

HALLIBURTON

SPECTRAL DENSITY  
DUAL SPACED NEUTRON  
ARRAY COMPENSATED  
TRUE RESISTIVITY

COMPANY				LARAMIE ENERGY			
WELL				BRUTON 19-06C			
FIELD				BRUSH CREEK			
COUNTY				MESA			
STATE				CO			
Permanent Datum				GL	Elev. 7345.0 ft		
Log measured from				KB	Elev. 7366.0 ft		
Drilling measured from				KB	D.F. 7365.0 ft		
Date				18-Mar-11	G.L. 7345.0 ft		
Run No.				ONE			
Depth - Driller				8100.00 ft			
Depth - Logger				8092.0 ft			
Bottom - Logged Interval				8088.0 ft			
Top - Logged Interval				1574.0 ft			
Casing - Driller				8.625 in @ 1556.0 ft	@		
Casing - Logger				1574.0 ft			
Bit Size				7.875 in	@		
Type Fluid in Hole				WATER BASED MUD			
Density				9.7 ppq	53.00	s/qt	
PH				8.30 pH	6.4	cpm	
Source of Sample				MUD TANK			
Rm @ Meas. Temperature				1.690 ohmm @ 60.00 degF	@		
Rmf @ Meas. Temperature				1.20 ohmm @ 75.00 degF	@		
Rmc @ Meas. Temperature				1.207 ohmm @ 75.00 degF	@		
Source Rmf				CHART	CHART		
Rm @ BHT				0.60 ohmm @ 180.0 degF	@		
Time Since Circulation				15.7 hr			
Time on Bottom				19-Mar-11 02:19			
Max. Rec. Temperature				180.0 degF @ 8092.0 ft	@		
Equipment				11392047	VERNAL		
Recorded By				M. LECUREUX	C. BRUNTZ		
Witnessed By				K. CLAUSSEN			

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Service Ticket No.: 8026594						API Serial No.: 05077100930000						PGM Version: WL INSITE R3.2.3 (Build 5)											
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-I777S201		N/A		1.5" STANDOFF		N/A			
Rmc @ Meas. Temp.				@				@															
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.		11016184		Serial No.								Serial No.		10950493				Serial No.		11013116			
Model No.		GTET		Model No.								Model No.		SDLT-I				Model No.		DSNT-I			
Diameter		3.625"		No. of Cent.								Diameter		4.5"				Diameter		3.625"			
Detector Model No.		GTET		Spacing								Log Type		GAMMA				Log Type		THERMAL			
Type		SCINT.										Source Type		Cs137				Source Type		Am241Be			
Length		8"		LSA [Y/N]								Serial No.		24520B				Serial No.		08-040			
Distance to Source		10'		FWDA [Y/N ]								Strength		1.5 Ci				Strength		15 Ci			
LOGGING DATA																							

GENERAL			GAMMA		ACOUSTIC		DENSITY		NEUTRON							
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix		
No.	From	To	ft/min	L	R	L	R		L	R		L	R			
ONE	8092'	1574'	REC	0	150				30%	-10%	2.65 g/cc	30%	-10%	SAND		
DIRECTIONAL INFORMATION																
Maximum Deviation								@	KOP							@
Remarks:																
TENSION PULLS AND HOLE RUGOSITY MAY AFFECT LOG QUALITY AND REPEATABILITY																
ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH CASING																
DSN BOW SPRING NOT RUN PER CUSTOMER REQUEST																
CHLORIDES REPORTED AT 1600 mg/l																
LATITUDE: 39.258° N																
LONGITUDE: 107.815° W																
IQ CREW: R. HENLINE, J. MATHIS																
THANK YOU FOR CHOOSING HALLIBURTON LOGGING SERVICES - VERNAL, UT (435) 789 - 2550										RIG: PRECISION #706						
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.																
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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	9.700	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	1600.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.000	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	35.0	degF
	SHARED	TD	Total Well Depth	8092.00	ft
	SHARED	BHT	Bottom Hole Temperature	180.0	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	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	

Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
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	Eccentered	
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	LHWT	Logging Horizontal Water Tank?	No	
SDLT	DNOK	Process Density?	Yes	
SDLT	DNOK	Process Density EVR?	No	
SDLT	CB	Logging Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	DMA	Formation Density Matrix	2.650	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
ACRt	THQY	Threshold Quality	0.50	

BOTTOM

Data: BRUTON\_19-06C10001 LOGIQ\_TRIPLEIDLE

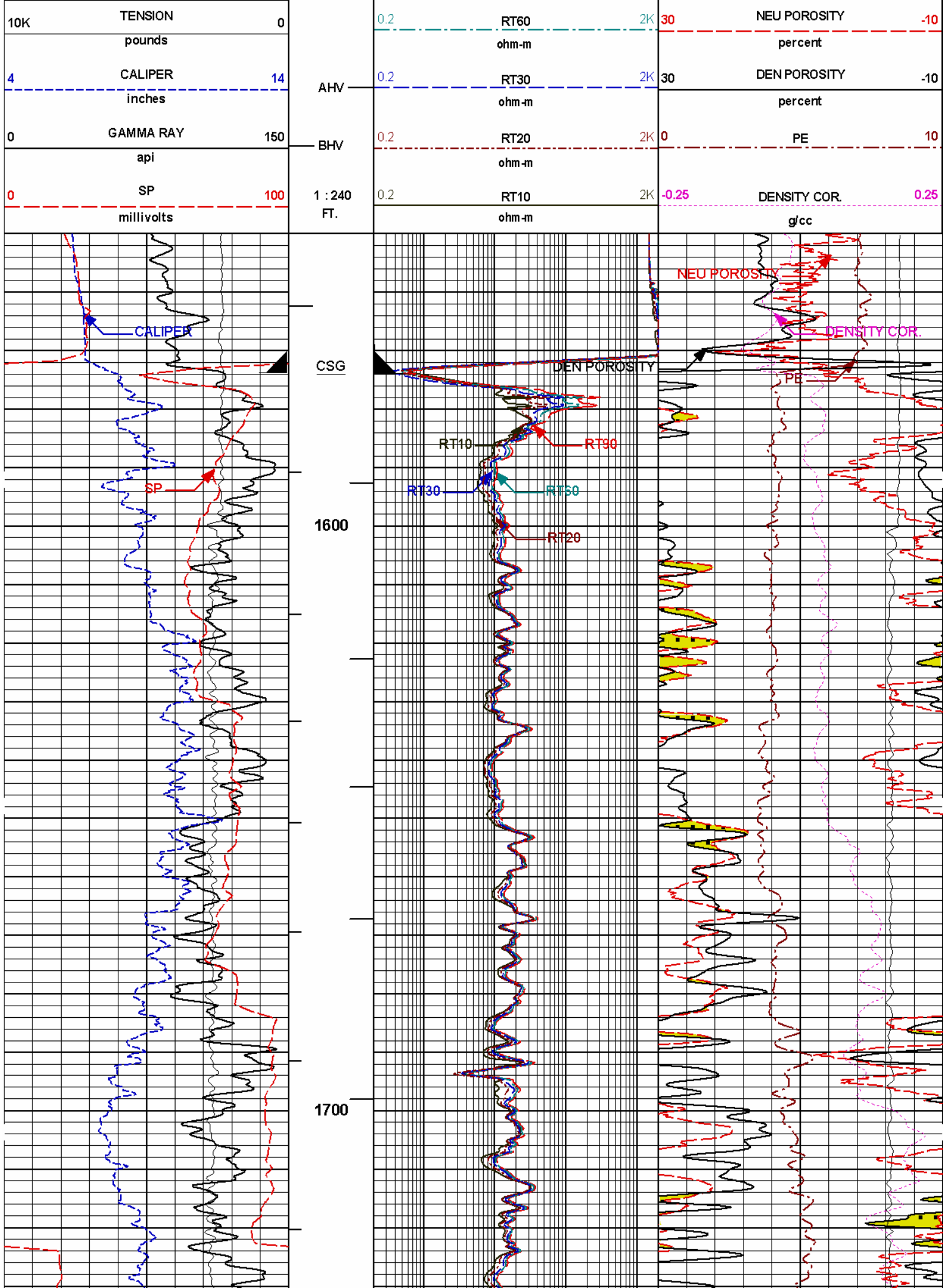
Date: 19-Mar-11 02:43:10

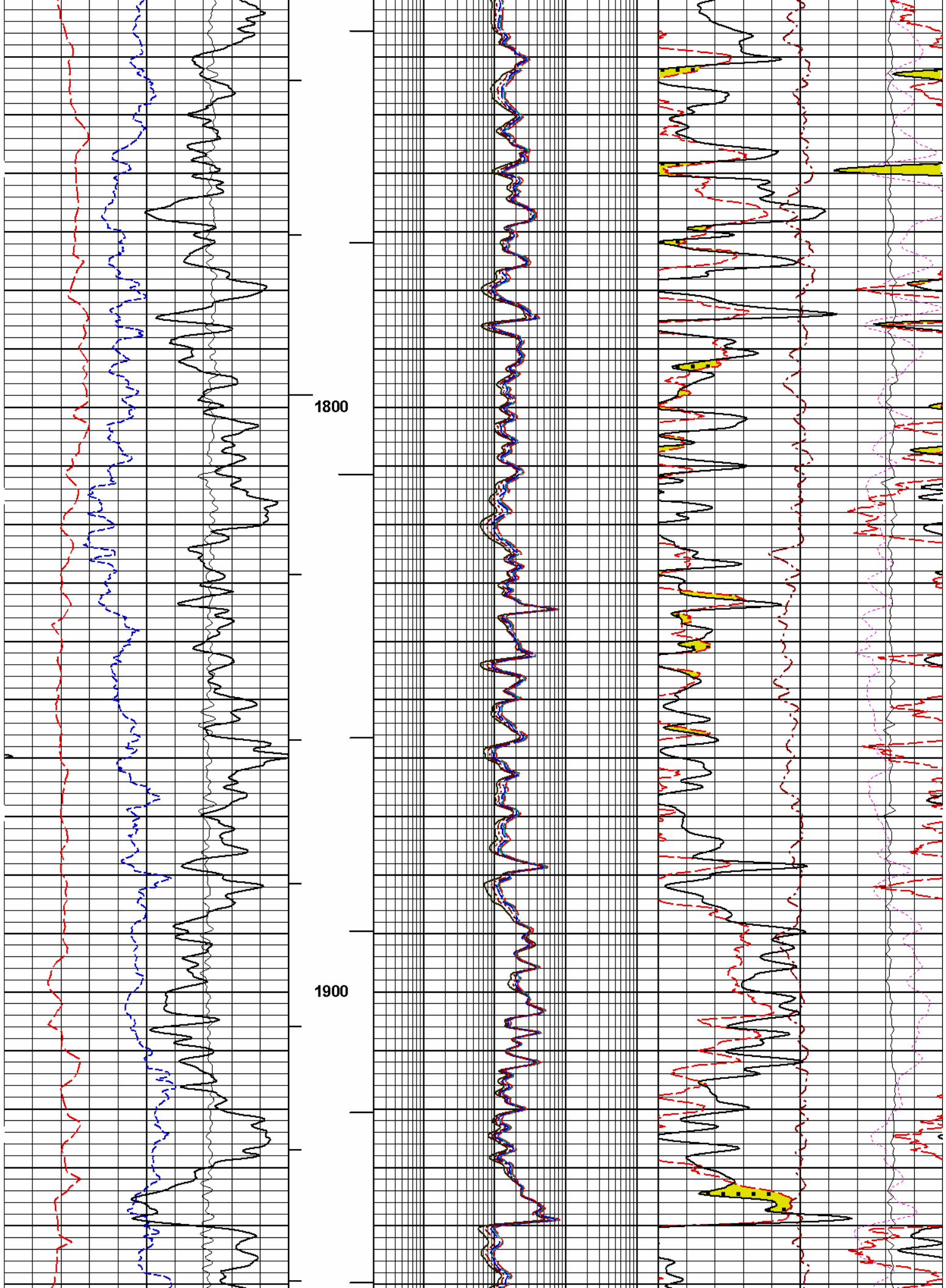
**HALLIBURTON**

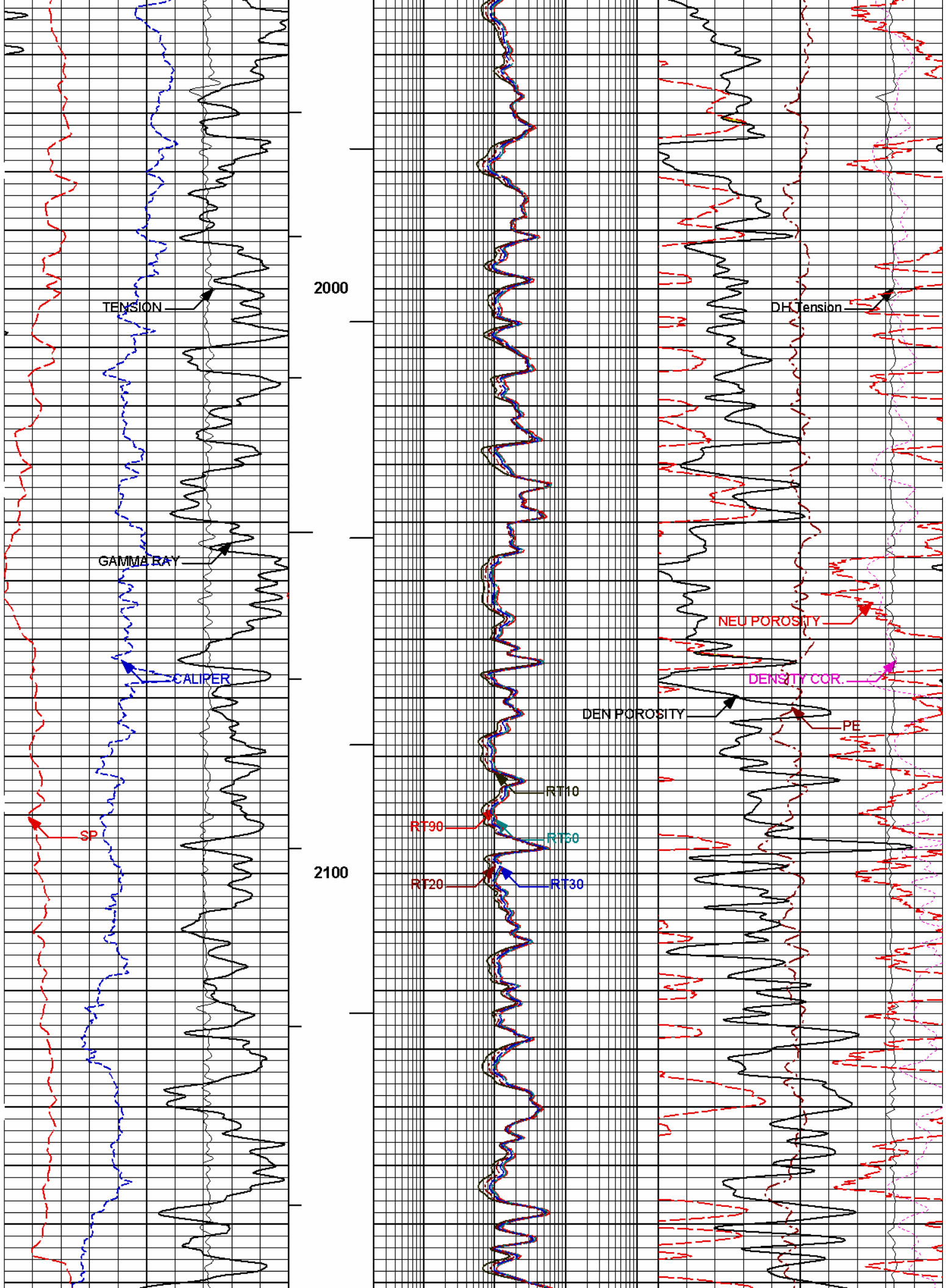
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Plot Range: 1550 ft to 8104 ft  
Data: BRUTON\_19-06C1Well Based\MAIN  
Plot File: \\TRIPLE\BP\_TRIPLE\_M

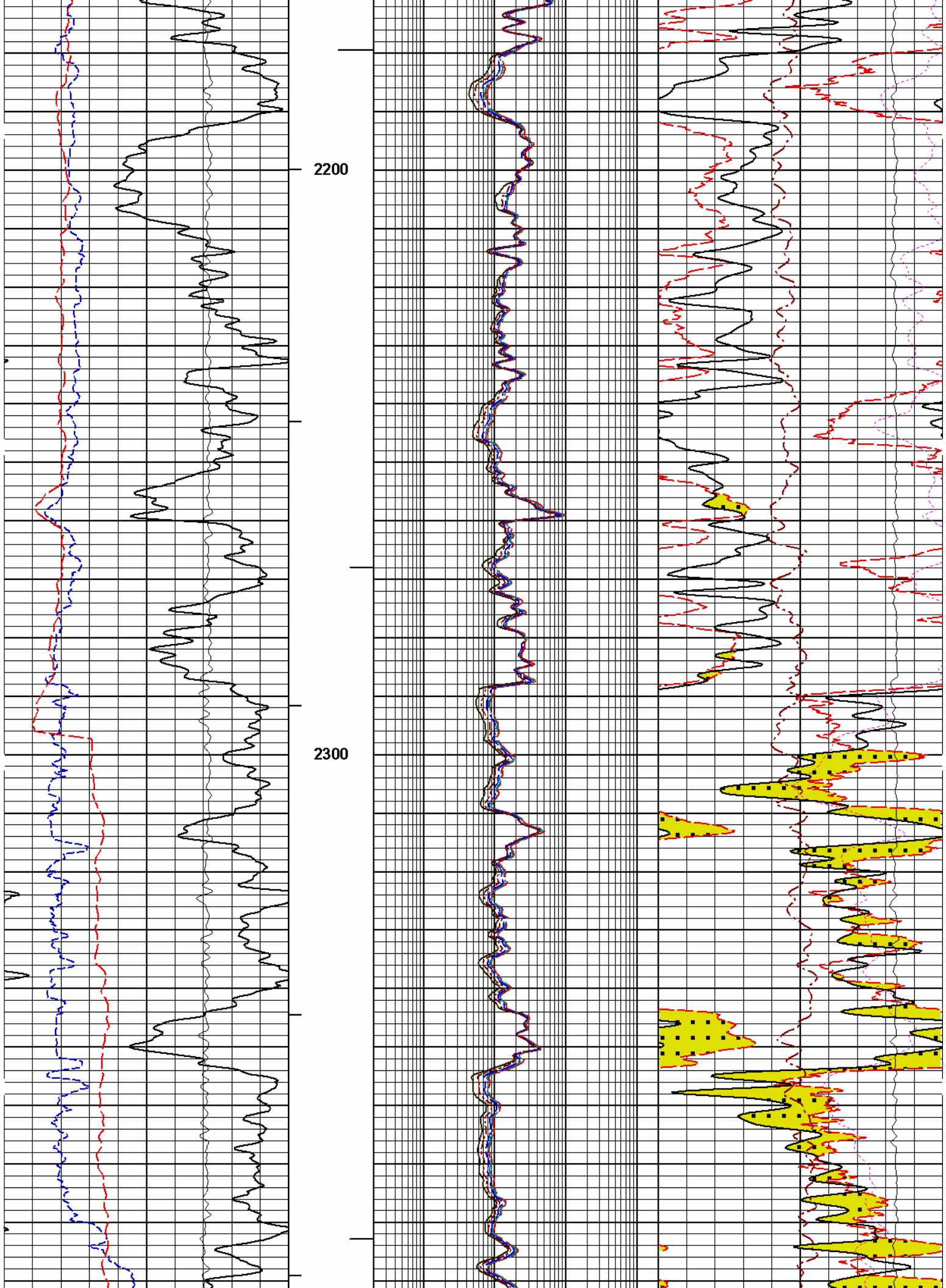
**MAIN PASS 5" = 100'**

0.2	RT90	2K	10K	DH TENSION	0
ohm-m			pounds		

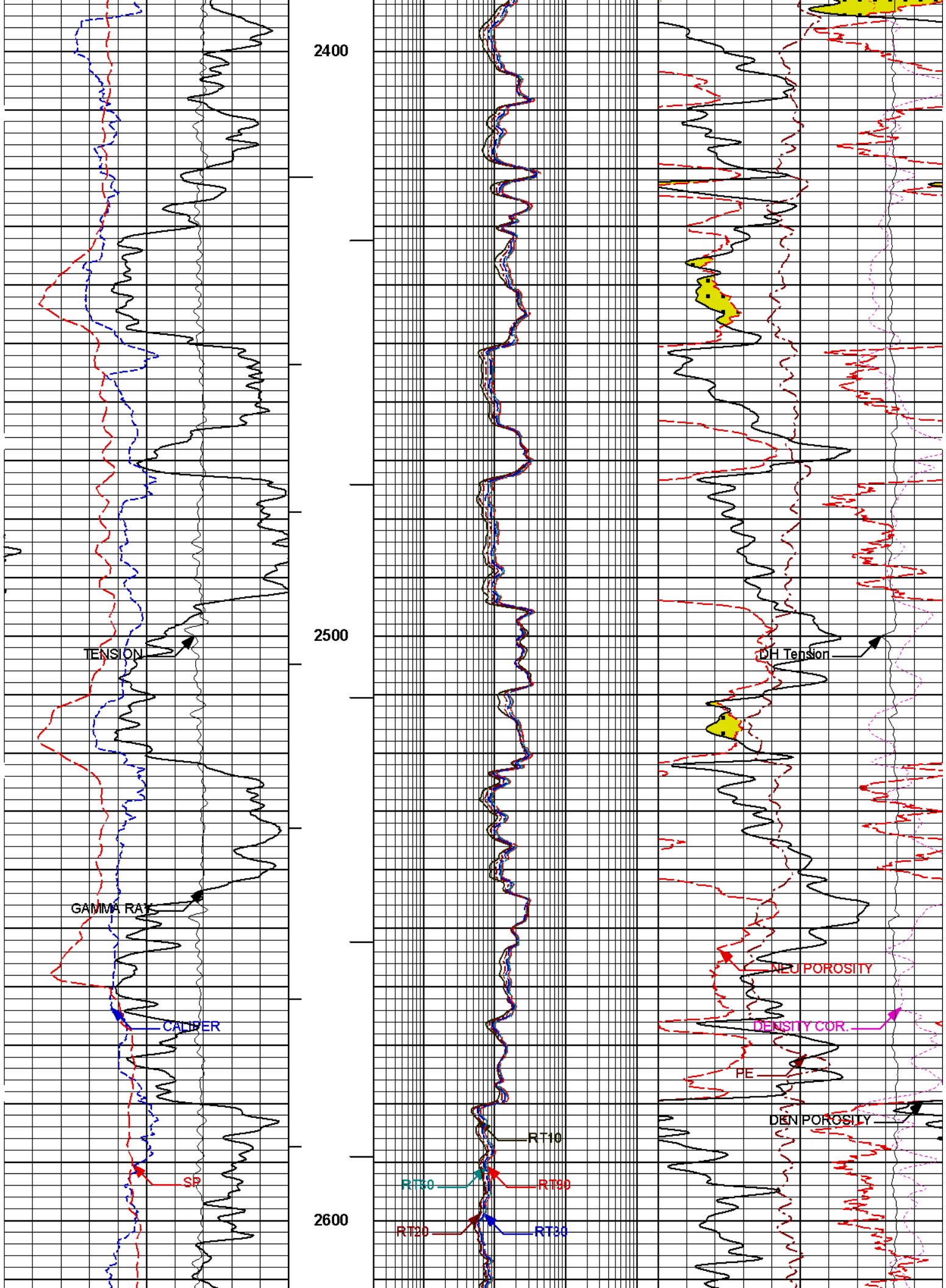




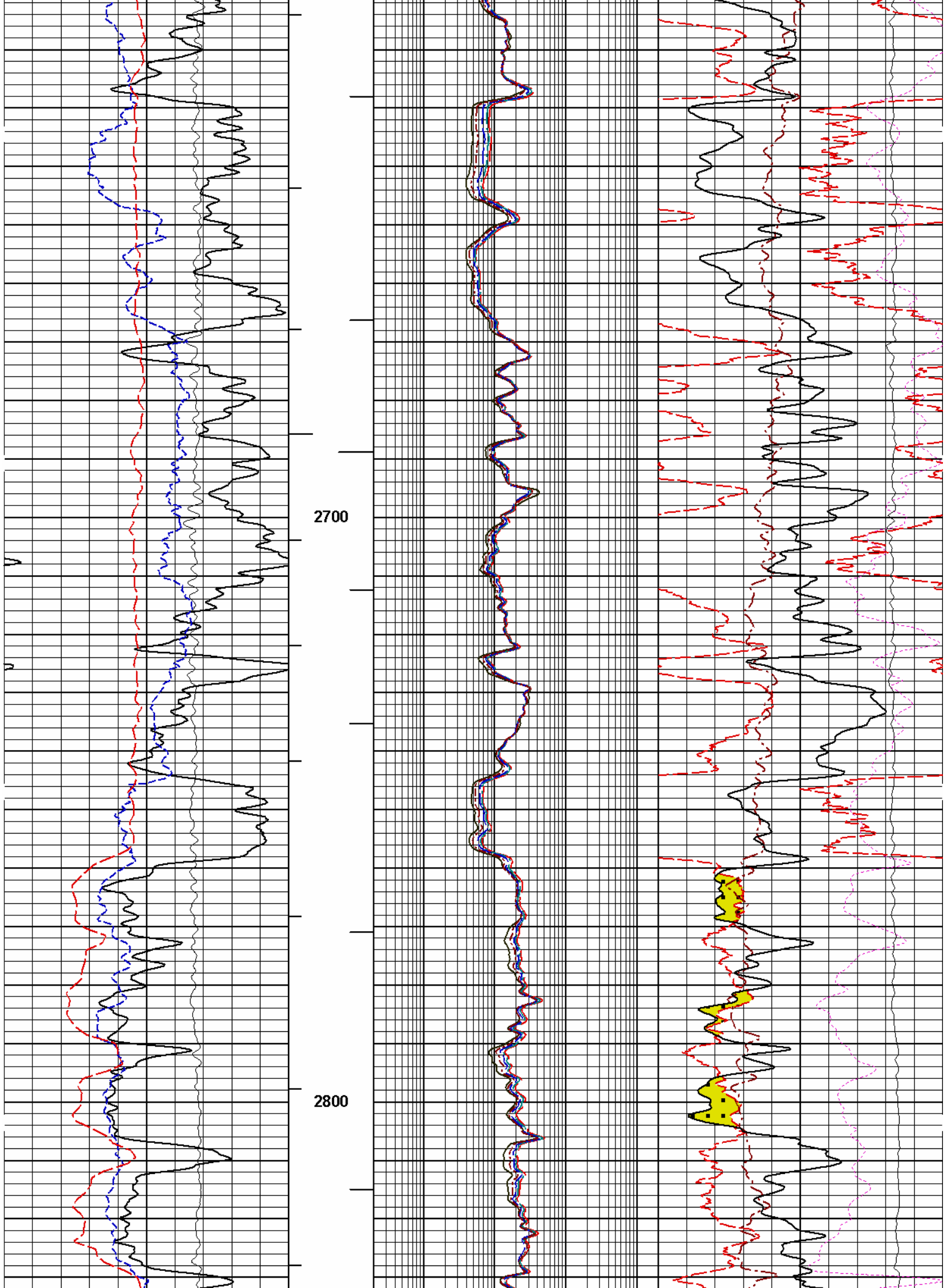


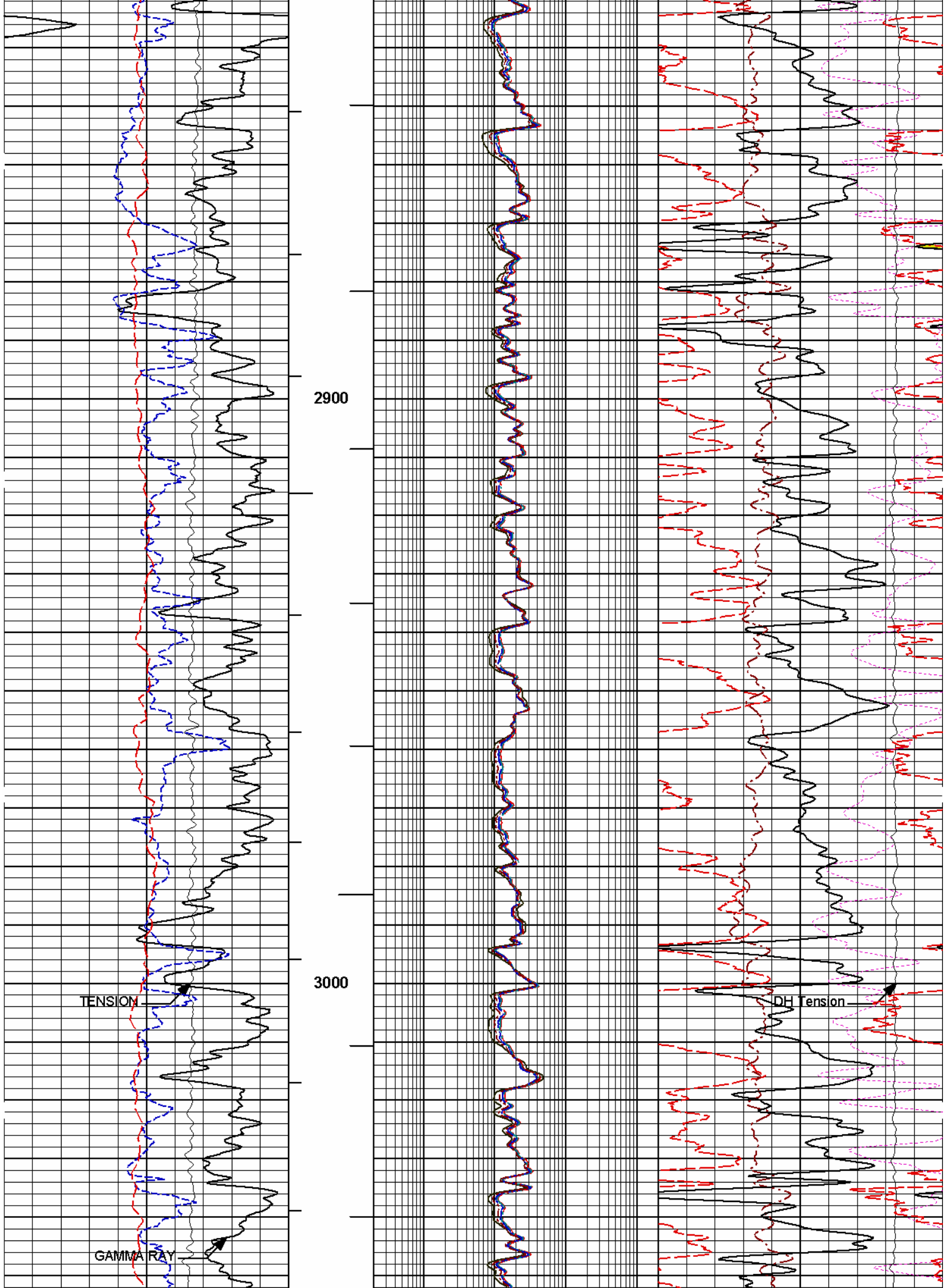


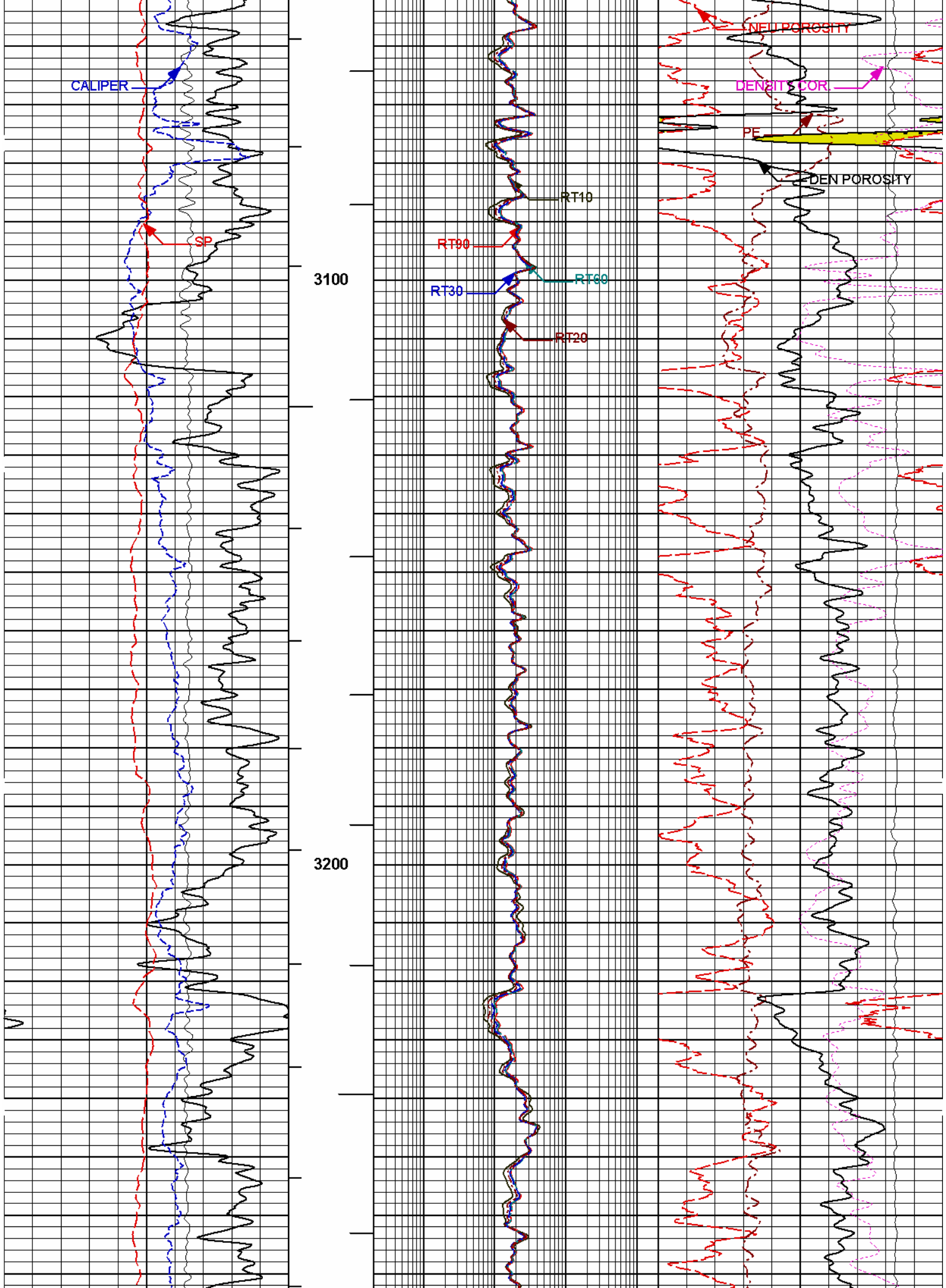


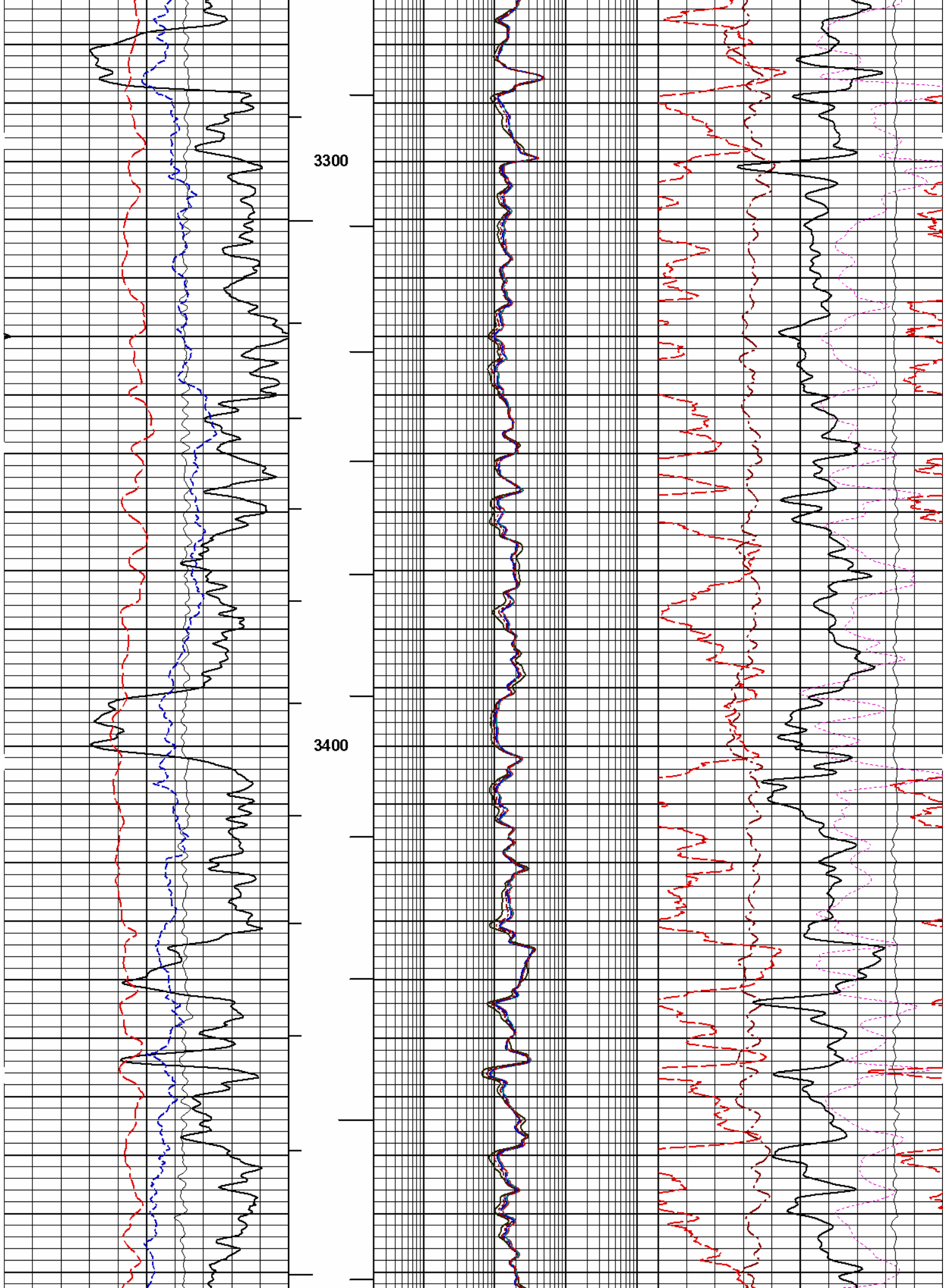


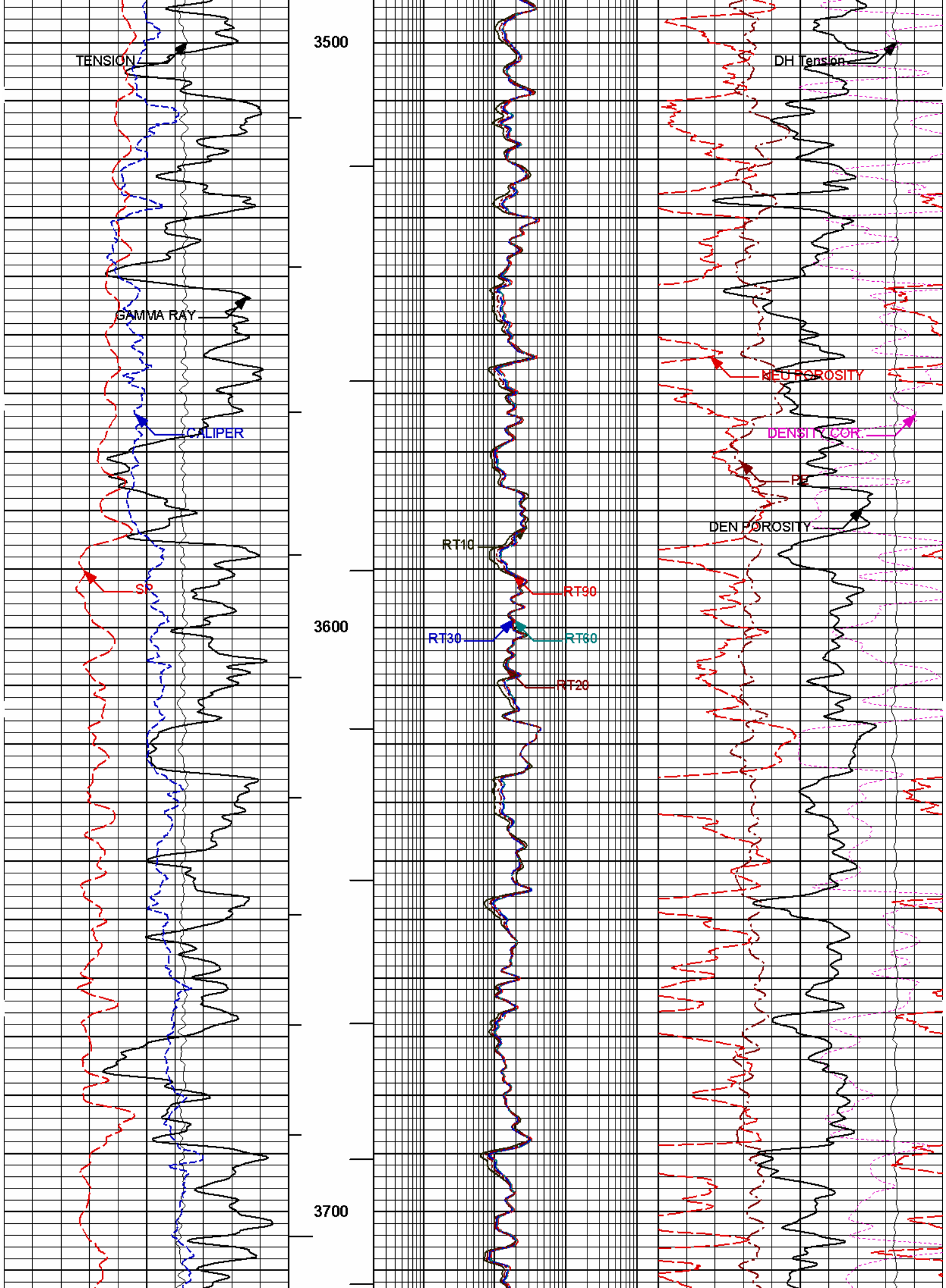




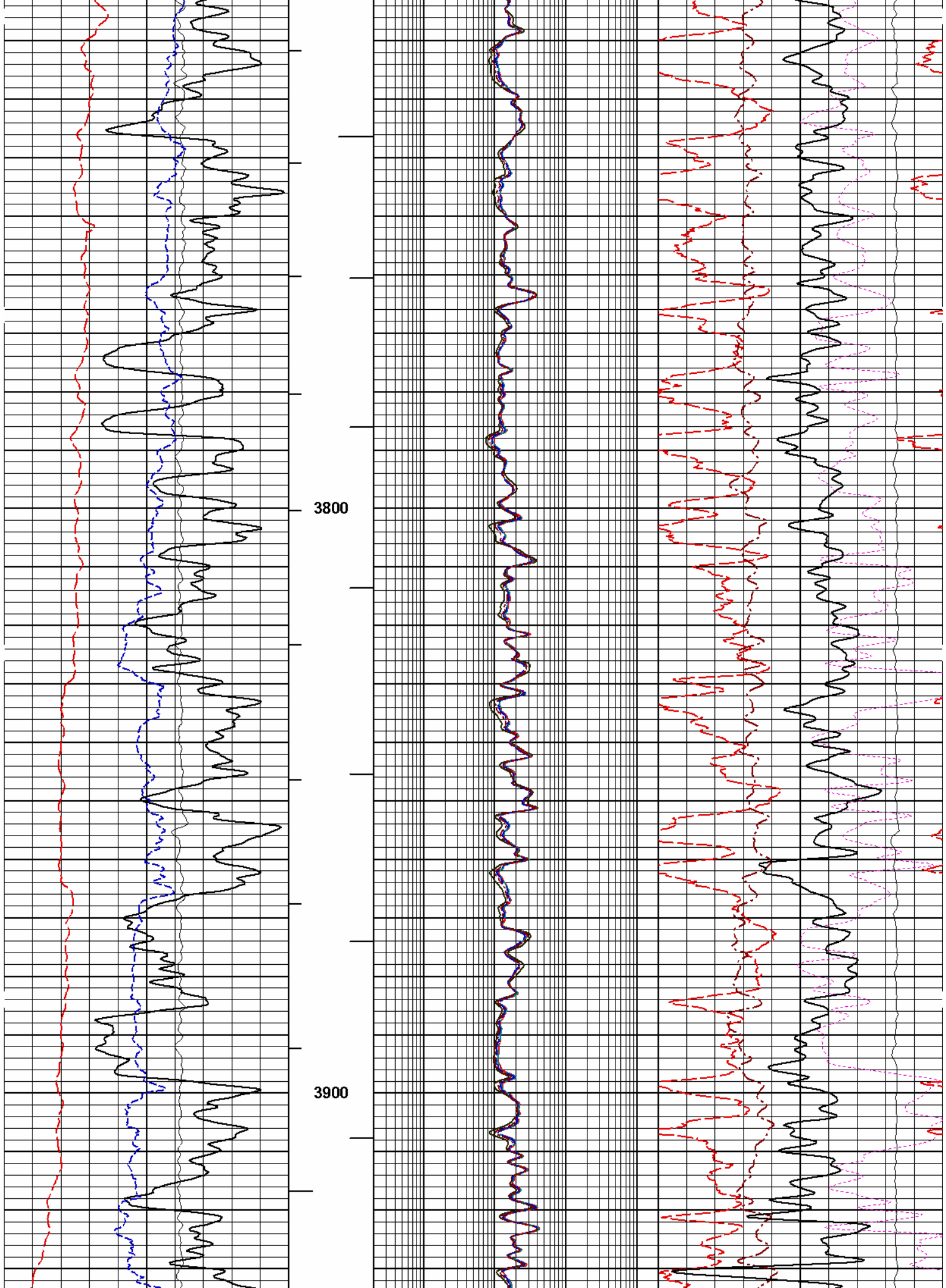




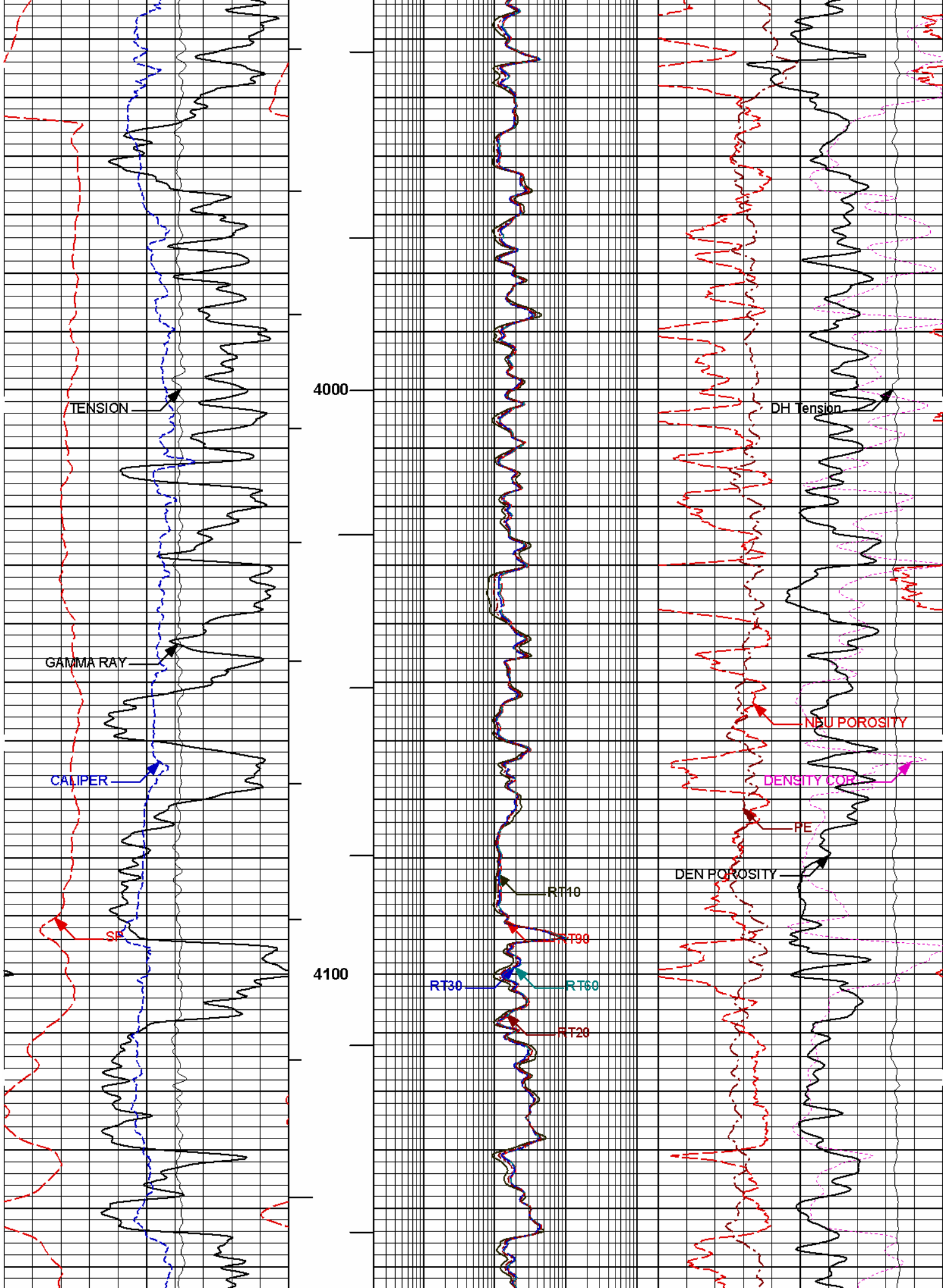


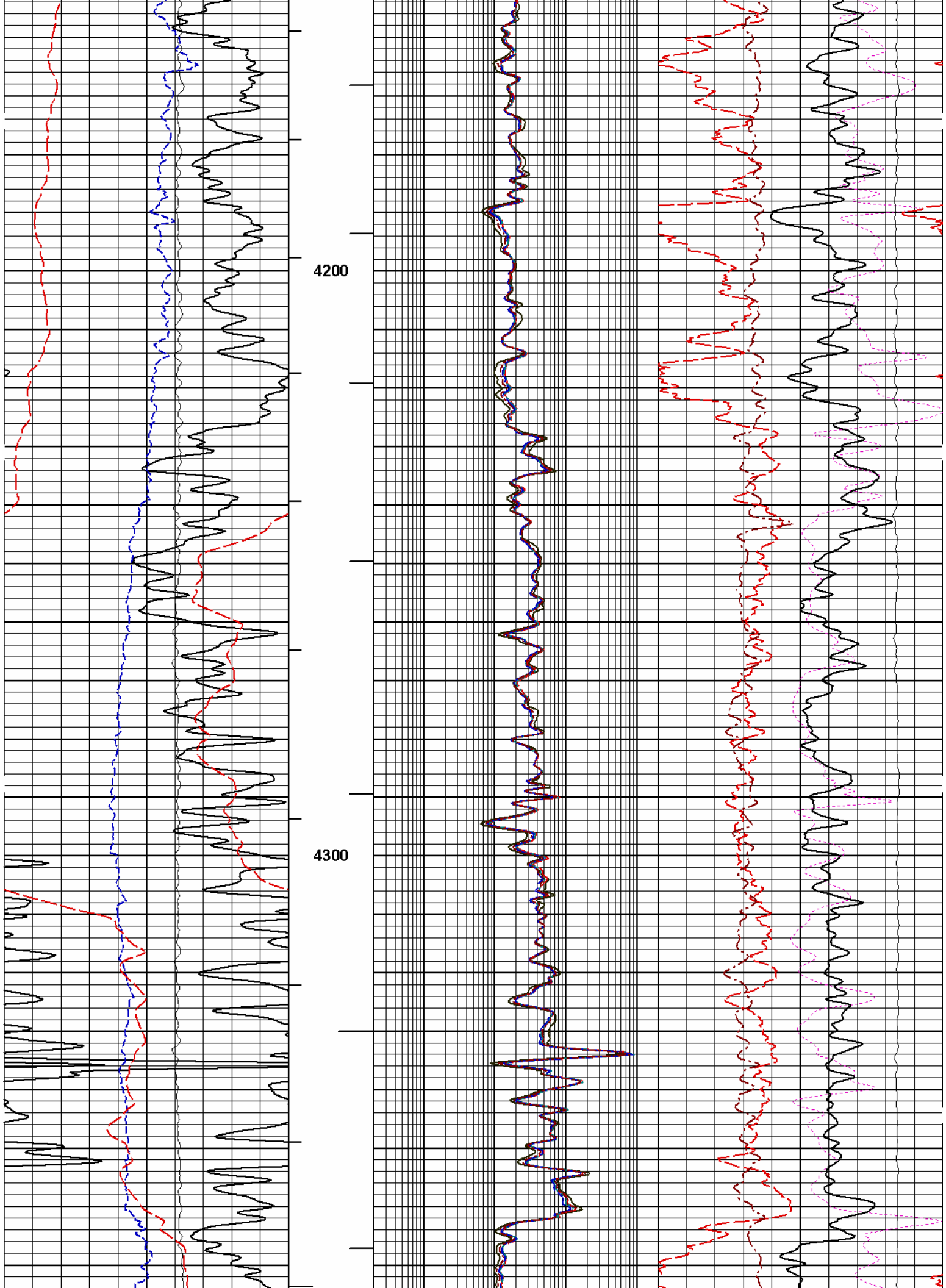


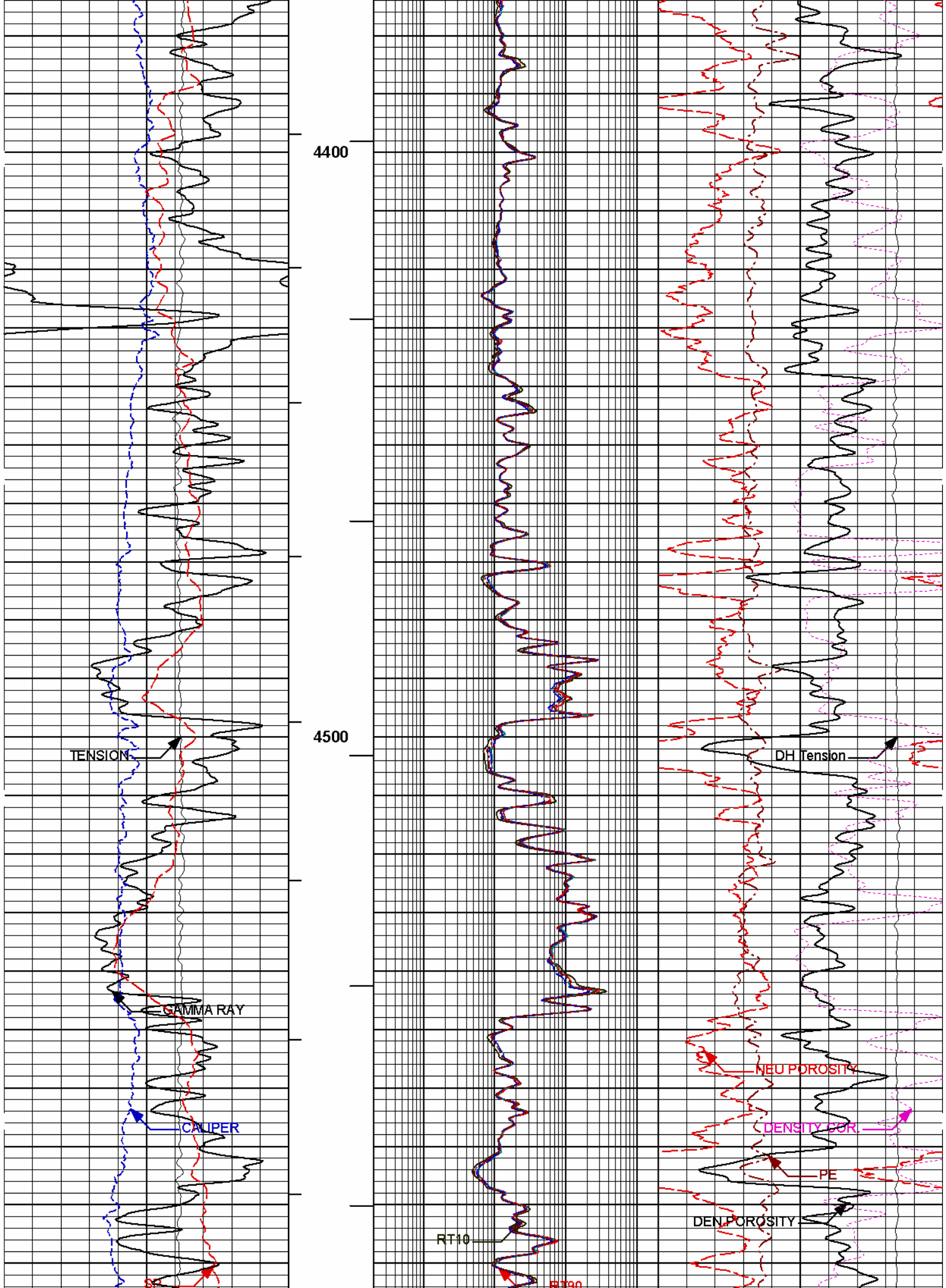


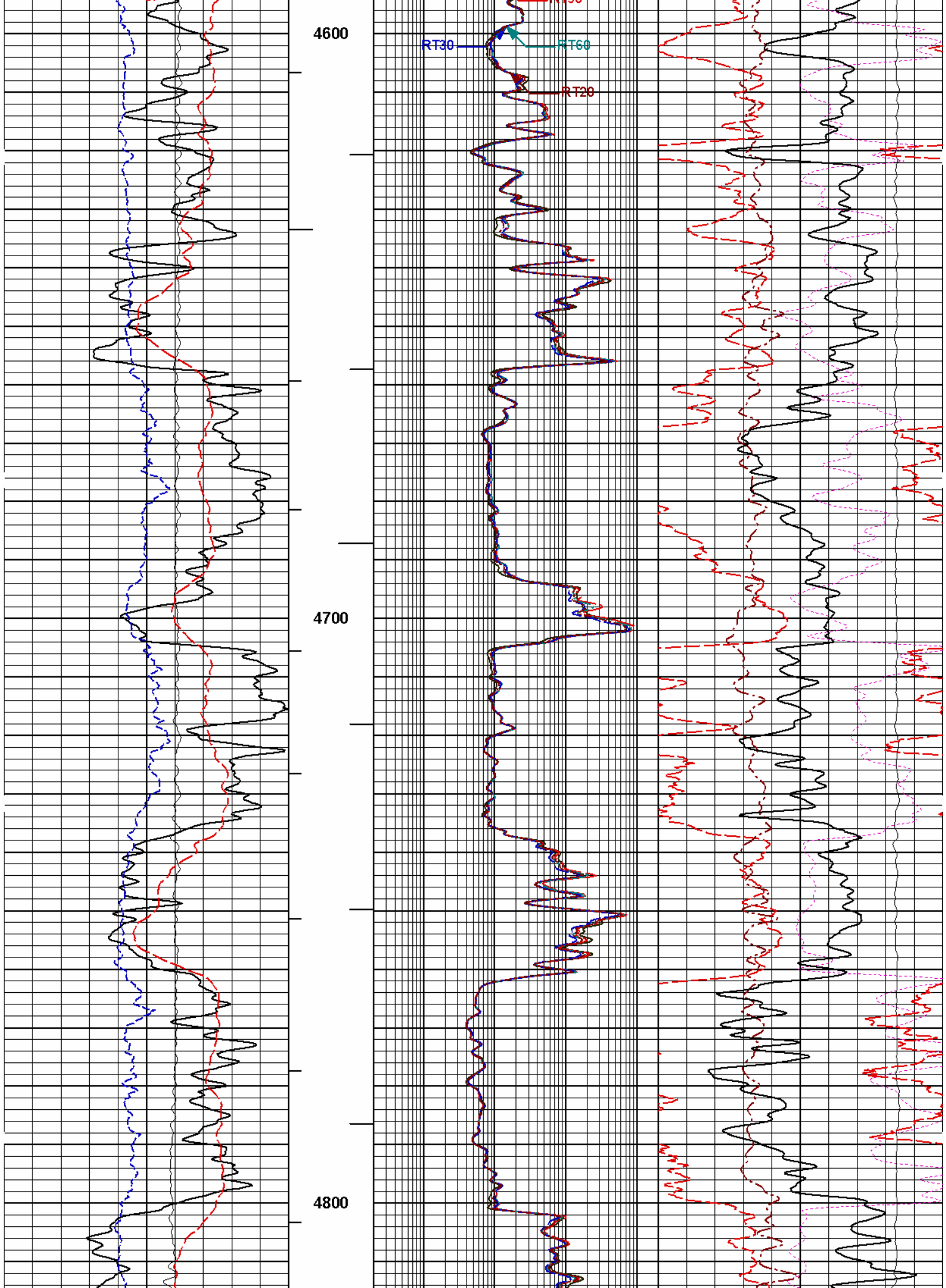


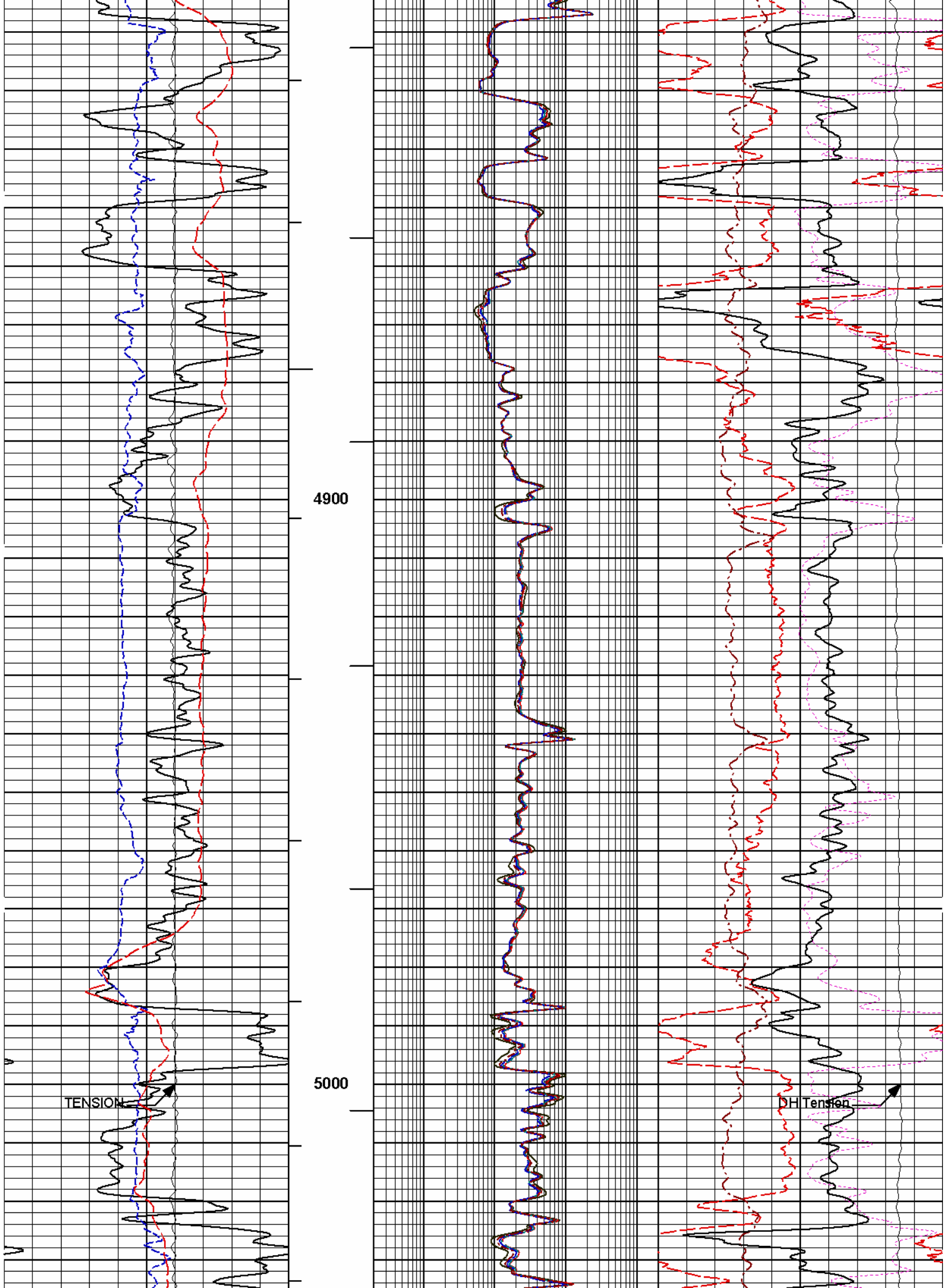




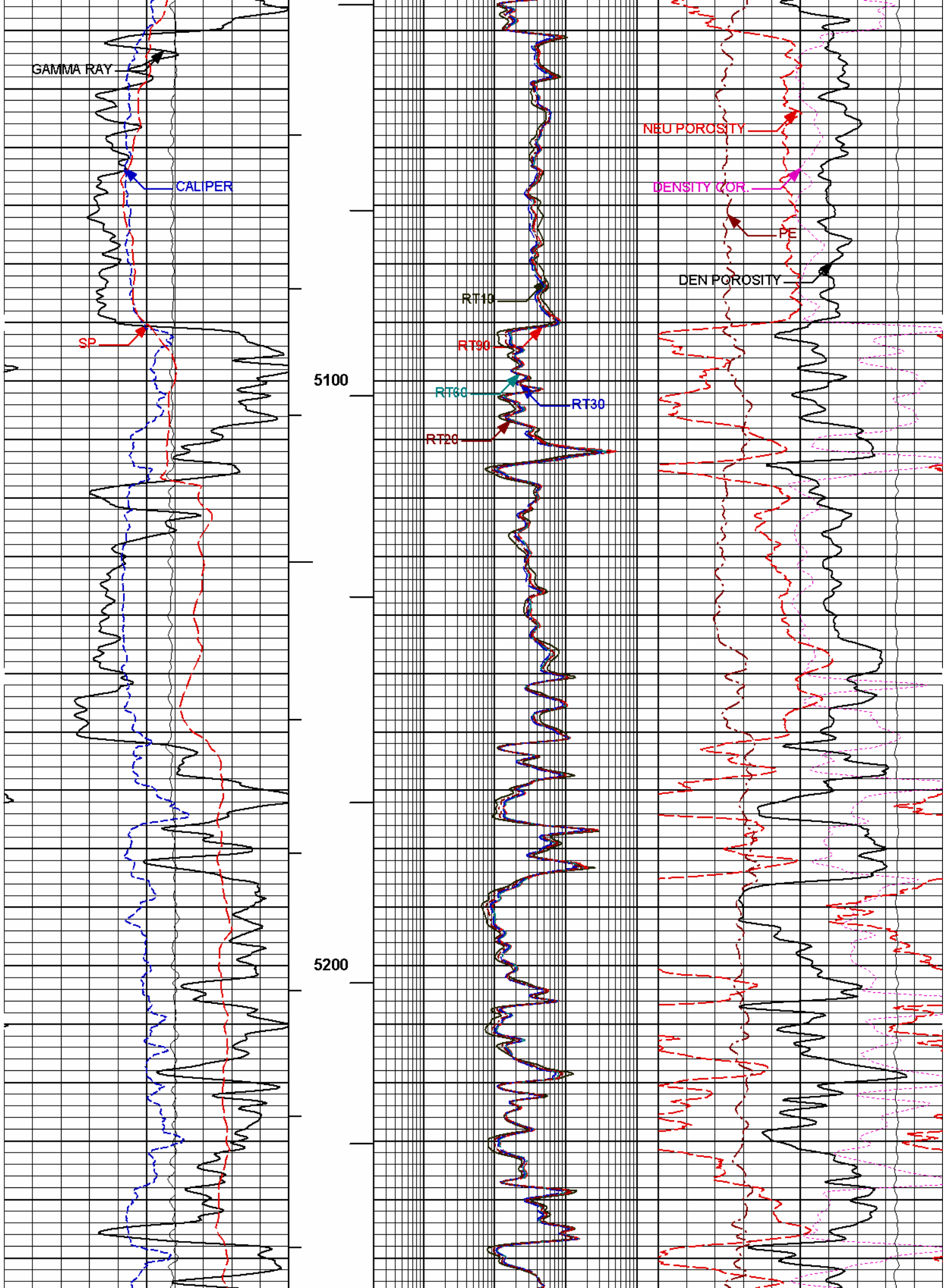




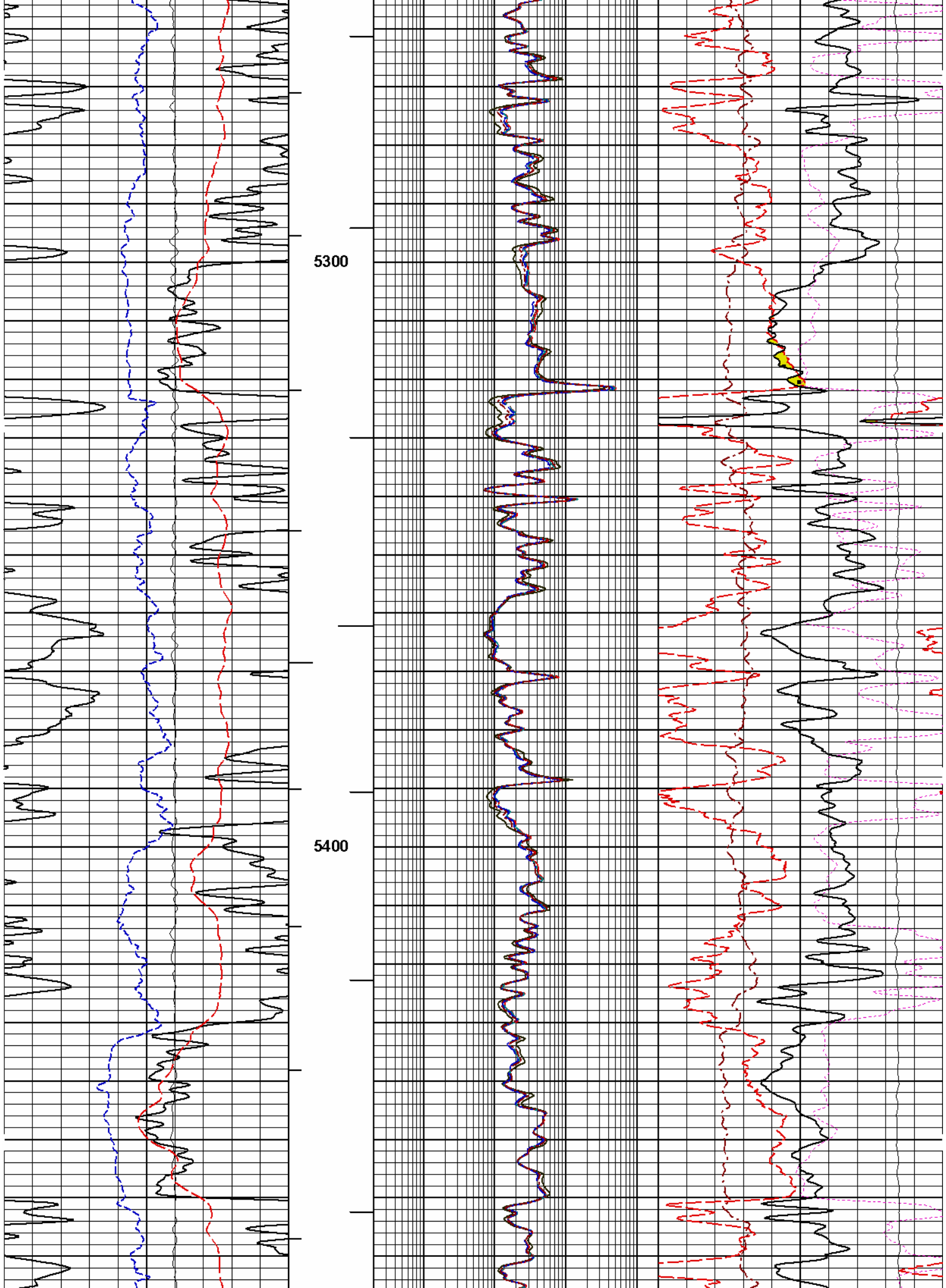


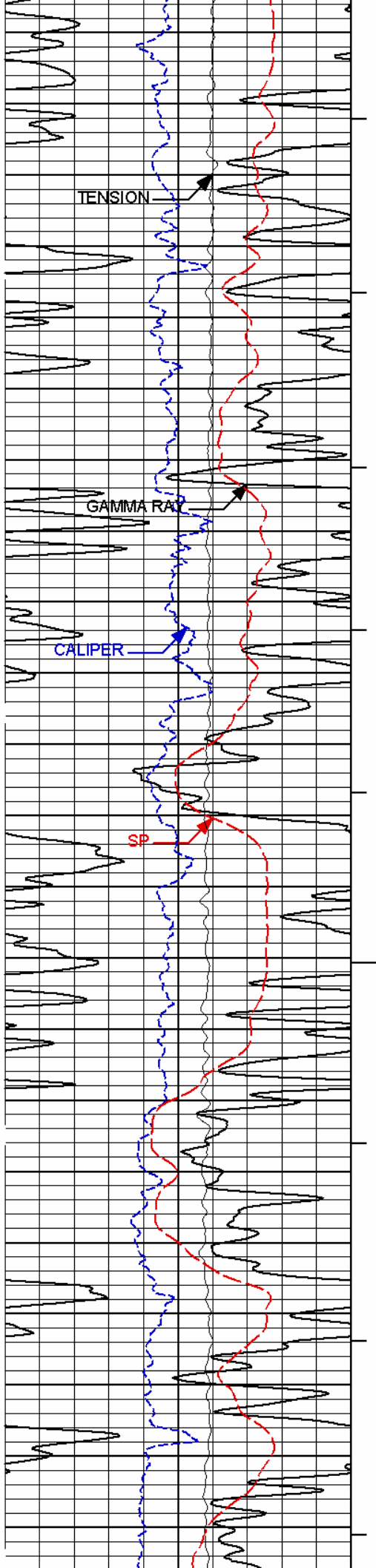






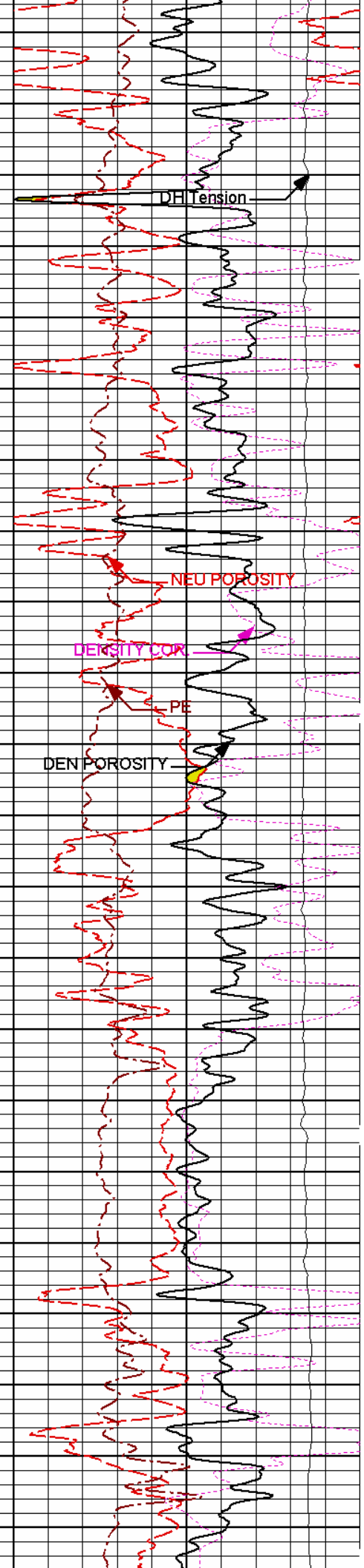
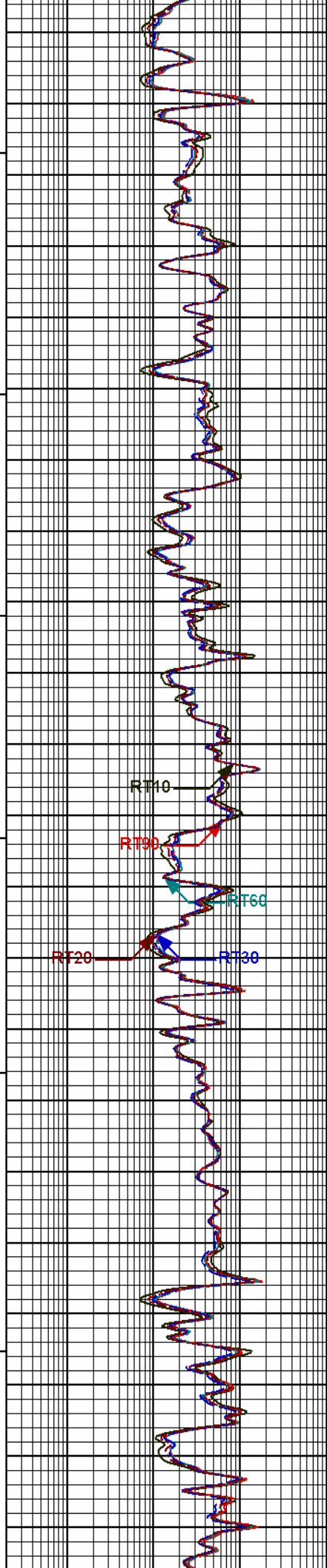


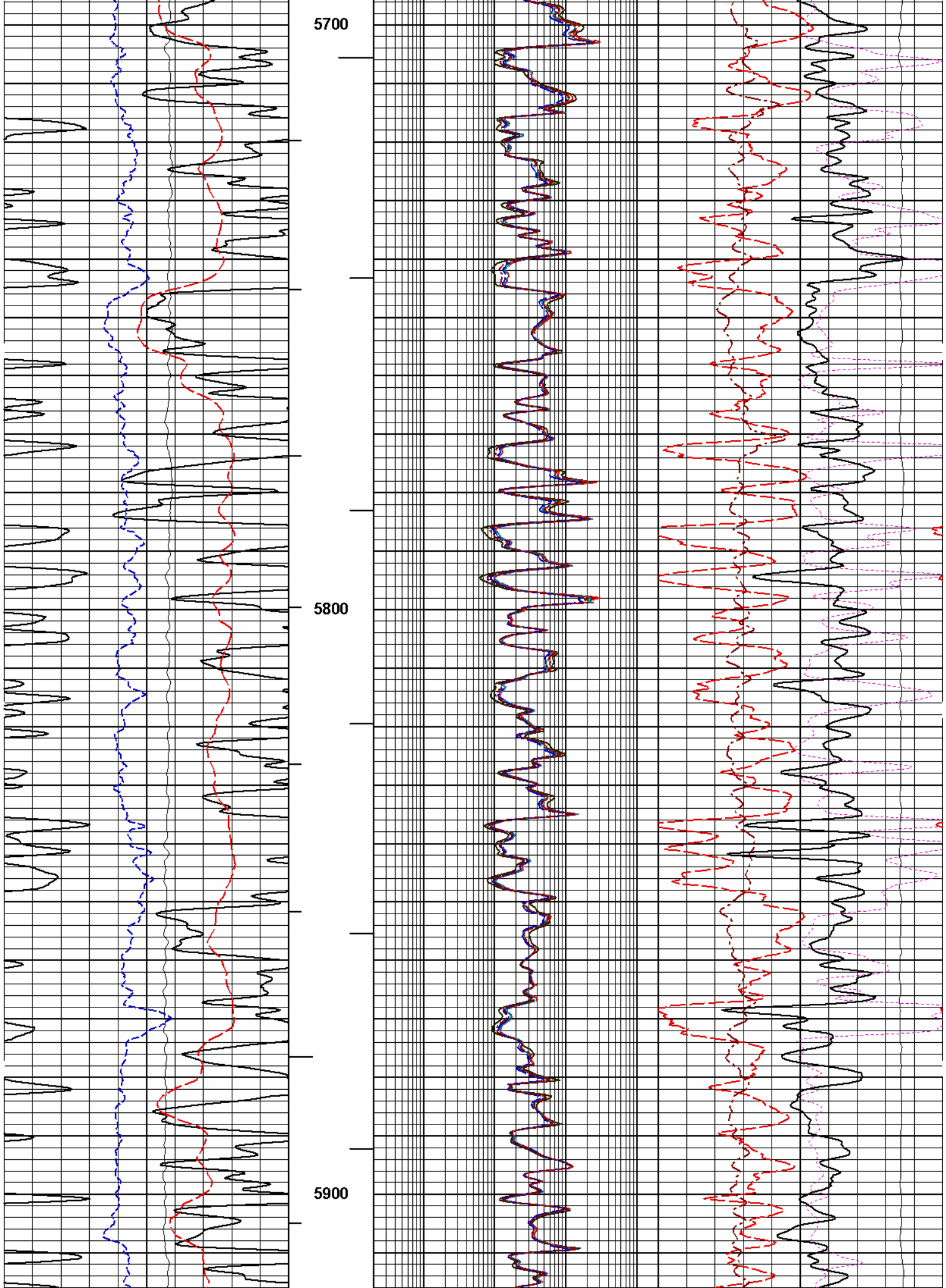


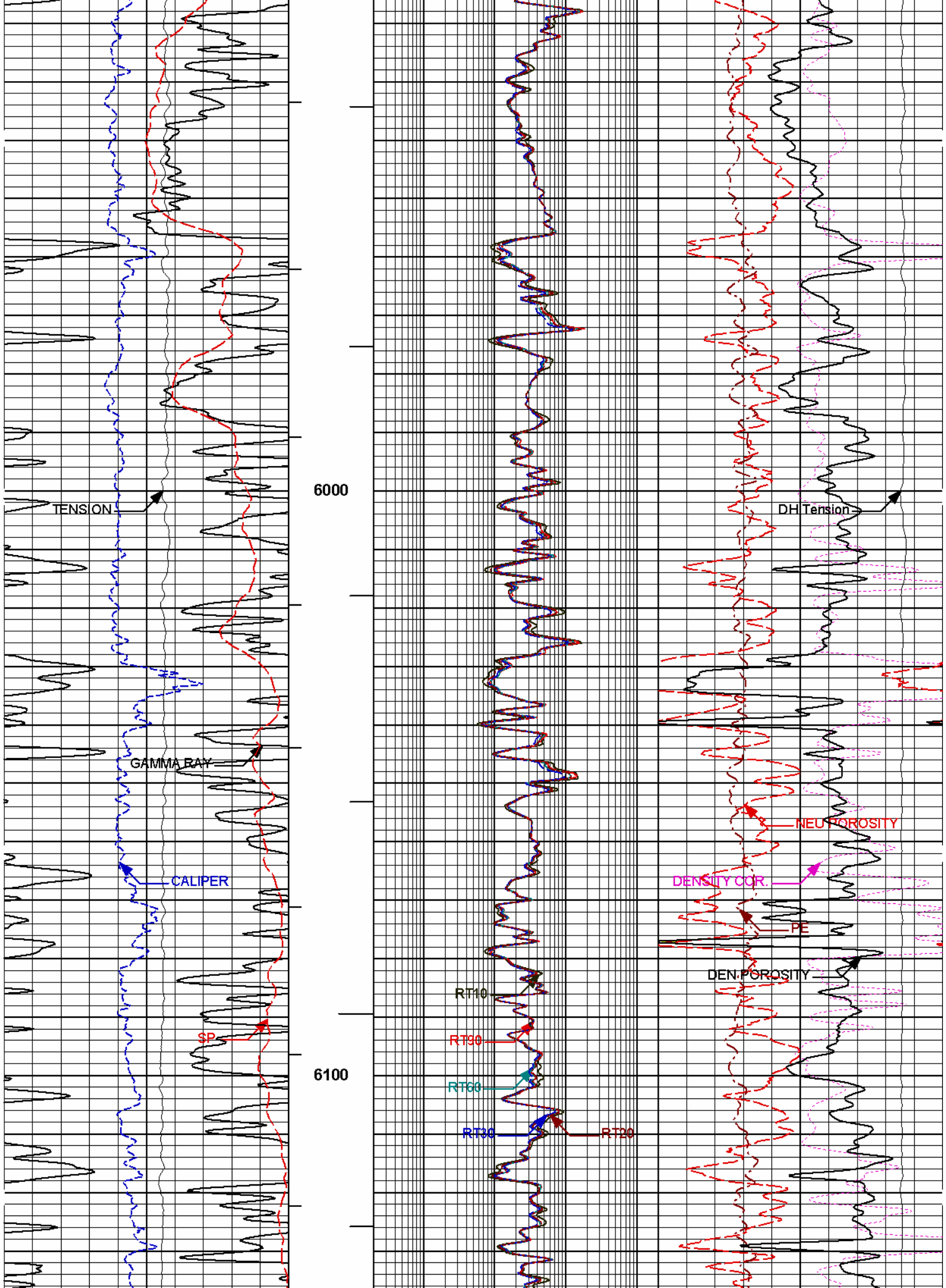


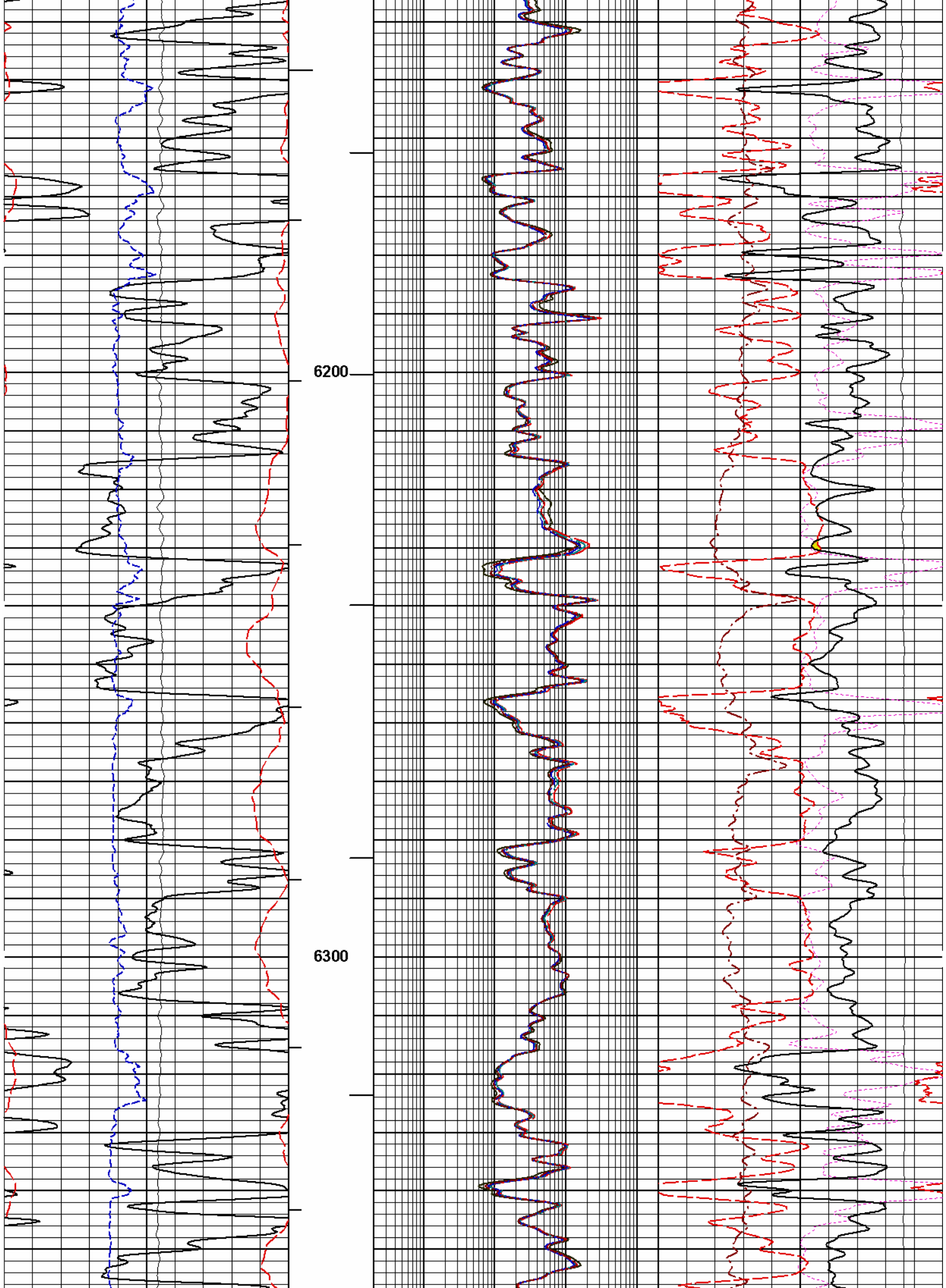
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5600

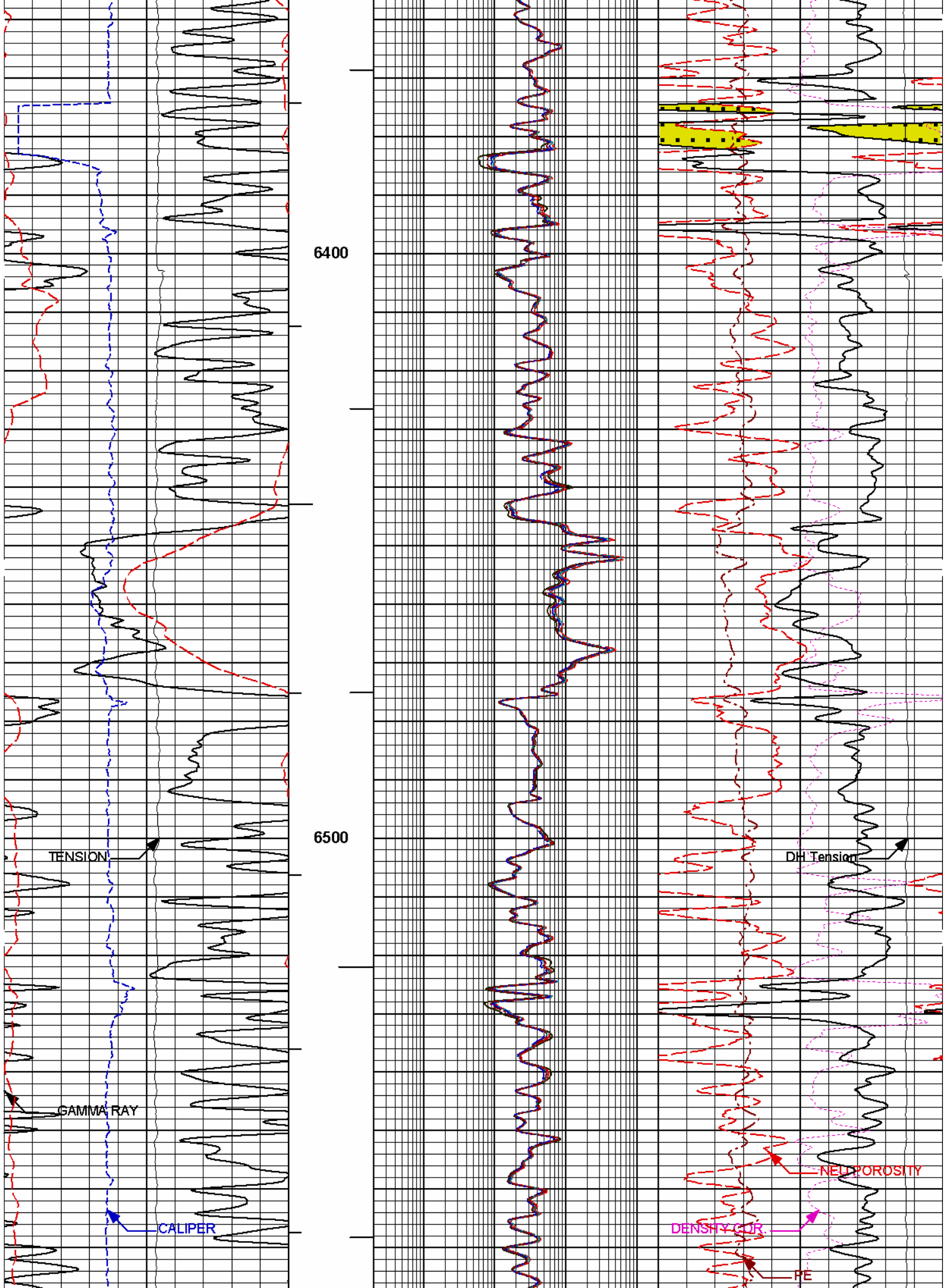




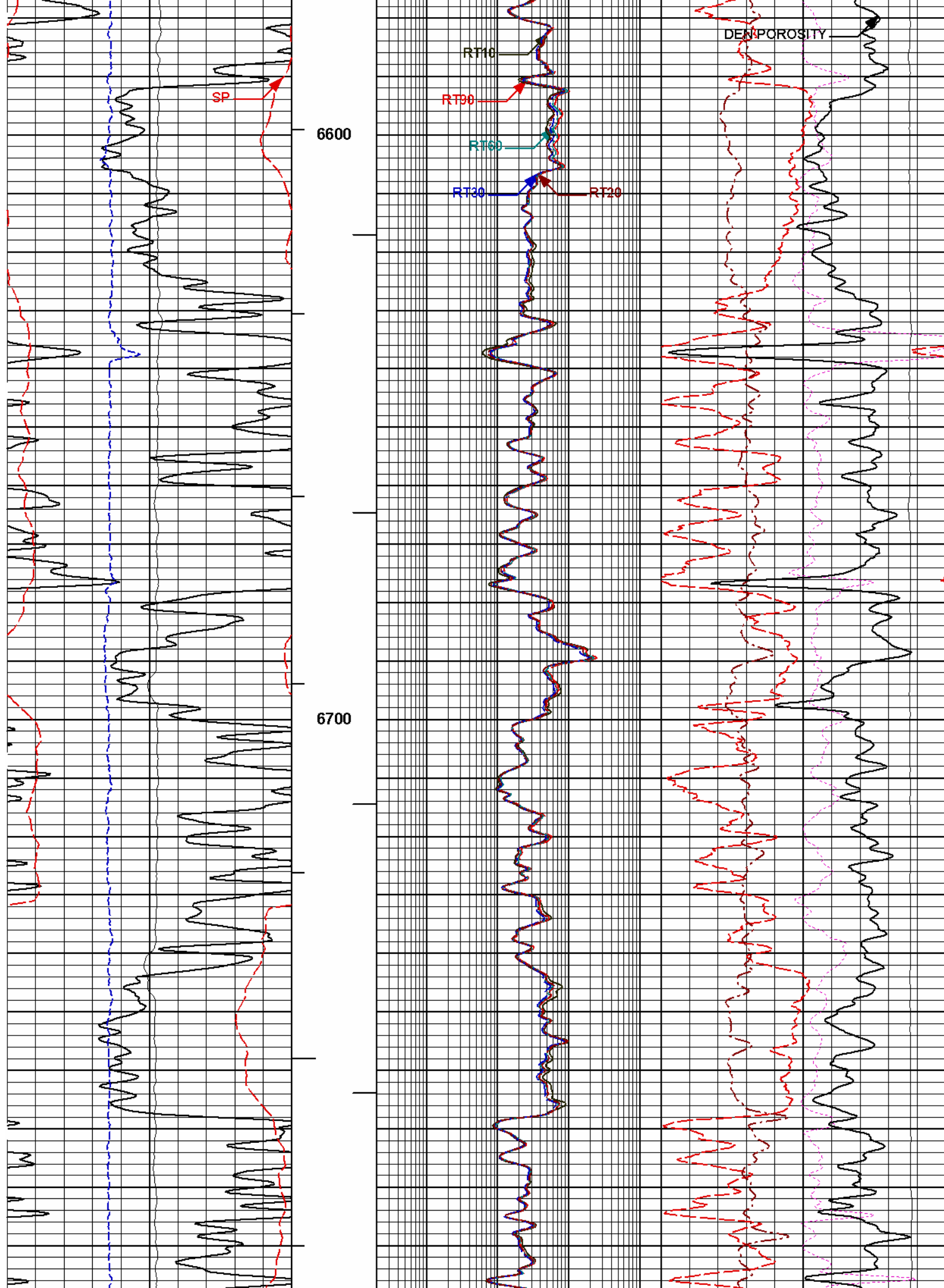


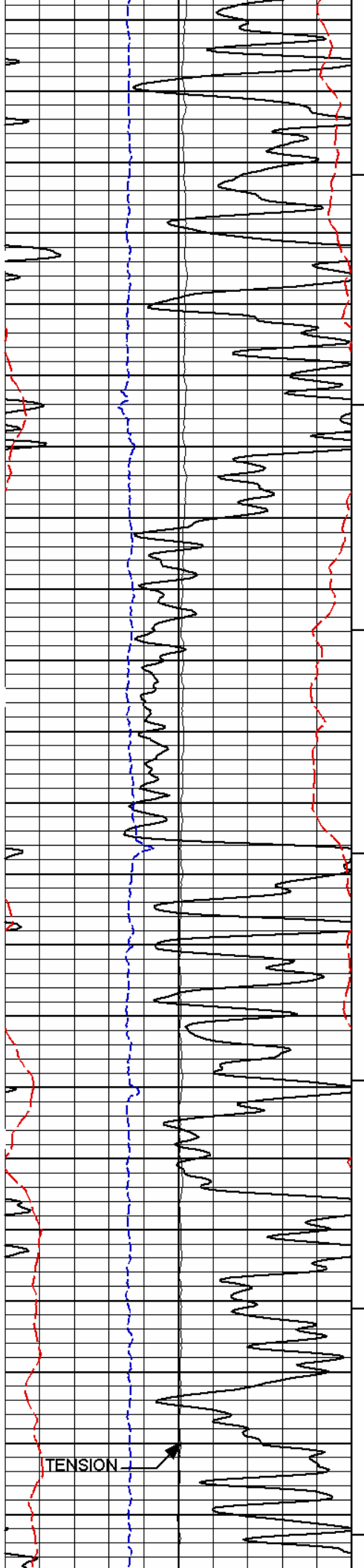








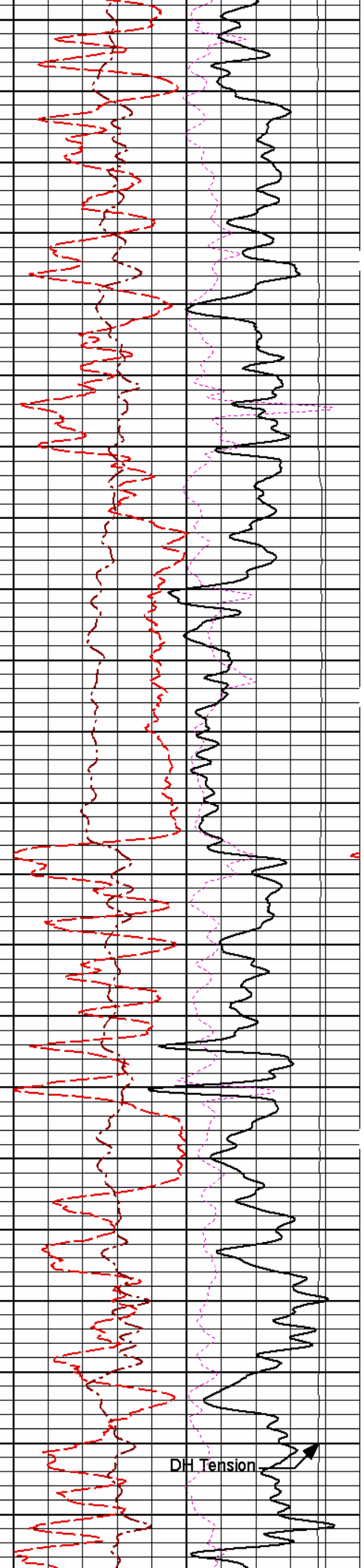
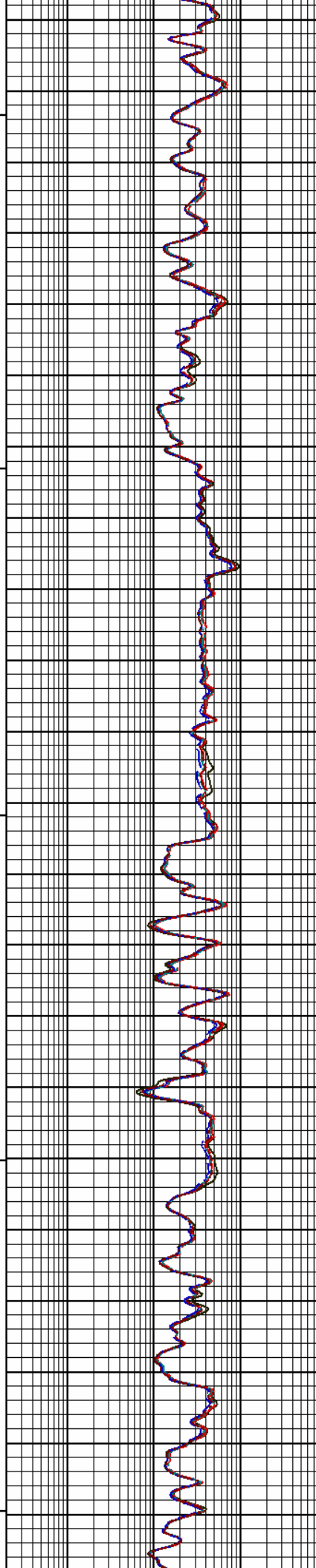


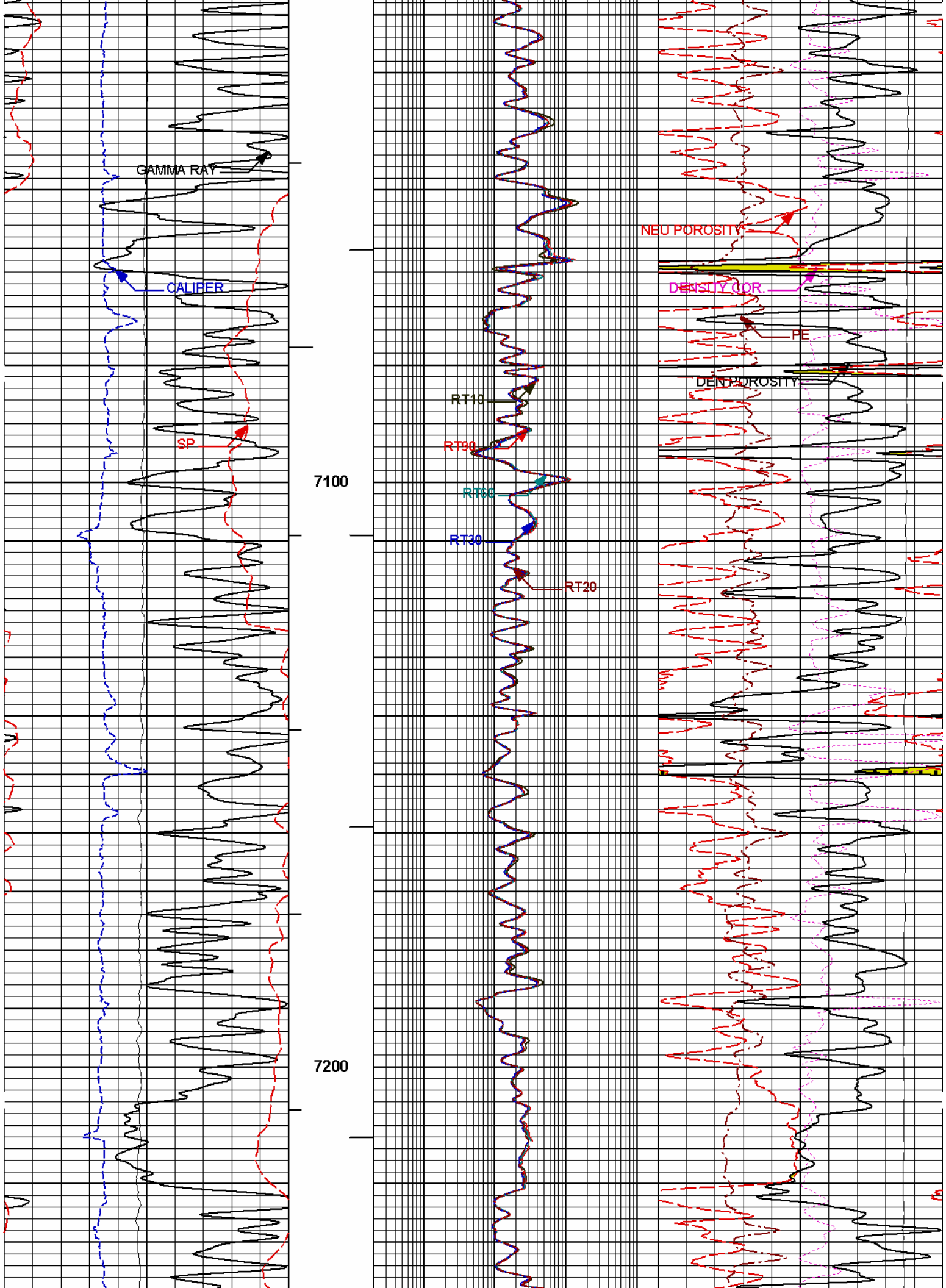


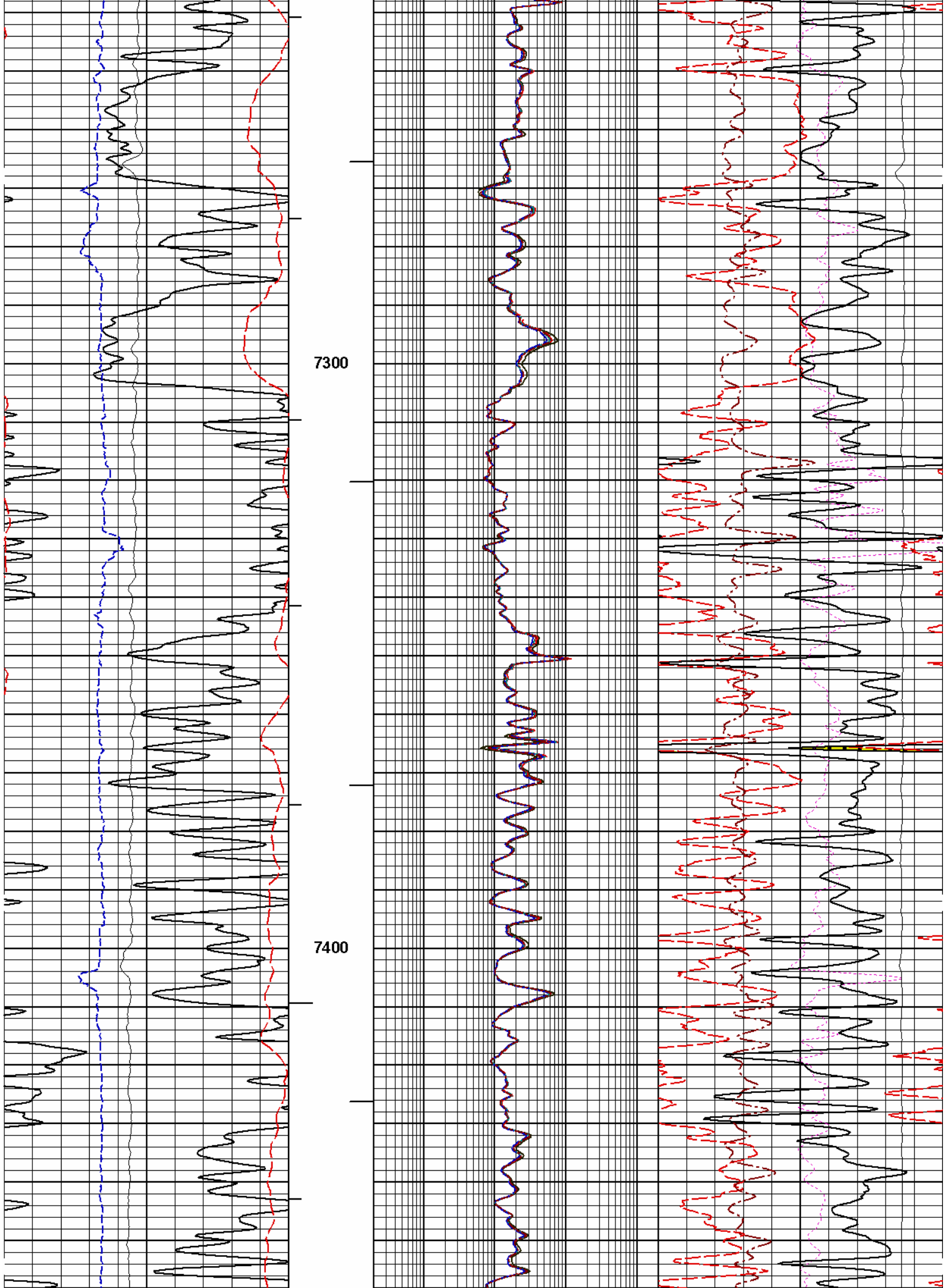
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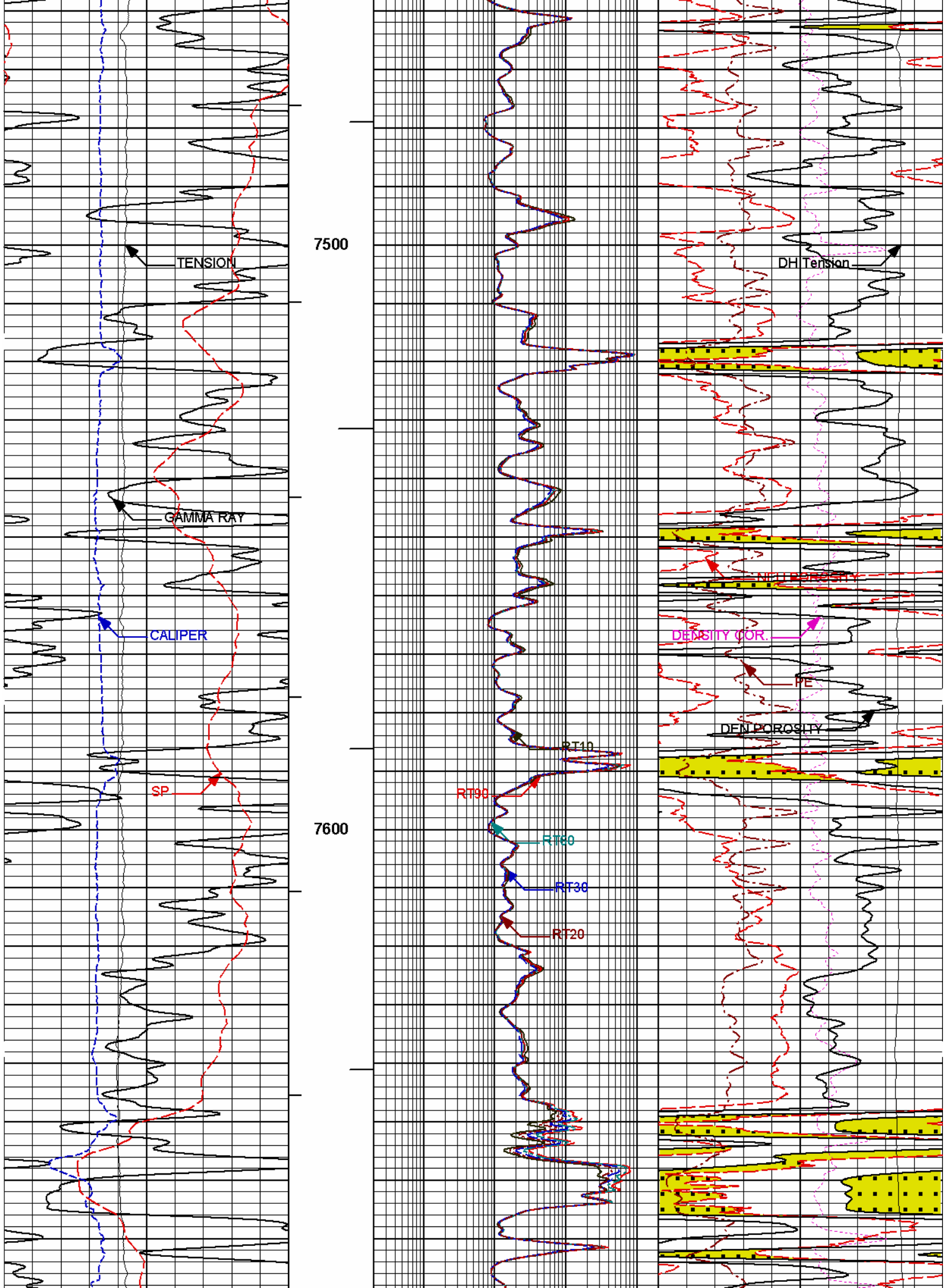
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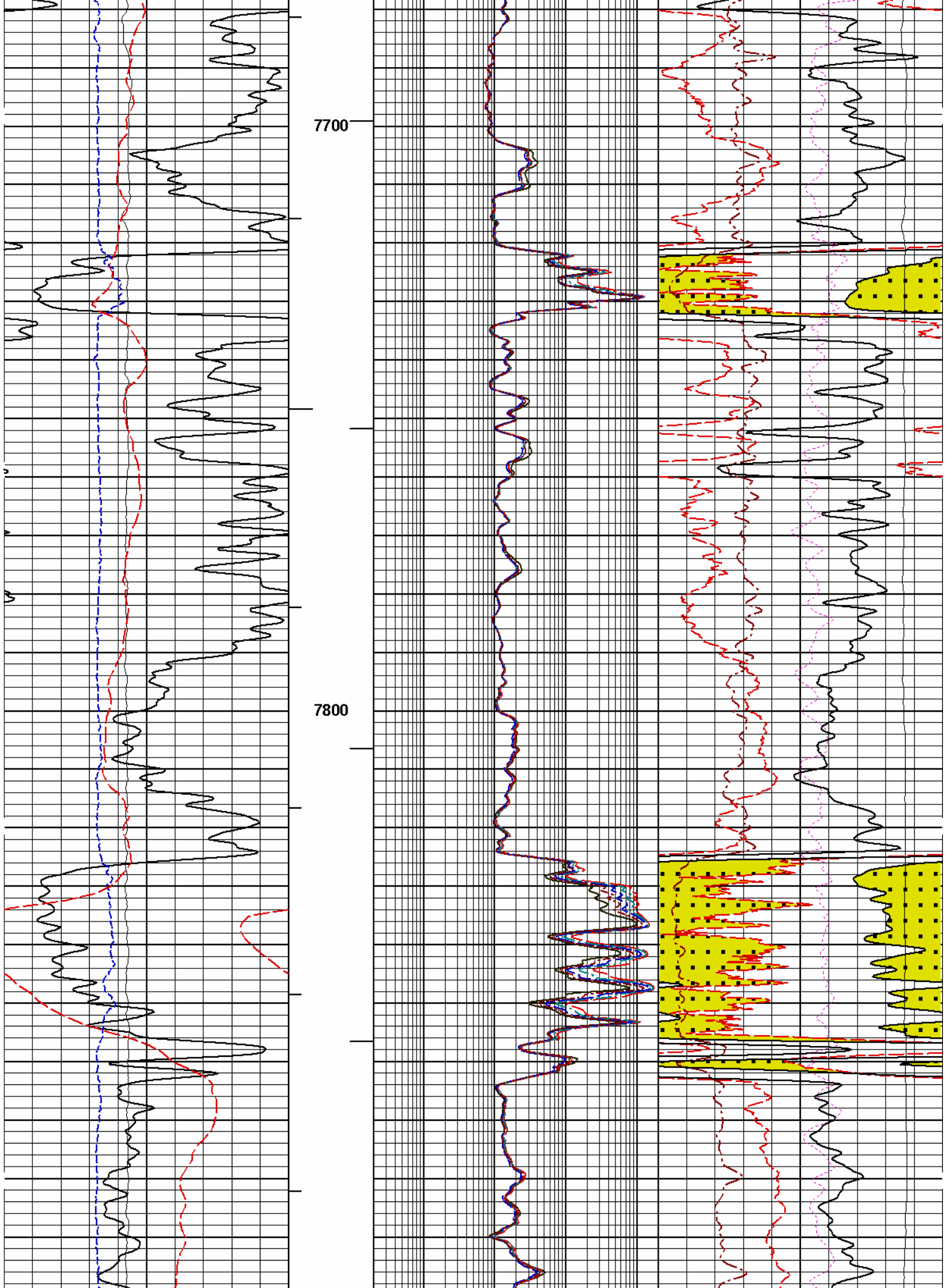
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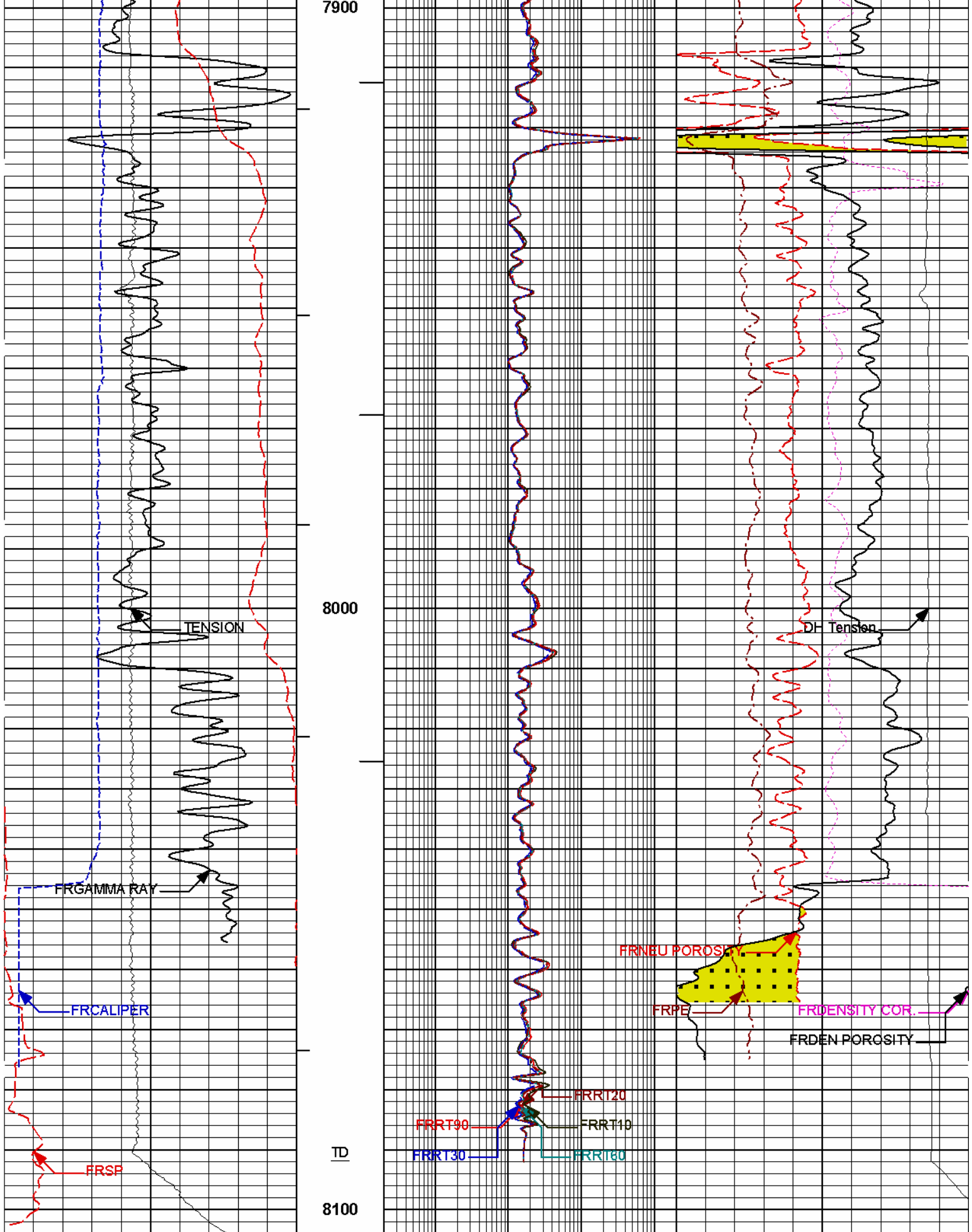












0	SP	100	1 : 240	0.2	RT10	2K	-0.25	DENSITY COR.	0.25
	millivolts		FT.		ohm-m			g/cc	
0	GAMMA RAY	150		0.2	RT20	2K	0	PE	10

<div>api</div> <div>4</div> <div>CALIPER</div> <div>14</div> <div>inches</div> <div>10K</div> <div>TENSION</div> <div>0</div> <div>pounds</div>	<div>BHV</div> <div>AHV</div>	<div>0.2</div> <div>ohm-m</div> <div>RT30</div> <div>2K</div>	<div>30</div> <div>DEN POROSITY</div> <div>-10</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT60</div> <div>2K</div>	<div>30</div> <div>percent</div> <div>NEU POROSITY</div> <div>-10</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT90</div> <div>2K</div>	<div>10K</div> <div>percent</div> <div>DH TENSION</div> <div>0</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT90</div> <div>2K</div>	<div>10K</div> <div>pounds</div> <div>DH TENSION</div> <div>0</div>

HALLIBURTON

Plot Time: 19-Mar-11 04:41:48  
 Plot Range: 1550 ft to 8104 ft  
 Data: BRUTON\_19-06C\Well Based\MAIN  
 Plot File: \\TRIPLE\BP\_TRIPLE\_M

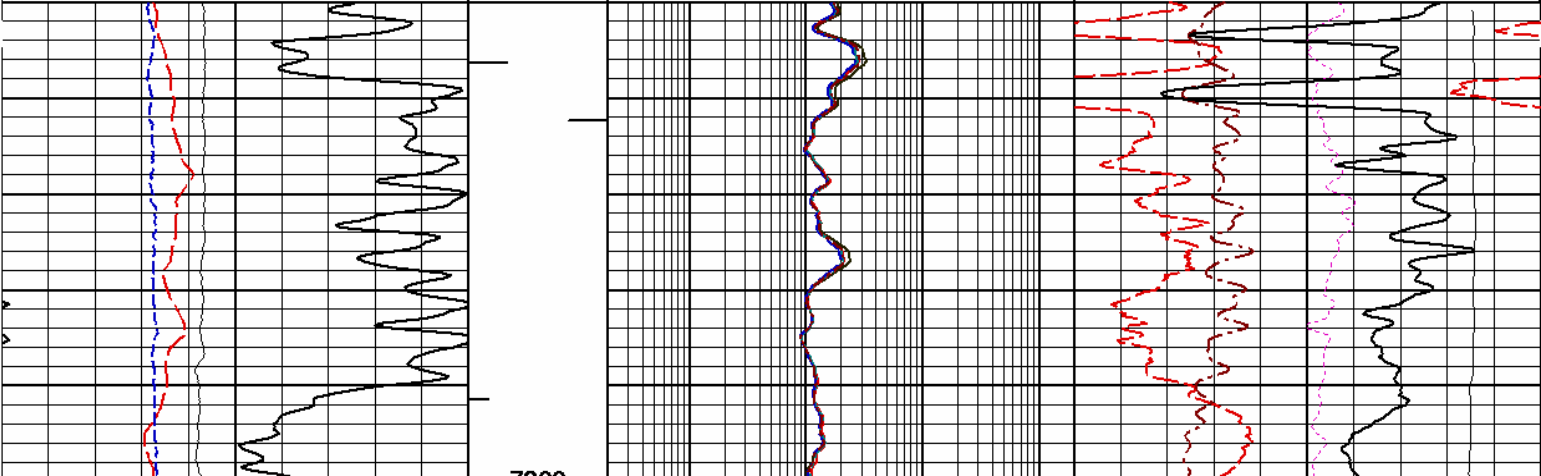
MAIN PASS 5" = 100'

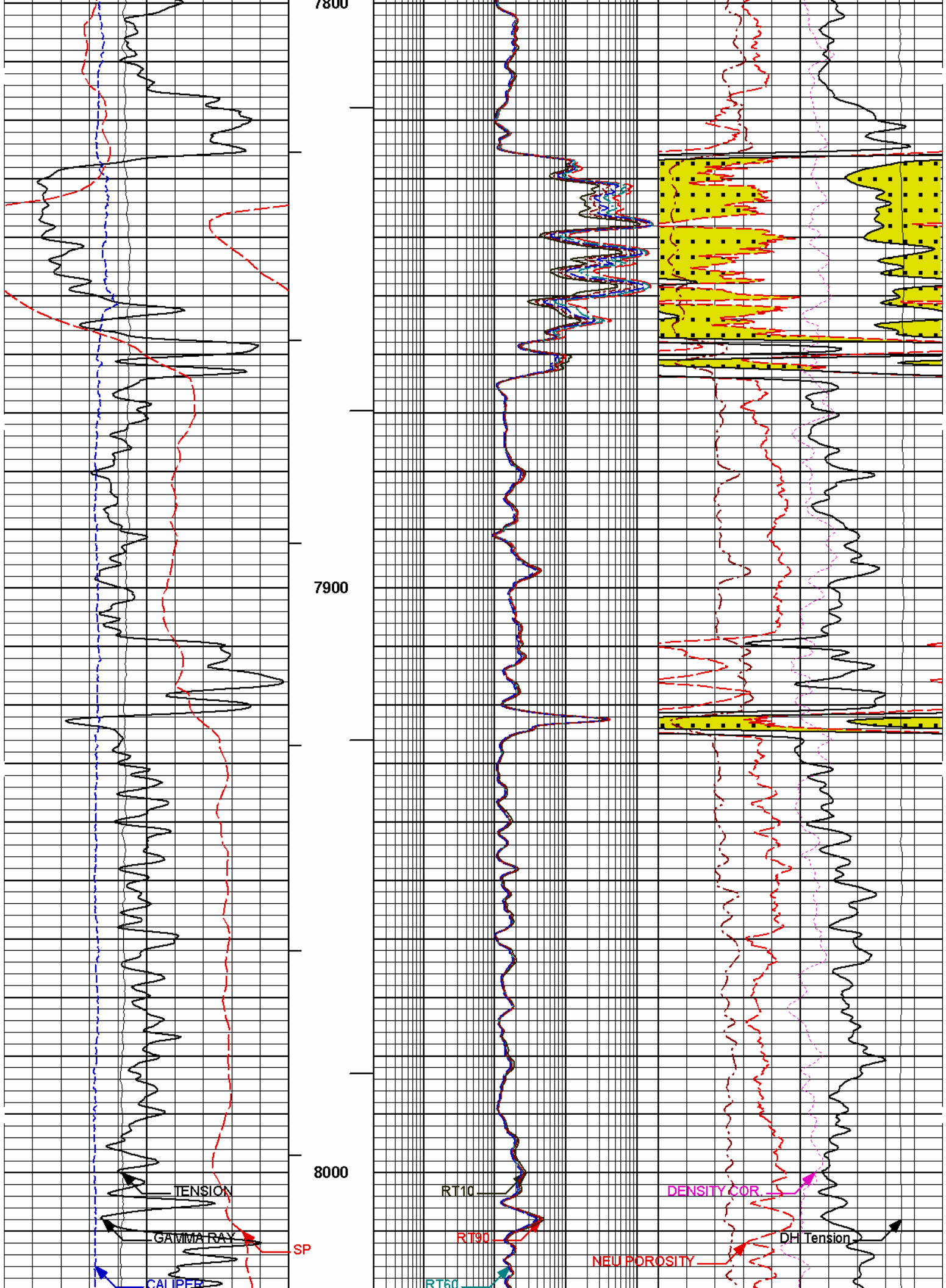
HALLIBURTON

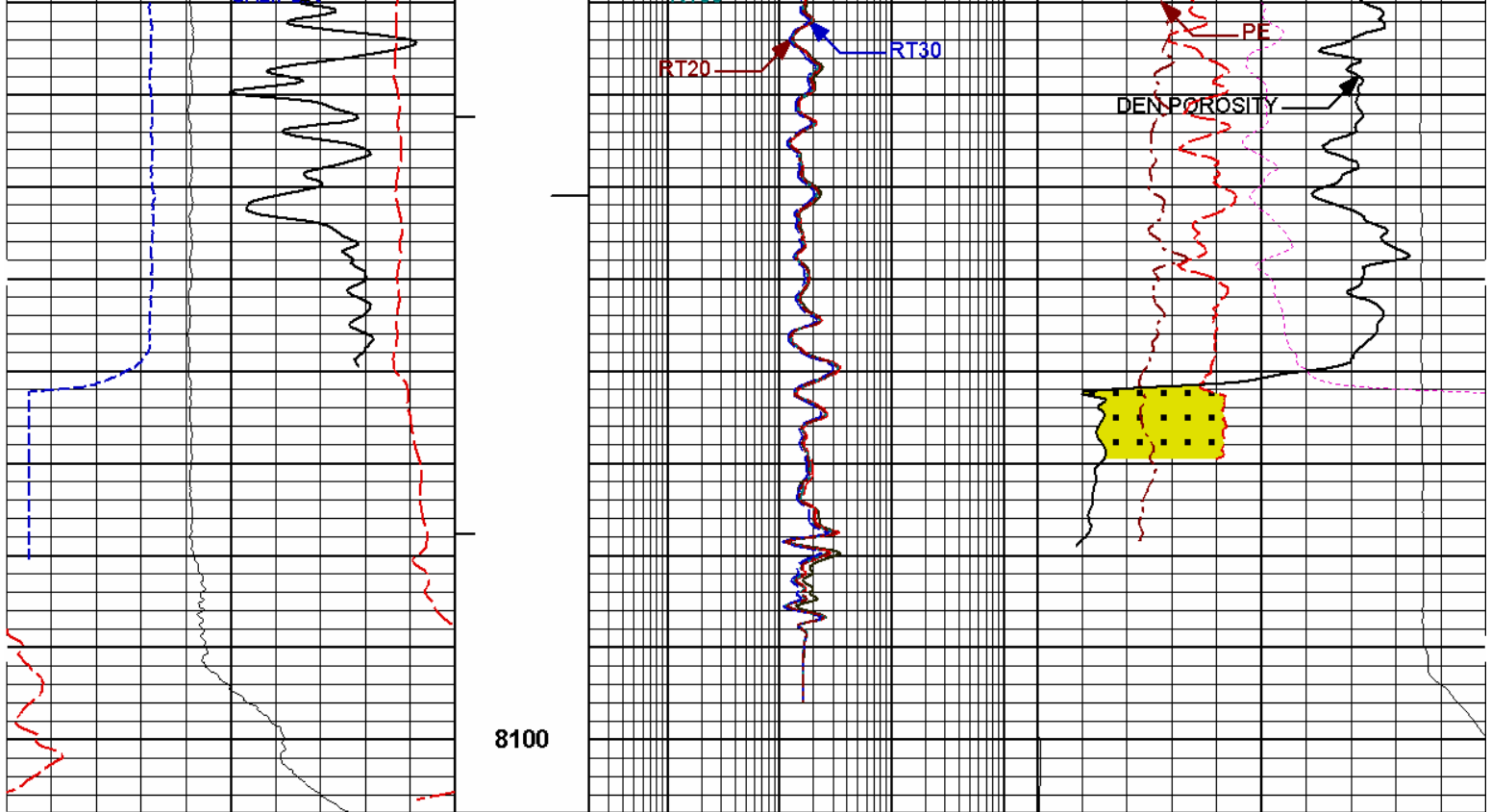
Plot Time: 19-Mar-11 04:41:48  
 Plot Range: 7750 ft to 8108 ft  
 Data: BRUTON\_19-06C\Well Based\REPEAT  
 Plot File: \\TRIPLE\BP\_TRIPLE\_R

REPEAT SECTION 5" = 100'

<div>10K</div> <div>TENSION</div> <div>0</div> <div>pounds</div> <div>4</div> <div>CALIPER</div> <div>14</div> <div>inches</div> <div>0</div> <div>GAMMA RAY</div> <div>150</div> <div>api</div> <div>0</div> <div>SP</div> <div>100</div> <div>millivolts</div>	<div>AHV</div>	<div>0.2</div> <div>ohm-m</div> <div>RT90</div> <div>2K</div>	<div>10K</div> <div>DH TENSION</div> <div>0</div> <div>pounds</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT60</div> <div>2K</div>	<div>30</div> <div>percent</div> <div>NEU POROSITY</div> <div>-10</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT30</div> <div>2K</div>	<div>30</div> <div>percent</div> <div>DEN POROSITY</div> <div>-10</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT20</div> <div>2K</div>	<div>0</div> <div>percent</div> <div>PE</div> <div>10</div>
<div>0.2</div> <div>ohm-m</div> <div>RT10</div> <div>2K</div>	<div>BHV</div> <div>1 : 240 FT.</div>	<div>0.2</div> <div>ohm-m</div> <div>RT10</div> <div>2K</div>	<div>-0.25</div> <div>g/cc</div> <div>DENSITY COR.</div> <div>0.25</div>
		<div>0.2</div> <div>ohm-m</div> <div>RT10</div> <div>2K</div>	<div>-0.25</div> <div>g/cc</div> <div>DENSITY COR.</div> <div>0.25</div>







8100

0	SP	100	1 : 240 FT.	0.2	RT10	2K	-0.25	DENSITY COR.	0.25
	millivolts				ohm-m			g/cc	
0	GAMMA RAY	150	BHV	0.2	RT20	2K	0	PE	10
	api				ohm-m				
4	CALIPER	14	AHV	0.2	RT30	2K	30	DEN POROSITY	-10
	inches				ohm-m			percent	
10K	TENSION	0		0.2	RT60	2K	30	NEU POROSITY	-10
	pounds				ohm-m			percent	
				0.2	RT90	2K	10K	DH TENSION	0
					ohm-m			pounds	

**HALLIBURTON**

Plot Time: 19-Mar-11 04:41:50  
 Plot Range: 7750 ft to 8108 ft  
 Data: BRUTON\_19-06CIWell Based\REPEAT1  
 Plot File: \\TRIPLEW\_BP\_TRIPLE\_R

REPEAT SECTION 5" = 100'

**HALLIBURTON**

## CALIBRATION REPORT

### NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11016184

Reference Calibration Date: 30-Jan-11 16:07:14

Engineer: M. LECUREUX

Calibration Date: 03-Mar-11 15:07:24

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

Calibrator Source S/N: TB-549

Calibrator API Reference:240.00 api

Equivalent Calibrator API Reference:244.2 api

Measurement	Measured	Calibrated	Units
Background	37.7	38.4	api
Background + Calibrator	277.9	282.6	api
Calibrator	244.8	244.2	api

#### NATURAL GAMMA RAY TOOL FIELD CALIBRATION

**Tool Name:** GTET - 11016184

**Reference Calibration Date:** 03-Mar-11 15:07:24

**Engineer:** M. LECUREUX

**Calibration Date:** 18-Mar-11 15:57:00

**Software Version:** WL INSITE R3.2.3 (Build 5)

**Calibration Version:** 1

Calibrator Source S/N: TB-549

Calibrator API Reference:240.00 api

Equivalent Calibrator API Reference:244.2 api

Field Verification	Shop	Field	Units
Background	38.4	30.0	api
Background + Calibrator	282.6	280.5	api
Calibrator	244.2	250.5	api

Shop	Field	Difference	Tolerance
244.2	250.5	-6.3	+/- 9.00

#### ACCELEROMETER SHOP CALIBRATION

**Tool Name:** GTET - 11016184

**Reference Calibration Date:** 30-Jan-11 16:13:21

**Engineer:** M. LECUREUX

**Calibration Date:** 03-Mar-11 15:12:39

**Software Version:** WL INSITE R3.2.3 (Build 5)

**Calibration Version:** 1

Horizontal-1 Telemetry	Horizontal-2 Telemetry	Vertical Telemetry	Units
-211.36	-141.73	-16529.91	cnts

Coefficient	Coefficient Value	Tolerance
Gain	-0.000061	-0.0100 - 0.0100
Offset	-0.011	----
Noise	0.0003	0.0030

Orientation	Measured	Calibrated
Horizontal	0.00	0.00
Vertical	1.00	1.00

#### DUAL SPACED NEUTRON SHOP CALIBRATION

**Tool Name:** DSNT - 11013116

**Reference Calibration Date:** 07-Feb-11 14:47:05

**Engineer:** M. LECUREUX

**Calibration Date:** 03-Mar-11 14:49:08

**Software Version:** WL INSITE R3.2.3 (Build 5)

**Calibration Version:** 1

Logging Source S/N: 08-040

Tank Serial Number: 105045

Reference value assigned to Tank: 52.630

Snow Block S/N: 37526

Calibration Tank Water Temperature: 62 degF

Min. Tool Housing Outside Diameter: 3.625 in

#### CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New
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Measurement	Prev. Value	New Value	Value
Gain:	0.964	0.963	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):	0.2166	0.2162	0.0004	+/- 0.0020
Calibrated Ratio:	9.92	9.91	0.013	+/- 0.050

#### VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0745	0.02000 - 0.09000

#### PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

#### DUAL SPACED NEUTRON FIELD CALIBRATION

<b>Tool Name:</b>	<b>DSNT - 11013116</b>	<b>Reference Calibration Date:</b>	<b>03-Mar-11 14:49:08</b>
<b>Engineer:</b>	<b>M. LECUREUX</b>	<b>Calibration Date:</b>	<b>18-Mar-11 16:06:01</b>
<b>Software Version:</b>	<b>WL INSITE R3.2.3 (Build 5)</b>	<b>Calibration Version:</b>	<b>1</b>

Logging Source S/N: 08-040

Snow Block S/N: 37526

#### NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0745	0.0691	-0.0054	+/- 0.0150

#### PASS/FAIL SUMMARY

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

#### SPECTRAL DENSITY SHOP CALIBRATION

<b>Tool Name:</b>	<b>SDLT - 10950493</b>	<b>Reference Calibration Date:</b>	<b>30-Jan-11 19:51:19</b>
<b>Engineer:</b>	<b>M. LECUREUX</b>	<b>Calibration Date:</b>	<b>03-Mar-11 11:49:30</b>
<b>Software Version:</b>	<b>WL INSITE R3.2.3 (Build 5)</b>	<b>Calibration Version:</b>	<b>1</b>

Logging Source S/N: 24520B

Aluminum Block S/N: 8261

Density: 2.602g/cc

Pe: 3.100

Magnesium Block S/N: 8260

Density: 1.688g/cc

Pe: 2.594

#### DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0237	1.0225	0.90 - 1.10
Near Dens Gain	1.0095	1.0114	0.90 - 1.10
Near Peak Gain	0.9882	1.0022	0.90 - 1.10
Near Lith Gain	0.9650	0.9737	0.90 - 1.10
Far Bar Gain	1.0089	1.0082	0.90 - 1.10
Far Dens Gain	0.9982	0.9981	0.90 - 1.10
Far Peak Gain	0.9923	0.9912	0.90 - 1.10
Far Lith Gain	0.9704	0.9690	0.90 - 1.10



Near Bar Offset	-0.1445	-0.1292	NONE
Near Dens Offset	-0.0258	-0.0398	NONE
Near Peak Offset	0.1449	0.0312	NONE
Near Lith Offset	0.3100	0.2440	NONE
Far Bar Offset	-0.0460	-0.0371	NONE
Far Dens Offset	0.0370	0.0387	NONE
Far Peak Offset	0.0451	0.0546	NONE
Far Lith Offset	0.1900	0.2005	NONE

Near Bar Background	953.23	951.38	700 - 1450
Near Dens Background	313.86	310.18	230 - 480
Near Peak Background	135.37	134.93	100 - 210
Near Lith Background	166.97	167.23	125 - 260
Far Bar Background	554.87	557.31	450 - 900
Far Dens Background	215.68	216.76	175 - 345
Far Peak Background	86.47	86.04	70 - 140
Far Lith Background	88.55	90.36	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.688	0.004	+/- 0.015
Pe	2.592	2.551	-0.041	+/- 0.150
ALUMINUM				
Density (g/cc)	2.598	2.602	0.004	+/- 0.01500
Pe	3.075	3.061	-0.014	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0004	+/- 0.0110	-0.0004	+/- 0.0140
Magnesium Block	0.0013	+/- 0.0110	0.0021	+/- 0.0140
Aluminum Block	0.0005	+/- 0.0110	-0.0001	+/- 0.0140
Resolution	9.23	6.00 - 11.50	9.11	6.00 - 11.50
Internal Verifier(B+D+P+L)	1564	1200 - 2700	950	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 - 10950493

Reference Calibration Date: 03-Mar-11 11:49:30

Engineer: M. LECUREUX

Calibration Date: 18-Mar-11 15:55:59

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

Pad Temperature: 60.3 degF

### DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1563.718	1562.475	-1.243	15.913
Far (B+D+P+L) cps	950.468	948.620	-1.848	16.627
Near Resolution	9.23	9.20	-0.030	0.50
Far Resolution	9.11	9.08	-0.030	1.00

### PASS/FAIL SUMMARY

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

### DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10950493

Reference Calibration Date: 03-Mar-11 14:00:09

Engineer: M. LECUREUX

Calibration Date: 03-Mar-11 14:06:11

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

### CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1612.77	-1592.46	-7000.00 - -1000.00
Pad Gain	0.0003814	0.0003800	0.000200 - 0.000600
Arm Offset	-3953.24	-4236.48	-5000.00 - 3000.00
Arm Gain	0.0005340	0.0005912	0.000300 - 0.000700
Arm Power	-0.000003173	-0.000007634	-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)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.14	8.25	0.11	+/- 0.20
Large Ring (in)	15.13	15.00	-0.13	+/- 0.20

### PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

### PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
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### SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10950493

Reference Calibration Date: 03-Mar-11 14:06:11

Engineer: M. LECUREUX

Calibration Date: 18-Mar-11 16:03:20

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

### MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.82	0.07	+/- 0.10

Ring Diameter

8.25

8.12

-0.13

+/- 0.15

**PASS/FAIL SUMMARY**

Pad Extension Check:

Passed

Diameter Check:

Passed

**ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION****Tool Name:** ACRT - I777S201**Reference Calibration Date:** 15-Sep-10 14:58:24**Engineer:** J. MELANCON**Calibration Date:** 15-Sep-10 15:07:18**Software Version:** WL INSITE R3.0.6 (Build 4)**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	1.0109	1.05	0.95	1.0149	1.05	0.95	1.0204	1.05
A2 (50")	0.95	1.0156	1.05	0.95	1.0196	1.05	0.95	1.0262	1.05
A3 (29")	0.95	1.0108	1.05	0.95	1.0146	1.05	0.95	1.0194	1.05
A4 (17")	0.95	1.0063	1.05	0.95	1.0086	1.05	0.95	1.0155	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9945	1.05	0.95	1.0007	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9895	1.05	0.95	0.9951	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	-0.855	2	-6	-4.136	-2	-8	-4.714	-2
A2 (50")	-7	-2.497	-1	-6	-3.925	-2	-7	-4.081	-2
A3 (29")	-27	-13.058	-9	-9	-3.916	-3	-7	-2.497	-1
A4 (17")	-180	-98.371	-60	-45	-32.262	-15	-39	-26.604	-13
A5 (10")	N/A	N/A	N/A	-150	-87.638	-50	-80	-41.542	-10
A6 (6")	N/A	N/A	N/A	175	331.236	525	90	166.752	270

**TRANSMITTER CURRENT GAIN**

Signal	Lower	R	Upper
12K	0.6	0.9915	1.3
36K	1.0	1.3204	2.0
72K	1.0	1.4953	2.0

**R-MUD VERIFICATION**

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.005	1.05

**CALIBRATION SUMMARY**

Sensor	Shop	Field	Post	Difference	Tolerance	Units
<b>GTET-11016184</b>						
Gamma Ray Calibrator	244.2	250.5	-----	-6.3	+/- 9.00	api
<b>DSNT-11013116</b>						
Snow-Block Porosity	0.0745	0.0691	-----	0.0054	+/- 0.0150	decP
<b>SDLT-10950493</b>						
Near(B+D+P+L)	1563.718	1562.475	-----	1.243	+/-15.913	cps
Far(B+D+P+L)	950.468	948.620	-----	1.848	+/-16.627	cps
Pad Extension	3.75	3.82	-----	-0.07	+/-0.10	in
Ring Diameter	8.25	8.12	-----	0.130	+/-0.15	in
<b>ACRT-I777S201</b>						
Mud Cell	1.005	-----	-----	0.000	-----	ohm-m

CUSTOMER EVENT LOG

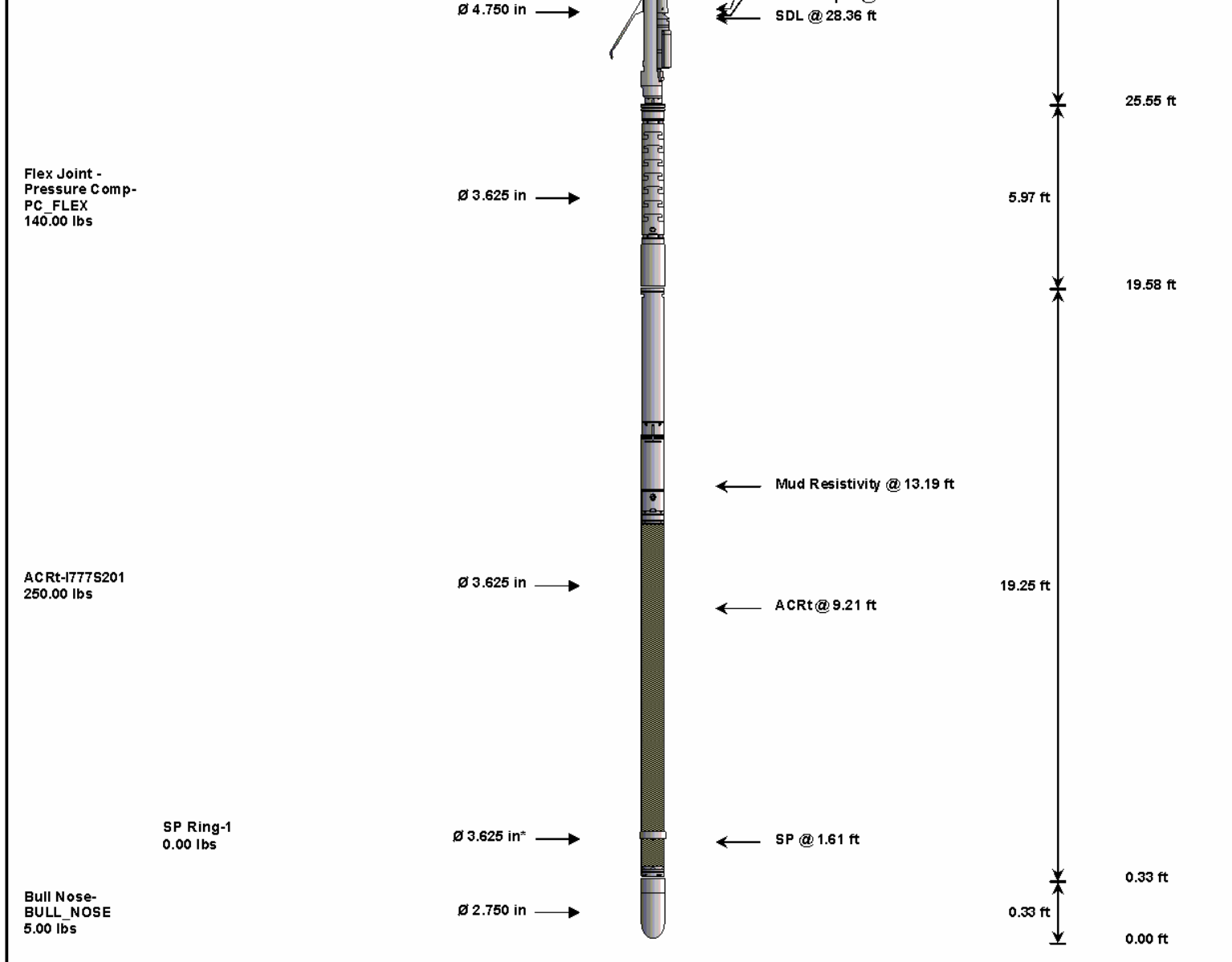
Event Type	Time & Date	Depth (ft)	Event Description
	19-Mar-11 00:20:49	1878.50	Logging 001 19-Mar-11 01:20 Up @1878.5f
	19-Mar-11 00:27:32	1499.41	Halting 001 19-Mar-11 01:20 Up @1878.5f
	19-Mar-11 00:27:59	1454.00	Logging 002 19-Mar-11 01:27 Dn @1454.0f
	19-Mar-11 01:04:09	8072.57	Halting 002 19-Mar-11 01:27 Dn @1454.0f
	19-Mar-11 01:05:05	8108.50	Logging 003 19-Mar-11 02:05 Up @8108.5f
	19-Mar-11 01:12:39	7719.39	Halting 003 19-Mar-11 02:05 Up @8108.5f
	19-Mar-11 01:19:18	8105.25	Logging 004 19-Mar-11 02:19 Up @8105.3f
	19-Mar-11 03:19:22	1476.36	Halting 004 19-Mar-11 02:19 Up @8105.3f

Data: BRUTON\_19-06C10001 LOGIQ\_TRIPLE1HW11174

Date: 19-Mar-11 04:23:35

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-C089 135.00 lbs		Ø 3.625 in →		Load Cell @ 57.14 ft BH Temperature @ 56.57 ft	6.25 ft	60.82 ft
GTET-11016184 165.00 lbs		Ø 3.625 in →		GammaRay @ 48.51 ft	8.52 ft	54.57 ft
DSNT-11013116 174.00 lbs		Ø 3.625 in →		DSN Far @ 39.12 ft DSN Near @ 38.37 ft	9.69 ft	46.05 ft
SDLT-10950493 360.00 lbs		Ø 4.500 in →		SDL Microlog @ 28.55 ft SDL Caliper @ 28.37 ft	10.81 ft	36.37 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	C089	135.00	6.25	54.57	300.00
GTET	Gamma Telemetry Tool	11016184	165.00	8.52	46.05	60.00
DSNT	Dual Spaced Neutron	11013116	174.00	9.69	36.37	60.00
SDLT	Spectral Density Tool	10950493	360.00	10.81	25.55	60.00
FLEX	Flex Joint - Pressure Compensated	PC_FLEX	140.00	5.97	19.58	300.00
ACRt	Array Compensated True Resistivity	I777S201	250.00	19.25	0.33	300.00
SP	SP Ring	1	0.00	0.25 *	1.61	300.00
BLNS	Bull Nose	BULL_NOSE	5.00	0.33	0.00	300.00
Total			1,229.00	60.82		
Data: BRUTON_19-06C\0001 LOGIQ_TRIPLE\IDLE						Date: 18-Mar-11 23:52:07

\* Not included in Total Length and Length Accumulation.

COMPANY	LARAMIE ENERGY		
WELL	BRUTON 19-06C		
FIELD	BRUSH CREEK		
COUNTY	MESA	STATE	CO

