

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON

LARAMIE ENERGY				COMPANY LARAMIE ENERGY			
SOUTH LEVERICH 18 - 05D				WELL SOUTH LEVERICH 18 - 05D			
RULISON				FIELD RULISON			
GARFIELD				COUNTY GARFIELD			
COLORADO				STATE COLORADO			
COMPANY	WELL	FIELD	COUNTY	STATE	API No.	05045182080001	Other Services: RWCH GAMMA ACRT
Permanent Datum	GL	Sect. 18	Twp. 7S	Rge. 93W	Location	SURFACE HOLE LOCATION: 1414 FSL & 805 FEL	
Log measured from	KB	BOTTOM HOLE LOCATION: 2268' FNL & 706' FWL					
Drilling measured from	KB	21.0 ft above perm. Datum					Elev. 8008.0 ft D.F. G.L. 8029.0 ft 8028.0 ft 8008.0 ft
Date	01-Apr-09						
Run No.	ONE						
Depth - Driller	10461.00 ft						
Depth - Logger	10462.0 ft						
Bottom - Logged Interval	10460.0 ft						
Top - Logged Interval	1552.0 ft						
Casing - Driller	8.625 in	@ 1550.0 ft					
Casing - Logger	1552.0 ft	@					
Bit Size	7.875 in	@					
Type Fluid in Hole	LSND						
Density	9.0 ppg	68.00	sqqt				
PH	9.70 pH	6.0	cpm				
Source of Sample	MUDTANK						
Rm @ Meas. Temperature	1.76 ohmm	@	52.60 degF	@			
Rmf @ Meas. Temperature	1.61 ohmm	@	54.30 degF	@			
Rmc @ Meas. Temperature	1.83 ohmm	@	58.20 degF	@			
Source Rmf	MEAS. Rmc		MEAS.				
Rm @ BHT	0.52 ohmm	@	198.0 degF	@			
Time Since Circulation	15.0 hr						
Time on Bottom	01-Apr-09 01:09						
Max. Rec. Temperature	198.0 degF	@	10462.0 ft	@			
Equipment	10800786	ROCKSPRING					
Recorded By	J. MAYNE	A. HERMAN					
Witnessed By	GARY STAPLETON						

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Service Ticket No.: 6563964						API Serial No.: 05045182080001						PGM Version: WL INSITE R2.4 (Build 11)															
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		ACRT-		M/A		1.5" S.O.				N/A					
Rmc @ Meas. Temp.				@				@						E332_S570													
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.		10832795				Serial No.						Serial No.		10695353				Serial No.		10813523							
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.		102A				Spacing						Log Type		GAM/GAM				Log Type		THERM/THERM							
Type		SCINT										Source Type		Cs137				Source Type		Am241Be							
Length		8"				LSA [Y/N]						Serial No.		20785B				Serial No.		21480B							
Distance to Source		10'				FWDA [Y/N]						Strength		1.5Ci				Strength		15Ci							

LOGGING DATA

GENERAL				GAMMA				ACOUSTIC				DENSITY				NEUTRON			
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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	MDWT	Borehole Fluid Weight	9.000	ppg
	SHARED	RMUD	Mud Resistivity	2.000	ohm m
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	OBM	Oil Based Mud System?	No	
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	10461.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	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	ohm m
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohm m
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in

GTET	GEOK	Process Gamma Ray EVR?	No	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Sandstone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.000	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		Logging Horizontal Water Tank?	No	
SDLT	DNOK	Process Density?	Yes	
SDLT	DNOK	Process Density EVR?	No	
SDLT	AD	Is Hole Air Drilled?	No	
SDLT	CB	Use Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	MDTP	Weighted Mud Correction Type?	Barite	
SDLT	DMA	Formation Density Matrix	2.680	g/cc
SDLT	DFL	Formation Density Fluid	1.000	g/cc
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT	MLOK	Process MicroLog Outputs?	Yes	
ACRt	RTOK	Process ACRt?	Yes	
ACRt	MNSO	Minimum Tool Standoff	1.50	in
ACRt	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt	TPOS	Tool Position	Free Hanging	
ACRt	RMOP	Rmud Source	Mud Cell	
ACRt	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt	RMIN	Maximum Resistivity for MAP	200.00	ohmm

BOTTOM

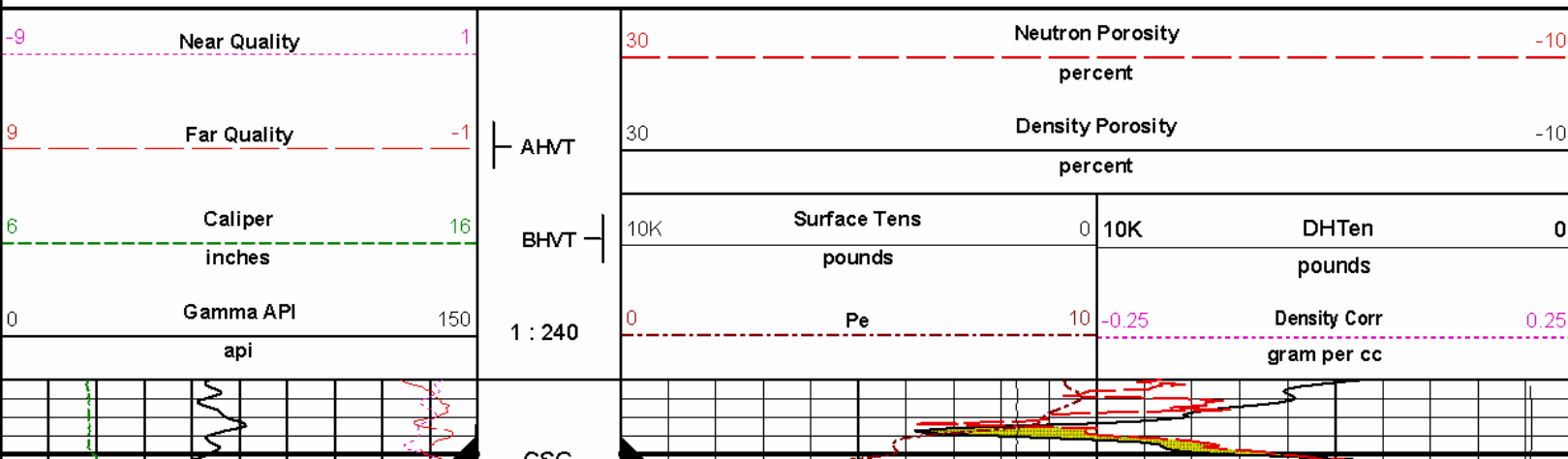
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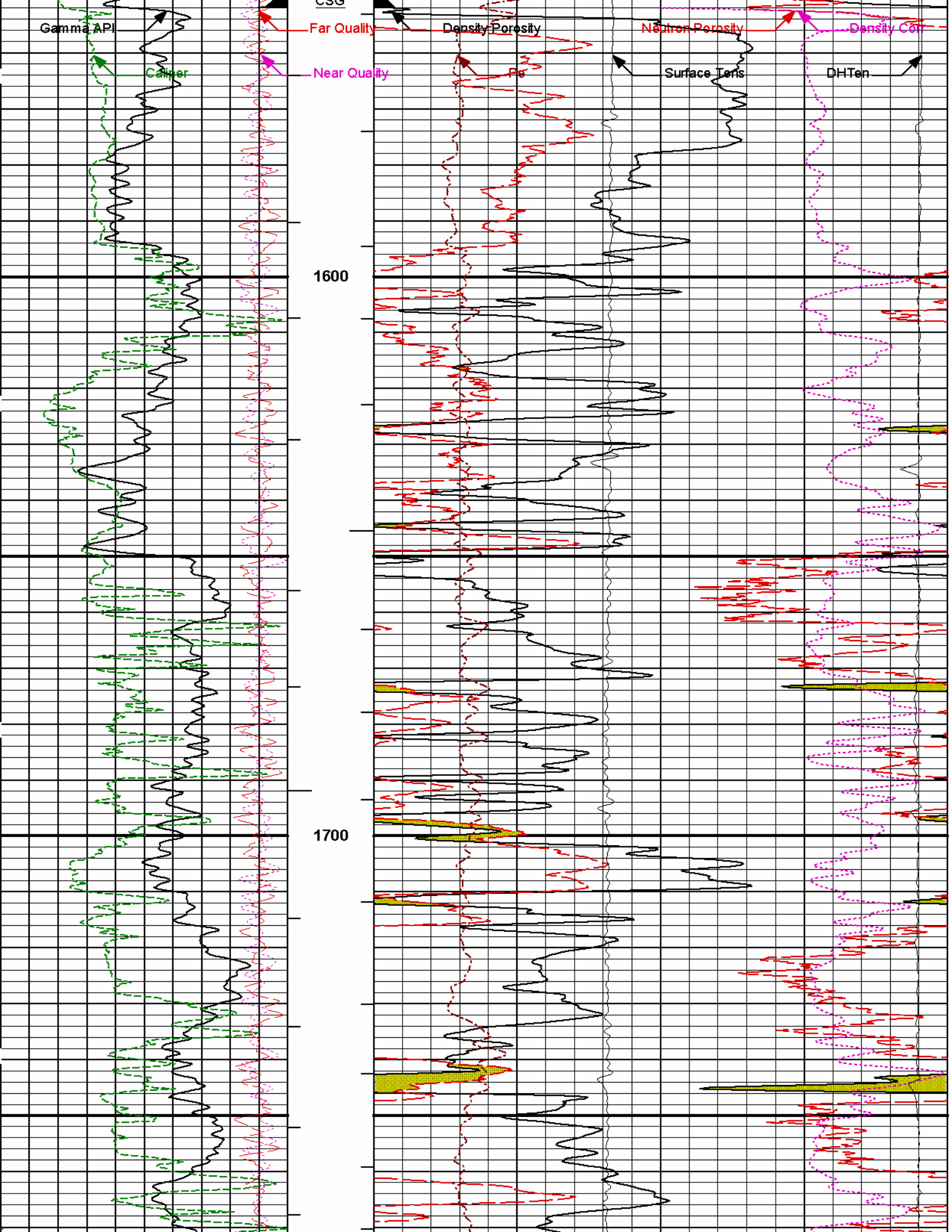
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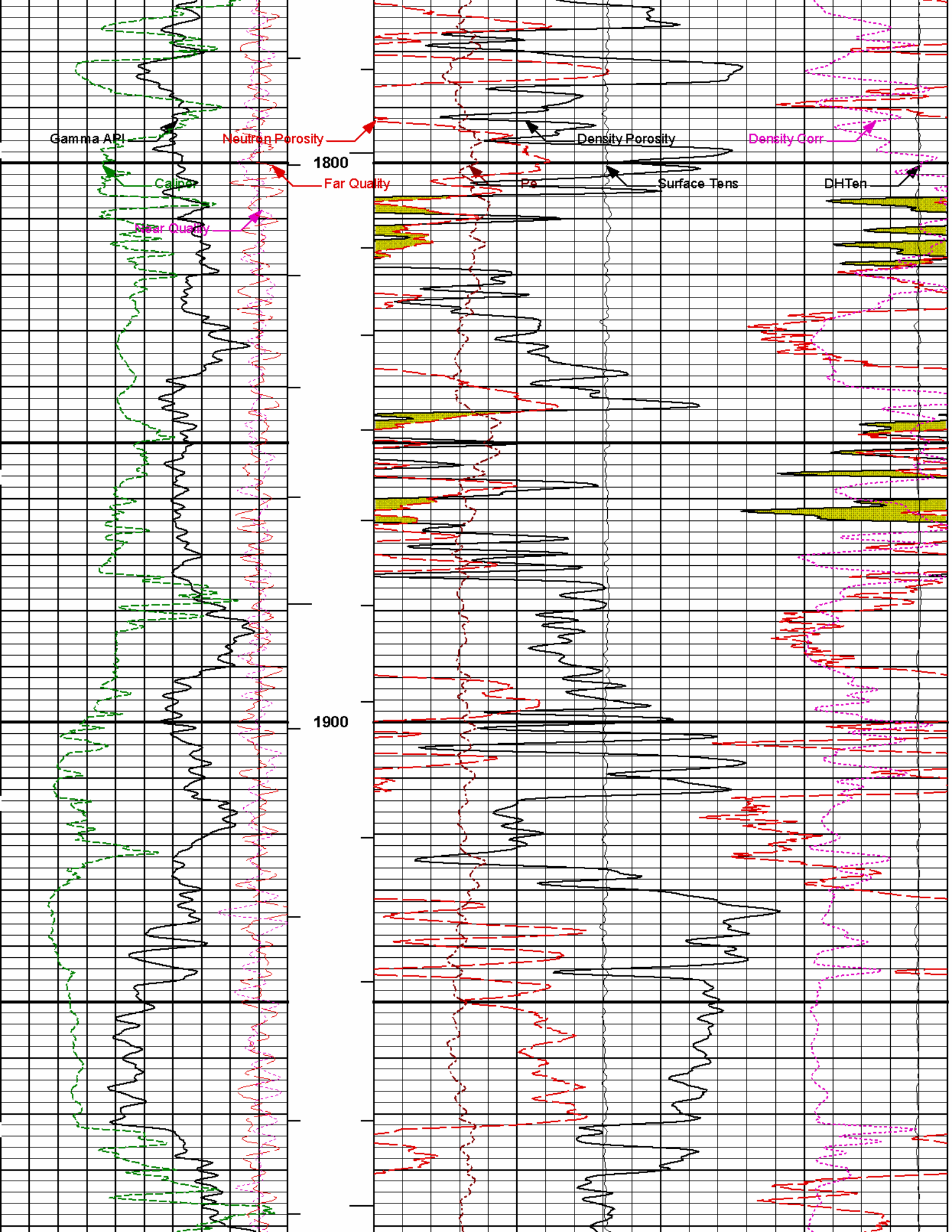
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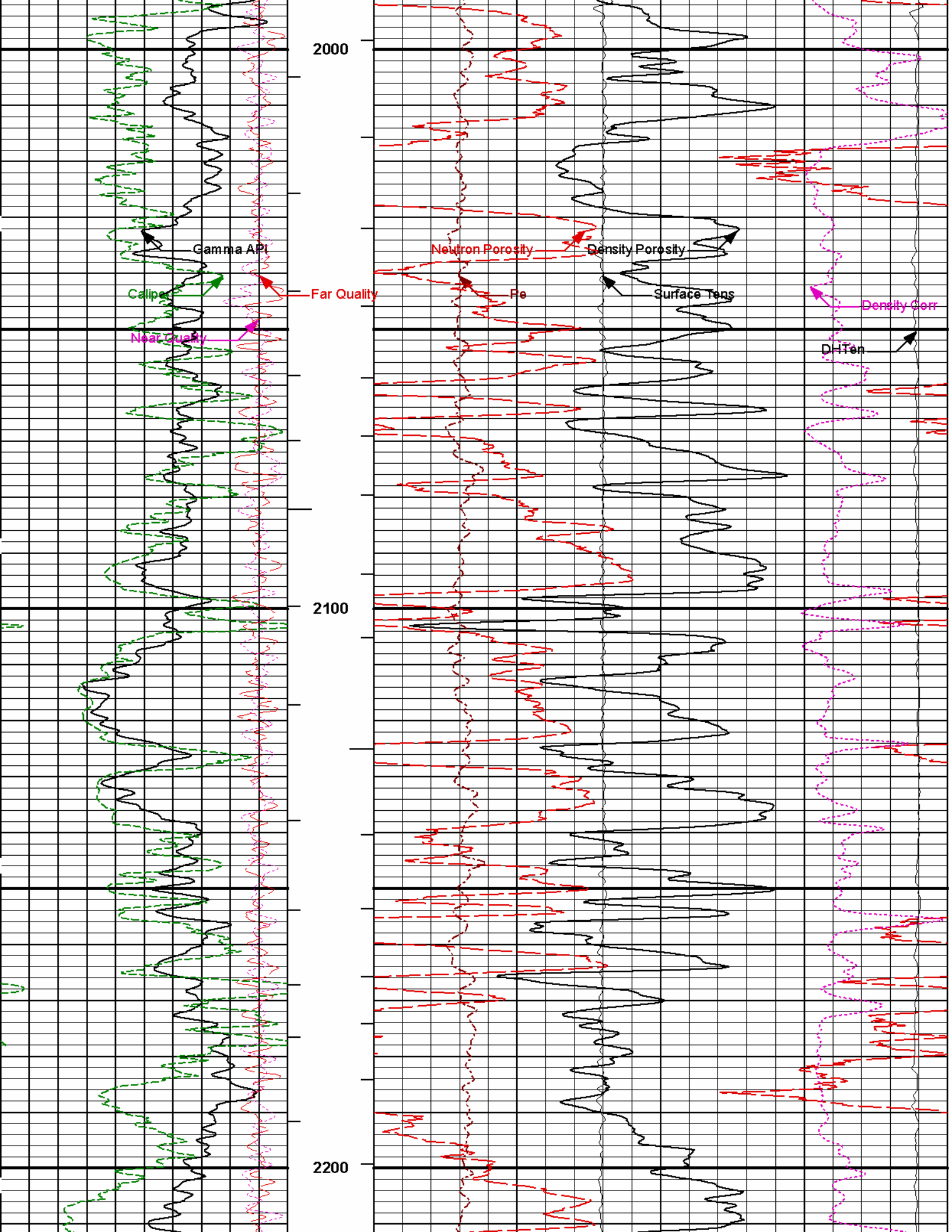
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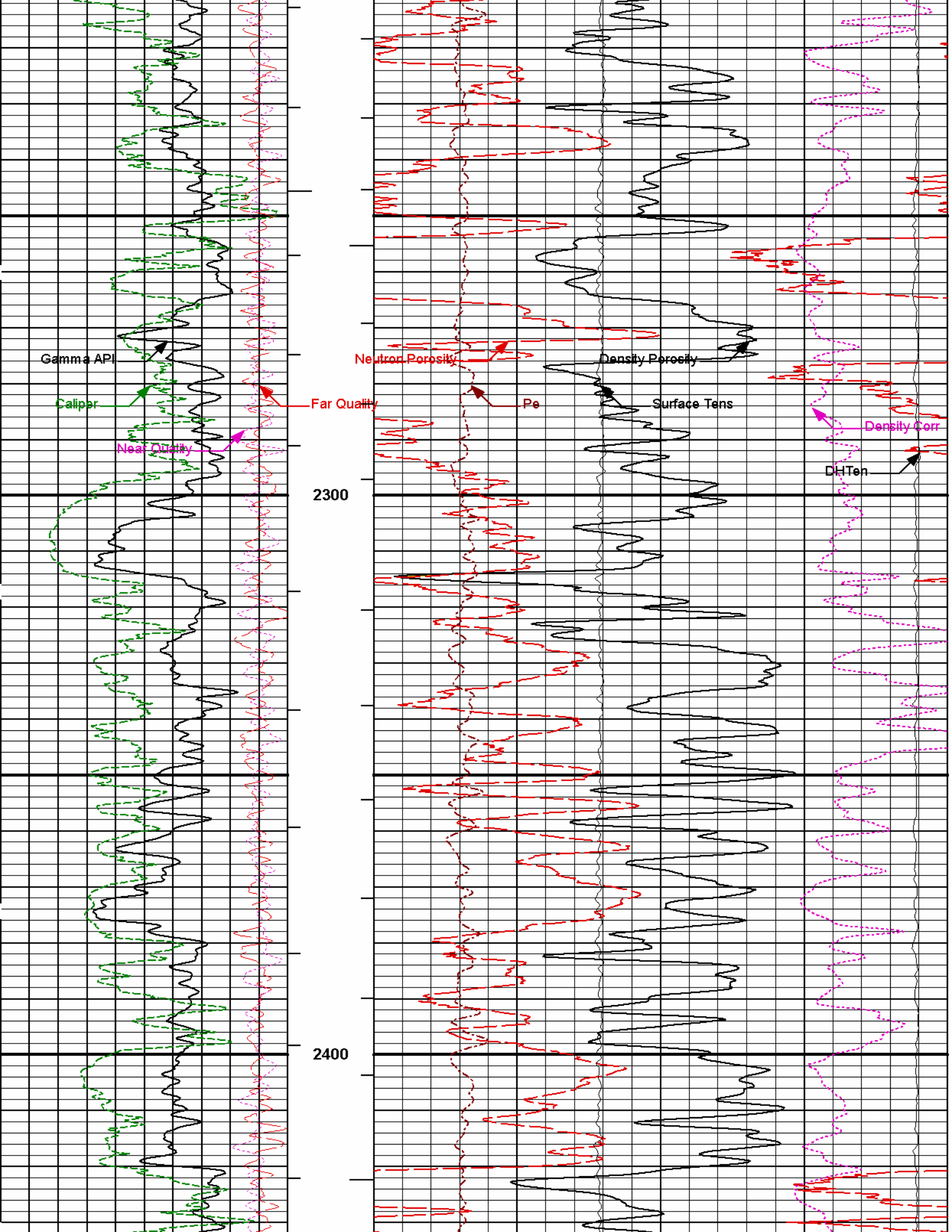
MAIN PASS 5" = 100'

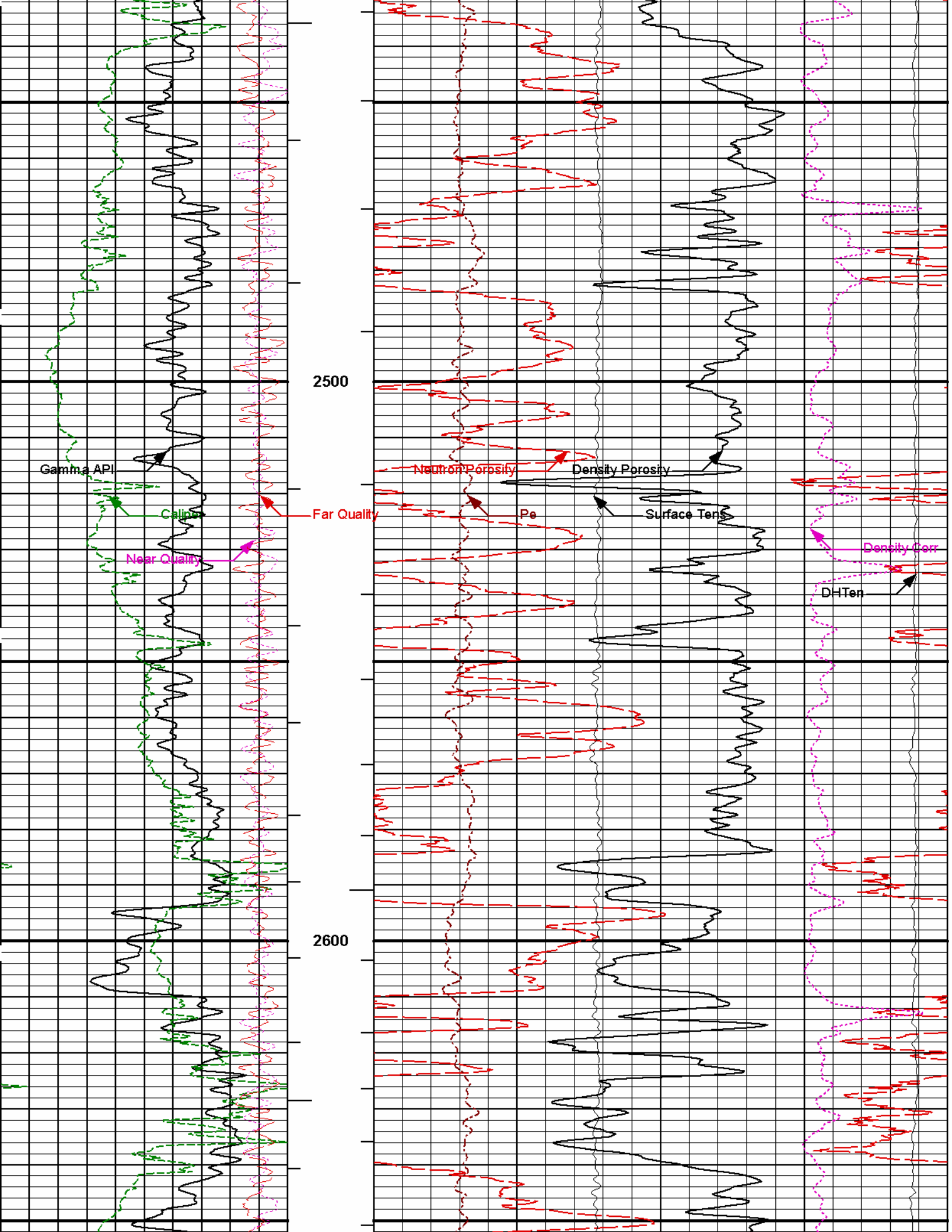


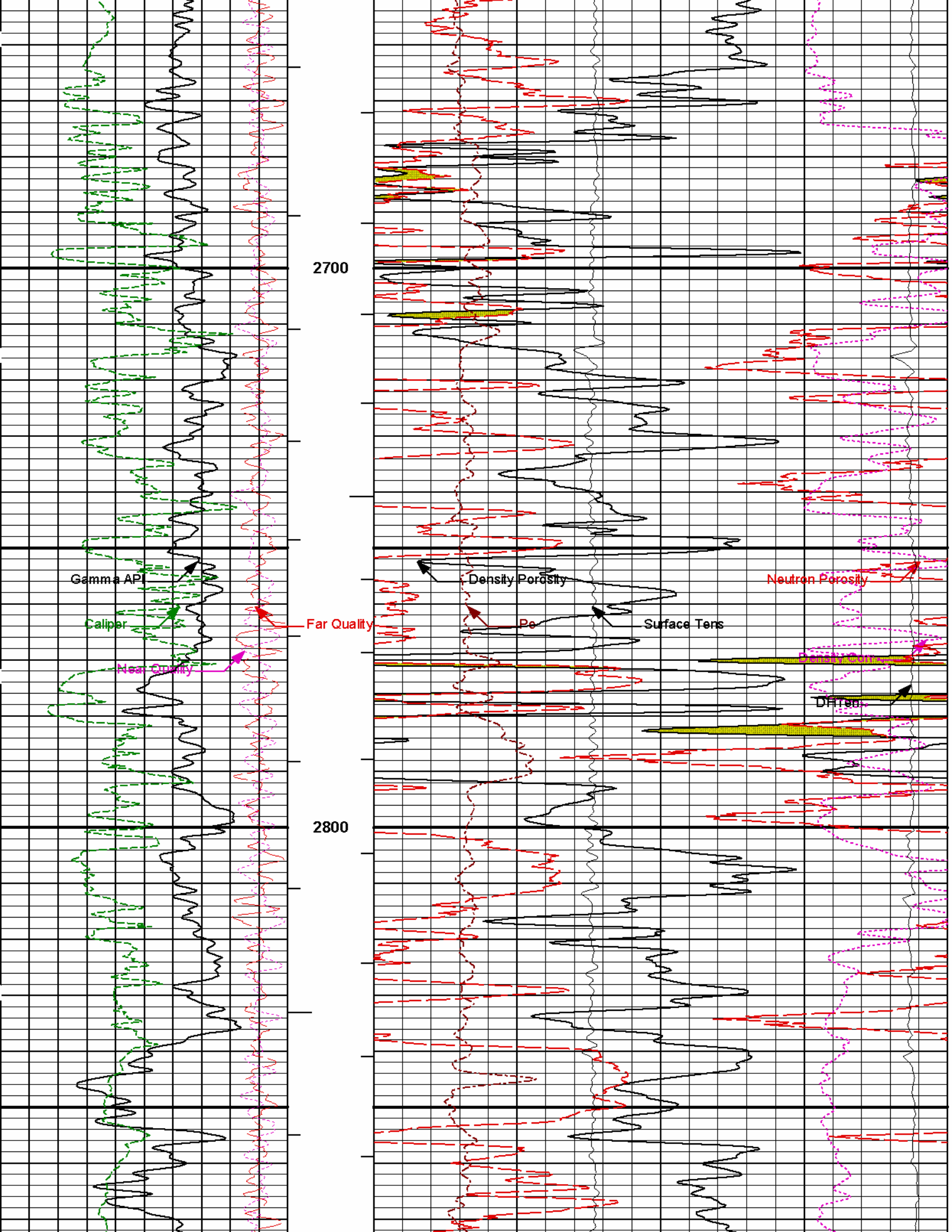


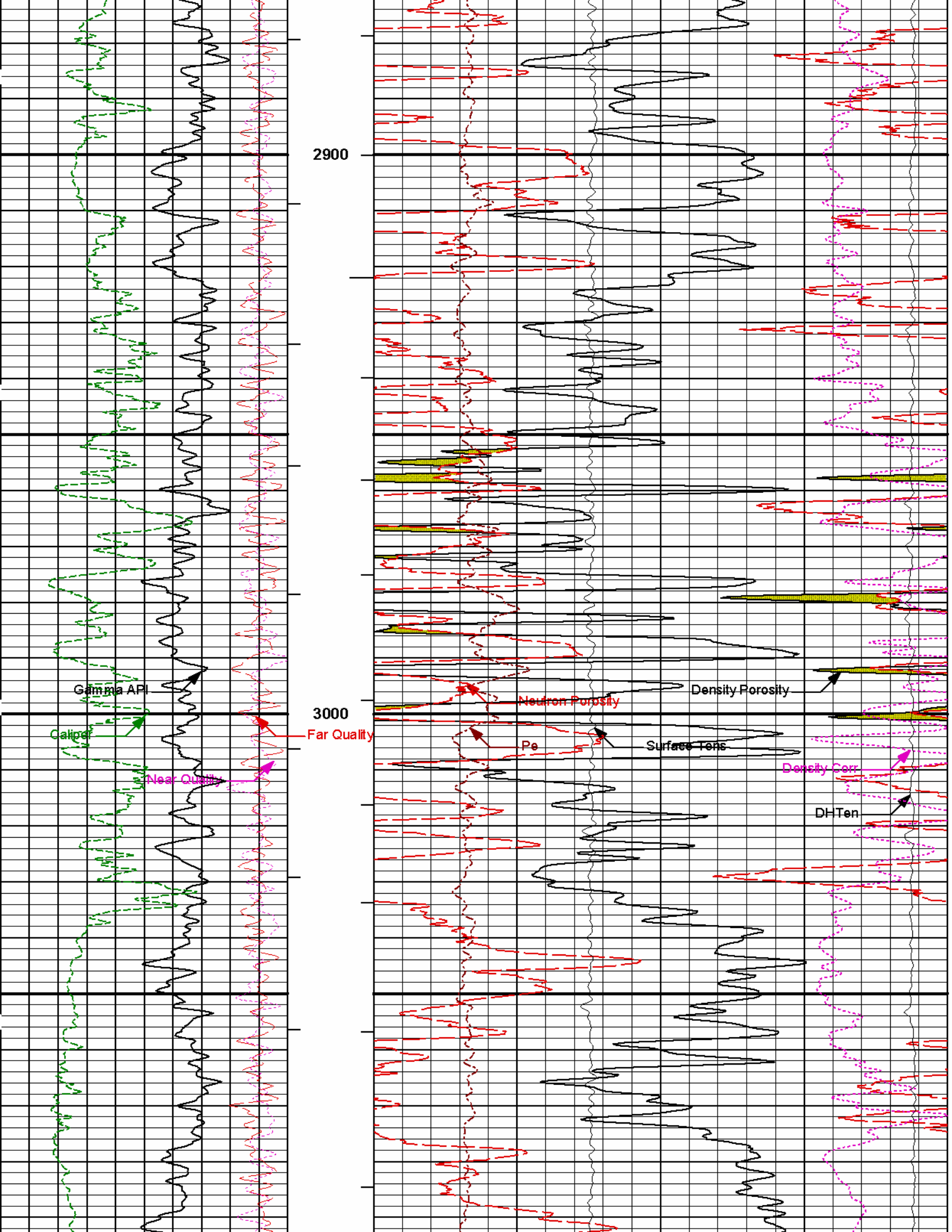


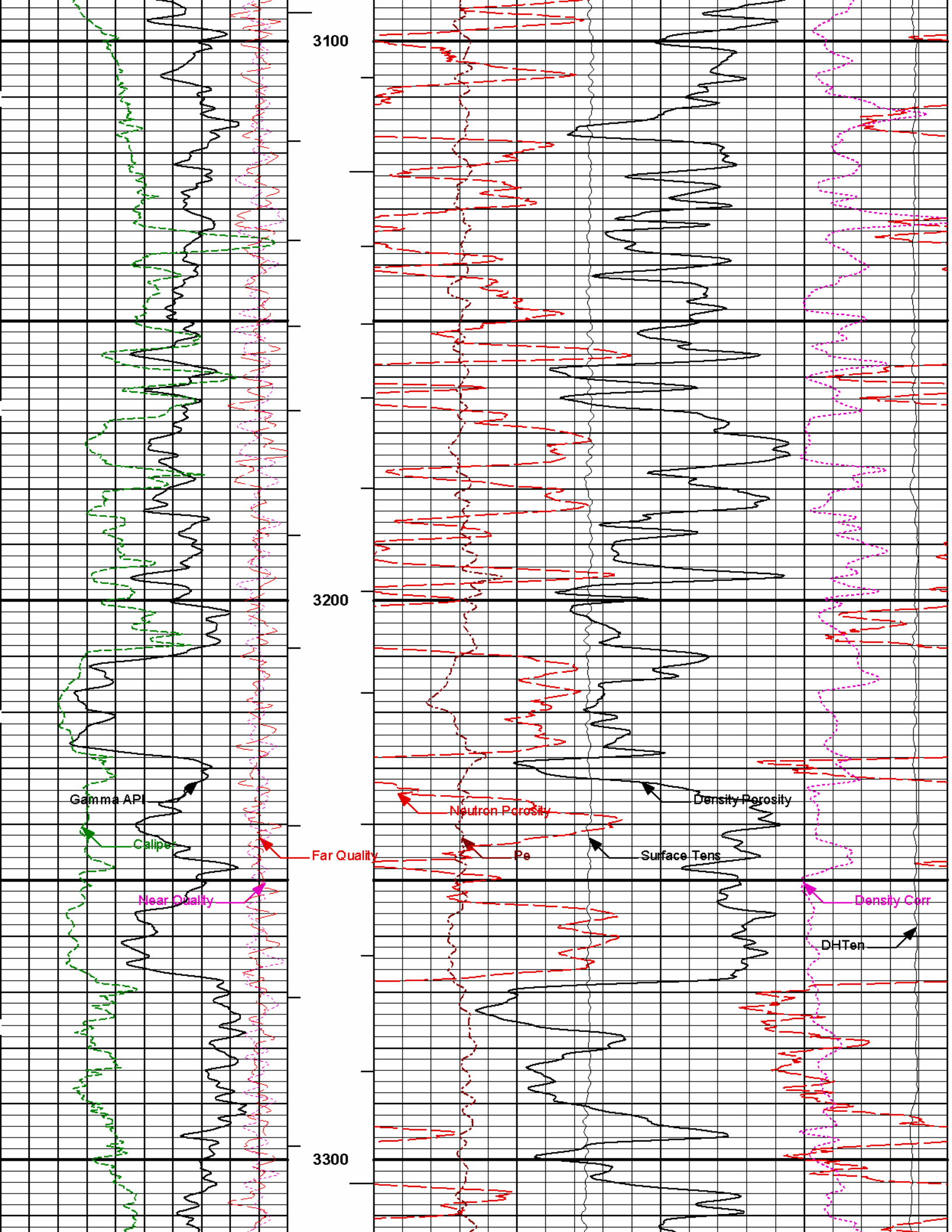


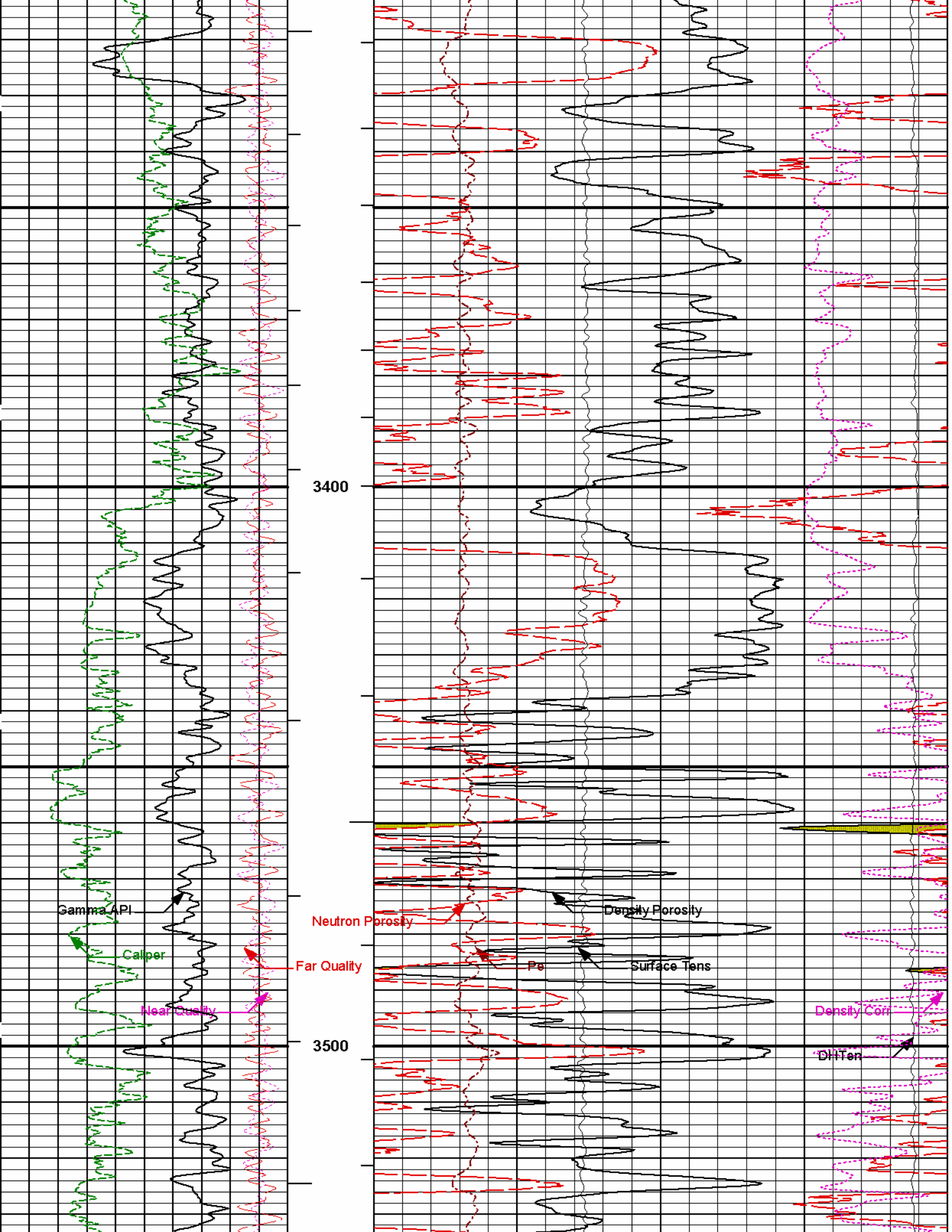


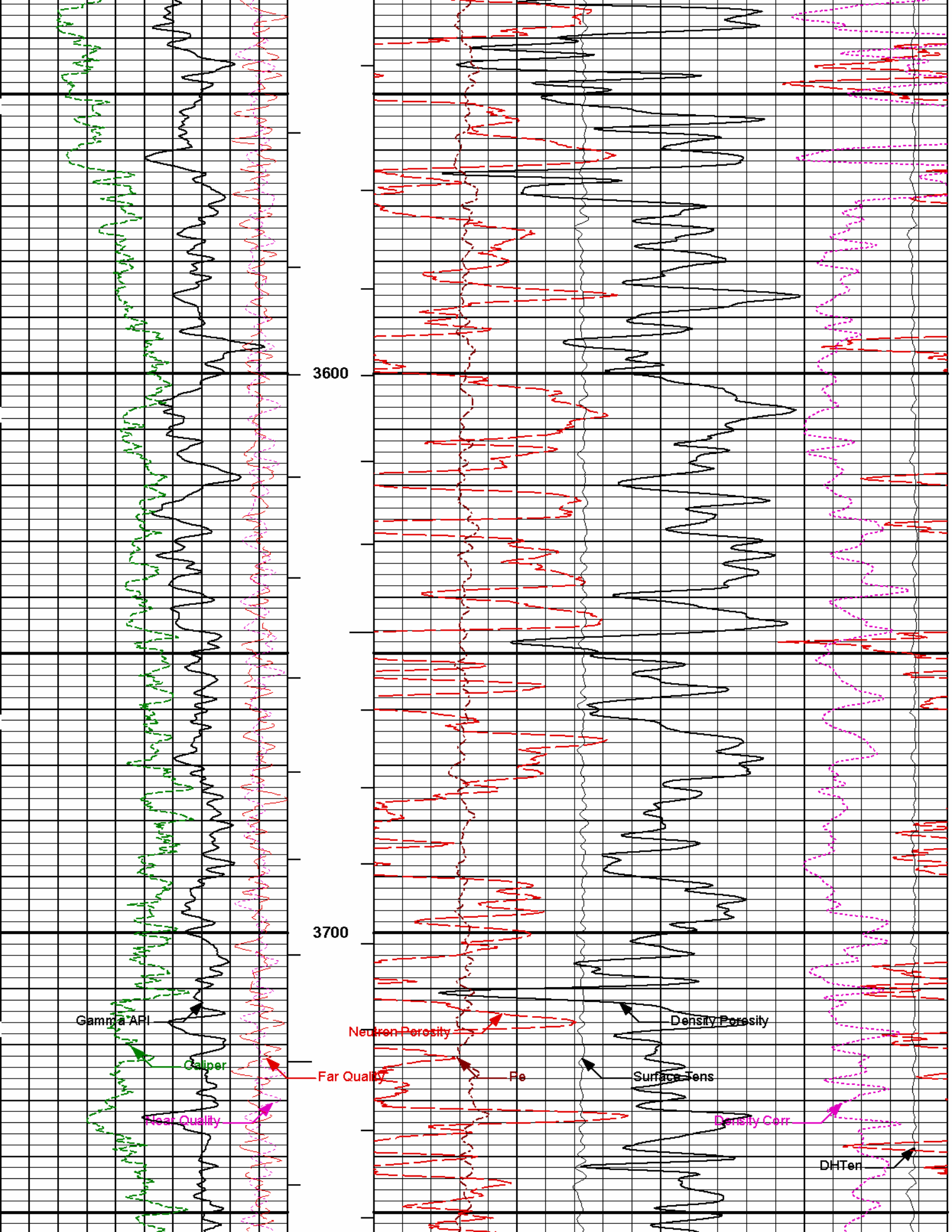


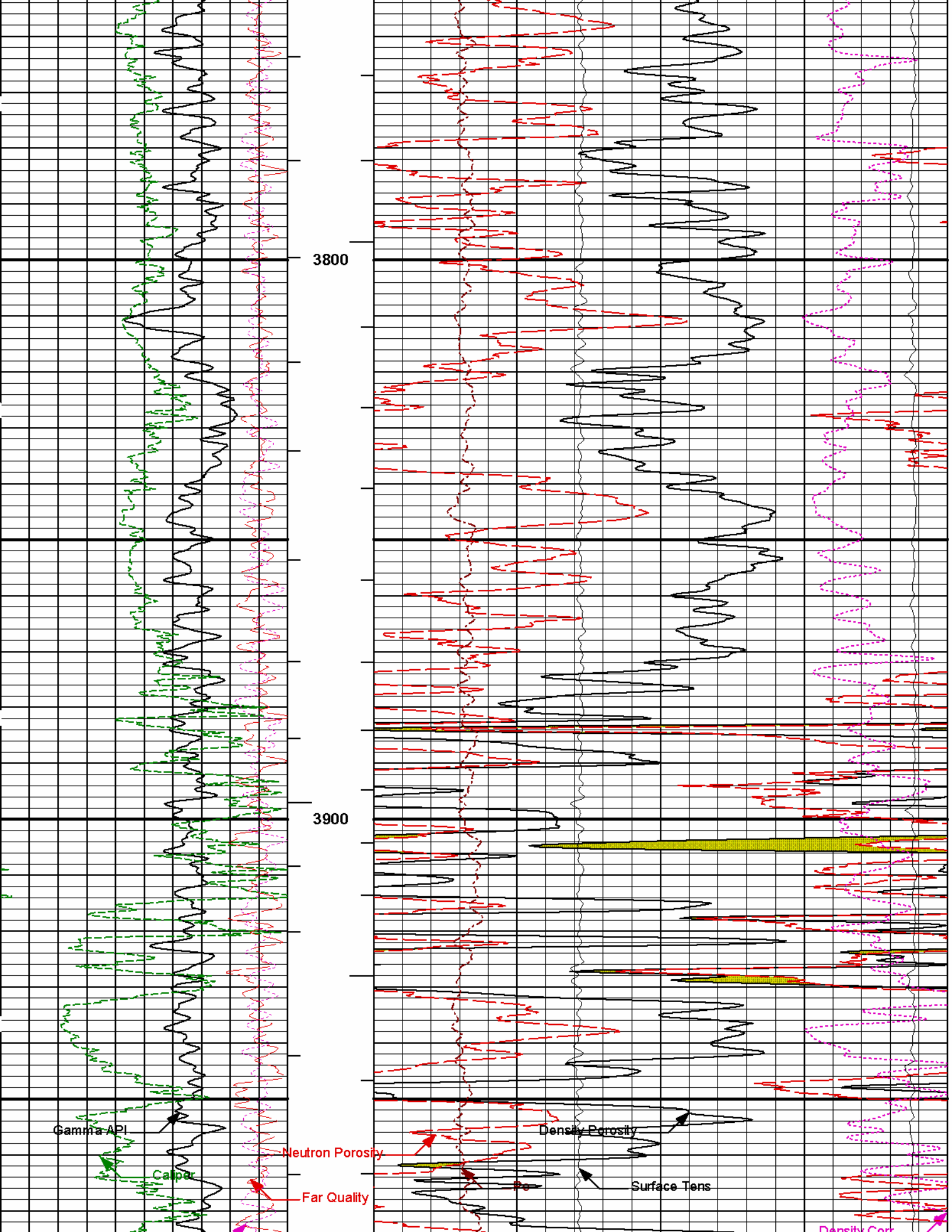


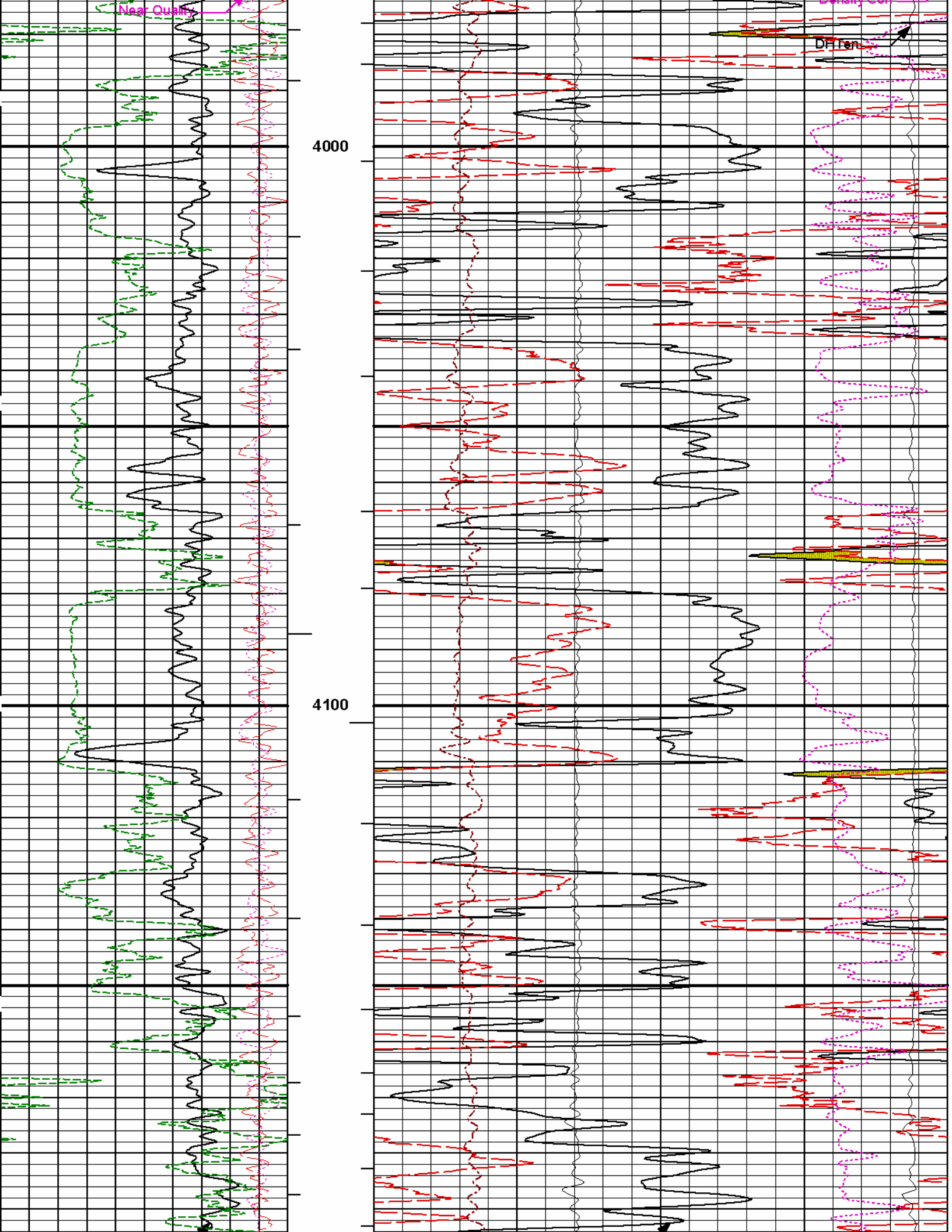


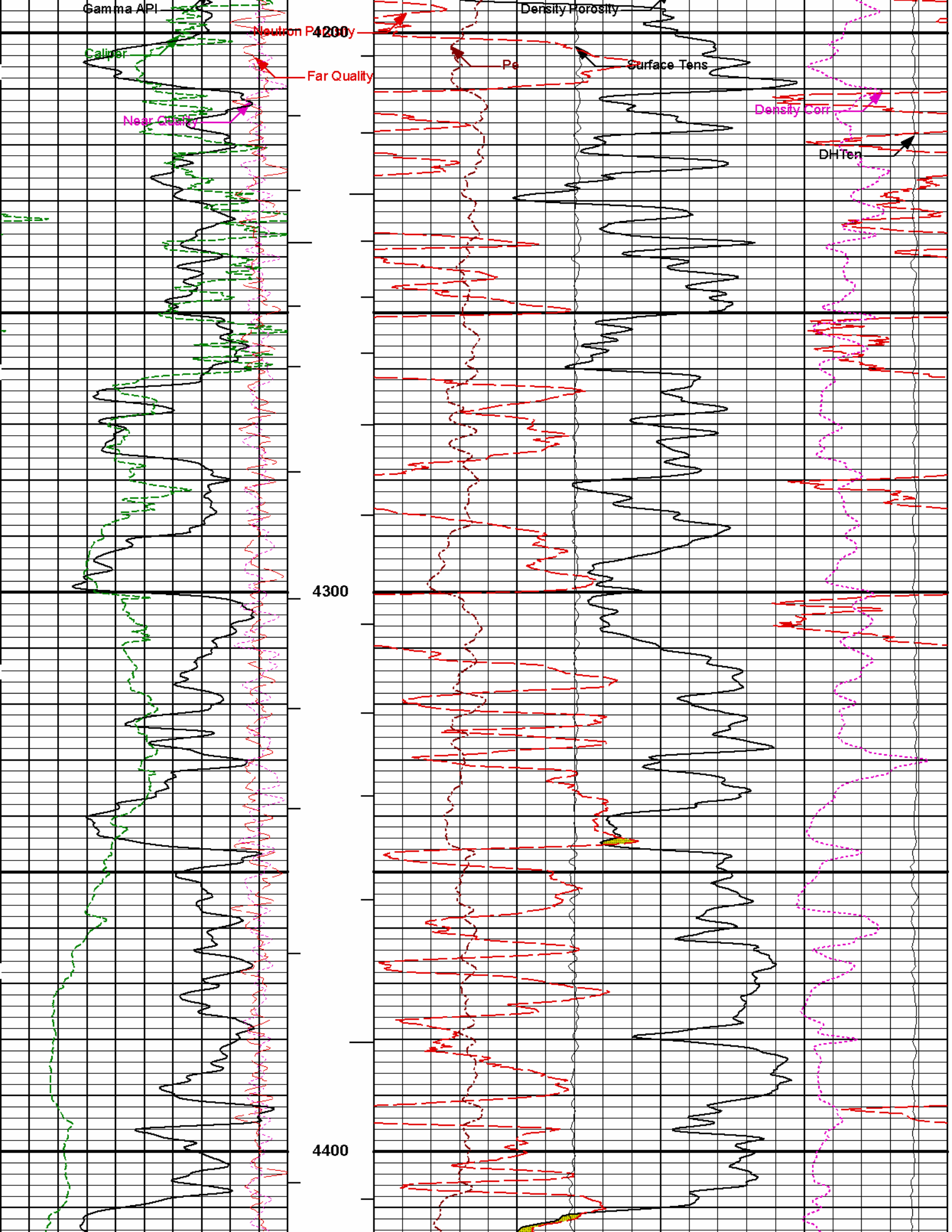


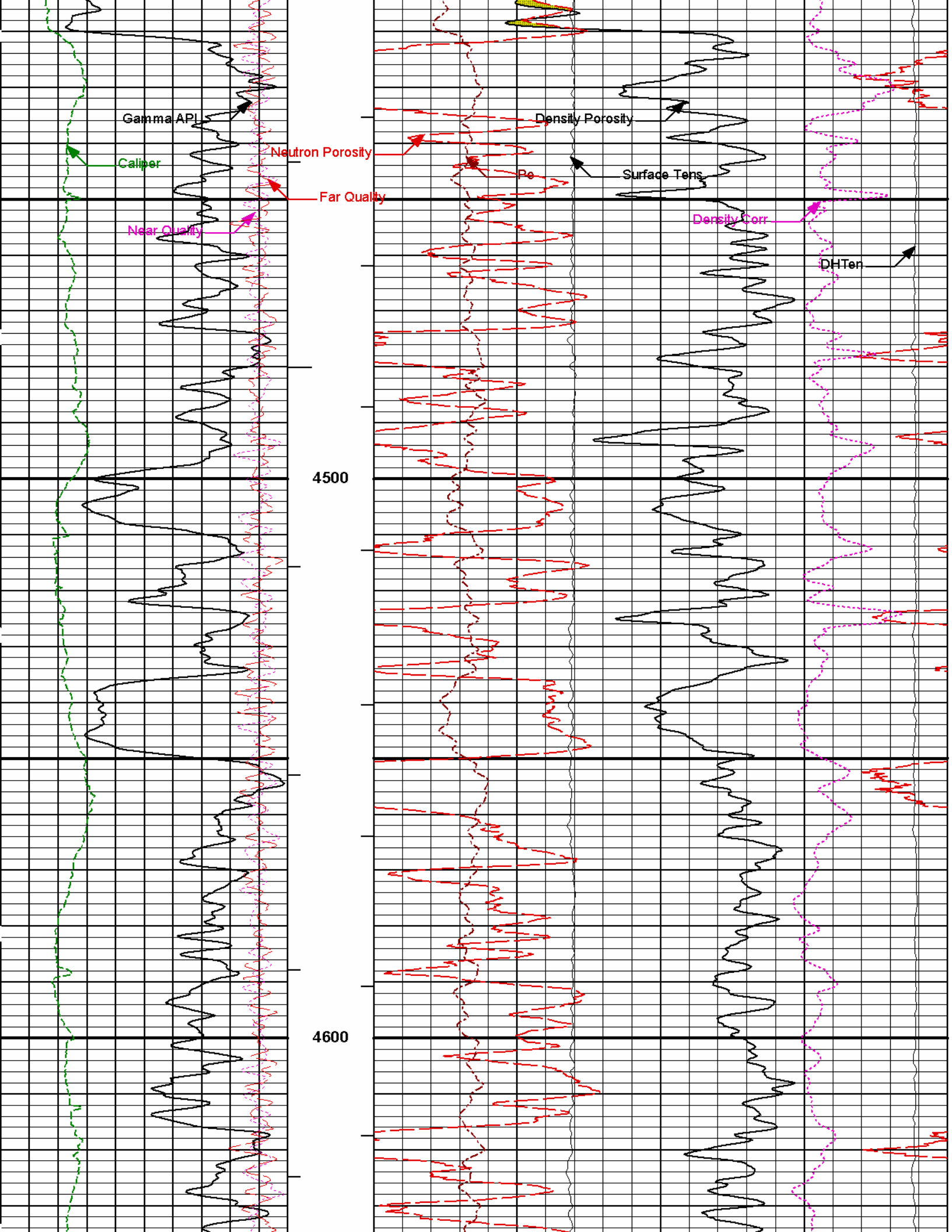


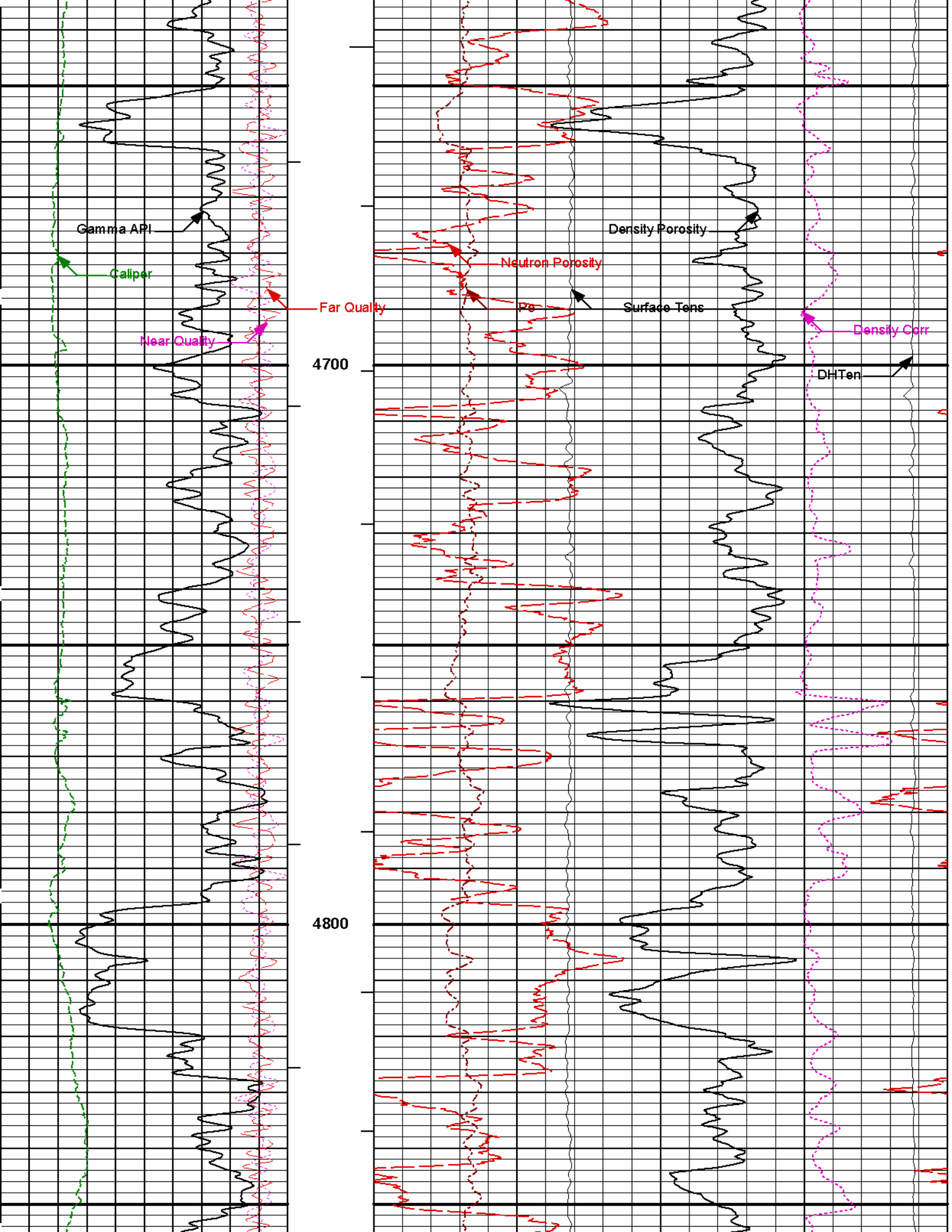


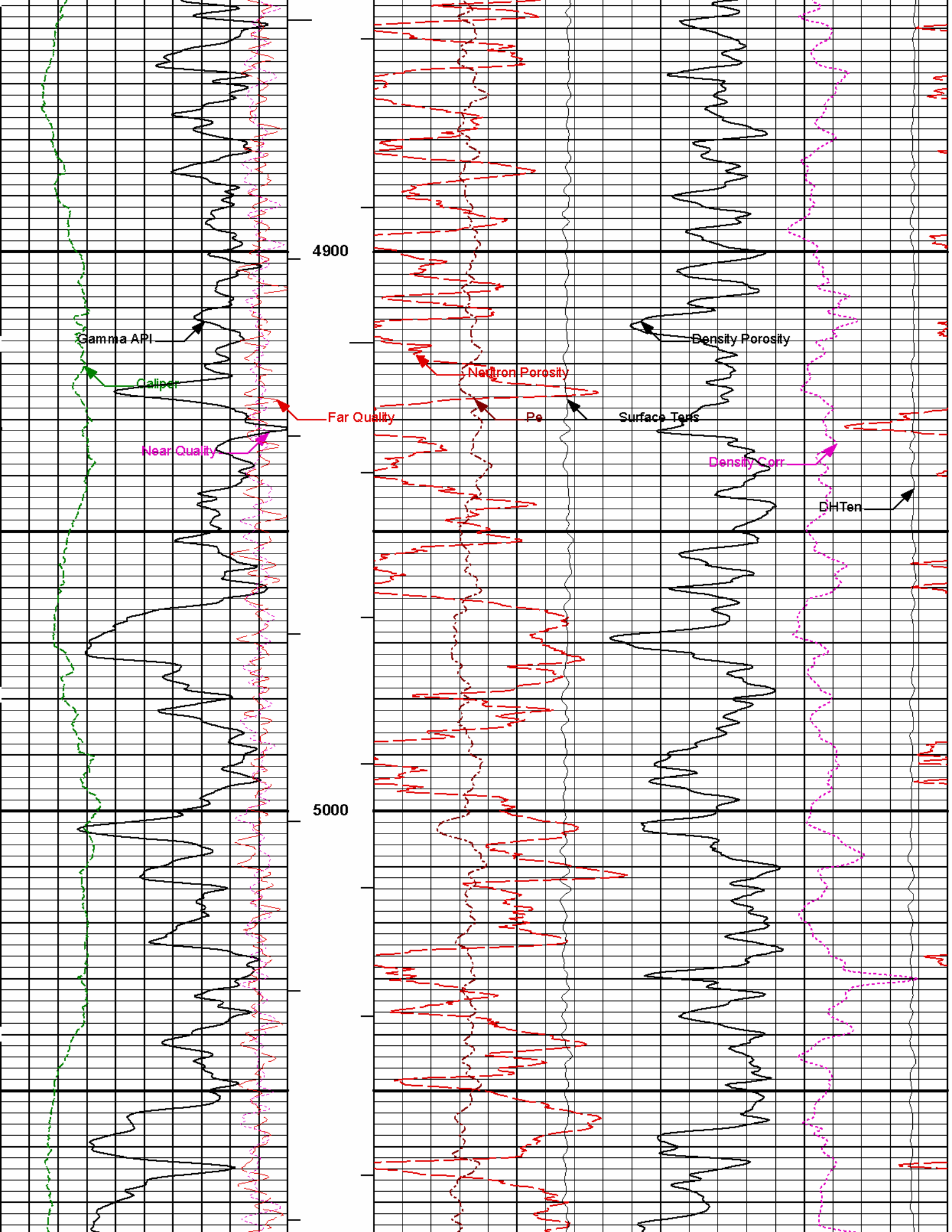


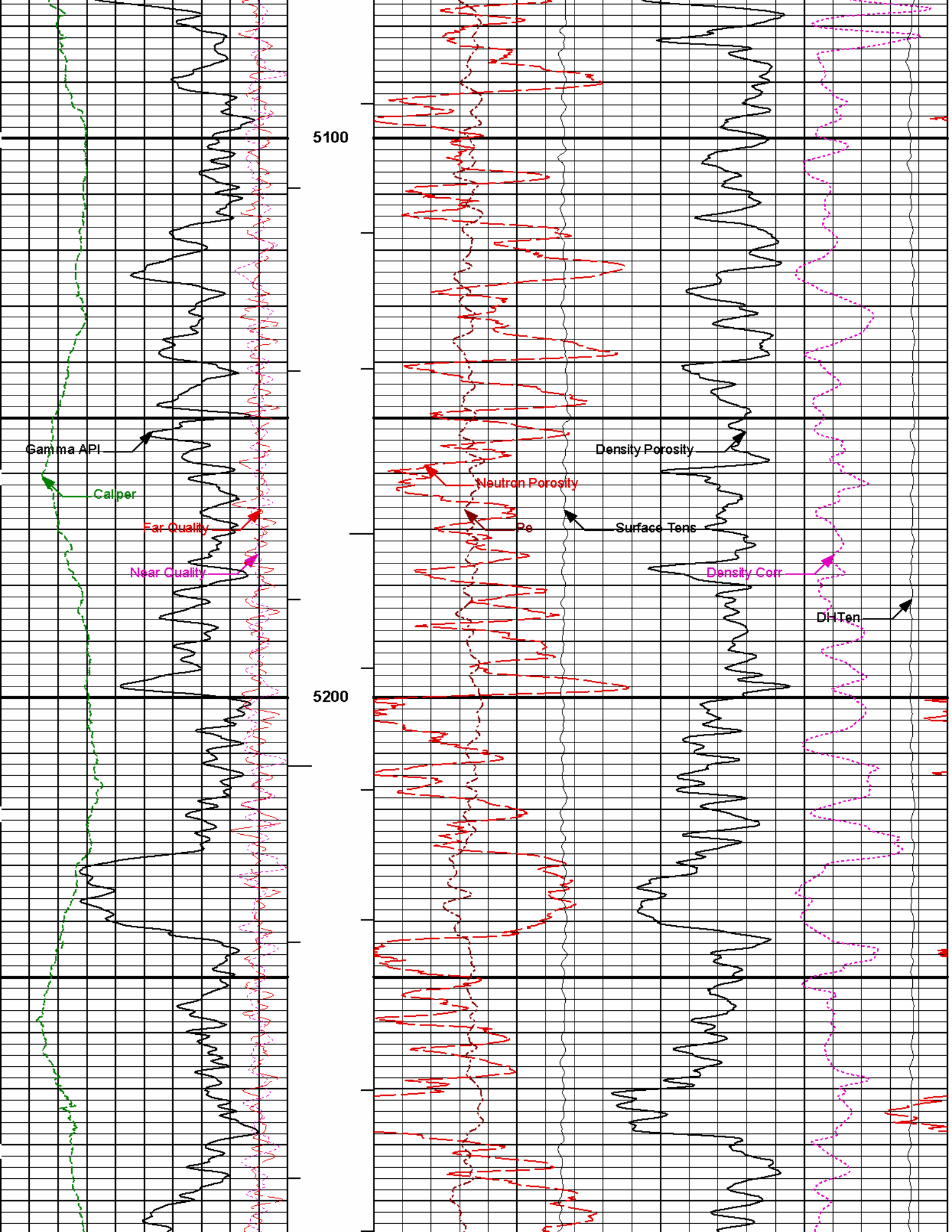


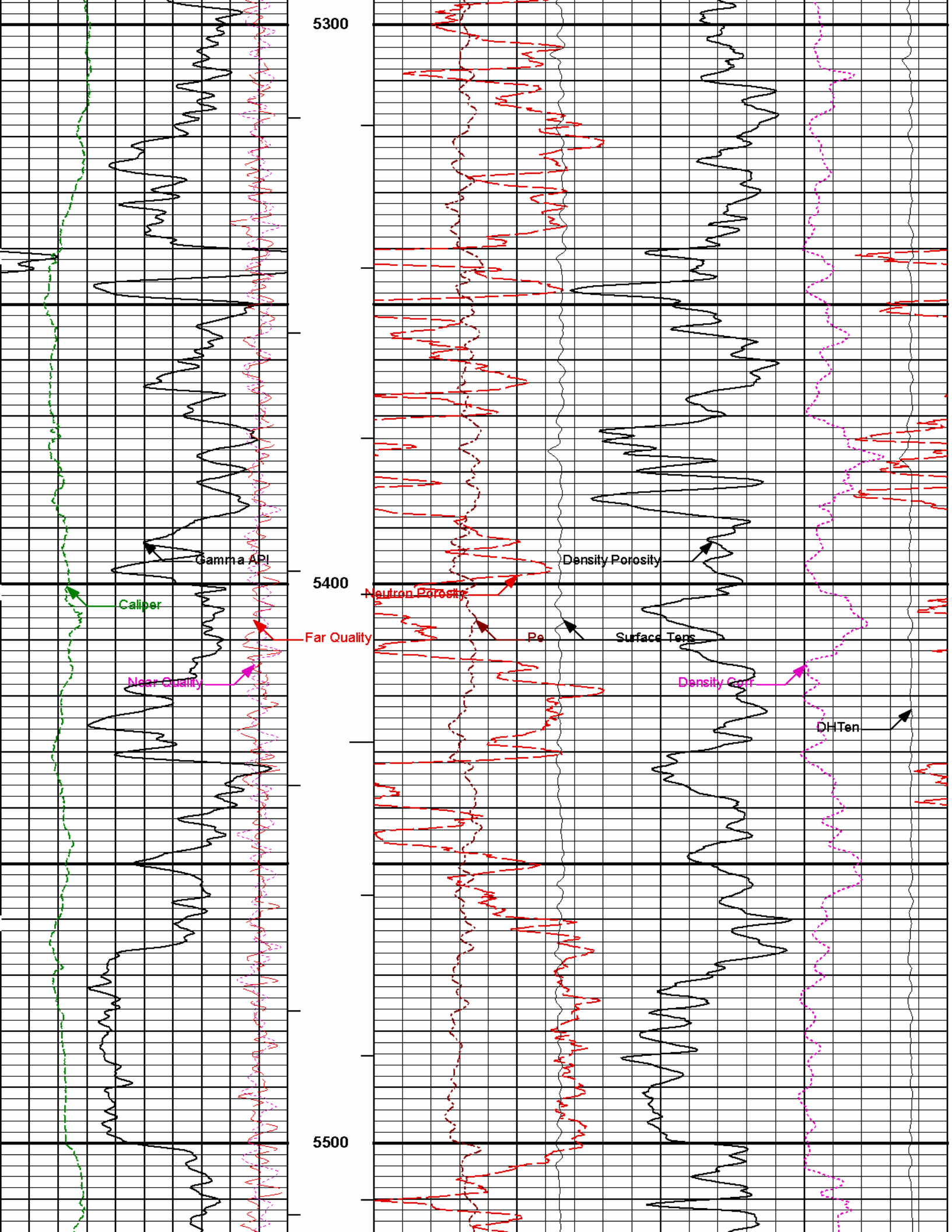


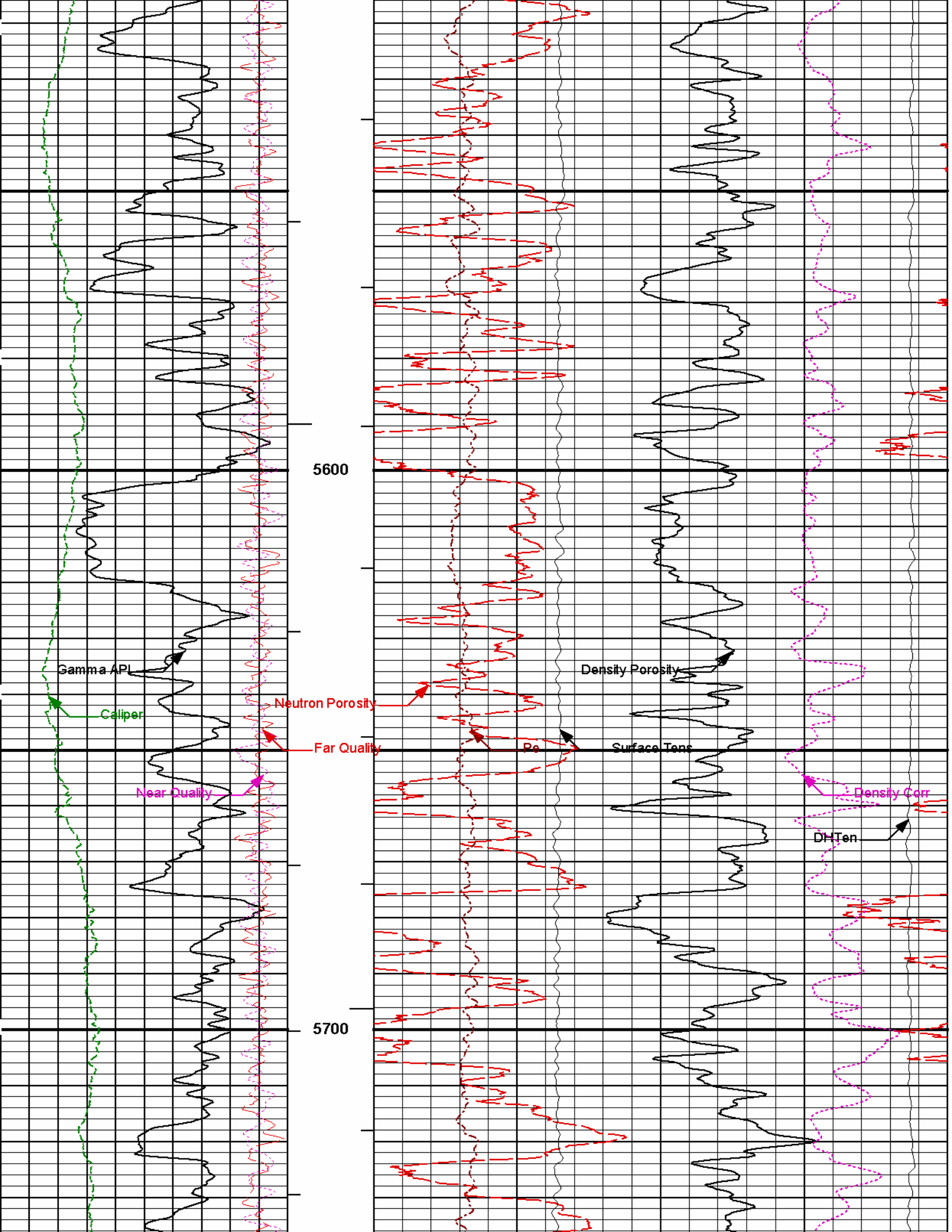


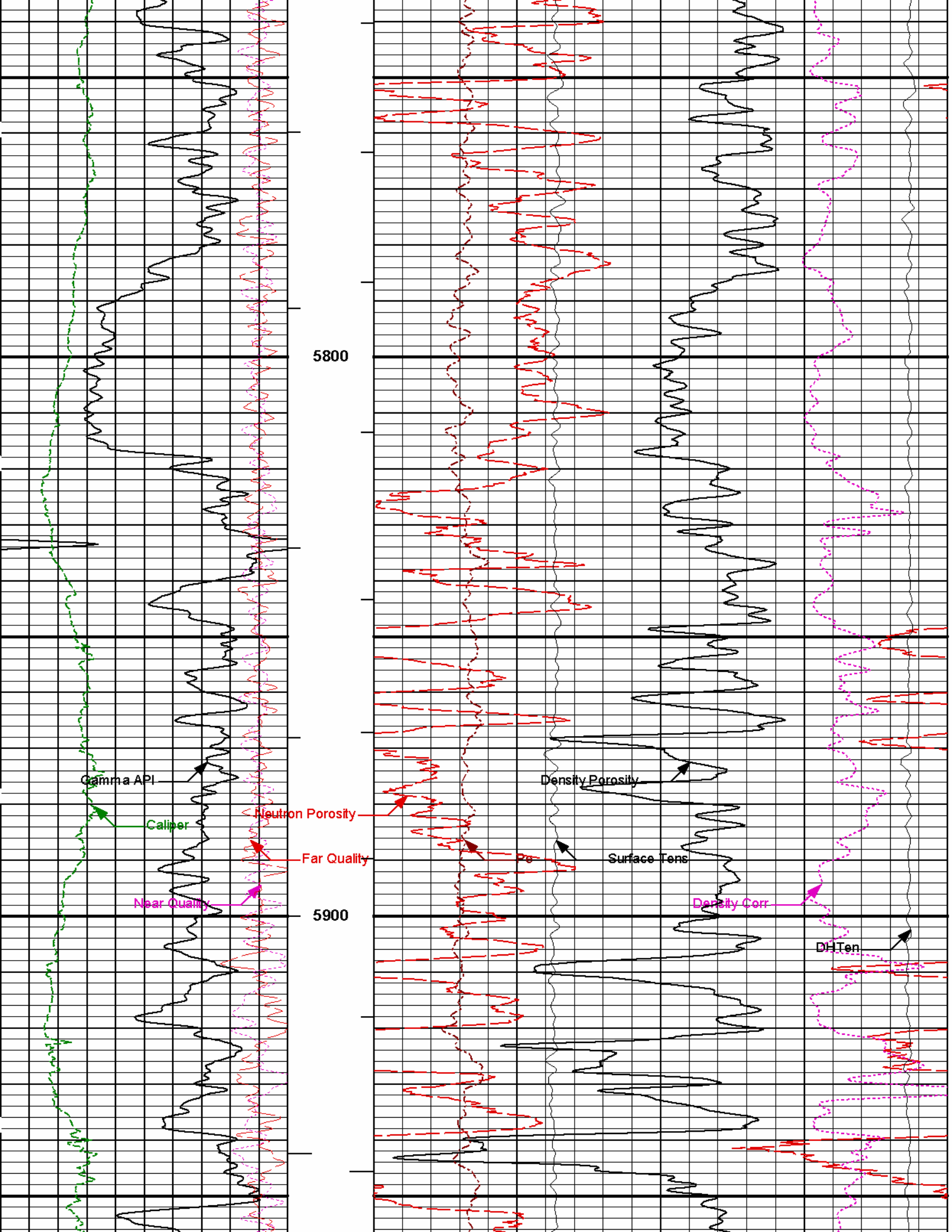


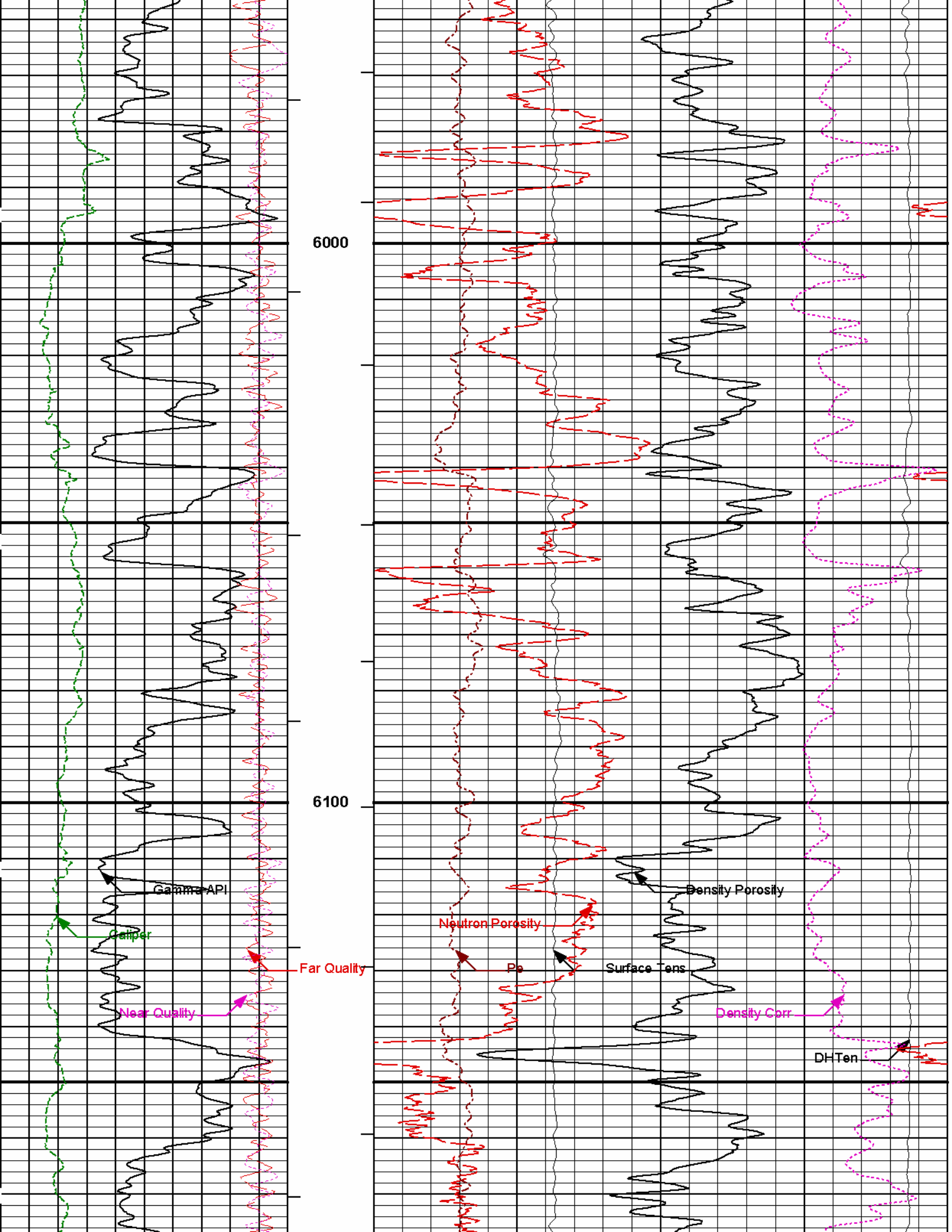


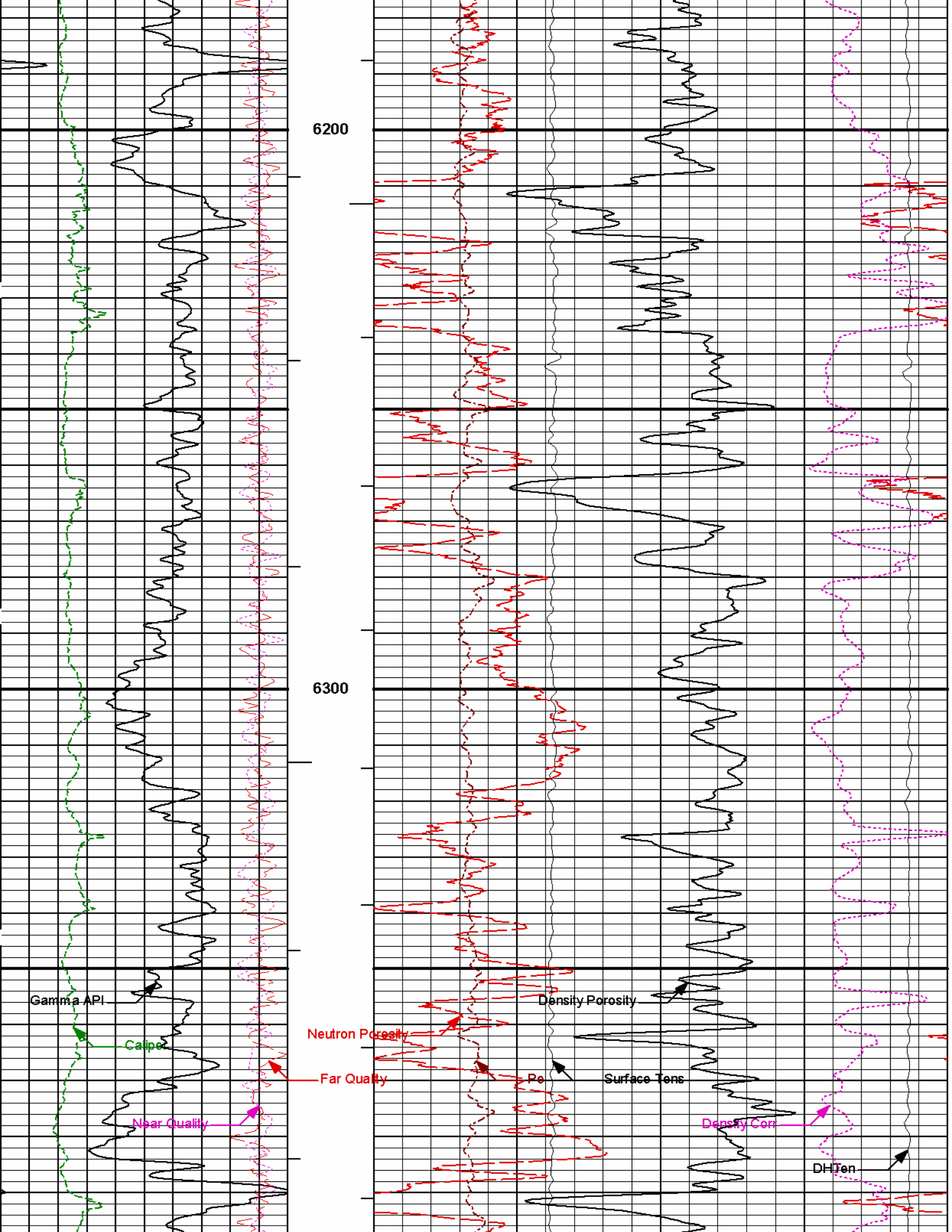


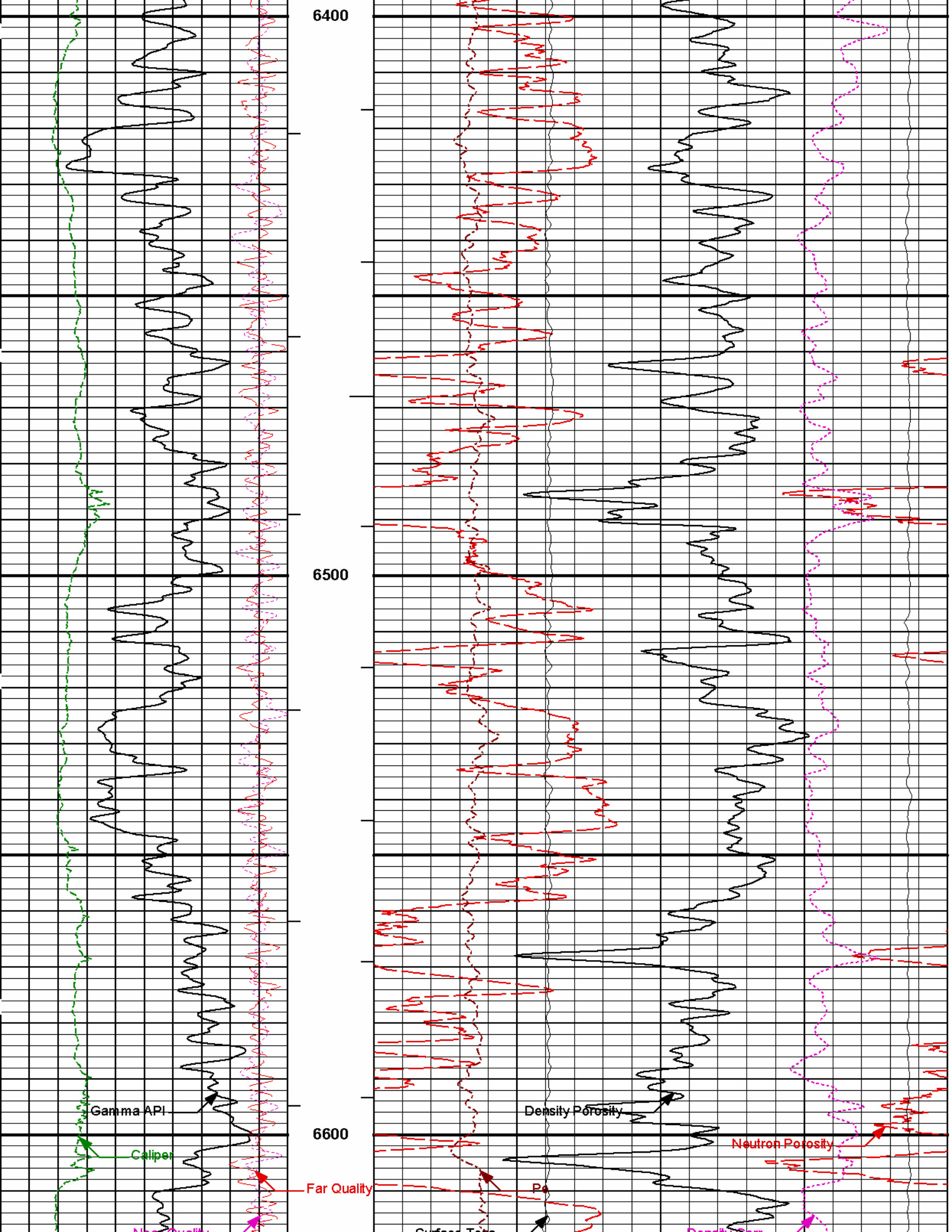


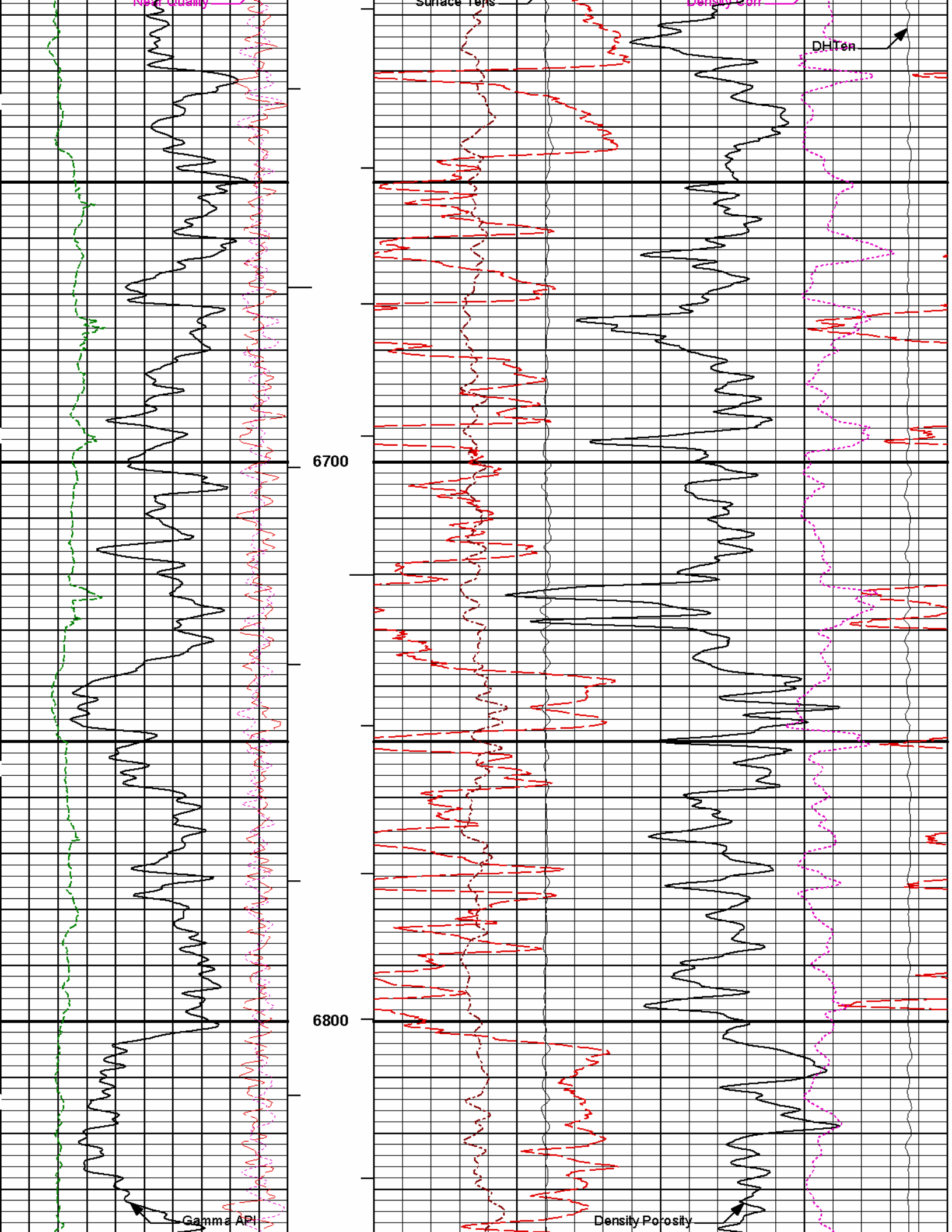


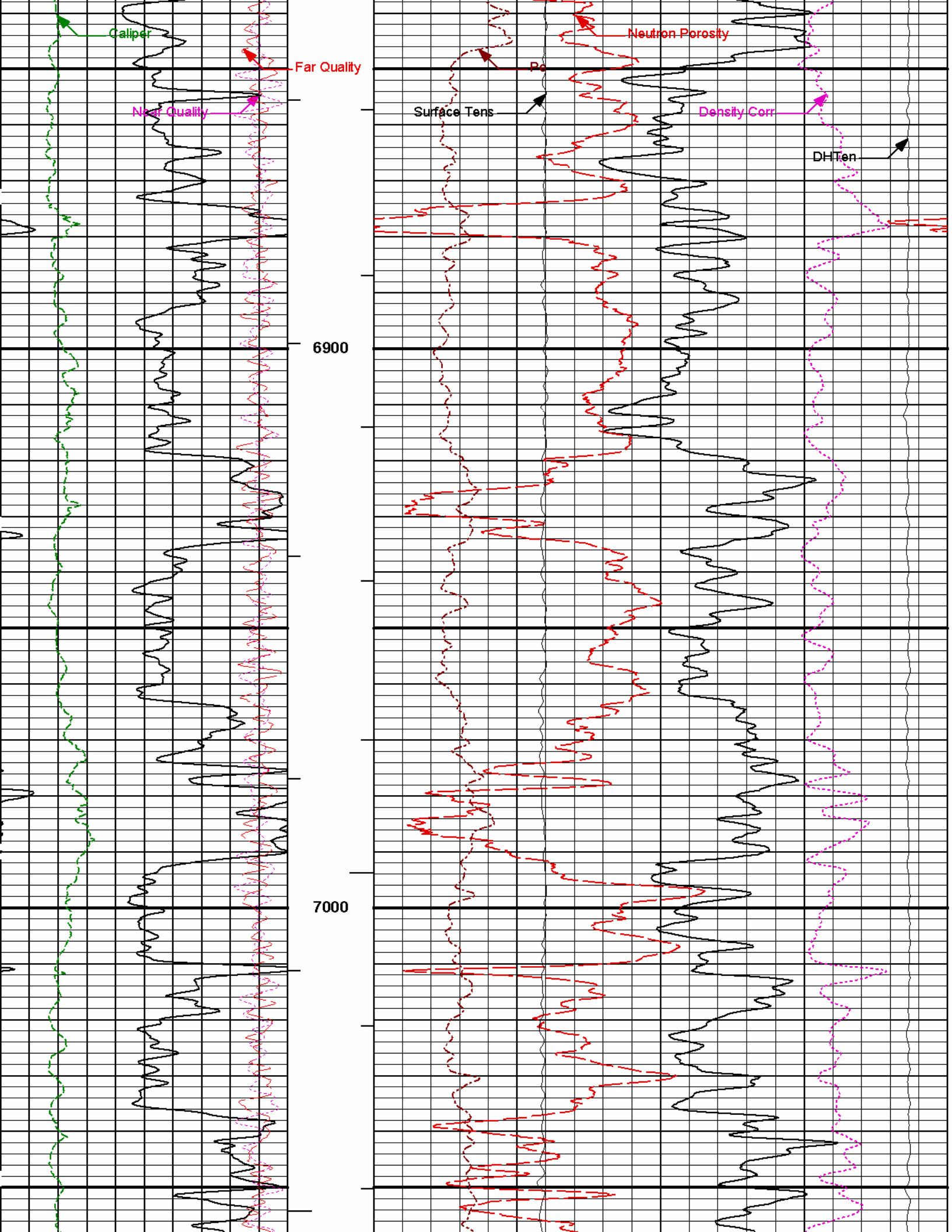


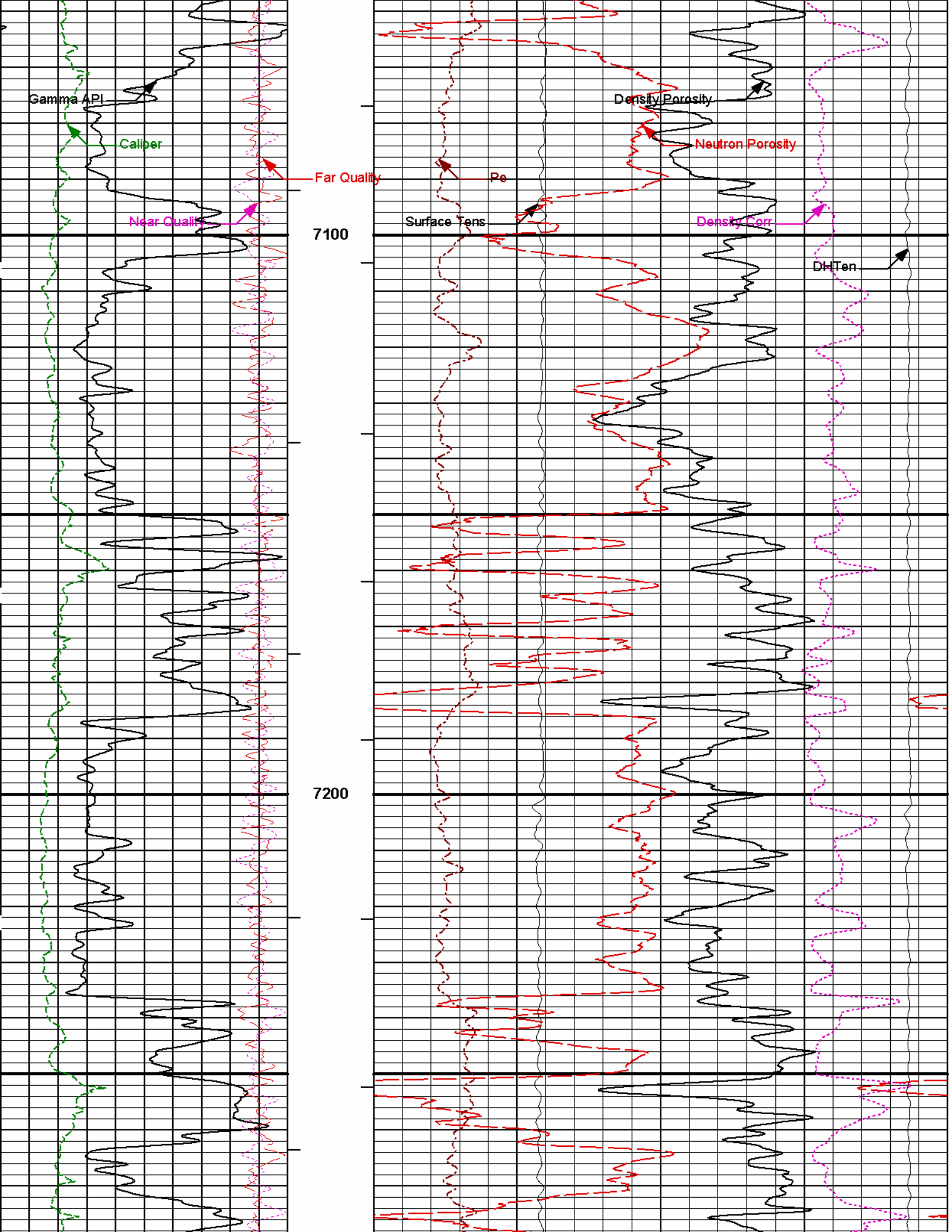


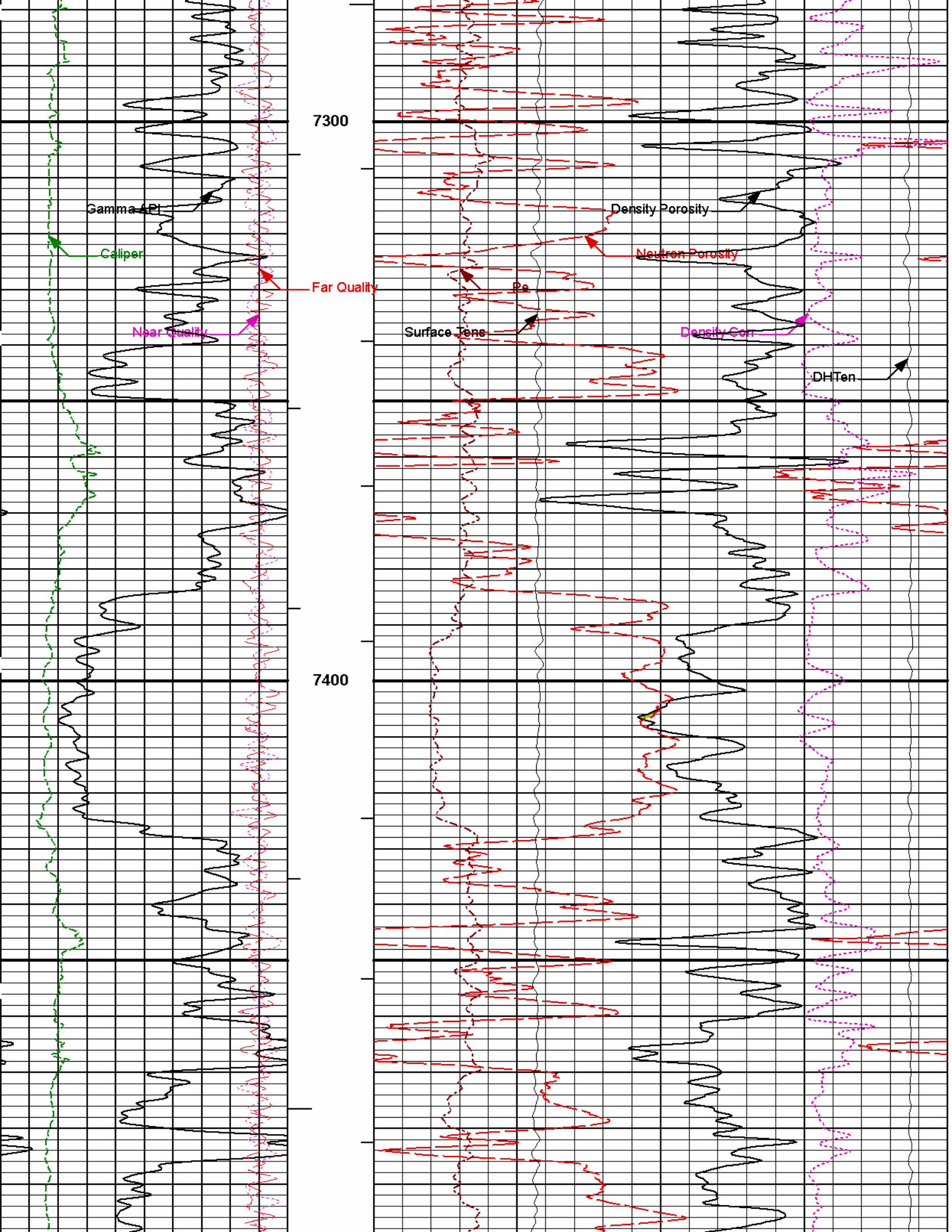


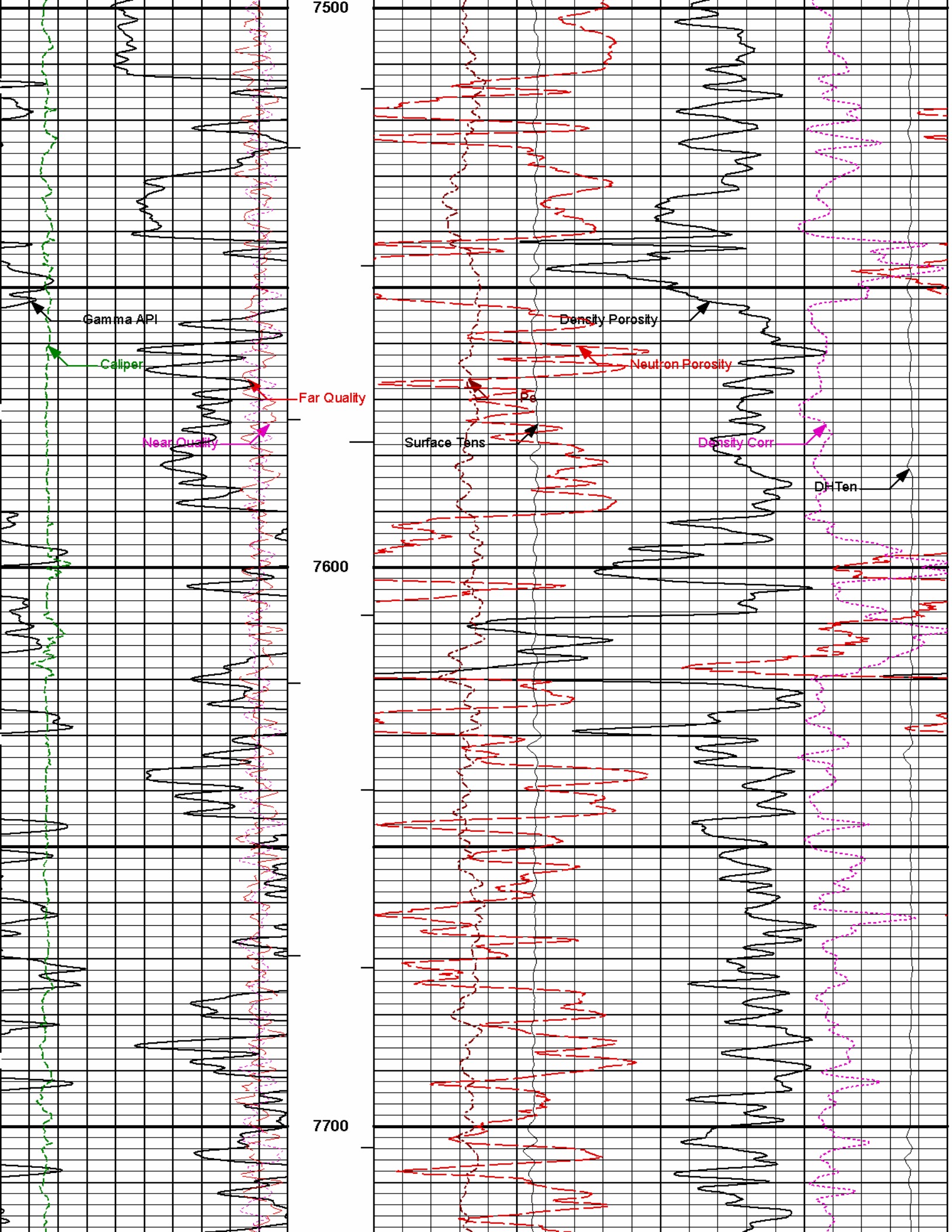


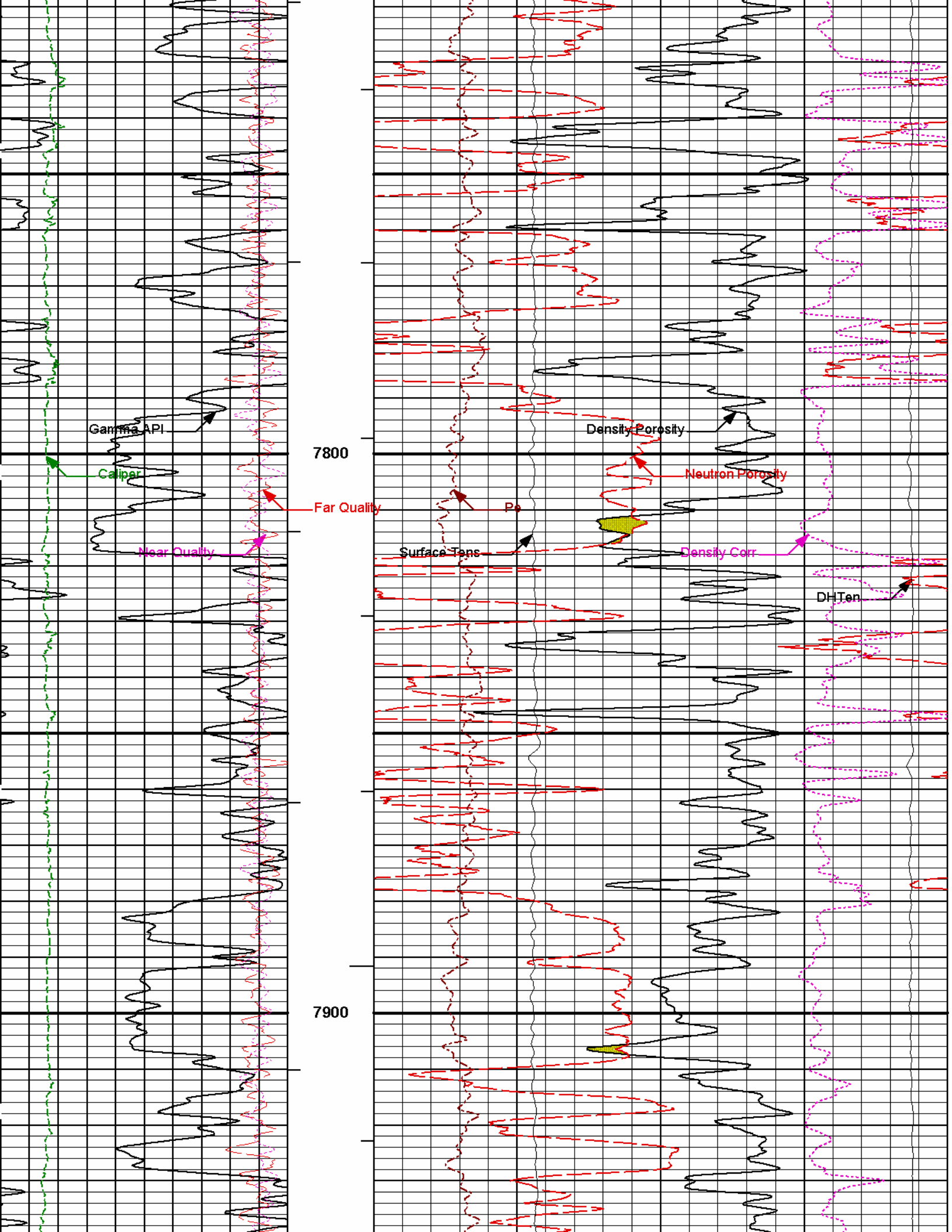


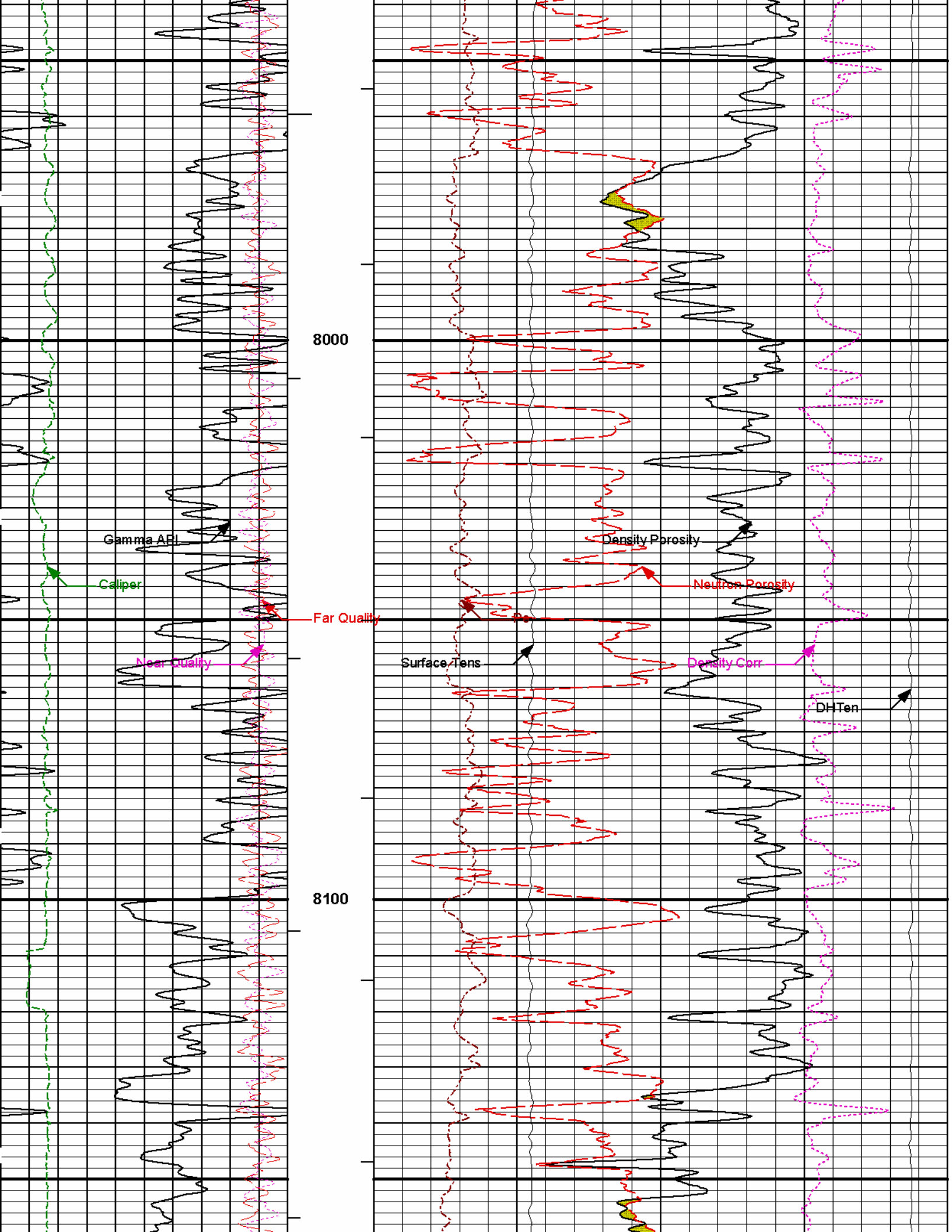


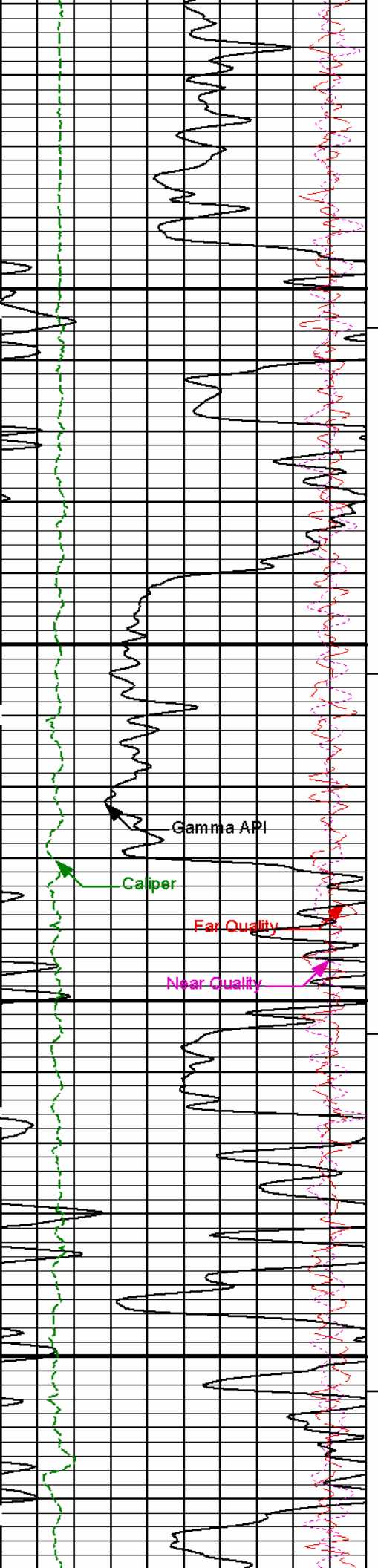






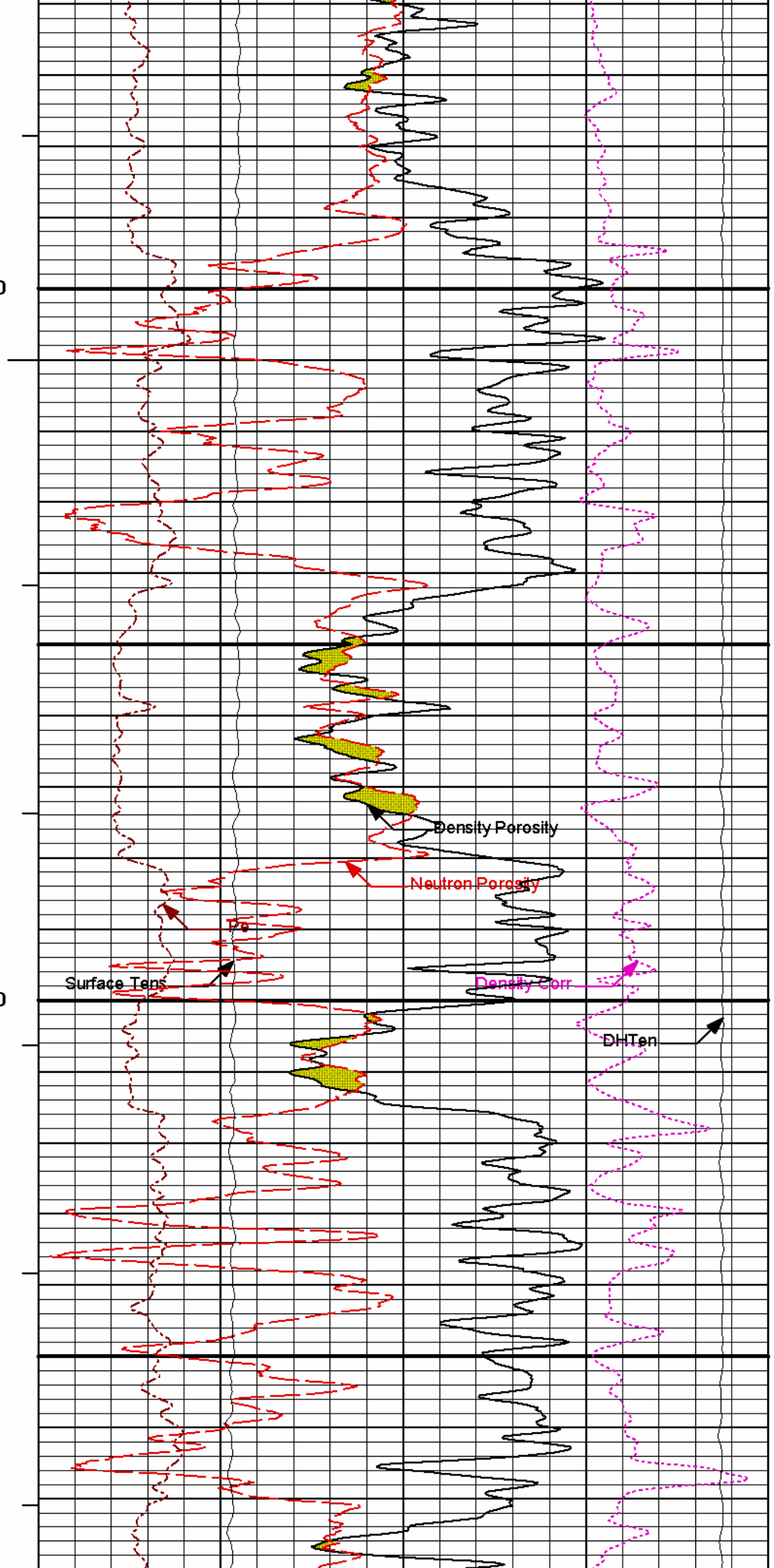


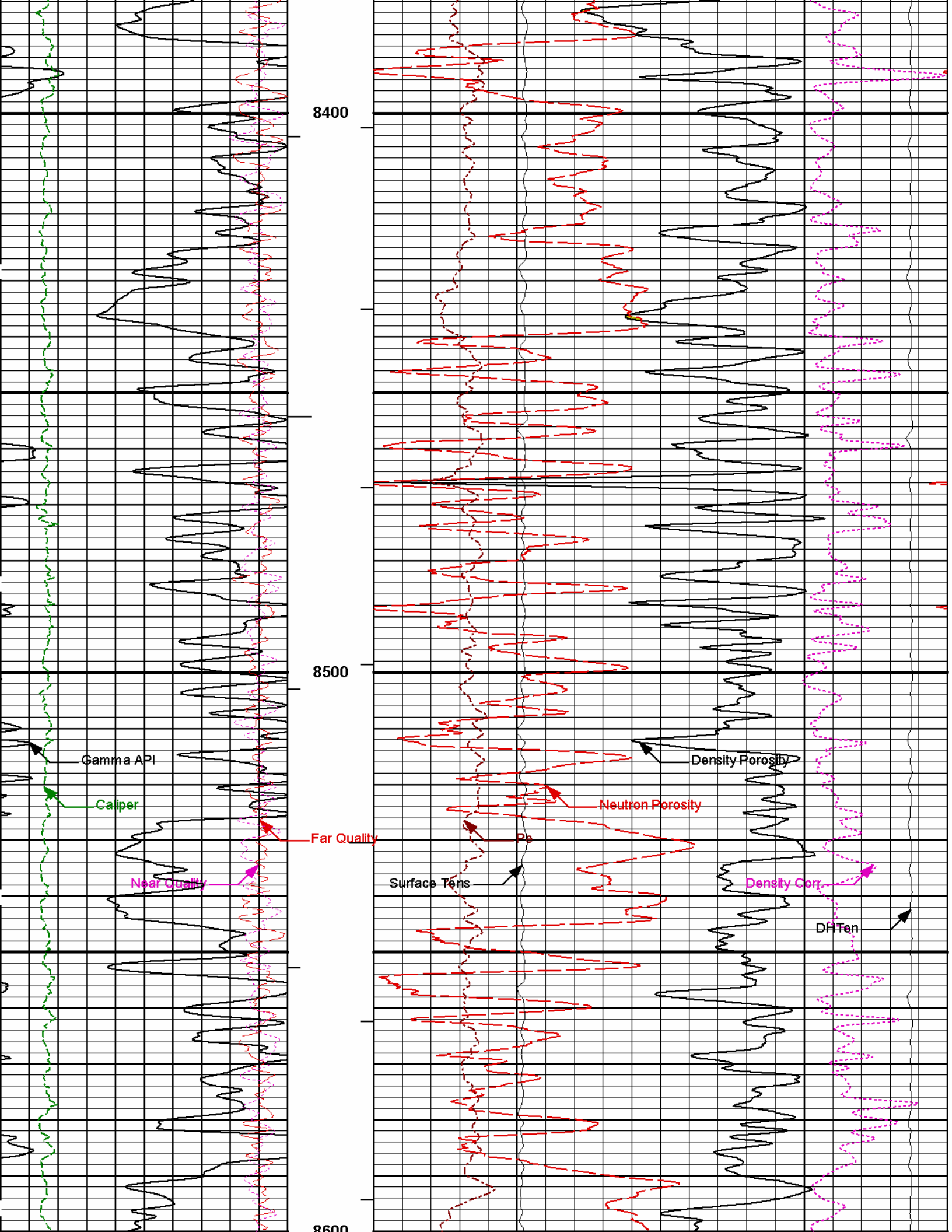


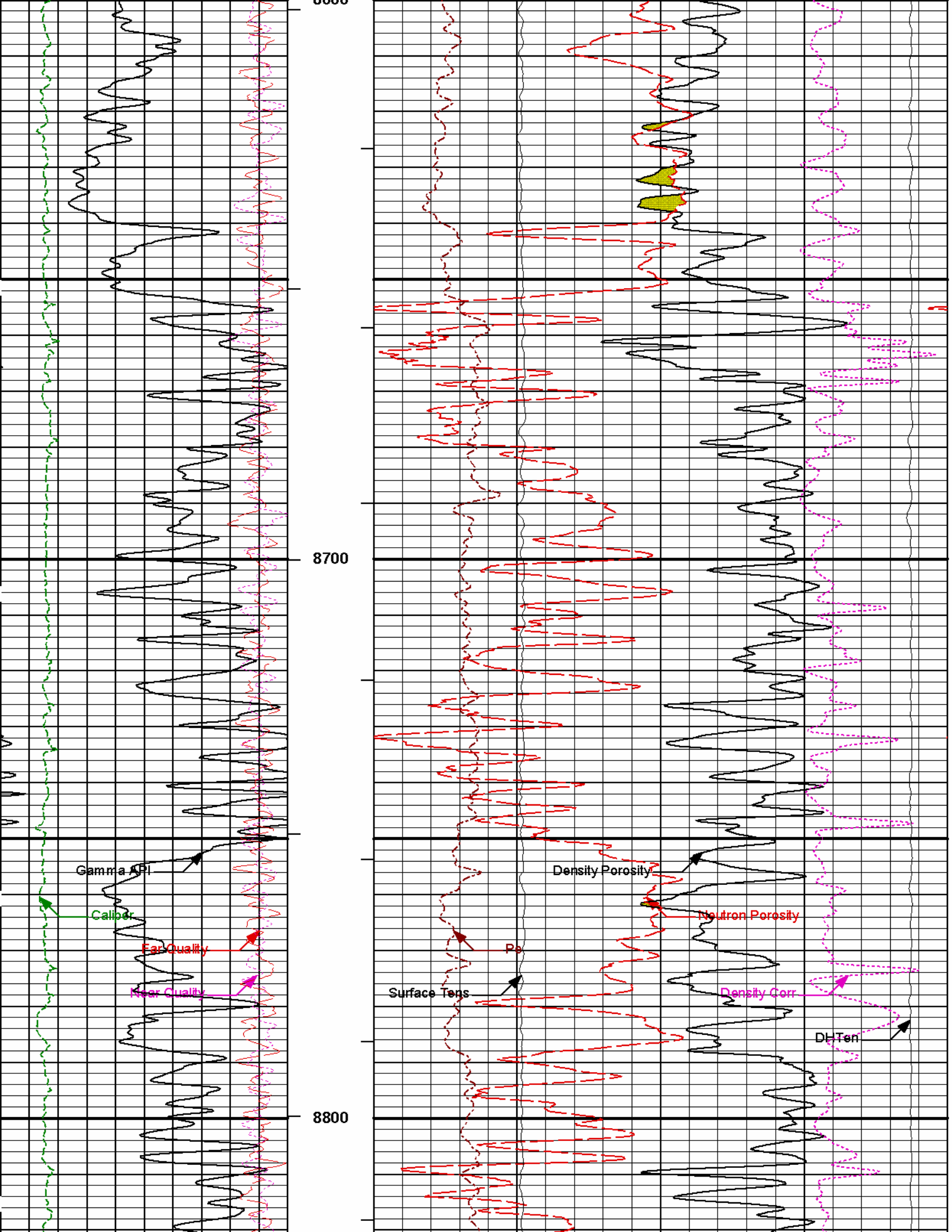


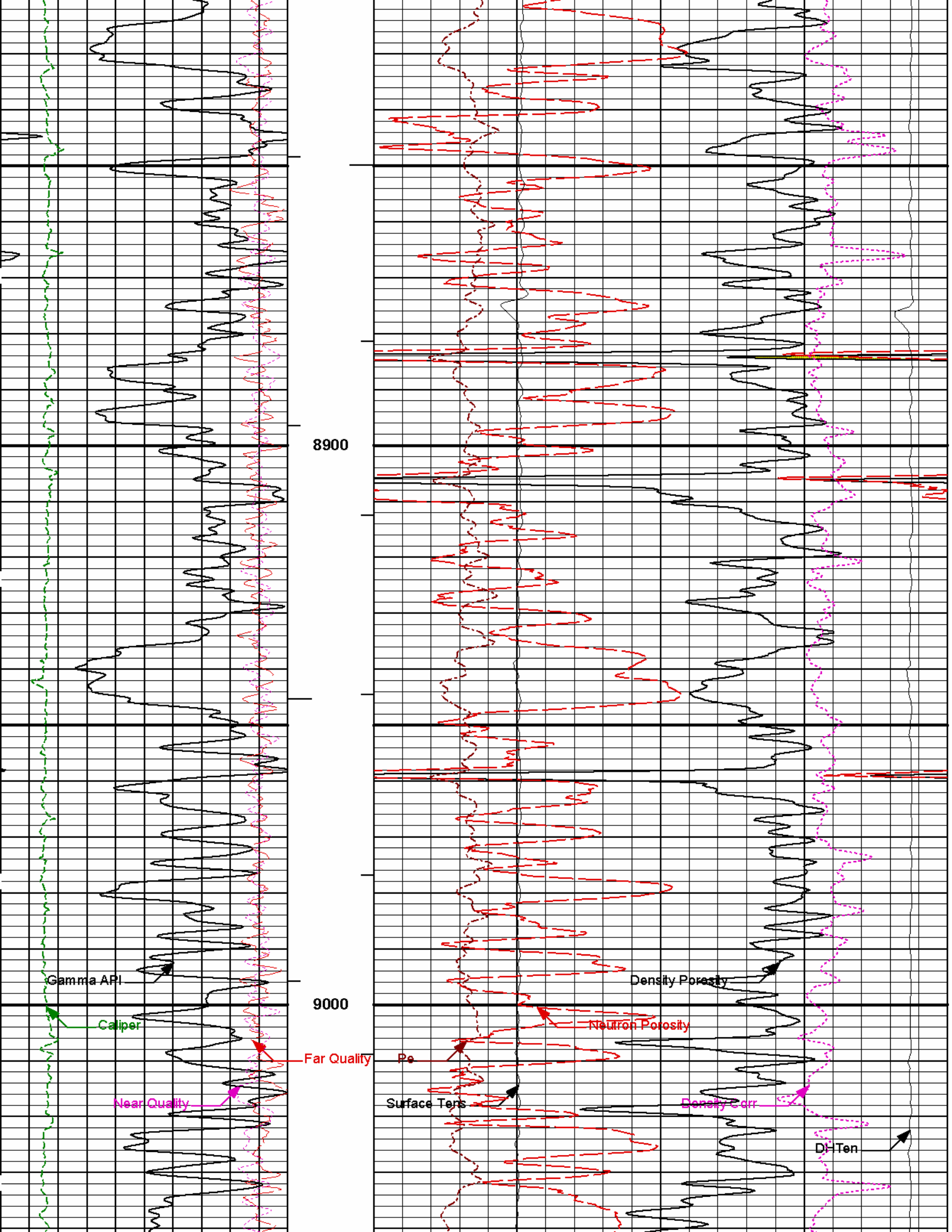
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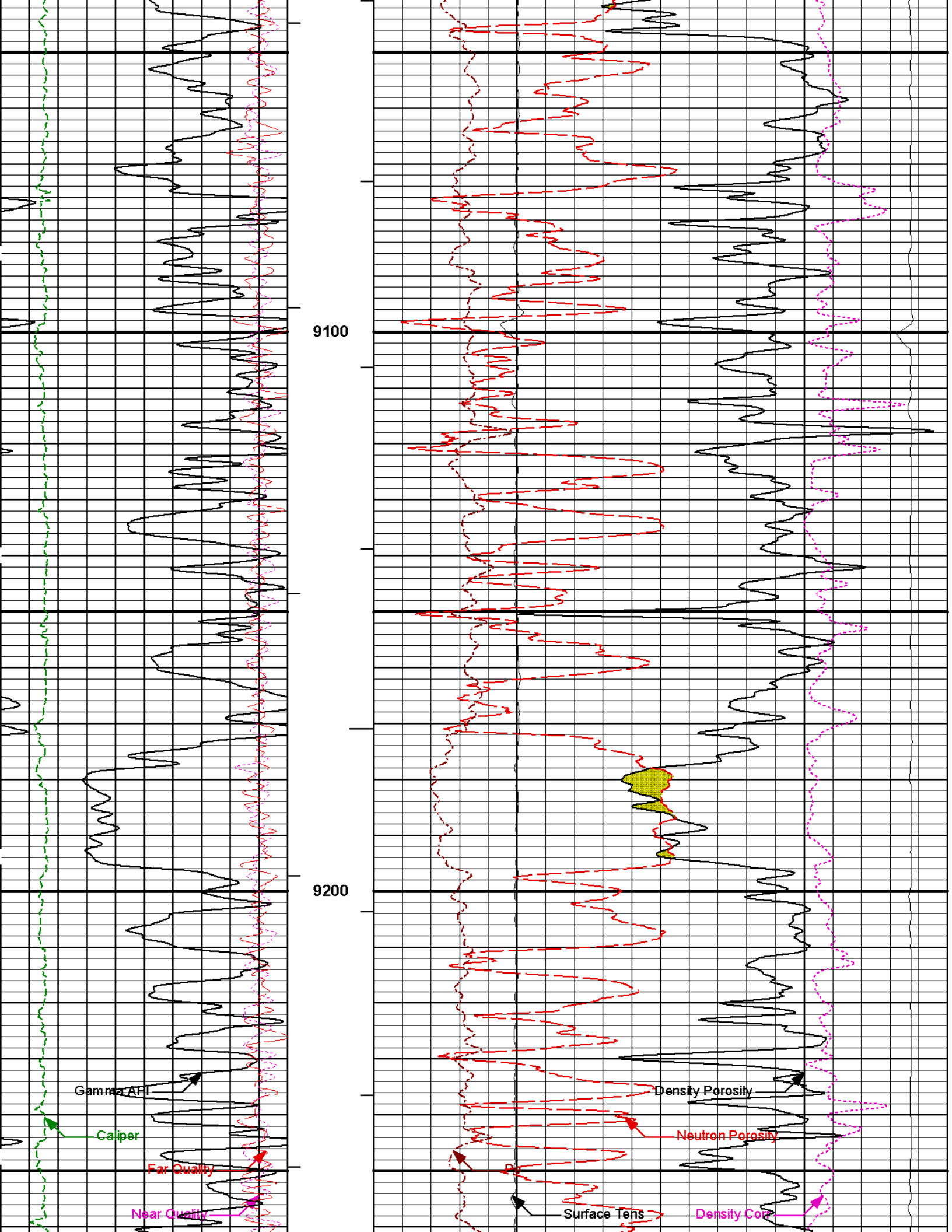
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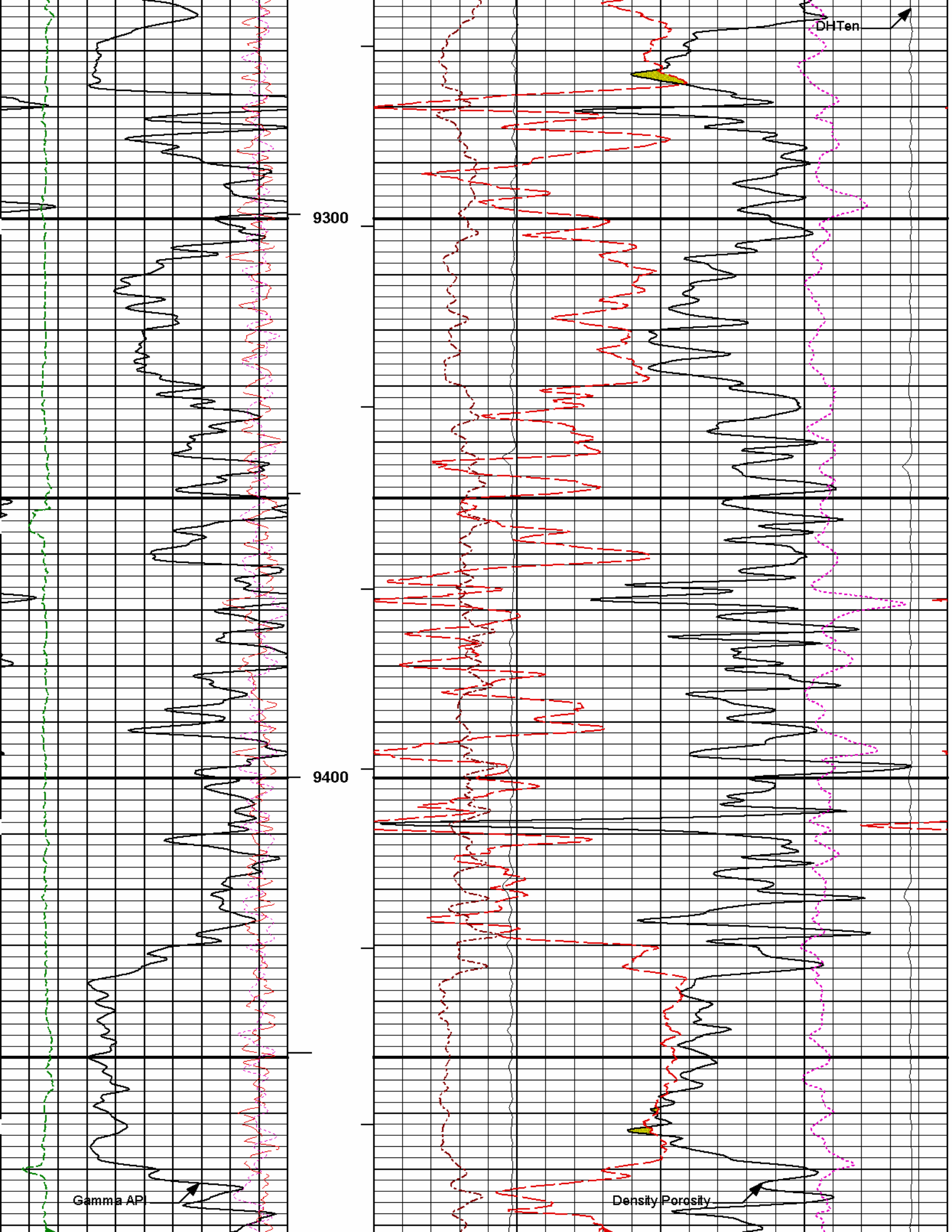


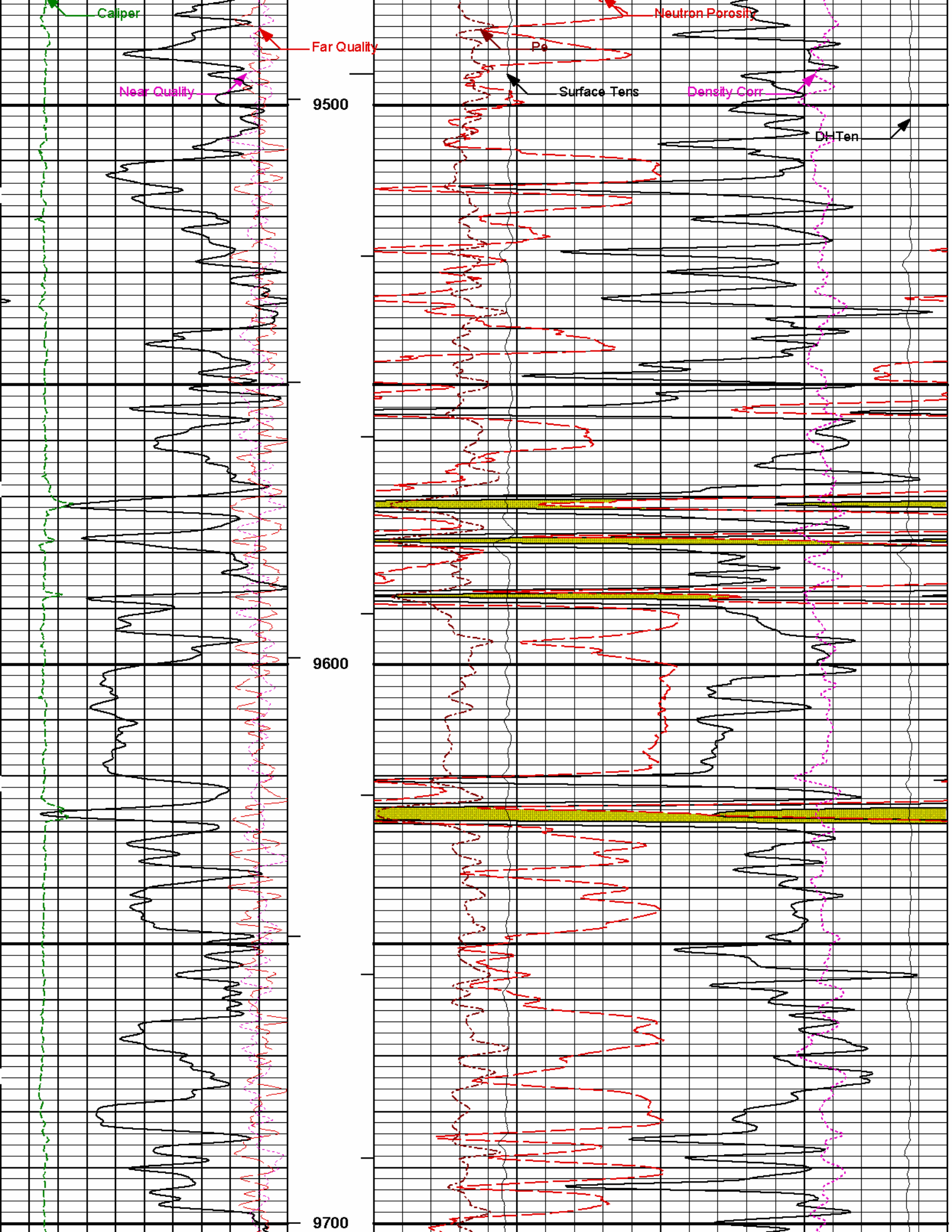


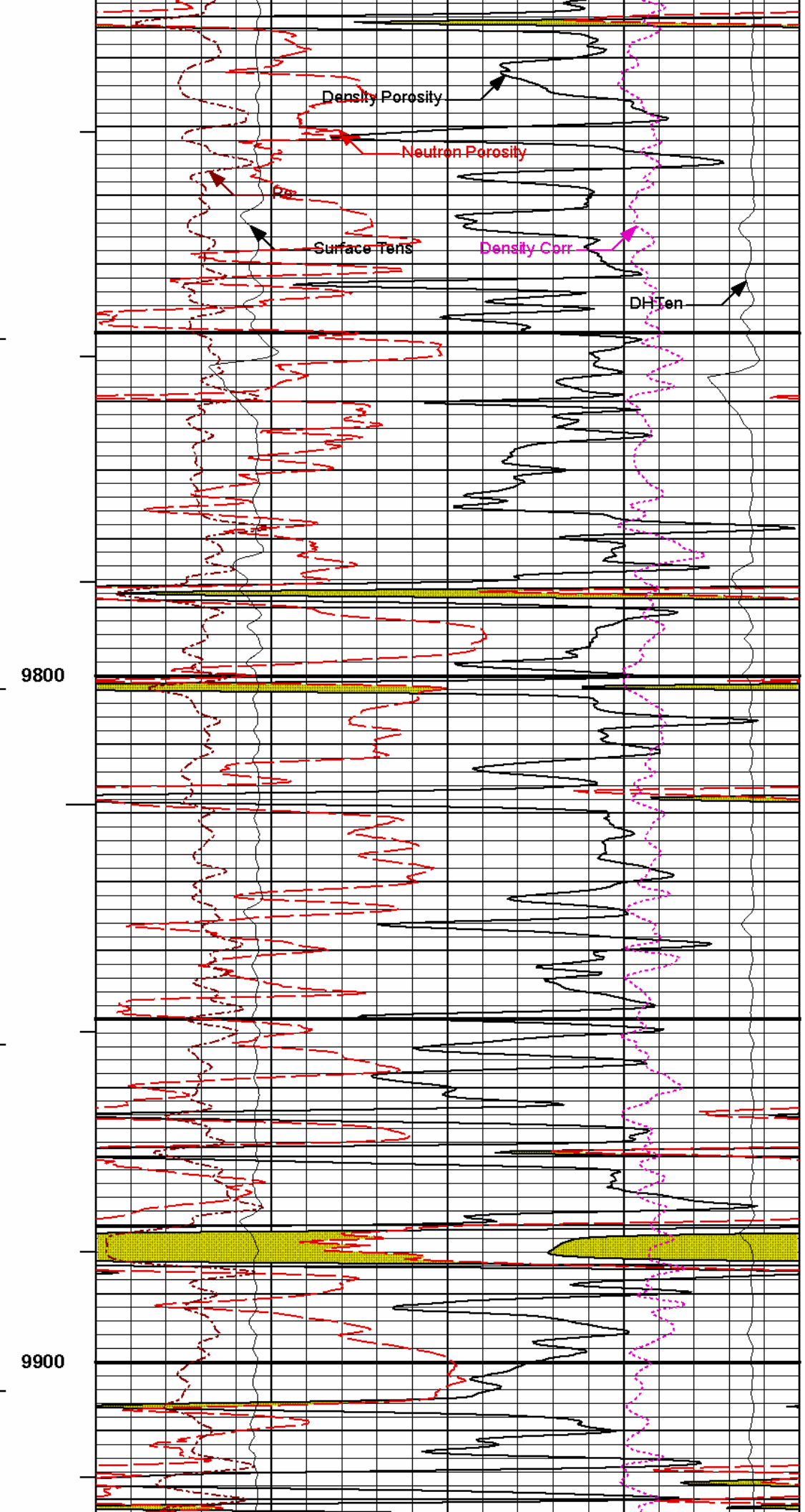
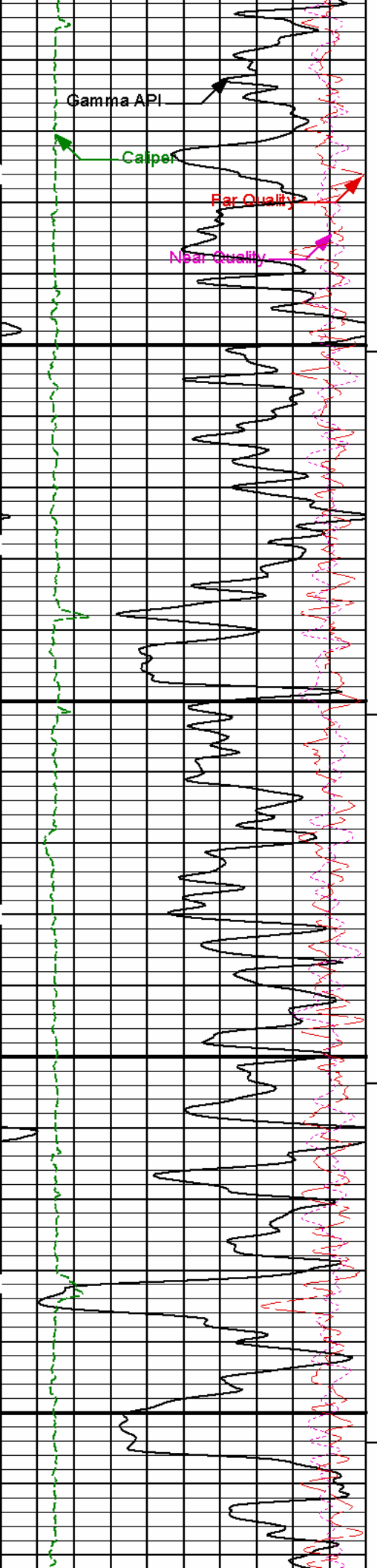


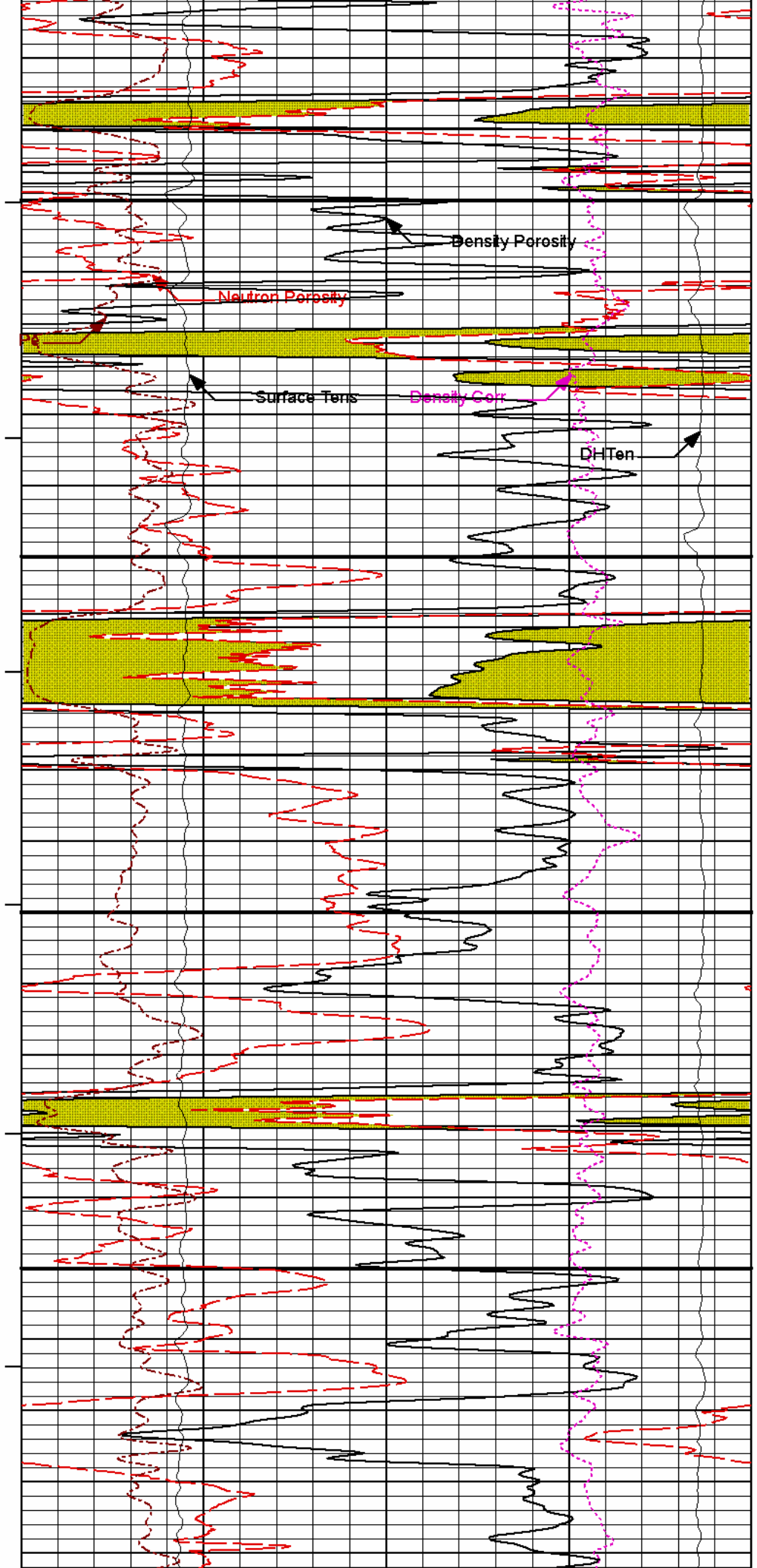
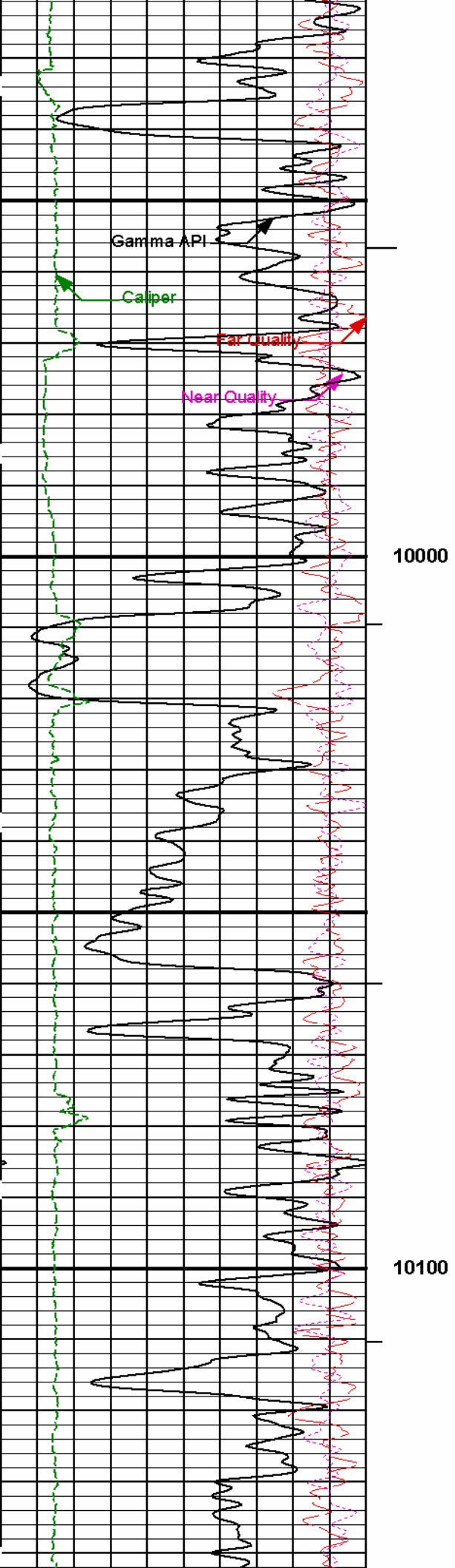


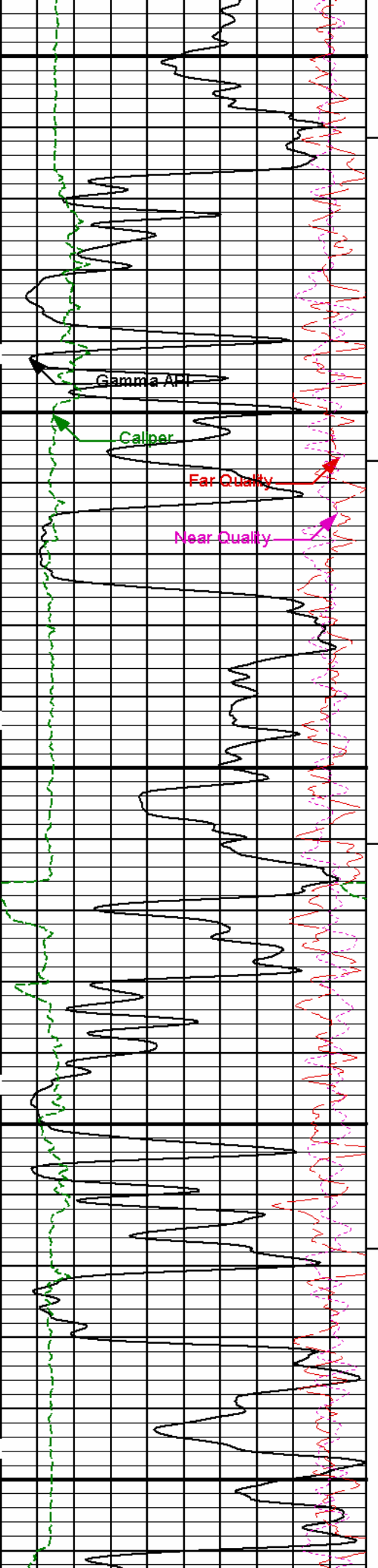






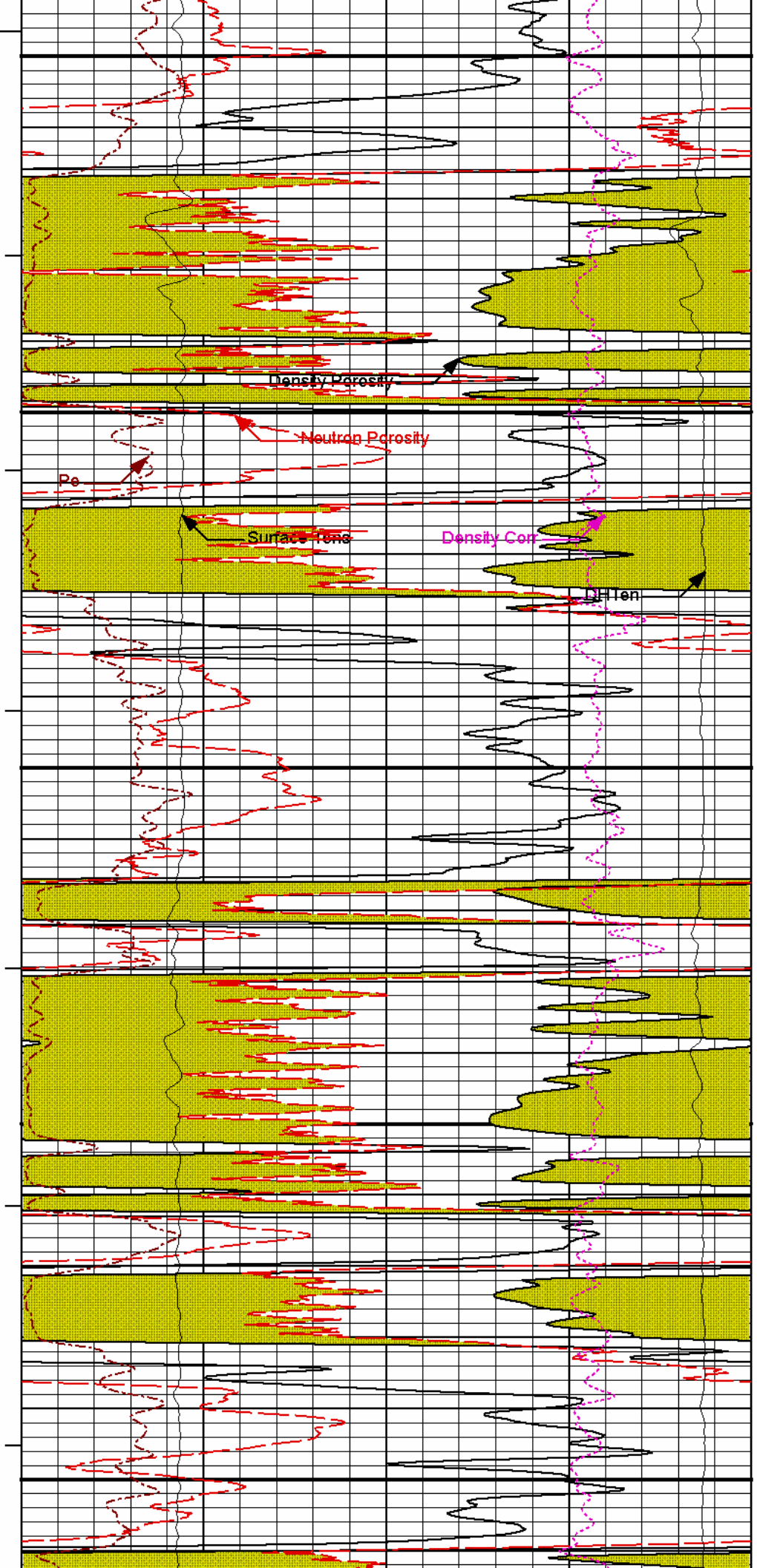


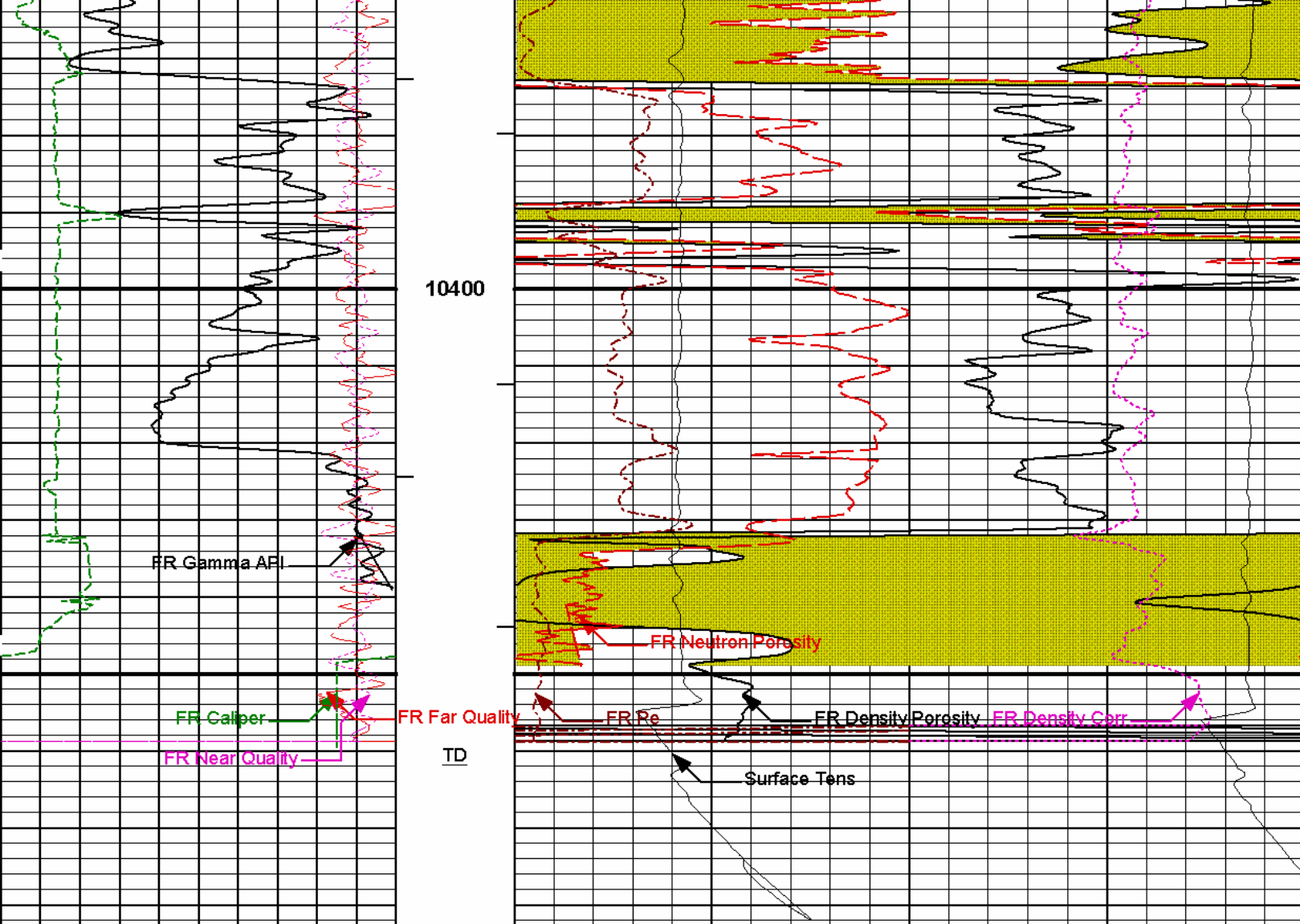




10200

10300





0	Gamma API	150	1 : 240	0	Pe	10	-0.25	Density Corr	0.25
	api							gram per cc	
6	Caliper	16	BHVT	10K	Surface Tens	0	10K	DHTen	0
	inches				pounds			pounds	
9	Far Quality	-1	AHVT	30	Density Porosity				-10
					percent				
-9	Near Quality	1		30	Neutron Porosity				-10
					percent				

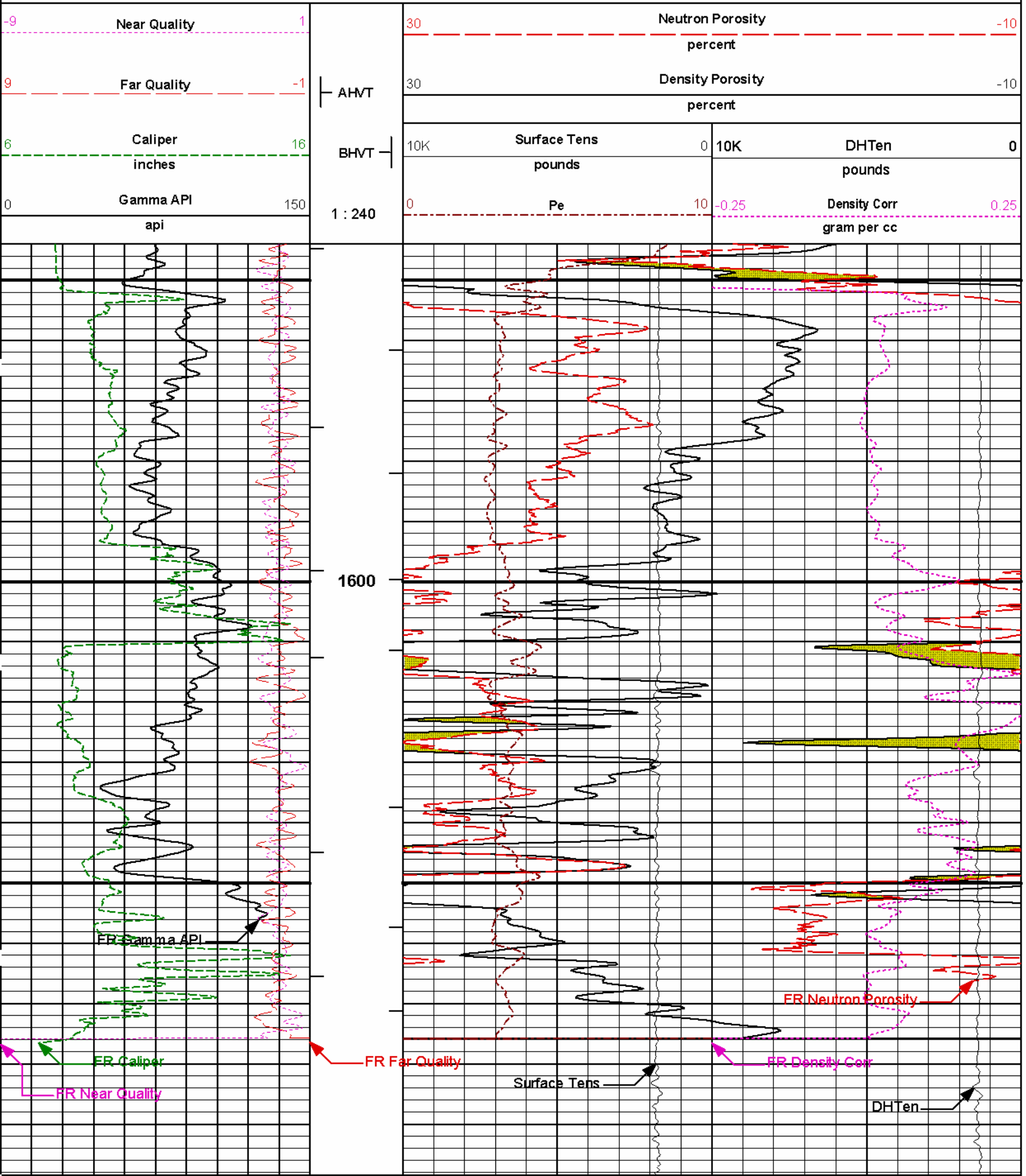
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Plot Time: 01-Apr-09 05:11:29
 Plot Range: 1542 ft to 10482.7 ft
 Data: LAR_S_LE_18_05DWell Based\DAQ-0001-003\
 Plot File: \\POR\BP_5IN_POR

MAIN PASS 5" = 100'

HALLIBURTON

Plot Time: 01-Apr-09 05:11:29
 Plot Range: 1544 ft to 1698.5 ft
 Data: LAR_S_LE_18_05DWell Based\REPEAT\
 Plot File: \\POR\BP_5IN_POR



0	Gamma API	150	1 : 240	0	Pe	10	-0.25	Density Corr	0.25
	api							gram per cc	
6	Caliper	16	BHVT	10K	Surface Tens	0	10K	DHTen	0
	inches				pounds			pounds	
9	Far Quality	-1	AHVT	30	Density Porosity			-10	
					percent				
-9	Near Quality	1		30	Neutron Porosity			-10	
					percent				

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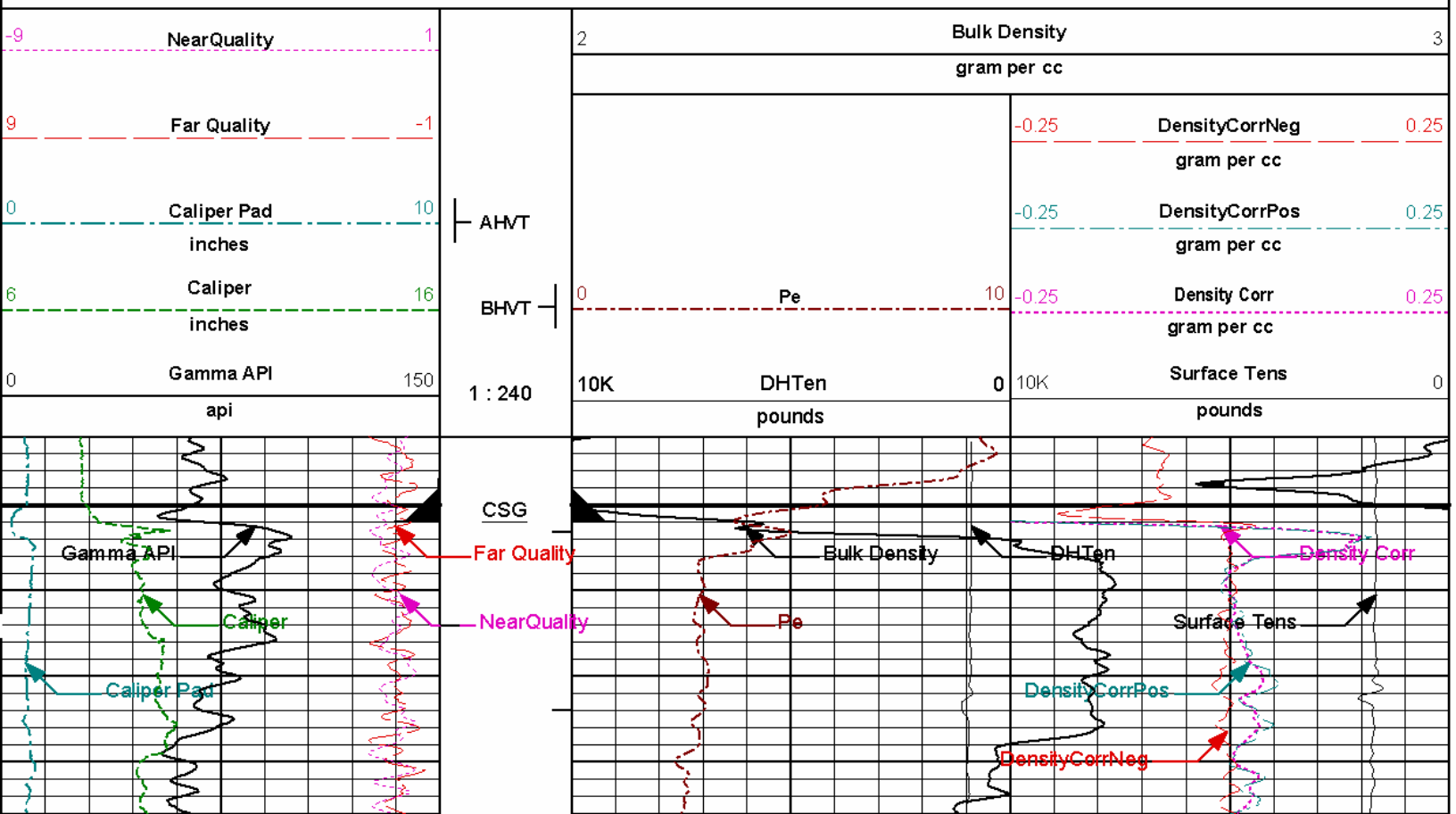
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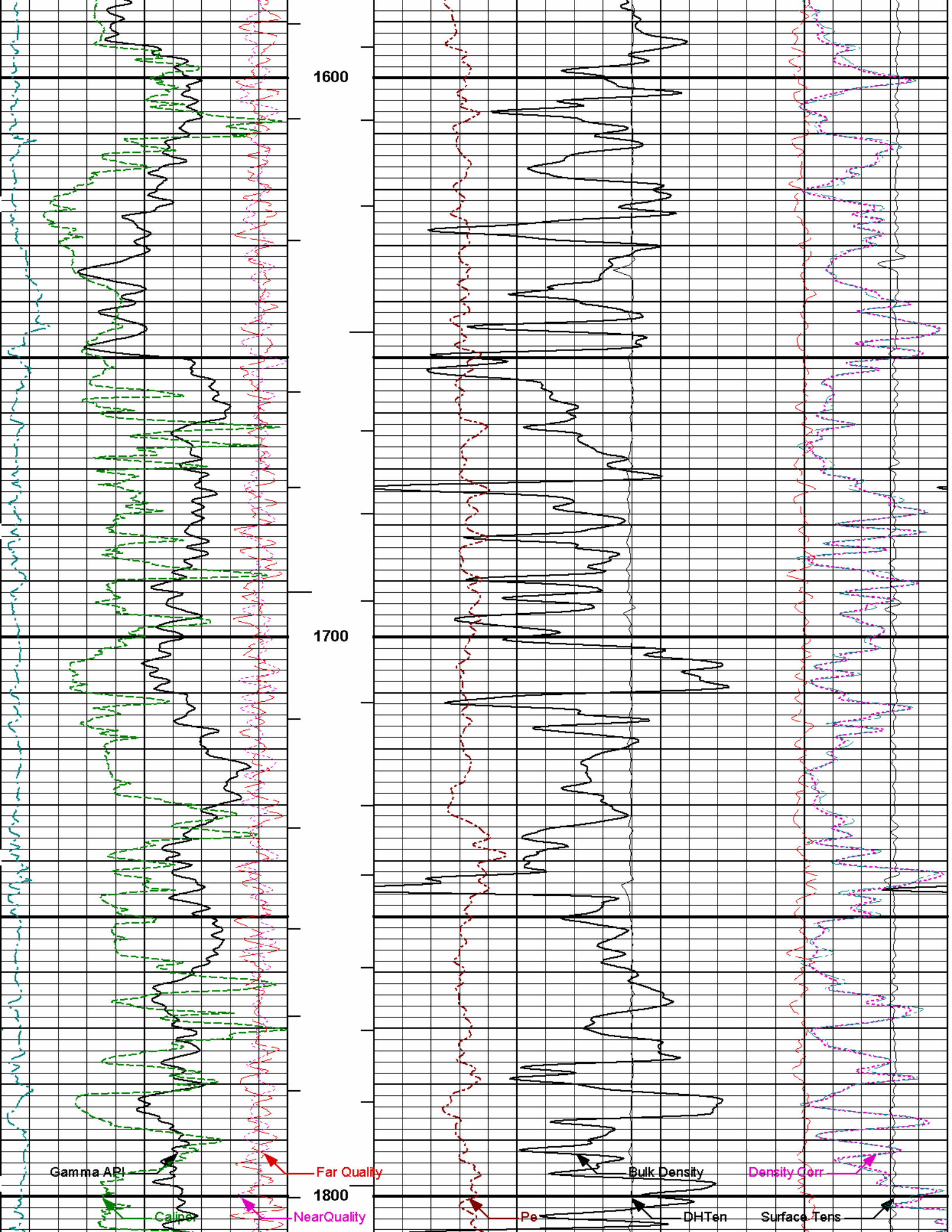
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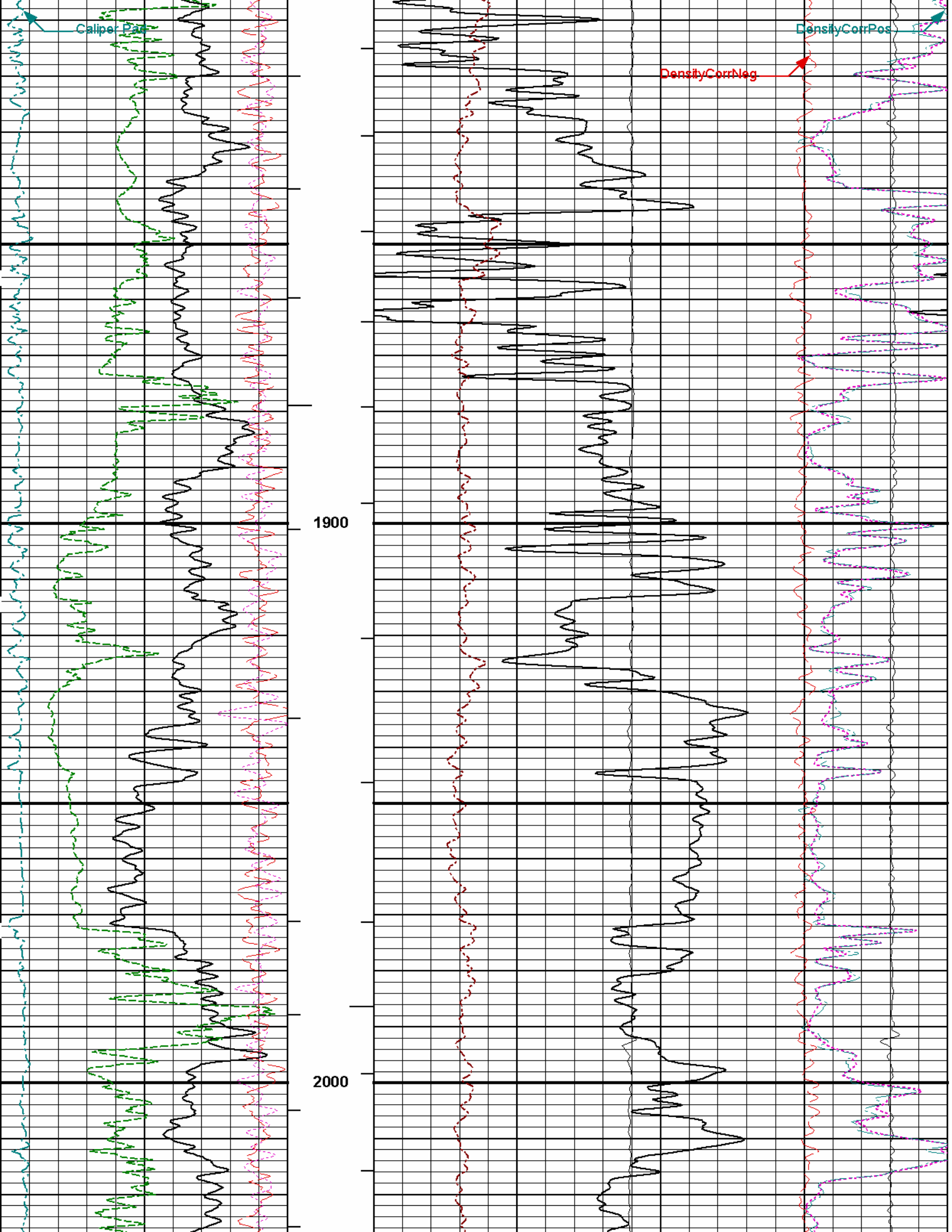
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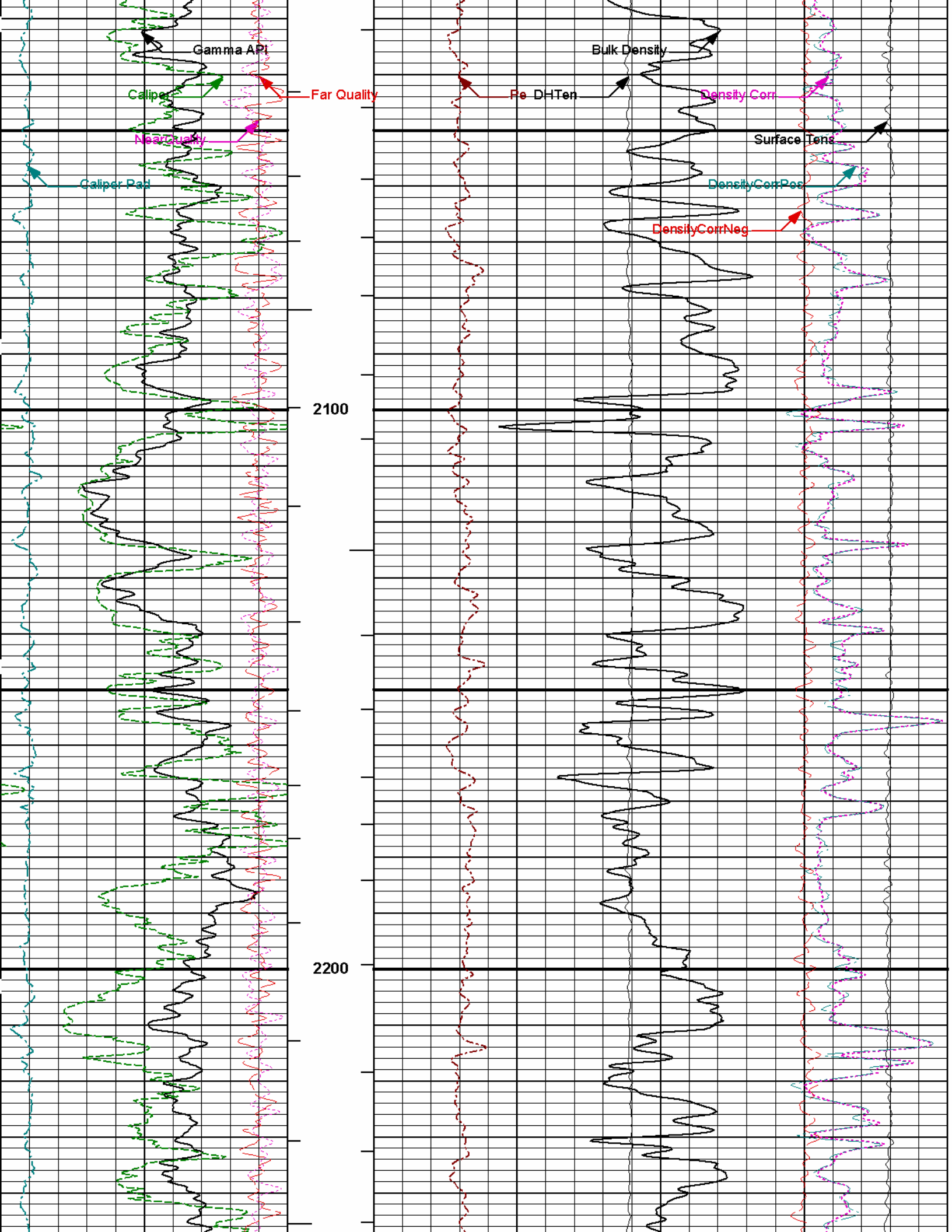
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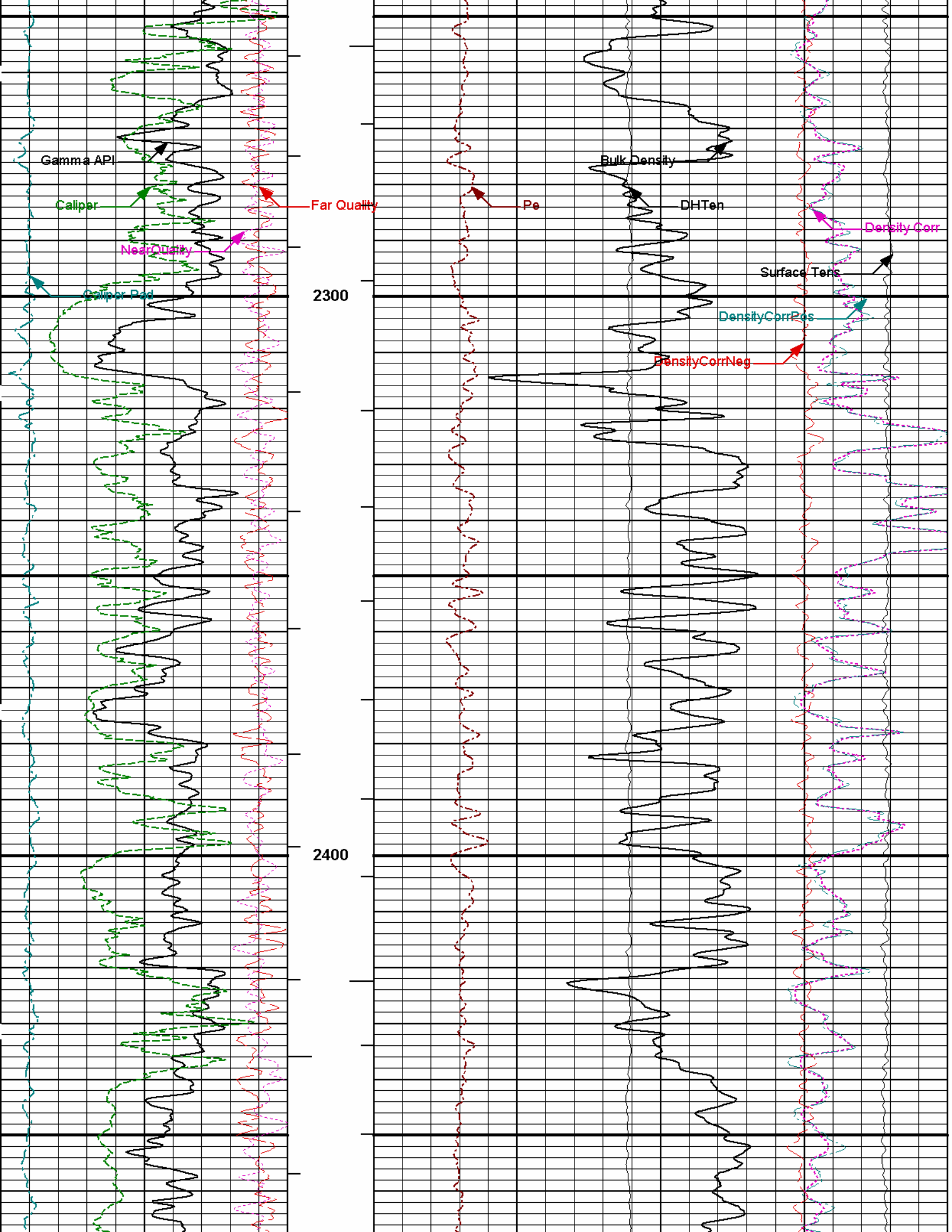
MAIN PASS 5" = 100'

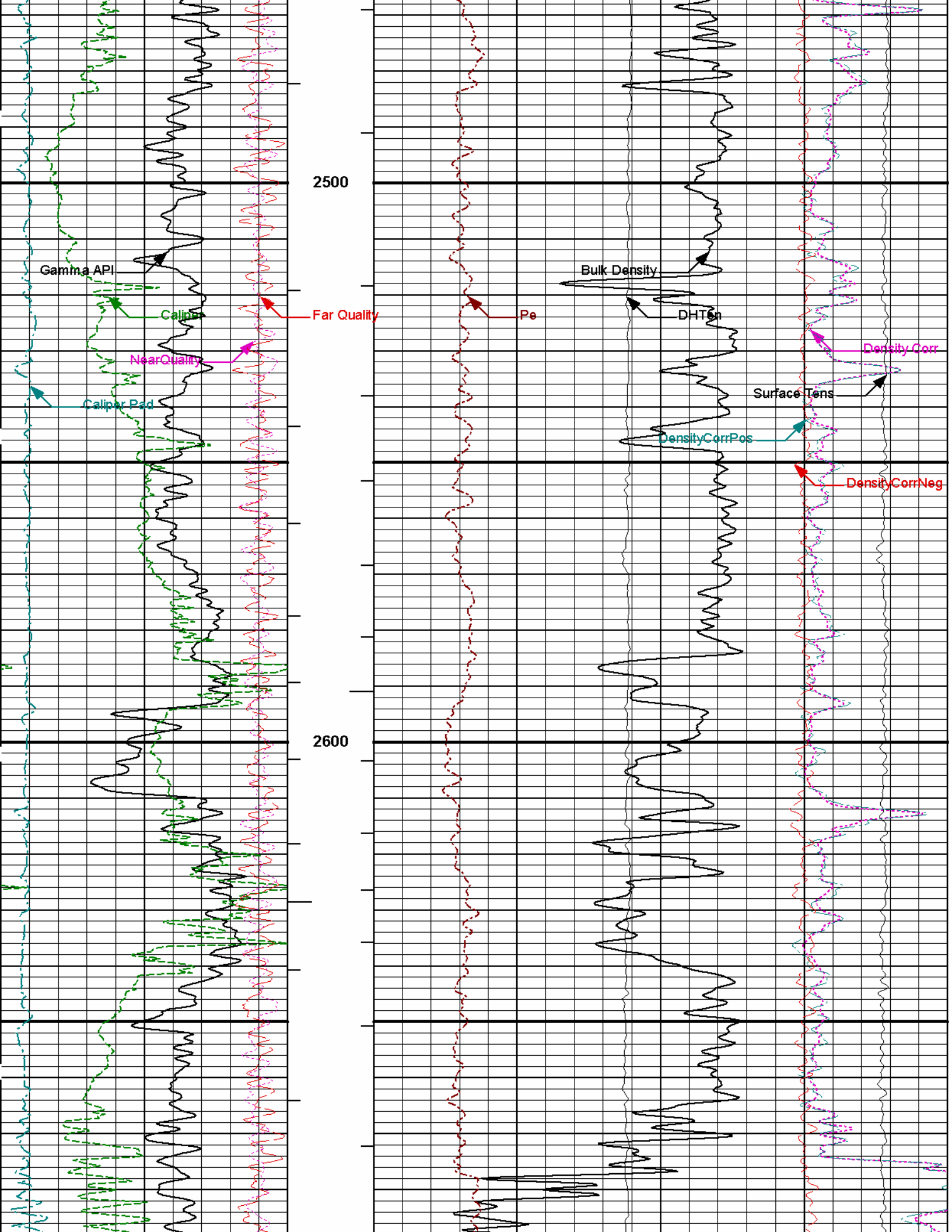


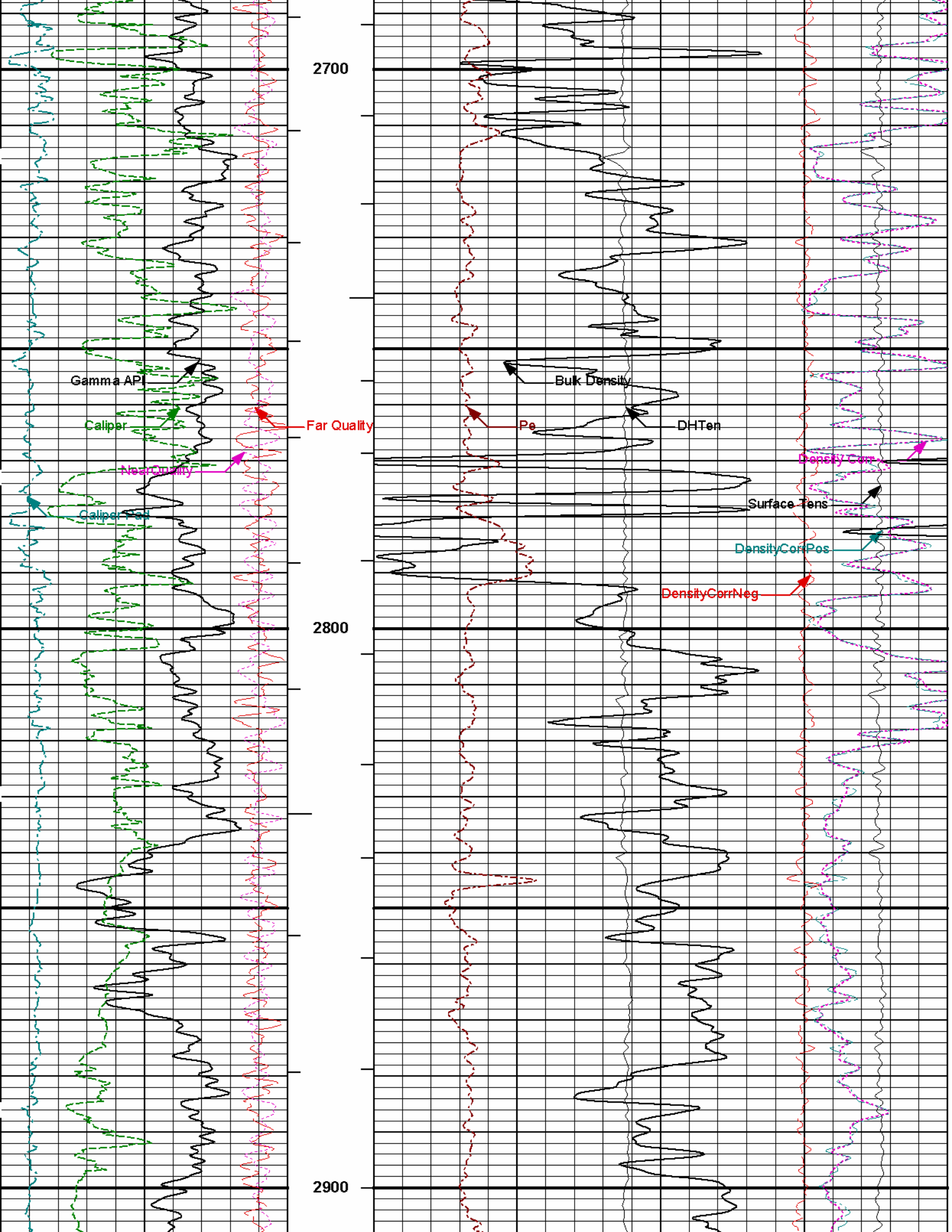


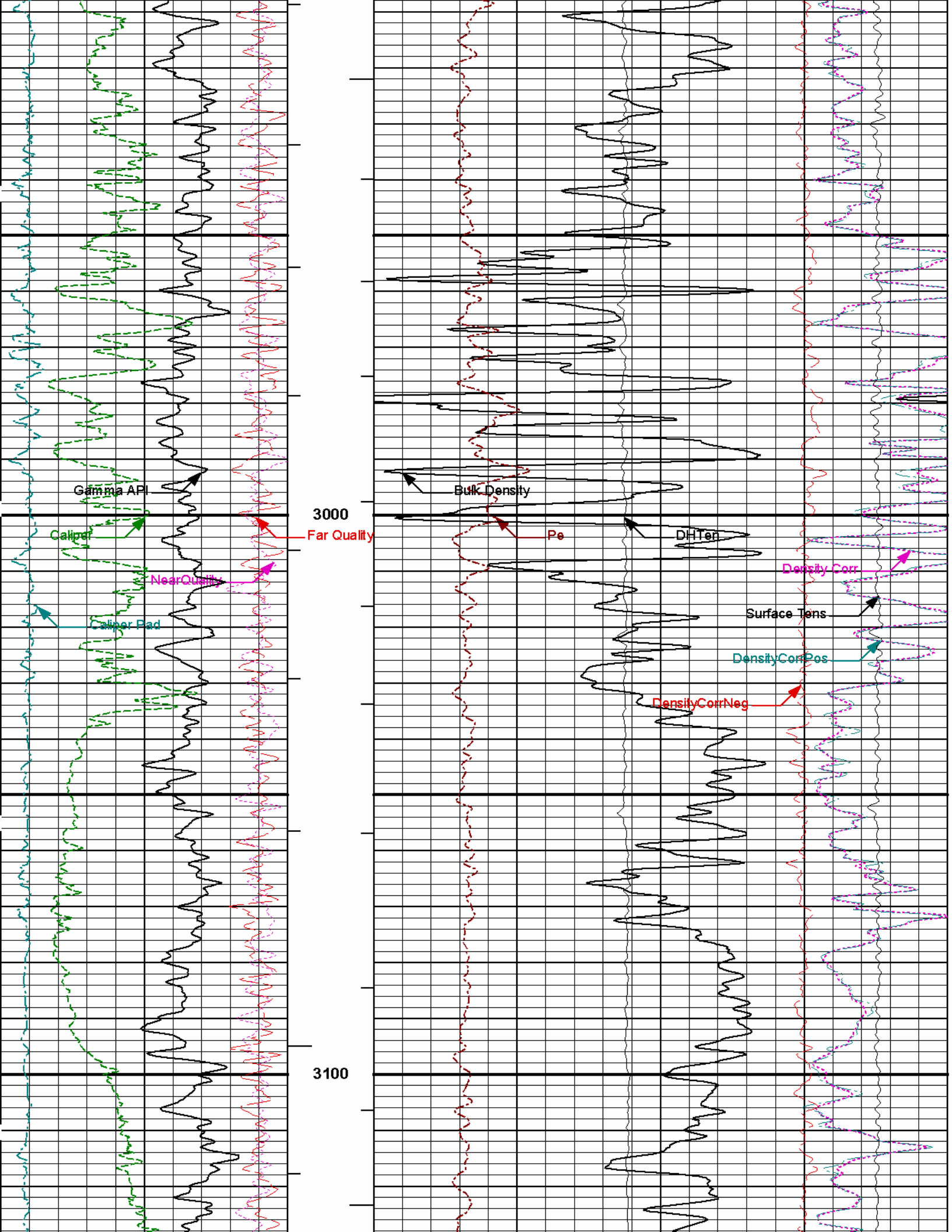


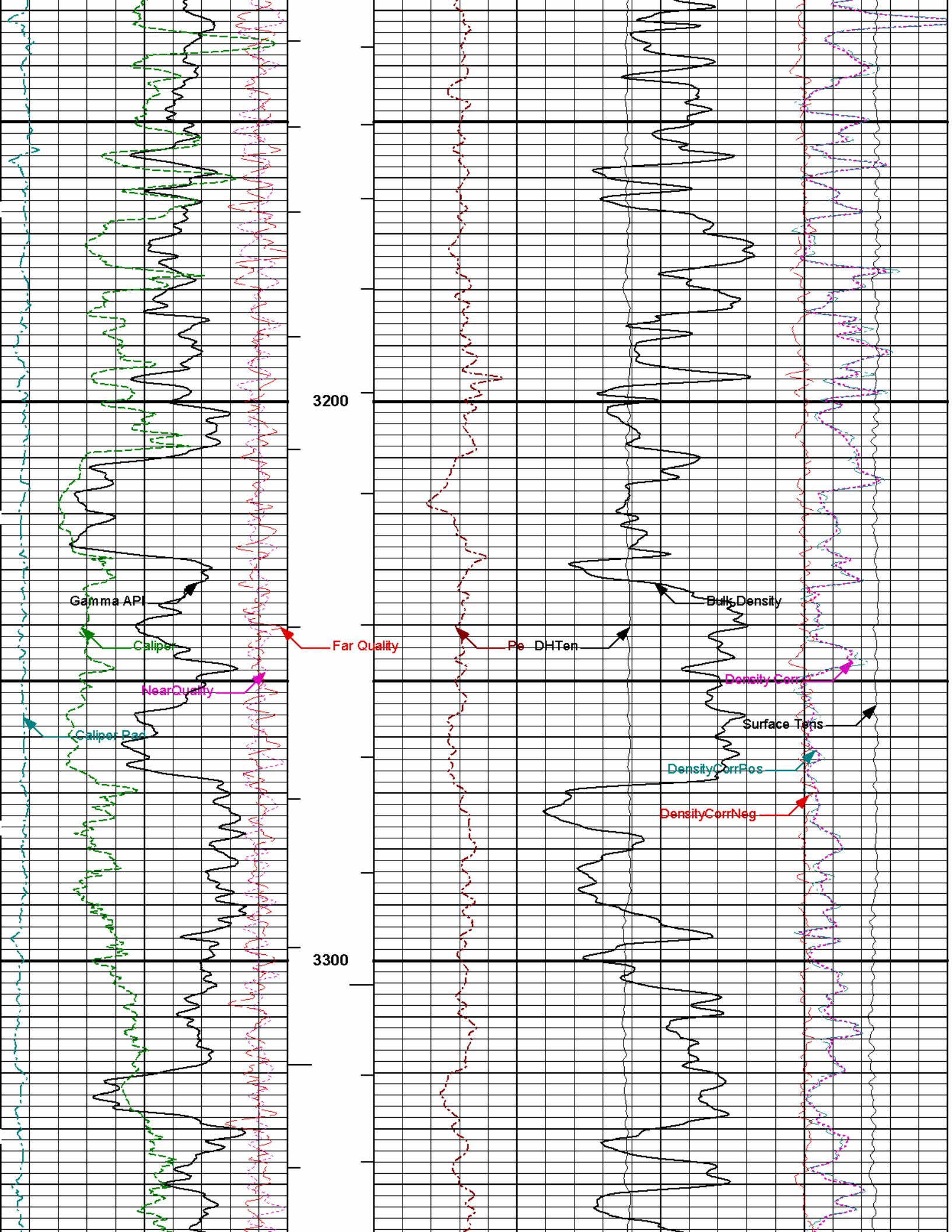


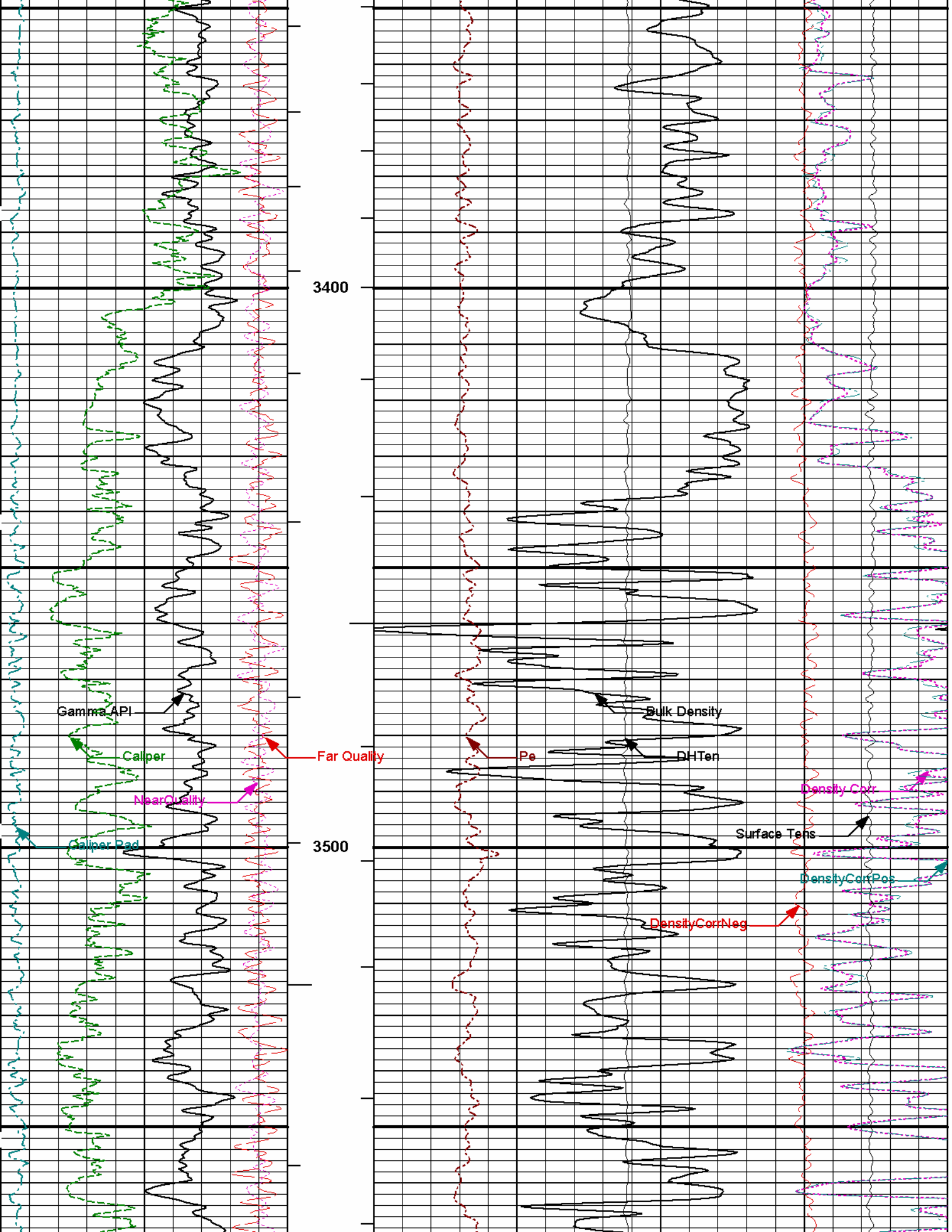


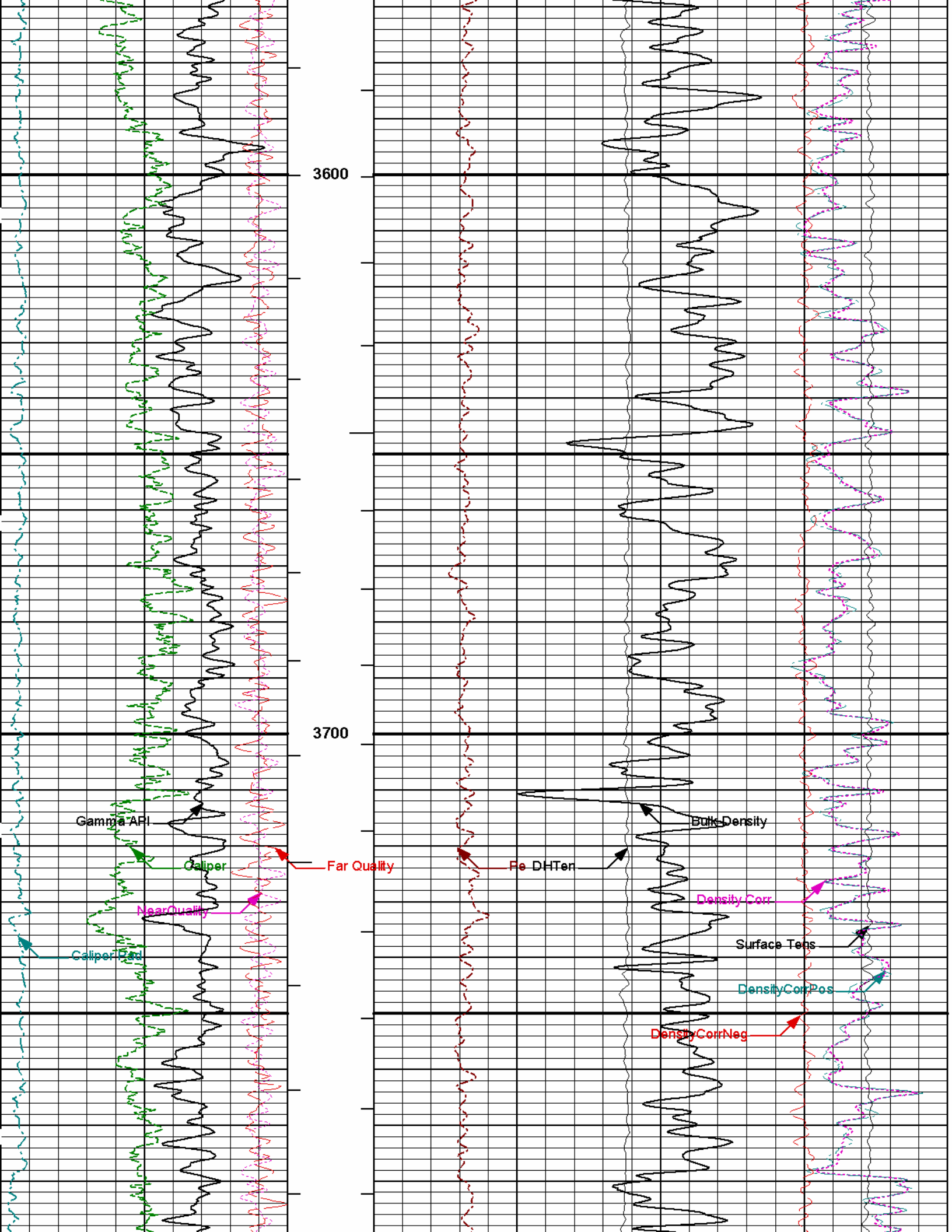


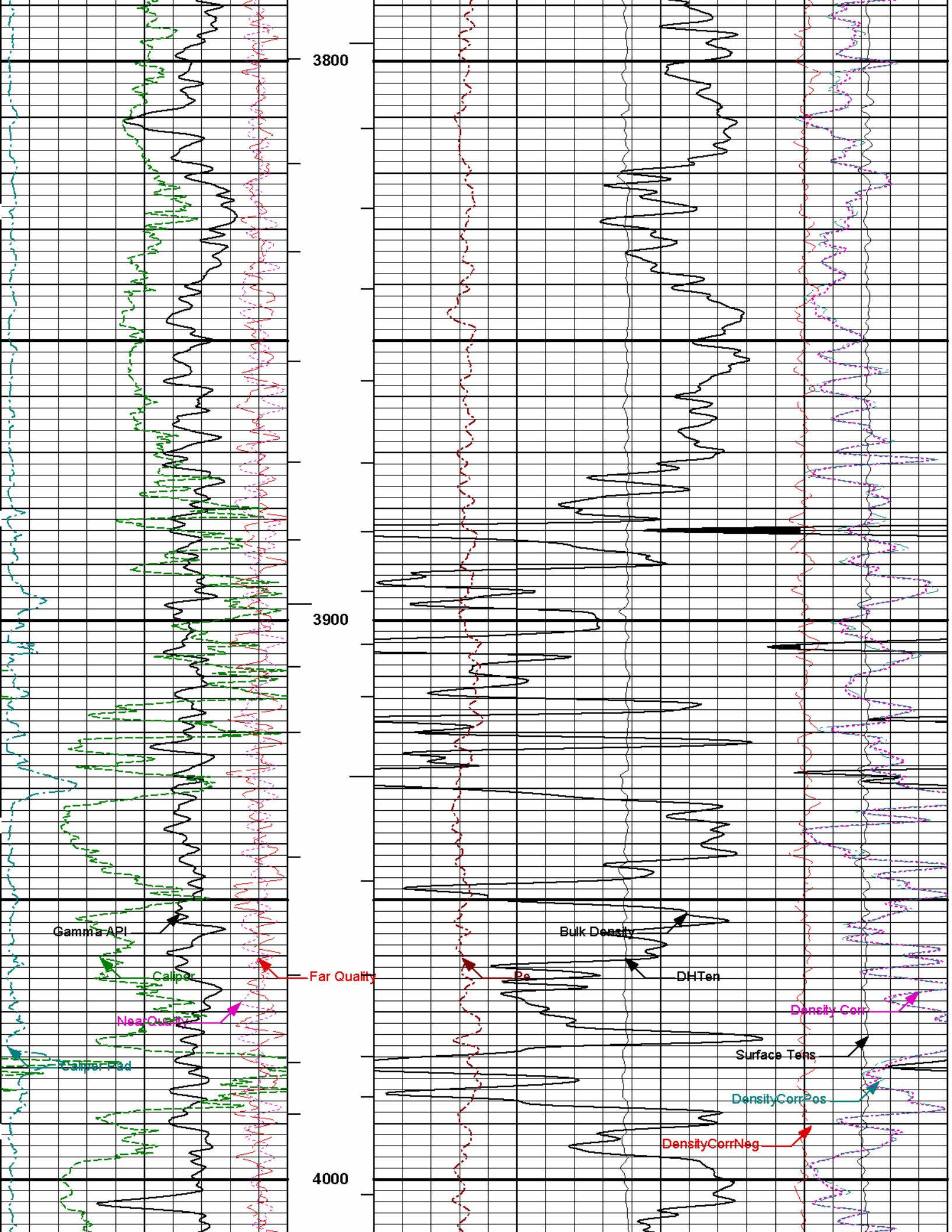


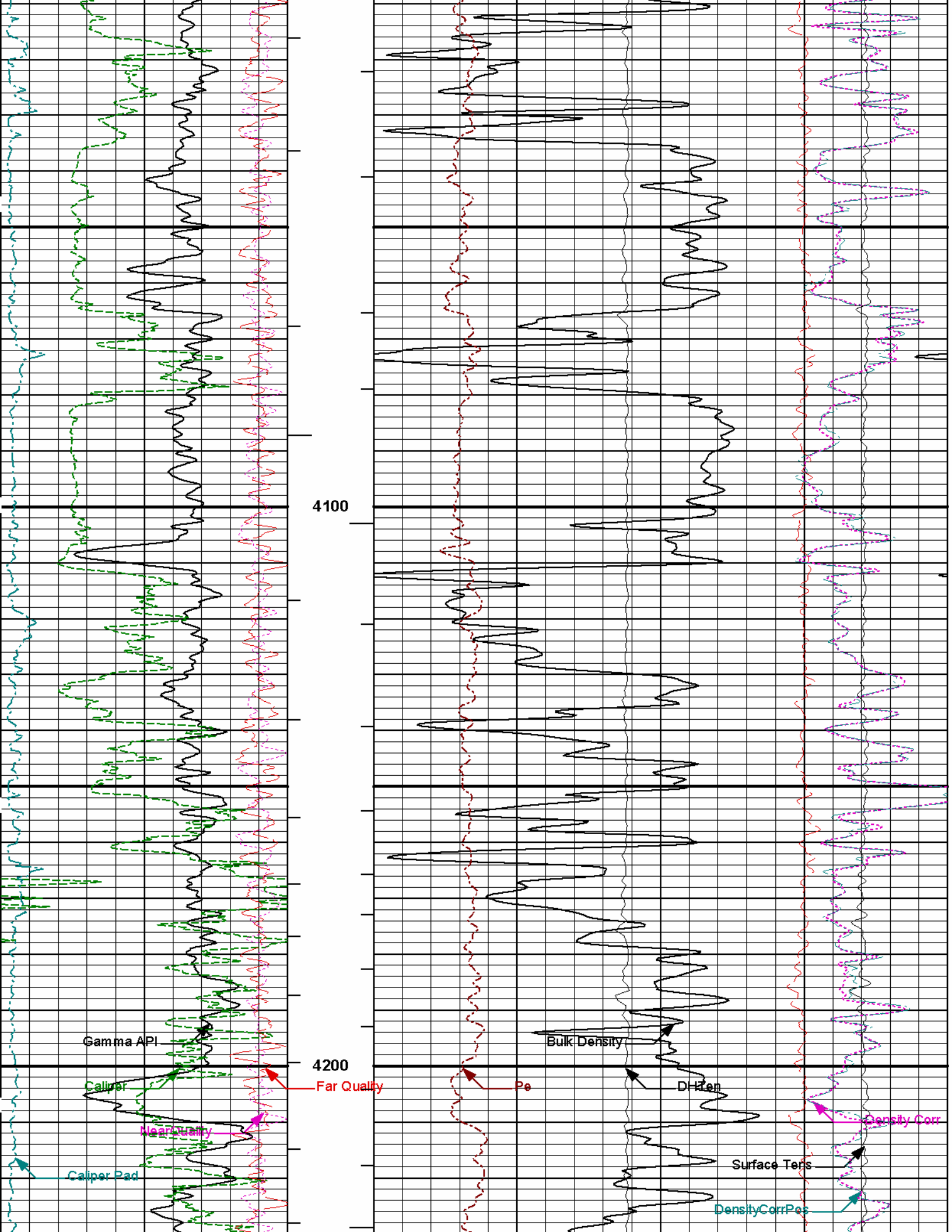


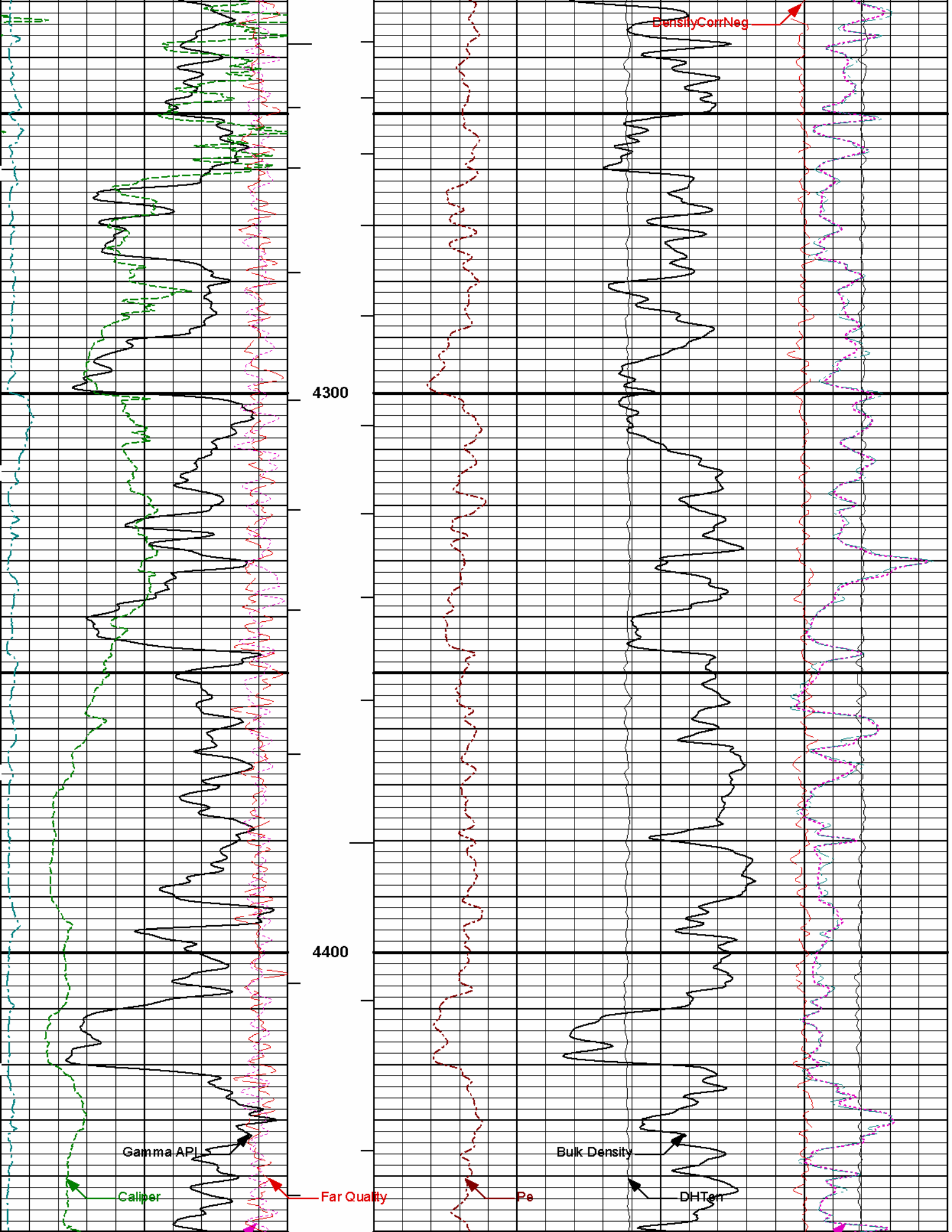


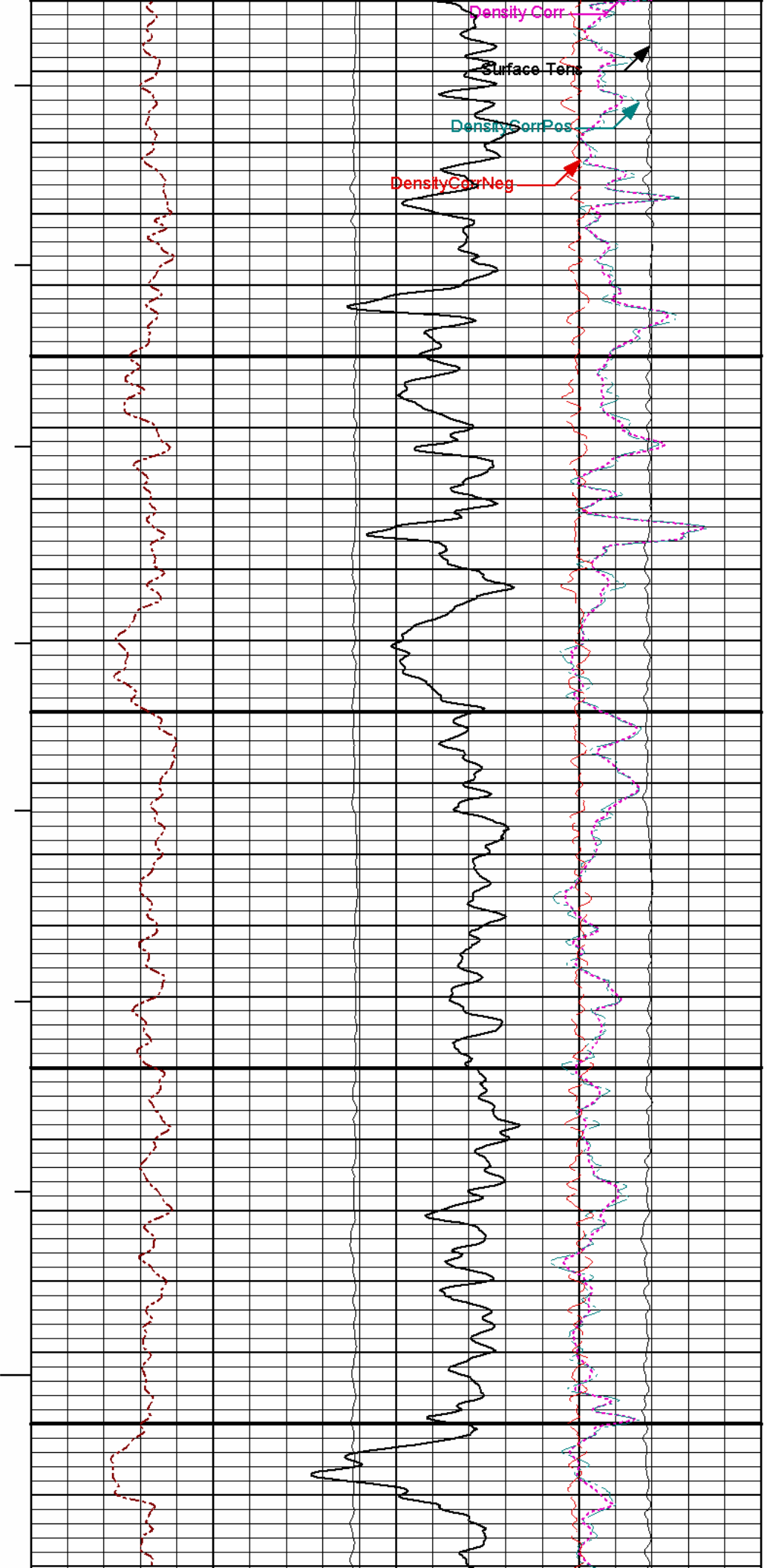
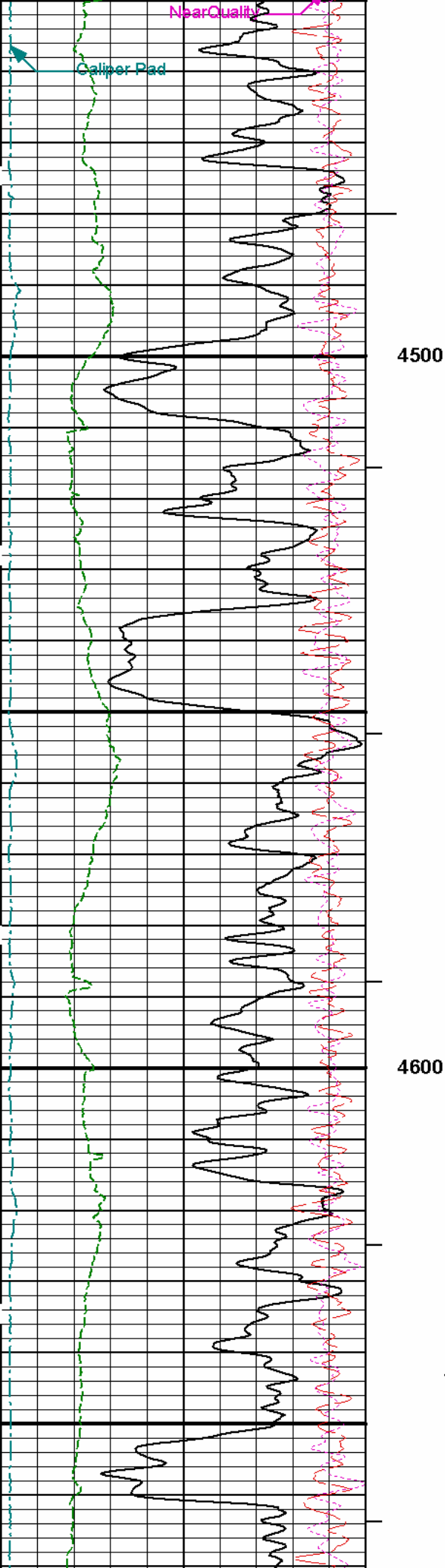


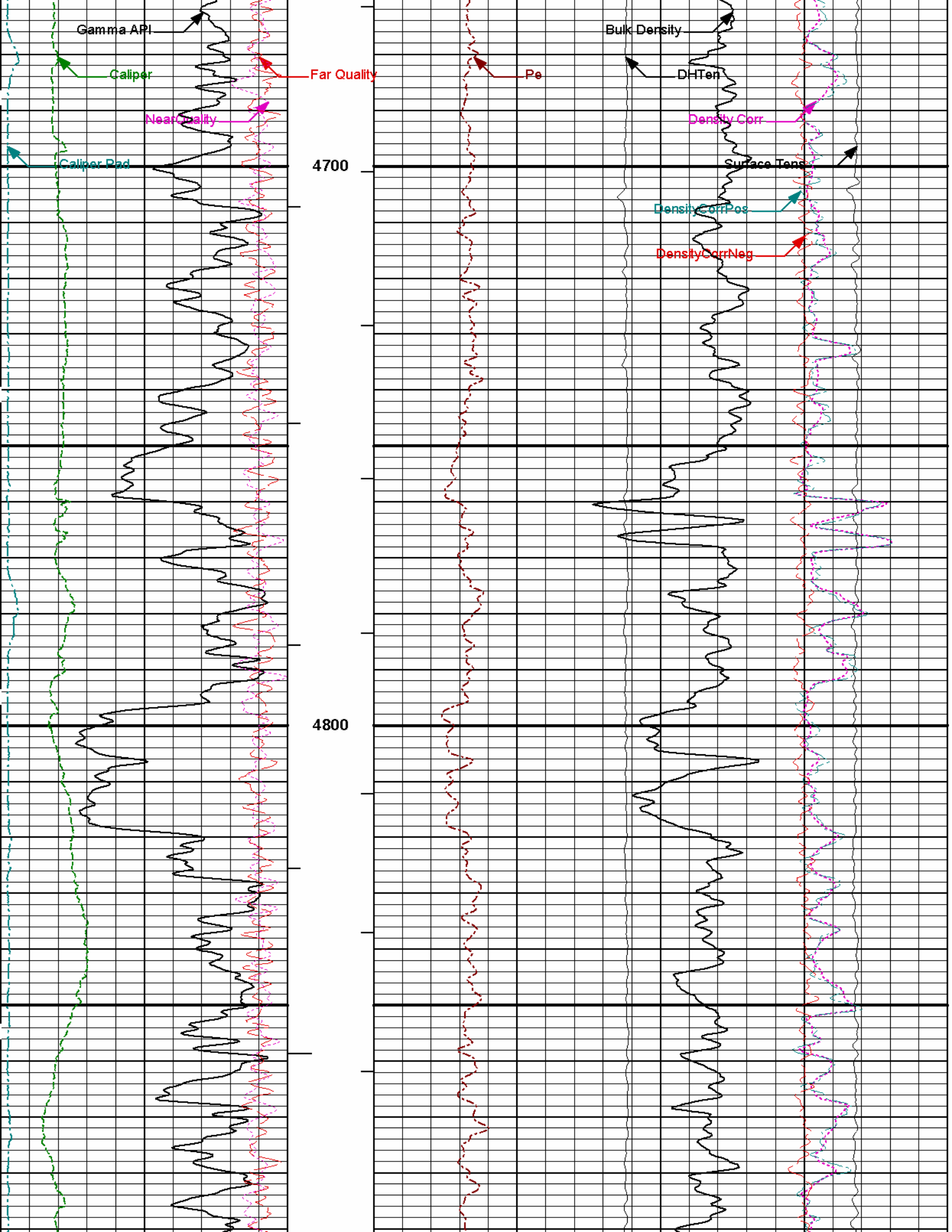


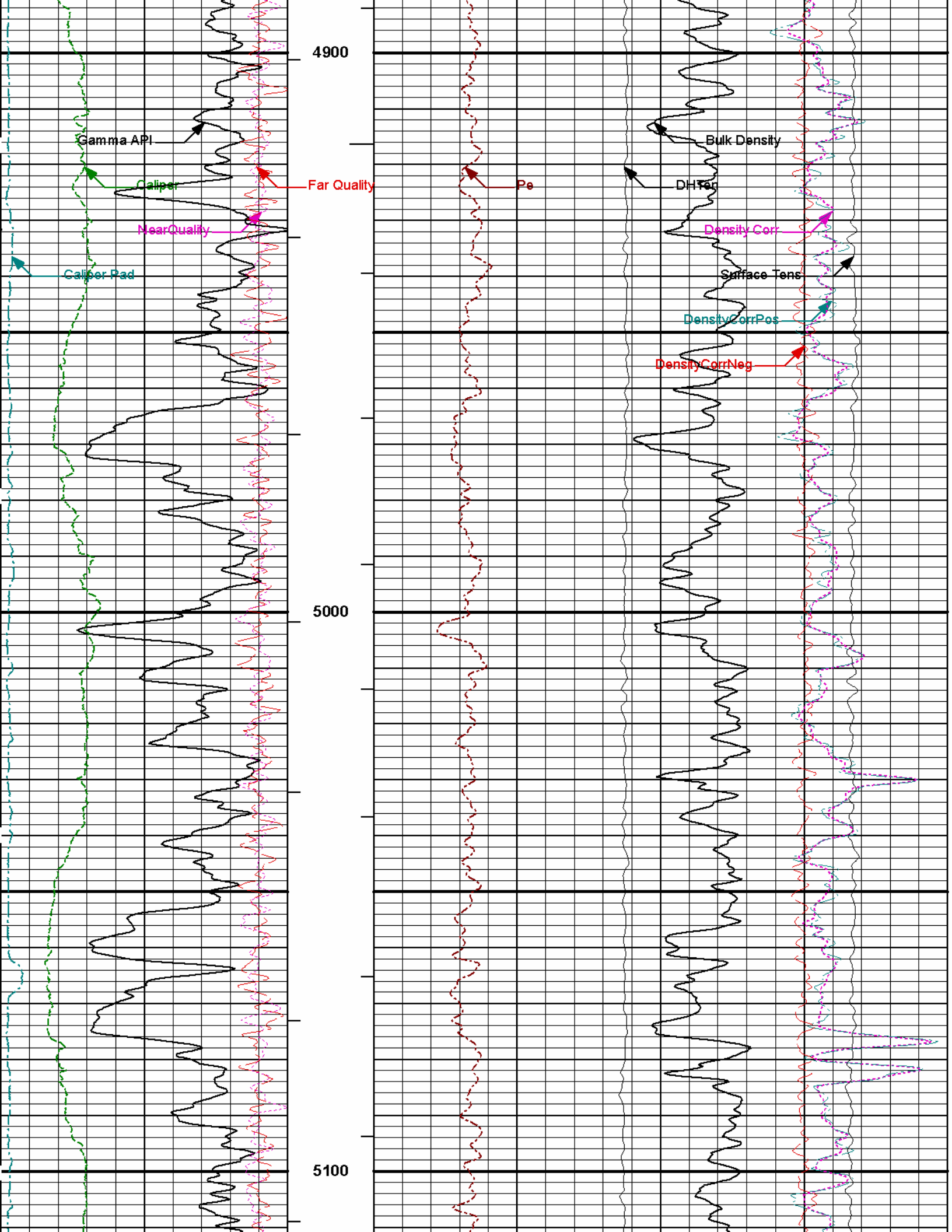


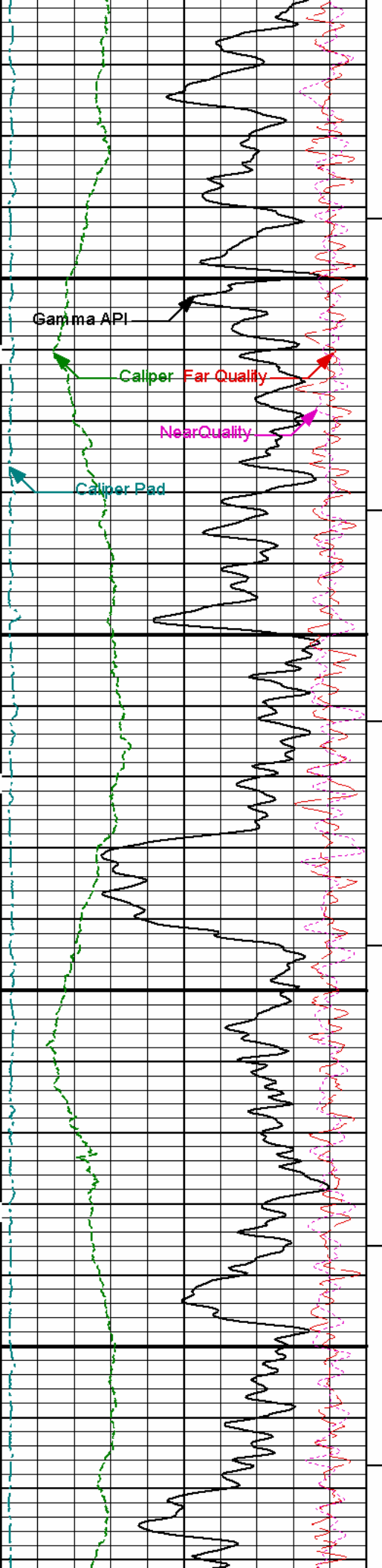






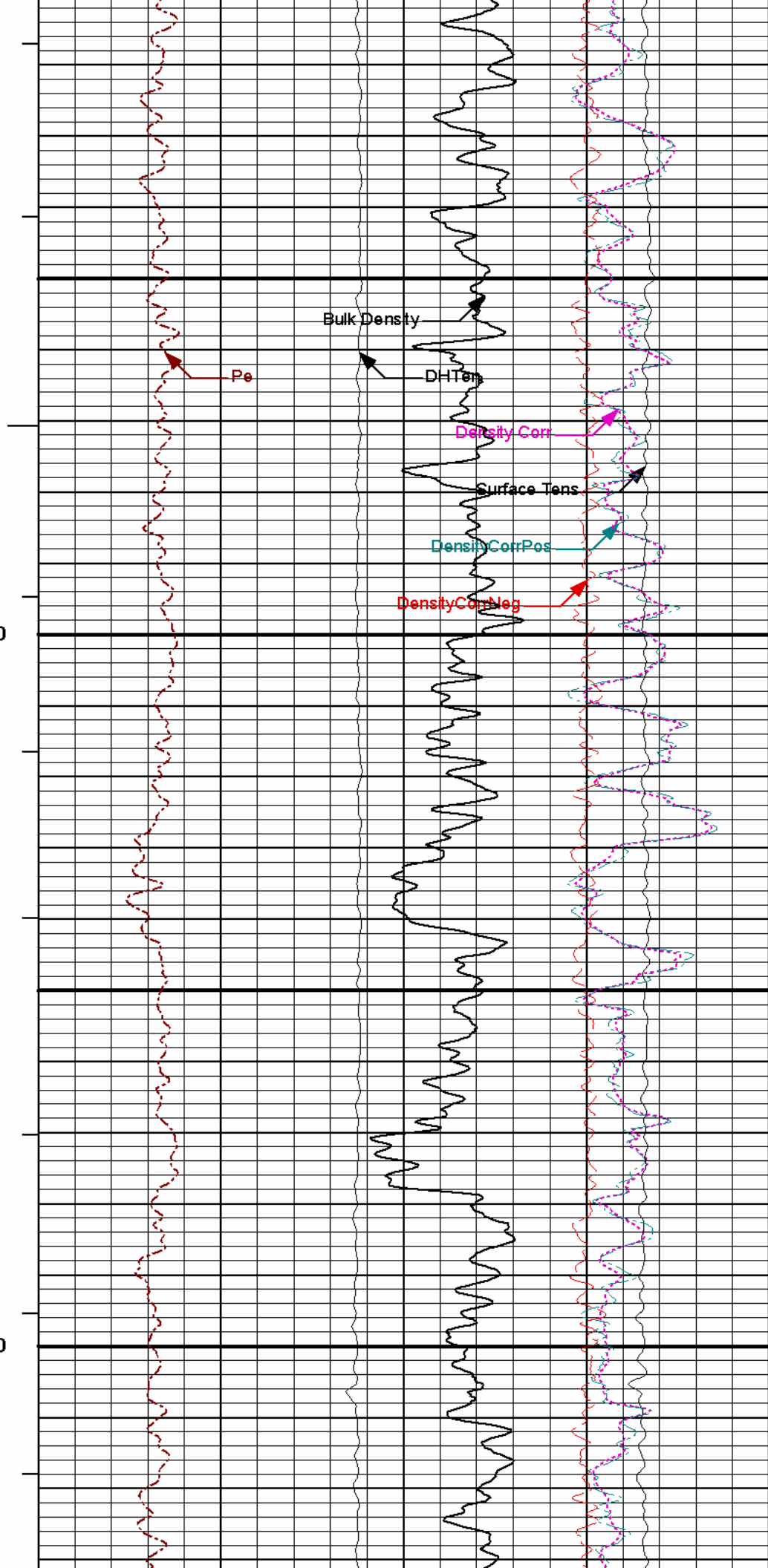


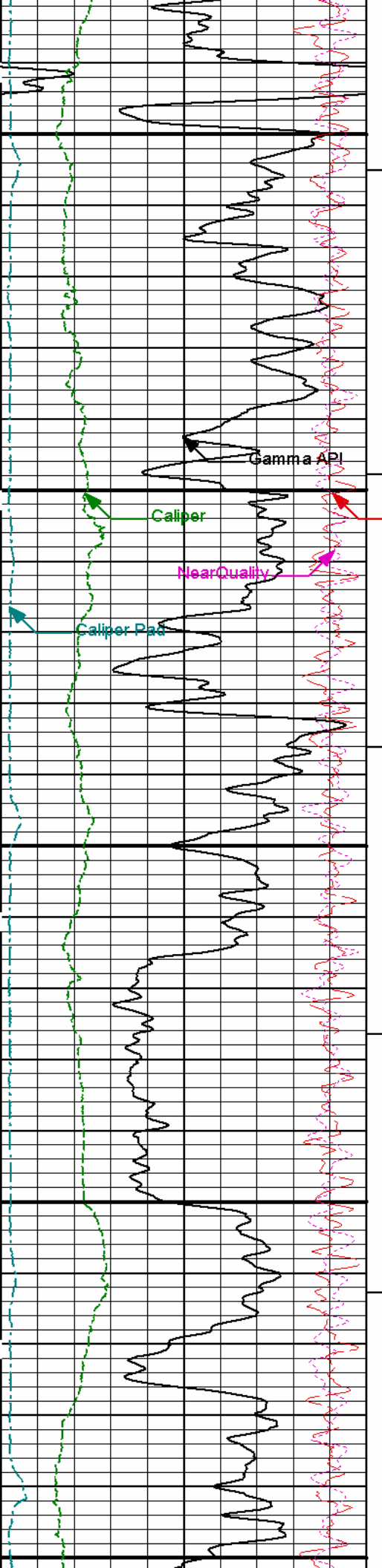




5200

5300

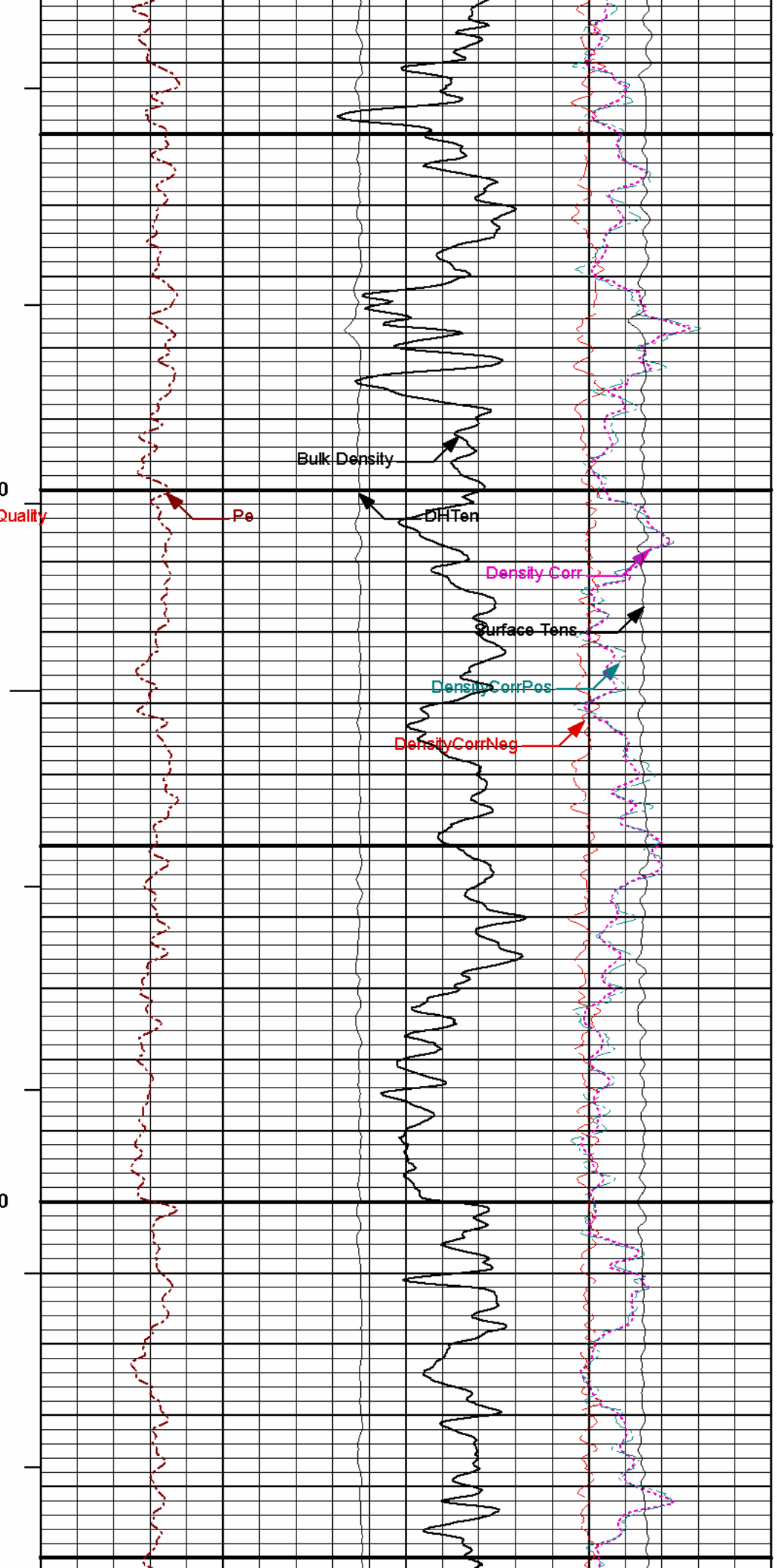


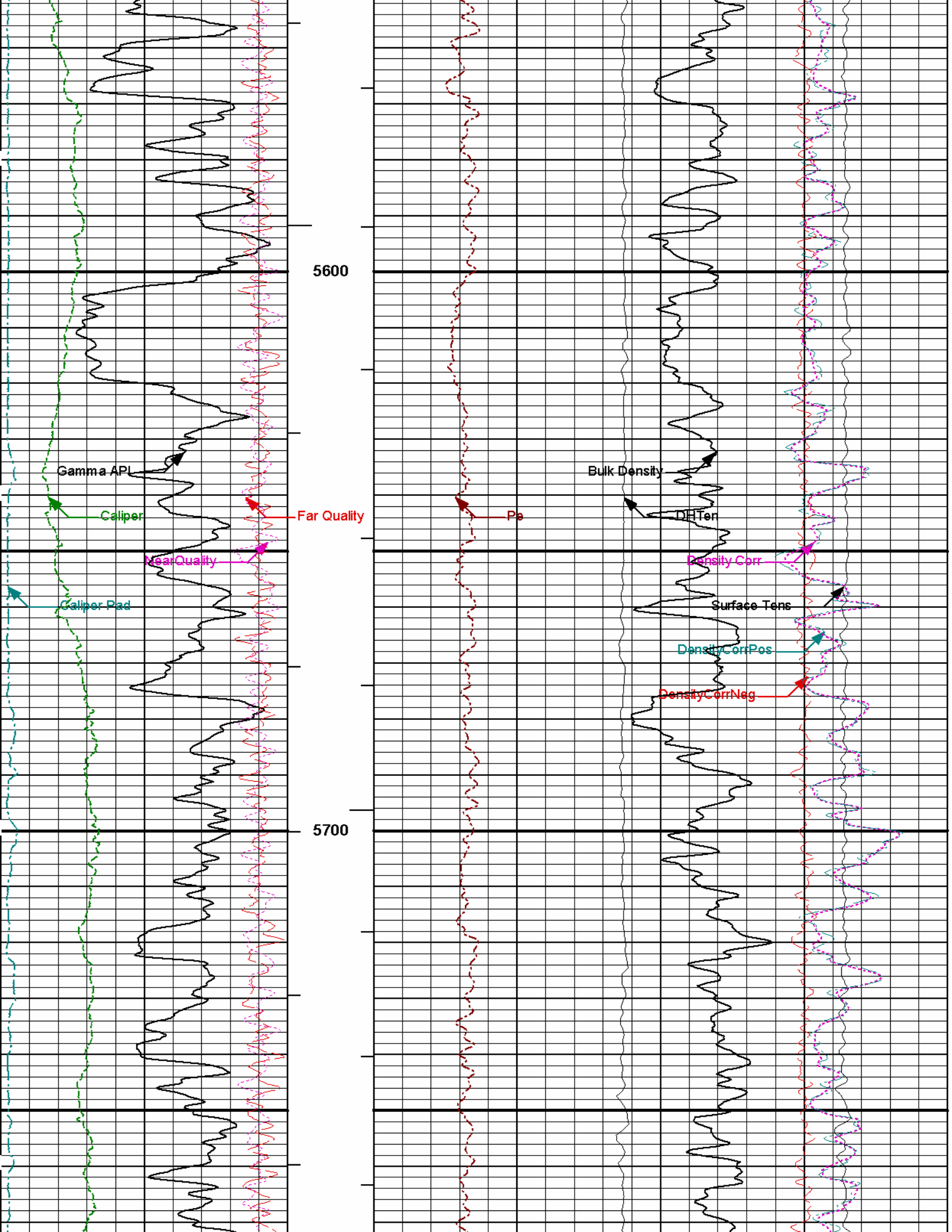


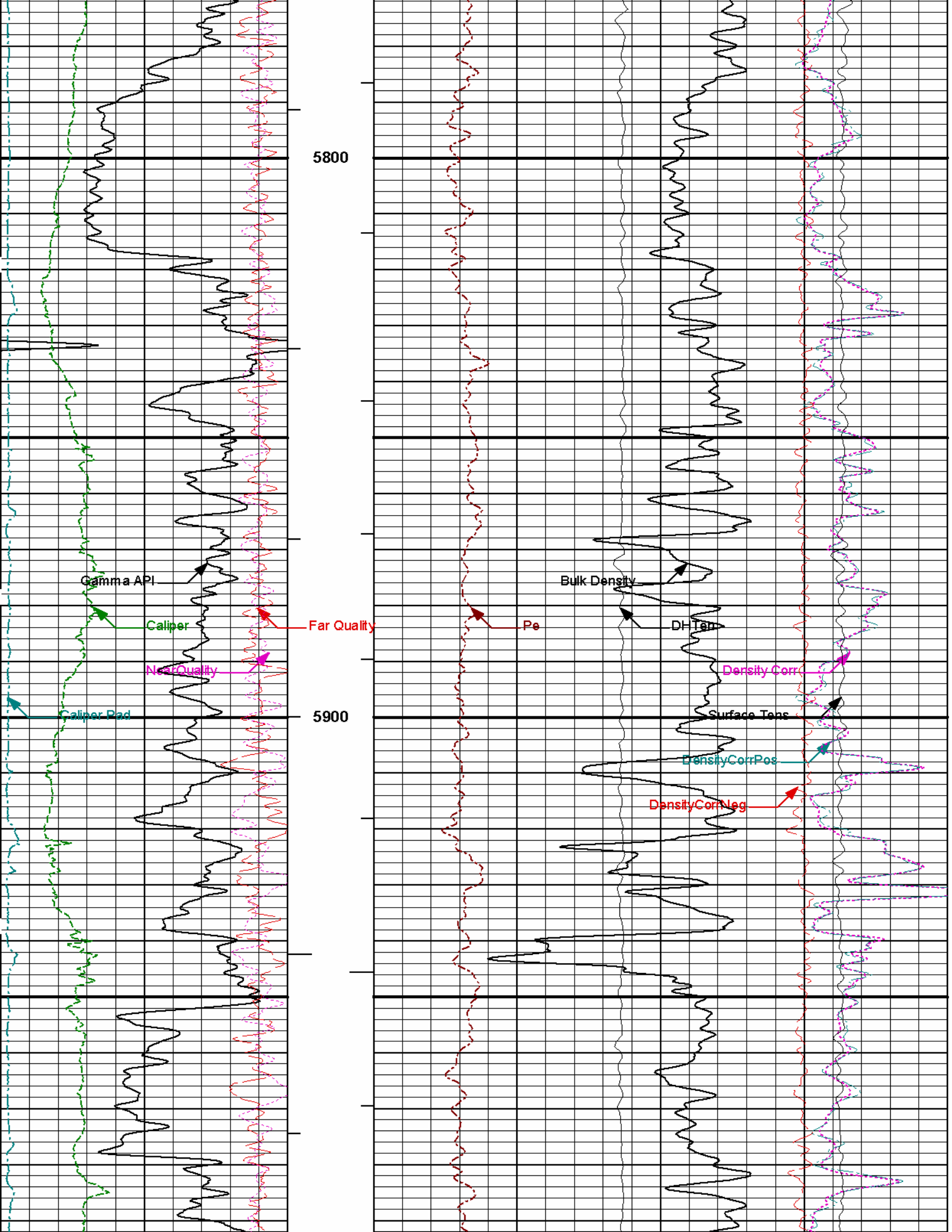
5400

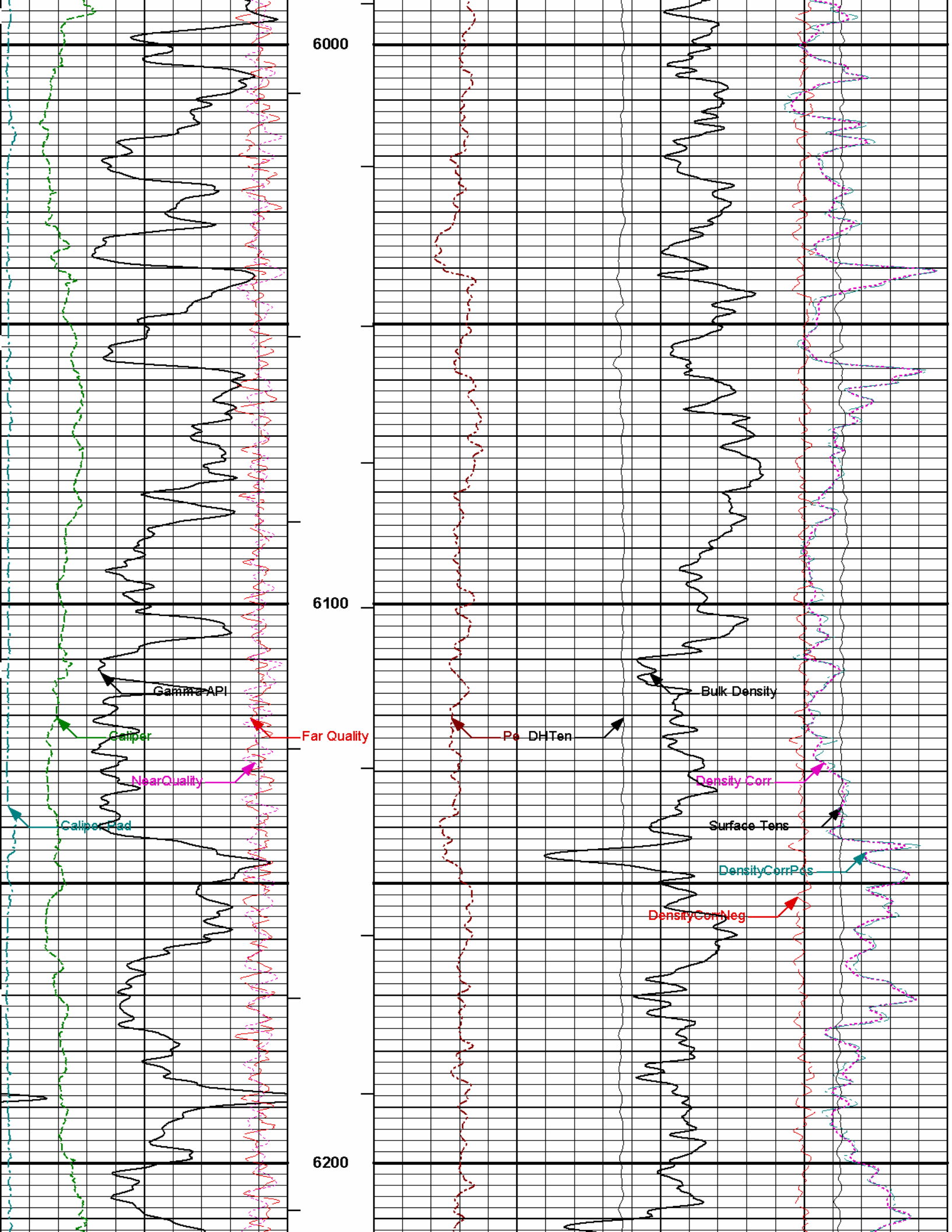
Far Quality

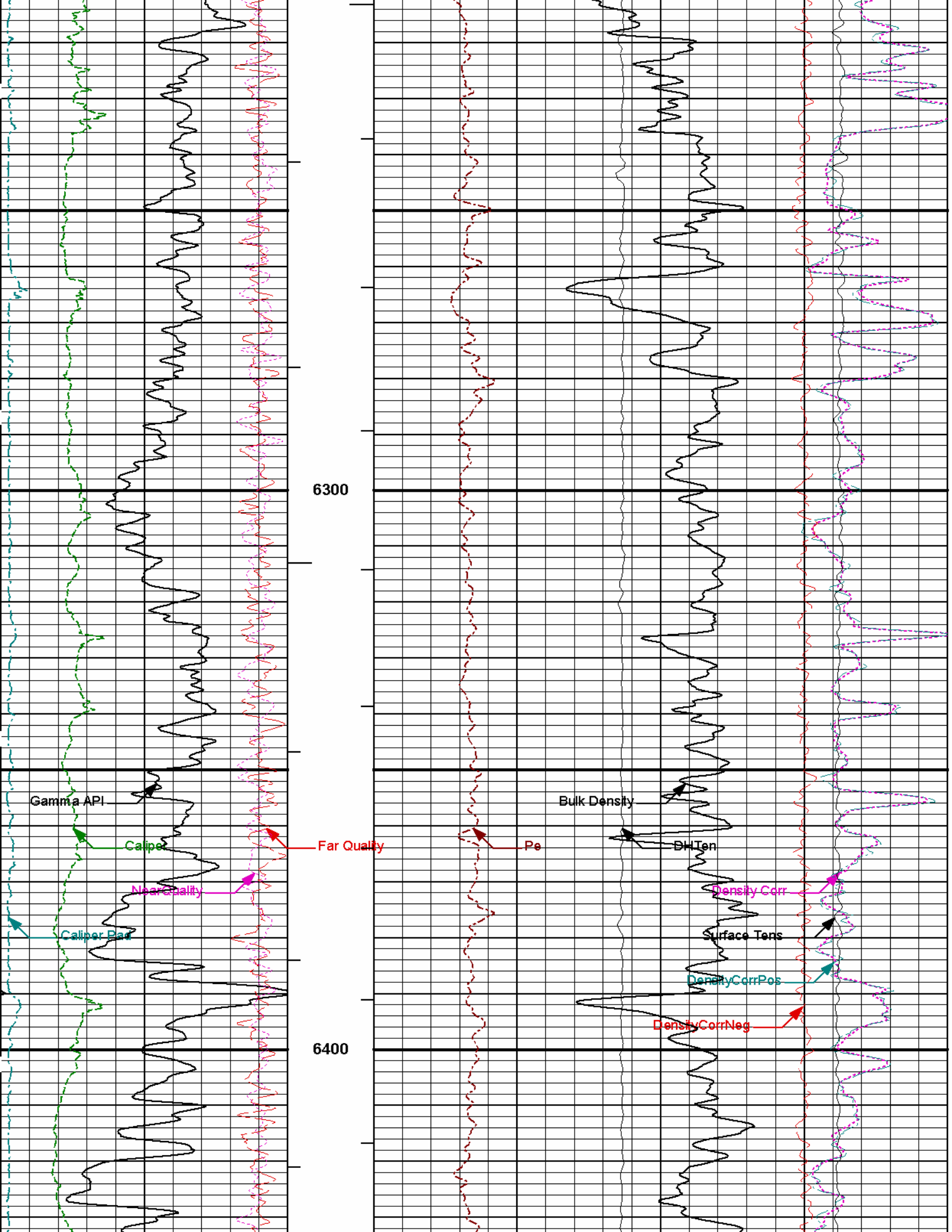
5500

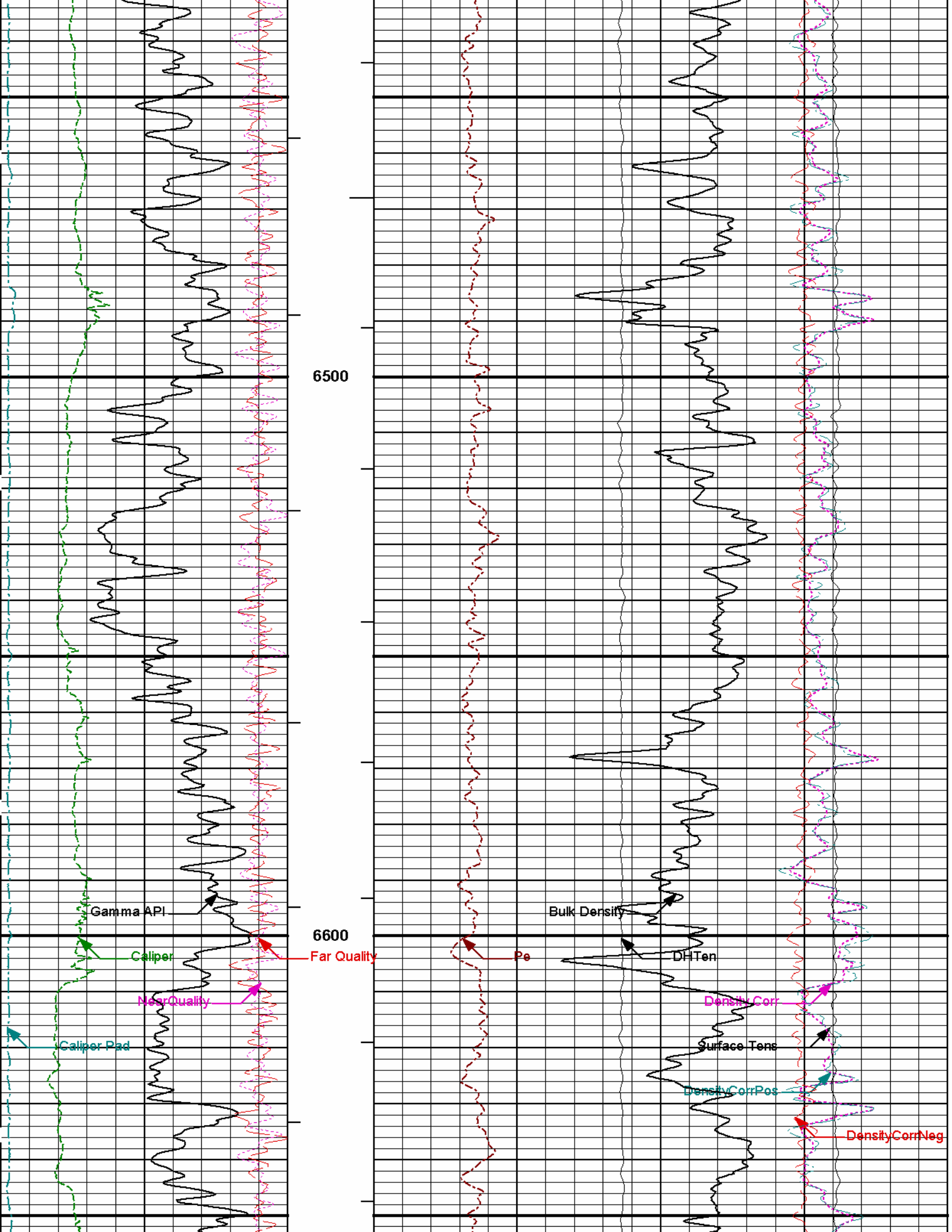


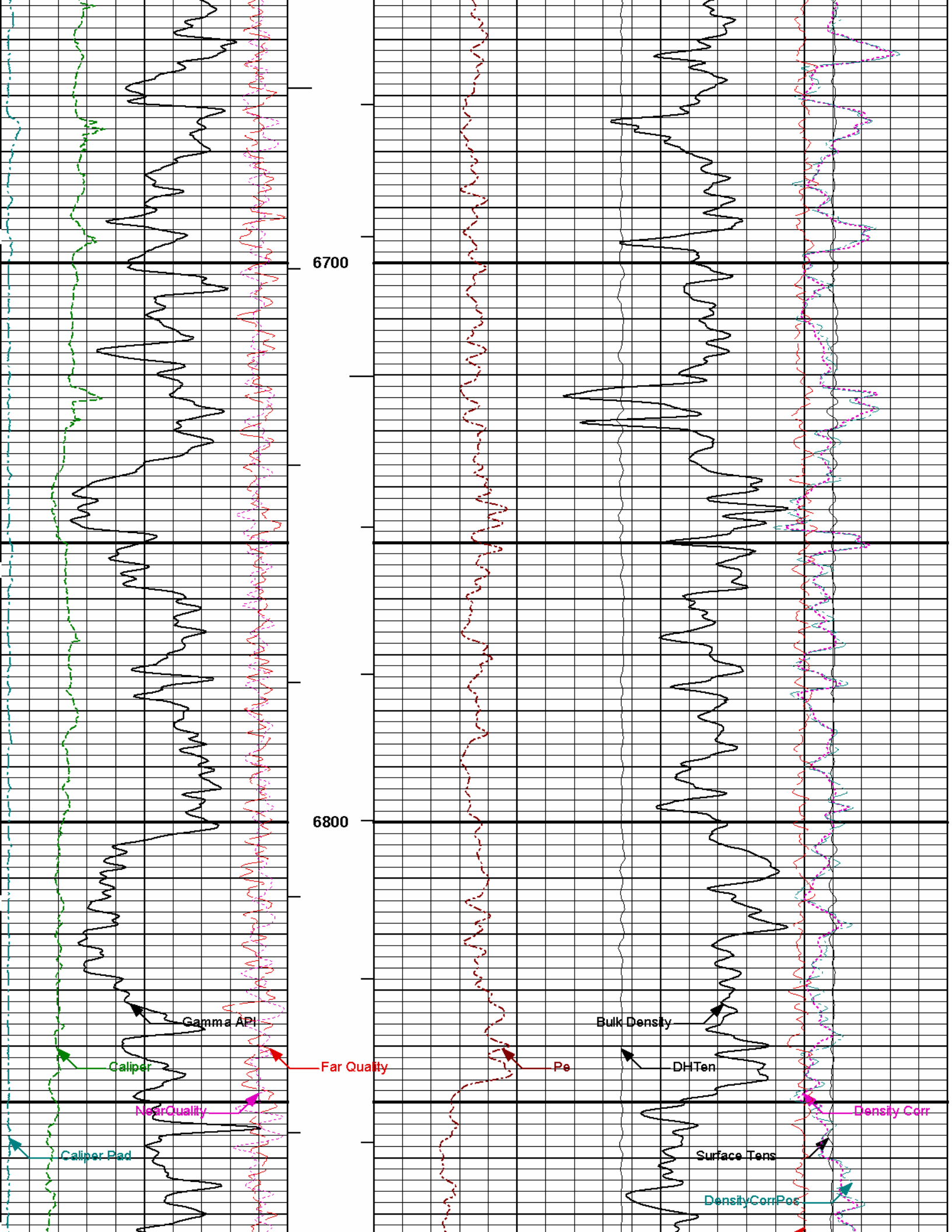


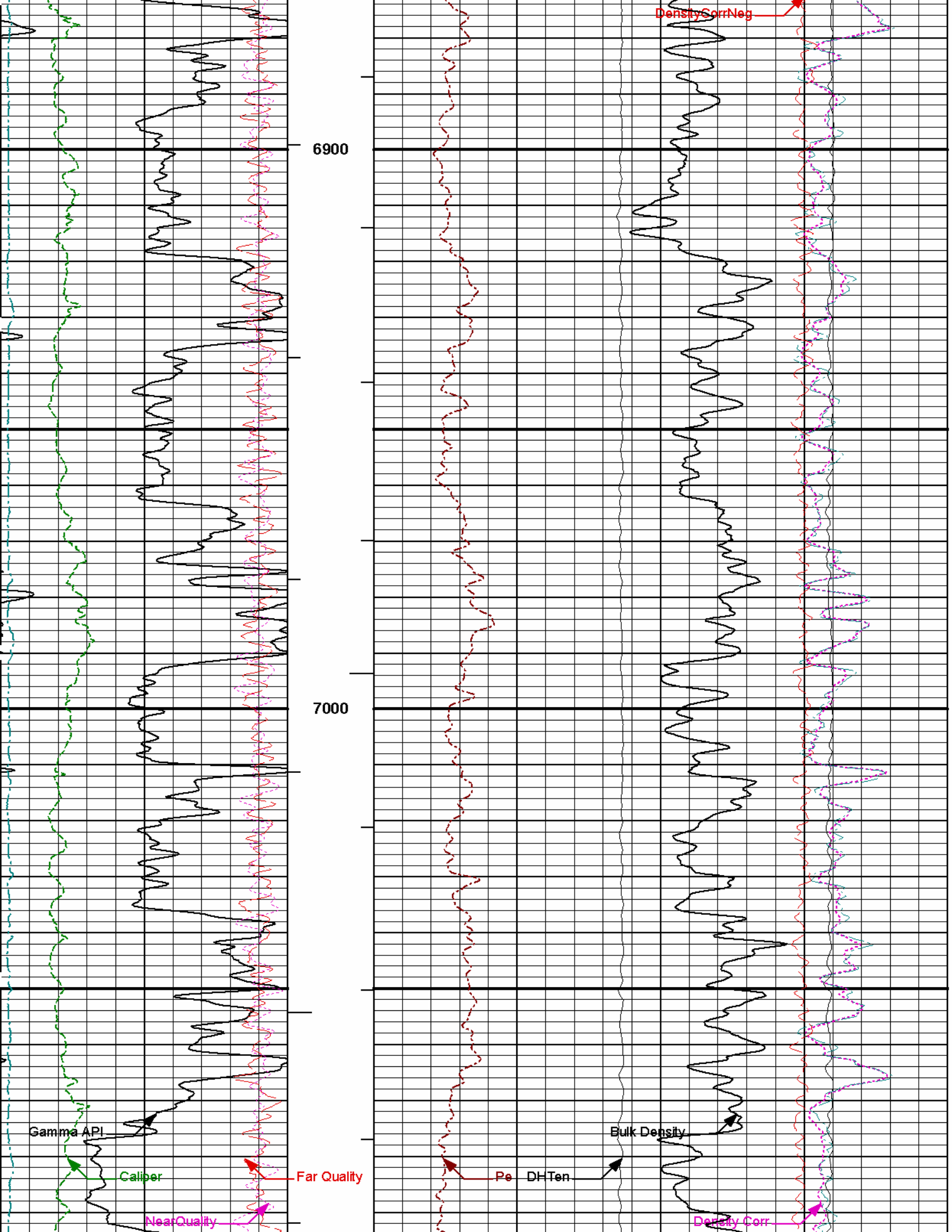


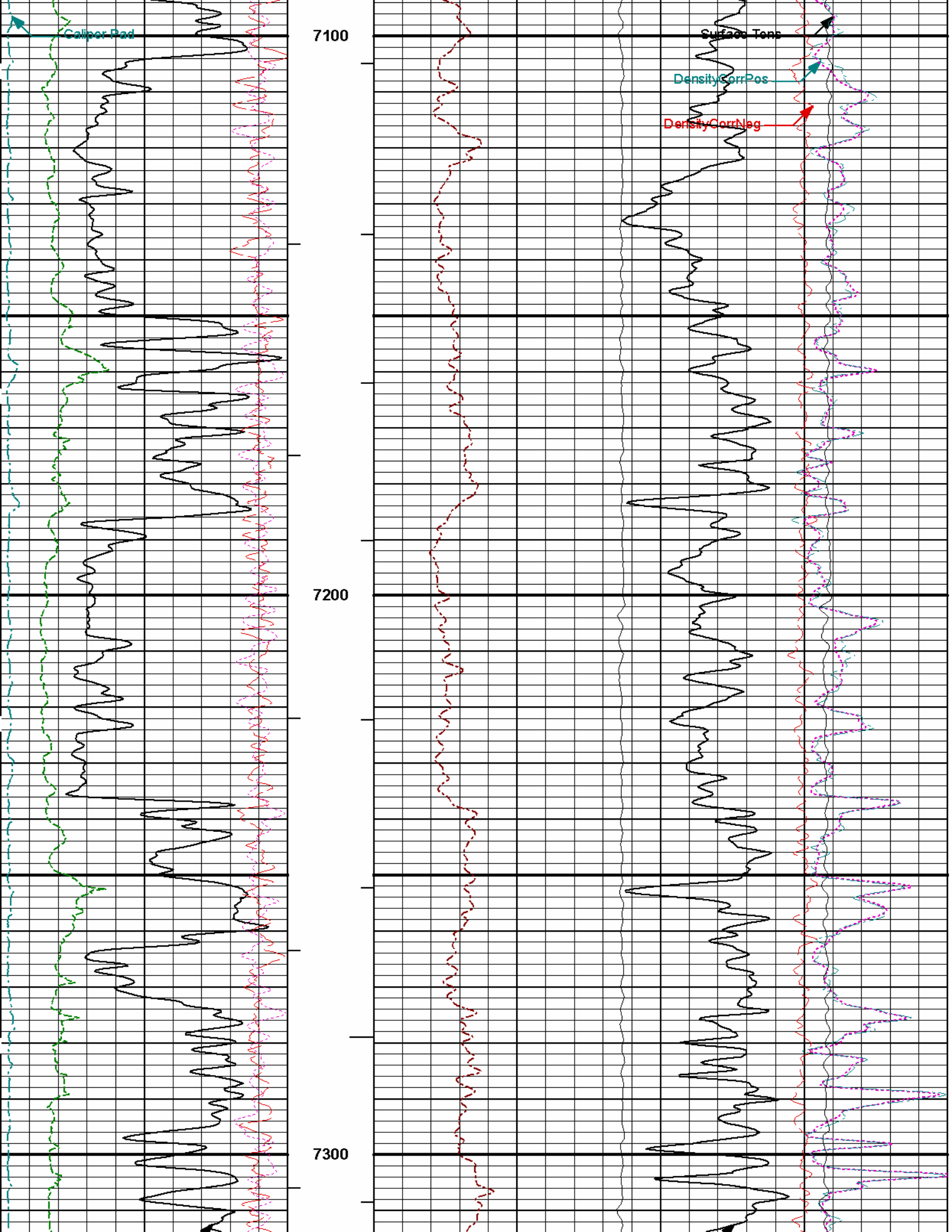


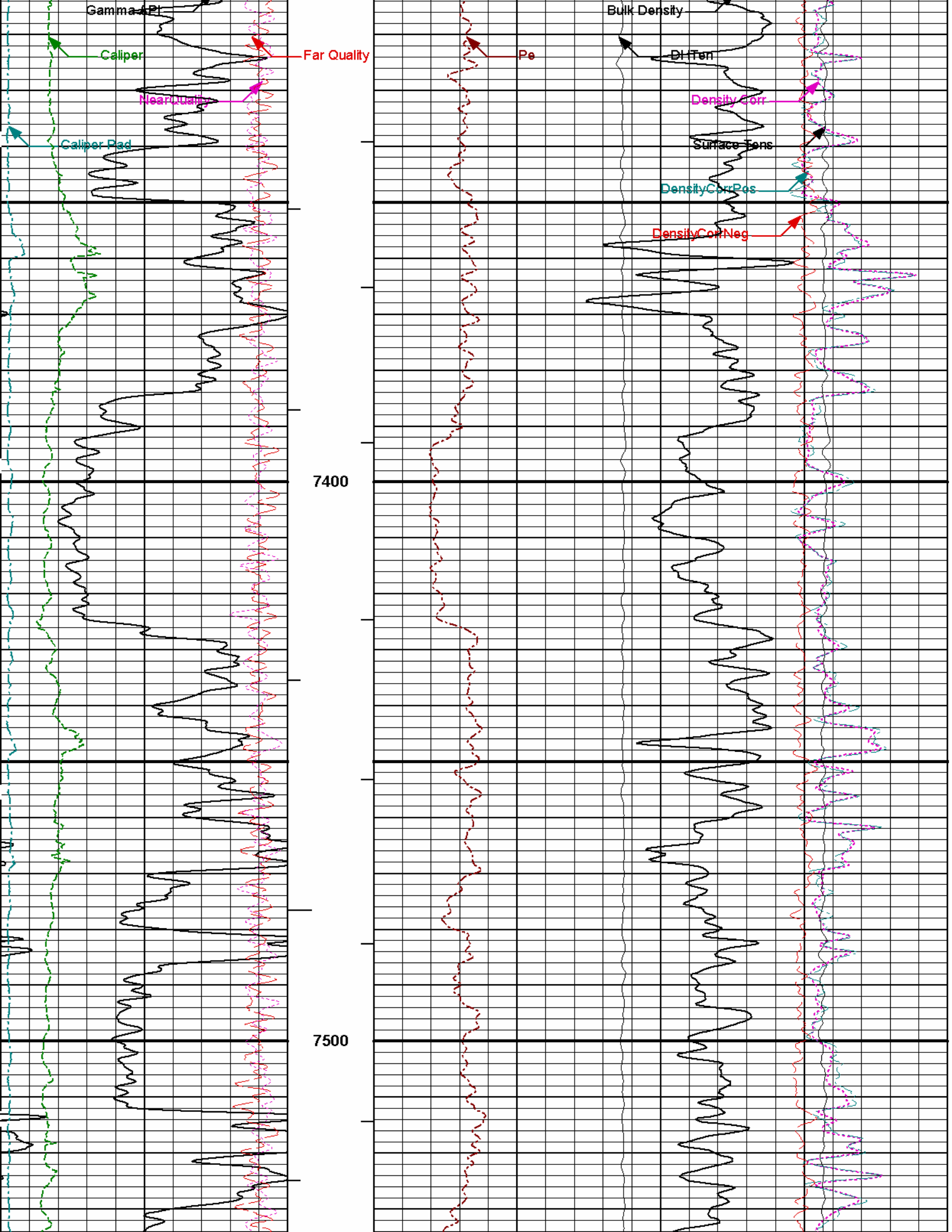


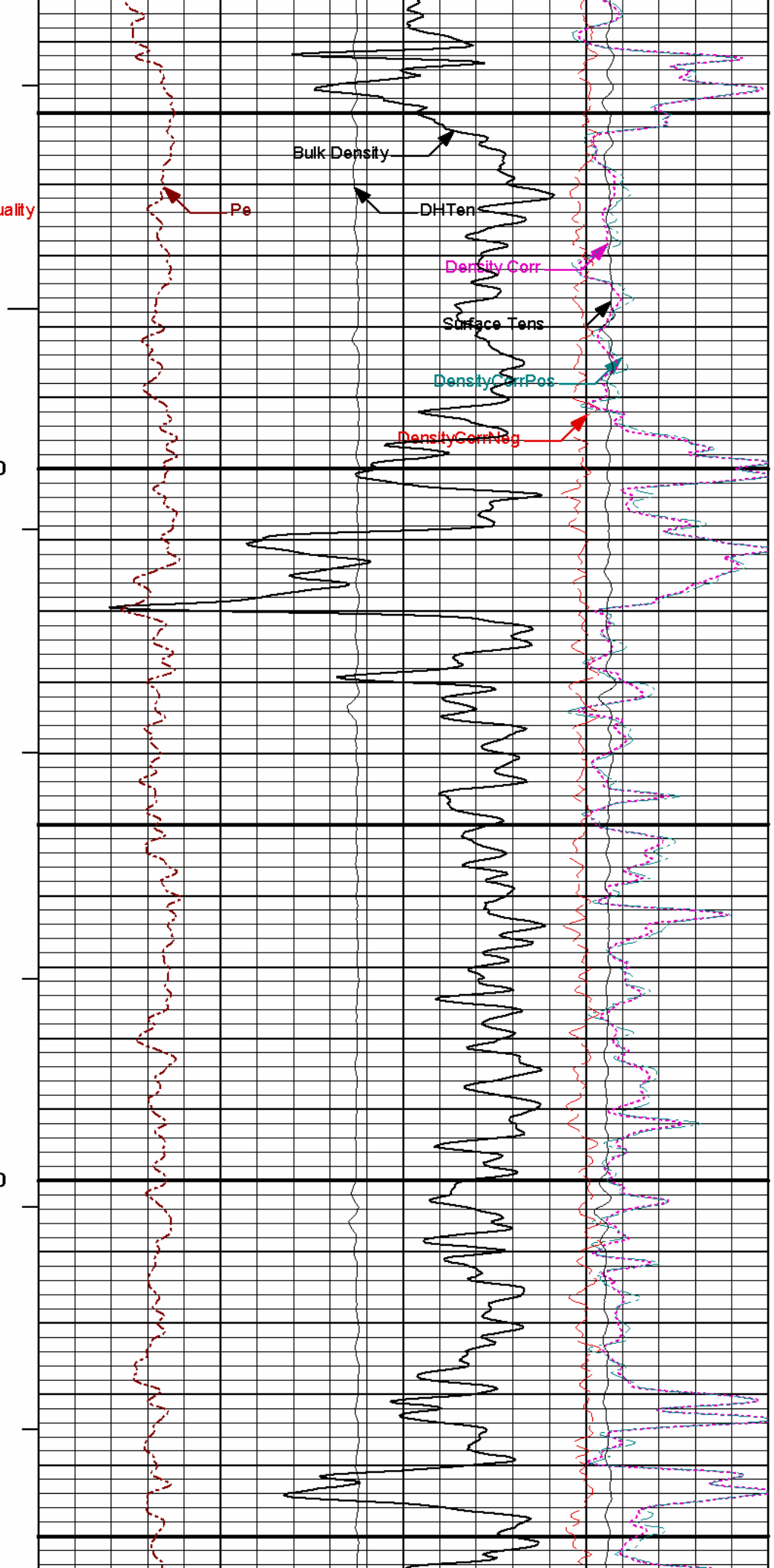
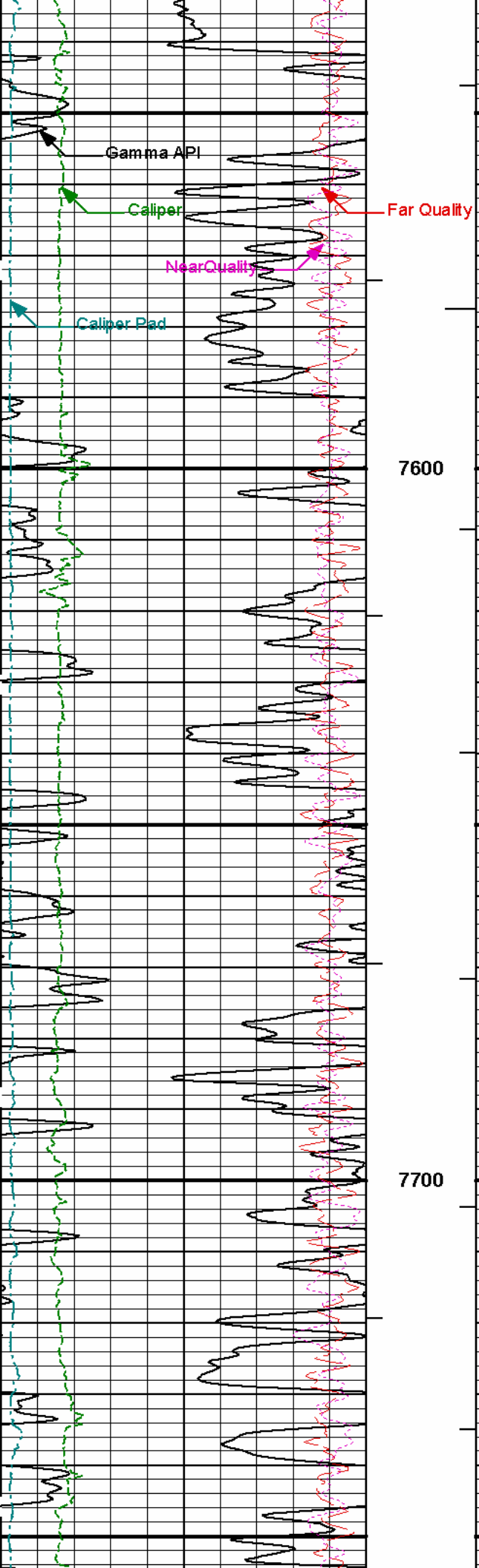


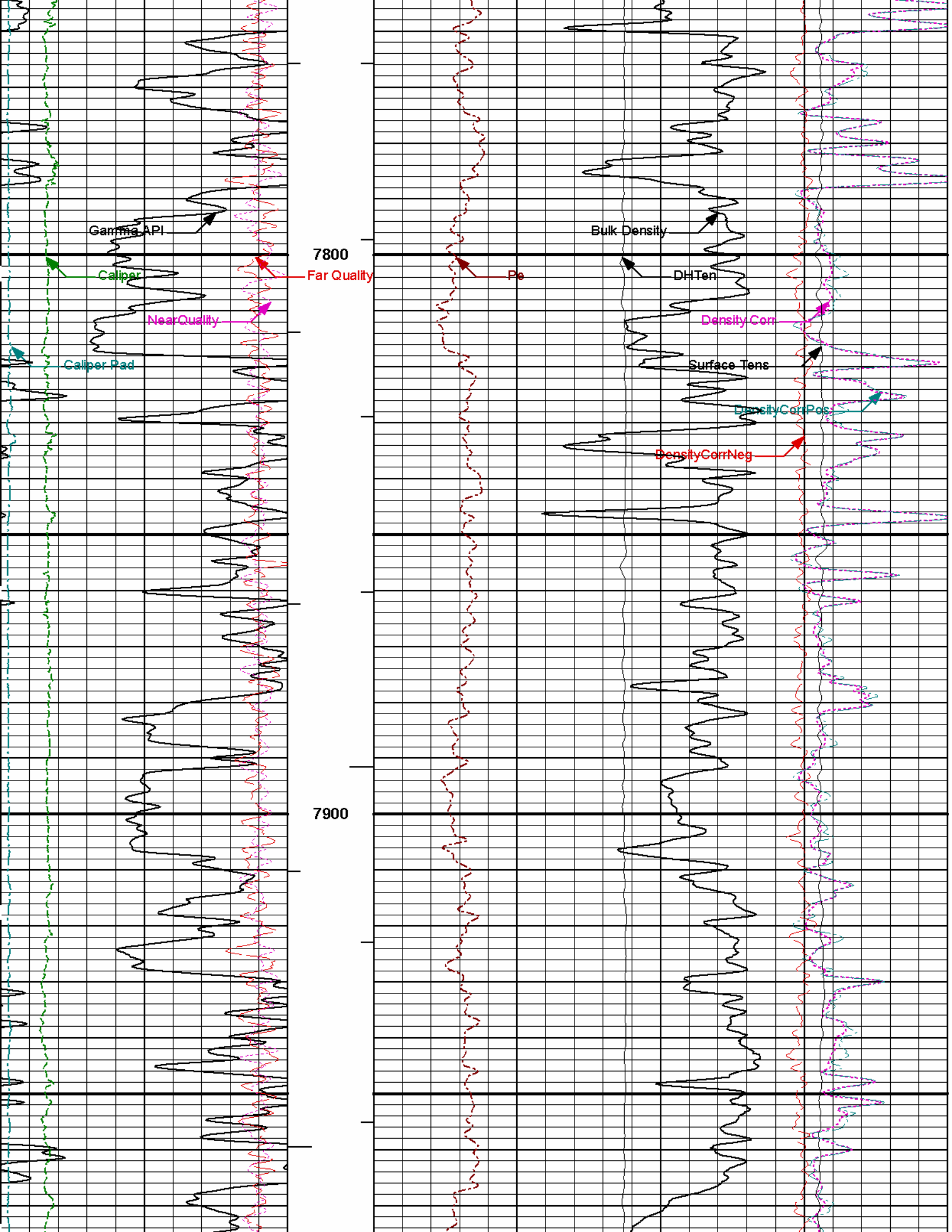


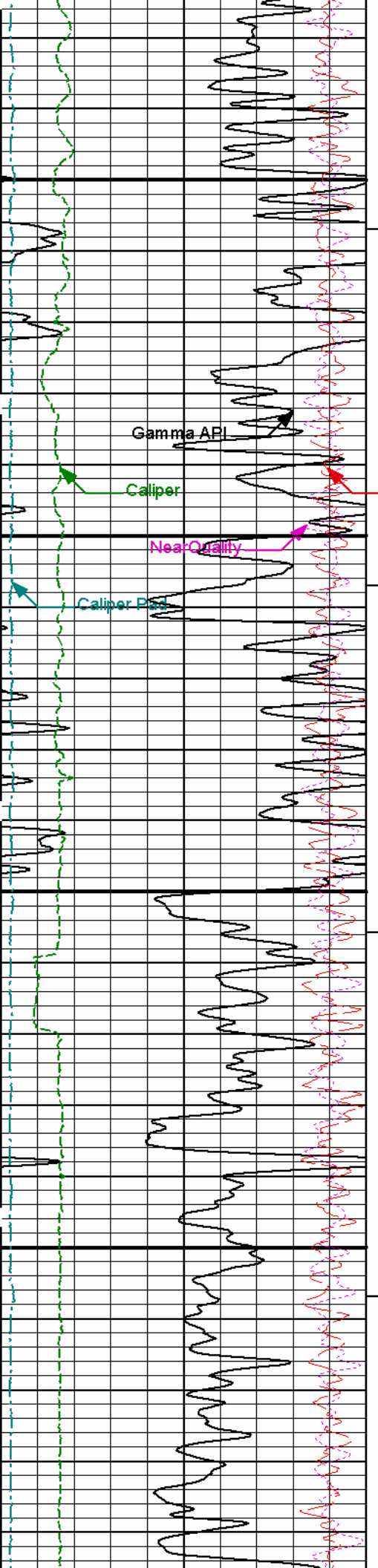












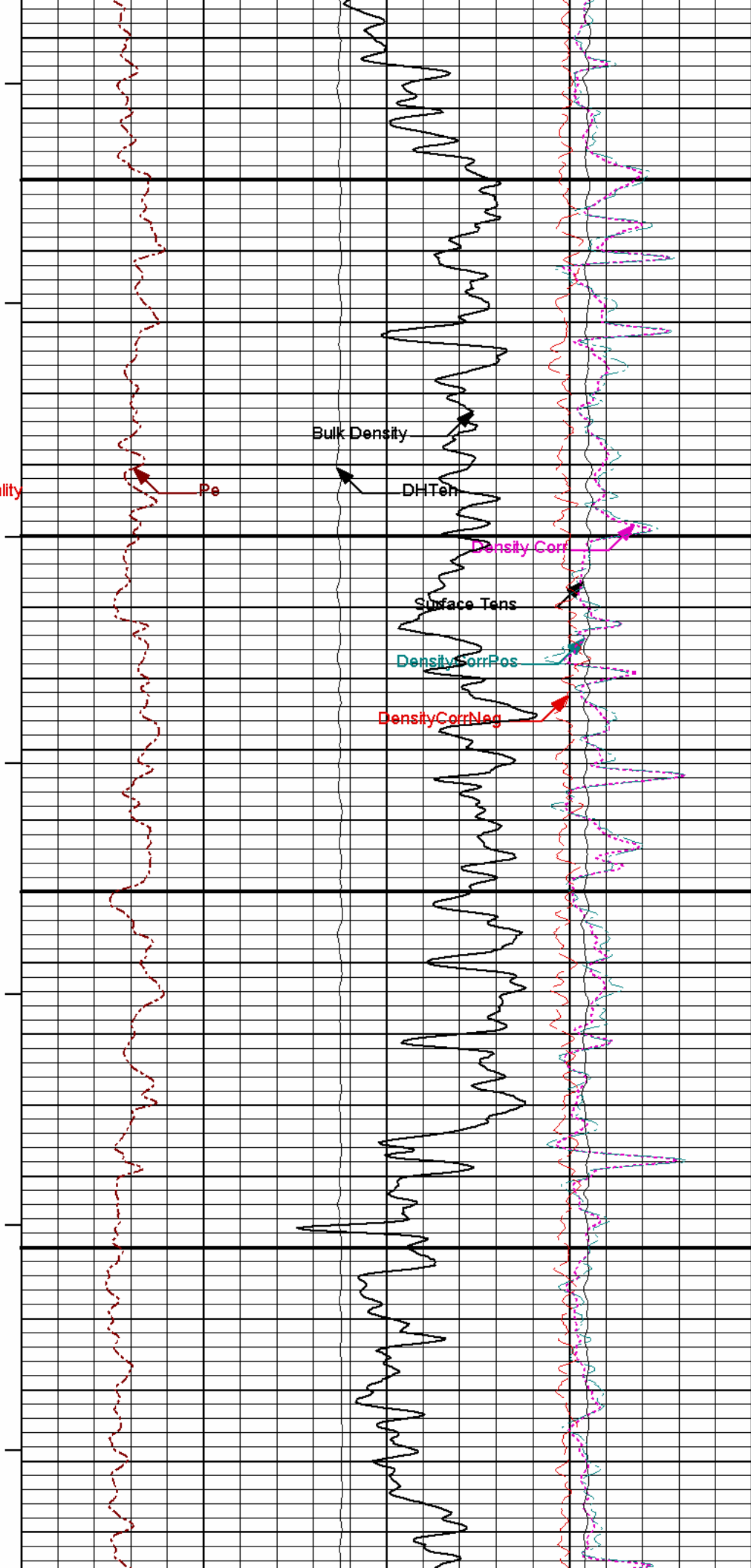
8000

Far Quality

Near Quality

Caliper Pos

8100



Bulk Density

DHTen

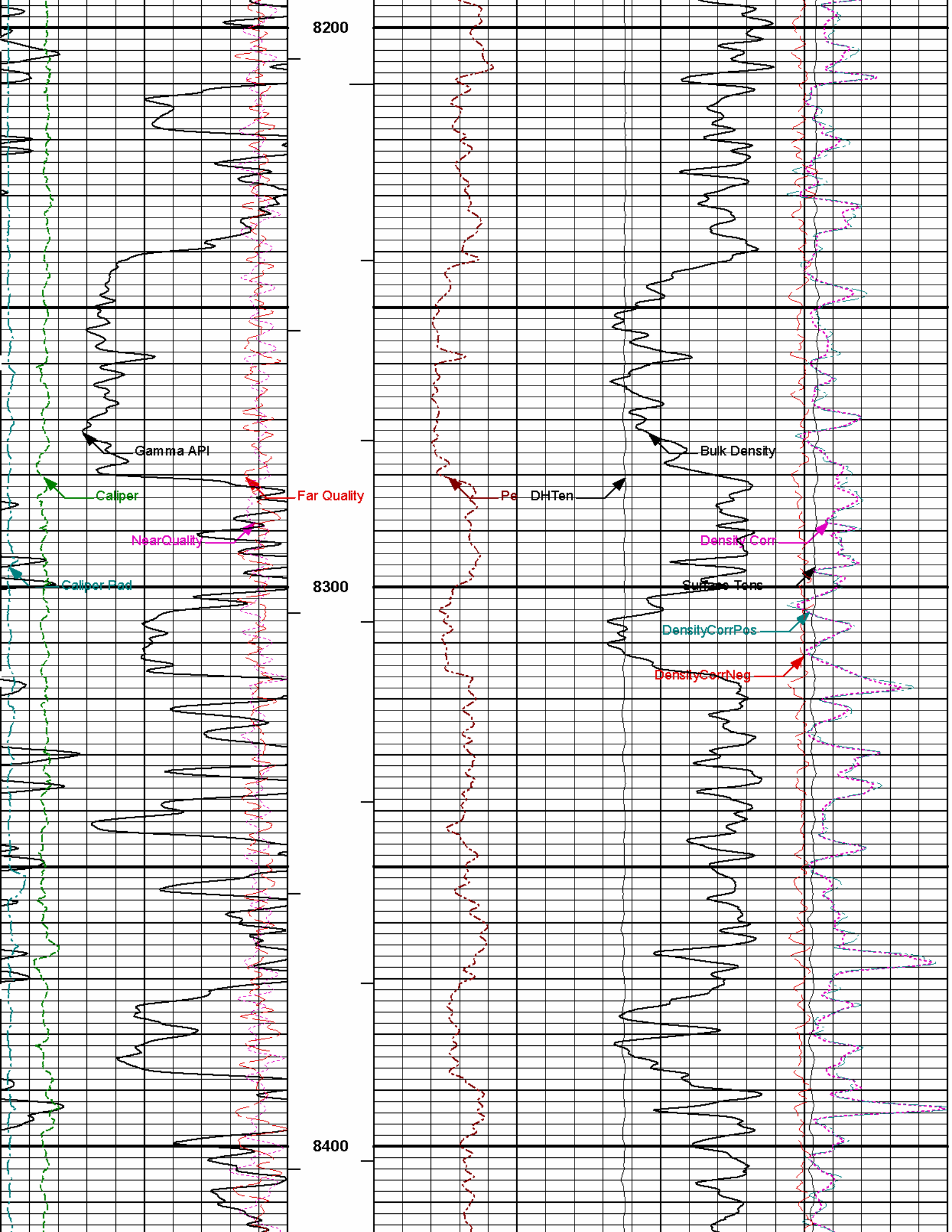
Density Corr

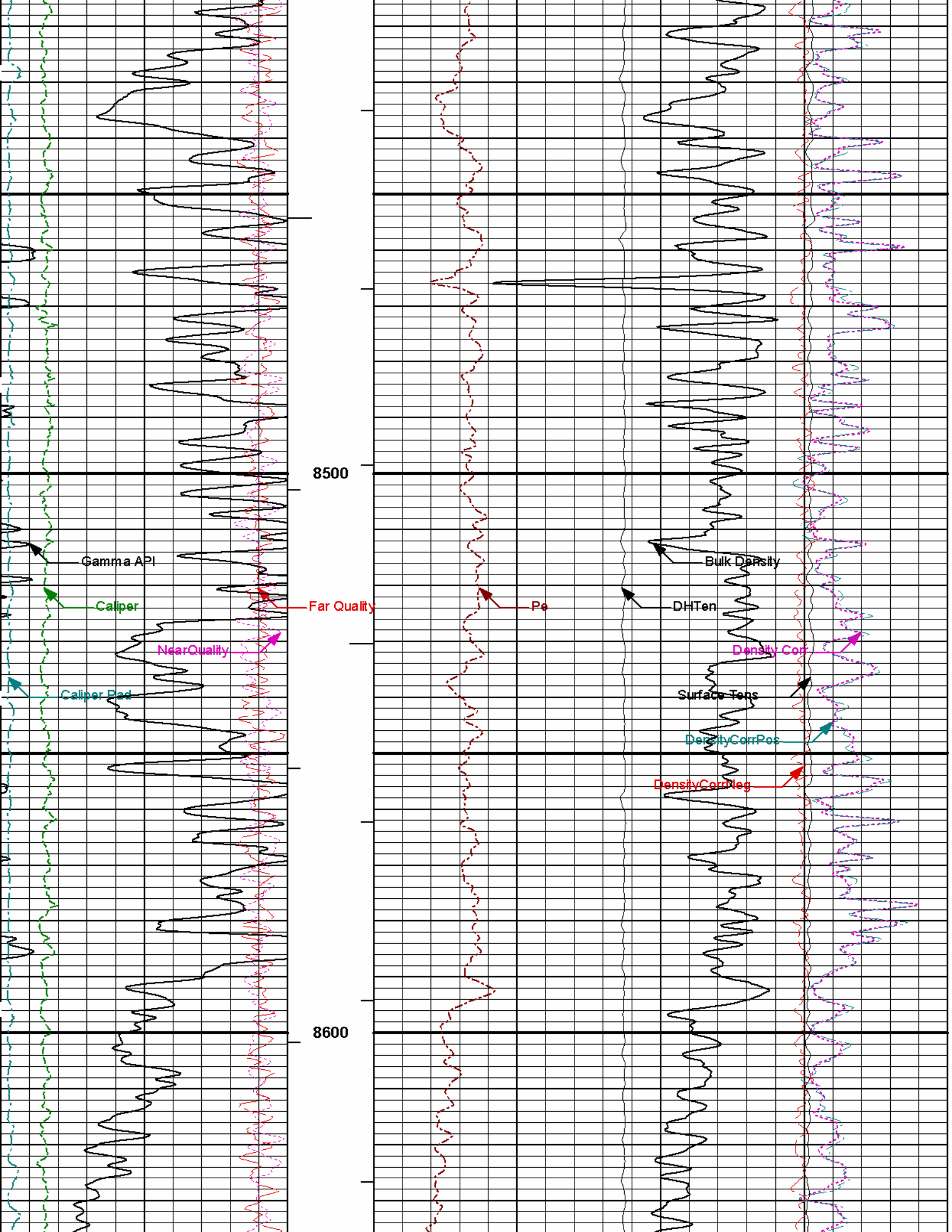
Surface Tens

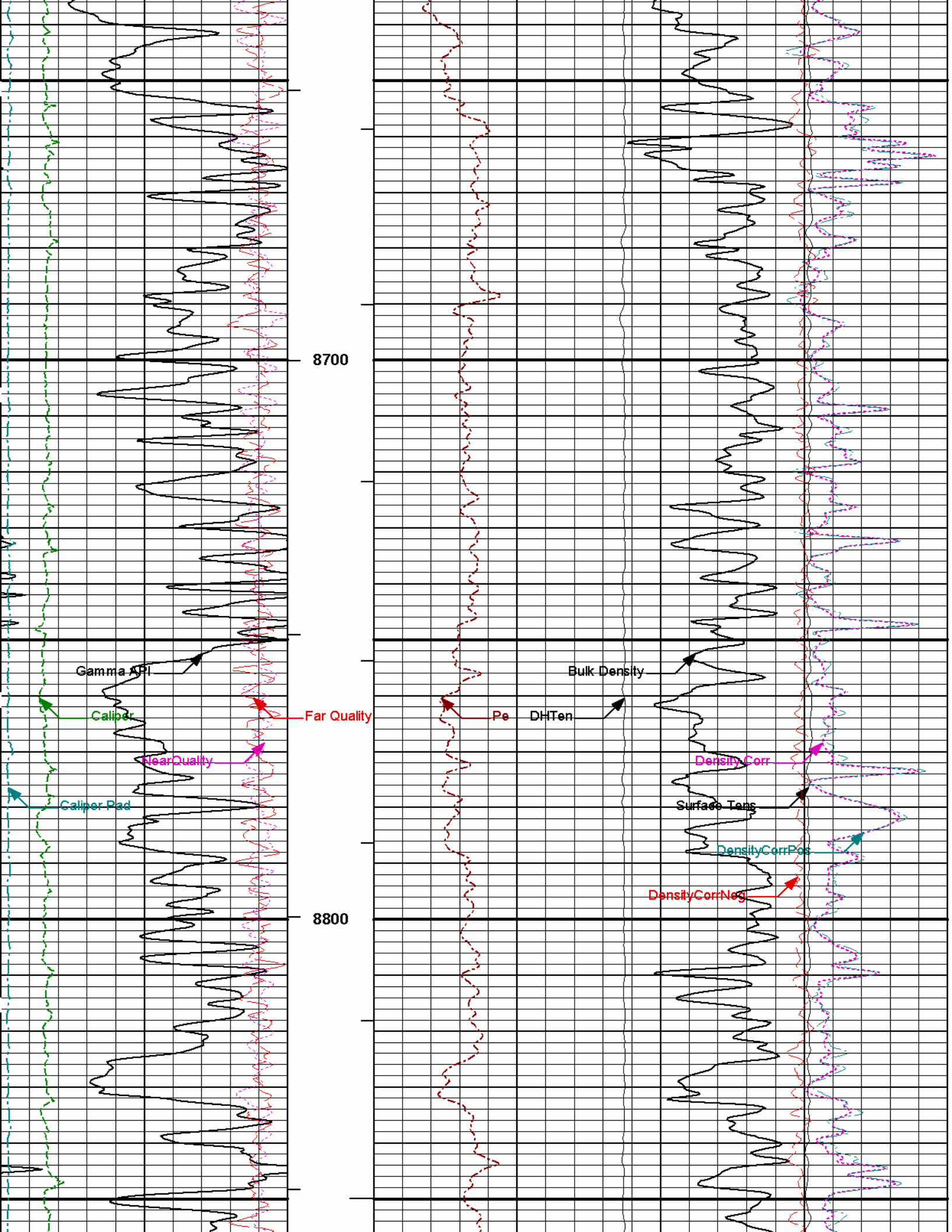
Density Corr Pos

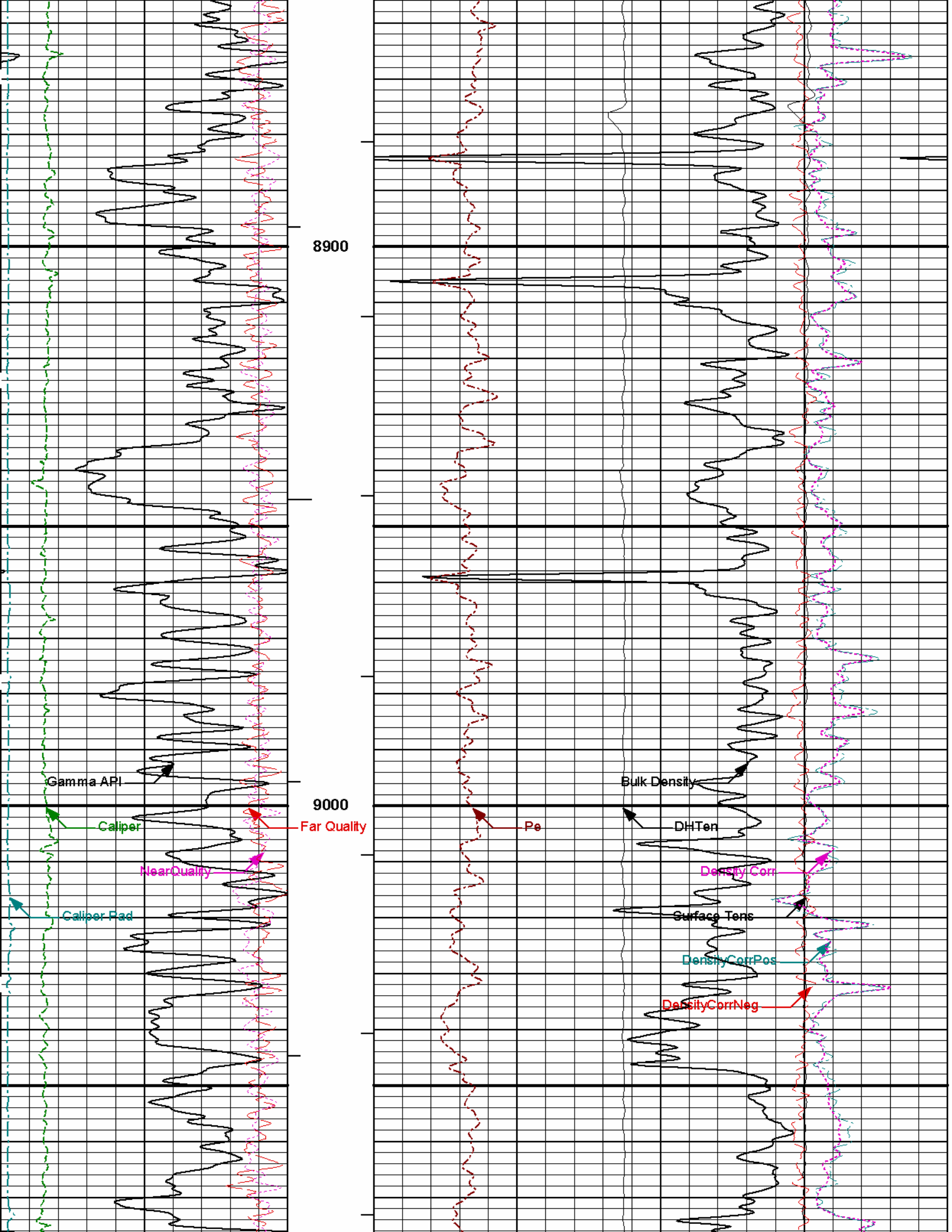
Density Corr Neg

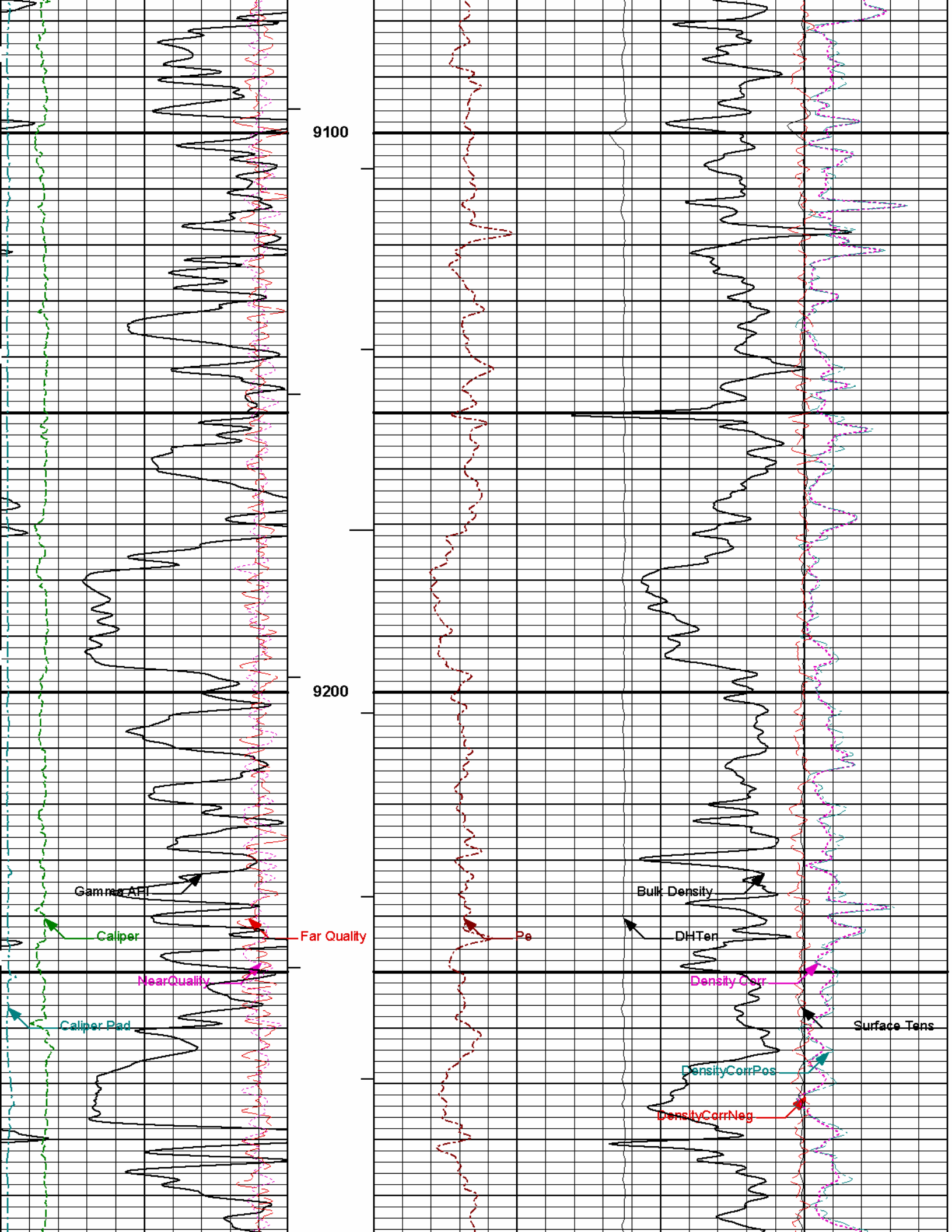
Pe

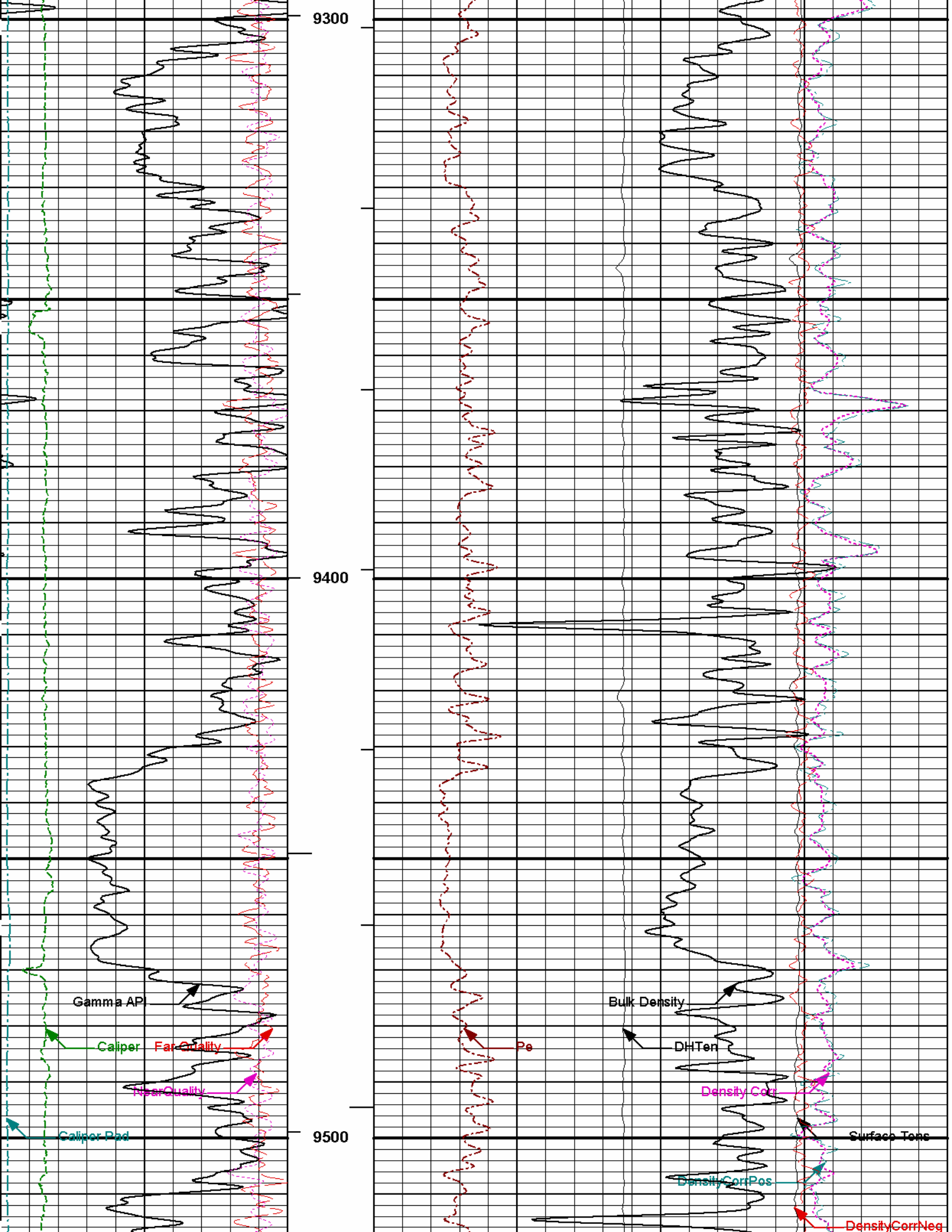


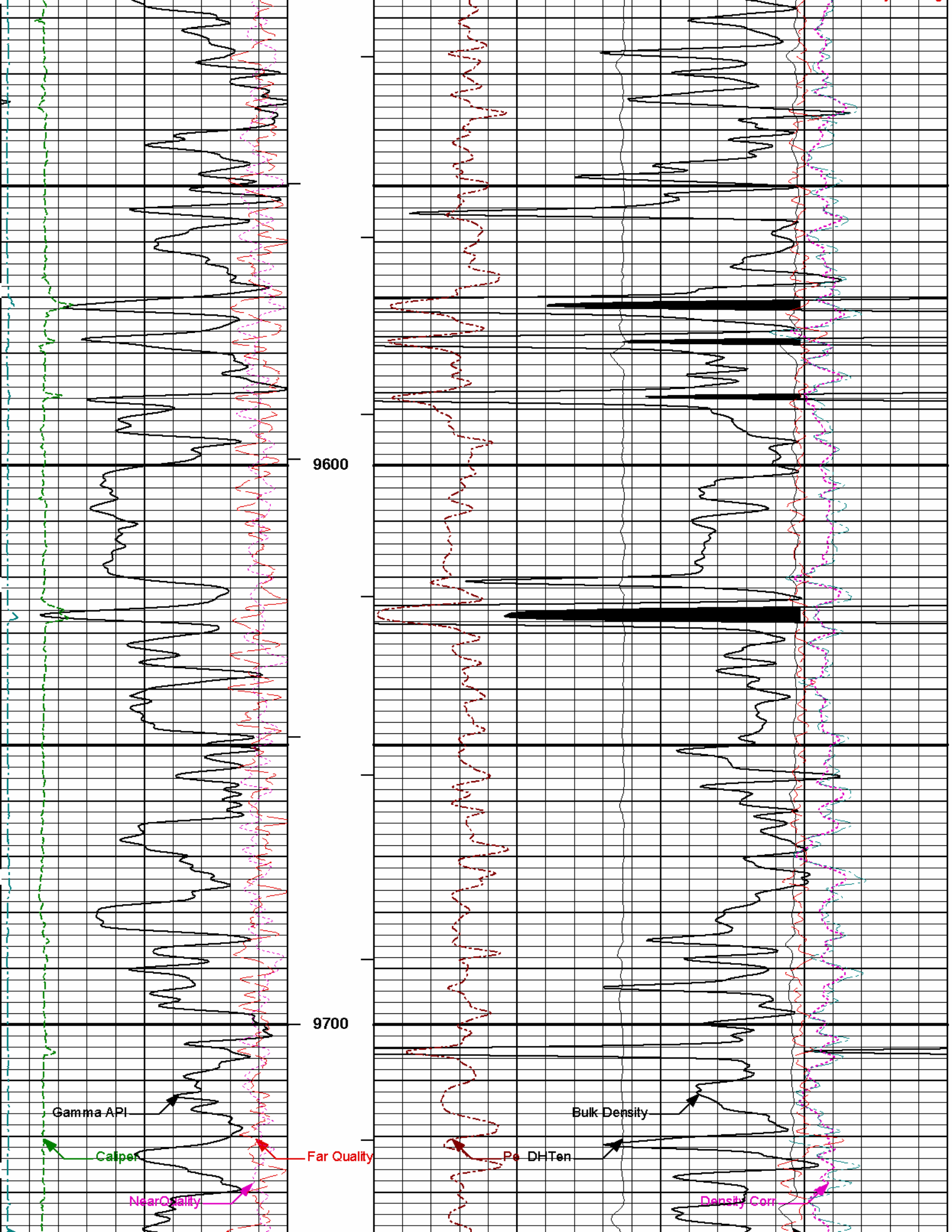


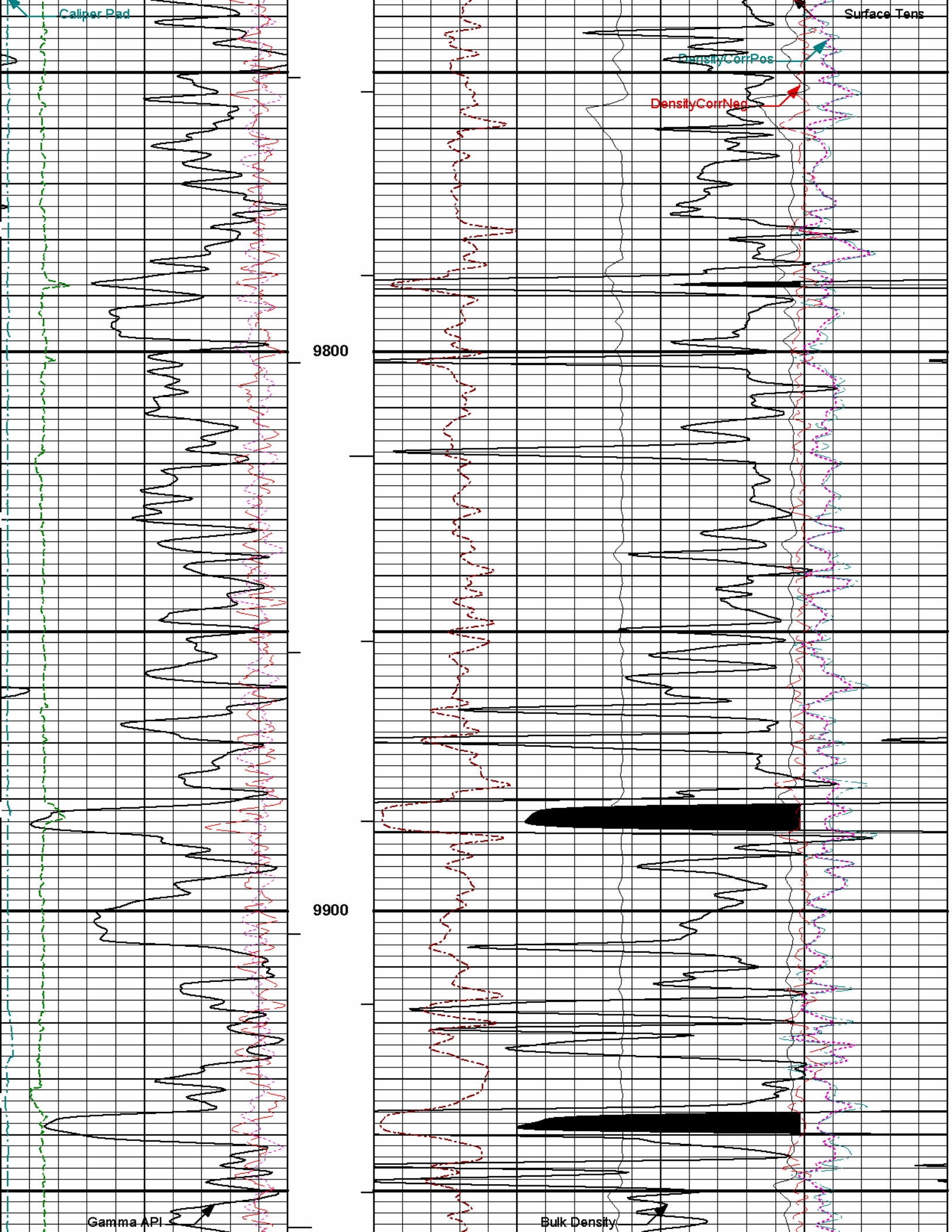


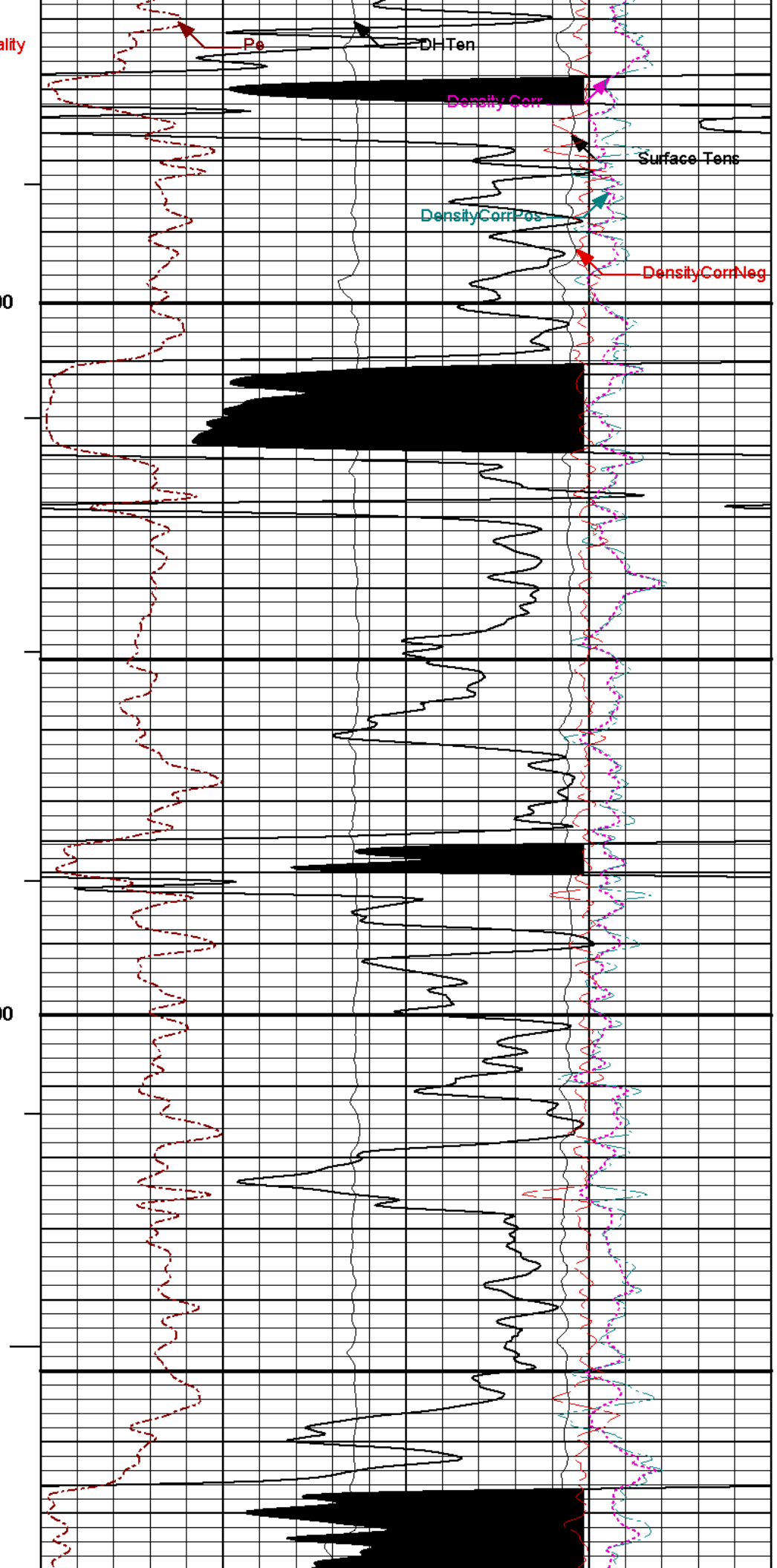
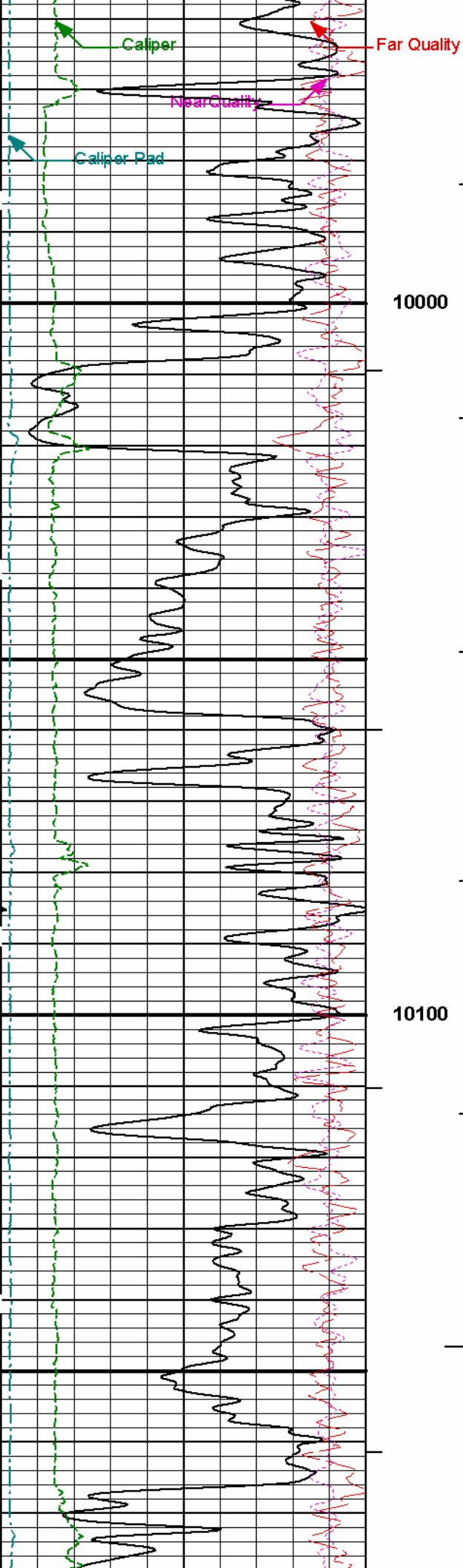


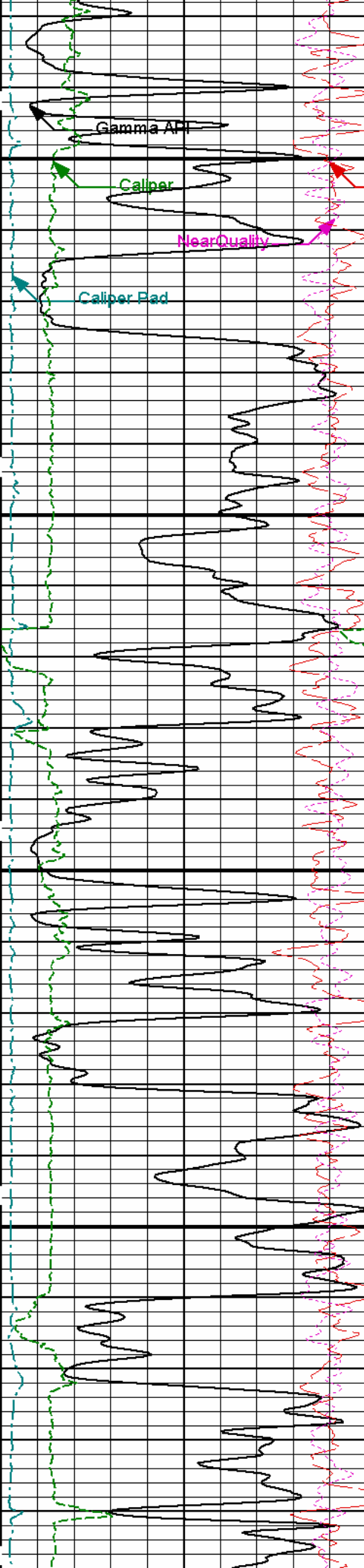








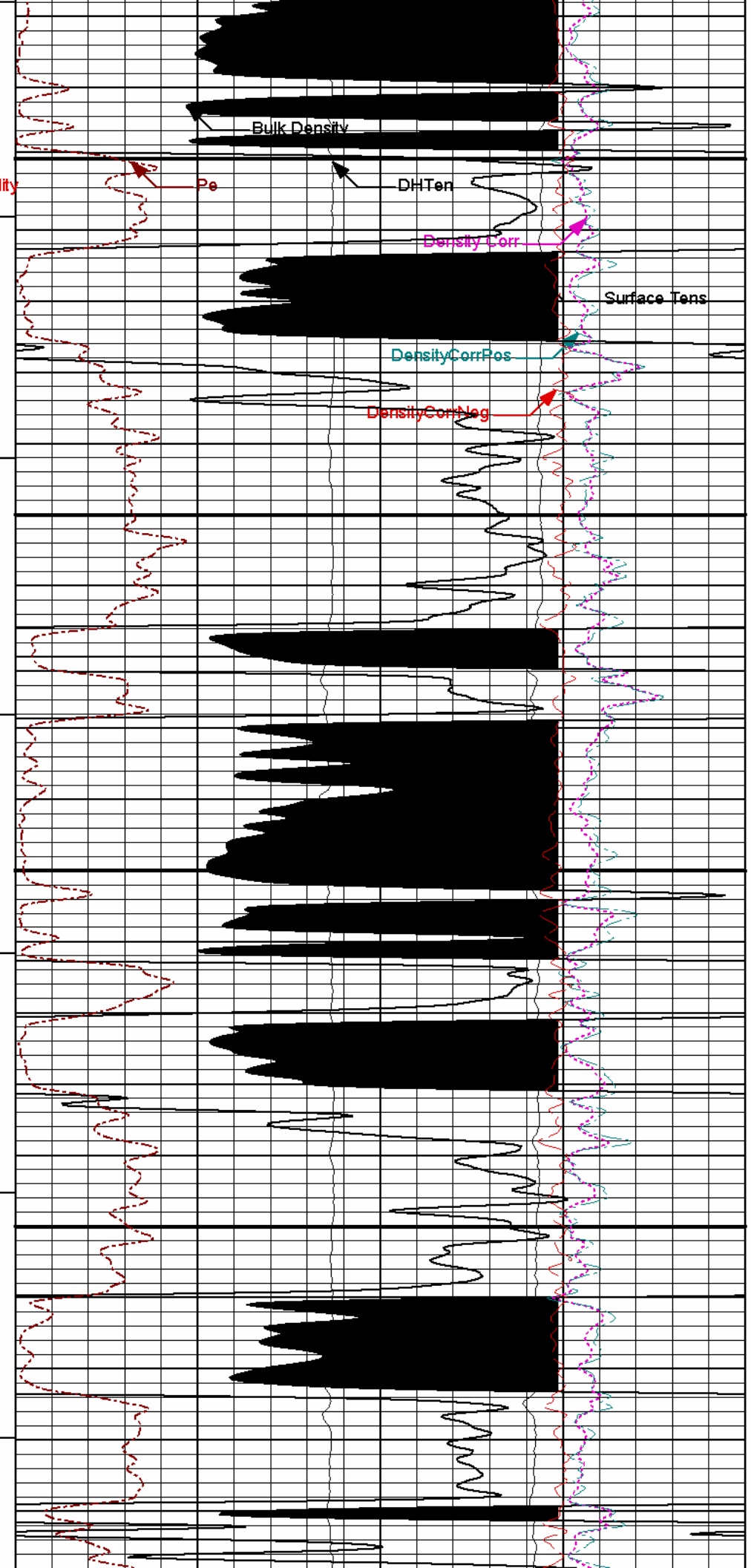




10200

Far Quality

10300



Bulk Density

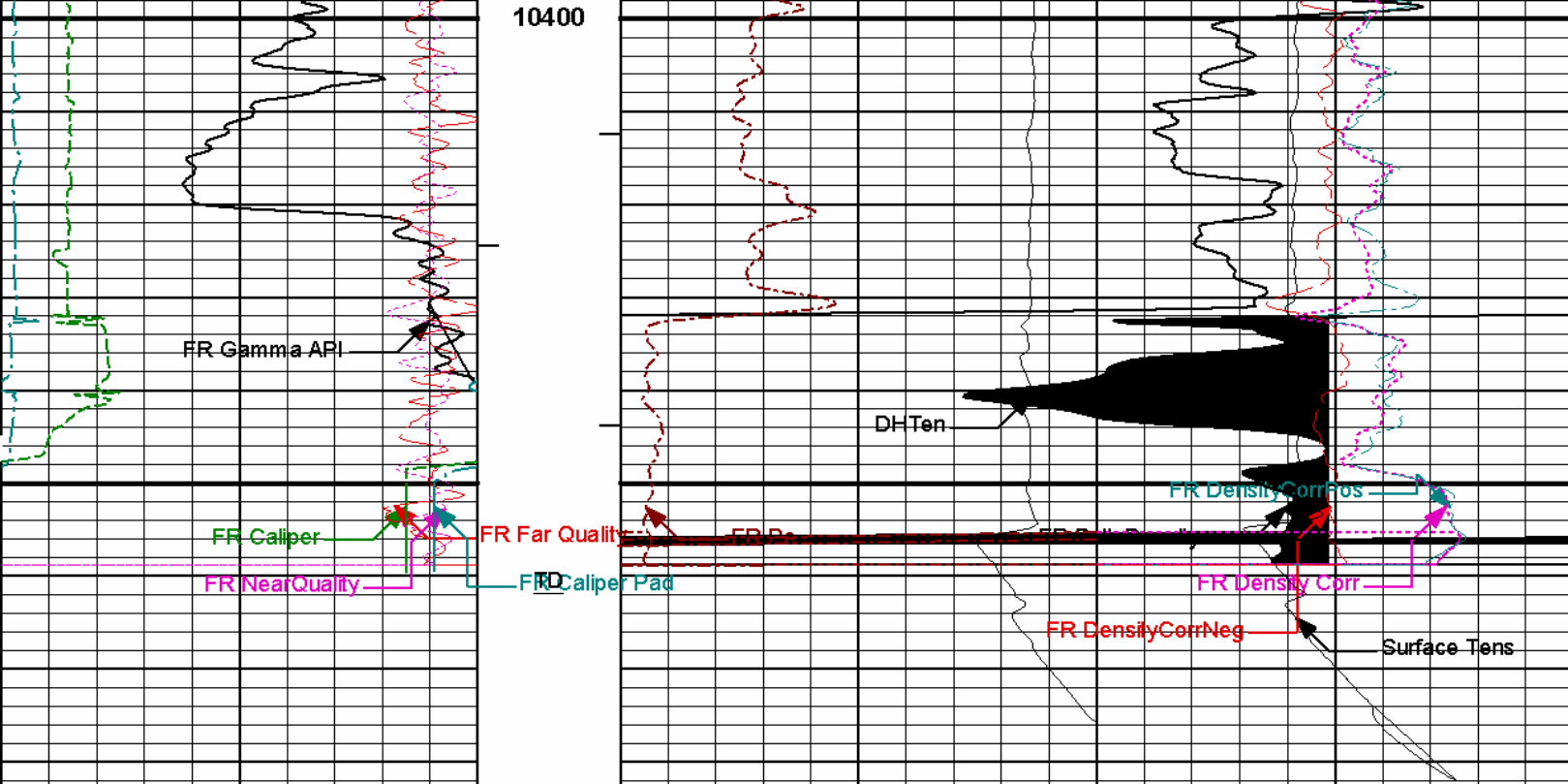
DHTen

Density Corr

Surface Tens

Density Corr Pos

Density Corr Neg



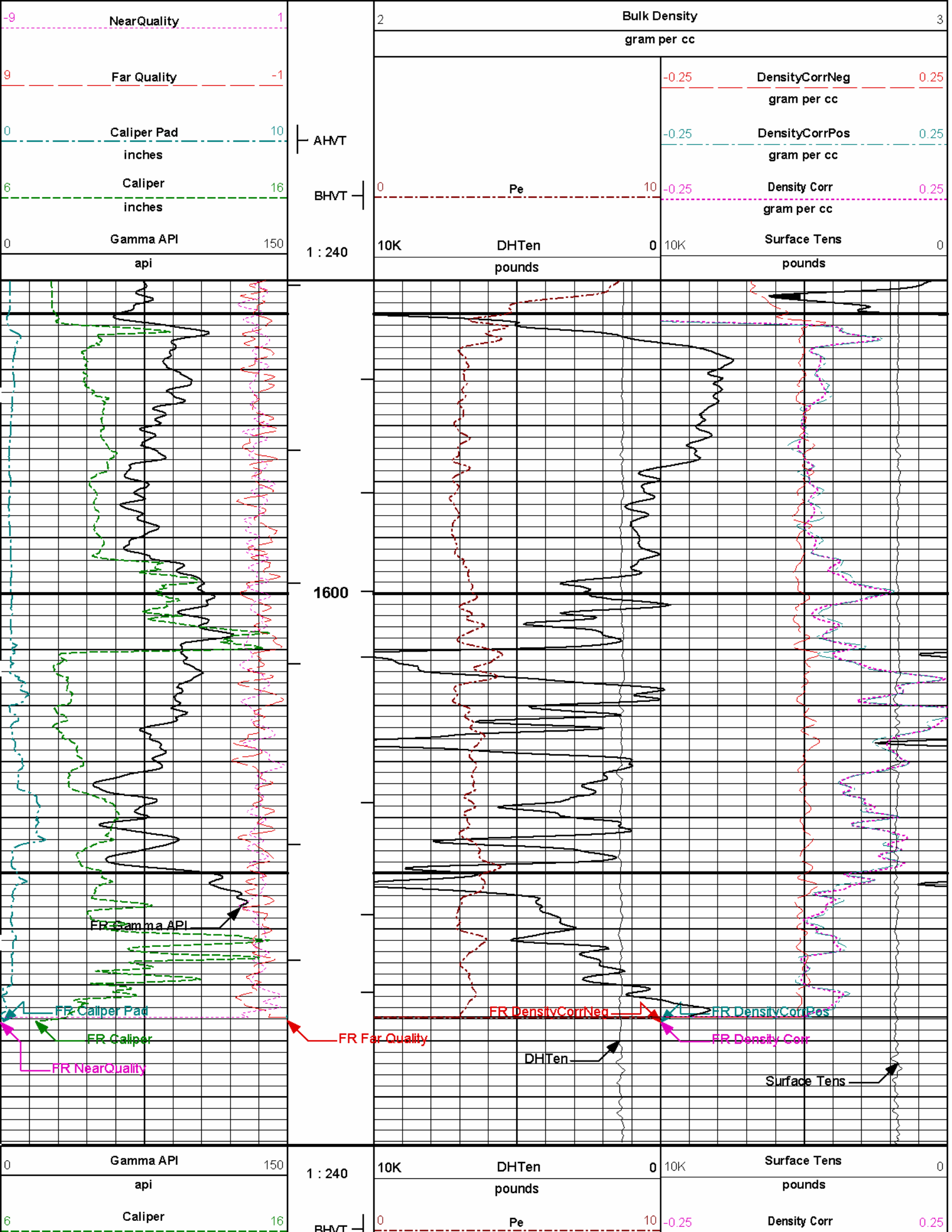
0	Gamma API	150	1 : 240	10K	DHTen	0	10K	Surface Tens	0
	api				pounds			pounds	
6	Caliper	16	BHVT	0	Pe	10	-0.25	Density Corr	0.25
	inches							gram per cc	
0	Caliper Pad	10	AHVT				-0.25	DensityCorrPos	0.25
	inches							gram per cc	
9	Far Quality	-1					-0.25	DensityCorrNeg	0.25
								gram per cc	
-9	NearQuality	1		2				Bulk Density	3
								gram per cc	

HALLIBURTON Plot Time: 01-Apr-09 05:11:39
 Plot Range: 1542 ft to 10482.7 ft
 Data: LAR_S_LE_18_05DIWell Based\DAQ-0001-0031*
 Plot File: \\POR\BP_5IN_RHOB

MAIN PASS 5" = 100'

HALLIBURTON Plot Time: 01-Apr-09 05:11:39
 Plot Range: 1544 ft to 1698.5 ft
 Data: LAR_S_LE_18_05DIWell Based\REPEAT1*
 Plot File: \\POR\BP_5IN_RHOB

REPEAT SECTION 5" = 100'



inches			gram per cc
0	Caliper Pad	10	-0.25 DensityCorrPos 0.25
	inches	AHVT	gram per cc
9	Far Quality	-1	-0.25 DensityCorrNeg 0.25
			gram per cc
-9	NearQuality	1	
		2	Bulk Density 3
			gram per cc

HALLIBURTON

Plot Time: 01-Apr-09 05:11:40
 Plot Range: 1544 ft to 1698.5 ft
 Data: LAR_S_LE_18_05DIWell Based\REPEAT1*
 Plot File: \\POR\BP_5IN_RHOB

REPEAT SECTION 5" = 100'

HALLIBURTON

CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	01-Apr-09 00:49:13	1698.75	Logging 001 01-Apr-09 00:49 Up @1698.8f
	01-Apr-09 00:54:53	1433.41	Halting 001 01-Apr-09 00:49 Up @1698.8f
	01-Apr-09 00:55:37	1345.00	Logging 002 01-Apr-09 00:55 Dn @1345.0f
	01-Apr-09 02:09:26	10197.51	Halting 002 01-Apr-09 00:55 Dn @1345.0f
	01-Apr-09 02:16:15	10482.75	Logging 003 01-Apr-09 02:16 Up 10482.8f
Data: LAR_S_LE_18_05DI0001 TRIPLE-RED\HW10991			Date: 01-Apr-09 04:13:35

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-10895163 135.00 lbs	Ø 3.625 in →		← Load Cell @ 51.17 ft ← BH Temperature @ 50.60 ft	6.25 ft	54.85 ft
					48.60 ft
GTET-10832795 165.00 lbs	Ø 3.625 in →		← GammaRay @ 42.54 ft	8.52 ft	
					40.08 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	10895163	135.00	6.25	48.60	300.00
GTET	Natural Gamma Ray Tool	10832795	165.00	8.52	40.08	60.00
DSNT	Dual Spaced Neutron	10813523	174.00	9.69	30.40	60.00
SDLT	Spectral Density Tool	10695353	360.00	10.81	19.58	60.00
ACRt	Array Compensated True Resistivity	E332S570	250.00	19.25	0.33	300.00
SP	SP Ring	PROTO1	0.00	0.25 *	1.61	300.00
BLNS	Bull Nose	BULLNOSE	5.00	0.33	0.00	300.00
Total			1,089.00	54.85		
* Not included in Total Length and Length Accumulation.						
Data: LAR_S_LE_18_05D\0001 TRIPLE-RED\IDLE				Date: 01-Apr-09 04:17:49		

COMPANY	LARAMIE ENERGY		
WELL	SOUTH LEVERICH 18 - 05D		
FIELD	RULISON		
COUNTY	GARFIELD	STATE	COLORADO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON	