

# HALLIBURTON

## ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY	VAL ENERGY INC.		
WELL	NELSON 3-24		
FIELD	MAYBERRY NORTH		
COUNTY	BARBER		
STATE	KANSAS		
COMPANY	VAL ENERGY INC.	WELL	NELSON 3-24
FIELD	MAYBERRY NORTH	COUNTY	BARBER
STATE	KANSAS	API No.	15-007-23930
Location	(SHL) 2210' FSL & 1526' FWL		
Other Services:	DSN/SDL ACRT MICROLOG		
Sect.	24	Twp.	34S
Rge.	11W		
Elev.	1346.0 ft	Elev.:	K.B. 1351.0 ft
D.F.	5.0 ft above perm. Datum	D.F.	1350.0 ft
G.L.	KB	G.L.	1346.0 ft

Date	09-Sep-12	
Run No.	ONE	
Depth - Driller	5000.00 ft	
Depth - Logger	4995.0 ft	
Bottom - Logged Interval	219	
Top - Logged Interval	4993	
Casing - Driller	8.625 in @ 218.0 ft	
Casing - Logger	219.0 ft	
Bit Size	7.875 in @	
Type Fluid in Hole	WATER BASED MUD	
Density	9.2 ppg	46.00 s/qt
PH	10.50 pH	9.6 cp/m
Source of Sample	MUD PIT	
Rm @ Meas. Temperature	0.353 ohmm	@ 78.00 degF
Rmf @ Meas. Temperature	0.30 ohmm	@ 78.00 degF
Rmc @ Meas. Temperature	0.405 ohmm	@ 78.00 degF
Source Rmf	CALC	CALC
Rm @ BHT	0.23 ohmm	@ 124.0 degF
Time Since Circulation	5.0 hr	
Time on Bottom	09-Sep-12 17:08	
Max. Rec. Temperature	124.0 degF	@ 4995.0 ft
Equipment	10546696	LIBERAL
Recorded By	S. INGERSOLL	
Witnessed By	S. VANBUSKIRK	

Fold here

Service Ticket No.: 9803847      API Serial No.: 15-007-23930      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.
Rmf @ Meas. Temp.	@	@		ONE	ACRT	N/A	1.5" S.O.
Rmc @ Meas. Temp.	@	@			I962_S909		
Source Rmf	Rmc						
Rm @ BHT	@	@					
Rmf @ BHT	@	@					
Rmc @ BHT	@	@					

EQUIPMENT DATA							
GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	11048627	Serial No.		Serial No.	10950489	Serial No.	11055304
Model No.	GTET	Model No.		Model No.	SDLT	Model No.	DSNT
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"
Detector Model No.	GTET	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	CS-137	Source Type	AM-241BE
Length	8"	LSA [Y/N]		Serial No.	5168GW	Serial No.	DSN424
Distance to Source		FWDA [Y/N]		Strength	1.5 CI	Strength	15 CI

LOGGING DATA

GENERAL      GAMMA      ACOUSTIC      DENSITY      NEUTRON

Run No.	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	TD	CSG	REC	0	150				30	-10	2.71 gm/cc	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING.

CHLORIDES REPORTED AT 4500 PPM.

SP, GTET, DSNT, SDLT, ACRT RUN IN COMBINATION

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

HALLIBURTON

**HALLIBURTON**

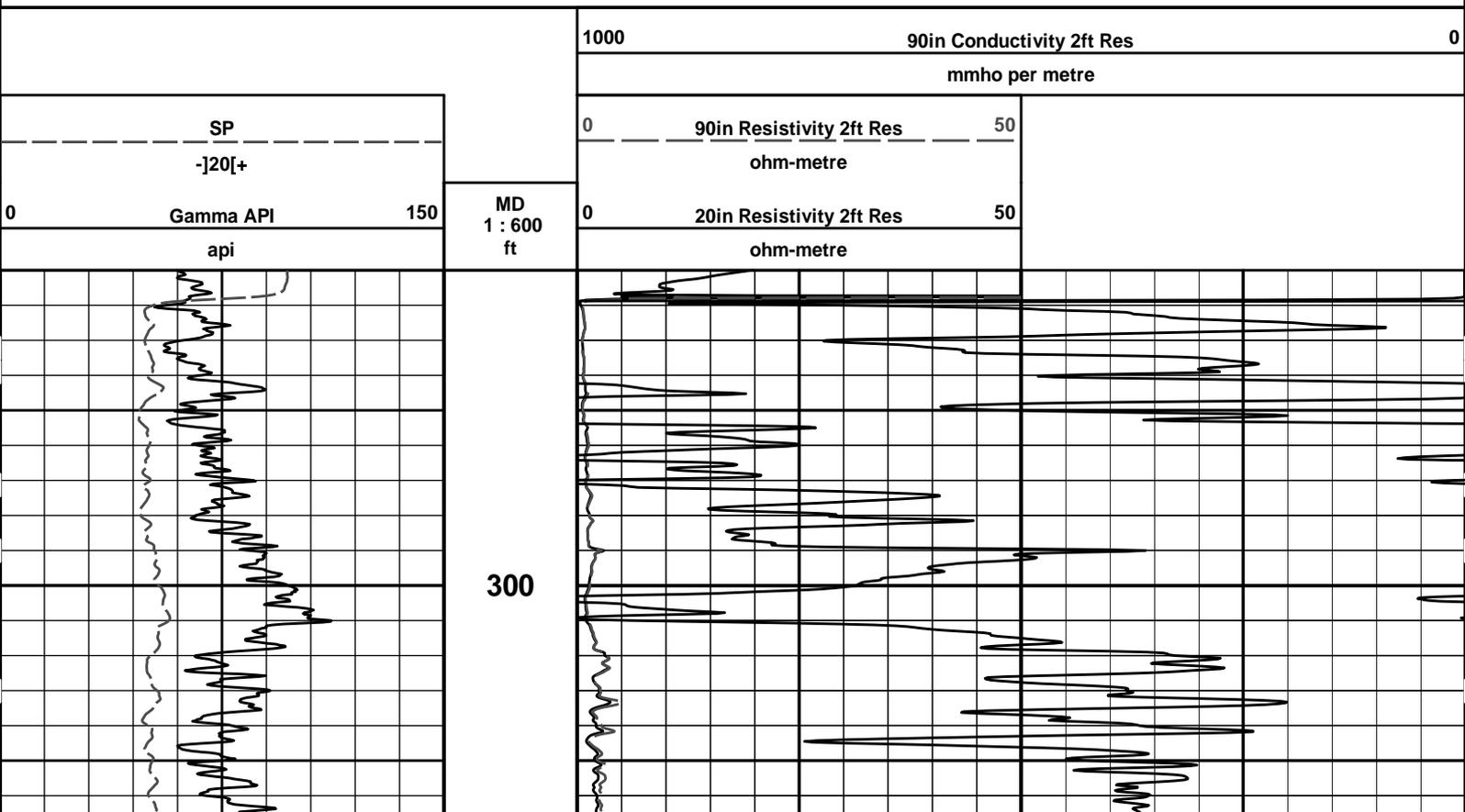
Plot Time: 09-Sep-12 20:50:08

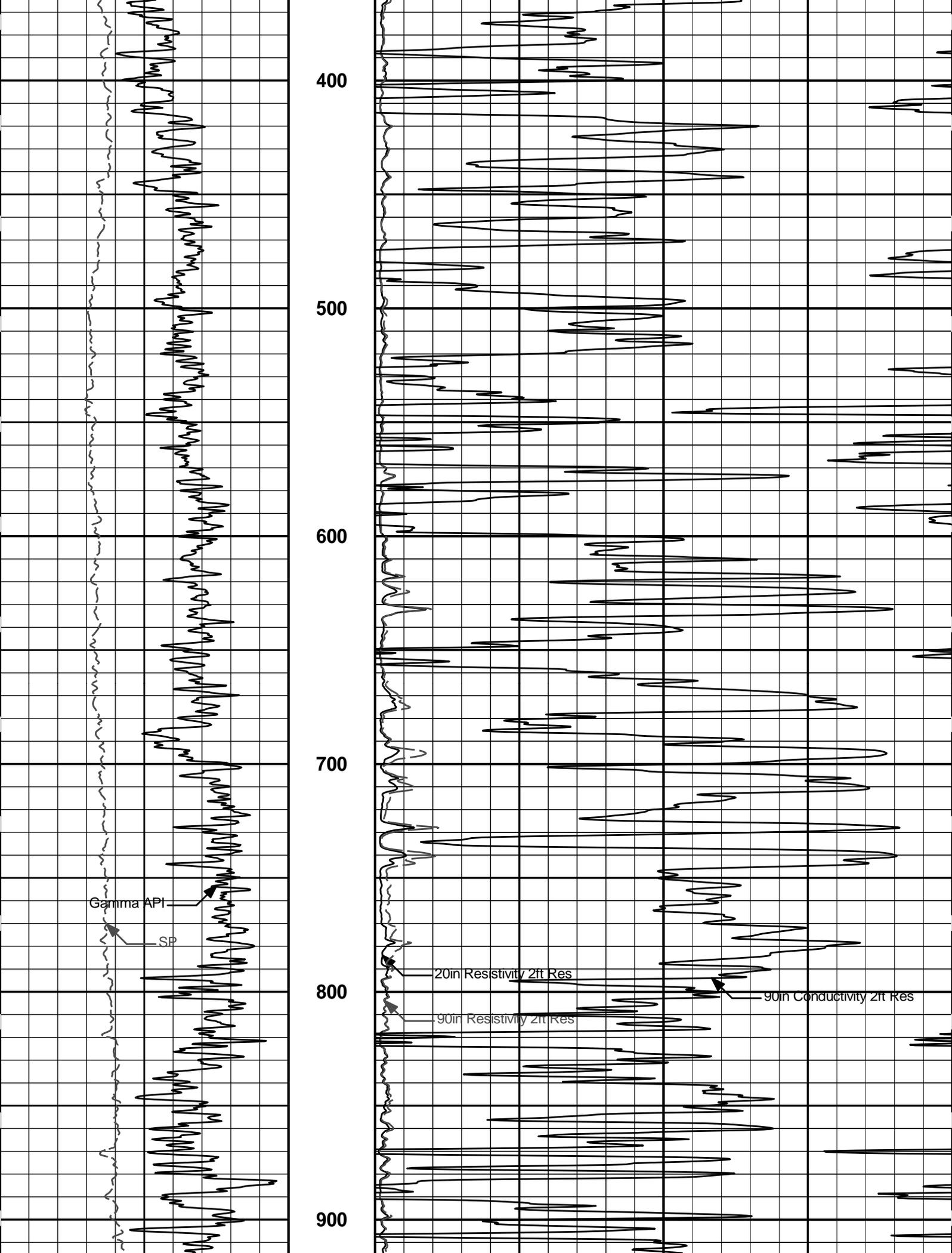
Plot Range: 210 ft to 4997 ft

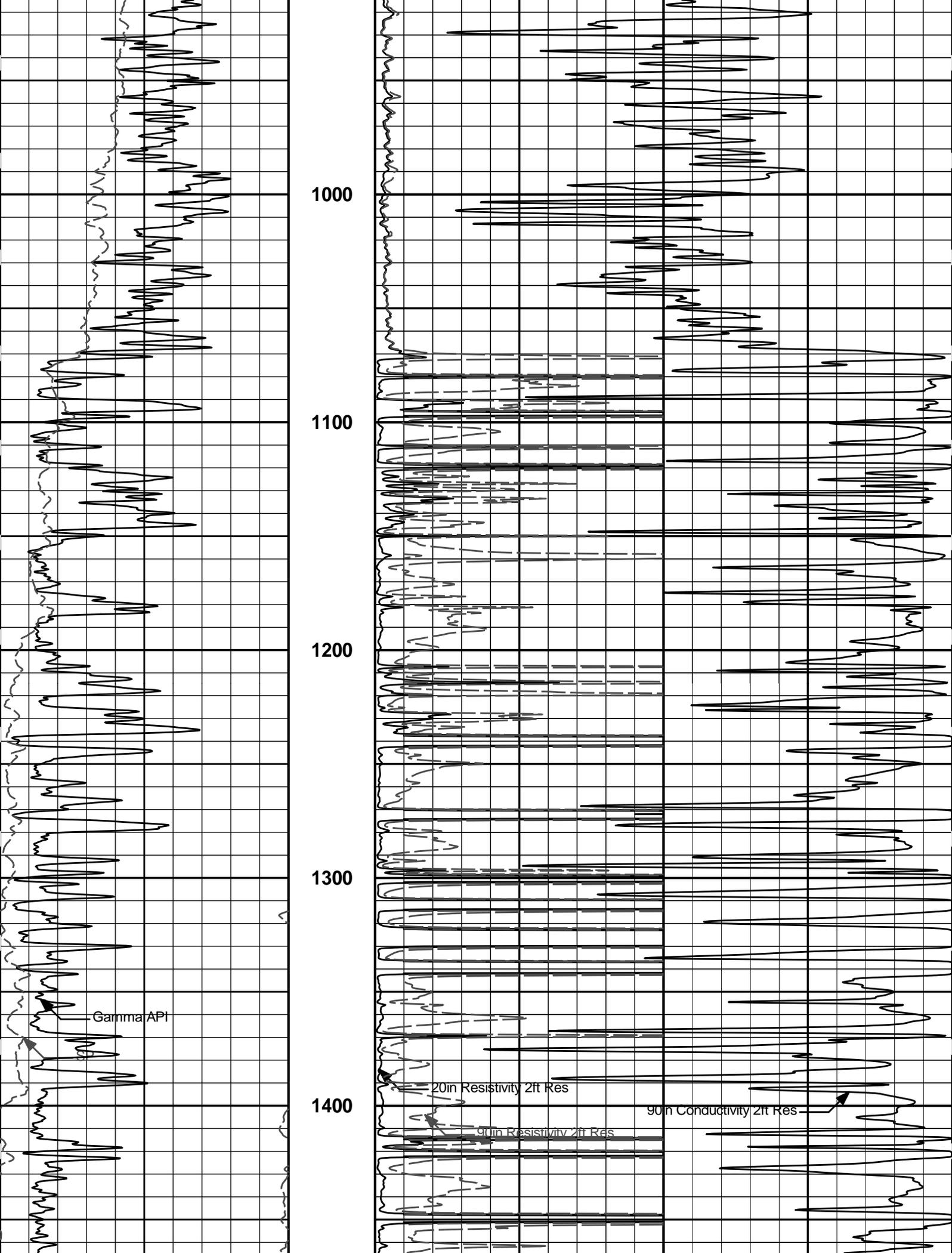
Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\

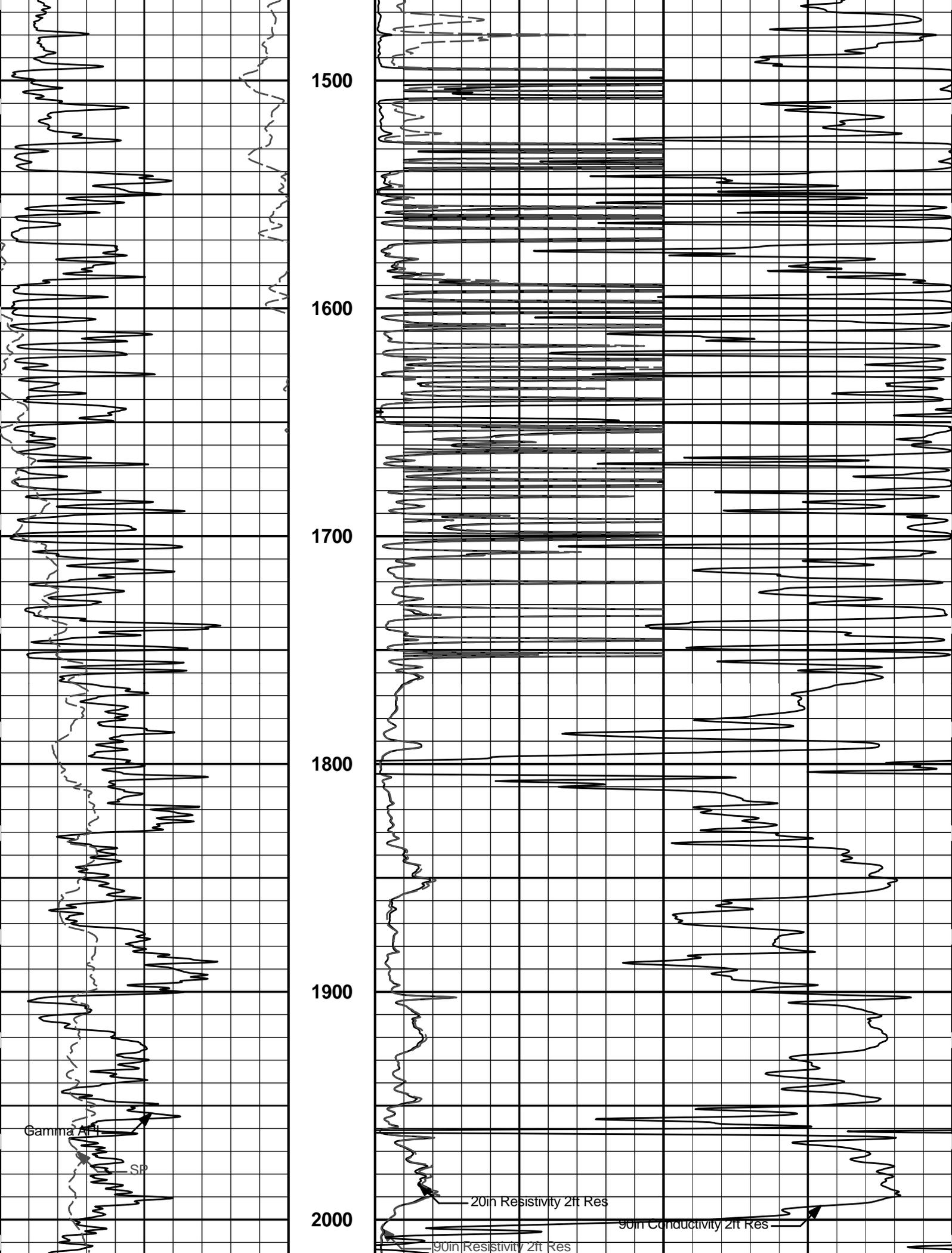
Plot File: \\-LOCAL-\VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_2.lib

## 2 INCH MAIN LOG









1500

1600

1700

1800

1900

2000

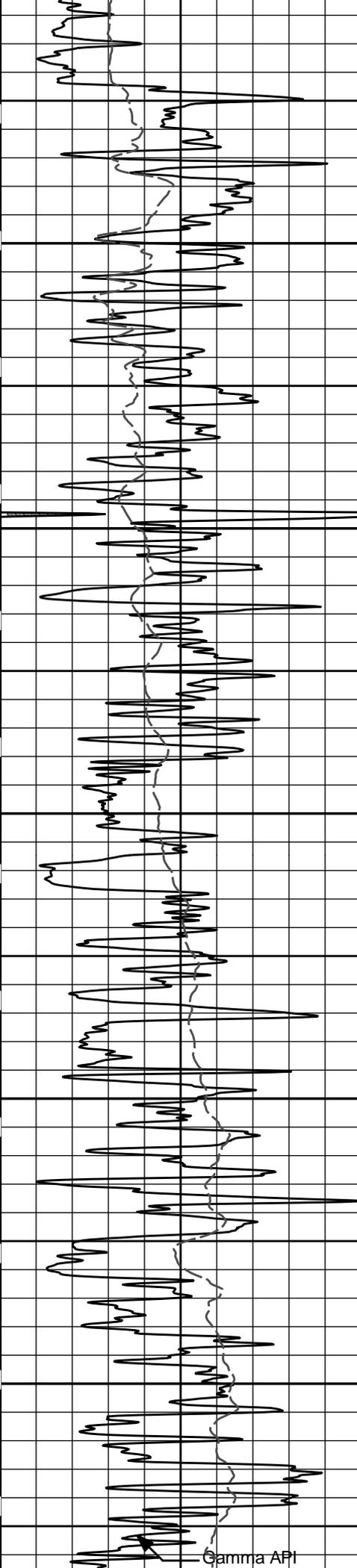
Gamma Ray

SP

20in Resistivity 2ft Res

90in Conductivity 2ft Res

90in Resistivity 2ft Res



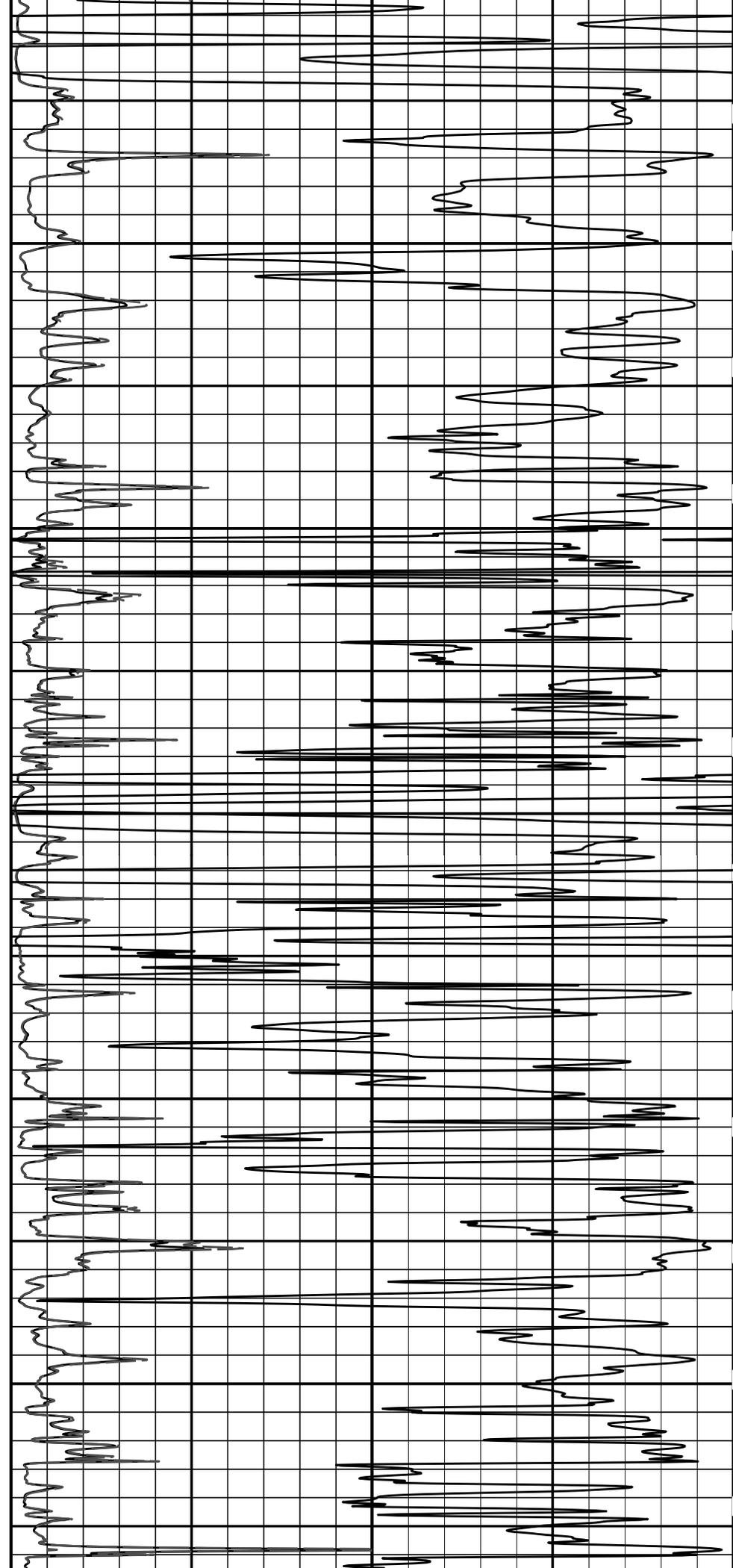
2100

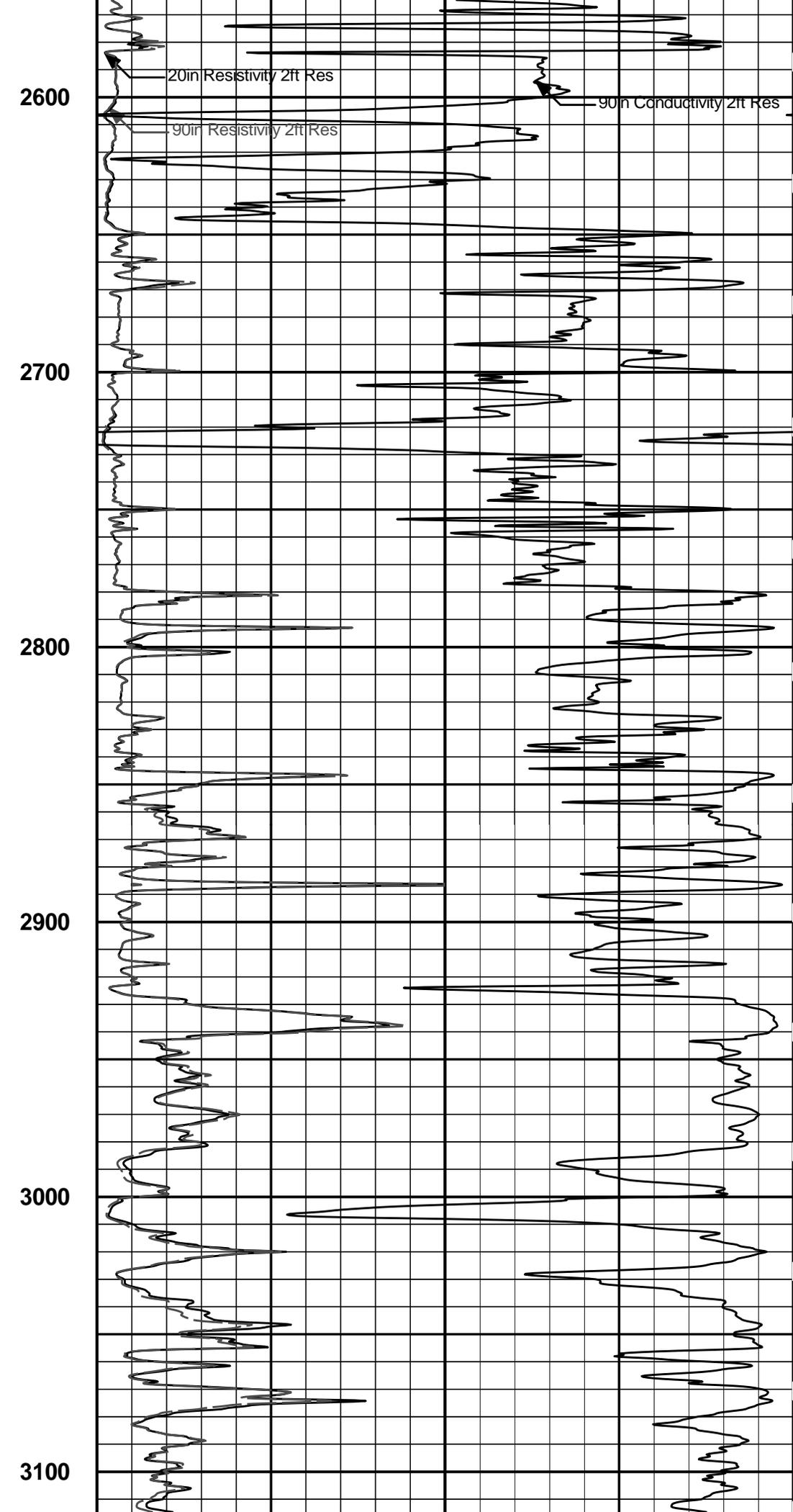
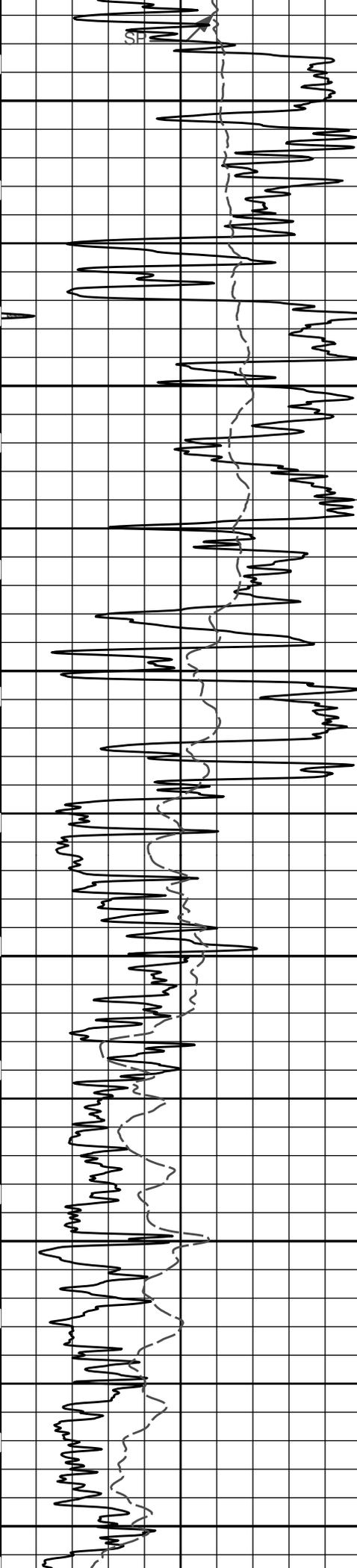
2200

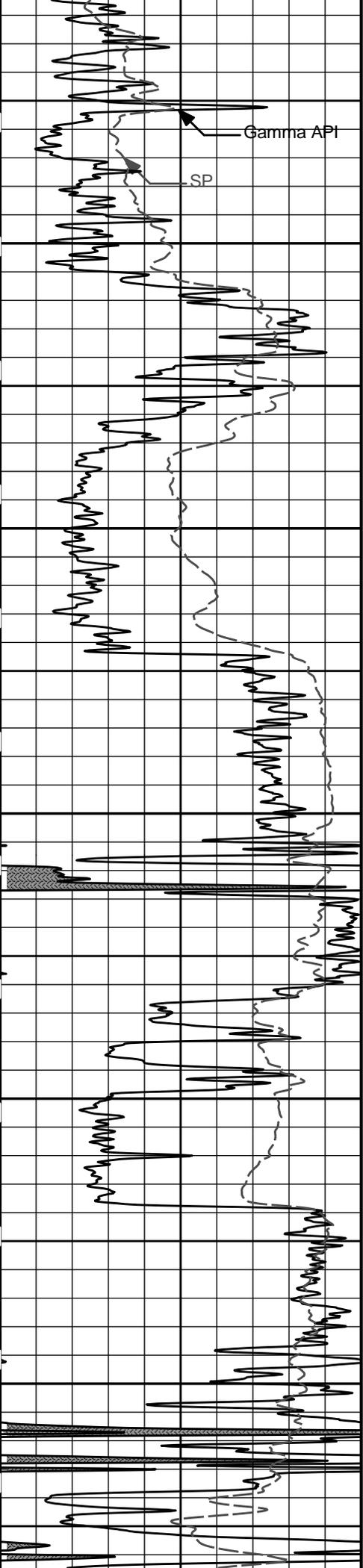
2300

2400

2500







Gamma API

SP

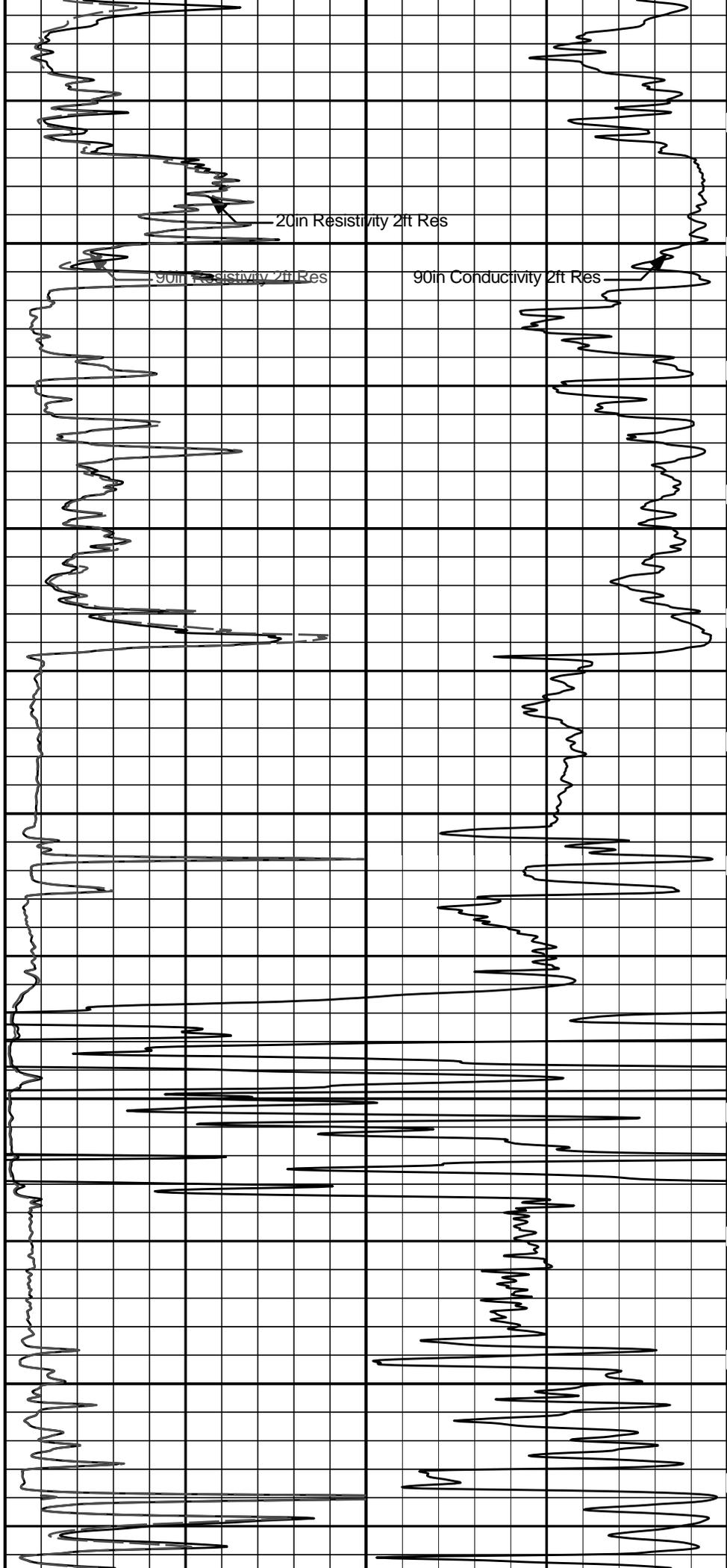
3200

3300

3400

3500

3600



20in Resistivity 2ft Res

90in Resistivity 2ft Res

90in Conductivity 2ft Res

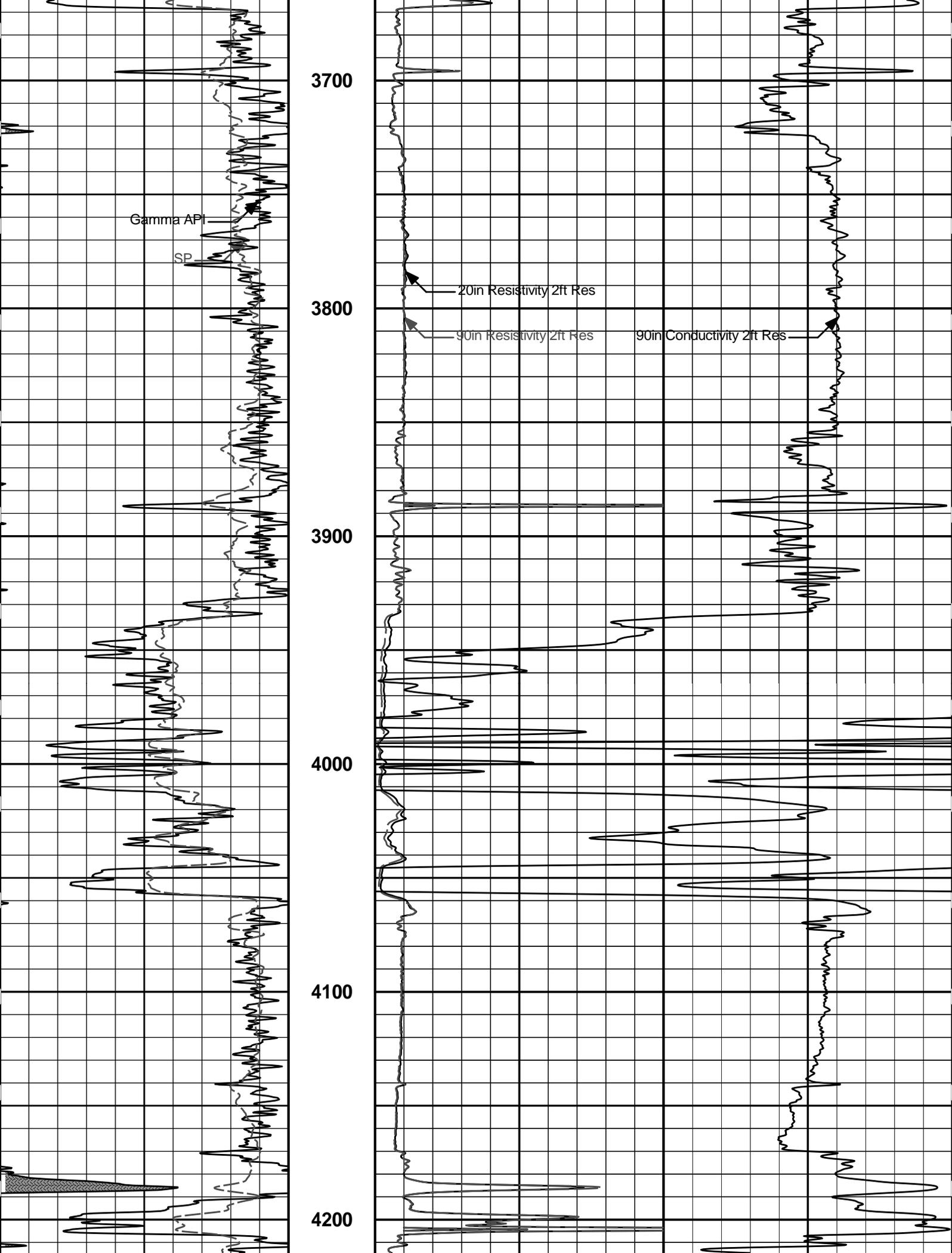
3200

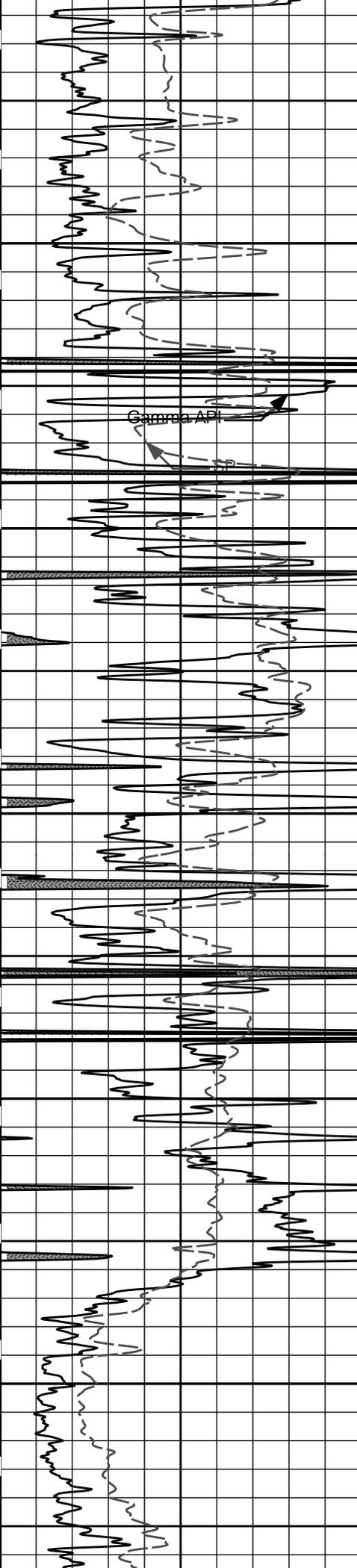
3300

3400

3500

3600





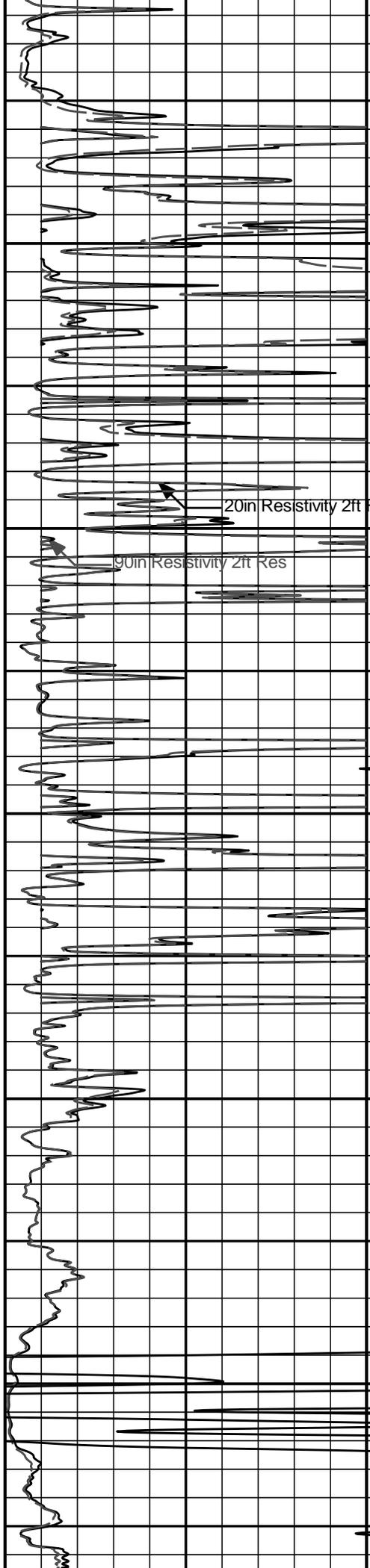
4300

4400

4500

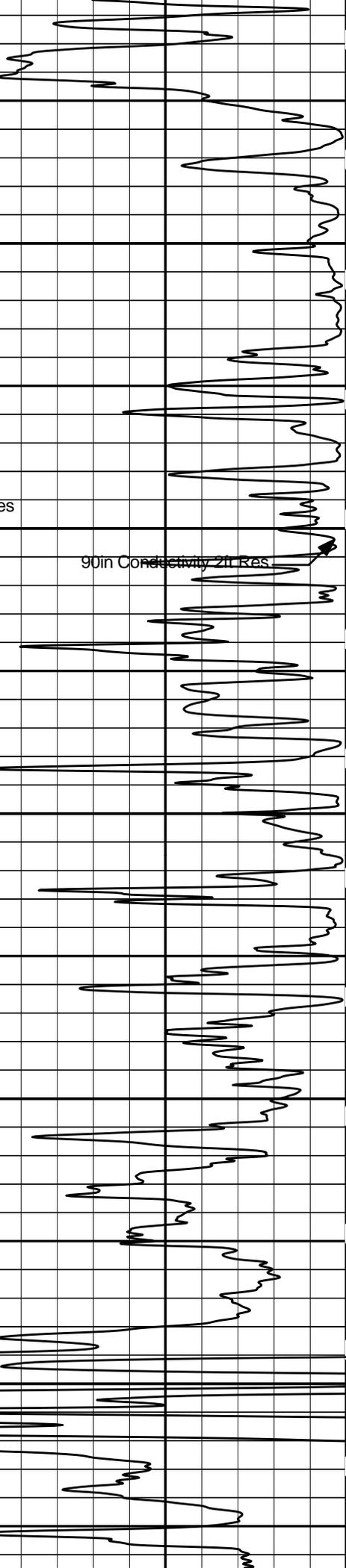
4600

4700

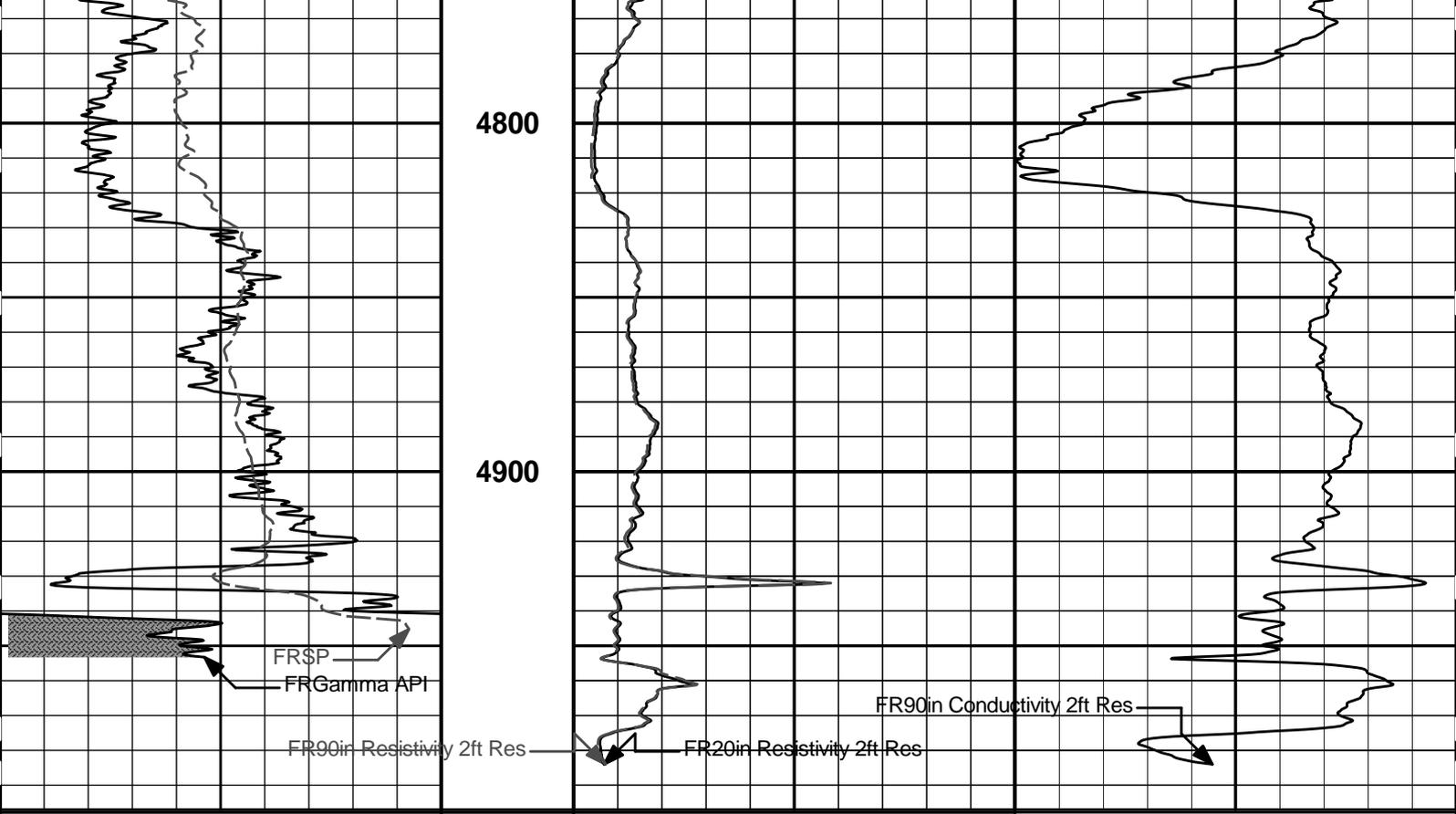


20in Resistivity 2ft Res

90in Resistivity 2ft Res



90in Conductivity 2ft Res



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

**HALLIBURTON**

Plot Time: 09-Sep-12 20:50:20  
 Plot Range: 210 ft to 4997 ft  
 Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\  
 Plot File: \\-LOCAL-VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_2\_lib

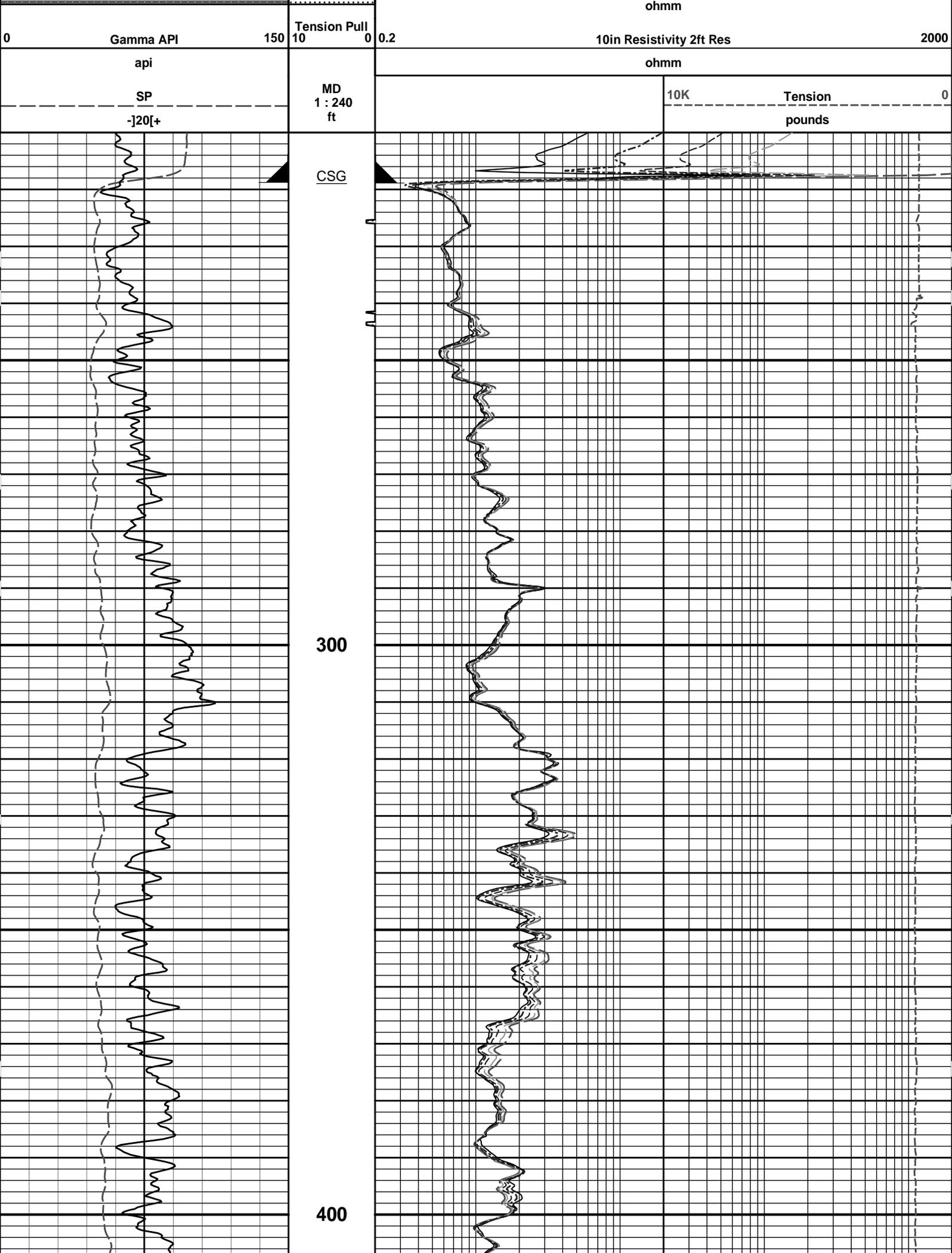
## 2 INCH MAIN LOG

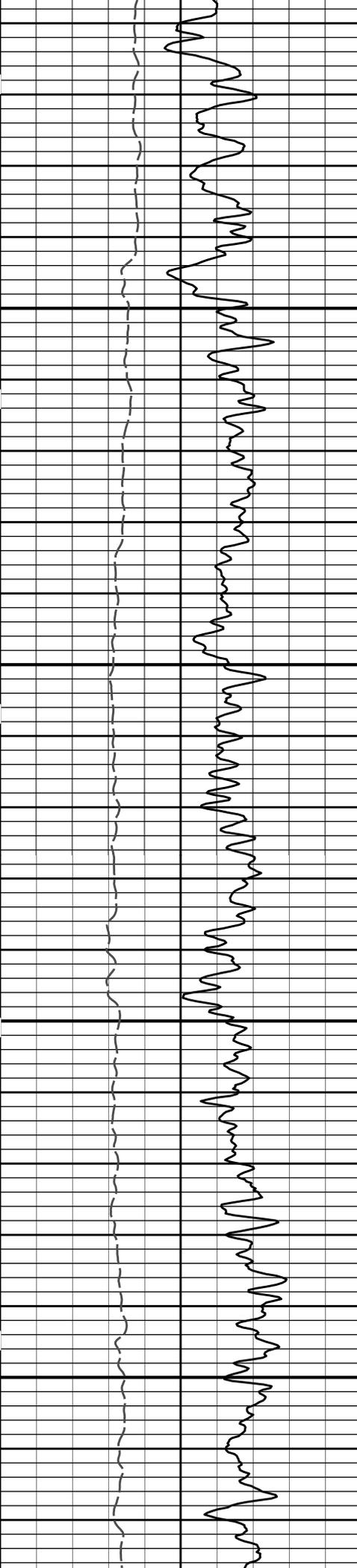
**HALLIBURTON**

Plot Time: 09-Sep-12 20:50:20  
 Plot Range: 210 ft to 4997 ft  
 Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\  
 Plot File: \\-LOCAL-VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_5\_main\_lib

## 5 INCH MAIN LOG

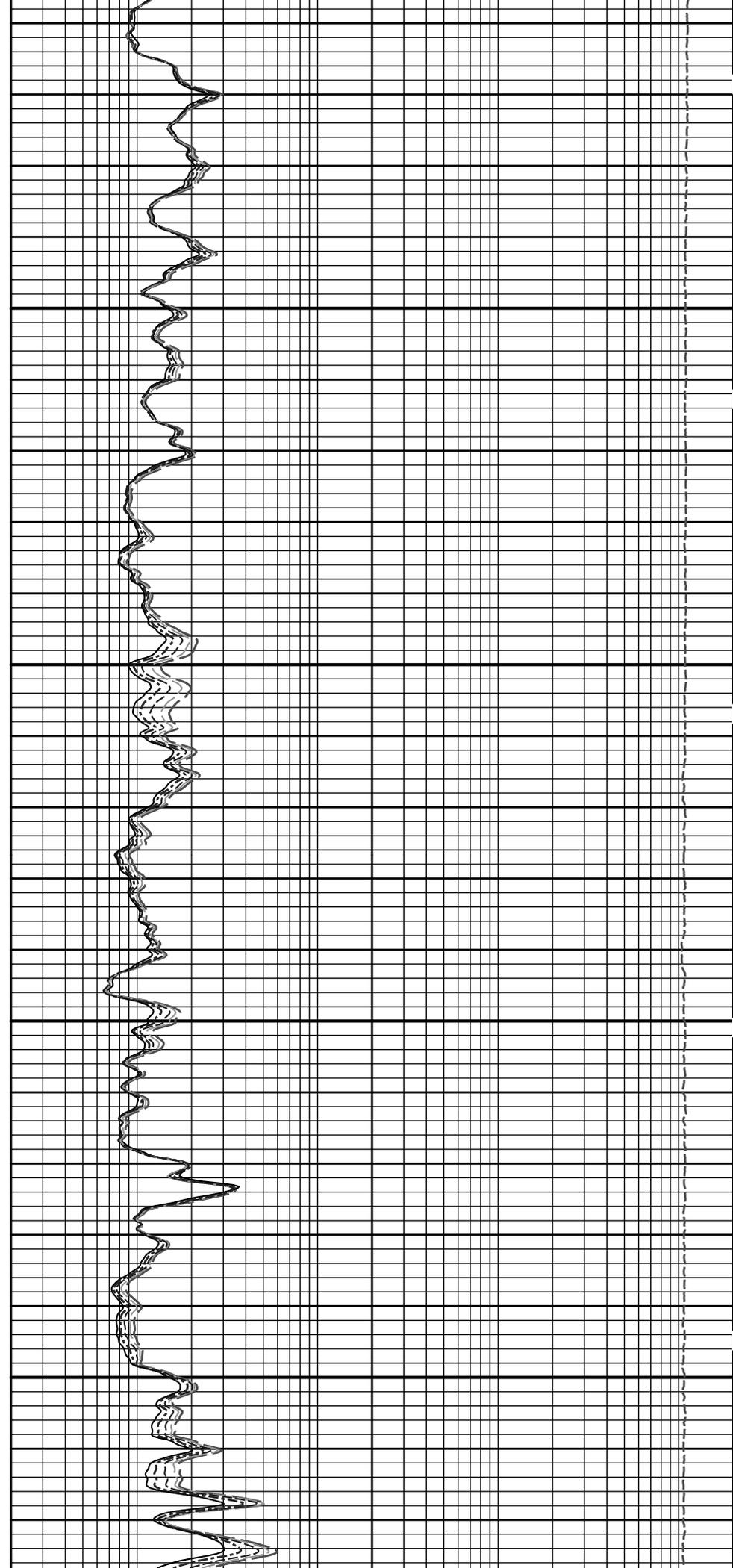
	0.2	90in Resistivity 2ft Res	2000
		ohmm	
	0.2	60in Resistivity 2ft Res	2000
		ohmm	
	0.2	30in Resistivity 2ft Res	2000
		ohm-metre	
SHALE	0.2	20in Resistivity 2ft Res	2000
Tension Pull			

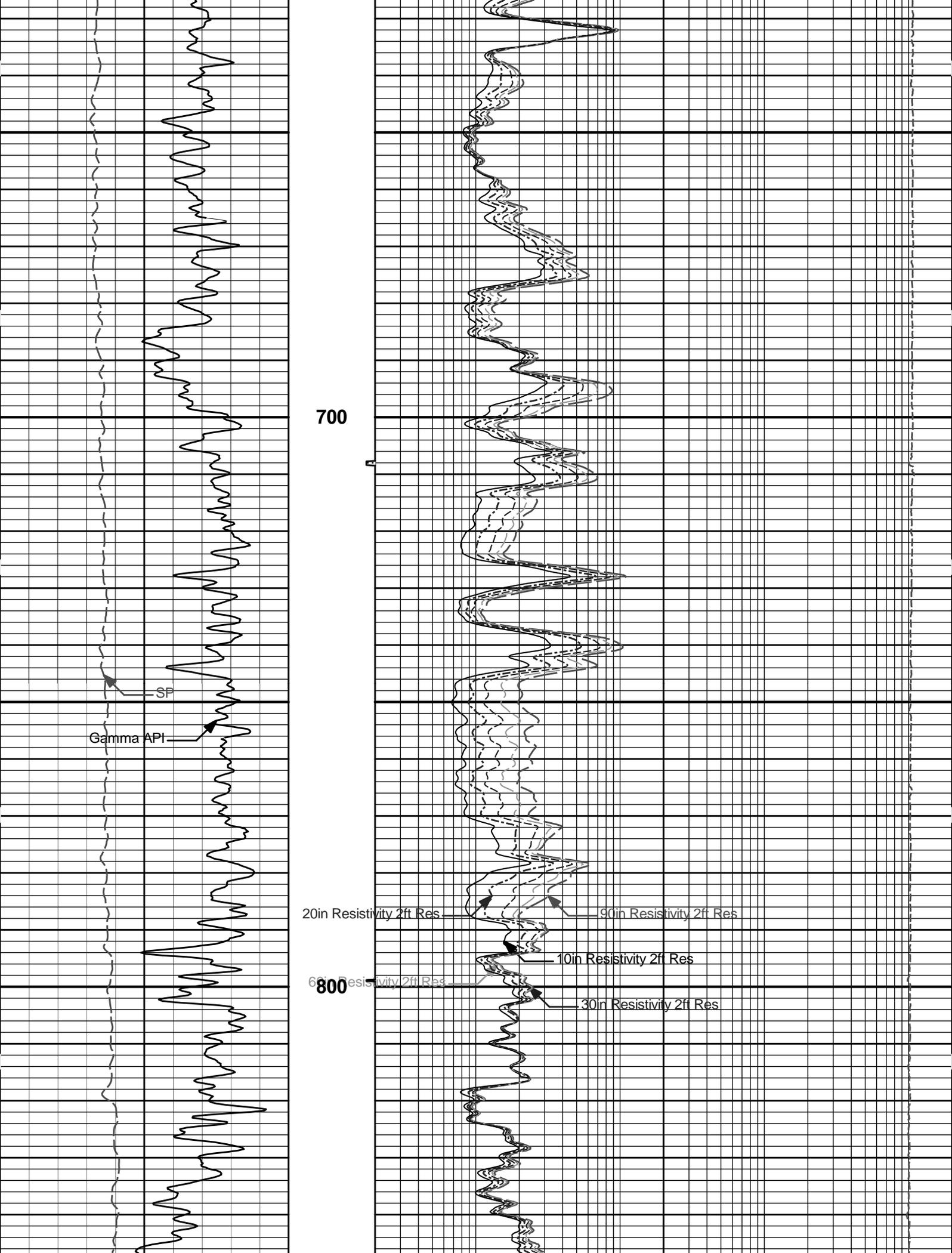




500

600





700

SP

Gamma API

20in Resistivity 2ft Res

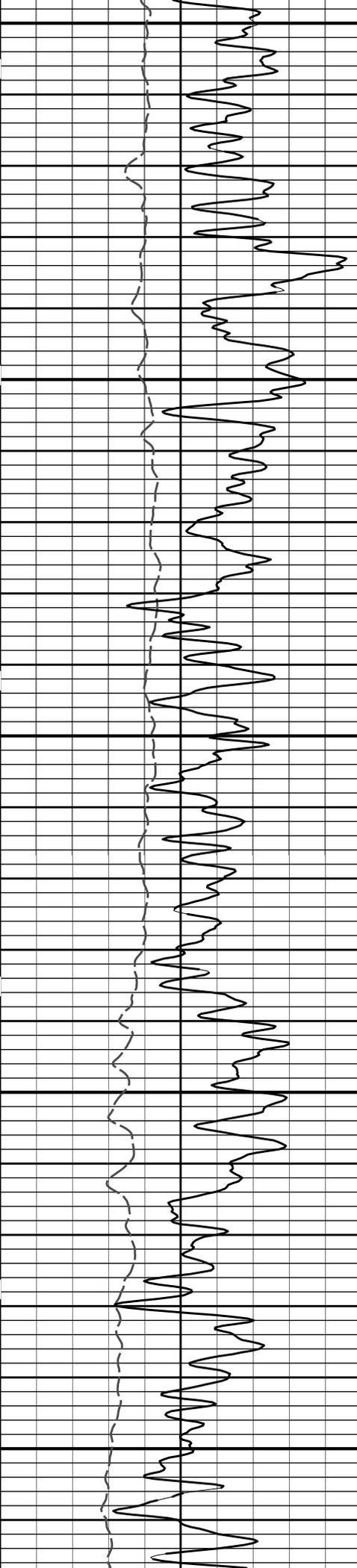
90in Resistivity 2ft Res

10in Resistivity 2ft Res

60in Resistivity 2ft Res

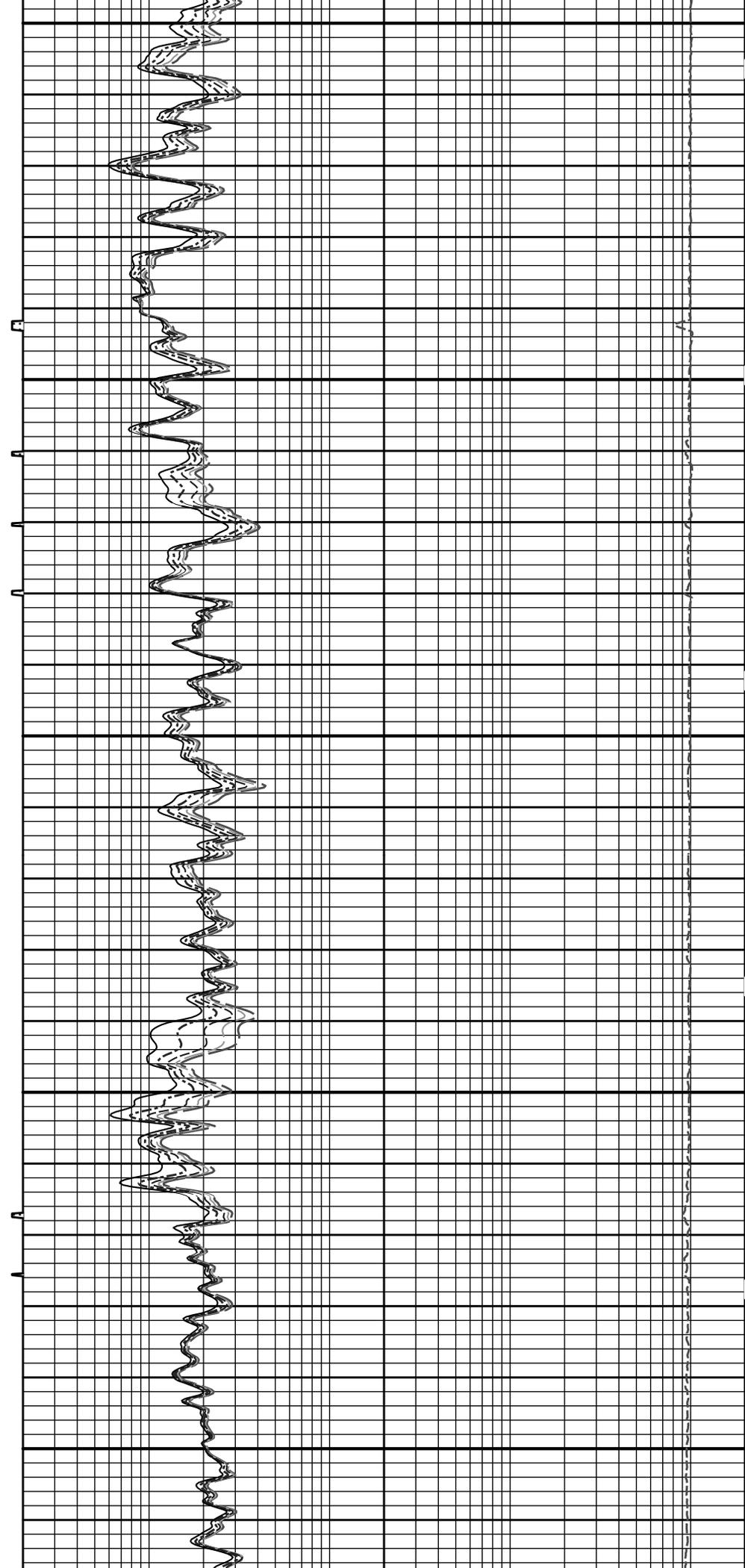
30in Resistivity 2ft Res

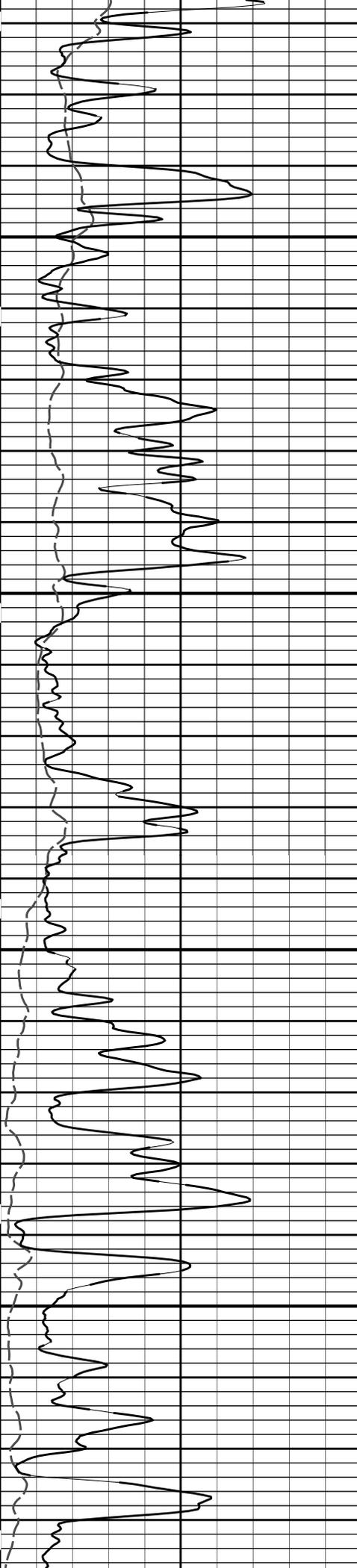
800



900

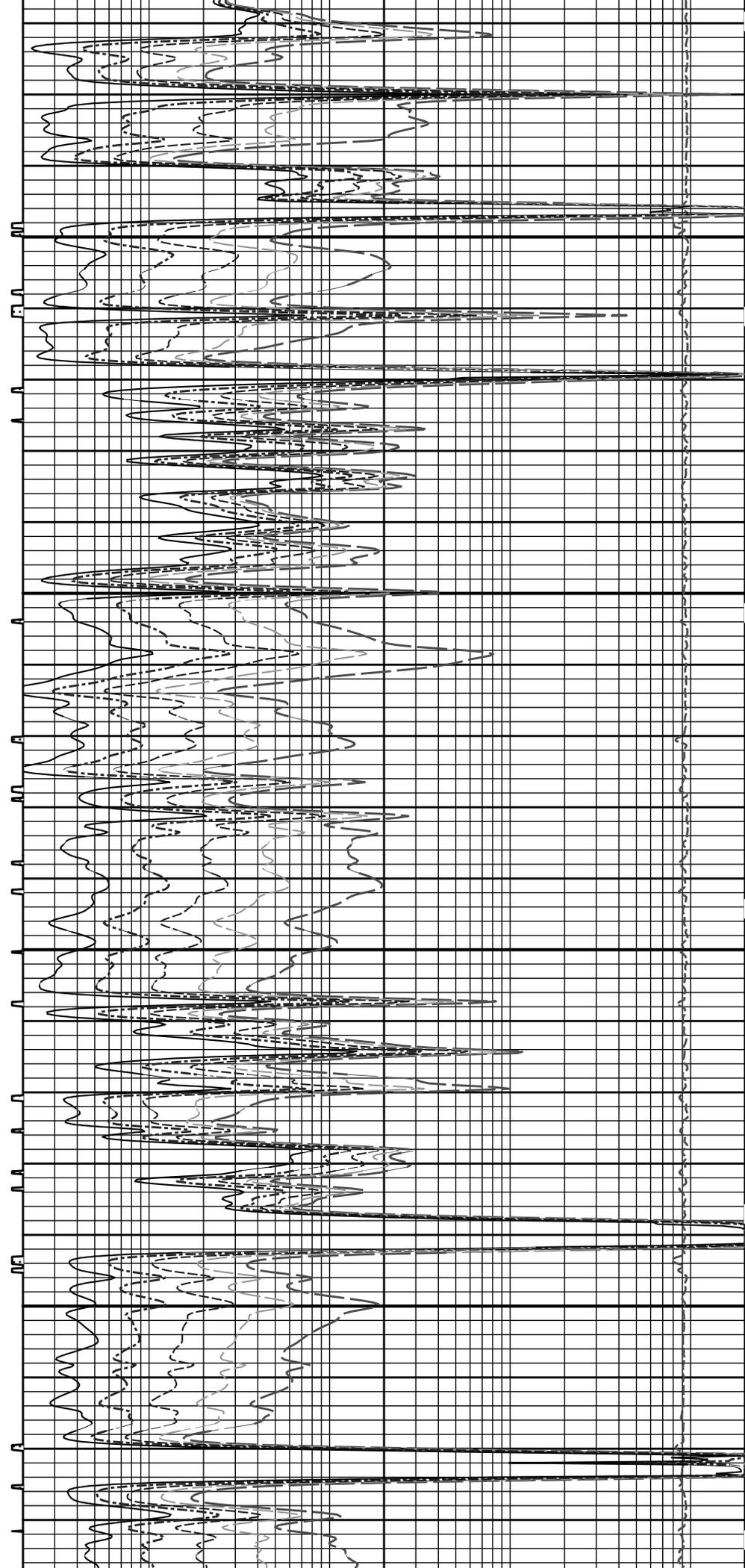
1000

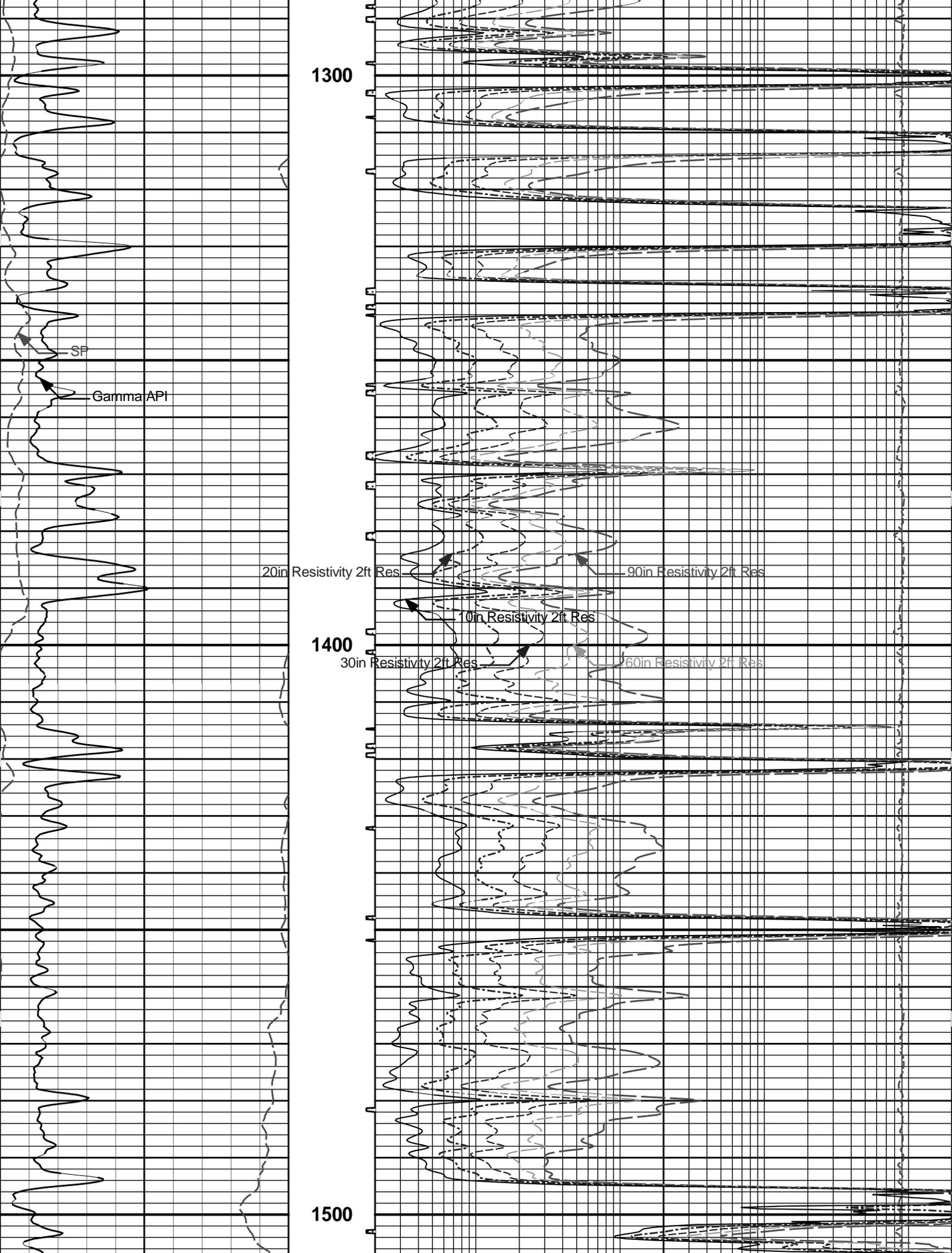


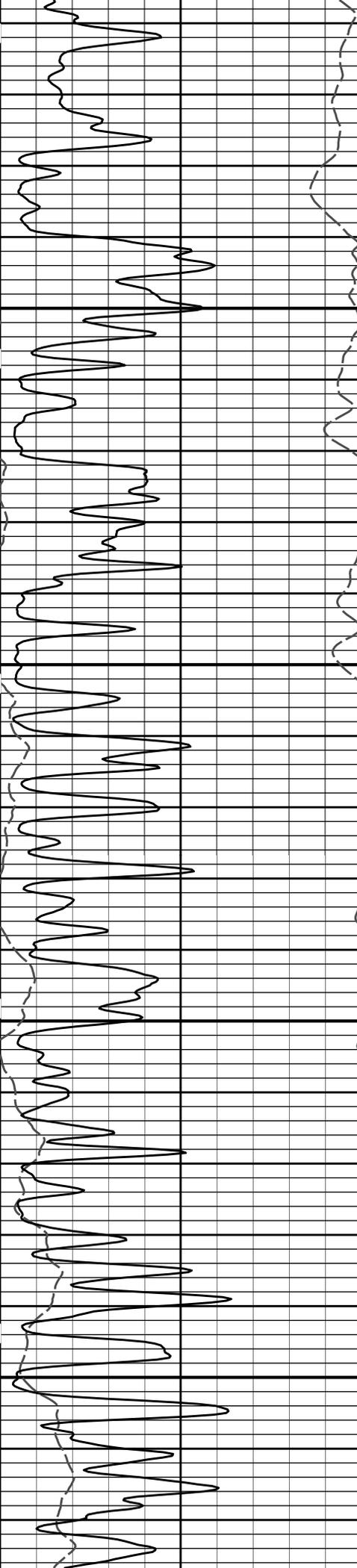


1100

1200

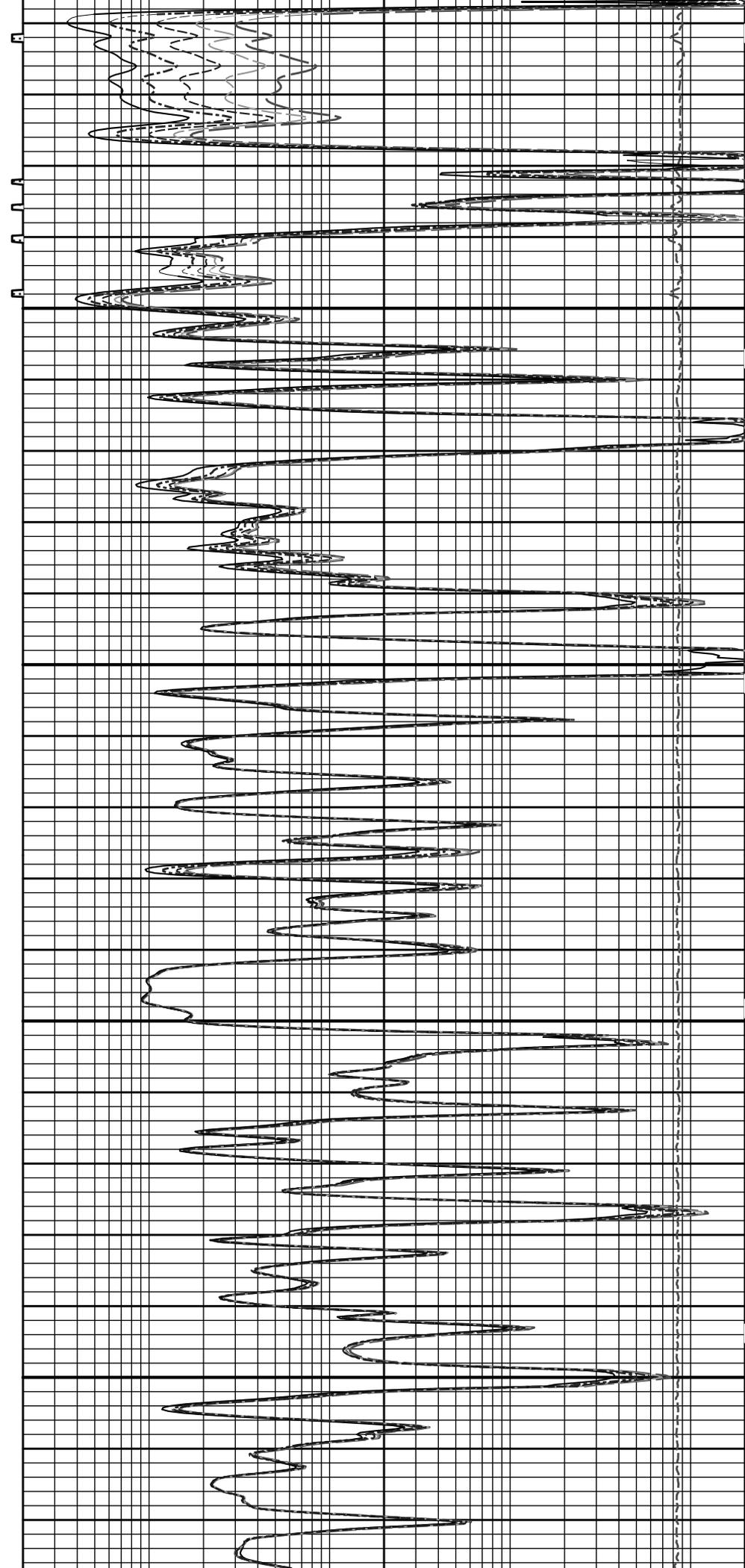


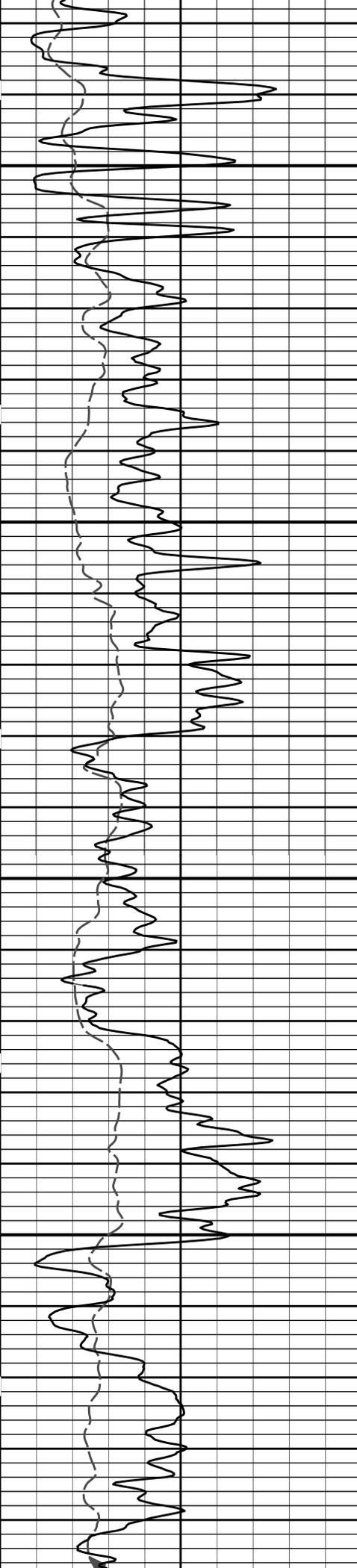




1600

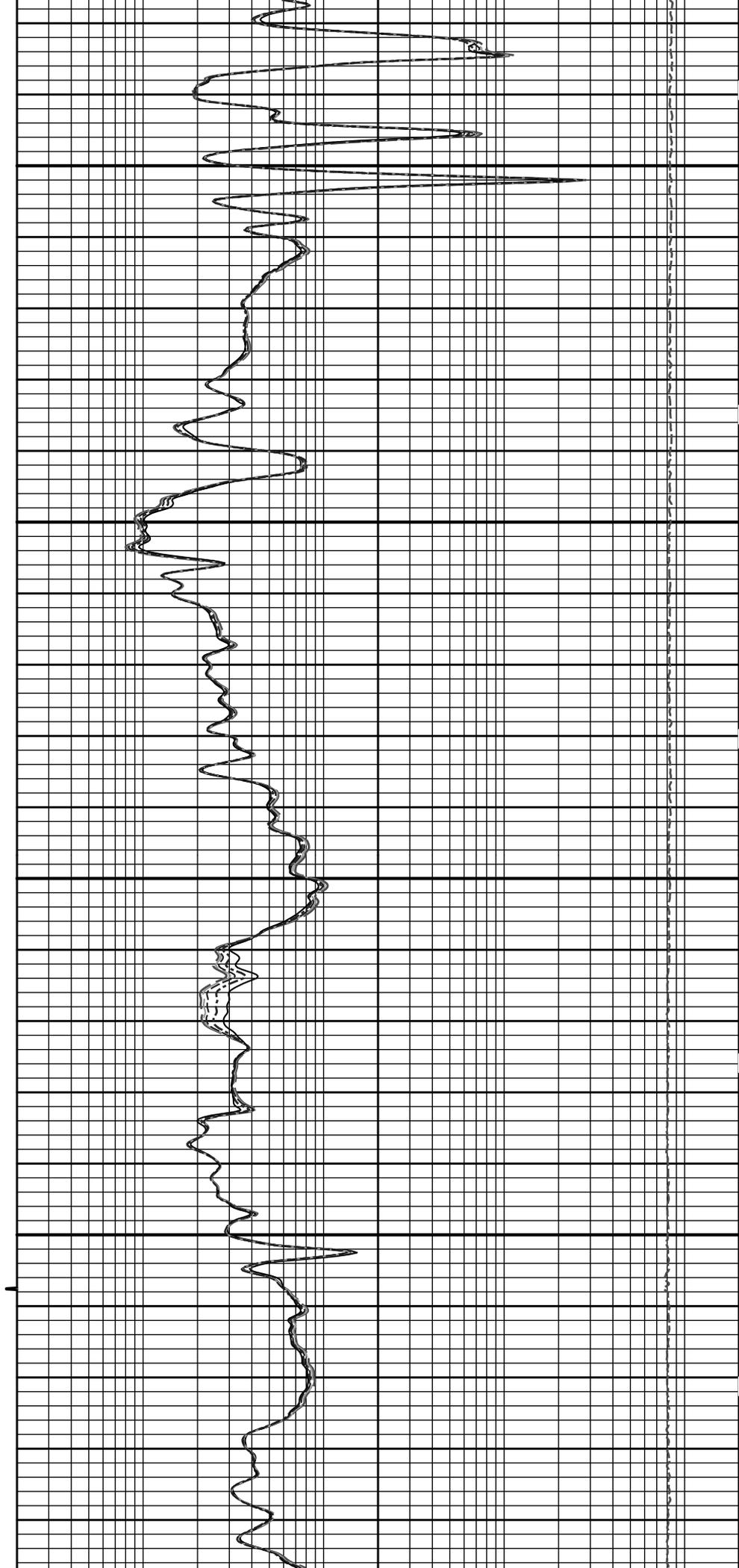
1700





1800

1900



Gamma API

SP

2000

30in Resistivity 2ft Res

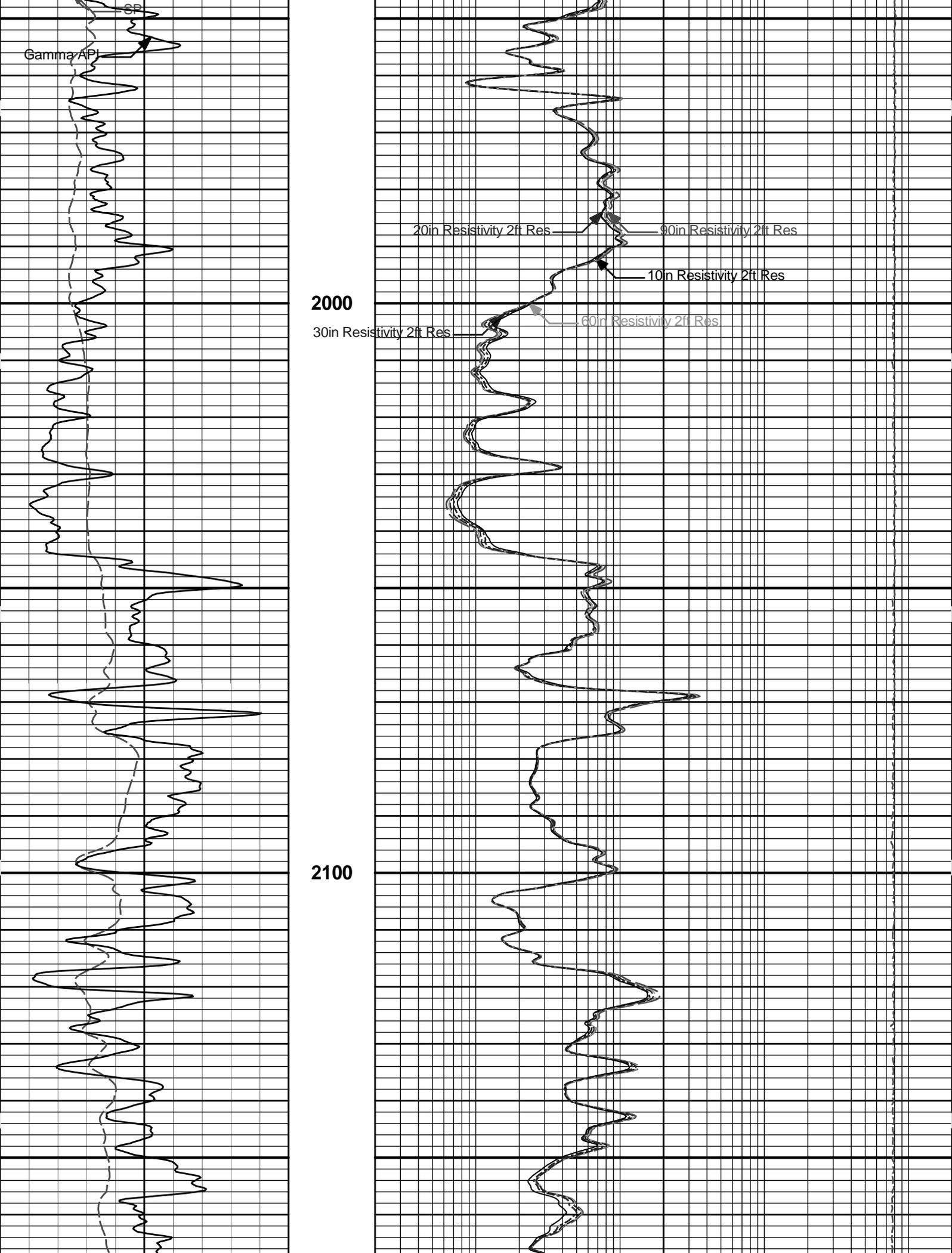
20in Resistivity 2ft Res

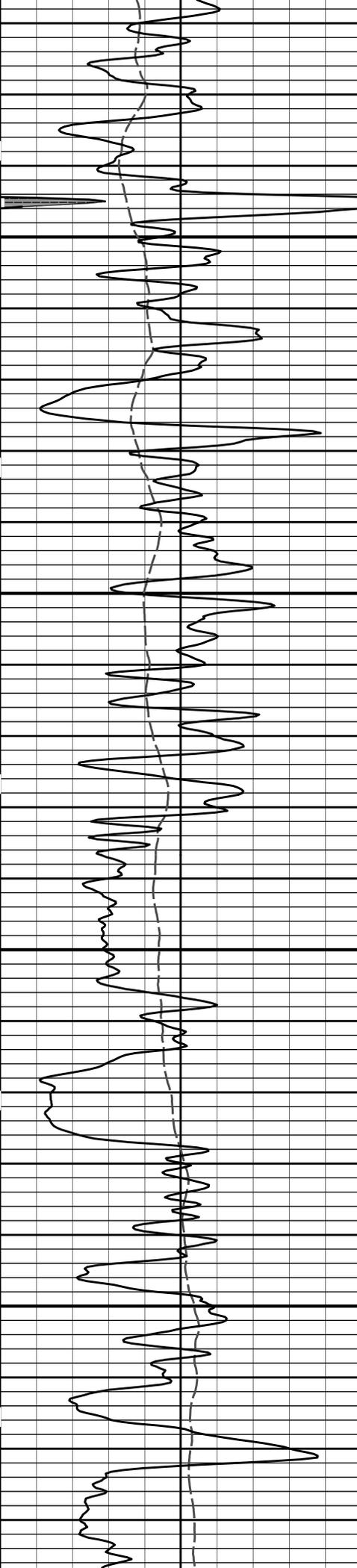
90in Resistivity 2ft Res

10in Resistivity 2ft Res

60in Resistivity 2ft Res

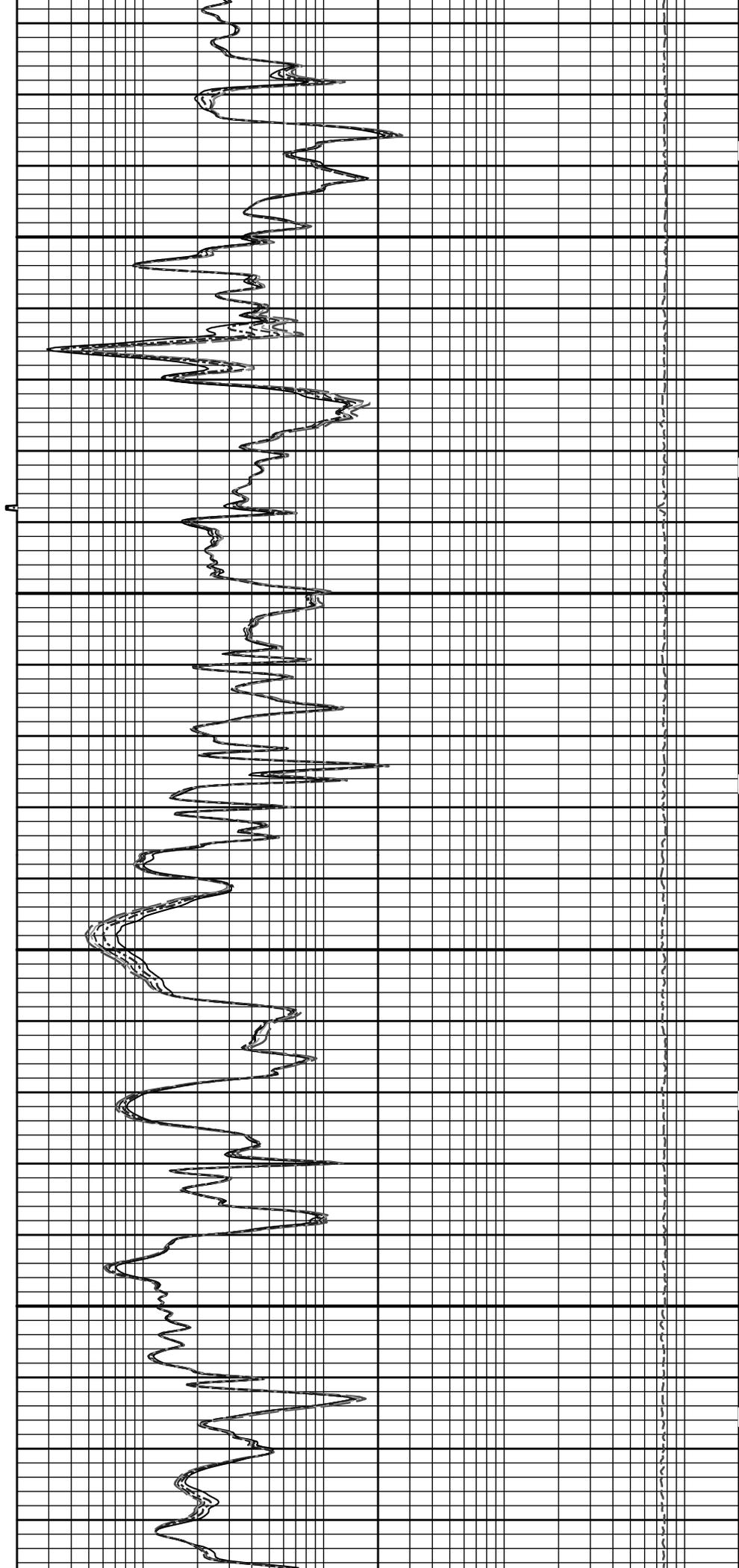
2100

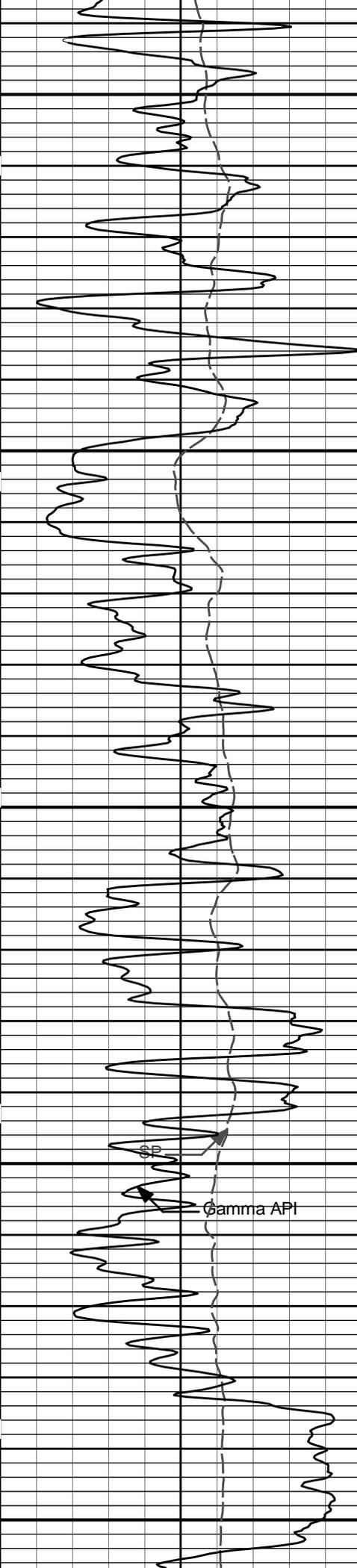




2200

2300





2400

2500

Gamma API

20in Resistivity 2ft Res

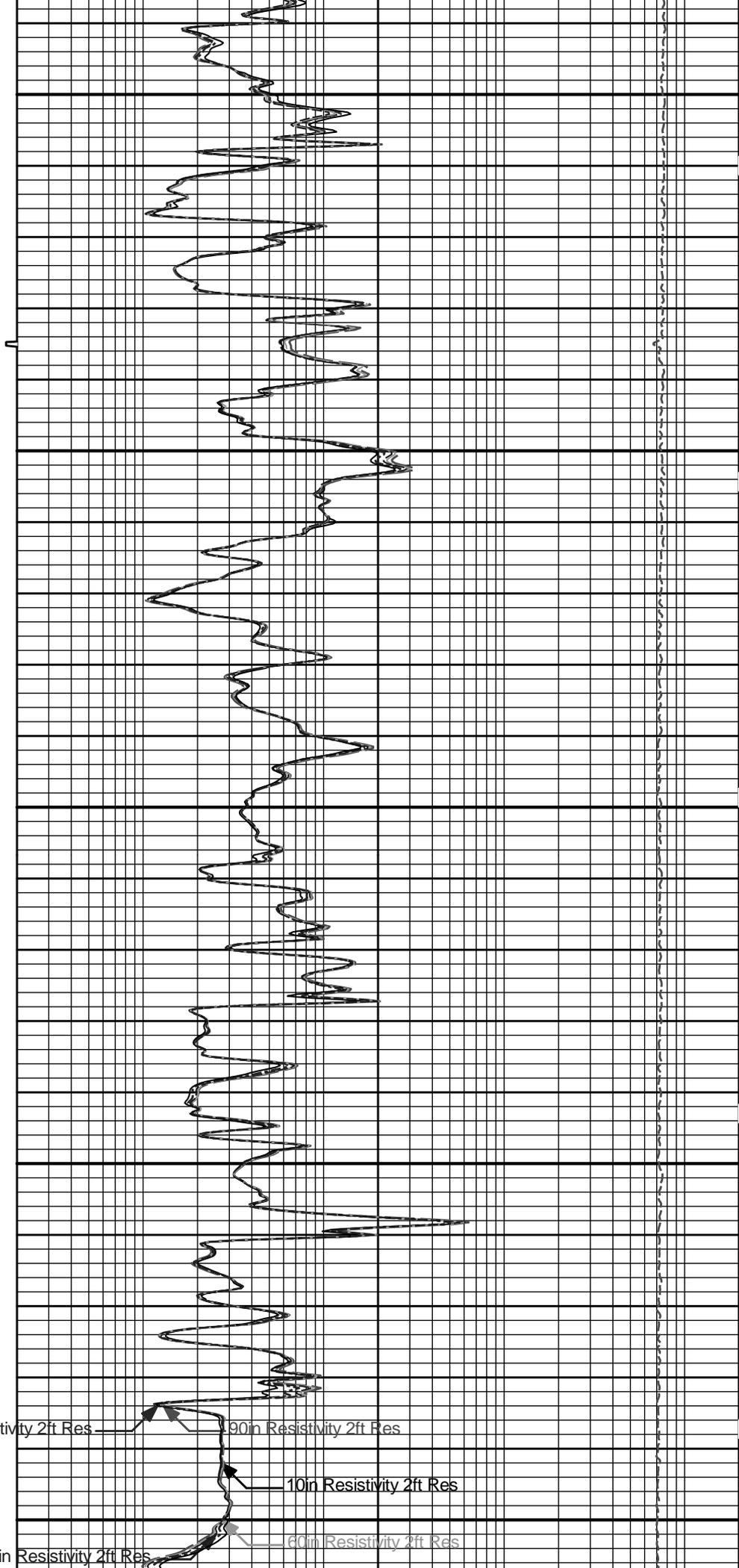
90in Resistivity 2ft Res

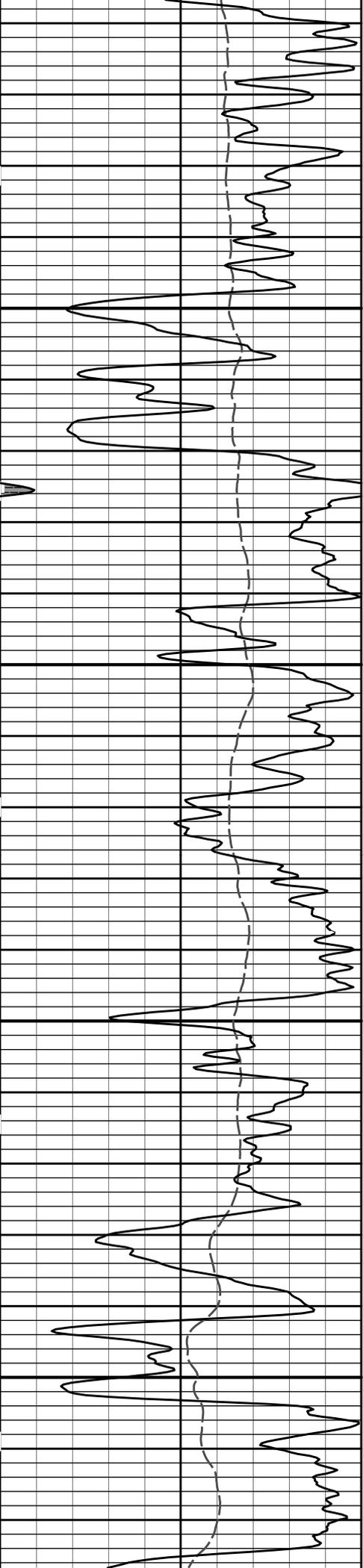
10in Resistivity 2ft Res

2600

30in Resistivity 2ft Res

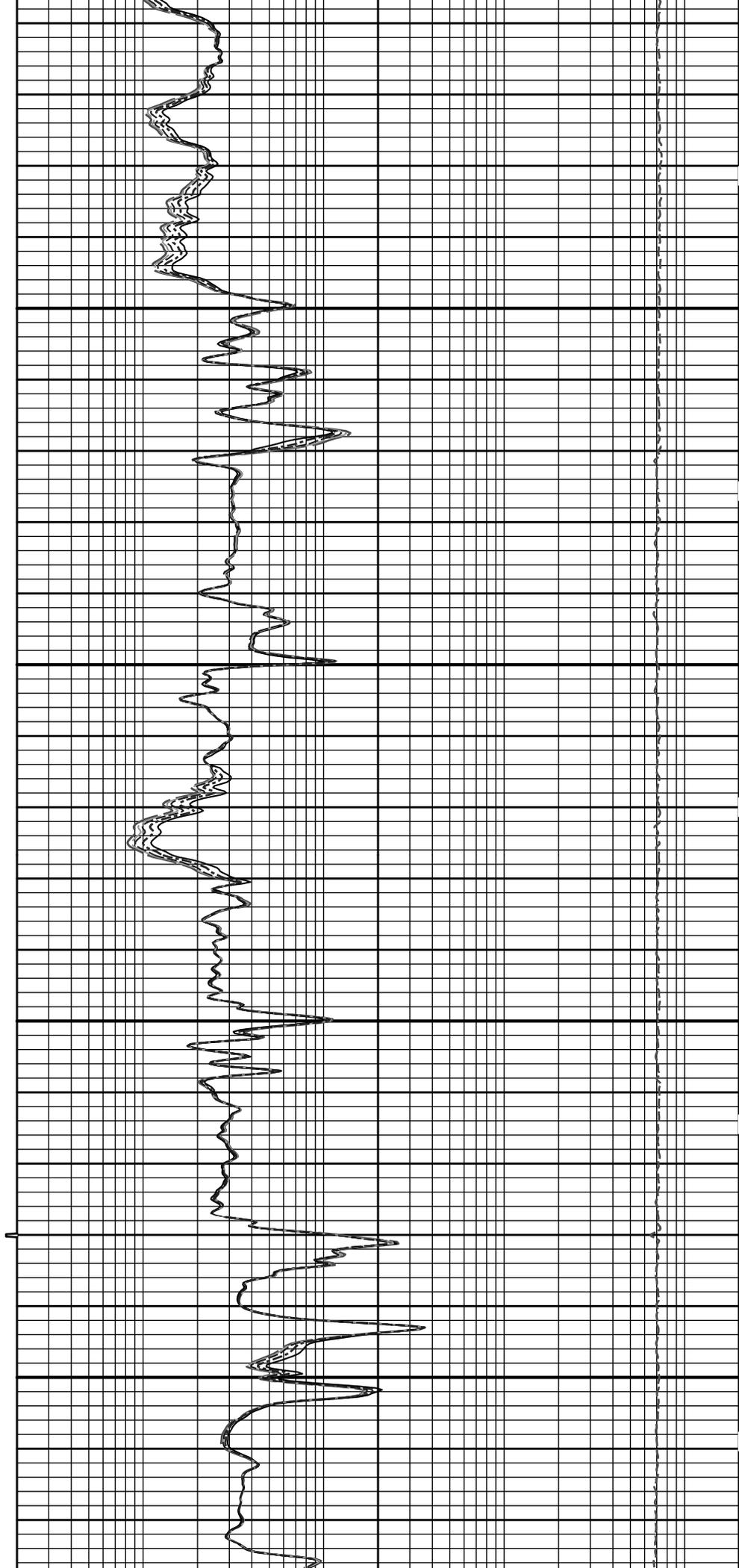
60in Resistivity 2ft Res

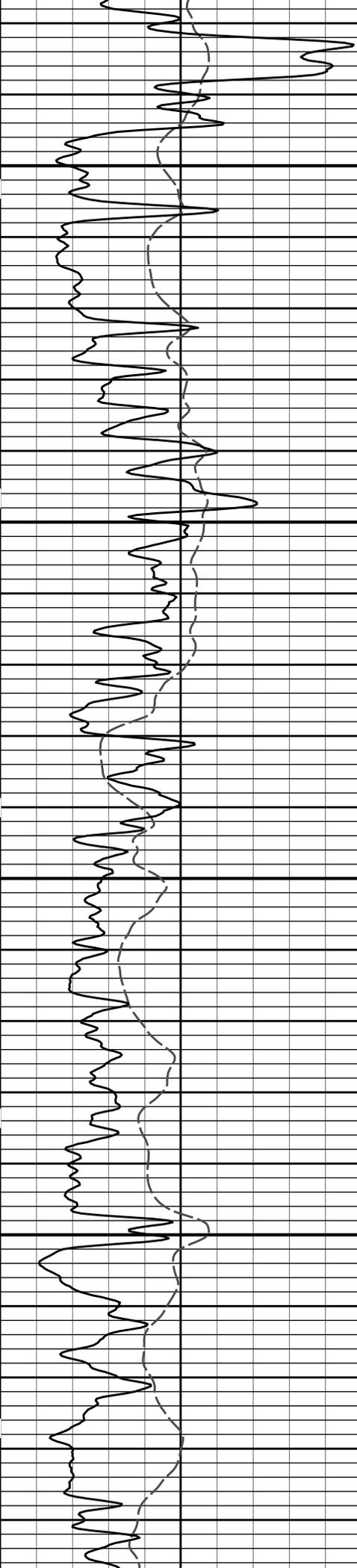




2700

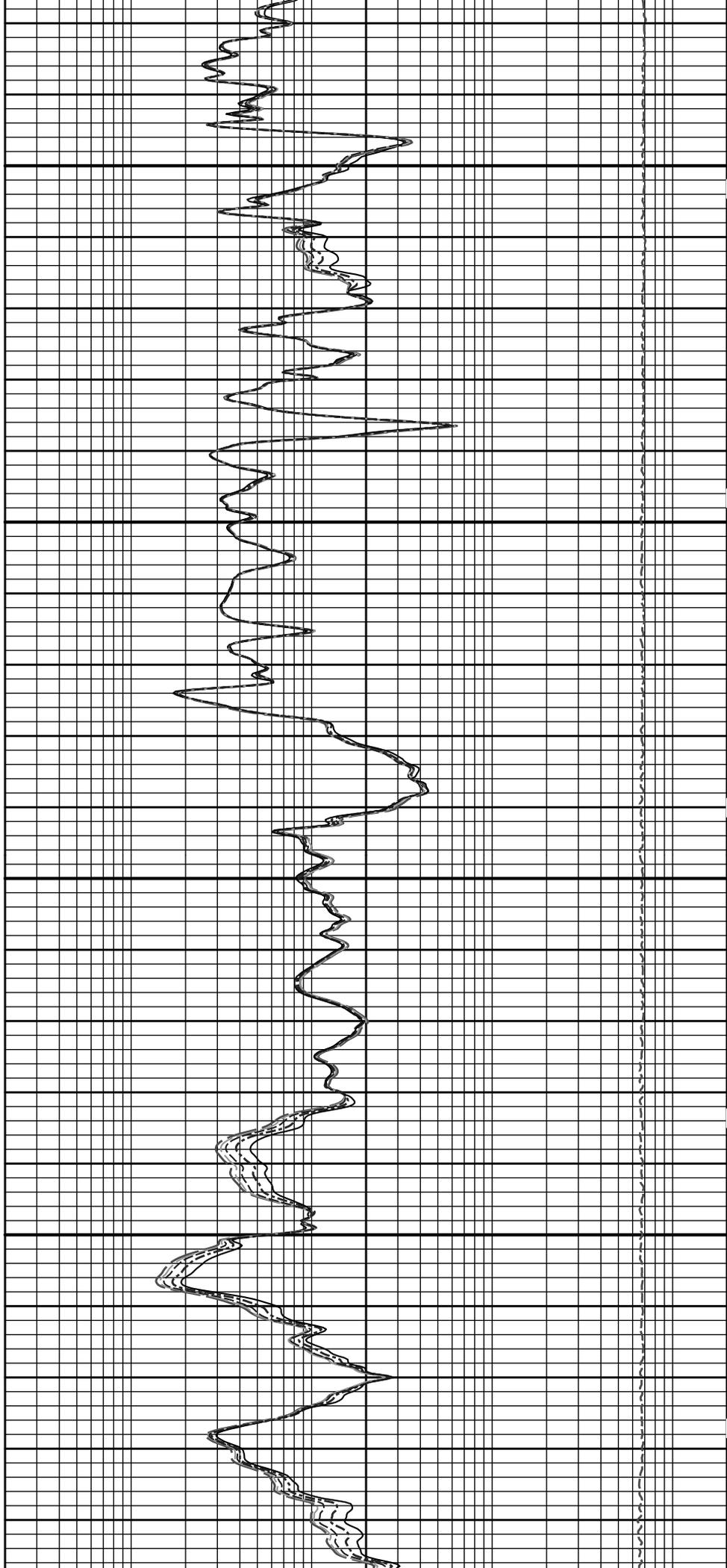
2800

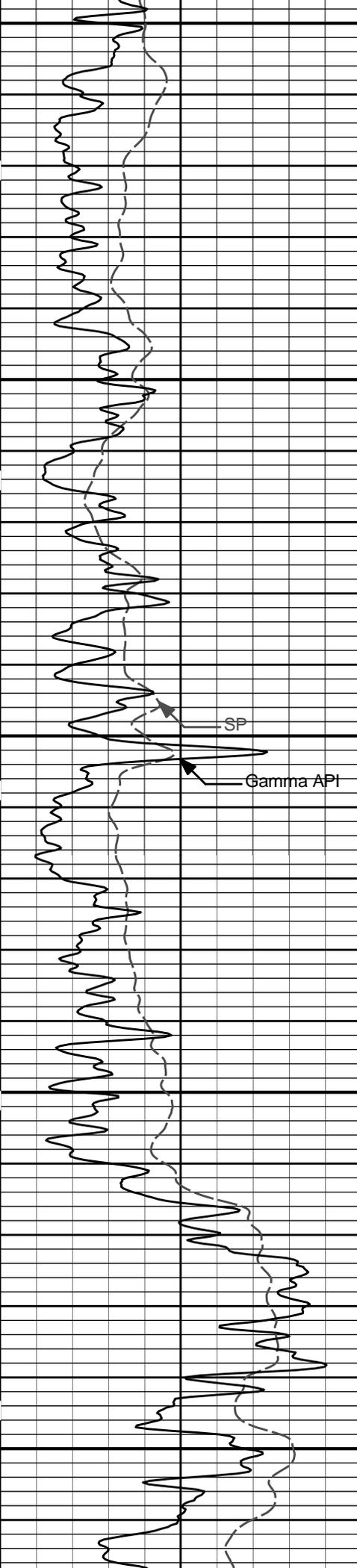




2900

3000



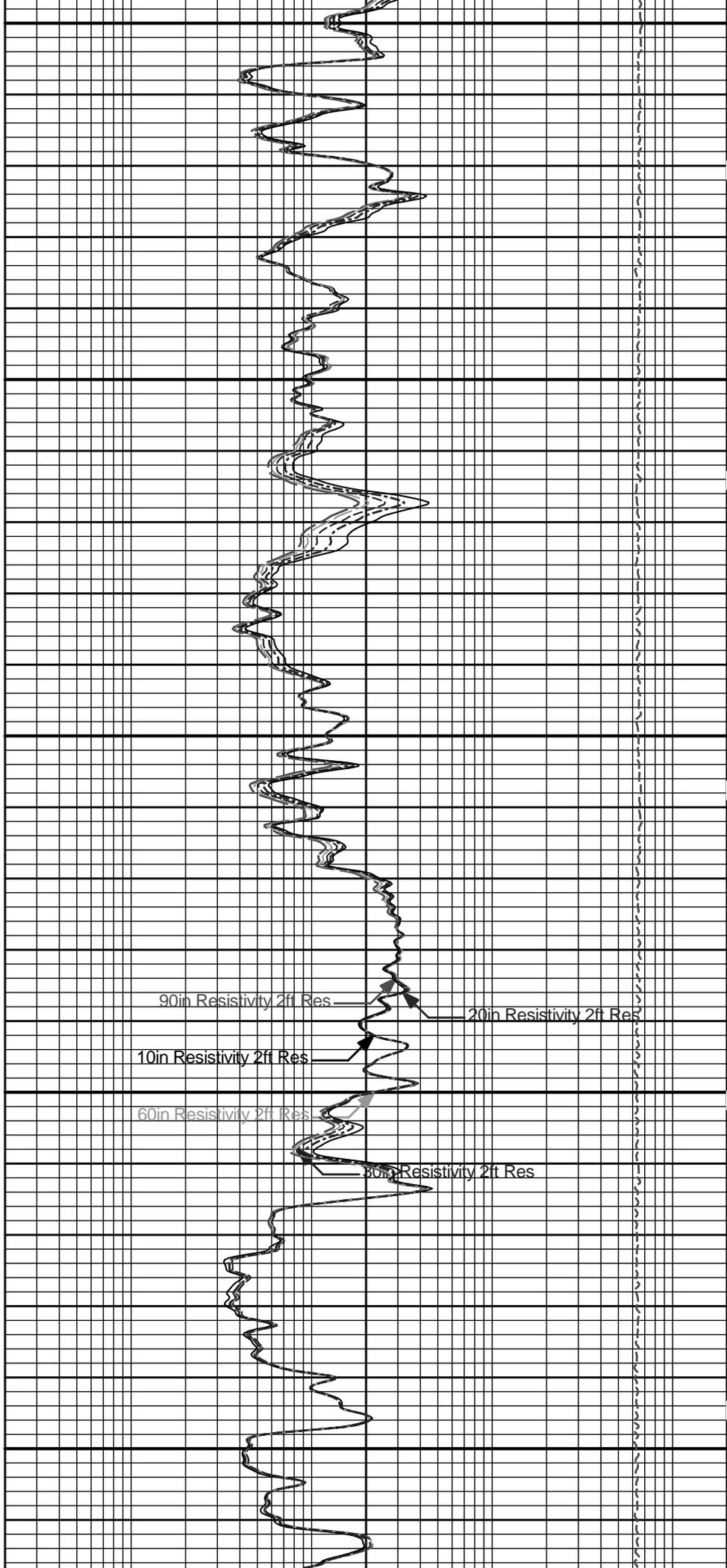


3100

SP

Gamma API

3200



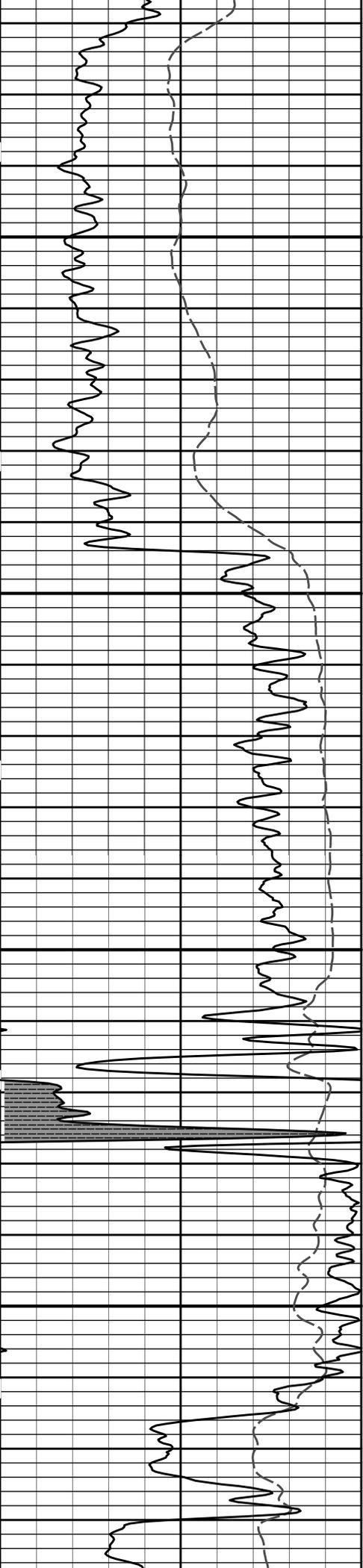
90in Resistivity 2ft Res

20in Resistivity 2ft Res

10in Resistivity 2ft Res

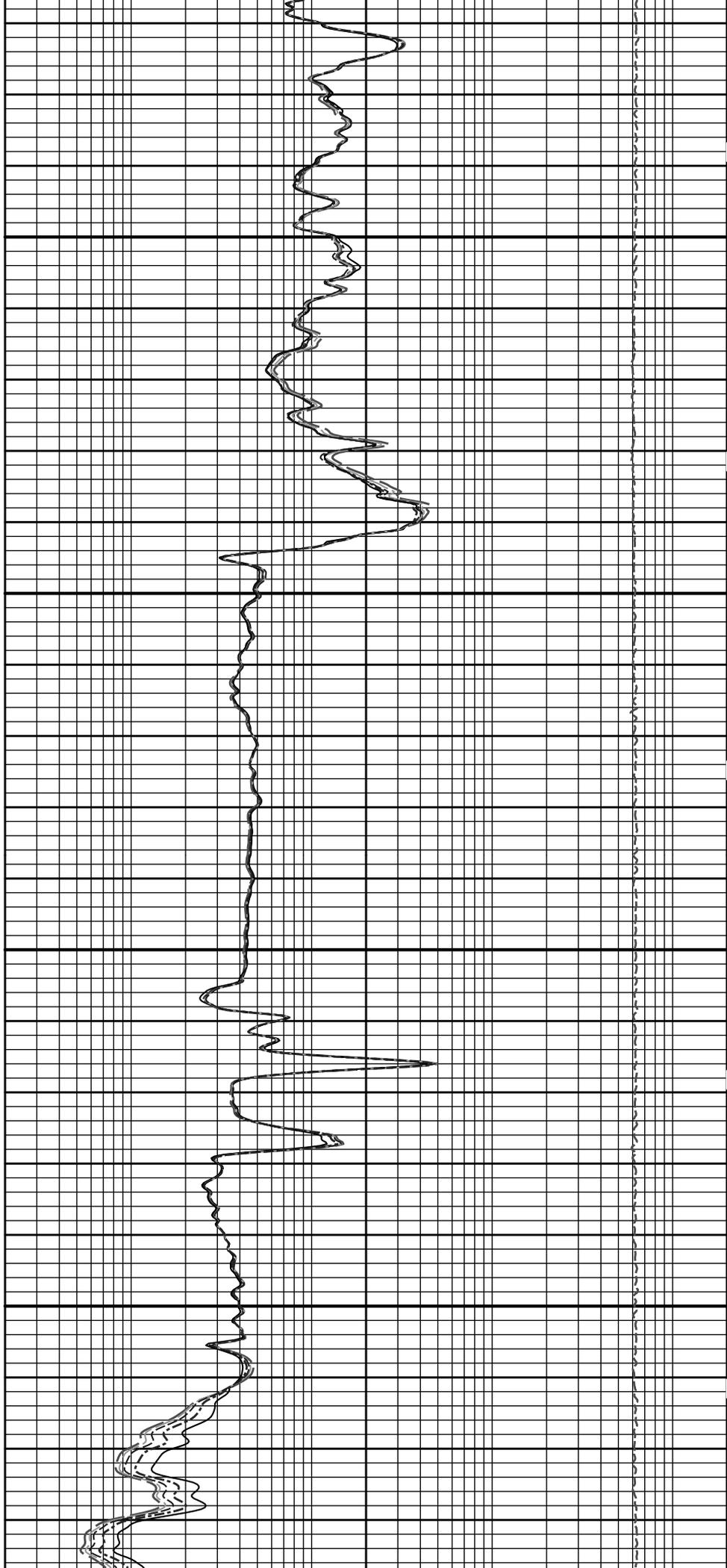
60in Resistivity 2ft Res

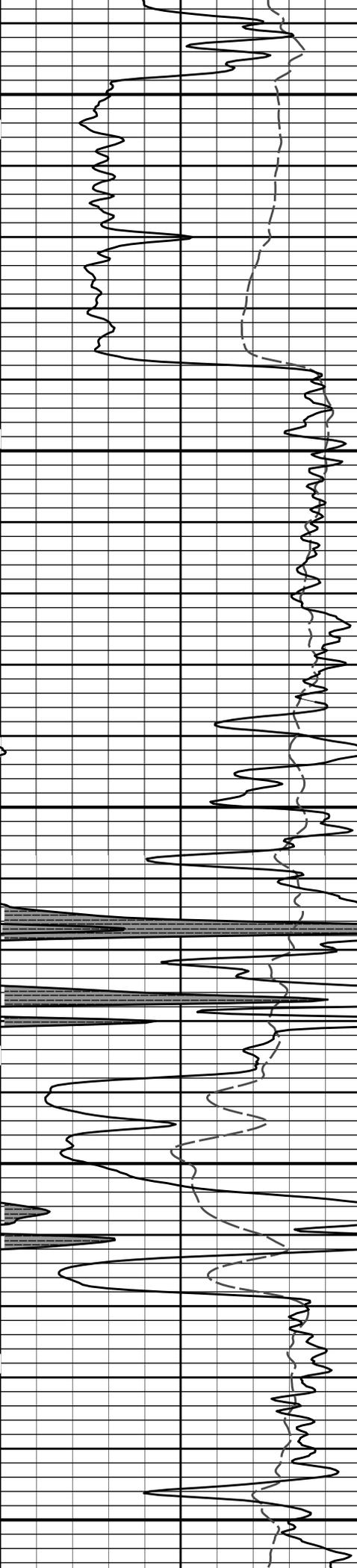
30in Resistivity 2ft Res



3300

3400

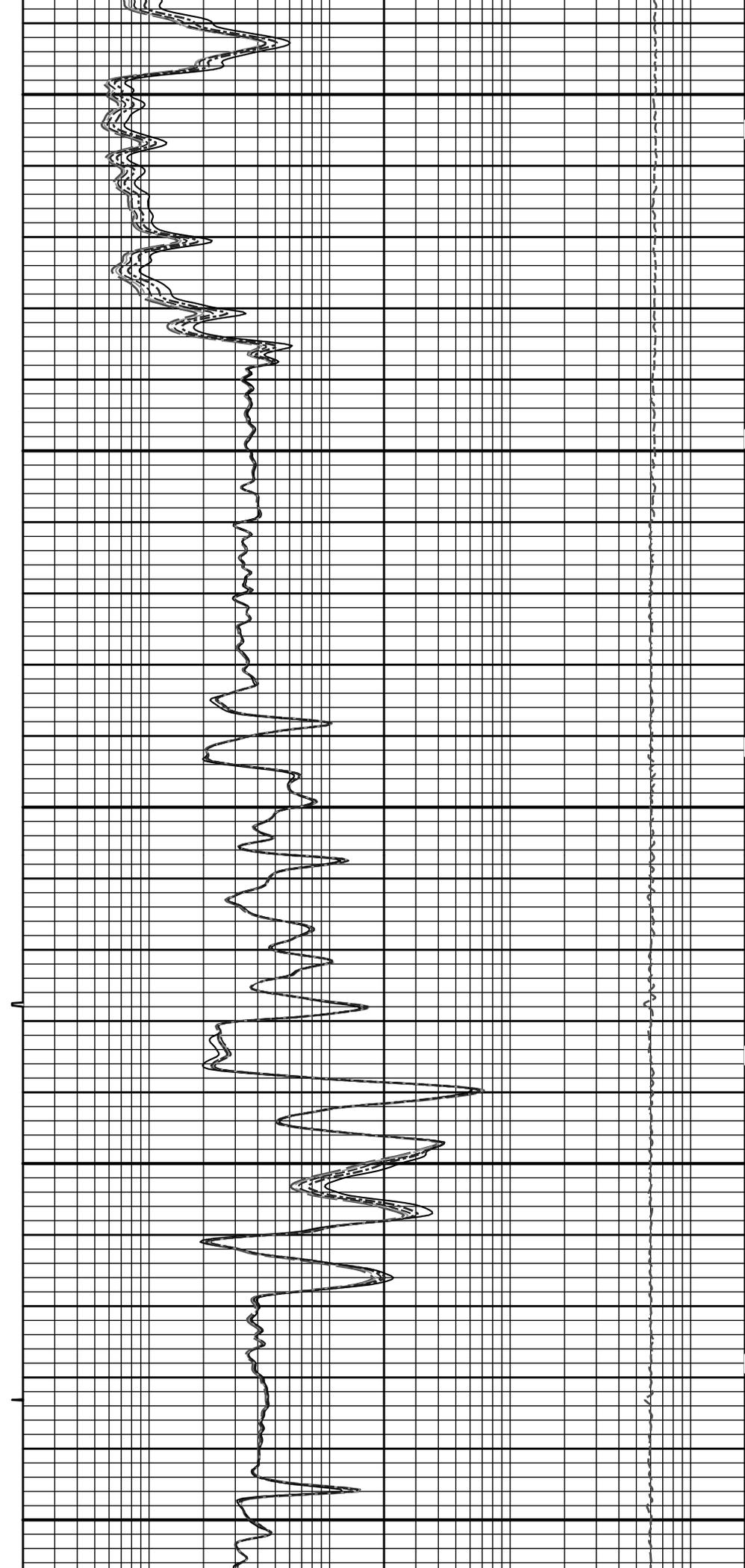


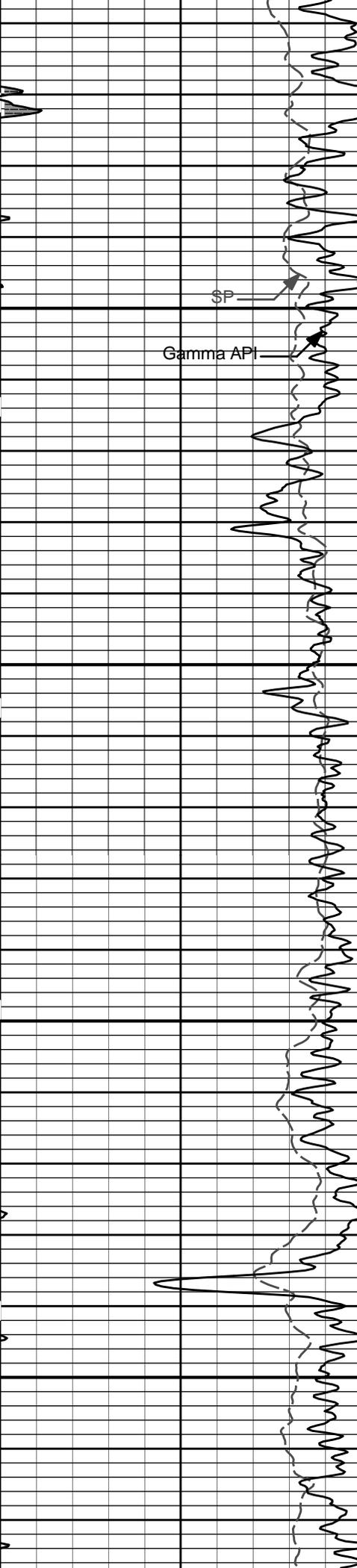


3500

3600

3700



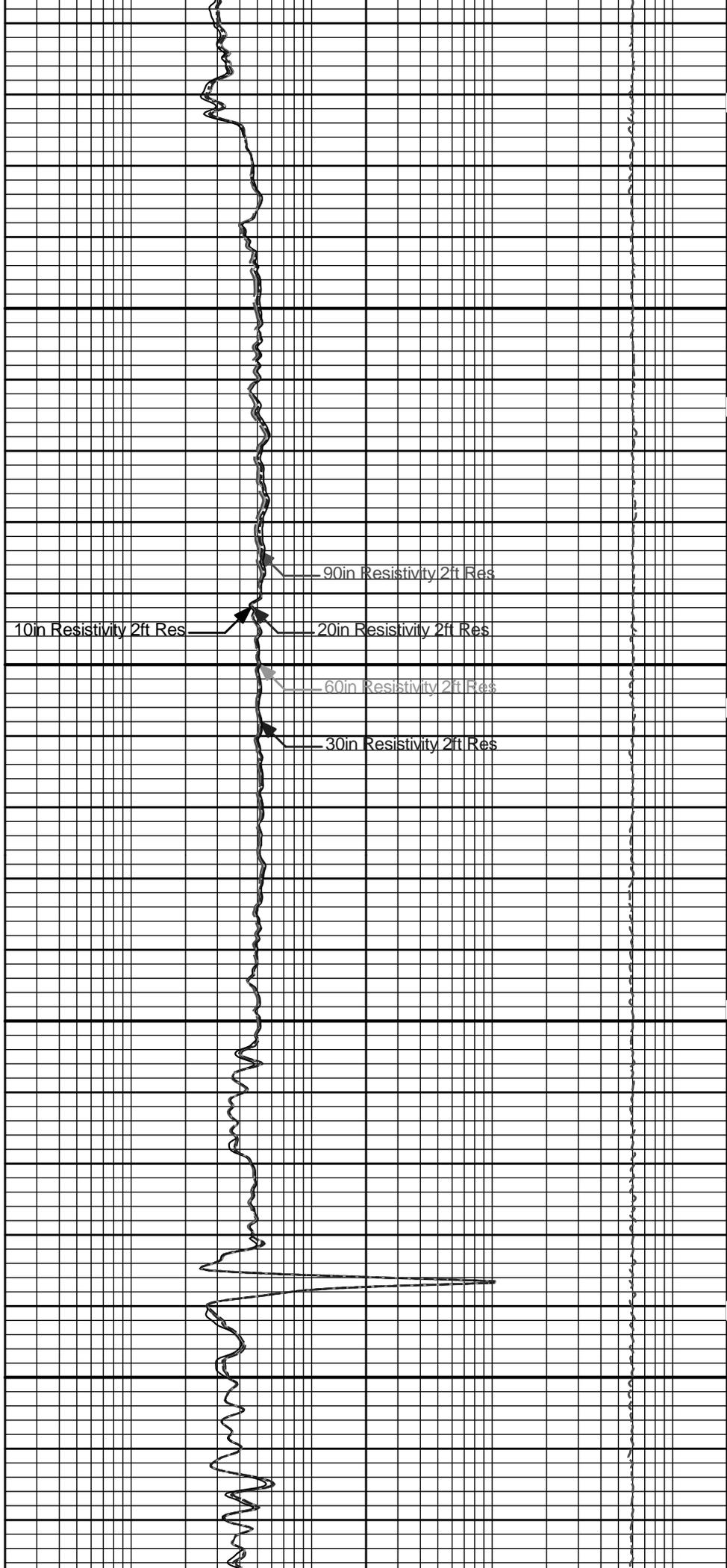


SP

Gamma API

3800

3900



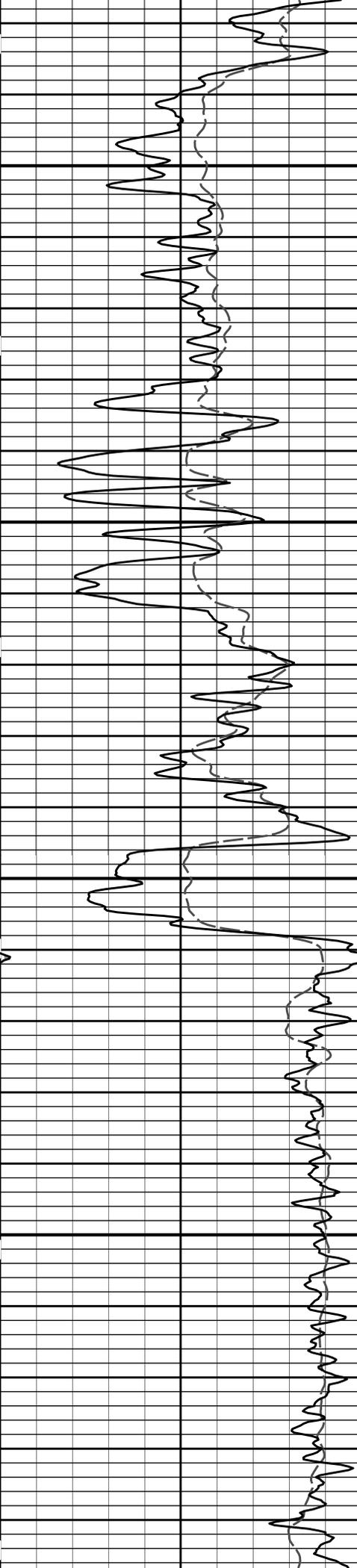
10in Resistivity 2ft Res

90in Resistivity 2ft Res

20in Resistivity 2ft Res

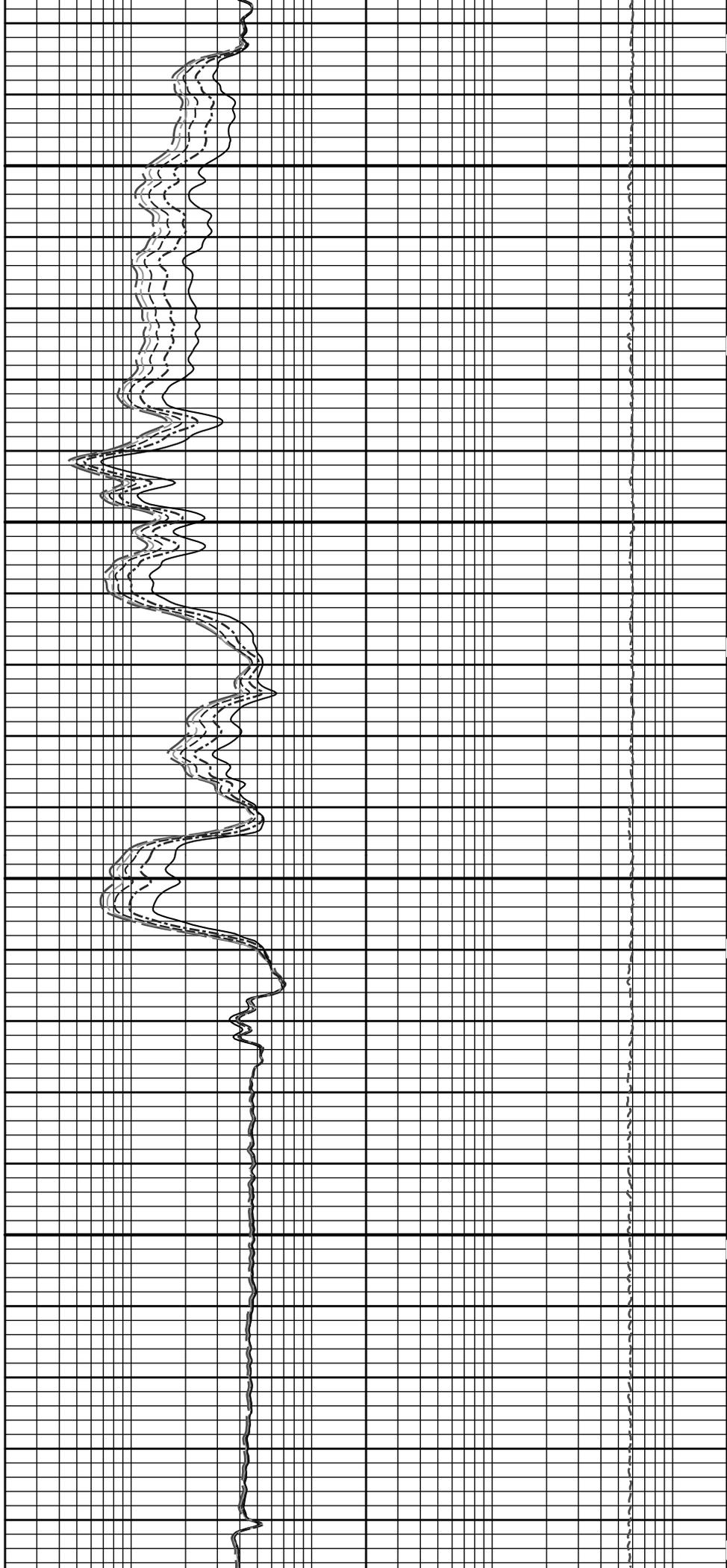
60in Resistivity 2ft Res

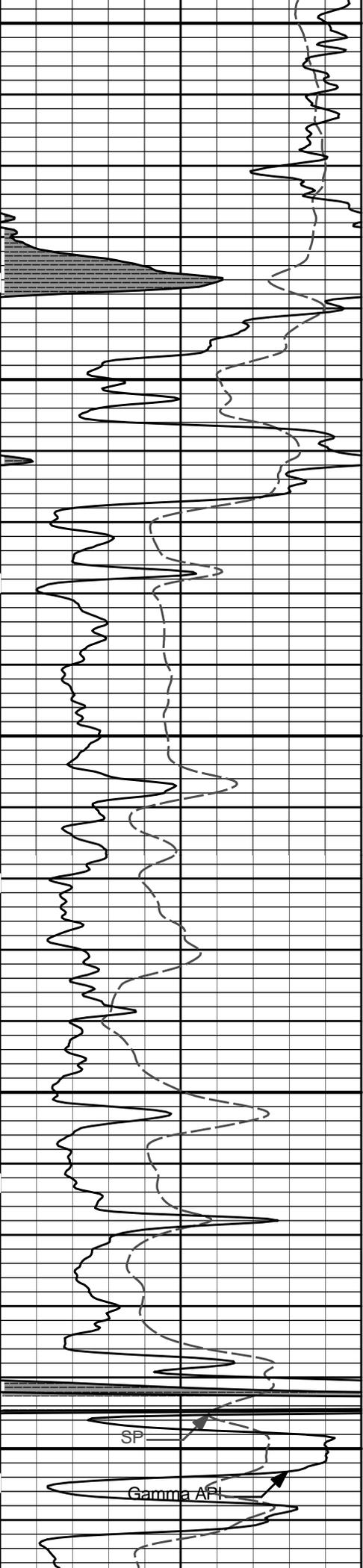
30in Resistivity 2ft Res



4000

4100



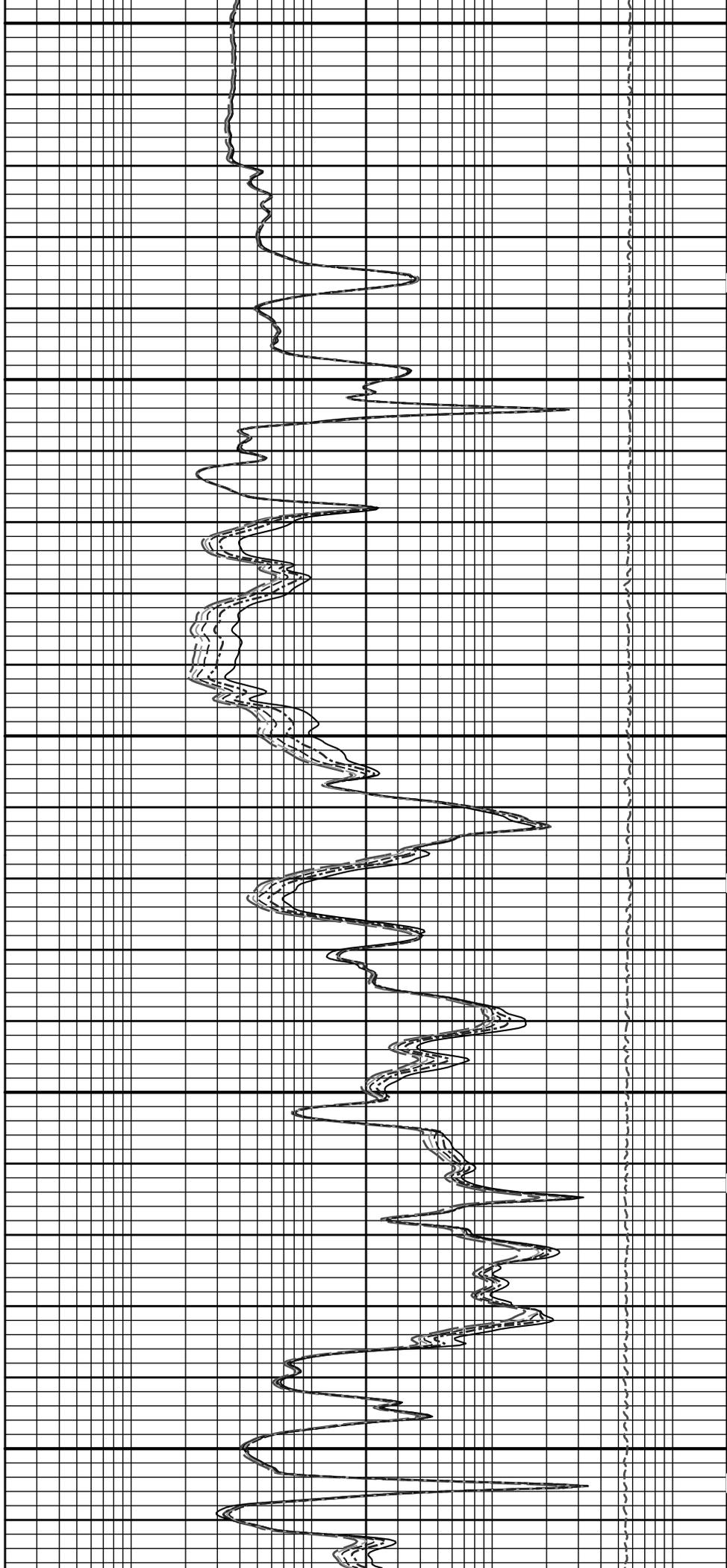


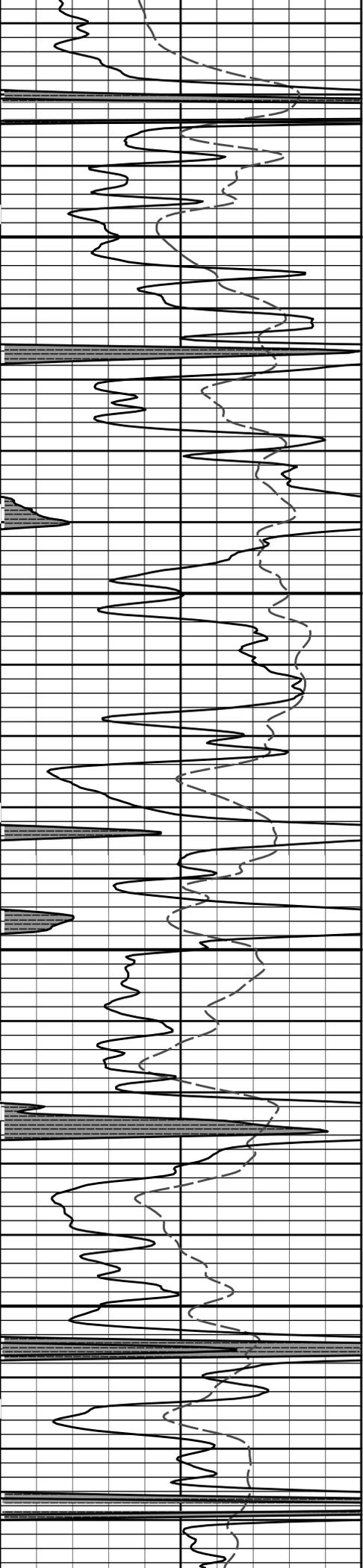
4200

4300

SP

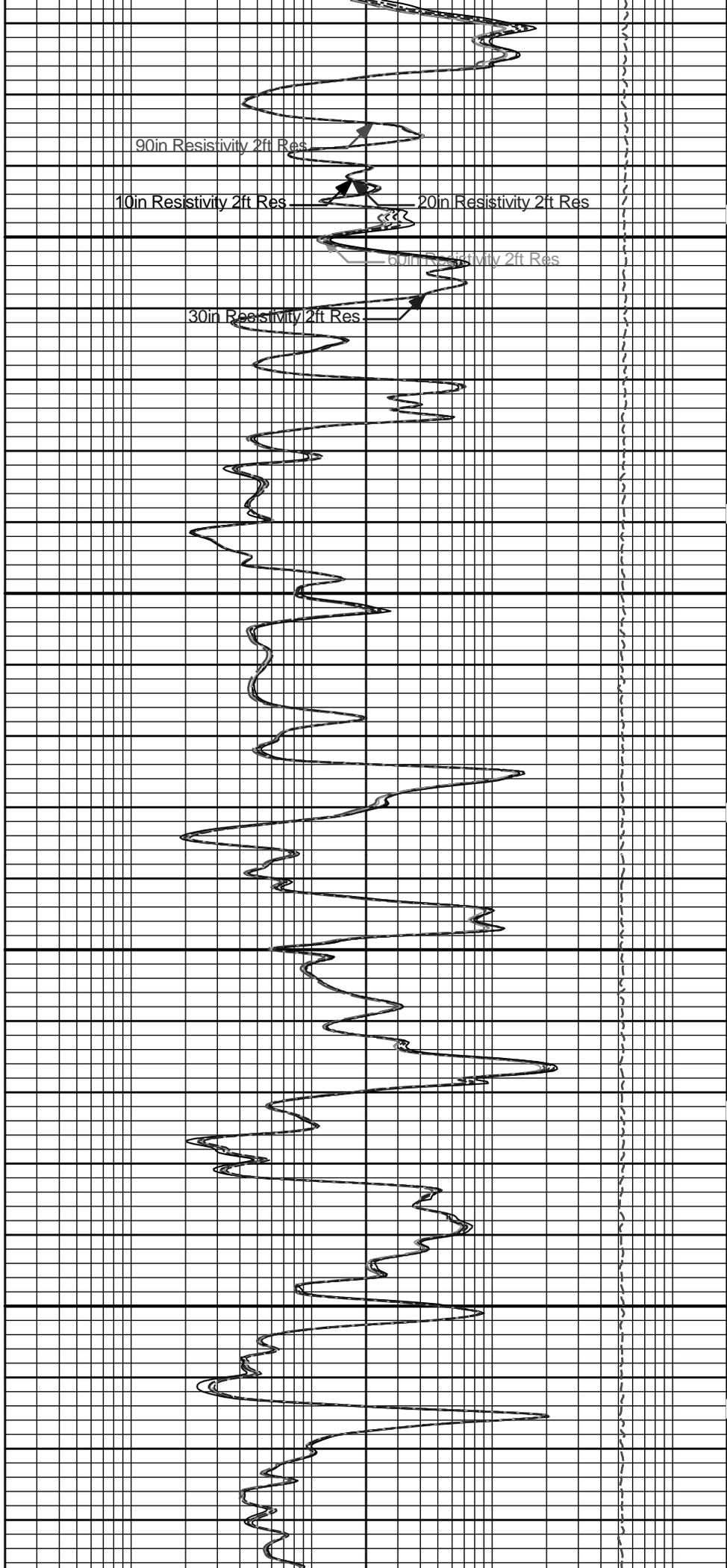
Gamma AFI

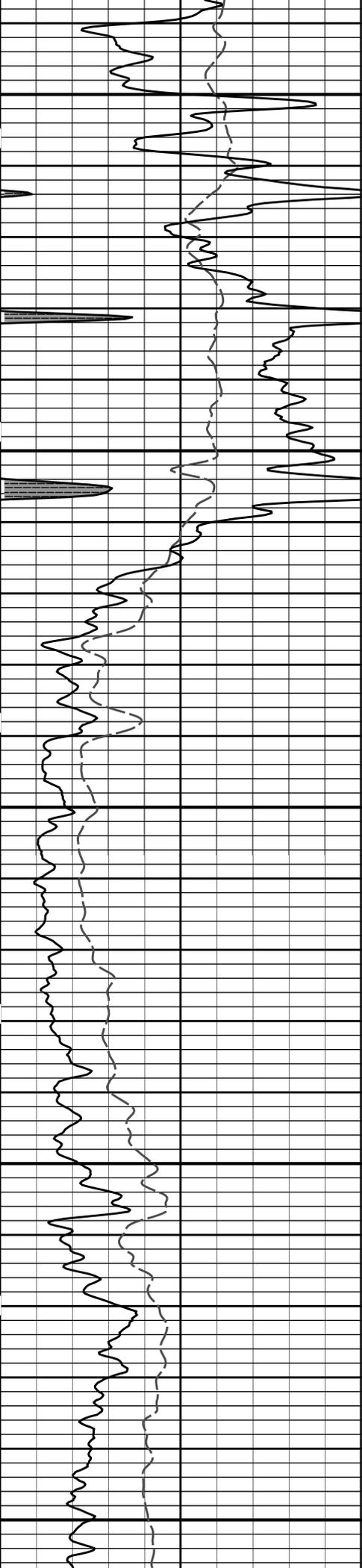




4400

4500

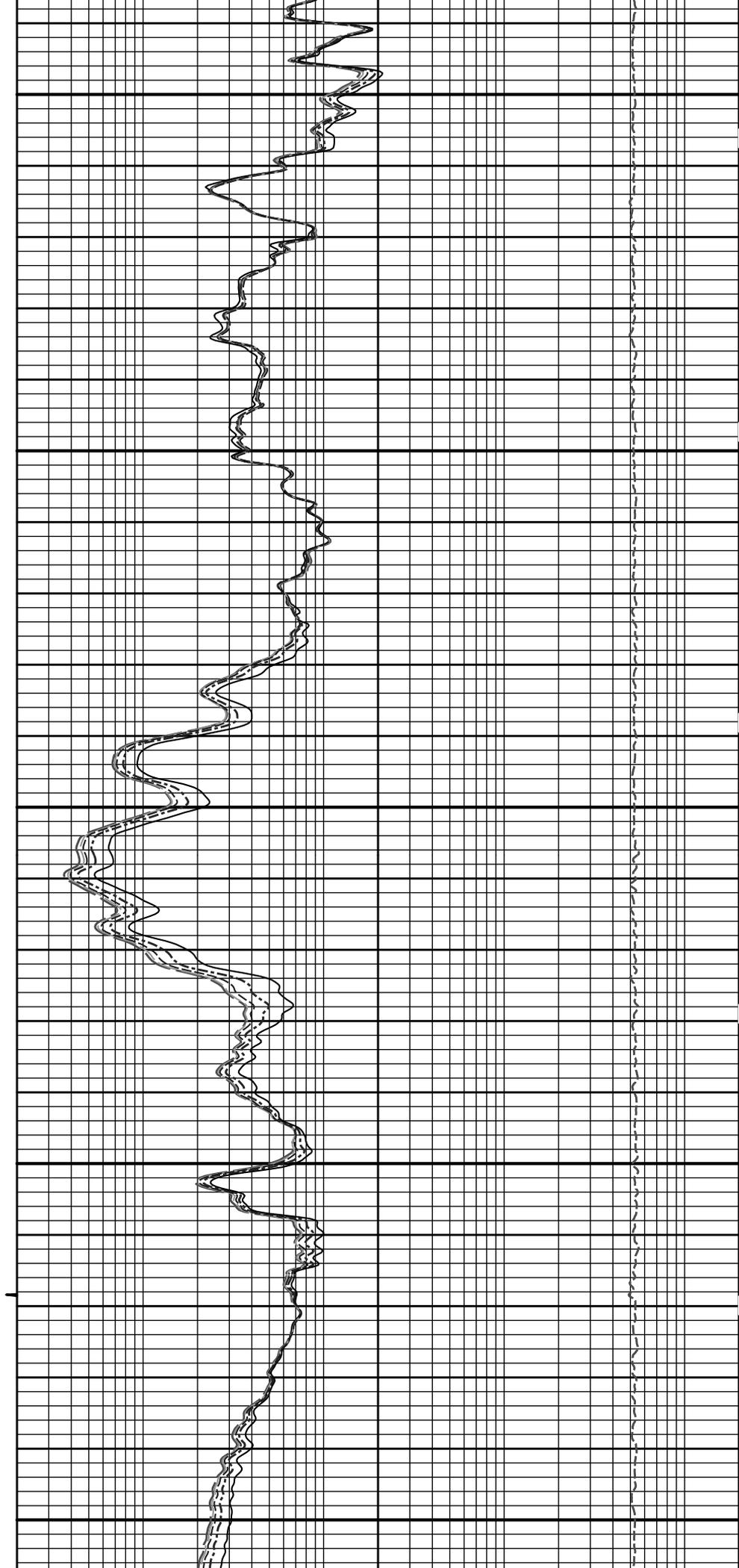


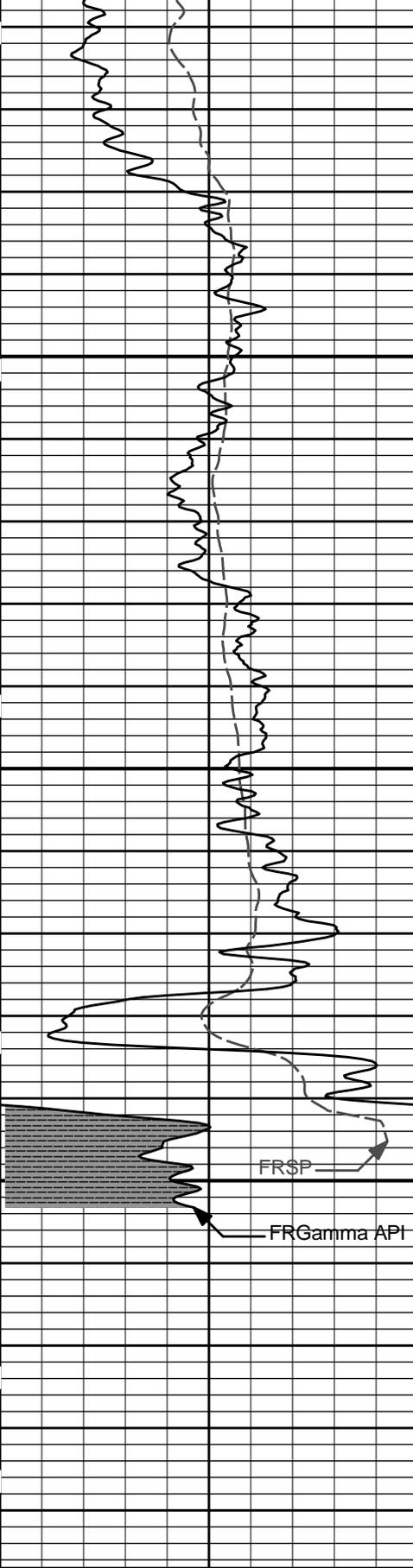


4600

4700

4800



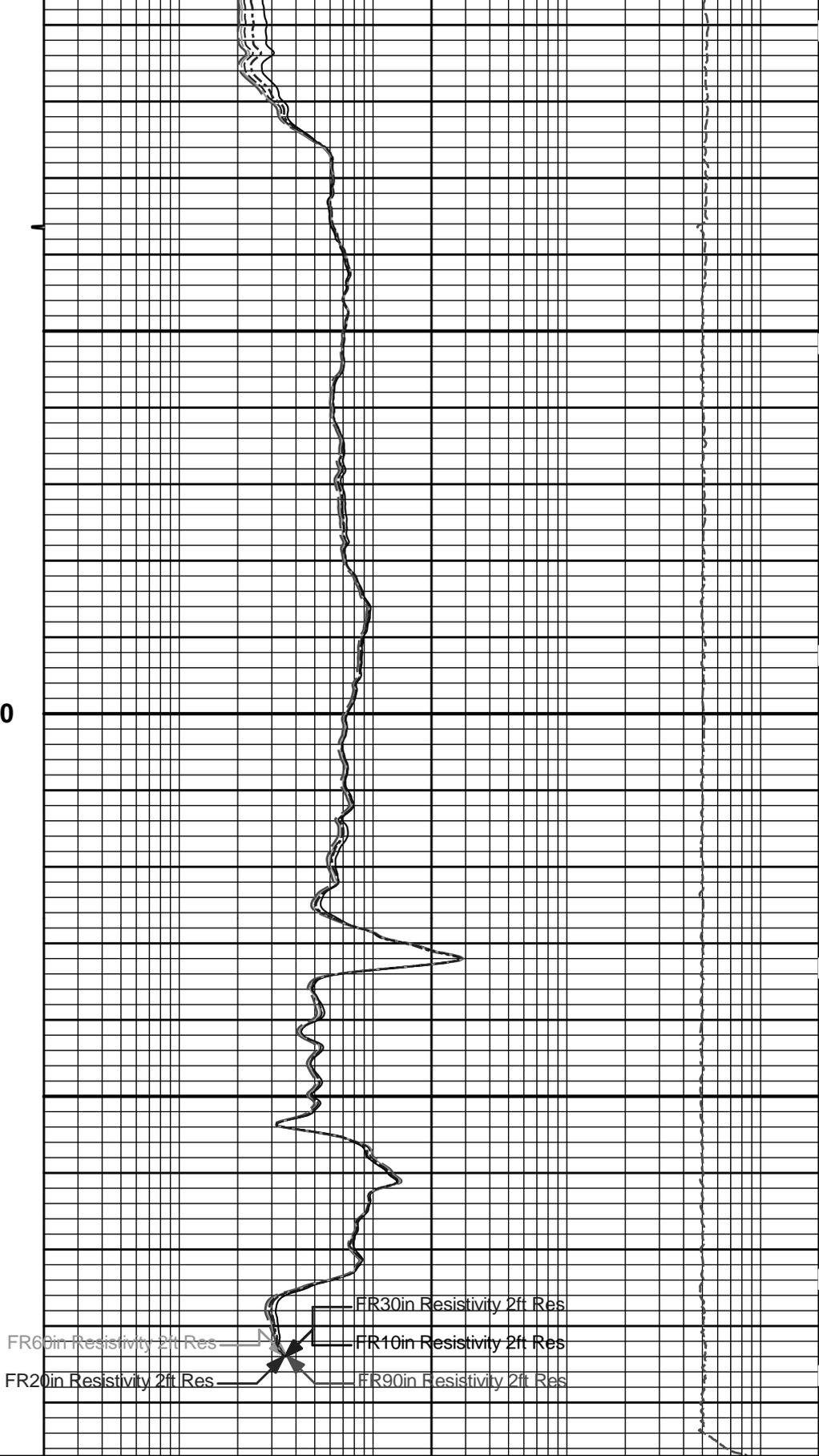


4900

FRSP

FRGamma API

TD



FR30in Resistivity 2ft Res

FR10in Resistivity 2ft Res

FR60in Resistivity 2ft Res

FR20in Resistivity 2ft Res

FR90in Resistivity 2ft Res

<p>SP - 20 +</p>	<p>MD 1 : 240 ft</p>	<p>10K</p>	<p>Tension pounds</p>
<p>Gamma API 150 api</p>	<p>Tension Pull 10 0</p>	<p>0.2</p>	<p>2000</p>
<p>SHALE</p>	<p>Tension Pull</p>	<p>0.2</p>	<p>2000</p>

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**

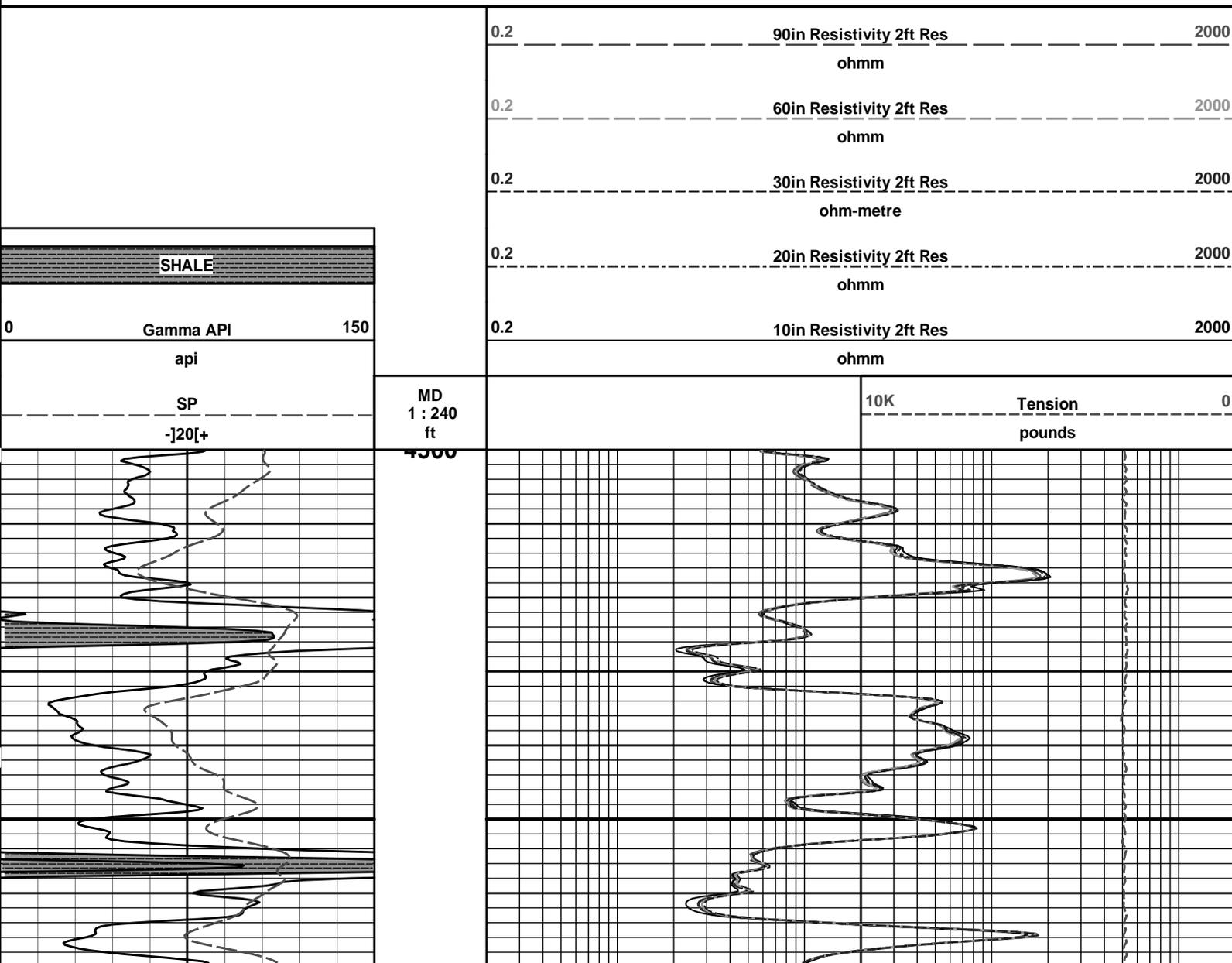
Plot Time: 09-Sep-12 20:50:28  
 Plot Range: 210 ft to 4997 ft  
 Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\  
 Plot File: \\-LOCAL-IVAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_5\_main\_lib

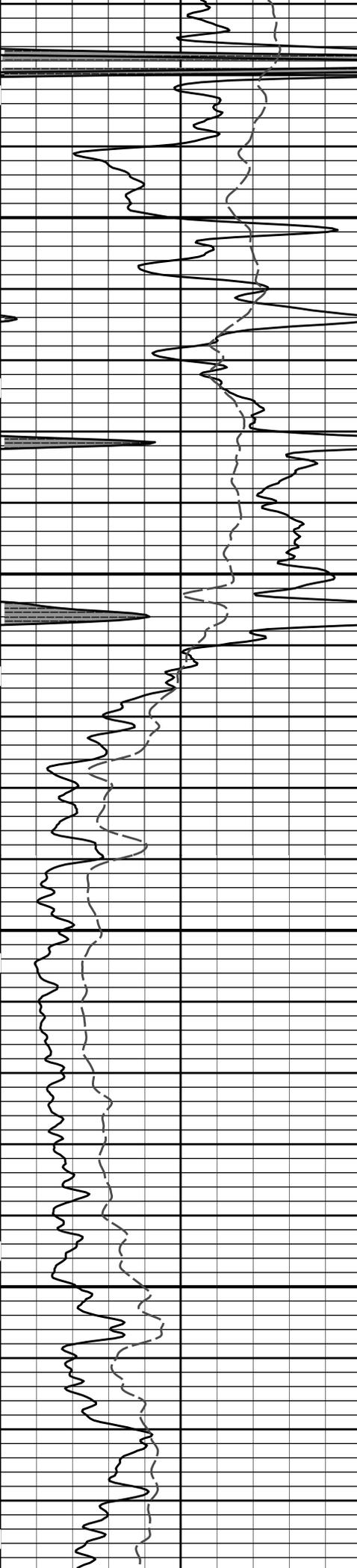
## 5 INCH MAIN LOG

**HALLIBURTON**

Plot Time: 09-Sep-12 20:50:29  
 Plot Range: 4500 ft to 4997.5 ft  
 Data: VAL\_NELSON\_3-24\Well Based\REPEAT\  
 Plot File: \\-LOCAL-IVAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_5\_repeat\_lib

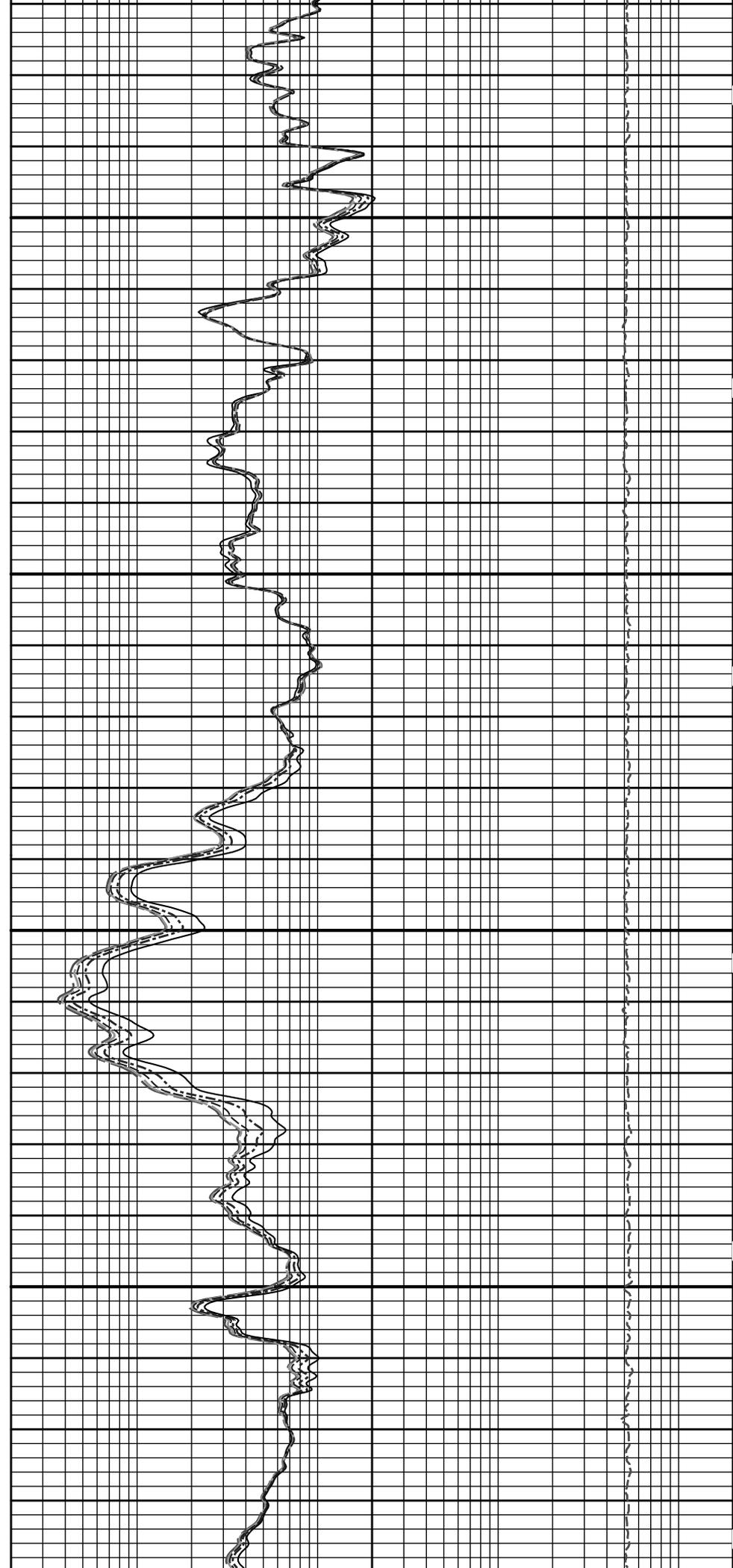
## REPEAT SECTION

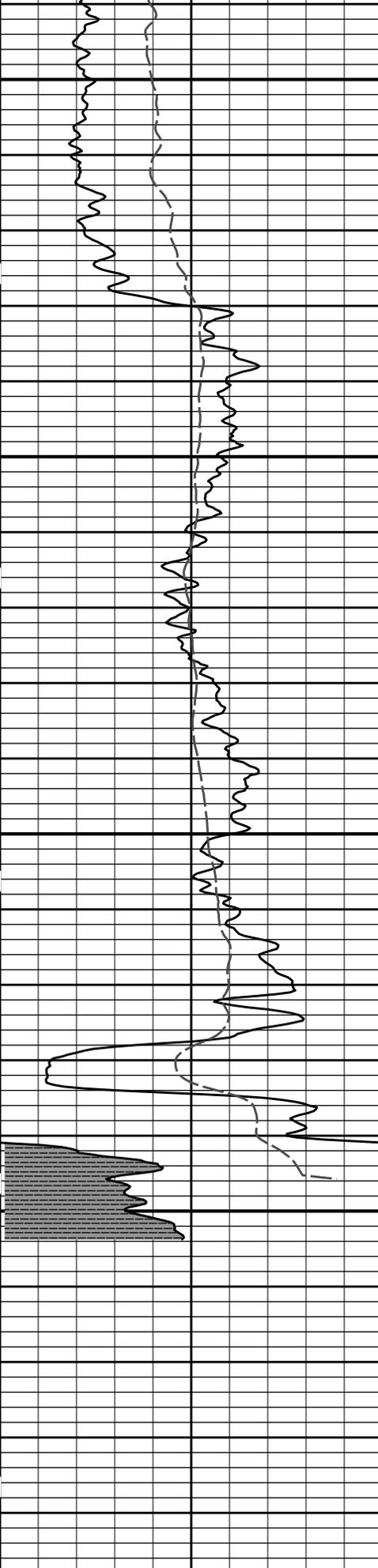




4600

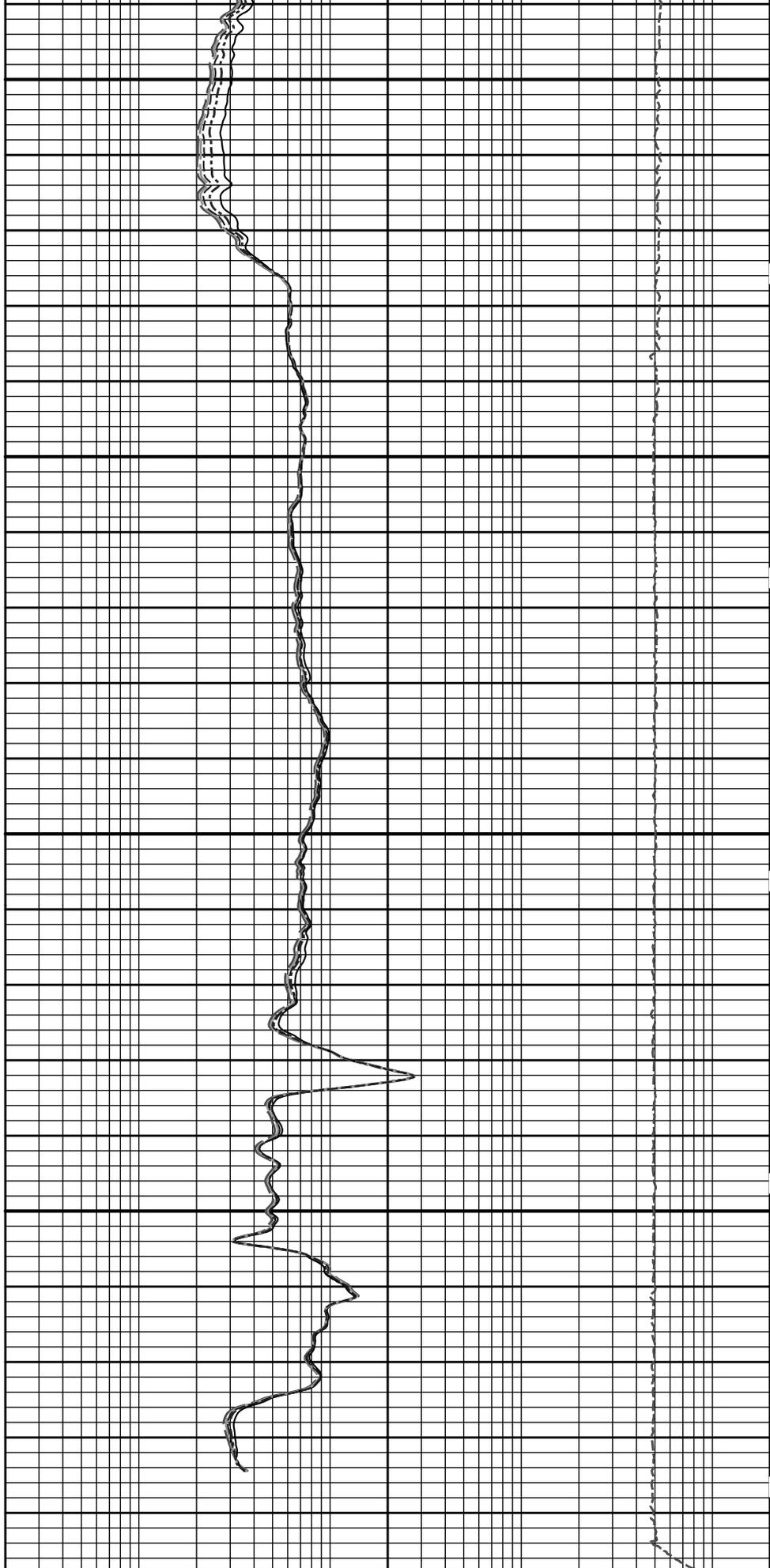
4700





4800

4900



SP  
-j20[+

MD  
1 : 240  
ft

10K

Tension  
pounds

0

0	Gamma API	150
	api	
	SHALE	

0.2	10in Resistivity 2ft Res	2000
	ohmm	
0.2	20in Resistivity 2ft Res	2000
	ohmm	
0.2	30in Resistivity 2ft Res	2000
	ohm-metre	
0.2	60in Resistivity 2ft Res	2000
	ohmm	
0.2	90in Resistivity 2ft Res	2000
	ohmm	

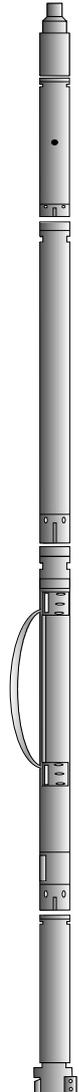
**HALLIBURTON**

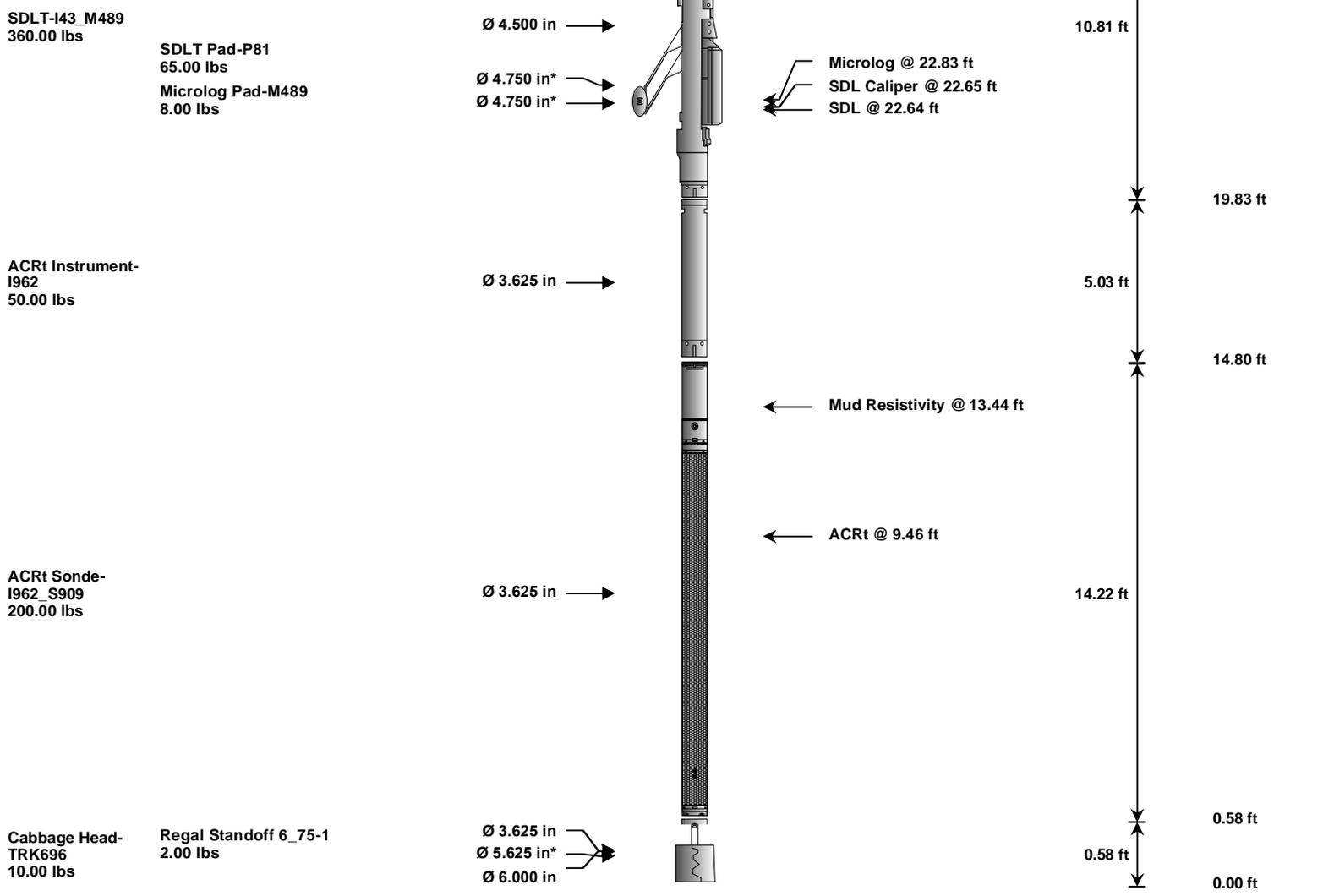
Plot Time: 09-Sep-12 20:50:33  
 Plot Range: 4500 ft to 4997.5 ft  
 Data: VAL\_NELSON\_3-24\Well Based\REPEAT\  
 Plot File: \\-LOCAL-VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHACRT\ACRT\_5\_repeat.lib

## REPEAT SECTION

**HALLIBURTON**

### TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
Cable Head- PROT01 30.00 lbs		Ø 3.625 in →			1.92 ft	54.51 ft
SP Sub-11441455 60.00 lbs		Ø 3.625 in →		← SP @ 50.81 ft	3.74 ft	52.59 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →		← GammaRay @ 42.79 ft	8.52 ft	48.85 ft
DSN Decentralizer- 10755066 6.60 lbs		Ø 5.000 in* →				40.33 ft
DSNT-11055304 174.00 lbs		Ø 3.625 in →		← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft	9.69 ft	30.64 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
CH	Standard OH Cable Head	PROT01	30.00	1.92	52.59	300.00
SP	SP Sub	11441455	60.00	3.74	48.85	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52	40.33	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	30.64	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	33.97	300.00
SDLT	Spectral Density Tool	I43_M489	360.00	10.81	19.83	60.00
SDLP	Density Insite Pad	P81	65.00	2.55	22.04	60.00
MICP	Microlog Pad	M489	8.00	1.00	22.33	60.00
ACRt	Array Compensated True Resistivity Instrument Section	I962	50.00	5.03	14.80	300.00
ACRt	Array Compensated True Resistivity Sonde Section	I962_S909	200.00	14.22	0.58	300.00
CBHD	Cabbage Head	TRK696	10.00	0.58	0.00	300.00
RSOF	Regal Standoff 6.75in	1	2.00	0.52	0.00	300.00

**Total** **1,130.60**    **54.51**

\* Not included in Total Length and Length Accumulation.

Data: VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CH\LDLE Date: 09-Sep-12 16:43:54

# HALLIBURTON

## CALIBRATION REPORT

### NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11048627	Reference Calibration Date: 09-Aug-12 10:44:30	
Engineer: T. HYDE	Calibration Date: 09-Aug-12 10:50:33	
Software Version: WL INSITE R3.6.0 (Build 3)	Calibration Version: 1	

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Measurement	Measured	Calibrated	Units
Background	57.5	57.1	api
Background + Calibrator	328.7	326.8	api
Calibrator	271.3	269.6	api

### NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11048627

Reference Calibration Date: 09-Aug-12 10:50:33

Engineer: S. INGERSOLL

Calibration Date: 09-Sep-12 09:53:50

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	57.1	55.0	api
Background + Calibrator	326.8	326.2	api
Calibrator	269.6	271.2	api

Shop	Field	Difference	Tolerance
269.6	271.2	-1.6	+/- 9.00

### DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11055304

Reference Calibration Date: 05-Sep-12 14:27:57

Engineer: T. HYDE

Calibration Date: 05-Sep-12 14:46:31

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Logging Source S/N: 696

Tank Serial Number: LIBERAL\_NEUTRON

Reference value assigned to Tank: 51.680

Snow Block S/N: 696

Calibration Tank Water Temperature: 68 degF

Min. Tool Housing Outside Diameter: 3.620 in

### CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.987	0.989	0.900 - 1.100

### WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2101	0.2107	0.0006	+/- 0.0020
Calibrated Ratio:	9.70	9.72	0.019	+/- 0.050

### VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0691	0.02000 - 0.09000

### PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Failed

Snow-Block Check:

Passed

**DUAL SPACED NEUTRON FIELD CALIBRATION**

Tool Name: DSNT - 11055304

Reference Calibration Date: 05-Sep-12 14:46:31

Engineer: S. INGERSOLL

Calibration Date: 09-Sep-12 10:02:22

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Logging Source S/N: 696

Snow Block S/N: 696

**NEUTRON FIELD-CHECK SUMMARY**

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decg):	0.0691	0.0807	0.0115	+/- 0.0150

**PASS/FAIL SUMMARY**

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

**DENSITY CALIPER SHOP CALIBRATION**

Tool Name: SDLT - I43\_M489

Reference Calibration Date: 01-Jan-70 00:00:00

Engineer: S. INGERSOLL

Calibration Date: 06-Sep-12 07:33:37

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Host Tool Name: DSNT - 11055304

**CALIBRATION COEFFICIENTS**

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2153.99	-2153.99	-7000.00 - -1000.00
Pad Gain	0.0003997	0.0003997	0.000200 - 0.000600
Arm Offset	1430.46	1430.46	-5000.00 - 3000.00
Arm Gain	0.0003851	0.0003851	0.000300 - 0.000700
Arm Power	0.000004432	0.000004432	-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**

Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

**PASS/FAIL SUMMARY**

Calibration-Coefficients Range Check:	Passed
---------------------------------------	--------

**SPECTRAL DENSITY SHOP CALIBRATION**

Tool Name: SDLT Pad - P81

Reference Calibration Date: 10-Aug-12 11:31:26

Engineer: T. HYDE

Calibration Date: 10-Aug-12 11:49:11

Logging Source S/N: 5168GW

Aluminum Block S/N: LIBERAL

Magnesium Block S/N: LIBERAL

Density: 2.598g/cc

Density: 1.684g/cc

Pe: 3.170

Pe: 2.598

**DENSITY CALIBRATION SUMMARY**

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0481	1.0562	0.90 - 1.10
Near Dens Gain	1.0278	1.0364	0.90 - 1.10
Near Peak Gain	1.0245	1.0524	0.90 - 1.10
Near Lith Gain	1.0006	1.0234	0.90 - 1.10
Far Bar Gain	1.0186	1.0128	0.90 - 1.10
Far Dens Gain	1.0024	1.0012	0.90 - 1.10
Far Peak Gain	0.9960	0.9928	0.90 - 1.10
Far Lith Gain	0.9724	0.9721	0.90 - 1.10
<hr/>			
Near Bar Offset	-0.2447	-0.3186	NONE
Near Dens Offset	-0.0693	-0.1422	NONE
Near Peak Offset	-0.0351	-0.2659	NONE
Near Lith Offset	0.1493	-0.0358	NONE
Far Bar Offset	-0.0284	0.0226	NONE
Far Dens Offset	0.1035	0.1123	NONE
Far Peak Offset	0.1312	0.1570	NONE
Far Lith Offset	0.2924	0.2917	NONE
<hr/>			
Near Bar Background	816.13	814.50	700 - 1450
Near Dens Background	266.21	267.82	230 - 480
Near Peak Background	117.08	115.74	100 - 210
Near Lith Background	143.90	144.47	125 - 260
Far Bar Background	532.29	535.49	450 - 900
Far Dens Background	209.58	211.26	175 - 345
Far Peak Background	84.04	84.43	70 - 140
Far Lith Background	86.02	87.66	75 - 145

**CALIBRATION BLOCK SUMMARY**

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
<b>MAGNESIUM</b>				
Density (g/cc)	1.679	1.684	0.005	+/- 0.015
Pe	2.603	2.564	-0.039	+/- 0.150
<b>ALUMINUM</b>				
Density (g/cc)	2.599	2.598	-0.001	+/- 0.01500
Pe	3.142	3.133	-0.009	+/- 0.150

**TOOL SUMMARY**

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
<b>QUALITY</b>				
Background	0.0014	+/- 0.0110	0.0016	+/- 0.0140
Magnesium Block	-0.0003	+/- 0.0110	-0.0021	+/- 0.0140
Aluminum Block	0.0000	+/- 0.0110	-0.0003	+/- 0.0140
Resolution	9.31	6.00 - 11.50	8.82	6.00 - 11.50
Internal Verifier(B+D+P+L)	1343	1200 - 2700	919	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 - P81

Reference Calibration Date: 10-Aug-12 11:49:11

Engineer: S. INGERSOLL

Calibration Date: 09-Sep-12 09:53:07

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Pad Temperature: 75.2 degF

**DENSITY FIELD CALIBRATION SUMMARY**

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1342.531	1343.195	0.664	14.818
Far (B+D+P+L) cps	918.840	913.800	-5.040	16.432
Near Resolution	9.31	9.33	0.020	0.50
Far Resolution	8.82	8.92	0.100	1.00

**PASS/FAIL SUMMARY**

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

**MICRO LOG SHOP CALIBRATION**

Tool Name: Microlog Pad - M489

Reference Calibration Date: 01-Jan-70 00:00:00

Engineer: C.PARKER

Calibration Date: 01-Nov-11 03:10:56

Software Version: WL INSITE R3.4.2 (Build 2)

Calibration Version: 1

Host Tool Name: DSNT - 11055304

**CALIBRATION COEFFICIENT SUMMARY**

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.07	-0.07	-0.01	-0.01	ohmm
Calibration Point #1	0.00	0.00	0.00	0.00	ohmm
Calibration Point #2	20.00	20.00	20.00	20.00	ohmm
Internal Reference	19.94	19.94	20.01	20.01	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	0.47	-0.57	V
Calibration Point #1	20.48	2.51	V
Calibration Point #2	5369.32	7024.07	V
Internal Reference	5352.53	7028.02	V

**MICRO LOG FIELD CHECK**

Tool Name: Microlog Pad - M489

Reference Calibration Date: 01-Nov-11 03:10:56

Engineer: S. INGERSOLL

Calibration Date: 09-Sep-12 09:52:23

Software Version: WL INSITE R3.6.0 (Build 3)			Calibration Version: 1		
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.07	-0.08	-0.01	-0.01	ohmm
Internal Reference	19.94	19.64	20.01	19.57	ohmm
Summary					
Signal	Shop	Field	Difference	Tolerance	
Microlog Normal	19.94	19.64	0.30	+/- 0.80	
Microlog Lateral	20.01	19.57	0.44	+/- 0.80	

SDLT CALIPER FIELD CALIBRATION					
Tool Name:	SDLT - I43_M489	Reference Calibration Date:	06-Sep-12 07:33:37		
Engineer:	S. INGERSOLL	Calibration Date:	09-Sep-12 09:58:33		
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1		

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.77	0.02	+/- 0.10
Ring Diameter	8.25	8.29	0.04	+/- 0.15
PASS/FAIL SUMMARY				
Pad Extension Check:			Passed	
Diameter Check:			Passed	

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION					
Tool Name:	ACRt Sonde - I962_S909	Reference Calibration Date:	11-Jul-12 14:10:58		
Engineer:	T. HYDE	Calibration Date:	23-Aug-12 19:00:08		
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1		
Host Tool Name:	ACRt Instrument - I962				

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.04	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	1.00	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.00	1.05	0.95	1.00	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.99	1.05	0.95	0.98	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	-0.64	2	-6	-3.61	-2	-8	-5.12	-2
A2 (50")	-7	-1.57	0	-7	-3.48	0	-7	-4.37	0
A3 (29")	-27	-13.72	-9	-9	-4.41	-3	-7	-2.62	-1
A4 (17")	-180	-101.07	-60	-45	-30.50	-15	-39	-25.77	-13
A5 (10")	N/A	N/A	N/A	-150	-99.60	-50	-80	-44.58	-10
A6 (6")	N/A	N/A	N/A	175	287.56	525	90	154.09	270

TRANSMITTER CURRENT GAIN	R-MUD VERIFICATION
--------------------------	--------------------

Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.92	1.3	Mud Cell	0.95	1.00	1.05
36K	1.0	1.37	2.0				
72K	1.0	1.61	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
<b>GTET-11048627</b>						
Gamma Ray Calibrator	269.6	271.2	-----	-1.6	+/- 9.00	api
<b>DSNT-11055304</b>						
Snow-Block Porosity	0.0691	0.0807	-----	-0.0116	+/- 0.0150	decp
<b>SDLT-I43_M489</b>						
Pad Extension	3.75	3.77	-----	-0.02	+/-0.10	in
Ring Diameter	8.25	8.29	-----	-0.04	+/-0.15	in
<b>SDLT Pad-P81</b>						
Near(B+D+P+L)	1342.531	1343.195	-----	-0.664	+/-14.818	cps
Far(B+D+P+L)	918.840	913.800	-----	5.040	+/-16.432	cps
<b>Microlog Pad-M489</b>						
MicroLog Normal	19.94	19.64	-----	0.30	+/-0.80	ohmm
MicroLog Lateral	20.01	19.57	-----	0.44	+/-0.80	ohmm
<b>ACRt Sonde-I962_S909</b>						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

Data: VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CH\003.01 09-Sep-12 19:51 Up

Date: 09-Sep-12 20:25:46

## HALLIBURTON

### PARAMETERS REPORT

Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	4500.00	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	5000.00	ft
SHARED	BHT	Bottom Hole Temperature	130.0	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	
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	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

# 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	50.81	NO	
SP	Spontaneous Potential	50.81	BLK	1.250
SPR	Raw Spontaneous Potential	50.81	NO	
SPO	Spontaneous Potential Offset	50.81	NO	
<b>GTET</b>				
TPUL	Tension Pull	42.79	NO	
GR	Natural Gamma Ray API	42.79	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	42.79	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.79	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
<b>DSNT</b>				
TPUL	Tension Pull	32.54	NO	
RNDS	Near Detector Telemetry Counts	32.64	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.39	TRI	0.583
DNTT	DSN Tool Temperature	32.64	NO	
DSNS	DSN Tool Status	32.54	NO	
ERND	Near Detector Telemetry Counts EVR	32.64	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.39	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.64	NO	
<b>SDLT</b>				
TPUL	Tension Pull	22.65	NO	
PCAL	Pad Caliper	22.65	TRI	0.250
ACAL	Arm Caliper	22.65	TRI	0.250
<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

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	

### SDLT Pad

TPUL	Tension Pull	22.64	NO	
NAB	Near Above	22.46	BLK	0.920
NHI	Near Cesium High	22.46	BLK	0.920
NLO	Near Cesium Low	22.46	BLK	0.920
NVA	Near Valley	22.46	BLK	0.920
NBA	Near Barite	22.46	BLK	0.920
NDE	Near Density	22.46	BLK	0.920
NPK	Near Peak	22.46	BLK	0.920
NLI	Near Lithology	22.46	BLK	0.920
NBAU	Near Barite Unfiltered	22.46	BLK	0.250
NLIU	Near Lithology Unfiltered	22.46	BLK	0.250
FAB	Far Above	22.81	BLK	0.250
FHI	Far Cesium High	22.81	BLK	0.250
FLO	Far Cesium Low	22.81	BLK	0.250
FVA	Far Valley	22.81	BLK	0.250
FBA	Far Barite	22.81	BLK	0.250
FDE	Far Density	22.81	BLK	0.250
FPK	Far Peak	22.81	BLK	0.250
FLI	Far Lithology	22.81	BLK	0.250
PTMP	Pad Temperature	22.65	BLK	0.920
NHV	Near Detector High Voltage	22.04	NO	

FHV	Far Detector High Voltage	22.04	NO
ITMP	Instrument Temperature	22.04	NO
DDHV	Detector High Voltage	22.04	NO

**Microlog Pad**

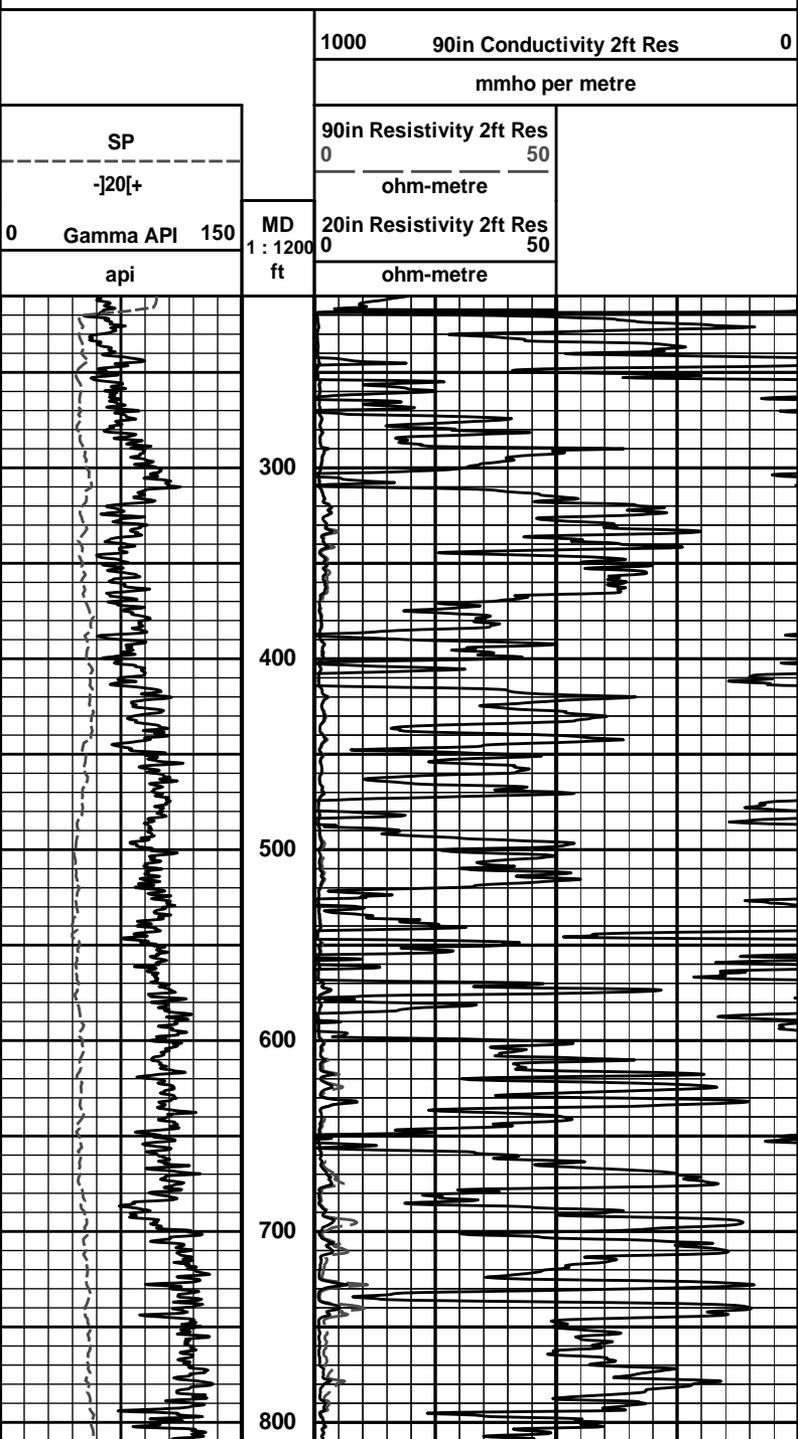
TPUL	Tension Pull	22.83	NO	
MINV	Microlog Lateral	22.83	BLK	0.750
MNOR	Microlog Normal	22.83	BLK	0.750

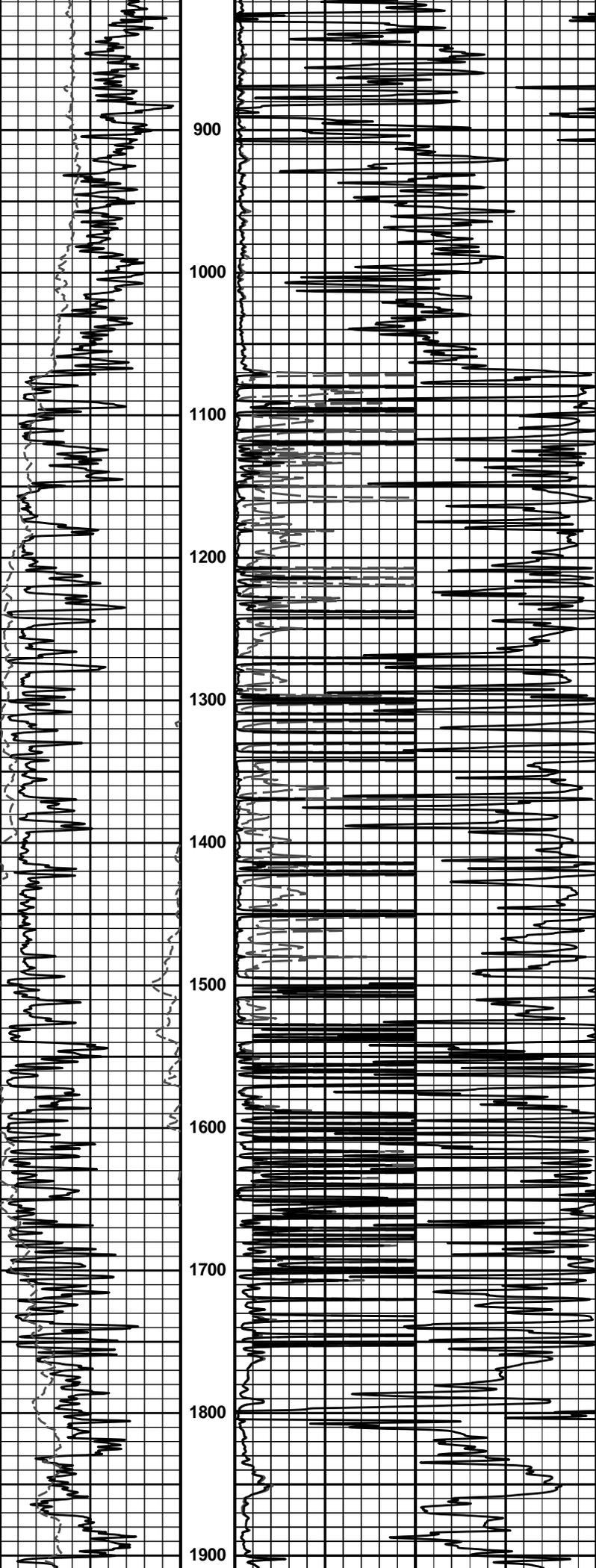
Data: VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CHMDLE

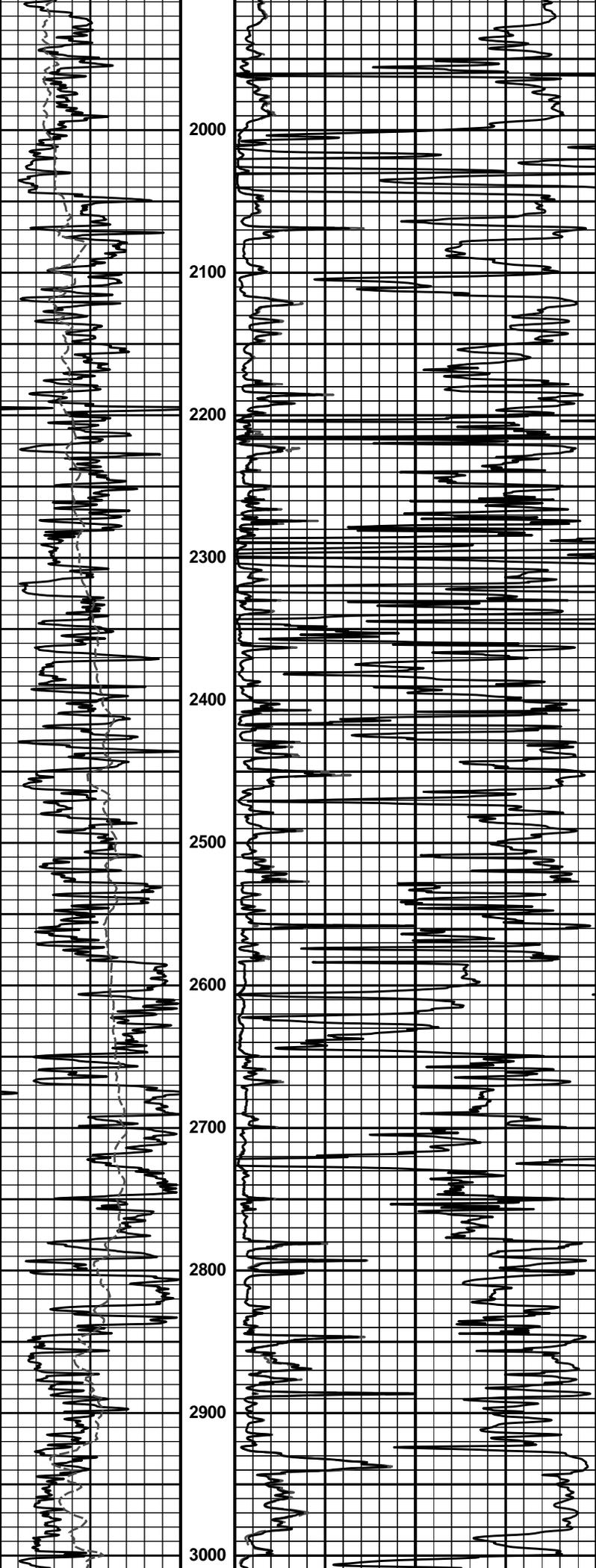
Date: 09-Sep-12 20:26:28

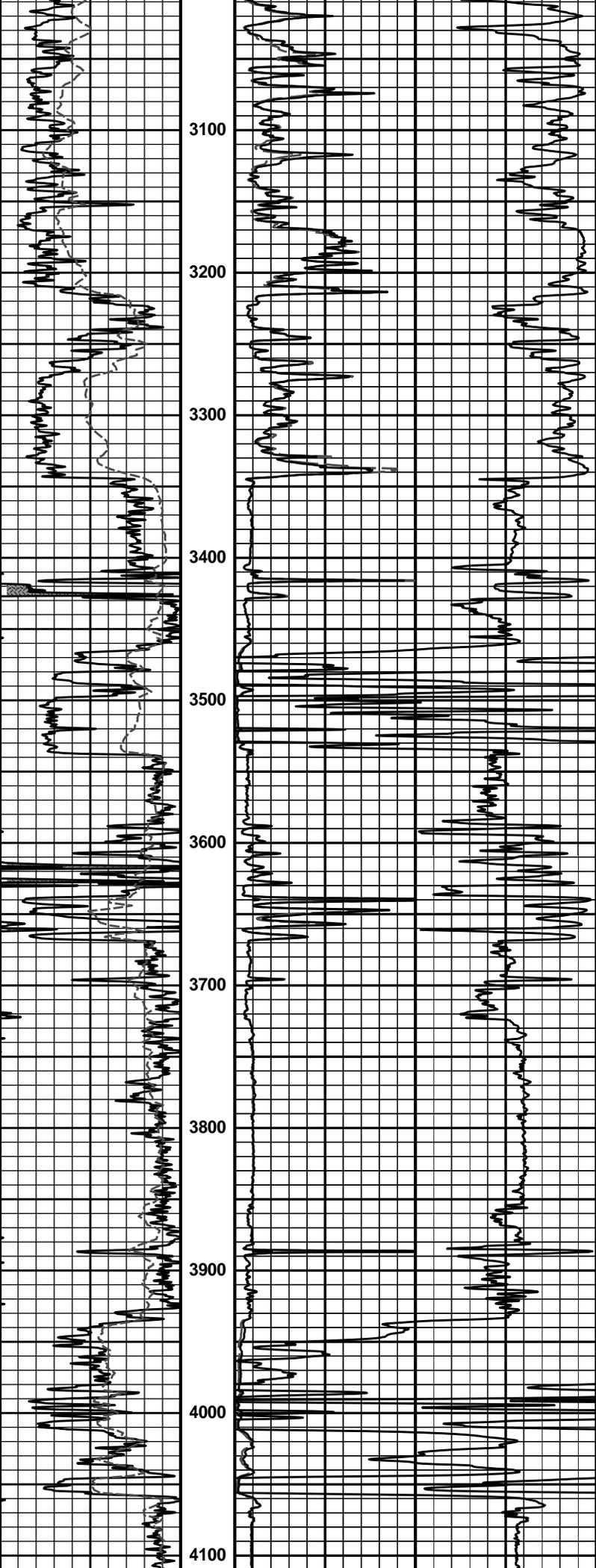
**HALLIBURTON**  
 Plot Time: 09-Sep-12 20:50:34  
 Plot Range: 210 ft to 4984 ft  
 Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\  
 Plot File: \\LOCAL\VAL\_NELSON\_3-24\0001 SP-GTET-DSN-SDL-ACRT-CH...ACRT\_1.lib

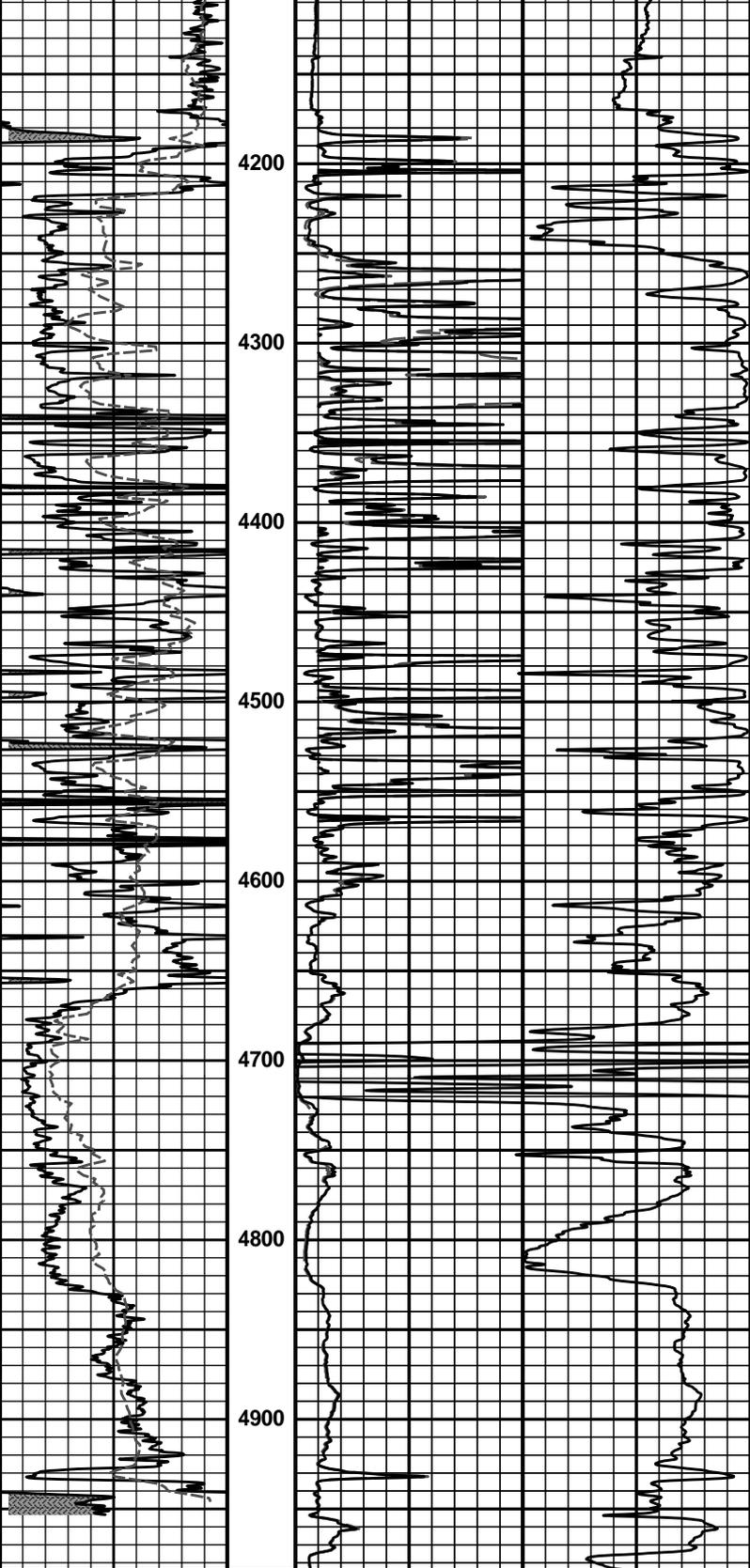
# 1 INCH MAIN LOG











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

**HALLIBURTON**

Plot Time: 09-Sep-12 20:50:36  
 Plot Range: 210 ft to 4984 ft  
 Data: VAL\_NELSON\_3-24\Well Based\DAQ-0001-003.01\  
 Plot File: \\J:\OCAL\VAL\_NELSON\_3-24\0001 SP-GTFT-DSN-SDI-ACRT-CHA \ACRT\_1.lib

# 1 INCH MAIN LOG

COMPANY	VAL ENERGY INC.		
WELL	NELSON 3-24		
FIELD	MAYBERRY NORTH		
COUNTY	BARBER	STATE	KANSAS
<b>HALLIBURTON</b>		ARRAY COMPENSATED TRUE RESISTIVITY LOG	