

HERMAN L. LOEB, LLC										MICROLOG									
YOST 2-28																			
EINSEL																			
KIOWA																			
KANSAS																			
COMPANY										COMPANY									
WELL										WELL									
FIELD/BLOCK										FIELD/BLOCK									
COUNTY										COUNTY									
STATE										STATE									
Permanent Datum										GL									
Log measured from										KB									
Drilling measured from										KB									
Date										31-Mar-15									
Run No.										ONE									
Depth - Driller										4840.00 ft									
Depth - Logger										4839.0 ft									
Bottom - Logged Interval										4835.50									
Top - Logged Interval										3900.00 ft									
Casing - Driller										8.625 in @ 549.0 ft									
Casing - Logger										549.0 ft									
Bit Size										7.875 in									
Type Fluid in Hole										Water Based Mud									
Density										9.2 ppg									
Viscosity										62.00 s/qt									
PH										9.00 pH									
Fluid Loss										5900.0 cphm									
Source of Sample										MUD PIT									
Rm @ Meas. Temperature										0.670 ohmm @ 74.00 degF									
Rmf @ Meas. Temperature										0.37 ohmm @ 74.00 degF									
Rmc @ Meas. Temperature										0.890 ohmm @ 74.00 degF									
Source Rmf										MEASURED									
Rm @ BHT										0.41 ohmm @ 110.0 degF									
Time Since Circulation										7.2544 hr									
Time on Bottom										31-Mar-15 01:45:39.000									
Max. Rec. Temperature										110.0 degF @ 4834.0 ft									
Equipment										11072142									
Location										Liberal, KS, US									
Recorded By										SUHAIL BISHTI									
Witnessed By										JON CHRISTENSEN									

Service Ticket No.: 902259578										API Serial No.: 15-097-21816-00-00										PGM Version: WL INSITE R4.6.4 (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	MICROLOG	RUBBER	ADJ	N/A															
Rmc @ Meas. Temp.		@				@					11014296																		
Source Rmf	Rmc																												
Rm @ BHT		@				@																							
Rmf @ BHT		@				@																							
Rmc @ BHT		@				@																							
EQUIPMENT DATA																													
GAMMA				ACOUSTIC				DENSITY				NEUTRON																	
Run No.	ONE			Run No.				Run No.	ONE			Run No.	ONE																
Serial No.	11048627			Serial No.				Serial No.	10865884			Serial No.	11055304																
Model No.	GTET			Model No.				Model No.	SDLT			Model No.	DSNT																
Diameter	3.625"			No. of Cent.				Diameter	4.5"			Diameter	3.625"																
Detector Model No.	T-102			Spacing				Log Type	GAM-GAM			Log Type	NEU-NEU																
Type	SCINT							Source Type	CS-137			Source Type	AM241BE																
Length	8"			LSA [Y/N]				Serial No.	5168 GW			Serial No.	DSN-424																
Distance to Source	10"			FWDA [Y/N]				Strength	1.5 CI			Strength	15 CI																
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	TD	3900'	REC	0	150				30	-10	2.71	30	-10	LIME															

DIRECTIONAL INFORMATION														
Maximum Deviation							@	KOP				@		
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5" CASING														
CHLORIDES REPORTED AT 4500 PPM														
LCM REPORTED AT 2 PPM														
GTET-DSN-SDL RUN IN COMBINATION IN THE SECOND RUN														
TODAY'S CREW:F.VILLA & A.ESTRADA														
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														



Plot Time: 31-Mar-15 02:29:44

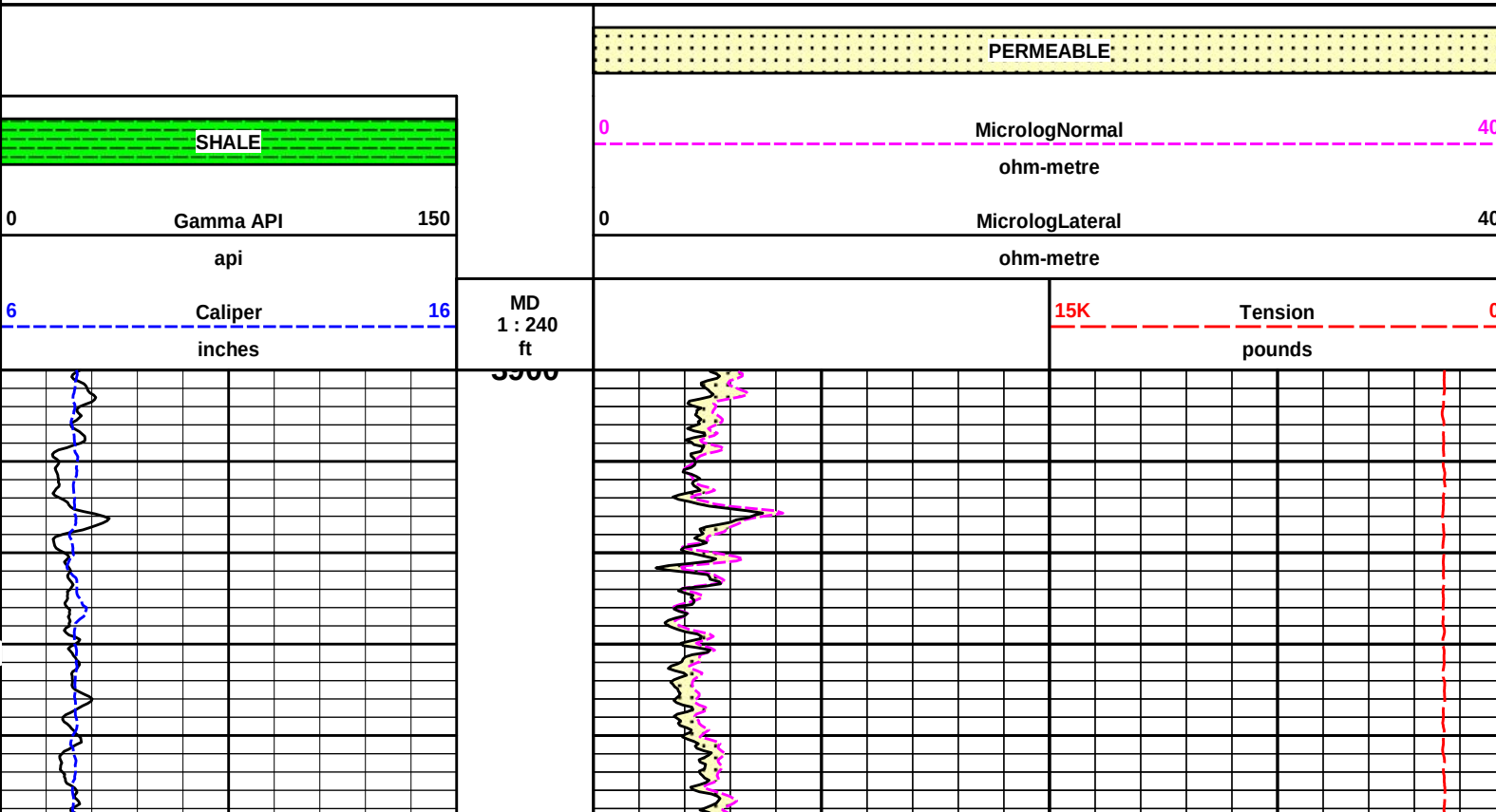
Plot Range: 3900 ft to 4843 ft

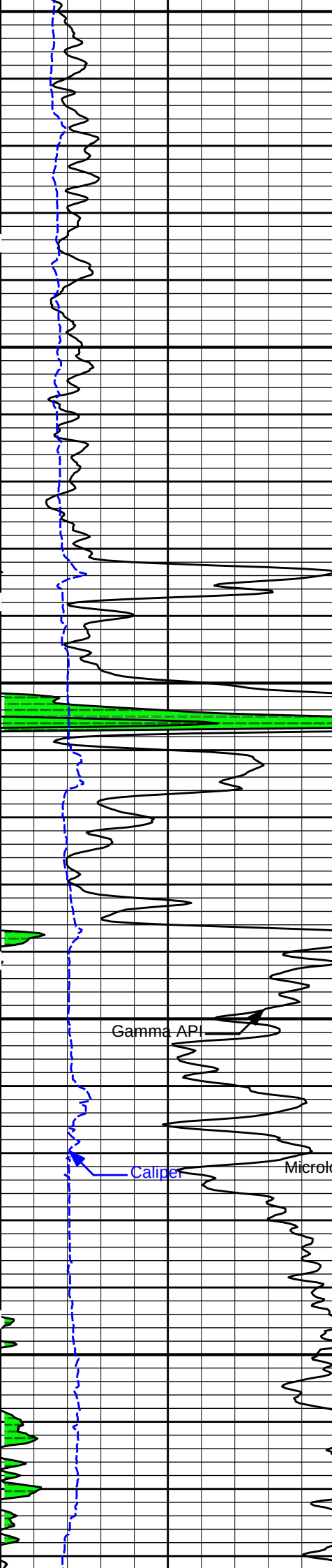
Data: YOST 2-28\Well Based\PORO DETAILS\

Plot File: \\LOCAL-YOST 2-28\Well Based\MICRO\Microlog_IQ_5_main_lib

5 INCH MAIN LOG

MEASURED DEPTH
MAIN LOG 5" PER 100'





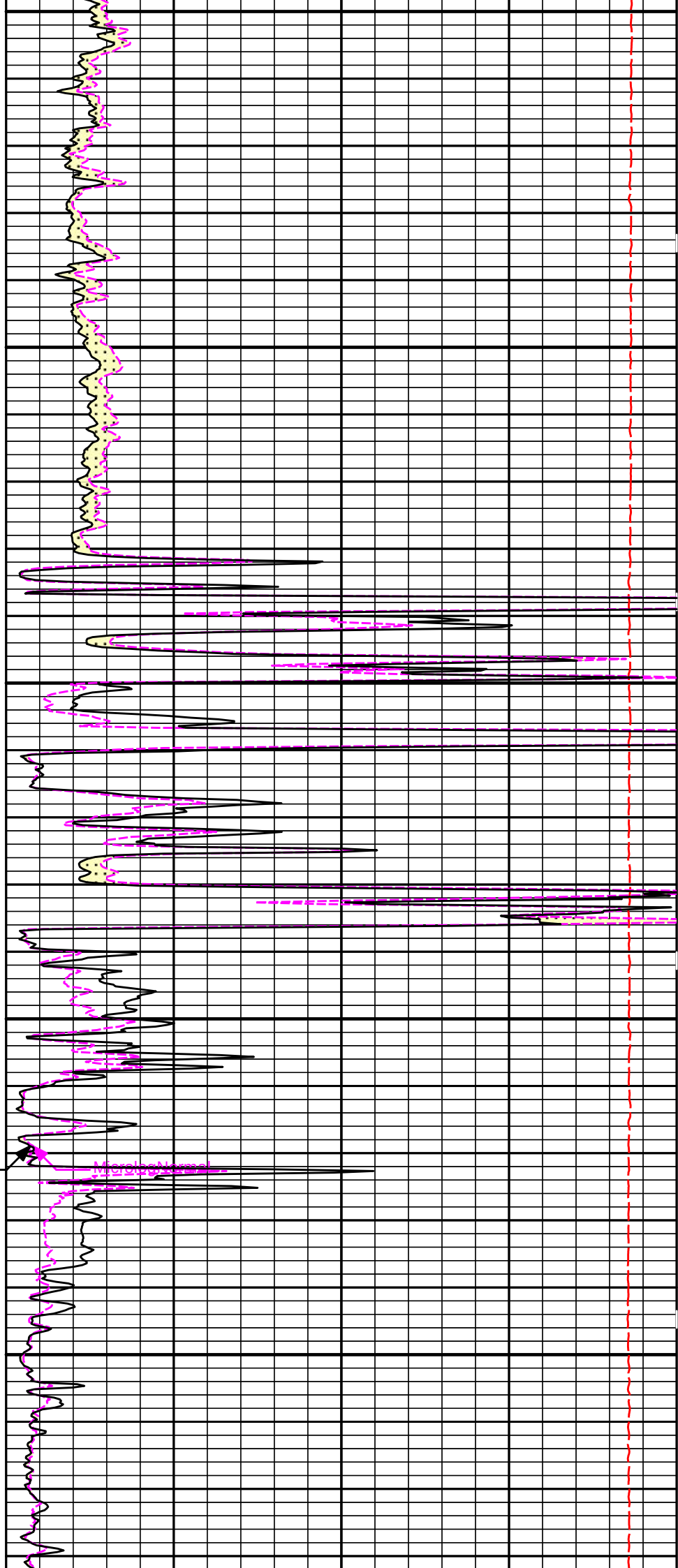
4000

4100

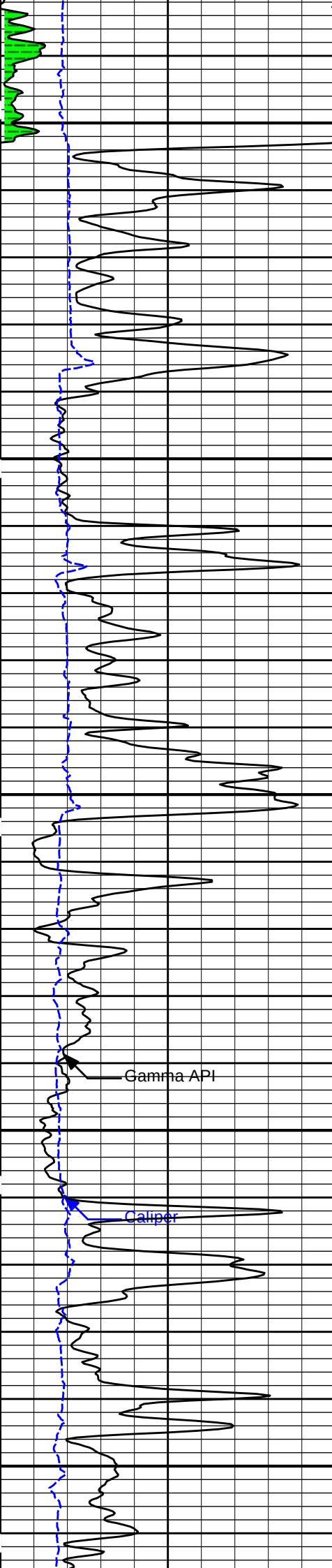
Gamma API

Caliper

Microlog Lateral



Microlog Resistivity



4200

4300

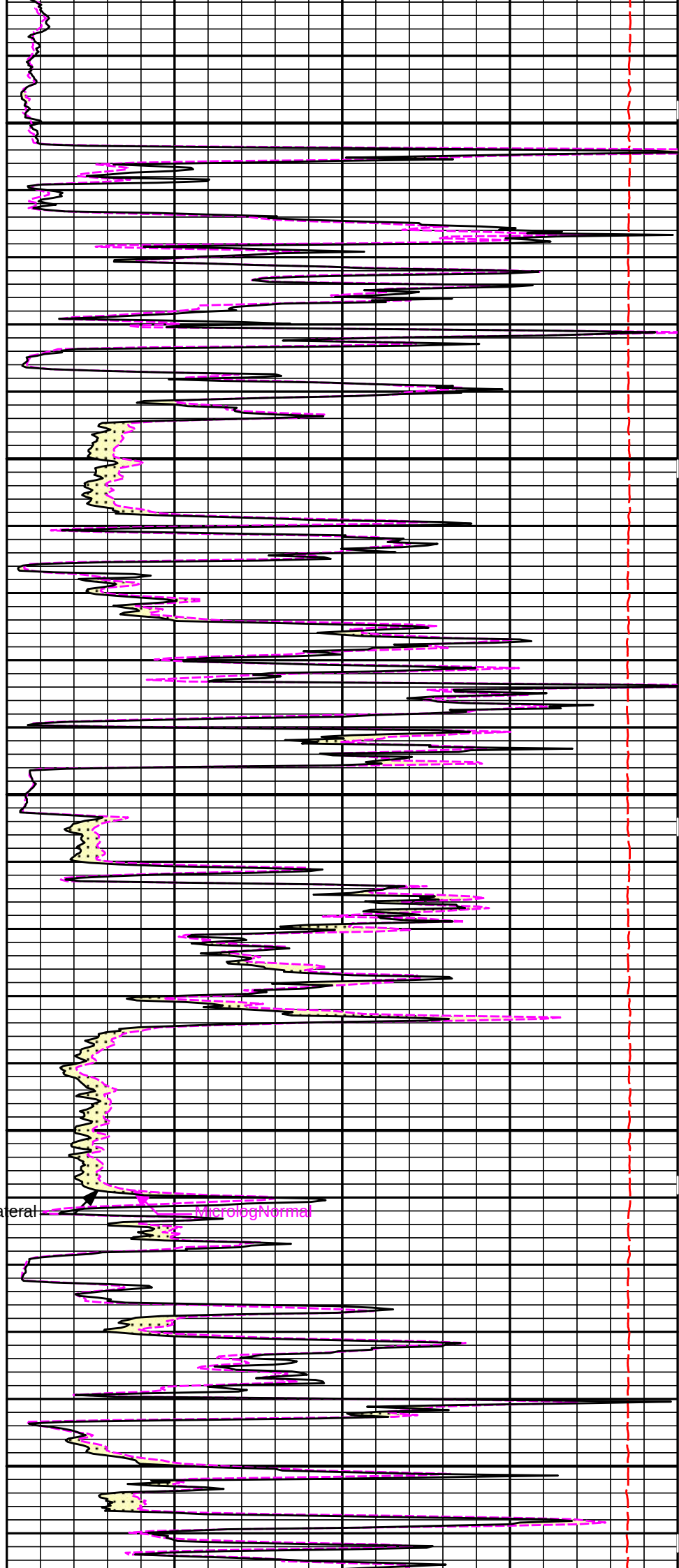
4400

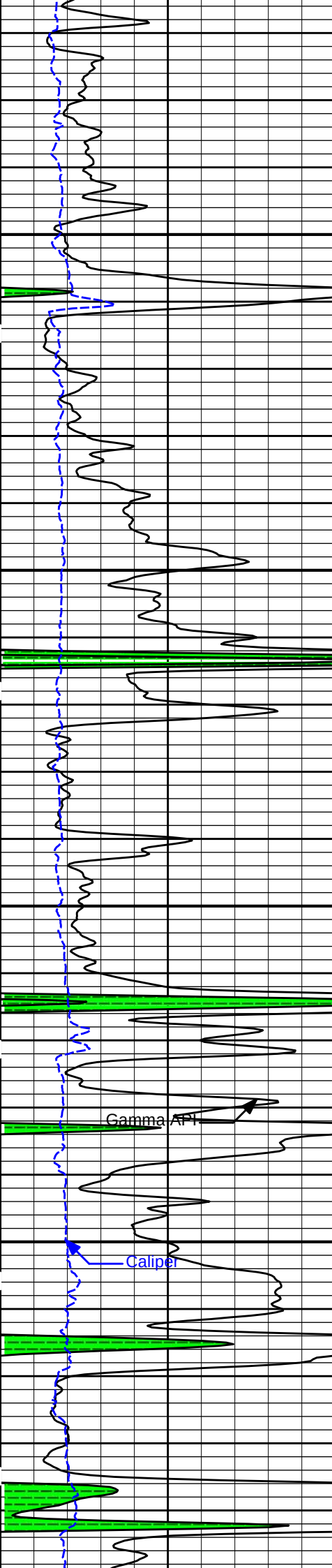
Gamma API

Caliper

MicrologLateral

MicrologNormal





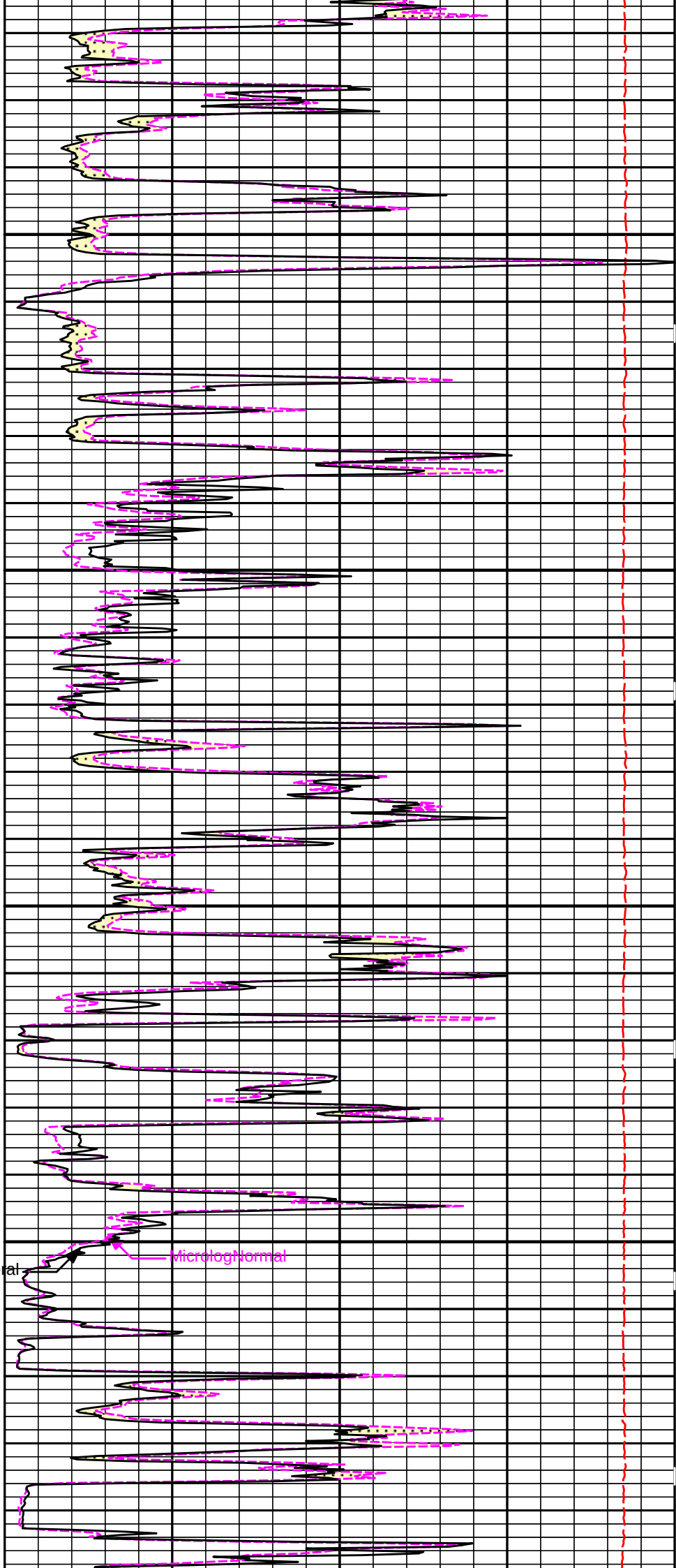
4500

4600

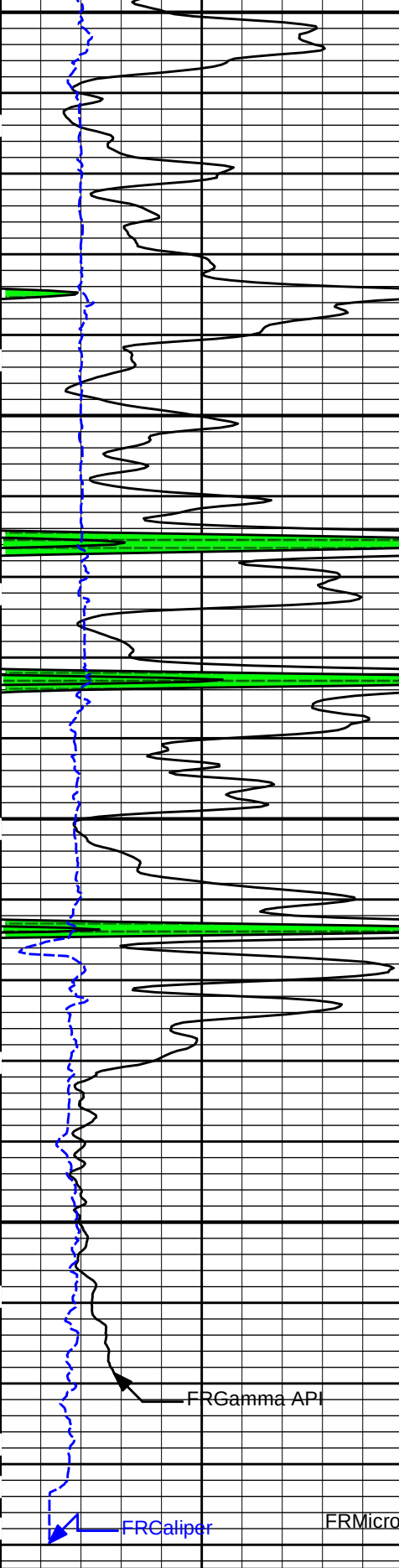
Gamma API

Caliper

MicrologLateral

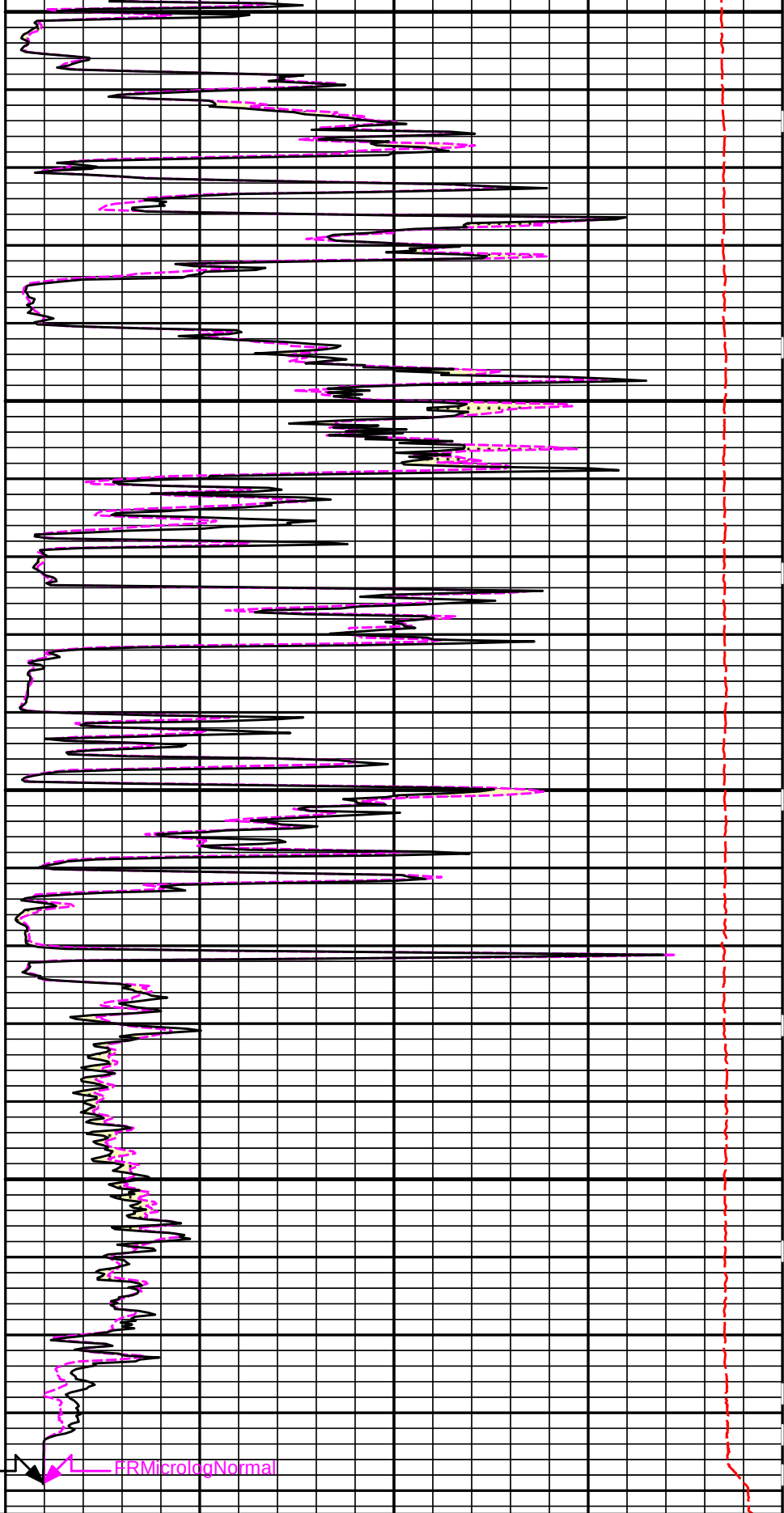


MicrologNormal



4700

4800



6	Caliper	16
inches		
0	Gamma API	150
api		
SHALE		

MD
1 : 240
ft

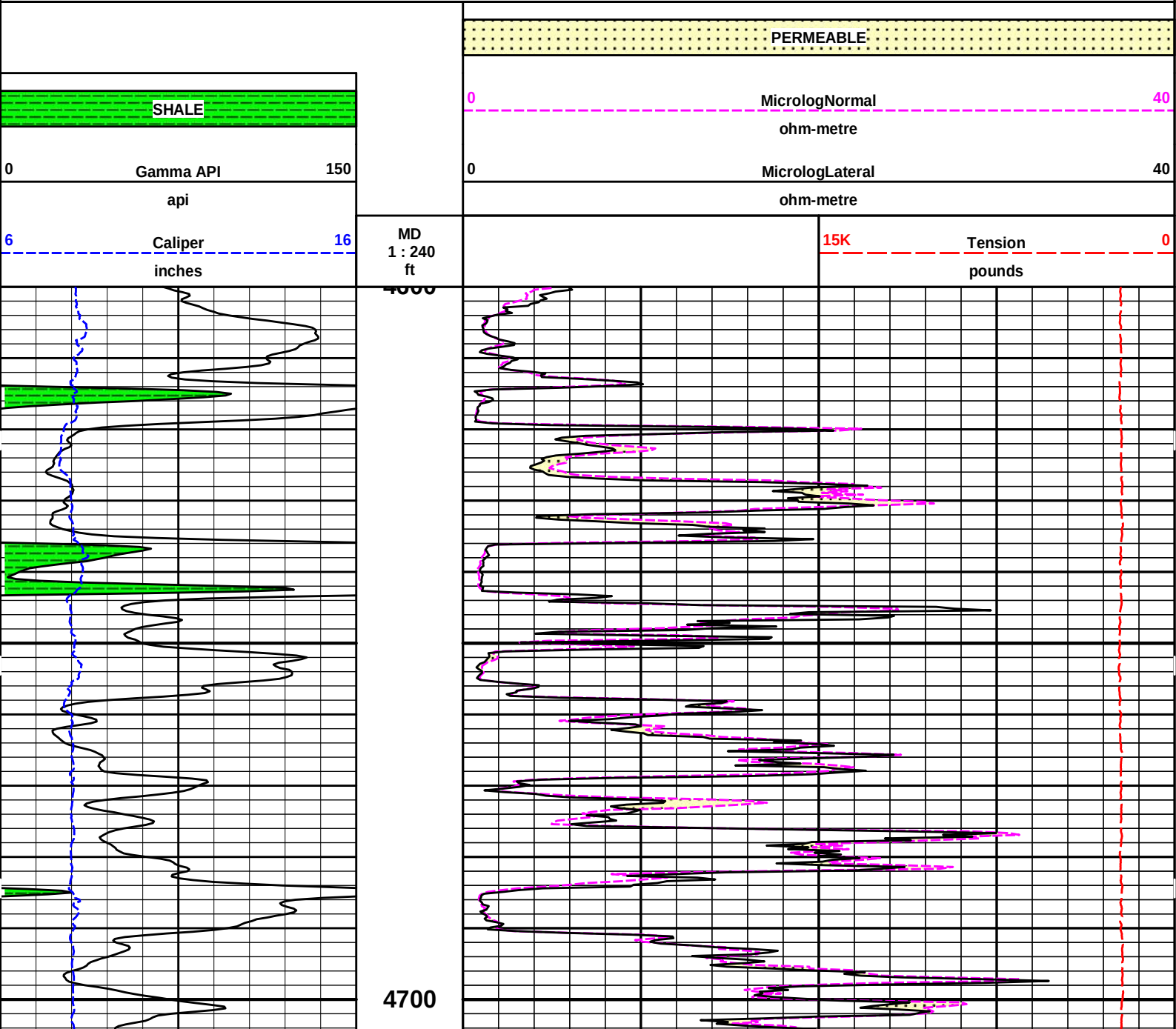
15K	Tension	0
pounds		
0	MicrologLateral	40
ohm-metre		
0	MicrologNormal	40
ohm-metre		

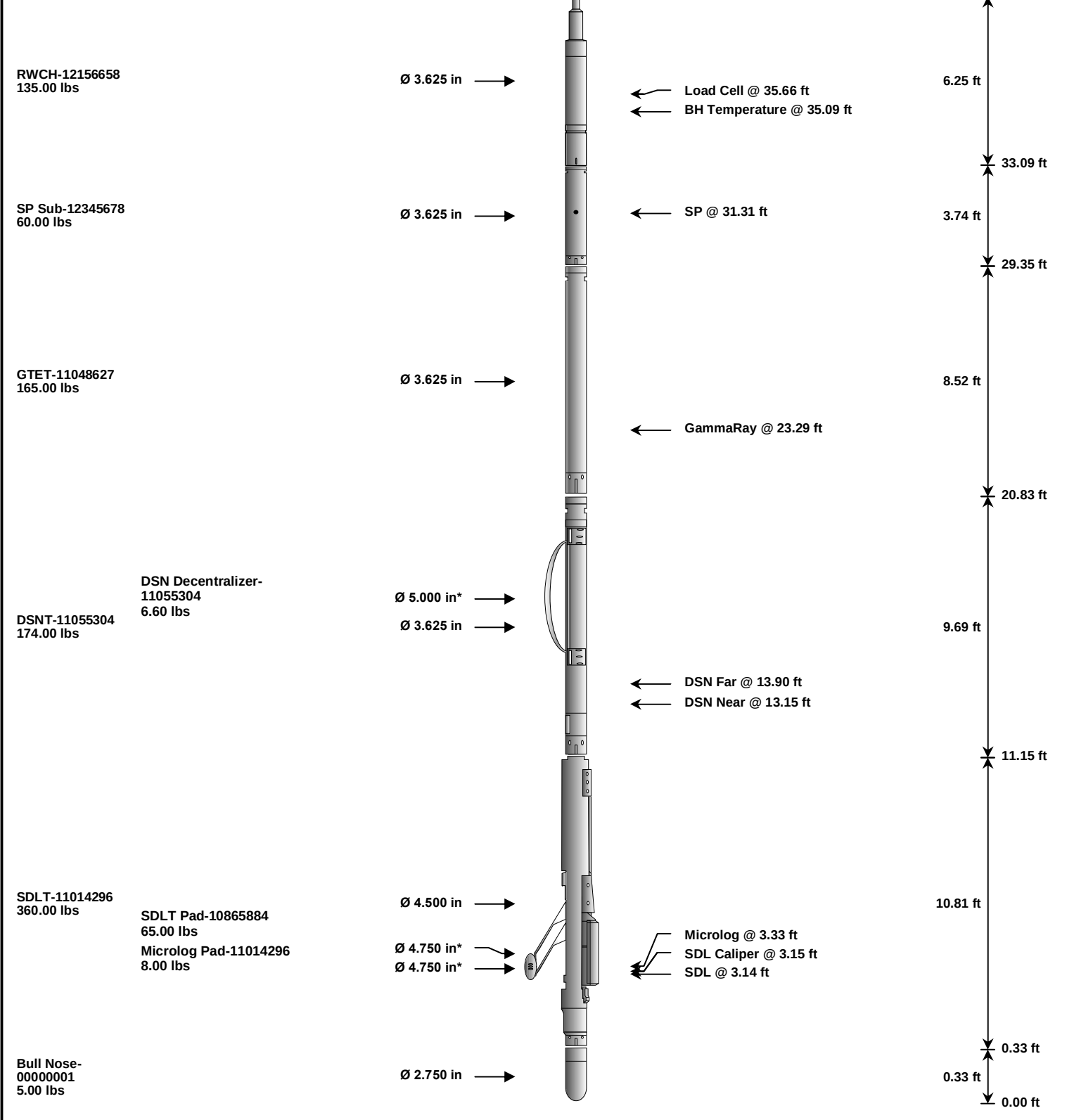
PERMEABLE		
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5 INCH MAIN LOG

MEASURED DEPTH
MAIN LOG 5" PER 100'

REPEAT SECTION





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12156658	135.00	6.25	33.09	300.00
SP	SP Sub	12345678	60.00	3.74	29.35	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52	20.83	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	11.15	60.00
DCNT	DSN Decentralizer	11055304	6.60	5.13 *	14.48	300.00
SDLT	Spectral Density Tool	11014296	360.00	10.81	0.33	60.00
SDLP	Density Insite Pad	10865884	65.00	2.55 *	2.54	60.00
MICP	Microlog Pad	11014296	8.00	1.00 *	2.83	60.00
BLNS	Bull Nose	00000001	5.00	0.33	0.00	300.00
Total			978.60	39.34		
* Not included in Total Length and Length Accumulation.						
Data: SP-GTET-DSN-SDL-BN					Date: 31-Mar-15 00:47:41	

CALIBRATION REPORT					
NATURAL GAMMA RAY TOOL SHOP CALIBRATION					
Tool Name:	GTET - 11048627		Reference Calibration Date:	30-Mar-15 15:50:45	
Engineer:	SUHAIL BISHTI		Calibration Date:	30-Mar-15 15:53:53	
Software Version:	WL INSITE R4.6.4 (Build 3)		Calibration Version:	1	
Calibrator Source S/N: Error					
Calibrator API Reference:265.00 api					
Equivalent Calibrator API Reference:269.6 api					
	Measurement	Measured	Calibrated	Units	
	Background	52.6	52.1	api	
	Background + Calibrator	324.9	321.7	api	
	Calibrator	272.3	269.6	api	
NATURAL GAMMA RAY TOOL FIELD CALIBRATION					
Tool Name:	GTET - 11048627		Reference Calibration Date:	30-Mar-15 15:53:53	
Engineer:	SUHAIL BISHTI		Calibration Date:	30-Mar-15 15:56:51	
Software Version:	WL INSITE R4.6.4 (Build 3)		Calibration Version:	1	
Calibrator Source S/N: Error					
Calibrator API Reference:265.00 api					
Equivalent Calibrator API Reference:269.6 api					
	Field Verification	Shop	Field	Units	
	Background	52.1	52.3	api	
	Background + Calibrator	321.7	323.7	api	
	Calibrator	269.6	271.4	api	
	Shop	Field	Difference	Tolerance	
	269.6	271.4	-1.8	+/- 9.00	
MICRO LOG SHOP CALIBRATION					
Tool Name:	Microlog Pad - 11014296		Reference Calibration Date:	25-Feb-15 19:34:32	
Engineer:	SUHAIL BISHTI		Calibration Date:	30-Mar-15 16:18:26	
Software Version:	WL INSITE R4.6.4 (Build 3)		Calibration Version:	1	
Host Tool Name:	DSNT - 11055304				
	CALIBRATION COEFFICIENT SUMMARY				
	Measurement	Micro Log Normal		Micro Log Lateral	
		Measured	Calibrated	Measured	Calibrated
	Units				
	Tool Zero	-0.05	-0.04	0.01	0.01
	Calibration Point #1	-0.01	0.00	0.00	0.00
	Calibration Point #2	20.24	20.00	19.96	20.00
	Internal Reference	20.17	19.94	19.95	19.99
	ohmm				
	Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value	
	Units				
	Tool Zero	6.47		5.11	
	Calibration Point #1	18.05		3.13	
	Calibration Point #2	5302.06		6886.88	
	Internal Reference	5284.90		6884.18	
	V				
	V				
	V				
	V				
MICRO LOG FIELD CHECK					
Tool Name:	Microlog Pad - 11014296		Reference Calibration Date:	30-Mar-15 16:18:26	
Engineer:	SUHAIL BISHTI		Calibration Date:	30-Mar-15 16:21:20	
Software Version:	WL INSITE R4.6.4 (Build 3)		Calibration Version:	1	
	Measurement	Micro Log Normal		Micro Log Lateral	
		Shop	Field	Shop	Field
					Units

Shop	Field	Shop	Field	Units
Tool Zero	-0.04	-0.07	0.01	ohmm
Internal Reference	19.94	19.94	19.99	ohmm
Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.94	19.94	0.00	+/- 0.80
Microlog Lateral	19.99	20.00	-0.01	+/- 0.80

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	271.4	-----	-1.8	+/- 9.00	api
Microlog Pad-11014296						
MicroLog Normal	19.94	19.94	-----	0.00	+/-0.80	ohmm
MicroLog Lateral	19.99	20.00	-----	-0.01	+/-0.80	ohmm
Data: YOST 2-28\0002 SP-GTET-DSN-SDL-BN\IDLE						
Date: 31-Mar-15 01:20:00						

HALLIBURTON PARAMETERS REPORT						
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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	9.200	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	0.670	ohmm
	SHARED	TRM	Temperature of Mud	74.0	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	4839.00	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	
	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	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	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	
GTET	BHSM	Borehole Size Source Tool	SDLT	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DSNO	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	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
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
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
BOTTOM				
Data: YOST 2-28\0002 SP-GTET-DSN-SDL-BN\IDLE			Date: 31-Mar-15 01:18:37	

HALLIBURTON INPUTS, DELAYS AND FILTERS TABLE				
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
Rwa / CrossPlot				
TPUL	Tension Pull	39.34	NO	
BS	Bit Size	39.34	NO	
HDIA	Measured Hole Diameter	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	31.31	NO	
SP	Spontaneous Potential	31.31	BLK	1.250
SPR	Raw Spontaneous Potential	31.31	NO	
SPO	Spontaneous Potential Offset	31.31	NO	
GTET				
TPUL	Tension Pull	23.29	NO	
GR	Natural Gamma Ray API	23.29	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	23.29	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	23.29	W	1.416 , 0.750
HDIA	Measured Hole Diameter	0.00	NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	

DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	13.05	NO	
RNDS	Near Detector Telemetry Counts	13.15	BLK	1.417
RFDS	Far Detector Telemetry Counts	13.90	TRI	0.583
DNTT	DSN Tool Temperature	13.15	NO	
DSNS	DSN Tool Status	13.05	NO	
ERND	Near Detector Telemetry Counts EVR	13.15	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	13.90	BLK	0.000
ENTM	DSN Tool Temperature EVR	13.15	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT				
TPUL	Tension Pull	3.15	NO	
PCAL	Pad Caliper	3.15	TRI	0.250
ACAL	Arm Caliper	3.15	TRI	0.250
SDLT Pad				
TPUL	Tension Pull	3.14	NO	
NAB	Near Above	2.96	BLK	0.920
NHI	Near Cesium High	2.96	BLK	0.920
NLO	Near Cesium Low	2.96	BLK	0.920
NVA	Near Valley	2.96	BLK	0.920
NBA	Near Barite	2.96	BLK	0.920
NDE	Near Density	2.96	BLK	0.920
NPK	Near Peak	2.96	BLK	0.920
NLI	Near Lithology	2.96	BLK	0.920
NBAU	Near Barite Unfiltered	2.96	BLK	0.250
NLIU	Near Lithology Unfiltered	2.96	BLK	0.250
FAB	Far Above	3.31	BLK	0.250
FHI	Far Cesium High	3.31	BLK	0.250
FLO	Far Cesium Low	3.31	BLK	0.250
FVA	Far Valley	3.31	BLK	0.250
FBA	Far Barite	3.31	BLK	0.250
FDE	Far Density	3.31	BLK	0.250
FPK	Far Peak	3.31	BLK	0.250
FLI	Far Lithology	3.31	BLK	0.250
PTMP	Pad Temperature	3.15	BLK	0.920
NHV	Near Detector High Voltage	2.54	NO	
FHV	Far Detector High Voltage	2.54	NO	
ITMP	Instrument Temperature	2.54	NO	
DDHV	Detector High Voltage	2.54	NO	
HDIA	Measured Hole Diameter	0.00	NO	
Microlog Pad				
TPUL	Tension Pull	3.33	NO	
MINV	Microlog Lateral	3.33	BLK	0.750
MNOR	Microlog Normal	3.33	BLK	0.750
Data: YOST 2-28\0002 SP-GTET-DSN-SDL-BN\IDLE			Date: 31-Mar-15 01:18:54	

COMPANY	HERMAN L. LOEB, LLC		
WELL	YOST 2-28		
FIELD	EINSEL		
COUNTY	KIOWA	STATE	KANSAS

