HALLIBURTON

BOREHOLE SONIC ARRAY LOG

COMPANY **OXY USA, INC.**

WELL **SNIDER C-2**

FIELD **PLEASANT PRAIRIE**

COUNTY **HASKELL** STATE **KANSAS**

COMPANY OXY USA, INC.
WELL SNIDER C-2
FIELD PLEASANT PRAIRIE
COUNTY HASKELL
STATE KANSAS

API No. 15-081-21929
Location 1460' FSL & 1660' FWL

Sect. 22 Twp. 27S Rge. 34W

Other Services:
SDL / DSN
MICRO
ACRT

Permanent Datum	GROUND LEVEL	Elev. 3010.0 ft	Elev.: K.B. 3021.0 ft
Log measured from	KELLY BUSHING	, 11.0 ft above perm. Datum	D.F. 3020.0 ft
Drilling measured from	KELLY BUSHING		G.L. 3010.0 ft

Date		17-Mar-11					
Run No.		ONE					
Depth - Driller		5430.00 ft					
Depth - Logger		5425.0 ft					
Bottom - Logged Interval		5398.0 ft					
Top - Logged Interval		1928.0 ft					
Casing - Driller		8.625 in @ 1930.0 ft		@		@	
Casing - Logger		1928.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	9.1 ppg	46.00 s/qt				
PH	Fluid Loss	10.80 pH	6.4 cptm				
Source of Sample		FLOW LINE					
Rm @ Meas. Temperature		1.300 ohmm @ 72.00 degF		@		@	
Rmf @ Meas. Temperature		1.20 ohmm @ 74.00 degF		@		@	
Rmc @ Meas. Temperature		1.700 ohmm @ 74.00 degF		@		@	
Source Rmf	Rmc	MEASURED	MEASURED				
Rm @ BHT		1.03 ohmm @ 125.0 degF		@		@	
Time Since Circulation		4.2 hr					
Time on Bottom		17-Mar-11 18:03					
Max. Rec. Temperature		125.0 degF @ 5425.0 ft		@		@	
Equipment	Location	10782954	LIBERAL				
Recorded By		S. JUNG					
Witnessed By		A. GARNER		D. NEESE			

Fold here

Service Ticket No.: 8017367 API Serial No.: 15-081-21929 PGM Version: WL INSITE R3.2.0 (Build 7)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole
Date					
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@	@	@	@
Rmf @ Meas. Temp.		@	@	@	@
Rmc @ Meas. Temp.		@	@	@	@
Source Rmf	Rmc				
Rm @ BHT		@	@	@	@
Rmf @ BHT		@	@	@	@
Rmc @ BHT		@	@	@	@

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Run No.					
Serial No.					
Model No.					
Diameter					
Log Type					
Source Type					
Serial No.					
Strength					

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.		Run No.	
Serial No.	10748374	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 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	47.6						

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING

GPS COORDINATES: LAT: 37.66 N & LONG: 101.01 W

CHLORIDES REPORTED AT 900 MG/L

RUBBER STANDOFFS USED INSTEAD OF CENTRALIZERS

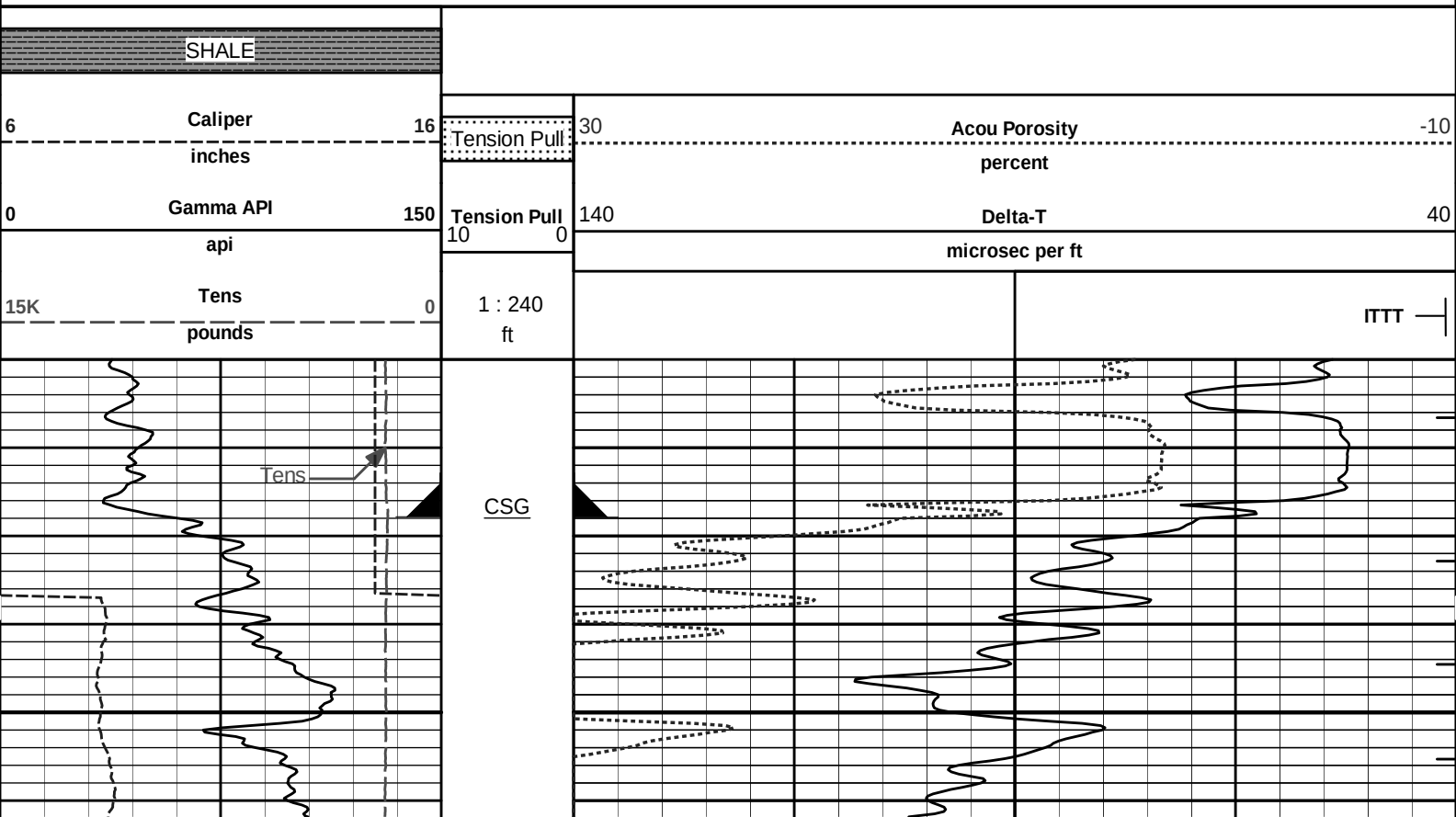
TODAY'S CREW: F. VILLA, D. FULLERTON

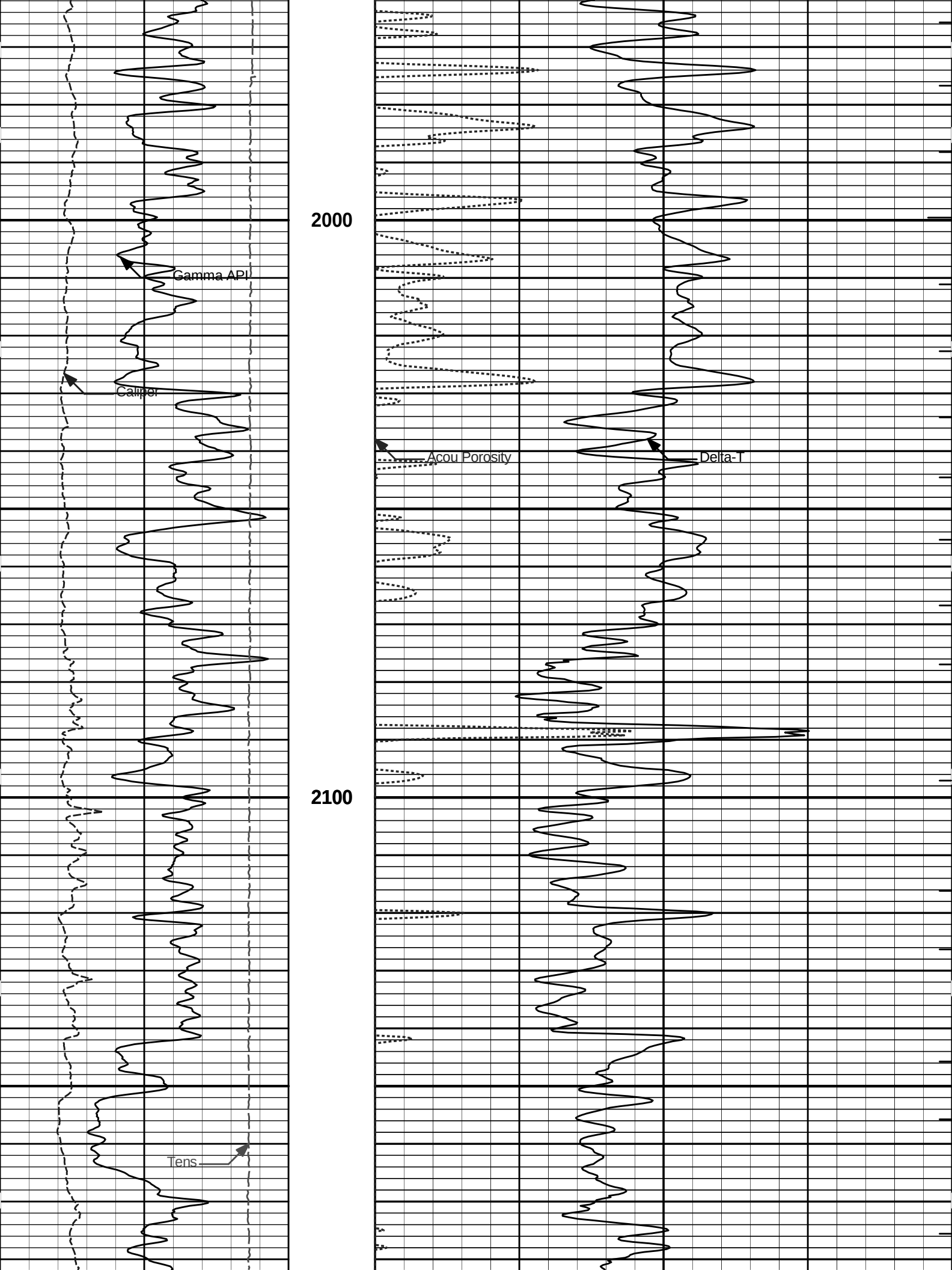
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES - LIBERAL, KS (620-624-8123)

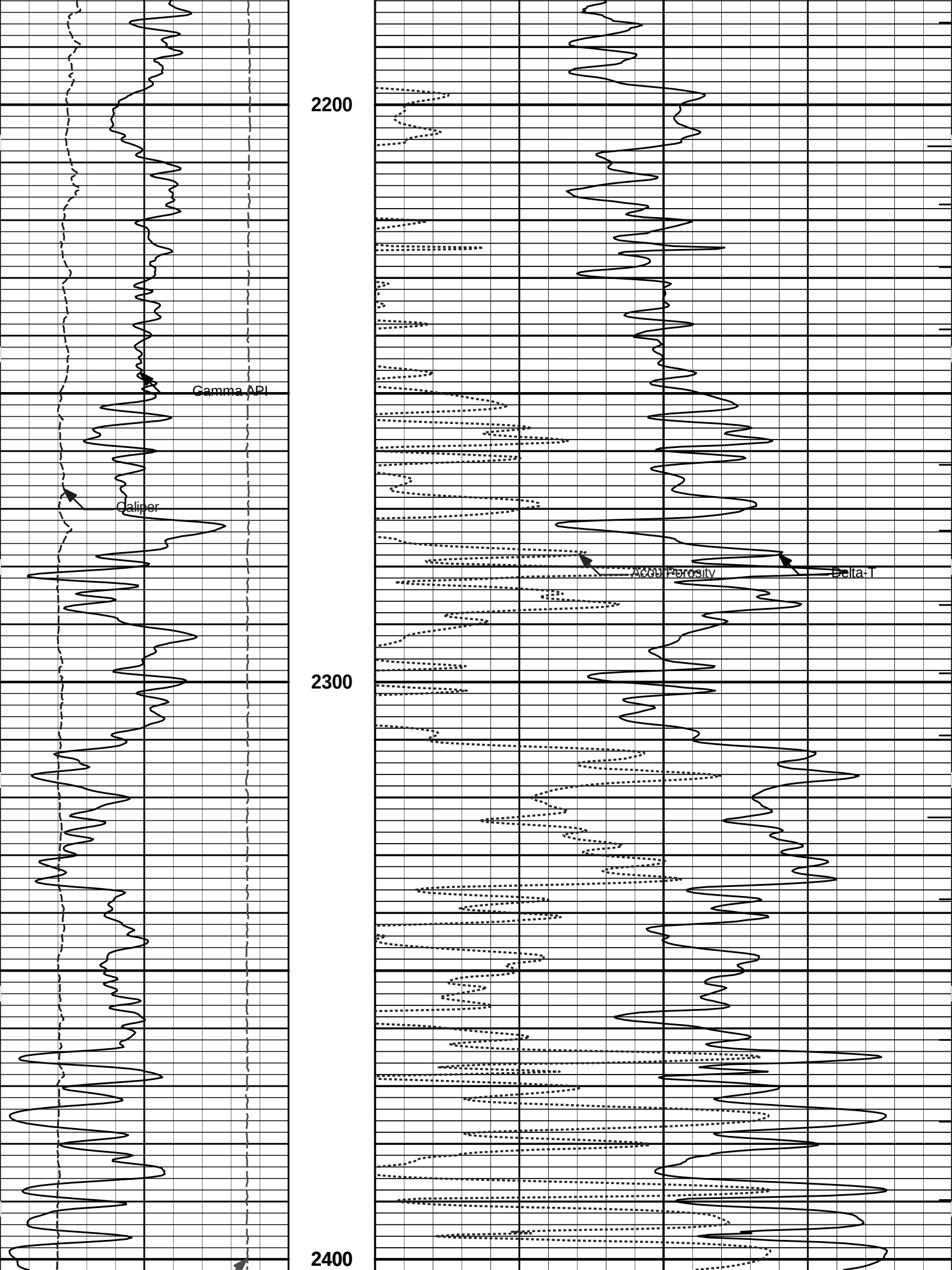
HALLIBURTON

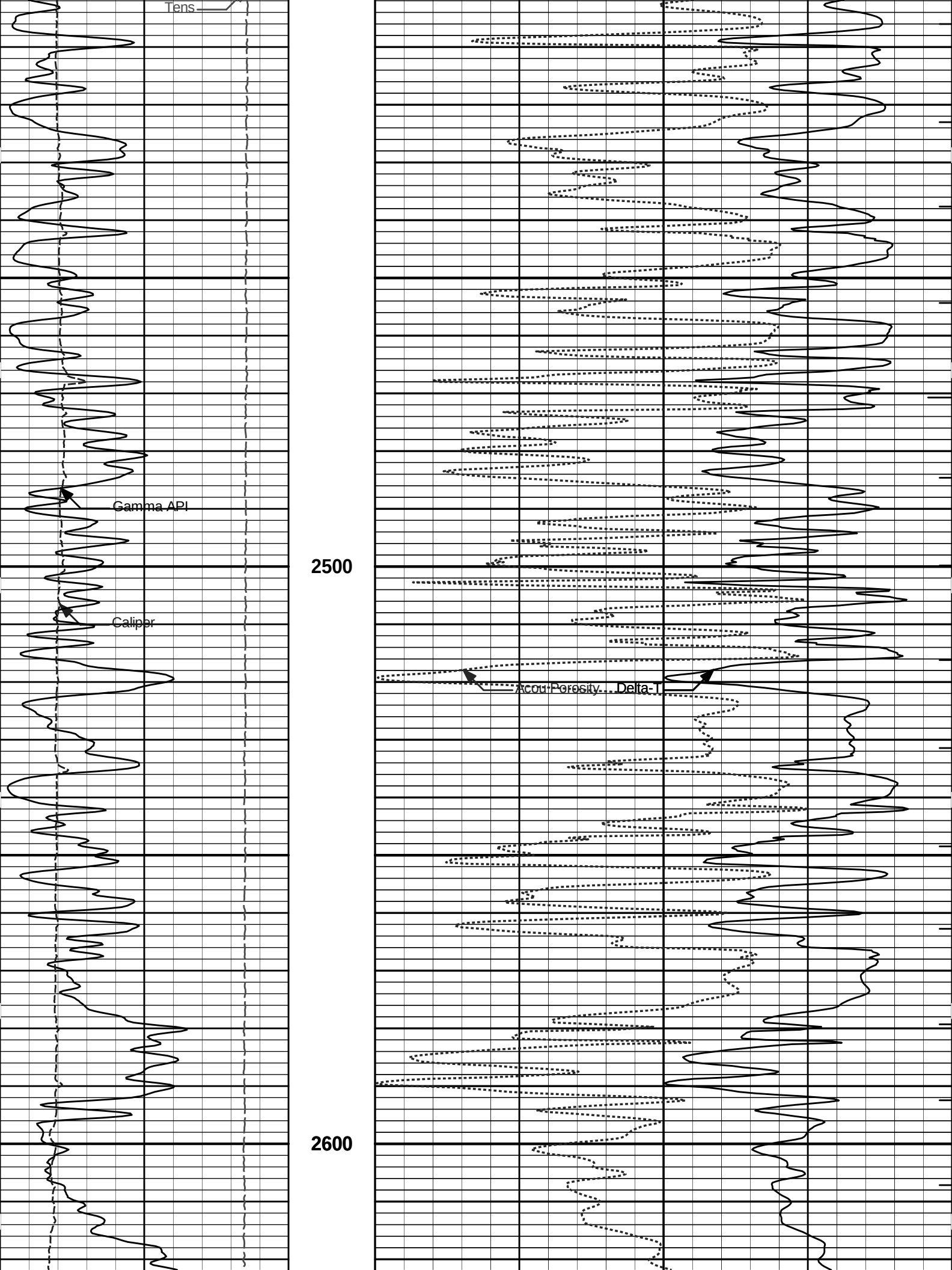
Plot Time: 17-Mar-11 20:21:32
Plot Range: 1910 ft to 5431.17 ft
Data: SNIDER_C_2\Well Based\DAQ-0001-CSG
Plot File: \\BSAT\BSAT_5_MAIN_LIB

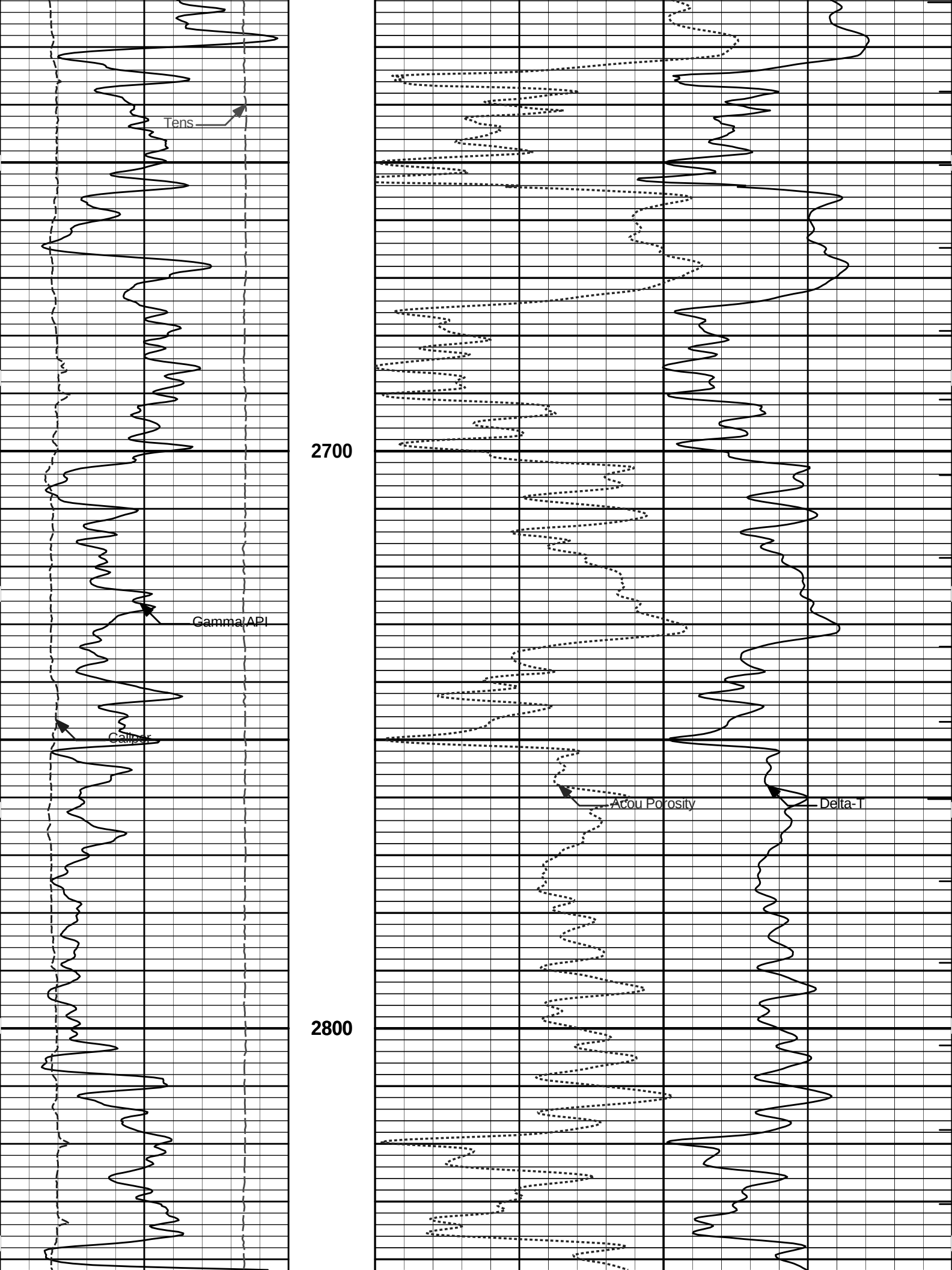
5 INCH MAIN LOG

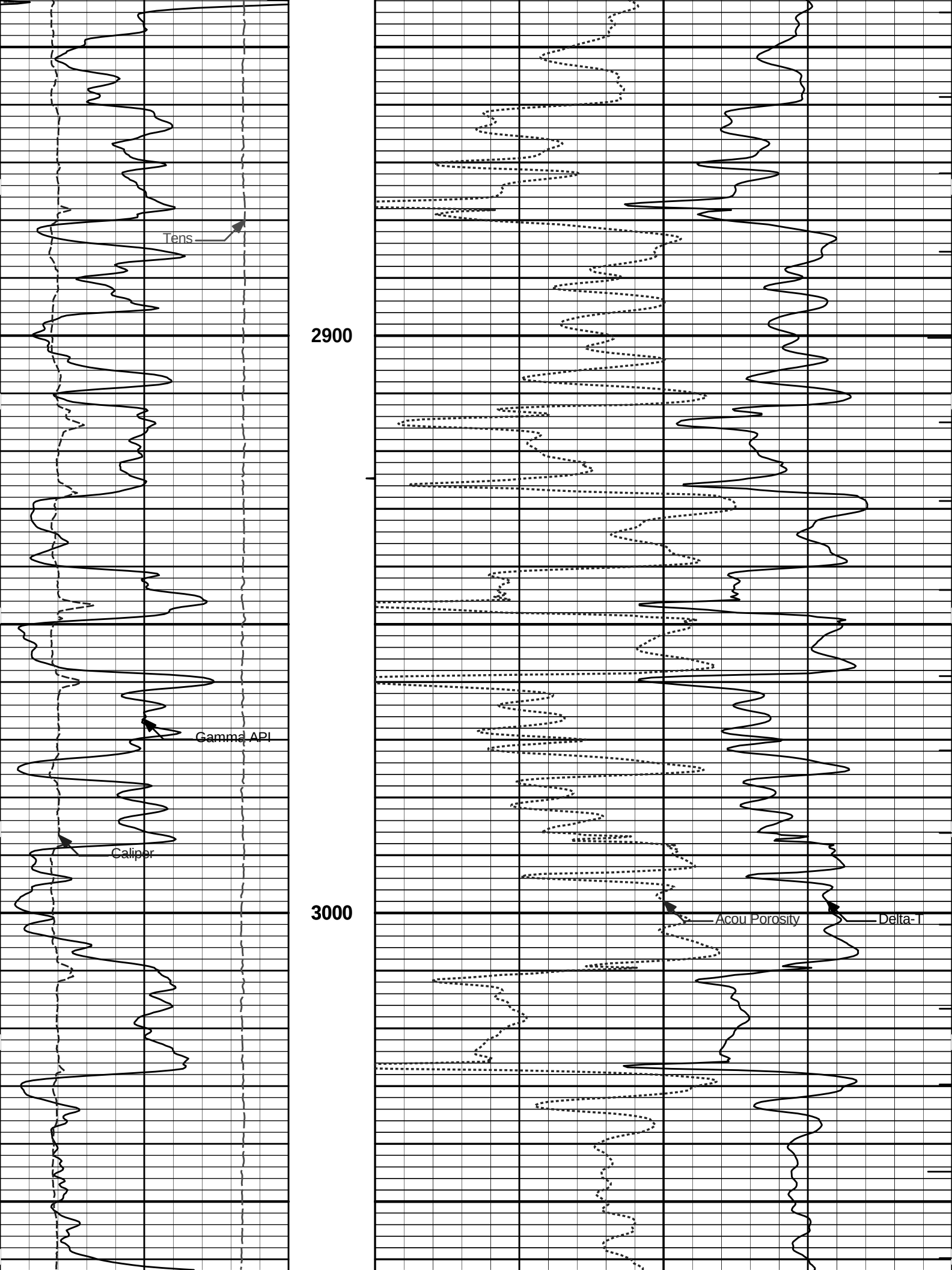


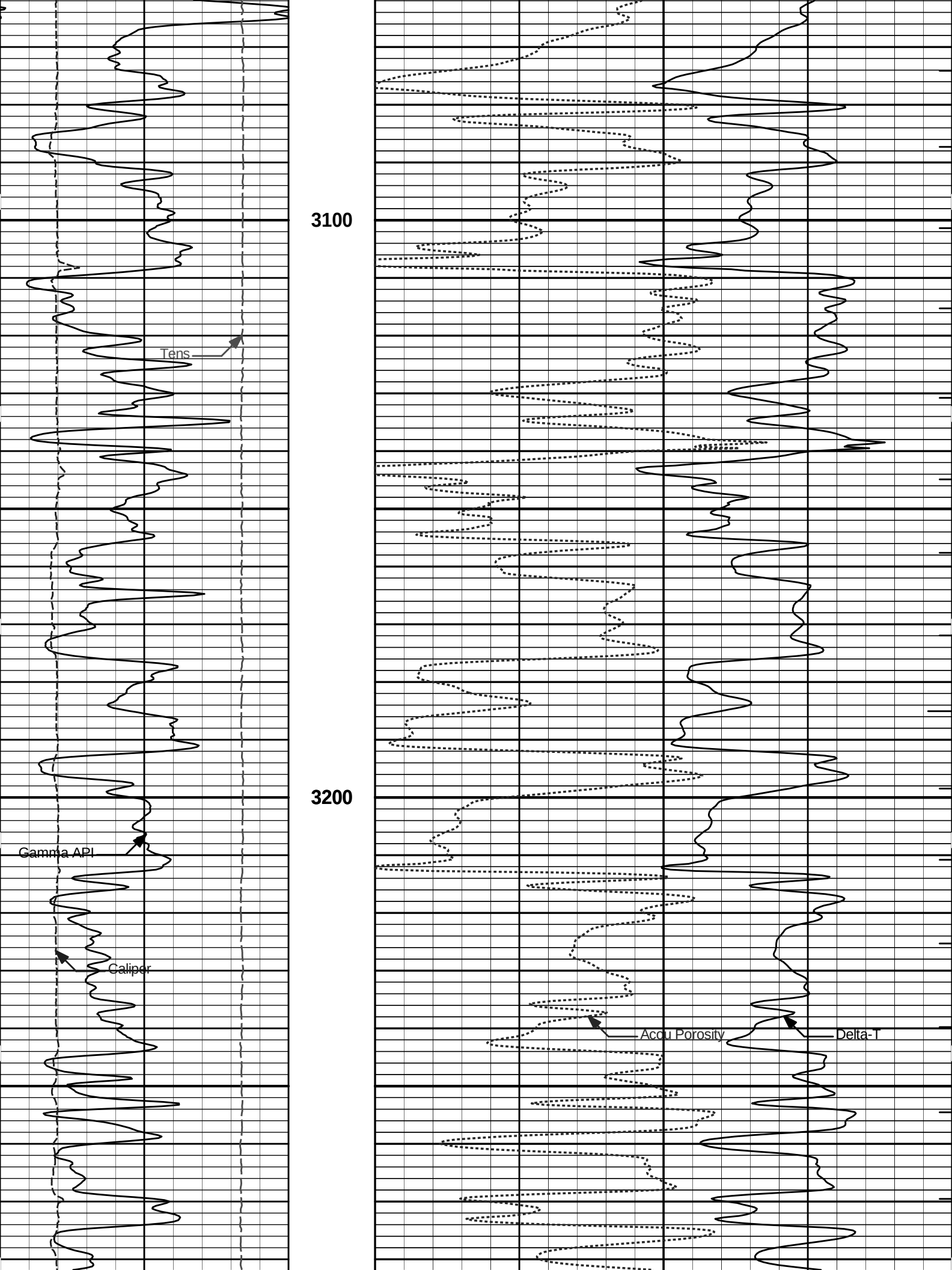

2000
Gamma API
Caliper
Acou Porosity
Delta-T
2100
Tens

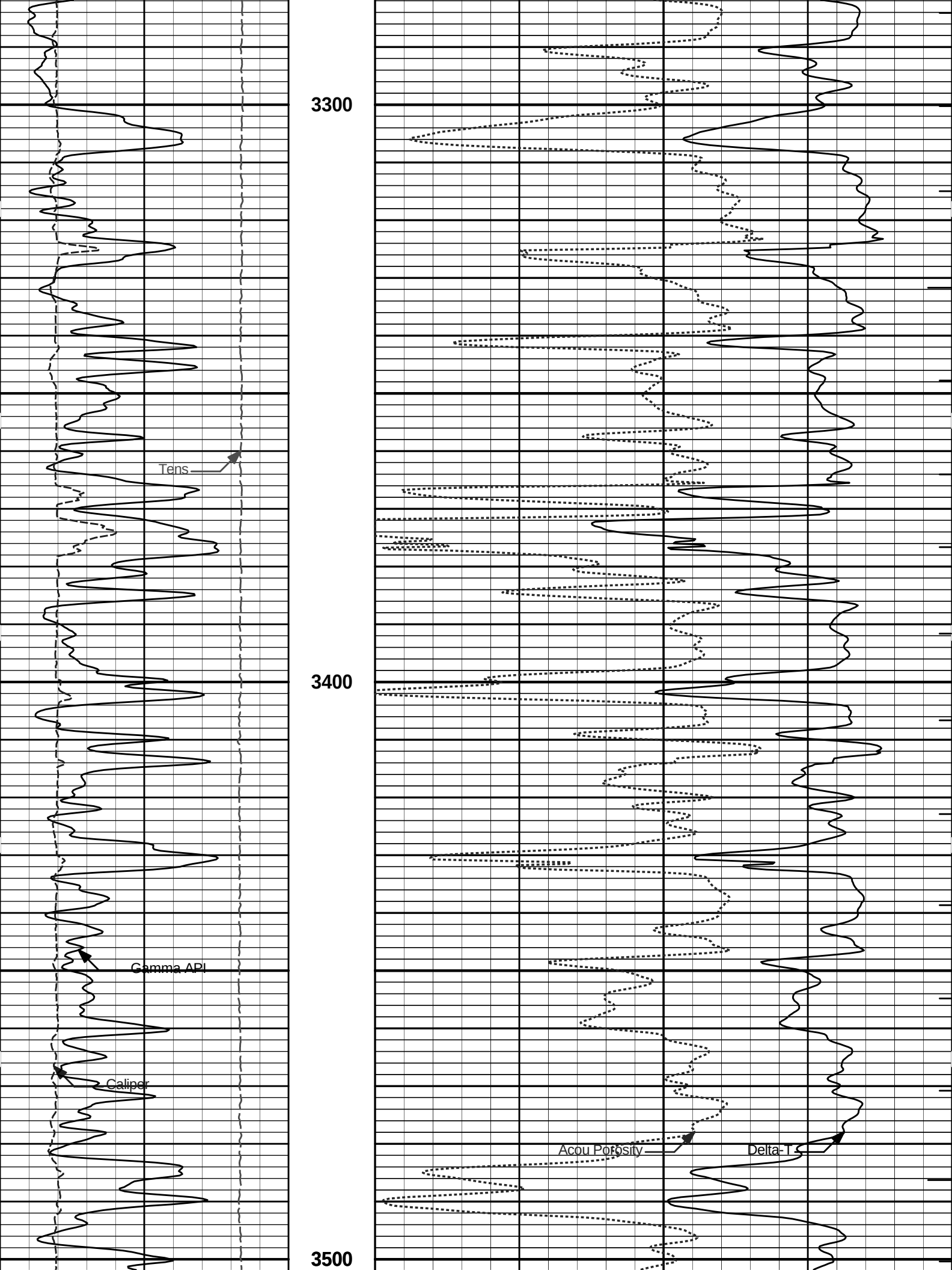

2200
Gamma API
Caliper
AccuPorosity
Delta-T
2300
2400

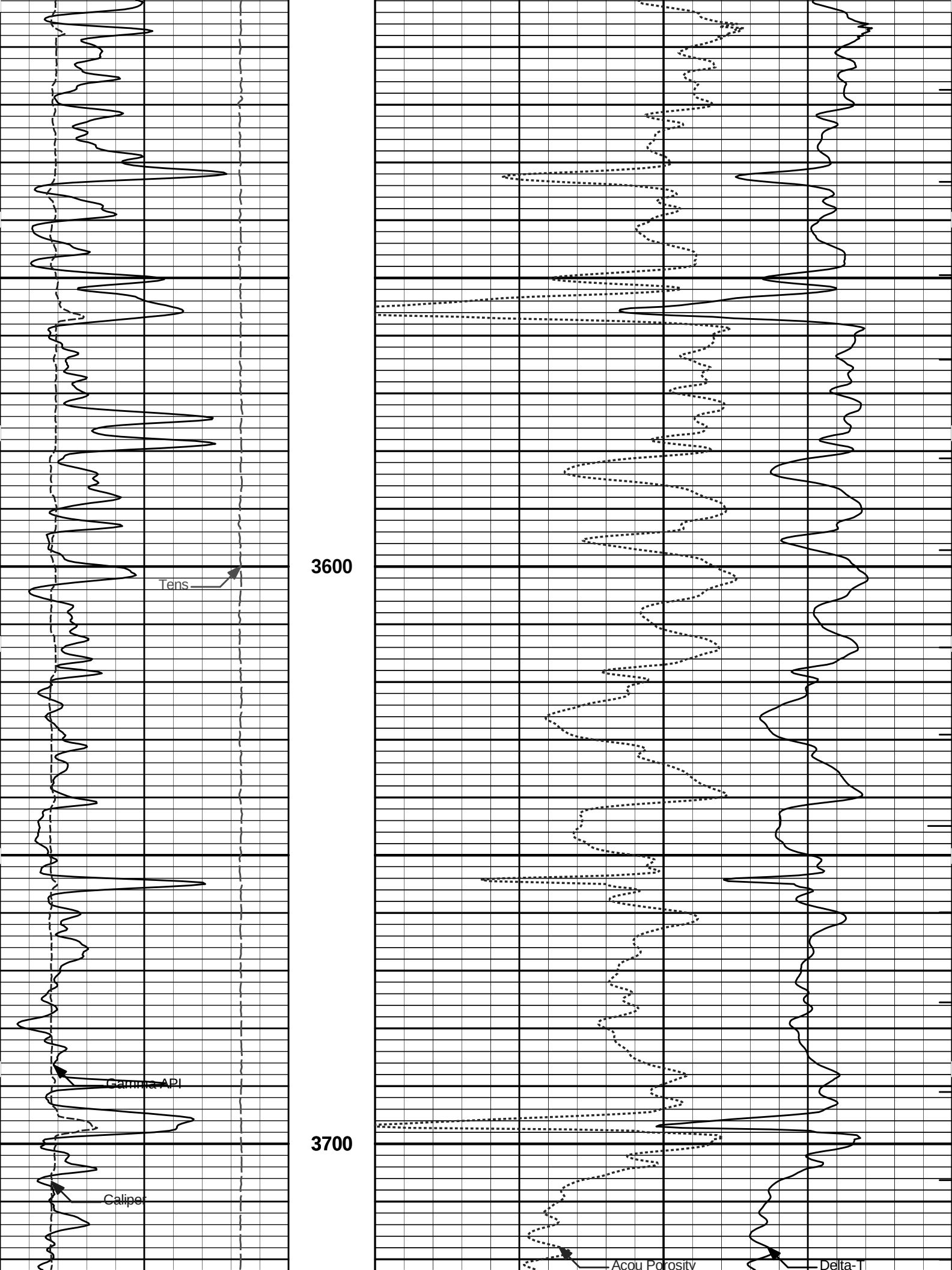

Tens
Gamma API
2500
Caliper
Acou Porosity
Delta-T
2600

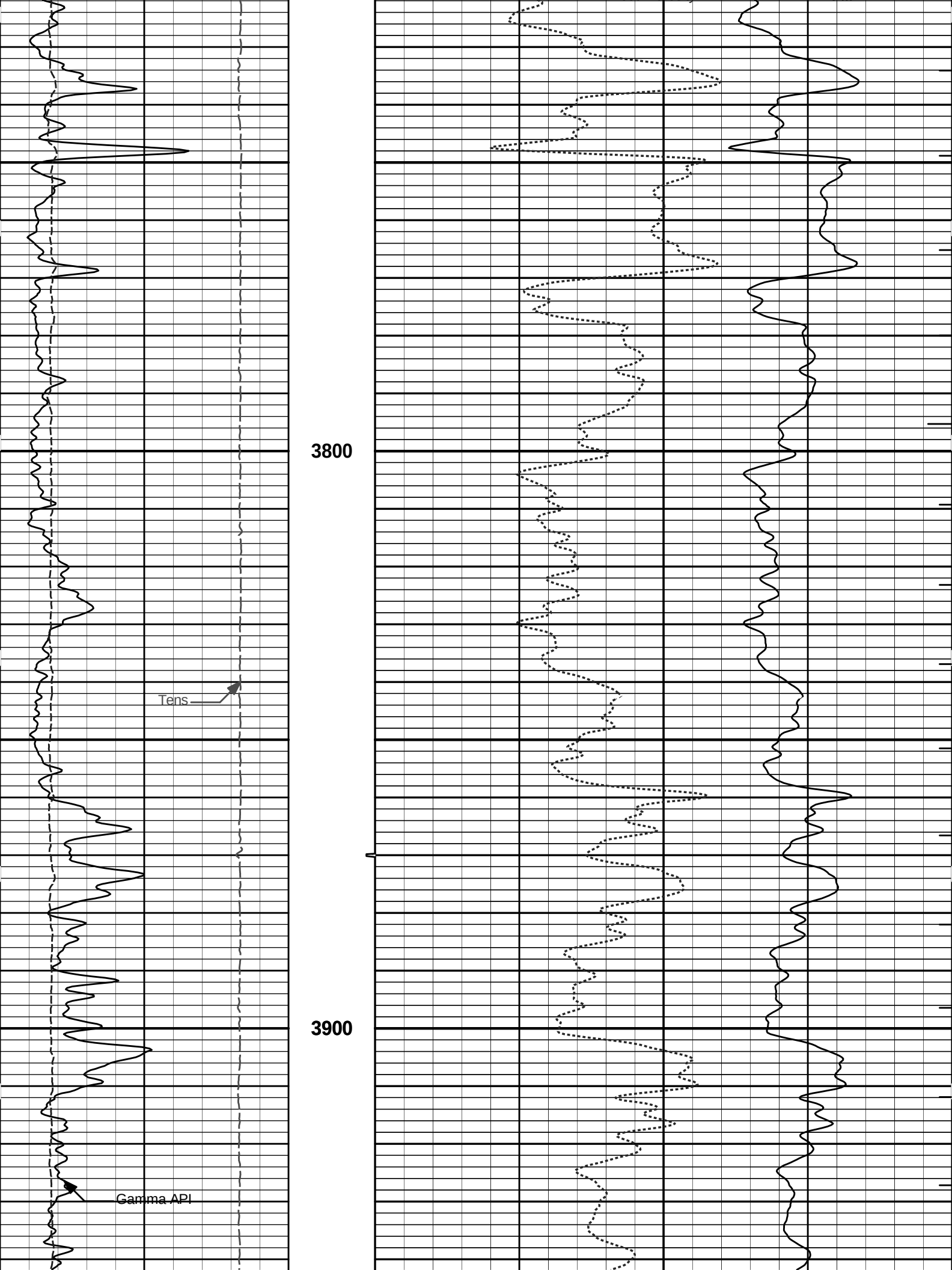

Tens
2700
Gamma/API
Caliper
Acou Porosity
Delta-T
2800

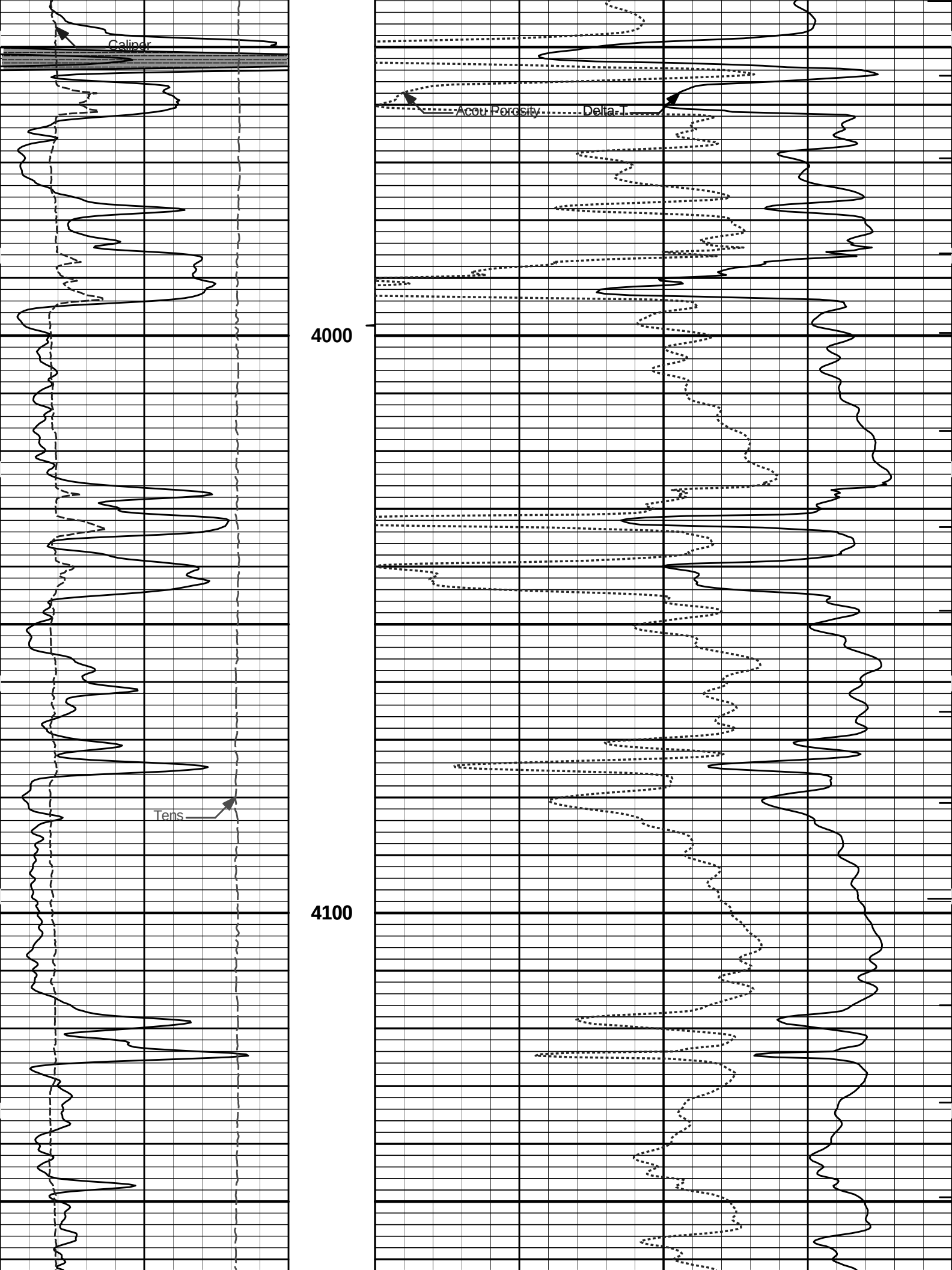

Tens
2900
Gamma API
Caliper
3000
Acou Porosity
Delta-T

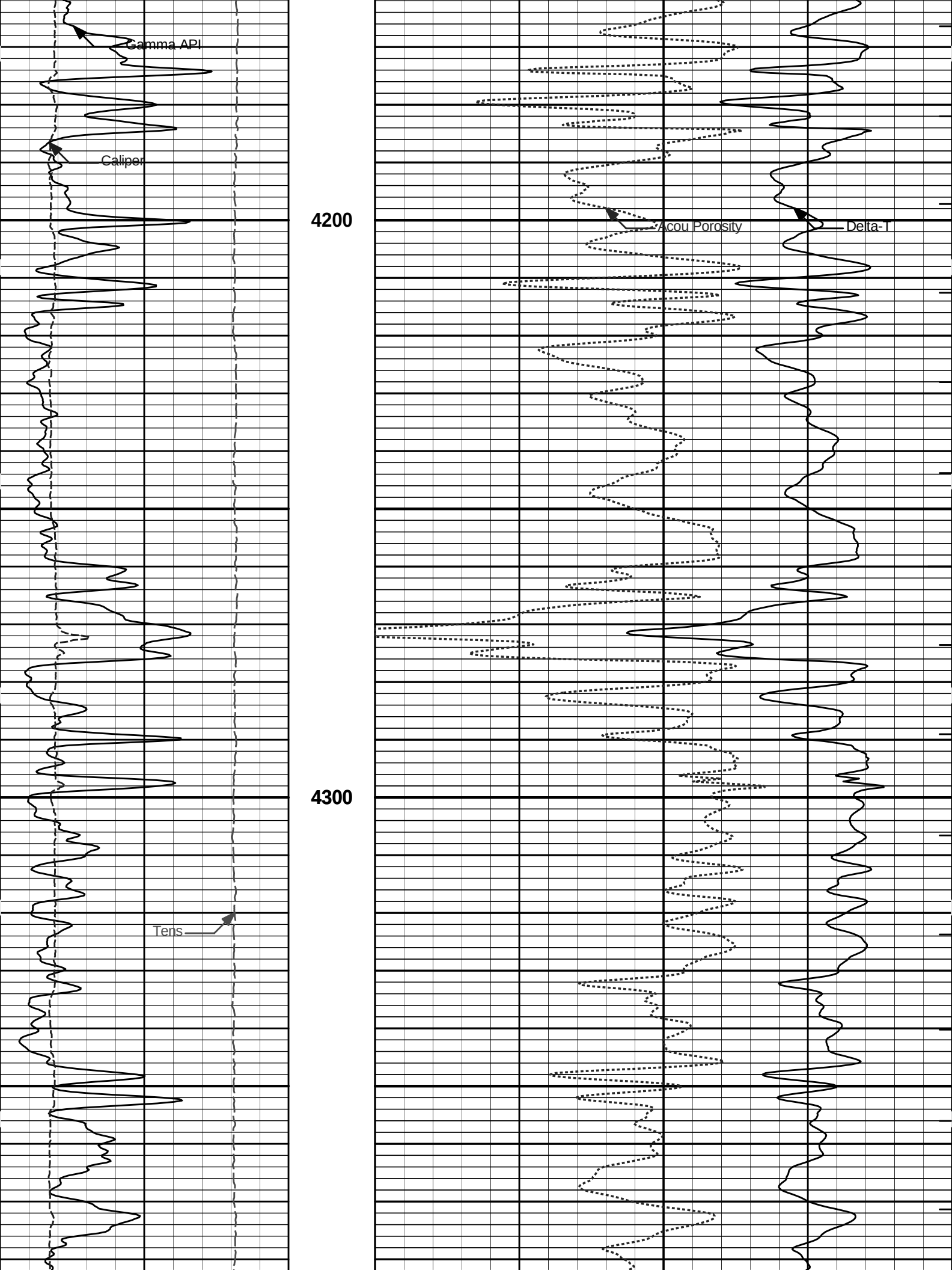

3100
Tens
3200
Gamma API
Caliper
Accu Porosity
Delta-T

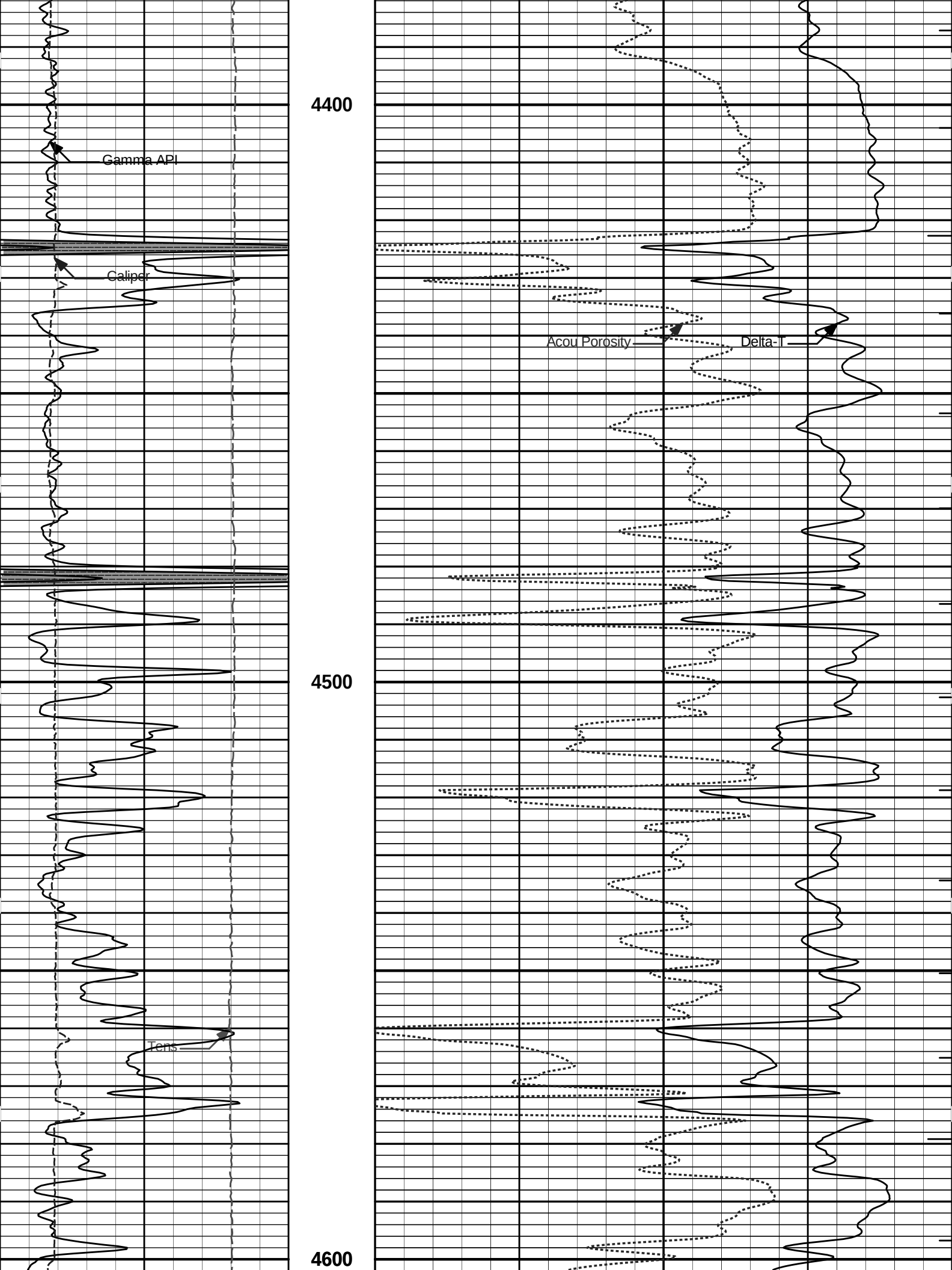

3300
3400
3500
Tens
Gamma API
Caliper
Acou Porosity
Delta-T

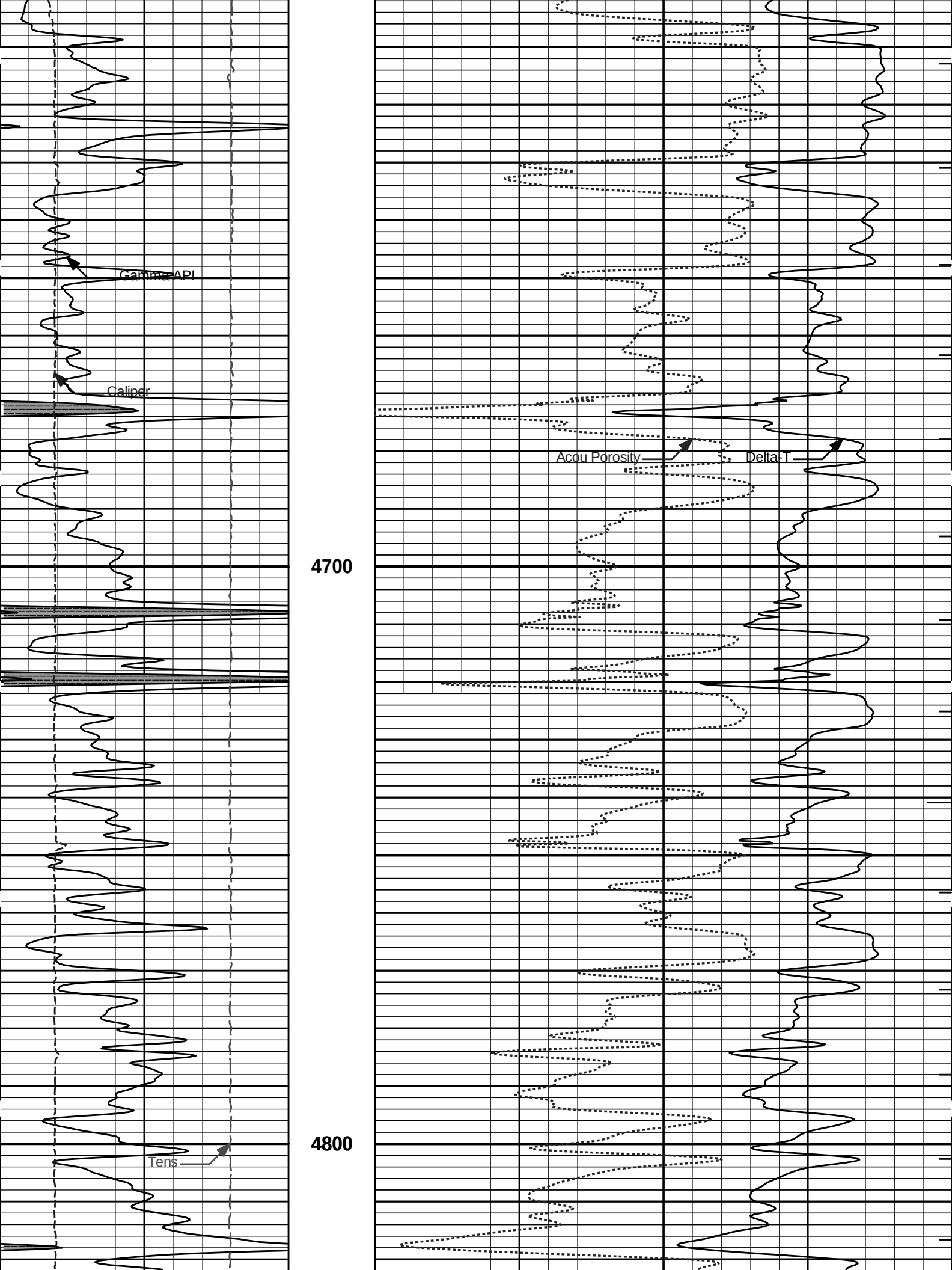

3600
Tens
Gamma API
3700
Caliper
Acou Porosity
Delta-T

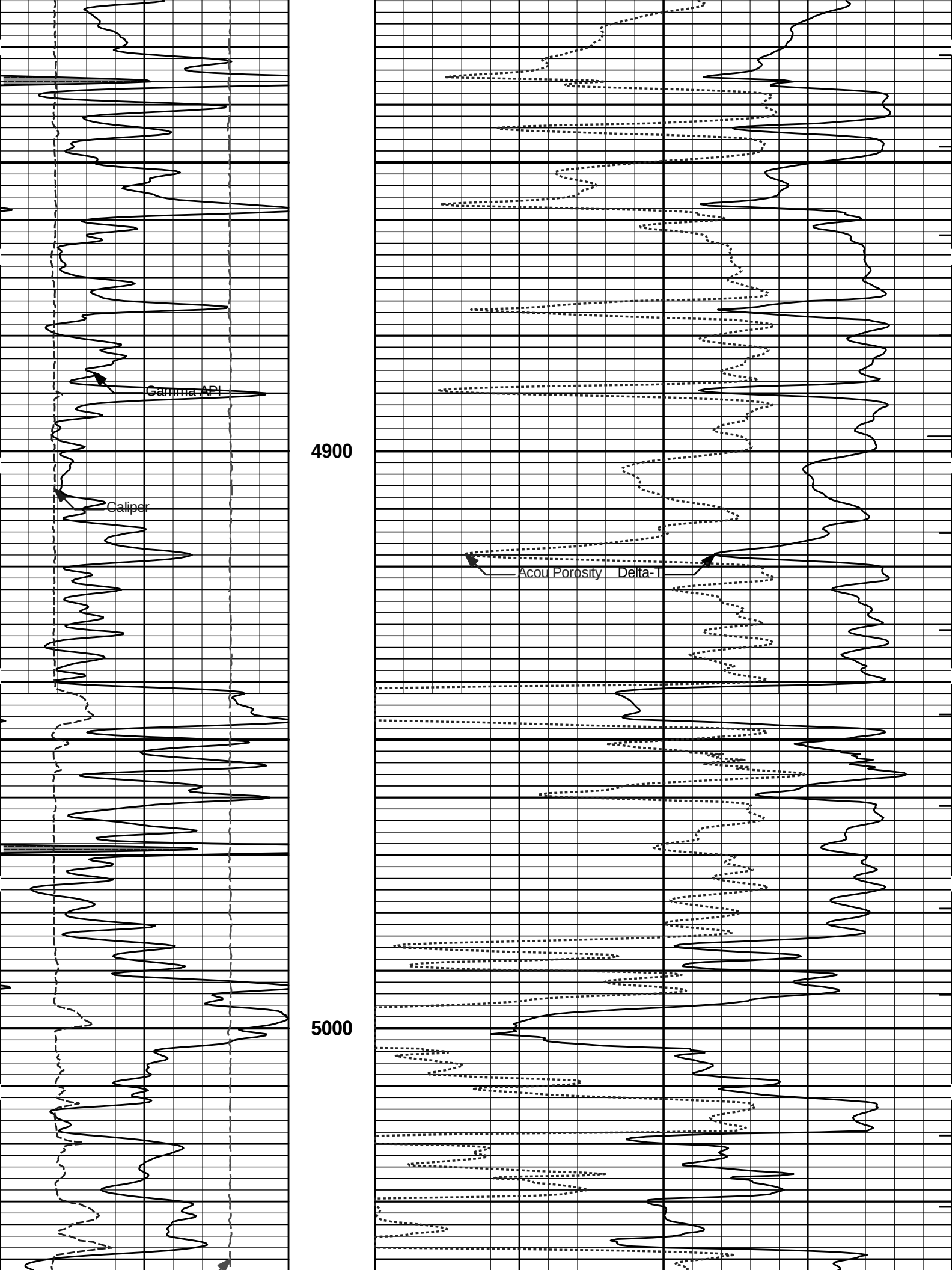

3800
Tens
3900
Gamma API

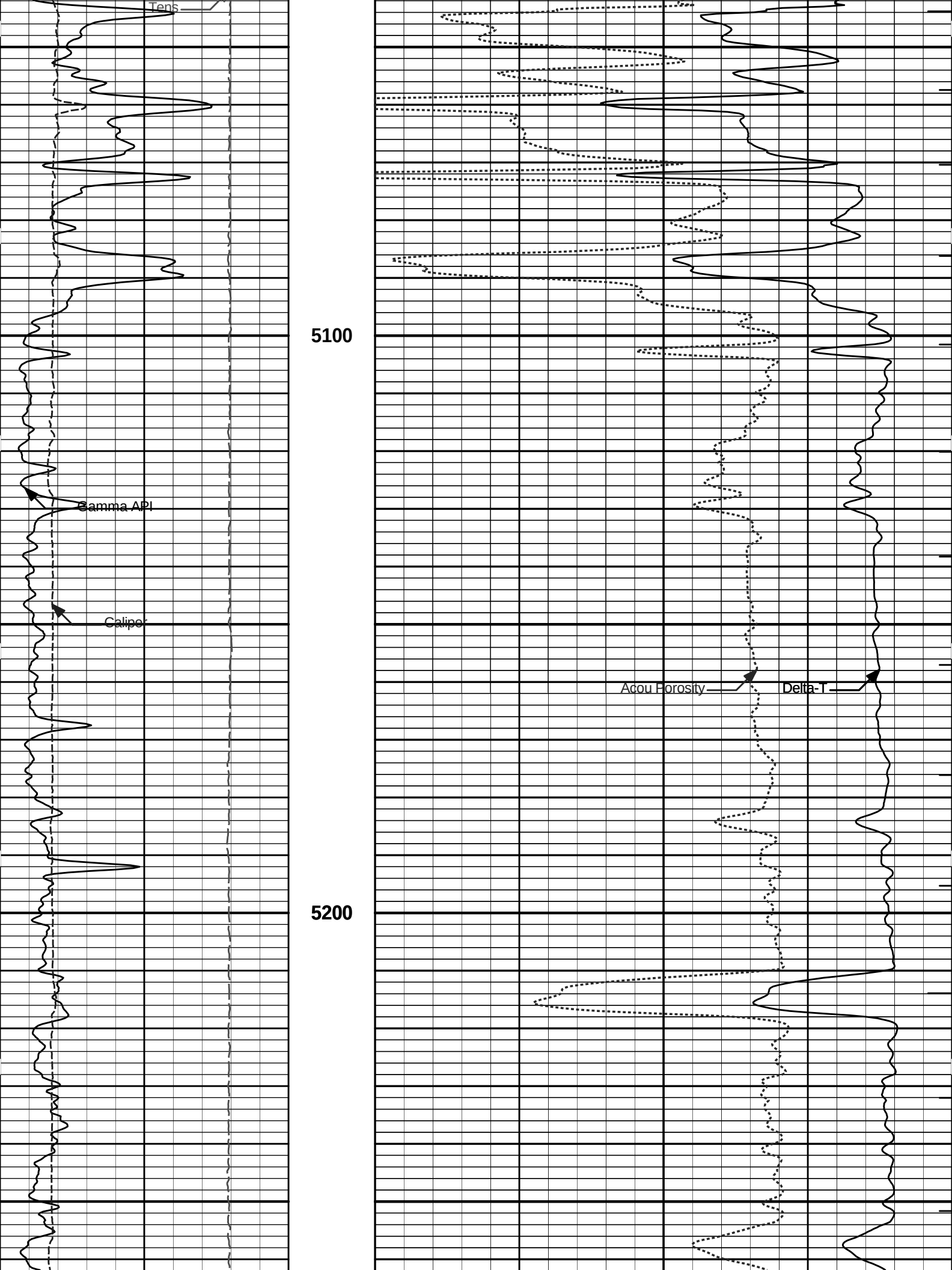

Caliper
Acou Porosity
Delta-T
4000
Tens
4100

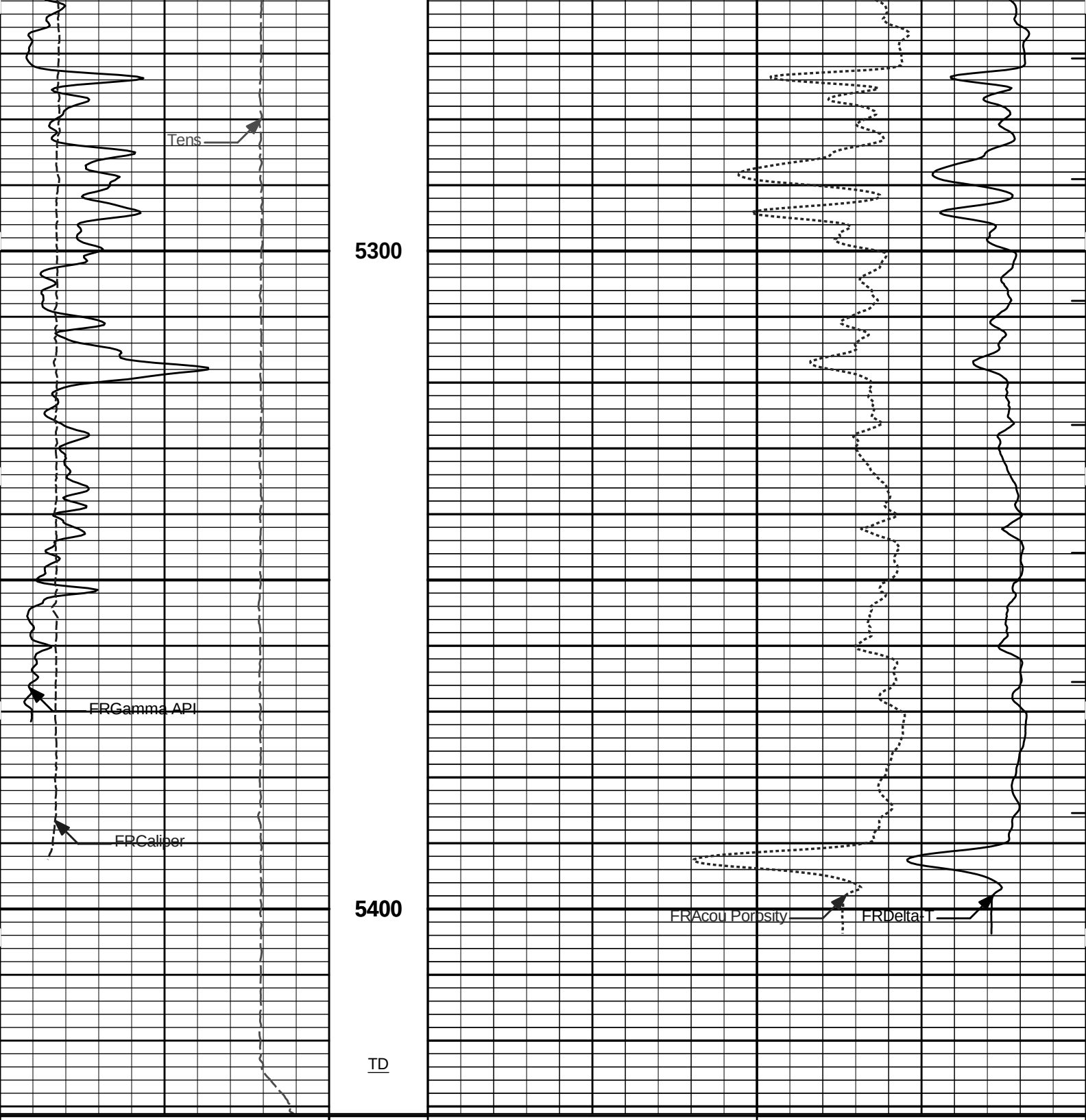

Gamma API
Caliper
4200
Acou Porosity
Delta-T
4300
Tens


4400
Gamma API
Caliper
Acou Porosity
Delta-T
4500
Tens
4600


GammaAPI
Caliper
Acou Porosity
Delta-T
4700
4800
Tens


Gamma API
Caliper
4900
Acou Porosity
Delta-T
5000


Tens
5100
Gamma API
Caliper
Acou Porosity
Delta-T
5200



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

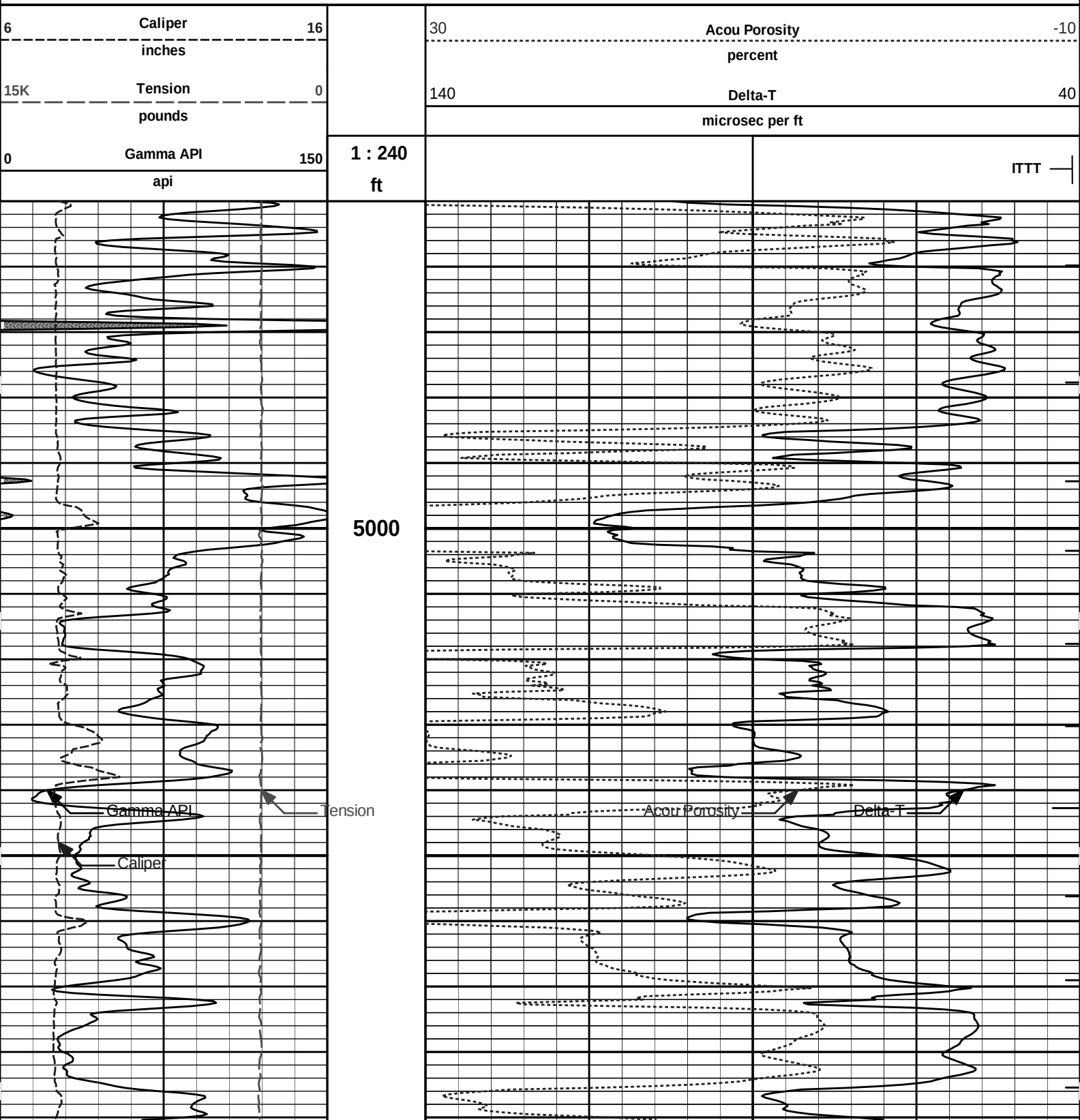
Plot File: \\BSAT\BSAT_5_MAIN_LIB

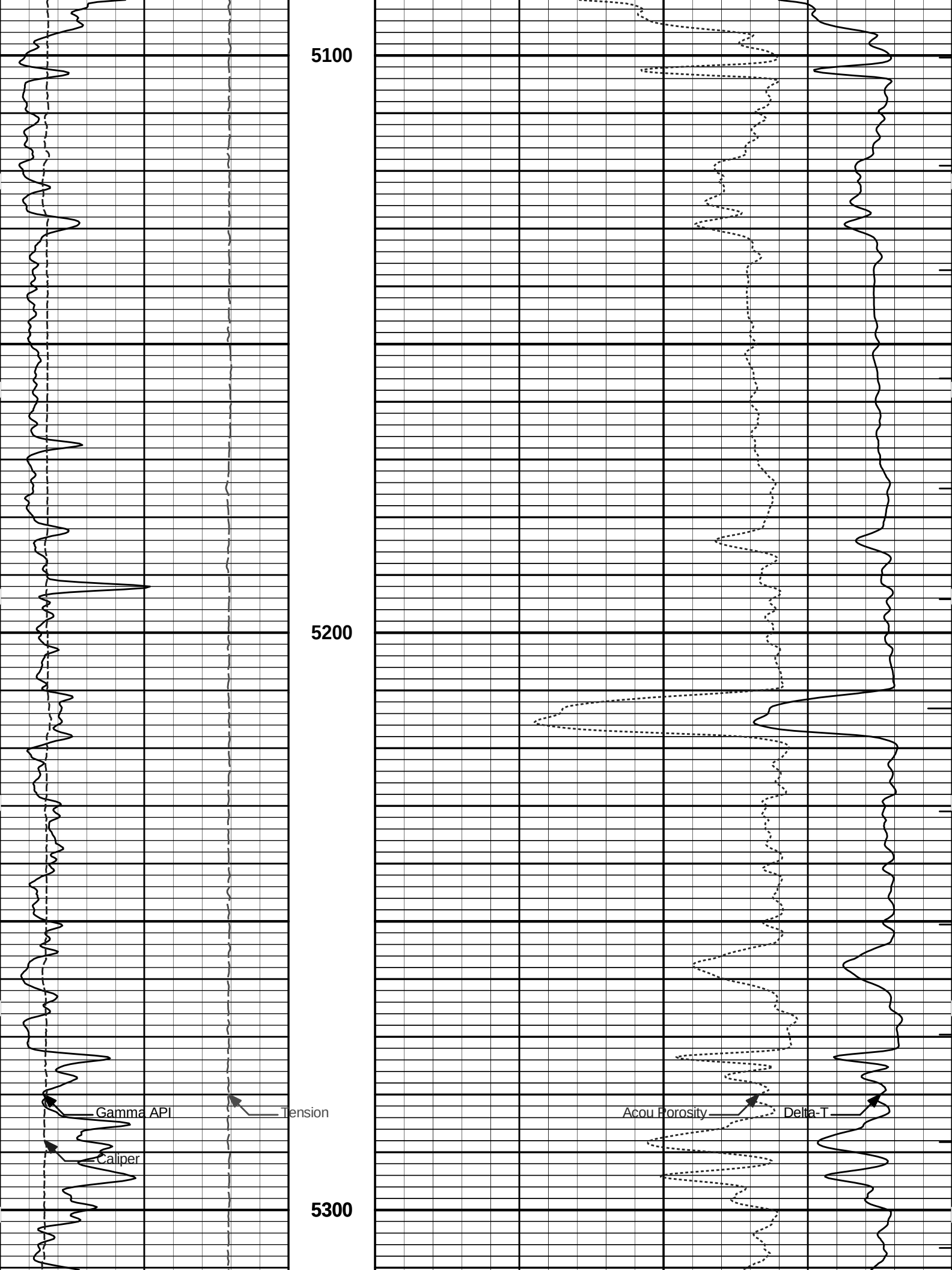
5 INCH MAIN LOG

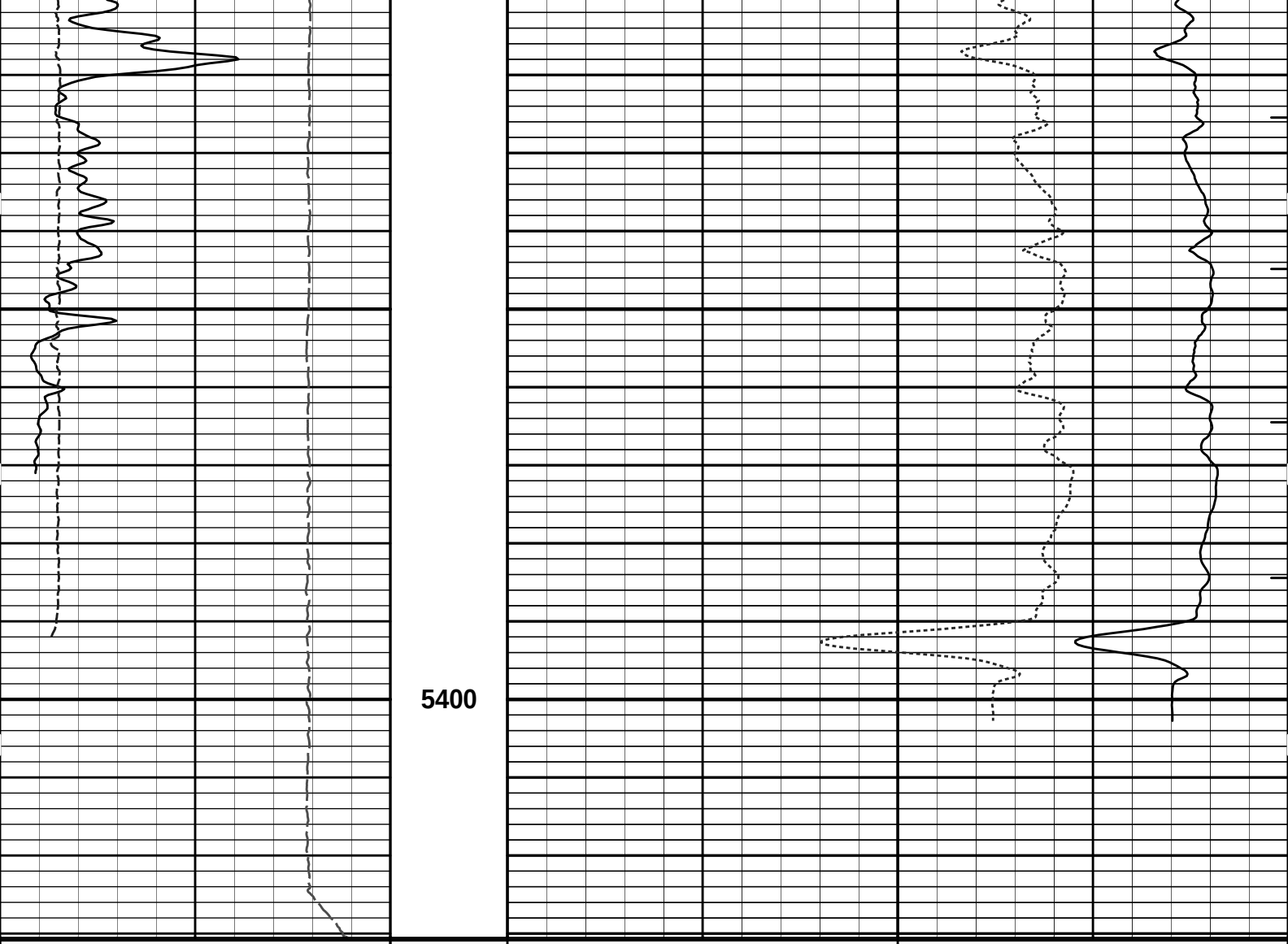
HALLIBURTON

Plot Time: 17-Mar-11 20:21:48
Plot Range: 4950 ft to 5430.58 ft
Data: SNIDER_C_2\Well Based\DAQ-0001-REPEAT\
Plot File: \\BSAT\BSAT_5_REP_LIB

REPEAT SECTION




5100
5200
5300
Gamma API
Tension
Caliper
Acou Porosity
Delta-T



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

HALLIBURTON

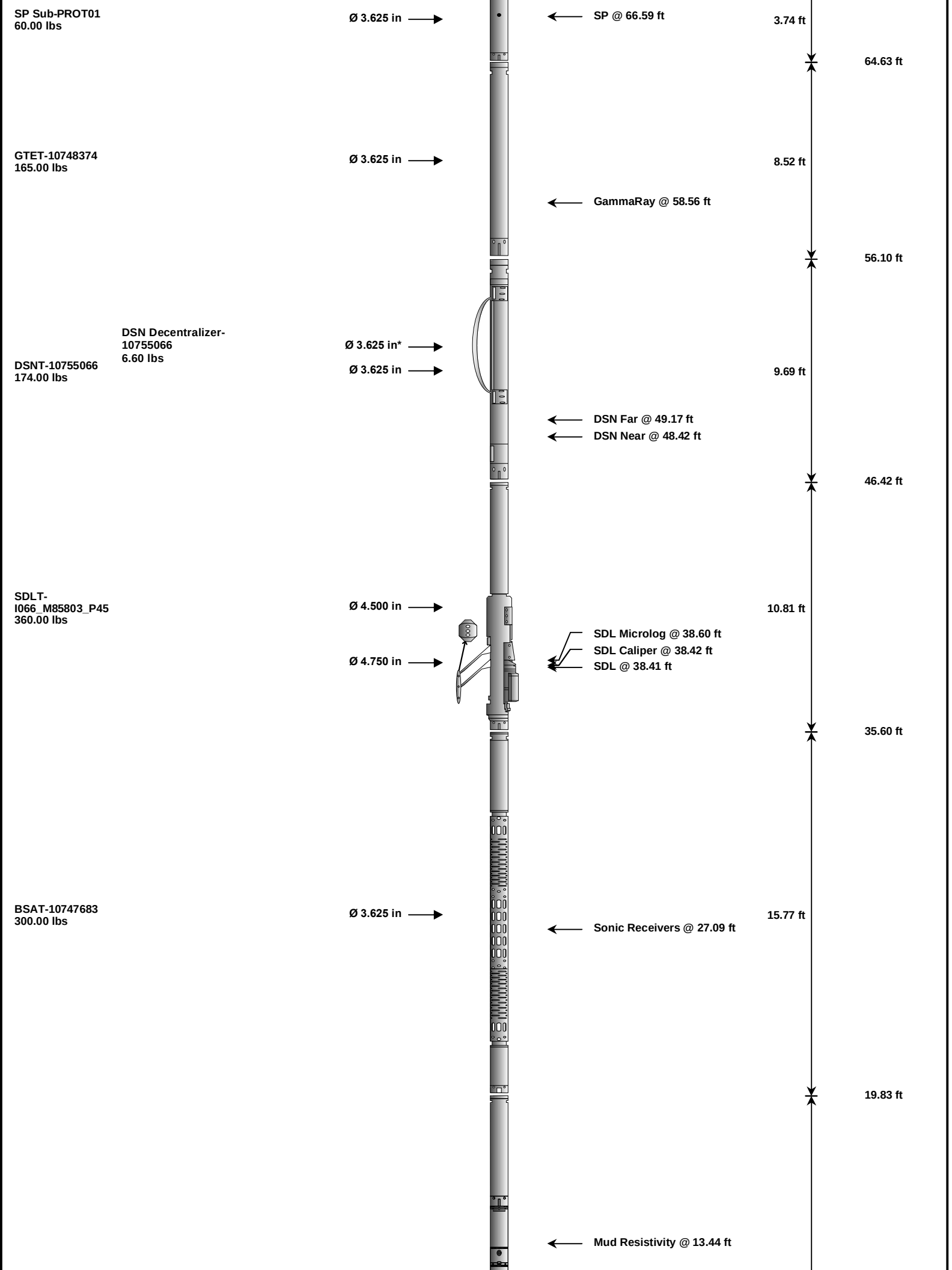
Plot Time: 17-Mar-11 20:21:53
Plot Range: 4950 ft to 5430.58 ft
Data: SNIDER_C_2\Well Based\DAQ-0001-REPEAT\
Plot File: \\BSAT\BSAT_5_REP_LIB

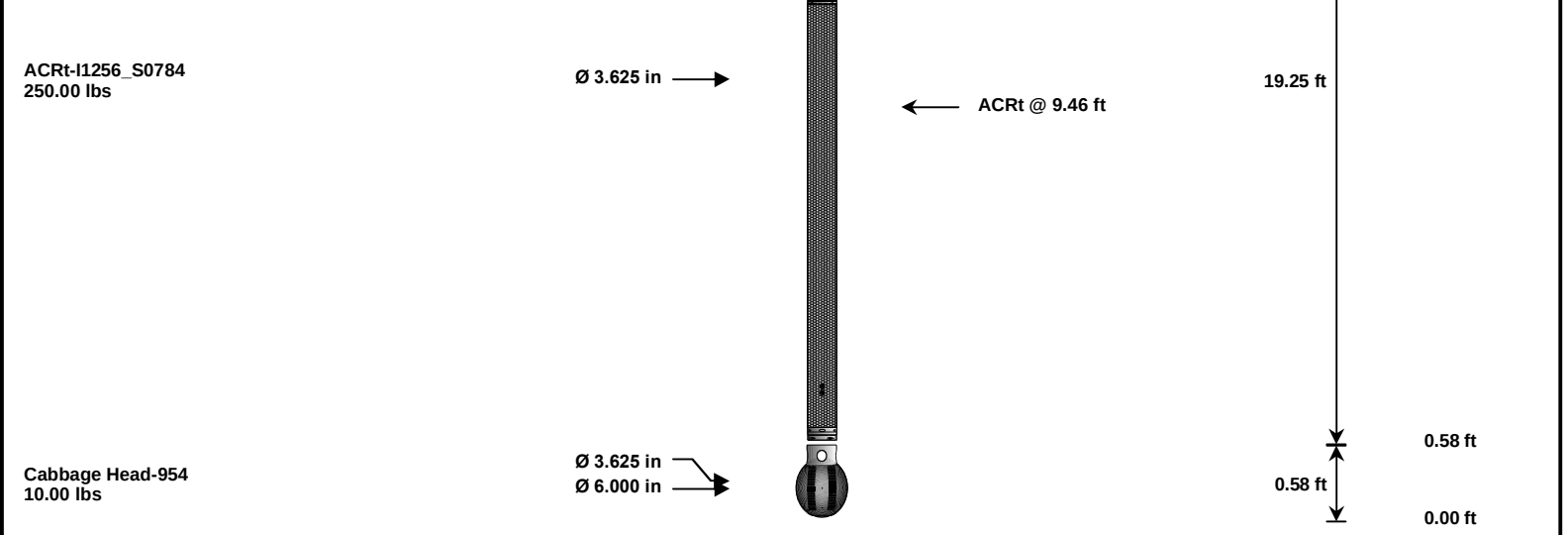
REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
Cable Head-PROT01 30.00 lbs		Ø 3.625 in			1.92 ft	70.28 ft 68.36 ft


SP Sub-PROT01
60.00 lbs
Ø 3.625 in
SP @ 66.59 ft
3.74 ft
64.63 ft
GTET-10748374
165.00 lbs
Ø 3.625 in
8.52 ft
GammaRay @ 58.56 ft
56.10 ft
DSN Decentralizer-
10755066
6.60 lbs
Ø 3.625 in*
DSNT-10755066
174.00 lbs
Ø 3.625 in
9.69 ft
DSN Far @ 49.17 ft
DSN Near @ 48.42 ft
46.42 ft
SDLT-
I066_M85803_P45
360.00 lbs
Ø 4.500 in
10.81 ft
SDL Microlog @ 38.60 ft
SDL Caliper @ 38.42 ft
Ø 4.750 in
SDL @ 38.41 ft
35.60 ft
BSAT-10747683
300.00 lbs
Ø 3.625 in
15.77 ft
Sonic Receivers @ 27.09 ft
19.83 ft
Mud Resistivity @ 13.44 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	PROT01	60.00	3.74		64.63	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52		56.10	60.00
DSNT	Dual Spaced Neutron	10755066	174.00	9.69		46.42	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	*	49.75	300.00
SDLT	Spectral Density Tool	I066_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	I1256_S0784	250.00	19.25		0.58	300.00
CBHD	Cabbage Head	954	10.00	0.58		0.00	300.00
Total			**1,355.60**	**70.28**			

* Not included in Total Length and Length Accumulation.

Data: SNIDER_C_2\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 17-Mar-11 18:44:54**

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	9.100	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	1.300	ohmm
	SHARED	TRM	Temperature of Mud	72.0	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	5430.00	ft
	SHARED	BHT	Bottom Hole Temperature	125.0	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	1.20	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	74.00	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	Centered	
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	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	ohmm
ACRt	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt	THQY	Threshold Quality	0.50	

BOTTOM

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: SNIDER_C_2\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 17-Mar-11 18:45:33**

COMPANY	**OXY USA, INC.**		
WELL	**SNIDER C-2**		
FIELD	**PLEASANT PRAIRIE**		
COUNTY	**HASKELL**	STATE	**KANSAS**

HALLIBURTON

BOREHOLE SONIC ARRAY LOG