HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY **OXY USA INC.**

WELL **DRUSSEL E-4**

FIELD/BLOCK **HUGOTON GAS AREA**

COUNTY **FINNEY** STATE **KANSAS**

COMPANY OXY USA INC.
WELL DRUSSEL E-4
FIELD/BLOCK HUGOTON GAS AREA
COUNTY FINNEY
STATE KANSAS

API No. 15055222400000

Location (SHL) 414' FSL & 1672' FEL
NW SE SW SE

Sect. 36 Twp. 25S Rge. 33W

Other Services:
MICROLOG
DSNT, SDLT
HFDT
BSAT

Permanent Datum	GL	Elev. 2889.0 ft	Elev.: K.B. 2900.0 ft
Log measured from	KB	, 11.0 ft above perm. Datum	D.F. 2899.0 ft
Drilling measured from	KB		G.L. 2889.0 ft

Date		09-Oct-13					
Run No.		ONE					
Depth - Driller		5293.00 ft					
Depth - Logger		5293.0 ft					
Bottom - Logged Interval		5283.0 ft					
Top - Logged Interval		1640.0 ft					
Casing - Driller		8.625 in @ 1640.0 ft		@		@	
Casing - Logger		1640.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	10.0 ppg	42.00 s/qt				
PH	Fluid Loss	9.90 pH	8.8 cptm				
Source of Sample		MUD PIT					
Rm @ Meas. Temperature		1.300 ohmm @ 75.00 degF		@		@	
Rmf @ Meas. Temperature		1.07 ohmm @ 75.00 degF		@		@	
Rmc @ Meas. Temperature		1.550 ohmm @ 75.00 degF		@		@	
Source Rmf	Rmc	MEASURED	MEASURED				
Rm @ BHT		0.72 ohmm @ 140.0 degF		@		@	
Time Since Circulation		5.0 hr					
Time on Bottom		09-Oct-13 08:45					
Max. Rec. Temperature		140.0 degF @ 5293.0 ft		@		@	
Equipment	Location	11230668	LIBERAL				
Recorded By		J. BOLLOM					
Witnessed By		G. FLAGG					

Fold here

PGM Version: WL INSITE R3.8.4 (Build 5)

Service Ticket No.: 900805003 API Serial No.: 15055222400000

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Sample No.				Type Log	Depth	Scale Up Hole	Scale Down Hole
Date								
Depth-Driller								
Type Fluid in Hole								
Density	Viscosity							
Ph	Fluid Loss							

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Source of Sample					
Rm @ Meas. Temp	@	@	@		
Rmf @ Meas. Temp.	@	ACRT	N/A	CENT	N/A
Rmc @ Meas. Temp.	@	I776_S775			
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.	10748374	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	25'	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	5293	1640	REC	0	150									

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING

CHLORIDES REPORTED AT 3,000 MG/L

LCM REPORTED AT 2 LB/BBL

GTET-HFDT-DSNT-SDLT-BSAT-ACRT RUN IN COMBINATION

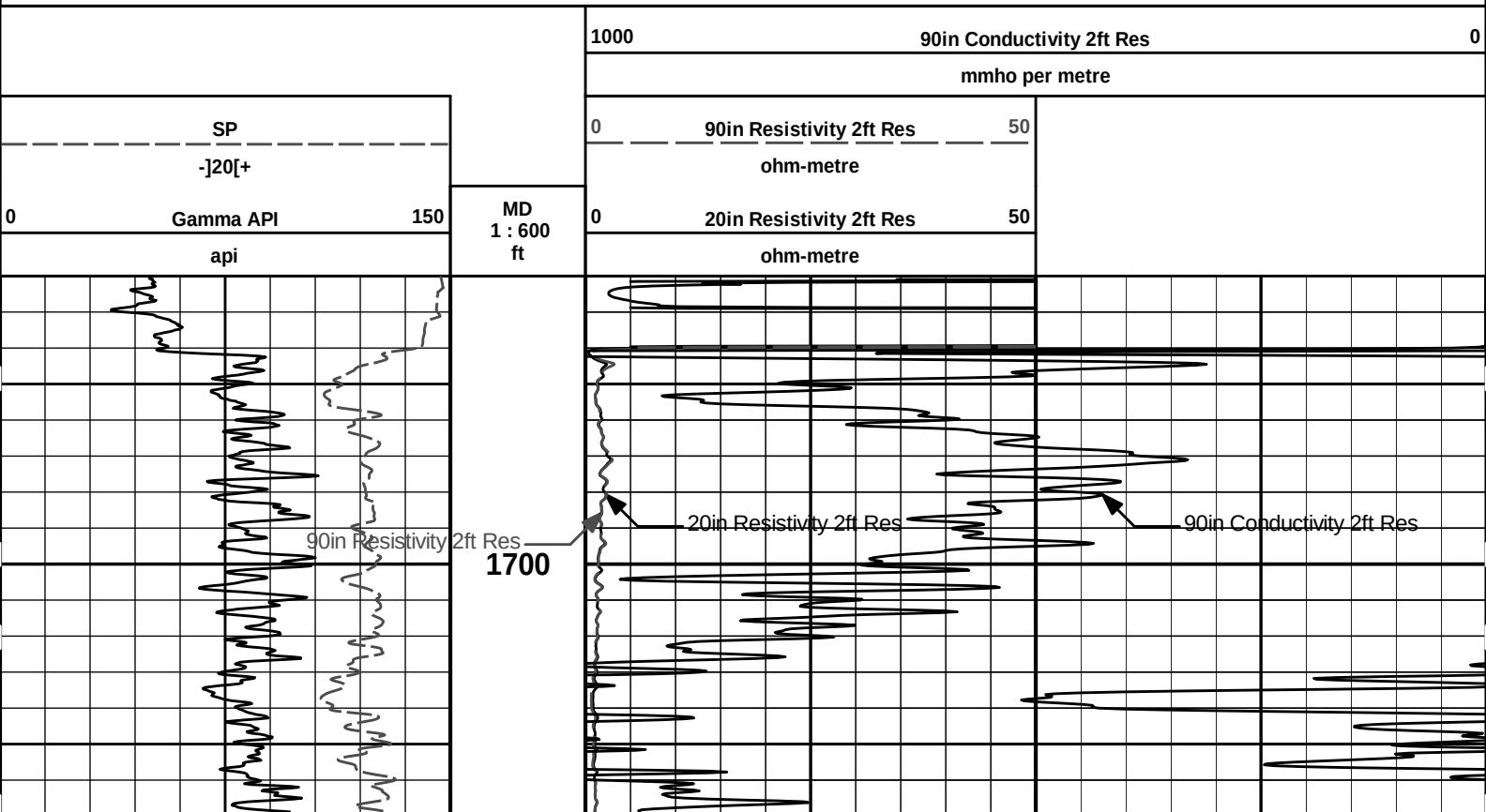
TODAY'S CREW: F. VILLA & V. JAIME

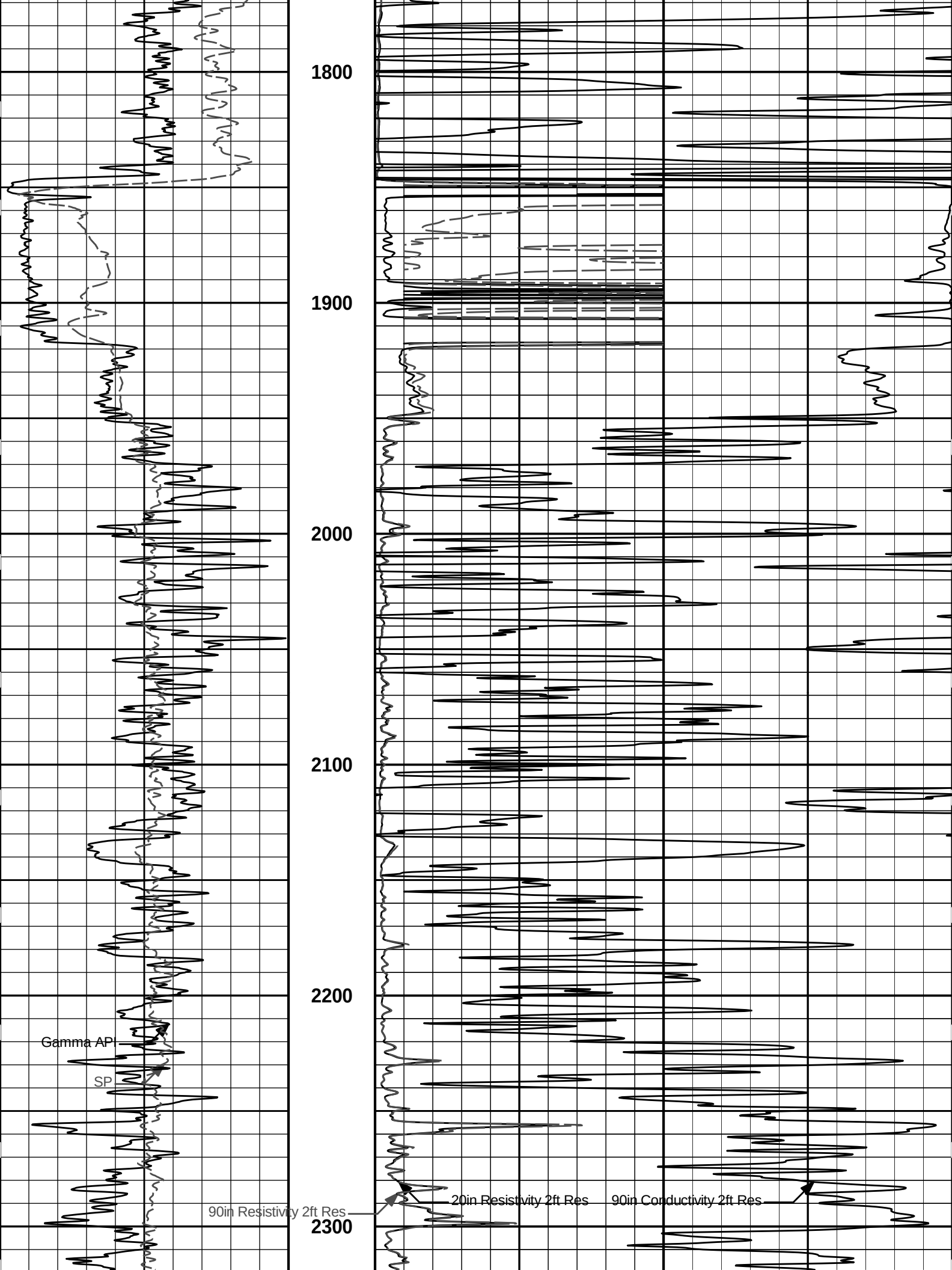
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS. 620-624-8123

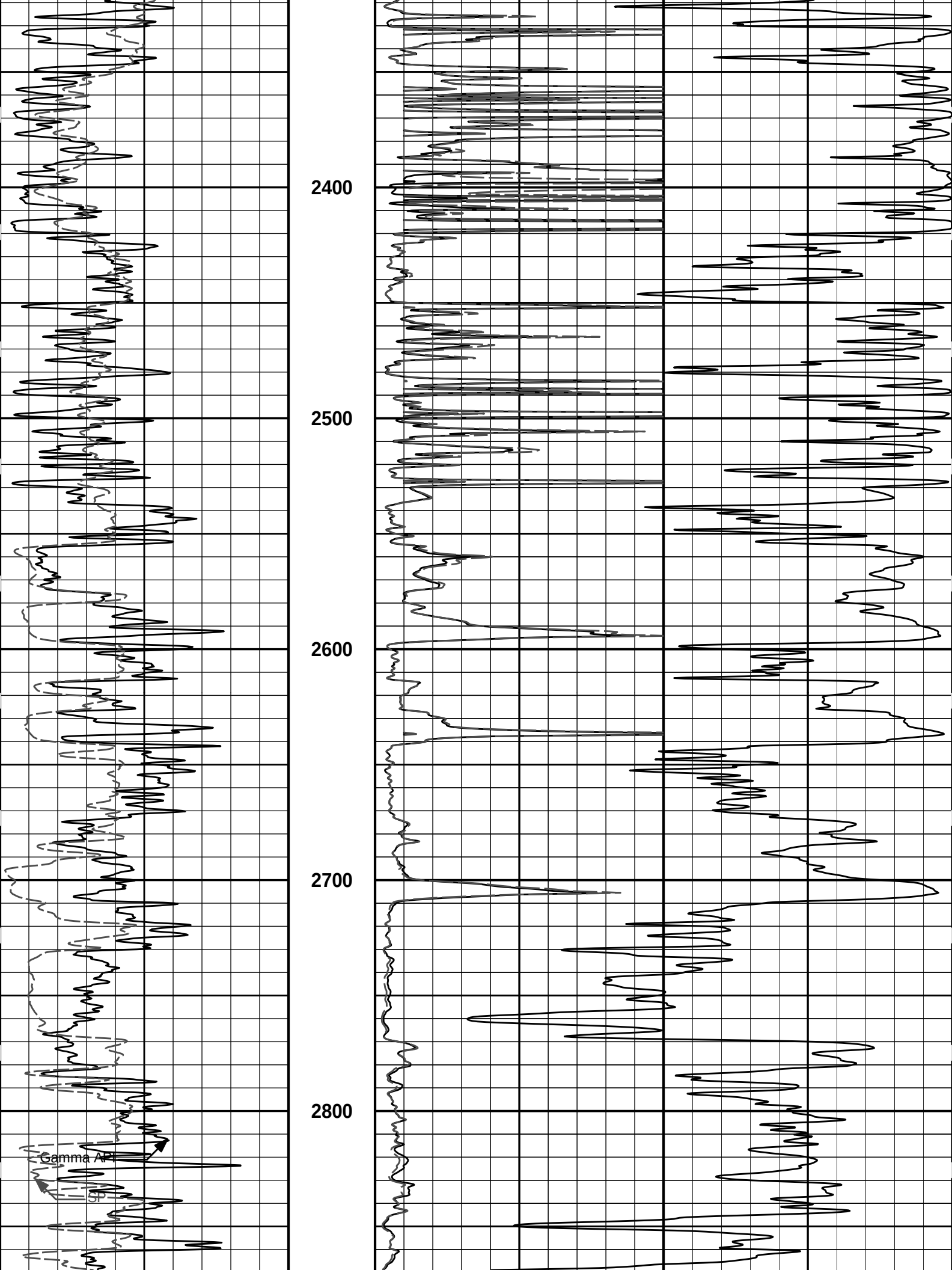
HALLIBURTON

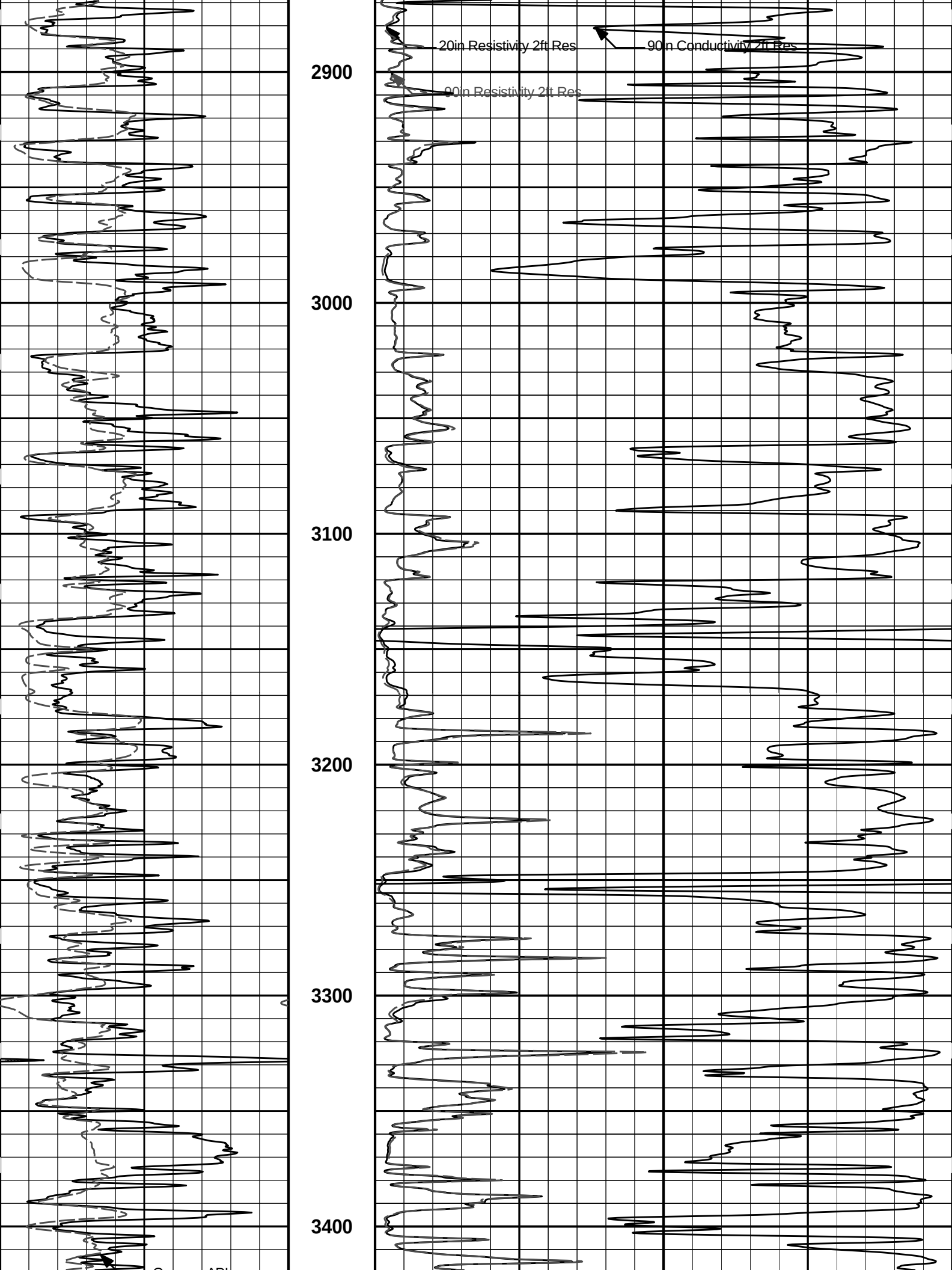
Plot Time: 09-Oct-13 11:48:25
Plot Range: 1620 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\CASING
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_2_lib

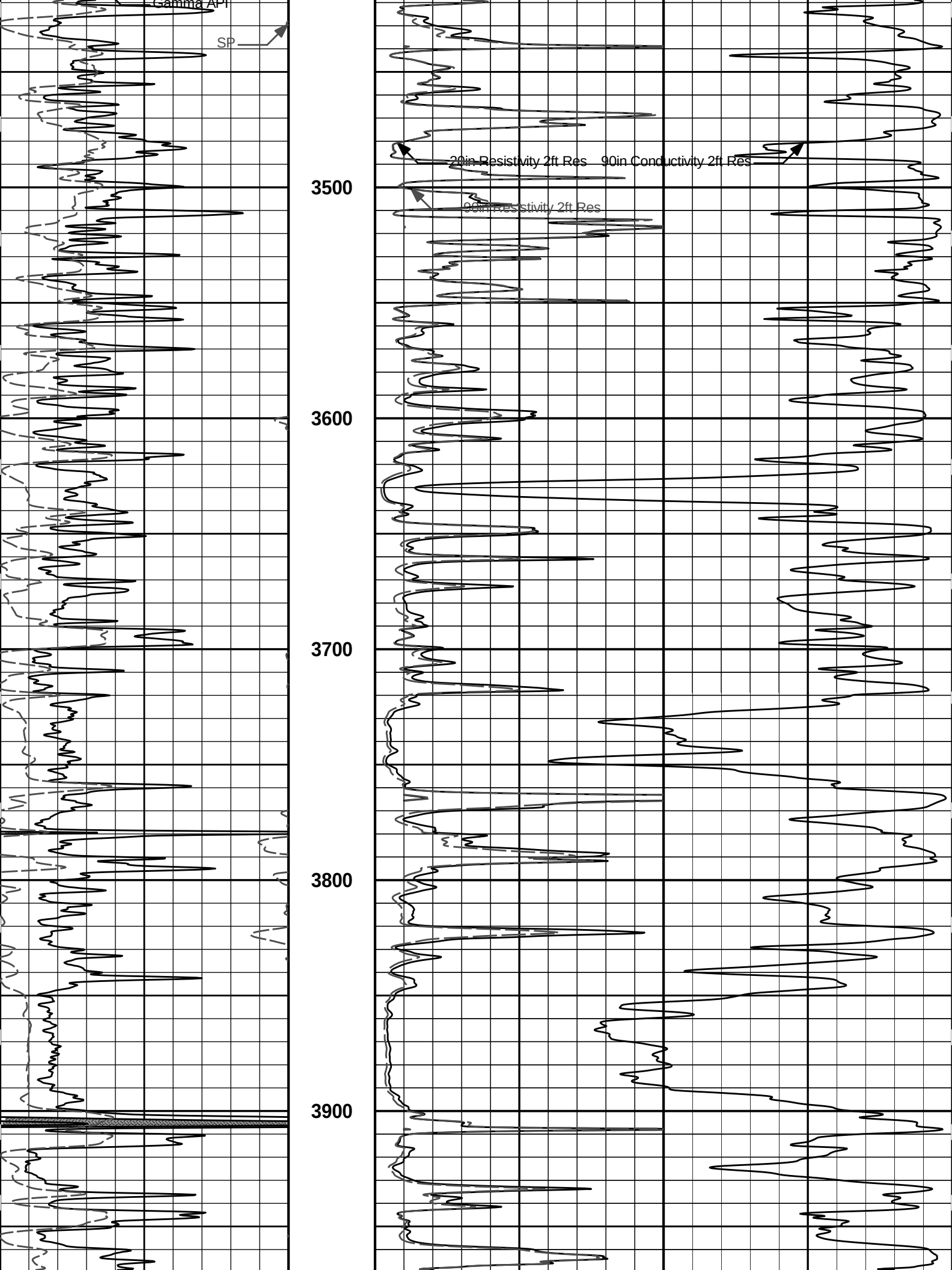
2 INCH MAIN LOG

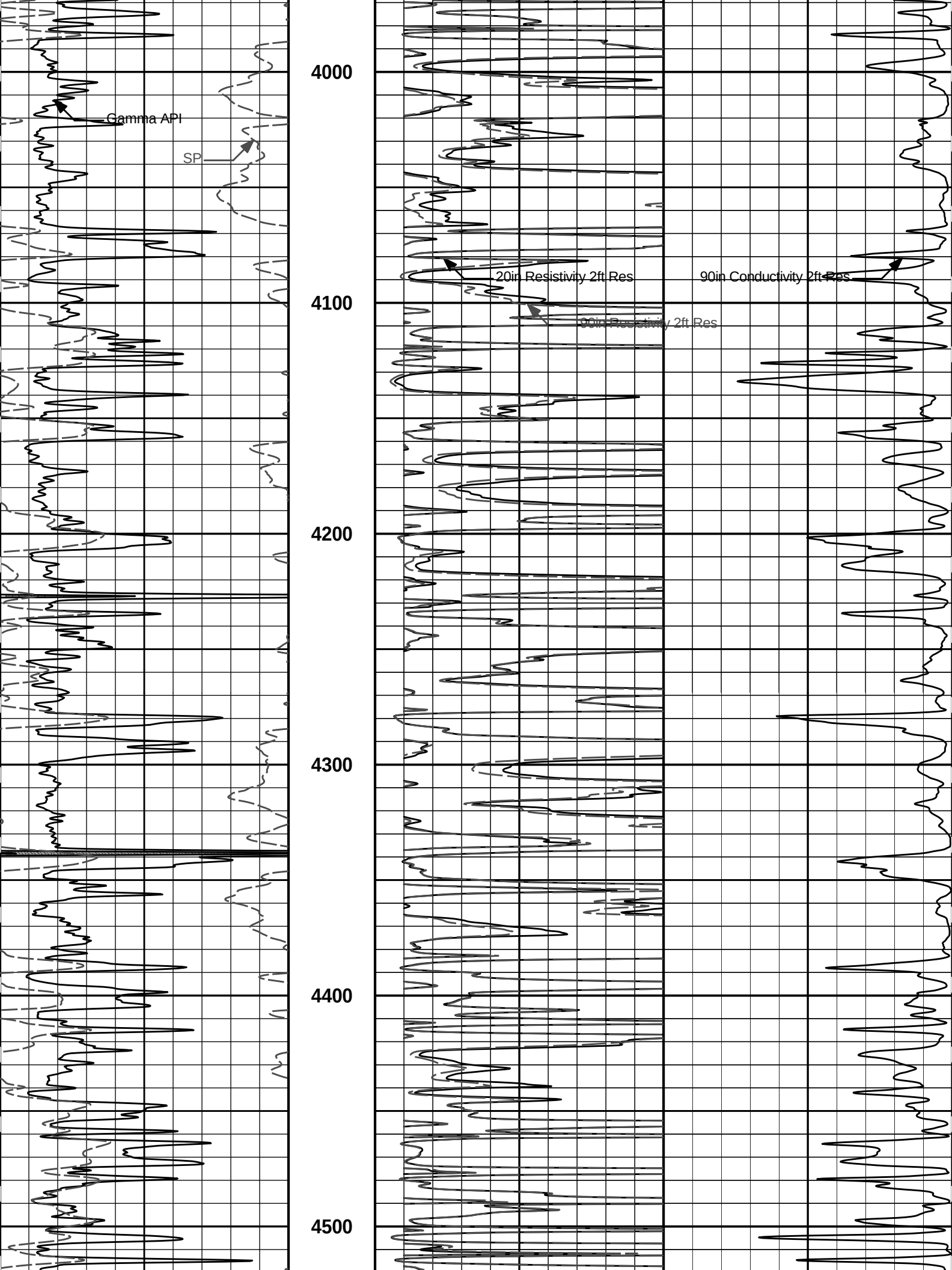


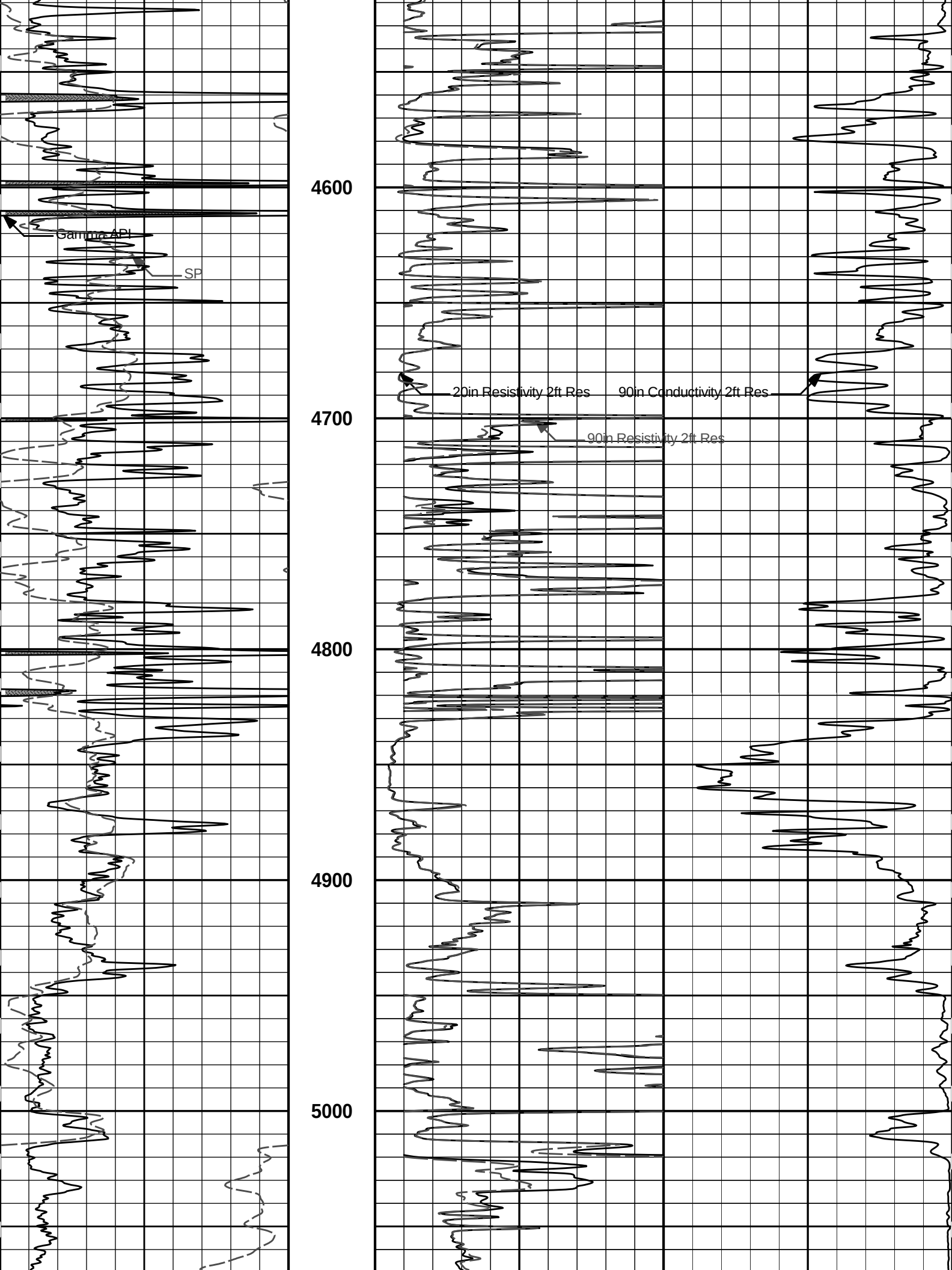

1800
1900
2000
2100
2200
2300
Gamma API
SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res

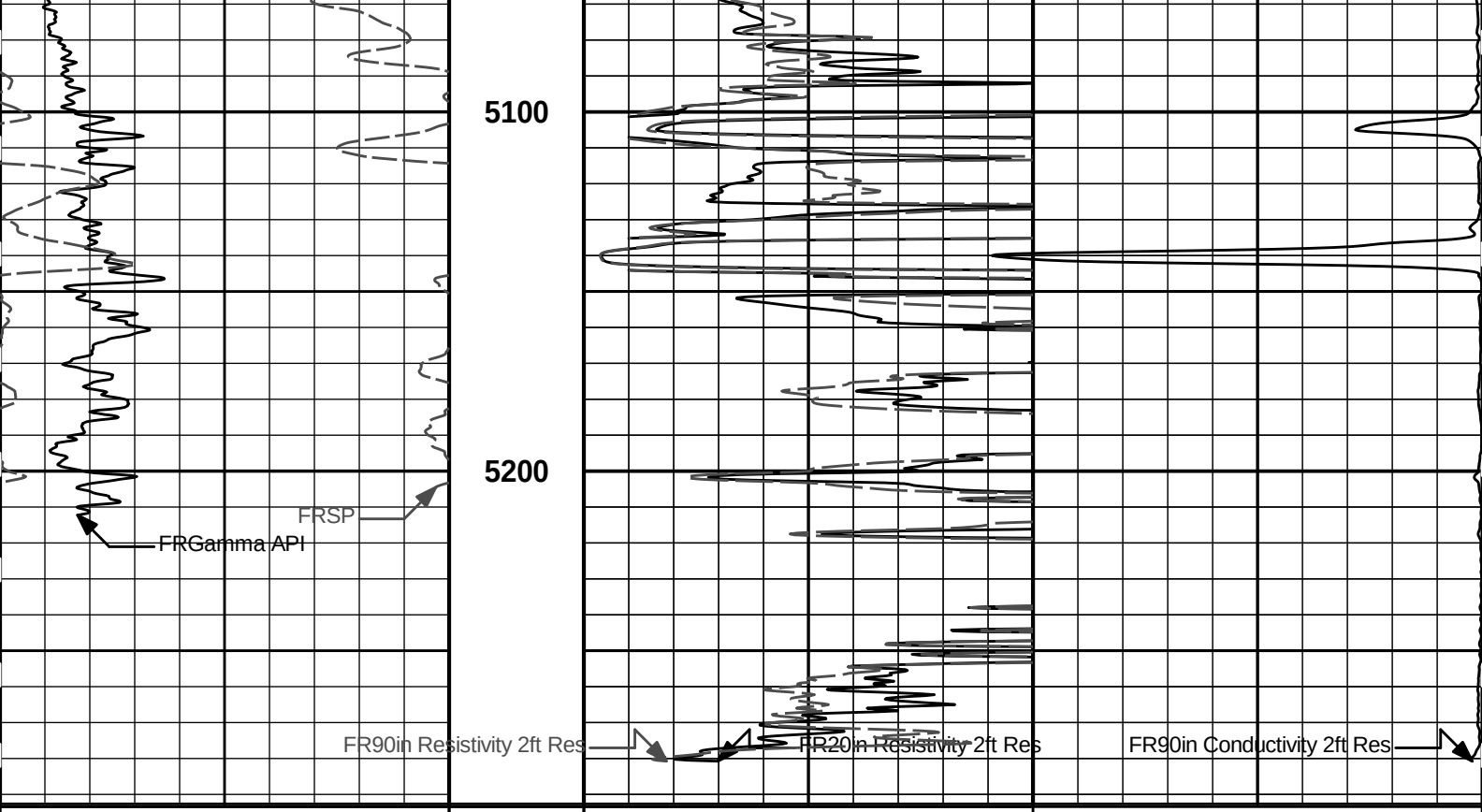

2400
2500
2600
2700
2800
Gamma API
0
150


20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res
2900
3000
3100
3200
3300
3400


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


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


4600
4700
4800
4900
5000
Gamma API
SP
20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res



0 Gamma API 150	MD 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: 09-Oct-13 11:48:29
Plot Range: 1620 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\CASING\
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_2_lib

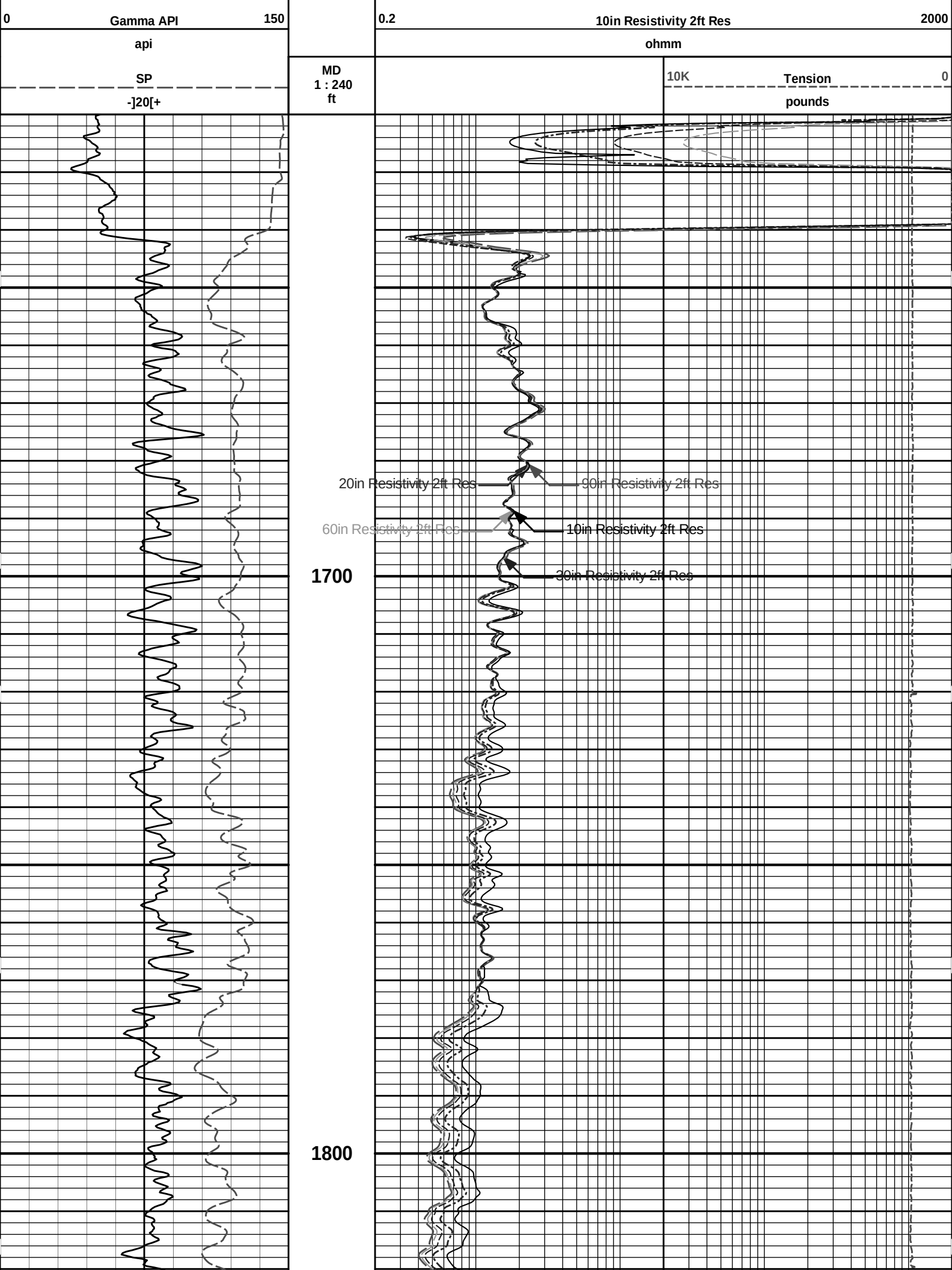
2 INCH MAIN LOG

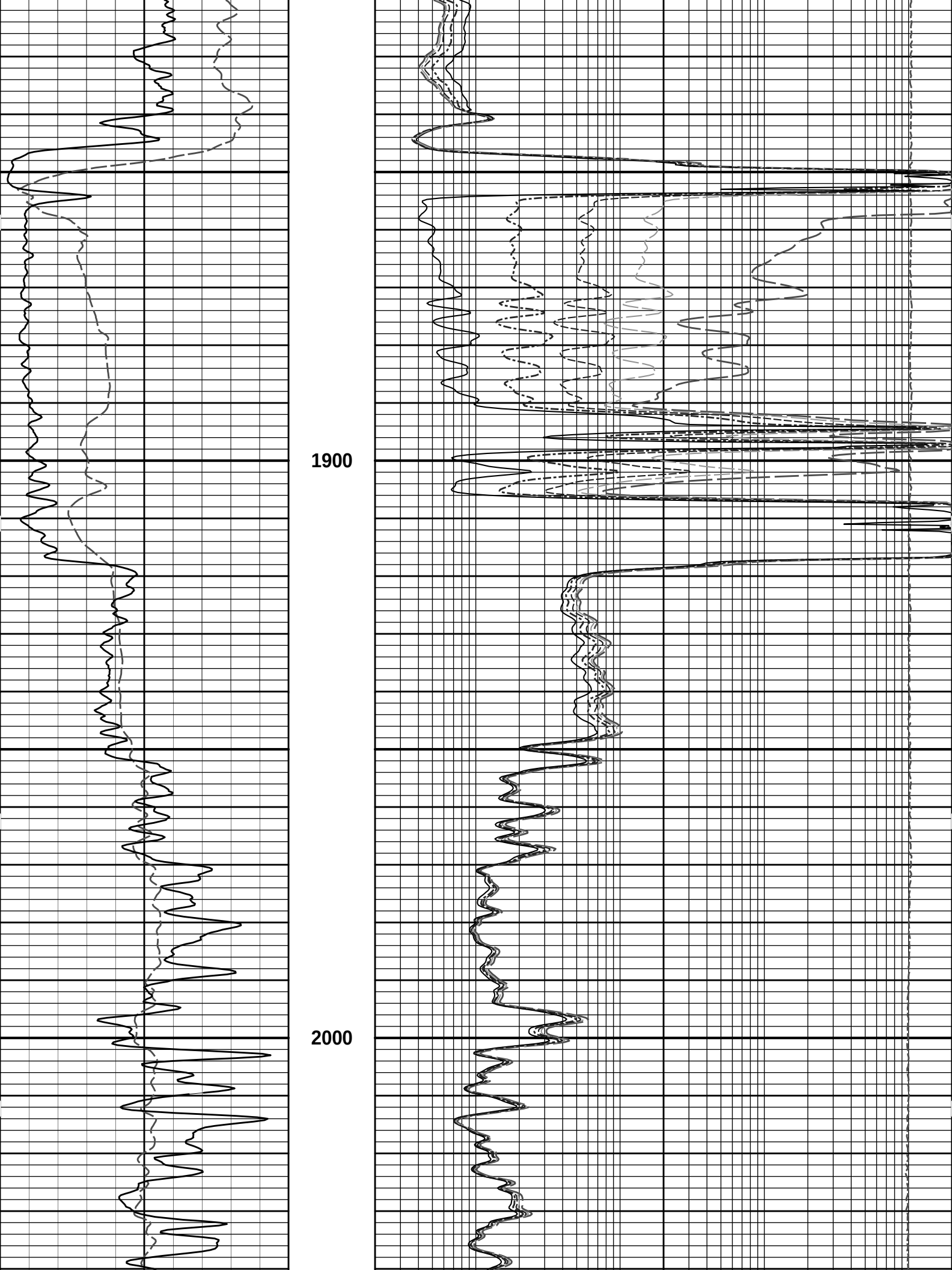
HALLIBURTON

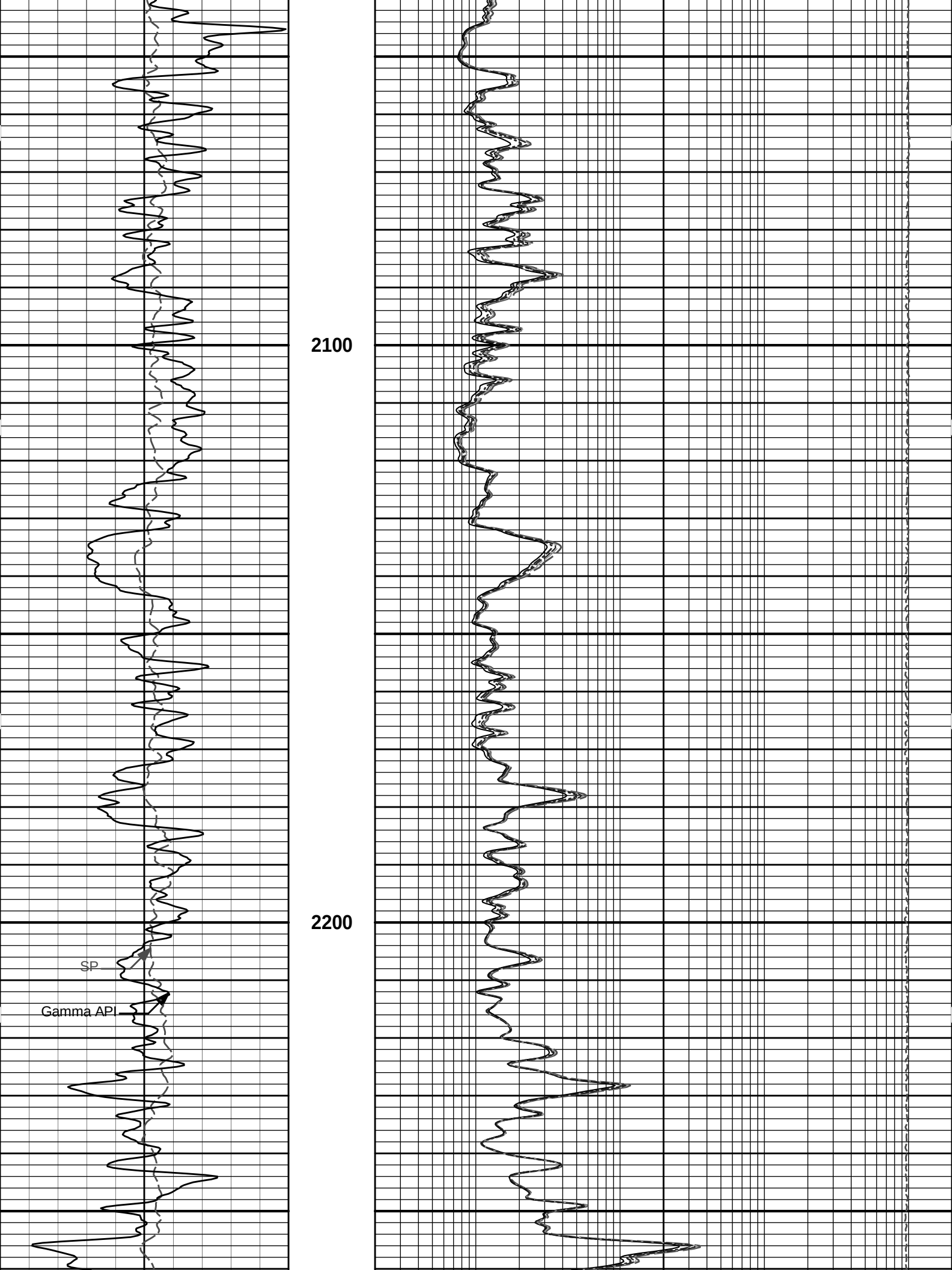
Plot Time: 09-Oct-13 11:48:29
Plot Range: 1620 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\CASING\
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_5_main_lib

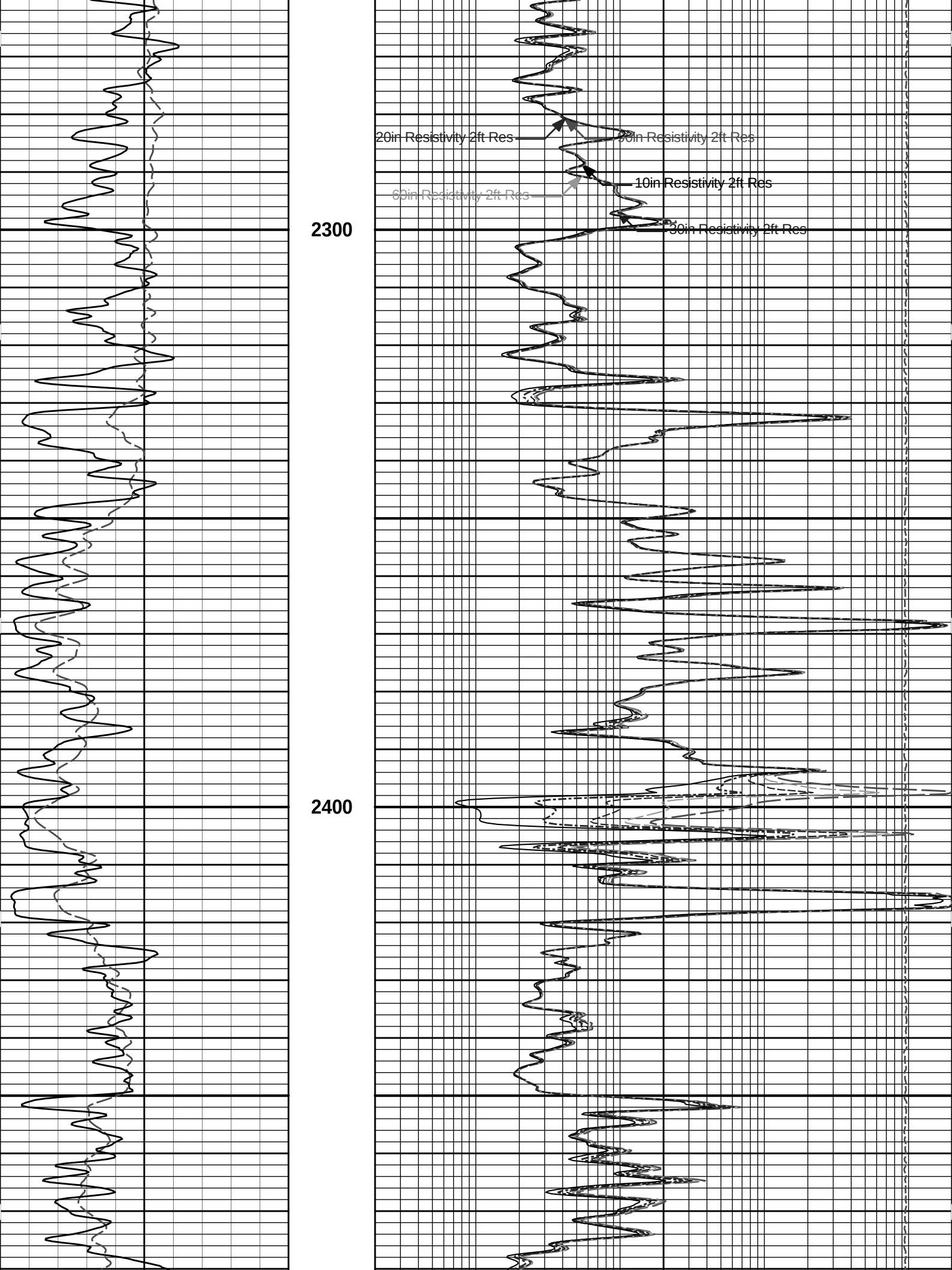
5 INCH MAIN LOG

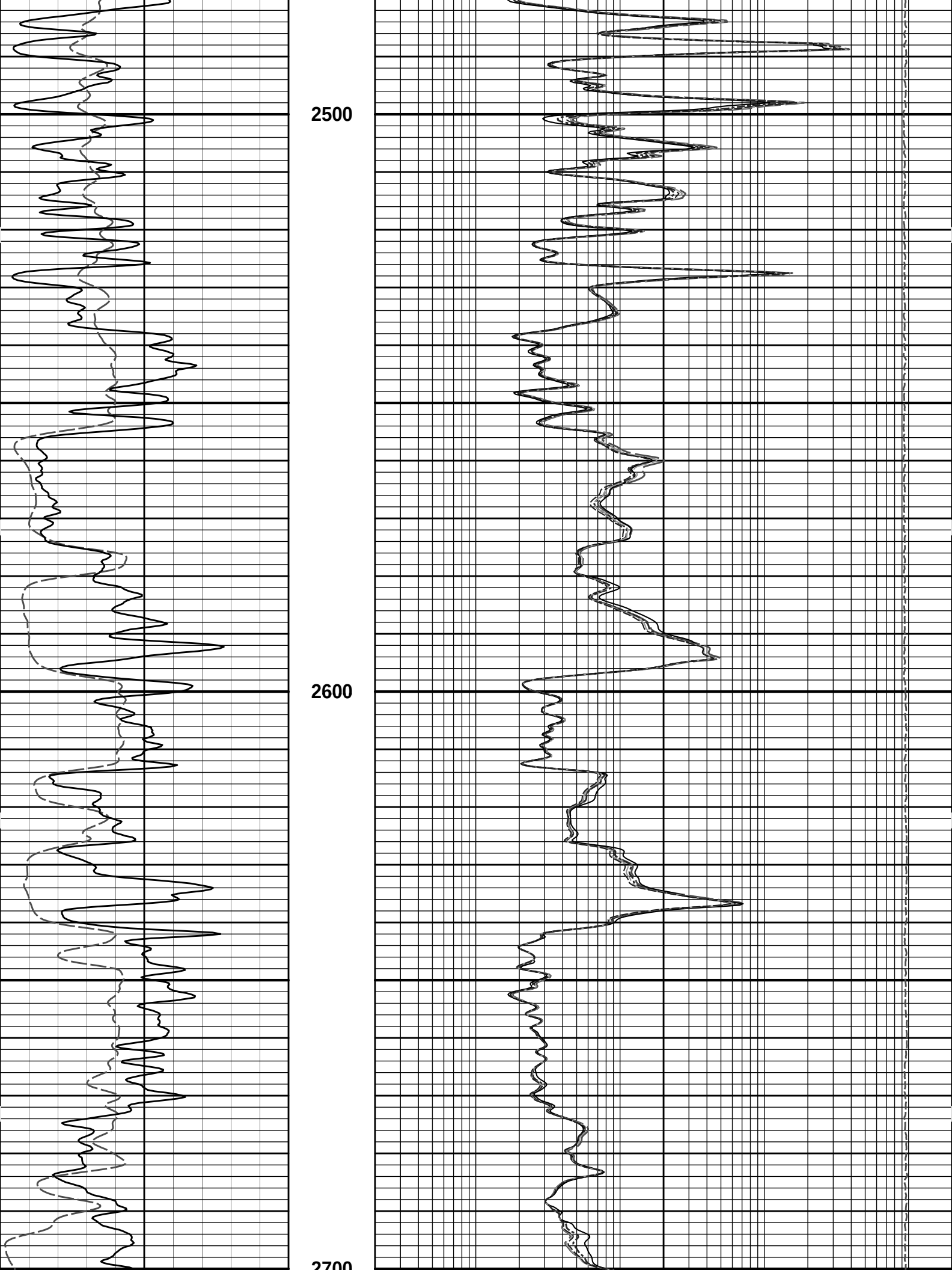
	0.2 90in Resistivity 2ft Res 2000
	ohmm
	0.2 60in Resistivity 2ft Res 2000
	ohmm
	0.2 30in Resistivity 2ft Res 2000
	ohm-metre
	0.2 20in Resistivity 2ft Res 2000
	ohmm
SHALE	


0
Gamma API
150
api
SP
-]20[+
MD
1 : 240
ft
0.2
10in Resistivity 2ft Res
2000
ohmm
10K
Tension
0
pounds
20in Resistivity 2ft Res
90in Resistivity 2ft Res
60in Resistivity 2ft Res
10in Resistivity 2ft Res
30in Resistivity 2ft Res
1700
1800


1900
2000


2100
2200
SP
Gamma API


20in Resistivity 2ft Res
90in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
2300
2400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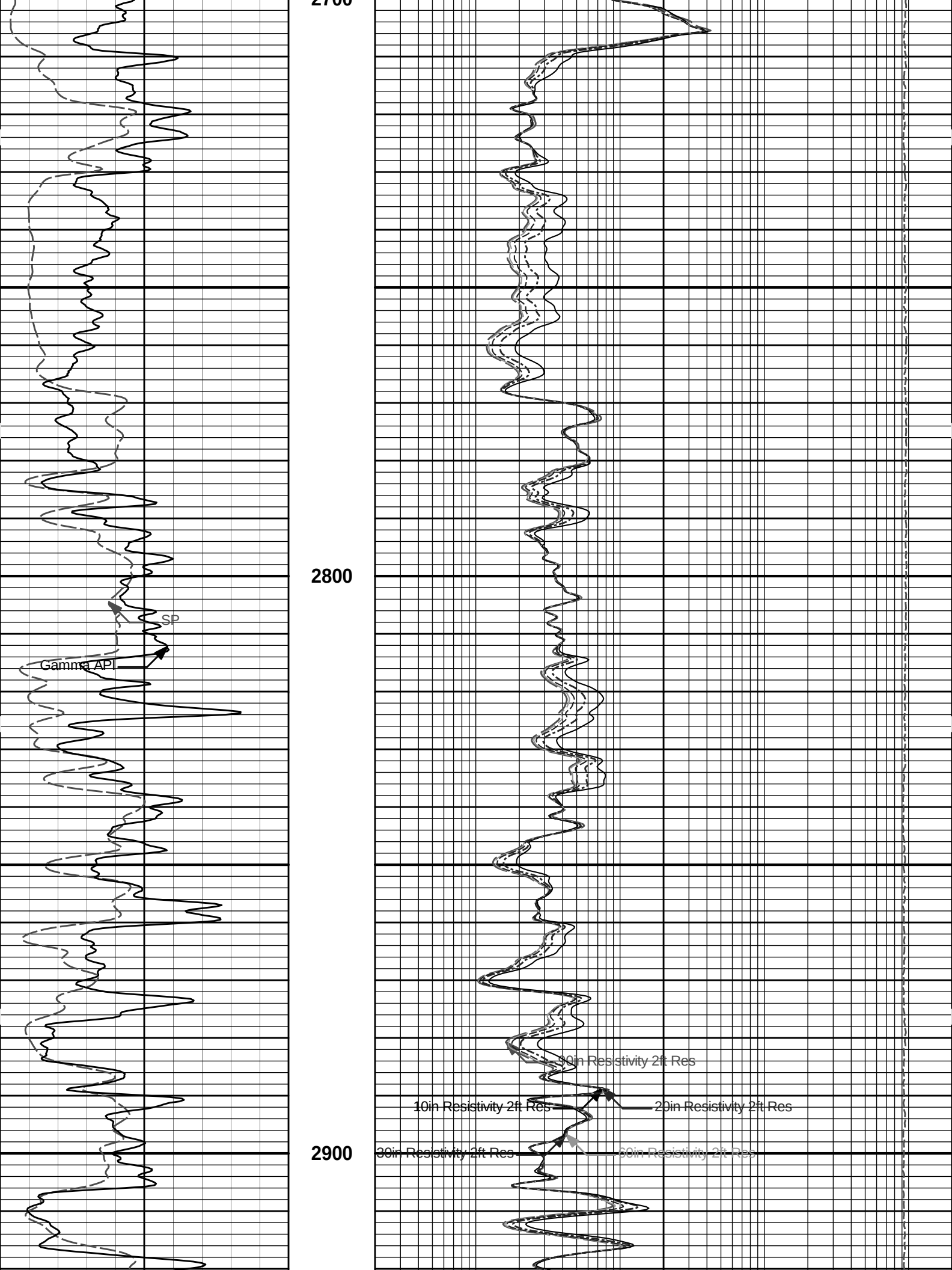
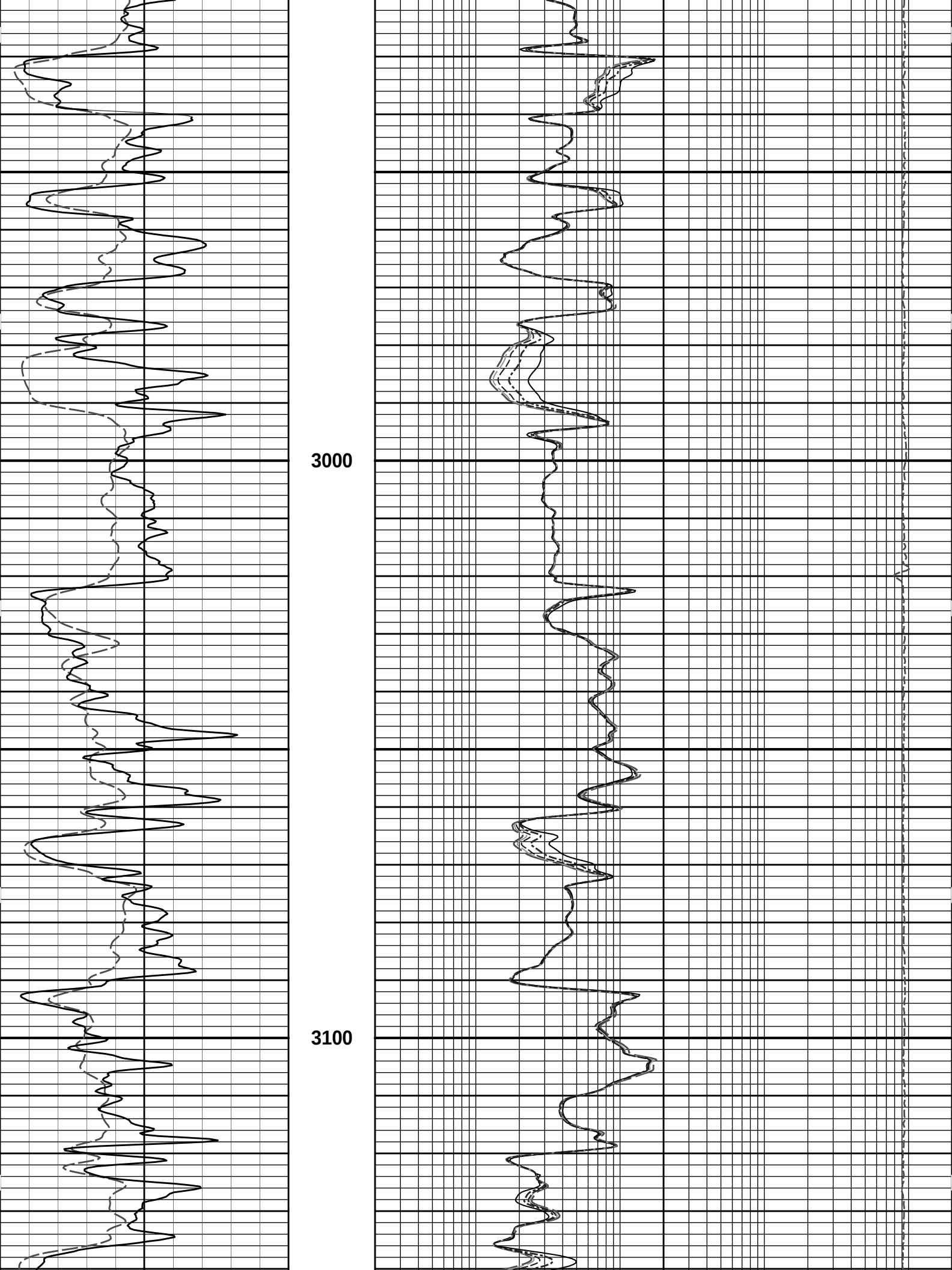
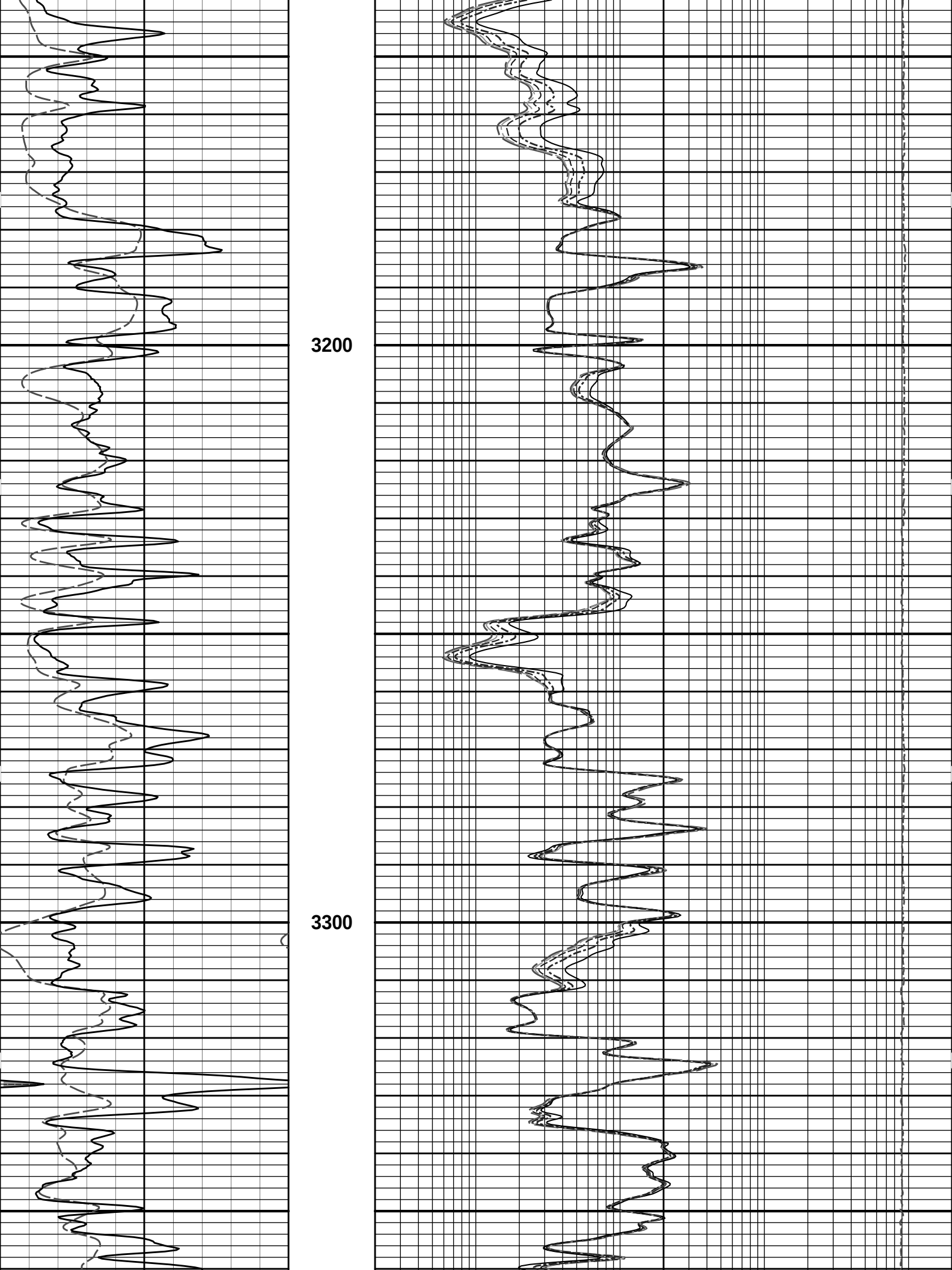
2600
2700


2700
2800
2900
SP
Gamma API
60in Resistivity 2ft Res
10in Resistivity 2ft Res
20in Resistivity 2ft Res
30in Resistivity 2ft Res
60in Resistivity 2ft Res


3000
3100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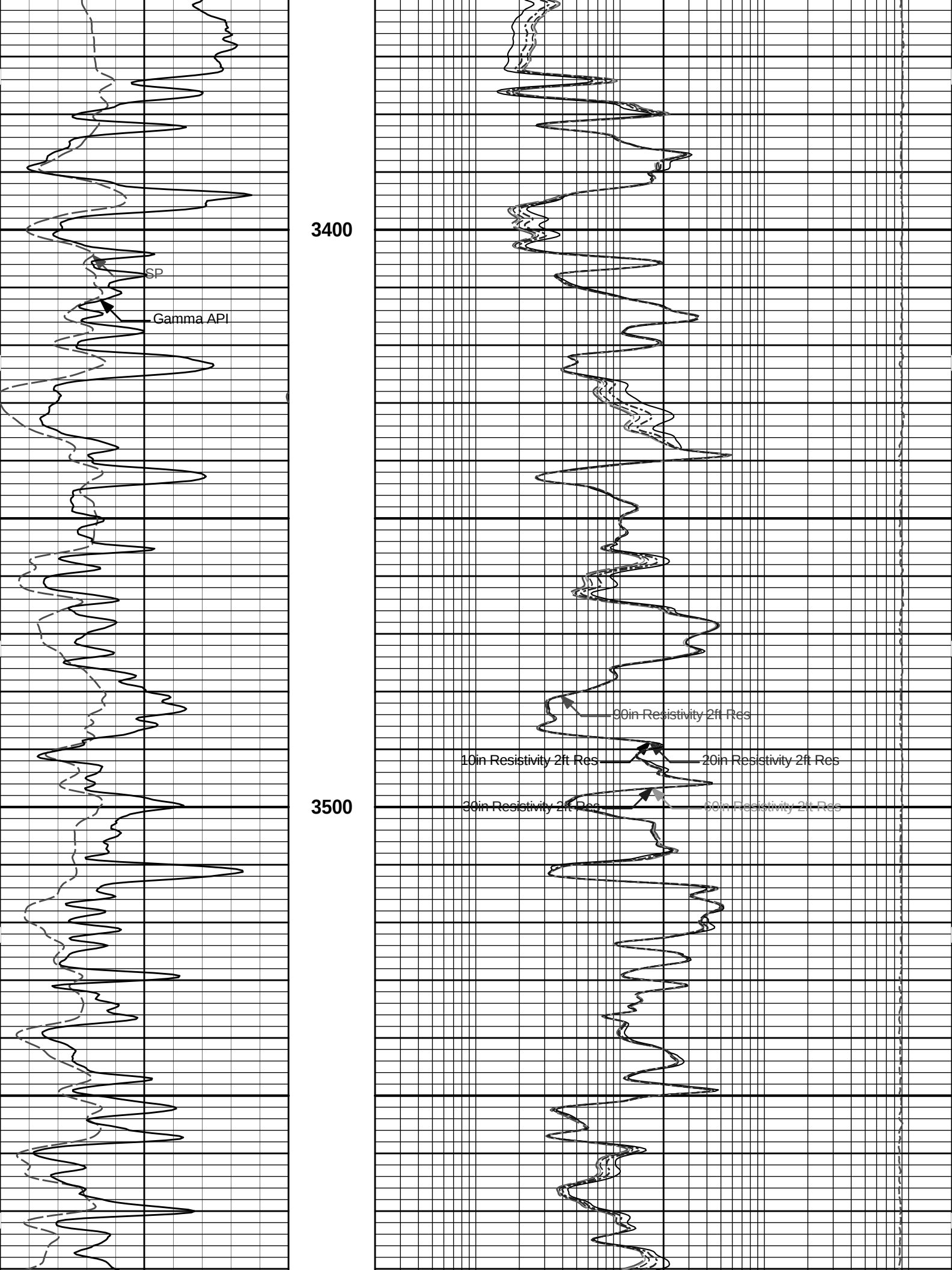
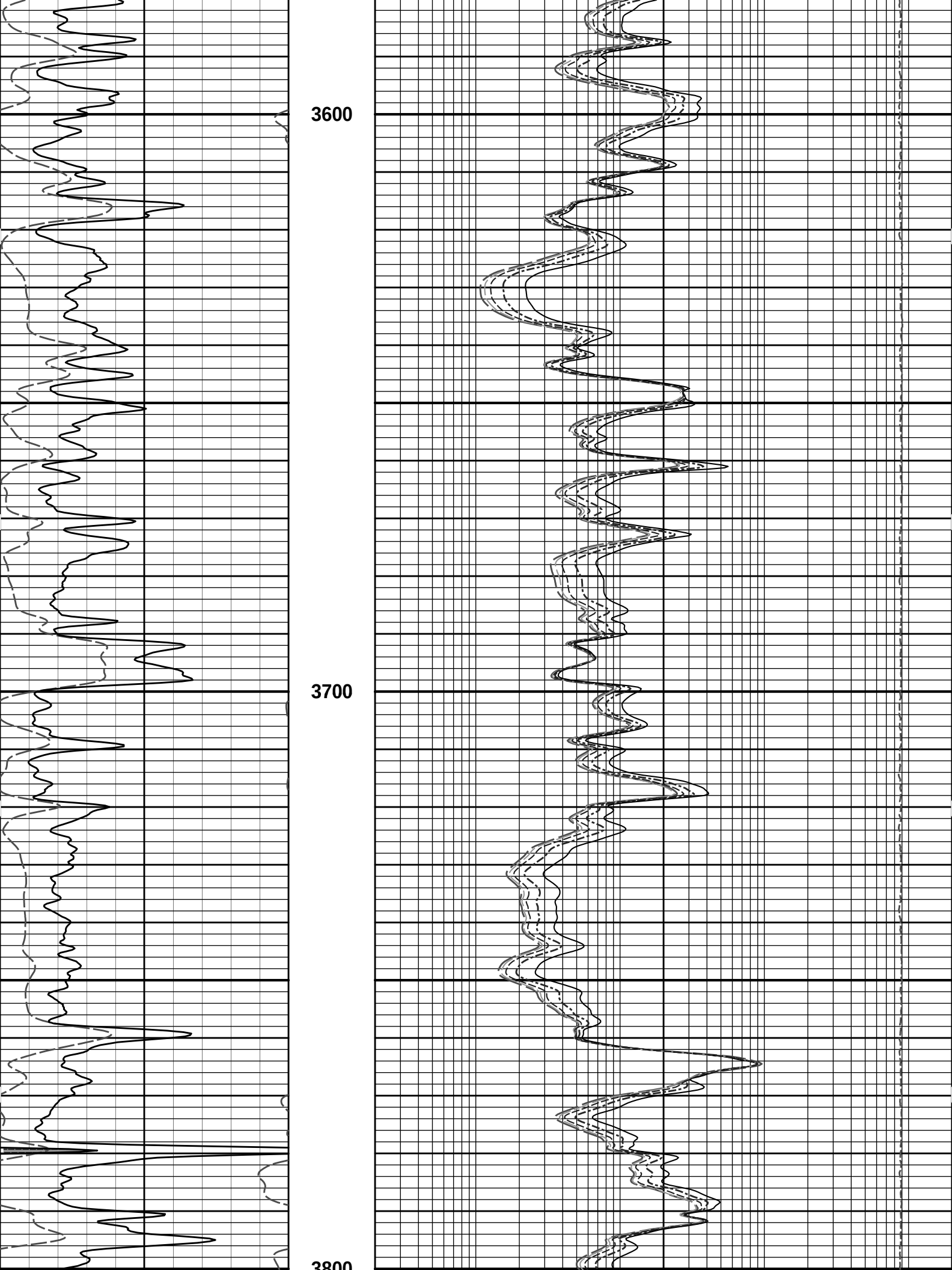
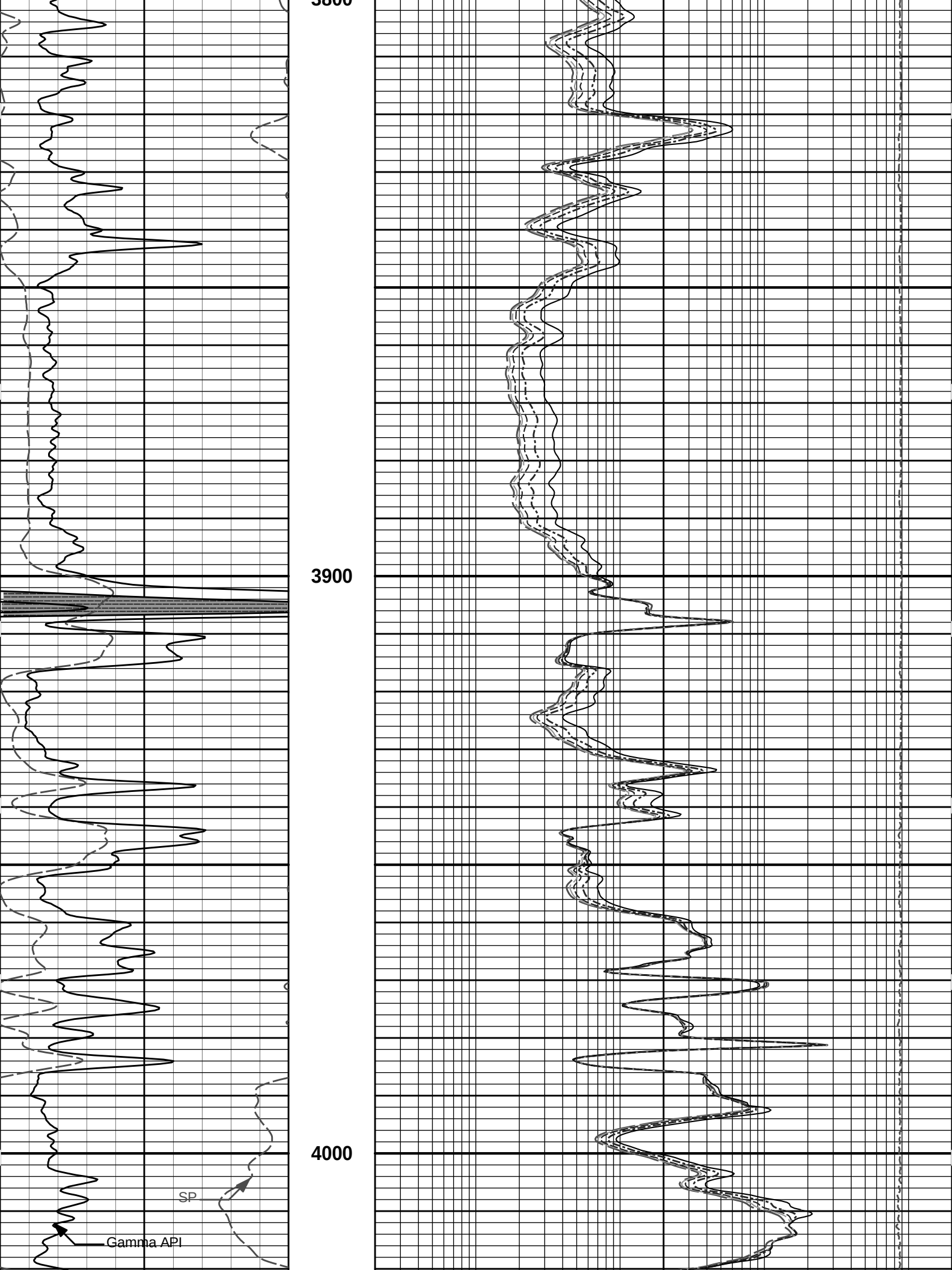
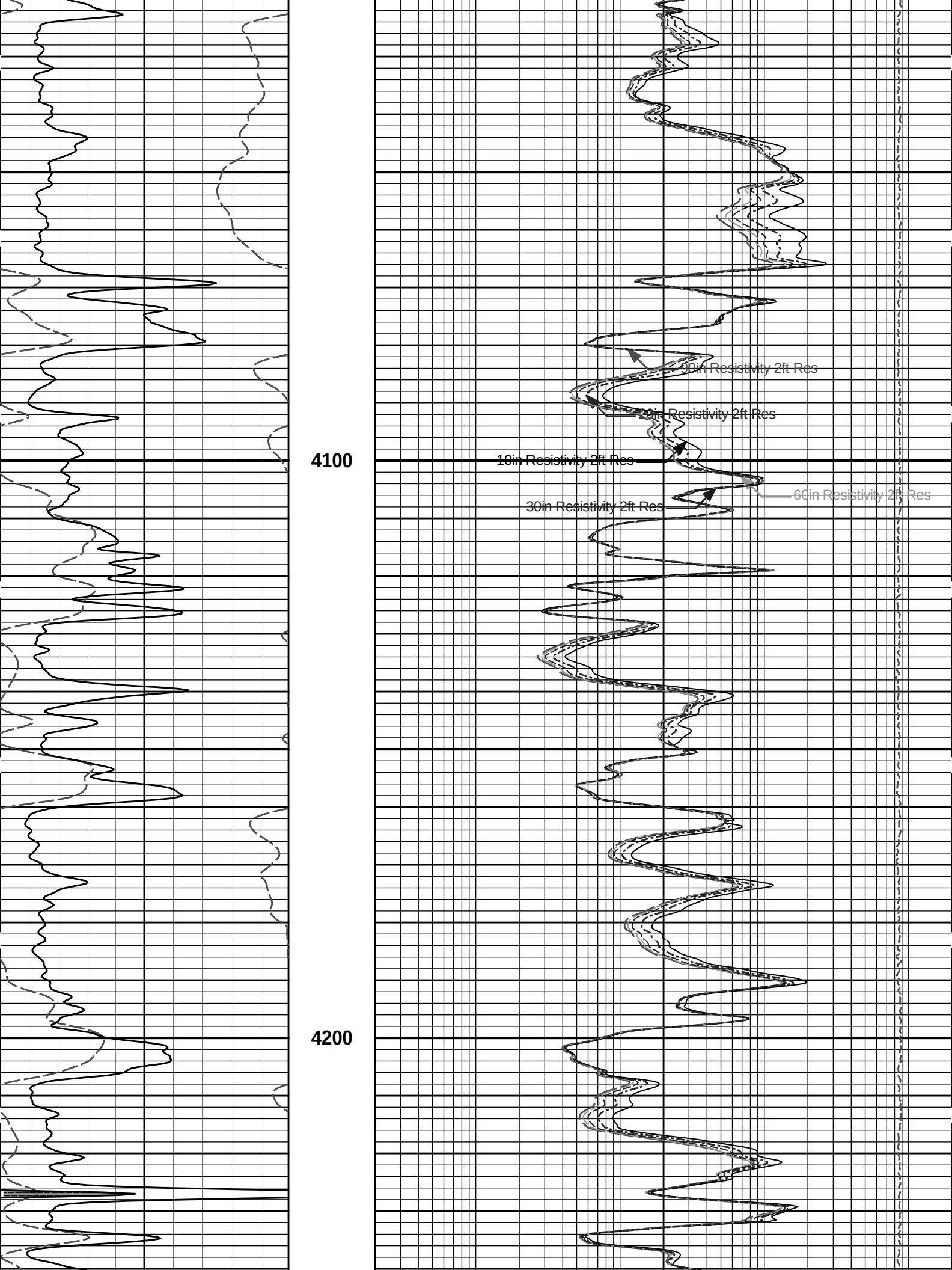
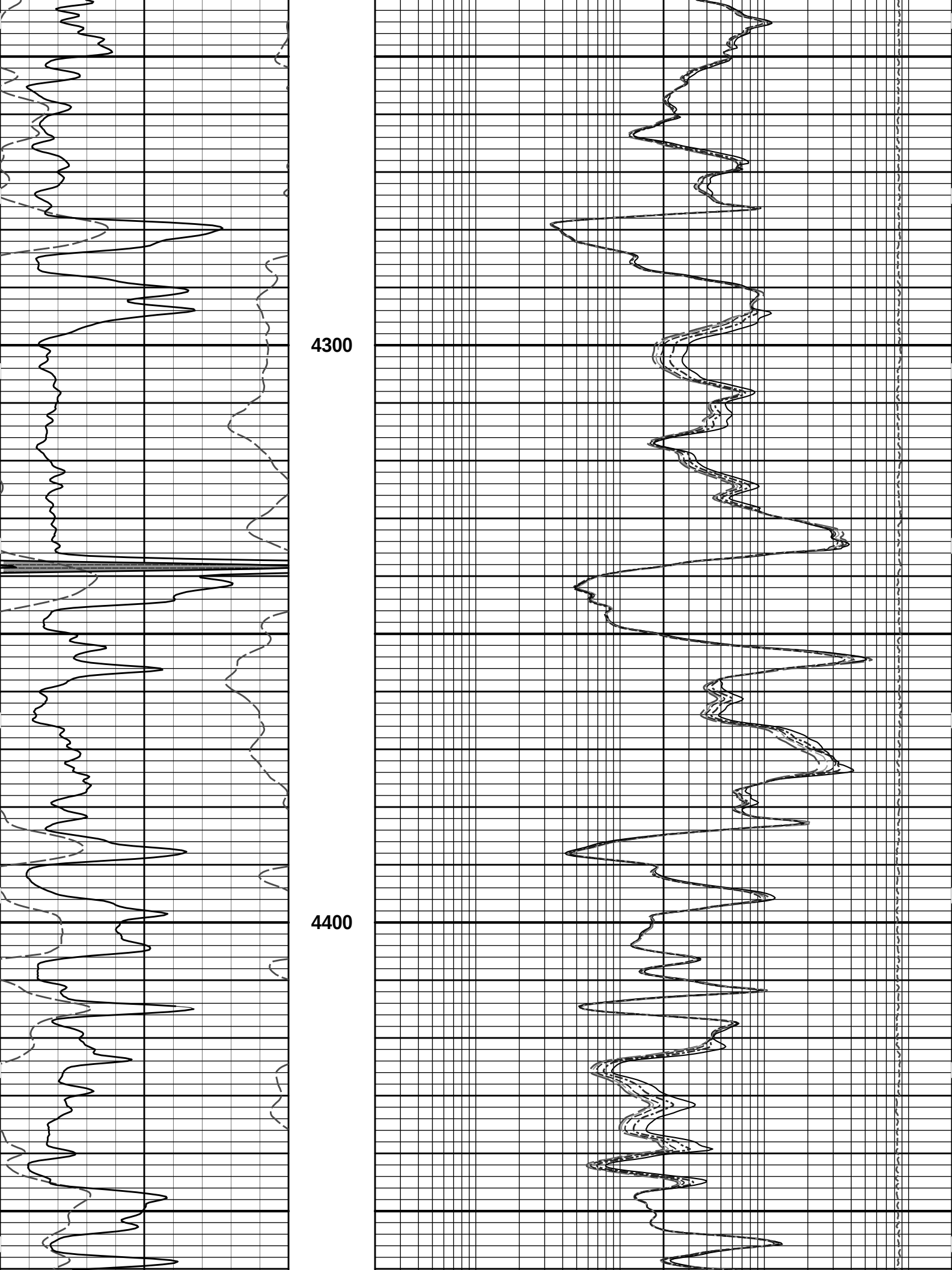
3300

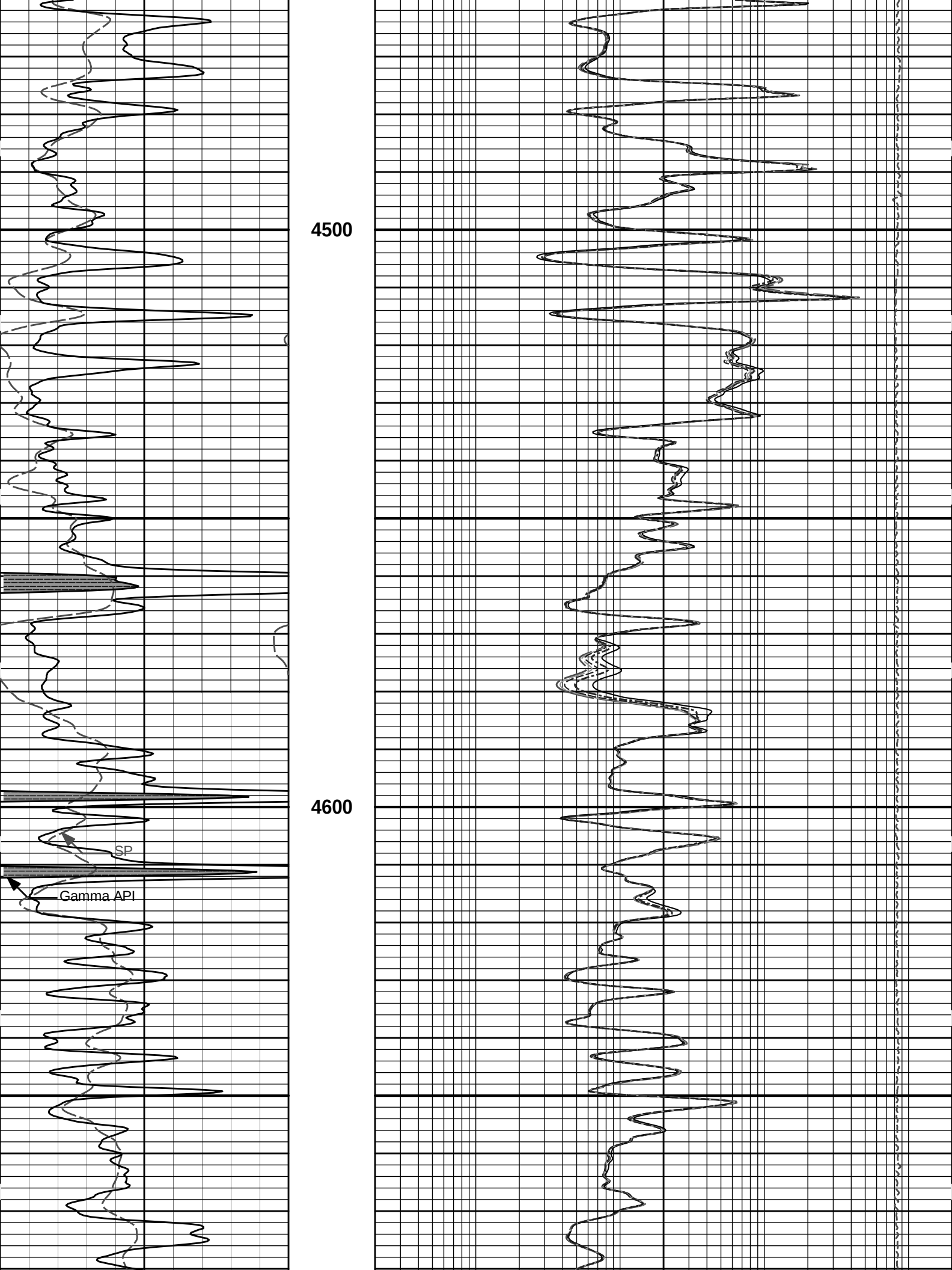

3400
SP
Gamma API
90in Resistivity 2ft Res
10in Resistivity 2ft Res
20in Resistivity 2ft Res
3500
30in Resistivity 2ft Res
60in Resistivity 2ft Res

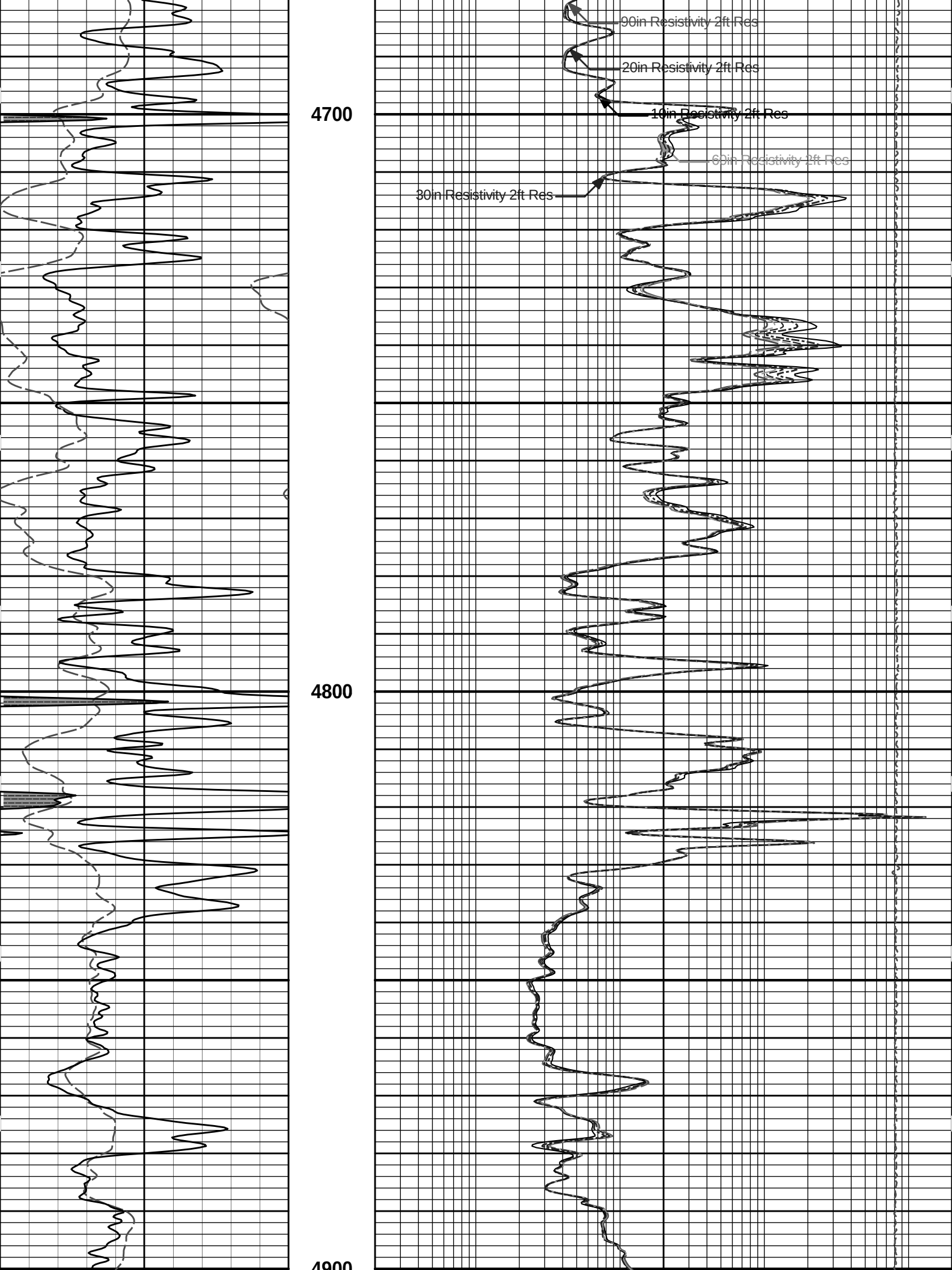

3600
3700
3800

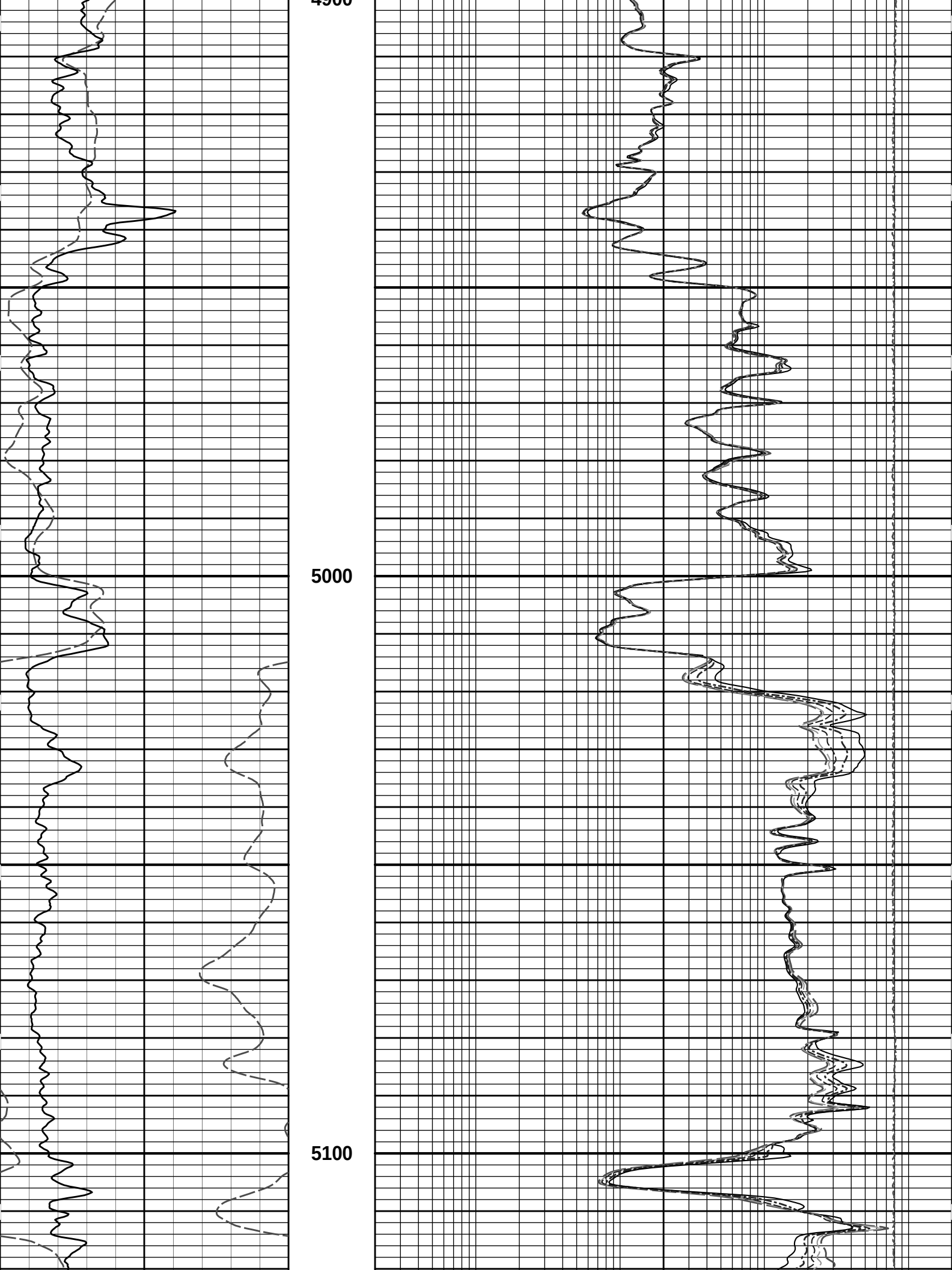

3900
4000
SP
Gamma API

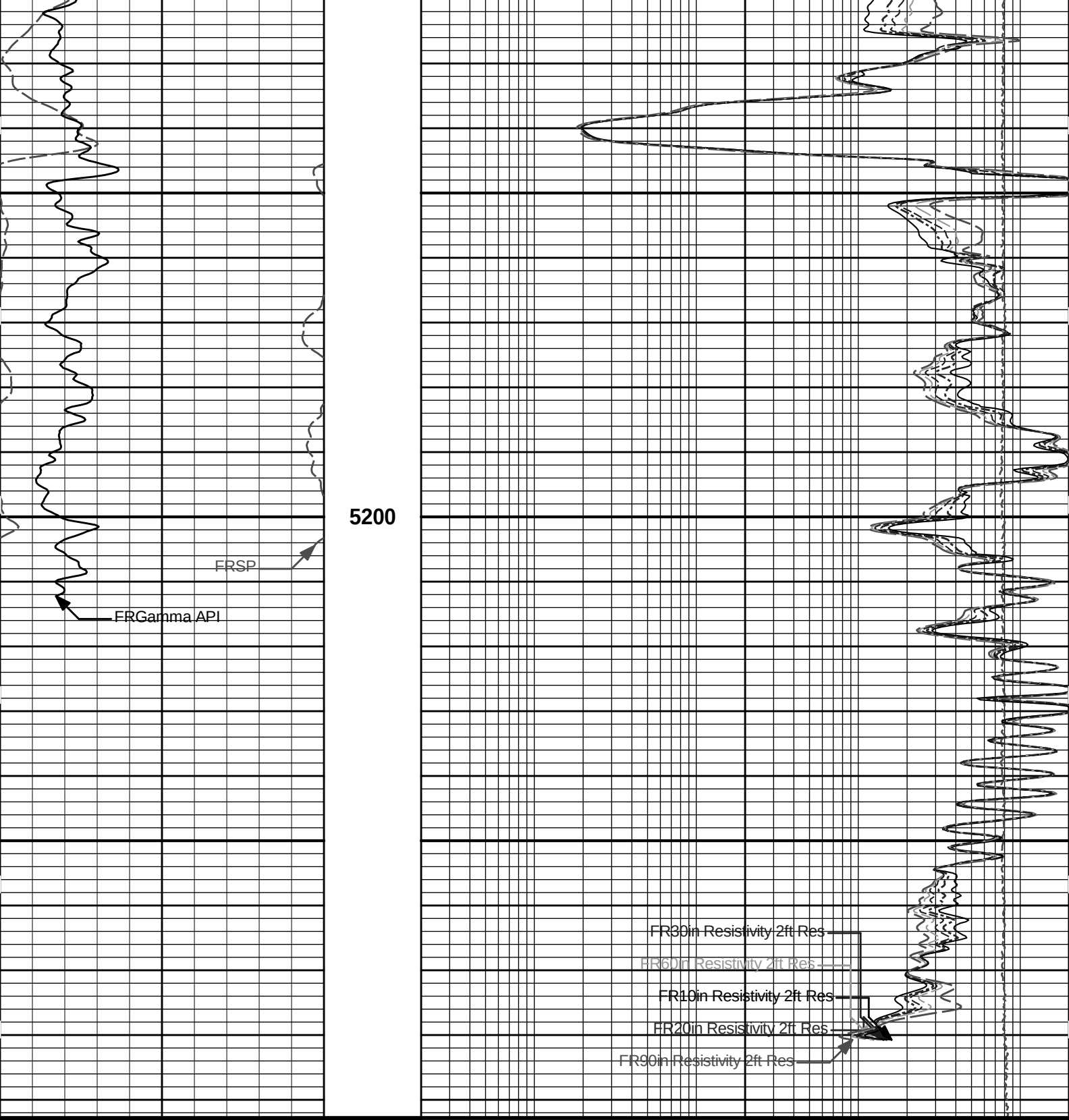

90in Resistivity 2ft Res
20in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
4100
4200


4300
4400


4500
4600
SP
Gamma API


90in Resistivity 2ft Res
20in Resistivity 2ft Res
10in Resistivity 2ft Res
60in Resistivity 2ft Res
30in Resistivity 2ft Res
4700
4800
4900


4900
5000
5100



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

0.2 90in Resistivity 2ft Res 2000

ohmm

HALLIBURTON

Plot Time: 09-Oct-13 11:48:36
Plot Range: 1620 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\CASING\
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_5_main_lib

5 INCH MAIN LOG

HALLIBURTON

Plot Time: 09-Oct-13 11:48:37
Plot Range: 4300 ft to 5294 ft
Data: DRUSSEL_E-4\Well Based\REPEAT\
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_5_repeat_lib

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

SHALE

0 Gamma API 150

api

SP

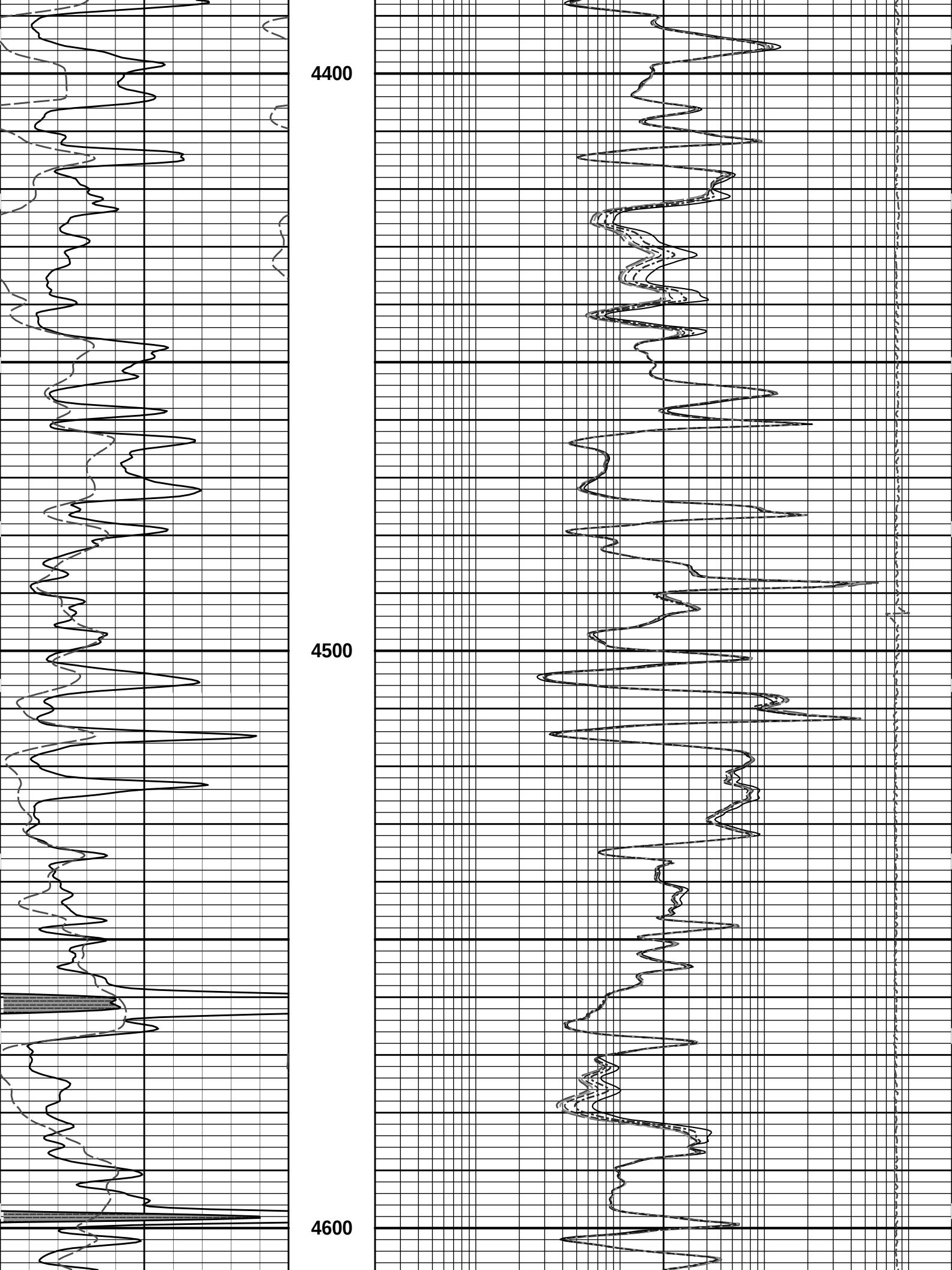
-]20[+

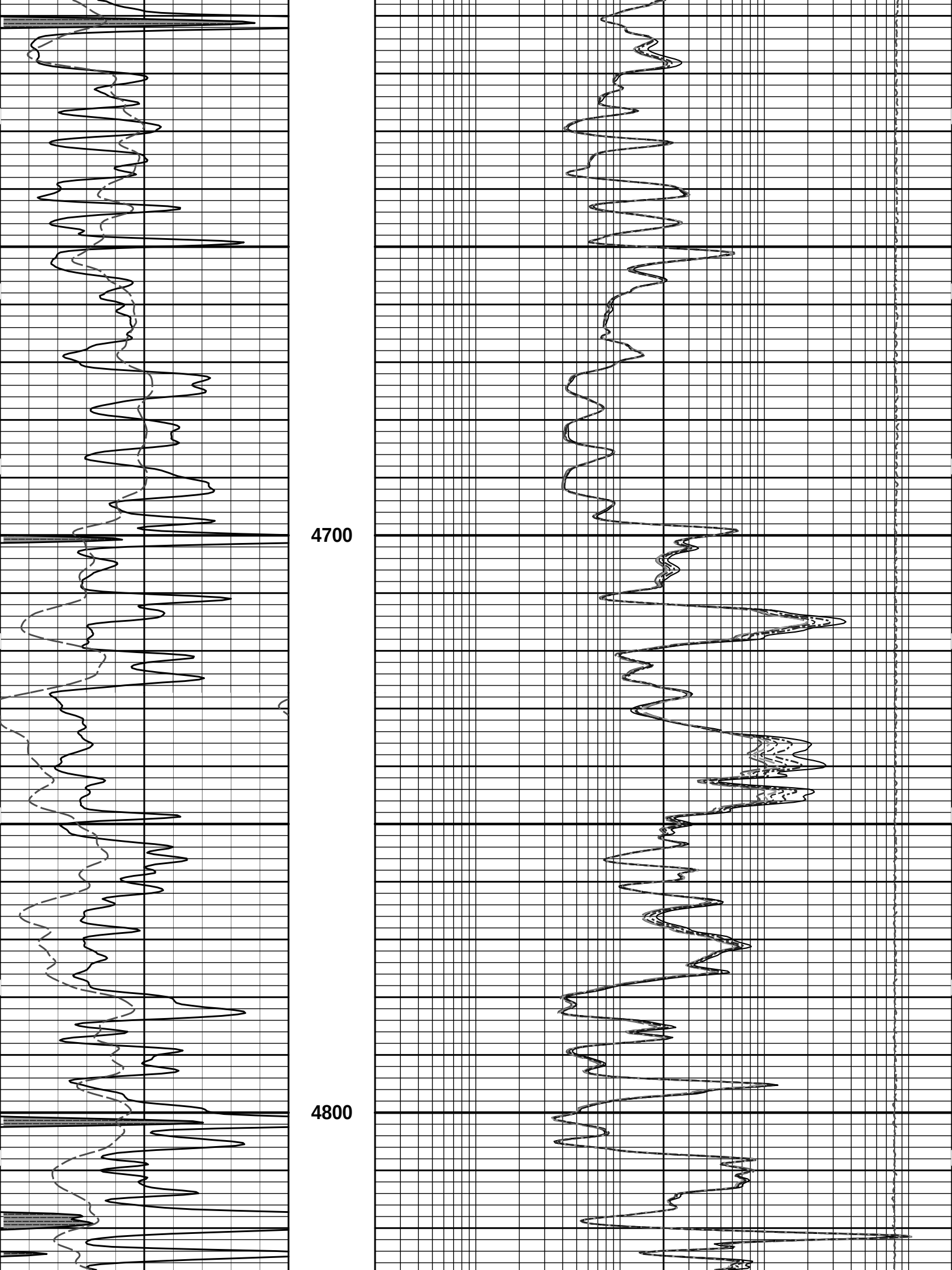
MD
1 : 240
ft

10K Tension 0

pounds

4300


4400
4500
4600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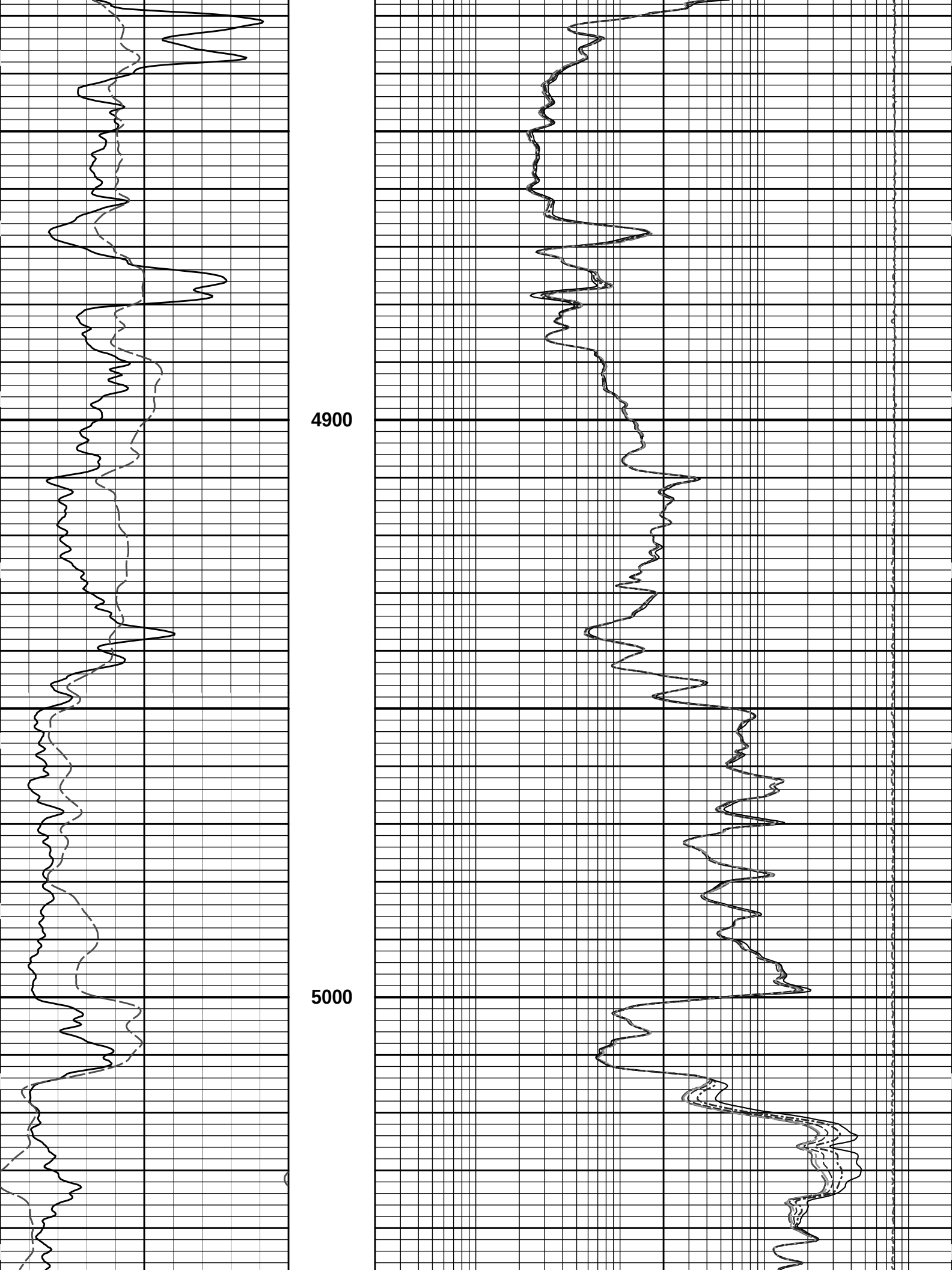
4900
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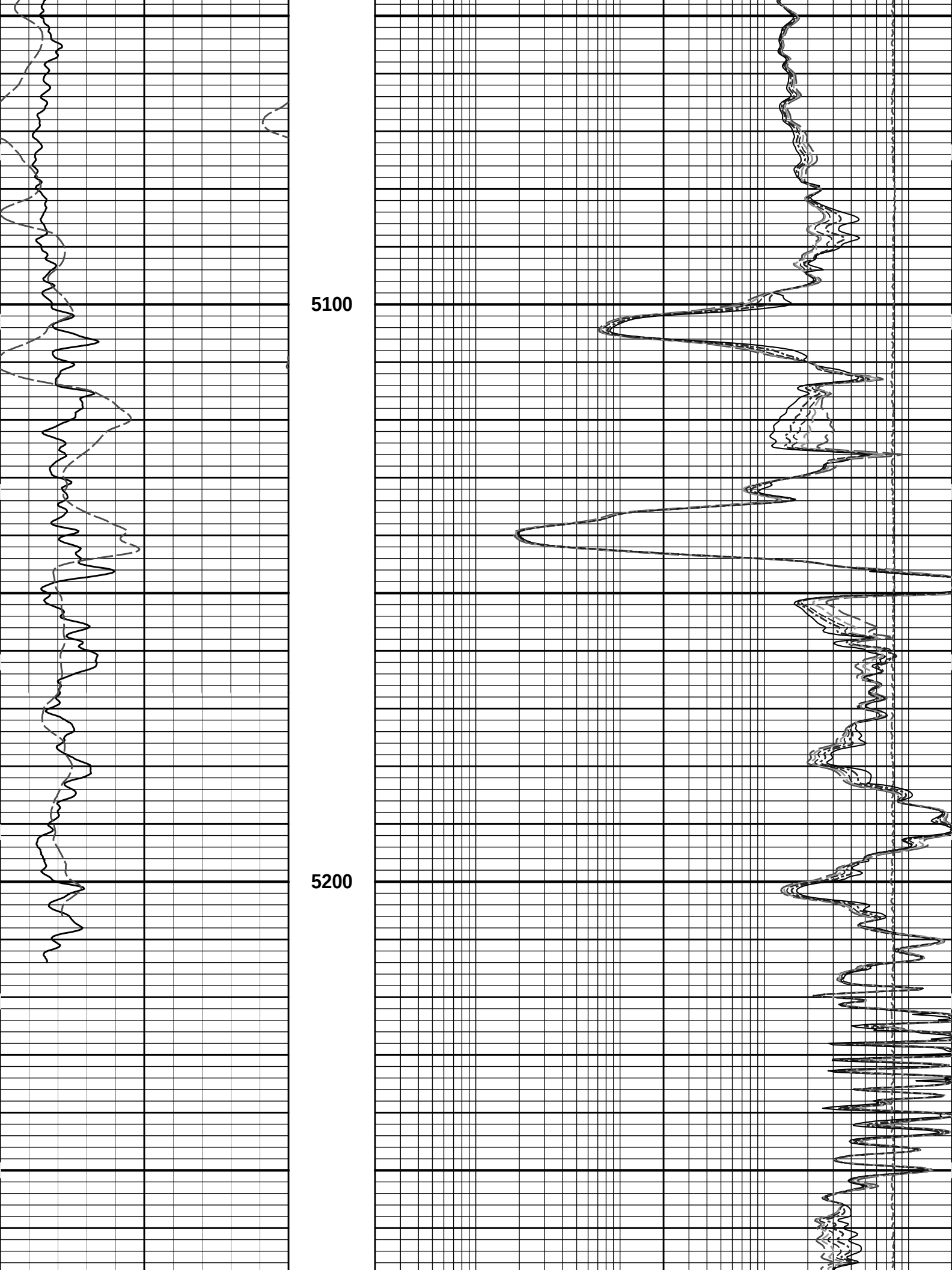
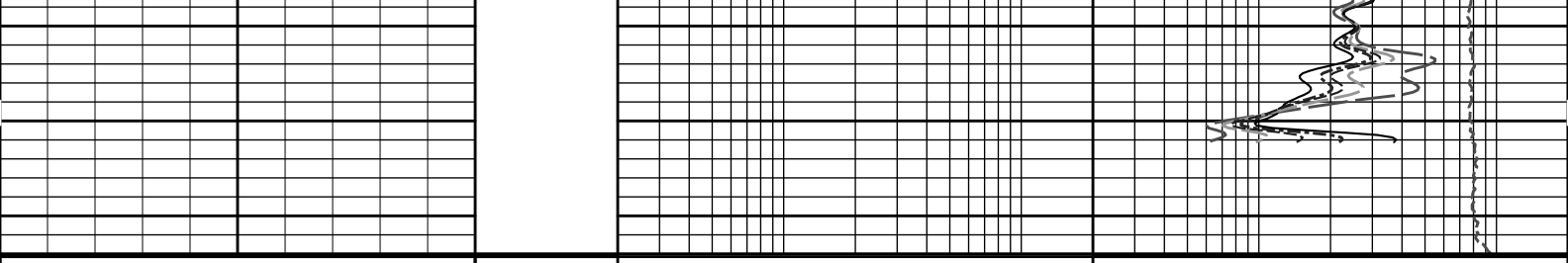

5100
5200



SP	MD		10K Tension 0
-]20[+	1 : 240 ft		pounds
0 Gamma API 150		0.2 10in Resistivity 2ft Res 2000	
api		ohmm	
SHALE		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	
		0.2 90in Resistivity 2ft Res 2000	
		ohmm	

HALLIBURTON

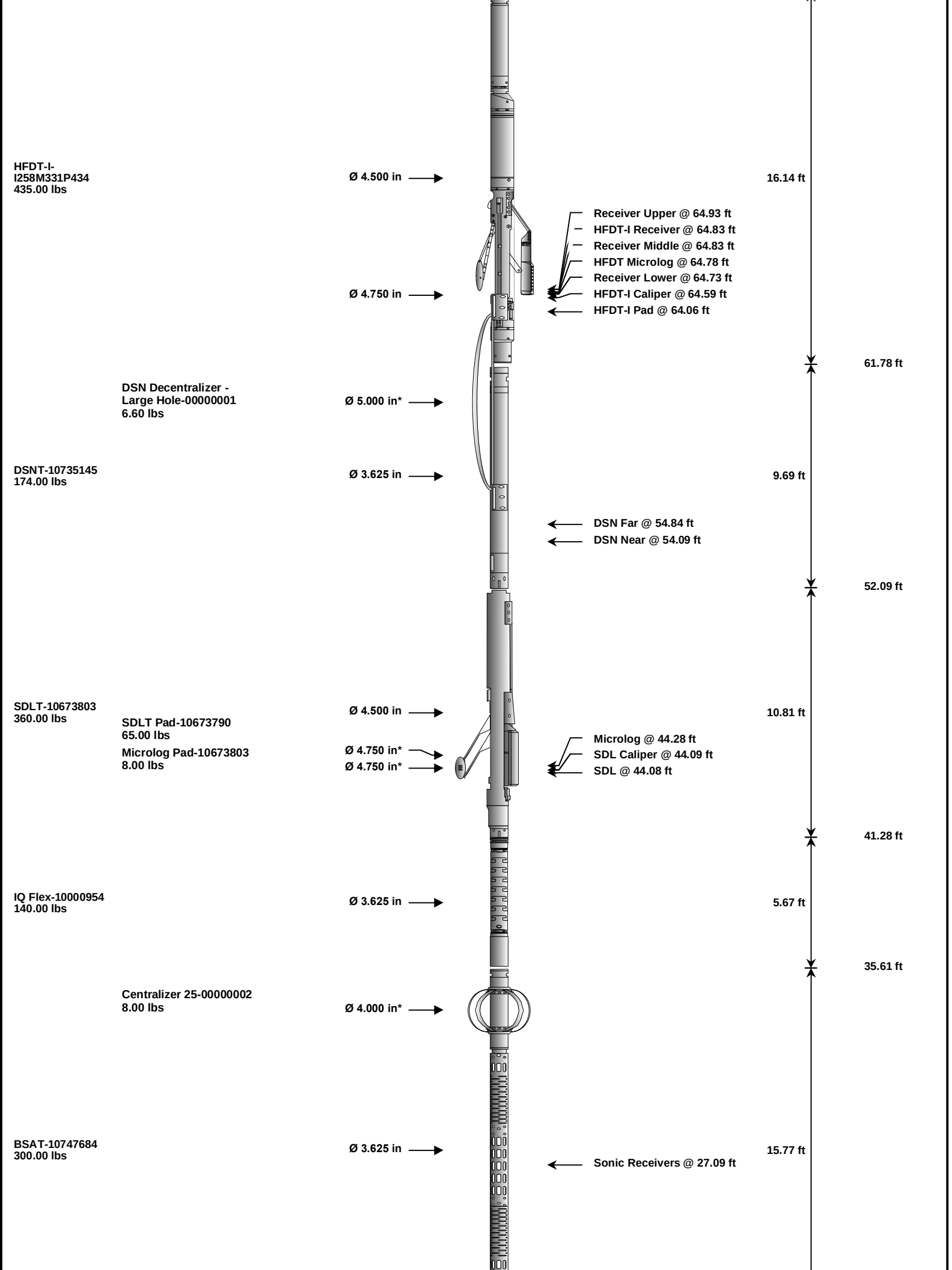
Plot Time: 09-Oct-13 11:48:39
Plot Range: 4300 ft to 5294 ft
Data: DRUSSEL_E-4\Well Based\REPEAT\
Plot File: \\-LOCAL-\DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\ACRT\ACRT_5_repeat_lib

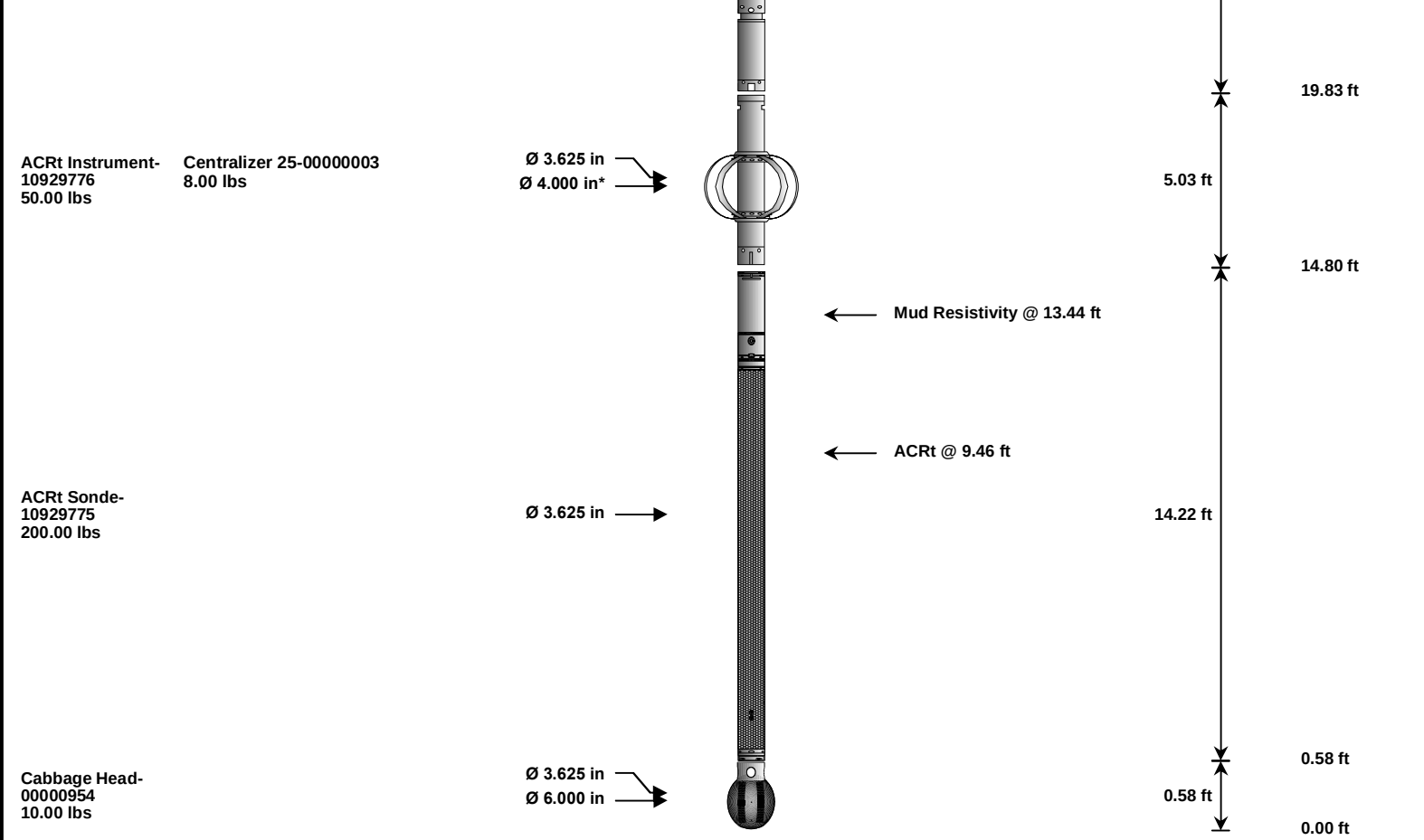
REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						96.42 ft
RWCH-11435227 135.00 lbs		Ø 3.625 in		Load Cell @ 92.74 ft BH Temperature @ 92.17 ft	6.25 ft	
						90.17 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in		SP @ 88.39 ft	3.74 ft	
						86.43 ft
GTET-10748374 165.00 lbs		Ø 3.625 in		GammaRay @ 80.37 ft	8.52 ft	
						77.91 ft


HFDT-I-
I258M331P434
435.00 lbs
Ø 4.500 in
16.14 ft
Receiver Upper @ 64.93 ft
HFDT-I Receiver @ 64.83 ft
Receiver Middle @ 64.83 ft
HFDT Microlog @ 64.78 ft
Receiver Lower @ 64.73 ft
HFDT-I Caliper @ 64.59 ft
HFDT-I Pad @ 64.06 ft
Ø 4.750 in
61.78 ft
DSN Decentralizer -
Large Hole-00000001
6.60 lbs
Ø 5.000 in*
DSNT-10735145
174.00 lbs
Ø 3.625 in
9.69 ft
DSN Far @ 54.84 ft
DSN Near @ 54.09 ft
52.09 ft
SDLT-10673803
360.00 lbs
Ø 4.500 in
10.81 ft
SDLT Pad-10673790
65.00 lbs
Microlog Pad-10673803
8.00 lbs
Ø 4.750 in*
Ø 4.750 in*
Microlog @ 44.28 ft
SDL Caliper @ 44.09 ft
SDL @ 44.08 ft
41.28 ft
IQ Flex-10000954
140.00 lbs
Ø 3.625 in
5.67 ft
35.61 ft
Centralizer 25-00000002
8.00 lbs
Ø 4.000 in*
BSAT-10747684
300.00 lbs
Ø 3.625 in
15.77 ft
Sonic Receivers @ 27.09 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11435227	135.00	6.25		90.17	300.00
SP	SP Sub	12345678	60.00	3.74		86.43	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52		77.91	60.00
HFDT	High Frequency Dielectric Tool	I258M331P434	435.00	16.14		61.78	30.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69		52.09	60.00
DCNT	DSN Decentralizer Large Hole	00000001	6.60	9.42	*	55.42	300.00
SDLT	Spectral Density Tool	10673803	360.00	10.81		41.28	60.00
MICP	Microlog Pad	10673803	8.00	1.00	*	43.78	60.00
SDLP	Density Insite Pad	10673790	65.00	2.55	*	43.49	60.00
IQF	IQ Flex tool	10000954	140.00	5.67		35.61	300.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77		19.83	60.00
OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	*	32.75	300.00
ACRt	Array Compensated True Resistivity Instrument Section	10929776	50.00	5.03		14.80	300.00
OBCEN	Centralizer - 25 in. Overbody	00000003	8.00	2.08	*	16.12	300.00
ACRt	Array Compensated True Resistivity Sonde Section	10929775	200.00	14.22		0.58	300.00
CBHD	Cabbage Head	00000954	10.00	0.58		0.00	300.00
Total			**2,124.60**	**96.42**			

* Not included in Total Length and Length Accumulation.

Data: DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\IDLE **Date: 09-Oct-13 08:49:41**

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CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 10748374**	**Reference Calibration Date:**	**02-Aug-13 14:20:06**
Engineer:	**THOMAS HYDE**	**Calibration Date:**	**03-Sep-13 10:36:47**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Measurement	Measured	Calibrated	Units
Background	44.2	44.4	api
Background + Calibrator	275.0	276.4	api
Calibrator	230.8	232.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 10748374 **Reference Calibration Date:** 03-Sep-13 10:36:47

Engineer: J. BOLLOM **Calibration Date:** 07-Oct-13 07:57:36

Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Field Verification	Shop	Field	Units
Background	44.4	35.1	api
Background + Calibrator	276.4	270.6	api
Calibrator	232.0	235.5	api

Shop	Field	Difference	Tolerance
232.0	235.5	-3.5	+/- 9.00

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 10929775 **Reference Calibration Date:** 21-Jun-13 11:07:27

Engineer: J. BOLLOM **Calibration Date:** 23-Aug-13 09:44:09

Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Host Tool Name: ACRt Instrument - 10929776

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.02	1.05	0.95	1.02	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.03	1.05	0.95	1.03	1.05	0.95	1.03	1.05
A3 (29")	0.95	1.03	1.05	0.95	1.04	1.05	0.95	1.04	1.05
A4 (17")	0.95	1.02	1.05	0.95	1.02	1.05	0.95	1.02	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.03	1.05	0.95	1.03	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.04	1.05	0.95	1.04	1.05

TYPICAL SONDE OFFSET RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-1.90	2	-6	-4.49	-2	-8	-4.55	-2
A2 (50")	-7	-2.93	0	-7	-4.28	0	-7	-4.35	0
A3 (29")	-27	-15.42	-9	-9	-4.83	-3	-7	-2.94	-1
A4 (17")	-180	-105.16	-60	-45	-33.00	-15	-39	-25.81	-13
A5 (10")	N/A	N/A	N/A	-150	-120.62	-50	-80	-56.02	-10
A6 (6")	N/A	N/A	N/A	175	287.69	525	90	143.22	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.87	1.2

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.05	0.09	1.25

12K	0.6	0.87	1.3	Mud Cell	0.95	0.99	1.05
36K	1.0	1.19	2.0				
72K	1.0	1.46	2.0				

PASS/FAIL SUMMARY	
GAIN RANGE CHK	PASS
SONDE OFFSET RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

TOOL OK TO LOG

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-10748374						
Gamma Ray Calibrator	232.0	235.5	----------	-3.5	+/- 9.00	api
ACRt Sonde-10929775						
Mud Cell	0.99	----------	----------	0.00	----------	ohm-m

Data: DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\001 09-Oct-13 08:57 Dn @1637.5f **Date: 09-Oct-13 10:21:22**

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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	10.000	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	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	5293.00	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	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm

Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
HFDT-I	HFOK	Do HFDT Calculations?	Yes	
HFDT-I	RMF	Mud Filtrate Resistivity	0.70	ohmm
HFDT-I	RMFT	Temperature of Mud Filtrate	132.00	degF
HFDT-I	MDIL	Matrix Dielectric Constant	8.000	
HFDT-I	HRTC	HFDT Insite Temperature Correction Source	PADTEMP1	
HFDT-I	CLOK	Process Caliper Outputs?	Yes	
HFDT-I	SAO	SDL Backup Arm Offset	0.00	in
HFDT-I	PAO	Pad Arm Offset	0.00	in
HFDT-I	MLOK	Process MicroLog Outputs?	Yes	
HFDT-I	MINO	Microlog Lateral Offset	0.00	ohmm
HFDT-I	MNOO	Microlog Normal Offset	0.00	ohmm
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
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 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	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

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INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
	Depth Panel			
TENS	Tension	0.00	NO	
	RWCH			
DHTN	DownholeTension	0.00	BLK	0.000
	SP Sub			
PLTC	Plot Control Mask	88.39	NO	
SP	Spontaneous Potential	88.39	BLK	1.250
SPR	Raw Spontaneous Potential	88.39	NO	
SPO	Spontaneous Potential Offset	88.39	NO	
	GTET			
TPUL	Tension Pull	80.37	NO	
GR	Natural Gamma Ray API	80.37	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	80.37	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	80.37	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
	HFDT-I			
TPUL	Tension Pull	64.83	NO	
IUXU	HFDT Insite In-phase Component of Upper Receiver - TXUon TXLoff	64.83	NO	
QUXU	HFDT Insite Quadrture Component of Upper Receiver - TXUon TXLof	64.83	NO	
IMXU	HFDT Insite In-phase Component of Middle Receiver TXUon TXLoff	64.83	NO	
QMXU	HFDT Insite Quadrture Component of Middle Receiver TXUon TXLof	64.83	NO	
ILXU	HFDT Insite In-phase Component of Lower Receiver TXUon TXLoff	64.83	NO	
QLXU	HFDT Insite Quadrture Component of Lower Receiver TXUon TXLoff	64.83	NO	
IUXL	HFDT Insite In-phase Component of Upper Receiver TXUoff TXLon	64.83	NO	
QUXL	HFDT Insite Quadrture Component of Upper Receiver TXUoff TXLon	64.83	NO	
IMXL	HFDT Insite In-phase Component of Middle Receiver TXUoff TXLon	64.83	NO	
QMXL	HFDT Insite Quadrture Component of Middle Receiver TXUoff TXLo	64.83	NO	
ILXL	HFDT Insite In-phase Component of Lower Receiver TXUoff TXLon	64.83	NO	
QLXL	HFDT Insite Quadrture Component of Lower Receiver TXUoff TXLon	64.83	NO	
TEX1	HFDTInsite External Pad Temperature Measurement 1	64.06	NO	
TEX2	HFDTInsite External Pad Temperature Measurement 2	64.06	NO	
STAT	HFDT Insite Pad Status Word	64.83	NO	
TPUL	Tension Pull	64.59	NO	
PCAL	Pad Caliper	64.59	TRI	0.250
ACAL	Arm Caliper	64.59	TRI	0.250
TPUL	Tension Pull	64.78	NO	

MINV	Microlog Lateral	64.78	BLK	0.750
MNOR	Microlog Normal	64.78	BLK	0.750
	DSNT			
TPUL	Tension Pull	53.99	NO	
RNDS	Near Detector Telemetry Counts	54.09	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.84	TRI	0.583
DNTT	DSN Tool Temperature	54.09	NO	
DSNS	DSN Tool Status	53.99	NO	
ERND	Near Detector Telemetry Counts EVR	54.09	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.84	BLK	0.000
ENTM	DSN Tool Temperature EVR	54.09	NO	
	SDLT			
TPUL	Tension Pull	44.09	NO	
PCAL	Pad Caliper	44.09	TRI	0.250
ACAL	Arm Caliper	44.09	TRI	0.250
	BSAT			
TPUL	Tension Pull	27.09	NO	
STAT	Status	27.09	NO	
DLYT	Delay Time	27.09	NO	
SI	Sample Interval	27.09	NO	
TXRX	Raw Telemetry 10 Receivers	27.09	NO	
FRMC	Tool Frame Count	27.09	NO	
GMOD	Gain processing mode	19.83	NO	
	ACRt Sonde			
TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000

F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	
	SDLT Pad			
TPUL	Tension Pull	44.08	NO	
NAB	Near Above	43.90	BLK	0.920
NHI	Near Cesium High	43.90	BLK	0.920
NLO	Near Cesium Low	43.90	BLK	0.920
NVA	Near Valley	43.90	BLK	0.920
NBA	Near Barite	43.90	BLK	0.920
NDE	Near Density	43.90	BLK	0.920
NPK	Near Peak	43.90	BLK	0.920
NLI	Near Lithology	43.90	BLK	0.920
NBAU	Near Barite Unfiltered	43.90	BLK	0.250
NLIU	Near Lithology Unfiltered	43.90	BLK	0.250
FAB	Far Above	44.26	BLK	0.250
FHI	Far Cesium High	44.26	BLK	0.250
FLO	Far Cesium Low	44.26	BLK	0.250
FVA	Far Valley	44.26	BLK	0.250
FBA	Far Barite	44.26	BLK	0.250
FDE	Far Density	44.26	BLK	0.250
FPK	Far Peak	44.26	BLK	0.250
FLI	Far Lithology	44.26	BLK	0.250
PTMP	Pad Temperature	44.09	BLK	0.920
NHV	Near Detector High Voltage	43.49	NO	
FHV	Far Detector High Voltage	43.49	NO	
ITMP	Instrument Temperature	43.49	NO	
DDHV	Detector High Voltage	43.49	NO	
	Microlog Pad			
TPUL	Tension Pull	44.28	NO	
MINV	Microlog Lateral	44.28	BLK	0.750
MNOR	Microlog Normal	44.28	BLK	0.750

Data: DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\IDLE Date: 09-Oct-13 08:50:08

COMPANY	**OXY USA INC.**		
WELL	**DRUSSEL E-4**		
FIELD	**HUGOTON GAS AREA**		
COUNTY	**FINNEY**	STATE	**KANSAS**

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ARRAY COMPENSATED TRUE RESISTIVITY LOG

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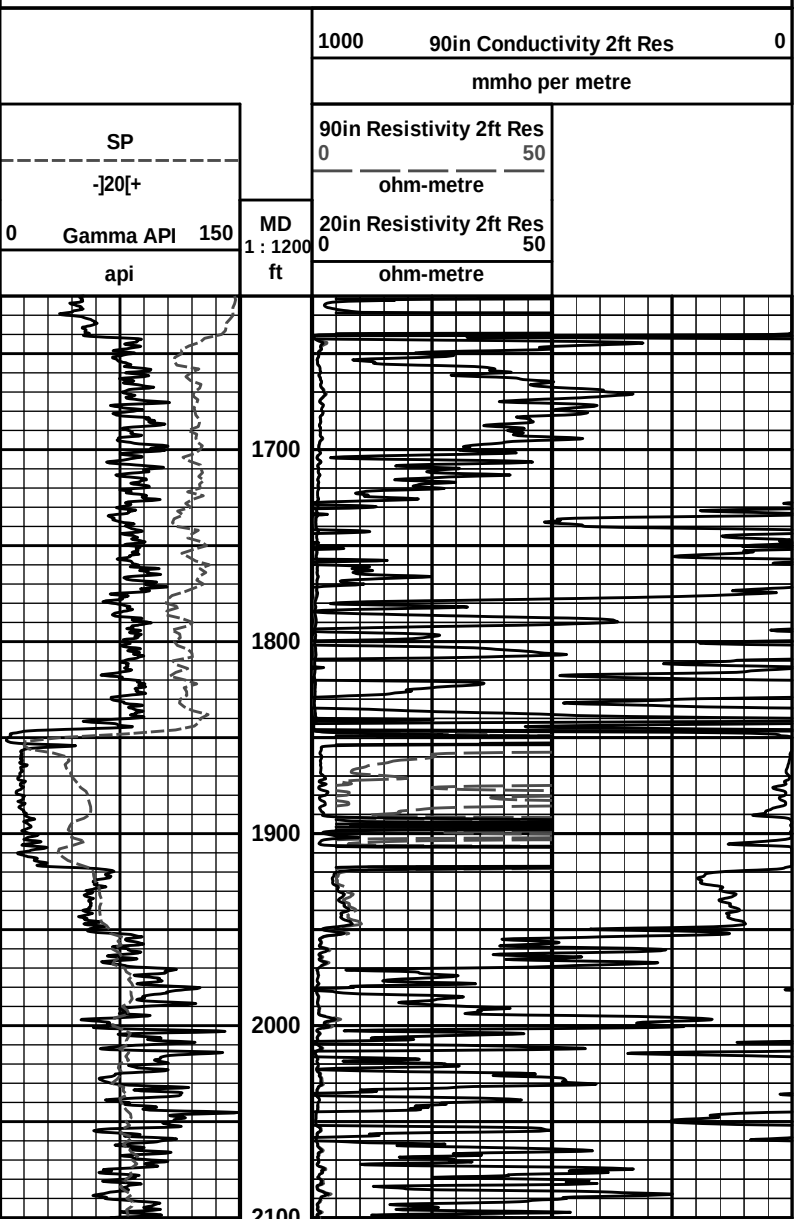
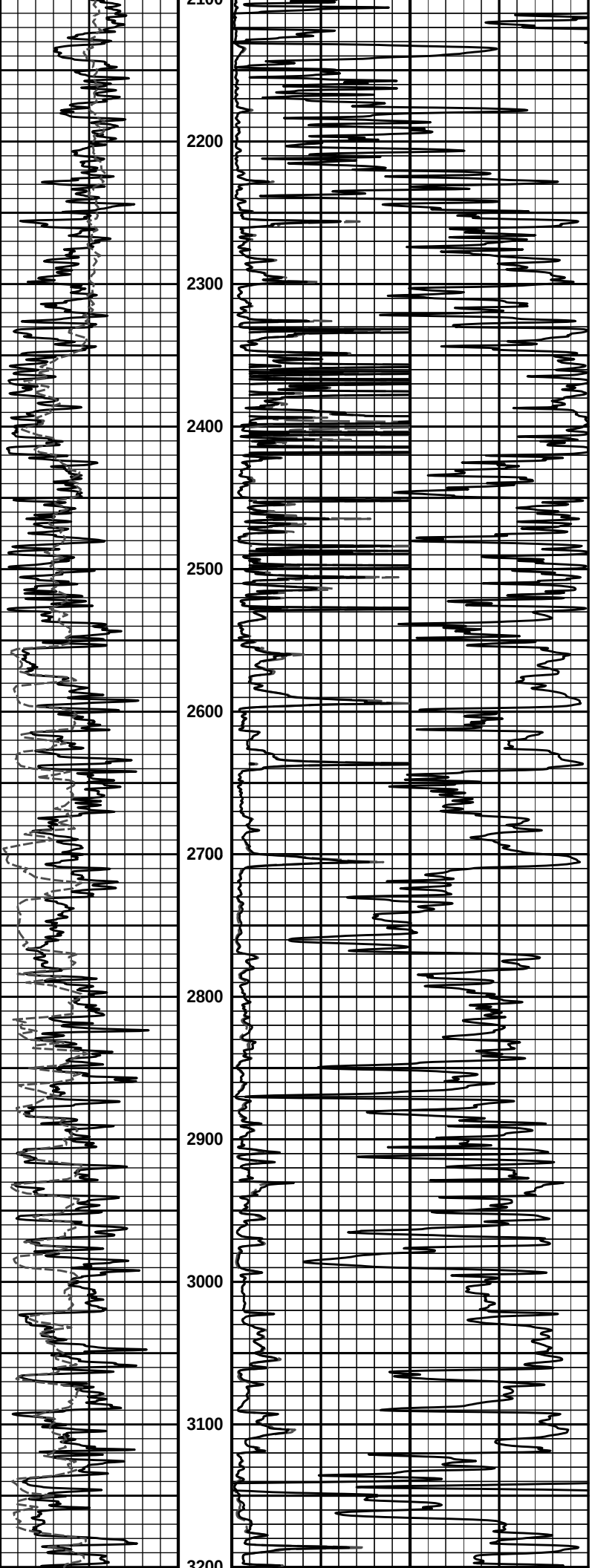
Plot Time: 09-Oct-13 11:48:40
Plot Range: 1620 ft to 5280.75 ft
Data: DRUSSEL_E-4\Well Based\CASING
Plot File: \\-LOCAL-\DRUSSEL_E-4\...\ACRT_1_lib

1 INCH MAIN LOG

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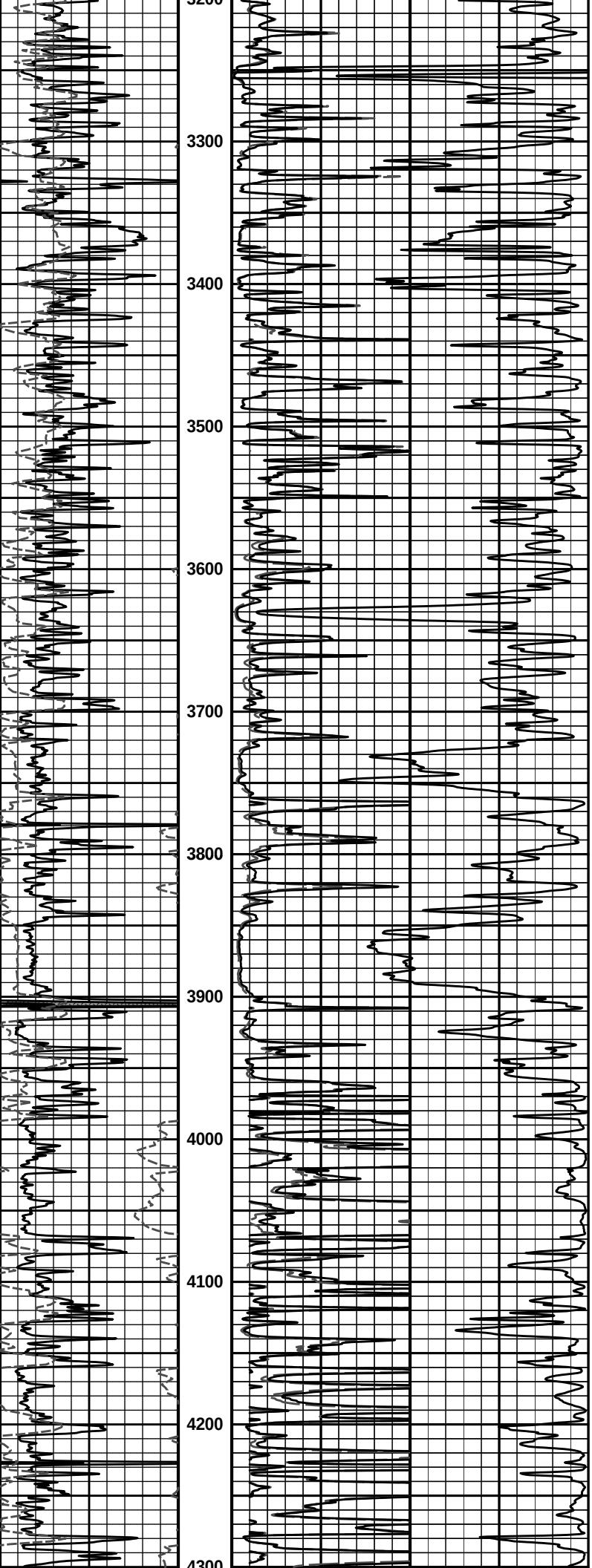
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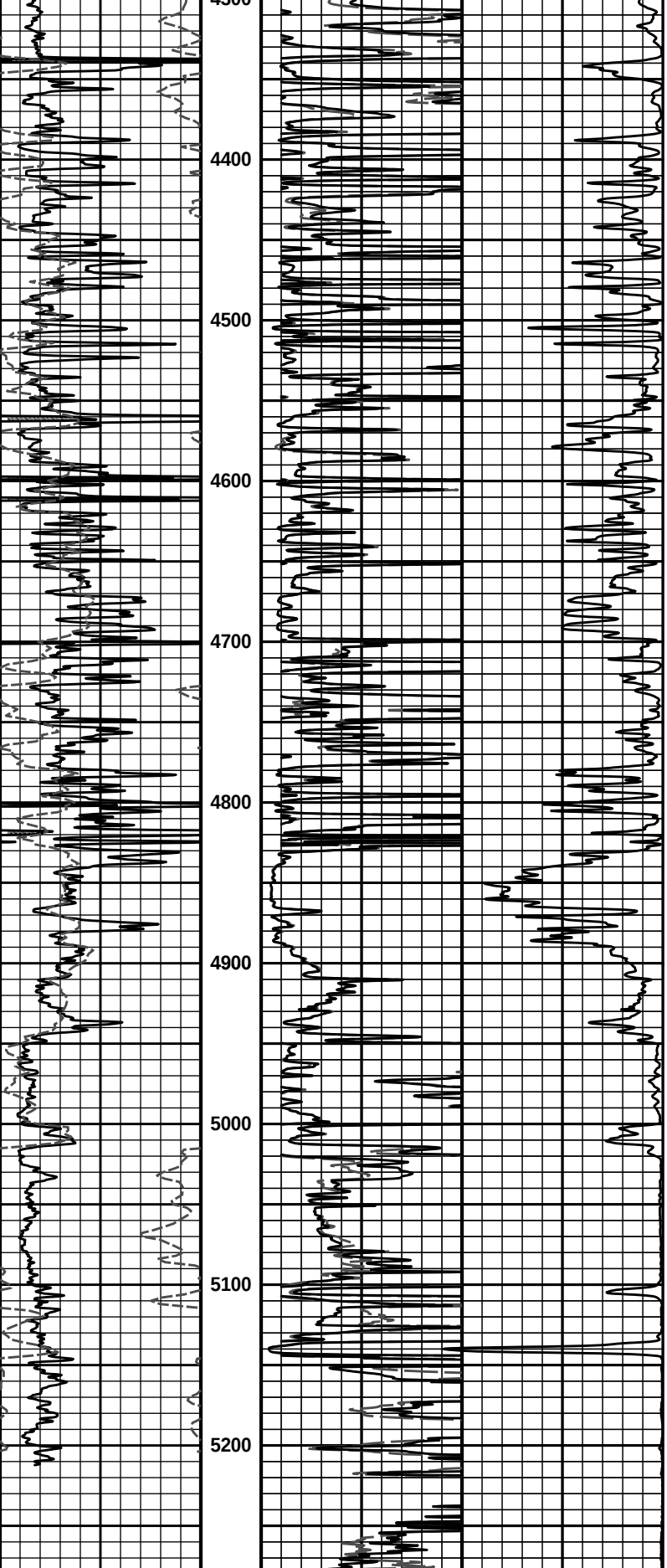

0 Gamma API 150	MD 1 : 1200 ft	20in Resistivity 2ft Res 0 50
api		ohm-metre
SP		90in Resistivity 2ft Res 0 50
-]20[+		ohm-metre
1000 90in Conductivity 2ft Res 0		

1000	90in Conductivity 2ft Res	0
	mmho per metre	

HALLIBURTON

Plot Time: 09-Oct-13 11:48:44
Plot Range: 1620 ft to 5280.75 ft
Data: DRUSSEL_E-4\Well Based\CASING
Plot File: \\-LOCAL-\DRUSSEL_E-4\...\ACRT_1_lib

1 INCH MAIN LOG