

MICROLOG

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LOGGING DATA

GENERAL	GAMMA	ACQUSTIC	PERCUTAN	NEUTRON
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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	3506'	1800'	REC	0	150									
DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
Remarks: SP-GTET-DSNT-SDLT-ACRT RAN IN COMBINATION.														
ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING.														
CHLORIDES REPORTED AT 1900 MG/L.														
LCM REPORTED AT 6 LB/BBL.														
TOOL SURVEYS NOT PERFORMED PER CUSTOMER REQUEST.														
YOUR CREW: F. VILLA, B. TERRELL														
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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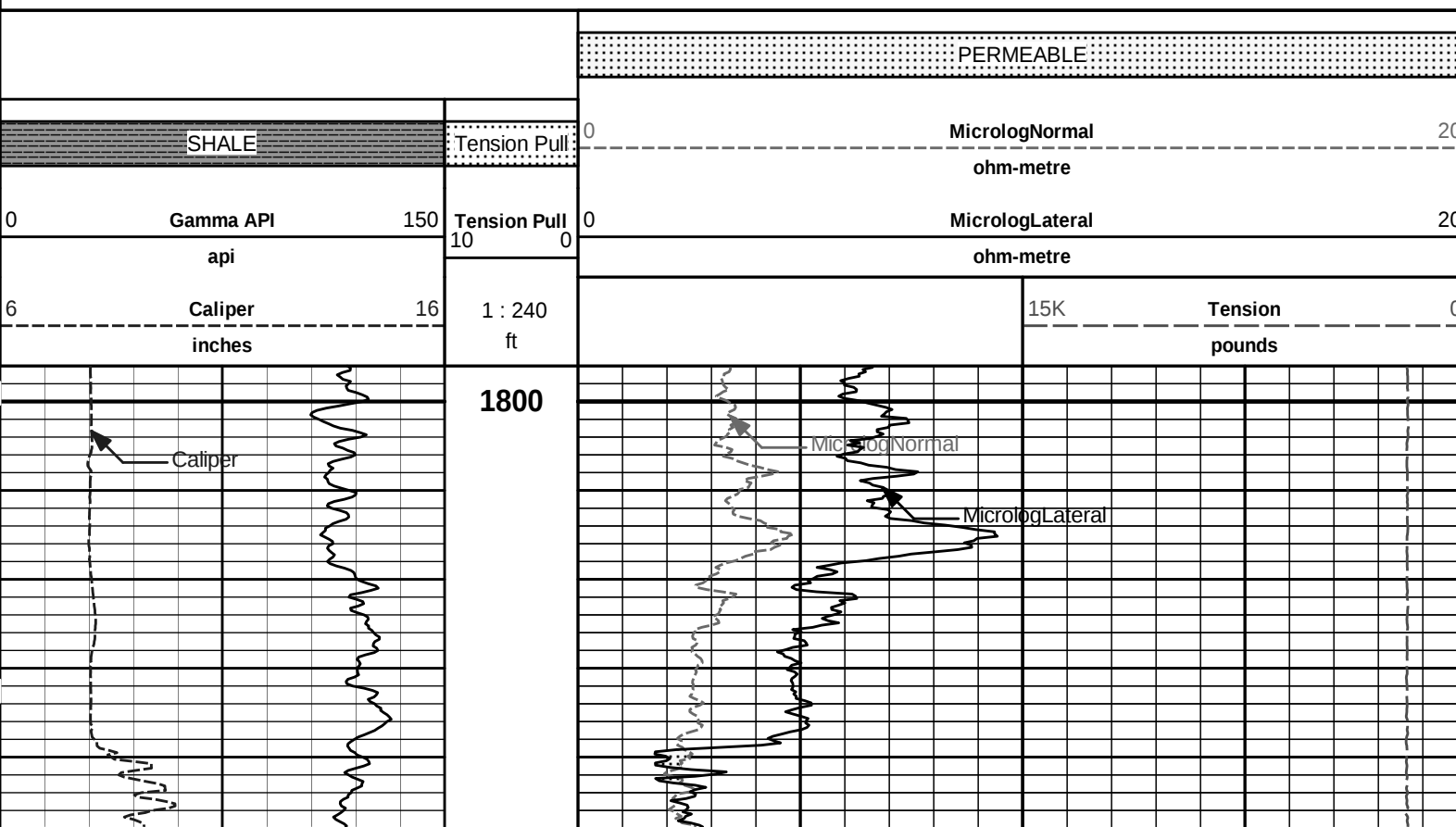
Plot Time: 08-Apr-12 04:56:17

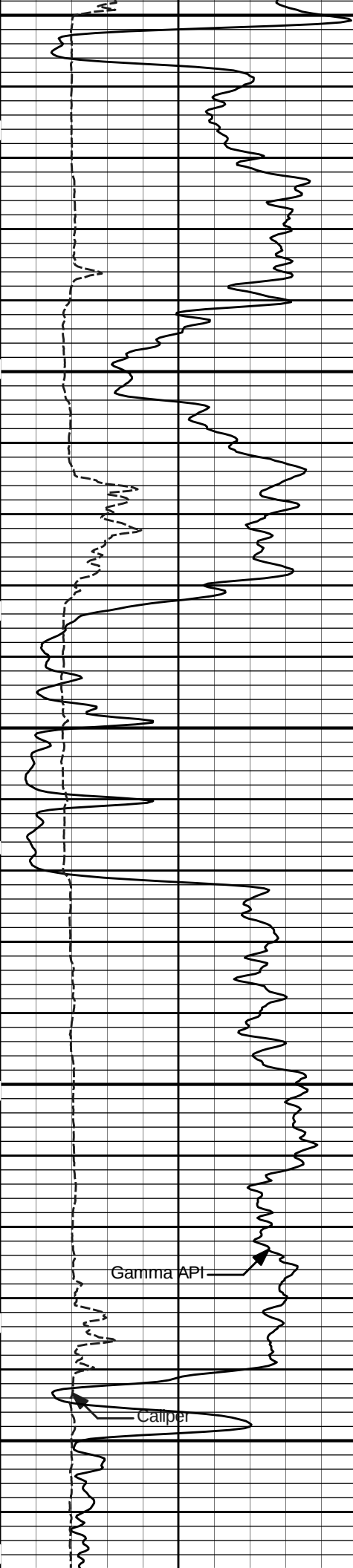
Plot Range: 1796 ft to 3507.92 ft

Data: BOLACK V 1 21\Well Based\R1 DETAIL\

Plot File: \\-LOCAL-\\BOLACK V 1 21\\0001 SP-GTET-DSNT-SDLT-ACRT-CH\\MICRO\\Microlog IQ 5 main lib

5 INCH MAIN LOG



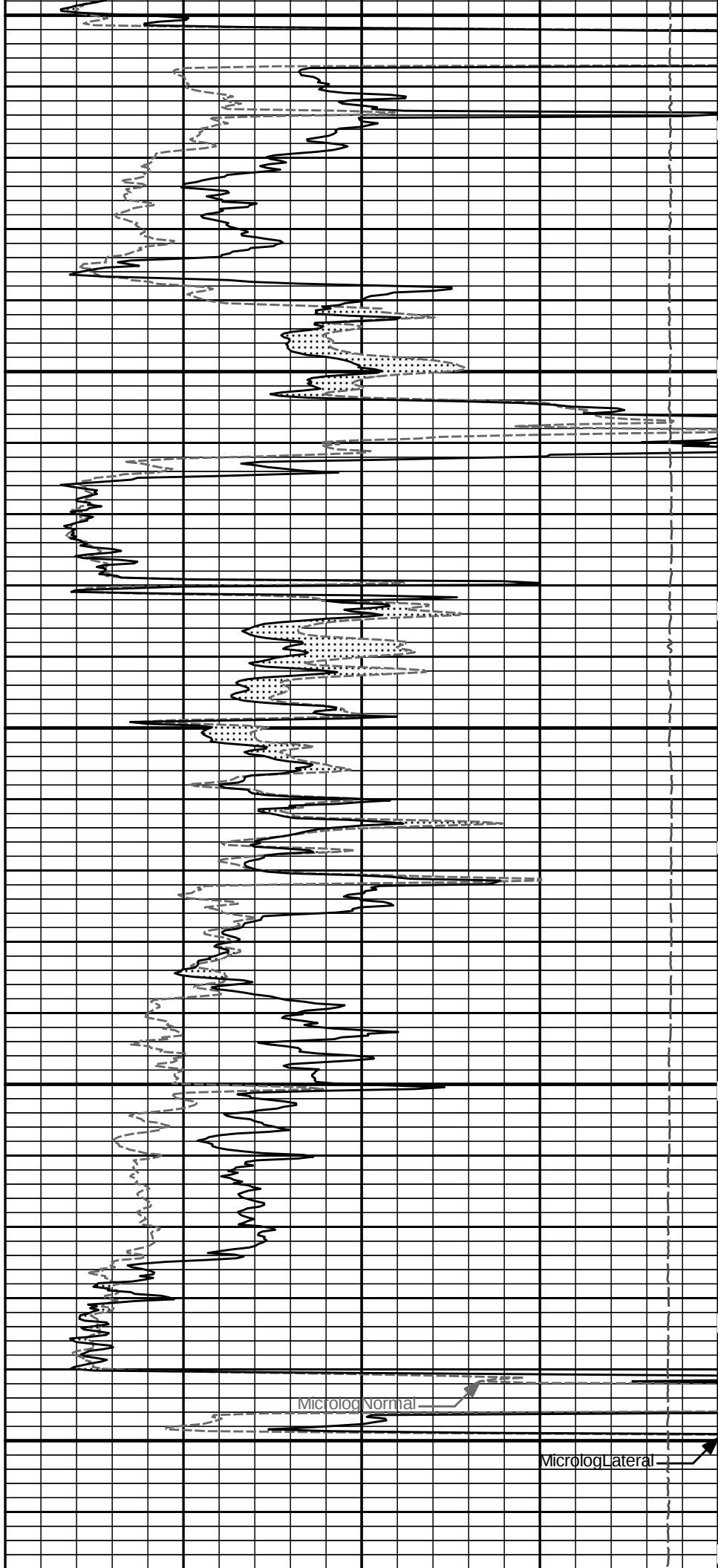


1900

2000

Gamma API

Caliper



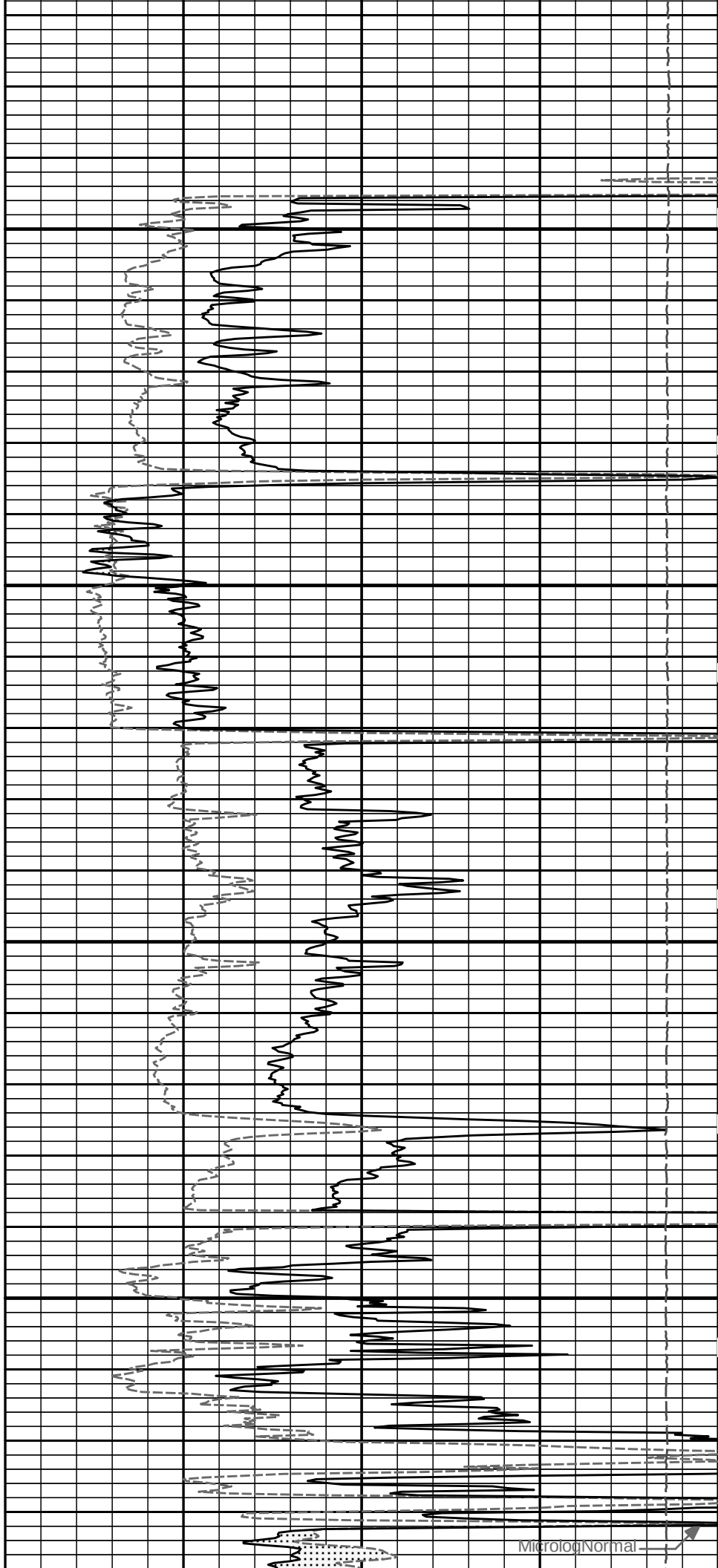
Microlog Normal

Microlog Lateral



2100

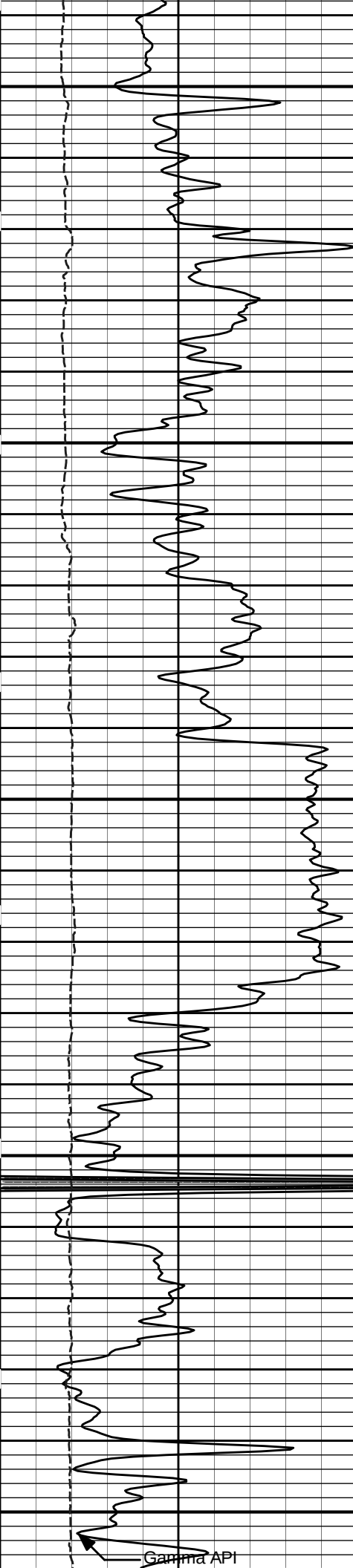
2200



Gamma API

Caliper

MicrologNormal

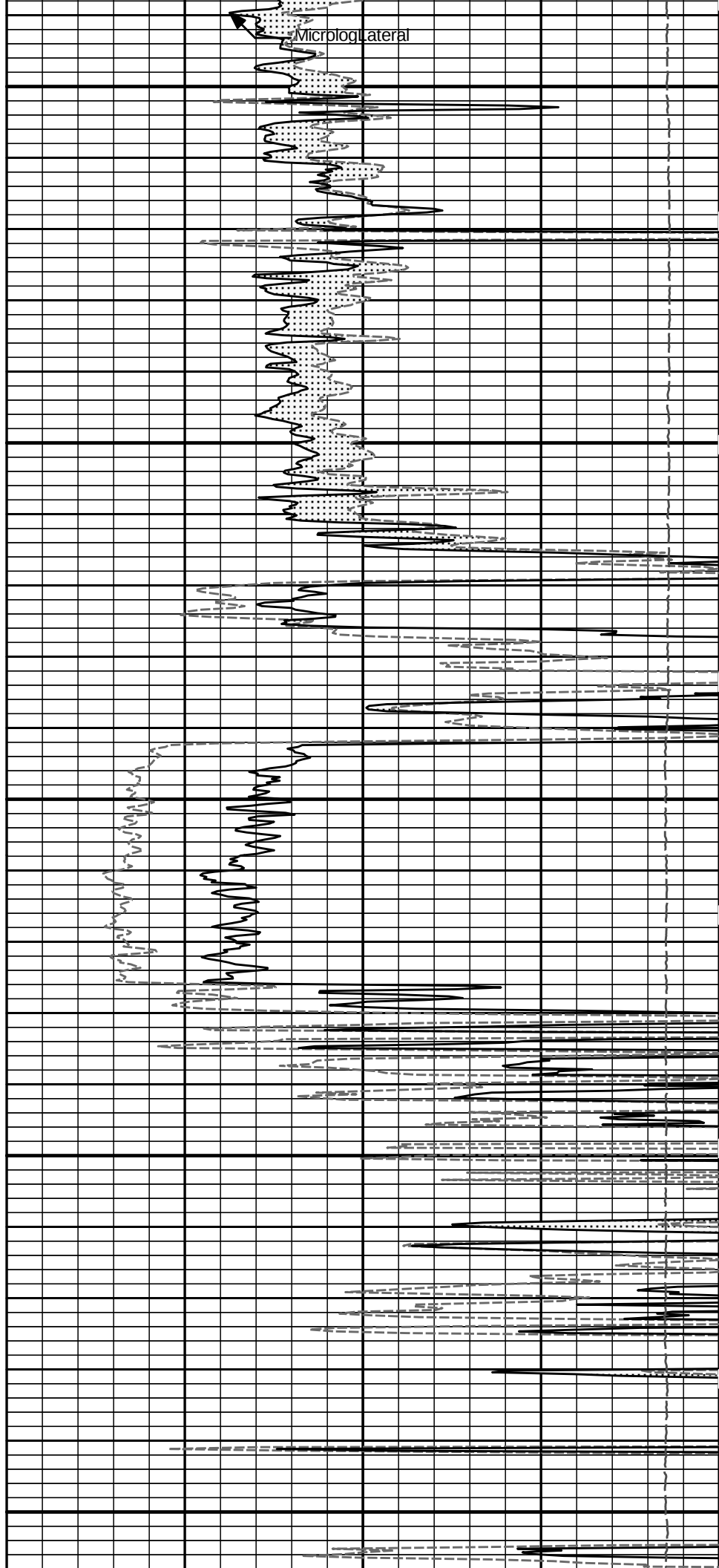


2300

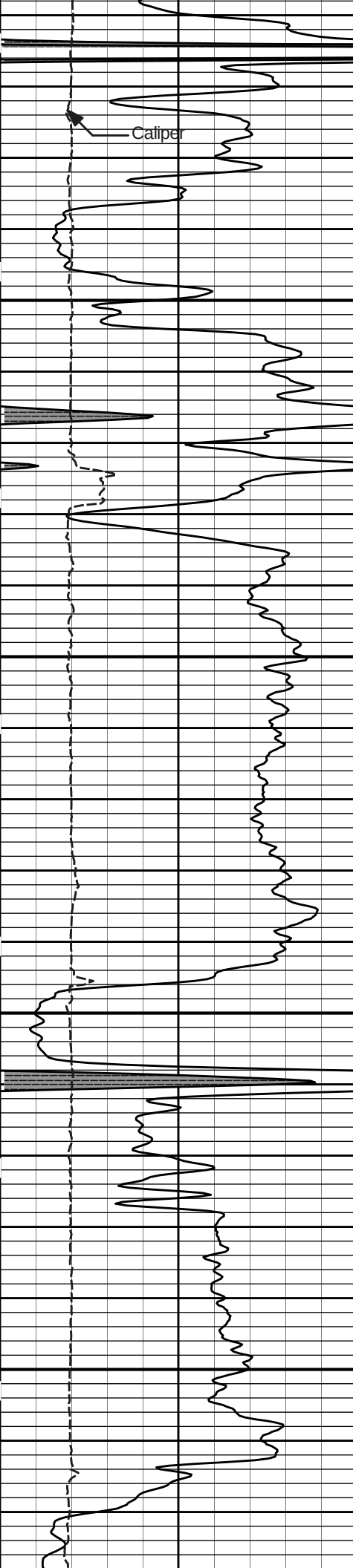
2400

2500

Gamma API

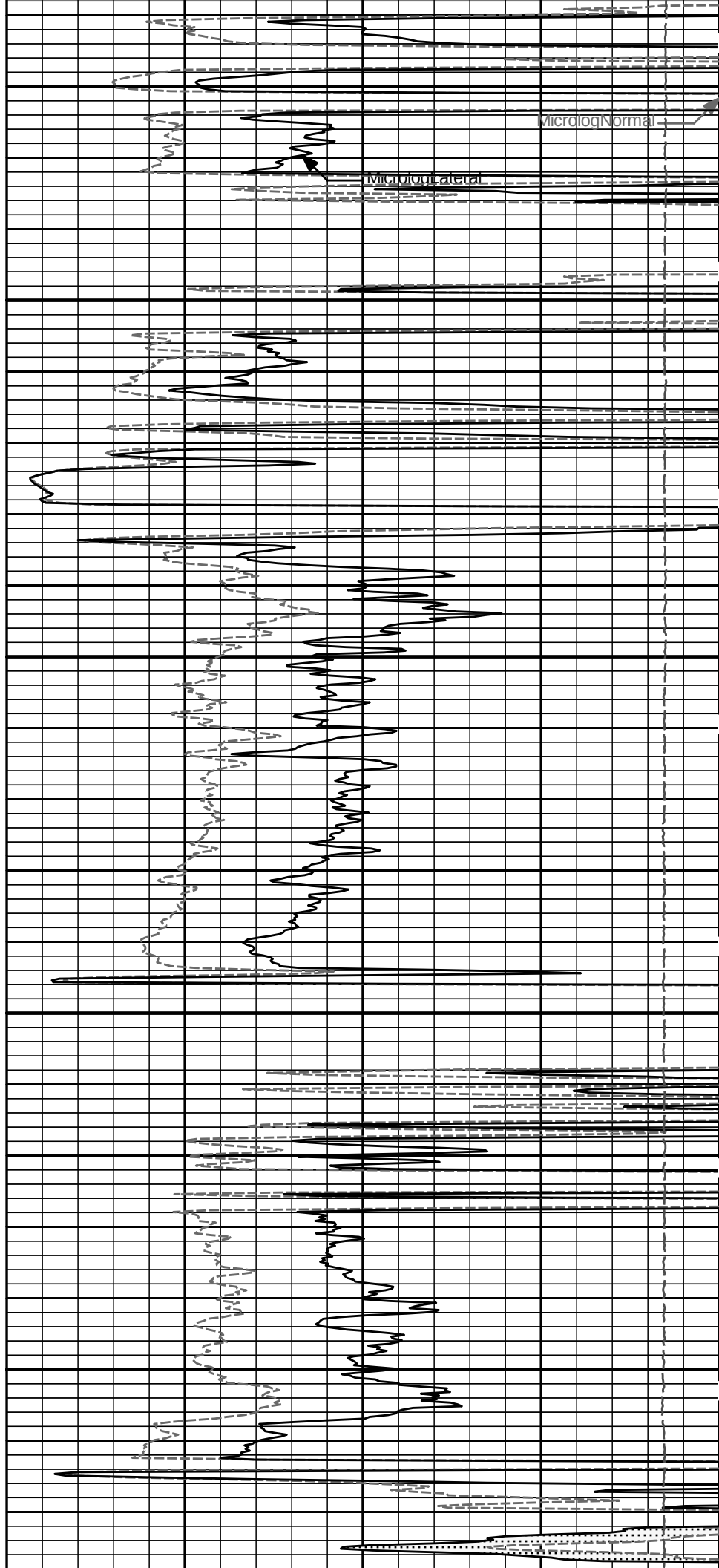


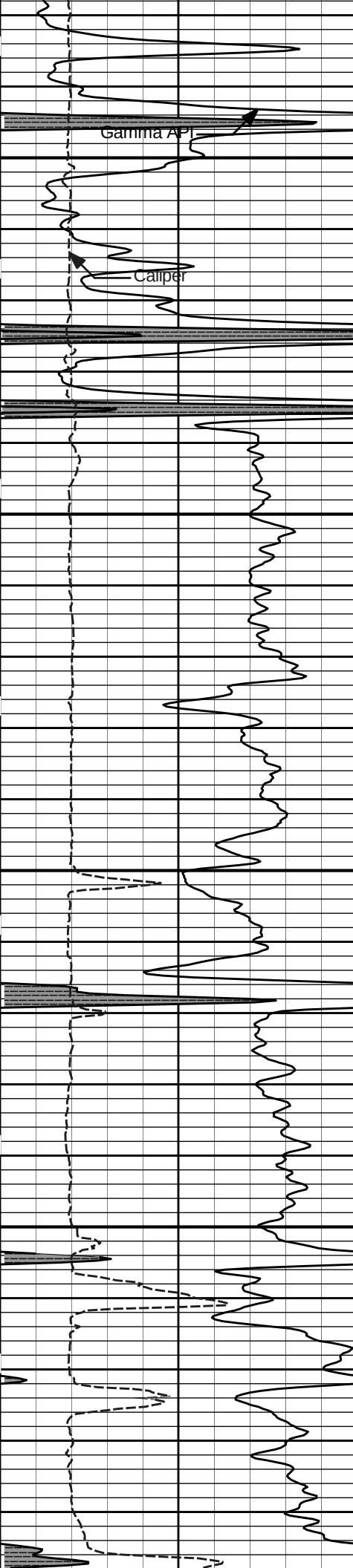
Microlog lateral



2600

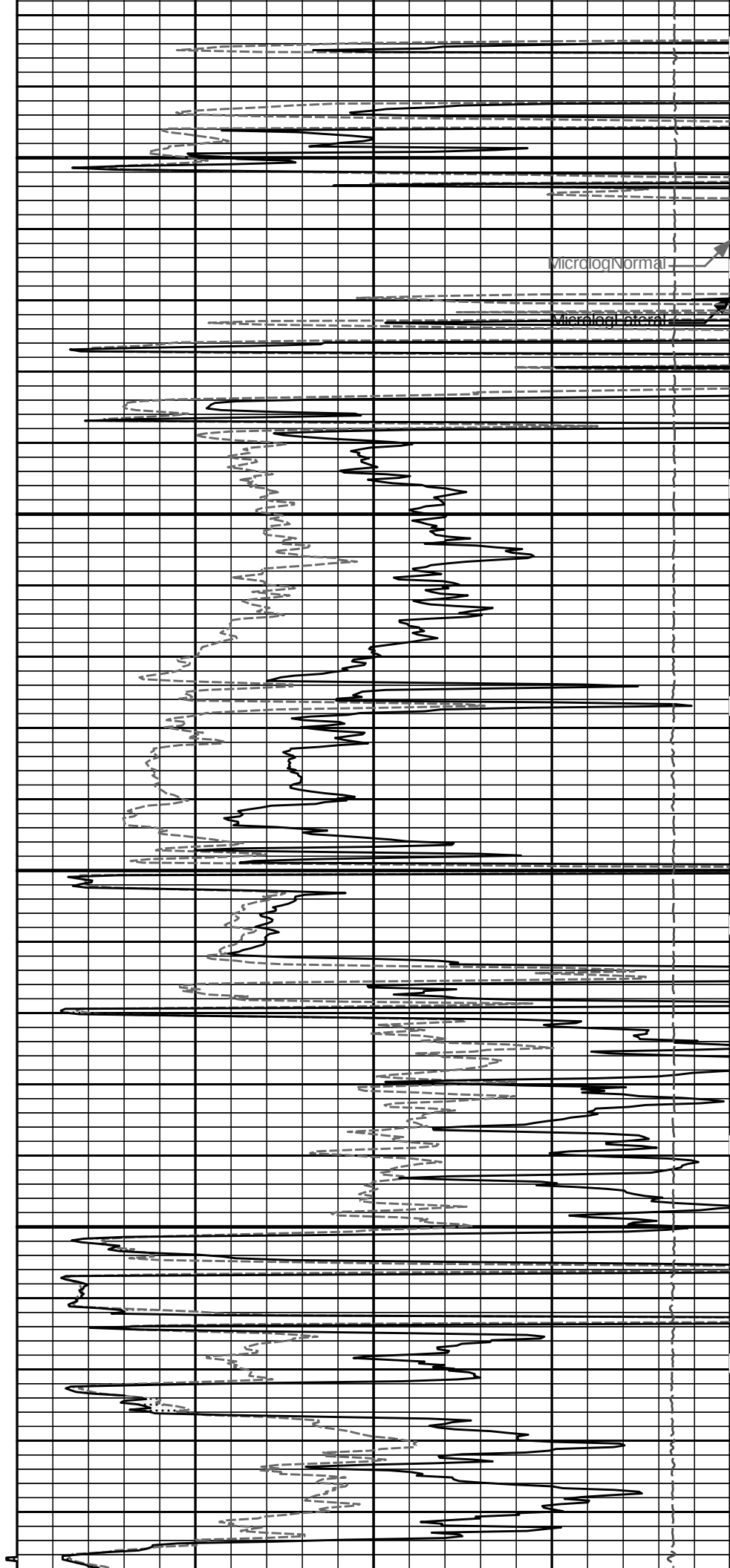
2700





2800

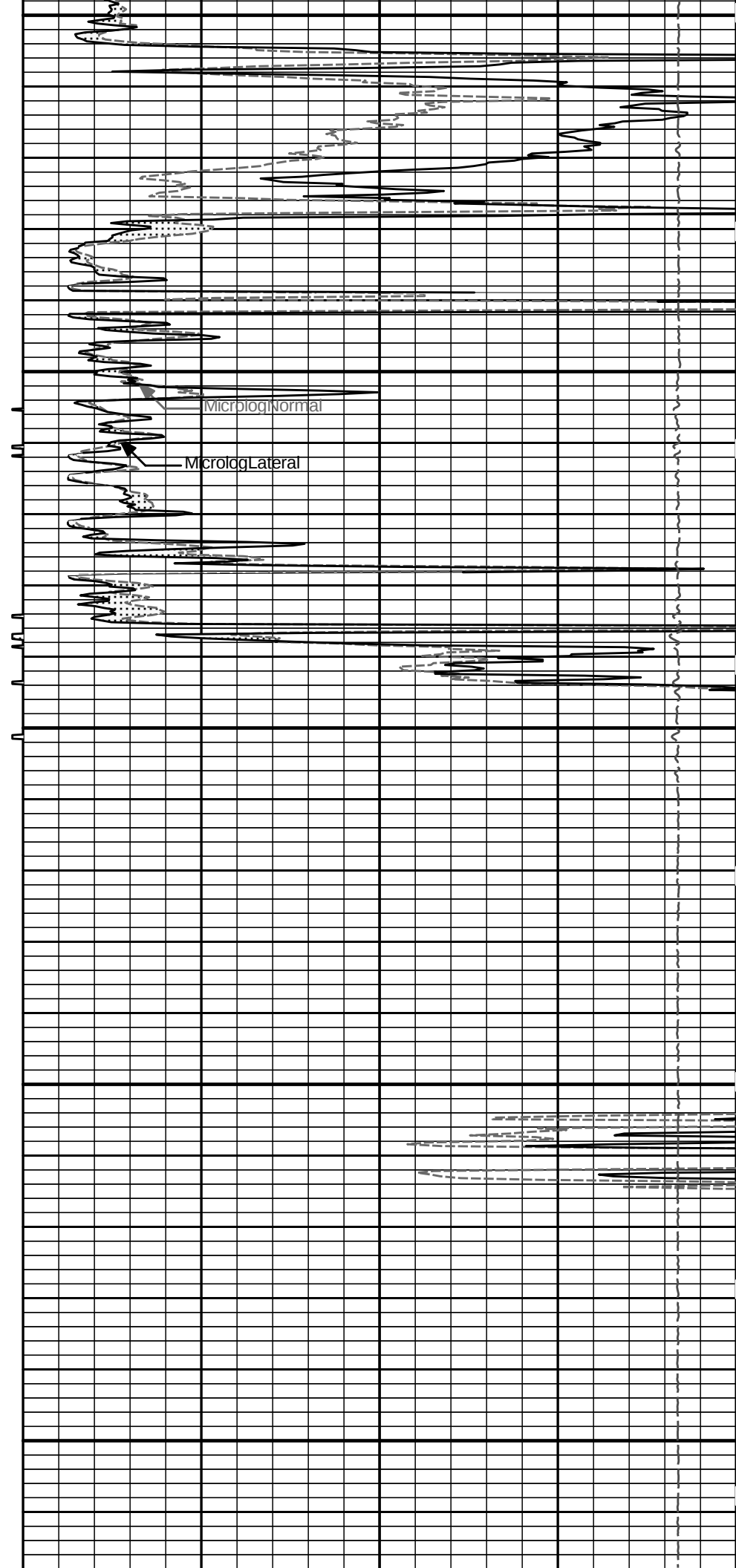
2900

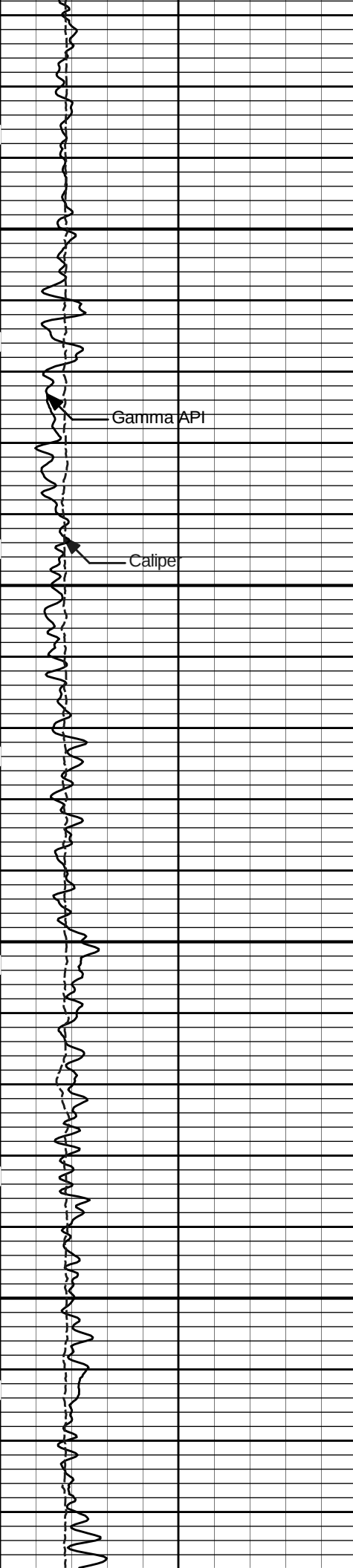




3000

3100



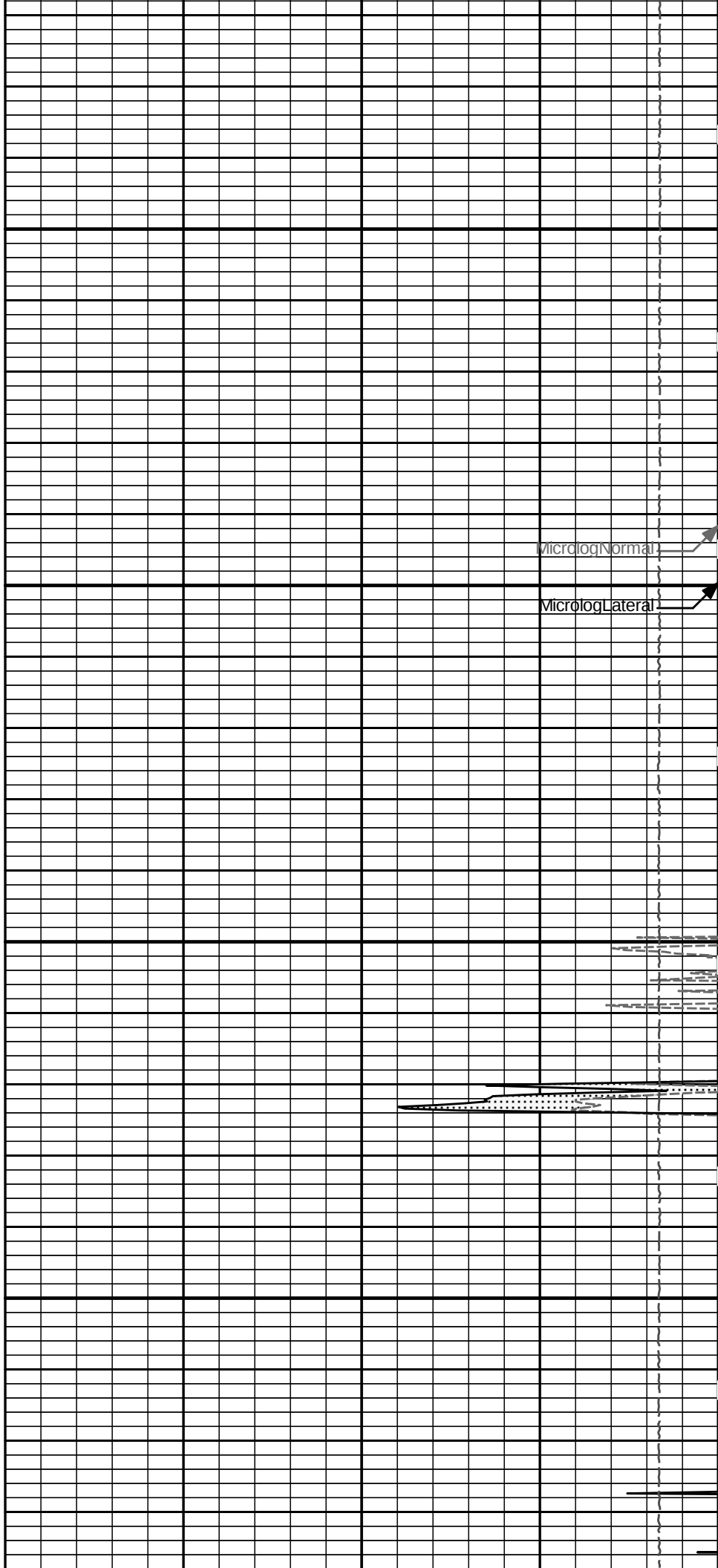


3200

Gamma API

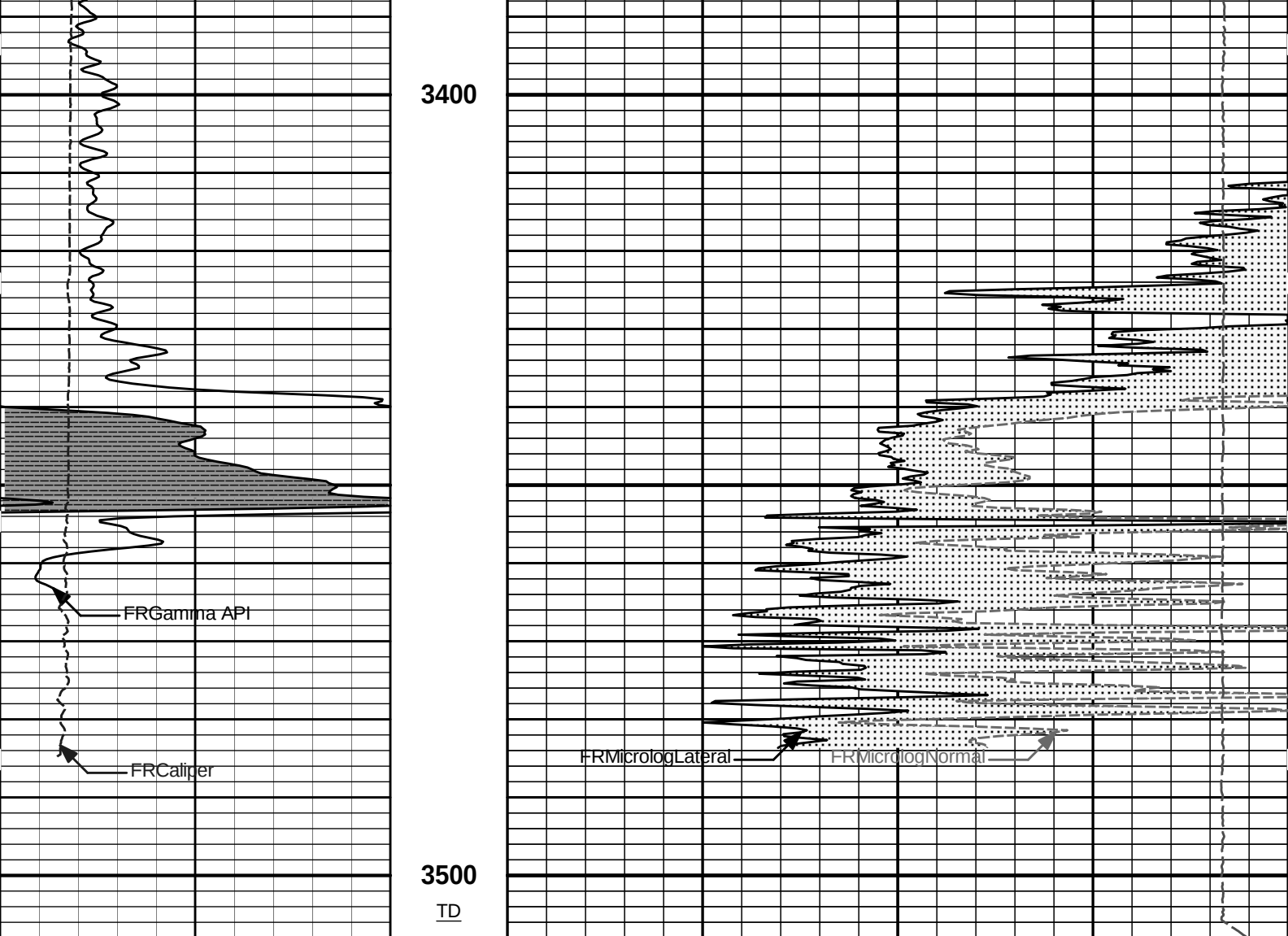
Calipe

3300



MicrologNormal

MicrologLateral



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

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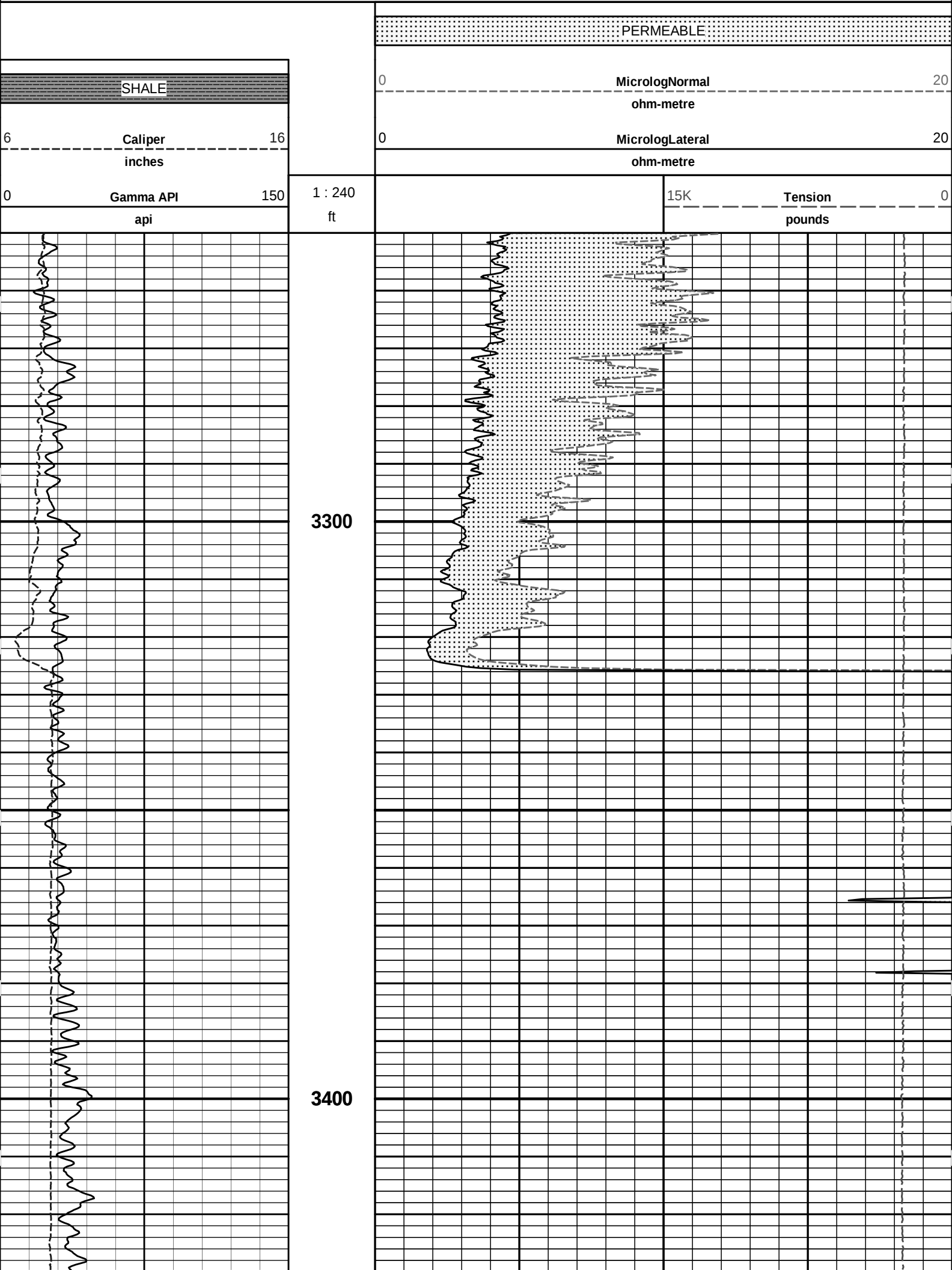
Plot Time: 08-Apr-12 04:56:29
Plot Range: 1796 ft to 3507.92 ft
Data: BOLACK_V_1_21\Well Based\IR1_DETAIL\
Plot File: \\-LOCAL-BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\MICRO\Microlog_IQ_5_main_lib

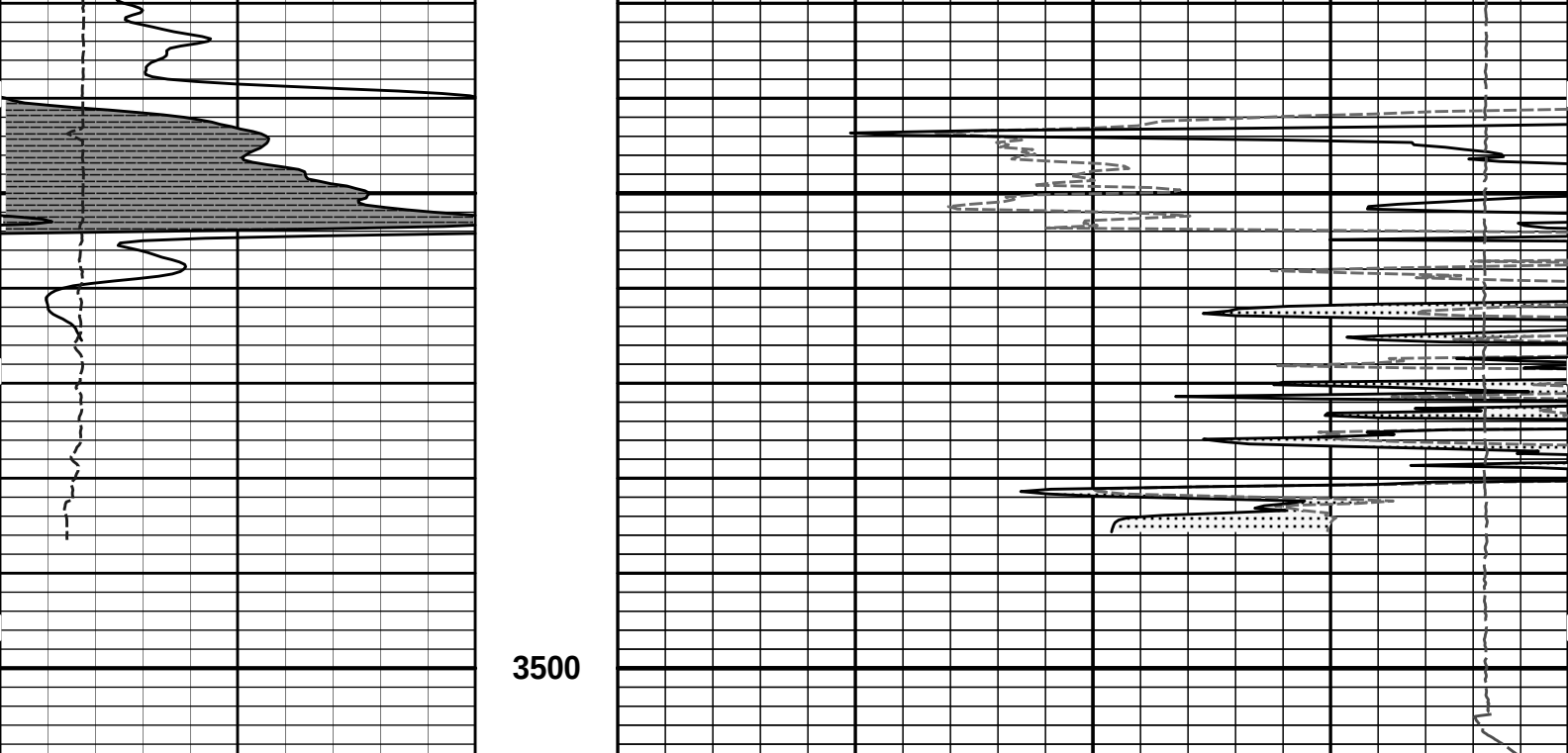
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 08-Apr-12 04:56:29
Plot Range: 3250 ft to 3509.42 ft
Data: BOLACK_V_1_21\Well Based\IR1_REPEAT\
Plot File: \\-LOCAL-BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\MICRO\Microlog_IQ_5_rep_lib

REPEAT SECTION





3500

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

HALLIBURTON

Plot Time: 08-Apr-12 04:56:30

Plot Range: 3250 ft to 3509.42 ft

Data: BOLACK_V_1_21\Well Based\IR1_REPEAT\

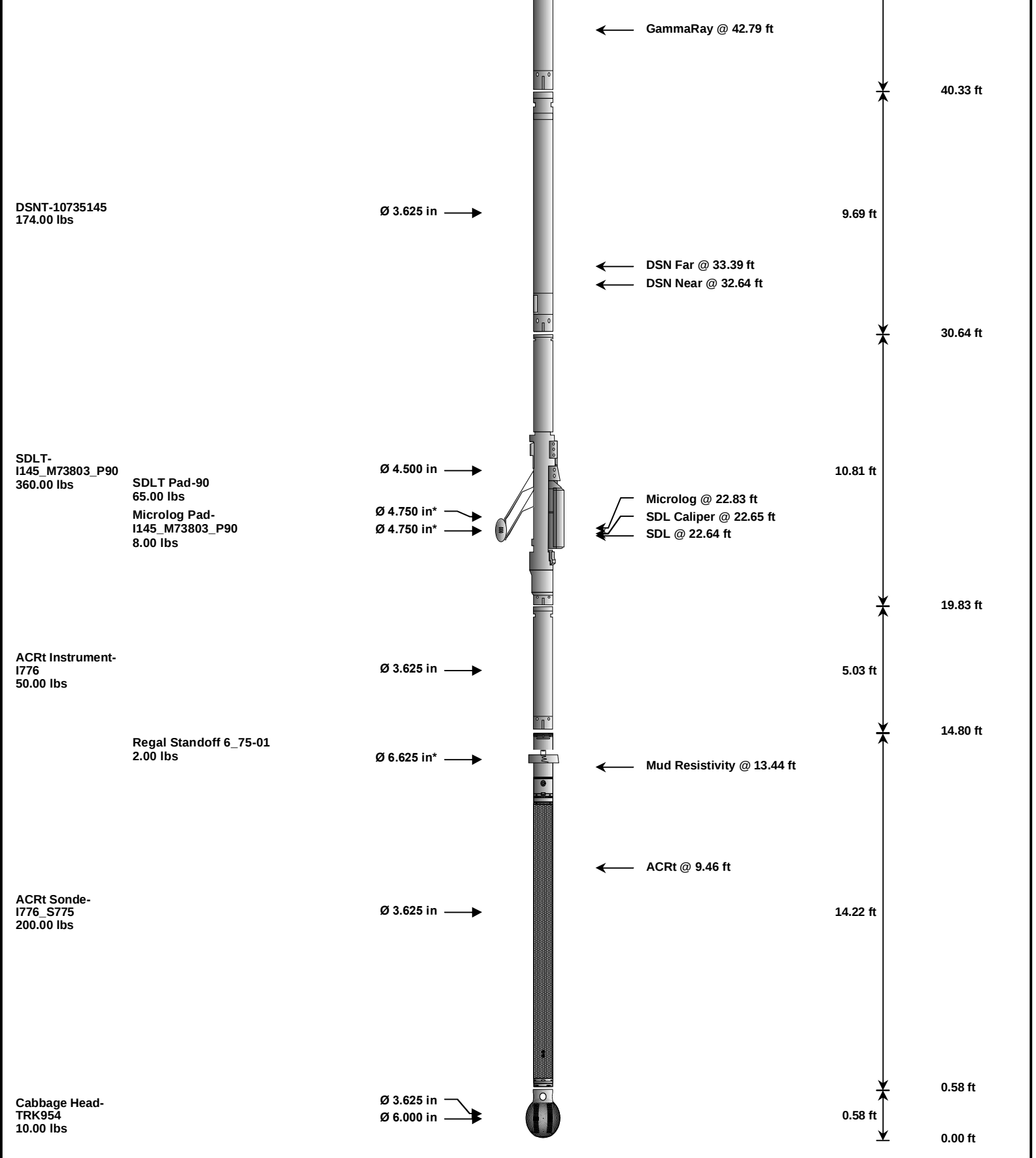
Plot File: \\-LOCAL-BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\MICRO\Microlog_IQ_5_rep.lib

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	54.51 ft	
							52.59 ft
SP Sub-11441709 60.00 lbs		Ø 3.625 in →		← SP @ 50.81 ft	3.74 ft		
							48.85 ft
GTET-10811258 165.00 lbs		Ø 3.625 in →			8.52 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	52.59	300.00
SP	SP Sub		11441709	60.00	3.74	48.85	300.00
GTET	Gamma Telemetry Tool		10811258	165.00	8.52	40.33	60.00
DSNT	Dual Spaced Neutron		10735145	174.00	9.69	30.64	60.00
SDLT	Spectral Density Tool		I145_M73803_P90	360.00	10.81	19.83	60.00
MICP	Microlog Pad		I145_M73803_P90	8.00	1.00	*	22.33
SDLP	Density Insite Pad		90	65.00	2.55	*	22.04
ACRt	Array Compensated True Resistivity Instrument Section		I776	50.00	5.03	14.80	300.00
ACRt	Array Compensated True Resistivity		I776_S775	200.00	14.22	0.58	300.00

ACRT	Array Compensated True Resistivity	1776_3775	200.00	14.22	0.58	300.00
RSOF	Regal Standoff 6.75in	01	2.00	0.52	*	13.53 300.00
CBHD	Cabbage Head	TRK954	10.00	0.58	0.00	300.00
Total			1,124.00	54.51		
* Not included in Total Length and Length Accumulation.						
Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CHIDLE				Date: 08-Apr-12 01:32:17		

HALLIBURTON						
CALIBRATION REPORT						
MICRO LOG SHOP CALIBRATION						
Tool Name:		Microlog Pad - I145_M73803_P90		Reference Calibration Date:		13-Jan-12 12:43:35
Engineer:		J. BOLLUM		Calibration Date:		12-Mar-12 08:17:08
Software Version:		WL INSITE R3.4.2 (Build 2)		Calibration Version:		1
	CALIBRATION COEFFICIENT SUMMARY					
	Measurement	Micro Log Normal		Micro Log Lateral		
		Measured	Calibrated	Measured	Calibrated	Units
	Tool Zero	-0.08	-0.07	-0.00	-0.01	ohmm
	Calibration Point #1	-0.02	0.00	0.00	0.00	ohmm
	Calibration Point #2	19.92	20.00	19.94	20.00	ohmm
	Internal Reference	19.85	19.93	19.94	19.99	ohmm
	Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero	-0.32		-0.77		V
	Calibration Point #1	17.42		1.71		V
	Calibration Point #2	5373.42		6988.77		V
	Internal Reference	5354.44		6985.83		V
CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
Microlog Pad-I145_M73803_P90						
MicroLog Normal	19.93	-----	-----	0.00	-----	ohmm
MicroLog Lateral	19.99	-----	-----	0.00	-----	ohmm
Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CHIDLE				Date: 08-Apr-12 01:58:40		

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	9.000	ppg	
	SHARED	WAGT	Weighting Agent	Natural		
	SHARED	BSAL	Borehole salinity	1900.00	ppm	
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm	

SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
SHARED	RMUD	Mud Resistivity	1.630	ohmm
SHARED	TRM	Temperature of Mud	71.0	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	3500.00	ft
SHARED	BHT	Bottom Hole Temperature	110.0	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?	No	
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	
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
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
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	
BOTTOM				
Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CHIDLE			Date: 08-Apr-12 01:57:28	

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		50.81	NO	
SP	Spontaneous Potential		50.81	BLK	1.250
SPR	Raw Spontaneous Potential		50.81	NO	
SPO	Spontaneous Potential Offset		50.81	NO	
GTET					
TPUL	Tension Pull		42.79	NO	
GR	Natural Gamma Ray API		42.79	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API		42.79	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution		42.79	W	1.416 , 0.750
ACCZ	Accelerometer Z		0.00	BLK	0.083
DEVI	Inclination		0.00	NO	
DSNT					
TPUL	Tension Pull		32.54	NO	
RNDS	Near Detector Telemetry Counts		32.64	BLK	1.417
RFDS	Far Detector Telemetry Counts		33.39	TRI	0.583
DNTT	DSN Tool Temperature		32.64	NO	
DSNS	DSN Tool Status		32.54	NO	
ERND	Near Detector Telemetry Counts EVR		32.64	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR		33.39	BLK	0.000
ENTM	DSN Tool Temperature EVR		32.64	NO	
SDLT					
TPUL	Tension Pull		22.65	NO	
PCAL	Pad Caliper		22.65	TRI	0.250
ACAL	Arm Caliper		22.65	TRI	0.250
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

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	
SDLT Pad				
TPUL	Tension Pull	22.64	NO	
NAB	Near Above	22.46	BLK	0.920
NHI	Near Cesium High	22.46	BLK	0.920
NLO	Near Cesium Low	22.46	BLK	0.920
NVA	Near Valley	22.46	BLK	0.920
NBA	Near Barite	22.46	BLK	0.920
NDE	Near Density	22.46	BLK	0.920
NPK	Near Peak	22.46	BLK	0.920
NLI	Near Lithology	22.46	BLK	0.920
NBAU	Near Barite Unfiltered	22.46	BLK	0.250
NLIU	Near Lithology Unfiltered	22.46	BLK	0.250
FAB	Far Above	22.81	BLK	0.250
FHI	Far Cesium High	22.81	BLK	0.250
FLO	Far Cesium Low	22.81	BLK	0.250
FVA	Far Valley	22.81	BLK	0.250
FBA	Far Barite	22.81	BLK	0.250
FDE	Far Density	22.81	BLK	0.250
FPK	Far Peak	22.81	BLK	0.250
FLI	Far Lithology	22.81	BLK	0.250
PTMP	Pad Temperature	22.65	BLK	0.920
NHV	Near Detector High Voltage	22.04	NO	

FHV	Far Detector High Voltage	22.04	NO	
ITMP	Instrument Temperature	22.04	NO	
DDHV	Detector High Voltage	22.04	NO	
Microlog Pad				
TPUL	Tension Pull	22.83	NO	
MINV	Microlog Lateral	22.83	BLK	0.750
MNOR	Microlog Normal	22.83	BLK	0.750
Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CHIDLE			Date: 08-Apr-12 01:57:39	

COMPANY	VAL ENERGY INC.		
WELL	BOLACK V 1-21		
FIELD	BOLACK		
COUNTY	COWLEY	STATE	KANSAS
HALLIBURTON		MICROLOG	