HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY ARRAY COMPENSATED TRUE RESISTIVITY

CONOCO PHILLIPS COMPANY
MURPHY FAMILY 4-64-36-1H
WILDCAT
ARAPAHOE
CO

COMPANY / WELL / FIELD/BLOCK / COUNTY / STATE

COMPANY **CONOCO PHILLIPS COMPANY**

WELL **MURPHY FAMILY 4-64-36-1H**

FIELD/BLOCK **WILDCAT**

COUNTY **ARAPAHOE** STATE **CO**

API No. 0500507214010000

Location SHL: 1620 FSL & 250 FEL NESE

LATITUDE: 39.655489
LONGITUDE: -104.491847

Sect. 36 Twp. 4S Rge. 64W

Other Services:
CSNG
ICT
WSTT

Permanent Datum	GL	Elev. 5915.0 ft	Elev.: K.B. 5939.0 ft
Log measured from	KB	, 24.0 ft above perm. Datum	D.F. 5938.0 ft
Drilling measured from	KB		G.L. 5915.0 ft

Date		05-Dec-13					
Run No.		ONE					
Depth - Driller		8029.00 ft					
Depth - Logger		8036.0 ft					
Bottom - Logged Interval		8026 ft					
Top - Logged Interval		200 ft					
Casing - Driller		9.625 in @ 2134.0 ft		@		@	
Casing - Logger		2134.0 ft					
Bit Size		8.750 in		@		@	
Type Fluid in Hole		OIL BASED MUD					
Density	F. Viscosity	9.2 ppg	39.00 s/qt				
Alkalinity	P. Viscosity		12.0 cP				
HTHP @ Meas. Temperature		4.4 cptm @ 250.00 degF		@		@	
Solids	Wgt. Material	5.2 %	BAROID 41				
Oil	Water Ratio	57	34				
Water Phase Salinity		76000.00 ppm Cl-					
Oil Type	Brine Type	DIESEL	CACL2				
Electrical Stability		430 V					
Time Since Circulation		21.0 hr					
Time on Bottom		05-Dec-13 02:03					
Max. Rec. Temperature		220.0 degF @ 8036.0 ft		@		@	
Equipment	Location	11454566	BRIGHTON, C				
Recorded By		J. SCHMIDT					
Witnessed By		M. JOHNSON					

Fold here

Service Ticket No.:
API Serial No.: 0500507214010000
PGM Version:

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Sample No.		Type Log	Depth	Scale Up Hole	Scale Down Hole
Date						
Depth-Driller						
Type Fluid in Hole						
Density	F. Viscosity					
Alkalinity	P. Viscosity					
HTHP @ Meas. Temp.		@				
Solids	Wgt. Mat.					
Oil	Water Ratio					
Water Phase Salinity						
Oil Type	Water Type					
Electrical Stability						

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
	ONE	ACRT	N/A	CENT,	N/A
		11296758			
		11294352			

EQUIPMENT DATA

	GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE	
Serial No.	11812882	Serial No.	90271590	Serial No.	11045470	Serial No.	11301132	
Model No.	GTET	Model No.	WSTT	Model No.	SDLT	Model No.	DSNT	
Diameter	3.625"	No. of Cent.	2	Diameter	4.5"	Diameter	3.625"	
Detector Model No.	GTET	Spacing	0.5'	Log Type	GAM-GAM	Log Type	NEU-NEU	
Type	SCINT			Source Type	Cs-137	Source Type	Am241Be	
Length	8"	LSA [Y/N]	Y	Serial No.	5471GW	Serial No.	DSN434	
Distance to Source	18'	FWDA [Y/N]	Y	Strength	1.78 Ci	Strength	15Ci	

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	TD	6000	REC	0	200	140	40	47.6	1.95	2.95	2.71	0.45	-0.15	LIME
ONE	6000	200	REC	0	200									

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: RWCH/GTET/CSNG/DSNT/SDLT/FLEX/ICT/WSTT/ACRT RAN IN COMBINATION

TENSION PULLS, WASHOUTS, AND BOREHOLE RUGOSITY CAN AFFECT TOOL RESPONSE

ANNULAR HOLE VOLUME CALCULATED FOR 7.0-INCH CASING

BHT AVERAGED FROM 4 MAX TEMPERATURE THERMOMETERS

YOUR CREW: A. AXE, K. PREIST, T. DICAMILLO RIG: H&P 280

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES - BRIGHTON, CO - (303) 825-4346

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PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	8.750	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Oil	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	WPHS	OBM Water Phase Salinity NaCl	0.00	ppm
	SHARED	OFOW	Base Oil Fraction from Oil/Water Ratio	1.69	
	SHARED	OBMT	Oil based Mud Type	Diesel	
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	7.000	in
	SHARED	ST	Surface Temperature	0.0	degF
	SHARED	TD	Total Well Depth	8029.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	ICT	
	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	
SimpleLithology	RMF	Mud Filtrate Resistivity	0.10	ohmm
SimpleLithology	RMFT	Temperature of Mud Filtrate	175.00	degF
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	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	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
ICT	CLOK	Process Caliper Outputs?	Yes	
ICT	DARM	Disable Caliper Arm	No	
ICT	ATDS	Arm To Disable	0	
ICT	REPM	Method to replace arm?	Caliper Average	
ICT	ARMV	Diameter to use for disabled arm	0.00	in
ICT	DARM	Disable Second Caliper Arm	No	
ICT	ATDS	Second Arm To Disable	0	
ICT	REPM	Method to replace second arm?	Caliper Average	
ICT	ARMV	Diameter to use for second disabled arm	0.00	in
ICT	CL1O	Radius 1 Offset	0.0	in
ICT	CL2O	Radius 2 Offset	0.0	in
ICT	CL3O	Radius 3 Offset	0.0	in
ICT	CL4O	Radius 4 Offset	0.0	in
ICT	CL5O	Radius 5 Offset	0.0	in
ICT	CL6O	Radius 6 Offset	0.0	in
ICT	BHVC	Radius type for borehole volume calcuations	Elliptical	

Wavesonic-I	WSOK	Process WSTT?	Yes	
Wavesonic-I	AFIL	Adaptive Filtering?	No	
Wavesonic-I	PINT	Process 1 Sample and Skip	0	
Wavesonic-I	PROM	Process Mode: M=1,MX=2,MY=3,MXY=4	4	
Wavesonic-I	DTSH	Delta -T Shale	100.00	uspf
Wavesonic-I	DTMT	Delta -T Matrix Type	User define	
Wavesonic-I	DTMA	Delta -T Matrix	47.60	uspf
Wavesonic-I	DTFL	Delta -T Fluid	189.00	uspf
Wavesonic-I	RHOM	Matrix Density	2.7100	g/cc
Wavesonic-I	RHOF	Fluid Density	1.0000	g/cc
Wavesonic-I	SMTH	Semblance Threshold	0.25	
Wavesonic-I	VPVS	VPVS Ratio for Porosity	1.40	
Wavesonic-I	APEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.25	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Centered	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

Data: MF_4-64-36-1H\0001 TRIPLE BLACK-CSNG-ICT-WSTT\IDLE **Date: 06-Dec-13 05:16:09**

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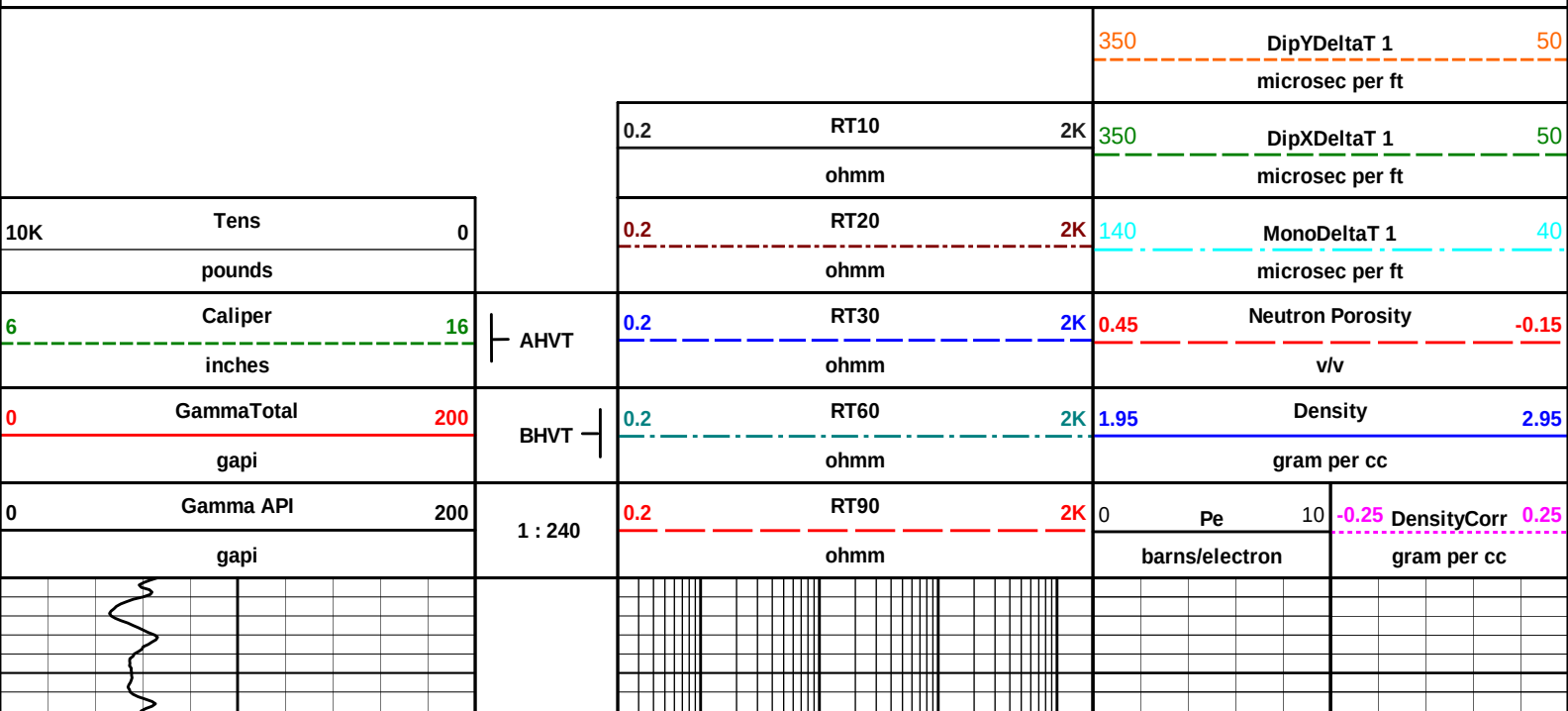
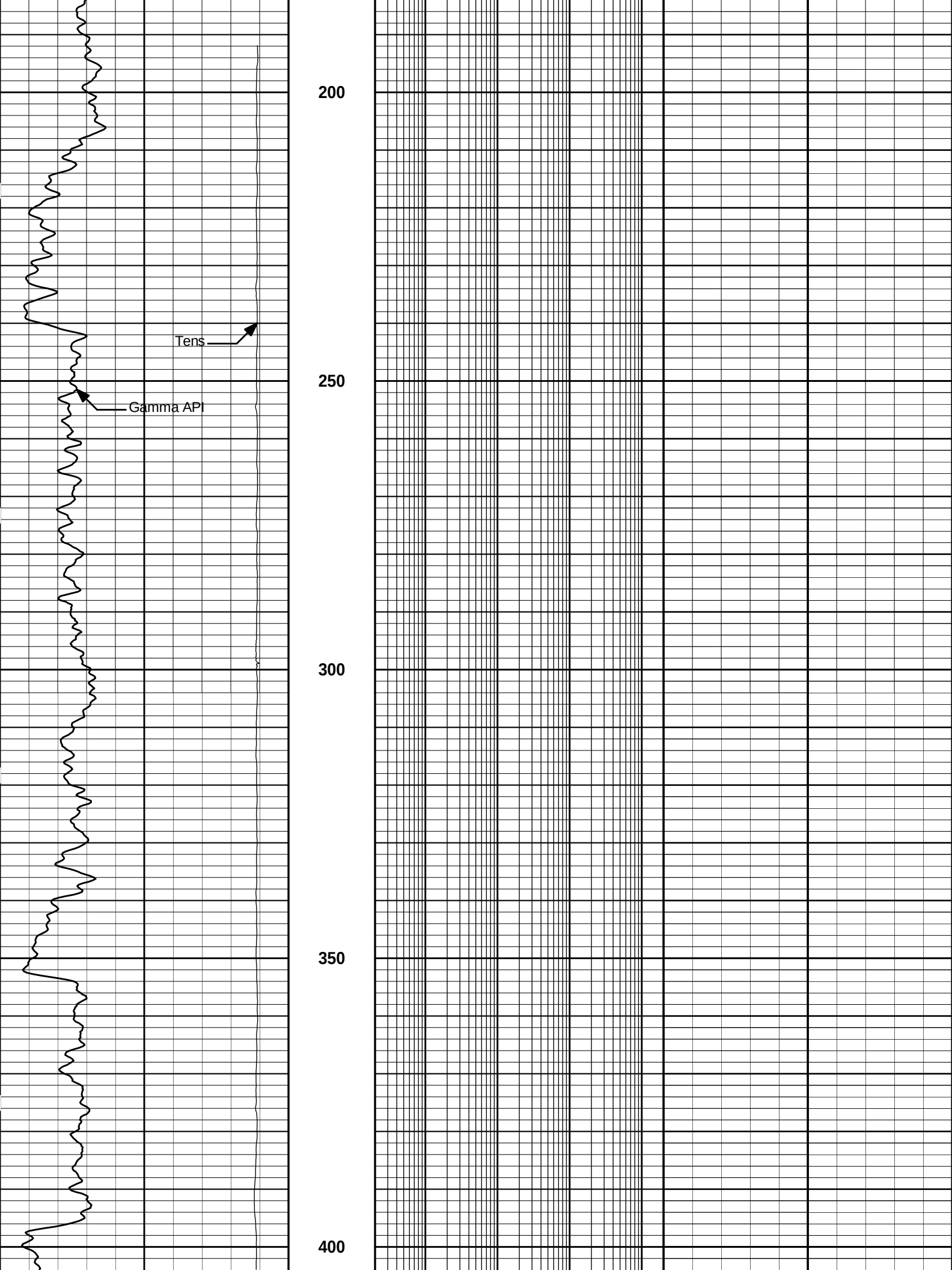
Plot Time: 06-Dec-13 10:24:23
Plot Range: 170 ft to 8053.42 ft
Data: MF_4-64-36-1H\Well Based**
Plot File: \\COMP\MAIN

MAIN PASS 5" = 100'

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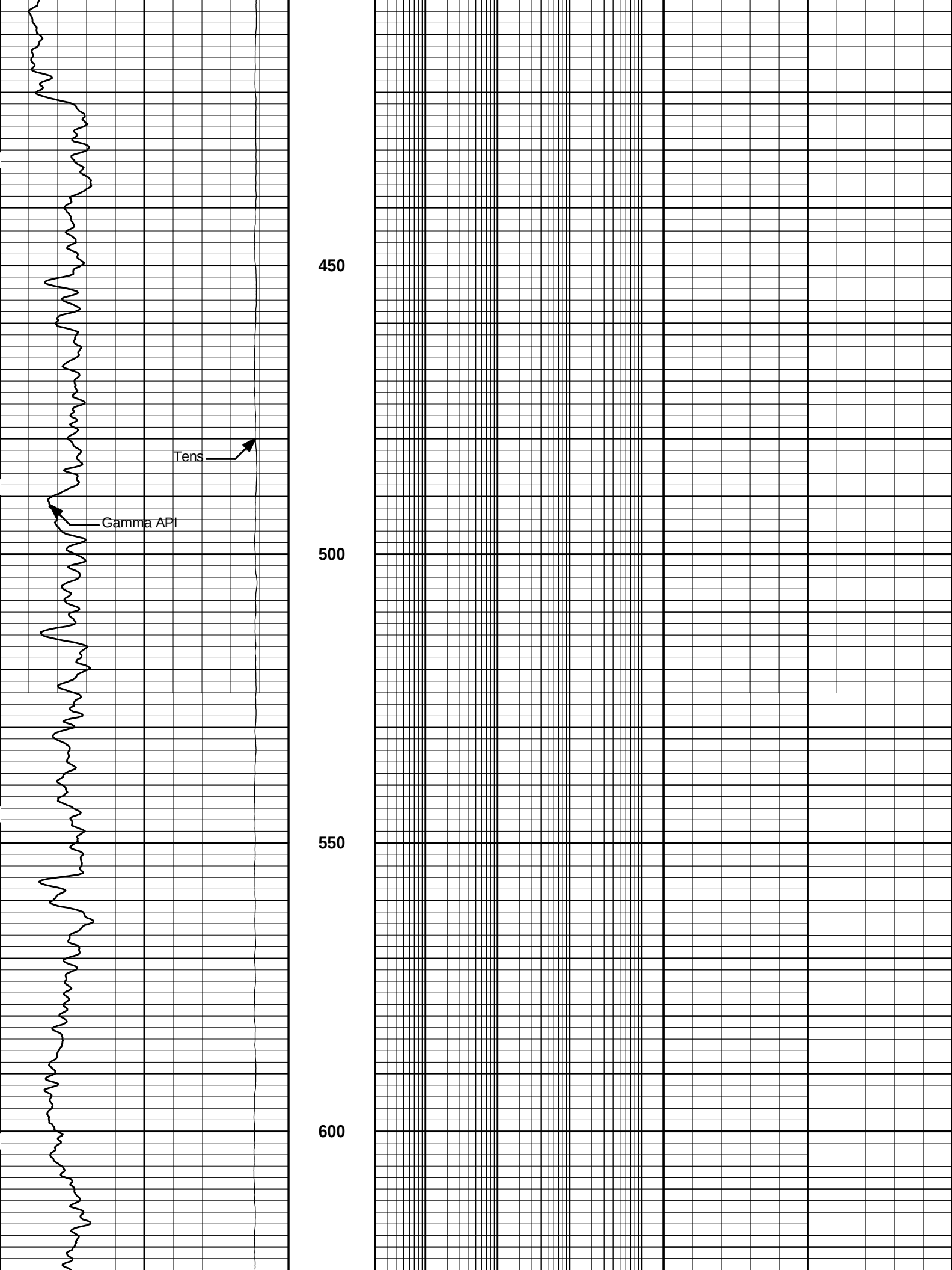
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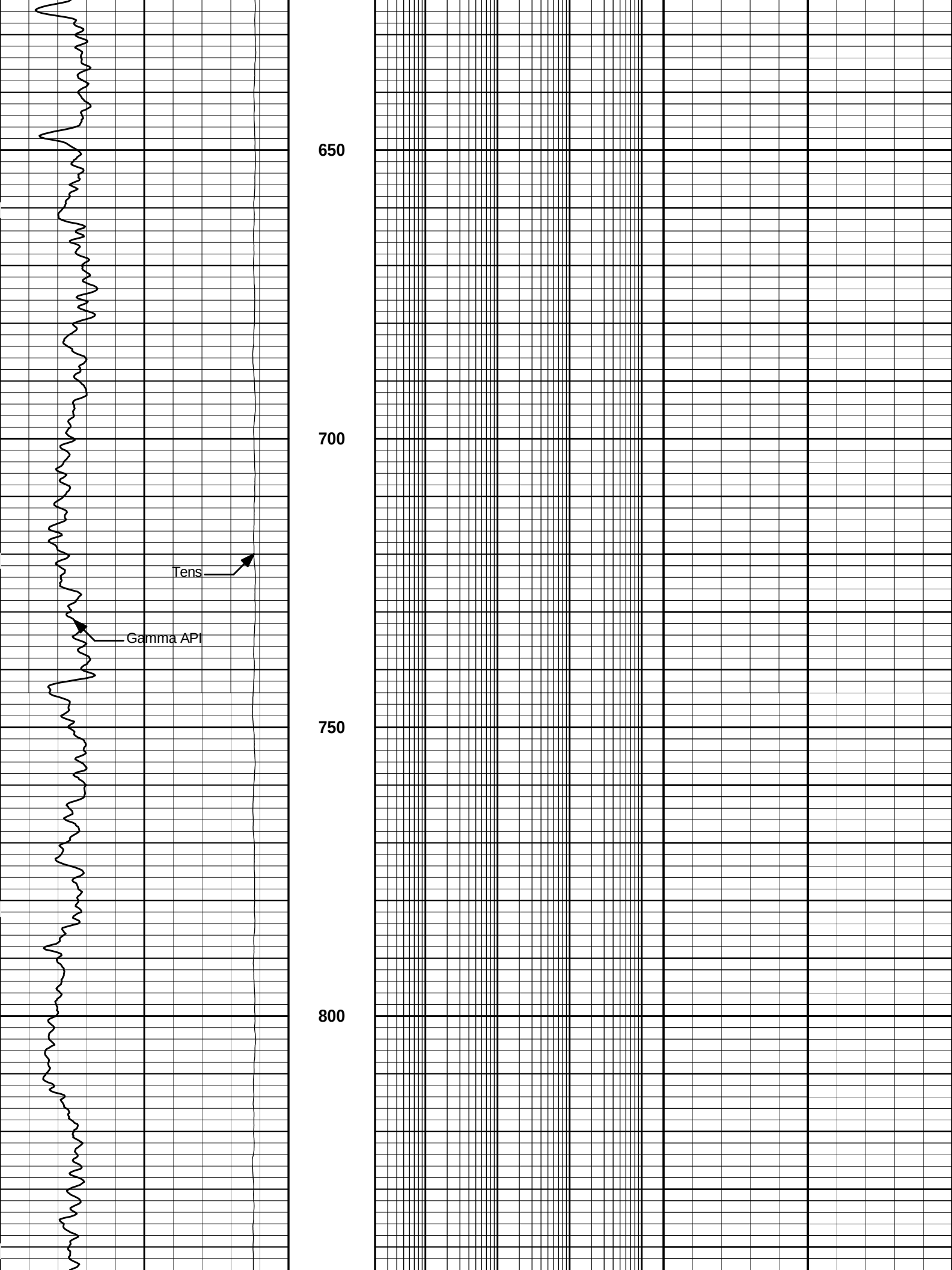
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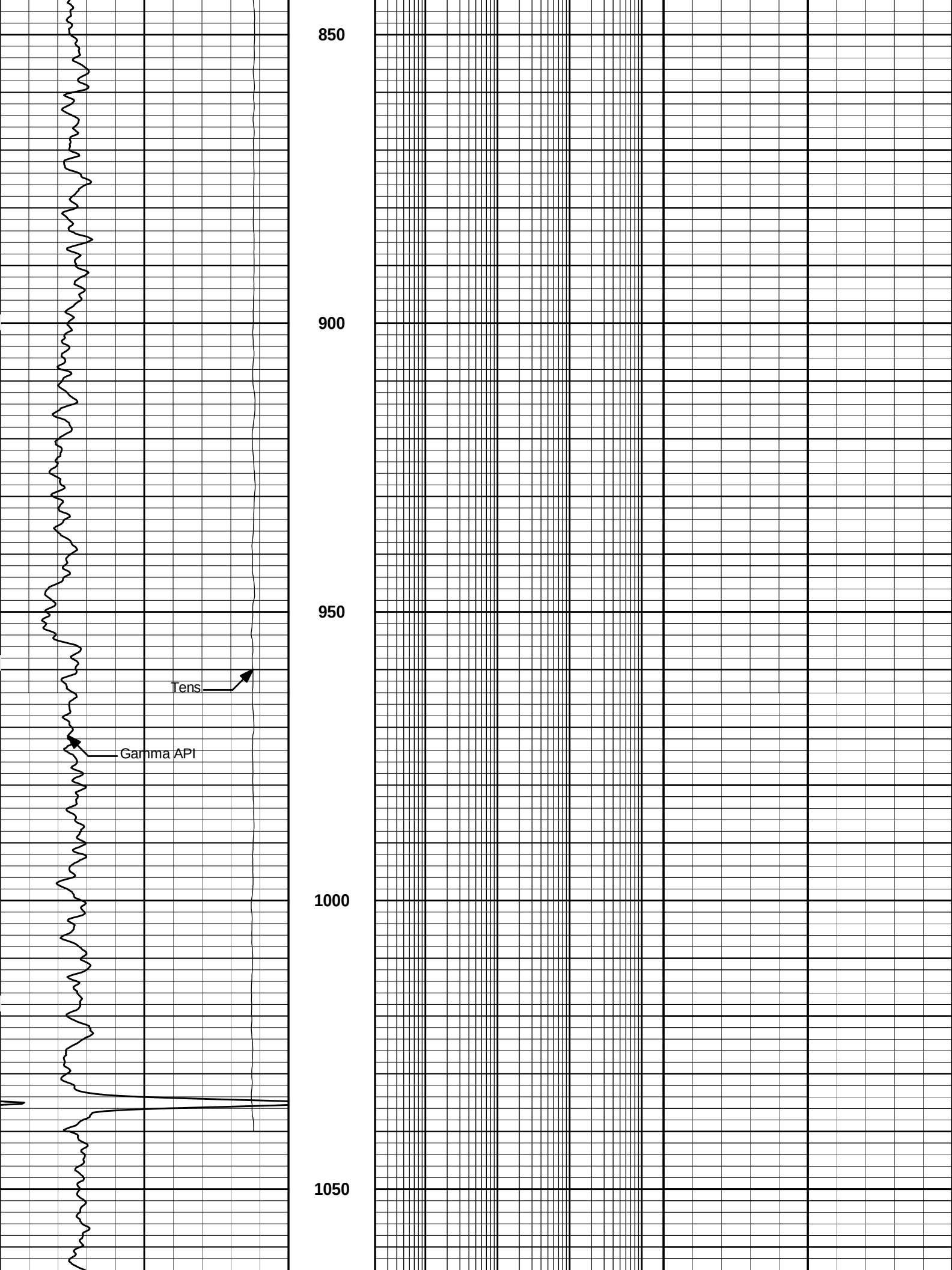
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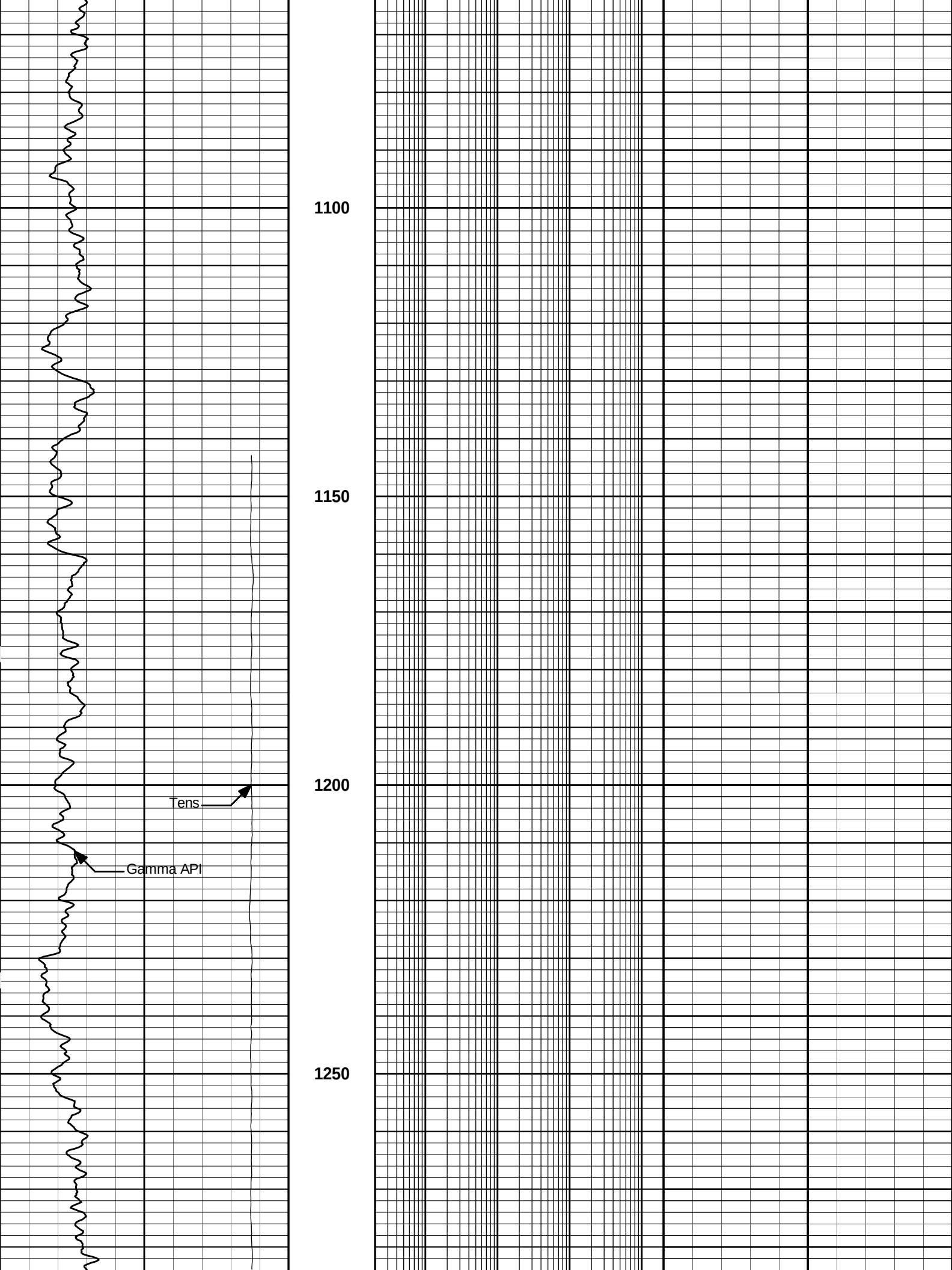
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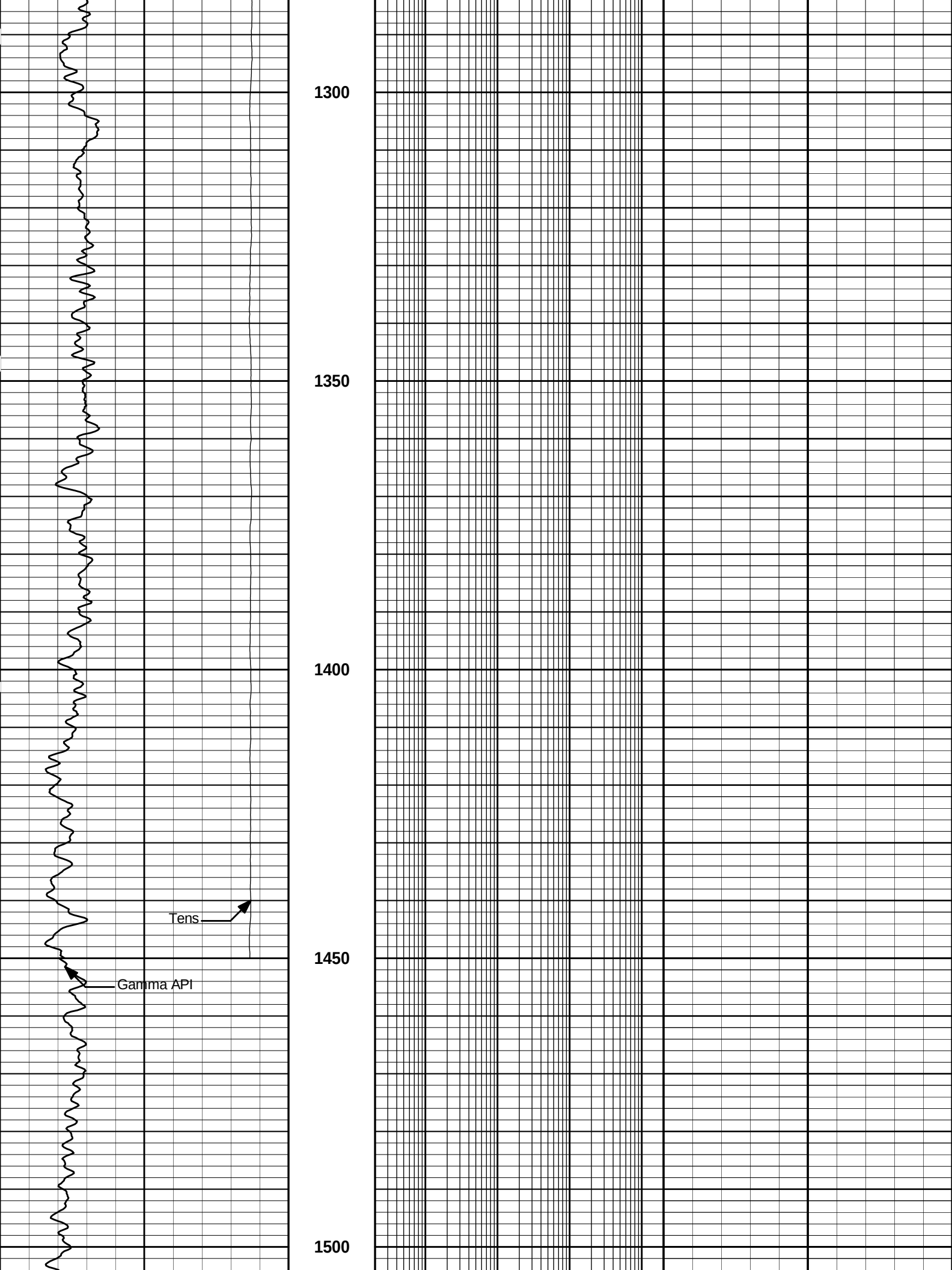
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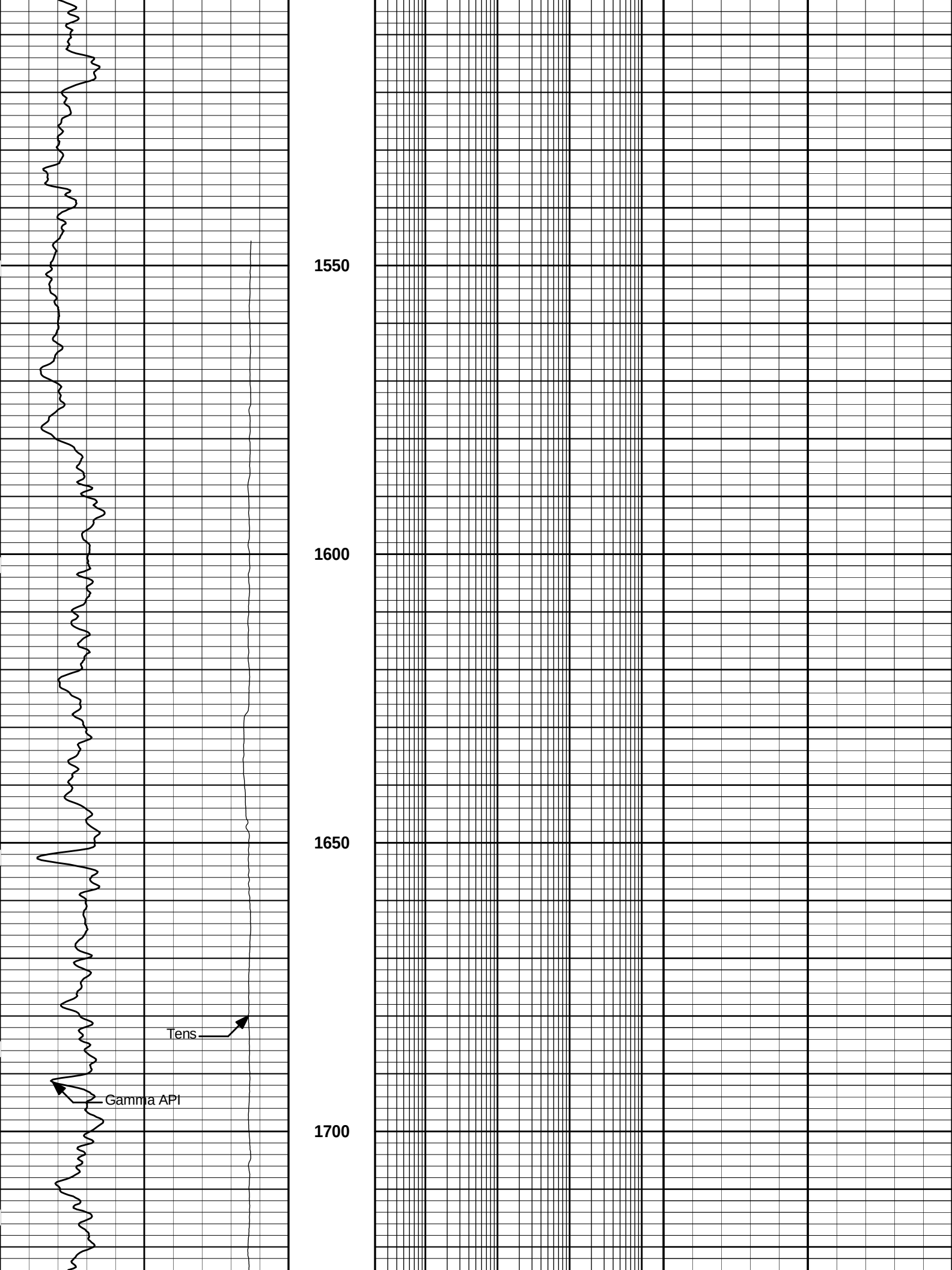
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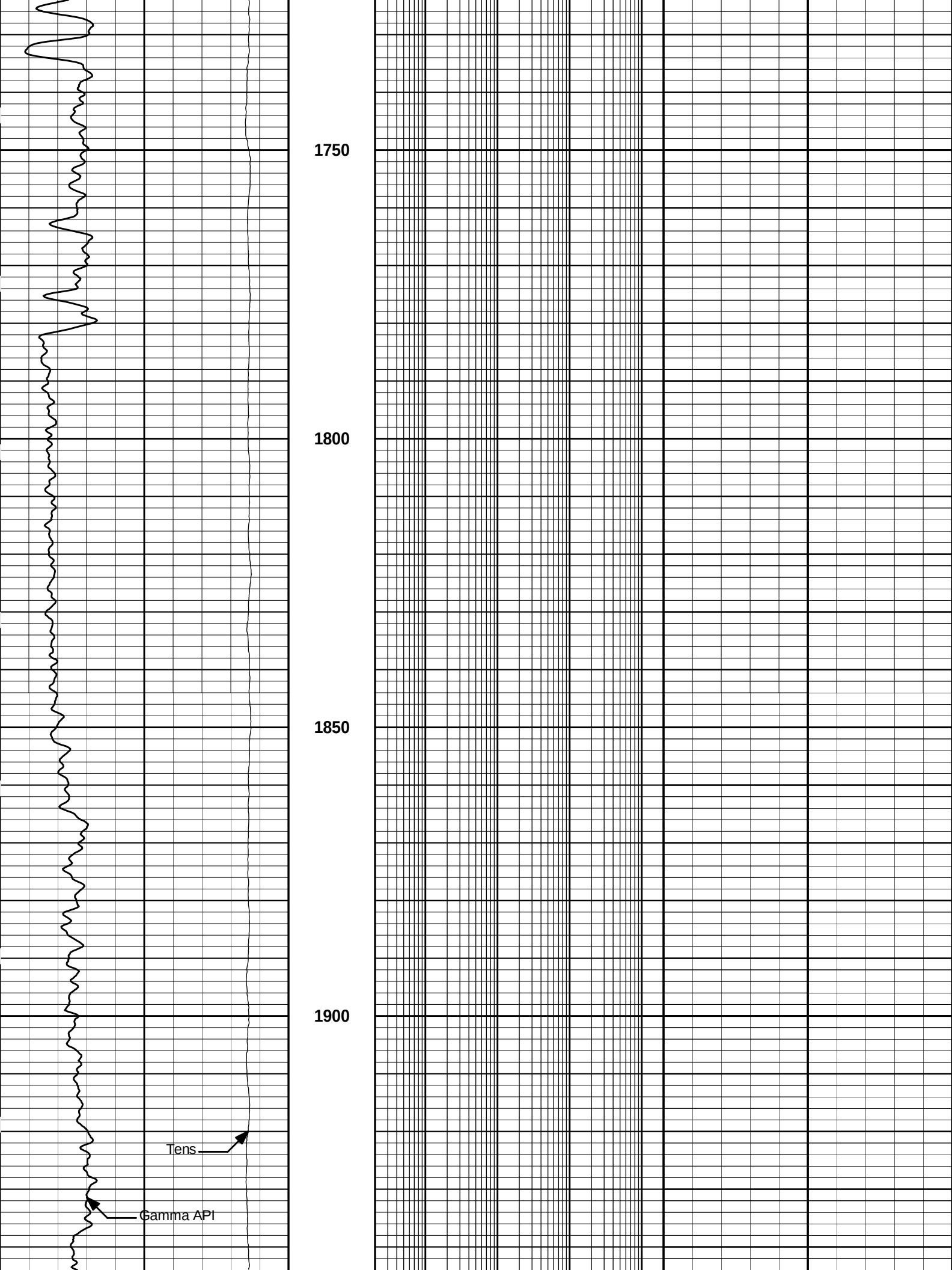
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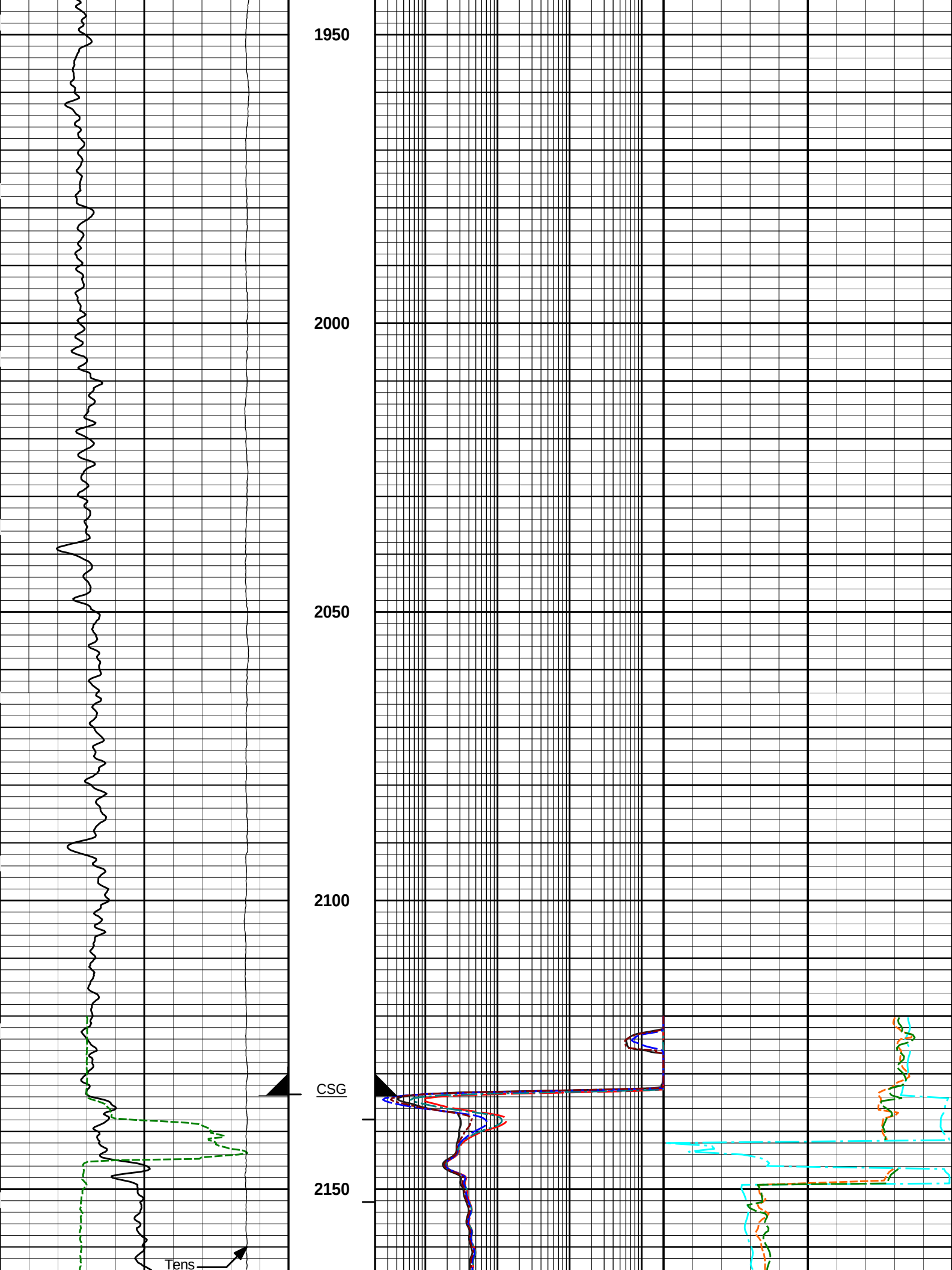
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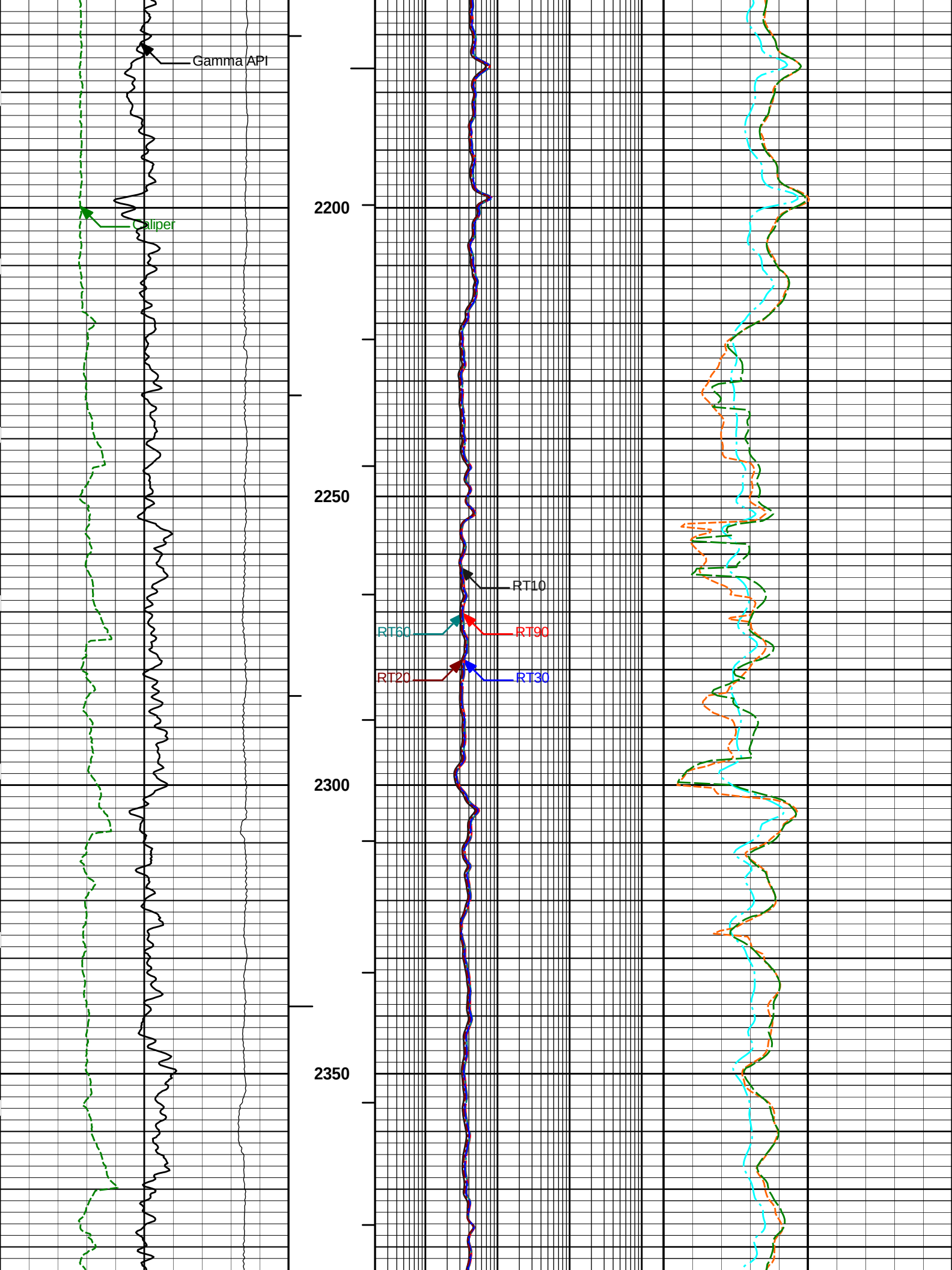
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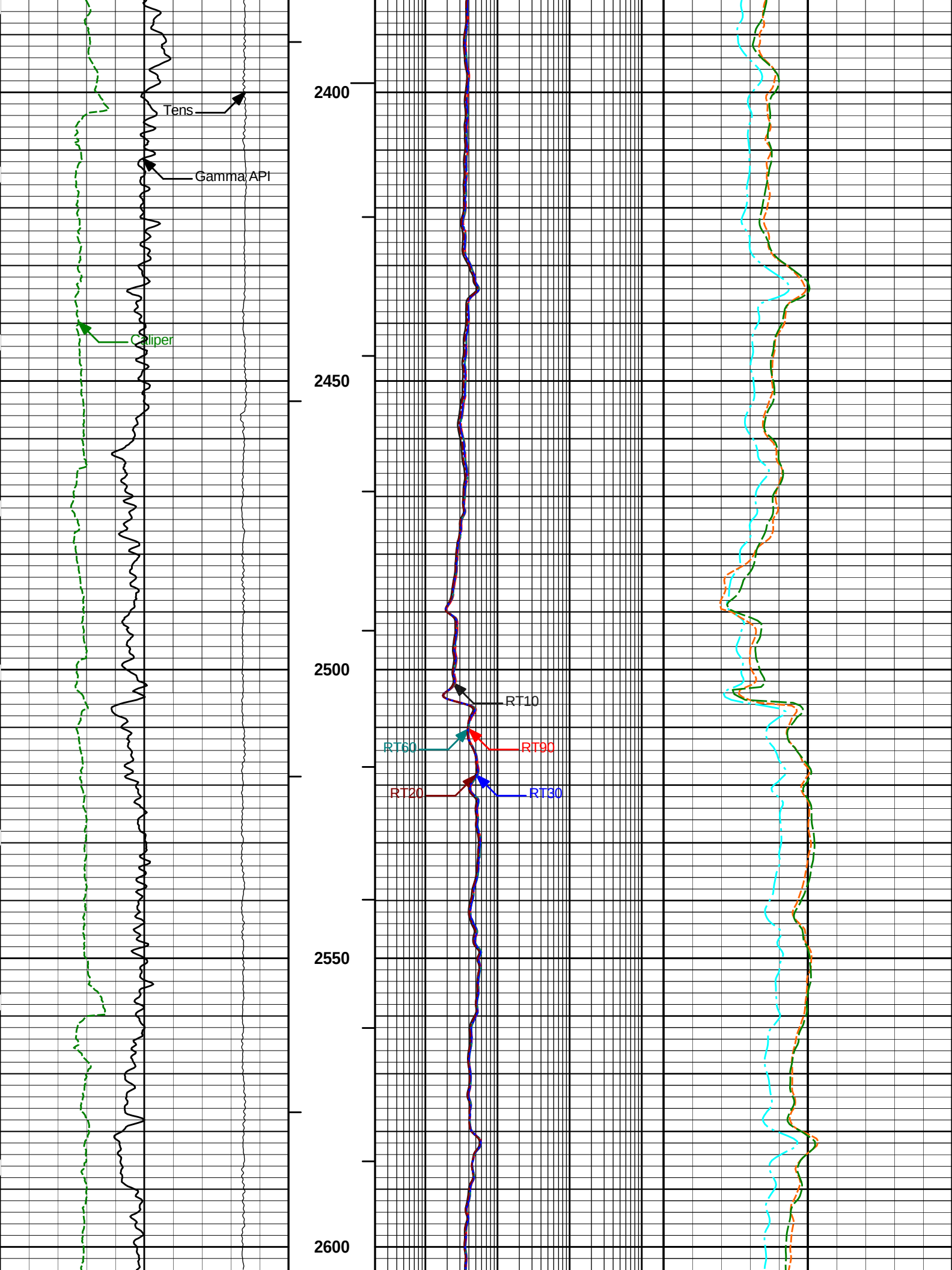
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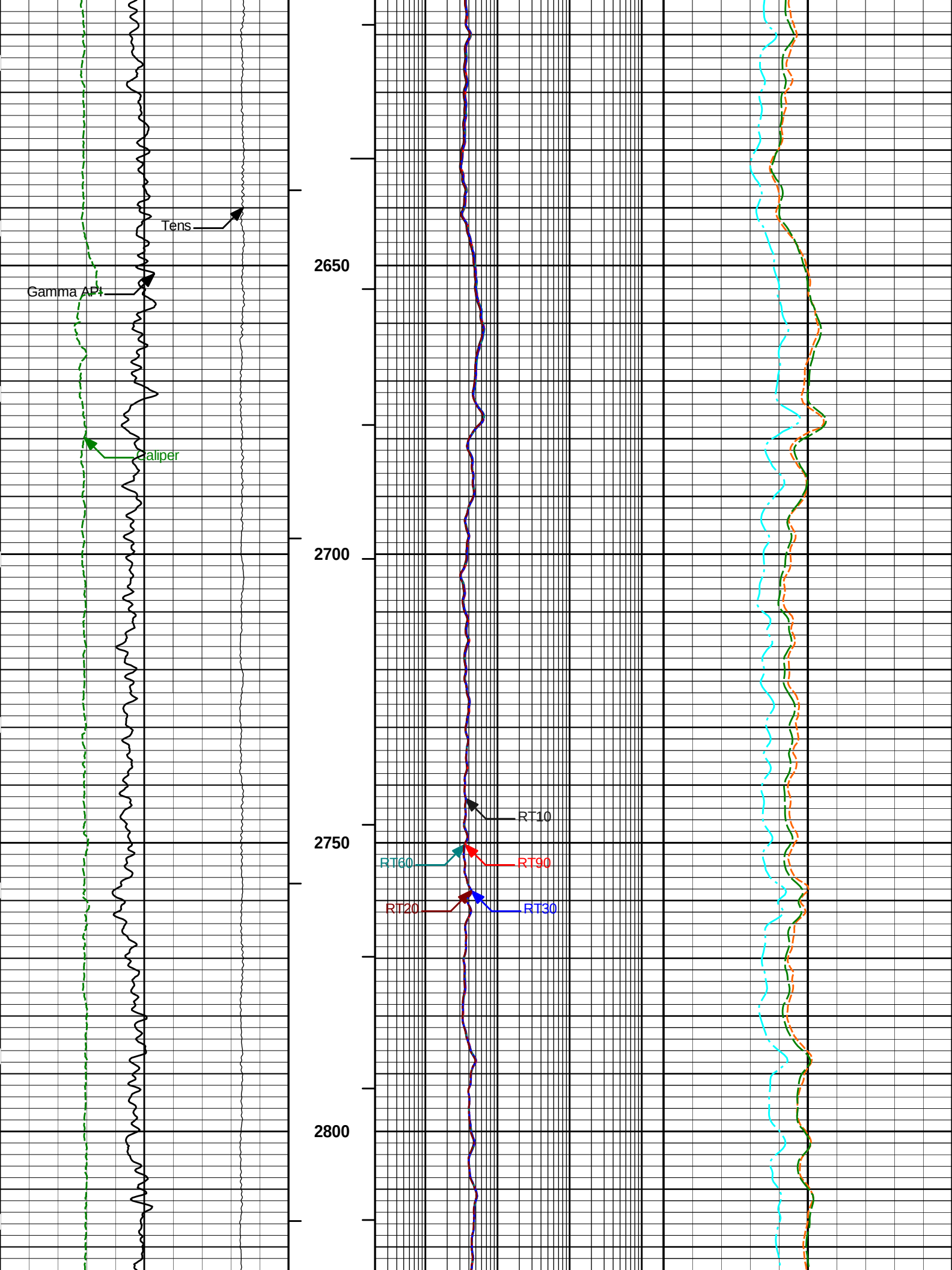
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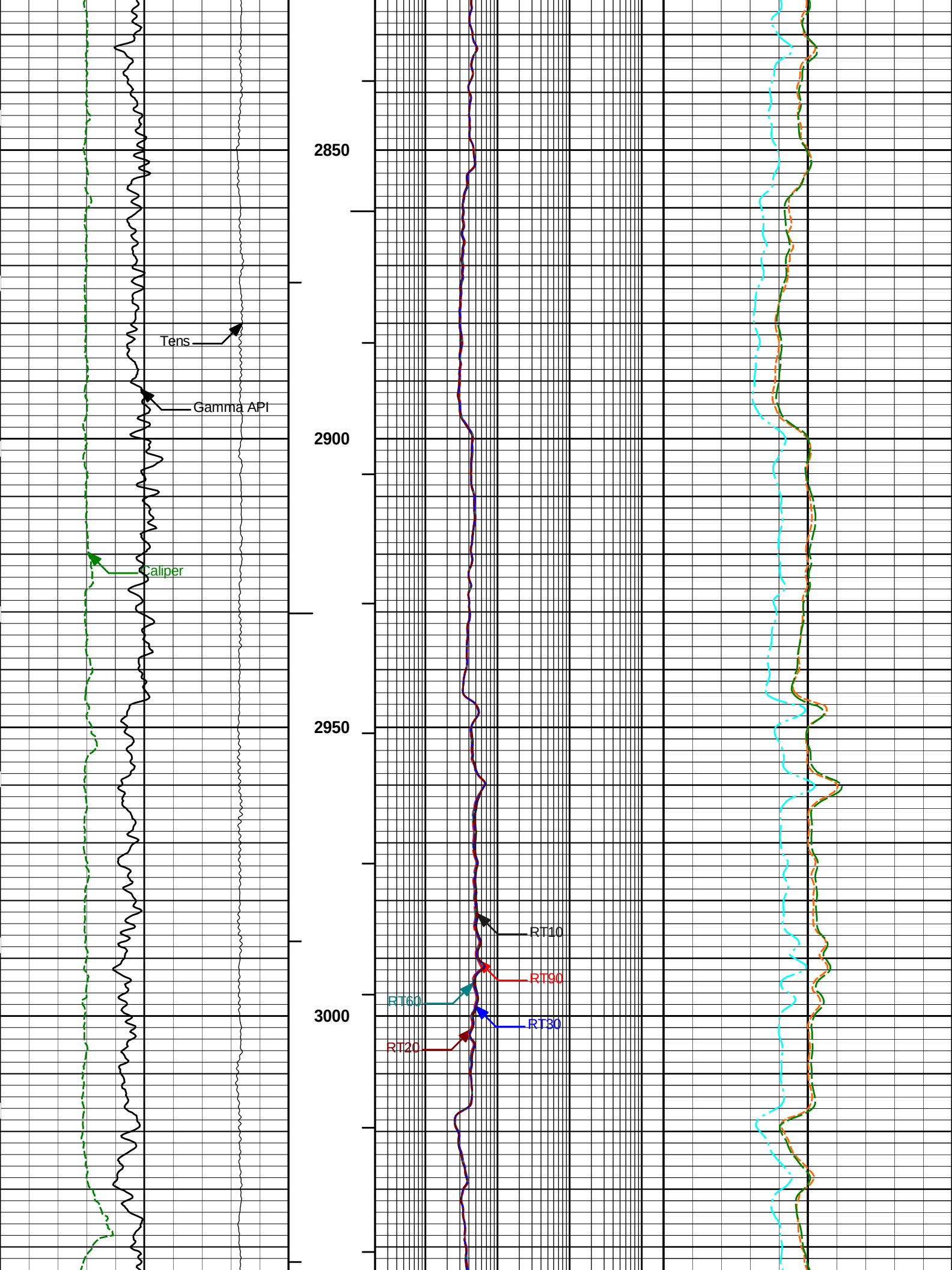
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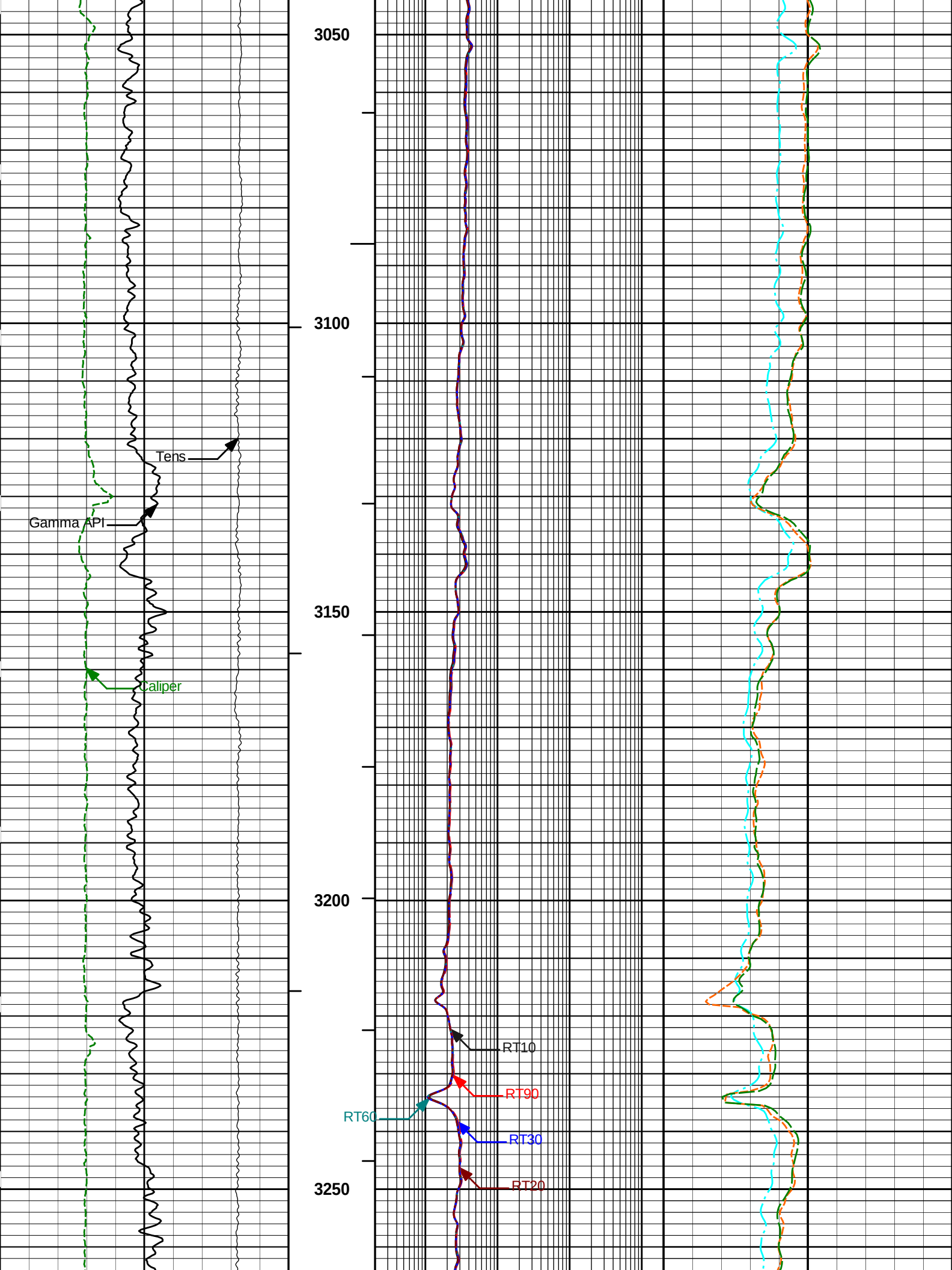
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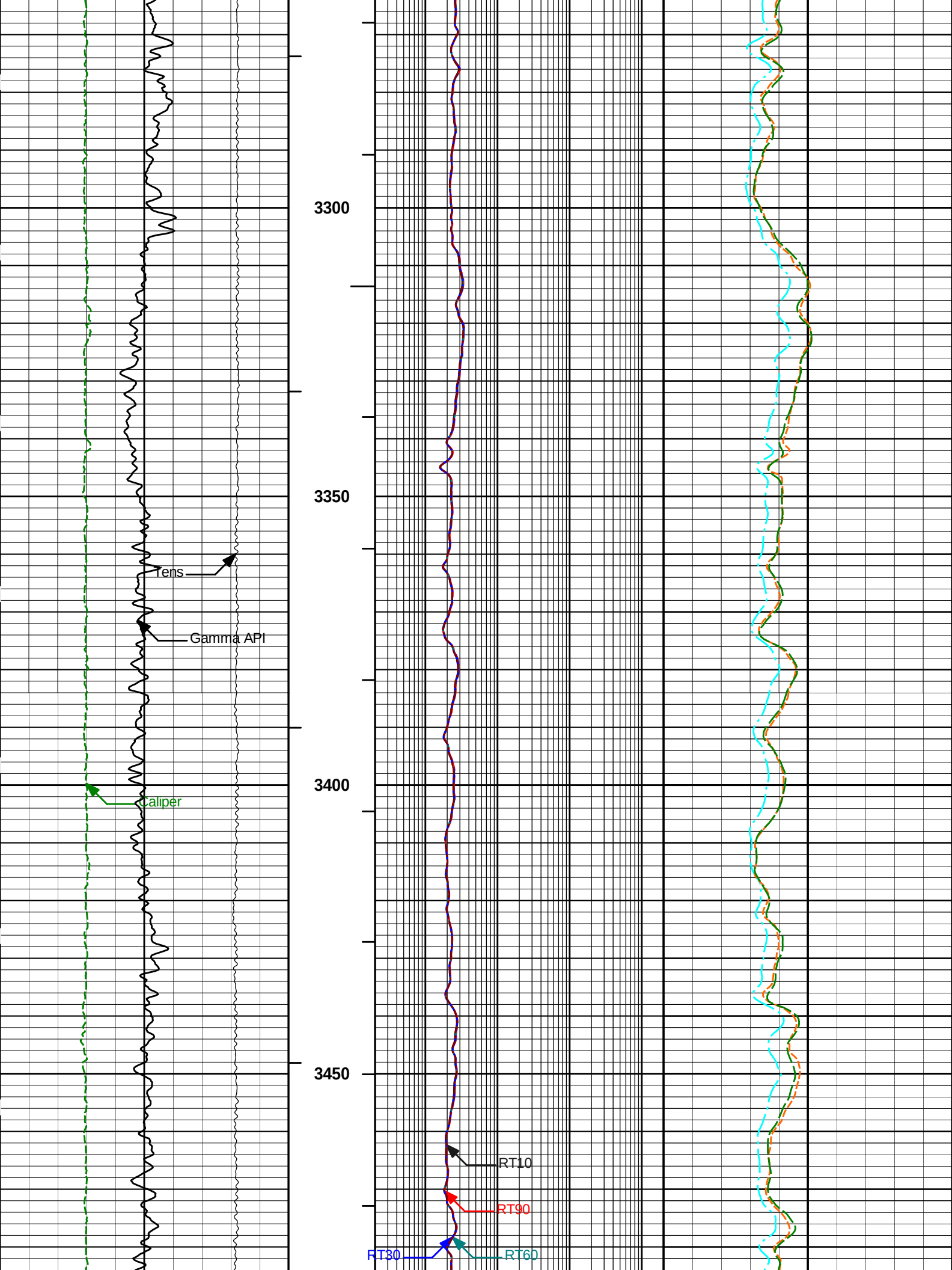
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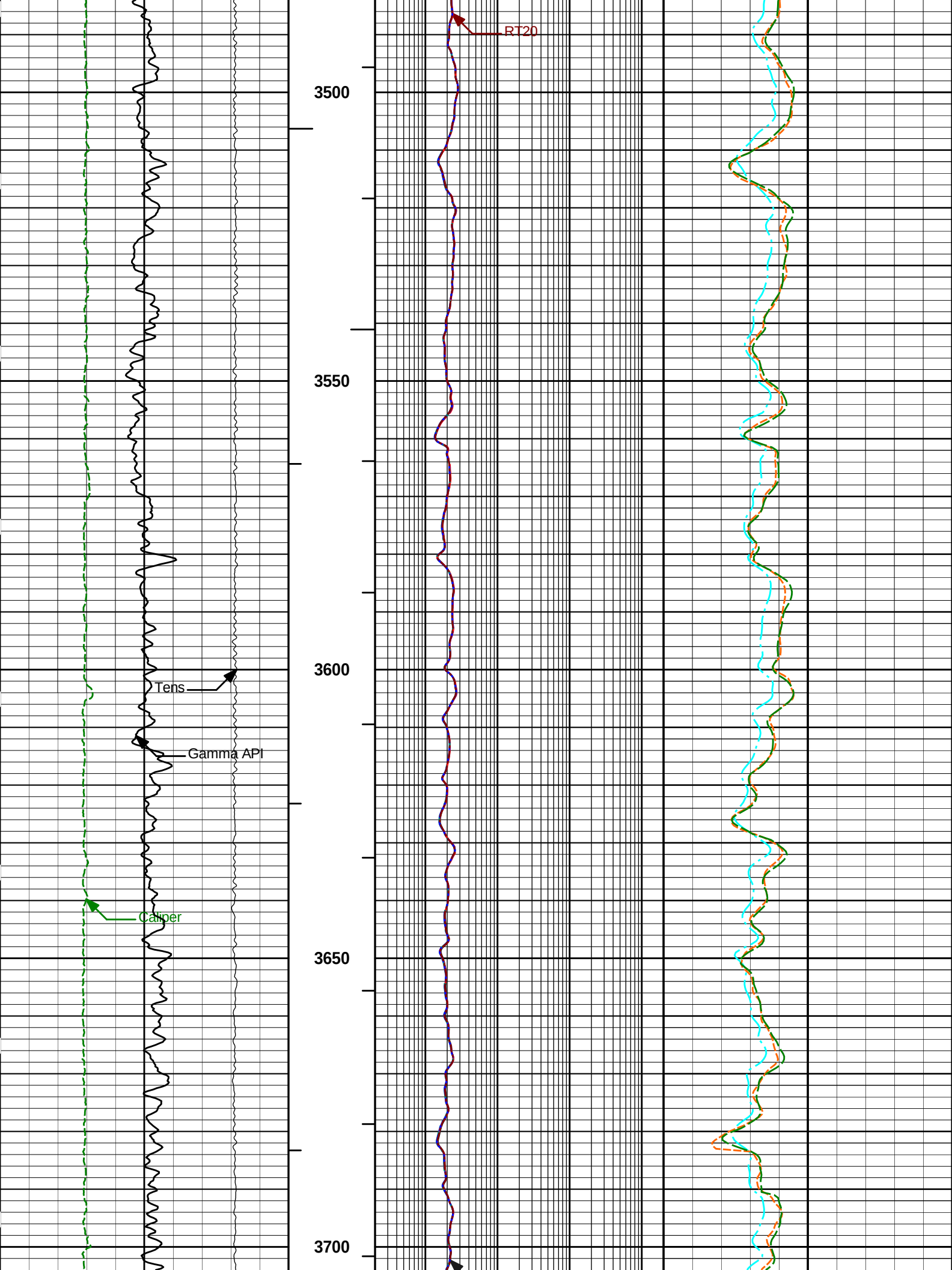
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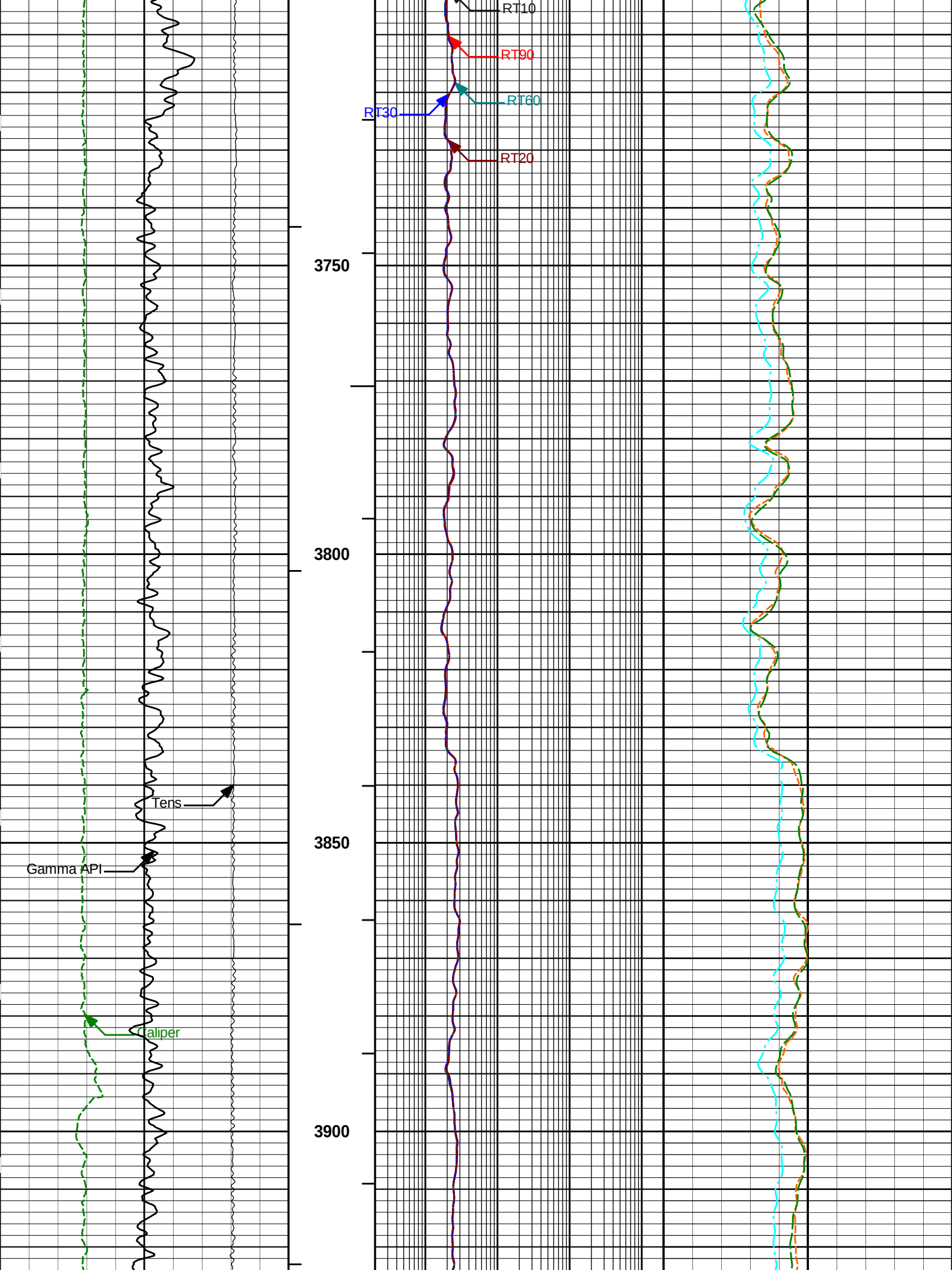
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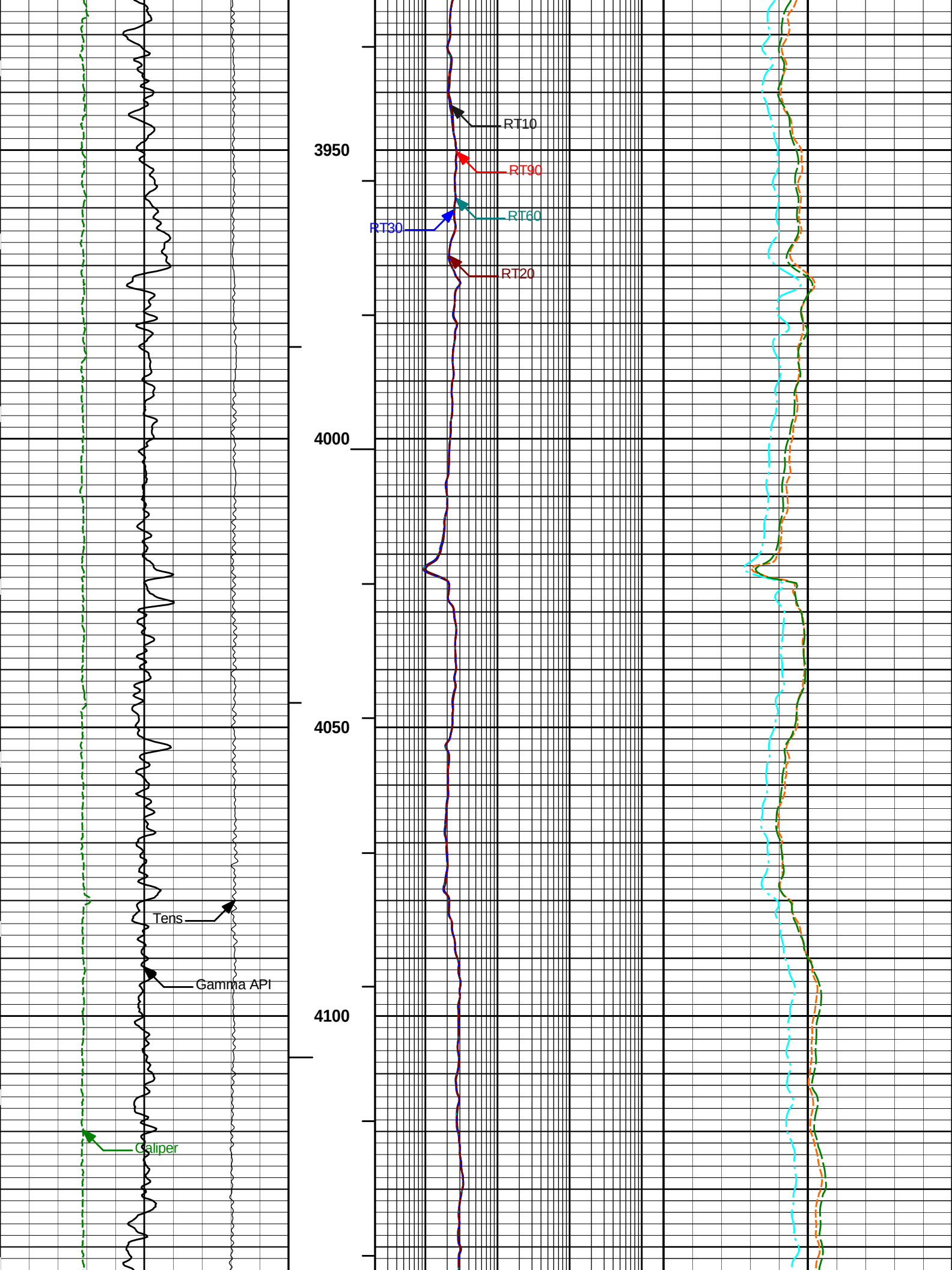
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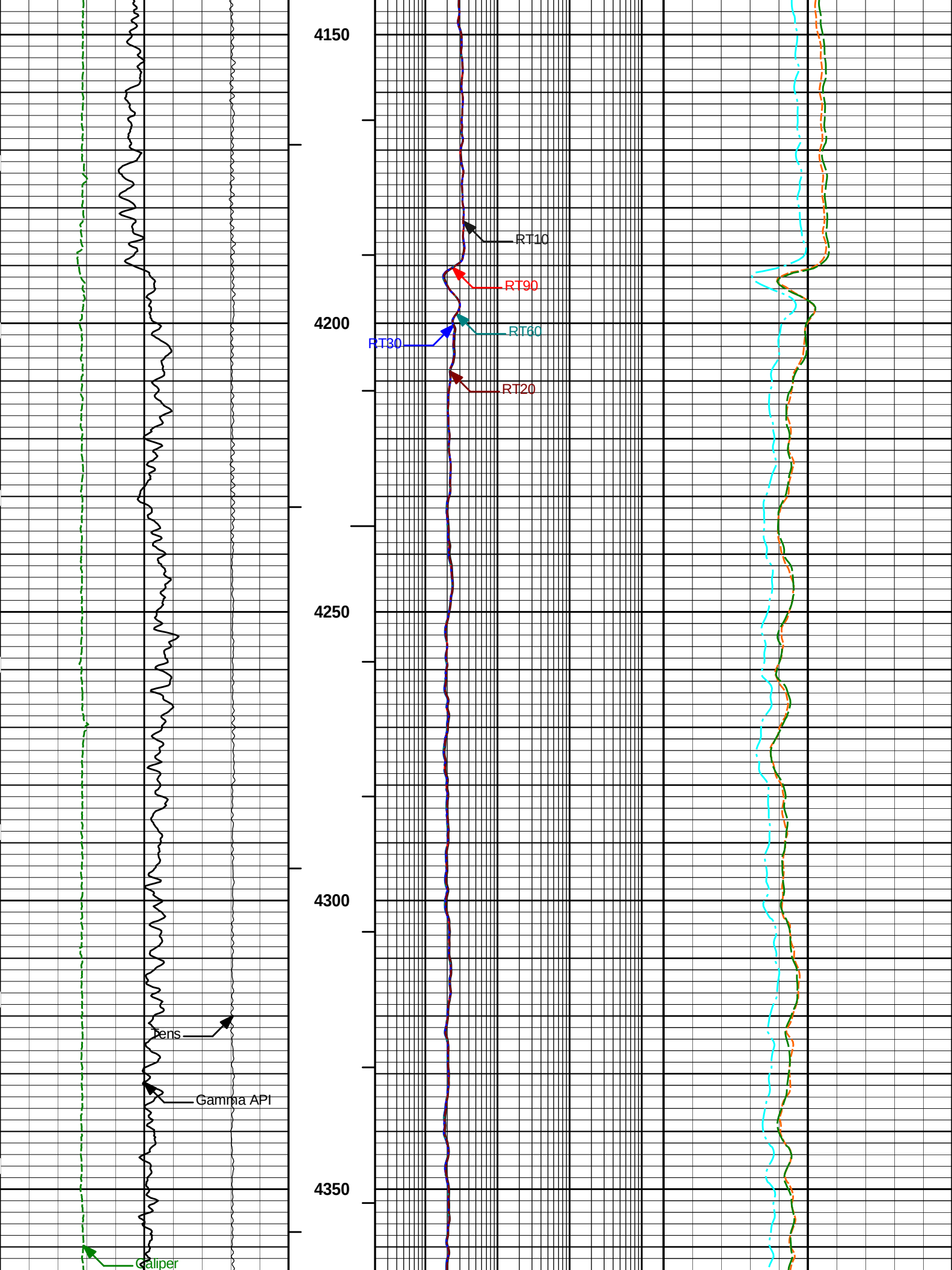
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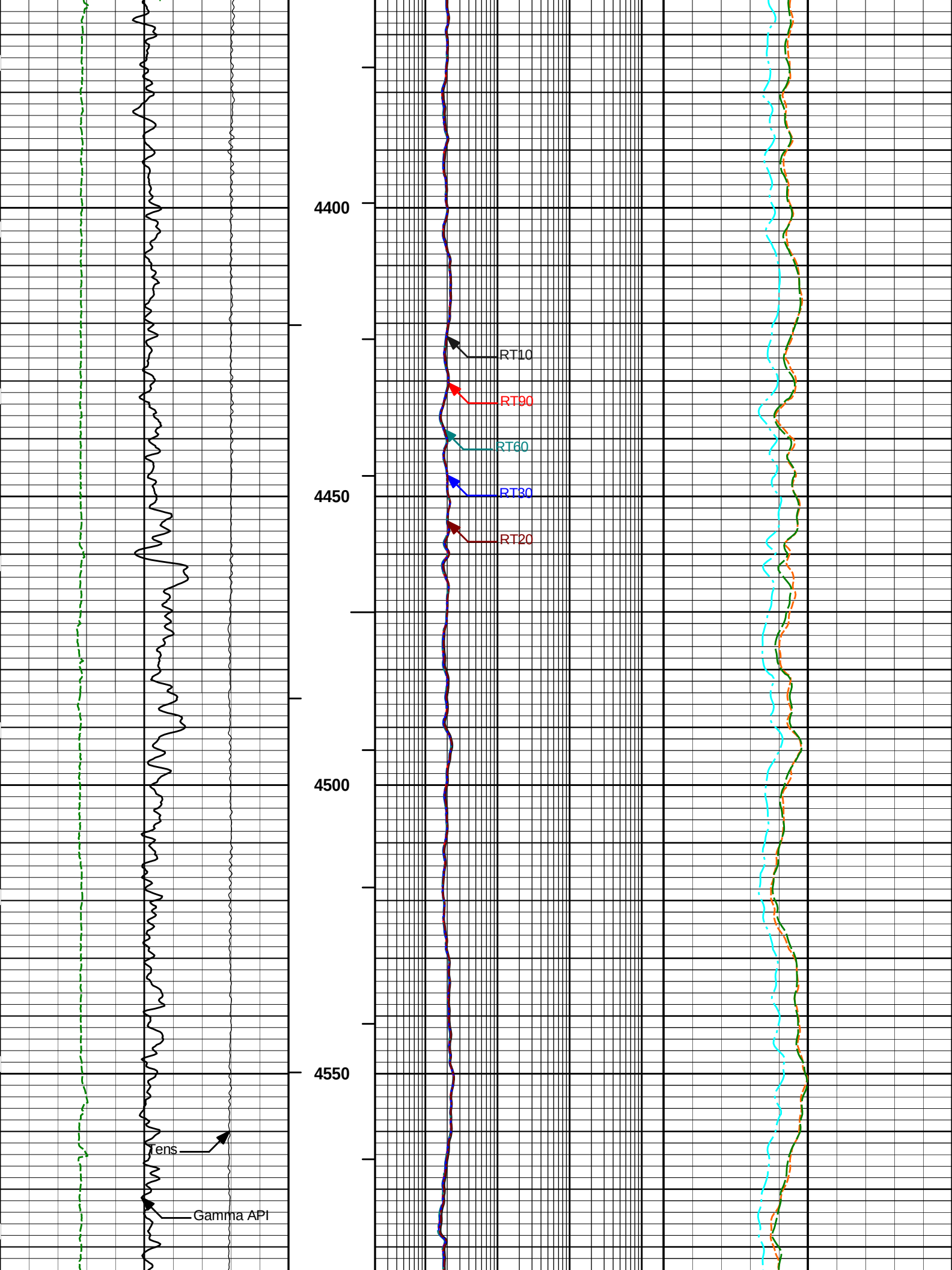
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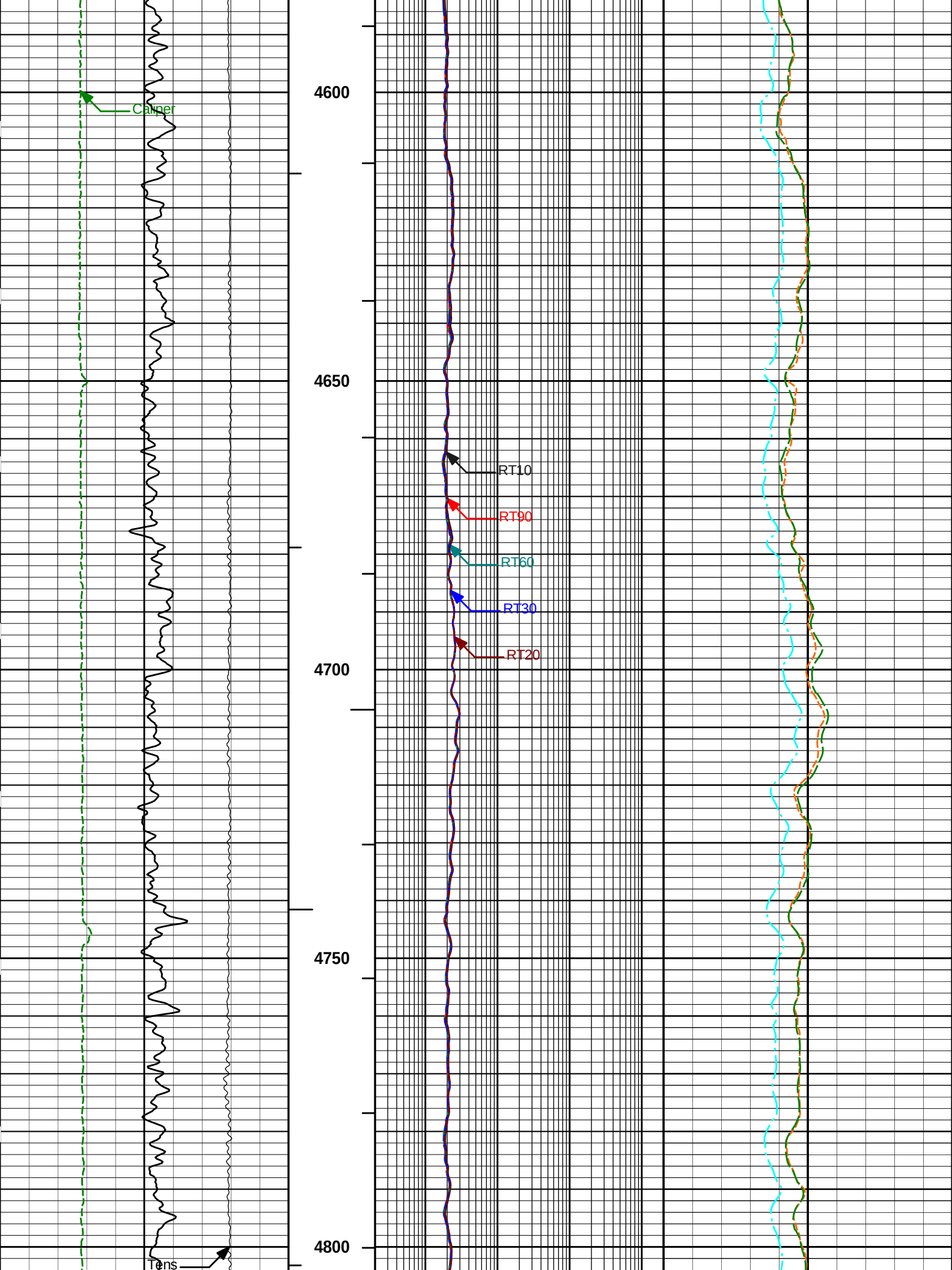
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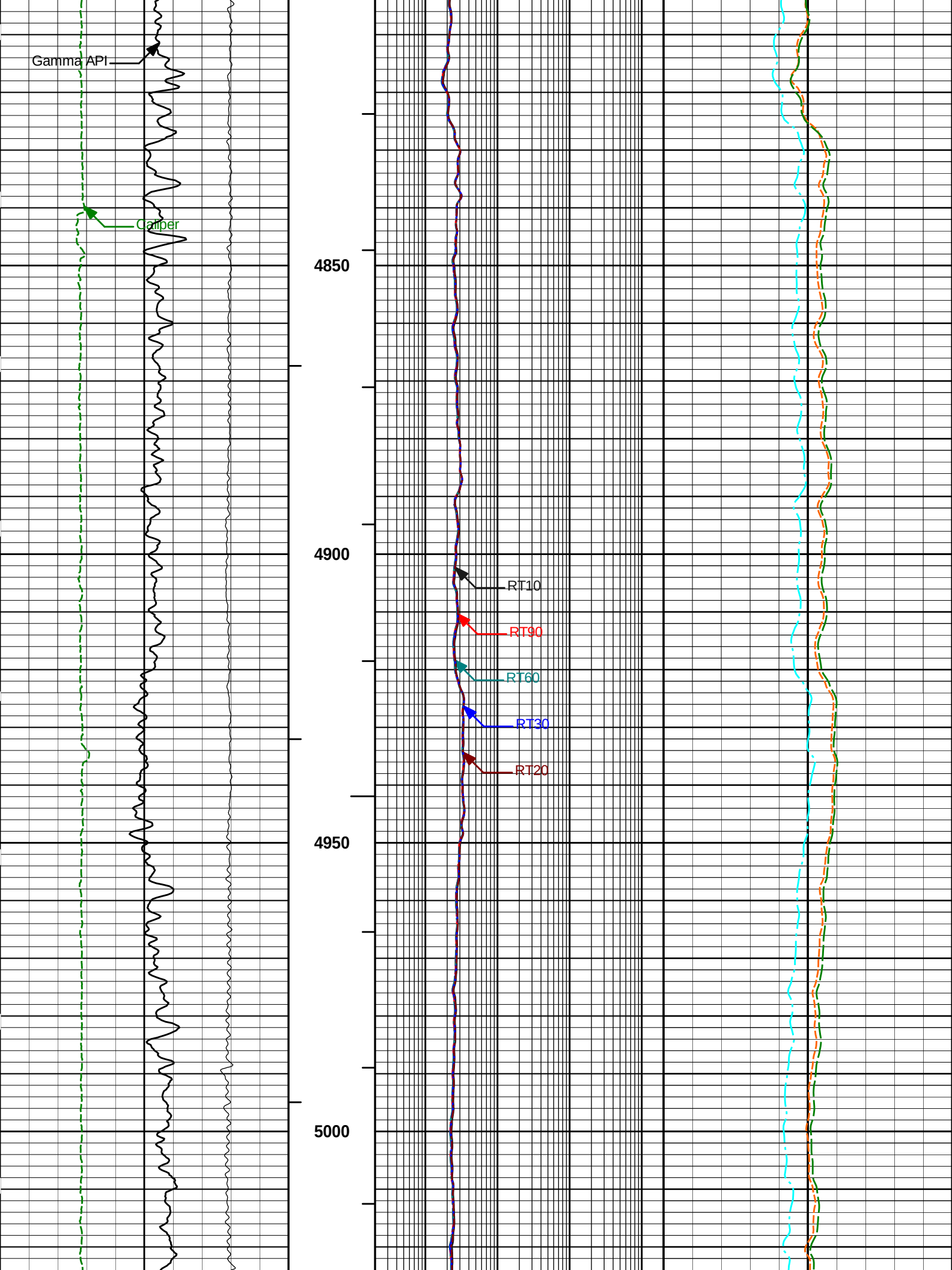
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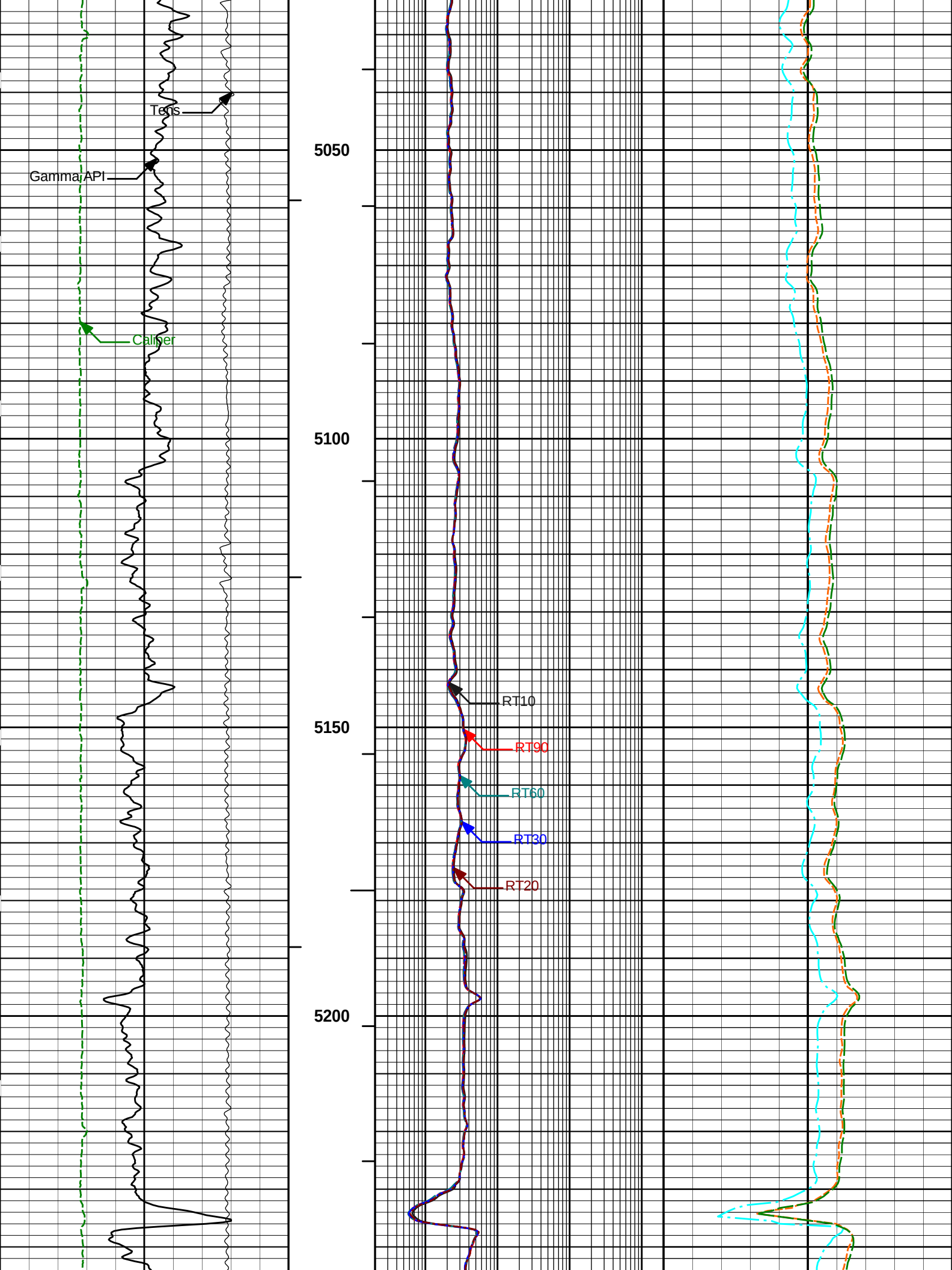
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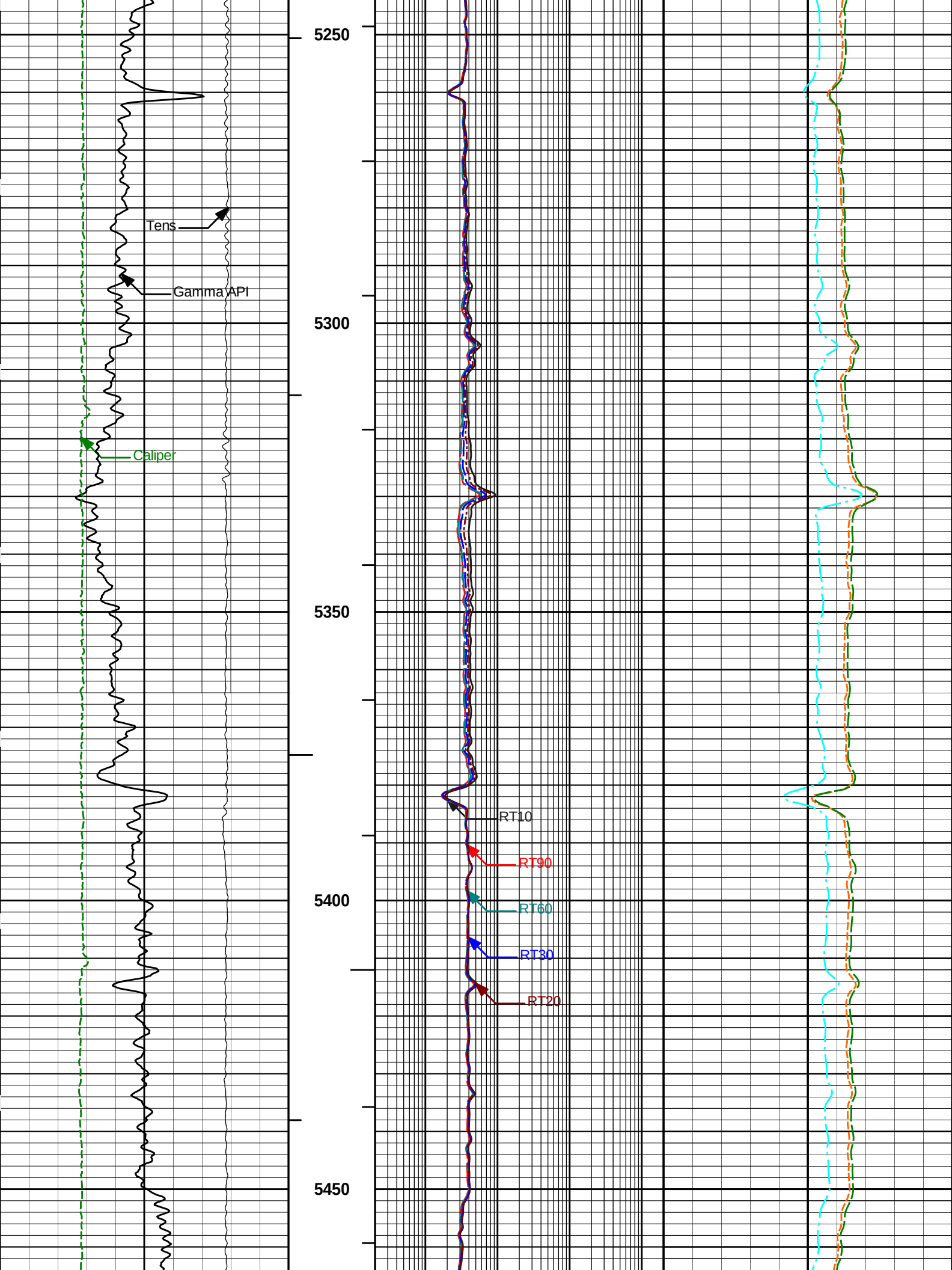
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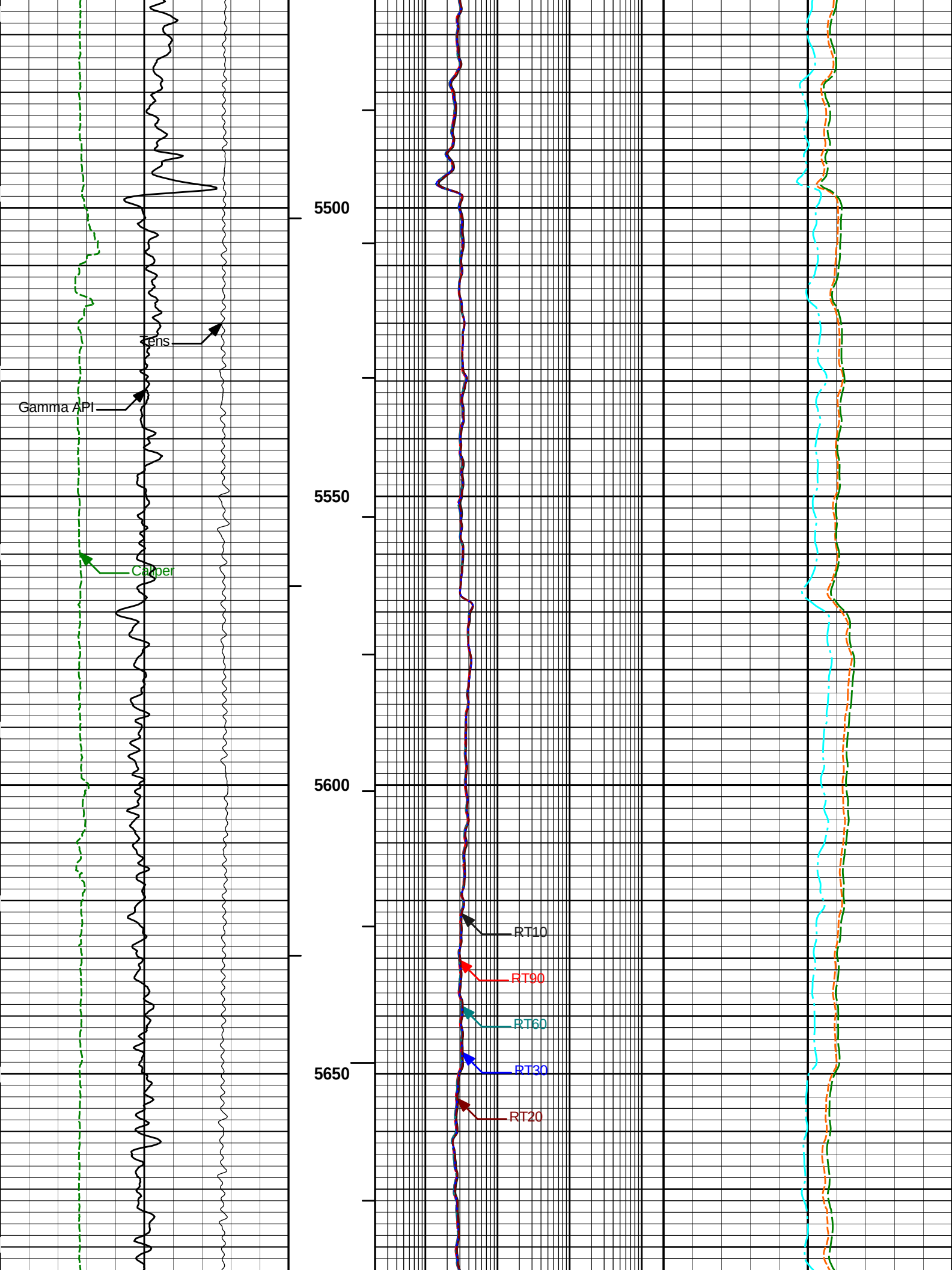
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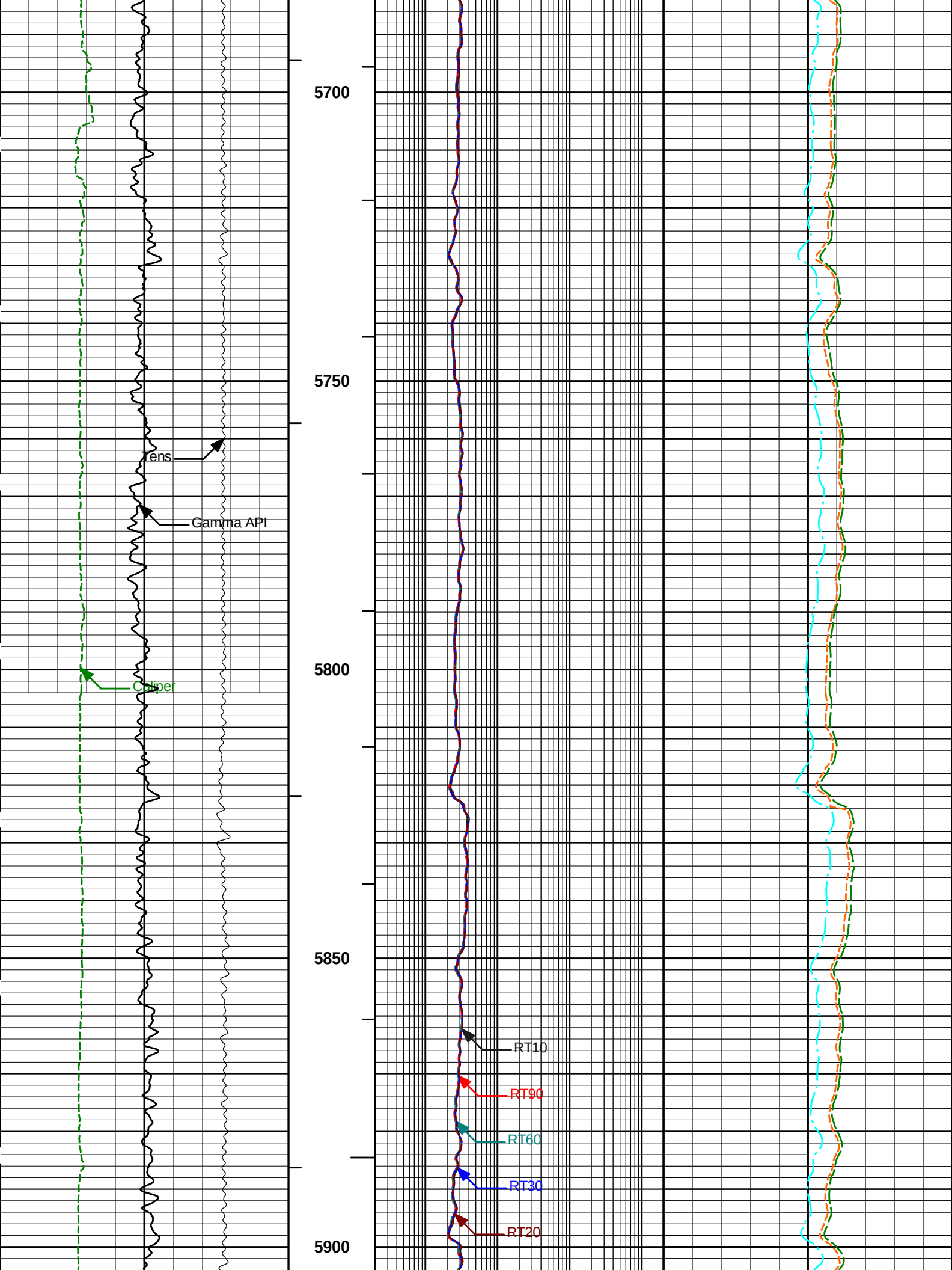
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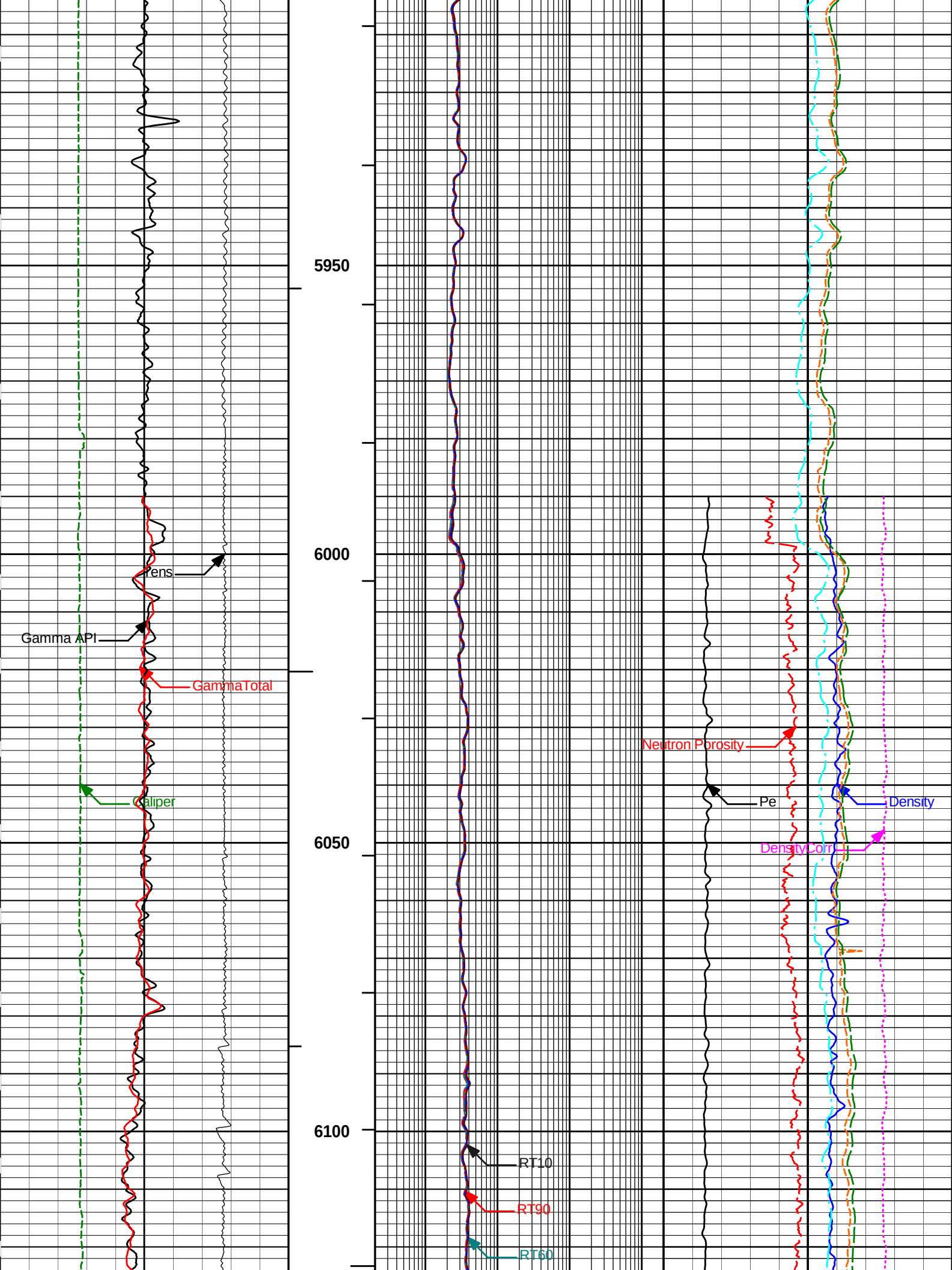
RT20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6000
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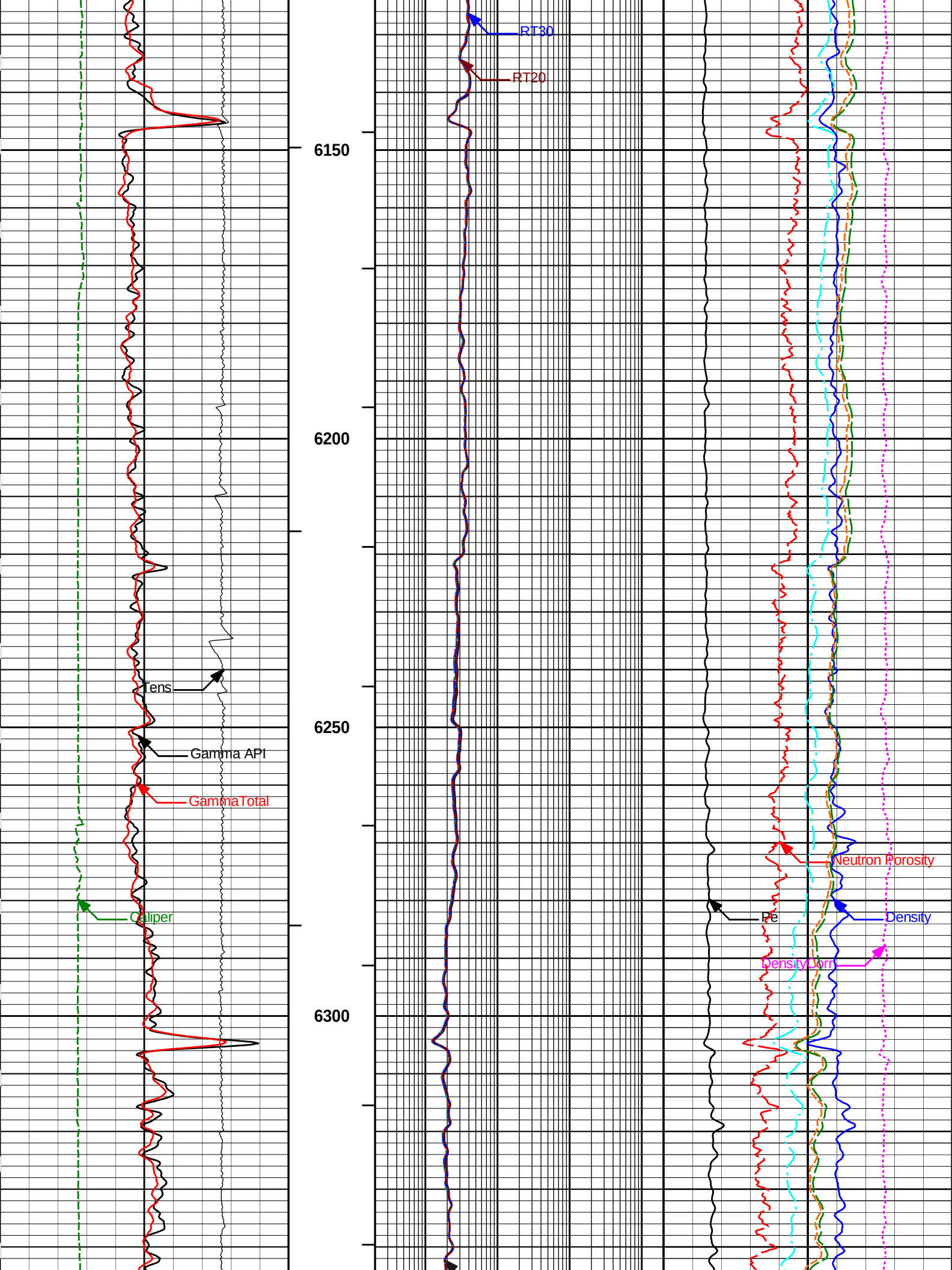
6100
Tens
Gamma API
GammaTotal
Caliper
RT10
RT90
RT60
Neutron Porosity
Pe
Density
DensityCorr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Tens
6250
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Neutron Porosity
Caliper
Pe
Density
Density Corr
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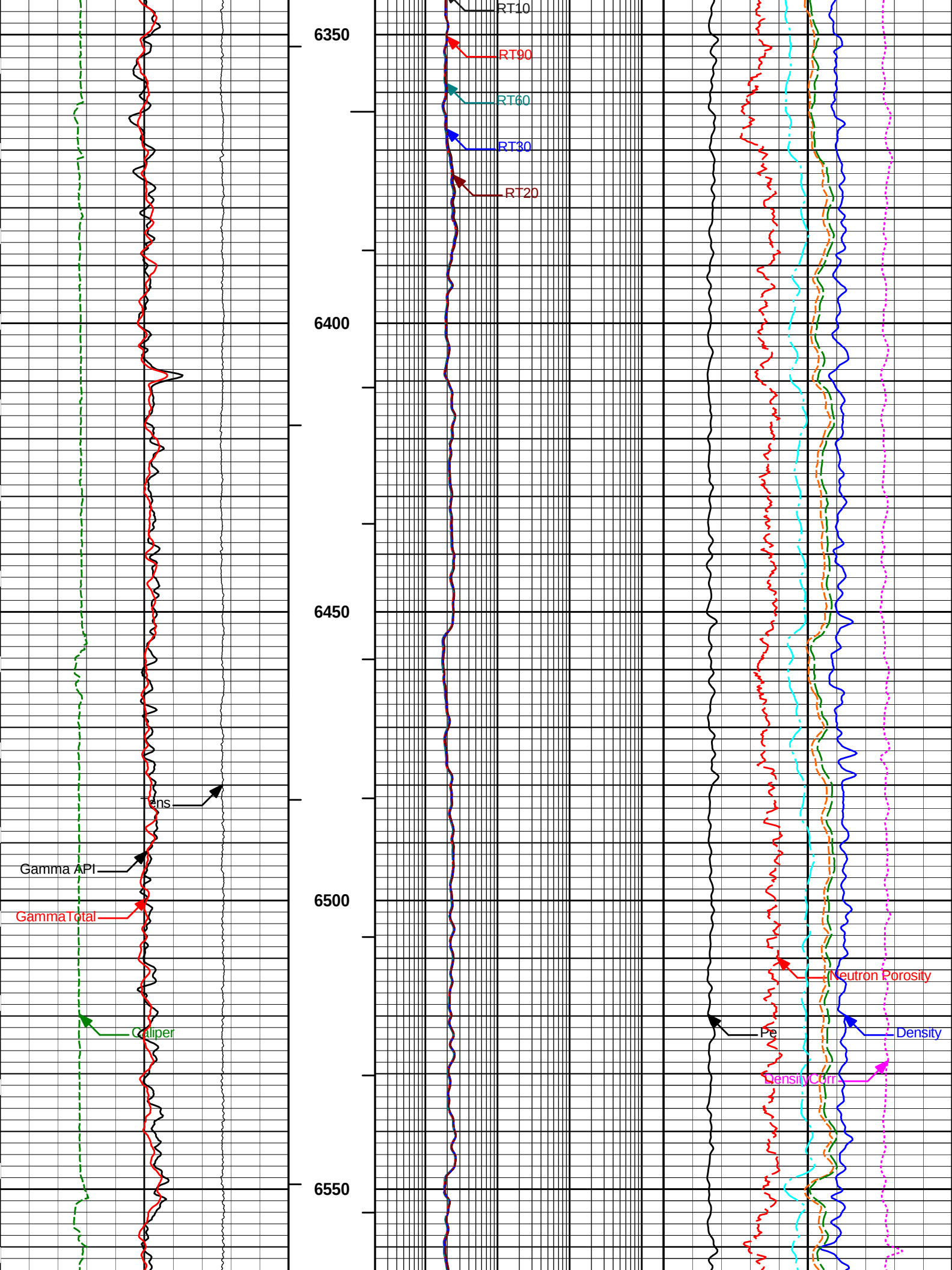
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RT20
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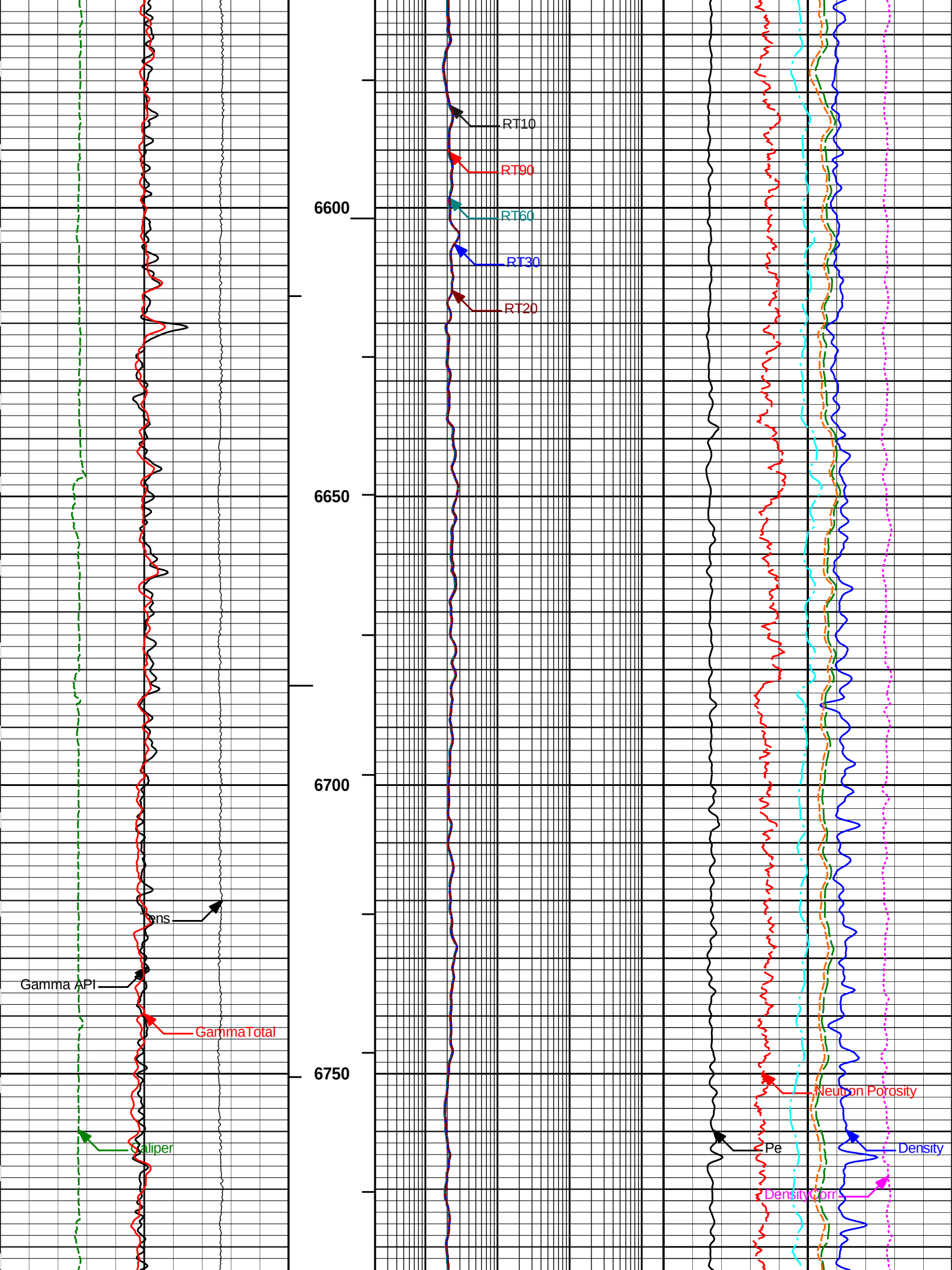
6500
6550
Tens
Gamma API
GammaTotal
Caliper
Neutron Porosity
Pe
Density
DensityCorr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RT90
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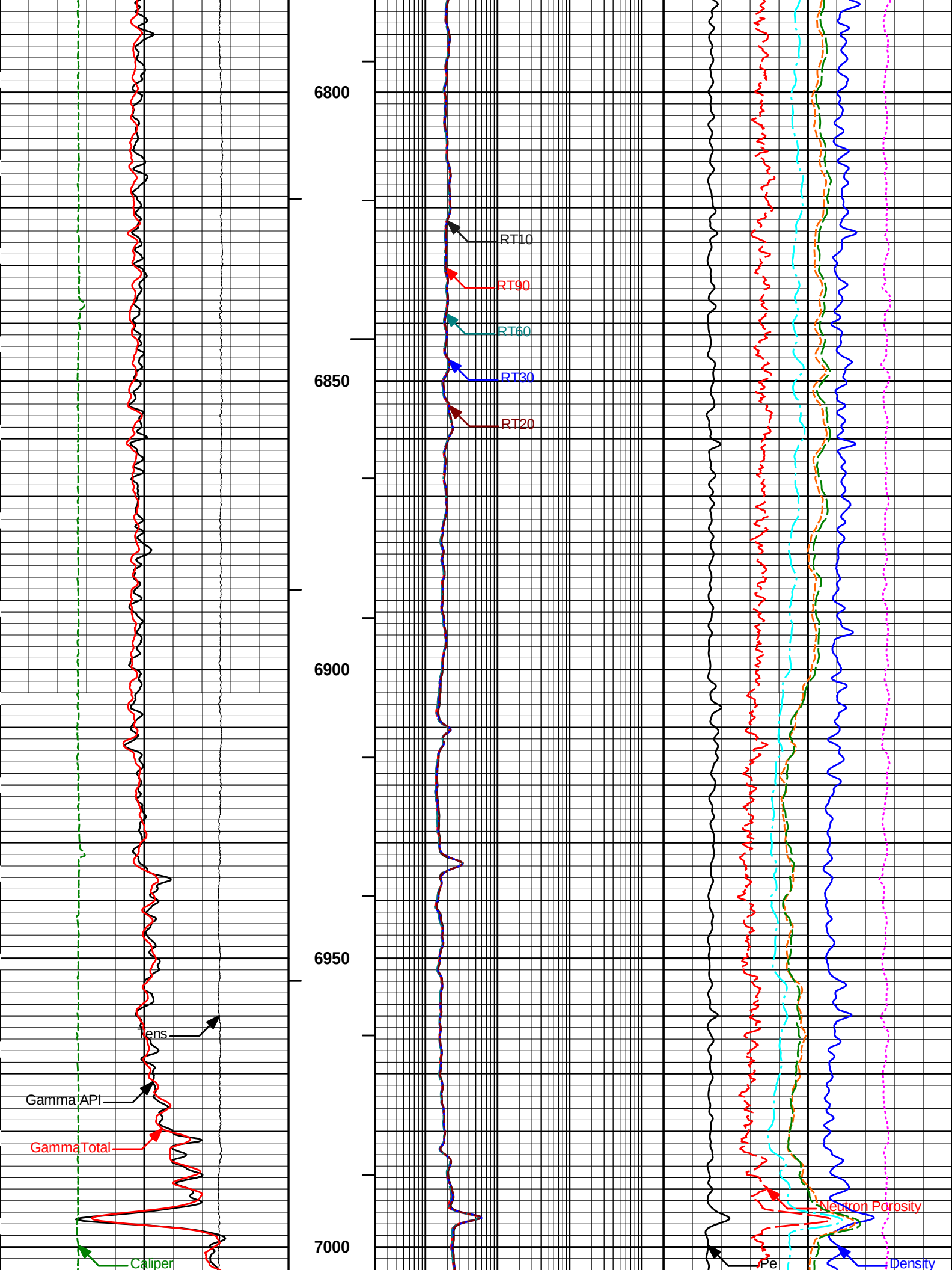
GammaTotal
Caliper
Neutron Porosity
Pe
Density
DensityCorr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6850
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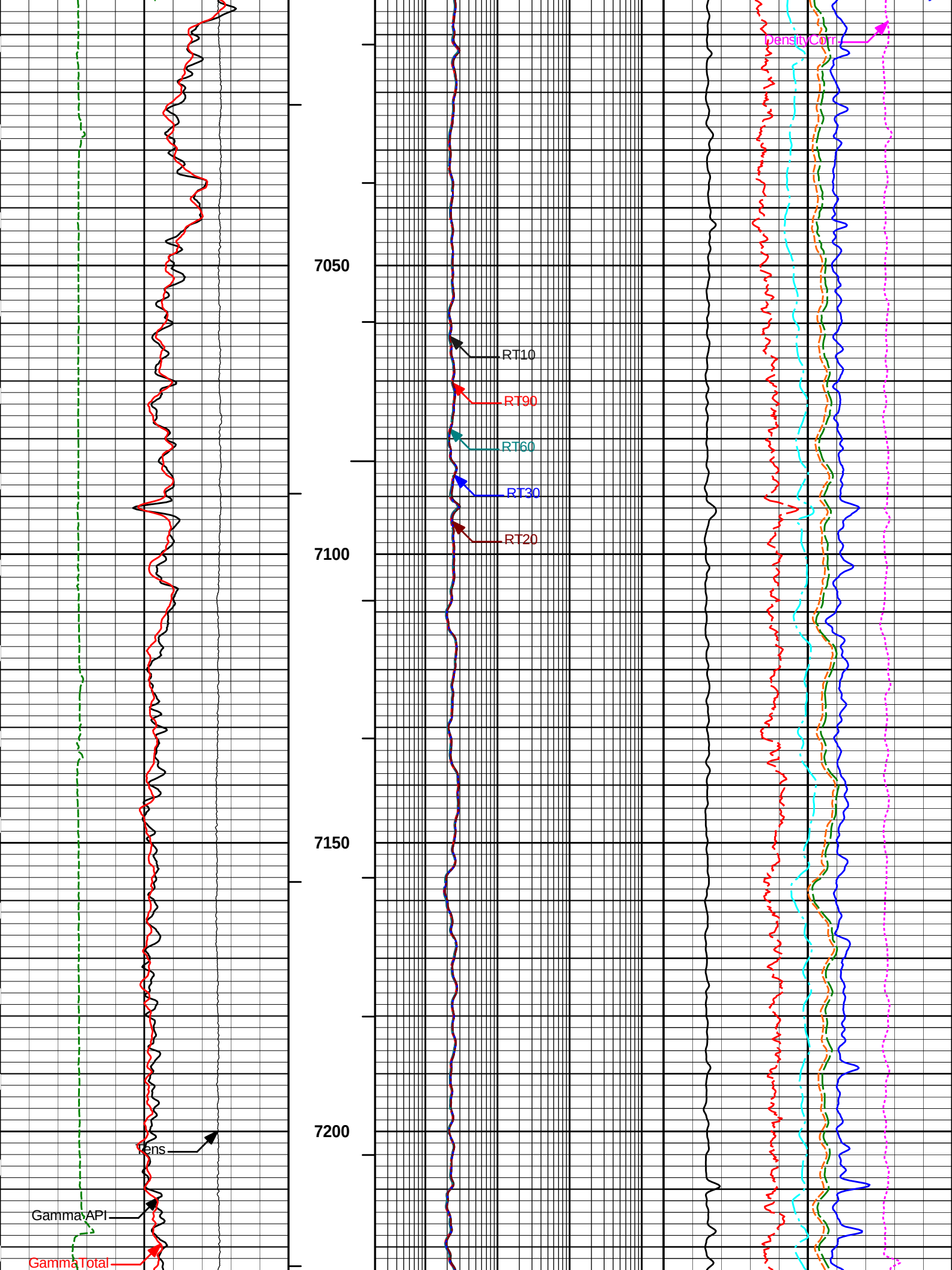
RT60
RT30
RT20
Tens
Gamma API
Gamma Total
Caliper
Neutron Porosity
Pe
Density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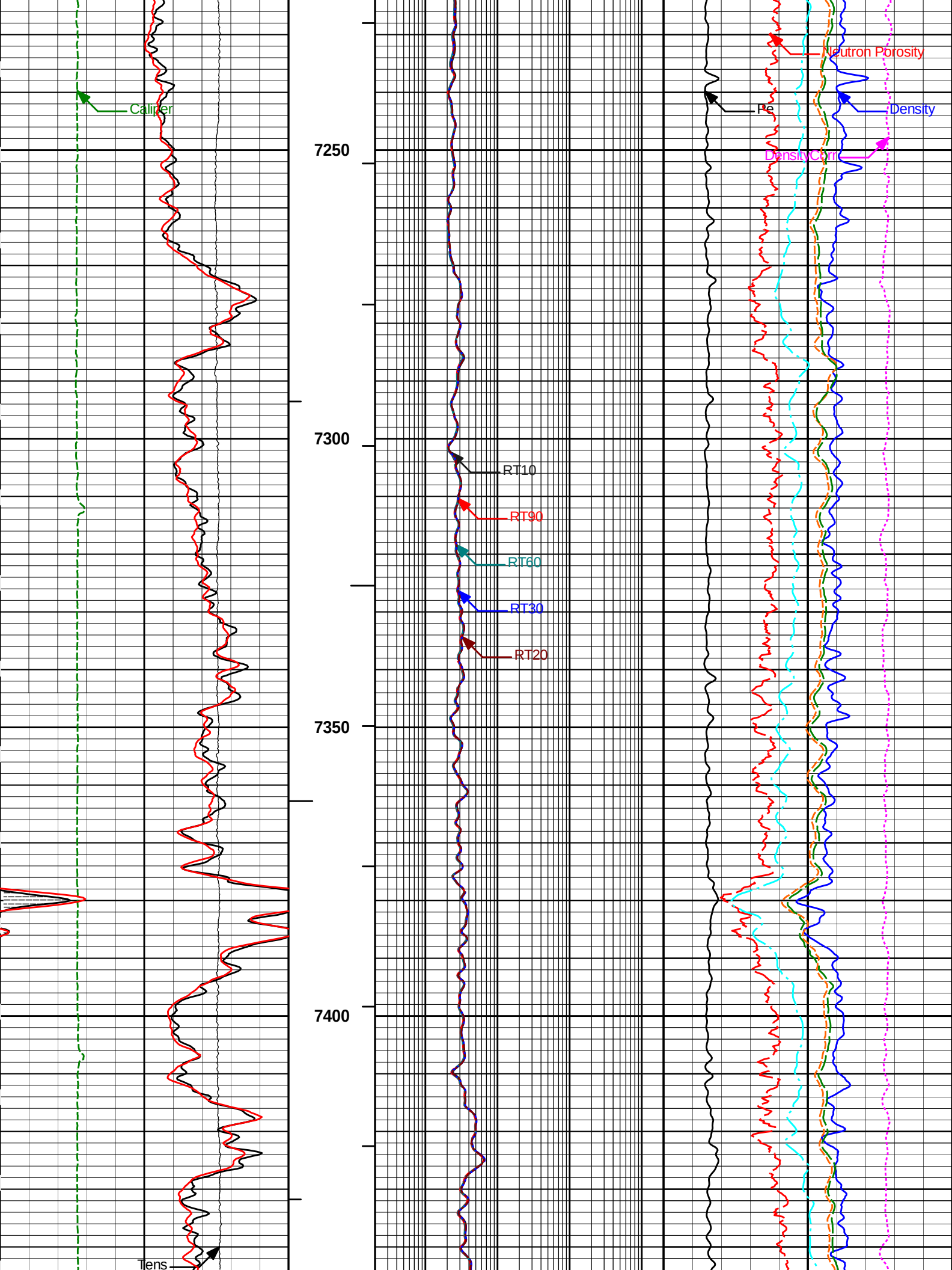
7200
RT10
RT90
RT60
RT30
RT20
DensityCorr
Tens
GammaAPI
GammaTotal


Caliper
7250
7300
RT10
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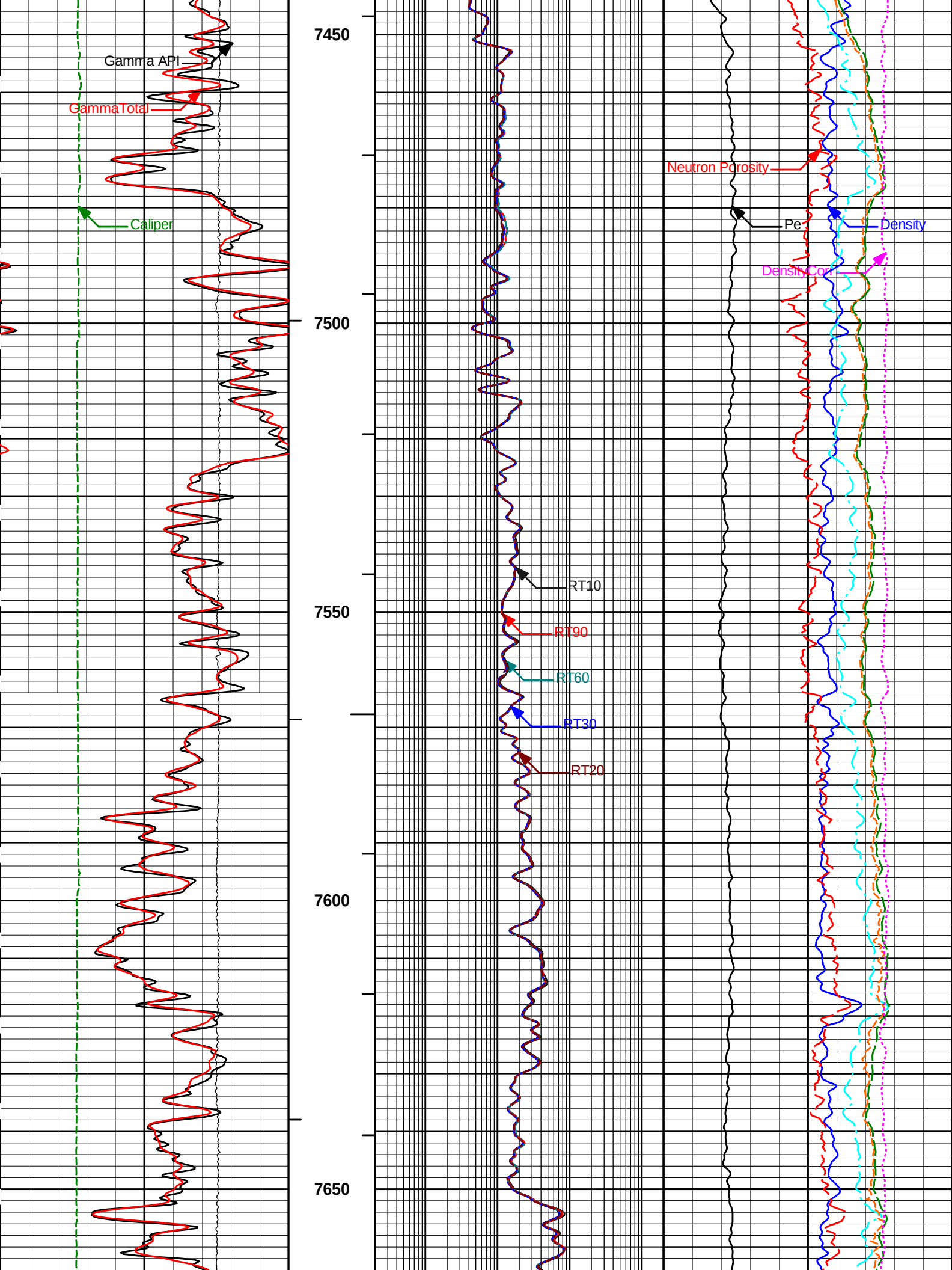
RT60
RT30
RT20
7350
7400
Neutron Porosity
Pe
Density
DensityCorr
Tens


Gamma API
GammaTotal
Caliper
7450
7500
7550
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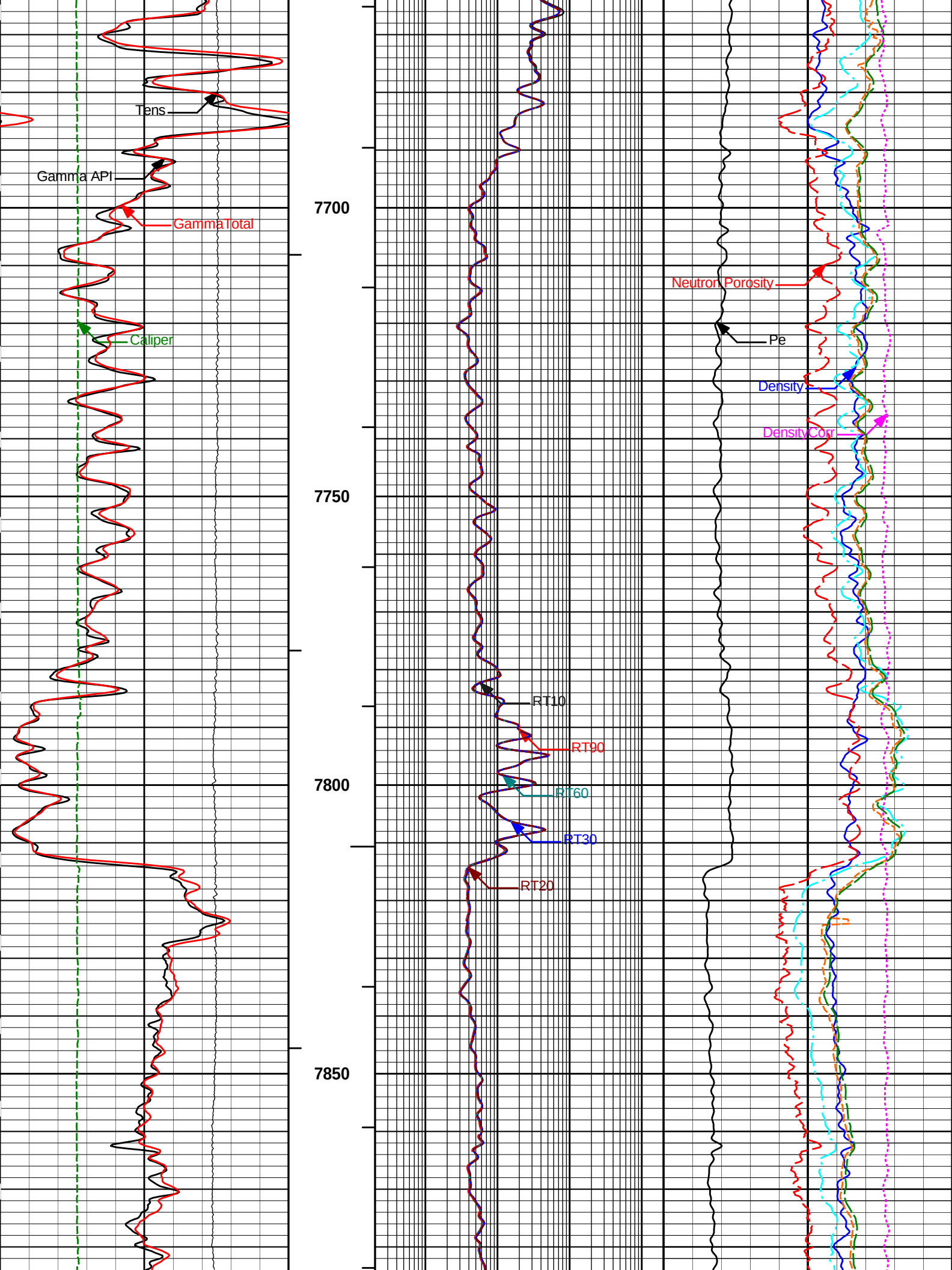
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Pe
Density
DensityCorr


Tens
Gamma API
GammaTotal
Caliper
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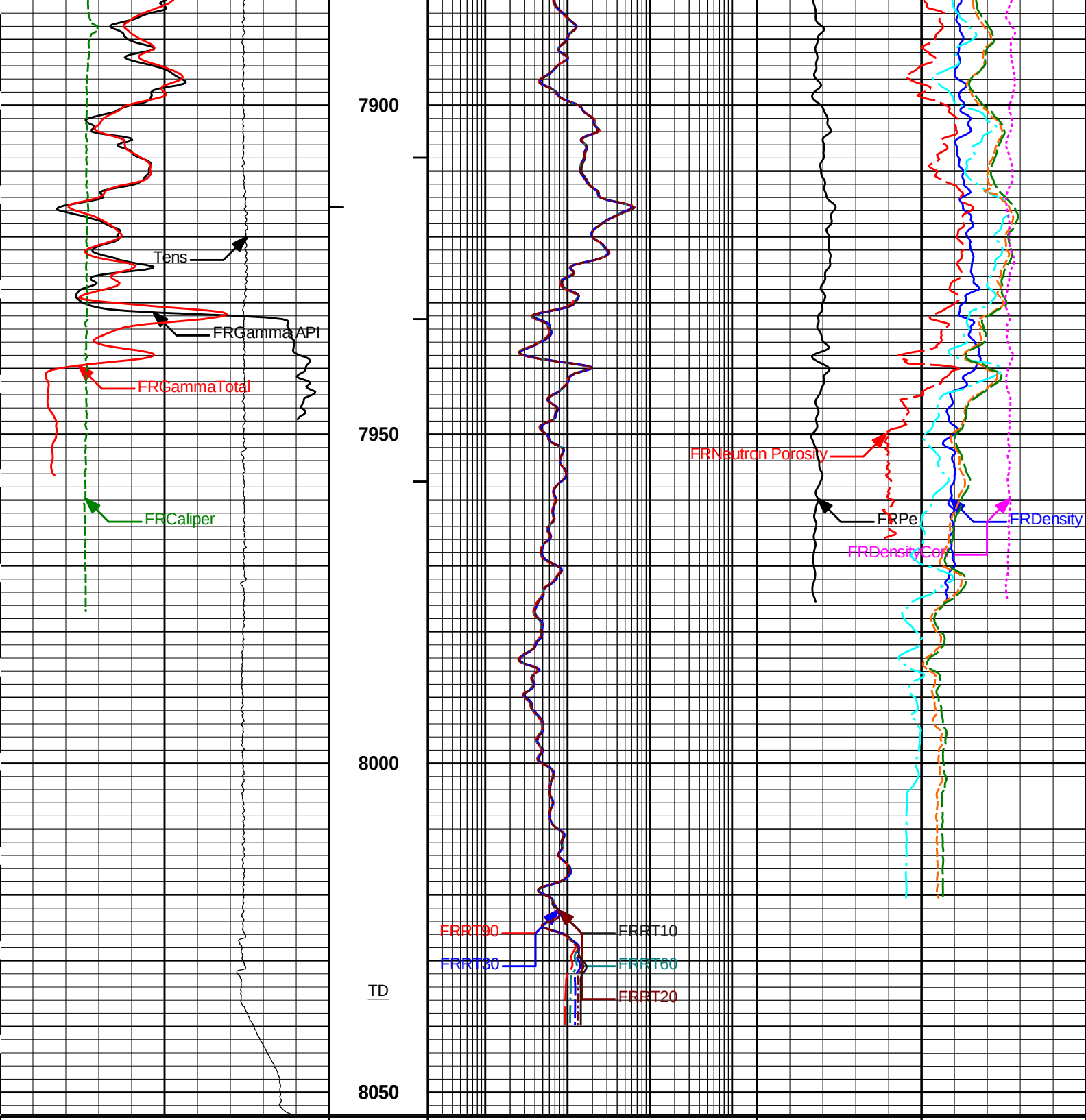
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Pe
Density
DensityCorr



0 Gamma API 200		0.2 RT90 2K		0 Pe 10	-0.25 DensityCorr 0.25
gapi	1 : 240	ohmm		barns/electron	gram per cc
0 GammaTotal 200	BHVT	0.2 RT60 2K		1.95 Density 2.95	
gapi		ohmm		gram per cc	
6 Caliper 16	AHVT	0.2 RT30 2K		0.45 Neutron Porosity -0.15	
inches		ohmm		v/v	
10K Tens 0		0.2 RT20 2K		140 MonoDeltaT 1 40	
pounds		ohmm		microsec per ft	
		0.2 RT10 2K		350 DipXDeltaT 1 50	
		ohmm		microsec per ft	

350 DipYDeltaT 1 50
microsec per ft

HALLIBURTON

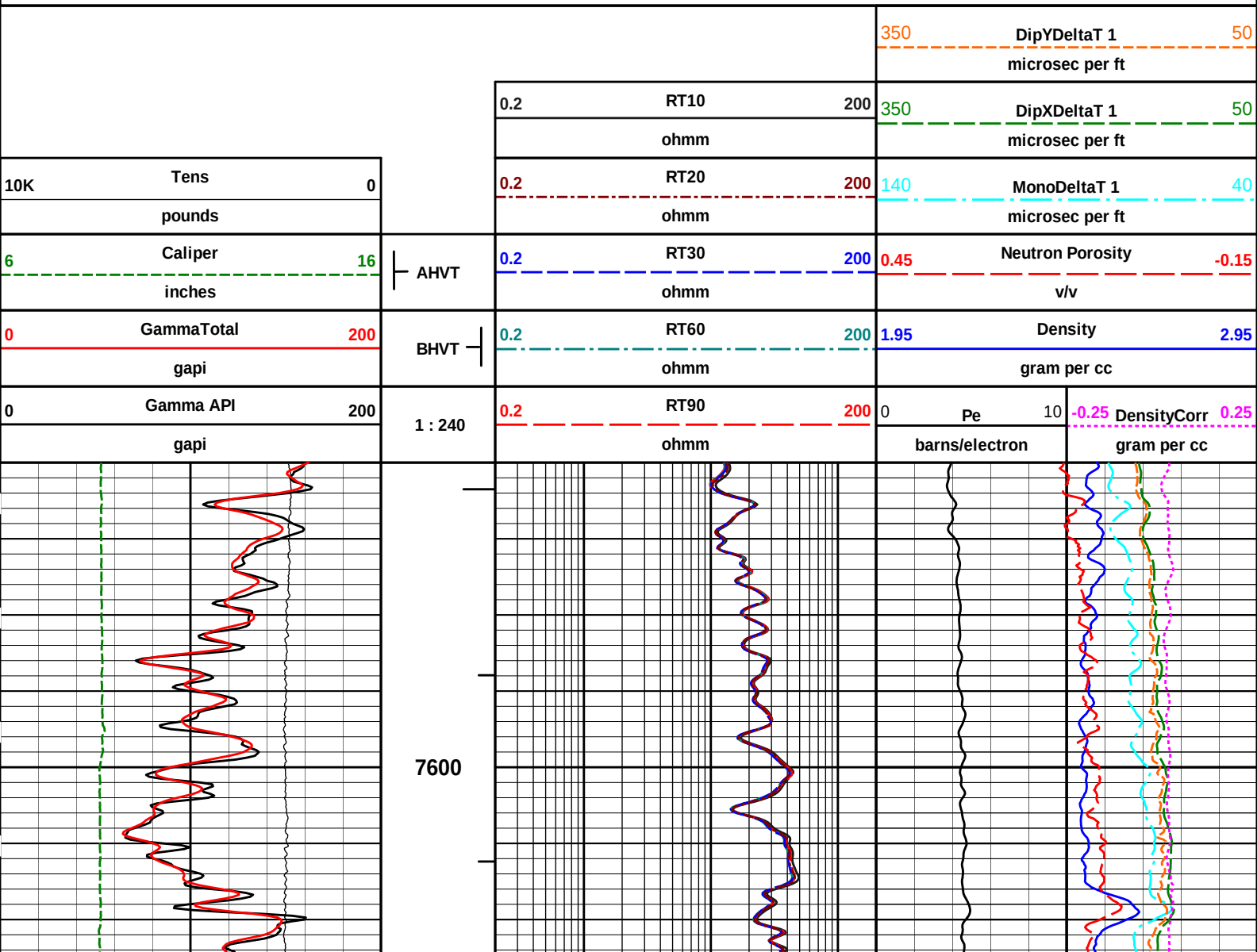
Plot Time: 06-Dec-13 10:25:17
Plot Range: 170 ft to 8053.42 ft
Data: MF_4-64-36-1H\Well Based**
Plot File: \\COMP\MAIN

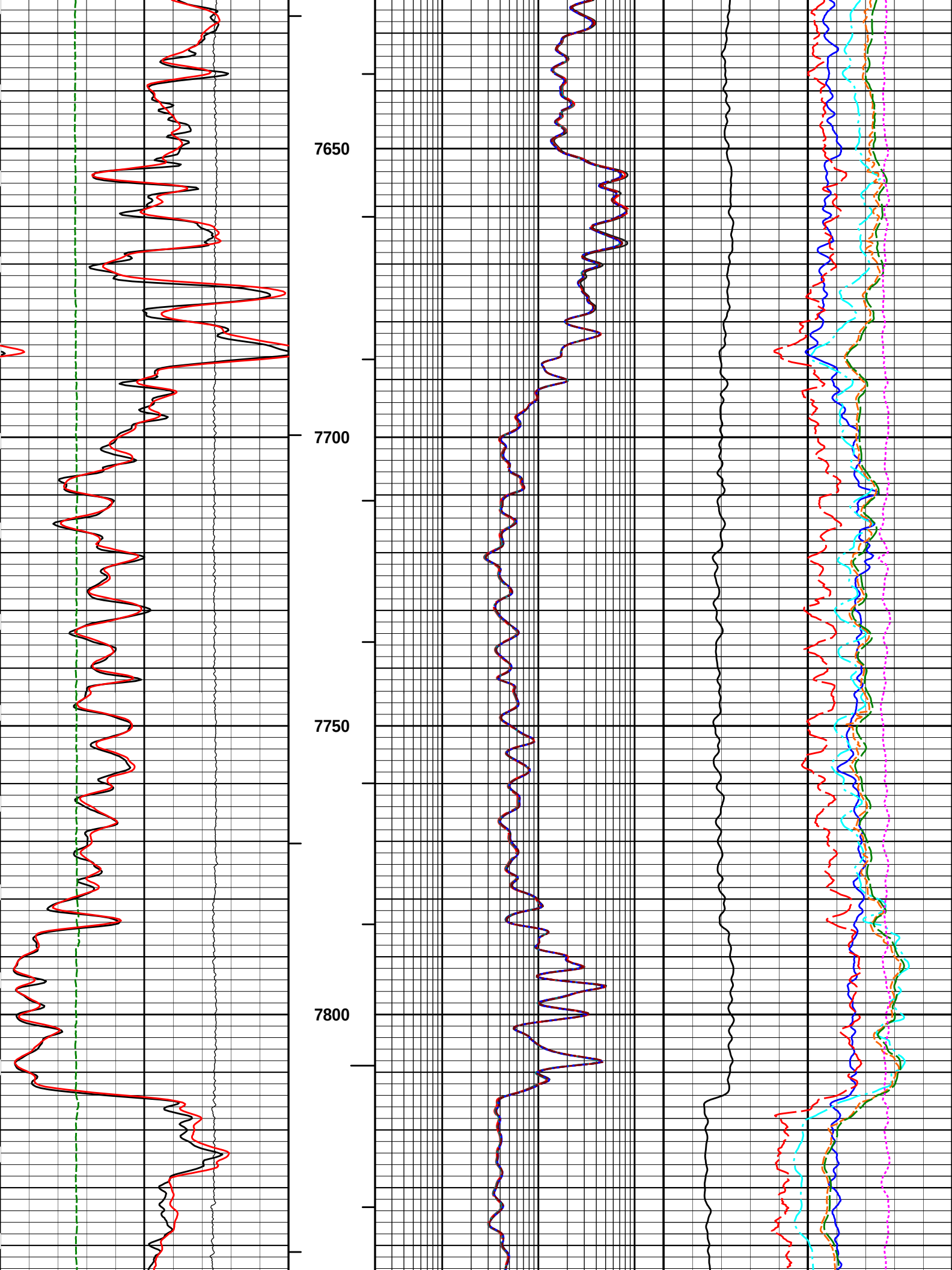
MAIN PASS 5" = 100'

HALLIBURTON

Plot Time: 06-Dec-13 10:25:17
Plot Range: 7560 ft to 8053.58 ft
Data: MF_4-64-36-1H\Well Based\REPEAT*
Plot File: \\COMP\REPEAT

REPEAT PASS 5" = 100'

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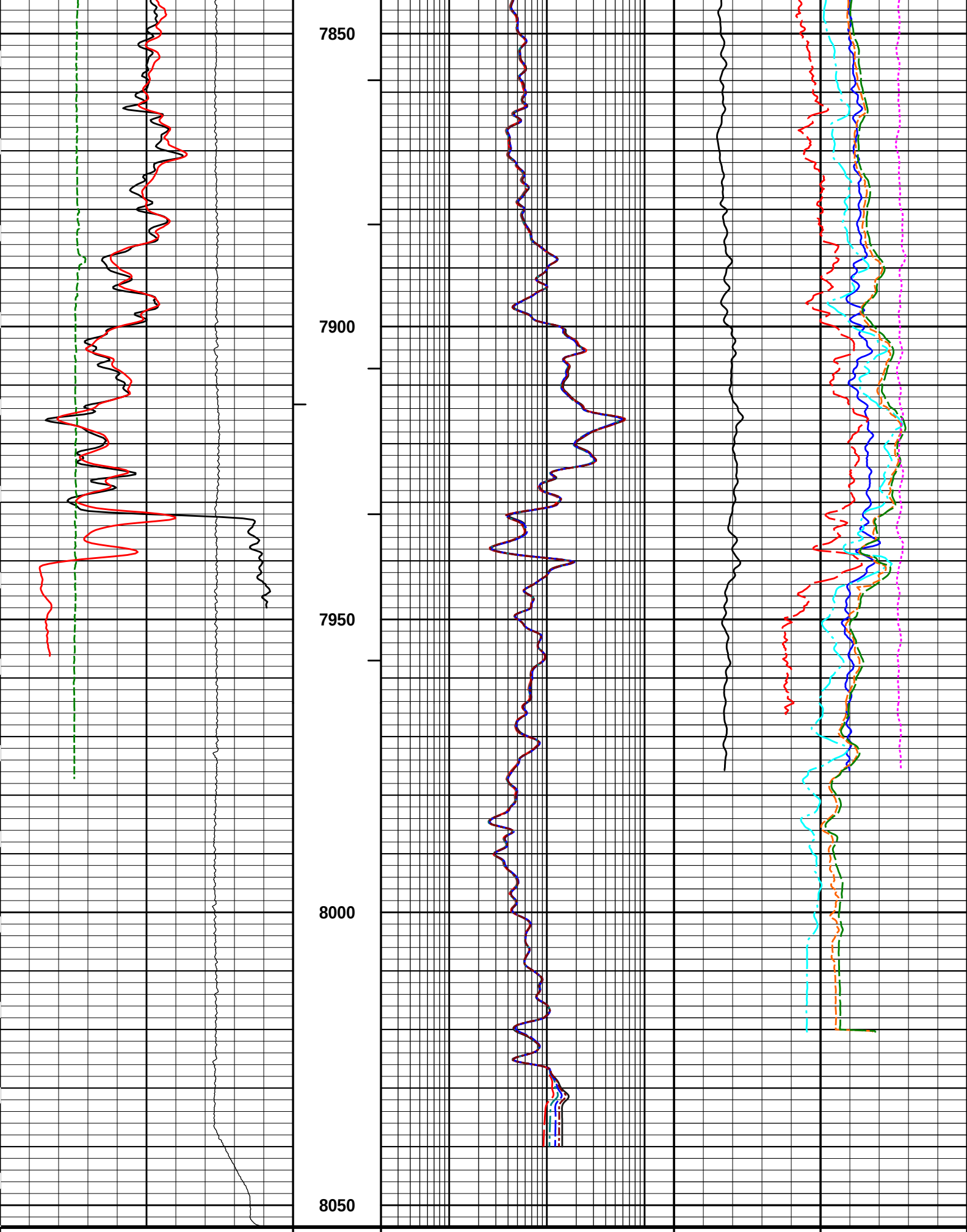
7700
7750
7800


7850
7900
7950
8000
8050
0
Gamma API
200
gapi
1 : 240
0.2
RT90
200
ohmm
0
Pe
10
barns/electron
-0.25
DensityCorr
0.25
gram per cc

0	GammaTotal	200	BHVT	0.2	RT60	200	1.95	Density	2.95
	gapi				ohmm			gram per cc	
6	Caliper	16	AHVT	0.2	RT30	200	0.45	Neutron Porosity	-0.15
	inches				ohmm			v/v	
10K	Tens	0		0.2	RT20	200	140	MonoDeltaT 1	40
	pounds				ohmm			microsec per ft	
				0.2	RT10	200	350	DipXDeltaT 1	50
					ohmm			microsec per ft	
							350	DipYDeltaT 1	50
								microsec per ft	

HALLIBURTON

Plot Time: 06-Dec-13 10:25:25
Plot Range: 7560 ft to 8053.58 ft
Data: MF_4-64-36-1H\Well Based\REPEAT*
Plot File: \\COMP\REPEAT

REPEAT PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11812882**	**Reference Calibration Date:**	**11-Nov-13 04:46:30**
Engineer:	**J. PINKETT**	**Calibration Date:**	**25-Nov-13 10:43:48**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**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	72.6	72.0	api
Background + Calibrator	321.7	319.3	api
Calibrator	249.1	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11812882**	**Reference Calibration Date:**	**25-Nov-13 10:43:48**
Engineer:	**J. SCHMIDT**	**Calibration Date:**	**04-Dec-13 18:57:51**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**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	72.0	72.0	api
Background + Calibrator	319.3	326.0	api
Calibrator	247.3	254.0	api

Shop	Field	Difference	Tolerance

247.3	254.0	-6.7	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	**CSNG - 10971168**	**Reference Calibration Date:**	**03-Jul-13 15:32:49**
Engineer:	**J. SCHMIDT**	**Calibration Date:**	**29-Nov-13 12:49:08**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**
Source SN:	**TB-289**		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.5	23.6	Channel #
583 KEV Peak Channel #	52.2	52.5	Channel #
2614 KEV Peak Channel #	212.6	214.4	Channel #
Calibrate Temperature	85.3	58.5	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	1792.9	CPS	336.5	336.6	API
Background	322.9	CPS	60.5	60.6	API

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

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 10971168**	**Reference Calibration Date:**	**29-Nov-13 12:49:08**
Engineer:	**J. SCHMIDT**	**Calibration Date:**	**04-Dec-13 19:04:00**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**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	23.7	Channel #
583 KEV Peak Channel #	52.5	52.5	Channel #
2614 KEV Peak Channel #	214.4	214.3	Channel #
Calibrate Temperature	58.5	63.7	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	1812.8	CPS	336.6	334.0	API
Background	314.8	CPS	60.6	58.0	API

Gamma Ray Gain: 0.93
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11301132 **Reference Calibration Date:** 31-Oct-13 13:39:24
Engineer: J. PINKETT **Calibration Date:** 25-Nov-13 11:08:59
Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Logging Source S/N: DSN 434
Tank Serial Number: 11068236
Reference value assigned to Tank: 53.720
Snow Block S/N: Brighton
Calibration Tank Water Temperature: 44 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.001	0.998	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):	0.2233	0.2223	0.0009	+/- 0.0020
Calibrated Ratio:	10.14	10.11	0.031	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0815	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 - 11301132 **Reference Calibration Date:** 25-Nov-13 11:08:59
Engineer: J. SCHMIDT **Calibration Date:** 04-Dec-13 19:10:06
Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Logging Source S/N: DSN 434
Snow Block S/N: Brighton

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0815	0.0787	-0.0028	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed

Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 11107335**	**Reference Calibration Date:**	**31-Oct-13 16:26:09**
Engineer:	**J. PINKETT**	**Calibration Date:**	**26-Nov-13 14:30:32**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11301132**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3303.90	-3126.38	-7000.00 - -1000.00
Pad Gain	0.0003814	0.0003758	0.000200 - 0.000600
Arm Offset	-3649.34	-3801.44	-5000.00 - 3000.00
Arm Gain	0.0005638	0.0005664	0.000300 - 0.000700
Arm Power	-0.000005857	-0.000006169	-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)	1.96	2.00	0.04	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.51	6.50	-0.01	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.03	15.00	-0.03	+/- 0.20

PASS/FAIL SUMMARY

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

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name:	**SDLT - 11107335**	**Reference Calibration Date:**	**26-Nov-13 14:30:32**
Engineer:	**J. SCHMIDT**	**Calibration Date:**	**04-Dec-13 19:02:51**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.75	0.00	+/- 0.10
Ring Diameter	8.25	8.28	0.03	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 11045470**	**Reference Calibration Date:**	**02-Dec-13 12:30:32**
Engineer:	**J. PINKETT**	**Calibration Date:**	**02-Dec-13 12:50:25**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Logging Source S/N: 5471GW

Aluminum Block S/N: 63066 Density: 2.602g/cc Pe: 3.100

Magnesium Block S/N: BRIGHTON MAGNESIUM BLOCK Density: 1.691g/cc Pe: 2.650

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0700	1.0659	0.90 - 1.10
Near Dens Gain	1.0142	1.0242	0.90 - 1.10
Near Peak Gain	1.0139	1.0165	0.90 - 1.10
Near Lith Gain	0.9797	0.9790	0.90 - 1.10
Far Bar Gain	1.0058	1.0083	0.90 - 1.10
Far Dens Gain	0.9980	0.9982	0.90 - 1.10
Far Peak Gain	0.9899	0.9917	0.90 - 1.10
Far Lith Gain	0.9742	0.9771	0.90 - 1.10
Near Bar Offset	-0.6686	-0.6313	NONE
Near Dens Offset	-0.1013	-0.1924	NONE
Near Peak Offset	-0.0765	-0.0979	NONE
Near Lith Offset	0.2056	0.2126	NONE
Far Bar Offset	-0.1364	-0.1601	NONE
Far Dens Offset	-0.0590	-0.0610	NONE
Far Peak Offset	-0.0000	-0.0158	NONE
Far Lith Offset	0.1116	0.0848	NONE
Near Bar Background	1002.89	1001.49	700 - 1450
Near Dens Background	329.71	329.10	230 - 480
Near Peak Background	145.27	144.25	100 - 210
Near Lith Background	175.17	174.94	125 - 260
Far Bar Background	530.28	527.07	450 - 900
Far Dens Background	210.39	208.76	175 - 345
Far Peak Background	83.10	82.96	70 - 140
Far Lith Background	86.18	85.74	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.692	1.691	-0.000	+/- 0.015
Pe	2.614	2.603	-0.011	+/- 0.150
ALUMINUM				
Density (g/cc)	2.601	2.602	0.001	+/- 0.01500
Pe	3.068	3.063	-0.005	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0003	+/- 0.0110	0.0016	+/- 0.0140
Magnesium Block	0.0006	+/- 0.0110	0.0002	+/- 0.0140
Aluminum Block	-0.0010	+/- 0.0110	0.0004	+/- 0.0140
Resolution	8.93	6.00 - 11.50	9.03	6.00 - 11.50
Internal Verifier(B+D+P+L)	1650	1200 - 2700	905	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 - 11045470 **Reference Calibration Date:** 02-Dec-13 12:50:25

Engineer: J. SCHMIDT **Calibration Date:** 04-Dec-13 18:56:44

Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Pad Temperature: 36.4 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	**Shop**	**Field**	**Change**	**Control Limit +/-**
Near (B+D+P+L) cps	1649.789	1645.575	-4.214	16.318
Far (B+D+P+L) cps	904.523	906.785	2.262	16.342
Near Resolution	8.93	9.04	0.110	0.50
Far Resolution	9.03	9.42	0.390	1.00

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

ICT SHOP CALIBRATION

Tool Name: ICT - 10978621 **Reference Calibration Date:** 04-Dec-13 13:28:11

Engineer: J. SCHMIDT **Calibration Date:** 04-Dec-13 13:35:47

Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

CALIPERS AND RINGS			
Ring	**Measured**	**Calibrated**	**Units**
CALIPER 1:			
Small Ring	3.67	3.65	in
Medium Ring	8.00	8.00	in
Large Ring	15.04	15.00	in
X-Large Ring	21.00	21.00	in
CALIPER 2:			
Small Ring	3.67	3.65	in
Medium Ring	8.00	8.00	in
Large Ring	15.05	15.00	in
X-Large Ring	21.00	21.00	in
CALIPER 3:			
Small Ring	3.66	3.65	in
Medium Ring	7.99	8.00	in
Large Ring	15.01	15.00	in
X-Large Ring	21.00	21.00	in
CALIPER 4:			
Small Ring	3.68	3.65	in

Medium Ring	8.00	8.00	in
Large Ring	14.97	15.00	in
X-Large Ring	21.00	21.00	in
CALIPER 5:			
Small Ring	3.66	3.65	in
Medium Ring	8.00	8.00	in
Large Ring	14.96	15.00	in
X-Large Ring	21.00	21.00	in
CALIPER 6:			
Small Ring	3.67	3.65	in
Medium Ring	7.99	8.00	in
Large Ring	15.00	15.00	in
X-Large Ring	21.00	21.00	in

ICT FIELD CALIBRATION

Tool Name:	**ICT - 10978621**	**Reference Calibration Date:**	**04-Dec-13 13:35:47**
Engineer:	**J. SCHMIDT**	**Calibration Date:**	**04-Dec-13 18:37:09**
Software Version:	**WL INSITE R3.8.4 (Build 5)**	**Calibration Version:**	**1**

CALIPERS

Caliper	Shop	Field	Units
Caliper 1	8.00	8.00	in
Caliper 2	8.00	8.00	in
Caliper 3	8.00	8.01	in
Caliper 4	8.00	8.01	in
Caliper 5	8.00	8.01	in
Caliper 6	8.00	8.02	in

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11294352**	**Reference Calibration Date:**	**30-Oct-13 13:56:18**
Engineer:	**J. PINKETT**	**Calibration Date:**	**29-Nov-13 12:42:49**
Software Version:	**WL INSITE R3.8.12 (Build 3)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 11296758**		

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.00	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	1.00	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.01	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	-1.37	2	-6	-4.20	-2	-8	-5.30	-2
A2 (50")	-7	-2.99	0	-7	-3.97	0	-7	-4.52	0
A3 (29")	-27	-13.85	-9	-9	-4.03	-3	-7	-3.22	-1
A4 (17")	-180	-96.49	-60	-45	-30.23	-15	-39	-24.27	-13
A5 (10")	N/A	N/A	N/A	-150	-101.20	-50	-80	-47.31	-10
A6 (6")	N/A	N/A	N/A	175	317.96	525	90	160.90	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.86	1.3
36K	1.0	1.85	2.0
72K	1.0	1.11	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.98	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

TOOL OK TO LOG

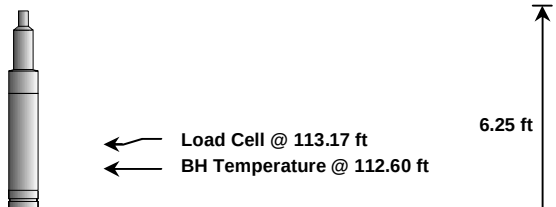
CALIBRATION SUMMARY

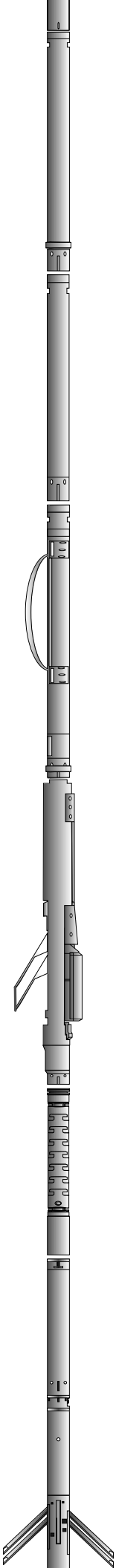
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11812882						
Gamma Ray Calibrator	247.3	254.0	----------	-6.7	+/- 9.00	api
CSNG-10971168						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.6	23.7	----------	-0.1	----------	Channel #
583 KEV Peak Channel #	52.5	52.5	----------	0.0	----------	Channel #
2614 KEV Peak Channel #	214.4	214.3	----------	0.1	----------	Channel #
DSNT-11301132						
Snow-Block Porosity	0.0815	0.0787	----------	0.0028	+/- 0.0150	decp
SDLT-11107335						
Pad Extension	3.75	3.75	----------	0.00	+/-0.10	in
Ring Diameter	8.25	8.28	----------	-0.03	+/-0.15	in
SDLT Pad-11045470						
Near(B+D+P+L)	1649.789	1645.575	----------	4.214	+/-16.318	cps
Far(B+D+P+L)	904.523	906.785	----------	-2.262	+/-16.342	cps
ICT-10978621						
Caliper 1	8.00	8.00	----------	0.00	+/-0.25	in
Caliper 2	8.00	8.00	----------	0.00	+/-0.25	in
Caliper 3	8.00	8.01	----------	-0.01	+/-0.25	in
Caliper 4	8.00	8.01	----------	-0.01	+/-0.25	in
Caliper 5	8.00	8.01	----------	-0.01	+/-0.25	in
Caliper 6	8.00	8.02	----------	-0.02	+/-0.25	in
ACRt Sonde-11294352						
Mud Cell	0.98	----------	----------	0.00	----------	ohm-m

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						116.85 ft
RWCH-10409638 135.00 lbs		Ø 3.625 in		Load Cell @ 113.17 ft BH Temperature @ 112.60 ft	6.25 ft	





110.60 ft

GTET-11812882
165.00 lbs

Ø 3.625 in

8.52 ft

GammaRay @ 104.54 ft

UnivWearRing3.6-
11812883
5.00 lbs

Ø 4.200 in*

102.08 ft

CSNG-10971168
114.00 lbs

Ø 3.625 in

8.17 ft

CSNG @ 96.45 ft

93.91 ft

DSN Decentralizer-
11812167
6.60 lbs

Ø 5.000 in*

DSNT-11301132
174.00 lbs

Ø 3.625 in

9.69 ft

DSN Far @ 86.98 ft

DSN Near @ 86.23 ft

UnivWearRing3.6-
11812167
5.00 lbs

Ø 4.200 in*

84.23 ft

SDLT-11107335
360.00 lbs

Ø 4.500 in

10.81 ft

SDLT Pad-11045470
65.00 lbs

Ø 4.750 in*

SDL Caliper @ 76.23 ft

SDL @ 76.22 ft

73.41 ft

Flex Joint -
Pressure Comp-
10847053
140.00 lbs

Ø 3.625 in

5.97 ft

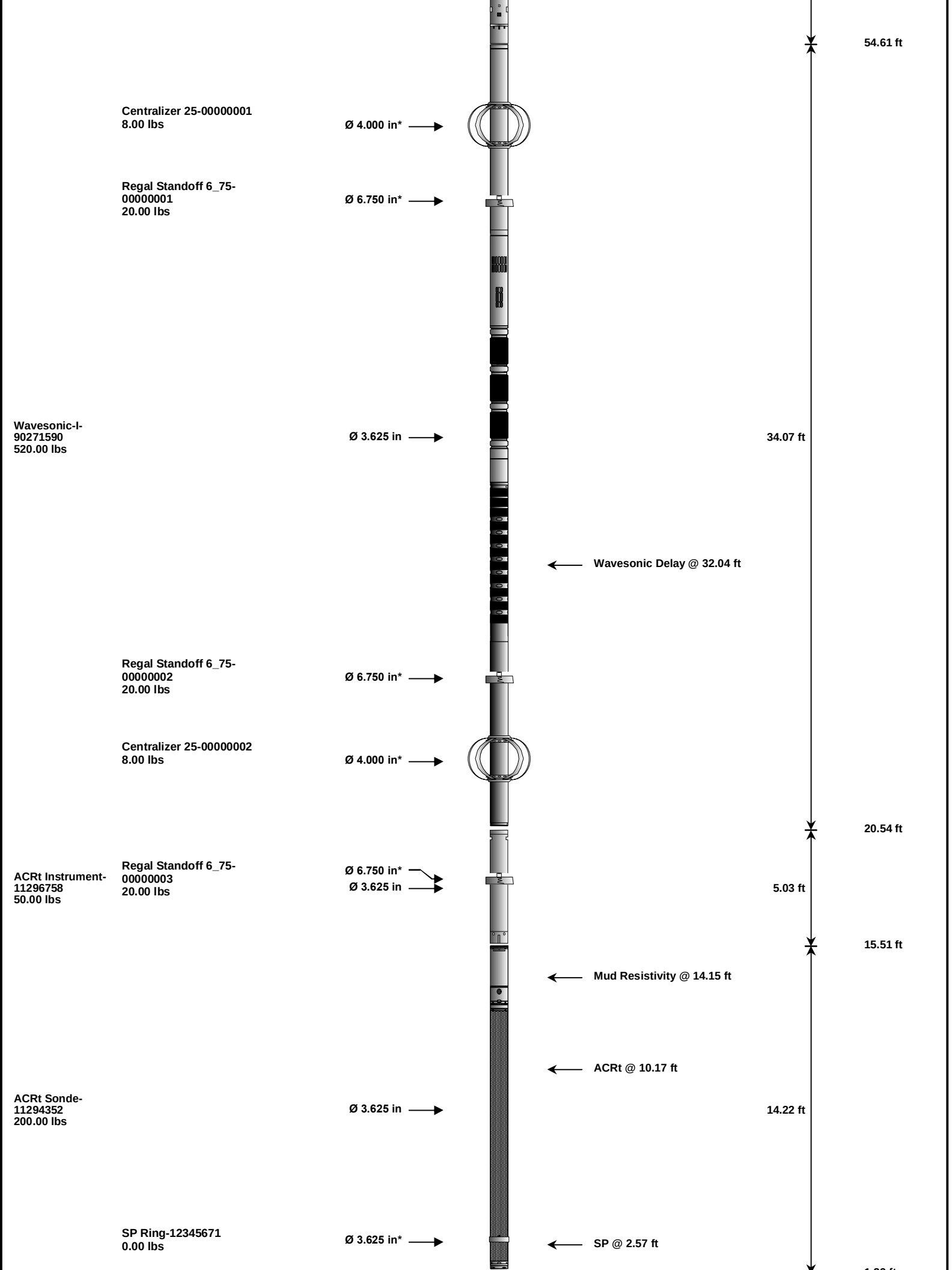
67.44 ft

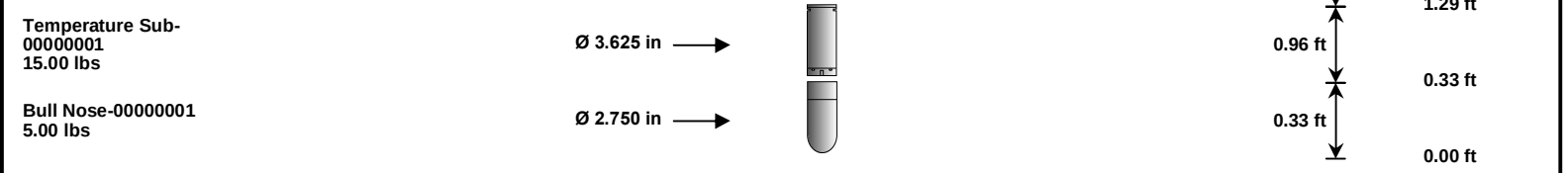
ICT-10978621
330.00 lbs

Ø 3.625 in

12.83 ft

ICT Caliper @ 57.40 ft


54.61 ft
Centralizer 25-00000001
8.00 lbs
Ø 4.000 in*
Regal Standoff 6_75-00000001
20.00 lbs
Ø 6.750 in*
Wavesonic-I-90271590
520.00 lbs
Ø 3.625 in
34.07 ft
Wavesonic Delay @ 32.04 ft
Regal Standoff 6_75-00000002
20.00 lbs
Ø 6.750 in*
Centralizer 25-00000002
8.00 lbs
Ø 4.000 in*
20.54 ft
ACRt Instrument-11296758
50.00 lbs
Regal Standoff 6_75-00000003
20.00 lbs
Ø 6.750 in*
Ø 3.625 in
5.03 ft
15.51 ft
Mud Resistivity @ 14.15 ft
ACRt @ 10.17 ft
ACRt Sonde-11294352
200.00 lbs
Ø 3.625 in
14.22 ft
SP Ring-12345671
0.00 lbs
Ø 3.625 in*
SP @ 2.57 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	10409638	135.00	6.25		110.60	300.00
GTET	Gamma Telemetry Tool	11812882	165.00	8.52		102.08	60.00
UWR3P6	Universal Wear Ring 3 5-8 inch	11812883	5.00	0.35	*	102.81	300.00
CSNG	Compensated Spectral Natural Gamma	10971168	114.00	8.17		93.91	15.00
DSNT	Dual Spaced Neutron	11301132	174.00	9.69		84.23	60.00
UWR3P6	Universal Wear Ring 3 5-8 inch	11812167	5.00	0.35	*	84.35	300.00
DCNT	DSN Decentralizer	11812167	6.60	5.13	*	87.56	300.00
SDLT	Spectral Density Tool	11107335	360.00	10.81		73.41	60.00
SDLP	Density Insite Pad	11045470	65.00	2.55	*	75.62	60.00
FLEX	Flex Joint - Pressure Compensated	10847053	140.00	5.97		67.44	300.00
ICT	Six Independent Arm Caliper	10978621	330.00	12.83		54.61	30.00
WSTT	WaveSonic Insite	90271590	520.00	34.07		20.54	30.00
OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	*	22.48	300.00
RSOF	Regal Standoff 6.75in	00000002	20.00	0.52	*	26.87	300.00
RSOF	Regal Standoff 6.75in	00000001	20.00	0.52	*	47.56	300.00
OBCEN	Centralizer - 25 in. Overbody	00000001	8.00	2.08	*	50.02	300.00
ACRt	Array Compensated True Resistivity Instrument Section	11296758	50.00	5.03		15.51	300.00
RSOF	Regal Standoff 6.75in	00000003	20.00	0.52	*	18.09	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11294352	200.00	14.22		1.29	300.00
SP	SP Ring	12345671	0.00	0.25	*	2.57	300.00
TMAX	Temperature Sub - 3_625 OD	00000001	15.00	0.96		0.33	300.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**2,365.60**	**116.85**			

* Not included in Total Length and Length Accumulation.

Data: MF_4-64-36-1H\0001 TRIPLE BLACK-CSNG-ICT-WSTT\005 06-Dec-13 02:03 Up @8053.5f **Date: 06-Dec-13 05:11:58**

COMPANY	**CONOCO PHILLIPS COMPANY**
WELL	**MURPHY FAMILY 4-64-36-1H**
FIELD	**WILDCAT**
COUNTY	**ARAPAHOE** STATE **CO**

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
ARRAY COMPENSATED
TRUE RESISTIVITY