

HALLIBURTON

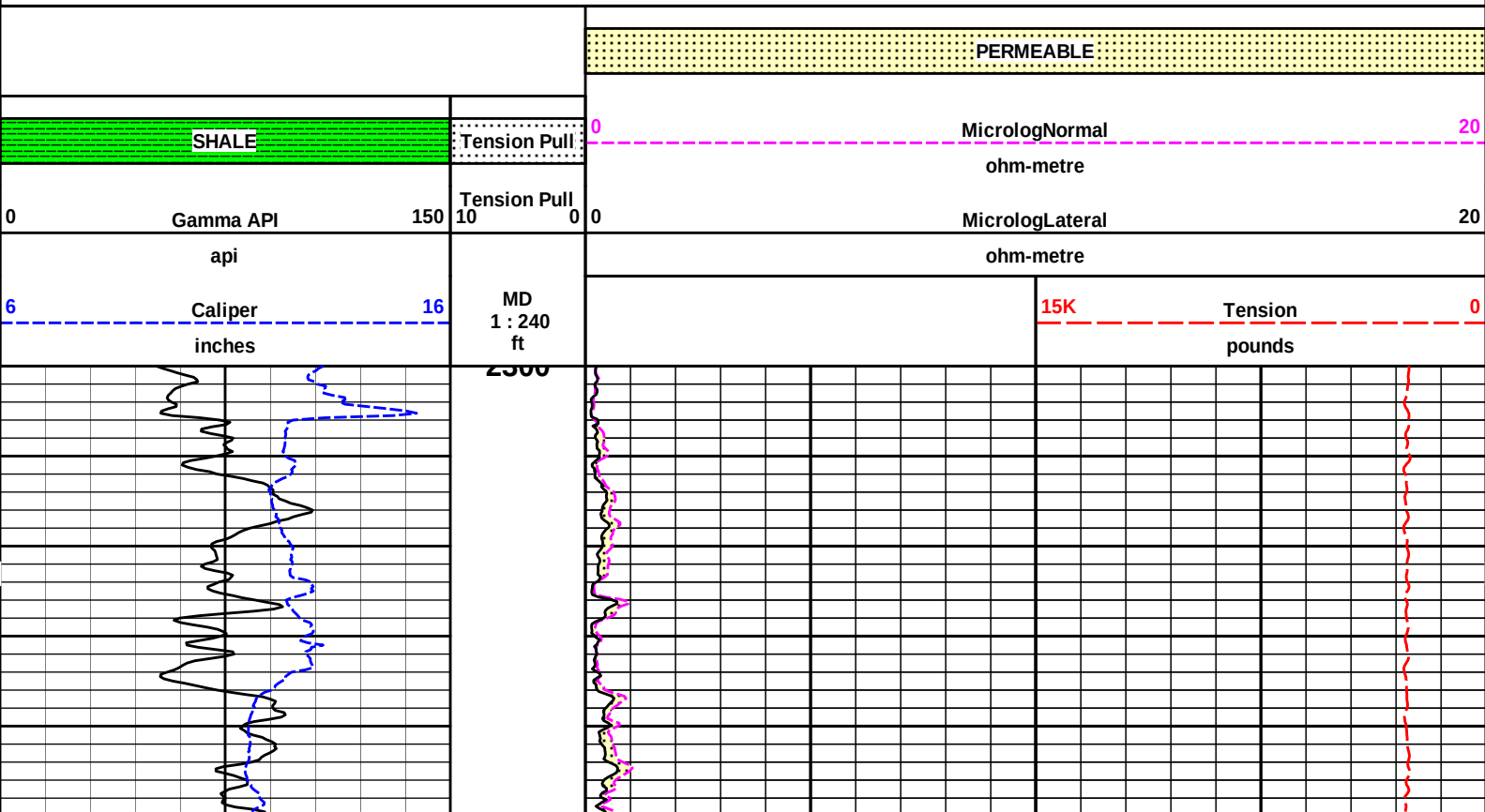
MICROLOG

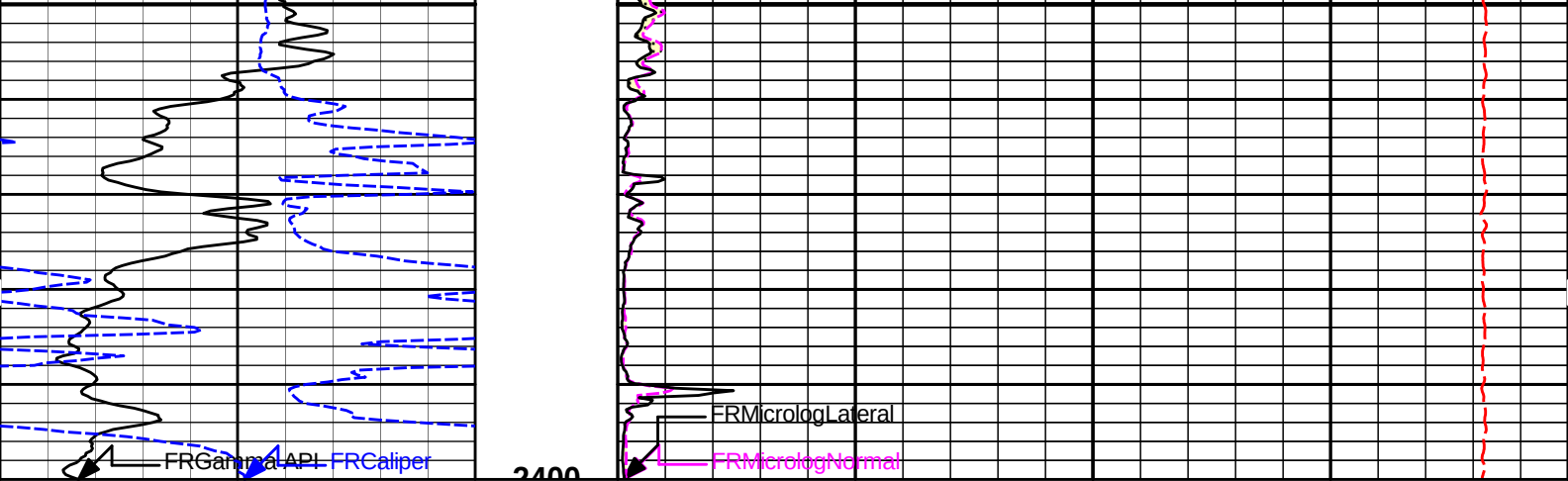
COMPANY		HARTMAN OIL CO., INC.			
WELL		WILKINSON #2-22			
FIELD/BLOCK		WILDCAT			
COUNTY		SCOTT			
STATE		KANSAS			
Permanent Datum		GL		Elev. 3110.0 ft	
Log measured from		KB		D.F. 3118.0 ft	
Drilling measured from		KB		G.L. 3110.0 ft	
Date		20-Mar-13			
Run No.		ONE			
Depth - Driller		4970.00 ft			
Depth - Logger		4966.0 ft			
Bottom - Logged Interval		4922.0 ft			
Top - Logged Interval		2300.0 ft			
Casing - Driller		8.625 in @ 338.0 ft			
Casing - Logger		336.0 ft			
Bit Size		7.875 in		@	
Type Fluid in Hole		WATER BASED MUD			
Density		9.5 ppg		49.00 s/qt	
PH		10.50 pH		10.4 cp/m	
Source of Sample		MUD PIT			
Rm @ Meas. Temperature		0.480 ohmm @ 75.00 degF		@	
Rmf @ Meas. Temperature		0.40 ohmm @ 75.00 degF		@	
Rmc @ Meas. Temperature		0.590 ohmm @ 75.00 degF		@	
Source Rmf		MEASURED			
Rm @ BHT		0.31 ohmm @ 120.0 degF		@	
Time Since Circulation		5.0 hr			
Time on Bottom		20-Mar-13 18:50			
Max. Rec. Temperature		120.0 degF @ 4966.0 ft		@	
Equipment		10546696		LIBERAL	
Recorded By		J. BOLLOW			
Witnessed By		K. NOAH			

Fold here

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.		@		@		ONE		MICROLOG		RUBBER		ADJ		N/A	
Rmc @ Meas. Temp.		@		@				10950489							
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.		11048627		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.		GTET		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					
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	3800	REC	0	150											
ONE	2400	2300	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																





6	Caliper	16	MD	1 : 240	ft	15K	Tension	0
0	Gamma API	150	Tension Pull	10	0	0	ohm-metre	20
	api						MicrologNormal	20
	SHALE		Tension Pull	0			ohm-metre	
							PERMEABLE	

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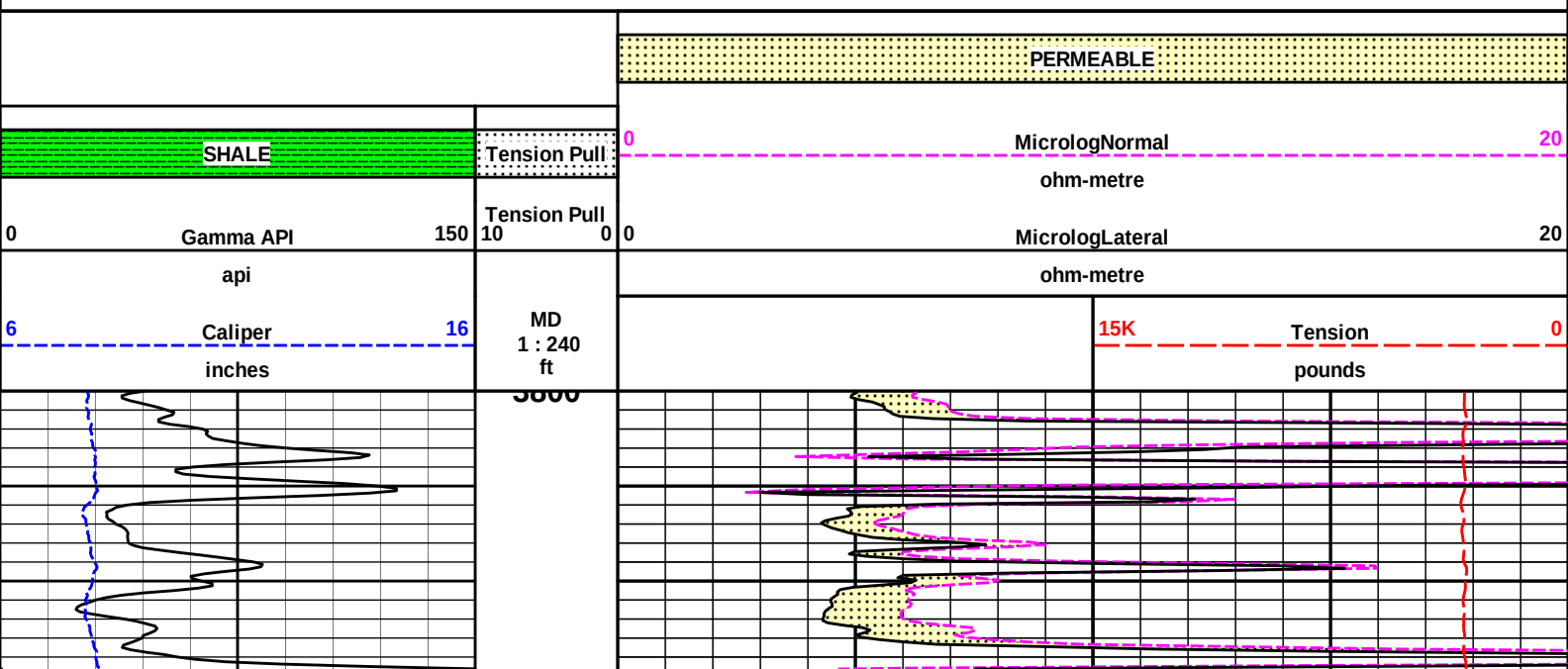
Plot Time: 20-Mar-13 20:21:52
Plot Range: 2300 ft to 2400 ft
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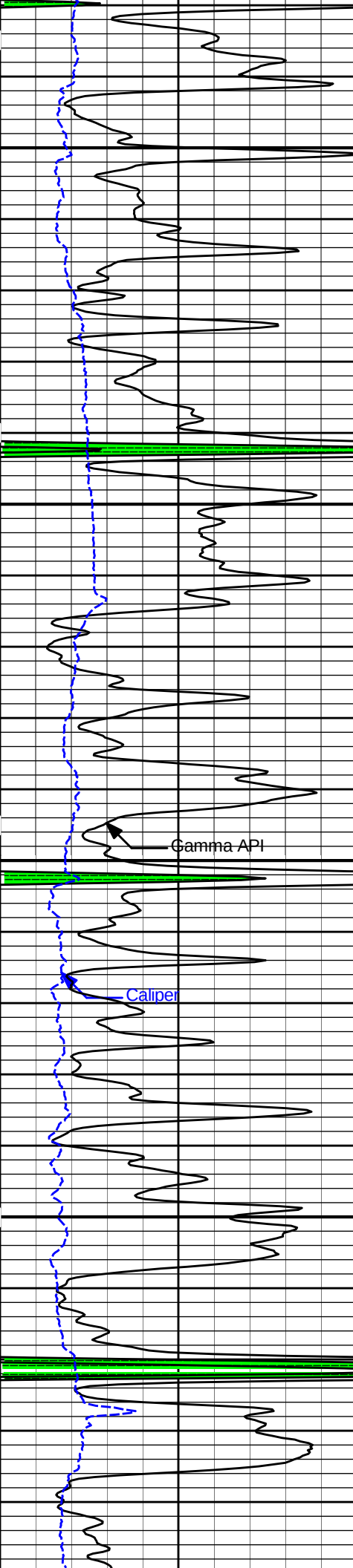
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 20-Mar-13 20:21:52
Plot Range: 3800 ft to 4969.75 ft
Data: WILKINSON_2_22\Well Based\DETAIL_TD-3800\
Plot File: \\LOCAL\WILKINSON_2_22\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\MICRO\Microlog_IQ_5_main_lib

5 INCH MAIN LOG





3900

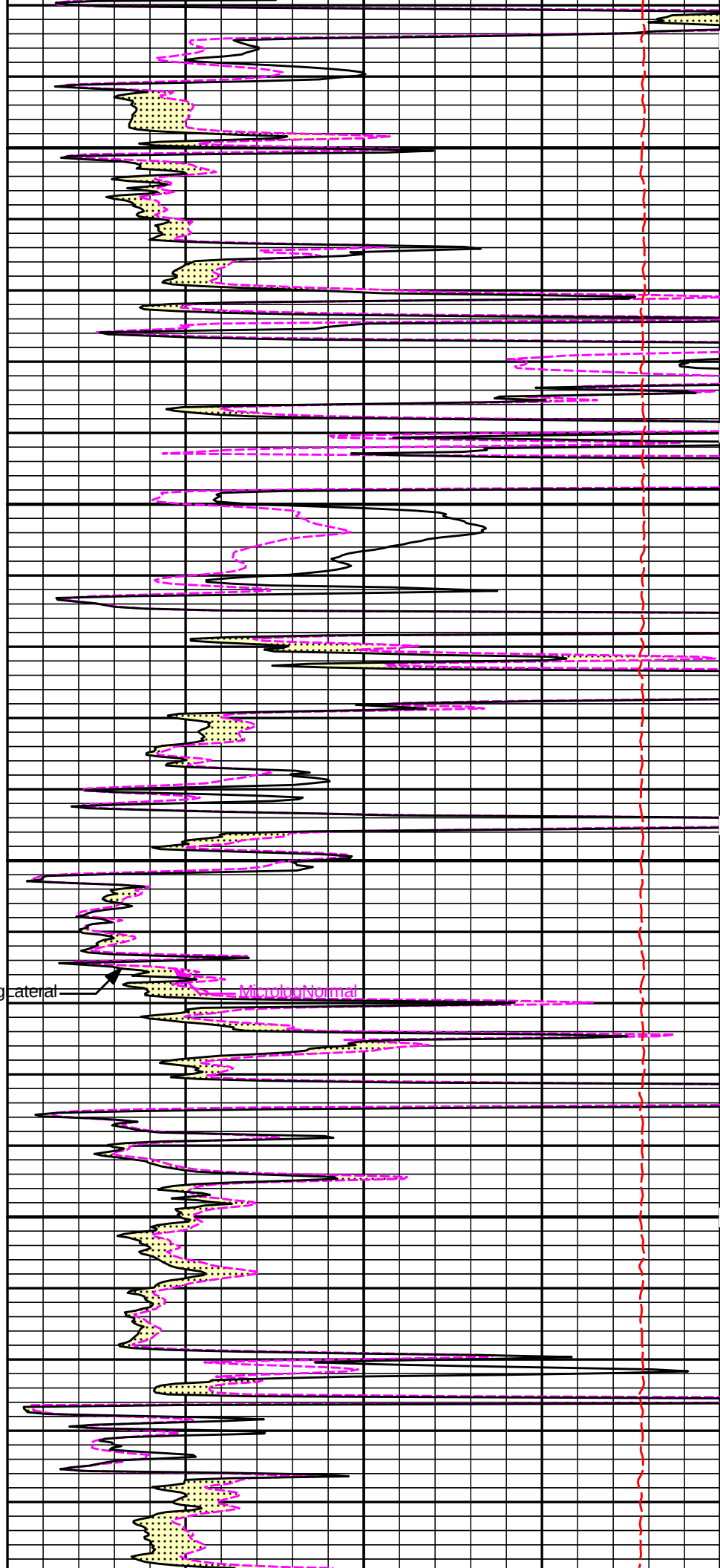
Gamma API

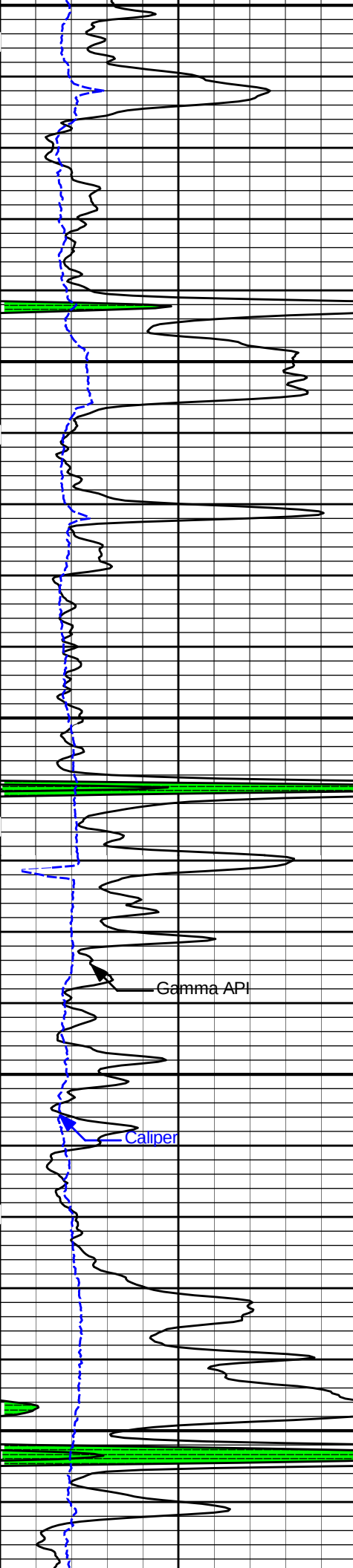
Caliper

4000

Microlog lateral

Microlog Normal

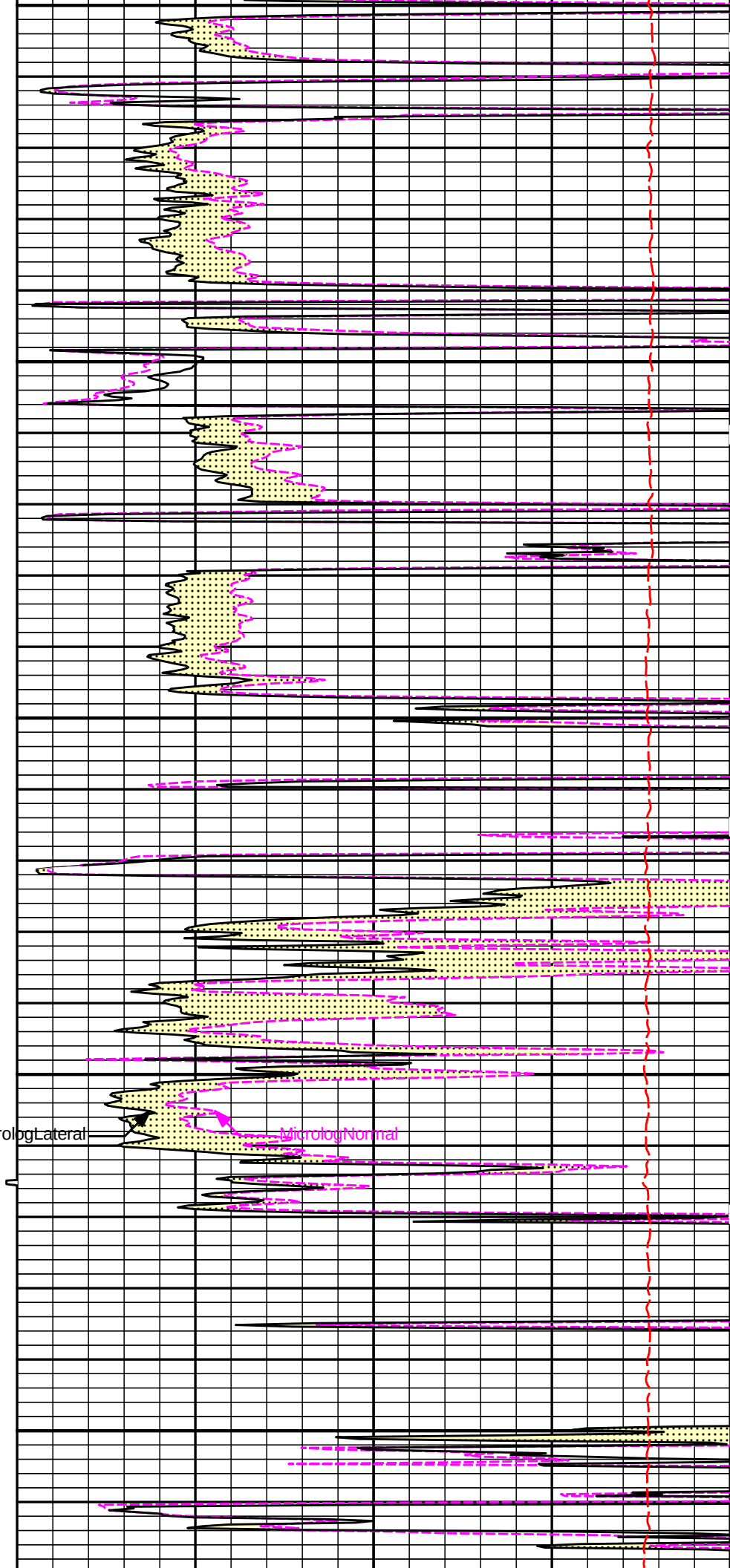


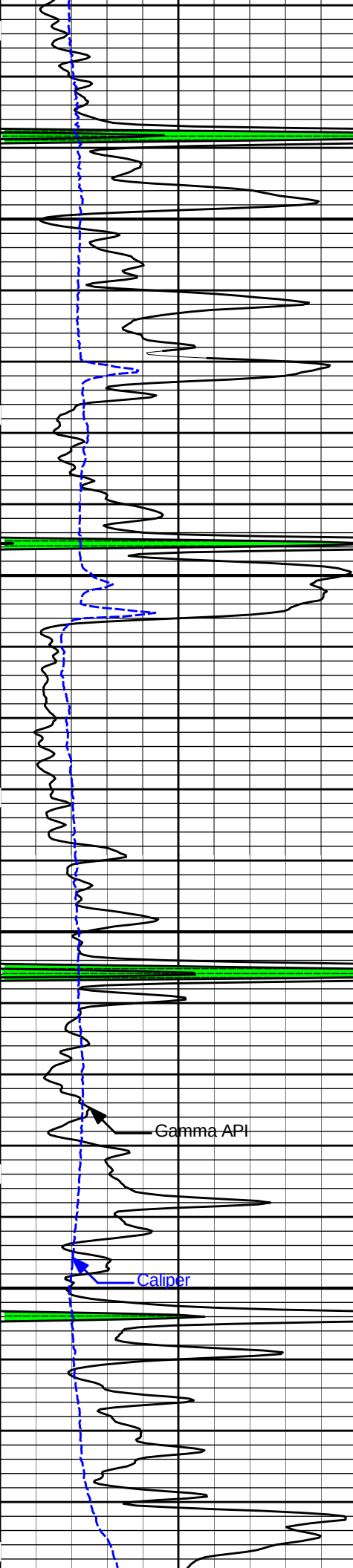


4100

4200

Microlog Lateral



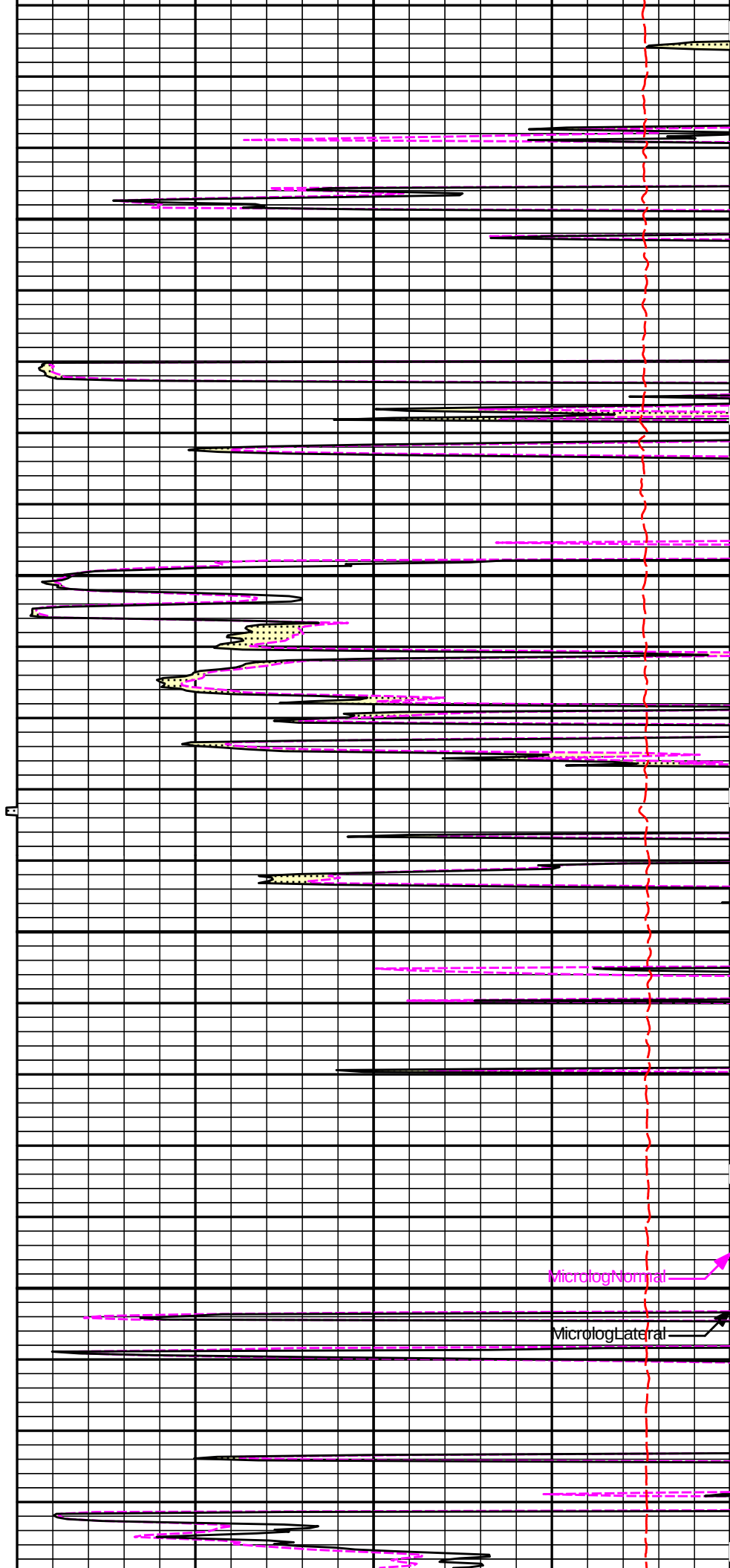


4300

4400

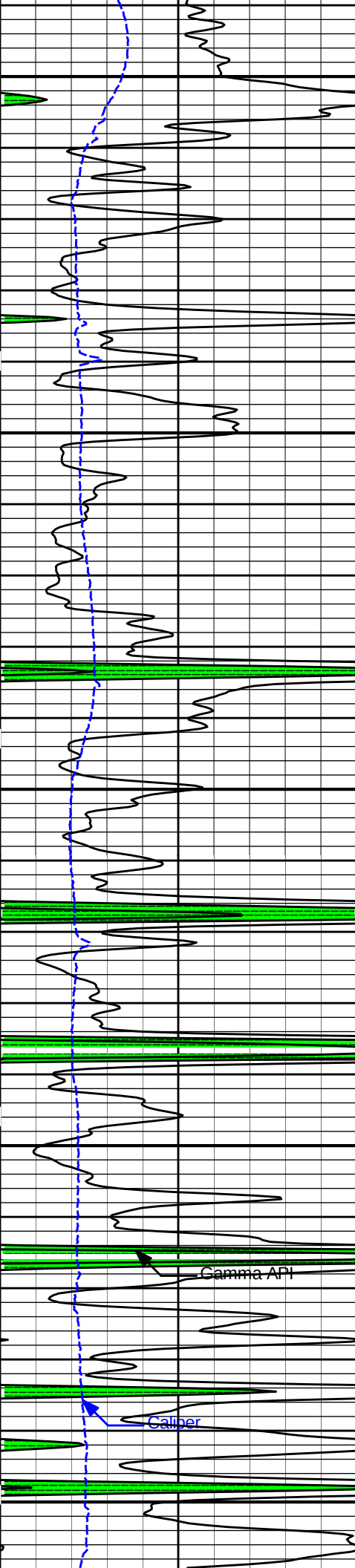
Gamma API

Caliper



Microlog Normal

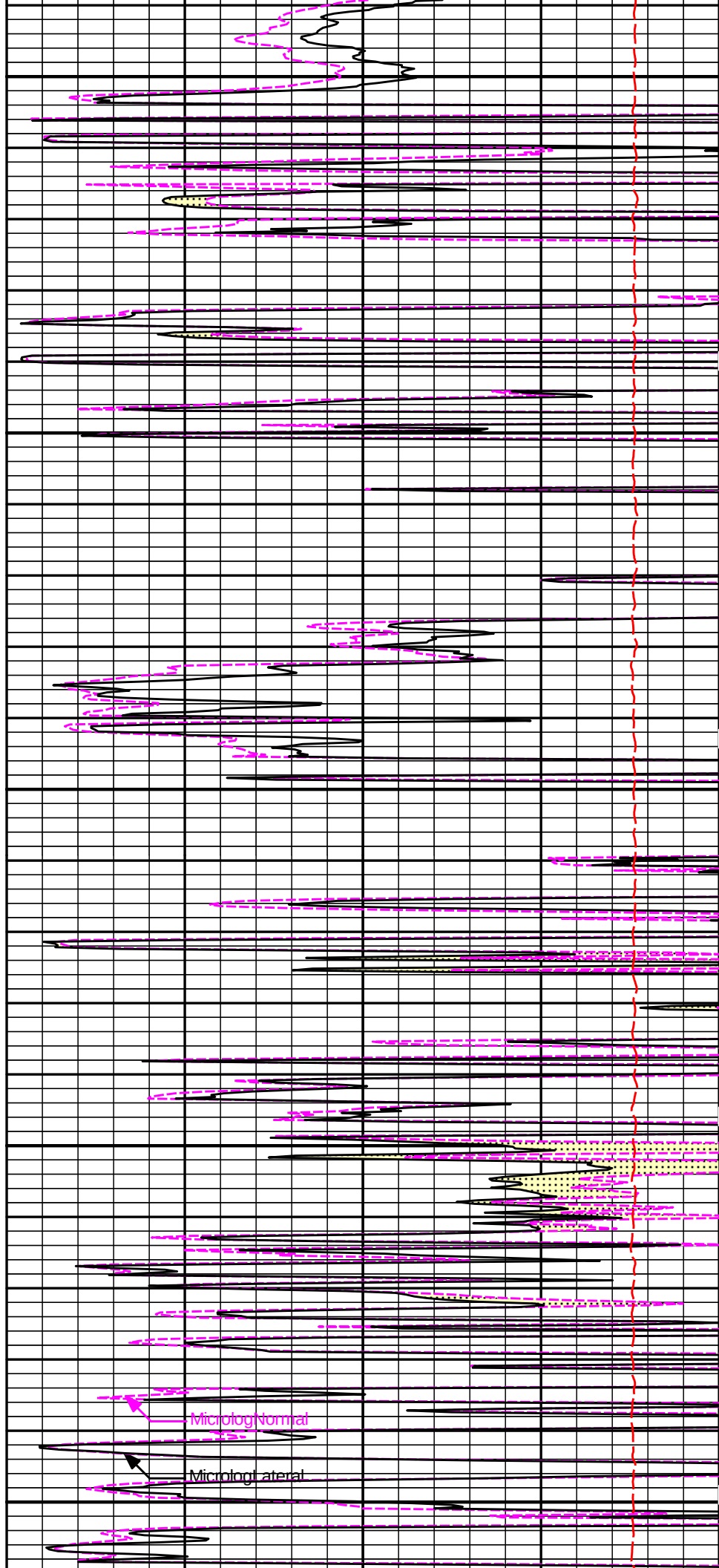
Microlog Lateral

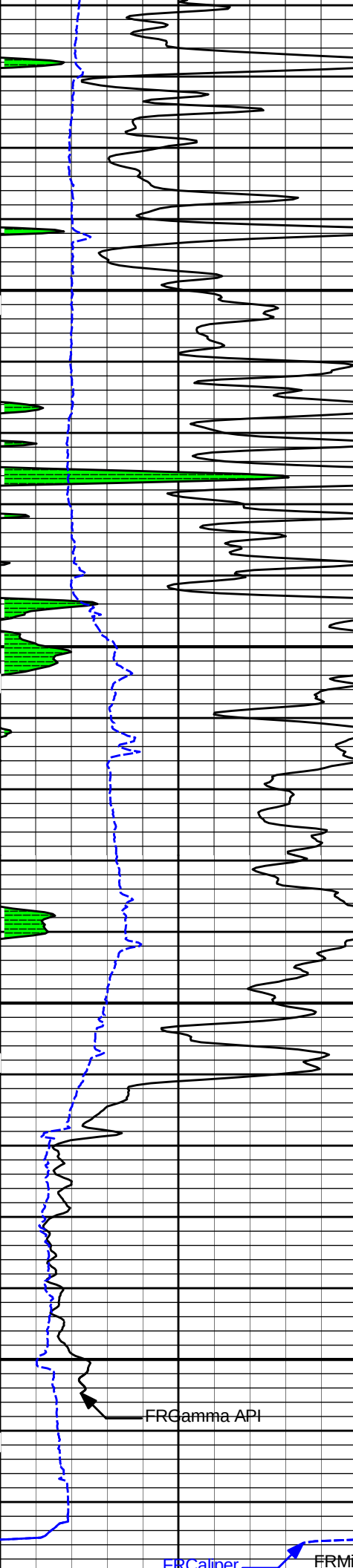


4500

4600

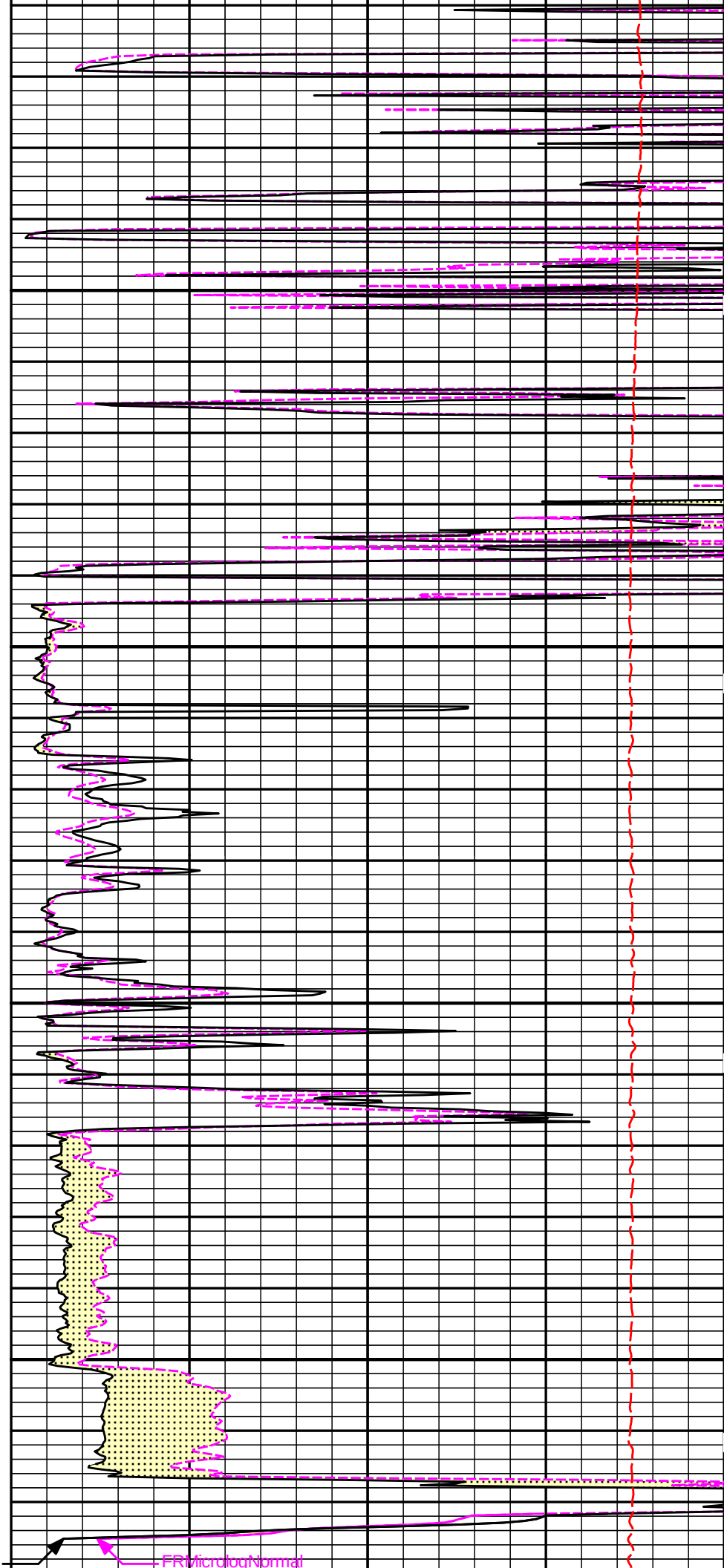
4700

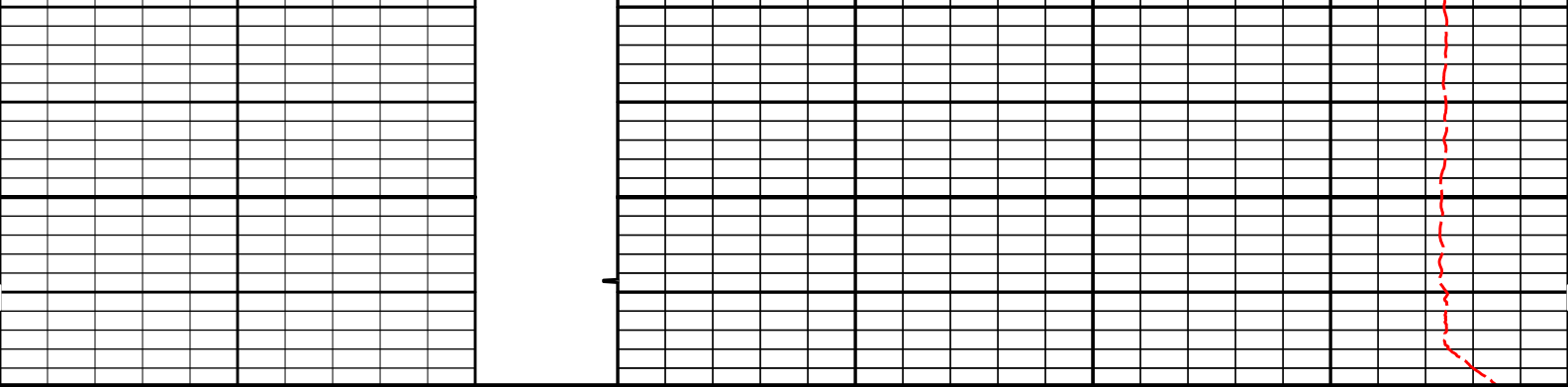




4800

4900





6 Caliper inches 16		MD 1 : 240 ft	15K Tension pounds 0	
0 Gamma API 150	Tension Pull 10 0		MicrologLateral 20	
api			ohm-metre	
SHALE	Tension Pull 0		MicrologNormal 20	
			ohm-metre	
			PERMEABLE	

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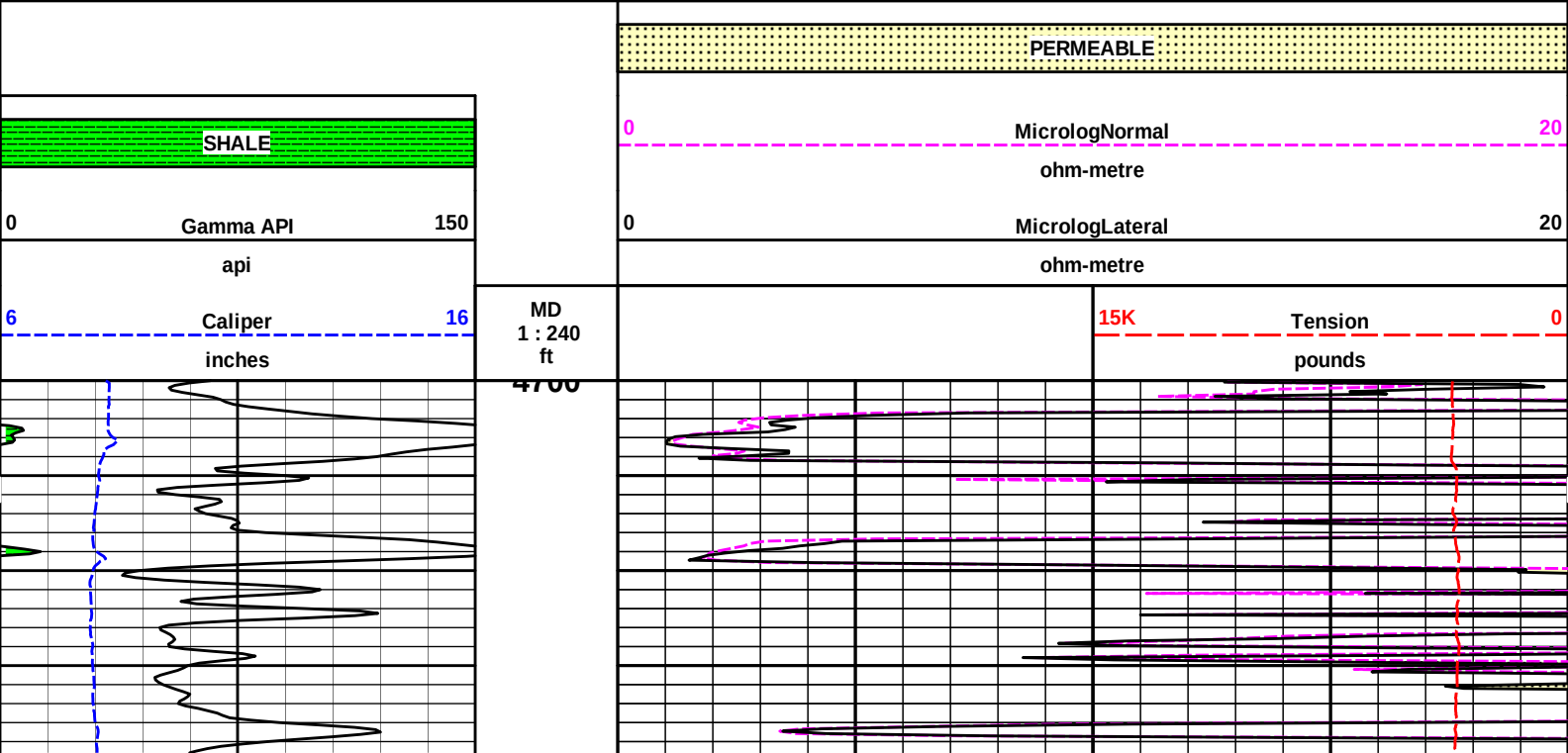
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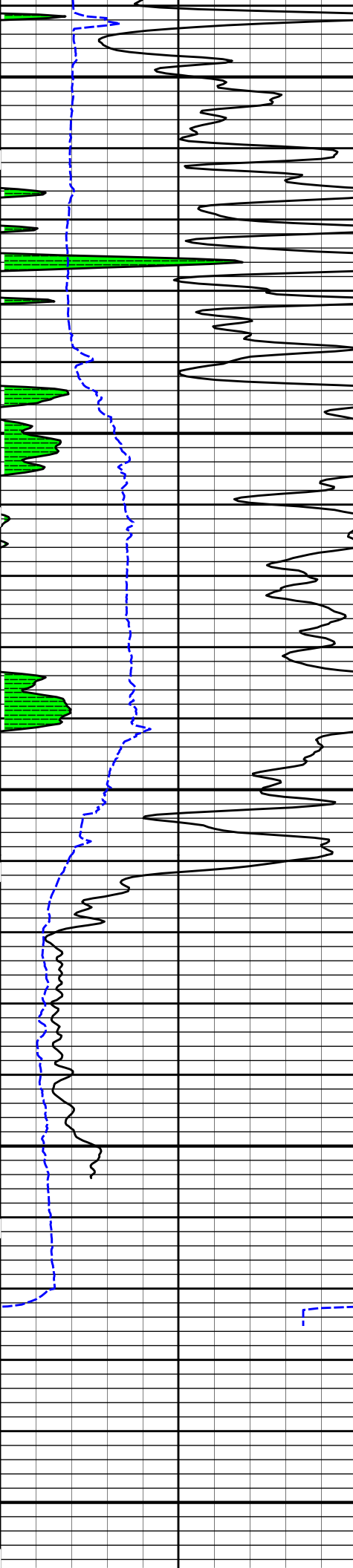
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 20-Mar-13 20:21:59
Plot Range: 4700 ft to 4968.92 ft
Data: WILKINSON_2_22Well Based\REPEAT_WILK\
Plot File: \\LOCAL\WILKINSON_2_22\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\MICRO\Microlog_IQ_5_rep.lib

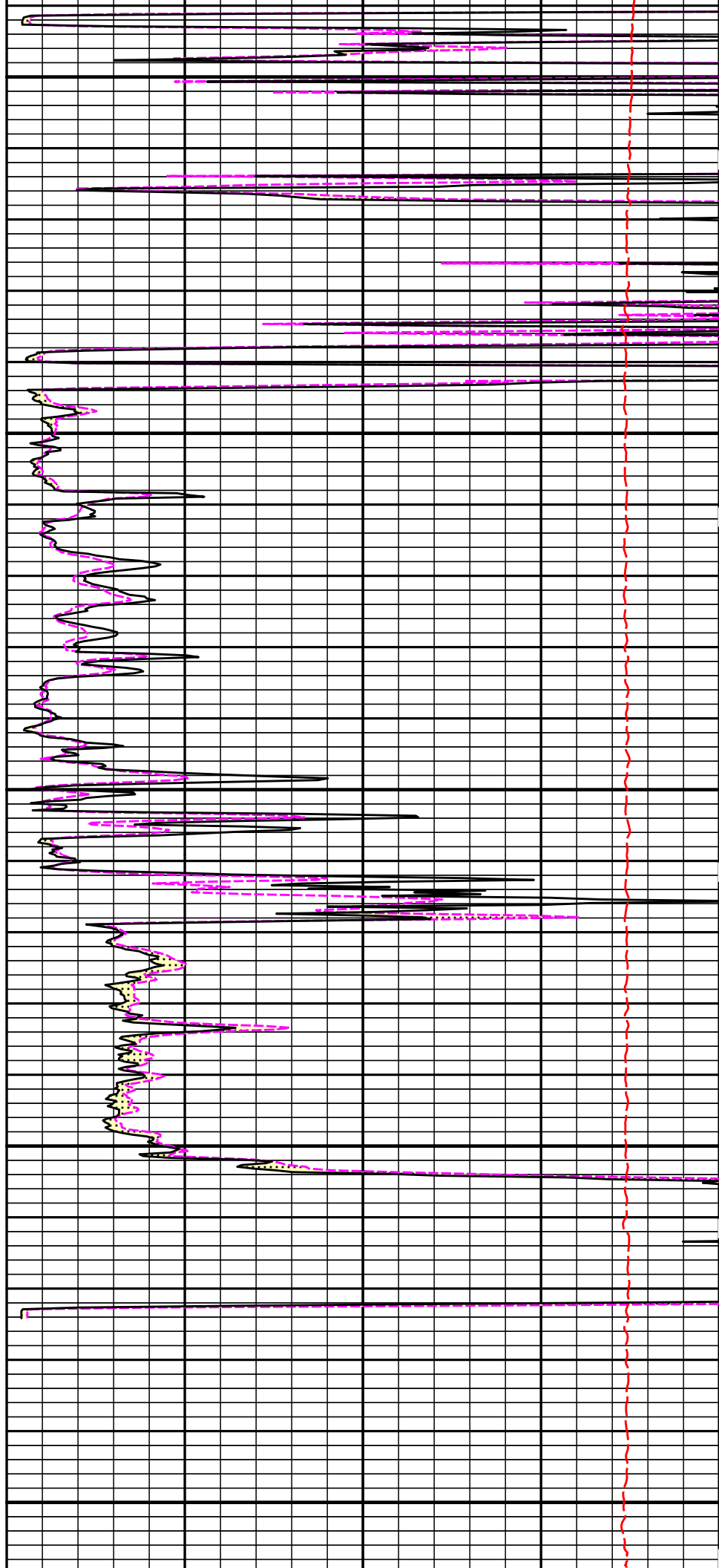
REPEAT SECTION



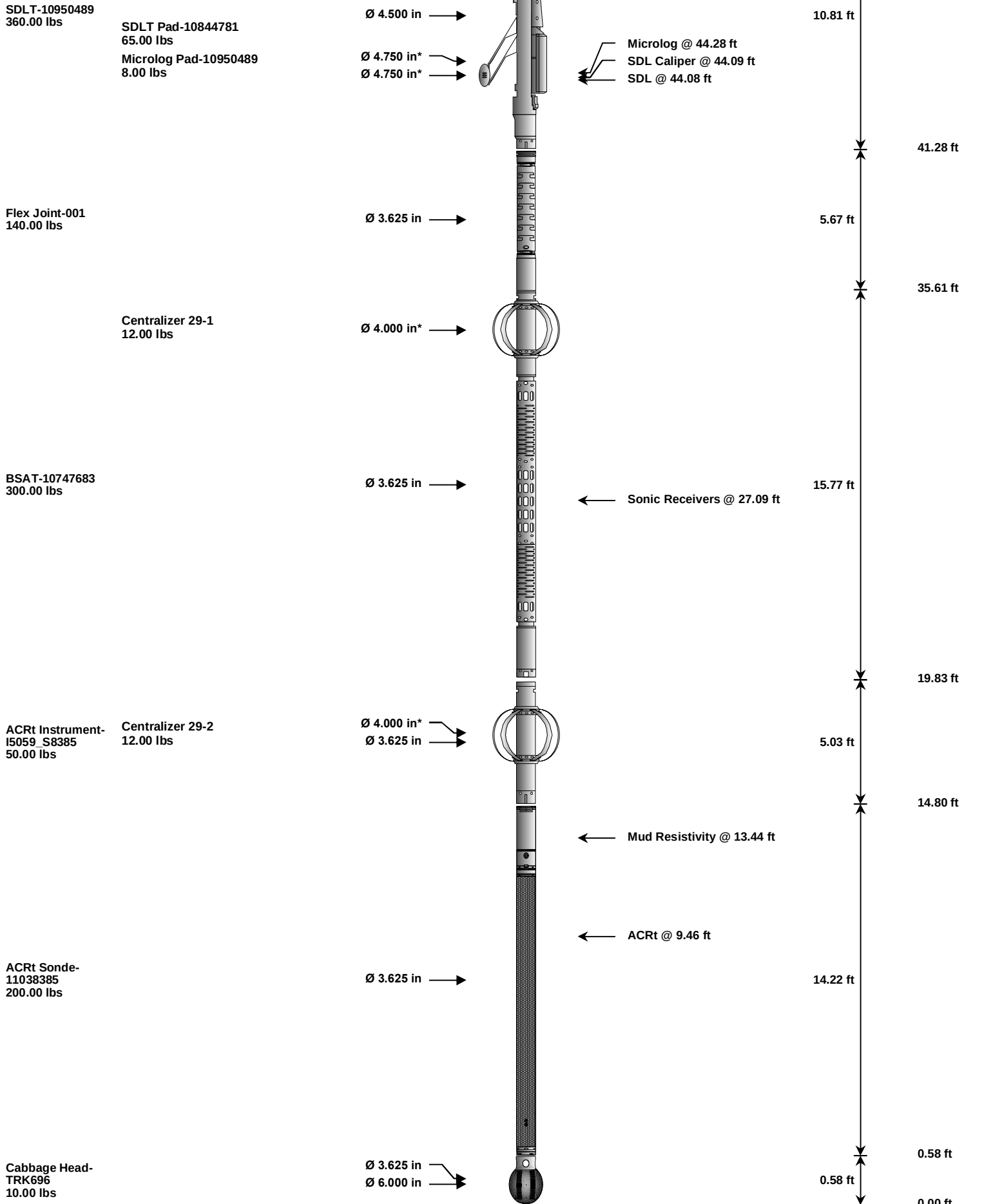


4800

4900



6					Caliper					16					MD				
					inches										1 : 240				
0					Gamma API					150					0				
					api										Tension				
					SHALE										pounds				



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_22I0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CHIDLE						Date: 20-Mar-13 18:40:51

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CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 11048627

Engineer:J. BOLLLOM

Software Version:WL INSITE R3.8.0 (Build 2)

Reference Calibration Date:13-Feb-13 14:00:35

Calibration Date:05-Mar-13 09:33:28

Calibration Version:1

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Measurement	Measured	Calibrated	Units
Background	50.6	51.6	api
Background + Calibrator	315.2	321.3	api
Calibrator	264.6	269.6	api

MICRO LOG SHOP CALIBRATION

Tool Name:Microlog Pad - 10950489

Engineer:J. BOLLLOM

Software Version:WL INSITE R3.8.0 (Build 2)

Host Tool Name:DSNT - 11019643

Reference Calibration Date:17-Jan-13 13:52:20

Calibration Date:07-Mar-13 09:35:23

Calibration Version:1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.05	-0.10	-0.01	-0.00	ohmm
Calibration Point #1	0.05	0.00	-0.01	0.00	ohmm
Calibration Point #2	19.96	20.00	19.94	20.00	ohmm
Internal Reference	19.89	19.94	19.94	20.00	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	0.36	-0.01	V
Calibration Point #1	26.71	0.86	V
Calibration Point #2	5346.91	6994.38	V
Internal Reference	5330.65	6995.97	V

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	-----	-----	0.0	+/- 9.00	api
Microlog Pad-10950489						
MicroLog Normal	19.94	-----	-----	0.00	-----	ohmm
MicroLog Lateral	20.00	-----	-----	0.00	-----	ohmm
Data: WILKINSON_2_22\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\001 20-Mar-13 18:44 Dn @215.3f					Date: 20-Mar-13 18:57:43	

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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	NI IT	Neutron Lithology	Limestone	

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	
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				

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_22\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\001 20-Mar-13 18:44 Dn @215.3f				Date: 20-Mar-13 18:54:49

COMPANY	HARTMAN OIL CO., INC.		
WELL	WILKINSON #2-22		
FIELD	WILDCAT		
COUNTY	SCOTT	STATE	KANSAS
HALLIBURTON		MICROLOG	