

HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON MICROLOG

COMPANY	BEREXCO LLC		
WELL	FRAN-AG UNIT 1-16		
FIELD/BLOCK	WILDCAT		
COUNTY	SCOTT		
STATE	KANSAS		
COMPANY	BEREXCO LLC	WELL	FRAN-AG UNIT 1-16
FIELD/BLOCK	WILDCAT	COUNTY	SCOTT
STATE	KANSAS		
API No.	15-171-21250-00-00	Location	(SHL) E2 NE NE SW 2310 FSL & 2581' FWL
Permanent Datum	GL	Elev.	2974.0 ft
Log measured from	KB	Elev.	2984.0 ft
Drilling measured from	KB	Elev.	2974.0 ft
Sect. 16		Twp. 18S	Rge. 32W
Other Services: ACRT SDL-DSN MICROLOG SONIC			

Date	18-Jun-19	Elev.	2974.0 ft
Run No.	1	Elev.	2986.0 ft
Depth - Driller	4821.0 ft	D.F.	2984.0 ft
Depth - Logger	4817.0 ft	G.L.	2974.0 ft
Bottom - Logged Interval	4807		
Top - Logged Interval	2000		
Casing - Driller	8.625 in @ 420.0 ft		
Casing - Logger	418.0 ft @		
Bit Size	7.875 in @		
Type Fluid in Hole	Water Based Mud		
Density	9.40 g/cc	47.00 s/qt	
PH	10.50 pH	2.2 cphm	
Source of Sample	FLOWLINE		
Rm @ Meas. Temperature	0.87 ohmm @ 76.00 degF	@	
Rmf @ Meas. Temperature	0.65 ohmm @ 74.00 degF	@	
Rmc @ Meas. Temperature	1.02 ohmm @ 74.00 degF	@	
Source Rmf	Rmc	MEAS	
Rm @ BHT	0.50 ohmm @ 137.0 degF	@	
Time Since Circulation	21:00 hr		
Time on Bottom	18-Jun-19 01:58		
Max. Rec. Temperature	137.00 degF @ 4817.0 ft	@	
Equipment	12156883	EL RENO, OK	
Recorded By	WHITLOCK		
Witnessed By	ED GRIEVES		

Fold here

Service Ticket No.: 905768818		API No.: 15-171-21250-00-00		PGM Version: WL INSITE R6.2.1 (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.
Rmf @ Meas. Temp.	@				
Rmc @ Meas. Temp.	@				
Source Rmf	Rmc				
Rm @ BHT	@				
Rmf @ BHT	@				
Rmc @ BHT	@				
EQUIPMENT DATA					
GAMMA		ACOUSTIC		DENSITY	
Run No.	Run No.	Run No.	Run No.	Run No.	Run No.
Serial No.	Serial No.	Serial No.	Serial No.	Serial No.	Serial No.
Model No.	Model No.	Model No.	Model No.	Model No.	Model No.
Diameter	No. of Cent.	Diameter	Diameter	Diameter	Diameter
Detector Model No.	Spacing	Log Type	Log Type	Log Type	Log Type
Type		Source Type	Source Type	Source Type	Source Type
Length	LSA [Y/N]	Serial No.	Serial No.	Serial No.	Serial No.
Distance to Source	FWDA [Y/N]	Strength	Strength	Strength	Strength
LOGGING DATA					
GENERAL		GAMMA		ACOUSTIC	
Run	Depth	Speed	Scale	Scale	Matrix
No.	From To	ft/min	L R	L R	L R

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

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.

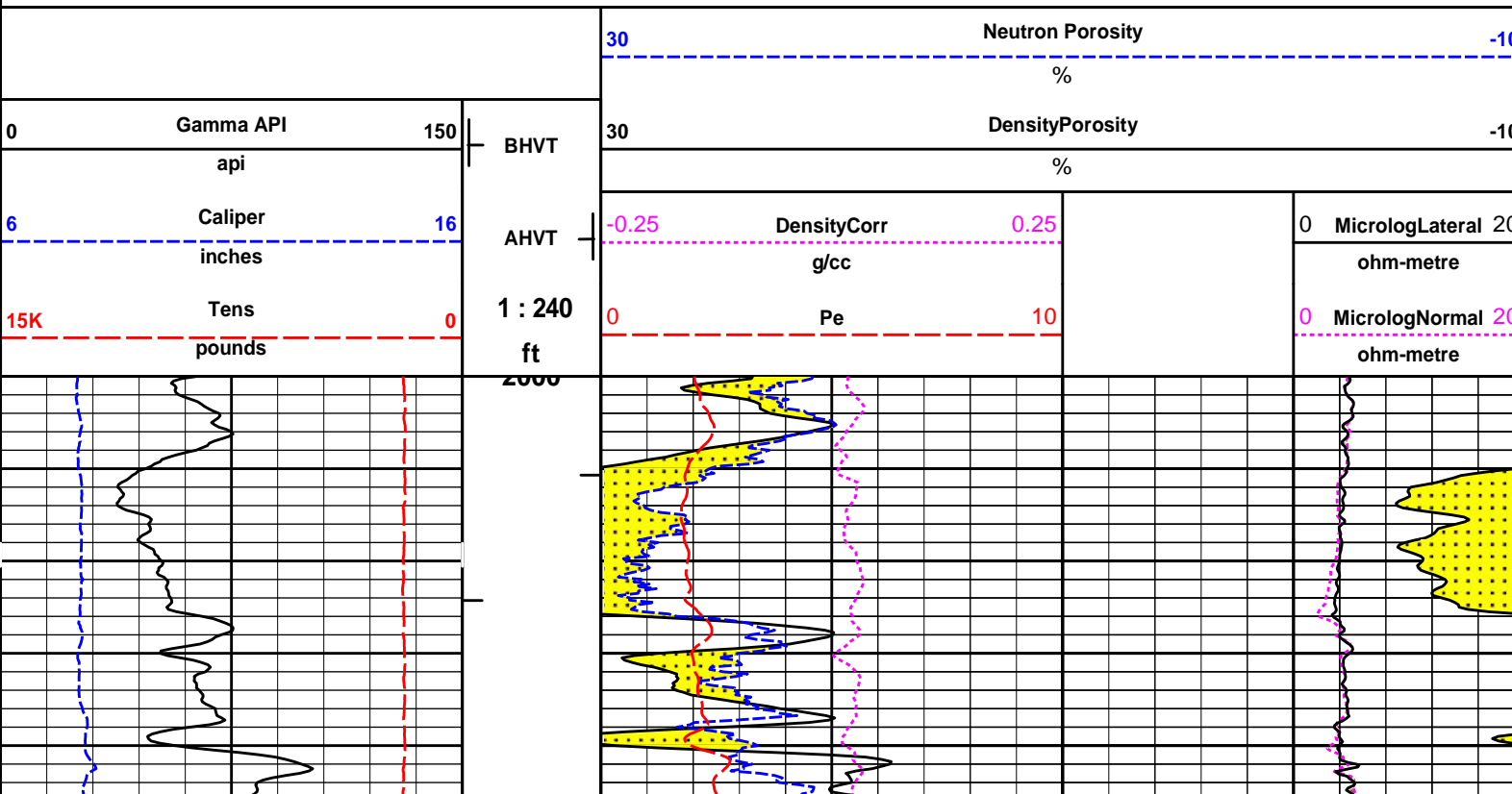
HALLIBURTON

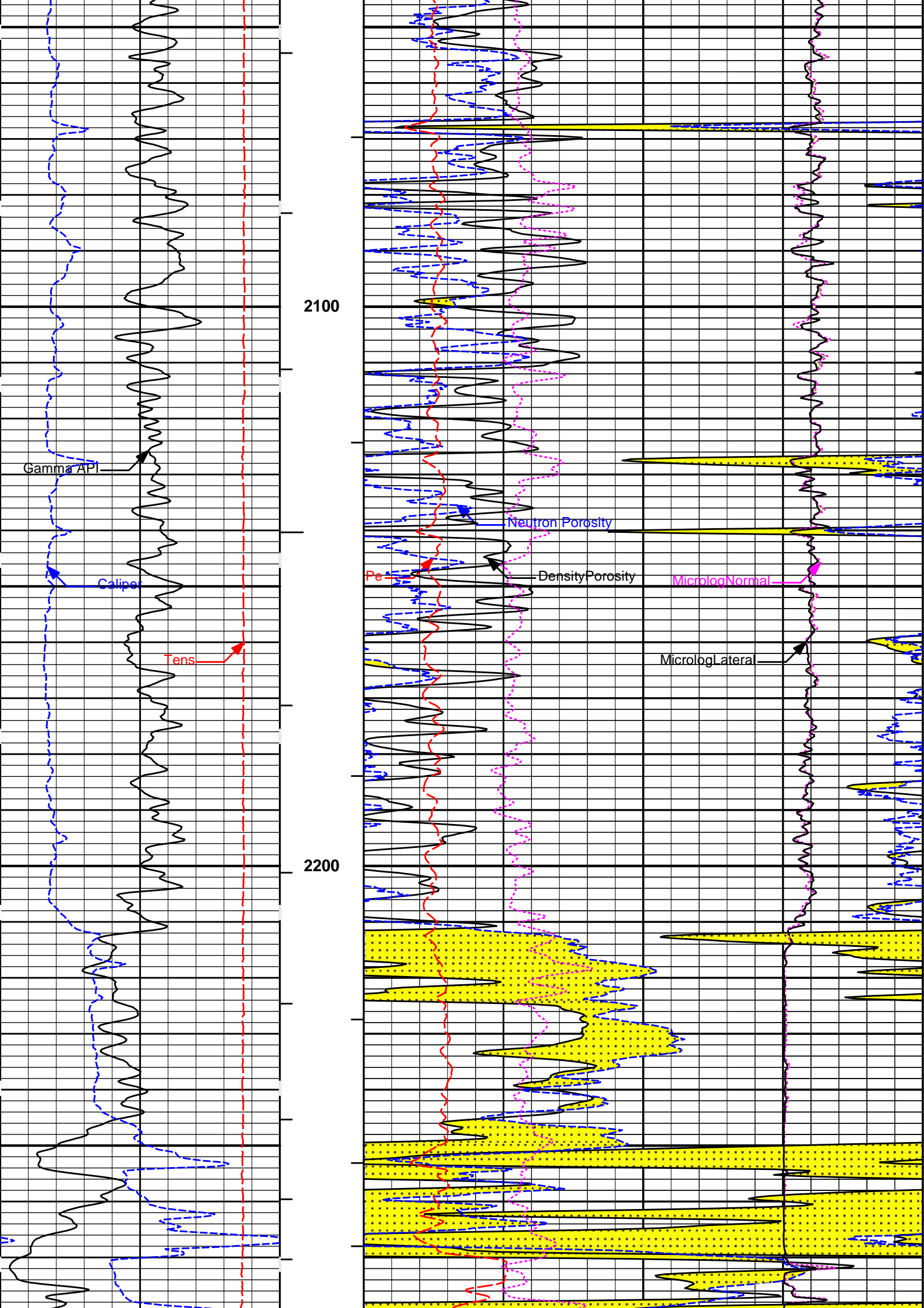


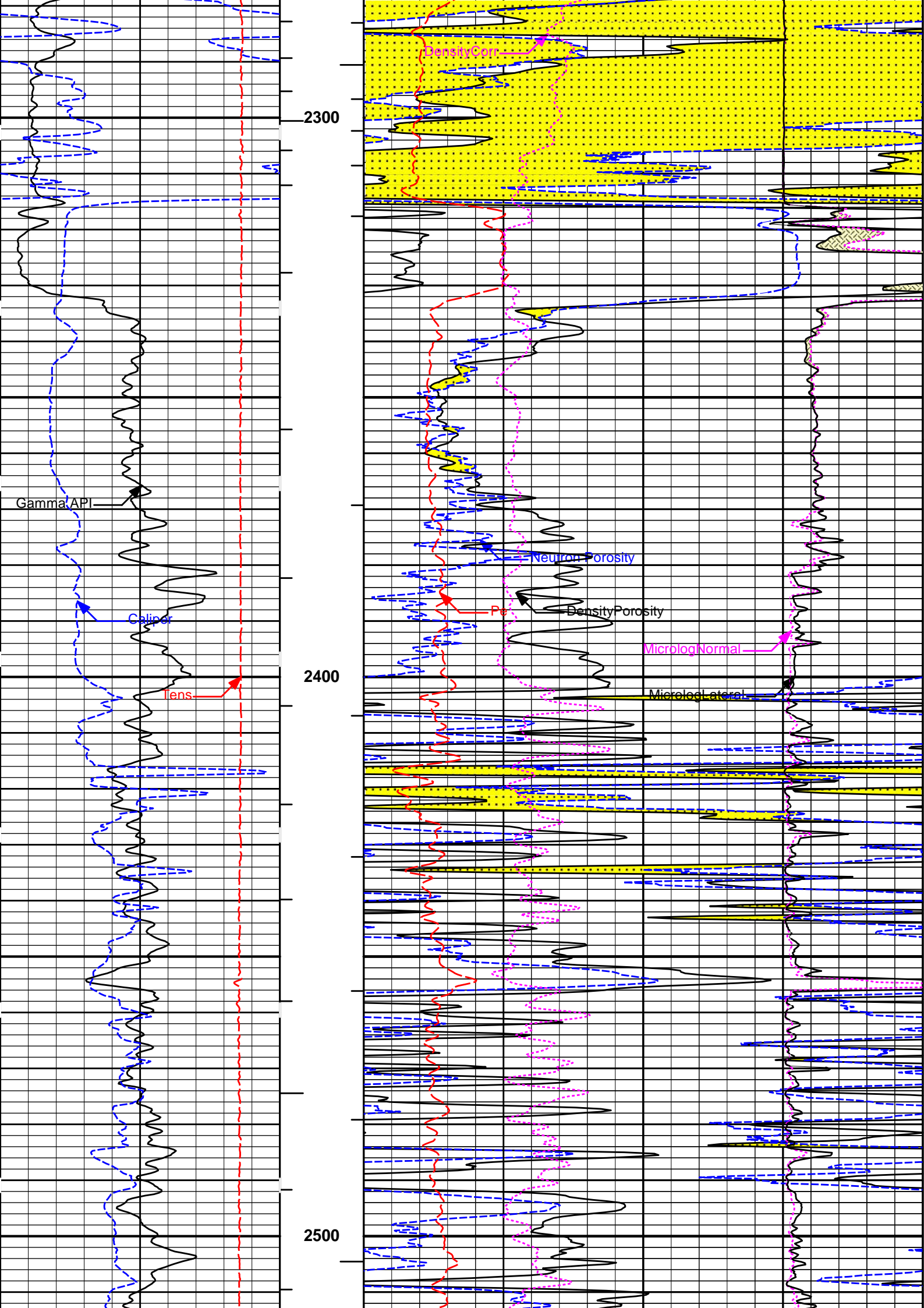
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 Plot Range: 2000 ft to 4825.17 ft
 Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-003\
 Plot File: \\SDL-DSN-ML\PoromL_5_main_IQ

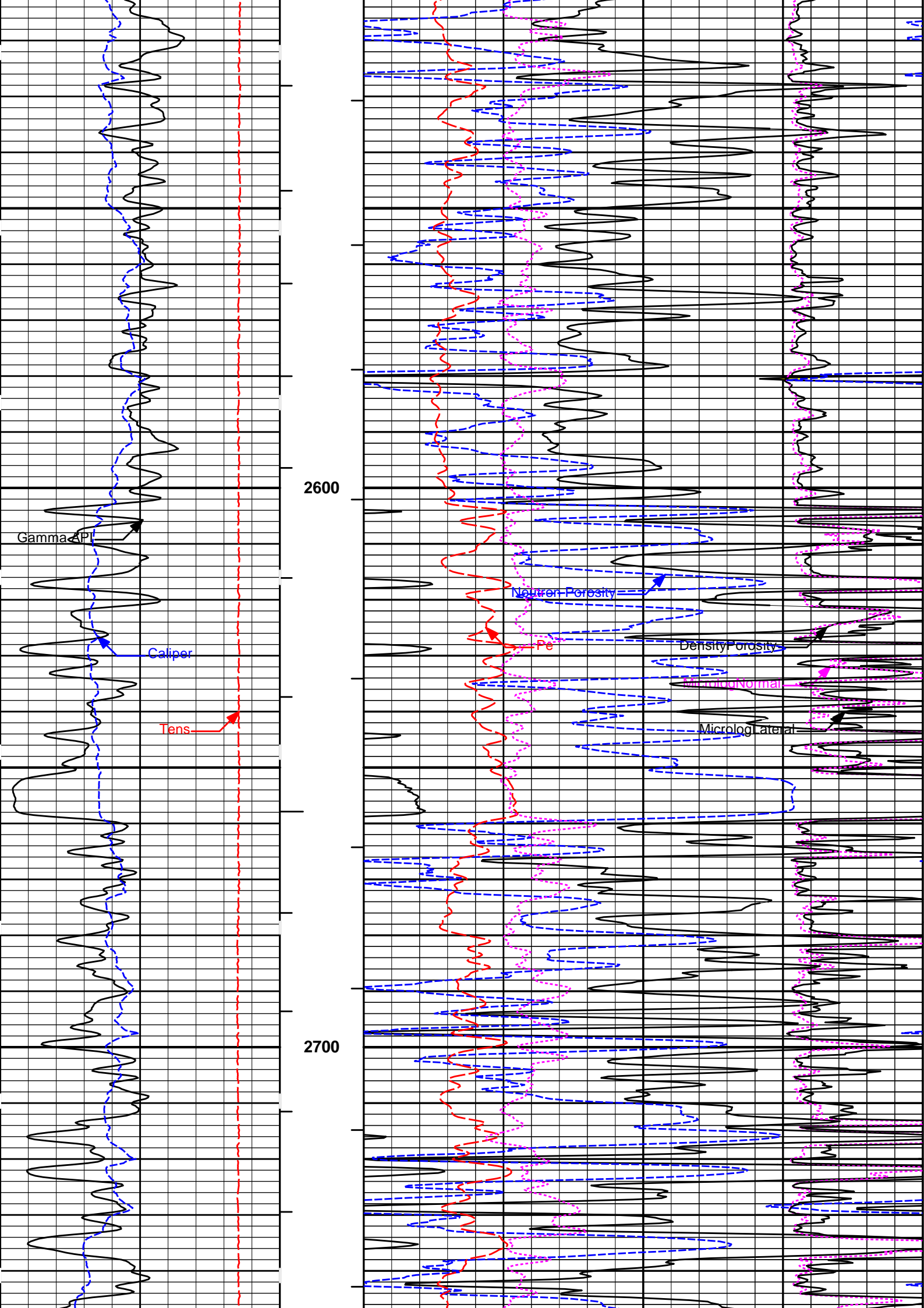
5 INCH MAIN LOG

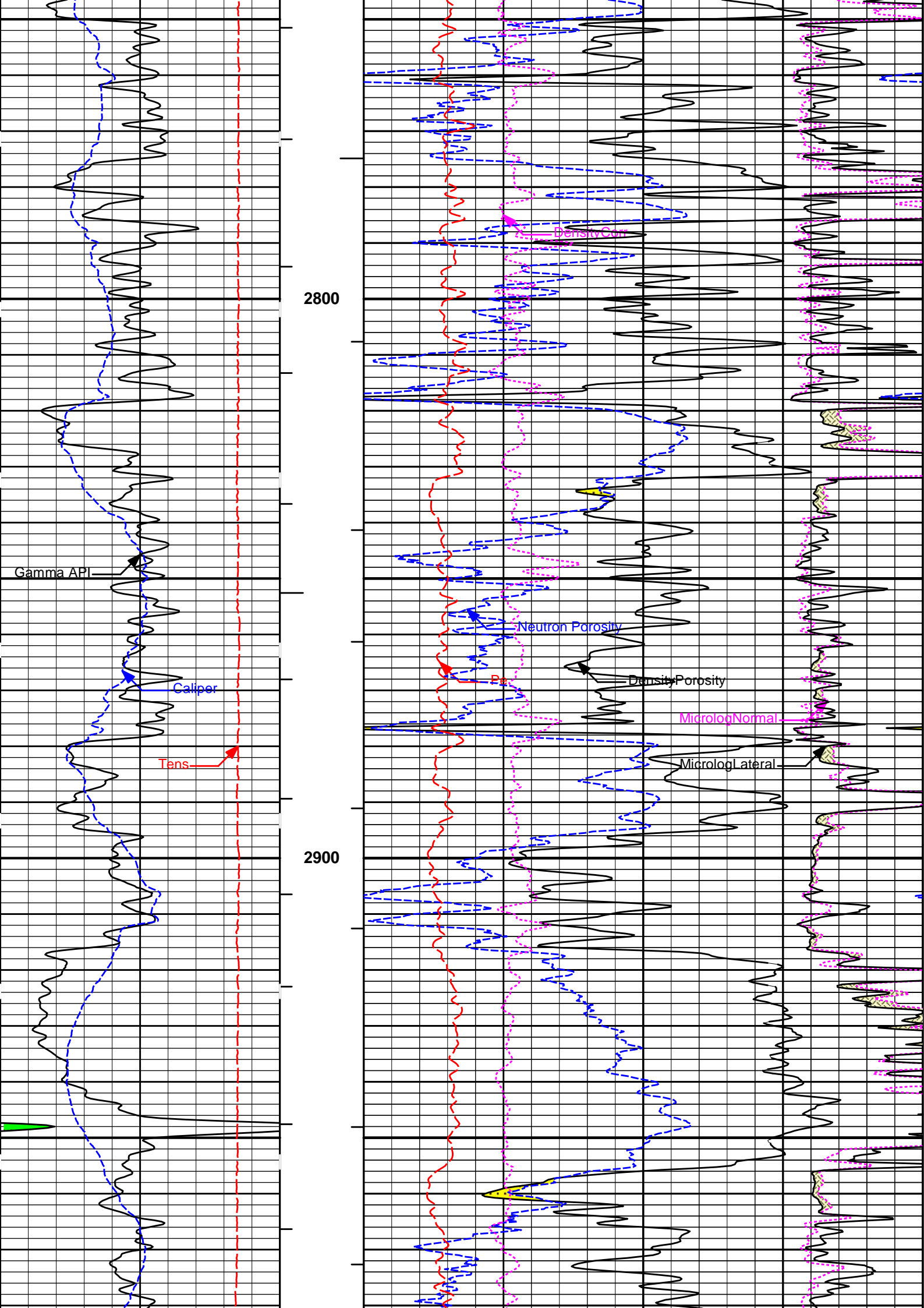
MAIN SECTION 5" PER 100'

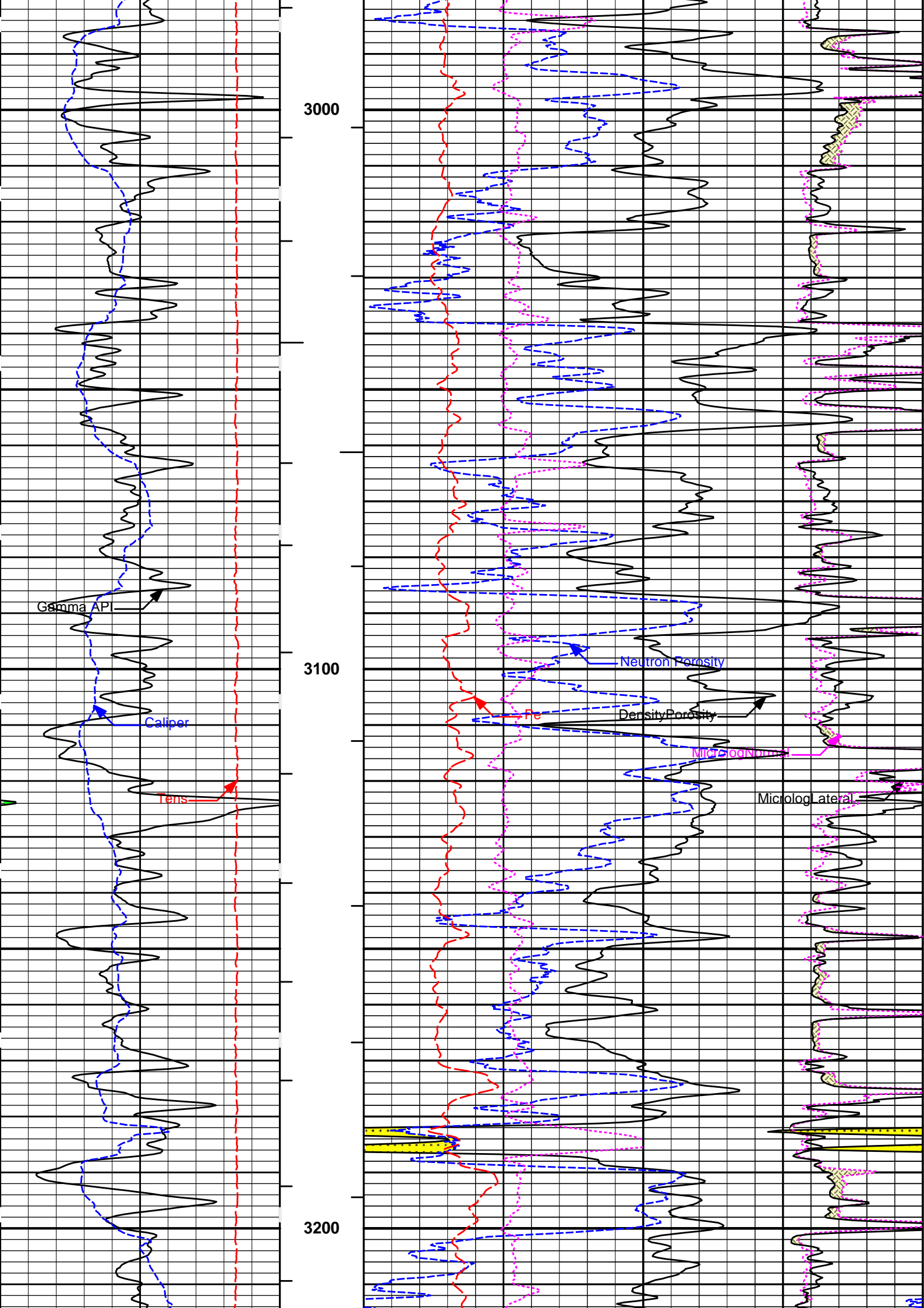


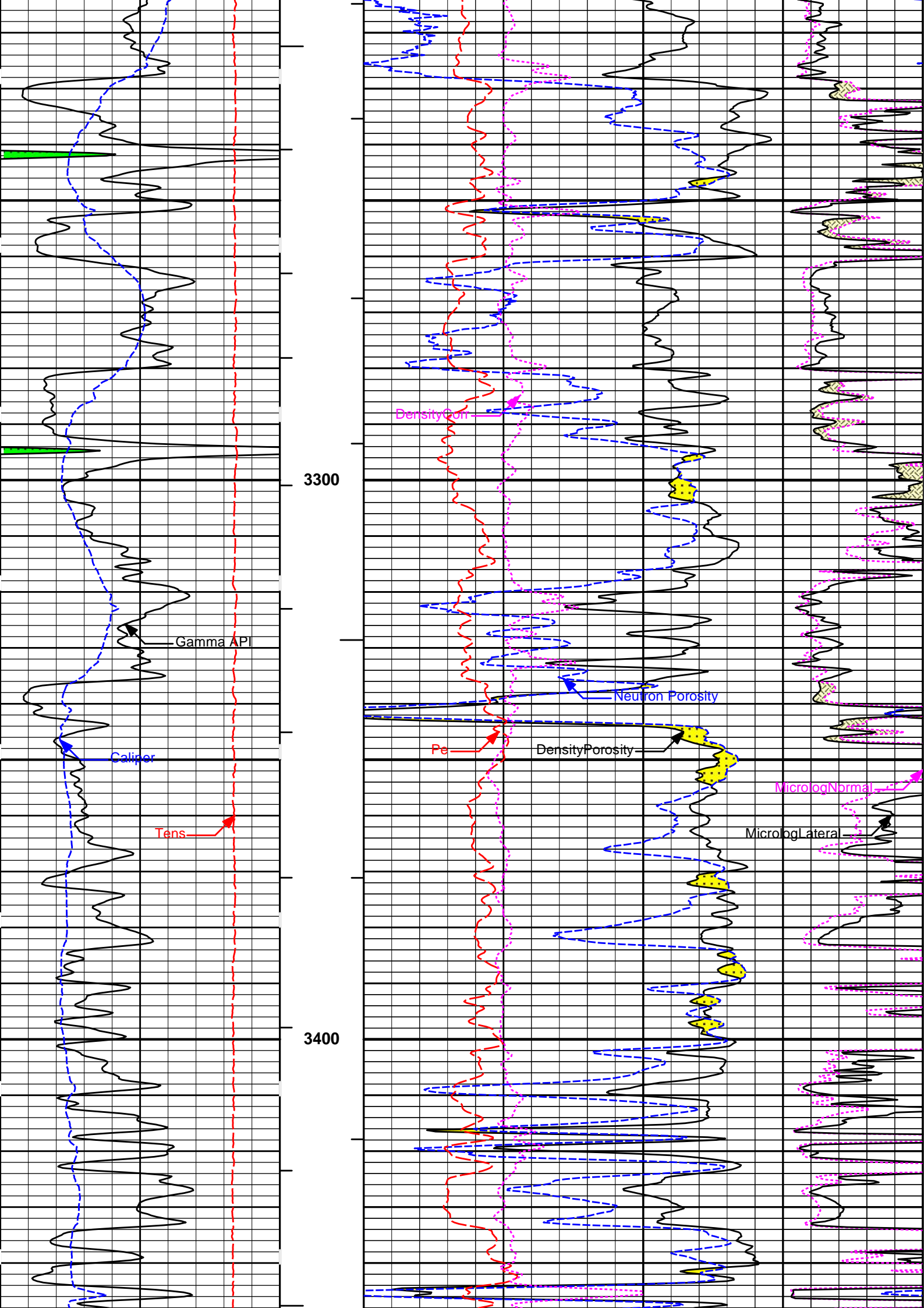


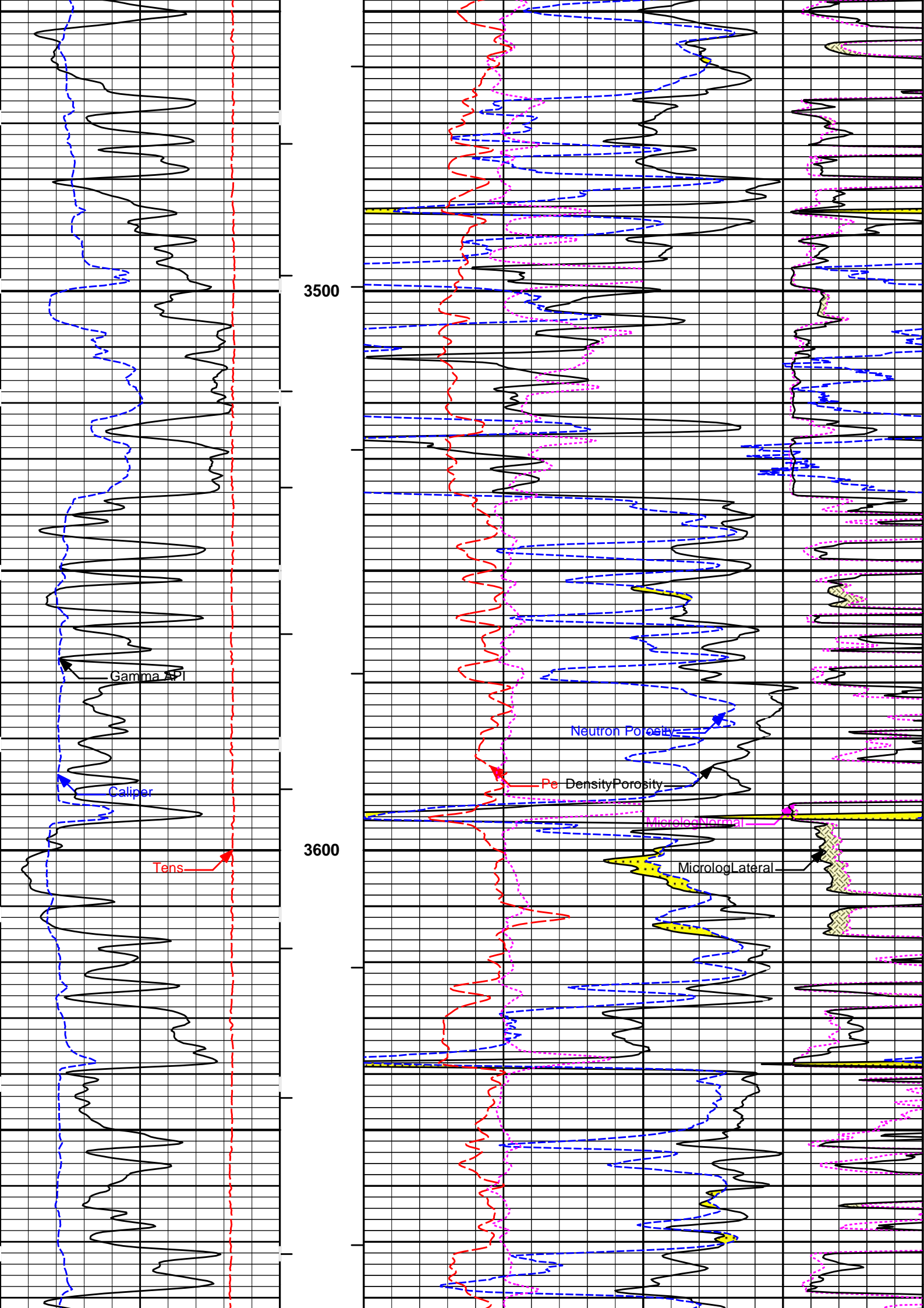


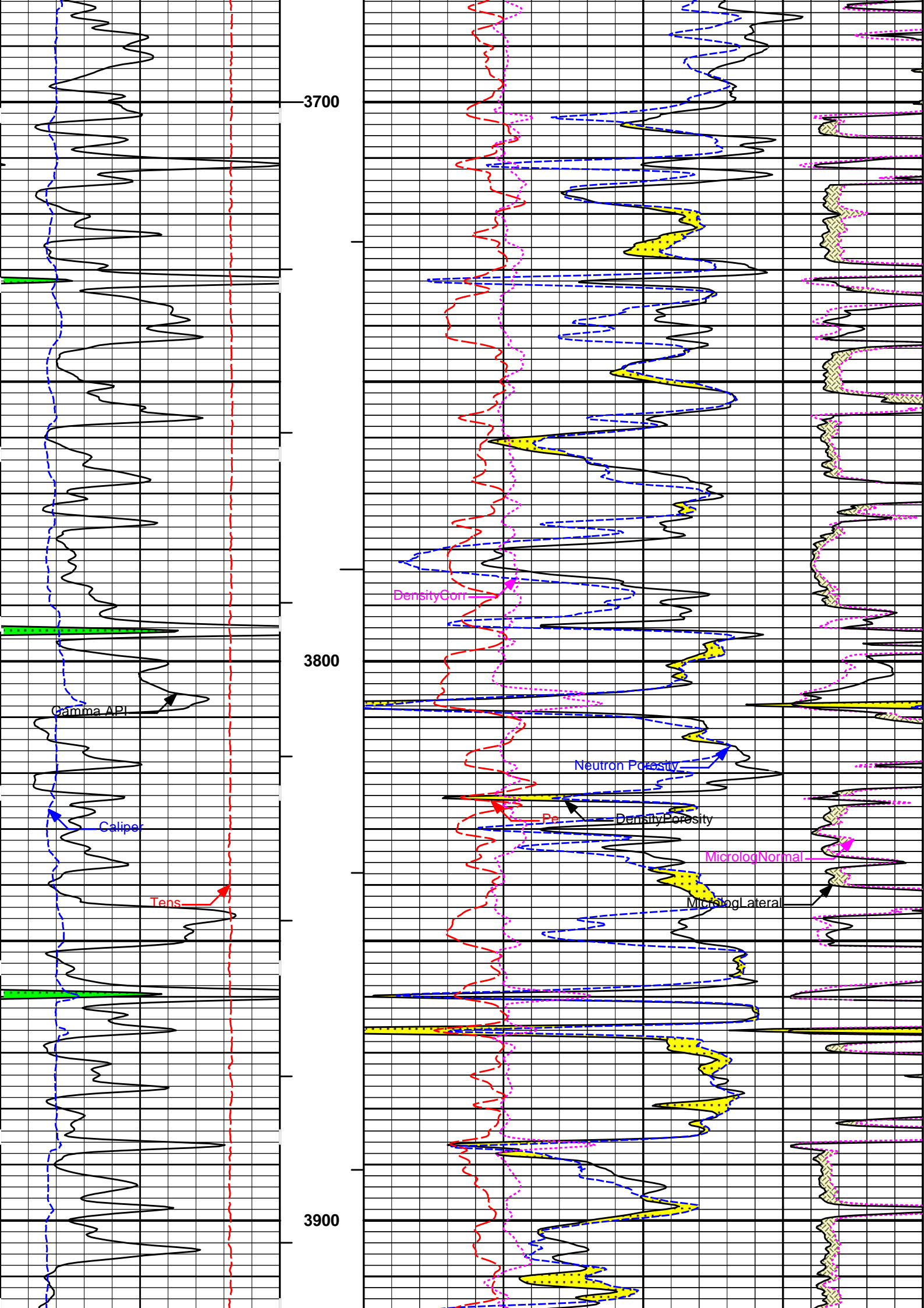


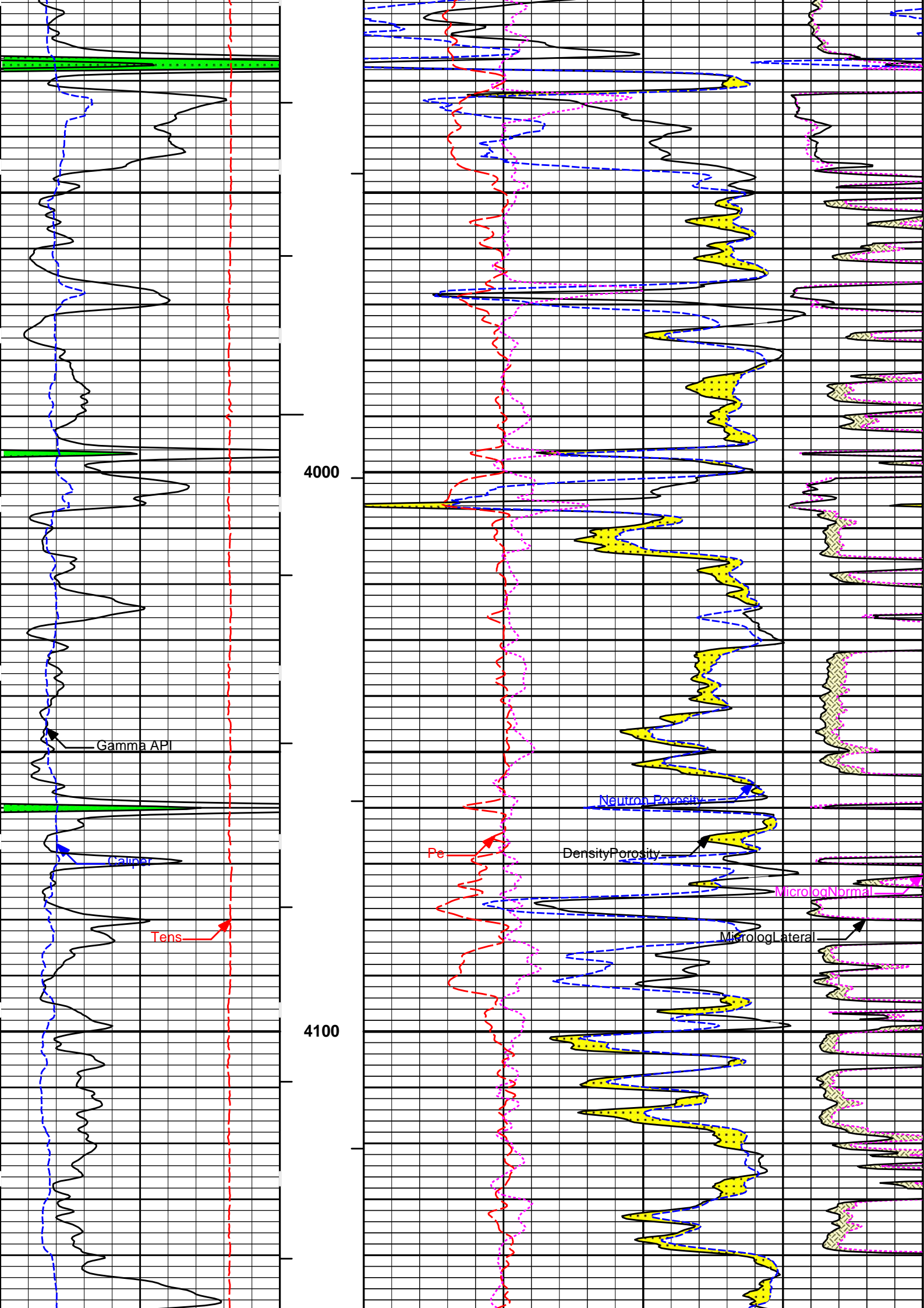


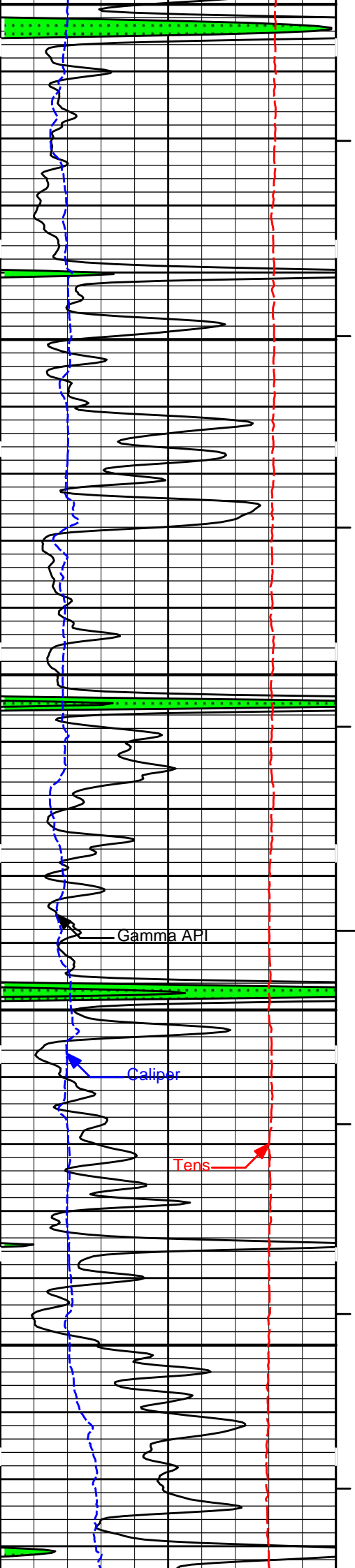






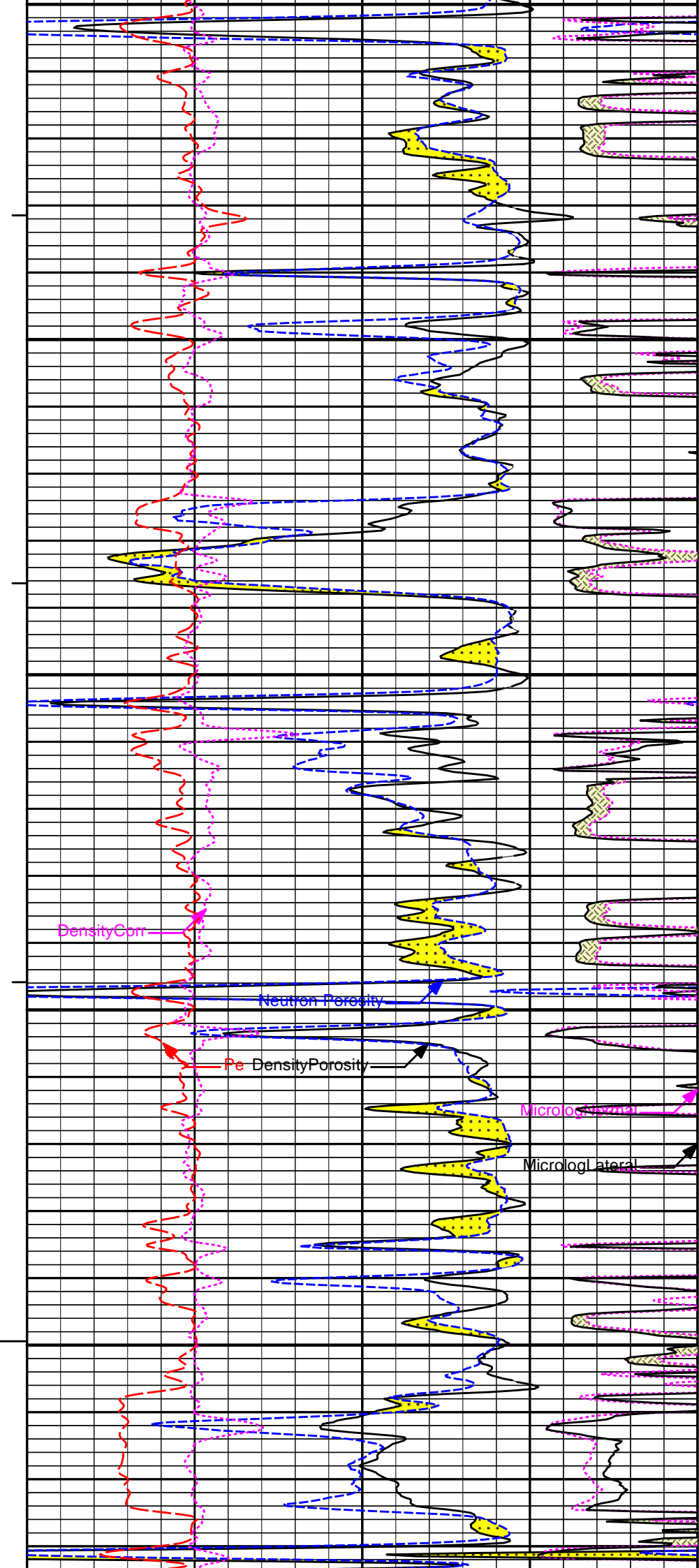


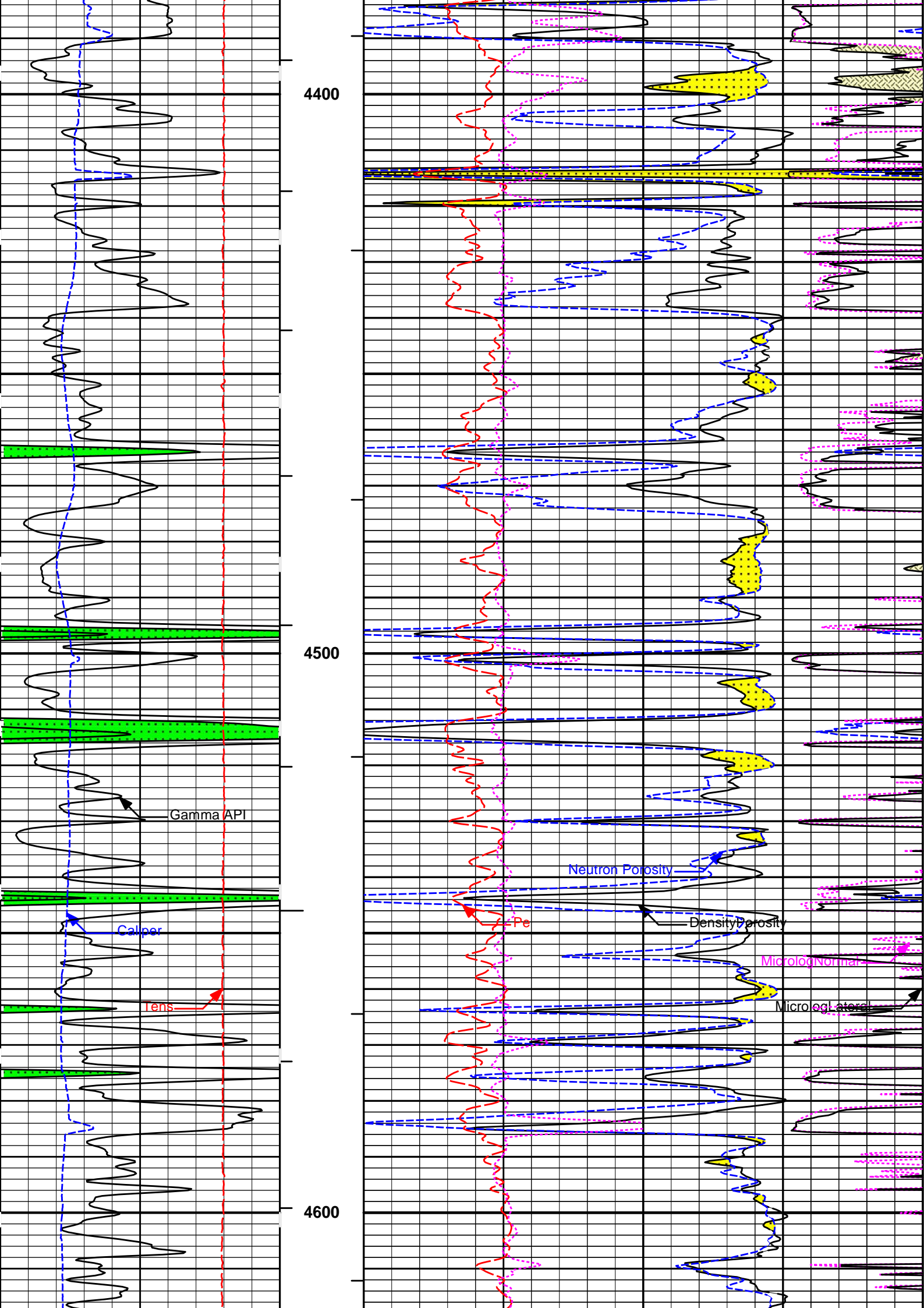


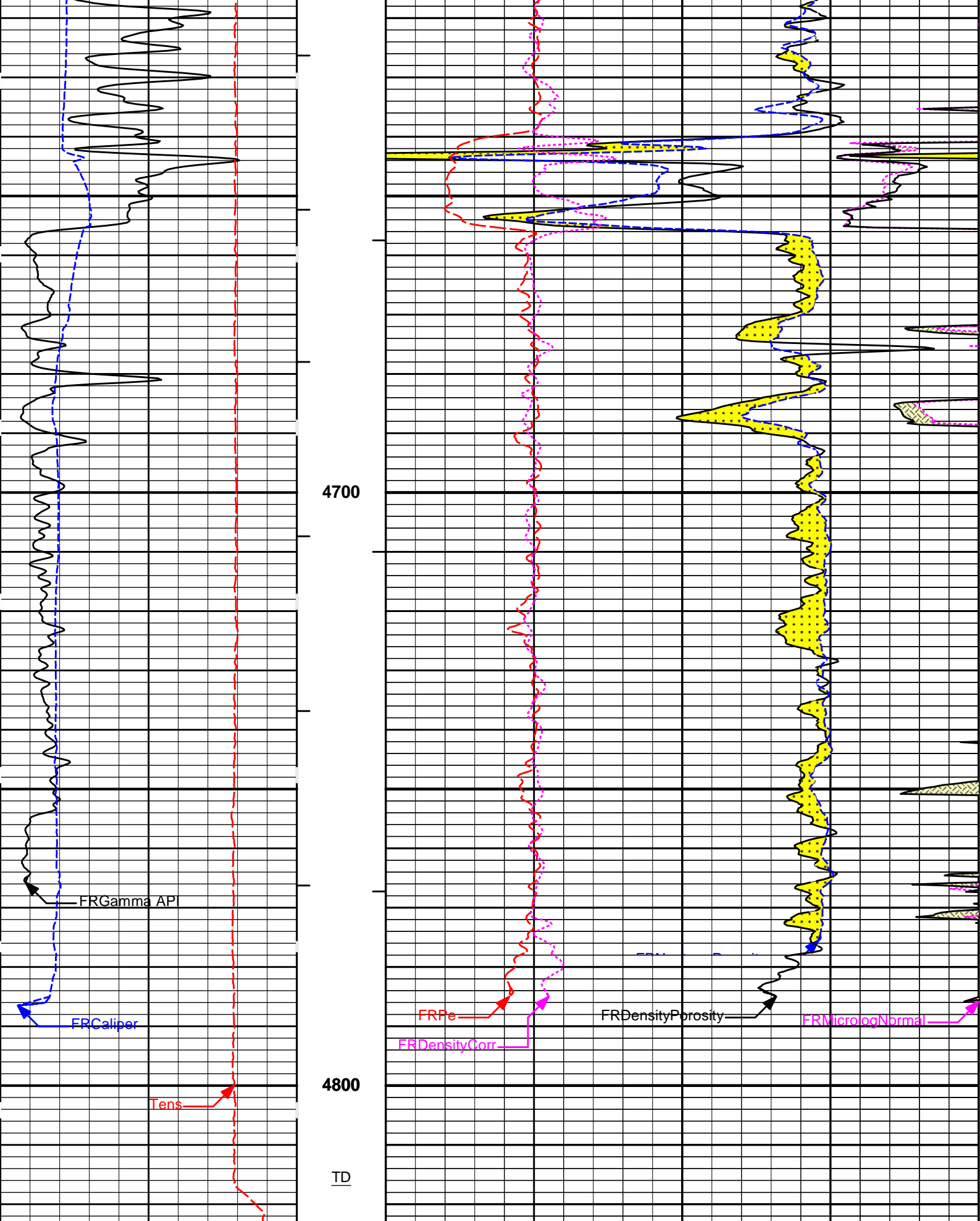


4200

4300







15K	Tens	0	1 : 240	0	Pe	10	0	MicrologNormal	20
	pounds		ft					ohm-metre	
6	Caliper	16	AHVT	-0.25	DensityCorr	0.25	0	MicrologLateral	20
	inches				g/cc			ohm-metre	
0	Gamma API	150	BHVT	30	DensityPorosity				-10

api

DHW

%

30

Neutron Porosity

-10

%

HALLIBURTON

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5 INCH MAIN LOG

MAIN SECTION 5" PER 100'

HALLIBURTON

Plot Time: 18-Jun-19 04:27:39
Plot Range: 4530 ft to 4821.67 ft
Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-002\
Plot File: \\SDL-DSN-ML\PoromL_5_main_IQ

REPEAT SECTION

REPEAT SECTION

30

Neutron Porosity

-10

%

0

Gamma API

150

BHVT

30

DensityPorosity

-10

%

api

Caliper

16

AHVT

-0.25

DensityCorr

0.25

0 MicrologLateral 20

inches

g/cc

ohm-metre

Tens

0

1 : 240

0

Pe

10

0 MicrologNormal 20

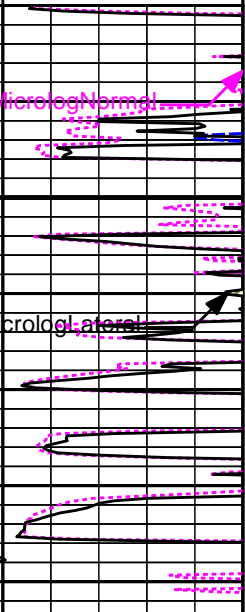
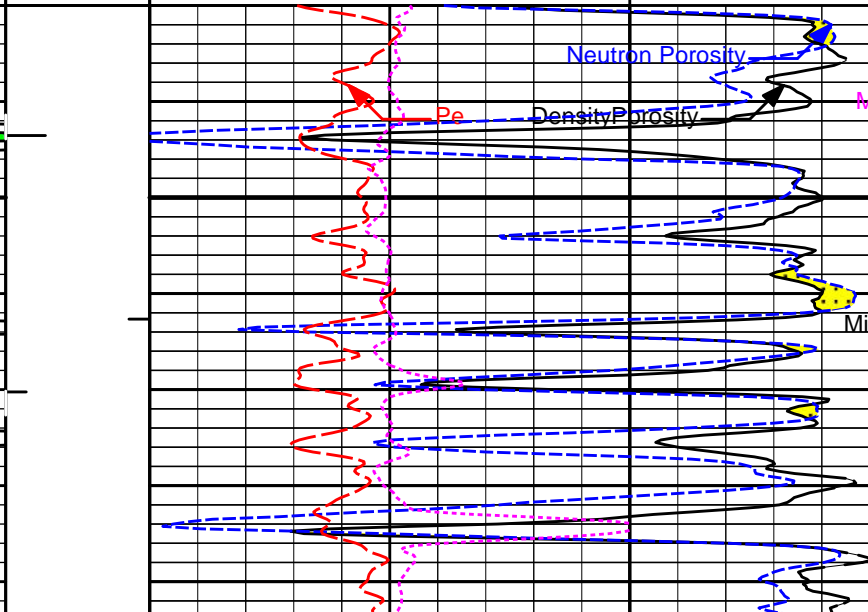
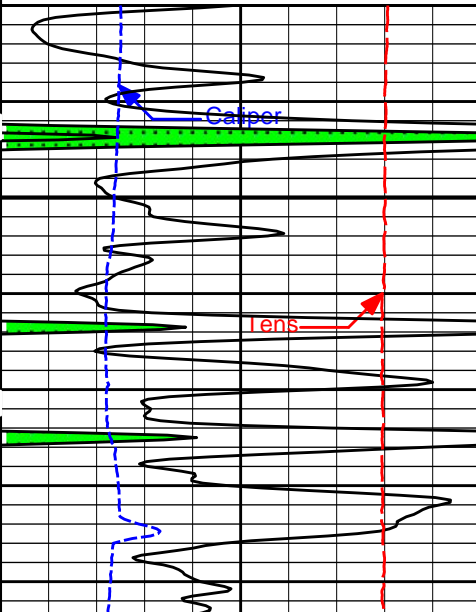
pounds

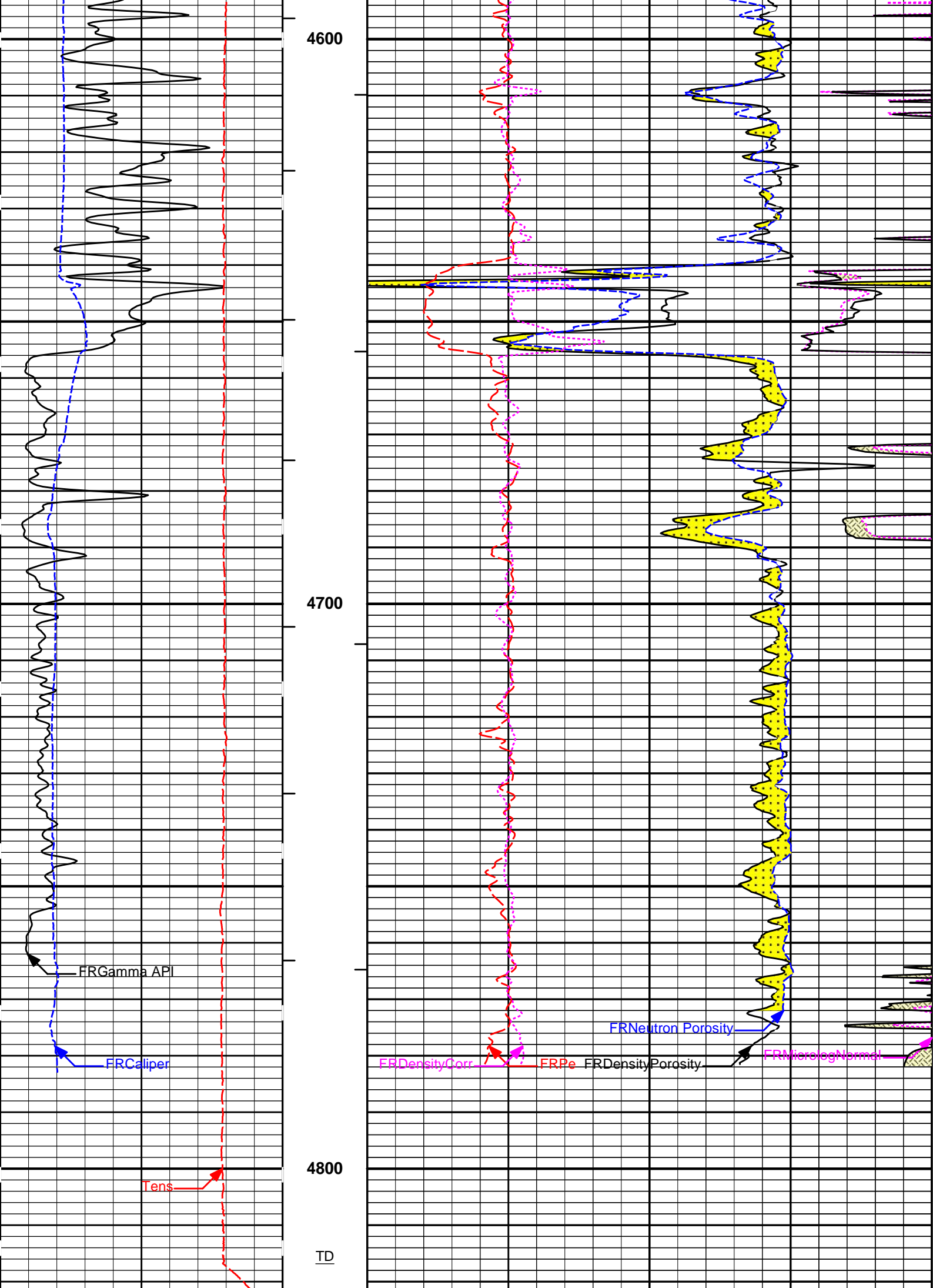
ft

Pe

10

ohm-metre





4600

4700

4800

TD

FRGamma API

FRCaliper

Tens

FRDensityCorr

FRPe

FRDensityPorosity

FRNeutron Porosity

FRMicrologNormal

0	Gamma API api	150	BHVT	30	DensityPorosity %	-10	ohm-metre
6	Caliper inches	16	AHVT	-0.25	DensityCorr g/cc	0.25	MicrologLateral ohm-metre
0	Gamma Ray api	150	BHVT	30	Neutron Porosity %	-10	ohm-metre

HALLIBURTON

Plot Time: 18-Jun-19 04:27:41
 Plot Range: 4530 ft to 4821.67 ft
 Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-002\
 Plot File: \\SDL-DSN-ML\PoromL_5_main_IQ

REPEAT SECTION

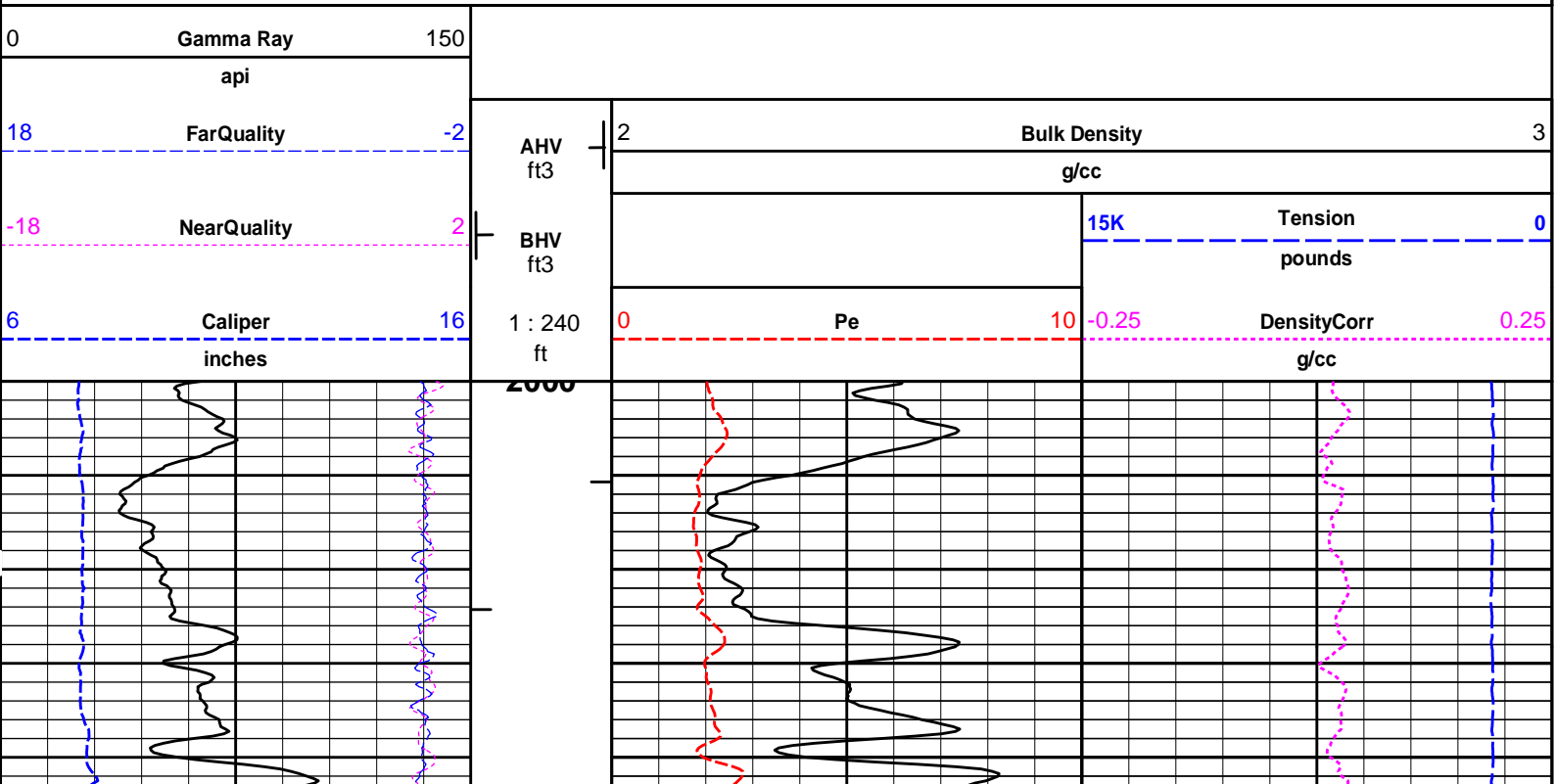
REPEAT SECTION

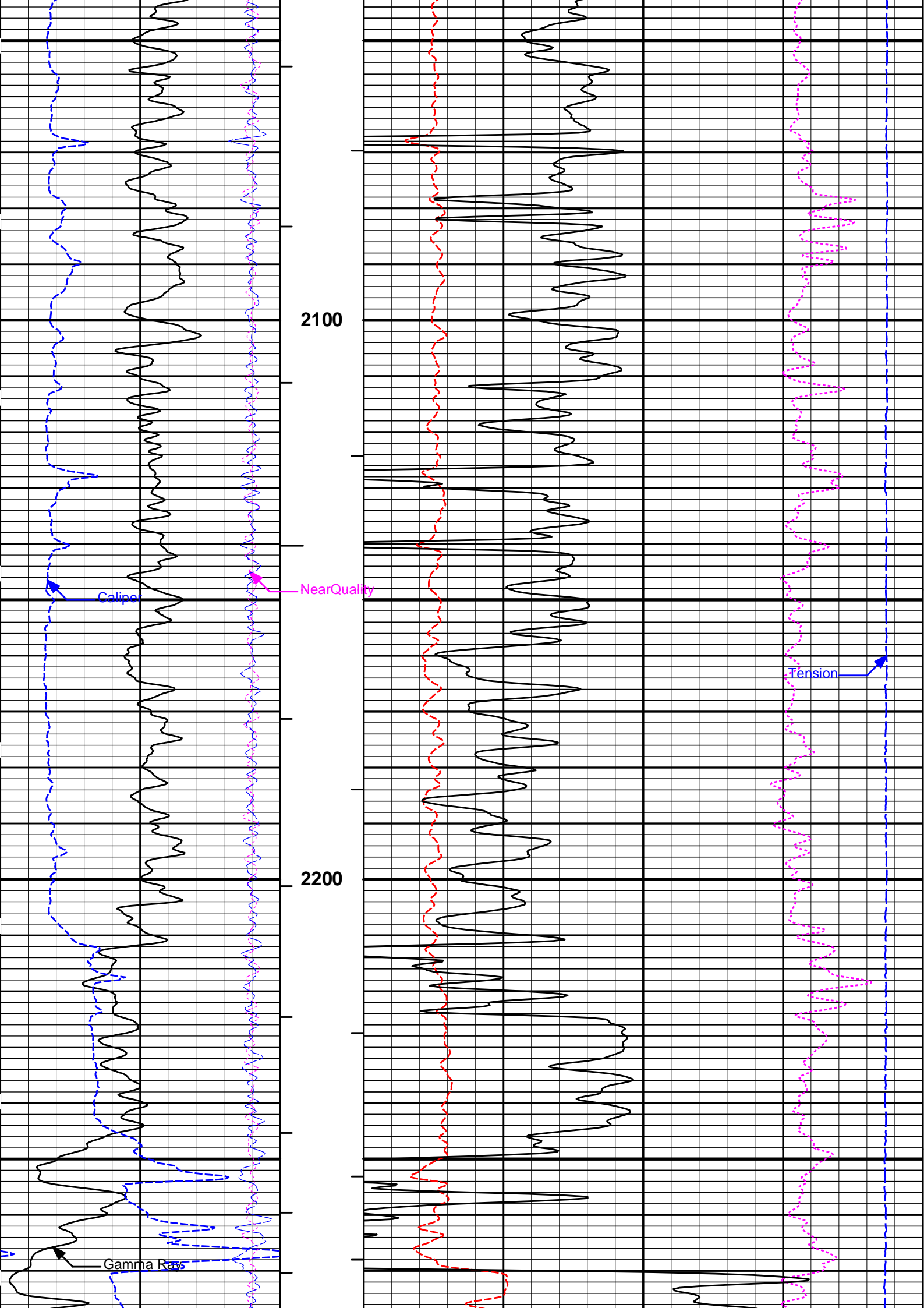
HALLIBURTON

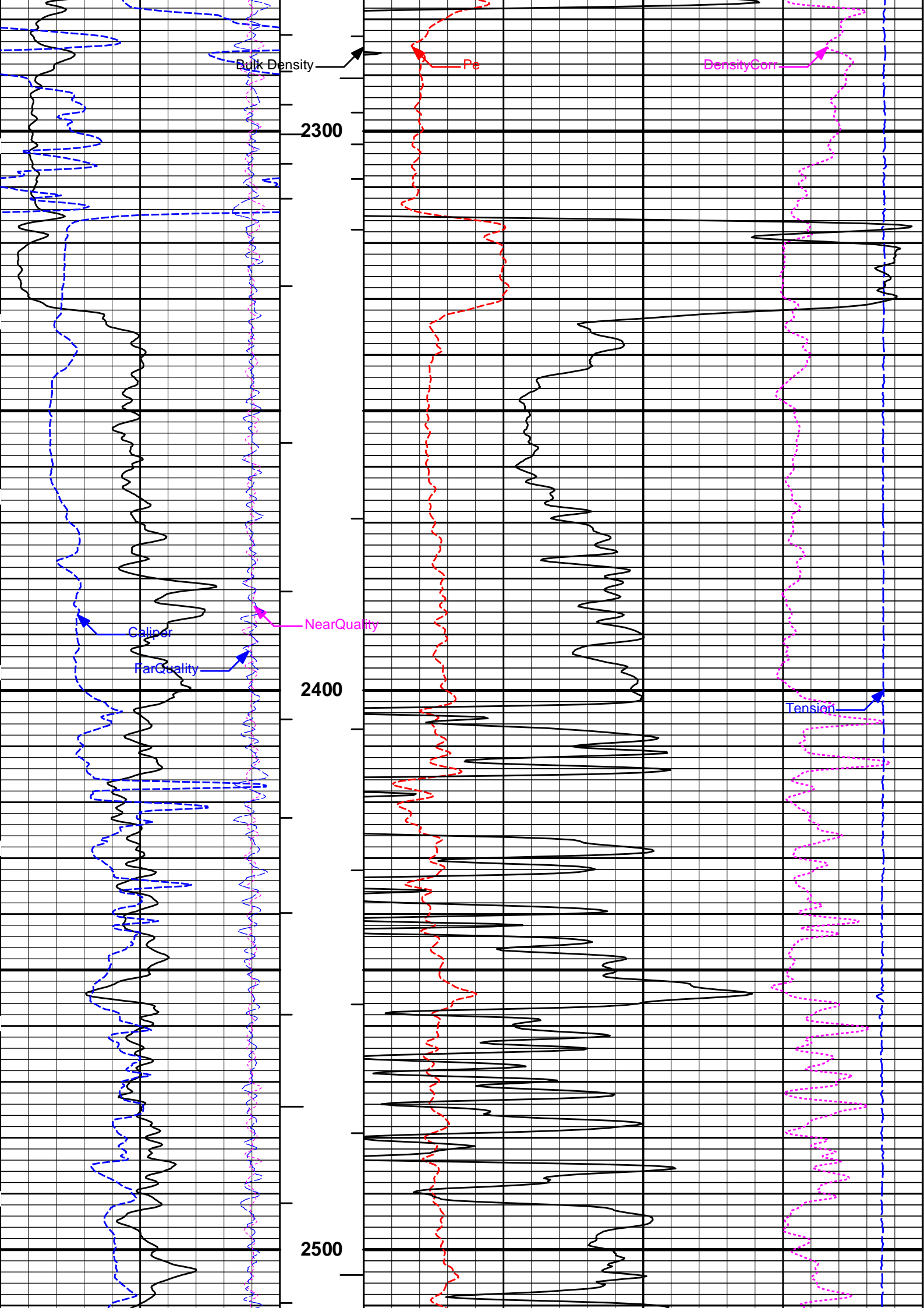
Plot Time: 18-Jun-19 04:27:41
 Plot Range: 2000 ft to 4825.17 ft
 Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-003\
 Plot File: \\-LOCAL-IBEREXCO_FRAN-AG\0001 GTET-DSN-SDL-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

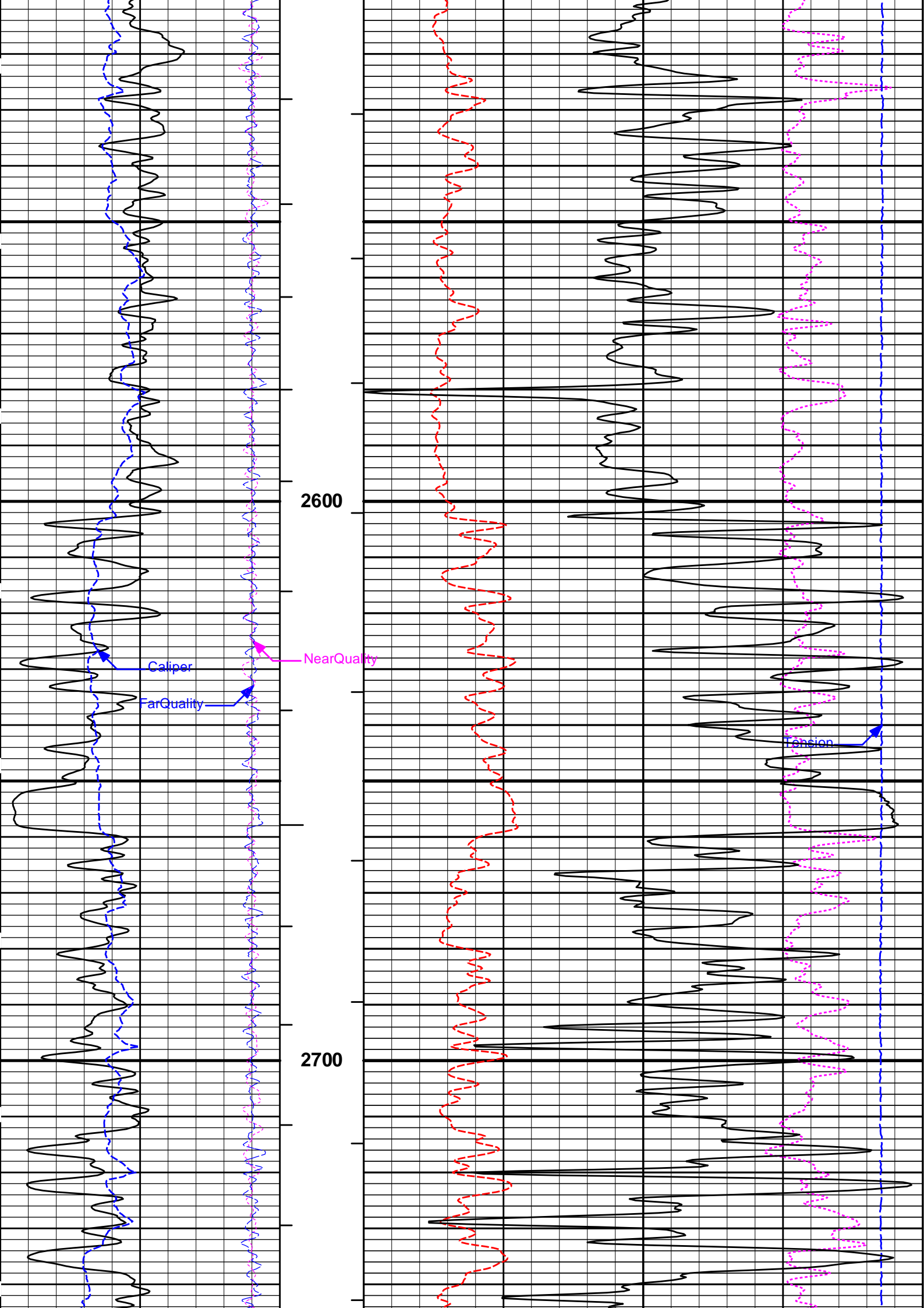
5 INCH MAIN LOG

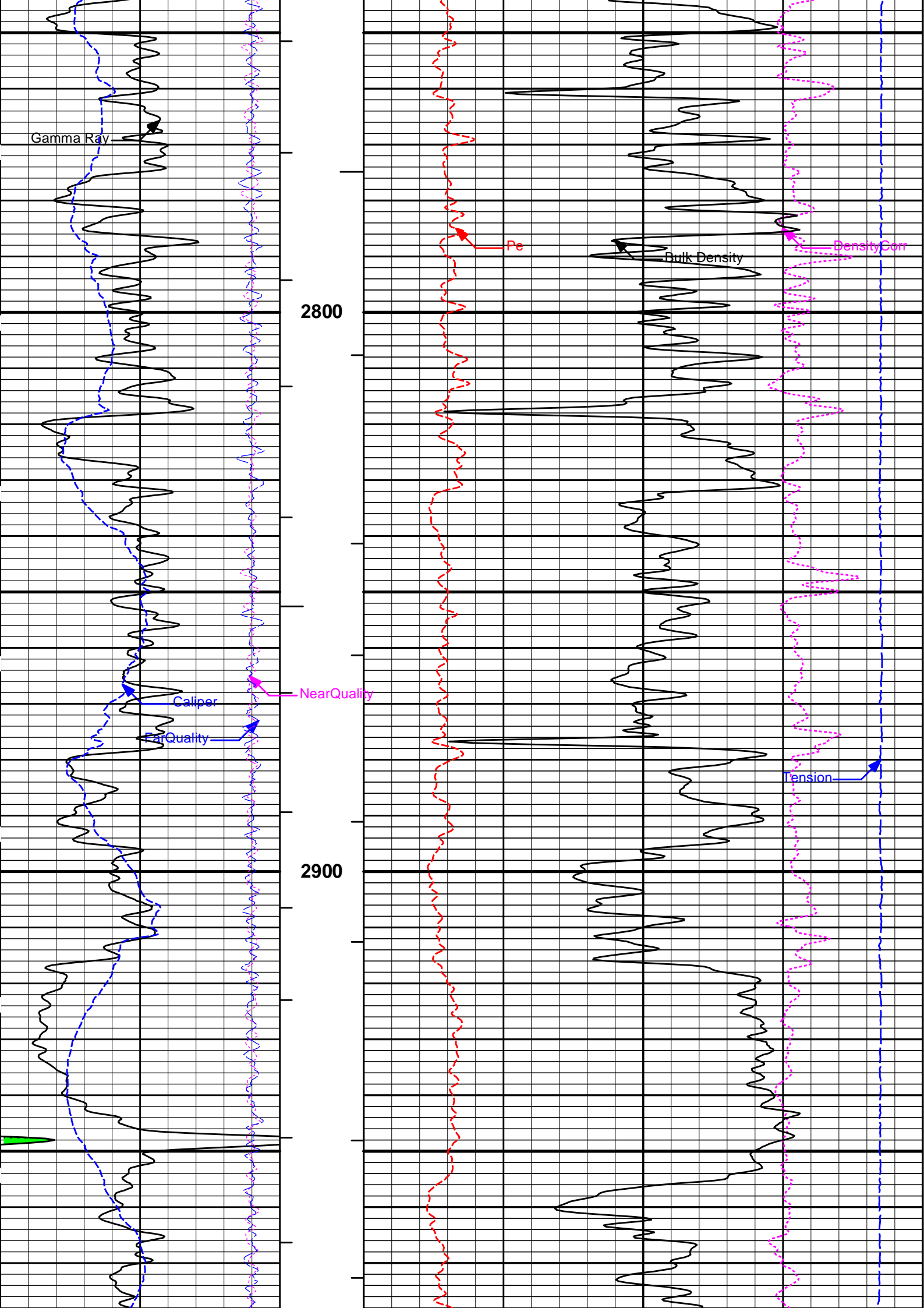
MAIN SECTION 5" PER 100'

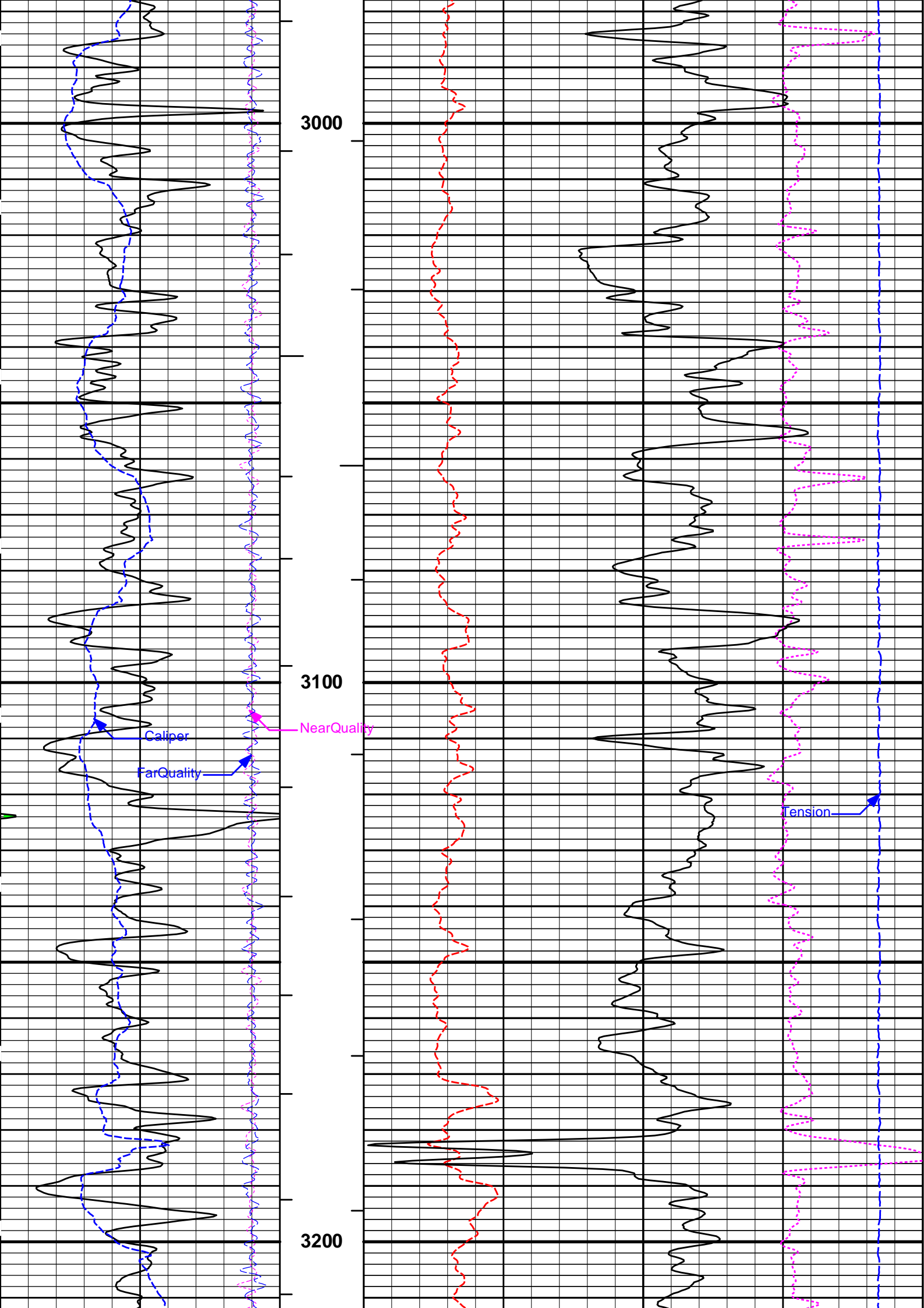


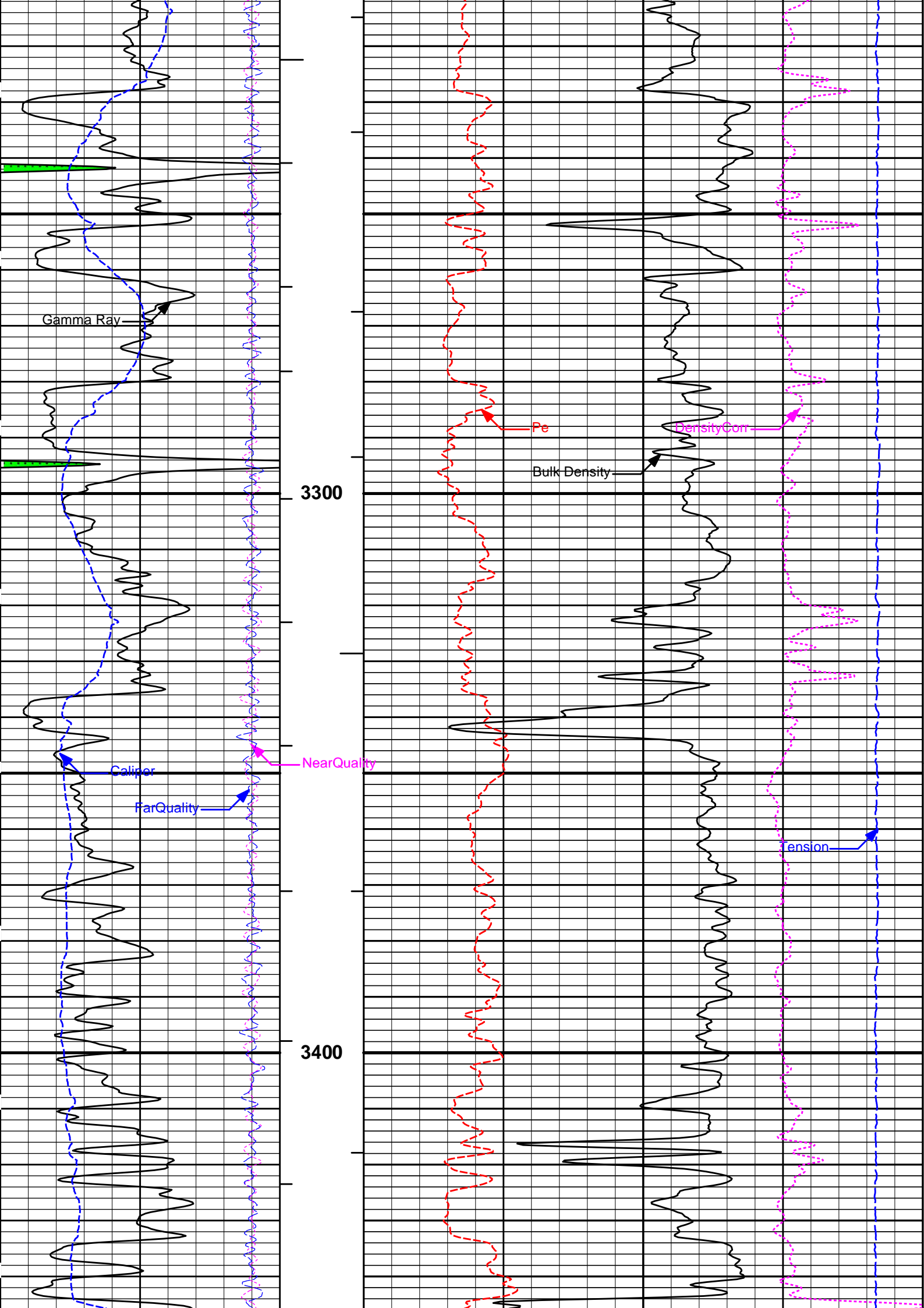


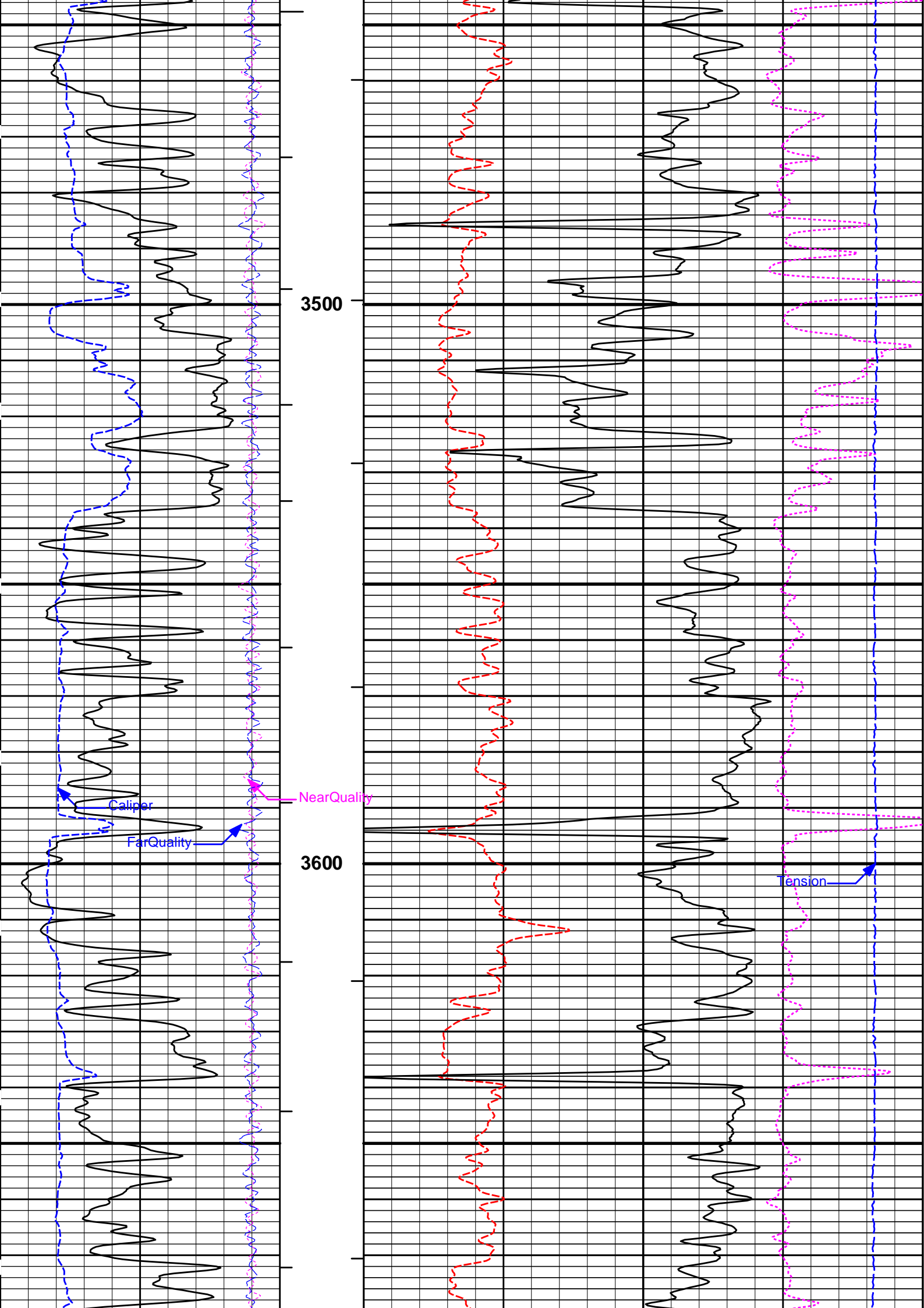


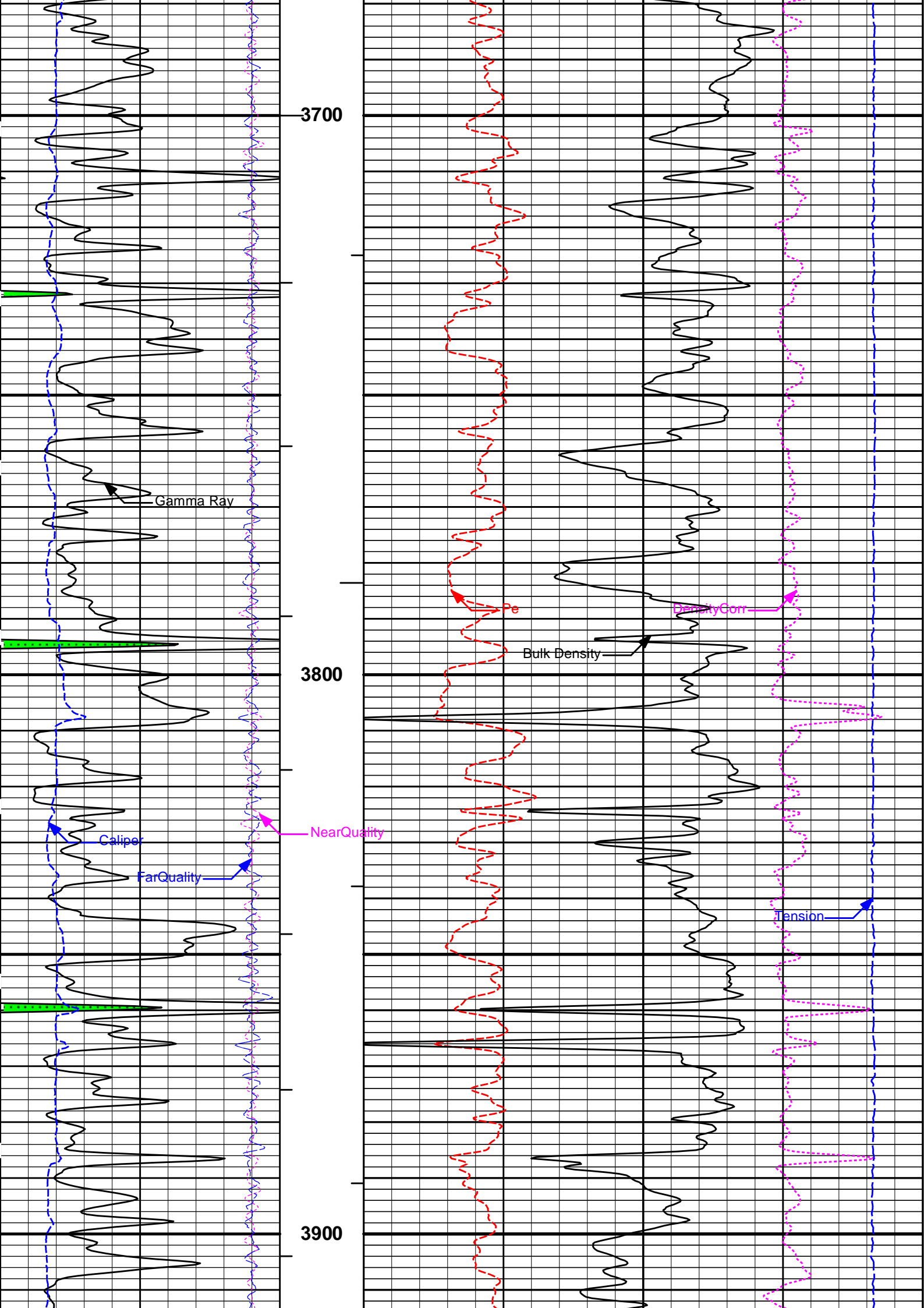


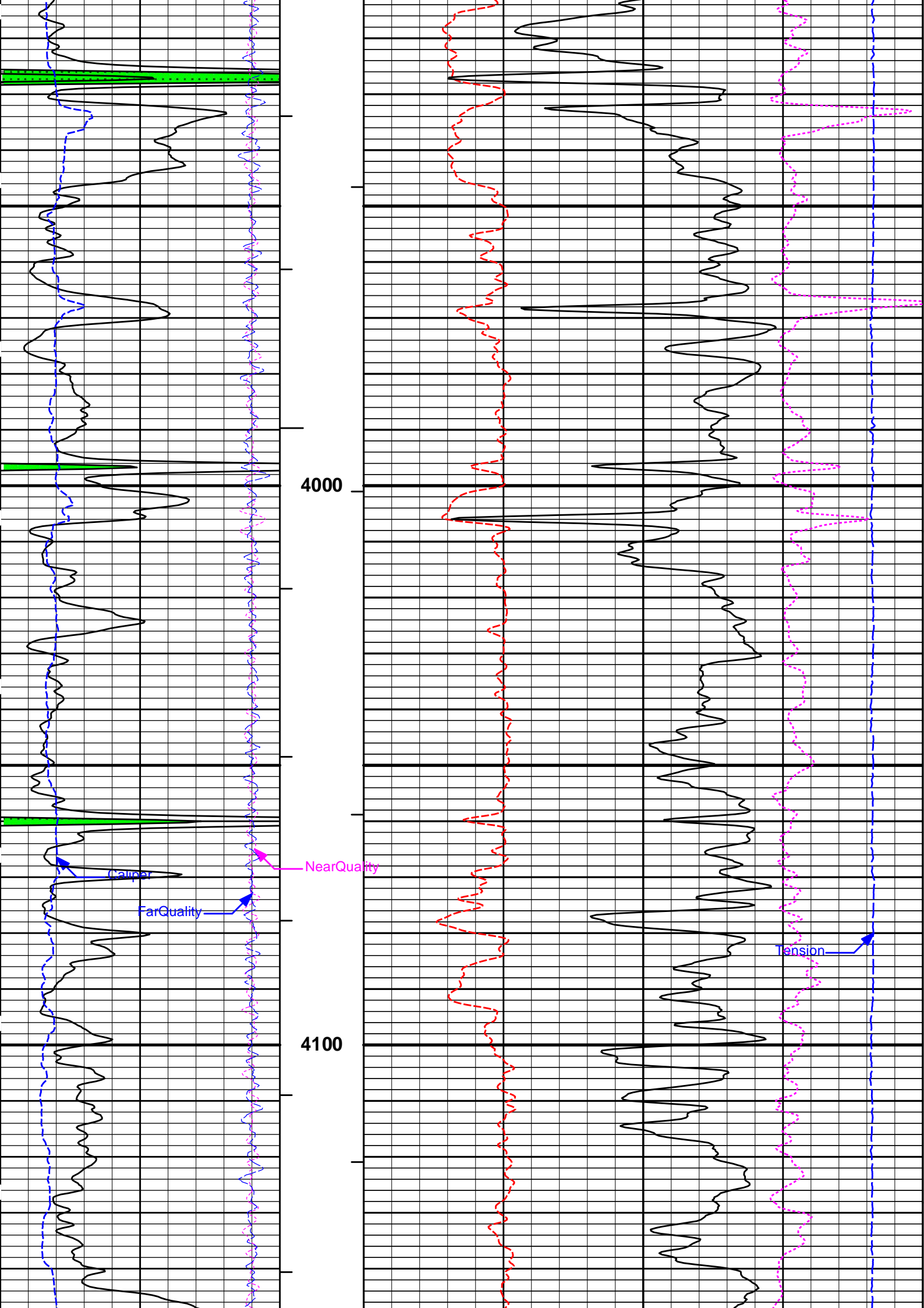


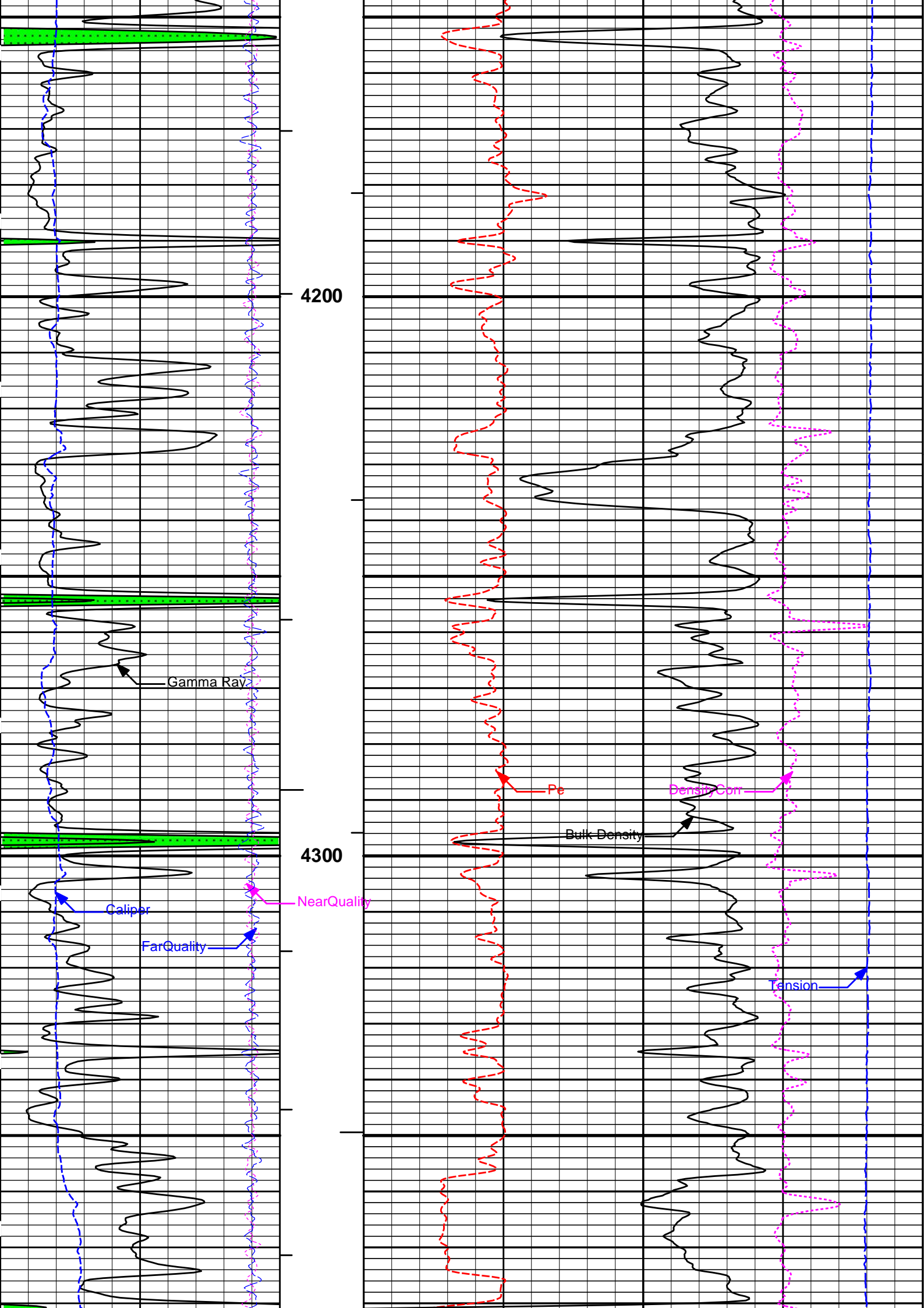


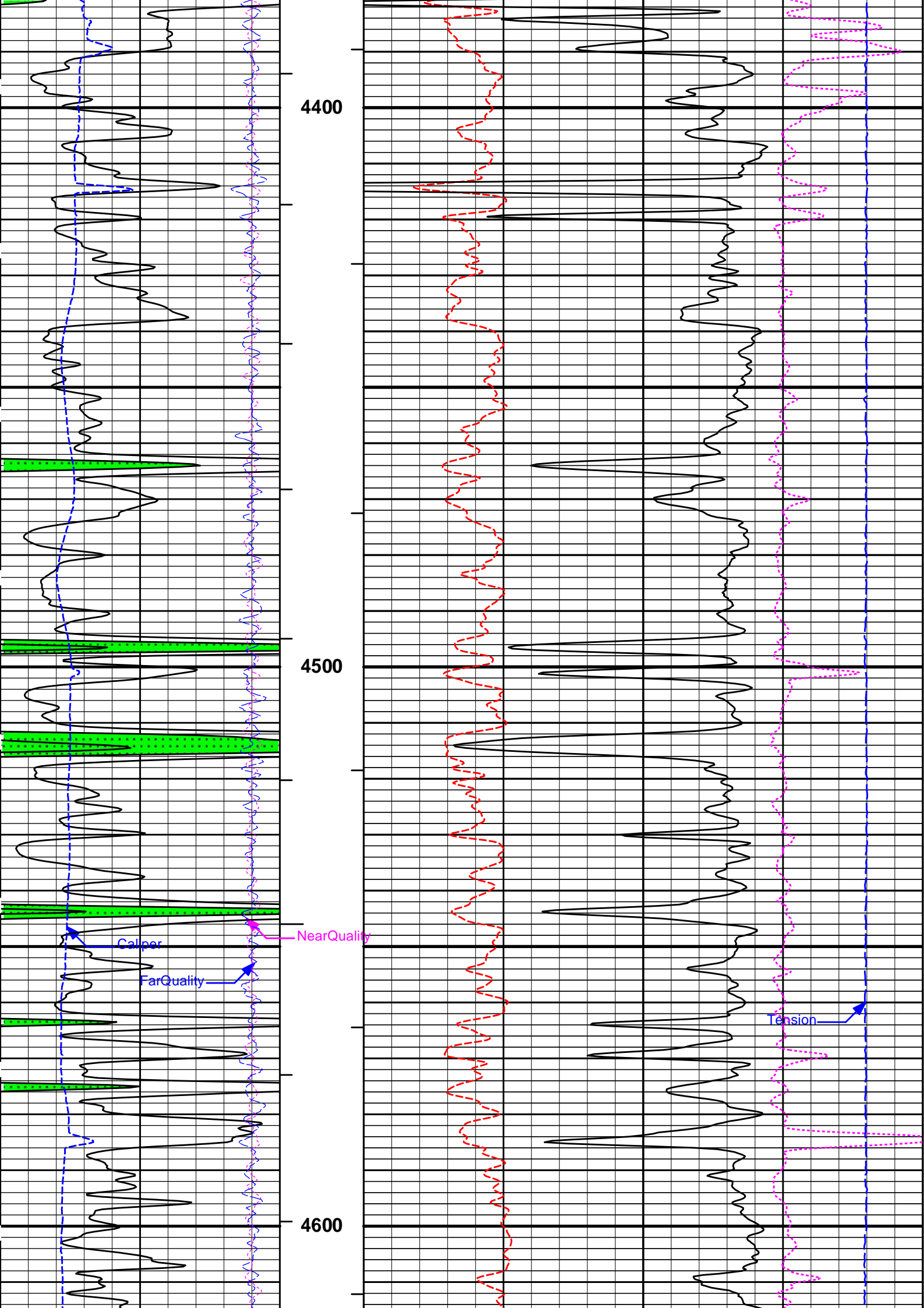


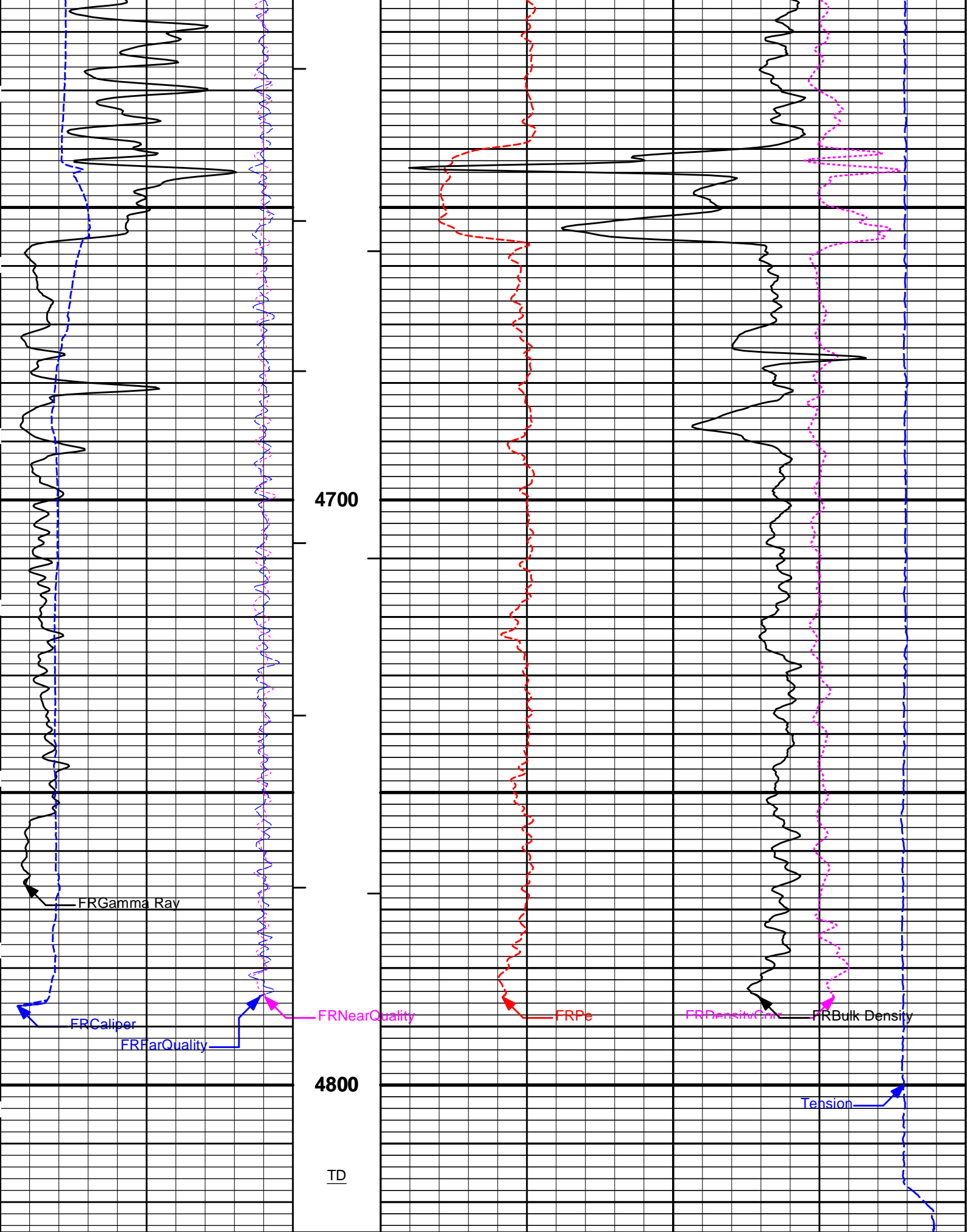












4700

4800

TD

6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					g/cc	
-18	NearQuality	2	BHV				15K	Tension	0
			ft3					pounds	

18	FarQuality	-2	AHV ft3	2	Bulk Density	3
0	Gamma Ray	150			g/cc	
	api					

HALLIBURTON

Plot Time: 18-Jun-19 04:27:45
 Plot Range: 2000 ft to 4825.17 ft
 Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-003\
 Plot File: \\-LOCAL-1\BEREXCO_FRAN-AG\0001 GTET-DSN-SDL-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

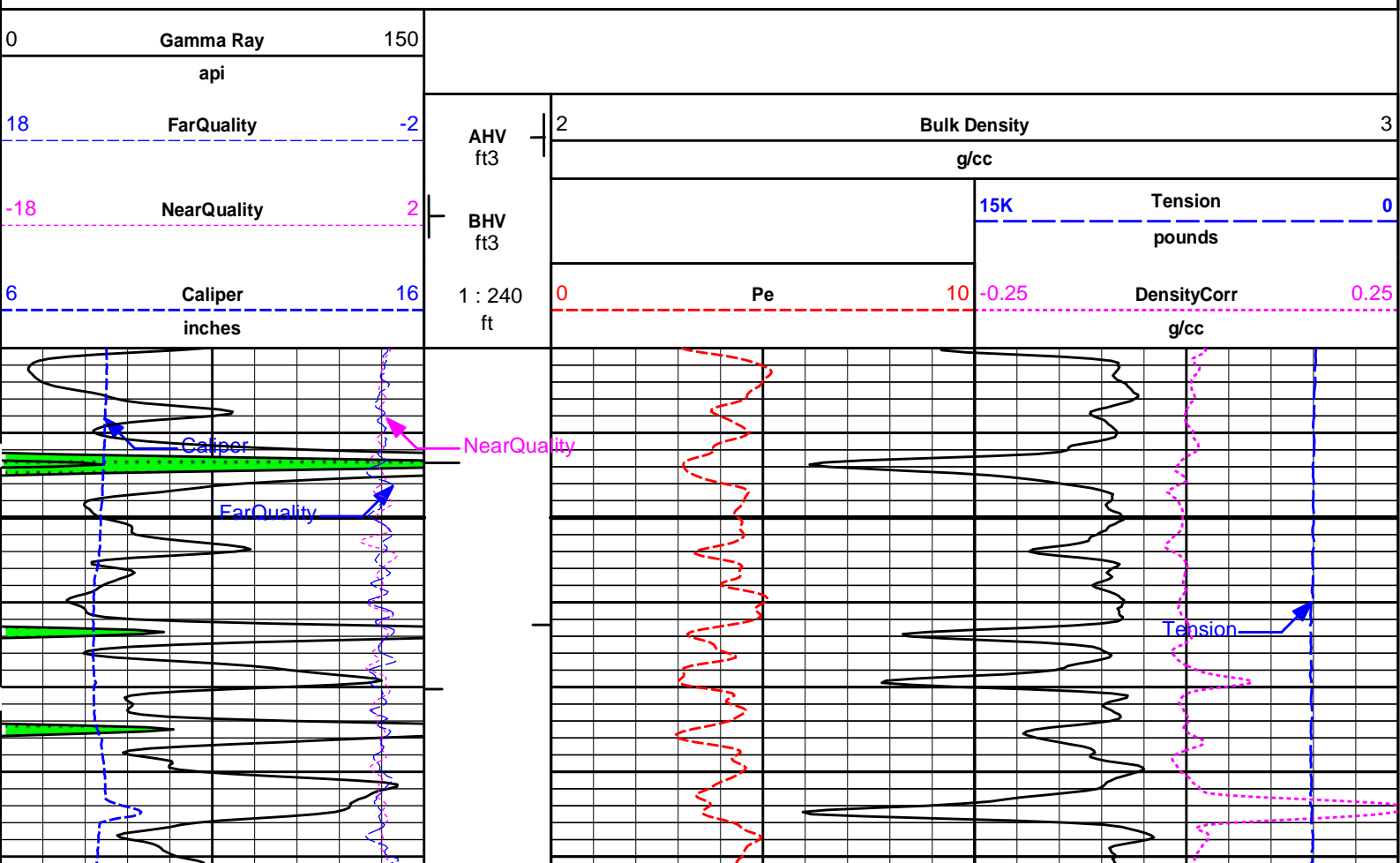
MAIN SECTION 5" PER 100'

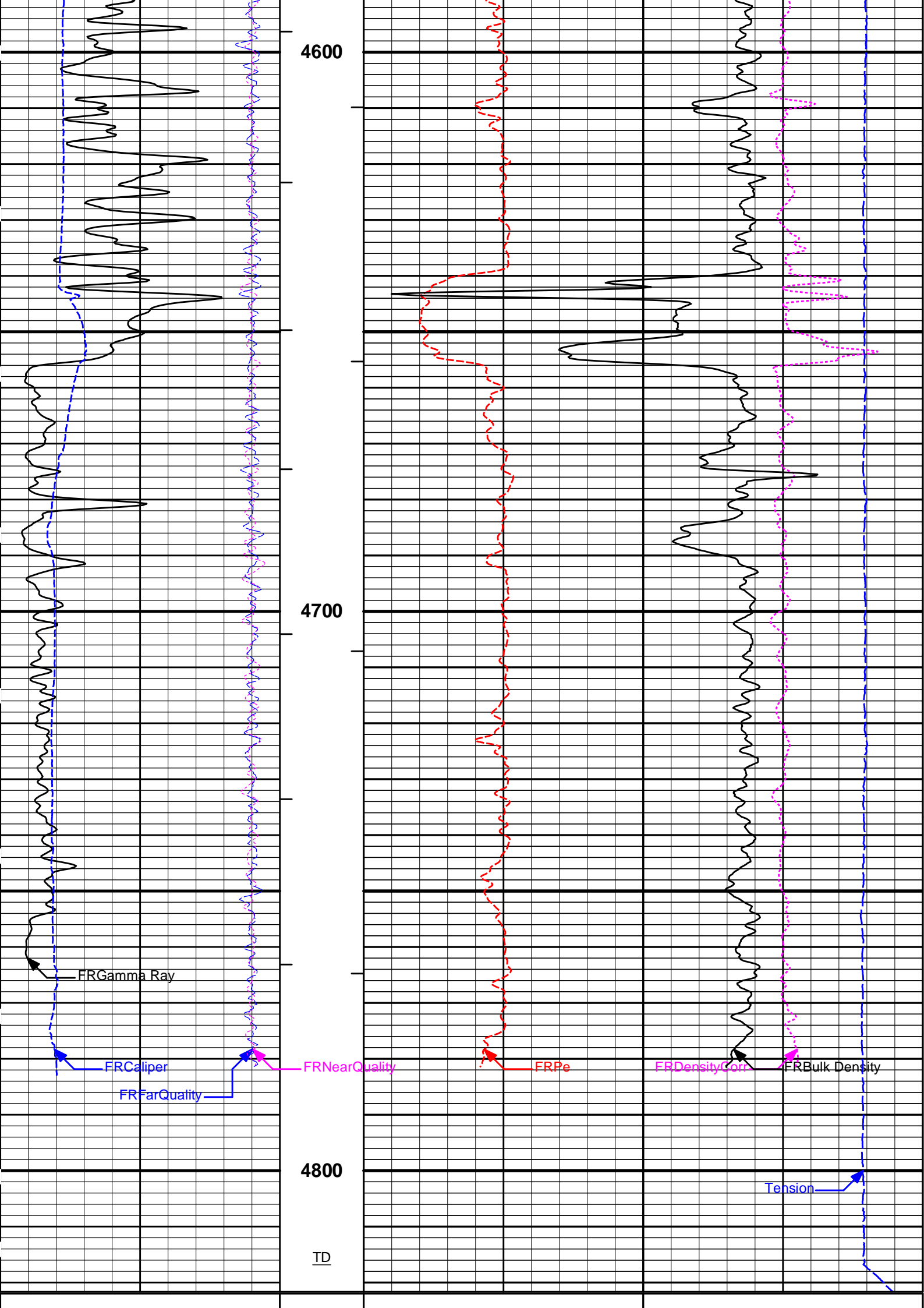
HALLIBURTON

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REPEAT SECTION

REPEAT SECTION





4600

4700

4800

TD

FRGamma Ray

FRCaliper

FRFarQuality

FRNearQuality

FRPe

FBDensityCorr

FRBulk Density

Tension

Caliper inches	16	1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
NearQuality	-18	BHV ft3	2			15K	Tension	0
FarQuality	18	AHV ft3	-2	2	Bulk Density			3
Gamma Ray api	0		150		g/cc			

HALLIBURTON

Plot Time: 18-Jun-19 04:27:47
 Plot Range: 4530 ft to 4821.67 ft
 Data: BEREXCO_FRAN-AG\Well Based\DAQ-0001-002\
 Plot File: \\LOCAL-1\BEREXCO_FRAN-AG\0001 GTET-DSN-SDL-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name: Depth Panel - 00000032 Reference Calibration Date: 23-May-19 08:18:17
 Engineer: WOLTEMATH Calibration Date: 08-Jun-19 01:47:01
 Software Version: WL INSITE R6.2.1 (Build 2) Calibration Version: 1

SURFACE TENSION LOAD CELL					
Measurement	Load Cell Value	Measurement	Calibrated	Units	
Low	10018.34	-94.65	0.00	lbs	
High	17469.37	7816.75	7830.00	lbs	

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 12345678 Reference Calibration Date: 08-Jun-19 02:55:32
 Engineer: WHITLOCK Calibration Date: 15-Jun-19 22:12:20
 Software Version: WL INSITE R6.2.1 (Build 2) Calibration Version: 1

DOWNHOLE LOAD CELL					
Measurement	Tool Value	Measurement	Calibrated	Units	
Low	-505.31	-24.47	0.00	lbs	
High	4251.45	521.39	1450.00	lbs	

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11021139 Reference Calibration Date: 17-Apr-19 13:42:53
 Engineer: WHITLOCK Calibration Date: 14-May-19 09:57:38
 Software Version: WL INSITE R6.2.1 (Build 2) Calibration Version: 1

Calibrator Source S/N: TB-79
 Calibrator API Reference:222.00 api
 Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	22.3	22.6	api

Background + Calibrator	244.2	248.5	api
Calibrator	221.9	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11021139 **Reference Calibration Date:** 14-May-19 09:57:38
Engineer: WHITLOCK **Calibration Date:** 17-Jun-19 11:15:59
Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Calibrator Source S/N: TB-79
Calibrator API Reference:222.00 api
Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	22.6	22.6	api
Background + Calibrator	248.5	252.5	api
Calibrator	225.9	229.9	api

Shop	Field	Difference	Tolerance
225.9	229.9	-4.0	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11660709 **Reference Calibration Date:** 14-Feb-19 11:05:14
Engineer: WHITLOCK **Calibration Date:** 14-May-19 11:28:42
Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN-436
Tank Serial Number: EL RENO HWT
Reference value assigned to Tank: 56.100
Snow Block S/N: 12156883
Calibration Tank Water Temperature: 74 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.01152	1.00941	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2364	0.2358	0.0007	+/- 0.0020
Calibrated Ratio:	10.5816	10.5596	0.022	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0724	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11660709 **Reference Calibration Date:** 14-May-19 11:28:42
Engineer: WHITLOCK **Calibration Date:** 14-Jun-19 16:28:24
Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN-436
Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0724	0.0681	-0.0043	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 12153526	Reference Calibration Date: 11-May-19 12:43:54
Engineer: WOLTEMATH	Calibration Date: 11-May-19 12:49:36
Software Version: WL INSITE R6.0.8 (Build 3)	Calibration Version: 1
Host Tool Name: DSNT - 11660709	

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3095.35	-3021.72	-7000.00 - -1000.00
Pad Gain	0.0003838	0.0003784	0.0002000 - 0.0006000
Arm Offset	-2287.67	-2312.57	-5000.00 - 3000.00
Arm Gain	0.0005330	0.0005234	0.0003000 - 0.0007000
Arm Power	-0.000005791	-0.000005276	-0.000010000 - 0.000010000

The ring diameter is computed from: $DIAMETER = PAD\ EXTENSION + ARM\ EXTENSION + TOOL\ DIAMETER$
 Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.77	3.75	-0.02	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.52	6.50	-0.02	+/- 0.20
Medium Ring (in)	8.29	8.25	-0.04	+/- 0.20
Large Ring (in)	15.03	15.00	-0.03	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 12153526	Reference Calibration Date: 11-May-19 12:49:36
Engineer: WOLTEMATH	Calibration Date: 26-May-19 12:58:05
Software Version: WL INSITE R6.2.1 (Build 2)	Calibration Version: 1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.80	0.05	+/- 0.10
Ring Diameter	8.25	8.39	0.14	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

BSAT FIELD CASING CHECK

Tool Name: BSAT - 10939049

Calibration Date: 30-Mar-17 10:01:32

Engineer: HARRIS

Software Version: WL INSITE R5.0.5 (Build 8)

Calibration Version: 1

Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
Delta-T Compensated	147.01	57.00	56.56	0.4400	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 11038385

Reference Calibration Date: 30-May-19 10:30:10

Engineer: WHITLOCK

Calibration Date: 30-May-19 16:04:26

Software Version: WL INSITE R6.2.1 (Build 2)

Calibration Version: 1

Host Tool Name: ACRt Instrument - 11055059

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0436	1.05	0.95	1.0233	1.05	0.95	1.0105	1.05
A2 (50")	0.95	1.0425	1.05	0.95	1.0248	1.05	0.95	1.0169	1.05
A3 (29")	0.95	1.0370	1.05	0.95	1.0178	1.05	0.95	1.0085	1.05
A4 (17")	0.95	1.0325	1.05	0.95	1.0108	1.05	0.95	1.0026	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0032	1.05	0.95	0.9929	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9937	1.05	0.95	0.9859	1.05

SONDE OFFSET

Subarray	R12KHz			R36KHz			R72KHz		
	(mmho/m)			(mmho/m)			(mmho/m)		
A1 (80")	1.105			-4.185			-6.175		
A2 (50")	-2.031			-4.364			-5.644		
A3 (29")	-15.630			-4.663			-3.991		
A4 (17")	-113.327			-34.718			-27.228		
A5 (10")	N/A			-86.739			-42.245		
A6 (6")	N/A			334.526			172.566		

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.93	1.3
36K	1.0	1.39	2.0
72K	1.0	1.66	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.00	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name: ACRt Sonde - 11038385

Reference Calibration Date: 27-Mar-19 10:28:27

Engineer: WHITLOCK

Calibration Date: 30-May-19 10:32:26

Software Version: WL INSITE R6.2.1 (Build 2)

Calibration Version: 1

Host Tool Name: ACRt Instrument - 11055059

STANDARD DEVIATIONS

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.007	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.004	> -0.500	Pass
A4 (17")	-0.003	> -0.500	Pass	-0.008	> -0.500	Pass	-0.028	> -0.500	Pass
A5 (10")	-0.012	> -0.500	Pass	-0.020	> -0.500	Pass	-0.043	> -0.500	Pass
A6 (6")	0.015	< 0.500	Pass	0.074	< 0.500	Pass	0.160	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-222464160.000	-219334160.000	3130000.000	10966708.000	Pass
A2 (50")	-218296048.000	-217147632.000	1148416.000	10857381.600	Pass
A3 (29")	-215615984.000	-213416928.000	2199056.000	10670846.400	Pass
A4 (17")	-212439408.000	-210205136.000	2234272.000	10510256.800	Pass
A5 (10")	-213281584.000	-210744480.000	2537104.000	10537224.000	Pass
A6 (6")	-213757744.000	-212744384.000	1013360.000	10637219.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	58226652.000	59308716.000	1082064.000	2965435.800	Pass
A2 (50")	59078976.000	60516680.000	1437704.000	3025834.000	Pass
A3 (29")	50762576.000	52467084.000	1704508.000	2623354.200	Pass
A4 (17")	47774380.000	48963324.000	1188944.000	2448166.200	Pass
A5 (10")	49758800.000	51107628.000	1348828.000	2555381.400	Pass
A6 (6")	48666176.000	49936832.000	1270656.000	2496841.600	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92092456.000	-91475104.000	617352.000	4573755.200	Pass
A2 (50")	-88448376.000	-88531624.000	83248.000	4426581.200	Pass
A3 (29")	-88454672.000	-88284496.000	170176.000	4414224.800	Pass
A4 (17")	-83513648.000	-83029816.000	483832.000	4151490.800	Pass
A5 (10")	-82220840.000	-81717560.000	503280.000	4085878.000	Pass
A6 (6")	-83857920.000	-83900568.000	42648.000	4195028.400	Pass

PASS/FAIL SUMMARY

Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name:	Microlog Pad - 12153526	Reference Calibration Date:	13-Feb-19 13:48:43
Engineer:	WOLTEMATH	Calibration Date:	11-May-19 13:30:58
Software Version:	WL INSITE R6.0.8 (Build 3)	Calibration Version:	1

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.13	-0.08	-0.01	-0.01	ohmm
Calibration Point #1	-0.05	0.00	0.00	0.00	ohmm
Calibration Point #2	19.95	20.00	19.99	20.00	ohmm
Internal Reference	19.86	19.91	19.99	19.99	ohmm

Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero		-0.08		
Calibration Point #1		21.72		2.13	V
Calibration Point #2		5304.14		6941.05	V
Internal Reference		5281.39		6939.09	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 12153526 **Reference Calibration Date:** 11-May-19 13:30:58
Engineer: WHITLOCK **Calibration Date:** 17-Jun-19 11:11:40
Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.08	-0.08	-0.01	-0.01	ohmm
Internal Reference	19.91	19.96	19.99	20.04	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.91	19.96	-0.05	+/- 0.80
Microlog Lateral	19.99	20.04	-0.05	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11284007 **Reference Calibration Date:** 14-May-19 10:35:42
Engineer: WHITLOCK **Calibration Date:** 14-May-19 11:01:04
Software Version: WL INSITE R6.2.1 (Build 2) **Calibration Version:** 1

Logging Source S/N: 5475GW

Aluminum Block S/N: EL RENO AL BLK

Density: 2.581g/cc

Pe: 3.170

Magnesium Block S/N: EL RENO MG BLK

Density: 1.687g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0672	1.0696	0.90 - 1.10
Near Dens Gain	1.0399	1.0253	0.90 - 1.10
Near Peak Gain	1.0698	1.0607	0.90 - 1.10
Near Lith Gain	1.0707	1.0600	0.90 - 1.10
Far Bar Gain	1.0119	1.0132	0.90 - 1.10
Far Dens Gain	1.0014	1.0004	0.90 - 1.10
Far Peak Gain	0.9998	0.9988	0.90 - 1.10
Far Lith Gain	0.9842	0.9832	0.90 - 1.10

Near Bar Offset	-0.4646	-0.4868	NONE
Near Dens Offset	-0.1638	-0.0376	NONE
Near Peak Offset	-0.4118	-0.3374	NONE
Near Lith Offset	-0.4691	-0.3841	NONE
Far Bar Offset	-0.0627	-0.0742	NONE
Far Dens Offset	0.0569	0.0650	NONE
Far Peak Offset	0.0511	0.0583	NONE

	0.1514	0.1583	NONE
Far Lith Offset			
Near Bar Background	993.88	993.91	700 - 1450
Near Dens Background	329.23	327.28	230 - 480
Near Peak Background	147.25	146.97	100 - 210
Near Lith Background	178.05	176.81	125 - 260
Far Bar Background	582.67	585.21	450 - 900
Far Dens Background	227.13	227.13	175 - 345
Far Peak Background	91.02	90.90	70 - 140
Far Lith Background	94.76	94.27	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.688	1.687	-0.001	+/- 0.015
Pe	2.523	2.556	0.033	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.581	0.001	+/- 0.01500
Pe	3.116	3.129	0.013	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0004	+/- 0.0110	-0.0020	+/- 0.0140
Magnesium Block	0.0005	+/- 0.0110	0.0007	+/- 0.0140
Aluminum Block	0.0003	+/- 0.0110	0.0001	+/- 0.0140
Resolution	8.86	6.00 - 11.50	9.16	6.00 - 11.50
Internal Verifier(B+D+P+L)	1645	1200 - 2700	998	800 - 1700

PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name: SDLT Pad - 11284007	Reference Calibration Date: 14-May-19 11:01:04
Engineer: WHITLOCK	Calibration Date: 17-Jun-19 11:16:05
Software Version: WL INSITE R6.2.1 (Build 2)	Calibration Version: 1

Pad Temperature: 79.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1644.977	1643.649	-1.328	16.295
Far (B+D+P+L) cps	997.505	995.411	-2.094	16.911
Near Resolution	8.86	8.87	0.010	0.50
Far Resolution	9.16	9.12	-0.040	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed

Bkg Resolution Check:

Passed

Bkg Verification Check:

Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-00000032						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
RWCH-12345678						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	1450.00	-----	-----	0.00	-----	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	229.9	-----	-4.0	+/- 9.00	api
DSNT-11660709						
Snow-Block Porosity	0.0724	0.0681	-----	0.0043	+/- 0.0150	decpc
SDLT-12153526						
Pad Extension	3.75	3.80	-----	-0.05	+/-0.10	in
Ring Diameter	8.25	8.39	-----	-0.14	+/-0.15	in
ACRt Sonde-11038385						
Mud Cell	1.00	-----	-----	0	-----	ohm-m
Microlog Pad-12153526						
MicroLog Normal	19.91	19.96	-----	-0.05	+/-0.80	ohmm
MicroLog Lateral	19.99	20.04	-----	-0.05	+/-0.80	ohmm
SDLT Pad-11284007						
Near(B+D+P+L)	1644.977	1643.649	-----	1.328	+/-16.295	cps
Far(B+D+P+L)	997.505	995.411	-----	2.094	+/-16.911	cps

Data: BEREXCO_FRAN-AG\0001 GTET-DSN-SDL-BSAT-ACRT\IDLE

Date: 18-Jun-19 01:00:43

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	Barite	
	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	0.750	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	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4821.00	ft
	SHARED	BHT	Bottom Hole Temperature	135.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	CBM Temperature Master Tool	GTET	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	Rwa /	YPOK	Process Control?	Yes	

CrossPlot	XPOR	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	
Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
GTET	GROK	Process Gamma Ray?	Yes	
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	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTT	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	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
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
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
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 Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
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	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

BOTTOM



TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in →		← Fishing Neck @ 73.73 ft		74.61 ft
RWCH-12345678 135.00 lbs		Ø 3.625 in →		← Load Cell @ 70.93 ft ← BH Temperature @ 70.36 ft	6.25 ft	
	Weak Point Solid- 11111111 0.01 lbs	Ø 0.010 in* →				68.36 ft
SP Sub-10904995 60.00 lbs		Ø 3.625 in →		← SP @ 66.59 ft	3.74 ft	
				← Z-Accelerometer @ 64.17 ft		64.63 ft
GTET-11021139 165.00 lbs		Ø 3.625 in →			8.52 ft	
				← GammaRay @ 58.56 ft		56.11 ft
	DSN Decentralizer- 11660709 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →			9.69 ft	
DSNT-11660709 174.00 lbs				← DSN Far @ 49.17 ft ← DSN Near @ 48.42 ft		46.42 ft
	SDLT Pad-11284007 65.00 lbs Microlog Pad-12153526 8.00 lbs RAM-Cs137-54750000 1.00 lbs	Ø 4.500 in → Ø 4.500 in* → Ø 4.750 in* → Ø 0.800 in* →		← Microlog @ 38.61 ft ← SDL Caliper @ 38.42 ft ← SDL @ 38.41 ft	10.81 ft	
					35.61 ft	
BSAT-10939049 300.00 lbs		Ø 3.625 in →	← Receiver Array @ 27.09 ft ← Sonic Receivers @ 27.09 ft	15.77 ft		

ACRt Instrument-
11055059
50.00 lbs

Ø 3.625 in →

19.83 ft
5.03 ft

ACRt Sonde-
11038385
200.00 lbs

Ø 3.625 in →

← Mud Resistivity @ 13.44 ft

14.80 ft

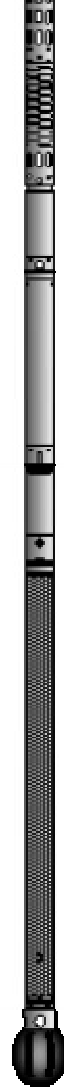
← ACRt @ 9.46 ft

14.22 ft

Cabbage Head-
11111111
10.00 lbs

Ø 3.625 in
Ø 6.000 in →

0.58 ft
0.58 ft
0.00 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max. Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25	68.36	300.00
WPSS	Weak Point Solid	11111111	0.01	0.01	* 68.36	300.00
SP	SP Sub	10904995	60.00	3.74	64.63	300.00
GTET	Gamma Telemetry Tool	11021139	165.00	8.52	56.11	60.00
DSNT	Dual Spaced Neutron	11660709	174.00	9.69	46.42	60.00
DCNT	DSN Decentralizer	11660709	6.60	5.13	* 49.75	300.00
SDLT	Spectral Density Tool	12153526	360.00	10.81	35.61	60.00
SDLP	Density Insite Pad	11284007	65.00	2.55	* 37.82	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	54750000	1.00	0.80	* 38.05	300.00
MICP	Microlog Pad	12153526	8.00	1.00	* 38.11	60.00
BSAT	Borehole Sonic Array Tool	10939049	300.00	15.77	19.83	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03	14.80	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22	0.58	120.00
CBHD	Cabbage Head	11111111	10.00	0.58	0.00	300.00
Total			1,534.61	74.61		

* Not included in Total Length and Length Accumulation.

Data: BEREXCO_FRAN-AG\0001 GTET-DSN-SDL-BSAT-ACRTIDLE

Date: 18-Jun-19 01:02:12