

BOREHOLE COMPENSATED SONIC ARRAY LOG

----- Fold here -----

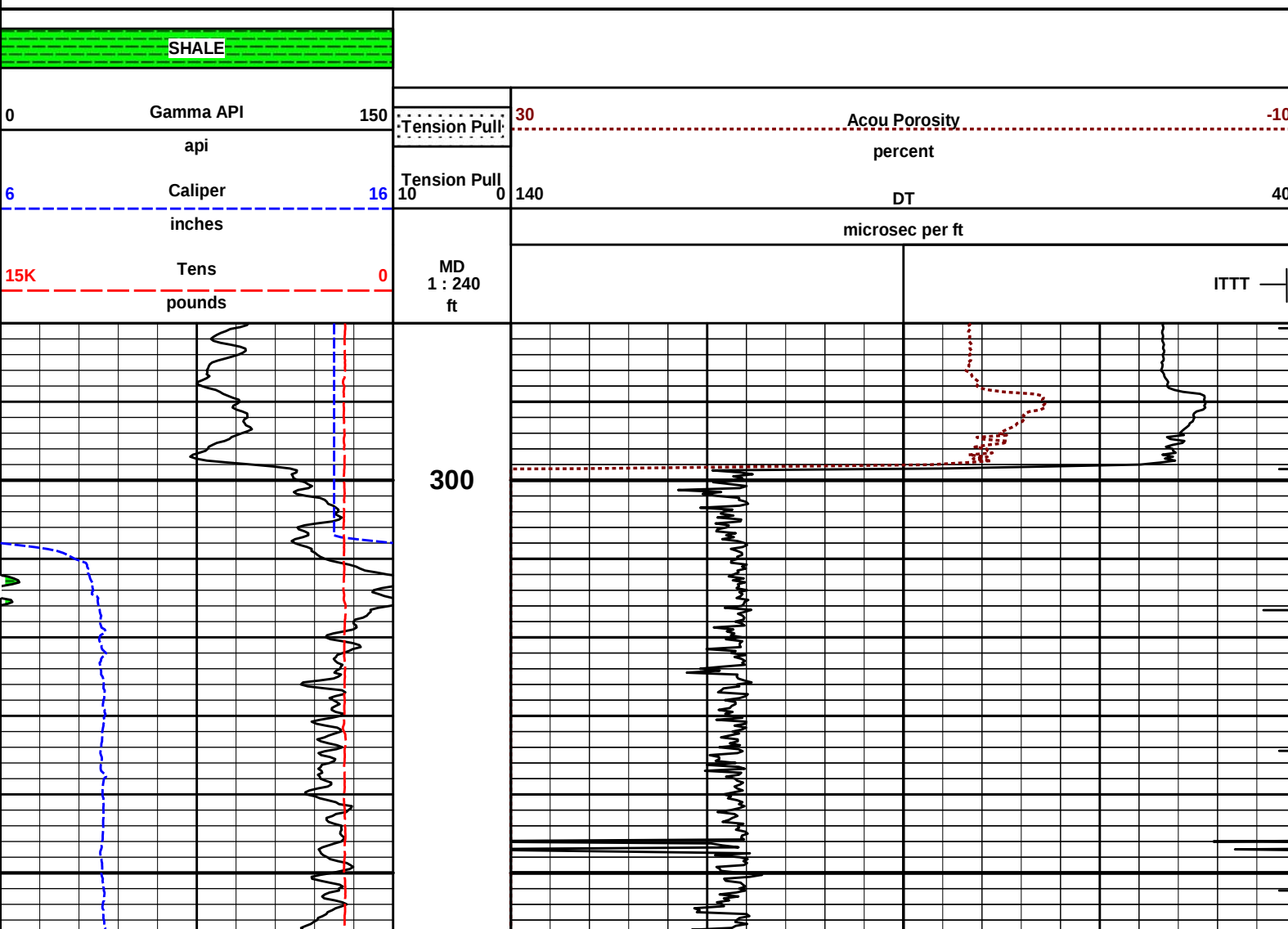
Service Ticket No.: 902179941						API Serial No.: 15-153-21109-00-00						PGM Version: WL INSITE R4.6.4 (Build 3)					
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE								RESISTIVITY SCALE CHANGES									
Date	Sample No.							Type Log	Depth		Scale Up Hole			Scale Down Hole			
Depth-Driller																	
Type Fluid in Hole																	
Density	Viscosity																
Ph	Fluid Loss																
Source of Sample									RESISTIVITY EQUIPMENT DATA								
Rm @ Meas. Temp			@			@			Run No.	Tool Type & No.		Pad Type		Tool Pos.		Other	
Rmf @ Meas. Temp.			@			@			ONE	ACRT		N/A		CENT		N/A	
Rmc @ Meas. Temp.			@			@				I962_S909							
Source Rmf	Rmc							ONE	MICROLOG		RUBBER		ADJ		N/A		
Rm @ BHT			@			@				11014296							
Rmf @ BHT			@			@											
Rmc @ BHT			@			@											
EQUIPMENT DATA																	
GAMMA				ACOUSTIC				DENSITY				NEUTRON					
Run No.		ONE		Run No.		ONE		Run No.		ONE		Run No.		ONE			
Serial No.		11048627		Serial No.		10747683		Serial No.		10865884		Serial No.		11055304			
Model No.		GTET		Model No.		BSAT		Model No.		SDLT-I		Model No.		DSNT-I			
Diameter		3.625"		No. of Cent.		2		Diameter		4.5"		Diameter		3.625"			
Detector Model No.		T-102		Spacing		6"		Log Type		GAM-GAM		Log Type		NEU-NEU			
Type		SCINT						Source Type		CS137		Source Type		AM241BE			
Length		8'		LSA [Y/N]		NO		Serial No.		5168GW		Serial No.		DSN-424			
Distance to Source		10'		FWDA [Y/N]		NO		Strength		1.5 CI		Strength		15 CI			
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	4864	297	REC	0	150	30	-10	47.6	30	-10	2.71	30	-10	LIME			

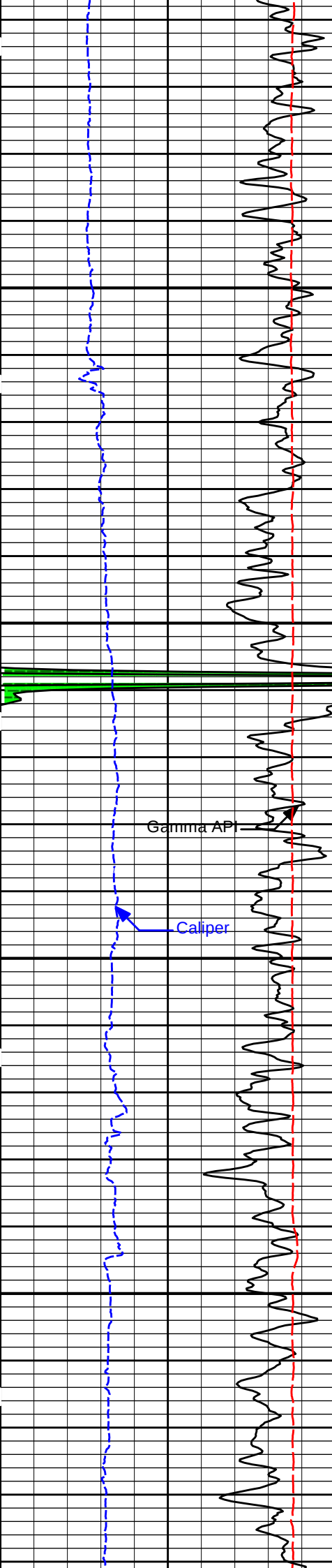
[illegible]

HALLIBURTON

Plot Time: 03-Mar-15 03:07:26
Plot Range: 280 ft to 4869.92 ft
Data: DEWEY_TRUST_1-7\Well Based\CASING\
Plot File: \\BSAT\BSAT_5_MAIN_LIB

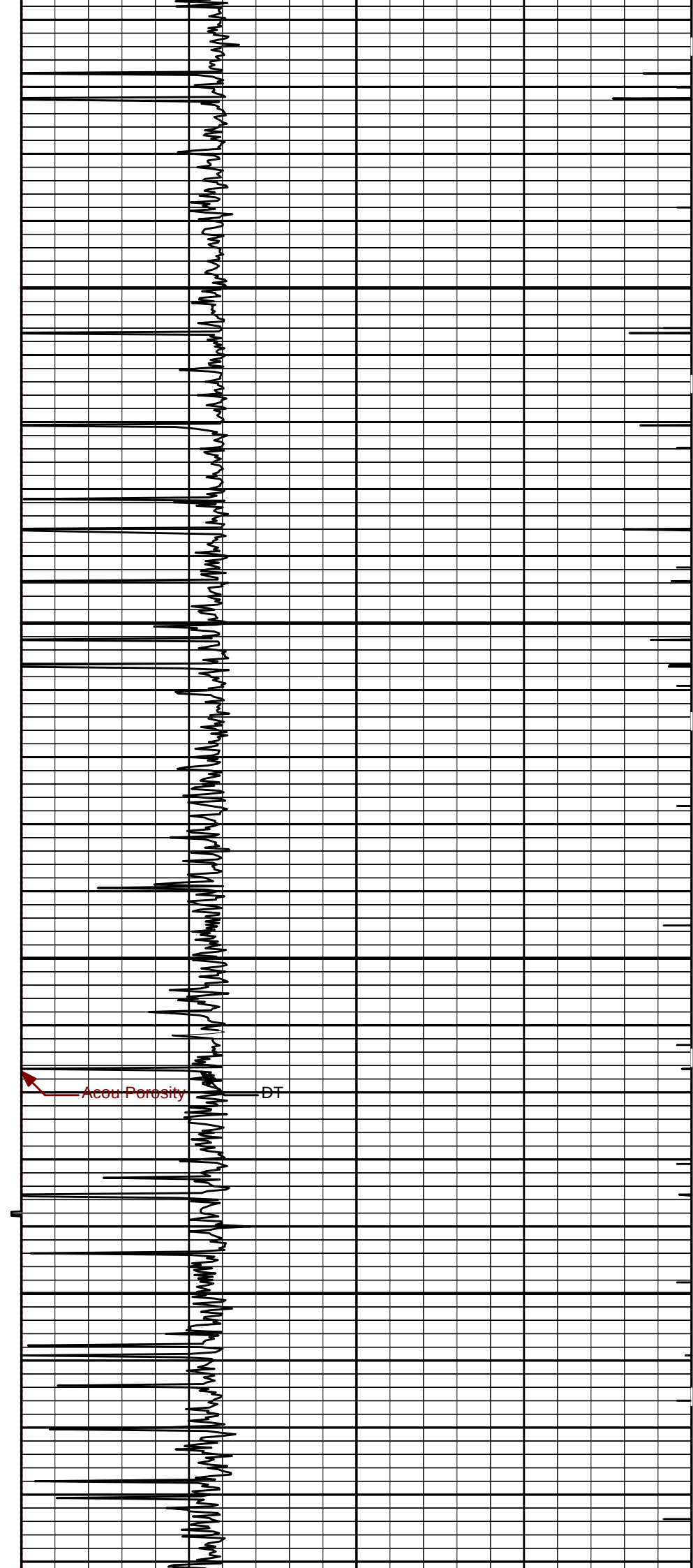
5 INCH MAIN LOG

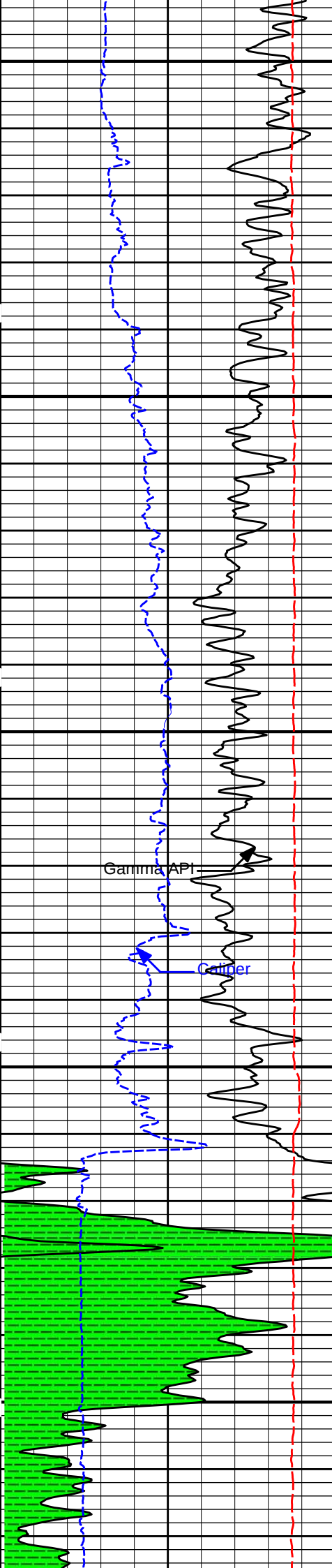




400

500

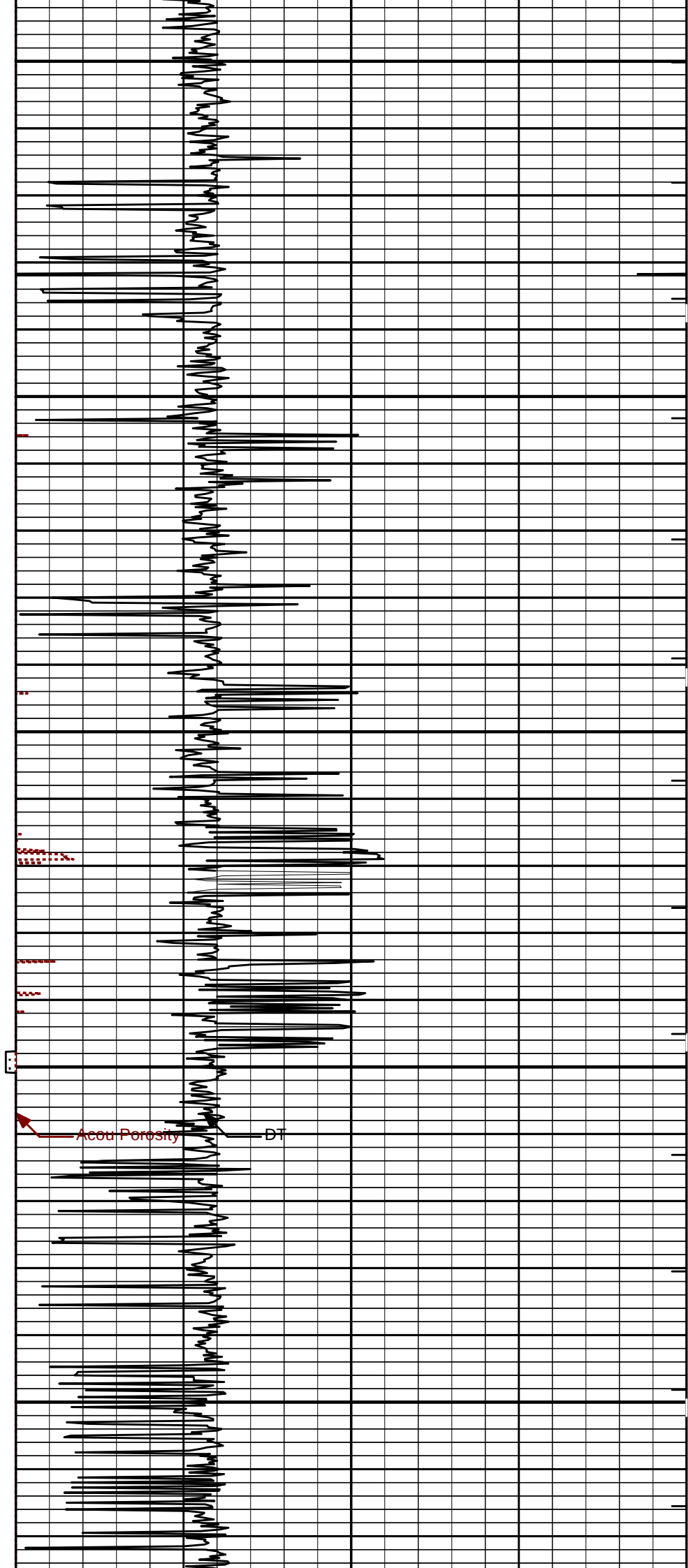




600

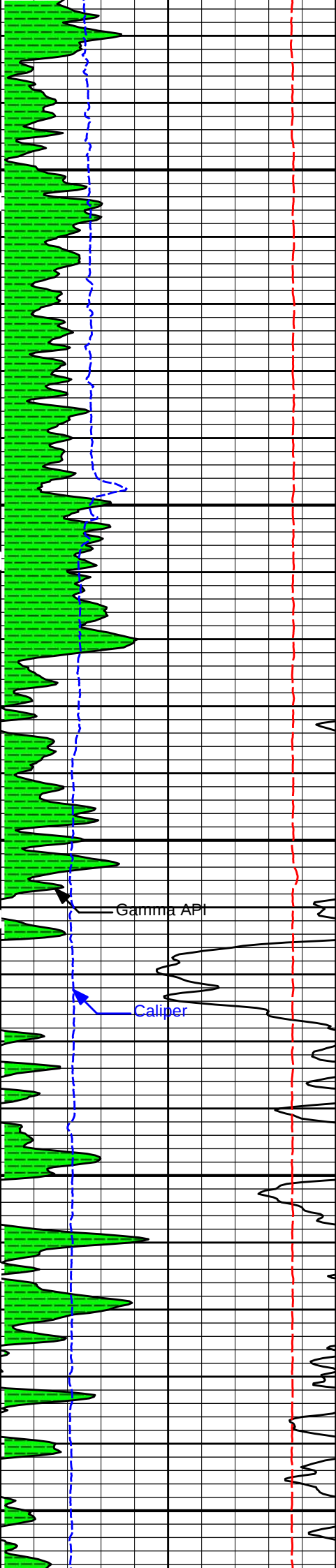
700

800



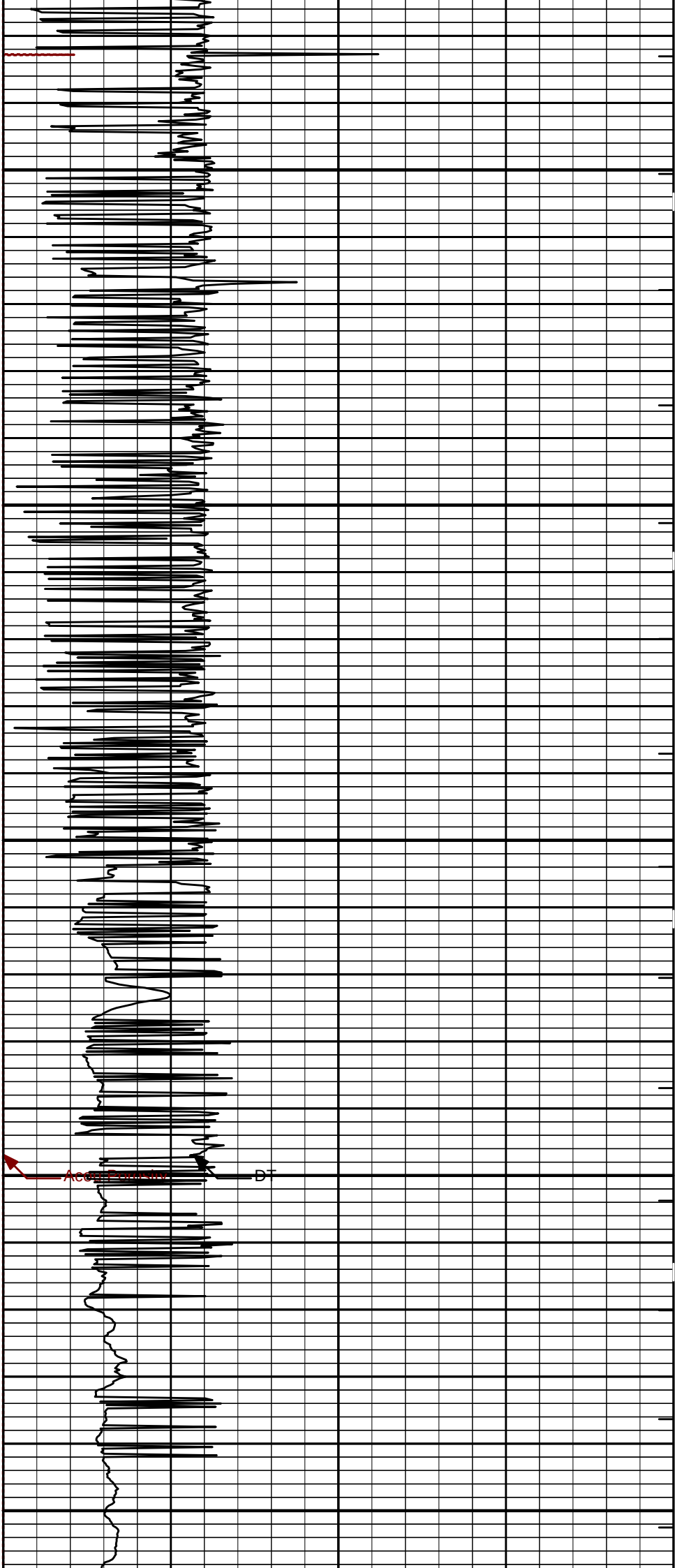
Acou Porosity

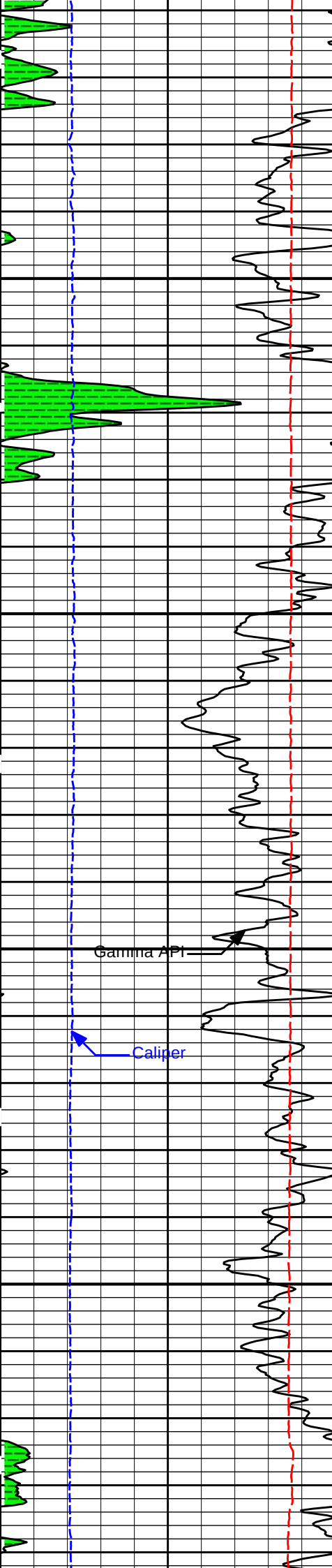
DT



900

1000





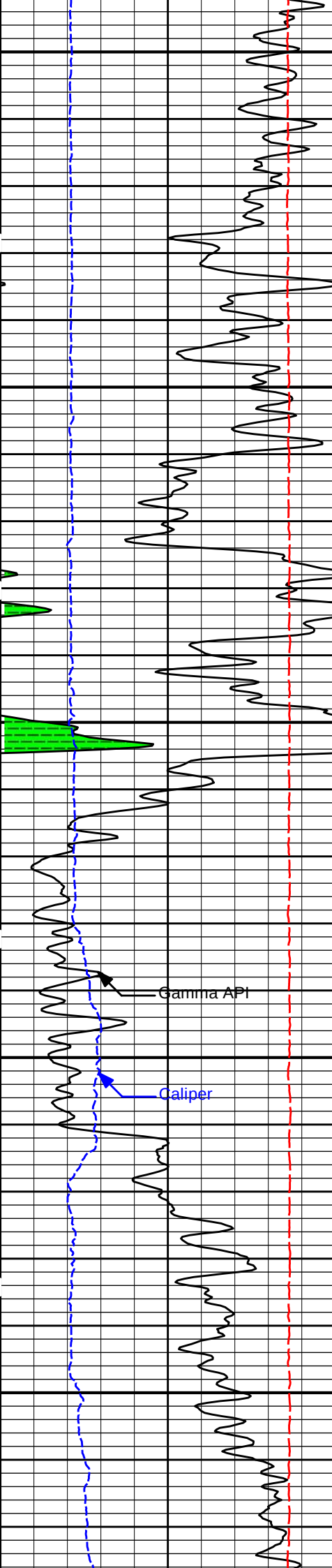
1100

1200

Gamma API

Caliper

Acou Porosity



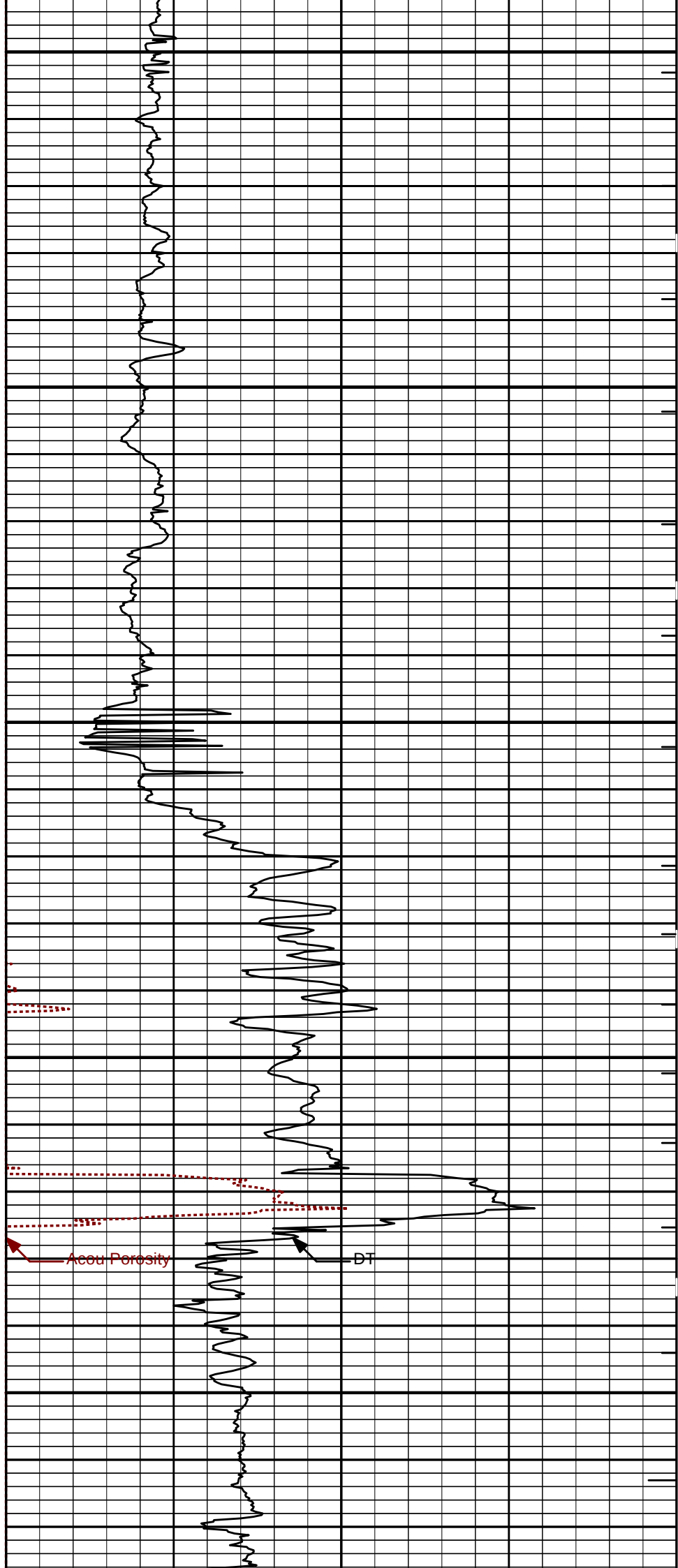
1300

1400

1500

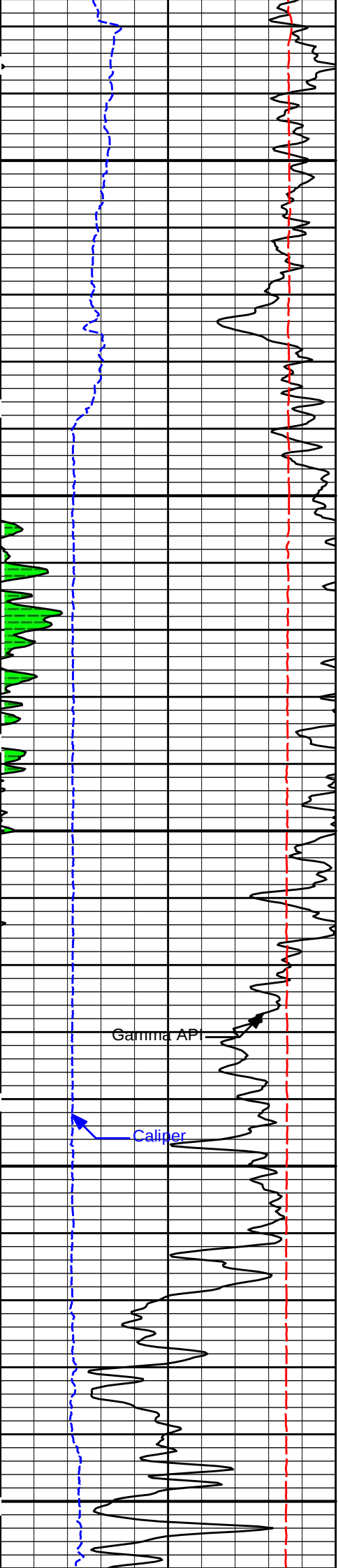
Gamma API

Caliper



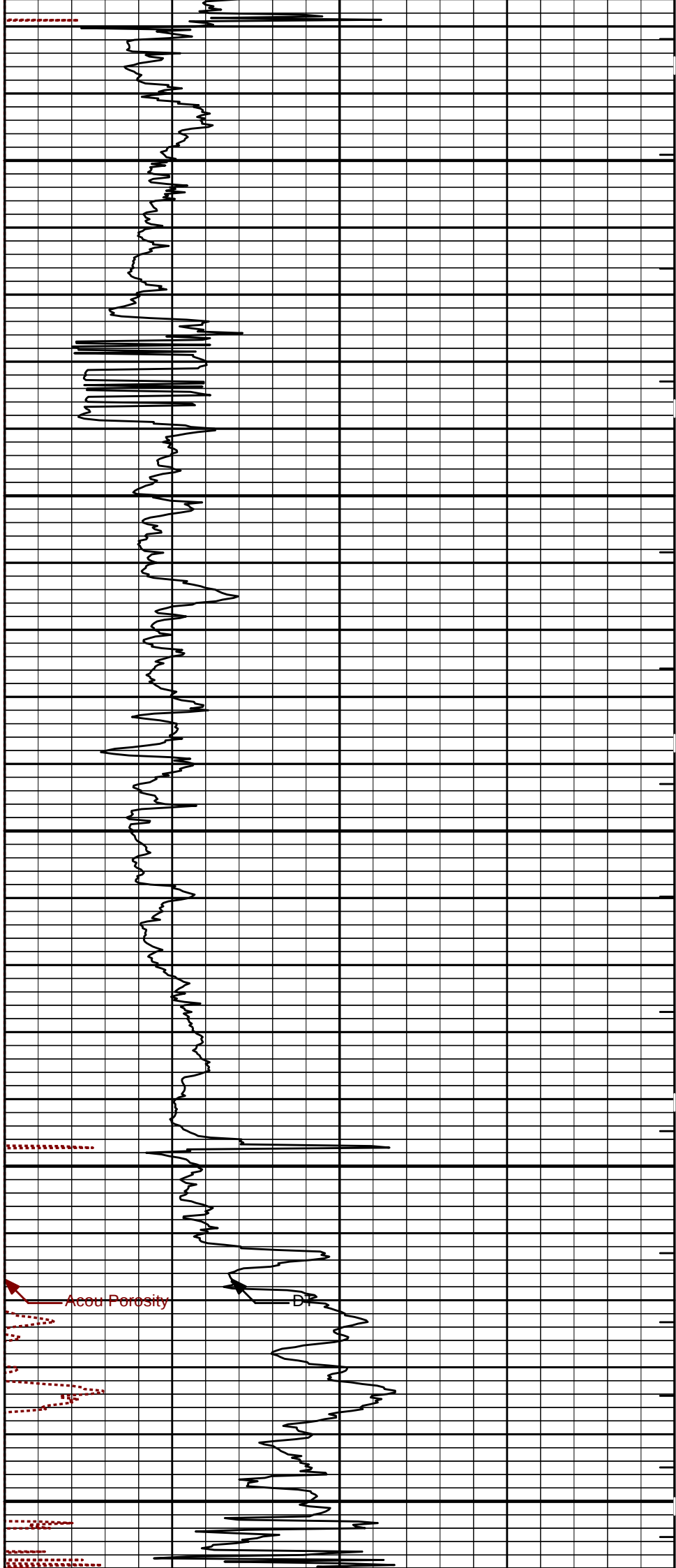
Acou Porosity

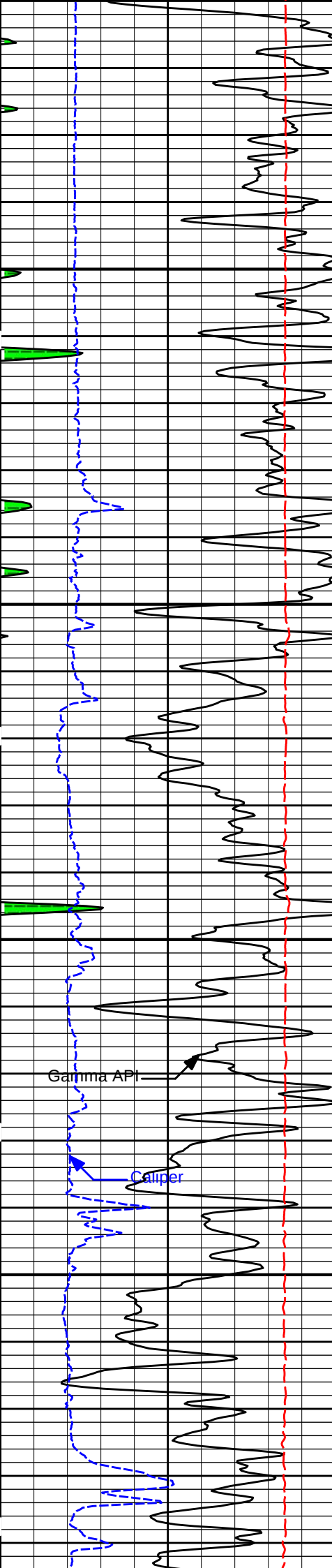
DT



1600

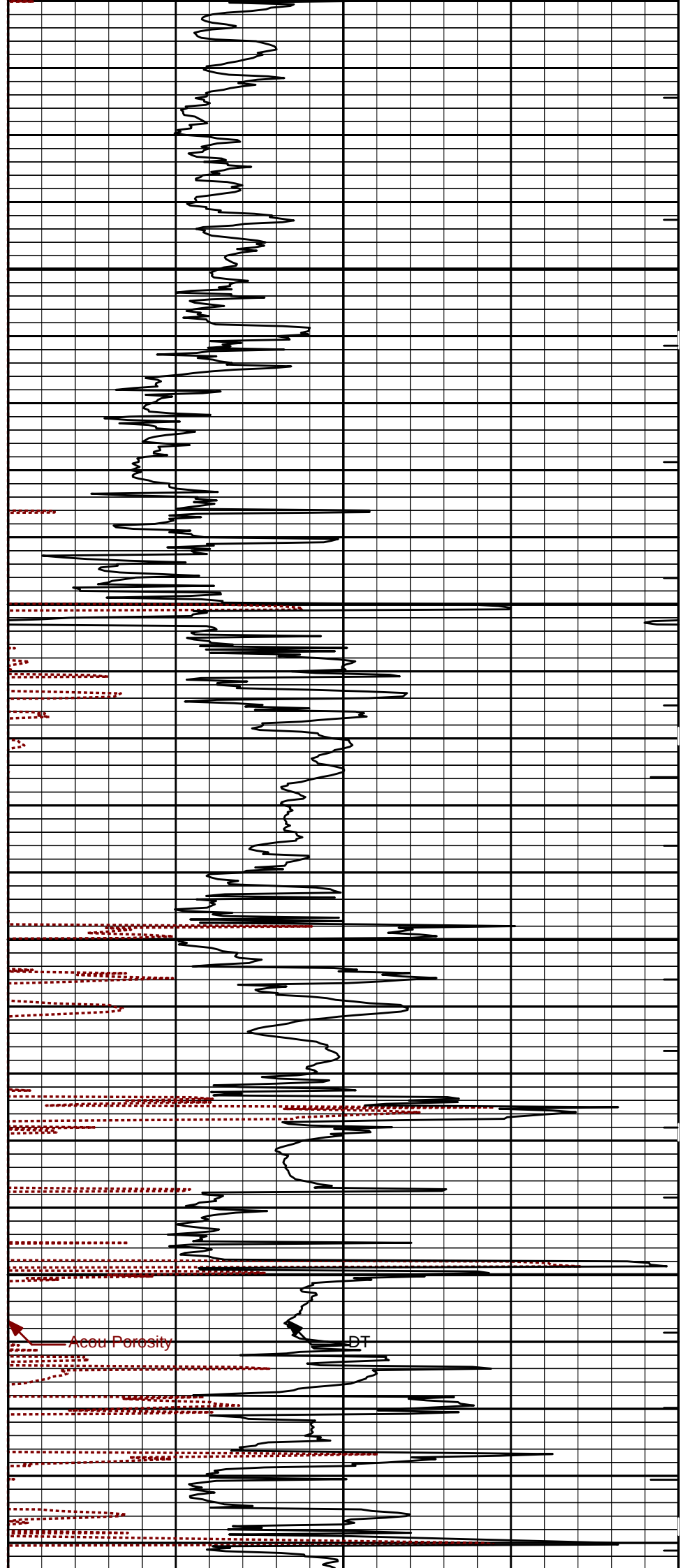
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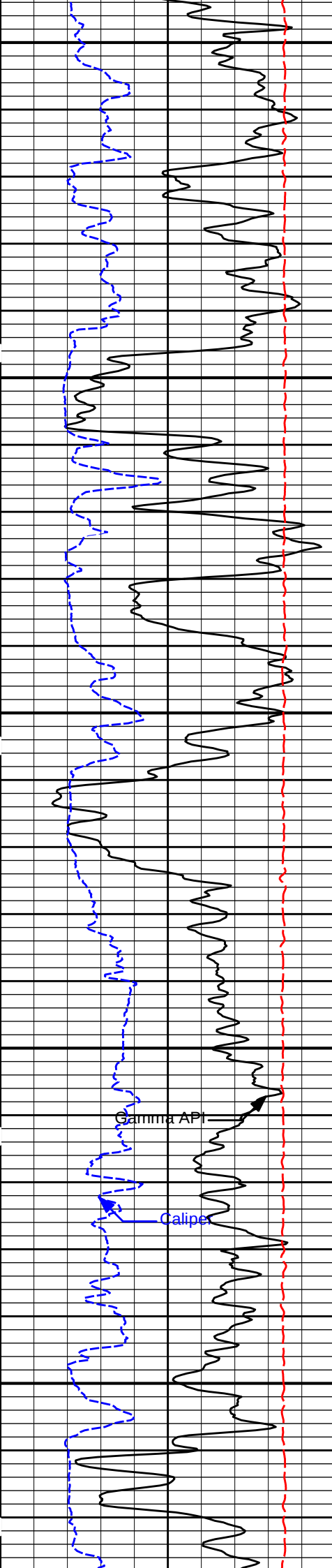




1800

1900





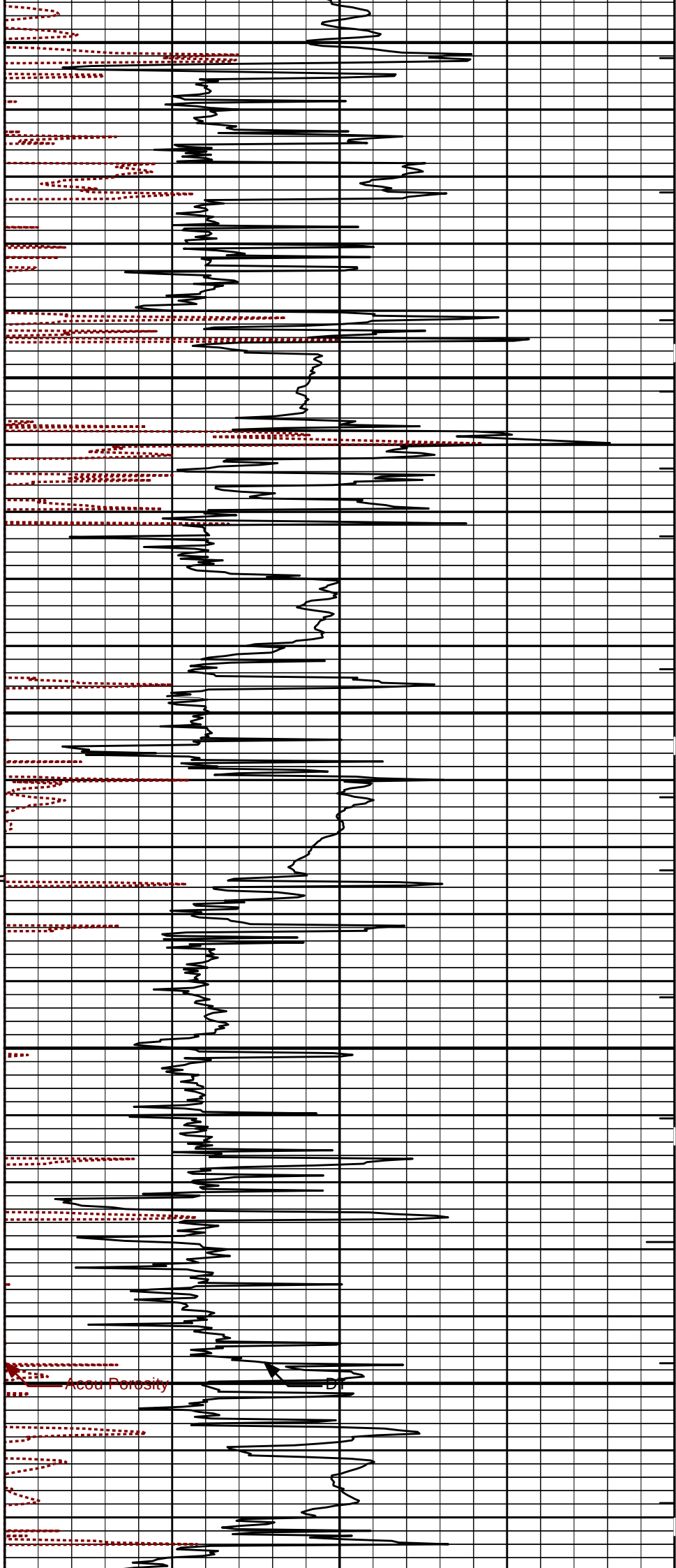
2000

2100

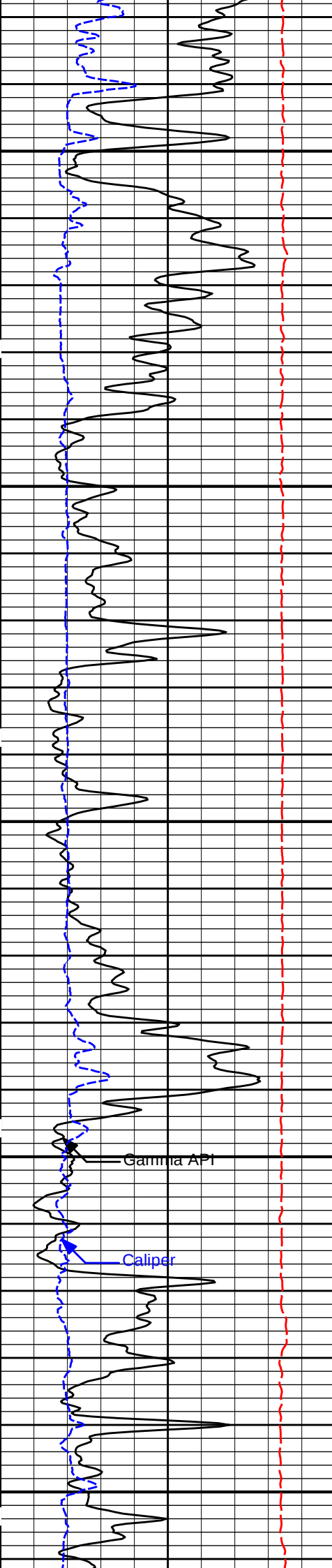
2200

Gamma API

Caliper

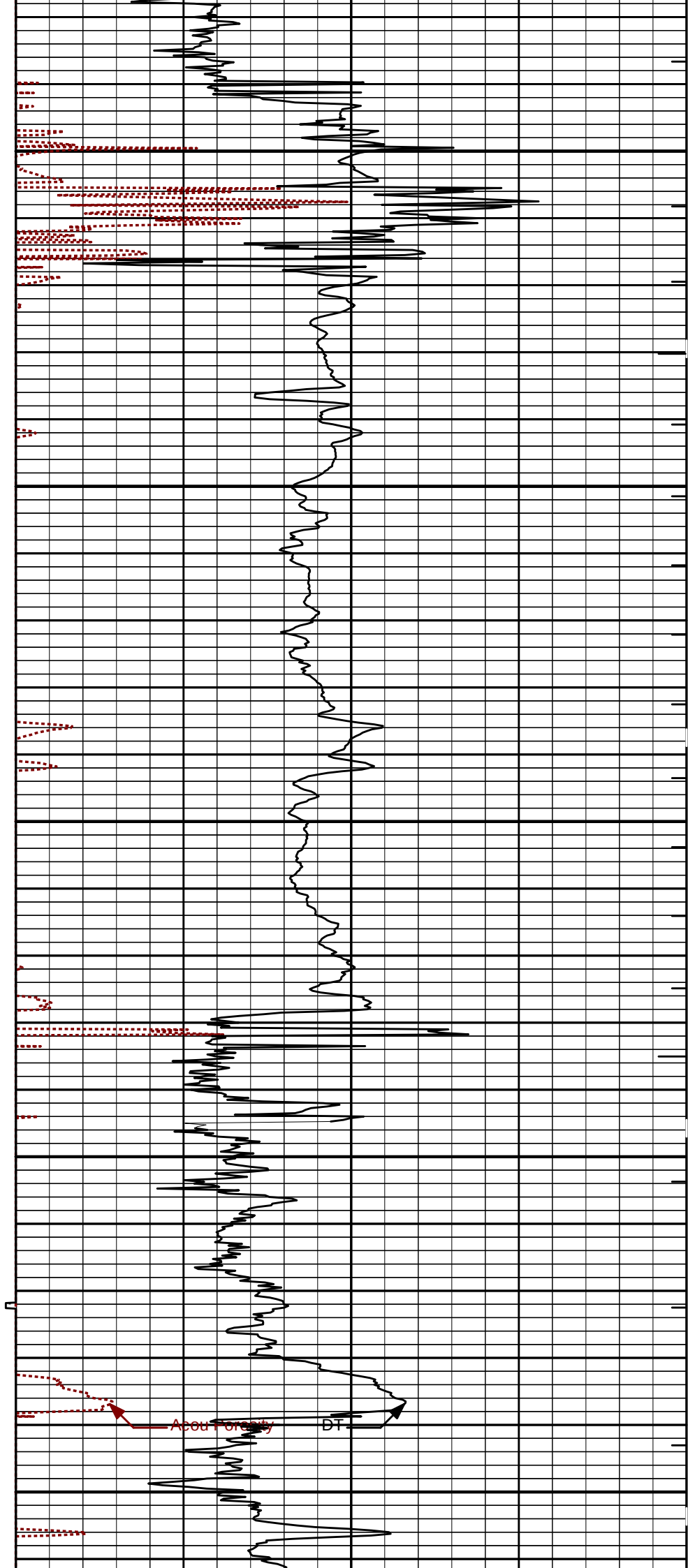


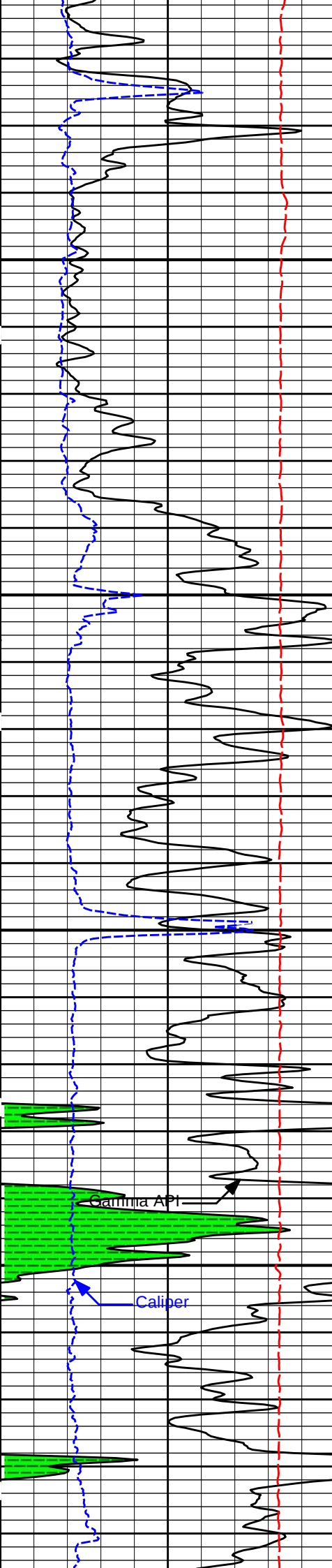
Acoustic Porosity



2300

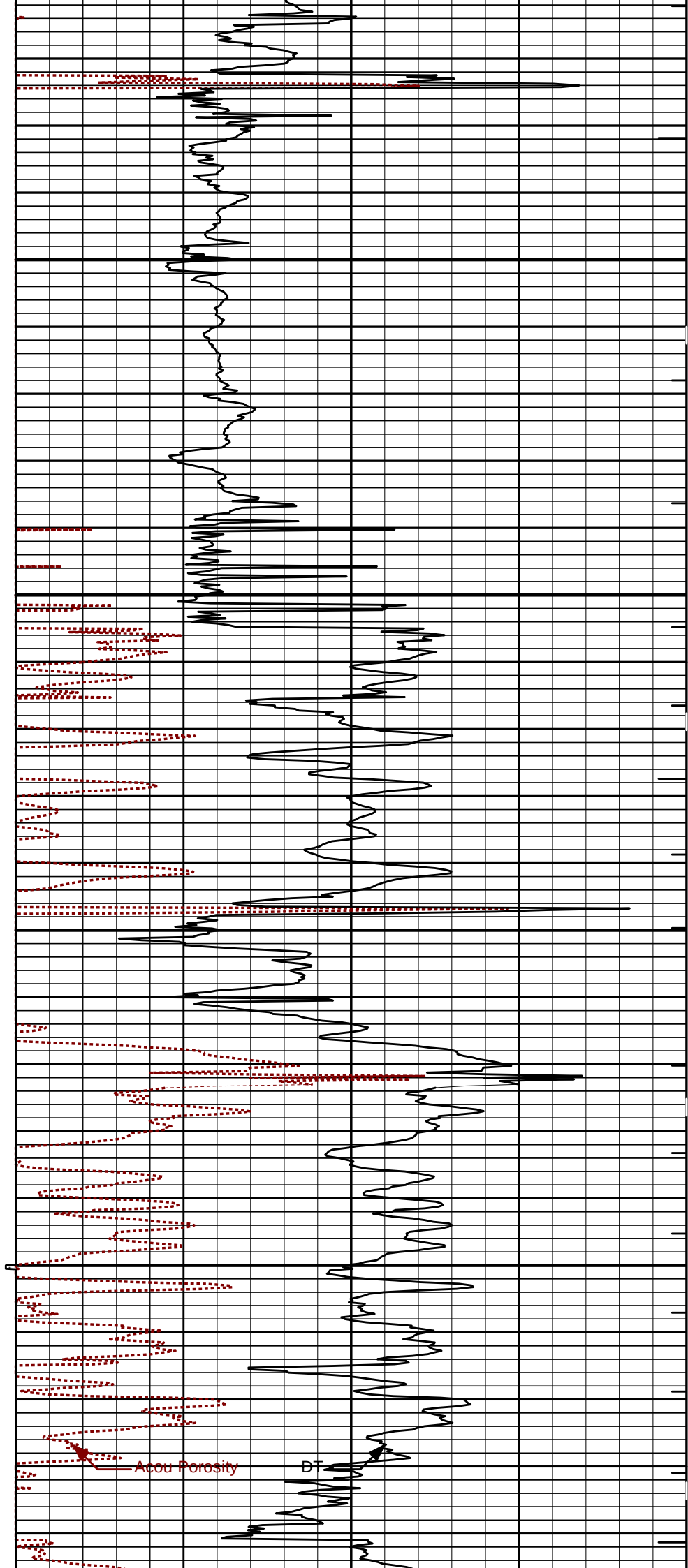
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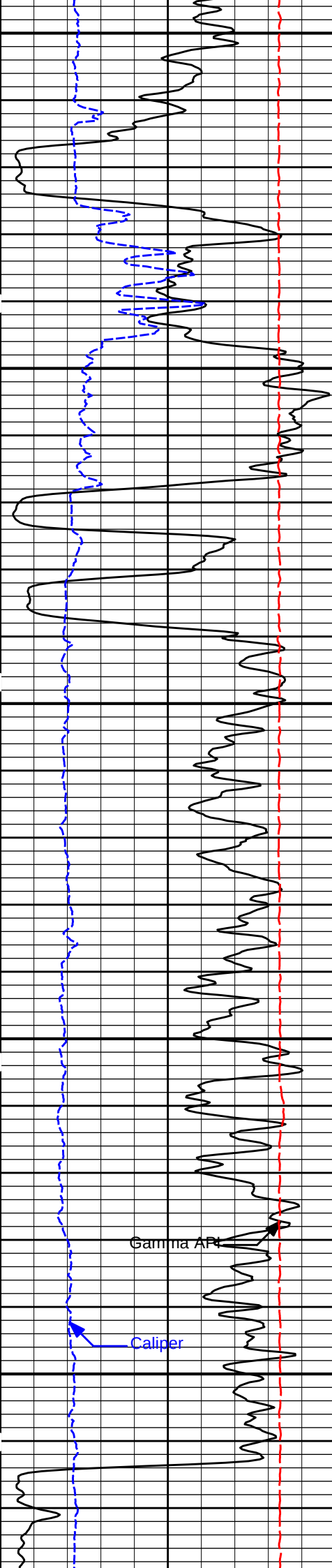




2500

2600

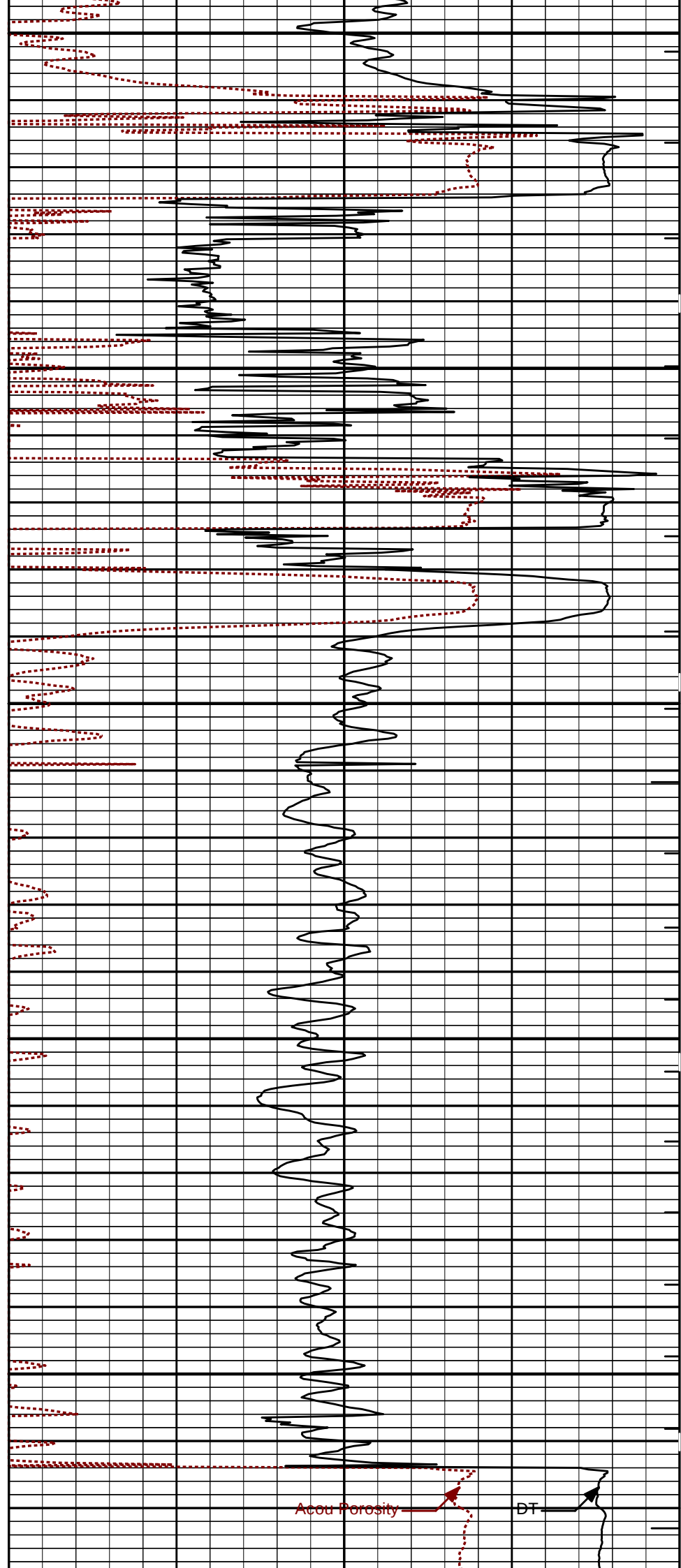


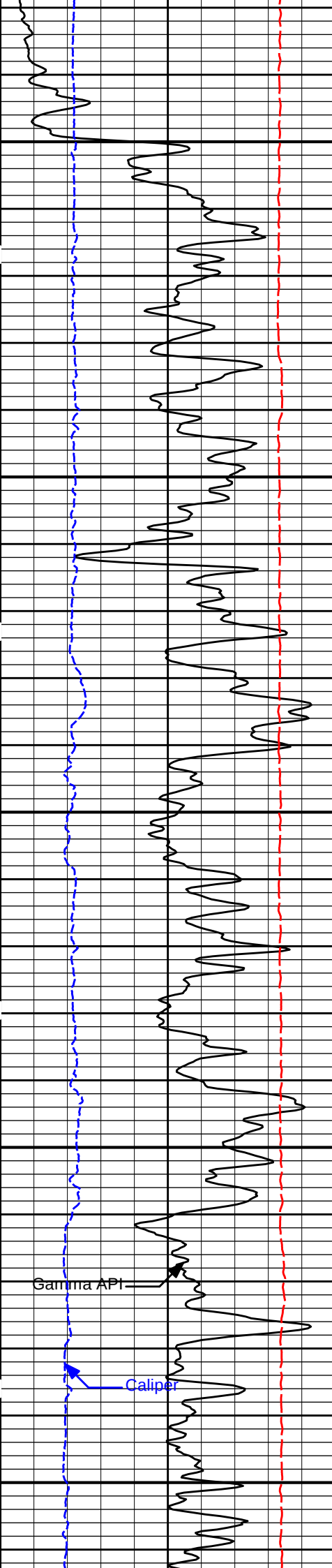


2700

2800

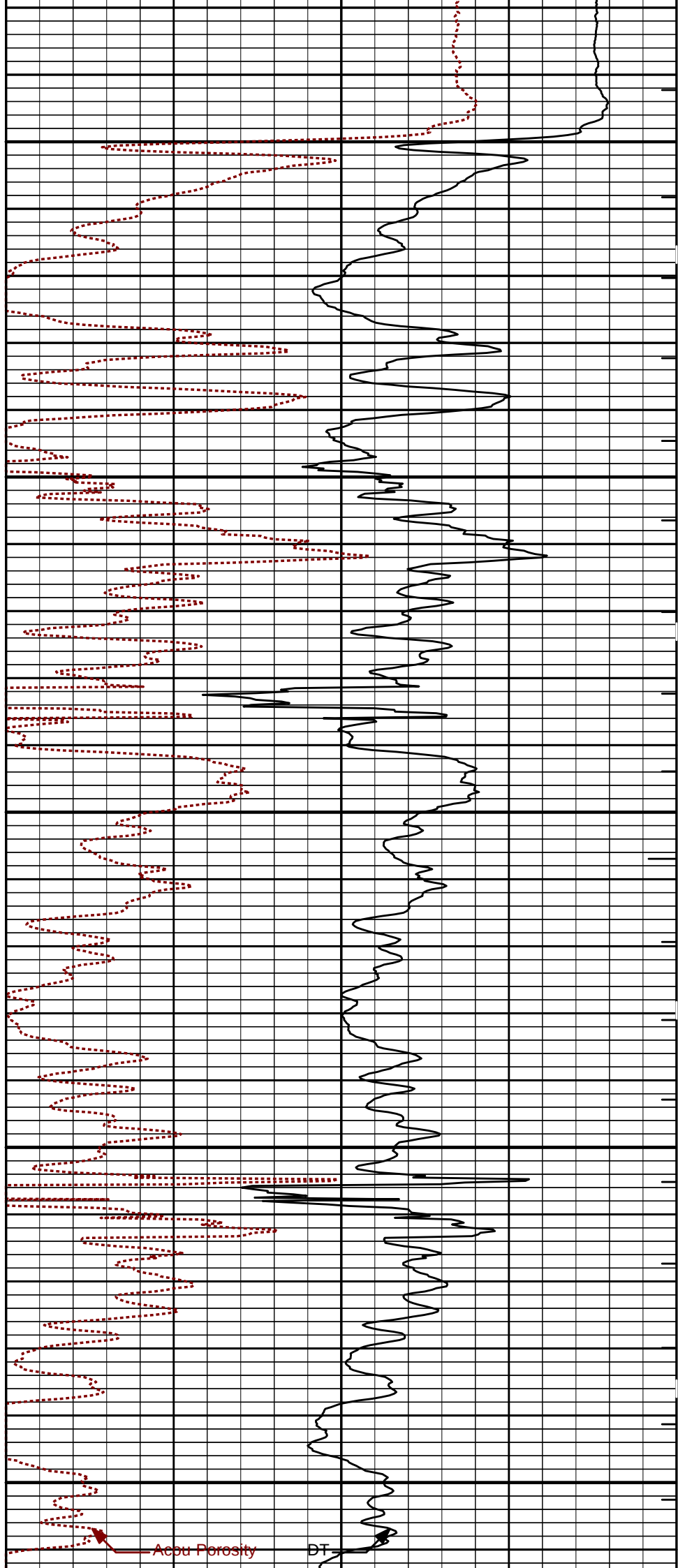
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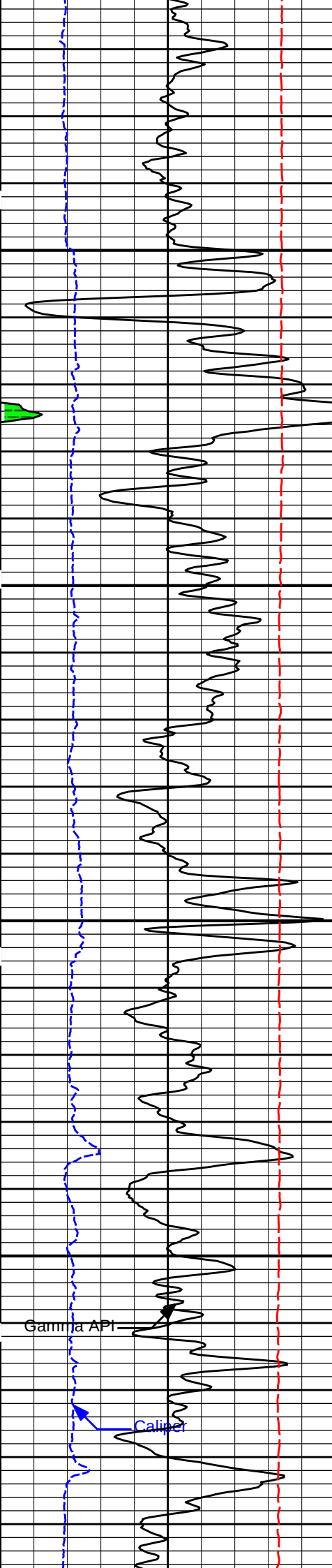




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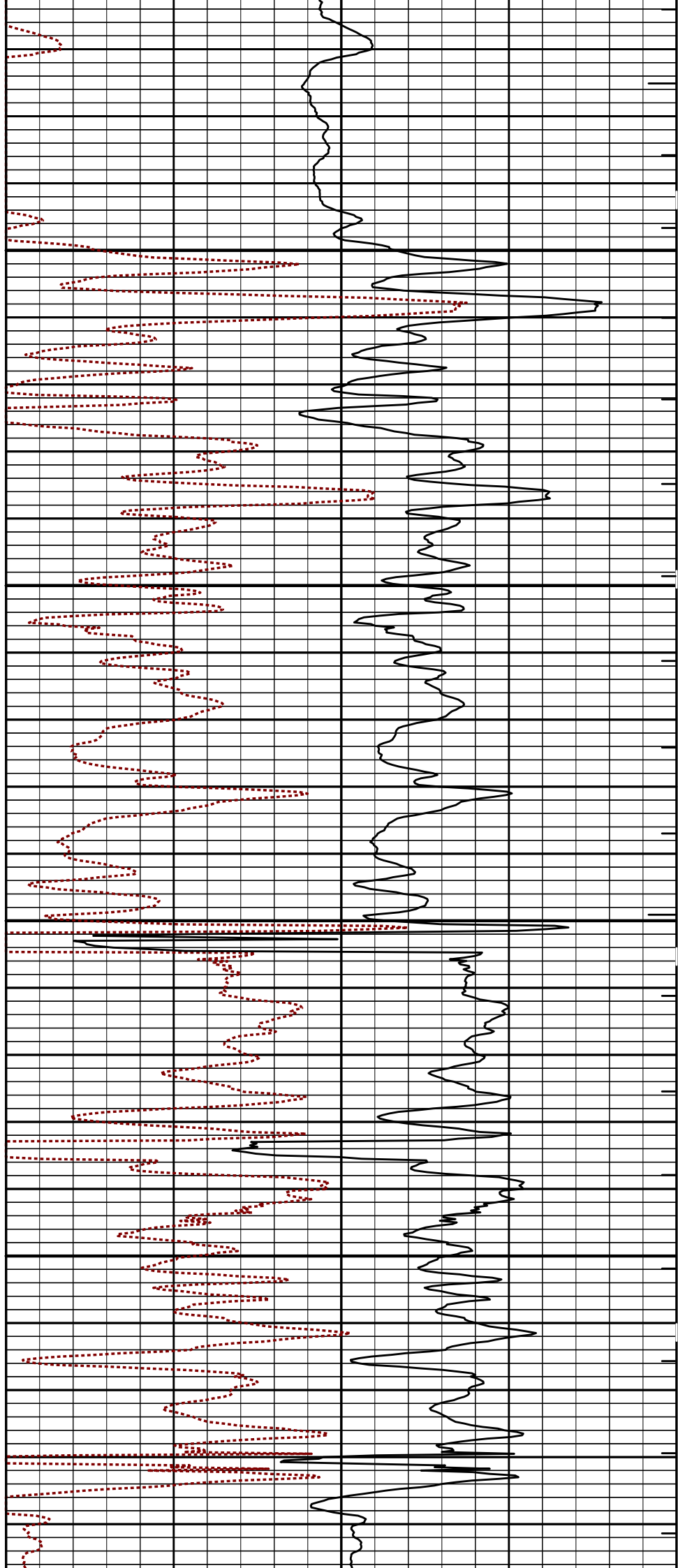
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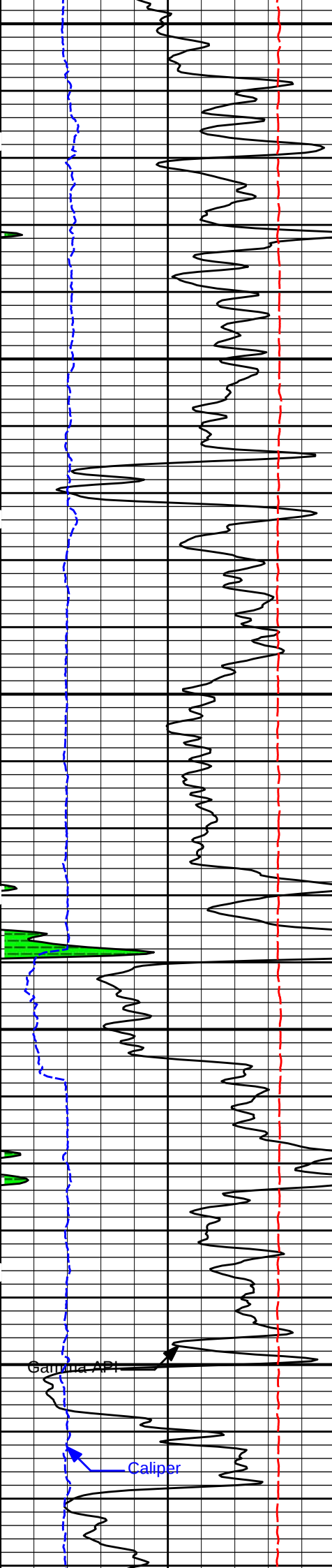




3200

3300

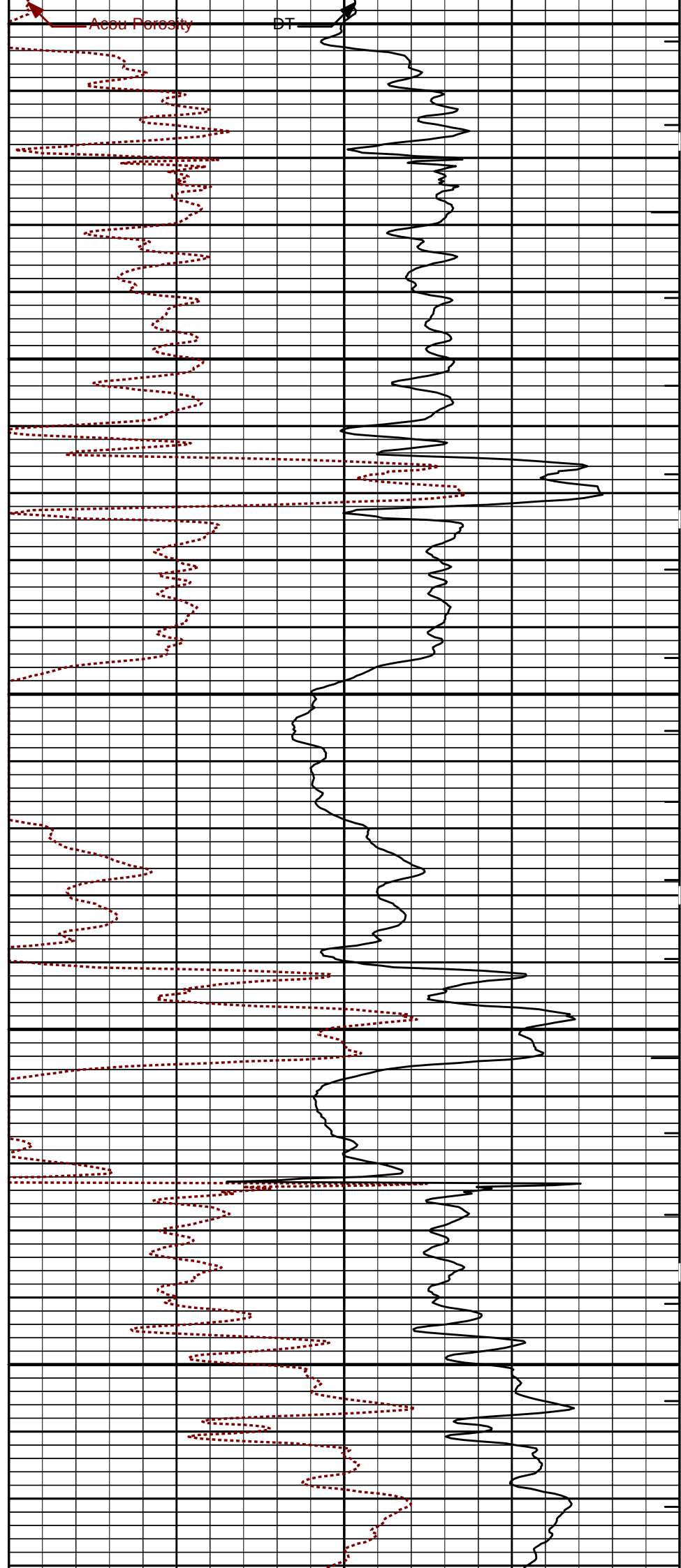


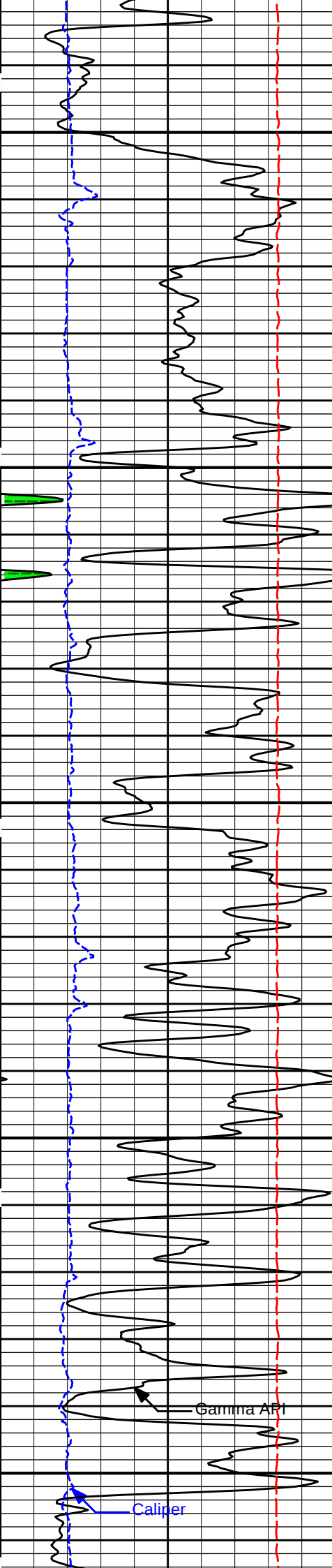


3400

3500

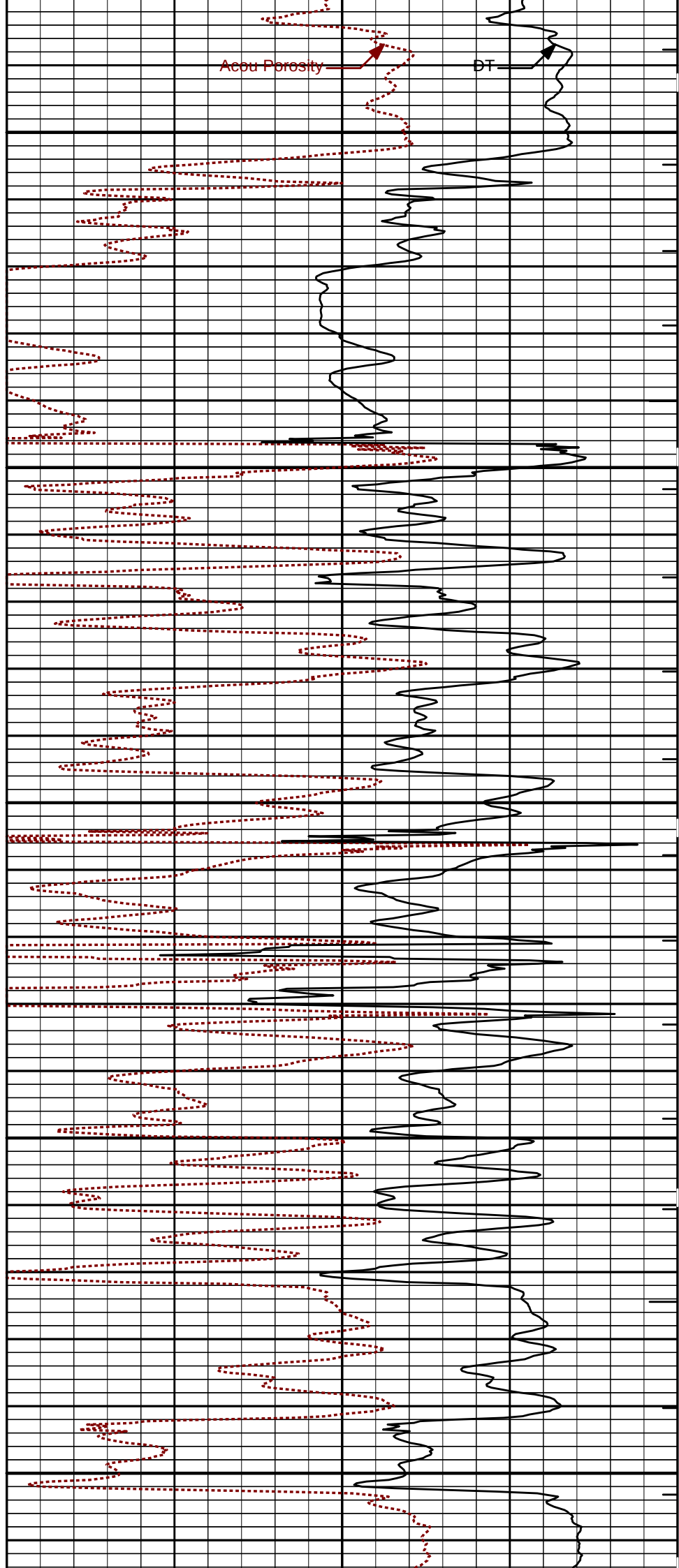
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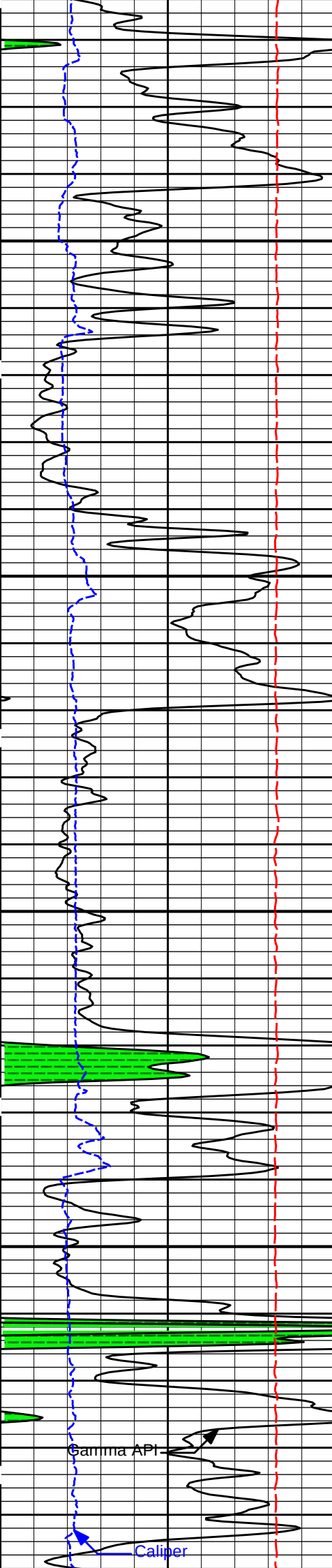




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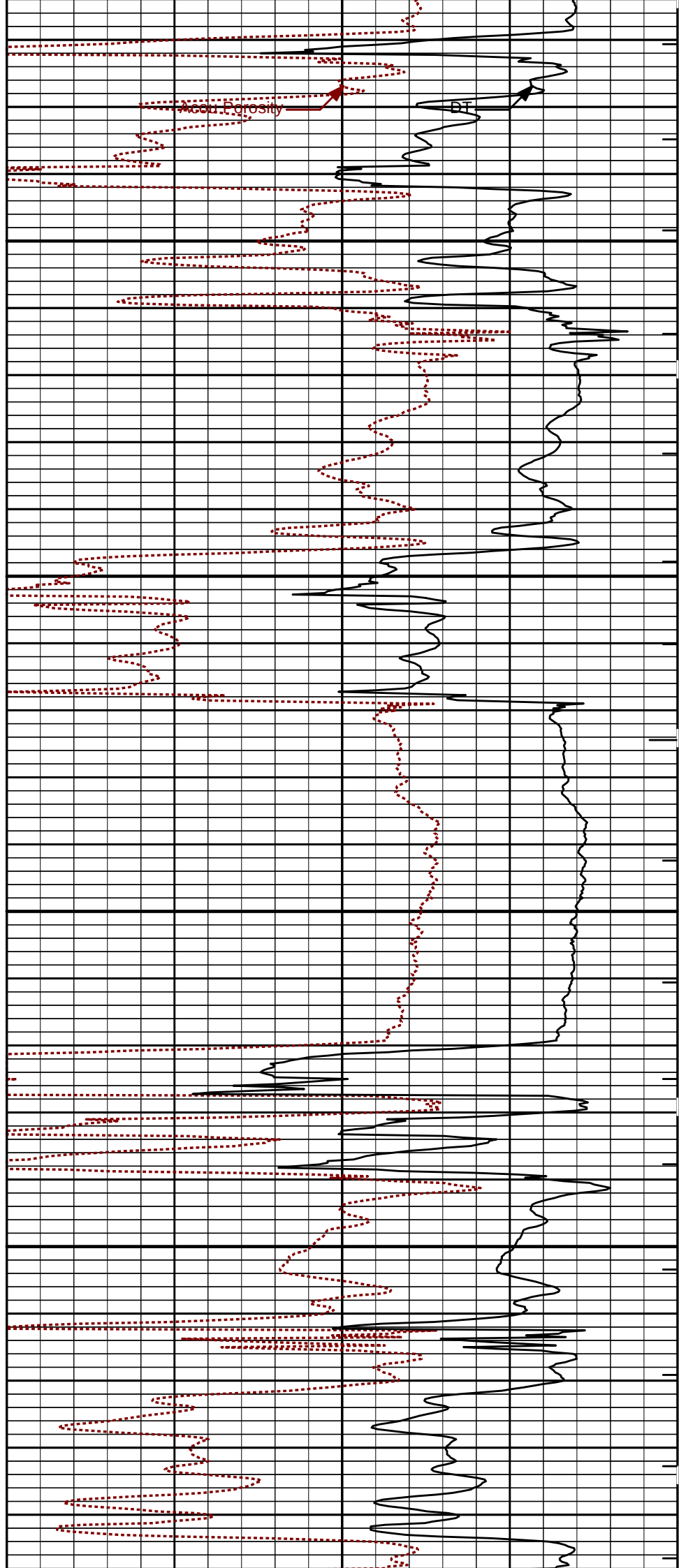
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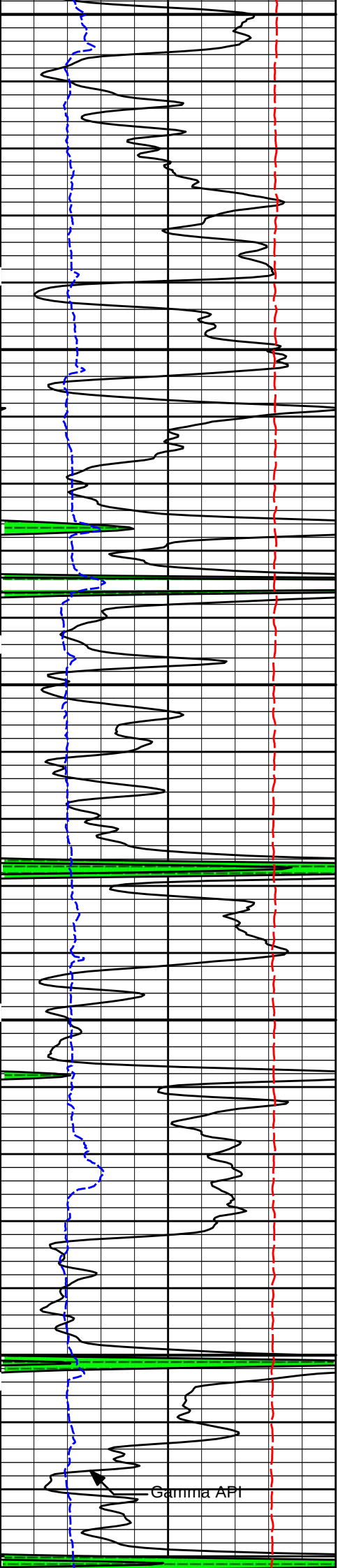




3900

4000

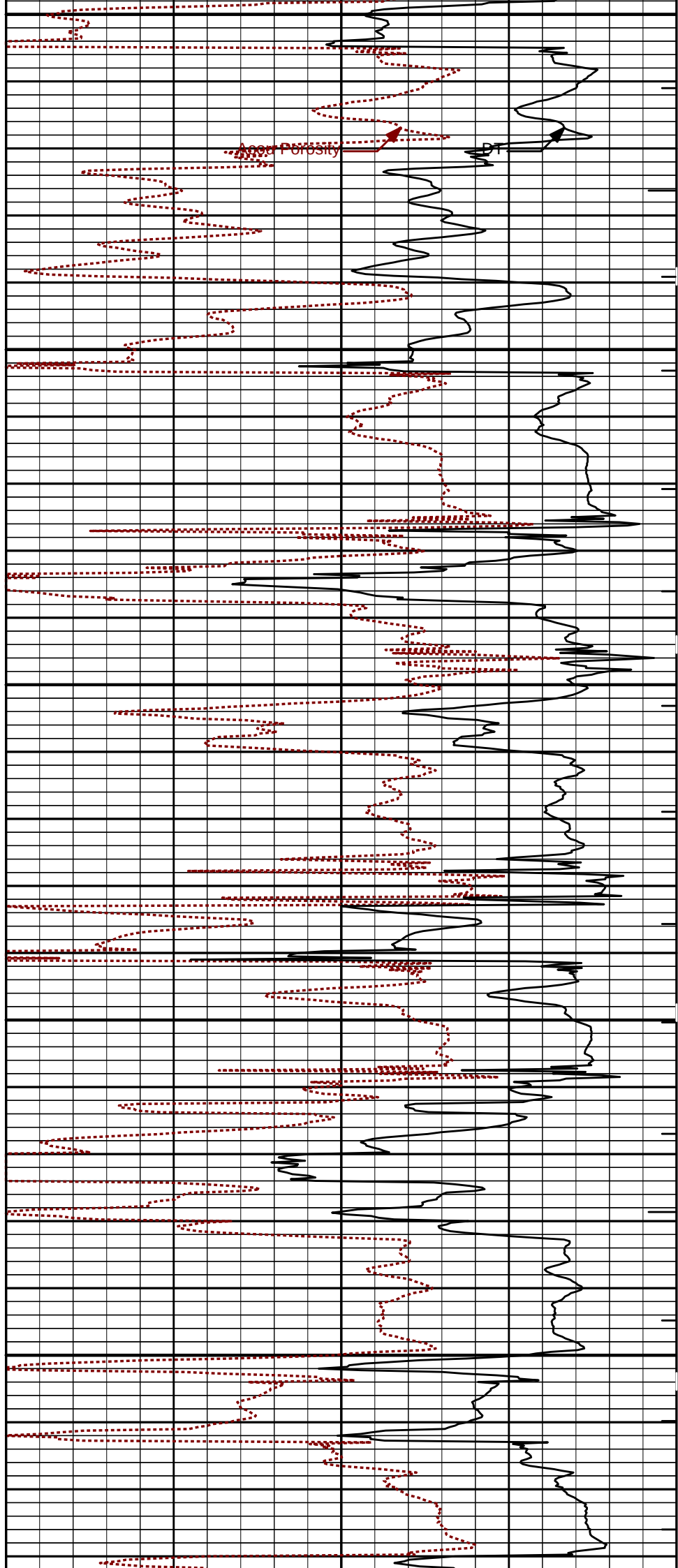


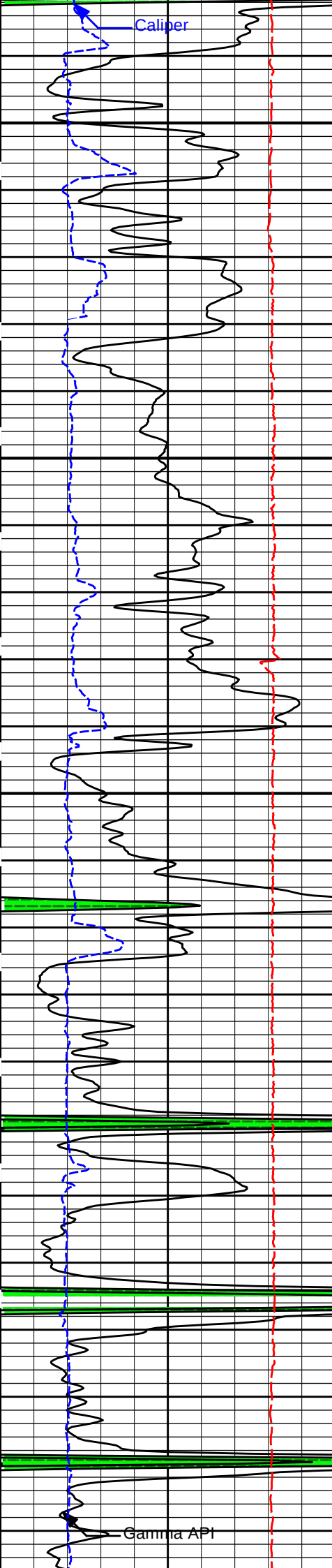


4100

4200

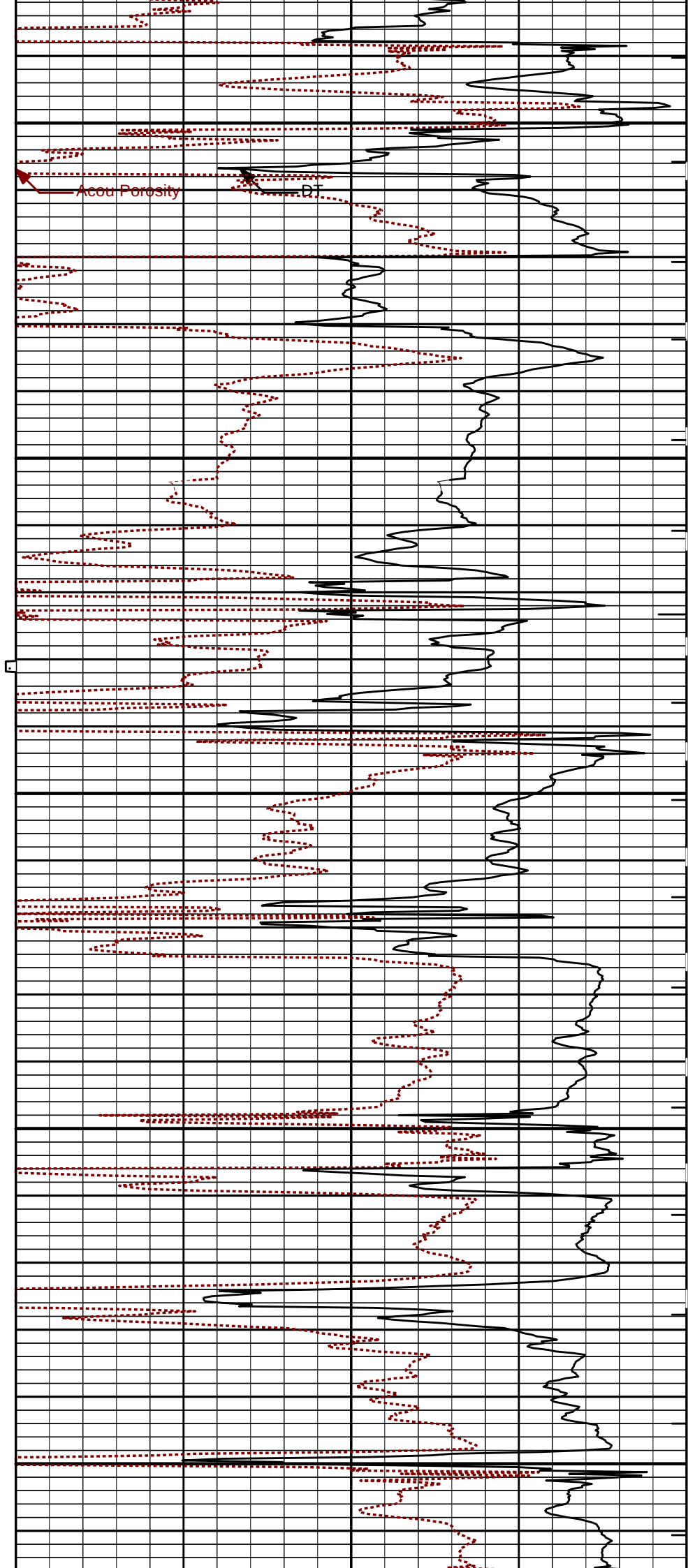
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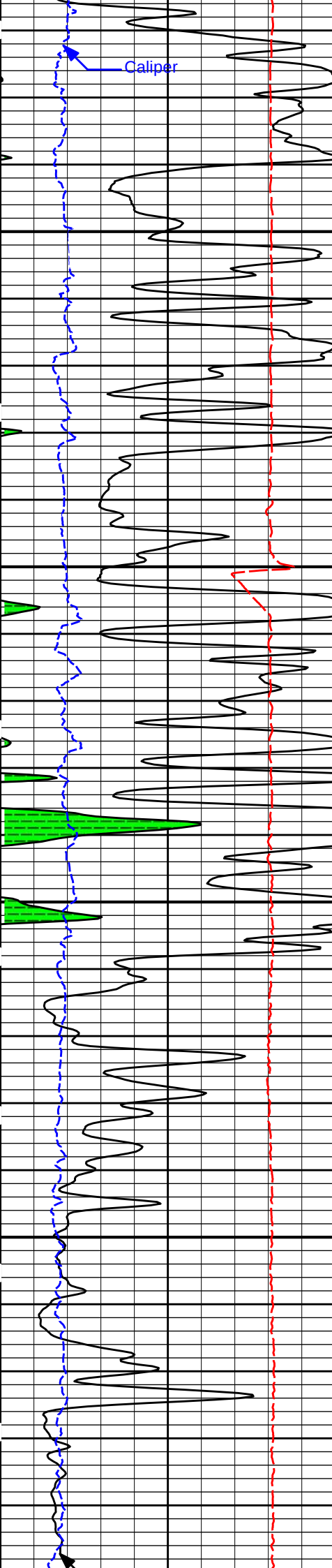




4400

4500

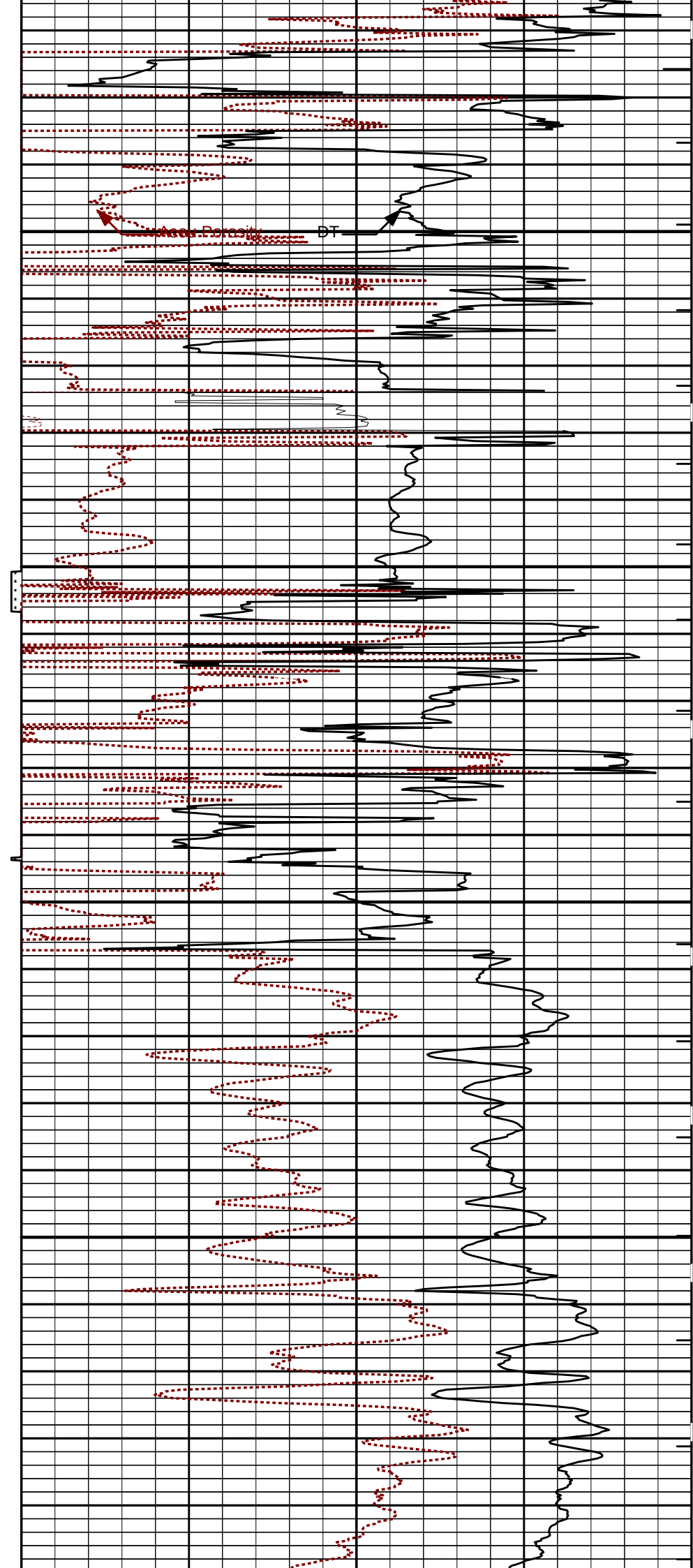


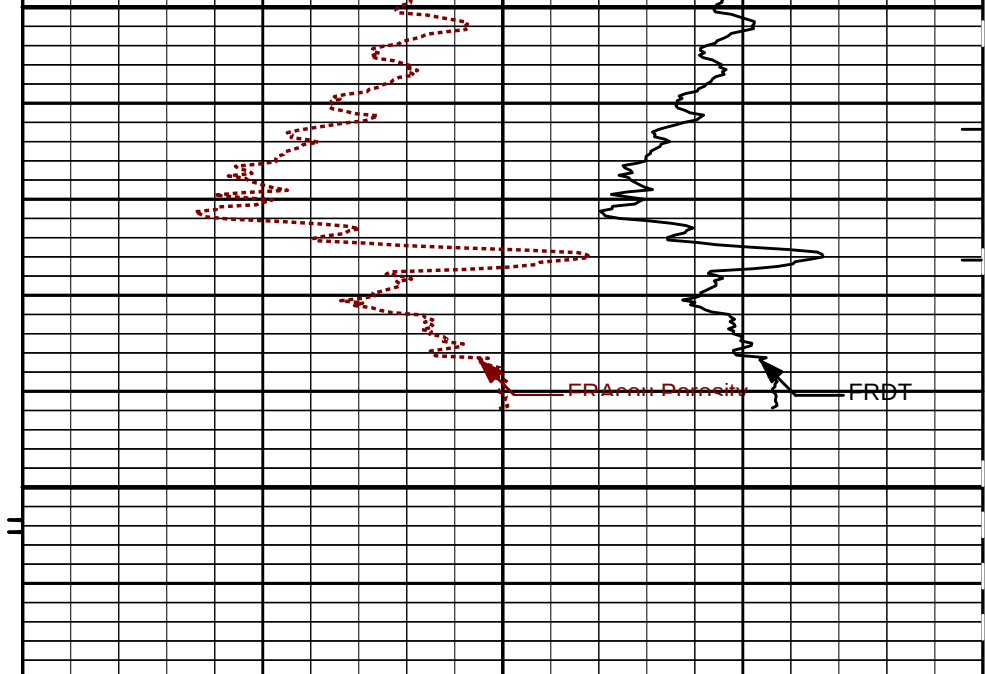
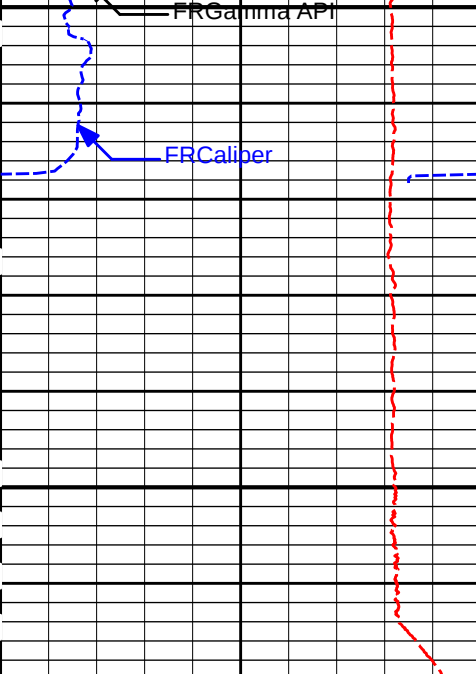


4600

4700

4800





15K	Tens pounds	0	MD 1 : 240 ft		ITTT —
6	Caliper inches	16	Tension Pull 10 0	140	DT 40
0	Gamma API	150		microsec per ft	
	api		Tension Pull	30	Acou Porosity -10
				percent	
SHALE					

HALLIBURTON

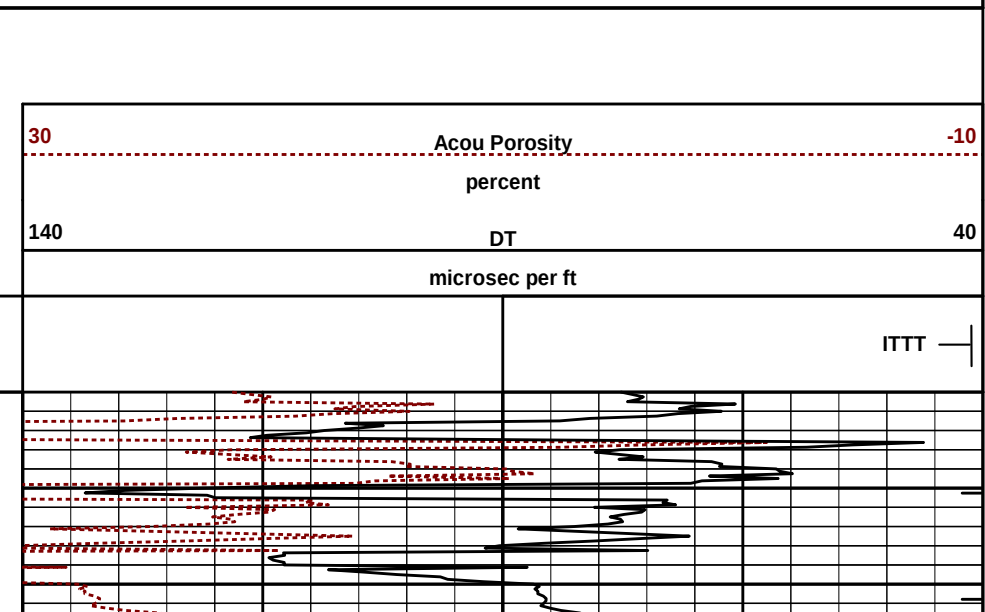
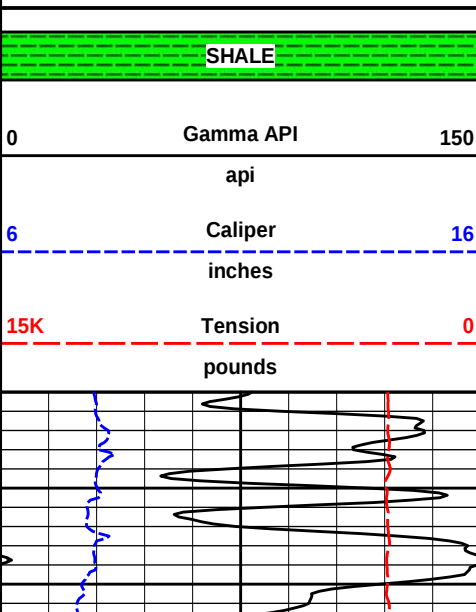
Plot Time: 03-Mar-15 03:07:29
Plot Range: 280 ft to 4869.92 ft
Data: DEWEY_TRUST_1-7\Well Based\CASING\
Plot File: \\BSAT\BSAT_5_MAIN_LIB

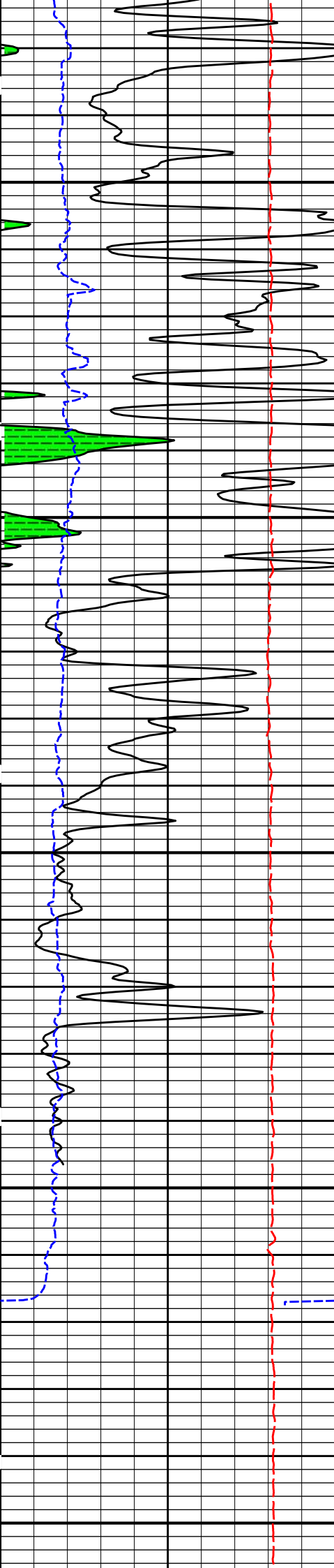
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 03-Mar-15 03:07:30
Plot Range: 4600 ft to 4869.17 ft
Data: DEWEY_TRUST_1-7\Well Based\REPEAT
Plot File: \\BSAT\BSAT_5_REP_LIB

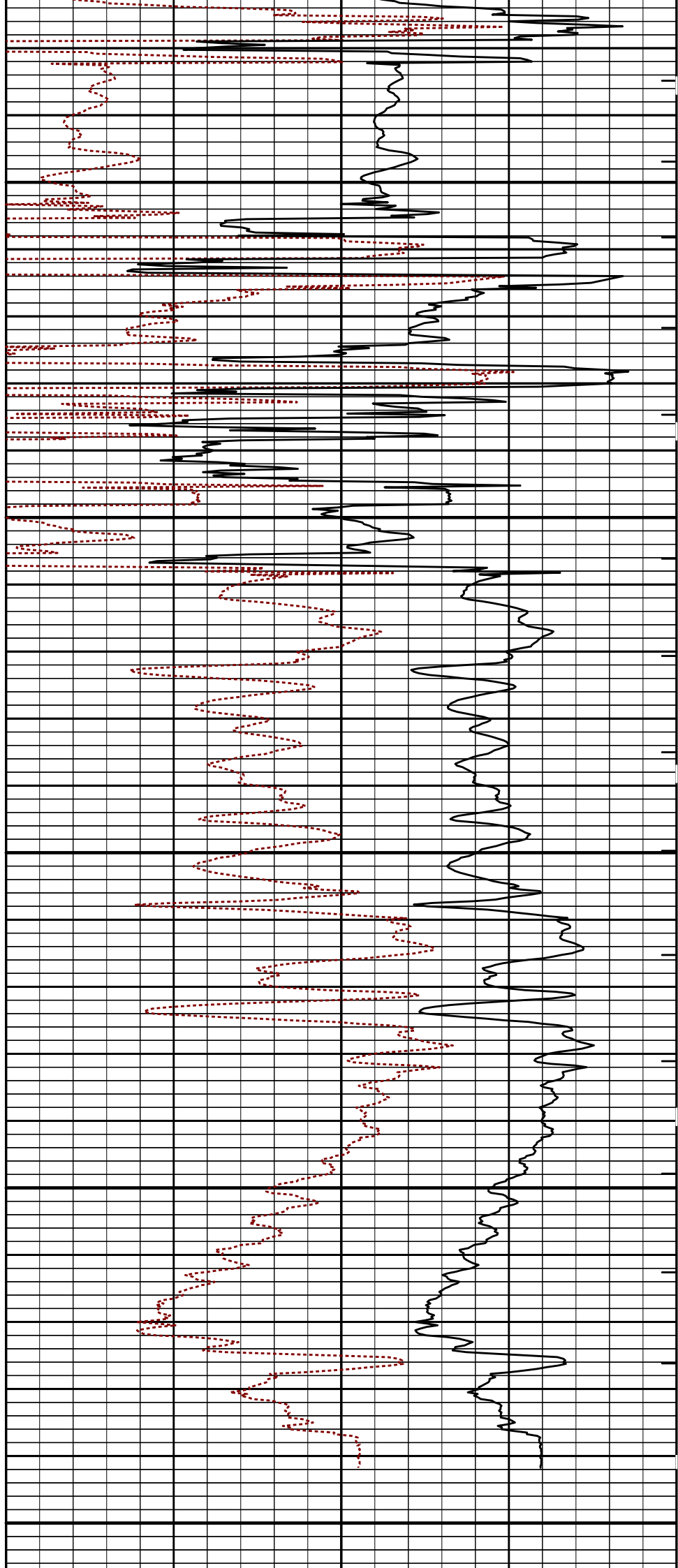
REPEAT SECTION





4700

4800



[illegible]

HALLIBURTON

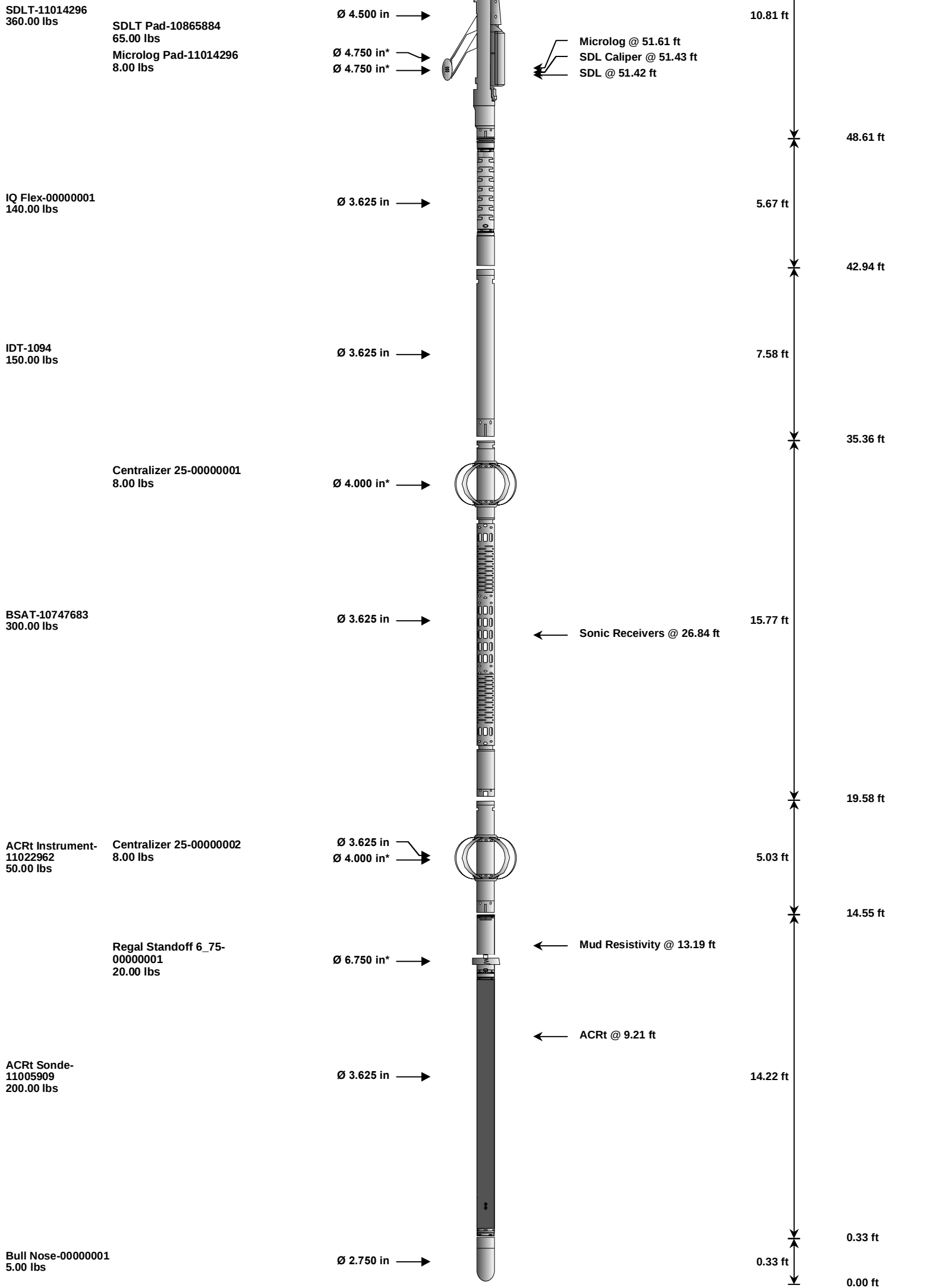
Plot Time: 03-Mar-15 03:07:31
Plot Range: 4600 ft to 4869.17 ft
Data: DEWEY_TRUST_1-7\Well Based\REPEAT\
Plot File: \\BSAT\BSAT_5_REP_LIB

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length	
						87.62 ft	
RWCH-12156658 135.00 lbs		Ø 3.625 in →		← Load Cell @ 83.94 ft ← BH Temperature @ 83.37 ft	6.25 ft		
							81.37 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		← SP @ 79.59 ft	3.74 ft		
							77.63 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →		← GammaRay @ 71.57 ft	8.52 ft		
						69.11 ft	
DSNT-11055304 174.00 lbs	DSN Decentralizer- 11019643 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 62.17 ft ← DSN Near @ 61.42 ft	9.69 ft		
						59.42 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12156658	135.00	6.25	81.37	300.00
SP	SP Sub	12345678	60.00	3.74	77.63	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52	69.11	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	59.42	60.00
DCNT	DSN Decentralizer	11019643	6.60	5.13	* 62.75	300.00
SDLT	Spectral Density Tool	11014296	360.00	10.81	48.61	60.00
SDLP	Density Insite Pad	10865884	65.00	2.55	* 50.82	60.00
MICP	Microlog Pad	11014296	8.00	1.00	* 51.11	60.00
IQF	IQ Flex tool	00000001	140.00	5.67	42.94	300.00
IDT	Insite Directional Tool	1094	150.00	7.58	35.36	60.00
BSAT	Borehole Sonic Array Tool	10747683	300.00	15.77	19.58	60.00
OBCEN	Centralizer - 25 in. Overbody	00000001	8.00	2.08	* 32.37	300.00
ACRt	Array Compensated True Resistivity Instrument Section	11022962	50.00	5.03	14.55	120.00
OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	* 15.92	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11005909	200.00	14.22	0.33	120.00
RSOF	Regal Standoff 6.75in	00000001	20.00	0.52	* 12.25	300.00
BLNS	Bull Nose	00000001	5.00	0.33	0.00	300.00
Total			1,854.60	87.62		
						* Not included in Total Length and Length Accumulation.
Data: DEWEY_TRUST_1-7\0001 SP-GTET-DSN-SDL-FLEX-IDT-BSAT-ACRT-BN\IDLE					Date: 03-Mar-15 00:14:22	

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	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	4870.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	IDT	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	IDT	
	SHARED	TEMM	Temperature Master Tool	NONE	
	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 /				

Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
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	
GTET	BHSM	Borehole Size Source Tool	SDLT	
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	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
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
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
IDT	WRTI	Survey Writing Interval	30	ft
IDT	SOPT	Smoothing Option	None	
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 Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	
BOTTOM				
Data: DEWEY_TRUST_1-7I0001 SP-GTET-DSN-SDL-FLEX-IDT-BSAT-ACRT-BNIDLE			Date: 03-Mar-15 00:20:10	

HALLIBURTON

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
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Depth Panel				
TENS	Tension	0.00	NO	
Rwa / CrossPlot				
TPUL	Tension Pull	87.62	NO	
BS	Bit Size	87.62	NO	
HDIA	Measured Hole Diameter	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	79.59	NO	
SP	Spontaneous Potential	79.59	BLK	1.250
SPR	Raw Spontaneous Potential	79.59	NO	
SPO	Spontaneous Potential Offset	79.59	NO	
GTET				
TPUL	Tension Pull	71.57	NO	
GR	Natural Gamma Ray API	71.57	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	71.57	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	71.57	W	1.416 , 0.750
HDIA	Measured Hole Diameter	0.00	NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	61.32	NO	
RNDS	Near Detector Telemetry Counts	61.42	BLK	1.417
RFDS	Far Detector Telemetry Counts	62.17	TRI	0.583
DNTT	DSN Tool Temperature	61.42	NO	
DSNS	DSN Tool Status	61.32	NO	
ERND	Near Detector Telemetry Counts EVR	61.42	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	62.17	BLK	0.000
ENTM	DSN Tool Temperature EVR	61.42	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT				
TPUL	Tension Pull	51.43	NO	
PCAL	Pad Caliper	51.43	TRI	0.250
ACAL	Arm Caliper	51.43	TRI	0.250
IDT				
TPUL	Tension Pull	36.36	NO	
ACCX	Accelerometer X	36.36	NO	
ACCY	Accelerometer Y	36.36	NO	
ACCZ	Accelerometer Z	36.36	NO	
MAGX	magnetometer x with unit	36.36	NO	
MAGY	Magnetometer Y with unit	36.36	NO	
MAGZ	magnetometer z with unit	36.36	NO	
IAMP	Accelerometer Temperature	36.36	NO	
MTMP	Magnetometer Temperature	36.36	NO	
BSAT				
TPUL	Tension Pull	26.84	NO	
STAT	Status	26.84	NO	
DLYT	Delay Time	26.84	NO	
SI	Sample Interval	26.84	NO	
TXRX	Raw Telemetry 10 Receivers	26.84	NO	
FRMC	Tool Frame Count	26.84	NO	

NAME	ACRT Frame Count	23.84	NO	
GMOD	Gain processing mode	19.58	NO	
ACRt Sonde				
TPUL	Tension Pull	2.73	NO	
F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000
RMUD	Mud Resistivity	12.52	BLK	0.000
F1RT	Transmitter Reference 12 KHz Real Signal	2.73	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000
ITMP	Instrument Temperature	2.73	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.73	NO	
TIDV	Instrument Temperature Derivative	2.73	NO	
TUDV	Upper Temperature Derivative	2.73	NO	
TLDV	Lower Temperature Derivative	2.73	NO	
TRBD	Receiver Board Temperature	2.73	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT Pad				
TPUL	Tension Pull	51.43	NO	

TPUL	Tension Pull	51.42	NO	
NAB	Near Above	51.24	BLK	0.920
NHI	Near Cesium High	51.24	BLK	0.920
NLO	Near Cesium Low	51.24	BLK	0.920
NVA	Near Valley	51.24	BLK	0.920
NBA	Near Barite	51.24	BLK	0.920
NDE	Near Density	51.24	BLK	0.920
NPK	Near Peak	51.24	BLK	0.920
NLI	Near Lithology	51.24	BLK	0.920
NBAU	Near Barite Unfiltered	51.24	BLK	0.250
NLIU	Near Lithology Unfiltered	51.24	BLK	0.250
FAB	Far Above	51.59	BLK	0.250
FHI	Far Cesium High	51.59	BLK	0.250
FLO	Far Cesium Low	51.59	BLK	0.250
FVA	Far Valley	51.59	BLK	0.250
FBA	Far Barite	51.59	BLK	0.250
FDE	Far Density	51.59	BLK	0.250
FPK	Far Peak	51.59	BLK	0.250
FLI	Far Lithology	51.59	BLK	0.250
PTMP	Pad Temperature	51.43	BLK	0.920
NHV	Near Detector High Voltage	50.82	NO	
FHV	Far Detector High Voltage	50.82	NO	
ITMP	Instrument Temperature	50.82	NO	
DDHV	Detector High Voltage	50.82	NO	
HDIA	Measured Hole Diameter	0.00	NO	
Microlog Pad				
TPUL	Tension Pull	51.61	NO	
MINV	Microlog Lateral	51.61	BLK	0.750
MNOR	Microlog Normal	51.61	BLK	0.750
Data: DEWEY_TRUST_1-7\0001 SP-GTET-DSN-SDL-FLEX-IDT-BSAT-ACRT-BN\IDLE			Date: 03-Mar-15 00:19:37	

COMPANY	CULBREATH OIL & GAS		
WELL	DEWEY TRUST 1-7 'A' 1		
FIELD	WILDCAT		
COUNTY	RAWLINS	STATE	KANSAS
HALLIBURTON		BOREHOLE COMPENSATED SONIC ARRAY LOG	