

HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY

HALLIBURTON										ARRAY COMPENSATED TRUE RESISTIVITY																			
COMPANY					HARTMAN OIL CO., INC.					COMPANY					HARTMAN OIL CO., INC.														
WELL					ROSE # 1-1					WELL					ROSE # 1-1														
FIELD					WILDCAT					FIELD					WILDCAT														
COUNTY					WICHITA					COUNTY					WICHITA														
STATE					KANSAS					STATE					KANSAS														
Permanent Datum					GL					Sect. 1					Twp. 16S					Rge. 35W					Other Services: RWCH BSAT DSNT/SDLT MEL				
Log measured from					KB					Location					SURFACE HOLE LOCATION: 1330' FNL & 2280' FWL					Elev. 3143.0 ft					Elev.: K.B. 3154.0 ft				
Drilling measured from					KB					11.0 ft above perm. Datum					D.F. 3153.0 ft					G.L. 3143.0 ft									
Date					06-Oct-12																								
Run No.					ONE																								
Depth - Driller					4850.00 ft																								
Depth - Logger					4847.0 ft																								
Bottom - Logged Interval					4844.0 ft																								
Top - Logged Interval					2450.0 ft																								
Casing - Driller					8.625 in @ 330.0 ft																								
Casing - Logger					332.0 ft																								
Bit Size					7.875 in																								
Type Fluid in Hole					CHEMICAL																								
Density					9.1 ppg					54.00 s/qt																			
PH					10.80 pH					8.8 cpm																			
Source of Sample					MUD TANK																								
Rm @ Meas. Temperature					0.570 ohmm @ 71.20 degF																								
Rmf @ Meas. Temperature					0.43 ohmm @ 64.20 degF																								
Rmc @ Meas. Temperature					0.920 ohmm @ 65.50 degF																								
Source Rmf					MEASURED					MEASURED																			
Rm @ BHT					0.33 ohmm @ 129.0 degF																								
Time Since Circulation					8.6 hr																								
Time on Bottom					06-Oct-12 21:53																								
Max. Rec. Temperature					129.0 degF @ N/A																								
Equipment					11170614					ROCK SPRING																			
Recorded By					V. CREWS																								
Witnessed By					K. NOAH																								

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Service Ticket No.:						API Serial No.: 15203201840000						PGM Version: WL INSITE R3.6.0 (Build 3)															
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE												RESISTIVITY SCALE CHANGES															
Date		Sample No.										Type Log		Depth		Scale Up Hole				Scale Down Hole							
Depth-Driller																											
Type Fluid in Hole																											
Density		Viscosity																									
Ph		Fluid Loss																									
Source of Sample												RESISTIVITY EQUIPMENT DATA															
Rm @ Meas. Temp				@				@				Run No.		Tool Type & No.		Pad Type		Tool Pos.				Other					
Rmf @ Meas. Temp.				@				@				ONE		ACRT -		N/A		1.5" S.O.				N/A					
Rmc @ Meas. Temp.				@				@						E6988-S8481													
Source Rmf		Rmc										ONE		MEL -		MICROLOG		ECCENTERED				N/A					
Rm @ BHT				@				@						10947725													
Rmf @ BHT				@				@																			
Rmc @ BHT				@				@																			
EQUIPMENT DATA																											
GAMMA				ACOUSTIC								DENSITY								NEUTRON							
Run No.		ONE		Run No.				ONE				Run No.				ONE				Run No.				ONE			
Serial No.		11602914		Serial No.				10747633				Serial No.				11014275				Serial No.				10860047			
Model No.		GTET		Model No.				BSAT				Model No.				SDLT-I				Model No.				DSNT-I			
Diameter		3.625"		No. of Cent.				2				Diameter				4.5"				Diameter				3.625"			
Detector Model No.		102-A		Spacing				0.5'				Log Type				GAM-GAM				Log Type				THERM-THERM			
Type		SCINT										Source Type				Cs137				Source Type				Am241Be			
Length		8"		LSA [Y/N]				N/A				Serial No.				5235GW				Serial No.				08-018			
Distance to Source		10'		FWDA [Y/N]				N/A				Strength				1.78 Ci				Strength				15.0 Ci			

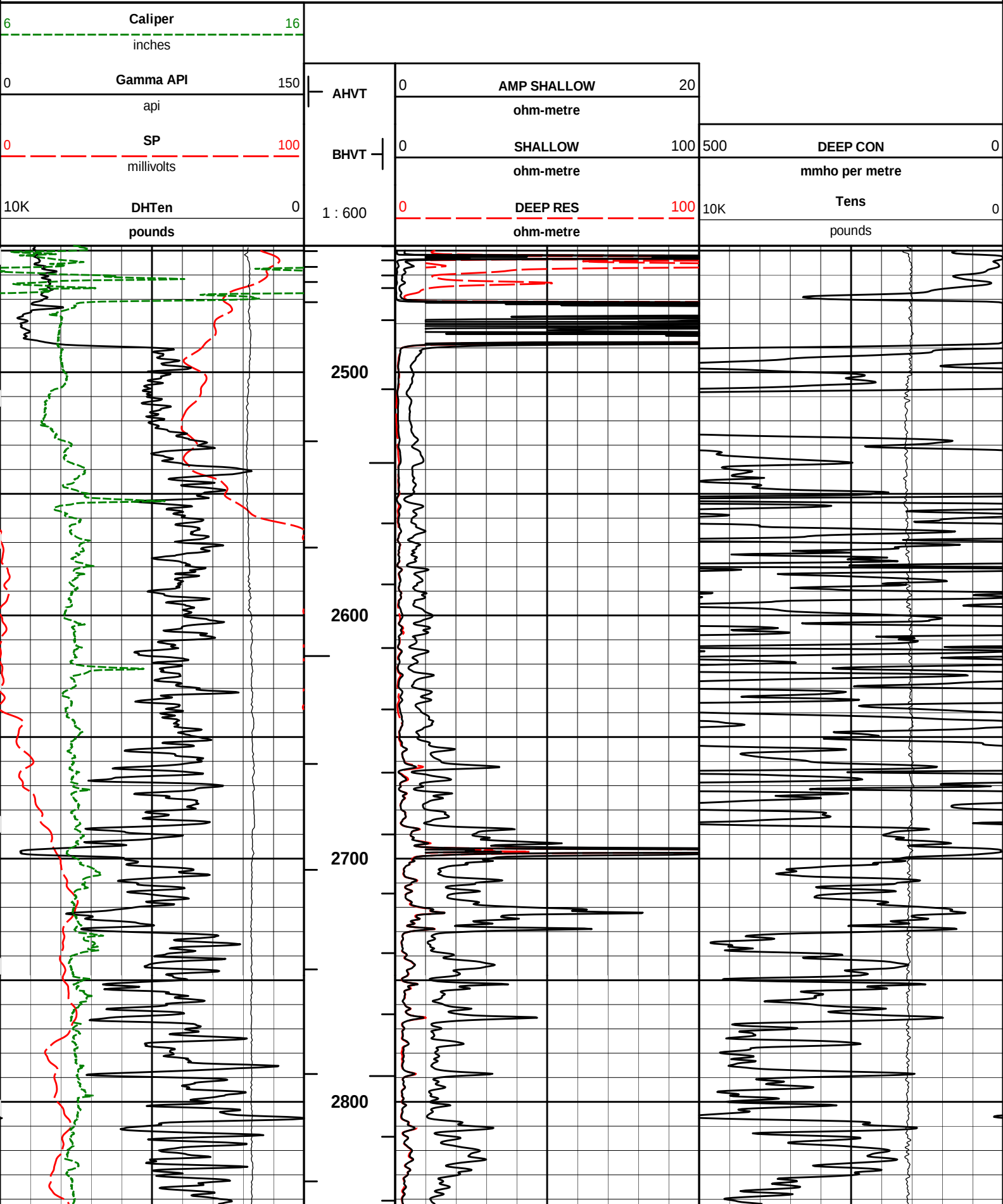
GENERAL			GAMMA		ACOUSTIC		DENSITY		NEUTRON										
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix					
No.	From	To	ft/min	L	R	L	R		L	R		L	R						
ONE	4847'	2540'	REC	0	150	40%	0%	LIME	30%	-10%	2.71 g/cc	30%	-10%	LIME					
ONE	2540'	332'	REC	0	150														
DIRECTIONAL INFORMATION																			
Maximum Deviation								@	KOP							@			
Remarks: RWCH-GTET-DSNT-SDLT-FLEX-BSAT-ACRT RAN IN COMBINATION																			
BOREHOLE RUGOSITY, TENSION PULLS AND WASHOUTS MAY EFFECT LOG QUALITY																			
ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING																			
BOWSPRING AND STANDOFF RUN																			
TODAY'S CREW: G. HOOD, C. DAVIS & D. TREFILETTI															RIG: H2 DRILLING				
*** THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, ROCK SPRINGS, WY (307) 352-8600 ***																			
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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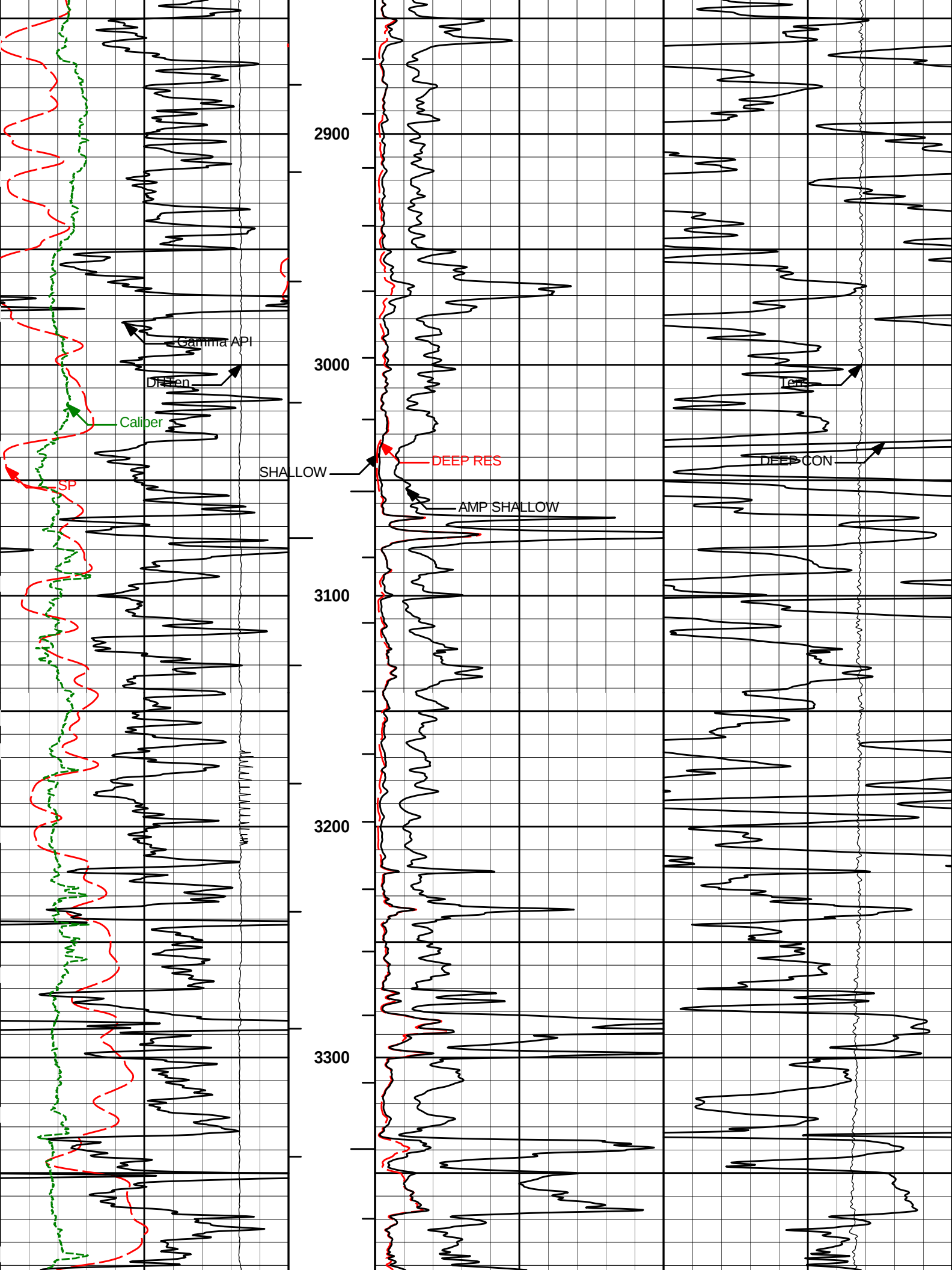
HALLIBURTON

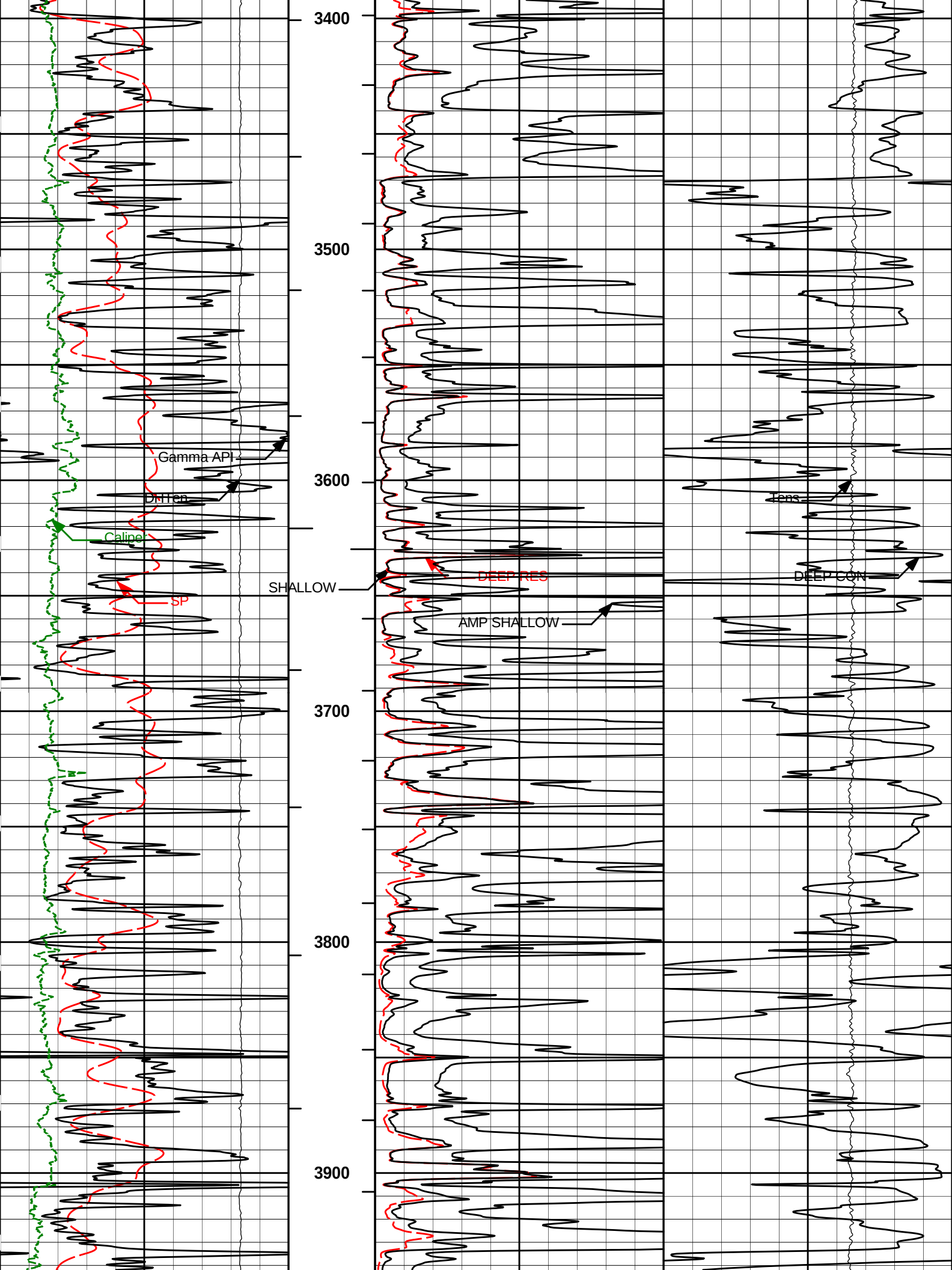
PARAMETERS REPORT

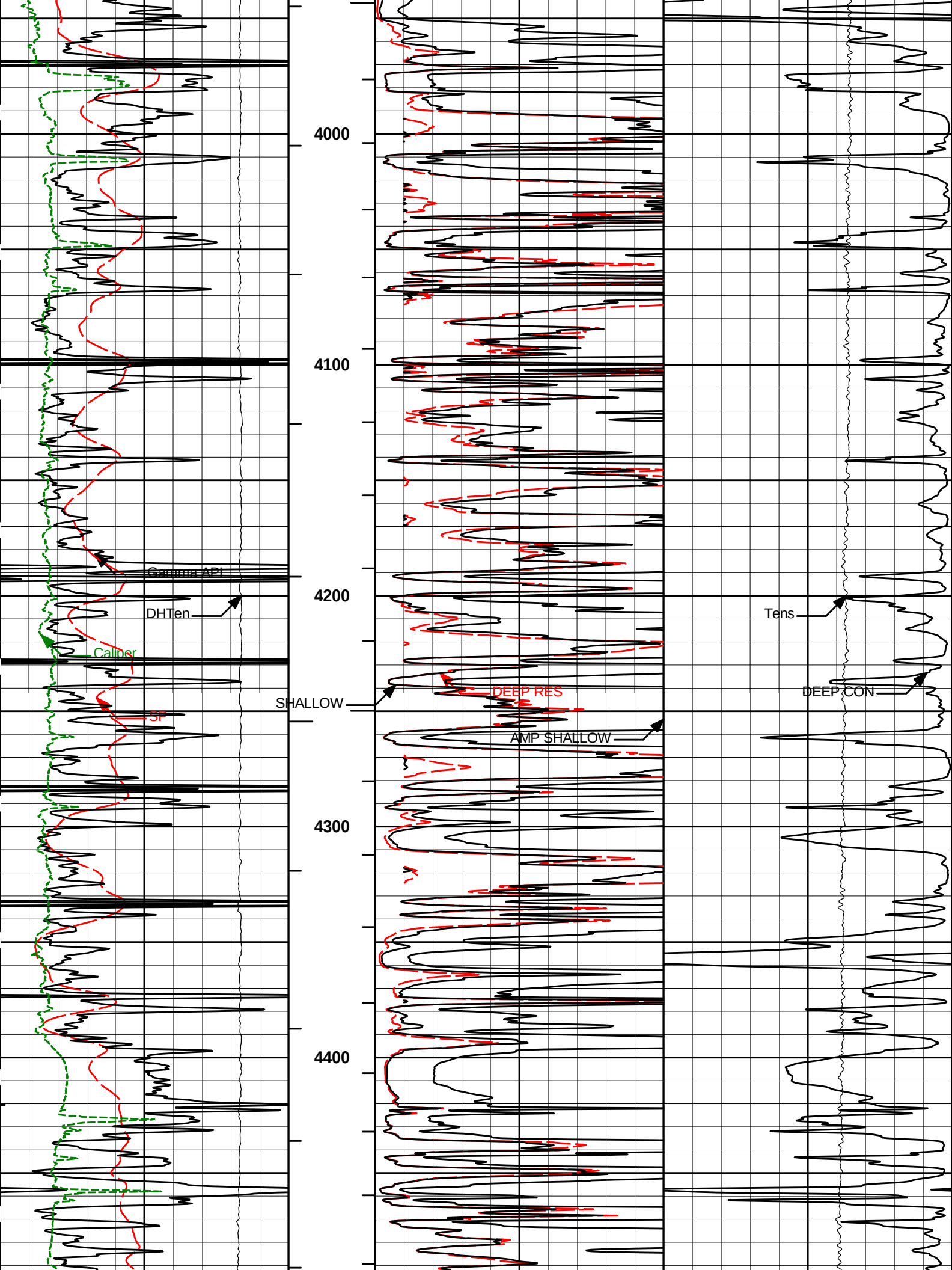
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.100	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.570	ohmm
	SHARED	TRM	Temperature of Mud	71.2	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	53.0	degF
	SHARED	TD	Total Well Depth	4847.00	ft
	SHARED	BHT	Bottom Hole Temperature	129.0	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	

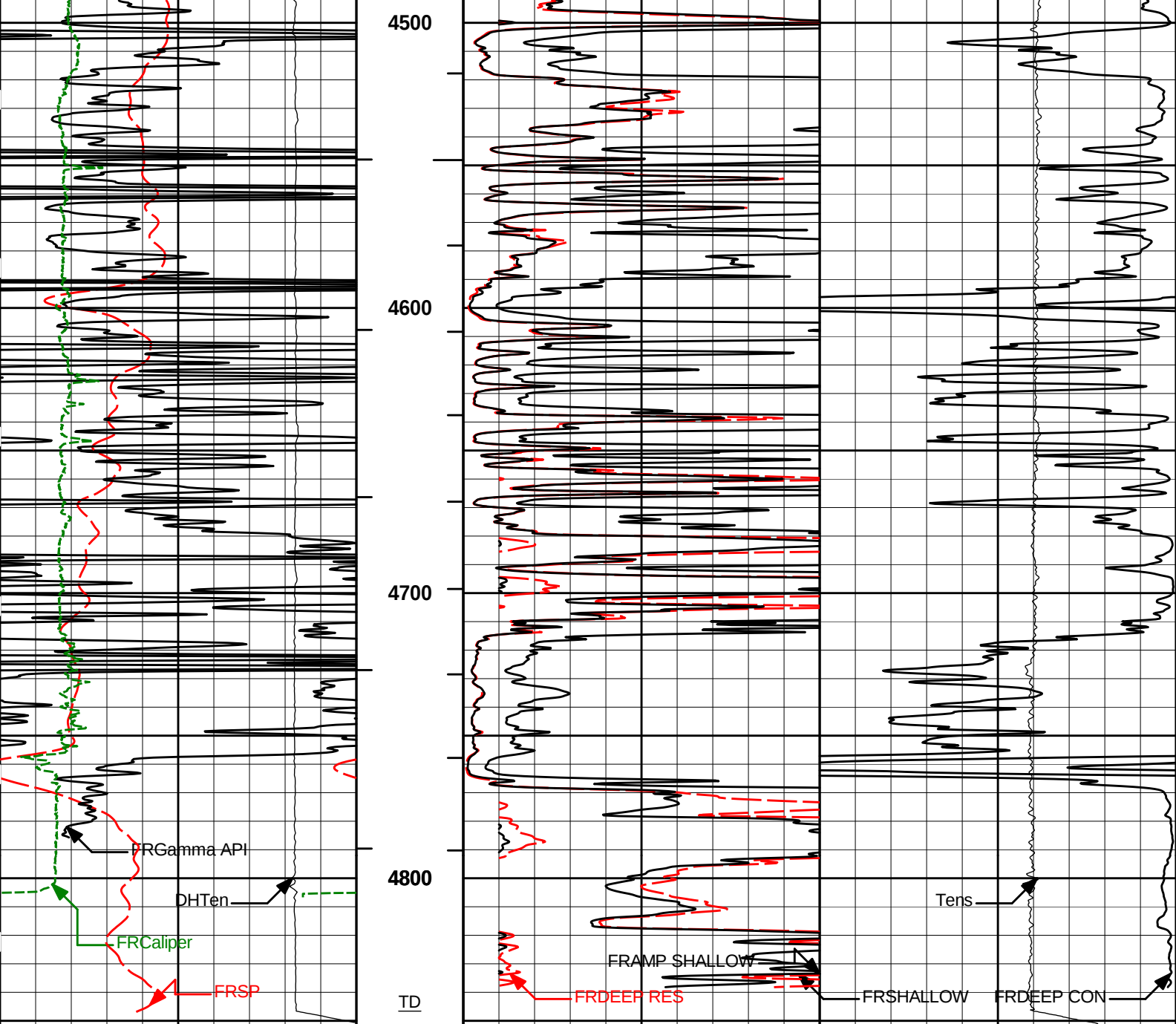
CrossPlot	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	GTET	GROK	Process Gamma 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	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
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
	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	Limestone 47.5	
	BSAT	DTSH	Delta -T Shale	100.00	uspf
	BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
	ACRt Sonde	RTOK	Process ACRt?	Yes	
	ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
	ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
	ACRt Sonde	TPOS	Tool Position	Free Hanging	
	ACRt Sonde	RMOP	Rmud Source	Mud Cell	
	ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	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: HARTMN_ROSE_1_1\0003 QUAD_MEL_BSAT\004.01 06-Oct-12 23:23 Up				Date: 07-Oct-12 00:07:57	











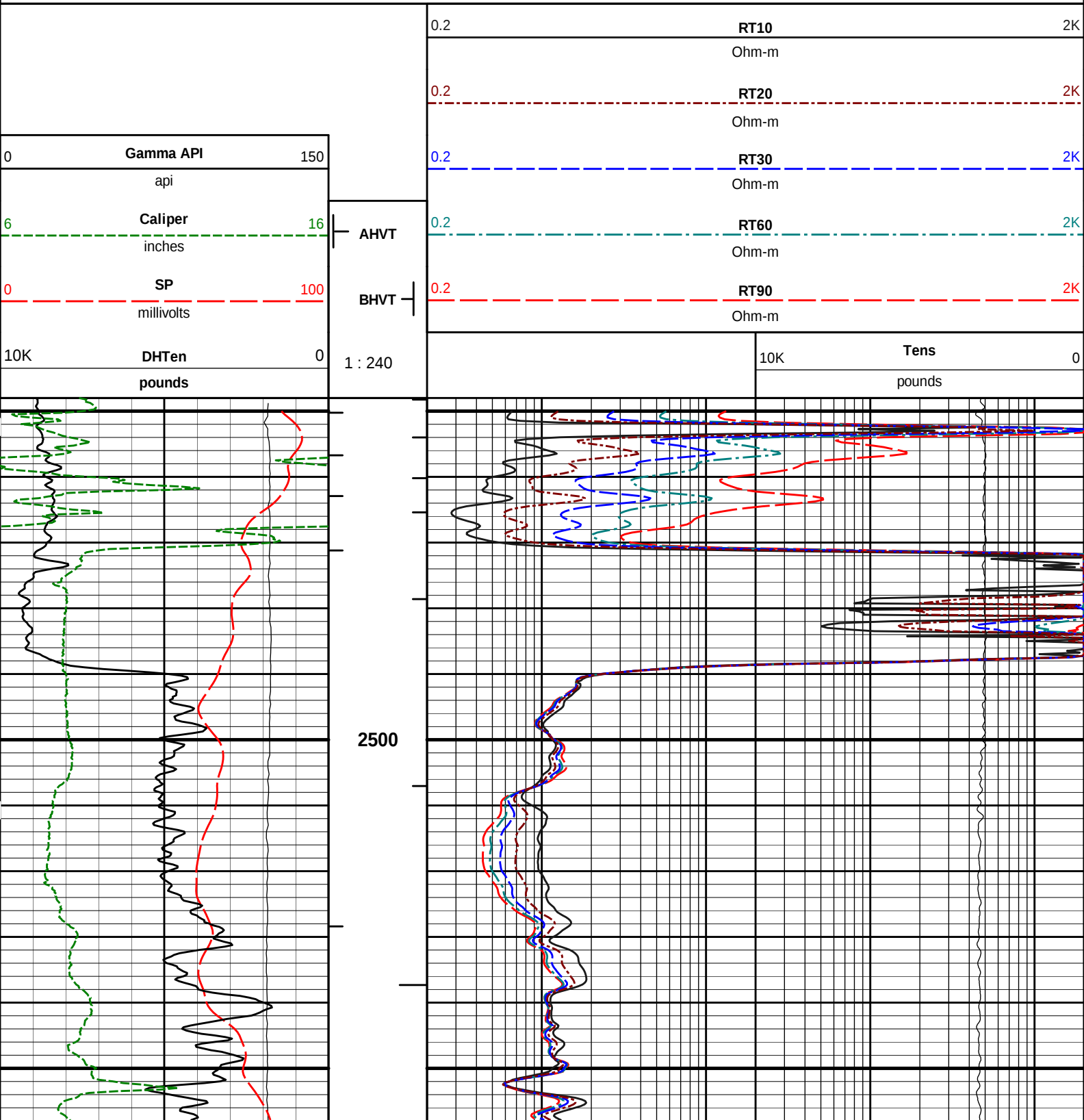
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	pounds				ohm-metre			pounds	
0	SP	100	BHVT	0	SHALLOW	100	500	DEEP CON	0
	millivolts				ohm-metre			mmho per metre	
0	Gamma API	150	AHVT	0	AMP SHALLOW	20			
	api				ohm-metre				
6	Caliper	16							
	inches								

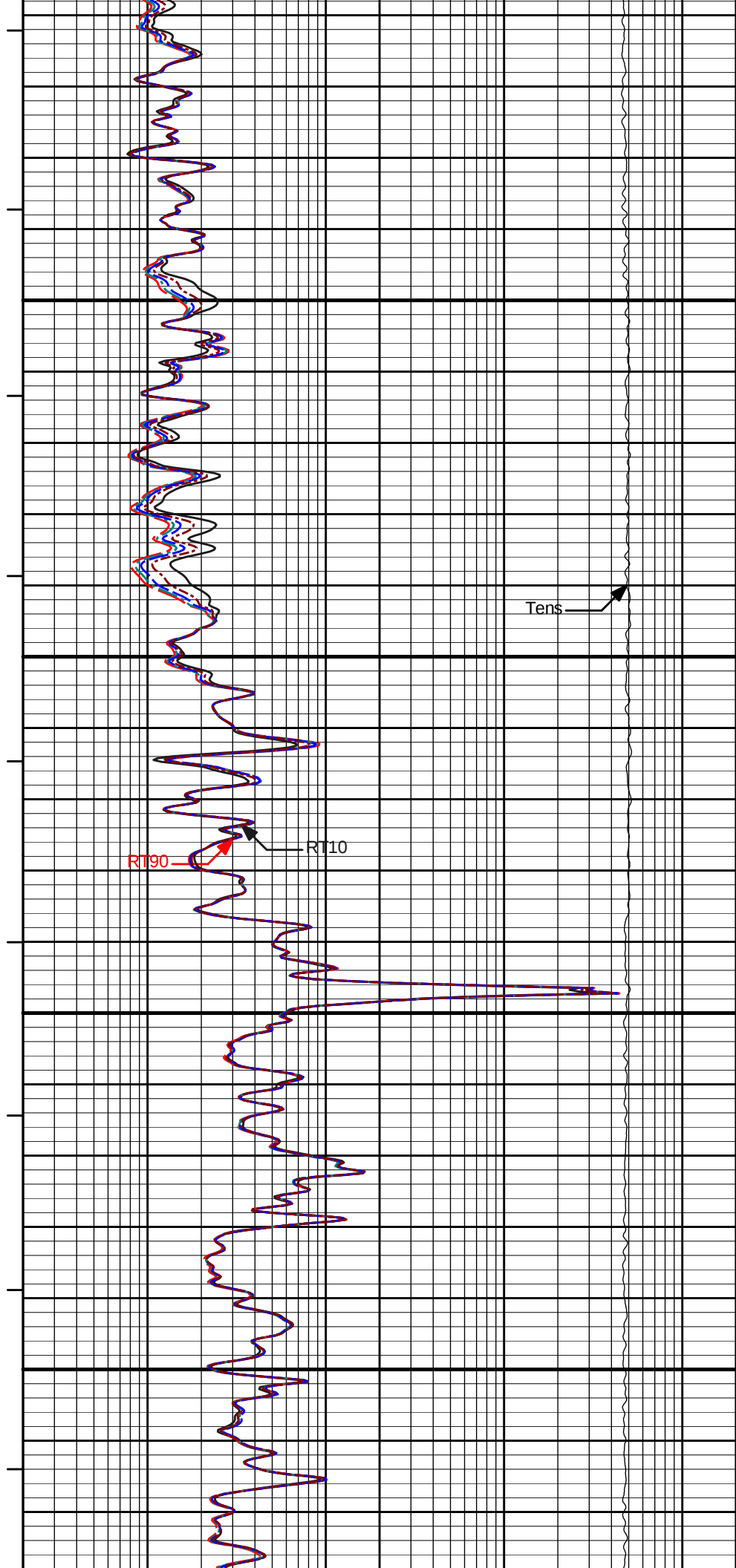
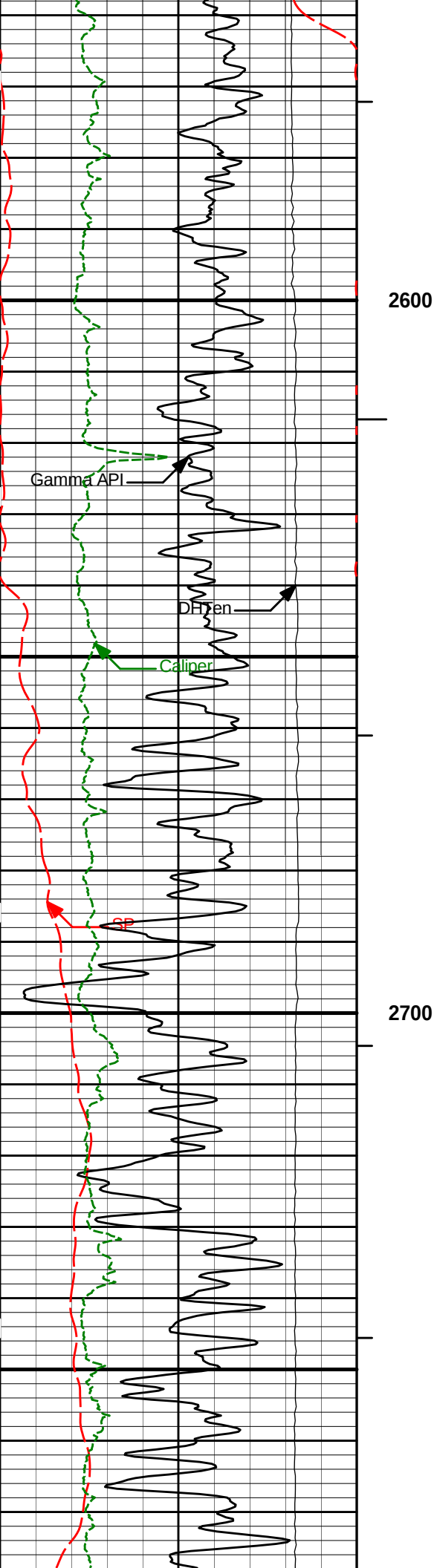
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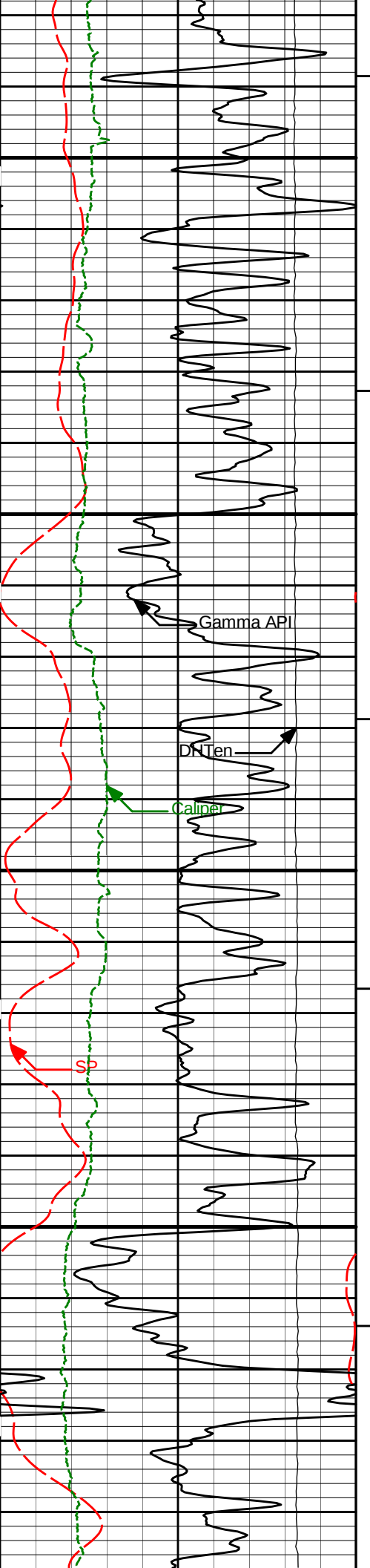
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 Plot Range: 2448 ft to 4851.5 ft
 Data: HARTMN_ROSE_1_1Well Based\MAIN*
 Plot File: \\ACRT\IQ_BP_ACRt_2IN_DHT

MAIN PASS 2" = 100'

MAIN PASS 5" = 100'







2800

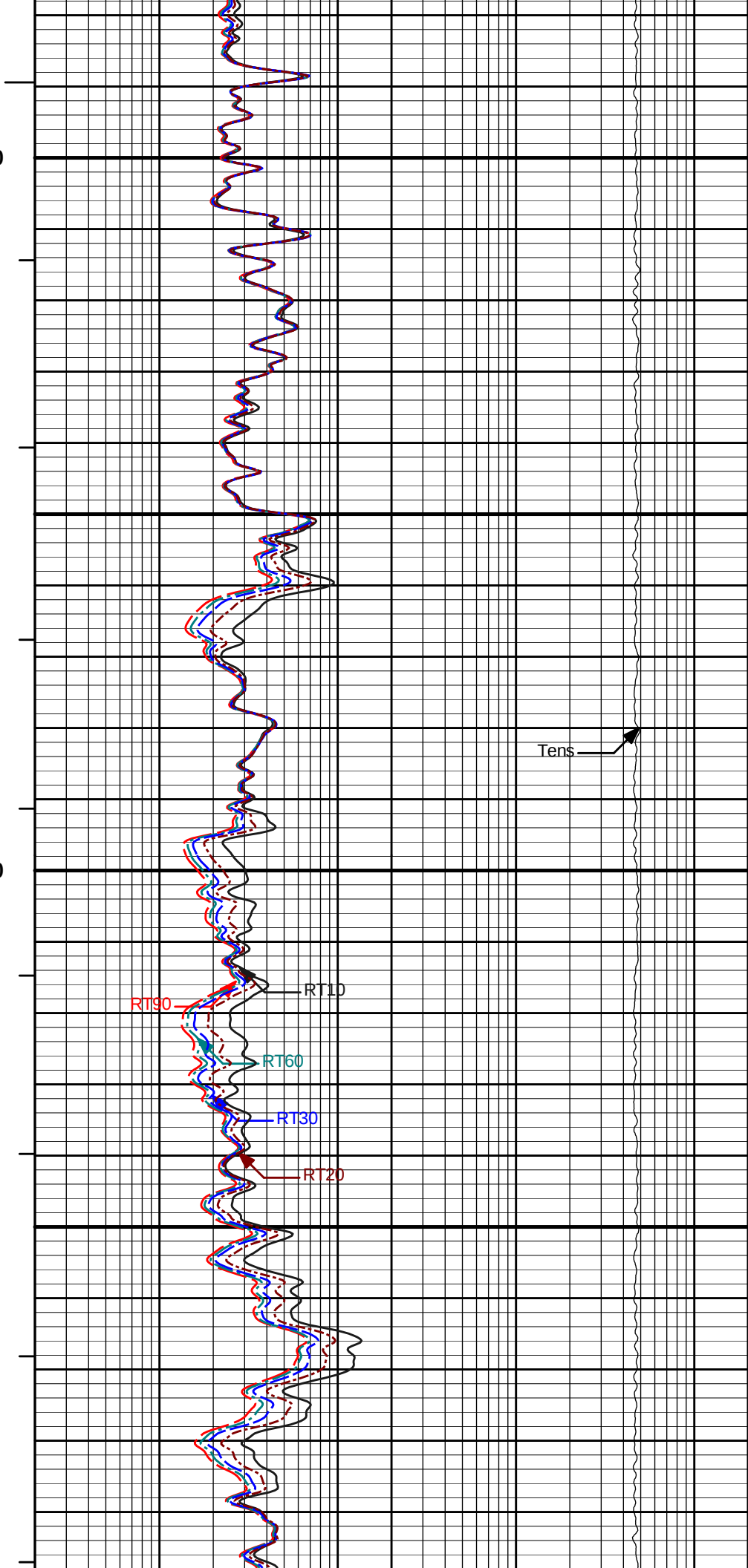
Gamma API

DNTen

Caliper

2900

SP



Tens

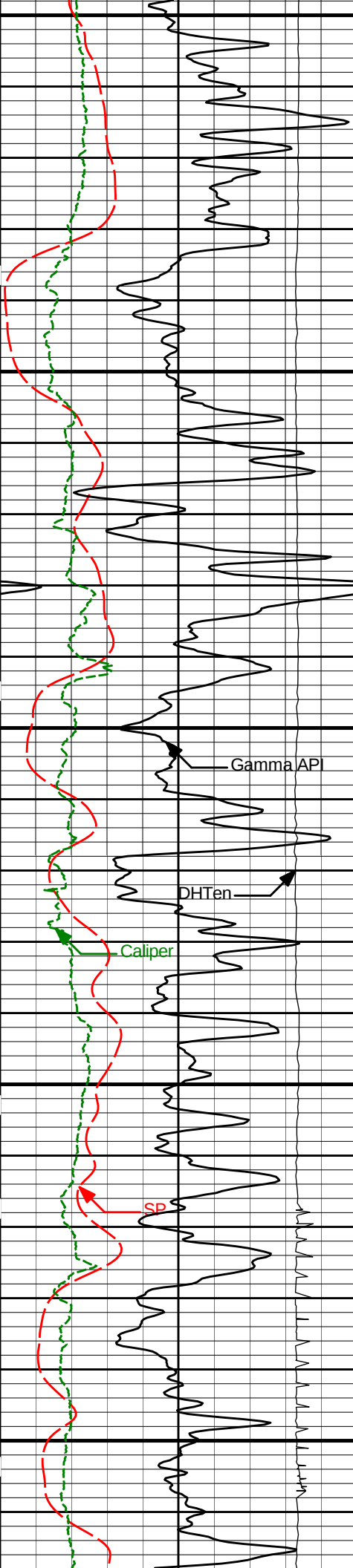
RT10

RT90

RT60

RT30

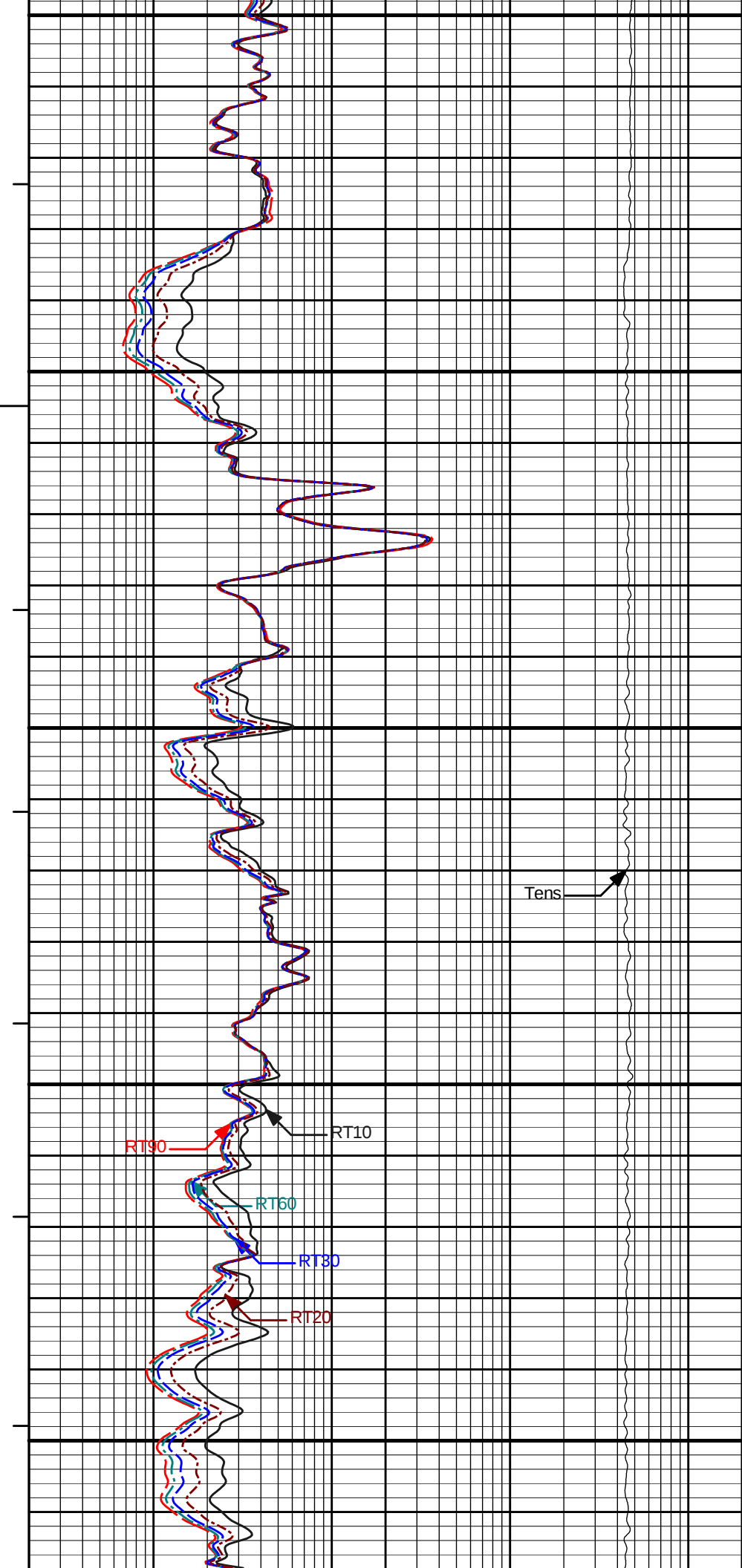
RT20

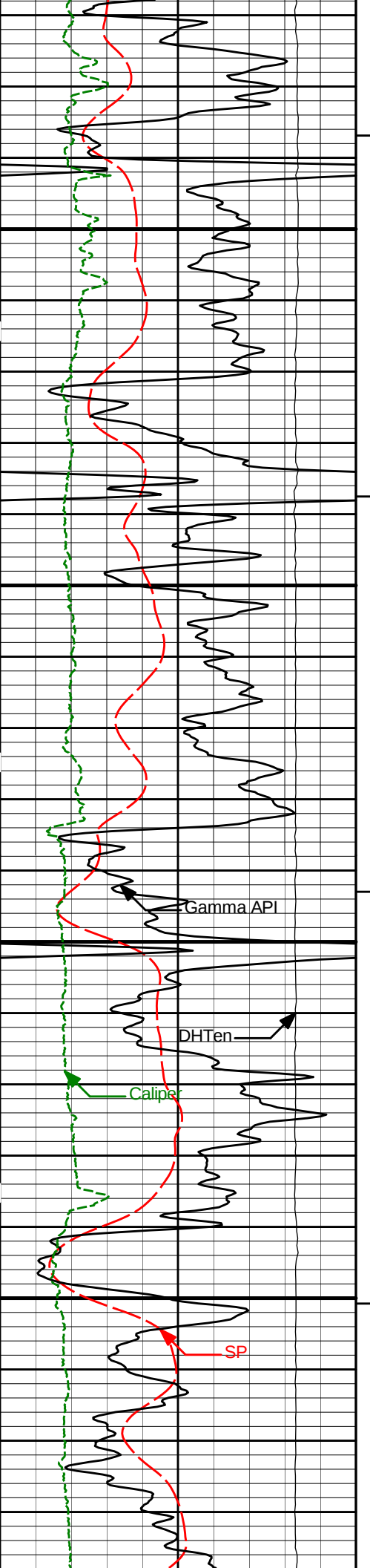


3000

3100

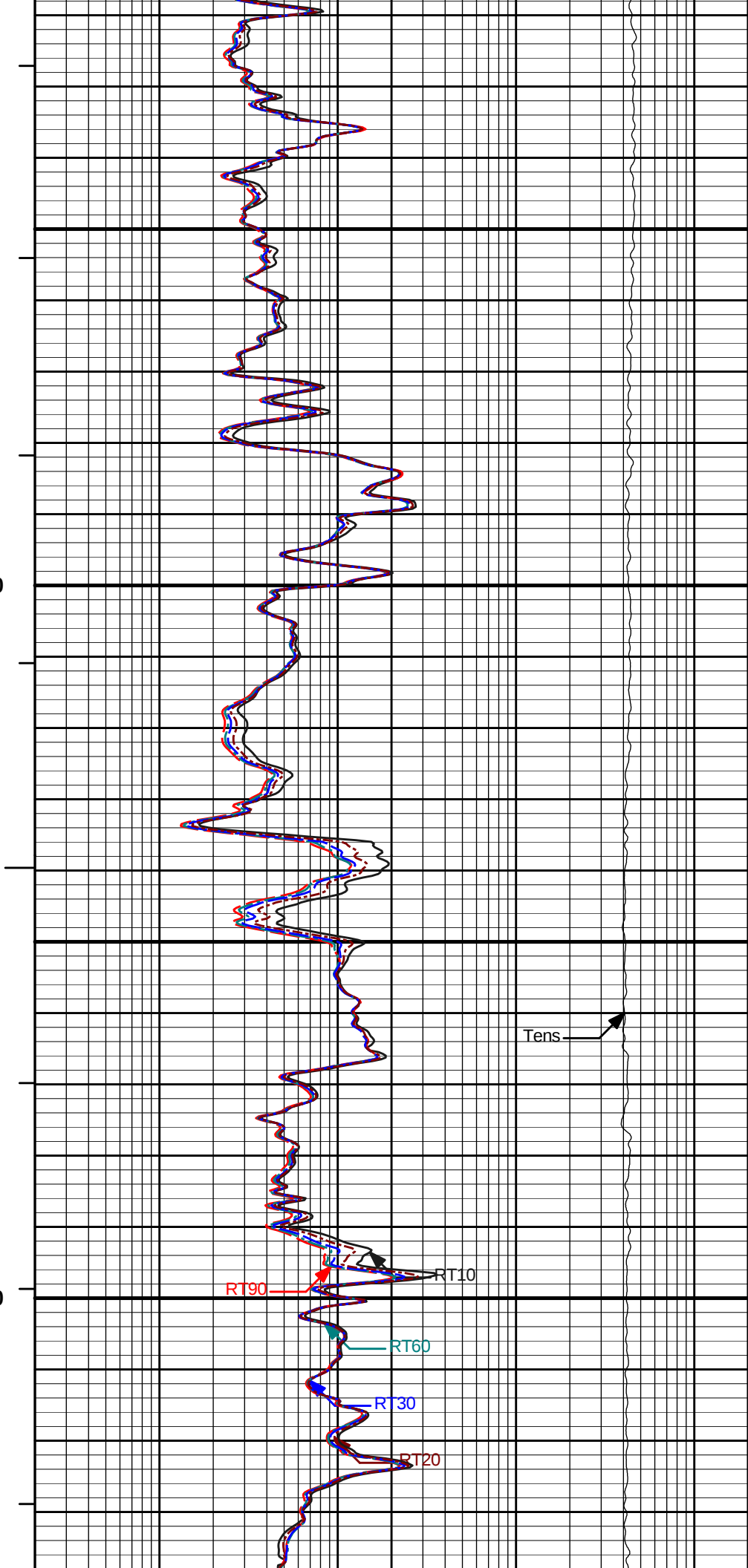
3200

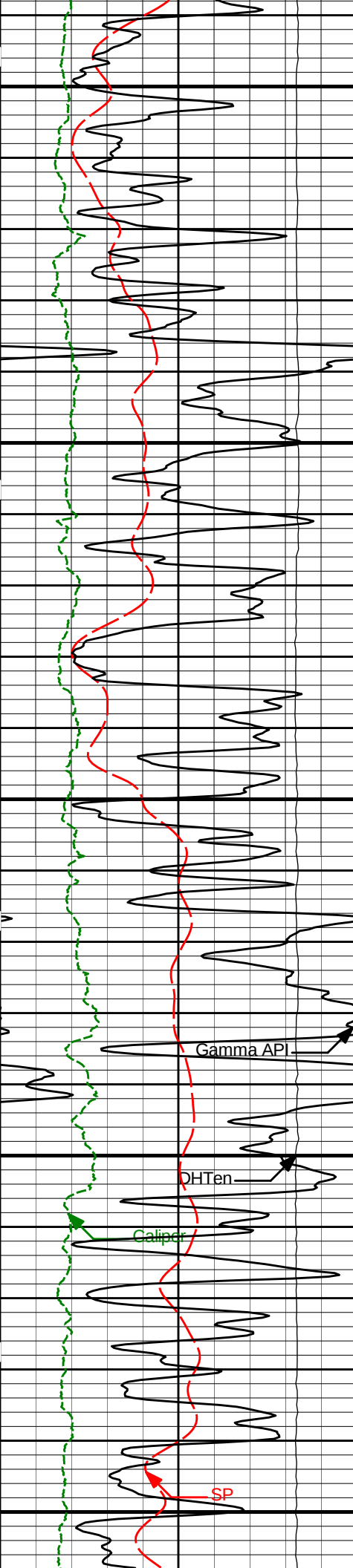




3300

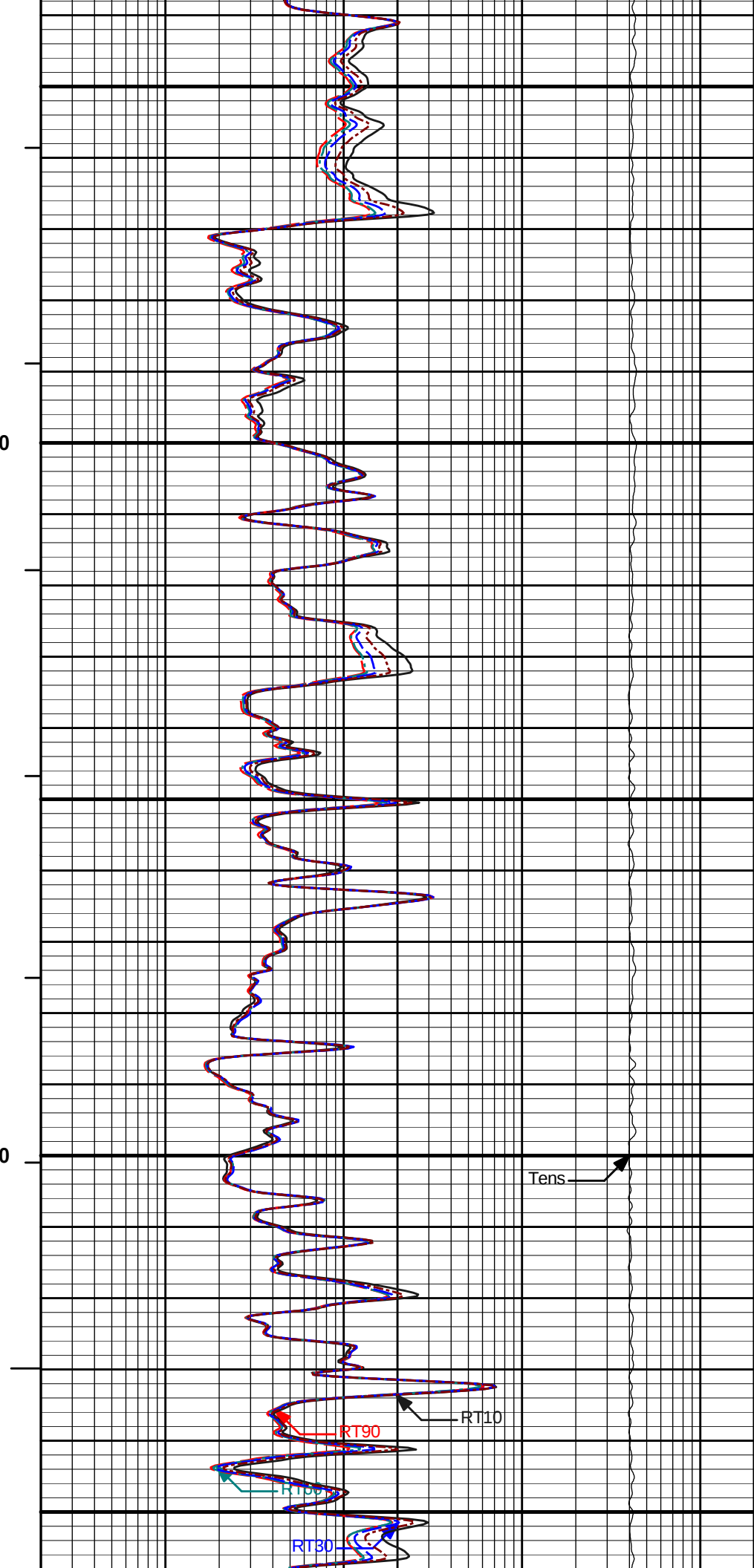
3400





3500

3600



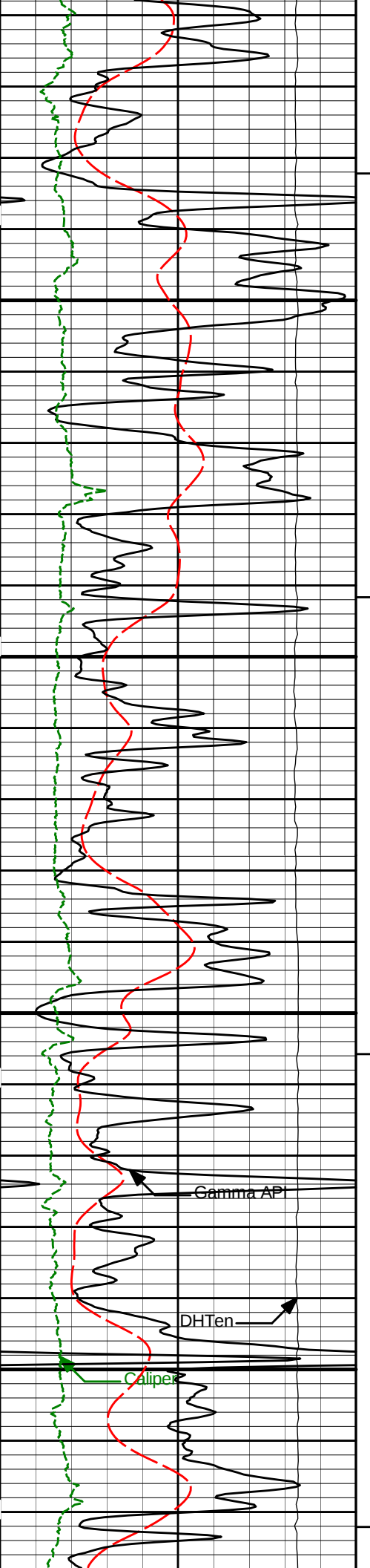
Tens

RT90

RT10

RT30

RT60



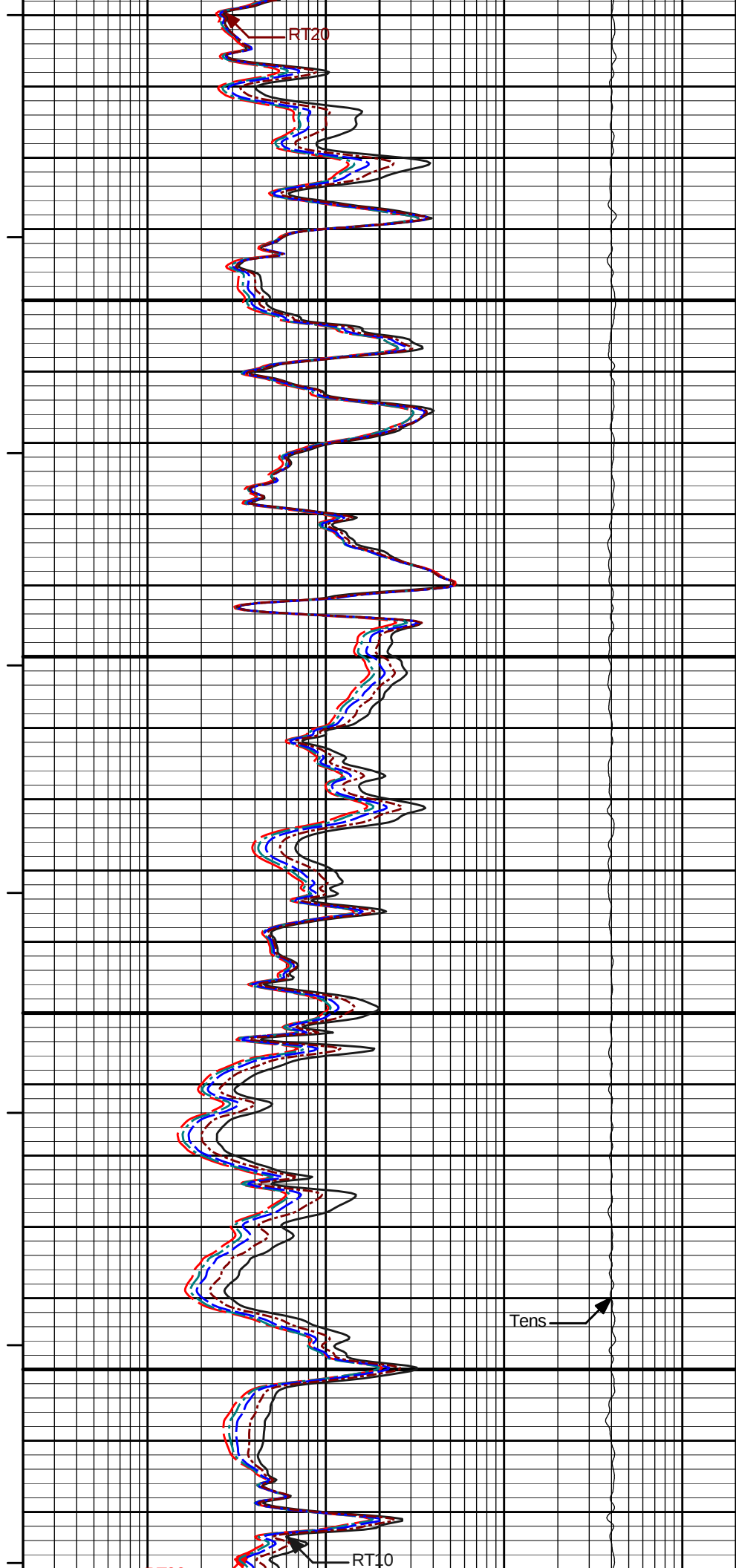
3700

3800

Gamma API

DHTen

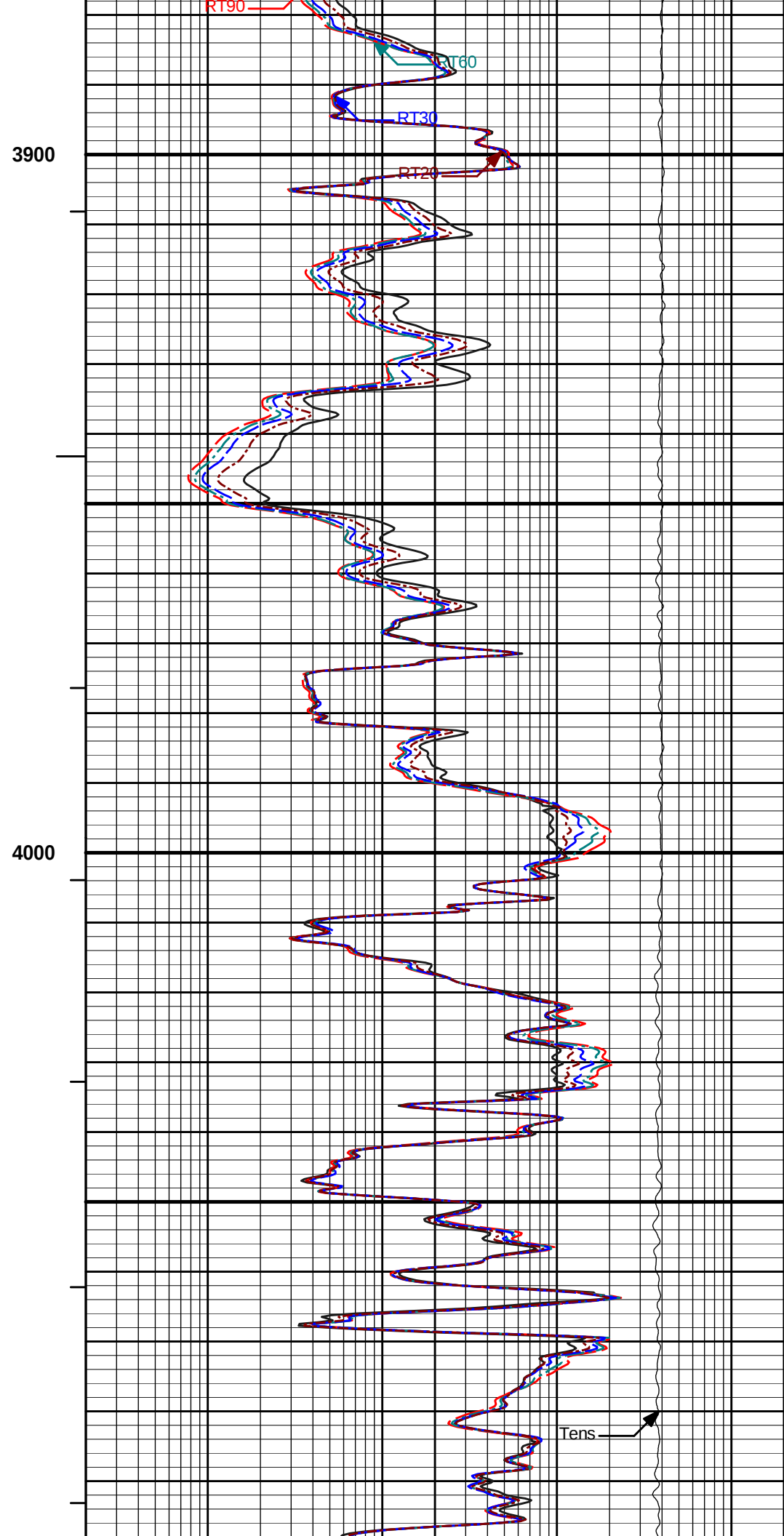
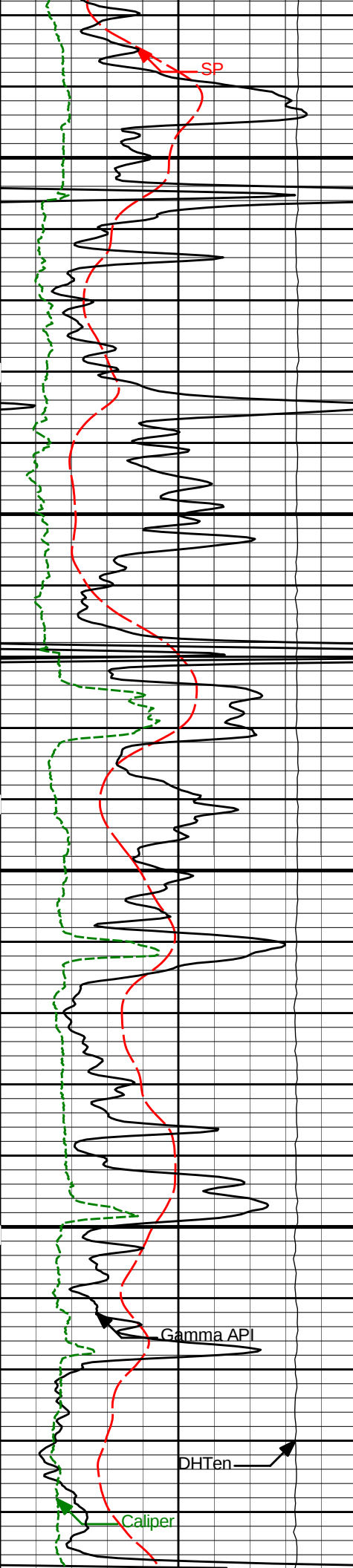
Caliper

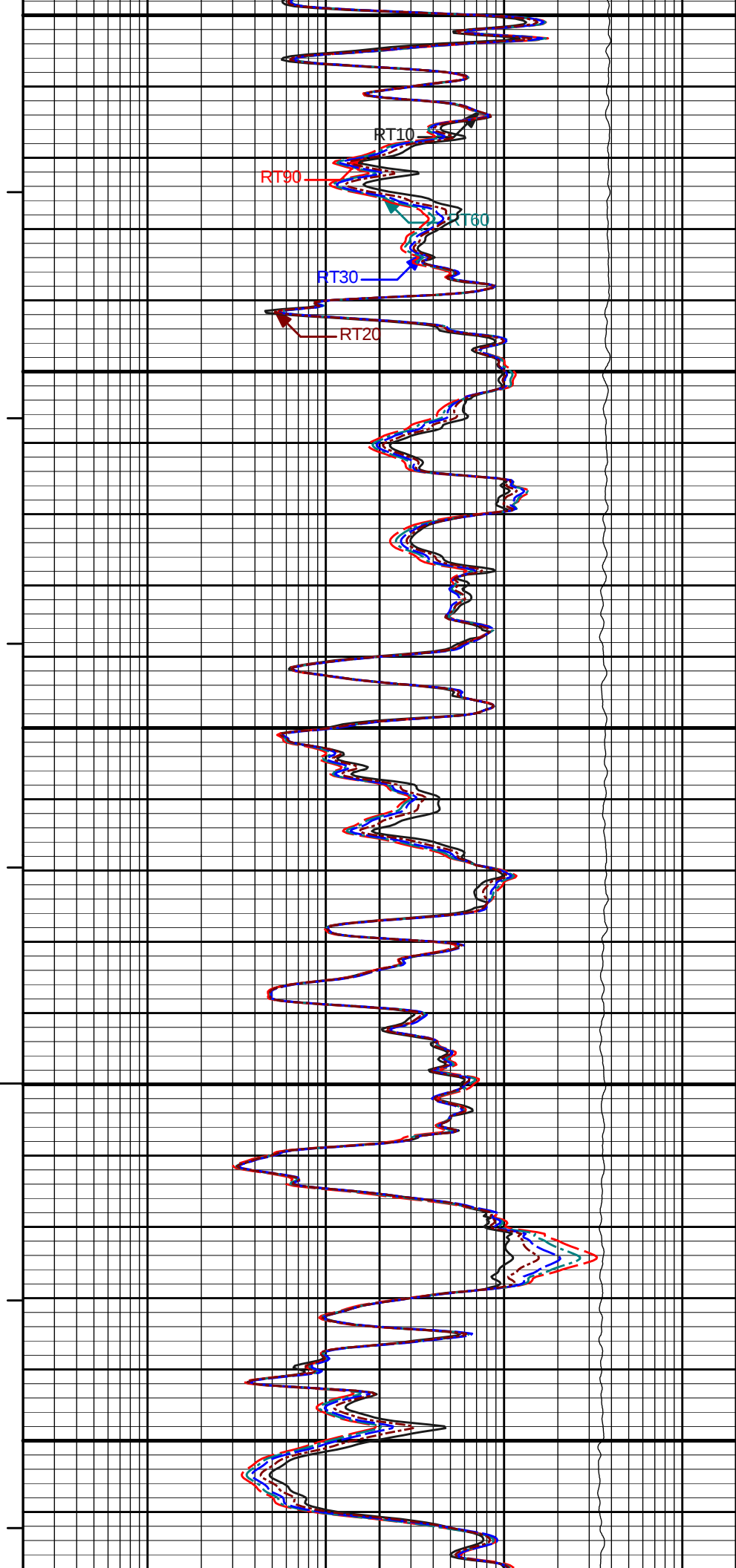
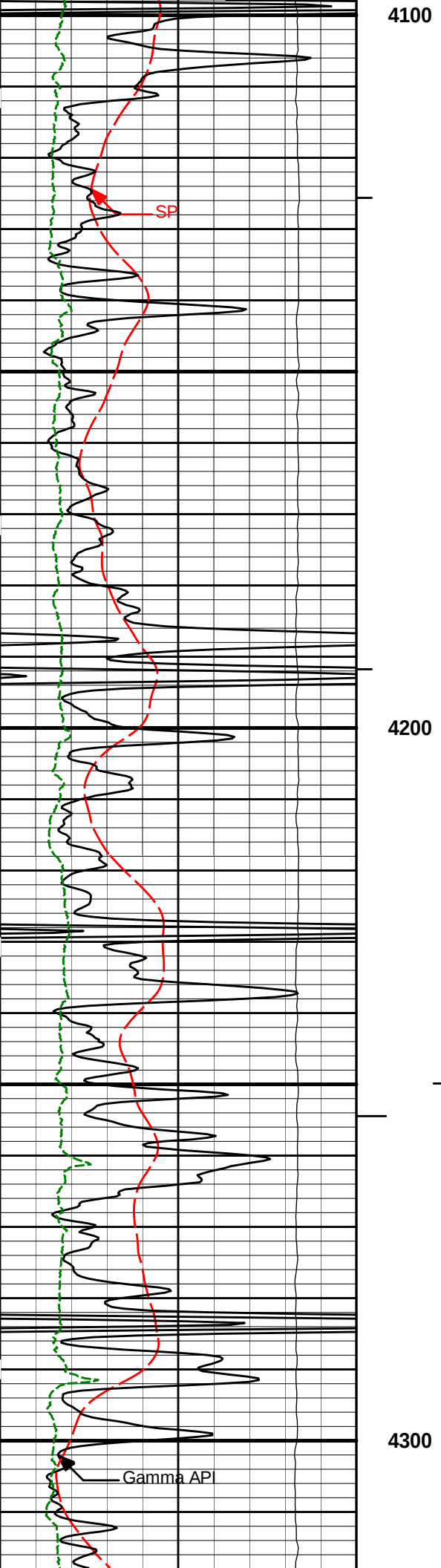


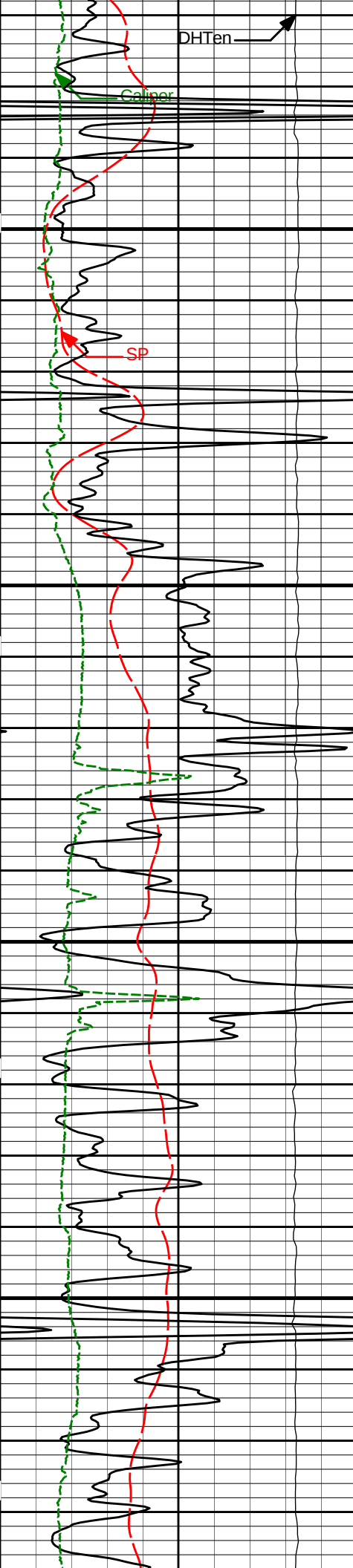
RT20

RT10

Tens

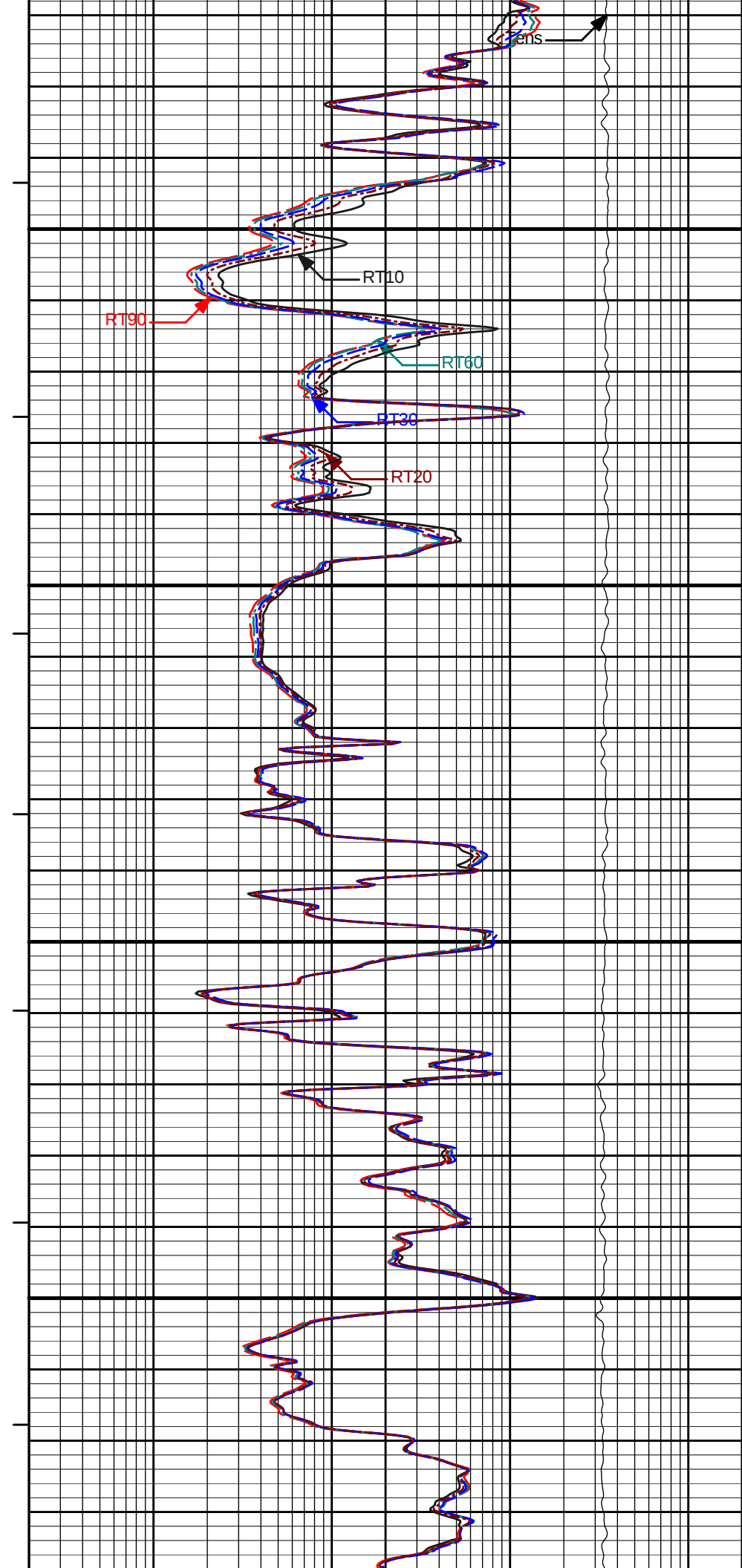


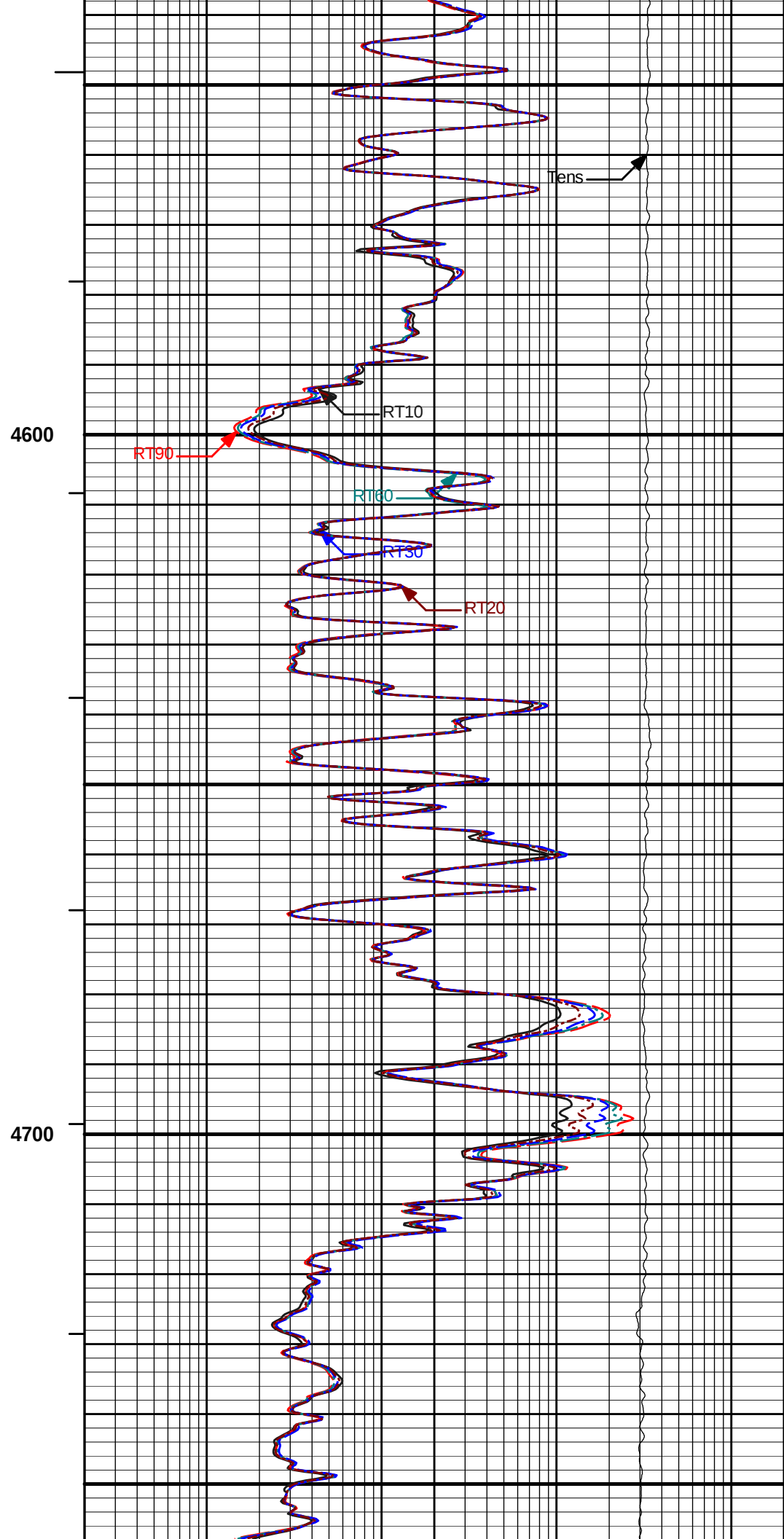
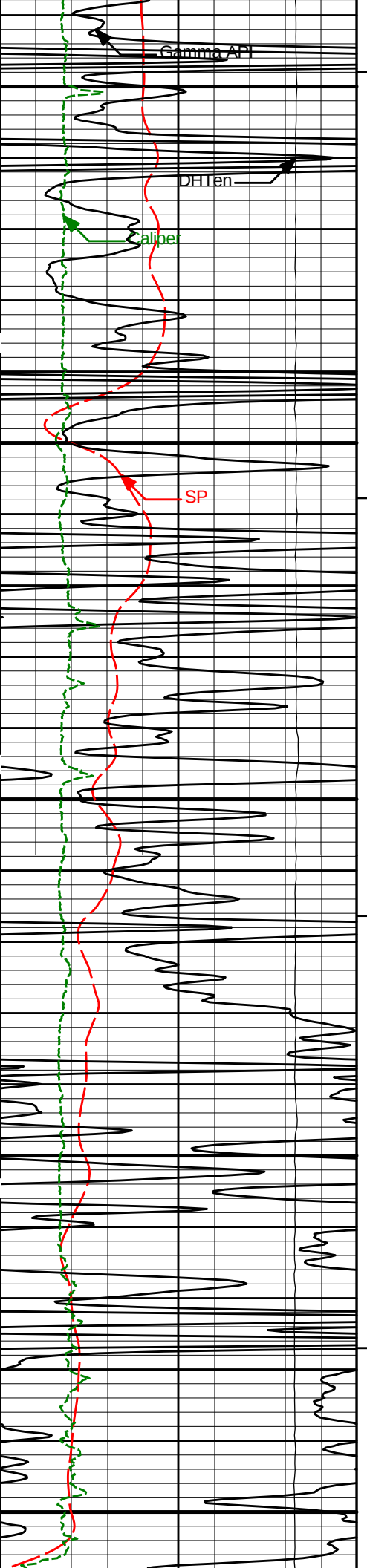


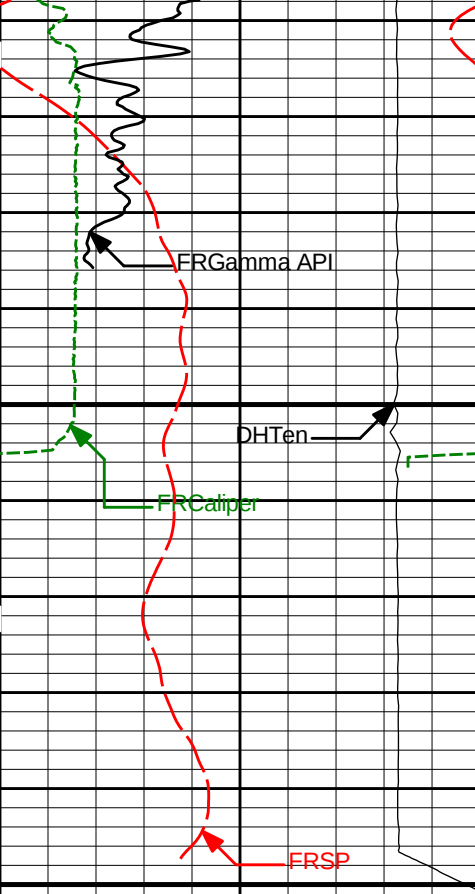


4400

4500

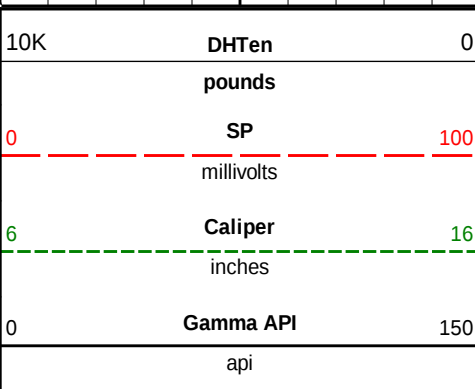
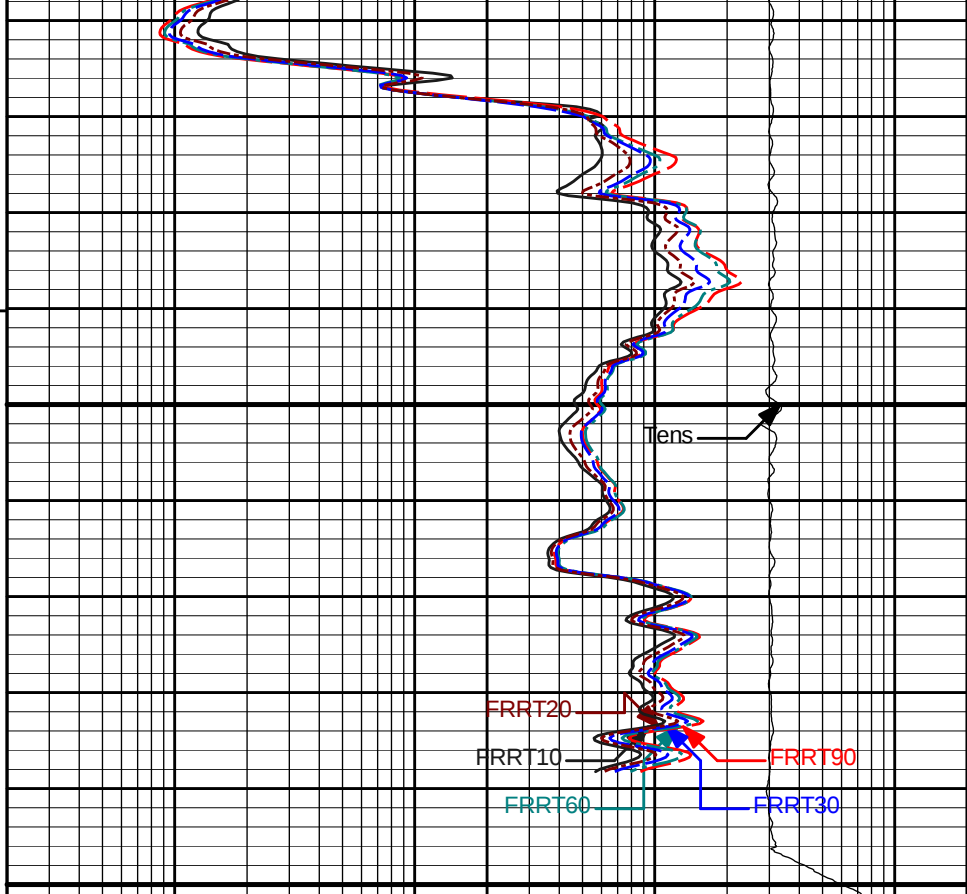






4800

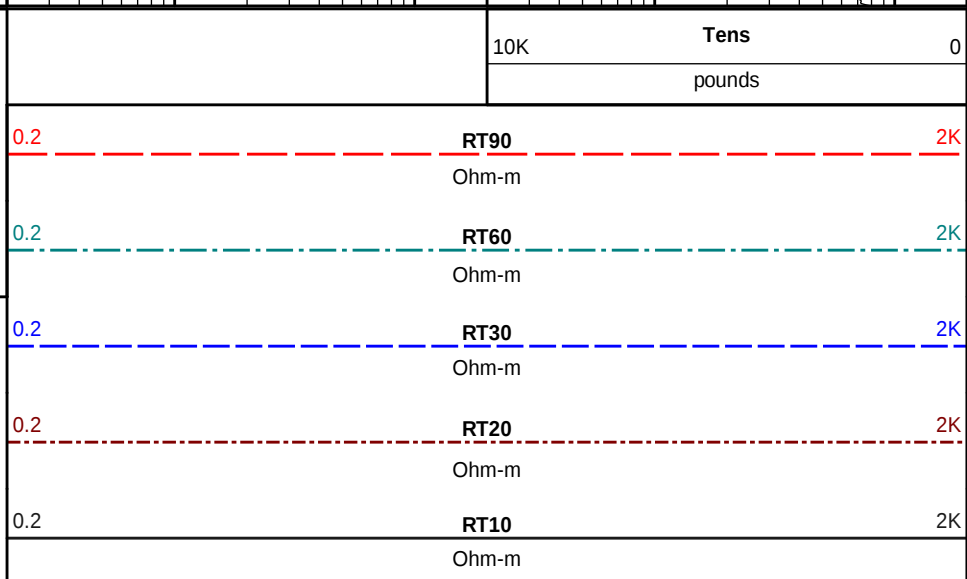
TD



1 : 240

BHVT

AHVT



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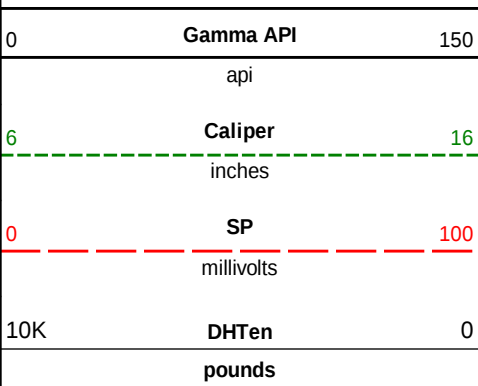
Plot Time: 07-Oct-12 00:29:39
 Plot Range: 2448 ft to 4851.5 ft
 Data: HARTMN_ROSE_1_1\Well Based\MAIN\
 Plot File: \\ACRT\IQ_BP_ACRt_5IN_DHT

MAIN PASS 5" = 100'

HALLIBURTON

Plot Time: 07-Oct-12 00:29:39
 Plot Range: 4498 ft to 4851.92 ft
 Data: HARTMN_ROSE_1_1\Well Based\RPT\
 Plot File: \\ACRT\IQ_BP_ACRt_5IN_DHT_RPT

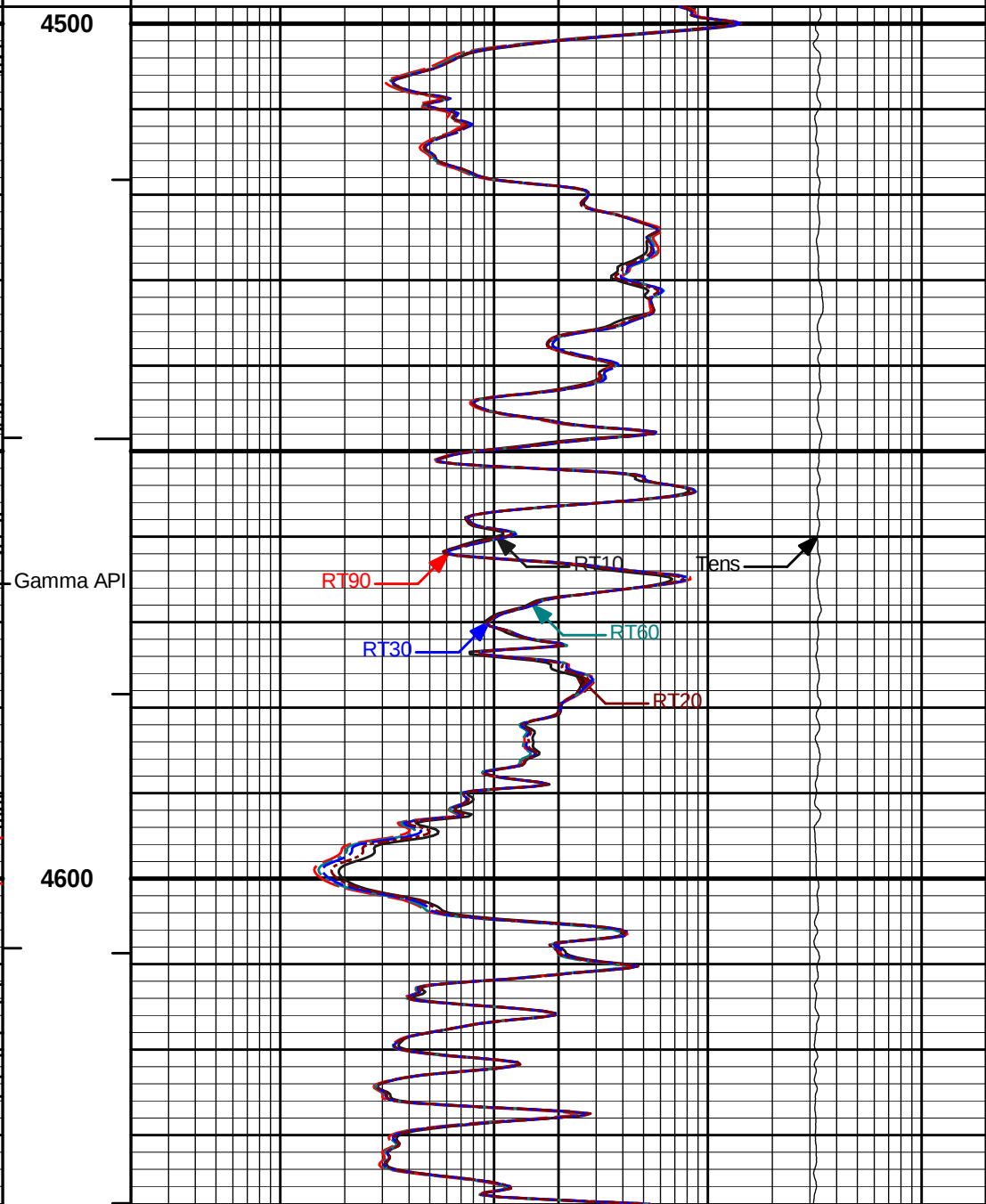
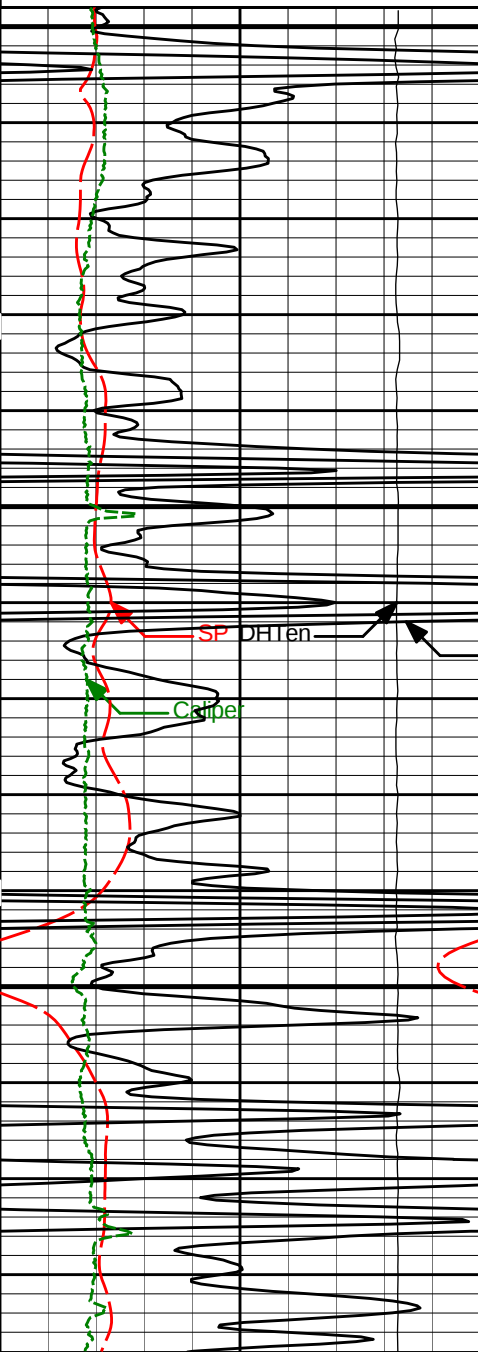
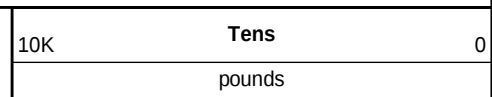
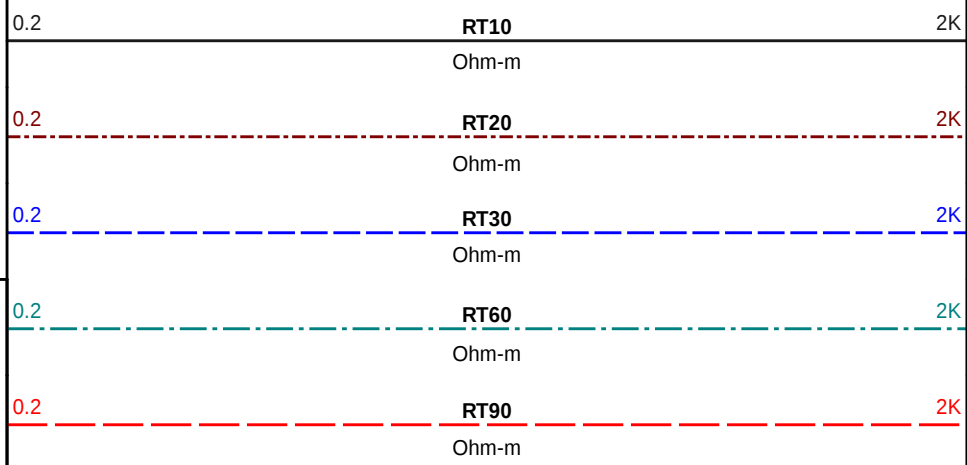
REPEAT SECTION 5" = 100'

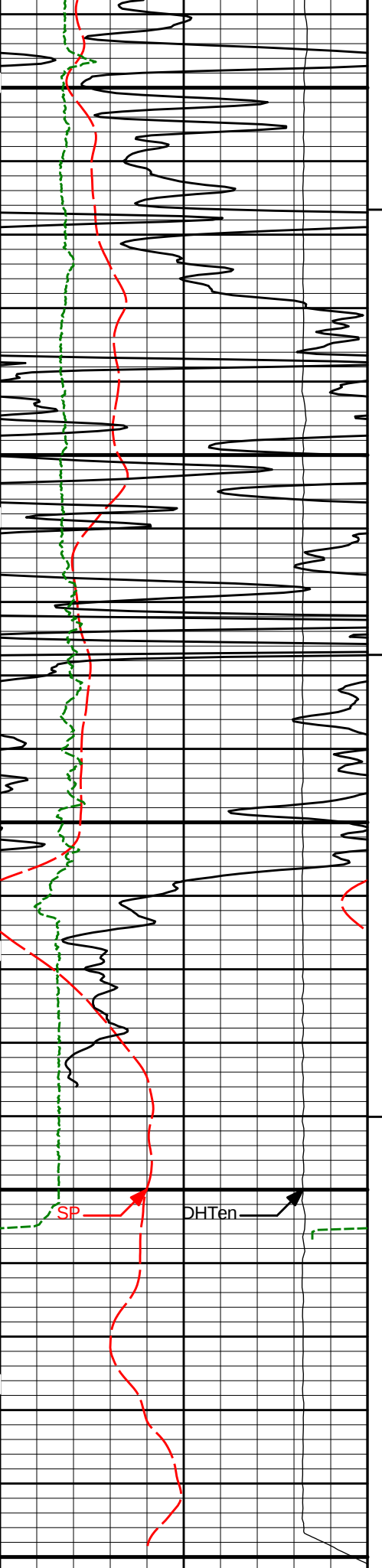


AHVT

BHVT

1 : 240



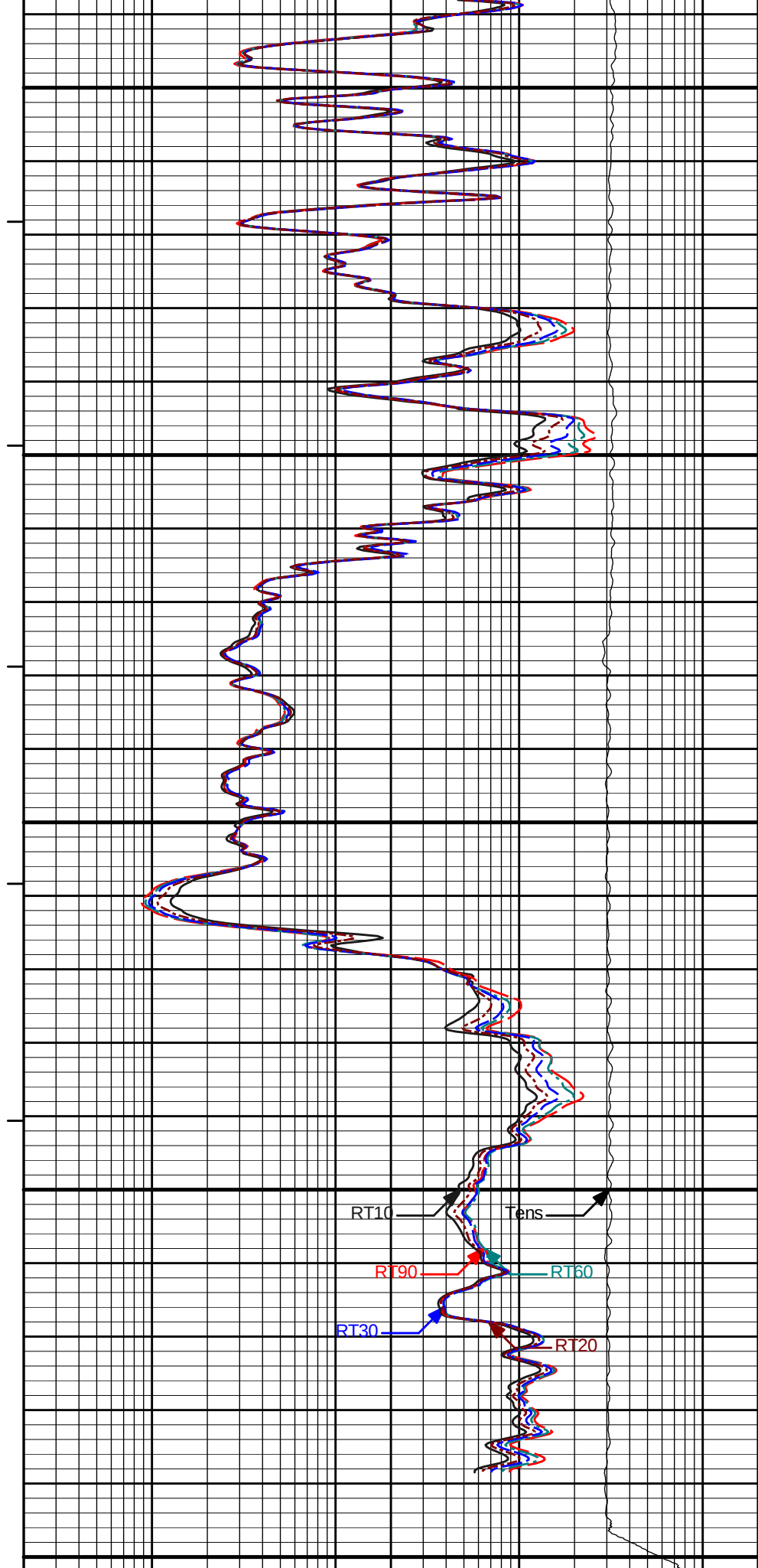


4700

4800

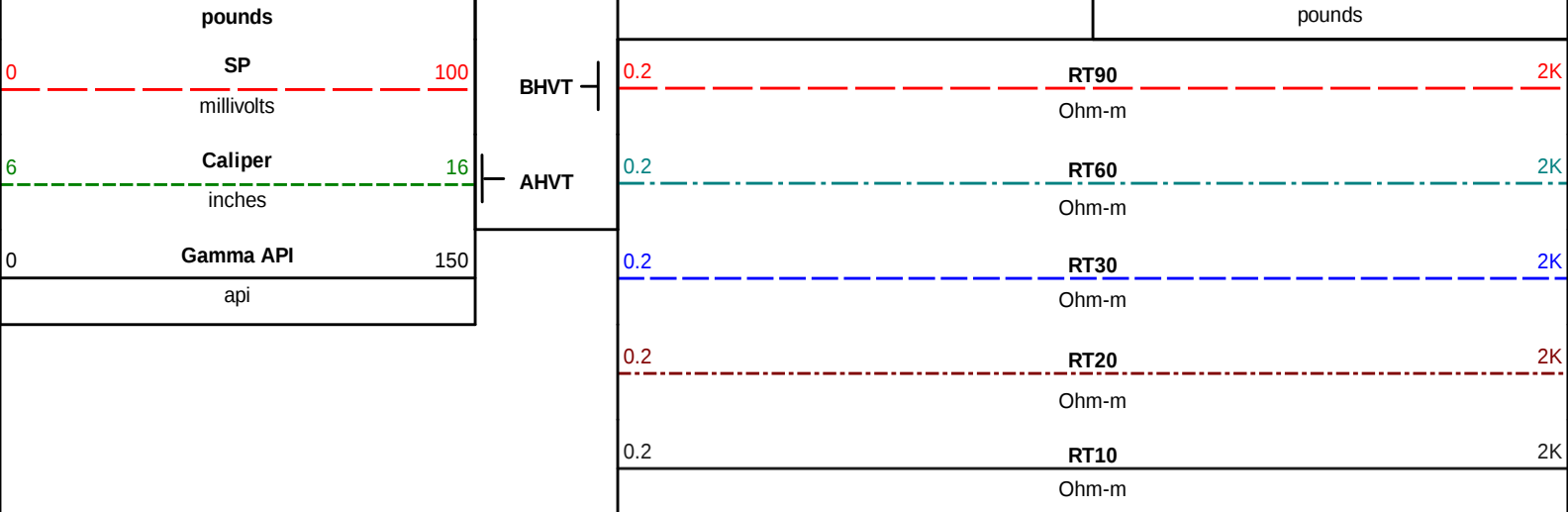
10K DHTen 0

1 : 240



RT10
RT90
RT30
RT60
RT20
Tens

10K Tens 0



HALLIBURTON

Plot Time: 07-Oct-12 00:29:40
Plot Range: 4498 ft to 4851.92 ft
Data: HARTMN_ROSE_1_1\Well Based\RPT\
Plot File: \\ACRT\IQ_BP_ACRt_5IN_DHT_RPT

REPEAT SECTION 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11602914	Reference Calibration Date:	03-Sep-12 14:11:39
Engineer:	D. CULVER	Calibration Date:	19-Sep-12 17:02:22
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Calibrator Source S/N: TB-270			
Calibrator API Reference:259.00 api			
Equivalent Calibrator API Reference:263.5 api			
Measurement	Measured	Calibrated	Units
Background	43.0	43.2	api
Background + Calibrator	305.9	306.7	api
Calibrator	262.8	263.5	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION			
Tool Name:	GTET - 11602914	Reference Calibration Date:	19-Sep-12 17:02:22
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 20:50:47
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Calibrator Source S/N: TB-270			
Calibrator API Reference:259.00 api			
Equivalent Calibrator API Reference:263.5 api			
Field Verification	Shop	Field	Units
Background	43.2	116.6	api
Background + Calibrator	306.7	383.1	api
Calibrator	263.5	266.4	api
Shop	Field	Shop	Field

Shop	Field	Difference	Tolerance
263.5	266.4	-2.9	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION			
Tool Name:	DSNT - 10860047	Reference Calibration Date:	21-Aug-12 11:15:06
Engineer:	D. CULVER	Calibration Date:	19-Sep-12 14:13:35
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: 08-018
 Tank Serial Number: 105039
 Reference value assigned to Tank: 49.230
 Snow Block S/N: 11170614
 Calibration Tank Water Temperature: 72 degF
 Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.941	0.938	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):	0.1982	0.1974	0.0008	+/- 0.0020
Calibrated Ratio:	9.29	9.27	0.026	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0735	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 - 10860047	Reference Calibration Date:	19-Sep-12 14:13:35
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:38:23
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: 08-018
 Snow Block S/N: 11170614

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0735	0.0606	-0.0129	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 10947725	Reference Calibration Date:	06-Oct-12 12:06:34
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:10:52

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1342.92	-1398.94	-7000.00 - -1000.00
Pad Gain	0.0003750	0.0003752	0.000200 - 0.000600
Arm Offset	-1039.27	-1052.18	-5000.00 - 3000.00
Arm Gain	0.0004958	0.0005057	0.000300 - 0.000700
Arm Power	-0.000002083	-0.000002847	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.02	2.00	-0.02	+/- 0.20
Medium Ring (in)	3.77	3.75	-0.02	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.49	6.50	0.01	+/- 0.20
Medium Ring (in)	8.23	8.25	0.02	+/- 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

Logging Source S/N: 5235GW

Aluminum Block S/N: ROCK SPRINGS

Density: 2.602g/cc

Pe: 3.110

Magnesium Block S/N: ROCK SPRINGS

Density: 1.690g/cc

Pe: 2.610

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0476	1.0337	0.90 - 1.10
Near Dens Gain	1.0107	1.0071	0.90 - 1.10
Near Peak Gain	1.0119	1.0184	0.90 - 1.10
Near Lith Gain	1.0110	1.0231	0.90 - 1.10
Far Bar Gain	1.0113	1.0121	0.90 - 1.10
Far Dens Gain	1.0022	1.0016	0.90 - 1.10
Far Peak Gain	0.9983	0.9989	0.90 - 1.10
Far Lith Gain	0.9748	0.9806	0.90 - 1.10
Near Bar Offset	-0.4135	-0.2834	NONE
Near Dens Offset	-0.0803	-0.0470	NONE
Near Peak Offset	-0.0904	-0.1464	NONE
Near Lith Offset	-0.0834	-0.1771	NONE
Far Bar Offset	0.1672	0.1720	NONE

Far Bar Offset	-0.0711	-0.0593	NONE
Far Peak Offset	-0.0874	-0.0840	NONE
Far Lith Offset	0.0241	-0.0069	NONE
Near Bar Background	905.33	902.03	700 - 1450
Near Dens Background	301.28	302.87	230 - 480
Near Peak Background	130.47	129.77	100 - 210
Near Lith Background	158.05	157.75	125 - 260
Far Bar Background	478.41	477.90	450 - 900
Far Dens Background	190.19	190.67	175 - 345
Far Peak Background	75.21	74.54	70 - 140
Far Lith Background	77.72	77.56	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.694	1.690	-0.004	+/- 0.015
Pe	2.618	2.556	-0.062	+/- 0.150
ALUMINUM				
Density (g/cc)	2.604	2.602	-0.002	+/- 0.01500
Pe	3.090	3.061	-0.029	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0008	+/- 0.0110	-0.0022	+/- 0.0140
Magnesium Block	-0.0011	+/- 0.0110	-0.0009	+/- 0.0140
Aluminum Block	0.0006	+/- 0.0110	0.0010	+/- 0.0140
Resolution	9.15	6.00 - 11.50	10.14	6.00 - 11.50
Internal Verifier(B+D+P+L)	1492	1200 - 2700	821	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 - 11014275	Reference Calibration Date:	05-Oct-12 09:24:27
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:24:34
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Pad Temperature: 56.9 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (Dens Peak)	1412.122	1412.222	0.001	17.500

Near (B+D+P+L) cps	1492.432	1496.326	3.894	15.569
Far (B+D+P+L) cps	820.674	824.912	4.238	15.804
Near Resolution	9.15	9.11	-0.040	0.50
Far Resolution	10.14	10.41	0.270	1.00

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

MICRO LOG SHOP CALIBRATION			
Tool Name:	Microlog Pad - 10947725	Reference Calibration Date:	06-Oct-12 12:20:37
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:22:08
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 10860047		

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.04	-0.05	0.01	0.00	ohmm
Calibration Point #1	0.01	0.00	0.00	0.00	ohmm
Calibration Point #2	20.00	20.00	19.93	20.00	ohmm
Internal Reference	20.09	20.09	20.16	20.24	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	4.44	2.91	V
Calibration Point #1	16.49	2.05	V
Calibration Point #2	5239.40	6752.30	V
Internal Reference	5263.45	6831.70	V

MICRO LOG FIELD CHECK			
Tool Name:	Microlog Pad - 10947725	Reference Calibration Date:	06-Oct-12 12:22:08
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:23:11
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.05	-0.05	0.00	-0.00	ohmm
Internal Reference	20.09	20.09	20.24	20.24	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	20.09	20.09	0.00	+/- 0.80
Microlog Lateral	20.24	20.24	0.00	+/- 0.80

SDLT CALIPER FIELD CALIBRATION			
Tool Name:	SDLT - 10947725	Reference Calibration Date:	06-Oct-12 12:10:52
Engineer:	V. CREWS	Calibration Date:	06-Oct-12 12:12:42
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.77	0.02	+/- 0.10

Ring Diameter		8.25	8.32	0.07	+/-	0.15			
PASS/FAIL SUMMARY									
Pad Extension Check:				Passed					
Diameter Check:				Passed					
BSAT FIELD CASING CHECK									
Tool Name:		BSAT - 10747633			Calibration Date:		06-Oct-12 21:15:41		
Engineer:		V. CREWS			Calibration Date:		25-Sep-12 12:13:40		
Software Version:		WL INSITE R3.6.0 (Build 3)			Calibration Version:		1		
	Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units		
	Delta-T Compensated	131.69	57.00	56.03	0.9700	1.00	uspf		
ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION									
Tool Name:		ACRt Sonde - E6988-S8481			Reference Calibration Date:		11-Feb-12 12:56:56		
Engineer:		J.MAYNE			Calibration Date:		25-Sep-12 12:13:40		
Software Version:		WL INSITE R3.6.0 (Build 3)			Calibration Version:		1		
Host Tool Name:		ACRt Instrument - E6988-S8481							
TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.05	1.05	0.95	1.02	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.06	1.05	0.95	1.03	1.05	0.95	1.02	1.05
A3 (29")	0.95	1.03	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.02	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.99	1.05	0.95	0.99	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	1.55	2	-6	-4.36	-2	-8	-6.36	-2
A2 (50")	-7	-1.34	0	-7	-4.84	0	-7	-5.76	0
A3 (29")	-27	-13.41	-9	-9	-5.12	-3	-7	-3.79	-1
A4 (17")	-180	-98.44	-60	-45	-30.17	-15	-39	-24.25	-13
A5 (10")	N/A	N/A	N/A	-150	-101.38	-50	-80	-48.71	-10
A6 (6")	N/A	N/A	N/A	175	304.71	525	90	152.90	270
TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION				
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)		
12K	0.6	0.81	1.3	Mud Cell	0.95	1.00	1.05		
36K	1.0	1.24	2.0						
72K	1.0	1.43	2.0						
PASS/FAIL SUMMARY									
GAIN RANGE CHK				FAIL					
SONDE OFFSET RANGE CHK				PASS					
Tx CURRENT GAIN				PASS					
Rmud VERIFICATION				PASS					

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11602914						
Gamma Ray Calibrator	263.5	266.4	-----	-2.9	+/- 9.00	api
DSNT-10860047						
Snow-Block Porosity	0.0735	0.0606	-----	0.0129	+/- 0.0150	decp
SDLT-10947725						
Pad Extension	3.75	3.77	-----	-0.02	+/-0.10	in
Ring Diameter	8.25	8.32	-----	-0.07	+/-0.15	in
SDLT Pad-11014275						
Near(B+D+P+L)	1492.432	1496.326	-----	-3.894	+/-15.569	cps
Far(B+D+P+L)	820.674	824.912	-----	-4.238	+/-15.804	cps
Microlog Pad-10947725						
MicroLog Normal	20.09	20.09	-----	0.00	+/-0.80	ohmm
MicroLog Lateral	20.24	20.24	-----	0.00	+/-0.80	ohmm
ACRt Sonde-E6988-S8481						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

Data: HARTMN ROSE 1 10003 QUAD MEL BSAT\IDLE

Date: 06-Oct-12 23:22:45

HALLIBURTON

CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	06-Oct-12 21:23:20	655.75	Logging 001 06-Oct-12 21:23 Dn @655.8f
	06-Oct-12 21:36:29	3831.58	Halting 001 06-Oct-12 21:23 Dn @655.8f
	06-Oct-12 21:37:19	3771.75	Logging 002 06-Oct-12 21:37 Dn @3771.8f
	06-Oct-12 21:43:27	4832.07	Halting 002 06-Oct-12 21:37 Dn @3771.8f
	06-Oct-12 21:44:39	4852.25	Logging 003 06-Oct-12 21:44 Up @4852.3f
	06-Oct-12 21:51:25	4485.66	Halting 003 06-Oct-12 21:44 Up @4852.3f
	06-Oct-12 21:53:59	4852.00	Logging 004 06-Oct-12 21:53 Up @4852.0f
	06-Oct-12 23:18:43	78.10	Halting 004 06-Oct-12 21:53 Up @4852.0f

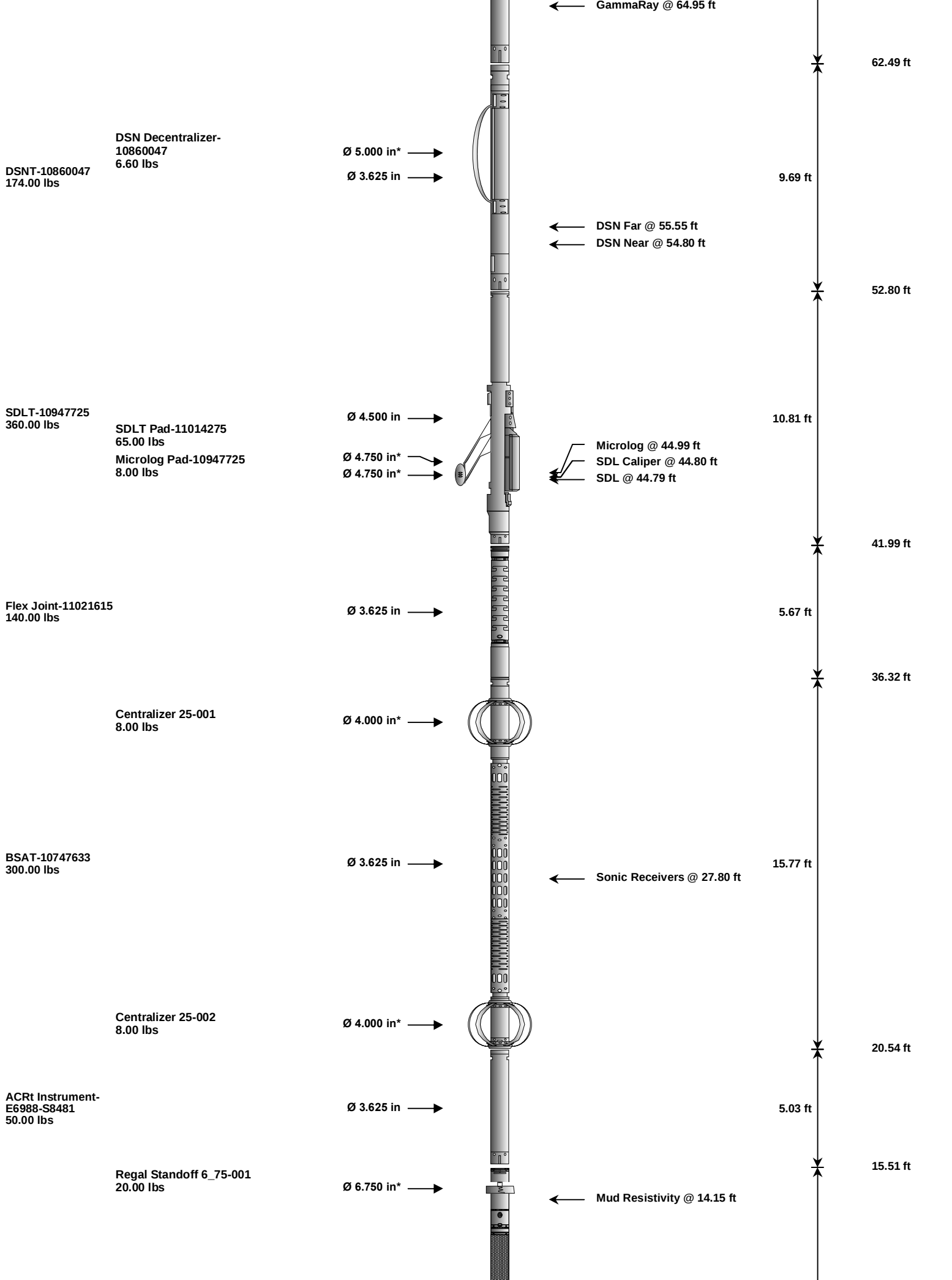
Data: HARTMN_ROSE_1_10003 QUAD MEL BSAT\HW11433

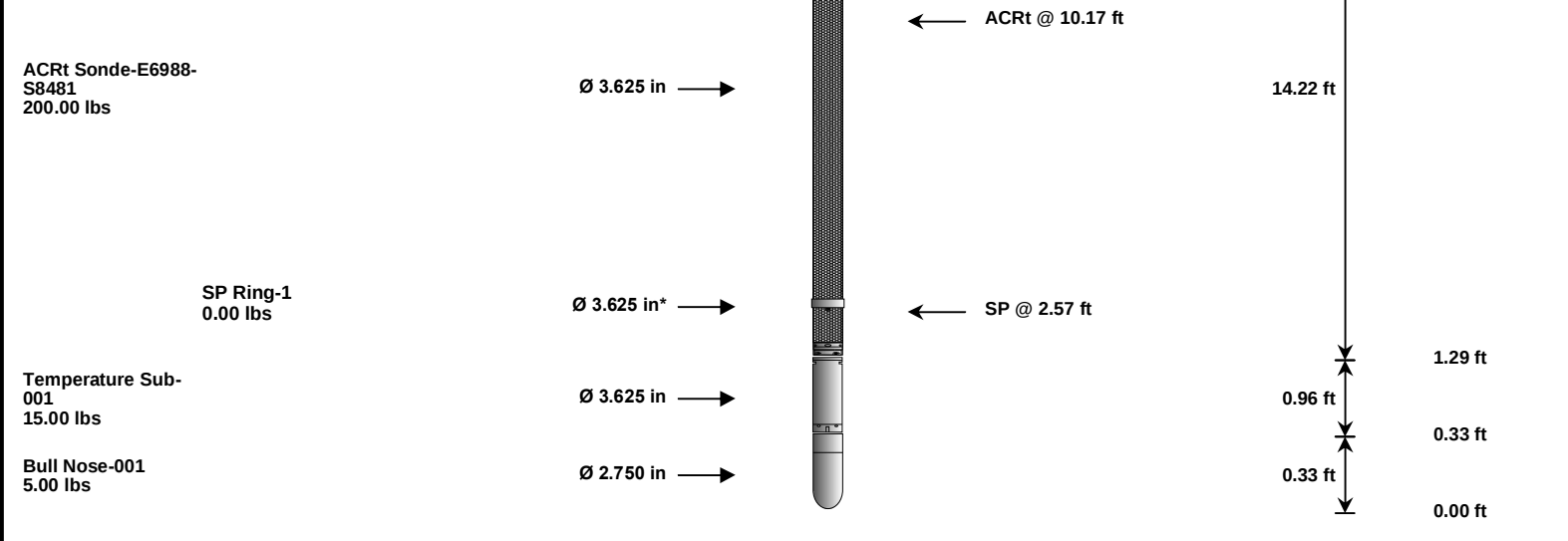
Date: 06-Oct-12 23:20:42

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-11103904 135.00 lbs		Ø 3.625 in →		← Load Cell @ 73.57 ft ← BH Temperature @ 73.01 ft	6.25 ft	77.26 ft
					71.01 ft	
GTET-11602914 165.00 lbs		Ø 3.625 in →			8.52 ft	





Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
RWCH	Releasable Wireline Cable Head		11103904	135.00	6.25	71.01	300.00	
GTET	Gamma Telemetry Tool		11602914	165.00	8.52	62.49	60.00	
DSNT	Dual Spaced Neutron		10860047	174.00	9.69	52.80	60.00	
DCNT	DSN Decentralizer		10860047	6.60	5.13	*	56.13	300.00
SDLT	Spectral Density Tool		10947725	360.00	10.81		41.99	60.00
SDLP	Density Insite Pad		11014275	65.00	2.55	*	44.20	60.00
MICP	Microlog Pad		10947725	8.00	1.00	*	44.49	60.00
FLEX	Flex Joint		11021615	140.00	5.67		36.32	300.00
BSAT	Borehole Sonic Array Tool		10747633	300.00	15.77		20.54	60.00
OBCEN	Centralizer - 25 in. Overbody		002	8.00	2.08	*	20.55	300.00
OBCEN	Centralizer - 25 in. Overbody		001	8.00	2.08	*	33.42	300.00
ACRt	Array Compensated True Resistivity Instrument Section		E6988-S8481	50.00	5.03		15.51	300.00
ACRt	Array Compensated True Resistivity Sonde Section		E6988-S8481	200.00	14.22		1.29	300.00
SP	SP Ring		1	0.00	0.25	*	2.57	300.00
RSOF	Regal Standoff 6.75in		001	20.00	0.52	*	14.36	300.00
TMAX	Temperature Sub - 3_625 OD		001	15.00	0.96		0.33	300.00
BLNS	Bull Nose		001	5.00	0.33		0.00	300.00
Total				1,659.60	77.26			
* Not included in Total Length and Length Accumulation.								
Data: HARTMN_ROSE_1_110003 QUAD_MEL_BSATIDLE								Date: 07-Oct-12 00:07:25

COMPANY	HARTMAN OIL CO., INC.		
WELL	ROSE # 1-1		
FIELD	WILDCAT		
COUNTY	WICHITA	STATE	KANSAS
HALLIBURTON		ARRAY COMPENSATED TRUE RESISTIVITY	