

HALLIBURTON

SPECTRAL DENSITY  
DUAL SPACED NEUTRON  
ARRAY COMPENSATED  
TRUE RESISTIVITY

COMPANY		NOBLE ENERGY INC	
WELL		GUTTERSEN USX D21-25	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum Log measured from Drilling measured from	GL	Elev. 4821.0 ft	
	KB	Elev. K.B. 4835.0 ft	
		D.F. 4835.0 ft	
		G.L. 4821.0 ft	
		14.0 ft above perm. Datum	
Date		07-Jul-12	
Run No.		ONE	
Depth - Driller		7232.00 ft	
Depth - Logger		7235.0 ft	
Bottom - Logged Interval		7235 ft	
Top - Logged Interval		784 ft	
Casing - Driller		7.000 in @ 784.0 ft	@
Casing - Logger		784.0 ft	
Bit Size		7.875 in	@
Type Fluid in Hole		WATER BASED MUD	
Density		9.5 ppq	44.00 sg/c
Viscosity			
PH		9.50 pH	10.4 cp/m
Fluid Loss			
Source of Sample		MUD CELL	
Rm @ Meas. Temperature		0.781 ohmm @ 101.10 degF	@
Rmf @ Meas. Temperature		0.87 ohmm @ 75.00 degF	@
Rmc @ Meas. Temperature		0.932 ohmm @ 75.00 degF	@
Source Rmf		CHART	
Rmc		CHART	
Rm @ BHT		0.39 ohmm @ 208.3 degF	@
Time Since Circulation		5.0 hr	
Time on Bottom		07-Jul-12 01:52	
Max. Rec. Temperature		208.3 degF @ 7235.0 ft	@
Equipment		11072147	BRIGHTON
Recorded By		A. ZWALI	
Witnessed By		F. STEWART	

Fold here

Service Ticket No.: N/A						API Serial No.: 05123352130000						PGM Version: WL INSITE R3.6.0 (Build 3)															
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE												RESISTIVITY SCALE CHANGES															
Date		Sample No.										Type Log		Depth		Scale Up Hole				Scale Down Hole							
Depth-Driller																											
Type Fluid in Hole																											
Density		Viscosity																									
Ph		Fluid Loss																									
Source of Sample												RESISTIVITY EQUIPMENT DATA															
Rm @ Meas. Temp				@				@				Run No.		Tool Type & No.		Pad Type		Tool Pos.				Other					
Rmf @ Meas. Temp.				@				@				ONE		ACRt		N/A		1.25" S.O				N/A					
Rmc @ Meas. Temp.				@				@						E5787-S5797													
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.		11215095				Serial No.						Serial No.		11816600				Serial No.		11219332							
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.		5256 GW				Serial No.		DSN 430							
Distance to Source		18'				FWDA [Y/N ]						Strength		1.5 Ci				Strength		15 Ci							

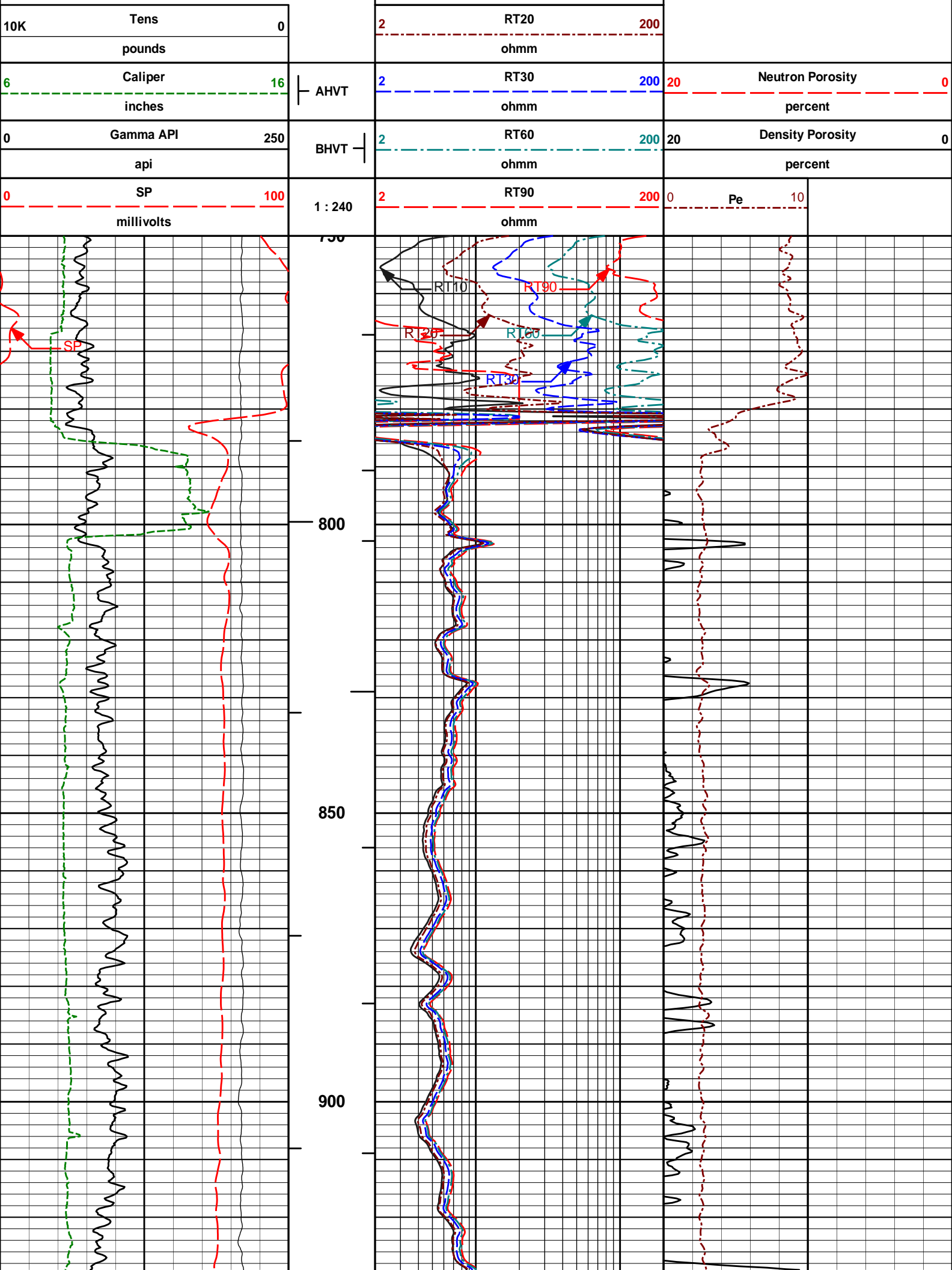
Depth (ft)	Tool Name	Description	Value	Units
TOP				
6746.00	DSNT	Neutron Lithology	Sandstone	
	SDLT Pad	Formation Density Matrix	2.680	g/cc
6801.00				
6801.00	DSNT	Neutron Lithology	Limestone	
	SDLT Pad	Formation Density Matrix	2.710	g/cc
6801.00				
	SHARED	Bit Size	7.875	in
	SHARED	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	Mud Base	Water	
	SHARED	Borehole Fluid Weight	9.500	ppg
	SHARED	Weighting Agent	Barite	
	SHARED	Borehole salinity	0.00	ppm
	SHARED	Formation Salinity NaCl	0.00	ppm
	SHARED	Percent K in Mud by Weight?	0.00	%
	SHARED	Mud Resistivity	0.781	ohmm
	SHARED	Temperature of Mud	101.1	degF
	SHARED	Logging Interval is Cased?	No	
	SHARED	AHV Casing OD	4.500	in
	SHARED	Surface Temperature	75.0	degF
	SHARED	Total Well Depth	7235.00	ft
	SHARED	Bottom Hole Temperature	208.3	degF
	SHARED	Navigation and Survey Master Tool	NONE	
	SHARED	High Res Z Accelerometer Master Tool	GTET	

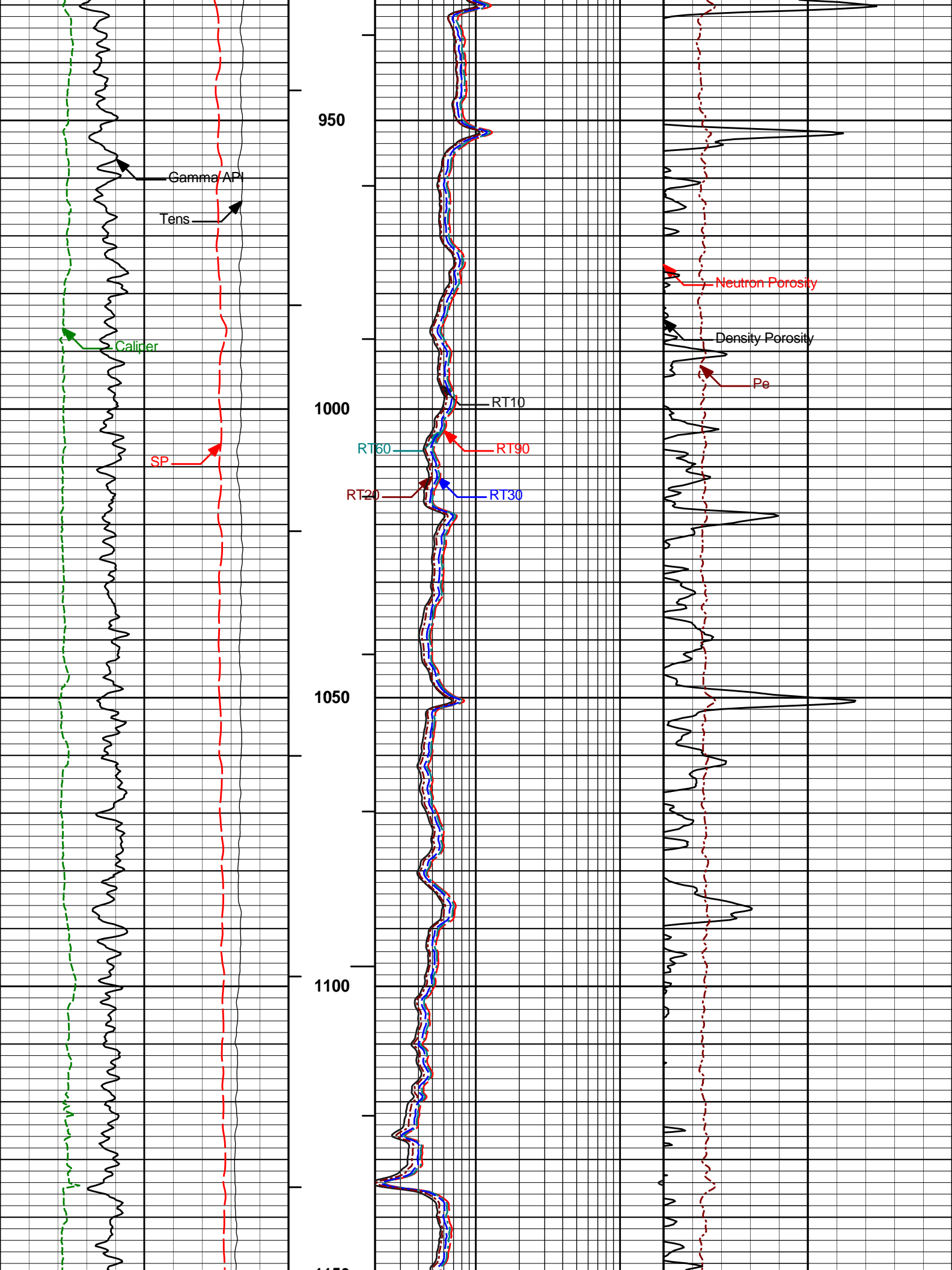
SHARED	Temperature Master Tool	NONE	
SHARED	Borehole Size Master Tool	NONE	
GTET	Process Gamma Ray?	Yes	
GTET	Gamma Tool Standoff	0.000	in
GTET	Process Gamma Ray EVR?	No	
GTET	Tool Position for Gamma Ray Tools.	Eccentered	
CSNG	Process CSNG Data?	Yes	
CSNG	Is Tool Centralized?	No	
CSNG	Gamma Enviromental Corrections?	Yes	
CSNG	Barite Correction Factor	1.00	
CSNG	Use Fixed Gain	No	
CSNG	Use Fixed Offset	No	
CSNG	Use Fixed Resolution Degradation Factor	No	
DSNT	Process DSN?	Yes	
DSNT	Process DSN EVR?	No	
DSNT	Neutron Lithology	Sandstone	
DSNT	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	Temperature Correction Type	None	
DSNT	DSN Pressure Correction Type	None	
DSNT	View More Correction Options	No	
DSNT	Use TVD for Gradient Corrections?	No	
DSNT	Logging Horizontal Water Tank?	No	
SDLT	Process Caliper Outputs?	Yes	
SDLT Pad	Process Density?	Yes	
SDLT Pad	Process Density EVR?	No	
SDLT Pad	Logging Calibration Blocks?	No	
SDLT Pad	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	Disable temperature warning	No	
SDLT Pad	Formation Density Matrix	2.680	g/cc
SDLT Pad	Formation Density Fluid	1.000	g/cc
ACRt Sonde	Process ACRt?	Yes	
ACRt Sonde	Minimum Tool Standoff	1.25	in
ACRt Sonde	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	Tool Position	Free Hanging	
ACRt Sonde	Rmud Source	Mud Cell	
ACRt Sonde	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	Threshold Quality	0.50	
ACRt Sonde	Fixed mud resistivity	2000	ohmm
BOTTOM			
Data: GUTTERSEN_D2125\0001 NOBLE_TC-CSNG\003.01 07-Jul-12 04:14 Up			Date: 07-Jul-12 04:21:28

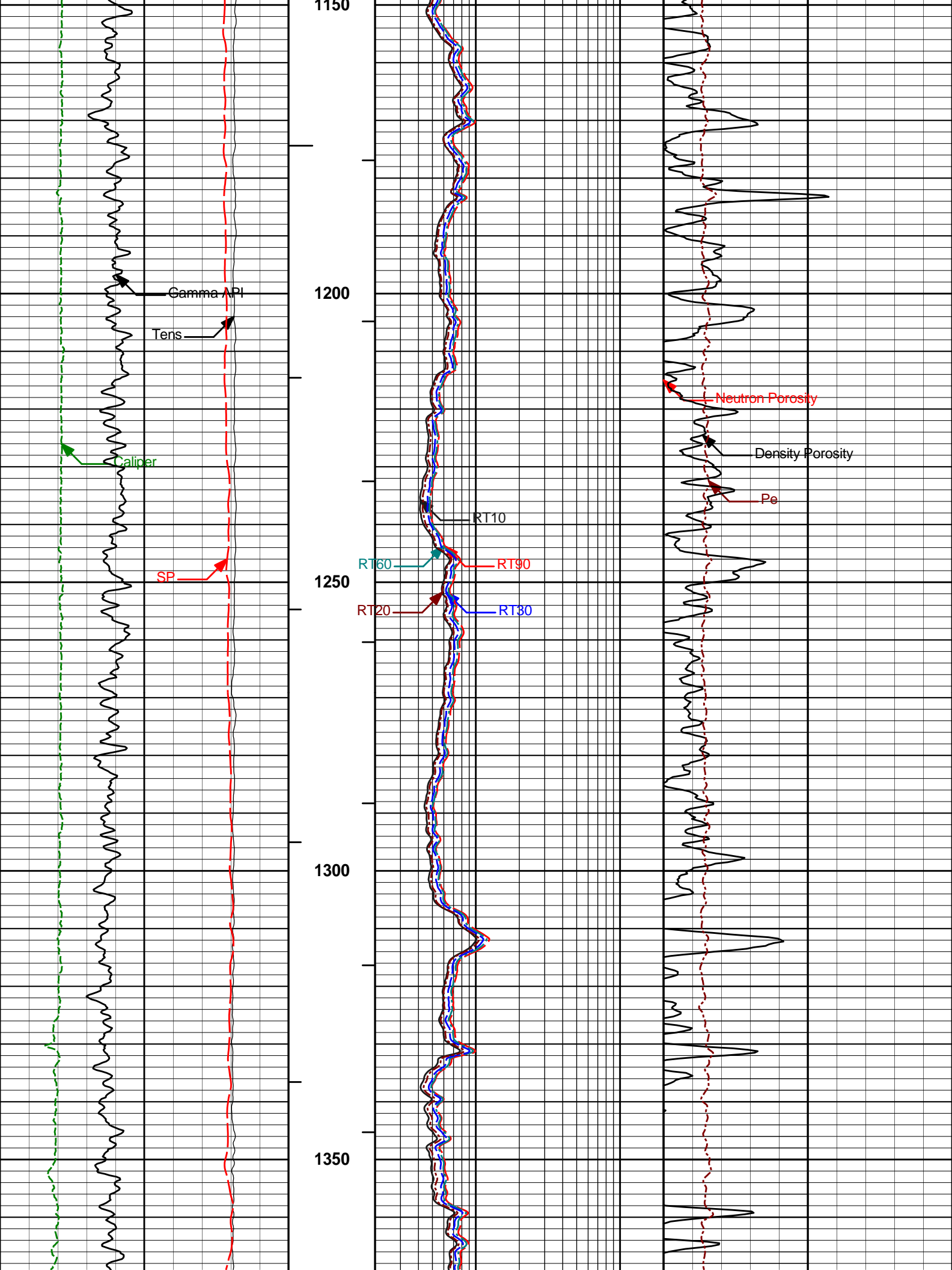
<b>HALLIBURTON</b>	Plot Time: 07-Jul-12 04:53:14 Plot Range: 750 ft to 7248.5 ft Data: GUTTERSEN_D2125\Well Based\DAQ-0001-003.01\ Plot File: \COMP\MAIN
--------------------	--

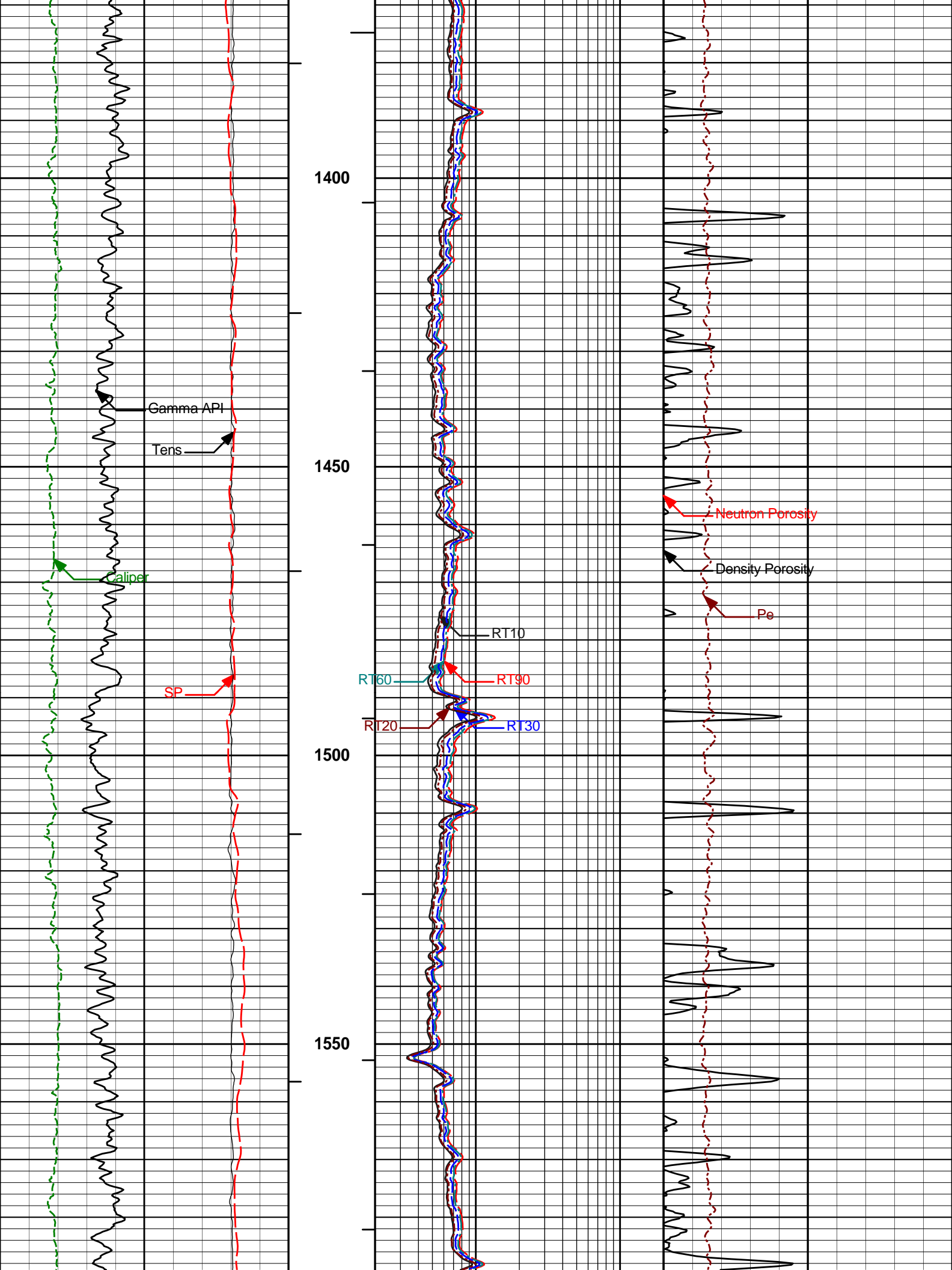
MAIN PASS 5" = 100'	
---------------------	--

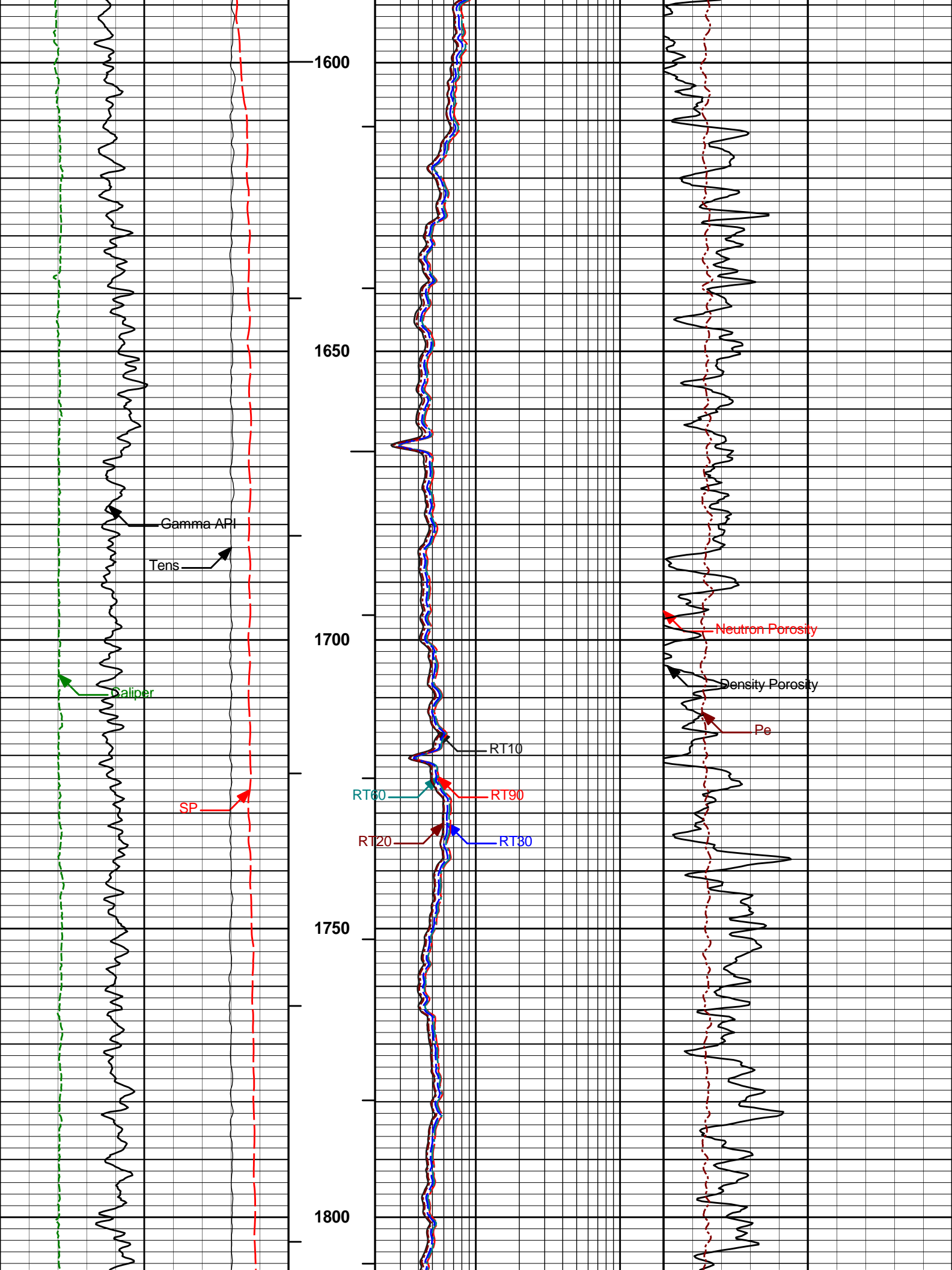
	2	RT10	200	
		ohmm		



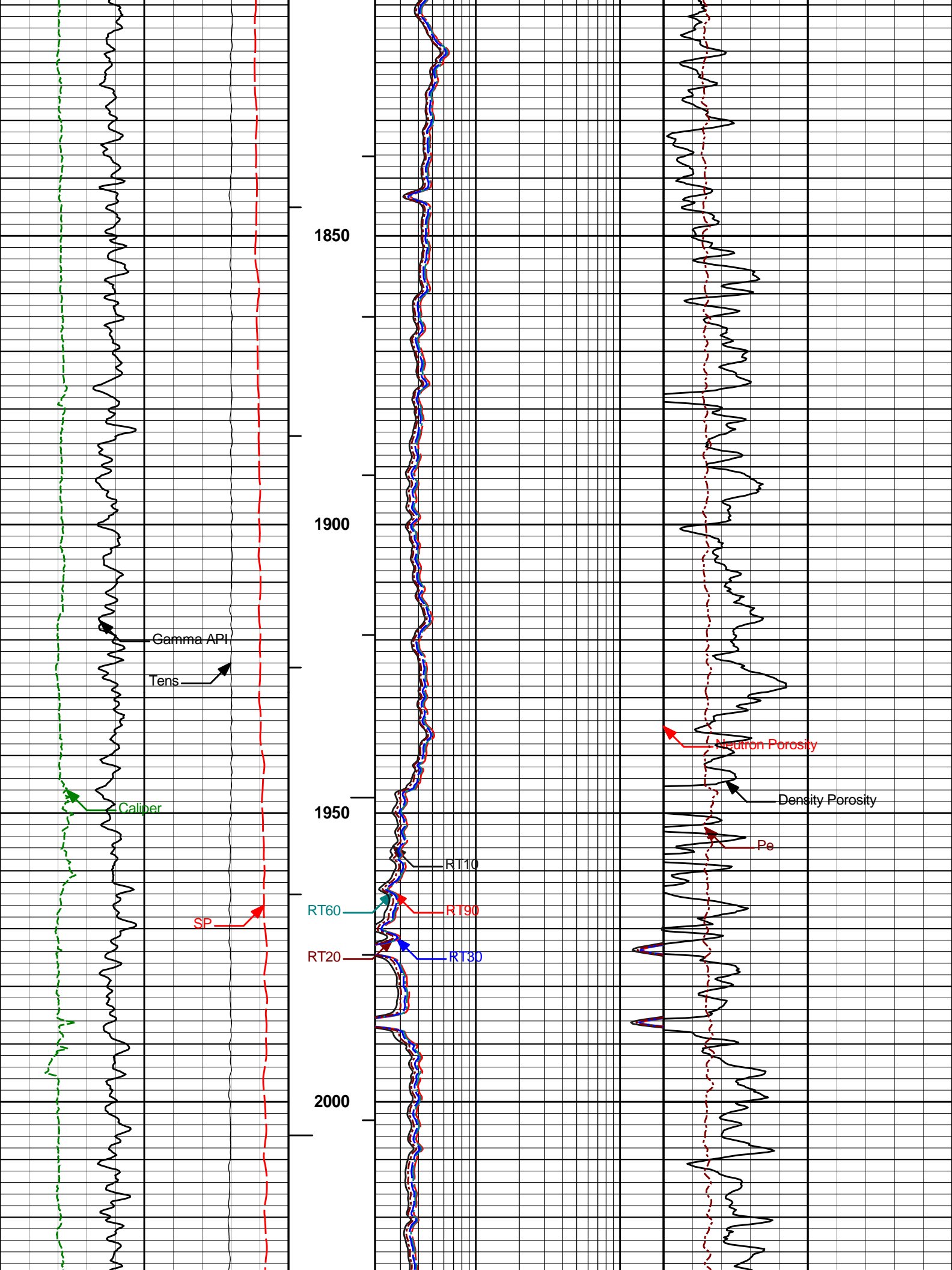


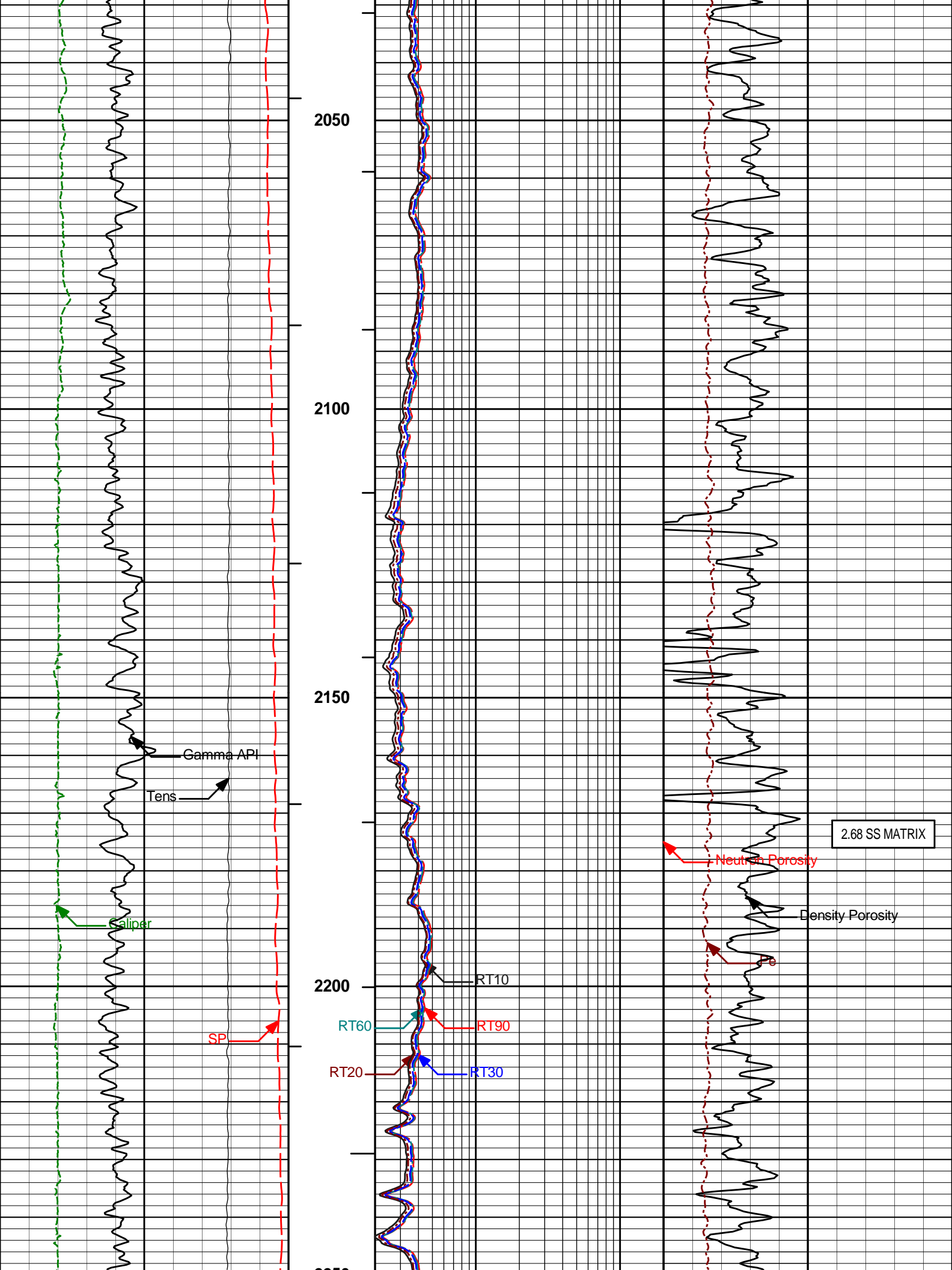


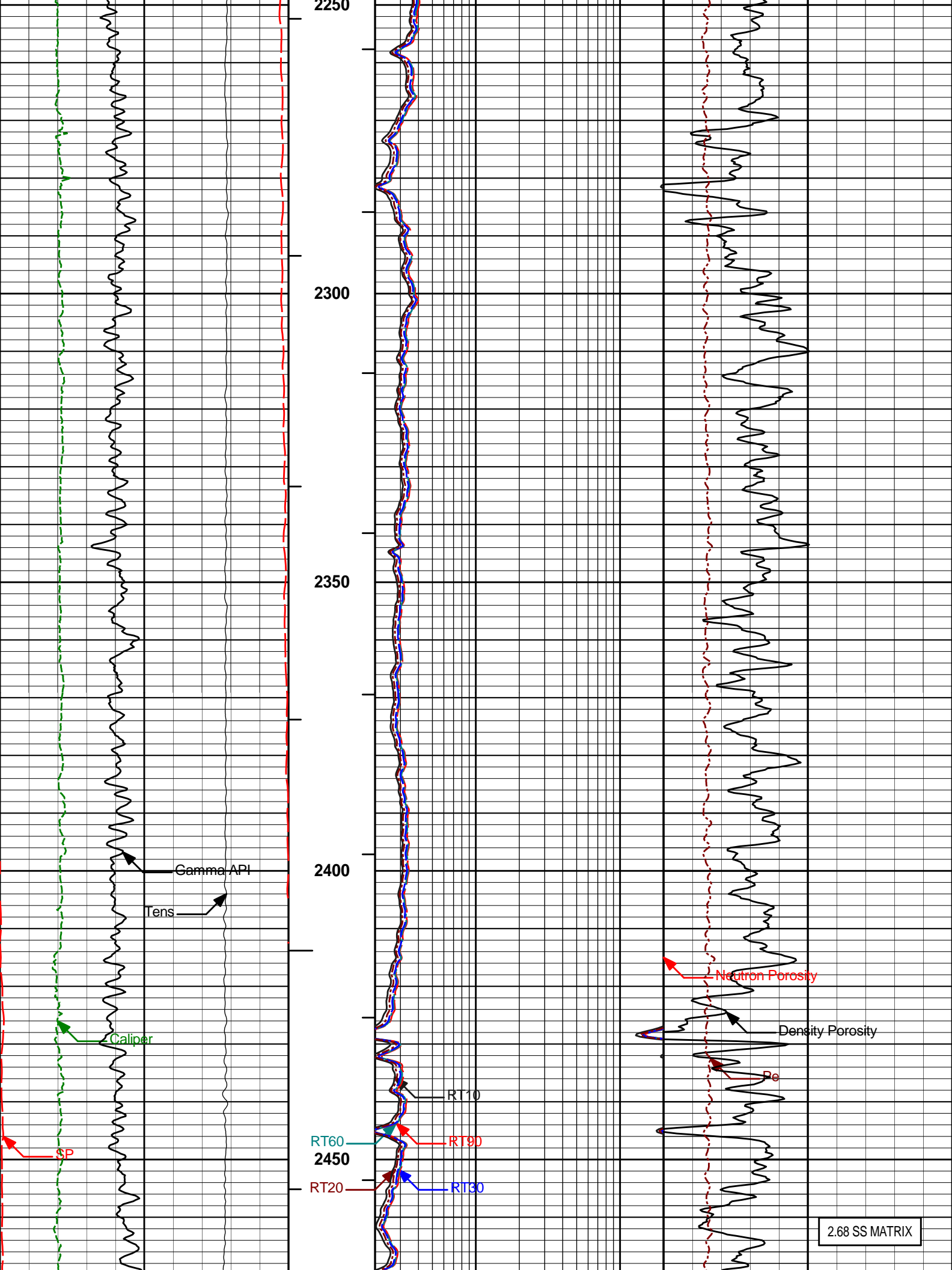


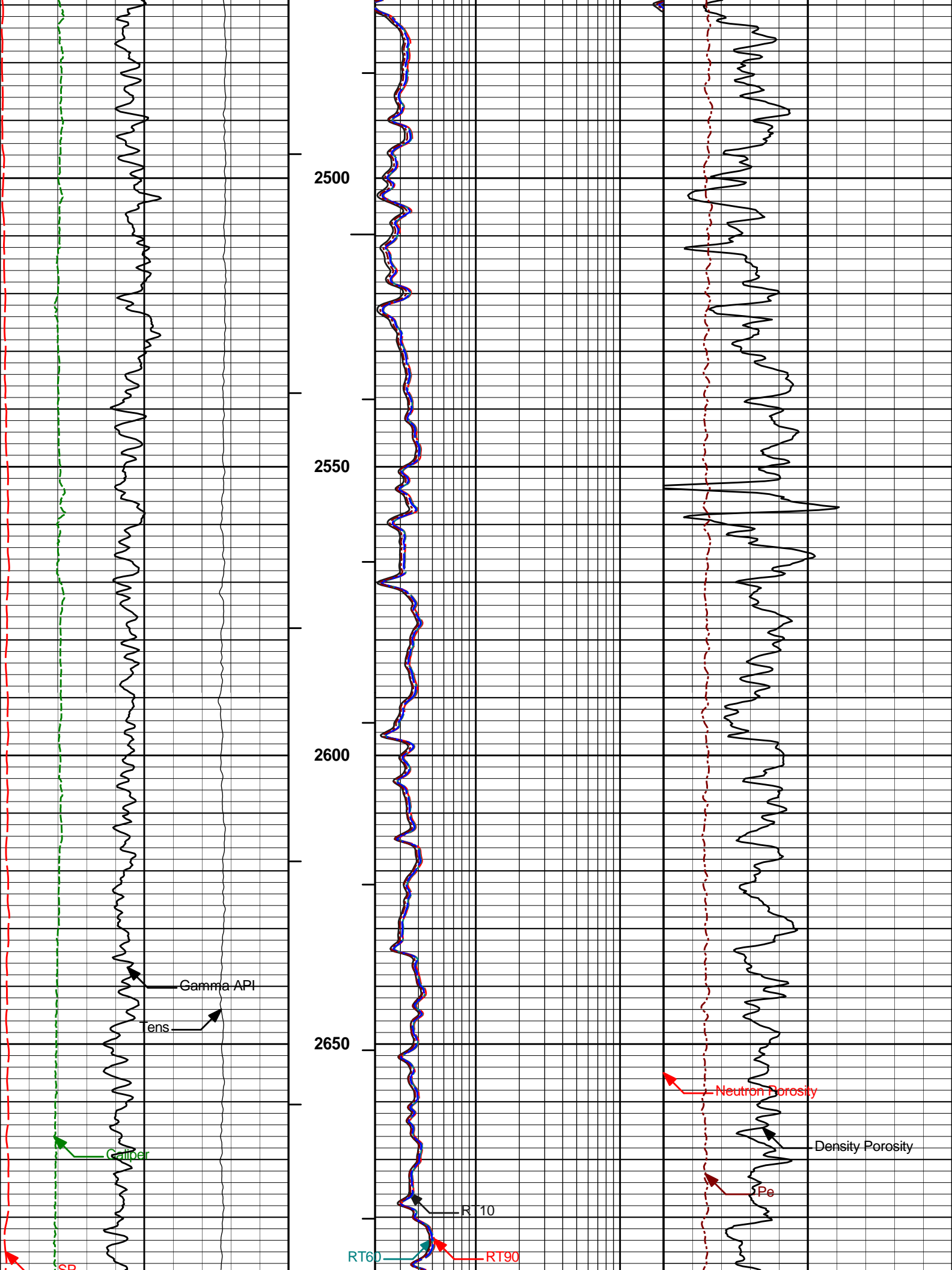


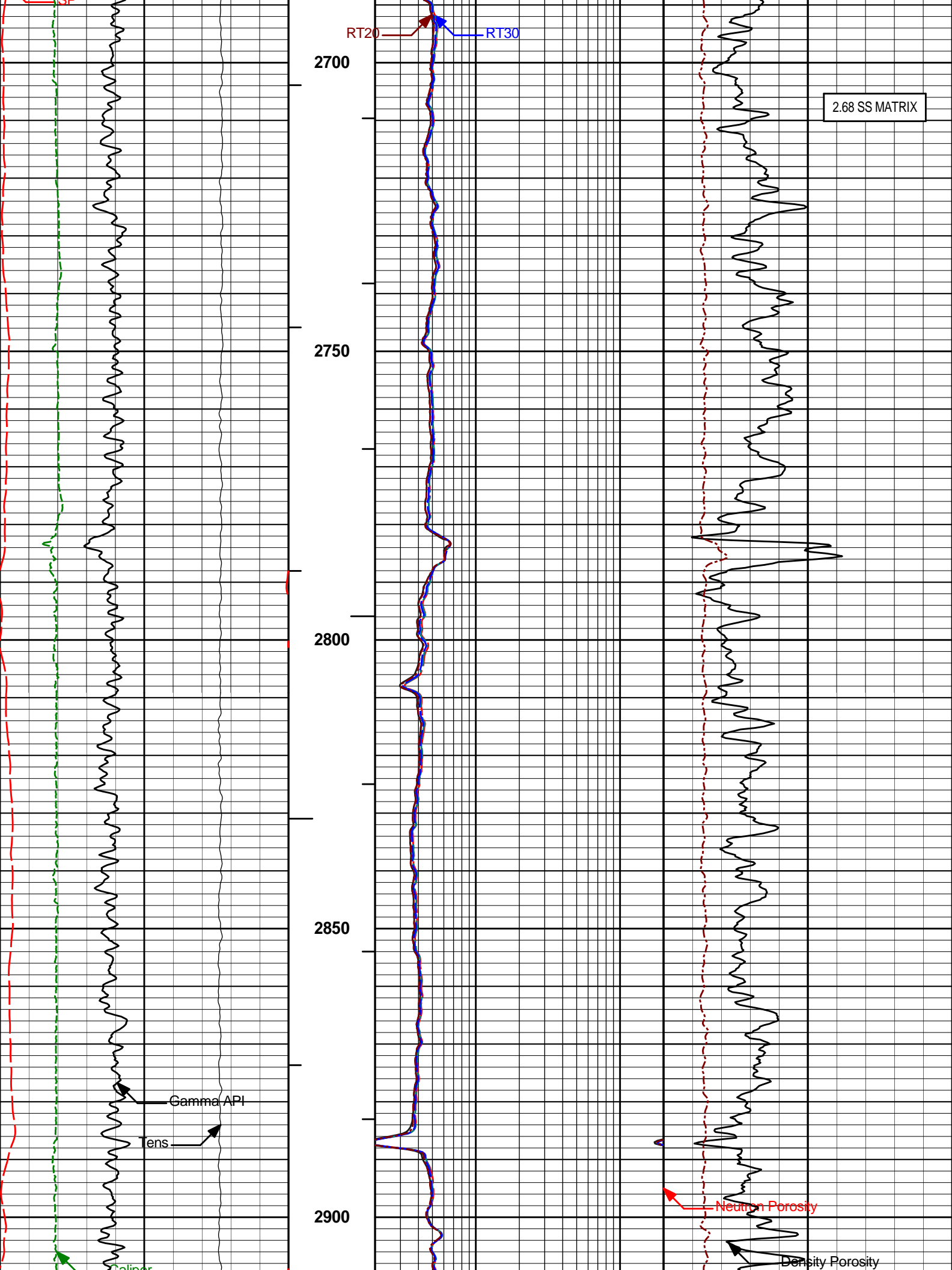


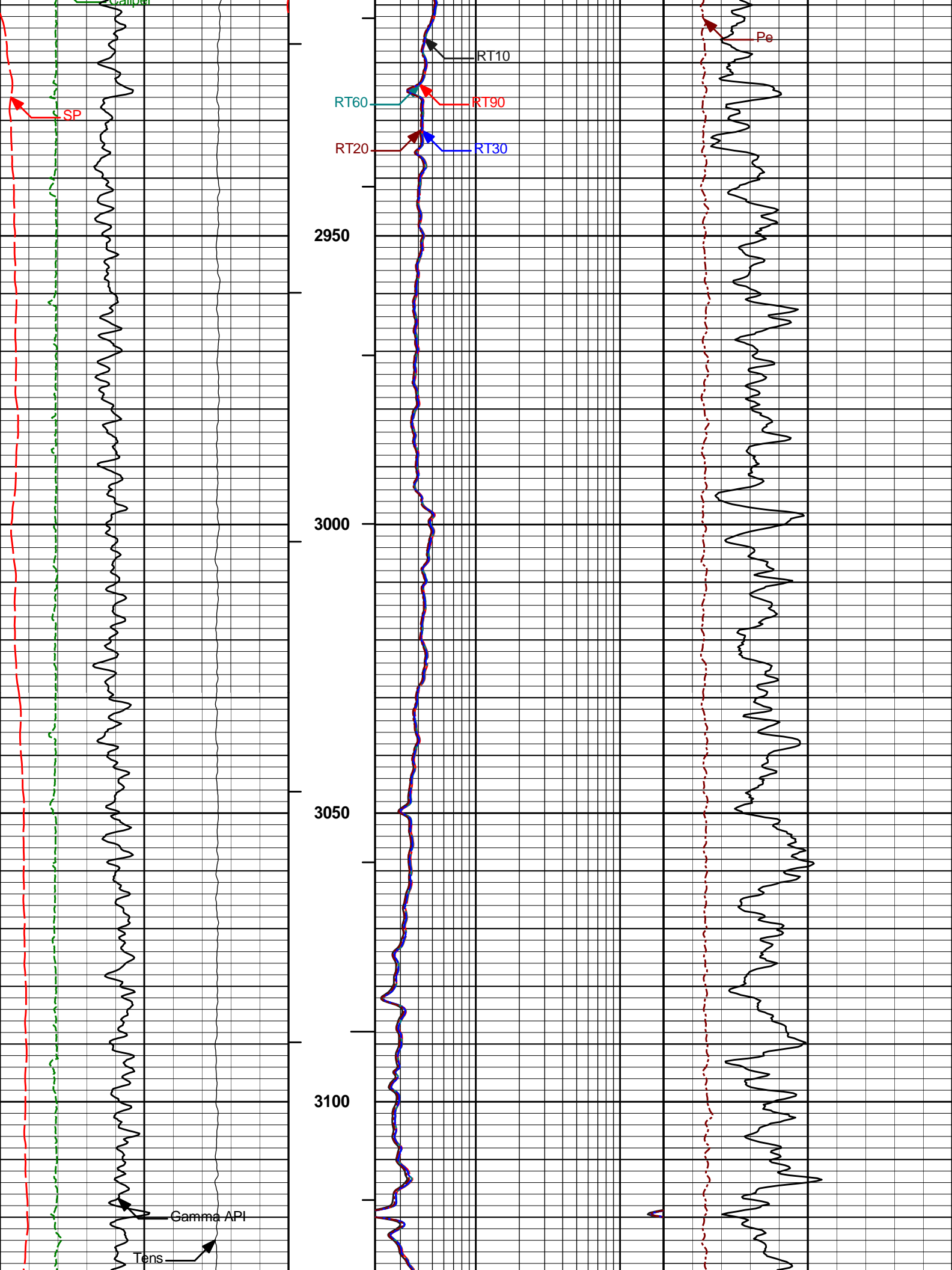


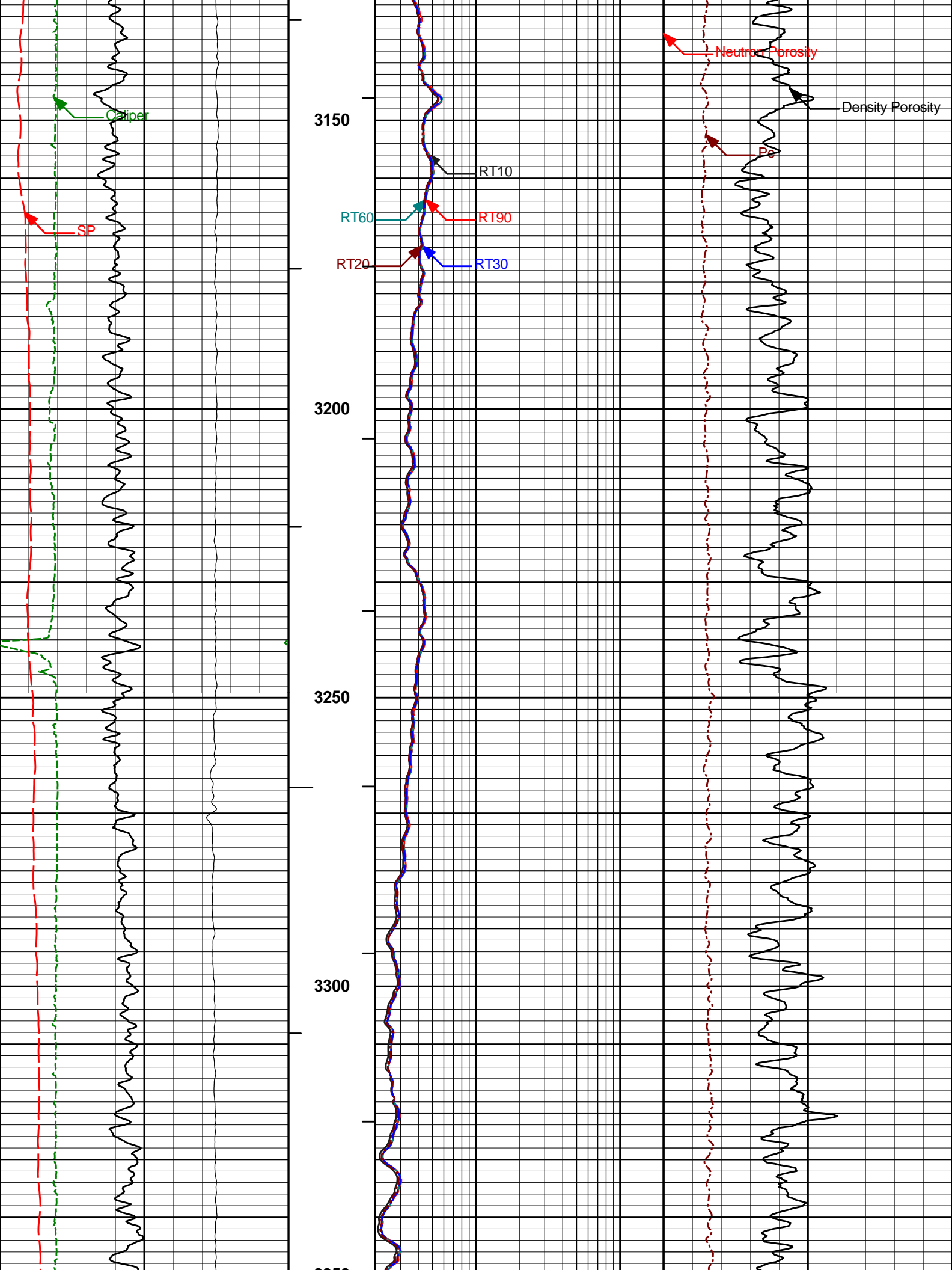


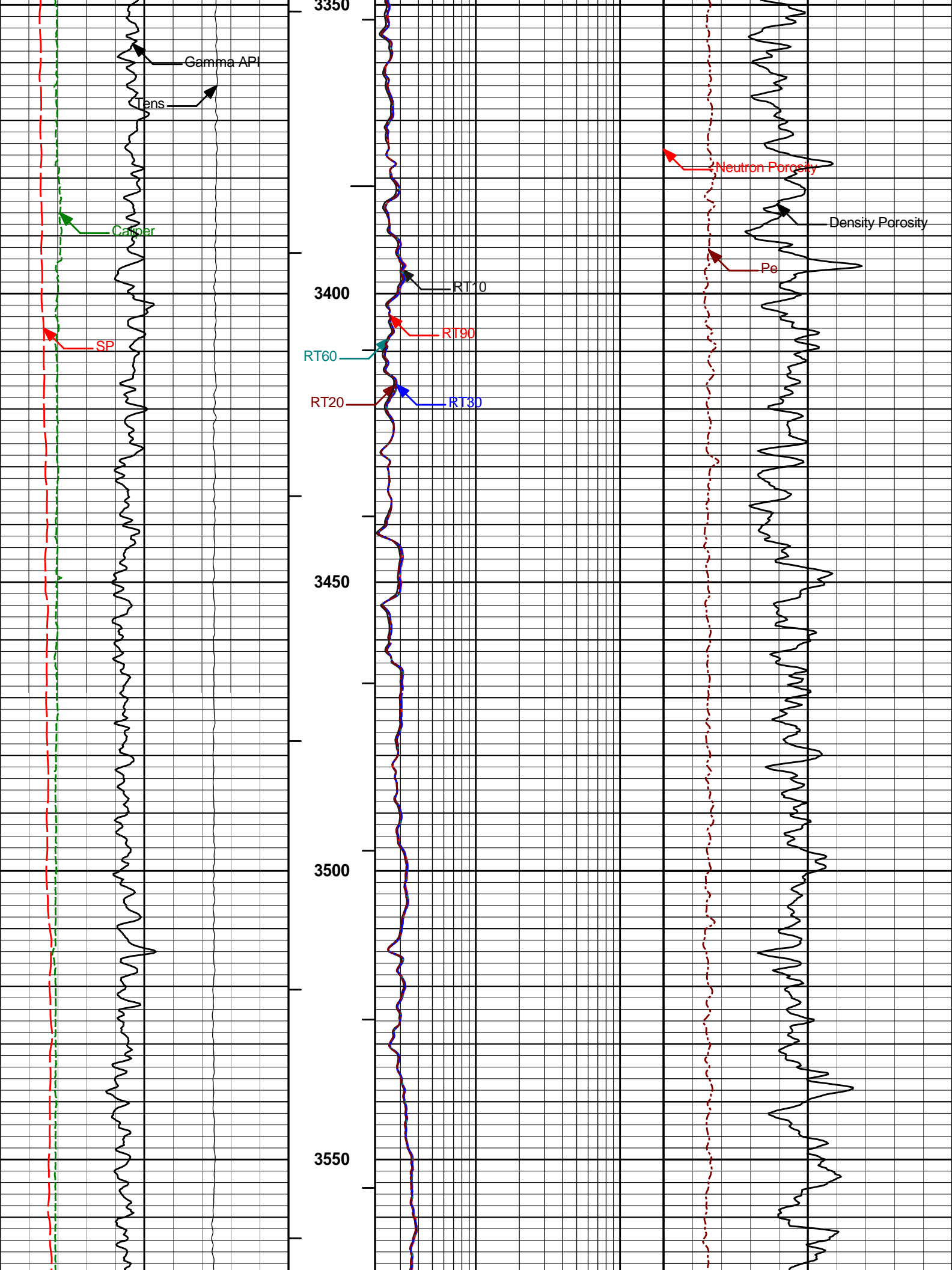




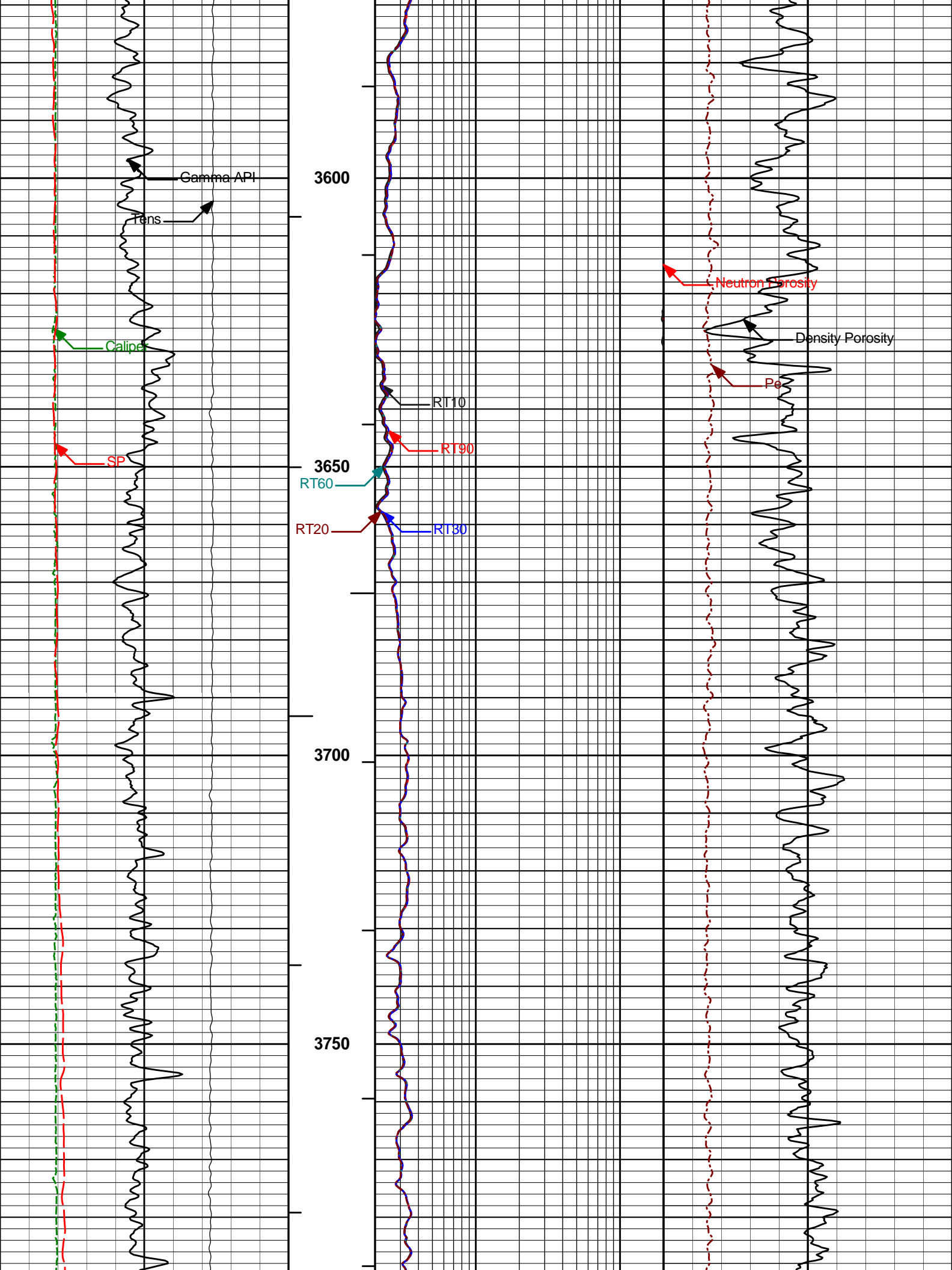


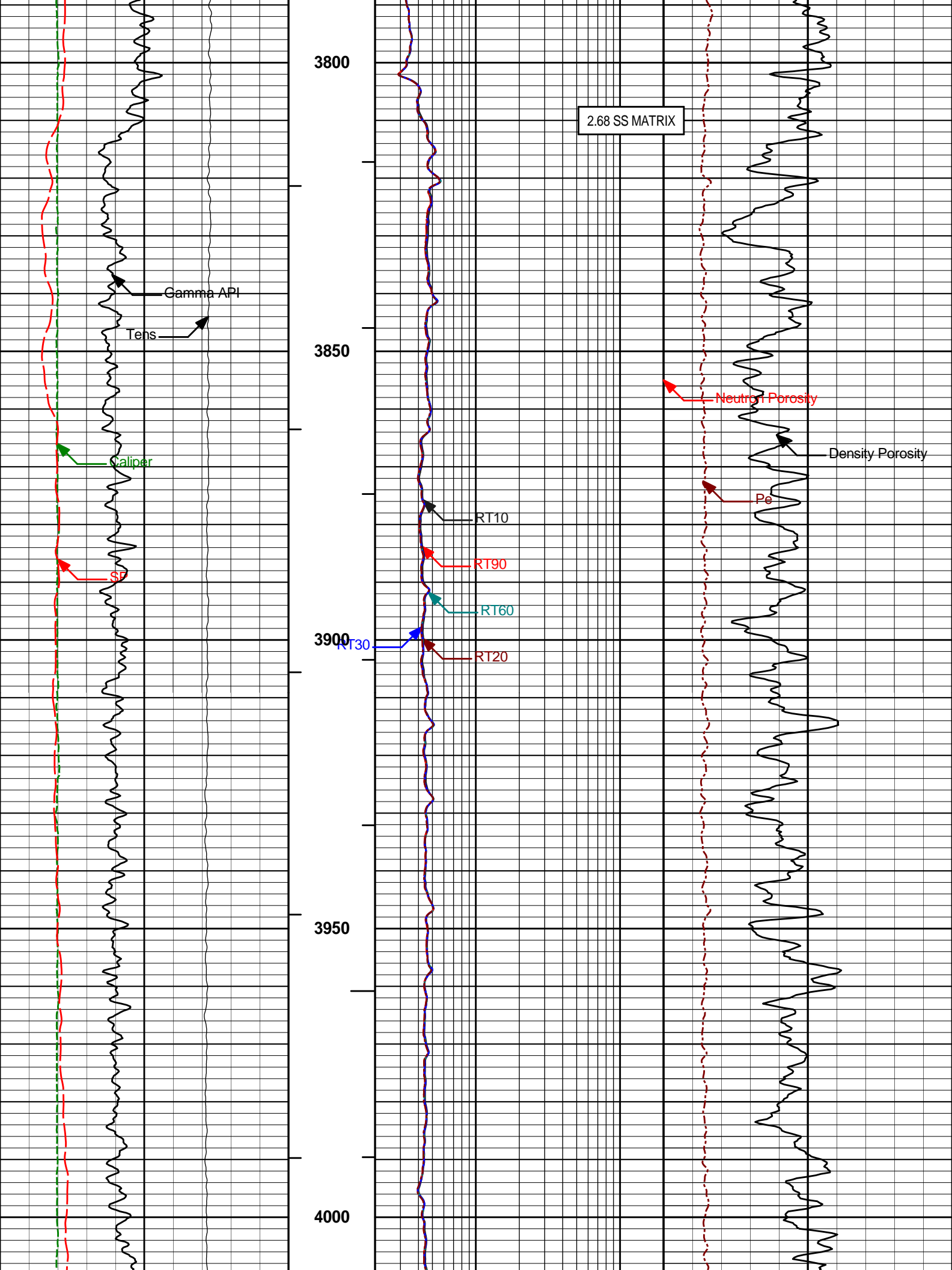


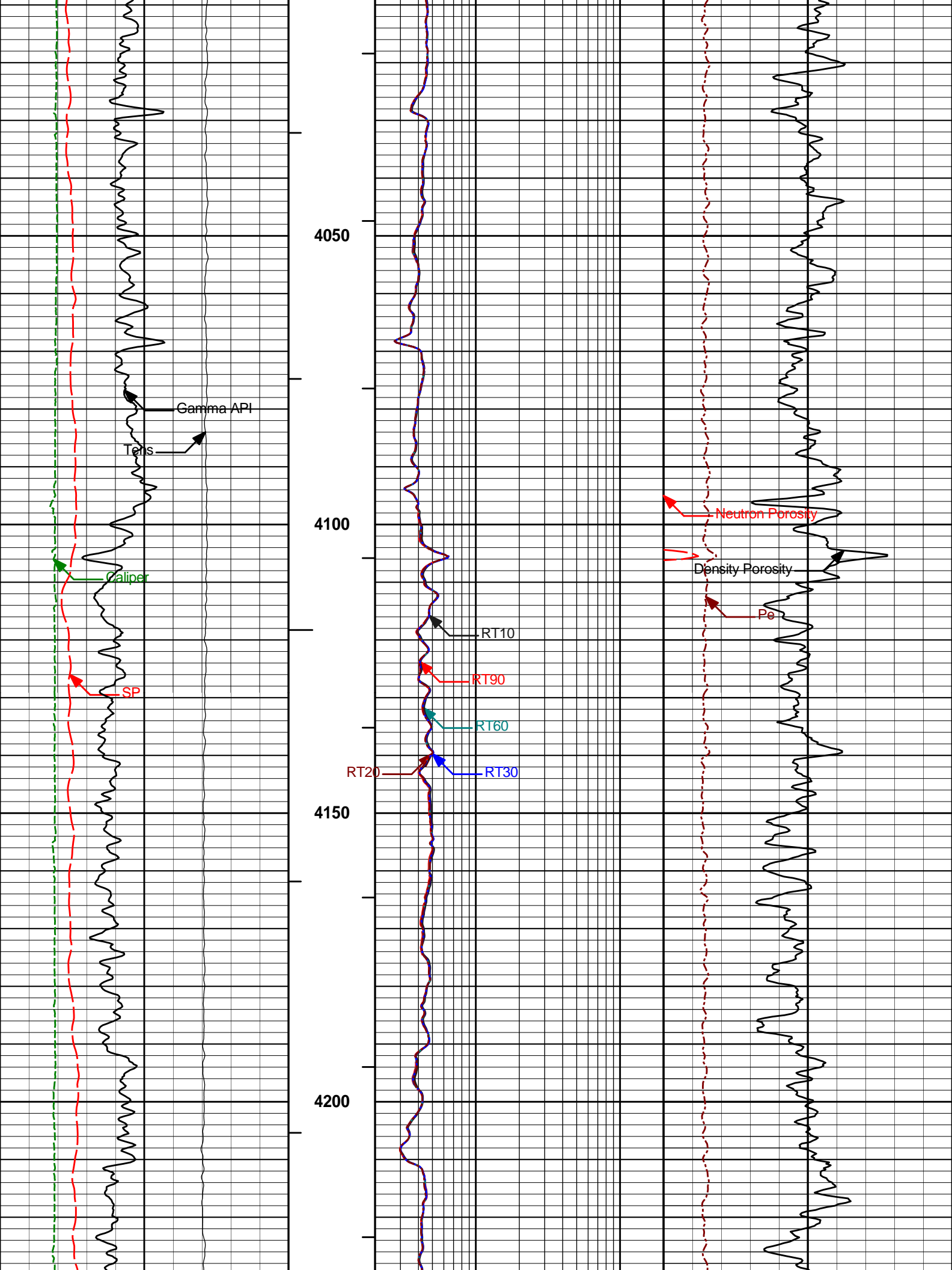


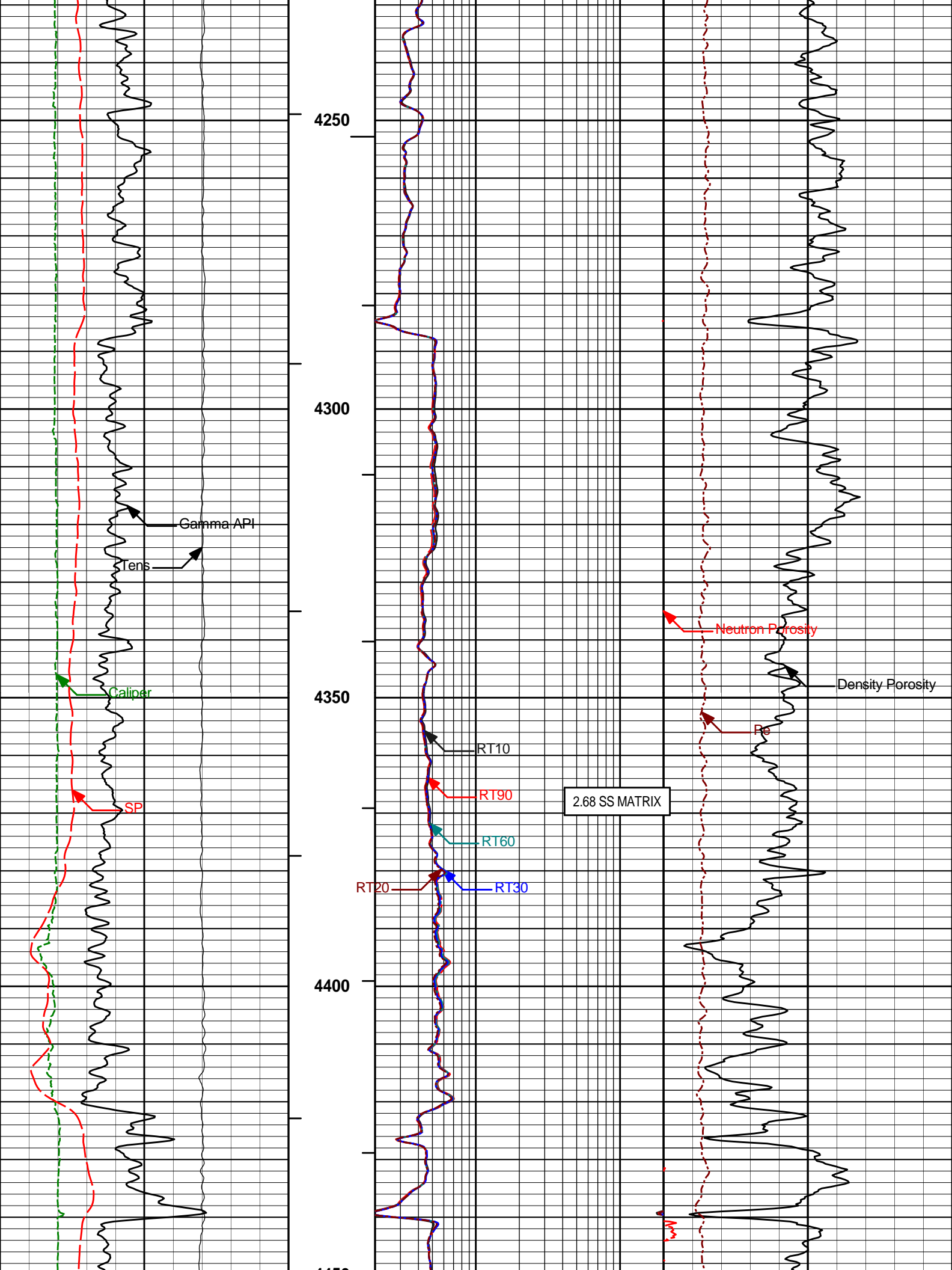


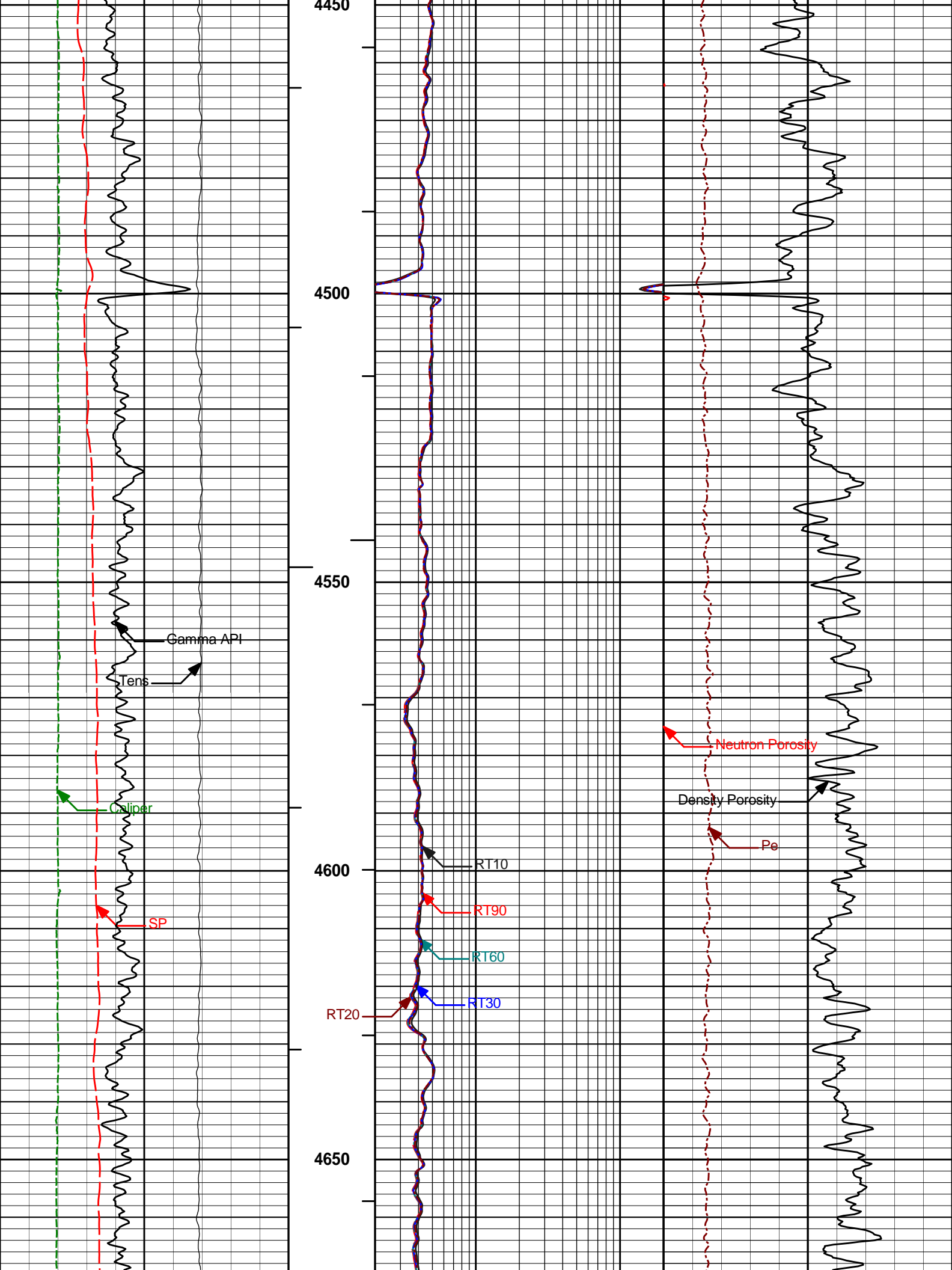


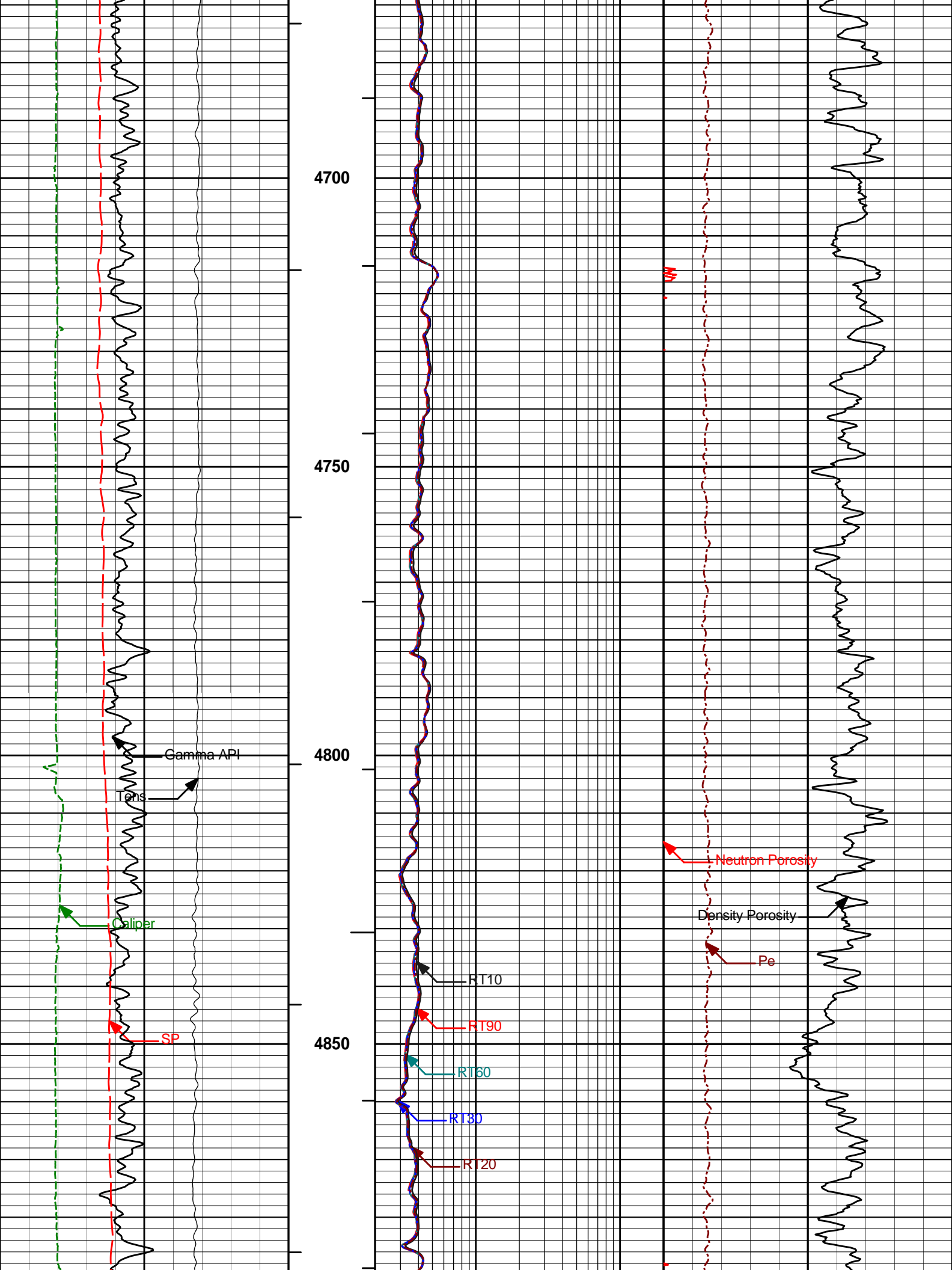


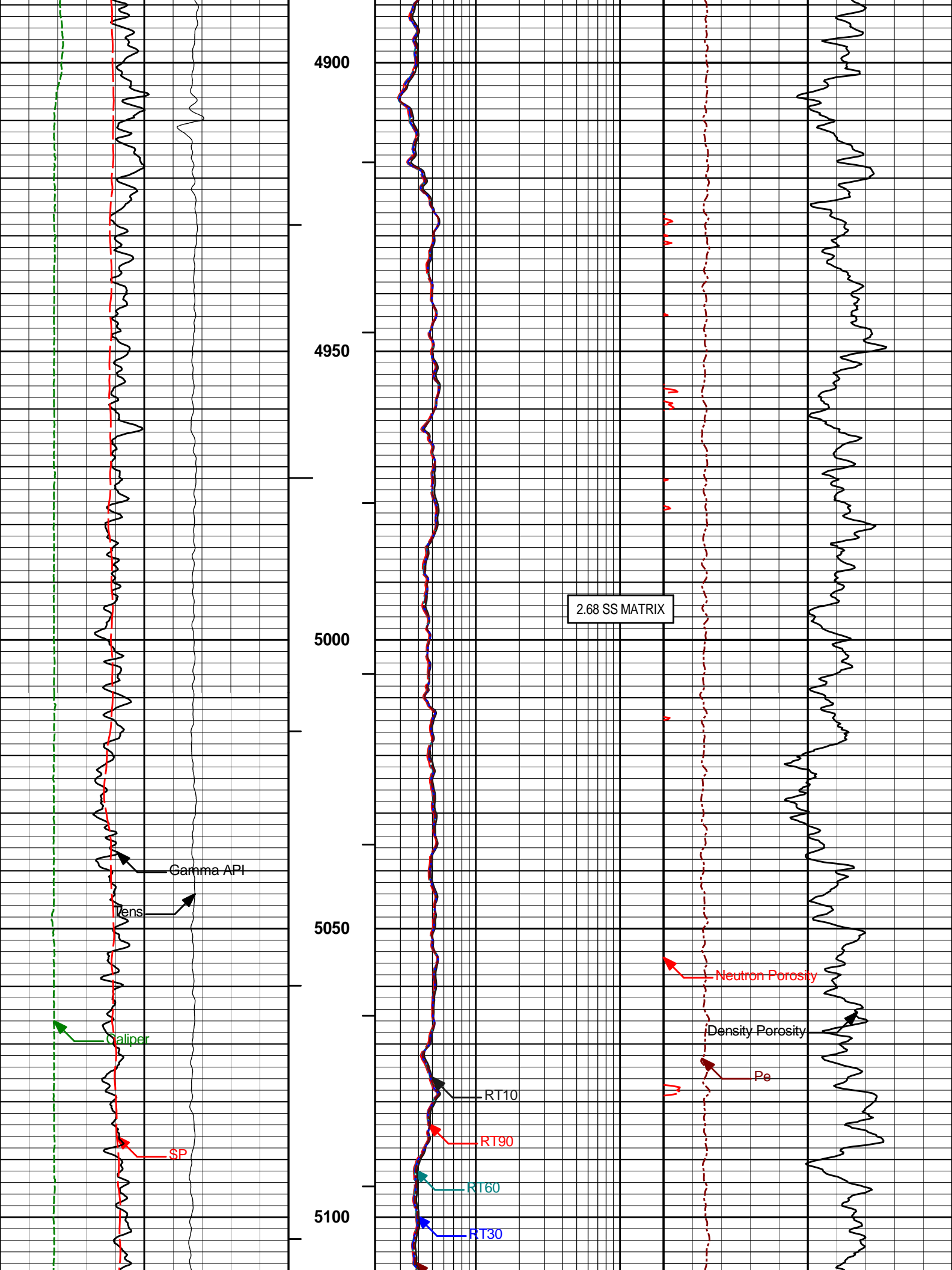


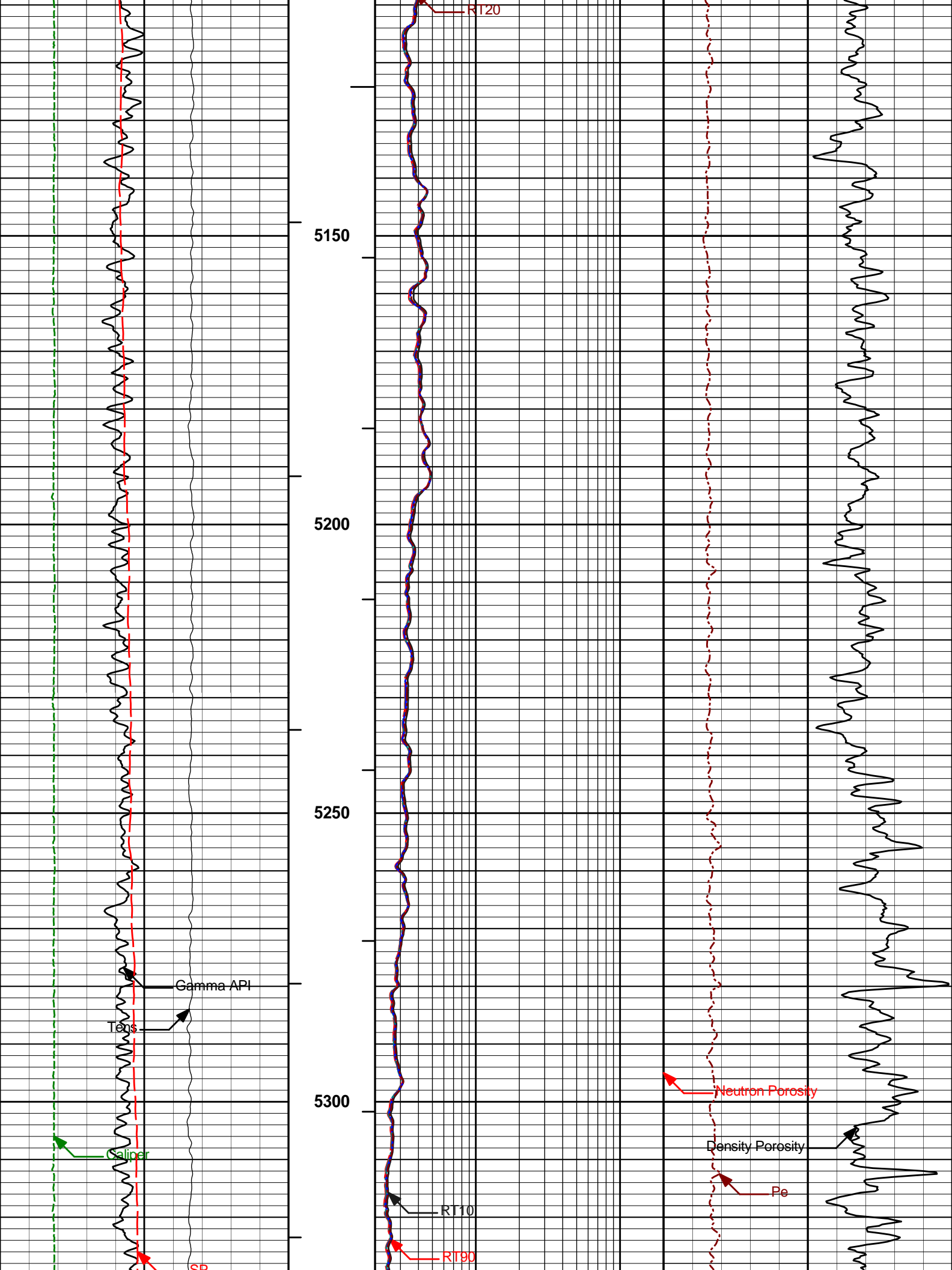




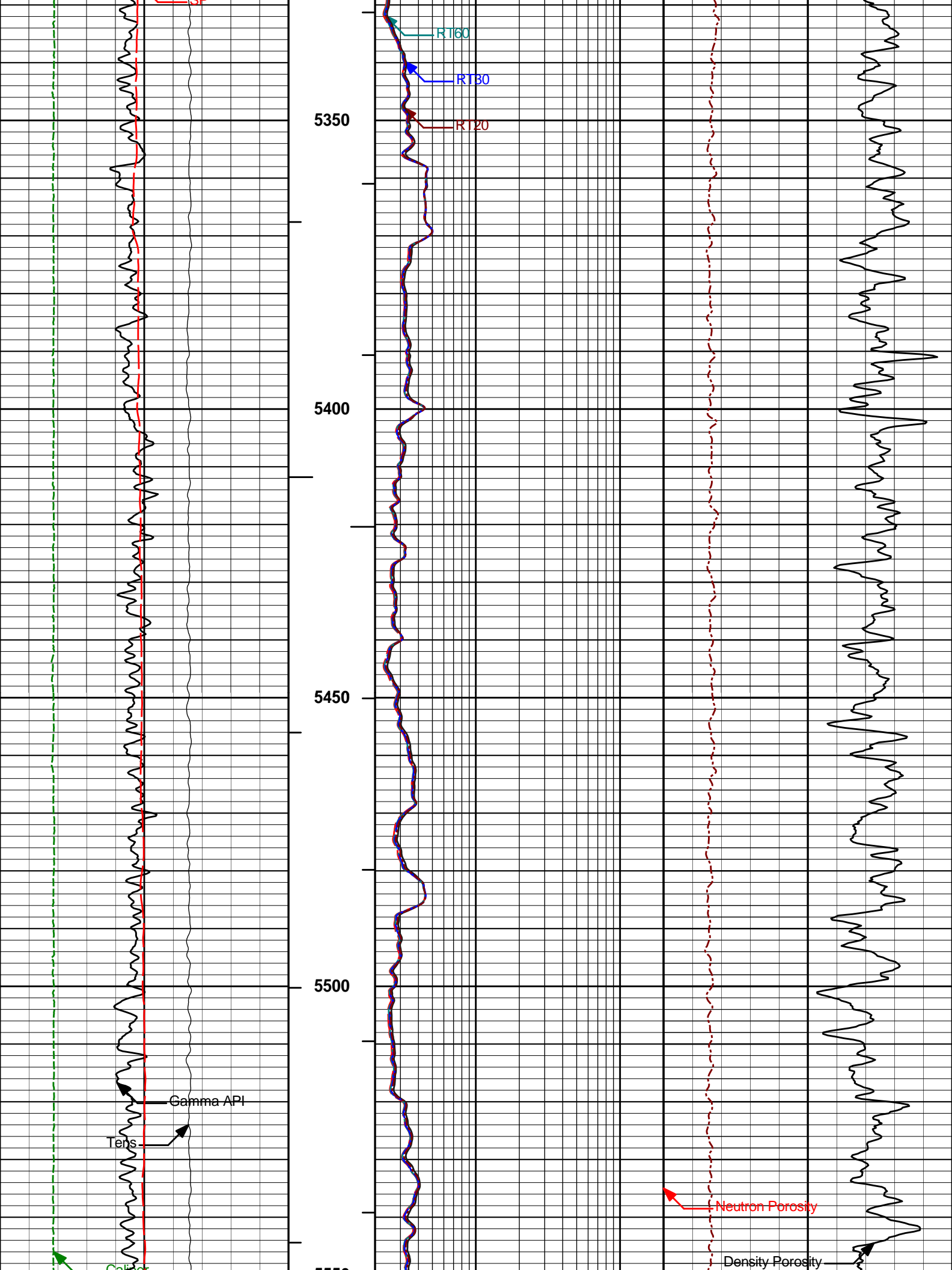


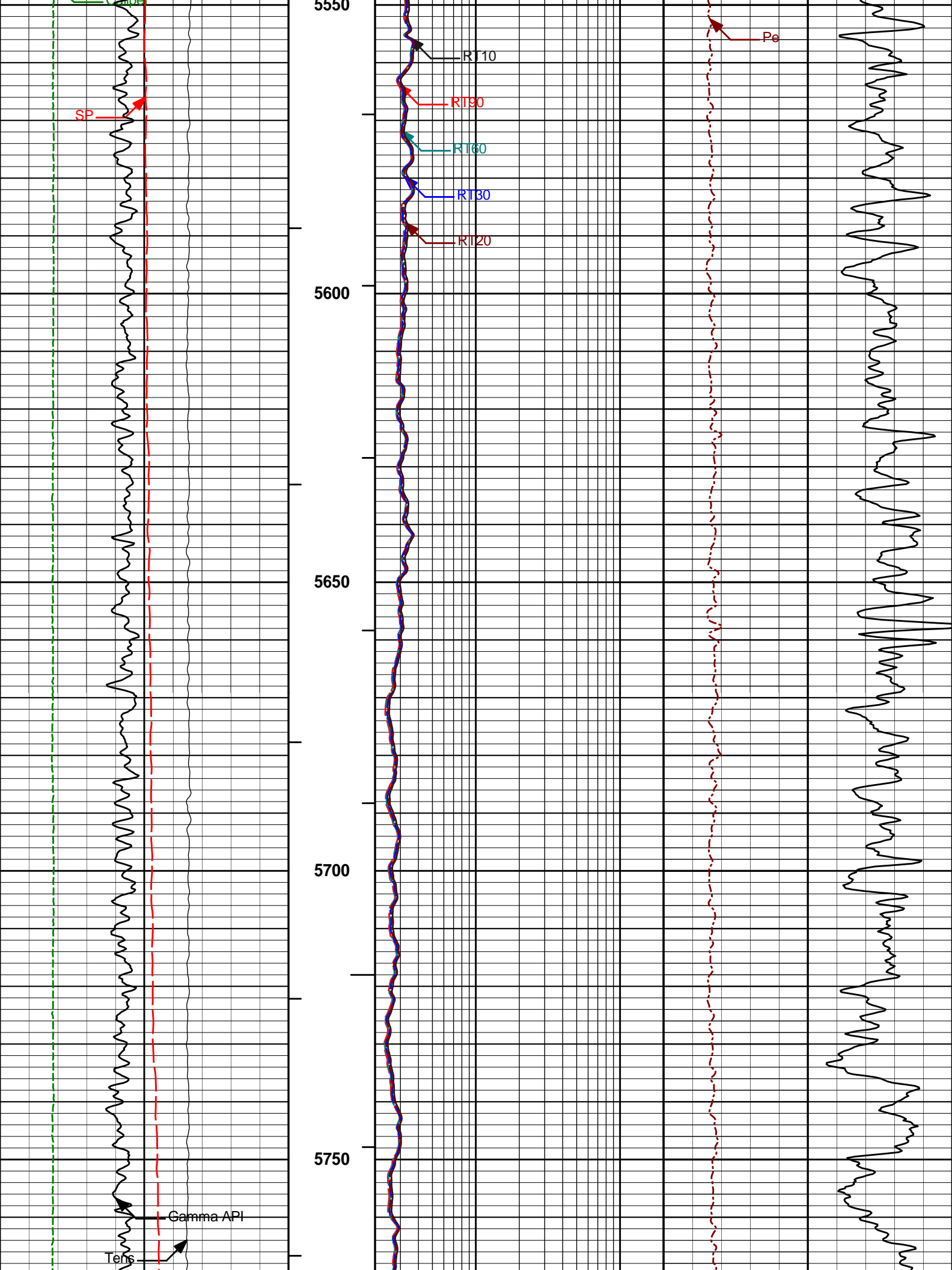


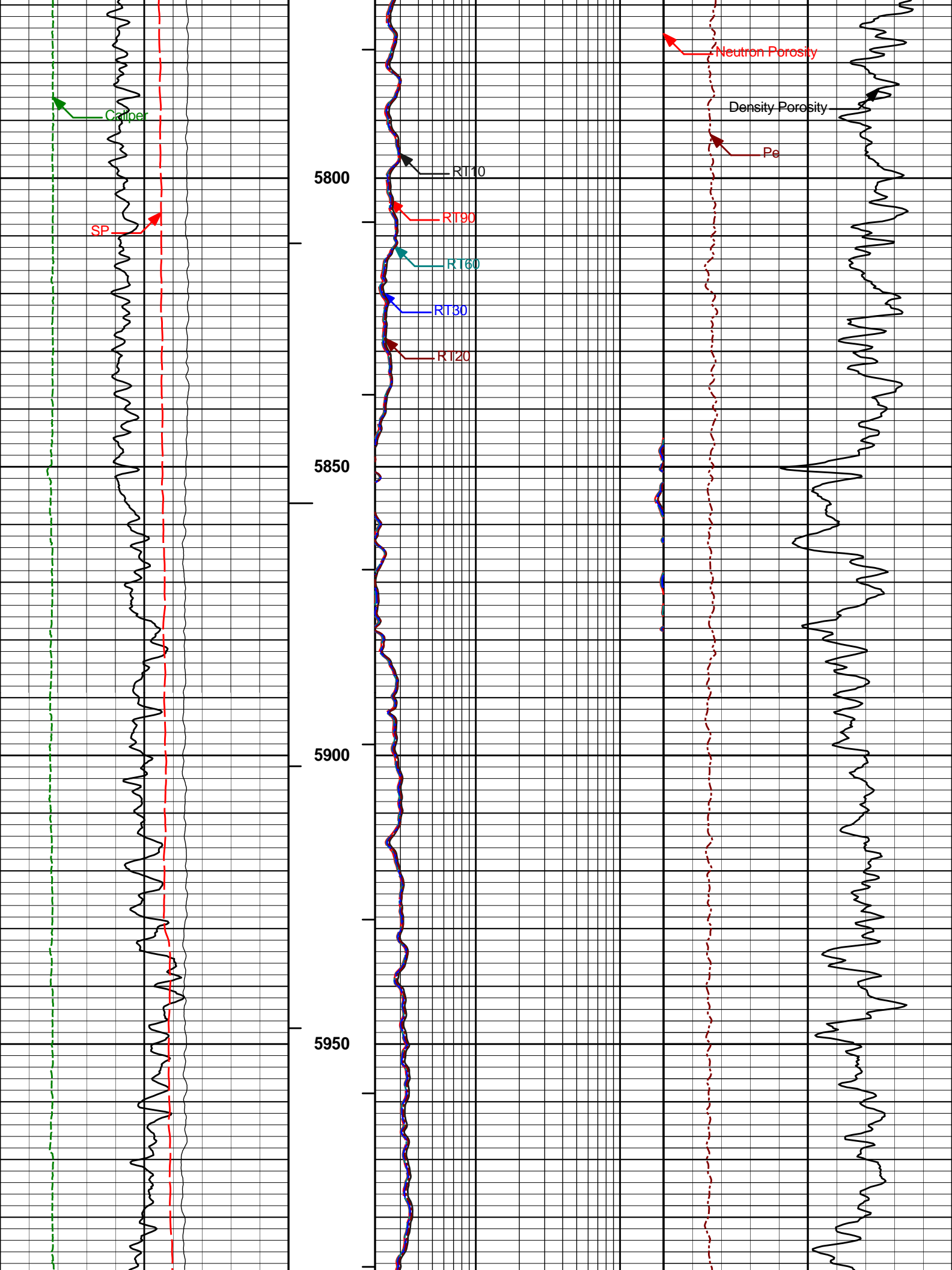


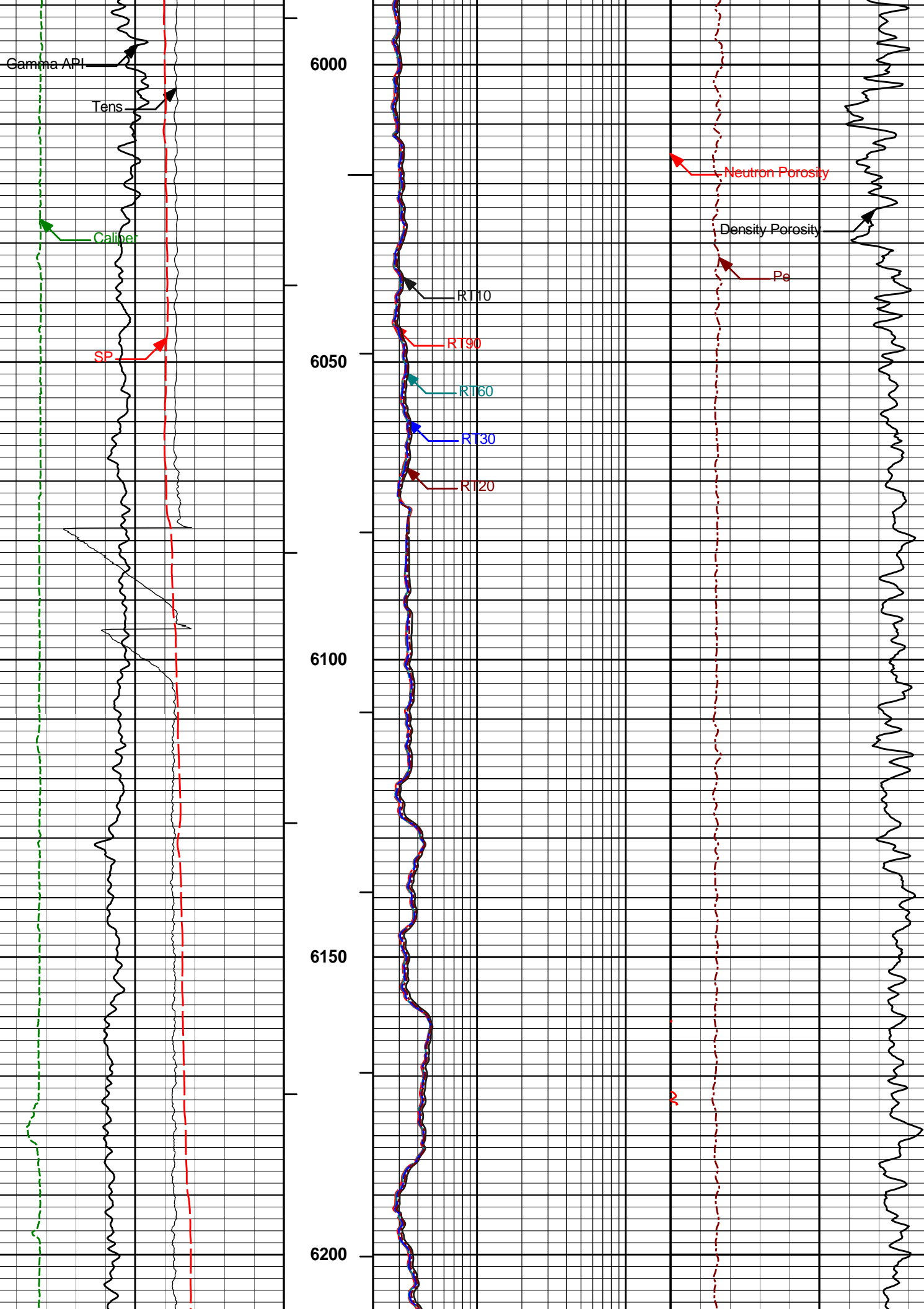


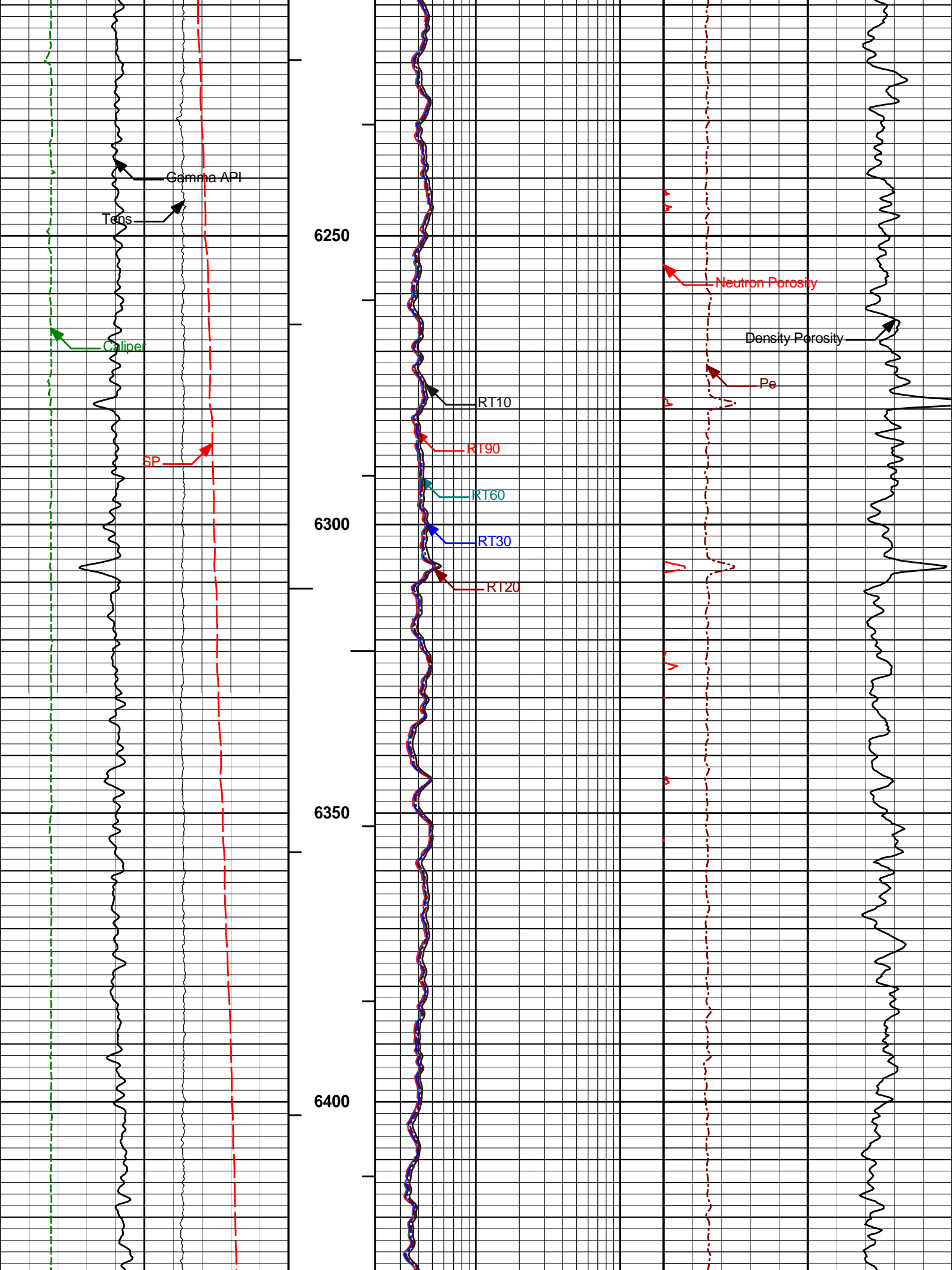


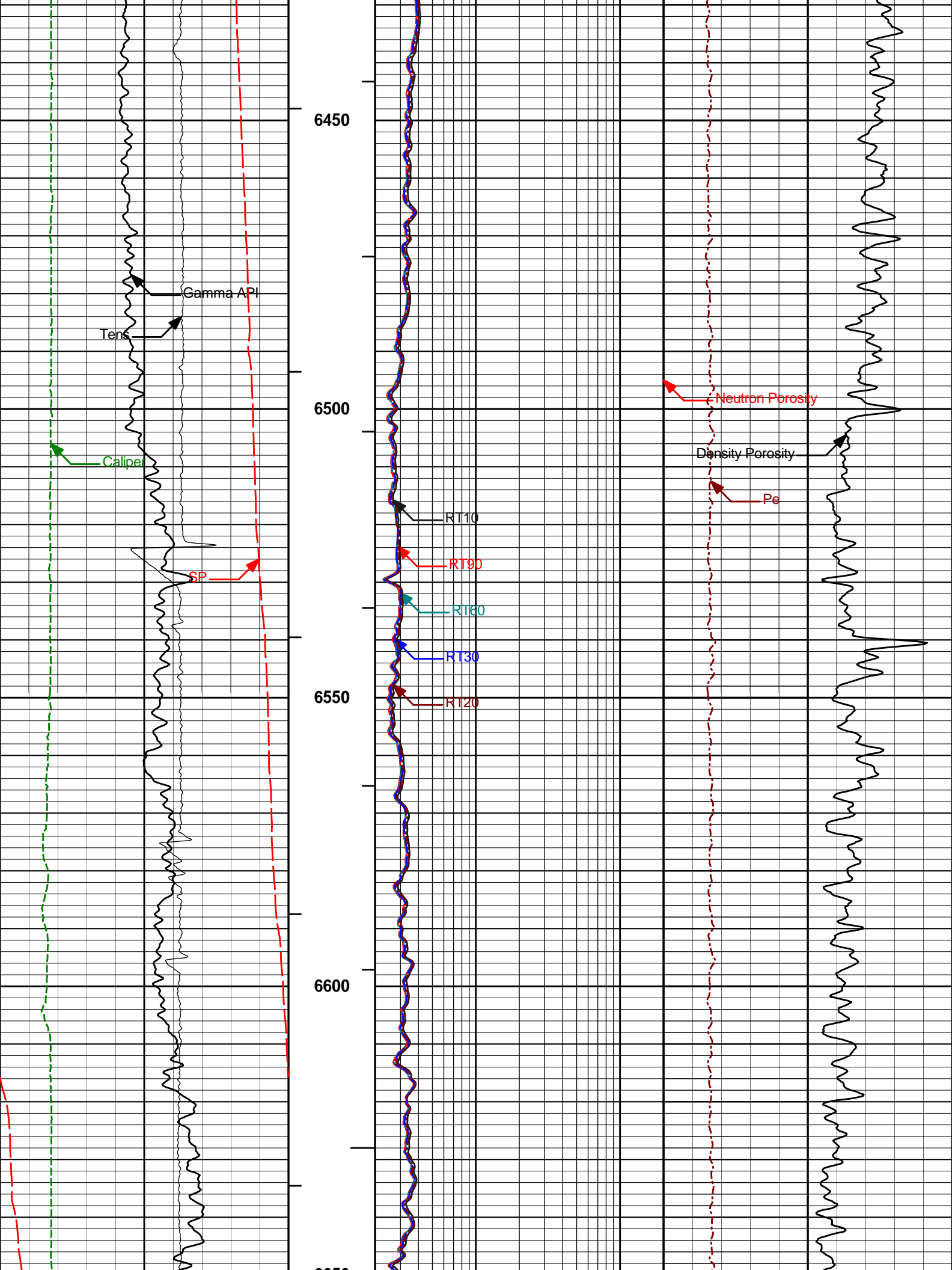


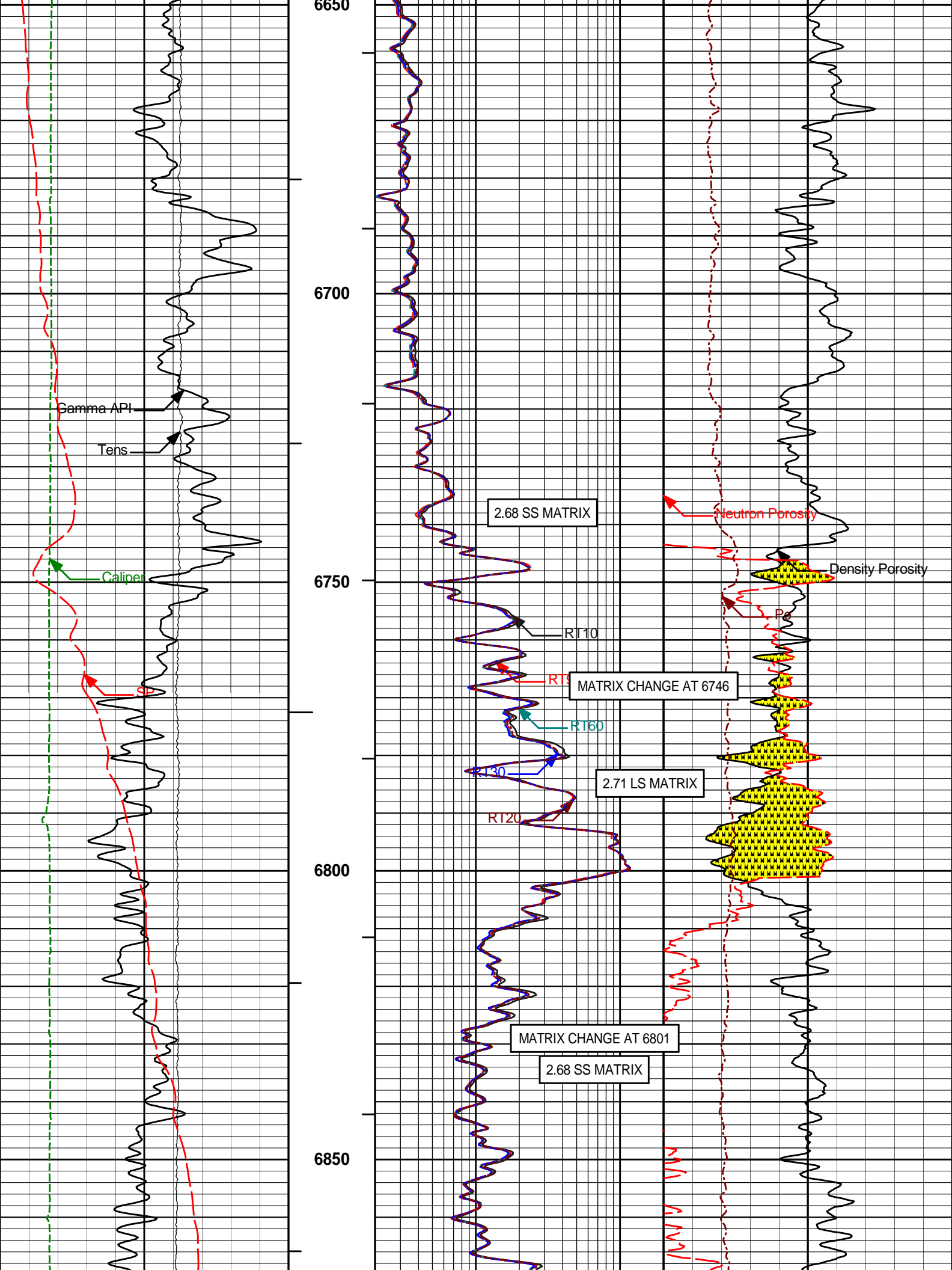


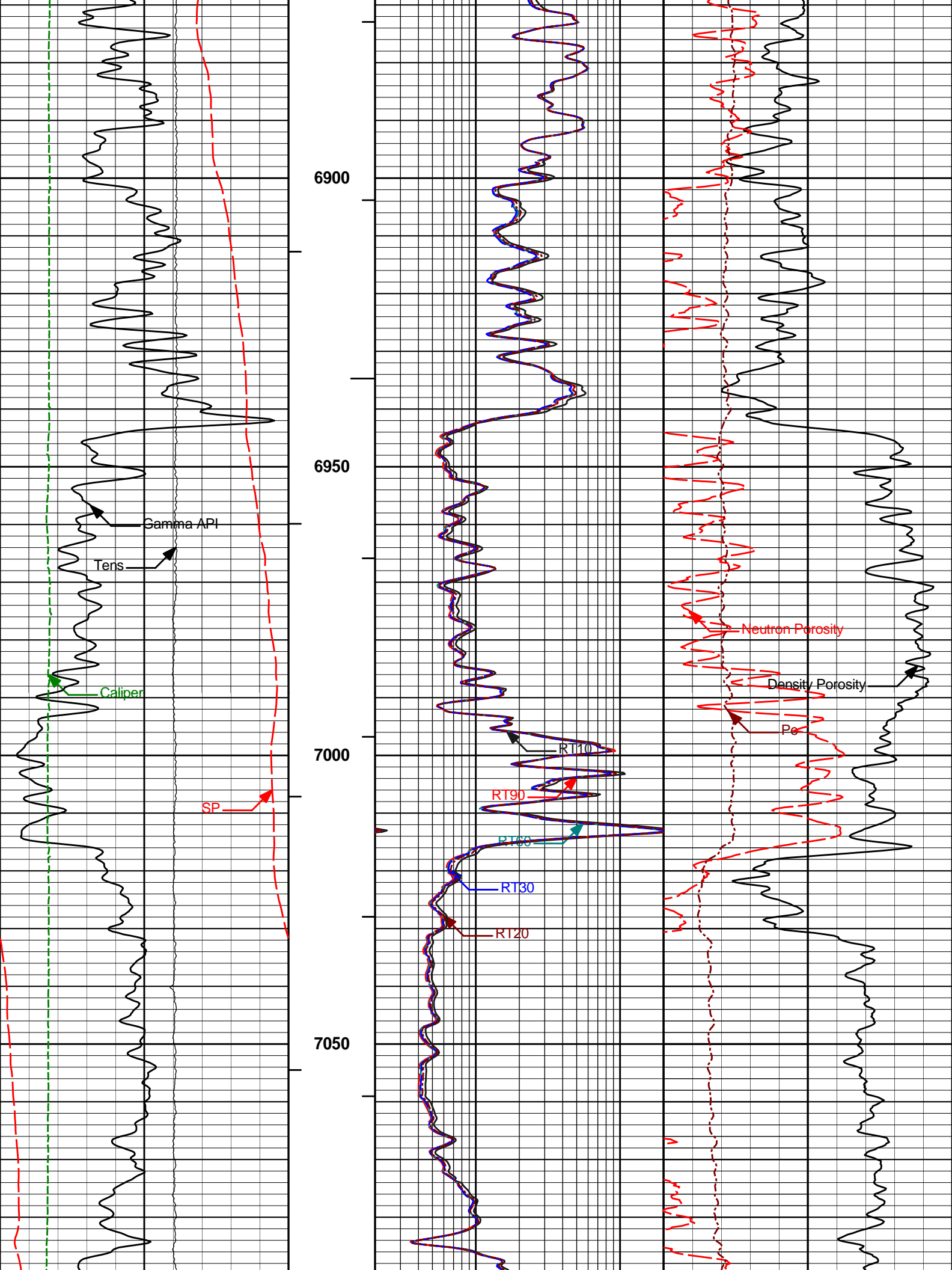




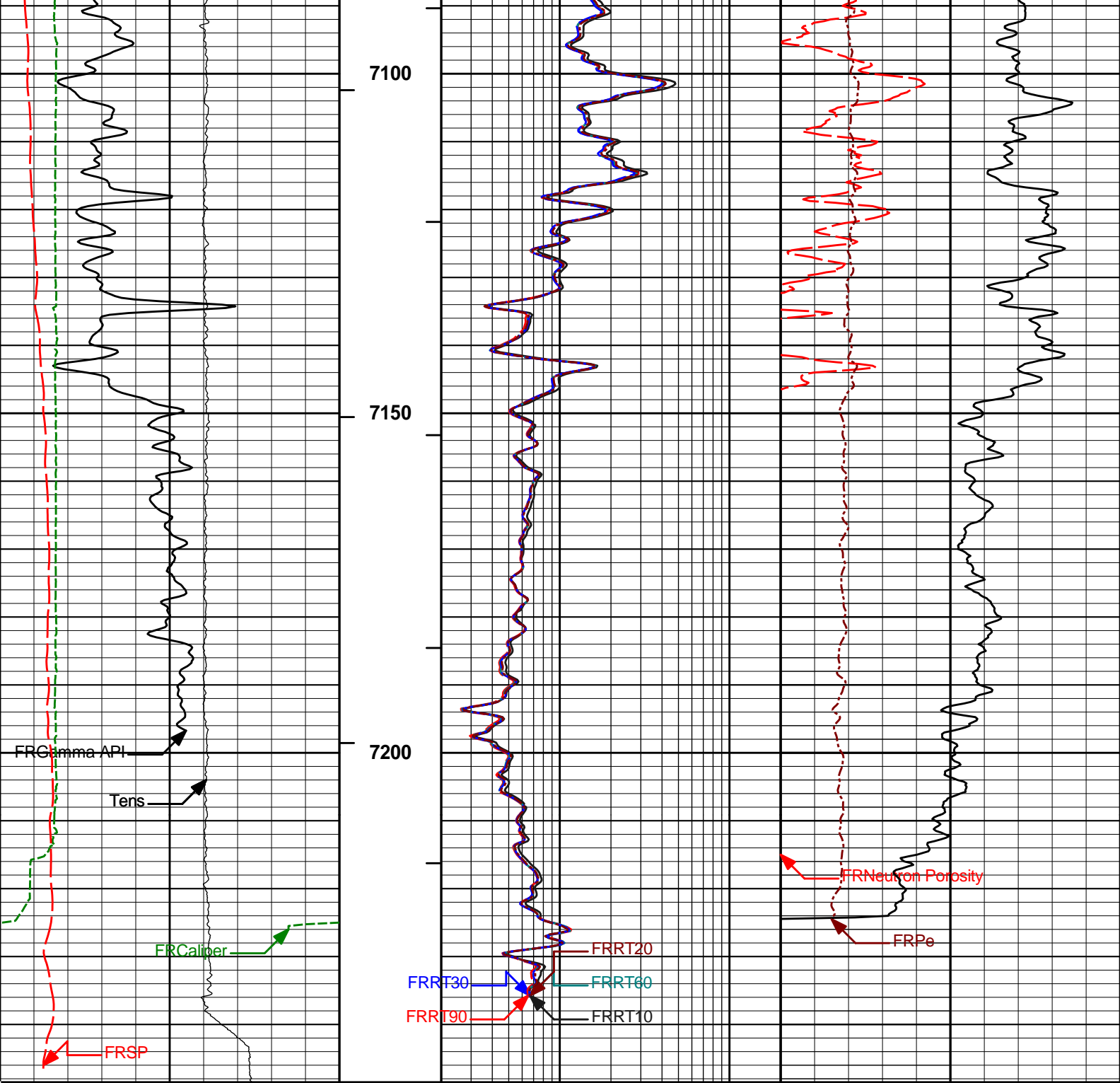












0	SP	100	1 : 240	2	RT90	200	0	Pe	10
	millivolts				ohmm				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				ohmm			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				ohmm			percent	
10K	Tens	0		2	RT20	200			
	pounds				ohmm				
				2	RT10	200			
					ohmm				

**HALLIBURTON**

Plot Time: 07-Jul-12 04:53:23  
 Plot Range: 750 ft to 7248.5 ft  
 Data: GUTTERSEN\_D2125Well Based\DAQ-0001-003.01\\*

MAIN PASS 5" = 100'

**HALLIBURTON****CALIBRATION REPORT****NATURAL GAMMA RAY TOOL SHOP CALIBRATION****Tool Name:** GTET - 11215095**Reference Calibration Date:** 10-Jun-12 15:39:19**Engineer:** A. ZWALI**Calibration Date:** 05-Jul-12 09:48:54**Software Version:** WL INSITE R3.6.0 (Build 3)**Calibration Version:** 1

Calibrator Source S/N: TB289

Calibrator API Reference:243.00 api

Equivalent Calibrator API Reference:247.3 api

Measurement	Measured	Calibrated	Units
Background	75.2	73.4	api
Background + Calibrator	328.7	320.7	api
Calibrator	253.4	247.3	api

**NATURAL GAMMA RAY TOOL FIELD CALIBRATION****Tool Name:** GTET - 11215095**Reference Calibration Date:** 05-Jul-12 09:48:54**Engineer:** A. ZWALI**Calibration Date:** 05-Jul-12 09:52:35**Software Version:** WL INSITE R3.6.0 (Build 3)**Calibration Version:** 1

Calibrator Source S/N: TB289

Calibrator API Reference:243.00 api

Equivalent Calibrator API Reference:247.3 api

Field Verification	Shop	Field	Units
Background	73.4	73.5	api
Background + Calibrator	320.7	323.0	api
Calibrator	247.3	249.4	api

Shop	Field	Difference	Tolerance
247.3	249.4	-2.1	+/- 9.00

**CSNG-FS SHOP CALIBRATION****Tool Name:** CSNG - 10846351**Reference Calibration Date:** 10-Jun-12 19:00:17**Engineer:** A. ZWALI**Calibration Date:** 05-Jul-12 10:27:51**Software Version:** WL INSITE R3.6.0 (Build 3)**Calibration Version:** 1**Source SN:** TB289

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.6	23.6	Channel #
583 KEV Peak Channel #	52.9	52.8	Channel #
2614 KEV Peak Channel #	218.2	218.0	Channel #
Calibrate Temperature	115.0	102.2	degF

Pass/Fail Summary	Centroid
239 KEV Peak	Passed
583 KEV Peak	Passed
2614 KEV Peak	Passed

Blanket Reference Value: 243.00 API  
Calibrator Value: 276.0 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1809.1	CPS	324.9	337.0	API
Background	327.8	CPS	63.7	61.1	API

Gamma Ray Gain: 0.94  
Expected Gain Range: 0.85 - 1.15  
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION			
Tool Name:	CSNG - 10846351	Reference Calibration Date:	05-Jul-12 10:27:51
Engineer:	A. ZWALI	Calibration Date:	05-Jul-12 10:39:04
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Source SN:			

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.6	23.3	Channel #
583 KEV Peak Channel #	52.8	52.5	Channel #
2614 KEV Peak Channel #	218.0	217.1	Channel #
Calibrate Temperature	102.2	105.7	degF

Pass/Fail Summary	Centroid
239 KEV Peak	Passed
583 KEV Peak	Passed
2614 KEV Peak	Passed

Blanket Reference Value: 243.00 API  
Calibrator Value: 276.0 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1835.2	CPS	337.0	334.1	API
Background	319.3	CPS	61.1	58.1	API

Gamma Ray Gain: 0.92  
Expected Gain Range: 0.85 - 1.15  
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION					
Tool Name:	DSNT - 11219332	Reference Calibration Date:	10-Jun-12 17:58:39		
Engineer:	A. ZWALI	Calibration Date:	05-Jul-12 09:38:47		
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1		

Logging Source S/N: DSN430  
Tank Serial Number: 11068236  
Reference value assigned to Tank: 53.720

Reference value assigned to Tank: 55.720  
Snow Block S/N: BRIGHTON SNOW BLOCK  
Calibration Tank Water Temperature: 70 degF  
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.979	0.974	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):	0.2238	0.2224	0.0014	+/- 0.0020
Calibrated Ratio:	10.16	10.11	0.048	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0826	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 - 11219332	Reference Calibration Date:	05-Jul-12 09:38:47
Engineer:	A. ZWALI	Calibration Date:	05-Jul-12 09:40:12
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN430  
Snow Block S/N: BRIGHTON SNOW BLOCK

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0826	0.0829	0.0003	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 11014271	Reference Calibration Date:	03-Jul-12 21:27:38
Engineer:	J. PINKETT	Calibration Date:	03-Jul-12 21:31:52
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 11219332		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3695.85	-3721.57	-7000.00 - -1000.00
Pad Gain	0.0003736	0.0003733	0.000200 - 0.000600
Arm Offset	-3734.54	-3428.61	-5000.00 - 3000.00
Arm Gain	0.0005114	0.0004917	0.000300 - 0.000700

Arm Power -0.000001137 0.000000067 -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)	2.01	2.00	-0.01	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.43	6.50	0.07	+/- 0.20
Medium Ring (in)	8.22	8.25	0.03	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT Pad - 11816600	Reference Calibration Date:	03-Jul-12 20:41:52
Engineer:	J. PINKETT	Calibration Date:	03-Jul-12 21:00:28
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: 5256GW		
Aluminum Block S/N: 63066	Density: 2.602g/cc	Pe: 3.100
Magnesium Block S/N: 12345	Density: 1.690g/cc	Pe: 2.650

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0439	1.0603	0.90 - 1.10
Near Dens Gain	1.0138	1.0191	0.90 - 1.10
Near Peak Gain	0.9939	0.9926	0.90 - 1.10
Near Lith Gain	0.9434	0.9537	0.90 - 1.10
Far Bar Gain	1.0103	1.0108	0.90 - 1.10
Far Dens Gain	0.9955	0.9972	0.90 - 1.10
Far Peak Gain	0.9885	0.9883	0.90 - 1.10
Far Lith Gain	0.9644	0.9658	0.90 - 1.10
Near Bar Offset	-0.3350	-0.4878	NONE
Near Dens Offset	-0.0319	-0.0817	NONE
Near Peak Offset	0.1543	0.1626	NONE
Near Lith Offset	0.5576	0.4692	NONE
Far Bar Offset	-0.0678	-0.0733	NONE
Far Dens Offset	0.0663	0.0519	NONE
Far Peak Offset	0.1101	0.1094	NONE
Far Lith Offset	0.2763	0.2624	NONE
Near Bar Background	1042.28	1044.79	700 - 1450
Near Dens Background	346.16	346.24	230 - 480
Near Peak Background	152.11	150.90	100 - 210
Near Lith Background	185.44	186.10	125 - 260
Far Bar Background	669.18	665.98	450 - 900
Far Dens Background	260.87	261.82	175 - 345

Far Peak Background	104.11	104.19	70 - 140
Far Lith Background	106.72	108.17	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.690	1.690	-0.000	+/- 0.015
Pe	2.603	2.615	0.012	+/- 0.150
ALUMINUM				
Density (g/cc)	2.603	2.601	-0.002	+/- 0.01500
Pe	3.071	3.075	0.004	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0011	+/- 0.0110	-0.0004	+/- 0.0140
Magnesium Block	0.0012	+/- 0.0110	0.0001	+/- 0.0140
Aluminum Block	0.0004	+/- 0.0110	0.0004	+/- 0.0140
Resolution	8.57	6.00 - 11.50	8.62	6.00 - 11.50
Internal Verifier(B+D+P+L)	1728	1200 - 2700	1140	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 - 11816600	Reference Calibration Date:	03-Jul-12 21:00:28
Engineer:	A. ZWALI	Calibration Date:	05-Jul-12 10:08:15
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Pad Temperature: 85.8 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1728.023	1732.646	4.623	16.677
Far (B+D+P+L) cps	1140.159	1134.895	-5.264	17.734
Near Resolution	8.57	8.59	0.020	0.50
Far Resolution	8.62	8.80	0.180	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

### SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 11014271		Reference Calibration Date: 03-Jul-12 21:31:52			
Engineer: A. ZWALI		Calibration Date: 05-Jul-12 10:46:38			
Software Version: WL INSITE R3.6.0 (Build 3)		Calibration Version: 1			
	MEASURED CALIPER VALUES				
	Measurement	Shop	Field	Change	Control Limit On New Value
	Pad Extension	3.75	3.66	-0.09	+/- 0.10
	Ring Diameter	8.25	8.31	0.06	+/- 0.15
	PASS/FAIL SUMMARY				
Pad Extension Check:			Passed		
Diameter Check:			Passed		

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION					
Tool Name: ACRt Sonde - E5787-S5797			Reference Calibration Date: 27-Apr-12 19:50:20		
Engineer: J. PINKETT			Calibration Date: 02-Jul-12 19:07:19		
Software Version: WL INSITE R3.6.0 (Build 3)			Calibration Version: 1		
Host Tool Name: ACRt Instrument - E5787_5797					

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A3 (29")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.00	1.05	0.95	1.00	1.05	0.95	1.00	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.00	1.05	0.95	1.00	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.99	1.05	0.95	0.99	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	-4.90	2	-6	-5.05	-2	-8	-5.78	-2
A2 (50")	-7	-1.84	0	-7	-3.31	0	-7	-4.39	0
A3 (29")	-27	-17.40	-9	-9	-4.42	-3	-7	-3.25	-1
A4 (17")	-180	-120.32	-60	-45	-35.46	-15	-39	-27.03	-13
A5 (10")	N/A	N/A	N/A	-150	-94.04	-50	-80	-48.66	-10
A6 (6")	N/A	N/A	N/A	175	305.24	525	90	154.16	270

TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION			
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K		0.6	0.90	1.3	Mud Cell	0.95	1.00	1.05
36K		1.0	1.82	2.0				
72K		1.0	1.15	2.0				


PASS/FAIL SUMMARY	
GAIN RANGE CHK	PASS
SONDE OFFSET RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

# CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11215095						
Gamma Ray Calibrator	247.3	249.4	-----	-2.1	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.6	23.3	-----	0.3	-----	Channel #
583 KEV Peak Channel #	52.8	52.5	-----	0.3	-----	Channel #
2614 KEV Peak Channel #	218.0	217.1	-----	0.9	-----	Channel #
DSNT-11219332						
Snow-Block Porosity	0.0826	0.0829	-----	-0.0003	+/- 0.0150	decp
SDLT-11014271						
Pad Extension	3.75	3.66	-----	0.09	+/-0.10	in
Ring Diameter	8.25	8.31	-----	-0.06	+/-0.15	in
SDLT Pad-11816600						
Near(B+D+P+L)	1728.023	1732.646	-----	-4.623	+/-16.677	cps
Far(B+D+P+L)	1140.159	1134.895	-----	5.264	+/-17.734	cps
ACRt Sonde-E5787-S5797						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m
Data: GUTTERSEN_D2125\0001 NOBLE_TC-CSNG\IDLE					Date: 07-Jul-12 02:58:56	

# 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 @ 59.34 ft ← BH Temperature @ 58.77 ft	6.25 ft	63.02 ft
GTET-11215095 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.71 ft	8.52 ft	56.77 ft
CSNG-10846351 114.00 lbs	UnivWearRing3.6- 10846351 5.00 lbs	Ø 4.200 in* Ø 3.625 in →		← CSNG @ 42.62 ft	8.17 ft	48.25 ft
						40.08 ft



DSNT-11219332  
174.00 lbs

Ø 3.625 in →

9.69 ft

← DSN Far @ 33.15 ft  
← DSN Near @ 32.40 ft

30.40 ft

SDLT-11014271  
360.00 lbs

Ø 4.500 in →

10.81 ft

SDLT Pad-11816600  
65.00 lbs

Ø 4.750 in\* →

← SDL Caliper @ 22.40 ft  
← SDL @ 22.39 ft

19.58 ft

ACRt Instrument-  
E5787\_5797  
50.00 lbs

Ø 3.625 in →

5.03 ft

Regal Standoff 6\_75-01  
20.00 lbs

Ø 6.750 in\* →

← Mud Resistivity @ 13.19 ft

14.55 ft

ACRt Sonde-E5787-  
S5797  
200.00 lbs

Ø 3.625 in →

14.22 ft

← ACRt @ 9.21 ft

SP Ring-1  
0.00 lbs

Ø 3.625 in\* →

← SP @ 1.61 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	56.77	300.00
GTET		Gamma Telemetry Tool	11215095	165.00	8.52	48.25	60.00
CSNG		Compensated Spectral Natural Gamma	10846351	114.00	8.17	40.08	15.00
UWR3P6		Universal Wear Ring 3 5-8 inch	10846351	5.00	0.35	* 44.16	300.00
DSNT		Dual Spaced Neutron	11219332	174.00	9.69	30.40	60.00
SDLT		Spectral Density Tool	11014271	360.00	10.81	19.58	60.00
SDLP		Density Insite Pad	11816600	65.00	2.55	* 21.79	60.00
ACRt		Array Compensated True Resistivity Instrument Section	E5787_5797	50.00	5.03	14.55	300.00
ACRt		Array Compensated True Resistivity Sonde Section	E5787-S5797	200.00	14.22	0.33	300.00
SP		SP Ring	1	0.00	0.25	* 1.61	300.00
RSOF		Regal Standoff 6.75in	01	20.00	0.52	* 13.25	300.00
BLNS		Bull Nose	01	5.00	0.33	0.00	300.00
Total				1,293.00	63.02		

COMPANY	NOBLE ENERGY INC		
WELL	GUTTERSEN USX D21-25		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY	