

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
MICROLOG

COMPANY				SANDRIDGE									
WELL				MADISON SWD 3304 1-24									
FIELD				NA									
COUNTY				SUMNER									
STATE				KANSAS									
Permanent Datum		GL		Sect. 24		Twp. 33S		Rge. 4W		Elev. 1238.0 ft		Elev.: K.B. 1250.5 ft	
Log measured from		KB								12.5 ft above perm. Datum		D.F. 1249.5 ft	
Drilling measured from		KB										G.L. 1238.0 ft	
Date		18-Jul-13											
Run No.		ONE											
Depth - Driller		4825.00 ft											
Depth - Logger		4821.0 ft											
Bottom - Logged Interval		4737.0 ft											
Top - Logged Interval		376.0 ft											
Casing - Driller		8.625 in		@		390.0 ft						@	
Casing - Logger		387.5 ft											
Bit Size		7.875 in						@				@	
Type Fluid in Hole		WATER BASED											
Density		9.3 ppq		4.20 s/qt									
PH		10.00 pH		5.6 optm									
Source of Sample		FLOW LINE											
Rm @ Meas. Temperature		0.720 ohmm		@		89.00 degF						@	
Rmf @ Meas. Temperature		0.65 ohmm		@		85.00 degF						@	
Rmc @ Meas. Temperature		0.830 ohmm		@		85.00 degF						@	
Source Rmf		MEASURED		MEASURED									
Rm @ BHT		0.49 ohmm		@		134.0 degF						@	
Time Since Circulation		6.0 hr											
Time on Bottom		18-Jul-13 15:23											
Max. Rec. Temperature		134.0 degF		@		4821.0 ft						@	
Equipment		10549592		PVOK									
Recorded By		CORY HANSON											
Witnessed By		BRUCE											

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Service Ticket No.: N/A				API Serial No.: 15-191-22686				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		MICROLOG		RUBBER		ADJ		NA	
Rmc @ Meas. Temp.		@		@						I15M94P73							
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.		11013114		Serial No.				Serial No.		10960494		Serial No.		10993115			
Model No.		GTET		Model No.				Model No.		SDLT		Model No.		DSNT			
Diameter		3.625"		No. of Cent.				Diameter		4.75"		Diameter		3.625"			
Detector Model No.		T-102		Spacing				Log Type		GAM-GAM		Log Type		NEU-NEU			
Type		SCINT						Source Type		CS-137		Source Type		AM241BE			
Length		8"		LSA [Y/N]				Serial No.		20791B		Serial No.		DSN382			
Distance to Source		18'		FWDA [Y/N]				Strength		1.5 CI		Strength		15 CI			
LOGGING DATA																	
GENERAL				GAMMA		ACOUSTIC		DENSITY		NEUTRON							

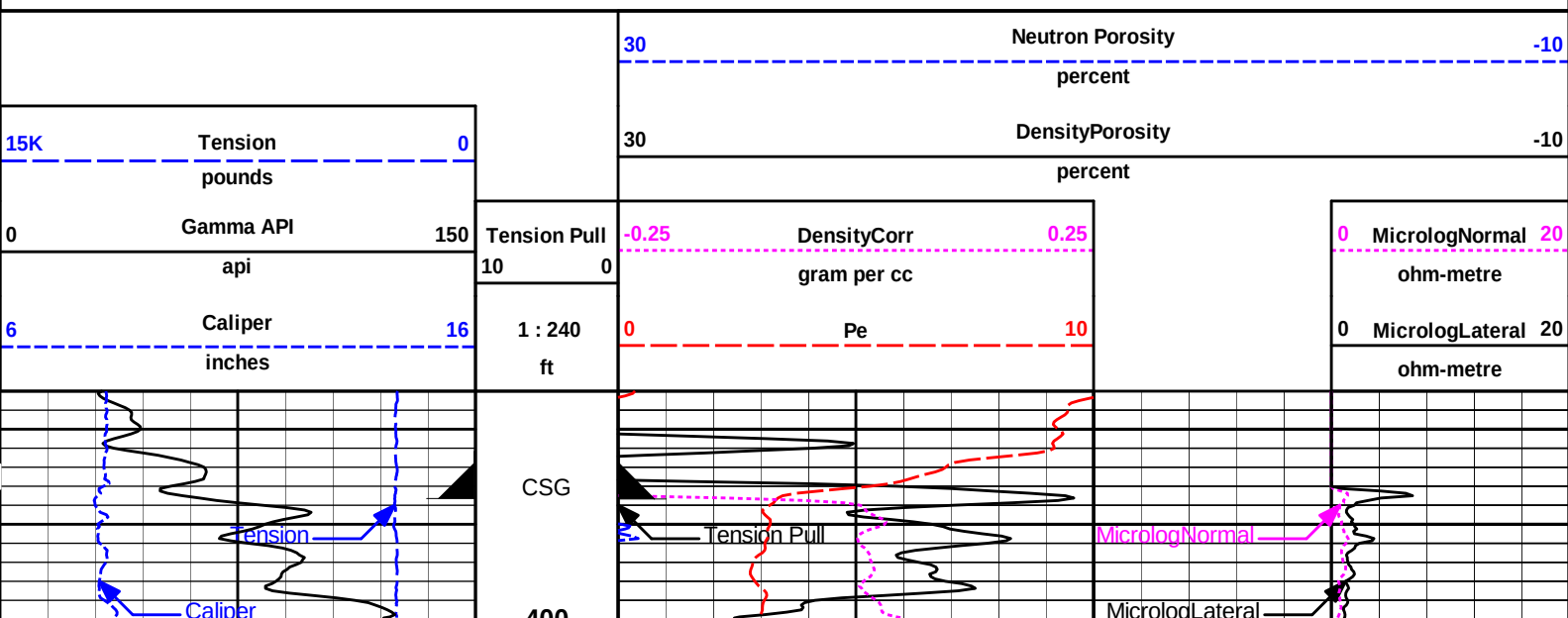
GENERAL			GAMMA		ACOUSTIC		DENSITY		NEUTRON					
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	TD	CSG	REC	0	150				30	-10	2.71	30	-10	LIME
DIRECTIONAL INFORMATION														
Maximum Deviation @									KOP @					
Remarks: GTET/CSNG/DSNT/SDLT/ICT/IDT/WSTT/ACRT RUN IN COMBINATION														
ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING														
CHLORIDES REPORTED AT 13400 PPM														
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES: PAULS VALLEY, OK														
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														

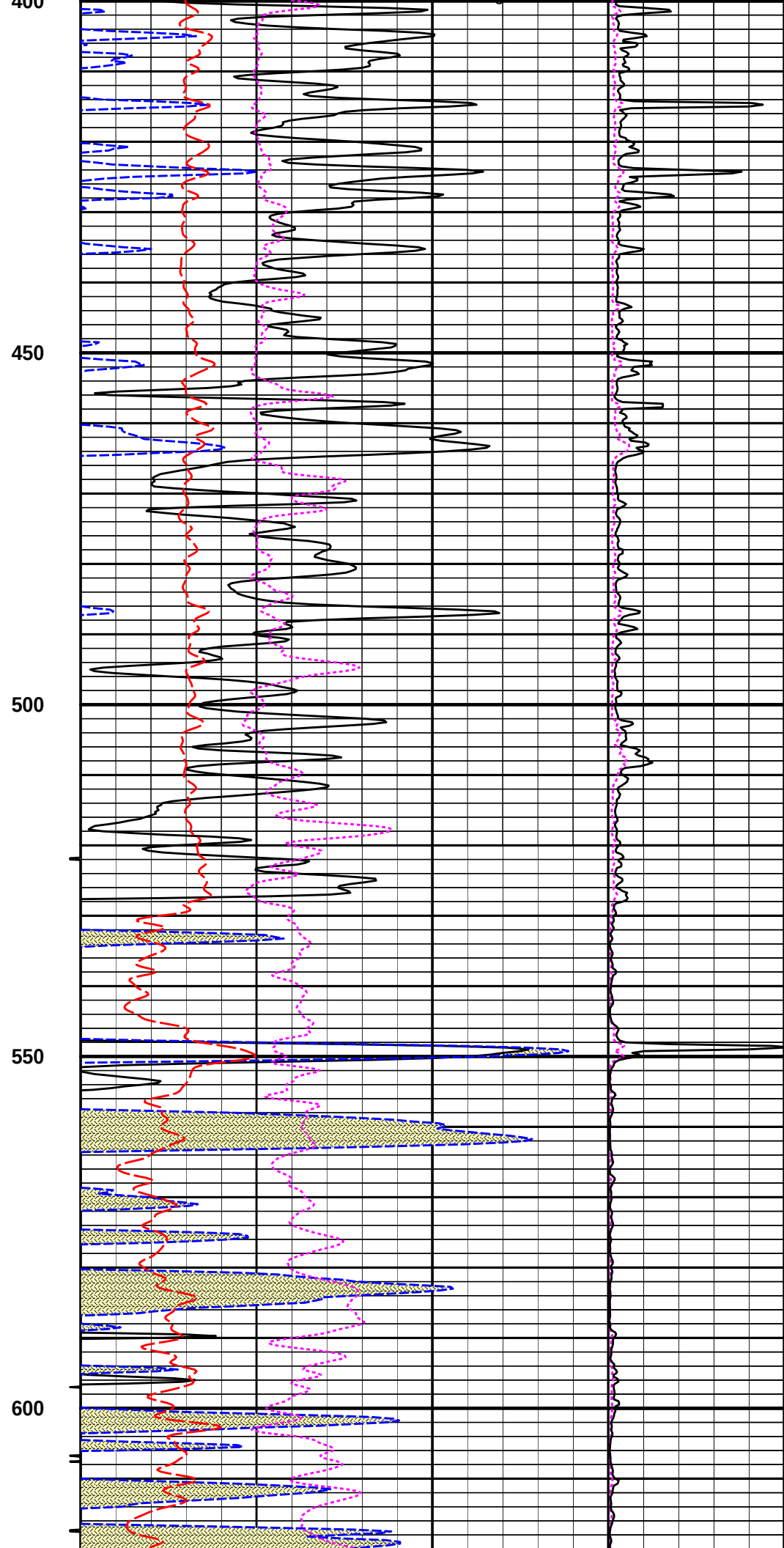
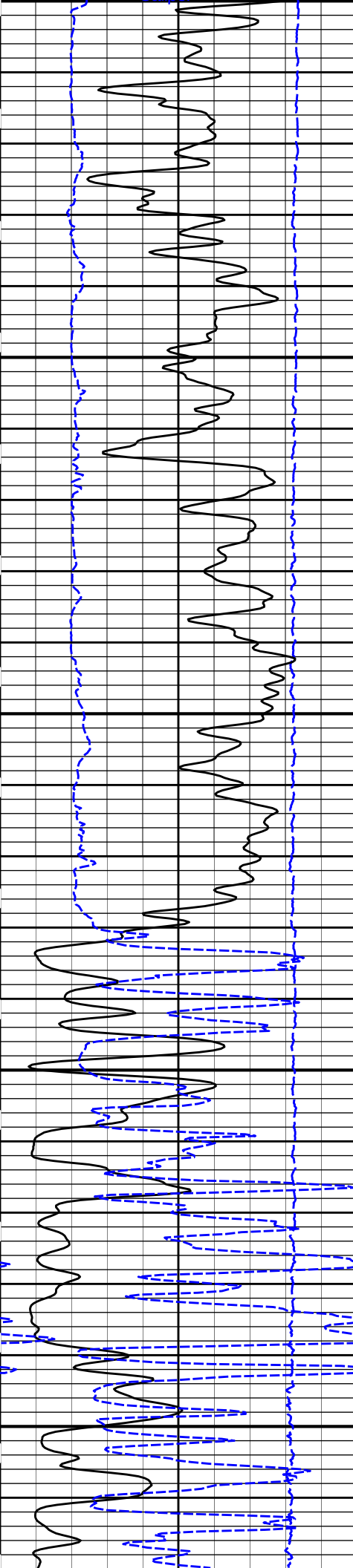
HALLIBURTON

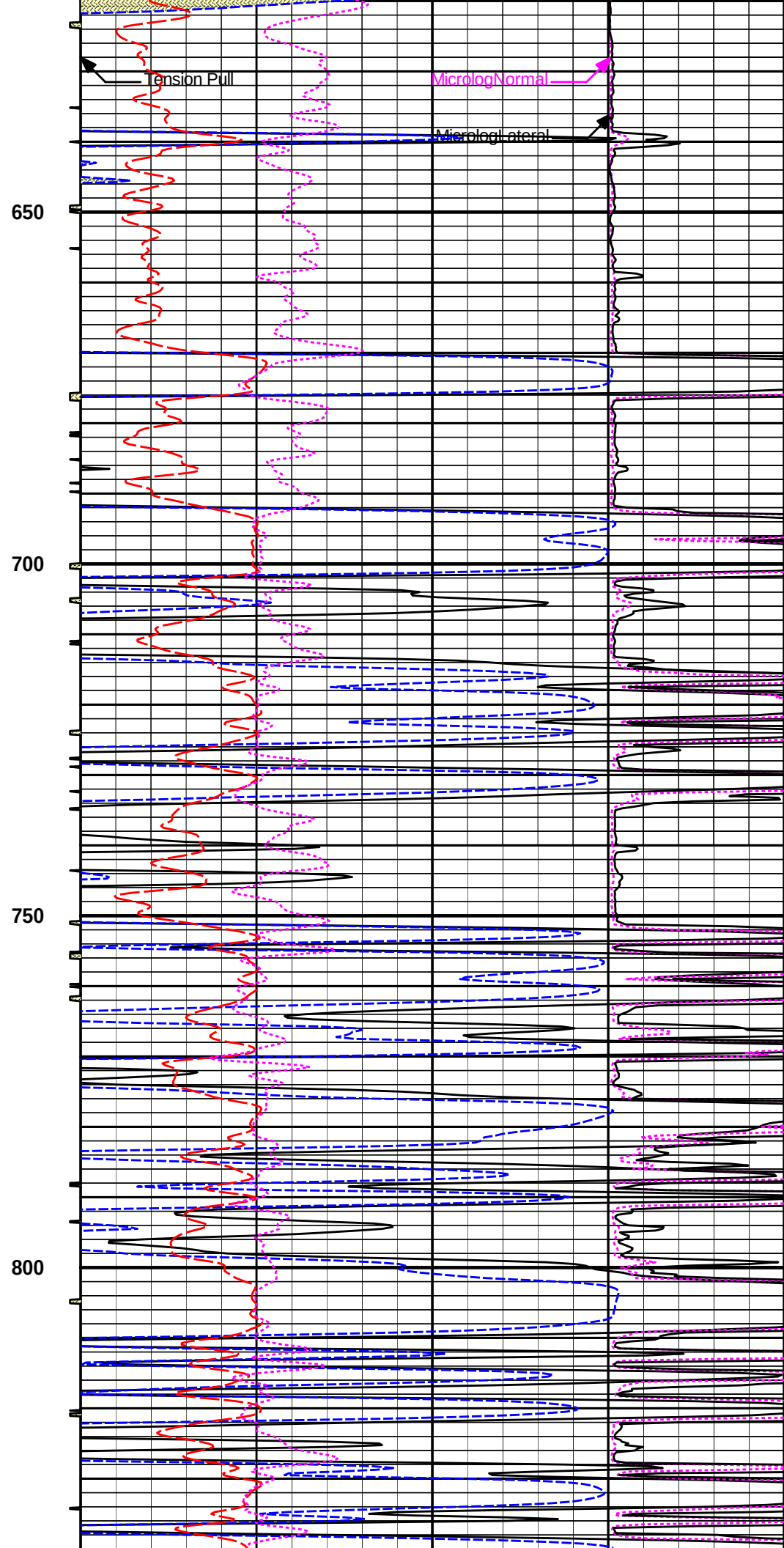
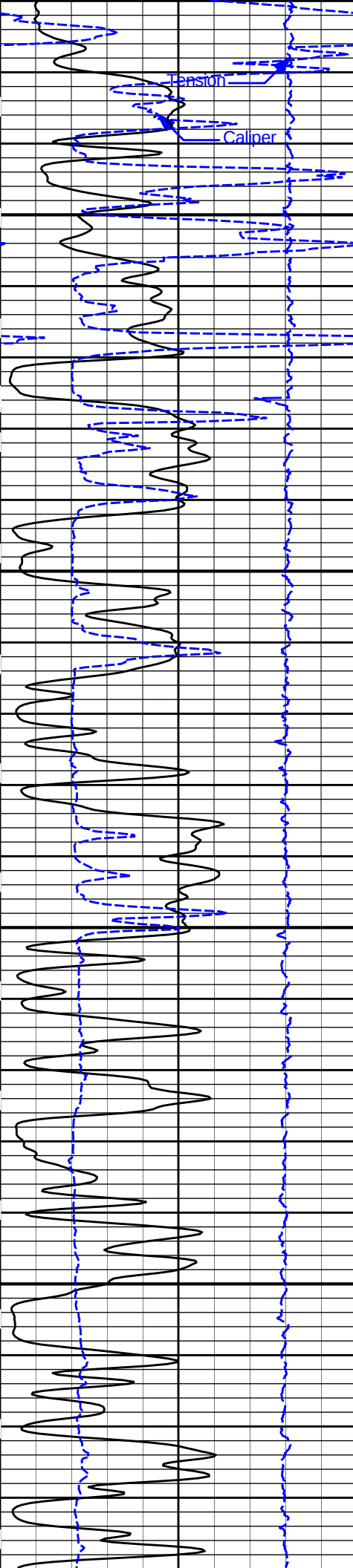
Plot Time: 18-Jul-13 21:56:10
Plot Range: 376 ft to 4823.67 ft
Data: {ActiveWell}\Well Based\MAIN_RUN_1\
Plot File: \\POROML1\ PoroMicro 5 mainx

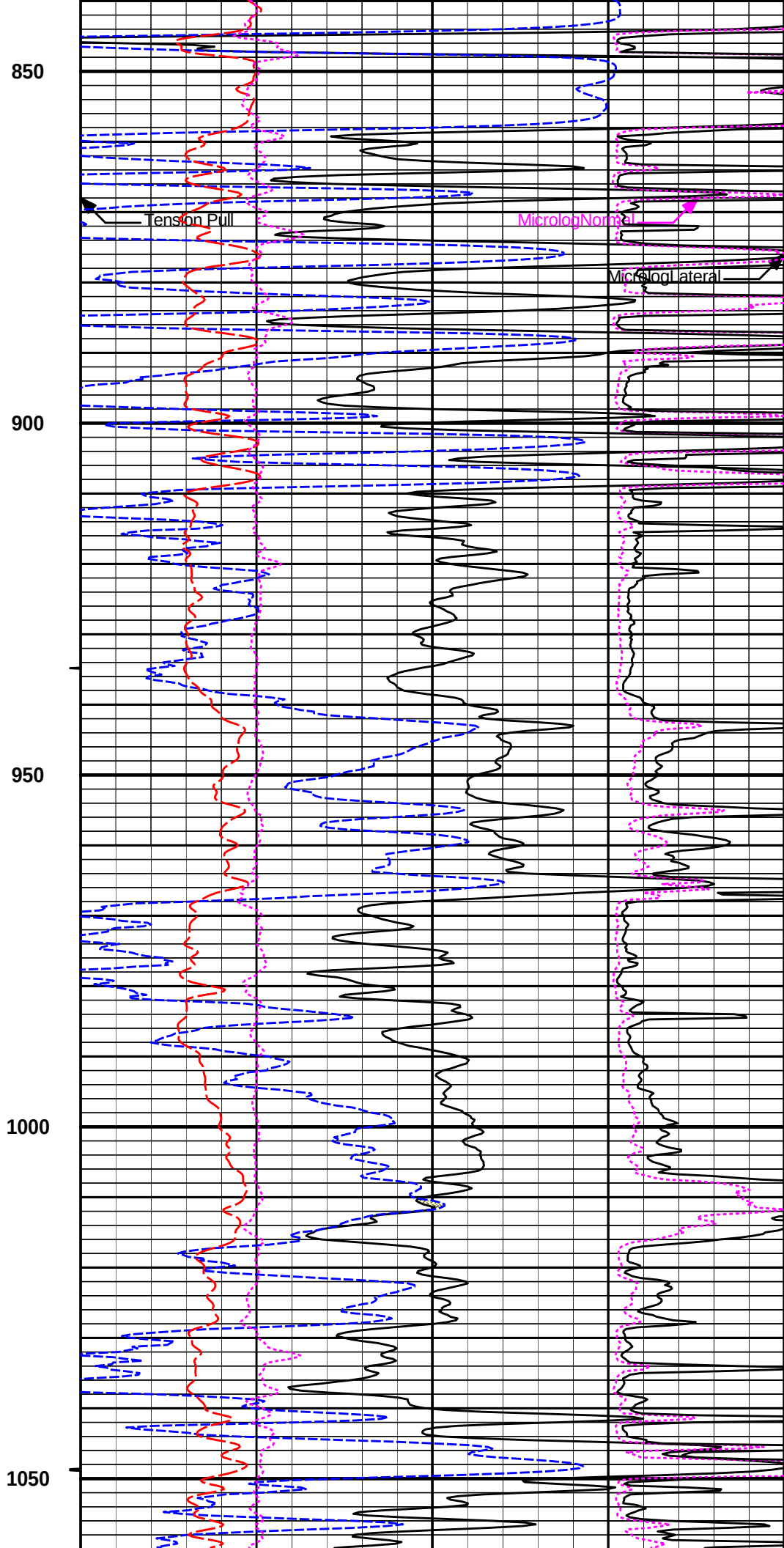
5 INCH MAIN LOG

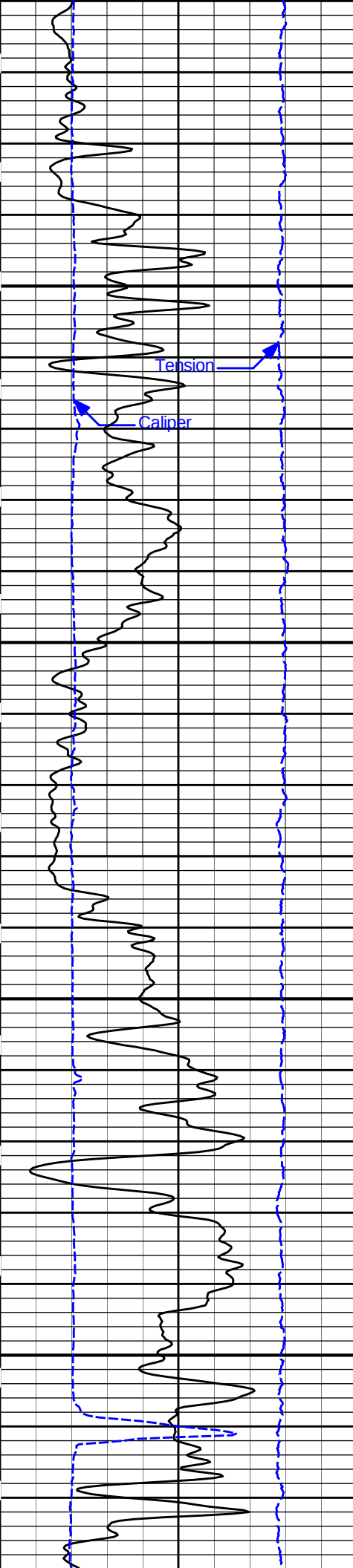
MAIN SECTION 5"=10'









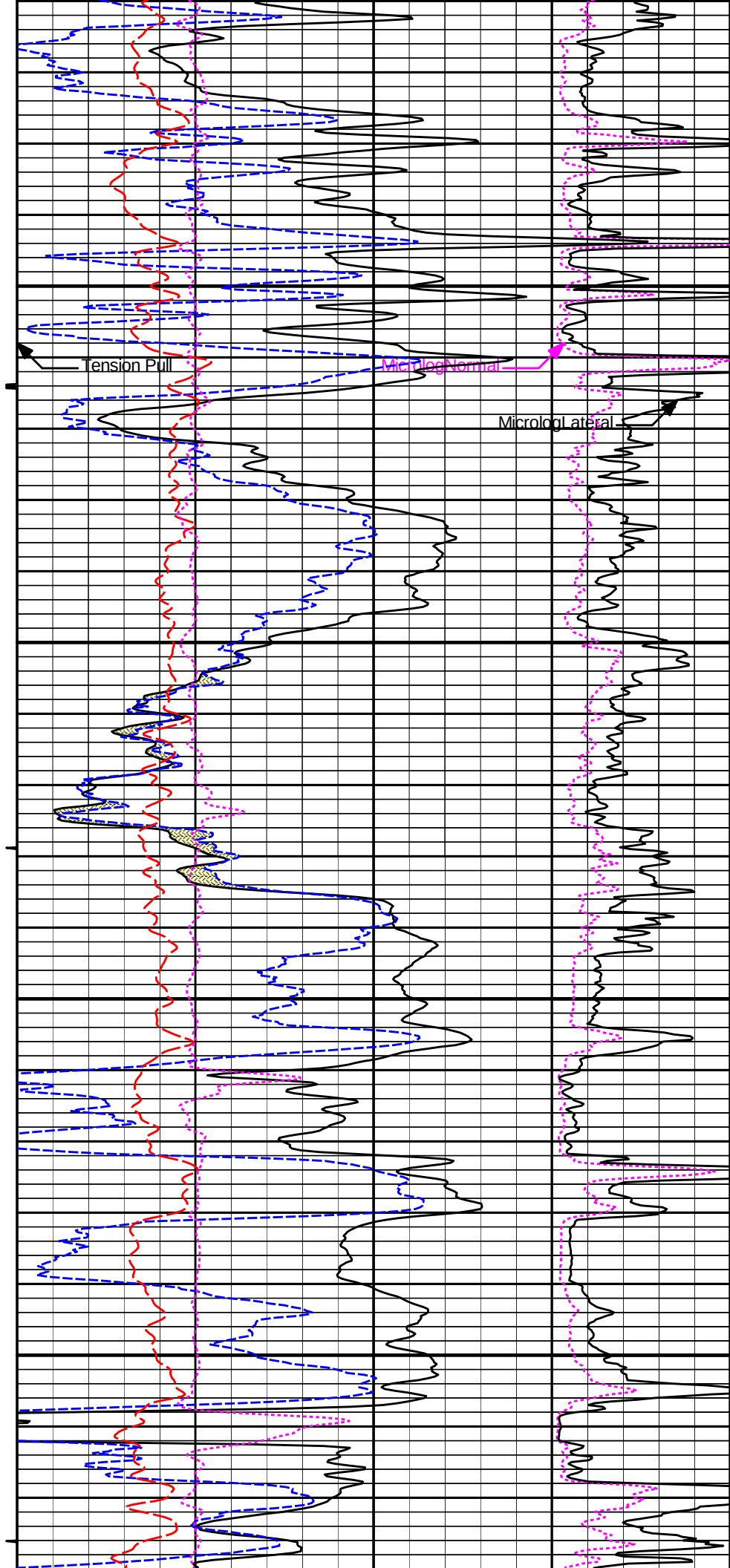


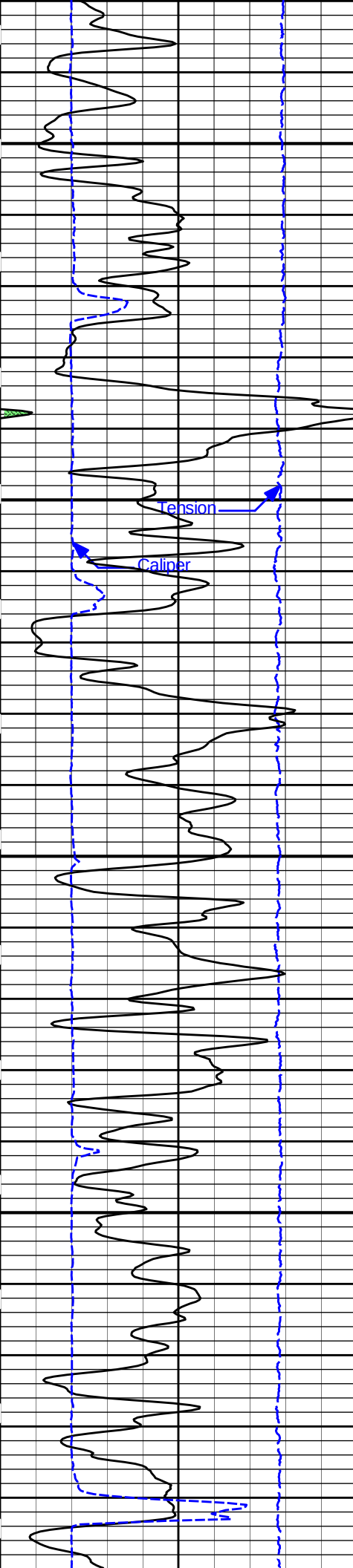
1100

1150

1200

1250





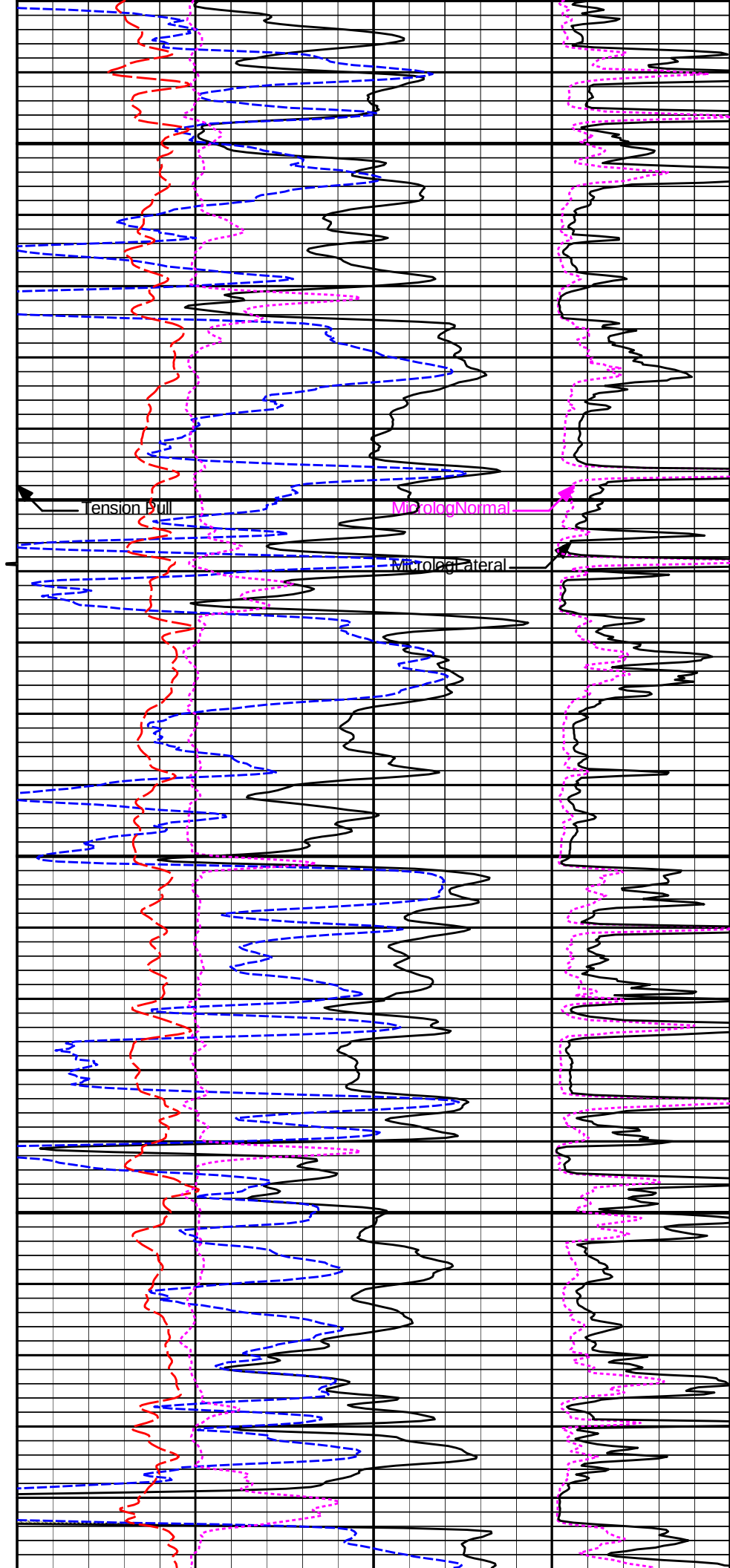
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1350

1400

1450

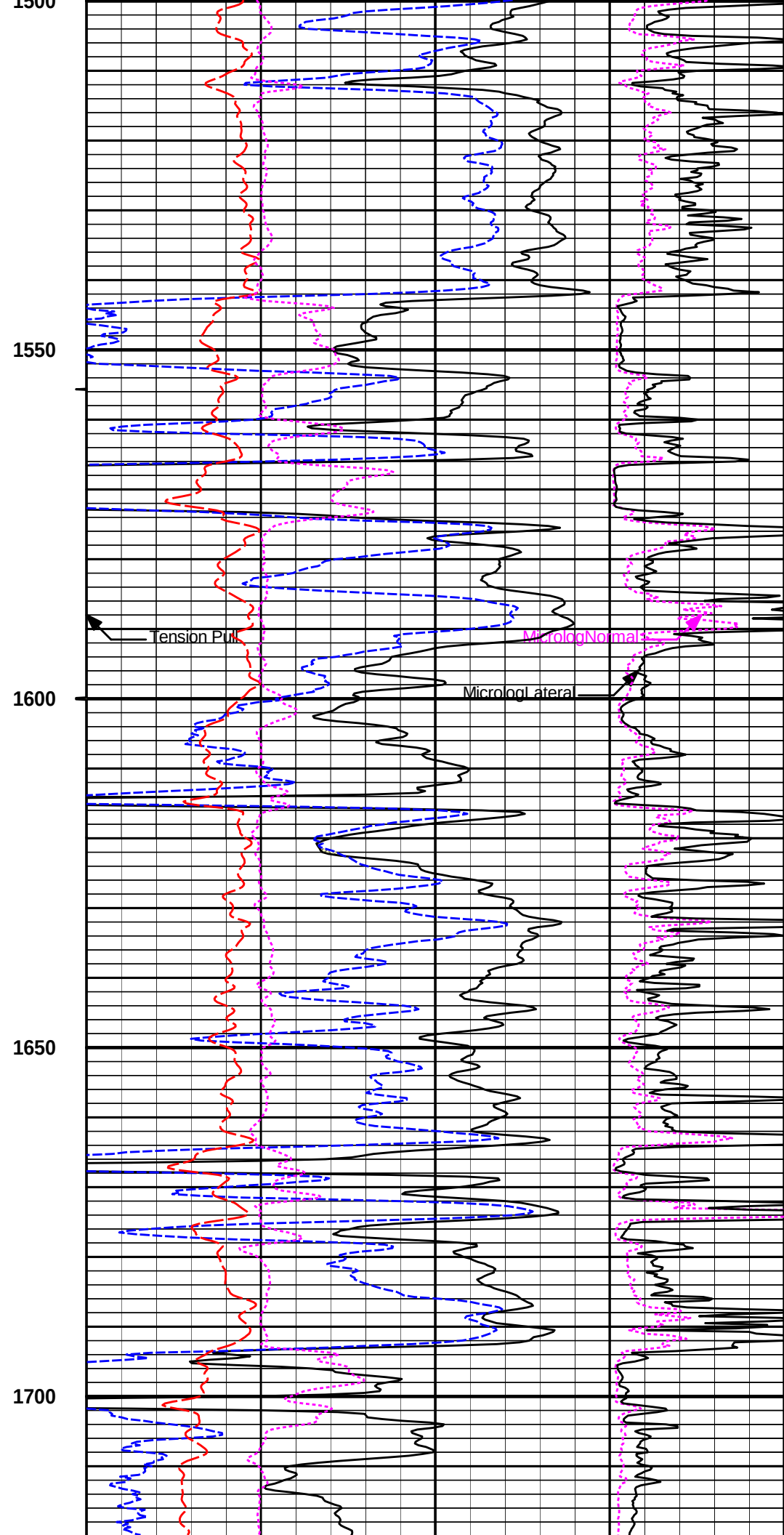
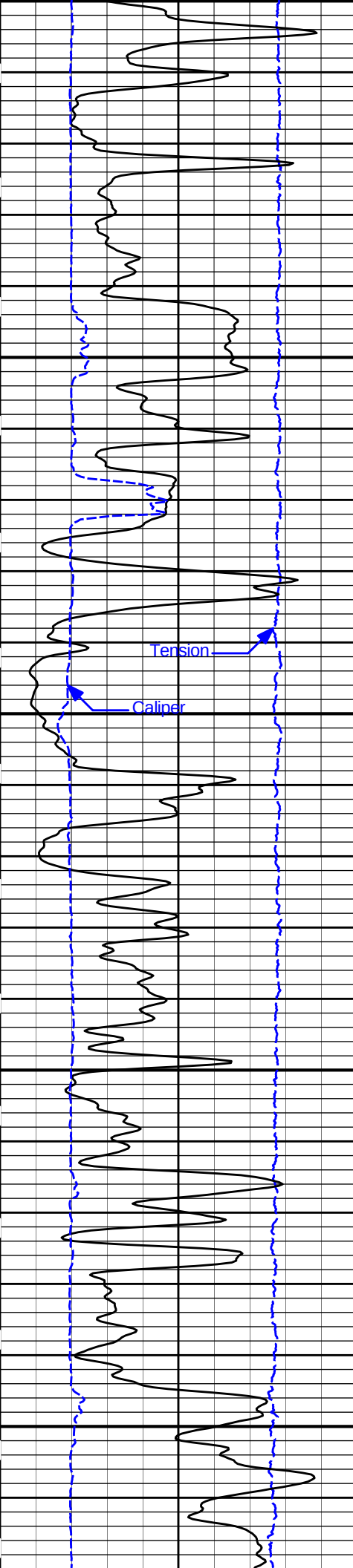
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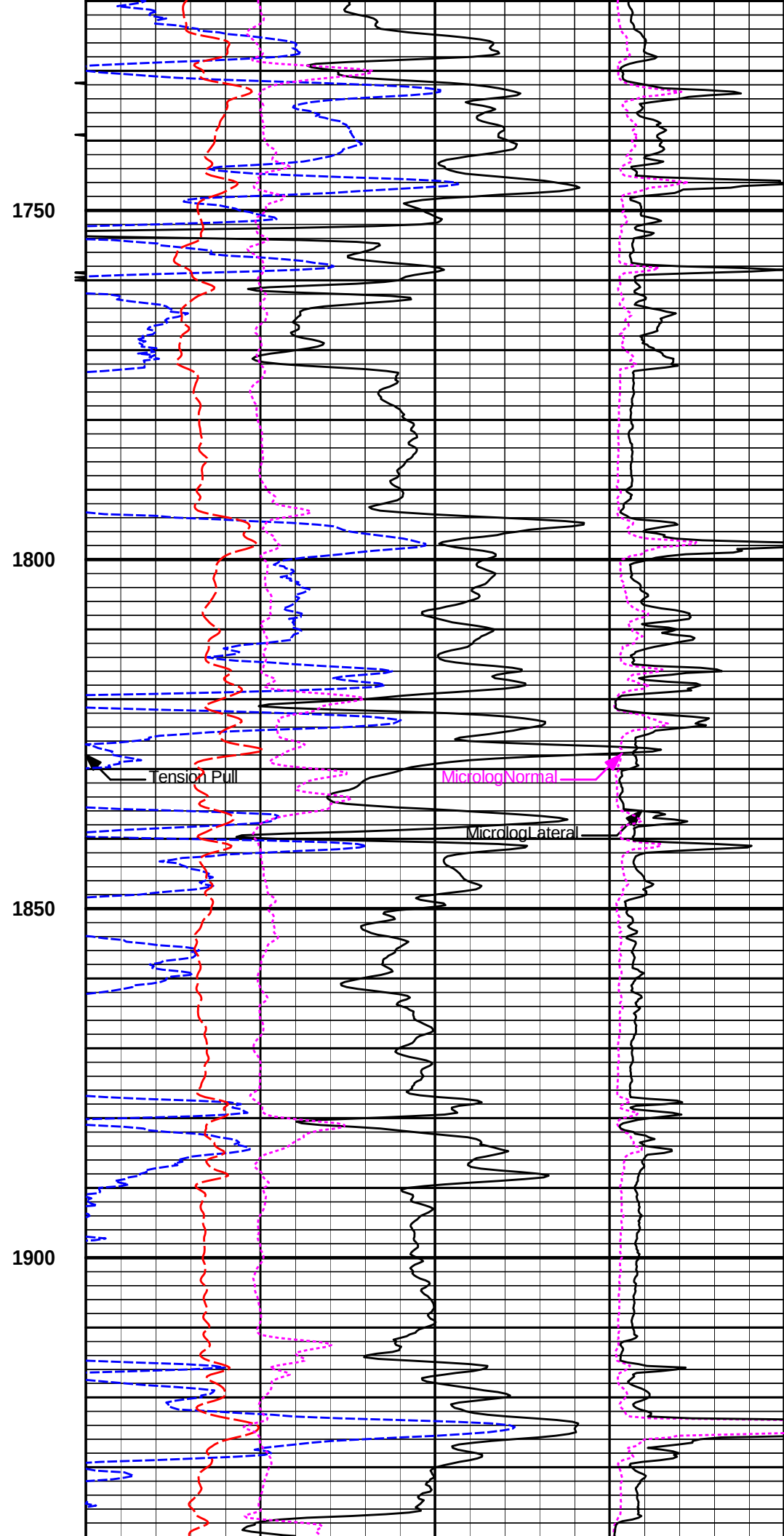
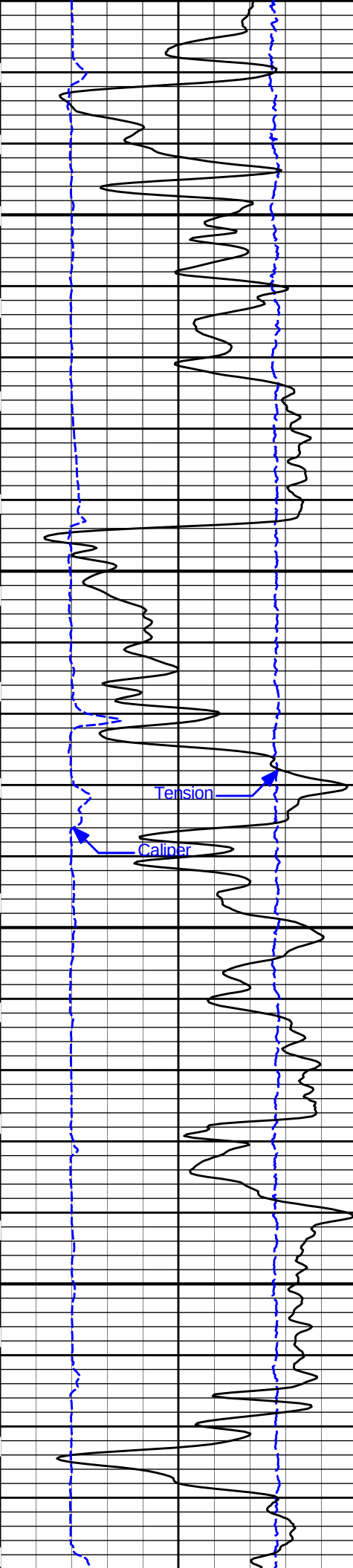


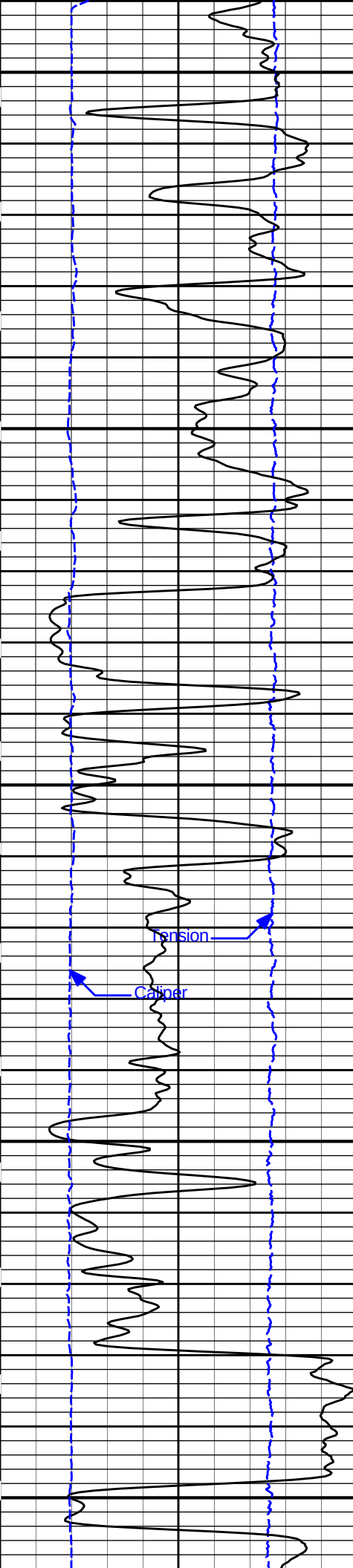
Tension Bull

Microlog Normal

Microlog Lateral







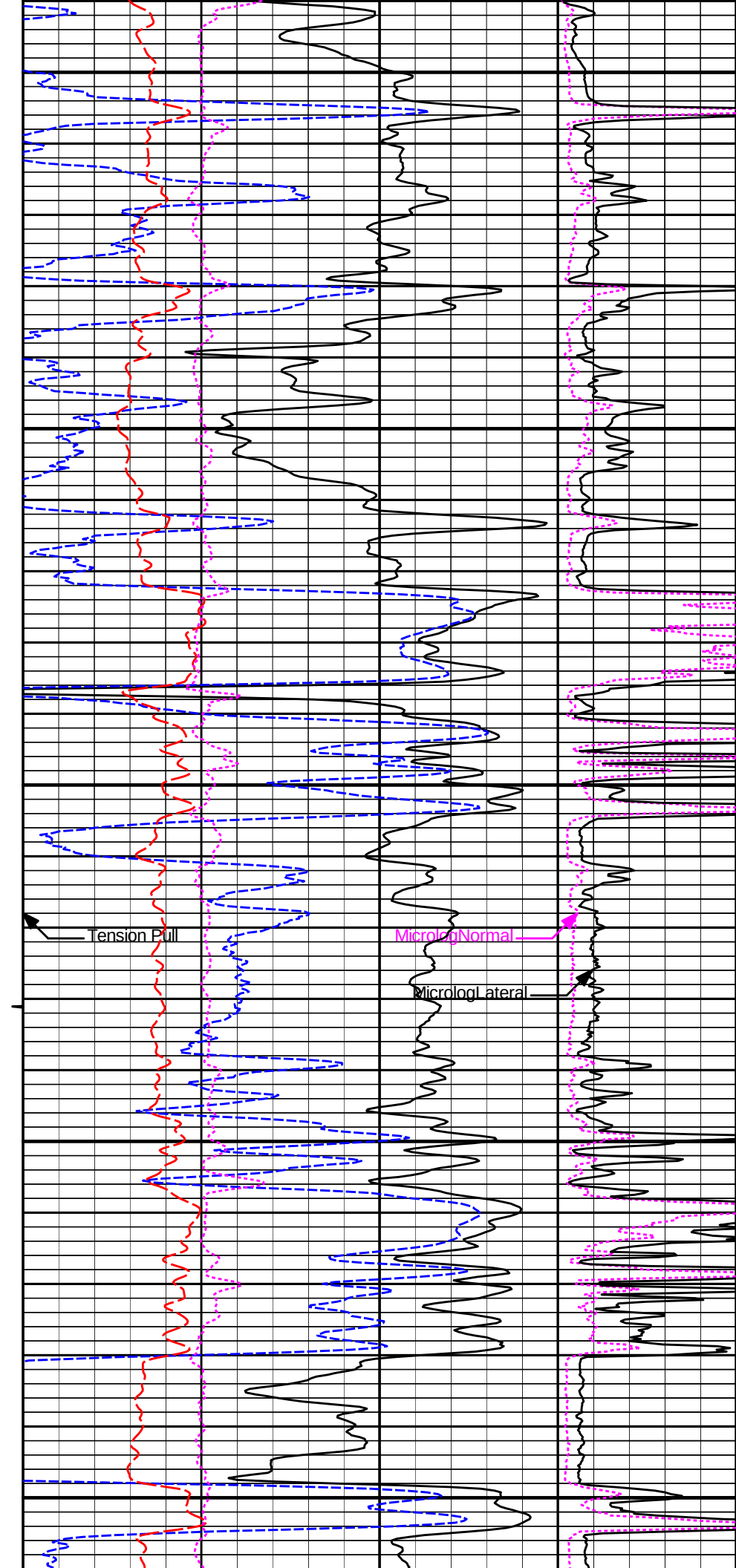
1950

2000

2050

2100

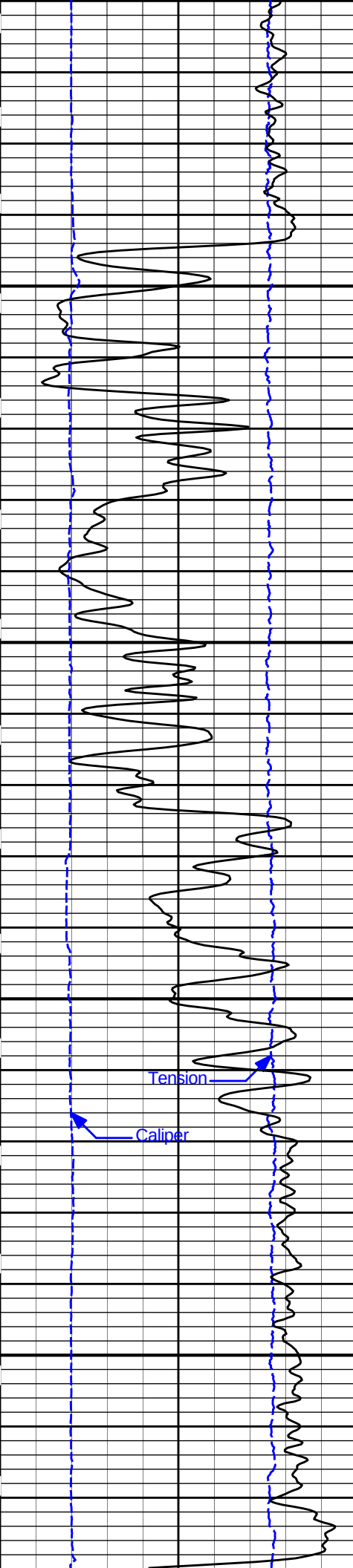
2150



Tension Pull

Microlog Normal

Microlog Lateral

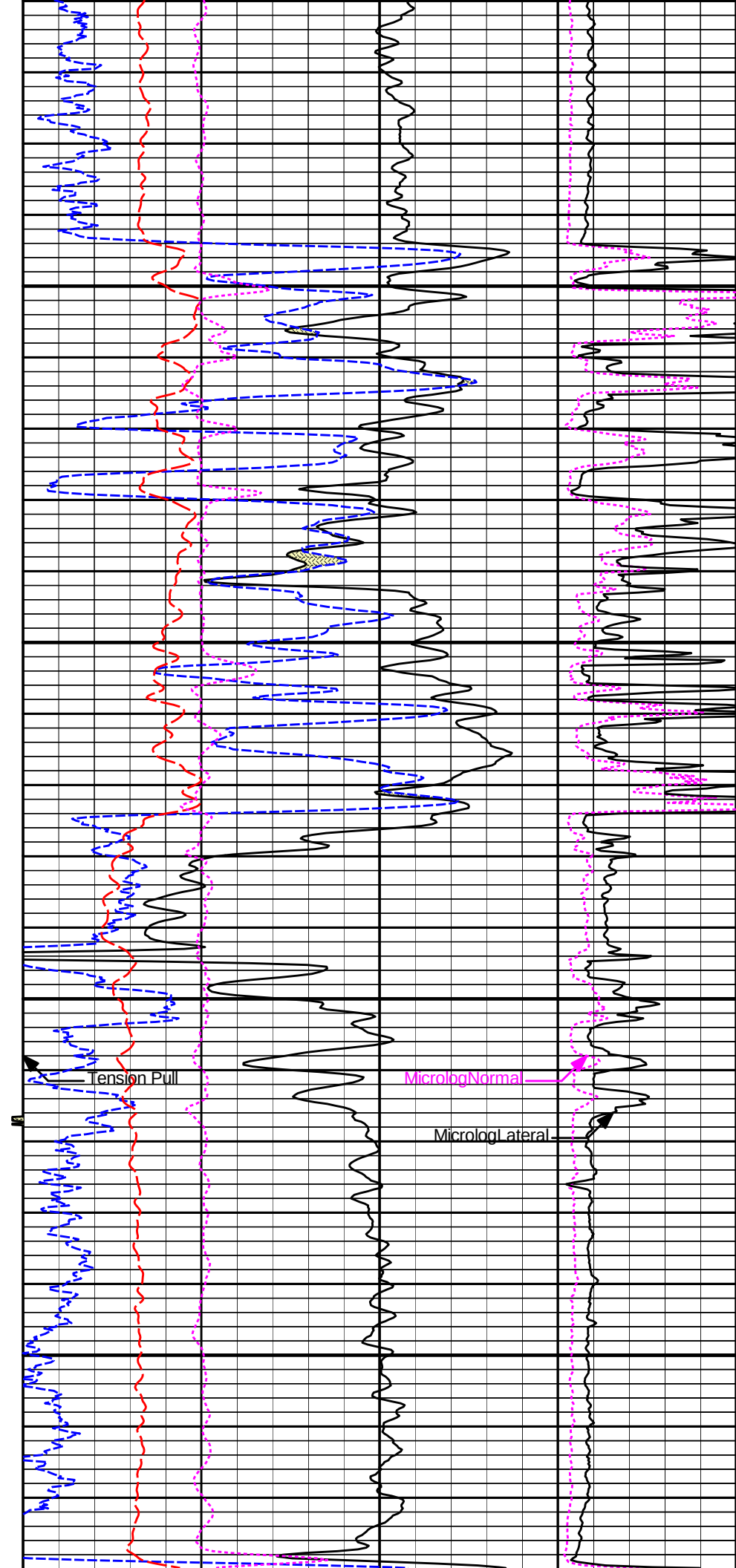


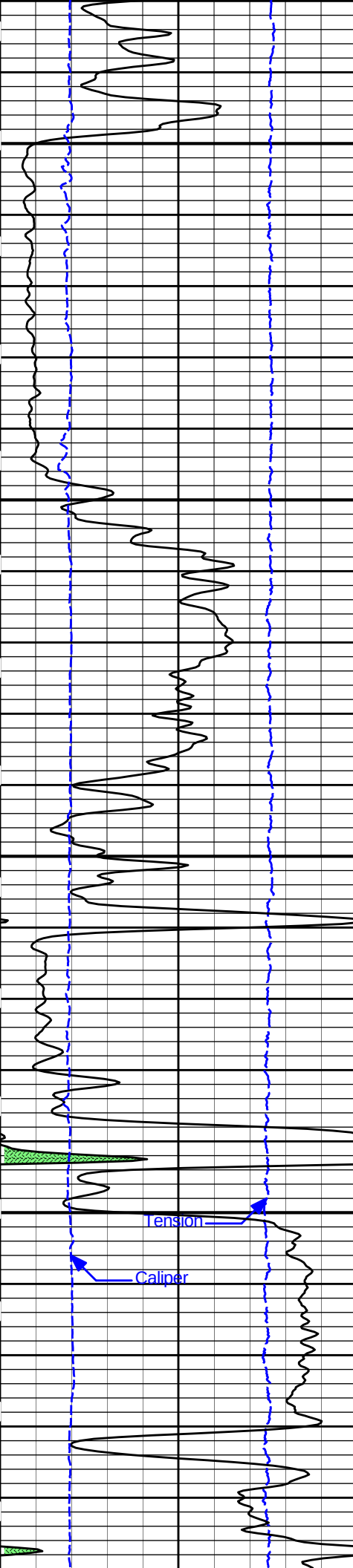
2200

2250

2300

2350





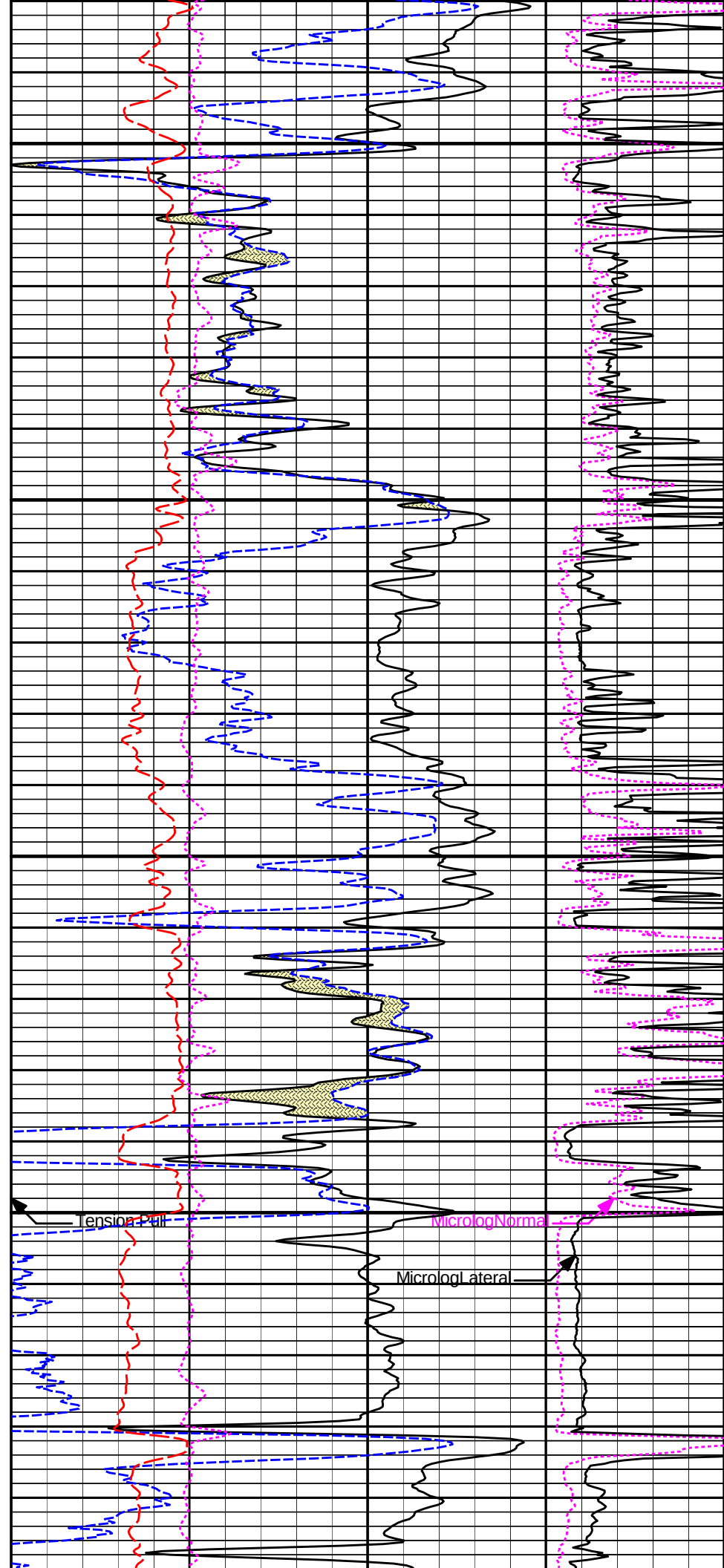
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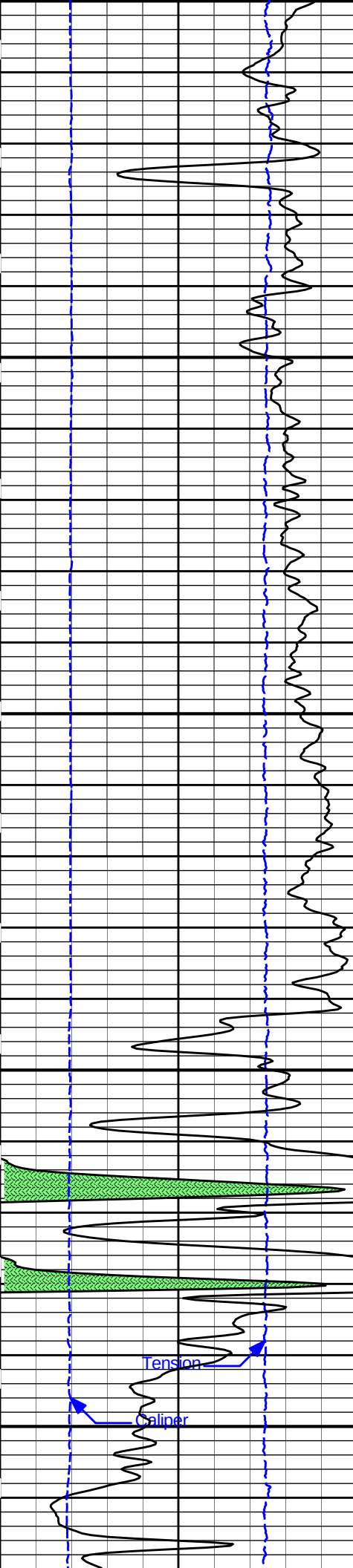
2450

2500

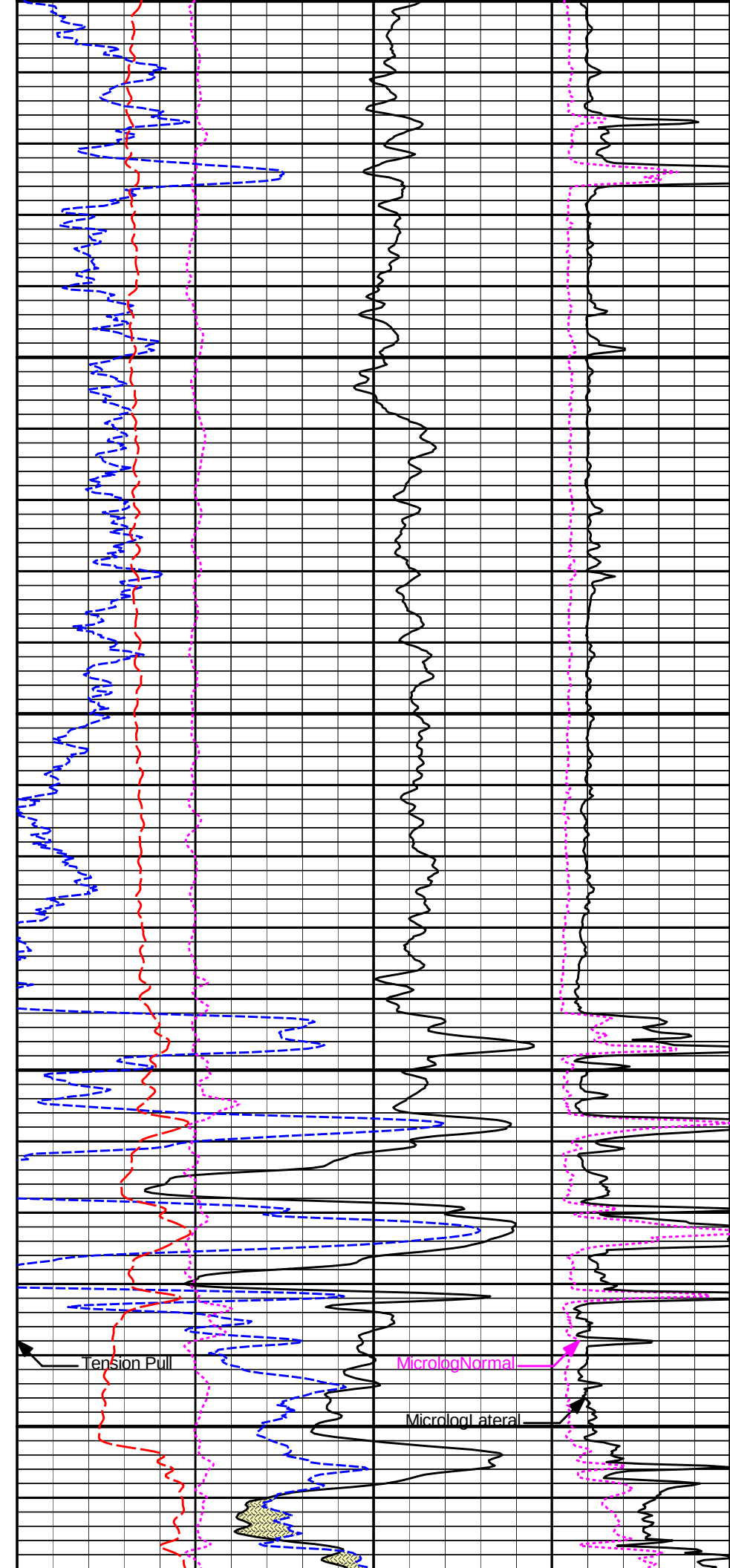
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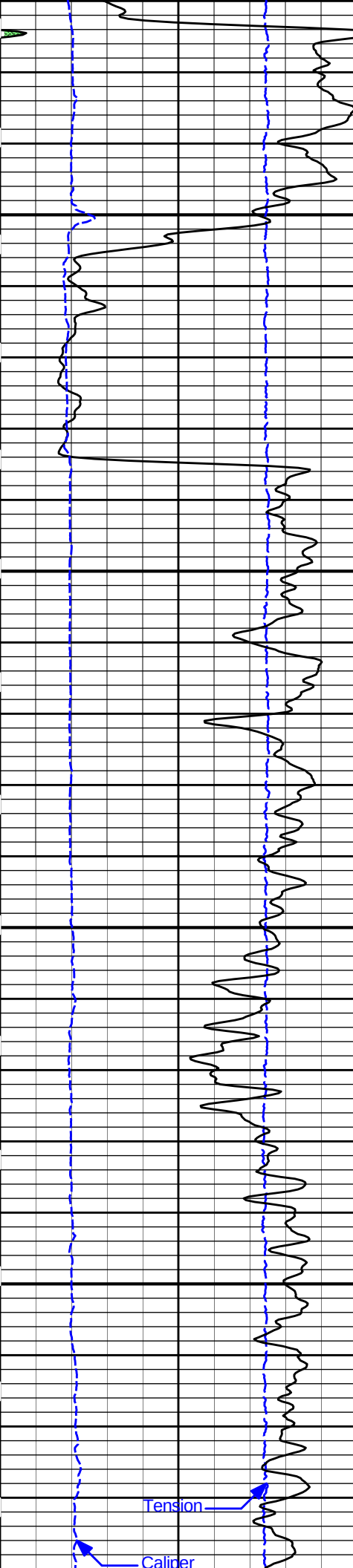
2600





2600
2650
2700
2750
2800





2850

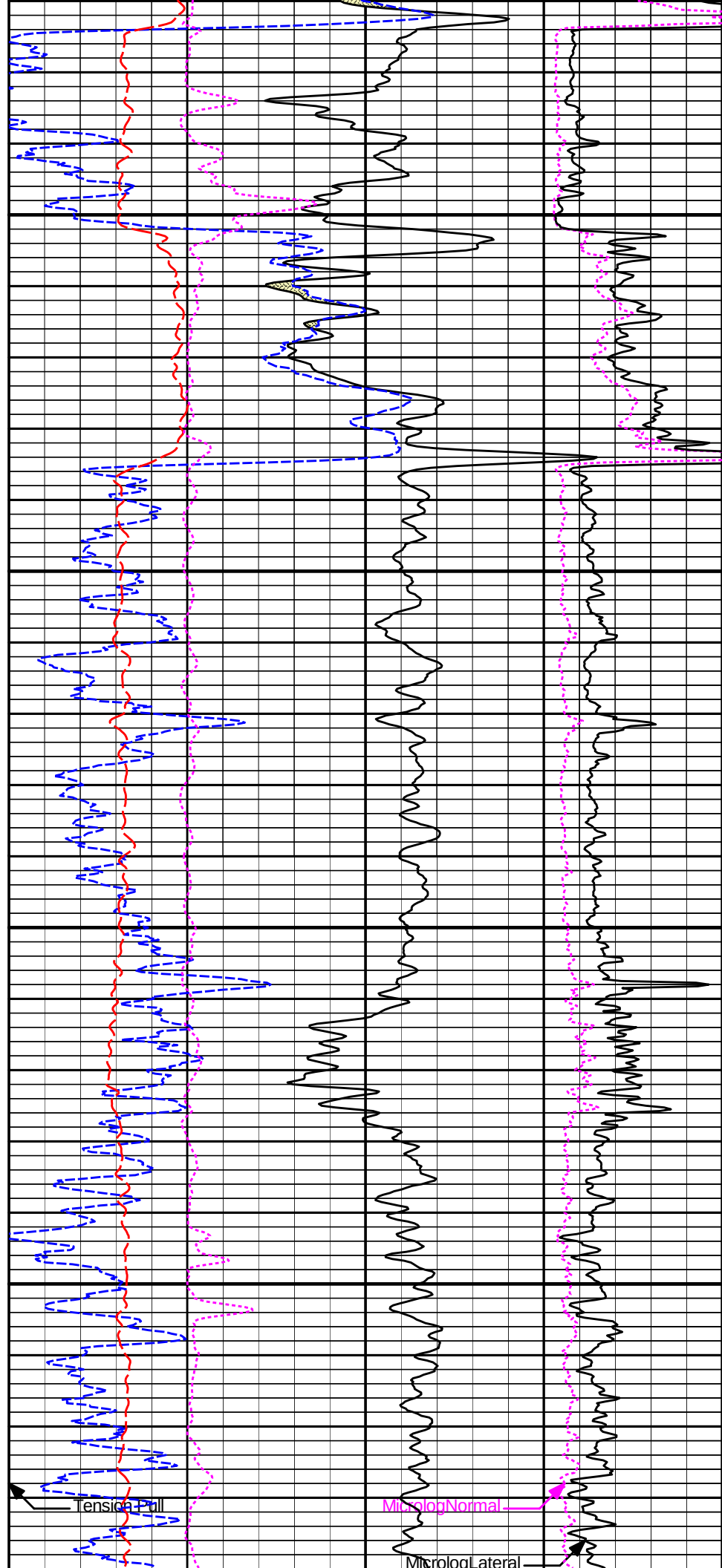
2900

2950

3000

Tension

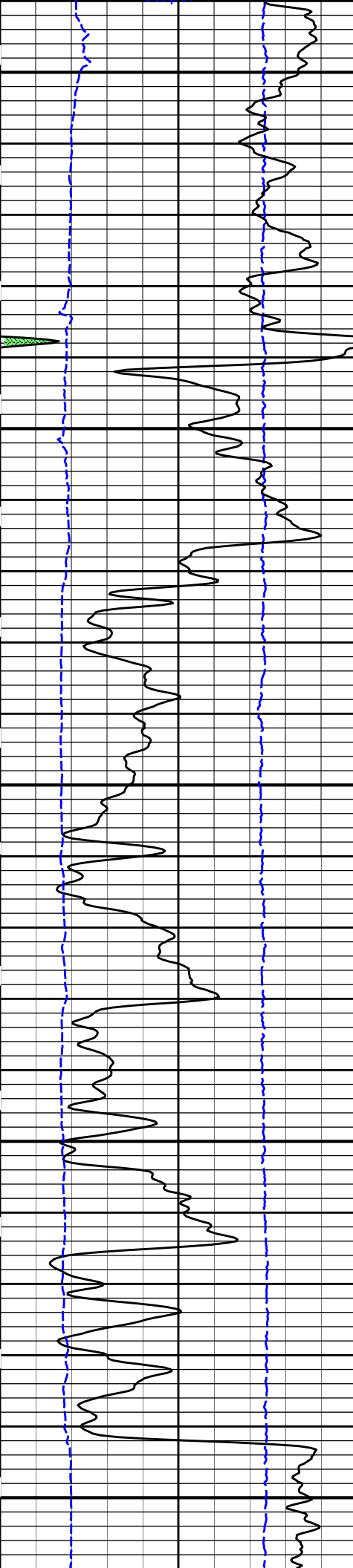
Caliper



Tension Pull

Microlog Normal

Microlog Lateral



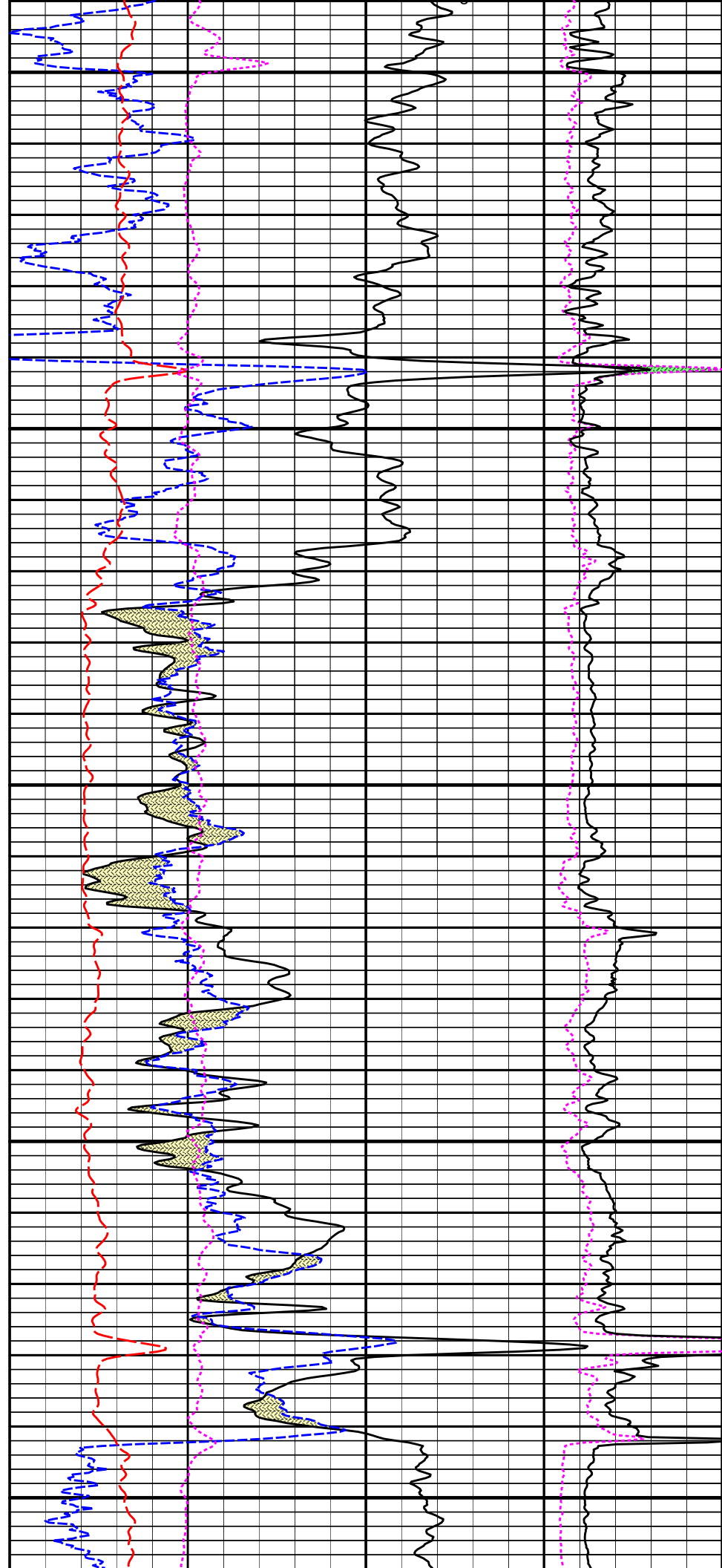
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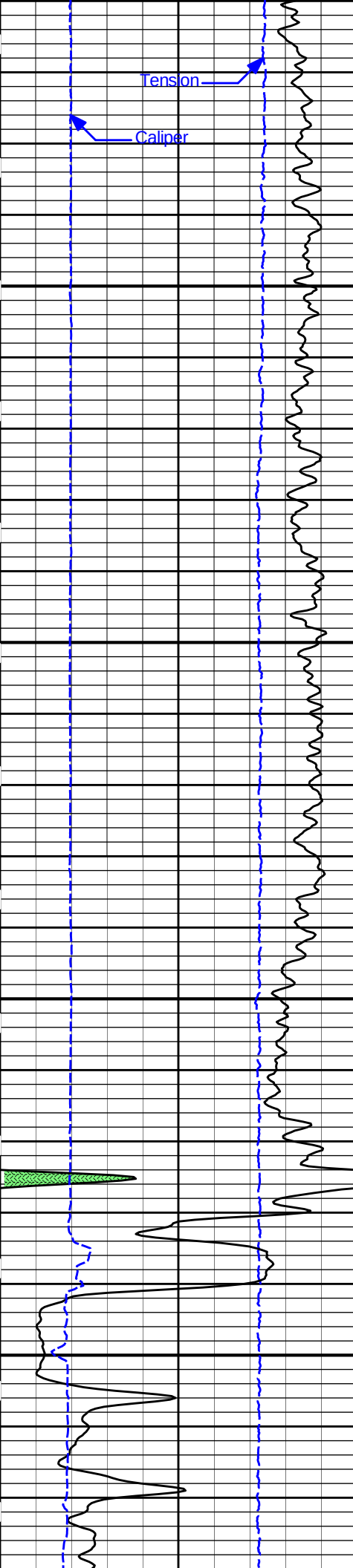
3100

3150

3200

3250



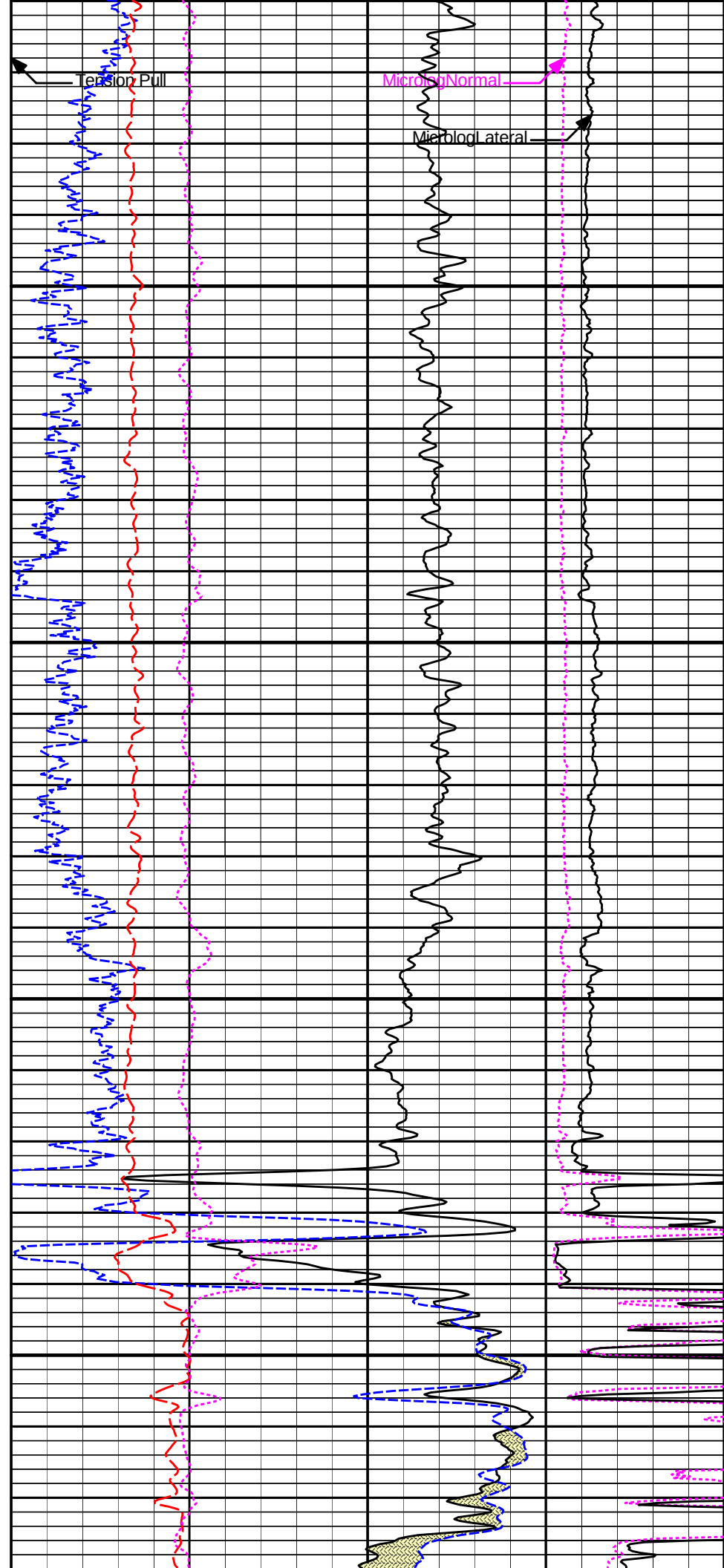


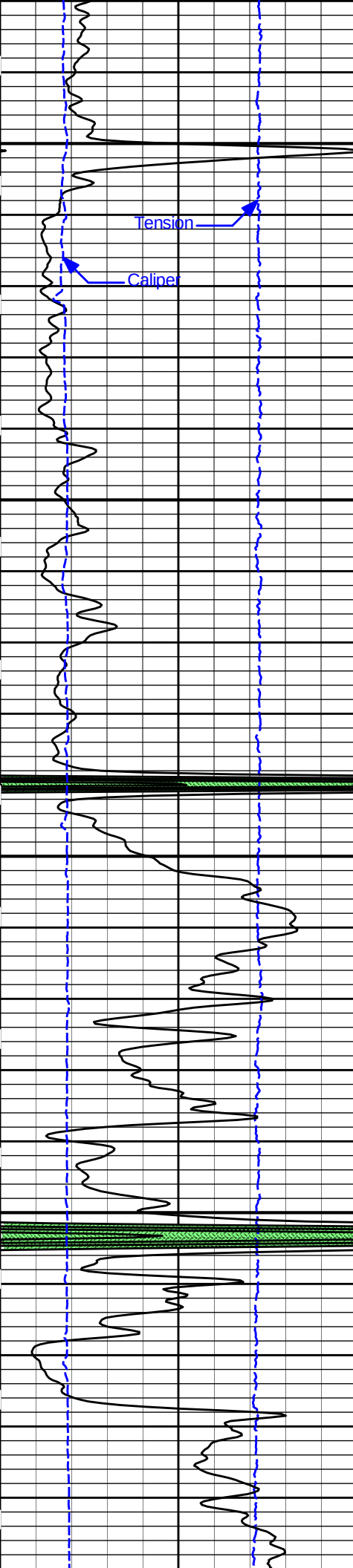
3300

3350

3400

3450





3500

Tension

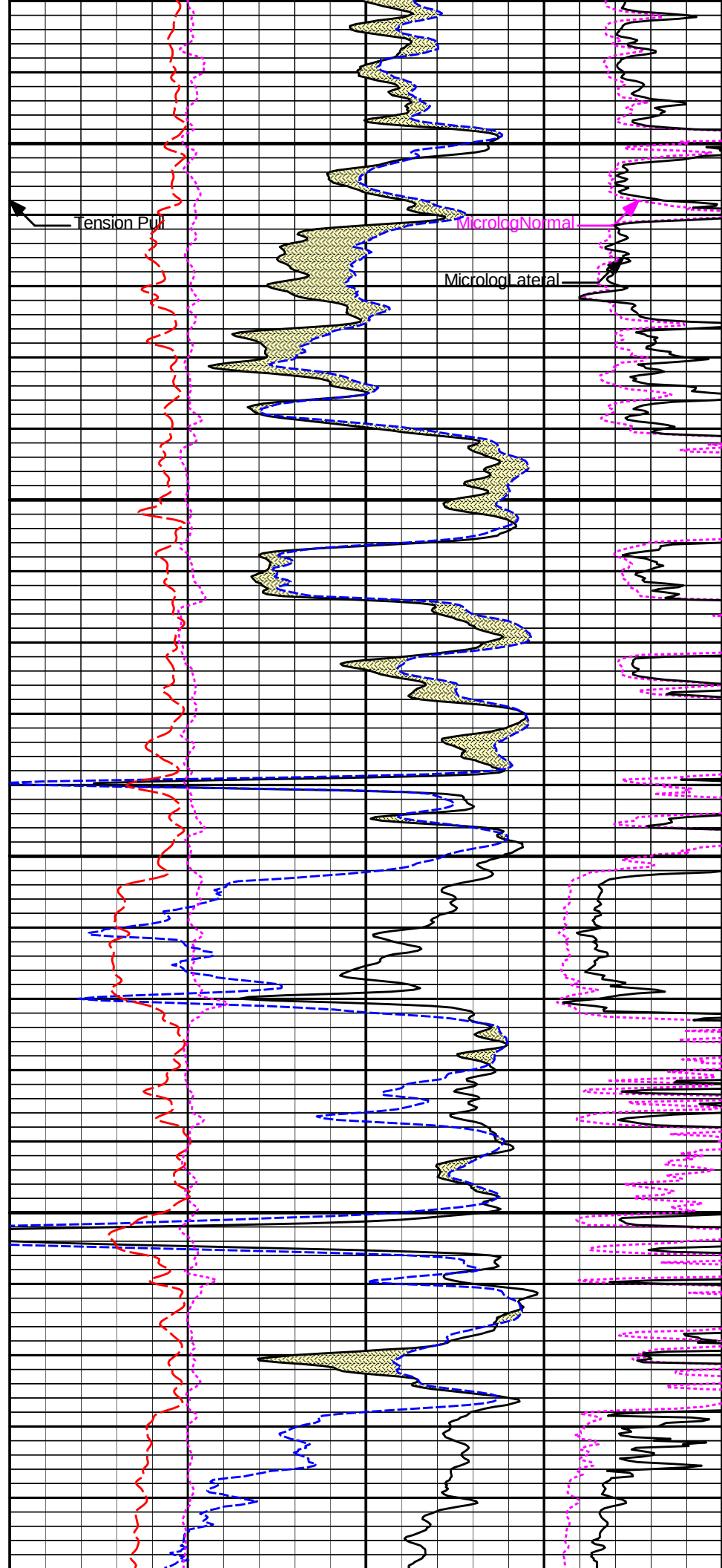
Caliper

3550

3600

3650

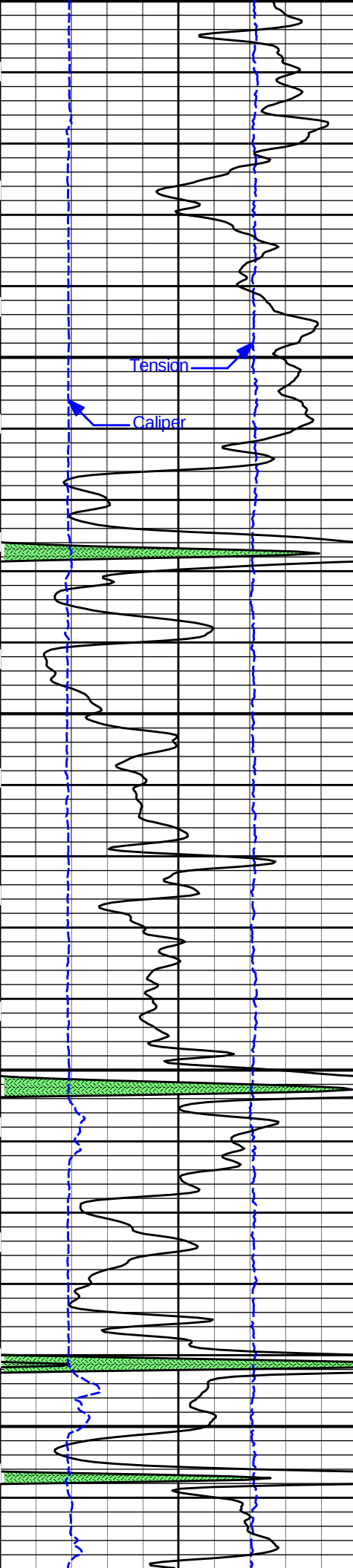
3700



Tension Pull

MicrologNormal

MicrologLateral



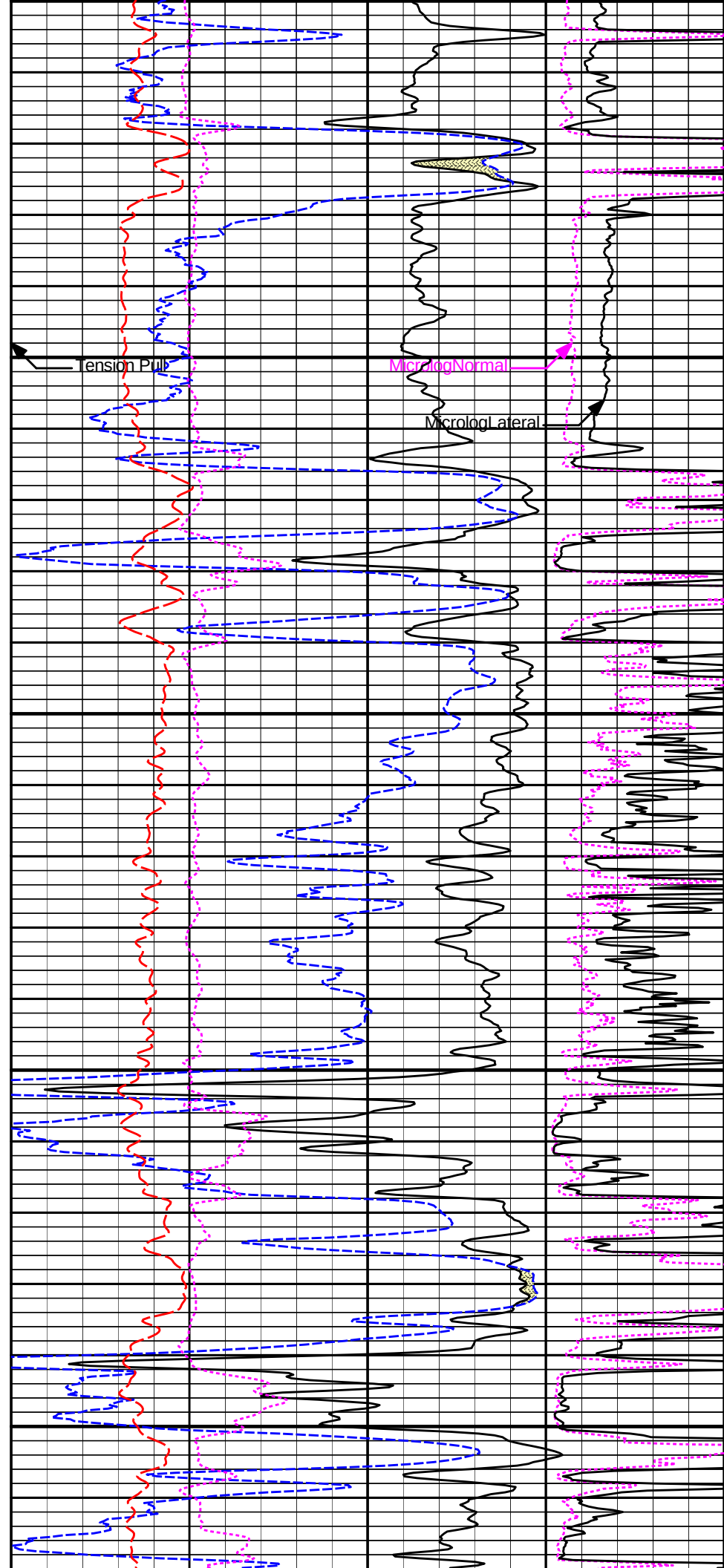
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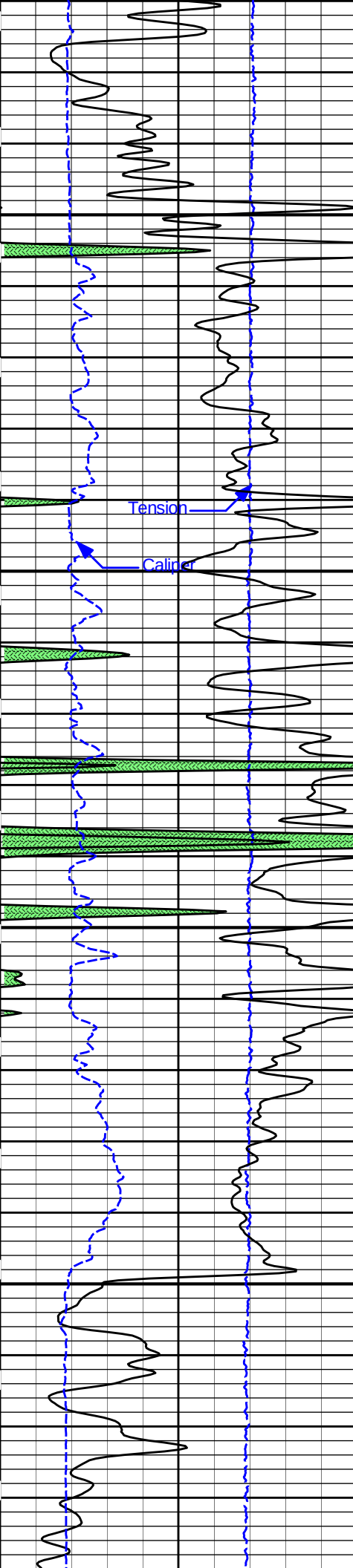
3750

3800

3850

3900





3950

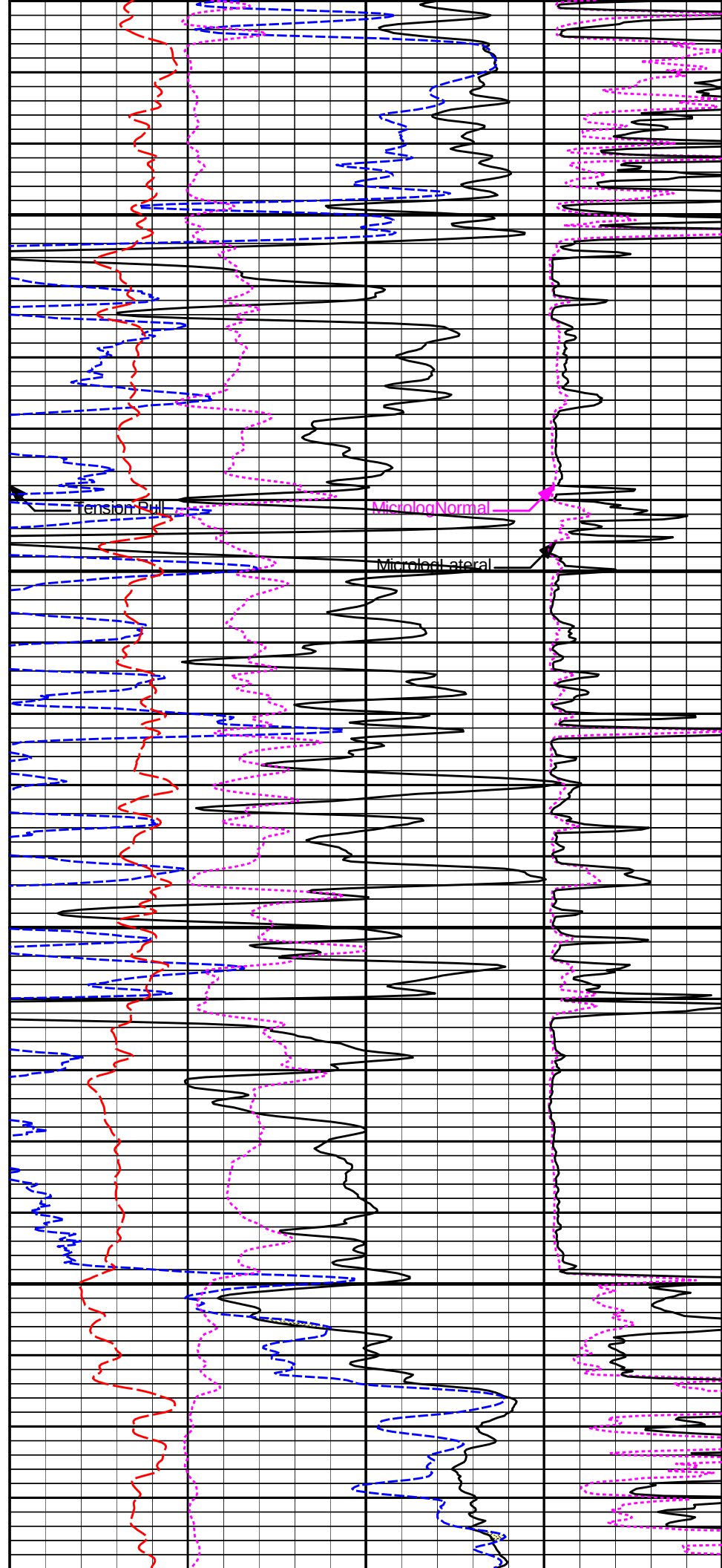
Tension

Caliper

4000

4050

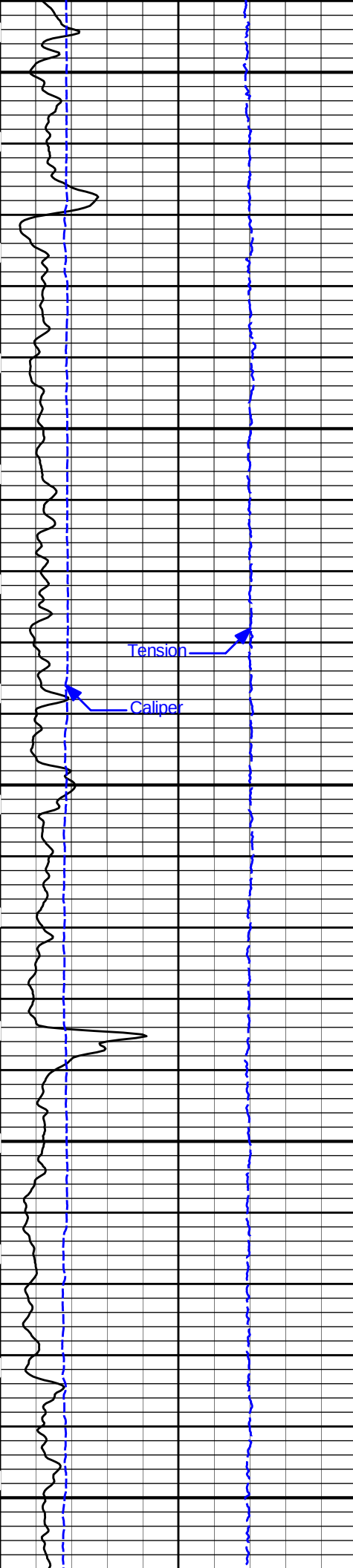
4100



Tension Pull

MicrologNormal

MicrologLateral



4150

4200

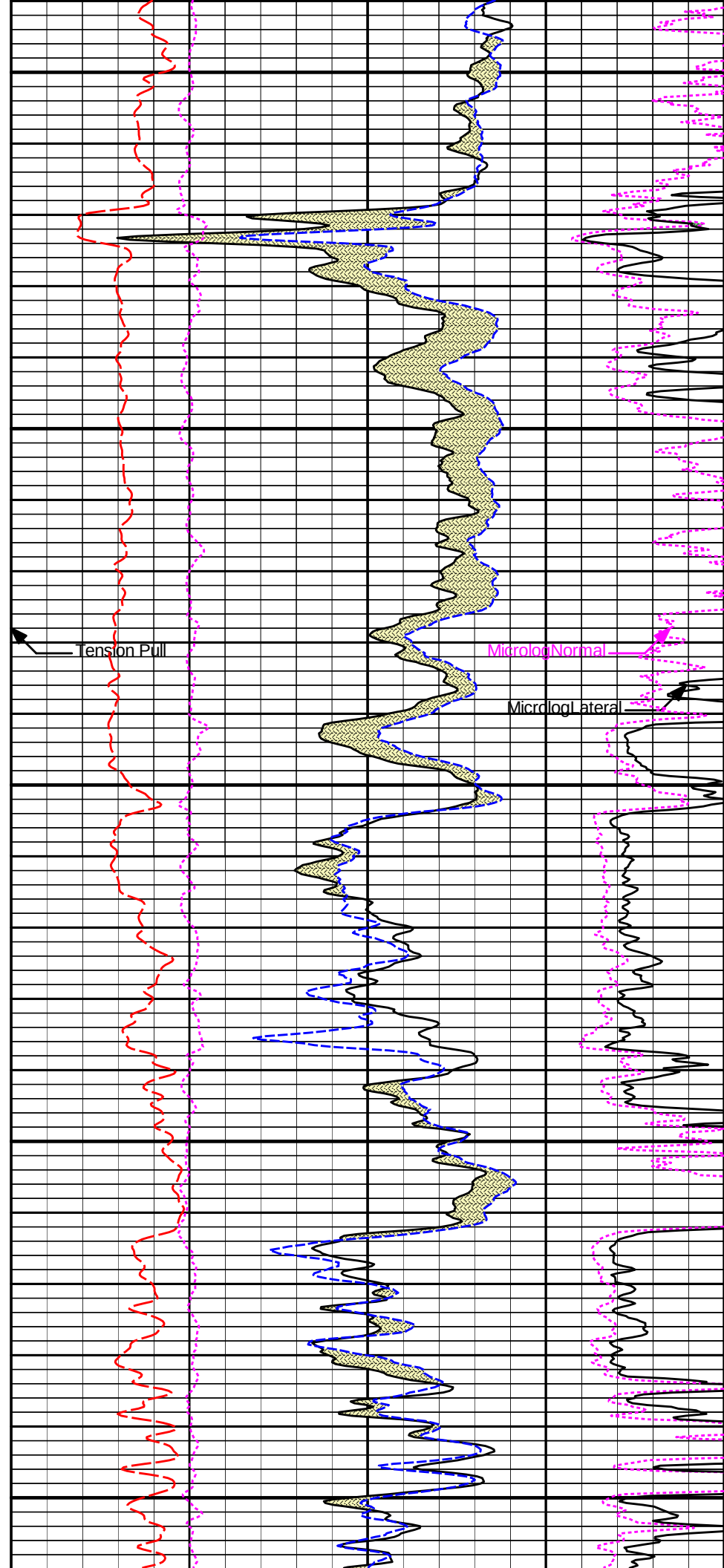
4250

4300

4350

Tension

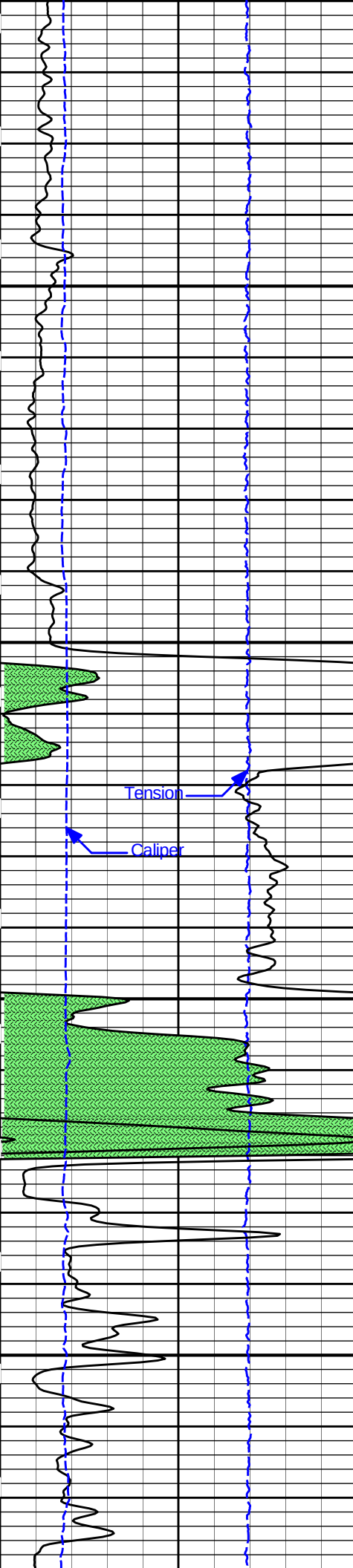
Caliper



Tension Pull

Microlog Normal

Microlog Lateral



4400

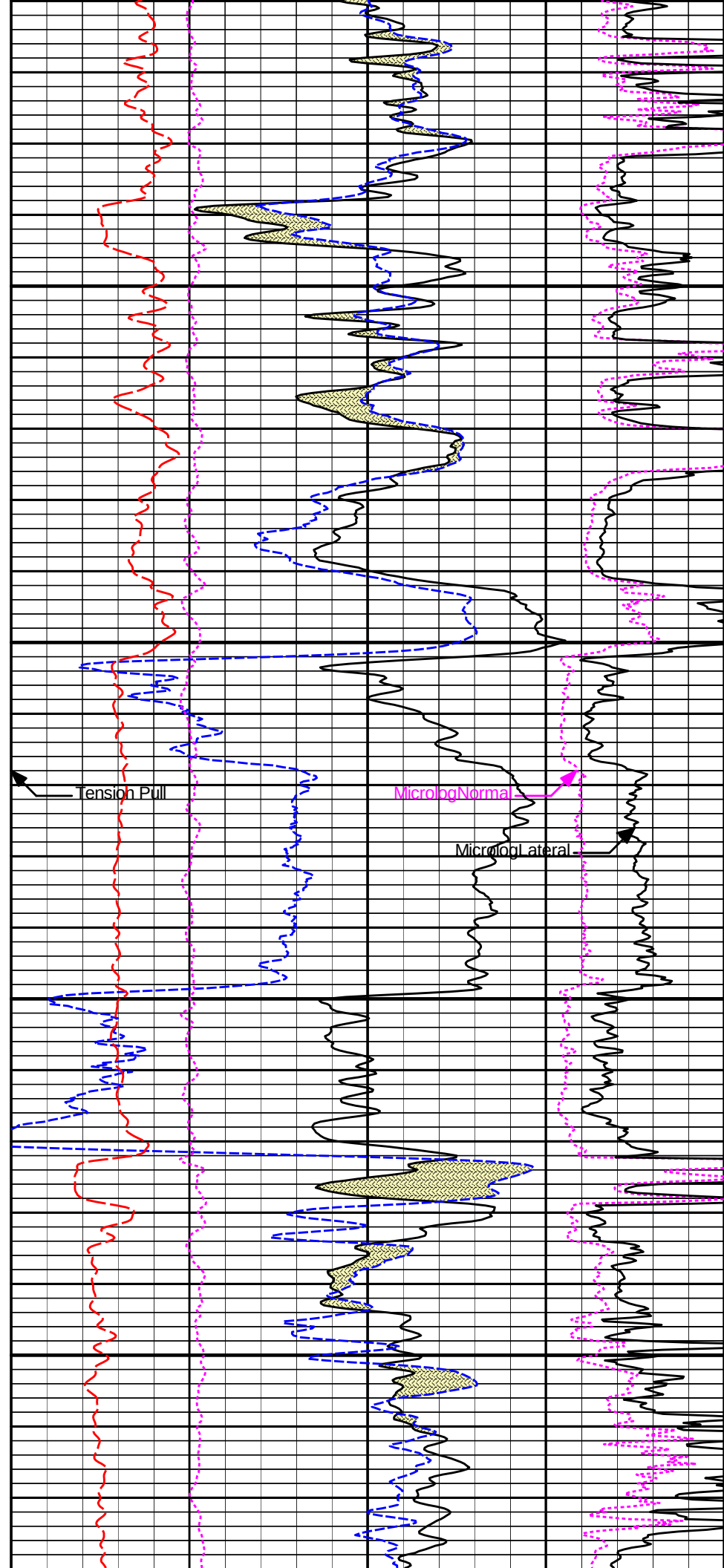
4450

4500

4550

Tension

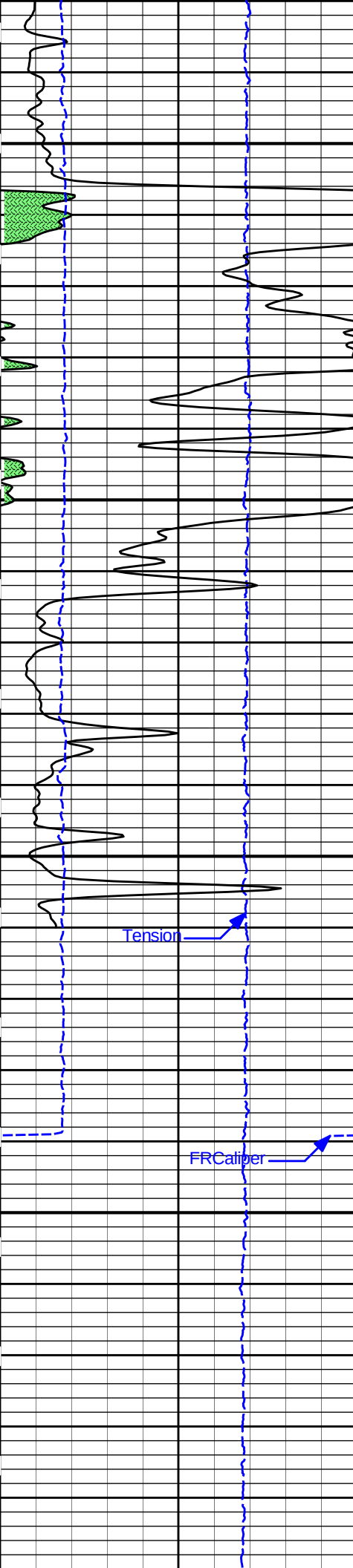
Caliper



Tension Pull

MicrologNormal

MicrologLateral



4600

4650

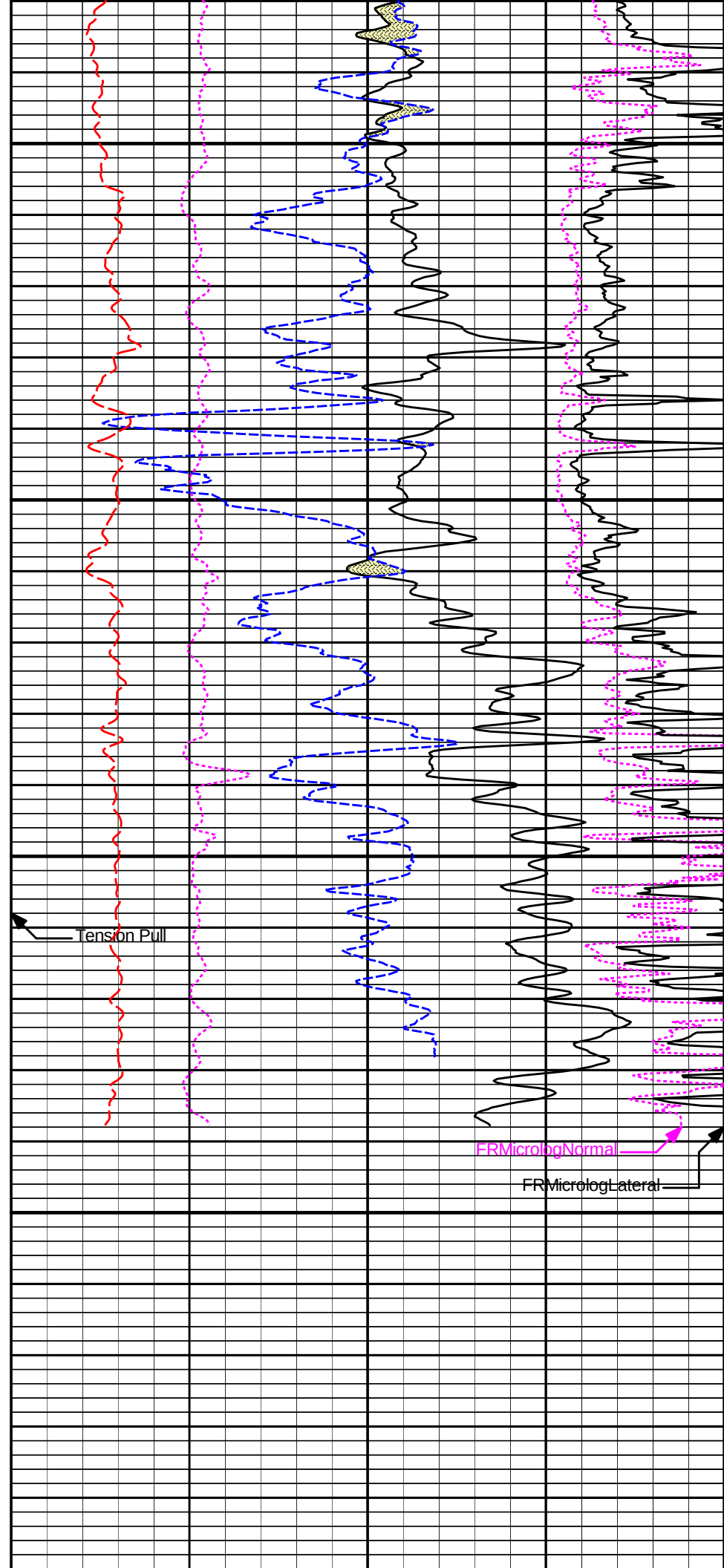
4700

4750

4800

Tension

FRCaliper

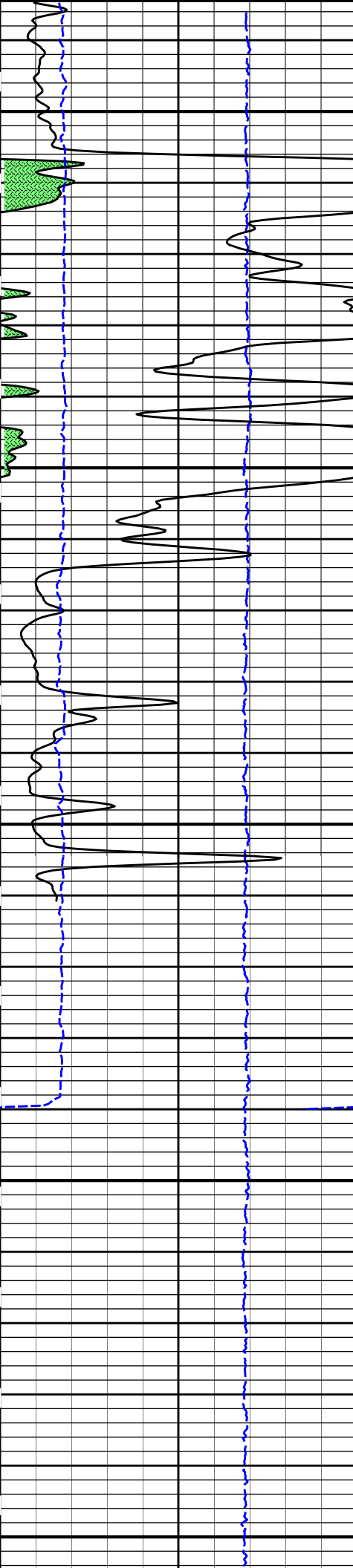


Tension Pull

FRMicrologNormal

FRMicrologLateral

										4800																																							
										TD																																							
6					Caliper					16					1 : 240					0					Pe					10					0					MicrologLateral					20				
					inches										ft																									ohm-metre									
0					Gamma API					150					Tension Pull					-0.25					DensityCorr					0.25					0					MicrologNormal					20				
					api										10										gram per cc															ohm-metre									
15K					Tension					0										30					DensityPorosity										-10														
					pounds																				percent																								
																				30					Neutron Porosity										-10														
																									percent																								
HALLIBURTON										Plot Time: 18-Jul-13 21:56:44 Plot Range: 376 ft to 4823.67 ft Data: {ActiveWell}\Well Based\MAIN_RUN_1\ Plot File: \\POROML1_PoroMicro_5_mainx																																							
5 INCH MAIN LOG																																																	
MAIN SECTION 5"=10'																																																	
HALLIBURTON										Plot Time: 18-Jul-13 21:56:44 Plot Range: 4584.5 ft to 4824.17 ft Data: {ActiveWell}\Well Based\REPEAT_RUN_1\ Plot File: \\POROML1_PoroMicro_5_rptx																																							
REPEAT SECTION																																																	
REPEAT SECTION 5"=100'																																																	
															30					Neutron Porosity										-10																			
																									percent																								
15K					Tension					0					30					DensityPorosity										-10																			
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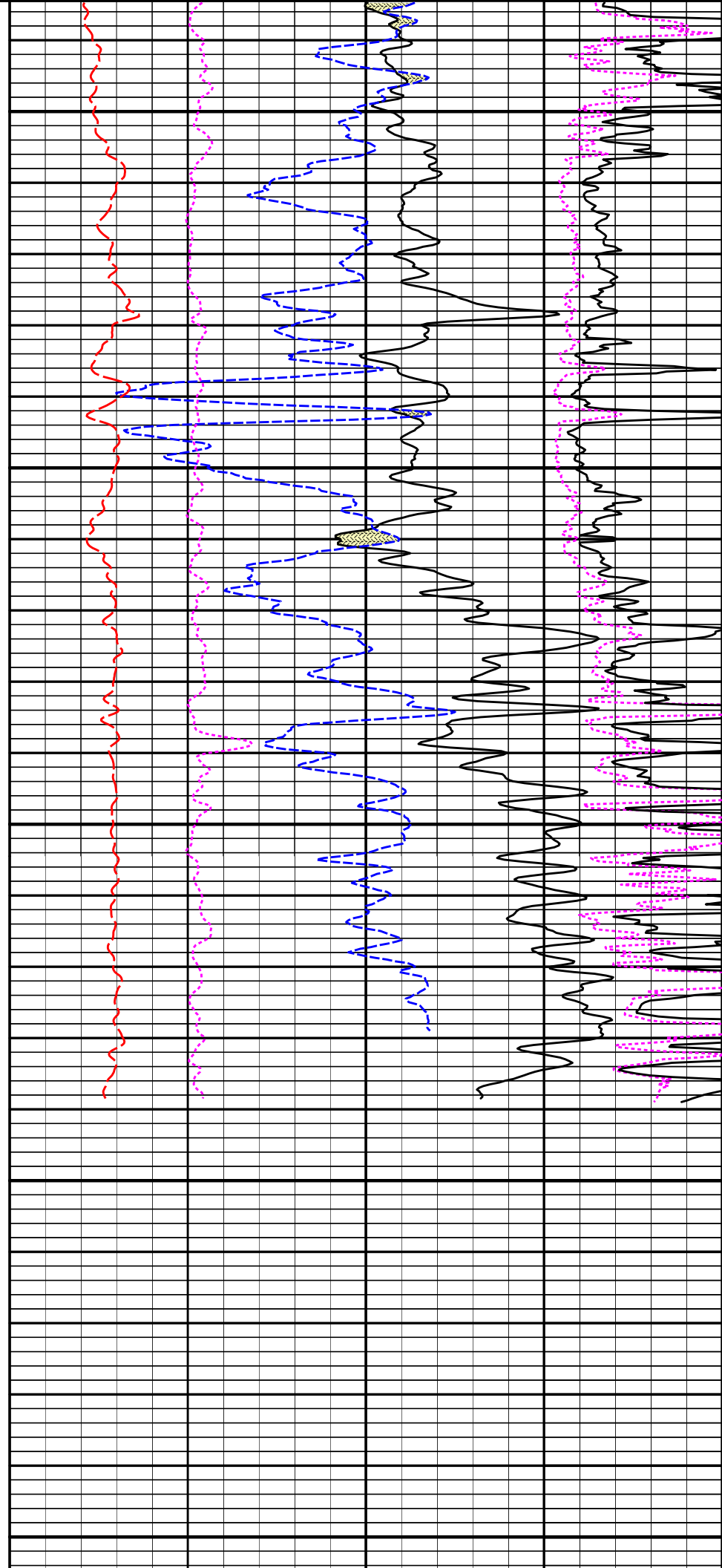
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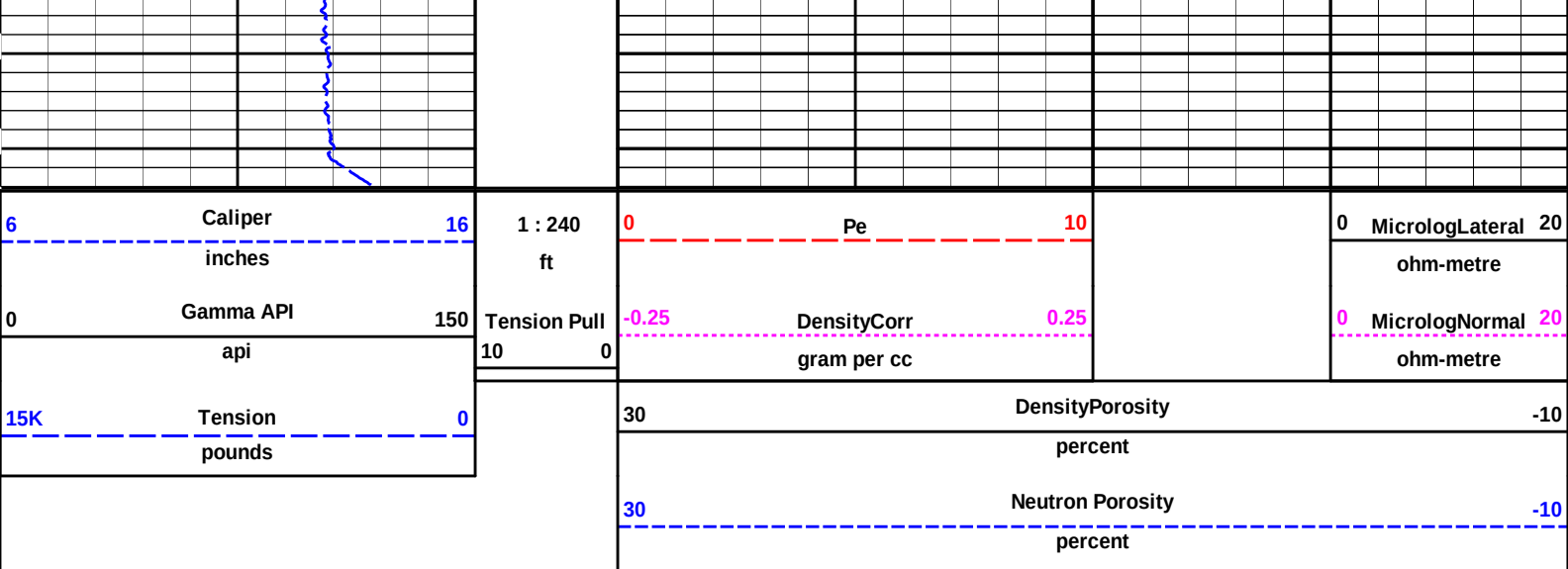
4650

4700

4750

4800





HALLIBURTON

Plot Time: 18-Jul-13 21:56:46
Plot Range: 4584.5 ft to 4824.17 ft
Data: {ActiveWell}\Well Based\REPEAT_RUN_1\
Plot File: \\POROML\1_PoroMicro_5_rptx

REPEAT SECTION

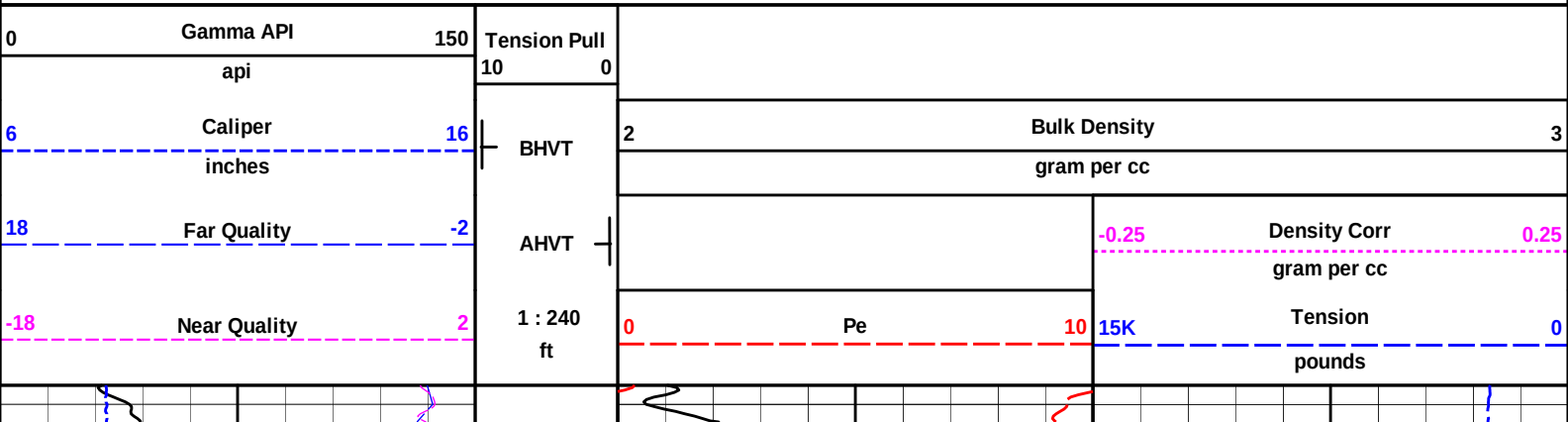
REPEAT SECTION 5"=100'

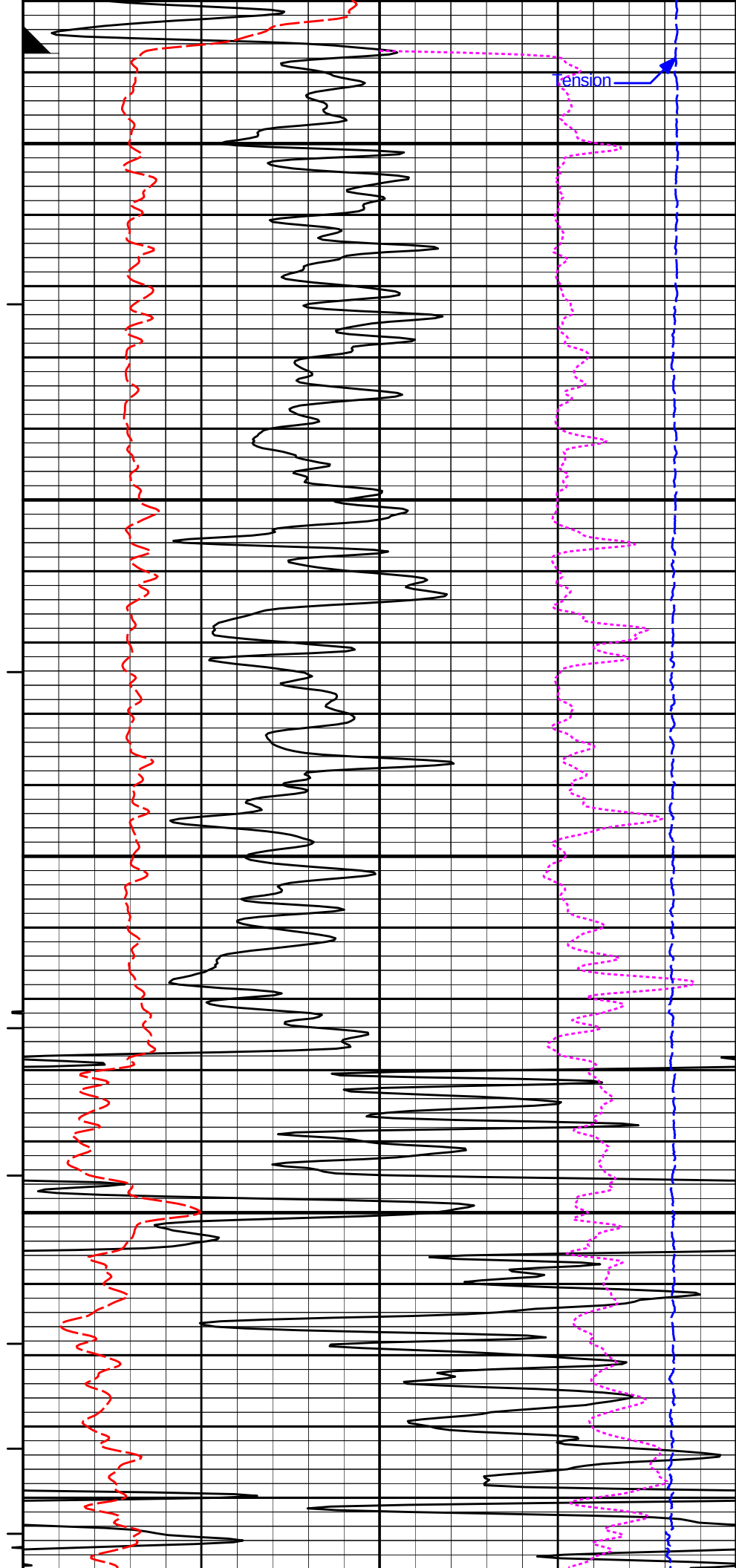
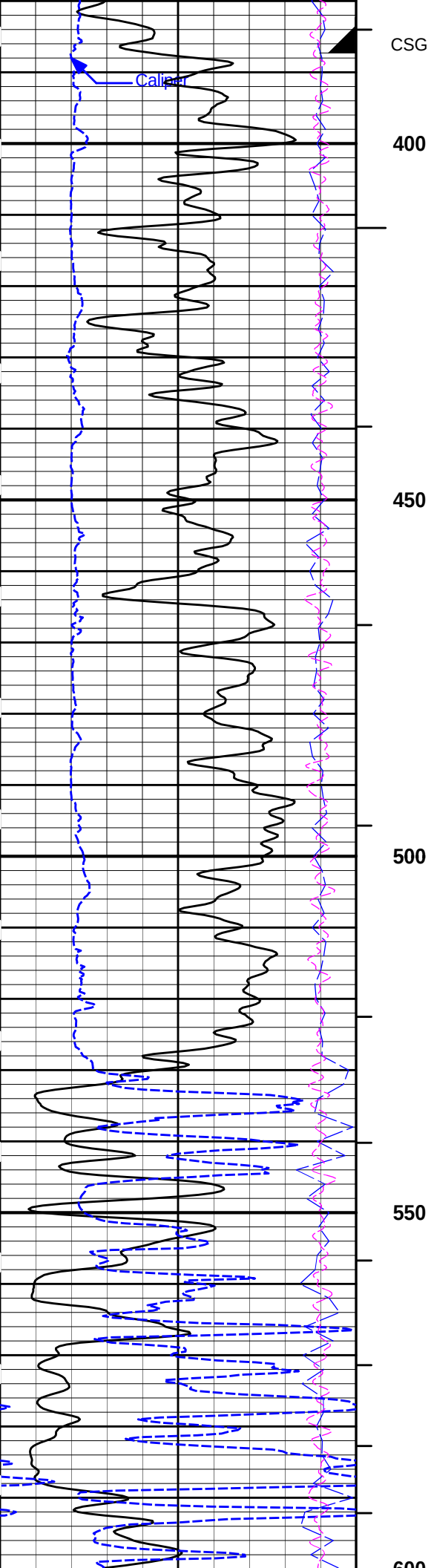
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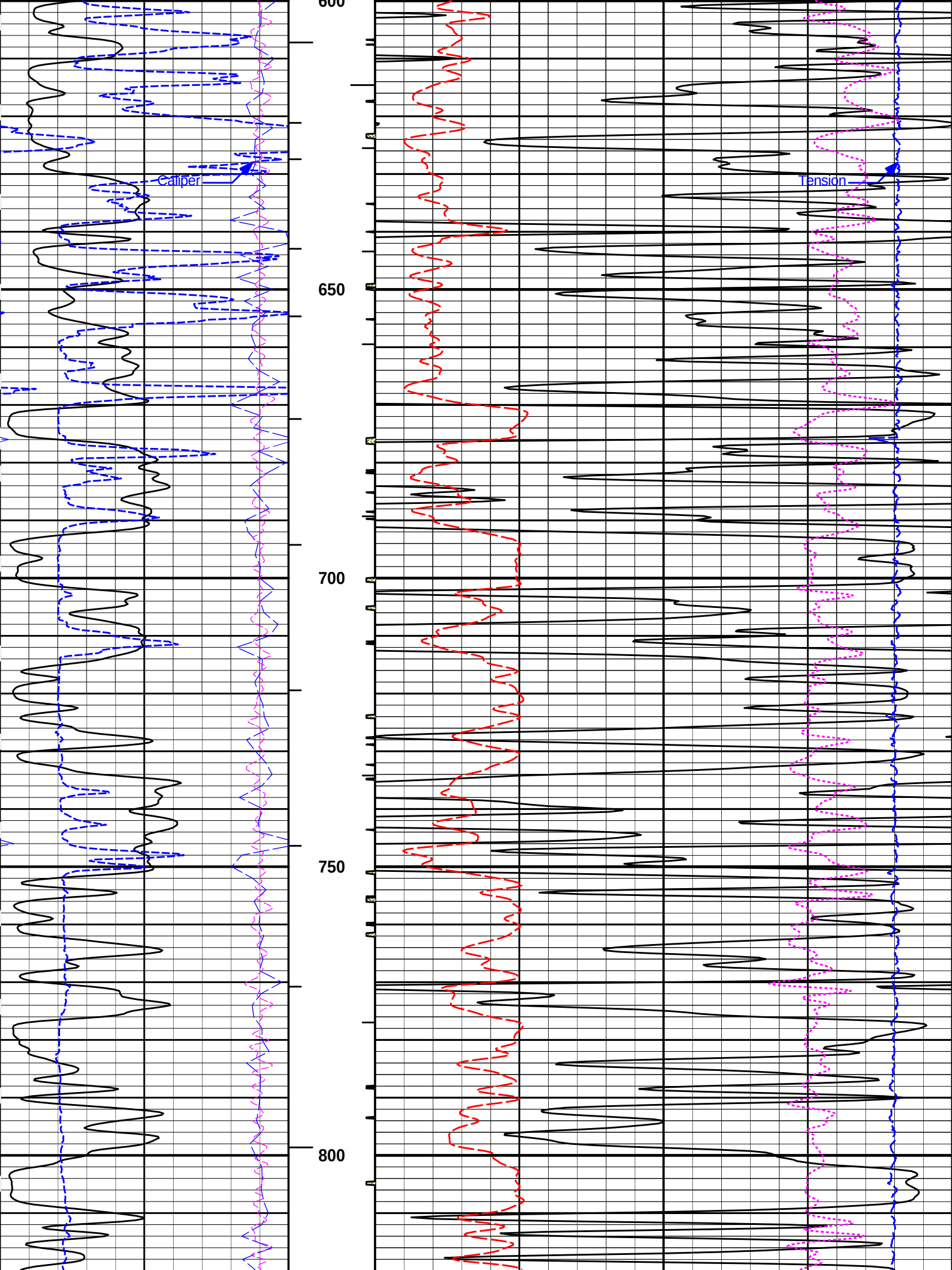
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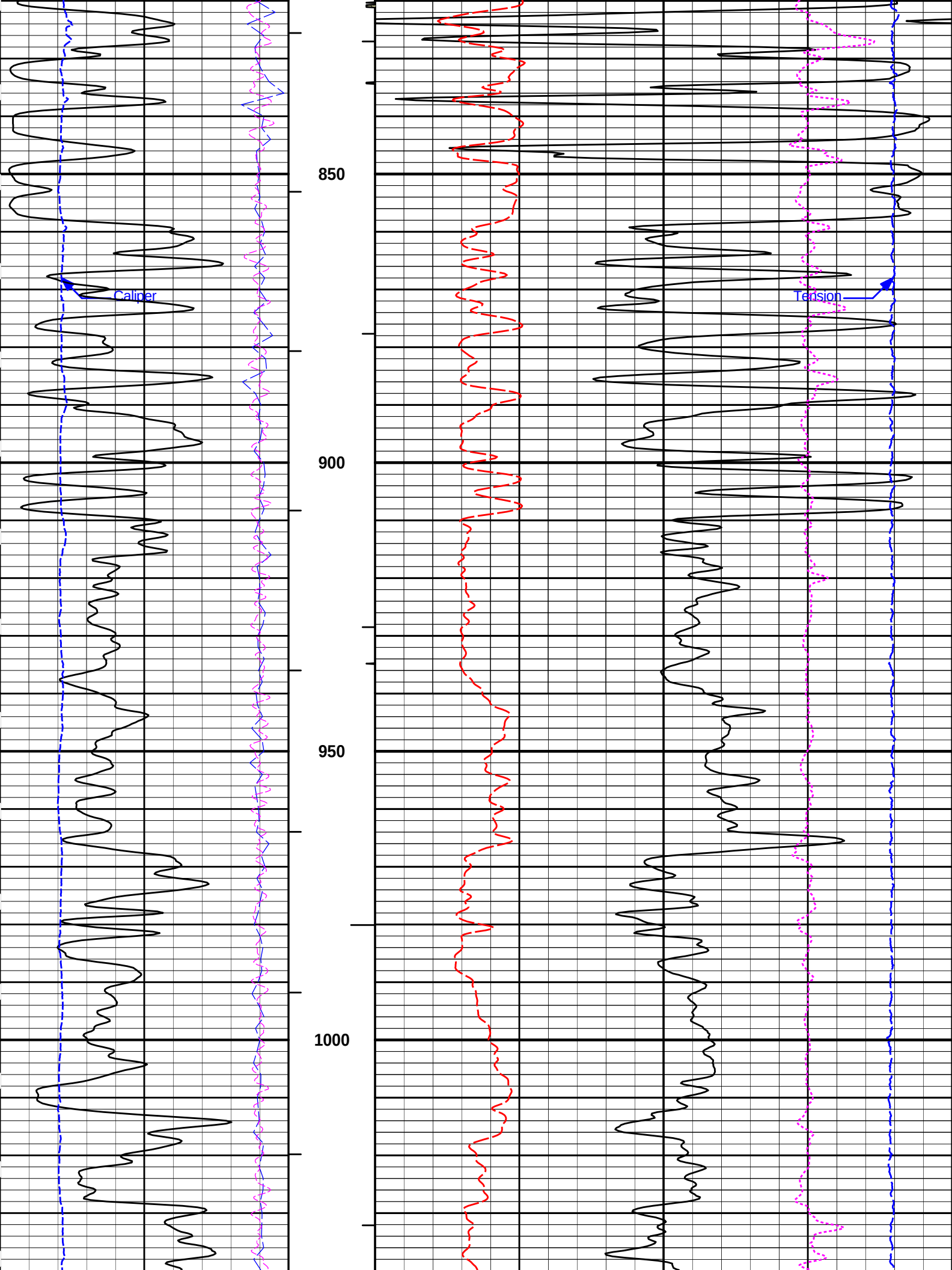
5 INCH MAIN LOG

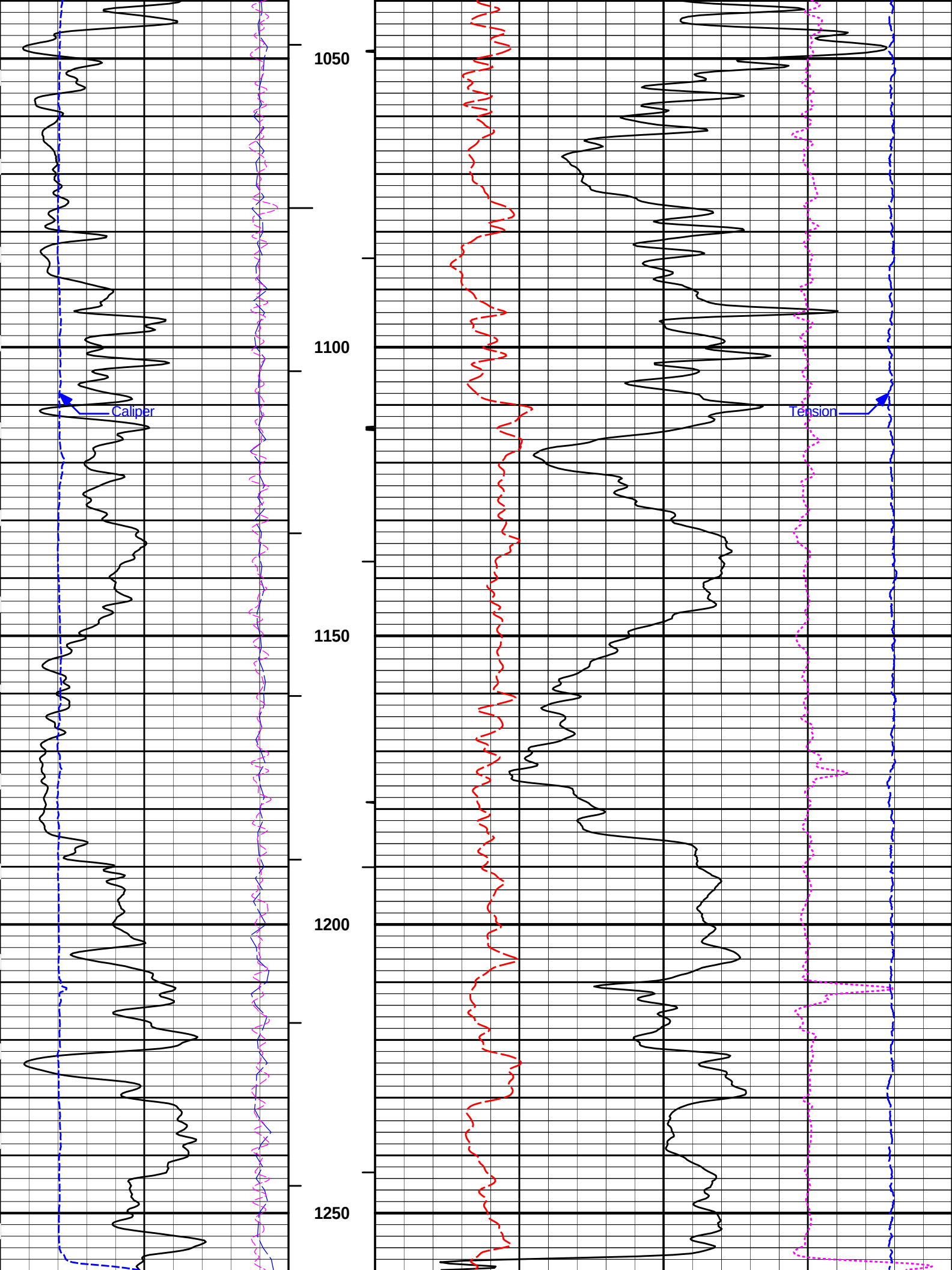
5 INCH MAIN LOG

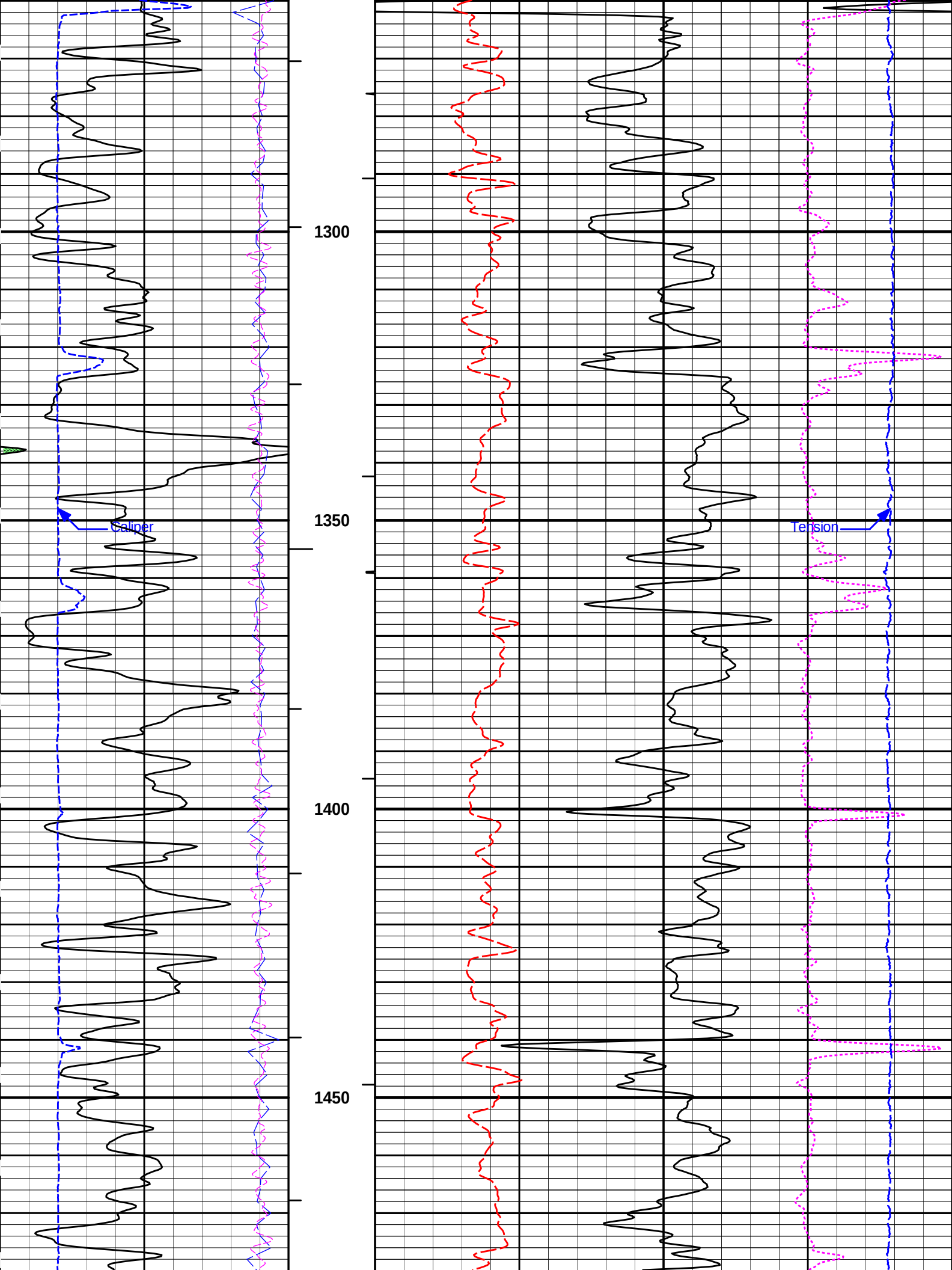


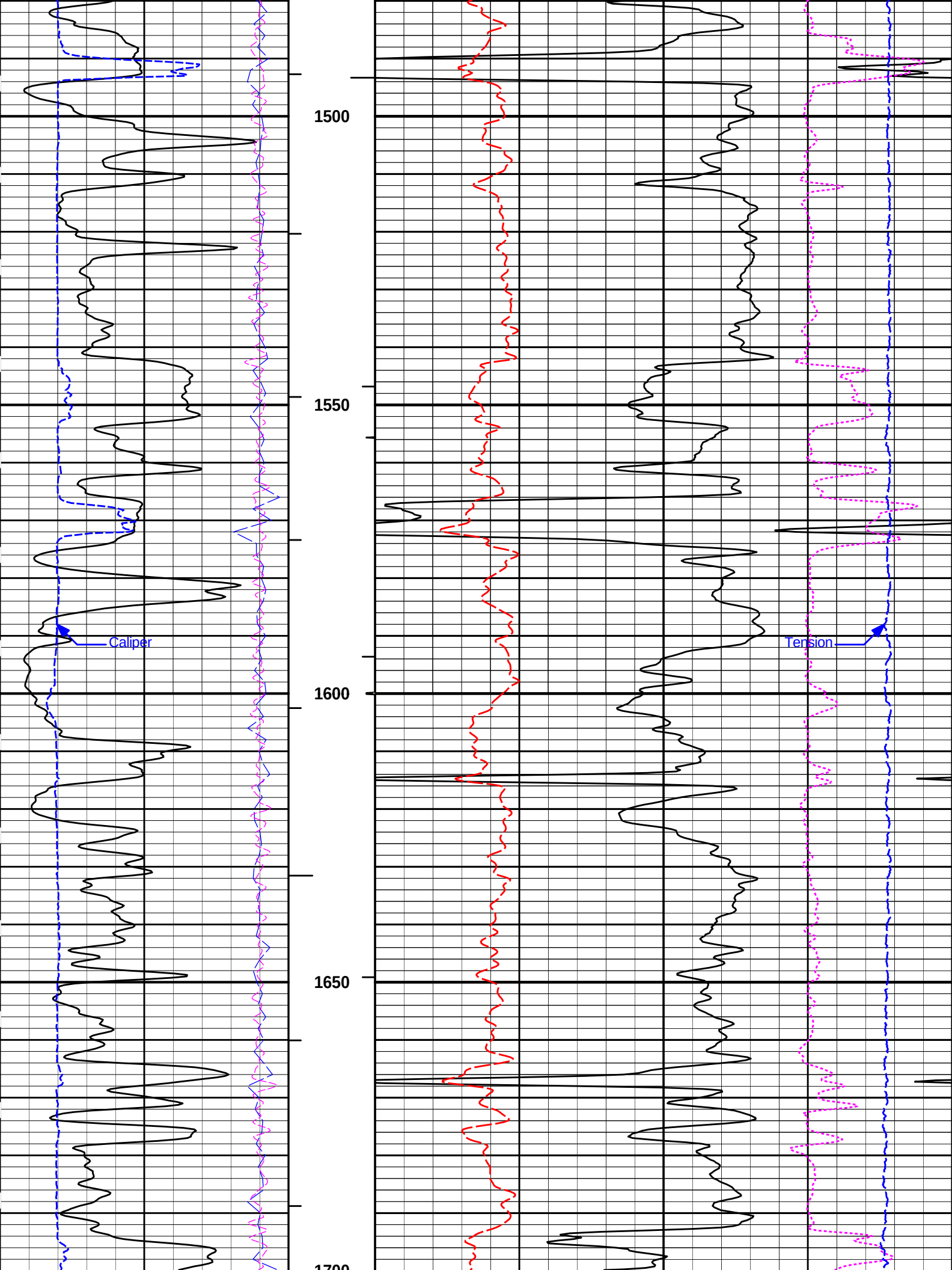


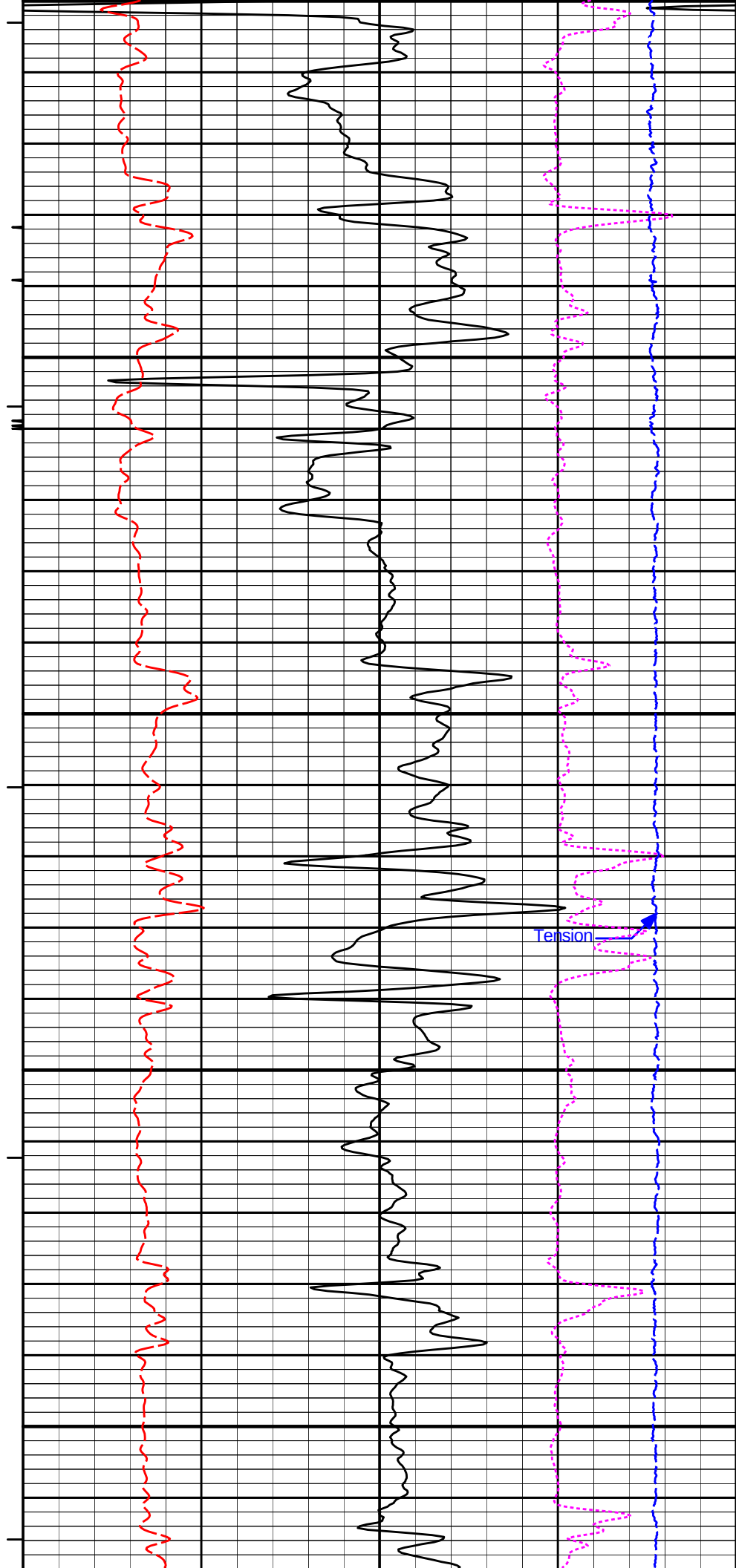
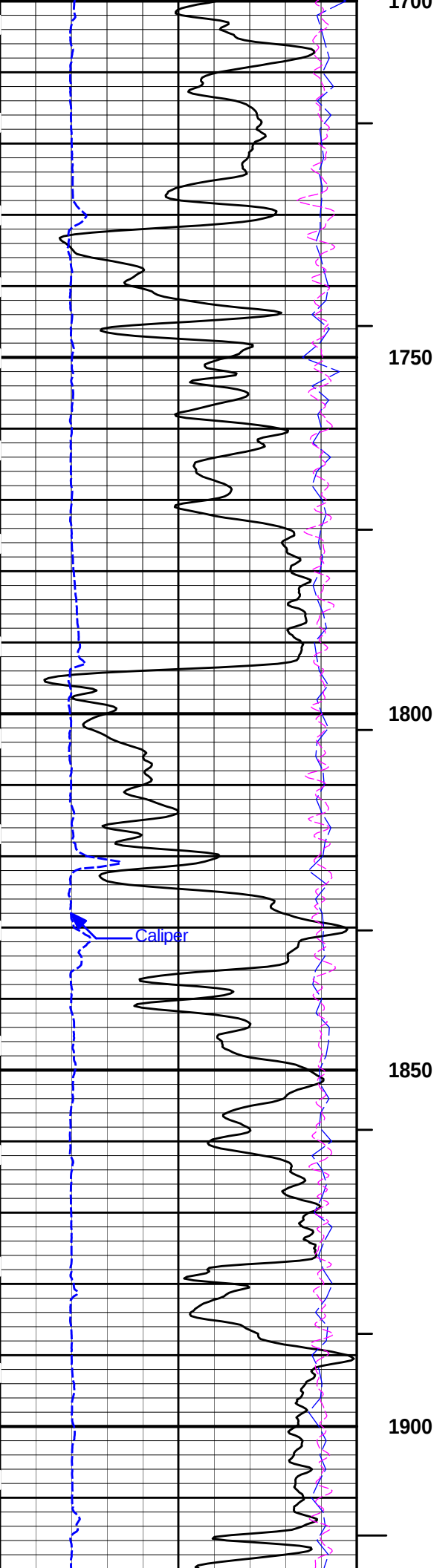


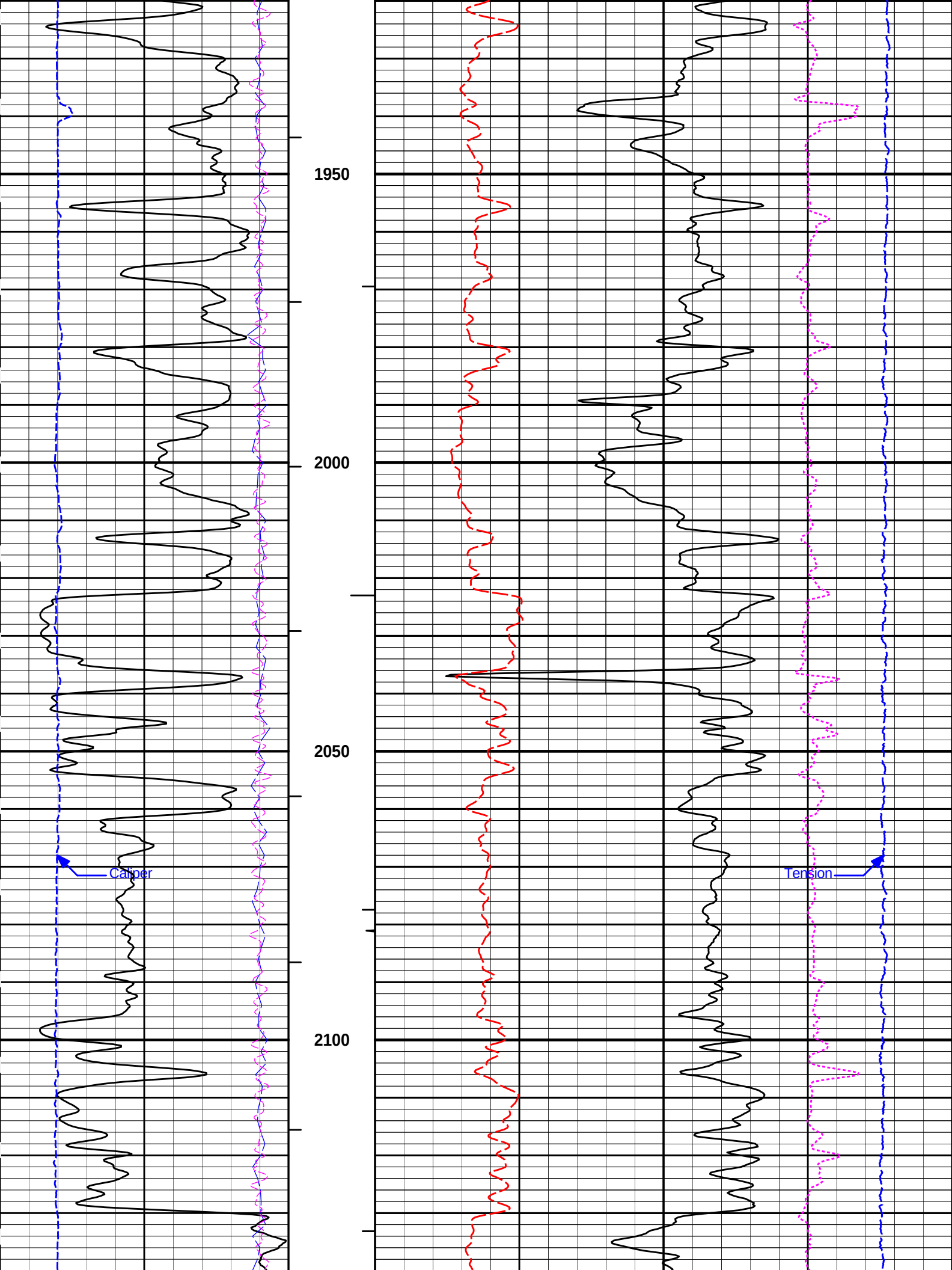


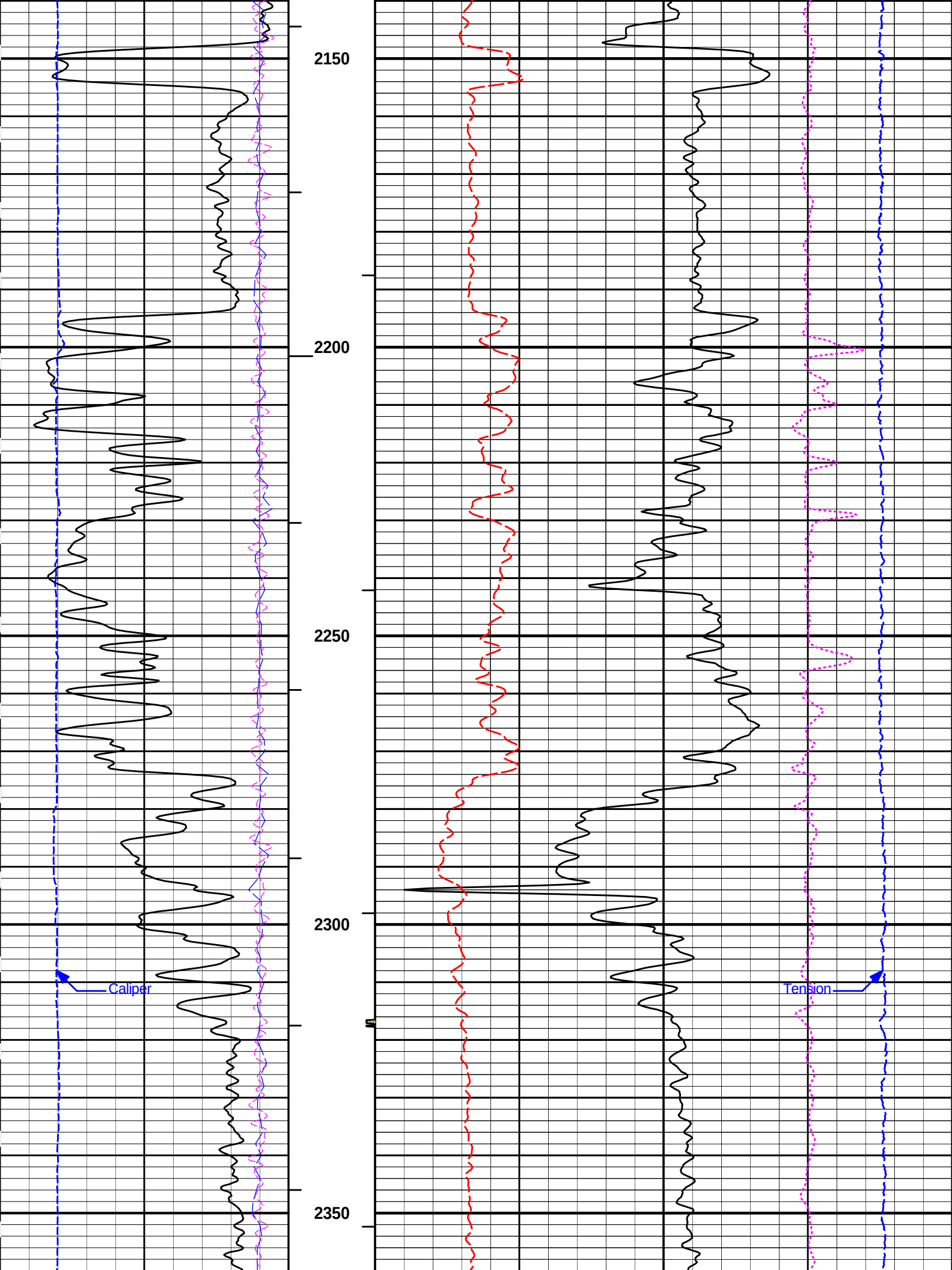


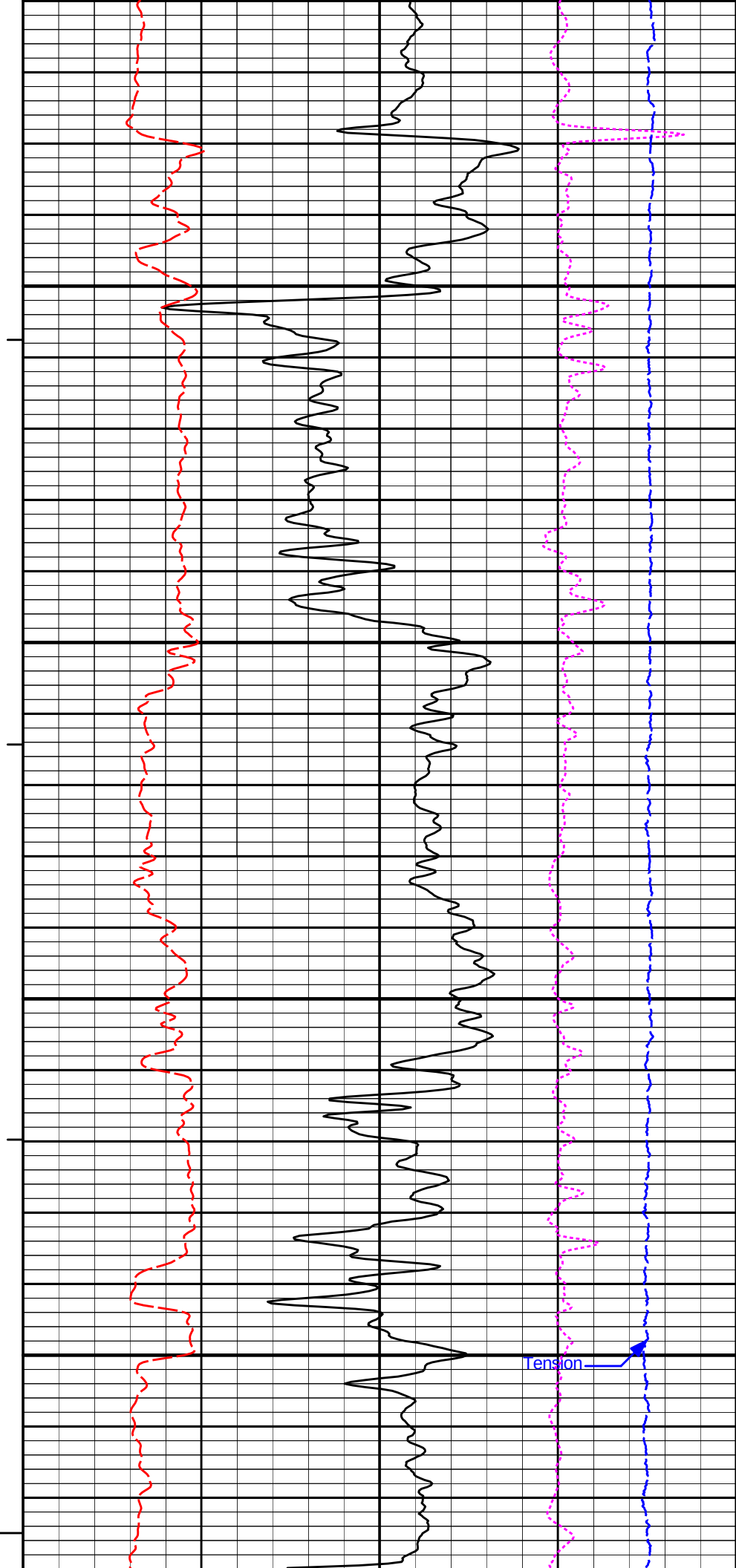
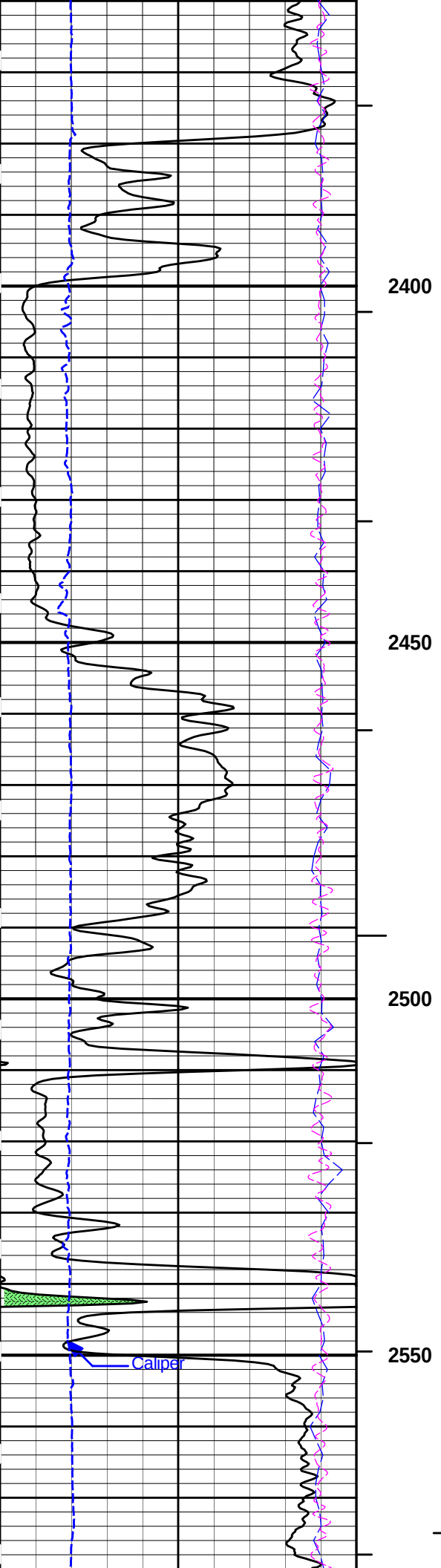


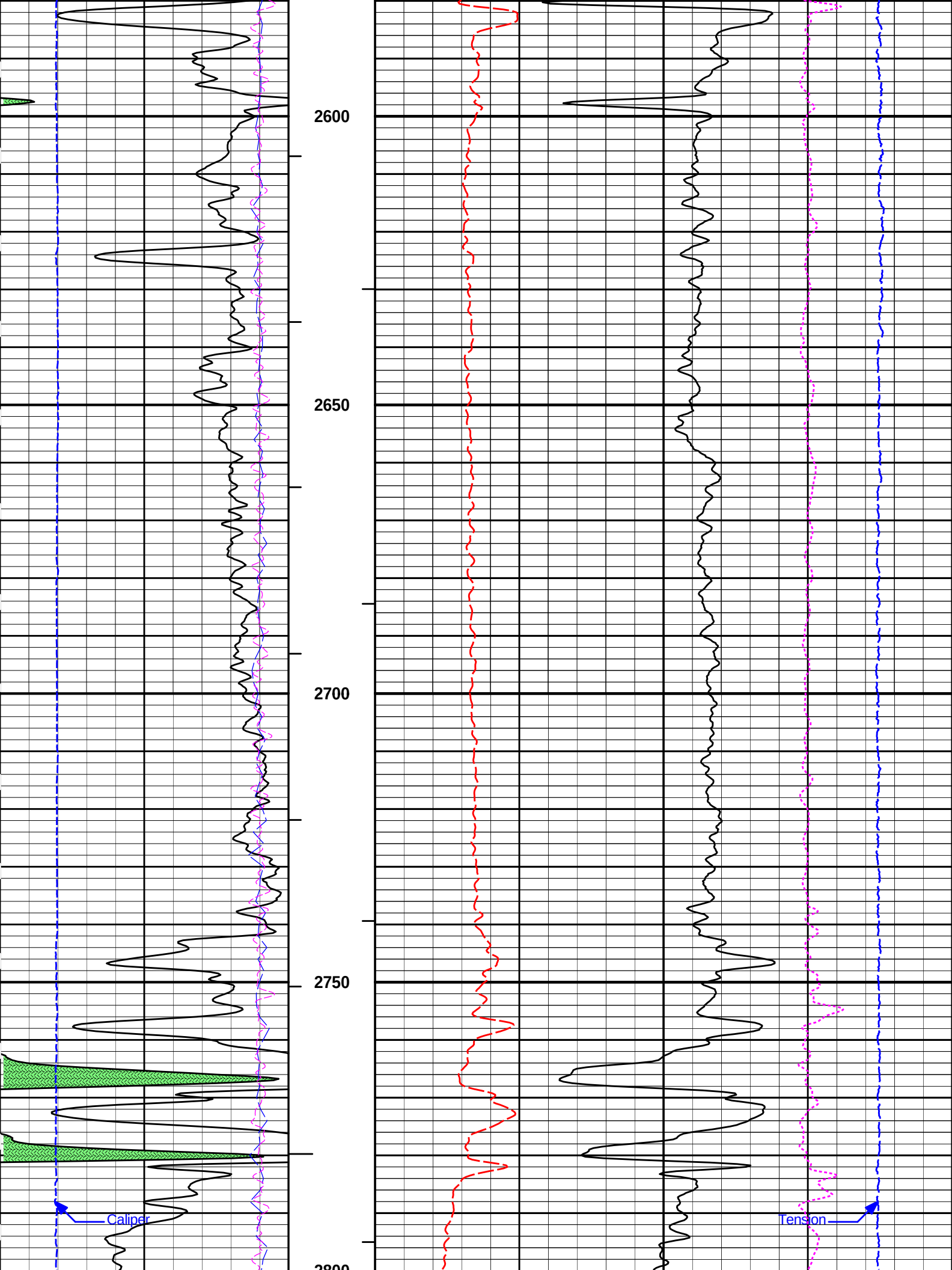


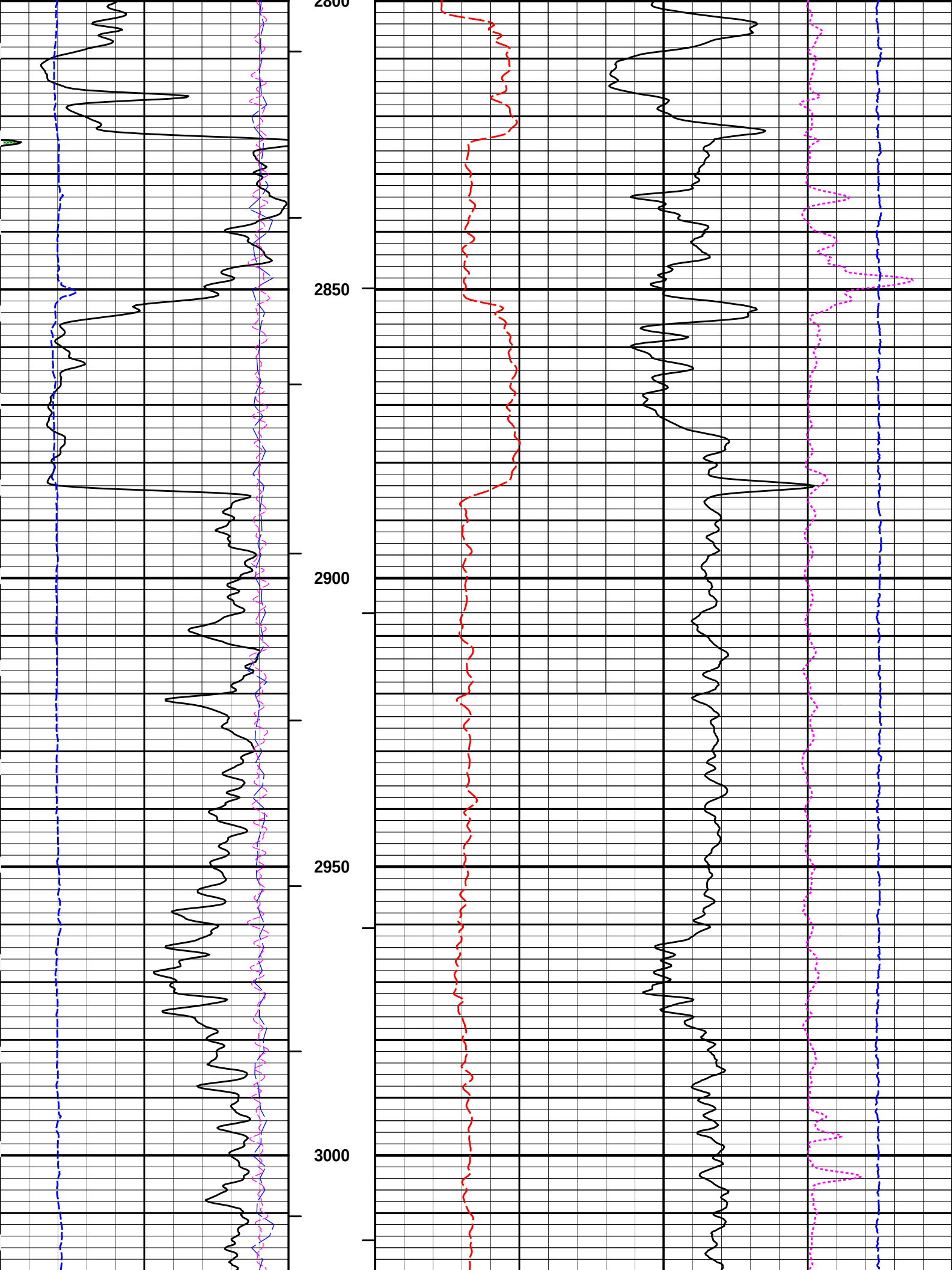


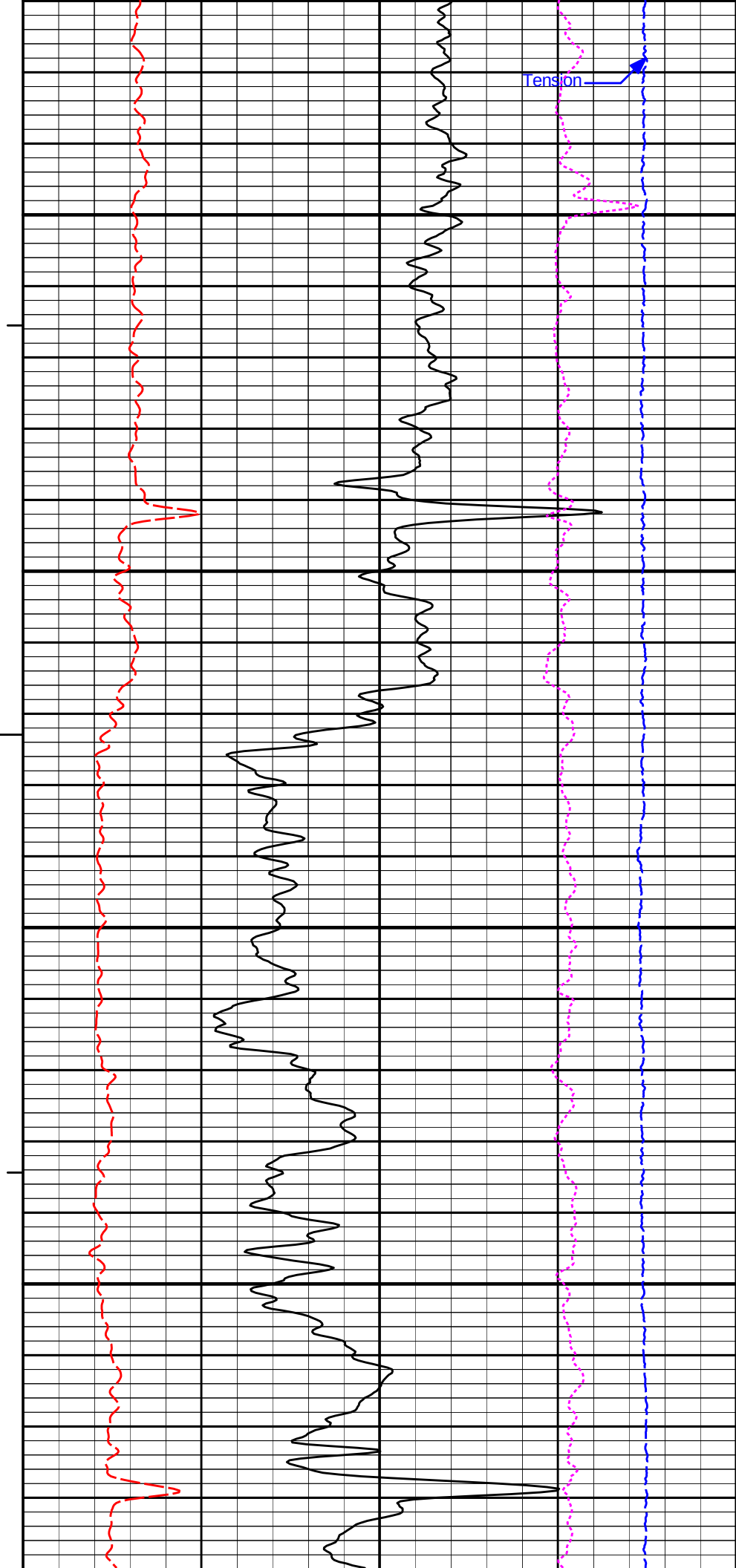
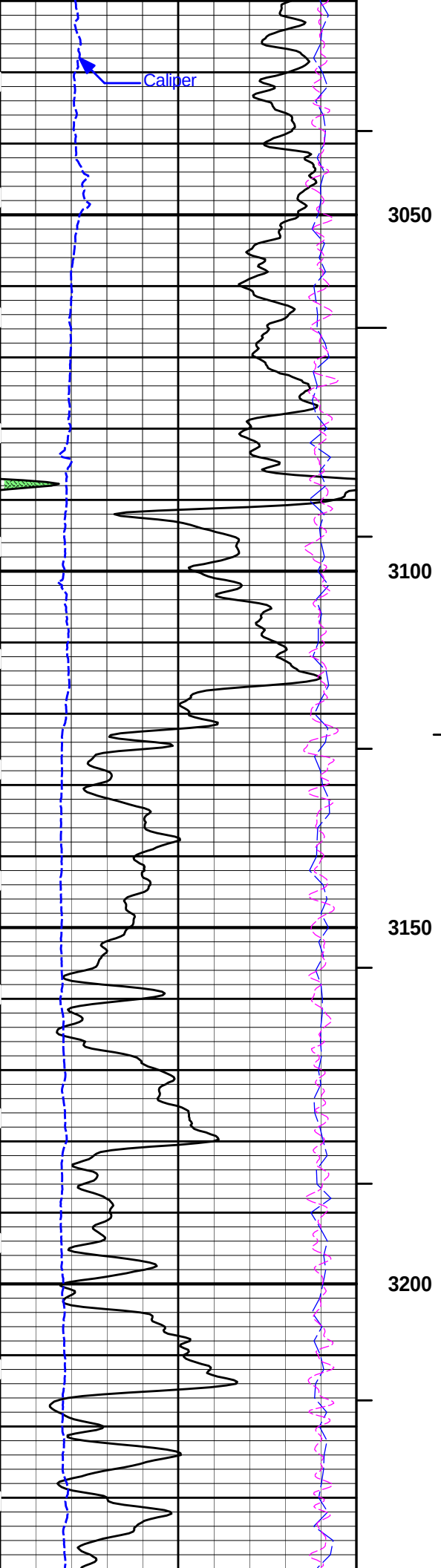


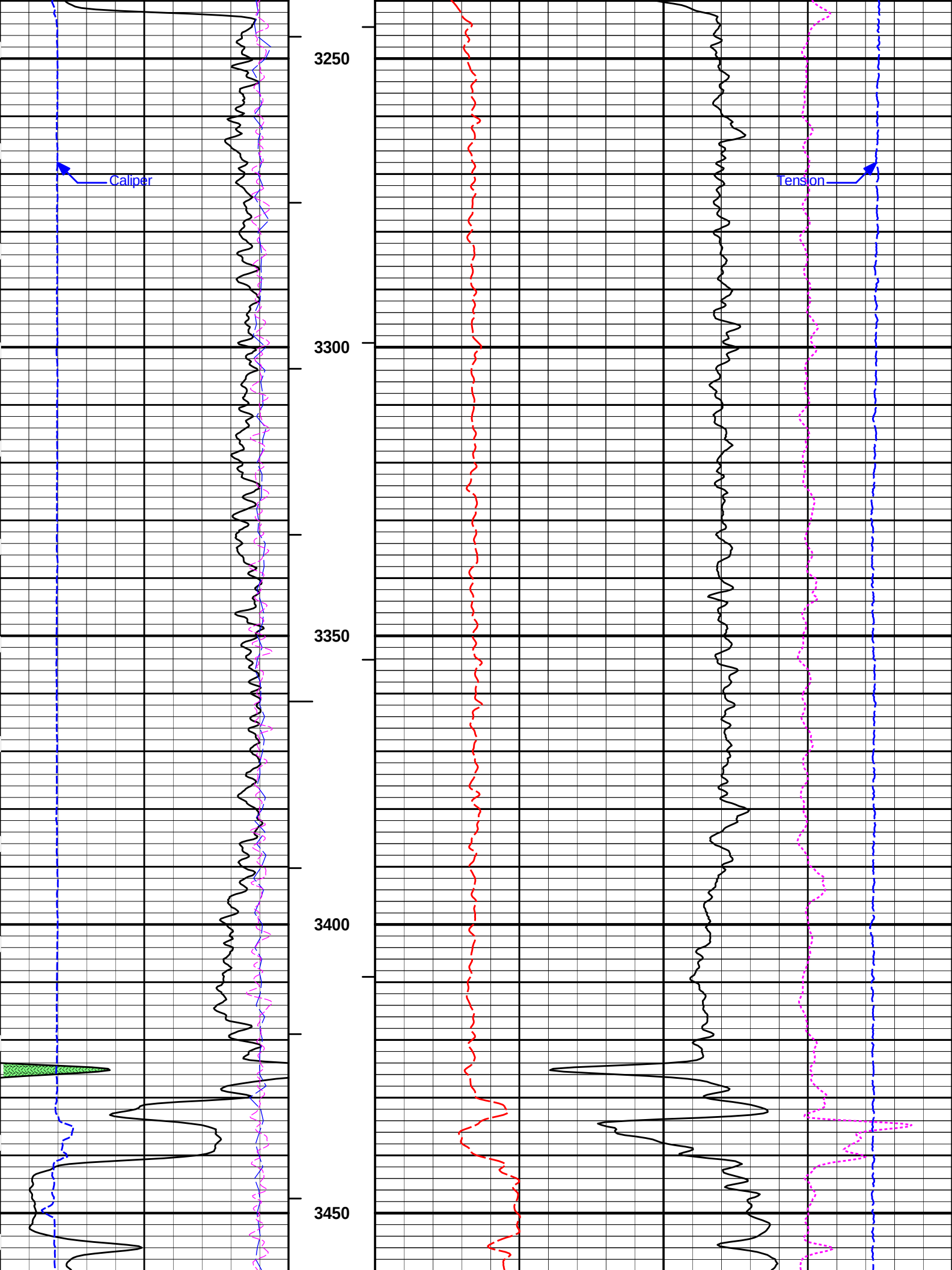


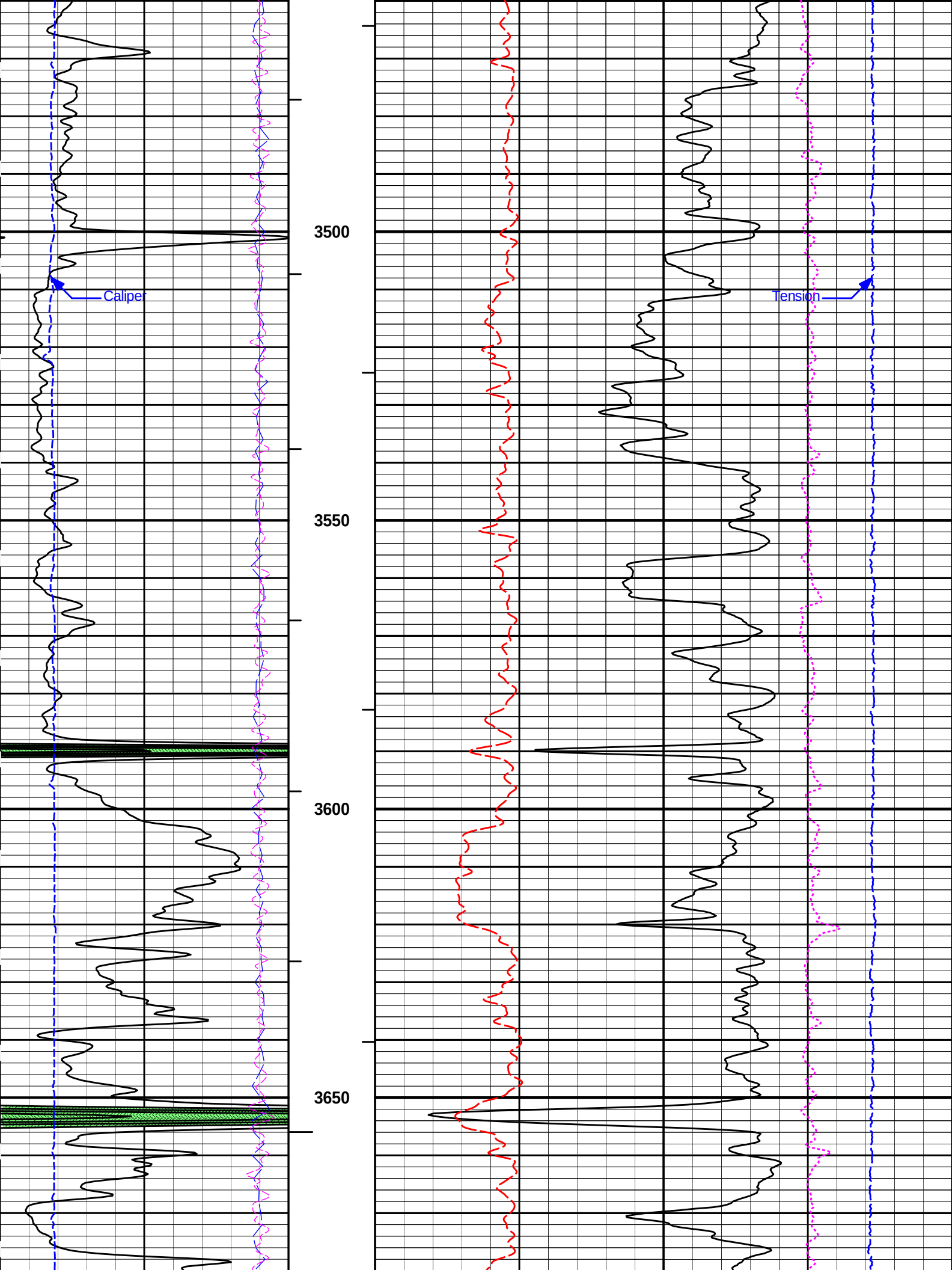


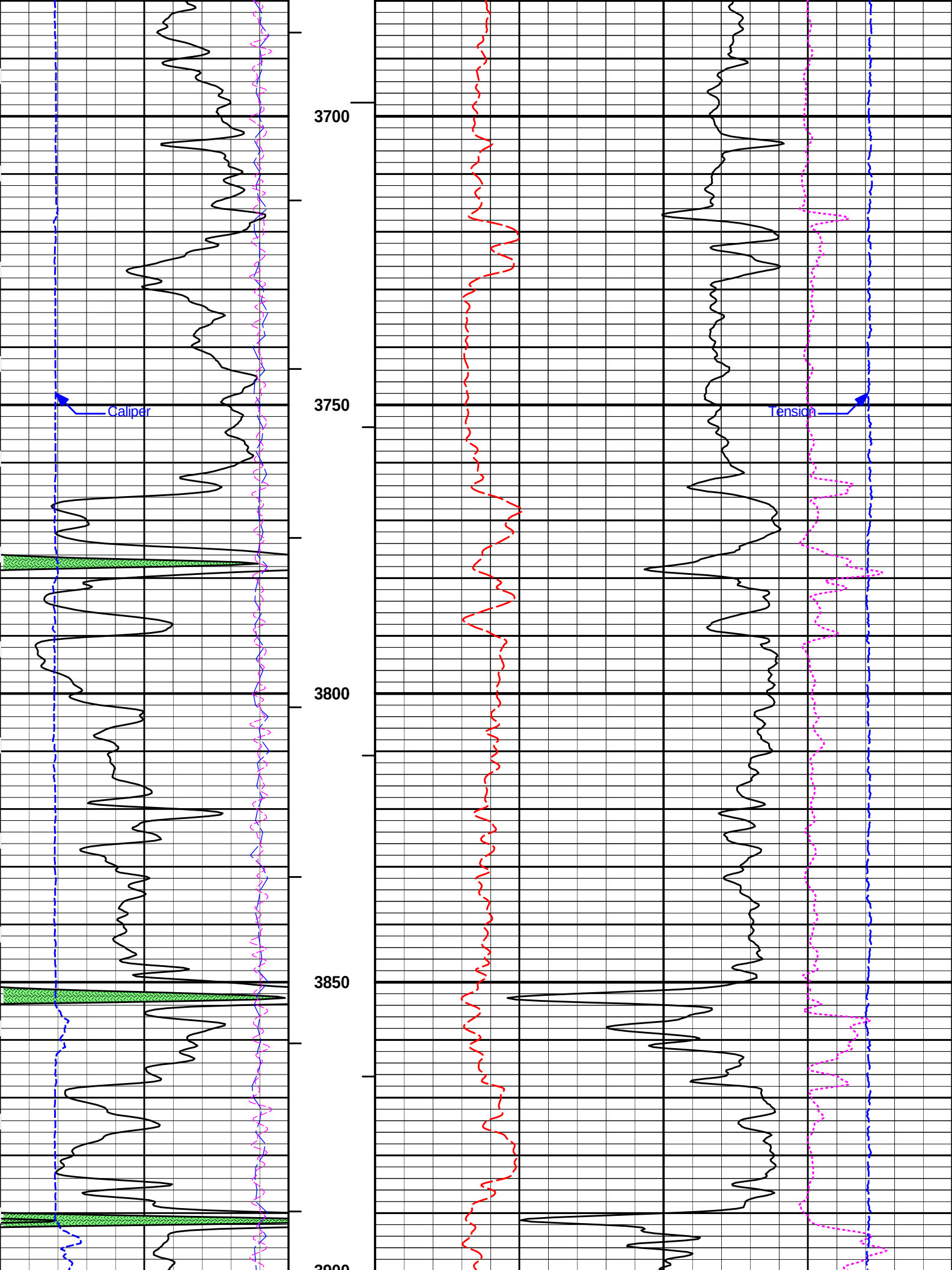


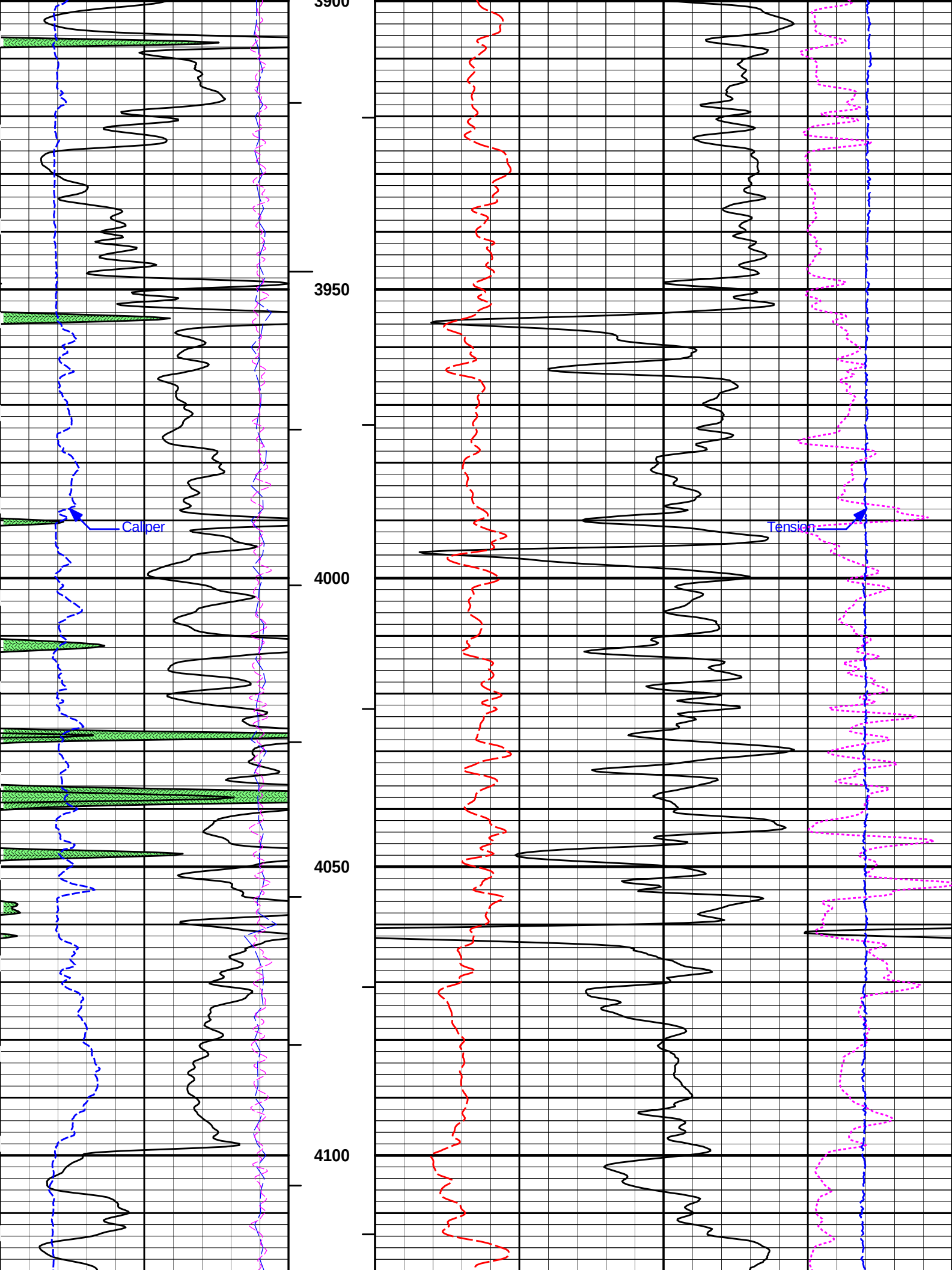


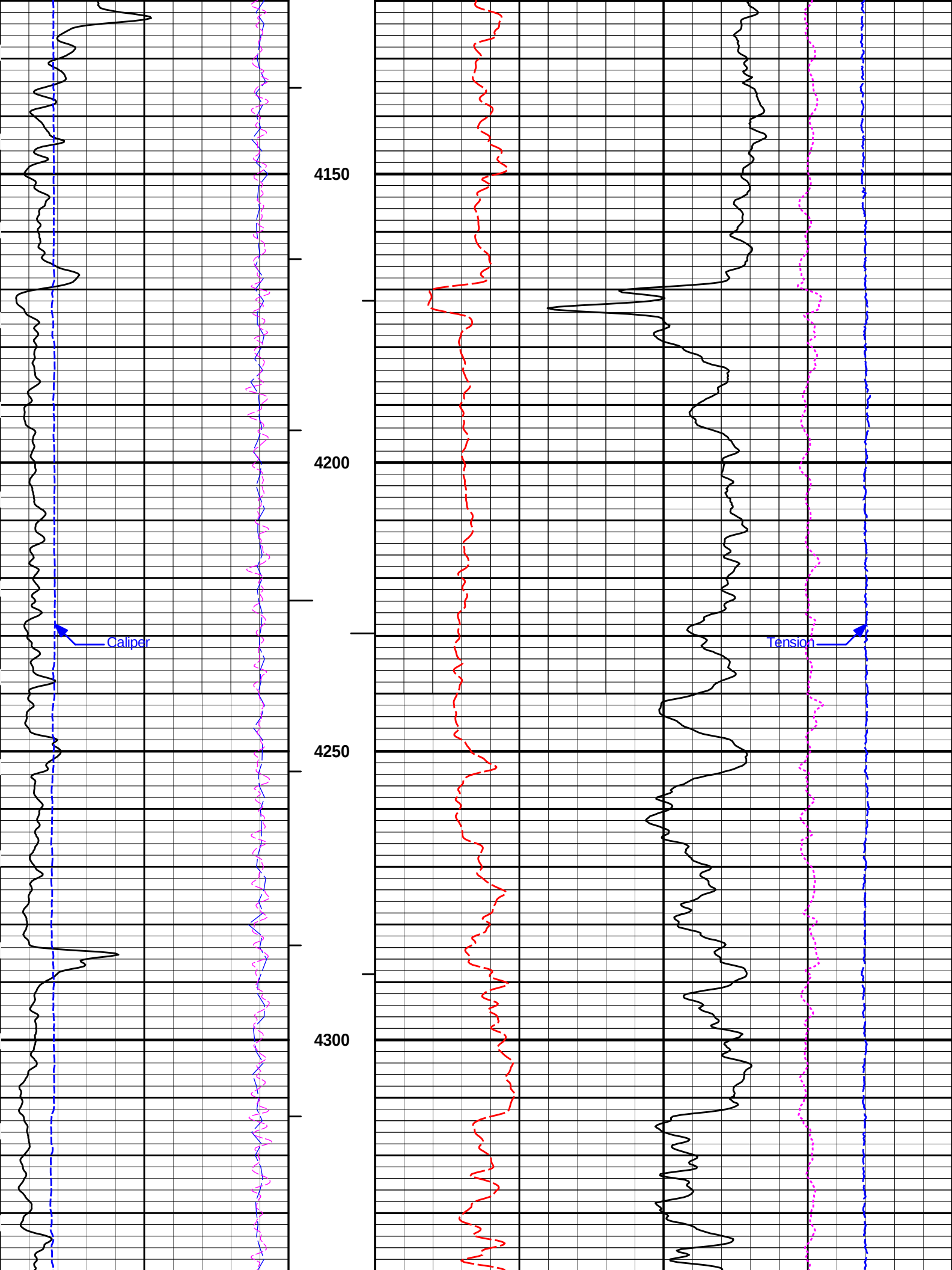


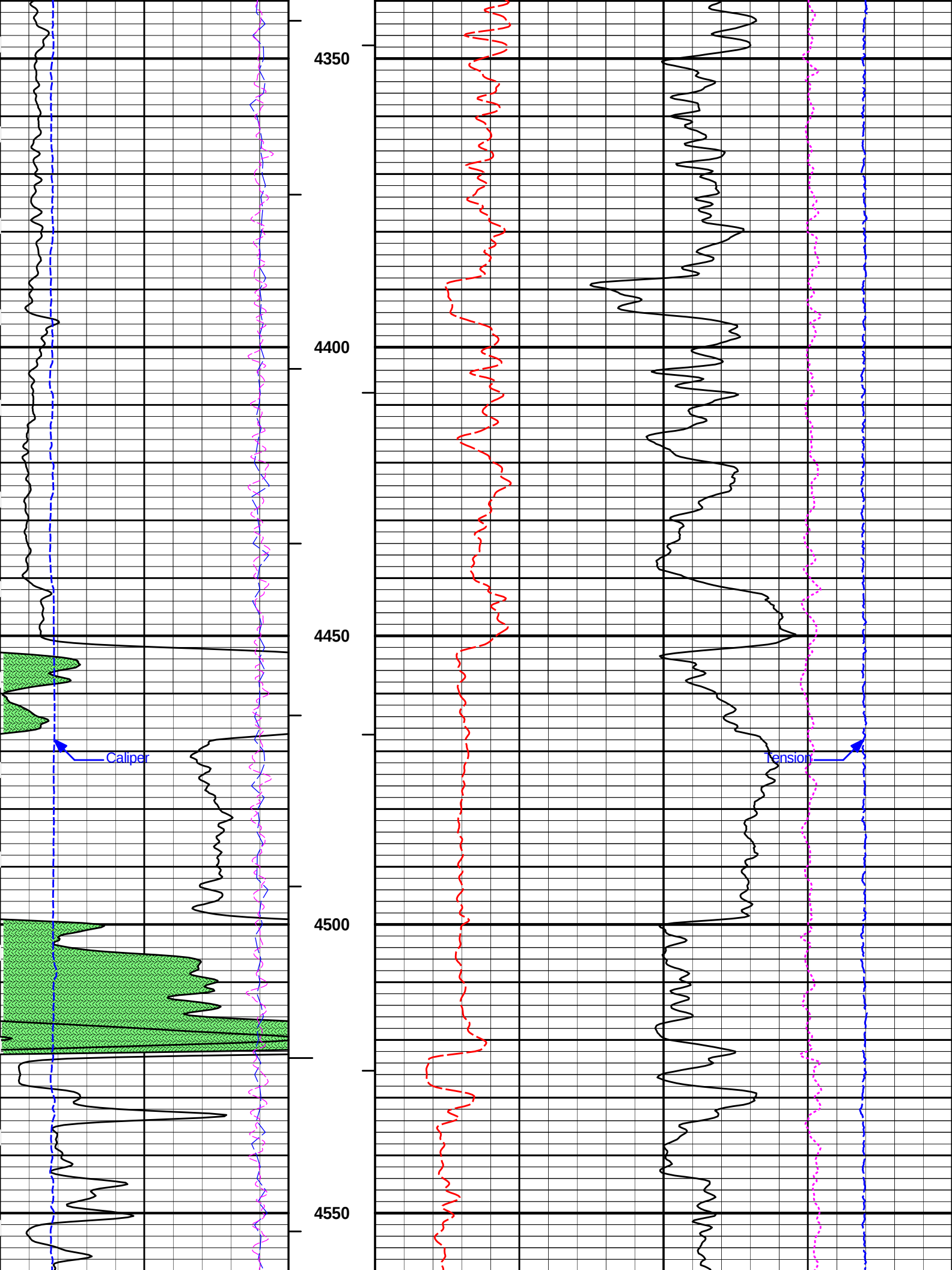


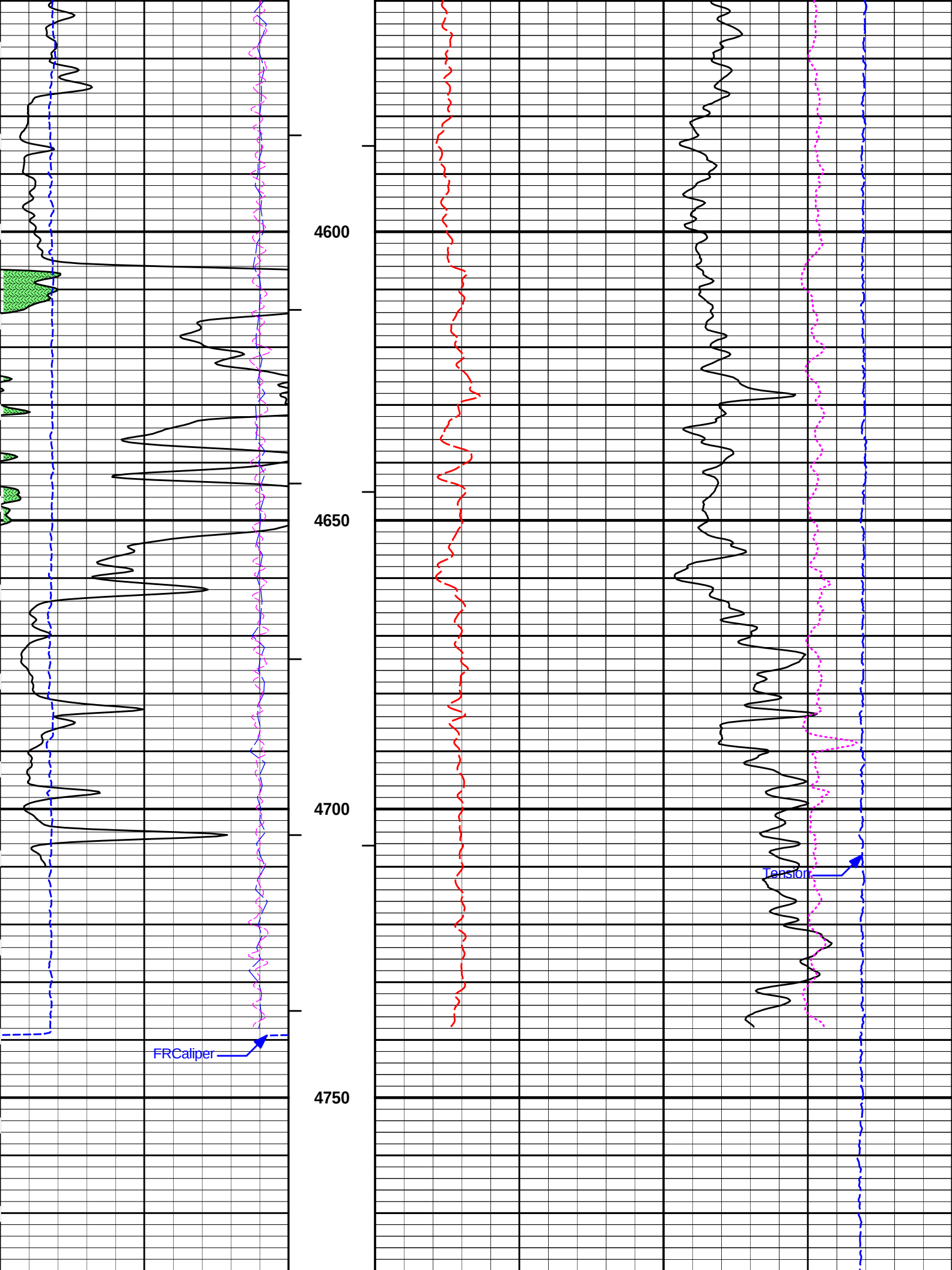


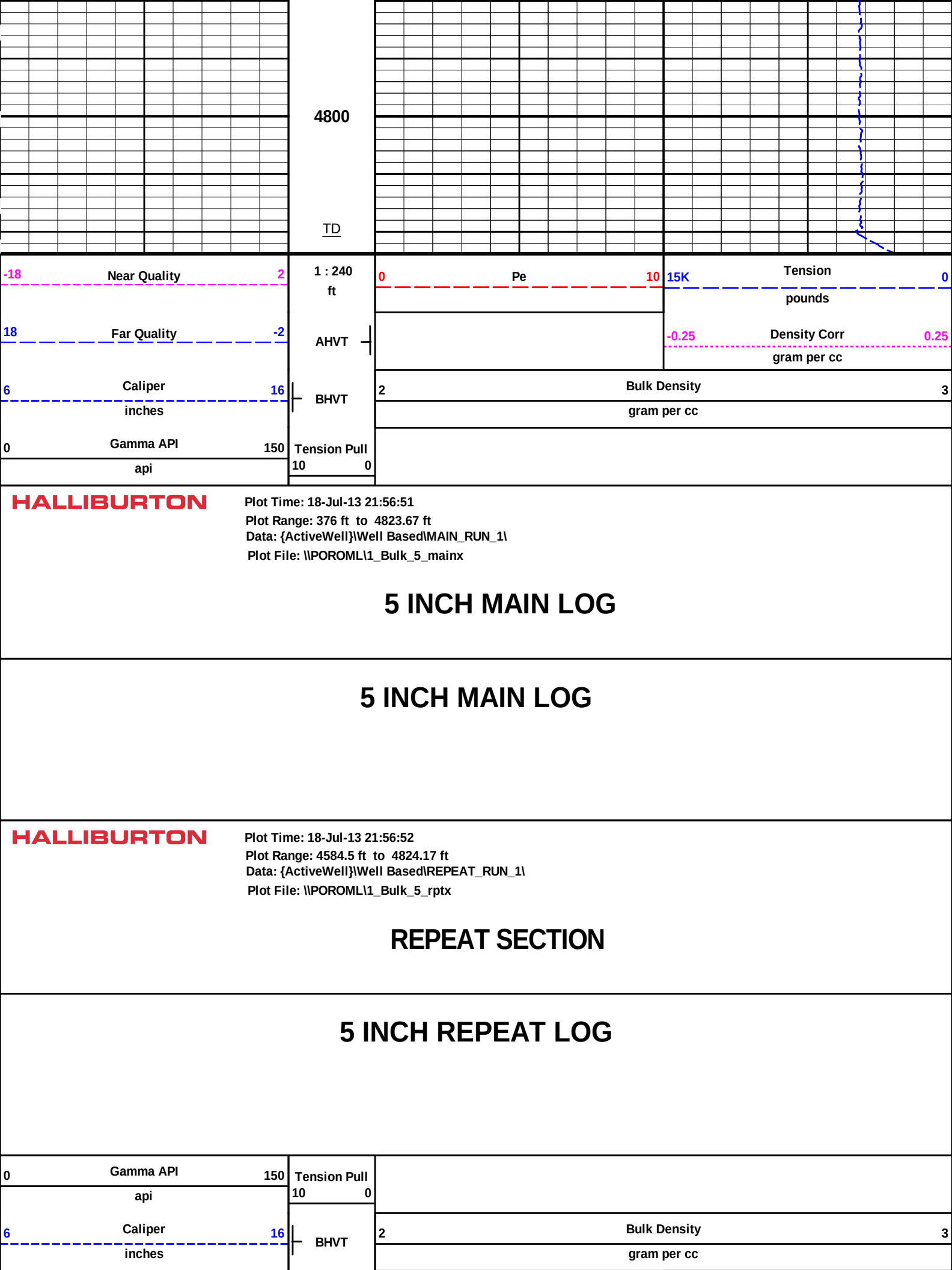


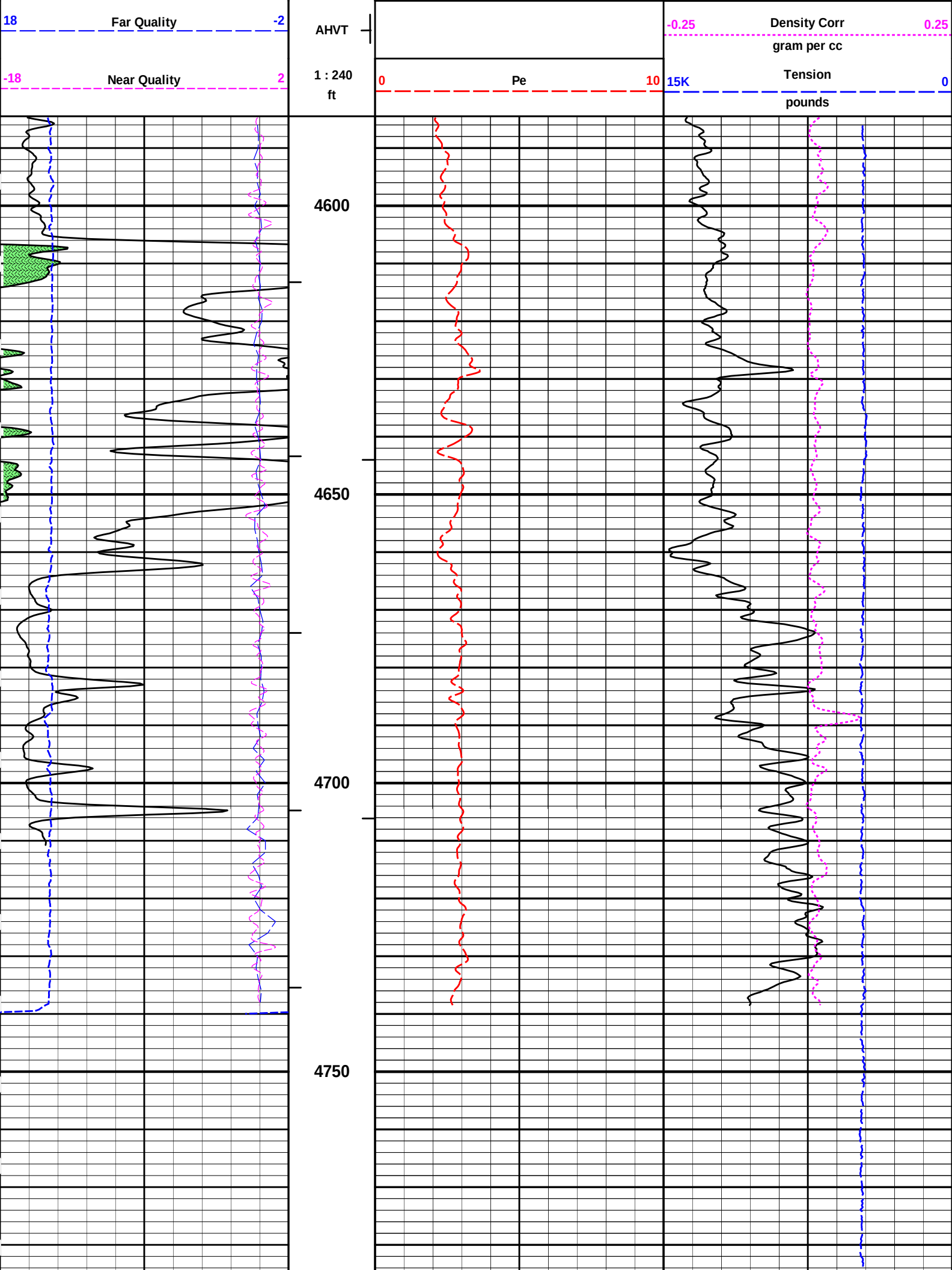


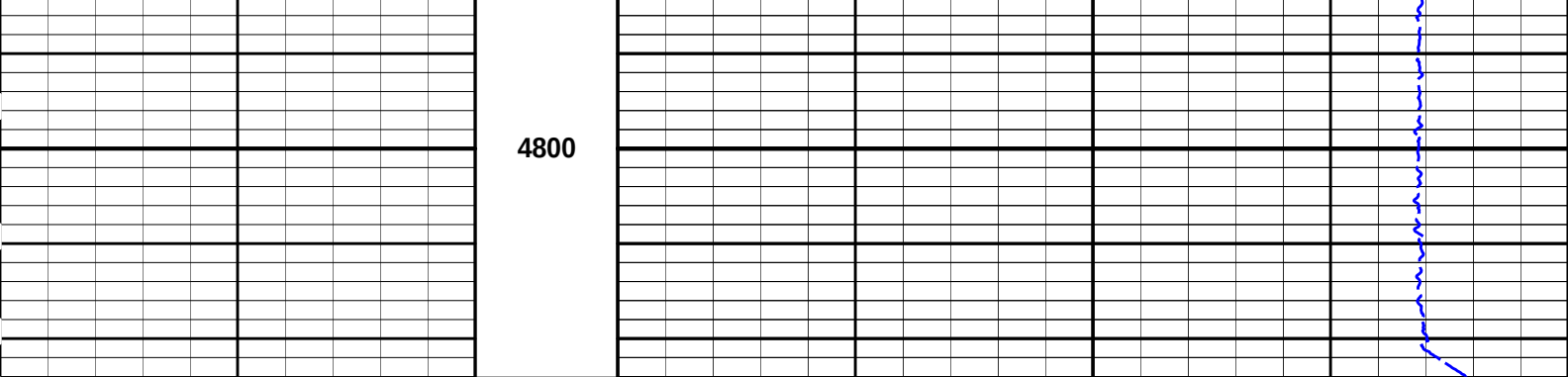












-18	Near Quality	2	1 : 240 ft	0	Pe	10	15K	Tension	0
								pounds	
18	Far Quality	-2	AHVT				-0.25	Density Corr	0.25
								gram per cc	
6	Caliper	16	BHVT	2	Bulk Density				3
	inches				gram per cc				
0	Gamma API	150	Tension Pull						
	api		10	0					

HALLIBURTON

Plot Time: 18-Jul-13 21:56:53
Plot Range: 4584.5 ft to 4824.17 ft
Data: {ActiveWell}\Well Based\REPEAT_RUN_1\
Plot File: \\POROML1_Bulk_5_rptx

REPEAT SECTION

5 INCH REPEAT LOG

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	9.300	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	13400.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.700	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	4825.00	ft
SHARED	BHT	Bottom Hole Temperature	125.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	IDT	
SHARED	AZTM	High Res Z Accelerometer Master Tool	IDT	
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	
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	
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	
IDT	WRTI	Survey Writing Interval	30	ft
IDT	SOPT	Smoothing Option	None	
ICT	CLOK	Process Caliper Outputs?	Yes	
ICT	NAVS	Navigation Source Tool	IDT	
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	Limestone 47.5	
Wavesonic-I	DTMA	Delta -T Matrix	57.00	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	IDT	
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: MADISON_3304_1_0001 BLACK-GTET-CSNG-DSNT-SDLT-IDT-ICT-WAVE-ACRT004 18-Jul-13 15:58 Up @4823.8f				Date: 18-Jul-13 16:37:46

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:Depth Panel - PROT01Reference Calibration Date:11-Jul-13 03:43:14

Engineer:CORY HANSONCalibration Date:11-Jul-13 07:05:05

Software Version:WL INSITE R3.6.0 (Build 3)Calibration Version:1

	SURFACE TENSION LOAD CELL					
	Measurement	Load Cell Value	Measurement	Calibrated	Units	
	Low	12281.89	31.26	0.00	lbs	
	High	19013.36	7872.74	7832.00	lbs	

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:CH_HOS - 590_REDReference Calibration Date:11-Jul-13 03:47:32

Engineer:JEREMY COTHRENCalibration Date:15-Jul-13 05:16:08

Software Version:WL INSITE R3.6.0 (Build 3)Calibration Version:1

	DOWNHOLE LOAD CELL					
	Measurement	Tool Value	Measurement	Calibrated	Units	
	Low	-569.75	-2938.18	0.00	lbs	
	High	-539.34	-2203.41	1093.10	lbs	

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 11013114Reference Calibration Date:28-Feb-13 09:55:36

Engineer:JEREMY COTHRENCalibration Date:14-Jun-13 12:58:03

Software Version:WL INSITE R3.6.0 (Build 3)Calibration Version:1

Calibrator Source S/N: 150

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Measurement		Measured	Calibrated	Units
Background		23.9	23.9	api
Background + Calibrator		253.5	252.8	api
Calibrator		229.5	228.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION			
Tool Name:	GTET - 11013114	Reference Calibration Date:	14-Jun-13 12:58:03
Engineer:	JEREMY COTHREN	Calibration Date:	16-Jun-13 18:44:40
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Calibrator Source S/N: 150
Calibrator API Reference:225.00 api
Equivalent Calibrator API Reference:228.9 api

Field Verification		Shop	Field	Units
Background		23.9	22.7	api
Background + Calibrator		252.8	250.4	api
Calibrator		228.9	227.7	api

Shop	Field	Difference	Tolerance
228.9	227.7	1.2	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION			
Tool Name:	DSNT - 10993115	Reference Calibration Date:	19-Apr-13 09:57:10
Engineer:	JEREMY COTHREN	Calibration Date:	14-Jun-13 13:25:15
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN 382
Tank Serial Number: PV
Reference value assigned to Tank: 56.100
Snow Block S/N: 592
Calibration Tank Water Temperature: 50 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.995	0.995	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):	0.2358	0.2358	0.0000	+/- 0.0020
Calibrated Ratio:	10.56	10.56	0.001	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0752	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION			
Tool Name:	DSNT - 10993115	Reference Calibration Date:	14-Jun-13 13:25:15

Tool Name: DSNT - 10993115		Reference Calibration Date: 17-Jun-13 13:23:23	
Engineer: CORY HANSON	Calibration Date: 10-Jul-13 12:28:59		
Software Version: WL INSITE R3.6.0 (Build 3)	Calibration Version: 1		
Logging Source S/N: DSN 382			
Snow Block S/N: 592			
NEUTRON FIELD-CHECK SUMMARY			
	Shop	Field	Difference
Snow-Block Porosity (decg):	0.0752	0.0666	-0.0086
			+/- 0.0150
PASS/FAIL SUMMARY			
Block Change Check:		Passed	
Snow Block Stat Check:		Passed	
Temperature Check:		Passed	

DENSITY CALIPER SHOP CALIBRATION			
Tool Name: SDLT - 10960494	Reference Calibration Date: 10-Apr-13 14:06:08		
Engineer: CORY HANSON	Calibration Date: 10-Apr-13 14:07:36		
Software Version: WL INSITE R3.6.0 (Build 3)	Calibration Version: 1		
Host Tool Name: DSNT - 10993115			

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3074.26	-3038.52	-7000.00 - -1000.00
Pad Gain	0.0003797	0.0003765	0.000200 - 0.000600
Arm Offset	-722.38	-772.81	-5000.00 - 3000.00
Arm Gain	0.0005114	0.0005132	0.000300 - 0.000700
Arm Power	-0.000004650	-0.000004767	-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)	3.77	3.75	-0.02	+/- 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 - 10865873	Reference Calibration Date: 23-Jan-13 11:36:30		
Engineer: JEREMY COTHREN	Calibration Date: 14-Jun-13 13:15:57		
Software Version: WL INSITE R3.6.0 (Build 3)	Calibration Version: 1		

Logging Source S/N: 20791B

Aluminum Block S/N: ny

Density: 2.584g/cc

Pa: 3.140

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	0.9827	0.9826	0.90 - 1.10
Near Dens Gain	0.9895	0.9890	0.90 - 1.10
Near Peak Gain	0.9714	0.9722	0.90 - 1.10
Near Lith Gain	0.9506	0.9498	0.90 - 1.10
Far Bar Gain	0.9925	0.9925	0.90 - 1.10
Far Dens Gain	0.9836	0.9837	0.90 - 1.10
Far Peak Gain	0.9789	0.9786	0.90 - 1.10
Far Lith Gain	0.9653	0.9656	0.90 - 1.10
Near Bar Offset	0.3137	0.3142	NONE
Near Dens Offset	0.2340	0.2385	NONE
Near Peak Offset	0.3585	0.3510	NONE
Near Lith Offset	0.5200	0.5267	NONE
Far Bar Offset	0.1705	0.1699	NONE
Far Dens Offset	0.2418	0.2408	NONE
Far Peak Offset	0.2586	0.2608	NONE
Far Lith Offset	0.3481	0.3460	NONE
Near Bar Background	929.32	929.07	700 - 1450
Near Dens Background	303.08	303.12	230 - 480
Near Peak Background	132.56	132.62	100 - 210
Near Lith Background	162.70	162.67	125 - 260
Far Bar Background	523.03	522.97	450 - 900
Far Dens Background	206.47	206.54	175 - 345
Far Peak Background	82.40	82.28	70 - 140
Far Lith Background	83.85	83.82	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.683	1.683	-0.000	+/- 0.015
Pe	2.545	2.545	0.000	+/- 0.150
ALUMINUM				
Density (g/cc)	2.584	2.584	-0.000	+/- 0.01500
Pe	3.090	3.089	-0.001	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0008	+/- 0.0110	-0.0006	+/- 0.0140
Magnesium Block	0.0005	+/- 0.0110	-0.0024	+/- 0.0140
Aluminum Block	0.0009	+/- 0.0110	-0.0001	+/- 0.0140
Resolution	10.11	6.00 - 11.50	8.84	6.00 - 11.50
Internal Verifier(B+D+P+L)	1527	1200 - 2700	896	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 - 10865873	Reference Calibration Date:	14-Jun-13 13:15:57
Engineer:	CORY HANSON	Calibration Date:	10-Jul-13 12:33:24
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Pad Temperature: 54.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1527.479	1525.956	-1.523	15.739
Far (B+D+P+L) cps	895.607	895.818	0.211	16.286
Near Resolution	10.11	10.05	-0.060	0.50
Far Resolution	8.84	8.86	0.020	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 - I15M94P73	Reference Calibration Date:	18-Sep-12 14:11:58
Engineer:	HOFKAMP	Calibration Date:	19-Dec-12 12:55:57
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 10993115		

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.04	-0.13	-0.02	-0.01	ohmm
Calibration Point #1	0.09	0.00	-0.01	0.00	ohmm
Calibration Point #2	20.00	20.00	19.93	20.00	ohmm
Internal Reference	19.90	19.90	19.92	20.00	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	0.95	-0.81	V
Calibration Point #1	35.34	1.96	V
Calibration Point #2	5315.32	6890.13	V
Internal Reference	5288.52	6888.50	V

MICRO LOG FIELD CHECK

Tool Name:	Microlog Pad - I15M94P73	Reference Calibration Date:	19-Dec-12 12:55:57
Engineer:	CORY HANSON	Calibration Date:	10-Jul-13 12:34:15
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Measurement	Micro Log Normal	Micro Log Lateral
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CH_HOS-590_RED
37.50 lbs

Ø 2.750 in →

← Temperature @ 121.55 ft

3.03 ft

122.36 ft

XODH-001
20.00 lbs

Ø 2.750 in
Ø 3.625 in →

0.88 ft

119.55 ft

118.67 ft

GTET-11013114
165.00 lbs

Ø 3.625 in →

8.52 ft

← GammaRay @ 112.61 ft

110.15 ft

CSNG-10736164
114.00 lbs

UnivWearRing3.6-
10736164
5.00 lbs

Ø 4.200 in*
Ø 3.625 in →

8.17 ft

← CSNG @ 104.53 ft

101.99 ft

DSNT-10993115
174.00 lbs

DSN Decentralizer-
10993115
6.60 lbs

Ø 5.000 in*
Ø 3.625 in →

9.69 ft

← DSN Far @ 95.05 ft
← DSN Near @ 94.30 ft

92.30 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* →

10.81 ft

Microlog @ 84.49 ft
SDL Caliper @ 84.30 ft
SDL @ 84.29 ft

81.49 ft

IQ Flex-BLACK
140.00 lbs

Ø 3.625 in →

5.67 ft

75.82 ft

IDT-10886210
150.00 lbs

Ø 3.625 in →

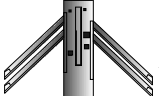
7.58 ft

ICT-10978621
330.00 lbs

Ø 3.625 in →

12.83 ft

68.23 ft



← ICT Caliper @ 58.19 ft

55.40 ft

Wavesonic-I-136
520.00 lbs

Ø 3.625 in →

34.07 ft

← Wavesonic Delay @ 32.83 ft

21.33 ft

ACRt Instrument-
989
50.00 lbs

Ø 3.625 in →

5.03 ft

ShortAxisKit-910
60.00 lbs

Ø 5.380 in* →

16.30 ft

← Mud Resistivity @ 14.94 ft

ACRt Sonde-
90144321-e989-s
200.00 lbs

SP Ring-1
0.00 lbs

Hole Finder-01
50.00 lbs

Ø 3.625 in →

Ø 3.625 in* →

Ø 2.800 in ↘
Ø 3.625 in →

← ACRt @ 10.96 ft

← SP @ 3.36 ft

14.22 ft

2.08 ft

2.08 ft

0.00 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	119.55	300.00
XODH	Dits to Hostile Cross Over	001		20.00	0.88	118.67	300.00
GTET	Gamma Telemetry Tool	11013114		165.00	8.52	110.15	60.00
CSNG	Compensated Spectral Natural Gamma	10736164		114.00	8.17	101.99	15.00
UWR3P6	Universal Wear Ring 3 5-8 inch	10736164		5.00	0.35	*	106.07 300.00
DSNT	Dual Spaced Neutron	10993115		174.00	9.69	92.30	60.00
DCNT	DSN Decentralizer	10993115		6.60	5.13	*	95.63 300.00
SDLT	Spectral Density Tool	10960494		360.00	10.81	81.49	60.00
SDLP	Density Insite Pad	10865873		65.00	2.55	*	83.70 60.00
MICP	Microlog Pad	I15M94P73		8.00	1.00	*	83.99 60.00
IQF	IQ Flex tool	BLACK		140.00	5.67	75.82	300.00
IDT	Insite Directional Tool	10886210		150.00	7.58	68.23	30.00
ICT	Six Independent Arm Caliper	10978621		330.00	12.83	55.40	30.00
WSTT	WaveSonic Insite	136		520.00	34.07	21.33	30.00
ACRt	Array Compensated True Resistivity Instrument Section	989		50.00	5.03	16.30	300.00
SAK	Short Axis Kit for logging short axis of a borehole.	910		60.00	1.02	*	16.30 300.00
ACRt	Array Compensated True Resistivity Sonde Section	90144321-e989-s		200.00	14.22	2.08	300.00
SP	SP Ring	1		0.00	0.25	*	3.36 300.00
HFND	Hole Finder	01		50.00	2.08	0.00	300.00
Total				2,455.10	122.58		
* Not included in Total Length and Length Accumulation.							
Data: MADISON_3304_1_0001 BLACK-GTET-CSNG-DSNT-SDLT-IDT-ICT-WAVE-ACRTIDLE						Date: 18-Jul-13 14:54:23	

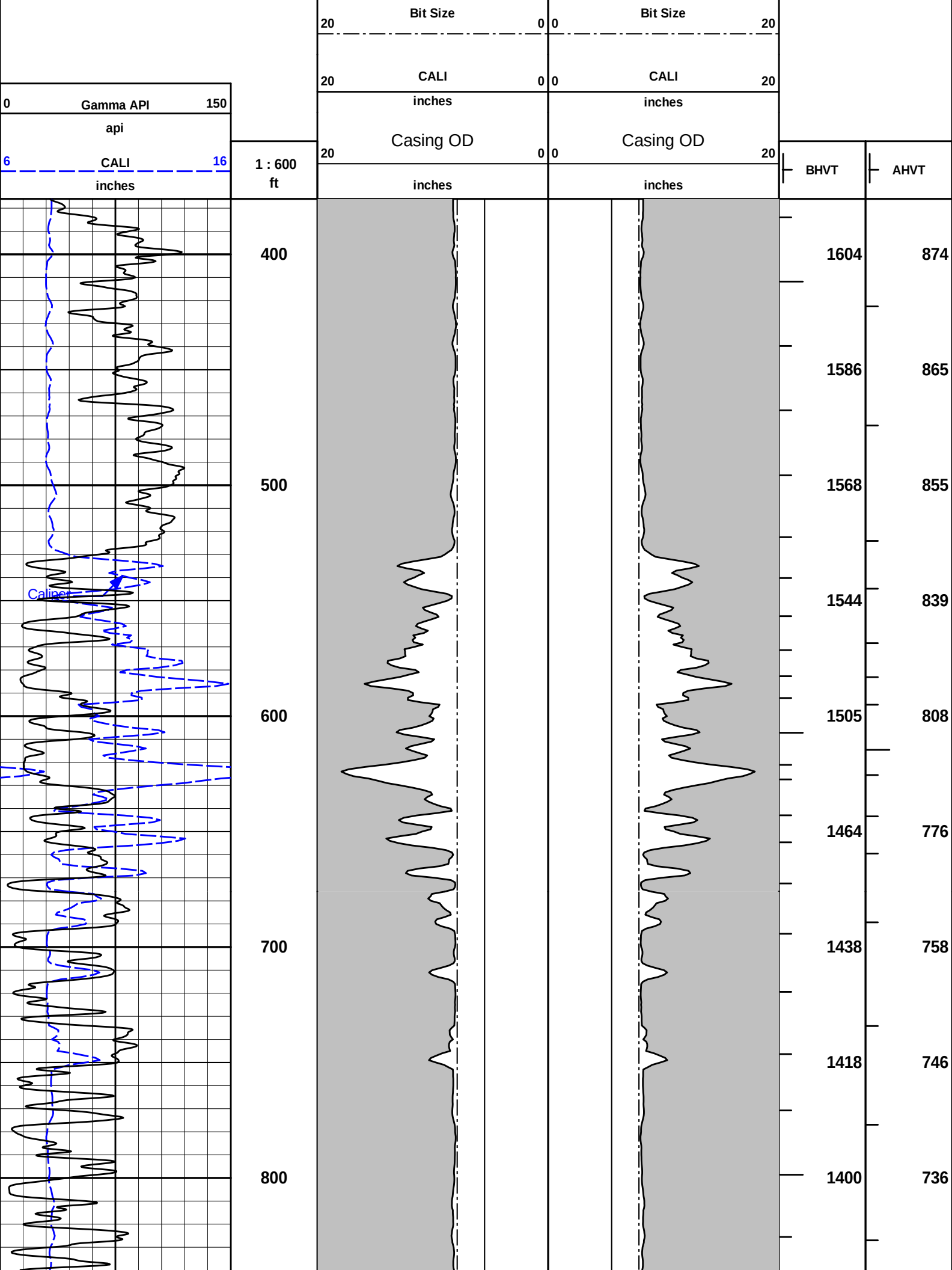
HALLIBURTON

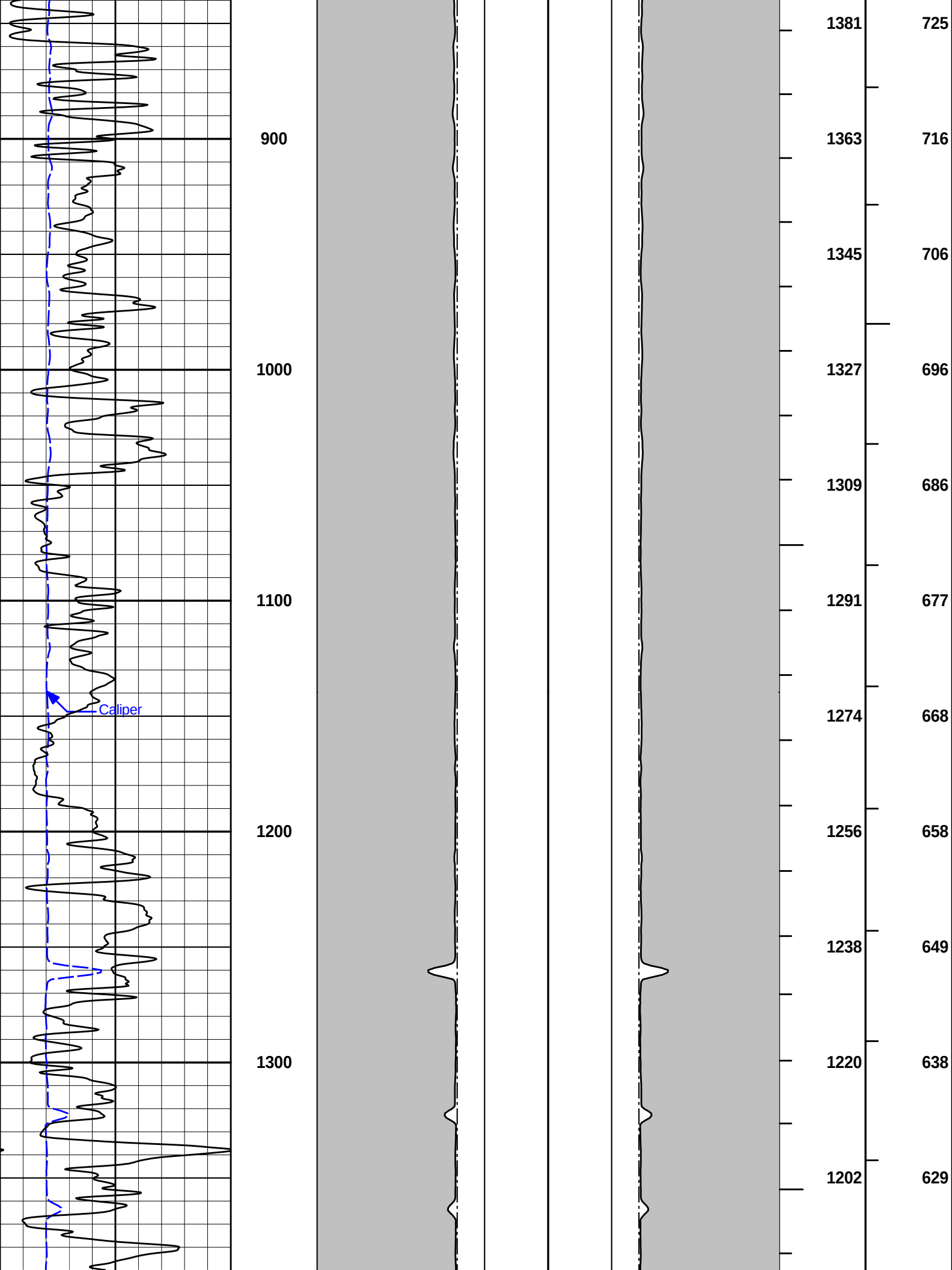
Plot Time: 18-Jul-13 21:56:54
Plot Range: 376 ft to 4823.67 ft
Data: {ActiveWell}\Well Based\MAIN_RUN_1\
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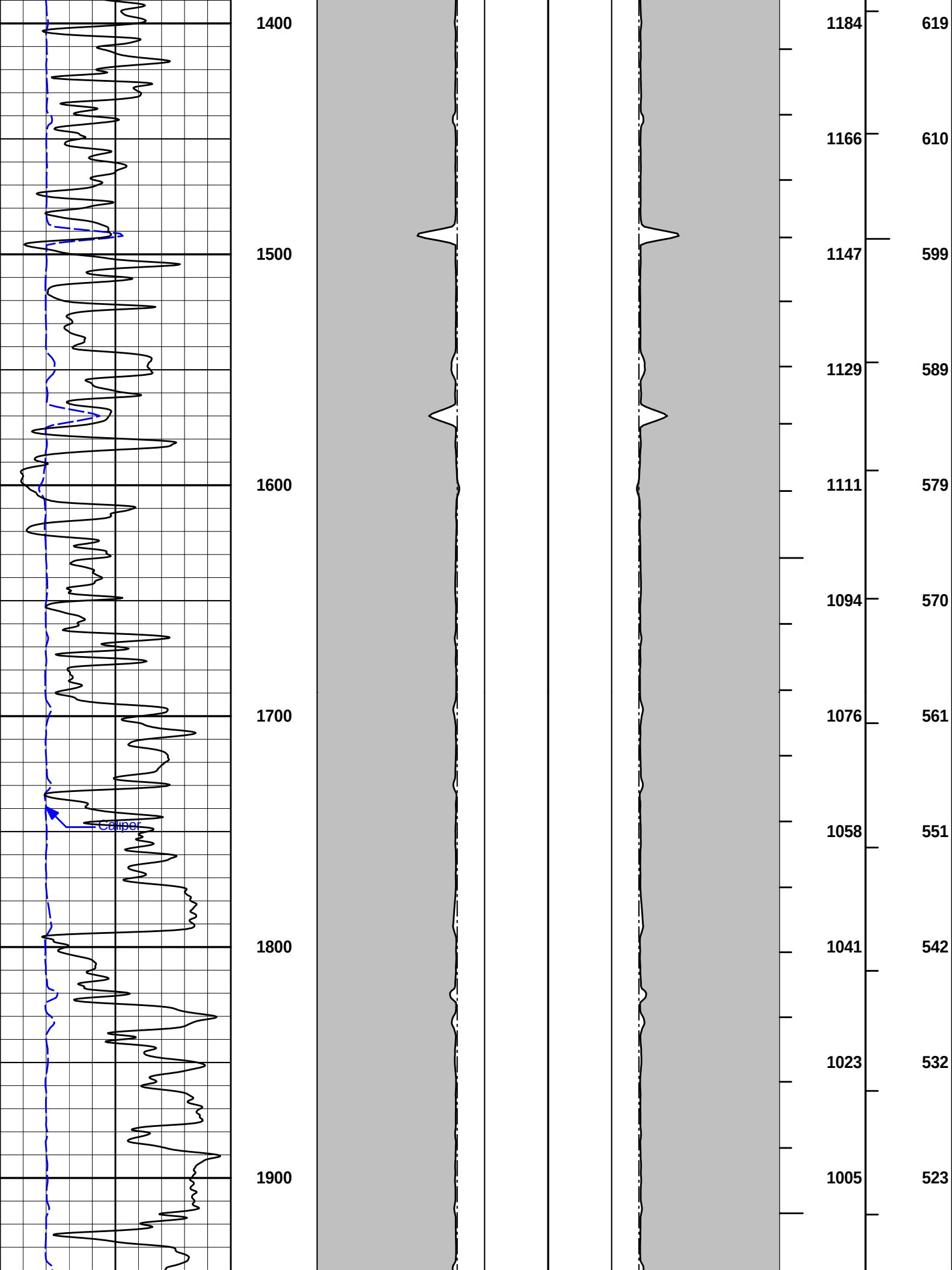
ANNULAR HOLE VOLUME PLOT

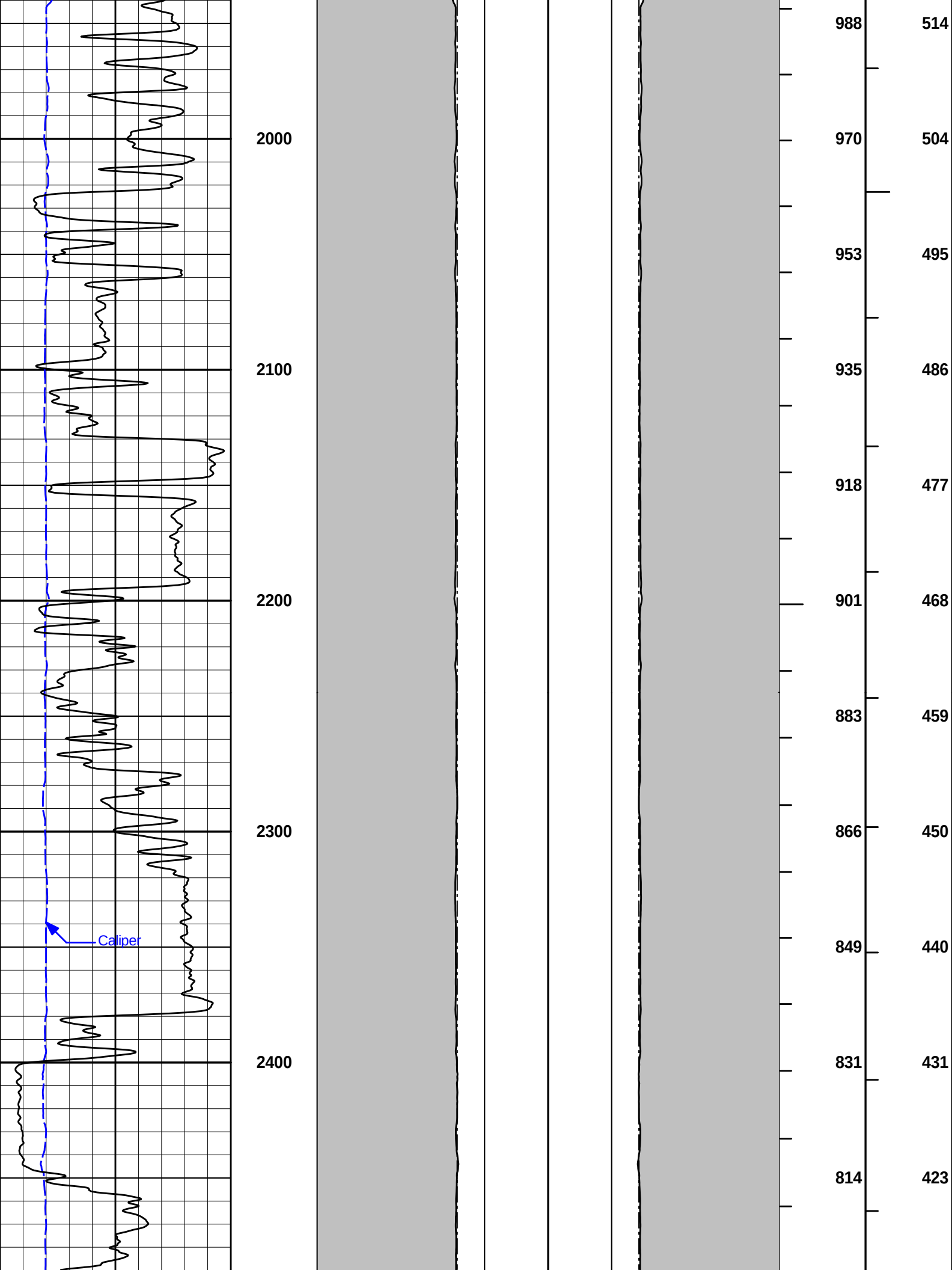
ANNULAR HOLE VOLUME PLOT

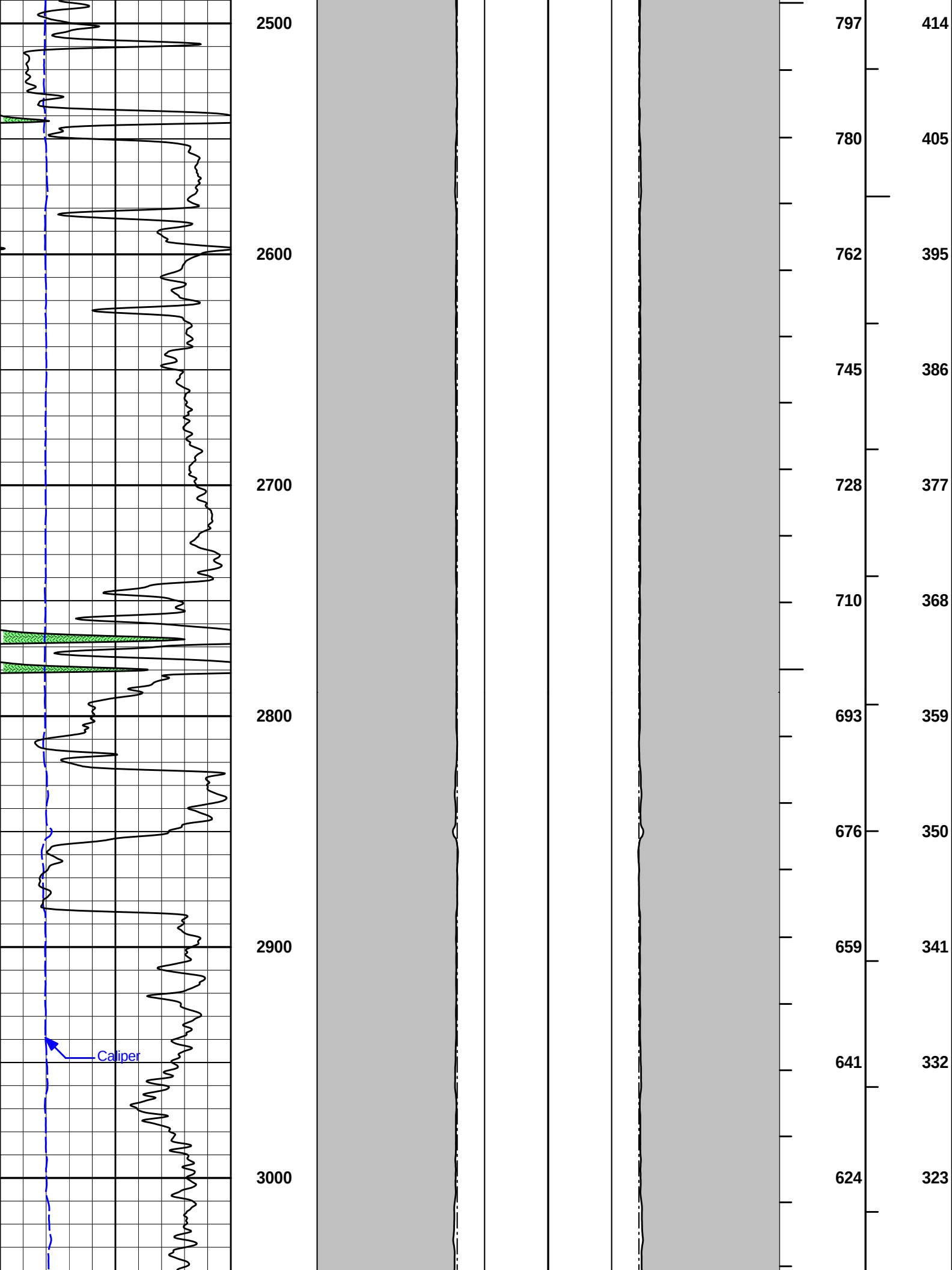
	MUDCAKE	MUDCAKE

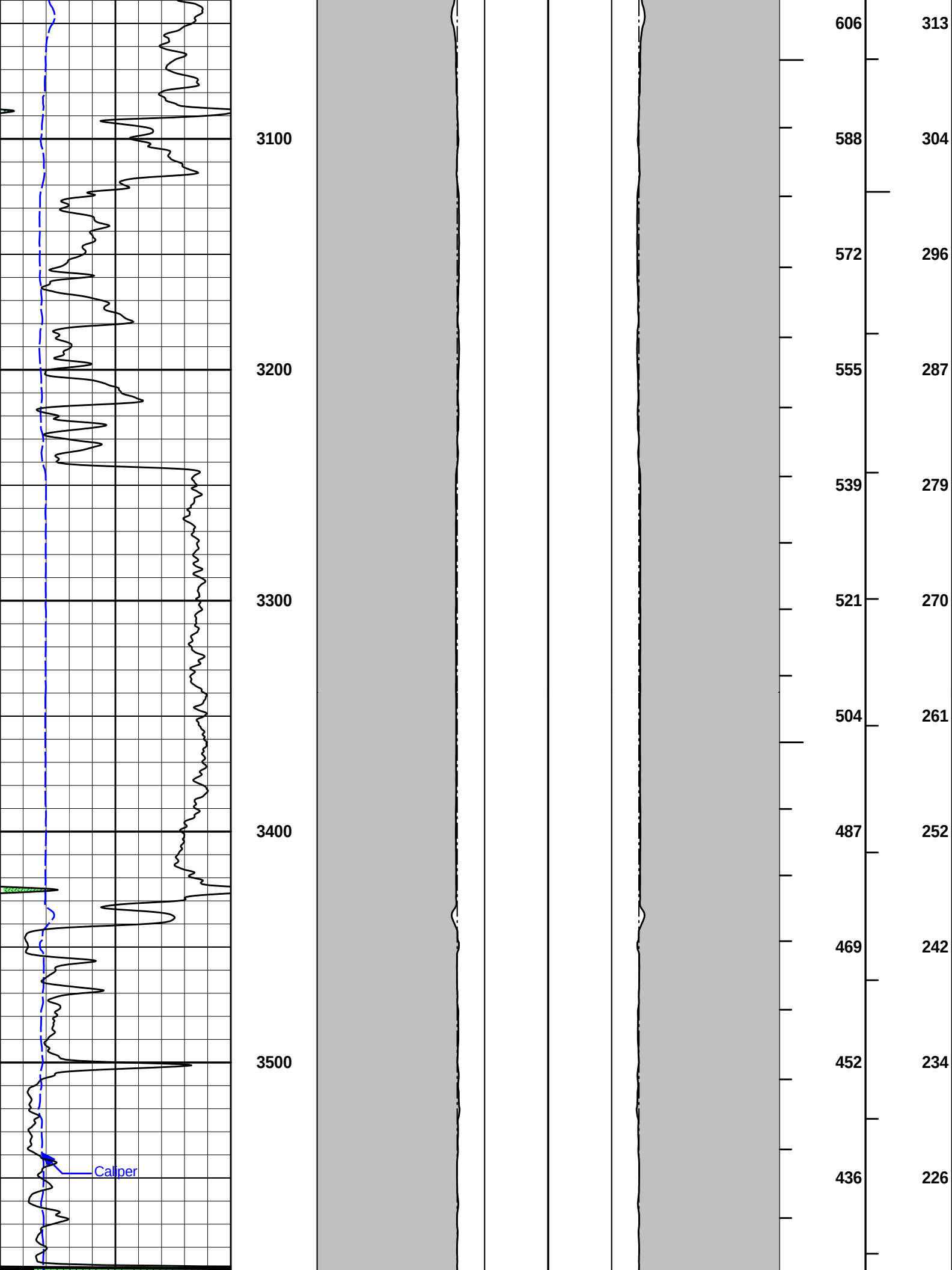


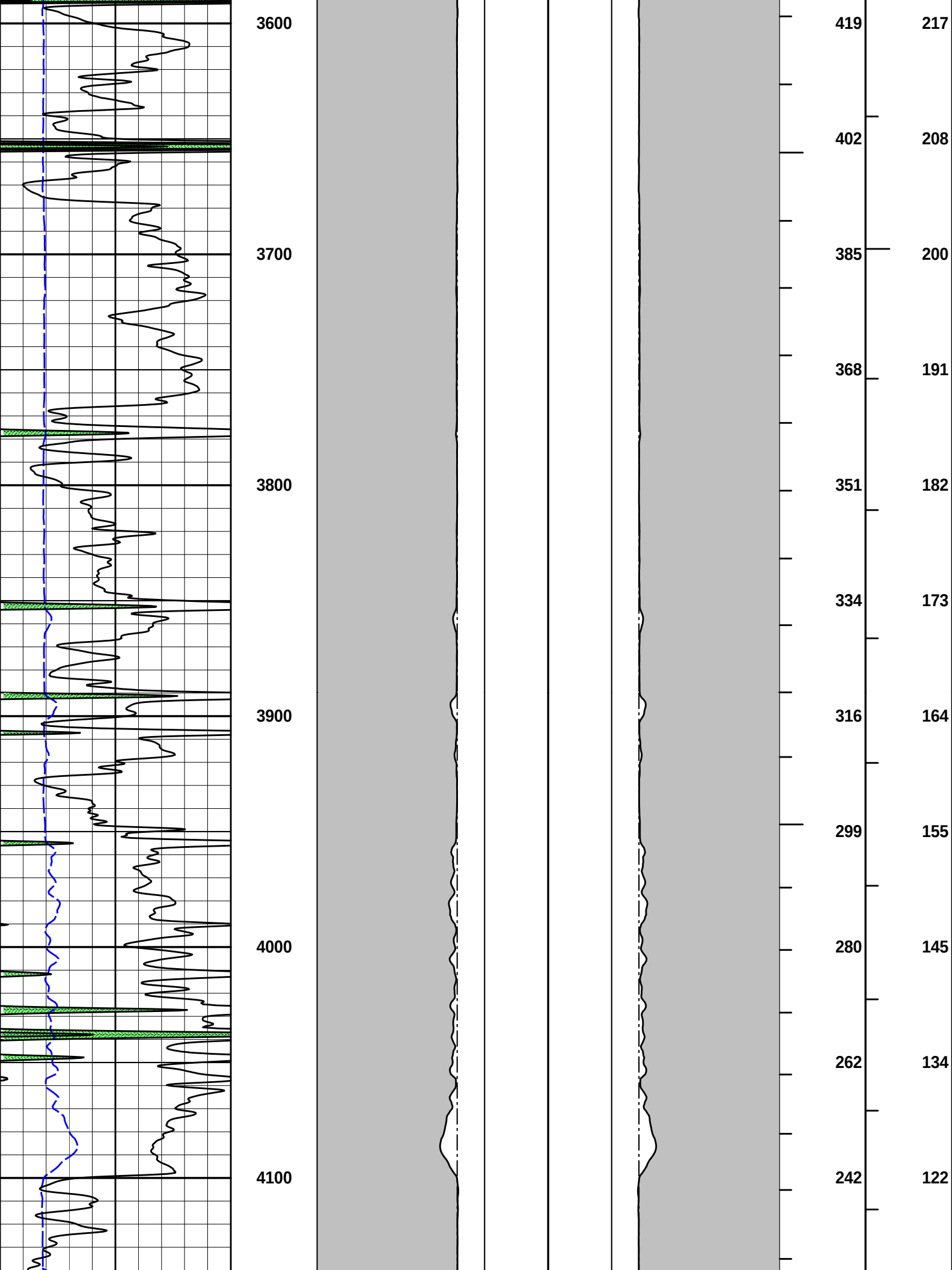


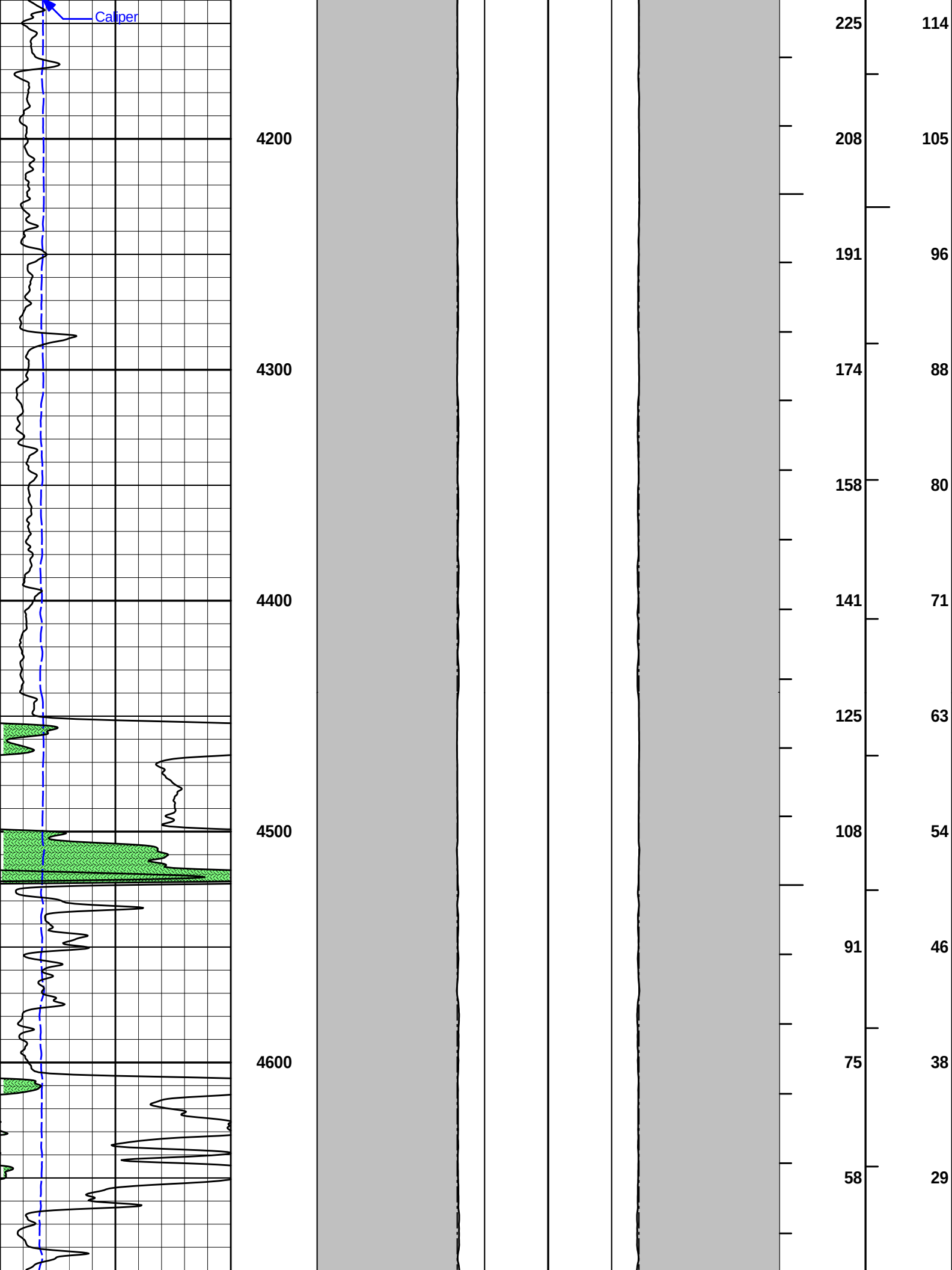


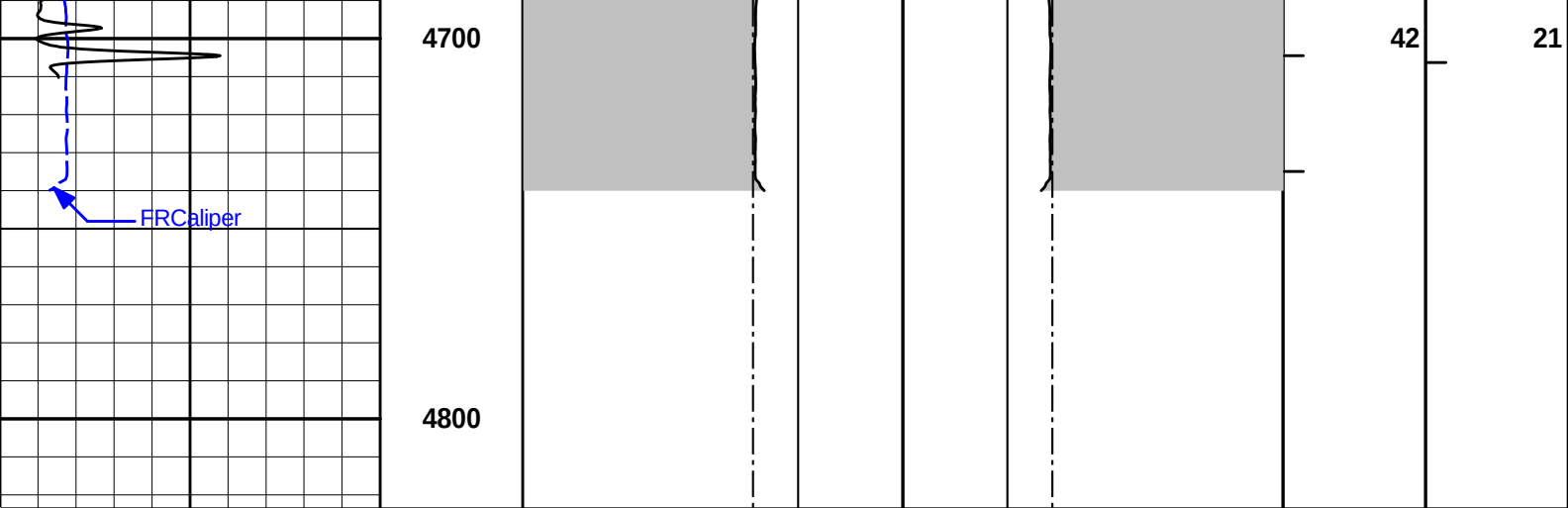












6 CALI 16 inches 0 Gamma API 150 api	1 : 600 ft	20	Casing OD	0 0	20	Casing OD	BHVT	AHVT
			inches			inches		
		CALI	0 0		CALI	20		
		inches			inches			
		Bit Size	0 0		Bit Size	20		
			MUDCAKE			MUDCAKE		

HALLIBURTON

Plot Time: 18-Jul-13 21:56:57
Plot Range: 376 ft to 4823.67 ft
Data: {ActiveWell}\Well Based\MAIN_RUN_1\
Plot File: \\LOCAL\MADISON_3304_1_10001 BLACK-GTET-CSNG-DSNT-SDLT-IDT-ICT-WAVE-ACRTIPOROML1_AHV Plot_x

ANNULAR HOLE VOLUME PLOT

ANNULAR HOLE VOLUME PLOT

COMPANY	SANDRIDGE		
WELL	MADISON SWD 3304 1-24		
FIELD	NA		
COUNTY	SUMNER	STATE	KANSAS
HALLIBURTON		DUAL SPACED NEUTRON SPECTRAL DENSITY MICROLOG	