

MICRO LOG

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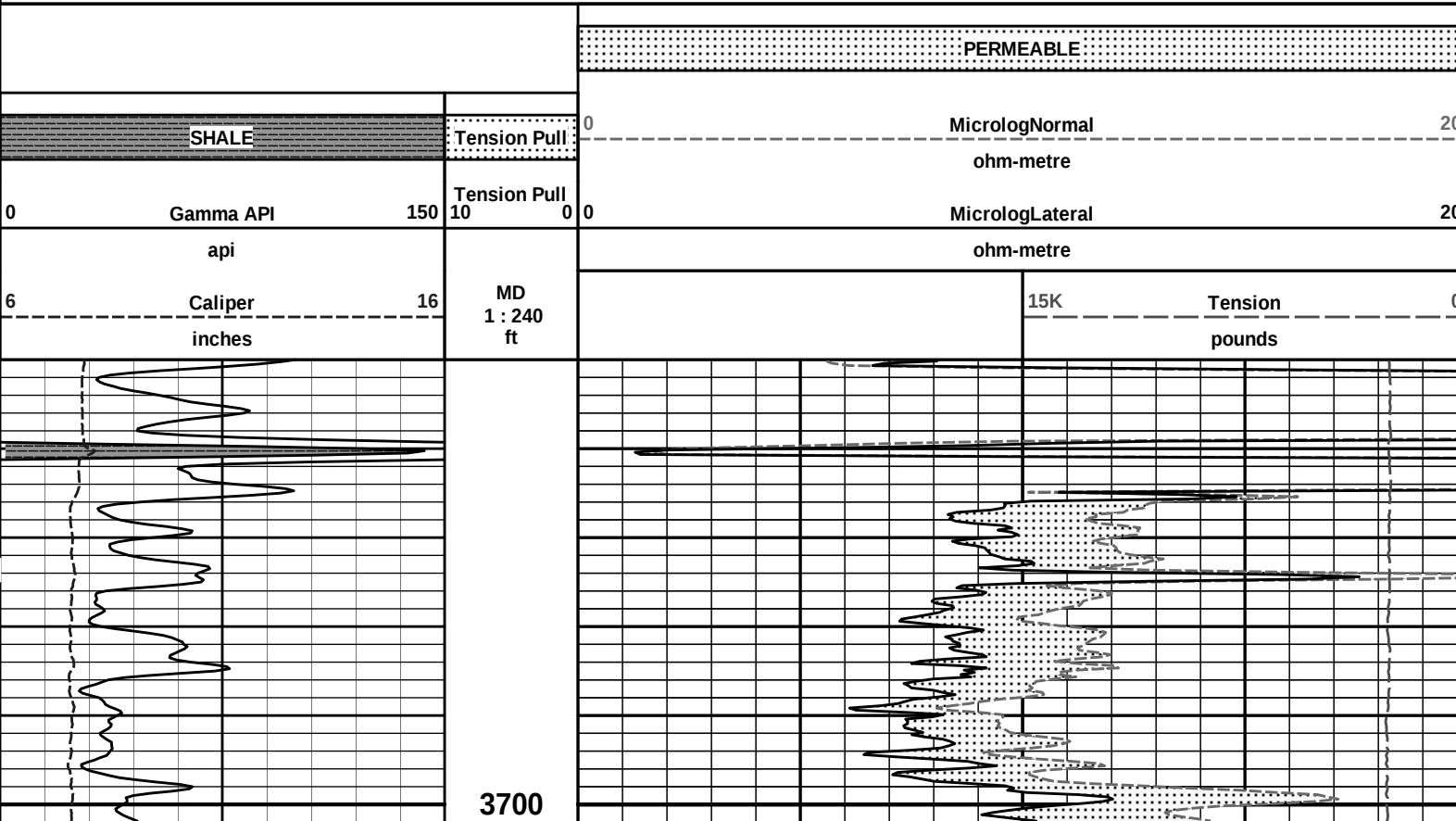
Service Ticket No.: 9754248										API Serial No.: 15-055-22173										PGM Version: WL INSITE R3.6.0 (Build 3)									
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE										RESISTIVITY SCALE CHANGES																			
Date		Sample No.								Type Log		Depth		Scale Up Hole				Scale Down Hole											
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		MICRO		RUBBER		ADJ.		N/A											
Rmc @ Meas. Temp.				@				@				M489																	
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.		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																			

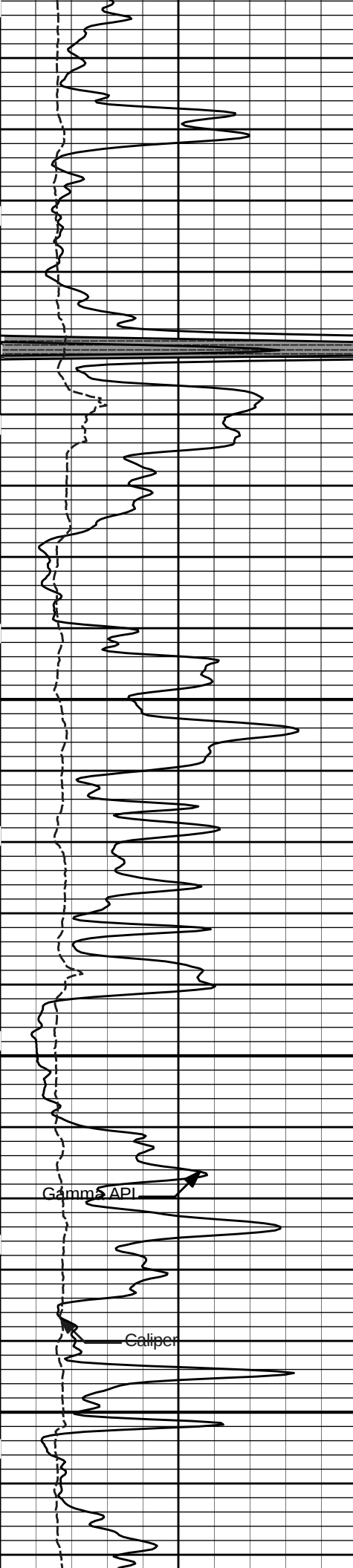
[illegible]

HALLIBURTON

Plot Time: 18-Aug-12 17:58:30
Plot Range: 3650 ft to 4890.75 ft
Data: LOOMIS_B2\Well Based\DAQ-0003-003\
Plot File: \\LOCAL-I\LOOMIS_B2\0003 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CHIMICRO\Microlog_IQ_5_main_lib

5 INCH MAIN LOG



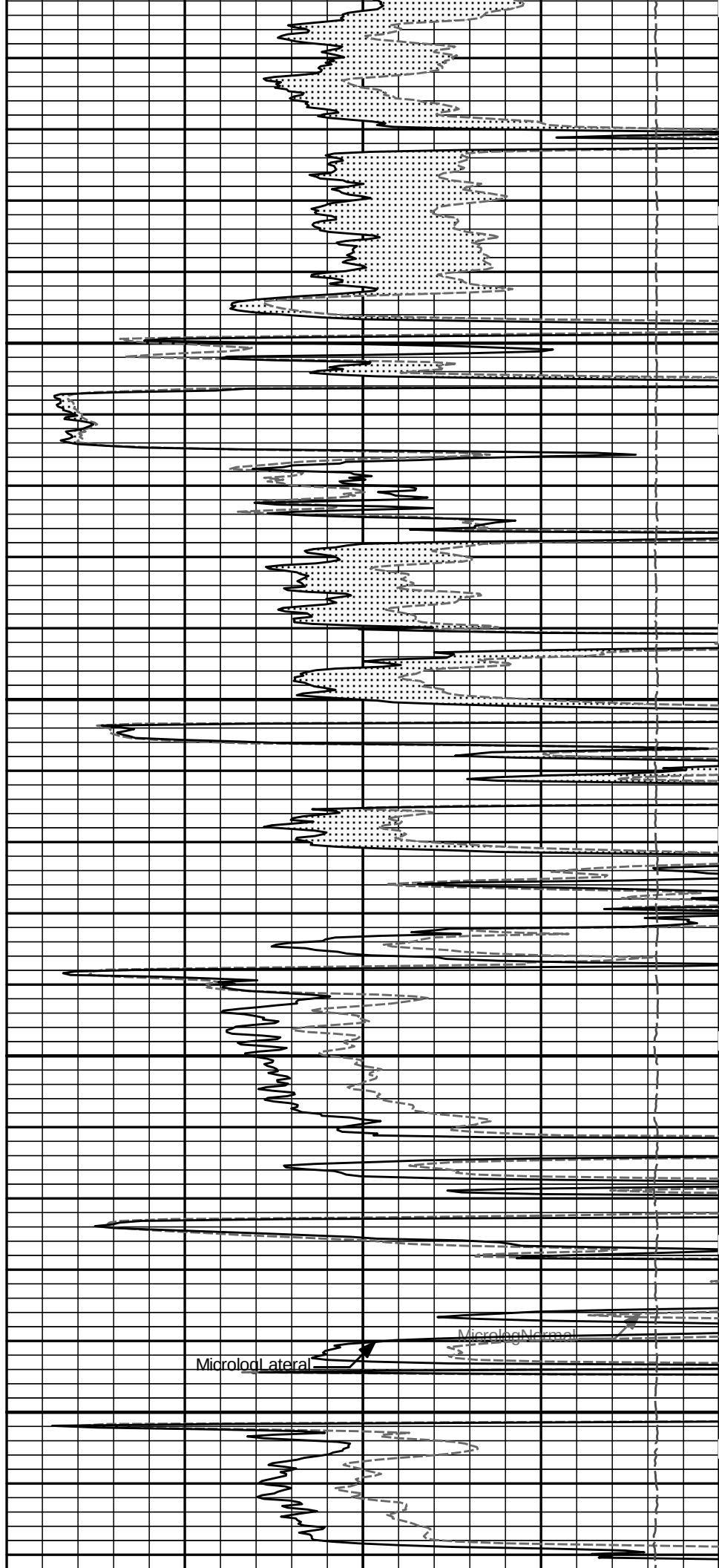


3800

3900

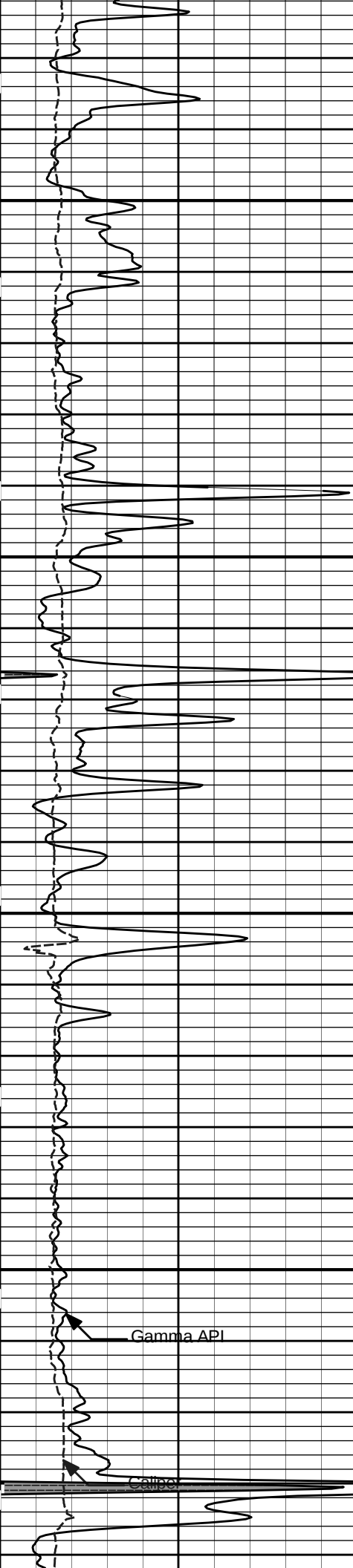
Gamma API

Caliper



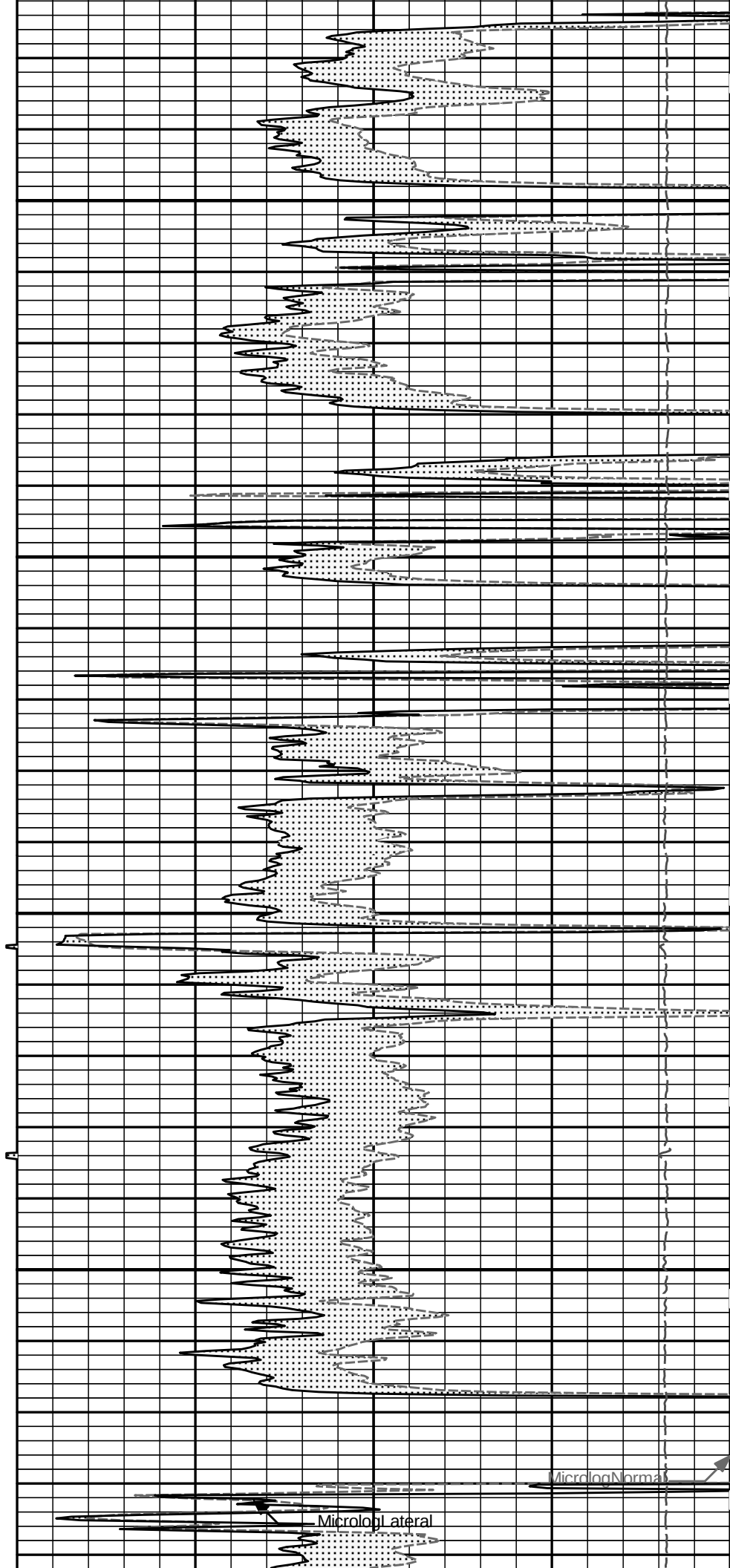
MicrologLateral

MicrologNormal



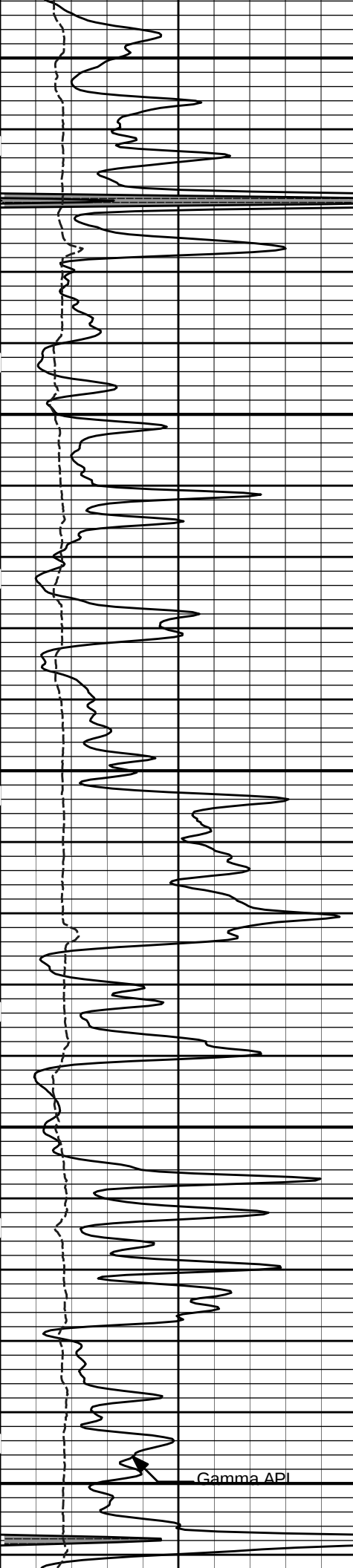
4000

4100



Microlog lateral

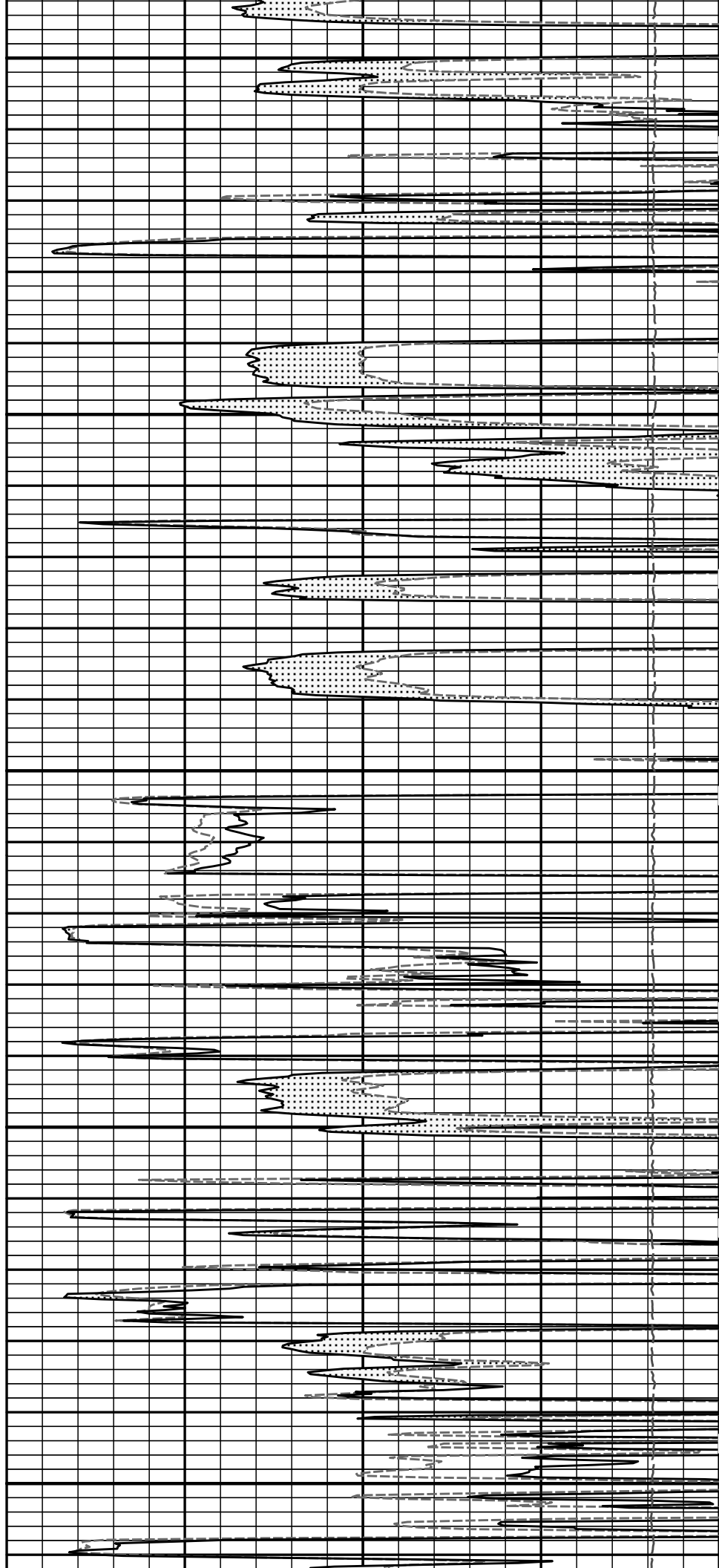
Microlog Normal

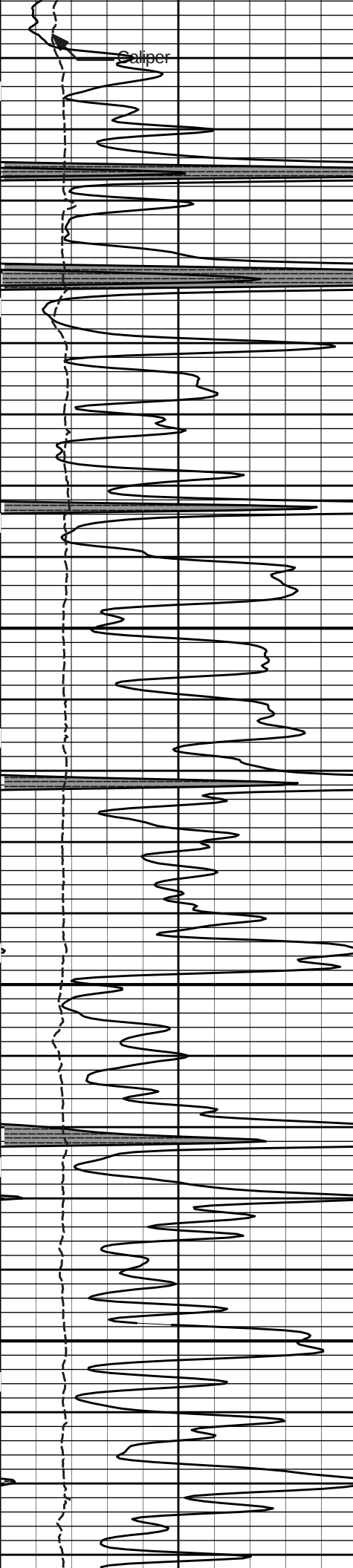


4200

4300

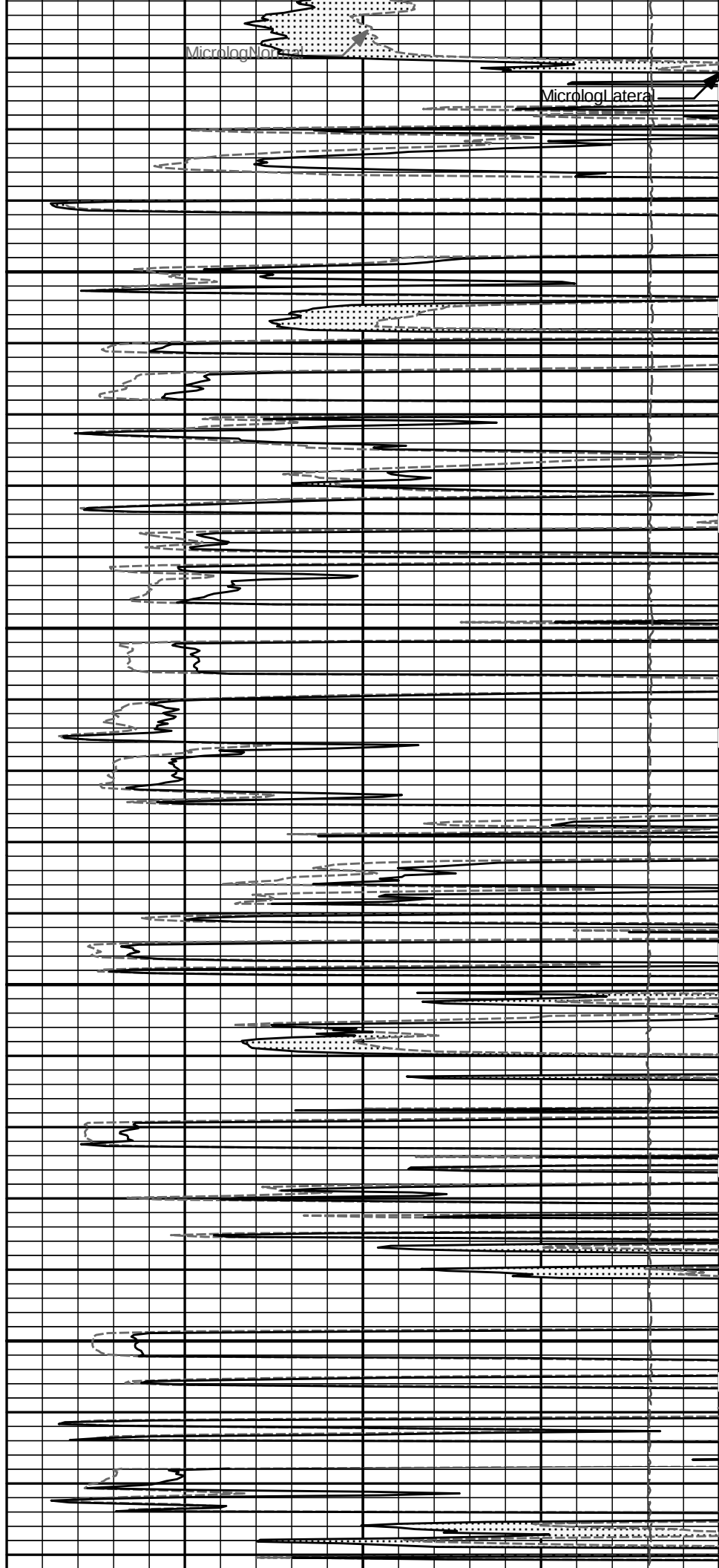
Gamma API

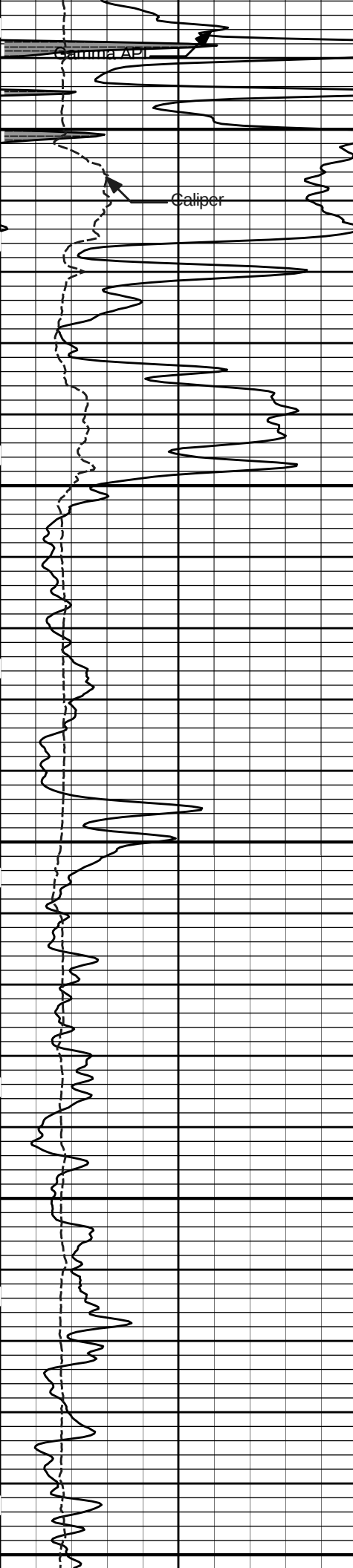




4400

4500

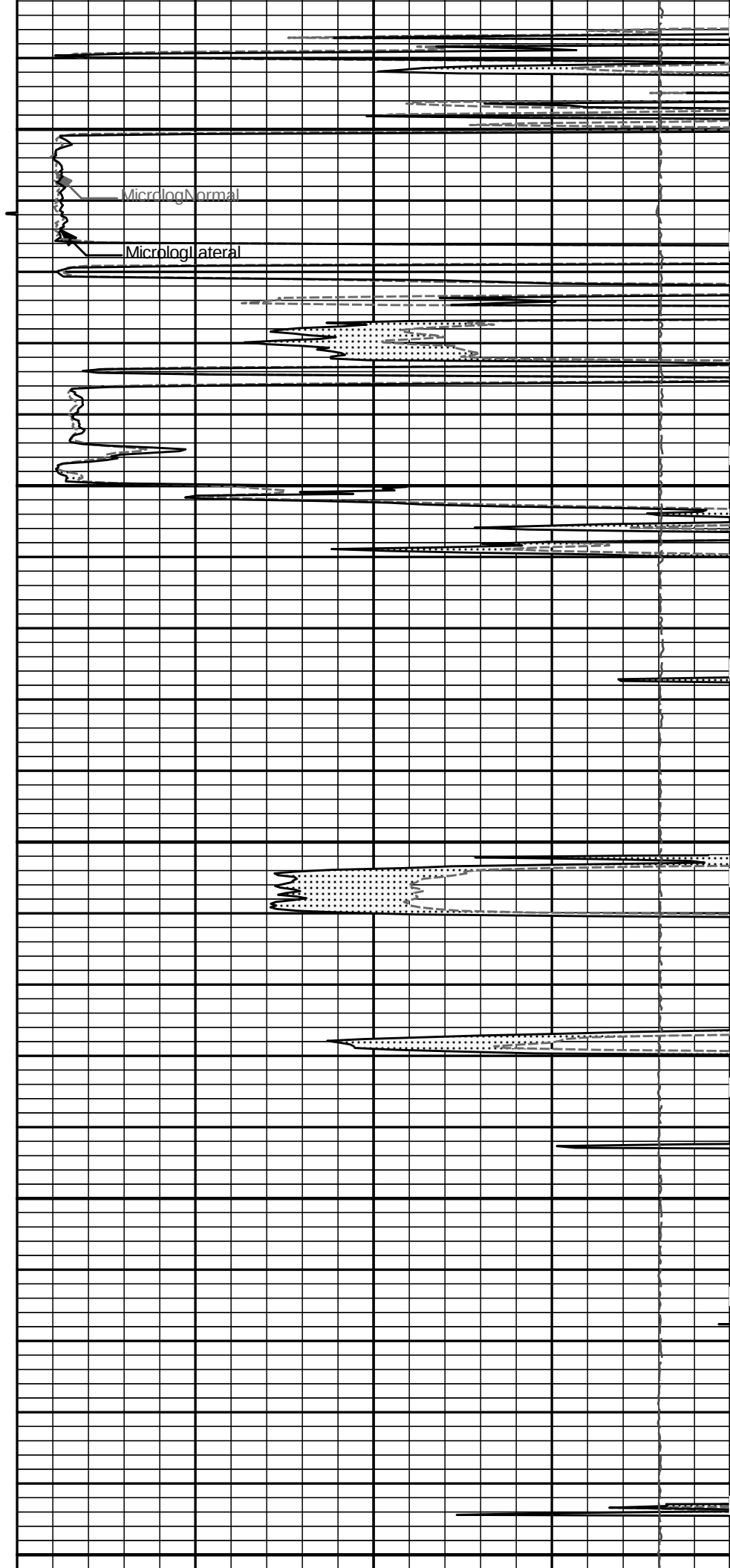


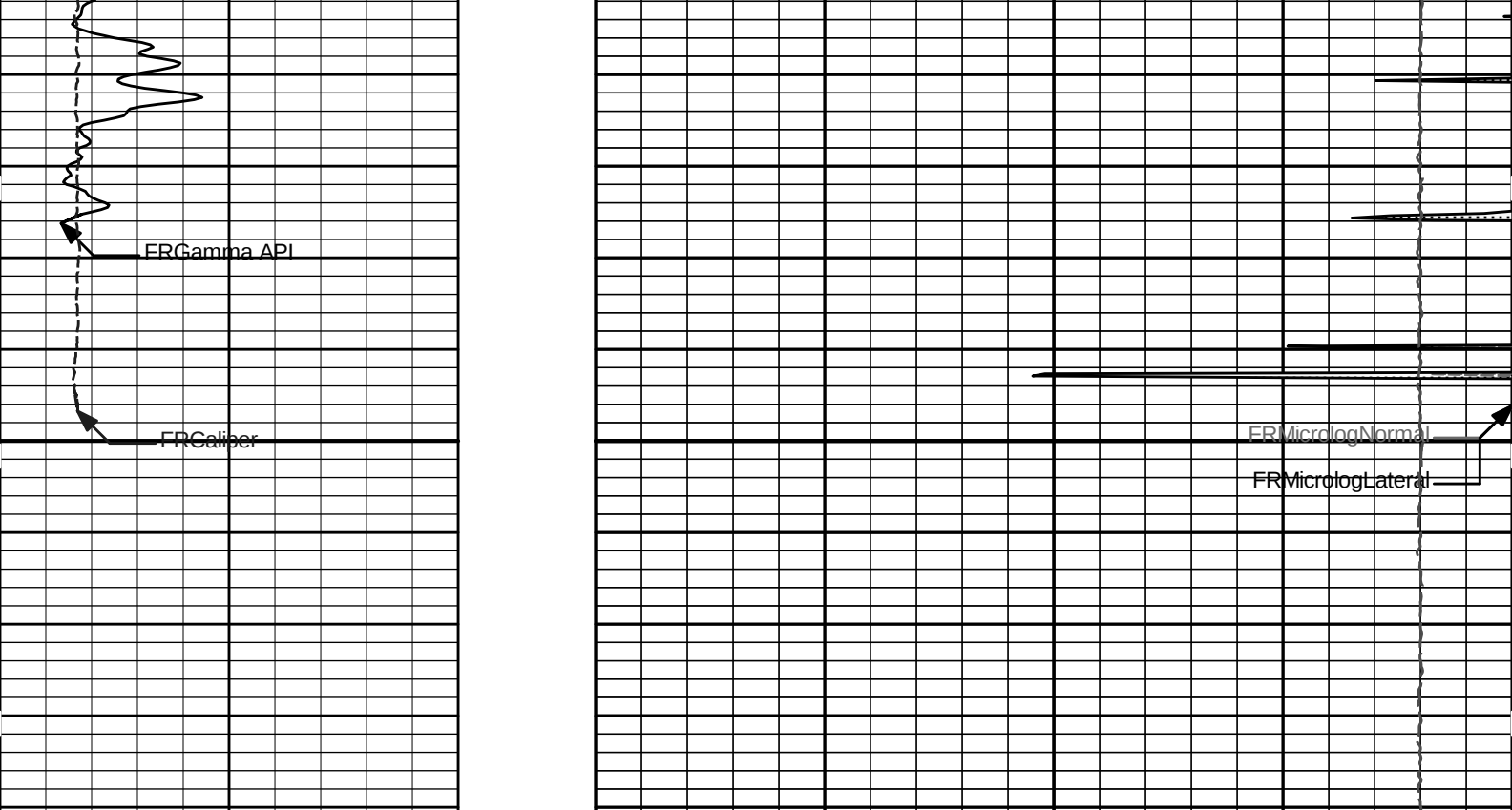


4600

4700

4800





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

HALLIBURTON

Plot Time: 18-Aug-12 17:58:33
Plot Range: 3650 ft to 4890.75 ft
Data: LOOMIS_B2\Well Based\DAQ-0003-003\
Plot File: \\LOCAL-LOOMIS_B2\0003 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\MICRO\Microlog_IQ_5_main_lib

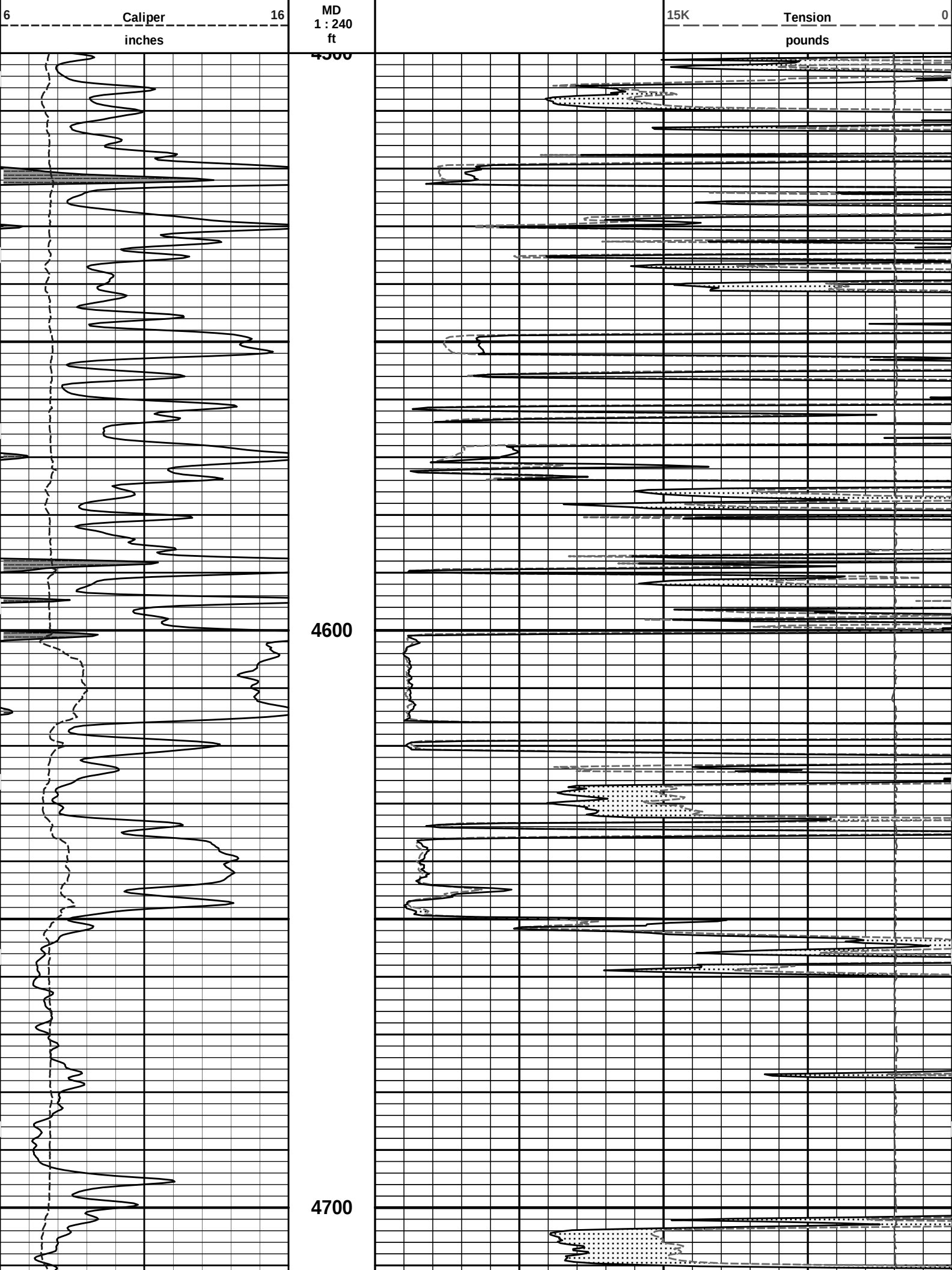
5 INCH MAIN LOG

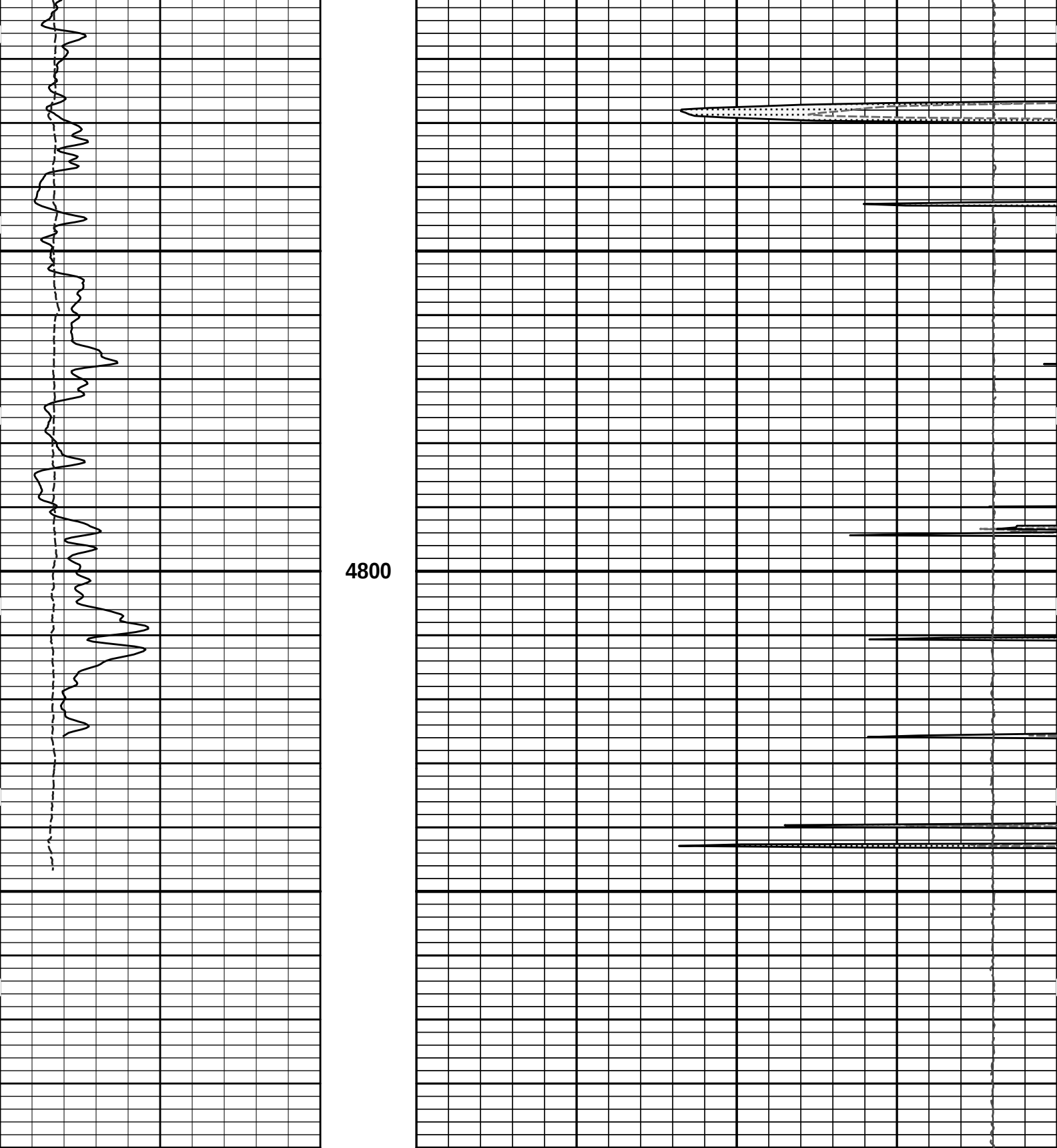
HALLIBURTON

Plot Time: 18-Aug-12 17:58:33
Plot Range: 4500 ft to 4890.75 ft
Data: LOOMIS_B2\Well Based\DAQ-0003-002\
Plot File: \\LOCAL-LOOMIS_B2\0003 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CH\MICRO\Microlog_IQ_5_rep_lib

REPEAT SECTION

			PERMEABLE		
			0	MicrologNormal	20
SHALE					
			ohm-metre		
0	Gamma API	150	0	MicrologLateral	20
api			ohm-metre		
			1		



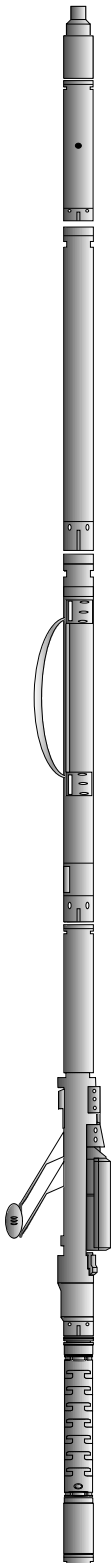


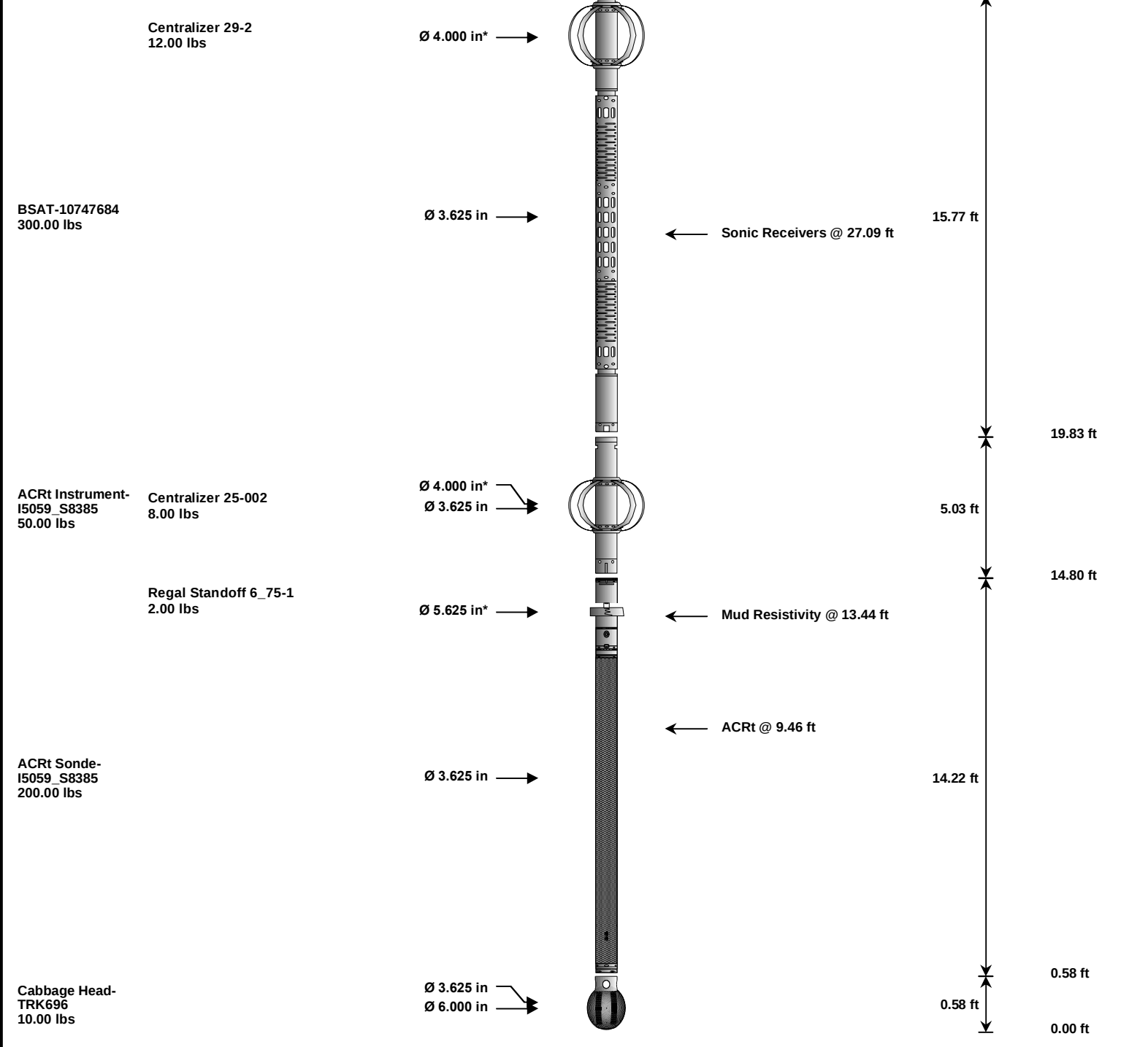
4800

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

REPEAT SECTION

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	75.95 ft
SP Sub-001 60.00 lbs		Ø 3.625 in →		← SP @ 72.26 ft	3.74 ft	74.03 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →			8.52 ft	70.30 ft
				← GammaRay @ 64.23 ft		61.78 ft
DSNT-11019643 174.00 lbs	DSN Decentralizer- 11005605 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 54.84 ft ← DSN Near @ 54.09 ft	9.69 ft	52.09 ft
SDLT-I43_M489 360.00 lbs	SDLT Pad-P81 65.00 lbs Microlog Pad-M489 8.00 lbs	Ø 4.500 in → Ø 4.750 in* → Ø 4.750 in* →		Microlog @ 44.28 ft SDL Caliper @ 44.09 ft SDL @ 44.08 ft	10.81 ft	41.28 ft
IQ Flex-696 140.00 lbs		Ø 3.625 in →			5.67 ft	35.61 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	74.03	300.00
SP	SP Sub		001	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		11005605	6.60	5.13	* 55.42	300.00
SDLT	Spectral Density Tool		I43_M489	360.00	10.81	41.28	60.00
SDLP	Density Insite Pad		P81	65.00	2.55	* 43.49	60.00
MICP	Microlog Pad		M489	8.00	1.00	* 43.78	60.00
IQF	IQ Flex tool		696	140.00	5.67	35.61	300.00
BSAT	Borehole Sonic Array Tool		10747684	300.00	15.77	19.83	60.00
OBCEN	Centralizer - 29 in.Overbody		2	12.00	2.42	* 32.88	300.00
ACRt	Array Compensated True Resistivity Instrument Section		I5059_S8385	50.00	5.03	14.80	300.00
OBCEN	Centralizer - 25 in. Overbody		002	8.00	2.08	* 16.30	300.00
ACRt	Array Compensated True Resistivity Sonde Section		I5059_S8385	200.00	14.22	0.58	300.00
RSOF	Regal Standoff 6.75in		1	2.00	0.52	* 13.38	300.00
CBHD	Cabbage Head		TRK696	10.00	0.58	0.00	300.00

Total				1,590.60	75.95		
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* Not included in Total Length and Length Accumulation.

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	GTET - 11048627	Reference Calibration Date:	09-Aug-12 10:44:30
Engineer:	T. HYDE	Calibration Date:	09-Aug-12 10:50:33
Software Version:	WL INSITE R3.6.0 (Build 3)	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	57.5	57.1	api
Background + Calibrator	328.7	326.8	api
Calibrator	271.3	269.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	GTET - 11048627	Reference Calibration Date:	09-Aug-12 10:50:33
Engineer:	T. HYDE	Calibration Date:	16-Aug-12 22:29:50
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Calibrator Source S/N: TB146
Calibrator API Reference:265.00 api
Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	57.1	23.4	api
Background + Calibrator	326.8	295.0	api
Calibrator	269.6	271.6	api

Shop	Field	Difference	Tolerance
269.6	271.6	-2.0	+/- 9.00

MICRO LOG SHOP CALIBRATION

Tool Name:	Microlog Pad - M489	Reference Calibration Date:	14-Jul-12 14:00:36
Engineer:	T. HYDE	Calibration Date:	10-Aug-12 13:09:32
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 11019643		

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.07	-0.06	-0.05	-0.00	ohmm
Calibration Point #1	-0.01	0.00	-0.05	0.00	ohmm
Calibration Point #2	19.97	20.00	19.25	20.00	ohmm
Internal Reference	19.88	19.92	19.22	19.97	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	3.06	1.99	V
Calibration Point #1	20.38	2.11	V

Calibration Point #2	5373.35	7033.97	V
Internal Reference	5350.71	7023.95	V

MICRO LOG FIELD CHECK			
Tool Name:	Microlog Pad - M489	Reference Calibration Date:	10-Aug-12 13:09:32
Engineer:	T. HYDE	Calibration Date:	16-Aug-12 22:27:41
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

	Measurement	Micro Log Normal		Micro Log Lateral		Units
		Shop	Field	Shop	Field	
	Tool Zero	-0.06	-0.08	-0.00	-0.01	ohmm
	Internal Reference	19.92	19.89	19.97	19.95	ohmm
Summary						
	Signal	Shop	Field	Difference		Tolerance
	Microlog Normal	19.92	19.89	0.03		+/- 0.80
	Microlog Lateral	19.97	19.95	0.02		+/- 0.80

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	271.6	-----	-2.0	+/- 9.00	api
Microlog Pad-M489						
MicroLog Normal	19.92	19.89	-----	0.03	+/-0.80	ohmm
MicroLog Lateral	19.97	19.95	-----	0.02	+/-0.80	ohmm
Data: LOOMIS_B2\0003 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CHIDLE					Date: 18-Aug-12 17:17:32	

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	9.400	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	0.900	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	4911.00	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	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	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog 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
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

BOTTOM

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	72.25	NO	
SP		Spontaneous Potential	72.25	BLK	1.250
SPR		Raw Spontaneous Potential	72.25	NO	
SPO		Spontaneous Potential Offset	72.25	NO	
GTET					
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 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	
Microlog Pad				
TPUL	Tension Pull	44.28	NO	
MINV	Microlog Lateral	44.28	BLK	0.750
MNOR	Microlog Normal	44.28	BLK	0.750
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

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	
Data: LOOMIS_B2I0003 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-CHIDLE			Date: 18-Aug-12 17:18:45	

COMPANY	OXY USA INC		
WELL	LOOMIS B2		
FIELD	AMAZON DITCH		
COUNTY	FINNEY	STATE	KANSAS
HALLIBURTON		MICRO LOG	