HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY	HARTMAN OIL COMPANY, INC.
WELL	WILKINSON TRUST UNIT #1-21
FIELD/BLOCK	ISBEL NORTH
COUNTY	SCOTT
STATE	KANSAS

COMPANY **HARTMAN OIL COMPANY, INC.**
WELL **WILKINSON TRUST UNIT #1-21**
FIELD/BLOCK **ISBEL NORTH**
COUNTY **SCOTT** STATE **KANSAS**

API No. 15-171-21204-00-00
Location
(SHL) NE NE SE SW
1047' FSL & 2331' FWL

Sect. 21 Twp. 17S Rge. 34W

Other Services:
ACRT
SDL-DSN
ML

Permanent Datum	GL	Elev. 3102.0 ft	Elev.: K.B.	3112.0 ft
Log measured from	KB	, 10.0 ft above perm. Datum	D.F.	3111.0 ft
Drilling measured from	KB		G.L.	3102.0 ft

Date		01-Jun-17					
Run No.		1					
Depth - Driller		4800.0 ft					
Depth - Logger		4801.0 ft					
Bottom - Logged Interval		4791					
Top - Logged Interval		345					
Casing - Driller		8.625 in @ 347.0 ft		@		@	
Casing - Logger		345.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.0 ppg	56.00 s/qt				
PH	Fluid Loss	9.00 pH	10.4 cptm				
Source of Sample		MUD PIT					
Rm @ Meas. Temperature		0.48 ohmm @ 82.00 degF		@		@	
Rmf @ Meas. Temperature		0.39 ohmm @ 80.00 degF		@		@	
Rmc @ Meas. Temperature		0.61 ohmm @ 80.00 degF		@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.33 ohmm @ 122.0 degF		@		@	
Time Since Circulation		04:00 hr					
Time on Bottom		01-Jun-17 06:29					
Max. Rec. Temperature		122.00 degF @ 4801.0 ft		@		@	
Equipment	Location	12156883	EL RENO				
Recorded By		WHITLOCK					
Witnessed By		CHRIS PETERS					

Fold here

Service Ticket No.: 904068966 API No.: 15-171-21204-00-00 PGM Version: WL INSITE R5.0.5 (Build 8)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE					
Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@		@	
Rmf @ Meas. Temp.		@		@	
Rmc @ Meas. Temp.		@		@	
Source Rmf	Rmc				
Rm @ BHT		@		@	
Rmf @ BHT		@		@	
Rmc @ BHT		@		@	

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

EQUIPMENT DATA

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

DIRECTIONAL INFORMATION

Maximum Deviation @	KOP @

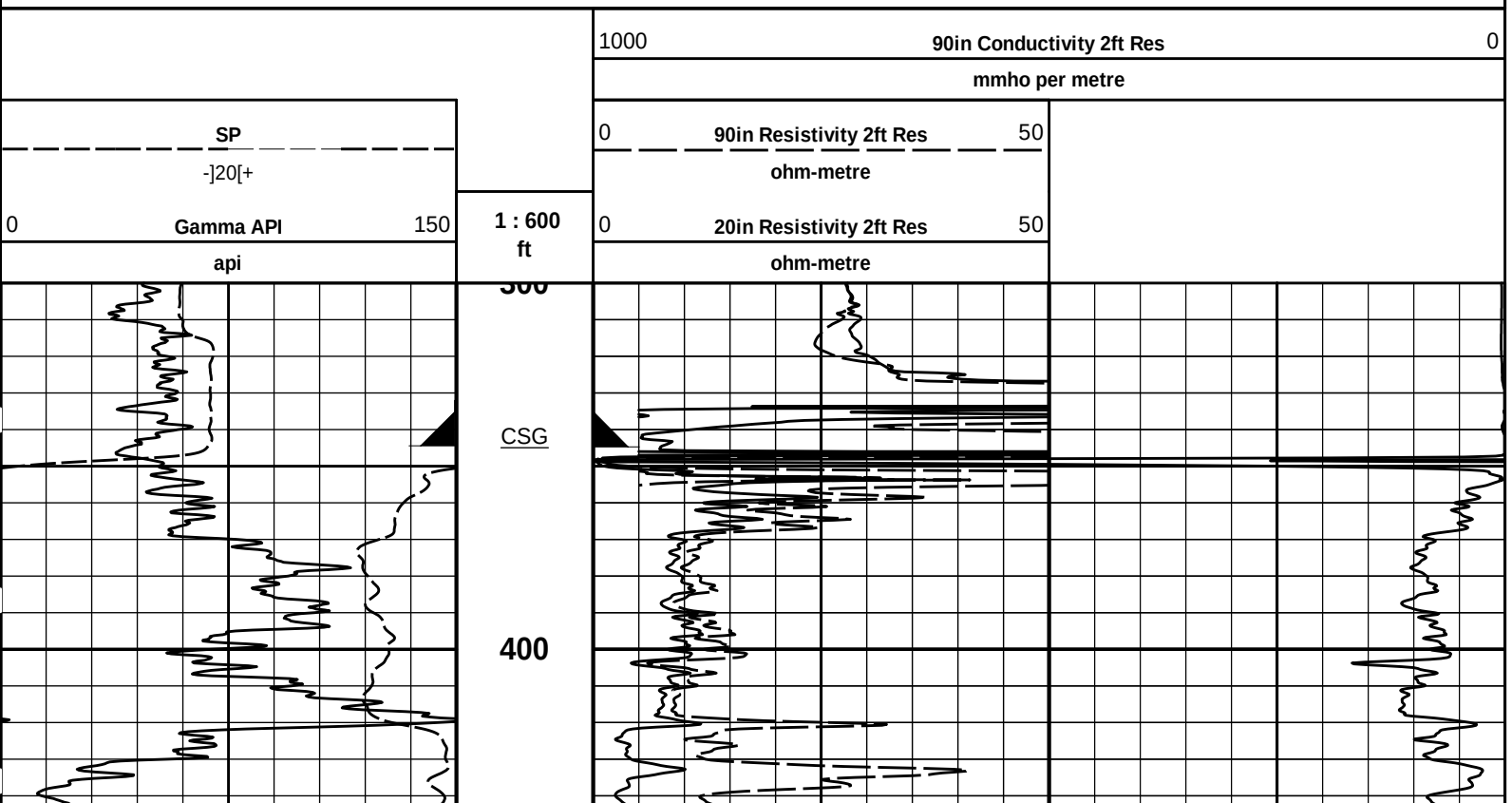
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

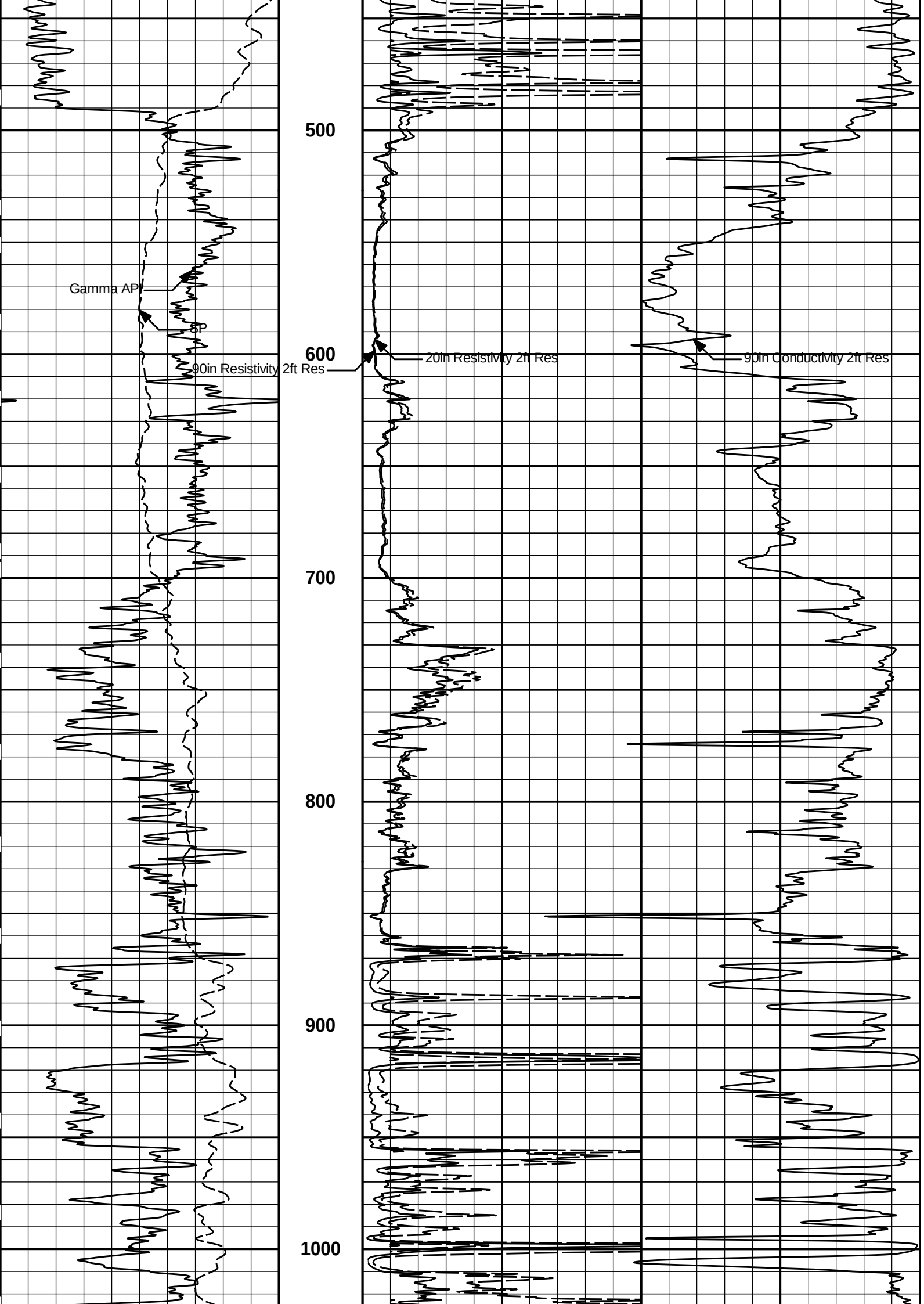
HALLIBURTON

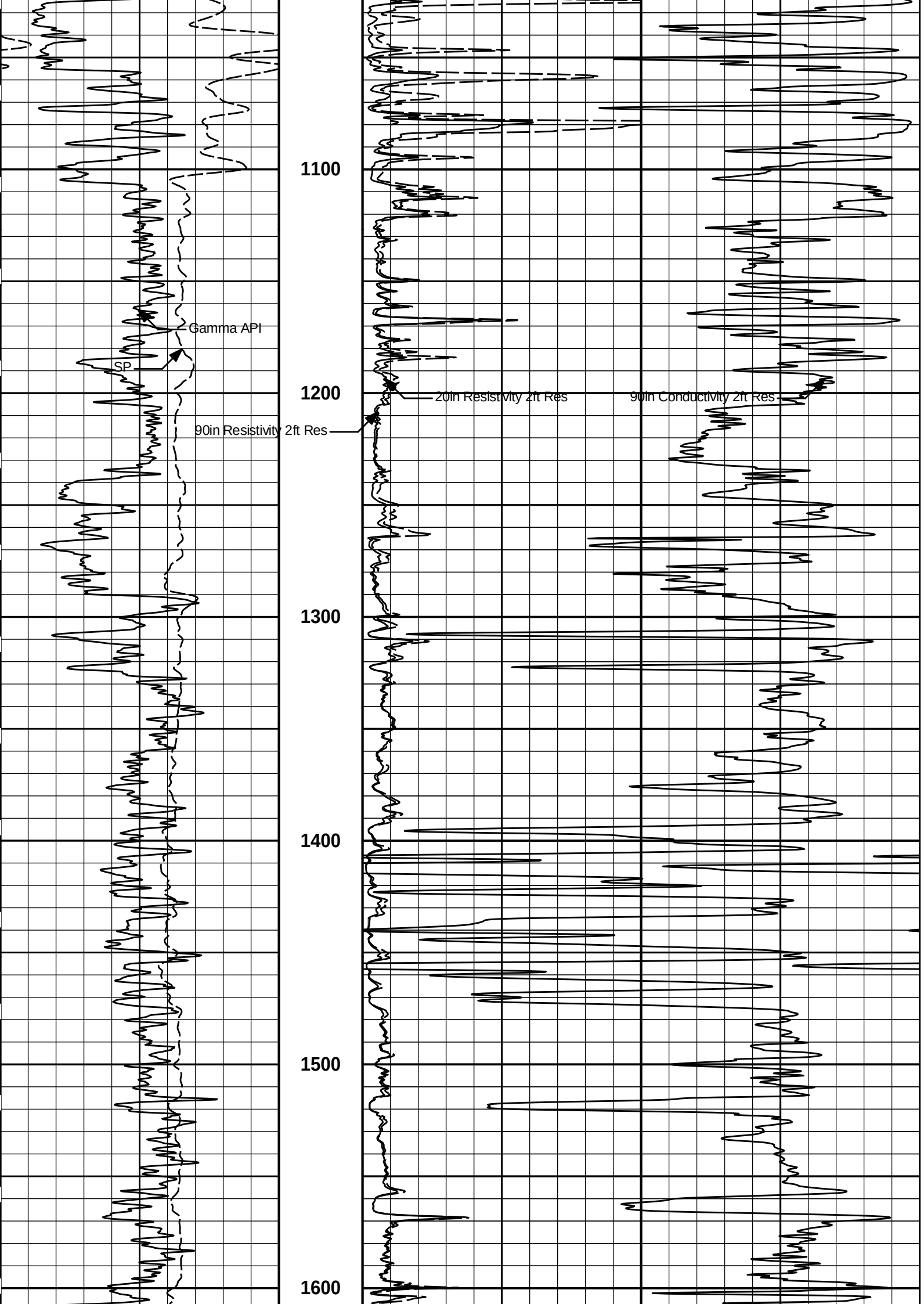
Plot Time: 01-Jun-17 09:58:15
Plot Range: 300 ft to 4806.42 ft
Data: HART_WILKINSON\Well Based\MAIN
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_2_main

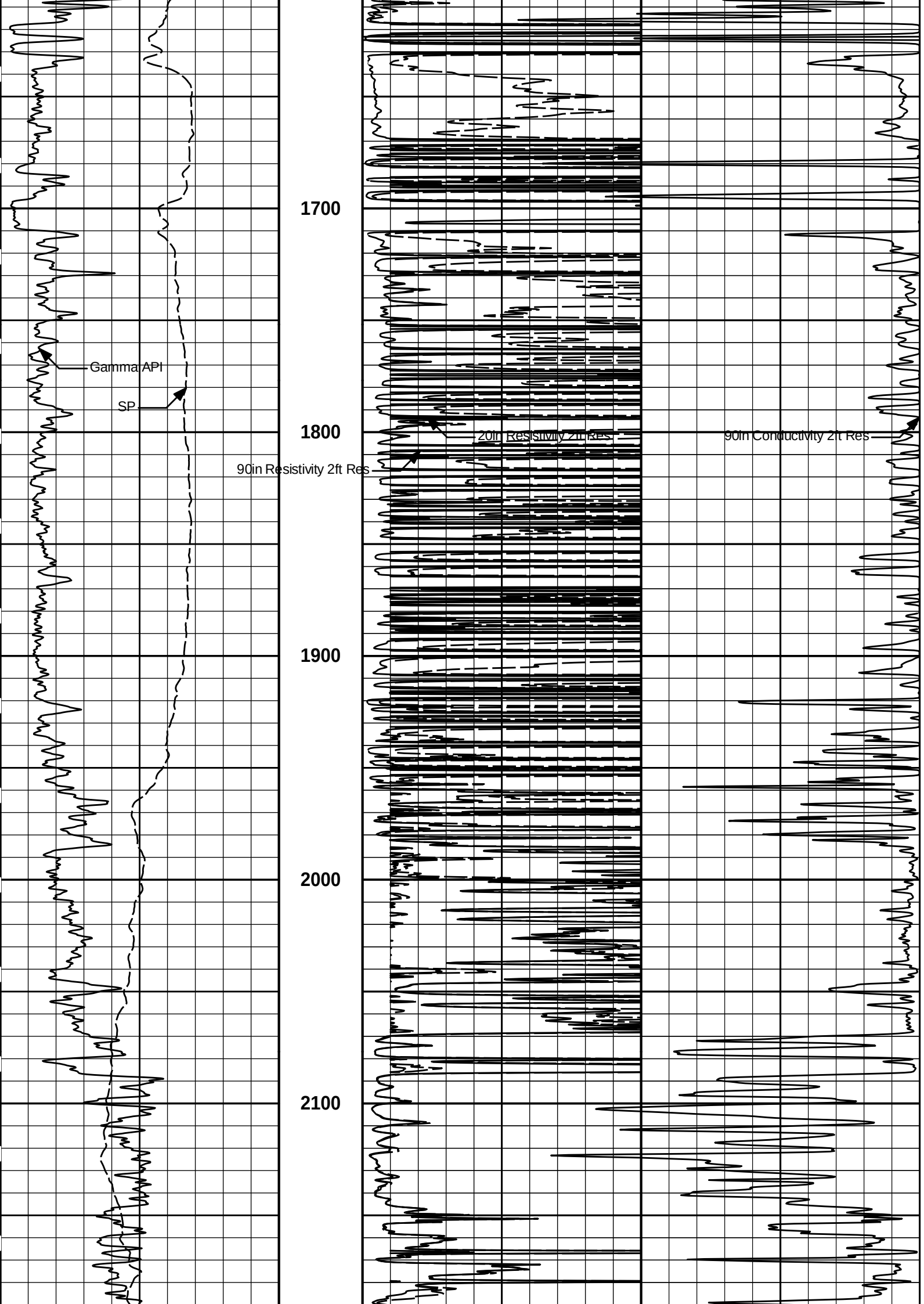
2 INCH MAIN LOG

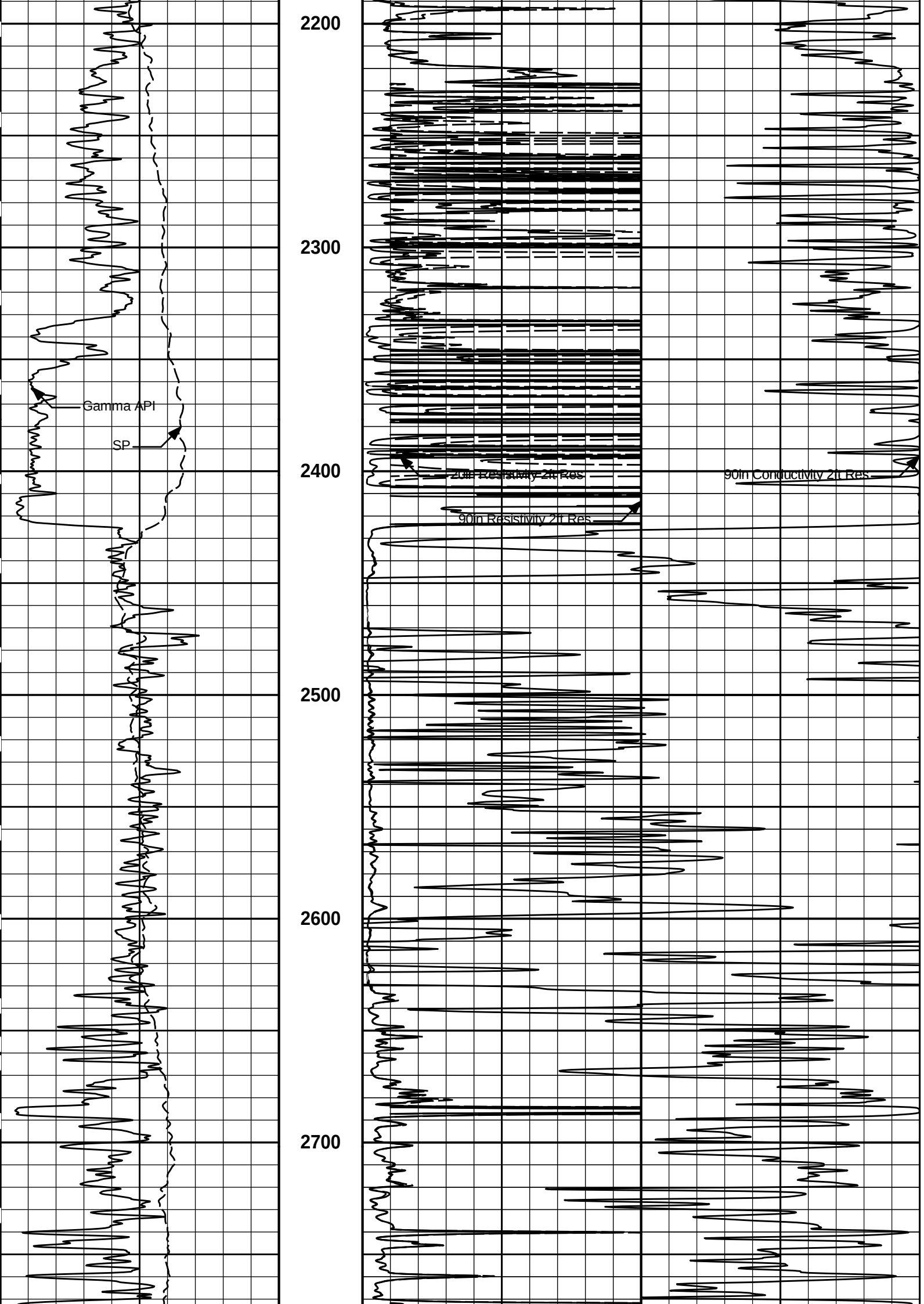
2 INCH MAIN LOG

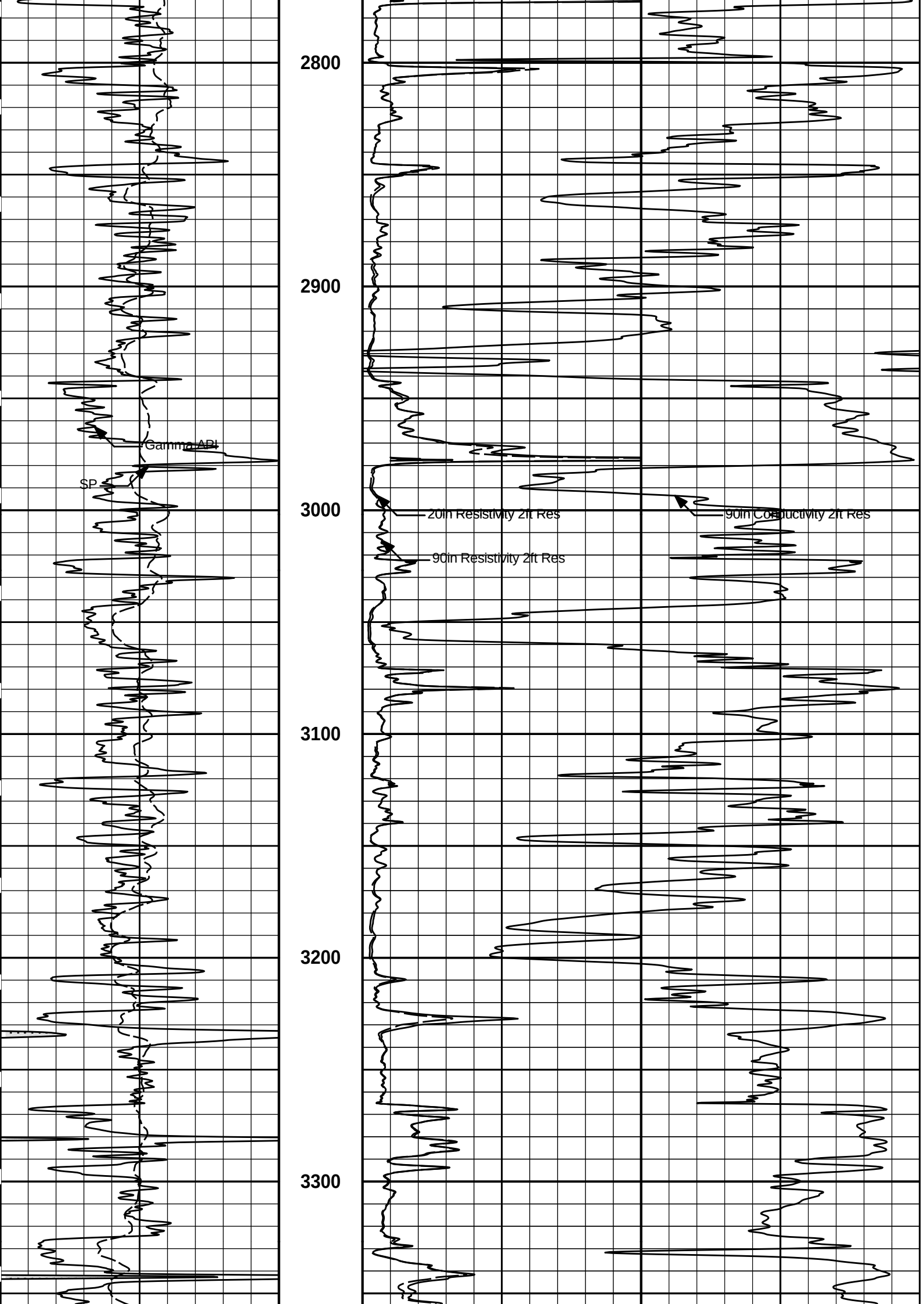


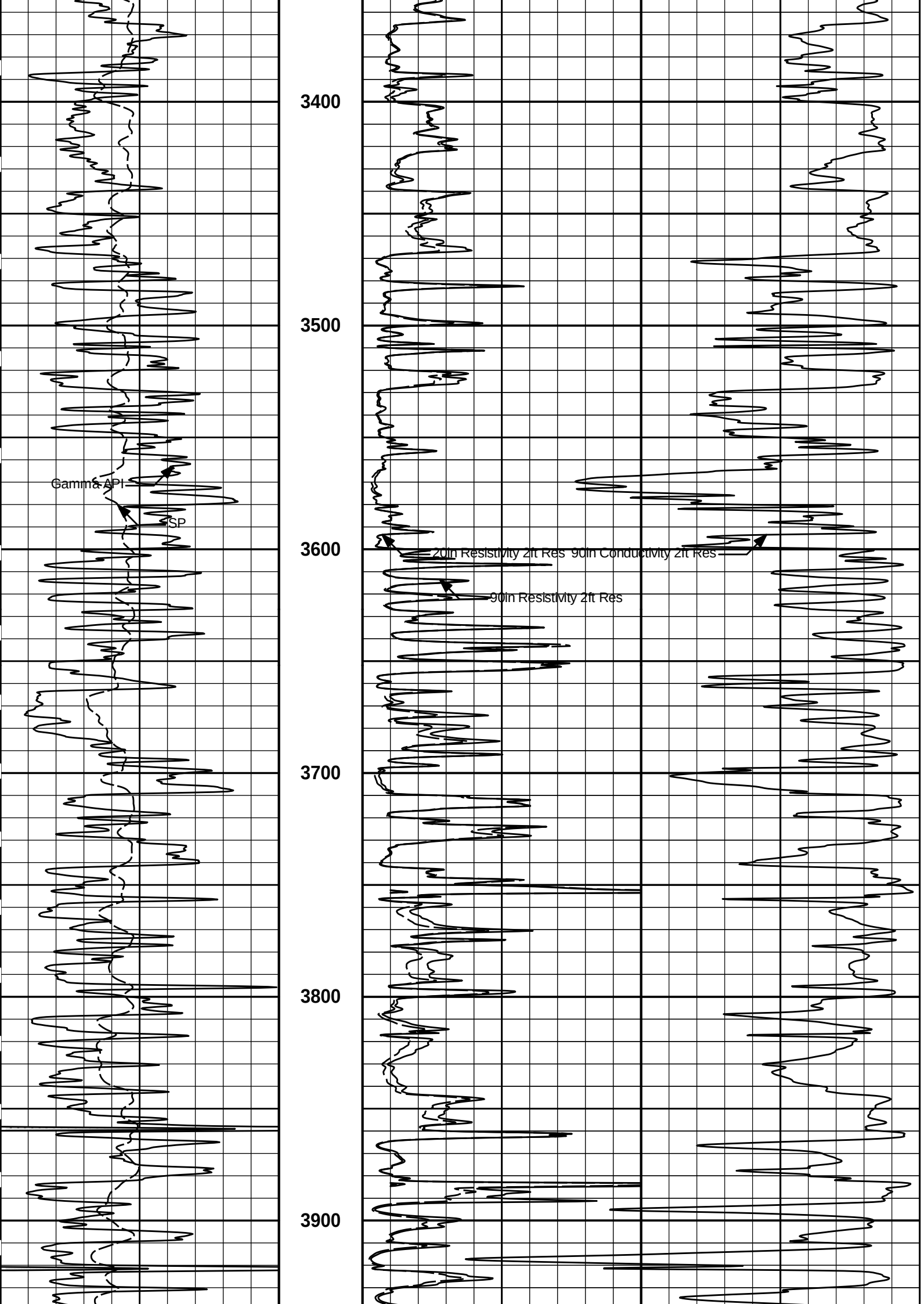

500
600
700
800
900
1000
Gamma API
SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res

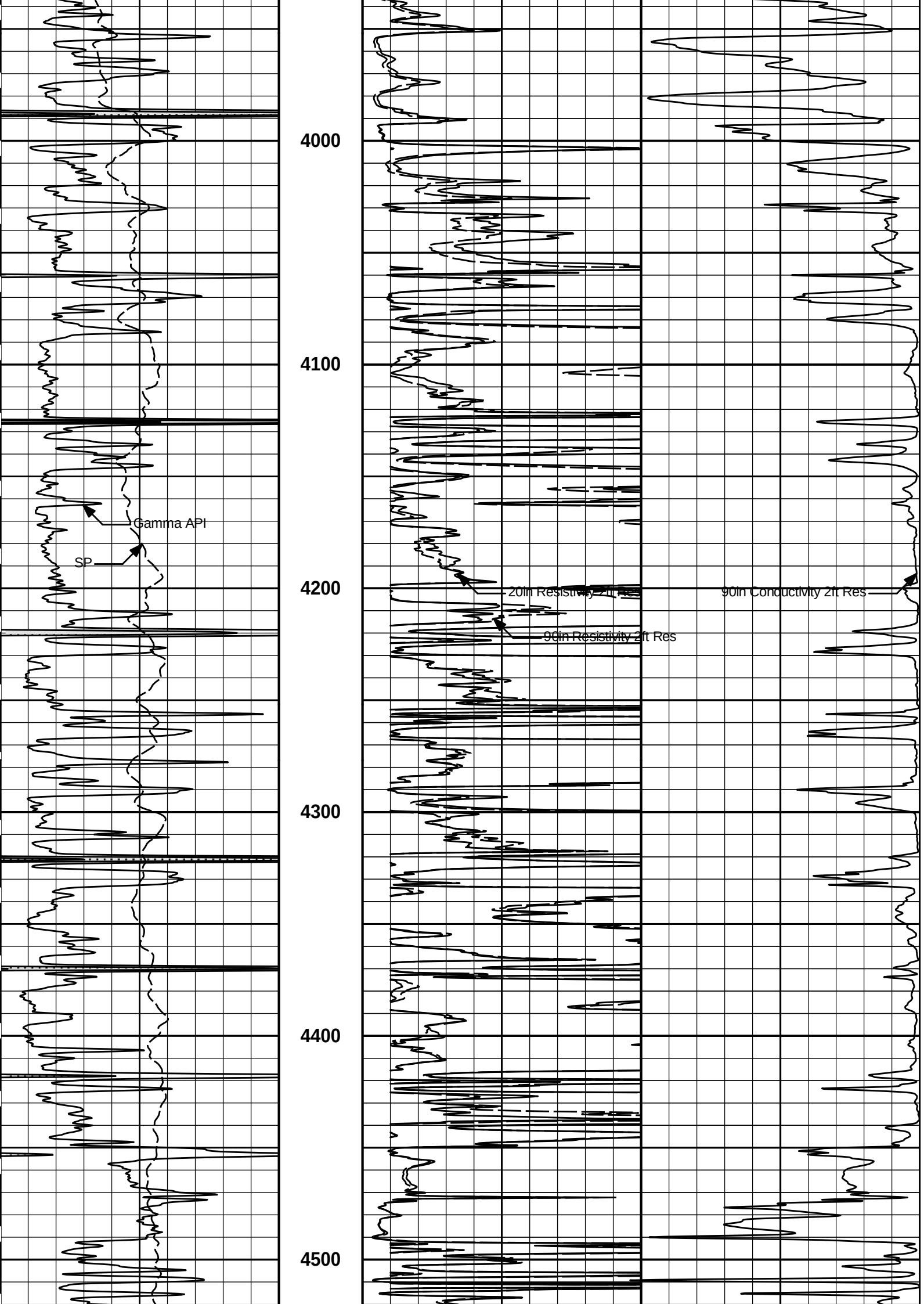

1100
1200
1300
1400
1500
1600
Gamma API
SP
20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res

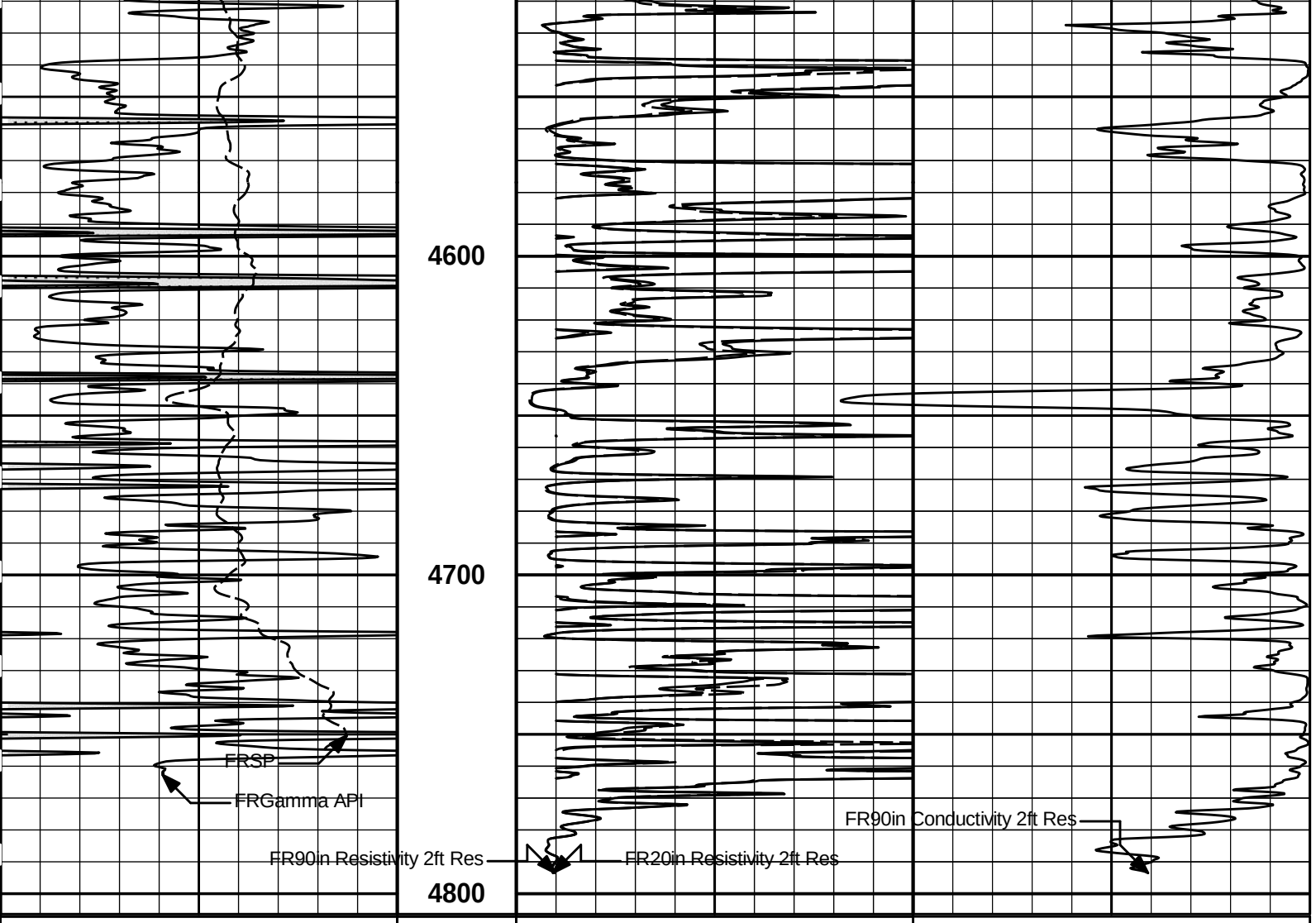

1700
1800
1900
2000
2100
Gamma API
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res


2200
2300
2400
2500
2600
2700
Gamma API
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res


2800
2900
3000
3100
3200
3300
Gamma API
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res


3400
3500
Gamma API
SP
3600
20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res
3700
3800
3900


4000
4100
4200
4300
4400
4500
Gamma API
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res



0 **Gamma API** 150	**1 : 600 ft**	0 **20in Resistivity 2ft Res** 50
api		**ohm-metre**
SP		0 **90in Resistivity 2ft Res** 50
-]20[+		**ohm-metre**
		1000 **90in Conductivity 2ft Res** 0
		mmho per metre

HALLIBURTON

Plot Time: 01-Jun-17 09:58:18
Plot Range: 300 ft to 4806.42 ft
Data: HART_WILKINSON\Well Based\MAIN
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_2_main

2 INCH MAIN LOG

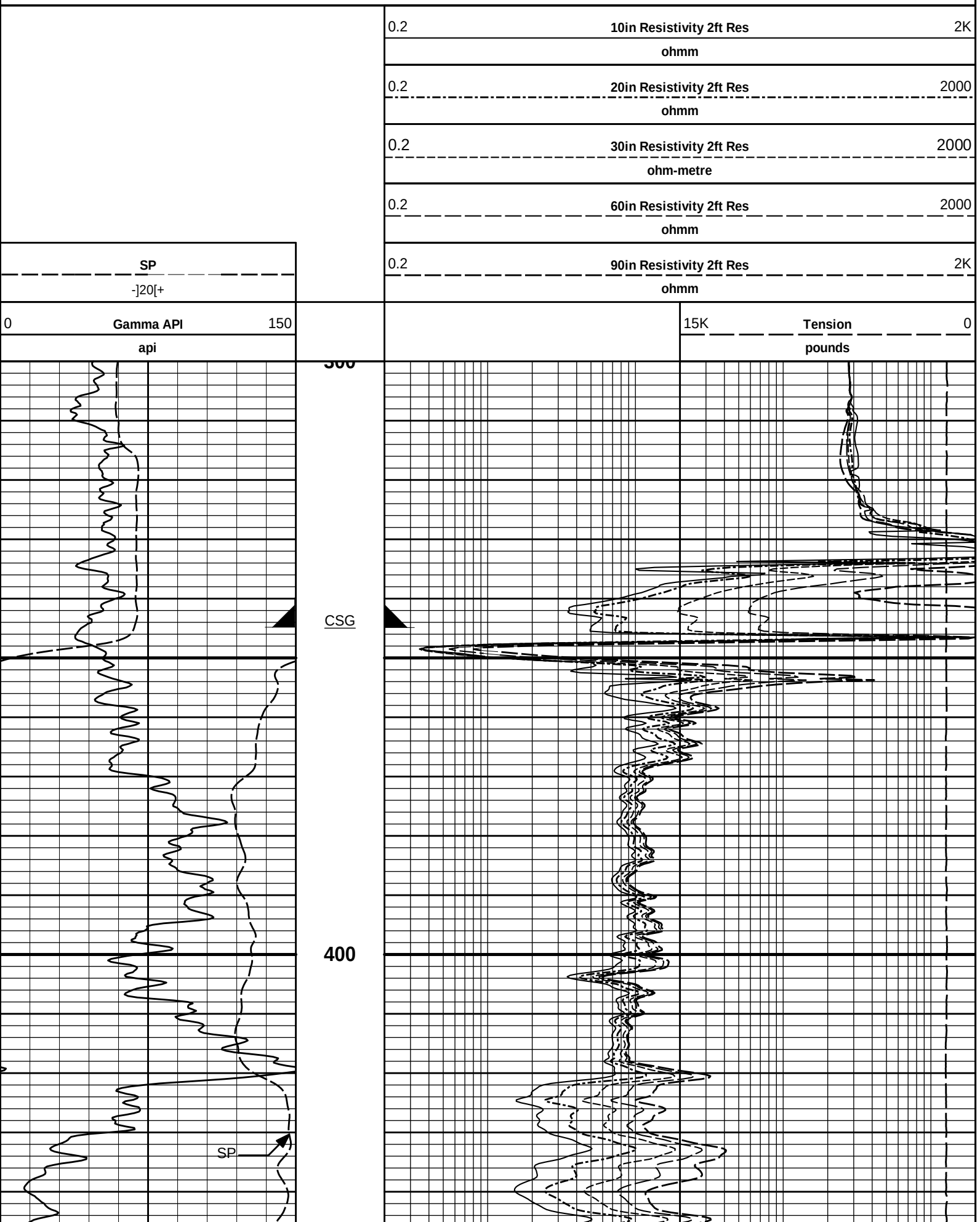
2 INCH MAIN LOG

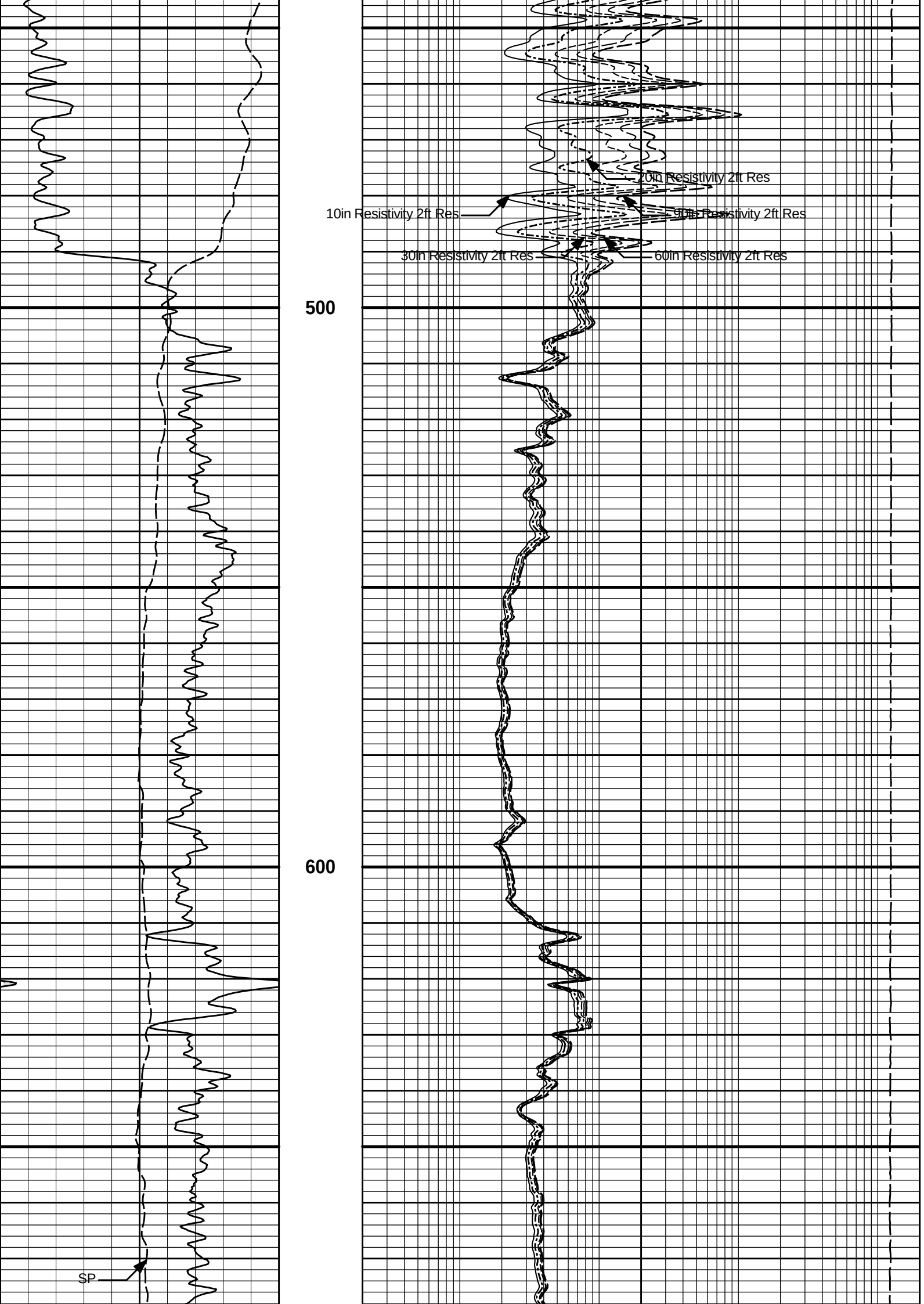
HALLIBURTON

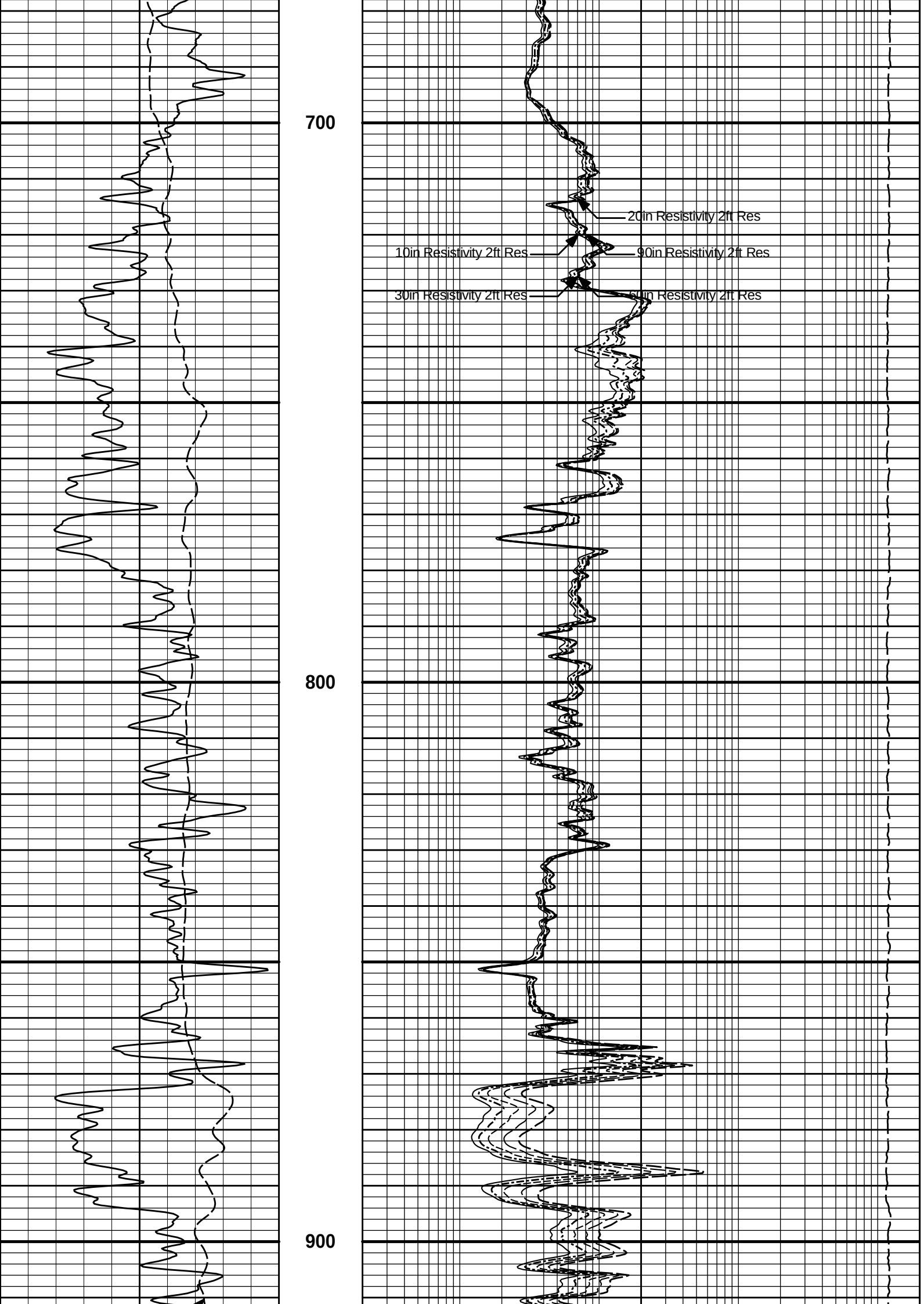
Plot Time: 01-Jun-17 09:58:18
Plot Range: 300 ft to 4806.42 ft
Data: HART_WILKINSON\Well Based\MAIN
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_5inch_main

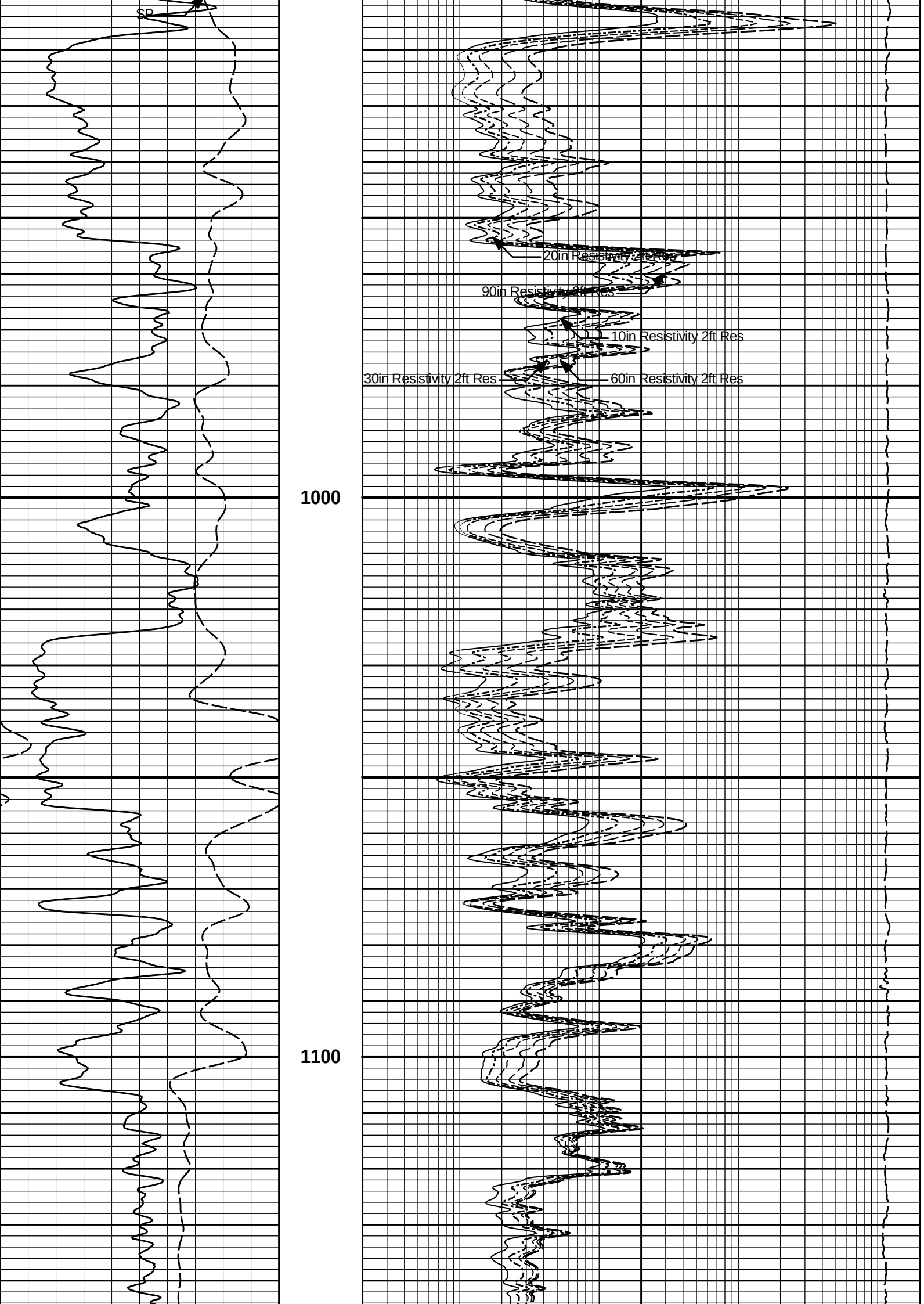
5 INCH MAIN LOG

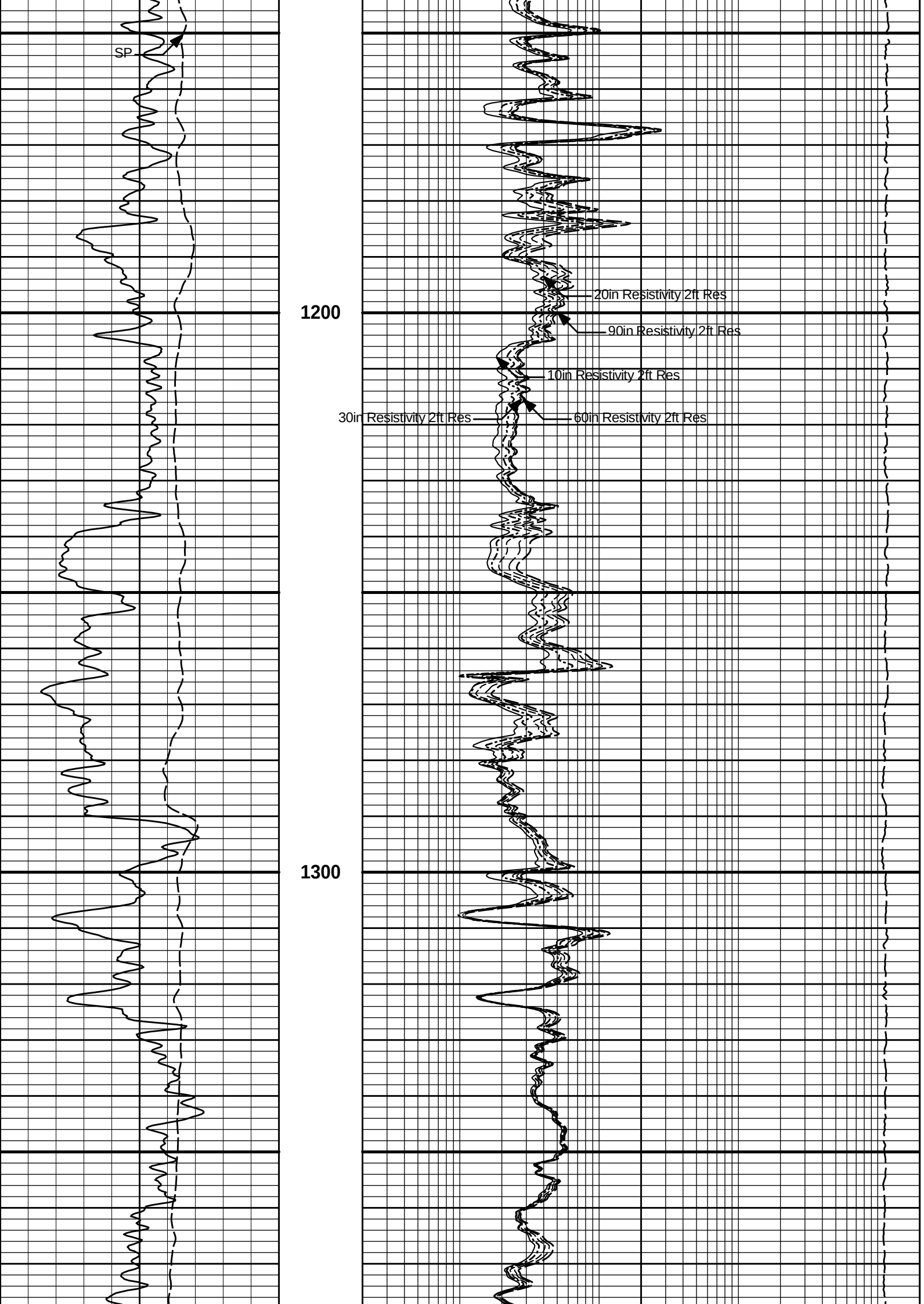
5 INCH MAIN LOG

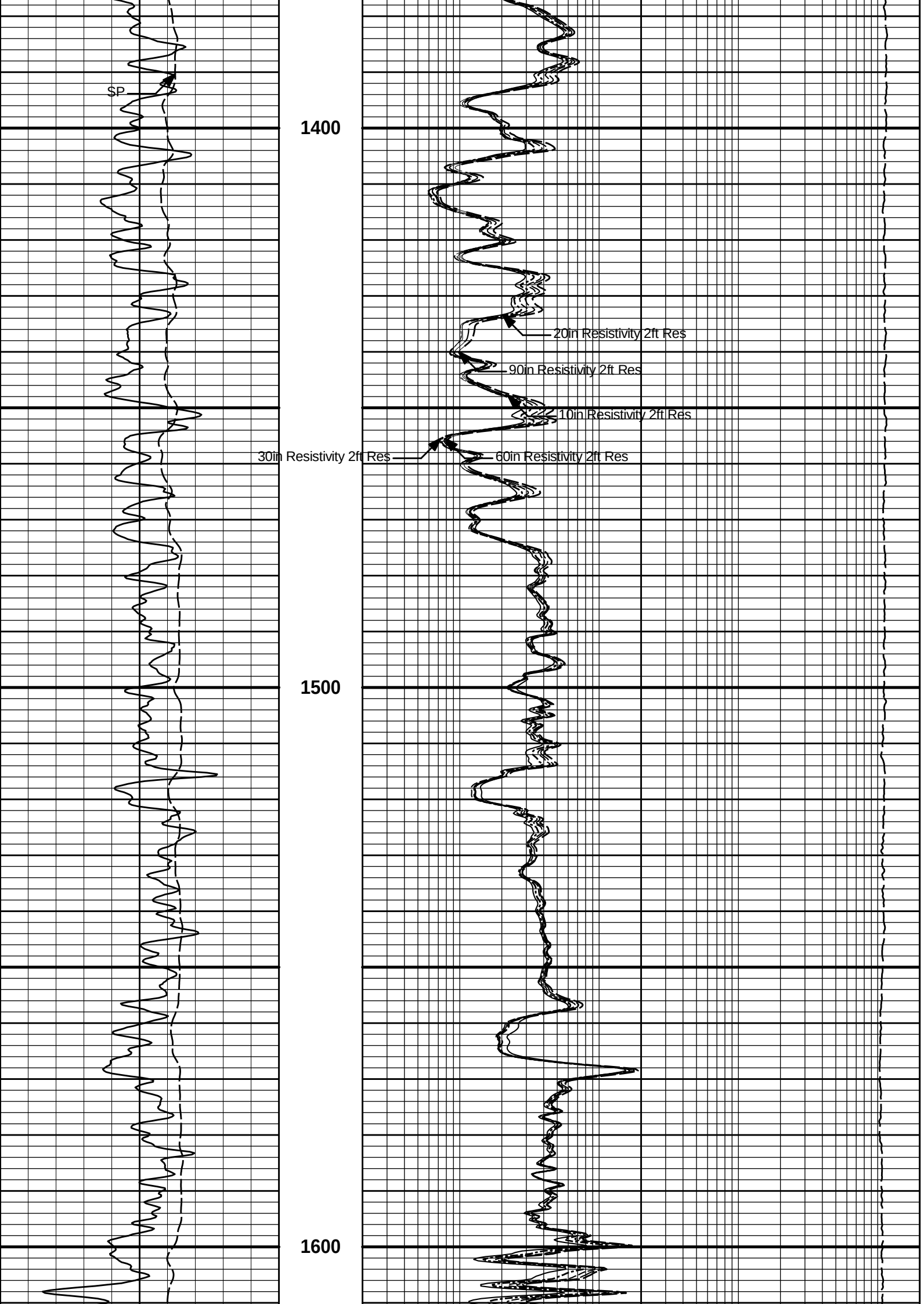


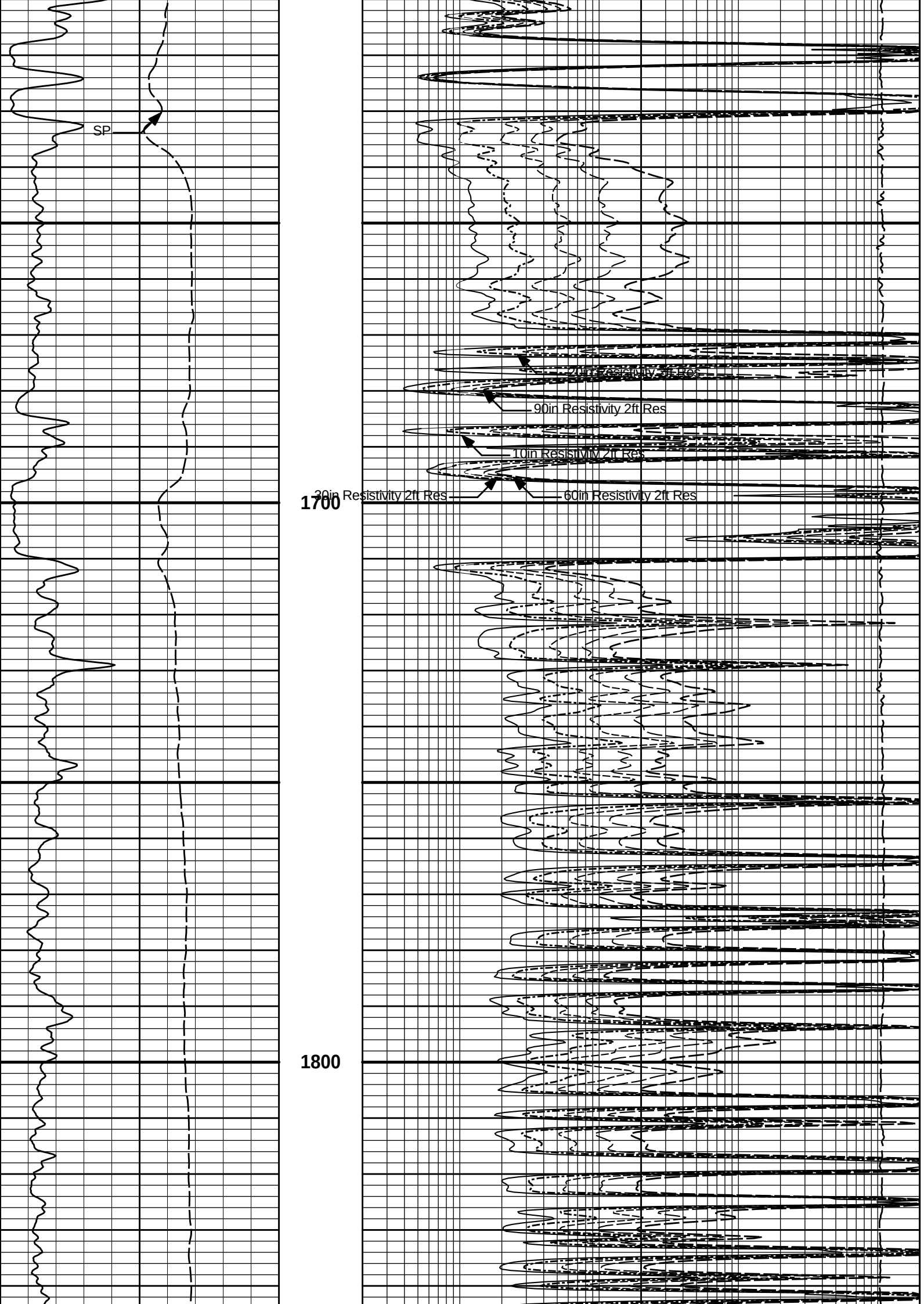

20in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
500
600
SP

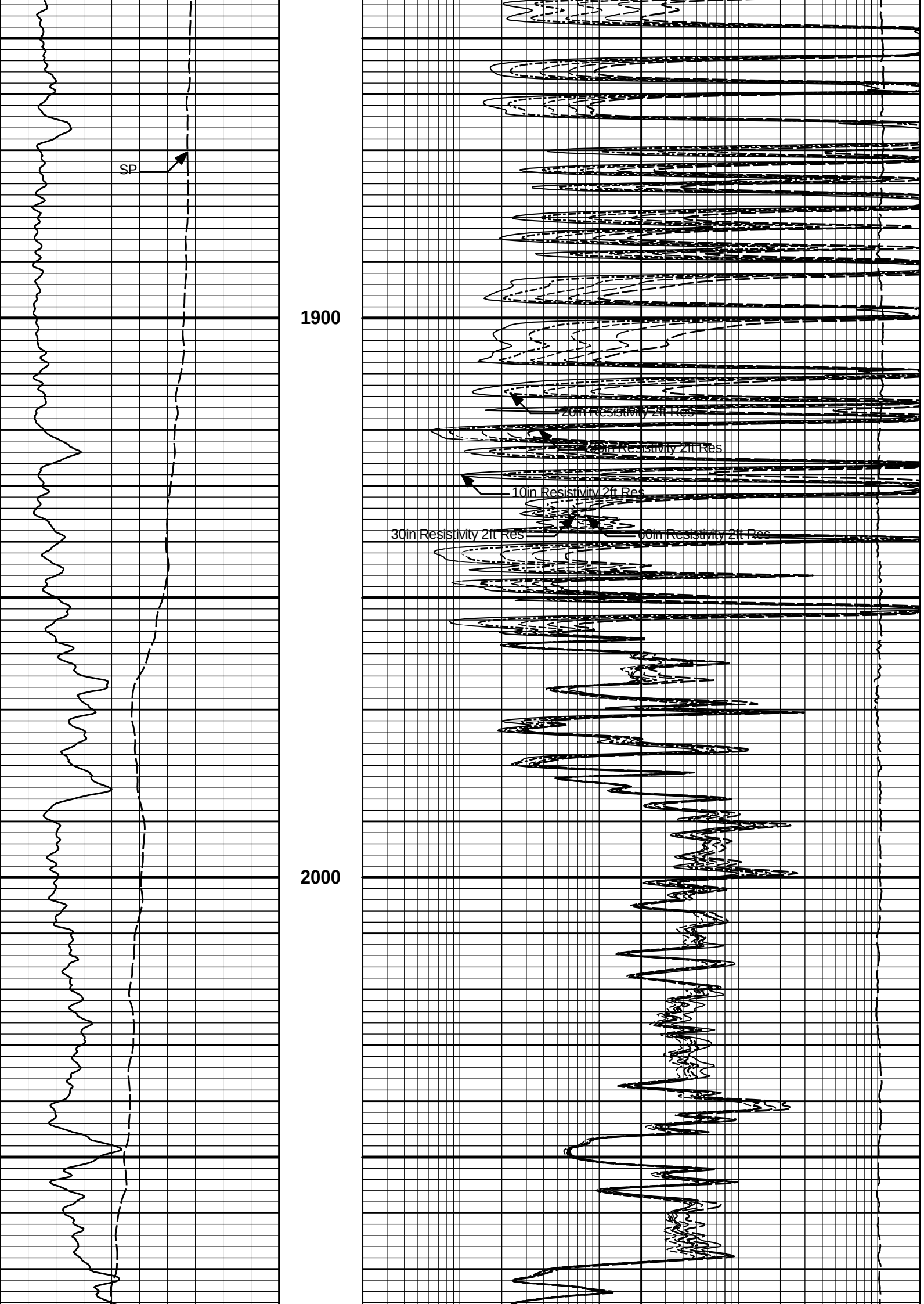

700
800
900
20in Resistivity 2ft Res
10in Resistivity 2ft Res
90in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res

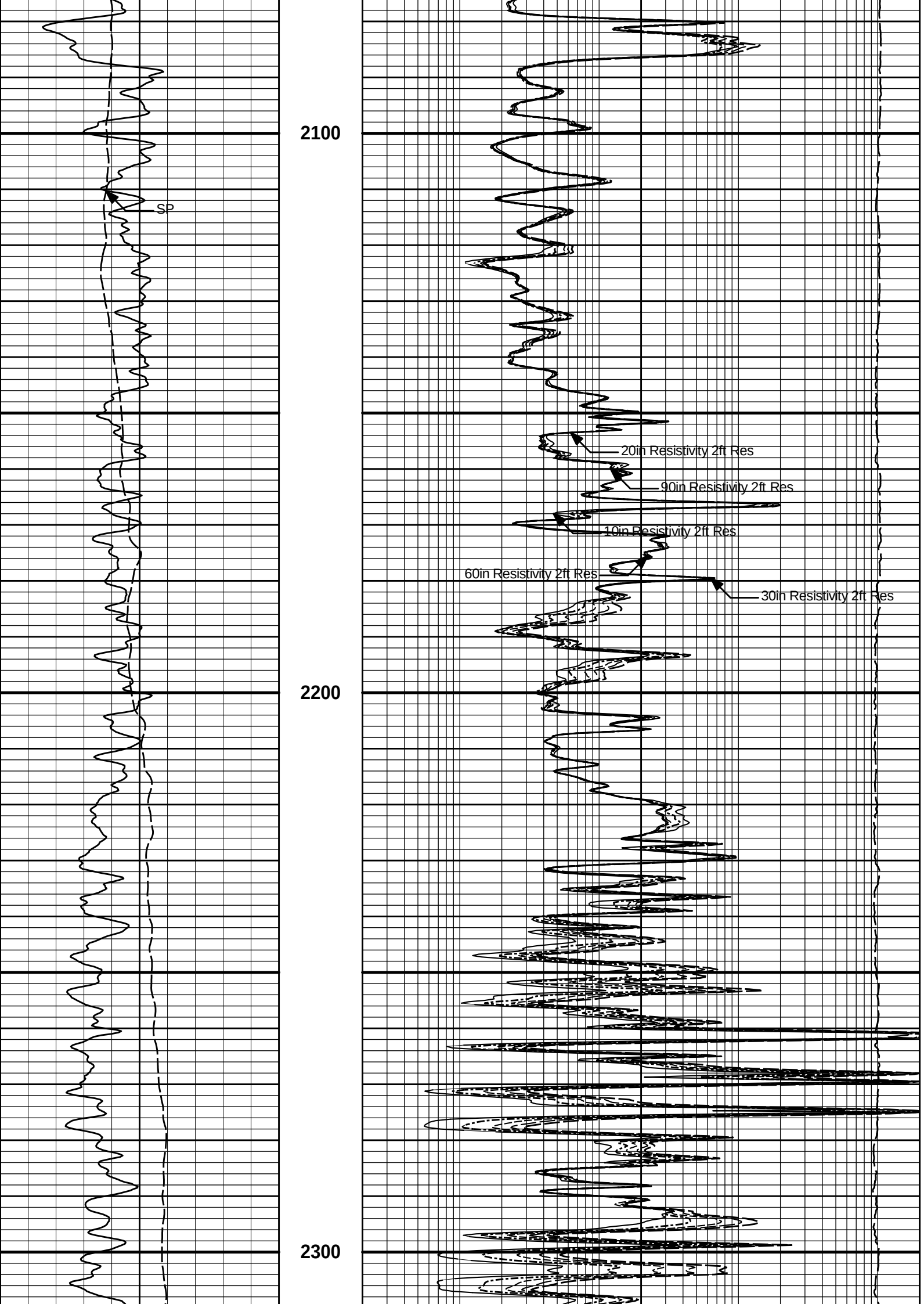

SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
1000
1100

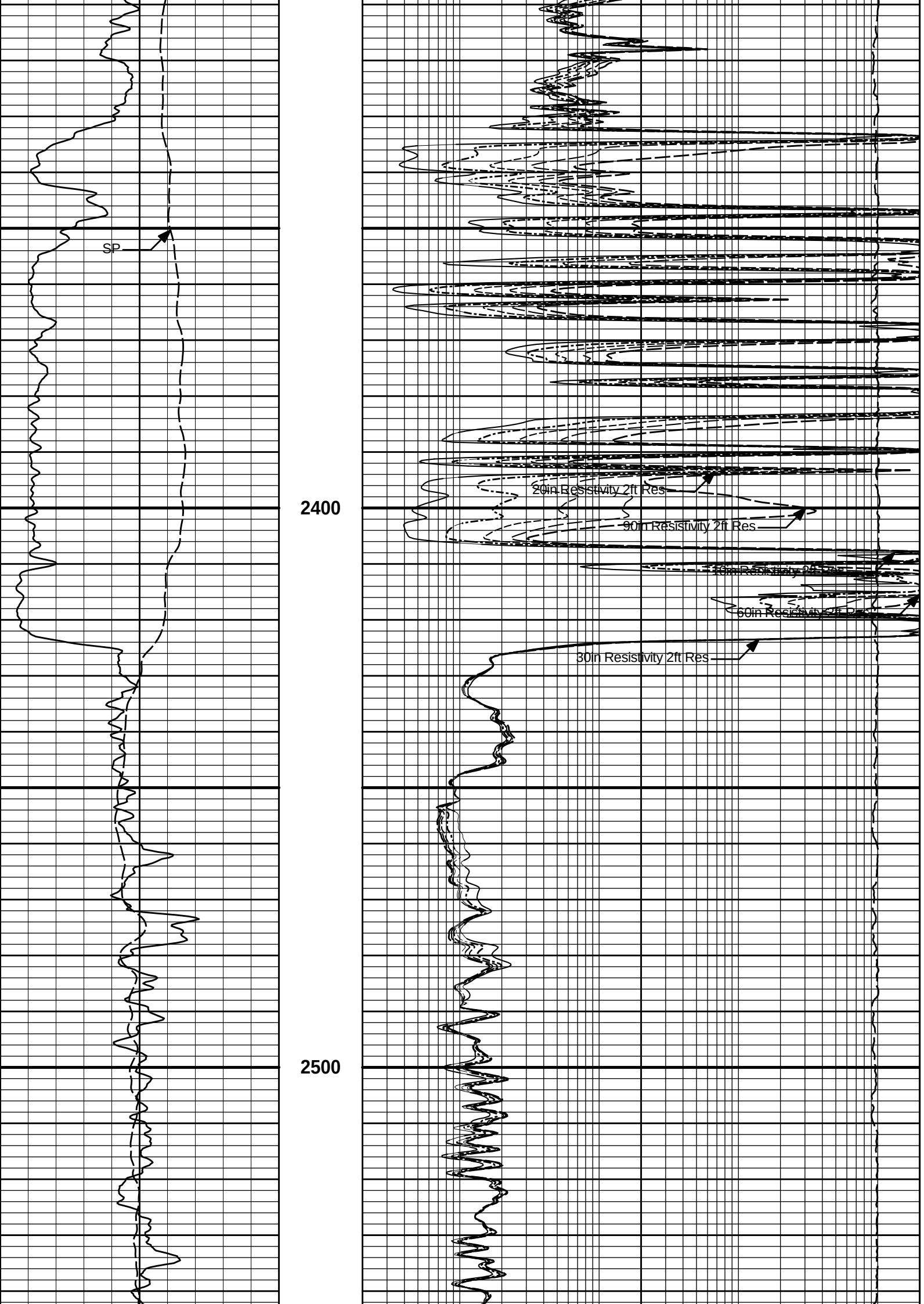

SP
1200
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
1300

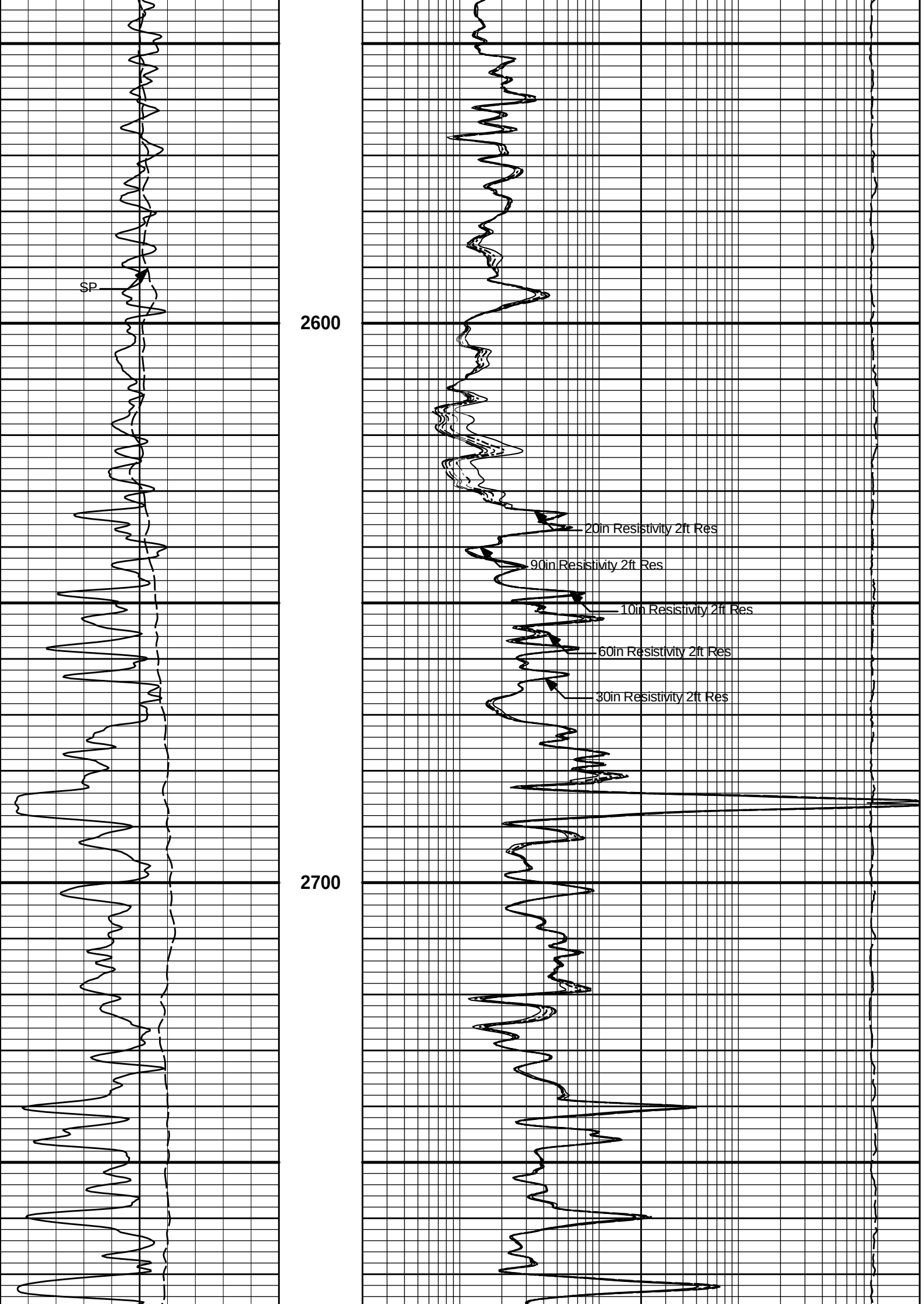

SP
1400
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
1500
1600

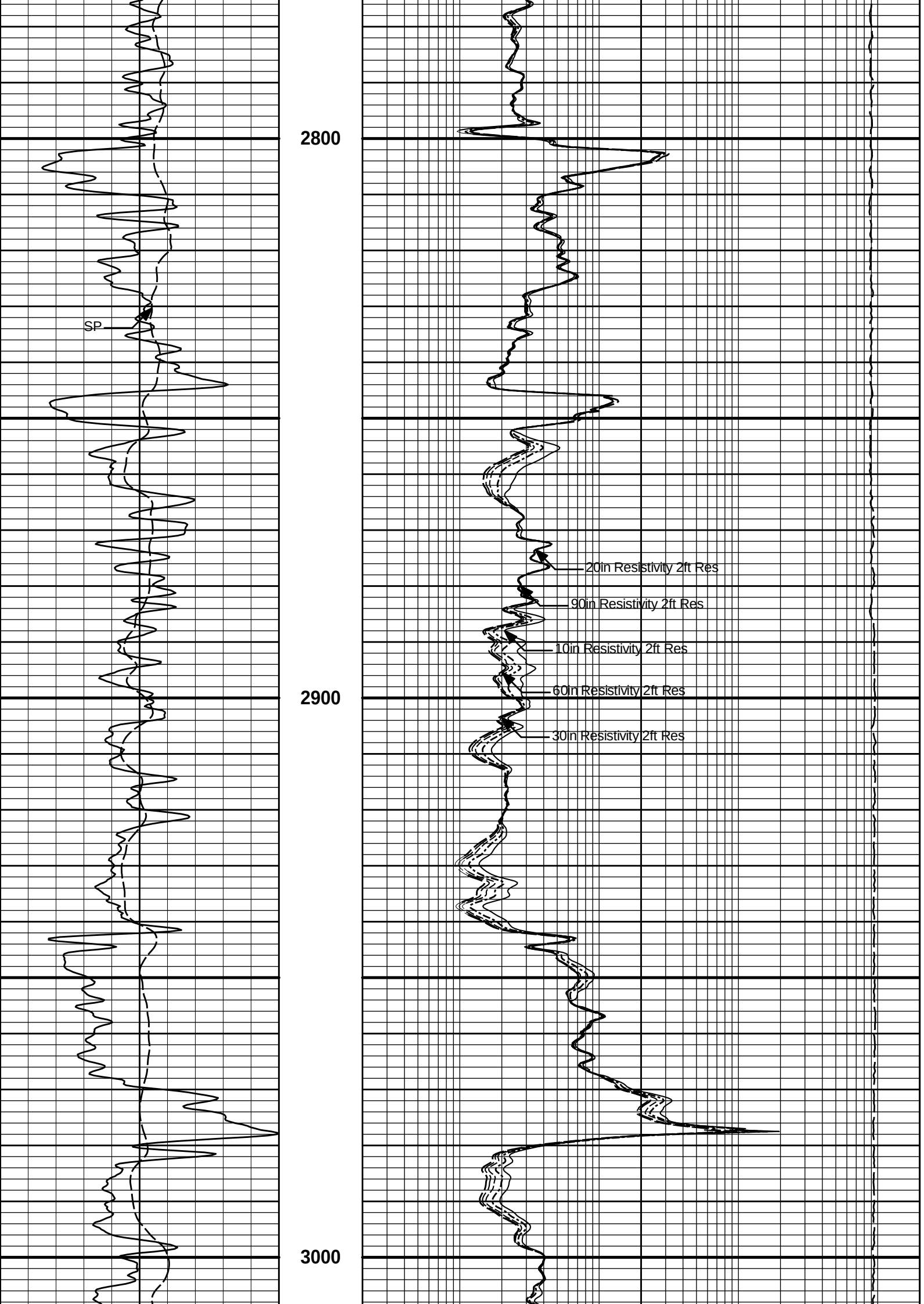

SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
1700
1800

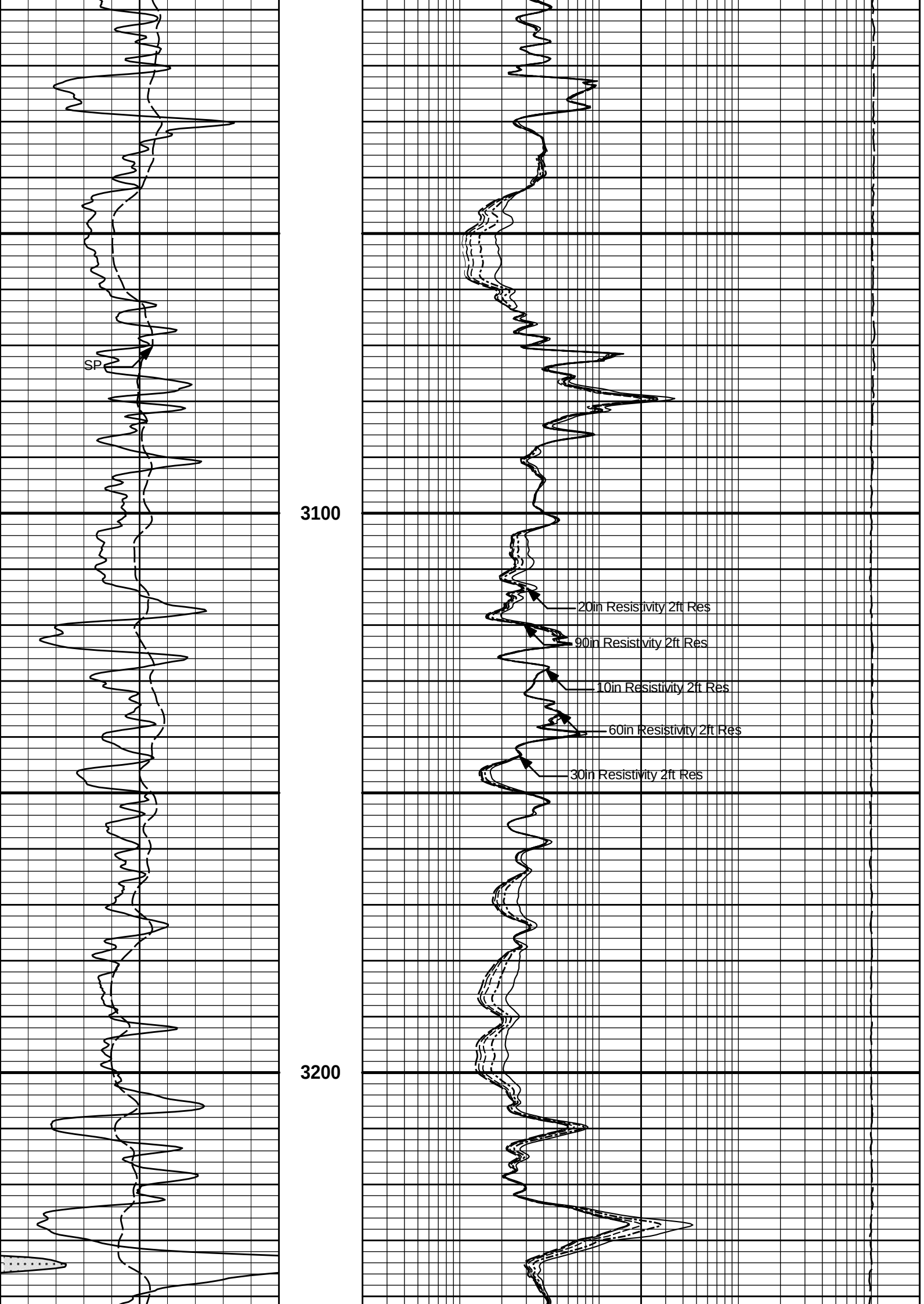

SP
1900
20in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res
2000

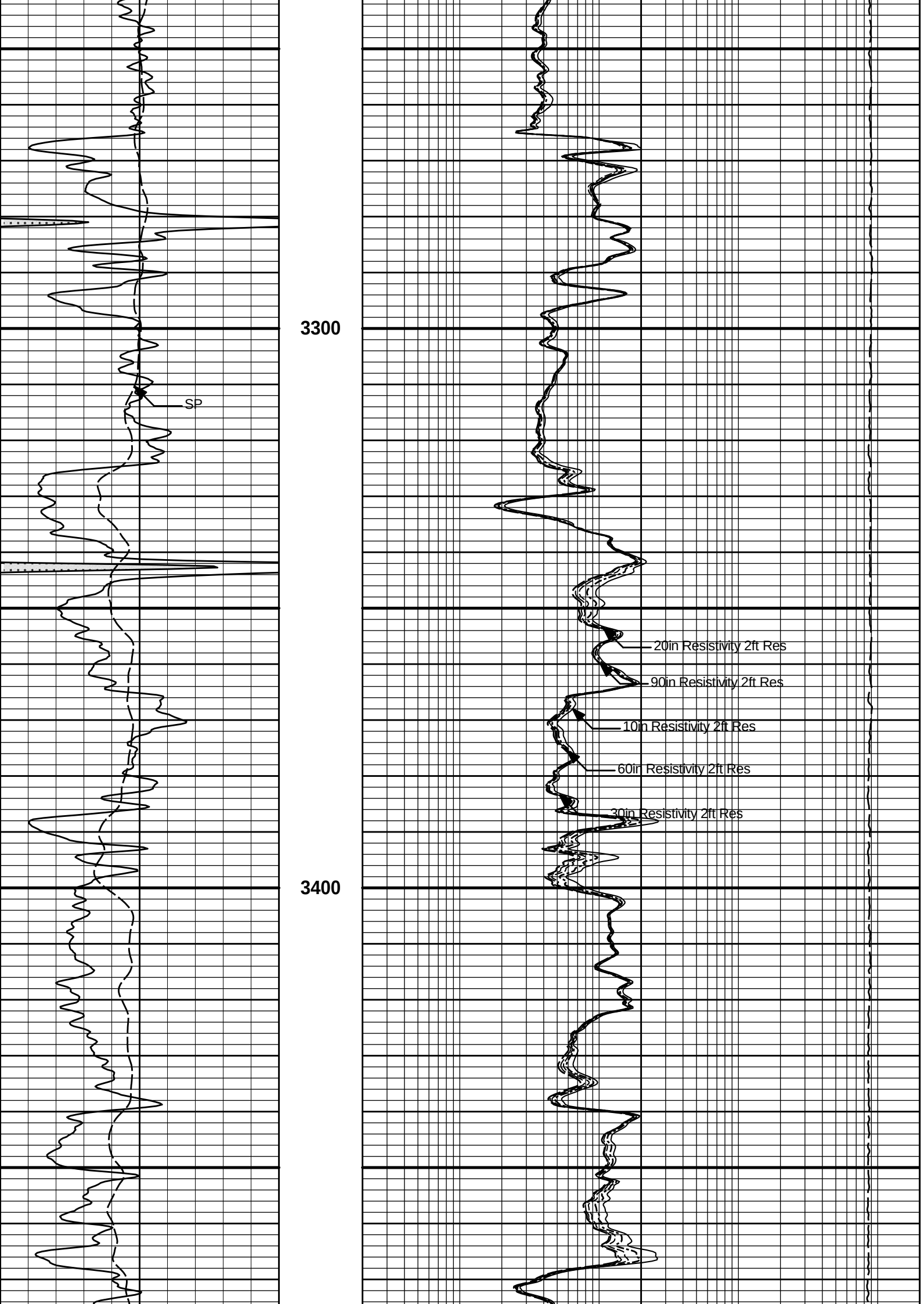

2100
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
2200
2300

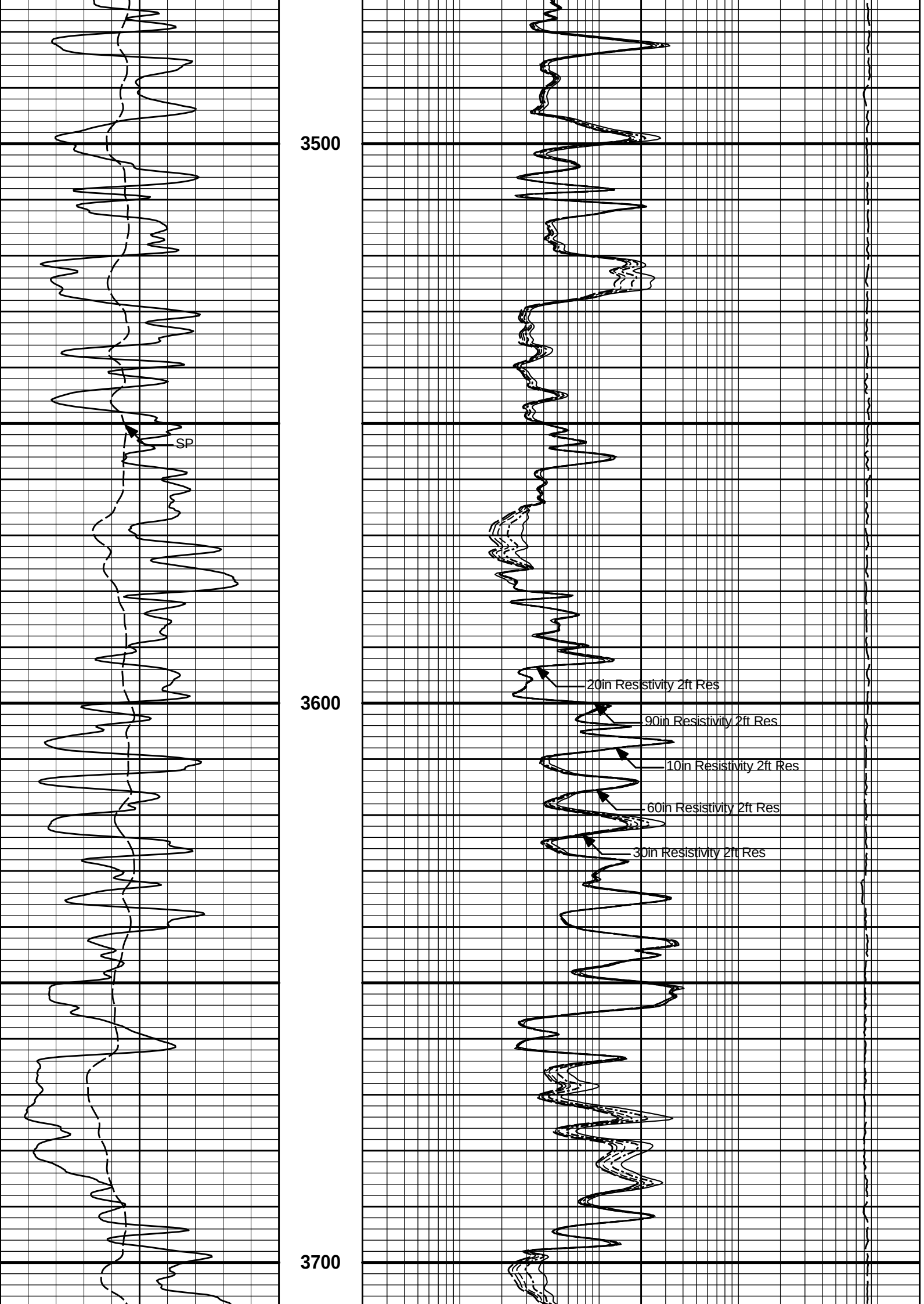

SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
2400
2500

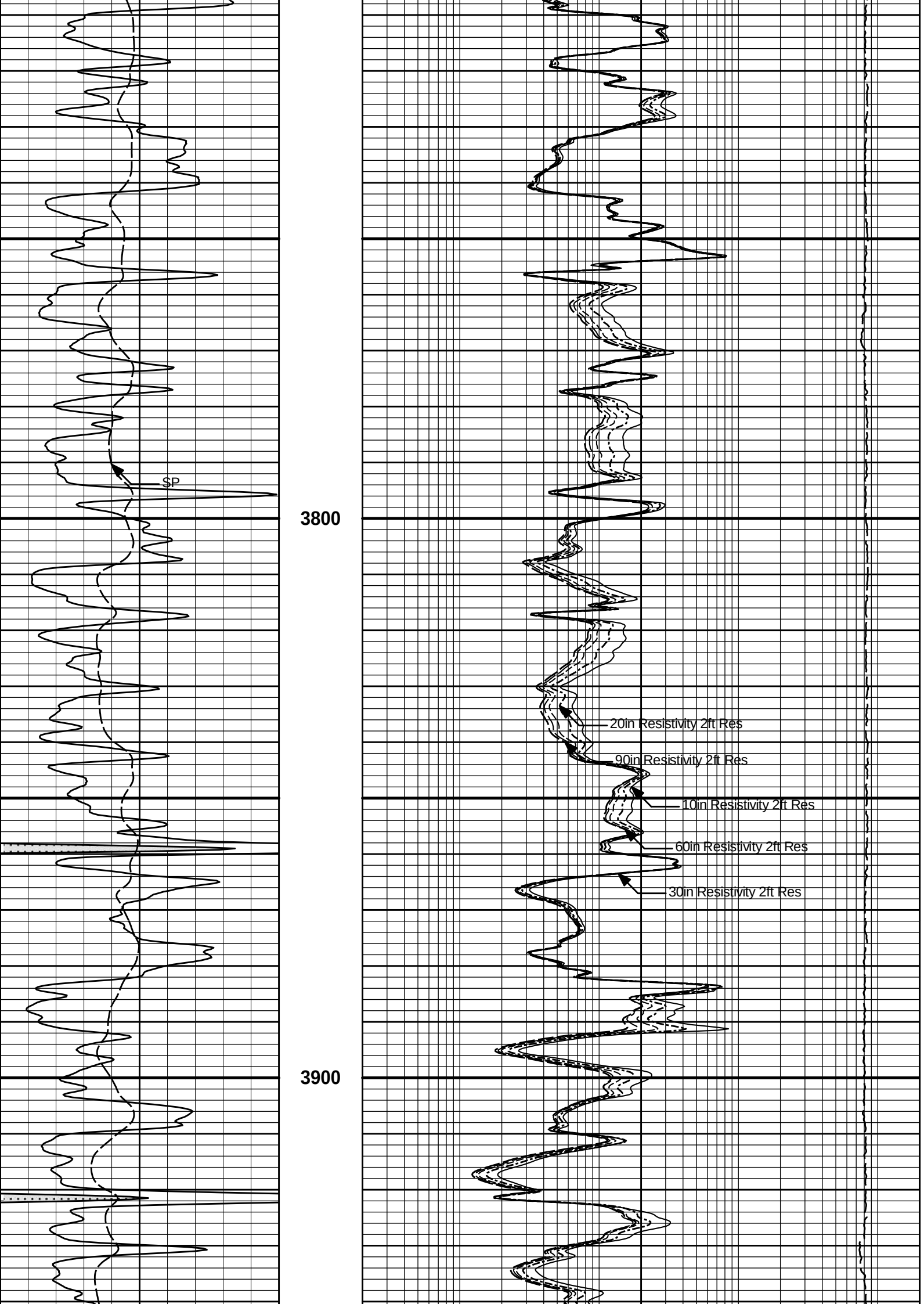

SP
2600
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
2700

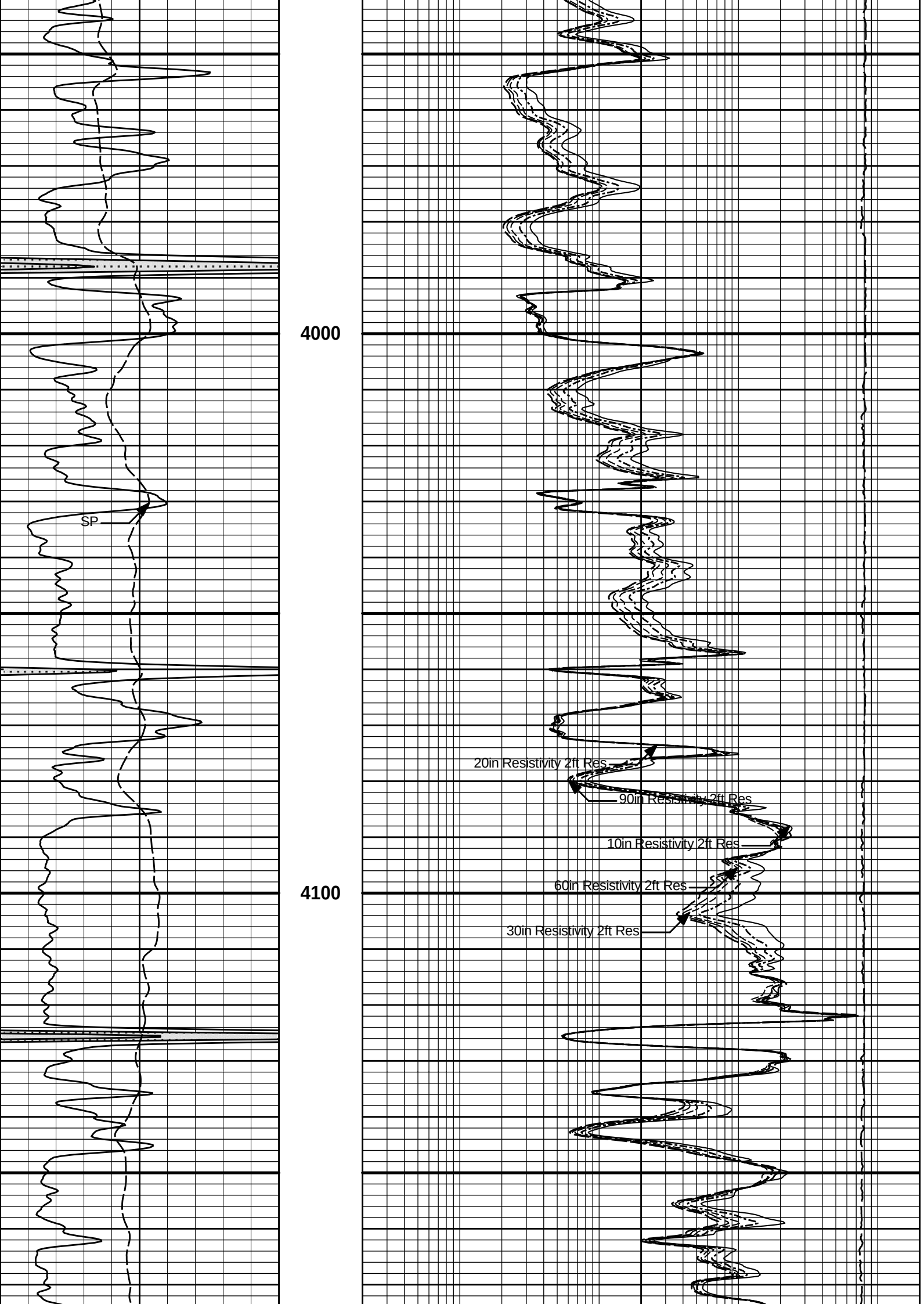

2800
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
2900
30in Resistivity 2ft Res
3000

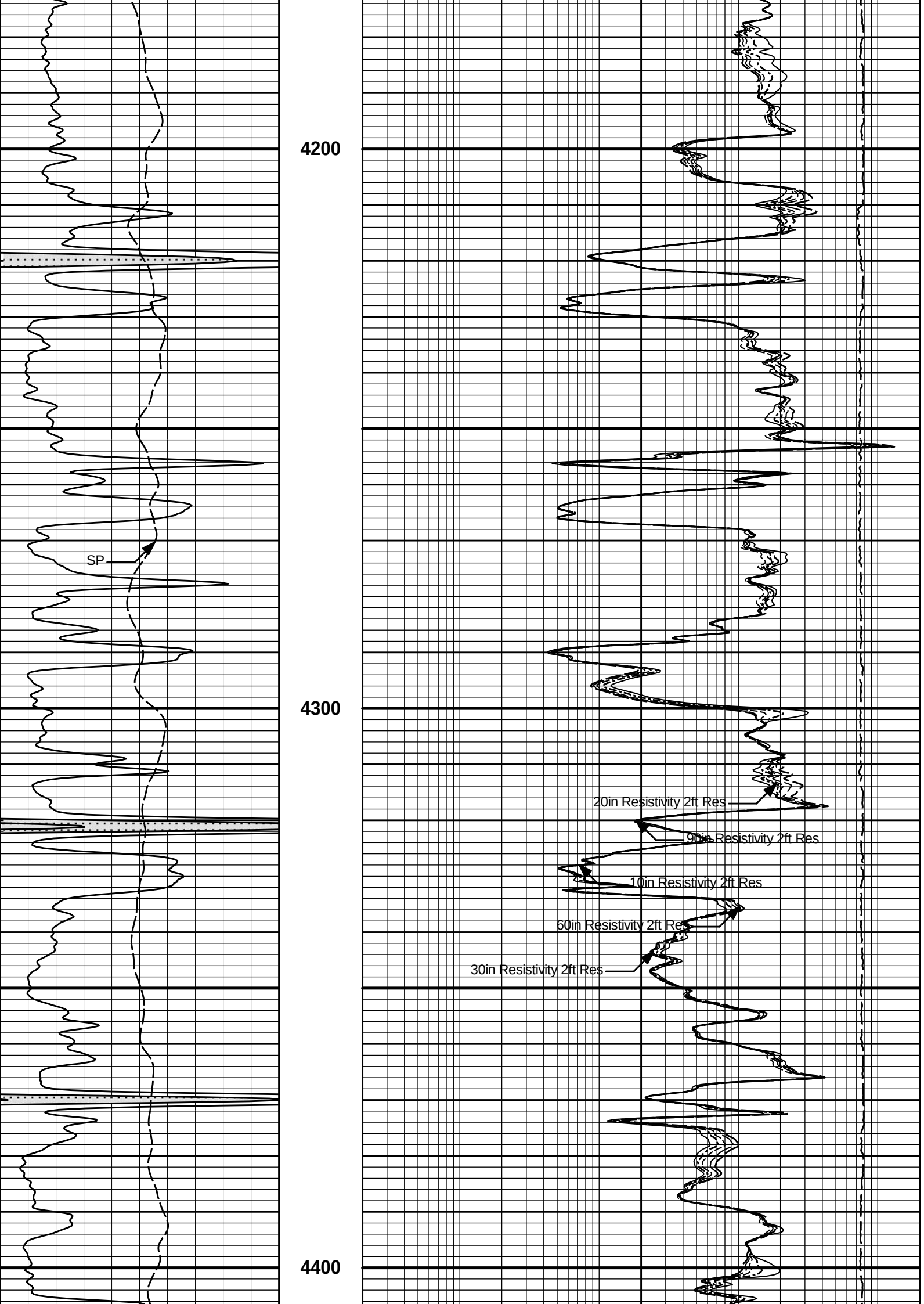

SP
3100
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
3200

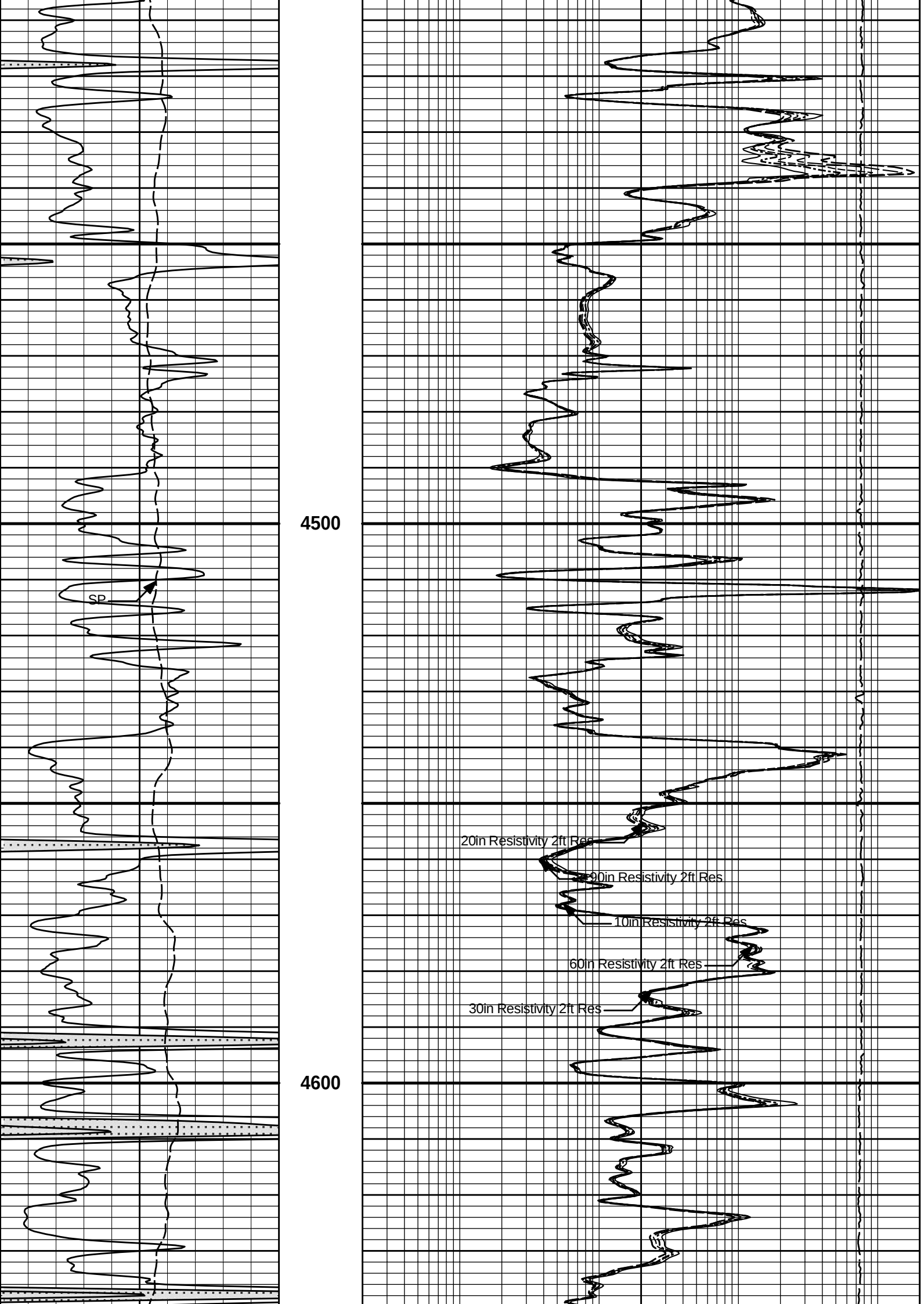

3300
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
3400

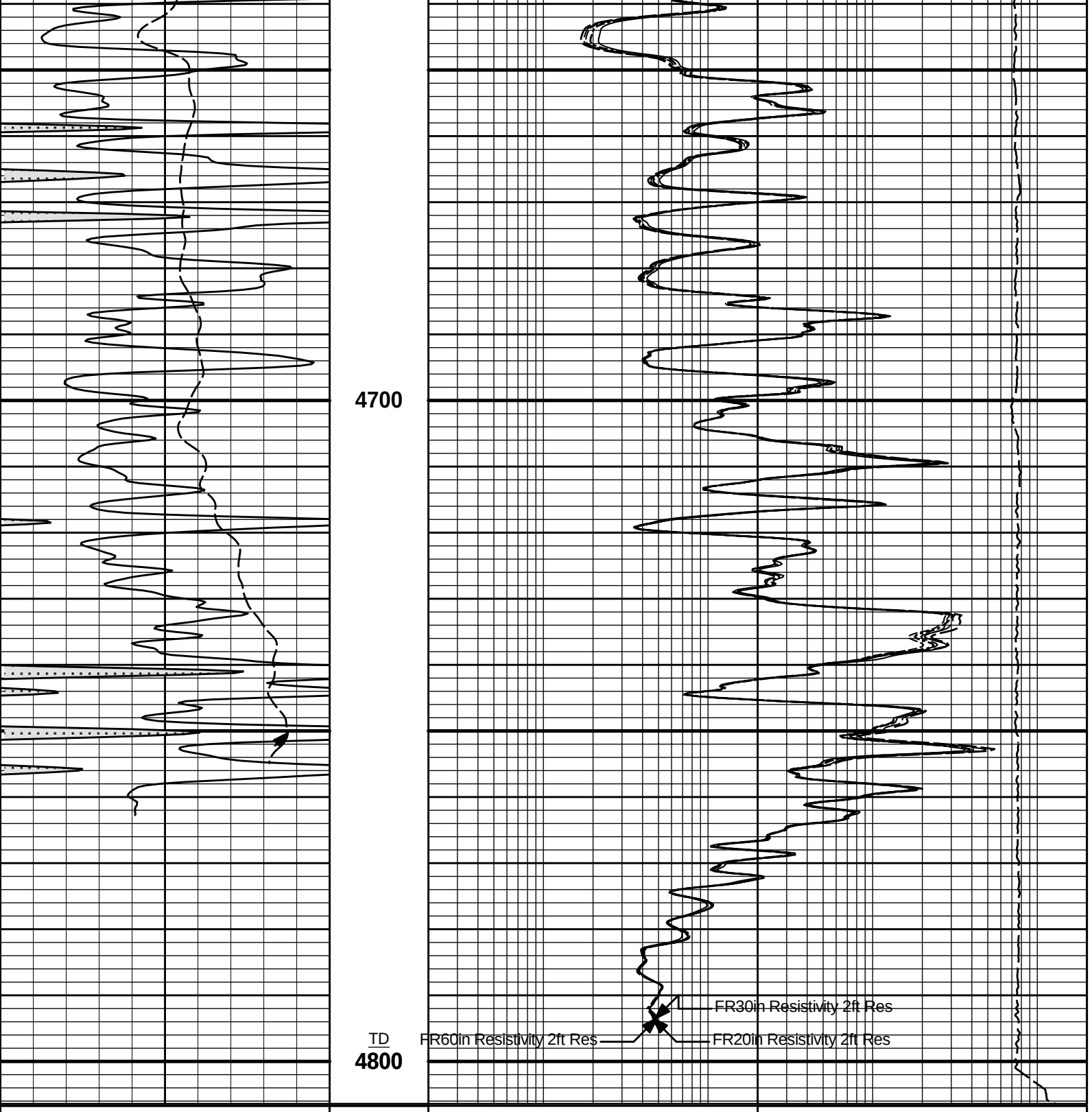

3500
SP
20in Resistivity 2ft Res
3600
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
3700


SP
3800
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
3900


4000
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
4100
30in Resistivity 2ft Res


4200
4300
4400
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res


4500
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
4600



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

15K	**Tension**	0
	pounds	
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-Jun-17 09:58:21
Plot Range: 200 ft to 4806.42 ft

Plot Range: 300 ft to 4806.42 ft
Data: HART_WILKINSON\Well Based\MAIN\
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_5inch_main

5 INCH MAIN LOG

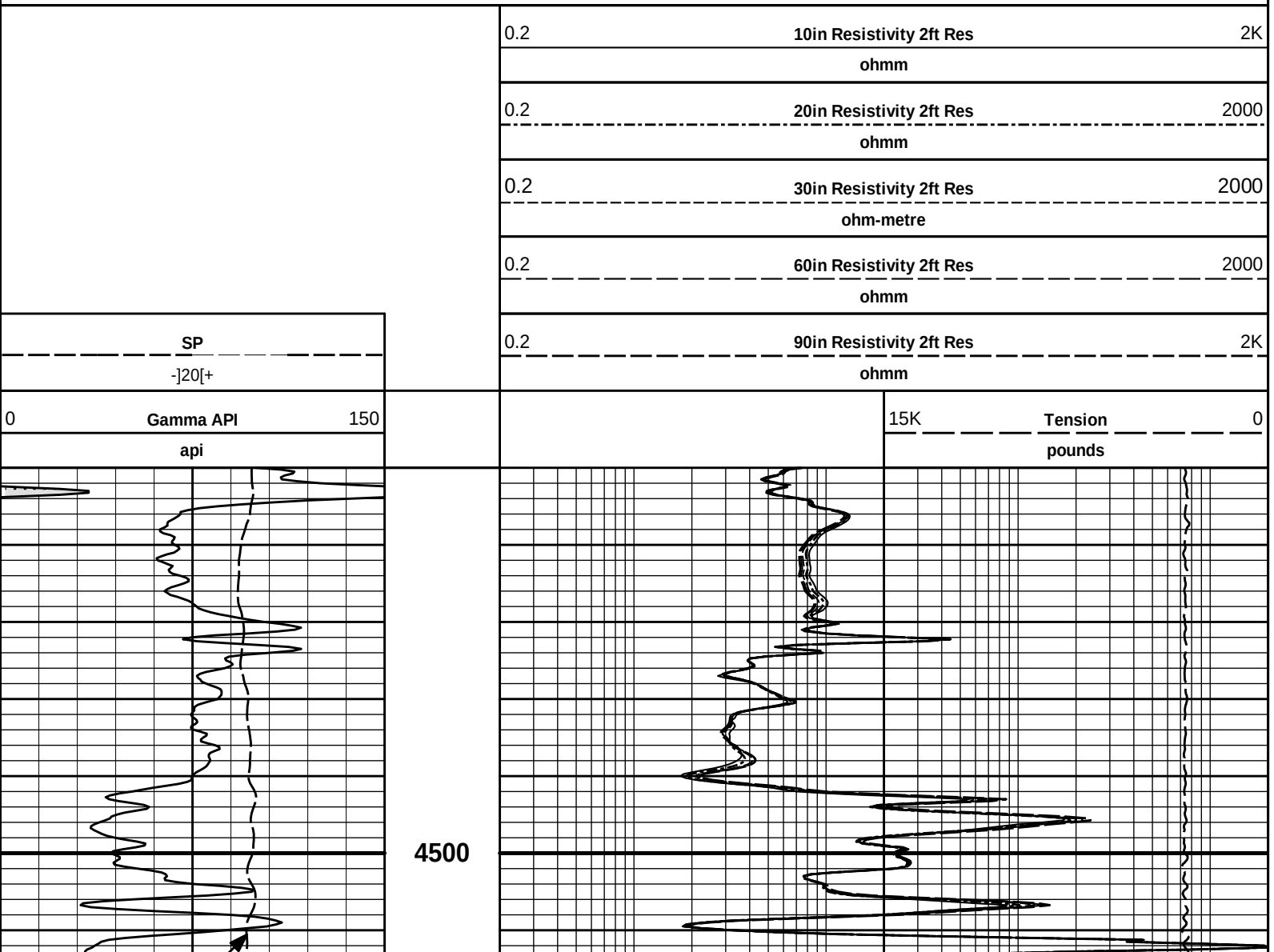
5 INCH MAIN LOG

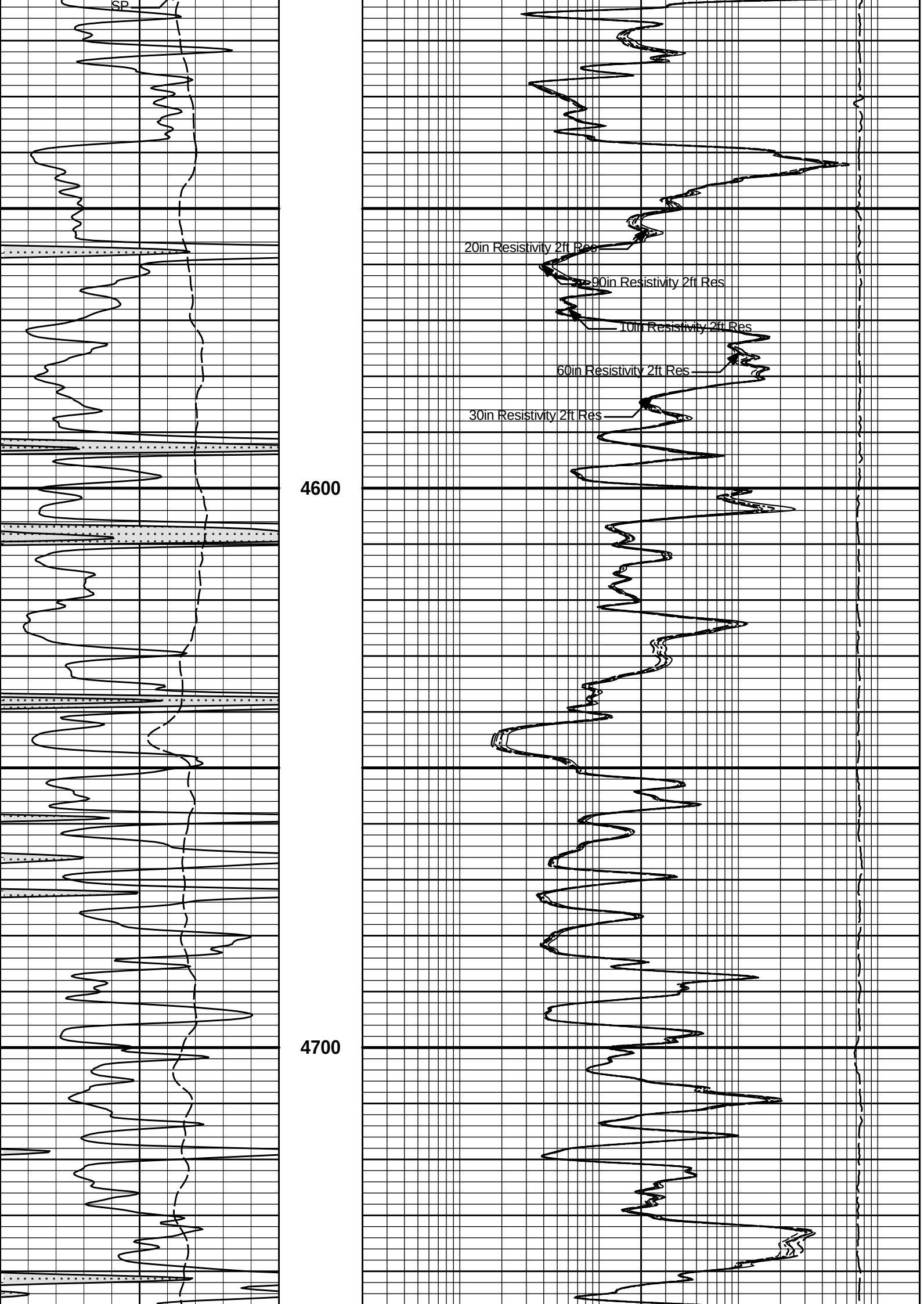
HALLIBURTON

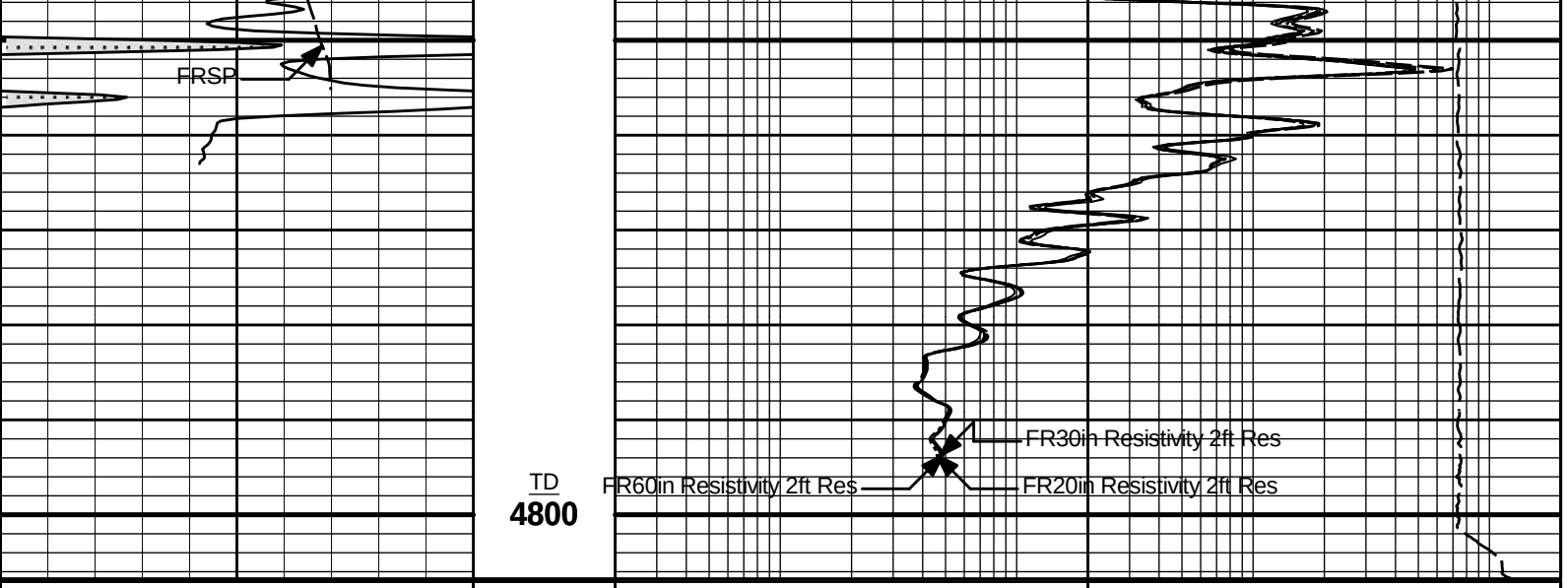
Plot Time: 01-Jun-17 09:58:21
Plot Range: 4450 ft to 4806.75 ft
Data: HART_WILKINSON\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION




SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
4600
4700



0	**Gamma API**	150
	api	
	SP	
	-]20[+	
15K	**Tension**	0
	pounds	
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-Jun-17 09:58:23
Plot Range: 4450 ft to 4806.75 ft
Data: HART_WILKINSON\Well Based\DAQ-0001-003
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	**Depth Panel - PROT01**	**Reference Calibration Date:**	**21-May-17 15:23:11**
Engineer:	**WHITLOCK**	**Calibration Date:**	**23-May-17 22:58:00**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10664.92	-64.08	0.00	lbs
High	17305.42	7820.03	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	**CH_HOS - CH_HOS_I**	**Reference Calibration Date:**	**21-May-17 15:26:44**
Engineer:	**MICHAEL RICHTER**	**Calibration Date:**	**23-May-17 23:02:10**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-585.15	10.04	0.00	lbs
High	3602.14	1286.88	1230.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11021139**	**Reference Calibration Date:**	**25-May-17 10:51:04**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-May-17 09:48:08**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB79
Calibrator API Reference:222.00 api
Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	23.7	23.5	api
Background + Calibrator	251.3	249.4	api
Calibrator	227.6	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11021139**	**Reference Calibration Date:**	**30-May-17 09:48:08**
Engineer:	**WHITLOCK**	**Calibration Date:**	**31-May-17 11:14:24**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB79
Calibrator API Reference:222.00 api
Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	23.5	23.1	api
Background + Calibrator	249.4	241.8	api
Calibrator	225.9	218.8	api

Shop	Field	Difference	Tolerance
225.9	218.8	7.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11019641**	**Reference Calibration Date:**	**09-Feb-17 10:58:20**
Engineer:	**WHITLOCK**	**Calibration Date:**	**09-Mar-17 12:55:14**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-436
Tank Serial Number: EL RENO
Reference value assigned to Tank: 56.100
Snow Block S/N: 12156883
Calibration Tank Water Temperature: 72 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.98465	0.98292	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading	Calibrated	Change	Control Limit

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2363	0.2358	0.0006	+/- 0.0020
Calibrated Ratio:	10.5782	10.5596	0.019	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0781	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 - 11019641**	**Reference Calibration Date:**	**09-Mar-17 12:55:14**
Engineer:	**WHITLOCK**	**Calibration Date:**	**31-May-17 11:23:52**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**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):	0.0781	0.0657	-0.0125	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10950477**	**Reference Calibration Date:**	**01-Jan-70 00:00:00**
Engineer:	**WHITLOCK**	**Calibration Date:**	**04-Oct-16 17:51:54**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11019641**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4023.44	-4023.44	-7000.00 - -1000.00
Pad Gain	0.0003896	0.0003896	0.0002000 - 0.0006000
Arm Offset	-3983.20	-3983.20	-5000.00 - 3000.00
Arm Gain	0.0005552	0.0005552	0.000300 - 0.000700
Arm Power	-0.000008048	-0.000008048	-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

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 - 10950477**	**Reference Calibration Date:**	**04-Oct-16 17:51:54**
Engineer:	**WHITLOCK**	**Calibration Date:**	**21-May-17 22:49:19**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.71	-0.04	+/- 0.10
Ring Diameter	8.25	8.25	-0.00	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11000156**	**Reference Calibration Date:**	**18-Jan-17 10:42:26**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**10-Mar-17 16:00:02**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 10996989**		

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0330	1.05	0.95	1.0116	1.05	0.95	1.0043	1.05
A2 (50")	0.95	1.0428	1.05	0.95	1.0225	1.05	0.95	1.0152	1.05
A3 (29")	0.95	1.0325	1.05	0.95	1.0127	1.05	0.95	1.0046	1.05
A4 (17")	0.95	1.0420	1.05	0.95	1.0182	1.05	0.95	1.0129	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9973	1.05	0.95	0.9910	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9898	1.05	0.95	0.9834	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	2.726	-3.207	-6.040
A2 (50")	0.675	-4.130	-4.785
A3 (29")	-10.177	-2.998	-3.744
A4 (17")	-105.235	-32.362	-24.692
A5 (10")	N/A	-77.217	-35.884
A6 (6")	N/A	322.459	173.582

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.93	1.3
36K	1.0	1.41	2.0
72K	1.0	1.65	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 - 11000156**	**Reference Calibration Date:**	**18-Jan-17 10:44:21**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**10-Mar-17 16:02:10**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 10996989**		

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	-0.004	> -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	-0.007	> -0.500	Pass	-0.024	> -0.500	Pass
A5 (10")	-0.011	> -0.500	Pass	-0.018	> -0.500	Pass	-0.036	> -0.500	Pass
A6 (6")	0.014	< 0.500	Pass	0.073	< 0.500	Pass	0.161	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	**Last Month (mmho/m)**	**Difference (mmho/m)**	**Tolerance (mmho/m)**	**Pass/Fail**
A1 (80")	-215480768.000	-214385984.000	1094784.000	10719299.200	Pass
A2 (50")	-211891248.000	-210782480.000	1108768.000	10539124.000	Pass
A3 (29")	-210958496.000	-209852992.000	1105504.000	10492649.600	Pass
A4 (17")	-213608736.000	-212411760.000	1196976.000	10620588.000	Pass
A5 (10")	-215382848.000	-214239584.000	1143264.000	10711979.200	Pass
A6 (6")	-207876976.000	-206615920.000	1261056.000	10330796.000	Pass

R36KHz

	Measured (mmho/m)	**Last Month (mmho/m)**	**Difference (mmho/m)**	**Tolerance (mmho/m)**	**Pass/Fail**
A1 (80")	57760512.000	57004368.000	756144.000	2850218.400	Pass
A2 (50")	54089236.000	53319468.000	769768.000	2665973.400	Pass
A3 (29")	44064052.000	43277876.000	786176.000	2163893.800	Pass
A4 (17")	48227896.000	47388224.000	839672.000	2369411.200	Pass
A5 (10")	52355700.000	51523356.000	832344.000	2576167.800	Pass
A6 (6")	43954020.000	43020756.000	933264.000	2151037.800	Pass

R72KHz

	Measured (mmho/m)	**Last Month (mmho/m)**	**Difference (mmho/m)**	**Tolerance (mmho/m)**	**Pass/Fail**
A1 (80")	-92226664.000	-92083472.000	143192.000	4604173.600	Pass
A2 (50")	-88065152.000	-87916144.000	149008.000	4395807.200	Pass
A3 (29")	-88130104.000	-87961488.000	168616.000	4398074.400	Pass
A4 (17")	-87542952.000	-87369368.000	173584.000	4368468.400	Pass

A5 (10")	-85906768.000	-85772992.000	133776.000	4288649.600	Pass
A6 (6")	-88399528.000	-88188008.000	211520.000	4409400.400	Pass

PASS/FAIL SUMMARY

Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - 10950477
Reference Calibration Date: 02-Dec-16 11:36:55
Engineer: WHITLOCK
Calibration Date: 31-May-17 11:11:14
Software Version: WL INSITE R5.0.5 (Build 8)
Calibration Version: 1
Host Tool Name: DSNT - 11019641

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.16	-0.19	0.00	0.00	ohmm
Calibration Point #1	0.03	0.00	0.00	0.00	ohmm
Calibration Point #2	19.84	20.00	19.66	20.00	ohmm
Internal Reference	19.67	19.83	19.66	20.00	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.05	0.35	V
Calibration Point #1	49.41	0.10	V
Calibration Point #2	5369.11	6957.54	V
Internal Reference	5322.73	6957.27	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10950477
Reference Calibration Date: 31-May-17 11:11:14
Engineer: WHITLOCK
Calibration Date: 31-May-17 11:11:59
Software Version: WL INSITE R5.0.5 (Build 8)
Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.19	-0.19	0.00	0.00	ohmm
Internal Reference	19.83	19.82	20.00	20.00	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.83	19.82	0.01	+/- 0.80
Microlog Lateral	20.00	20.00	0.00	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10865881
Reference Calibration Date: 09-Mar-17 11:19:48
Engineer: WHITLOCK
Calibration Date: 25-May-17 13:00:56
Software Version: WL INSITE R5.0.5 (Build 8)
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 MG — Density: 1.687g/cc — Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0526	1.0463	0.90 - 1.10
Near Dens Gain	1.0243	1.0284	0.90 - 1.10

Near Dens Gain	1.0243	1.0284	0.90 - 1.10
Near Peak Gain	1.0479	1.0729	0.90 - 1.10
Near Lith Gain	1.0542	1.0746	0.90 - 1.10
Far Bar Gain	1.0103	1.0129	0.90 - 1.10
Far Dens Gain	1.0015	1.0003	0.90 - 1.10
Far Peak Gain	1.0000	0.9976	0.90 - 1.10
Far Lith Gain	0.9831	0.9826	0.90 - 1.10
Near Bar Offset	-0.1941	-0.1428	NONE
Near Dens Offset	0.0300	-0.0128	NONE
Near Peak Offset	-0.1771	-0.3966	NONE
Near Lith Offset	-0.2721	-0.4539	NONE
Far Bar Offset	0.1039	0.0785	NONE
Far Dens Offset	0.1725	0.1829	NONE
Far Peak Offset	0.1856	0.2071	NONE
Far Lith Offset	0.2797	0.2879	NONE
Near Bar Background	947.94	945.33	700 - 1450
Near Dens Background	316.55	314.07	230 - 480
Near Peak Background	137.62	136.63	100 - 210
Near Lith Background	166.92	167.65	125 - 260
Far Bar Background	612.66	612.64	450 - 900
Far Dens Background	240.31	239.40	175 - 345
Far Peak Background	93.33	93.82	70 - 140
Far Lith Background	98.65	98.35	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.693	1.687	-0.006	+/- 0.015
Pe	2.517	2.554	0.037	+/- 0.150
ALUMINUM				
Density (g/cc)	2.584	2.581	-0.003	+/- 0.01500
Pe	3.061	3.127	0.066	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0003	+/- 0.0110	-0.0015	+/- 0.0140
Magnesium Block	-0.0002	+/- 0.0110	0.0006	+/- 0.0140
Aluminum Block	-0.0014	+/- 0.0110	0.0010	+/- 0.0140
Resolution	9.73	6.00 - 11.50	8.99	6.00 - 11.50
Internal Verifier(B+D+P+L)	1564	1200 - 2700	1044	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:**	**25-May-17 13:00:56**
Engineer:	**WHITLOCK**	**Calibration Date:**	**31-May-17 11:16:22**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

Pad Temperature: 82.3 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1563.693	1565.696	2.003	15.913
Far (B+D+P+L) cps	1044.216	1040.995	-3.221	17.186
Near Resolution	9.73	9.77	0.040	0.50
Far Resolution	8.99	8.92	-0.070	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-PROT01						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
CH_HOS-CH_HOS_I						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1230.00	----------	----------	0.00	----------	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	218.8	----------	7.1	+/- 9.00	api
DSNT-11019641						
Snow-Block Porosity	0.0781	0.0657	----------	0.0124	+/- 0.0150	decp
SDLT-10950477						
Pad Extension	3.75	3.71	----------	0.04	+/-0.10	in
Ring Diameter	8.25	8.25	----------	0.00	+/-0.15	in
ACRt Sonde-11000156						
Mud Cell	1.00	----------	----------	0	----------	ohm-m
Microlog Pad-10950477						
MicroLog Normal	19.83	19.82	----------	0.01	+/-0.80	ohmm
MicroLog Lateral	20.00	20.00	----------	0.00	+/-0.80	ohmm
SDLT Pad-10865881						
Near(B+D+P+L)	1563.693	1565.696	----------	-2.003	+/-15.913	cps
Far(B+D+P+L)	1044.216	1040.995	----------	3.221	+/-17.186	cps

Data: HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\IDLE **Date: 01-Jun-17 05:49:04**

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	9.000	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	2.000	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	4800.00	ft
SHARED	BHT	Bottom Hole Temperature	125.0	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	
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	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	
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	

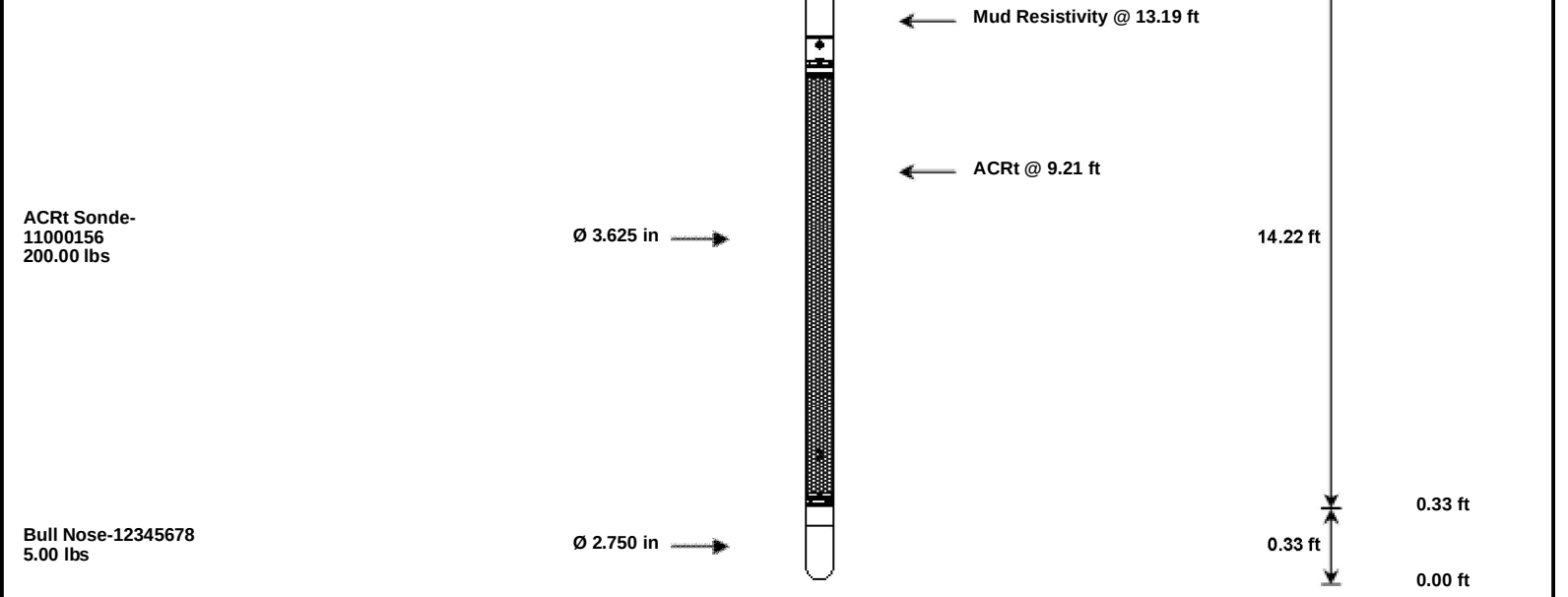
BOTTOM

Data: HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\IDLE **Date: 01-Jun-17 05:50:33**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
				Temperature @ 55.29 ft		55.54 ft
CH_HOS_I 37.50 lbs		Ø 2.750 in			2.25 ft	
		Ø 2.750 in				53.29 ft
XOHD-12345678 20.00 lbs		Ø 3.625 in			0.95 ft	
						52.34 ft
SP Sub-10904995 60.00 lbs		Ø 3.625 in		SP @ 50.56 ft	3.74 ft	
				Z-Accelerometer @ 48.15 ft		48.60 ft
GTET-11021139 165.00 lbs		Ø 3.625 in			8.52 ft	
				GammaRay @ 42.54 ft		
						40.08 ft
	DSN Decentralizer-11023947 6.60 lbs	Ø 5.000 in*				
DSNT-11019641 174.00 lbs		Ø 3.625 in			9.69 ft	
				DSN Far @ 33.15 ft		
				DSN Near @ 32.40 ft		
						30.40 ft
	SDLT Pad-10865881 65.00 lbs					
SDLT-10950477 360.00 lbs	Microlog Pad-10950477 8.00 lbs	Ø 4.500 in			10.81 ft	
		Ø 4.500 in*		Microlog @ 22.58 ft		
		Ø 4.750 in*		SDL Caliper @ 22.40 ft		
	RAM-Cs137-10948154 1.00 lbs	Ø 0.800 in*		SDL @ 22.39 ft		
						19.58 ft
ACRt Instrument-10996989 50.00 lbs		Ø 3.625 in			5.03 ft	
						14.55 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	CH_HOS_I	37.50	2.25		53.29	300.00
XOHD	Hostile to Dits Cross Over	12345678	20.00	0.95		52.34	300.00
SP	SP Sub	10904995	60.00	3.74		48.60	300.00
GTET	Gamma Telemetry Tool	11021139	165.00	8.52		40.08	60.00
DSNT	Dual Spaced Neutron	11019641	174.00	9.69		30.40	60.00
DCNT	DSN Decentralizer	11023947	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	10950477	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	10865881	65.00	2.55	*	21.79	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	10948154	1.00	0.80	*	22.02	300.00
MICP	Microlog Pad	10950477	8.00	1.00	*	22.08	60.00
ACRt	Array Compensated True Resistivity Instrument Section	10996989	50.00	5.03		14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11000156	200.00	14.22		0.33	120.00
BLNS	Bull Nose	12345678	5.00	0.33		0.00	300.00
Total			**1,152.10**	**55.54**			

* Not included in Total Length and Length Accumulation.

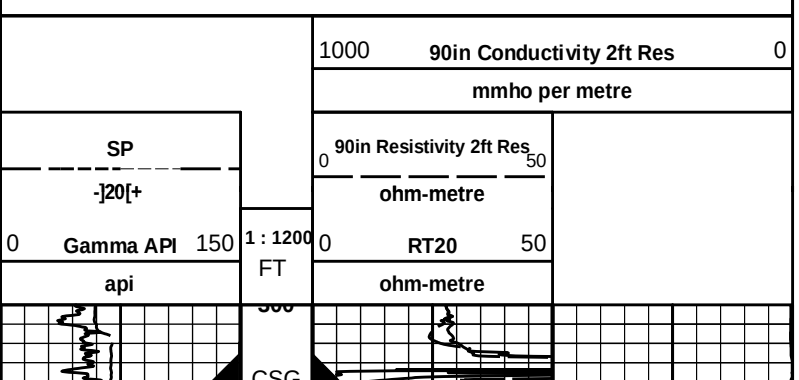
Data: HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\IDLE **Date: 01-Jun-17 05:54:40**

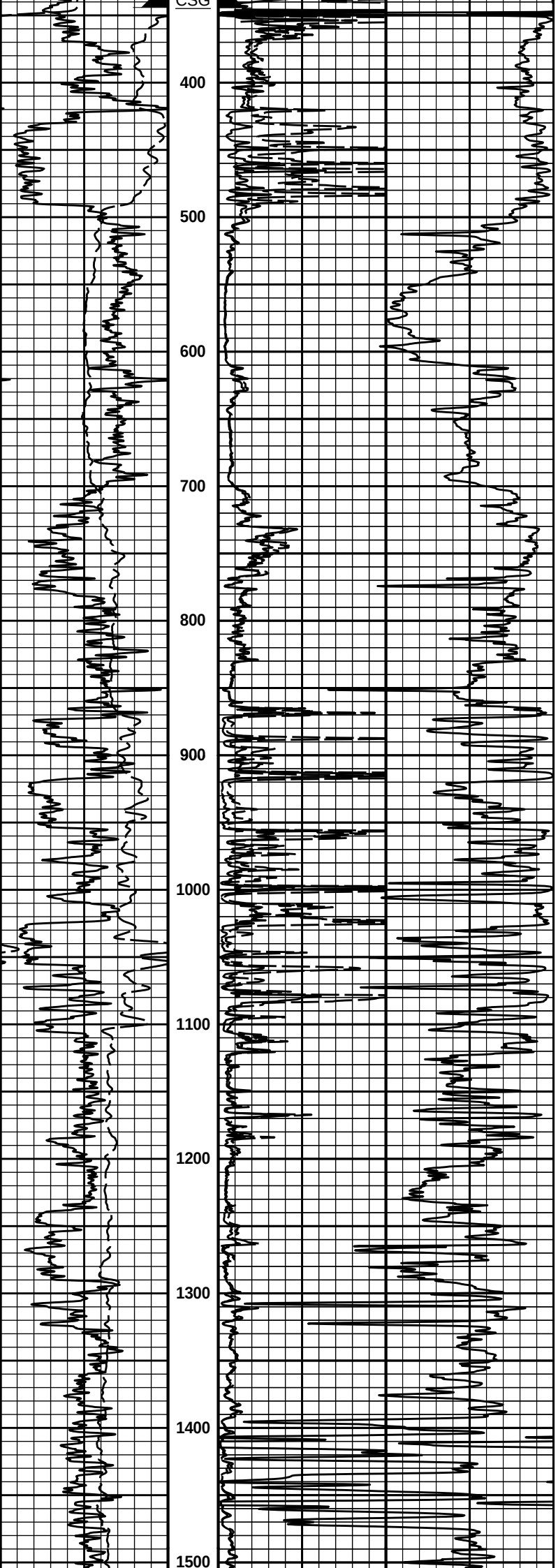
HALLIBURTON

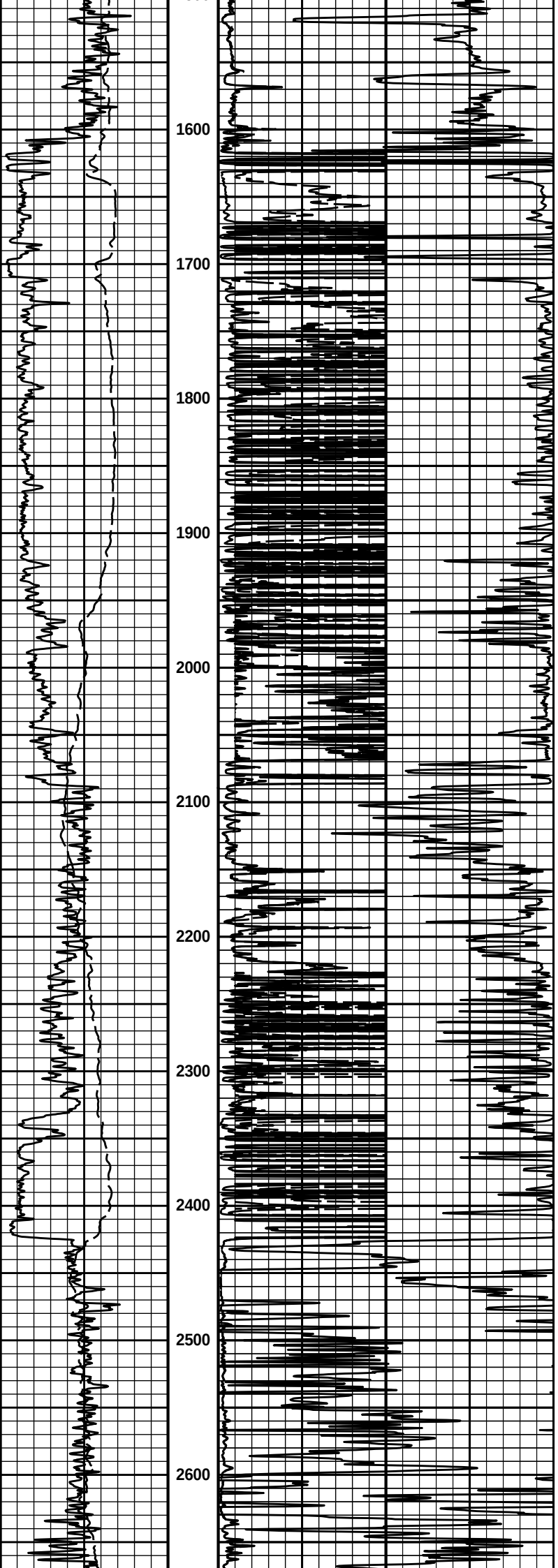
Plot Time: 01-Jun-17 09:58:32
Plot Range: 300 ft to 4806 ft
Data: HART_WILKINSON\Well Based\MAIN
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_1_main

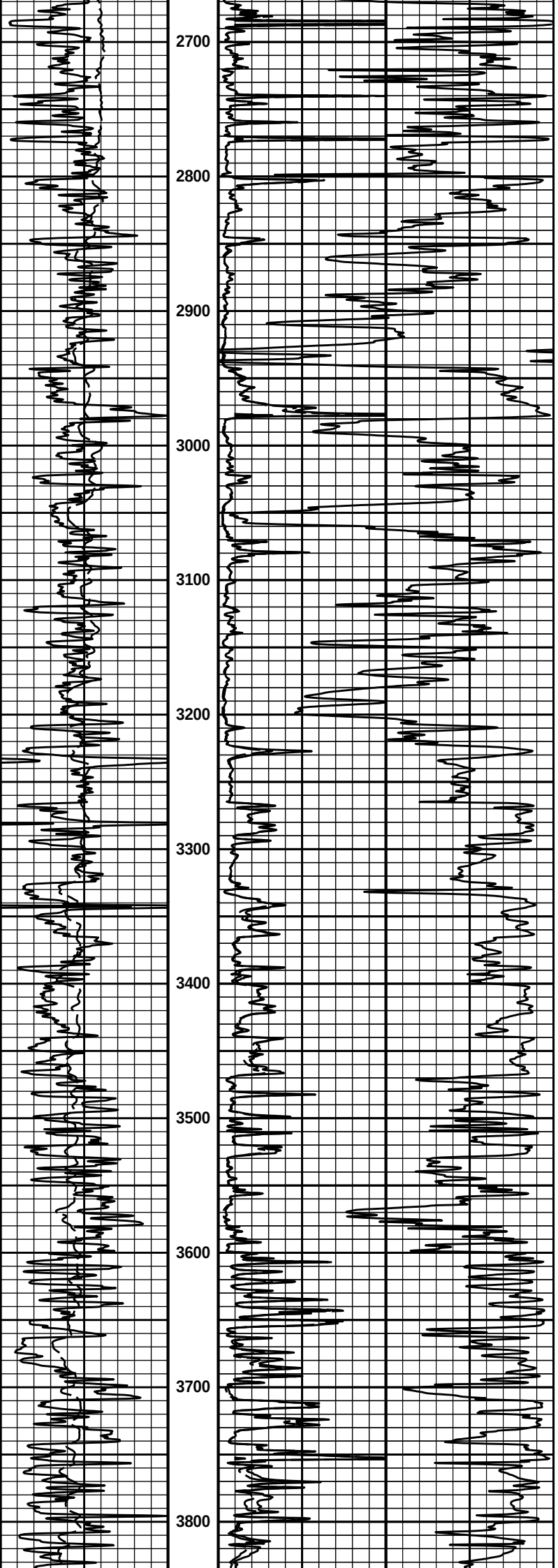
1 INCH MAIN LOG

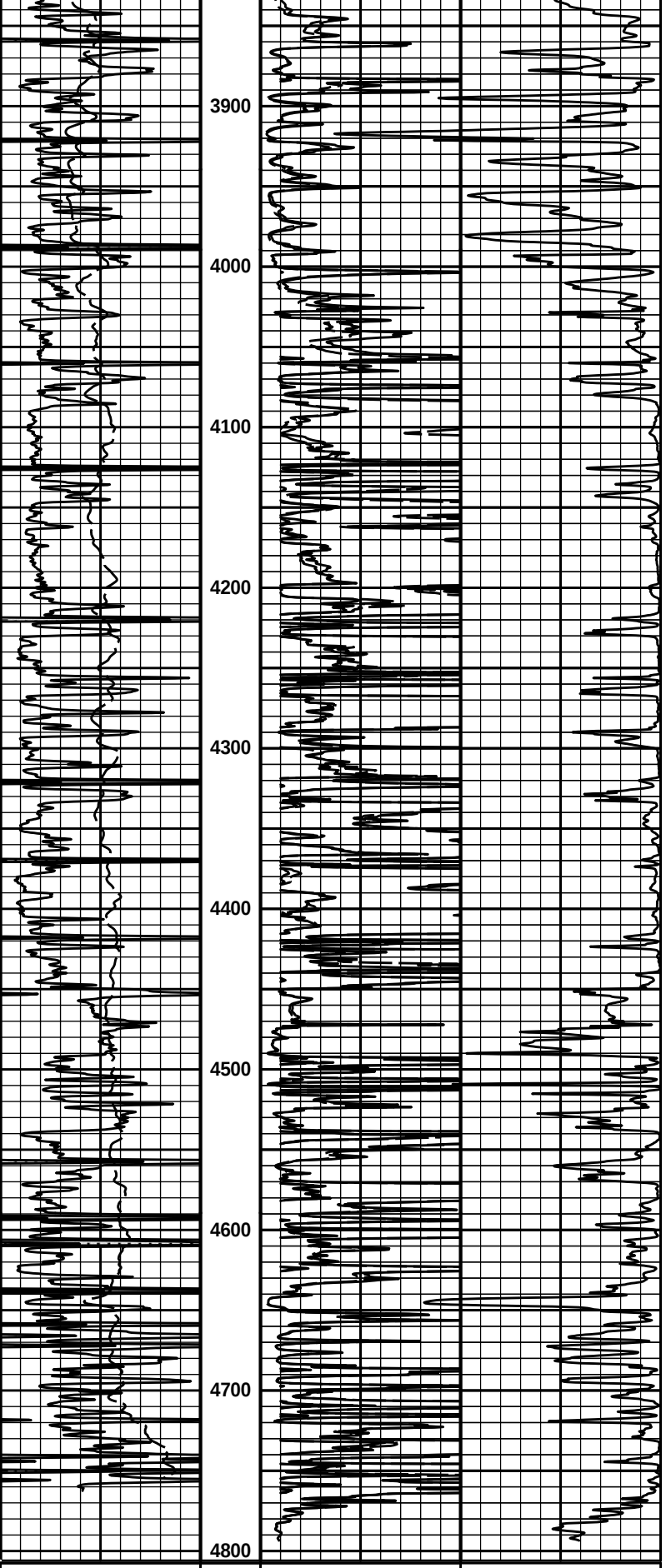
1 INCH CORRELATION LOG




CSG
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500


1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600


2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800



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

HALLIBURTON

Plot Time: 01-Jun-17 09:58:34

Plot Range: 300 ft to 4806 ft
Data: HART_WILKINSON\Well Based\MAIN
Plot File: \\-LOCAL-\HART_WILKINSON\0001 GTET-DSNT-SDLT-ACRT\ACRT\ACRT_1_main

1 INCH MAIN LOG

1 INCH CORRELATION LOG