

HALLIBURTON

DUAL LATEROLOG
MICRO-SPHERICALLY
FOCUSED LOG

COMPANY		CHAMA OIL & MINERALS LLC	
WELL		SORS-1P	
FIELD/BLOCK		WILDCAT	
COUNTY		WASHINGTON	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		08-Jan-13	
Run No.		1	
Depth - Driller		6385.00 ft	
Depth - Logger		6366.0 ft	
Bottom - Logged Interval		6363.0 ft	
Top - Logged Interval		547.0 ft	
Casing - Driller		13.375 in @ 550.0 ft	
Casing - Logger		547.0 ft	
Bit Size		12.250 in	
Type Fluid in Hole		WATER BASED MUD	
Density		10.5 ppg	
Viscosity		47.00 s/qt	
PH		10.50 pH	
Fluid Loss		5.8 cpm	
Source of Sample		FLOWLINE	
Rm @ Meas. Temperature		0.069 ohmm @ 36.00 degF	
Rmf @ Meas. Temperature		0.02 ohmm @ 75.00 degF	
Rmc @ Meas. Temperature		0.065 ohmm @ 75.00 degF	
Source Rmf		CHART	
Rmc		CHART	
Rm @ BHT		0.02 ohmm @ 179.0 degF	
Time Since Circulation		10.0 hr	
Time on Bottom		08-Jan-13 05:58	
Max. Rec. Temperature		179.0 degF @ 6366.0 ft	
Equipment		11072147	
Location		BRIGHTON	
Recorded By		J. WALDEN	
Witnessed By		LARRY KEITH	

COMPANY		CHAMA OIL & MINERALS LLC	
WELL		SORS-1P	
FIELD/BLOCK		WILDCAT	
COUNTY		WASHINGTON	
STATE		CO	
API No.		05121110180000	
Location		LATITUDE: 40.279391° LONGITUDE: -103.394496° SHL: 650' FSL & 650' FWL SMSW	
Other Services:		RWCH DSNT SDLT BSAT	
Sect. 26		Twp. 4N	
Rge. 54W		Elev. 4412.5 ft	
D.F.		4434.6 ft	
G.L.		4412.5 ft	

Fold here

Service Ticket No.:				API Serial No.: 05121110180000				PGM Version: WL INSITE R3.8.0 (Build 2)							
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES									
Date		Sample No.				Type Log		Depth		Scale Up Hole		Scale Down Hole			
Depth-Driller															
Type Fluid in Hole															
Density		Viscosity													
Ph		Fluid Loss													
Source of Sample						RESISTIVITY EQUIPMENT DATA									
Rm @ Meas. Temp		@		@		Run No.		Tool Type & No.		Pad Type		Tool Pos.		Other	
Rmf @ Meas. Temp.		@		@		ONE		DLTT		N/A		ECCE.		N/A	
Rmc @ Meas. Temp.		@		@				90277021							
Source Rmf		Rmc				ONE		MSFL		STAN.		ECCE.		N/A	
Rm @ BHT		@		@				11976327							
Rmf @ BHT		@		@											
Rmc @ BHT		@		@											
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		ONE		Run No.		ONE		Run No.		ONE		Run No.		ONE	
Serial No.		11958944		Serial No.		11105780		Serial No.		11014271		Serial No.		11219332	
Model No.		GTET		Model No.		BSAT		Model No.		SDLT		Model No.		DSNT	
Diameter		3.625"		No. of Cent.		2		Diameter		4.5"		Diameter		3.625"	
Detector Model No.		GTET		Spacing		2'		Log Type		GAM-GAM		Log Type		NEU-NEU	
Type		SCINT						Source Type		CS137		Source Type		AM241BE	
Length		8"		LSA [Y/N]		N/A		Serial No.		5256GW		Serial No.		DSN430	
Distance to Source		14'		FWDA [Y/N]		N/A		Strength		1.78CI		Strength		15CI	
LOGGING DATA															

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	12.250	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	10.500	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	146000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.069	ohmm
	SHARED	TRM	Temperature of Mud	36.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	9.625	in
	SHARED	ST	Surface Temperature	34.0	degF
	SHARED	TD	Total Well Depth	6366.00	ft
	SHARED	BHT	Bottom Hole Temperature	179.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	IDT	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	IDT	
	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 /	AEAC	Archie A factor	0.6200	

	CrossPlot	ARAC	Archie A factor	0.0200	
	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 for Gamma Ray Tools.	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	0.250	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	2.680	g/cc
	SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
	BSAT	MBOK	Compute BCAS Results?	Yes	
	BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
	BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
	BSAT	DTFL	Delta -T Fluid	189.00	uspf
	BSAT	DTMT	Delta -T Matrix Type	Sandstone 55.5	
	BSAT	DTSH	Delta -T Shale	100.00	uspf
	BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
	IDT	WRTI	Survey Writing Interval	30	ft
	IDT	SOPT	Smoothing Option	None	
	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	NAVS	Navigation Source Tool	IDT	
	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	
	ICT	BLOK	Radius type for borehole volume calcuations	Yes	

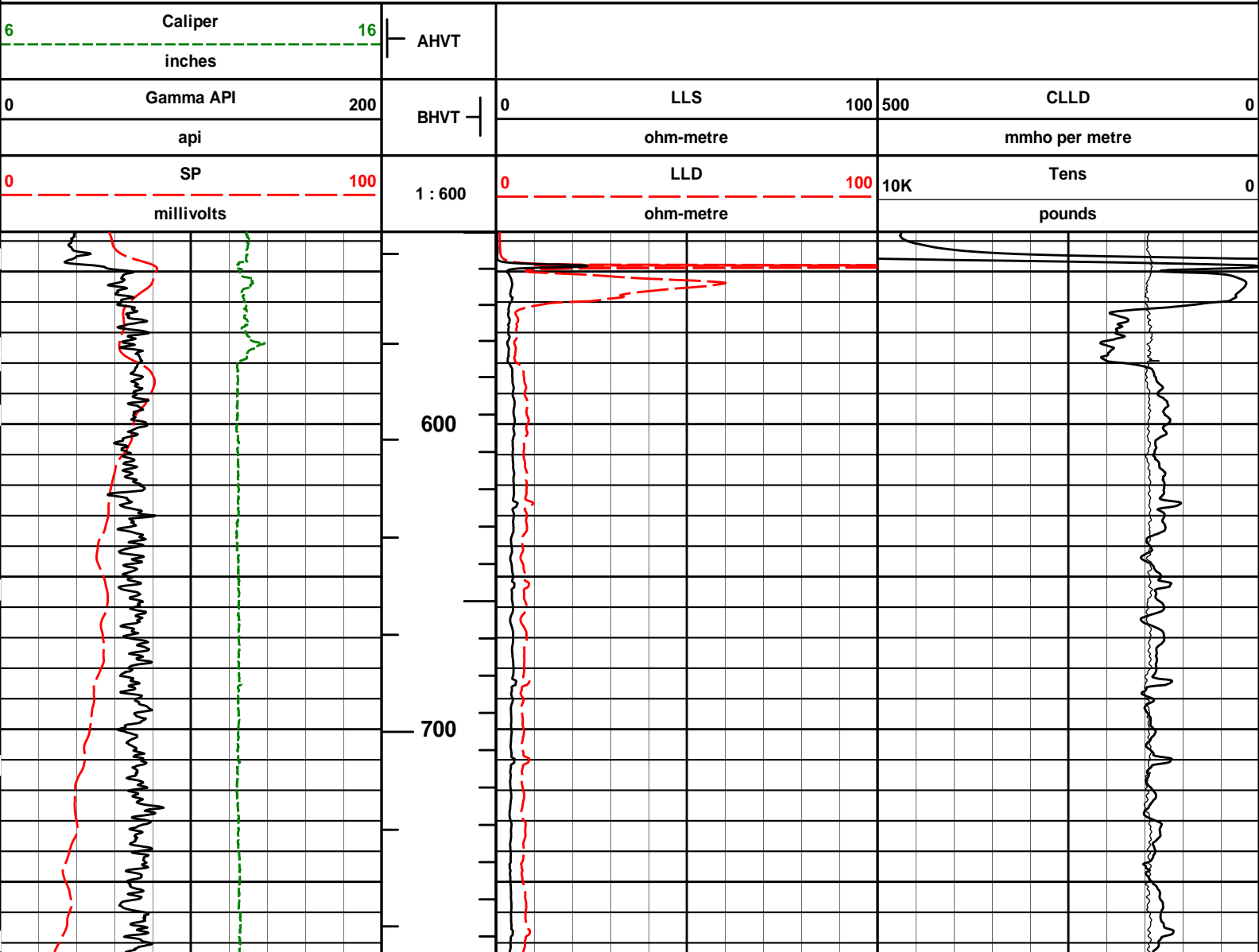
DLLT	DLOK	Process Dual Laterolog?	Yes
DLLT	DBOK	Process Dual Laterolog Borehole Corrections?	Yes
DLLT	SBHD	Select Borehole Diam Source	Caliper
DLLT	TPOS	Tool Position	Standoff
DLLT	TMPC	Temperature Correction Type	Tool Value
DLLT	DLOK	Calculate Dual Laterolog DI?	Yes
MSFL	DLOK	Process MSFL?	Yes
MSFL	SLPD	Use MSFL Slim Hole Pad?	No
MSFL	CLOK	Process Caliper Outputs?	Yes

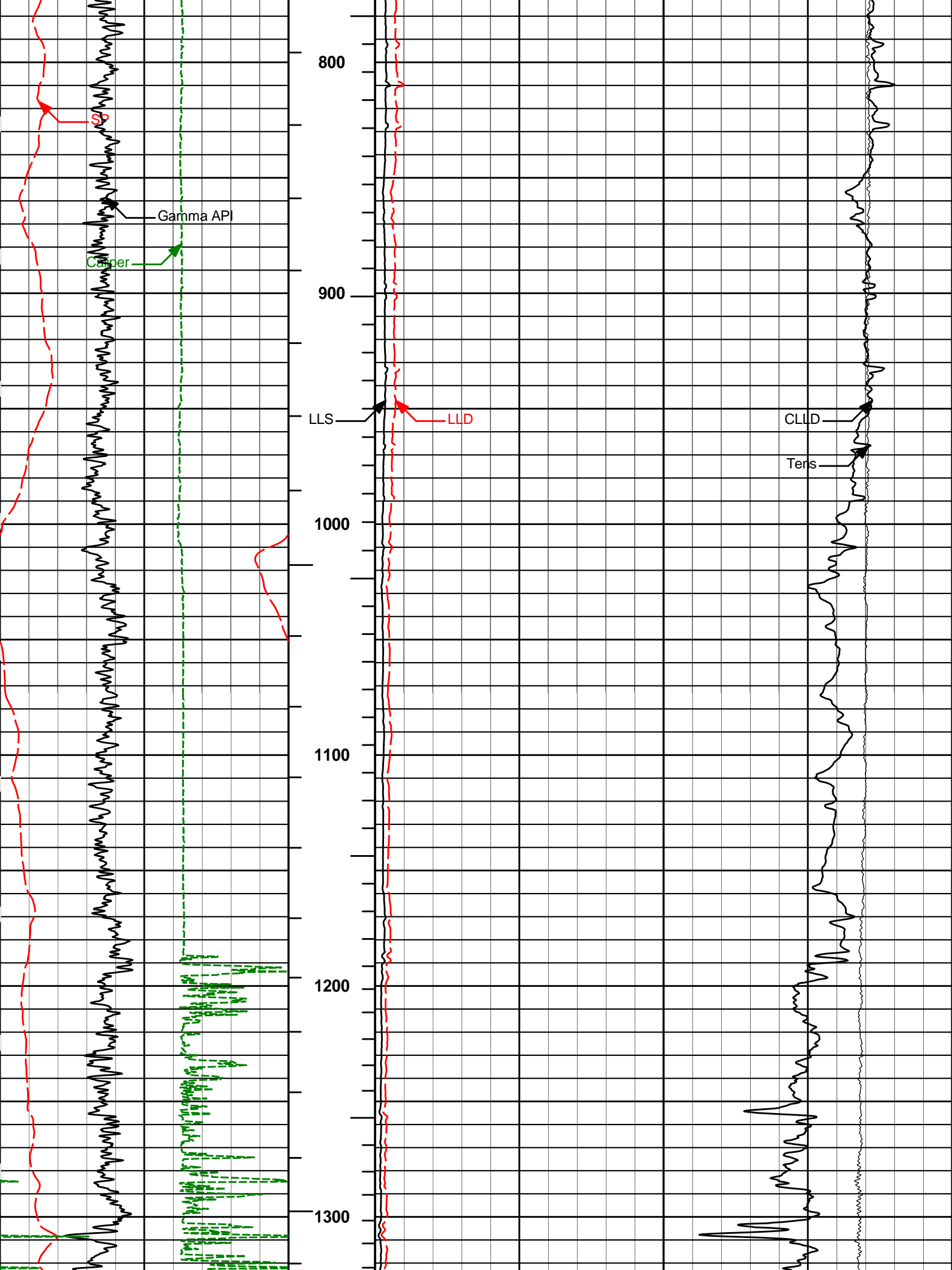
BOTTOM_____

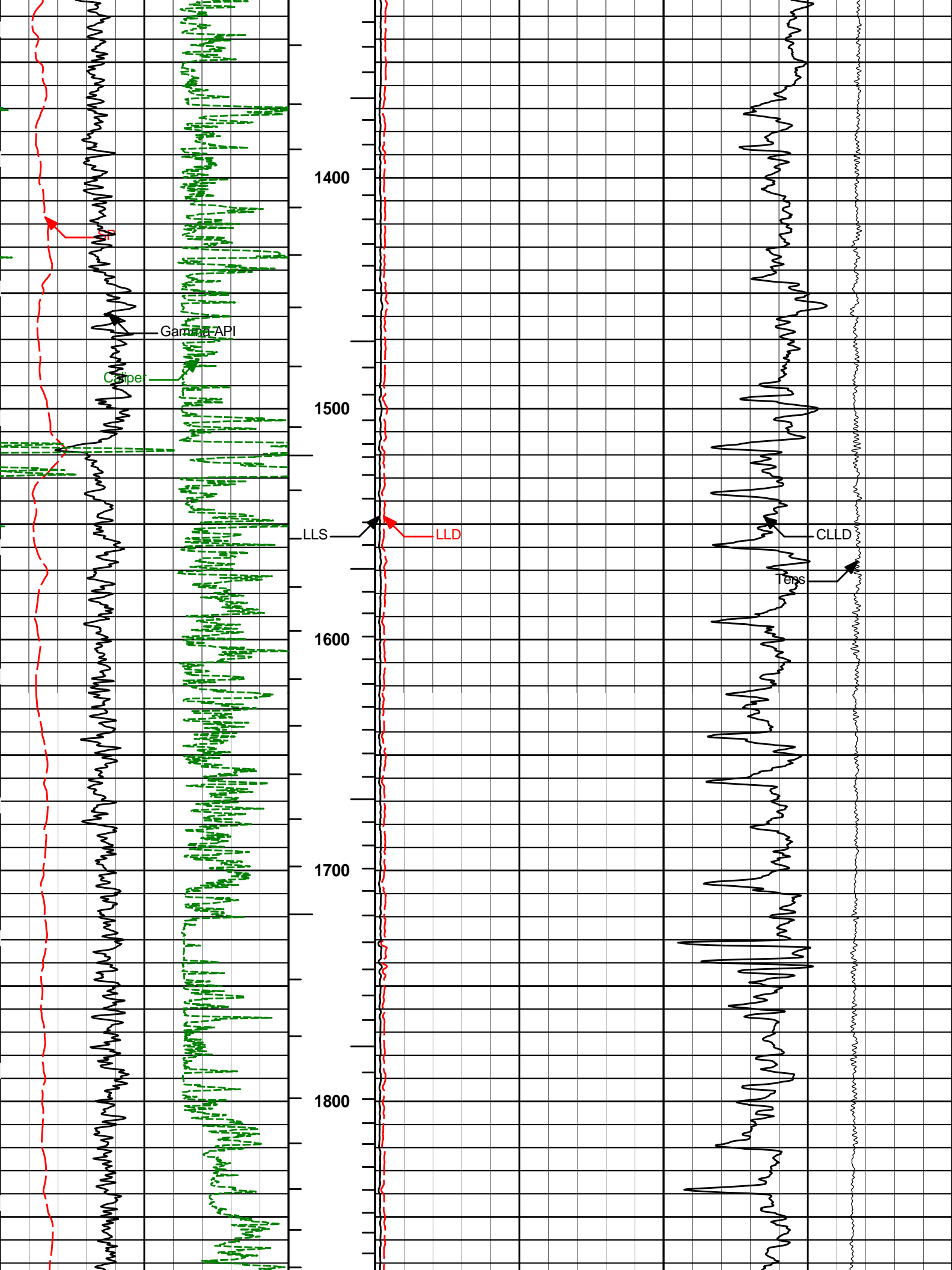
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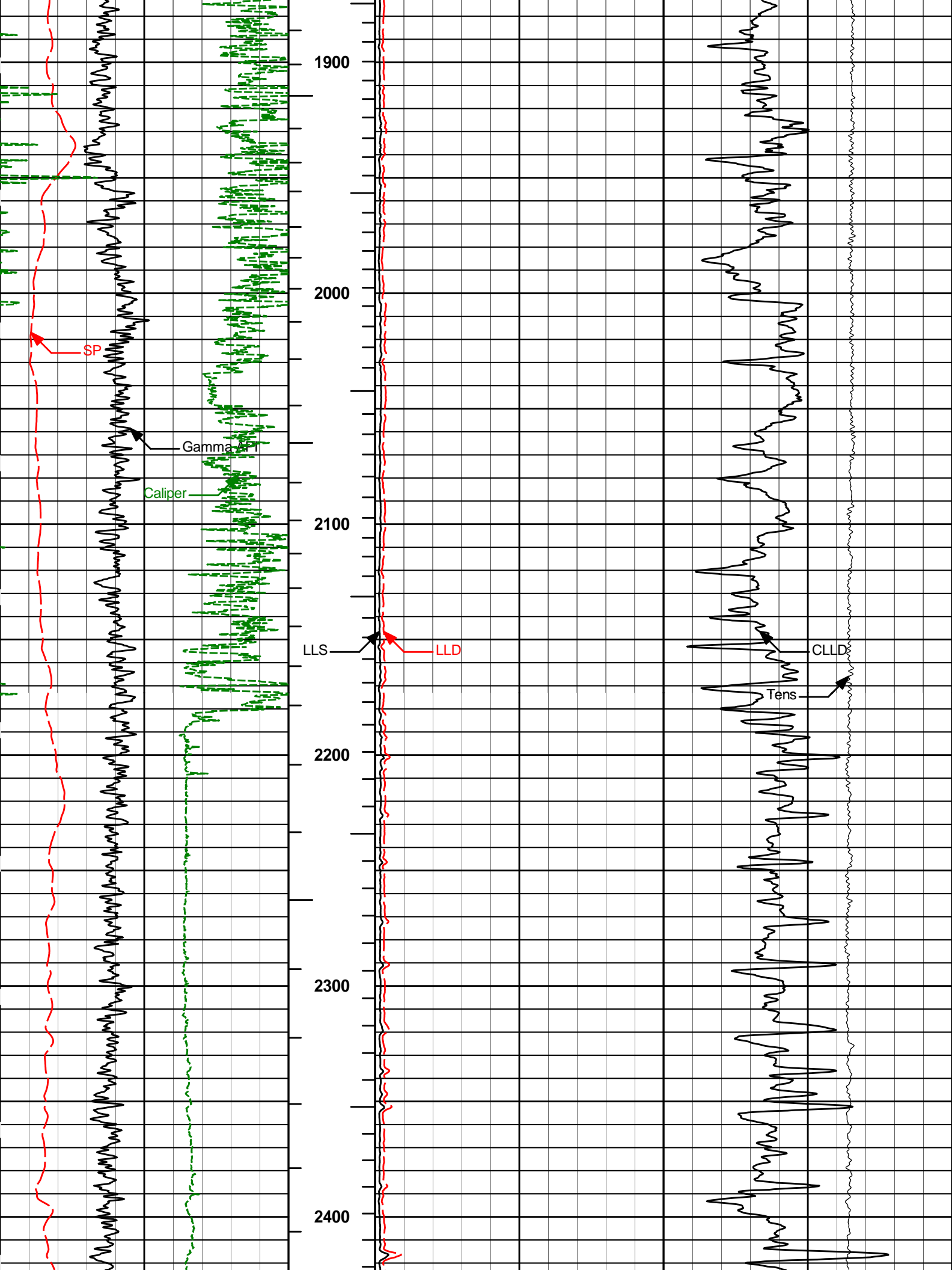
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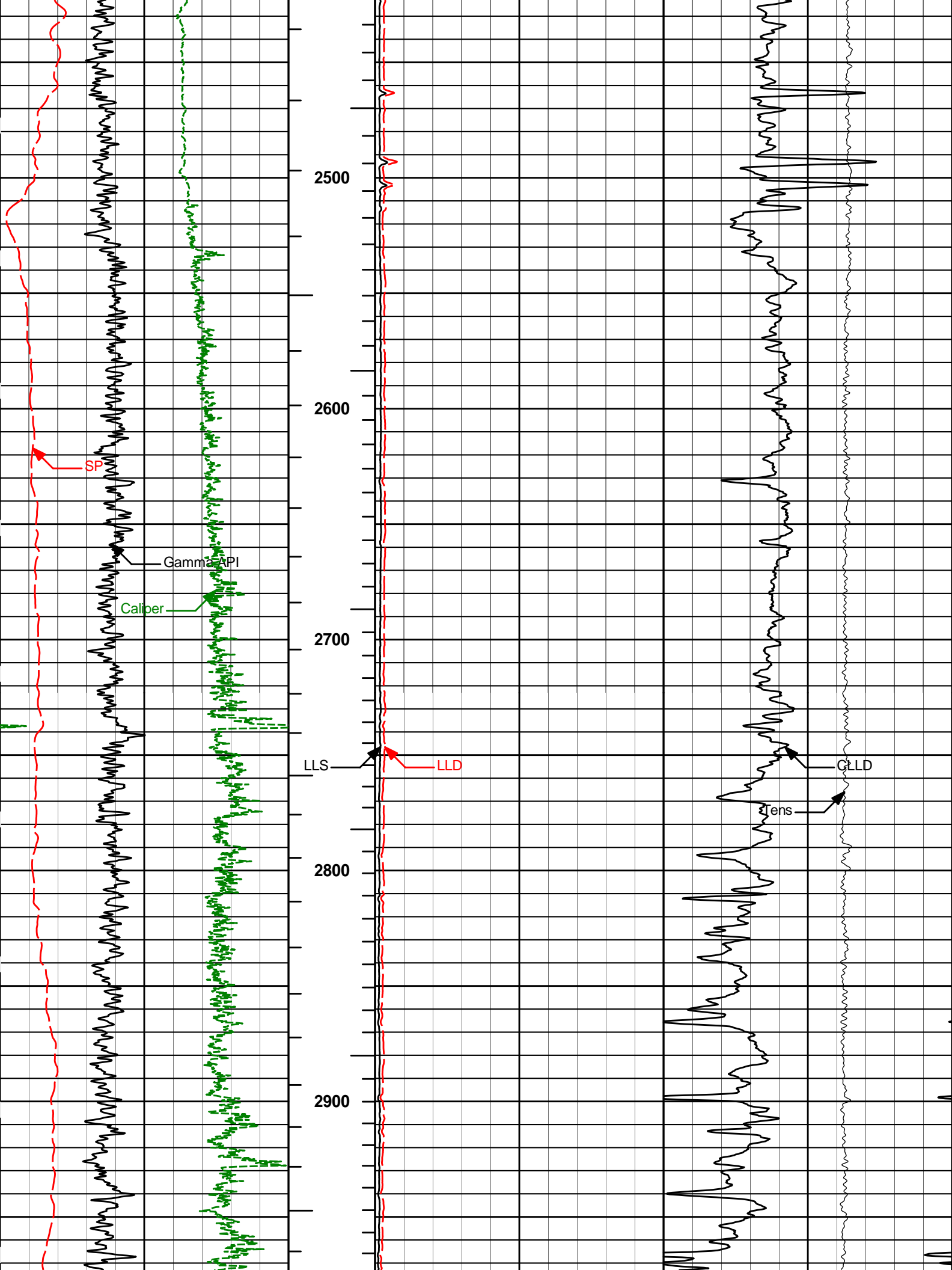
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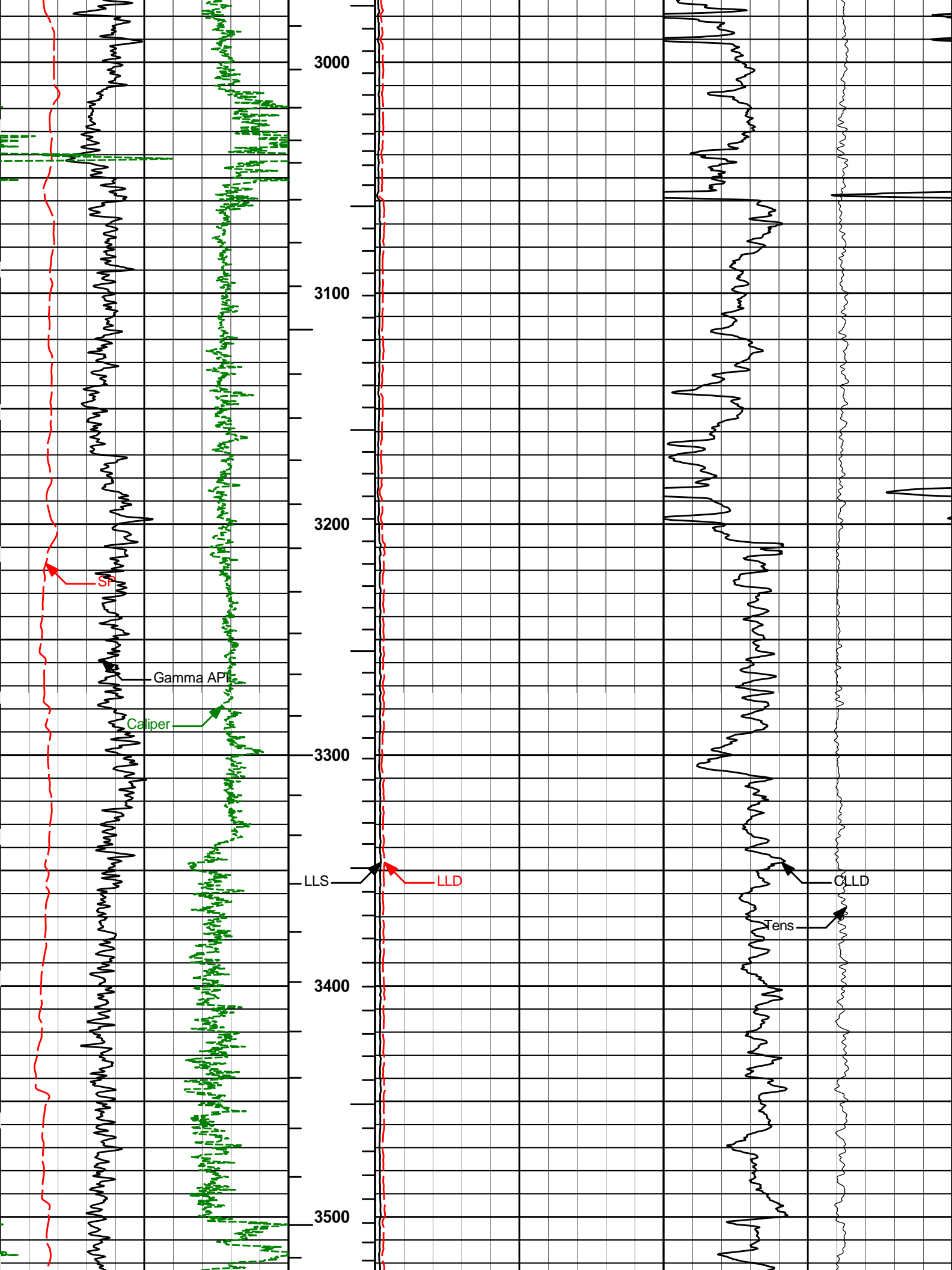


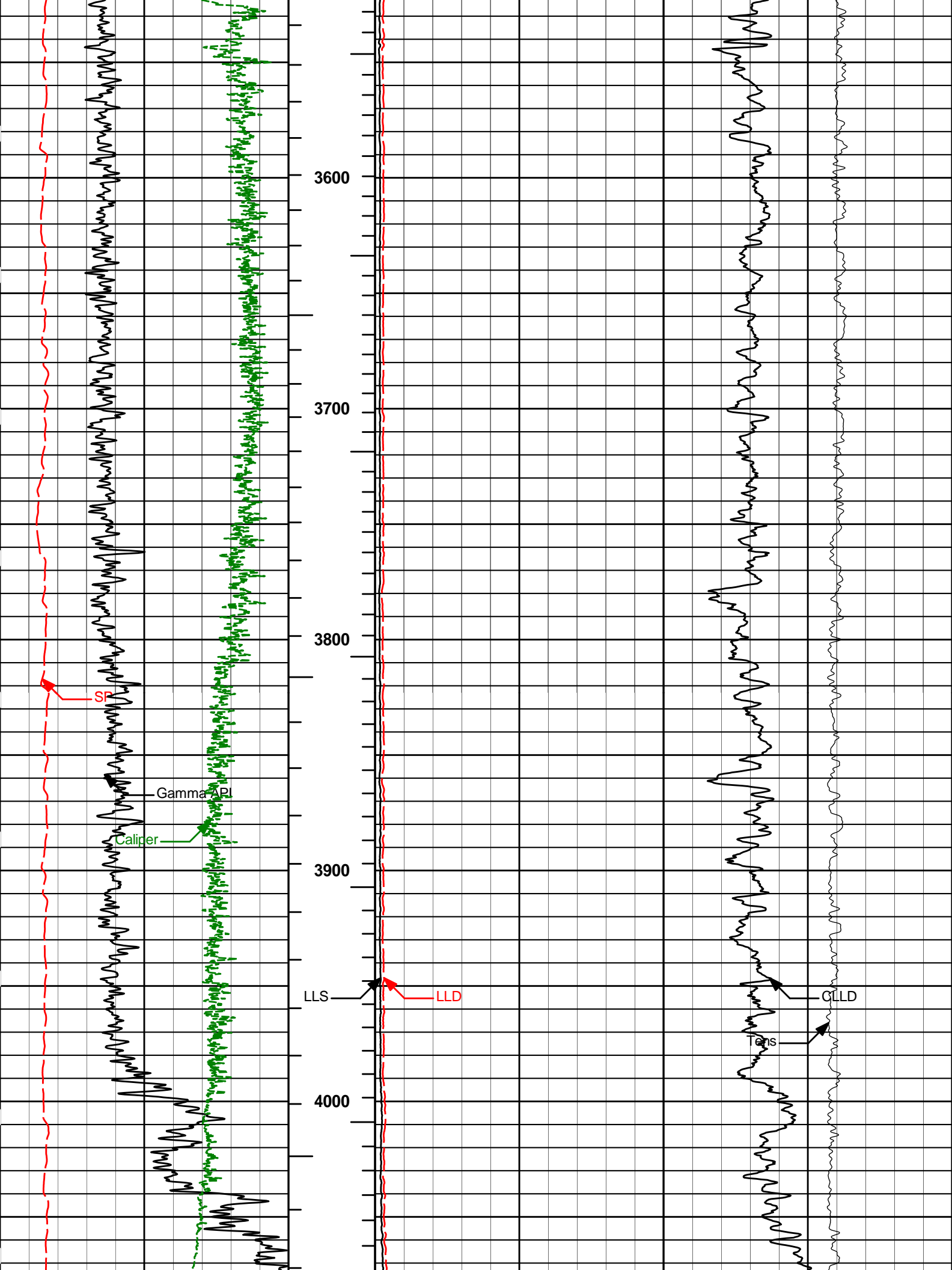


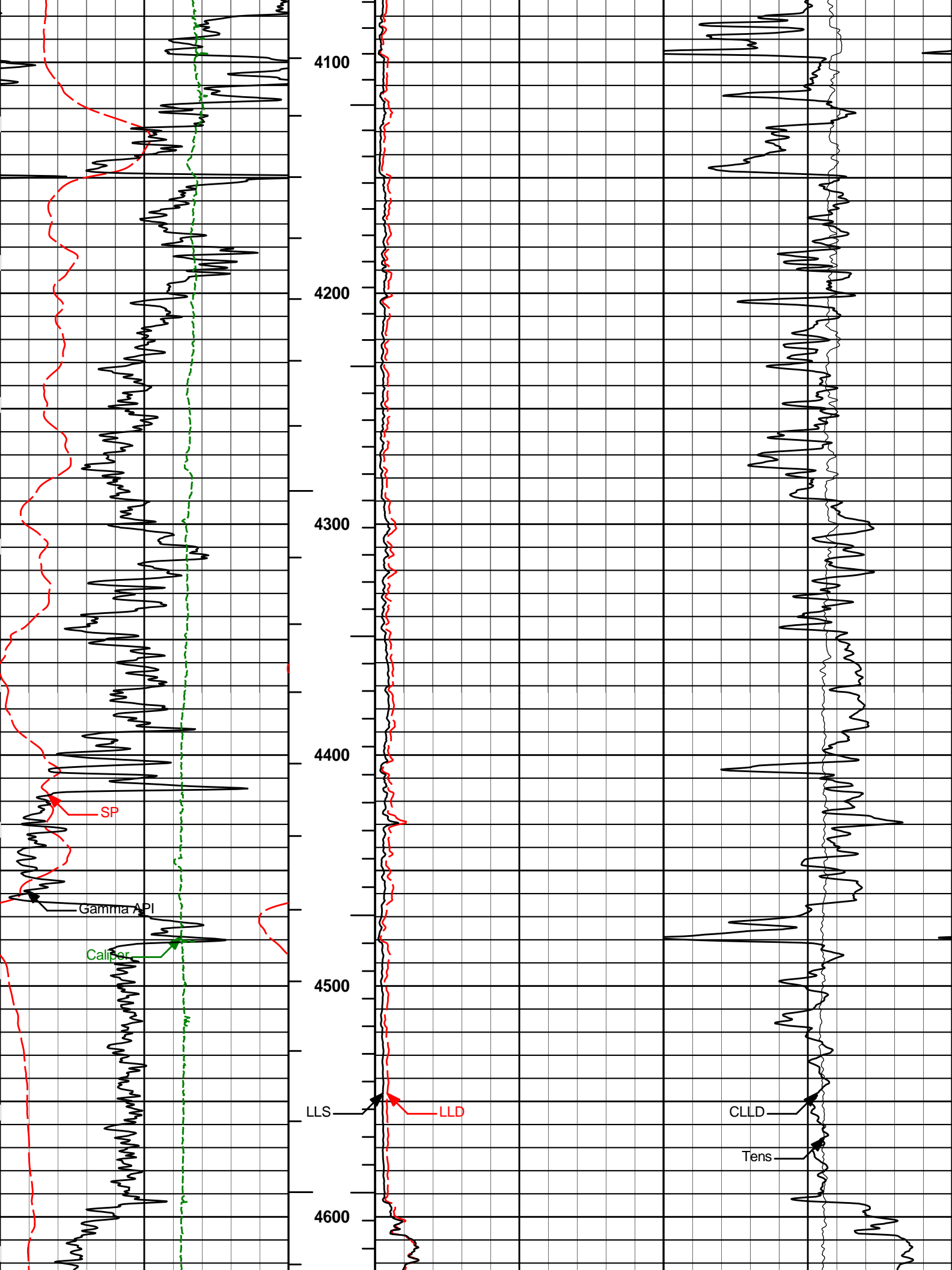


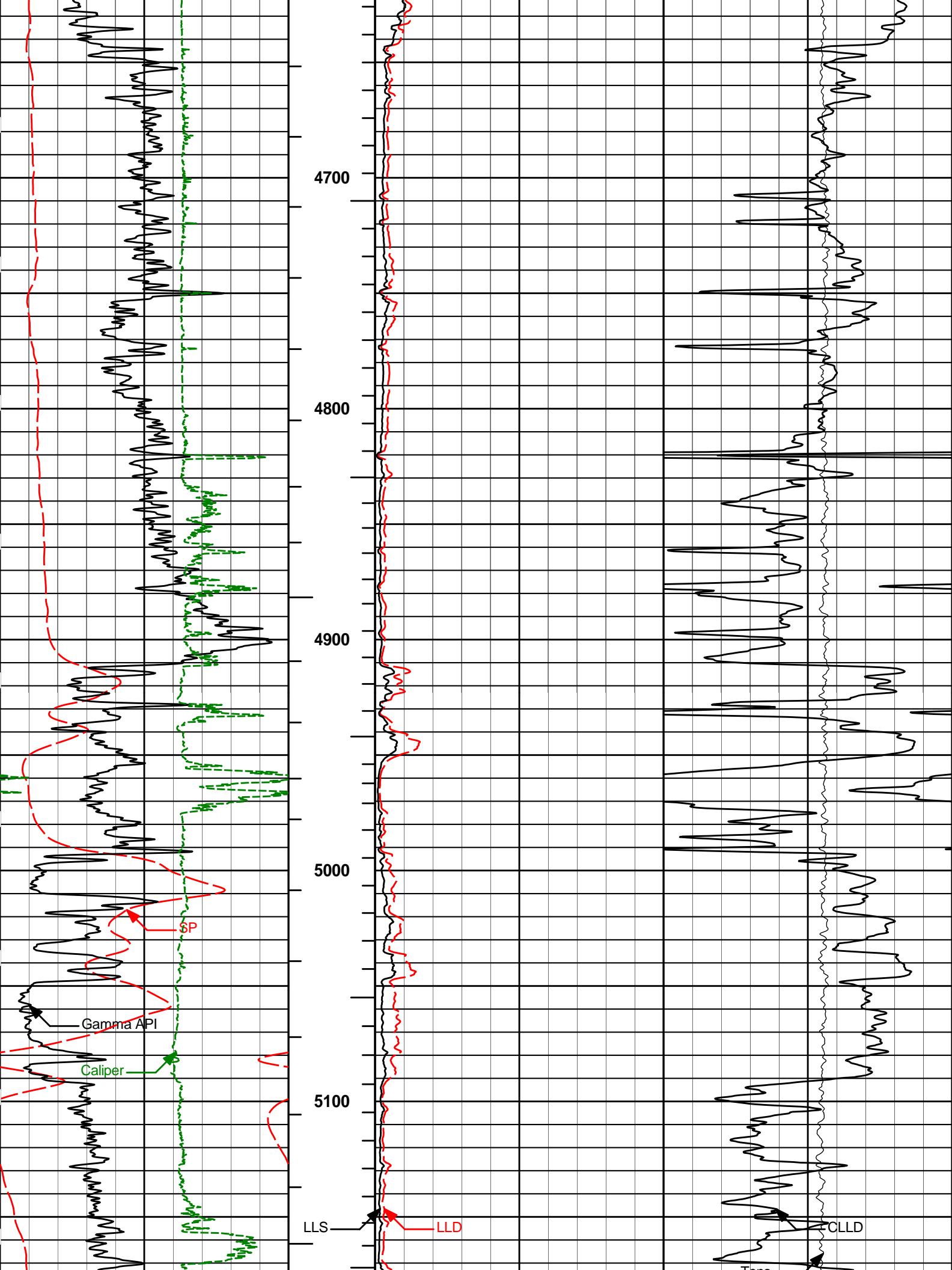


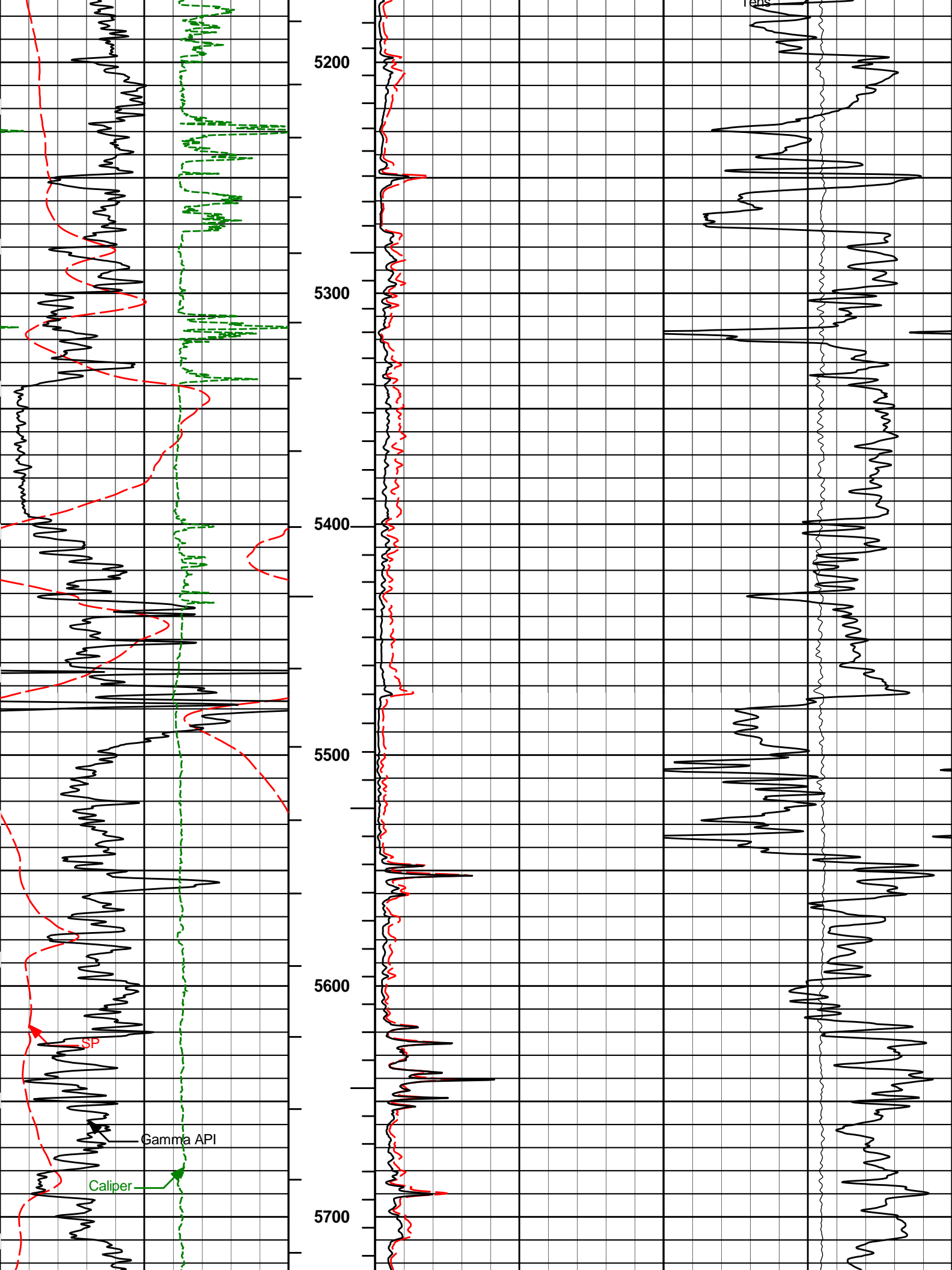


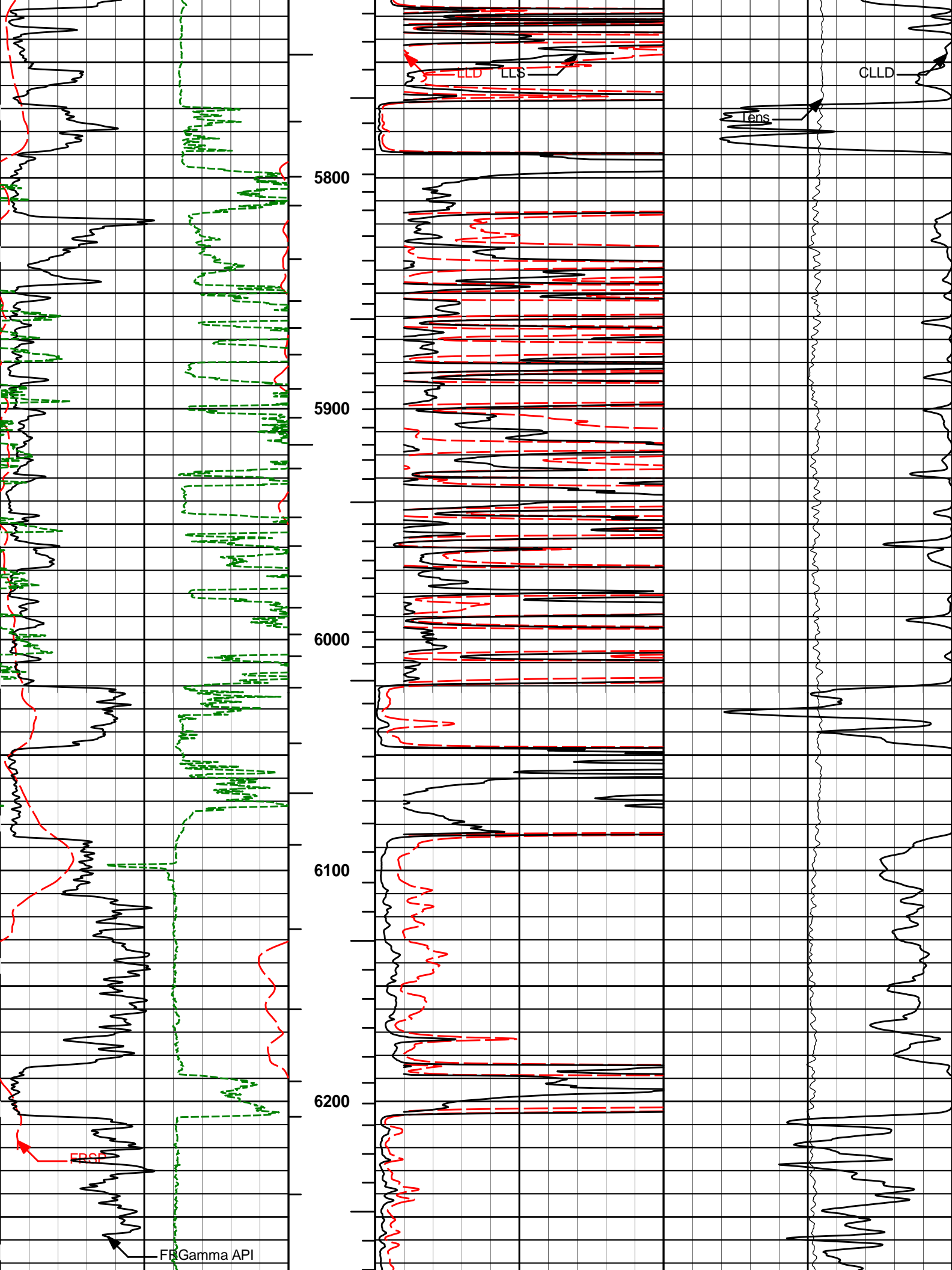


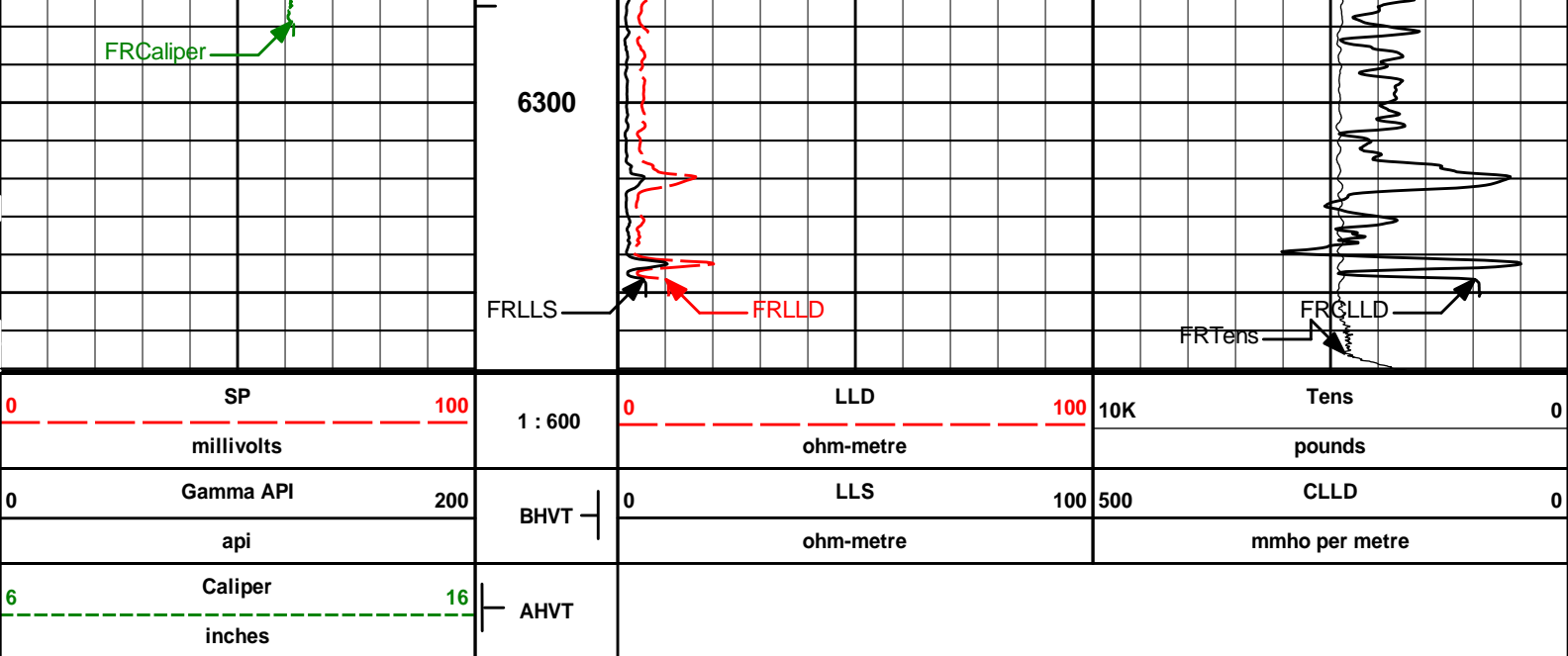












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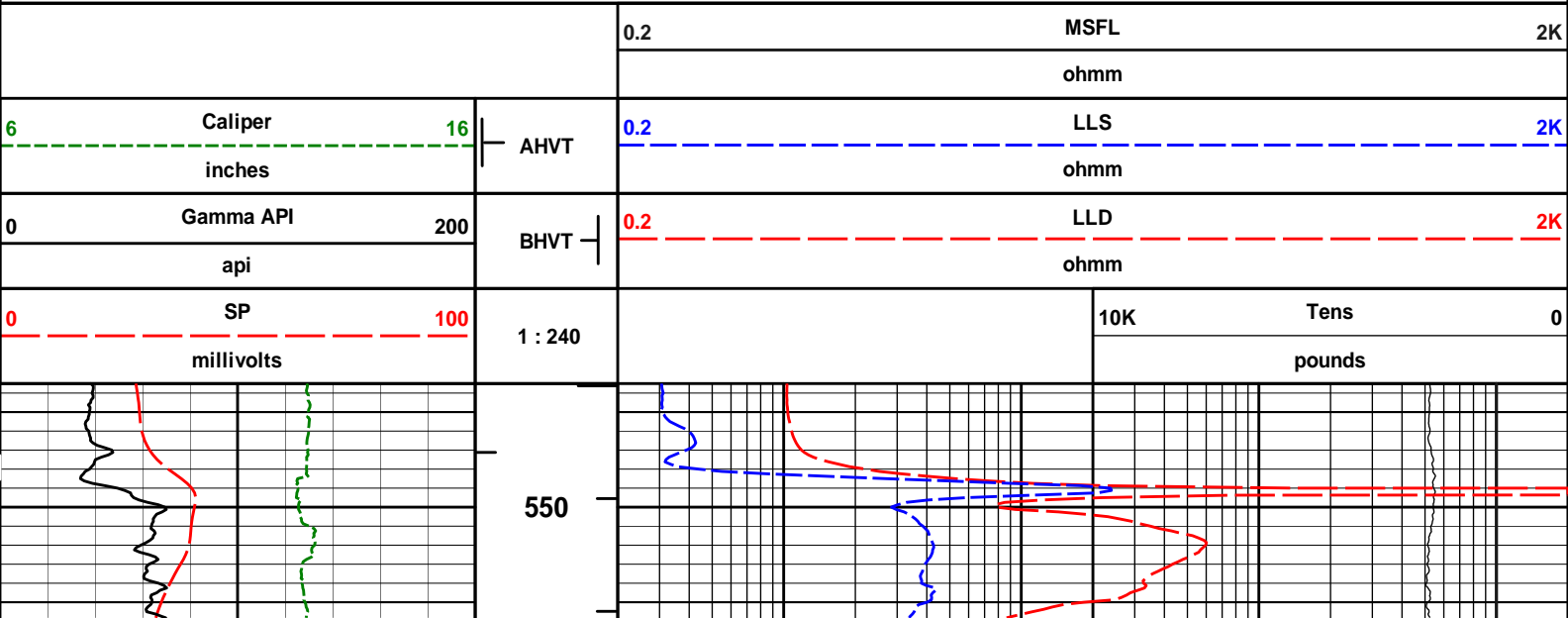
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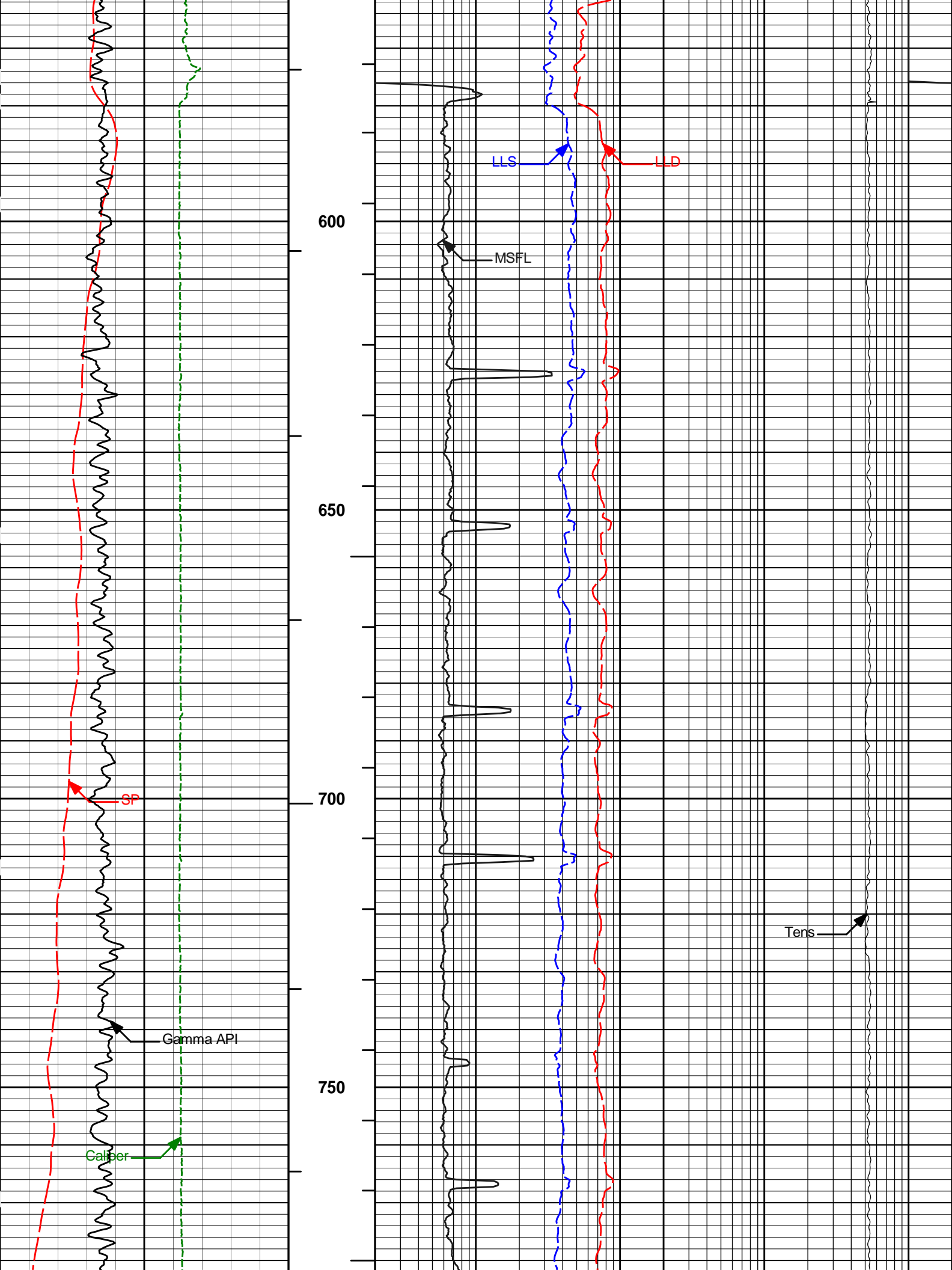
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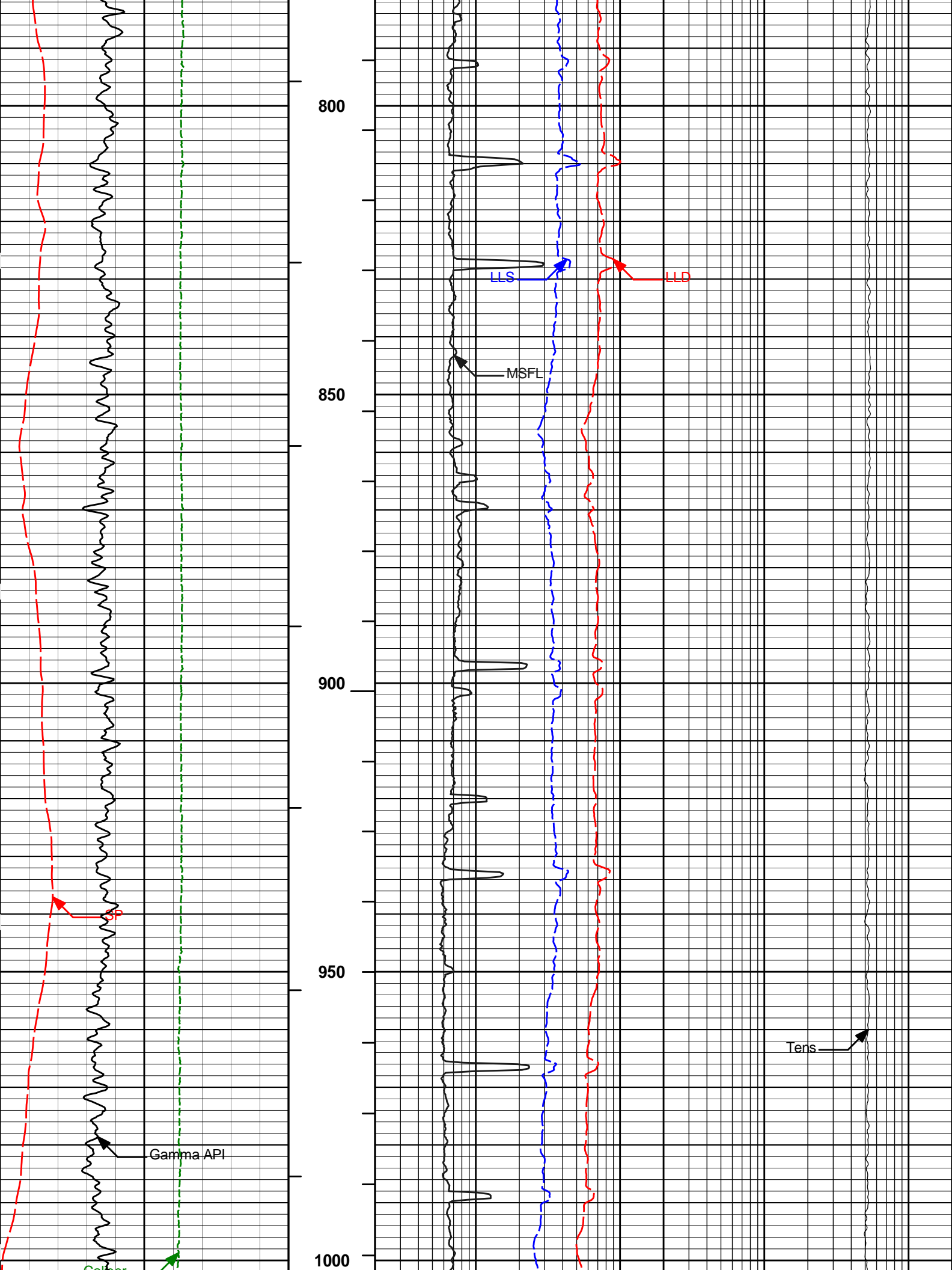
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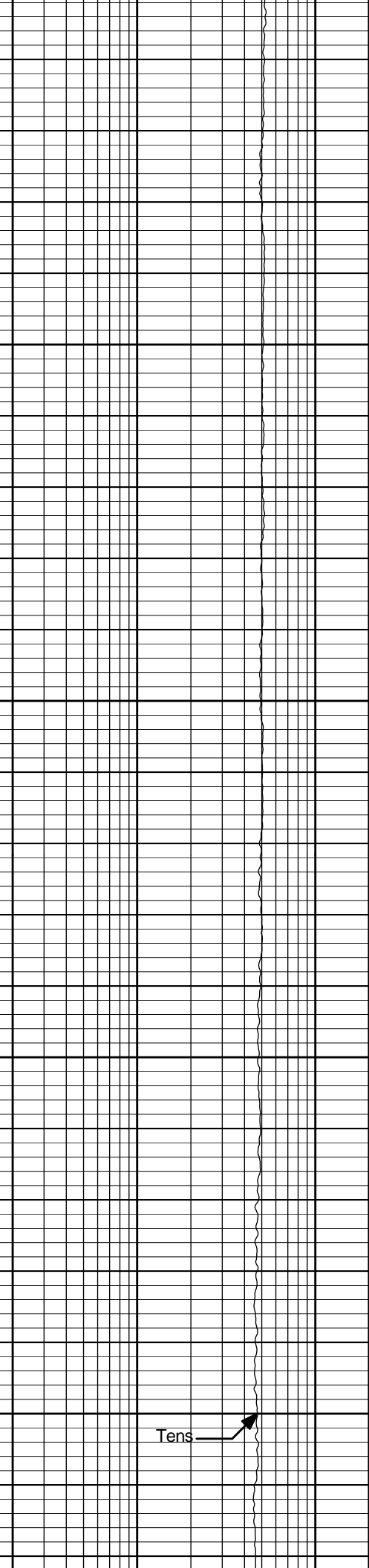
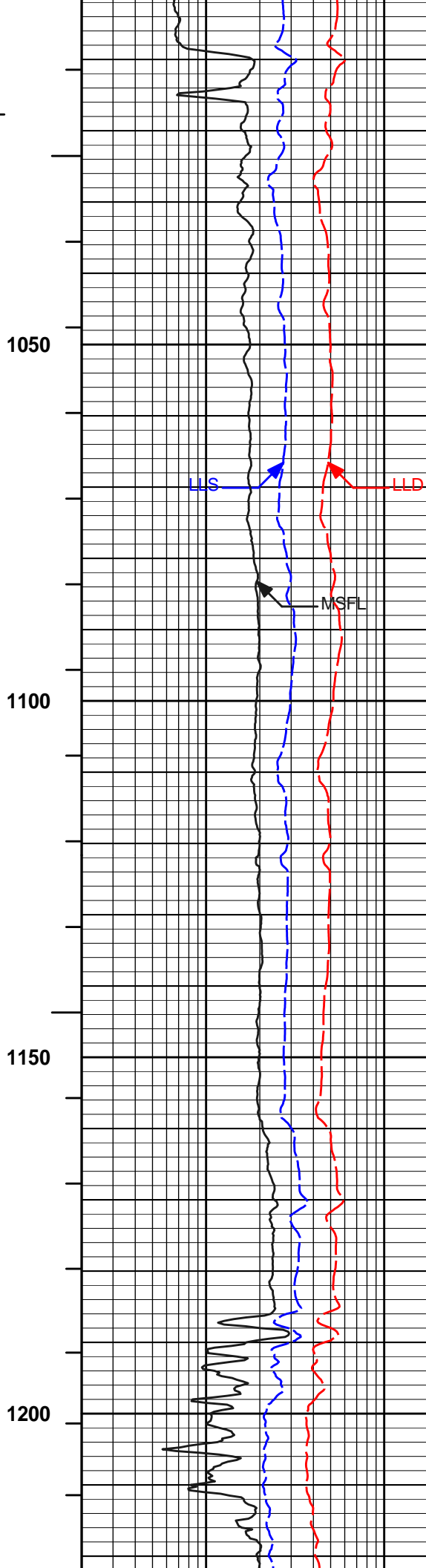
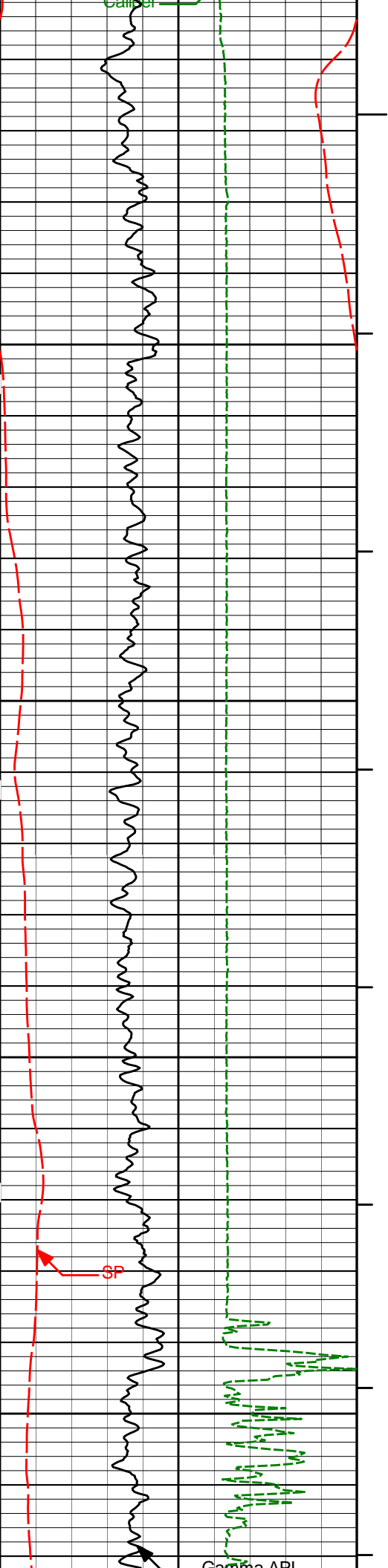
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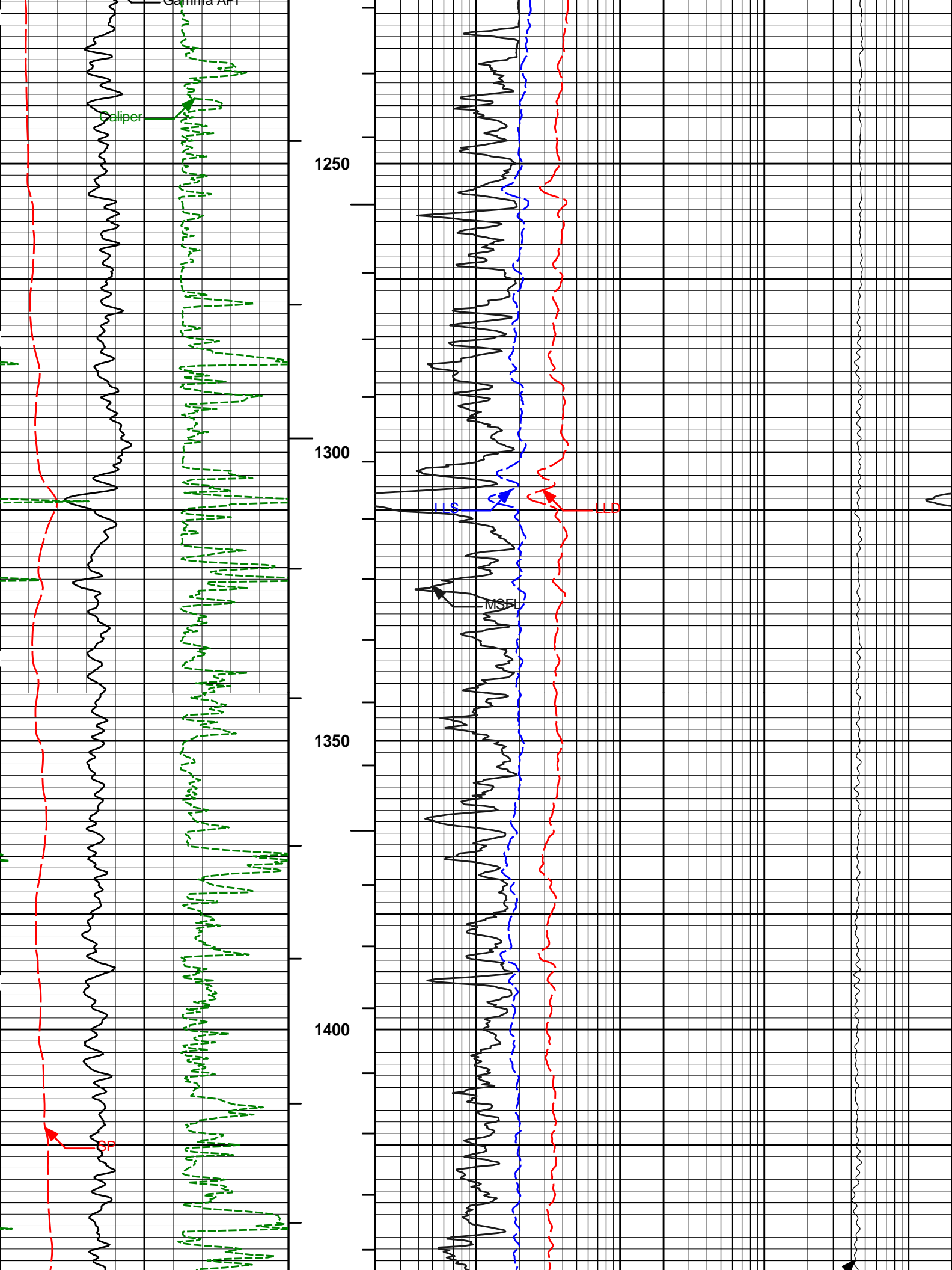
MAIN PASS 5" = 100'

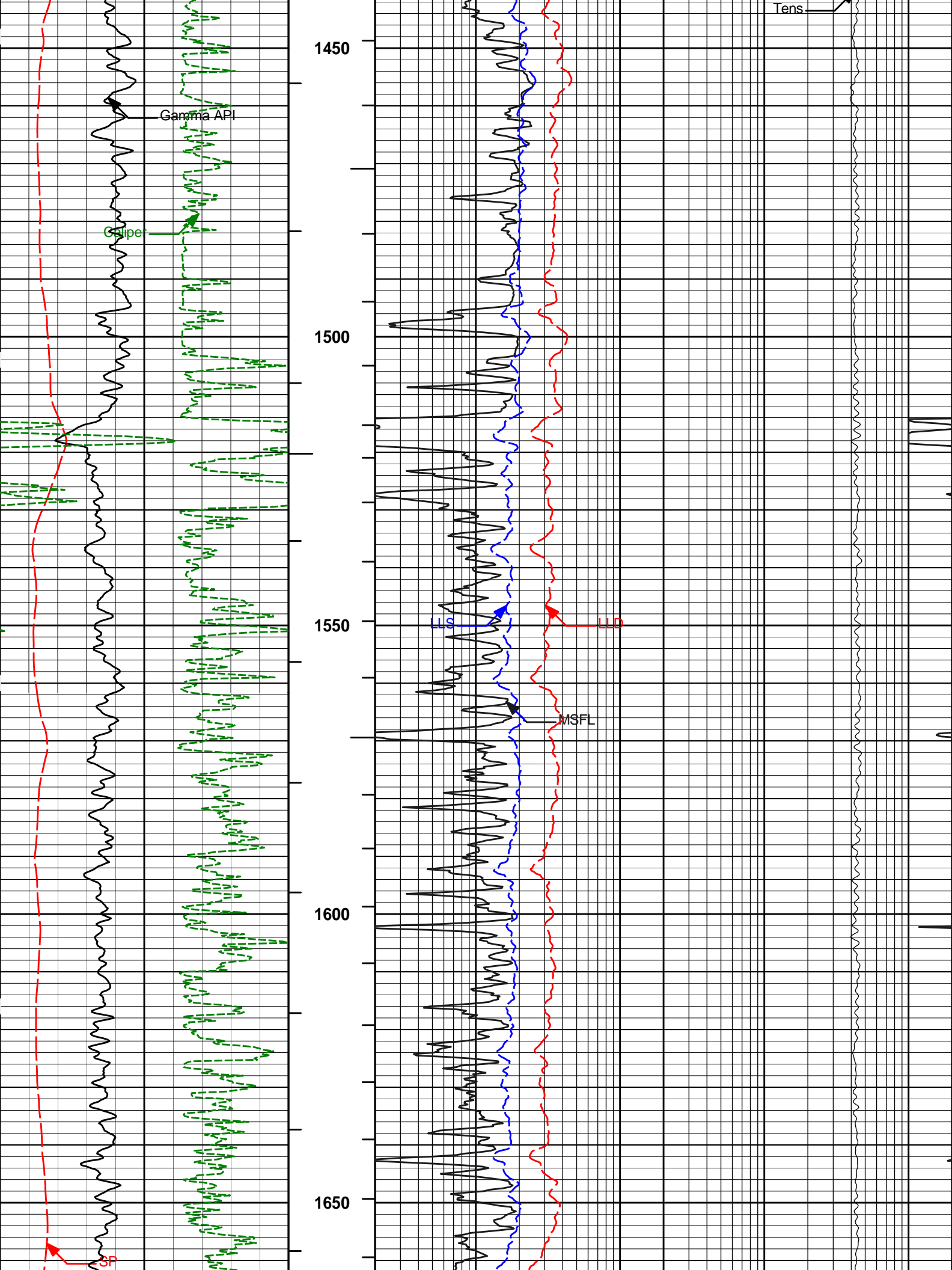


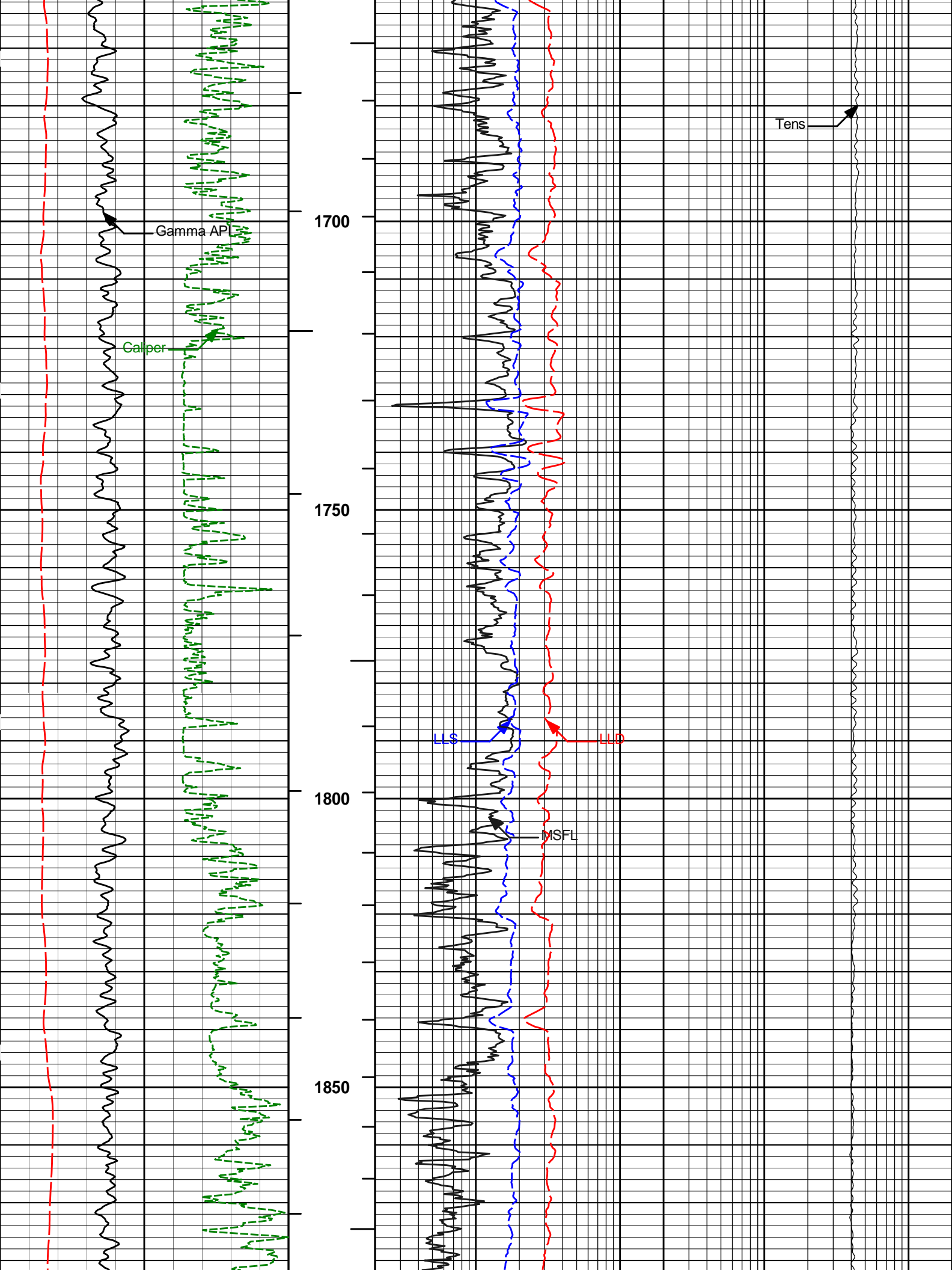


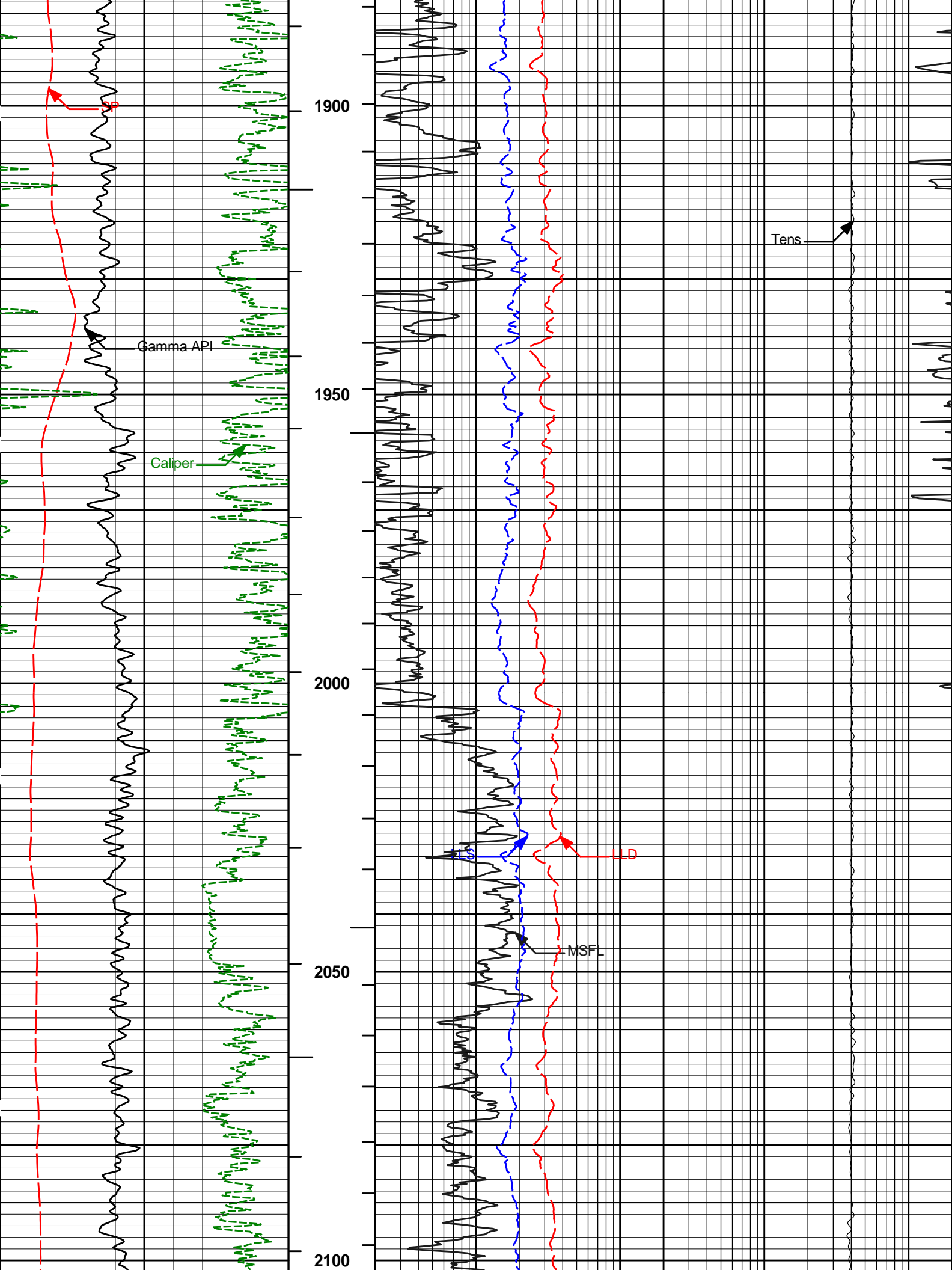


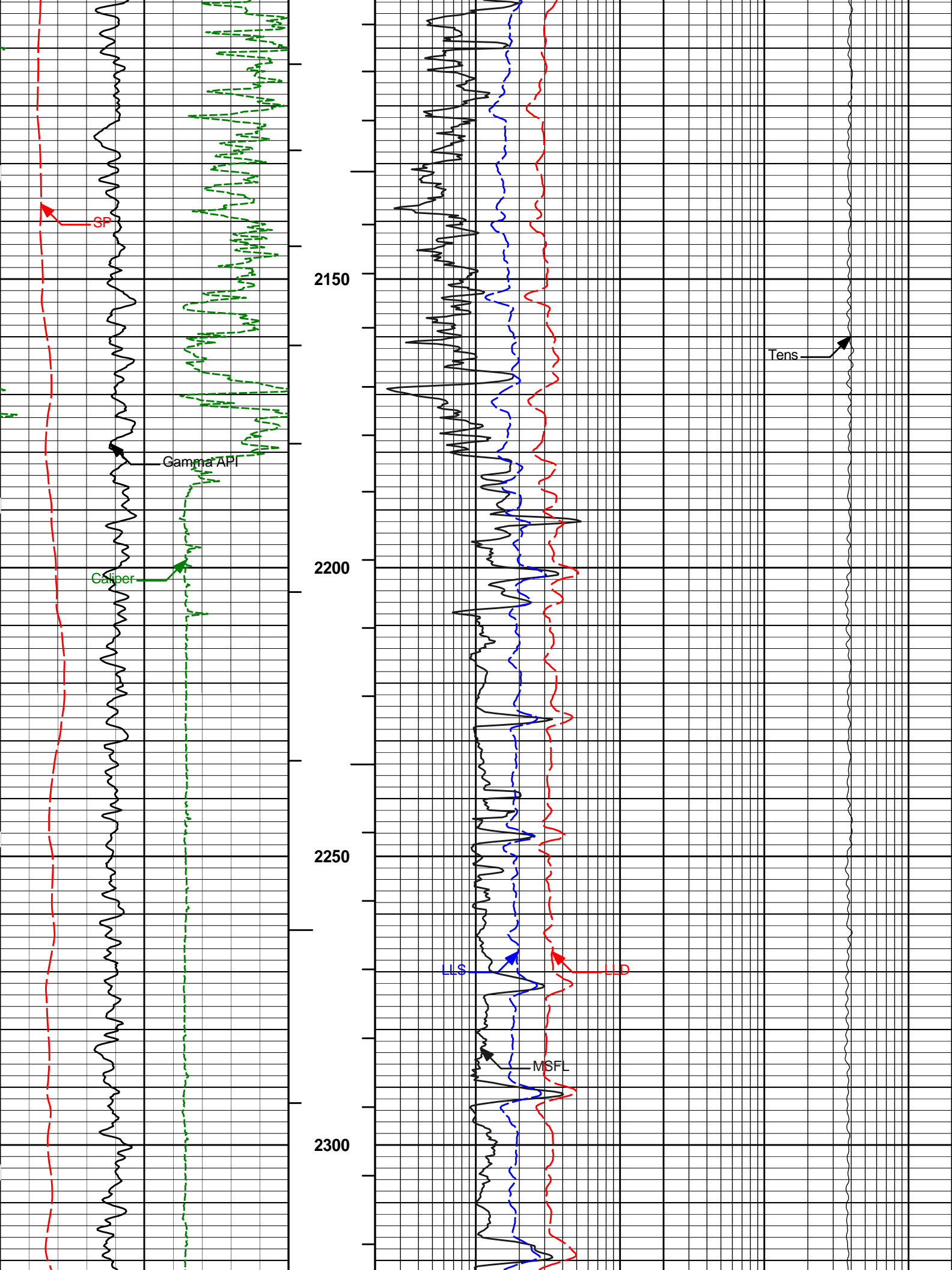


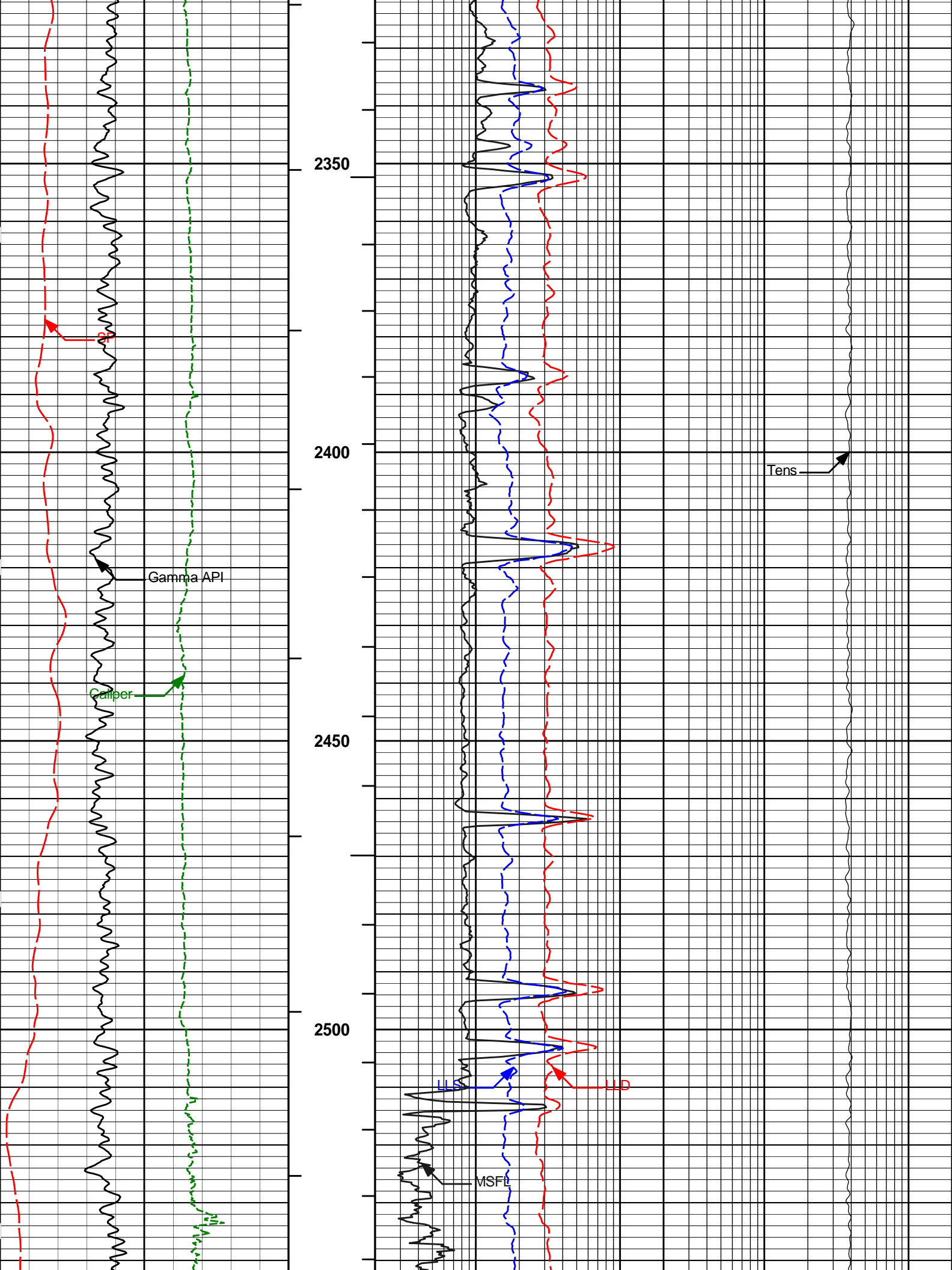


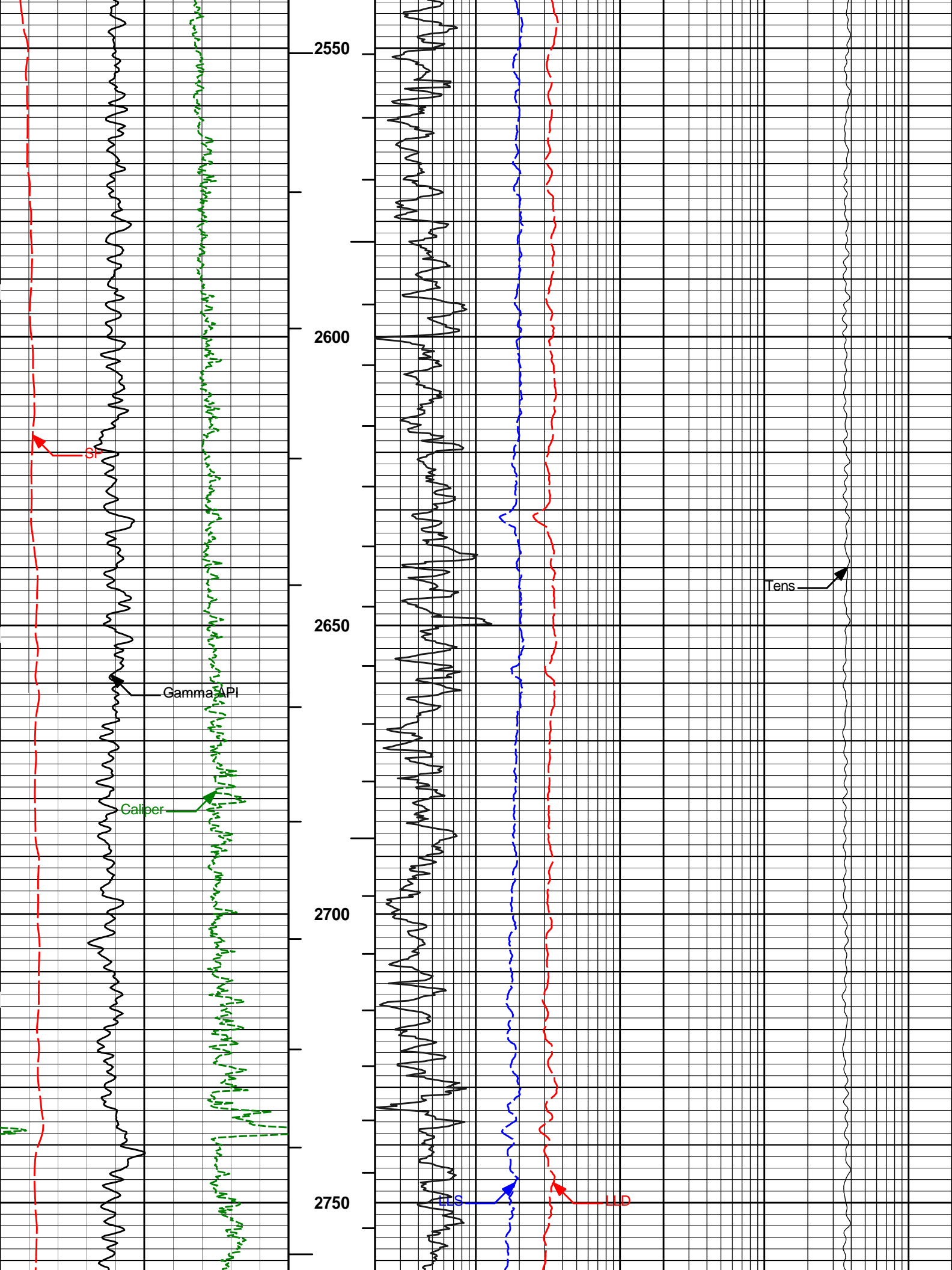


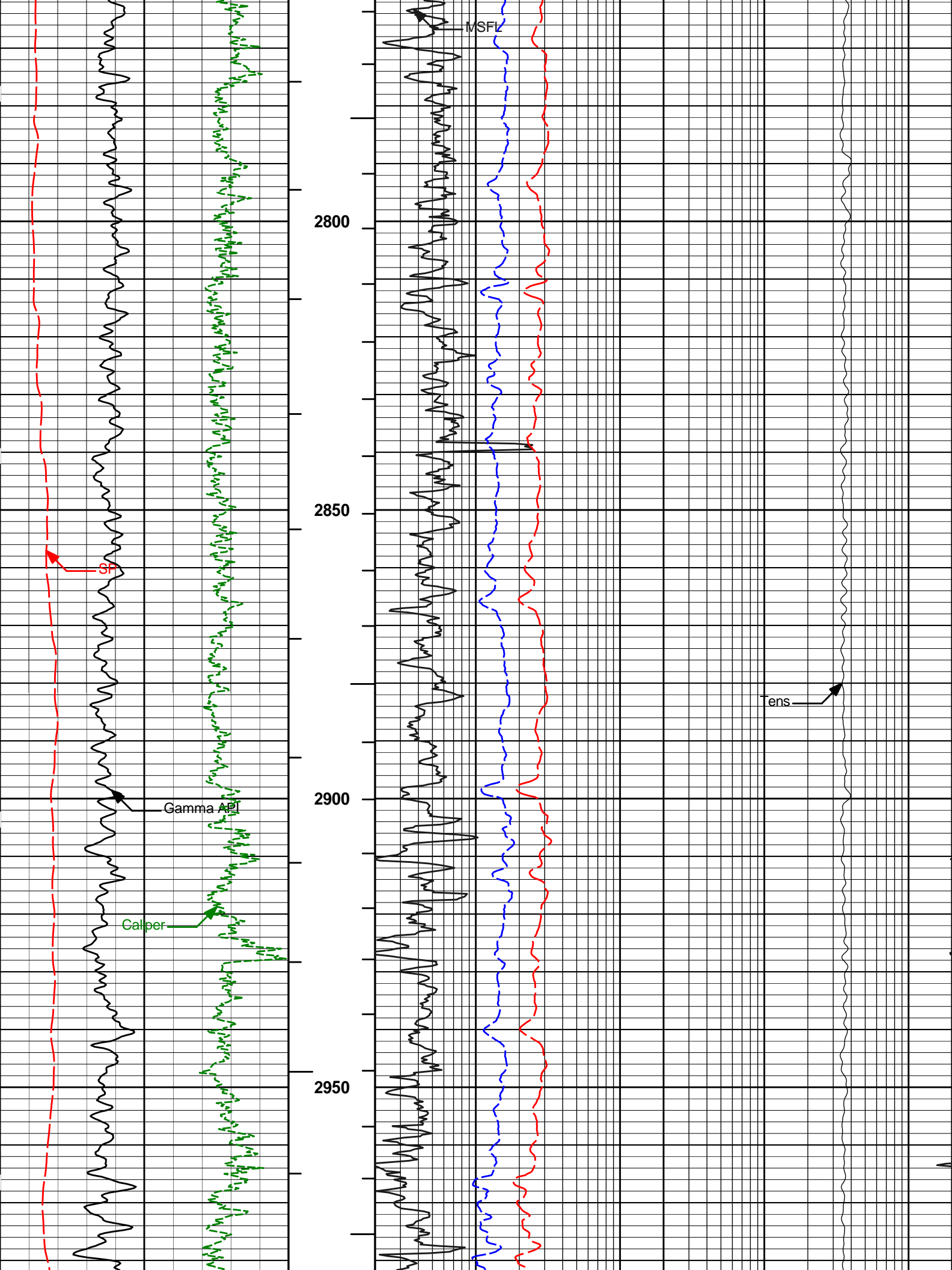


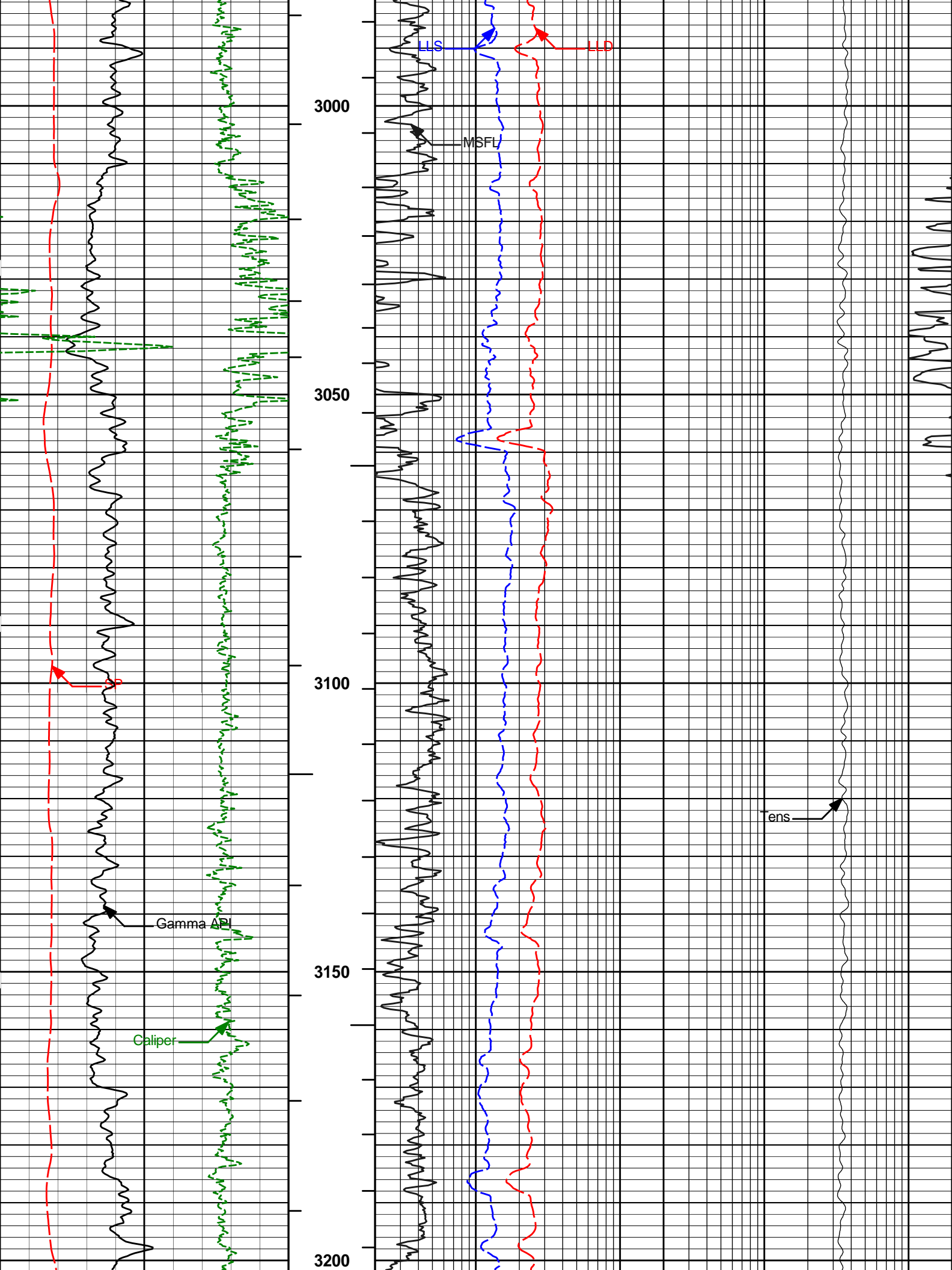


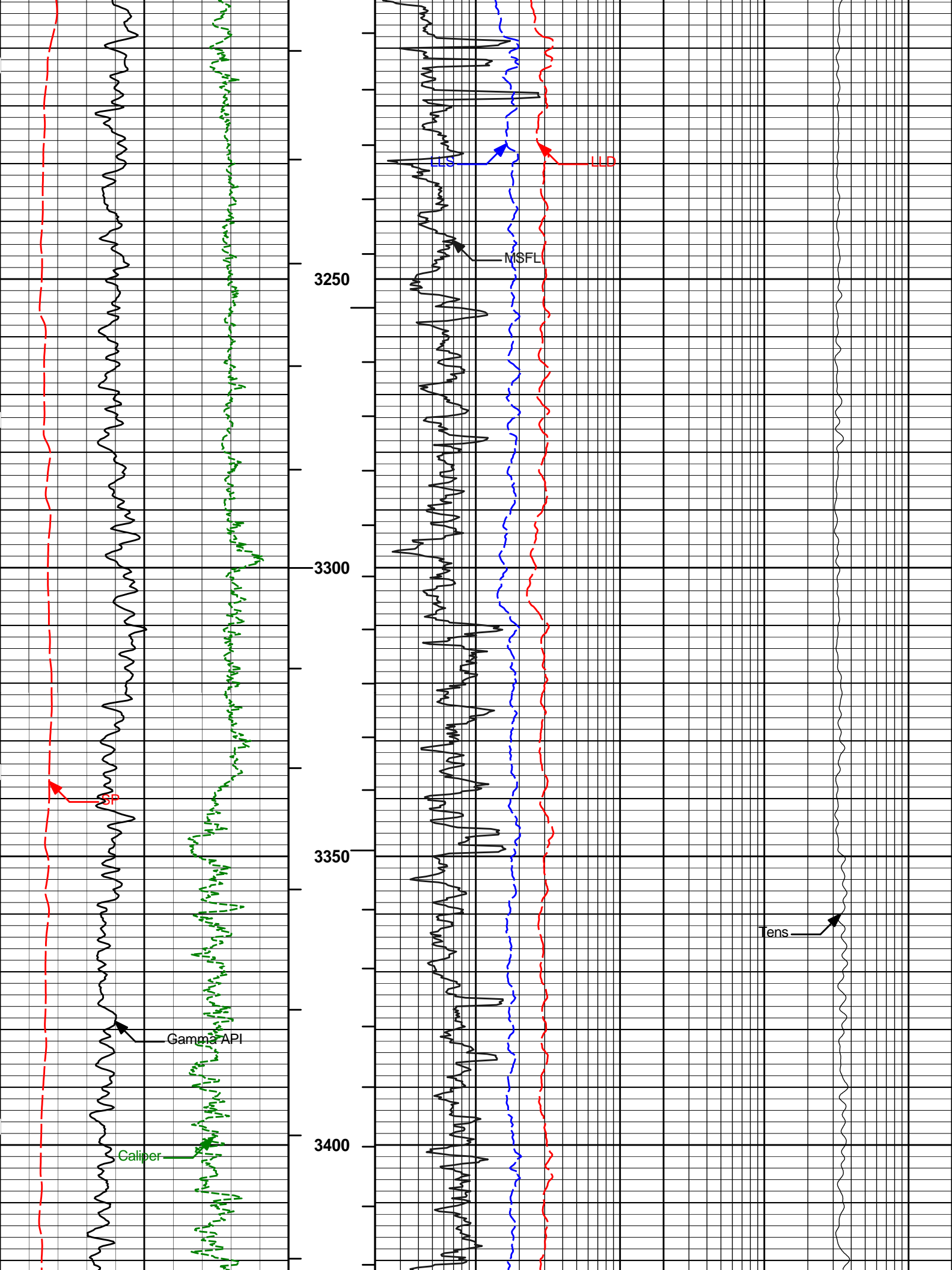


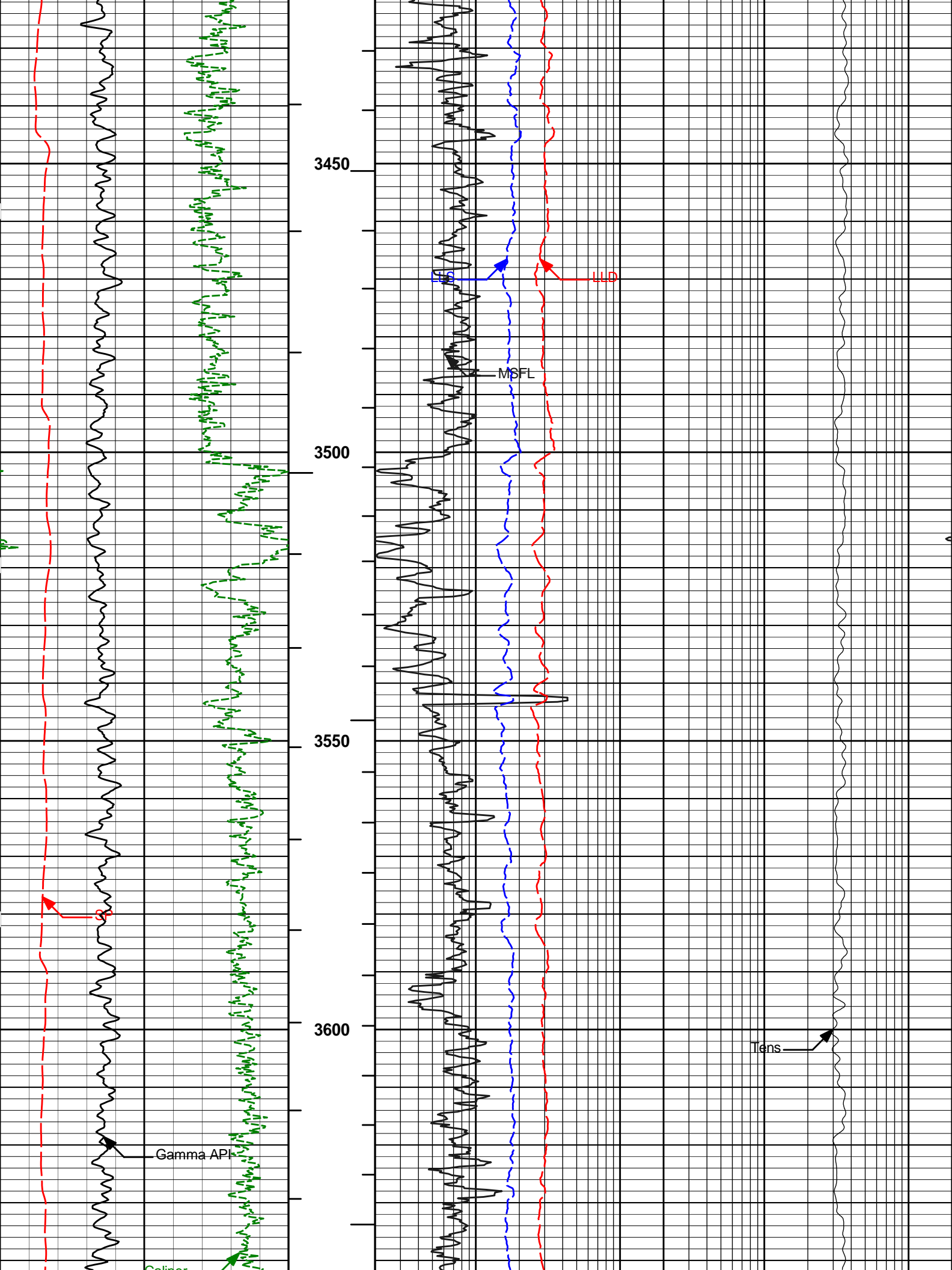


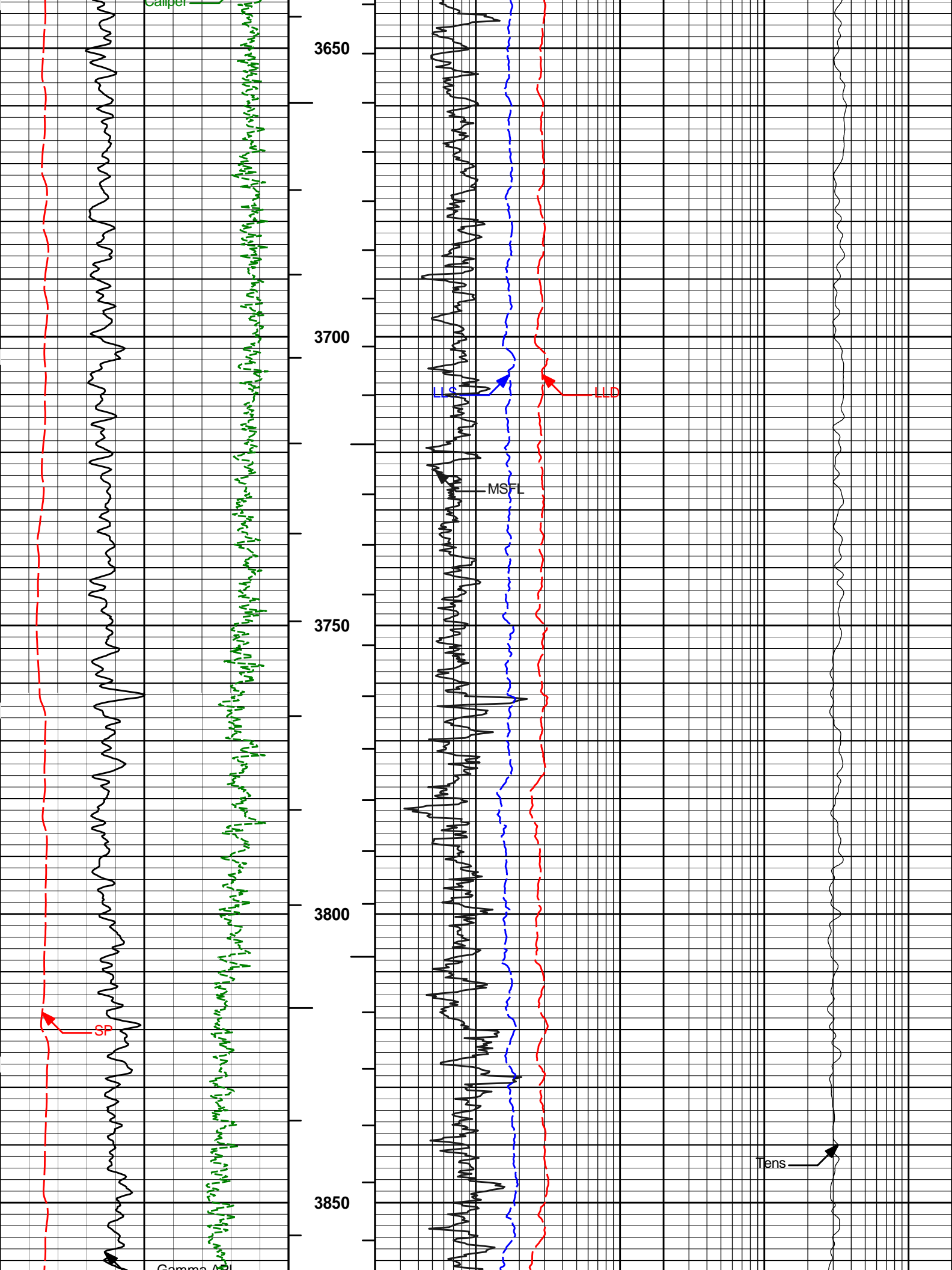


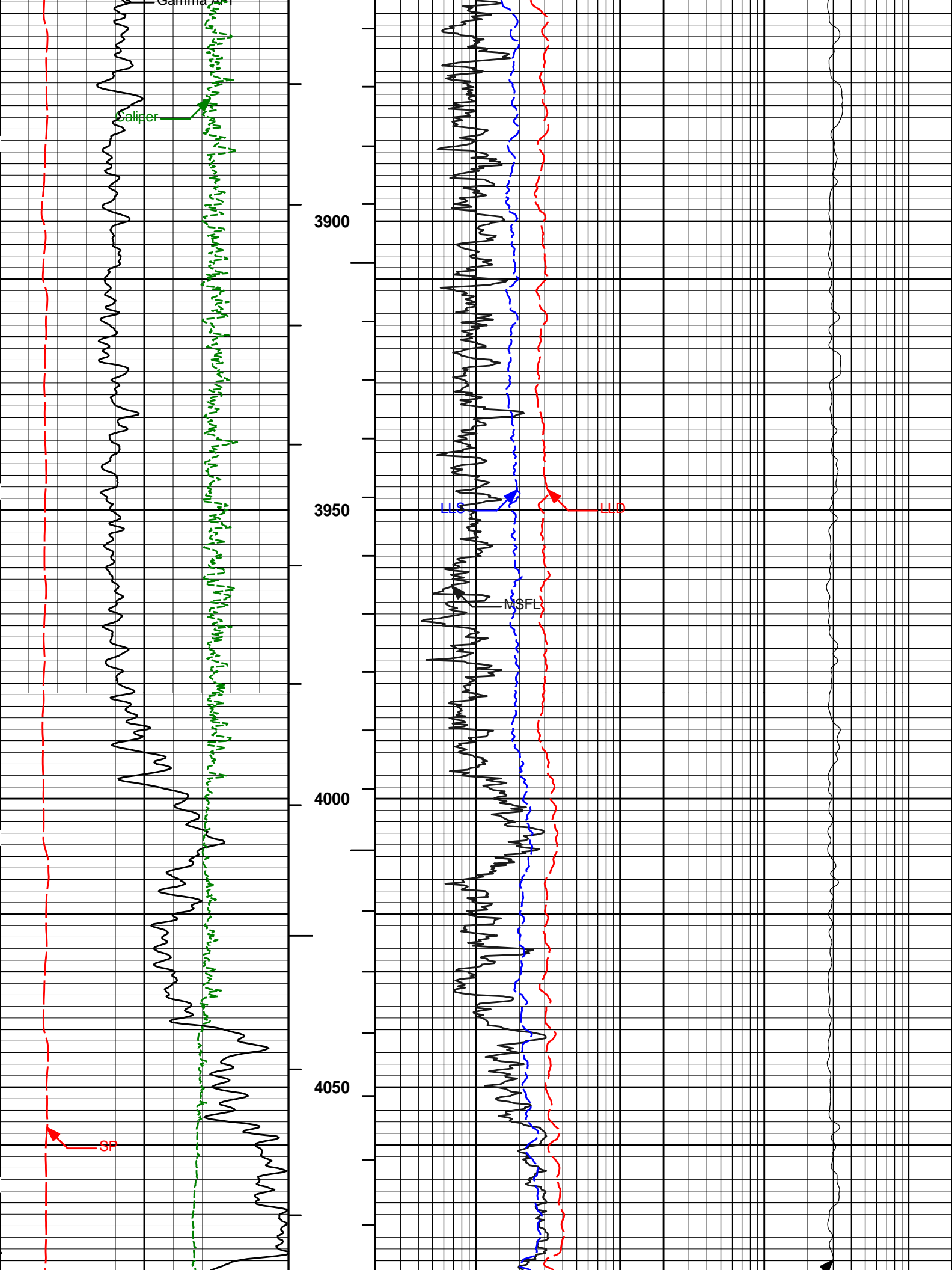


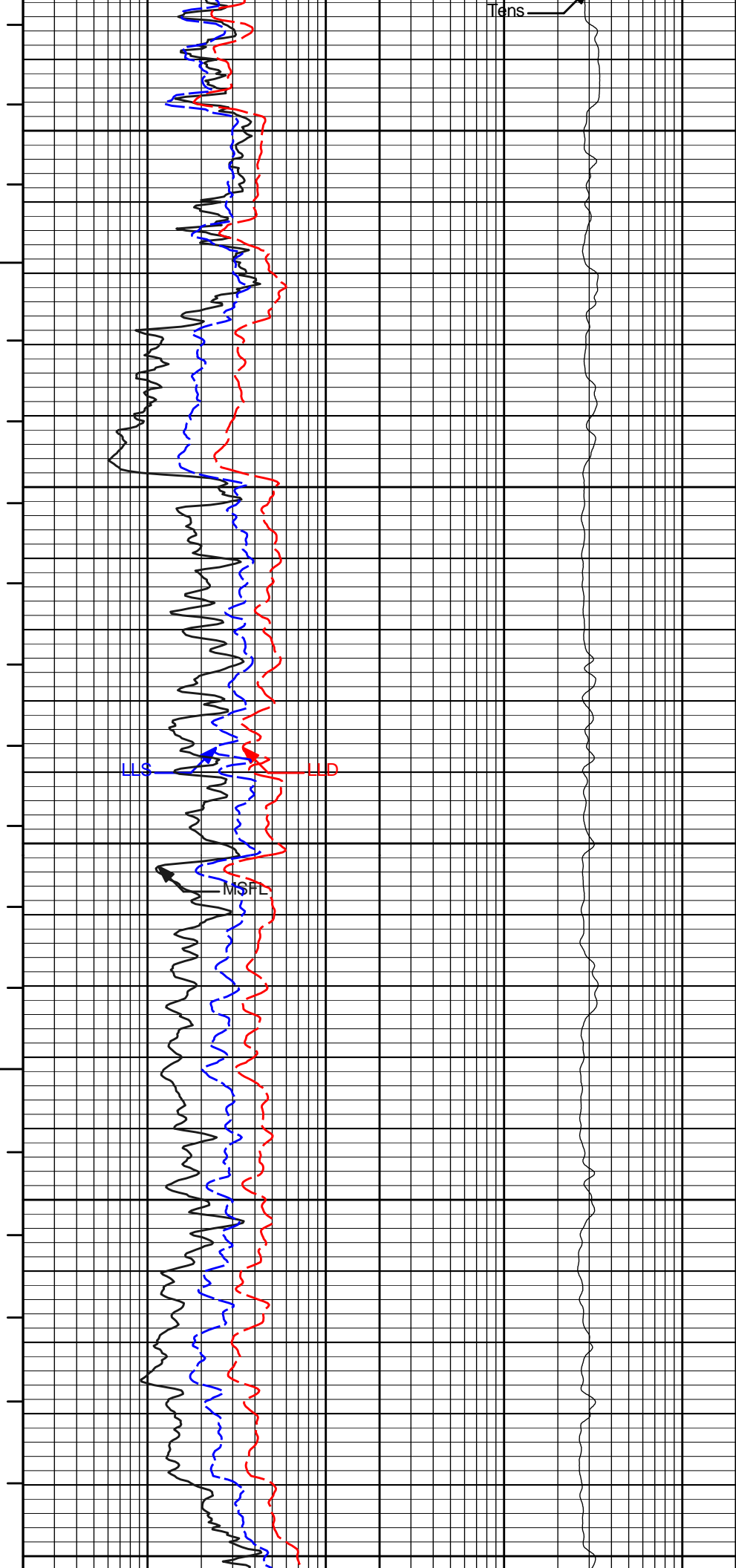
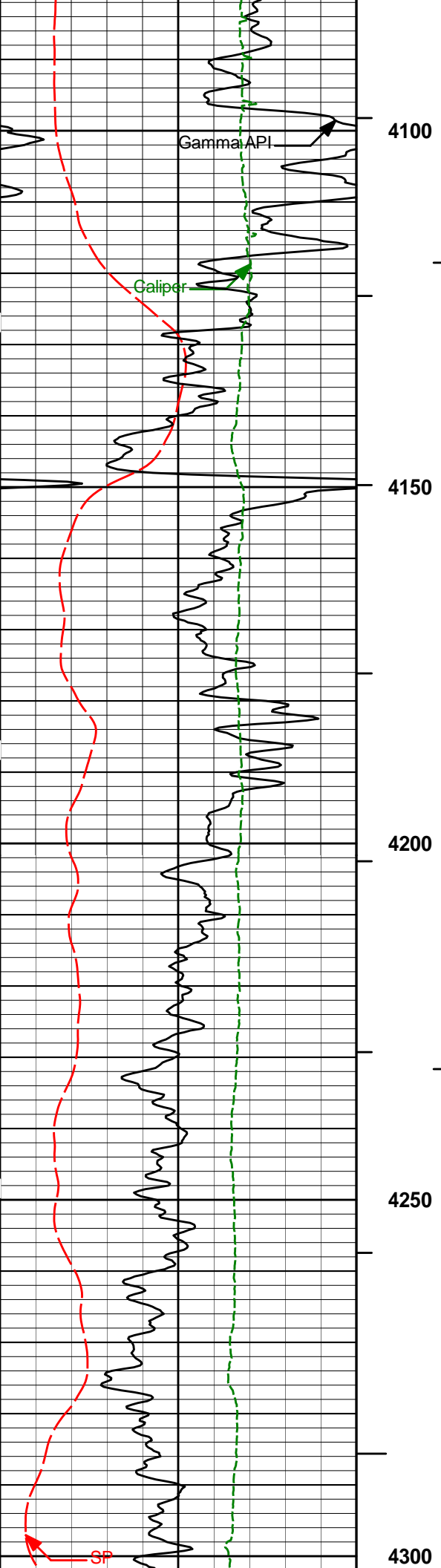


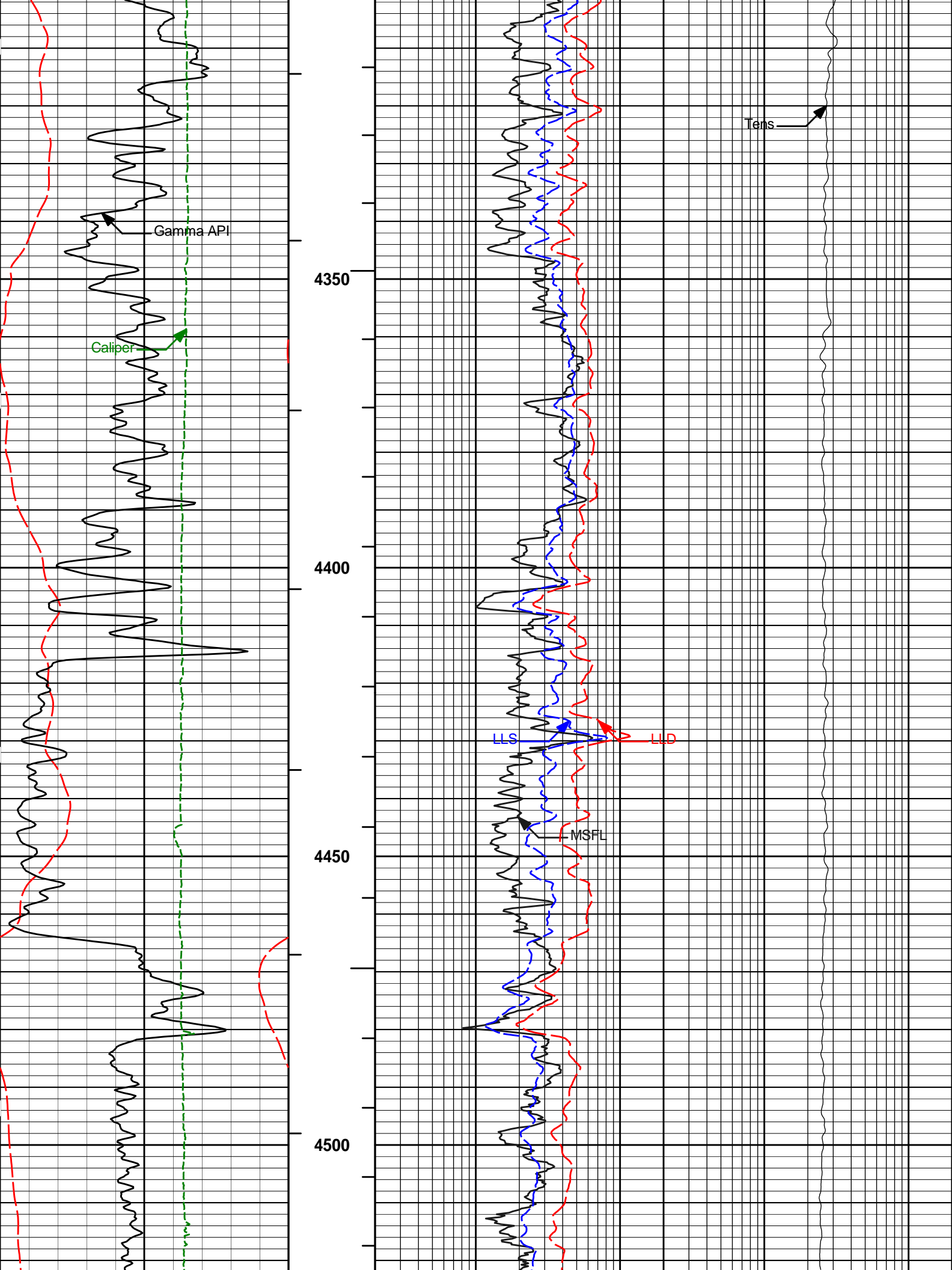


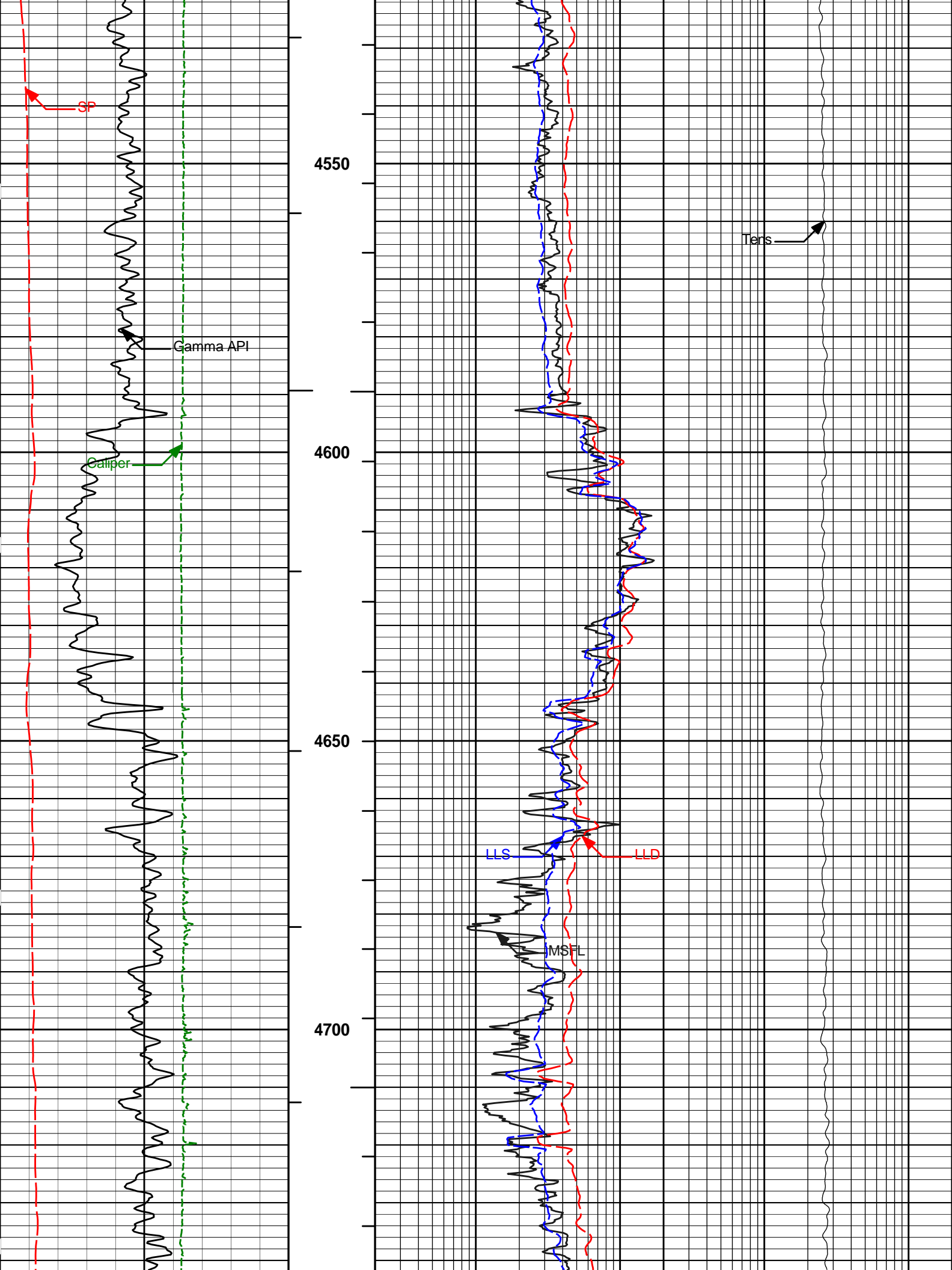


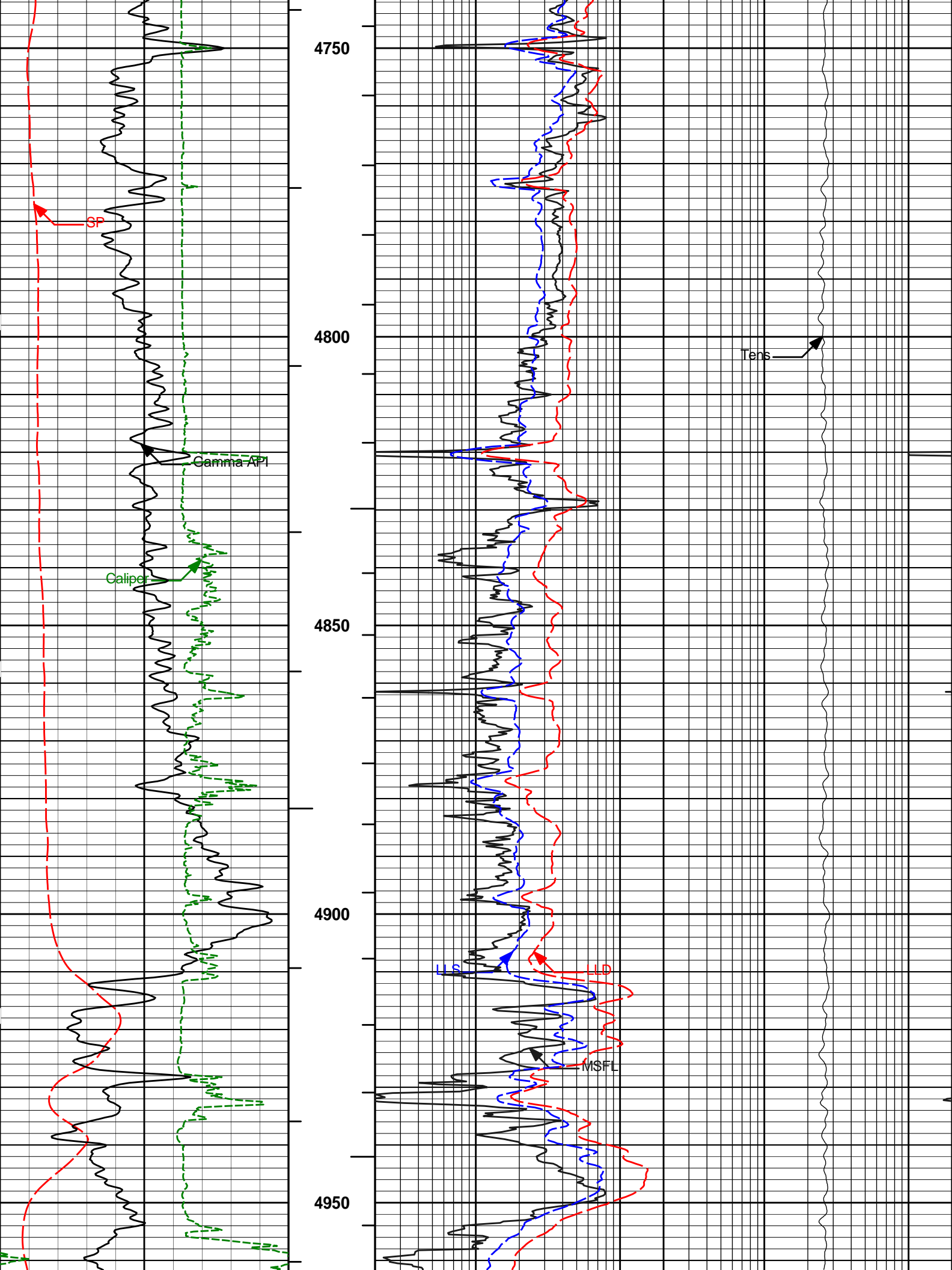


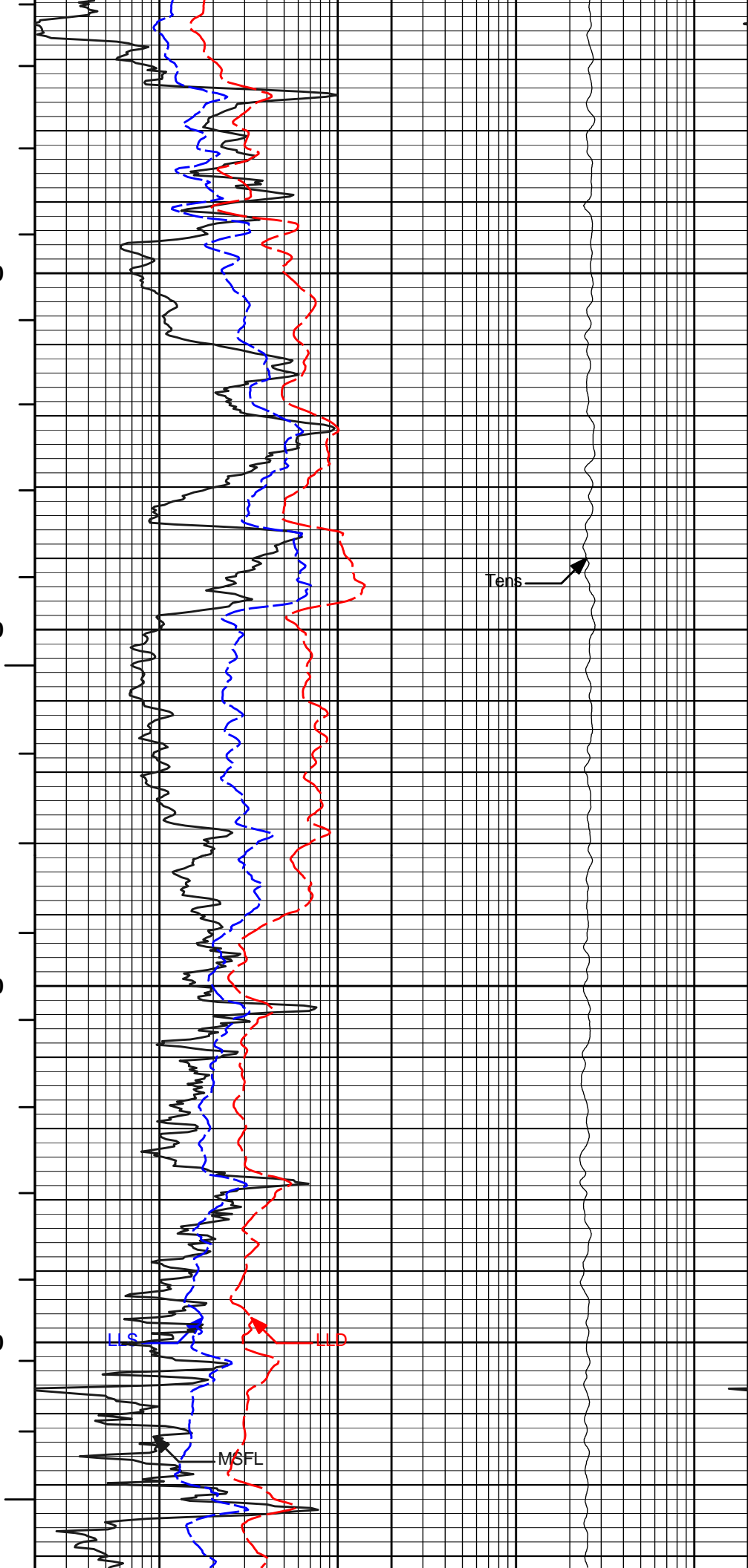
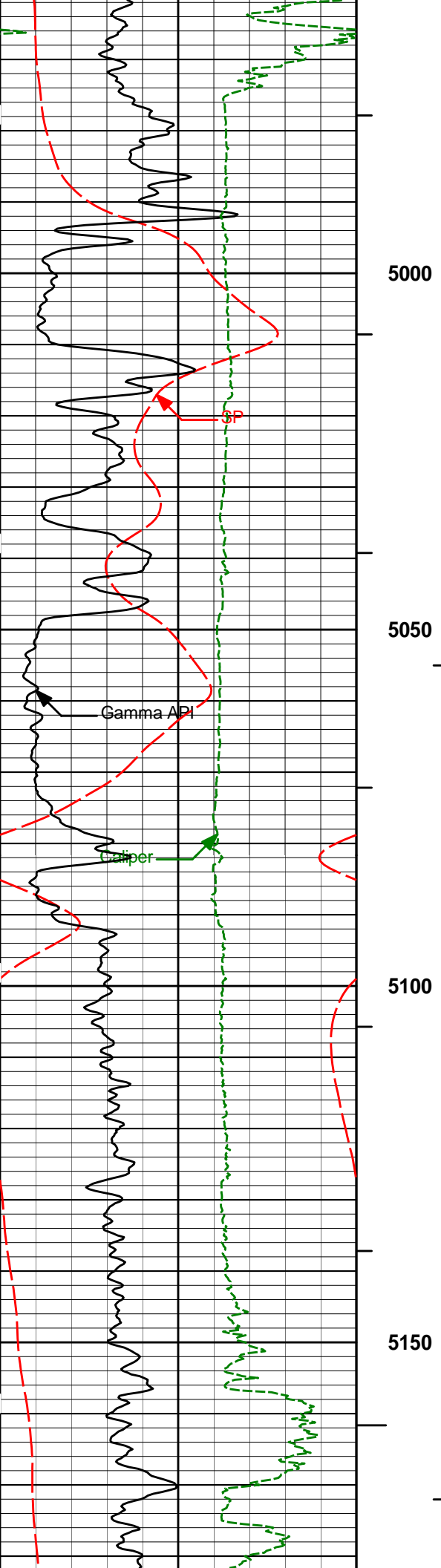


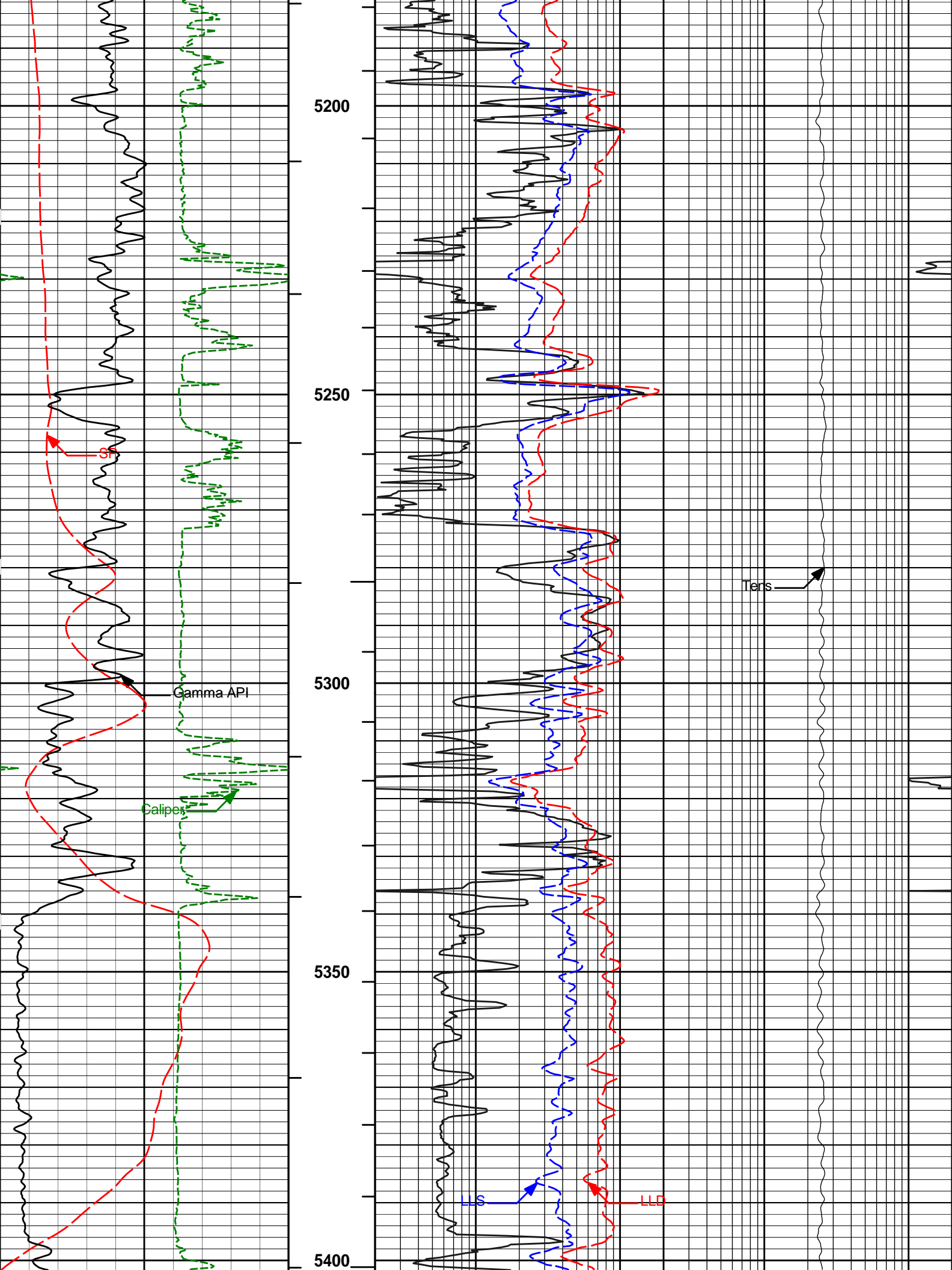


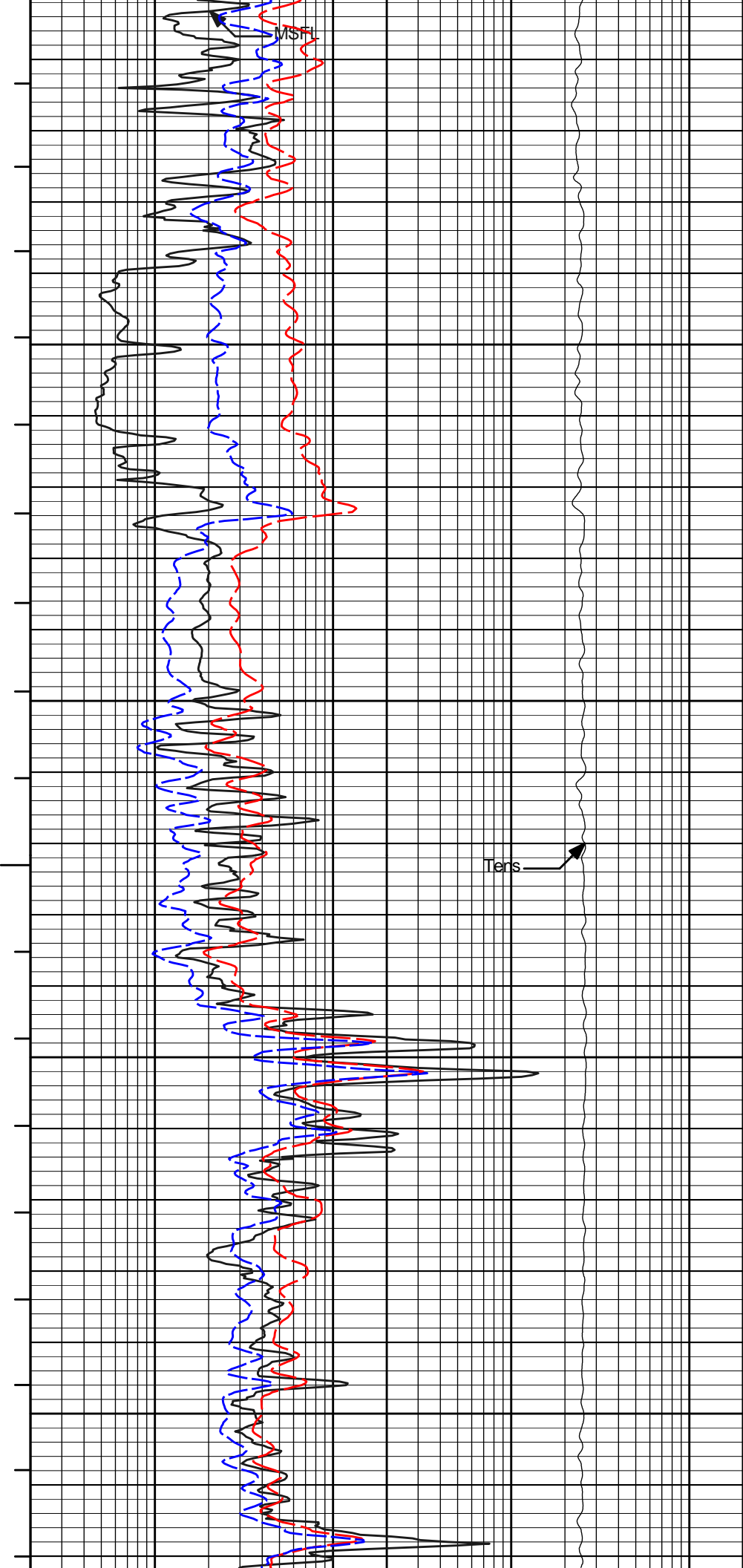
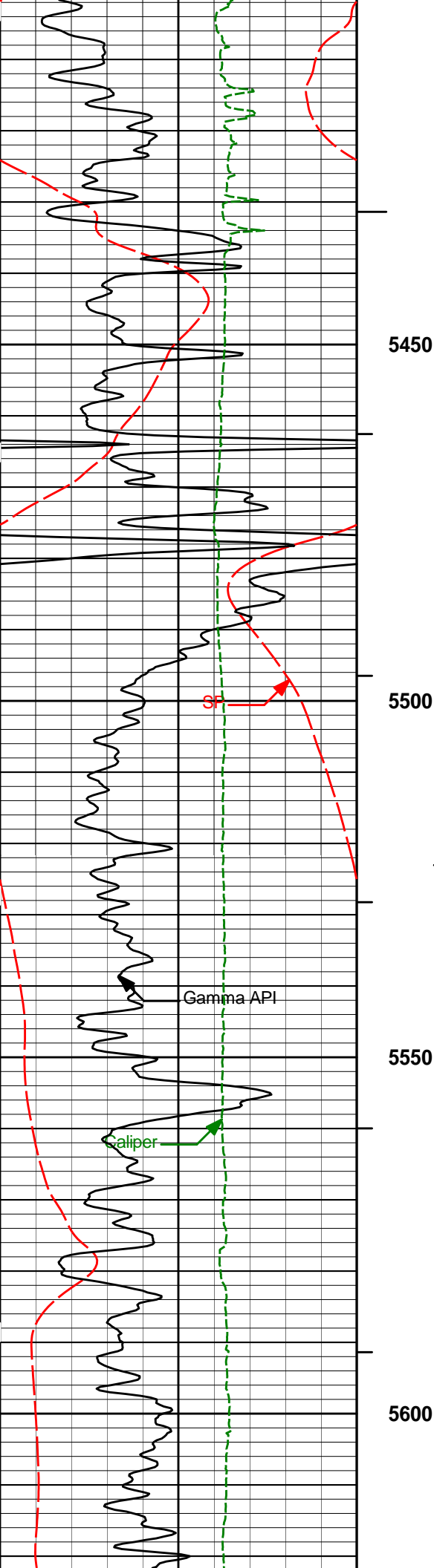


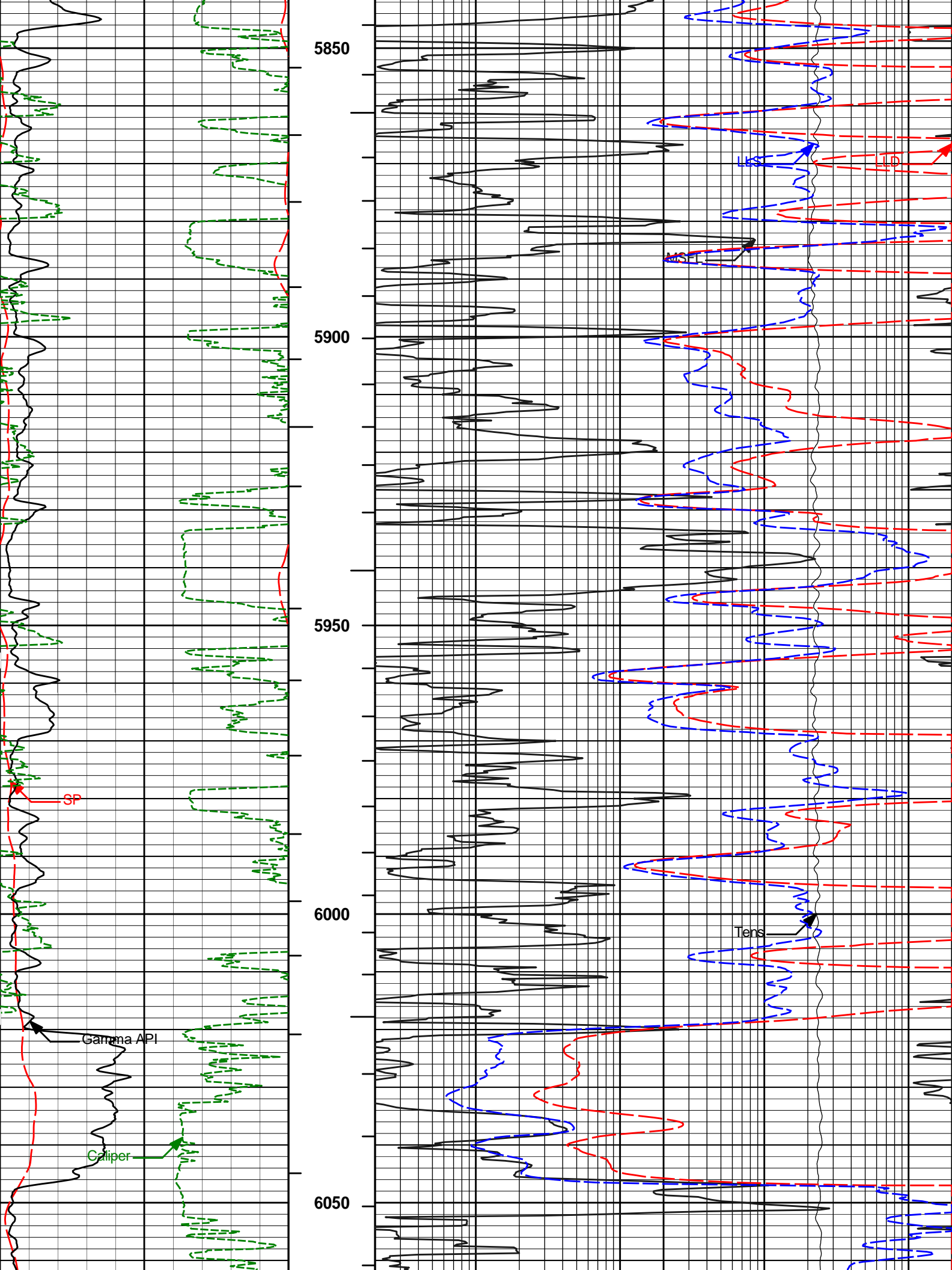


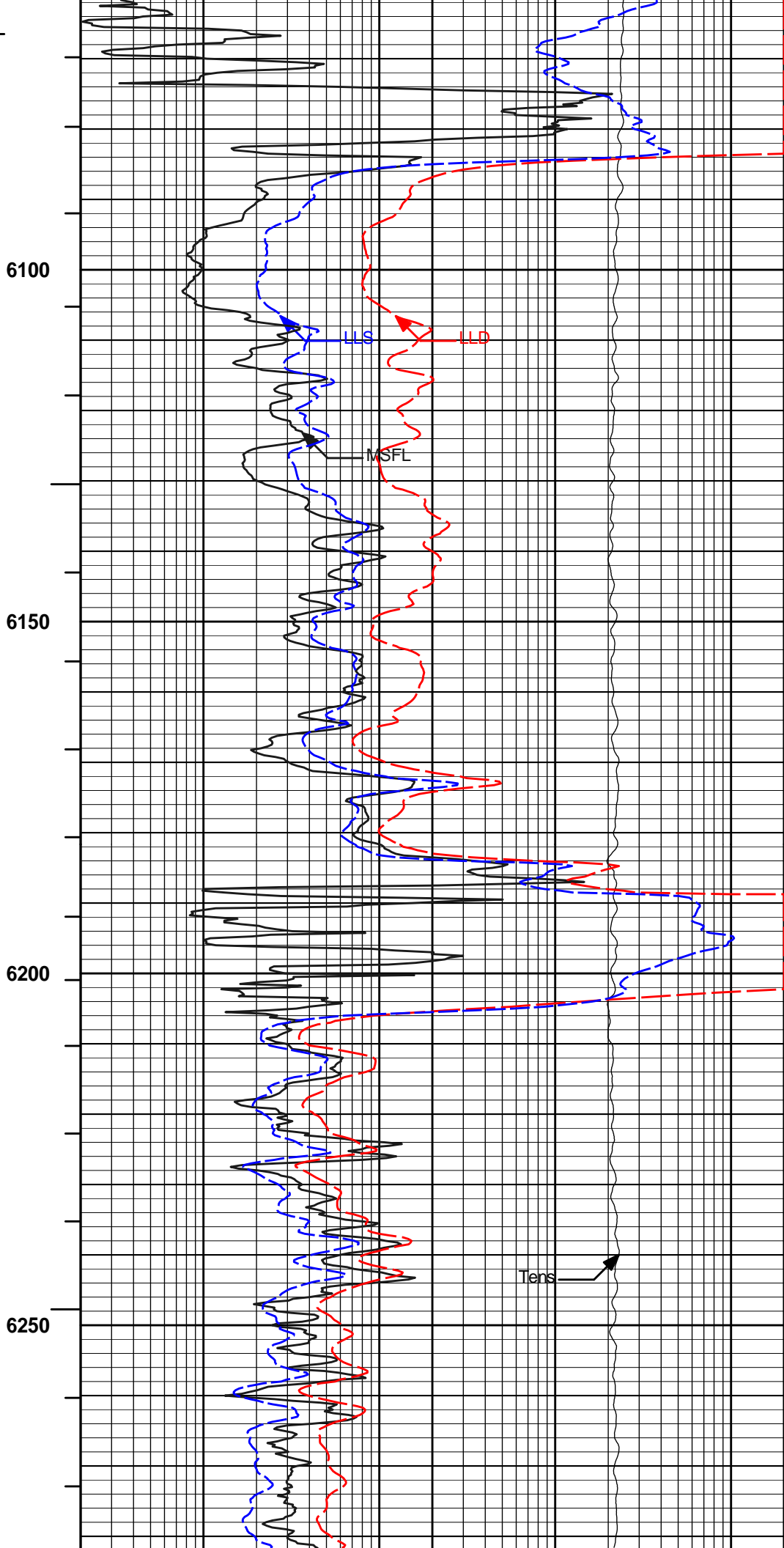
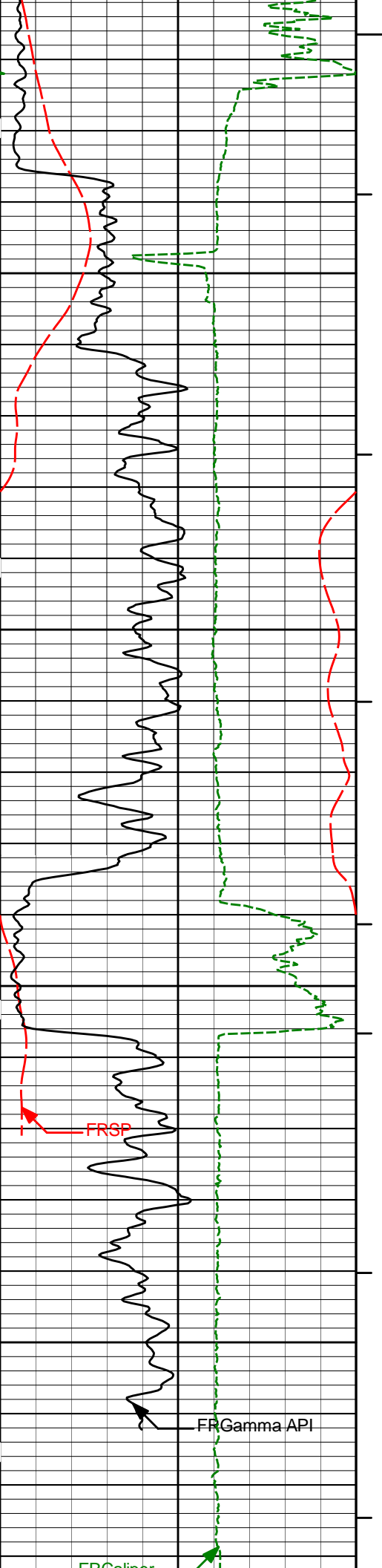


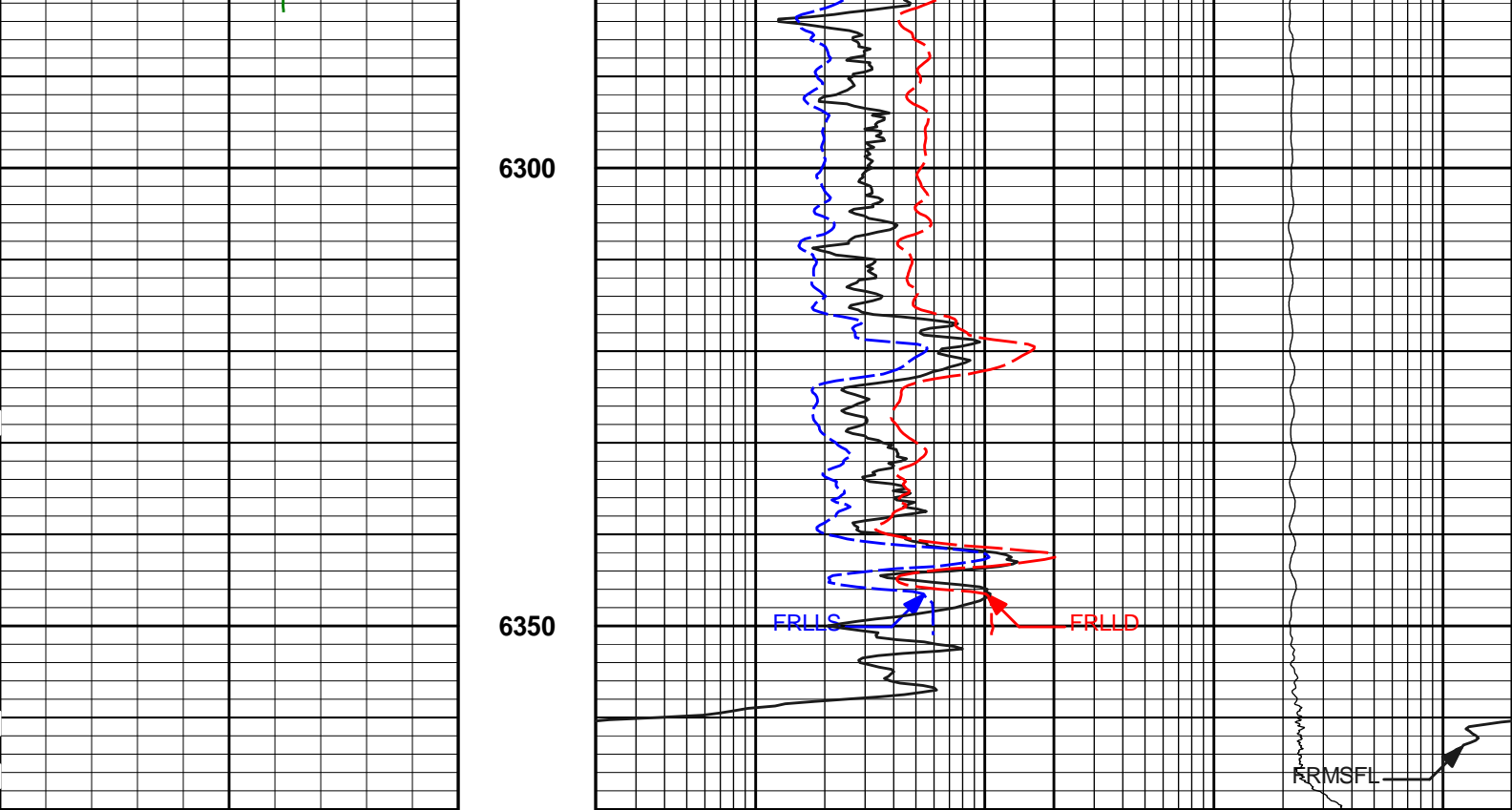












0	SP	100	1 : 240	10K	Tens	0
	millivolts				pounds	
0	Gamma API	200	BHVT	0.2	LLD	2K
	api				ohmm	
6	Caliper	16	AHVT	0.2	LLS	2K
	inches				ohmm	
				0.2	MSFL	2K
					ohmm	

HALLIBURTON Plot Time: 08-Jan-13 09:50:03
 Plot Range: 537 ft to 6370.58 ft
 Data: SORS_1PWell Based\DAQ-0002-002\
 Plot File: \DLLT\IQ_ACRt_5IN_RM

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11958944	Reference Calibration Date:	17-Dec-12 13:37:02
Engineer:	J. WALDEN	Calibration Date:	07-Jan-13 10:10:17
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Calibrator Source S/N: TB-290
 Calibrator API Reference:230.00 api
 Equivalent Calibrator API Reference:234.0 api

Measurement	Measured	Calibrated	Units
Background	77.4	76.1	api
Background + Calibrator	315.1	310.2	api
Calibrator	237.8	234.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	GTET - 11958944	Reference Calibration Date:	07-Jan-13 10:10:17
Engineer:	J. WALDEN	Calibration Date:	07-Jan-13 10:13:16
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Calibrator Source S/N: TB-290
Calibrator API Reference:230.00 api
Equivalent Calibrator API Reference:234.0 api

Field Verification	Shop	Field	Units
Background	76.1	76.8	api
Background + Calibrator	310.2	311.2	api
Calibrator	234.0	234.4	api

Shop	Field	Difference	Tolerance
234.0	234.4	-0.4	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11219332	Reference Calibration Date:	13-Nov-12 12:16:23
Engineer:	J. SCHMIDT	Calibration Date:	17-Dec-12 13:59:21
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Logging Source S/N: DSN430
Tank Serial Number: 11068236
Reference value assigned to Tank: 53.720
Snow Block S/N: 37526
Calibration Tank Water Temperature: 50 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.977	0.978	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):	0.2220	0.2223	0.0004	+/- 0.0020
Calibrated Ratio:	10.10	10.11	0.012	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0766	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: 17-Dec-12 13:59:21		
Engineer: J. WALDEN		Calibration Date: 07-Jan-13 10:21:18		
Software Version: WL INSITE R3.8.0 (Build 2)		Calibration Version: 1		
Logging Source S/N: DSN430				
Snow Block S/N: 37526				
NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0766	0.0745	-0.0021	+/- 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: 17-Dec-12 17:09:10		
Engineer: J. SCHMIDT		Calibration Date: 17-Dec-12 17:13:23		
Software Version: WL INSITE R3.8.0 (Build 2)		Calibration Version: 1		
Host Tool Name: DSNT - 11219332				
CALIBRATION COEFFICIENTS				
Measurement	Previous Value	New Value	Control Limit On New Value	
Pad Offset	-3261.53	-3152.75	-7000.00 - -1000.00	
Pad Gain	0.0003781	0.0003749	0.000200 - 0.000600	
Arm Offset	-3871.74	-3981.46	-5000.00 - 3000.00	
Arm Gain	0.0005207	0.0005253	0.000300 - 0.000700	
Arm Power	-0.000001960	-0.000002330	-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)	1.98	2.00	0.02	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.24	8.25	0.01	+/- 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: 17-Dec-12 16:00:17	
Engineer: J. SCHMIDT		Calibration Date: 17-Dec-12 16:37:26	
Software Version: WL INSITE R3.8.0 (Build 2)		Calibration Version: 1	
Logging Source S/N: 5256 GW			
Aluminum Block S/N: 62066			
Density: 2.602g/cc			
Re: 3.100			

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0810	1.0859	0.90 - 1.10
Near Dens Gain	1.0417	1.0457	0.90 - 1.10
Near Peak Gain	1.0198	1.0307	0.90 - 1.10
Near Lith Gain	0.9866	0.9715	0.90 - 1.10
Far Bar Gain	1.0120	1.0115	0.90 - 1.10
Far Dens Gain	1.0005	1.0015	0.90 - 1.10
Far Peak Gain	0.9937	0.9951	0.90 - 1.10
Far Lith Gain	0.9743	0.9759	0.90 - 1.10
Near Bar Offset	-0.6695	-0.7187	NONE
Near Dens Offset	-0.2738	-0.3127	NONE
Near Peak Offset	-0.0563	-0.1539	NONE
Near Lith Offset	0.2090	0.3300	NONE
Far Bar Offset	-0.0766	-0.0725	NONE
Far Dens Offset	0.0329	0.0222	NONE
Far Peak Offset	0.0820	0.0687	NONE
Far Lith Offset	0.2248	0.2109	NONE
Near Bar Background	1033.91	1032.22	700 - 1450
Near Dens Background	343.03	343.79	230 - 480
Near Peak Background	150.10	150.01	100 - 210
Near Lith Background	183.01	183.49	125 - 260
Far Bar Background	658.62	661.91	450 - 900
Far Dens Background	257.43	257.27	175 - 345
Far Peak Background	101.42	102.41	70 - 140
Far Lith Background	105.96	106.13	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.694	1.691	-0.003	+/- 0.015
Pe	2.567	2.601	0.034	+/- 0.150
ALUMINUM				
Density (g/cc)	2.604	2.602	-0.002	+/- 0.01500
Pe	3.060	3.061	0.001	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0004	+/- 0.0110	0.0005	+/- 0.0140
Magnesium Block	0.0009	+/- 0.0110	-0.0006	+/- 0.0140
Aluminum Block	0.0002	+/- 0.0110	-0.0000	+/- 0.0140
Resolution	8.60	6.00 - 11.50	8.70	6.00 - 11.50
Internal Verifier(B+D+P+L)	1710	1200 - 2700	1128	800 - 1700

PASS/FAIL SUMMARY	
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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:	17-Dec-12 16:37:26
Engineer:	J. WALDEN	Calibration Date:	07-Jan-13 09:57:15
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Pad Temperature: 57.6 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1709.502	1709.182	-0.320	16.593
Far (B+D+P+L) cps	1127.718	1126.210	-1.508	17.664
Near Resolution	8.60	8.74	0.140	0.50
Far Resolution	8.70	8.95	0.250	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:	17-Dec-12 17:13:23
Engineer:	J. WALDEN	Calibration Date:	07-Jan-13 09:59:53
Software Version:	WL INSITE R3.8.0 (Build 2)	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	8.17	-0.08	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

ACCELEROMETER AND MAGNETOMETER SHOP CALIBRATION

Tool Name:	IDT - 11277451	Reference Calibration Date:	22-Dec-11 12:25:38
Engineer:	R. TWEETEN	Calibration Date:	12-Dec-12 09:29:09
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Reference Gravity Field: 1.0000 g
Reference Magnetic Field: 52800.0000 nT

* QF : value of 0 is shown for bad quality if | data - reference | > (2 * standard deviation) and > (0.5% of reference value)

ACCELEROMETER CALIBRATION RAW DATA VALUE					
Raw Acc X	Raw Acc Y	Raw Acc Z	Quality(Gravity)	Quality Error(%)	QF
0.4269	-0.5884	-0.0061	1.0002	99.9829	1
0.5500	0.1700	0.0000	1.0000	99.9997	1

-0.5599	-0.4780	-0.0063	1.0000	99.9967	1
-0.4375	0.6033	-0.0067	1.0000	99.9953	1
0.5831	0.4446	-0.0061	1.0000	99.9994	1
-0.0172	0.7436	-0.0064	0.9999	99.9936	1
0.6184	0.3018	0.1163	0.9998	99.9824	1
-0.0564	0.7421	-0.0065	1.0001	99.9927	1
0.7216	0.0940	-0.0061	1.0001	99.9879	1
-0.0078	-0.7309	-0.0061	0.9999	99.9889	1
-0.7395	-0.0298	-0.0065	1.0000	99.9995	1
-0.0143	0.0013	0.3591	1.0000	99.9969	1
0.6578	-0.1071	-0.1504	0.9999	99.9929	1

ACCELEROMETER QUALITY SUMMARY

Average Calculated Gravity Field	1.0000	g
Standard Deviation Calculated Gravity Field	0.0001	g

ACCELEROMETER GAIN AND OFFSET

	GAIN	OFFSET
ACC X	1.3631752729	0.0093273642
ACC Y	1.3562285900	-0.0086623570
ACC Z	2.7358396053	0.0174727775

* QF : value of 0 is shown for bad quality if | data - reference | > (3 * standard deviation) and > (1% of reference value)

MAGNETOMETER CALIBRATION RAW DATA VALUE

Raw Mag X	Raw Mag Y	Raw Mag Z	Quality(Magnetic)	Quality Error(%)	QF
-0.1621	1.2632	-0.0843	53389.0742	98.8843	1
1.2405	0.2697	-0.0857	53529.2031	98.6189	1
0.1707	-1.2622	-0.0893	54134.3047	97.4729	1
-1.2427	-0.1685	-0.0880	52686.8008	99.7856	1
-0.0479	-1.0868	0.4088	51367.3828	97.2867	1
-1.0982	-0.5665	-0.3070	53254.3945	99.1394	1
0.2701	-1.0216	-0.6403	52368.3047	99.1824	1
-0.9920	-0.3106	-0.6376	51226.5664	97.0200	1
-0.1738	1.0402	-0.6485	51847.8633	98.1967	1
1.0246	0.2544	-0.6342	51825.9453	98.1552	1
-0.2197	-0.5608	0.9200	52932.6523	99.7488	1
-0.7837	-0.0929	-0.9906	54458.1367	96.8596	1

MAGNETOMETER QUALITY SUMMARY

Average Calculated Magnetic Field	52751.7188	nT
Standard Deviation Calculated Magnetic Field	1052.5829	nT

MAGNETOMETER GAIN AND OFFSET

	GAIN	OFFSET
MAG X	42089.3085937500	159.4645385742
MAG Y	42207.0781250000	-351.8444519043
MAG Z	46856.6171875000	3174.7180175781

Noise Level Value: 0.000219 cnts

Noise Level Cal Value: 0.0006 g

ICT SHOP CALIBRATION

Tool Name: ICT - 11294351

Reference Calibration Date: 13-Mar-12 12:13:20

Engineer: R. TWEETEN

Calibration Date: 20-Nov-12 10:40:08

Software Version: WL INSITE B3.0 (Build 3)

Calibration Version: 1

CALIPERS AND RINGS				
Ring	Measured	Calibrated	Units	
CALIPER 1:				
Small Ring	3.69	3.65	in	
Medium Ring	8.12	8.00	in	
Large Ring	15.16	15.00	in	
X-Large Ring	23.50	21.00	in	
CALIPER 2:				
Small Ring	3.74	3.65	in	
Medium Ring	8.05	8.00	in	
Large Ring	15.21	15.00	in	
X-Large Ring	21.07	21.00	in	
CALIPER 3:				
Small Ring	3.72	3.65	in	
Medium Ring	7.94	8.00	in	
Large Ring	15.10	15.00	in	
X-Large Ring	21.19	21.00	in	
CALIPER 4:				
Small Ring	3.76	3.65	in	
Medium Ring	7.92	8.00	in	
Large Ring	14.91	15.00	in	
X-Large Ring	20.89	21.00	in	
CALIPER 5:				
Small Ring	3.61	3.65	in	
Medium Ring	7.93	8.00	in	
Large Ring	14.75	15.00	in	
X-Large Ring	25.58	21.00	in	
CALIPER 6:				
Small Ring	3.66	3.65	in	
Medium Ring	8.04	8.00	in	
Large Ring	15.04	15.00	in	
X-Large Ring	21.00	21.00	in	

DUAL LATEROLOG SHOP CALIBRATION

Tool Name: DLLT - 90277021

Reference Calibration Date: 05-Nov-12 17:37:07

Engineer: Z. TAYLOR

Calibration Date: 05-Nov-12 17:44:10

Software Version: WL INSITE R3.6.0 (Build 3)

Calibration Version: 1

Measurement	Deep Measured	Deep Calibrated	Shallow Measured	Shallow Calibrated	Units
External Cal Point #1	1.06	1.04	1.00	1.00	ohmm
External Cal Point #2	119.57	119.47	99.66	99.63	ohmm
External Cal Point #3	1539.64	1541.79	1020.27	1019.96	ohmm
External Check Point	119.58	119.48	99.66	99.63	ohmm
Internal Reference	16.04	16.01	20.17	20.17	ohmm

DUAL LATEROLOG FIELD CALIBRATION

Tool Name: DLLT - 90277021

Reference Calibration Date: 05-Nov-12 17:44:10

Engineer: J. WALDEN

Calibration Date: 07-Jan-13 11:08:57

Software Version: WL INSITE R3.8.0 (Build 2)

Calibration Version: 1

Measurement	Deep Shop	Deep Field	Shallow Shop	Shallow Field	Units
Internal Reference	16.01	16.02	20.17	20.18	ohmm

PASS/FAIL SUMMARY				
Measurement	Difference		Tolerance	Pass/Fail
Internal Deep	0.01	+/- 0.8		Passed
Internal Shallow	0.00	+/- 0.8		Passed

MICRO SPHERICALLY FOCUSED LOG SHOP CALIBRATION			
Tool Name:	MSFL - 11976327	Reference Calibration Date:	05-Nov-12 18:47:05
Engineer:	Z. TAYLOR	Calibration Date:	05-Nov-12 18:49:29
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Measurement	Measured	Calibrated	Units
External Cal Point #1	0.20	0.20	ohmm
External Cal Point #2	20.00	20.00	ohmm
External Cal Point #3	2001.49	2000.00	ohmm
Internal Reference	19.98	19.98	ohmm

MICRO SPHERICALLY FOCUSED LOG FIELD CALIBRATION					
Tool Name:	MSFL - 11976327		Reference Calibration Date:	05-Nov-12 18:49:29	
Engineer:	R. TWEETEN		Calibration Date:	30-Nov-12 11:39:25	
Software Version:	WL INSITE R3.8.0 (Build 2)		Calibration Version:	1	

Measurement	Shop	Field	Change	Control Limit On	Units
Internal Reference	19.98	19.99	0.007	0.800	ohmm

PASS/FAIL SUMMARY			
Internal Reference:		Passed	

CALIPER SHOP CALIBRATION				
Tool Name:	MSFL - 11976327		Reference Calibration Date:	05-Nov-12 18:34:56
Engineer:	Z. TAYLOR		Calibration Date:	05-Nov-12 18:38:11
Software Version:	WL INSITE R3.6.0 (Build 3)		Calibration Version:	1

CALIBRATION RINGS AND INTERNAL				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	
RING DIAMETER:				
Ring #1 (in)	8.40	8.25	0.1500	
Ring #2 (in)	15.00	15.00	0.0000	
Hi/Lo Internal:				
Lo Internal (in)	4.17	4.17	0.0000	
Hi Internal (in)	19.10	19.10	0.0000	

CALIPER FIELD CALIBRATION				
Tool Name:	MSFL - 11976327		Reference Calibration Date:	05-Nov-12 18:38:11
Engineer:	J. WALDEN		Calibration Date:	07-Jan-13 11:10:09
Software Version:	WL INSITE R3.8.0 (Build 2)		Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Lo Internal (in)	4.17	3.93	0.238	+/- 0.500
Hi Internal (in)	19.10	19.20	-0.099	+/- 0.500

PASS/FAIL SUMMARY			
Lo Internal Check:		Passed	

CALIBRATION SUMMARY


Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11958944						
Gamma Ray Calibrator	234.0	234.4	-----	-0.4	+/- 9.00	api
DSNT-11219332						
Snow-Block Porosity	0.0766	0.0745	-----	0.0021	+/- 0.0150	decg
SDLT-11014271						
Pad Extension	3.75	3.82	-----	-0.07	+/-0.10	in
Ring Diameter	8.25	8.17	-----	0.08	+/-0.15	in
SDLT Pad-11816600						
Near(B+D+P+L)	1709.502	1709.182	-----	0.320	+/-16.593	cps
Far(B+D+P+L)	1127.718	1126.210	-----	1.508	+/-17.664	cps
ICT-11294351						
Caliper 1	8.00	-----	-----	0.00	-----	in
Caliper 2	8.00	-----	-----	0.00	-----	in
Caliper 3	8.00	-----	-----	0.00	-----	in
Caliper 4	8.00	-----	-----	0.00	-----	in
Caliper 5	8.00	-----	-----	0.00	-----	in
Caliper 6	8.00	-----	-----	0.00	-----	in
DLLT-90277021						
Deep Internal Ref.	16.01	16.02	-----	-0.01	+/- 0.8	ohmm
Shallow Internal Ref.	20.17	20.18	-----	-0.01	+/- 0.8	ohmm
MSFL-11976327						
MSFL Internal Ref.	19.98	19.99	-----	-0.01	+/- 0.800	ohmm
Caliper Lo. Internal	4.17	3.93	-----	0.24	+/- 0.500	in
Caliper Hi. Internal	19.10	19.20	-----	-0.10	+/- 0.500	in

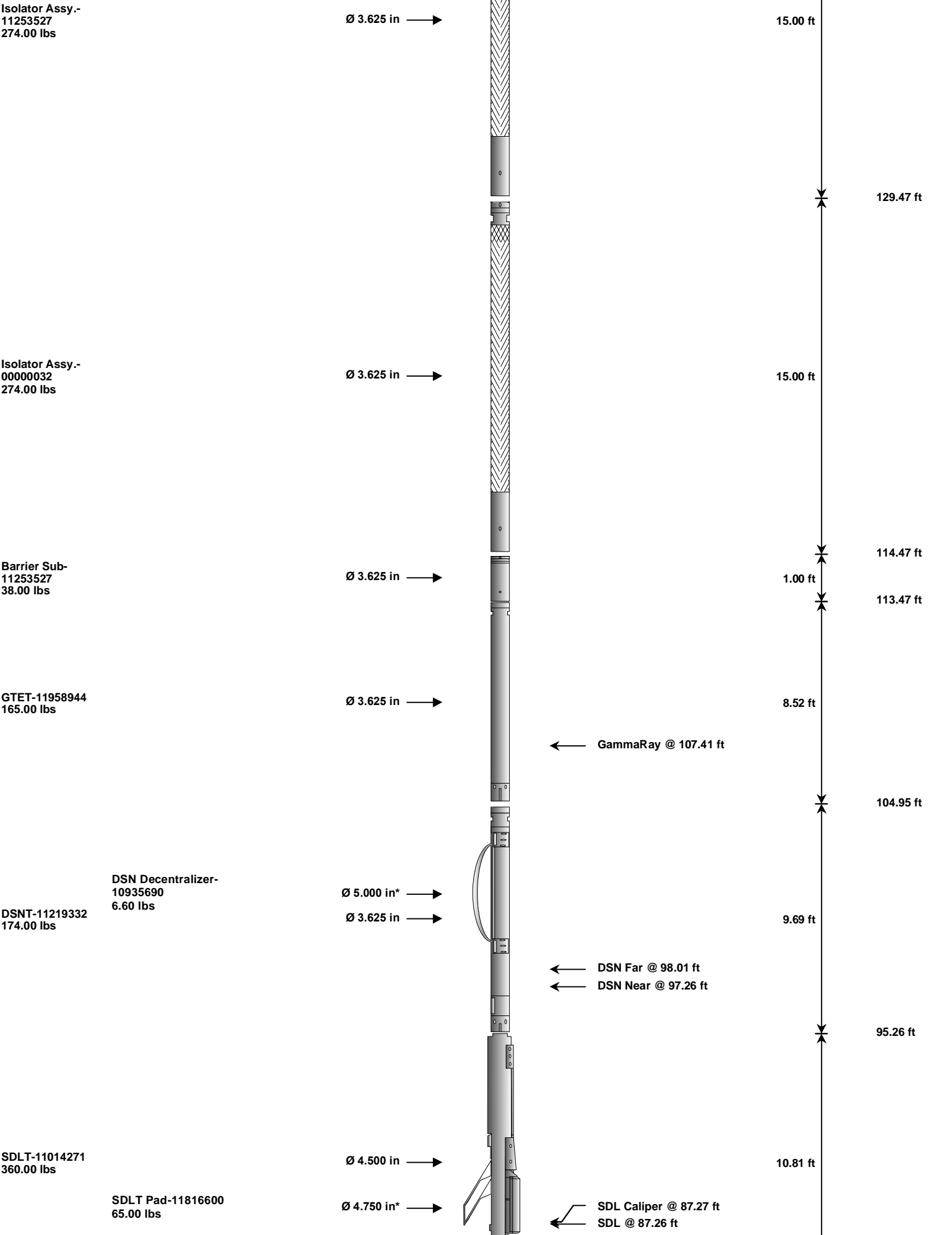
Data: SORS_1P\0001 GTET-DSNT-SDLT-BSAT-DLLT-MSFL\001 08-Jan-13 05:53 Dn @50.0f

Date: 08-Jan-13 06:17:19

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-11732195 135.00 lbs		Ø 3.625 in →		← Load Cell @ 153.28 ft ← BH Temperature @ 152.71 ft	6.25 ft	156.96 ft
SP Sub-11616670 60.00 lbs		Ø 3.625 in →		← SP @ 148.93 ft	3.74 ft	150.71 ft
Return Electrode- 11603107 57.00 lbs		Ø 3.625 in →			2.50 ft	146.97 ft
						144.47 ft



Flex Joint -
Pressure Comp-
00000009
140.00 lbs

Centralizer 25-00000009
8.00 lbs

BSAT-11105780
300.00 lbs

IDT-11277451
150.00 lbs

ICT-11294351
330.00 lbs

Centralizer 25-00000014
8.00 lbs

Ø 3.625 in →

Ø 4.000 in* →

Ø 3.625 in →

Ø 3.625 in →

Ø 3.625 in →

Ø 4.000 in* →

84.45 ft

5.97 ft

78.48 ft

15.77 ft

62.71 ft

7.58 ft

55.12 ft

12.83 ft

42.29 ft

← Sonic Receivers @ 69.96 ft

← ICT Caliper @ 45.08 ft

DLLT-90277021
390.00 lbs

Ø 3.625 in →

31.63 ft

← DLLT Sonde @ 19.41 ft

10.66 ft

MSFL-11976327
214.00 lbs

Ø 4.000 in →

10.33 ft

← MSFL Pad @ 2.75 ft

0.33 ft

Bull Nose-00000009
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	11732195	135.00	6.25	150.71	300.00
SP		SP Sub	11616670	60.00	3.74	146.97	300.00
RE		Return Electrode - Rigid Bridle	11603107	57.00	2.50	144.47	300.00
ISA		Isolator Assembly - Rigid Bridle	11253527	274.00	15.00	129.47	300.00
ISA		Isolator Assembly - Rigid Bridle	00000032	274.00	15.00	114.47	300.00
w		Barrier Sub - Rigid Bridle	11253527	38.00	1.00	113.47	300.00
GTET		Gamma Telemetry Tool	11958944	165.00	8.52	104.95	60.00
DSNT		Dual Spaced Neutron	11219332	174.00	9.69	95.26	60.00
DCNT		DSN Decentralizer	10935690	6.60	5.13	* 98.59	300.00
SDLT		Spectral Density Tool	11014271	360.00	10.81	84.45	60.00
SDLP		Density Insite Pad	11816600	65.00	2.55	* 86.66	60.00
FLEX		Flex Joint - Pressure Compensated	00000009	140.00	5.97	78.48	300.00
BSAT		Borehole Sonic Array Tool	11105780	300.00	15.77	62.71	60.00
OBCEN		Centralizer - 25 in. Overbody	00000009	8.00	2.08	* 75.87	300.00
IDT		Insite Directional Tool	11277451	150.00	7.58	55.12	30.00
ICT		Six Independent Arm Caliper	11294351	330.00	12.83	42.29	30.00
DLLT		Dual Laterolog	90277021	390.00	31.63	10.66	100.00
OBCEN		Centralizer - 25 in. Overbody	00000014	8.00	2.08	* 38.59	300.00
MSFL		Micro Spherically Focused Log	11976327	214.00	10.33	0.33	60.00
BLNS		Bull Nose	00000009	5.00	0.33	0.00	300.00

Total3,153.60156.96

* Not included in Total Length and Length Accumulation.

COMPANY	CHAMA OIL & MINERALS LLC		
WELL	SORS-1P		
FIELD	WILDCAT		
COUNTY	WASHINGTON	STATE	CO
HALLIBURTON		DUAL LATEROLOG MICRO-SPHERICALLY FOCUSED LOG	