

# HALLIBURTON

## ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY	<b>SANDRIDGE ENERGY</b>		
WELL	<b>ALBERTA MARIE 3119 1-23</b>		
FIELD	<b>SILVER SPUR</b>		
COUNTY	<b>COMANCHE</b>		
STATE	<b>KANSAS</b>		
COMPANY	<b>SANDRIDGE ENERGY</b>	API No.	15-033-21653
WELL	<b>ALBERTA MARIE 3119 1-23</b>	Location	351' FNL 363' FWL
FIELD	<b>SILVER SPUR</b>		
COUNTY	<b>COMANCHE</b>		
STATE	<b>KANSAS</b>		
SECT.	23	TWP.	31S
RGE.			19W
ELEV. (K.B.)			2186.0 ft
ELEV. (D.F.)			2185.0 ft
ELEV. (G.L.)			2172.0 ft
PERM. DATUM	GL		
LOG MEASURED FROM	KB		14.0 ft above perm. Datum
DRILLING MEASURED FROM	KB		

DATE	16-Jul-12		
RUN NO.	ONE		
DEPTH - DRILLER	6110.00 ft		
DEPTH - LOGGER	6096.0 ft		
BOTTOM - LOGGED INTERVAL	6087.0 ft		
TOP - LOGGED INTERVAL	825.0 ft		
CASING - DRILLER	9.625 in @ 833.0 ft		
CASING - LOGGER	825.0 ft		
BIT SIZE	8.750 in		@
TYPE FLUID IN HOLE	WATER BASED MUD		
DENSITY	9.1 ppg	54.00	s/qt
PH	10.00 pH	5.8	cp/m
SOURCE OF SAMPLE	MUD PIT		
Rm @ Meas. Temperature	1.000 ohmm @ 82.00 degF		@
Rmf @ Meas. Temperature	0.75 ohmm @ 76.00 degF		@
Rmc @ Meas. Temperature	1.000 ohmm @ 76.00 degF		@
SOURCE Rmf	MEAS		MEAS
Rm @ BHT	0.36 ohmm @ 144.0 degF		@
TIME SINCE CIRCULATION	11.5 hr		
TIME ON BOTTOM	16-Jul-12 23:32		
MAX. REC. TEMPERATURE	144.0 degF @ 6096.0 ft		@
EQUIPMENT	10546696		LIBERAL
RECORDED BY	C. HAVERKAMP		
WITNESSED BY	K. GENTRY		

Fold here

Service Ticket No.: 9669057		API Serial No.: 15-033-21653		PGM Version: WL INSITE R3.6.0 (Build 3)			
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE			RESISTIVITY SCALE CHANGES				
Date	Sample No.		Type Log	Depth	Scale Up Hole	Scale Down Hole	
Depth-Driller							
Type Fluid in Hole							
Density	Viscosity						
Ph	Fluid Loss						
Source of Sample			RESISTIVITY EQUIPMENT DATA				
Rm @ Meas. Temp	@	@	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Rmf @ Meas. Temp.	@	@	ONE	ACRT	N/A	1.5" S.O.	N/A
Rmc @ Meas. Temp.	@	@		I5059_S8385			
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.	11039640	Serial No.		Serial No.		Serial No.	
Model No.	CSNG	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	10"	LSA [Y/N]		Serial No.		Serial No.	
Distance to Source	10'	FWDA [Y/N]		Strength		Strength	
LOGGING DATA							
GENERAL		GAMMA		ACOUSTIC		NEUTRON	

Run No.	GENERAL		Speed ft/min	GAMMA		ACOUSTIC		Matrix	DENSITY		NEUTRON	
	Depth			Scale		Scale			Matrix	Scale		Matrix
	From	To		L	R	L	R			L	R	
ONE	6096	825	REC	0	150							

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: SP-GTET-CSNG-DSNT-SDLT-WSTT-XRMI-ACRT RAN IN COMBINATION.

ANNULAR HOLE VOLUME CALCULATED FOR 7 INCH CASING.

CHLORIDES REPORTED AT 2000 MG/L.

LCM REPORTED AT 2 LB/BBL.

TOOL SURVEYS NOT PERFORMED PER CUSTOMER REQUEST.

YOUR CREW: K. KING, V. JAIME

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

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HALLIBURTON



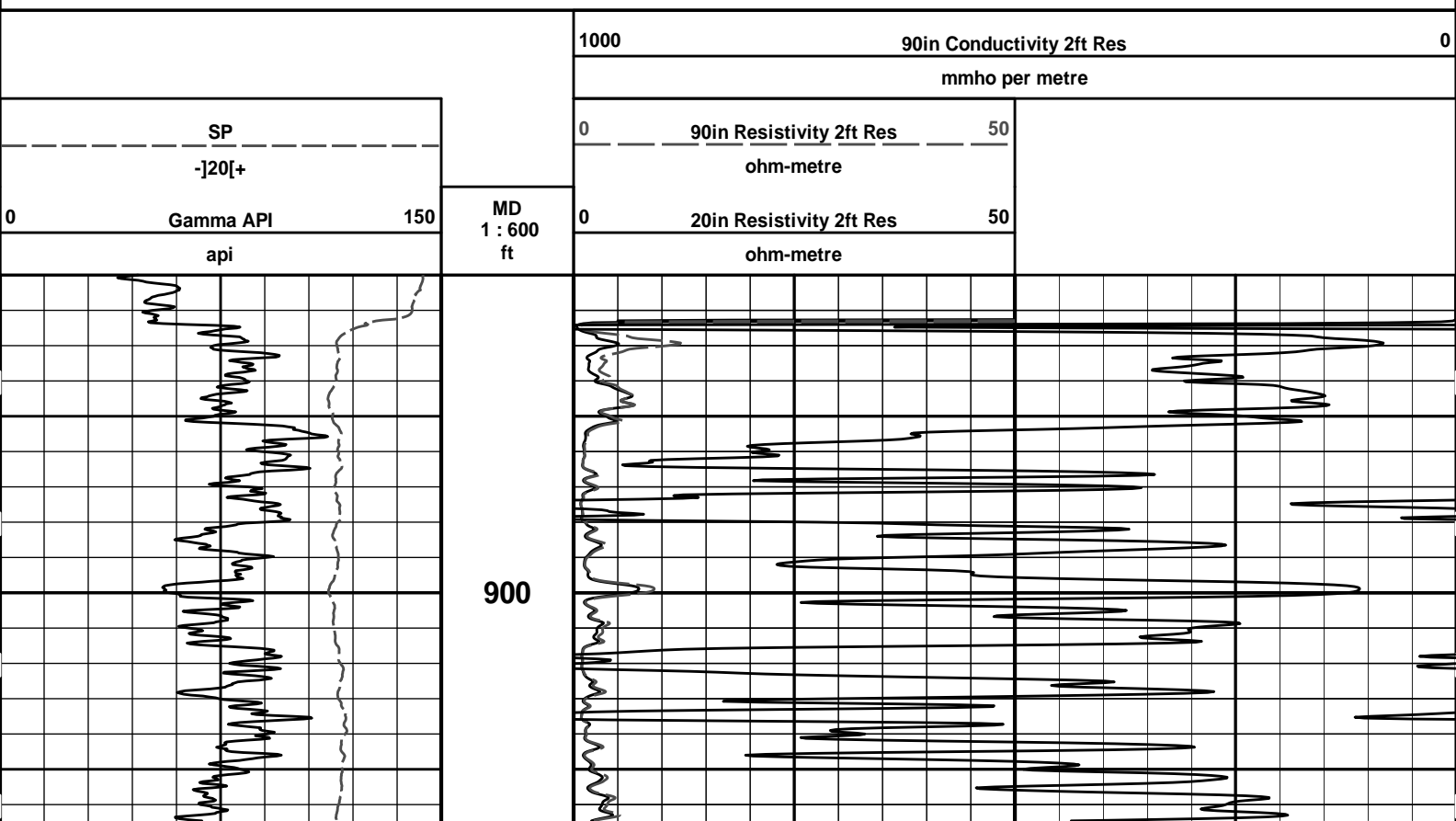
Plot Time: 17-Jul-12 04:58:36

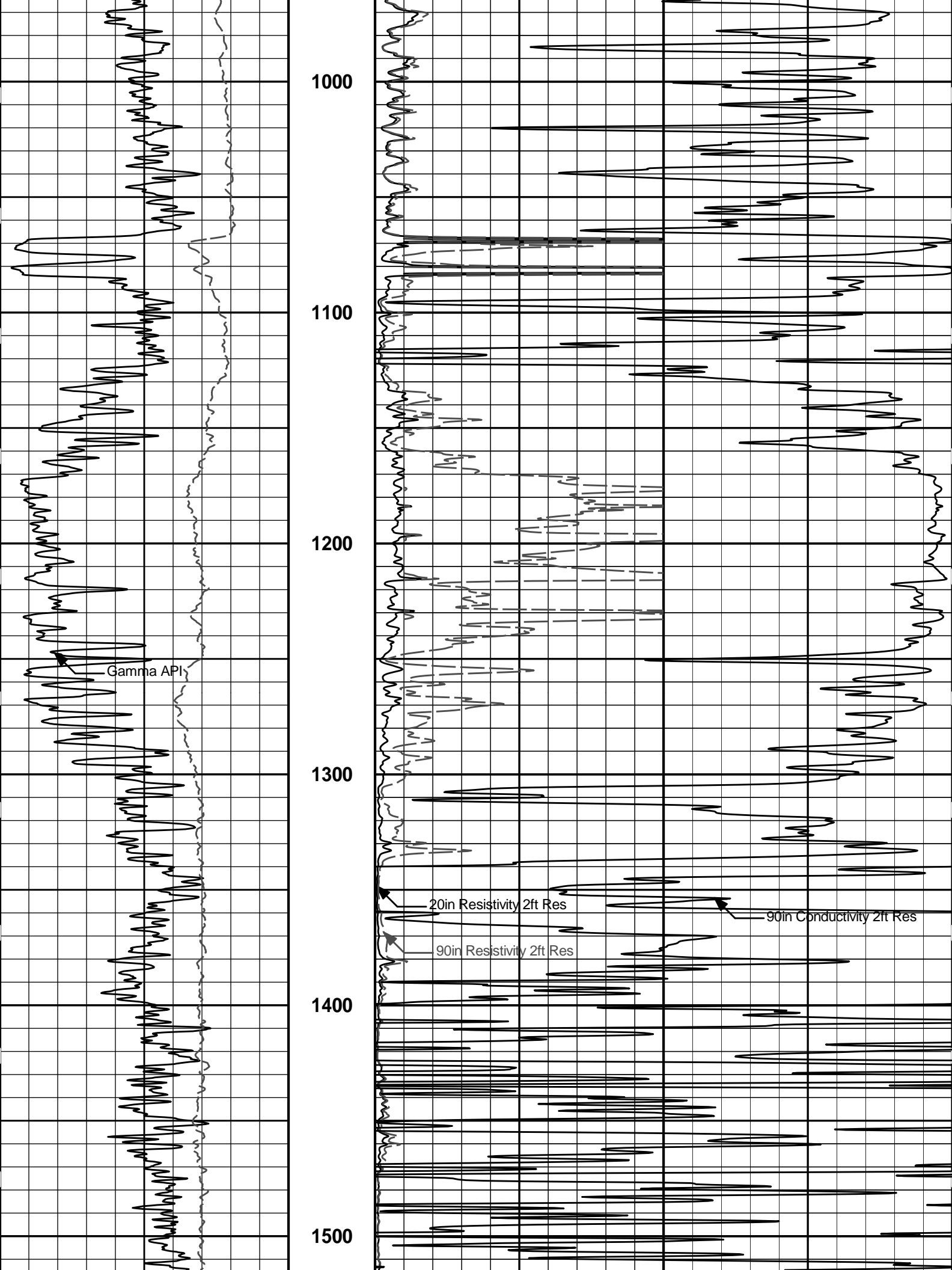
Plot Range: 810 ft to 6098.42 ft

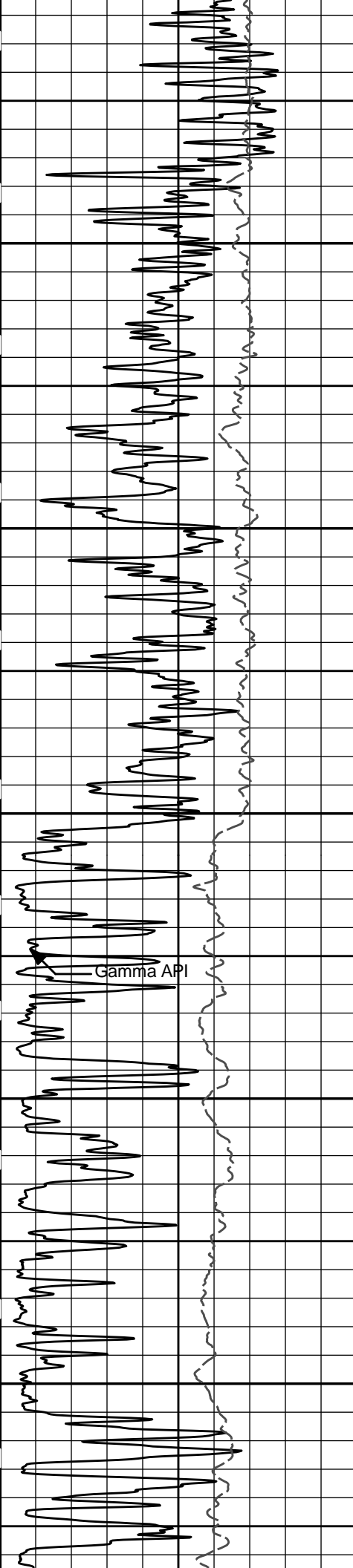
Data: ALBERTA MARIE\_1\Well Based\*\

Plot File: \\-LOCAL-ALBERTA\_MARIE\_1\0001 SP-GTET-DSN-SDL-WSTT-XRMI-ACRT-CHACRT\ACRT\_2\_lib

## 2 INCH MAIN LOG







1600

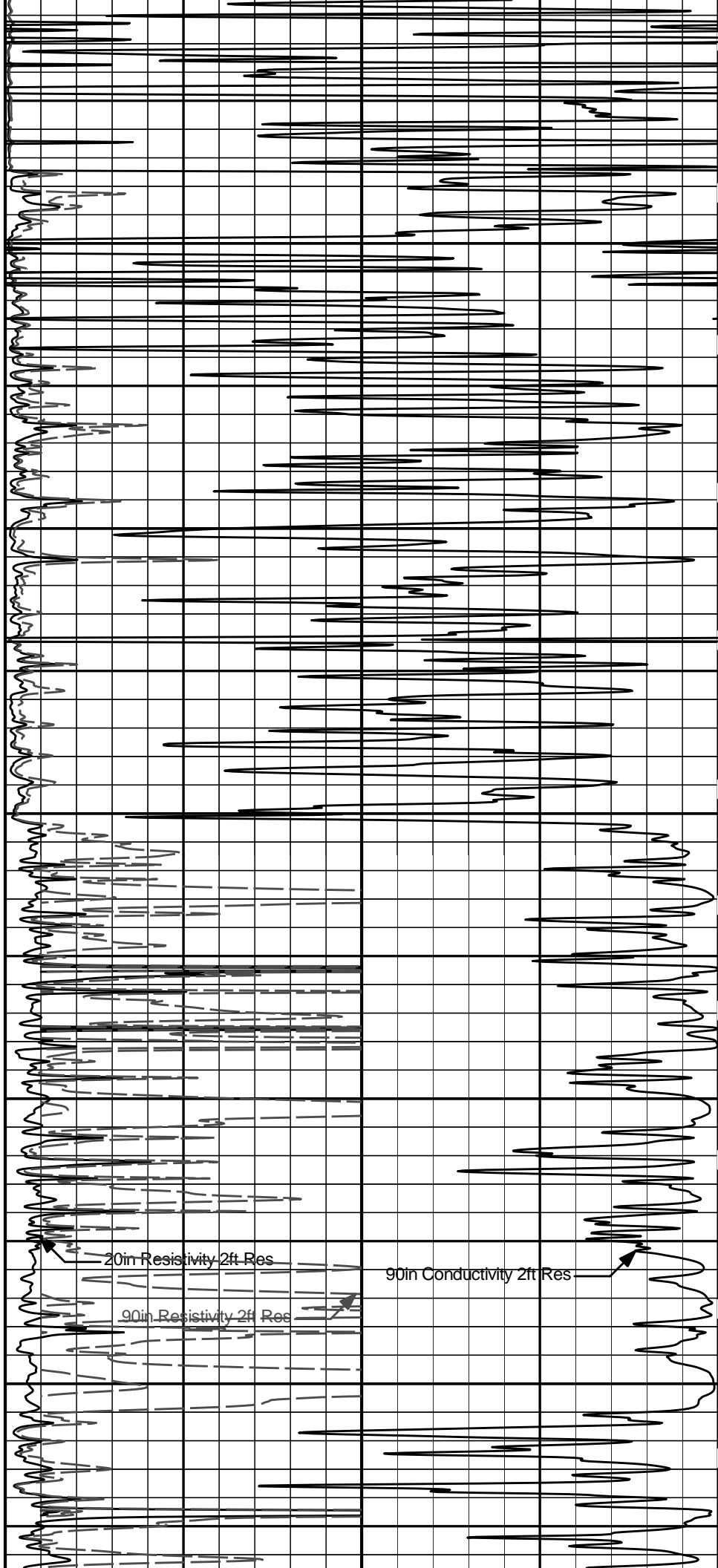
1700

1800

1900

2000

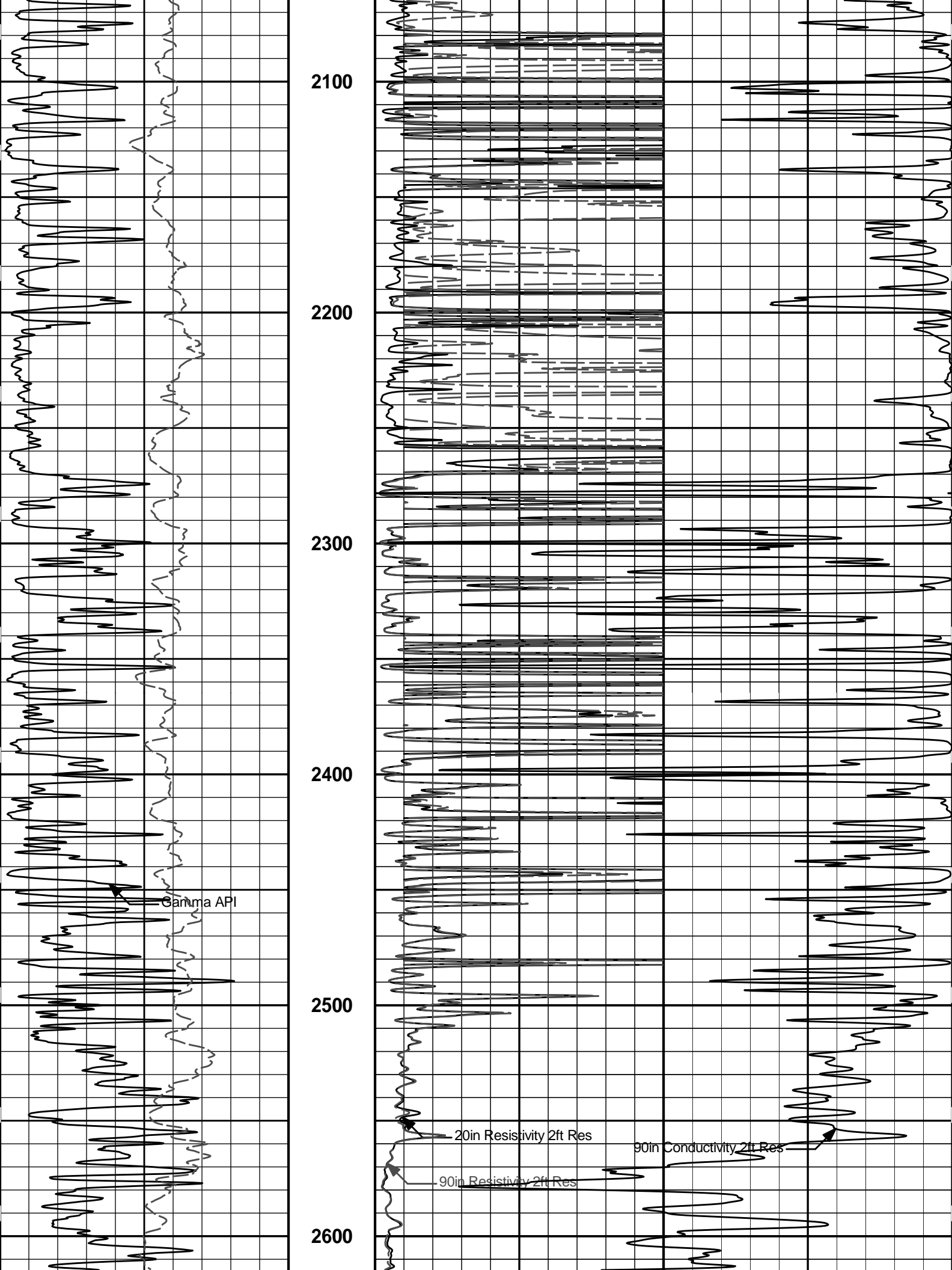
Gamma API

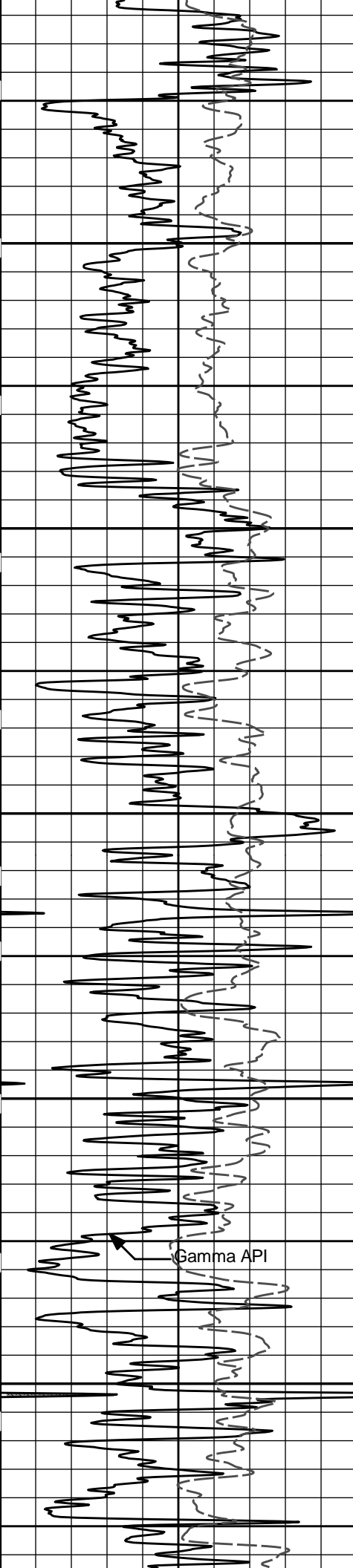


20in Resistivity 2ft Res

90in Resistivity 2ft Res

90in Conductivity 2ft Res





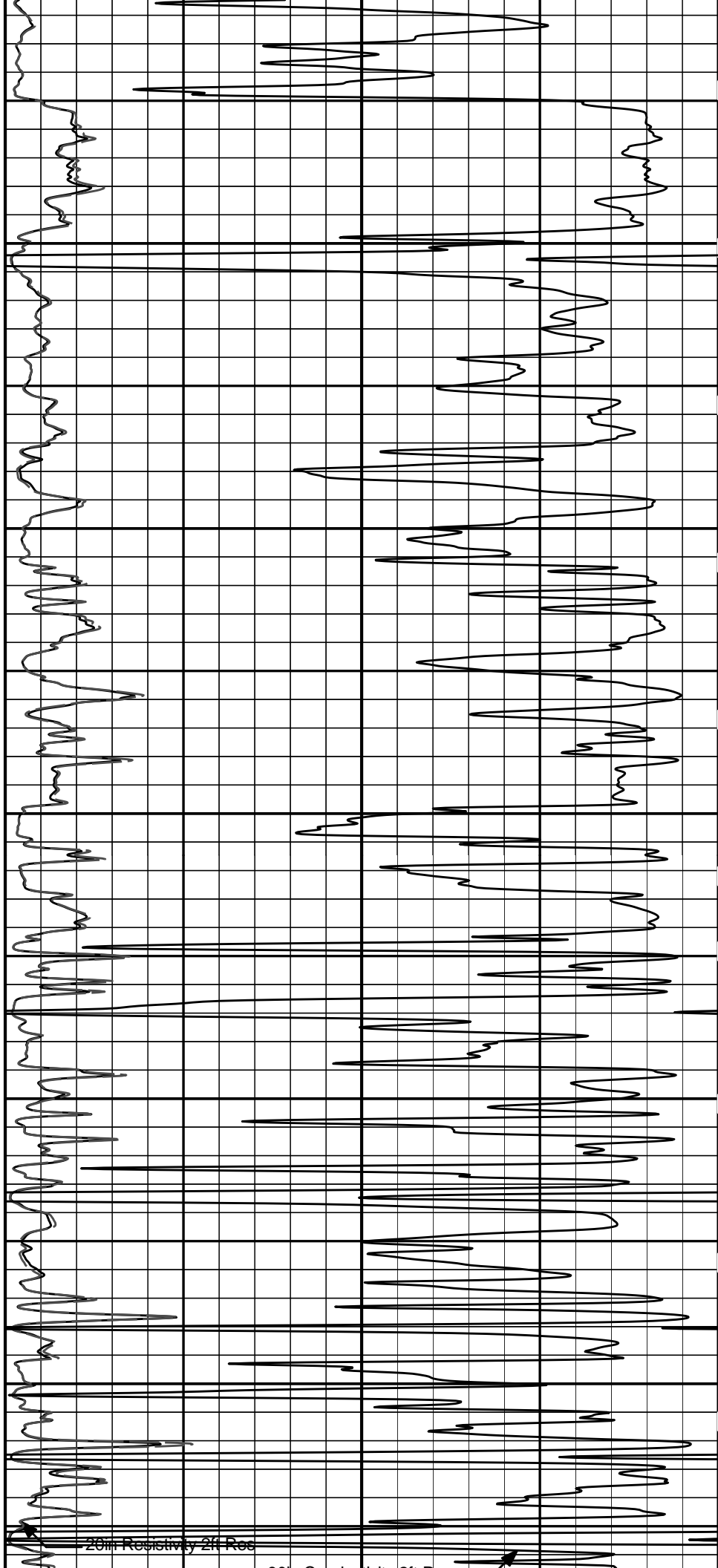
2700

2800

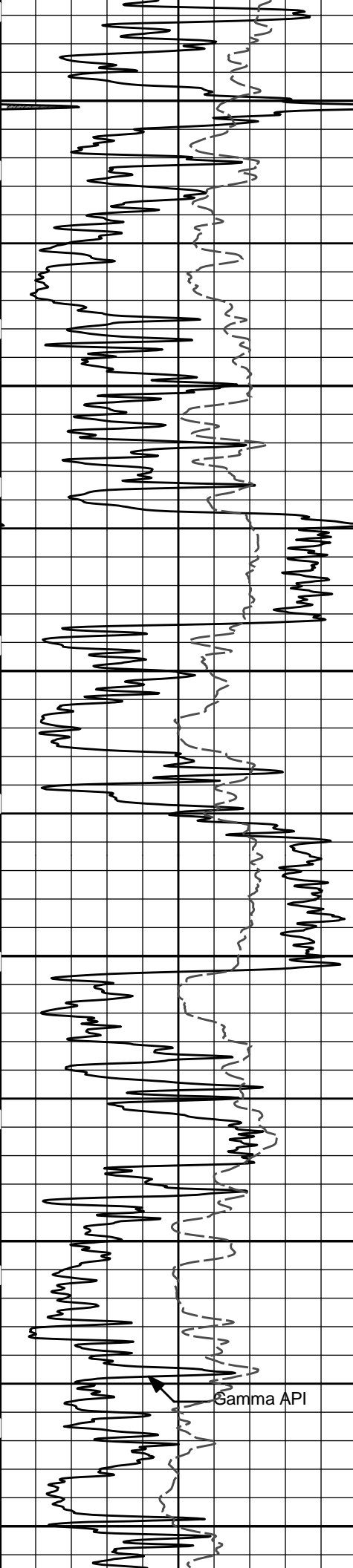
2900

3000

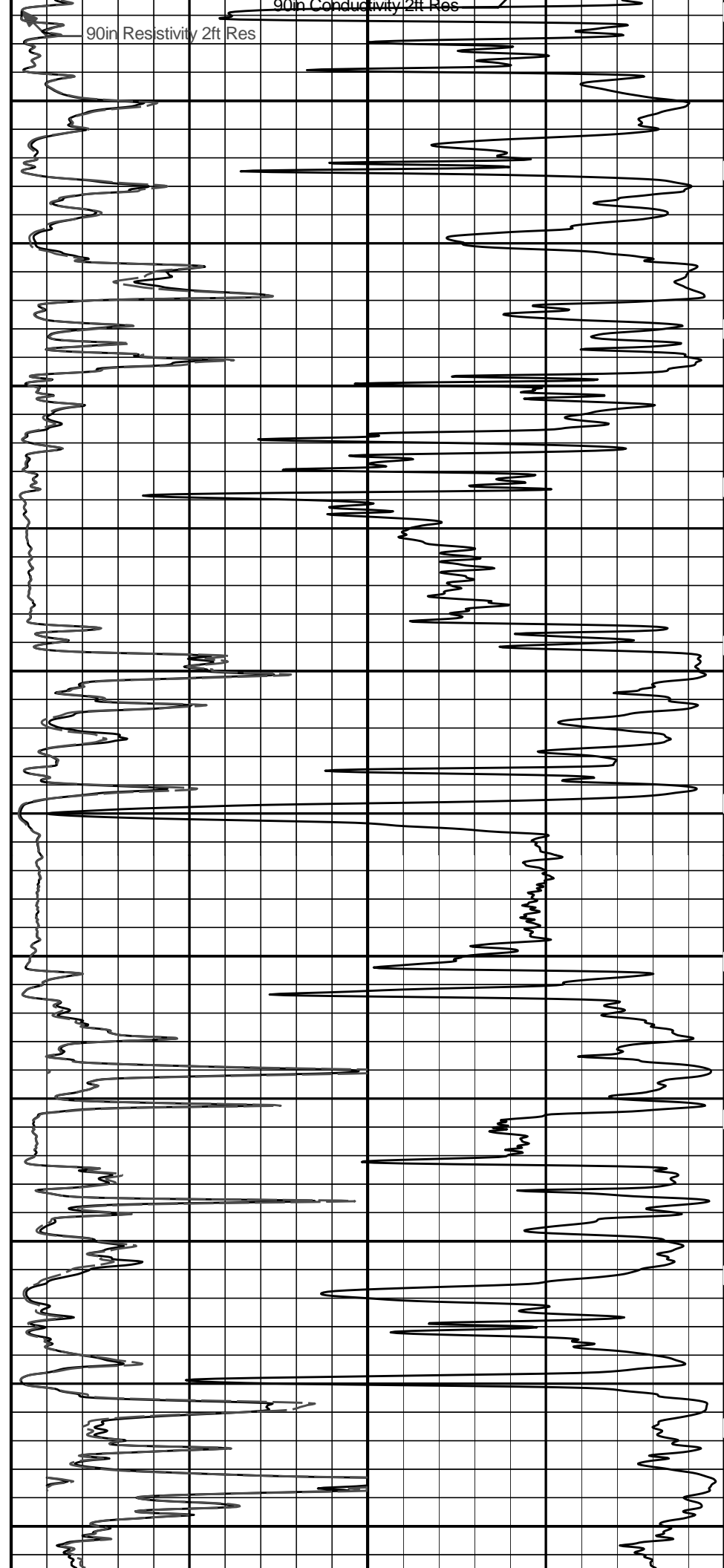
3100



20m Resistivity

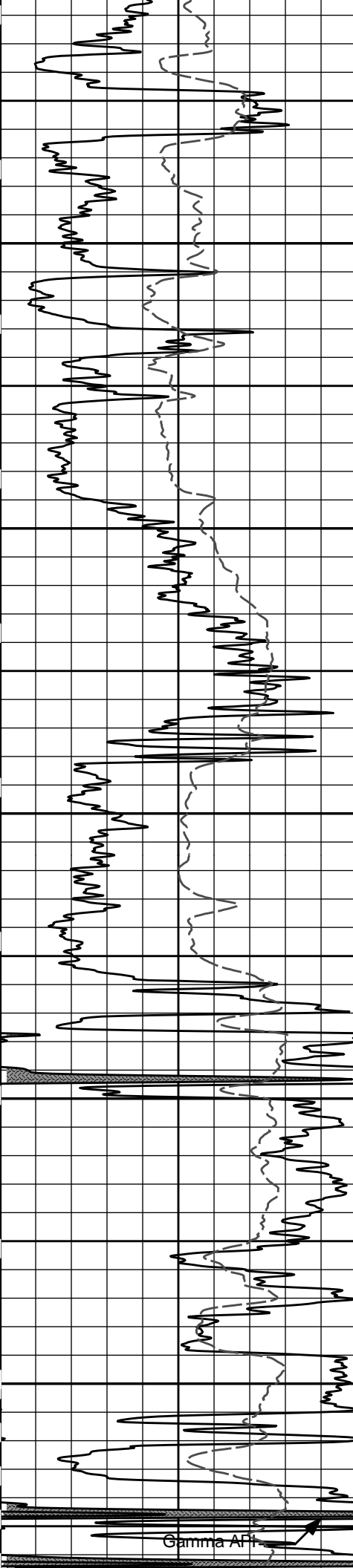


3200  
3300  
3400  
3500  
3600  
3700



90in Resistivity 2ft Res

90in Conductivity 2ft Res



3800

3900

4000

4100

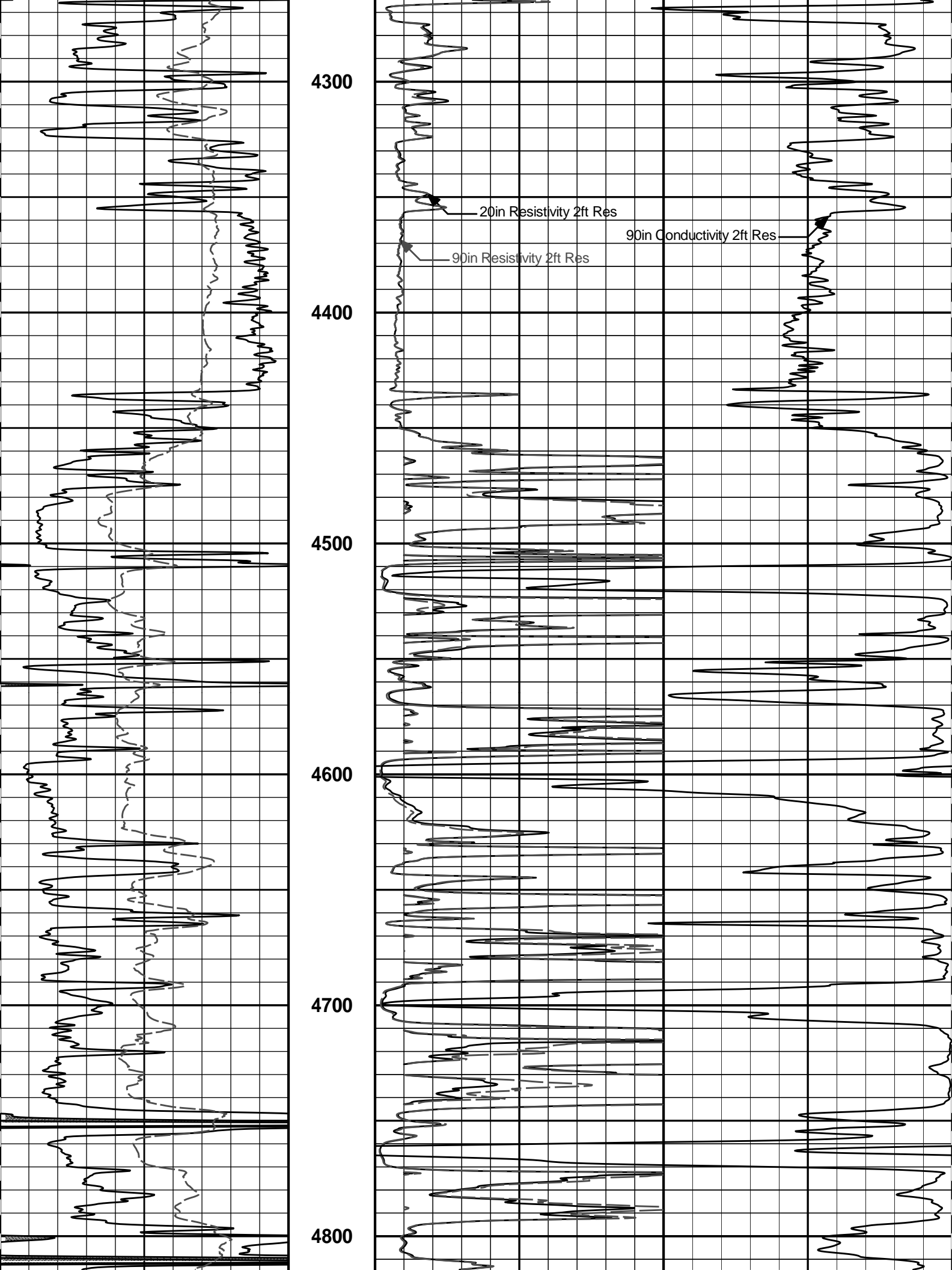
4200

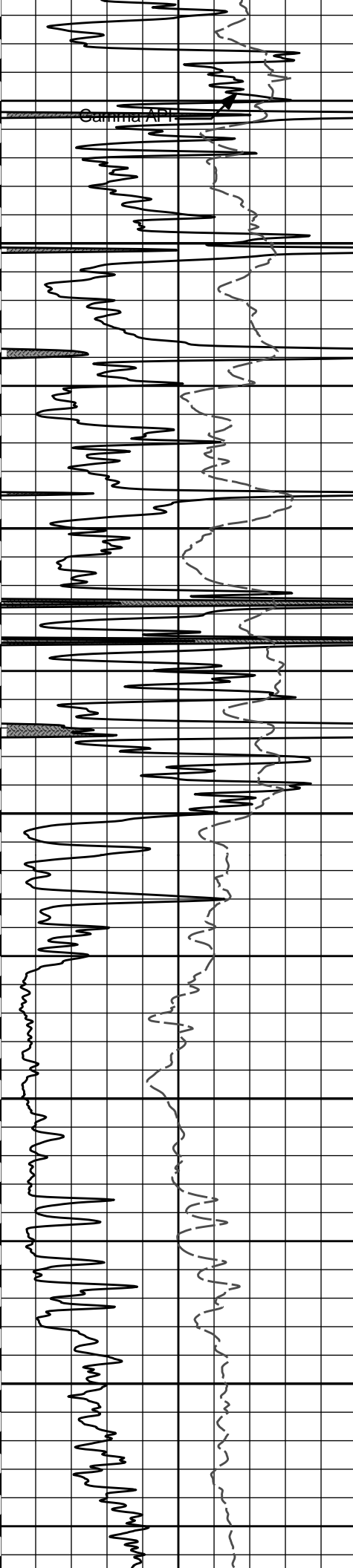
20in Resistivity 2ft Res

90in Resistivity 2ft Res

90in Conductivity 2ft Res

Gamma API





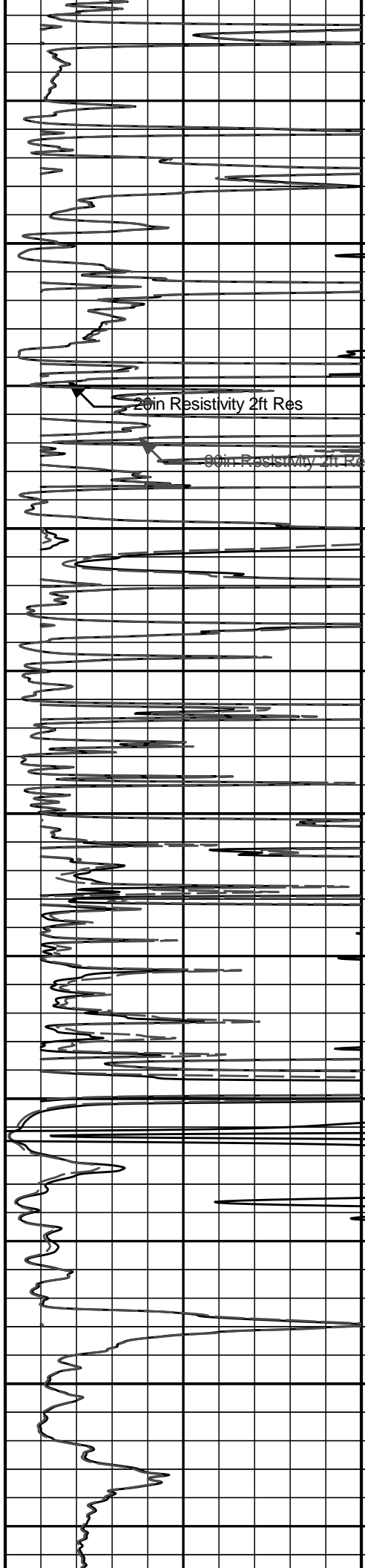
4900

5000

5100

5200

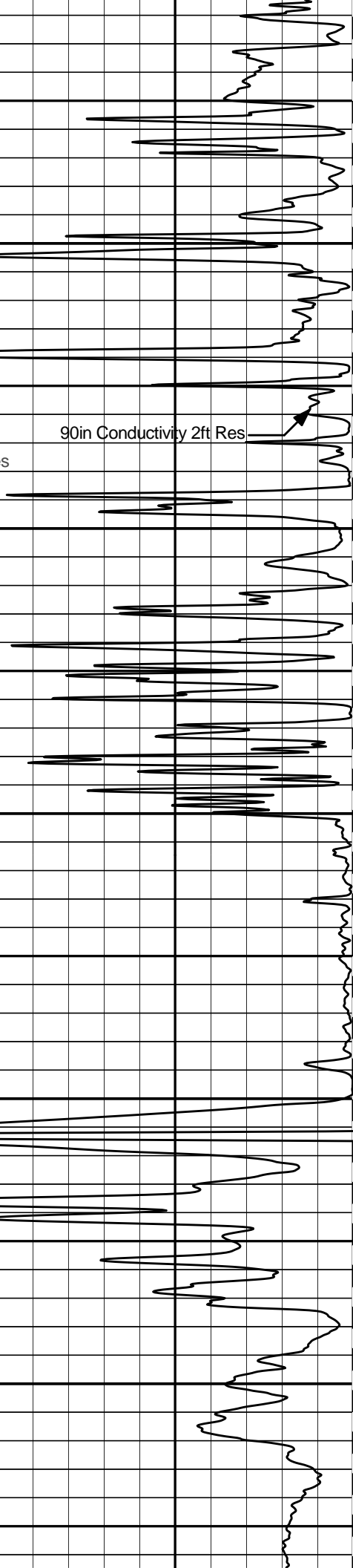
5300

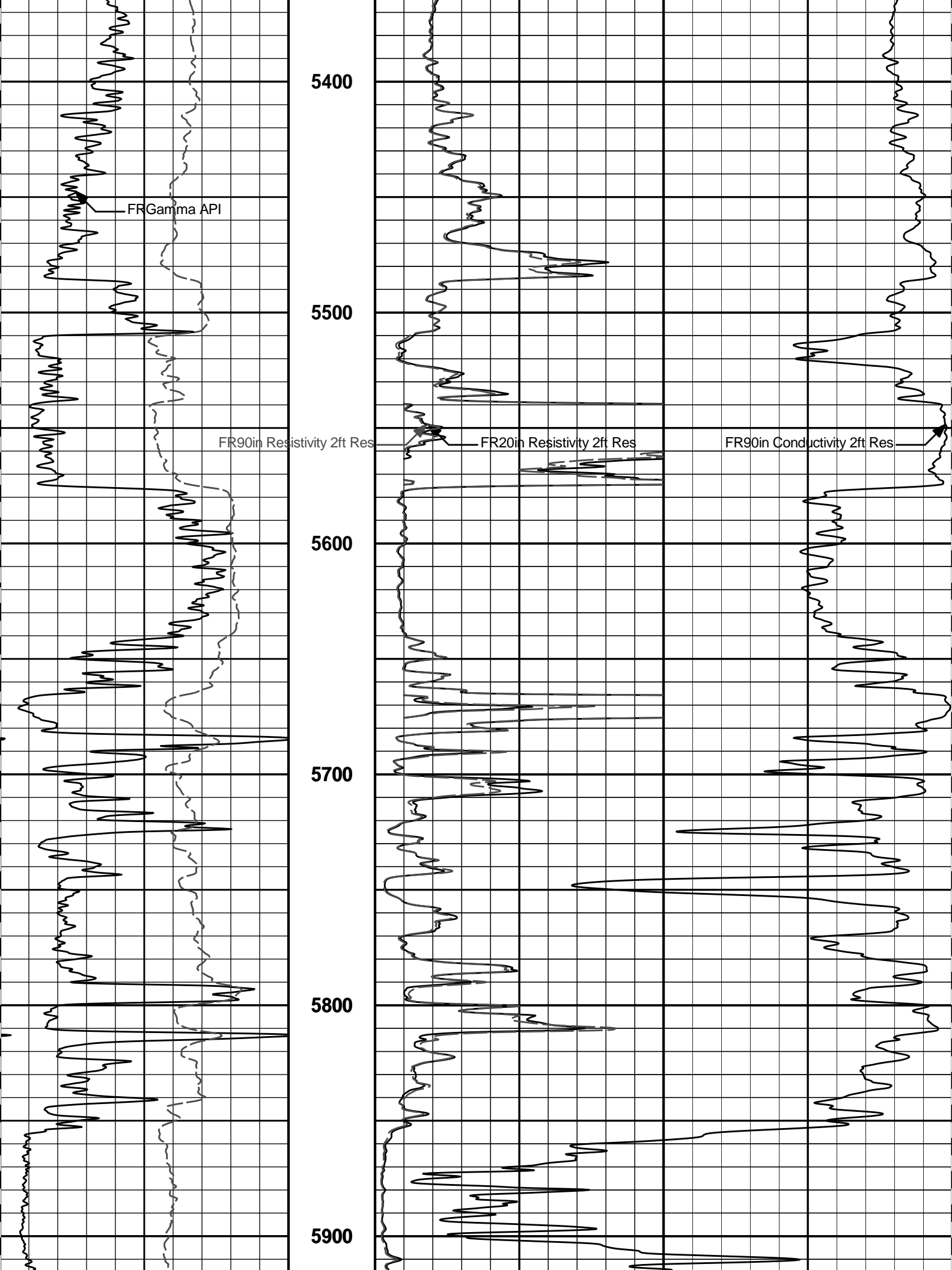


20in Resistivity 2ft Res

90in Resistivity 2ft Res

90in Conductivity 2ft Res





5400

FR Gamma API

5500

FR90in Resistivity 2ft Res

FR20in Resistivity 2ft Res

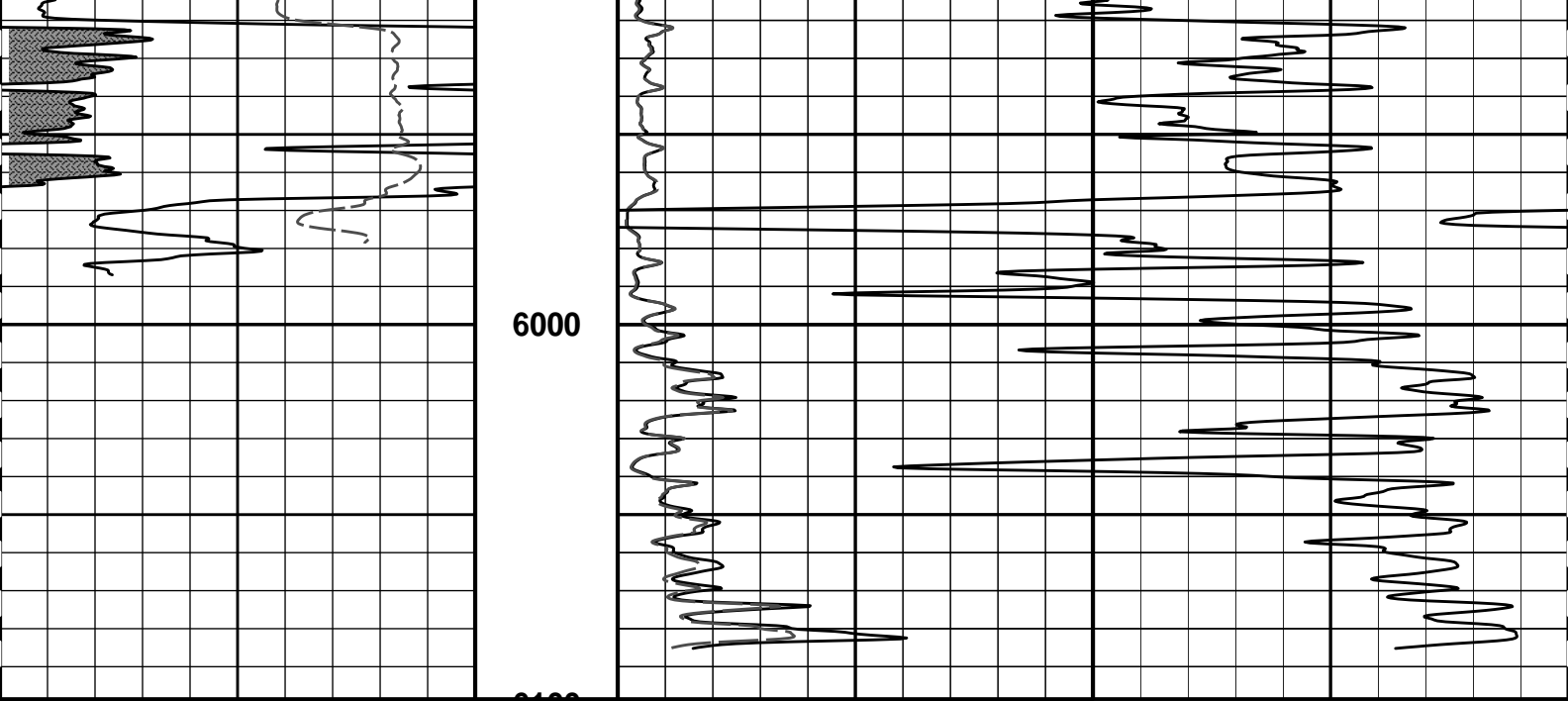
FR90in Conductivity 2ft Res

5600

5700

5800

5900



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: 17-Jul-12 04:59:02  
 Plot Range: 810 ft to 6098.42 ft  
 Data: ALBERTA\_MARIE\_1\Well Based\\*\  
 Plot File: \\-LOCAL-ALBERTA\_MARIE\_1\0001 SP-GTET-DSN-SDL-WSTT-XRMI-ACRT-CHACRT\ACRT\_2\_lib

## 2 INCH MAIN LOG

**HALLIBURTON**

Plot Time: 17-Jul-12 04:59:03  
 Plot Range: 810 ft to 6098.42 ft  
 Data: ALBERTA\_MARIE\_1\Well Based\\*\  
 Plot File: \\-LOCAL-ALBERTA\_MARIE\_1\0001 SP-GTET-DSN-SDL-WSTT-XRMI-ACRT-CHACRT\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	
				0.2	10in Resistivity 2ft Res	2000
					ohmm	
				10K	Tension	0
0	Gamma API	150	Tension Pull	10		
	api					
	SP		MD	1 : 240		

-J20[+

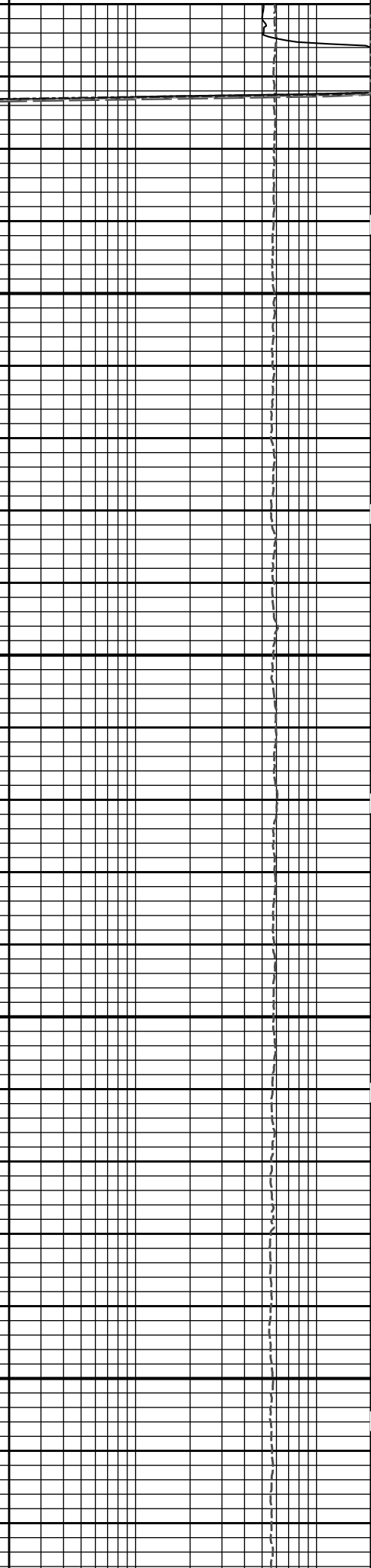
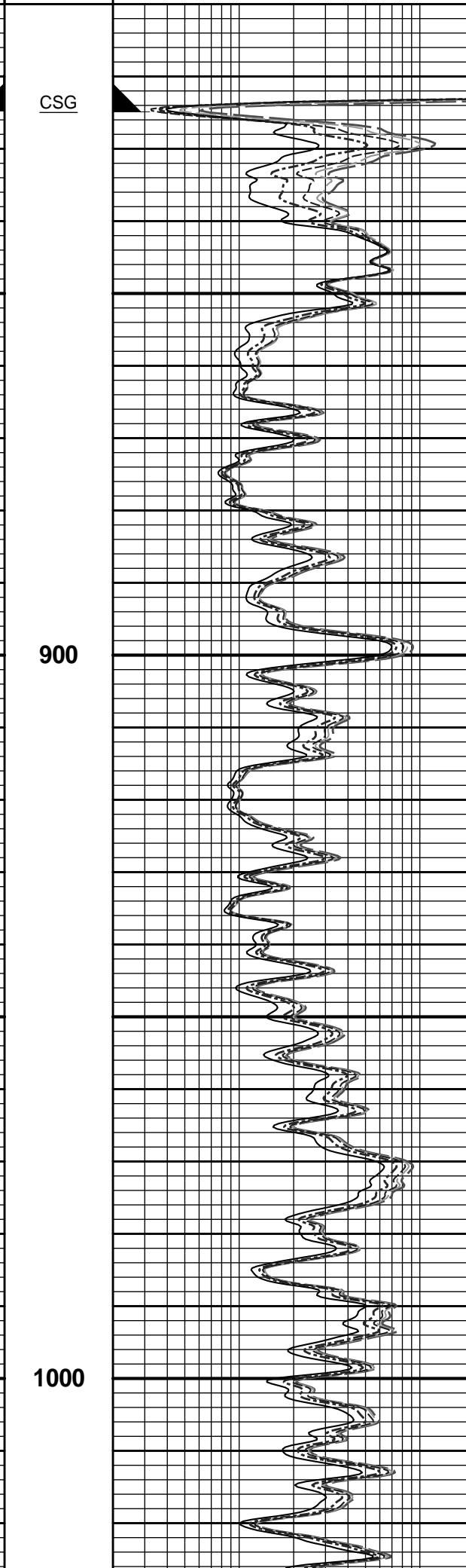
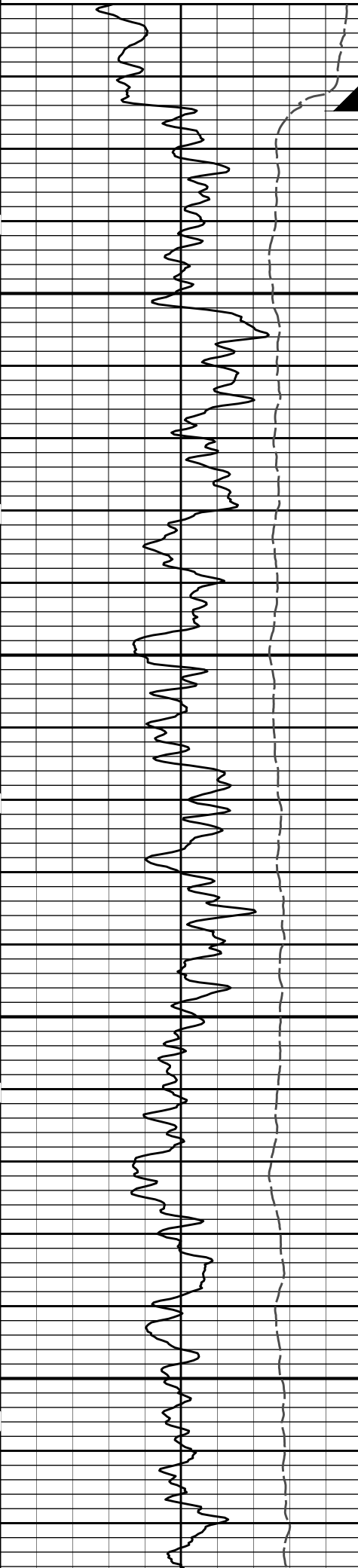
ft

pounds

CSG

900

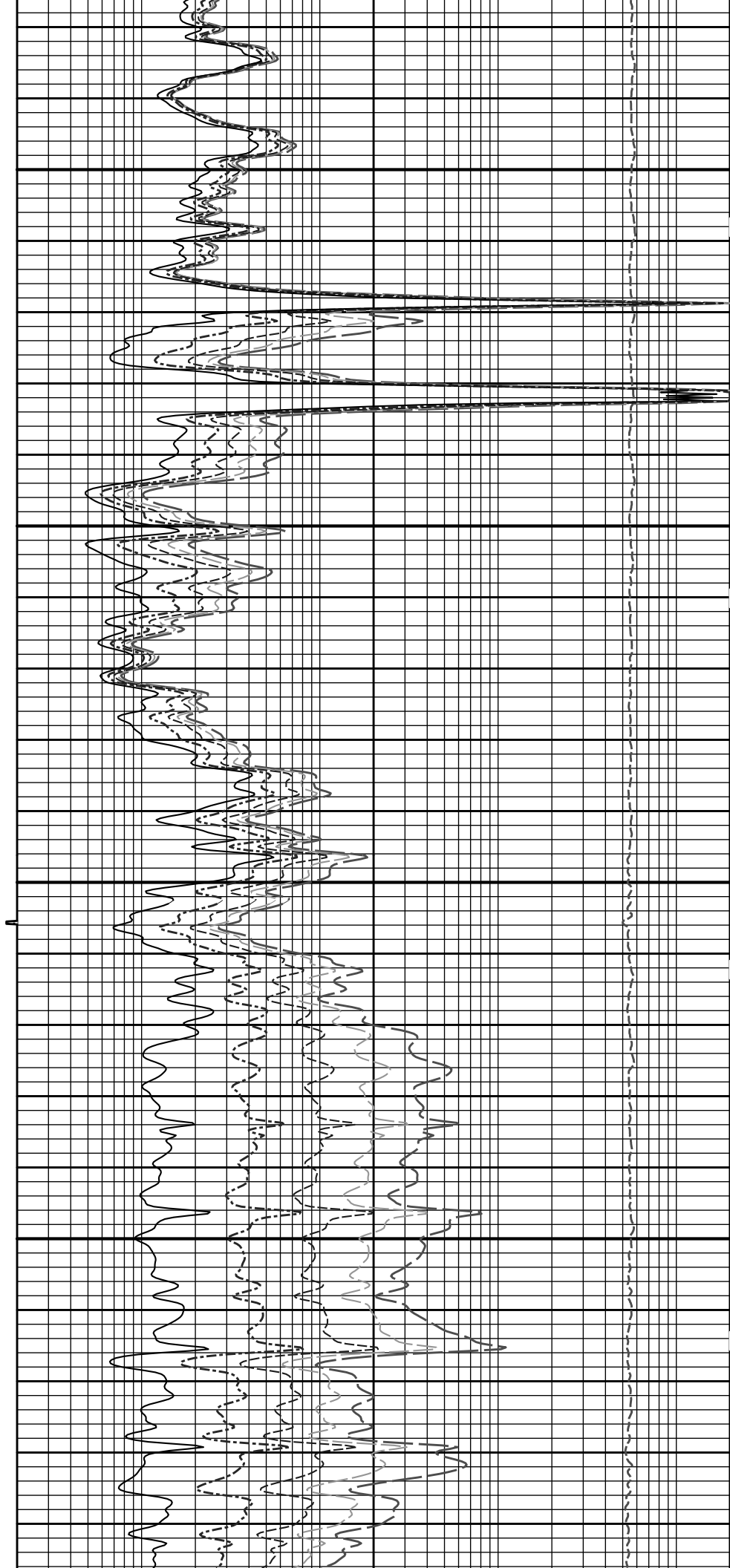
1000

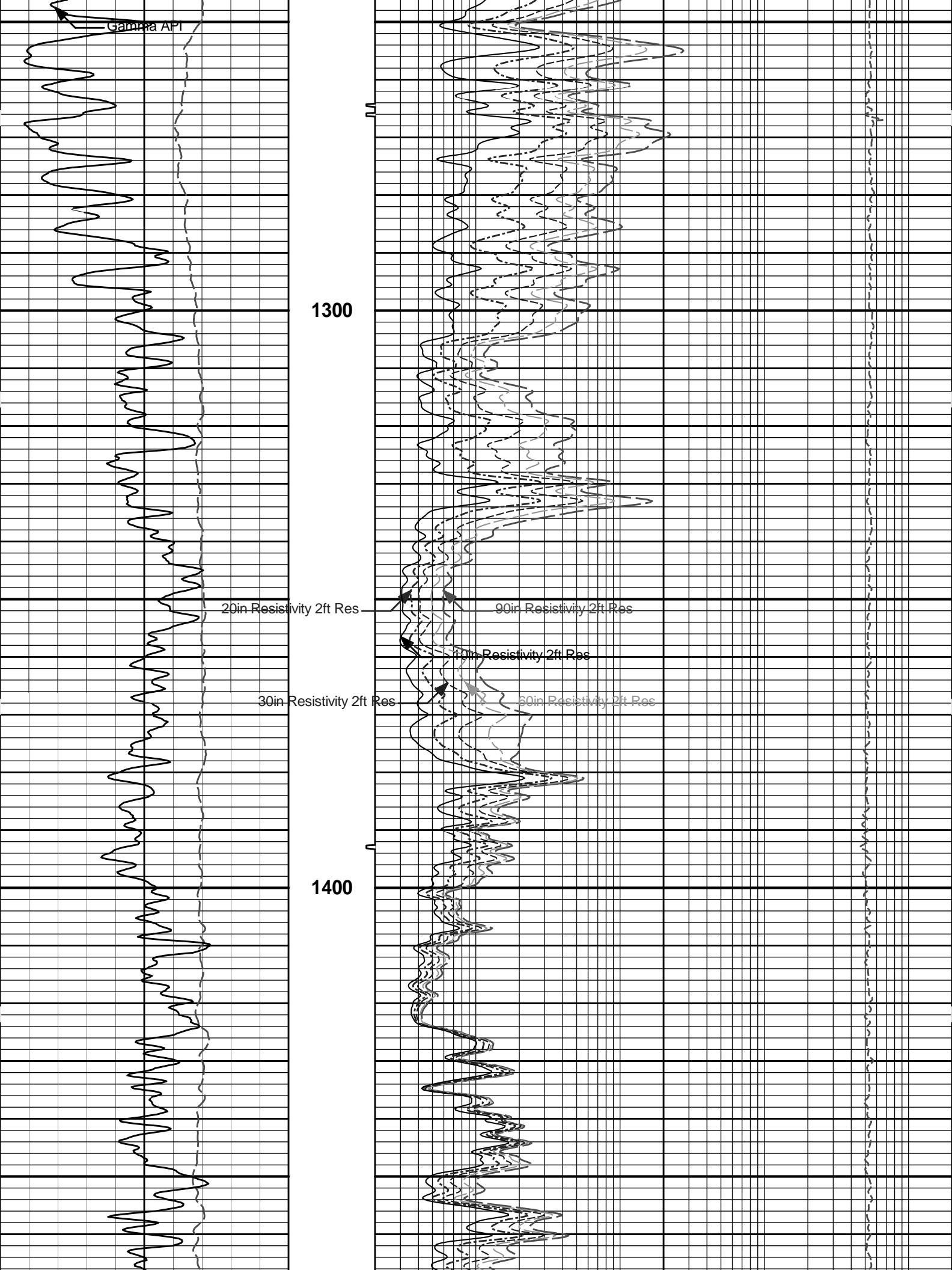




1100

1200





Gamma Ra API

1300

20in Resistivity 2ft Res

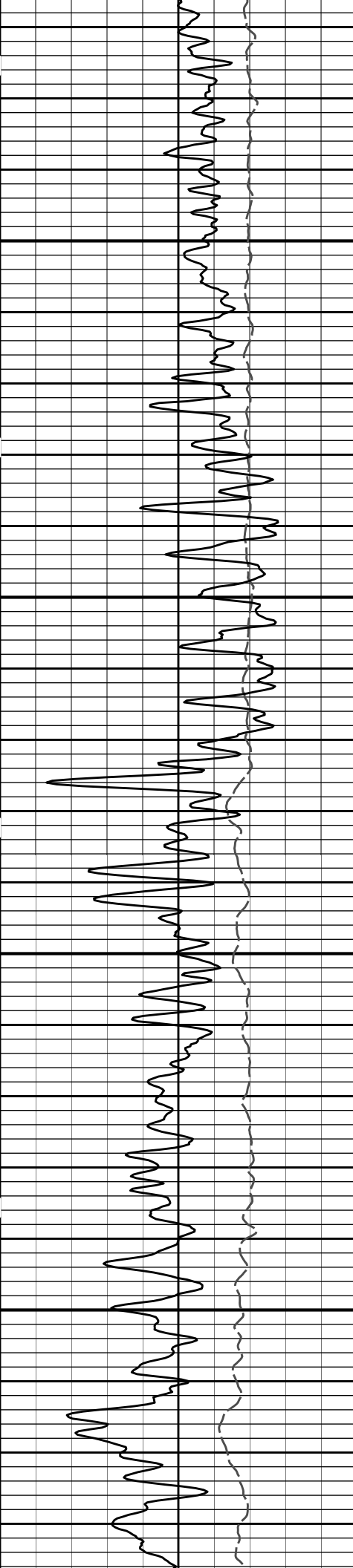
90in Resistivity 2ft Res

30in Resistivity 2ft Res

30in Resistivity 2ft Res

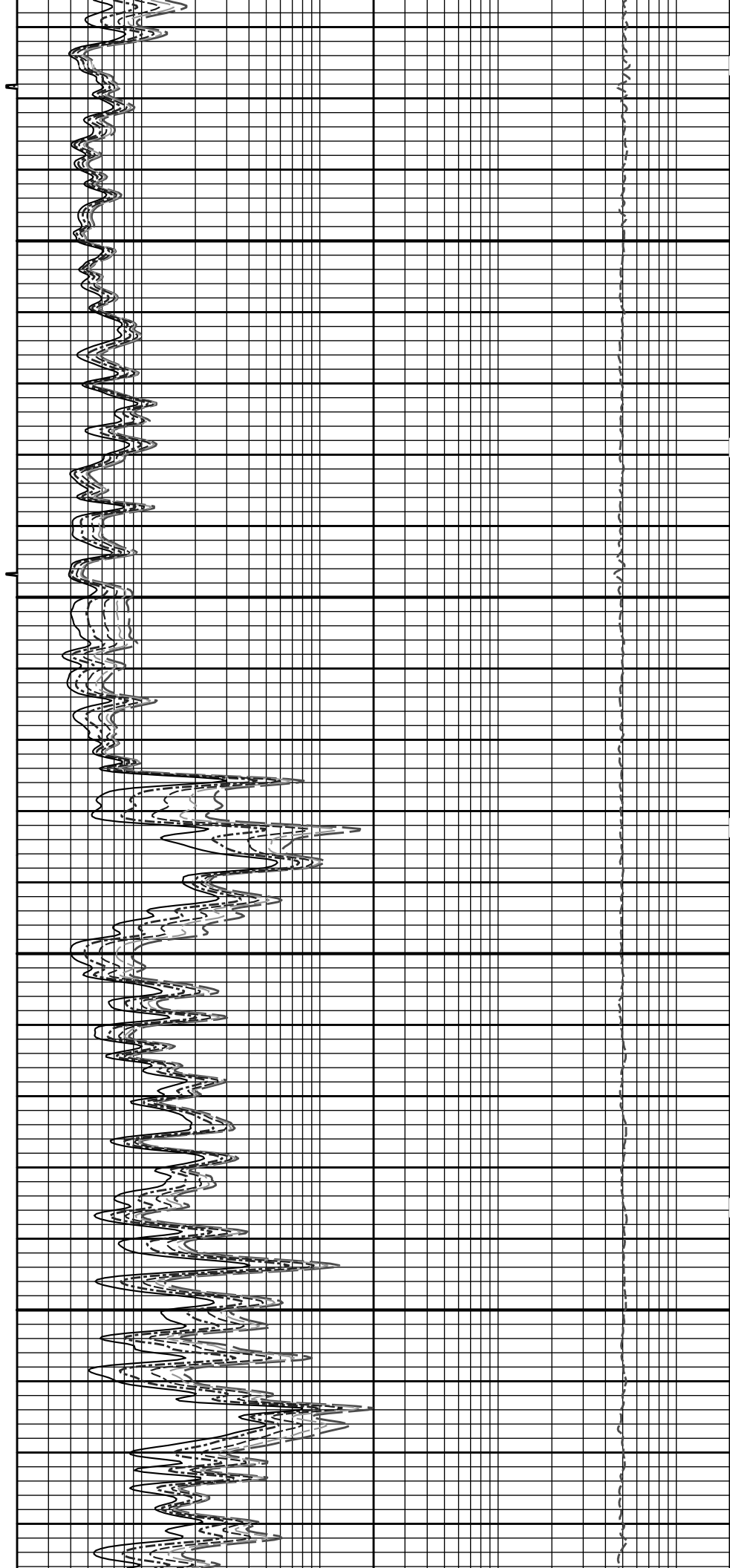
30in Resistivity 2ft Res

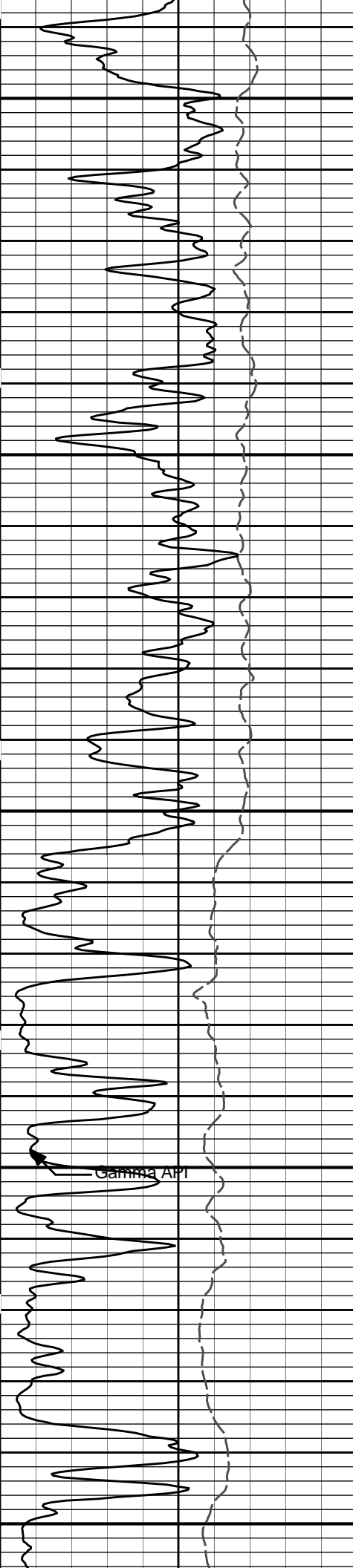
1400



1500

1600



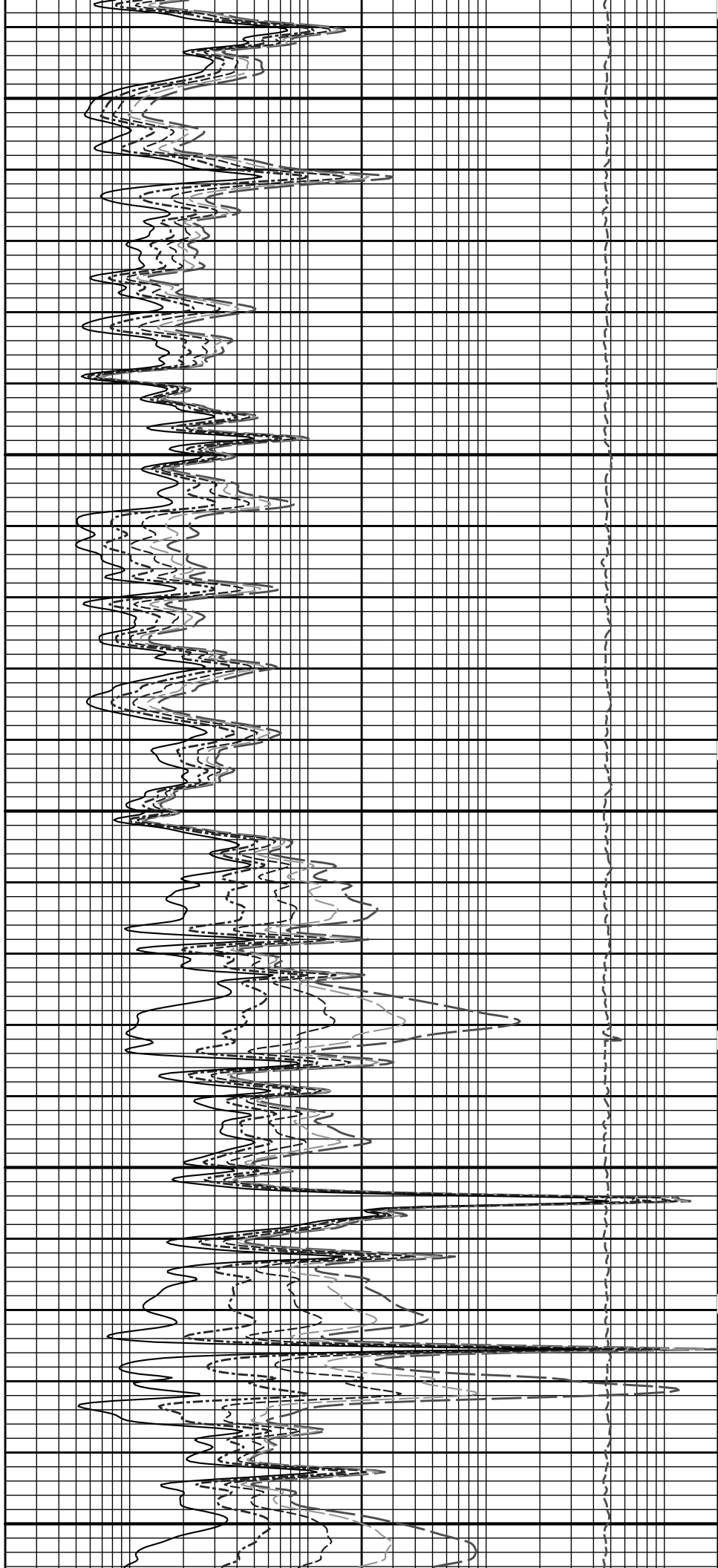


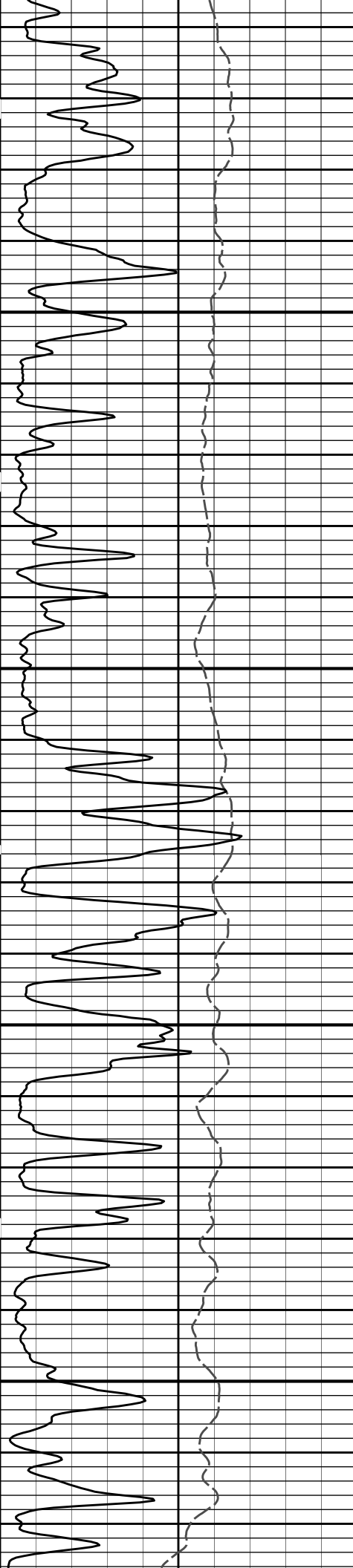
1700

1800

1900

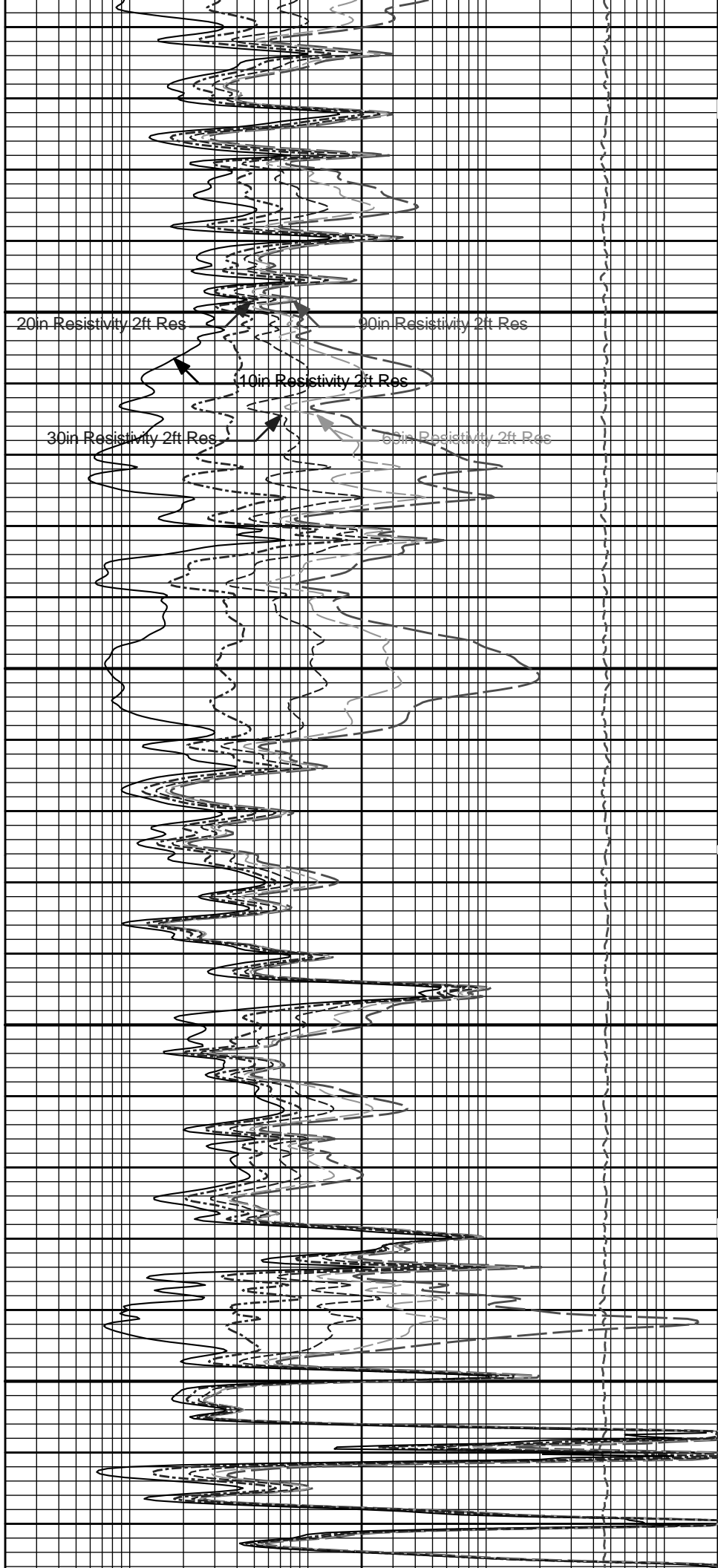
Gamma API

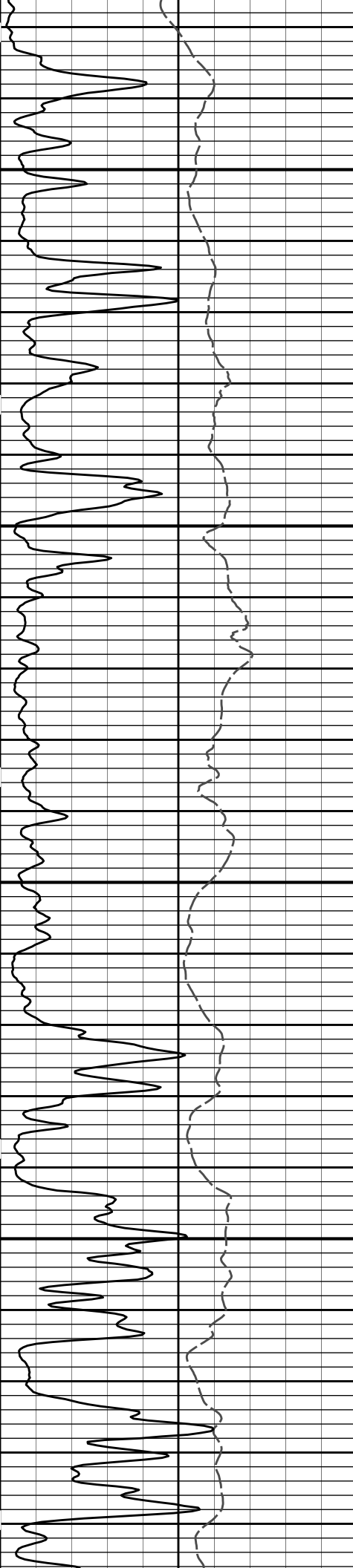




2000

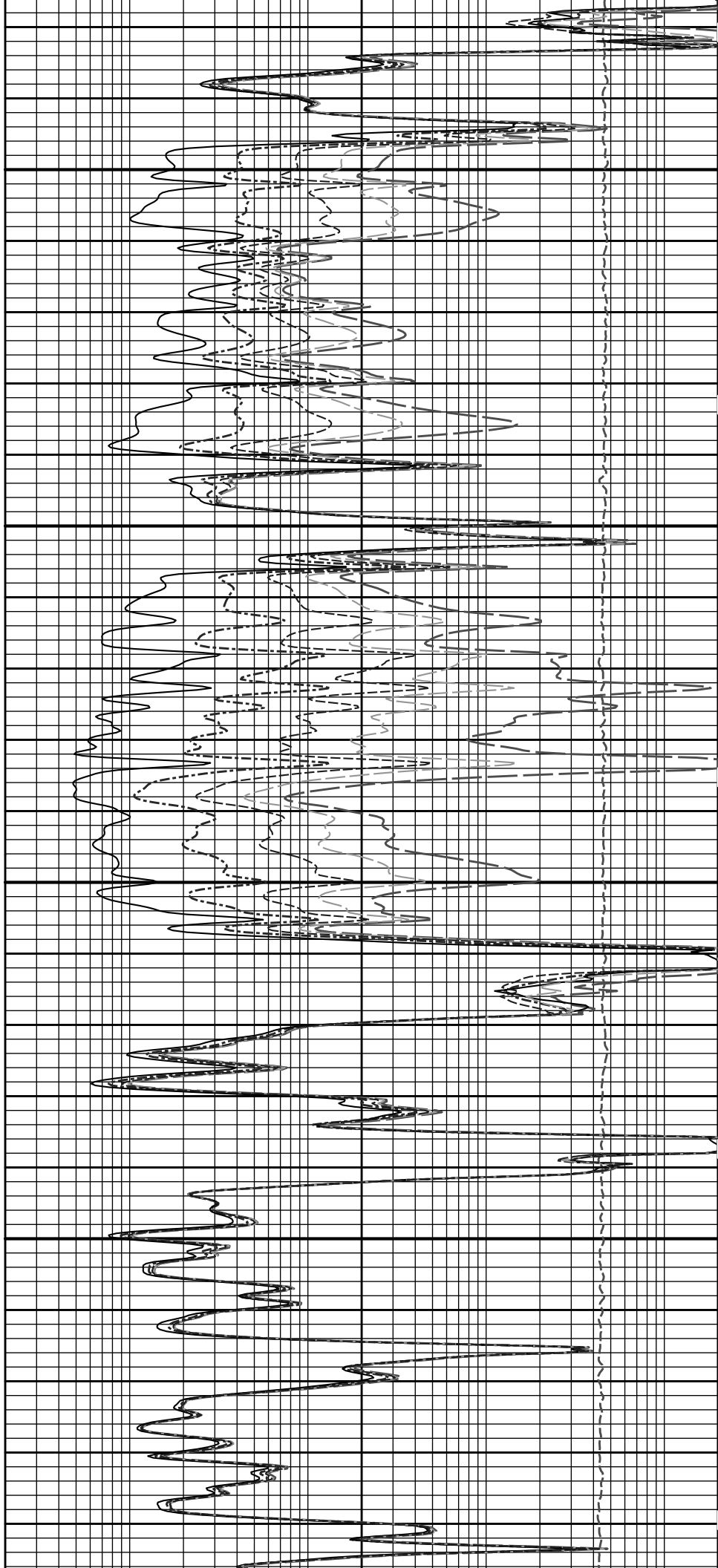
2100

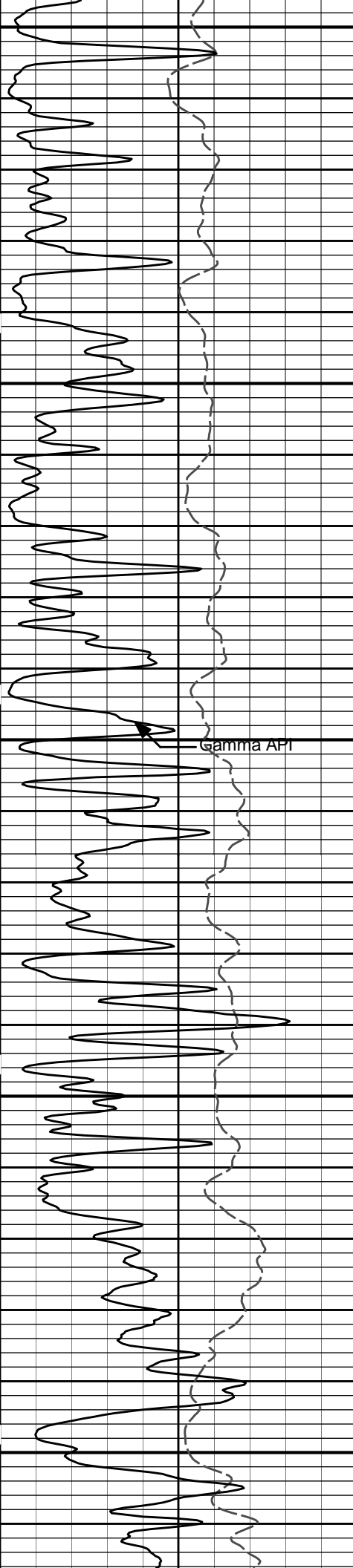




2200

2300

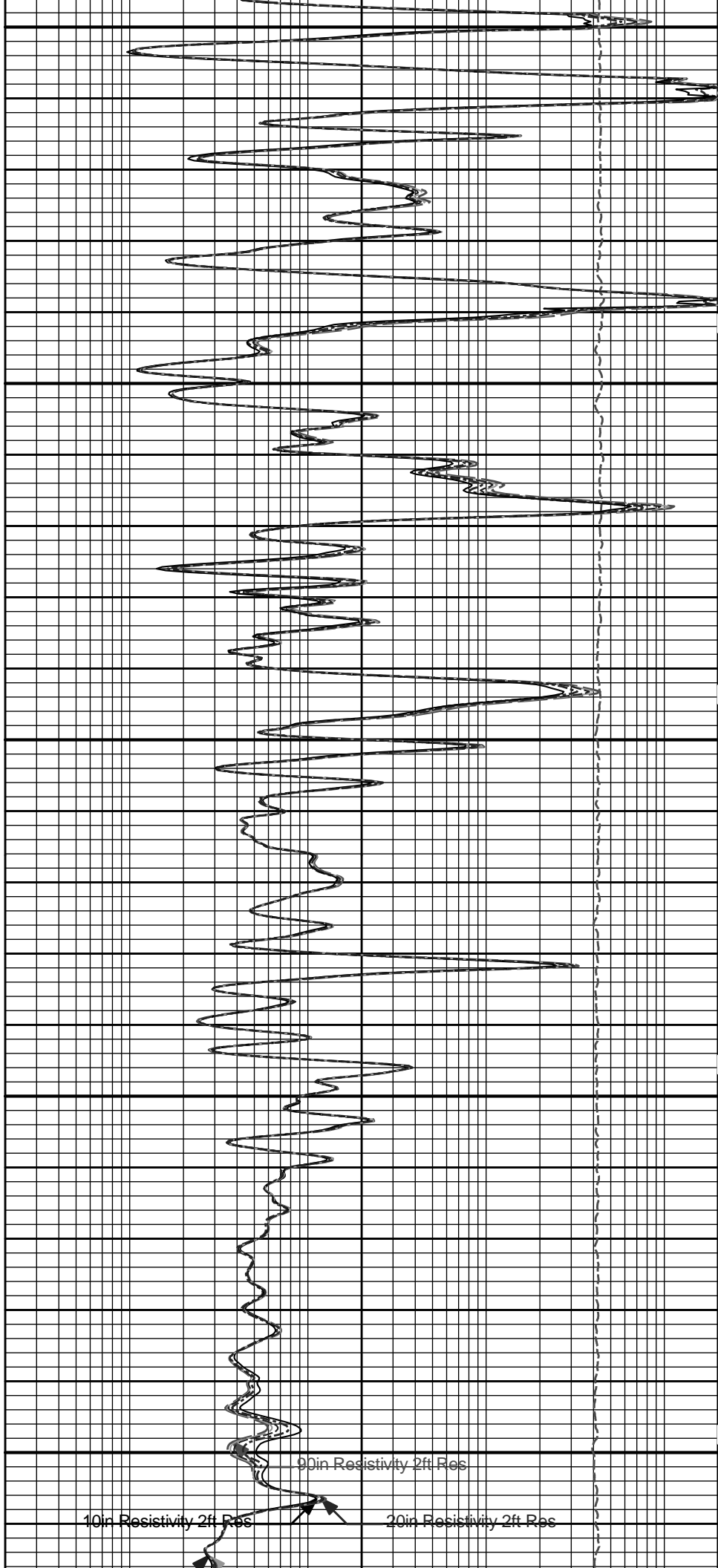




2400

2500

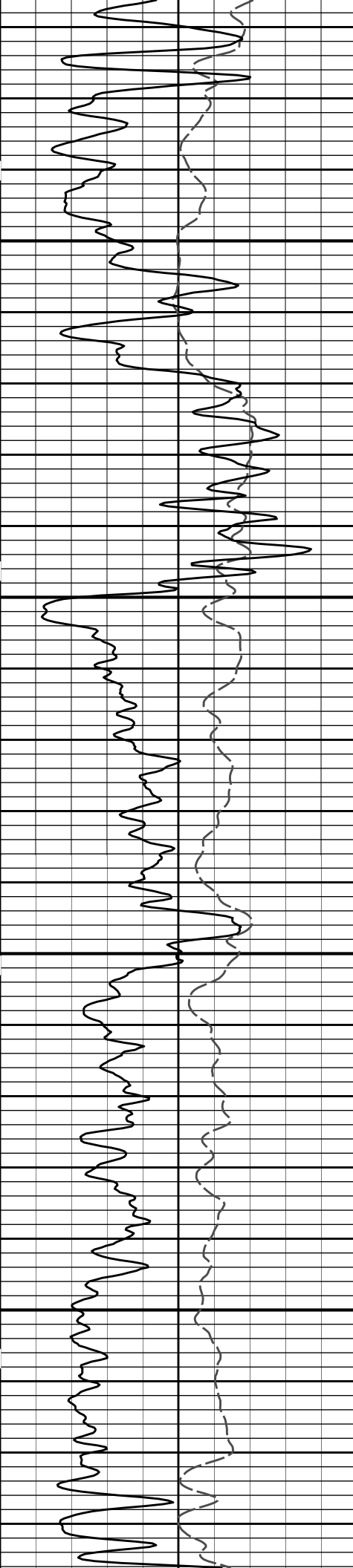
Gamma API



10in Resistivity 2ft Res

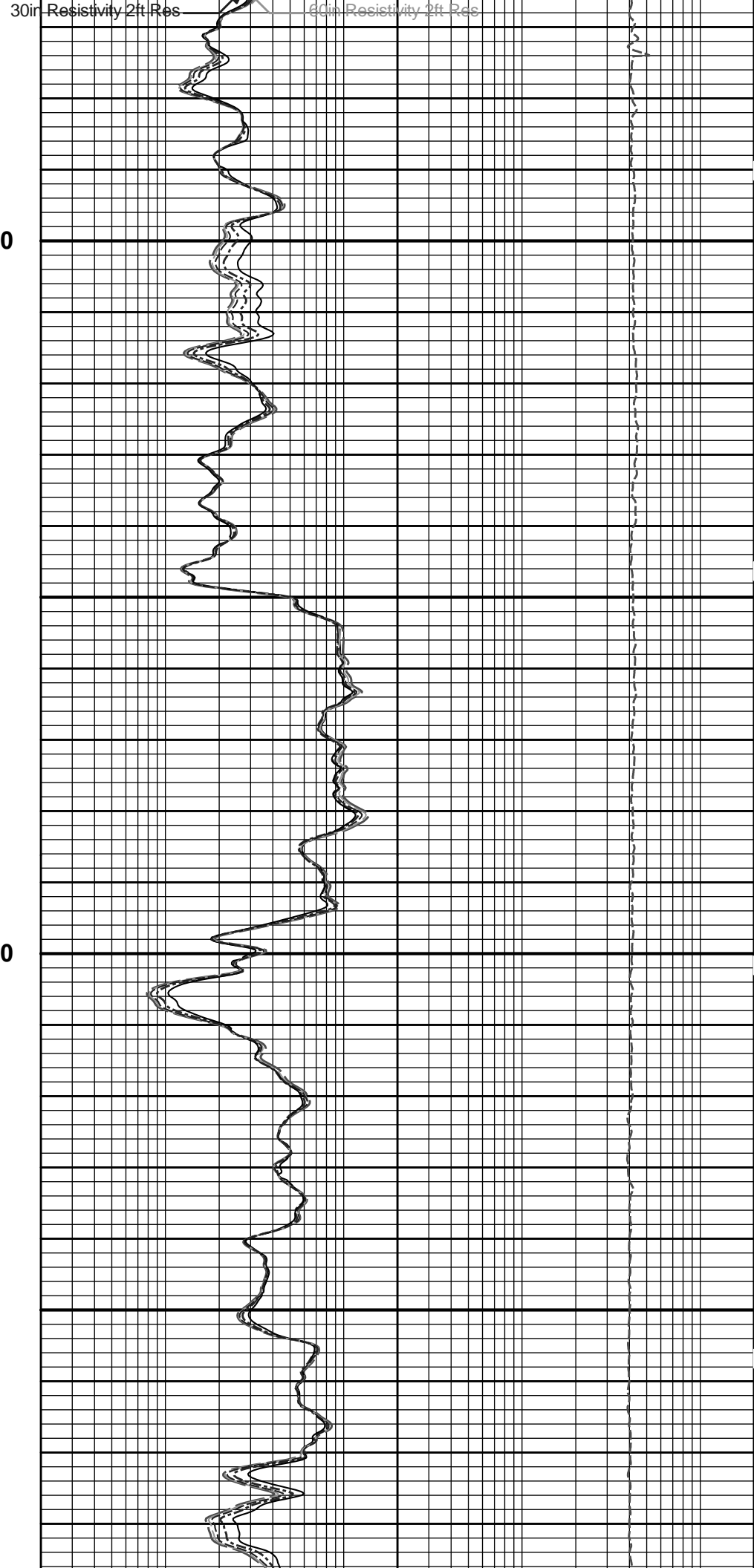
90in Resistivity 2ft Res

20in Resistivity 2ft Res



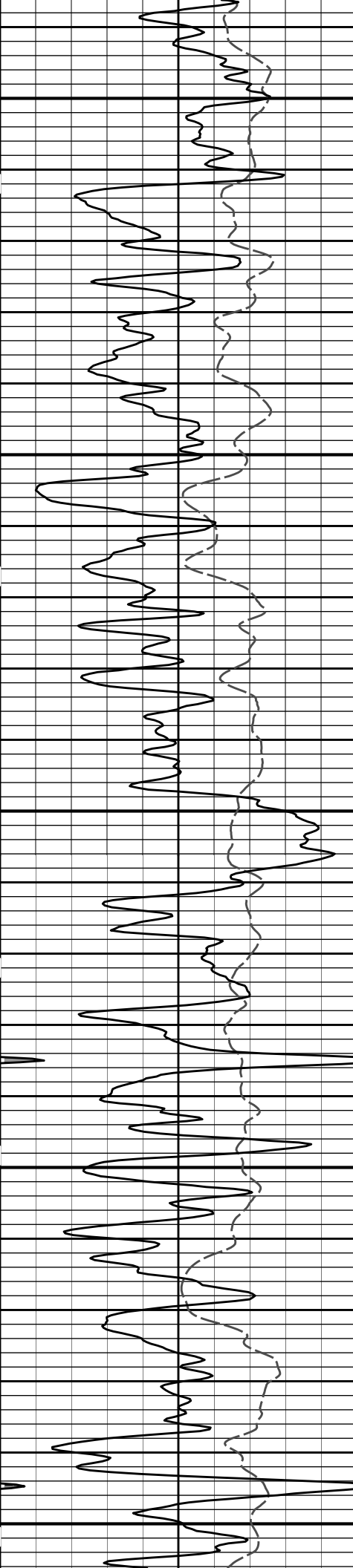
2600

2700



2600

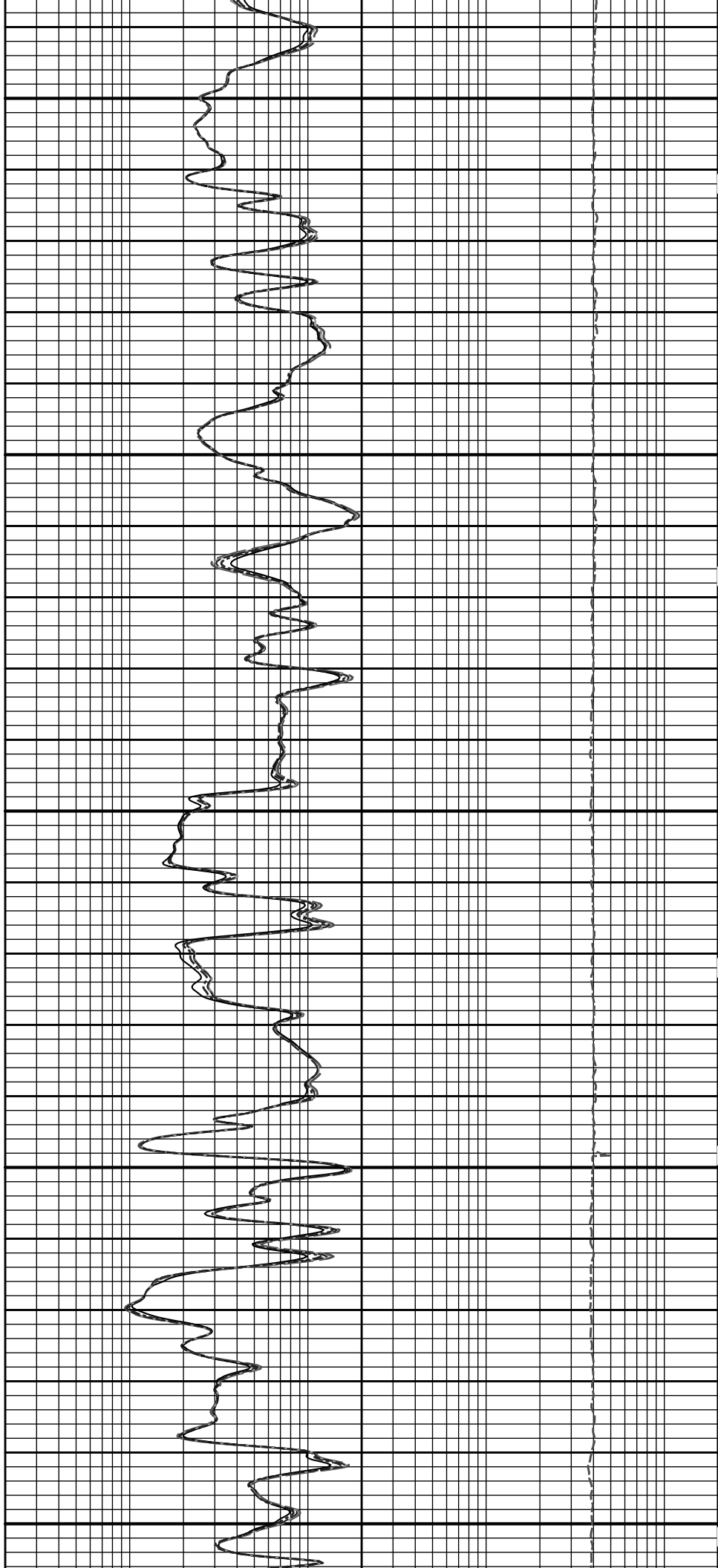
2700

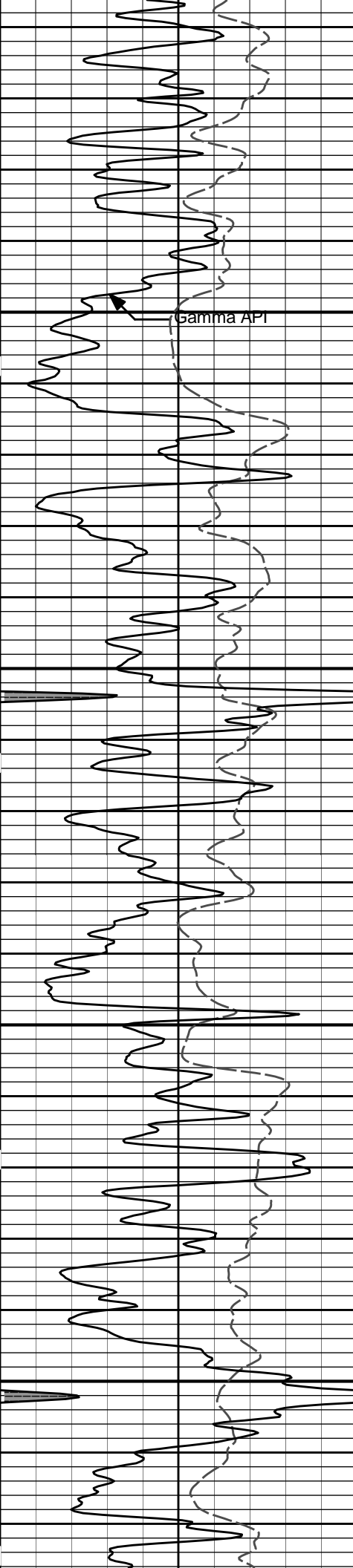


2800

2900

3000

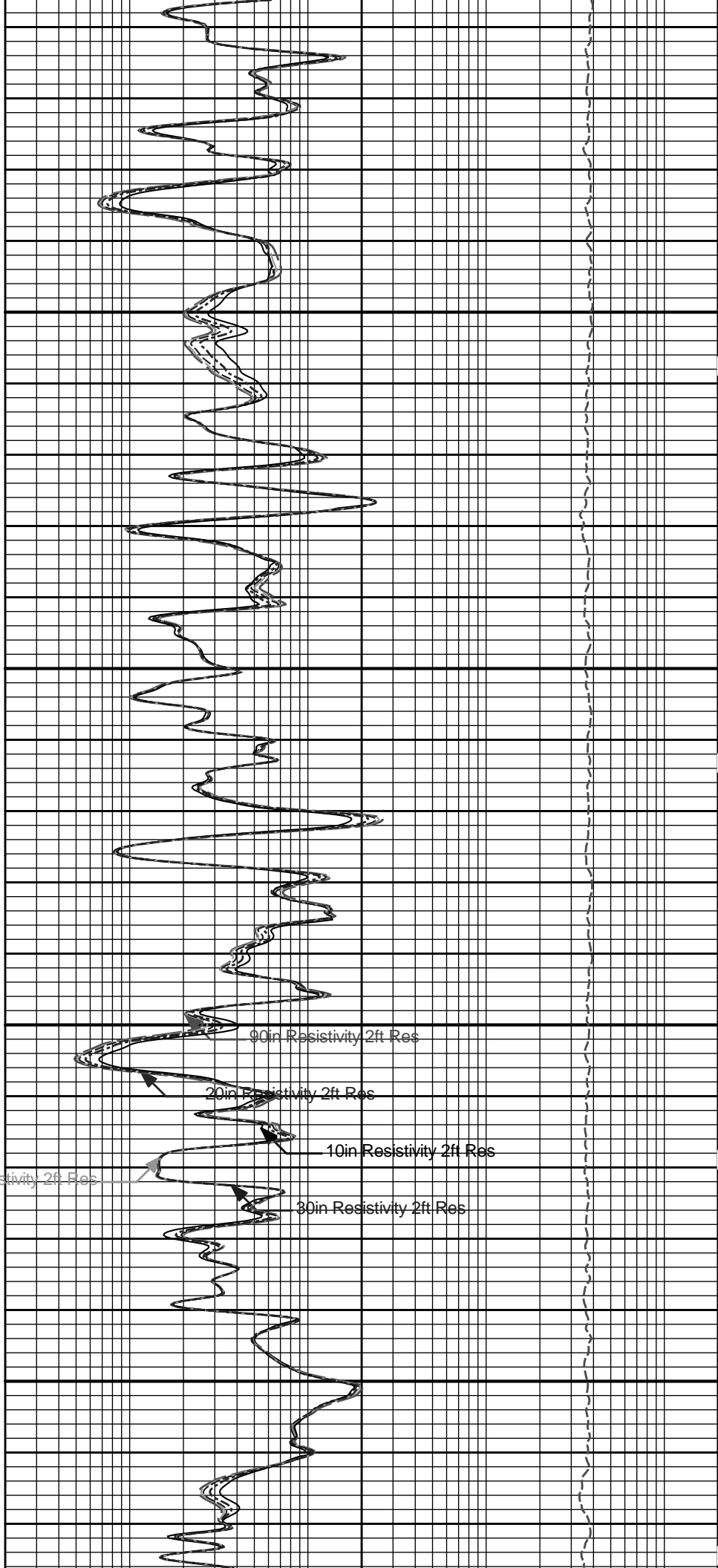




Gamma API

3100

3200



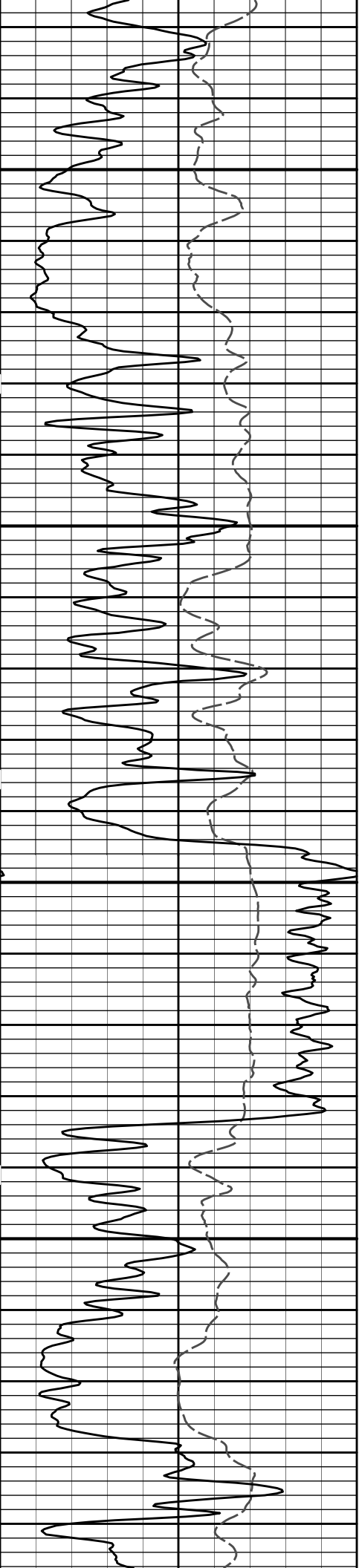
90in Resistivity 2ft Res

20in Resistivity 2ft Res

10in Resistivity 2ft Res

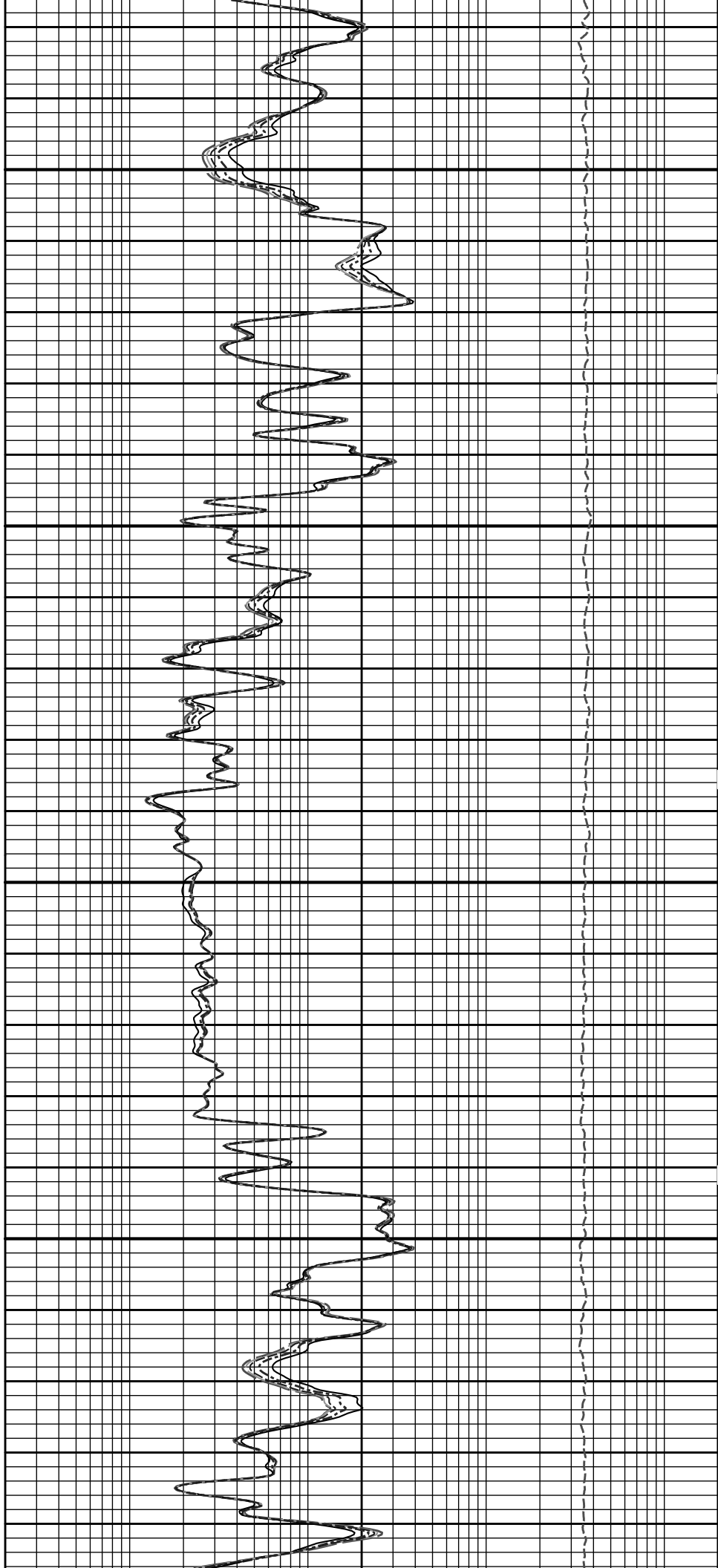
30in Resistivity 2ft Res

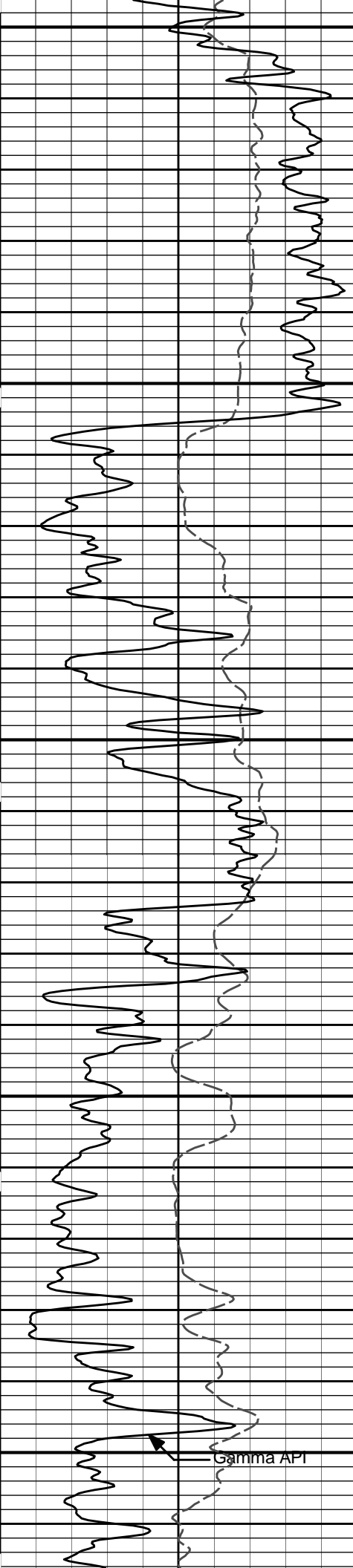
60in Resistivity 2ft Res



3300

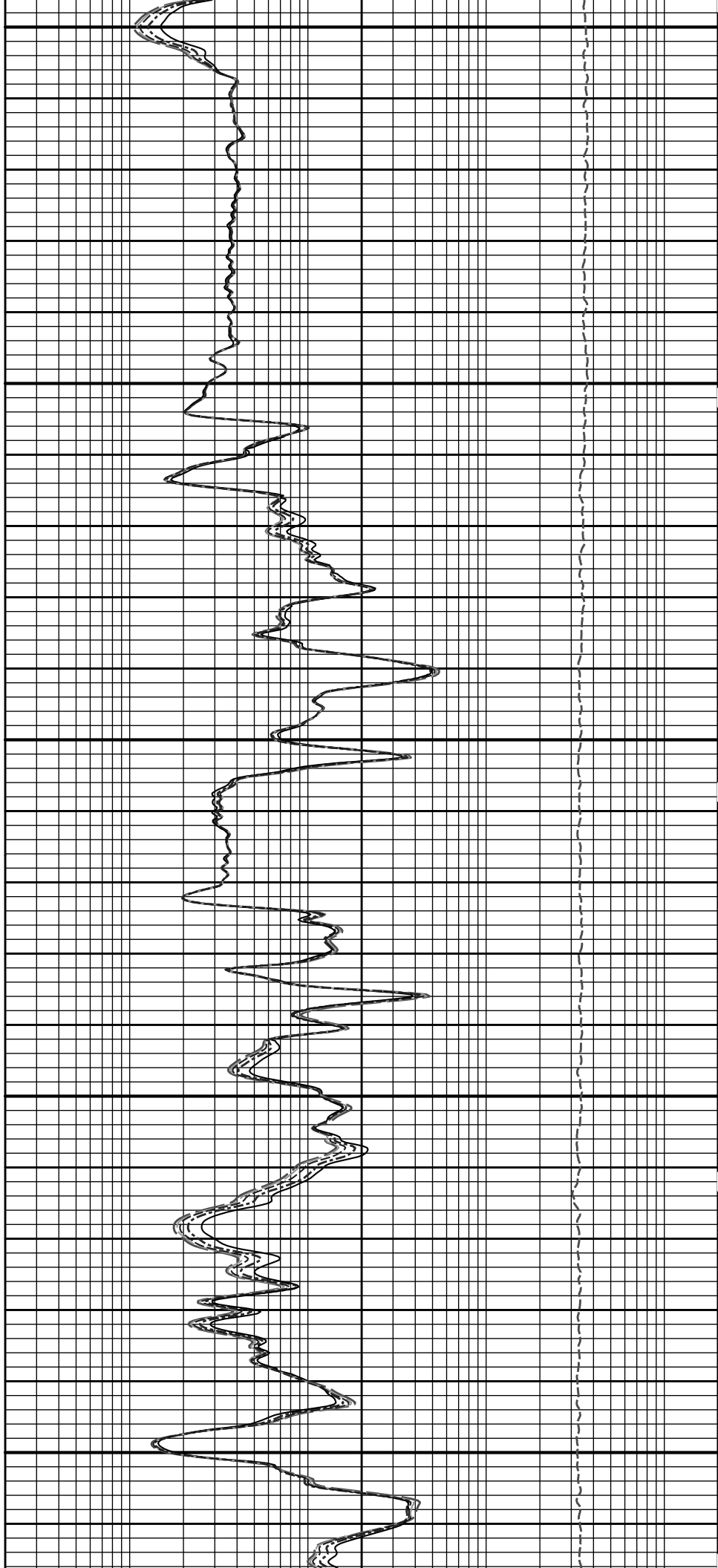
3400

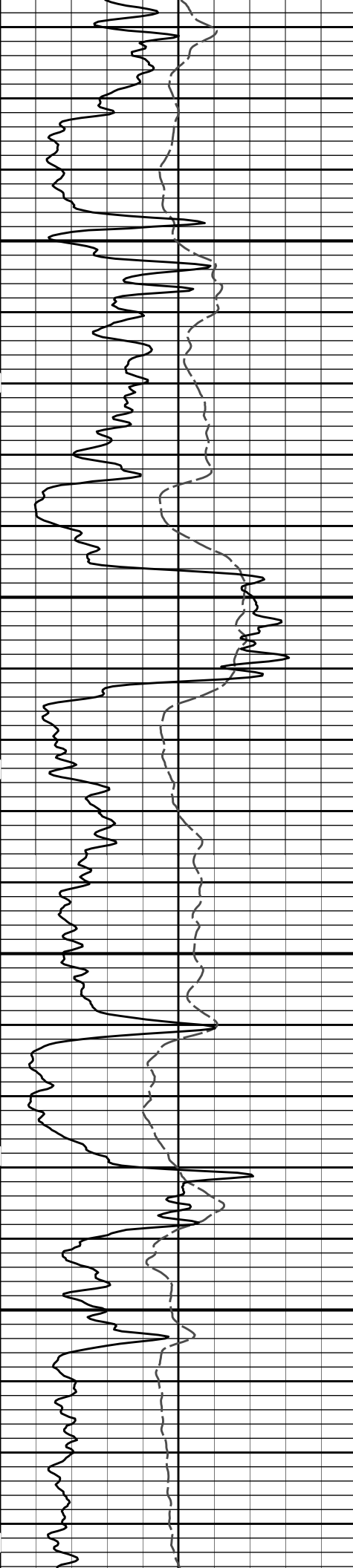




3500

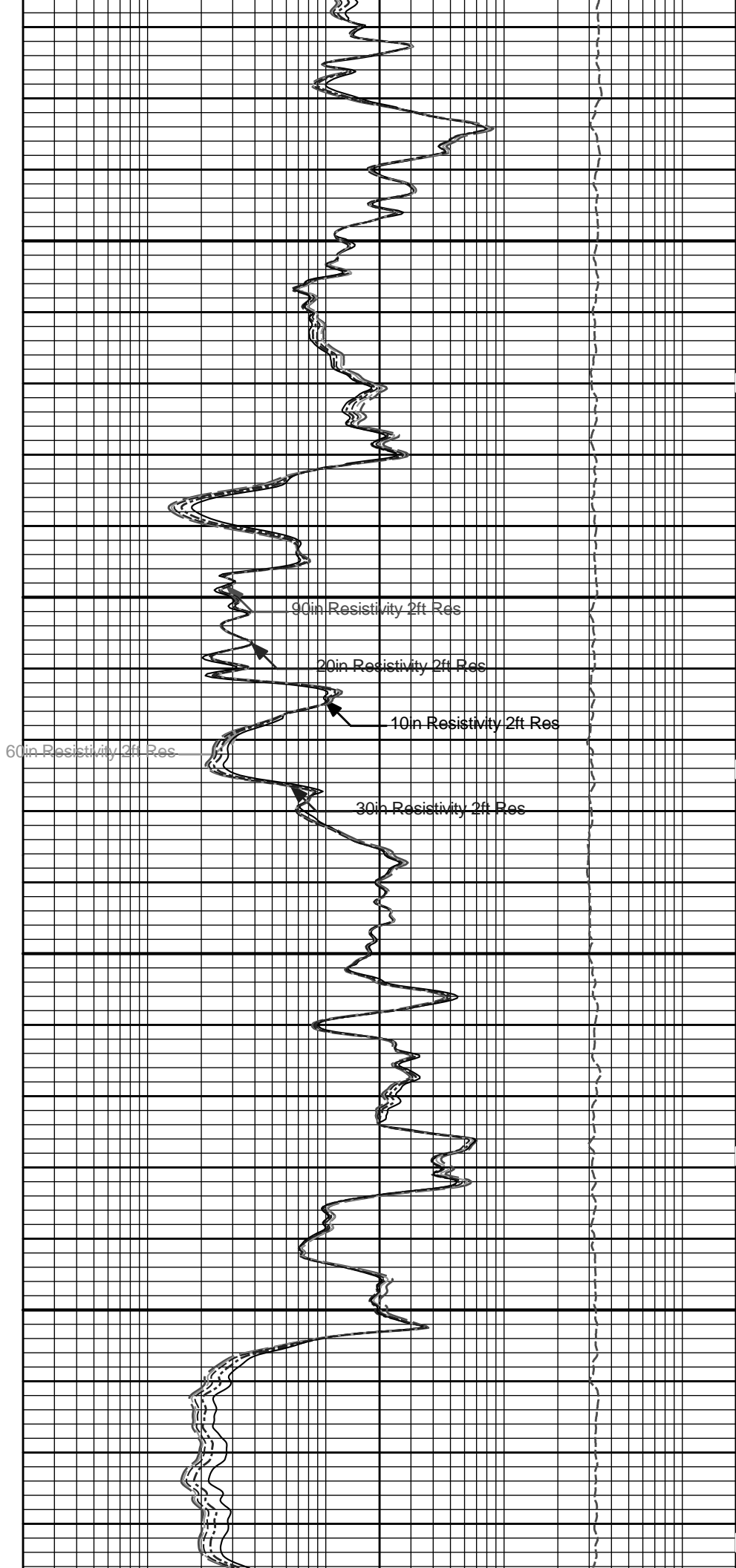
3600

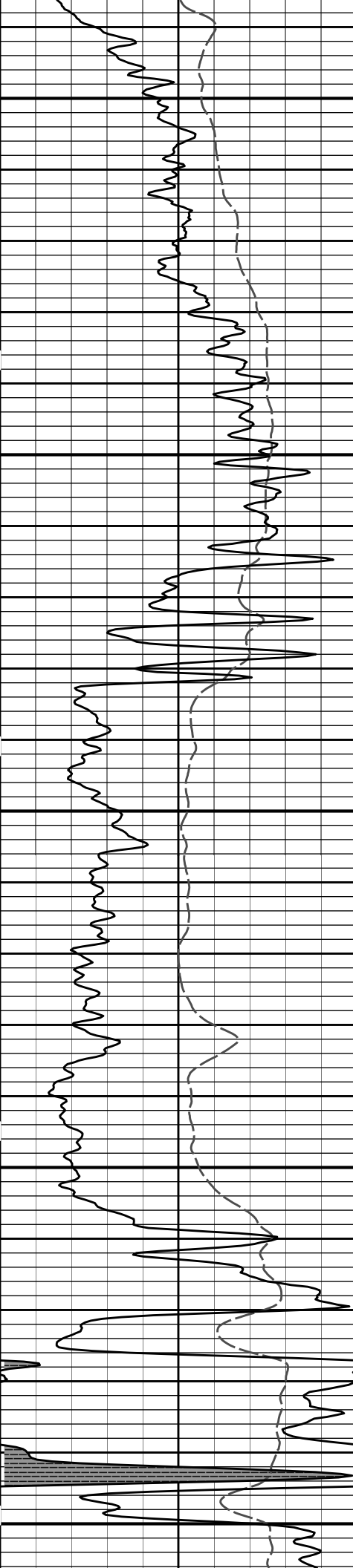




3700

3800

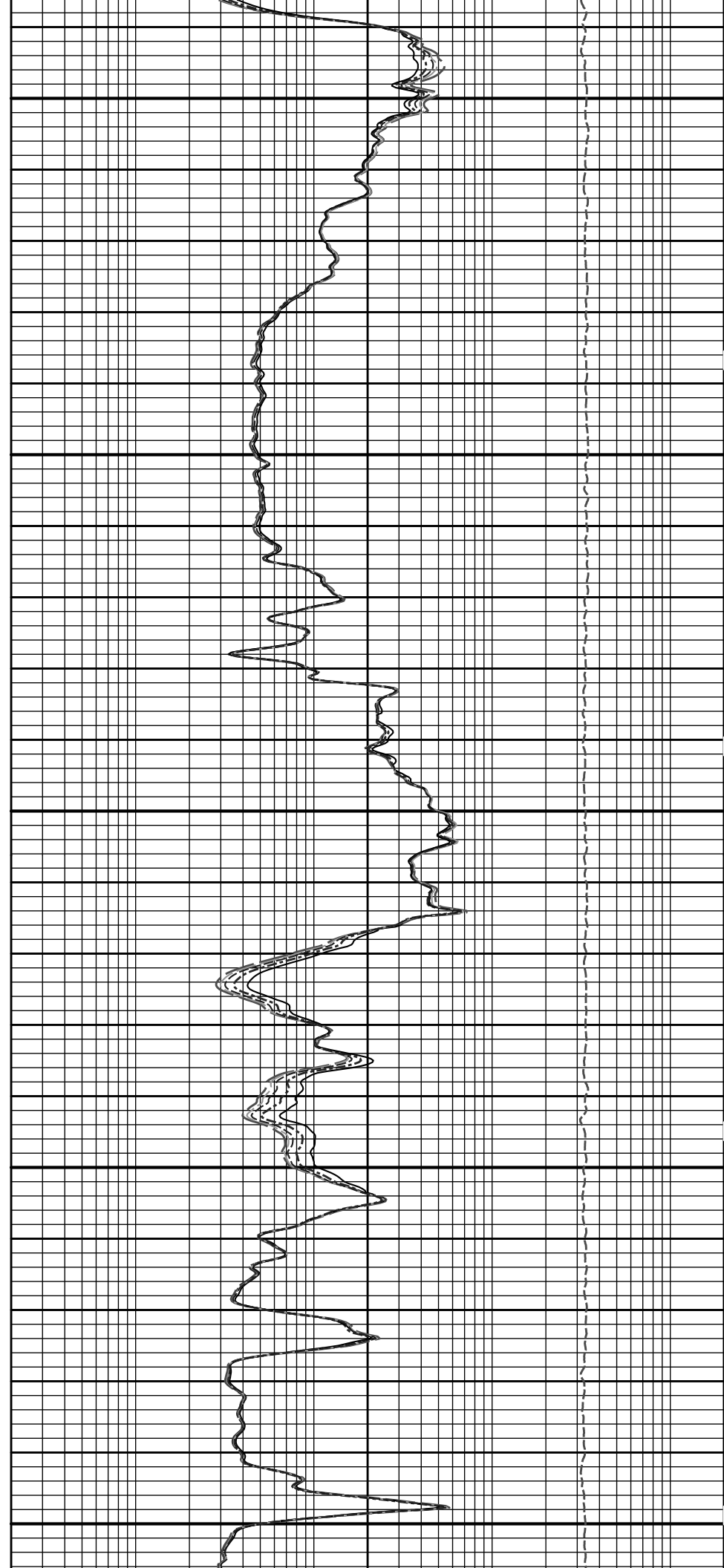


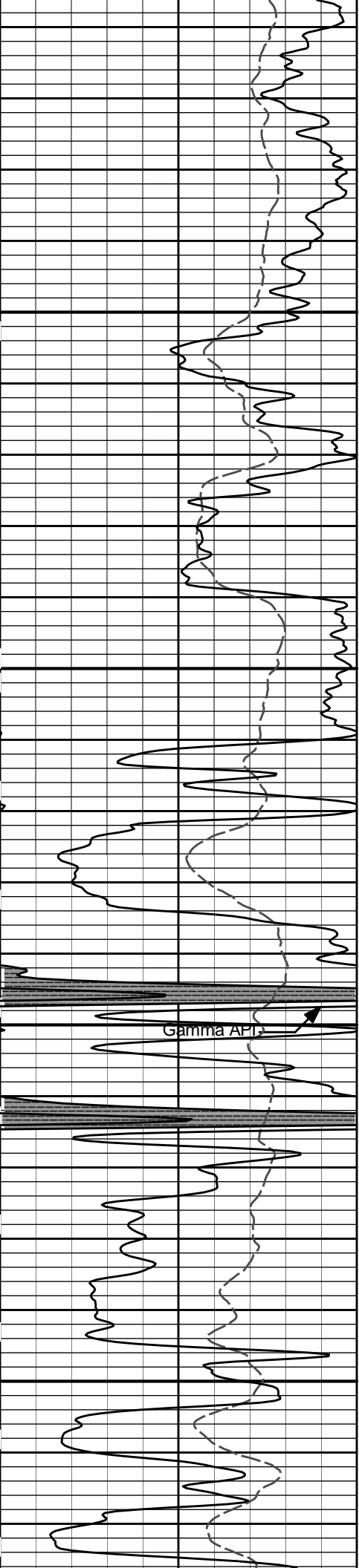


3900

4000

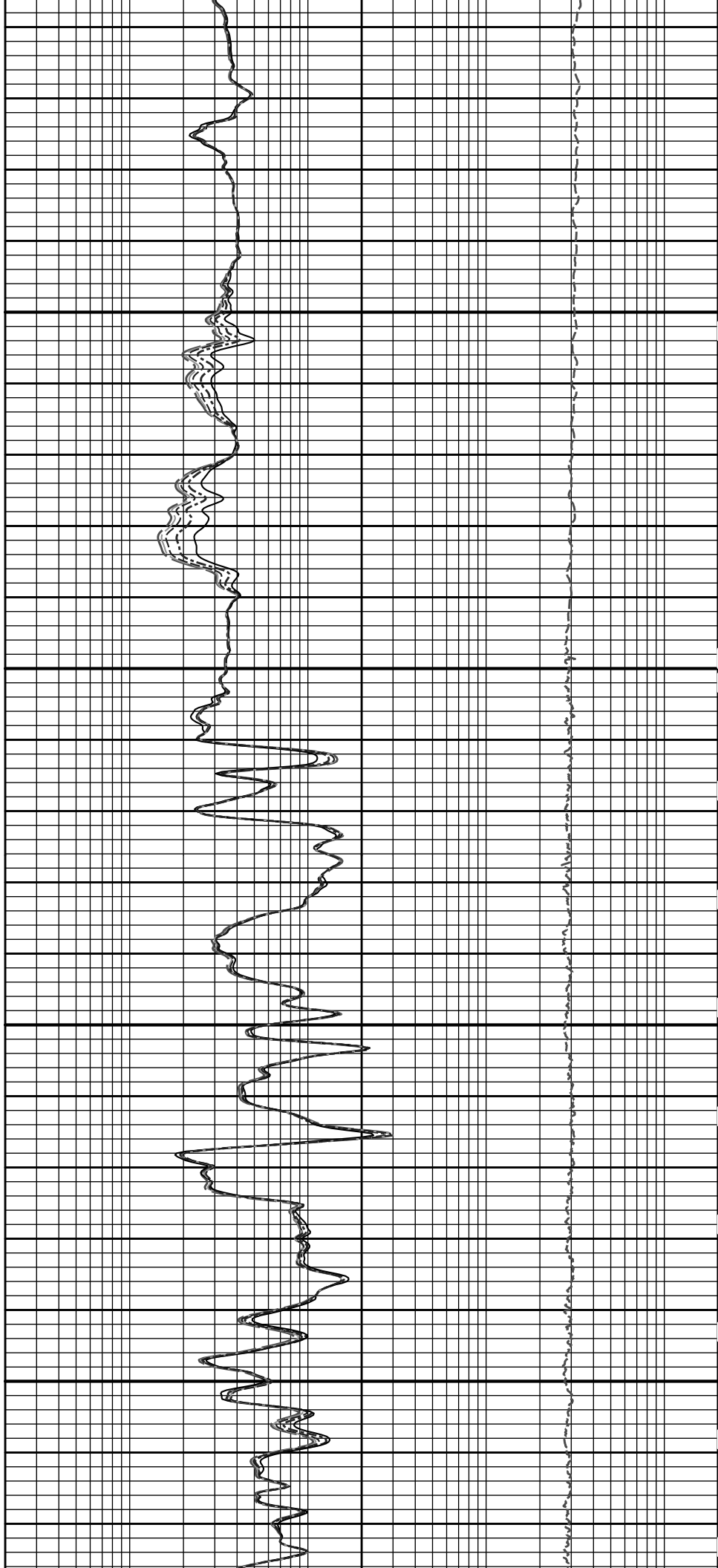
4100

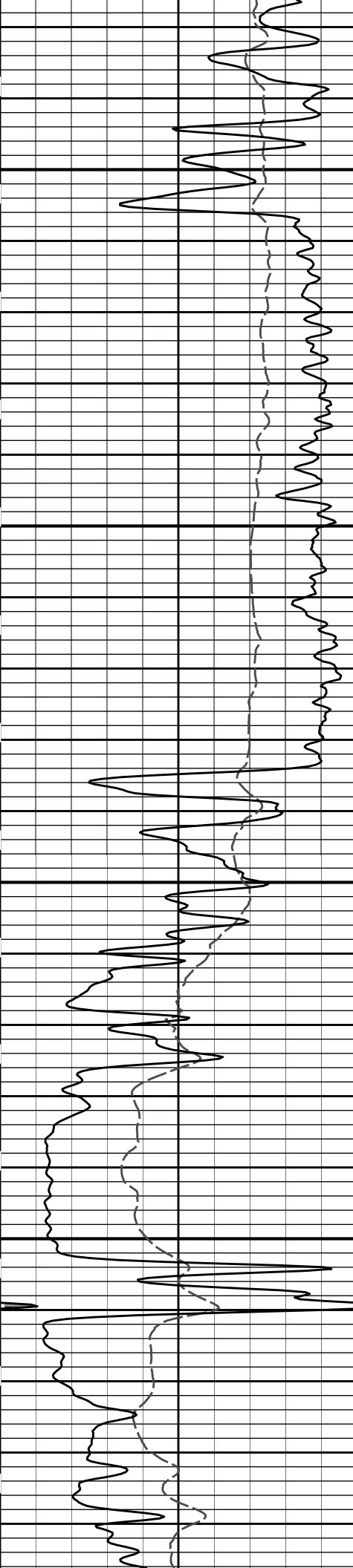




4200

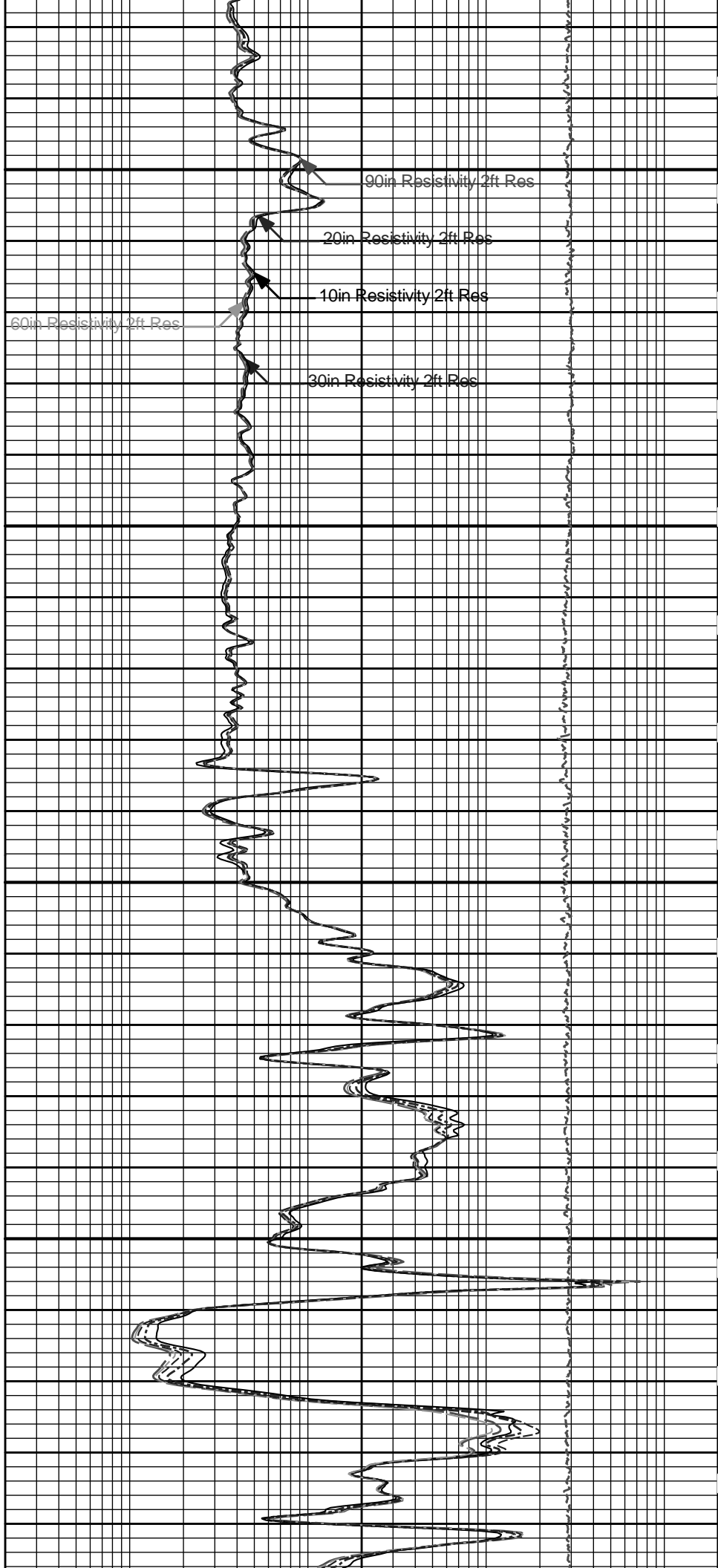
4300





4400

4500



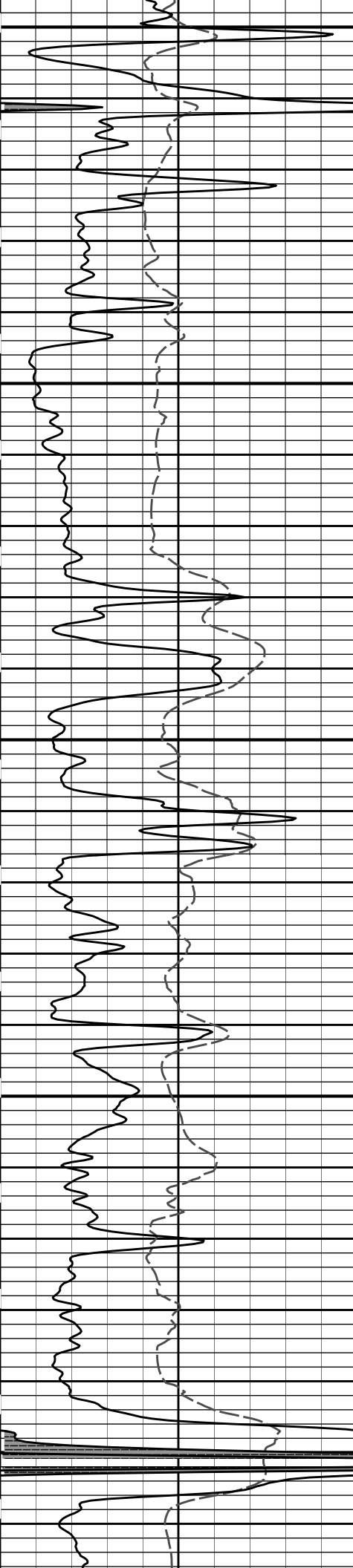
90in Resistivity 2ft Res

20in Resistivity 2ft Res

10in Resistivity 2ft Res

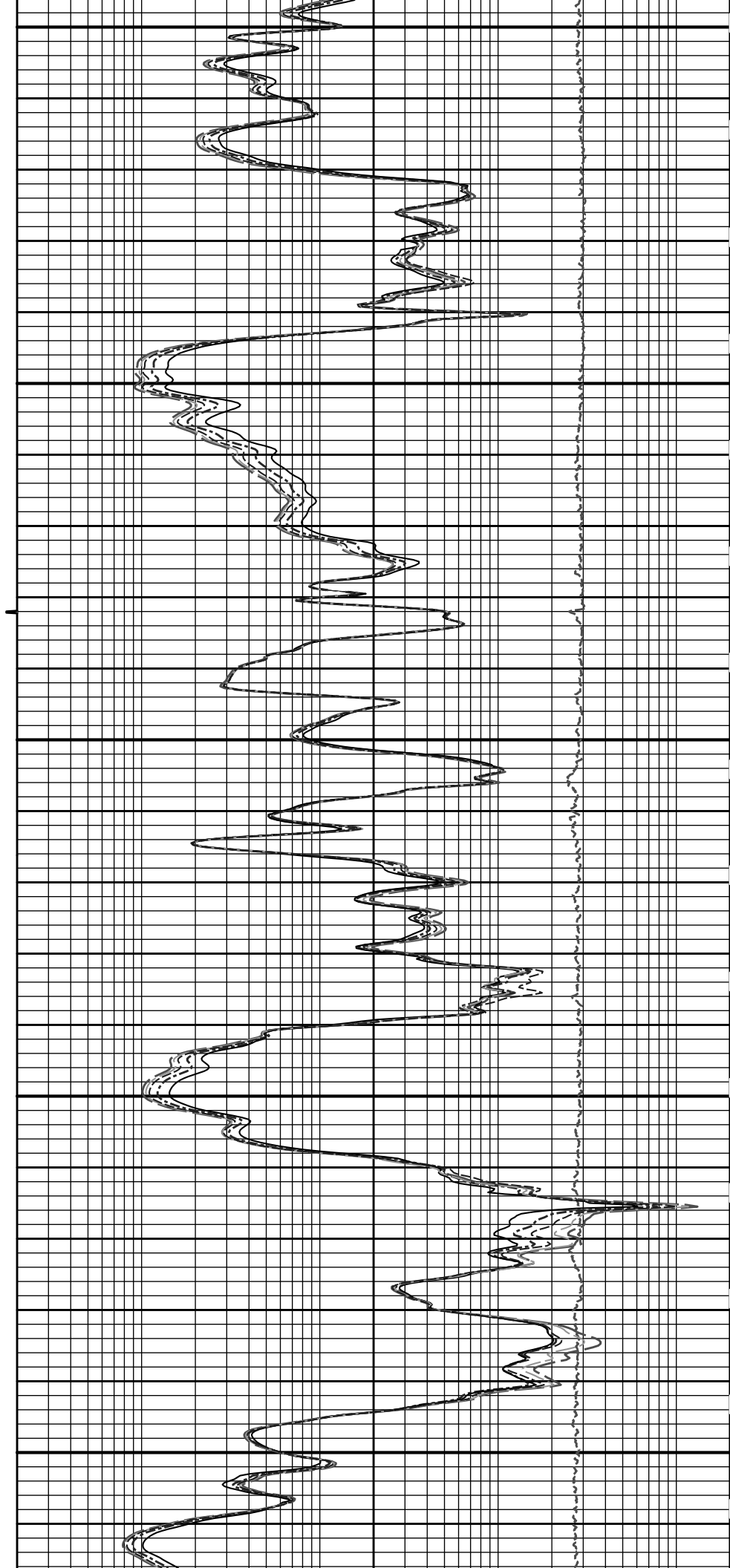
60in Resistivity 2ft Res

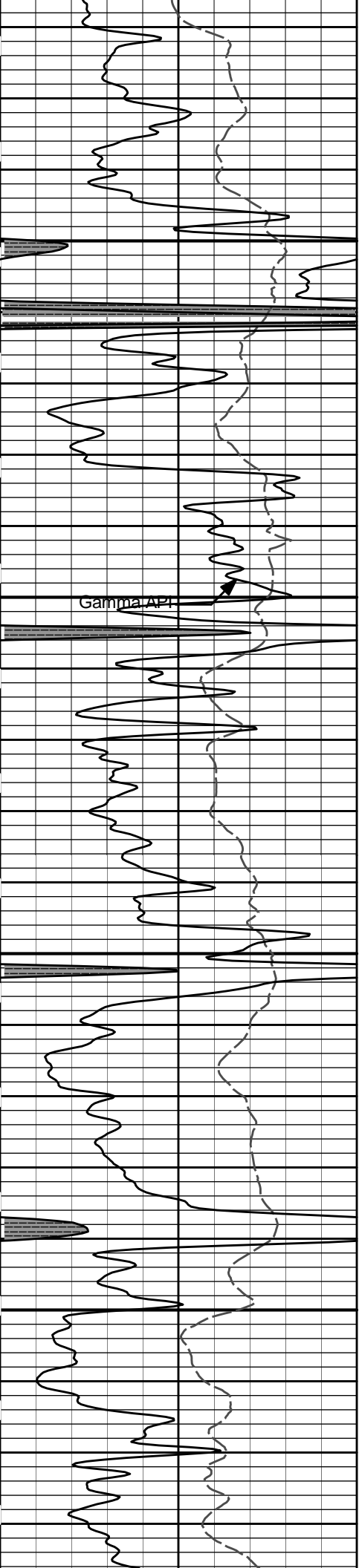
30in Resistivity 2ft Res



4600

4700

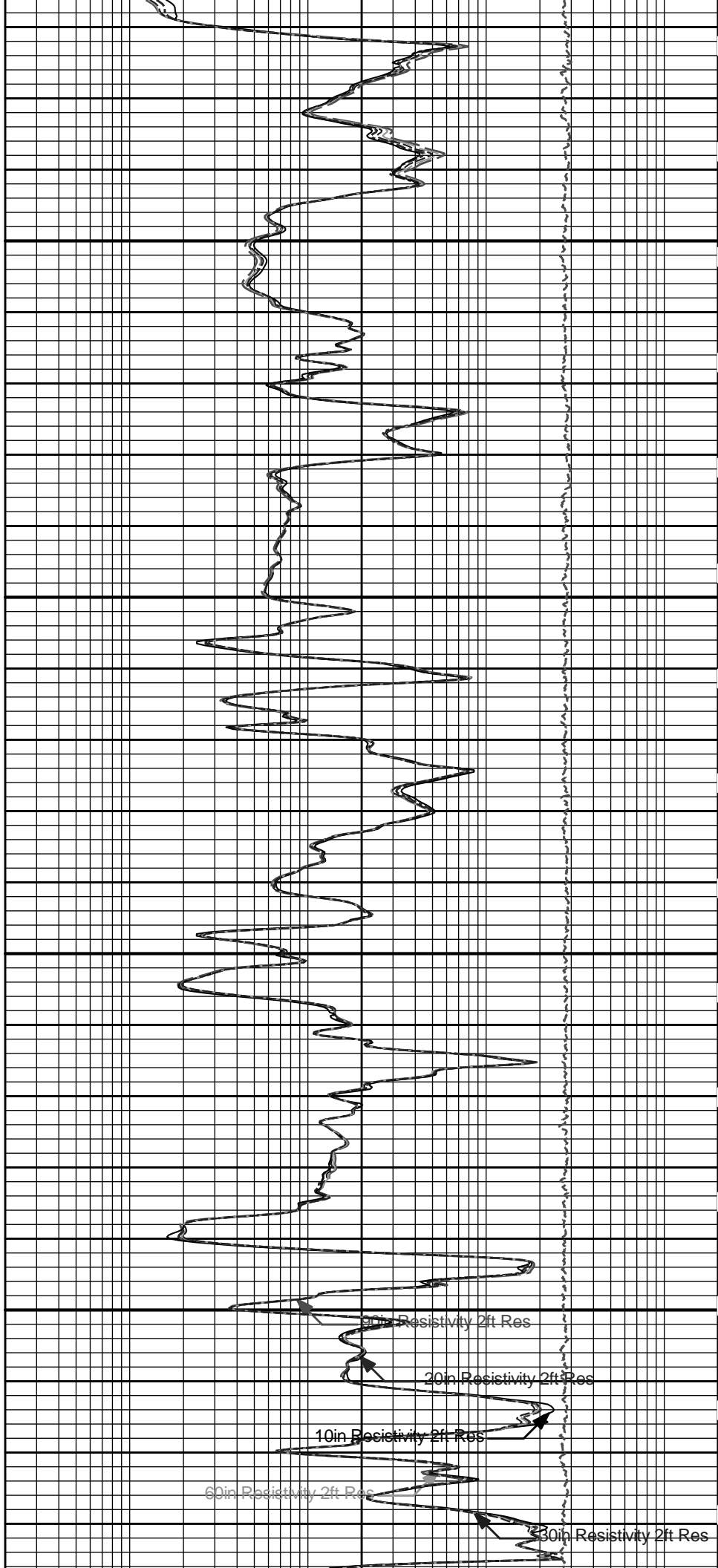




4800

4900

Gamma API



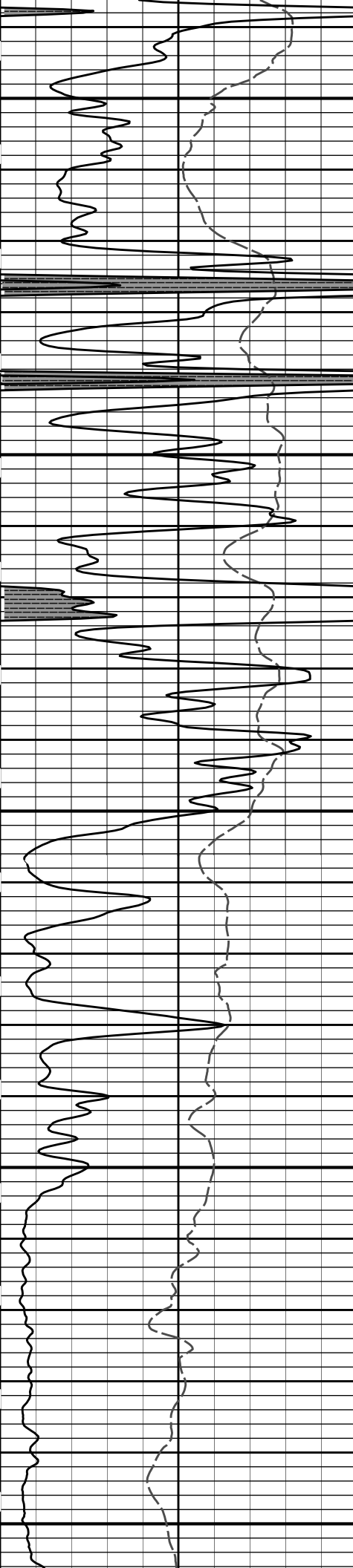
10in Resistivity 2ft Res

20in Resistivity 2ft Res

30in Resistivity 2ft Res

60in Resistivity 2ft Res

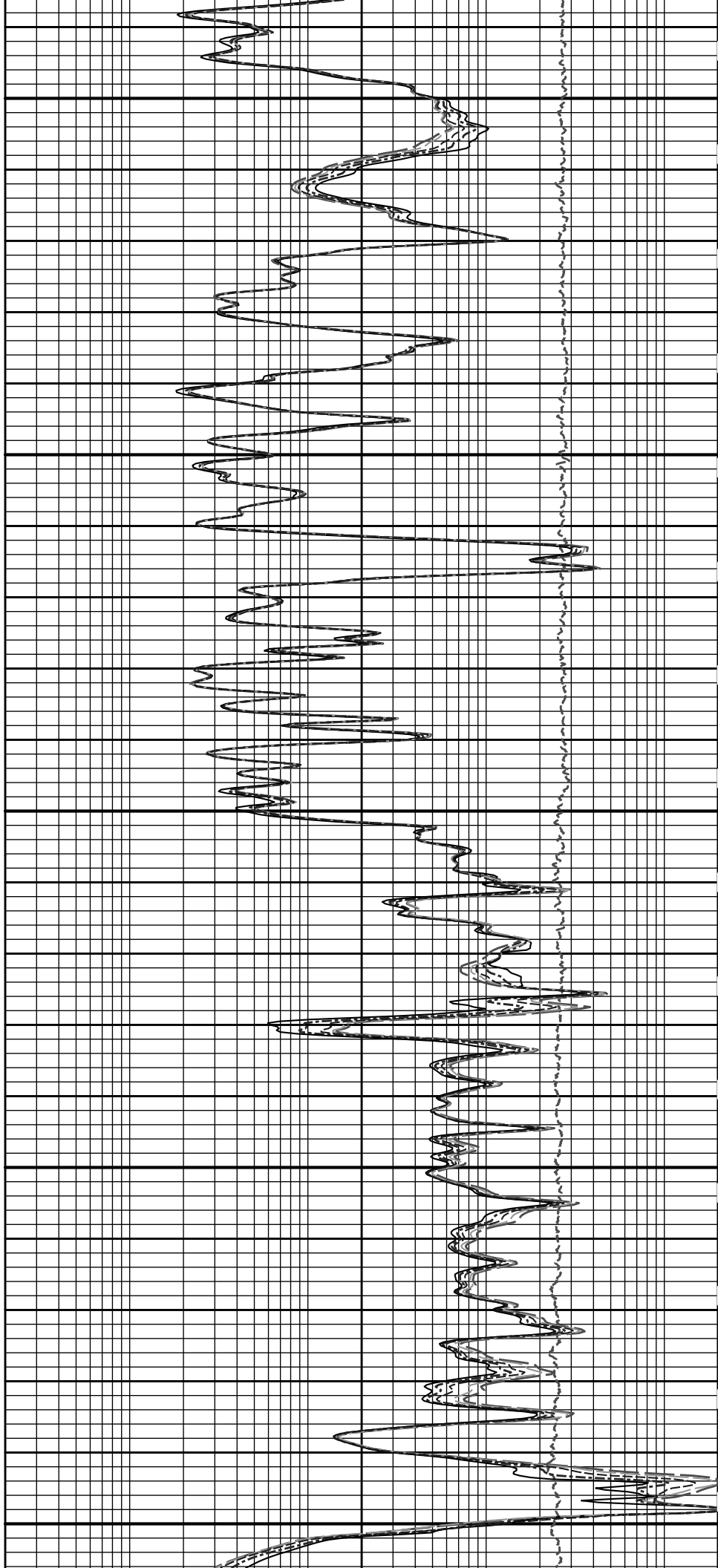
30in Resistivity 2ft Res

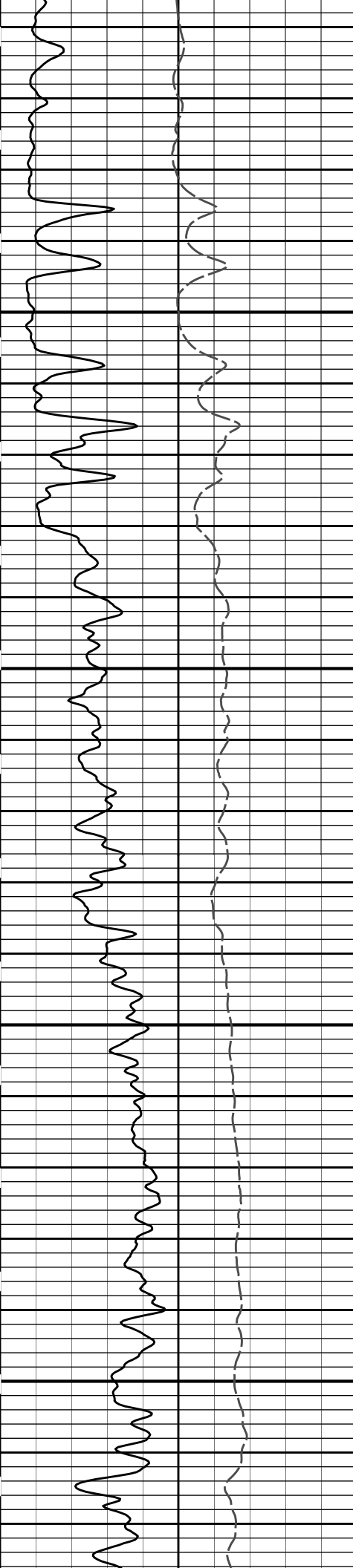


5000

5100

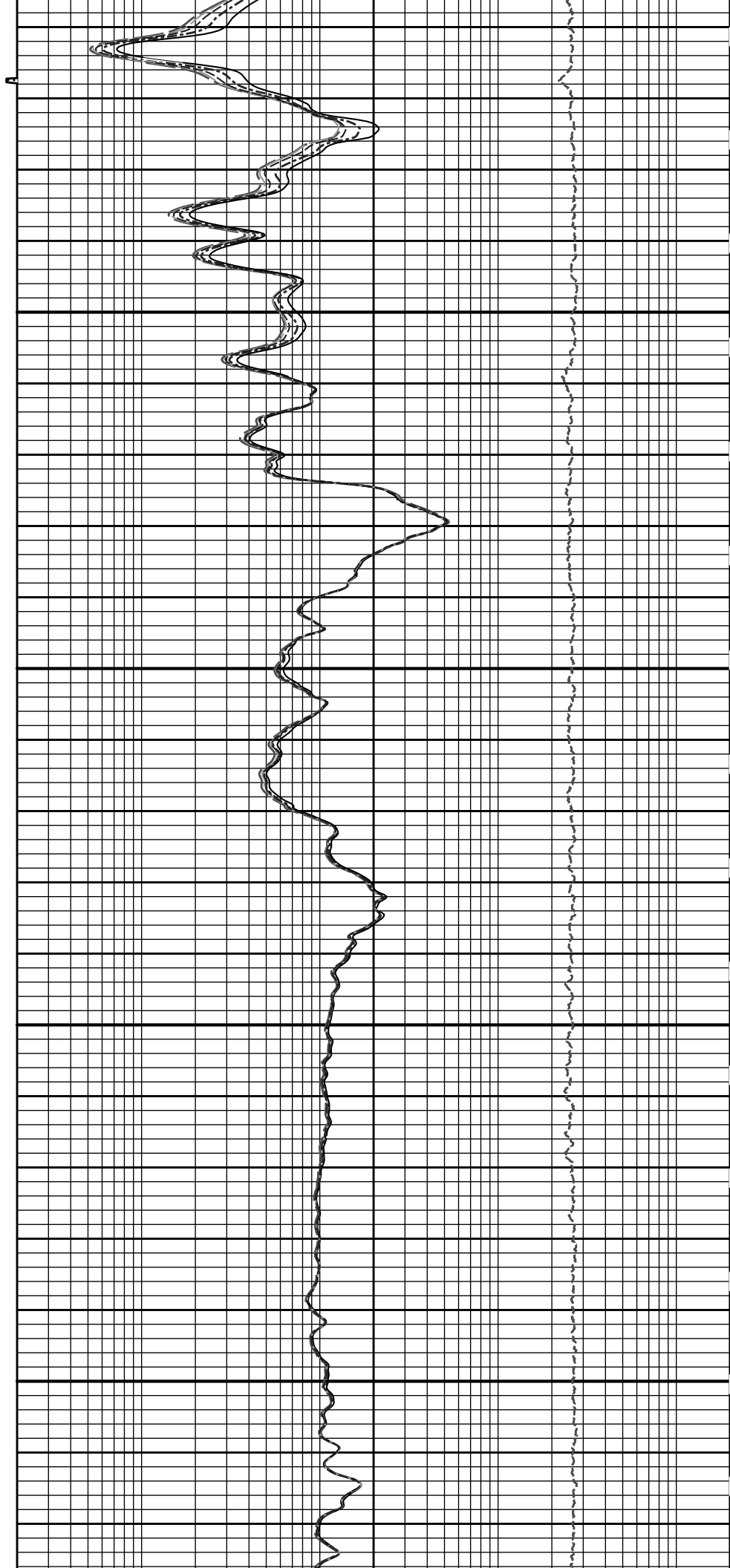
5200

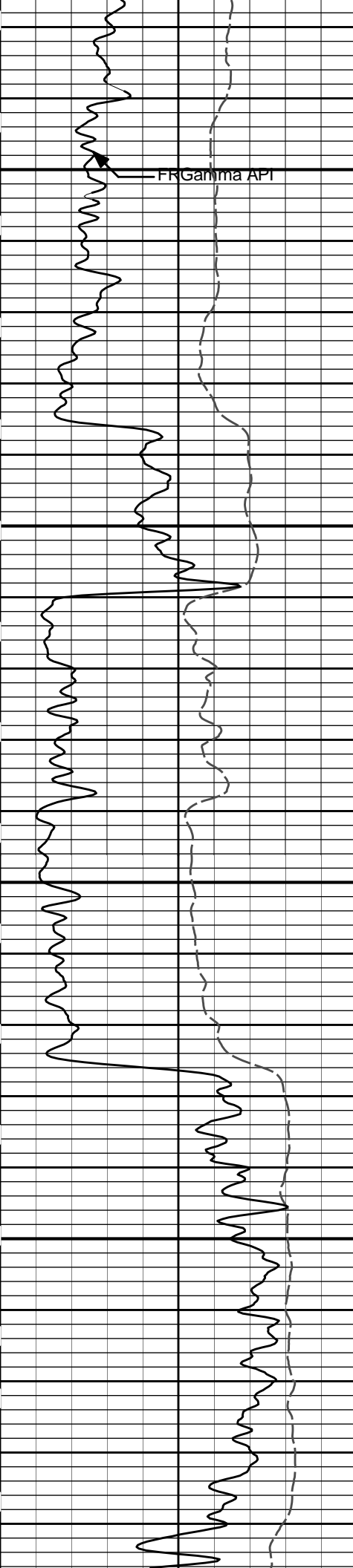




5300

5400

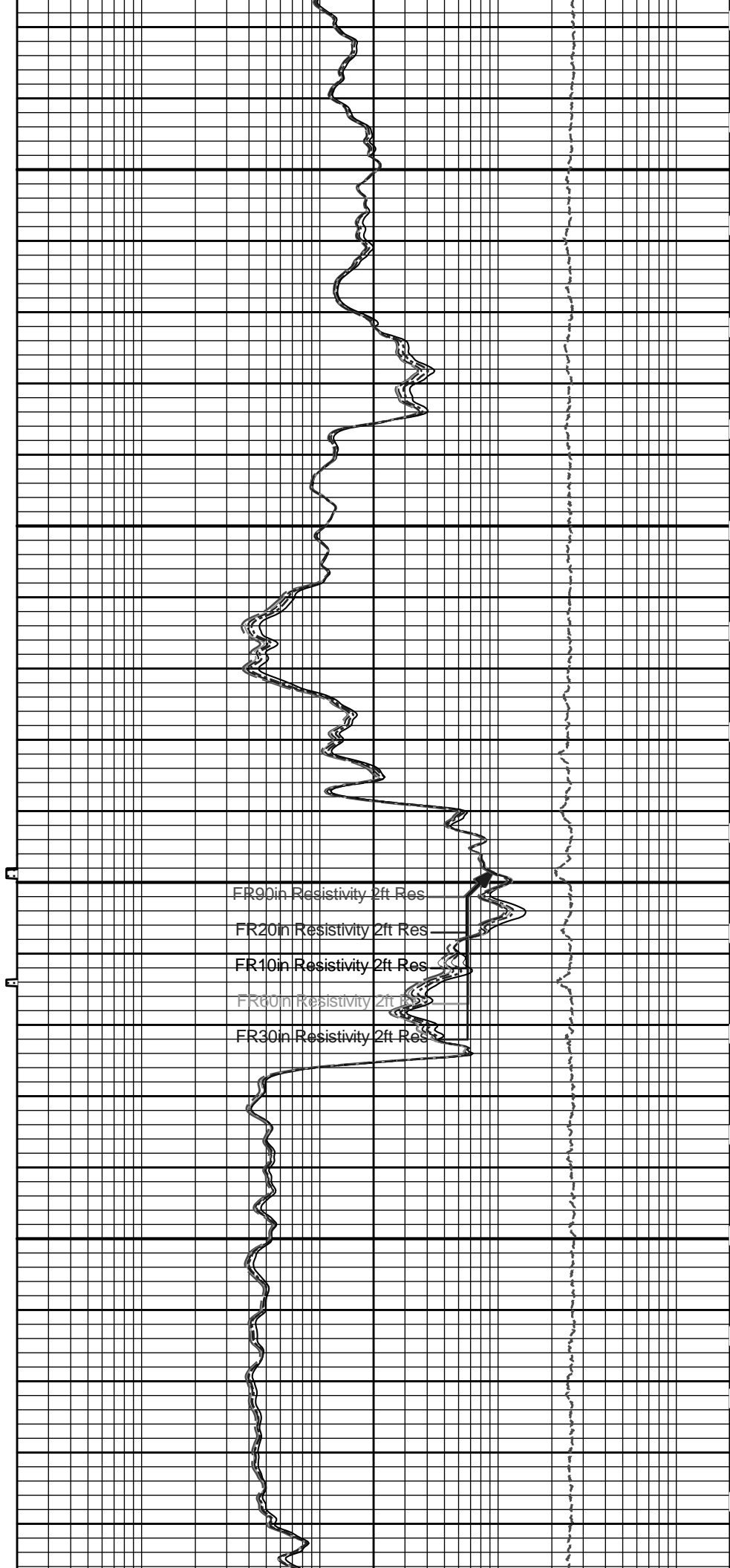




FR Gamma API

5500

5600



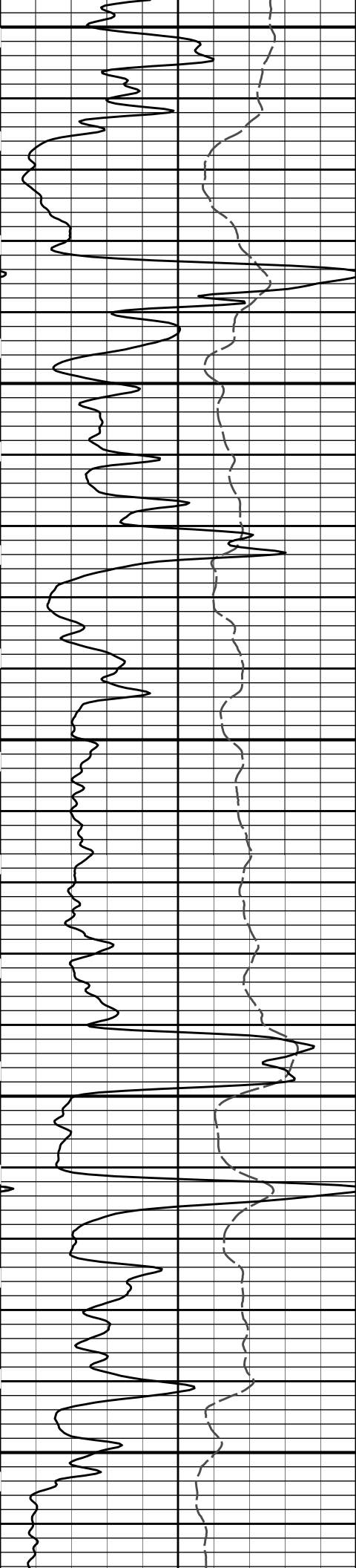
FR90in Resistivity 2ft Res

FR20in Resistivity 2ft Res

FR10in Resistivity 2ft Res

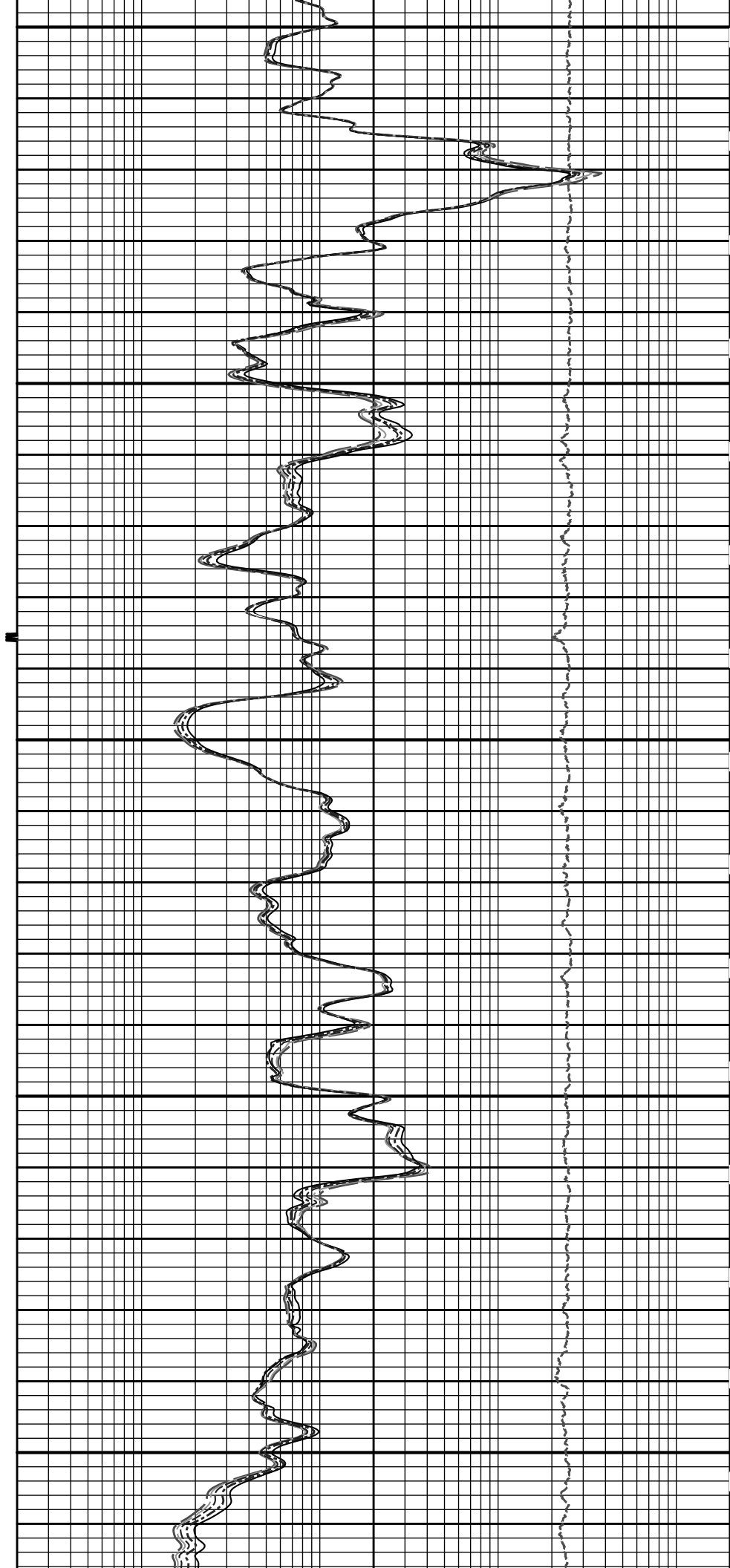
FR60in Resistivity 2ft Res

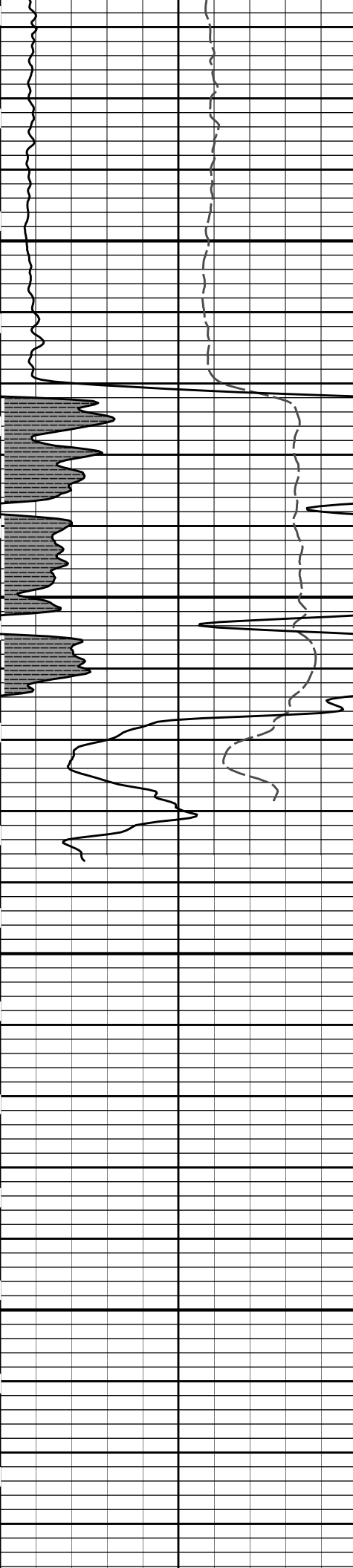
FR30in Resistivity 2ft Res



5700

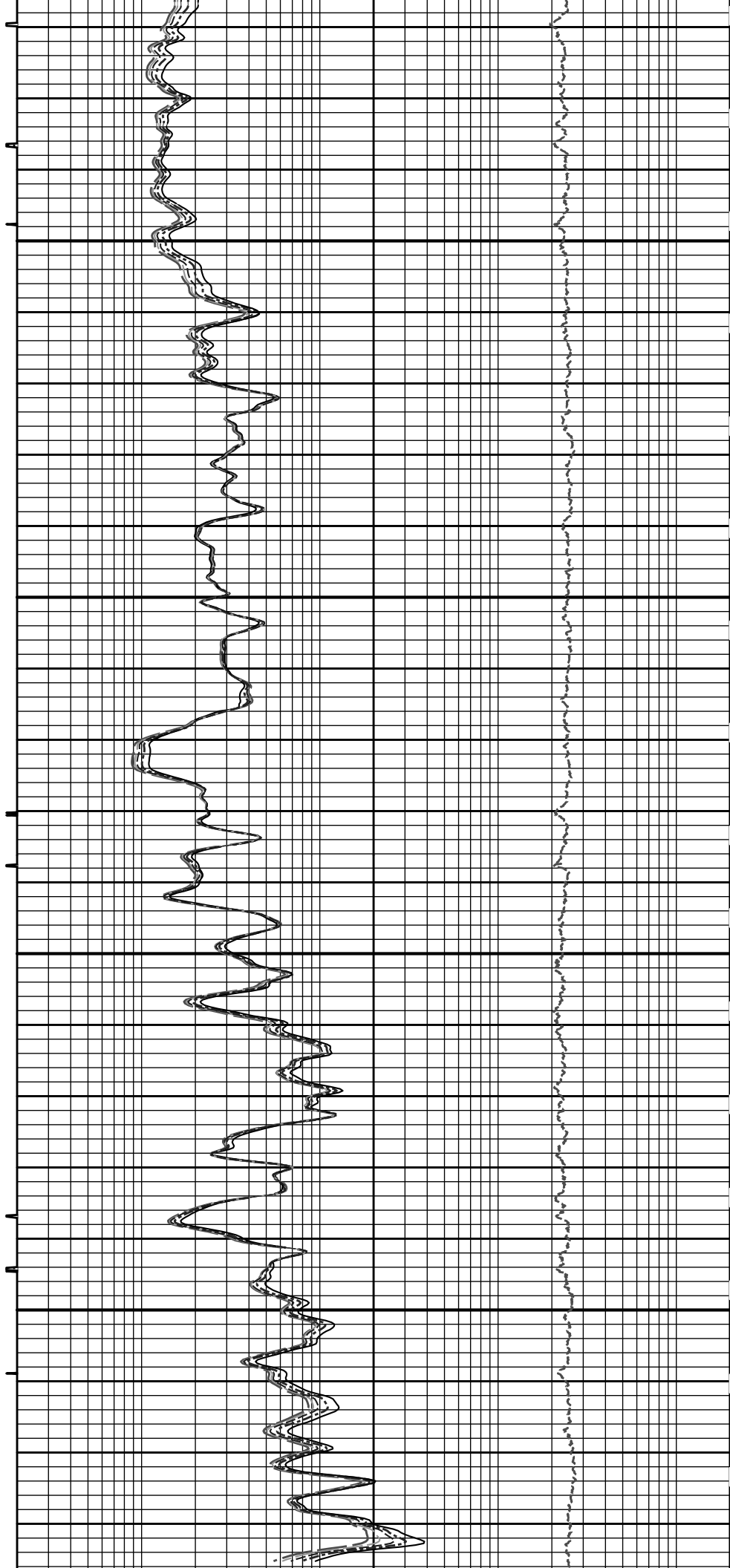
5800



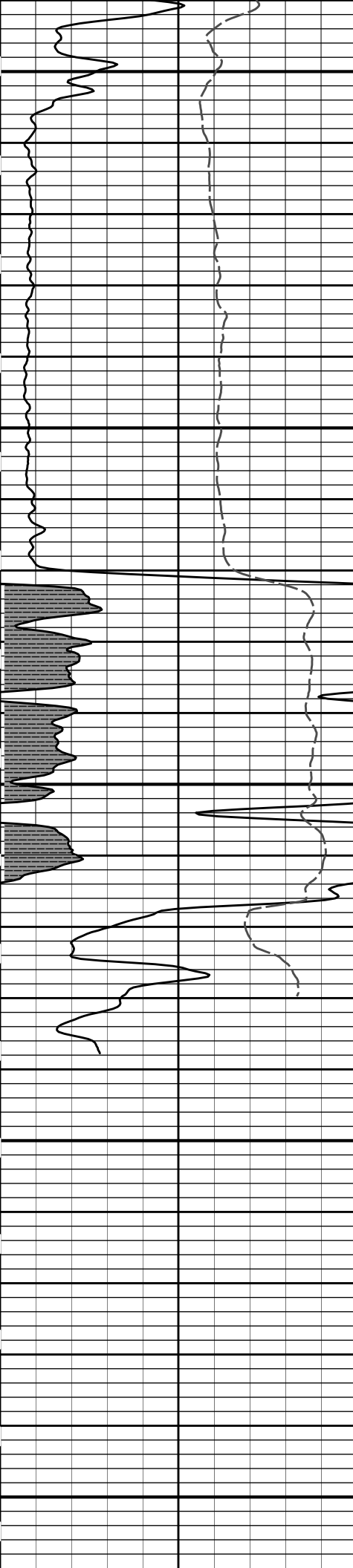


5900

6000

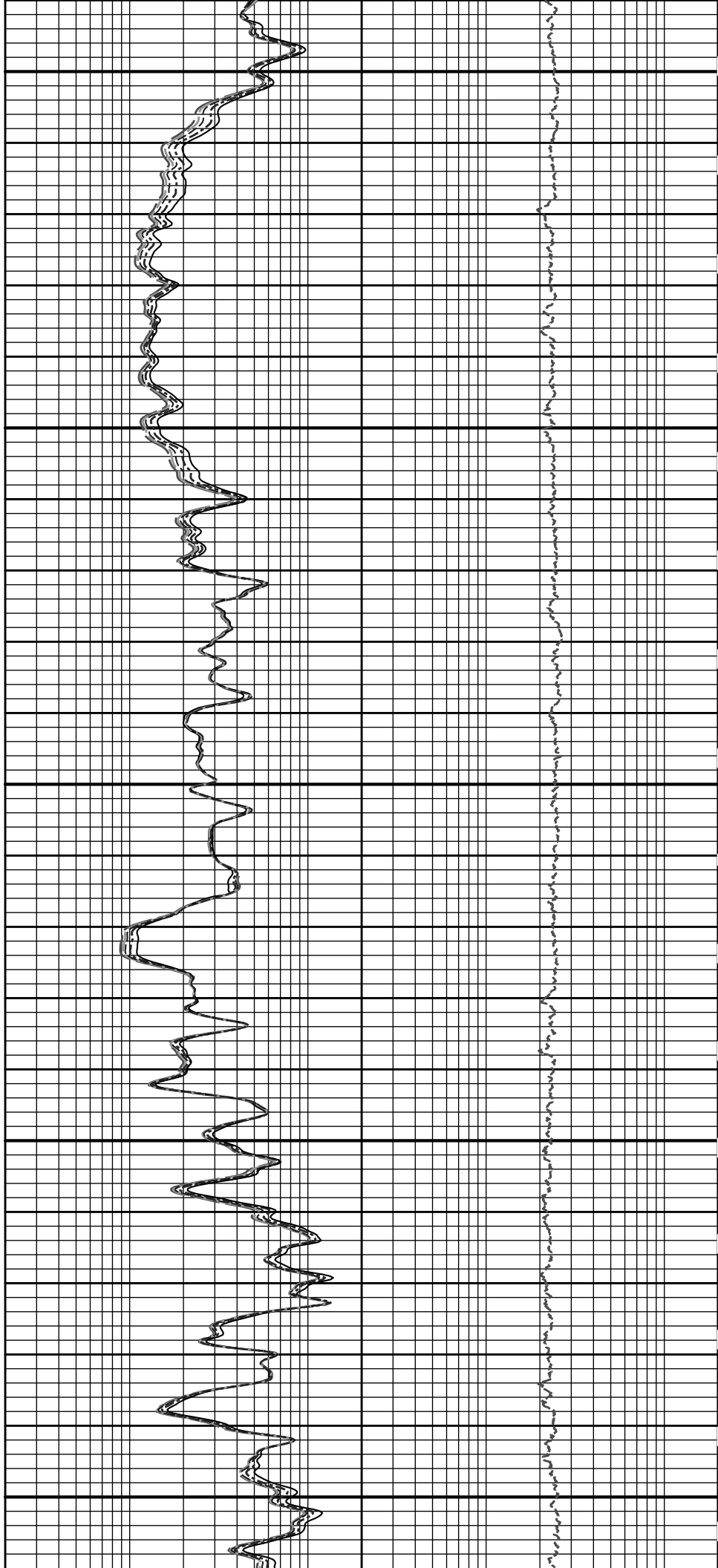






5900

6000





CSNG-10736164  
114.00 lbs

Ø 3.625 in →

8.17 ft

← CSNG @ 102.40 ft

99.86 ft

DSN Decentralizer-  
11005605  
6.60 lbs

Ø 5.000 in\* →

9.69 ft

← DSN Far @ 92.93 ft  
← DSN Near @ 92.18 ft

90.18 ft

DSNT-11019643  
174.00 lbs

Ø 3.625 in →

SDLT-I43\_M489  
360.00 lbs

SDLT Pad-P81  
65.00 lbs  
Microlog Pad-M489  
8.00 lbs

Ø 4.500 in →

10.81 ft

Microlog @ 82.36 ft  
SDL Caliper @ 82.18 ft  
SDL @ 82.17 ft

79.36 ft

Centralizer 25-002  
8.00 lbs

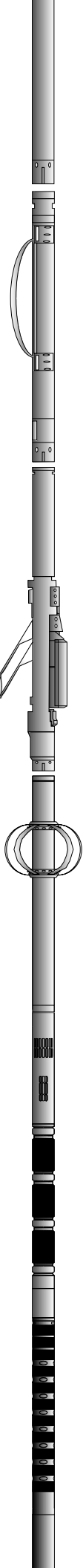
Ø 4.000 in\* →

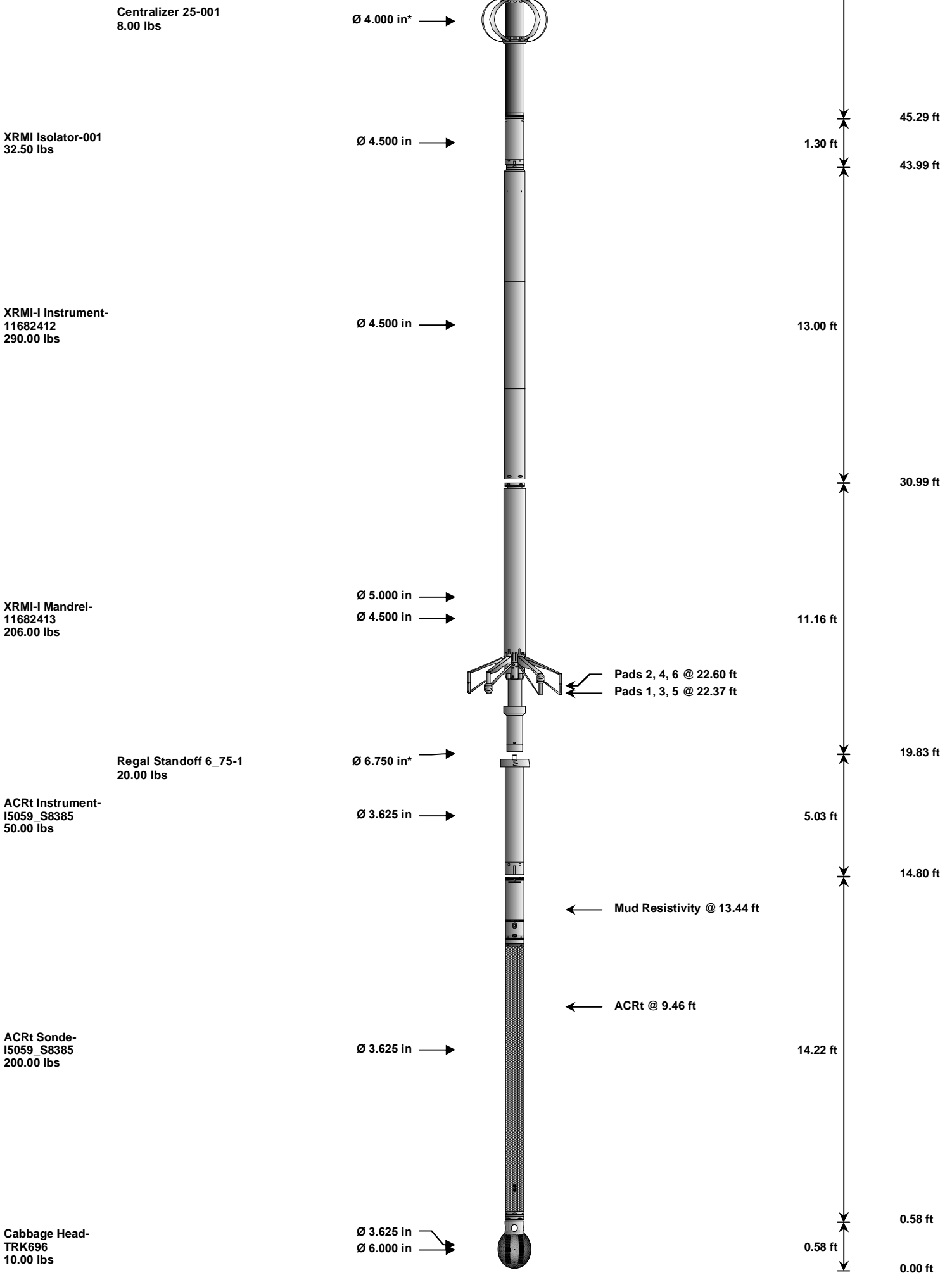
Wavesonic-I-  
10855601  
520.00 lbs

Ø 3.625 in →

34.07 ft

← Wavesonic Delay @ 56.79 ft





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Length (ft)	Speed (fpm)
CH	Standard OH Cable Head	PROT01	30.00	1.92	120.29	300.00
SP	SP Sub	11441455	60.00	3.74	116.55	300.00
GTET	Gamma Telemetry Tool	11039640	165.00	8.52	108.03	60.00
CSNG	Compensated Spectral Natural Gamma	10736164	114.00	8.17	99.86	15.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69	90.18	60.00
DCNT	DSN Decentralizer	11005605	6.60	5.13 *	93.51	300.00
SDLT	Spectral Density Tool	I43_M489	360.00	10.81	79.36	60.00
SDLP	Density Insite Pad	P81	65.00	2.55 *	81.57	60.00
MICP	Microlog Pad	M489	8.00	1.00 *	81.86	60.00
WSTT	WaveSonic Insite	10855601	520.00	34.07	45.29	30.00
OBCEN	Centralizer - 25 in. Overbody	001	8.00	2.08 *	48.27	300.00
OBCEN	Centralizer - 25 in. Overbody	002	8.00	2.08 *	75.63	300.00
	Isolator for the XRMI tool	001	32.50	1.30	43.99	300.00
XRMI	XRMI Navigation - Insite	11682412	290.00	13.00	30.99	30.00
XRMI-I	XRMI Imager - Insite	11682413	206.00	11.16	19.83	30.00
ACRt	Array Compensated True Resistivity Instrument Section	I5059_S8385	50.00	5.03	14.80	300.00
RSOF	Regal Standoff 6.75in	1	20.00	0.52 *	19.31	300.00
ACRt	Array Compensated True Resistivity Sonde Section	I5059_S8385	200.00	14.22	0.58	300.00
CBHD	Cabbage Head	TRK696	10.00	0.58	0.00	300.00
<b>Total</b>			<b>2,327.10</b>	<b>122.21</b>		
* Not included in Total Length and Length Accumulation.						
<b>Data: ALBERTA_MARIE_1\0001 SP-GTET-DSN-SDL-WSTT-XRMI-ACRT-CHWIDLE</b>						<b>Date: 16-Jul-12 22:01:36</b>

# HALLIBURTON

## CALIBRATION REPORT

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION			
<b>Tool Name:</b>	<b>ACRt Sonde - I5059_S8385</b>	<b>Reference Calibration Date:</b>	<b>12-Jul-12 16:18:52</b>
<b>Engineer:</b>	<b>T. HYDE</b>	<b>Calibration Date:</b>	<b>12-Jul-12 16:29:47</b>
<b>Software Version:</b>	<b>WL INSITE R3.6.0 (Build 3)</b>	<b>Calibration Version:</b>	<b>1</b>
<b>Host Tool Name:</b>	<b>ACRt Instrument - I5059_S8385</b>		

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.03	1.05	0.95	1.04	1.05	0.95	1.04	1.05
A2 (50")	0.95	1.01	1.05	0.95	1.02	1.05	0.95	1.02	1.05
A3 (29")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.01	1.05	0.95	1.02	1.05	0.95	1.02	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.01	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.00	1.05	0.95	1.00	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	-1.40	2	-6	-4.43	-2	-8	-4.52	-2
A2 (50")	-7	-2.26	0	-7	-3.72	0	-7	-4.52	0
A3 (29")	-27	-13.36	-9	-9	-3.56	-3	-7	-2.73	-1
A4 (17")	-180	-107.06	-60	-45	-33.57	-15	-39	-26.06	-13
A5 (10")	N/A	N/A	N/A	-150	-82.67	-50	-80	-41.94	-10
A6 (6")	N/A	N/A	N/A	175	341.28	525	90	170.50	270

**TRANSMITTER CURRENT GAIN**

**R-MUD VERIFICATION**

Signal	Lower	R	Upper
12K	0.6	0.92	1.3
36K	1.0	1.37	2.0
72K	1.0	1.63	2.0

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 RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

TOOL OK TO LOG

**CALIBRATION SUMMARY**

Sensor	Shop	Field	Post	Difference	Tolerance	Units
<b>ACRt Sonde-I5059_S8385</b>						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

Data: ALBERTA\_MARIE\_1\0001 SP-GTET-DSN-SDL-WSST-XRMI-ACRT-CHNDLE

Date: 17-Jul-12 02:51:08

**HALLIBURTON**

**PARAMETERS REPORT**

Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	8.750	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.100	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	2000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	1.000	ohmm
	SHARED	TRM	Temperature of Mud	82.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	7.000	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	6100.00	ft
	SHARED	BHT	Bottom Hole Temperature	130.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	XRMI-I Instrument	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	XRMI-I Instrument	
	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	ohm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohm
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	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
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	
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
Wavesonic-I	WSOK	Process WSTT?	Yes	
Wavesonic-I	AFIL	Adaptive Filtering?	No	
Wavesonic-I	PINT	Process 1 Sample and Skip	0	
Wavesonic-I	PROM	Process Mode: M=1,MX=2,MY=3,MXY=4	4	
Wavesonic-I	DTSH	Delta -T Shale	100.00	uspf
Wavesonic-I	DTMT	Delta -T Matrix Type	User define	
Wavesonic-I	DTMA	Delta -T Matrix	47.60	uspf
Wavesonic-I	DTFL	Delta -T Fluid	189.00	uspf
Wavesonic-I	RHOM	Matrix Density	2.7100	g/cc
Wavesonic-I	RHOF	Fluid Density	1.0000	g/cc
Wavesonic-I	SMTH	Semblance Threshold	0.25	
Wavesonic-I	VPVS	VPVS Ratio for Porosity	1.40	
Wavesonic-I	APEQ	Acoustic Porosity Equation	Wylie	
Wavesonic-I	NAVS	Navigation Source Tool	XRMI-I Instrument	
XRMI-I Instrument	WRTI	Survey Writing Interval	30	ft
XRMI-I Instrument	SOPT	Smoothing Option	None	
XRMI-I Mandrel	DIMG	Process XRMI?	Yes	
XRMI-I Mandrel	ROTI	Rotate Image (N-E-S-W-N)?	Yes	
XRMI-I	ACN	Use Button Auto Gain?	Yes	

Mandrel	AGN	Use Button Auto Gain?	Yes	
XRMI-I Mandrel	BCLR	Button Auto Gain Color	127	
XRMI-I Mandrel	BFIL	Button Auto Gain Filter	0.020	
XRMI-I Mandrel	BGAN	Button Gain Value	0.001	
XRMI-I Mandrel	BOFF	Button Offset	0	
XRMI-I Mandrel	DIPE	Process Dipmeter Calculations?	Yes	
XRMI-I Mandrel	BHCS	Process Borehole Corrections?	Yes	
XRMI-I Mandrel	CLOK	Process Caliper Outputs?	Yes	
XRMI-I Mandrel	CMAX	Caliper Maximum Limit	100.0	in
XRMI-I Mandrel	CMIN	Caliper Mimimum Limit	3.5	in
XRMI-I Mandrel	NAVS	Navigation Source Tool	XRMI-I Instrument	
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

# HALLIBURTON

## INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
<b>Depth Panel</b>				
TENS	Tension	0.00	NO	
<b>SP Sub</b>				
PLTC	Plot Control Mask	118.51	NO	
SP	Spontaneous Potential	118.51	BLK	1.250
SPR	Raw Spontaneous Potential	118.51	NO	
SPO	Spontaneous Potential Offset	118.51	NO	
<b>GTET</b>				
TPUL	Tension Pull	110.49	NO	
GR	Natural Gamma Ray API	110.49	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	110.49	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	110.49	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
<b>CSNG</b>				
TPUL	Tension Pull	102.40	NO	
STAT	Status	102.40	NO	
FRMC	Tool Frame Count	102.40	BLK	0.250
TFRM	Total Frames	102.40	NO	
LSPD	Line Speed	102.40	BLK	0.250
CTIM	Accumulation time for sample	102.40	BLK	0.250
NOIS	Spectral Noise	102.40	BLK	0.250
STAB	Stabilizer Voltage in mv	102.40	BLK	0.250
STBP	Stabilizer 60 KEV Peak	102.40	BLK	0.250

AMER	Americium	102.40	BLK	0.250
FTMP	Flask PCB Temperature	102.40	BLK	0.250
SPEL	Low Energy Spectrum	102.40	BLK	0.250
SPEH	High Energy Spectrum	102.40	BLK	0.250
SSP	Stabilization Energy Spectrum	102.40	BLK	0.250
CSPC	CSNG Lo Hi Spectrum Data	102.40	NO	
<b>DSNT</b>				
TPUL	Tension Pull	92.08	NO	
RNDS	Near Detector Telemetry Counts	92.18	BLK	1.417
RFDS	Far Detector Telemetry Counts	92.93	TRI	0.583
DNTT	DSN Tool Temperature	92.18	NO	
DSNS	DSN Tool Status	92.08	NO	
ERND	Near Detector Telemetry Counts EVR	92.18	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	92.93	BLK	0.000
ENTM	DSN Tool Temperature EVR	92.18	NO	
<b>SDLT</b>				
TPUL	Tension Pull	82.18	NO	
PCAL	Pad Caliper	82.18	TRI	0.250
ACAL	Arm Caliper	82.18	TRI	0.250
<b>Wavesonic-I</b>				
TPUL	Tension Pull	56.79	NO	
DPSX	Dipole Source X StructureI	45.29	NO	
DPSY	Dipole Source Y StructureI	45.29	NO	
DPSM	Monopole Source Structure	45.29	NO	
WVST	Wavesonic Compressed Data	56.79	NO	
TPUL	Tension Pull	56.79	NO	
XMS1	Wave Sonic Status Word 1	45.29	NO	
XMS2	Wave Sonic Status Word 2	45.29	NO	
XMS1	Wave Sonic XMITStatus Word 1	45.29	NO	
XMS1	Wave Sonic XMITStatus Word 2	45.29	NO	
F1HA	Dipole 1 HV After	45.29	NO	
F1HB	Dipole 1 HV Before	45.29	NO	
F2HA	Dipole 2 HV After	45.29	NO	
F2HB	Dipole 2 HV Before	45.29	NO	
F3HA	Monopole HV After	45.29	NO	
F3HB	Monopole HV Before	45.29	NO	
INVT	Input Voltage	45.29	NO	
5VOL	5 Volts	45.29	NO	
MI5A	Minus 5 Volts Analog	45.29	NO	
ITMP	Instrument Temperature	45.29	NO	
PL5A	Plus 5 Volts Analog	45.29	NO	
5VD	Plus 5 Volts Digital	45.29	NO	
TCUR	Tool Current	45.29	NO	
SUPV	Supply Voltage	45.29	NO	
PRVT	Preregulated voltage	45.29	NO	
PRVT	Pre-regulated voltage Xmter	45.29	NO	
TEMP	Temperature	45.29	NO	
ACQN	Acquisition Number	45.29	NO	
XDP	Delay Reference	56.79	NO	
MITM	MIT Mode	56.79	NO	
VERS	Version	45.29	NO	
D1CT	Dipole 1 Compressed Word Count	56.79	NO	
D2CT	Dipole 2 Compressed Word Count	56.79	NO	

MCNT	Monopole Compressed Word Count	56.79	NO
SEQN	Sequence Number	45.29	NO
FREV	Firmware Revision	45.29	NO
MSMP	Monopole Sample Rate	45.29	NO
MSMP	Dipole Sample Rate	45.29	NO
MFWF	Monopole Firing Waveform	45.29	NO
MFRQ	Monopole Frequency	45.29	NO
MDLY	Monopole Delay	45.29	NO
DXWF	Dipole X Firing Waveform	45.29	NO
XFRQ	Dipole X Frequency	45.29	NO
XDLY	Dipole X Delay	45.29	NO
DYWF	Dipole Y Firing Waveform	45.29	NO
YFRQ	Dipole Y Frequency	45.29	NO
YDLY	Dipole Y Delay	45.29	NO
DPSX	Dipole Source X Structurel	45.29	NO
DPSY	Dipole Source Y Structurel	45.29	NO
DPSM	Monopole Source Structure	45.29	NO
WVST	Wavesonic Compressed Data	56.79	NO
AUTM	Auto Mode	45.29	NO
SONM	tool mode for sonic - 0 for normal or 3 for calibration	45.29	NO
MSL	Monopole Lower Travel Time	56.79	NO
MSH	Monopole Upper Travel Time	56.79	NO
MLFC	Monopole-1 Lower Filter Bandpass Frequency Cut-off	45.29	NO
MUFC	Monopole-1 Upper Filter Bandpass Frequency Cut-off	45.29	NO
DLTT	Dipole Lower Travel Time	45.29	NO
DUTT	Dipole Upper Travel Time	45.29	NO
DLFC	Dipole Lower Filter Bandpass Frequency Cut-off	45.29	NO
DUFC	Dipole Upper Filter Bandpass Frequency Cut-off	45.29	NO
MUTE	WaveSonic Mute/Enable Channels and Sides map	45.29	NO
MUTS	Mute/Enable Sides	45.29	NO
WSRB	Relative Bearing	56.79	NO
WSAZ	WSX Azimuth Pad 1	56.79	NO
TPUL	Tension Pull	56.79	NO
WMP	Summed array of Monopole for SIDES - A,B,C,D	56.79	NO
WXX	Dipole X for SIDES - A-C	56.79	NO
WYY	Dipole Y for SIDES - B-D	56.79	NO
WXY	Dipole X for SIDES - B-D	56.79	NO
WYX	Dipole Y for SIDES - A-C	56.79	NO
TPUL	Tension Pull	56.79	NO
WMA	Monopole Waveform Side A - Channel 1 to Channel 8 Receivers	56.79	NO
WMB	Monopole Waveform Side B - Channel 1 to Channel 8 Receivers	56.79	NO
WMC	Monopole Waveform Side C - Channel 1 to Channel 8 Receivers	56.79	NO
WMD	Monopole Waveform Side D - Channel 1 to Channel 8 Receivers	56.79	NO
WXA	Dipole X Waveform Side A - Channel 1 to Channel 8 Receivers	56.79	NO
WXB	Dipole X Waveform Side B - Channel 1 to Channel 8 Receivers	56.79	NO
WXC	Dipole X Waveform Side C - Channel 1 to Channel 8 Receivers	56.79	NO
WXD	Dipole X Waveform Side D - Channel 1 to Channel 8 Receivers	56.79	NO
WYA	Dipole Y Waveform Side A - Channel 1 to Channel 8 Receivers	56.79	NO
WYB	Dipole Y Waveform Side B - Channel 1 to Channel 8 Receivers	56.79	NO
WYC	Dipole Y Waveform Side C - Channel 1 to Channel 8 Receivers	56.79	NO

WYD	Dipole Y Waveform Side D - Channel 1 to Channel 8 Receivers	56.79	NO
GAR1	Gain Side A Receiver 1	45.29	NO
GAR2	Gain Side A Receiver 2	45.29	NO
GAR3	Gain Side A Receiver 3	45.29	NO
GAR4	Gain Side A Receiver 4	45.29	NO
GAR5	Gain Side A Receiver 5	45.29	NO
GAR6	Gain Side A Receiver 6	45.29	NO
GAR7	Gain Side A Receiver 7	45.29	NO
GAR8	Gain Side A Receiver 8	45.29	NO
GBR1	Gain Side B Receiver 1	45.29	NO
GBR2	Gain Side B Receiver 2	45.29	NO
GBR3	Gain Side B Receiver 3	45.29	NO
GBR4	Gain Side B Receiver 4	45.29	NO
GBR5	Gain Side B Receiver 5	45.29	NO
GBR6	Gain Side B Receiver 6	45.29	NO
GBR7	Gain Side B Receiver 7	45.29	NO
GBR8	Gain Side B Receiver 8	45.29	NO
GCR1	Gain Side C Receiver 1	45.29	NO
GCR2	Gain Side C Receiver 2	45.29	NO
GCR3	Gain Side C Receiver 3	45.29	NO
GCR4	Gain Side C Receiver 4	45.29	NO
GCR5	Gain Side C Receiver 5	45.29	NO
GCR6	Gain Side C Receiver 6	45.29	NO
GCR7	Gain Side C Receiver 7	45.29	NO
GCR8	Gain Side C Receiver 8	45.29	NO
GDR1	Gain Side D Receiver 1	45.29	NO
GDR2	Gain Side D Receiver 2	45.29	NO
GDR3	Gain Side D Receiver 3	45.29	NO
GDR4	Gain Side D Receiver 4	45.29	NO
GDR5	Gain Side D Receiver 5	45.29	NO
GDR6	Gain Side D Receiver 6	45.29	NO
GDR7	Gain Side D Receiver 7	45.29	NO
GDR8	Gain Side D Receiver 8	45.29	NO
<b>XRMI-I Mandrel</b>			
TPUL	Tension Pull	22.60	NO
PAD1	XRMI Pad 1 values	22.36	NO
PAD2	XRMI Pad 2 values	22.36	NO
PAD3	XRMI Pad 3 values	22.36	NO
PAD4	XRMI Pad 4 values	22.36	NO
PAD5	XRMI Pad 5 values	22.36	NO
PAD6	XRMI Pad 6 values	22.36	NO
OD1	EMI Odd Button Values Pad 1	22.36	NO
OD2	EMI Odd Button Values Pad 2	22.60	NO
OD3	EMI Odd Button Values Pad 3	22.36	NO
OD4	EMI Odd Button Values Pad 4	22.60	NO
OD5	EMI Odd Button Values Pad 5	22.36	NO
OD6	EMI Odd Button Values Pad 6	22.60	NO
EV1	EMI Even Button Values Pad 1	22.39	NO
EV2	EMI Even Button Values Pad 2	22.57	NO
EV3	EMI Even Button Values Pad 3	22.39	NO
EV4	EMI Even Button Values Pad 4	22.57	NO
EV5	EMI Even Button Values Pad 5	22.39	NO
EV6	EMI Even Button Values Pad 6	22.57	NO
ITMP	Instrument Temperature	19.83	NO

EMIM	Tool Mode	19.83	NO	
HAZI	Hole Azimuth	22.11	NO	
HAZI	Hole Azimuth - Down Delay	22.61	NO	
ZACC	Accelerometer Z	22.36	NO	
TPUL	Tension Pull	22.60	NO	
FIR1	Current Button R - Pad 1	22.36	NO	
FIR2	Current Button R - Pad 2	22.60	NO	
FIR3	Current Button R - Pad 3	22.36	NO	
FIR4	Current Button R - Pad 4	22.60	NO	
FIR5	Current Button R - Pad 5	22.36	NO	
FIR6	Current Button R - Pad 6	22.60	NO	
FIX1	Current Button X - Pad 1	22.36	NO	
FIX2	Current Button X - Pad 2	22.60	NO	
FIX3	Current Button X - Pad 3	22.36	NO	
FIX4	Current Button X - Pad 4	22.60	NO	
FIX5	Current Button X - Pad 5	22.36	NO	
FIX6	Current Button X - Pad 6	22.60	NO	
SIR1	Current Slow Button R - Pad 1	22.36	BLK	3.000
SIR2	Current Slow Button R - Pad 2	22.60	BLK	3.000
SIR3	Current Slow Button R - Pad 3	22.36	BLK	3.000
SIR4	Current Slow Button R - Pad 4	22.60	BLK	3.000
SIR5	Current Slow Button R - Pad 5	22.36	BLK	3.000
SIR6	Current Slow Button R - Pad 6	22.60	BLK	3.000
SIX1	Current Slow Button X - Pad 1	22.36	BLK	3.000
SIX2	Current Slow Button X - Pad 2	22.60	BLK	3.000
SIX3	Current Slow Button X - Pad 3	22.36	BLK	3.000
SIX4	Current Slow Button X - Pad 4	22.60	BLK	3.000
SIX5	Current Slow Button X - Pad 5	22.36	BLK	3.000
SIX6	Current Slow Button X - Pad 6	22.60	BLK	3.000
EMMR	Phasor Voltage - Real Part	22.36	NO	
EMMX	Phasor Voltage - Imaginary Part	22.36	NO	
PADV	Pad Voltage	19.83	BLK	0.250
ITMP	Instrument Temperature	19.83	BLK	0.000
CON1	Conductivity Pad 1	22.36	BLK	3.000
CON2	Conductivity Pad 2	22.60	BLK	3.000
CON3	Conductivity Pad 3	22.36	BLK	3.000
CON4	Conductivity Pad 4	22.60	BLK	3.000
CON5	Conductivity Pad 5	22.36	BLK	3.000
CON6	Conductivity Pad 6	22.60	BLK	3.000
UIR2	Current Button R No Delay - Pad 2	22.36	NO	
UIR4	Current Button R No Delay - Pad 4	22.36	NO	
UIR6	Current Button R No Delay - Pad 6	22.36	NO	
UIX2	Current Button X No Delay - Pad 2	22.36	NO	
UIX4	Current Button X No Delay - Pad 4	22.36	NO	
UIX6	Current Button X No Delay - Pad 6	22.36	NO	
TPUL	Tension Pull	22.60	NO	
ARM1	Caliper 1 measurement	22.36	BLK	0.000
ARM2	Caliper 2 measurement	22.36	BLK	0.000
ARM3	Caliper 3 measurement	22.36	BLK	0.000
ARM4	Caliper 4 measurement	22.36	BLK	0.000
ARM5	Caliper 5 measurement	22.36	BLK	0.000
ARM6	Caliper 6 measurement	22.36	BLK	0.000
MOTV	Motor Voltage Monitor 1	22.36	BLK	0.000
PRES	Caliper percentage of total compression of the spring	19.83	BLK	0.000
HAZI	Hole Azimuth	22.36	NO	
RB	Relative Bearing	22.36	NO	

AZ11	PAD1 Azimuth	22.36	NO	
DEVI	Inclination	22.36	NO	
<b>ACRt Sonde</b>				
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 Reference 12 KHz Real Signal	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	

Microlog Pad				
TPUL	Tension Pull	82.36	NO	
MINV	Microlog Lateral	82.36	BLK	0.750
MNOR	Microlog Normal	82.36	BLK	0.750

SDLT Pad				
TPUL	Tension Pull	82.17	NO	
NAB	Near Above	81.99	BLK	0.920
NHI	Near Cesium High	81.99	BLK	0.920
NLO	Near Cesium Low	81.99	BLK	0.920
NVA	Near Valley	81.99	BLK	0.920
NBA	Near Barite	81.99	BLK	0.920
NDE	Near Density	81.99	BLK	0.920
NPK	Near Peak	81.99	BLK	0.920
NLI	Near Lithology	81.99	BLK	0.920
NBAU	Near Barite Unfiltered	81.99	BLK	0.250
NLIU	Near Lithology Unfiltered	81.99	BLK	0.250
FAB	Far Above	82.34	BLK	0.250
FHI	Far Cesium High	82.34	BLK	0.250
FLO	Far Cesium Low	82.34	BLK	0.250
FVA	Far Valley	82.34	BLK	0.250
FBA	Far Barite	82.34	BLK	0.250
FDE	Far Density	82.34	BLK	0.250
FPK	Far Peak	82.34	BLK	0.250
FLI	Far Lithology	82.34	BLK	0.250
PTMP	Pad Temperature	82.18	BLK	0.920
NHV	Near Detector High Voltage	81.57	NO	
FHV	Far Detector High Voltage	81.57	NO	
ITMP	Instrument Temperature	81.57	NO	
DDHV	Detector High Voltage	81.57	NO	

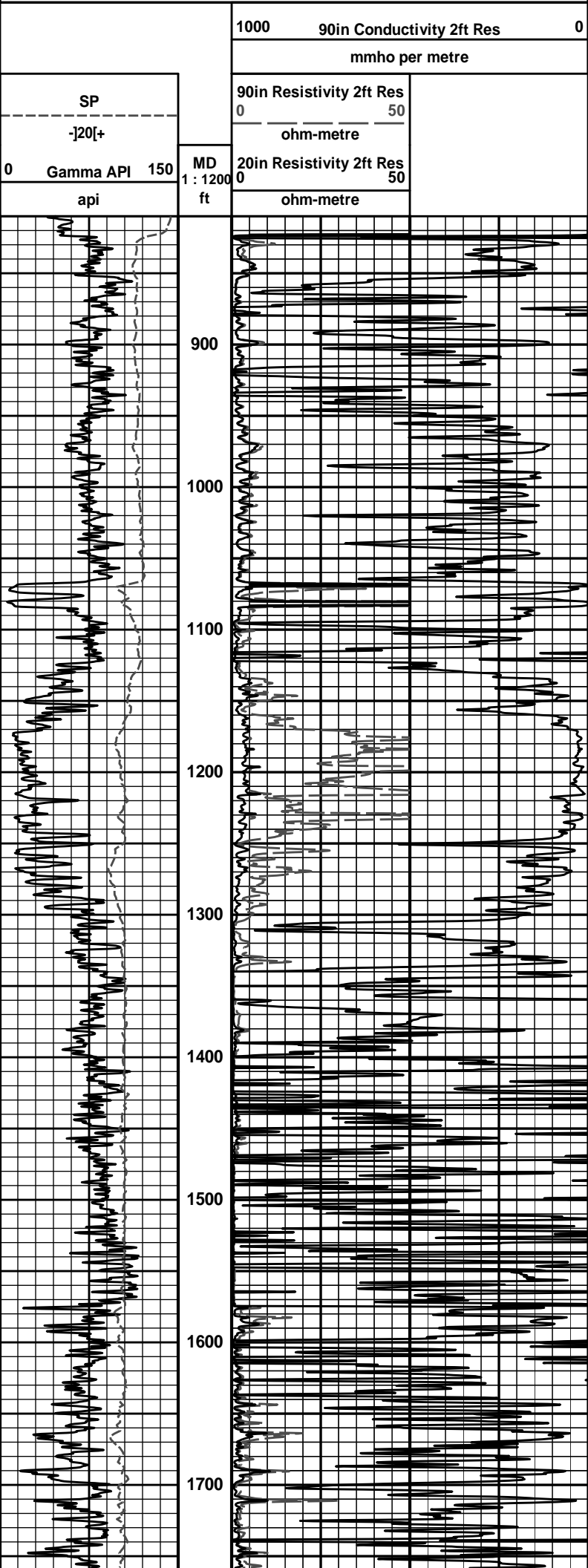
Data: ALBERTA\_MARIE\_1\0001 SP-GTET-DSN-SDL-WSTT-XRMI-ACRT-CHIDLE Date: 17-Jul-12 02:49:59

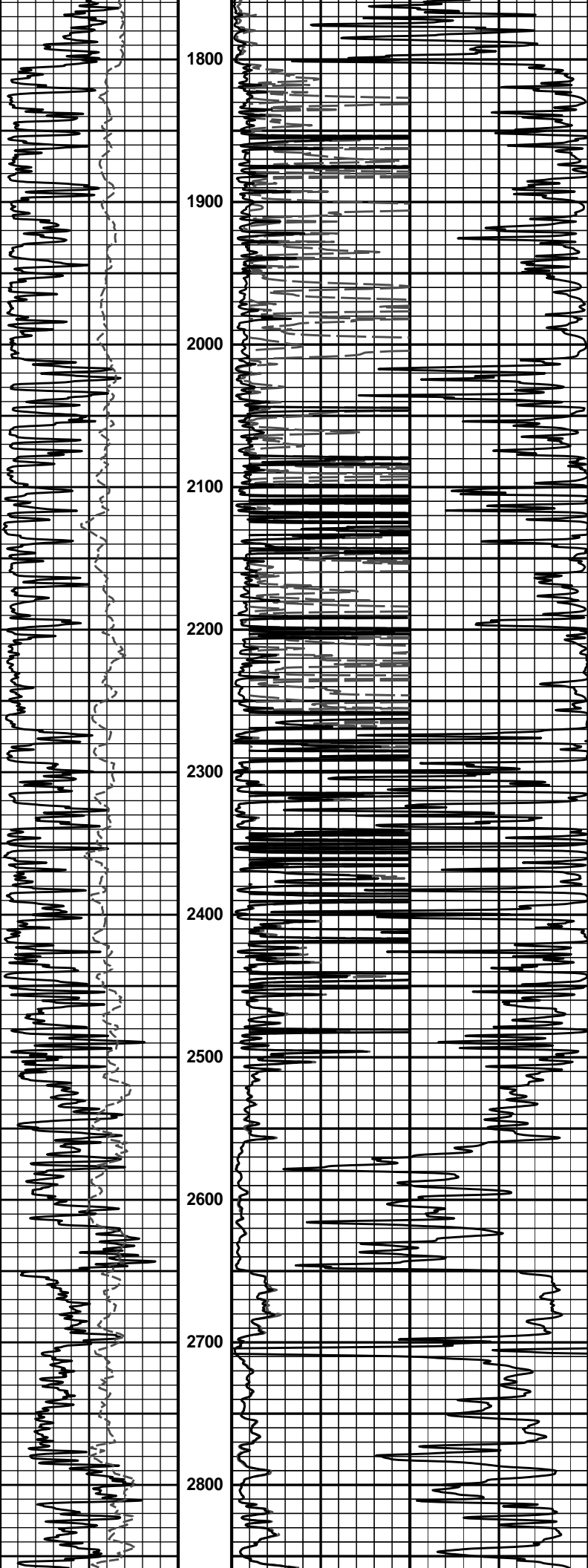
COMPANY	SANDRIDGE ENERGY		
WELL	ALBERTA MARIE 3119 1-23		
FIELD	SILVER SPUR		
COUNTY	COMANCHE	STATE	KANSAS

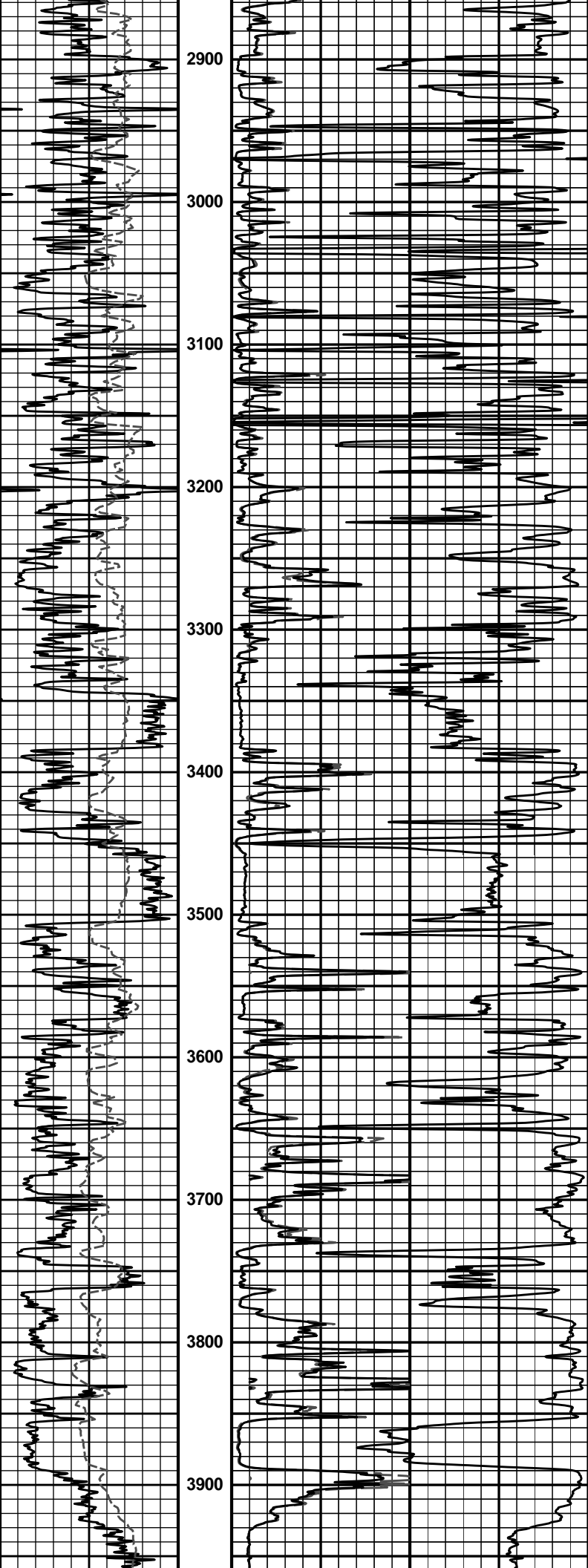
<b>HALLIBURTON</b>	<b>ARRAY COMPENSATED TRUE RESISTIVITY LOG</b>
--------------------	-------------------------------------------------------

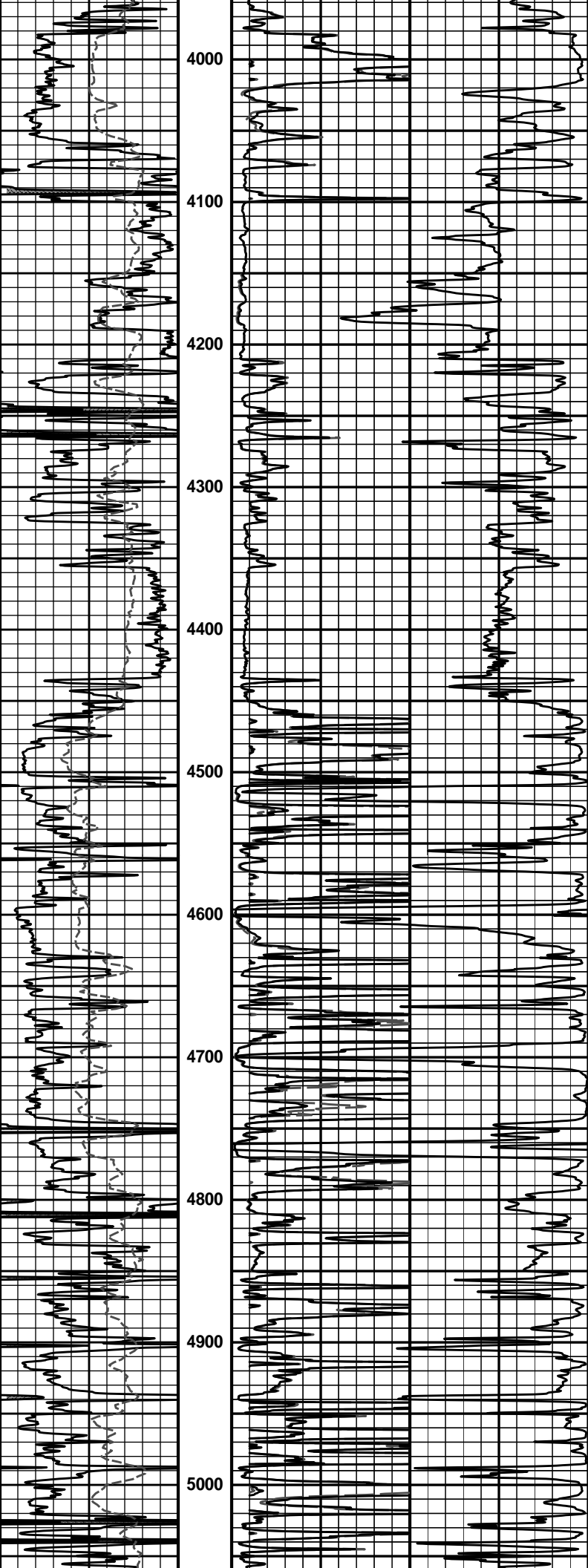
**HALLIBURTON**  
 Plot Time: 17-Jul-12 04:59:12  
 Plot Range: 810 ft to 6085.25 ft  
 Data: ALBERTA\_MARIE\_1\Well Based\\*1  
 Plot File: \\-LOCAL-VALBERTA\_MARIE\_1\..ACRT\_1.lib

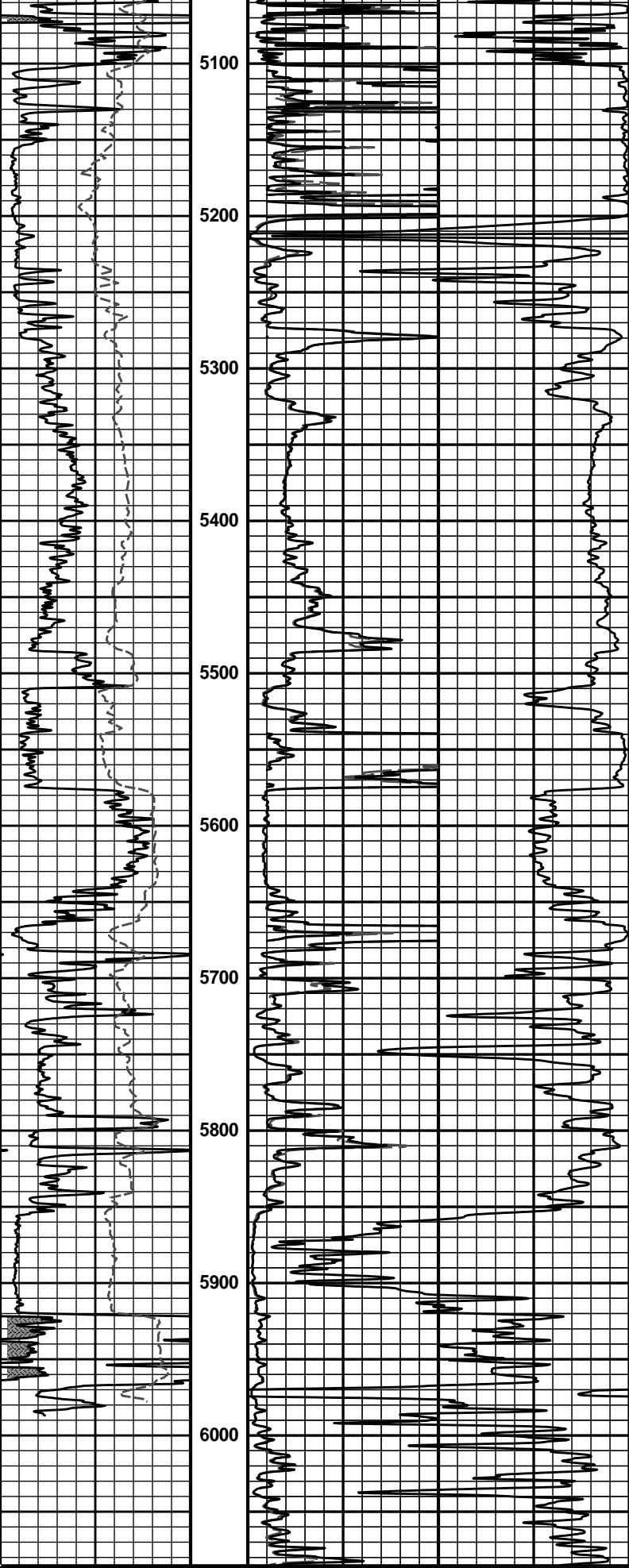
# 1 INCH MAIN LOG











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

-]20[+	0	50
	ohm-metre	
	1000	90in Conductivity 2ft Res 0
	mmho per metre	

**HALLIBURTON**

Plot Time: 17-Jul-12 04:59:14  
 Plot Range: 810 ft to 6085.25 ft  
 Data: ALBERTA\_MARIE\_1\Well Based\\*\  
 Plot File: \\-LOCAL-ALBERTA\_MARIE\_1\...\ACRT\_1.lib

**1 INCH MAIN LOG**