

HALLIBURTON

SPECTRAL DENSITY  
DUAL SPACED NEUTRON

COMPANY		WELL		FIELD		COUNTY		STATE	
KERR-MCGEE OIL & GAS ONSHORE LP		NORTHGLENN STATE 19-36X		WATTENBERG		WELD		CO	
COMPANY		WELL		FIELD		COUNTY		STATE	
KERR-MCGEE OIL & GAS ONSHORE LP		NORTHGLENN STATE 19-36X		WATTENBERG		WELD		CO	
API No.		05123344690100		Location		SURFACE LOCATION: 1.289' FSL & 2.491' FEL SWSE BOTTOM LOCATION: 1.400' FSL & 1.648' FWL NESW LATITUDE: 40.008875° LONGITUDE: -104.951438°		Other Services: RWCH ACRt	
Sect.		36		Twp.		1N		Rge. 66W	
Permanent Datum		GL		Elev.		5119.0 ft		Elev. K.B.	
Log measured from		KB		15.0 ft above perm. Datum		D.F.		5133.0 ft	
Drilling measured from		KB		G.L.		5119.0 ft			
Date		27-Feb-12							
Run No.		ONE							
Depth - Driller		8270.00 ft							
Depth - Logger		8262.0 ft							
Bottom - Logged Interval		8234 ft							
Top - Logged Interval		CASING							
Casing - Driller		8.625 in @ 1037.0 ft							
Casing - Logger		1037.0 ft							
Bit Size		7.875 in							
Type Fluid in Hole		WATER BASED MUD							
Density		9.0 ppg		50.00 s/qt					
PH		7.50 pH							
Source of Sample		MUD CELL							
Rm @ Meas. Temperature		1.140 ohmm @ 70.70 degF							
Rmf @ Meas. Temperature		0.92 ohmm @ 75.00 degF							
Rmc @ Meas. Temperature		0.971 ohmm @ 75.00 degF							
Source Rmf		CHART		CHART					
Rm @ BHT		0.38 ohmm @ 228.0 degF							
Time Since Circulation		11.0 hr							
Time on Bottom		27-Feb-12 12:34							
Max. Rec. Temperature		228.0 degF @ 8262.0 ft							
Equipment		11454566		BRIGHTON					
Recorded By		R. TWEETEN							
Witnessed By		B. BENJAMIN		T. GEDAMU					

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Service Ticket No.: 9302989				API Serial No.: 05123344690100				PGM Version: WLINSITE R3.4.4 (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.		Other					
Rmf @ Meas. Temp.		@		@		ONE		ACRt		N/A		FREE		N/A					
Rmc @ Meas. Temp.		@		@				E6758-S4352											
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.		11277436		Serial No.				Serial No.		M335_P470		Serial No.		11812167					
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.		GTET		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.		GAM-GAM		Serial No.		NEU-NEU					
Distance to Source		10'		FWDA [Y/N ]				Strength		1.5 CI		Strength		15 CI					
LOGGING DATA																			
GENERAL				GAMMA				ACOUSTIC				DENSITY				NEUTRON			

GENERAL			ACOUSTIC		GAMMA		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	CSG	REC	0	200				30	-10	2.71	30	-10	LIME
DIRECTIONAL INFORMATION														
Maximum Deviation			21.00 deg		@		2658.00 ft		KOP			@		
Remarks: RWCH-GTET-DSNT-SDLT-ACRT RUN IN COMBINATION.														
ANNULAR HOLE VOLUME CALCULATED USING 4.5-INCH PRODUCTION CASING.														
TENSION PULLS, WASHOUTS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE.														
CHLORIDES REPORTED AT 650 ppm.														
DSNT DECENTRALIZER NOT RUN AT CLIENT'S REQUEST.														
YOUR CREW TODAY: A. DUNCAN, R. PERSHALL, C. CRADDOCK, I. KHALID, S. SPEAK RIG: XTREME 11														
THANK YOU FOR USING HALLIBURTON LOGGING SERVICES - BRIGHTON, CO - (303) 825-4346														
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														



## 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	650.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	1.140	ohmm
	SHARED	TRM	Temperature of Mud	70.7	degF
	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	8262.00	ft
	SHARED	BHT	Bottom Hole Temperature	228.0	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	
	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	DNOK	Process DSN?	Yes	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNOS	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	1.25	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	ohm m
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohm m
ACRt Sonde	THQY	Threshold Quality	0.50	

BOTTOM

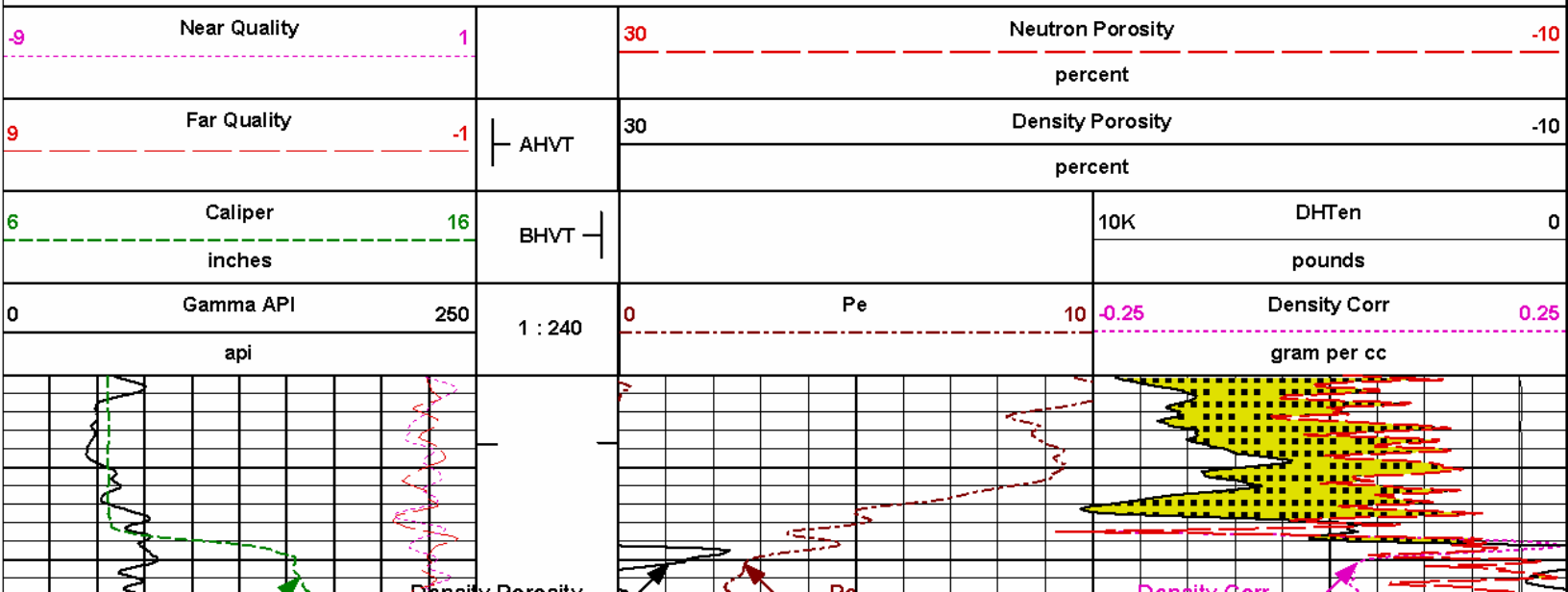
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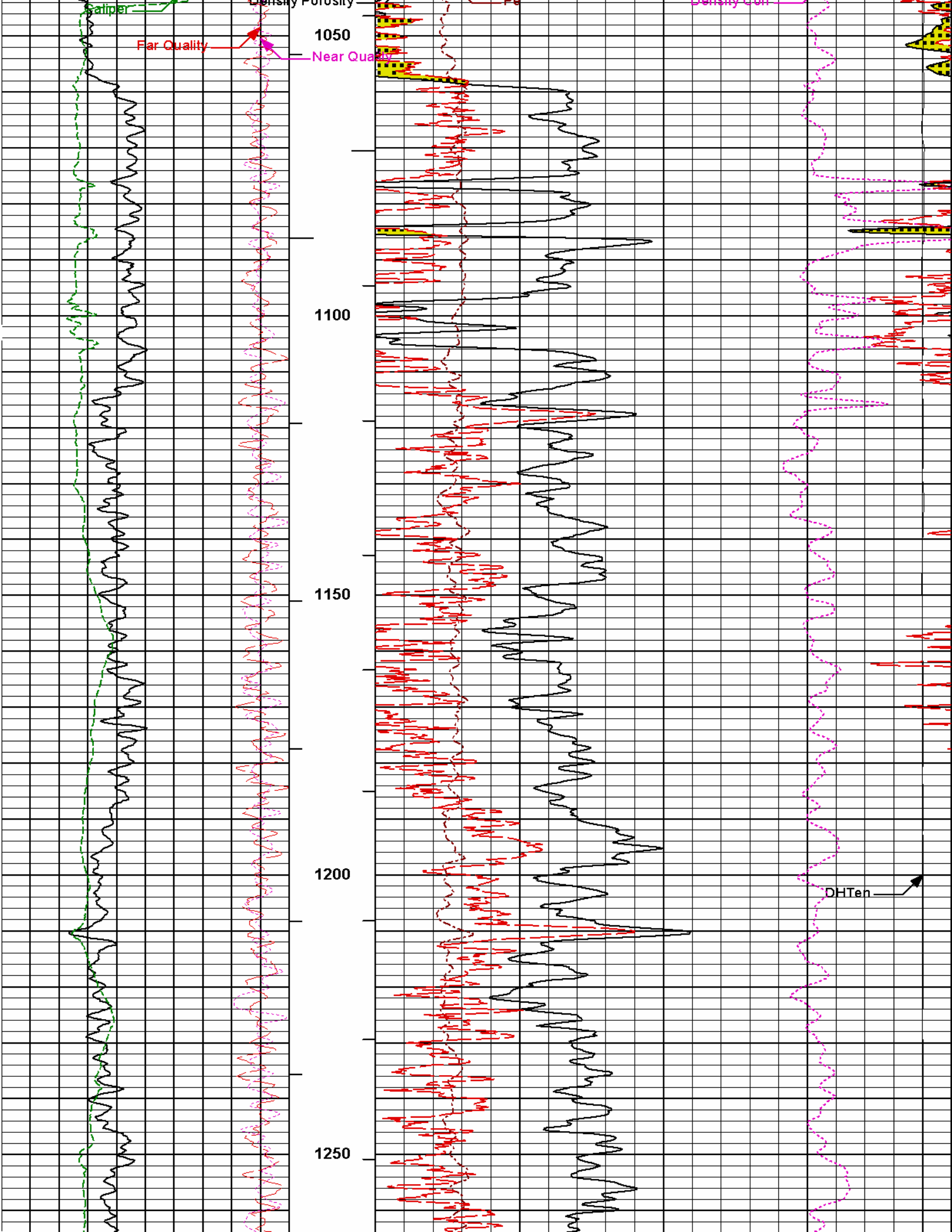
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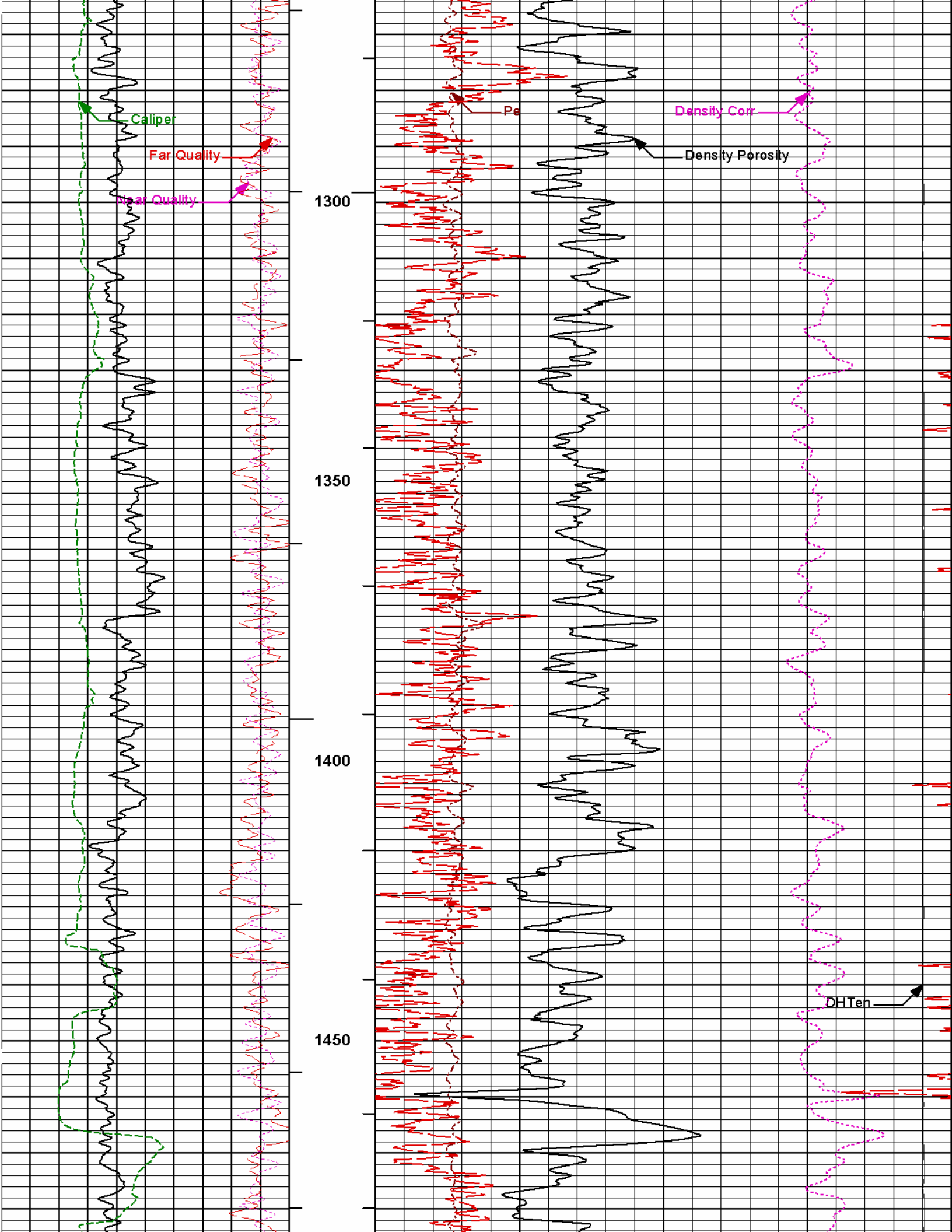
HALLIBURTON

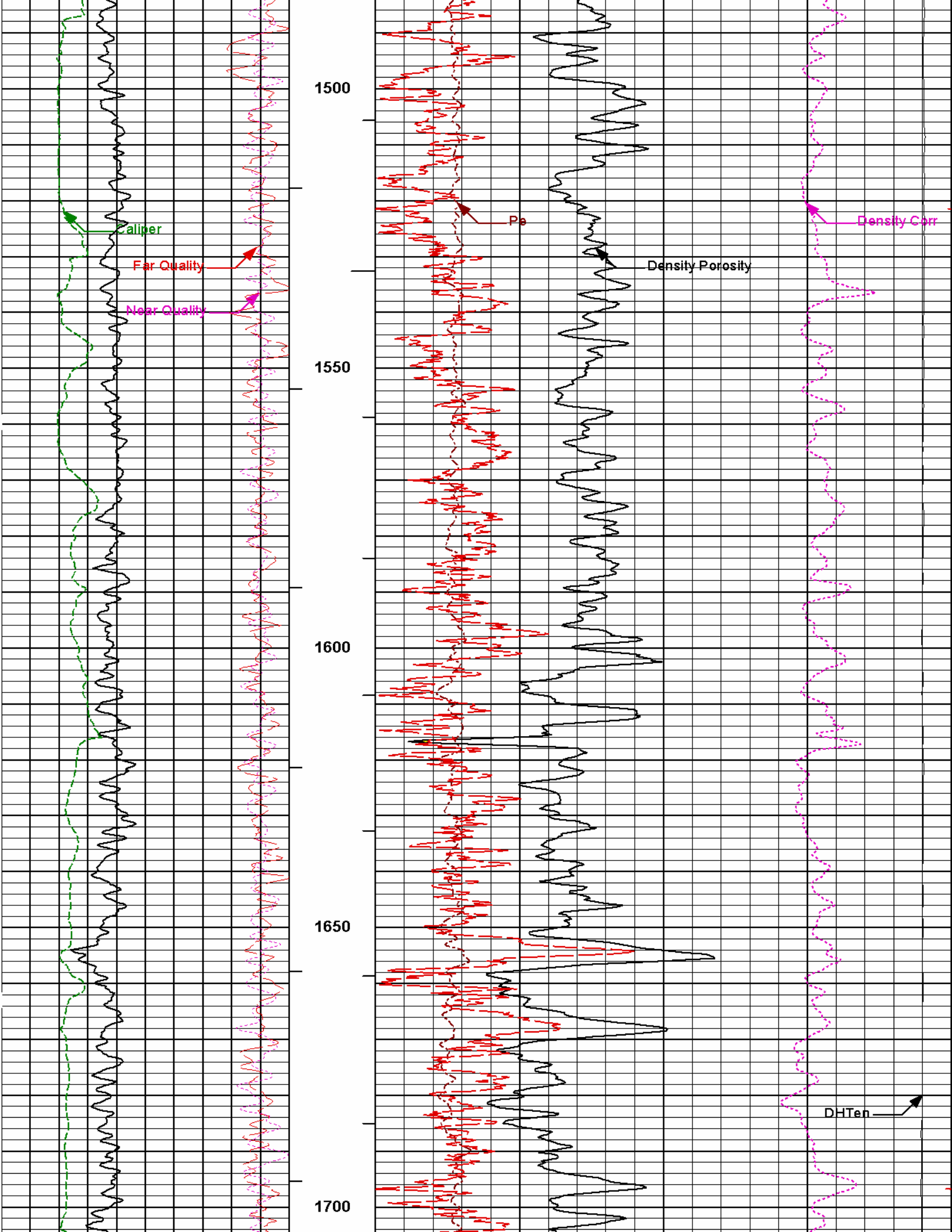
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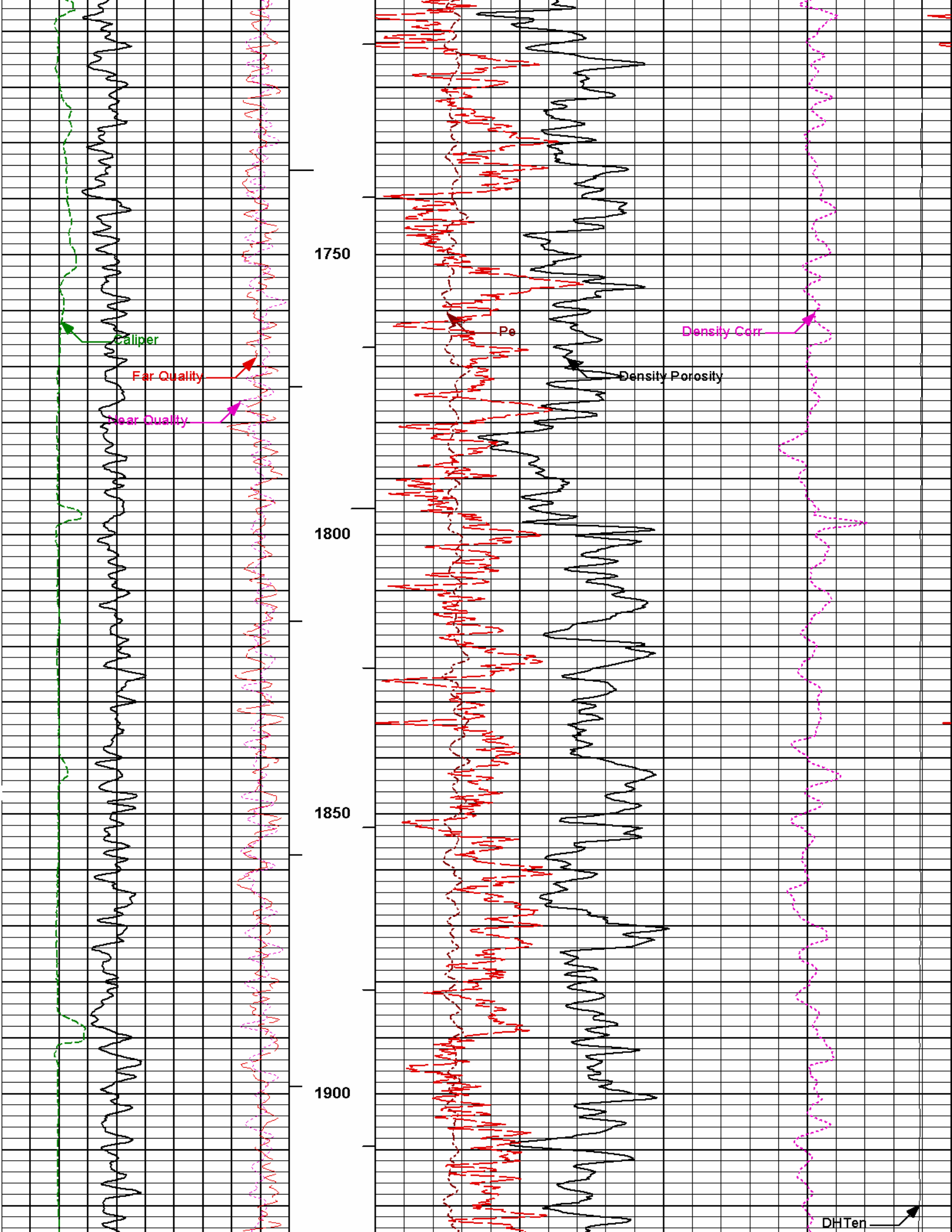
MAIN PASS 5" = 100'



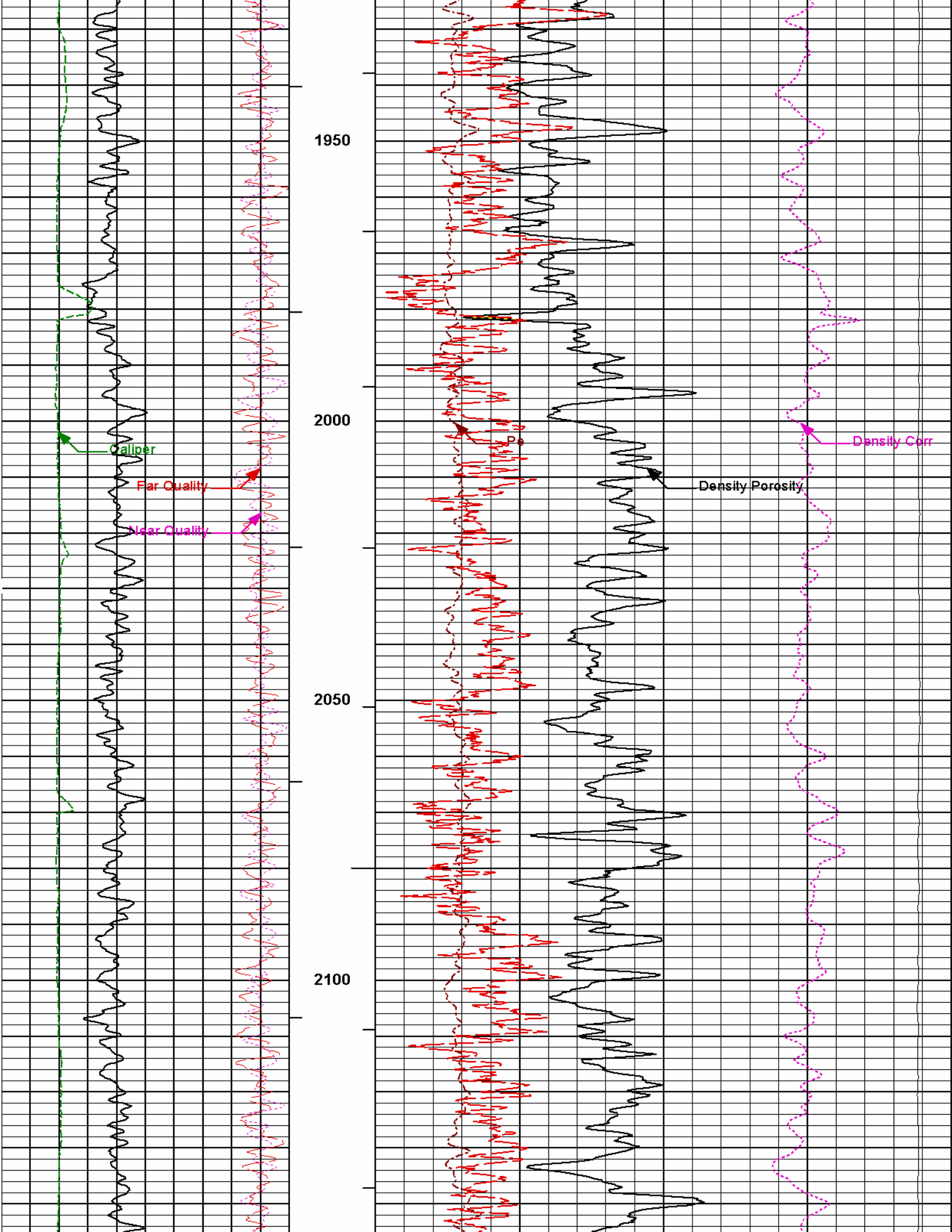




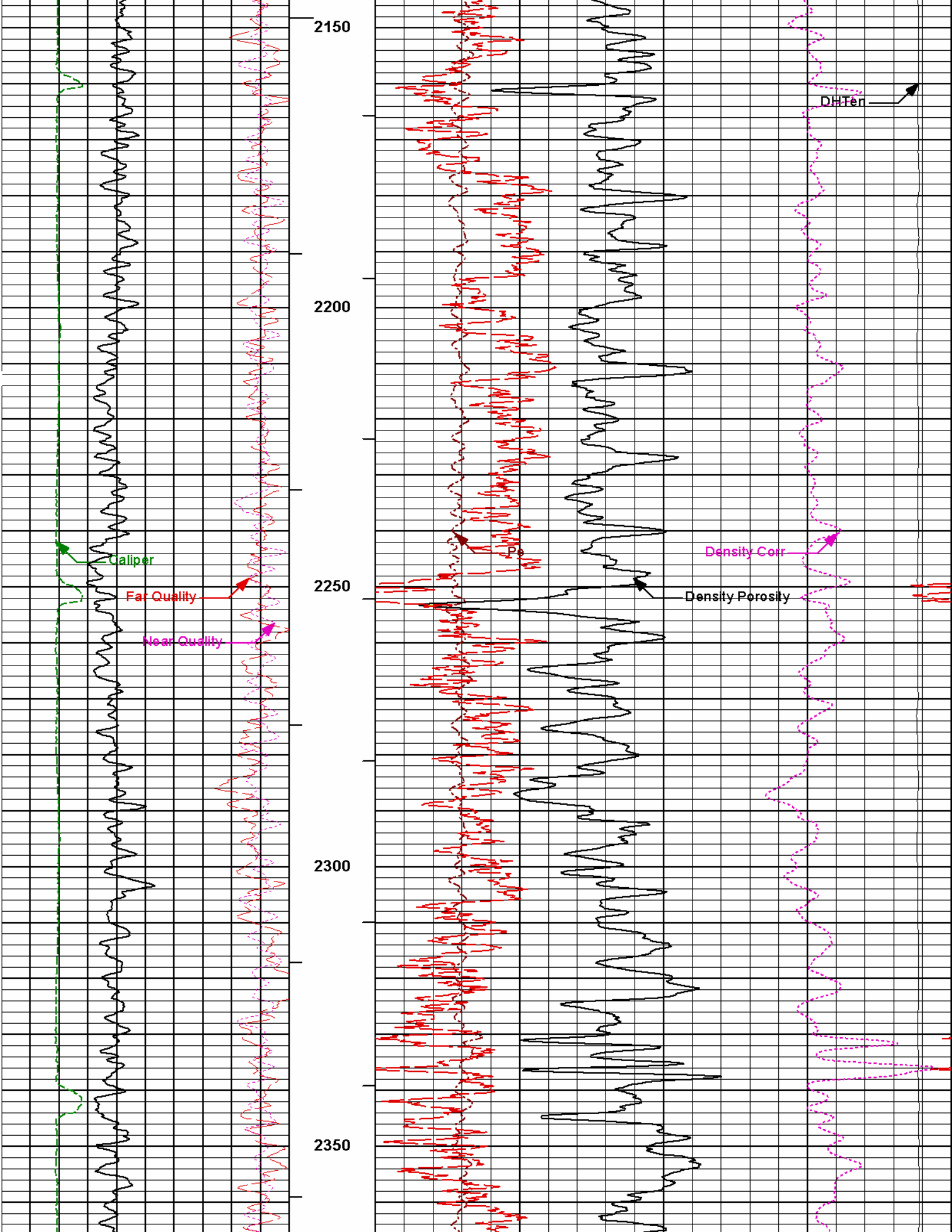


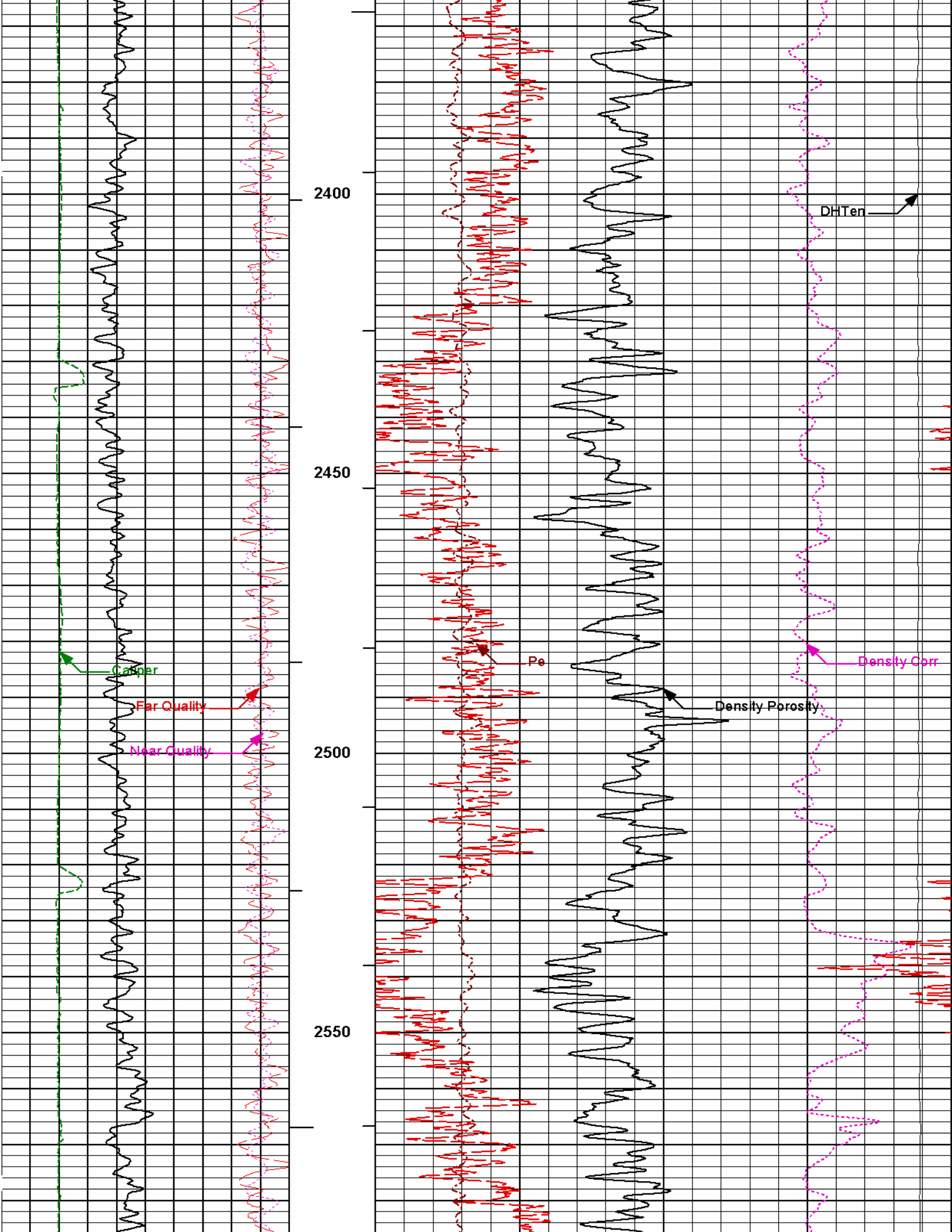


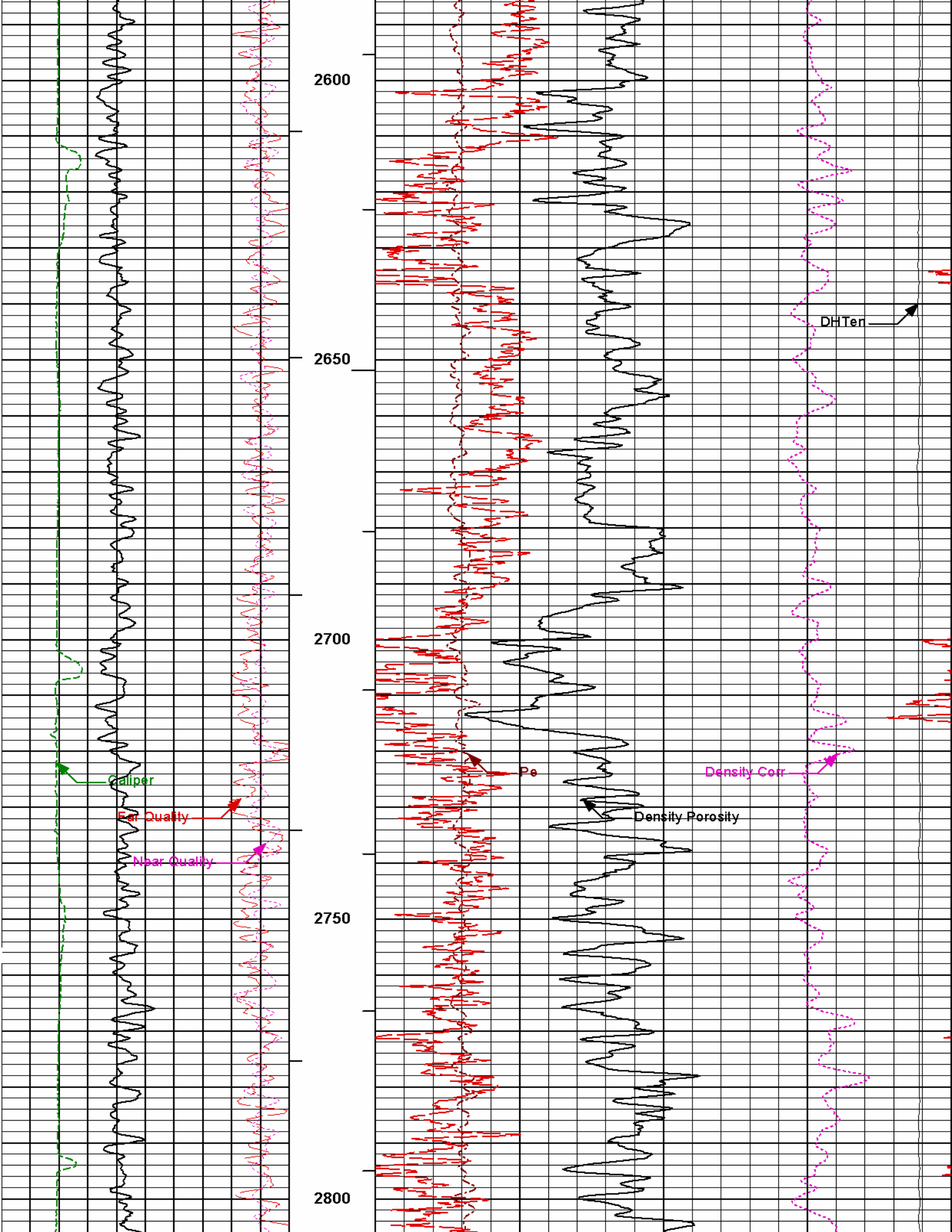


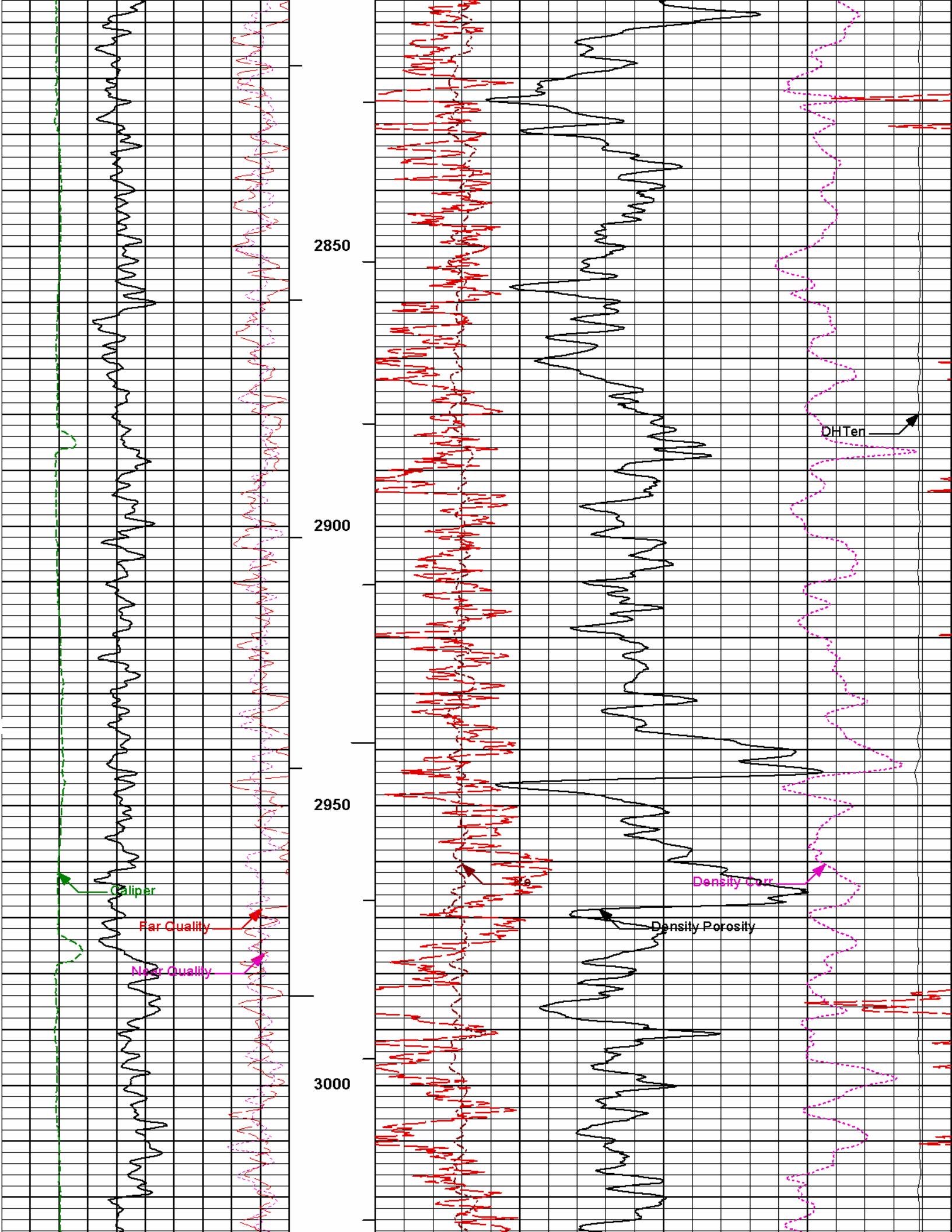


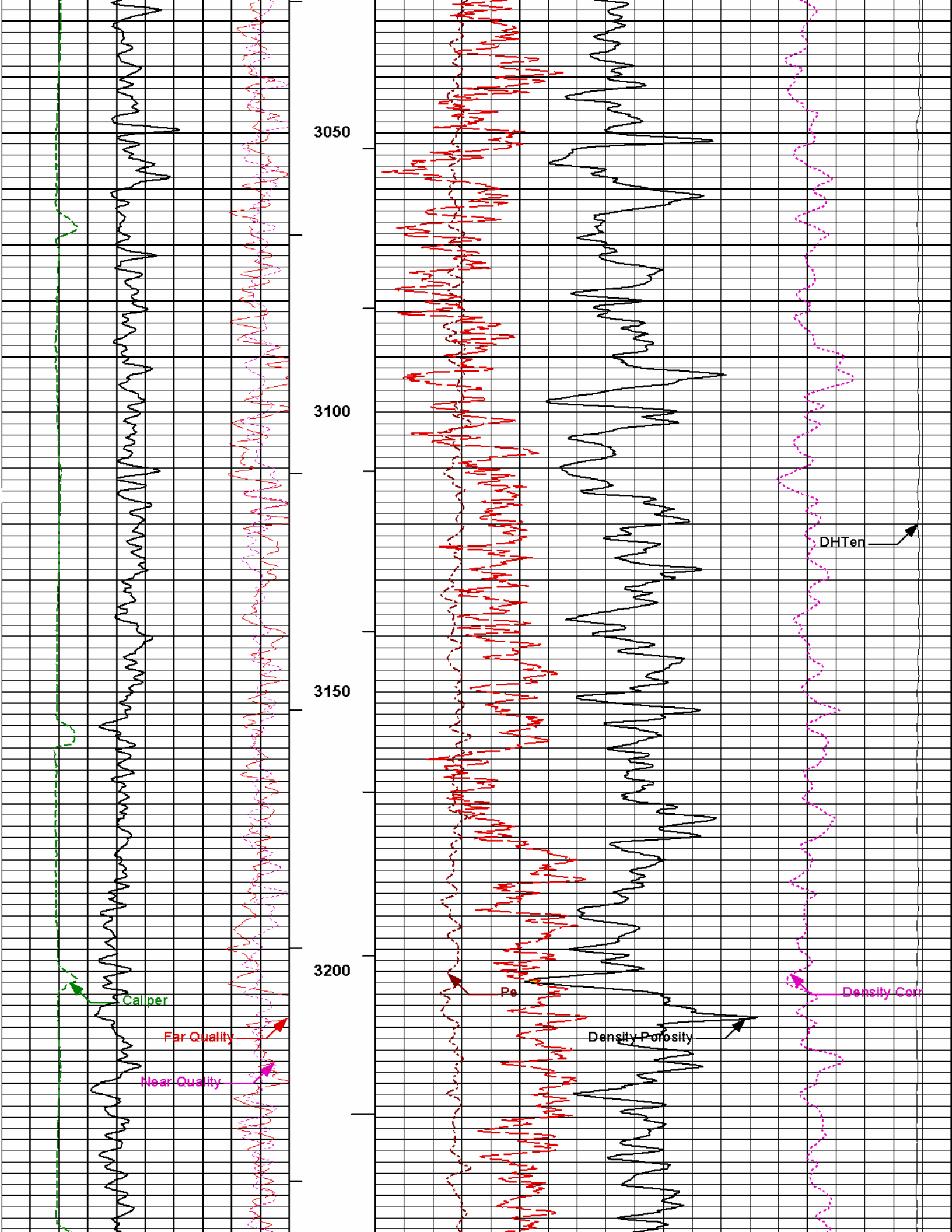


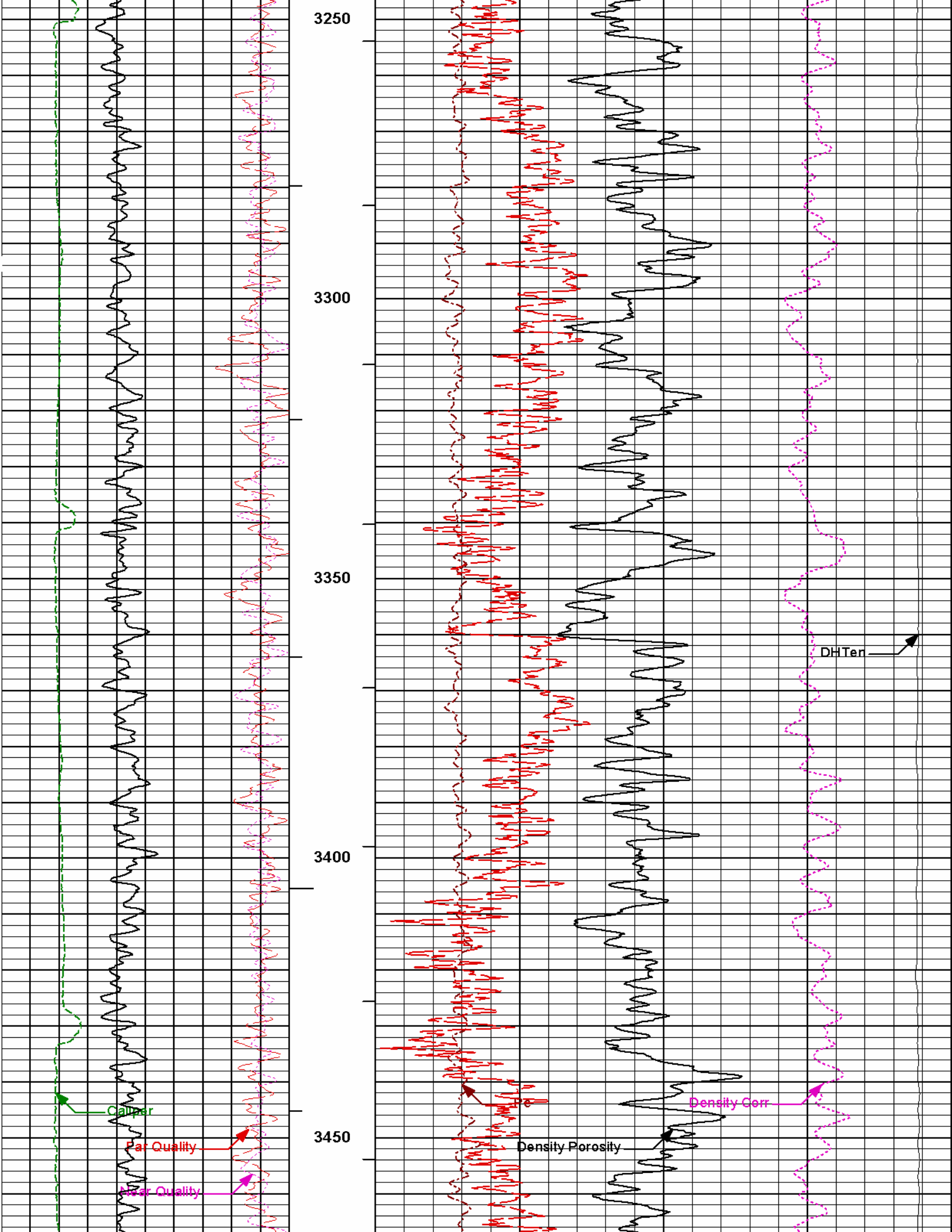


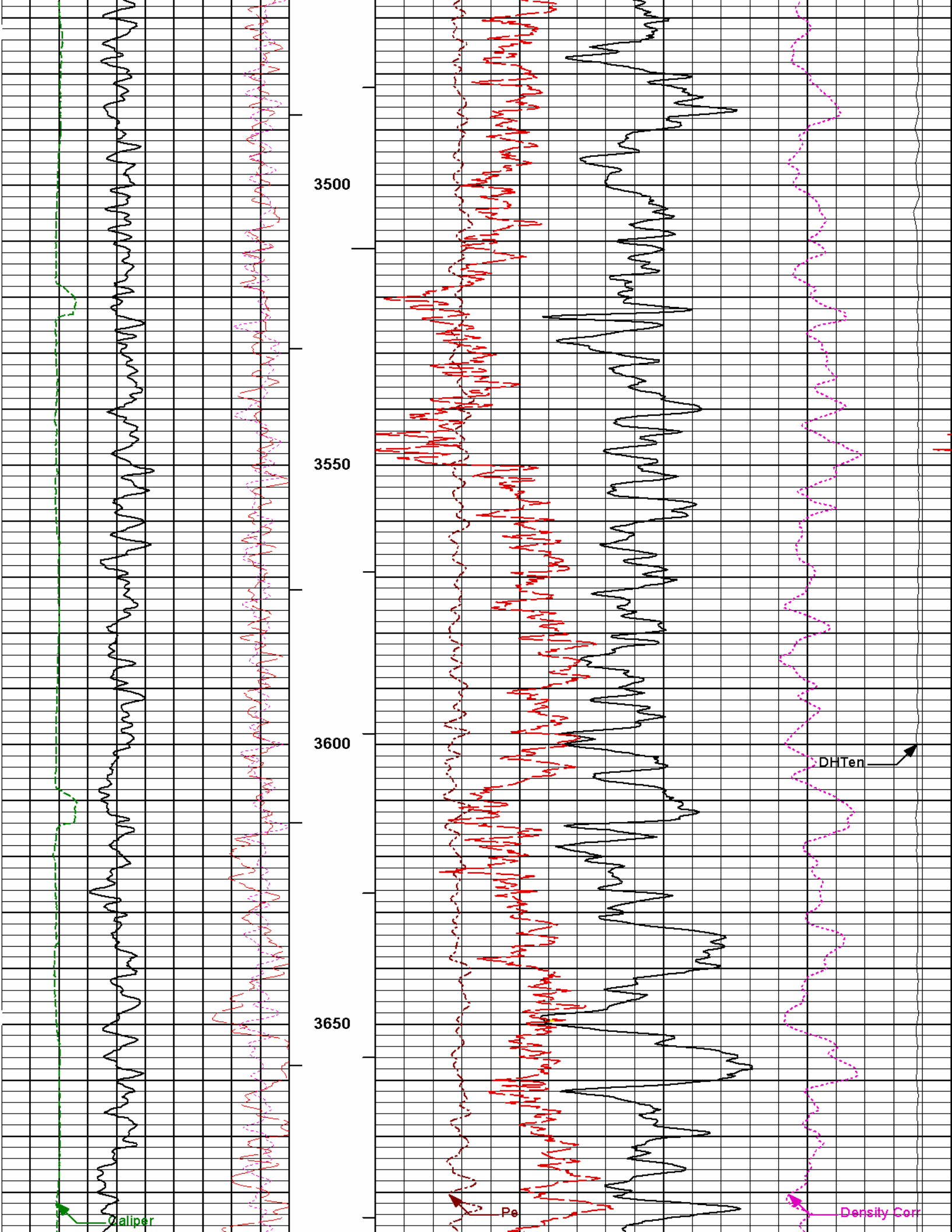




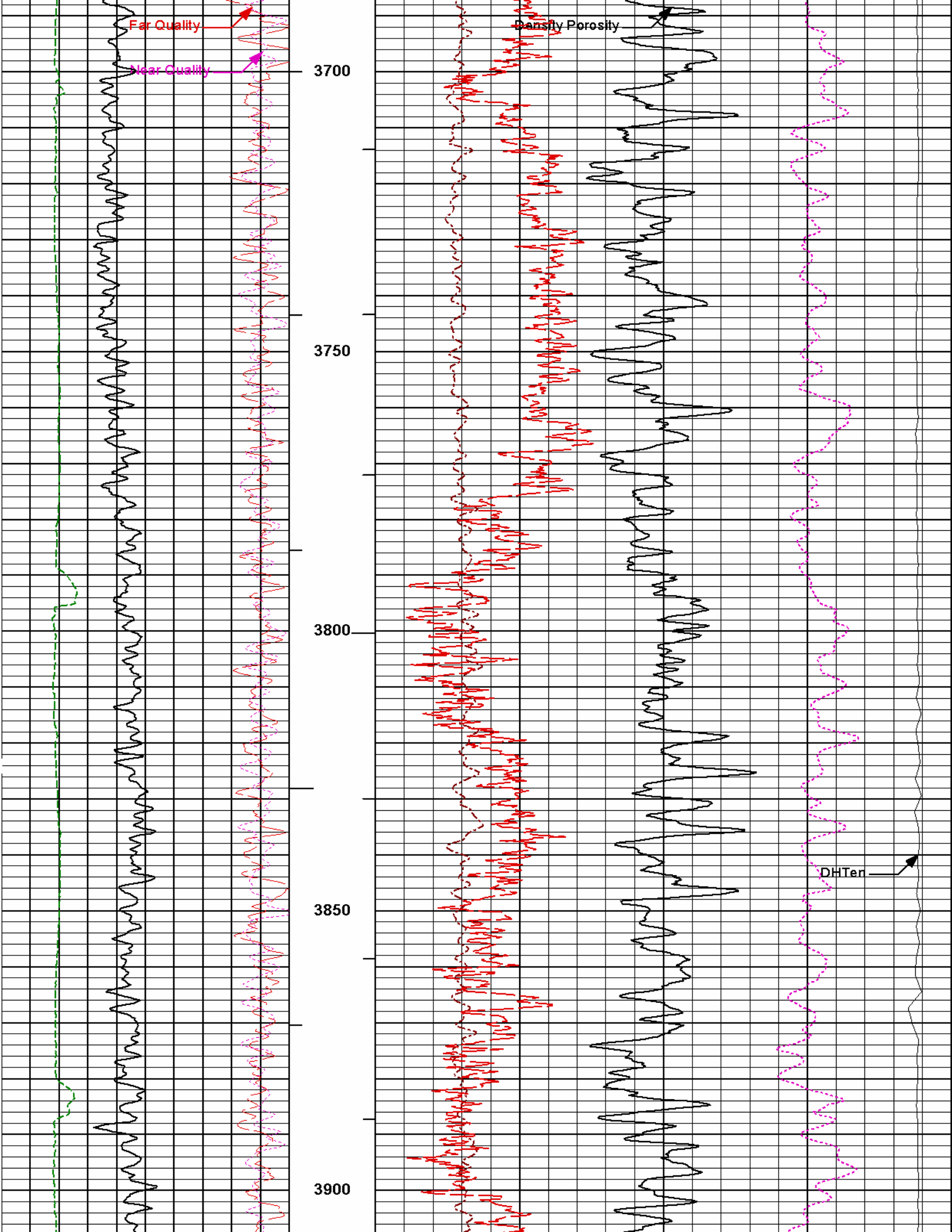


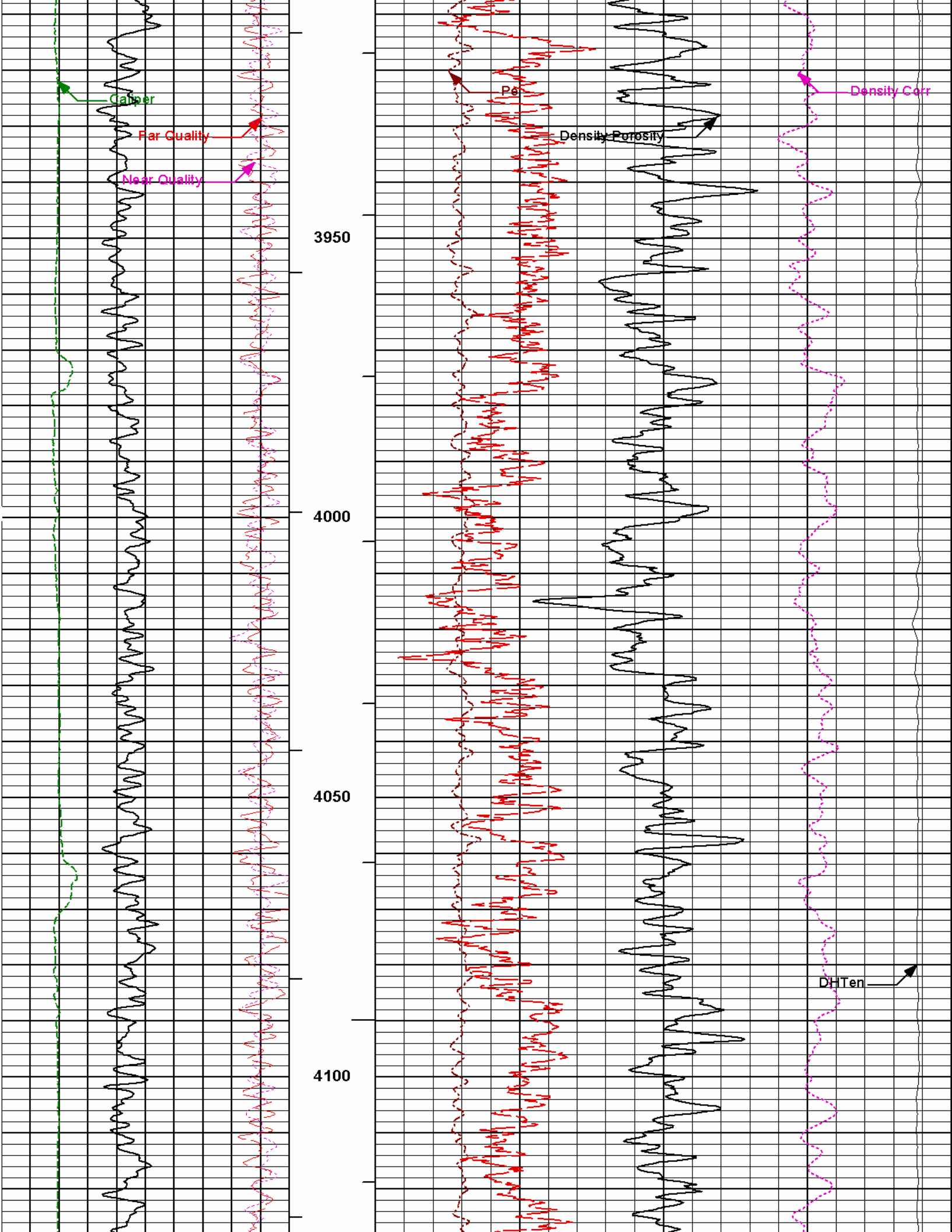


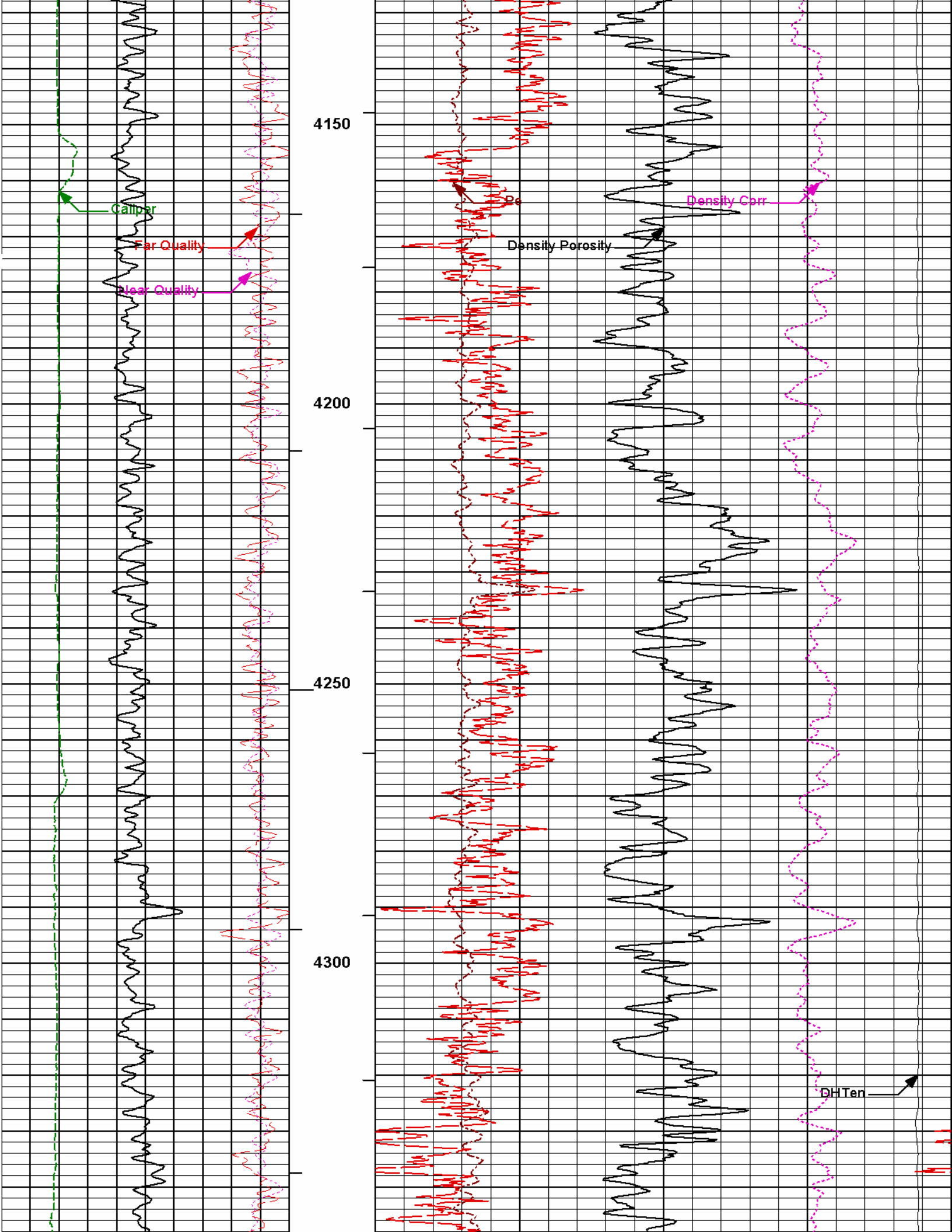


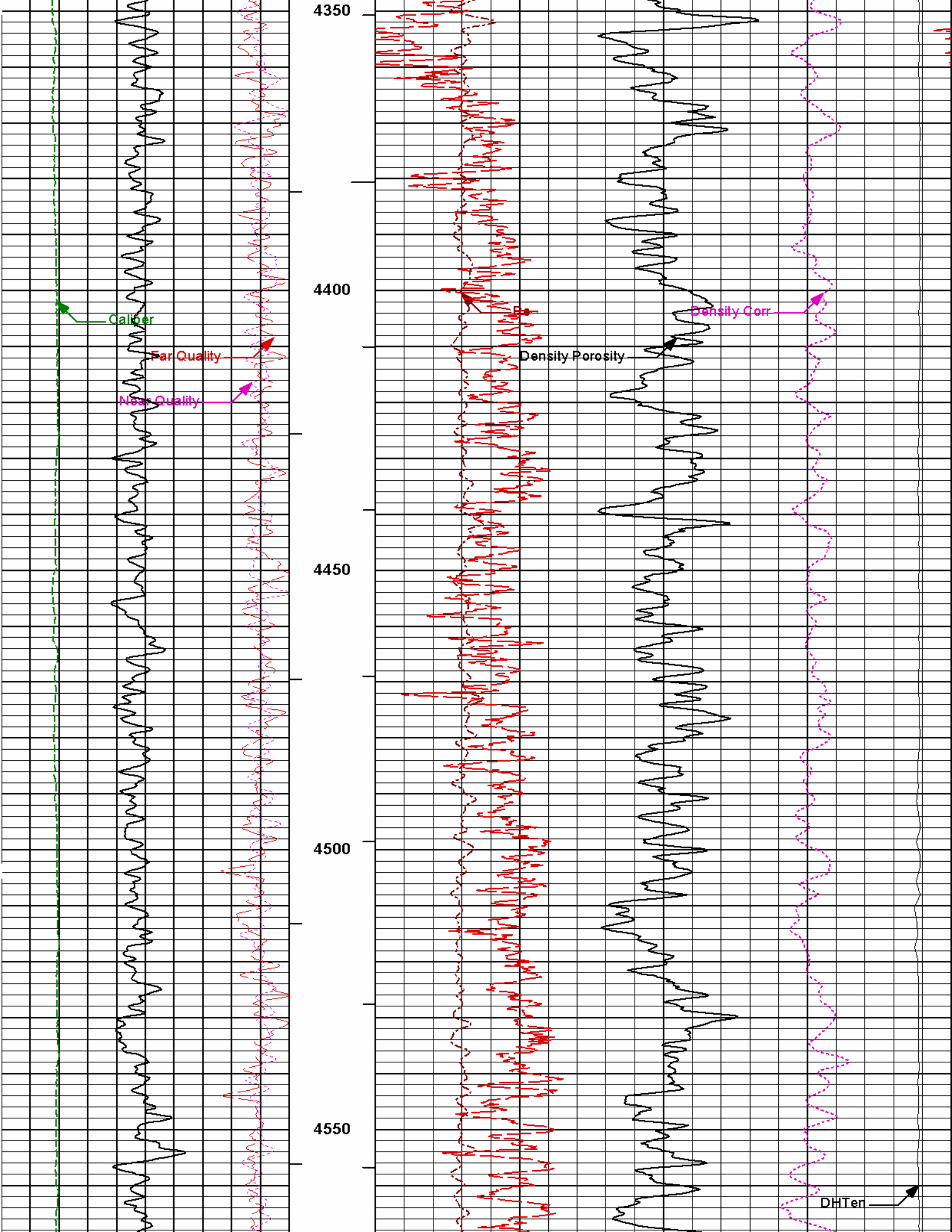


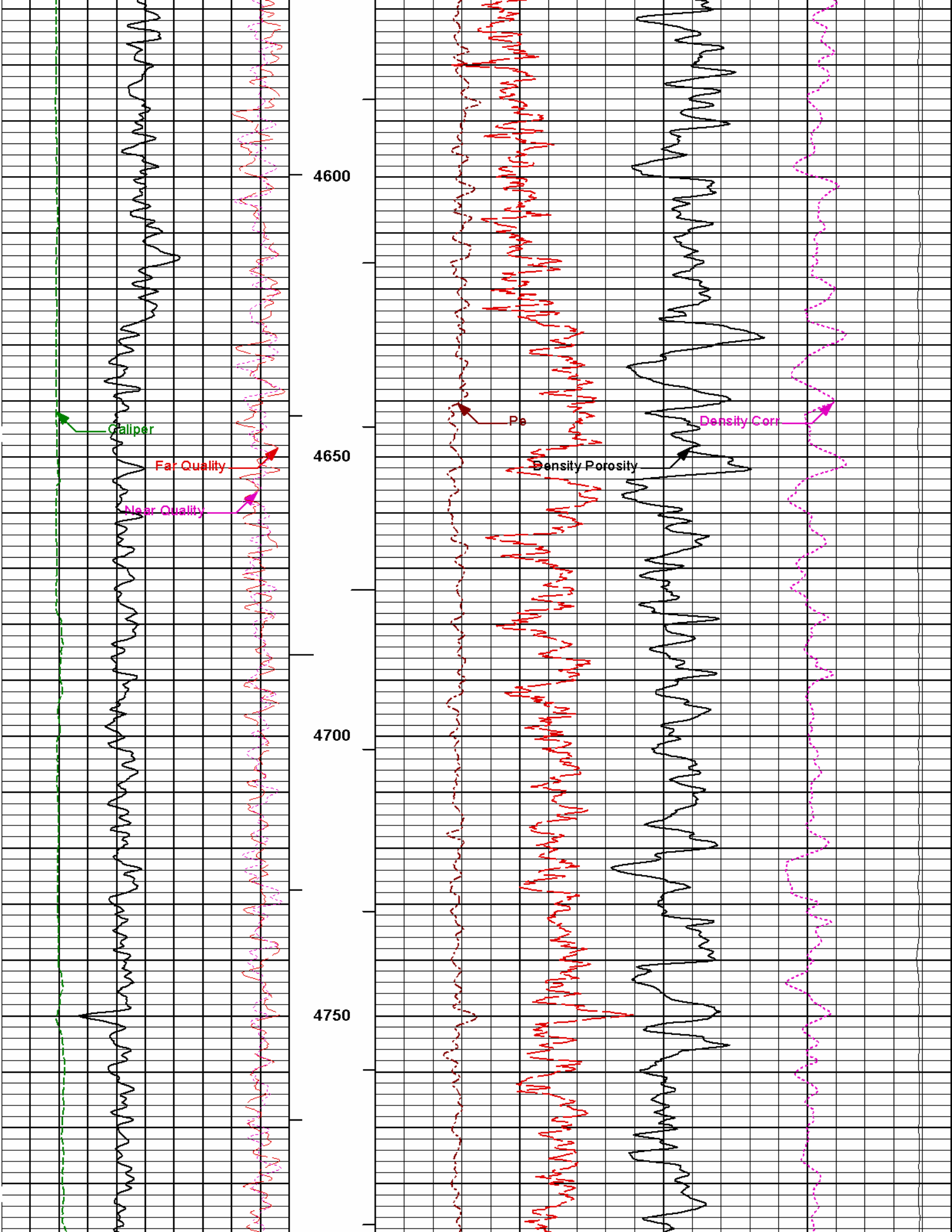


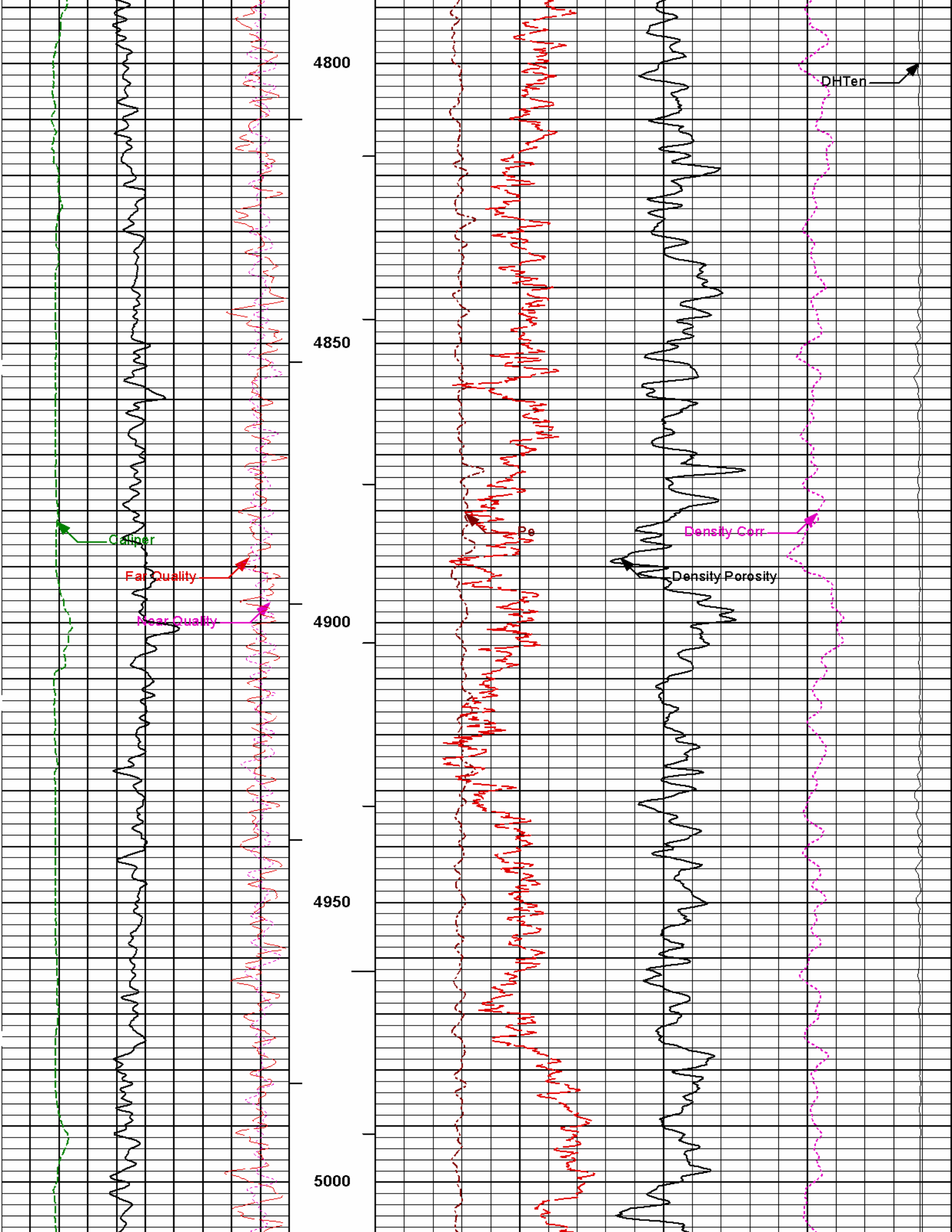


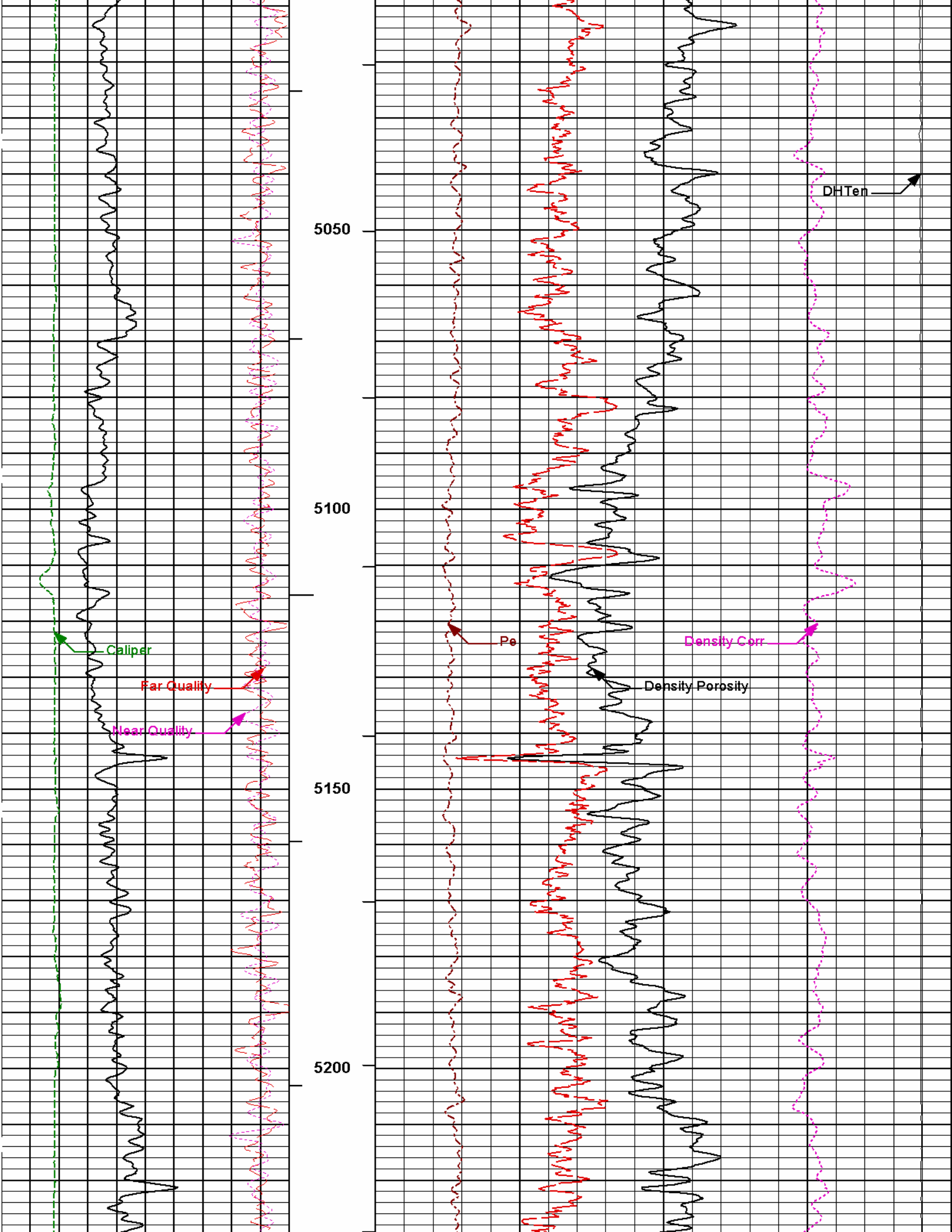




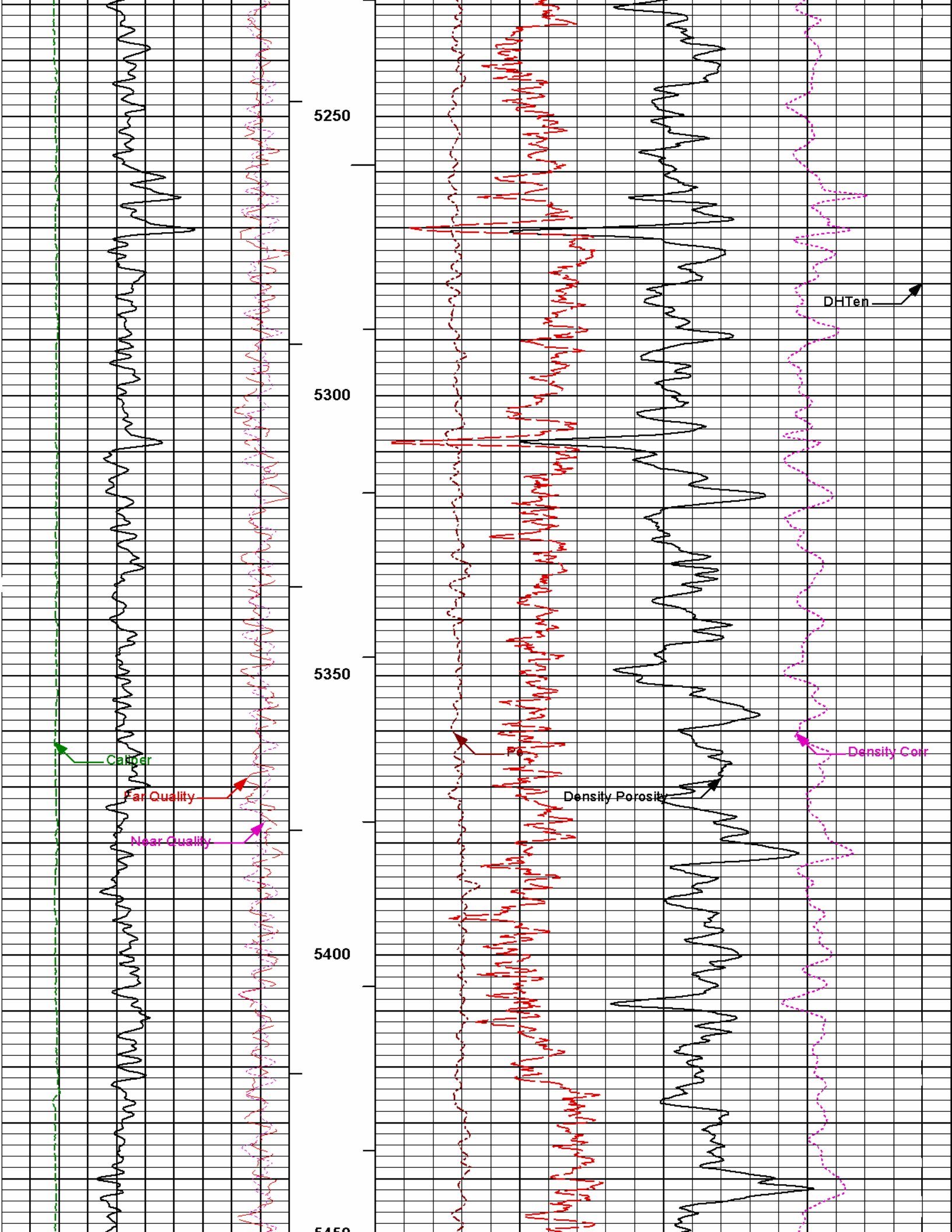


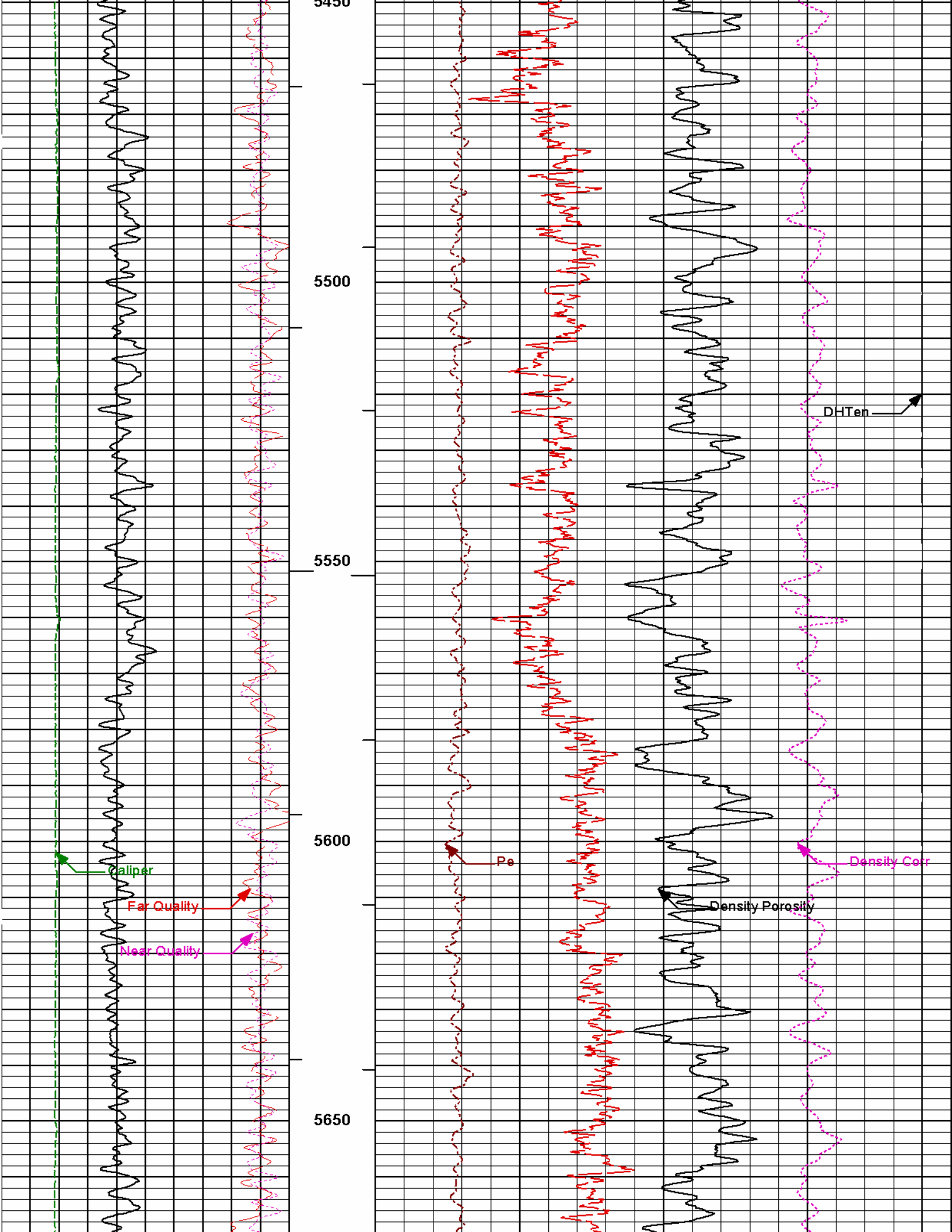


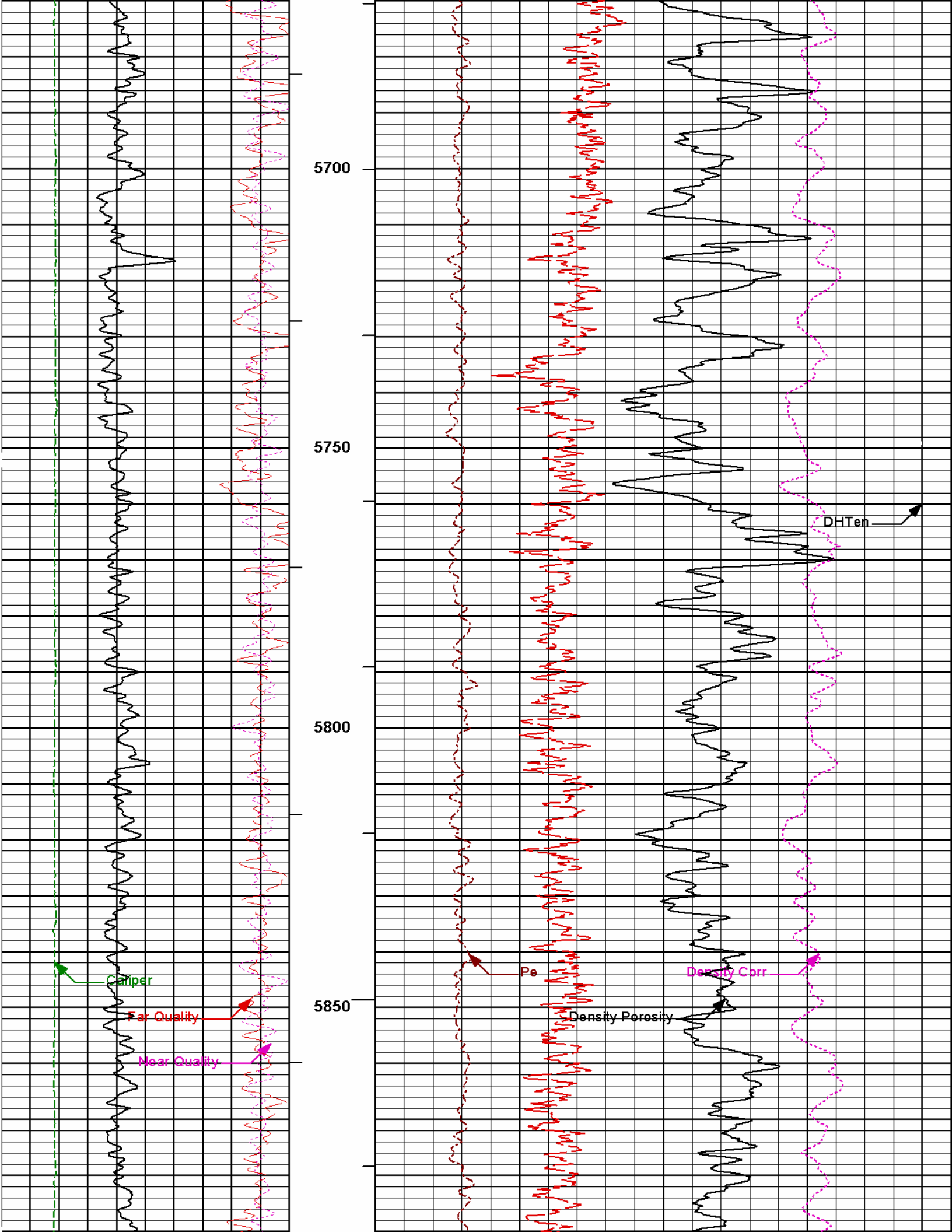


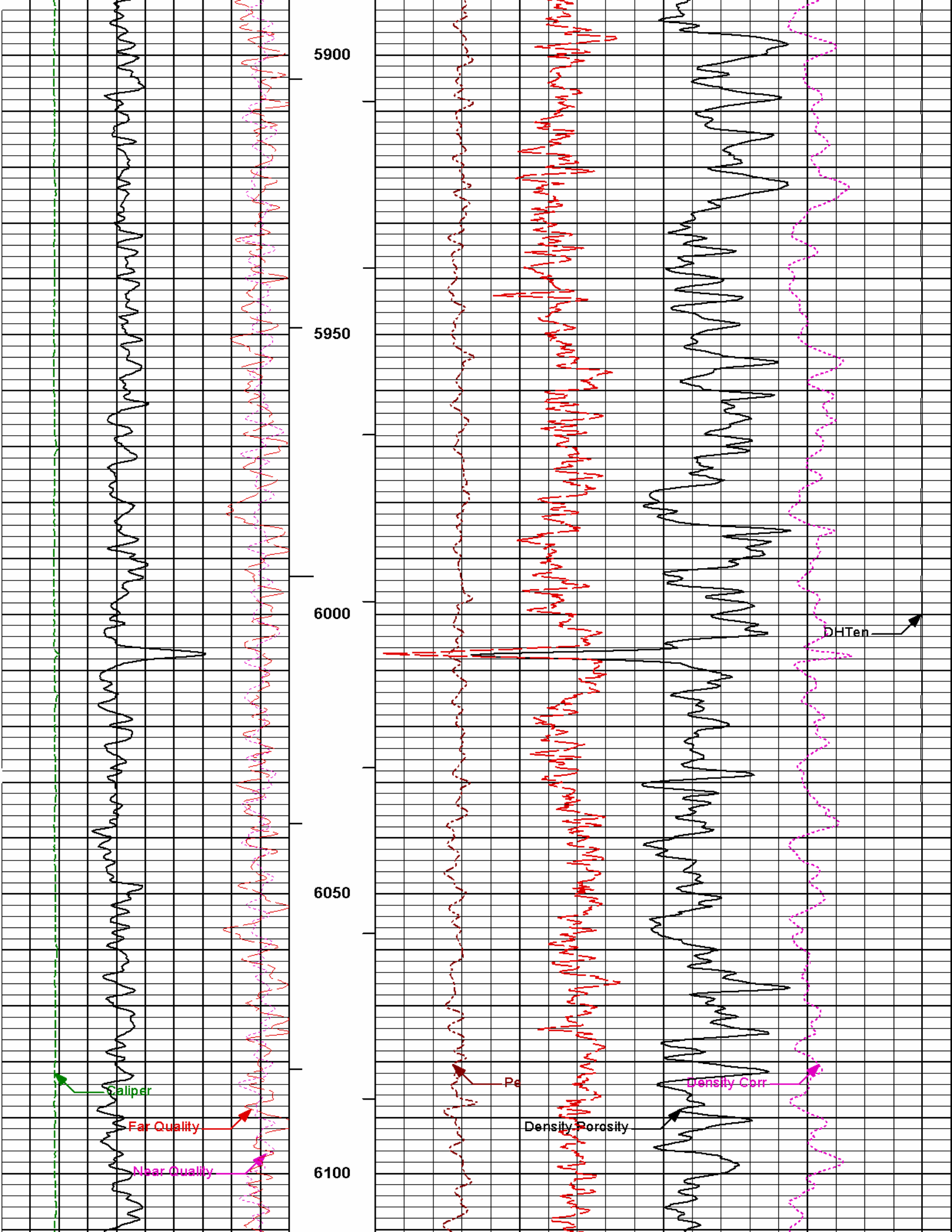


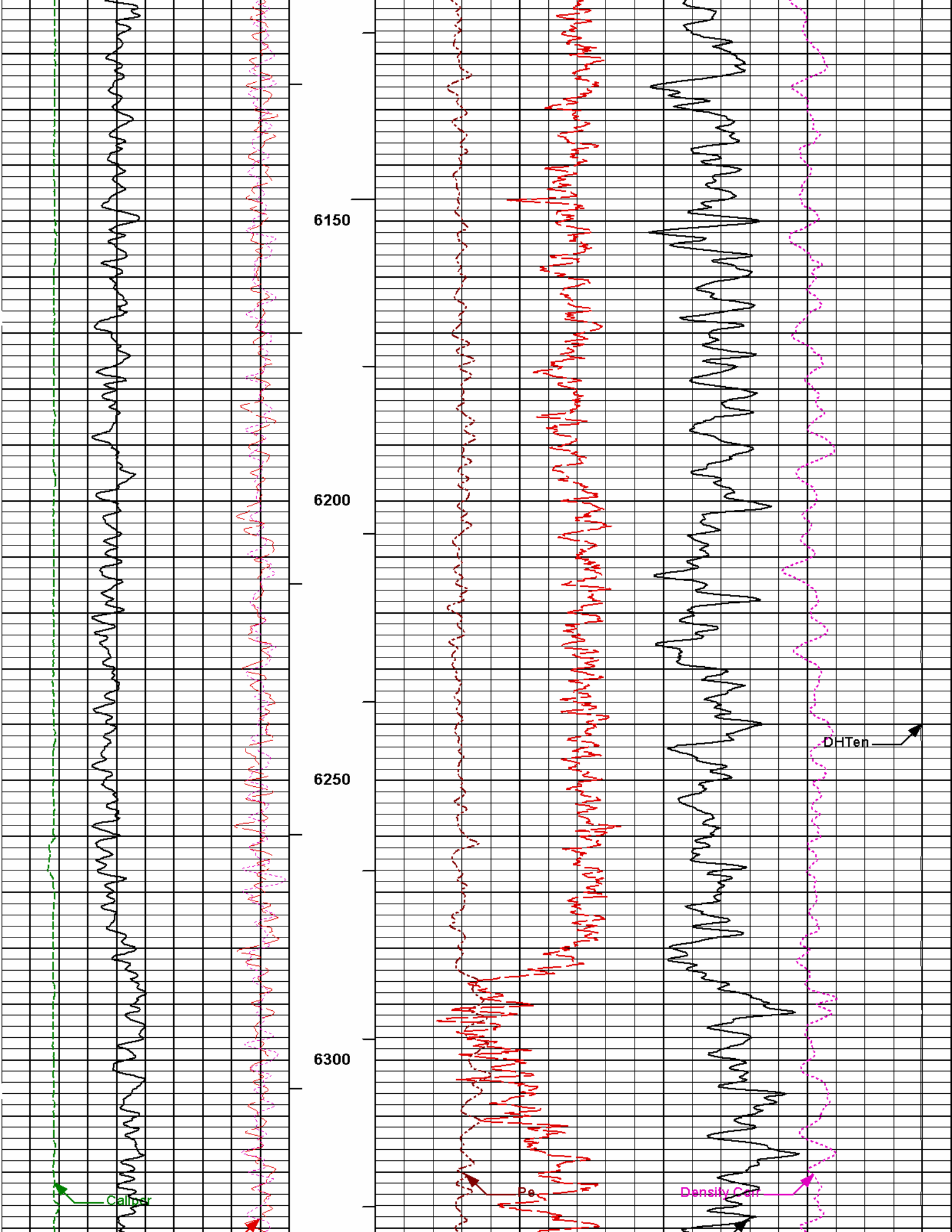


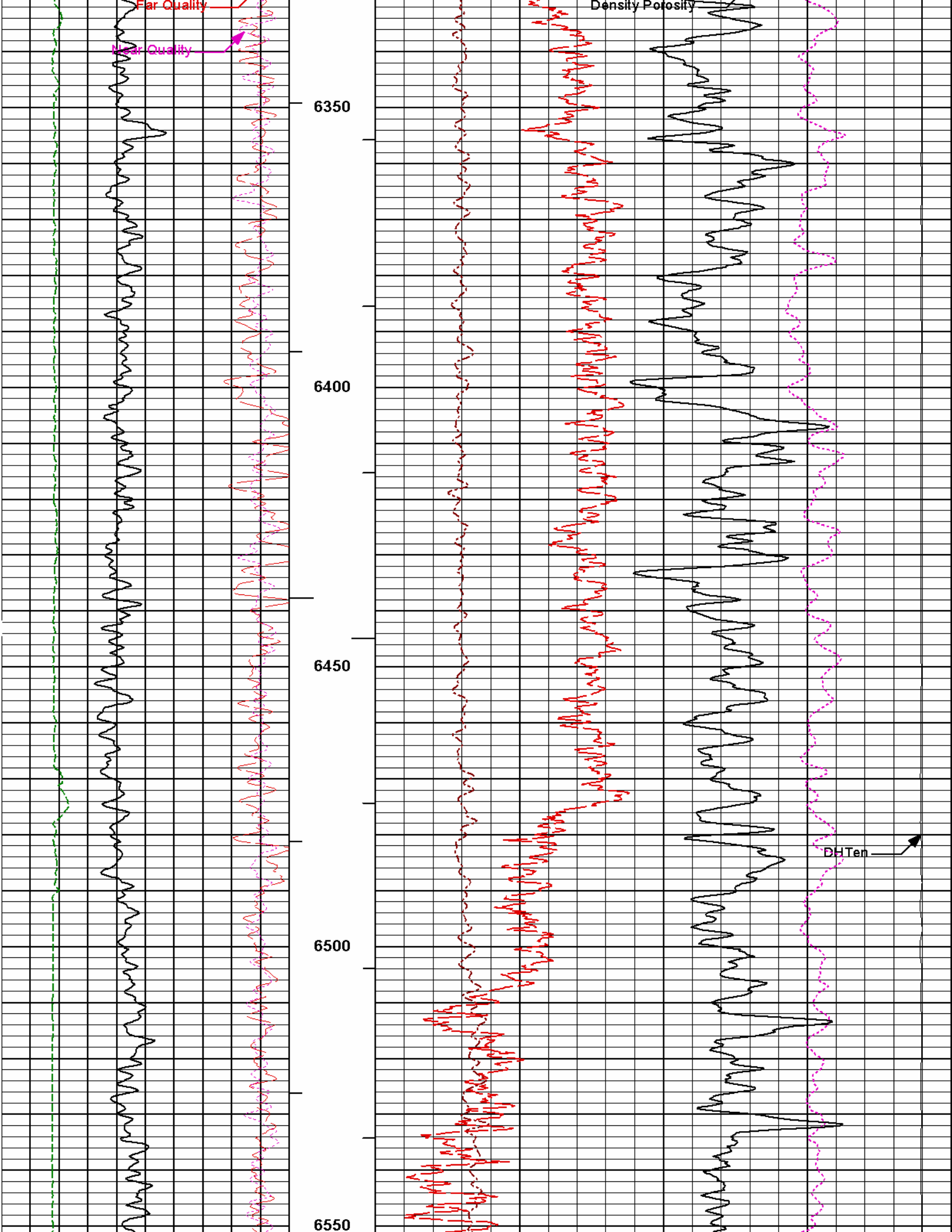


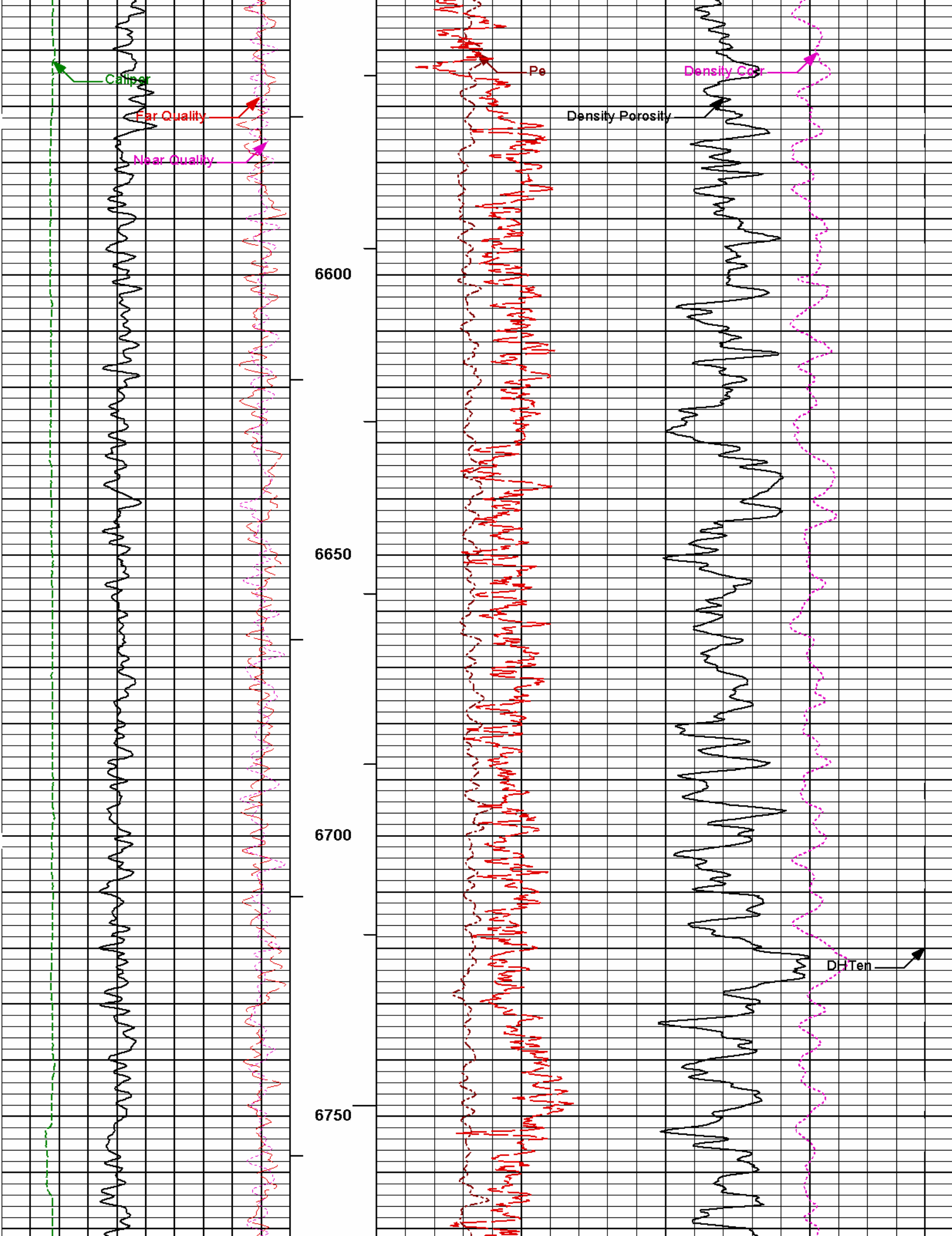




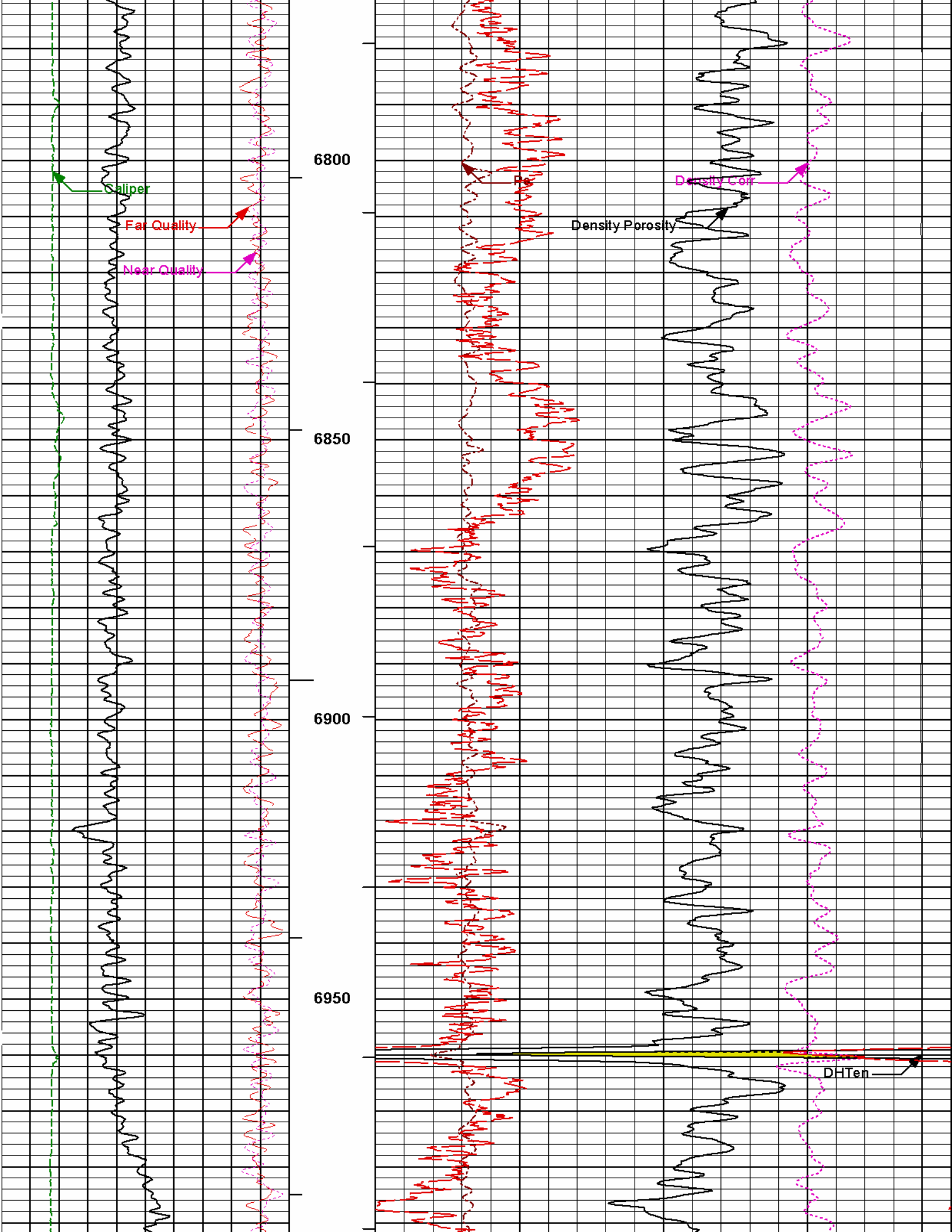


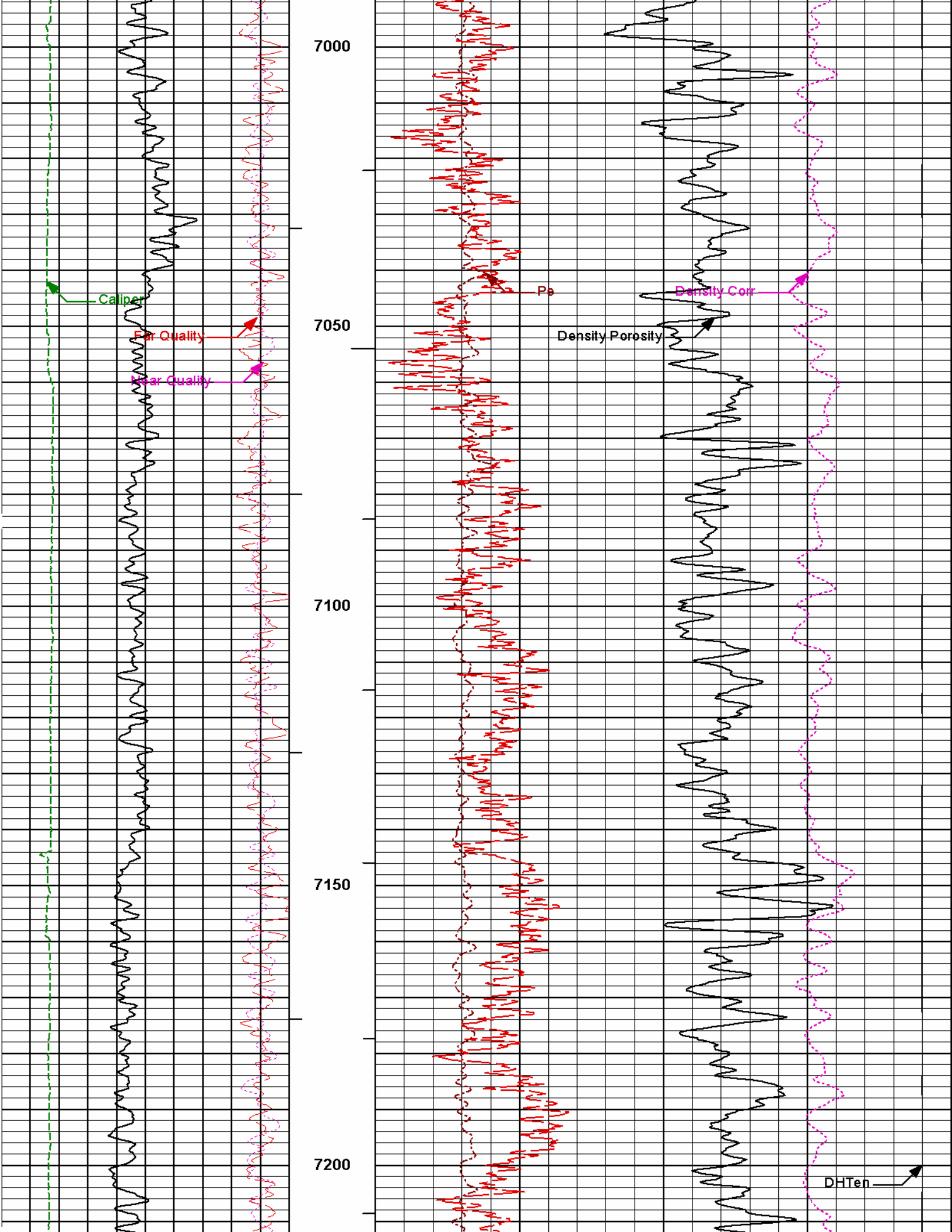


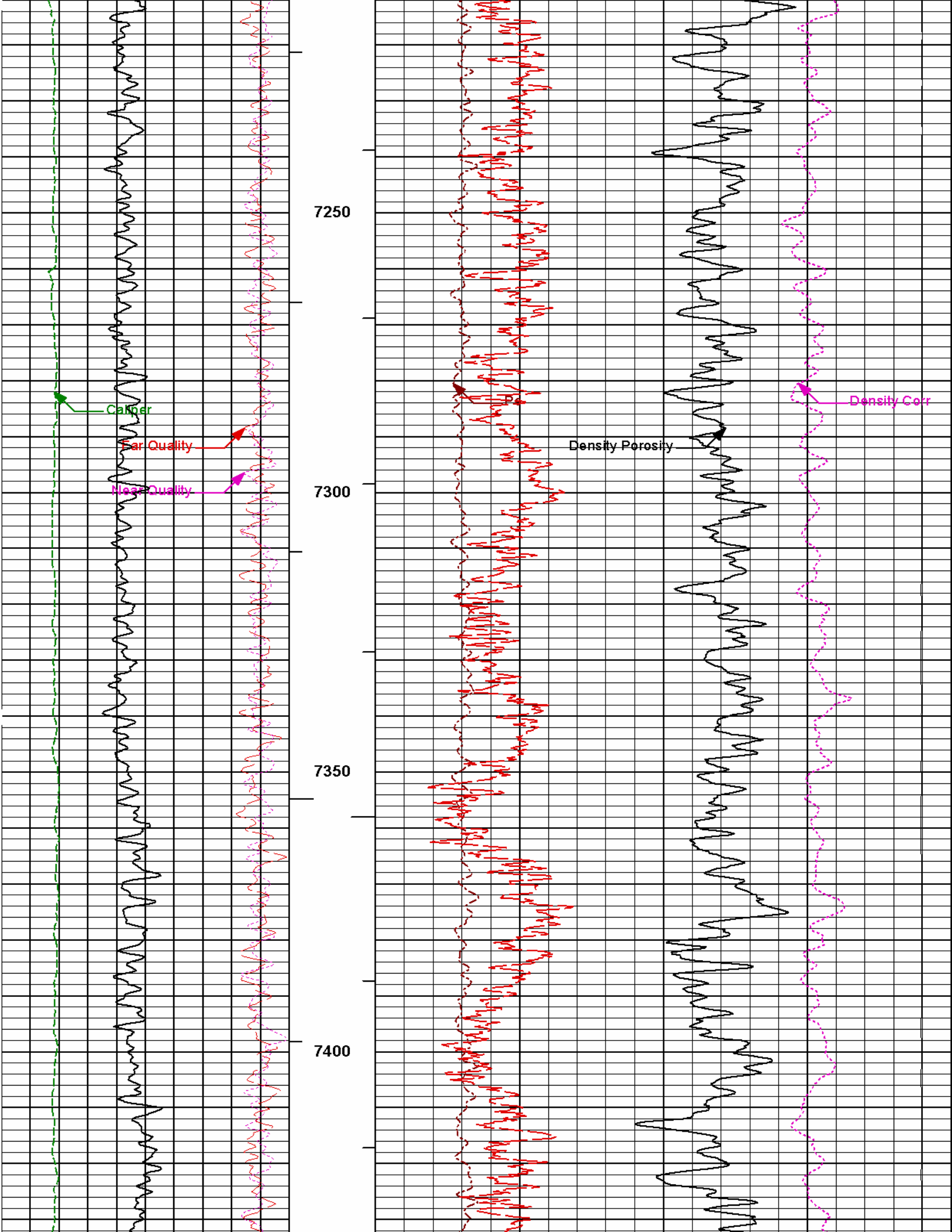


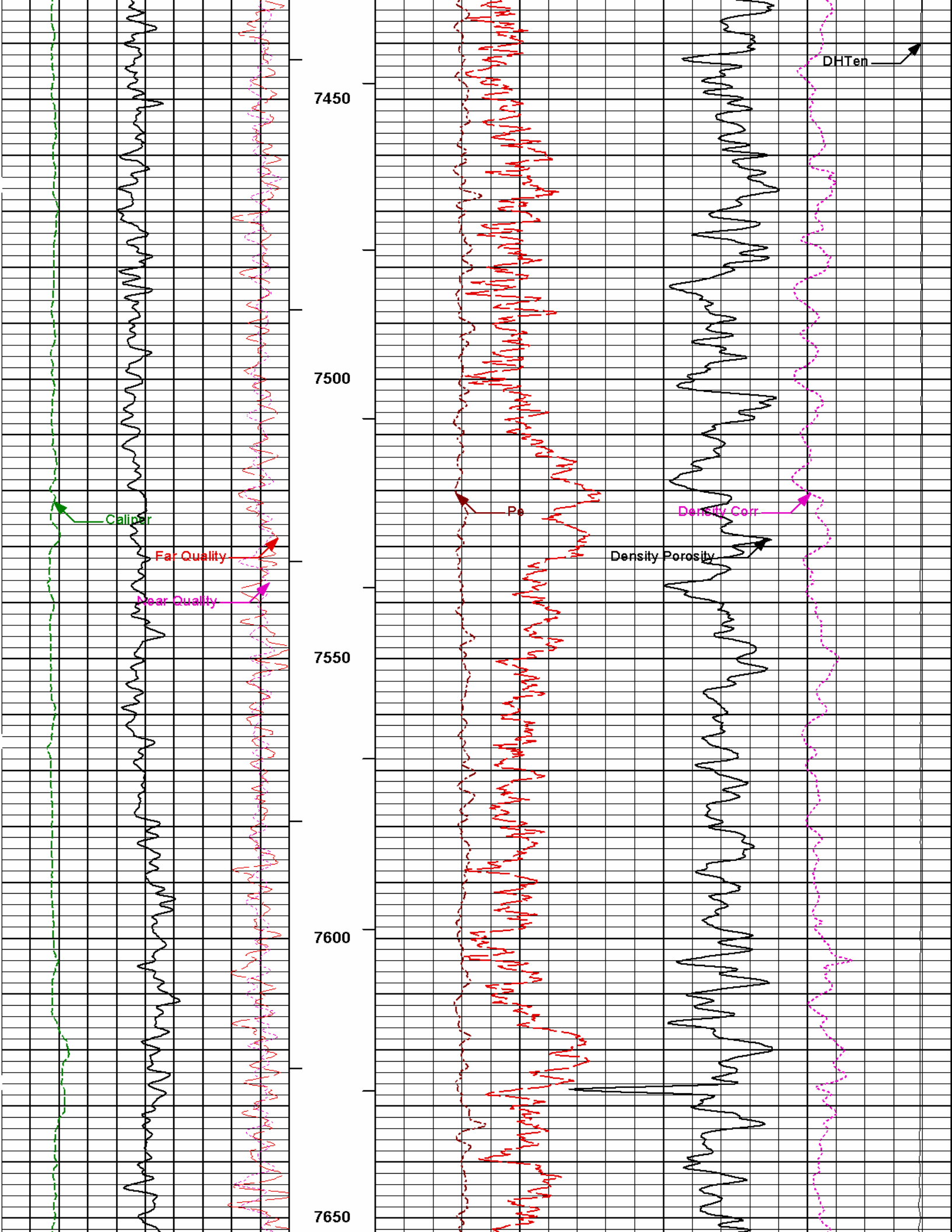


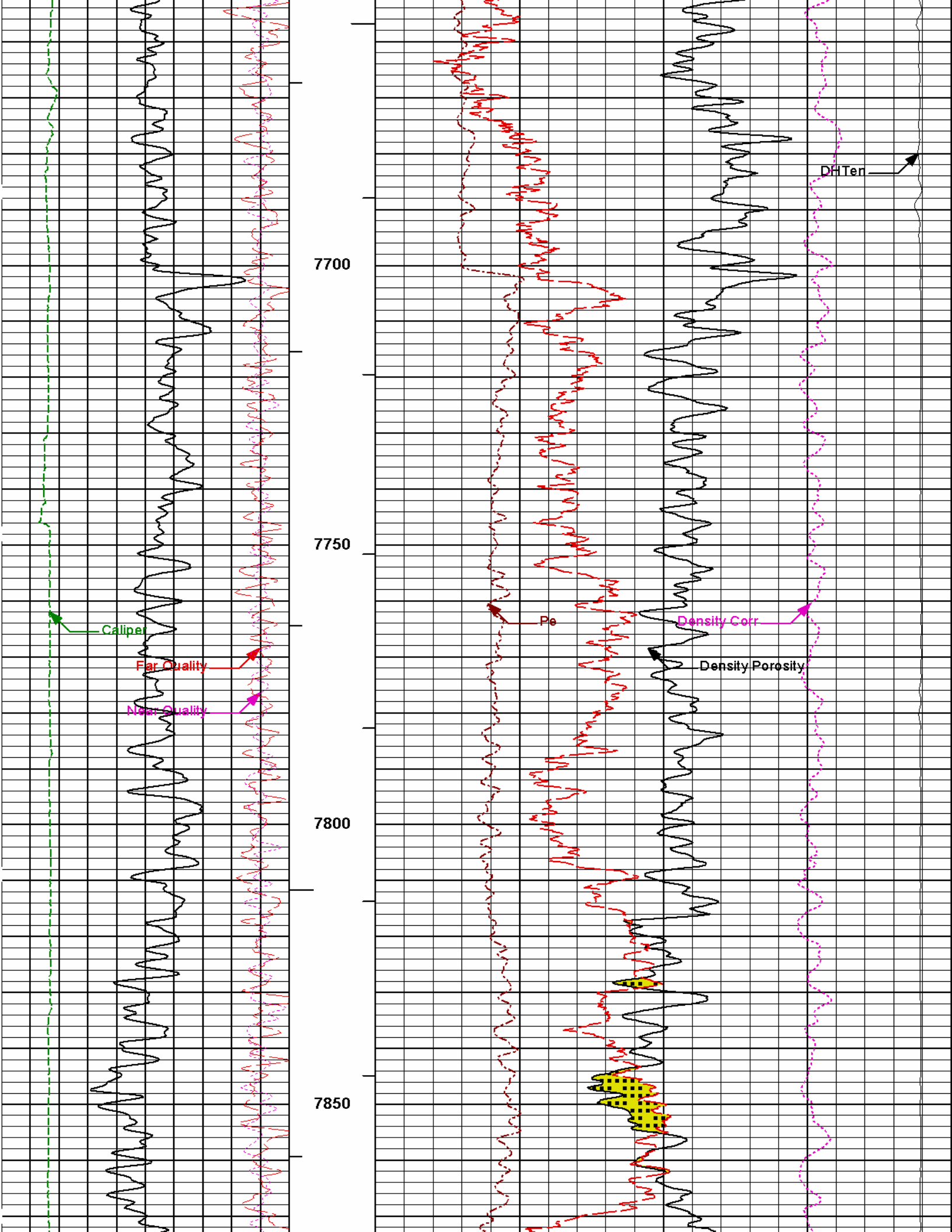


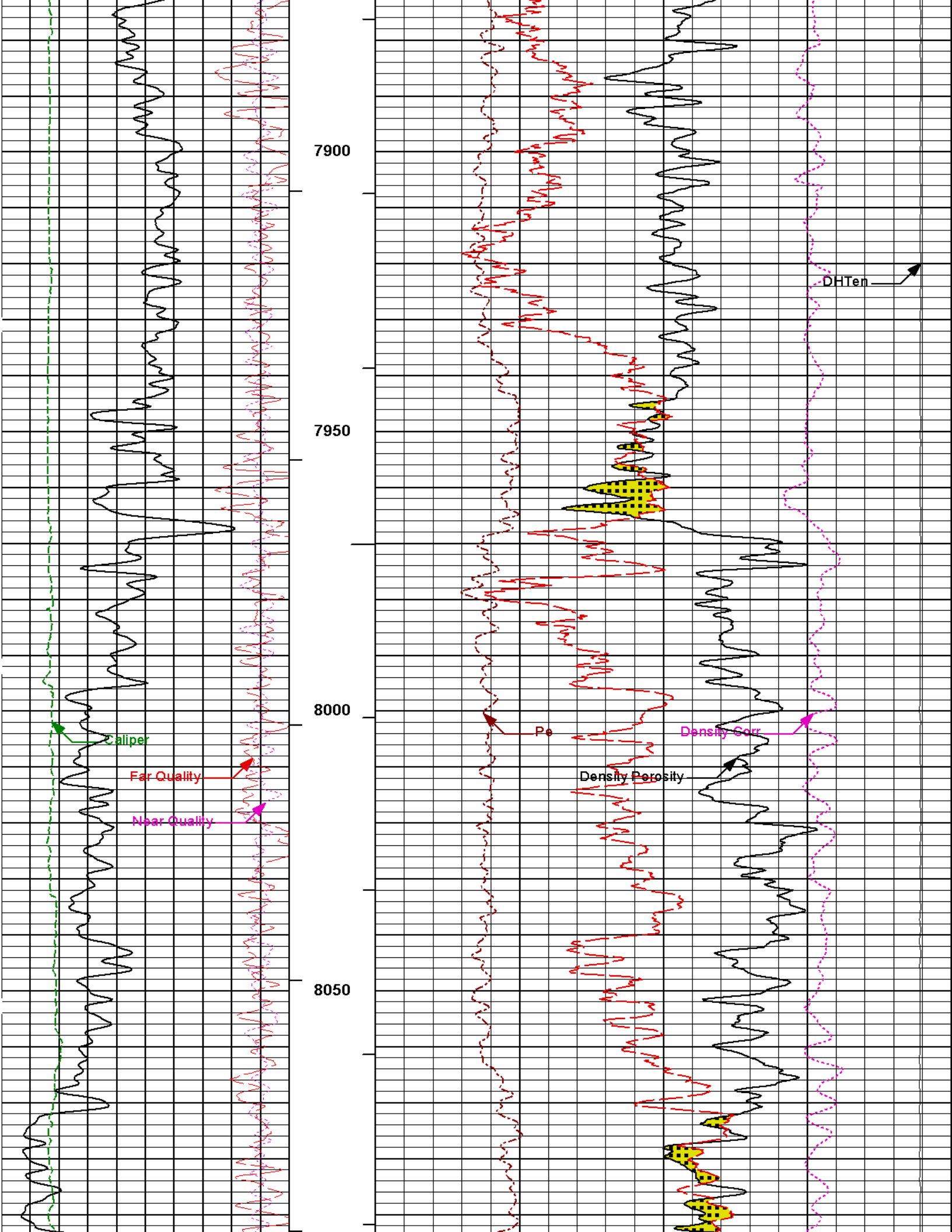


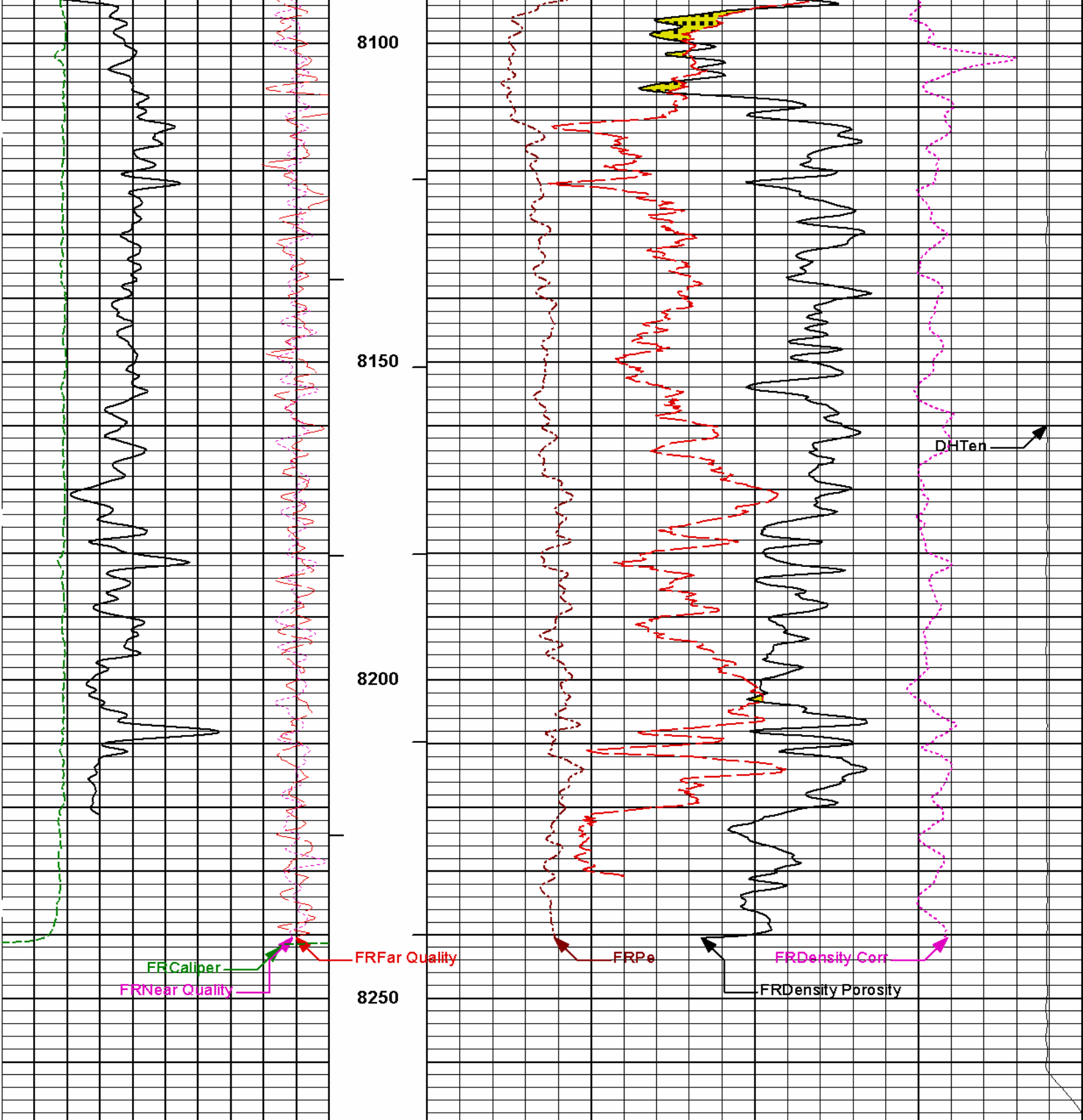










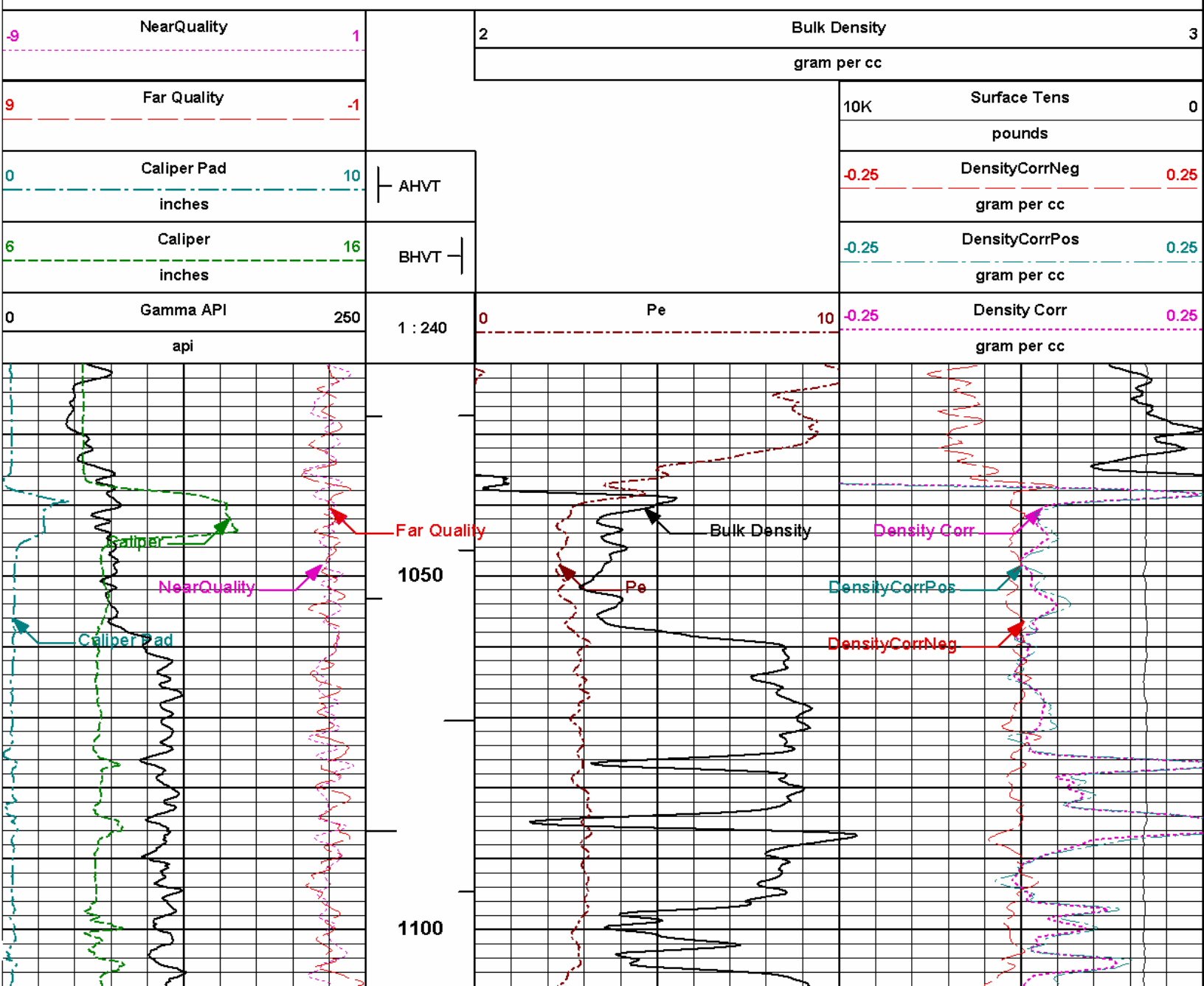


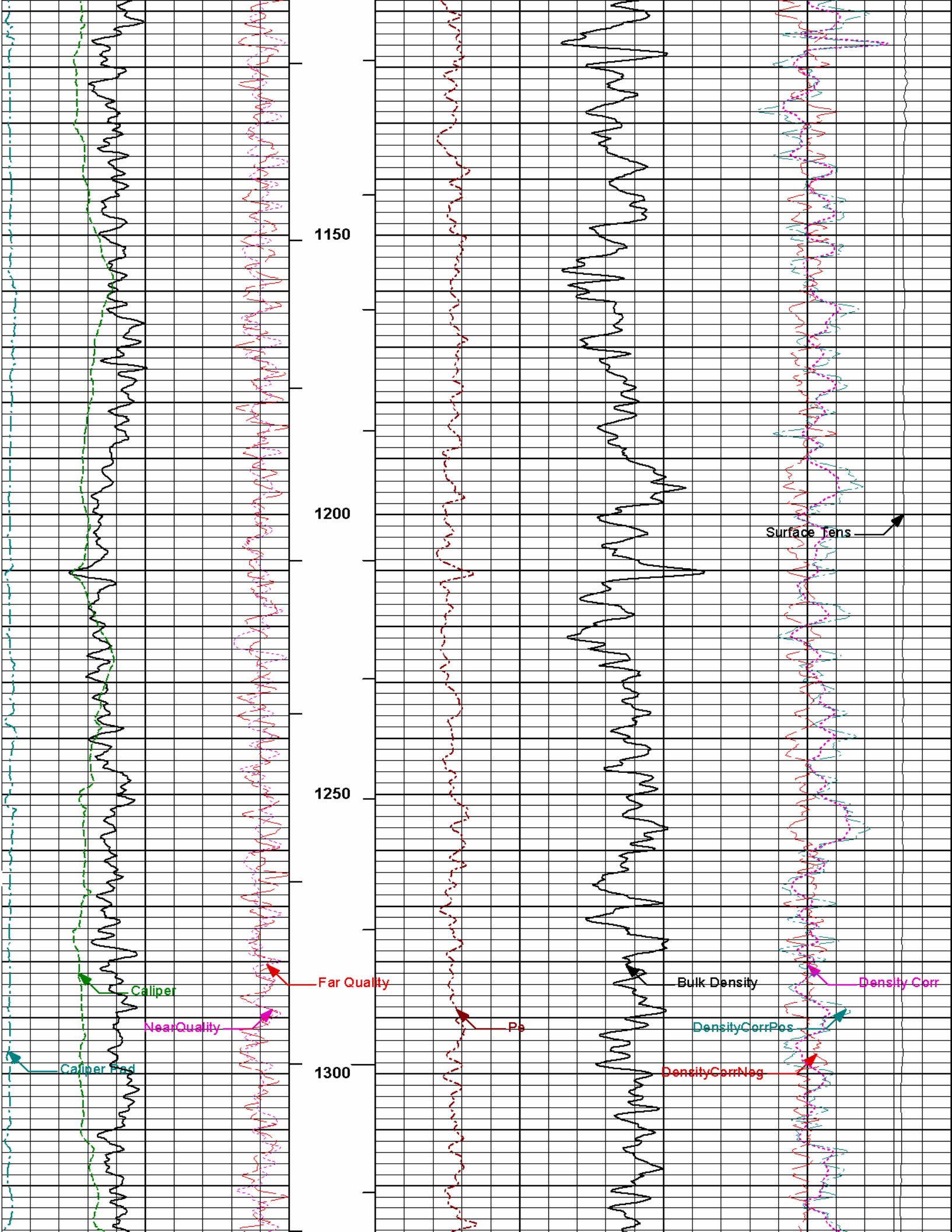
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	api							gram per cc	
6	Caliper	16	BHVT				10K	DHTen	0
	inches							pounds	
9	Far Quality	-1	AHVT	30	Density Porosity				-10
					percent				
-9	Near Quality	1		30	Neutron Porosity				-10
					percent				

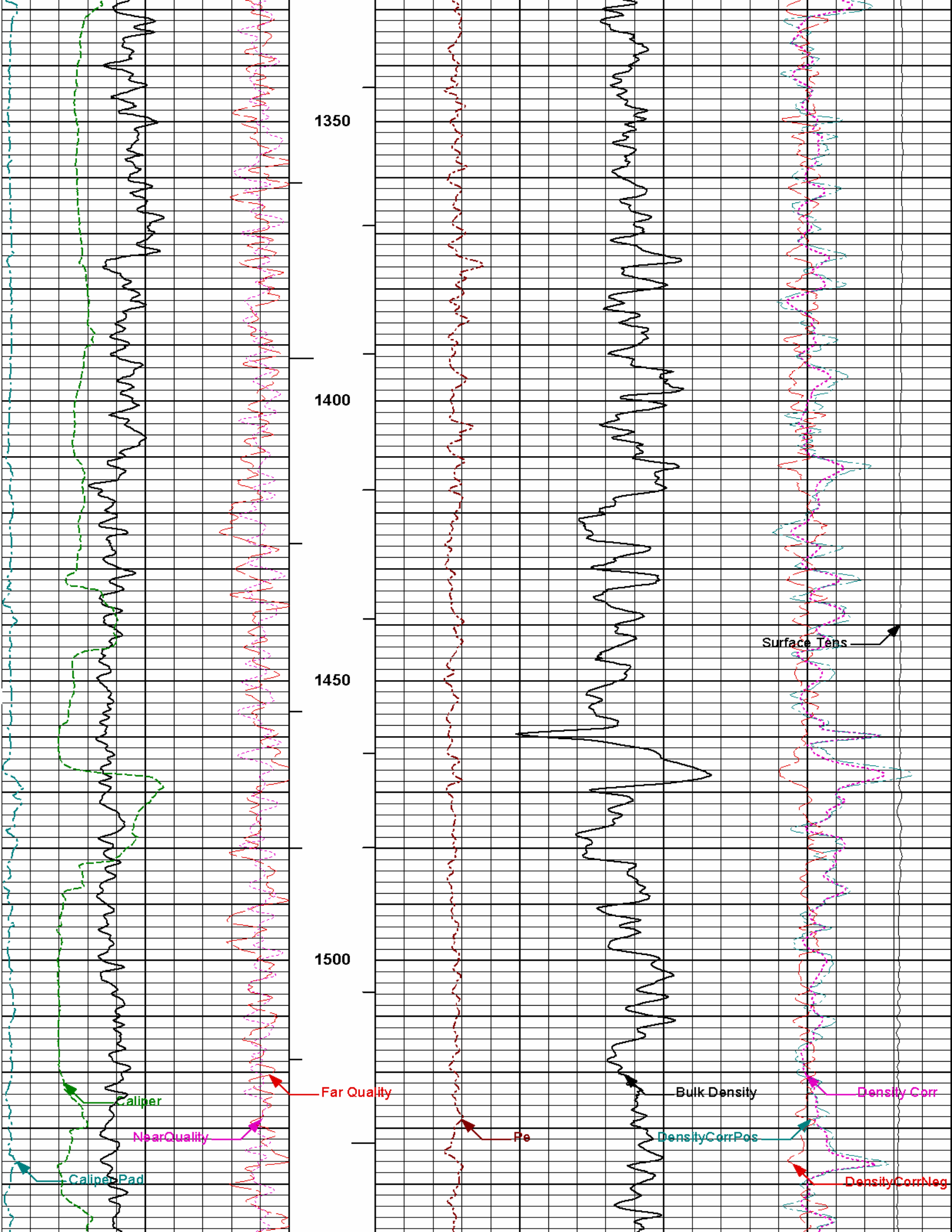


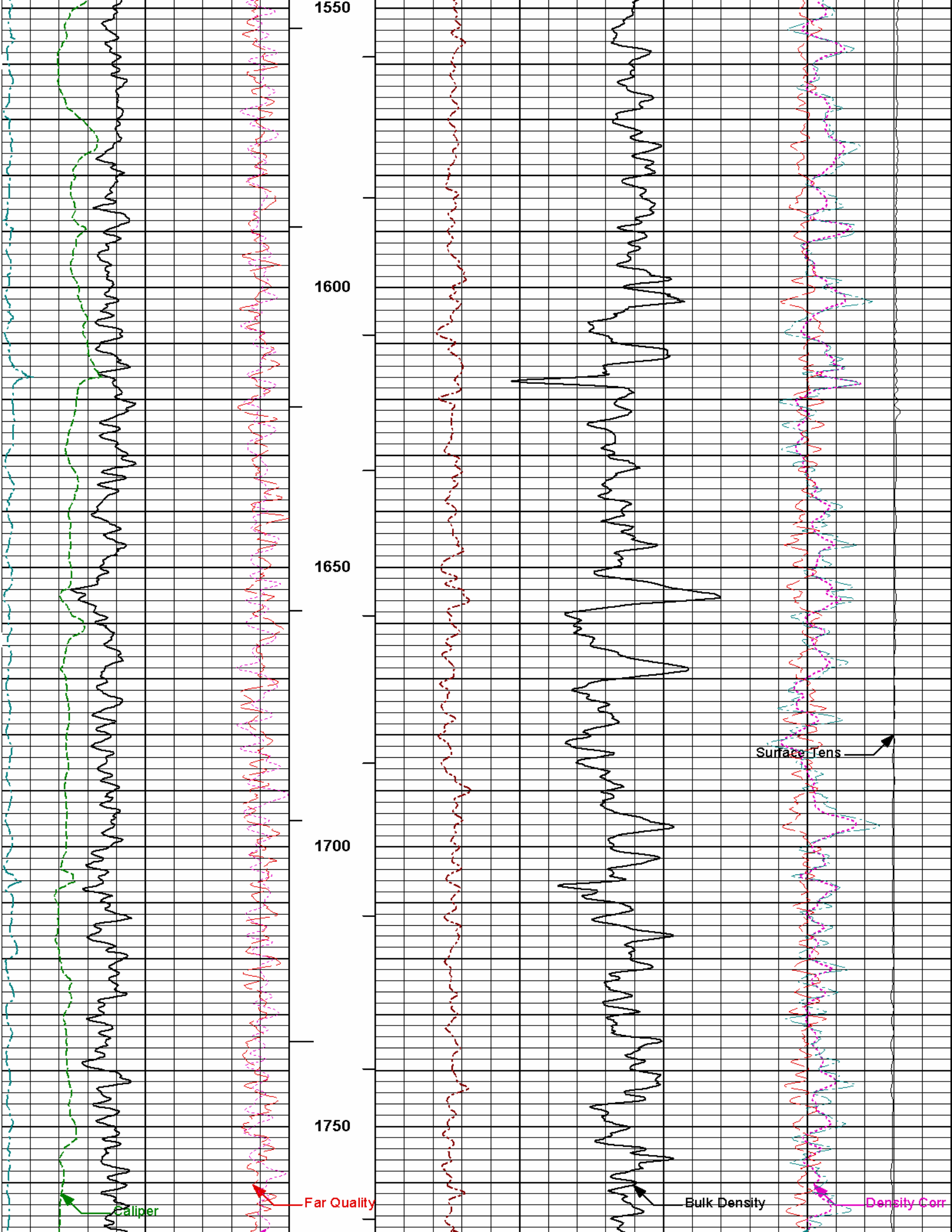
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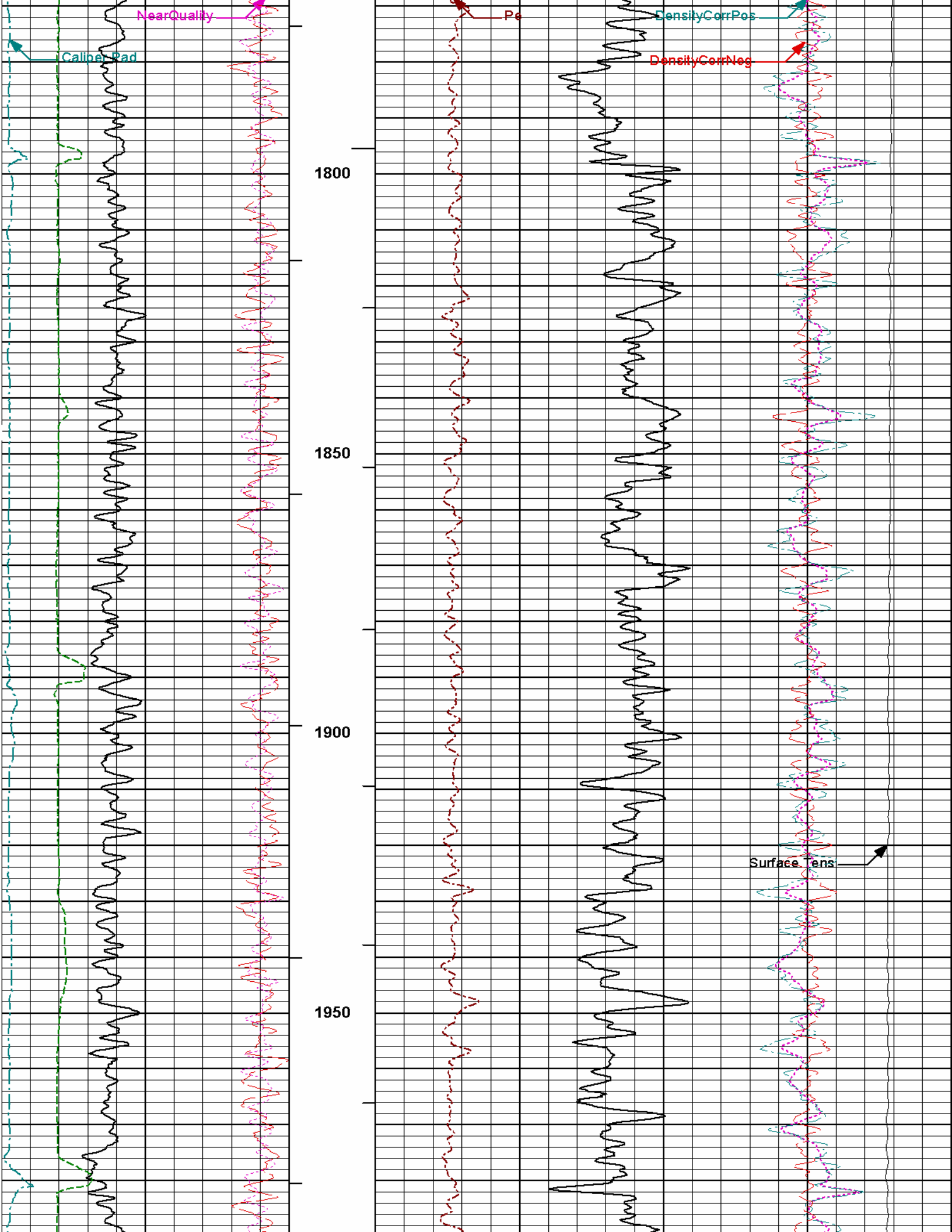
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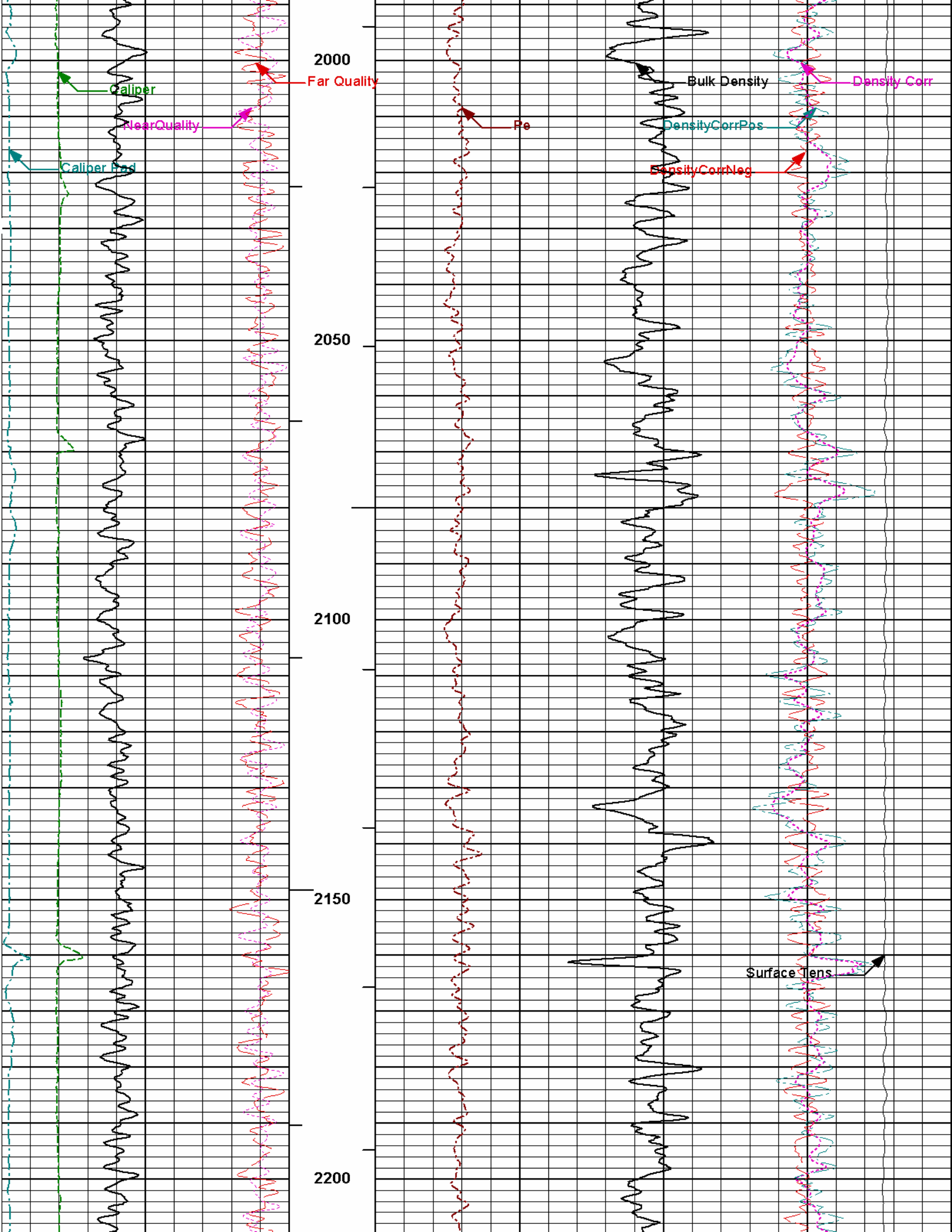


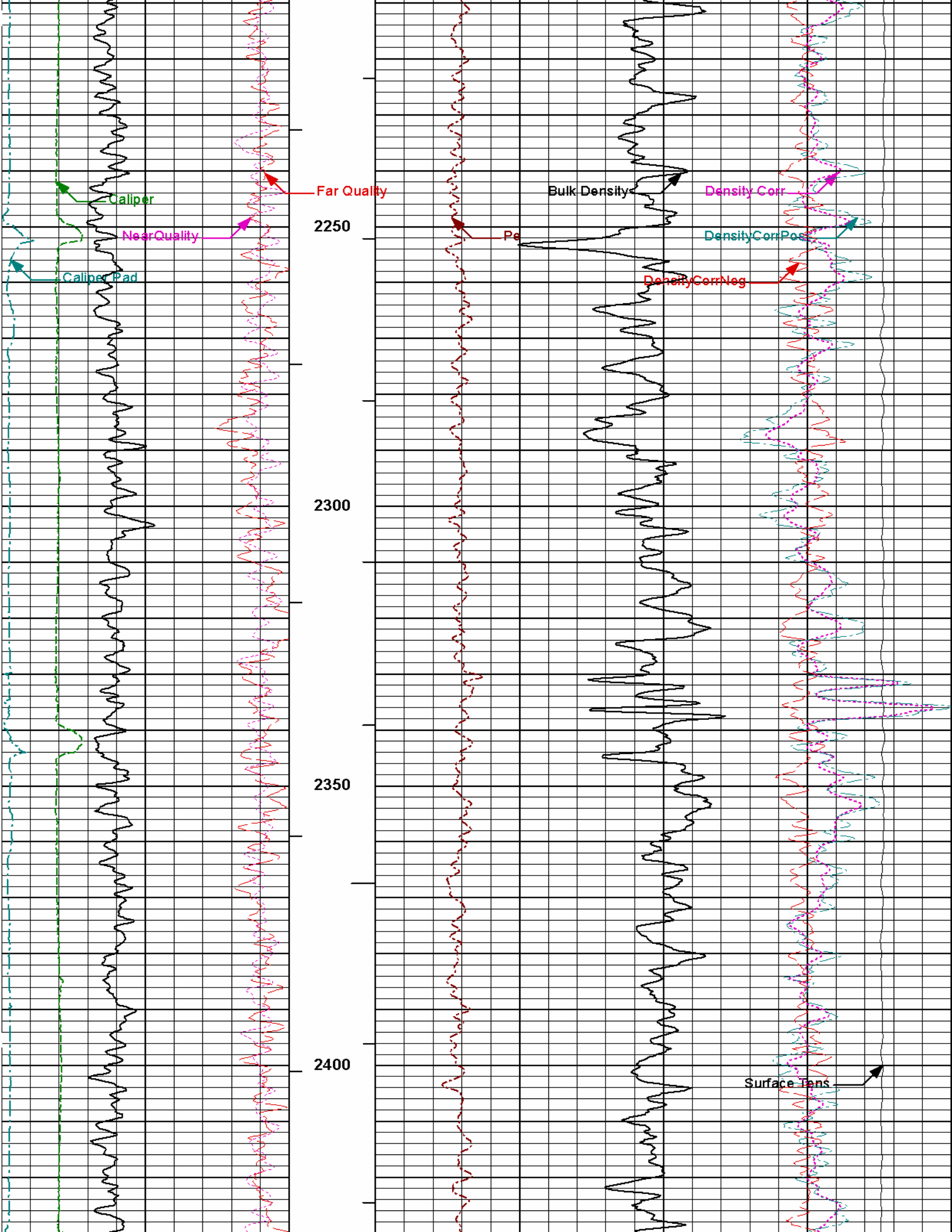




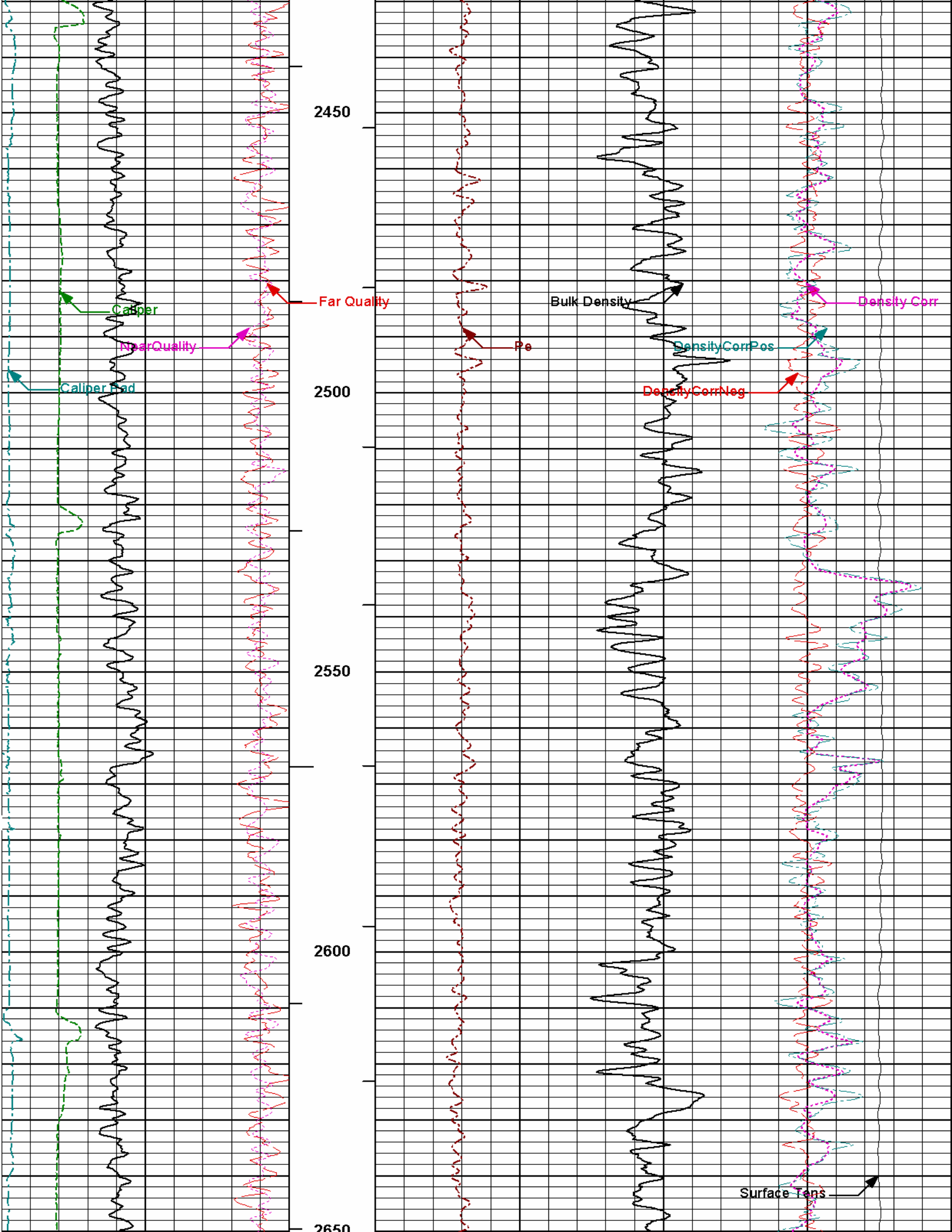


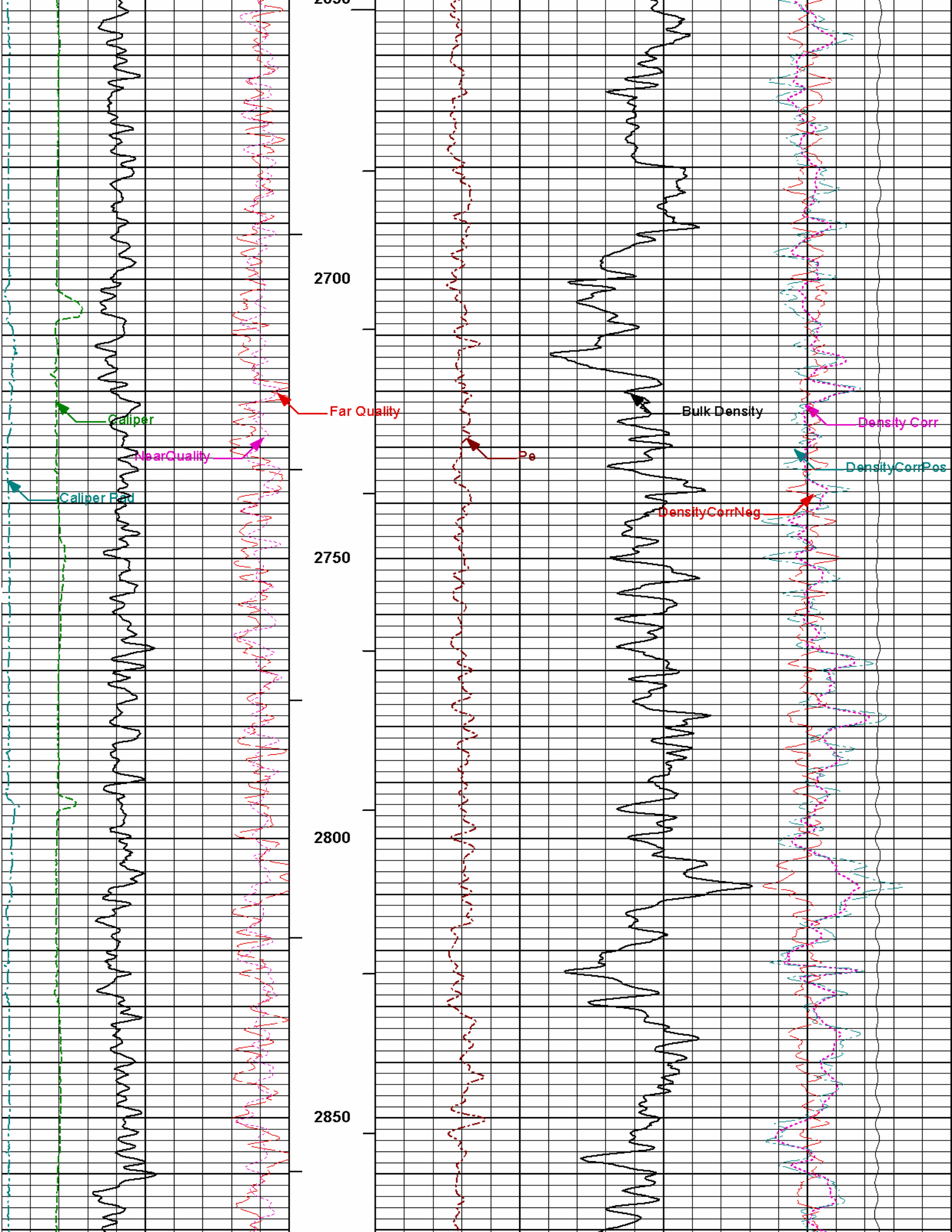


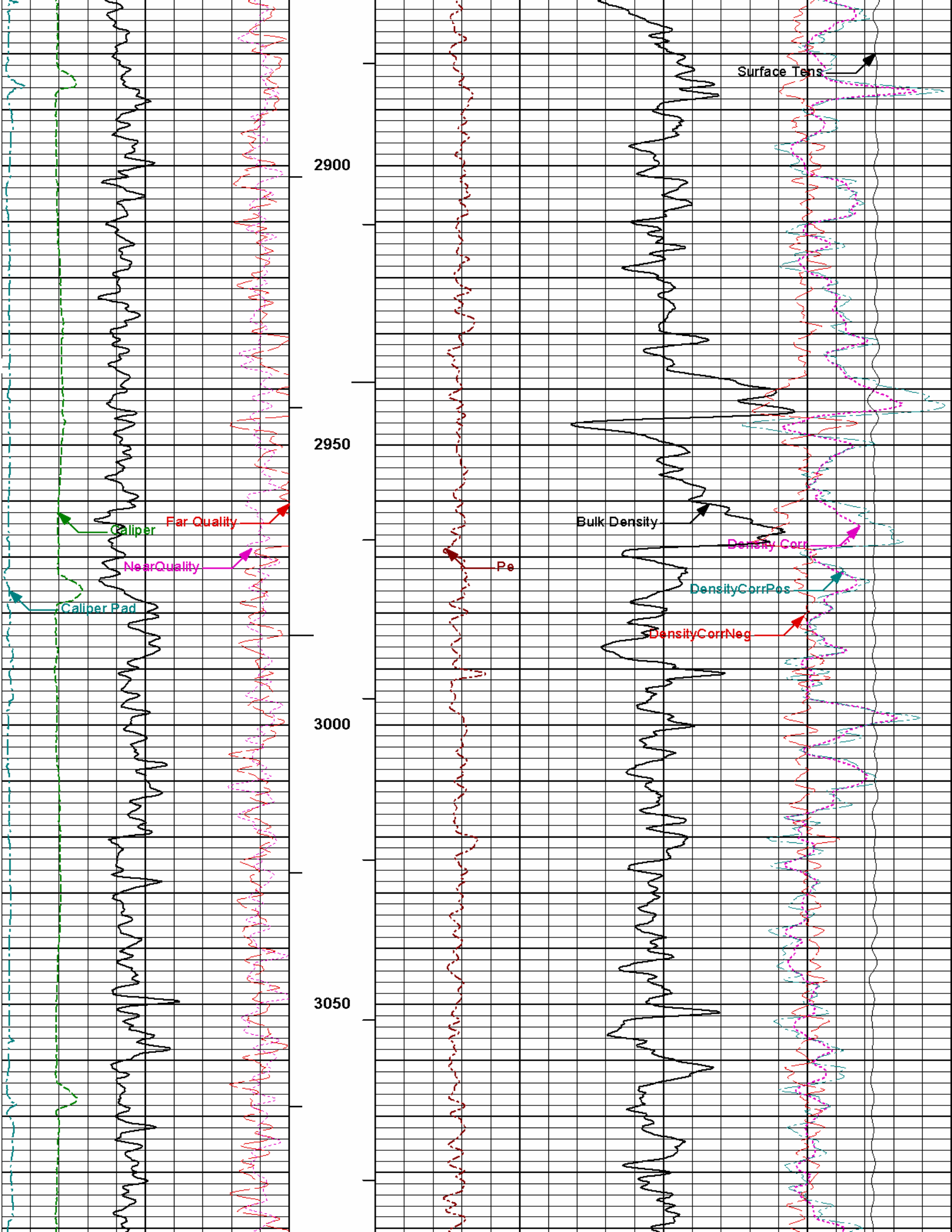


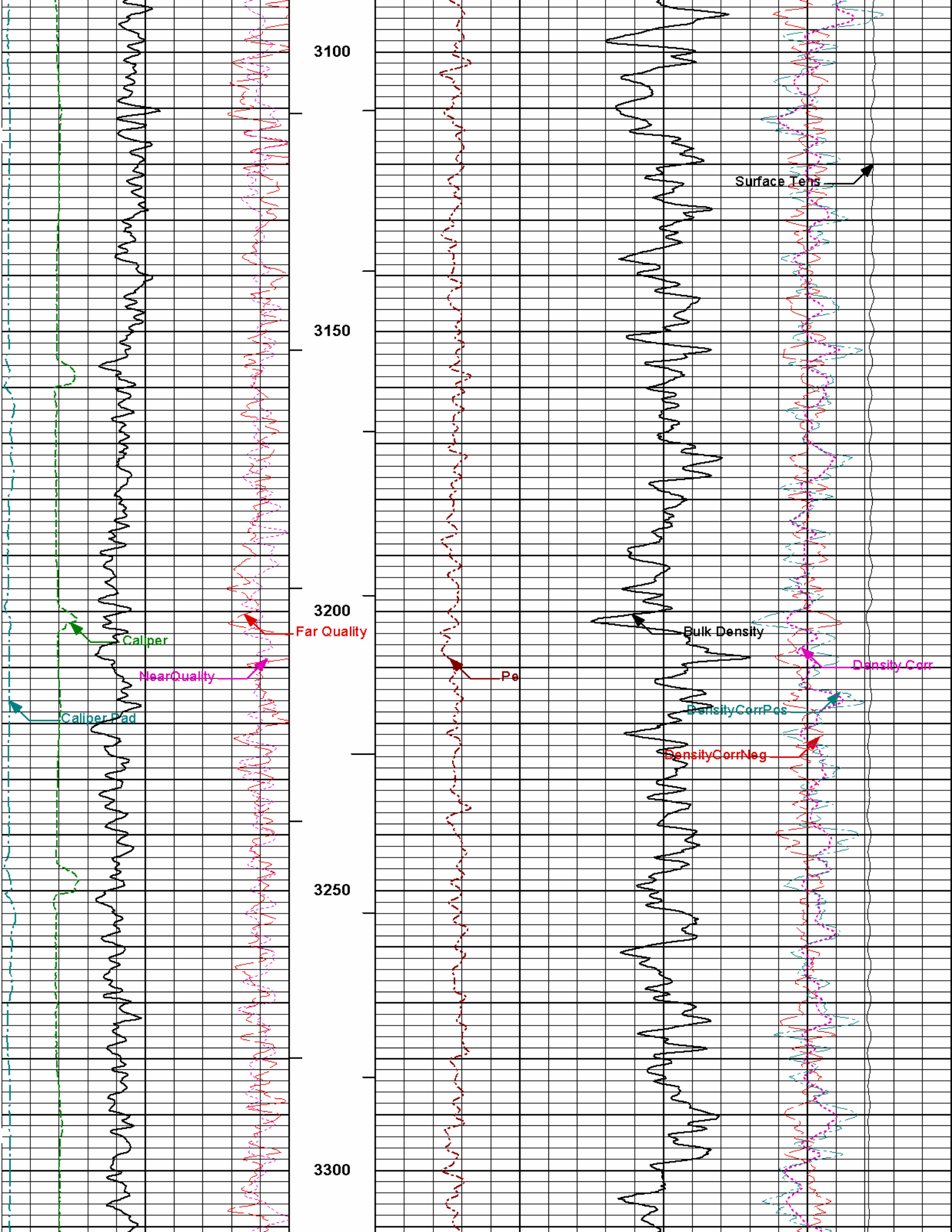


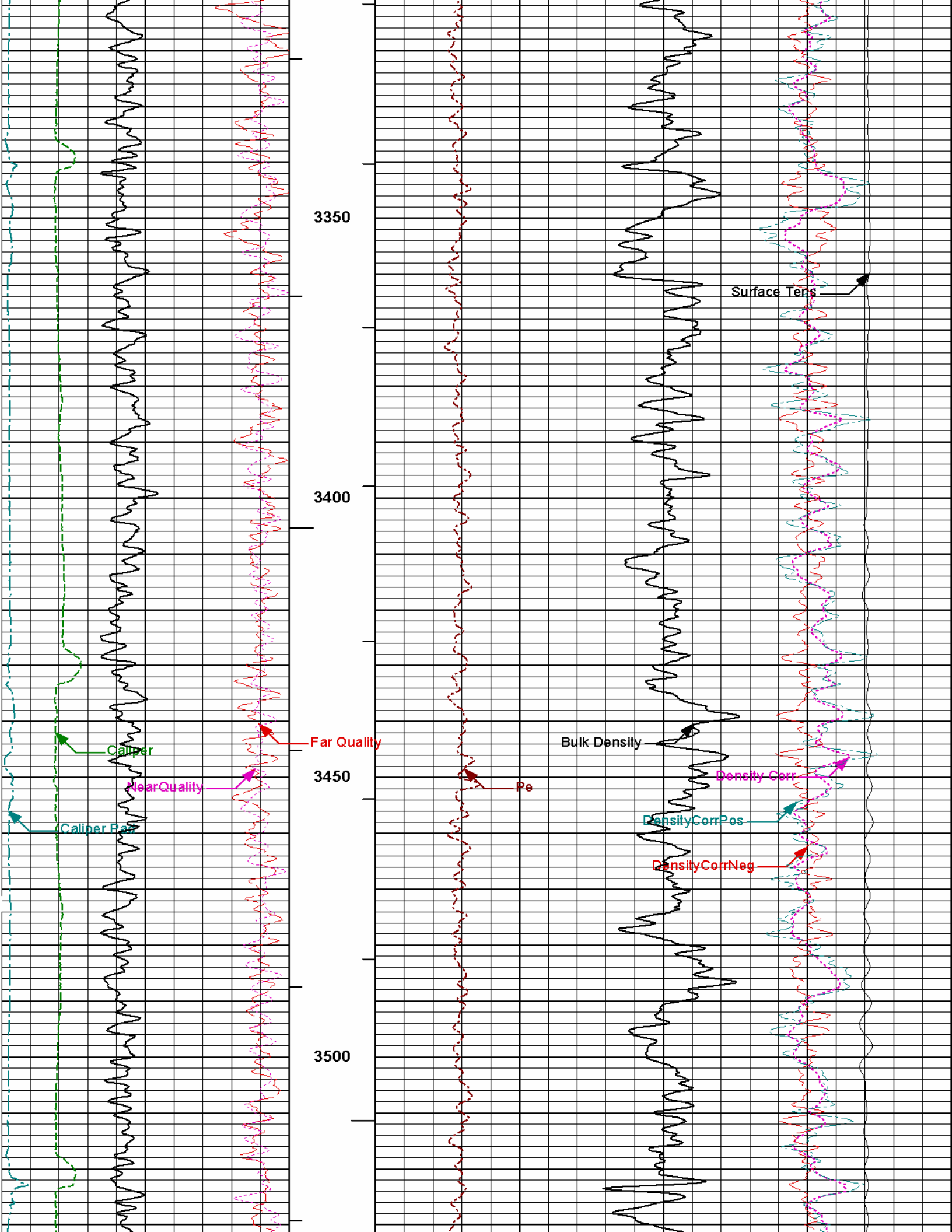


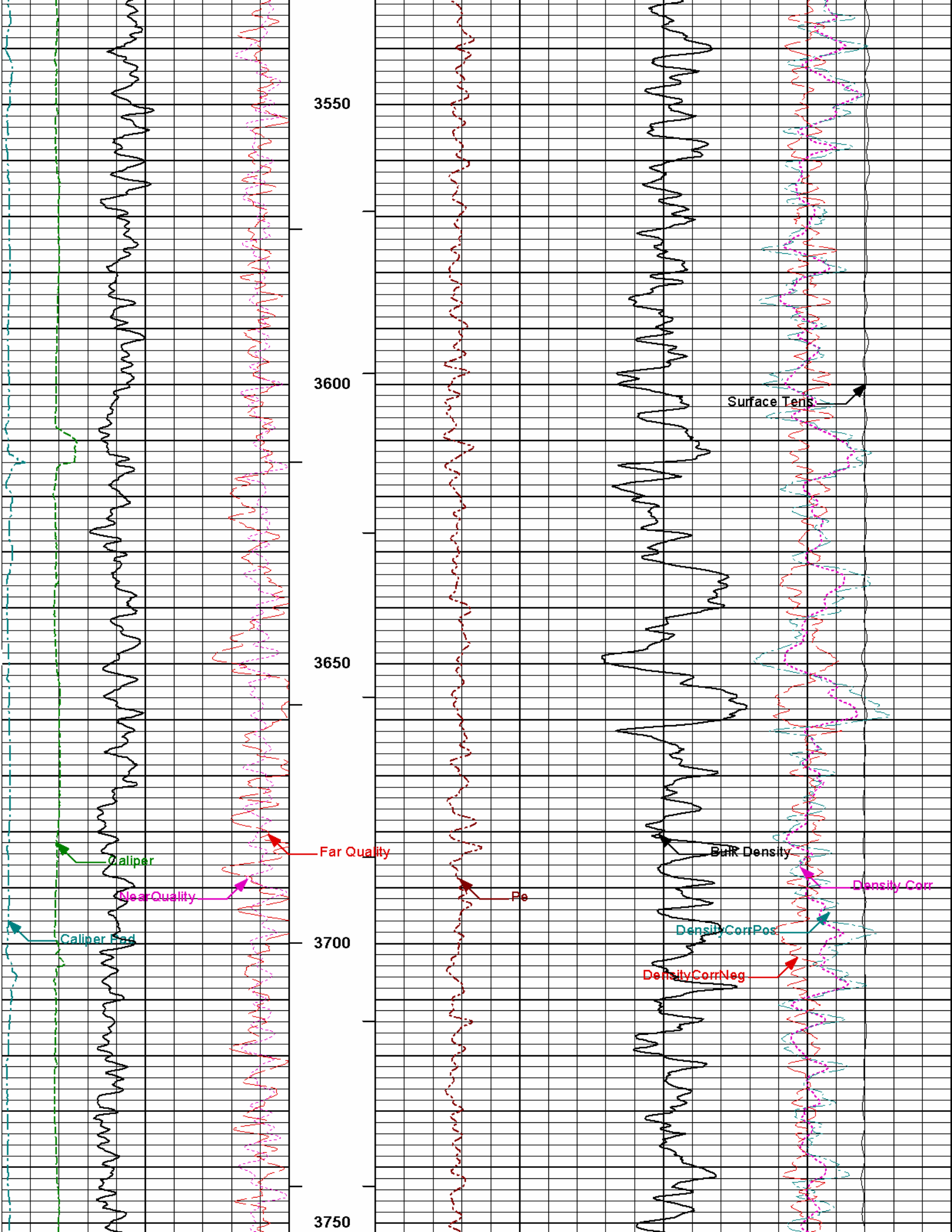




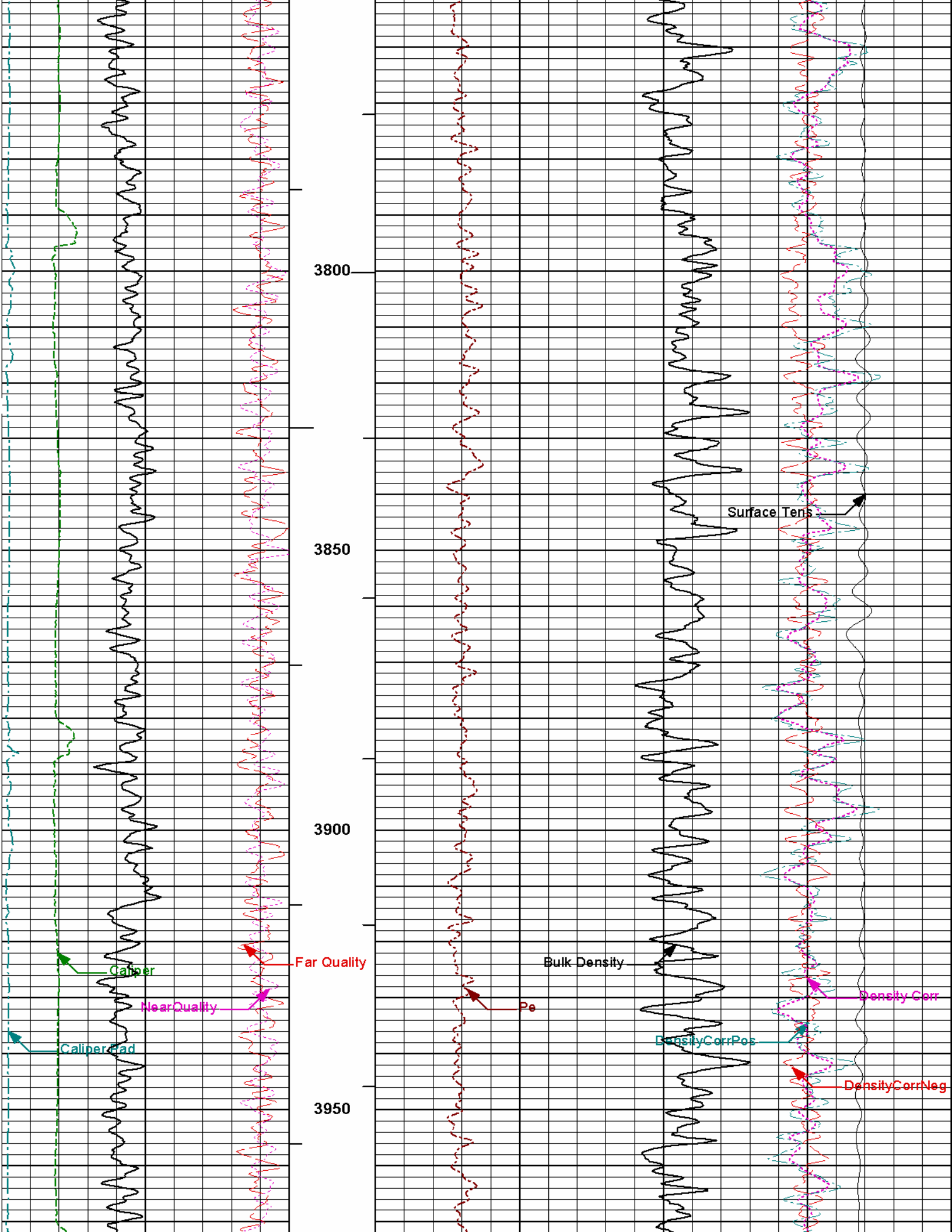




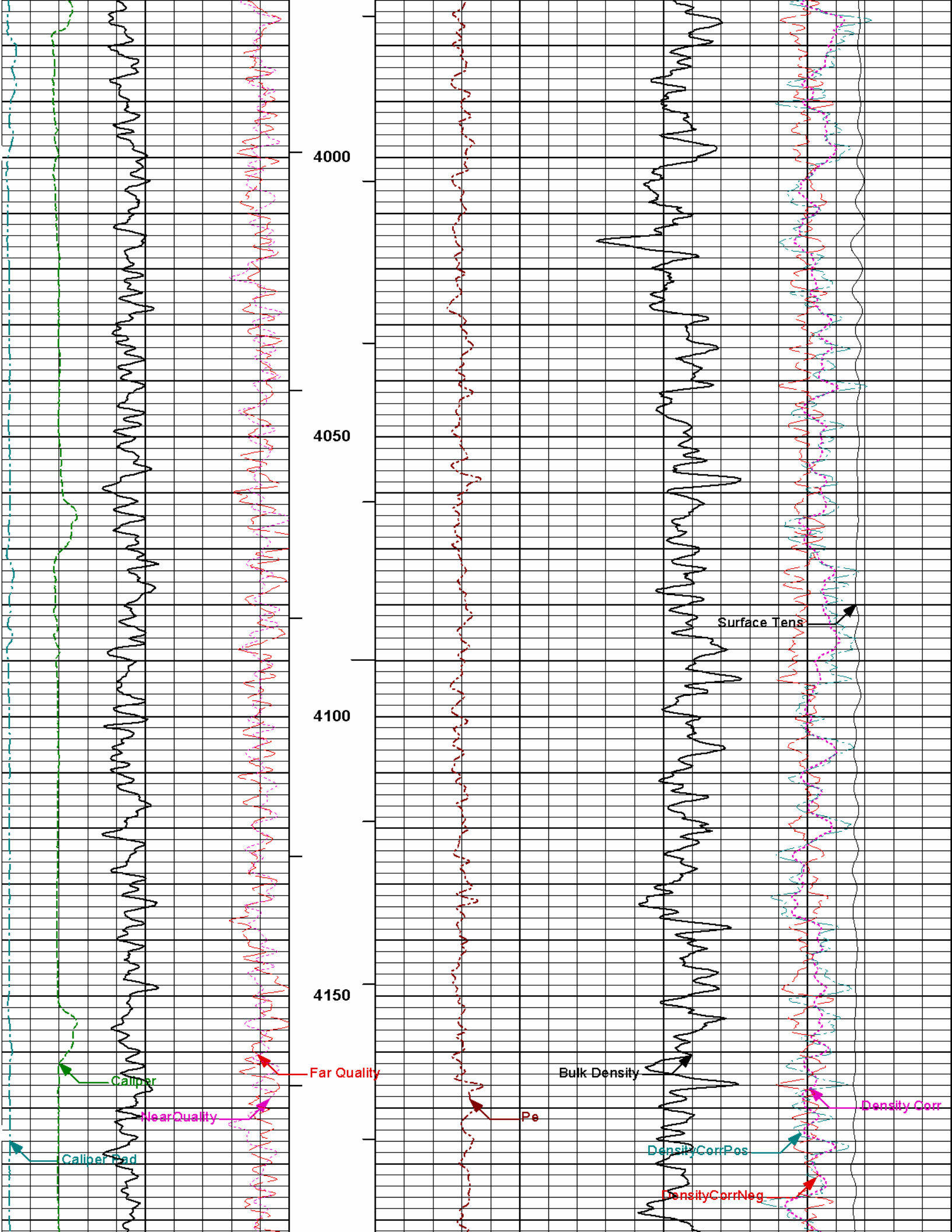


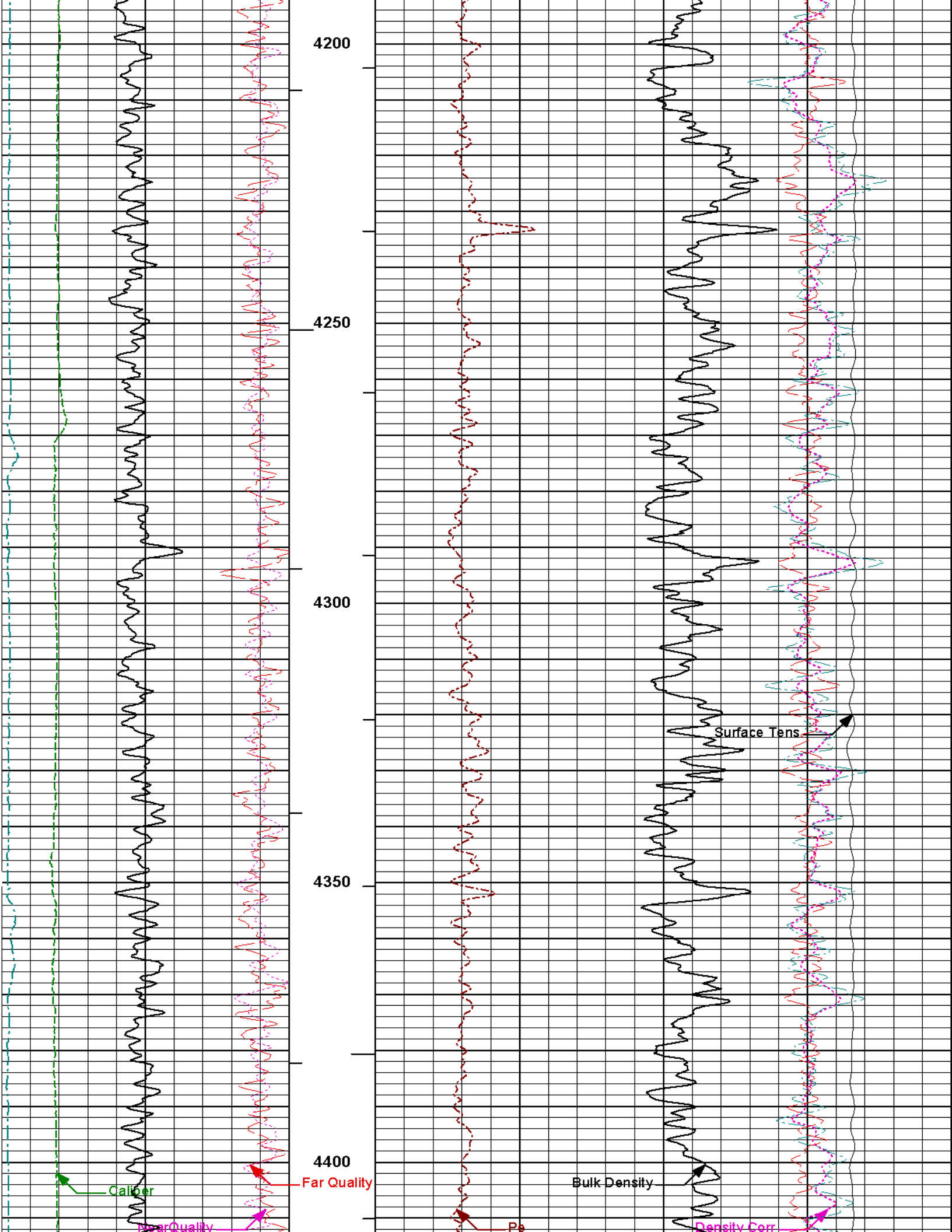


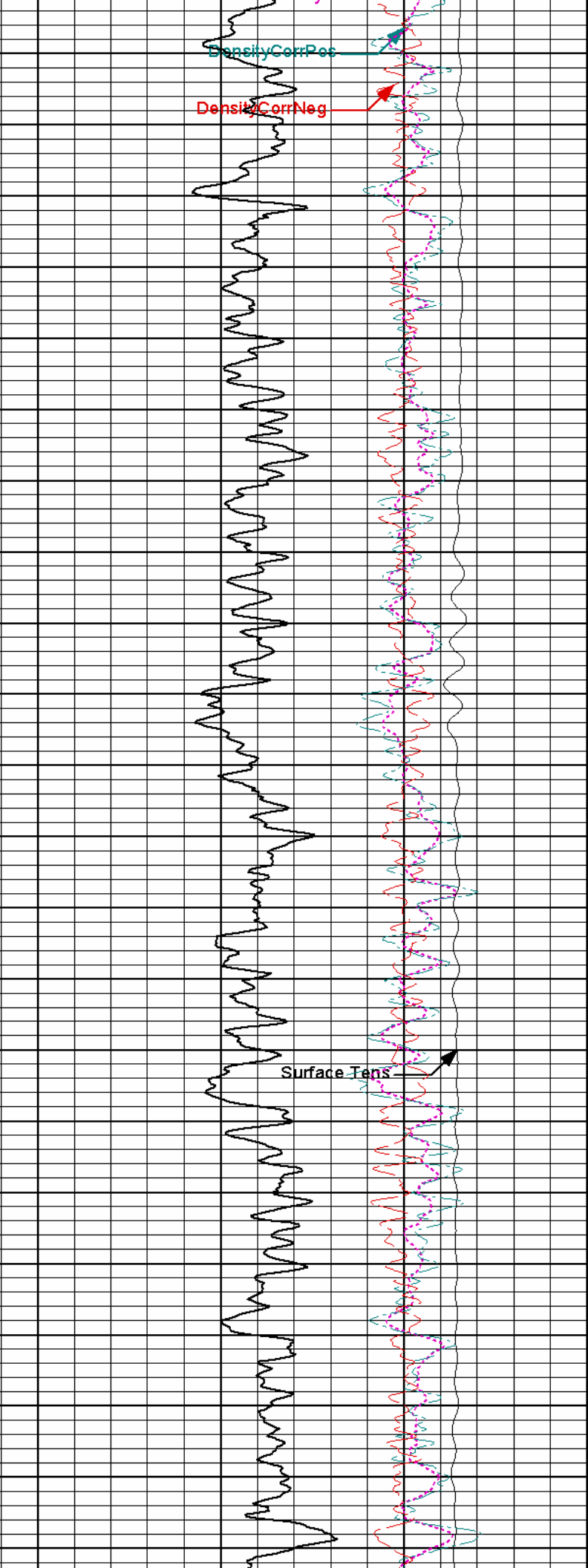
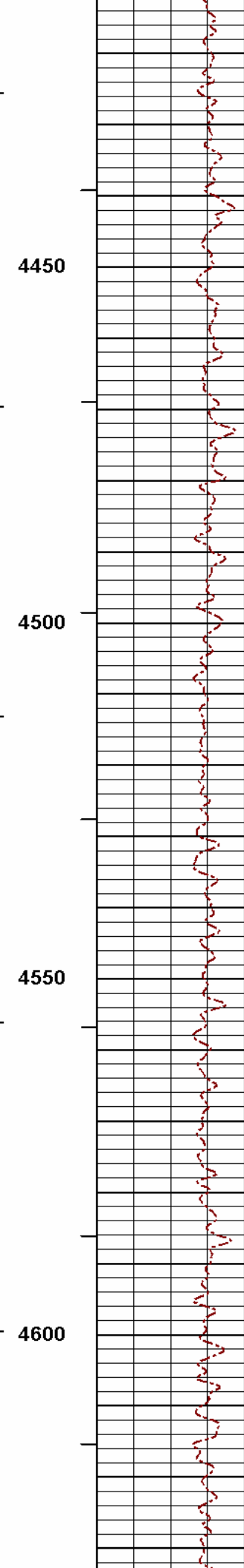
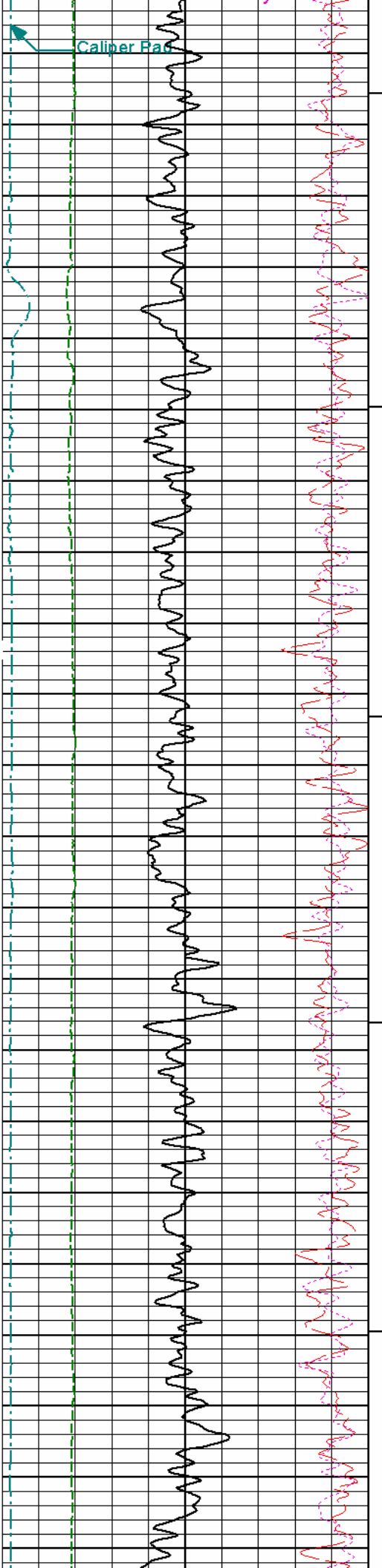


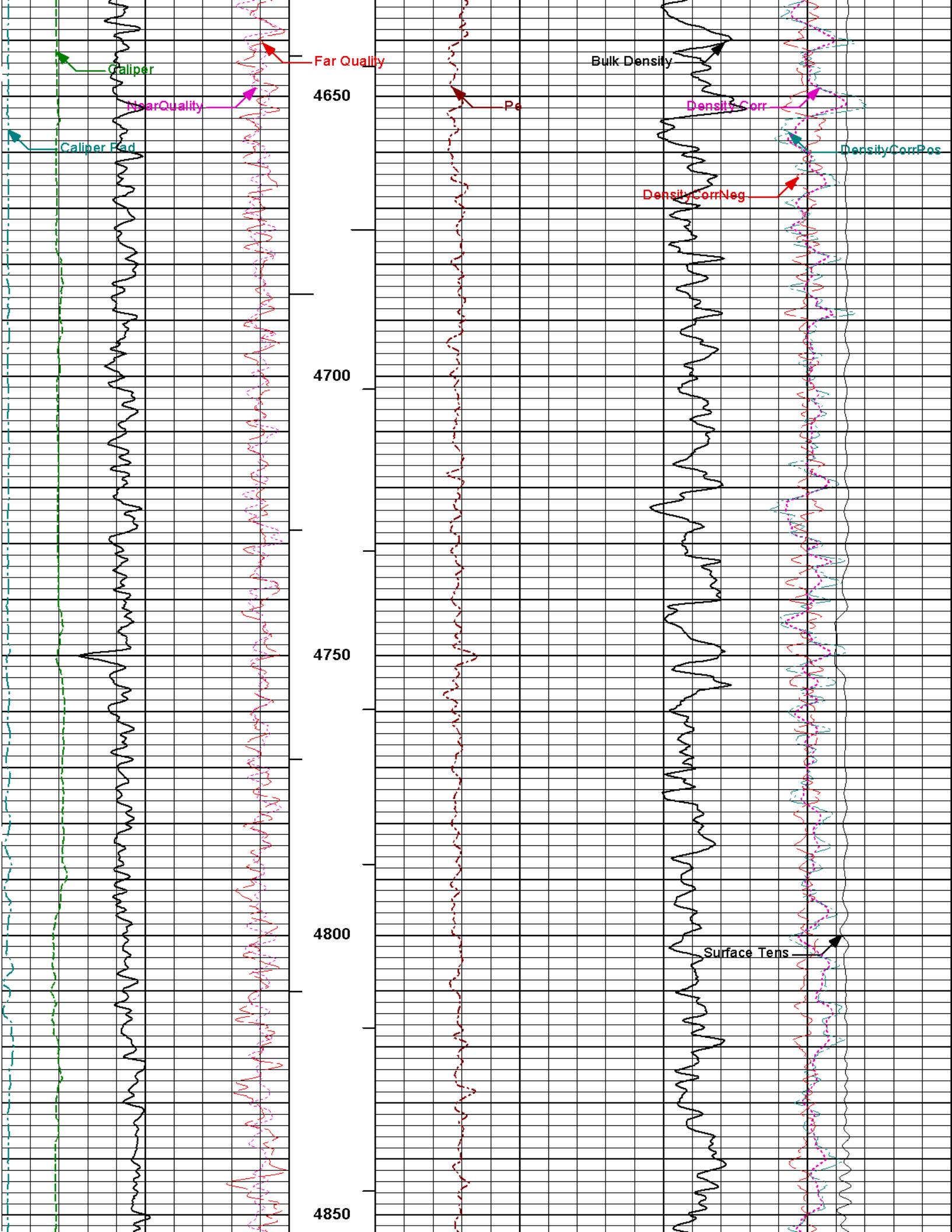


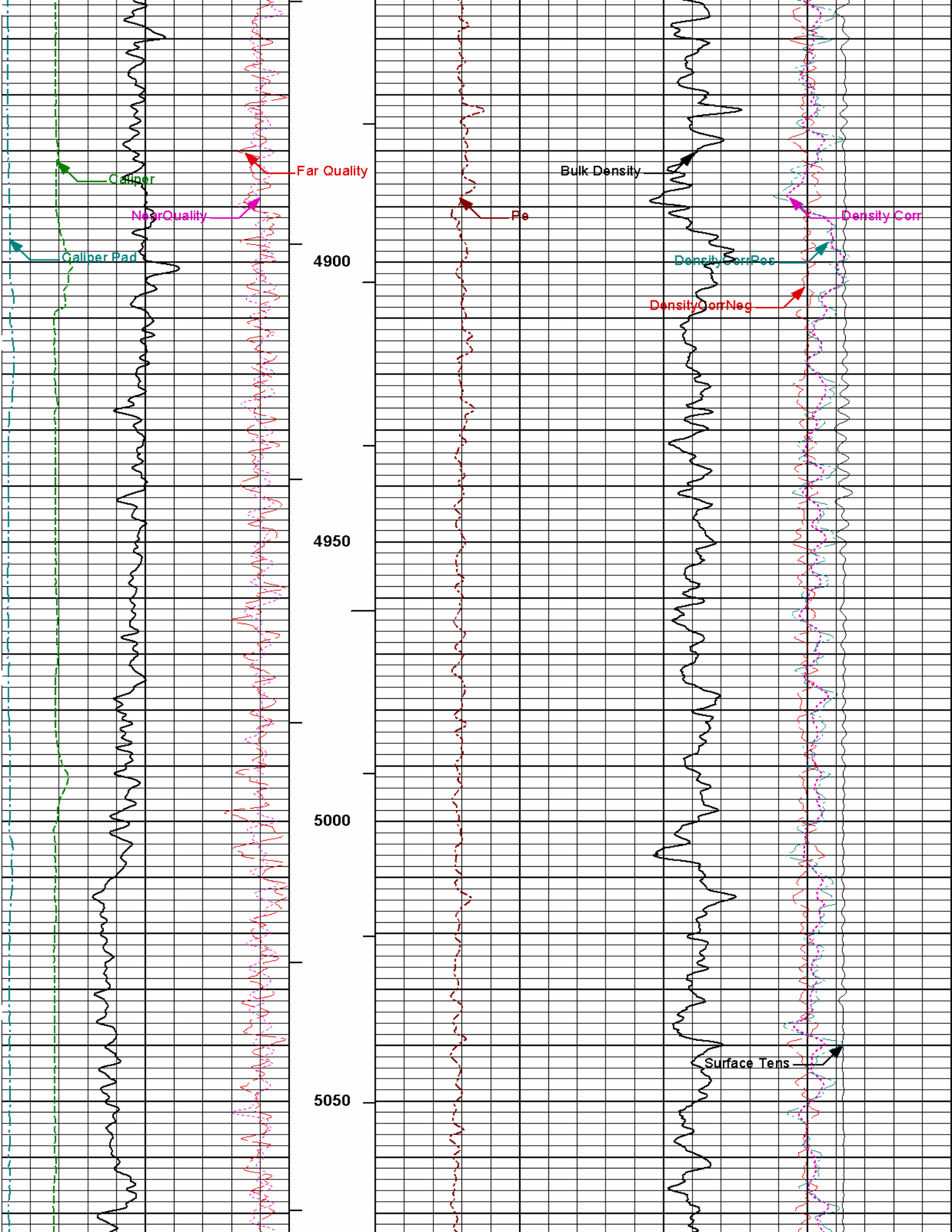


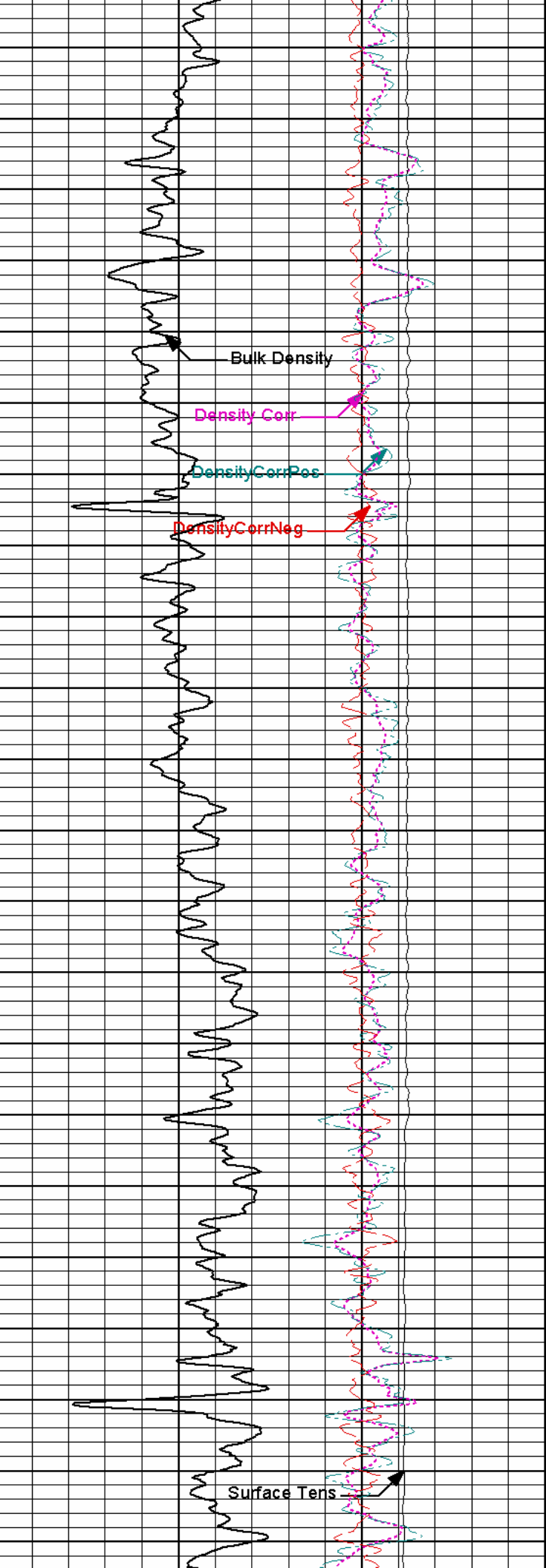
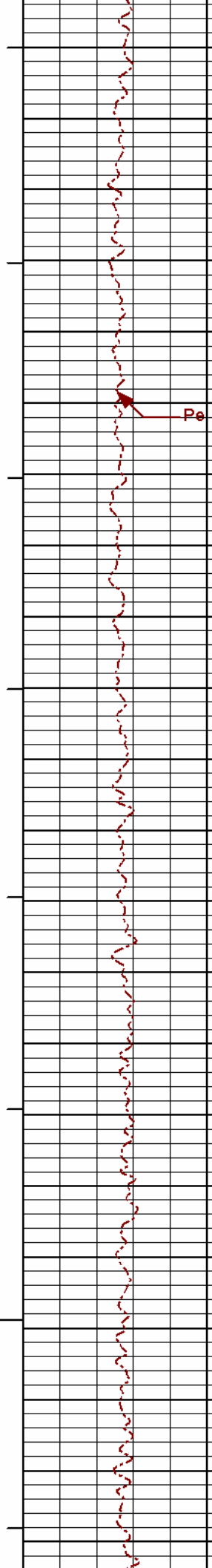
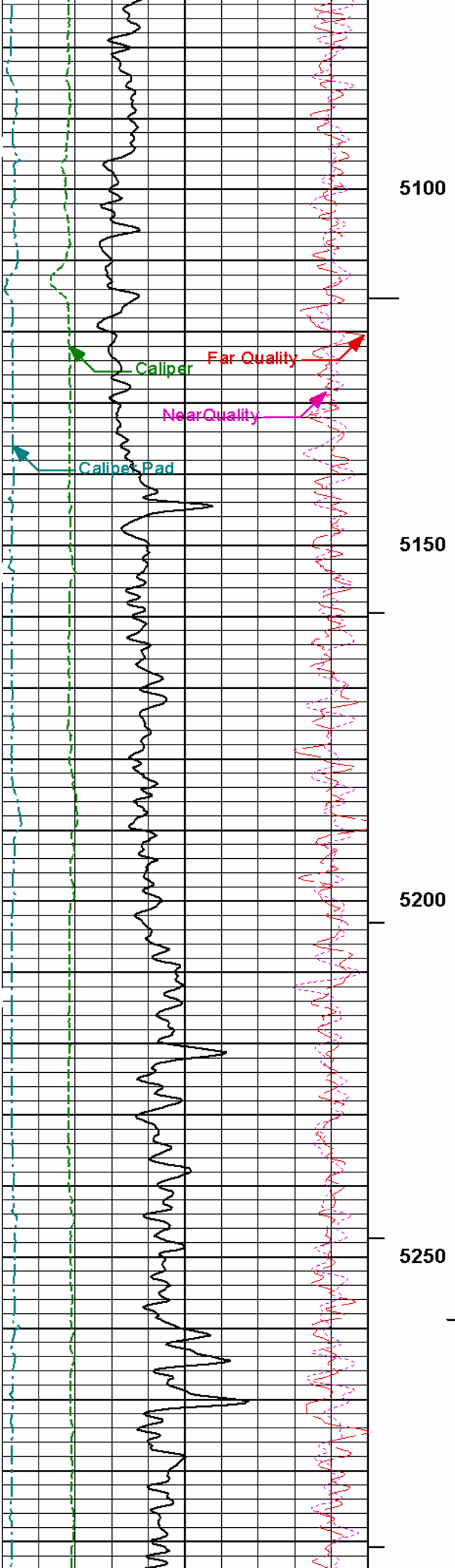


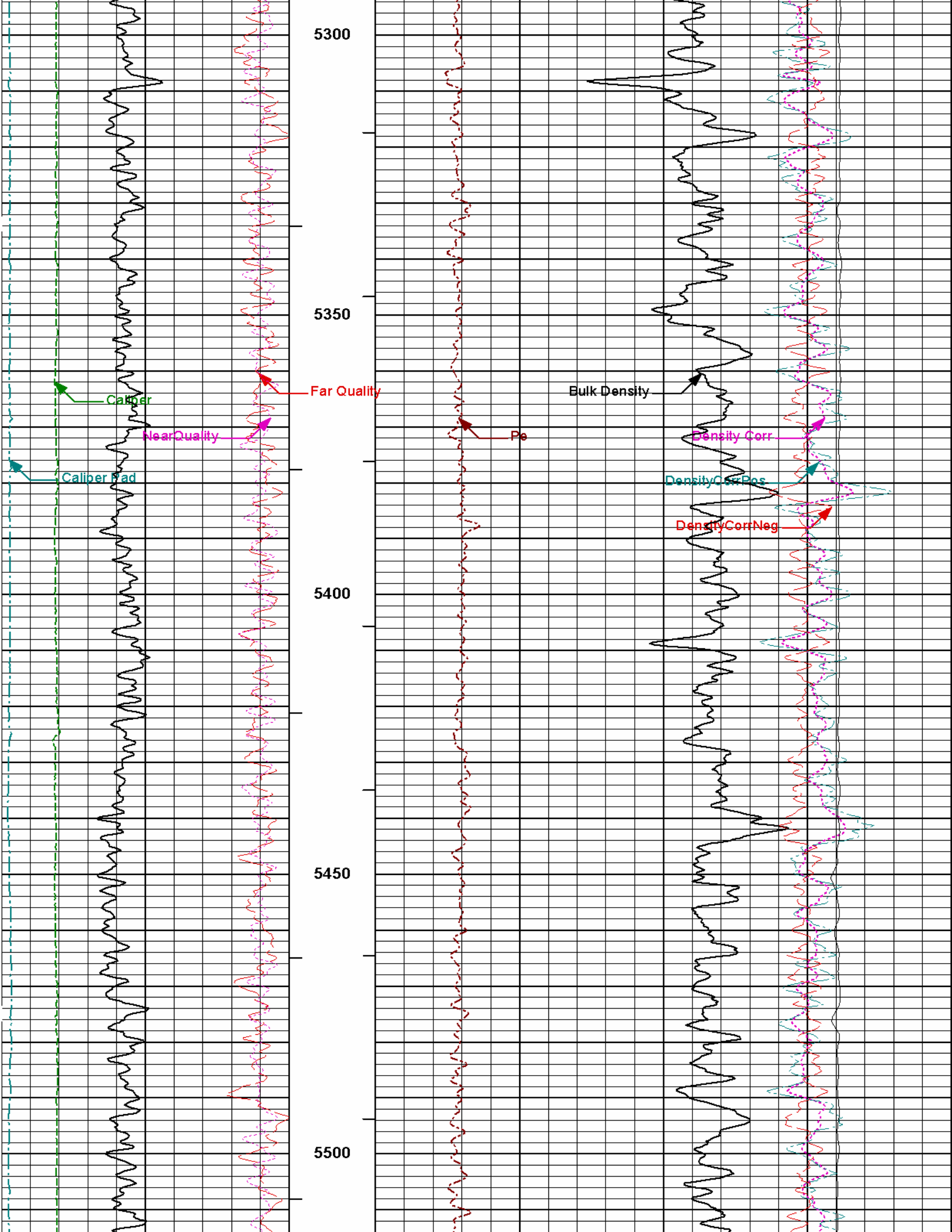




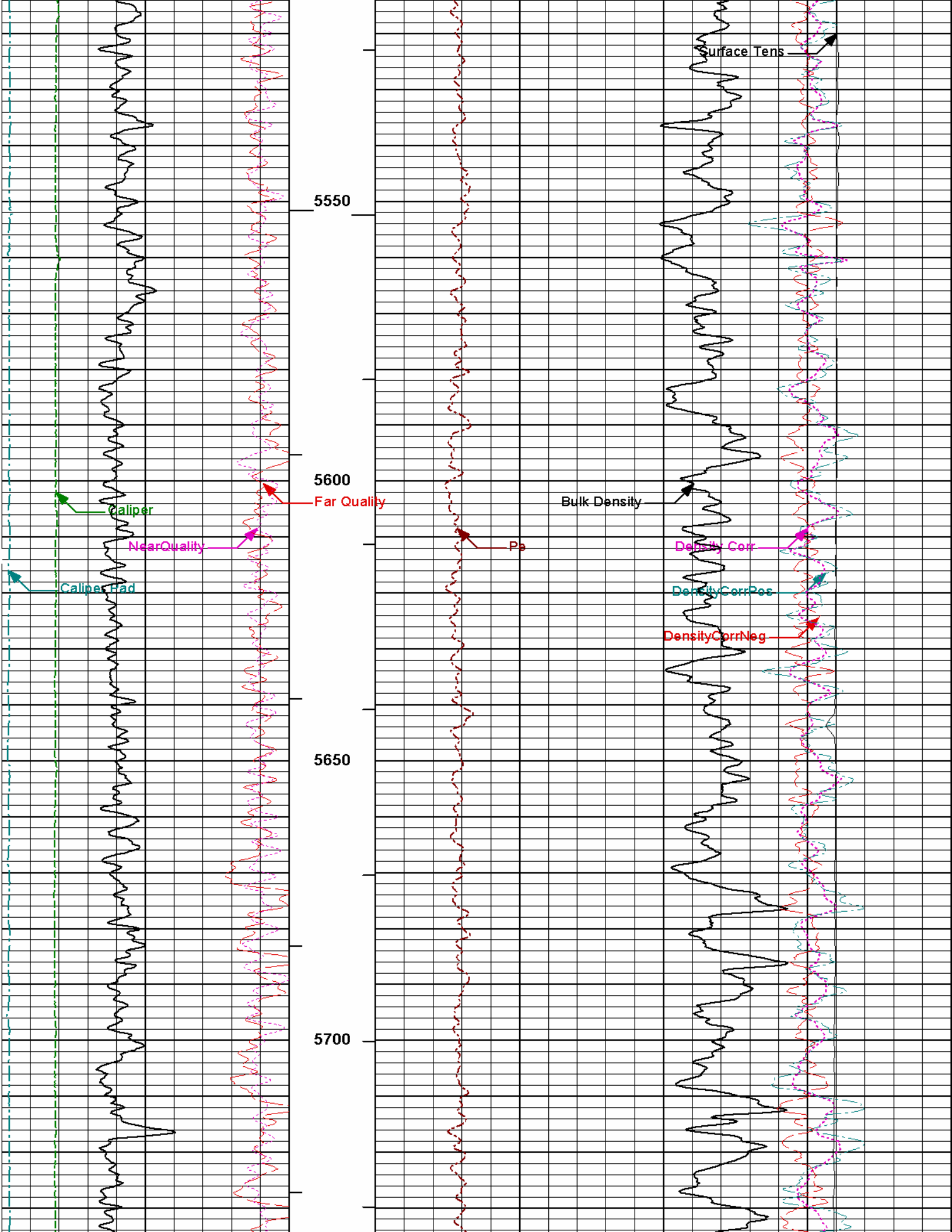


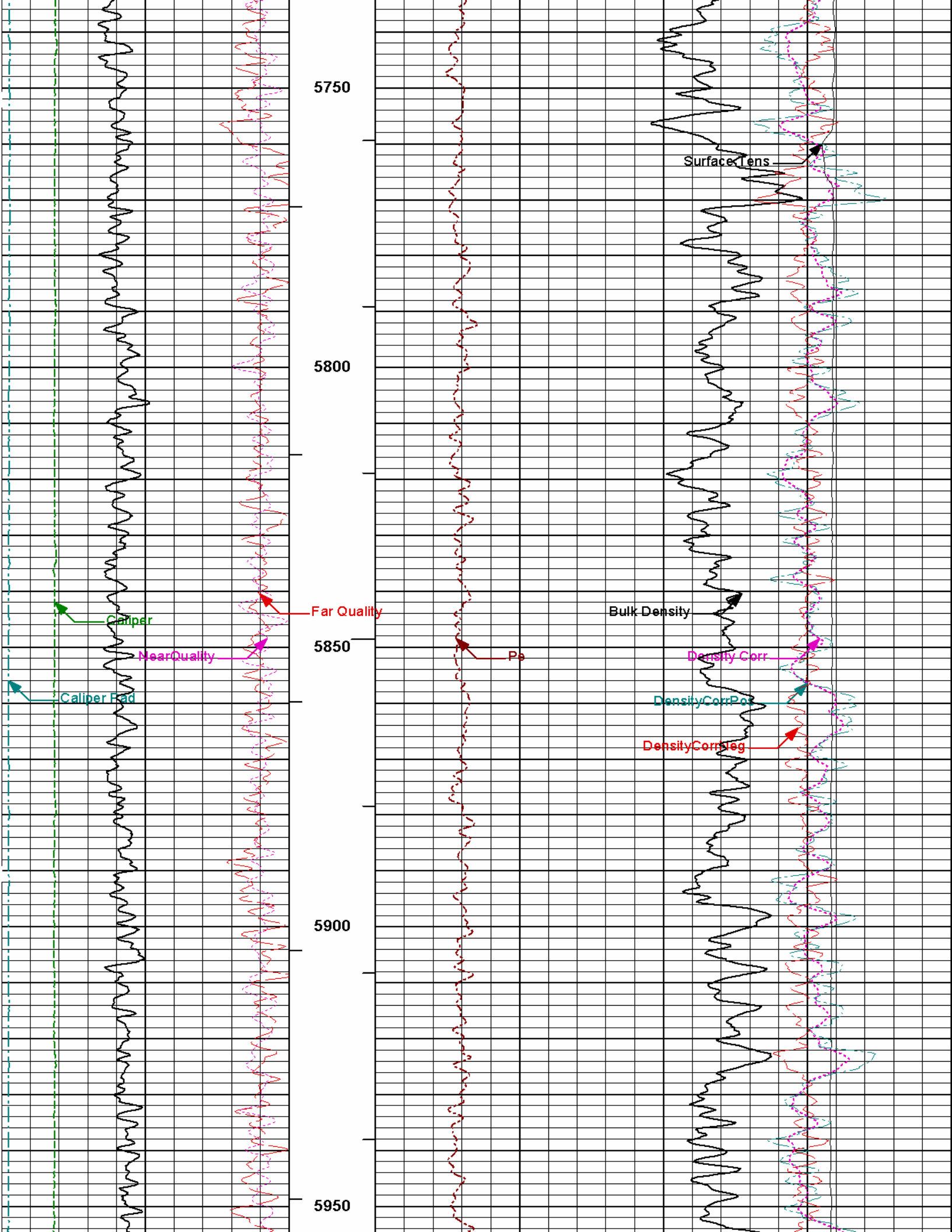


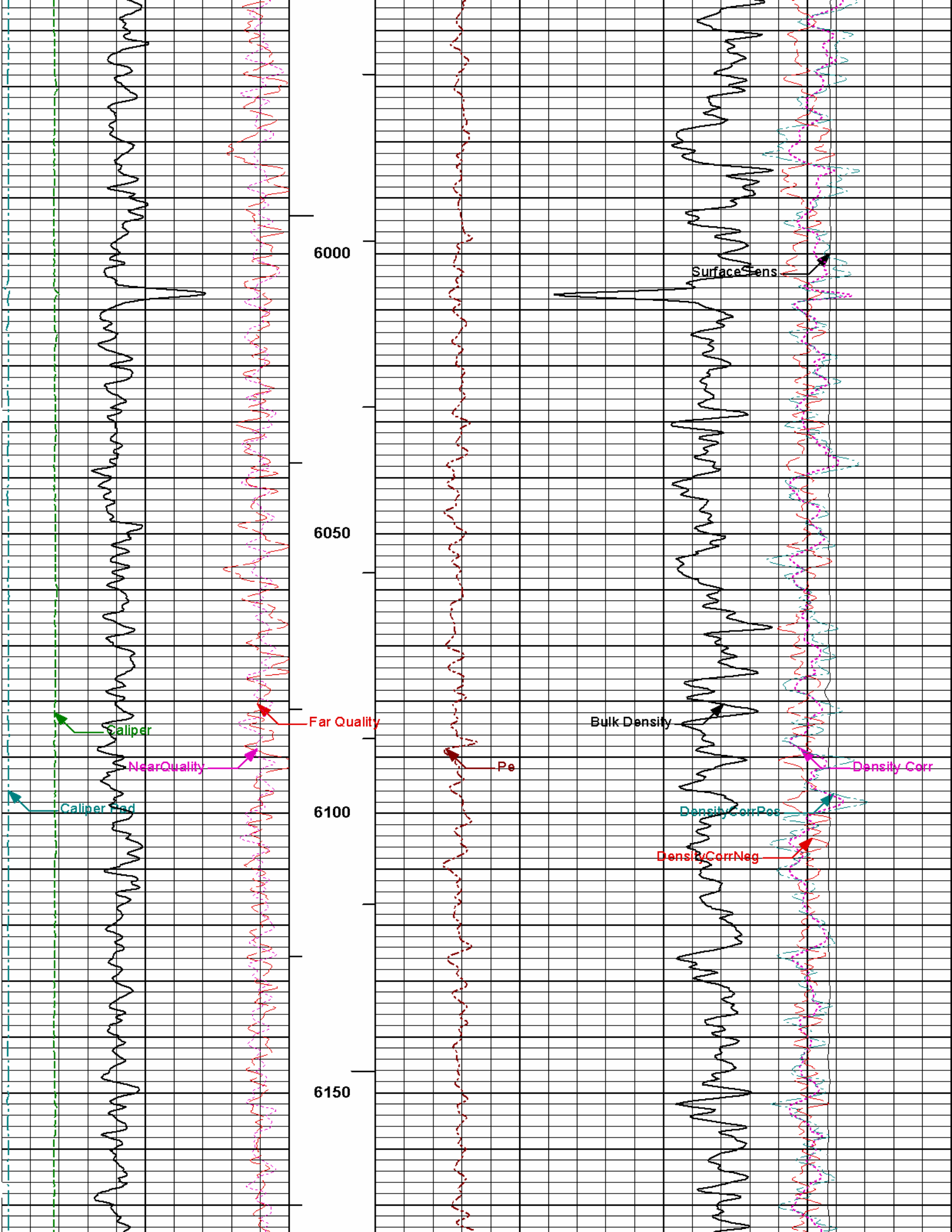


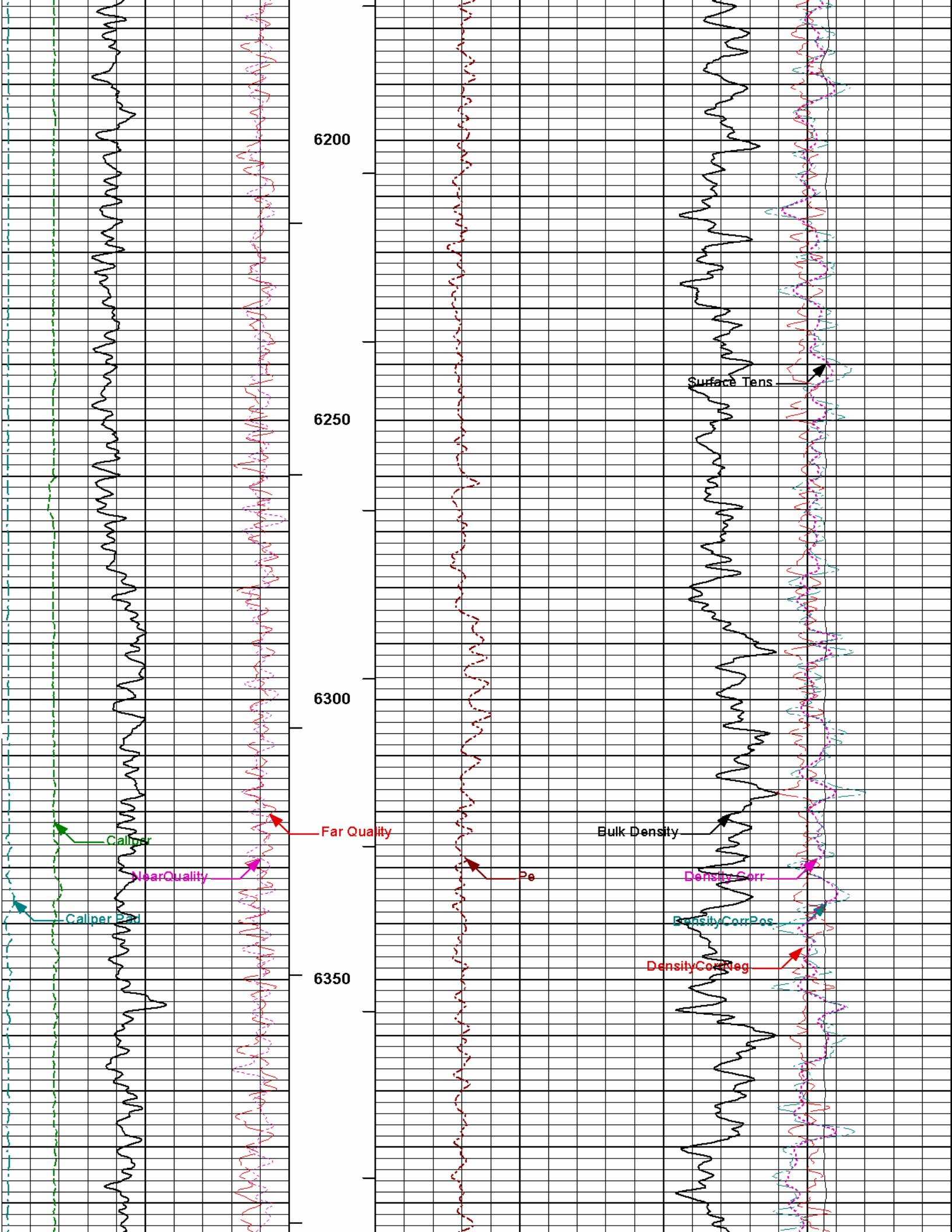


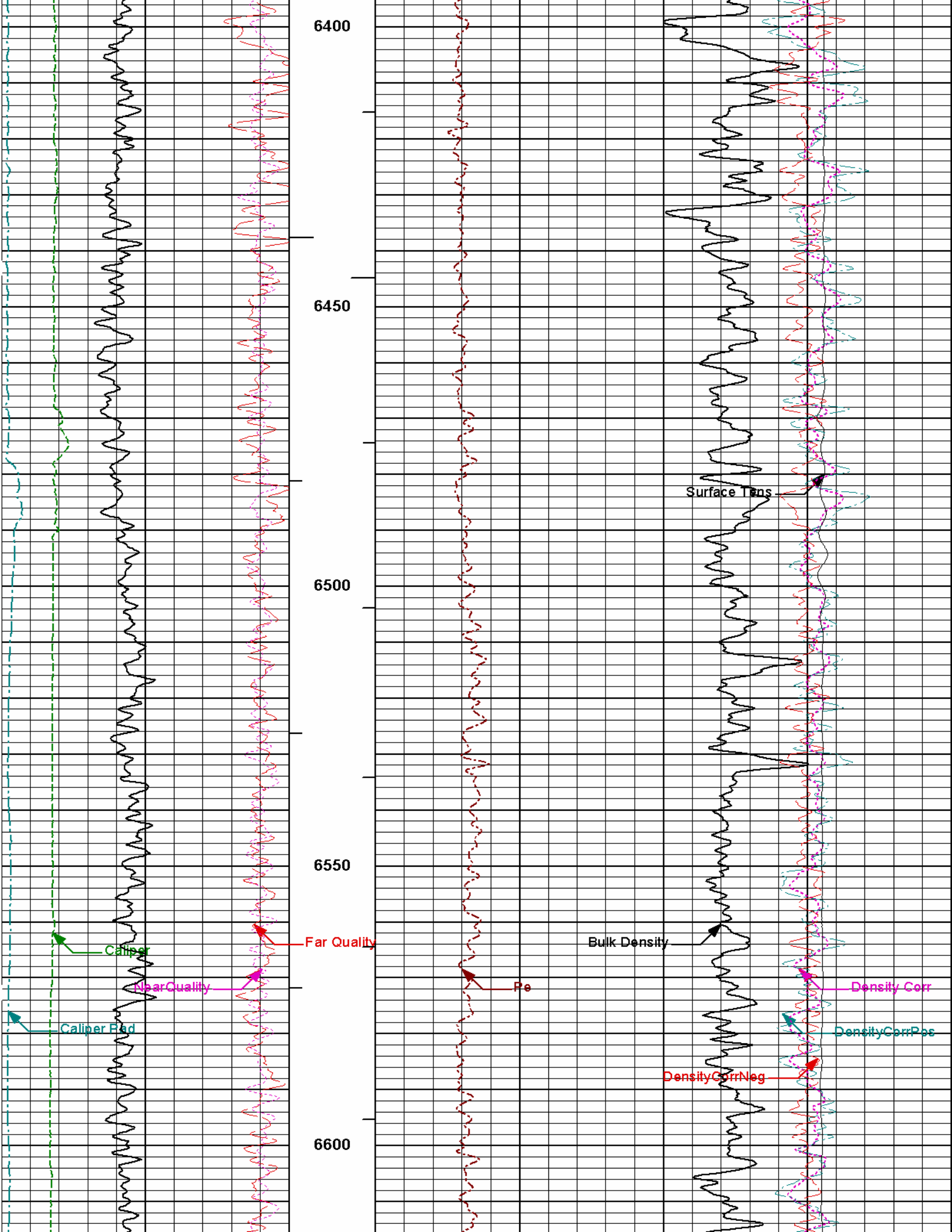


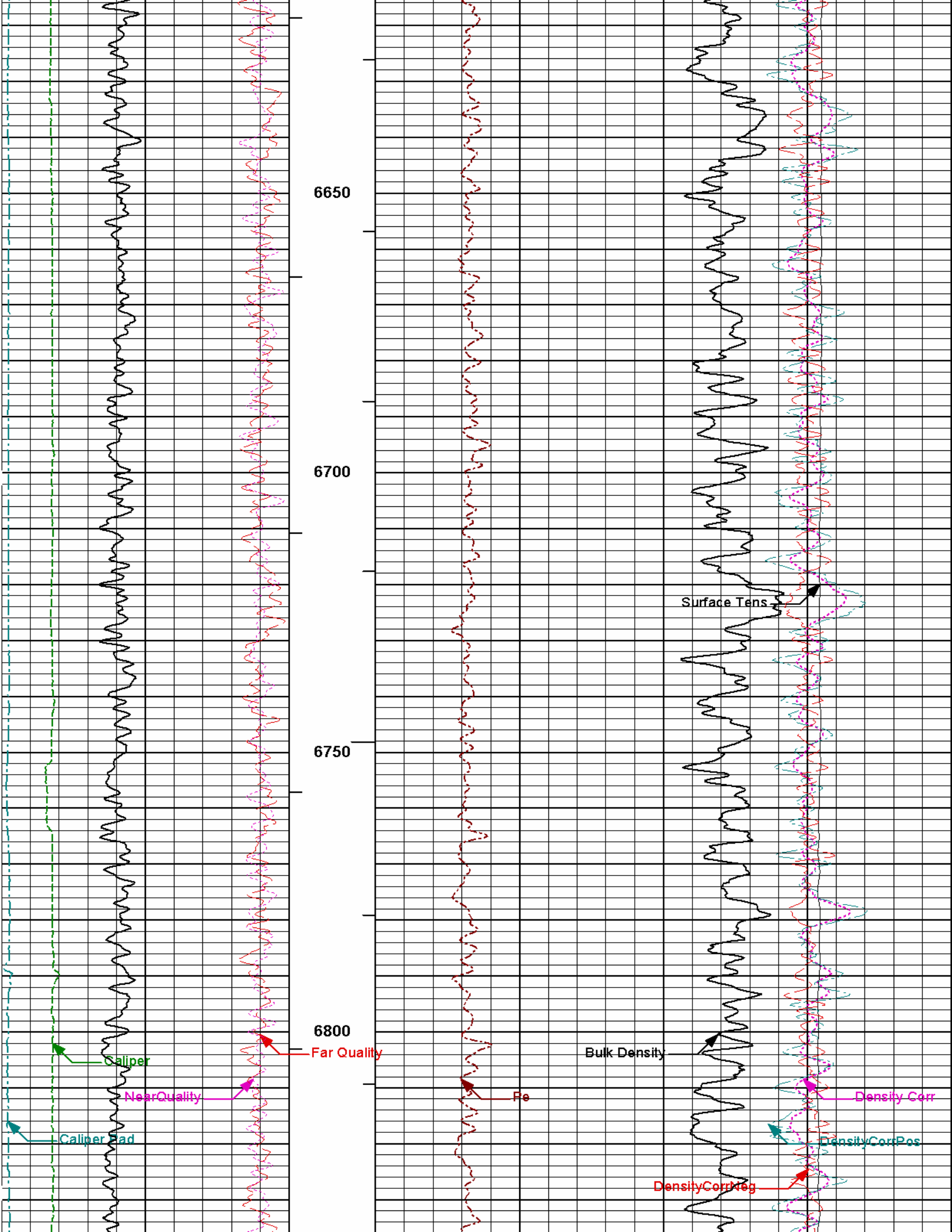


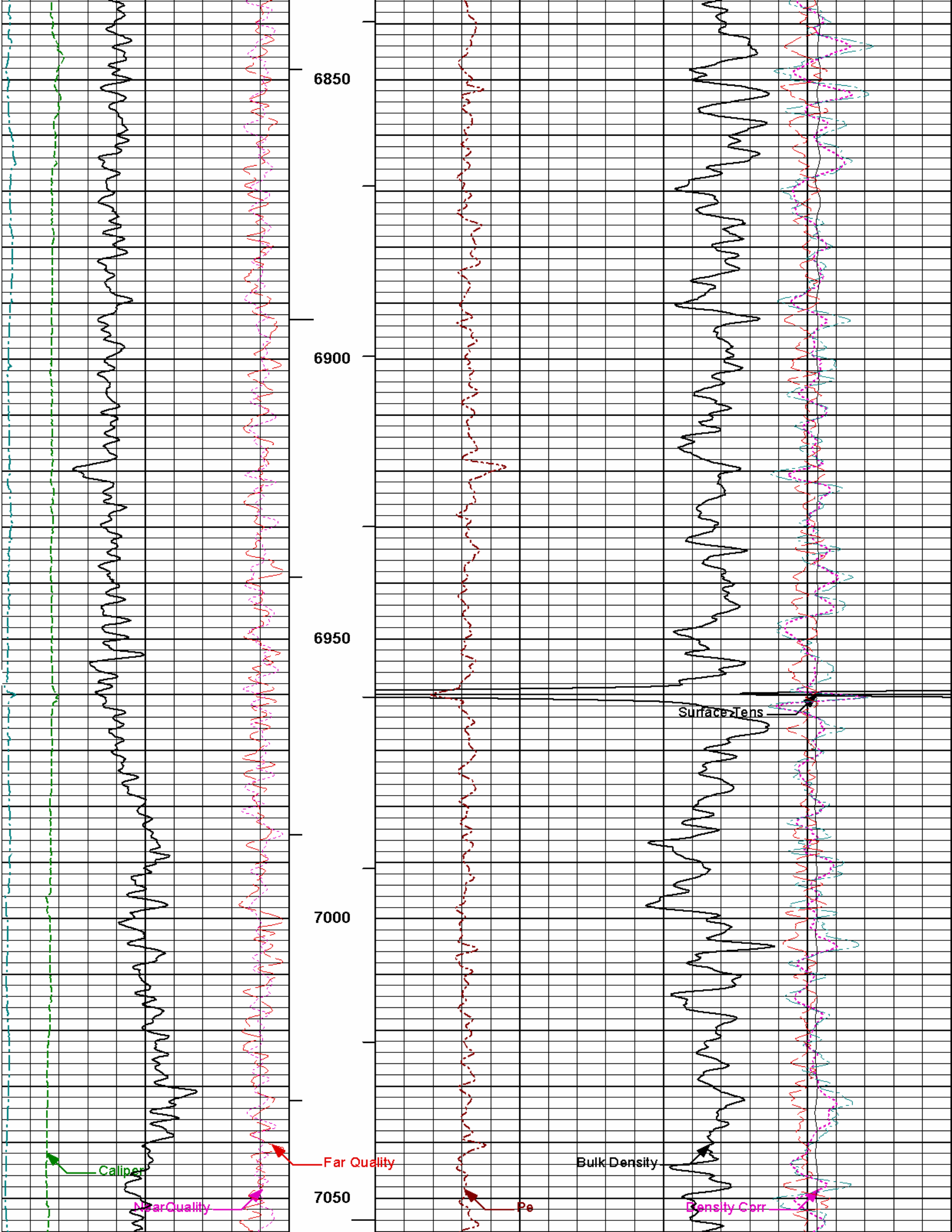




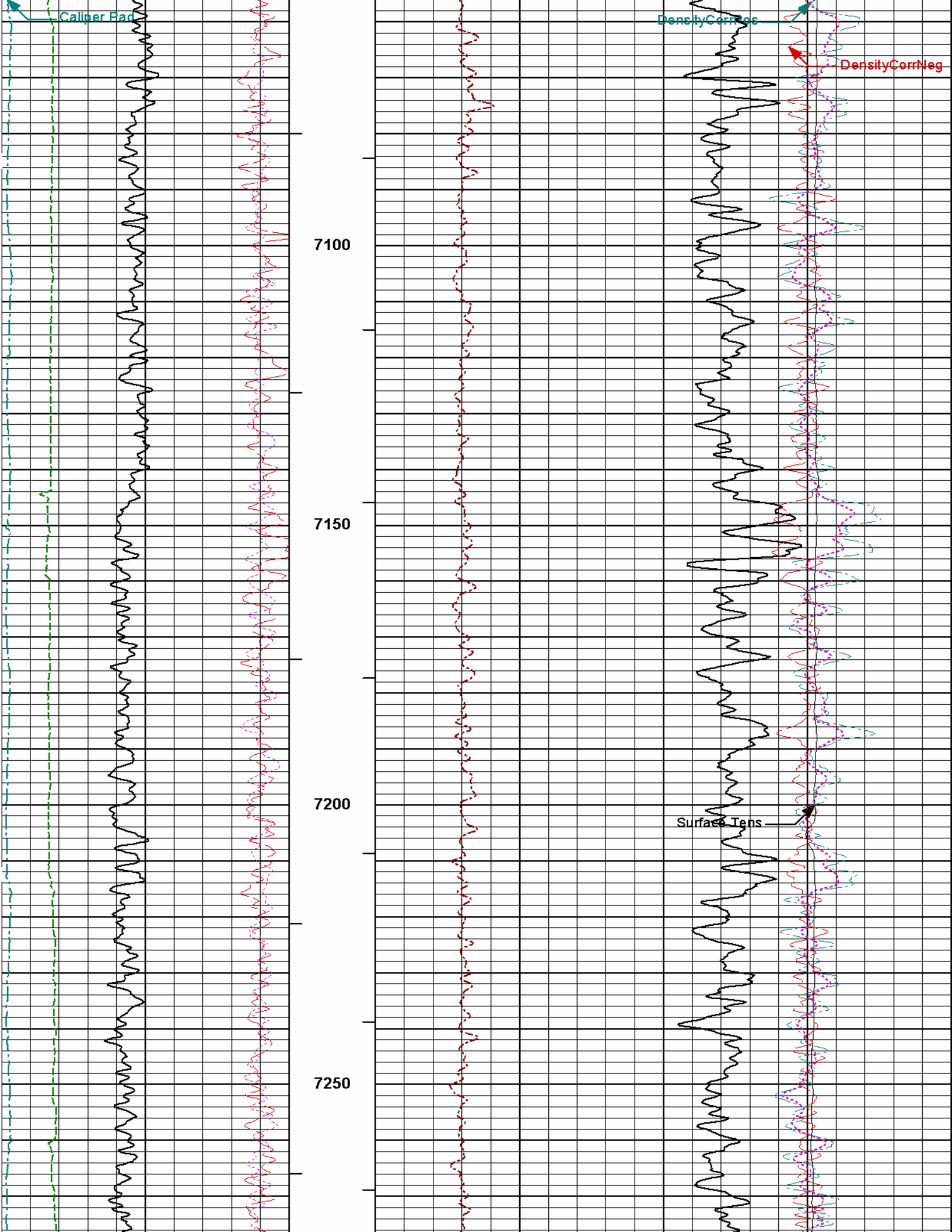


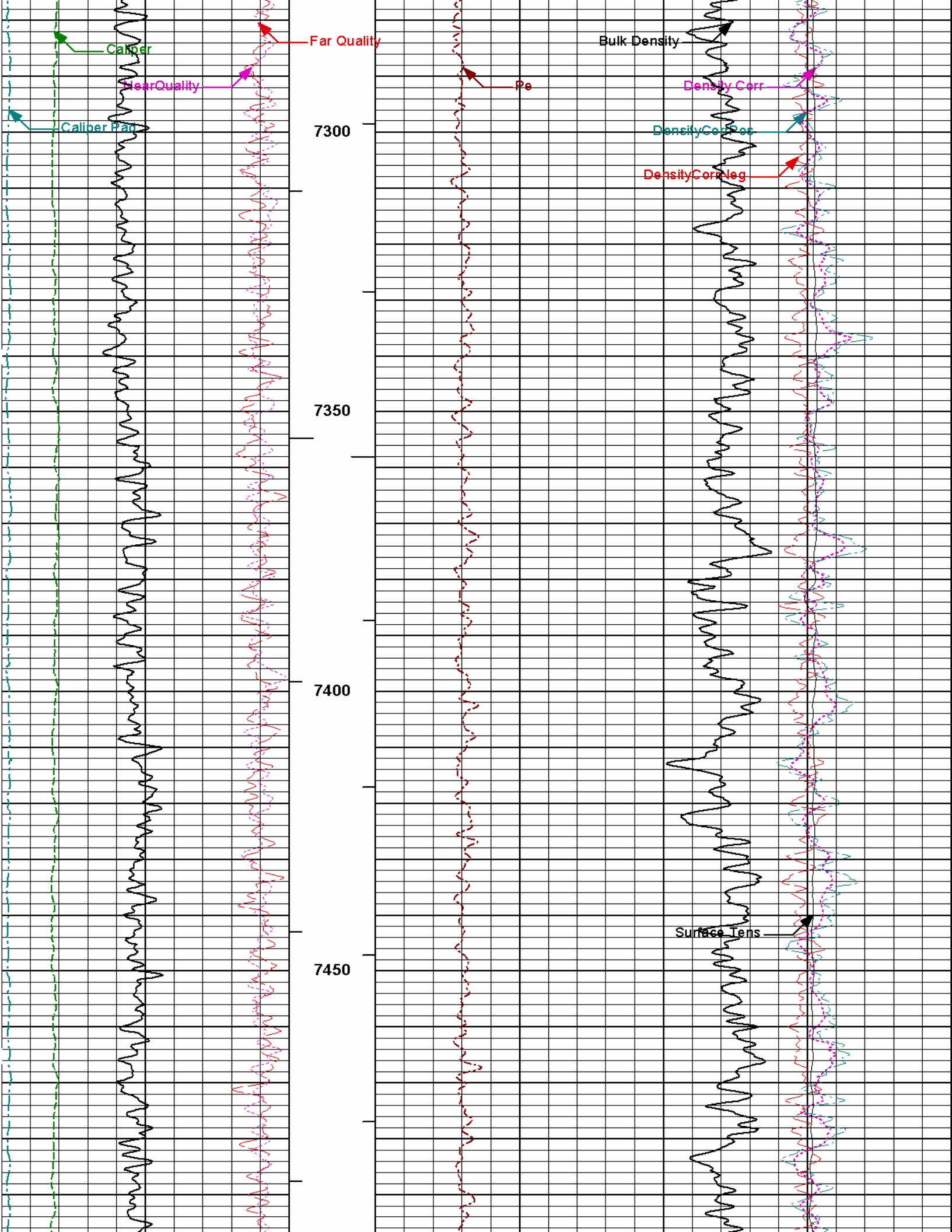


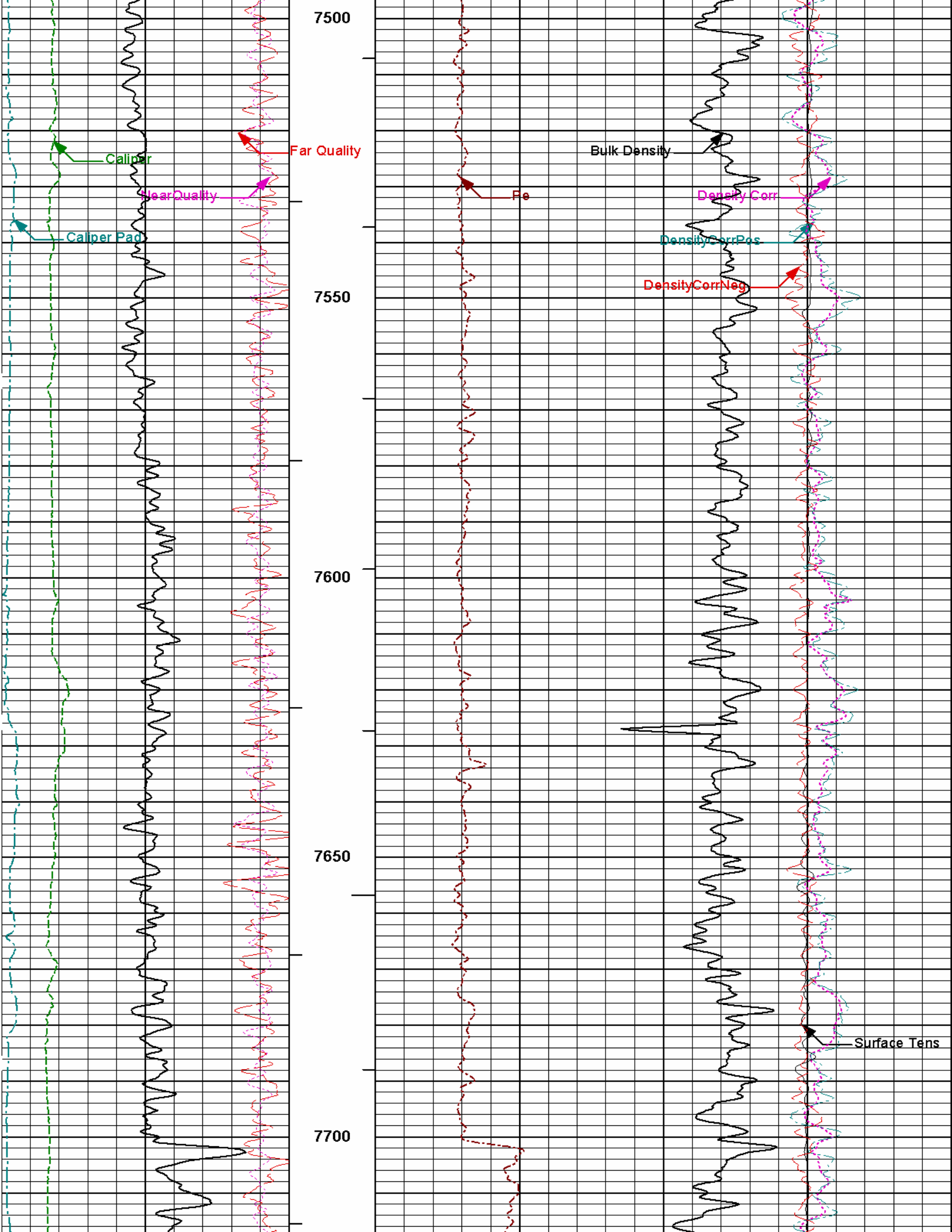


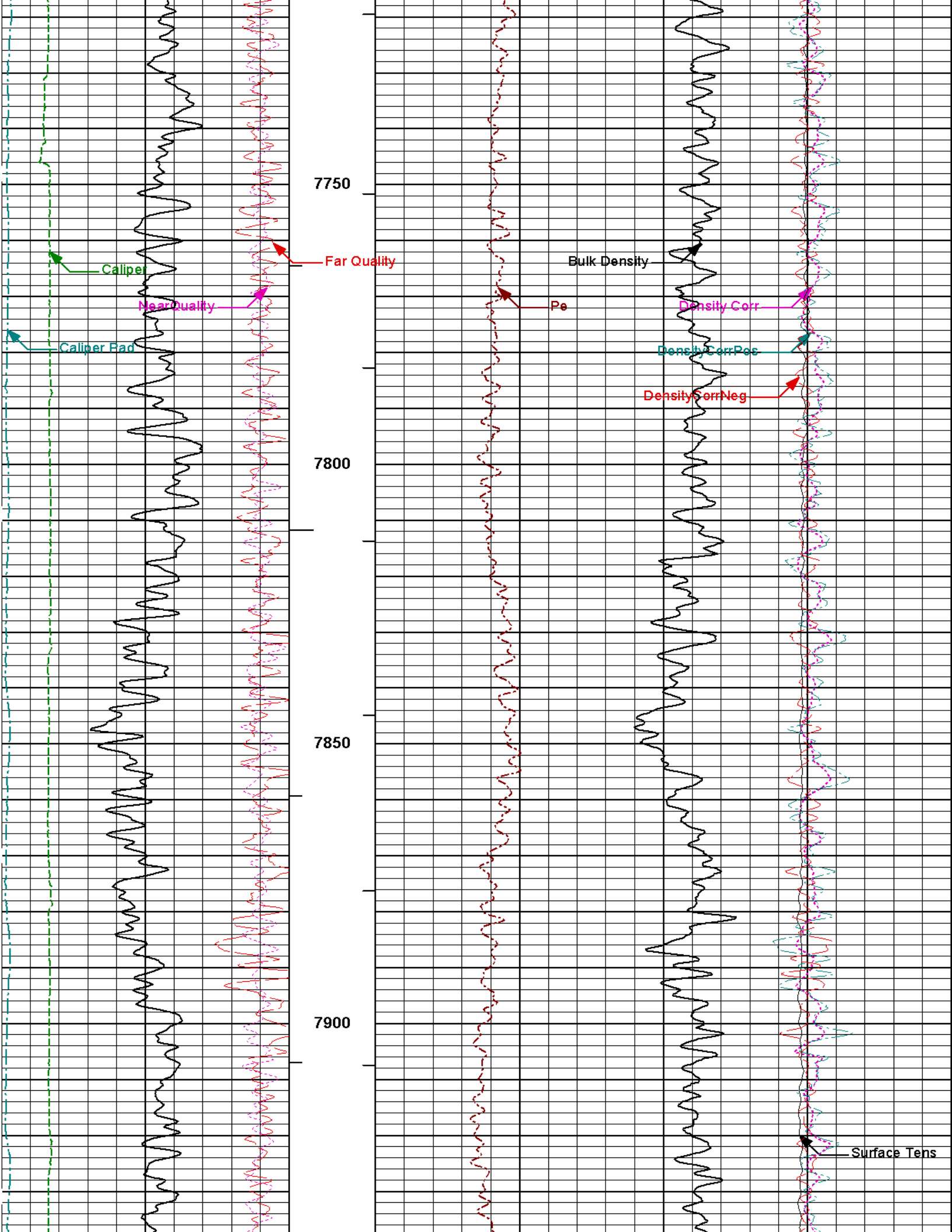


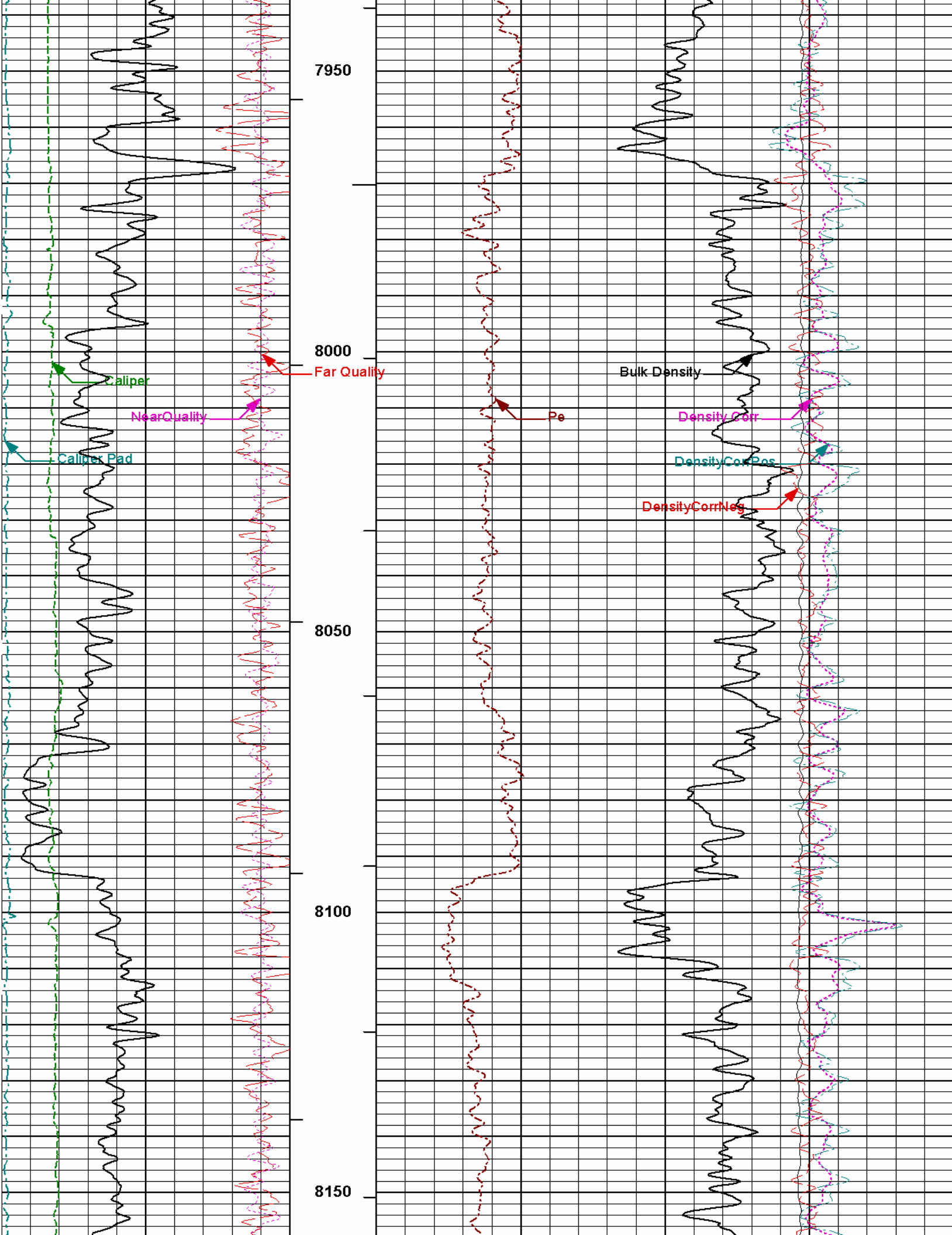


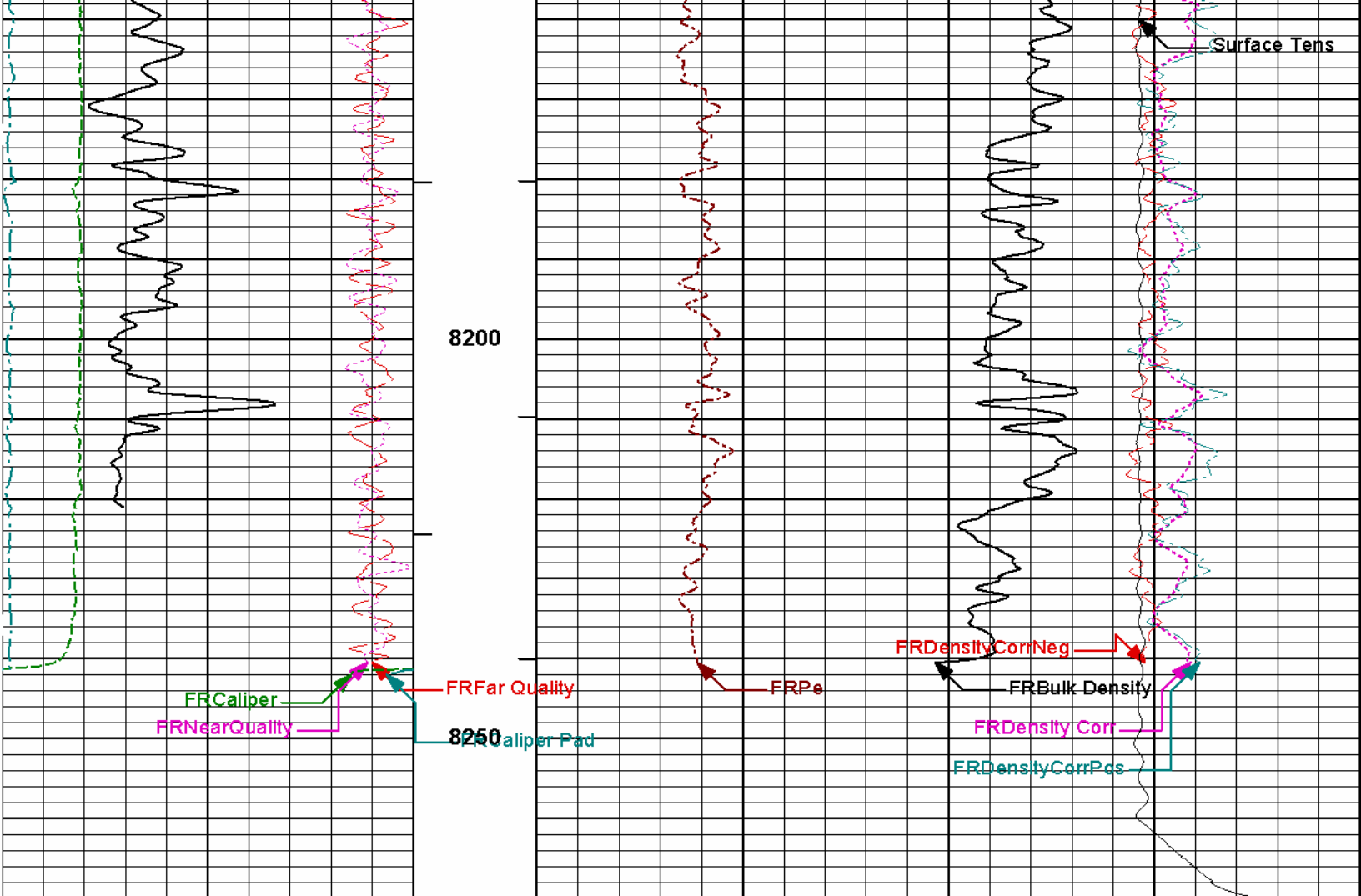












0	Gamma API	250	1 : 240	0	Pe	10	-0.25	Density Corr	0.25
	api							gram per cc	
6	Caliper	16	BHVT				-0.25	DensityCorrPos	0.25
	inches							gram per cc	
0	Caliper Pad	10	AHVT				-0.25	DensityCorrNeg	0.25
	inches							gram per cc	
9	Far Quality	-1					10K	Surface Tens	0
								pounds	
-9	NearQuality	1		2	Bulk Density	3			
					gram per cc				

**HALLIBURTON**

Plot Time: 28-Feb-12 17:13:54  
 Plot Range: 1020 ft to 8269.92 ft  
 Data: NG\_STATE\_19-36\Well Based\MAIN  
 Plot File: \\PORO\IQ\_RHOB\_5IN\_RM

MAIN PASS 5" = 100'

## NATURAL GAMMA RAY TOOL SHOP CALIBRATION

**Tool Name:** GTET - 11277436\_BLACK

**Reference Calibration Date:** 14-Jan-12 14:01:24

**Engineer:** R. TWEETEN

**Calibration Date:** 14-Feb-12 10:36:36

**Software Version:** WL INSITE R3.4.2 (Build 2)

**Calibration Version:** 1

Calibrator Source S/N: TB-289

Calibrator API Reference:243.00 api

Equivalent Calibrator API Reference:247.3 api

Measurement	Measured	Calibrated	Units
Background	69.4	68.6	api
Background + Calibrator	319.5	315.9	api
Calibrator	250.1	247.3	api

## NATURAL GAMMA RAY TOOL FIELD CALIBRATION

**Tool Name:** GTET - 11277436\_BLACK

**Reference Calibration Date:** 14-Feb-12 10:36:36

**Engineer:** R. TWEETEN

**Calibration Date:** 27-Feb-12 06:03:39

**Software Version:** WL INSITE R3.4.4 (Build 2)

**Calibration Version:** 1

Calibrator Source S/N: TB-289

Calibrator API Reference:243.00 api

Equivalent Calibrator API Reference:247.3 api

Field Verification	Shop	Field	Units
Background	68.6	65.3	api
Background + Calibrator	315.9	313.1	api
Calibrator	247.3	247.9	api

Shop	Field	Difference	Tolerance
247.3	247.9	-0.6	+/- 9.00

## DUAL SPACED NEUTRON SHOP CALIBRATION

**Tool Name:** DSNT - 11812167

**Reference Calibration Date:** 16-Jan-12 11:10:08

**Engineer:** R. TWEETEN

**Calibration Date:** 14-Feb-12 09:14:17

**Software Version:** WL INSITE R3.4.2 (Build 2)

**Calibration Version:** 1

Logging Source S/N: DSN434

Tank Serial Number: 11068236

Reference value assigned to Tank: 53.720

Snow Block S/N: BRIGHTON

Calibration Tank Water Temperature: 68 degF

Min. Tool Housing Outside Diameter: 3.625 in

### CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.993	0.995	0.900 - 1.100

### WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decip):	0.2218	0.2224	0.0005	+/- 0.0020
Calibrated Ratio:	10.09	10.11	0.018	+/- 0.050

### VERIFIER

Measurement	Value	Control Limit
-------------	-------	---------------



Snow-Block Porosity (dec): 0.0788 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 - 11812167 **Reference Calibration Date:** 14-Feb-12 09:14:17  
**Engineer:** R. TWEETEN **Calibration Date:** 27-Feb-12 06:17:04  
**Software Version:** WL INSITE R3.4.4 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN434

Snow Block S/N: BRIGHTON

#### NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (dec):	0.0788	0.0788	-0.0000	+/- 0.0150

#### PASS/FAIL SUMMARY

Block Change Check: Passed  
Snow Block Stat Check: Passed  
Temperature Check: Passed

#### DENSITY CALIPER SHOP CALIBRATION

**Tool Name:** SDLT - M335\_P470\_BLACK **Reference Calibration Date:** 01-Feb-12 13:59:10  
**Engineer:** R. TWEETEN **Calibration Date:** 14-Feb-12 10:17:04  
**Software Version:** WL INSITE R3.4.2 (Build 2) **Calibration Version:** 1

#### CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3204.97	-3216.38	-7000.00 - -1000.00
Pad Gain	0.0003880	0.0003872	0.000200 - 0.000600
Arm Offset	-2220.57	-2197.02	-5000.00 - 3000.00
Arm Gain	0.0005459	0.0005359	0.000300 - 0.000700
Arm Power	-0.000007203	-0.000006463	-0.000010 - 0.000010

The ring diameter is computed from:  $\text{DIAMETER} = \text{PAD EXTENSION} + \text{ARM EXTENSION} + \text{TOOL DIAMETER}$

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)	2.01	2.00	-0.01	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 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)	14.98	15.00	0.02	+/- 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 - M335\_P470\_BLACK

Reference Calibration Date: 14-Feb-12 10:17:04

Engineer: R. TWEETEN

Calibration Date: 27-Feb-12 06:11:55

Software Version: WL INSITE R3.4.4 (Build 2)

Calibration Version: 1

## MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.81	0.06	+/- 0.10
Ring Diameter	8.25	8.23	-0.02	+/- 0.15

## PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

## ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - E6758-S4352\_BLK

Reference Calibration Date: 24-Jan-12 11:40:30

Engineer: J. KRONABLE

Calibration Date: 24-Jan-12 11:57:14

Software Version: WL INSITE R3.4.4 (Build 2)

Calibration Version: 1

## TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0029	1.05	0.95	1.0038	1.05	0.95	0.9979	1.05
A2 (50")	0.95	1.0015	1.05	0.95	1.0022	1.05	0.95	0.9991	1.05
A3 (29")	0.95	0.9967	1.05	0.95	0.9980	1.05	0.95	0.9936	1.05
A4 (17")	0.95	1.0038	1.05	0.95	1.0025	1.05	0.95	0.9995	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9936	1.05	0.95	0.9901	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9795	1.05	0.95	0.9748	1.05

## TYPICAL SONDE OFFSET RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-0.767	2	-6	-4.087	-2	-8	-5.057	-2
A2 (50")	-7	-2.627	-1	-6	-3.859	-2	-7	-4.491	-2
A3 (29")	-27	-13.119	-9	-9	-3.690	-3	-7	-3.216	-1
A4 (17")	-180	-97.003	-60	-45	-31.655	-15	-39	-25.306	-13
A5 (10")	N/A	N/A	N/A	-150	-94.346	-50	-80	-45.505	-10
A6 (6")	N/A	N/A	N/A	175	301.498	525	90	153.429	270

## TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.8707	1.3
36K	1.0	1.8867	2.0
72K	1.0	1.1107	2.0

## R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.009	1.05

## SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - M335\_P470\_BLACK

Reference Calibration Date: 16-Jan-12 11:44:34

Engineer: R. TWEETEN

Calibration Date: 14-Feb-12 09:53:43

Software Version: WL INSITE R3.4.2 (Build 2)

Calibration Version: 1

Logging Source S/N: 2770GW

Aluminum Block S/N: 63066

Density: 2.602g/cc

Pe: 3.100

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0824	1.0241	0.90 - 1.10
Near Dens Gain	1.0376	1.0071	0.90 - 1.10
Near Peak Gain	1.0258	0.9727	0.90 - 1.10
Near Lith Gain	0.9874	0.9658	0.90 - 1.10
Far Bar Gain	1.0141	1.0113	0.90 - 1.10
Far Dens Gain	1.0012	0.9953	0.90 - 1.10
Far Peak Gain	0.9904	0.9904	0.90 - 1.10
Far Lith Gain	0.9648	0.9632	0.90 - 1.10
Near Bar Offset	-0.5015	0.0269	NONE
Near Dens Offset	-0.0600	0.2075	NONE
Near Peak Offset	0.0500	0.4894	NONE
Near Lith Offset	0.3477	0.5387	NONE
Far Bar Offset	0.0910	0.1146	NONE
Far Dens Offset	0.1792	0.2328	NONE
Far Peak Offset	0.2501	0.2547	NONE
Far Lith Offset	0.4086	0.4261	NONE
Near Bar Background	1045.54	1043.19	700 - 1450
Near Dens Background	343.13	342.59	230 - 480
Near Peak Background	149.37	148.52	100 - 210
Near Lith Background	182.65	180.31	125 - 260
Far Bar Background	545.30	546.12	450 - 900
Far Dens Background	213.27	213.37	175 - 345
Far Peak Background	82.98	81.49	70 - 140
Far Lith Background	88.21	87.85	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.695	1.690	-0.005	+/- 0.015
Pe	2.690	2.593	-0.097	+/- 0.150
ALUMINUM				
Density (g/cc)	2.598	2.602	0.004	+/- 0.01500
Pe	3.114	3.052	-0.062	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0003	+/- 0.0110	0.0002	+/- 0.0140
Magnesium Block	0.0003	+/- 0.0110	0.0046	+/- 0.0140
Aluminum Block	0.0004	+/- 0.0110	0.0026	+/- 0.0140
Resolution	9.19	6.00 - 11.50	9.97	6.00 - 11.50
Internal Verifier(B+D+P+L)	1715	1200 - 2700	929	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

<b>Tool Name:</b>	<b>SDLT Pad - M335_P470_BLACK</b>	<b>Reference Calibration Date:</b>	<b>14-Feb-12 09:53:43</b>
<b>Engineer:</b>	<b>R. TWEETEN</b>	<b>Calibration Date:</b>	<b>27-Feb-12 06:03:09</b>
<b>Software Version:</b>	<b>WL INSITE R3.4.4 (Build 2)</b>	<b>Calibration Version:</b>	<b>1</b>

Pad Temperature: 47.9 degF

#### DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1714.615	1717.619	3.004	16.616
Far (B+D+P+L) cps	928.838	926.818	-2.020	16.494
Near Resolution	9.19	9.16	-0.030	0.50
Far Resolution	9.97	10.05	0.080	1.00

#### PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

### MICRO LOG SHOP CALIBRATION

<b>Tool Name:</b>	<b>Microlog Pad - M335_P470_BLACK</b>	<b>Reference Calibration Date:</b>	<b>14-Feb-12 10:27:23</b>
<b>Engineer:</b>	<b>R. TWEETEN</b>	<b>Calibration Date:</b>	<b>22-Feb-12 10:27:08</b>
<b>Software Version:</b>	<b>WL INSITE R3.4.4 (Build 2)</b>	<b>Calibration Version:</b>	<b>1</b>

#### CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.06	-0.07	-0.00	-0.00	ohmm
Calibration Point #1	0.01	0.00	0.00	0.00	ohmm
Calibration Point #2	20.06	20.00	20.07	20.00	ohmm
Internal Reference	19.99	19.93	20.05	19.99	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	0.01	0.21	V
Calibration Point #1	17.65	1.63	V
Calibration Point #2	5308.53	6923.25	V
Internal Reference	5290.19	6918.23	V

### MICRO LOG FIELD CHECK

<b>Tool Name:</b>	<b>Microlog Pad - M335_P470_BLACK</b>	<b>Reference Calibration Date:</b>	<b>22-Feb-12 10:27:08</b>
<b>Engineer:</b>	<b>R. TWEETEN</b>	<b>Calibration Date:</b>	<b>27-Feb-12 05:59:52</b>
<b>Software Version:</b>	<b>WL INSITE R3.4.4 (Build 2)</b>	<b>Calibration Version:</b>	<b>1</b>

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.07	-0.07	-0.00	-0.00	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.93	19.85	0.08	+/- 0.80
Microlog Lateral	19.99	19.90	0.09	+/- 0.80

## CALIBRATION SUMMARY


Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11277436_BLACK						
Gamma Ray Calibrator	247.3	247.9	-----	-0.6	+/- 9.00	api
DSNT-11812167						
Snow-Block Porosity	0.0788	0.0788	-----	0.0000	+/- 0.0150	decg
SDLT-M335_P470_BLACK						
Pad Extension	3.75	3.81	-----	-0.06	+/-0.10	in
Ring Diameter	8.25	8.23	-----	0.020	+/-0.15	in
ACRt Sonde-E6758-S4352_BLK						
Mud Cell	1.009	-----	-----	0.000	-----	ohm-m
SDLT Pad-M335_P470_BLACK						
Near(B+D+P+L)	1714.615	1717.619	-----	-3.004	+/-16.616	cps
Far(B+D+P+L)	928.838	926.818	-----	2.020	+/-16.494	cps
Microlog Pad-M335_P470_BLACK						
MicroLog Normal	19.93	19.85	-----	0.08	+/-0.80	ohmm
MicroLog Lateral	19.99	19.90	-----	0.09	+/-0.80	ohmm

Data: NG\_STATE\_19-36\0001 ANADARKO\IDLE

Date: 27-Feb-12 11:56:33

HALLIBURTON

## TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-A094 135.00 lbs		Ø 3.625 in →		← Load Cell @ 56.84 ft ← BH Temperature @ 56.27 ft	6.25 ft	60.52 ft
GTET-11277436_BLACK 165.00 lbs		Ø 3.625 in →		← GammaRay @ 48.21 ft	8.52 ft	54.27 ft
DSNT-11812167 174.00 lbs		Ø 3.625 in →			9.69 ft	45.75 ft

SDLT-  
M335\_P470\_BLACK  
360.00 lbs

SDLT Pad-  
M335\_P470\_BLACK  
65.00 lbs

Microlog Pad-  
M335\_P470\_BLACK  
8.00 lbs

Ø 4.500 in →

Ø 4.750 in\* →  
Ø 4.750 in\* →

← DSN Far @ 38.82 ft  
← DSN Near @ 38.07 ft

← Microlog @ 28.25 ft  
← SDL Caliper @ 28.07 ft  
← SDL @ 28.06 ft

10.81 ft

36.07 ft

25.25 ft

Flex Joint-  
11005586  
140.00 lbs

Ø 3.625 in →

5.67 ft

19.58 ft

ACRt Instrument-  
90199007\_BLK  
50.00 lbs

Ø 3.625 in →

5.03 ft

14.55 ft

Regal Standoff 6\_75-01  
20.00 lbs

Ø 6.750 in\* →

← Mud Resistivity @ 13.19 ft

← ACRt @ 9.21 ft

ACRt Sonde-E6758-  
S4352\_BLK  
200.00 lbs

Ø 3.625 in →

14.22 ft

SP Ring-90199007\_BLK  
0.00 lbs

Ø 3.625 in\* →

← SP @ 1.61 ft

0.33 ft

0.33 ft

Bull Nose-01  
5.00 lbs

Ø 2.750 in →

0.33 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	A094	135.00	6.25	54.27	300.00
GTET	Gamma Telemetry Tool	11277436_BLACK	165.00	8.52	45.75	60.00
DSNT	Dual Spaced Neutron	11812167	174.00	9.69	36.07	60.00
SDLT	Spectral Density Tool	M335_P470_BLACK	360.00	10.81	25.25	60.00
MICP	Microlog Pad	M335_P470_BLACK	8.00	1.00 *	27.75	60.00
SDLP	Density Insite Pad	M335_P470_BLACK	65.00	2.55 *	27.46	60.00
FLEX	Flex Joint	11005586	140.00	5.67	19.58	300.00
ACRt	Array Compensated True Resistivity Instrument Section	90199007_BLK	50.00	5.03	14.55	300.00
ACRt	Array Compensated True Resistivity	E6758-S4352_BLK	200.00	14.22	0.33	300.00
SP	SP Ring	90199007_BLK	0.00	0.25 *	1.61	300.00
RSOF	Regal Standoff 6.75in	01	20.00	0.52 *	13.24	300.00
BLNS	Bull Nose	01	5.00	0.33	0.00	300.00

COMPANYKERR-MCGEE OIL & GAS ONSHORE LP

WELLNORTHGLENN STATE 19-36X

FIELDWATTENBERG

COUNTYWELDSTATECO

HALLIBURTON

SPECTRAL DENSITY  
DUAL SPACED NEUTRON