDLT Pad-10844781						
Near(B+D+P+L)	1373.120	1369.409	----------	3.711	+/-14.975	cps
Far(B+D+P+L)	1124.751	1117.884	----------	6.867	+/-17.648	cps

Data: RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 01-Oct-19 18:22:39**

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	8.800	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	0.000	ohmm

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	CSTR	Compressive Strength	1000.00	psia
SHARED	ST	Surface Temperature	75.0	degF
SHARED	TD	Total Well Depth	5830.00	ft
SHARED	BHT	Bottom Hole Temperature	140.0	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	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 Upr	
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

Data: RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 01-Oct-19 18:23:37**

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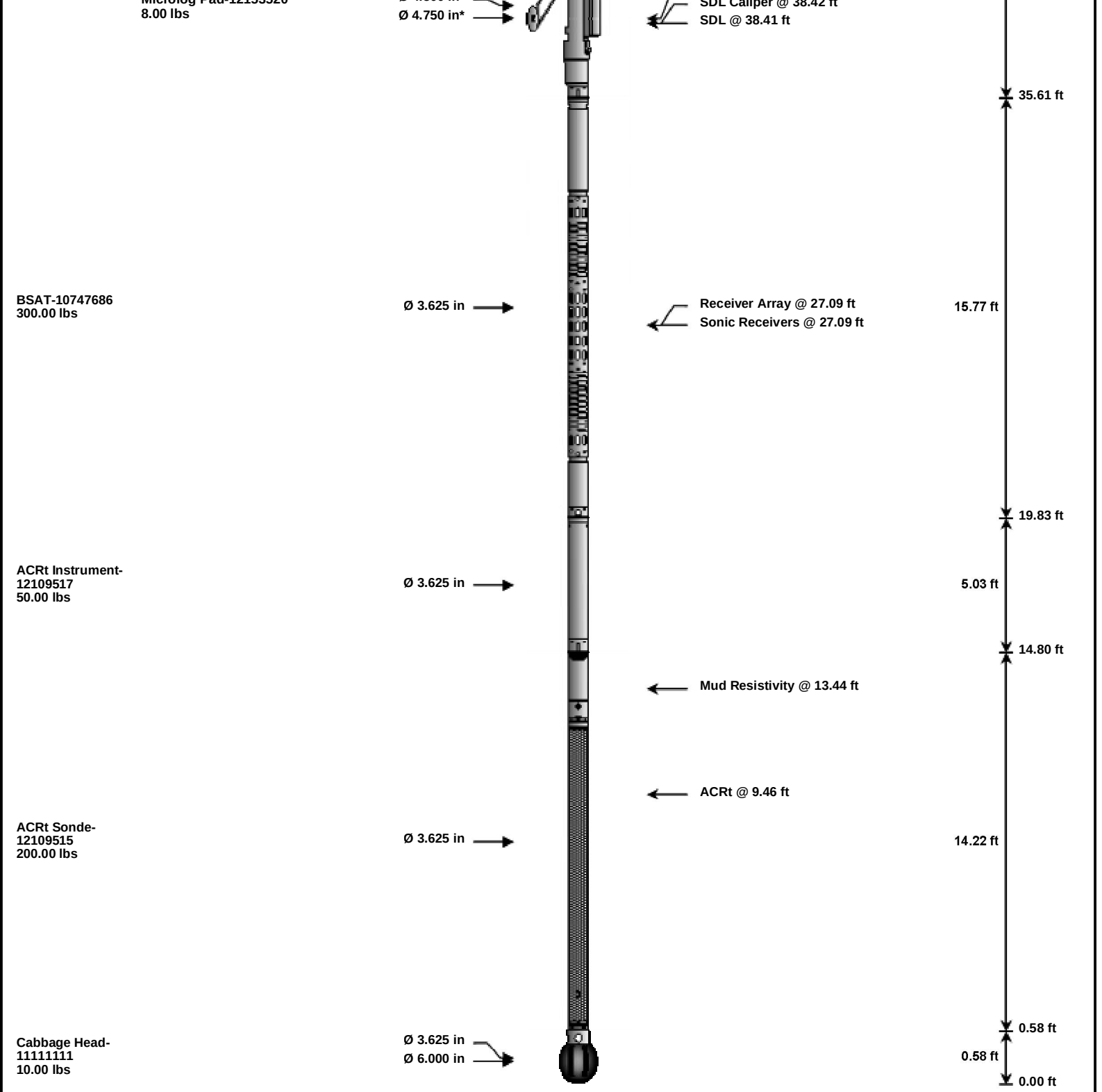
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in		Fishing Neck @ 73.73 ft		74.61 ft
RWCH-12027542 135.00 lbs		Ø 3.625 in		Load Cell @ 70.93 ft BH Temperature @ 70.36 ft	6.25 ft	
	Weak Point Solid-12027542 0.01 lbs	Ø 0.010 in*				68.36 ft
SP Sub-11441455 60.00 lbs		Ø 3.625 in		SP @ 66.59 ft	3.74 ft	
				Z-Accelerometer @ 64.17 ft		64.63 ft
GTET-11958947 165.00 lbs		Ø 3.625 in		GammaRay @ 58.56 ft	8.52 ft	
						56.11 ft
DSNT-11019643 174.00 lbs	DSN Decentralizer-11019643 6.60 lbs	Ø 5.000 in* Ø 3.625 in		DSN Far @ 49.17 ft DSN Near @ 48.42 ft	9.69 ft	
						46.42 ft
SDLT-12153520 360.00 lbs	SDLT Pad-10844781 65.00 lbs Microlog Pad-12153520	Ø 4.500 in Ø 4.500 in*		Microlog @ 38.61 ft SDL Caliper @ 38.42 ft	10.81 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12027542	135.00	6.25		68.36	300.00
WPSS	Weak Point Solid	12027542	0.01	0.01	*	68.36	300.00
SP	SP Sub	11441455	60.00	3.74		64.63	300.00
GTET	Gamma Telemetry Tool	11958947	165.00	8.52		56.11	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69		46.42	60.00
DCNT	DSN Decentralizer	11019643	6.60	5.13	*	49.75	300.00
SDLT	Spectral Density Tool	12153520	360.00	10.81		35.61	60.00
SDLP	Density Insite Pad	10844781	65.00	2.55	*	37.82	60.00
MICP	Microlog Pad	12153520	8.00	1.00	*	38.11	60.00
BSAT	Borehole Sonic Array Tool	10747686	300.00	15.77		19.83	60.00
ACRt	Array Compensated True Resistivity Instrument Section	12109517	50.00	5.03		14.80	120.00
ACRt	Array Compensated True Resistivity Sonde Section	12109515	200.00	14.22		0.58	120.00
CBHD	Cabbage Head	11111111	10.00	0.58		0.00	300.00
Total			**1,533.61**	**74.61**			

* Not included in Total Length and Length Accumulation.

Data: RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 01-Oct-19 18:23:48**

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Plot Time: 01-Oct-19 23:33:17
Plot Range: 1600 ft to 5833 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_1_main

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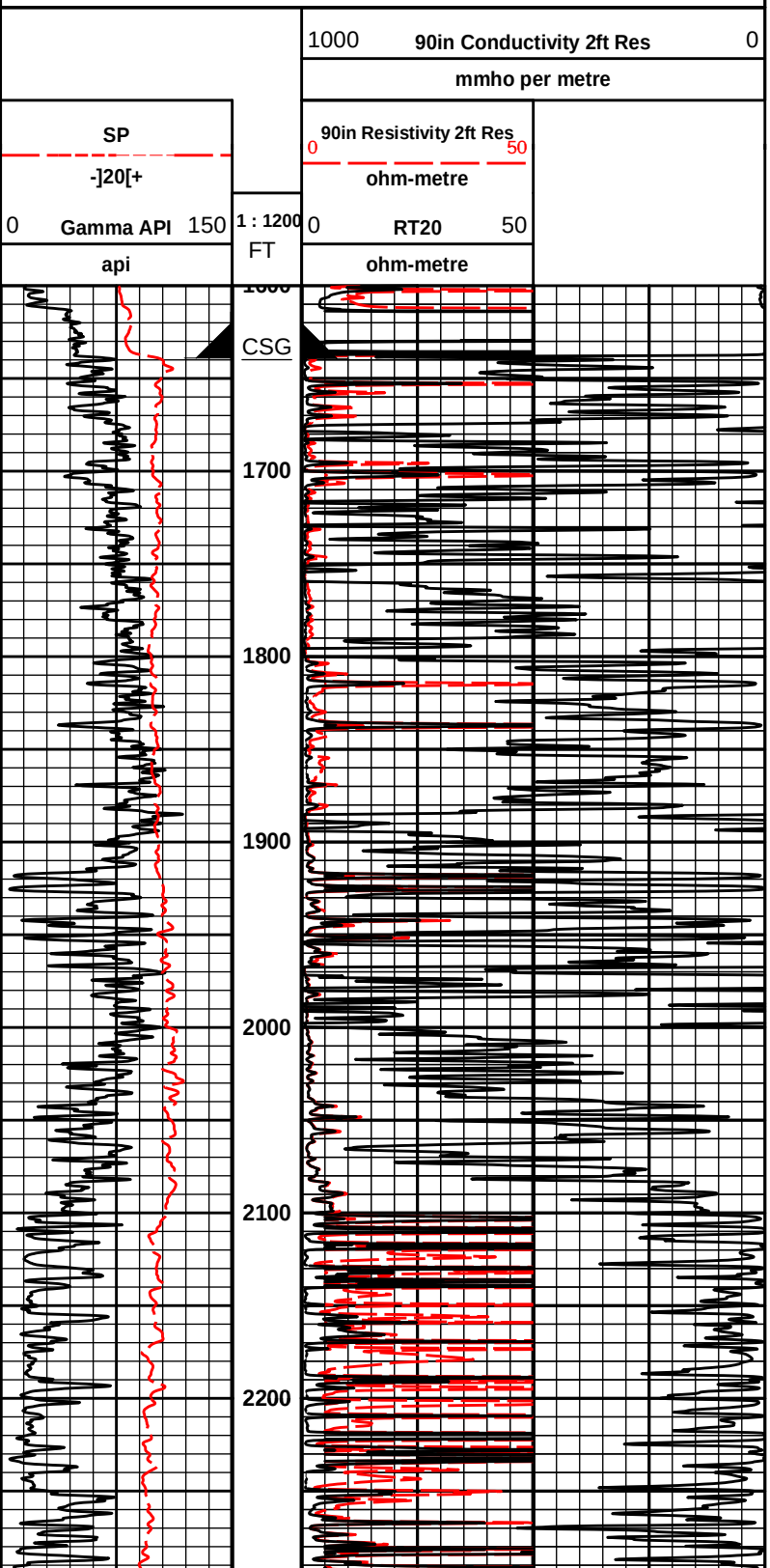
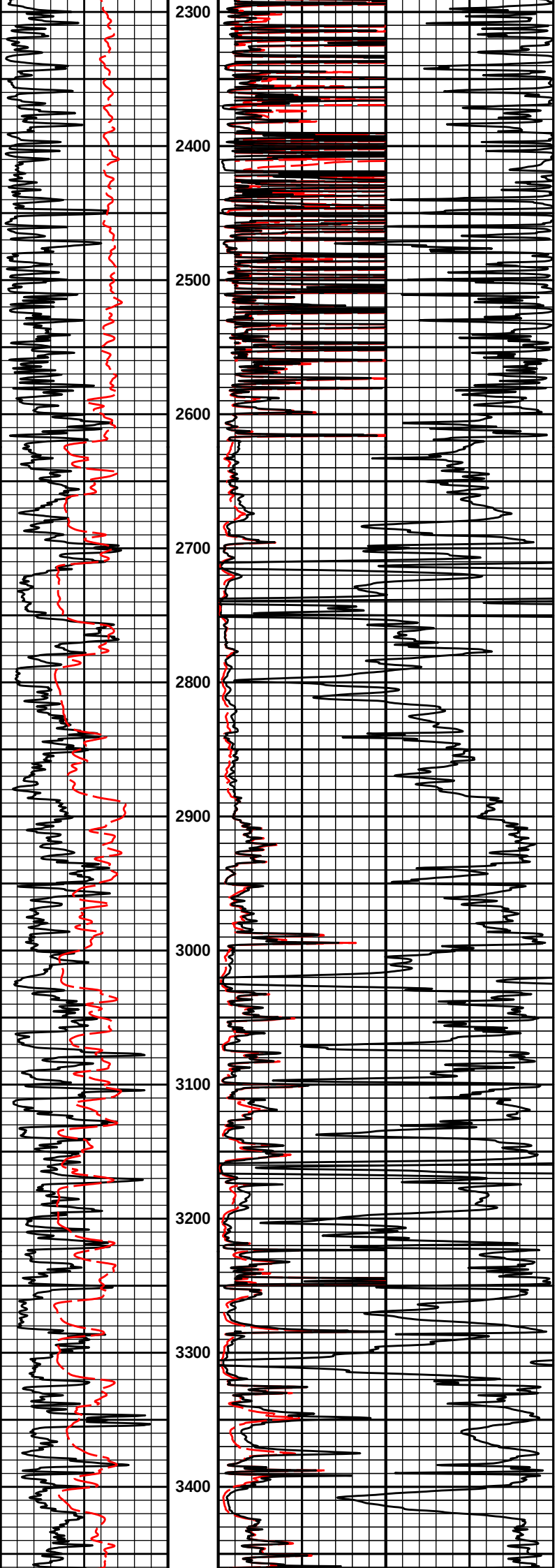
1 INCH CORRELATION LOG

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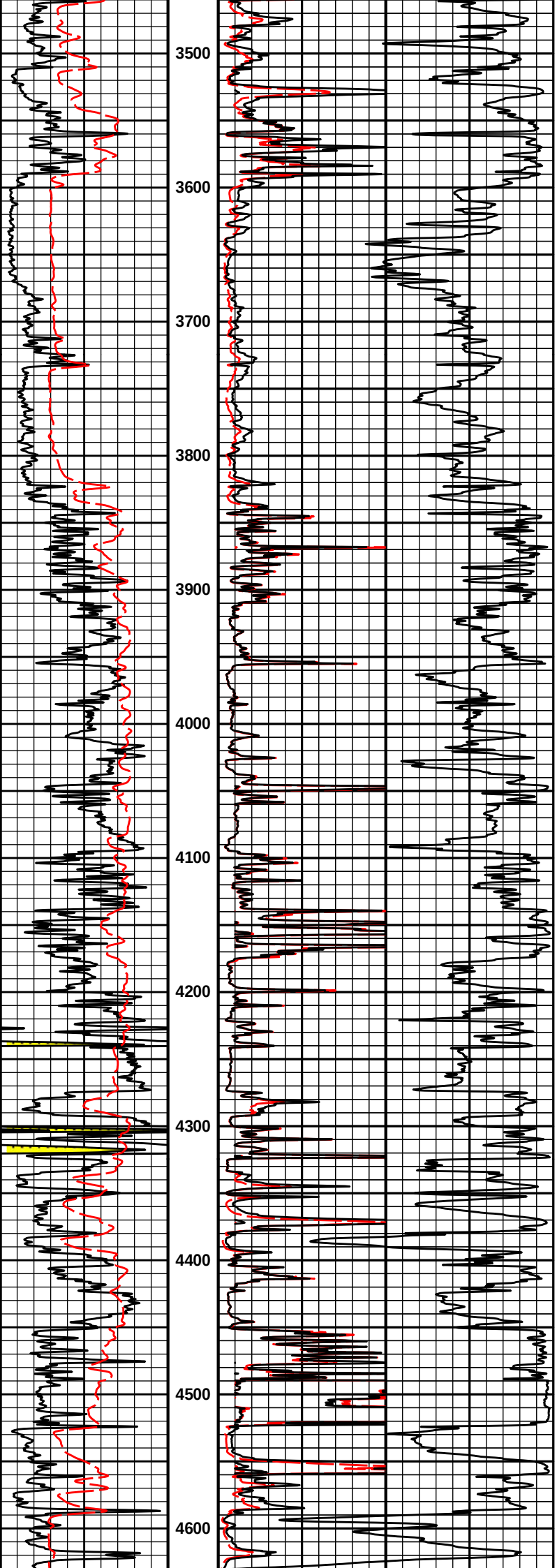
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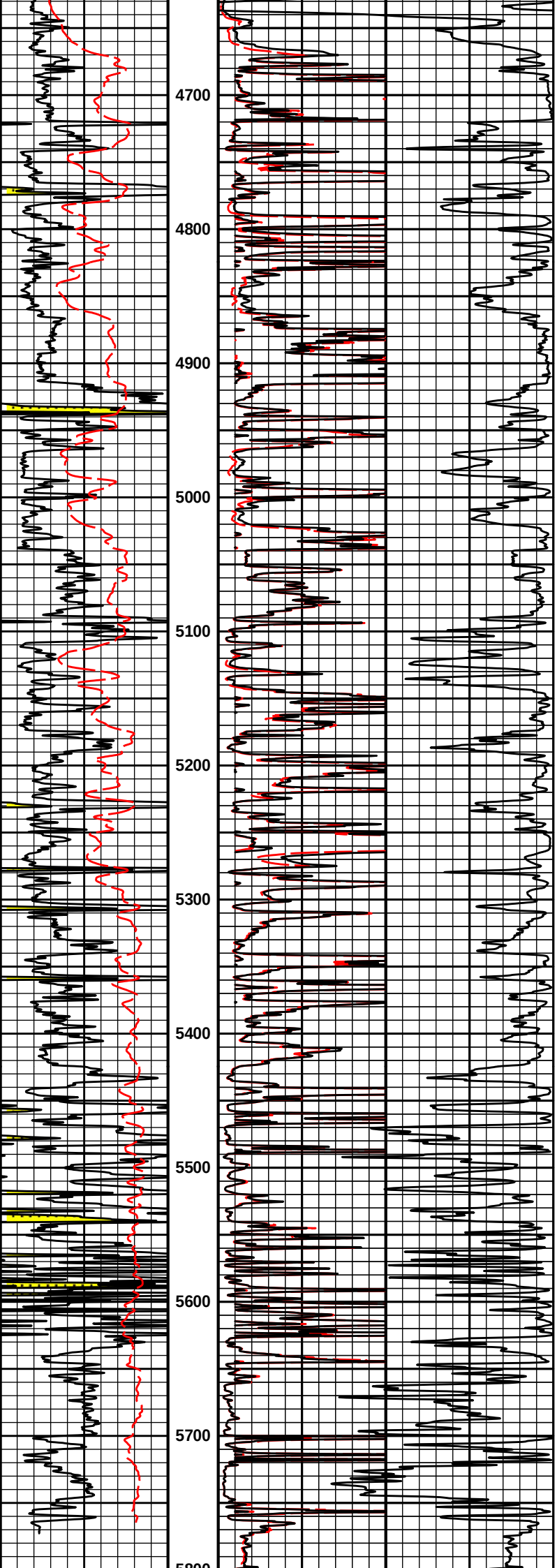
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5700

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

HALLIBURTON

Plot Time: 01-Oct-19 23:33:19
Plot Range: 1600 ft to 5833 ft
Data: RAYDON_ROCK\Well Based\DAQ-0001-003
Plot File: \\-LOCAL-\RAYDON_ROCK\0001 RWCH-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_1_main

1 INCH MAIN LOG

1 INCH CORRELATION LOG