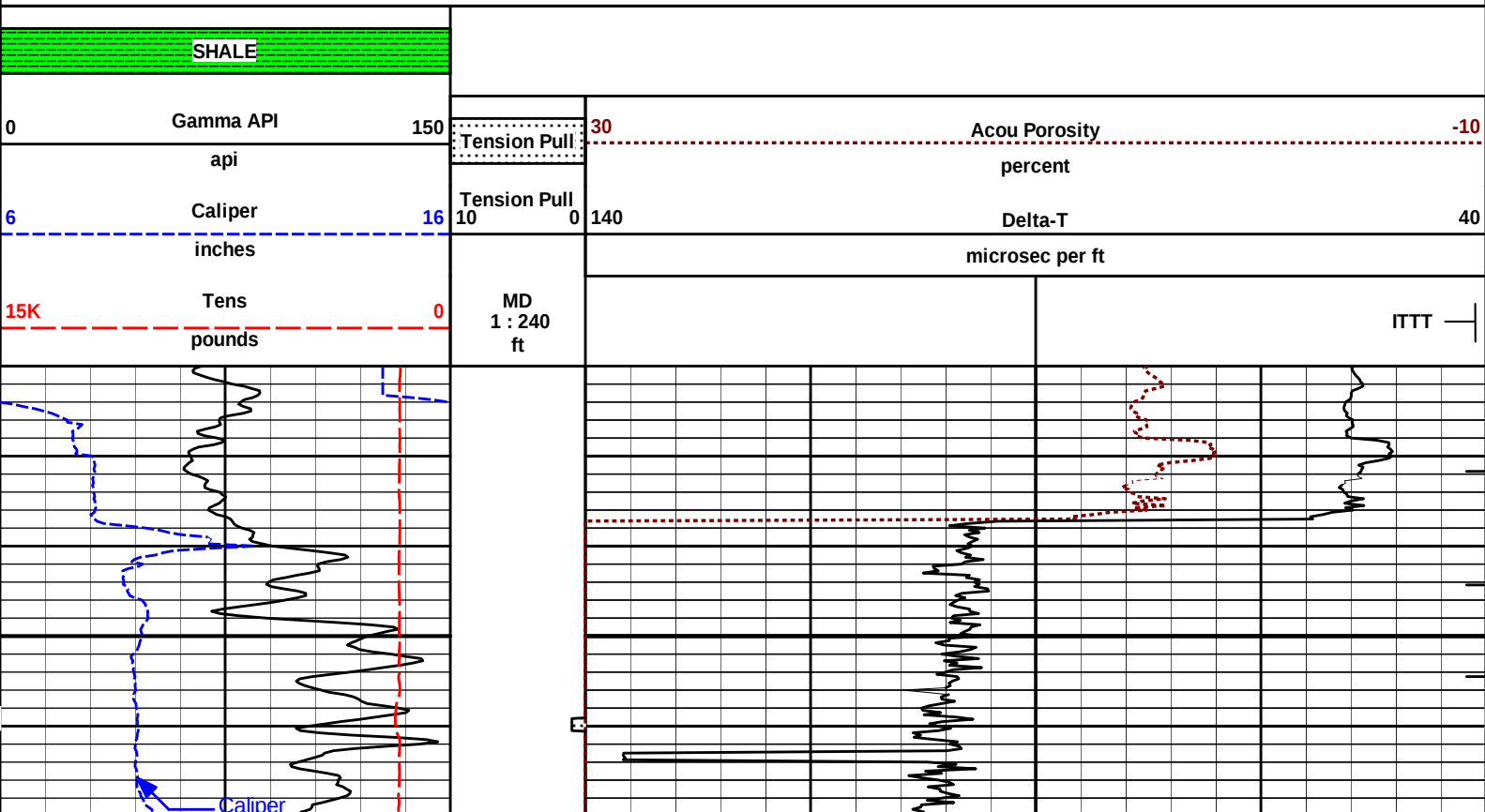
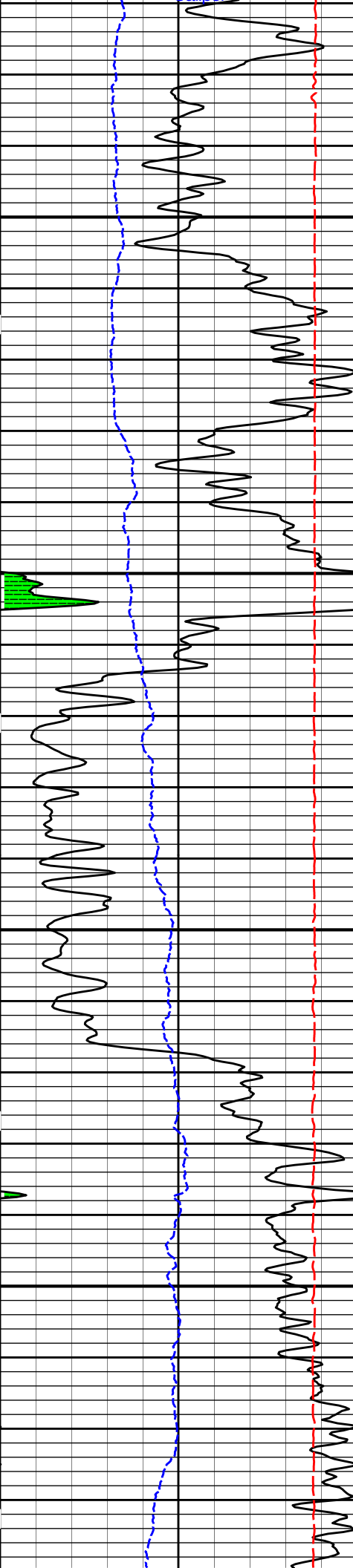


**BOREHOLE COMPENSATED
SONIC ARRAY
LOG**

Service Ticket No.: 9000299657																API Serial No.: 15-171-20933-00-00																PGM Version: WL INSITE R3.8.0 (Build 2)															
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.								@				@																																			
Rmc @ Meas. Temp.								@				@																																			
Source Rmf				Rmc																																											
Rm @ BHT								@				@																																			
Rmf @ BHT								@				@																																			
Rmc @ BHT								@				@																																			
EQUIPMENT DATA																																															
GAMMA								ACOUSTIC								DENSITY								NEUTRON																							
Run No.				ONE				Run No.				ONE				Run No.								Run No.																							
Serial No.				11048627				Serial No.				10747683				Serial No.								Serial No.																							
Model No.				GTET				Model No.				BSAT				Model No.								Model No.																							
Diameter				3.625"				No. of Cent.				2				Diameter								Diameter																							
Detector Model No.				GTET				Spacing				6"				Log Type								Log Type																							
Type				SCINT												Source Type								Source Type																							
Length				8'				LSA [Y/N]				NO				Serial No.								Serial No.																							
Distance to Source				10'				FWDA [Y/N]				NO				Strength								Strength																							
LOGGING DATA																																															

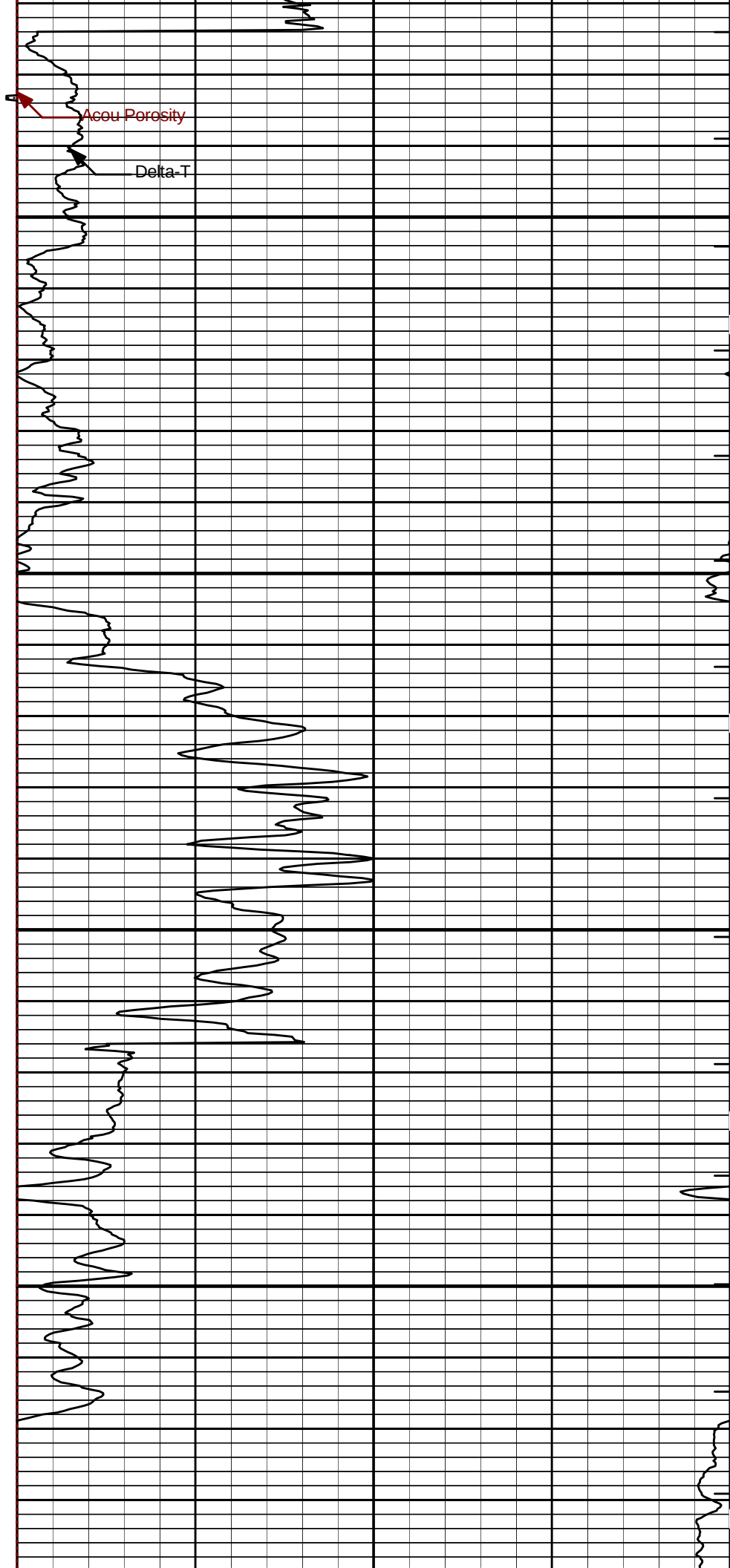
GENERAL			GAMMA		ACOUSTIC			DENSITY			NEUTRON			
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	4966	336	REC	0	150									
DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING														
CHLORIDES REPORTED AT 10,000 MG/L														
LCM REPORTED AT 1 LB/BBL														
GTET-DSNT-SDLT-BSAT-ACRT RUN IN COMBINATION														
TODAY'S CREW: F. VILLA & M. GRAHAM														
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS. 620-624-8123														
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.														
HALLIBURTON														

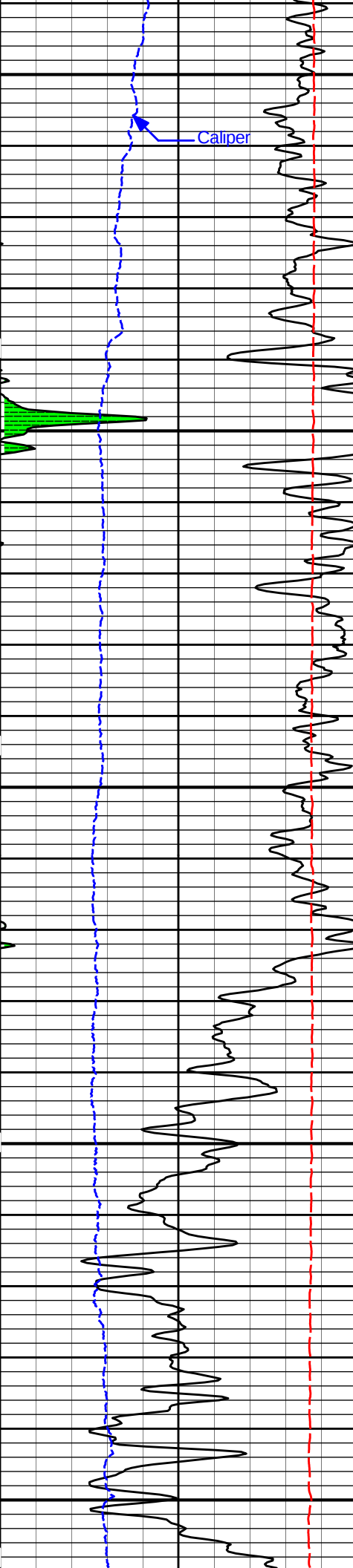




400

500

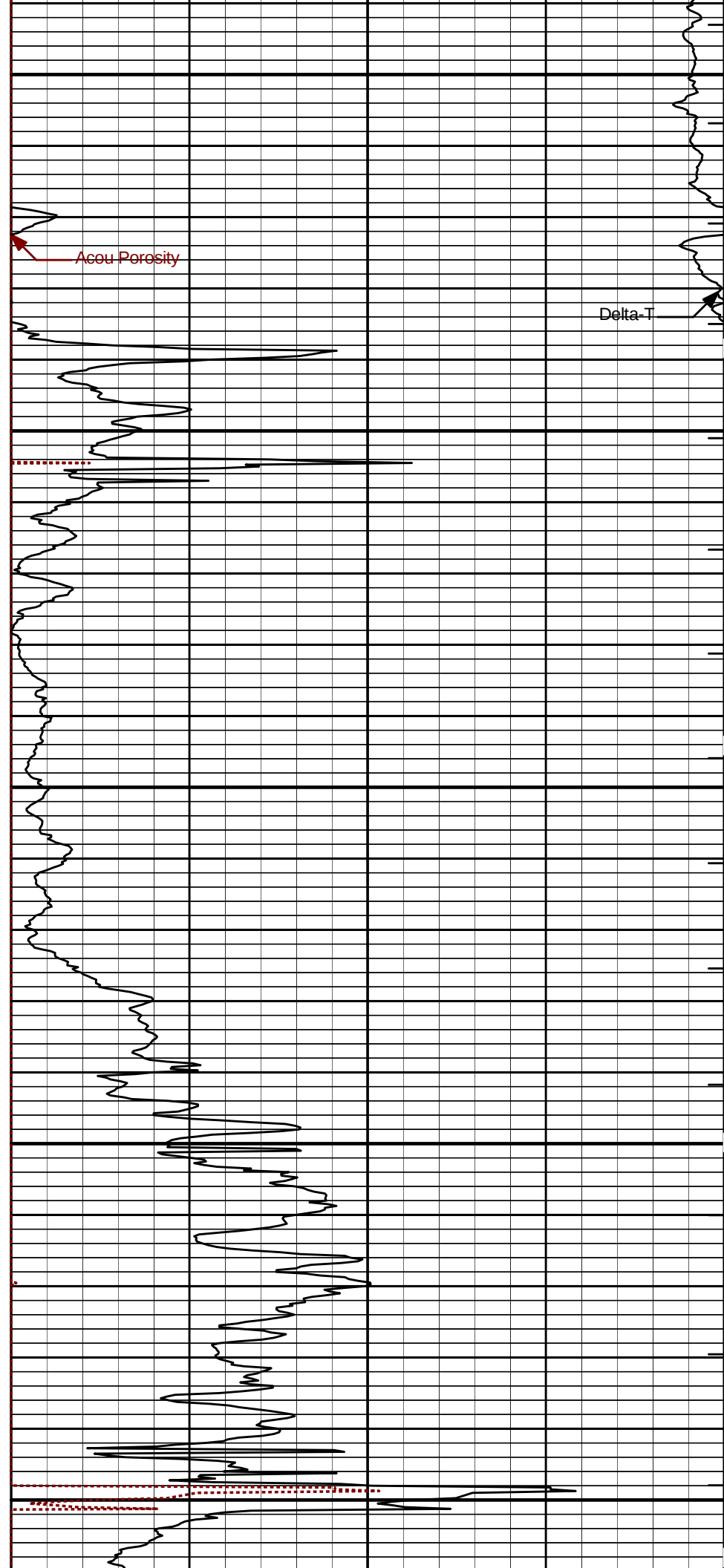




600

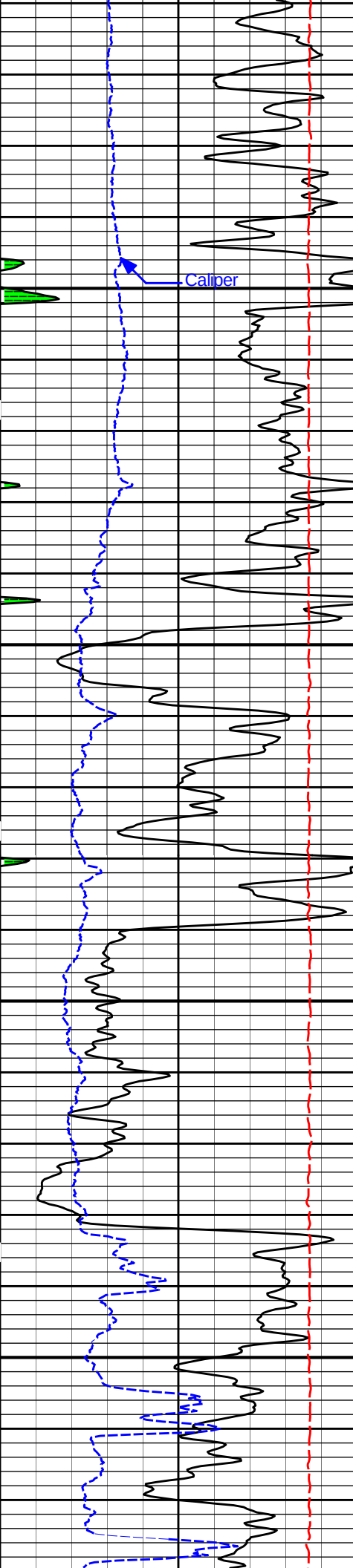
700

800



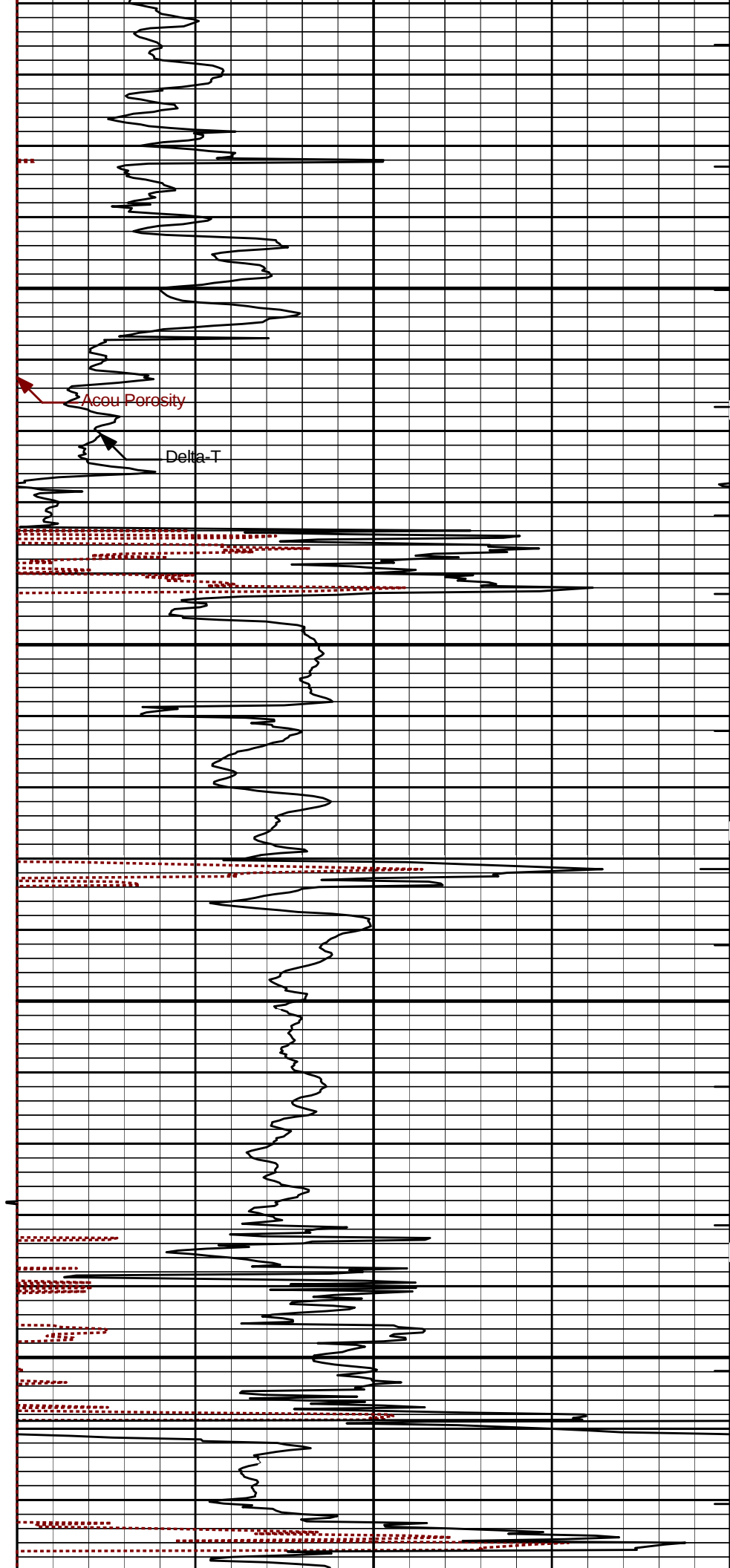
Acou Porosity

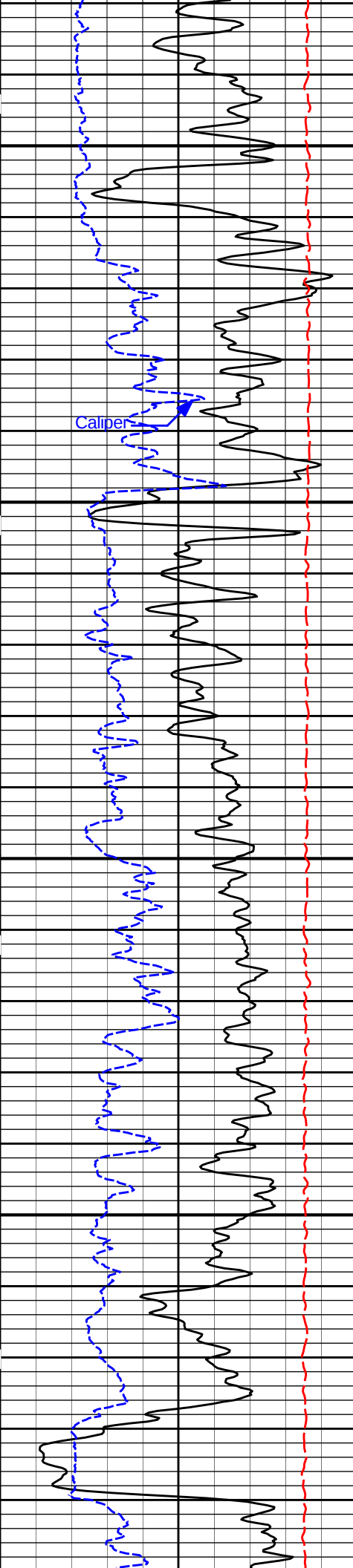
Delta-T



900

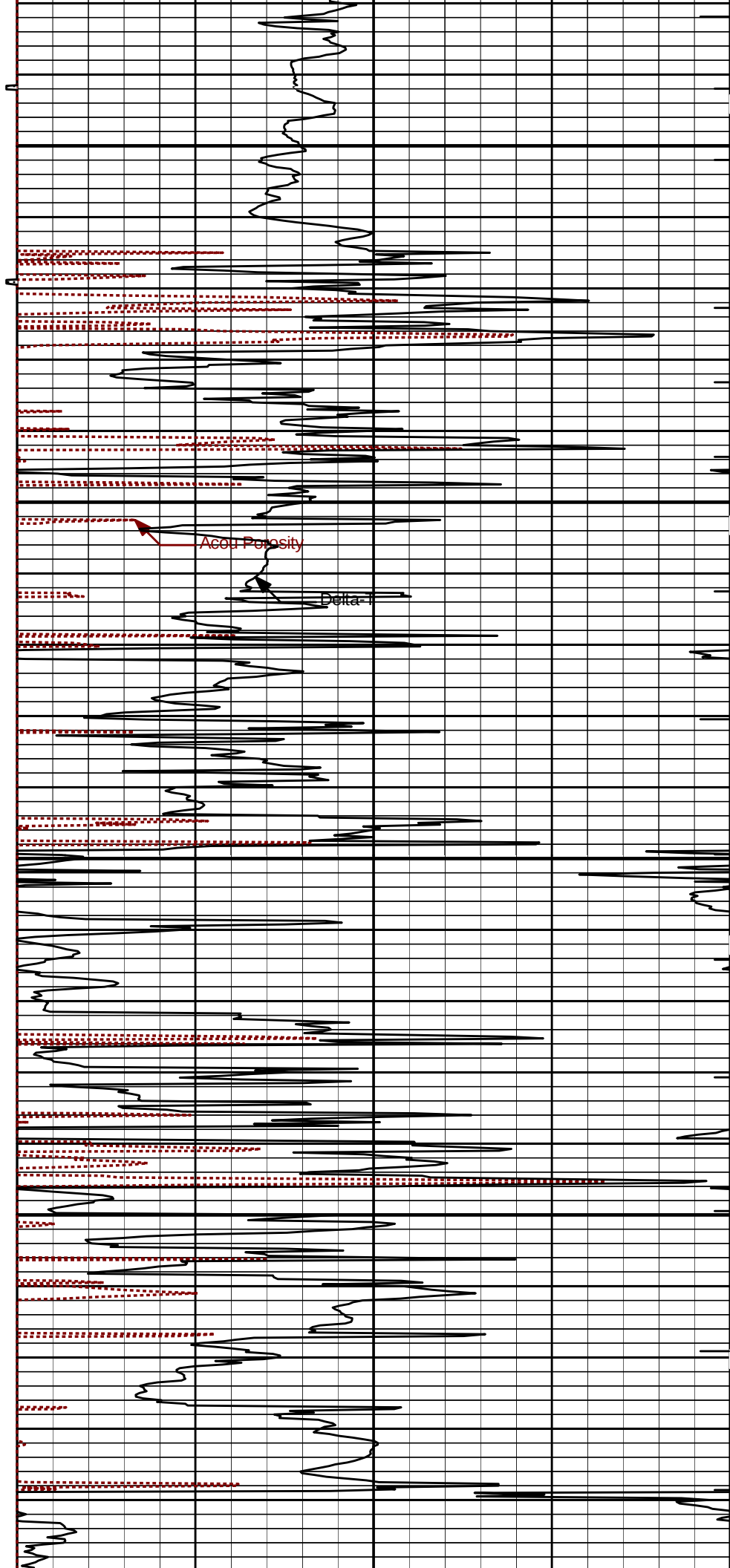
1000





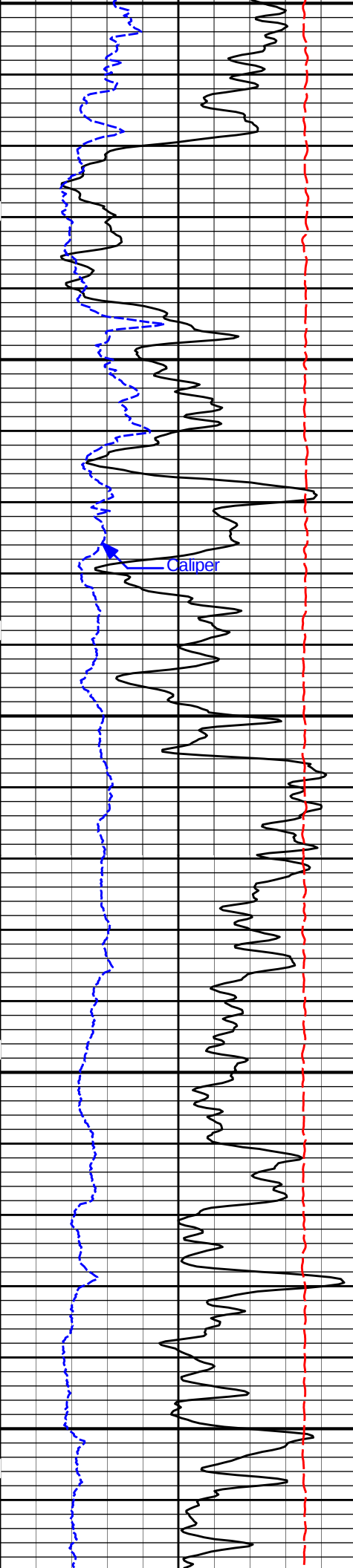
1100

1200



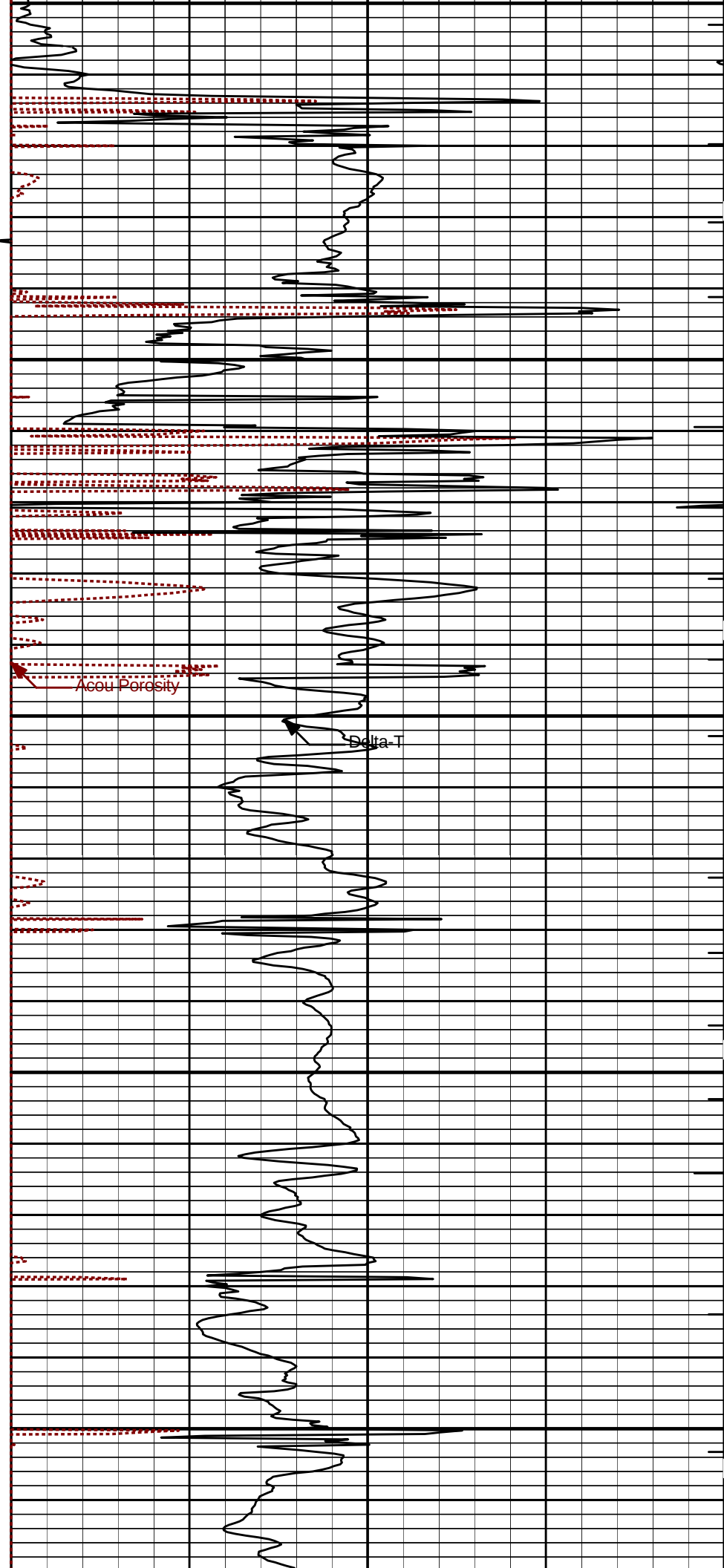
Acoustic Porosity

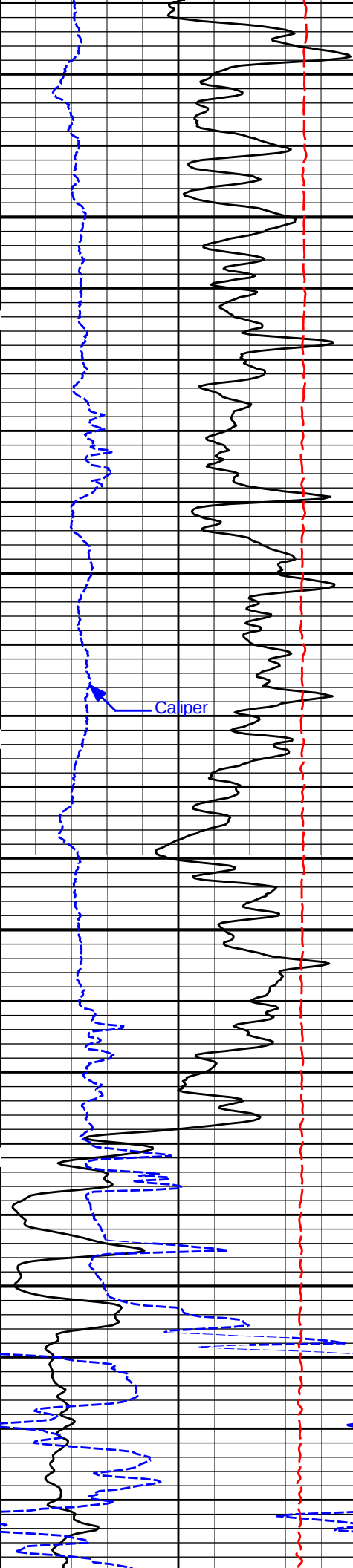
Delta T



1300

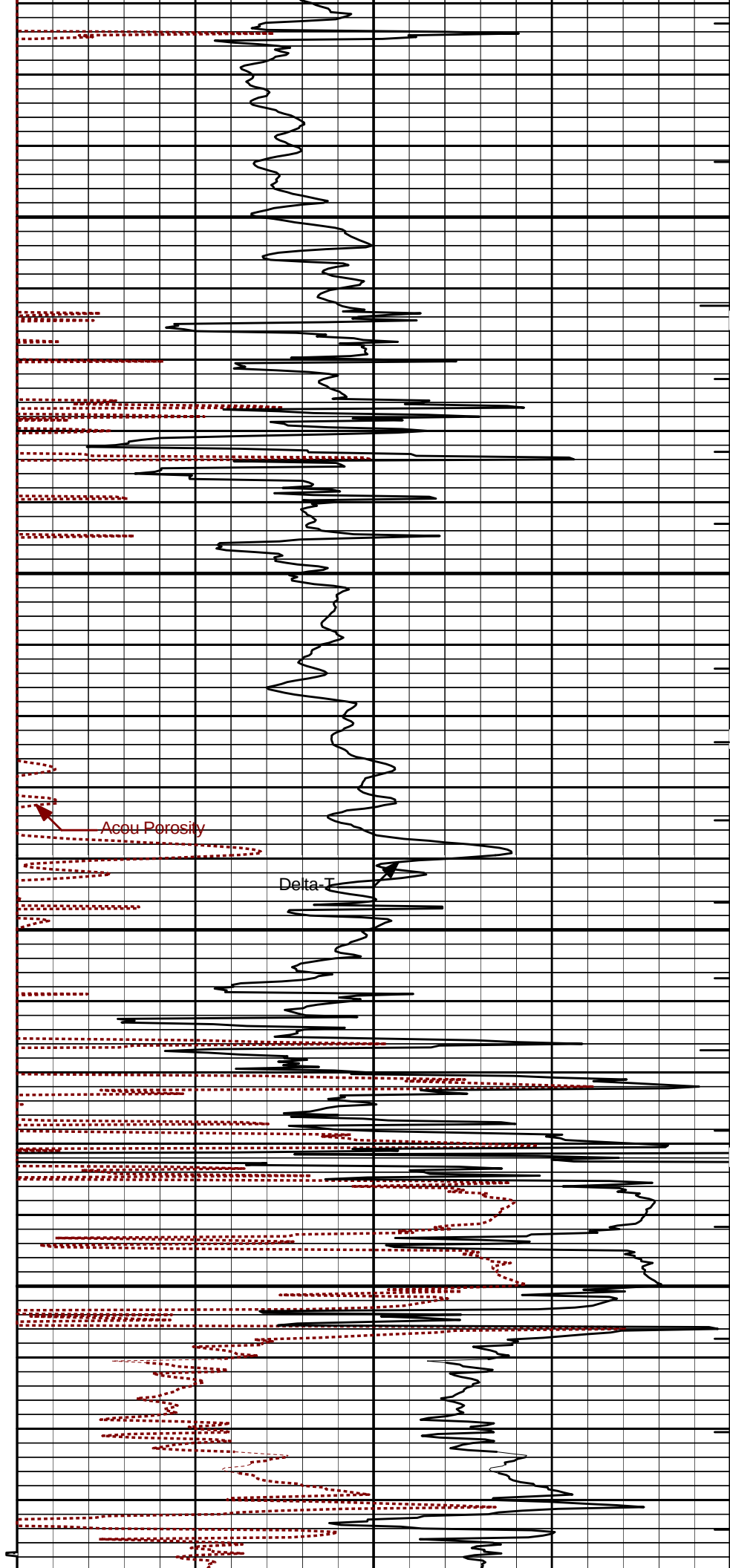
1400

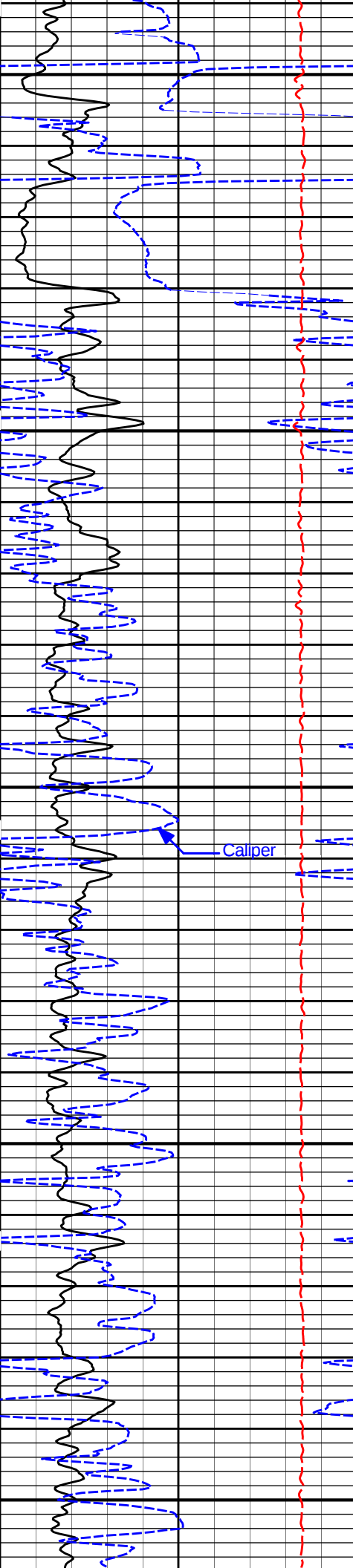




1500

1600

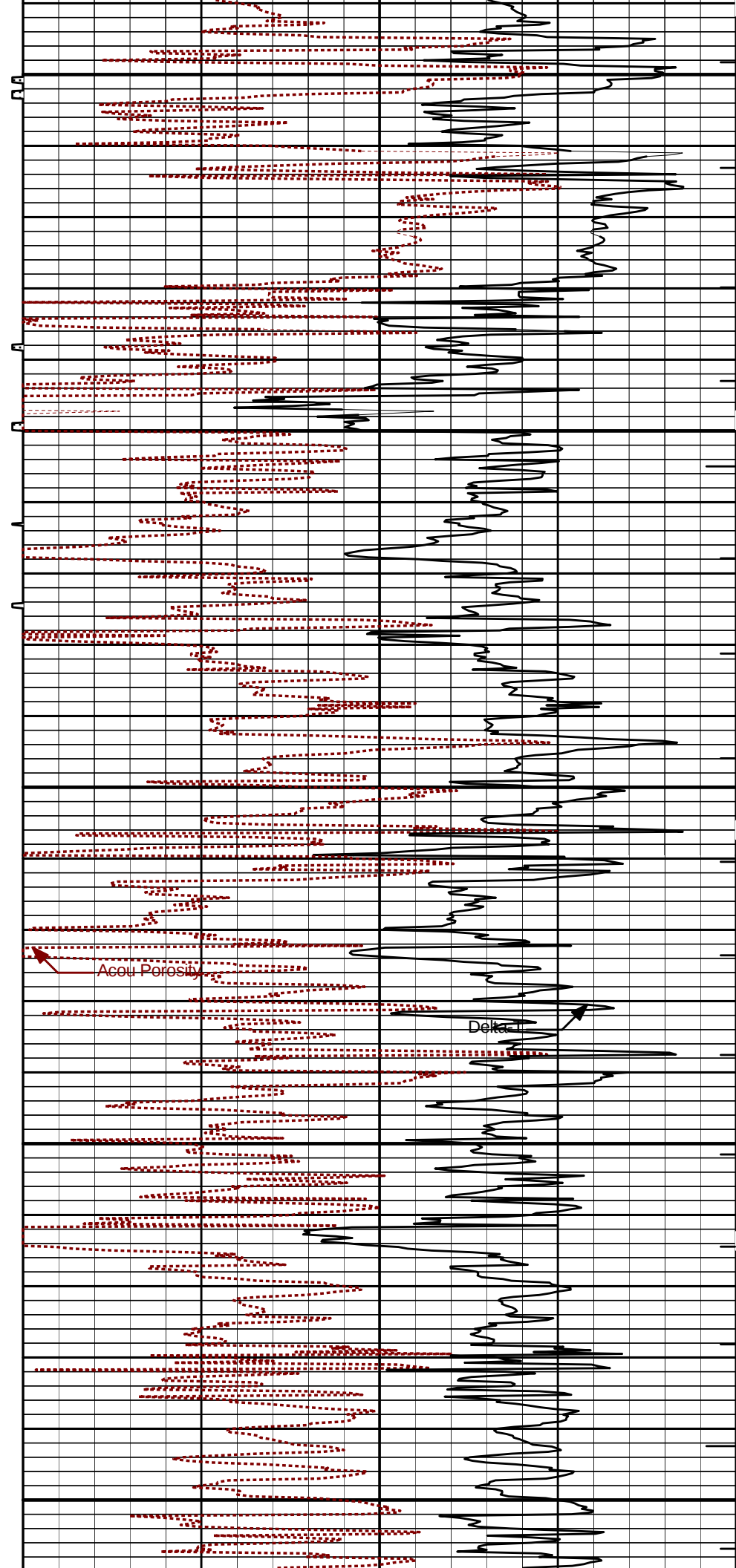


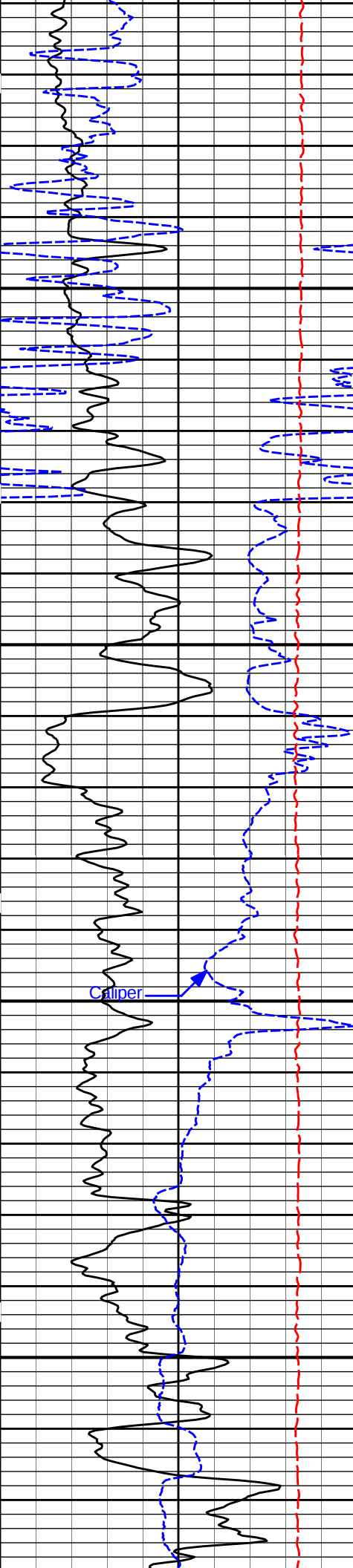


1700

1800

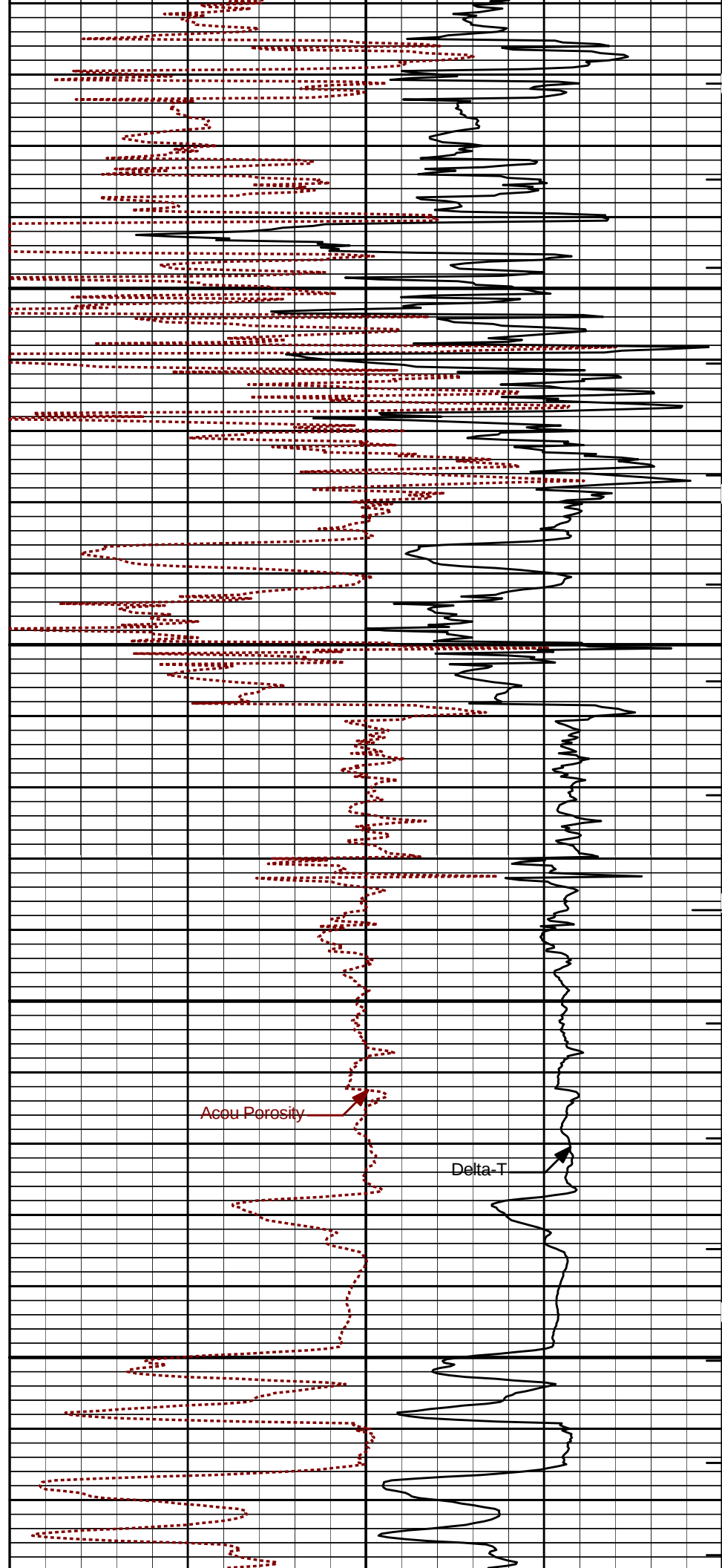
1900

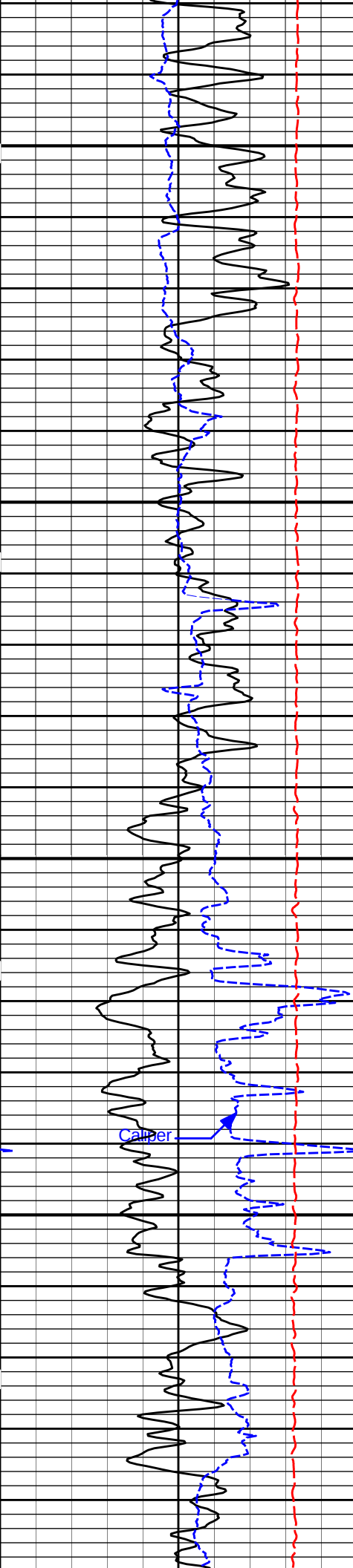




2000

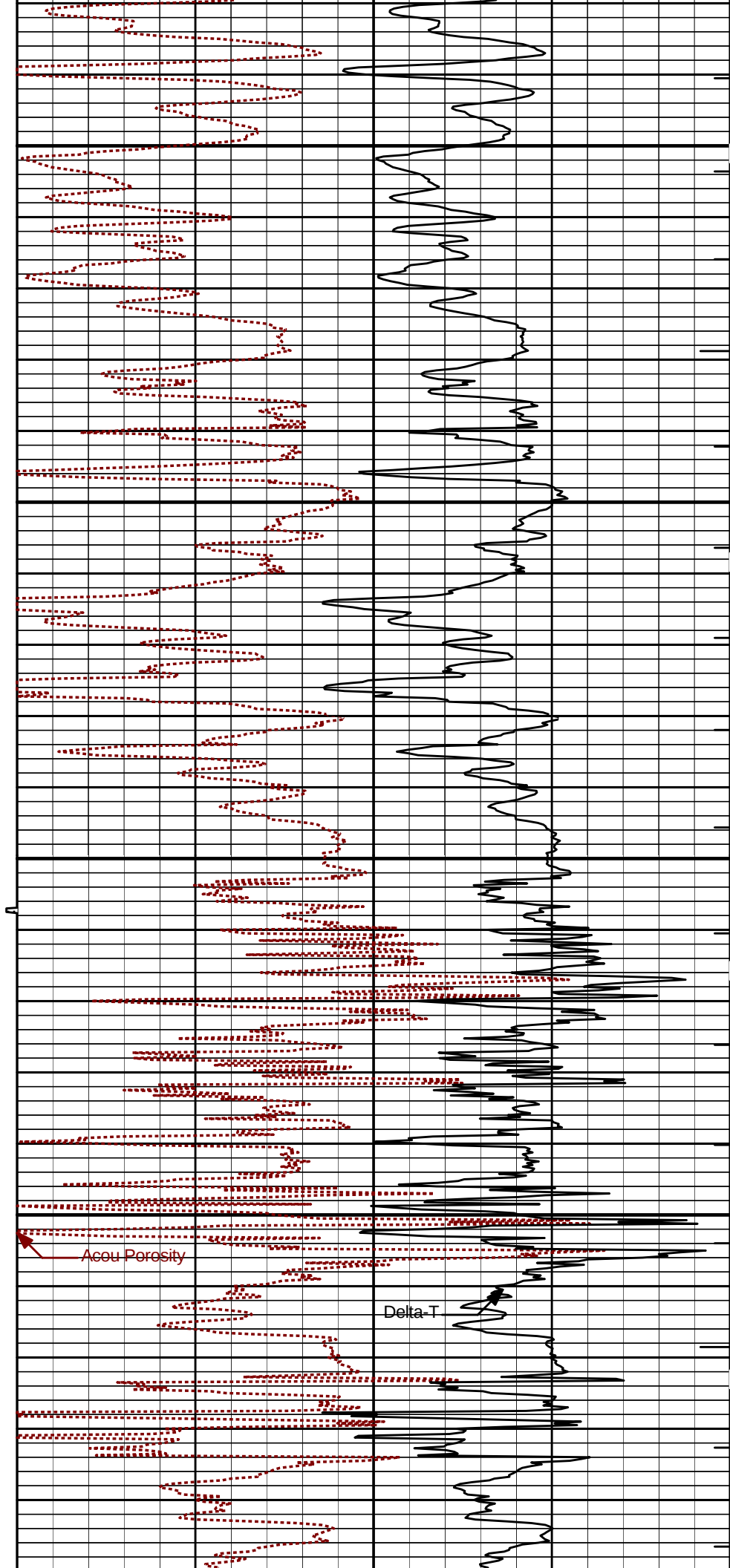
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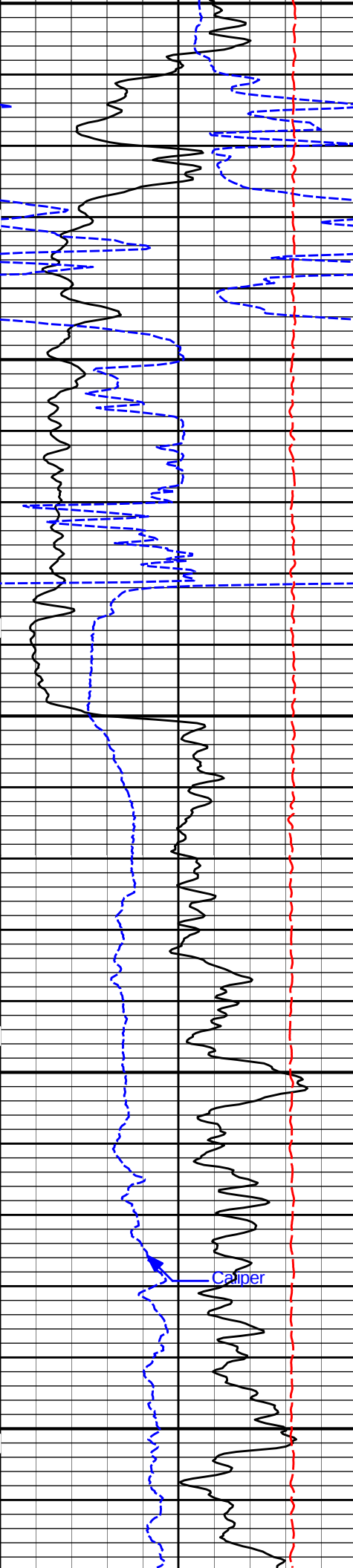




2200

2300

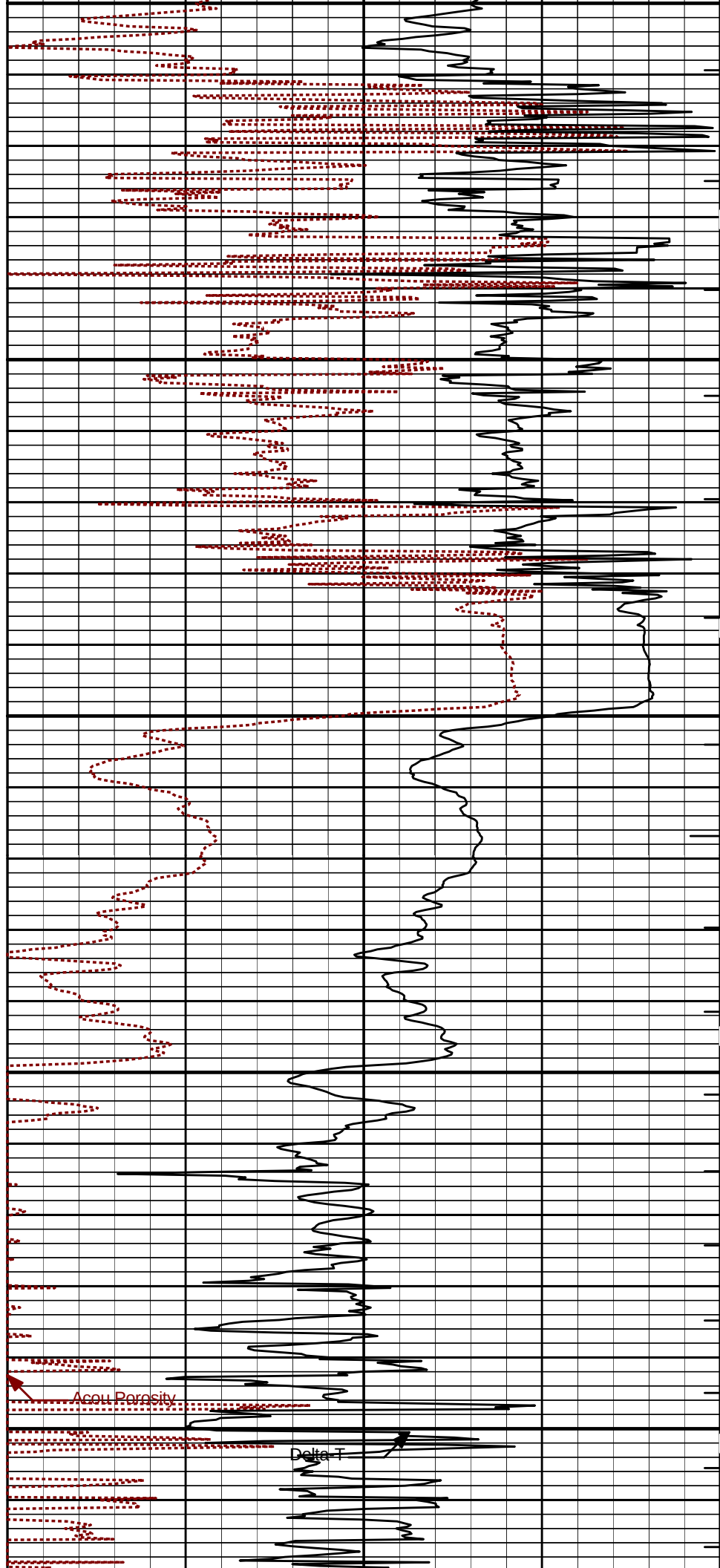




2400

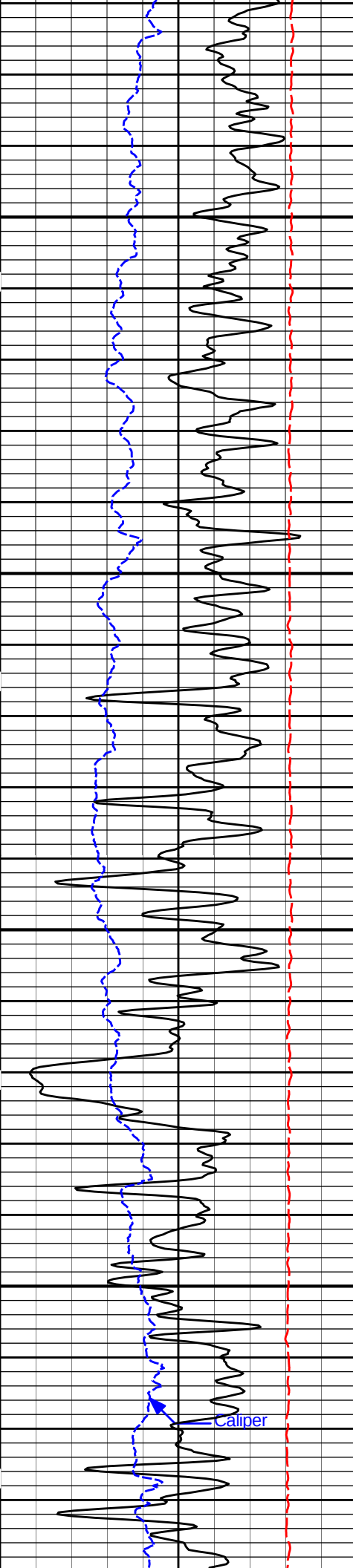
2500

Caliper



Acou Porosity

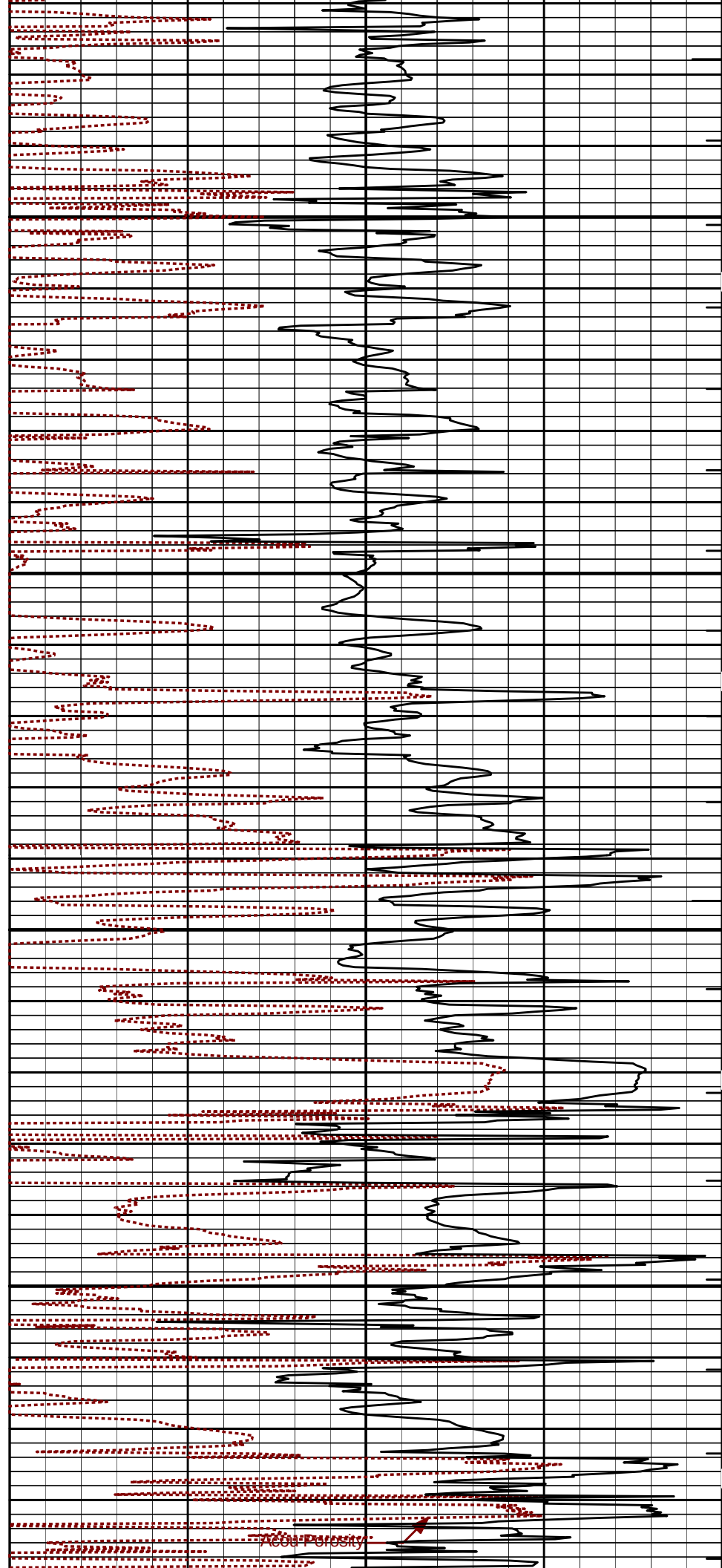
Delta T



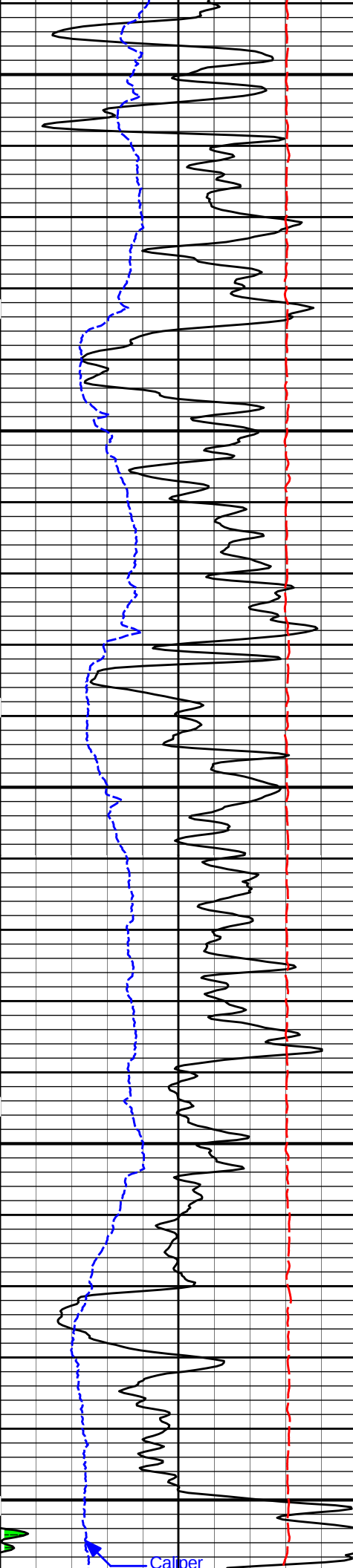
2600

2700

Caliper



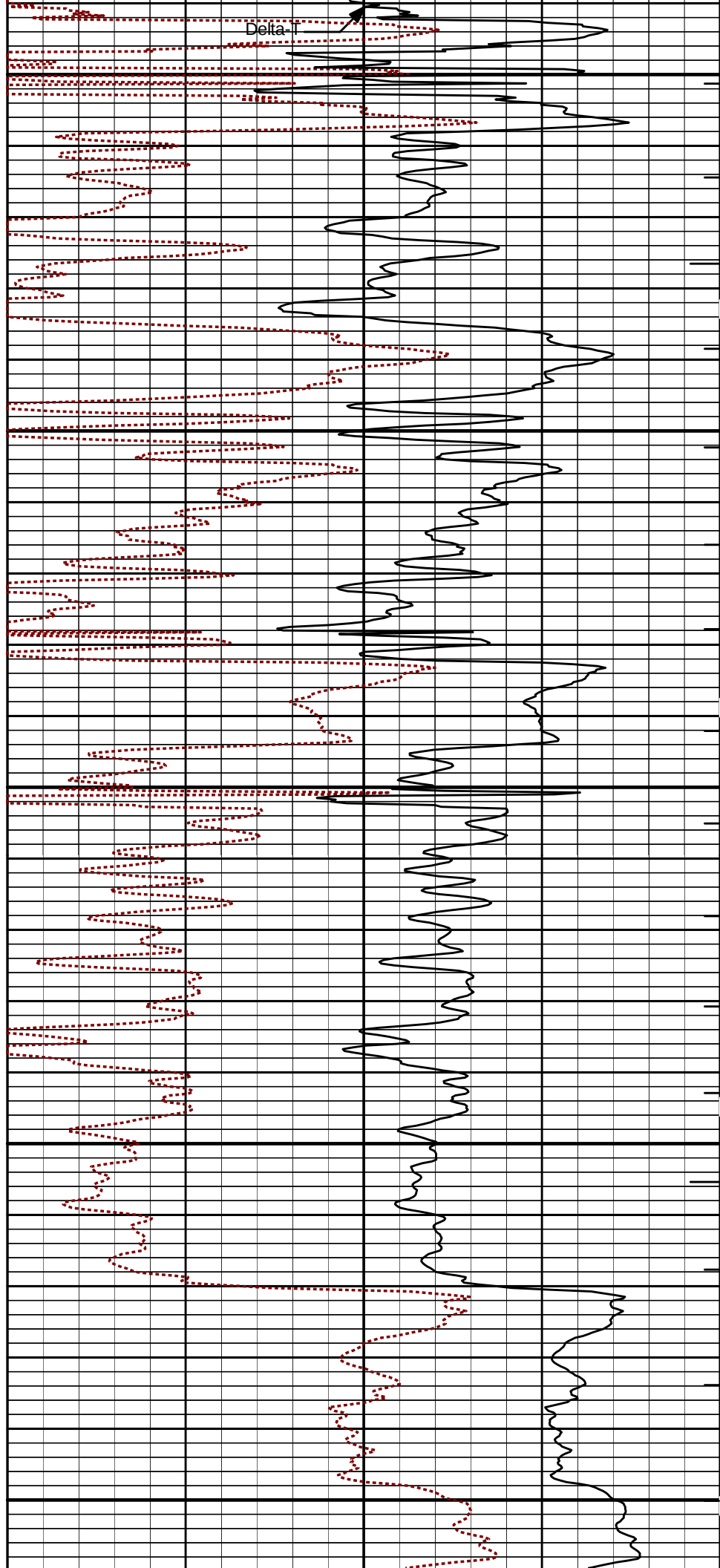
Neutron Porosity

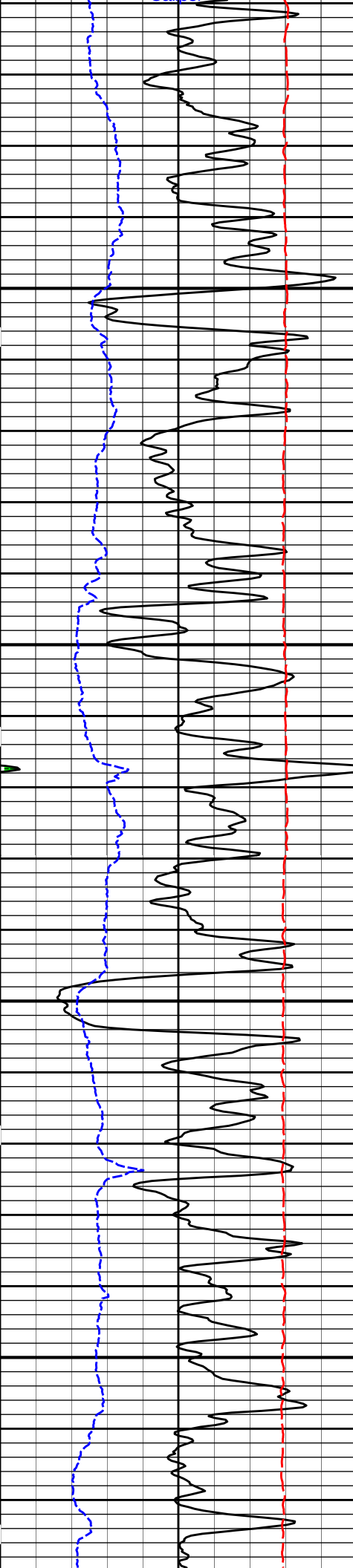


2800

2900

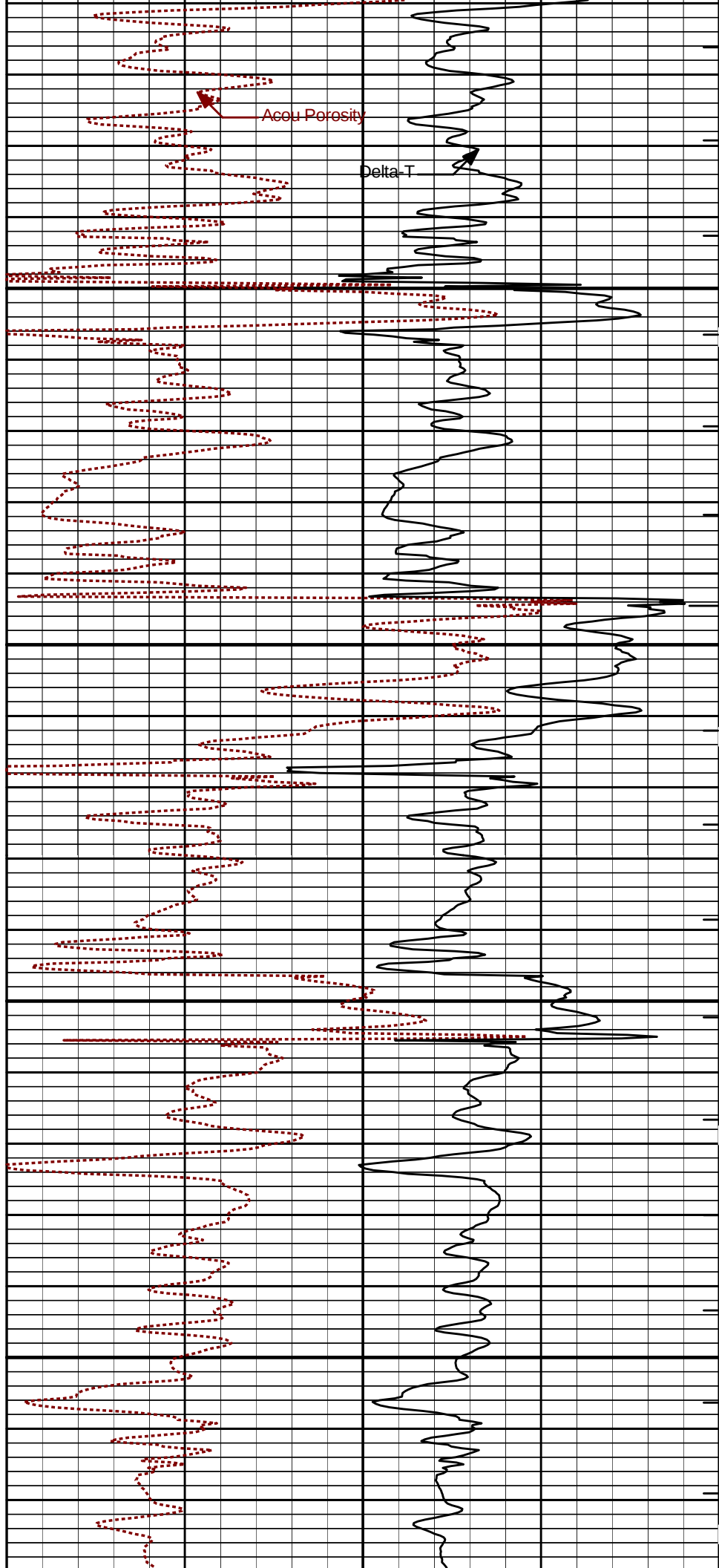
3000

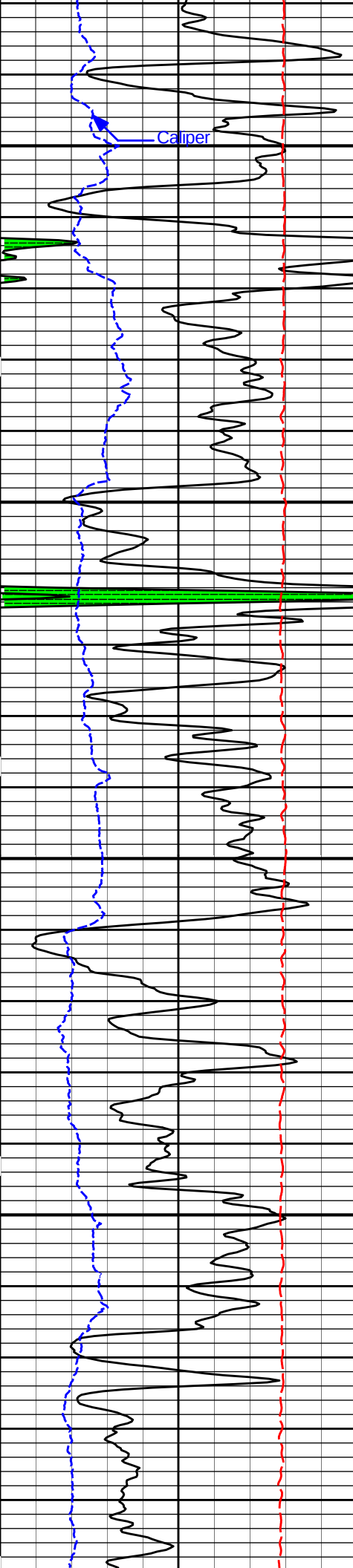




3100

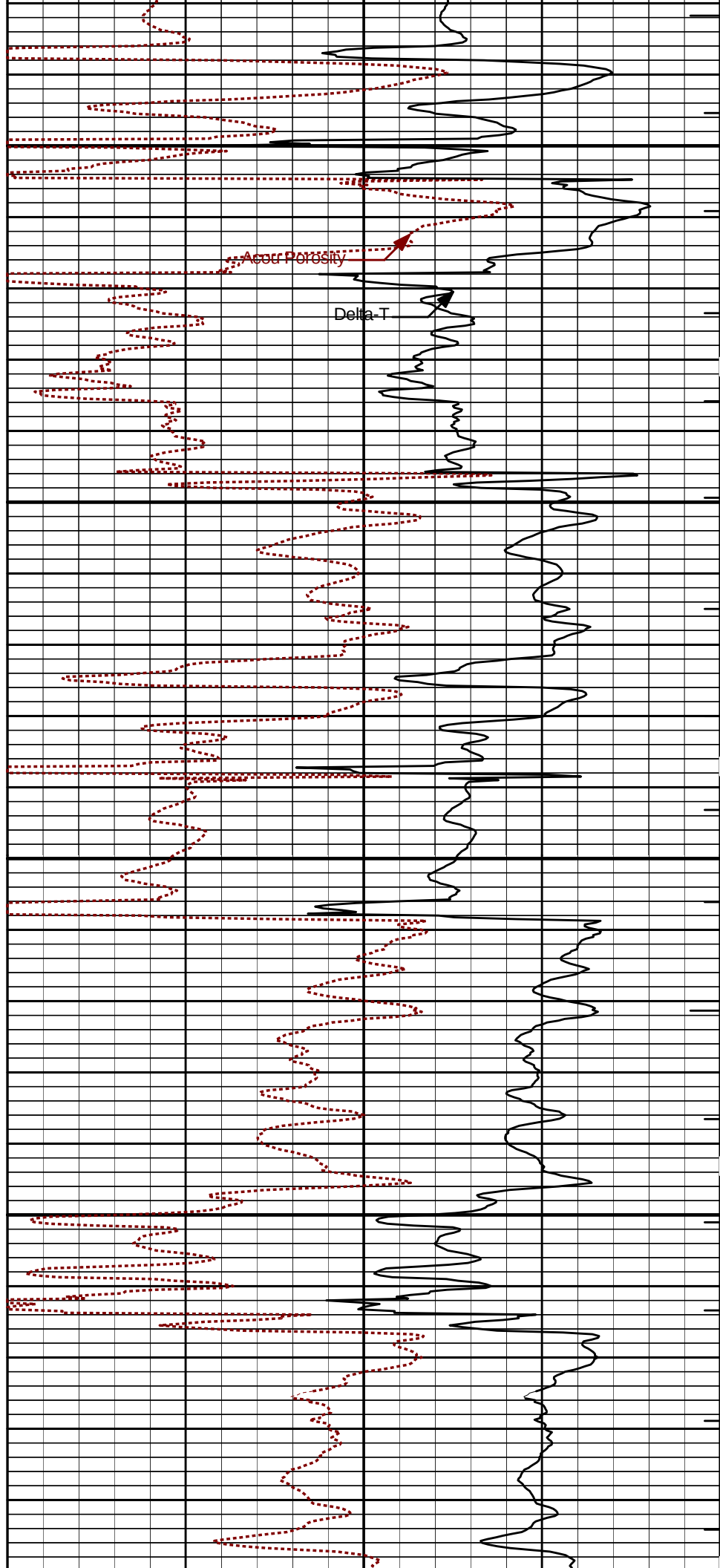
3200

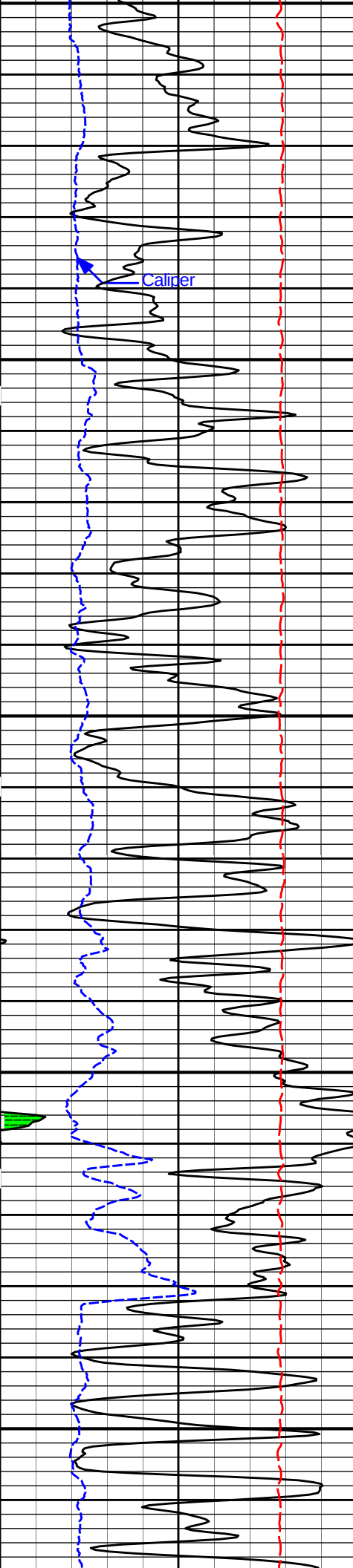




3300

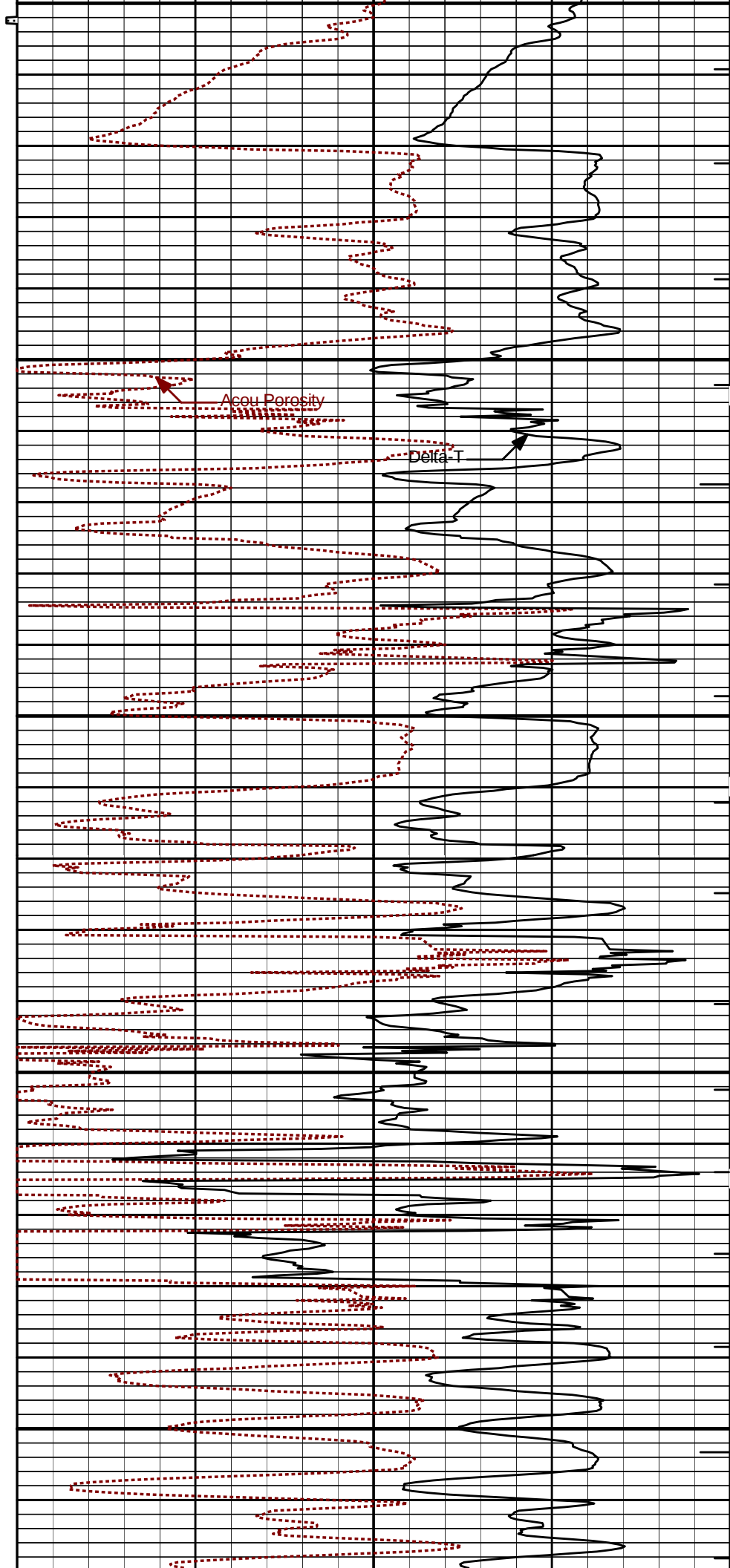
3400

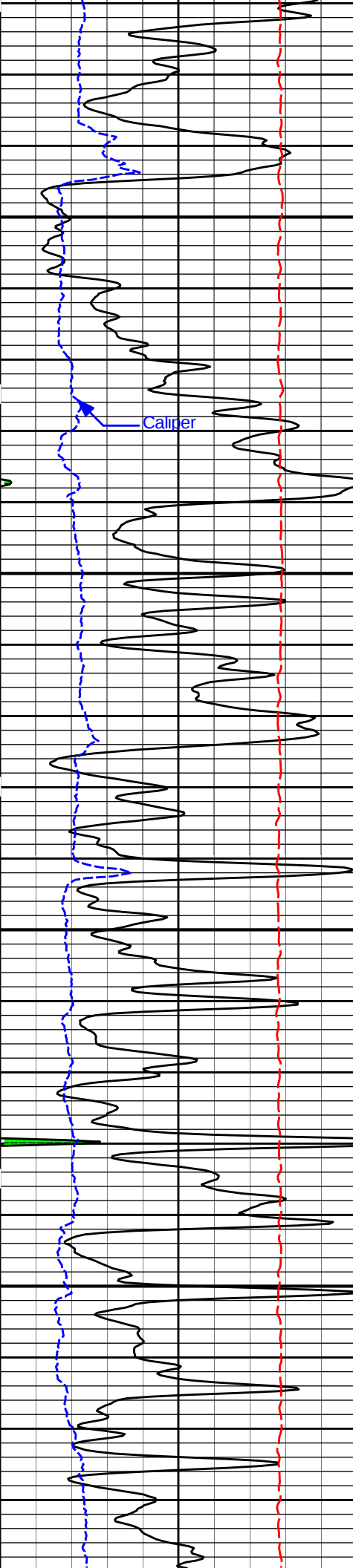




3500

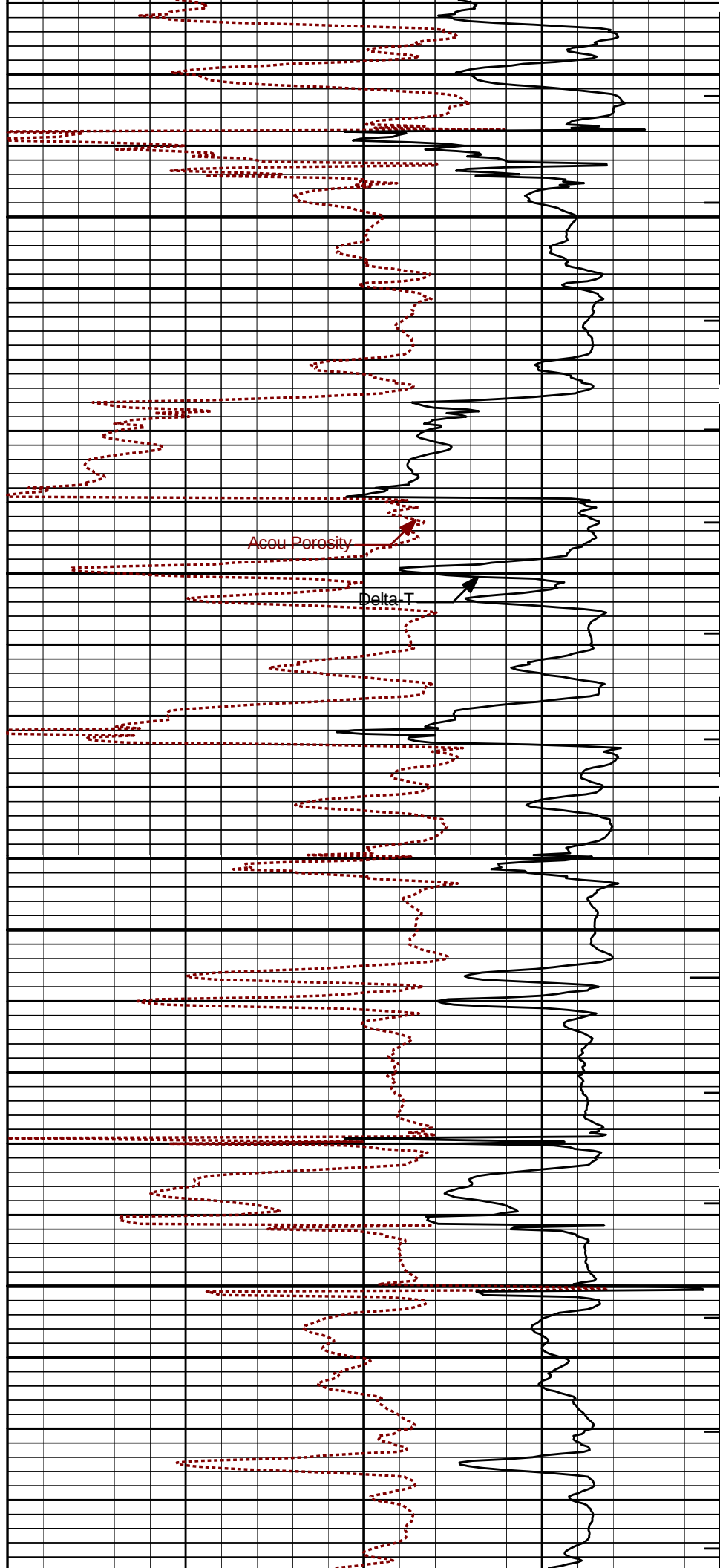
3600

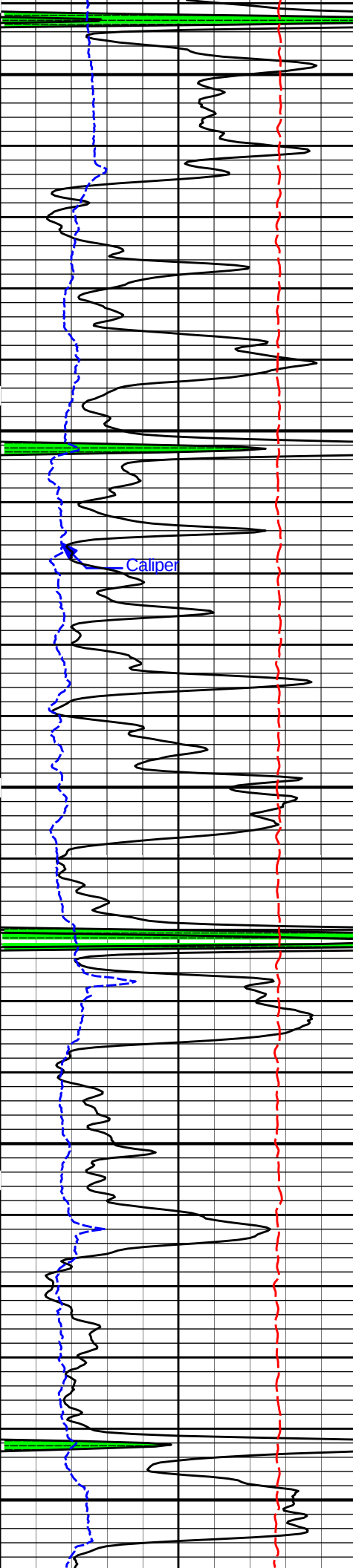




3700

3800



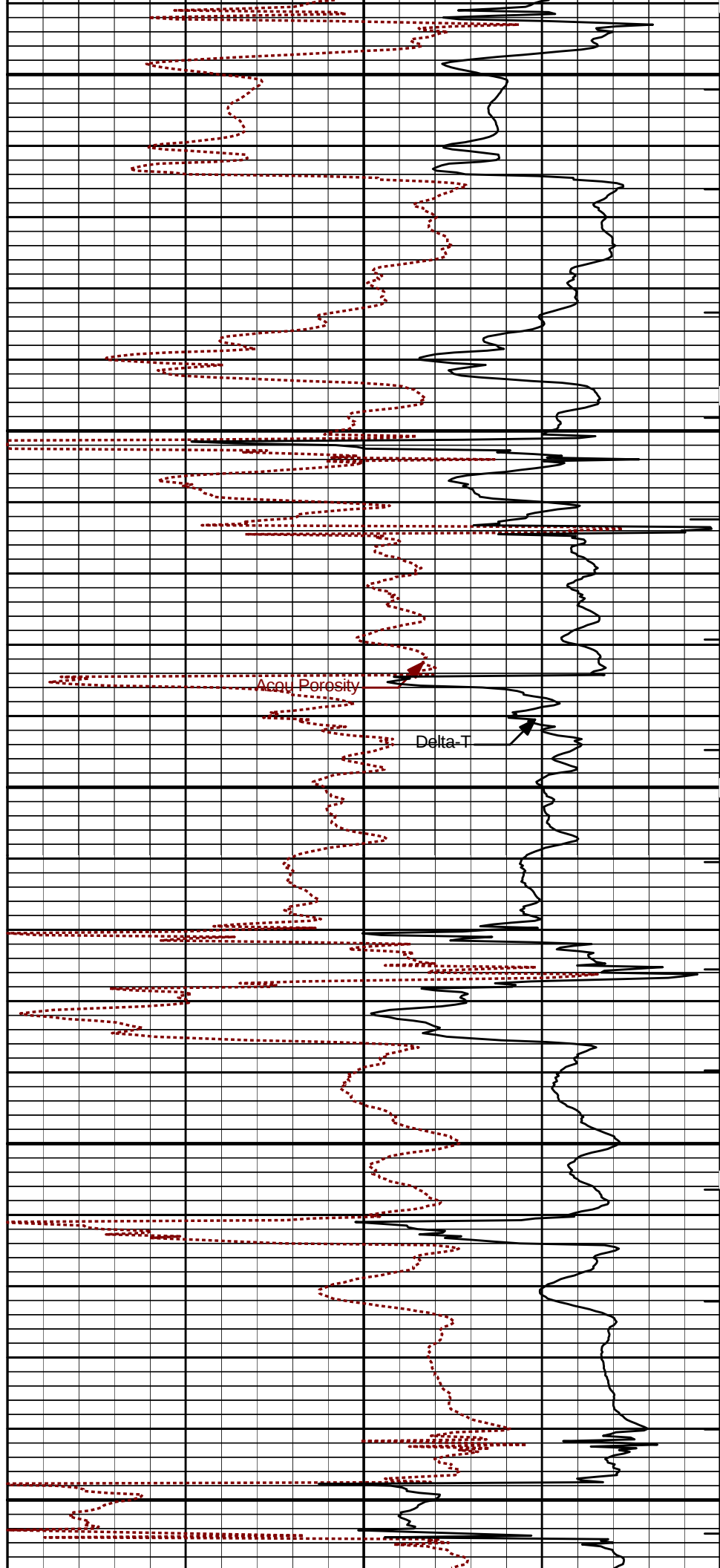


3900

4000

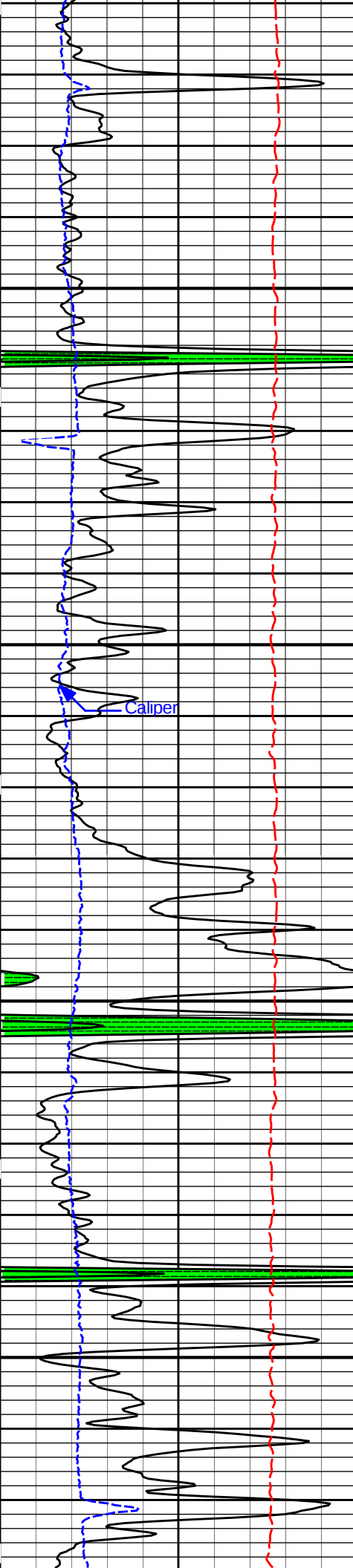
4100

Caliper



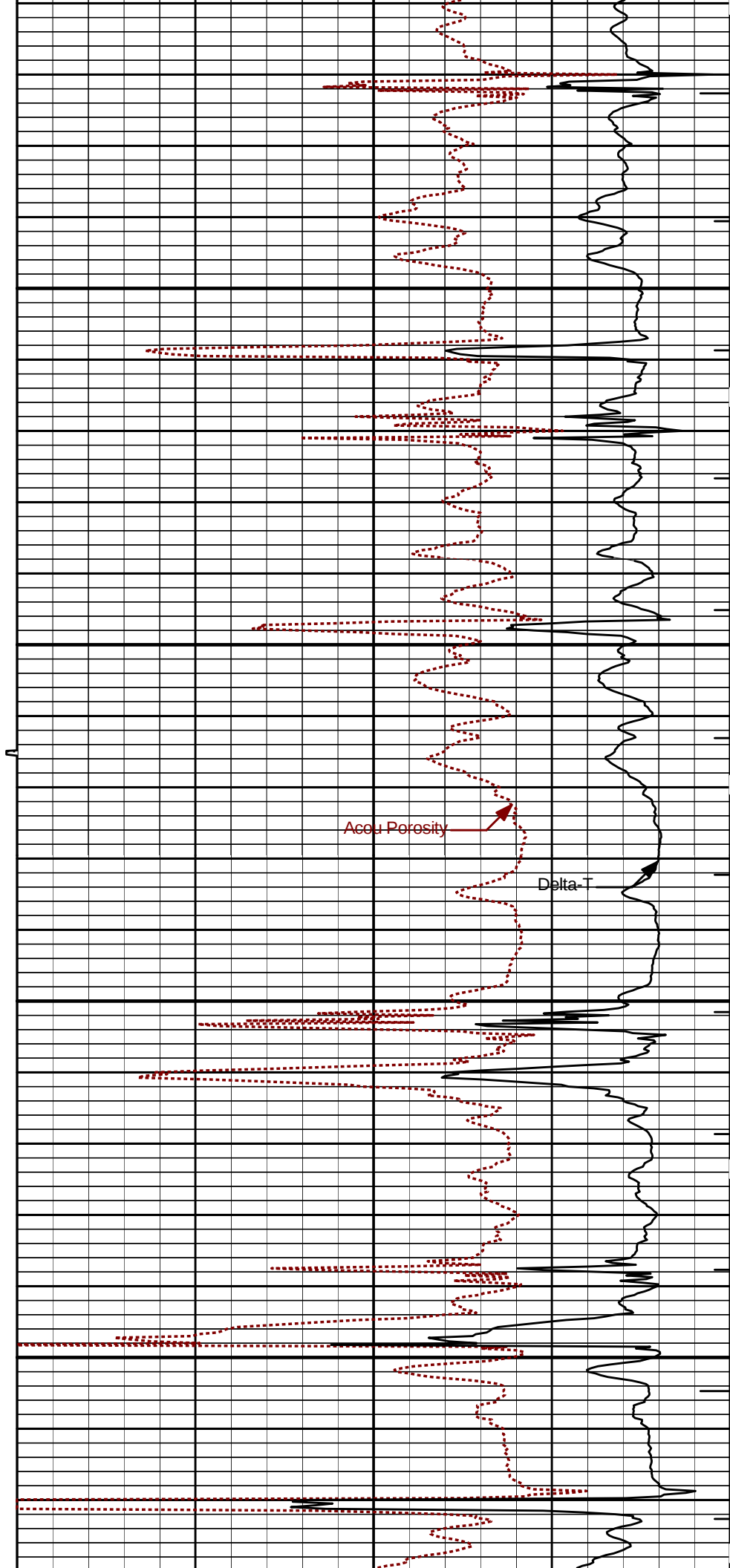
Acoustic Porosity

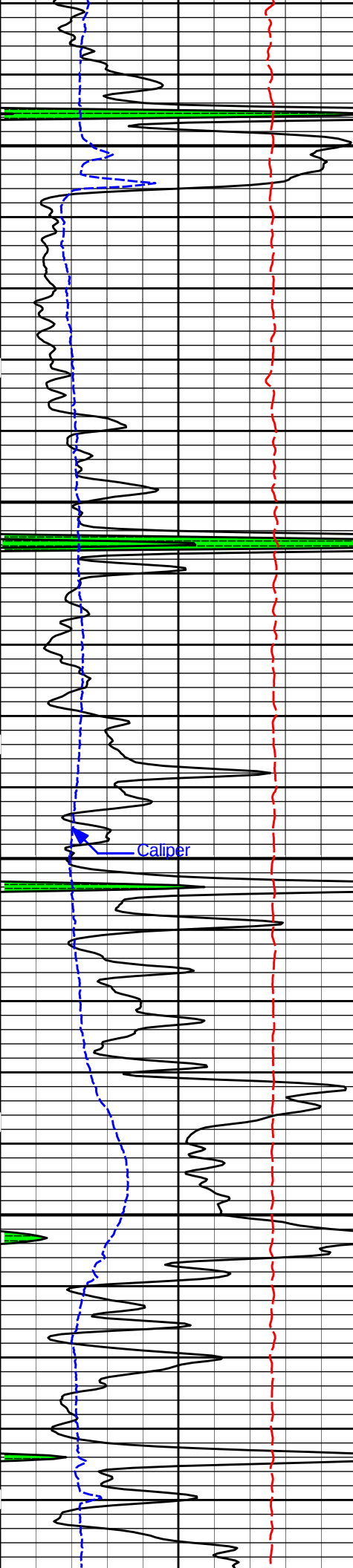
Delta-T



4200

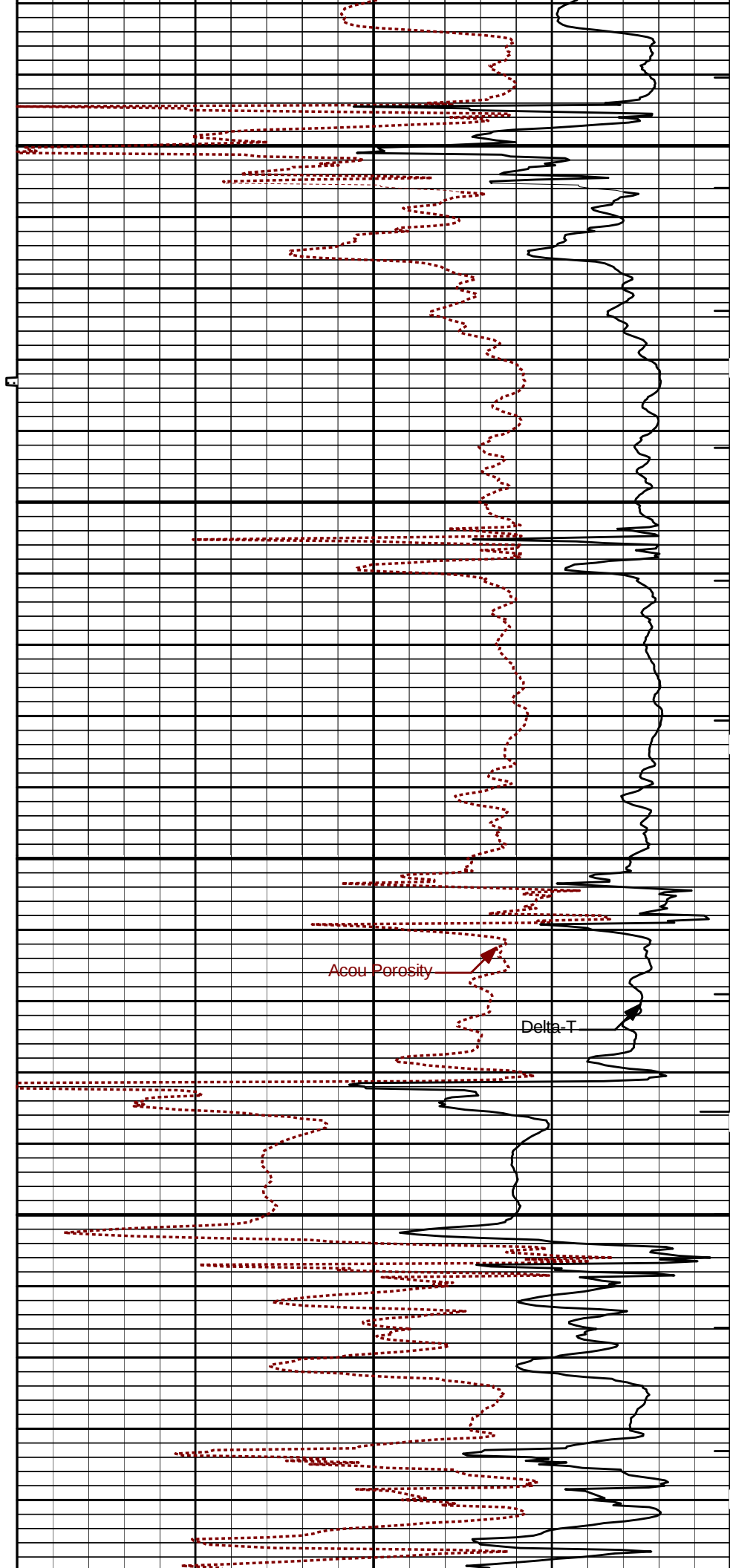
4300

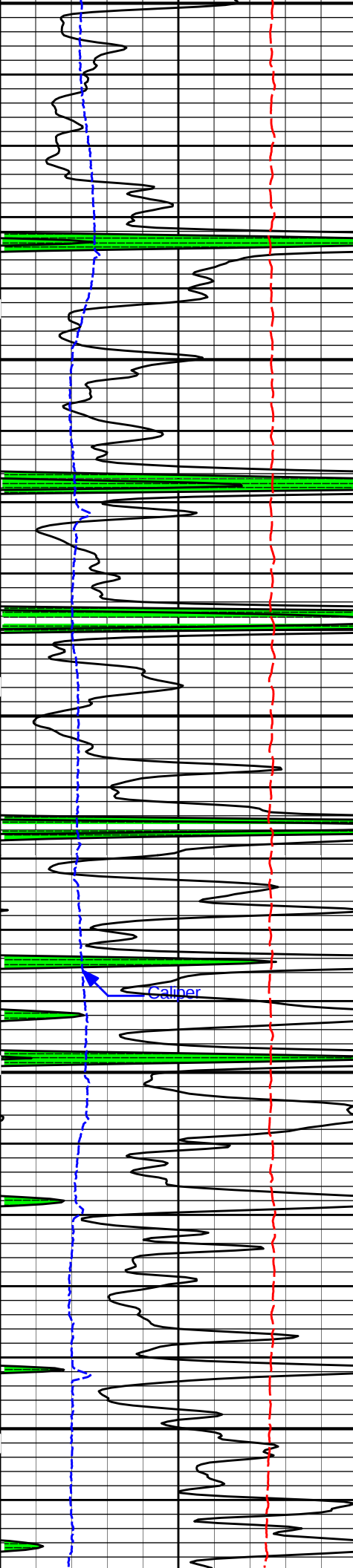




4400

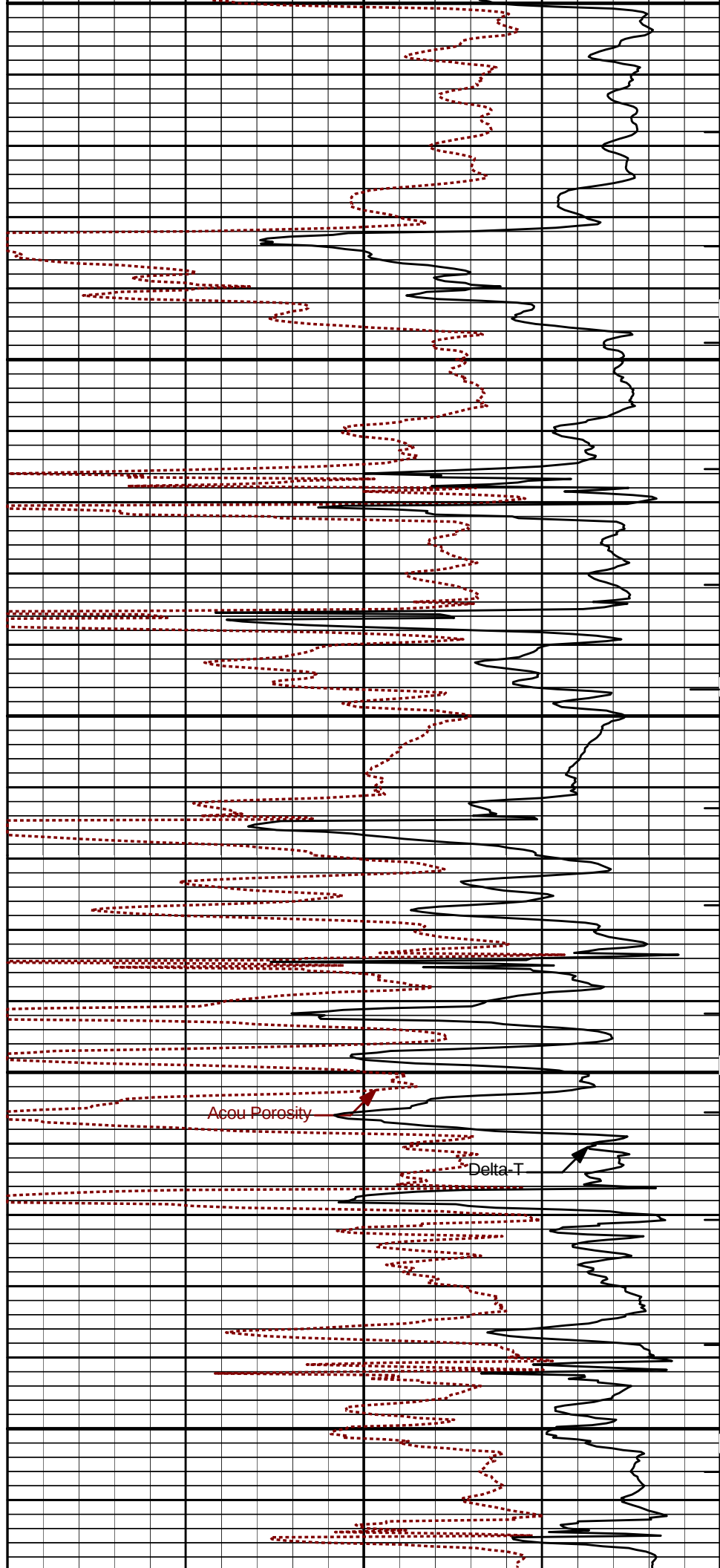
4500





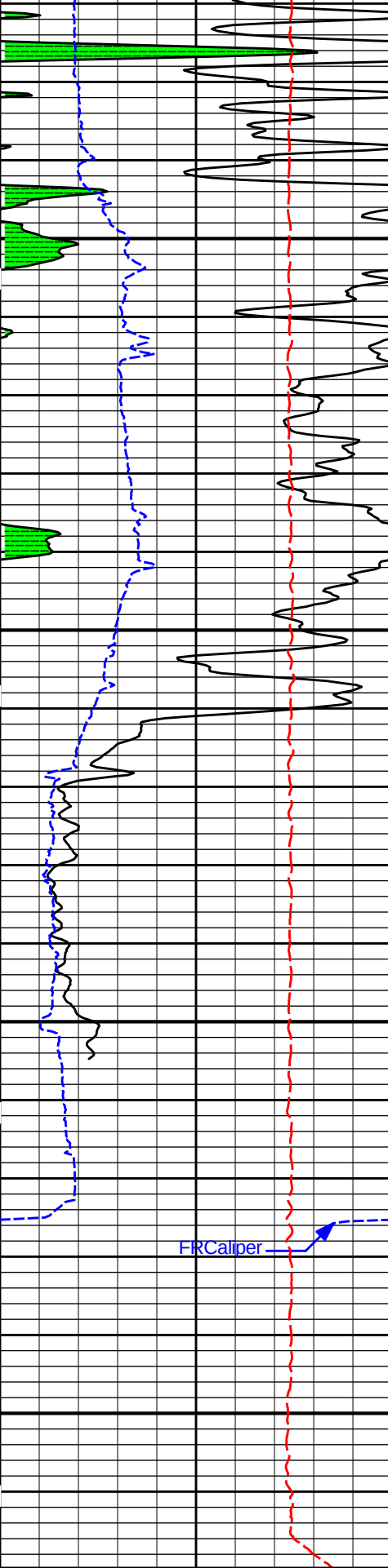
4600

4700



Acoustic Porosity

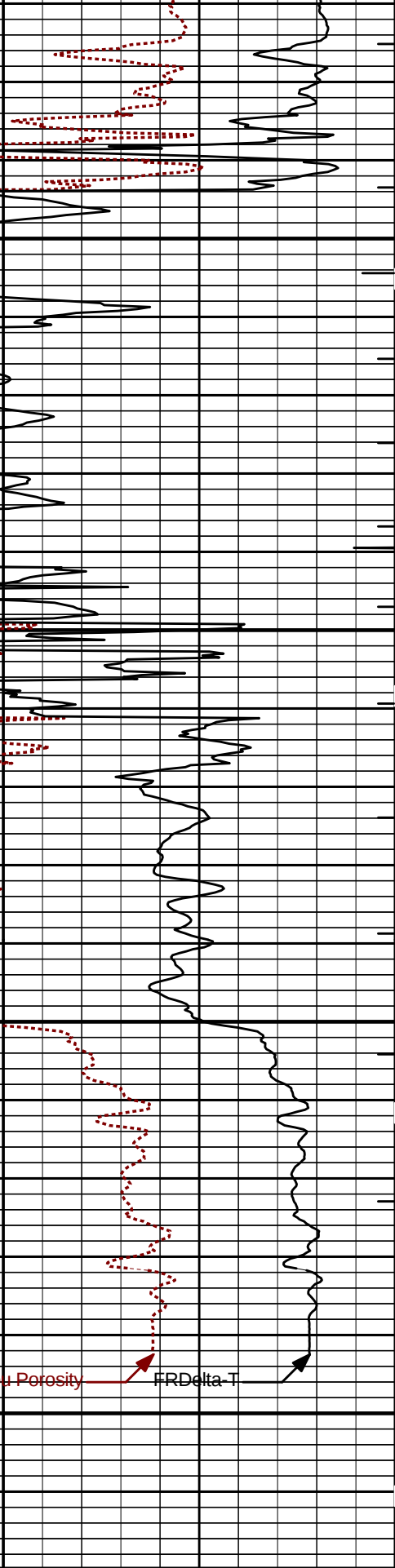
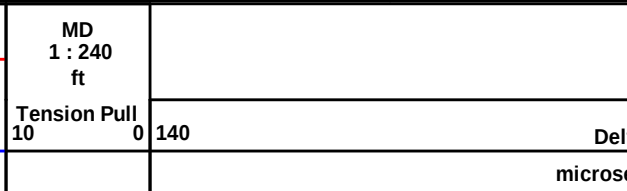
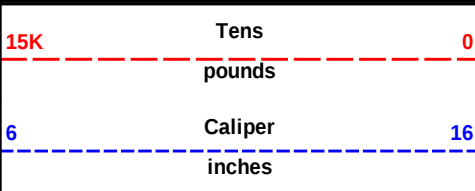
Delta T



4800

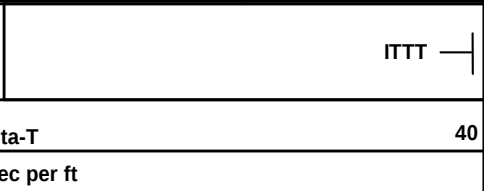
4900

FRCaliper



FRAcou Porosity

FRDelta-T



0	Gamma API	150	Tension Pull	30	Acou Porosity	-10
	api				percent	
	SHALE					

HALLIBURTON

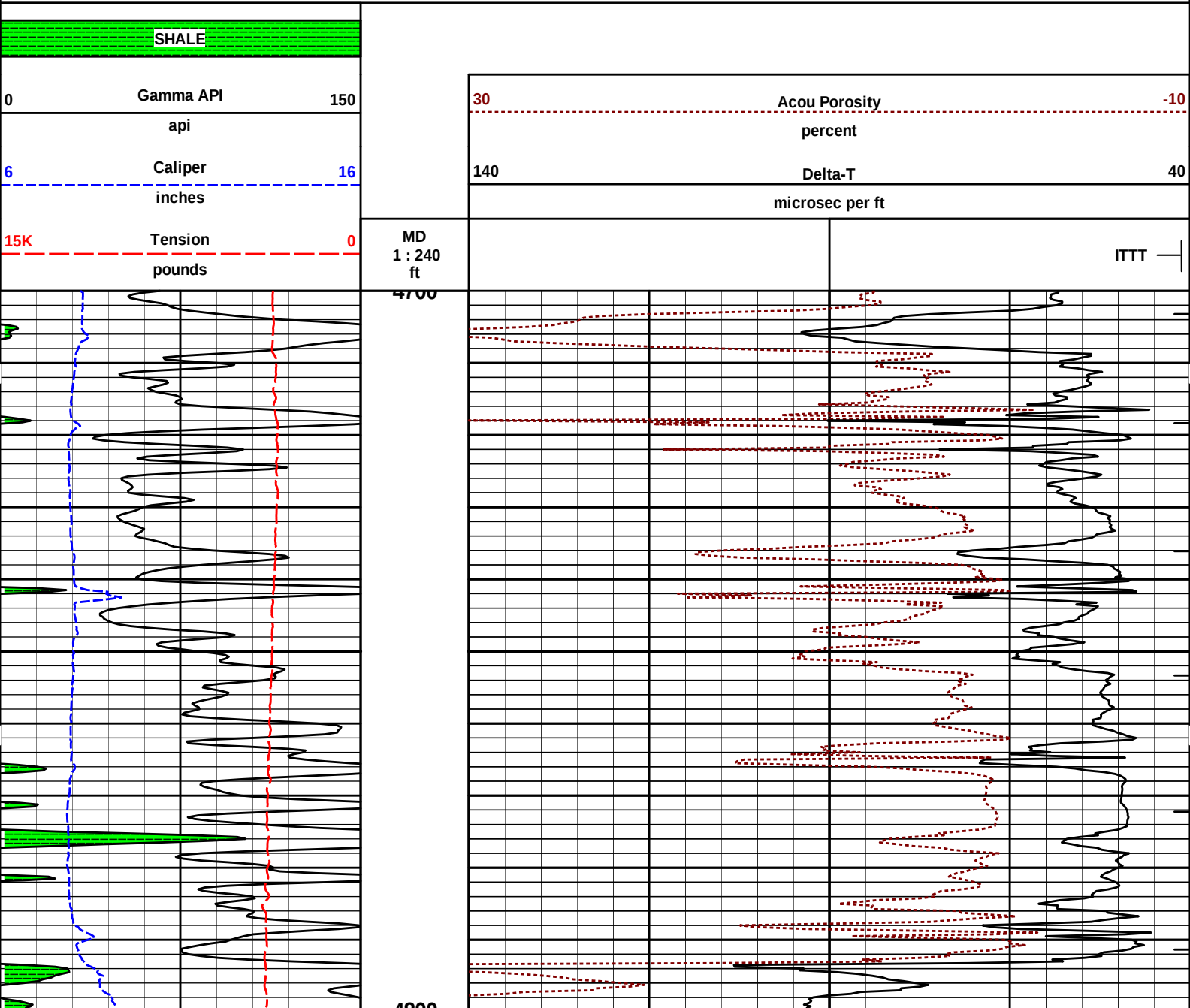
Plot Time: 20-Mar-13 21:14:12
Plot Range: 320 ft to 4969.75 ft
Data: WILKINSON_2_22\Well Based\CASING\
Plot File: \\BSAT\BSAT_5_MAIN_LIB

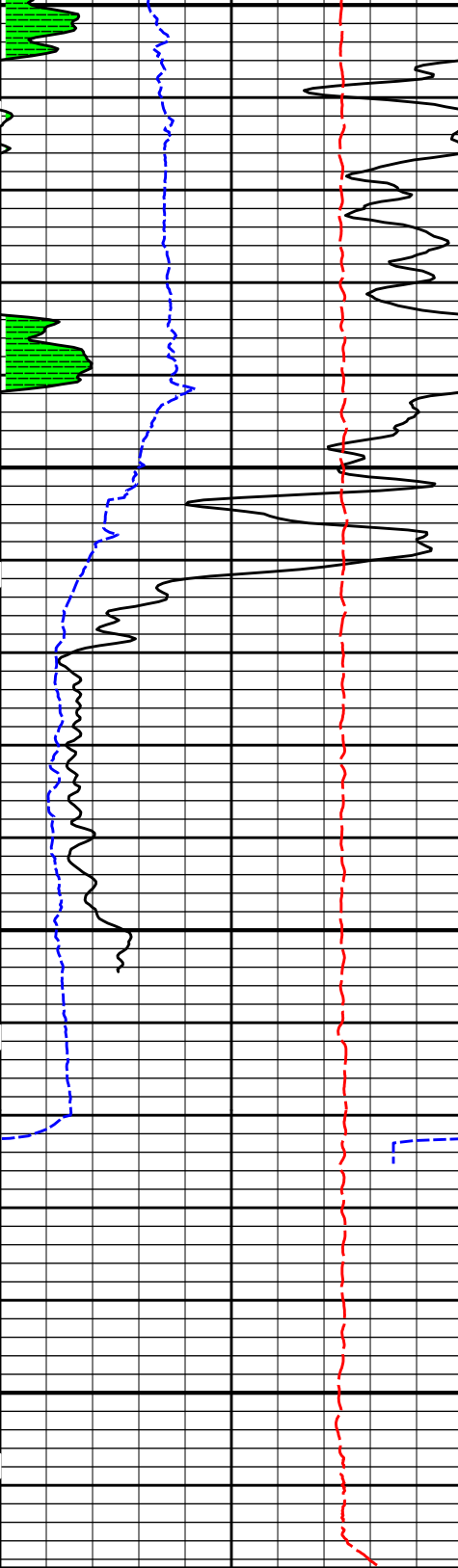
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 20-Mar-13 21:14:12
Plot Range: 4700 ft to 4968.92 ft
Data: WILKINSON_2_22\Well Based\REPEAT_WILK\
Plot File: \\BSAT\BSAT_5_REP_LIB

REPEAT SECTION



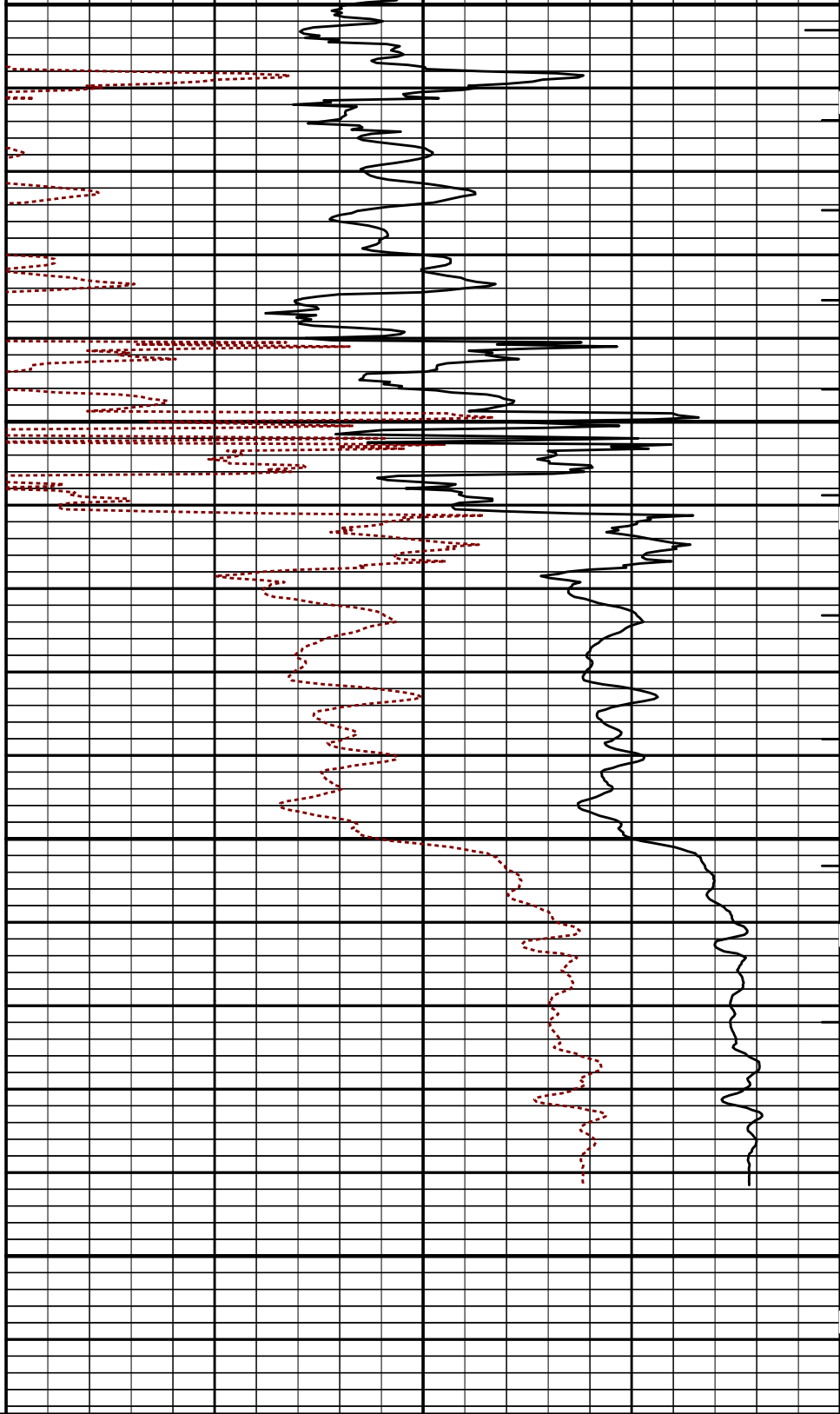


4800

4900

15K	Tension	0
	pounds	
6	Caliper	16
	inches	
0	Gamma API	150
	api	
SHALE		

MD
1 : 240
ft



140	Delta-T	40
	microsec per ft	
30	Acou Porosity	-10
	percent	

HALLIBURTON

Plot Time: 20-Mar-13 21:14:14
Plot Range: 4700 ft to 4968.92 ft
Data: WILKINSON_2_22\Well Based\REPEAT_WILK1

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-CH_696 37.50 lbs		Ø 2.750 in →		← Temperature @ 76.03 ft	3.03 ft	77.06 ft
SP Sub-11441455 60.00 lbs		Ø 3.625 in →		← SP @ 72.26 ft	3.74 ft	74.03 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →		← GammaRay @ 64.23 ft	8.52 ft	70.30 ft
DSNT-11019643 174.00 lbs	DSN Decentralizer- 11019643 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 54.84 ft ← DSN Near @ 54.09 ft	9.69 ft	61.78 ft
SDLT-10950489 360.00 lbs	SDLT Pad-10844781 65.00 lbs Microlog Pad-10950489 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	52.09 ft
Flex Joint-001 140.00 lbs		Ø 3.625 in →			5.67 ft	41.28 ft
Centralizer 29-1 62.00 lbs		Ø 4.000 in* →				35.61 ft

12.00 lbs

BSAT-10747683
300.00 lbs

Ø 3.625 in →

← Sonic Receivers @ 27.09 ft

15.77 ft

ACRt Instrument-
I5059_S8385
50.00 lbs

Centralizer 29-2
12.00 lbs

Ø 4.000 in*
Ø 3.625 in →

5.03 ft

19.83 ft

ACRt Sonde-
11038385
200.00 lbs

Ø 3.625 in →

← Mud Resistivity @ 13.44 ft

← ACRt @ 9.46 ft

14.22 ft

Cabbage Head-
TRK696
10.00 lbs

Ø 3.625 in
Ø 6.000 in →

0.58 ft

0.58 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	CH_696	37.50	3.03	74.03	300.00
SP	SP Sub	11441455	60.00	3.74	70.30	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52	61.78	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69	52.09	60.00
DCNT	DSN Decentralizer	11019643	6.60	5.13	* 55.42	300.00
SDLT	Spectral Density Tool	10950489	360.00	10.81	41.28	60.00
MICP	Microlog Pad	10950489	8.00	1.00	* 43.78	60.00
SDLP	Density Insite Pad	10844781	65.00	2.55	* 43.49	60.00
FLEX	Flex Joint	001	140.00	5.67	35.61	300.00
BSAT	Borehole Sonic Array Tool	10747683	300.00	15.77	19.83	60.00
OBCEN	Centralizer - 29 in.Overbody	1	12.00	2.42	* 32.77	300.00
ACRt	Array Compensated True Resistivity Instrument Section	I5059_S8385	50.00	5.03	14.80	300.00
OBCEN	Centralizer - 29 in.Overbody	2	12.00	2.42	* 16.39	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22	0.58	300.00
CBHD	Cabbage Head	TRK696	10.00	0.58	0.00	300.00
Total			1,600.10	77.06		

* Not included in Total Length and Length Accumulation.

Data: WILKINSON_2_2210001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CHIDLE

Date: 20-Mar-13 18:40:51

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	9.500	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.000	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4970.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DSNO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
	DSNT	DNTP	Temperature Correction Type	None	
	DSNT	DPRS	DSN Pressure Correction Type	None	
	DSNT	SHCO	View More Correction Options	No	
	DSNT	UTVD	Use TVD for Gradient Corrections?	No	
	DSNT	LHWT	Logging Horizontal Water Tank?	No	
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	SDLT Pad	DNOK	Process Density?	Yes	
	SDLT Pad	DNOK	Process Density EVR?	No	

SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	User define	
BSAT	DTMA	Delta -T Matrix	47.60	uspf
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP 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: WILKINSON_2_22\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\002 20-Mar-13 18:55 Dn @1846.3f				Date: 20-Mar-13 18:56:01

HALLIBURTON INPUTS, DELAYS AND FILTERS TABLE				
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
CH_HOS				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	72.25	NO	
SP	Spontaneous Potential	72.25	BLK	1.250
SPR	Raw Spontaneous Potential	72.25	NO	
SPO	Spontaneous Potential Offset	72.25	NO	
GTET				
TPUL	Tension Pull	64.23	NO	
GR	Natural Gamma Ray API	64.23	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	64.23	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	64.23	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	53.99	NO	
PNDS	Near Detector Telemetry Counts	54.00	BLK	1.417

RNDS	Near Detector Telemetry Counts	54.09	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.84	TRI	0.583
DNTT	DSN Tool Temperature	54.09	NO	
DSNS	DSN Tool Status	53.99	NO	
ERND	Near Detector Telemetry Counts EVR	54.09	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.84	BLK	0.000
ENTM	DSN Tool Temperature EVR	54.09	NO	
SDLT				
TPUL	Tension Pull	44.09	NO	
PCAL	Pad Caliper	44.09	TRI	0.250
ACAL	Arm Caliper	44.09	TRI	0.250
BSAT				
TPUL	Tension Pull	27.09	NO	
STAT	Status	27.09	NO	
DLYT	Delay Time	27.09	NO	
SI	Sample Interval	27.09	NO	
TXRX	Raw Telemetry 10 Receivers	27.09	NO	
FRMC	Tool Frame Count	27.09	NO	
GMOD	Gain processing mode	19.83	NO	
ACRt Sonde				
TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000

F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	
SDLT Pad				
TPUL	Tension Pull	44.08	NO	
NAB	Near Above	43.90	BLK	0.920
NHI	Near Cesium High	43.90	BLK	0.920
NLO	Near Cesium Low	43.90	BLK	0.920
NVA	Near Valley	43.90	BLK	0.920
NBA	Near Barite	43.90	BLK	0.920
NDE	Near Density	43.90	BLK	0.920
NPK	Near Peak	43.90	BLK	0.920
NLI	Near Lithology	43.90	BLK	0.920
NBAU	Near Barite Unfiltered	43.90	BLK	0.250
NLIU	Near Lithology Unfiltered	43.90	BLK	0.250
FAB	Far Above	44.26	BLK	0.250
FHI	Far Cesium High	44.26	BLK	0.250
FLO	Far Cesium Low	44.26	BLK	0.250
FVA	Far Valley	44.26	BLK	0.250
FBA	Far Barite	44.26	BLK	0.250
FDE	Far Density	44.26	BLK	0.250
FPK	Far Peak	44.26	BLK	0.250
FLI	Far Lithology	44.26	BLK	0.250
PTMP	Pad Temperature	44.09	BLK	0.920
NHV	Near Detector High Voltage	43.49	NO	
FHV	Far Detector High Voltage	43.49	NO	
ITMP	Instrument Temperature	43.49	NO	
DDHV	Detector High Voltage	43.49	NO	
Microlog Pad				
TPUL	Tension Pull	44.28	NO	
MINV	Microlog Lateral	44.28	BLK	0.750
MNOR	Microlog Normal	44.28	BLK	0.750
Data: WILKINSON_2_22I0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\001 20-Mar-13 18:44 Dn @215.3f				
Date: 20-Mar-13 18:54:49				

FIELD	WILDCAT		
COUNTY	SCOTT	STATE	KANSAS
HALLIBURTON		BOREHOLE COMPENSATED SONIC ARRAY LOG	