

HALLIBURTON

BOREHOLE SONIC ARRAY LOG

COMPANY	EOG RESOURCES		
WELL	GILLESPIE 21 #1		
FIELD	WILLIS		
COUNTY	STEVENS		
STATE	KANSAS		
COMPANY	EOG RESOURCES	WELL	GILLESPIE 21 #1
FIELD	WILLIS	COUNTY	STEVENS
STATE	KANSAS	API No.	15-189-22771
Location	1780' FNL & 1890' FWL		
GROUND LEVEL	Sec. 21	Twp. 32S	Rge. 37W
Elev. 3146.0 ft	Other Services: DSN / SDL / ML ACRT		
Log measured from	KELLY BUSHING		
Drilling measured from	KELLY BUSHING		
Date	12-Jul-11		
Run No.	ONE		
Depth - Driller	6550.00 ft		
Depth - Logger	6554.0 ft		
Bottom - Logged Interval	6527.0 ft		
Top - Logged Interval	1742.0 ft		
Casing - Driller	8.625 in @ 1742.0 ft		
Casing - Logger	1742.0 ft @		
Bit Size	7.875 in @		
Type Fluid in Hole	WATER BASED MUD		
Density	9.2 ppq	55.00	s/qt
PH	10.50 pH	8.0	cp/m
Source of Sample	FLOWLINE		
Rm @ Meas. Temperature	1.060 ohmm	@	86.00 degF
Rmf @ Meas. Temperature	0.90 ohmm	@	85.00 degF
Rmc @ Meas. Temperature	1.220 ohmm	@	85.00 degF
Source Rmf	MEASURED		MEASURED
Rm @ BHT	0.70 ohmm	@	140.0 degF
Time Since Circulation	4.0 hr		
Time on Bottom	12-Jul-11 07:07		
Max. Rec. Temperature	140.0 degF	@	6554.0 ft
Equipment	10782954		LIBERAL
Recorded By	S. JUNG		
Witnessed By	S. MUELLER		

Fold here

Service Ticket No.: 8308171		API Serial No.: 15-189-22771		PGM Version: WL INSITE R3.2.5 (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.
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.	10811258	Serial No.	10747683	Serial No.		Serial No.	
Model No.	GTET	Model No.	BSAT	Model No.		Model No.	
Diameter	3.625"	No. of Cent.	TWO	Diameter		Diameter	
Detector Model No.	T-102	Spacing	0.5'	Log Type		Log Type	
Type	SCINT			Source Type		Source Type	
Length	8"	LSA [Y/N]	Y	Serial No.		Serial No.	
Distance to Source	10'	FWDA [Y/N]	N	Strength		Strength	
LOGGING DATA							
GENERAL		GAMMA		ACOUSTIC		DENSITY	

Run No.	Depth		Speed ft/min	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
	From	To		L	R	L	R		L	R		L	R	
ONE	TD	CSG	REC	0	150	30	-10	47.6						

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 4.5 & 5.5 INCH CASINGS

GPS COORDINATES: LAT: 37.25 N & LONG: 101.35 W

CHLORIDES REPORTED AT 2800 MG/L LCM REPORTED AT 10 PPB

RUBBER STANDOFFS USED INSTEAD OF CENTRALIZERS

TODAY'S CREW: A. VAQUERA, P. COBLE

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.

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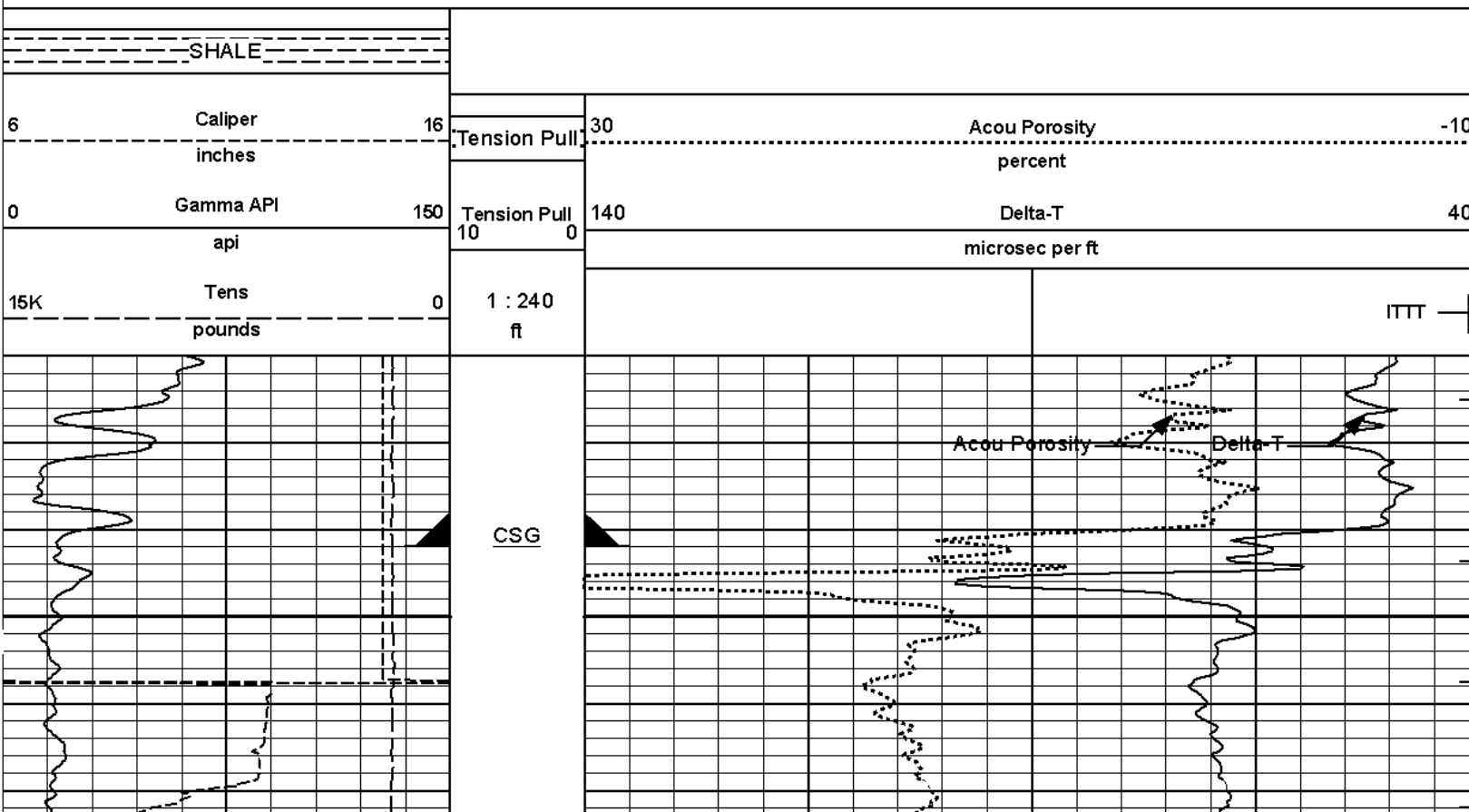
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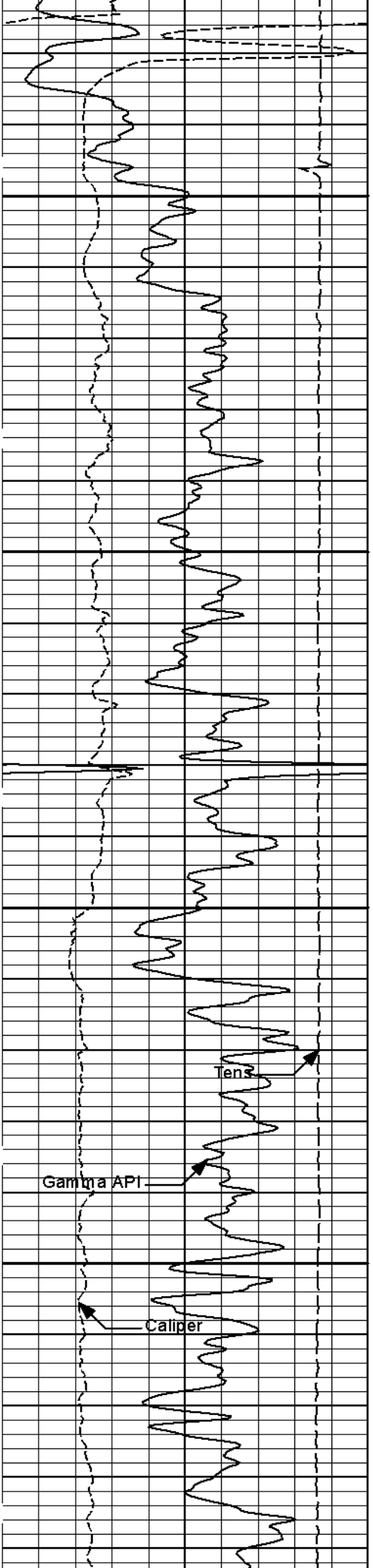
Plot Range: 1720 ft to 6558.33 ft

Data: GILLESPIE_21_1\Well Based\DAQ-0001-CSG_5_5\

Plot File: \\BSAT\BSAT_5_MAIN_LIB

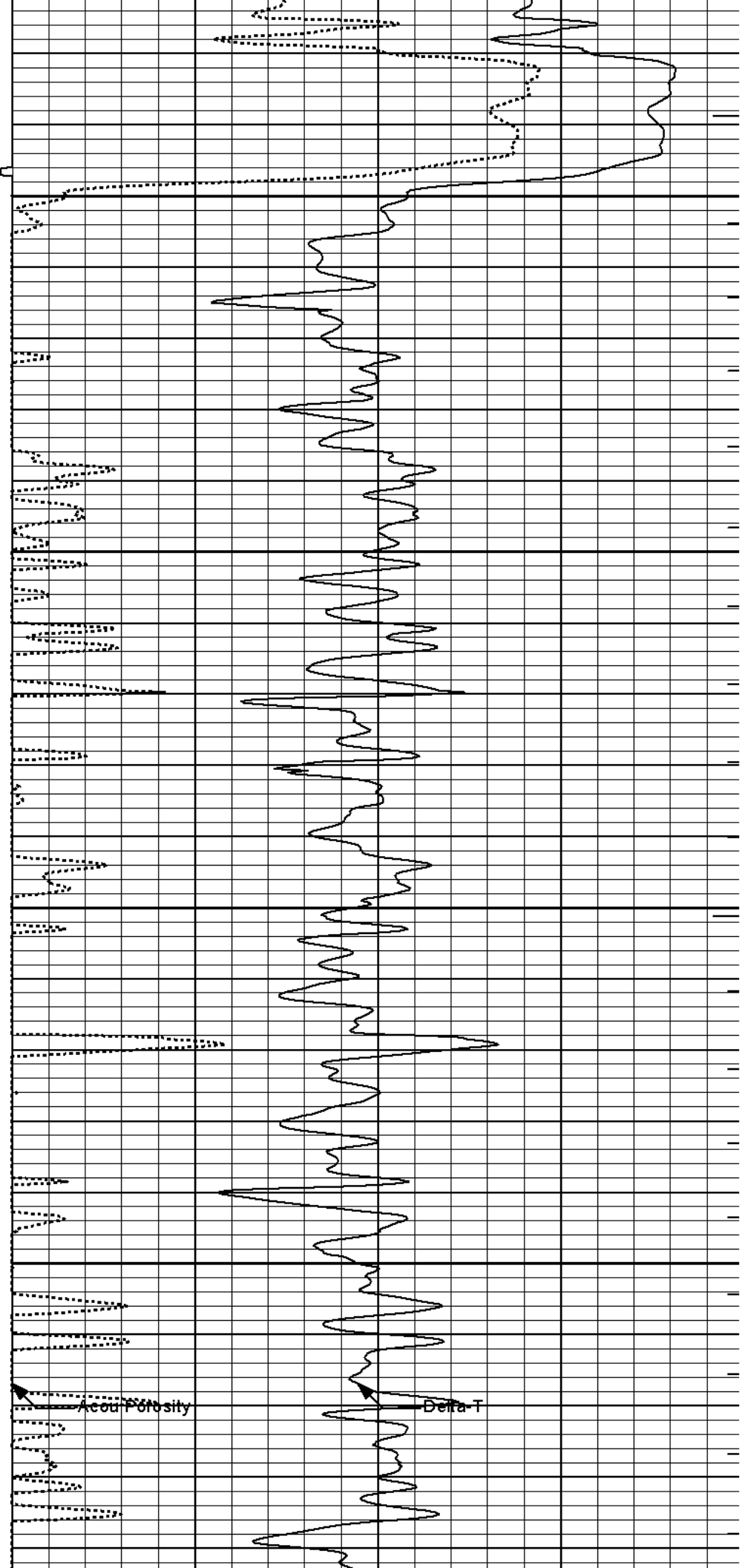
5 INCH MAIN LOG





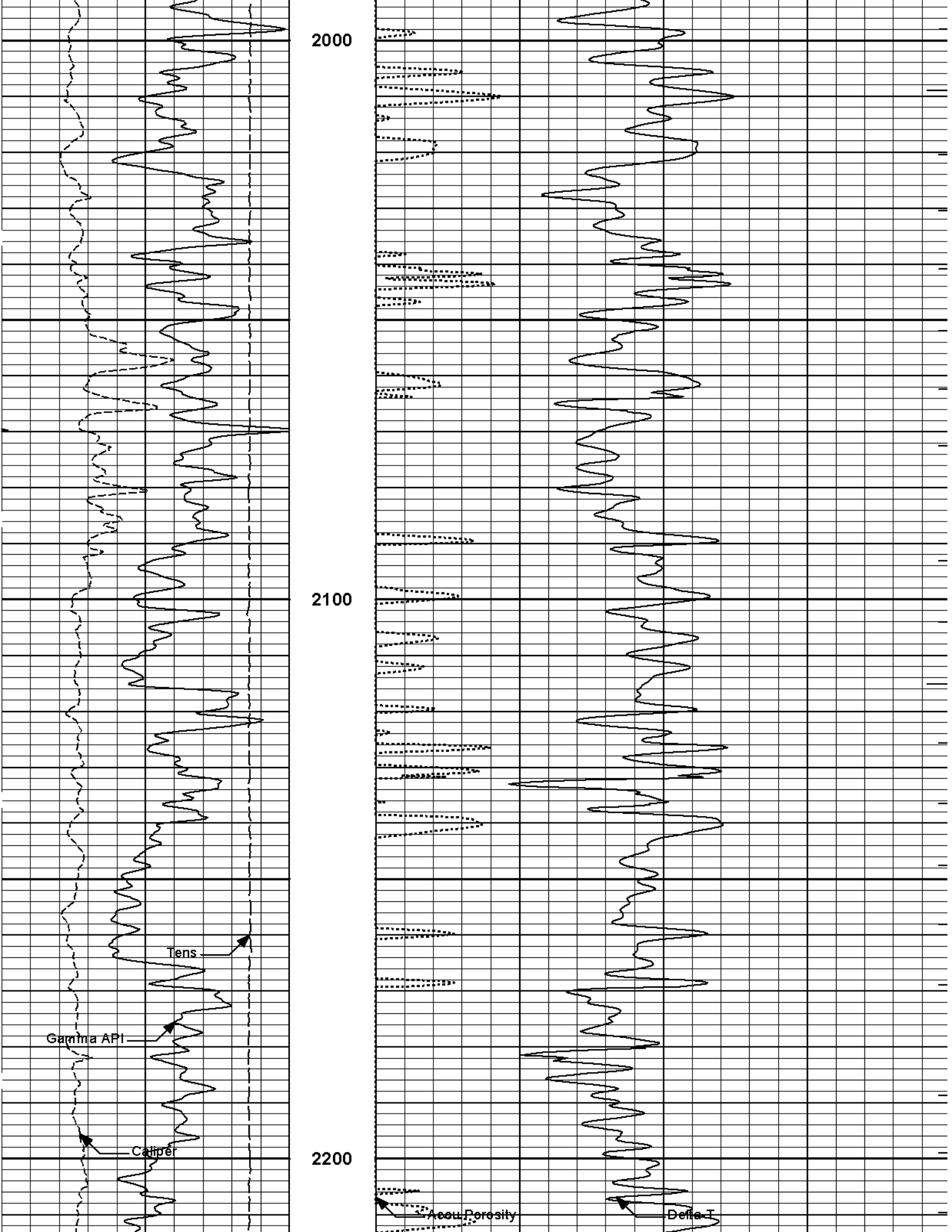
1800

1900



Acoustic Porosity

Delta-T



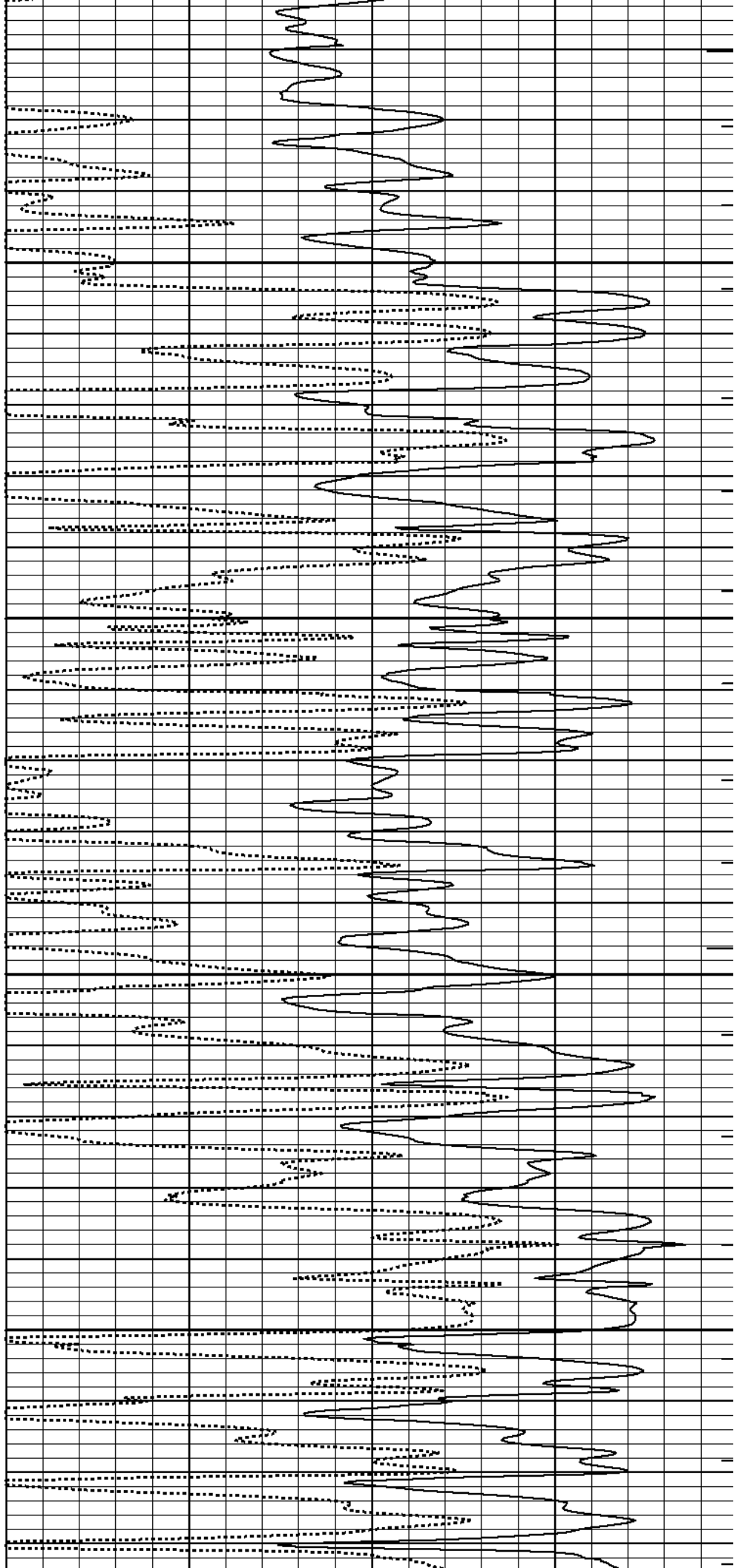


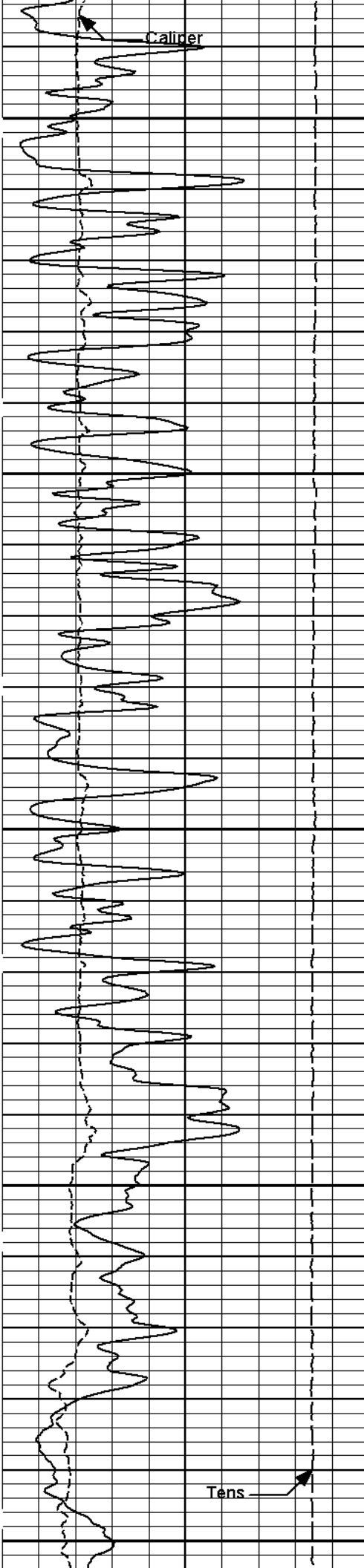
2300

2400

Tens

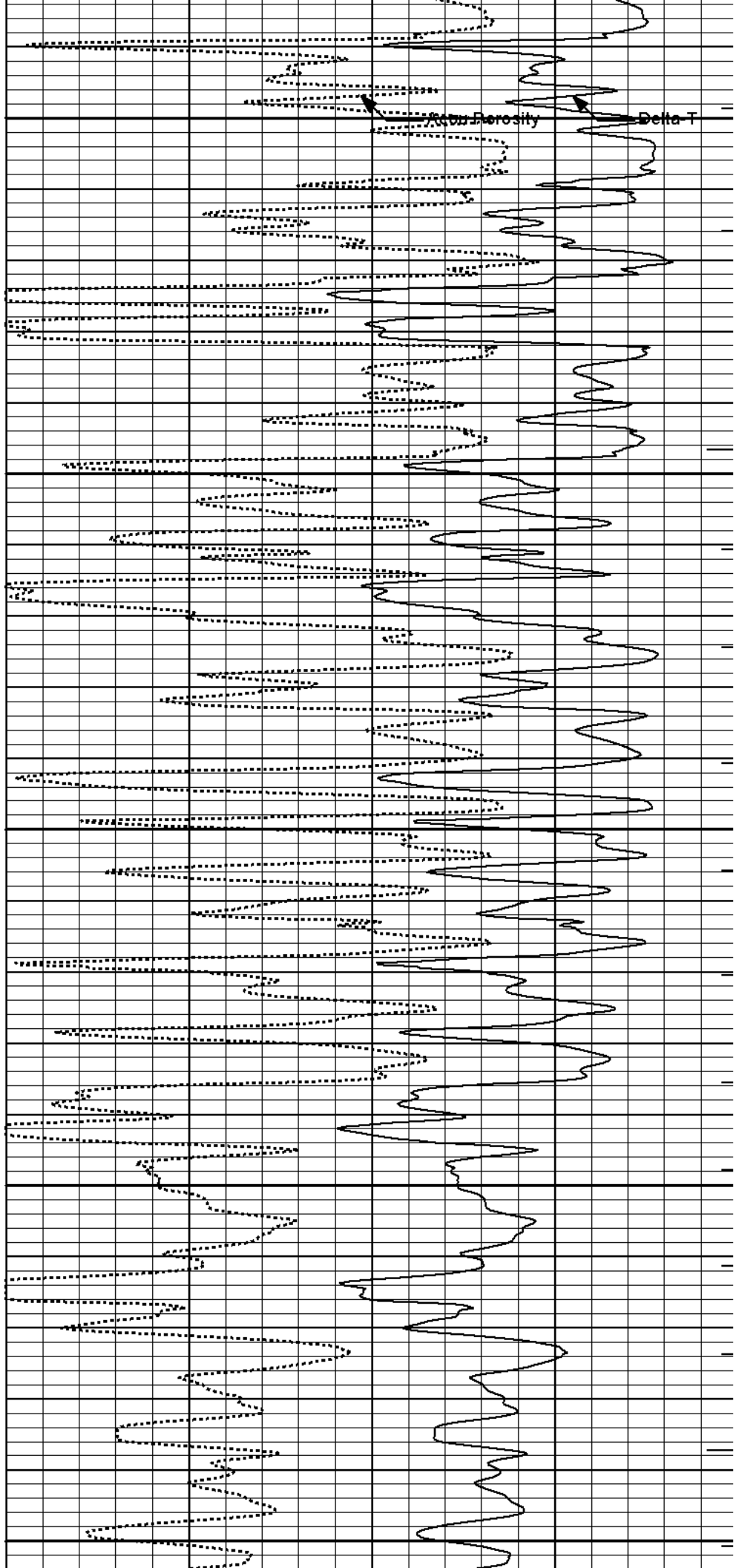
Gamma API

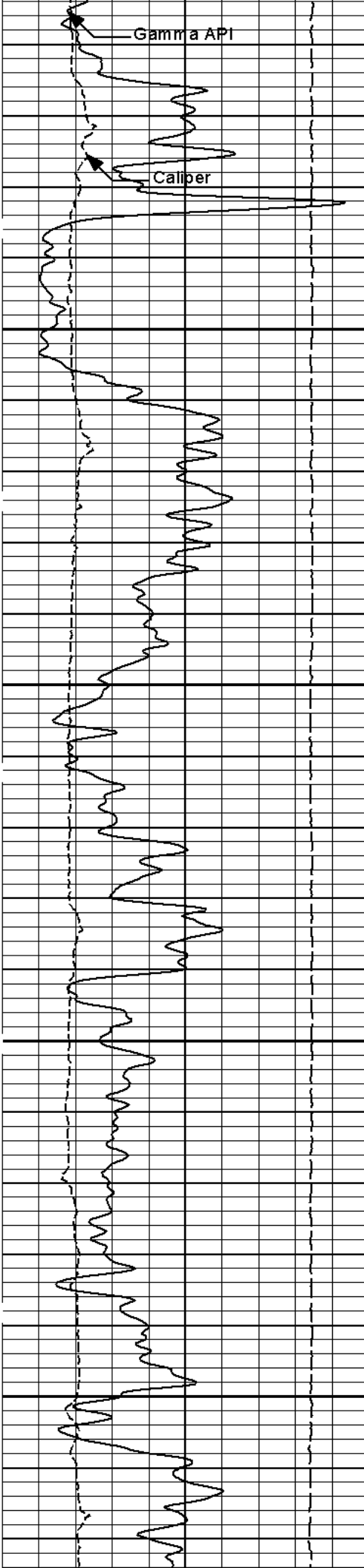




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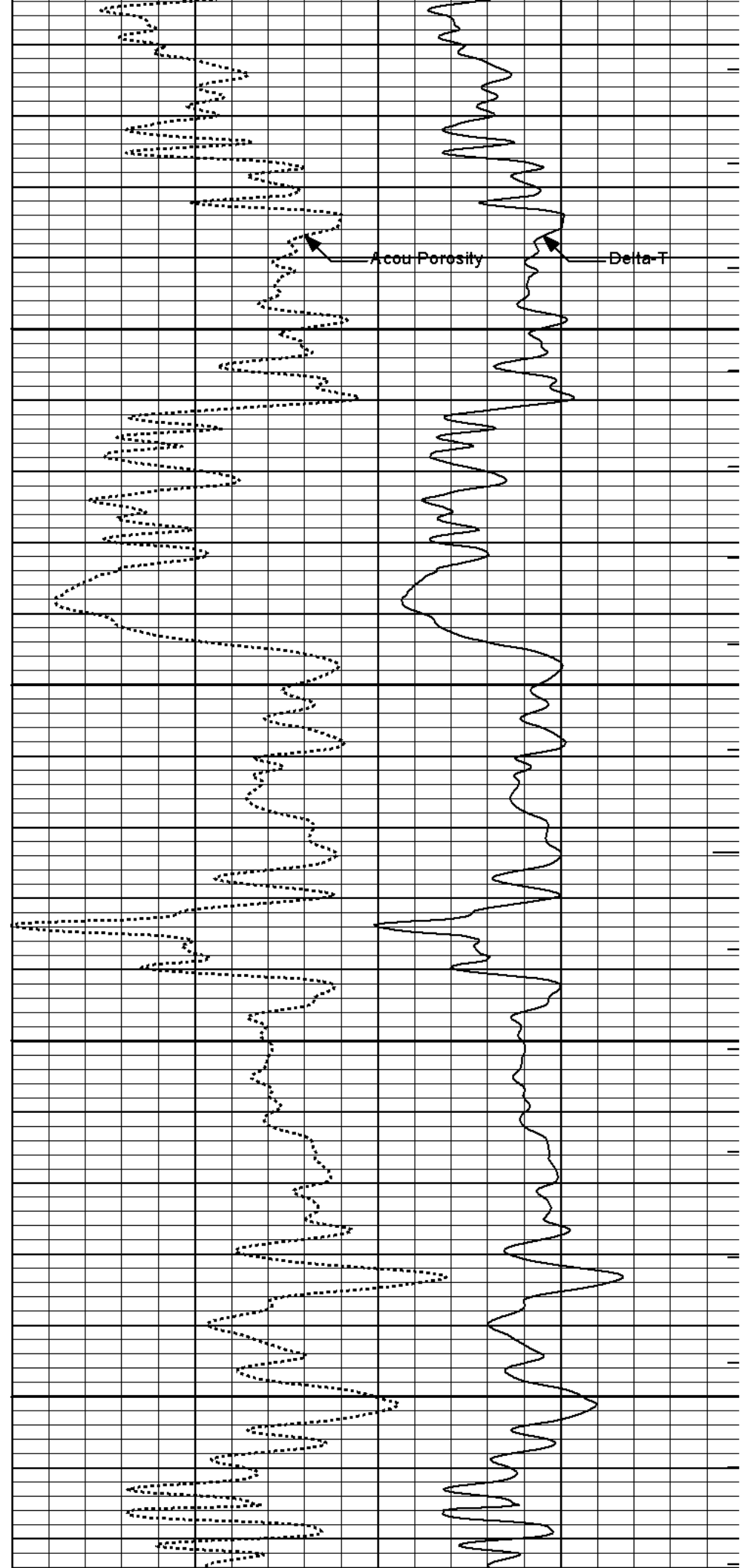
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2700

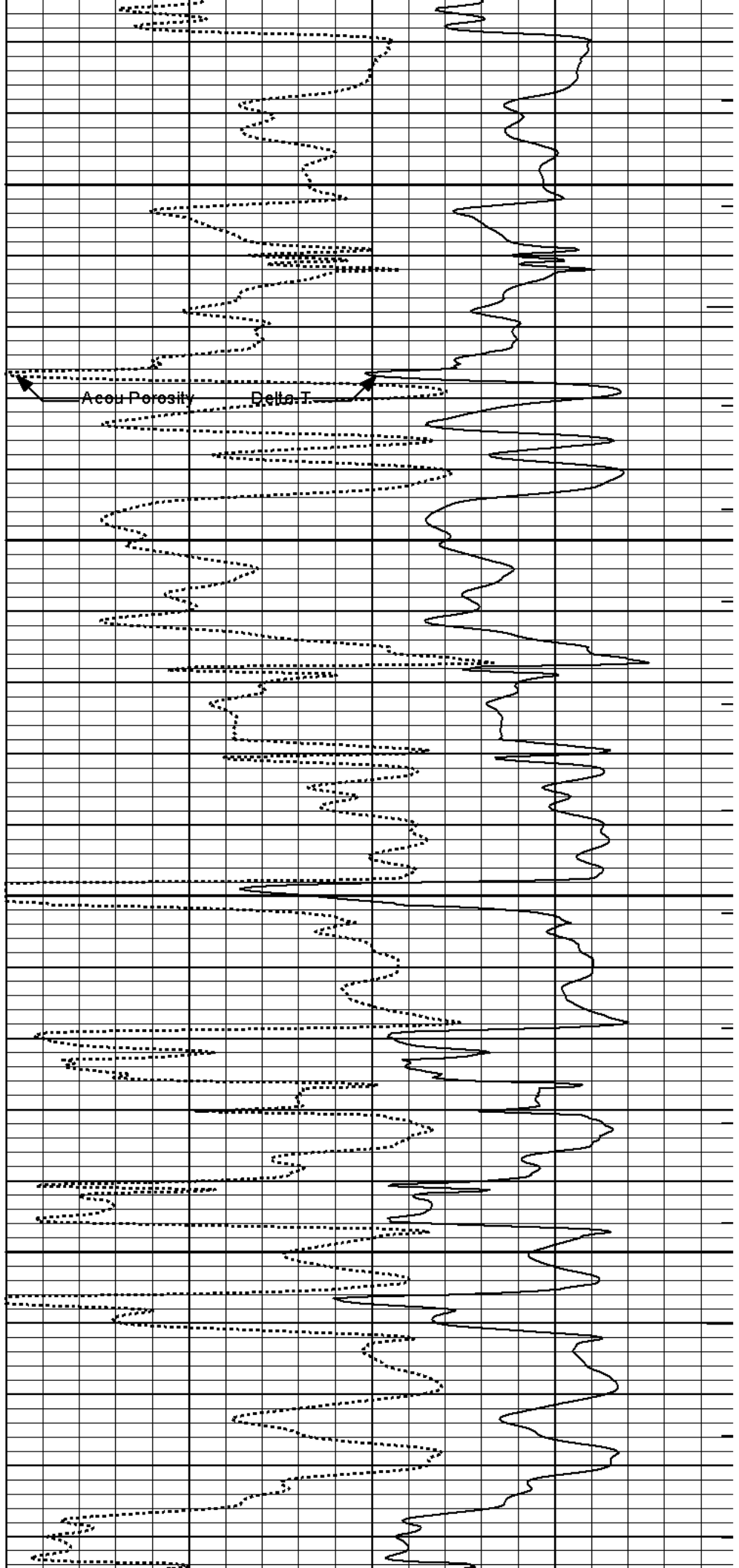
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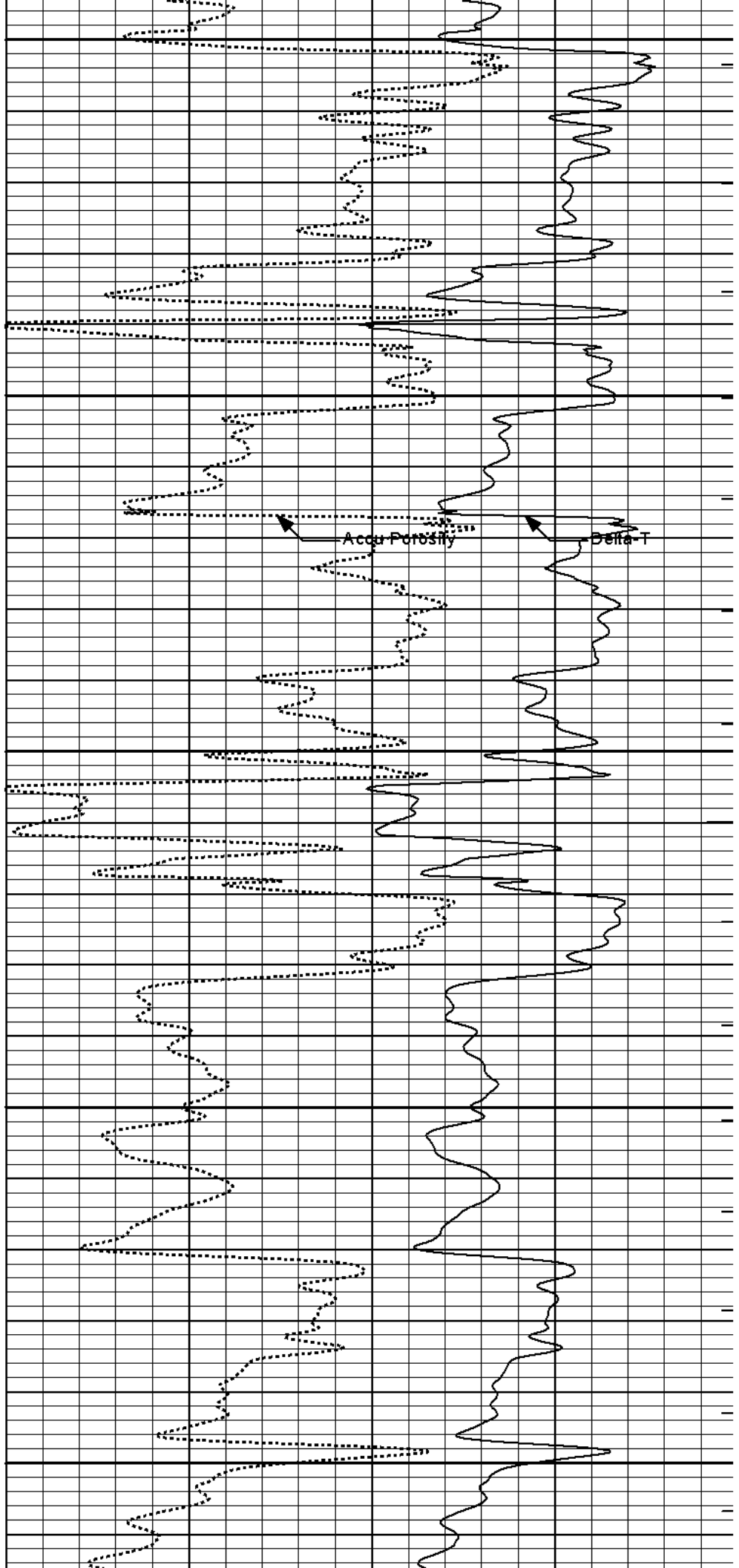
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3000



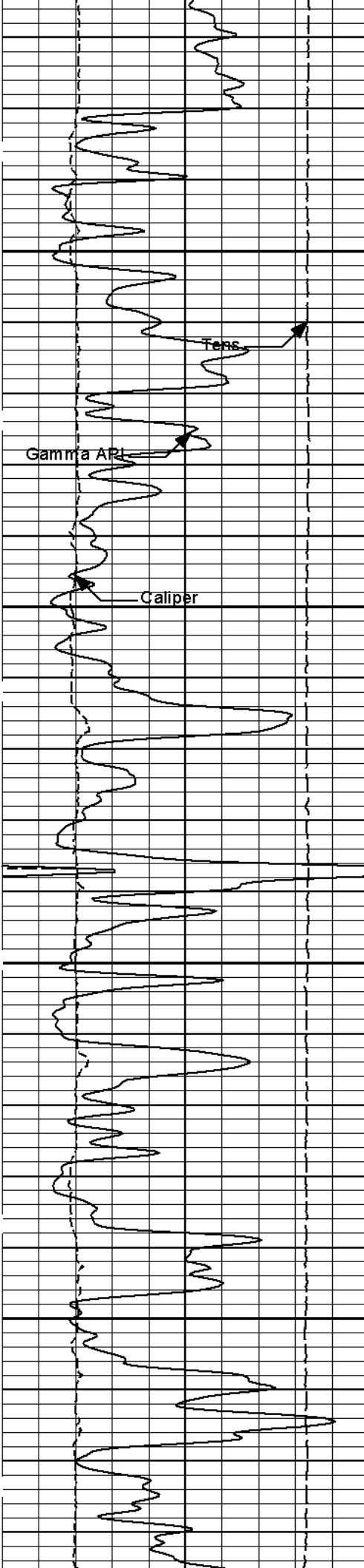


3100



3200

3300



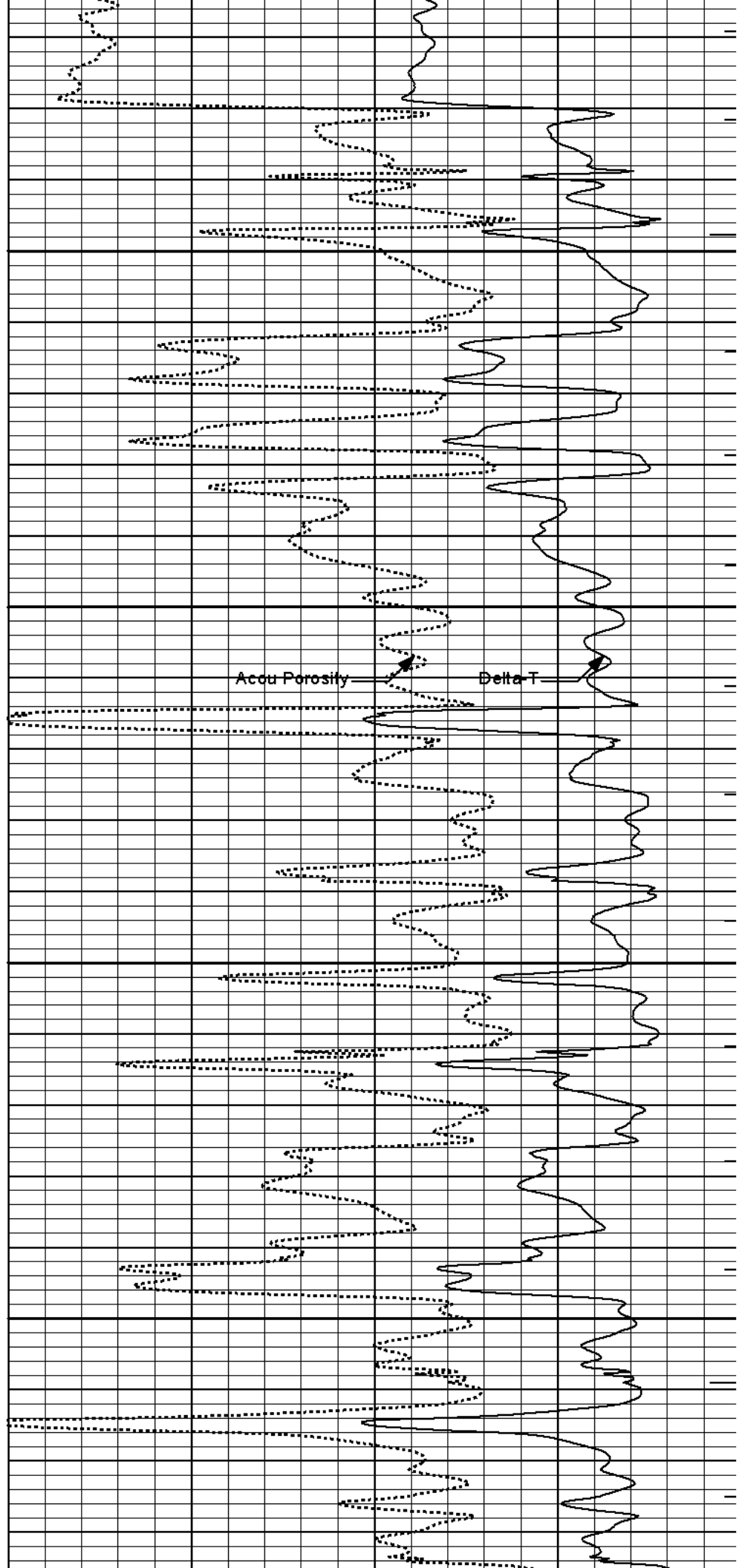
Gamma API

Caliper

Fens

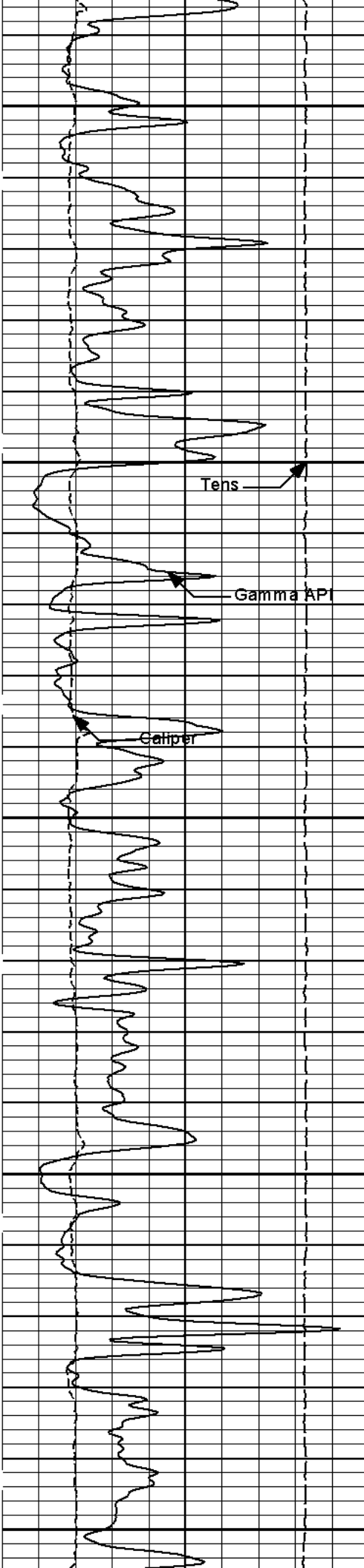
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3500



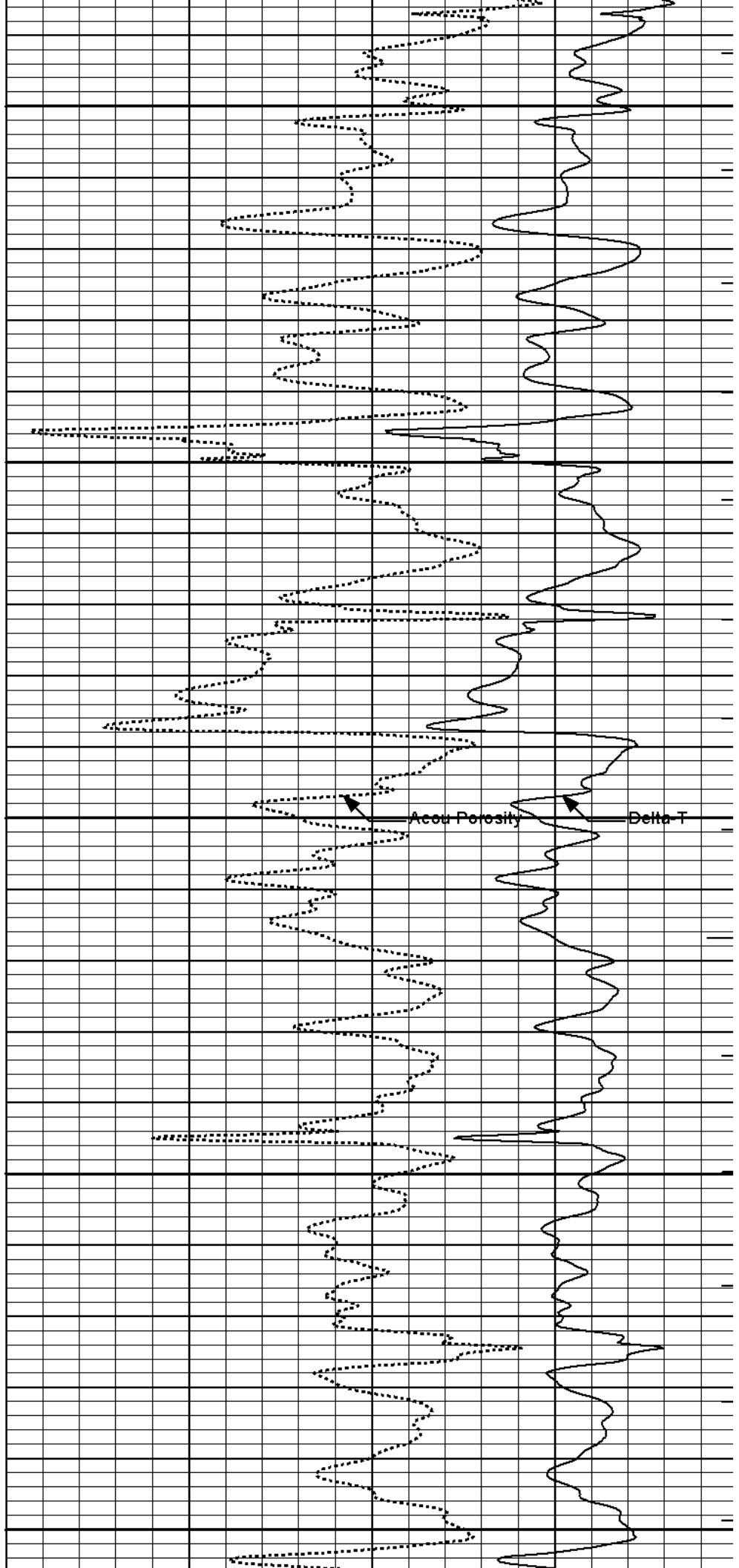
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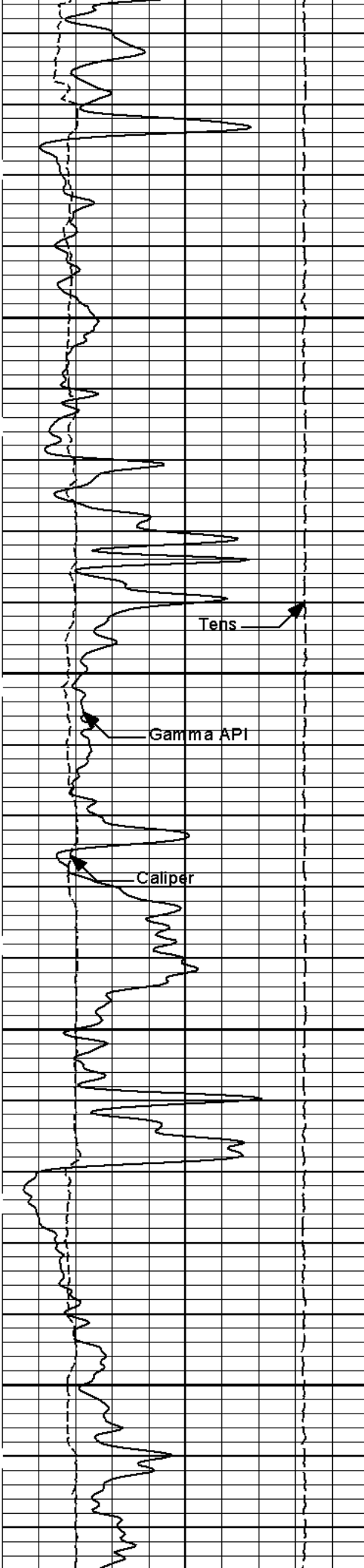
Delta-T



3600

3700





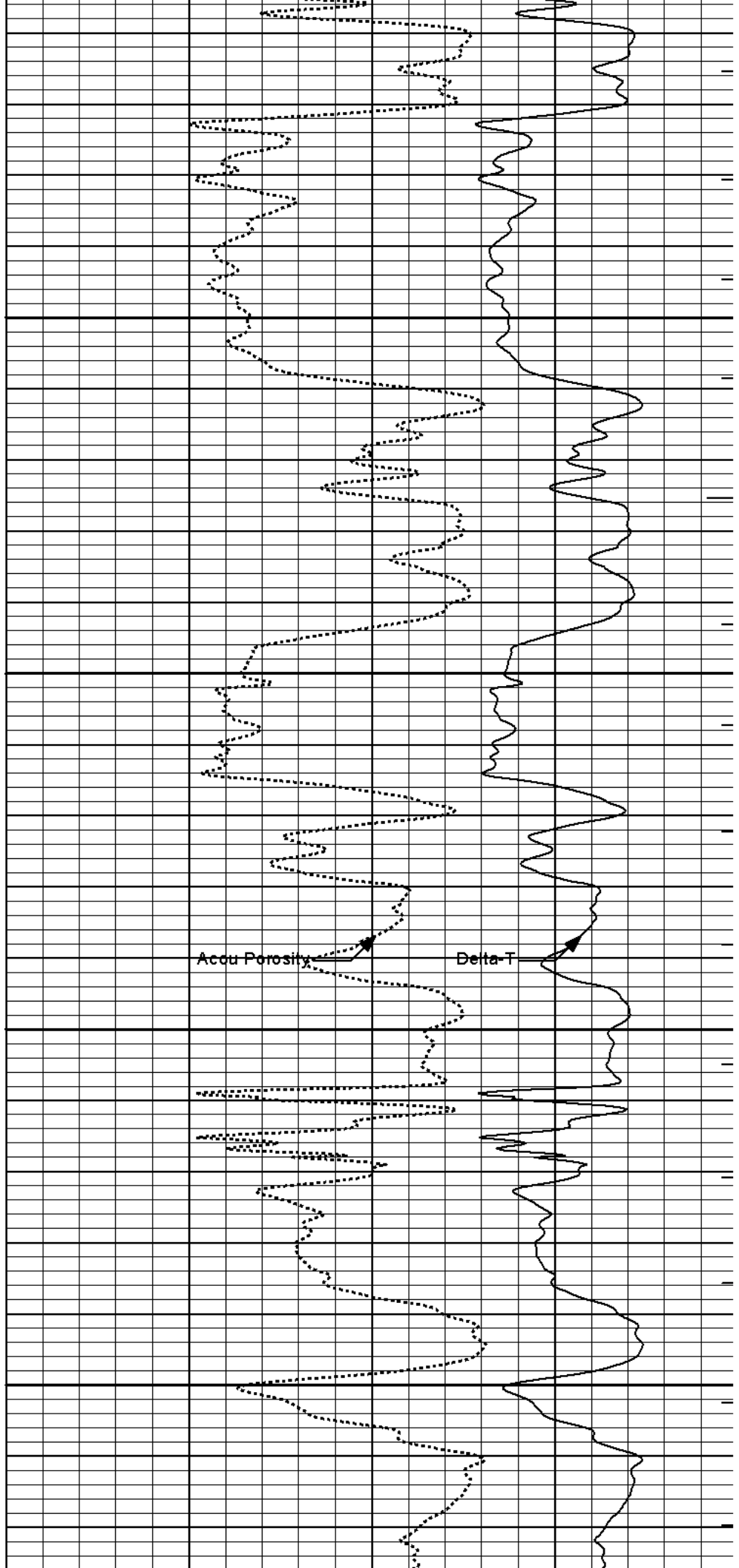
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Tens

Gamma API

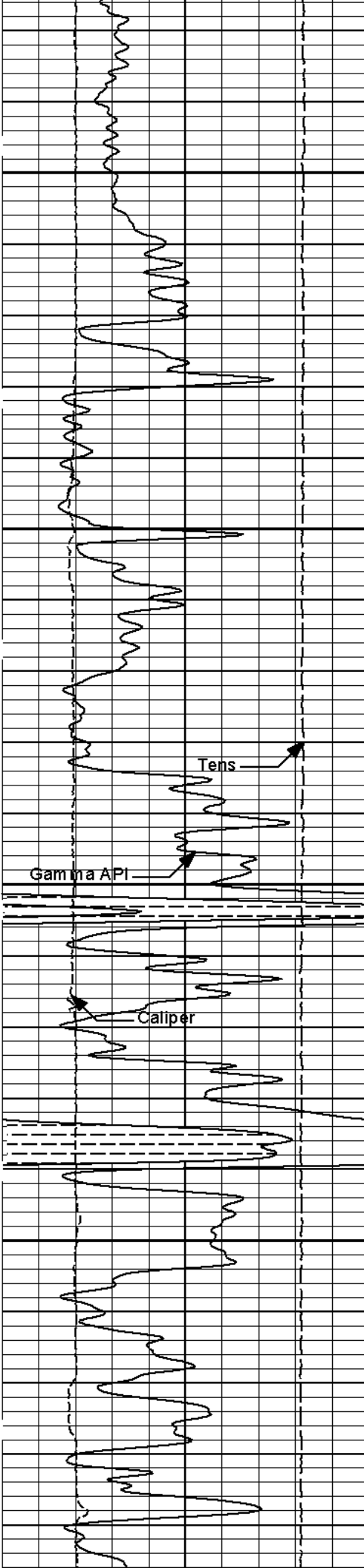
Caliper

3900



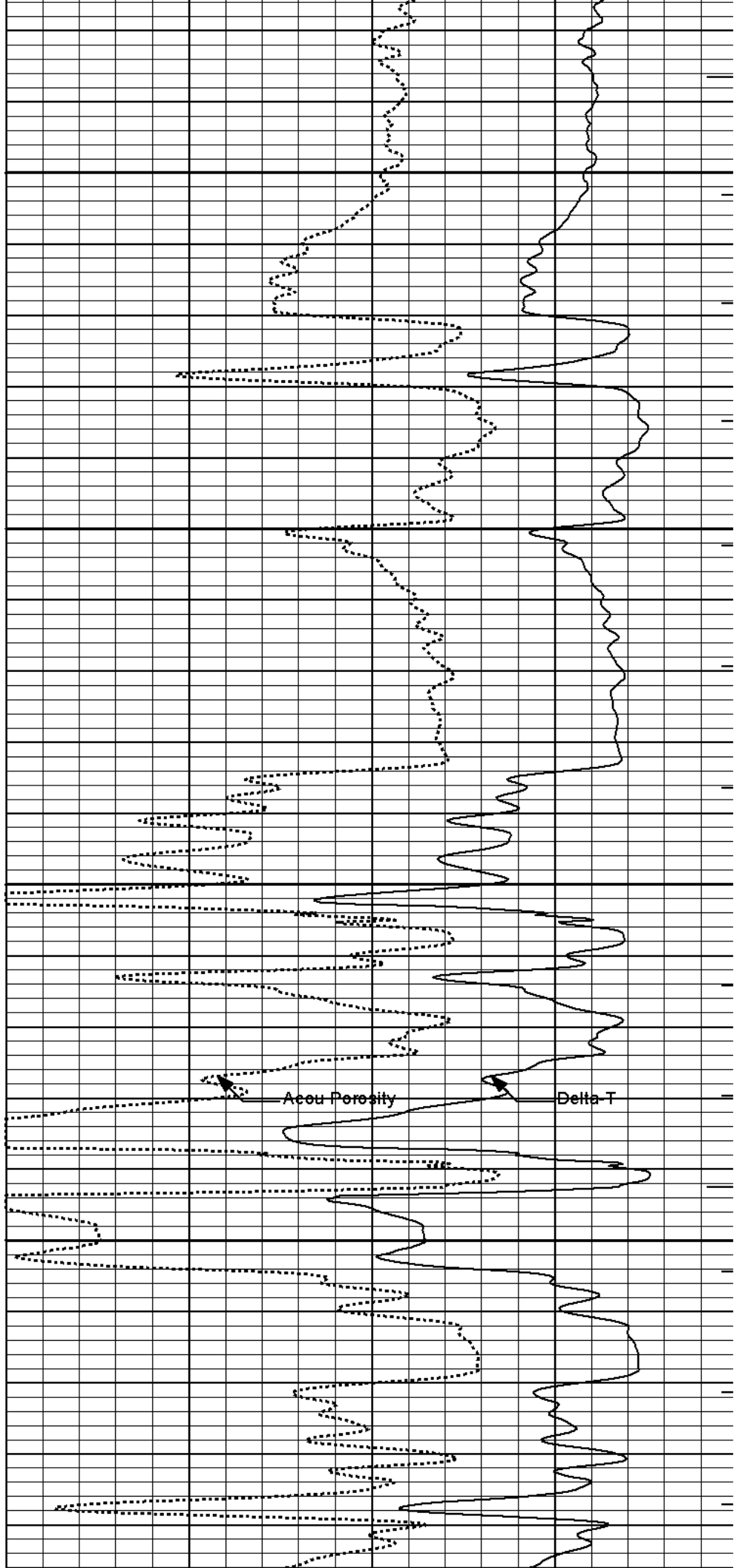
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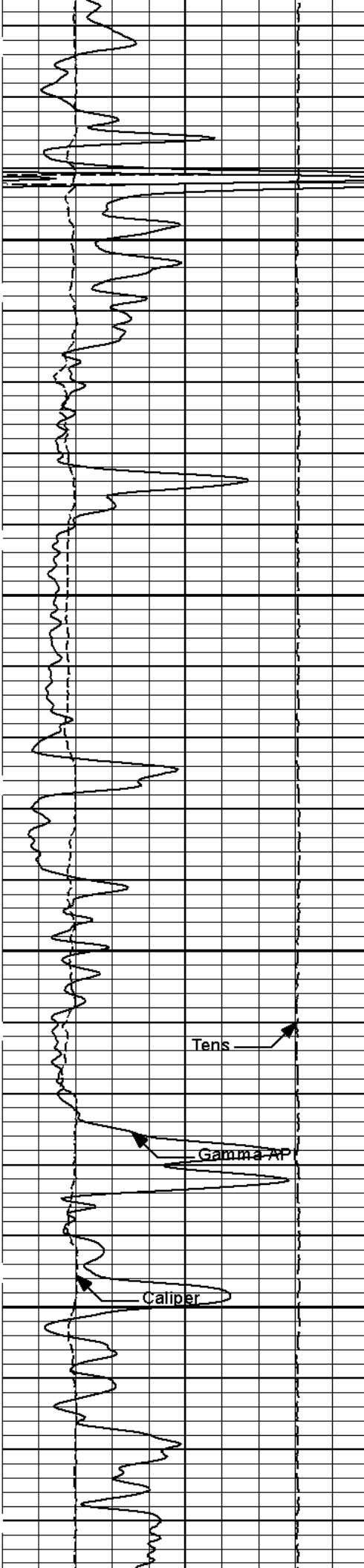
Delta-T



4000

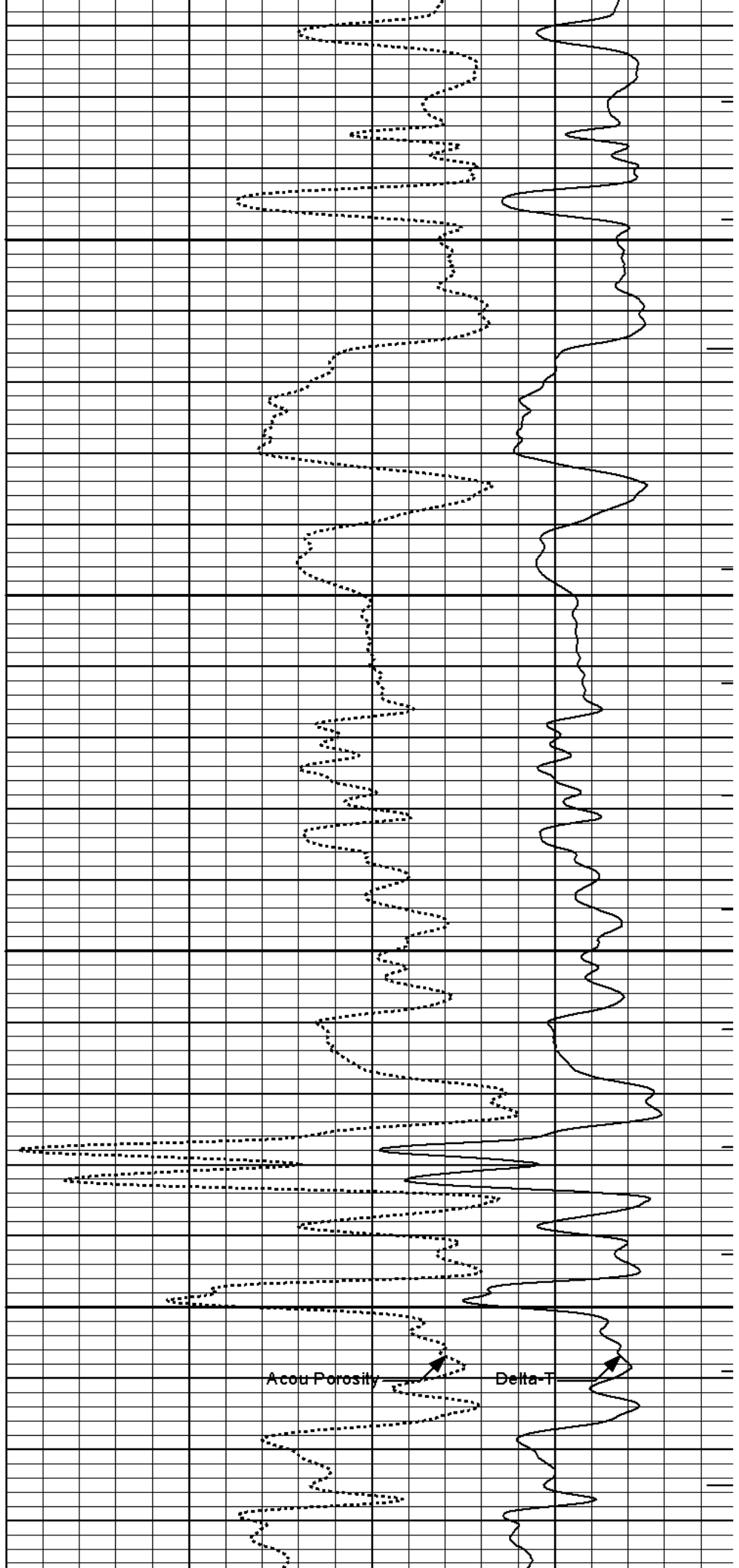
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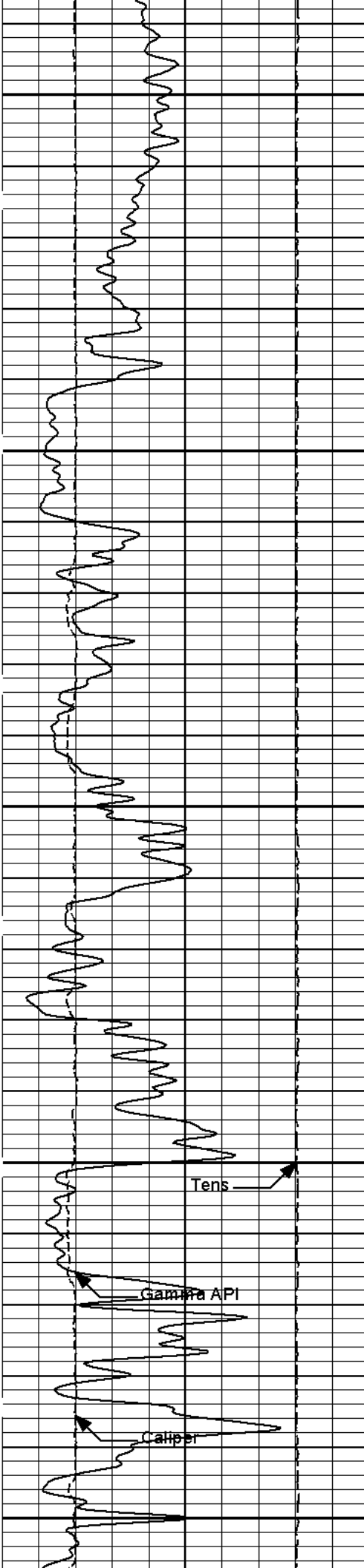




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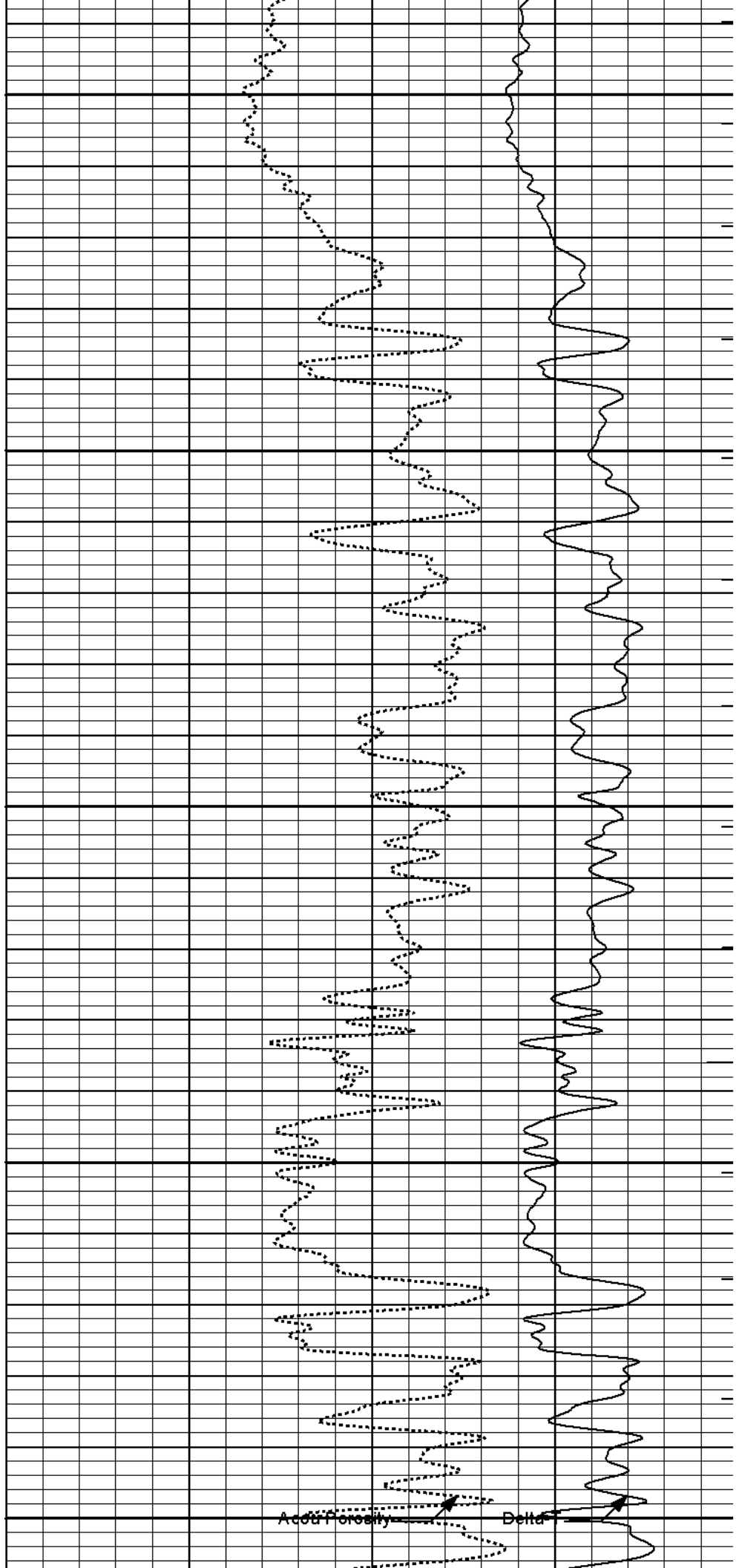
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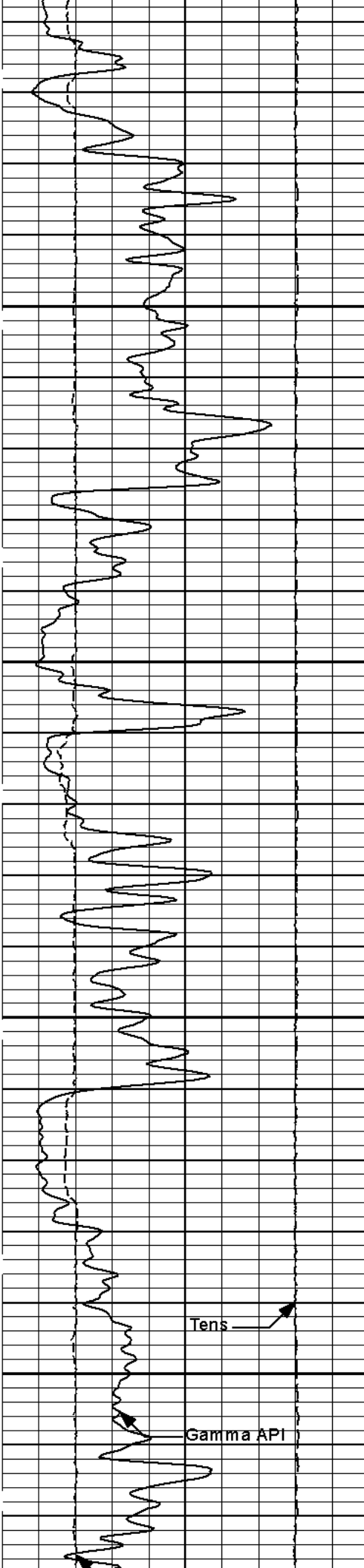




4700

4800



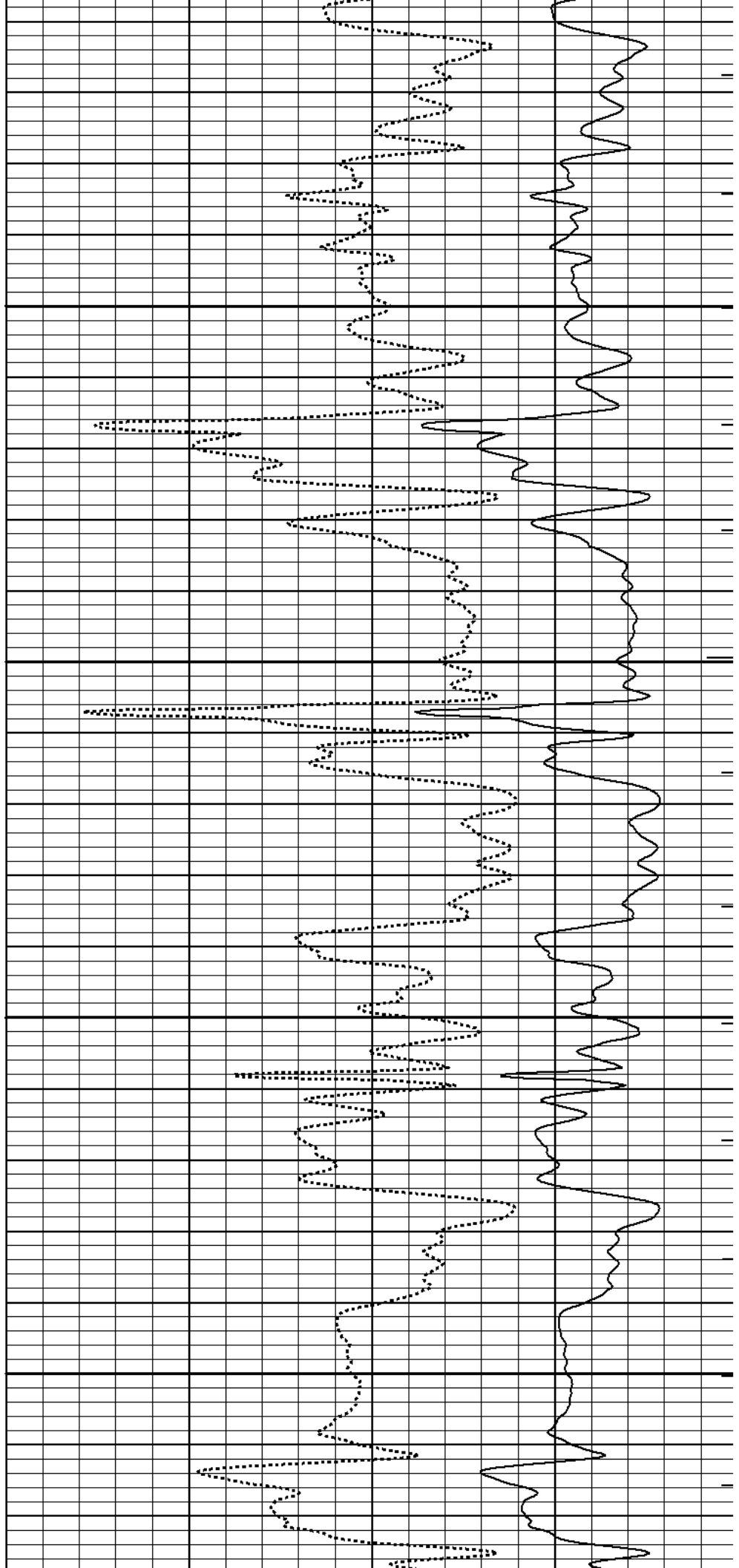


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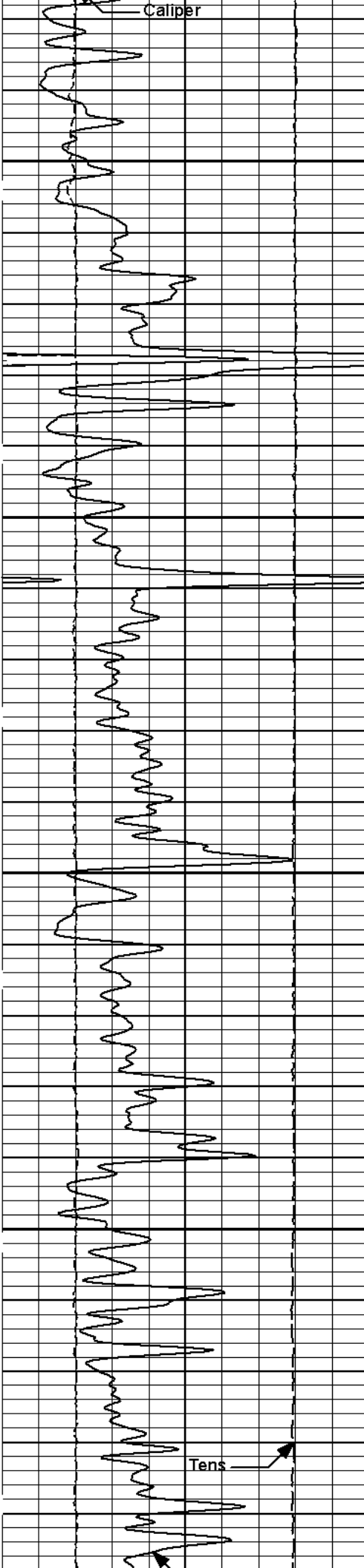
5000

Tens

Gamma API



Caliper

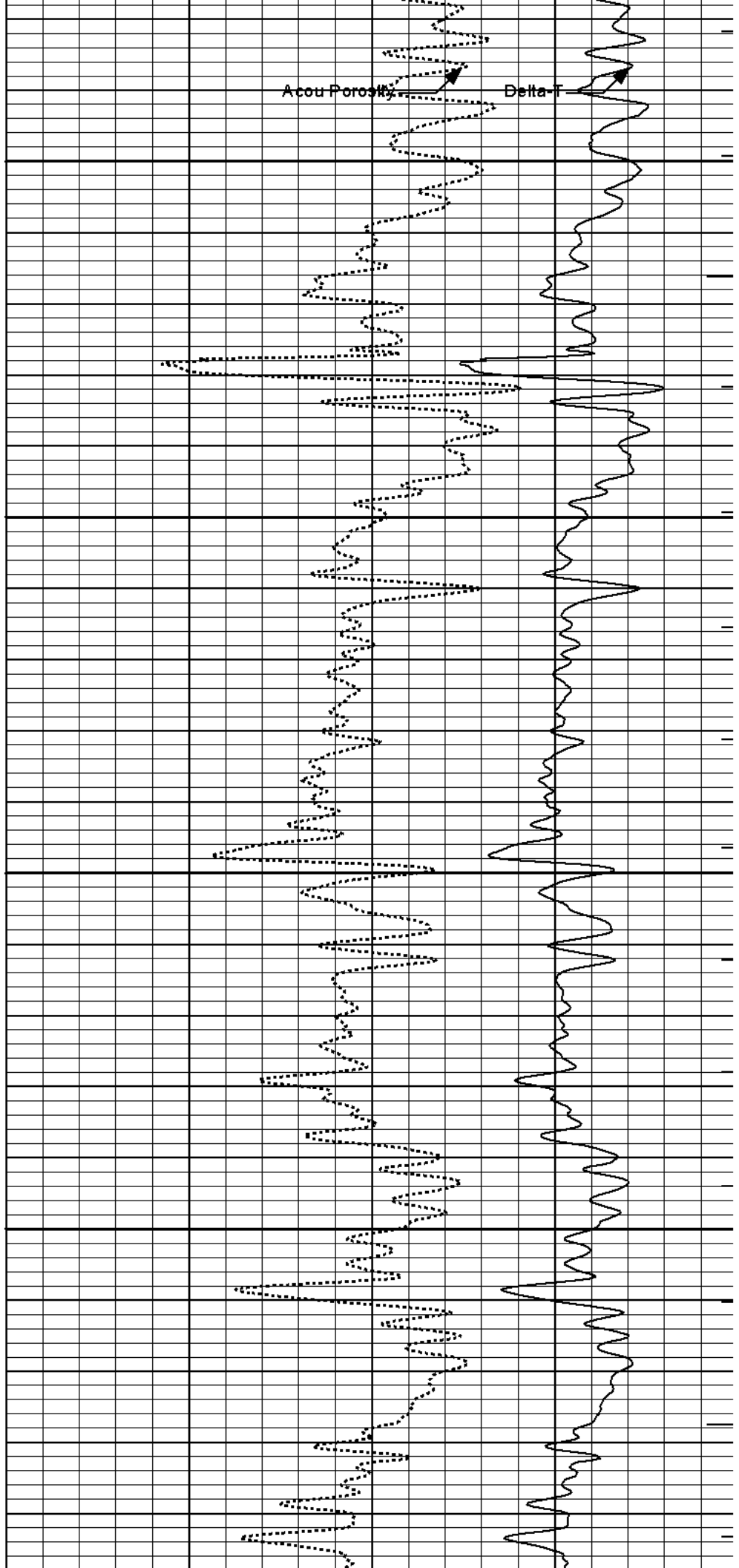


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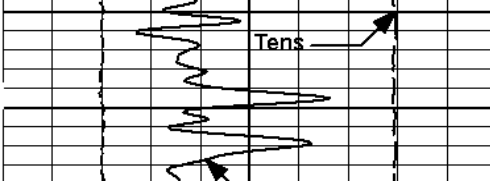
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Acou Porosity

Delta-T



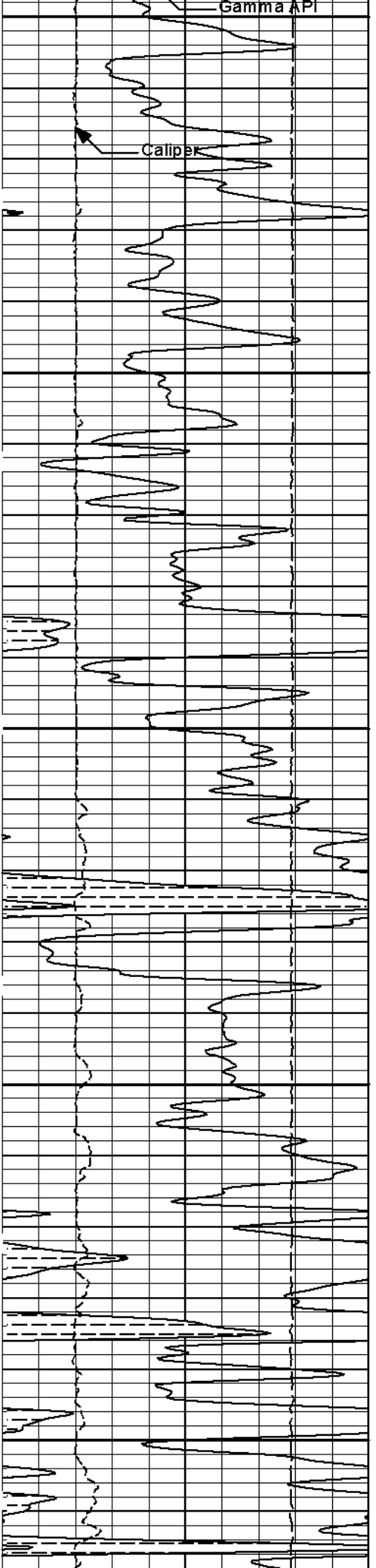
Tens



Gamma API

5300

Caliper

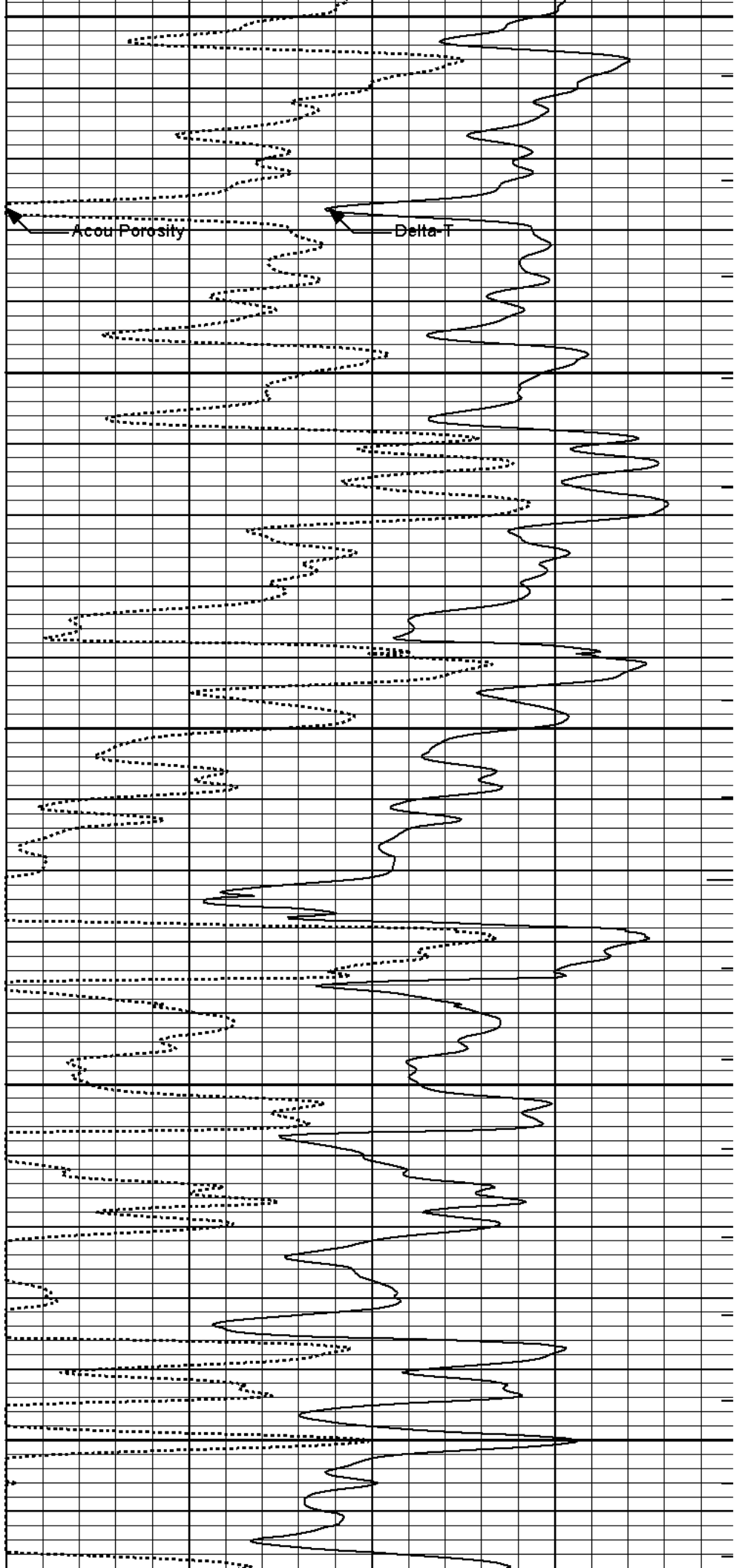


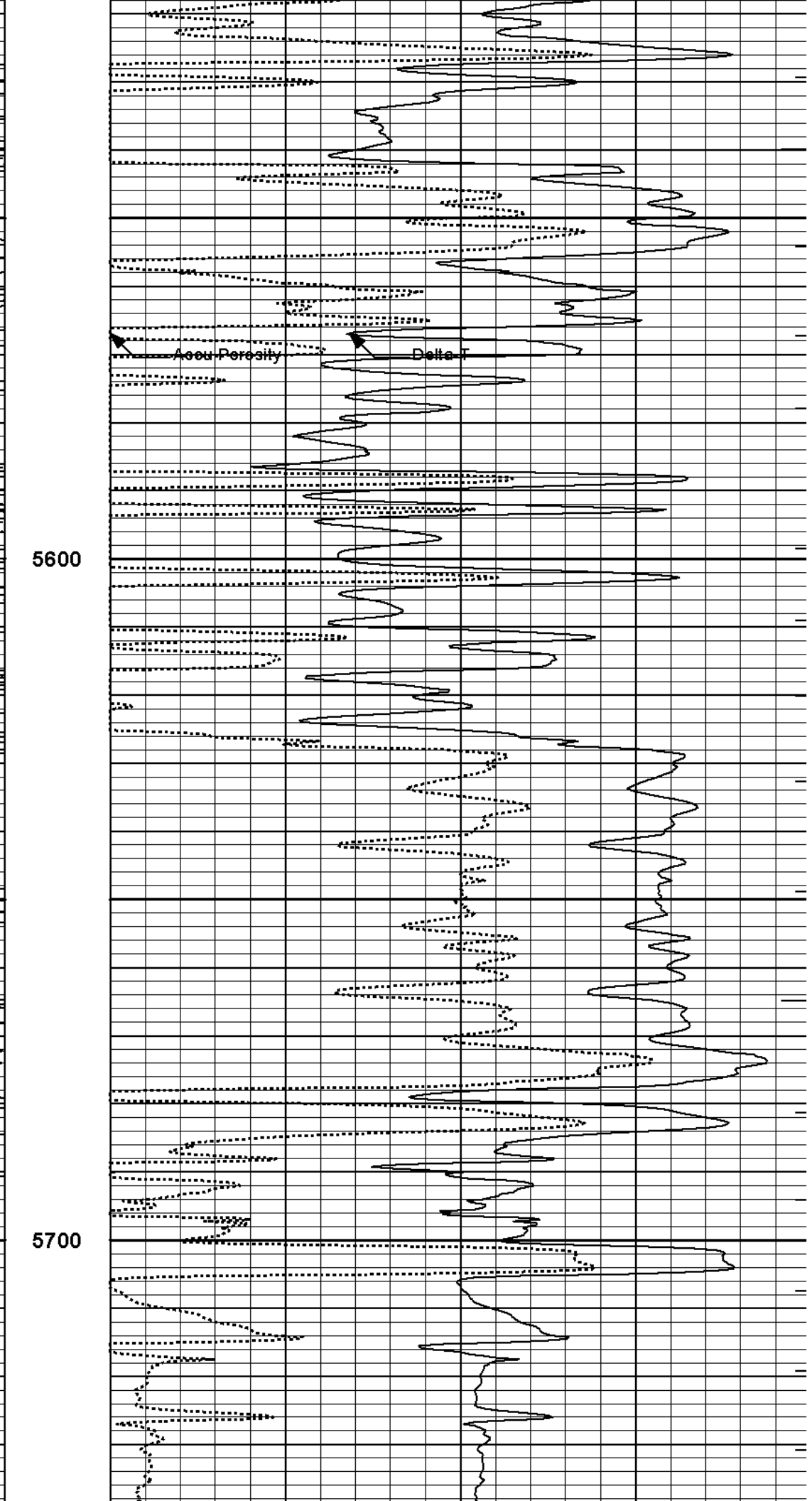
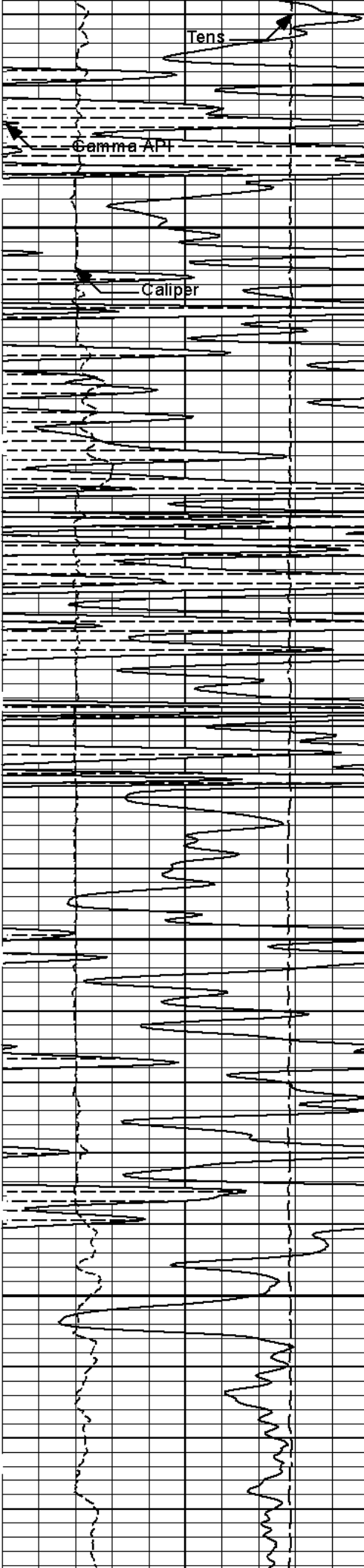
AcouPorosity

Delta-T

5400

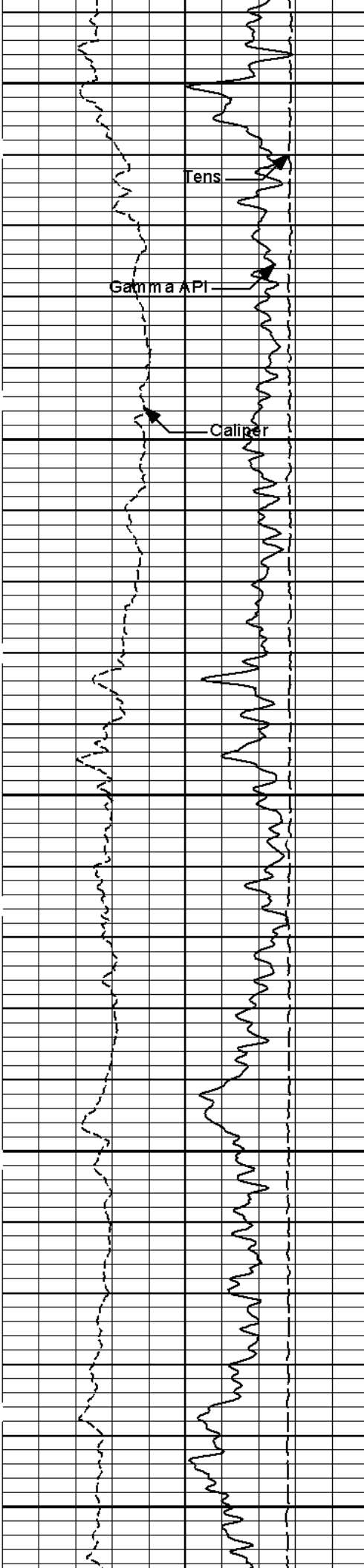
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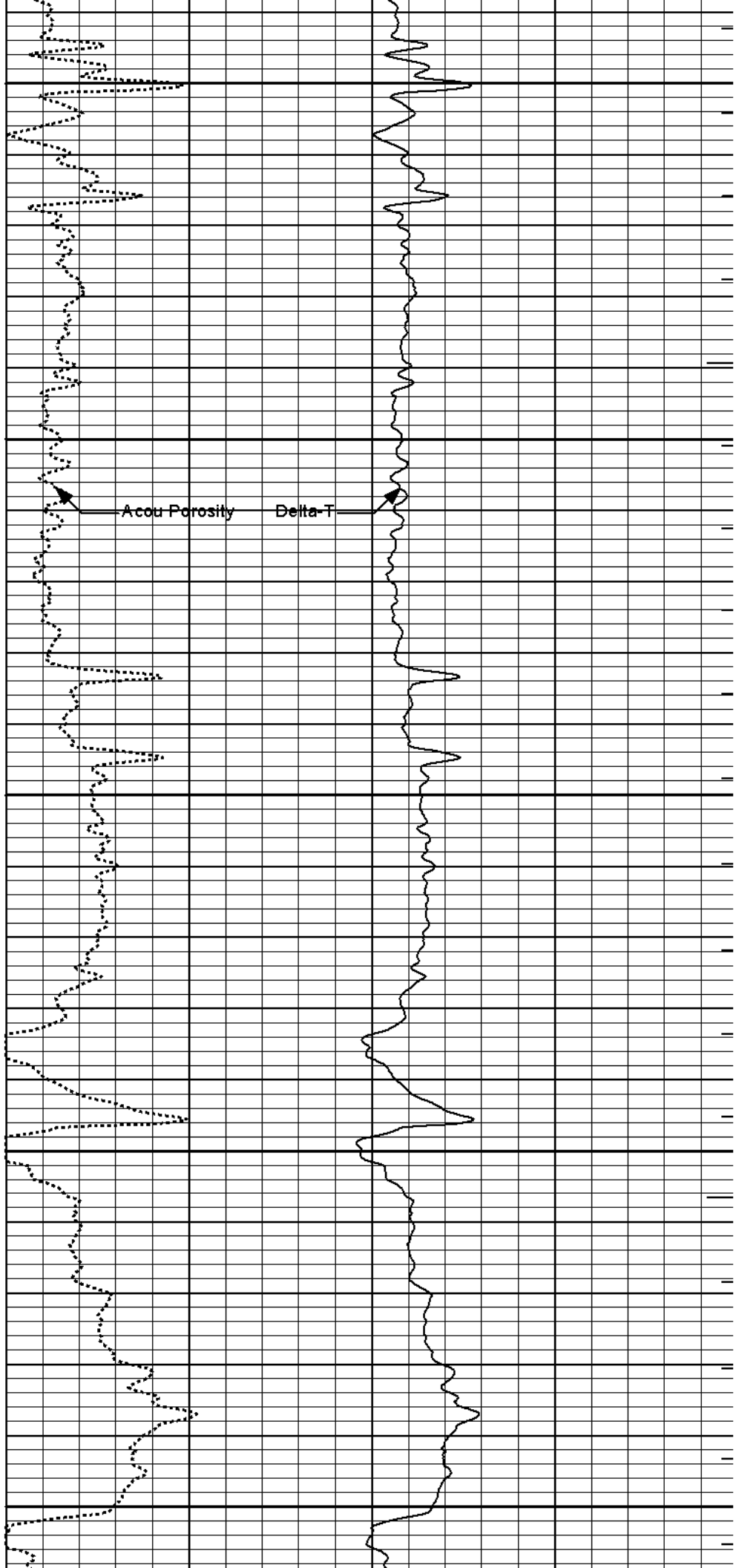
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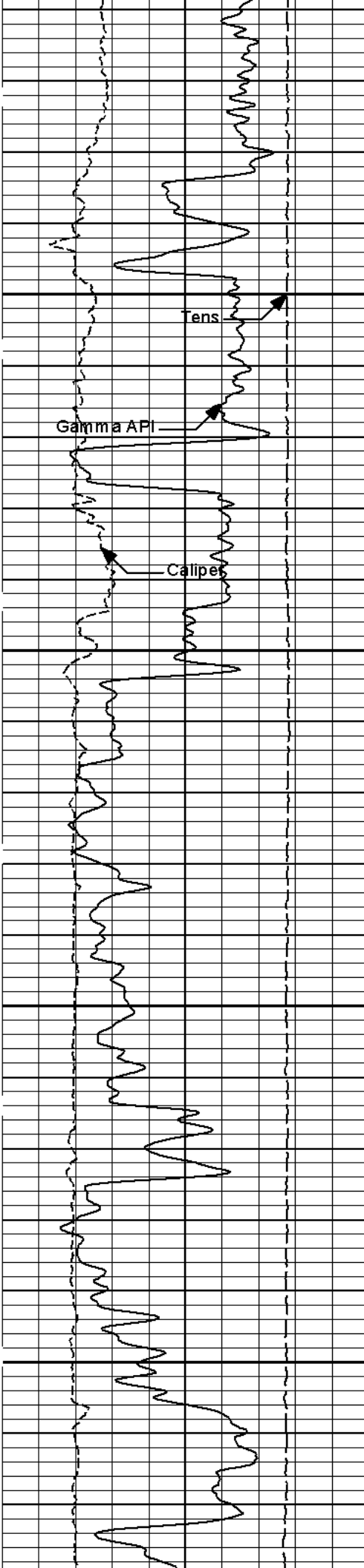
5700



5800

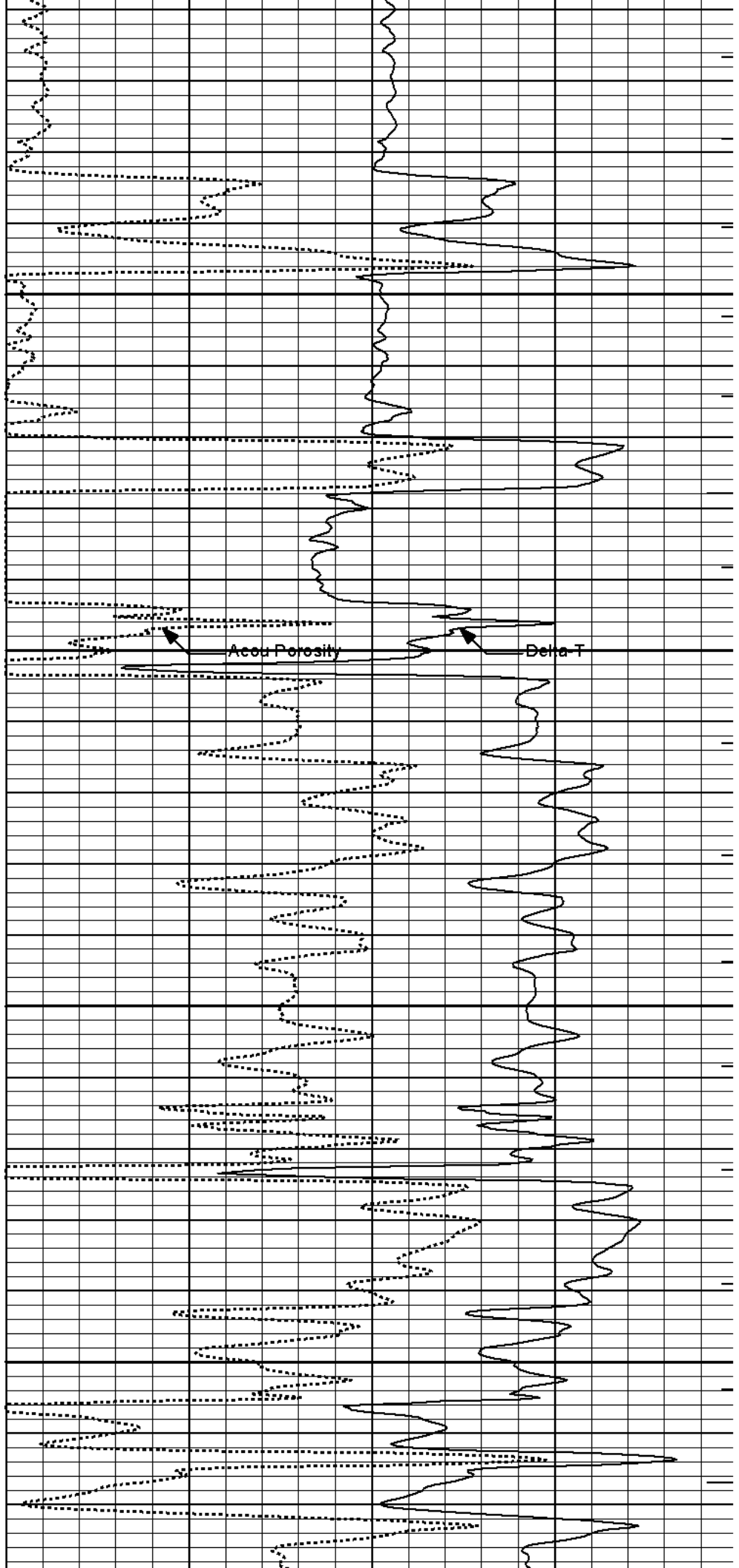
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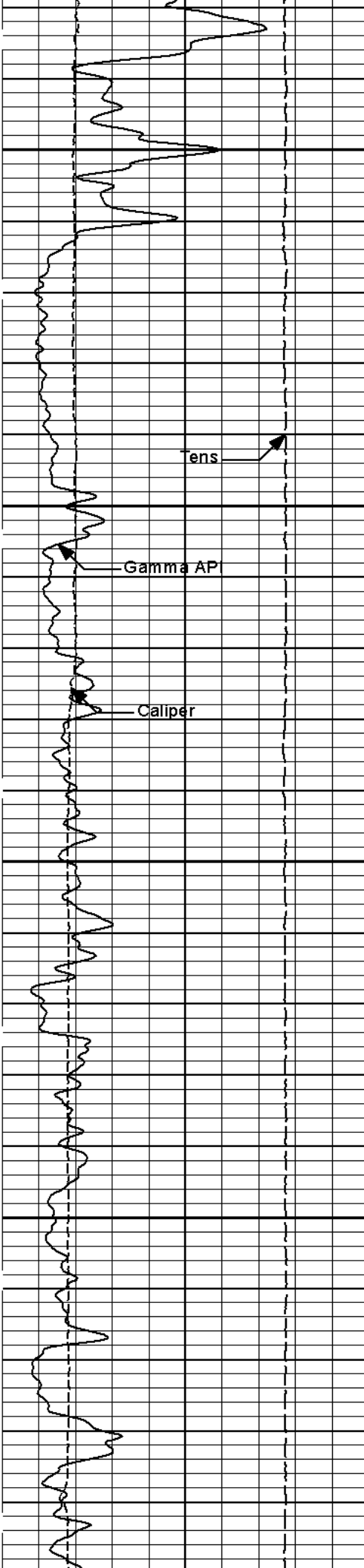




6000

6100





6200

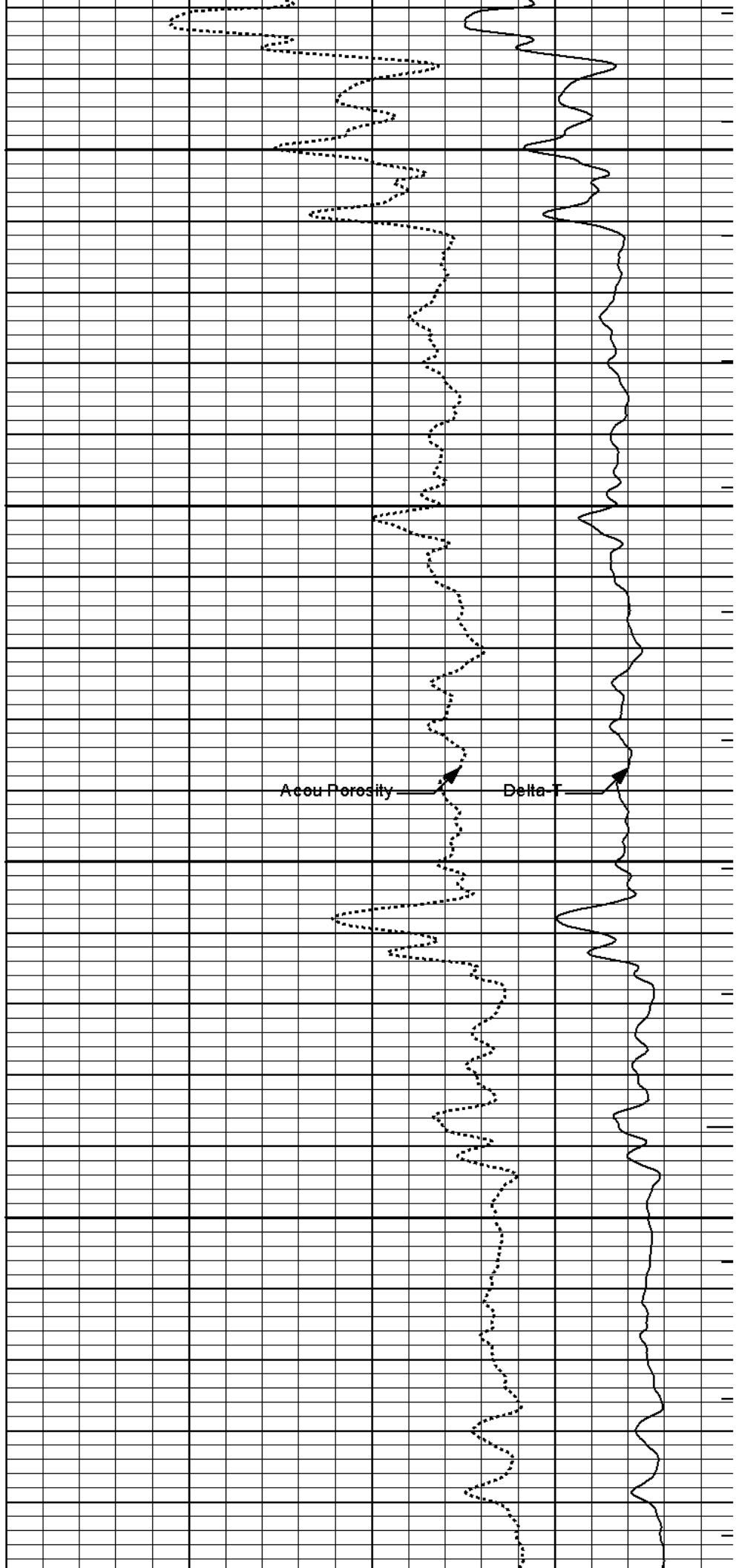
Tens

Gamma AP

Caliper

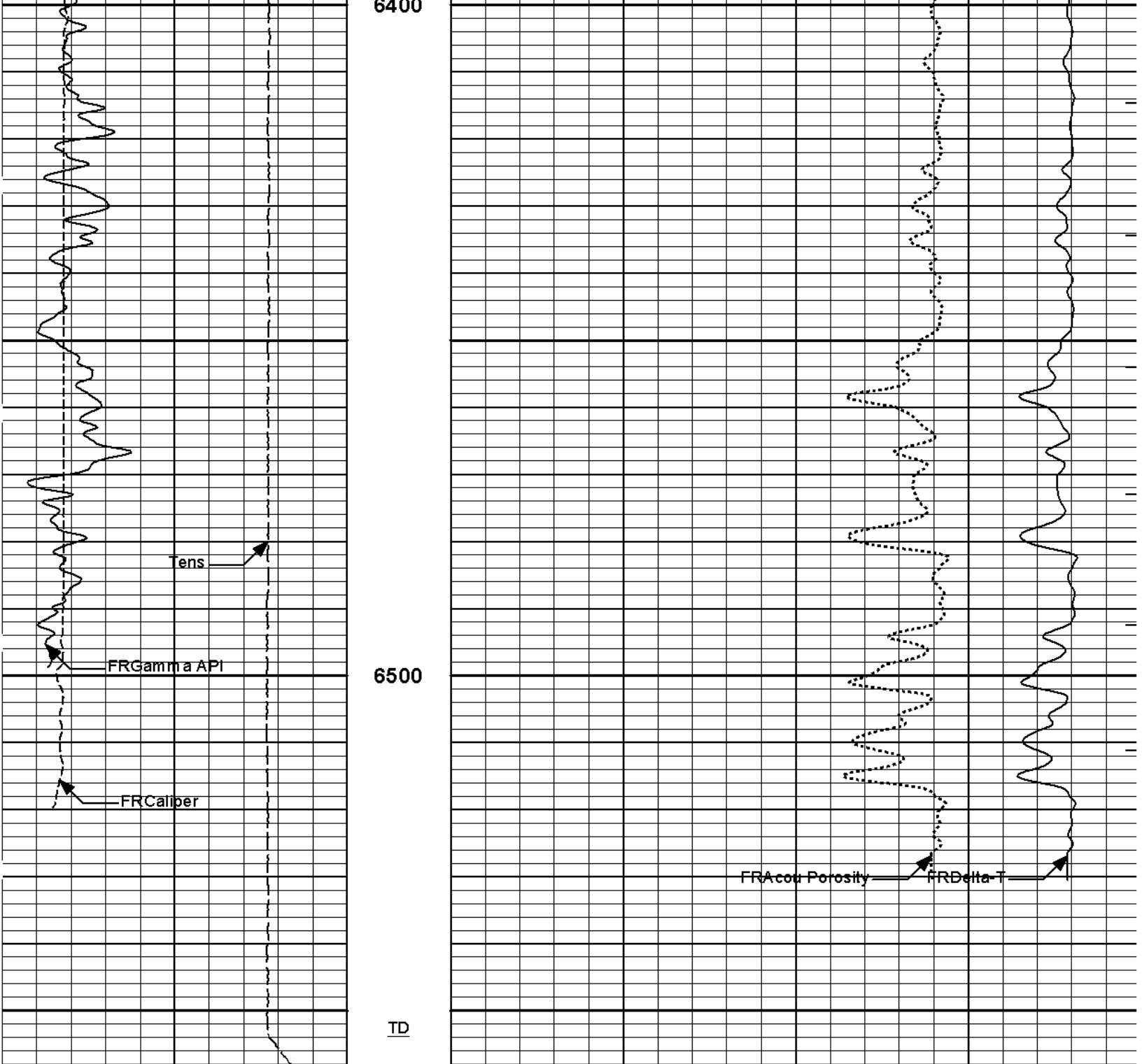
6300

6400



Acou Porosity

Delta T



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

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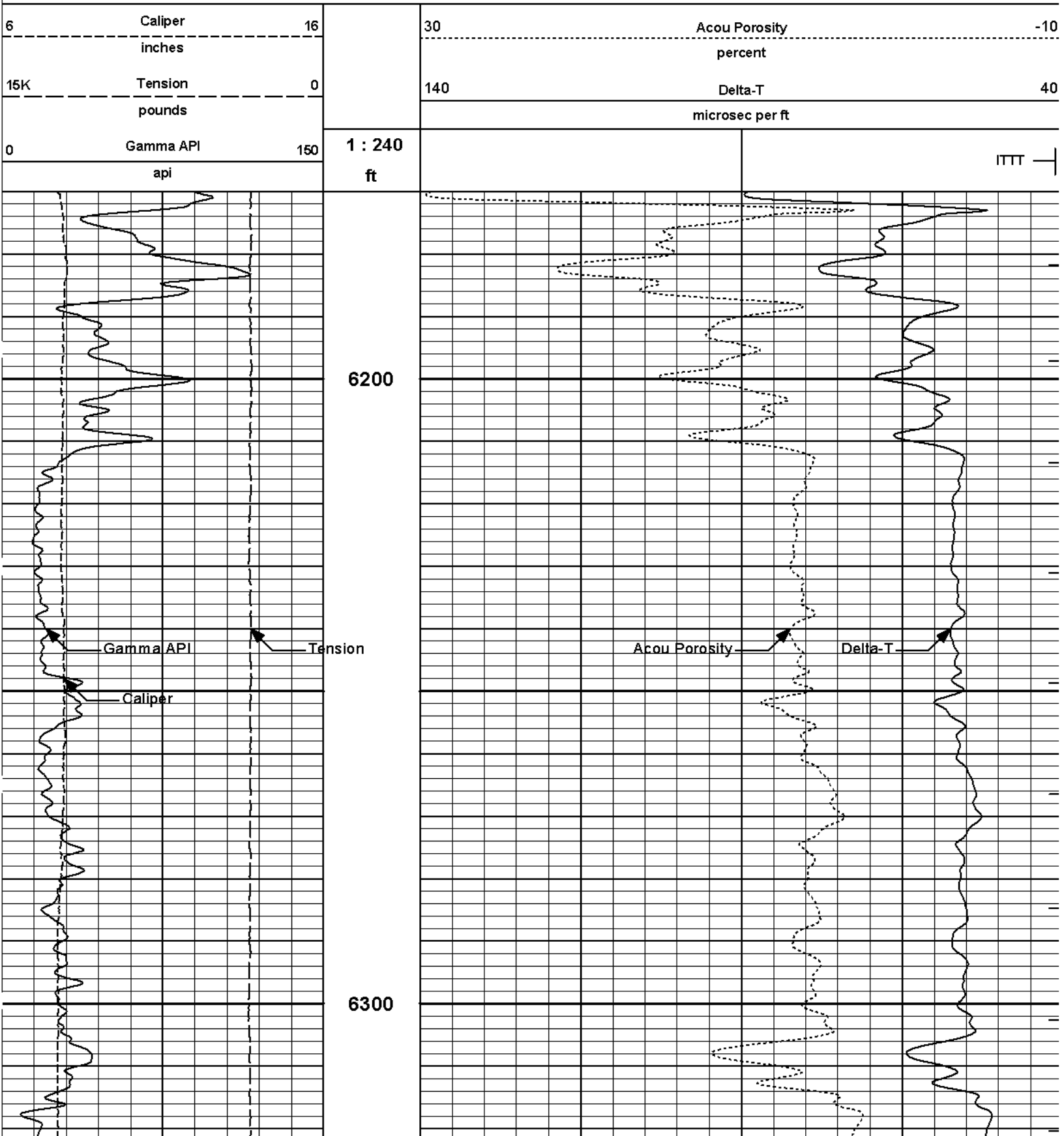
Plot Time: 12-Jul-11 09:31:44
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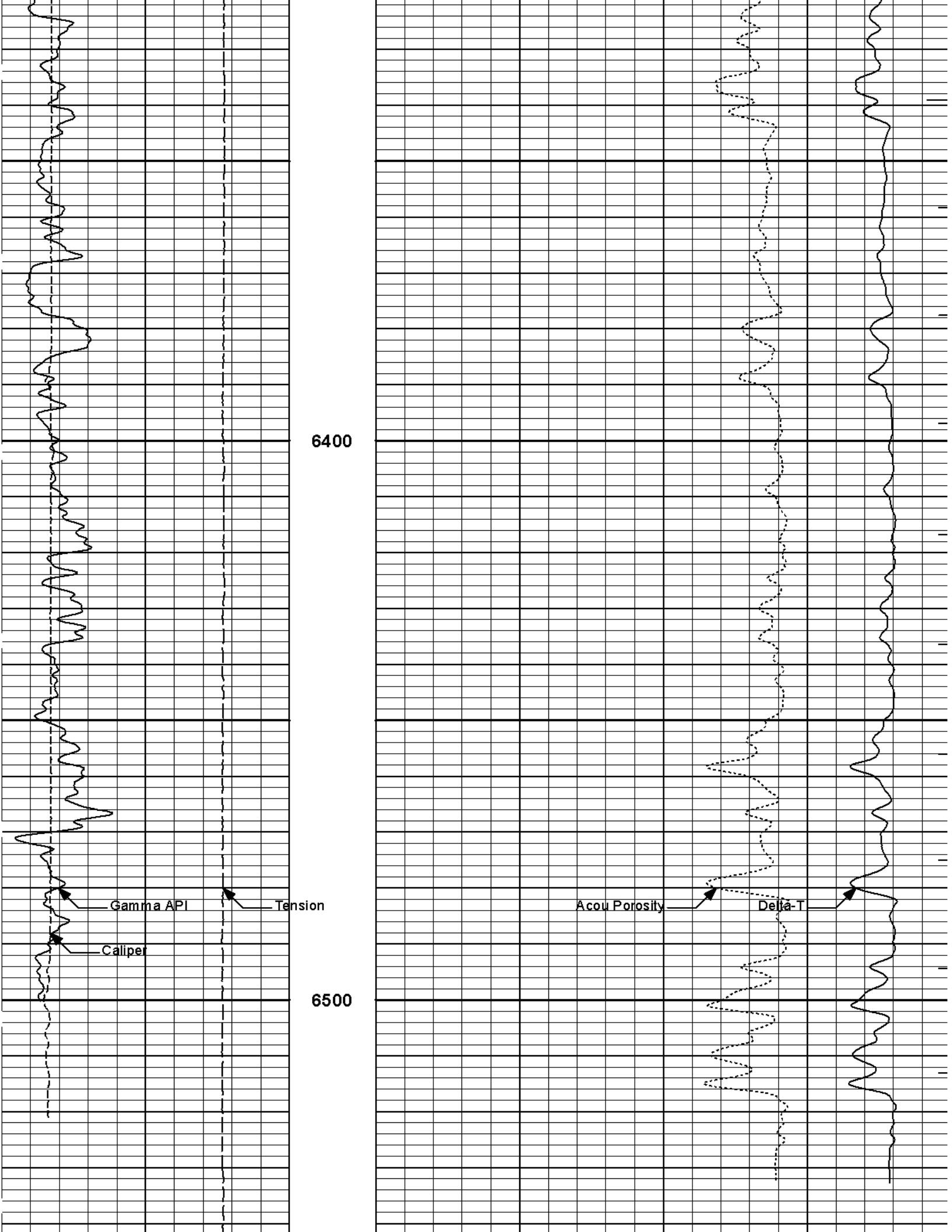
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 12-Jul-11 09:31:44
 Plot Range: 6170 ft to 6559.5 ft
 Data: GILLESPIE_21_1\Well Based\DAQ-0001-REPEAT
 Plot File: \BSAT\BSAT_5_REP_LIB

REPEAT SECTION

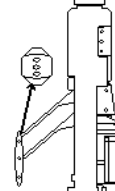




SDLT-
1066_M85803_P45
360.00 lbs

Ø 4.500 in →

Ø 4.750 in →



SDL Microlog @ 38.60 ft
SDL Caliper @ 38.42 ft
SDL @ 38.41 ft

10.81 ft

35.60 ft

BSAT-10747683
300.00 lbs

Ø 3.625 in →

← Sonic Receivers @ 27.09 ft

15.77 ft

19.83 ft

ACRt-1776_S775
250.00 lbs

Ø 3.625 in →

← Mud Resistivity @ 13.44 ft

← ACRt @ 9.46 ft

19.25 ft

Cabbage Head-
TRK954
10.00 lbs

Ø 3.625 in →

Ø 6.000 in →



0.58 ft

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	Standard OH Cable Head	PROT01	30.00	1.92	68.36	300.00
SP	SP Sub	TRK954	60.00	3.74	64.63	300.00
GTET	Gamma Telemetry Tool	10811258	165.00	8.52	56.10	60.00
DSNT	Dual Spaced Neutron	10755066	174.00	9.69	46.42	60.00
DCNT	DSN Decentralizer	11005605	6.60	5.13 *	49.75	300.00
SDLT	Spectral Density Tool	1066_M85803_P45	360.00	10.81	35.60	60.00
BSAT	Borehole Sonic Array Tool	10747683	300.00	15.77	19.83	60.00
ACRt	Array Compensated True Resistivity	1776_S775	250.00	19.25	0.58	300.00
CBHD	Cabbage Head	TRK954	10.00	0.58	0.00	300.00
Total			1,355.60	70.28		

* Not included in Total Length and Length Accumulation

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	1.060	ohm m
	SHARED	TRM	Temperature of Mud	86.0	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	6550.00	ft
	SHARED	BHT	Bottom Hole Temperature	140.0	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	0.90	ohm m
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	85.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohm m
	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	Centered	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DNNO	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	DNOK	Process Density?	Yes	

SDLT	DNOK	Process Density EVR?	No	
SDLT	CB	Logging Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	DMA	Formation Density Matrix	2.710	g/cc
SDLT	DFL	Formation Density Fluid	1.000	g/cc
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT	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	RTOK	Process ACRT?	Yes	
ACRT	MNSO	Minimum Tool Standoff	1.50	in
ACRT	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRT	TPOS	Tool Position	Free Hanging	
ACRT	RMOP	Rmud Source	Mud Cell	
ACRT	RMIN	Minimum Resistivity for MAP	0.20	ohm m
ACRT	RMIN	Maximum Resistivity for MAP	200.00	ohm m
ACRT	THQY	Threshold Quality	0.50	

BOTTOM

Data: GILLESPIE_21_10001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDLE

Date: 12-Jul-11 08:13:25

HALLIBURTON

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
SP Sub				
PLTC	Plot Control Mask	66.58	NO	
SP	Spontaneous Potential	66.58	BLK	1.250
SPR	Raw Spontaneous Potential	66.58	NO	
SPO	Spontaneous Potential Offset	66.58	NO	
GTET				
TPUL	Tension Pull	58.56	NO	
GR	Natural Gamma Ray API	58.56	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	58.56	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	58.56	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	48.32	NO	
RNDS	Near Detector Telemetry Counts	48.42	BLK	1.417
RFDS	Far Detector Telemetry Counts	49.17	TRI	0.583

DNTT	DSN Tool Temperature	48.42	NO	
DSNS	DSN Tool Status	48.32	NO	
ERND	Near Detector Telemetry Counts EVR	48.42	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	49.17	BLK	0.000
ENTM	DSN Tool Temperature EVR	48.42	NO	
SDLT				
TPUL	Tension Pull	38.41	NO	
NAB	Near Above	38.24	BLK	0.920
NHI	Near Cesium High	38.24	BLK	0.920
NLO	Near Cesium Low	38.24	BLK	0.920
NVA	Near Valley	38.24	BLK	0.920
NBA	Near Barite	38.24	BLK	0.920
NDE	Near Density	38.24	BLK	0.920
NPK	Near Peak	38.24	BLK	0.920
NLI	Near Lithology	38.24	BLK	0.920
NBAU	Near Barite Unfiltered	38.24	BLK	0.250
NLIU	Near Lithology Unfiltered	38.24	BLK	0.250
FAB	Far Above	38.58	BLK	0.250
FHI	Far Cesium High	38.58	BLK	0.250
FLO	Far Cesium Low	38.58	BLK	0.250
FVA	Far Valley	38.58	BLK	0.250
FBA	Far Barite	38.58	BLK	0.250
FDE	Far Density	38.58	BLK	0.250
FPK	Far Peak	38.58	BLK	0.250
FLI	Far Lithology	38.58	BLK	0.250
PTMP	Pad Temperature	38.42	BLK	0.920
NHV	Near Detector High Voltage	35.60	NO	
FHV	Far Detector High Voltage	35.60	NO	
ITMP	Instrument Temperature	35.60	NO	
DDHV	Detector High Voltage	35.60	NO	
TPUL	Tension Pull	38.42	NO	
PCAL	Pad Caliper	38.42	TRI	0.250
ACAL	Arm Caliper	38.42	TRI	0.250
TPUL	Tension Pull	38.60	NO	
MINV	Microlog Lateral	38.60	BLK	0.750
MNOR	Microlog Normal	38.60	BLK	0.750
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	
ACRt				
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 Reference 12 KHz Real Signal	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	

Data: GILLESPIE_21_110001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDLE

Date: 12-Jul-11 08:13:38

COMPANY	EOG RESOURCES		
WELL	GILLESPIE 21 #1		
FIELD	WILLIS		
COUNTY	STEVENS	STATE	KANSAS
HALLIBURTON		BOREHOLE SONIC ARRAY	

