

HALLIBURTON

MICROLOG

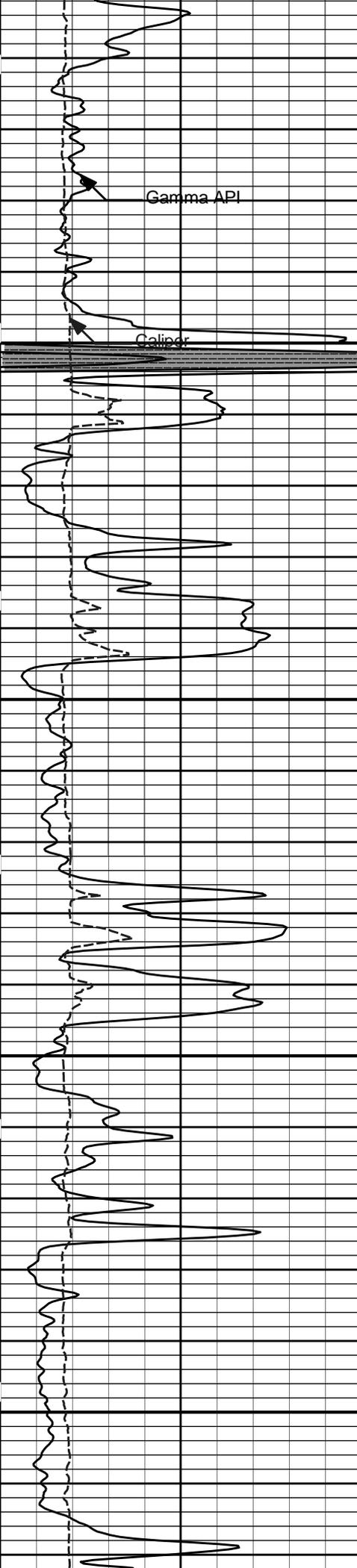
COMPANY	OXY USA, INC.		
WELL	SNIDER C-2		
FIELD	PLEASANT PRAIRIE		
COUNTY	HASKELL		
STATE	KANSAS		
COMPANY	OXY USA, INC.	WELL	SNIDER C-2
FIELD	PLEASANT PRAIRIE	COUNTY	HASKELL
COUNTY	HASKELL	STATE	KANSAS
API No.	15-081-21929	Location	1460' FSL & 1660' FWL
Sec. 22	Twp. 27S	Rge. 34W	
GROUND LEVEL		Elev. 3010.0 ft	
KELLY BUSHING		11.0 ft above perm. Datum	
KELLY BUSHING			Elev.: K.B. 3021.0 ft D.F. 3020.0 ft G.L. 3010.0 ft
Other Services:	SDL / DSN ACRT BSAT		

Date	17-Mar-11	Run No.	ONE
Depth - Driller	5430.00 ft	Depth - Logger	5425.0 ft
Bottom - Logged Interval	5387.0 ft	Top - Logged Interval	3900.0 ft
Casing - Driller	8.625 in	Casing - Logger	1928.0 ft
Bit Size	7.875 in	Type Fluid in Hole	WATER BASED MUD
Density	9.1 ppg	Viscosity	46.00 s/qt
PH	10.80 pH	Fluid Loss	6.4 cpm
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	MEASURED	Rmc	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	10782954	Location	LIBERAL
Recorded By	S. JUNG	Witnessed By	A. GARNER
			D. NEESE

Fold here

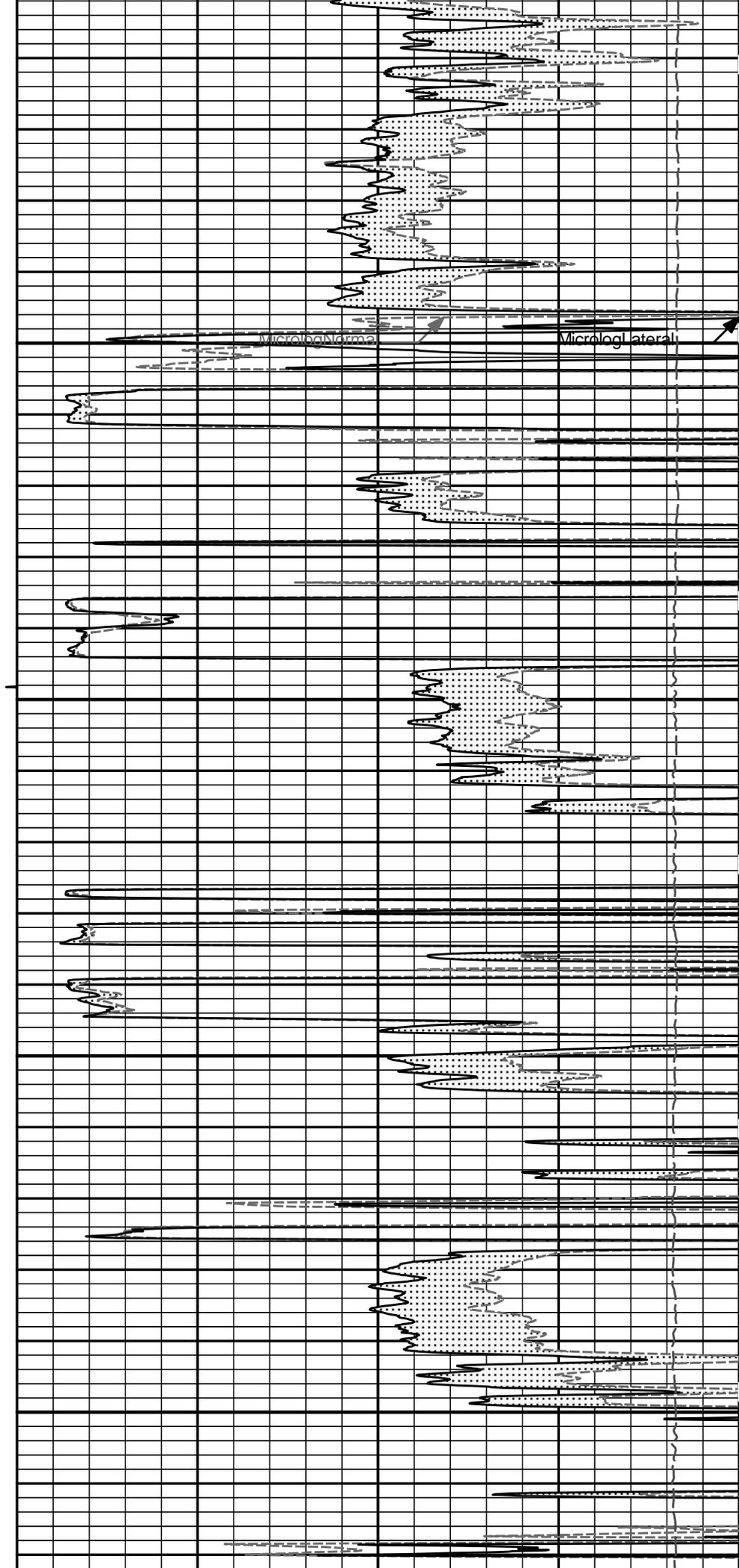
Service Ticket No.: 8017367 API Serial No.: 15-081-21929 PGM Version: WL INSITE R3.2.0 (Build 7)

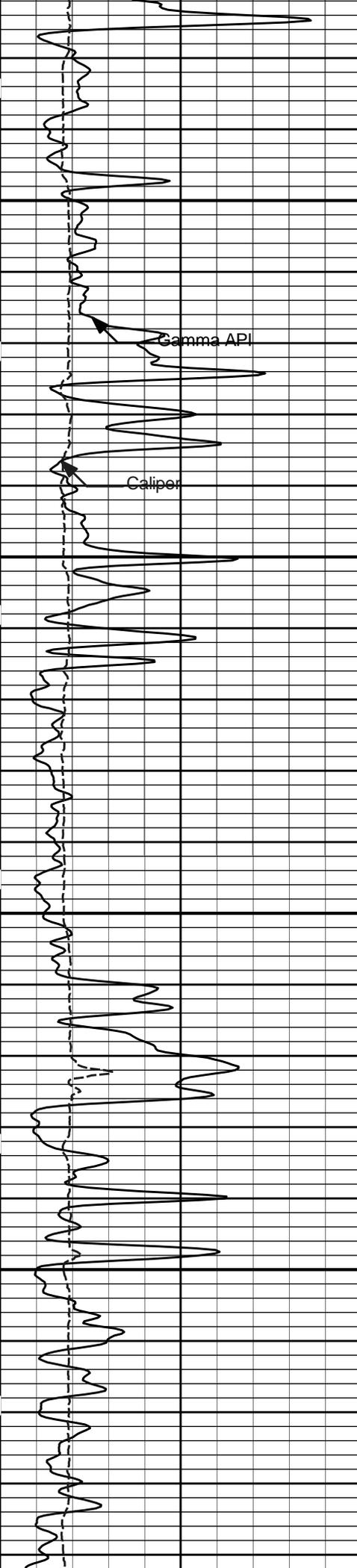
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE				RESISTIVITY SCALE CHANGES					
Date	Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole		
Type Fluid in Hole									
Density	Viscosity								
Ph	Fluid Loss								
Source of Sample				RESISTIVITY EQUIPMENT DATA					
Rm @ Meas. Temp	@	@		Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other	
Rmf @ Meas. Temp.	@	@		ONE	MICRO M85803	RUBBER	ADJ	N/A	
Rmc @ Meas. Temp.	@	@							
Source Rmf	Rmc								
Rm @ BHT	@	@							
Rmf @ BHT	@	@							
Rmc @ BHT	@	@							
EQUIPMENT DATA									
GAMMA		ACOUSTIC		DENSITY		NEUTRON			
Run No.	ONE	Run No.		Run No.		Run No.			
Serial No.	10748374	Serial No.		Serial No.		Serial No.			
Model No.	GTET	Model No.		Model No.		Model No.			
Diameter	3.625"	No. of Cent.		Diameter		Diameter			
Detector Model No.	T-102	Spacing		Log Type		Log Type			
Type	SCINT			Source Type		Source Type			
Length	8"	LSA [Y/N]		Serial No.		Serial No.			
Distance to Source	10'	FWDA [Y/N]		Strength		Strength			
LOGGING DATA									
GENERAL		GAMMA		ACOUSTIC		DENSITY		NEUTRON	



4000

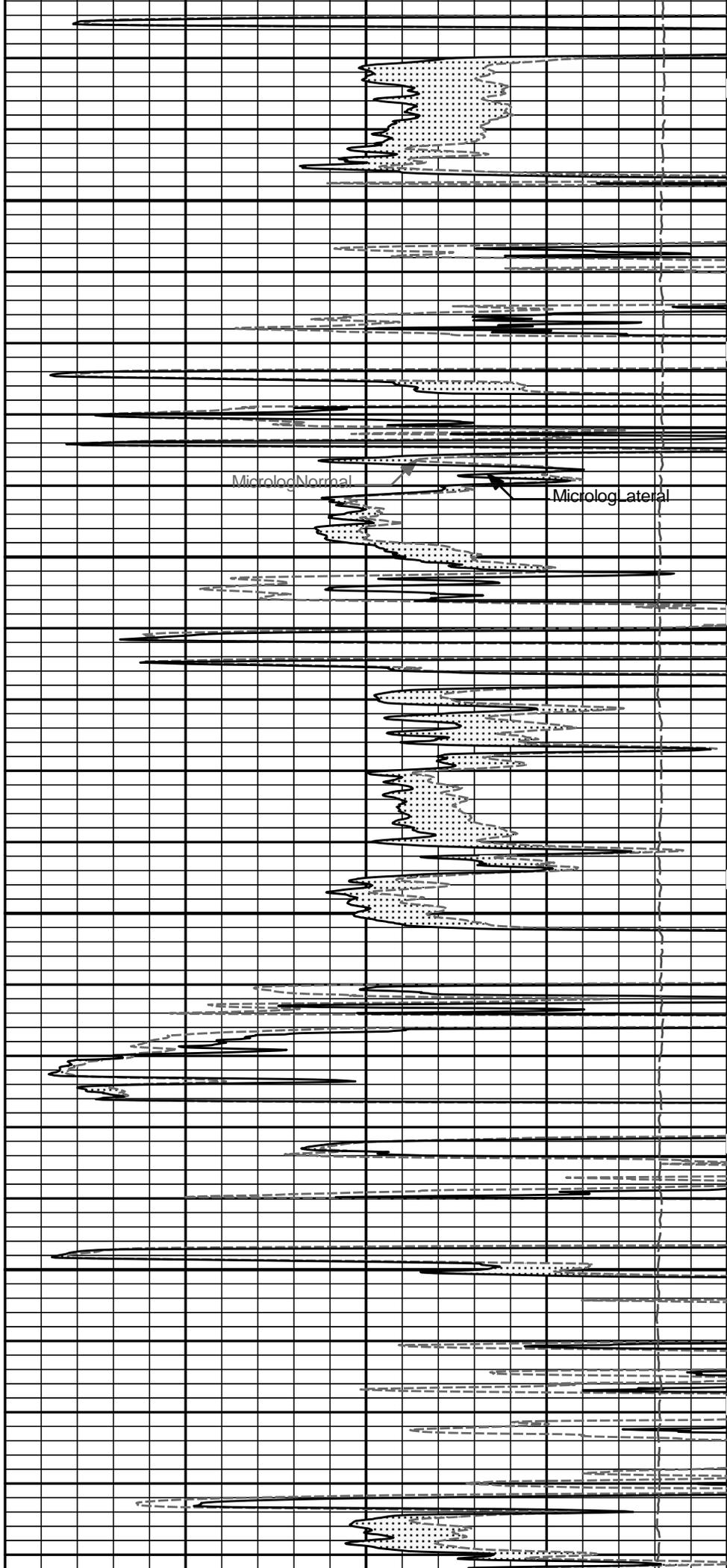
4100

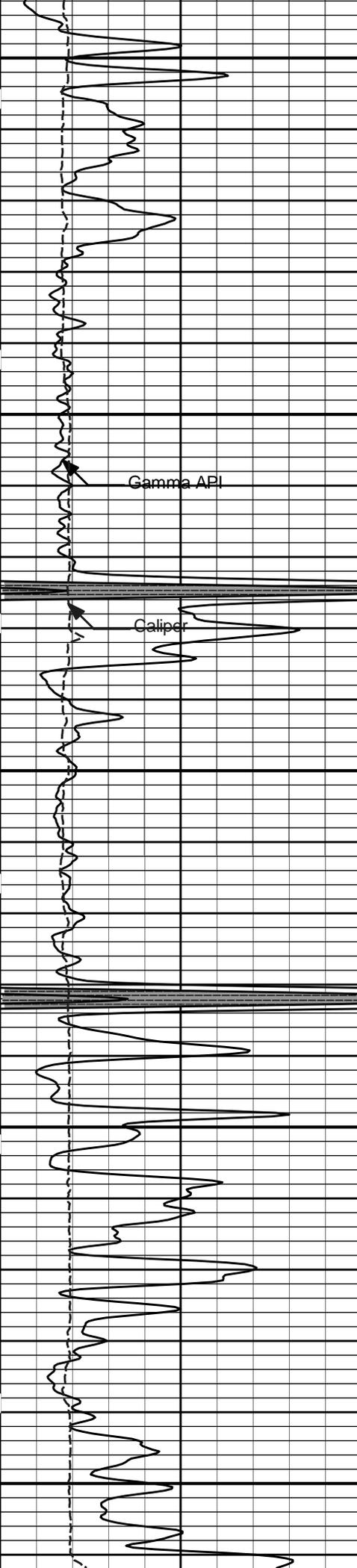




4200

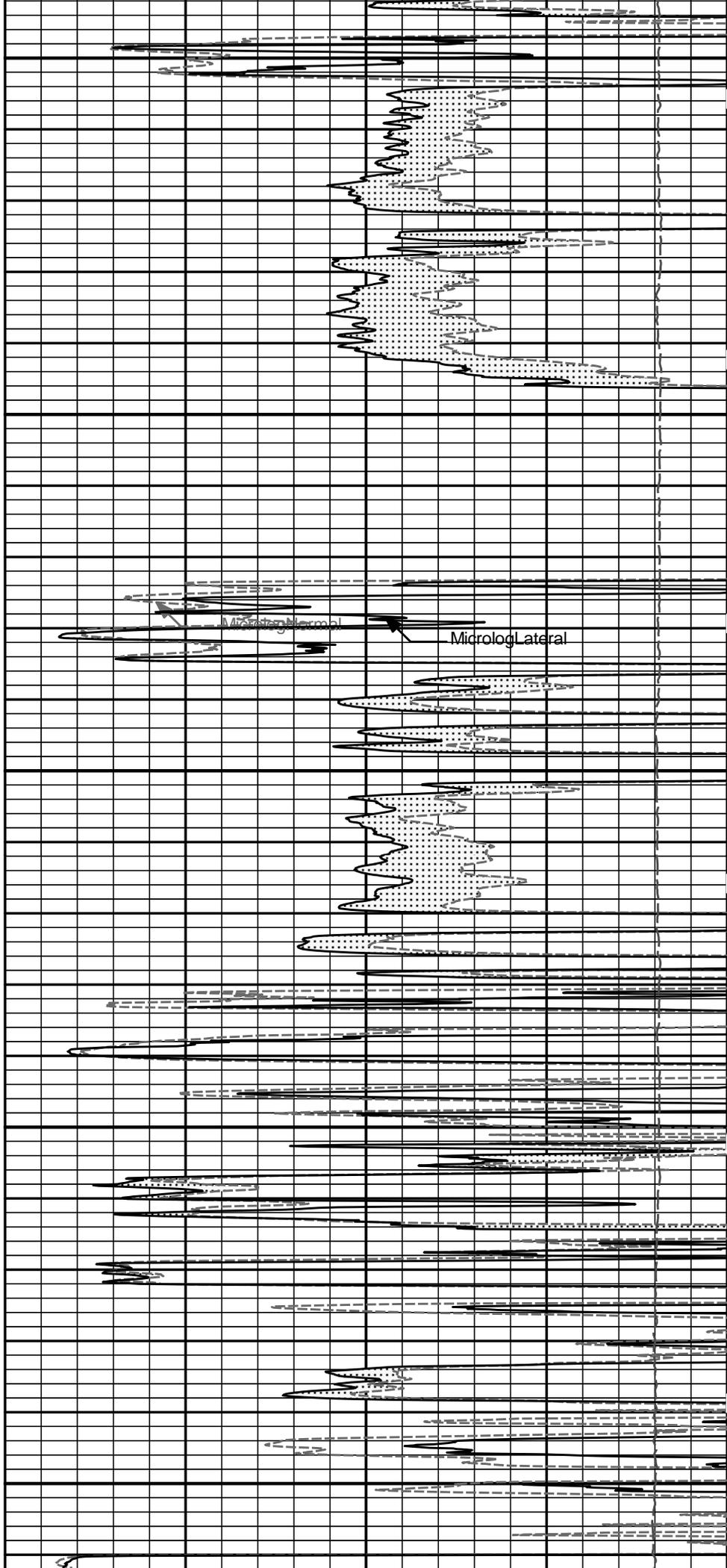
4300

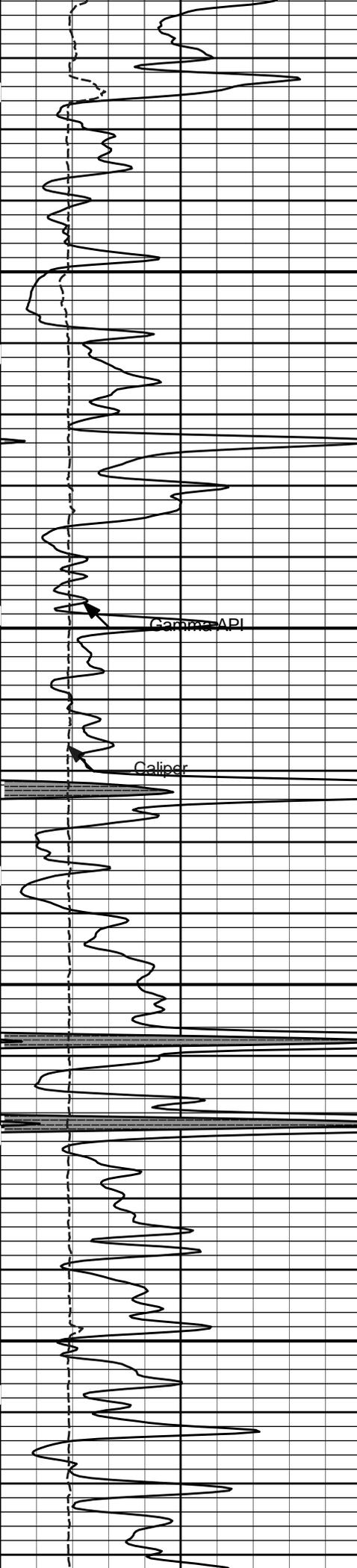




4400

4500



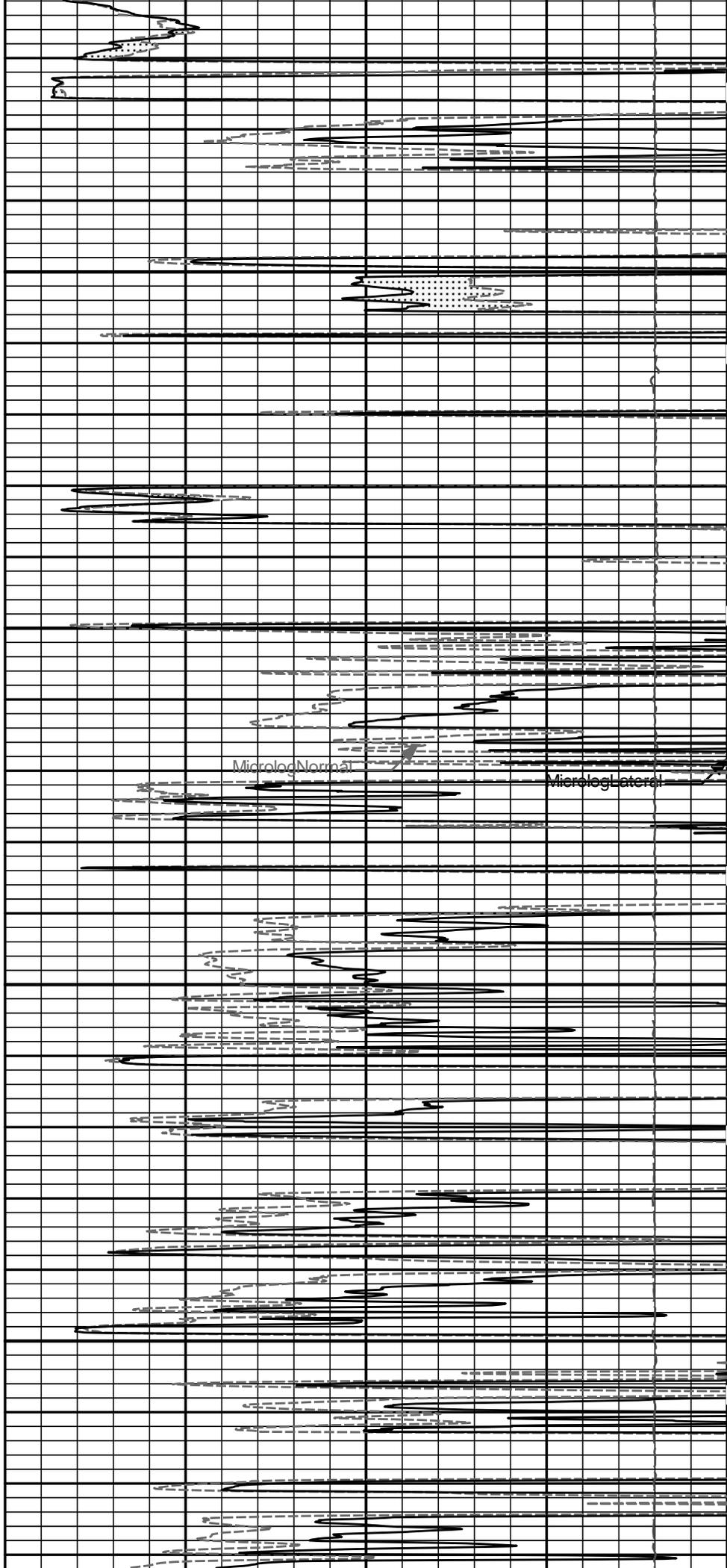


4600

4700

Gamma API

Caliper



Microlog Normal

Microlog Lateral



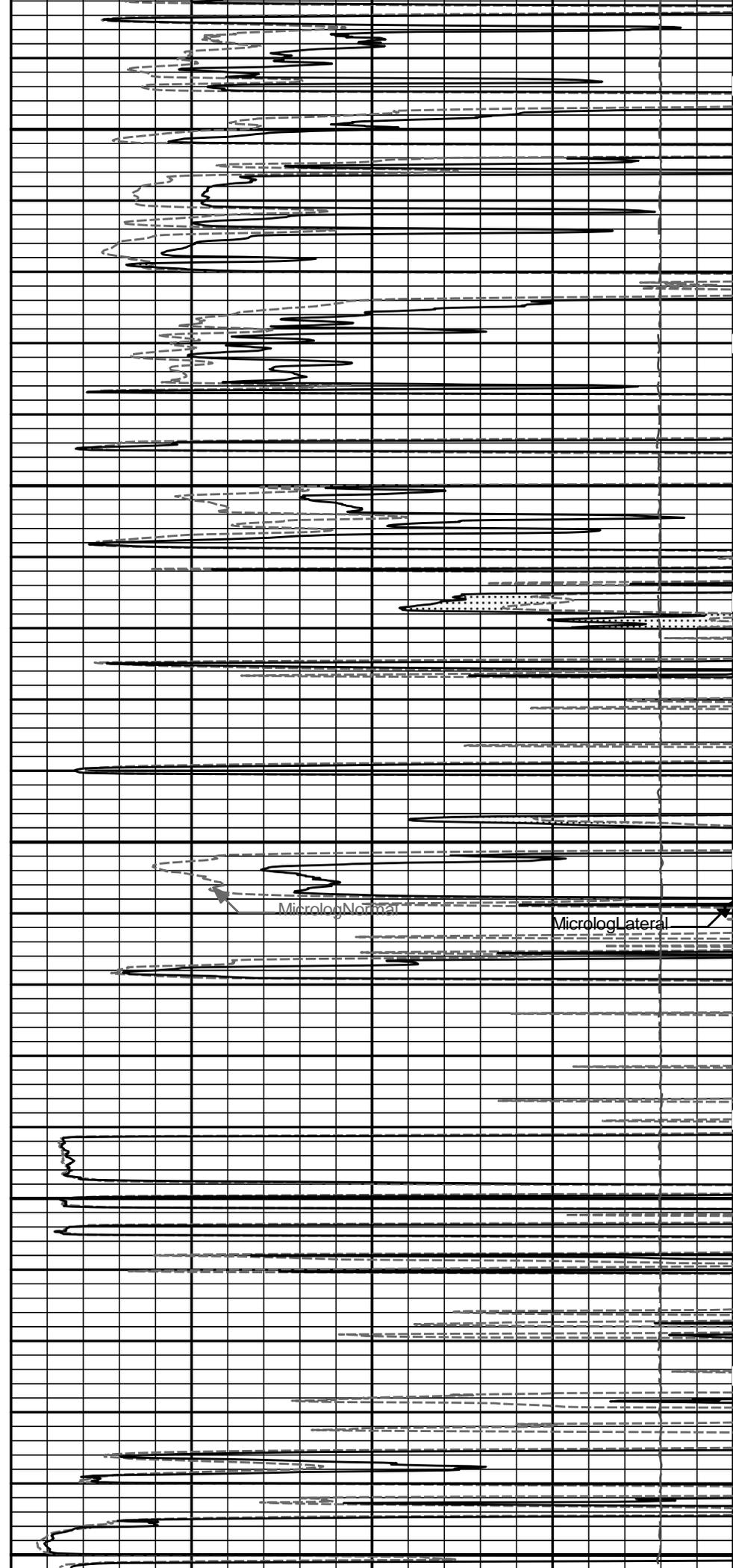
4800

Gamma API

4900

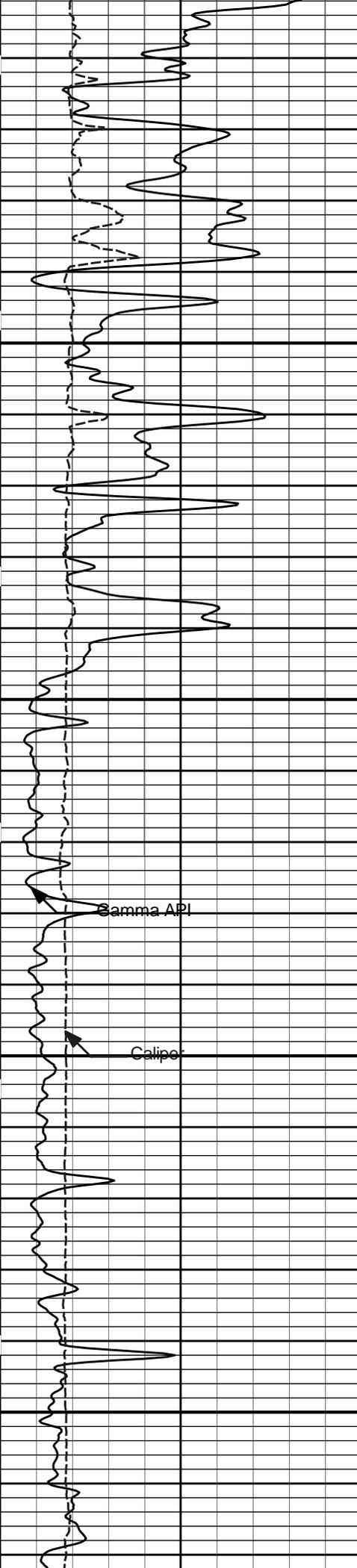
Caliper

5000



MicrologNormal

MicrologLateral

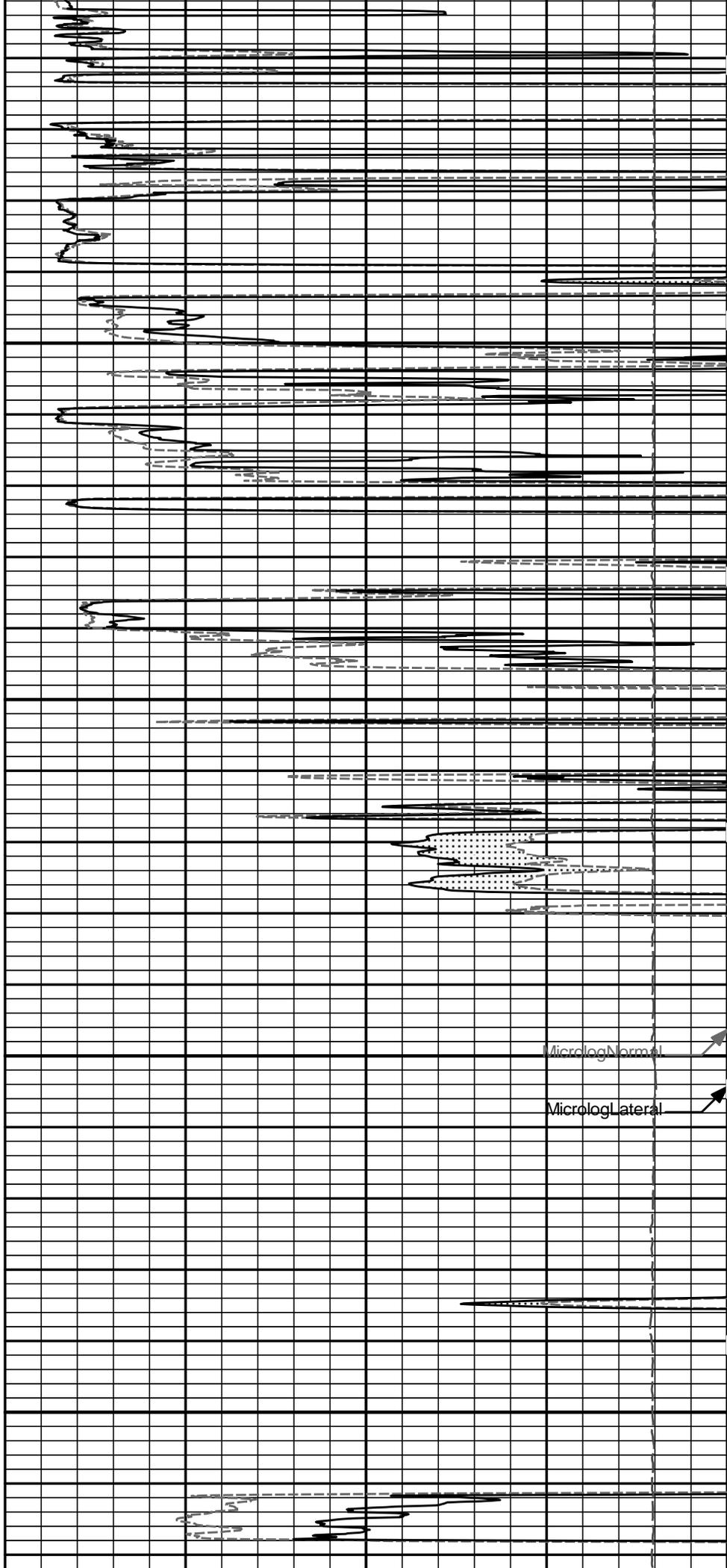


5100

5200

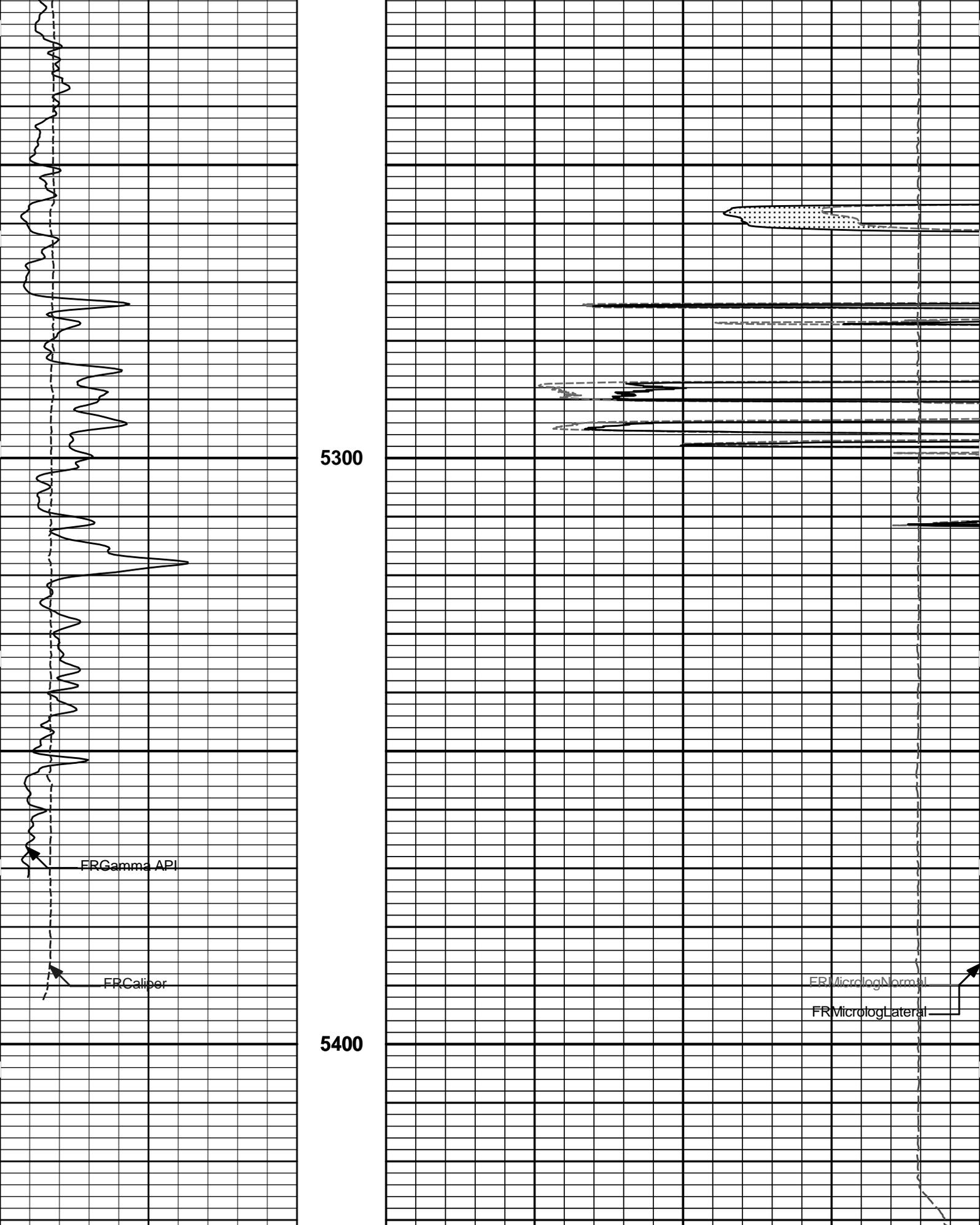
Gamma API

Caliper



MicrologNormal

MicrologLateral



5300

5400

ERGamma API

FRCaliber

ERMicrolgNormal

FRMicrologLateral

6 Caliper 16 inches

1 : 240 ft

15K Tension 0 pounds

0	Gamma API	150	Tension Pull	0	MicrologLateral	20
	api		10		ohm-metre	
	SHALE		Tension Pull	0	MicrologNormal	20
					ohm-metre	
					PERMEABLE	

HALLIBURTON

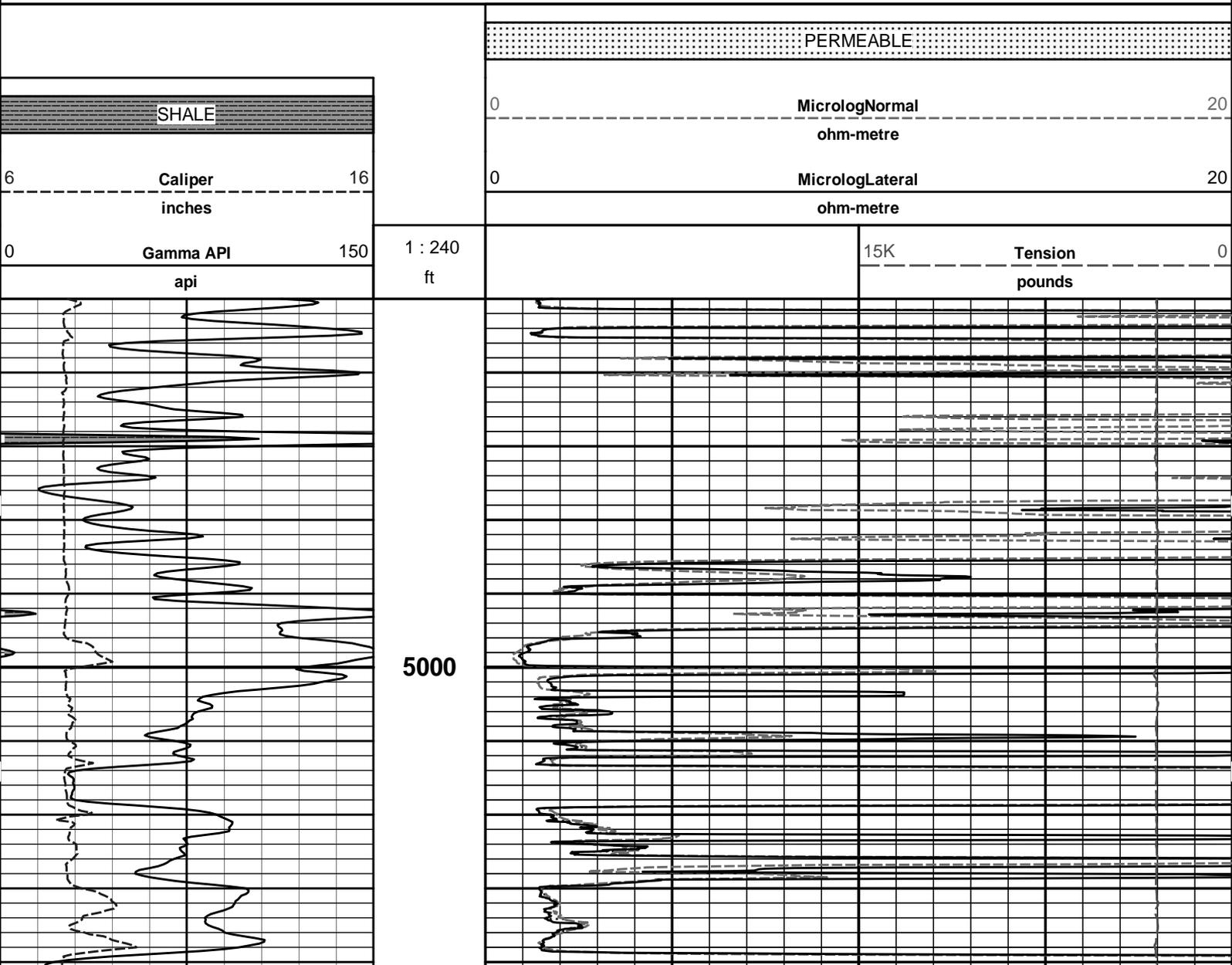
Plot Time: 17-Mar-11 20:18:09
 Plot Range: 3850 ft to 5431.17 ft
 Data: SNIDER_C_2\Well Based\DAQ-0001-DETAIL\
 Plot File: \\-LOCAL-\SNIDER_C_2\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHMICRO\Microlog_IQ_5_main_lib

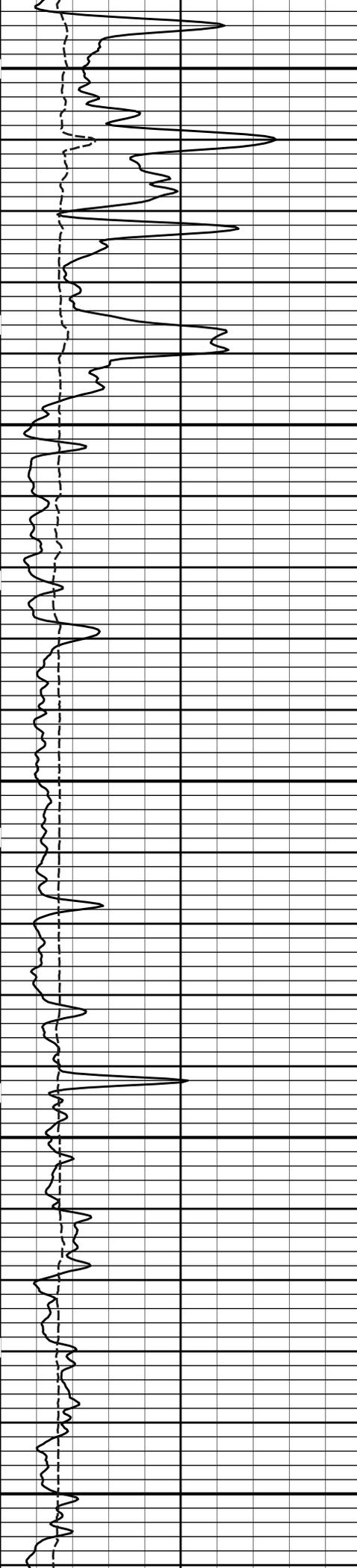
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 17-Mar-11 20:18:10
 Plot Range: 4950 ft to 5430.58 ft
 Data: SNIDER_C_2\Well Based\DAQ-0001-REPEAT\
 Plot File: \\-LOCAL-\SNIDER_C_2\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHMICRO\Microlog_IQ_5_rep_lib

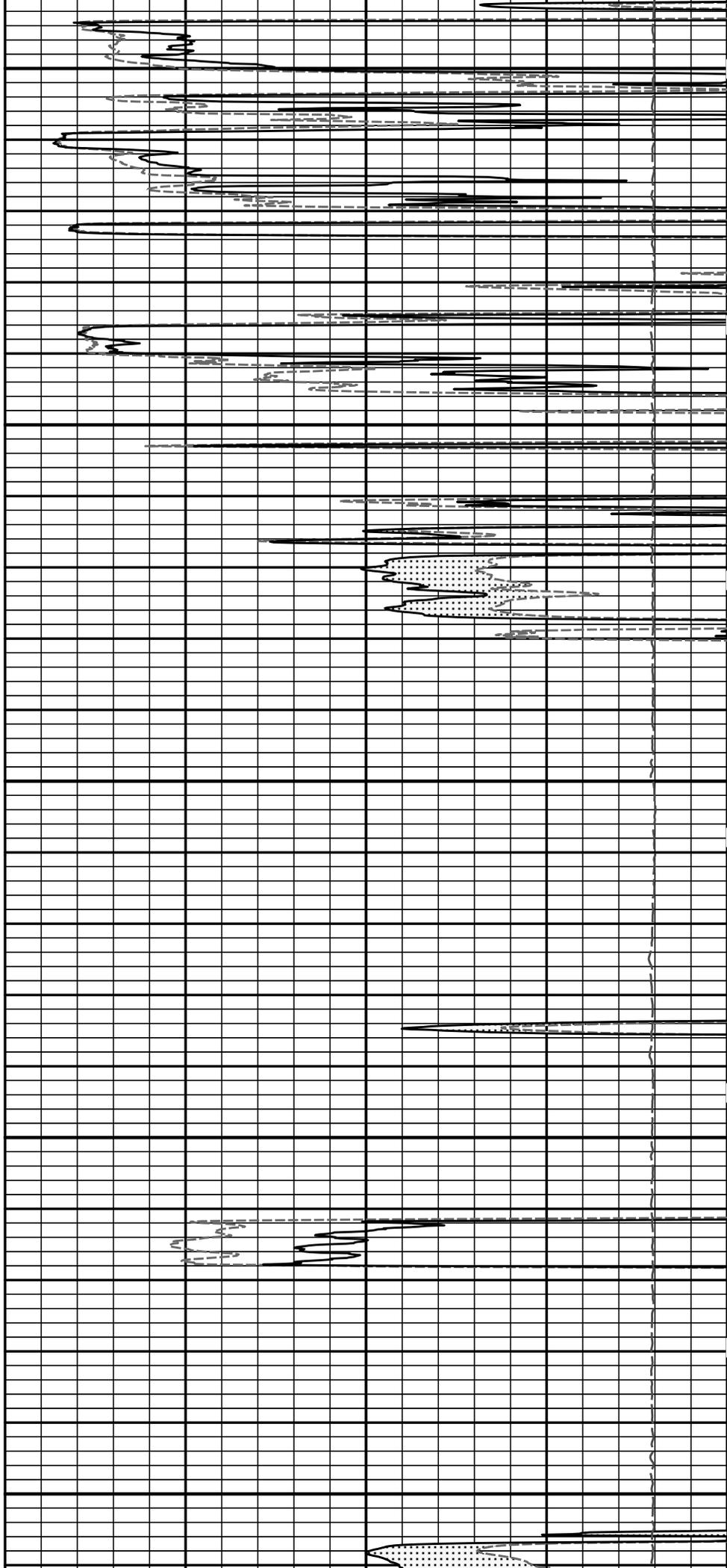
REPEAT SECTION

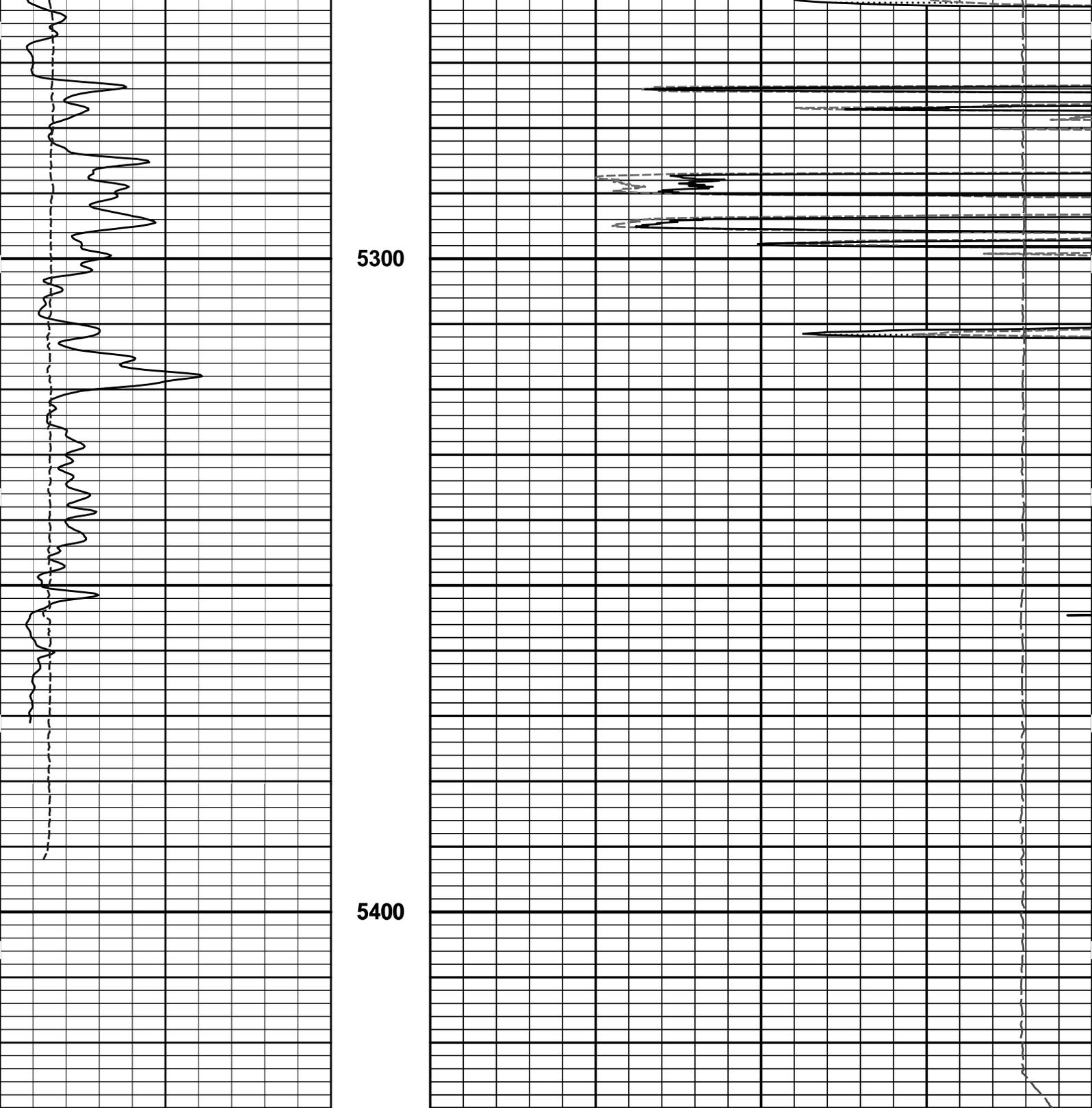




5100

5200





0	Gamma API	150	1 : 240 ft	15K	Tension	0
	api					pounds
6	Caliper	16		0	MicrologLateral	20
	inches				ohm-metre	
	SHALE			0	MicrologNormal	20
					ohm-metre	
					PERMEABLE	

HALLIBURTON

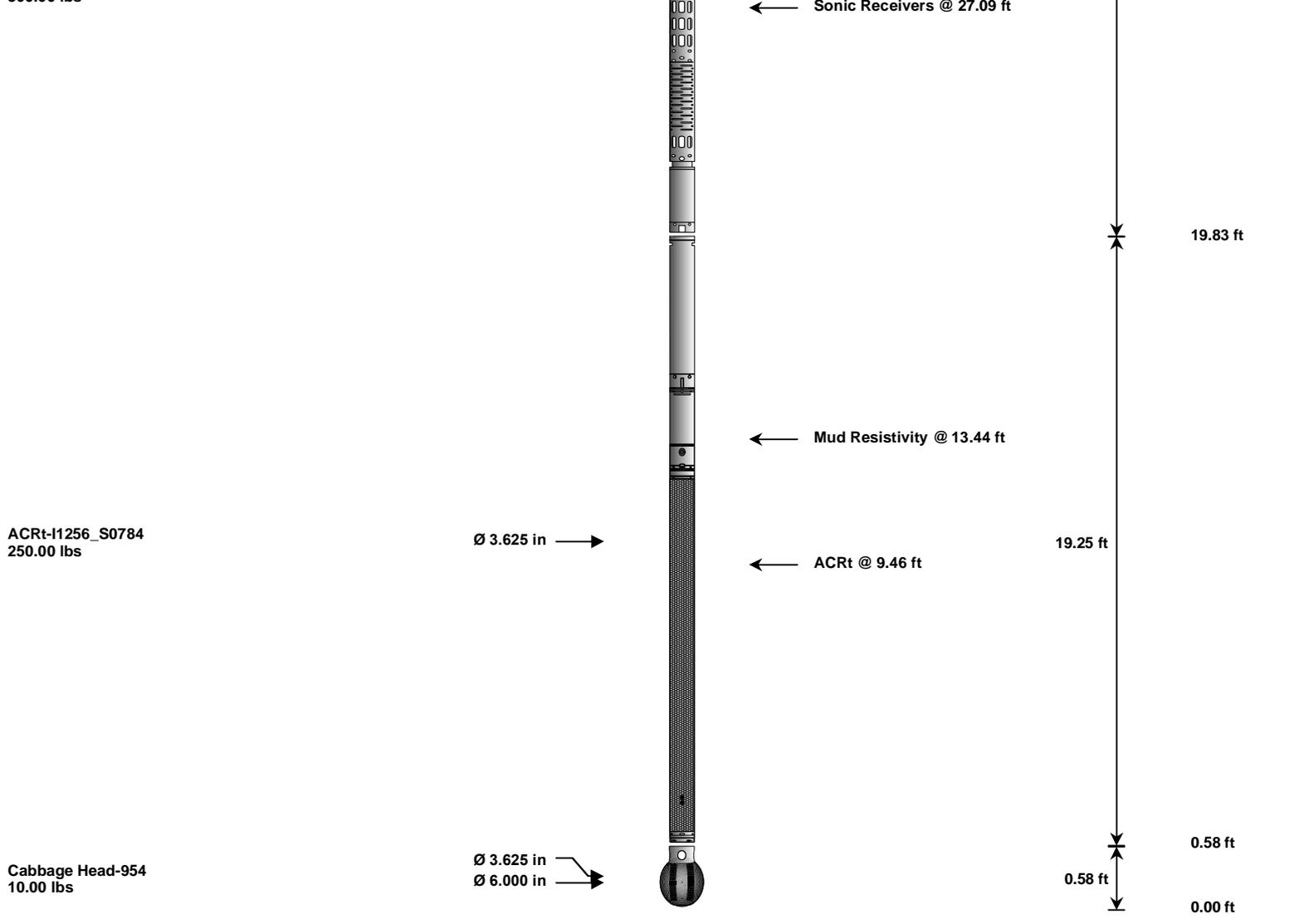
Plot Time: 17-Mar-11 20:18:14
 Plot Range: 4950 ft to 5430.58 ft
 Data: SNIDER, C. 2\Well Based\DAQ-0001-REPEAT

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
SP Sub-PROT01 60.00 lbs		Ø 3.625 in →		← SP @ 66.59 ft	3.74 ft	68.36 ft
GTET-10748374 165.00 lbs		Ø 3.625 in →		← GammaRay @ 58.56 ft	8.52 ft	64.63 ft
DSN Decentralizer- 10755066 6.60 lbs		Ø 3.625 in* → Ø 3.625 in →		← DSN Far @ 49.17 ft ← DSN Near @ 48.42 ft	9.69 ft	56.10 ft
DSNT-10755066 174.00 lbs						46.42 ft
SDLT- I066_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 →			15.77 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_2I0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE Date: 17-Mar-11 18:44:54

HALLIBURTON

CALIBRATION REPORT

MICRO LOG SHOP CALIBRATION

Tool Name: SDLT - I066_M85803_P45 Reference Calibration Date: 19-Feb-11 02:15:28

Engineer: S. JUNG Calibration Date: 17-Mar-11 14:49:59

Software Version: WL INSITE R3.2.0 (Build 7) Calibration Version: 1

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.07	-0.07	-0.01	-0.01	ohmm
Calibration Point #1	-0.00	0.00	0.00	0.00	ohmm
Calibration Point #2	20.01	20.00	20.13	20.00	ohmm
Internal Reference	20.07	20.06	20.11	19.98	ohmm

Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero		-0.01		
Calibration Point #1		18.42		3.81	V
Calibration Point #2		5270.68		6886.67	V
Internal Reference		5286.52		6880.89	V

MICRO LOG FIELD CHECK

Tool Name: SDLT - I066_M85803_P45

Reference Calibration Date: 17-Mar-11 14:49:59

Engineer: S. JUNG

Calibration Date: 17-Mar-11 14:50:30

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.07	-0.07	-0.01	-0.01	ohmm
Internal Reference	20.06	20.06	19.98	19.99	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	20.06	20.06	0.00	+/- 0.80
Microlog Lateral	19.98	19.99	-0.01	+/- 0.80

MICRO LOG POST CHECK

Tool Name: SDLT - I066_M85803_P45

Reference Calibration Date: 17-Mar-11 14:50:30

Engineer: S. JUNG

Calibration Date: 17-Mar-11 19:42:09

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Field	Post	Field	Post	
Tool Zero	-0.07	-0.07	-0.01	-0.01	ohmm
Internal Reference	20.06	20.21	19.99	20.14	ohmm

Summary				
Signal	Field	Post	Difference	Tolerance
Microlog Normal	20.06	20.21	0.15	+/- 0.80
Microlog Lateral	19.99	20.14	0.15	+/- 0.80

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
SDLT-I066_M85803_P45						
MicroLog Normal	20.06	20.06	20.21	-0.15	+/-0.80	ohmm
MicroLog Lateral	19.98	19.99	20.14	-0.15	+/-0.80	ohmm

Data: SNIDER_C_20001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE Date: 17-Mar-11 19:43:04

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

Data: SNIDER_C_210001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE

Date: 17-Mar-11 18:45:22

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	
ERNR	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_210001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE

Date: 17-Mar-11 18:45:33

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