

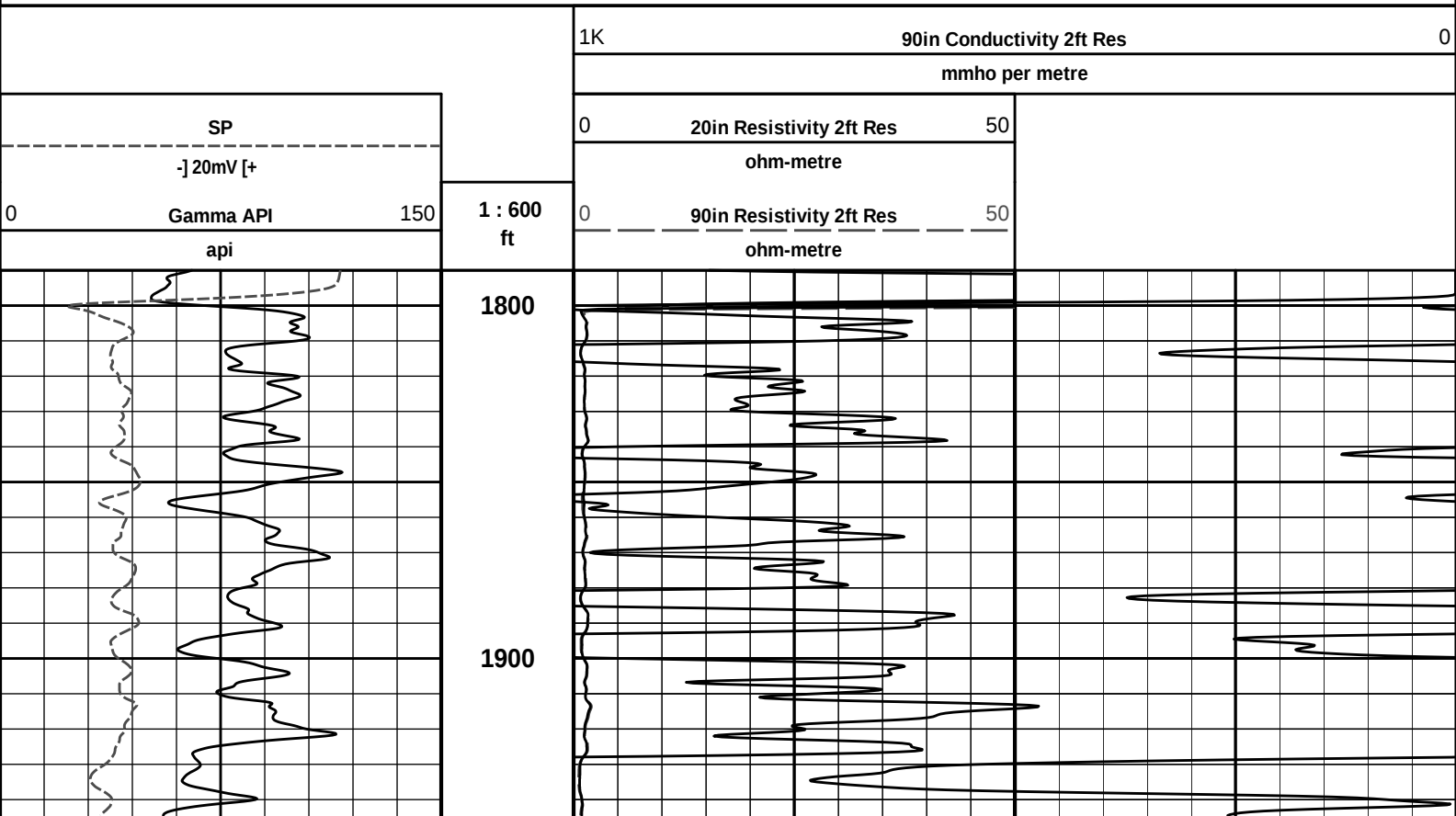
HALLIBURTON

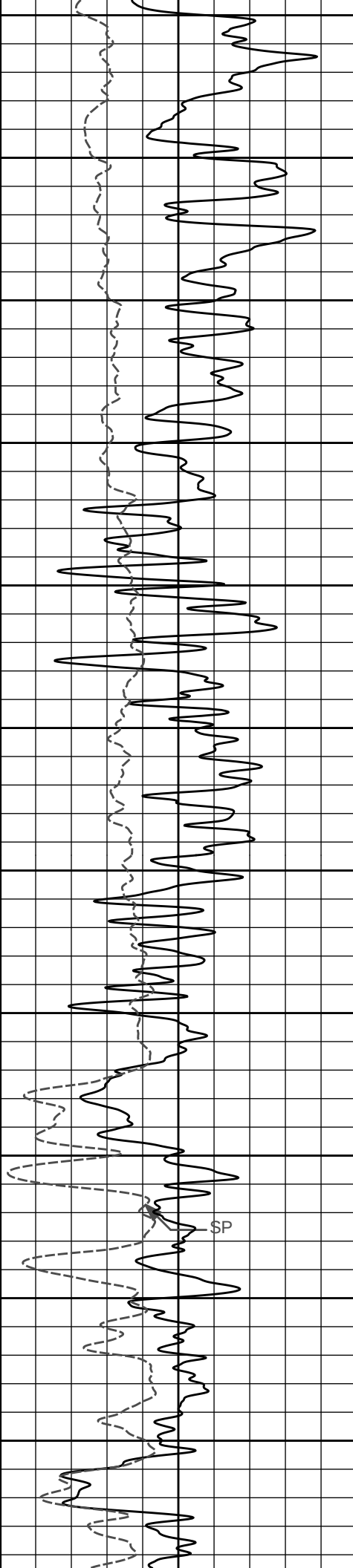
ARRAY COMPENSATED RESISTIVITY LOG

HALLIBURTON										ARRAY COMPENSATED RESISTIVITY LOG					
COMPANY					OXY USA INC										
WELL					EDWARDS B-1										
FIELD					BIG BOW WEST										
COUNTY					STANTON										
STATE					KANSAS										
Permanent Datum					GL	Elev. 3197.0 ft					Elev.: K.B. 3208.0 ft				
Log measured from					KB	11.0 ft above perm. Datum					D.F. 3208.0 ft				
Drilling measured from					KB						G.L. 3197.0 ft				
Date					13-Apr-13										
Run No.					ONE										
Depth - Driller					6000.00 ft										
Depth - Logger					5966.0 ft										
Bottom - Logged Interval					5966 ft										
Top - Logged Interval					1797 ft										
Casing - Driller					8.625 in @ 1798.0 ft					@					
Casing - Logger					1797.0 ft										
Bit Size					7.875 in					@					
Type Fluid in Hole					WATER BASED										
Density					Viscosity		9.2 ppq		45.00 s/qt						
PH					Fluid Loss		10.70 pH		9.6 cpm						
Source of Sample					FLOW LINE										
Rm @ Meas. Temperature					1.140 ohmm @ 85.00 degF					@					
Rmf @ Meas. Temperature					0.96 ohmm @ 70.00 degF					@					
Rmc @ Meas. Temperature					1.420 ohmm @ 70.00 degF					@					
Source Rmf					Rmc		MEASURED		MEASURED						
Rm @ BHT					0.80 ohmm @ 124.0 degF					@					
Time Since Circulation					8.0 hr										
Time on Bottom					13-Apr-13 18:11										
Max. Rec. Temperature					124.0 degF @ 5966.0 ft					@					
Equipment					Location		10549592		PVOK						
Recorded By					JEREMY COTHREN										
Witnessed By					ROBERT WEBSTER										

Fold here

Service Ticket No.: 900357203					API Serial No.: 15187212220000					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 989	N/A		1.5" STANDOFF		N/A	
Rmc @ Meas. Temp.		@			@									
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.	113		Serial No.				Serial No.				Serial No.			
Model No.	GTET		Model No.				Model No.				Model No.			
Diameter	3.625"		No. of Cent.				Diameter				Diameter			
Detector Model No.	A-102		Spacing				Log Type				Log Type			
Type	SCINT.						Source Type				Source Type			
Length	8"		LSA [Y/N]				Serial No.				Serial No.			
Distance to Source	10'		FWDA [Y/N]				Strength				Strength			





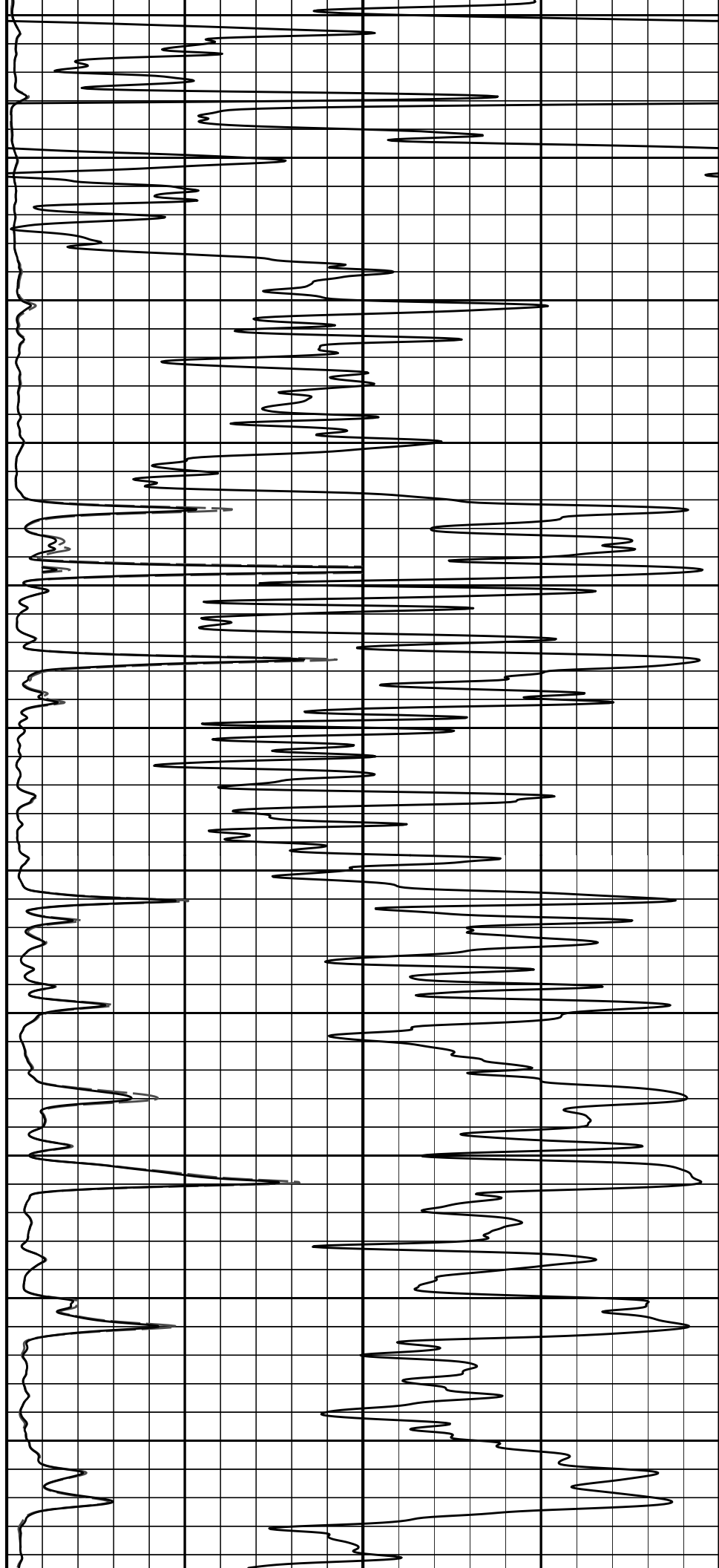
2000

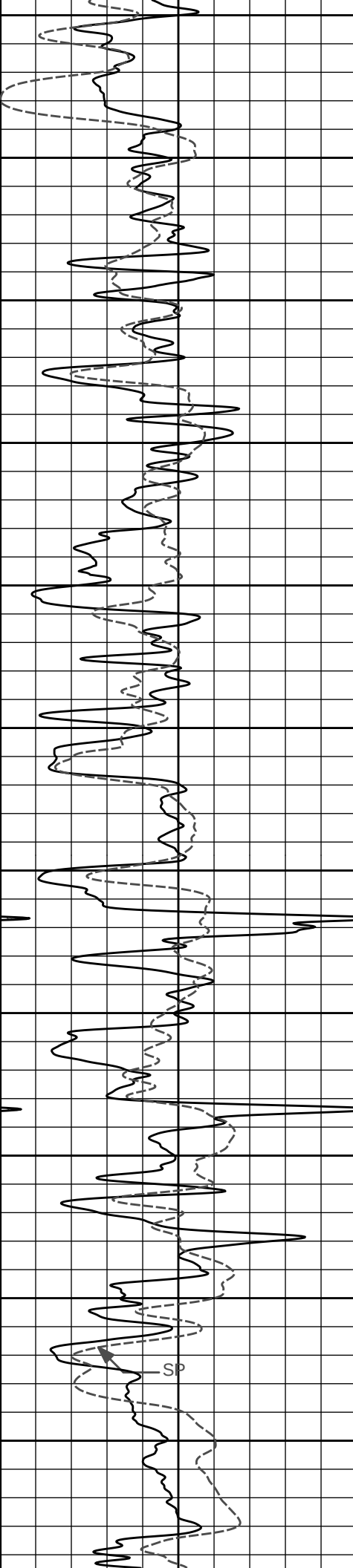
2100

2200

2300

2400





2500

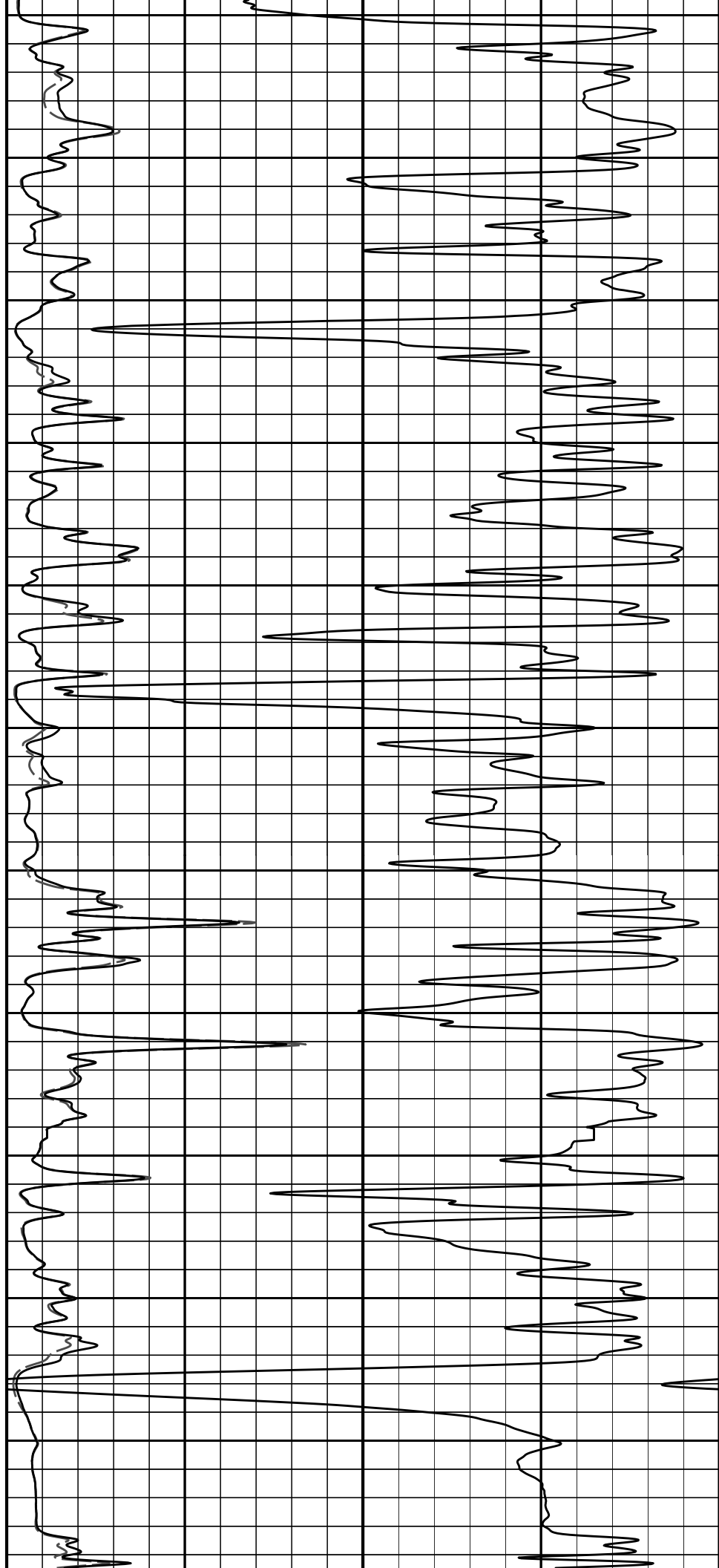
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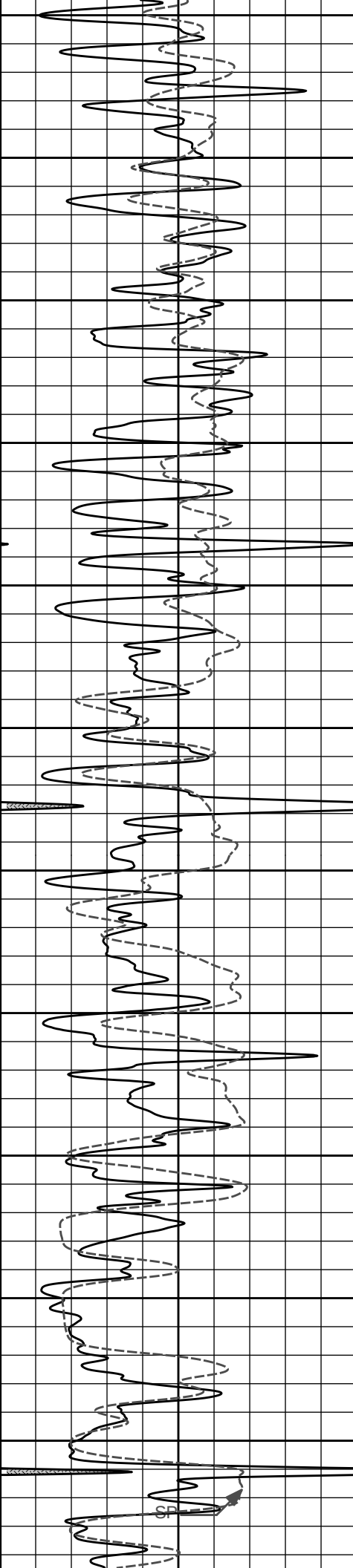
2700

2800

2900

3000





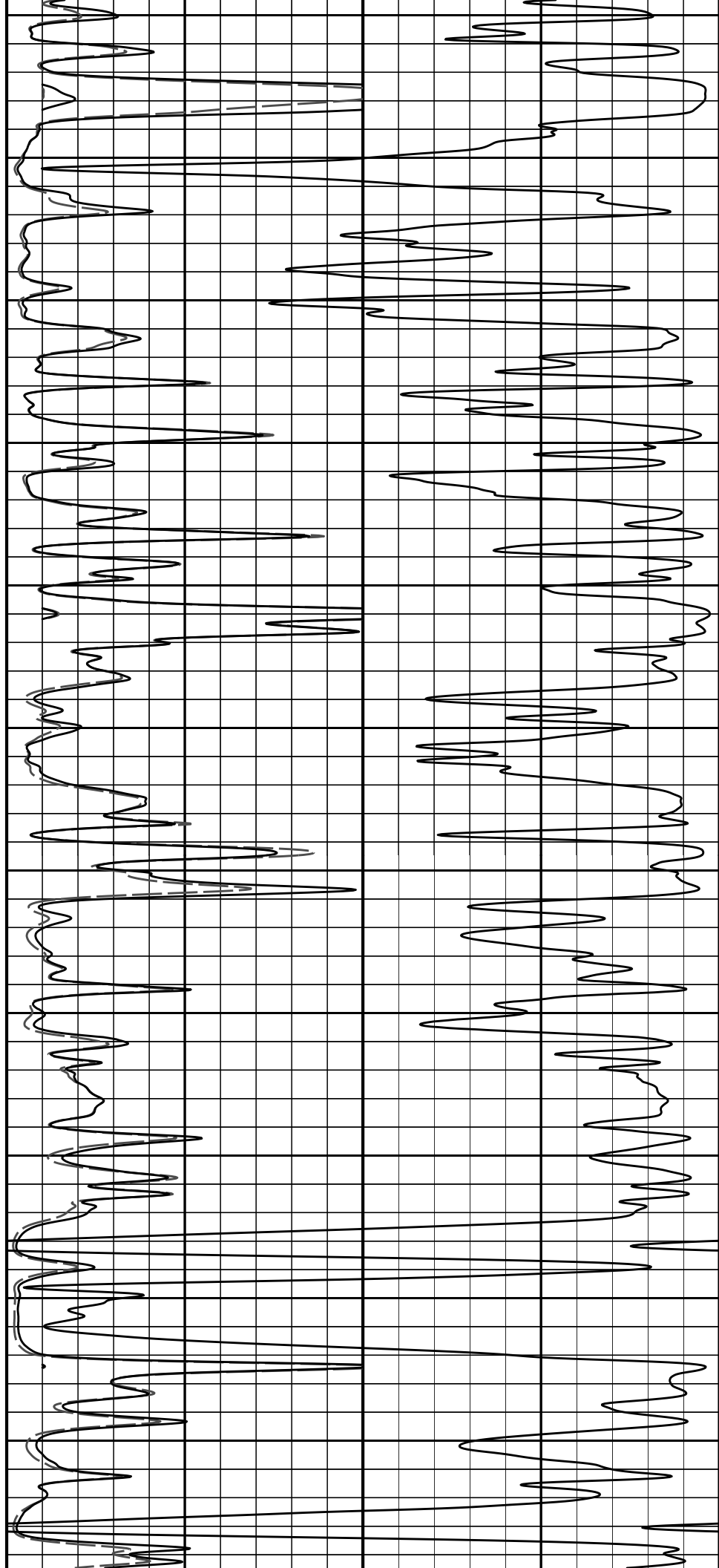
3100

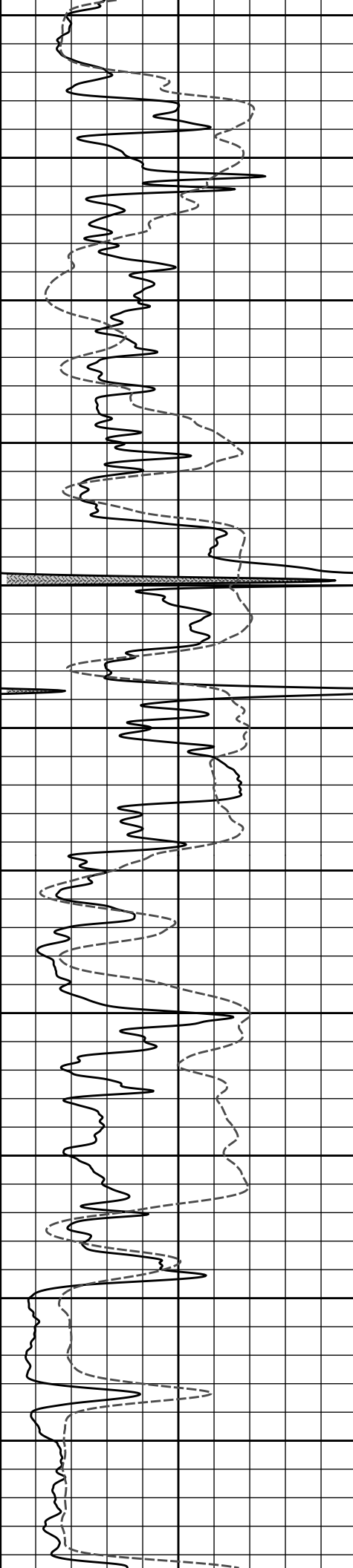
3200

3300

3400

3500





3600

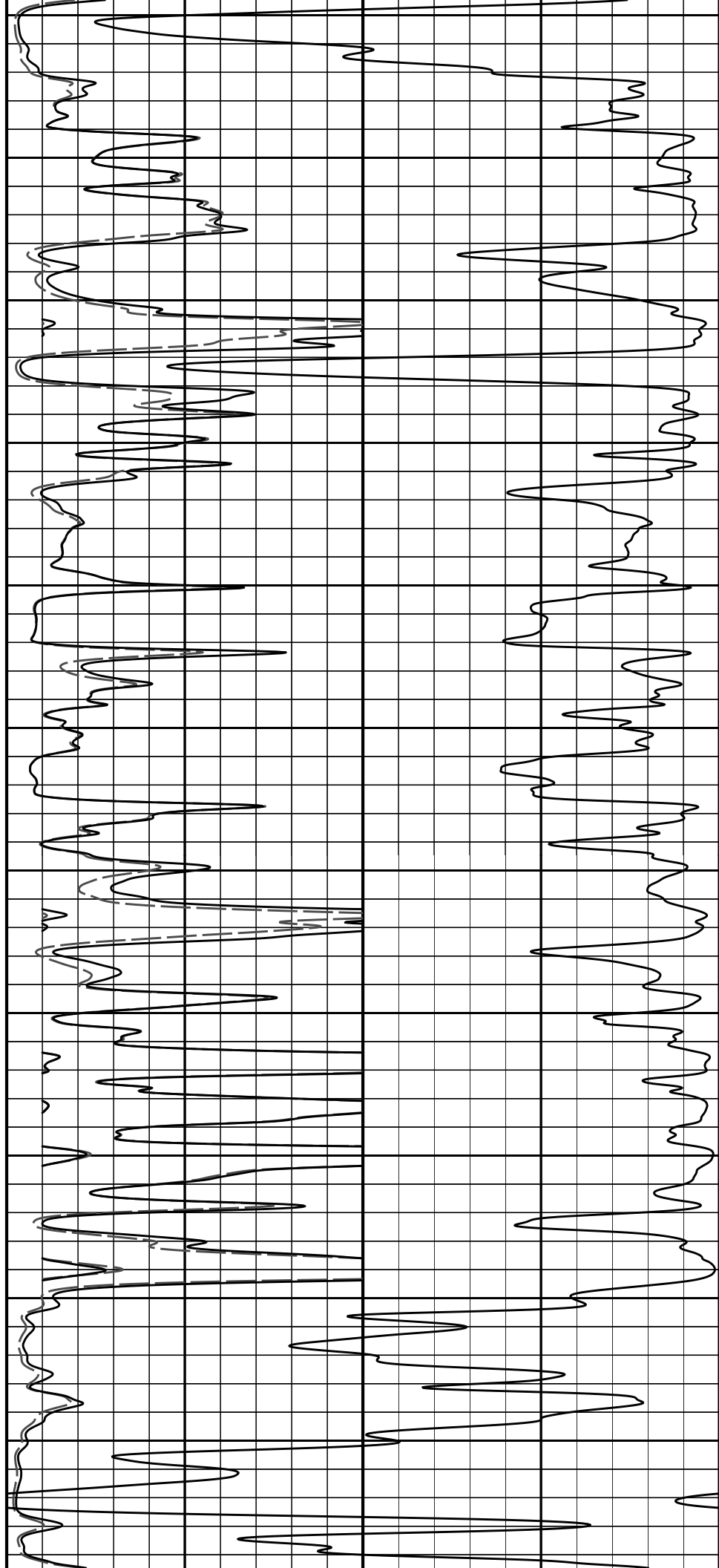
3700

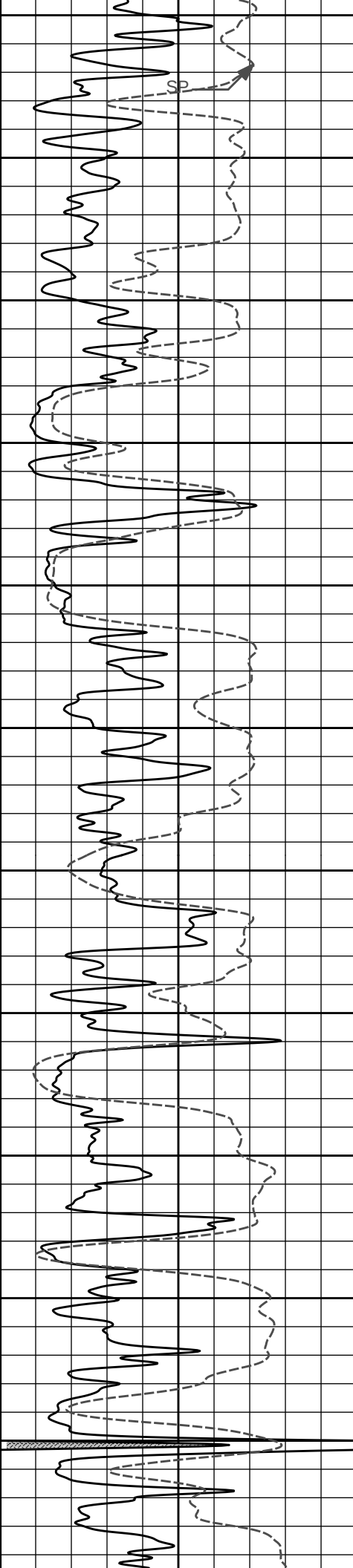
3800

3900

4000

4100





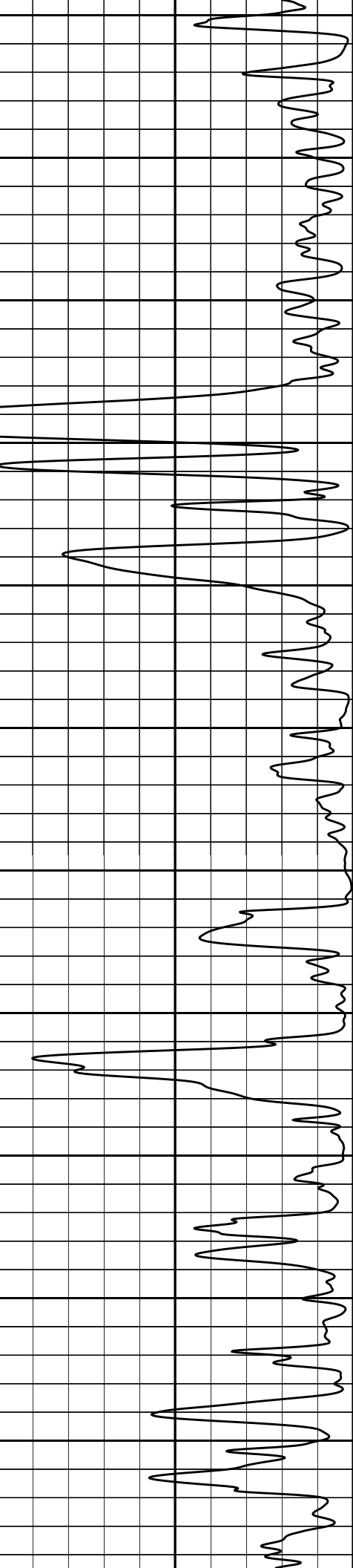
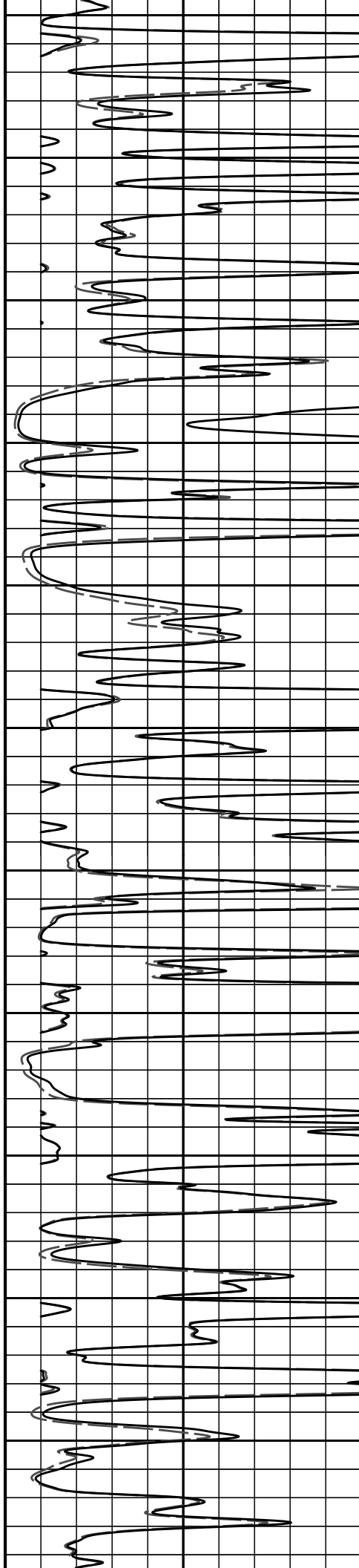
4200

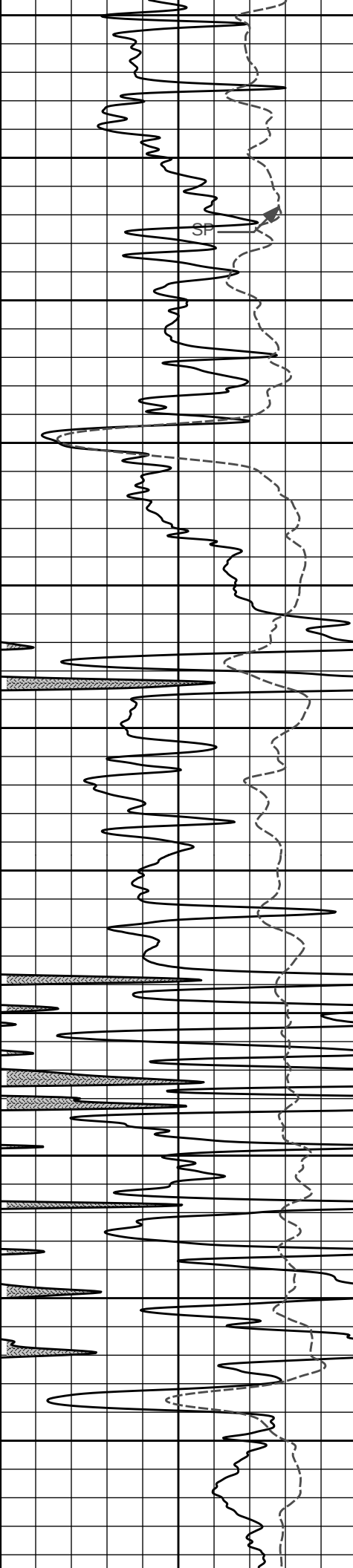
4300

4400

4500

4600





4700

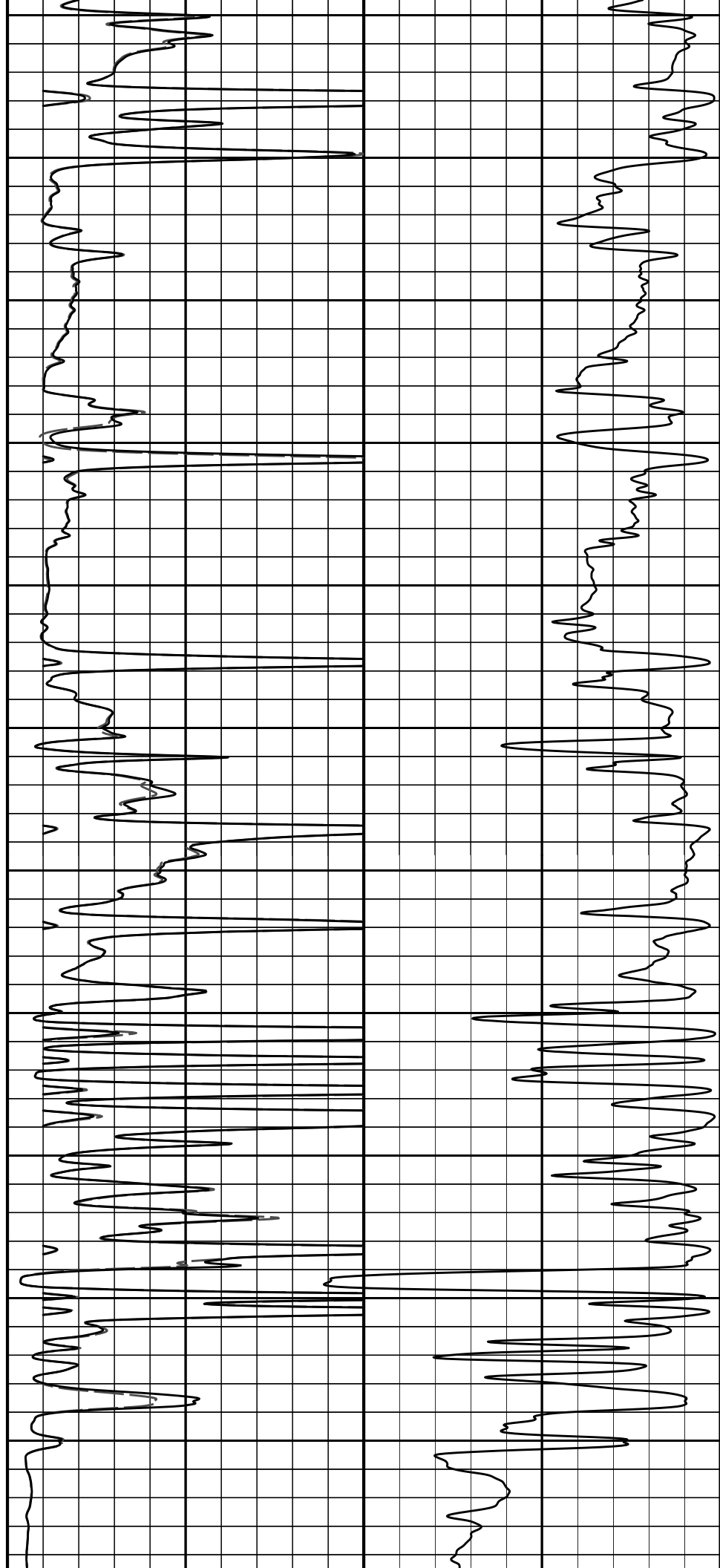
4800

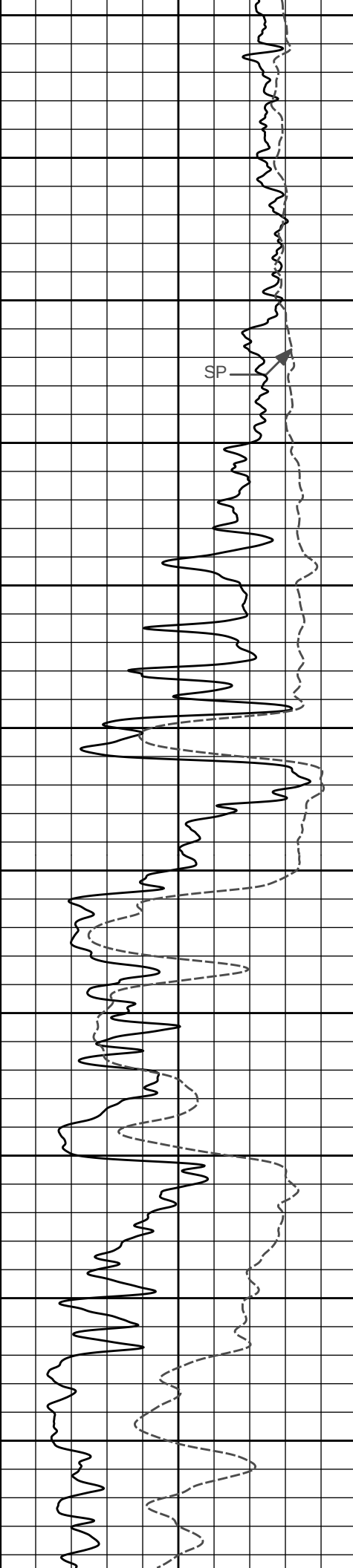
4900

5000

5100

5200





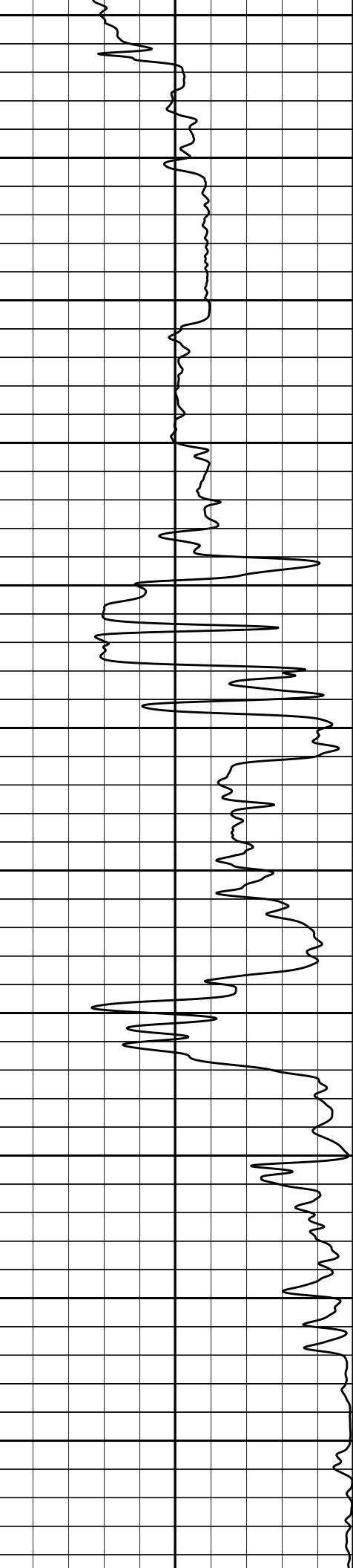
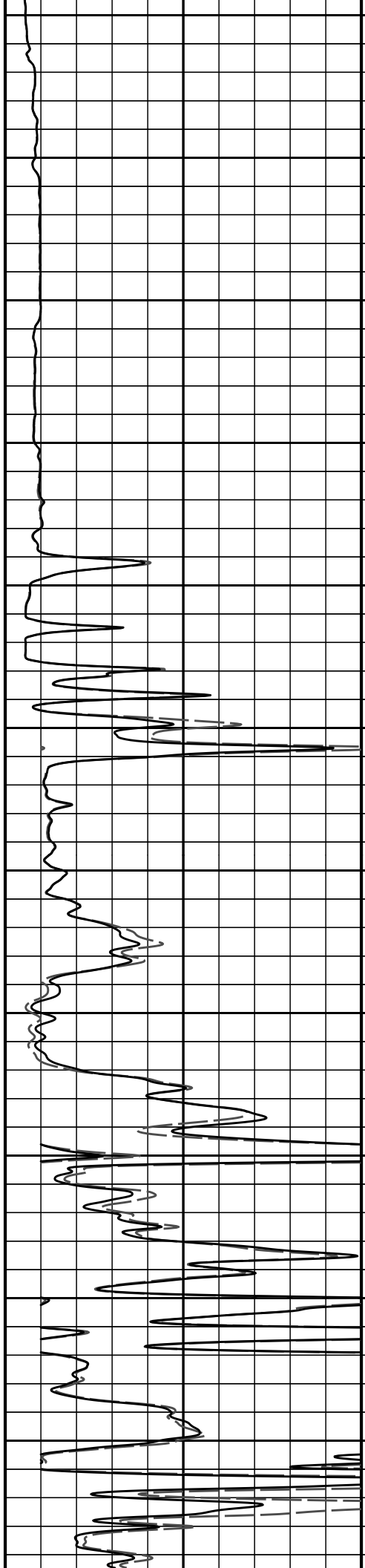
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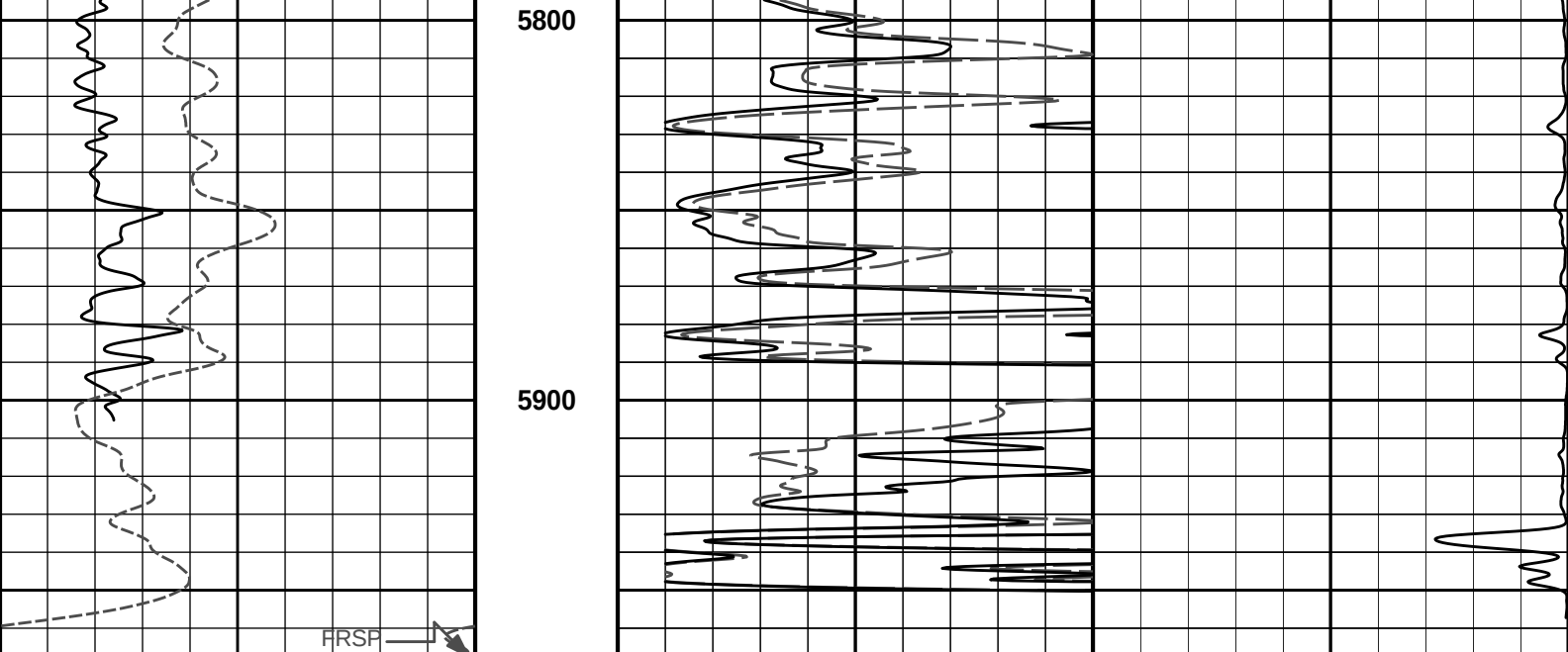
5400

5500

5600

5700





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

HALLIBURTON

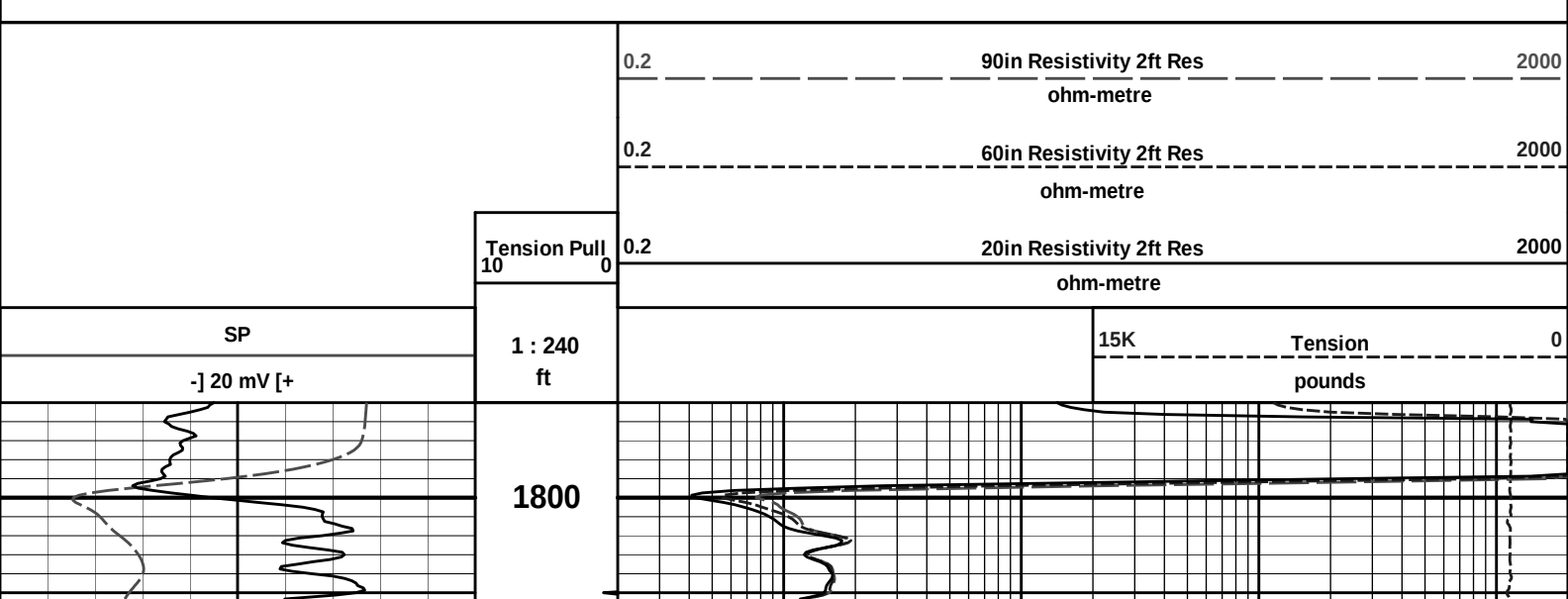
Plot Time: 13-Apr-13 23:33:54
Plot Range: 1790 ft to 5967.25 ft
Data: {ActiveWell}\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\\EDWARDS_B_1\0001 BLACK_TRIPLE\ACRT1_1_ACRT_2inx

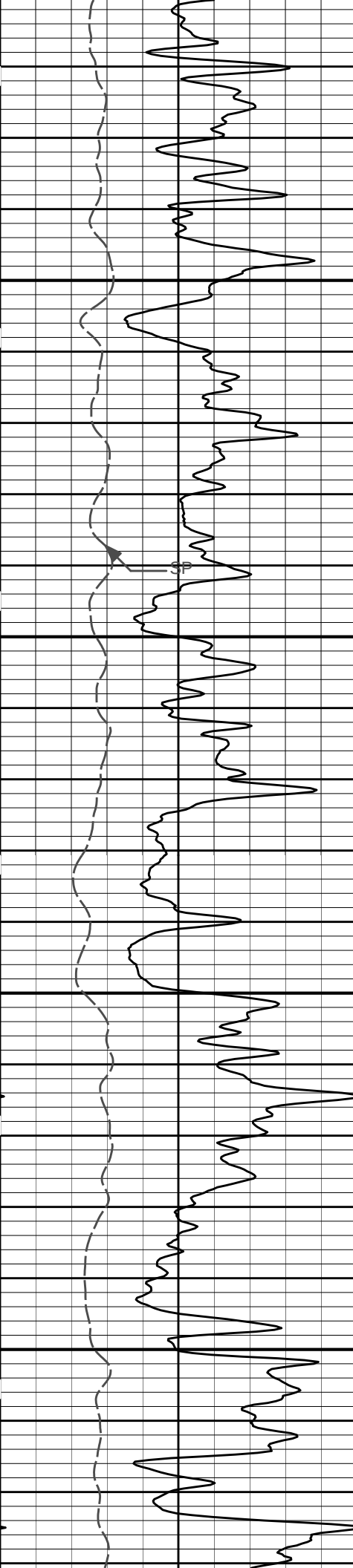
2 INCH MAIN LOG

HALLIBURTON

Plot Time: 13-Apr-13 23:33:54
Plot Range: 1790 ft to 5970.08 ft
Data: {ActiveWell}\Well Based\DAQ-0001-003\
Plot File: \\-LOCAL-\\EDWARDS_B_1\0001 BLACK_TRIPLE\ACRT1_1_ACRT_5_mainx

5 INCH MAIN LOG



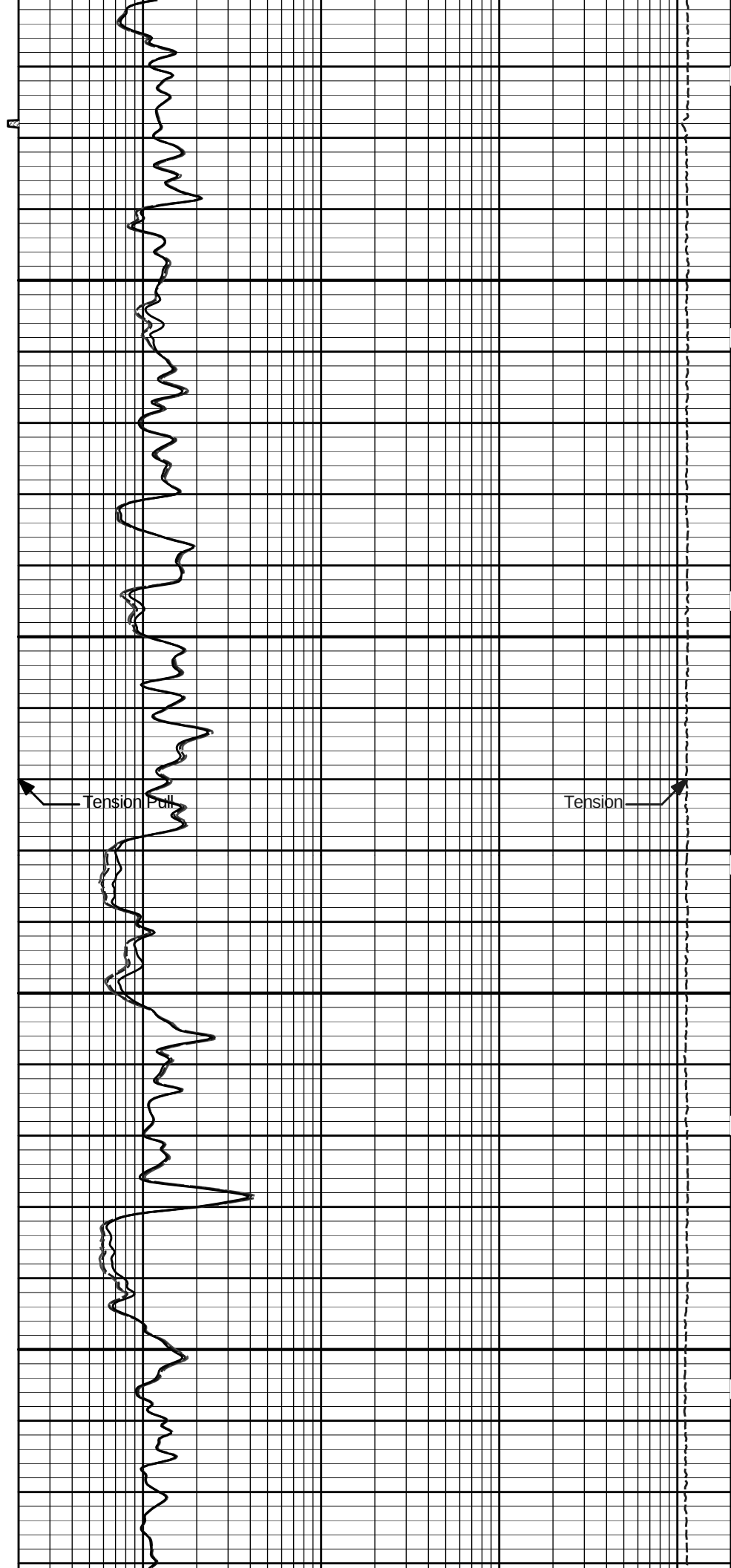


1850

1900

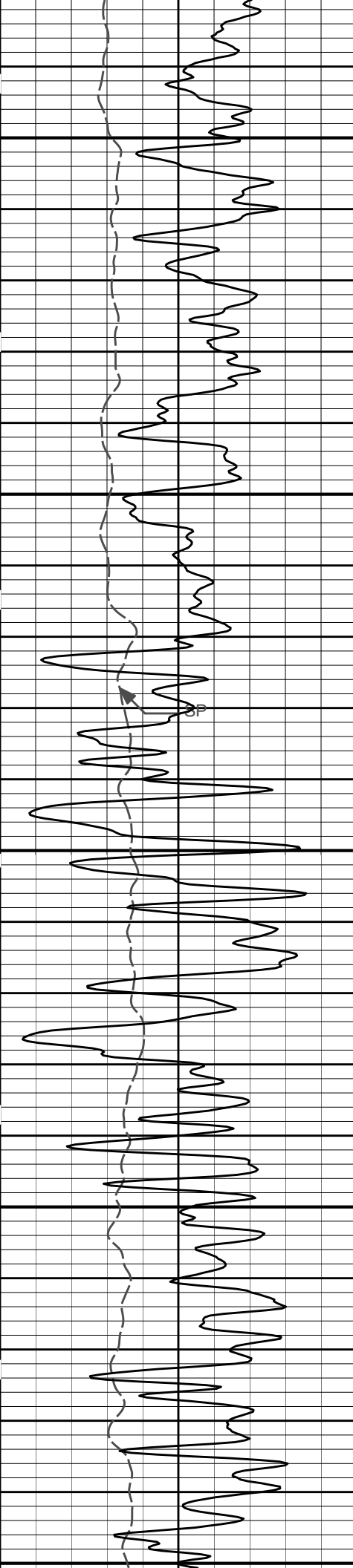
1950

2000



Tension Pull

Tension



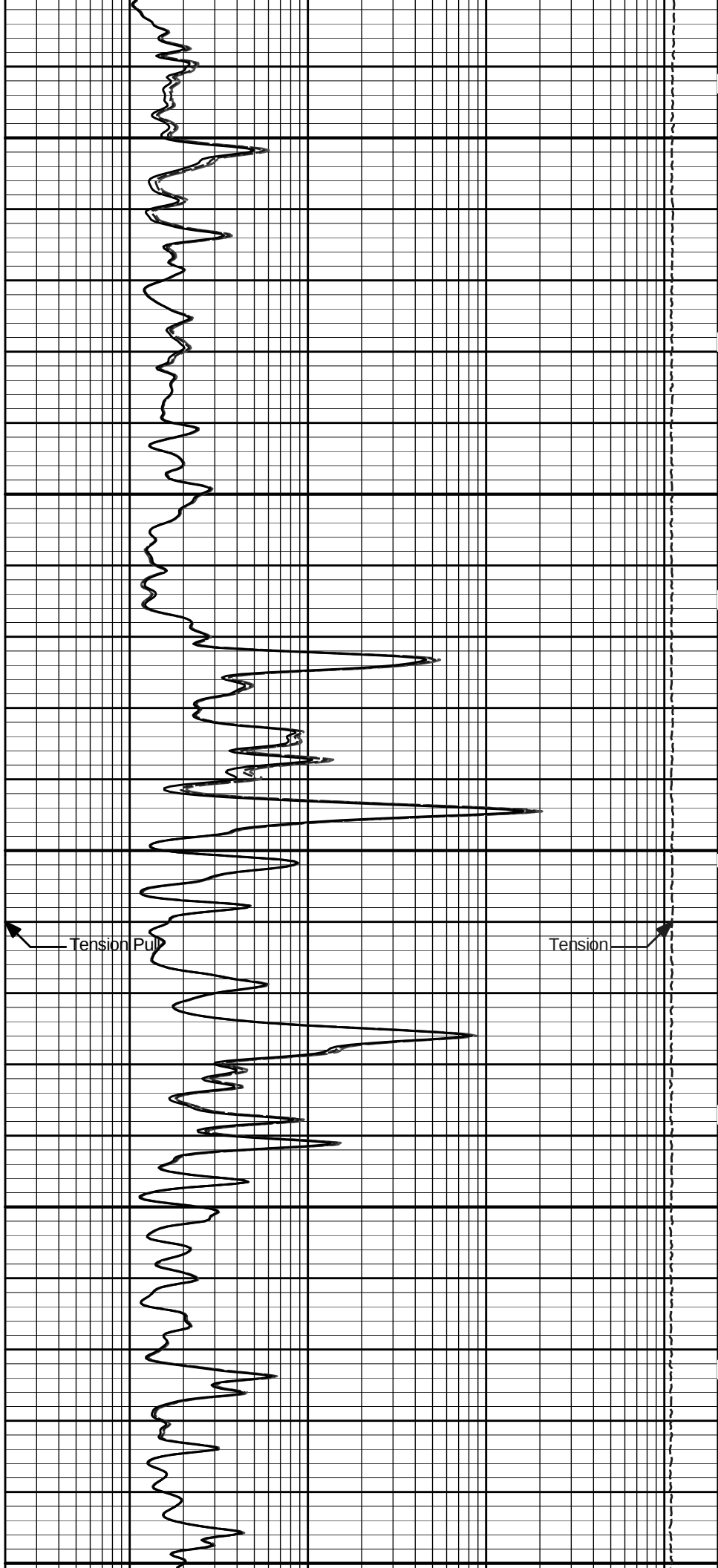
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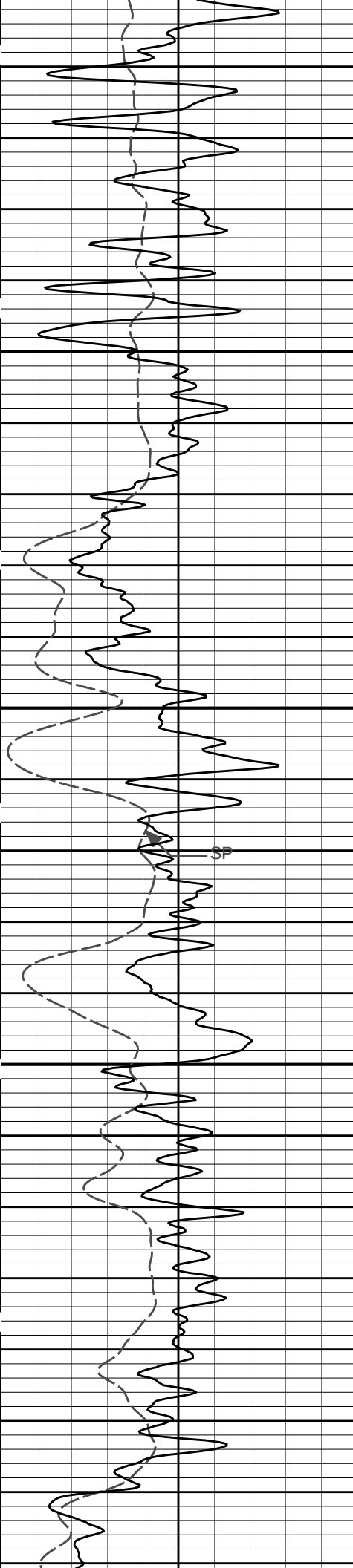
2100

2150

2200

2250



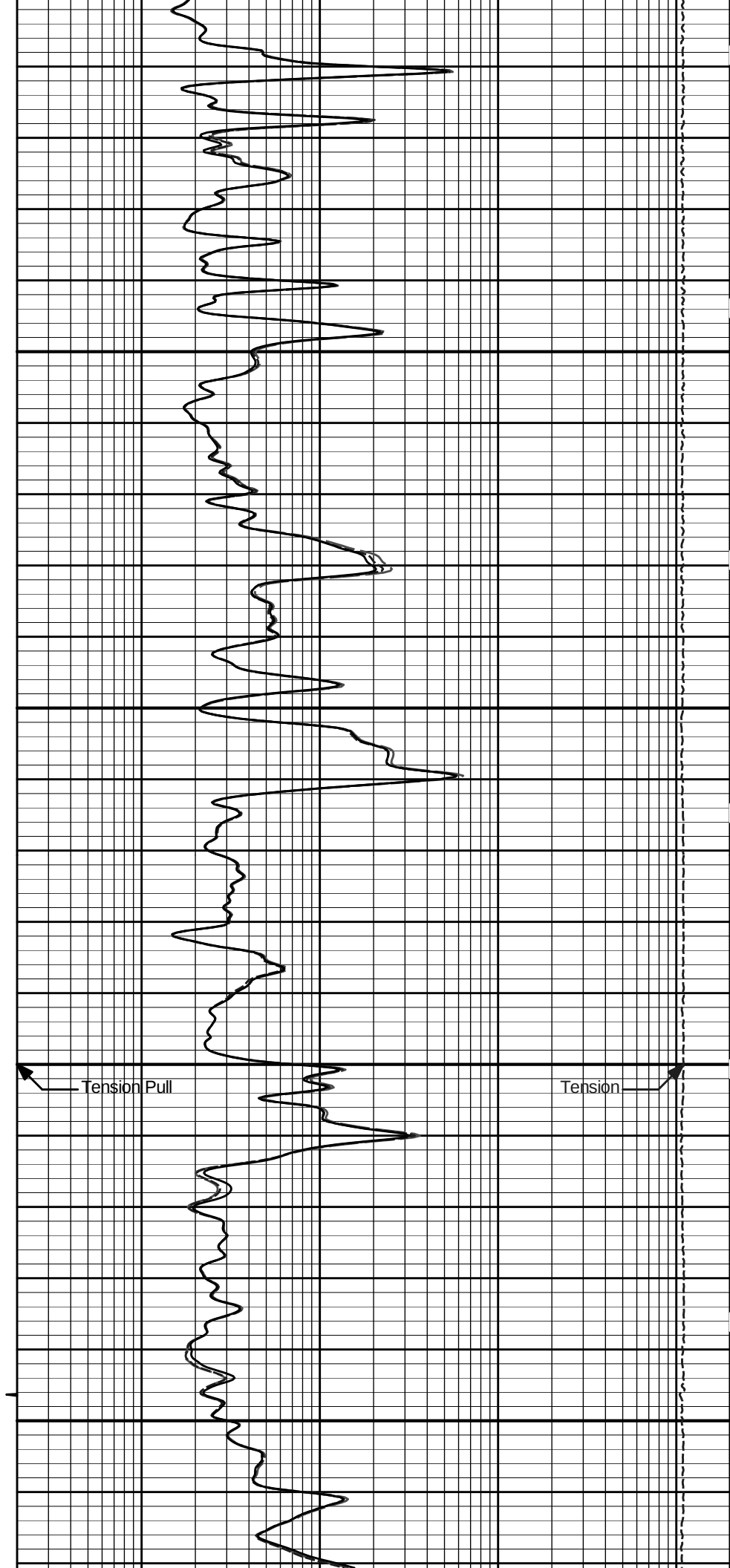


2300

2350

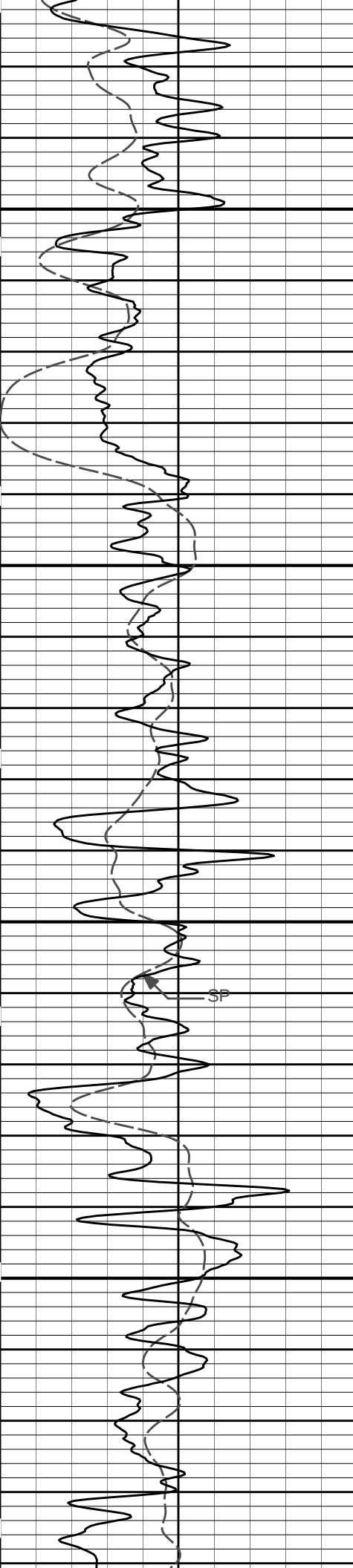
2400

2450



Tension Pull

Tension

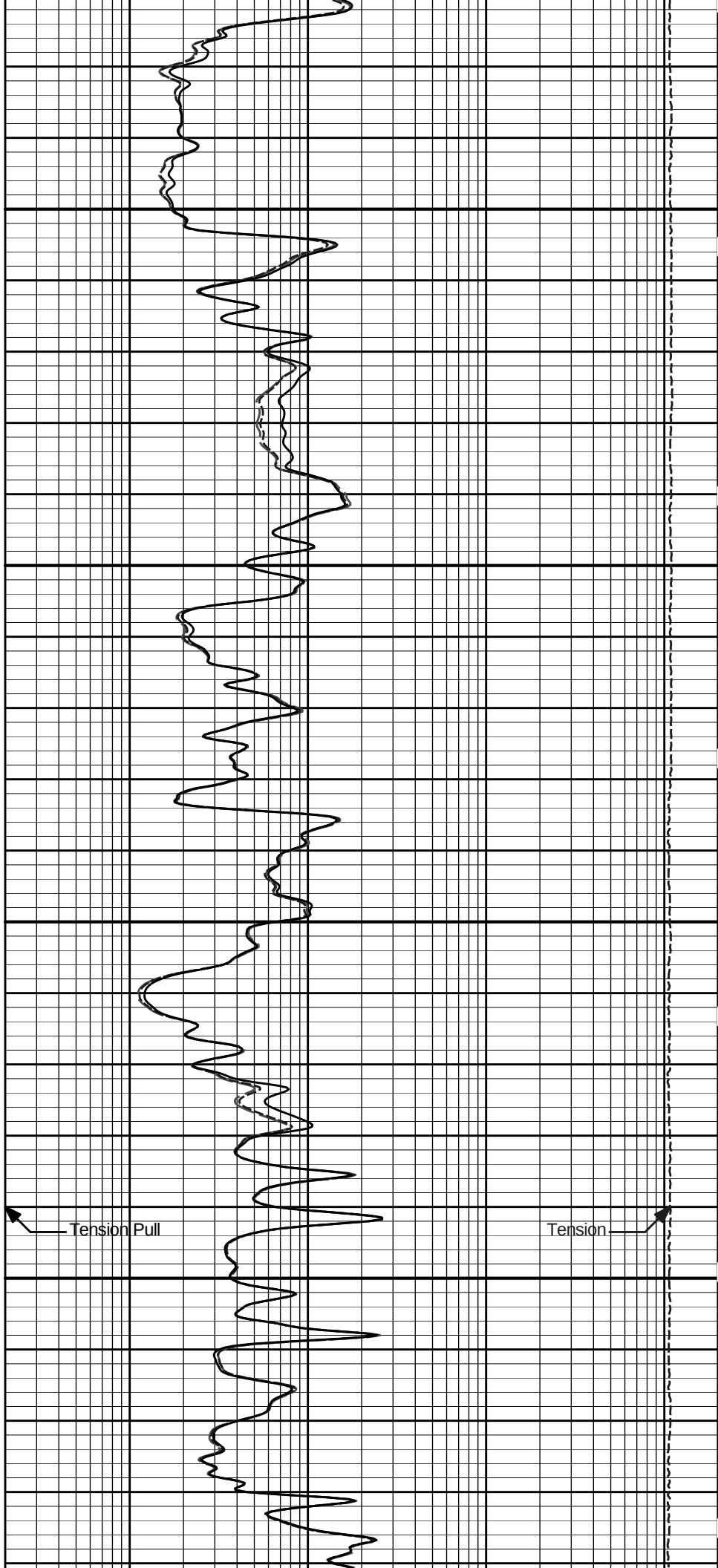


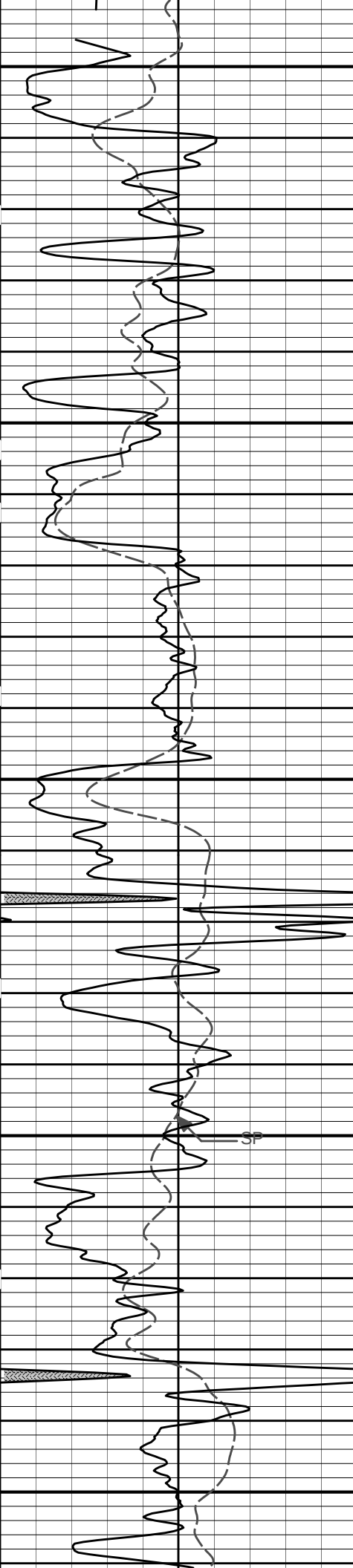
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2550

2600

2650





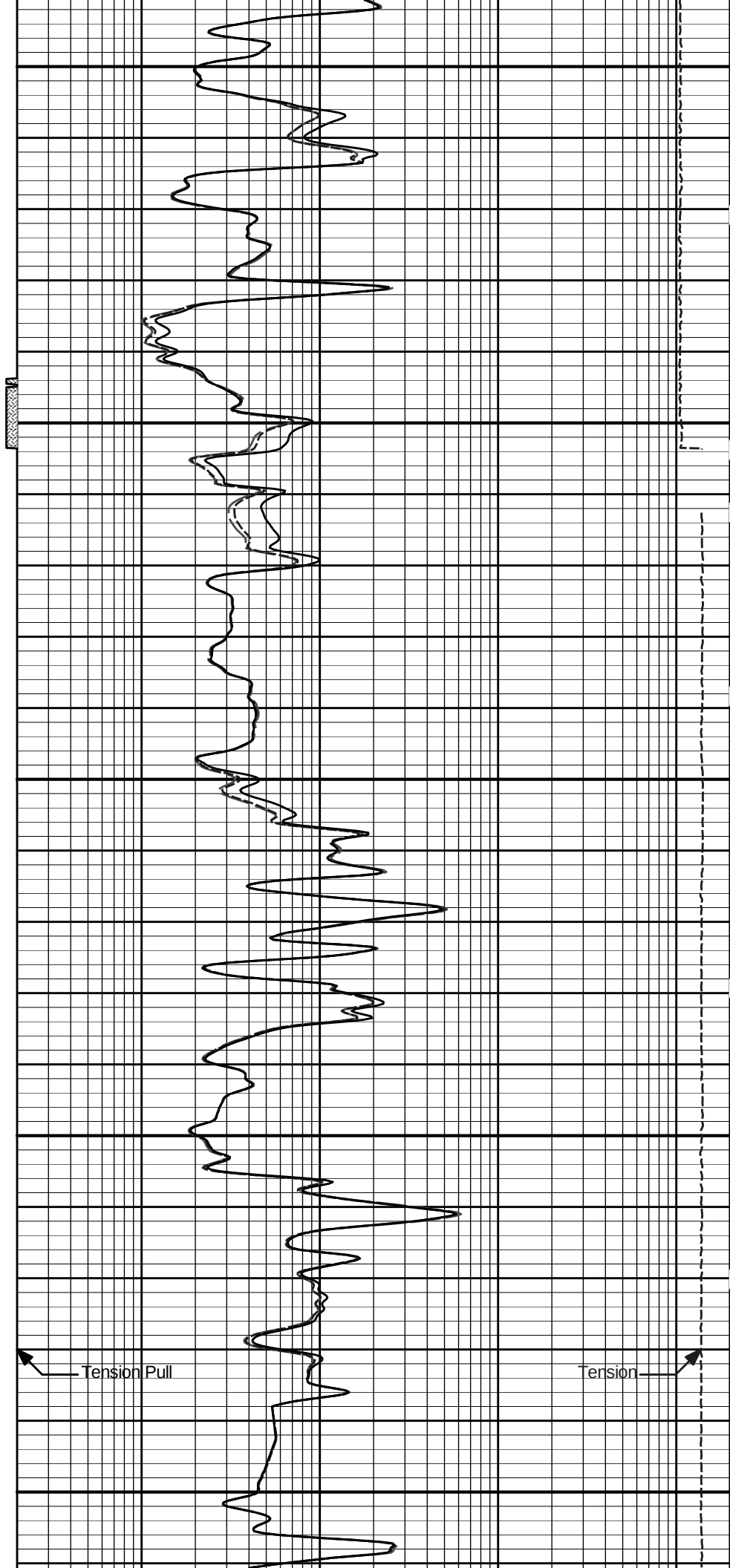
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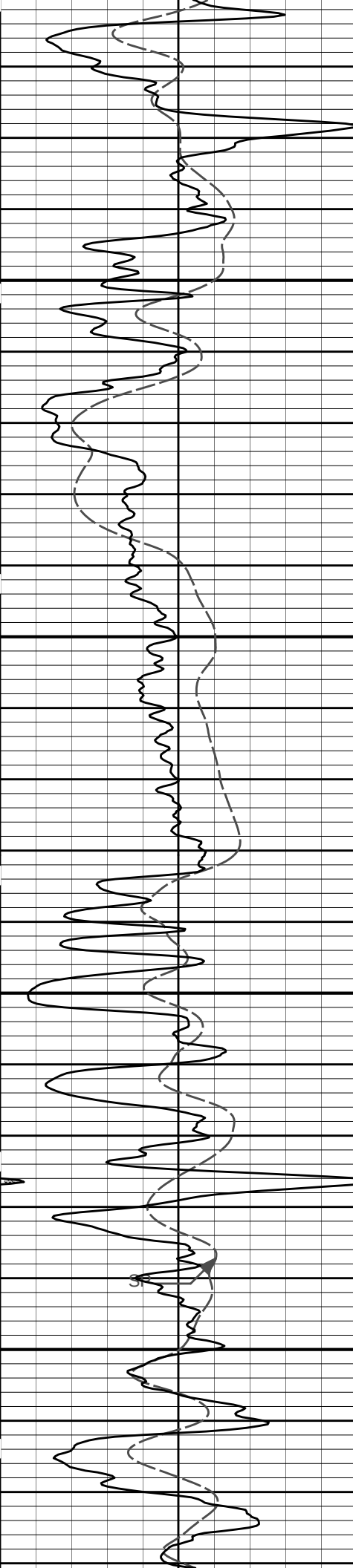
2750

2800

2850

2900



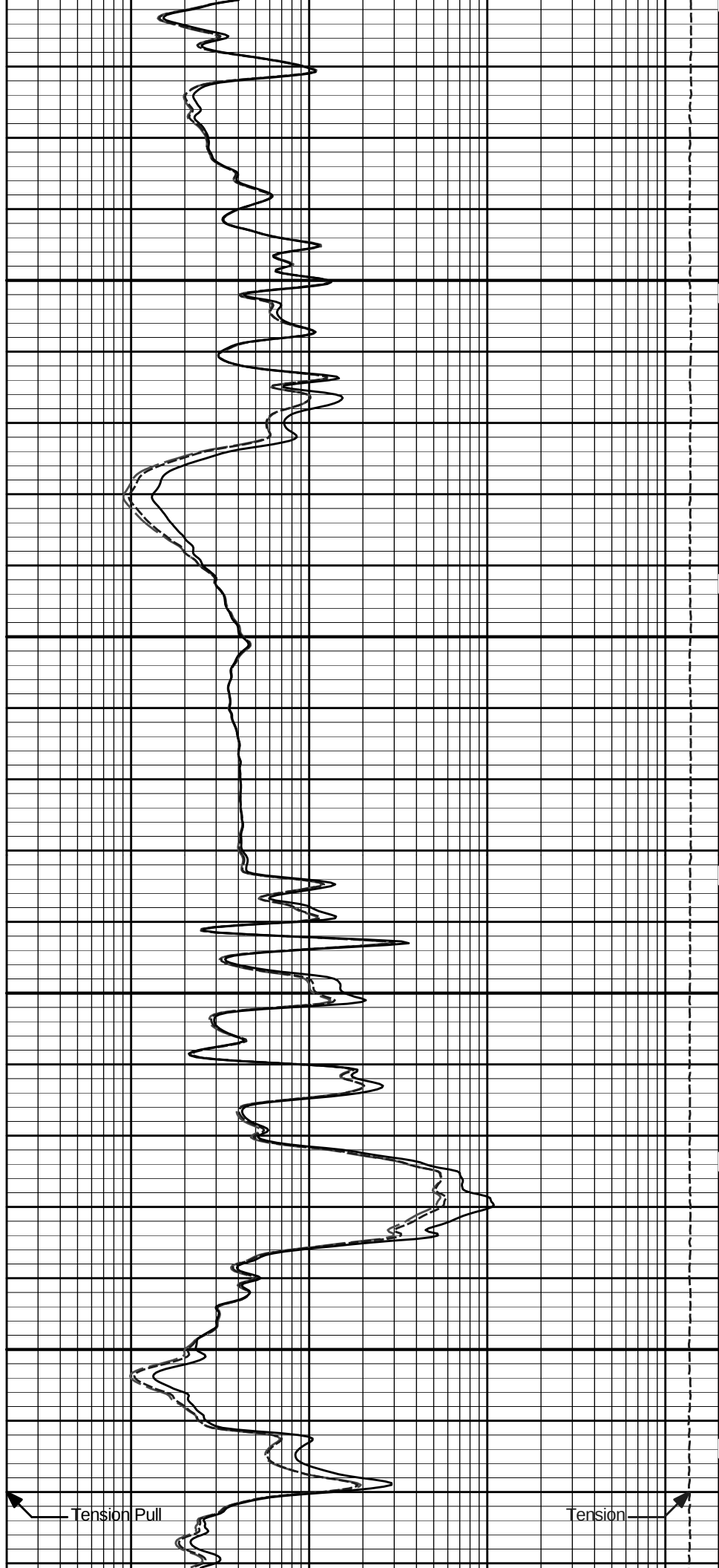


2950

3000

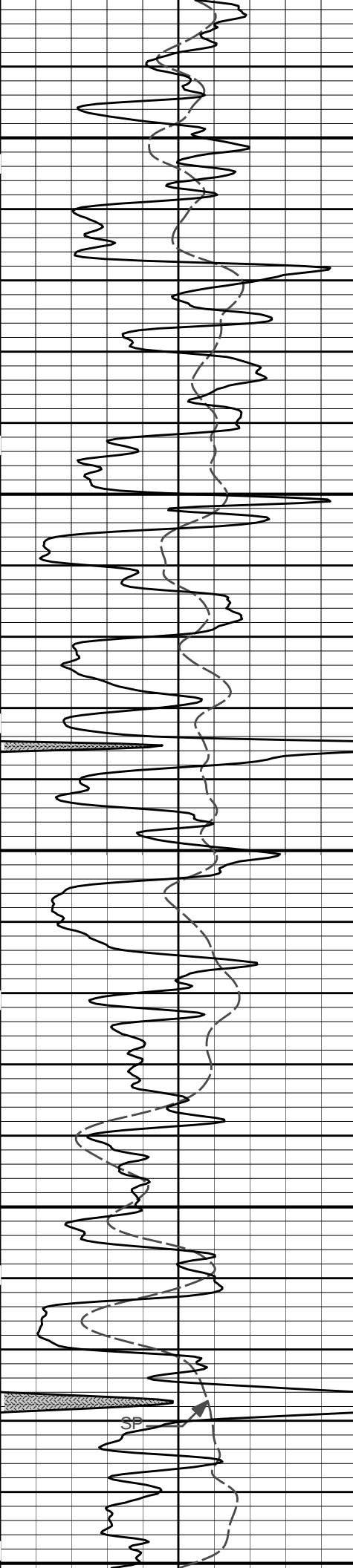
3050

3100



Tension Pull

Tension



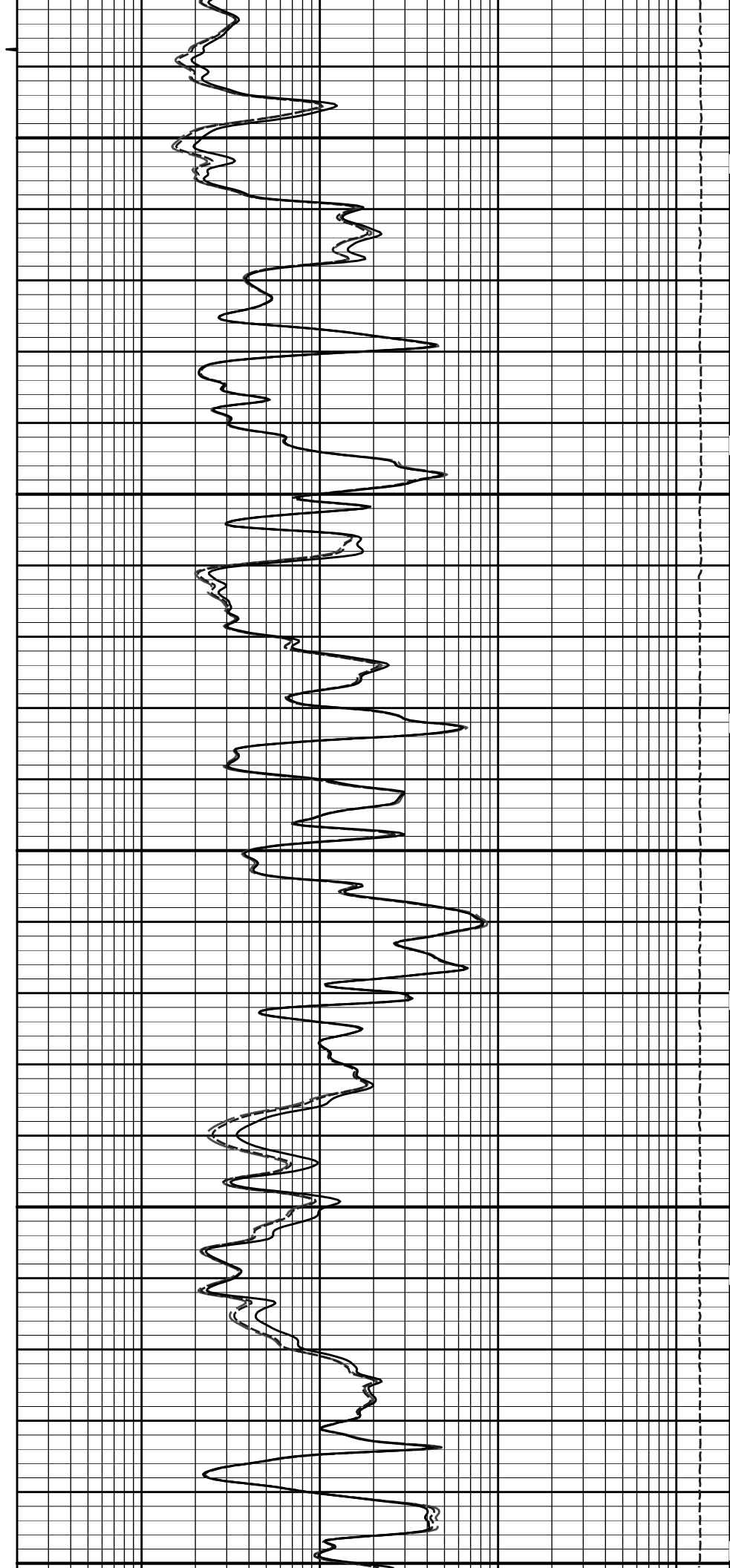
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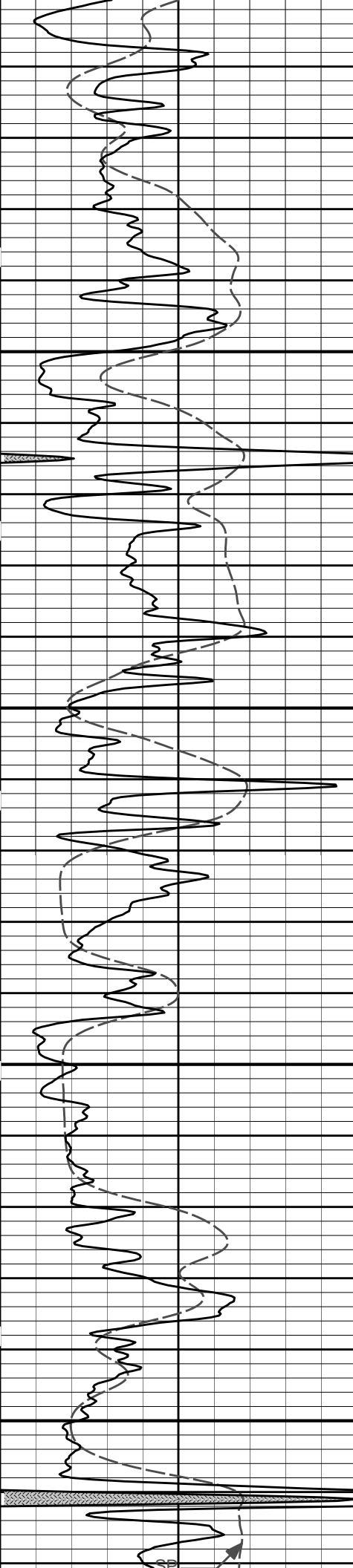
3200

3250

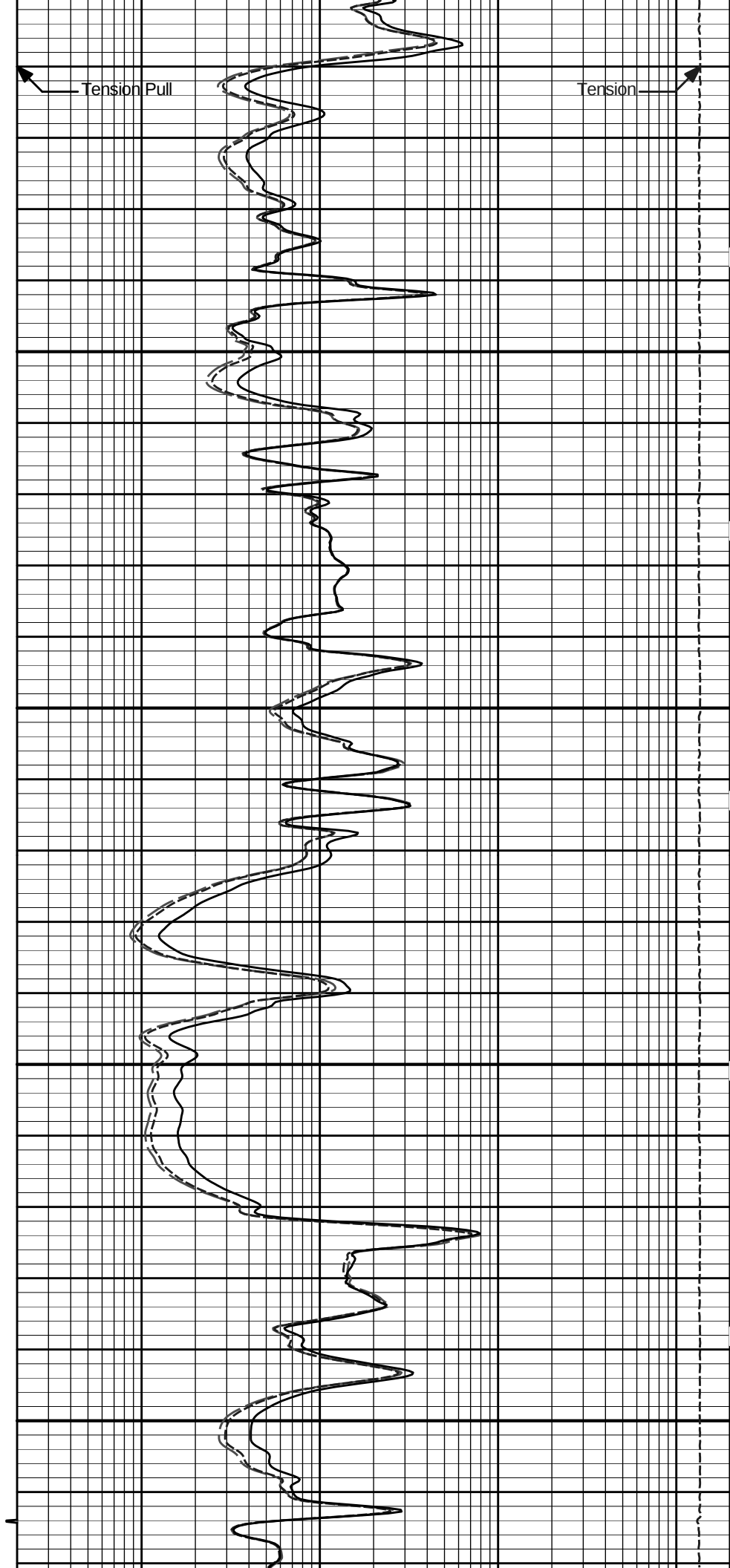
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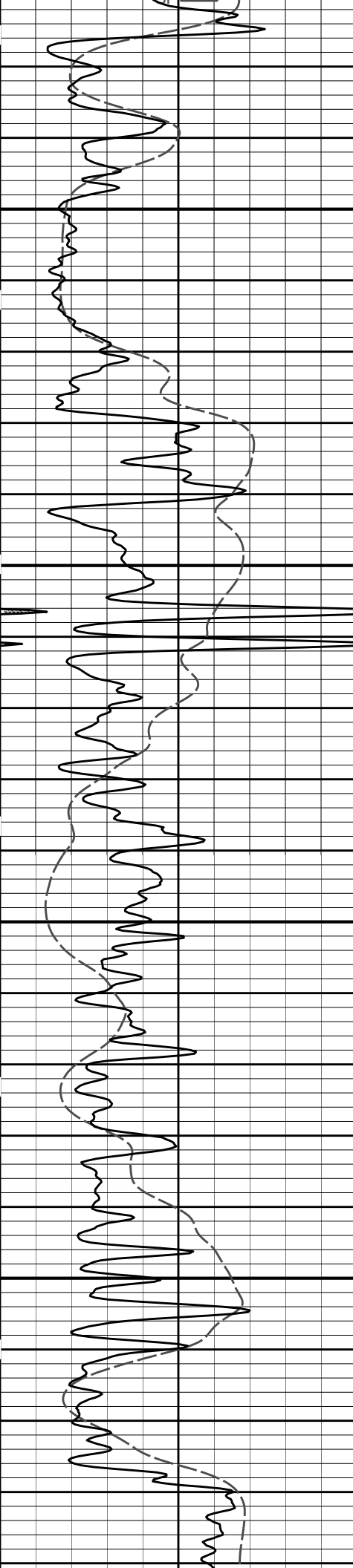
3350





3350
3400
3450
3500
3550



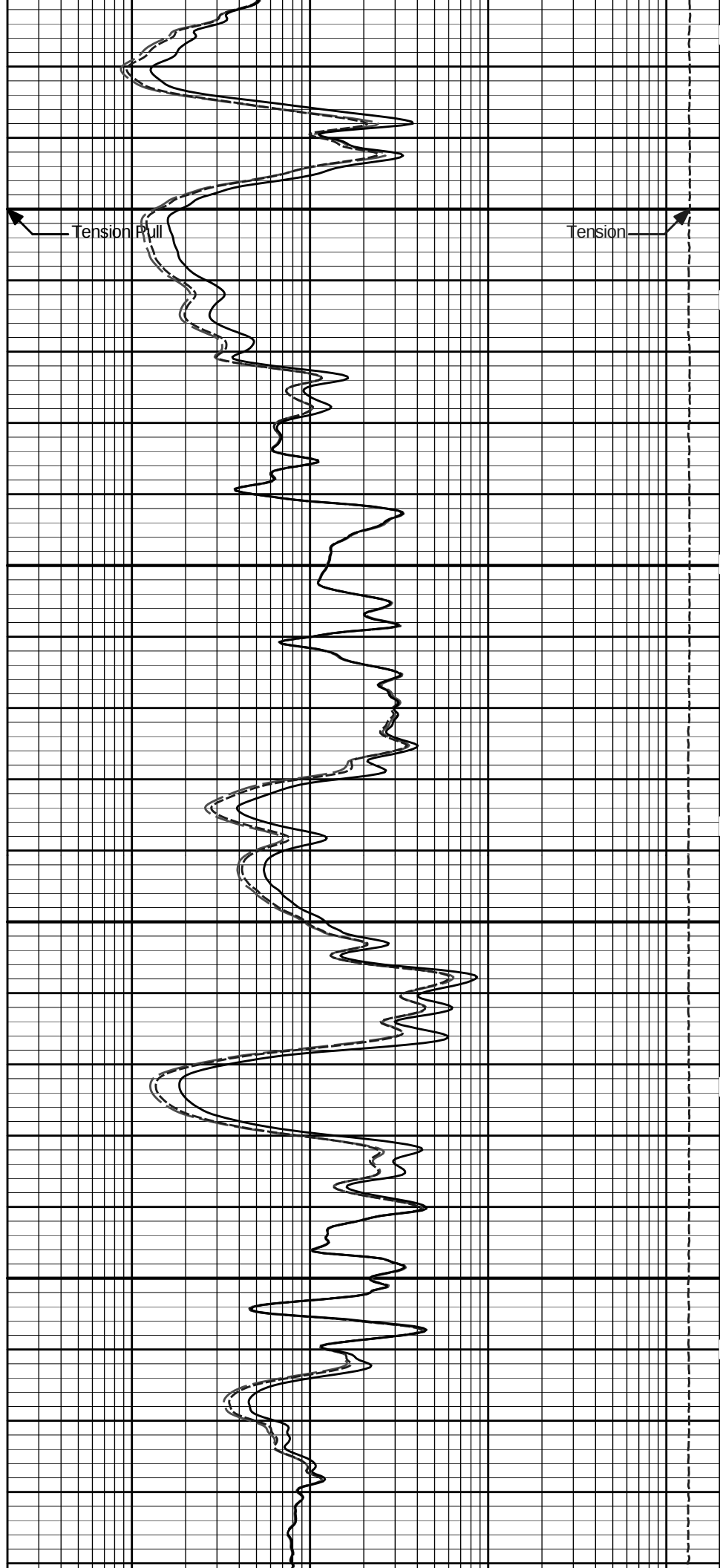


3600

3650

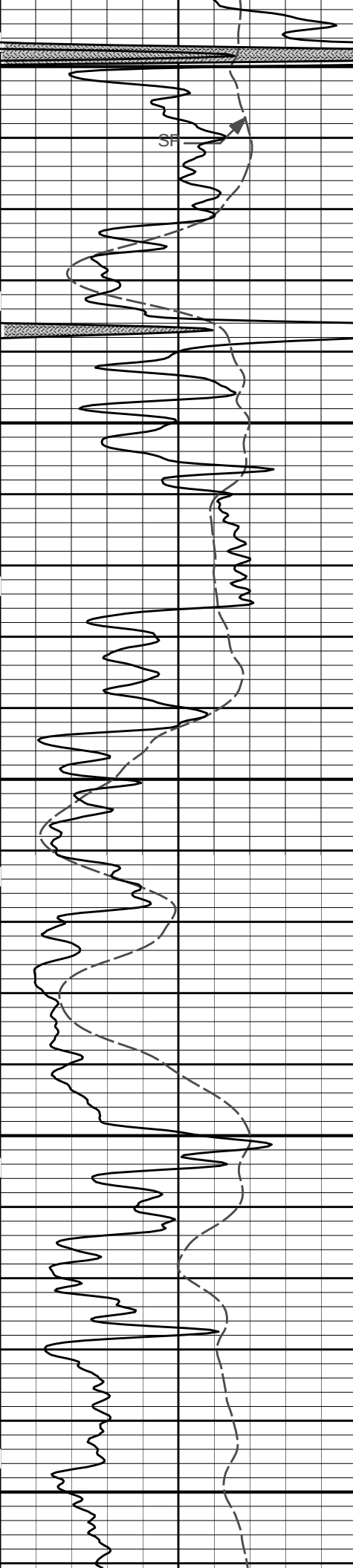
3700

3750



Tension Pull

Tension



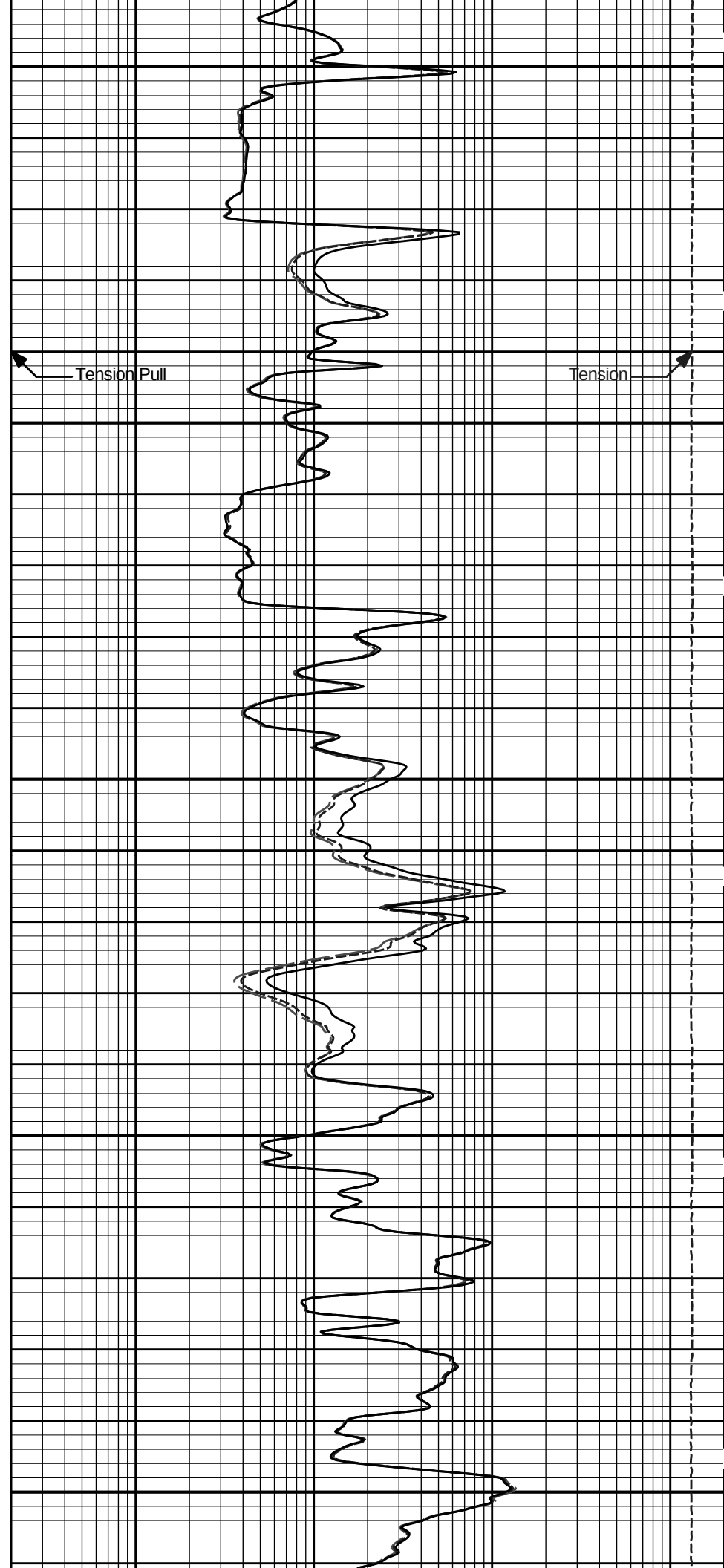
3800

3850

3900

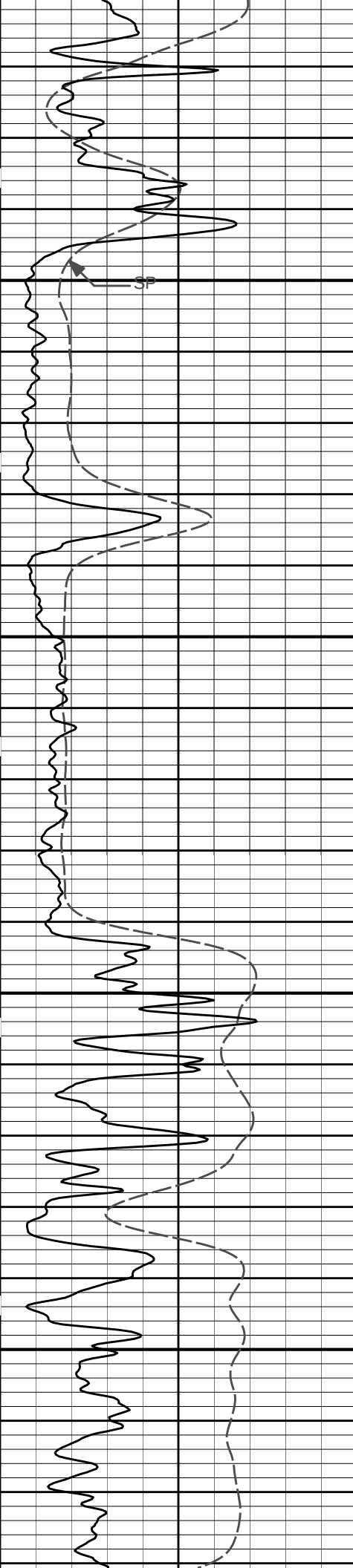
3950

4000



Tension Pull

Tension

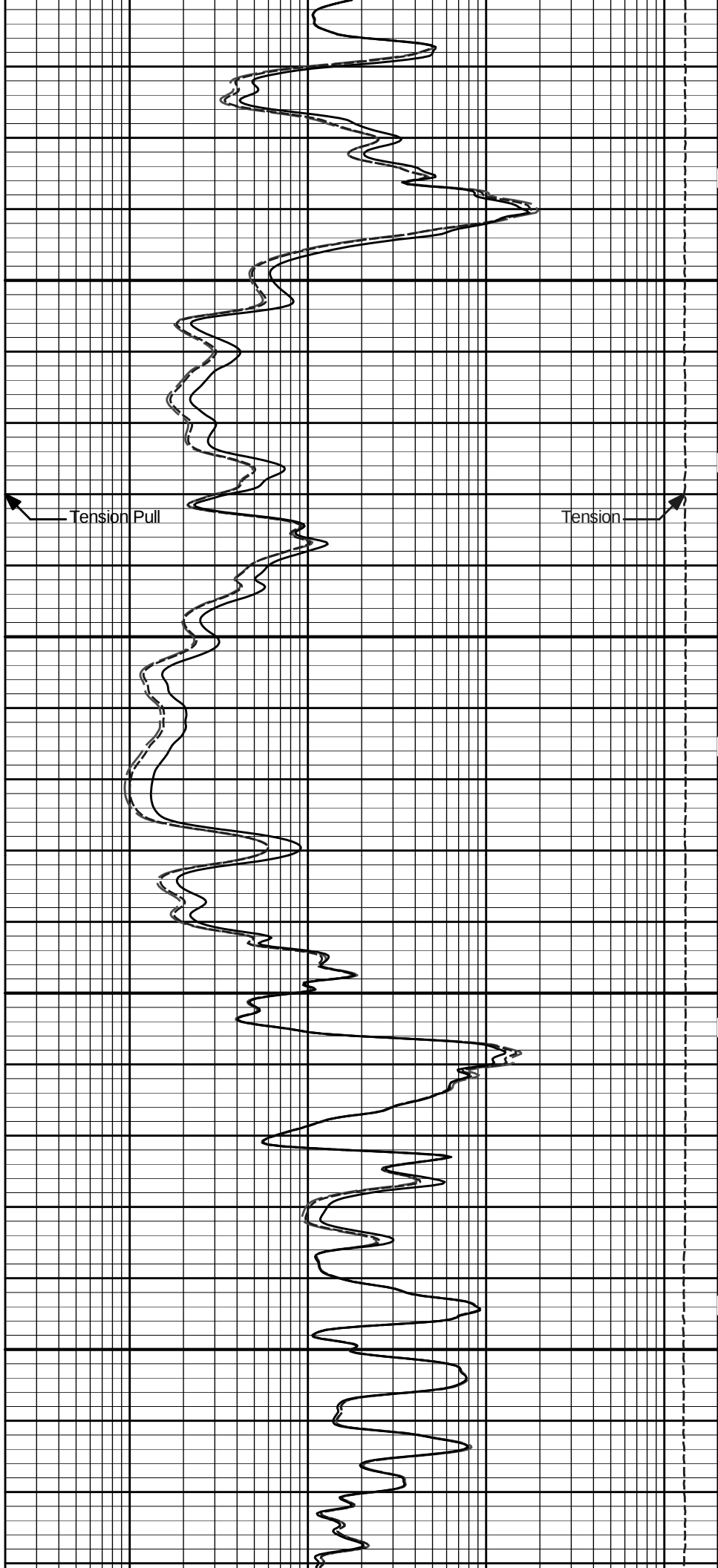


4050

4100

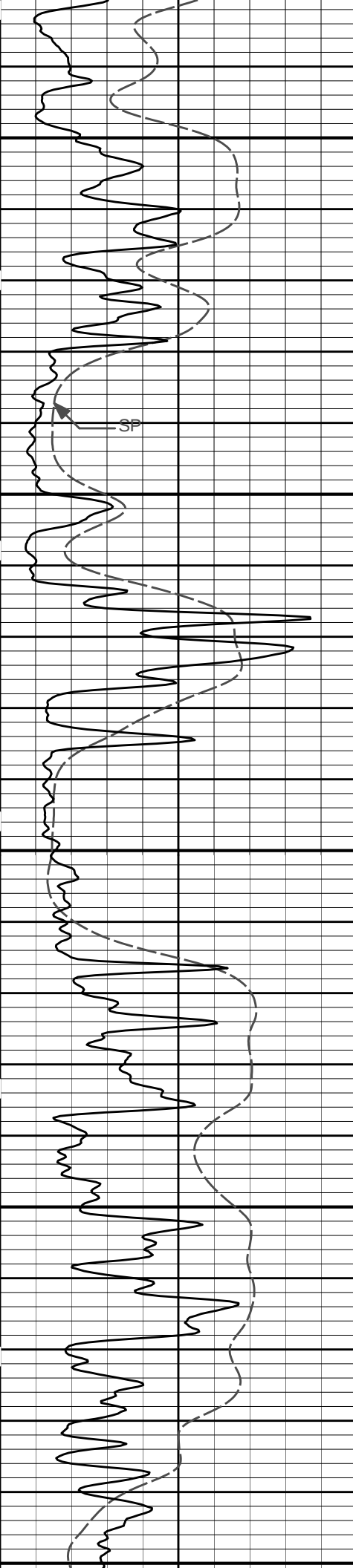
4150

4200



Tension Pull

Tension



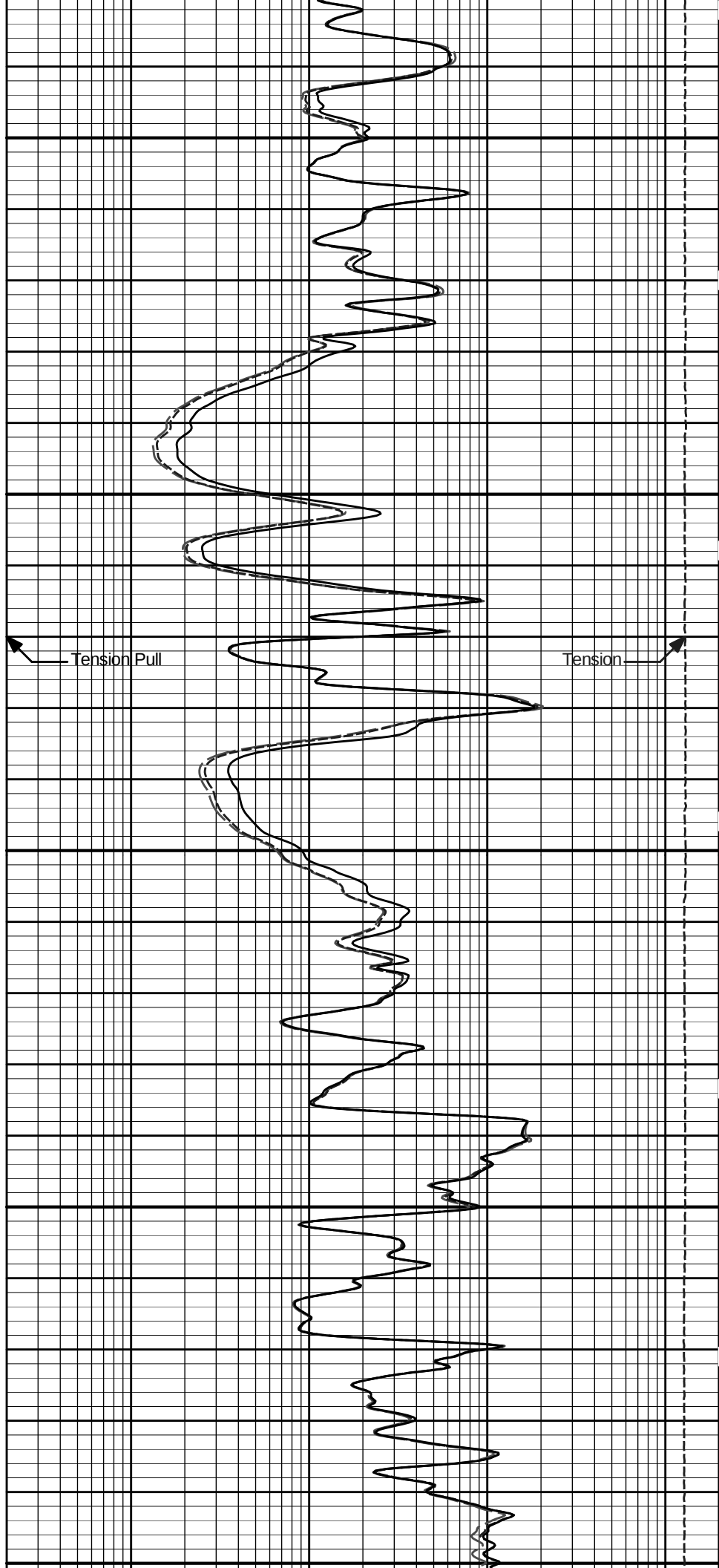
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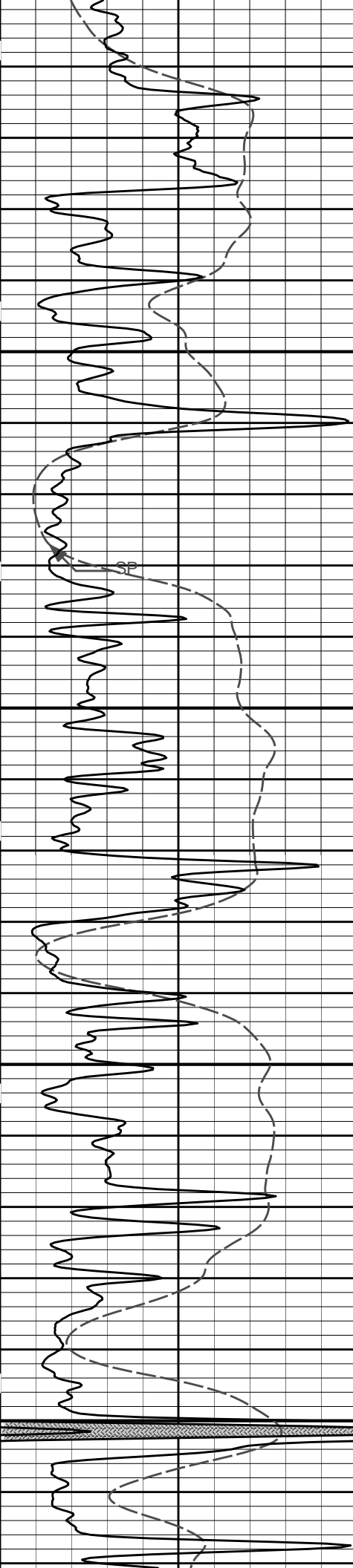
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4350

4400

4450





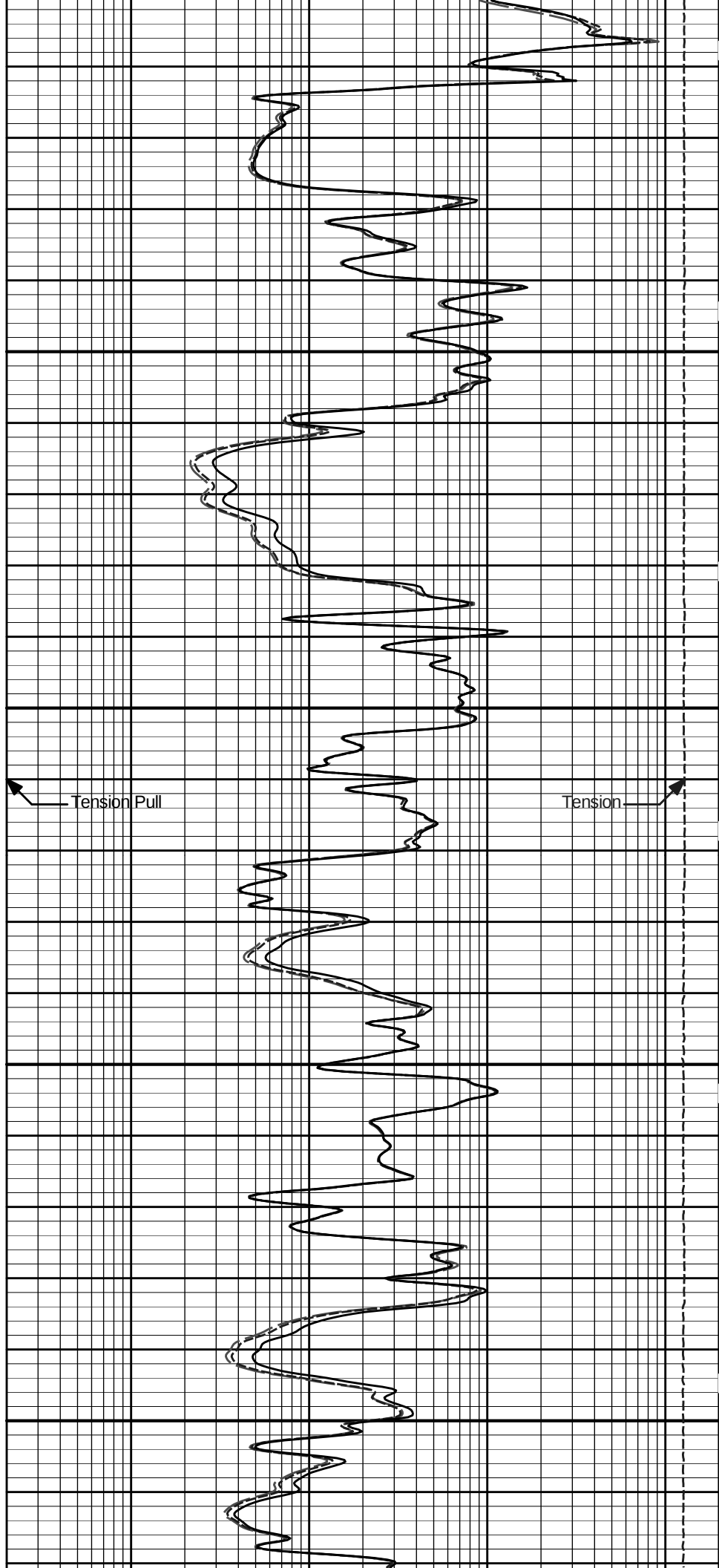
4500

4500

4550

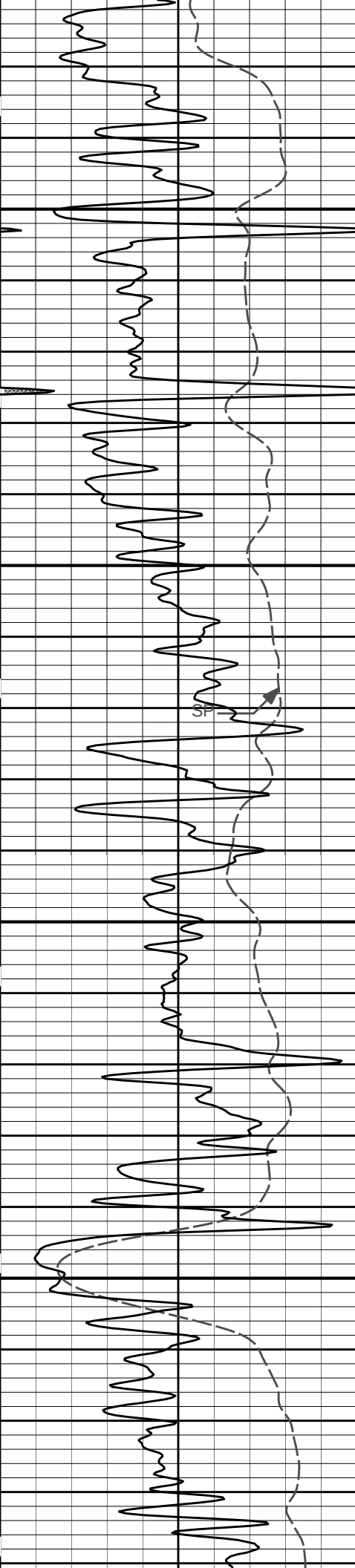
4600

4650



Tension Pull

Tension

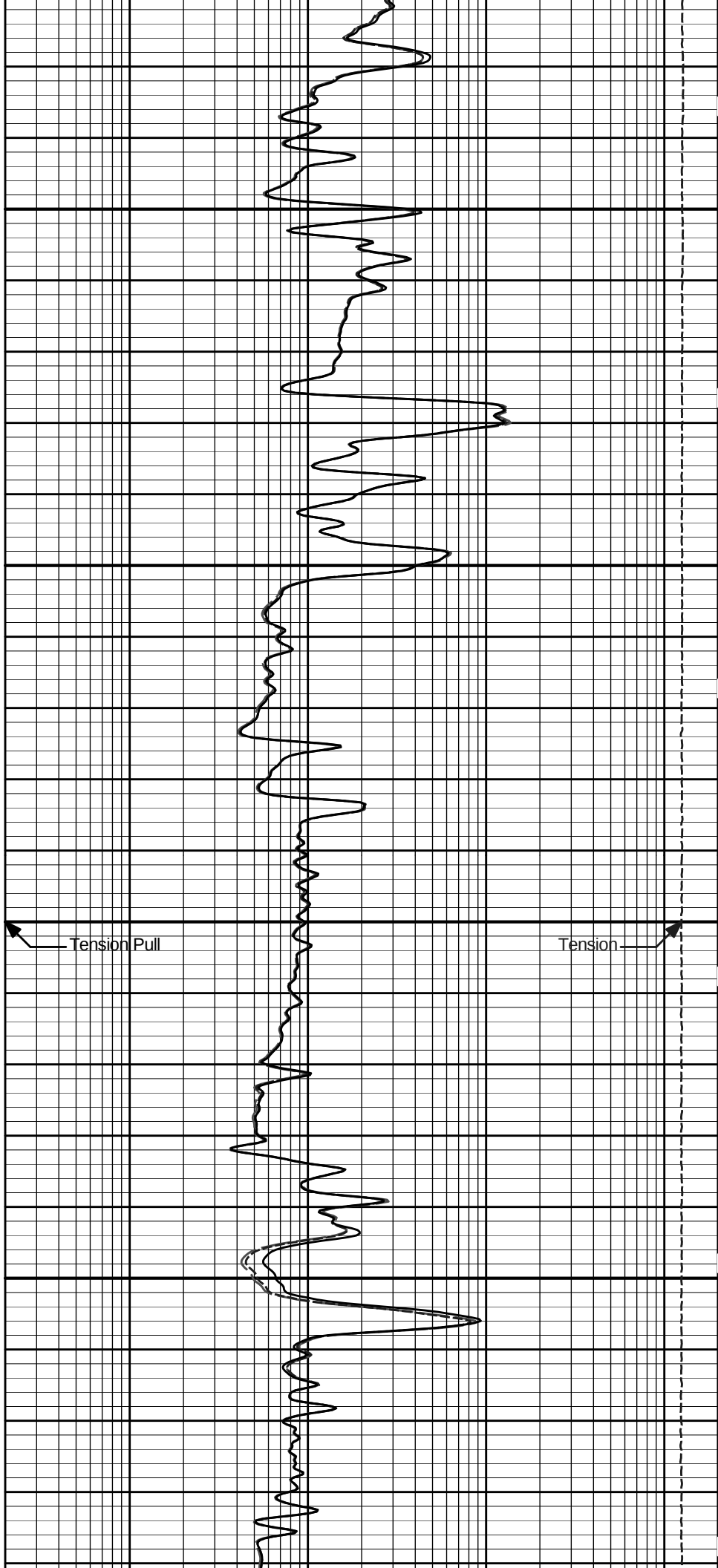


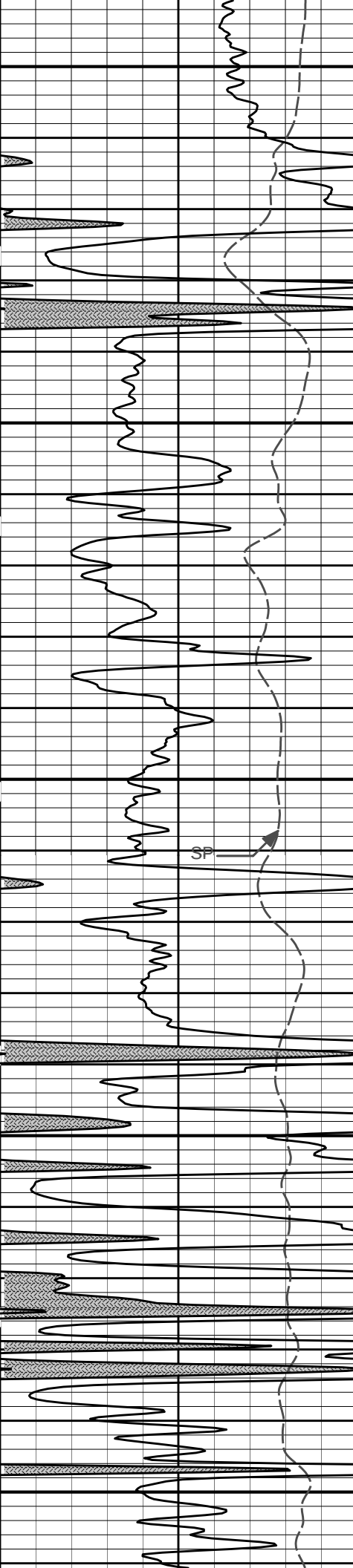
4700

4750

4800

4850





4900

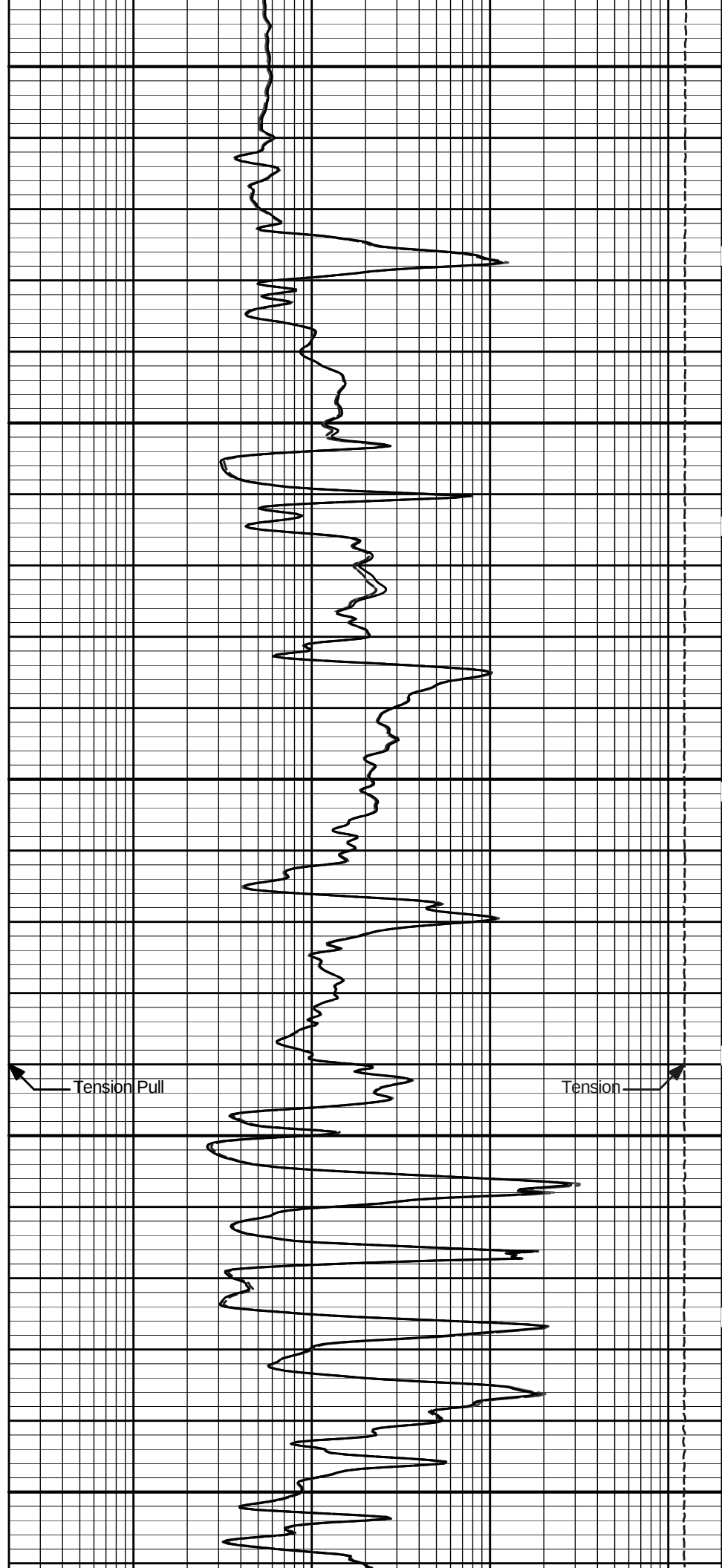
4950

5000

5050

5100

SP



Tension Pull

Tension



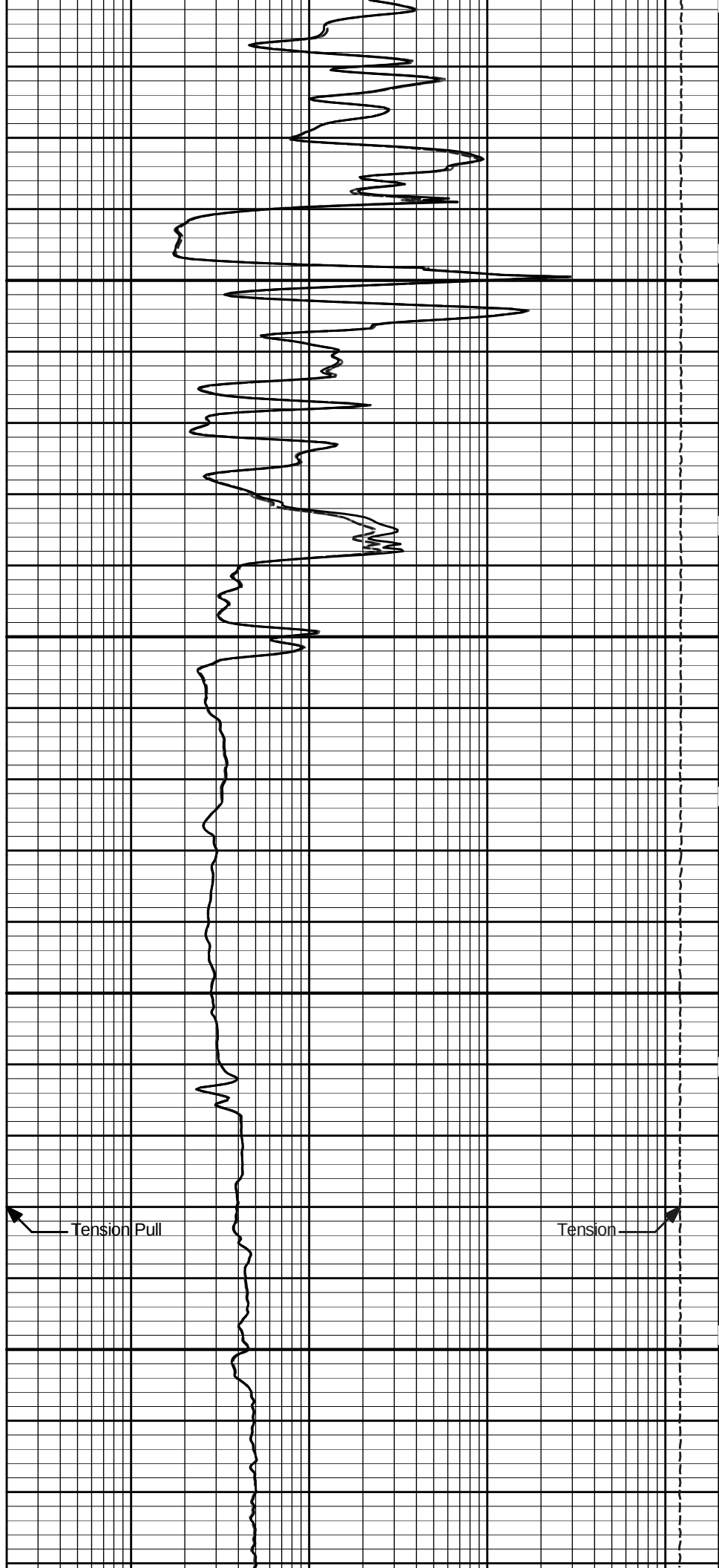
5150

5200

5250

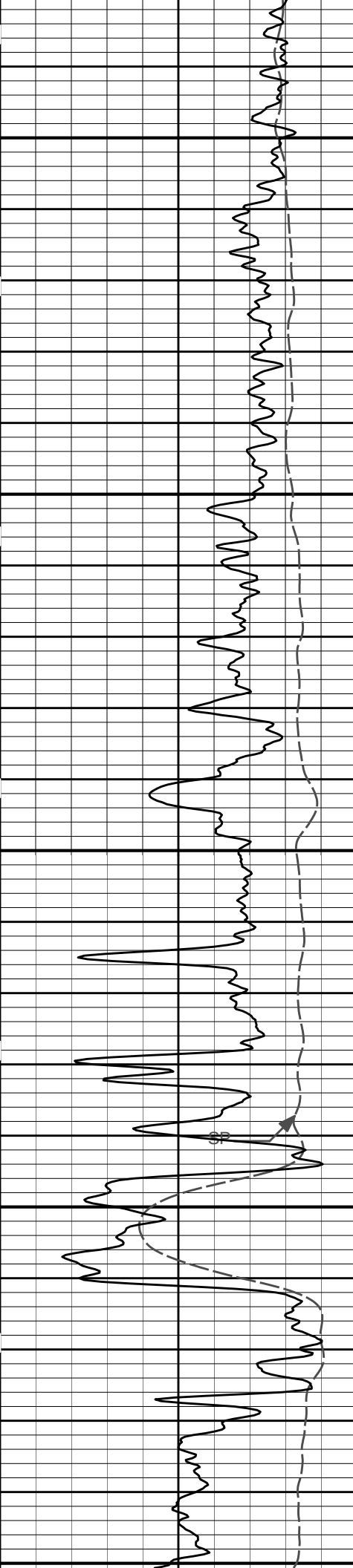
5300

SP



Tension Pull

Tension



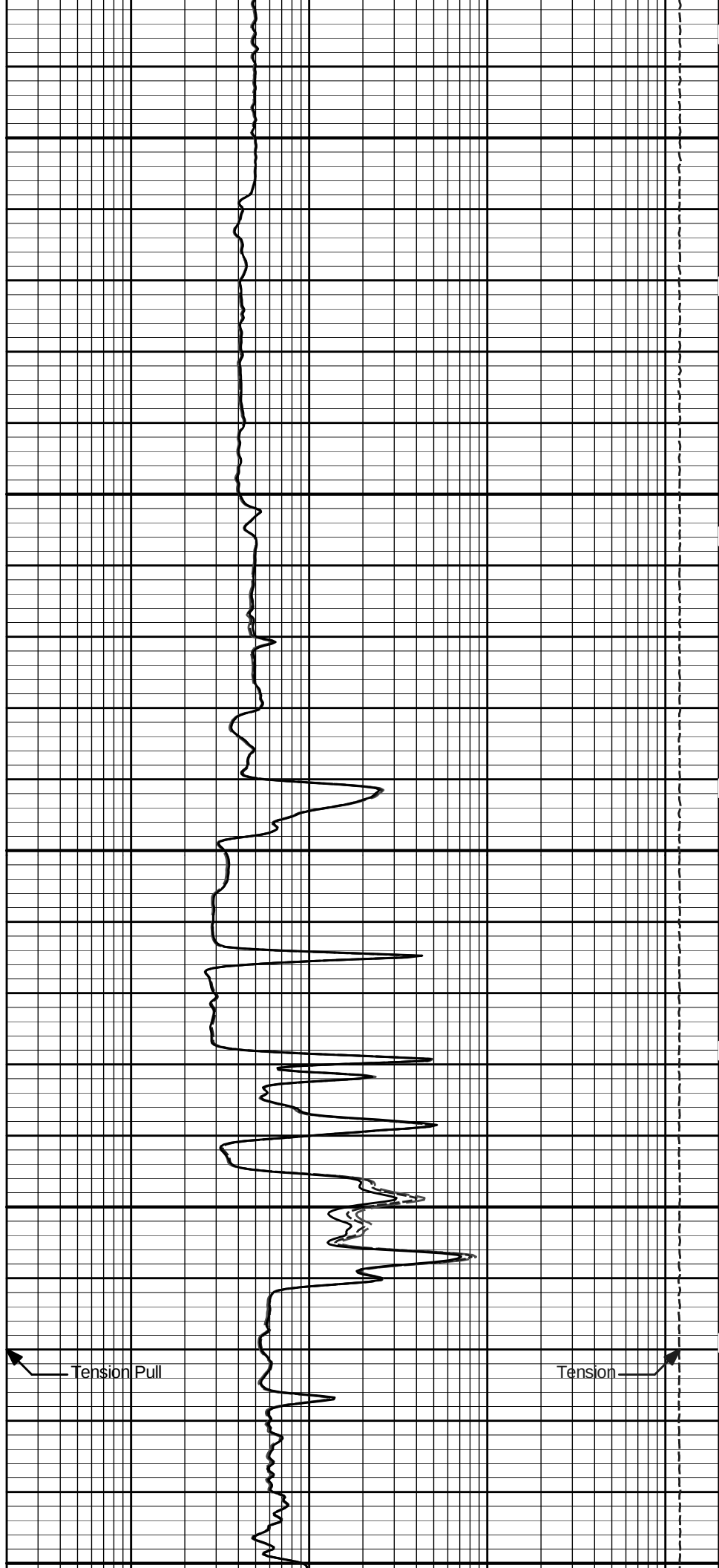
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5450

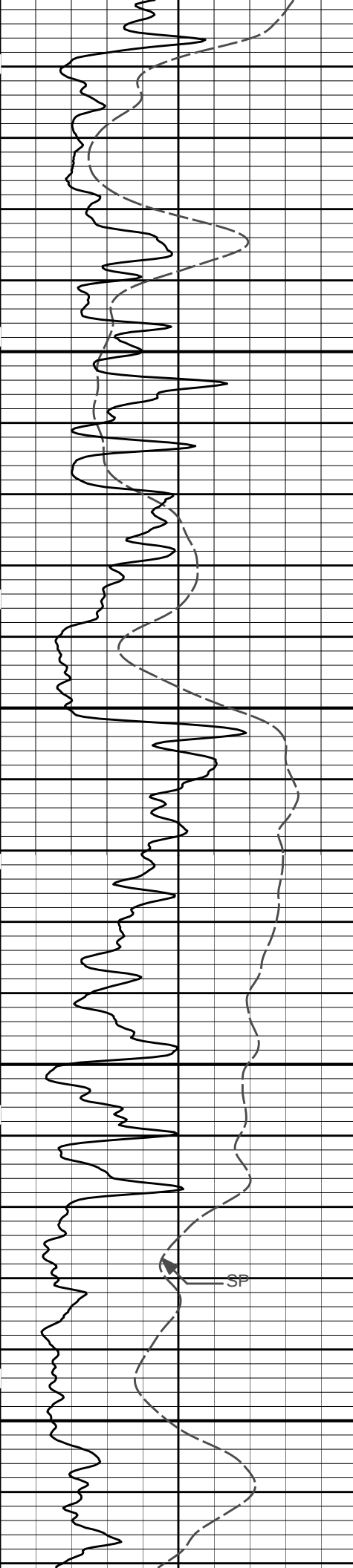
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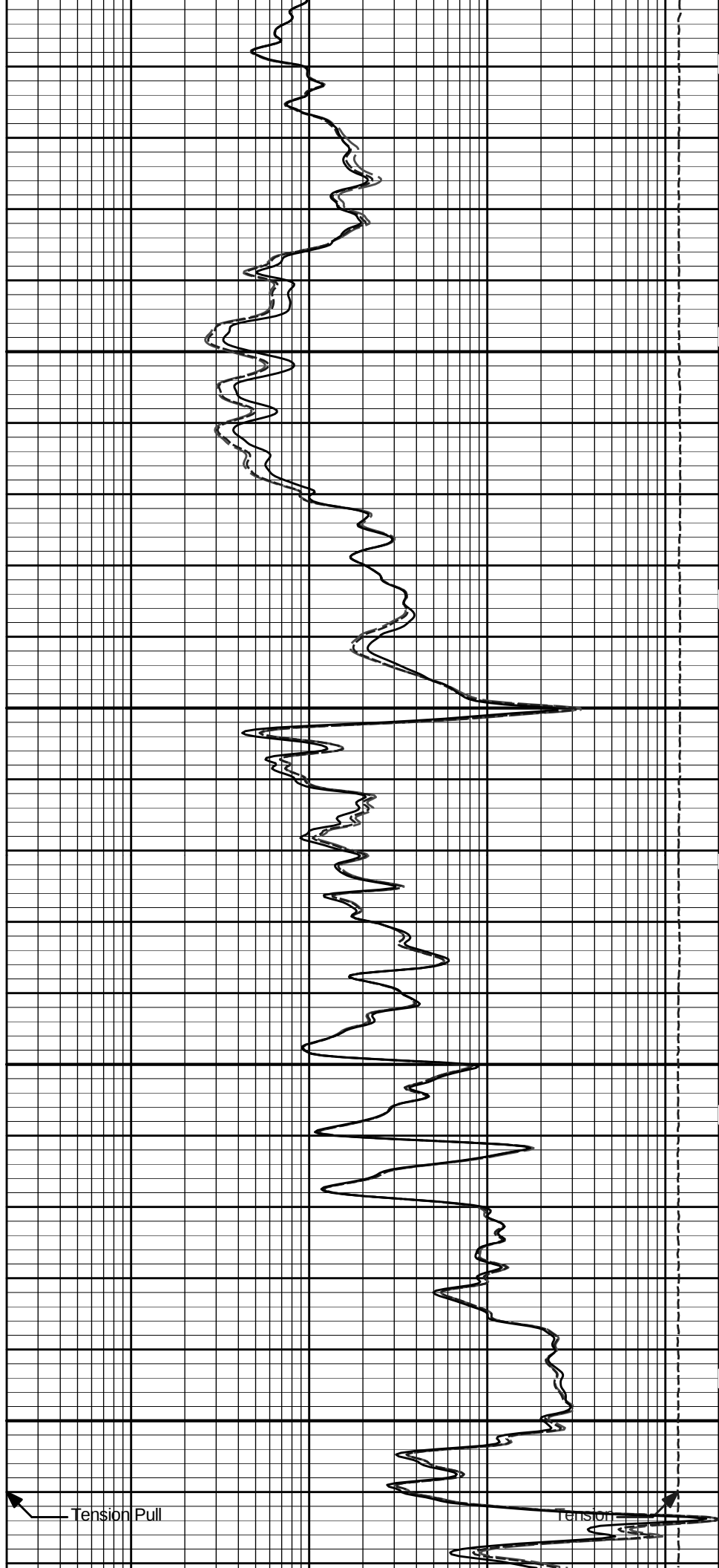


Tension Pull

Tension

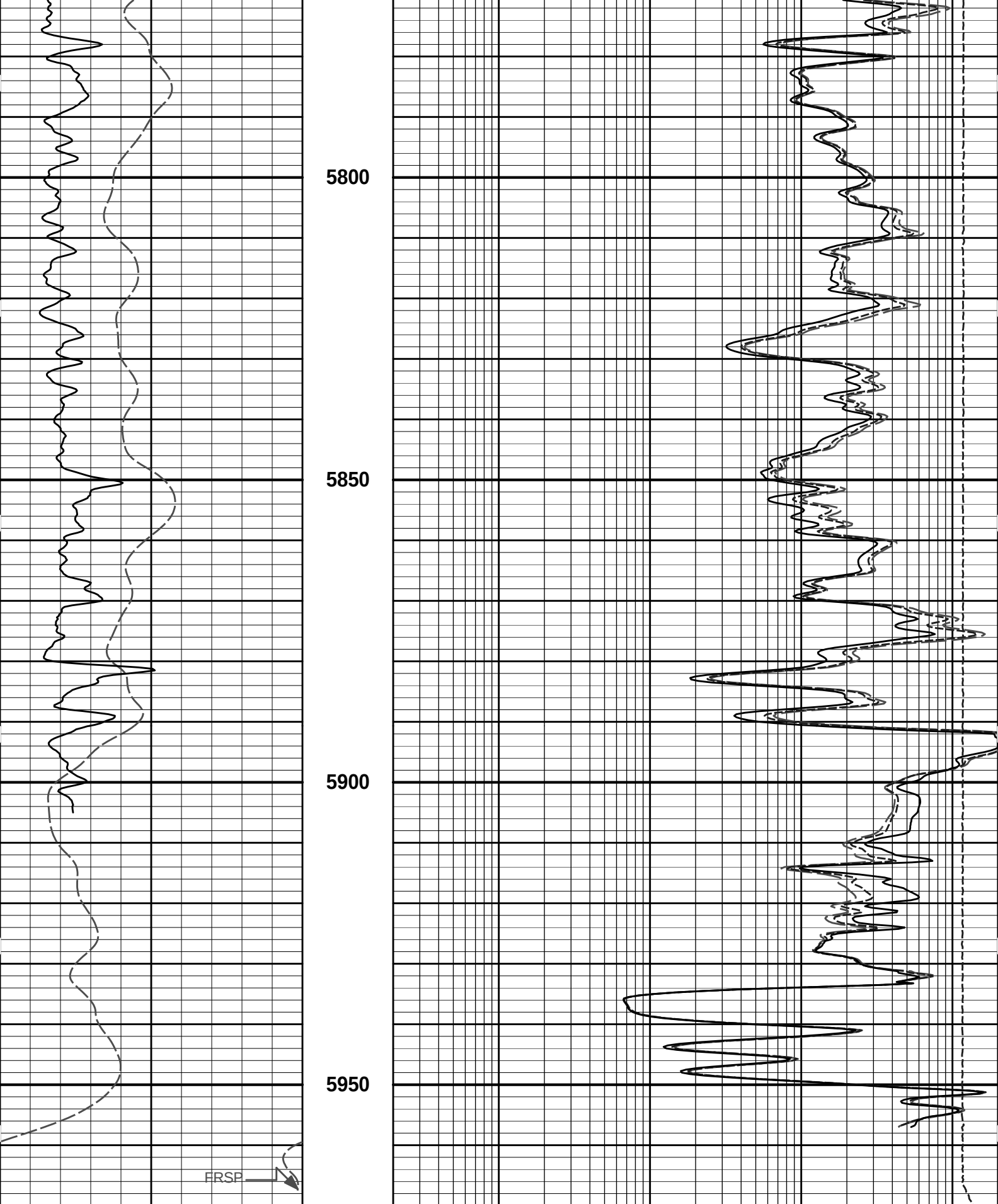


5550
5600
5650
5700
5750

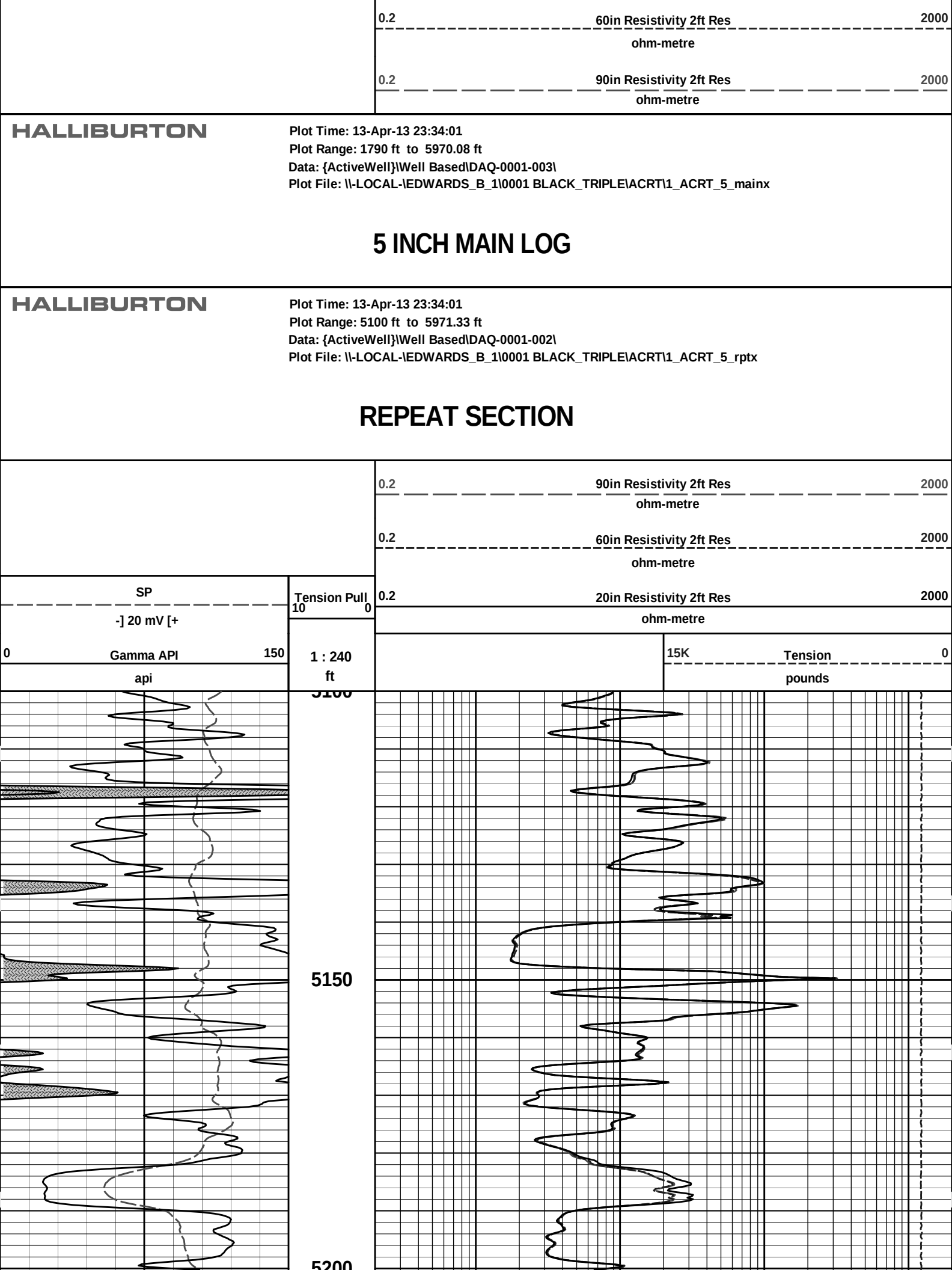


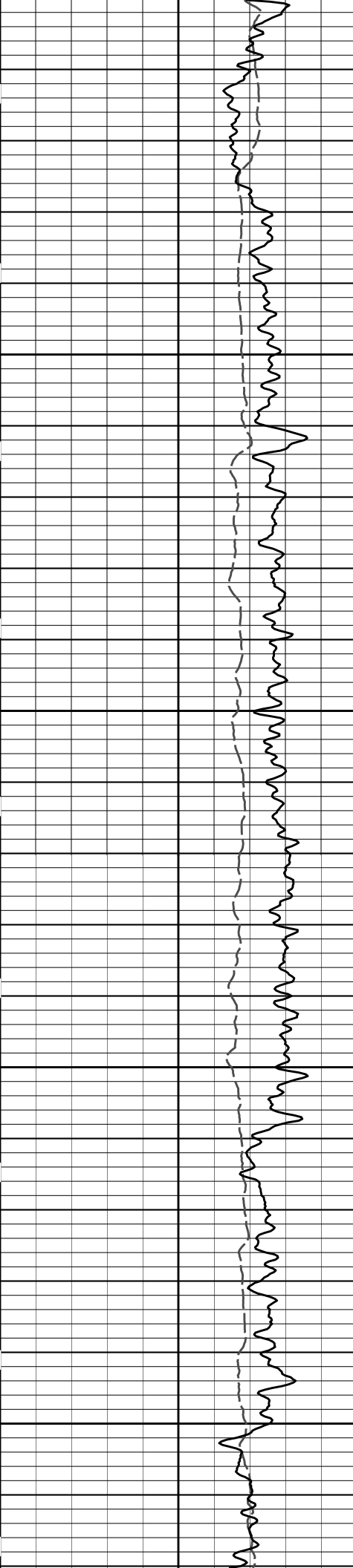
Tension Pull

Tension



SP	1 : 240	15K	Tension
-] 20 mV [+	ft		pounds
	Tension Pull 10	0.2	2000
		20in Resistivity 2ft Res	ohm-metre





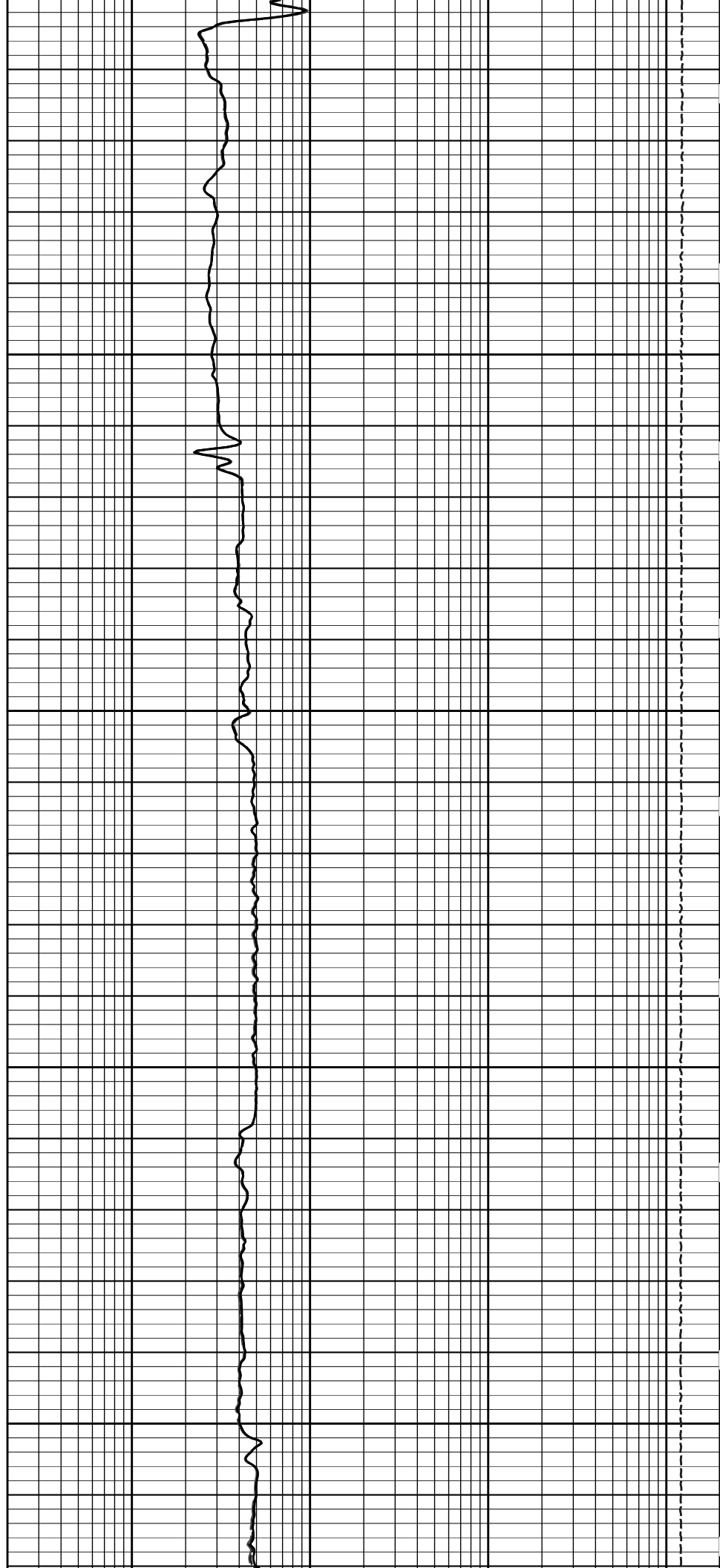
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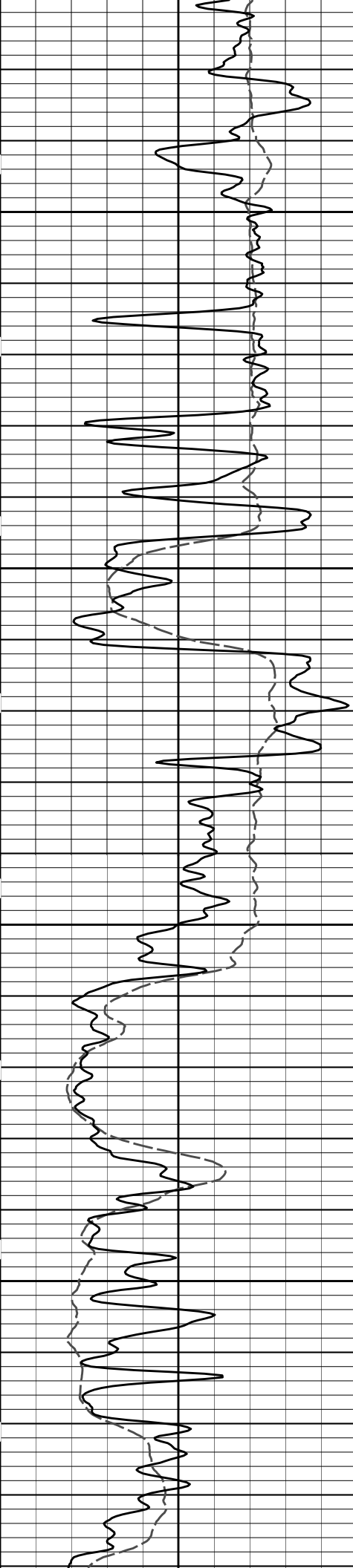
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5300

5350

5400



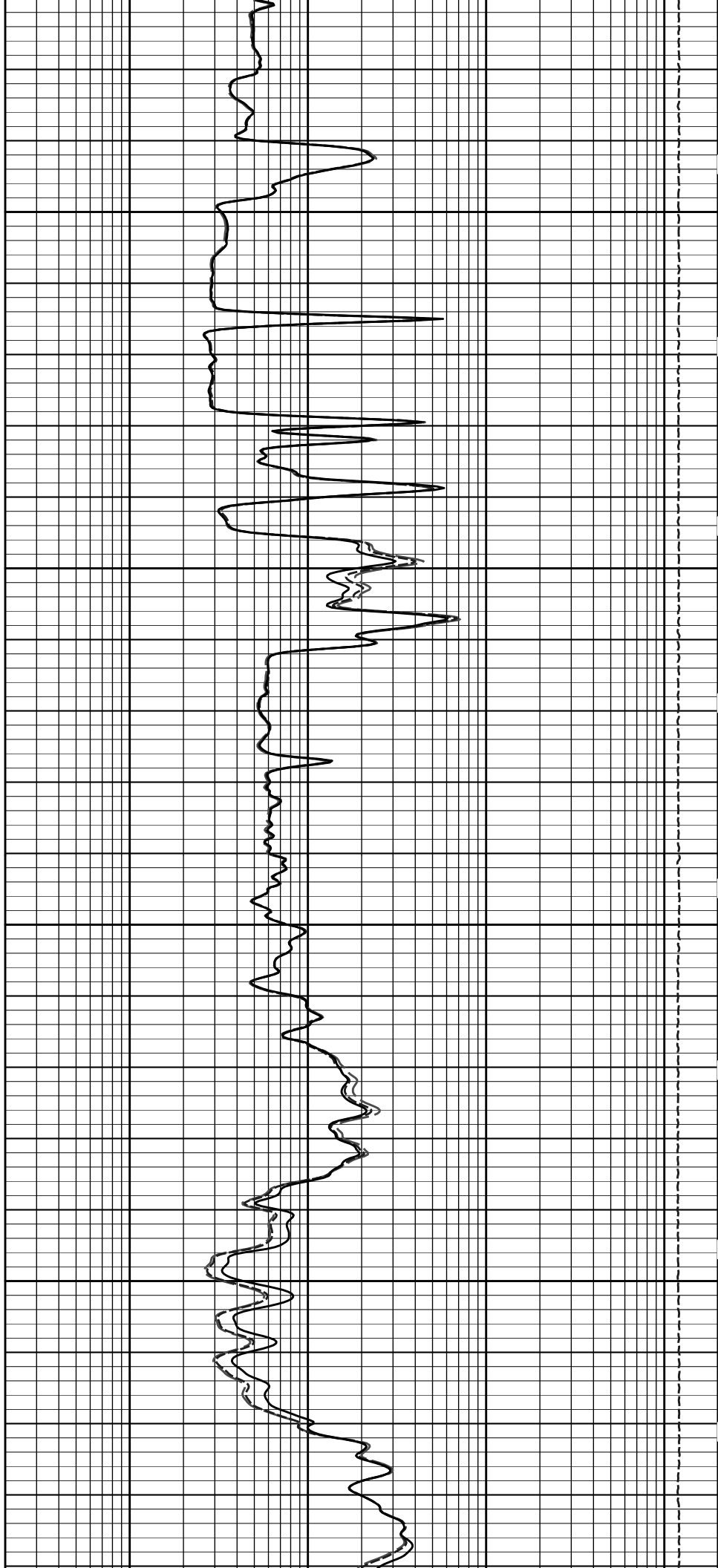


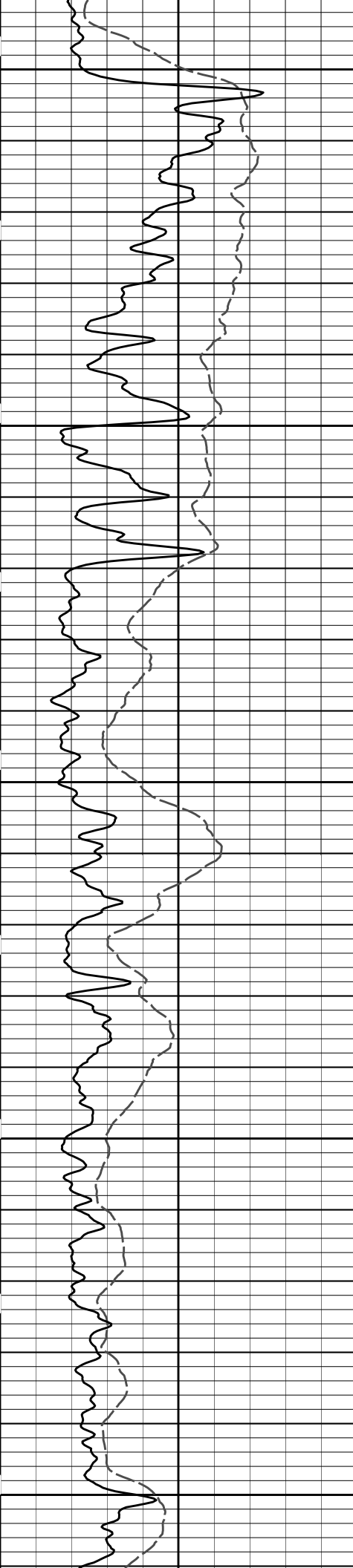
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5500

5550

5600





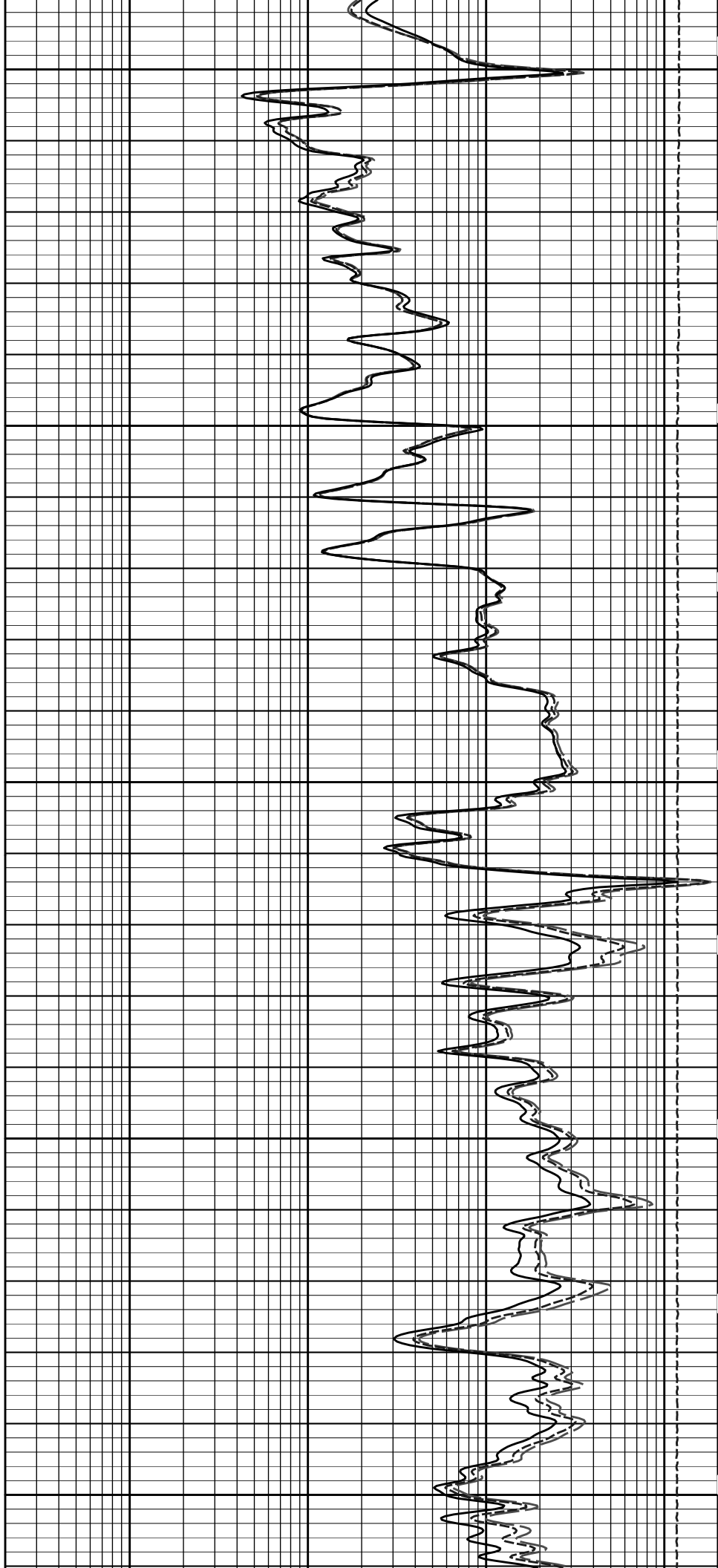
5650

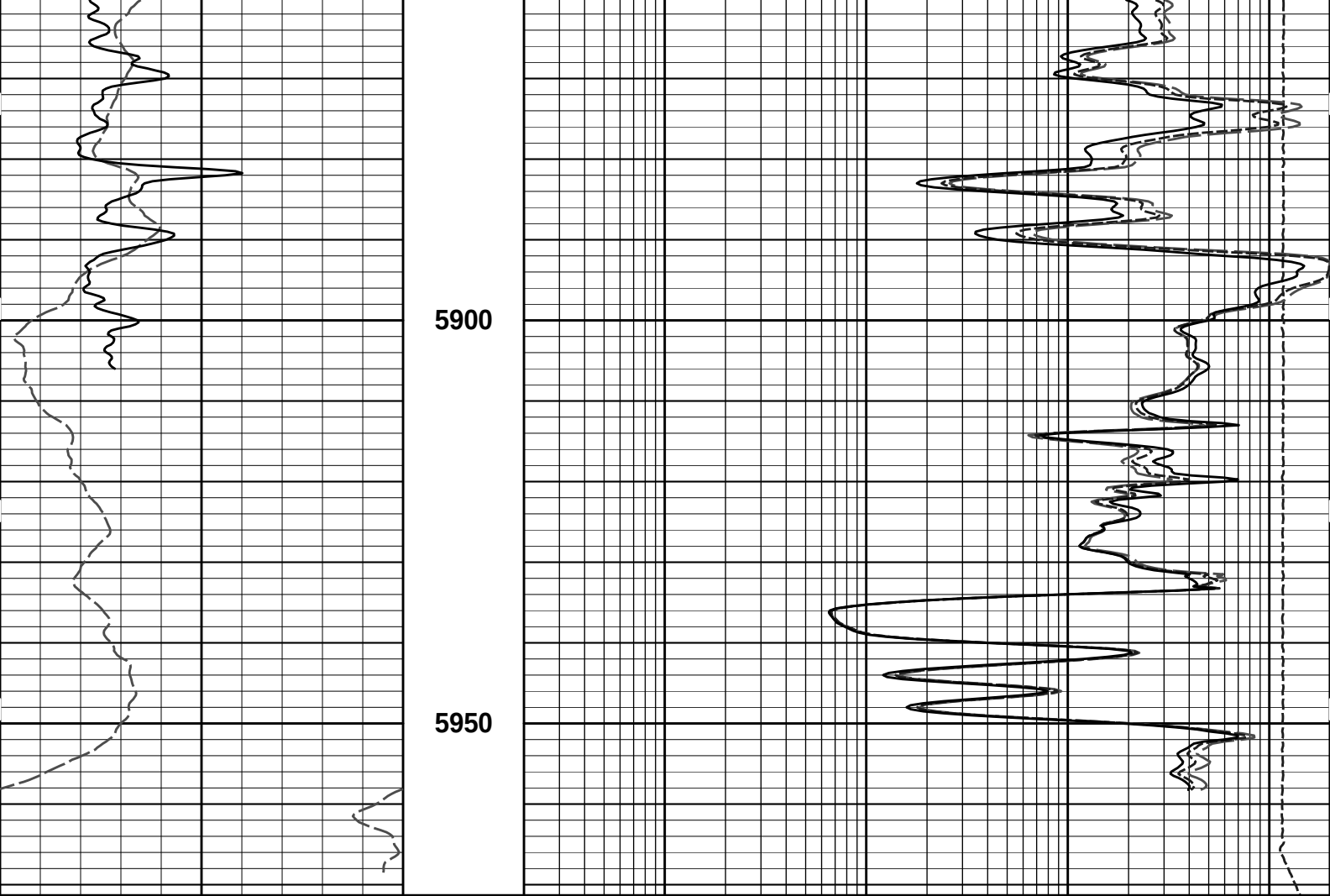
5700

5750

5800

5850





0	Gamma API	150	1 : 240 ft	15K	Tension	0
	api				pounds	
	SP		Tension Pull 10	0.2	20in Resistivity 2ft Res	2000
	-] 20 mV [+				ohm-metre	
				0.2	60in Resistivity 2ft Res	2000
					ohm-metre	
				0.2	90in Resistivity 2ft Res	2000
					ohm-metre	

HALLIBURTON

Plot Time: 13-Apr-13 23:34:05
Plot Range: 5100 ft to 5971.33 ft
Data: {ActiveWell}\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\\EDWARDS_B_1\0001 BLACK_TRIPLE\ACRT11_ACRT_5_rptx

REPEAT SECTION

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	MBDS	Master Bit Depth Scale	Master	

	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	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	6000.00	ft
	SHARED	BHT	Bottom Hole Temperature	110.0	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	
	BSAT	MBOK	Compute BCAS Results?	Yes	
	BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
	BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
	BSAT	DTFL	Delta -T Fluid	189.00	uspf
	BSAT	DTMT	Delta -T Matrix Type	Limestone	17.5

BSAT	DTM	Delta -T Matrix Type	Limestone 47.5	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP 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				
Data: EDWARDS_B_10001 BLACK_TRIPLE				IDLE Date: 13-Apr-13 18:27:07

HALLIBURTON

CALIBRATION REPORT

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION				
Tool Name:	ACRt Sonde - 90144321-e989-s		Reference Calibration Date:	26-Sep-12 10:15:19
Engineer:	RAMIRO GONZALEZ		Calibration Date:	26-Nov-12 11:33:47
Software Version:	WL INSITE R3.6.0 (Build 3)		Calibration Version:	1
Host Tool Name:	ACRt Instrument - 989			

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.03	1.05	0.95	1.03	1.05	0.95	1.03	1.05
A3 (29")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.00	1.05	0.95	1.00	1.05	0.95	1.00	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.99	1.05	0.95	0.99	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.98	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	-0.33	2	-6	-3.20	-2	-8	-5.12	-2
A2 (50")	-7	-2.34	0	-7	-4.10	0	-7	-4.49	0
A3 (29")	-27	-12.33	-9	-9	-3.22	-3	-7	-3.22	-1
A4 (17")	-180	-101.93	-60	-45	-31.74	-15	-39	-24.21	-13
A5 (10")	N/A	N/A	N/A	-150	-91.98	-50	-80	-43.90	-10
A6 (6")	N/A	N/A	N/A	175	322.96	525	90	164.40	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	1.41	2.0					
72K	1.0	1.66	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

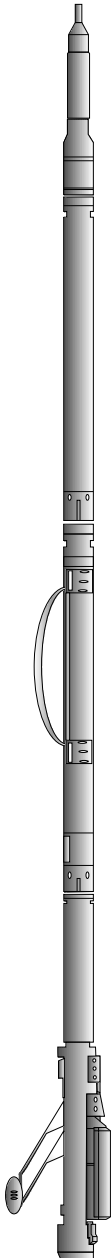
Sensor	Shop	Field	Post	Difference	Tolerance	Units
ACRt Sonde-90144321-e989-s						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

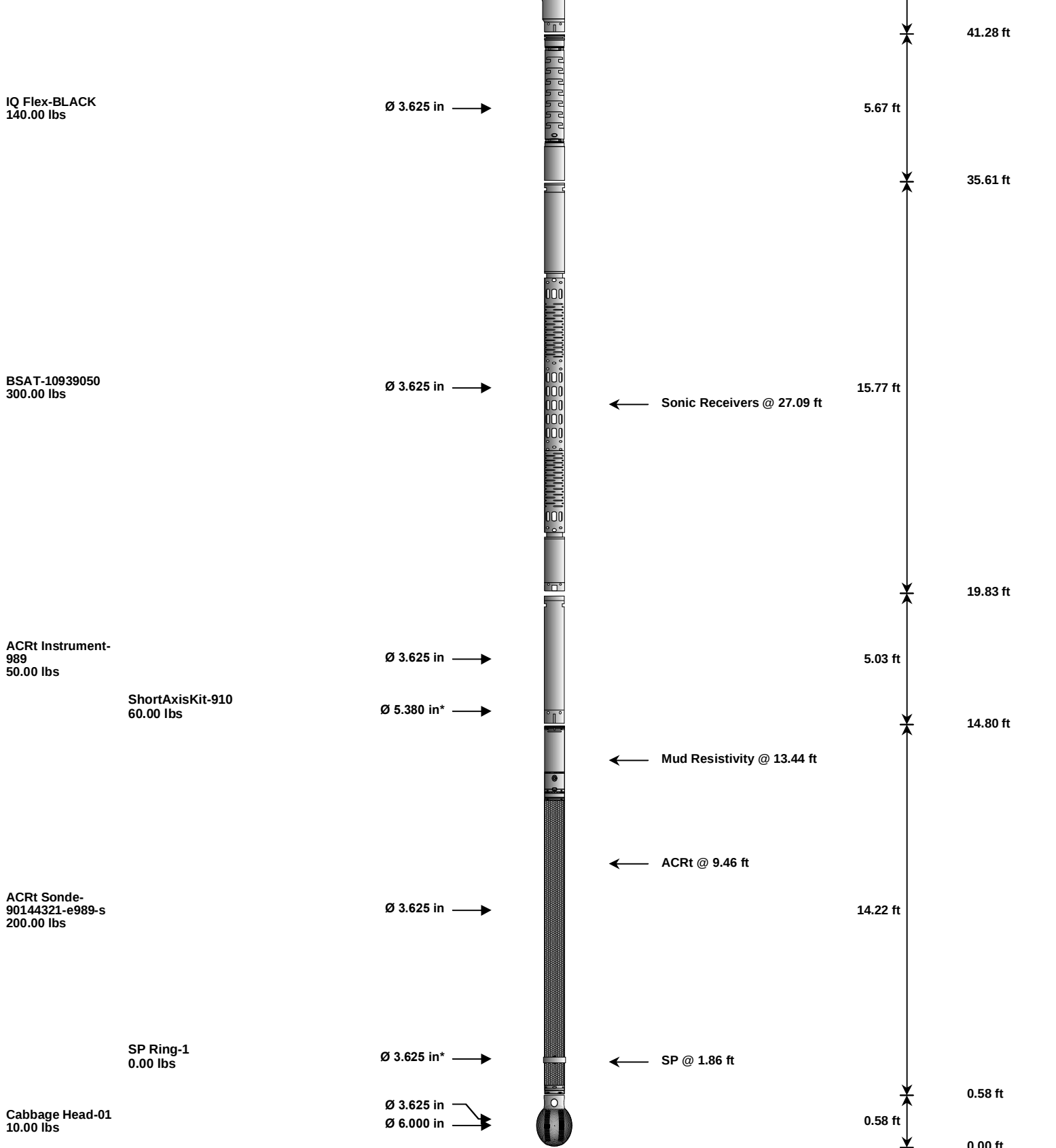
Data: EDWARDS_B_1\0001 BLACK_TRIPLE\IDLE

Date: 13-Apr-13 18:27:29

HALLIBURTON

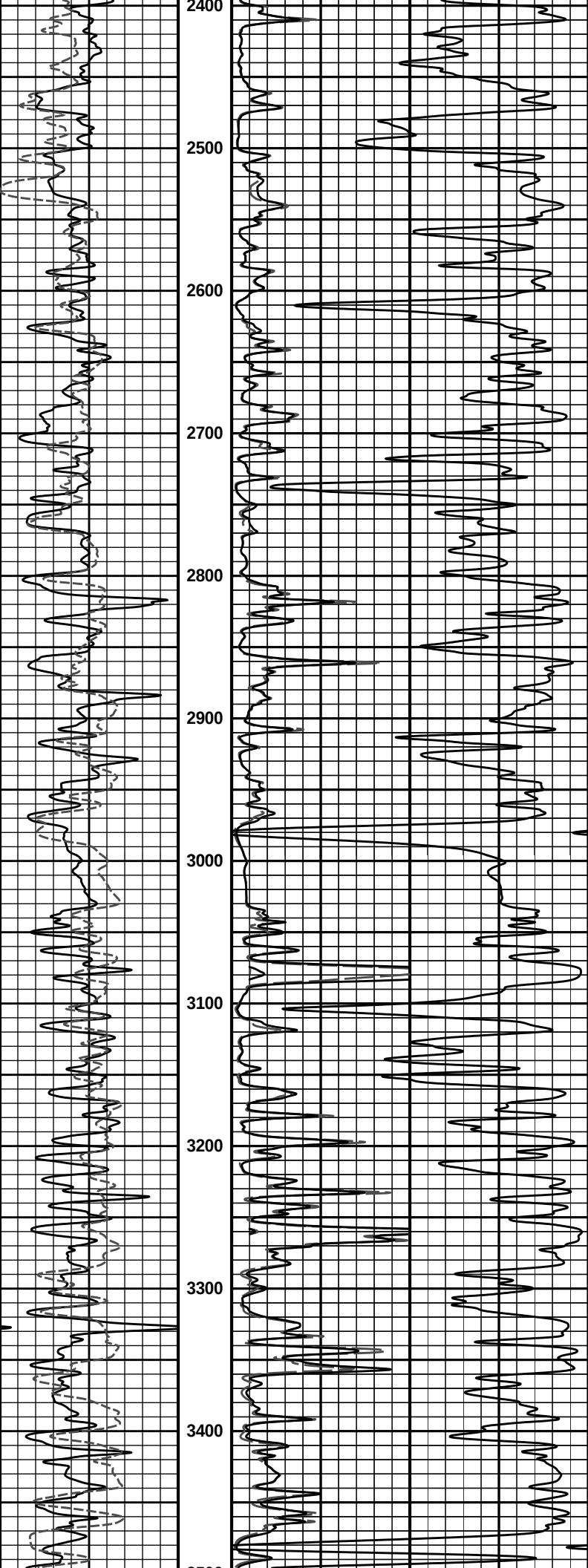
TOOL STRING DIAGRAM REPORT

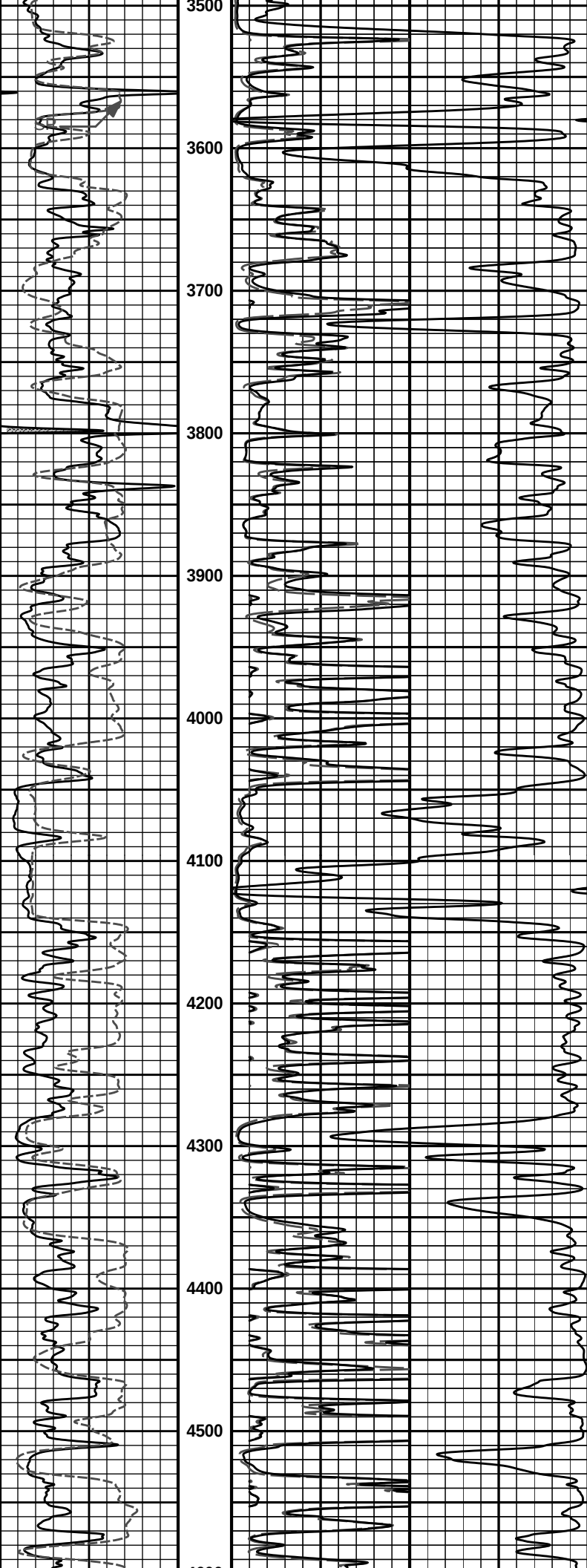
Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-590_RED 37.50 lbs		Ø 2.750 in →		← Temperature @ 73.25 ft	3.03 ft	74.27 ft
XOHD-01 20.00 lbs		Ø 2.750 in → Ø 3.625 in →			0.95 ft	71.25 ft
						70.30 ft
GTET-11013113 165.00 lbs		Ø 3.625 in →		← GammaRay @ 64.23 ft	8.52 ft	
						61.78 ft
DSNT-10993115 174.00 lbs	DSN Decentralizer-10993115 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 54.84 ft ← DSN Near @ 54.09 ft	9.69 ft	
						52.09 ft
SDLT-10960494 360.00 lbs	SDLT Pad-10865873 65.00 lbs Microlog Pad-I15M94P73 8.00 lbs	Ø 4.500 in → Ø 4.750 in* → Ø 4.750 in* →		Microlog @ 44.28 ft SDL Caliper @ 44.09 ft SDL @ 44.08 ft	10.81 ft	

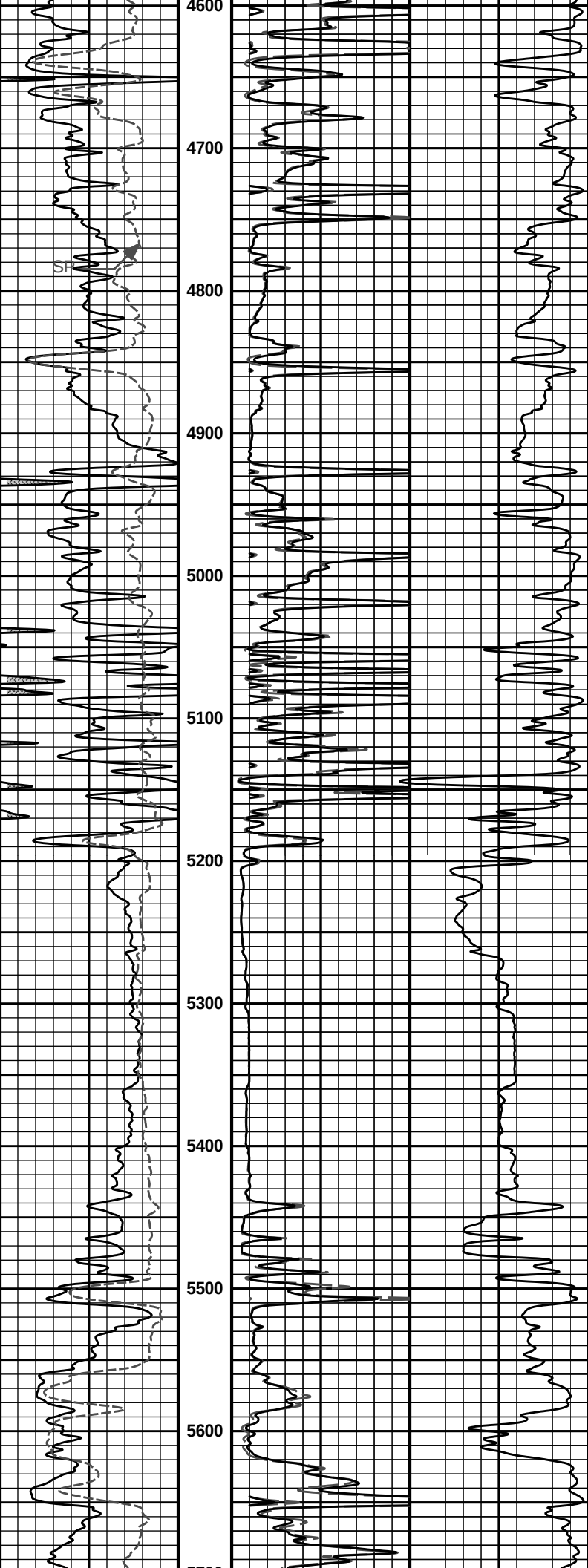


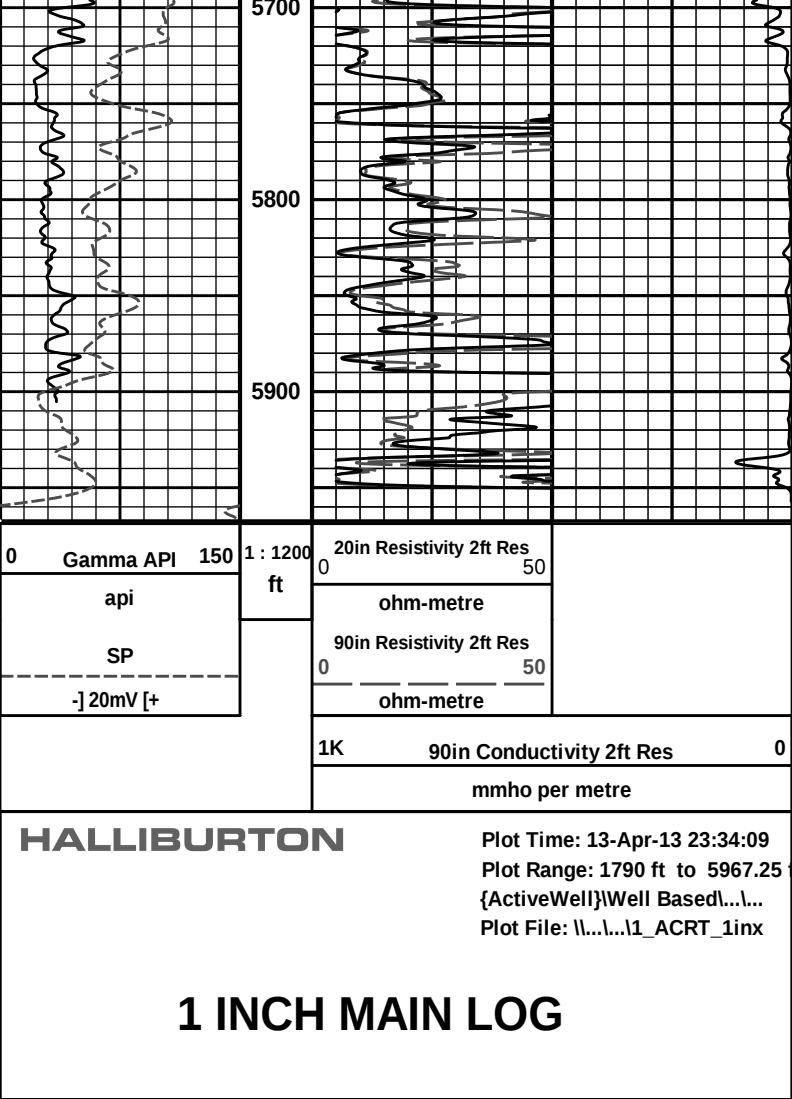
Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell		590_RED	37.50	3.03	71.25	300.00
XOHD	Hostile to Dits Cross Over		01	20.00	0.95	70.30	300.00
GTET	Gamma Telemetry Tool		11013113	165.00	8.52	61.78	60.00
DSNT	Dual Spaced Neutron		10993115	174.00	9.69	52.09	60.00
DCNT	DSN Decentralizer		10993115	6.60	5.13	* 55.42	300.00
SDLT	Spectral Density Tool		10960494	360.00	10.81	41.28	60.00
MICP	Microlog Pad		I15M94P73	8.00	1.00	* 43.78	60.00
SDLP	Density Insite Pad		10865873	65.00	2.55	* 43.49	60.00
IQF	IQ Flex tool		BLACK	140.00	5.67	35.61	300.00
BSAT	Borehole Sonic Array Tool		10939050	300.00	15.77	19.83	60.00

ACRt	Array Compensated True Resistivity Instrument Section	989	50.00	5.03	14.80	300.00
SAK	Short Axis Kit for logging short axis of a borehole.	910	60.00	1.02 *	14.80	300.00
ACRt	Array Compensated True Resistivity Sonde Section	90144321-e989-s	200.00	14.22	0.58	300.00
SP	SP Ring	1	0.00	0.25 *	1.86	300.00
CBHD	Cabbage Head	01	10.00	0.58	0.00	300.00
Total			1,596.10	74.27		
* Not included in Total Length and Length Accumulation.						
Data: EDWARDS_B_1\0001 BLACK_TRIPLE\IDLE				Date: 13-Apr-13 18:28:57		









COMPANY	OXY USA INC				
WELL	EDWARDS B-1				
FIELD	BIG BOW WEST				
COUNTY	STANTON	STATE	KANSAS		
HALLIBURTON			ARRAY COMPENSATED RESISTIVITY LOG		