

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY

COMPANY		LARAMIE ENERGY	
WELL		SOUTH LEVERICH 13-10A	
FIELD		RULISON	
COUNTY		GARFIELD	
STATE		COLORADO	
Permanent Datum Log measured from Drilling measured from		GL KB KB KB	
Date		20-May-09	
Run No.		ONE	
Depth - Driller		10265.00 ft	
Depth - Logger		10268.0 ft	
Bottom - Logged Interval		10266 ft	
Top - Logged Interval		100.0 ft	
Casing - Driller		8.625 in @ 2502.0 ft	
Casing - Logger		2503.0 ft	
Bit Size		7.875 in	
Type Fluid In Hole		LSND	
Density		9.5 ppq	
Viscosity		57.00 s/qt	
PH		9.60 pH	
Source of Sample		MUDTANK	
Rm @ Meas. Temperature		2.86 ohmm @ 58.80 degF	
Rmf @ Meas. Temperature		0.99 ohmm @ 60.20 degF	
Rmc @ Meas. Temperature		1.82 ohmm @ 60.10 degF	
Source Rmf		MEAS.	
Rm @ BHT		0.92 ohmm @ 196.0 degF	
Time Since Circulation		16.5 hr	
Time on Bottom		20-May-09 06:59	
Max. Rec. Temperature		196.0 degF @ 10268.0 ft	
Equipment		10800785	
Location		ROCKSPRING	
Recorded By		D. CULVER	
Witnessed By		G. STAPLETON	

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Service Ticket No.: 6669371				API Serial No.: 05045176090000				PGM Version: WL INSITE R2.4 (Build 11)							
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.		@		@				E171-S970							
Source Rmf		Rmc													
Rm @ BHT		@		@											
Rmf @ BHT		@		@											
Rmc @ BHT		@		@											
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		ONE		Run No.				Run No.		ONE		Run No.		ONE	
Serial No.		10832795		Serial No.				Serial No.		10733075		Serial No.		10839203	
Model No.		GTET		Model No.				Model No.		SDLT		Model No.		DSNT	
Diameter		3.625"		No. of Cent.				Diameter		4.5"		Diameter		3.625"	
Detector Model No.		GTET		Spacing				Log Type		GAMMA/GAMMA		Log Type		THERMAL	
Type		SCINT						Source Type		Cs137		Source Type		Am241Be	
Length		8"		LSA [Y/N]				Serial No.		20785B		Serial No.		21480B	
Distance to Source		10'		FWDA [Y/N]				Strength		1.5 Ci		Strength		15 Ci	
LOGGING DATA															

GENERAL				GAMMA		ACOUSTIC		DENSITY		NEUTRON						
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix		
No.	From	To	ft/min	L	R	L	R		L	R		L	R			
ONE	CSG	SURF	REC	0	150											
ONE	TD	CSG	REC	0	150				30%	-10%	2.68 g/cc	30%	-10%	SAND		
DIRECTIONAL INFORMATION																
Maximum Deviation								@	KOP							@
Remarks: RWCH-GTET-DSN-SDL-ACRT RAN IN COMBINATION																
ANNULAR HOLE VOLUME CALCULATED FOR 4.5" PRODUCTION CASING																
BOREHOLE RUGOSITY AND TENSION PULLS MAY AFFECT TOOL RESPONSE																
CHLORIDES REPORTED @ 3500 ppm																
LATITUDE: 39.43																
LONGITUDE: 107.8296																
YOUR CREW TODAY: LE CLAIRE, MAY, PRICE																
RIG: GREYWOLF 706																
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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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	MDWT	Borehole Fluid Weight	9.500	ppg
	SHARED	RMUD	Mud Resistivity	2.860	ohmm
	SHARED	TRM	Temperature of Mud	58.8	degF
	SHARED	OBM	Oil Based Mud System?	No	
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	10265.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	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
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSQ	Gamma Tool Standoff	0.000	in

GTET	GEOK	Process Gamma Ray EVR?	No	
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		Logging Horizontal Water Tank?	No	
SDLT	DNOK	Process Density?	Yes	
SDLT	DNOK	Process Density EVR?	No	
SDLT	AD	Is Hole Air Drilled?	No	
SDLT	CB	Use Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	MDTP	Weighted Mud Correction Type?	Barite	
SDLT	DMA	Formation Density Matrix	2.680	g/cc
SDLT	DFL	Formation Density Fluid	1.000	g/cc
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT	MLOK	Process MicroLog Outputs?	Yes	
ACRt	RTOK	Process ACRt?	Yes	
ACRt	MNSO	Minimum Tool Standoff	1.50	in
ACRt	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt	TPOS	Tool Position	Free Hanging	
ACRt	RMOP	Rmud Source	Mud Cell	
ACRt	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt	RMIN	Maximum Resistivity for MAP	200.00	ohmm

Data: S_LEVRCH_13_10A\0001 IQ-TRIPLE\003 20-May-09 06:59 Up 10282.8f

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MAIN PASS 5" = 100'

millivolts

Ohm-m

gram per cc

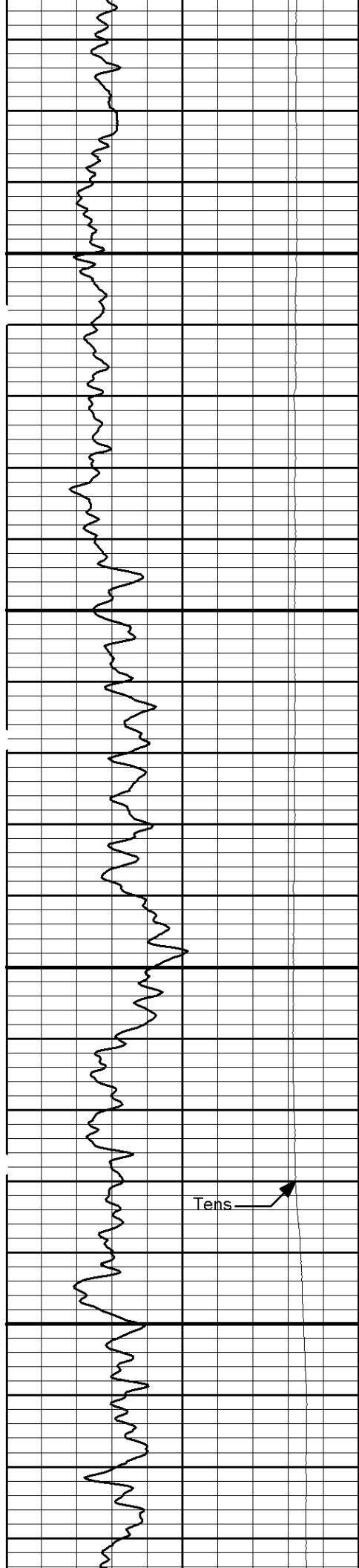
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200

300

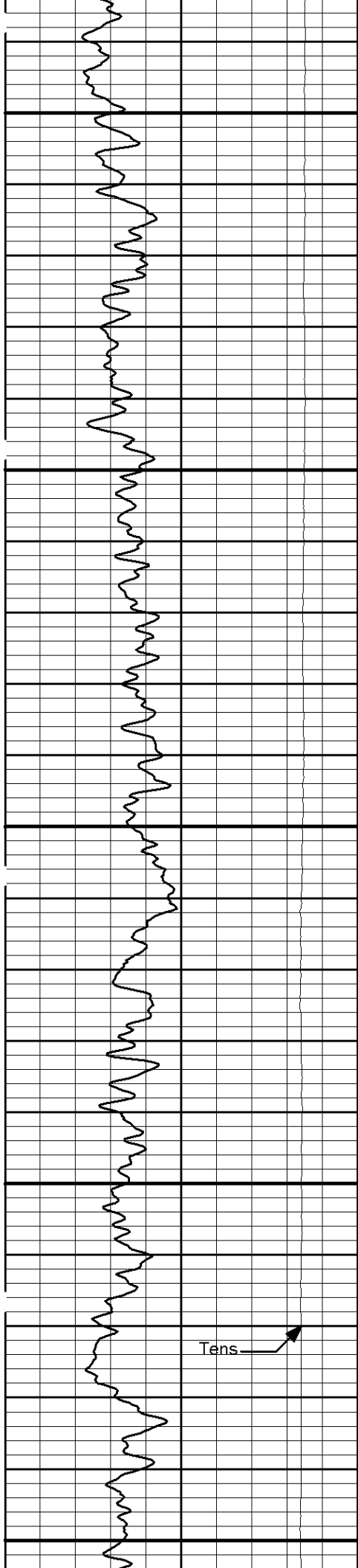
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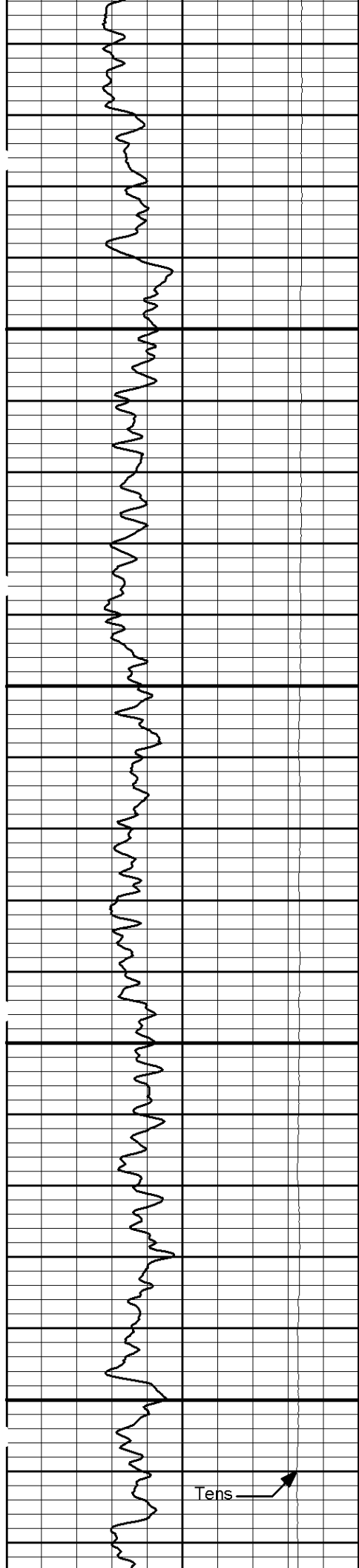
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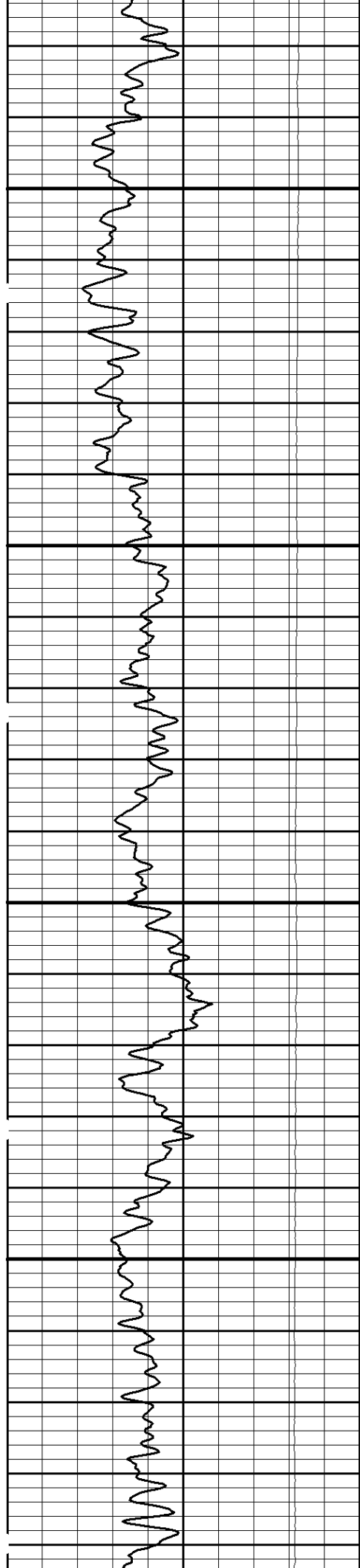
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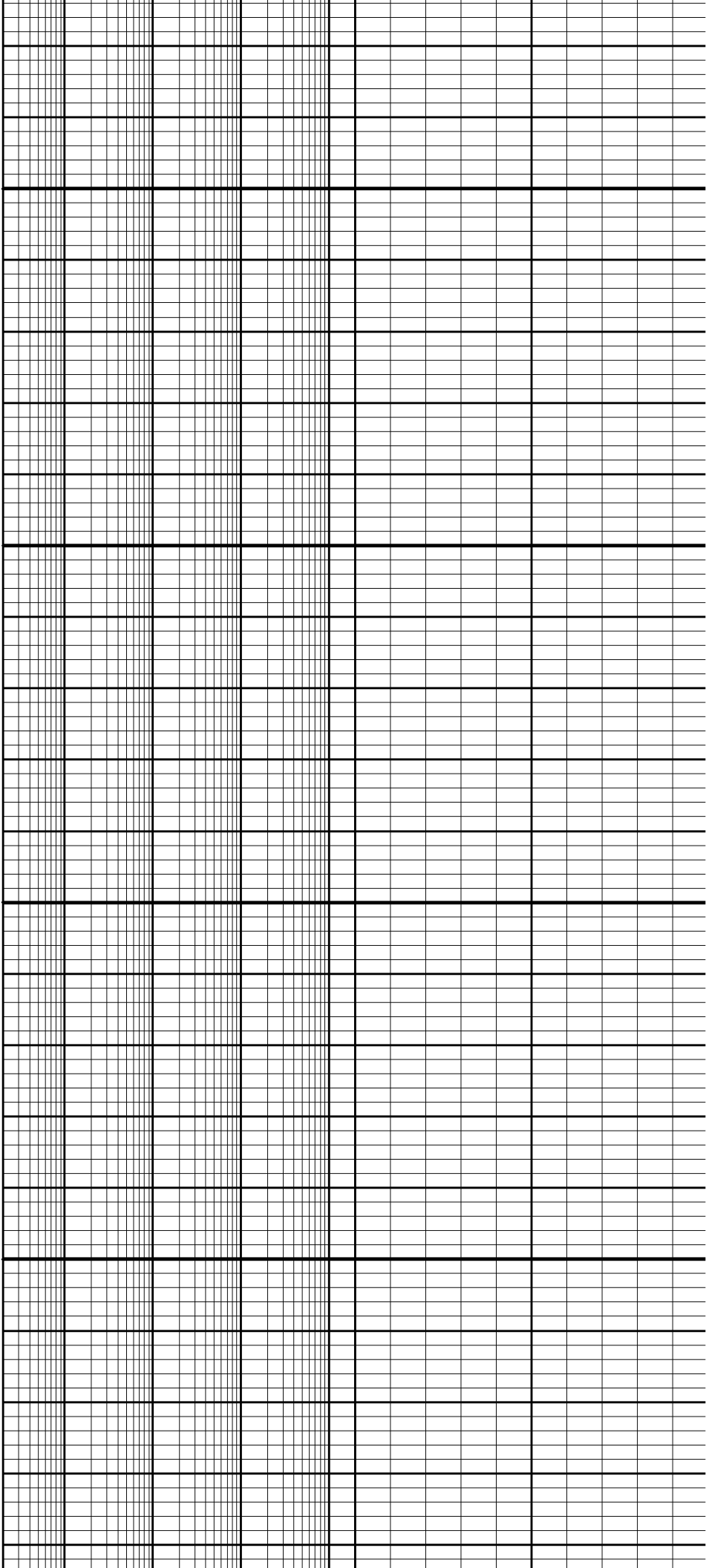
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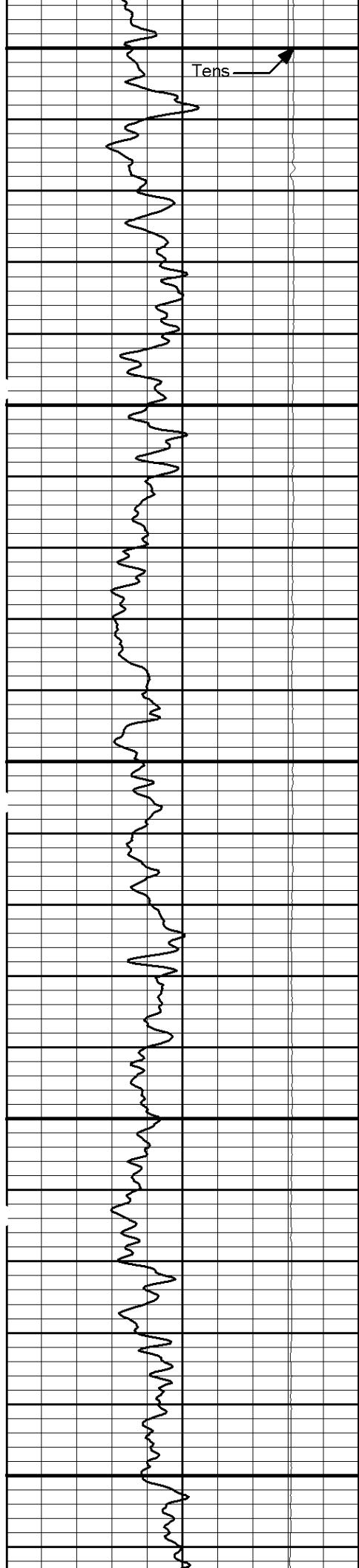
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1000

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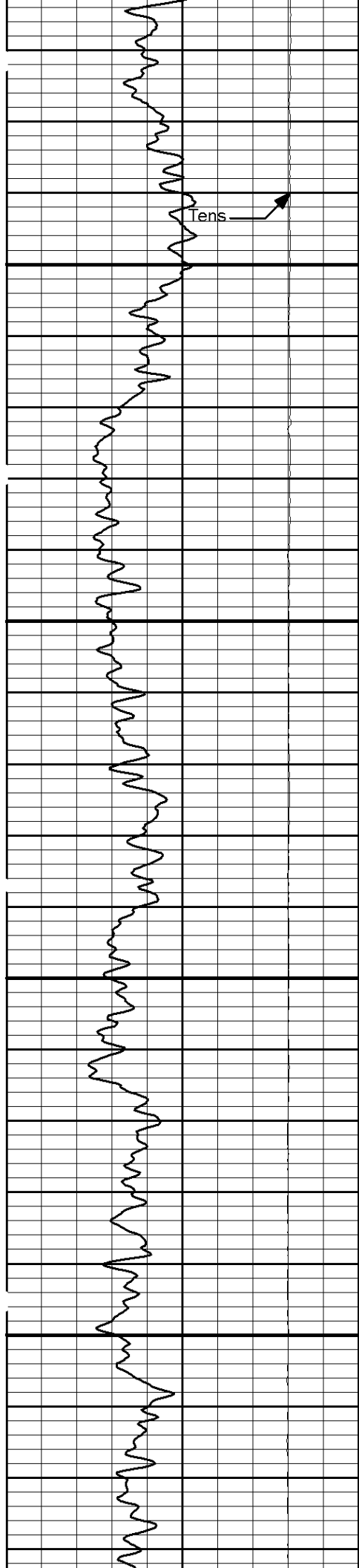




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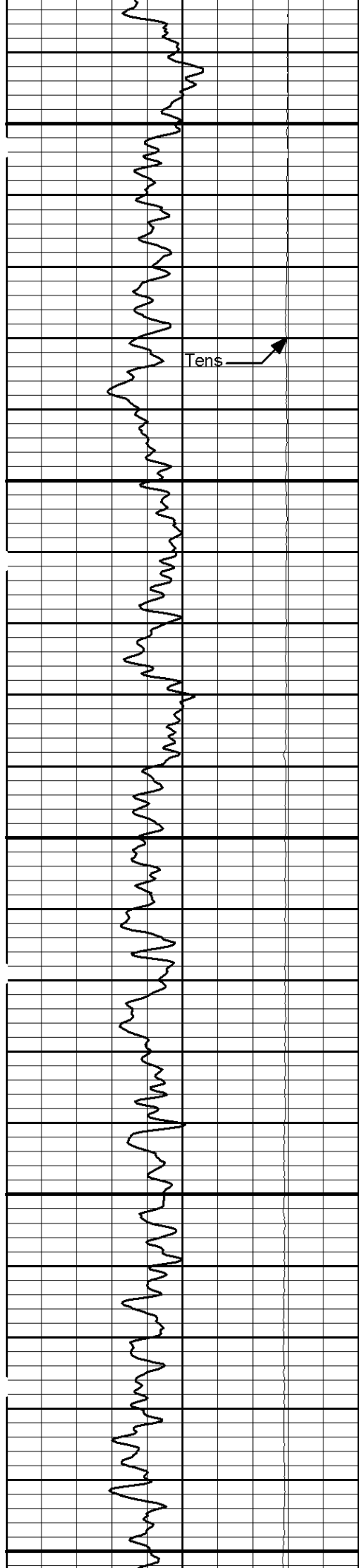
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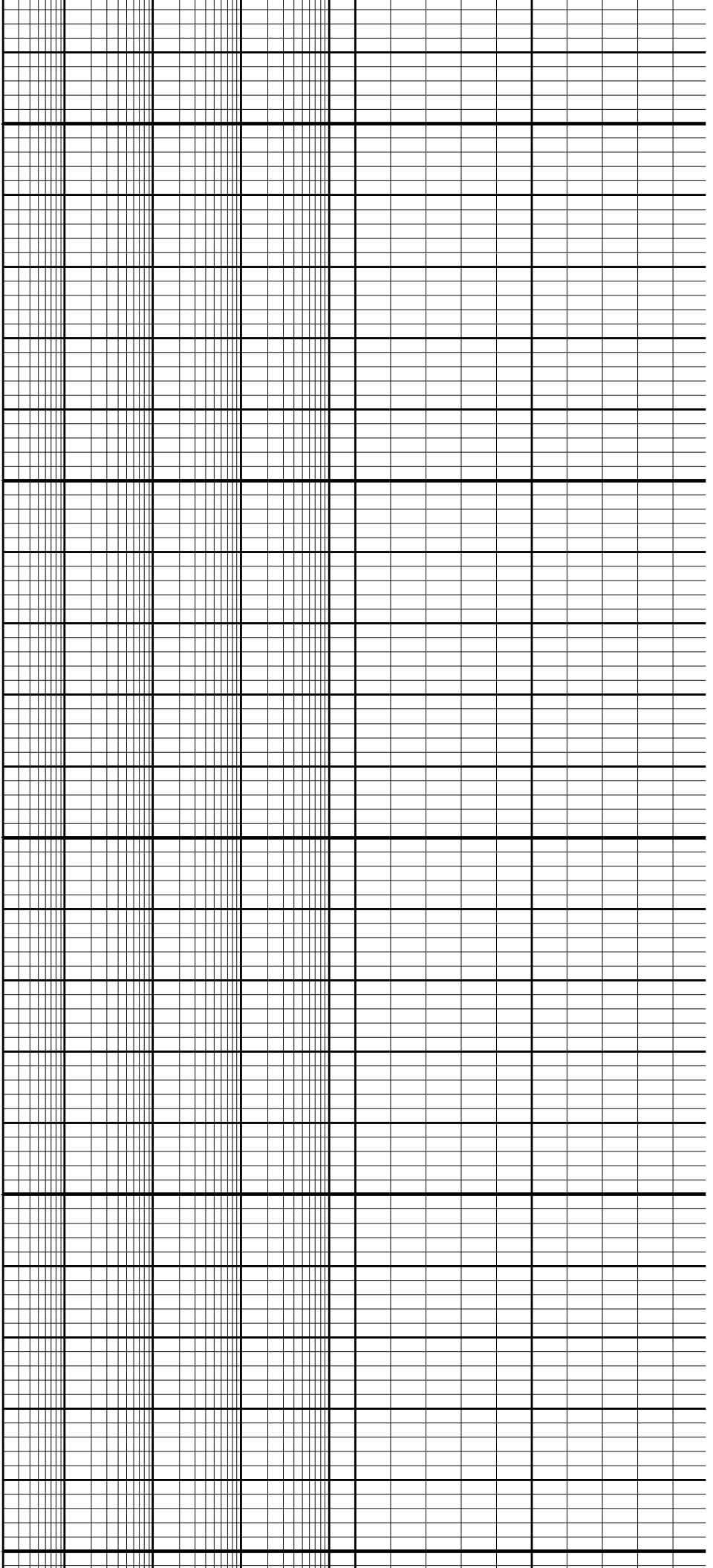
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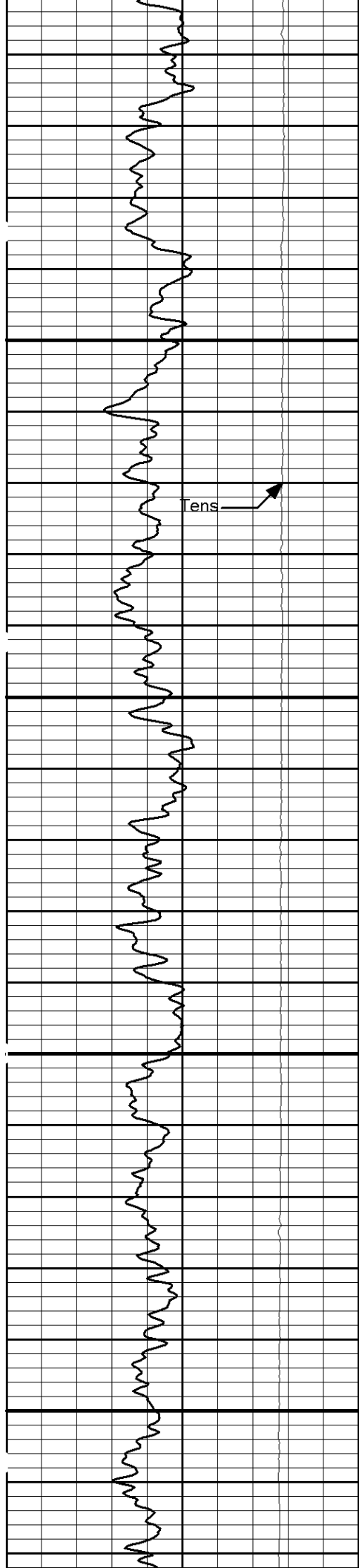
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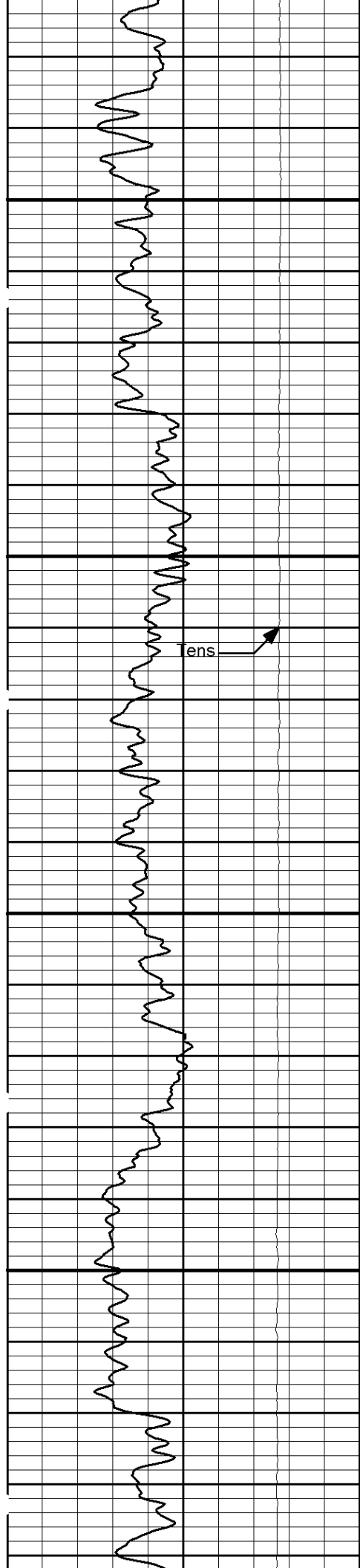
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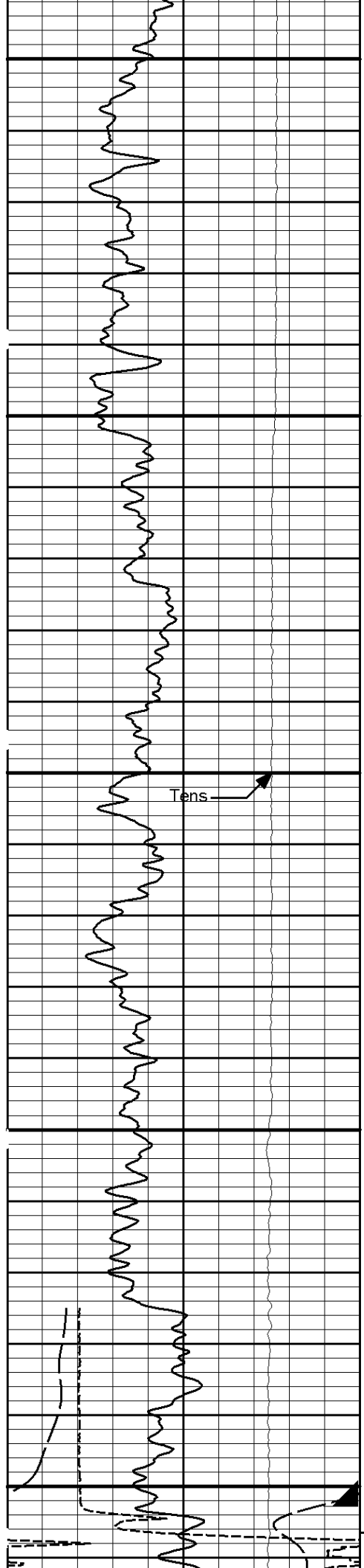
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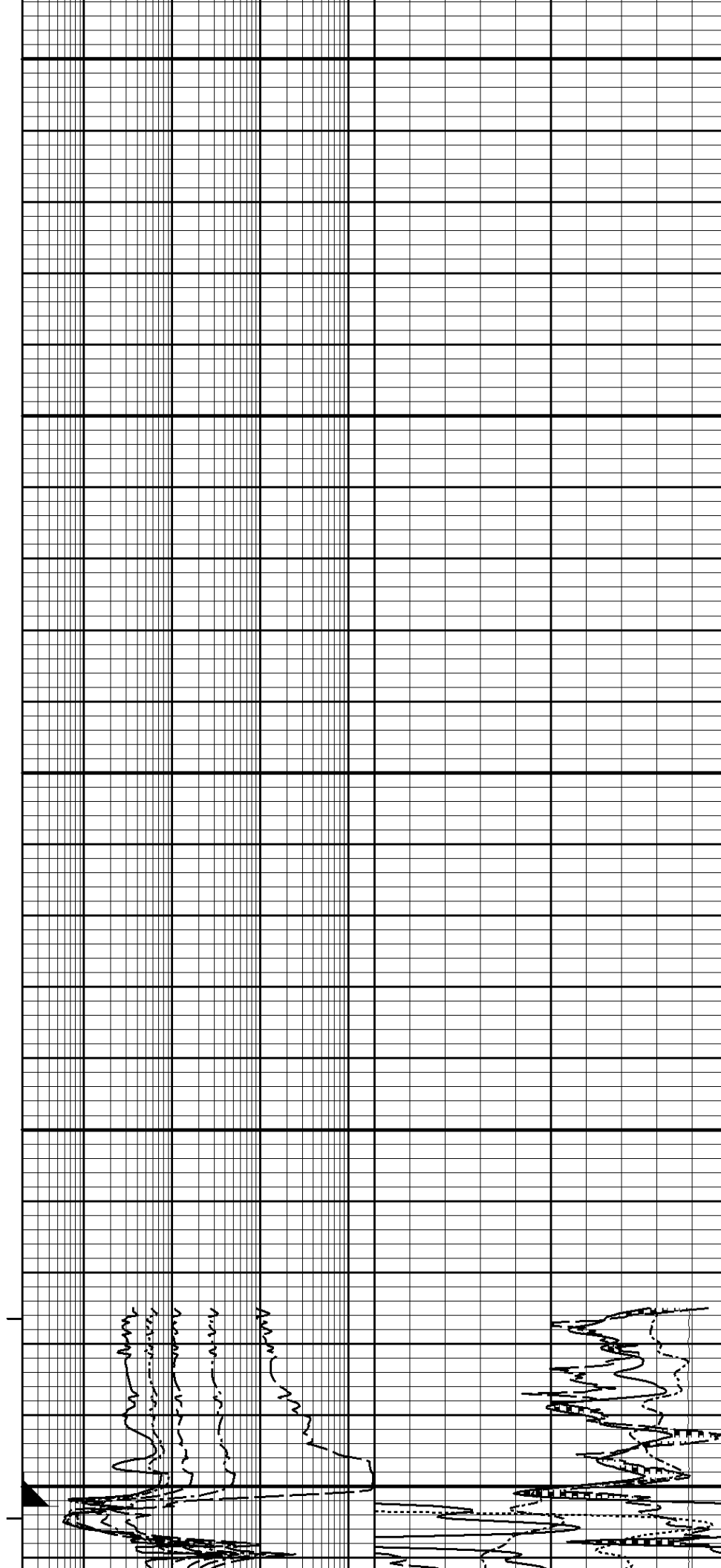
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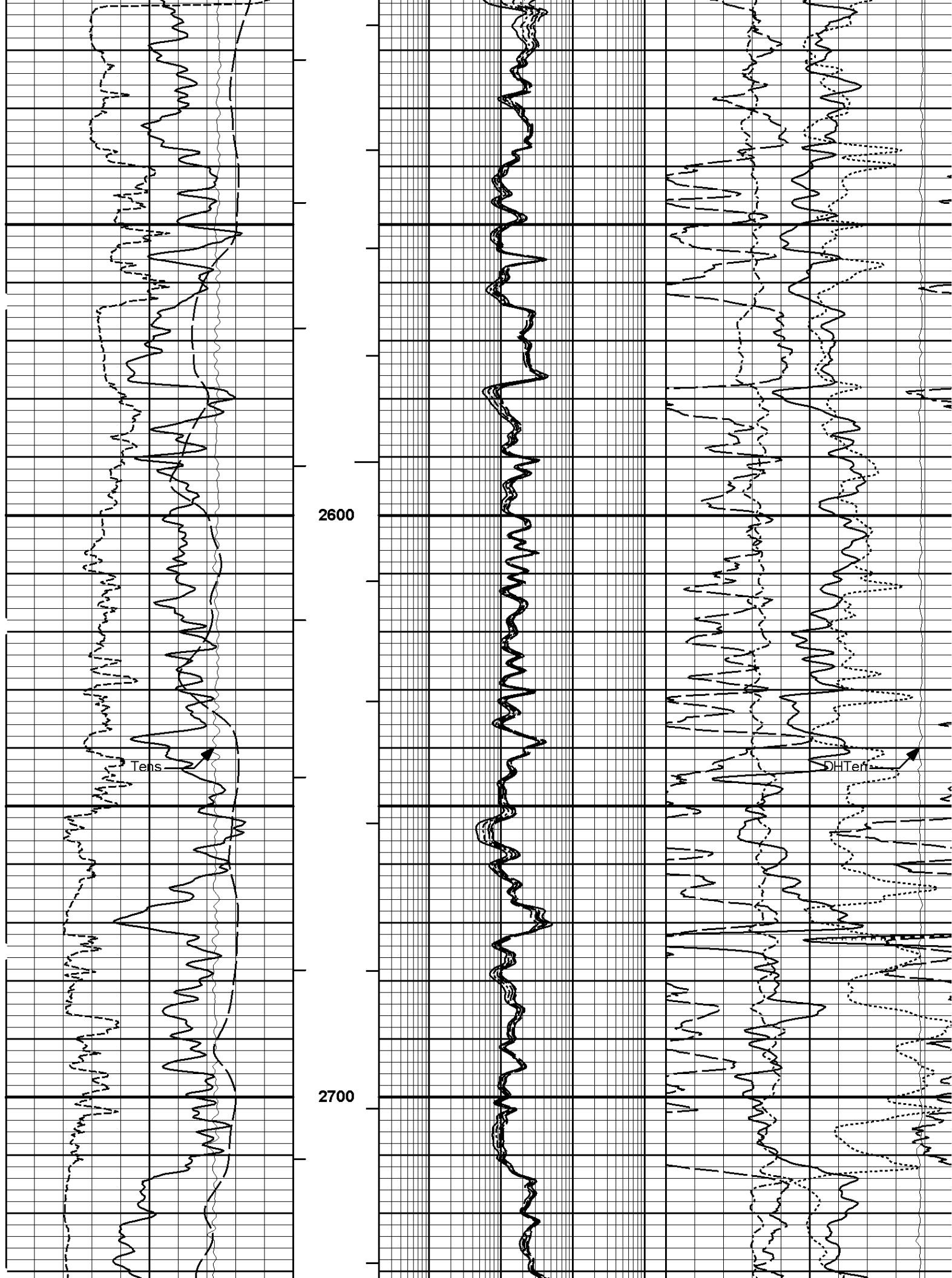


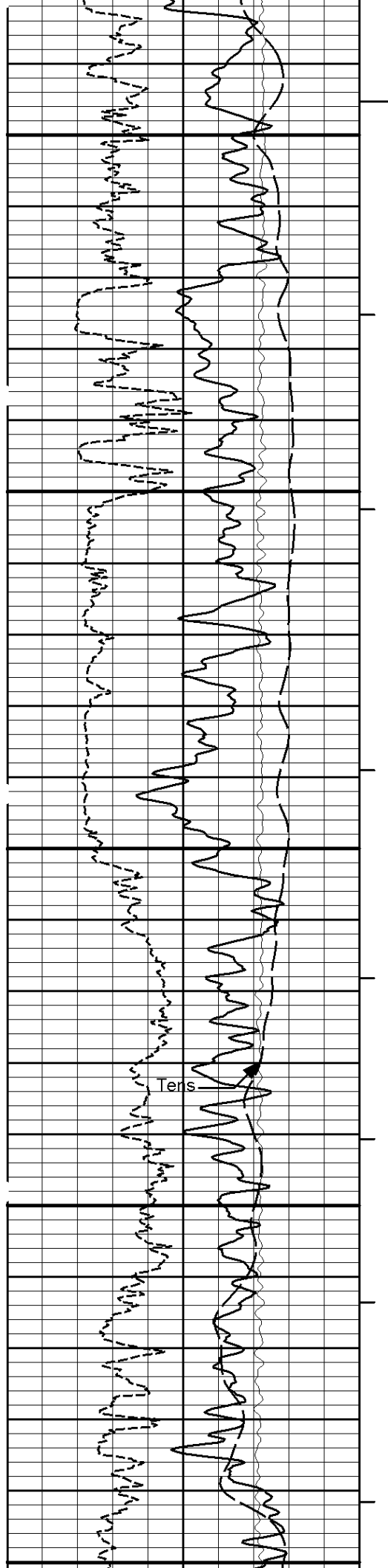
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CSG



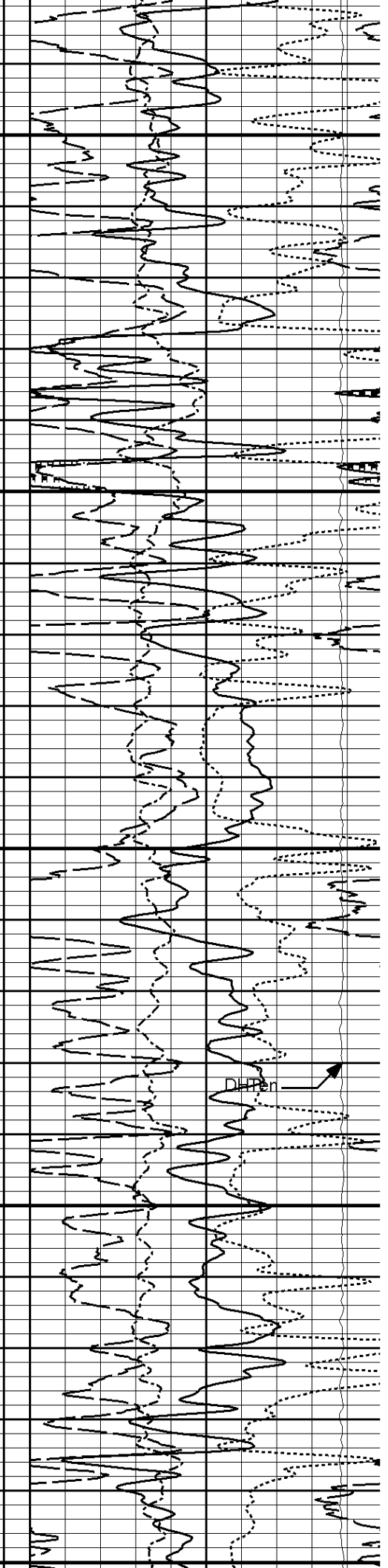
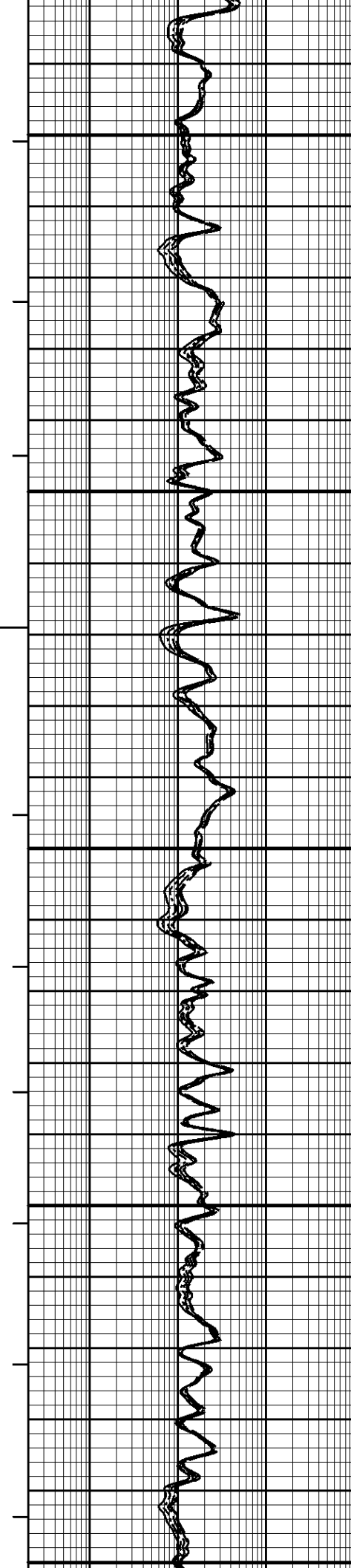




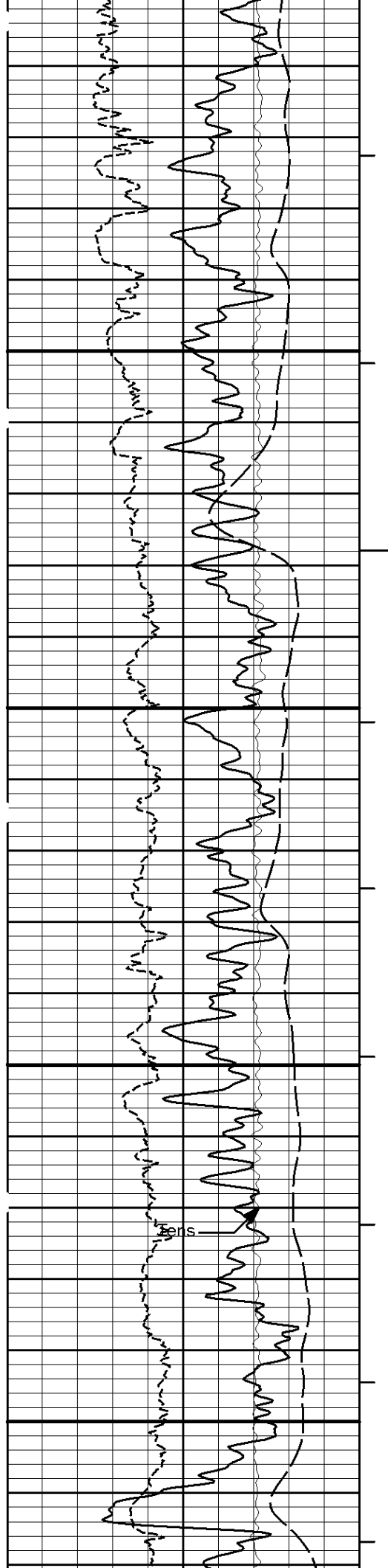
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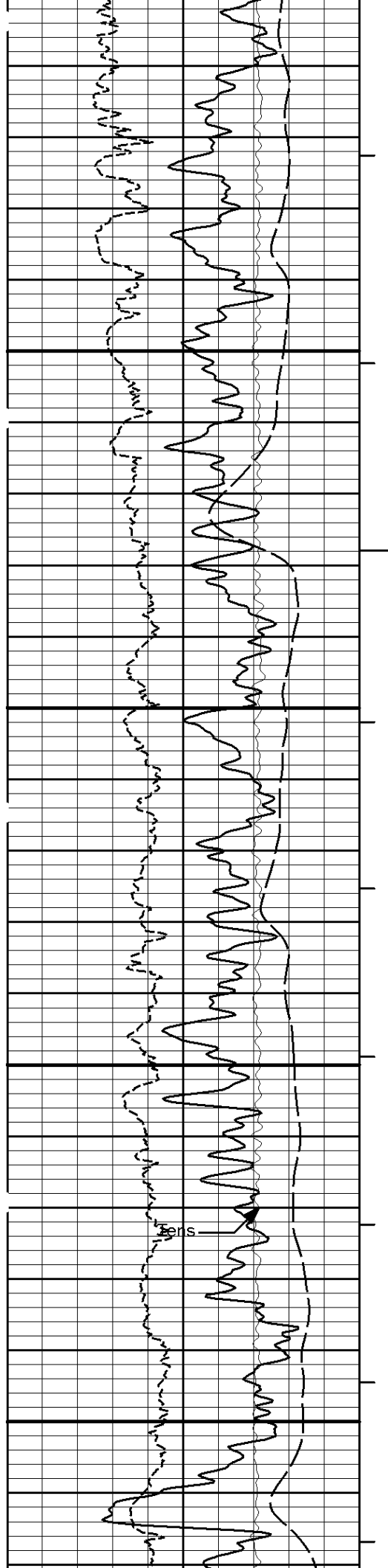
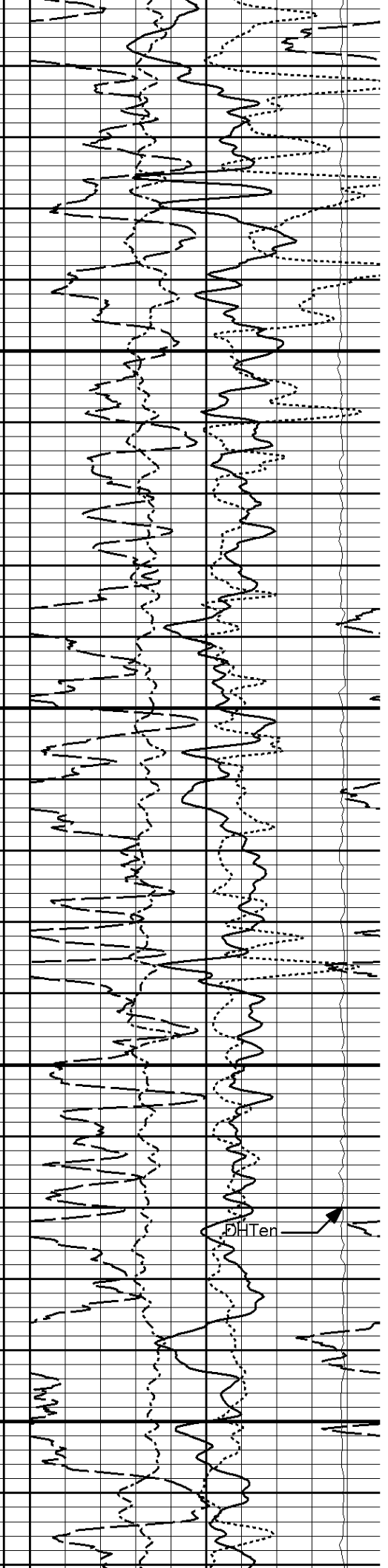
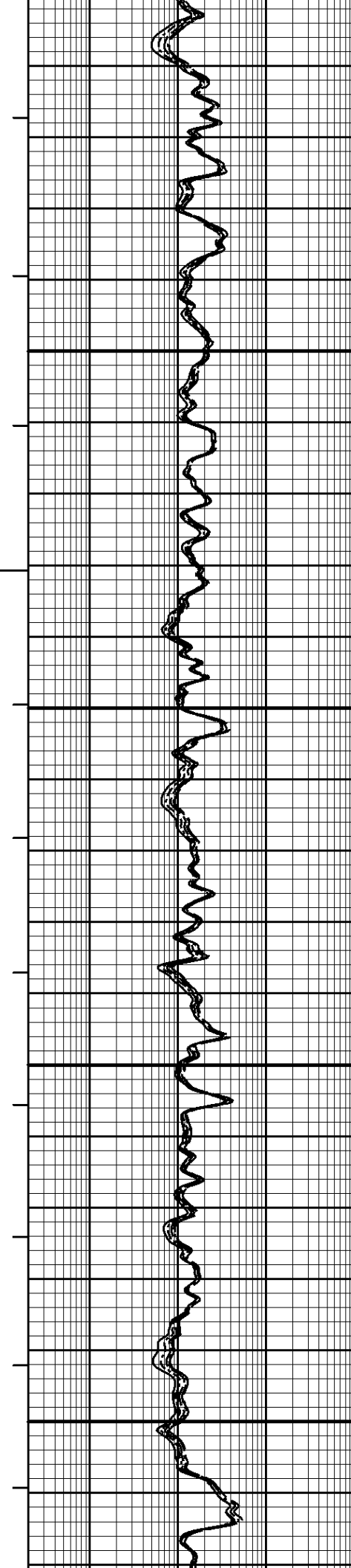


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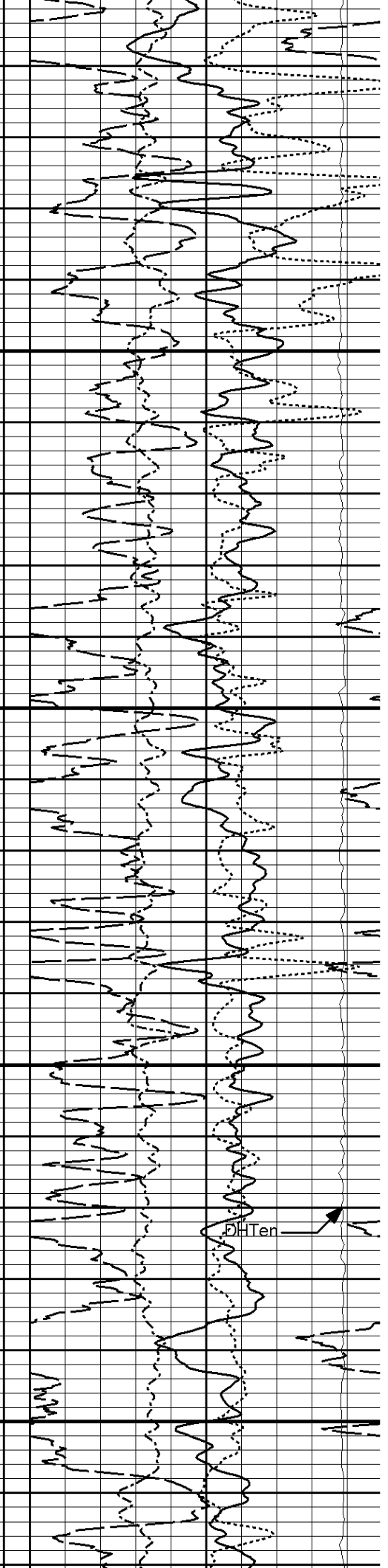
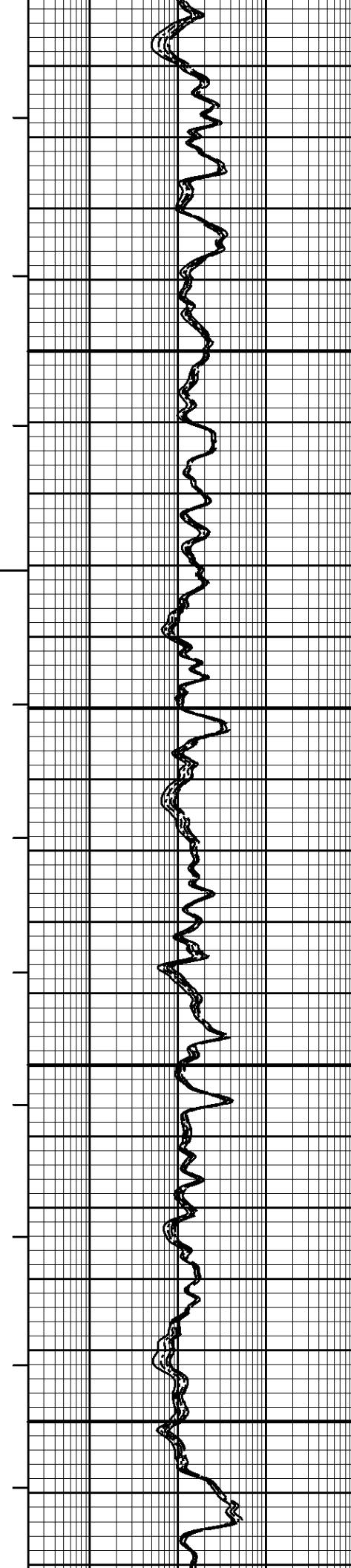
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3100



3000

3100

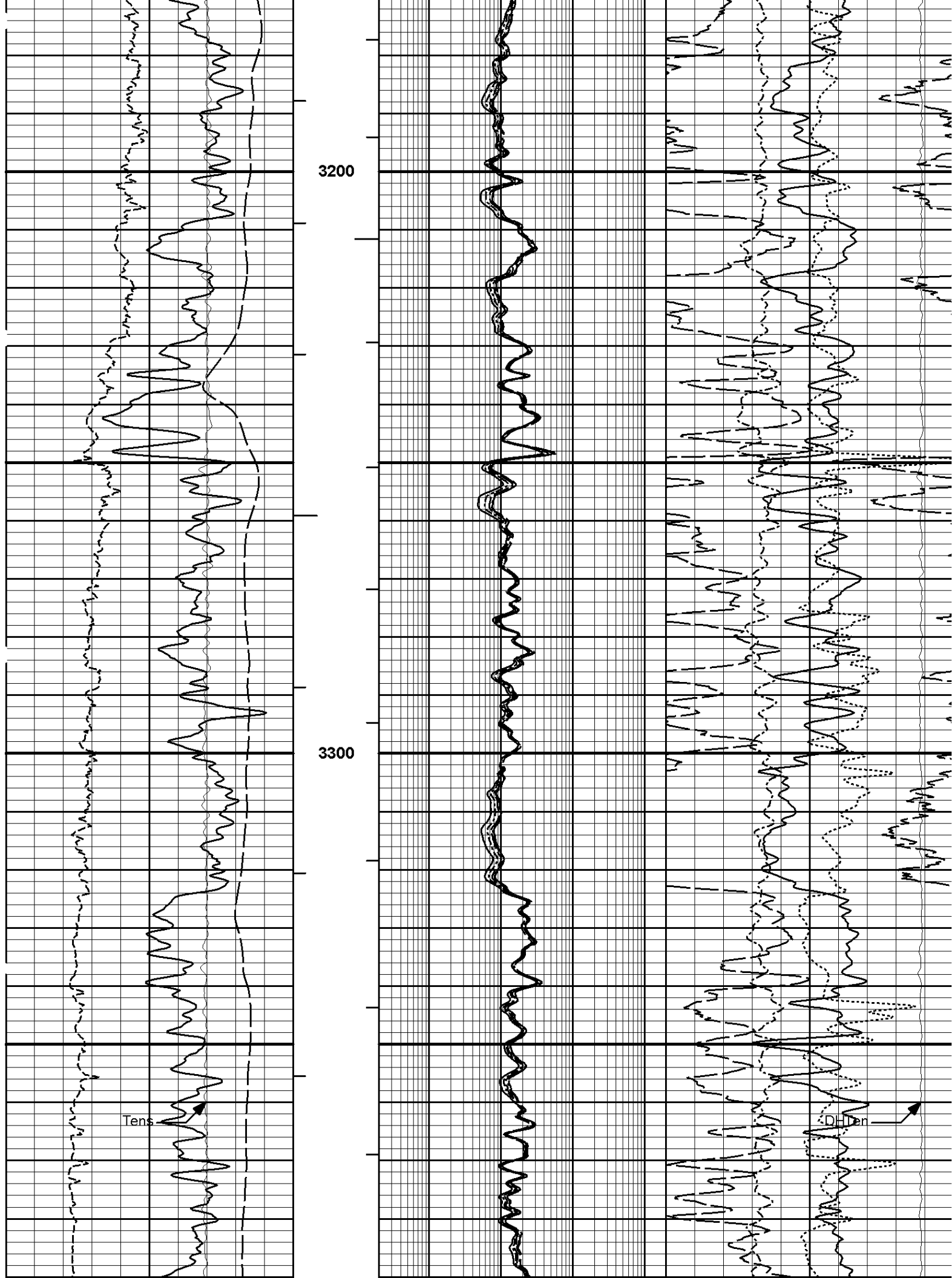


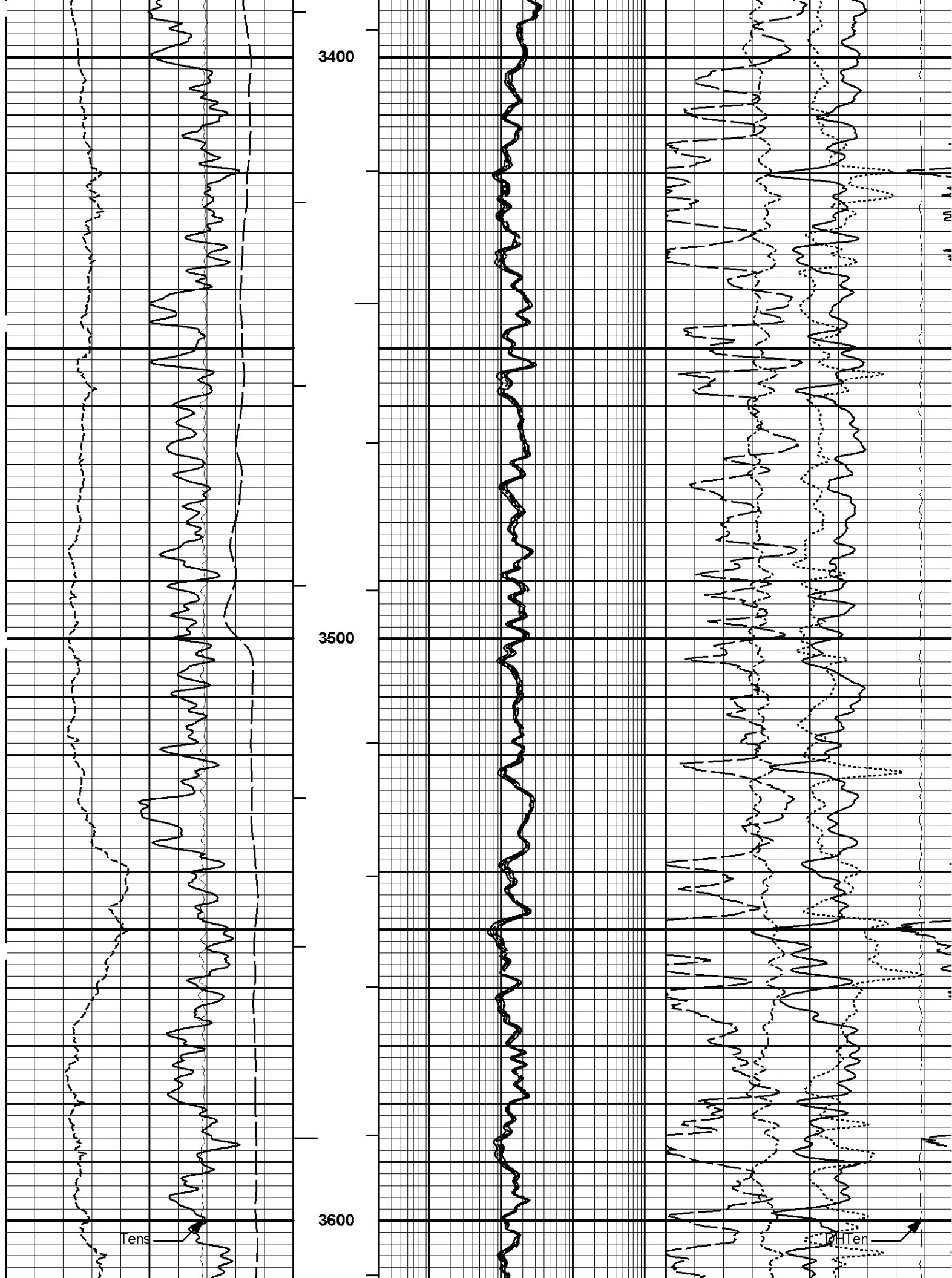
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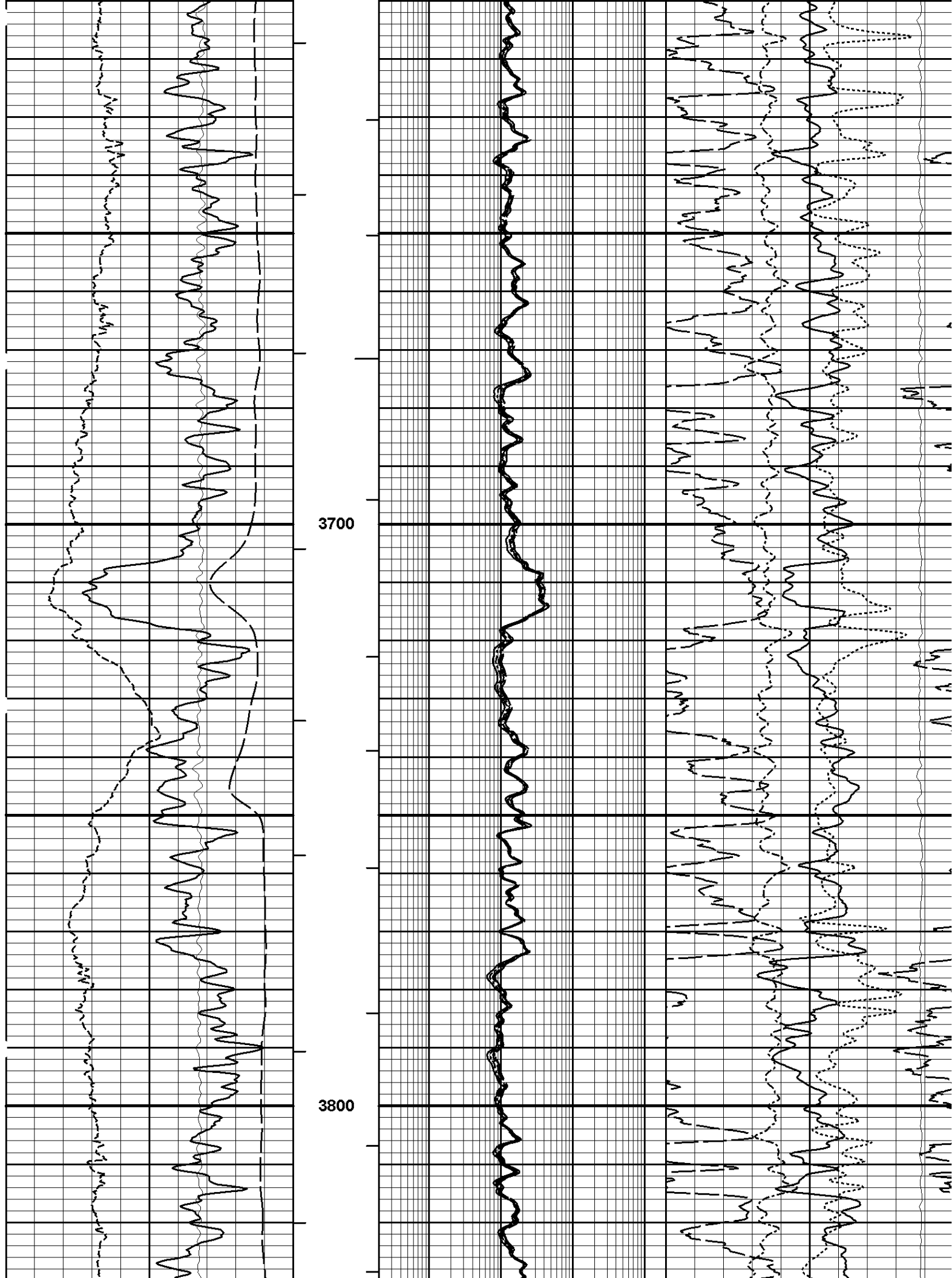
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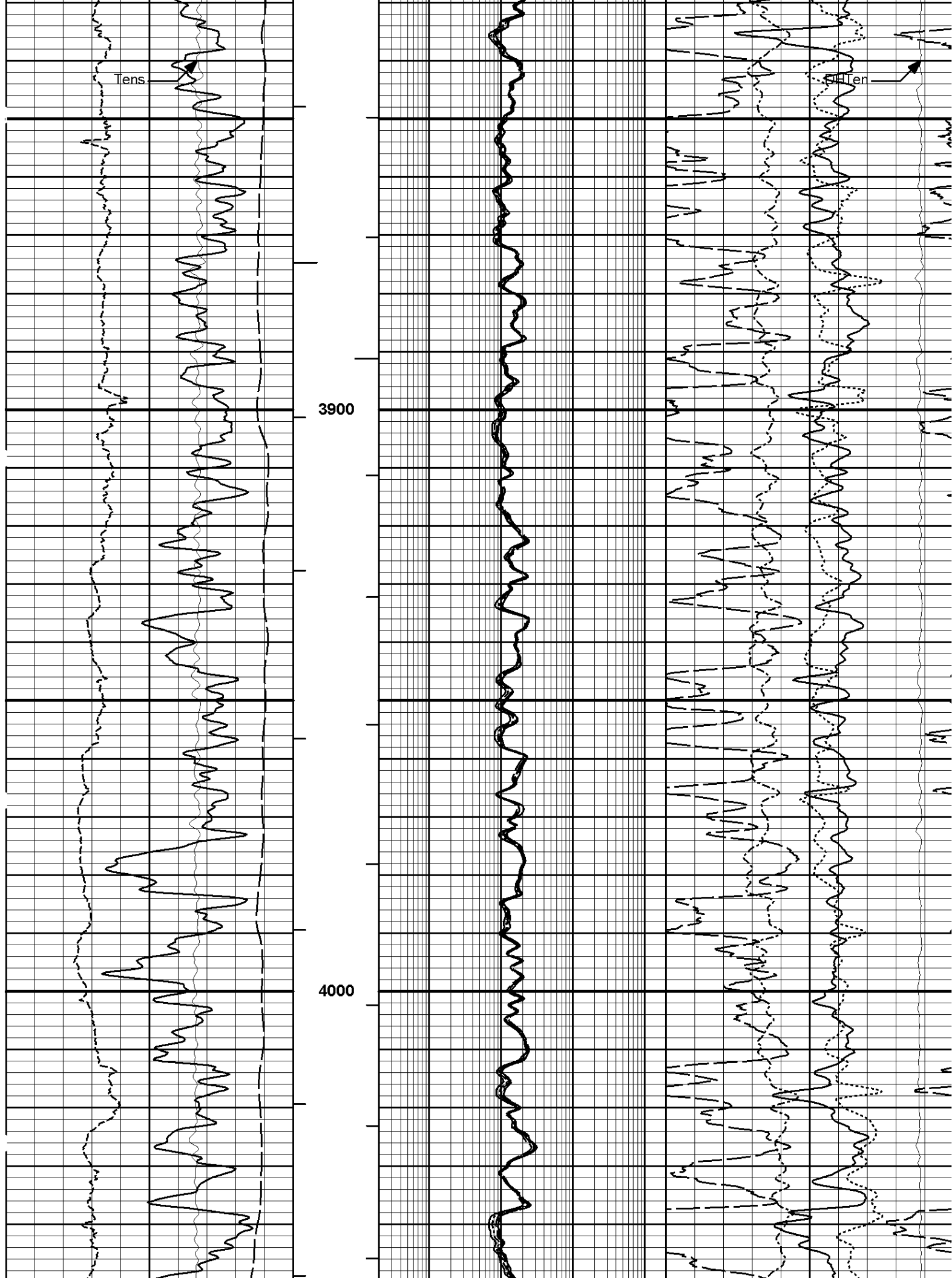


Tens

Ten

3900

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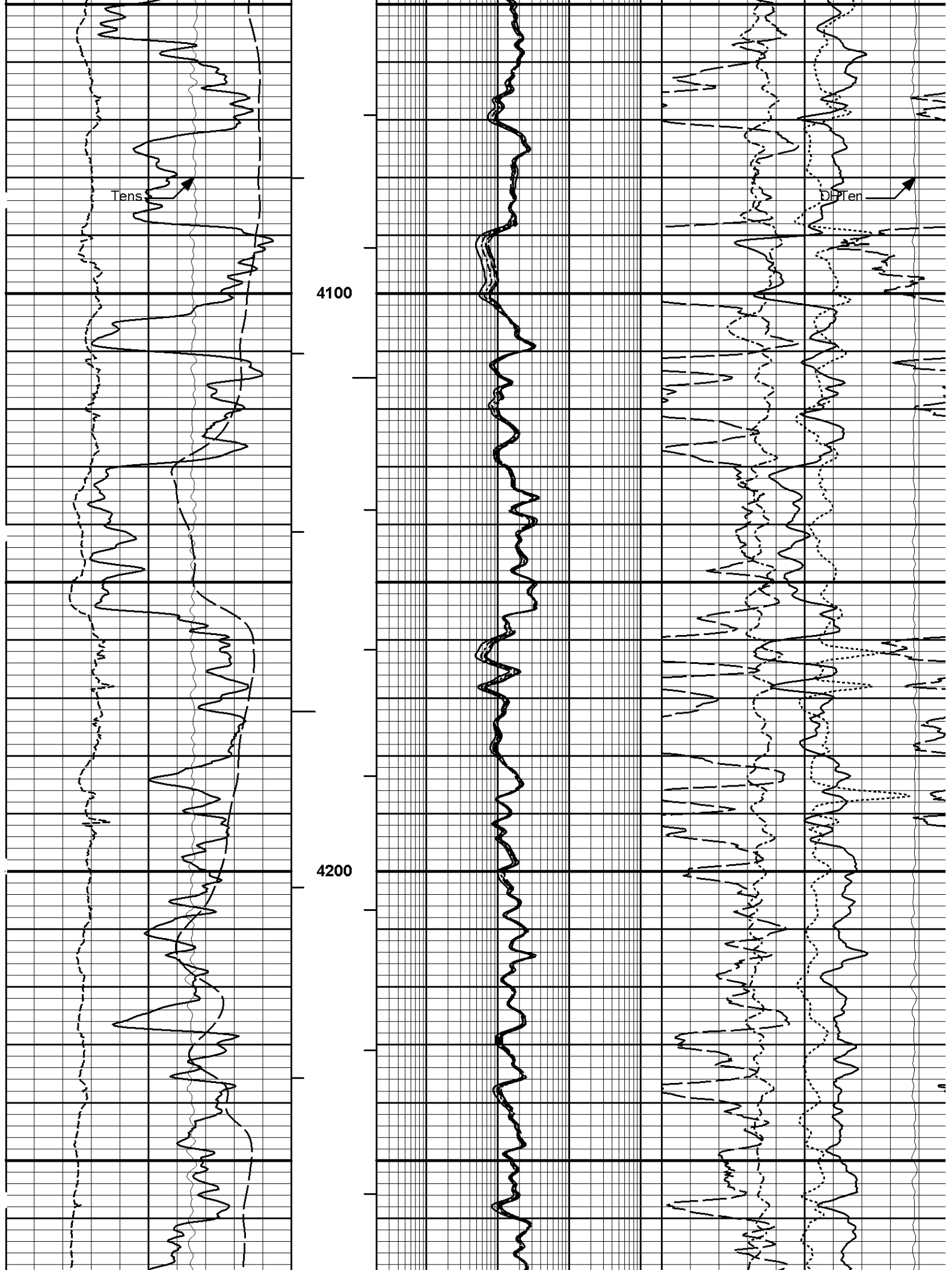


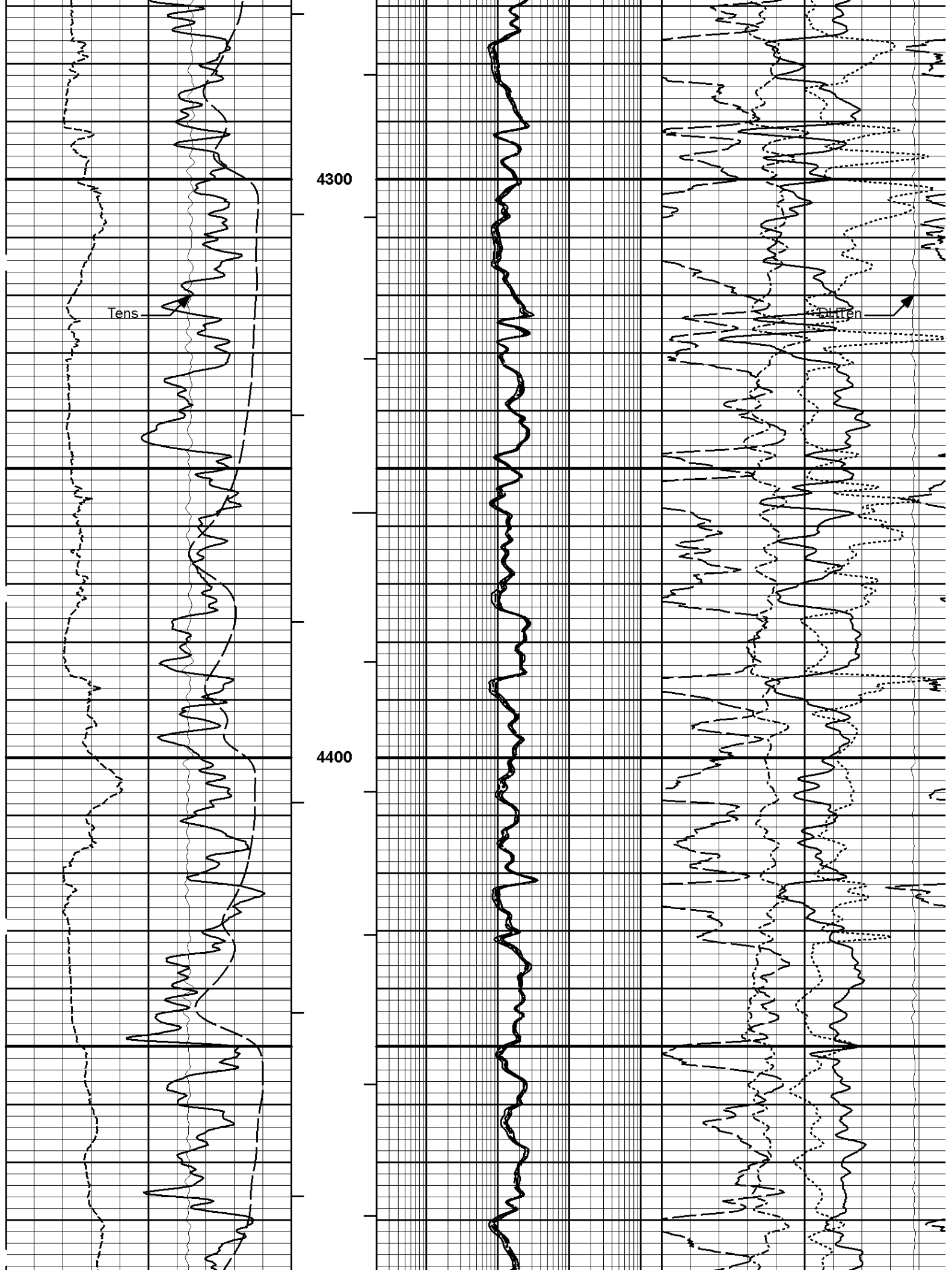
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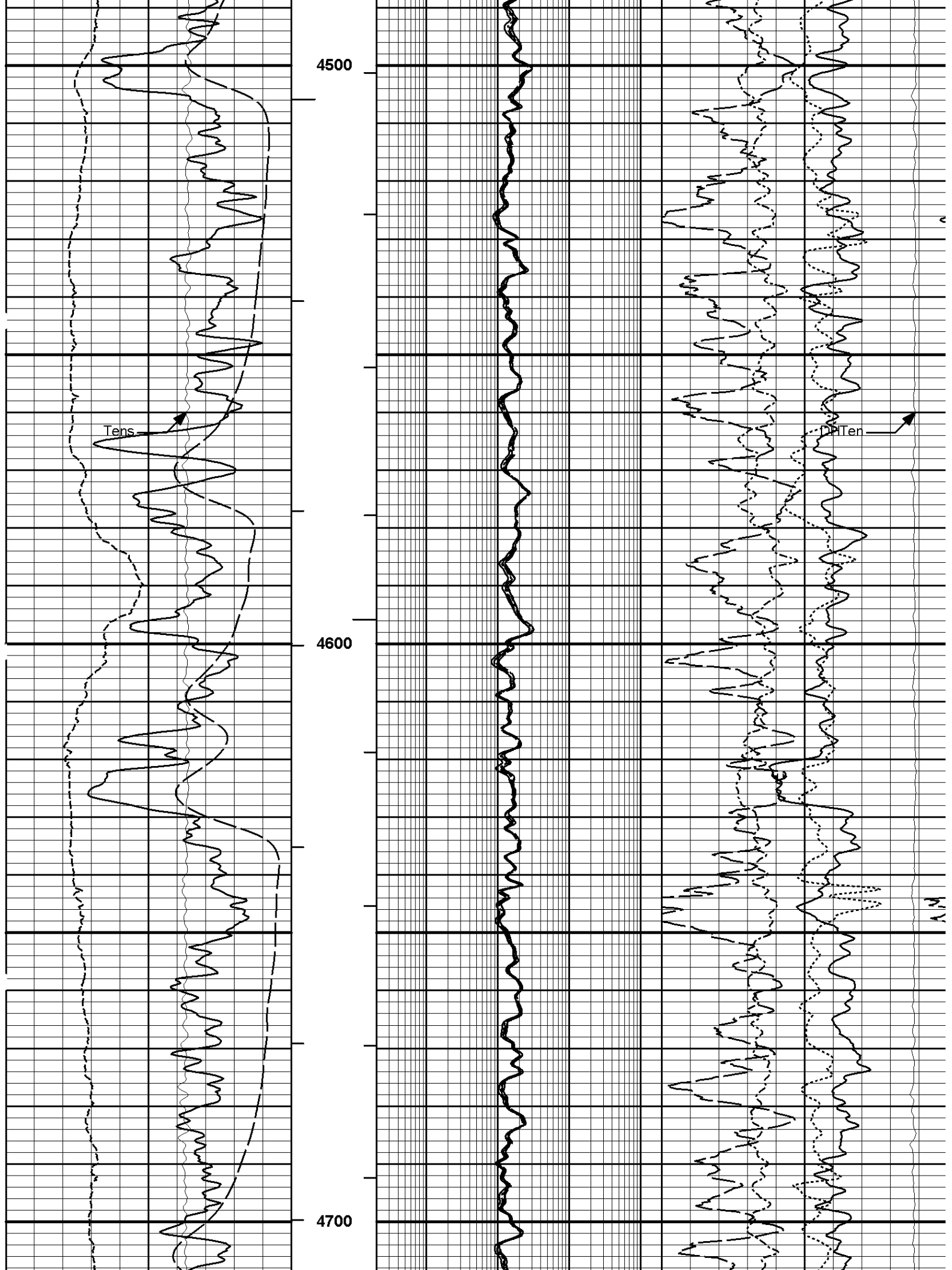
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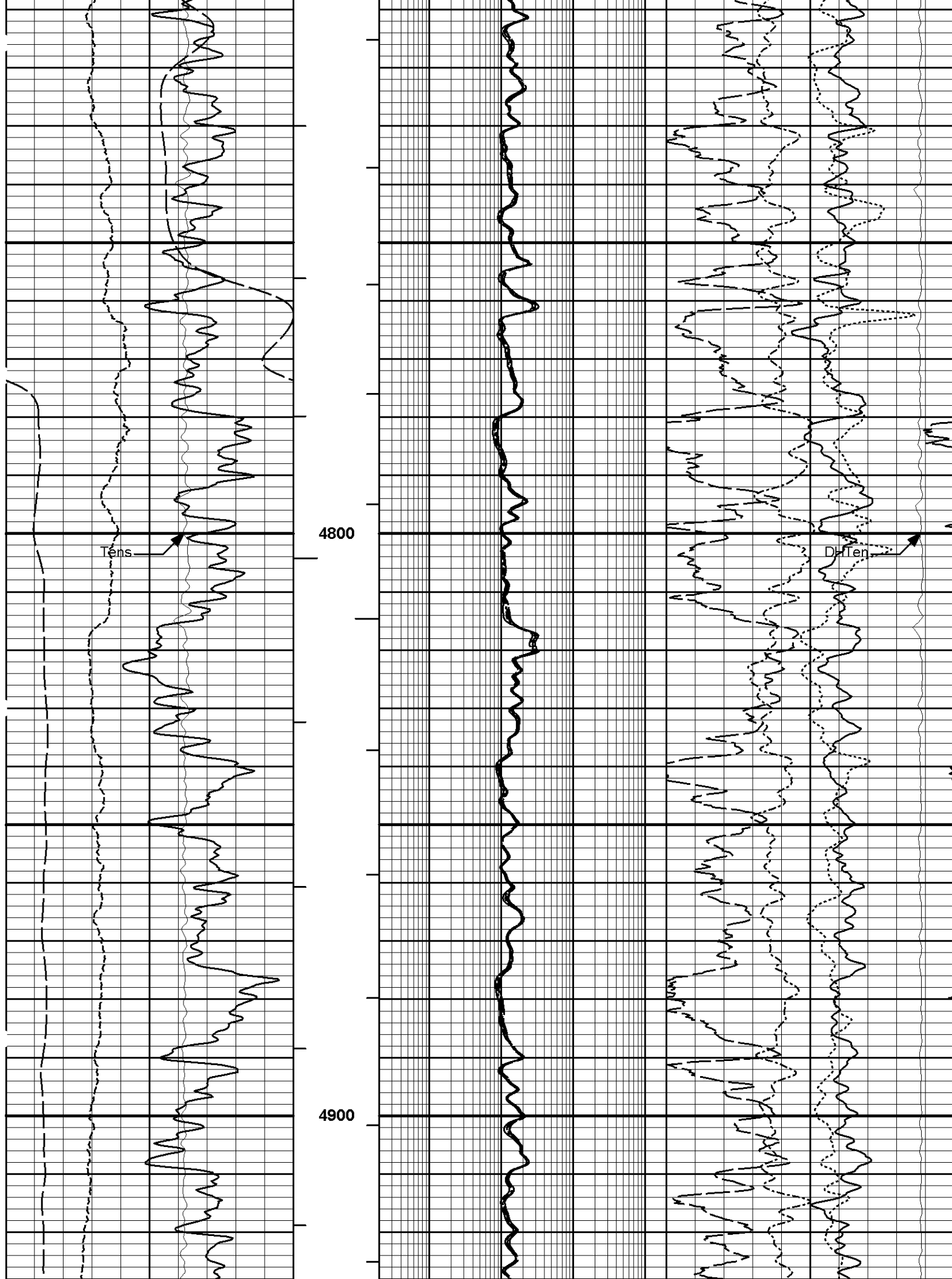
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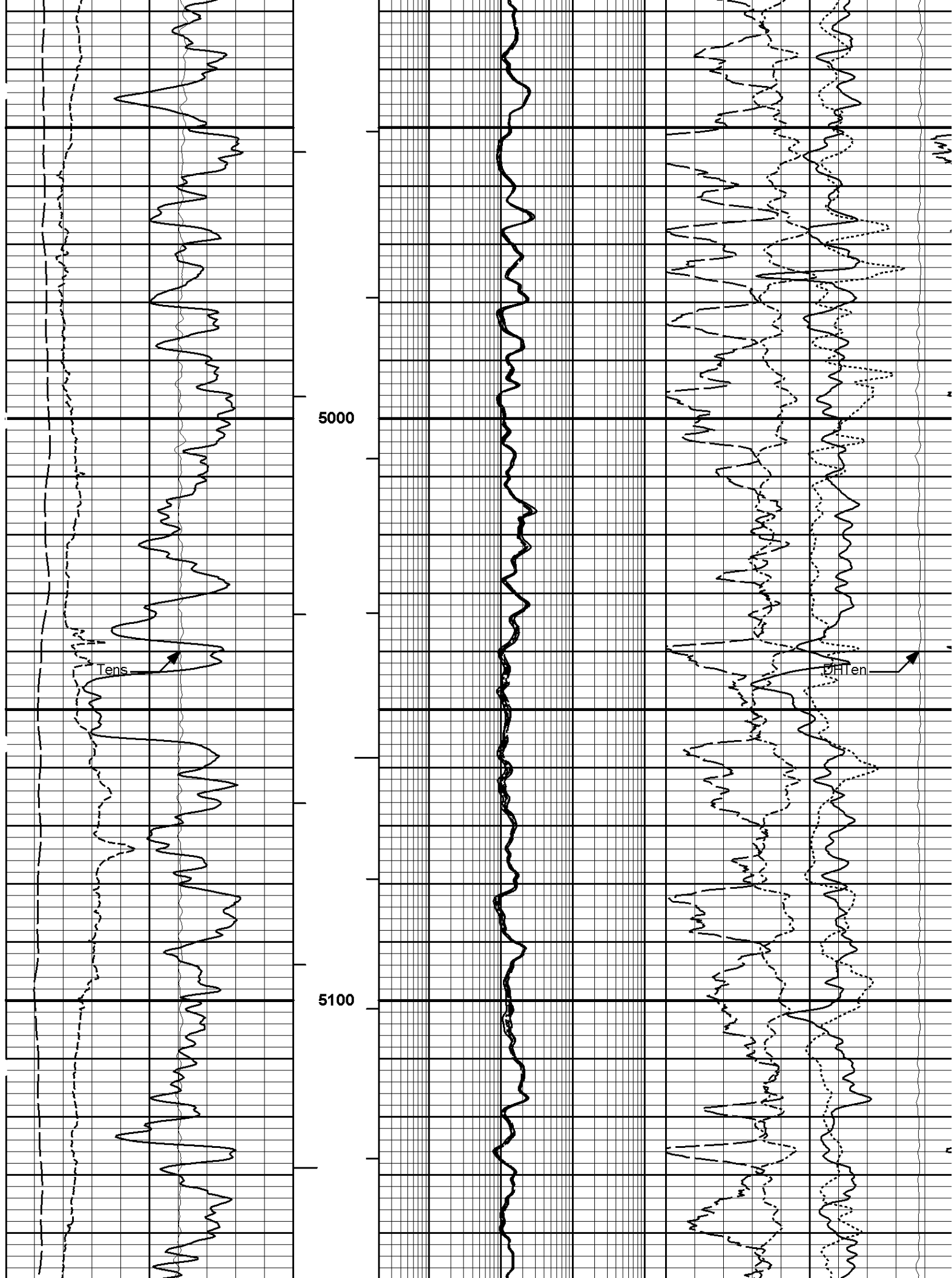
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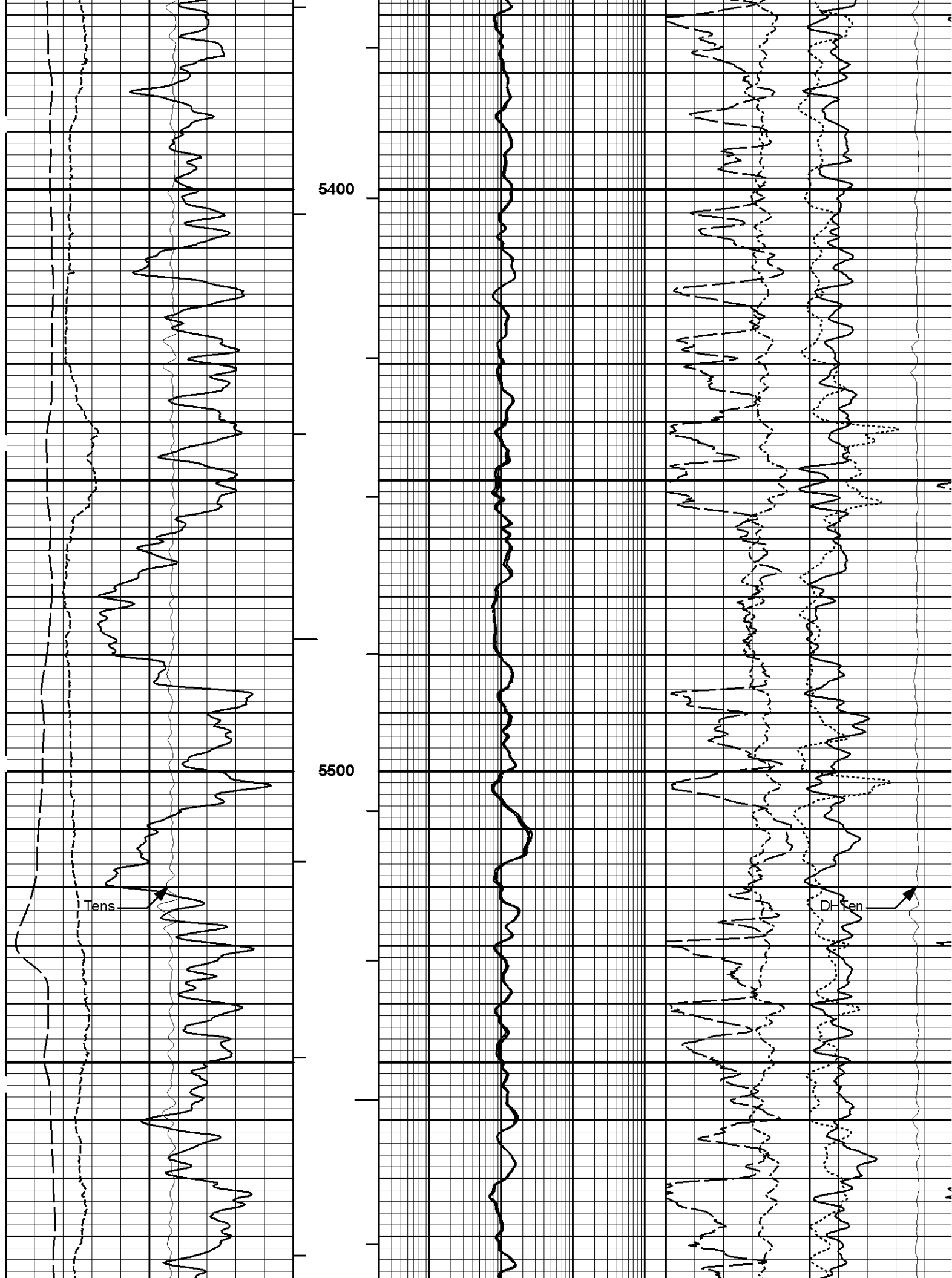


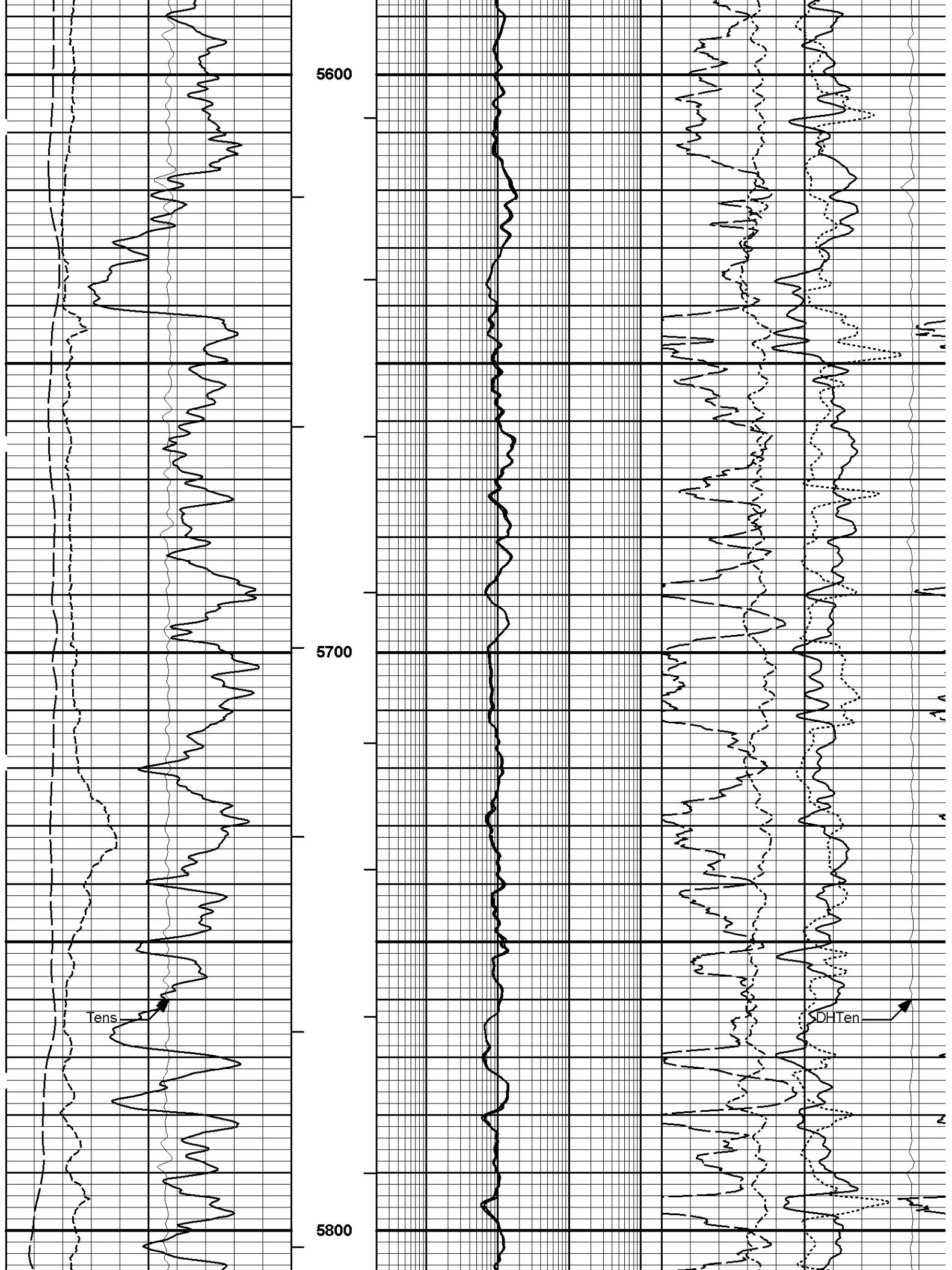
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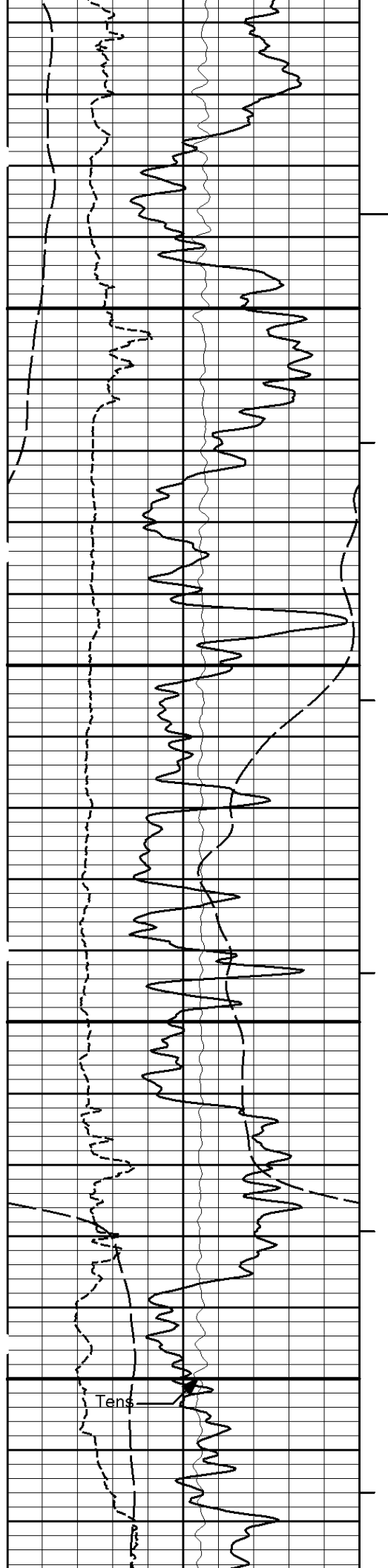
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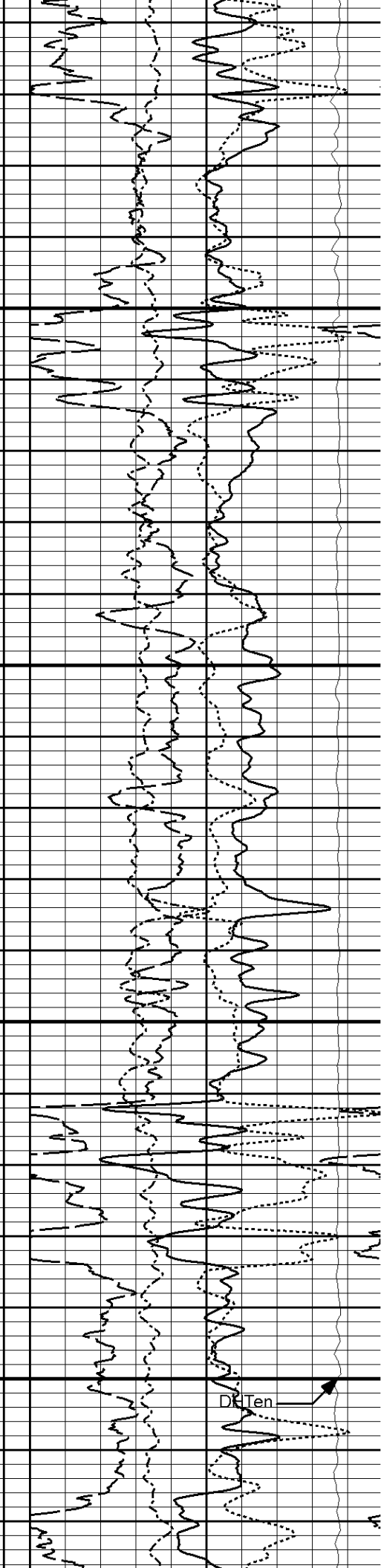
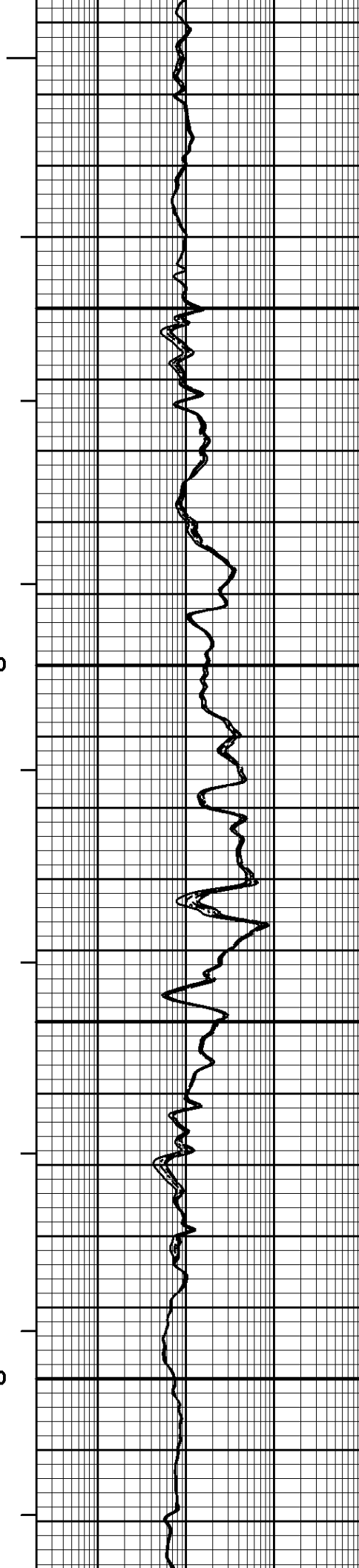


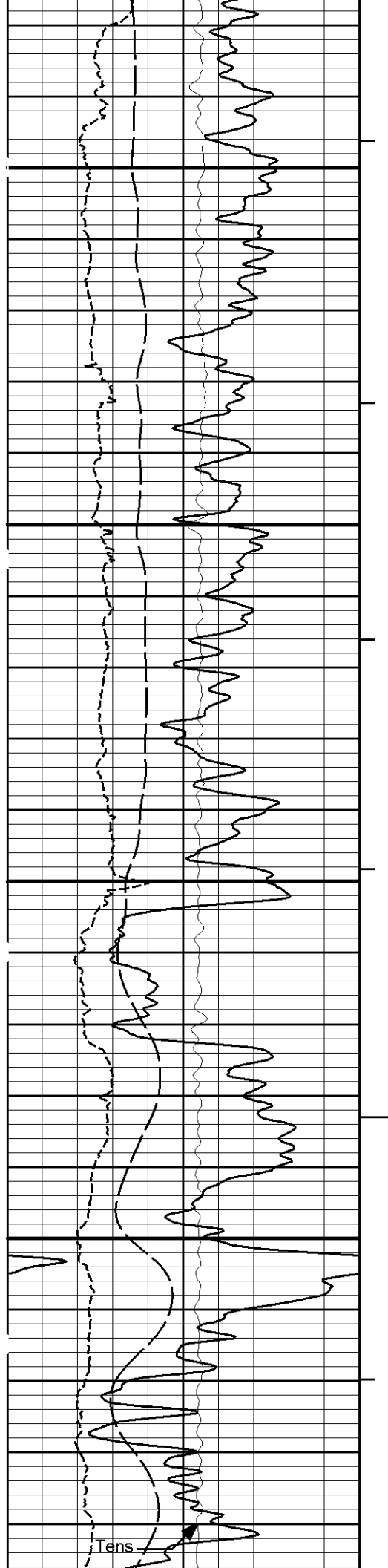




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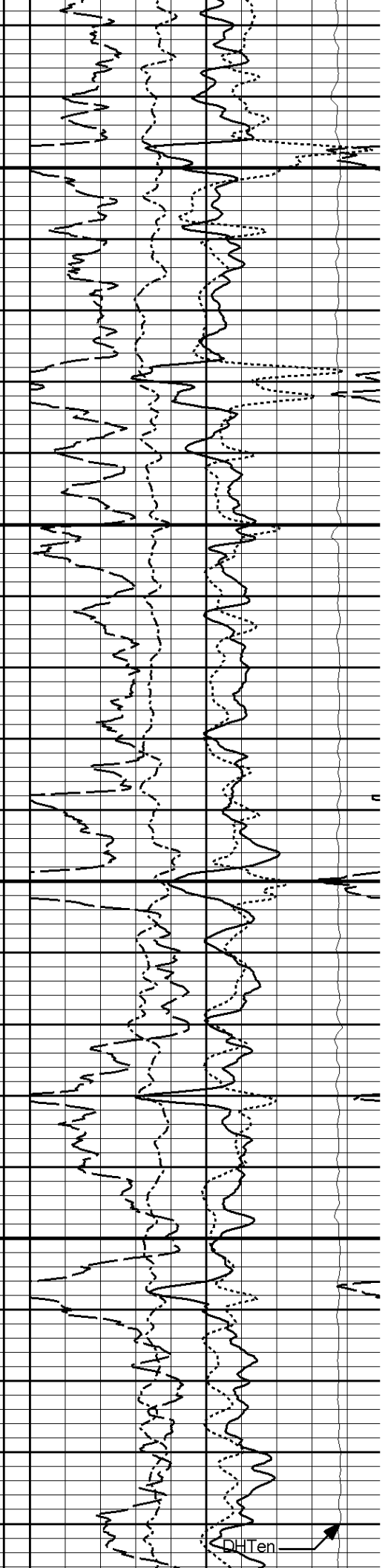
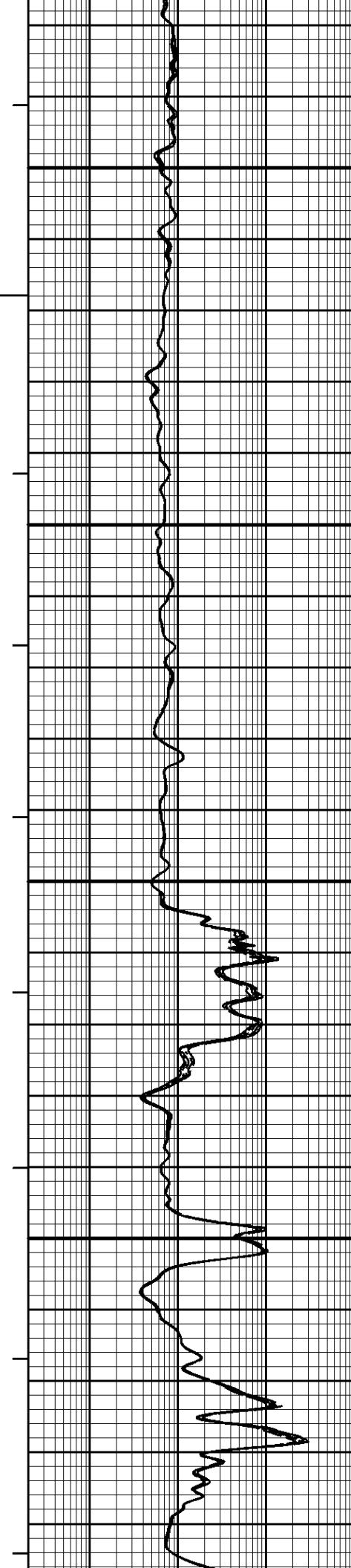
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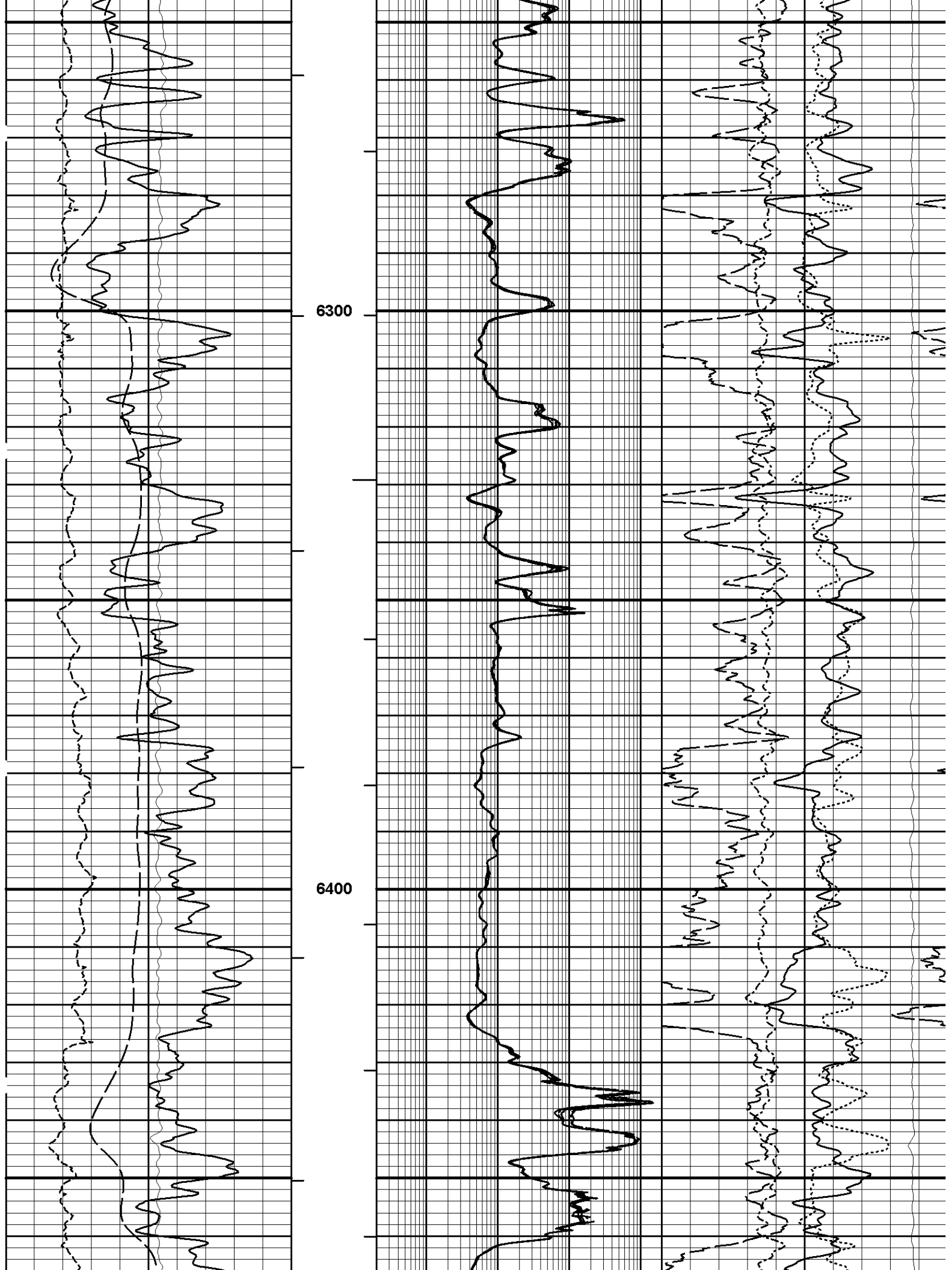


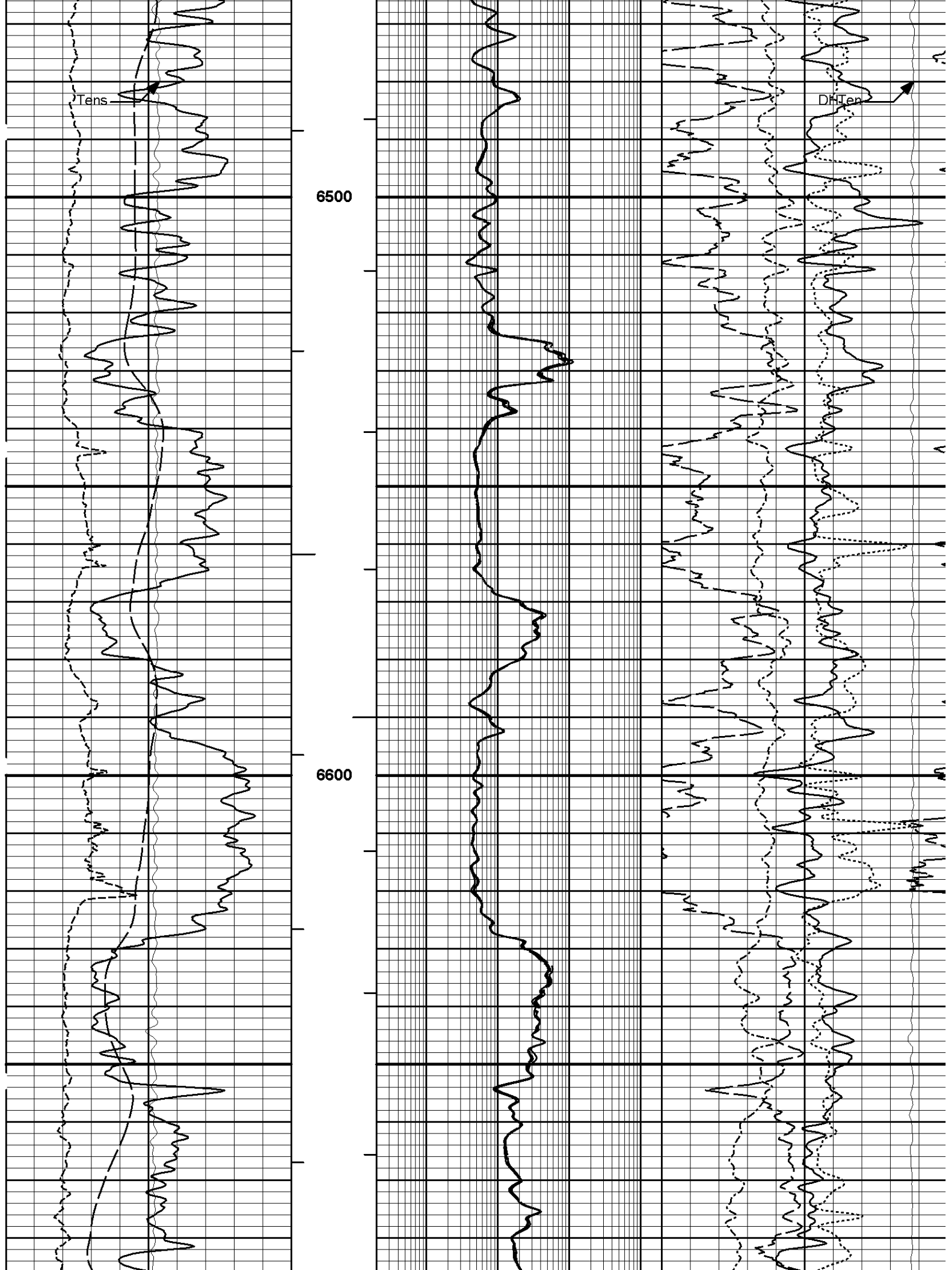


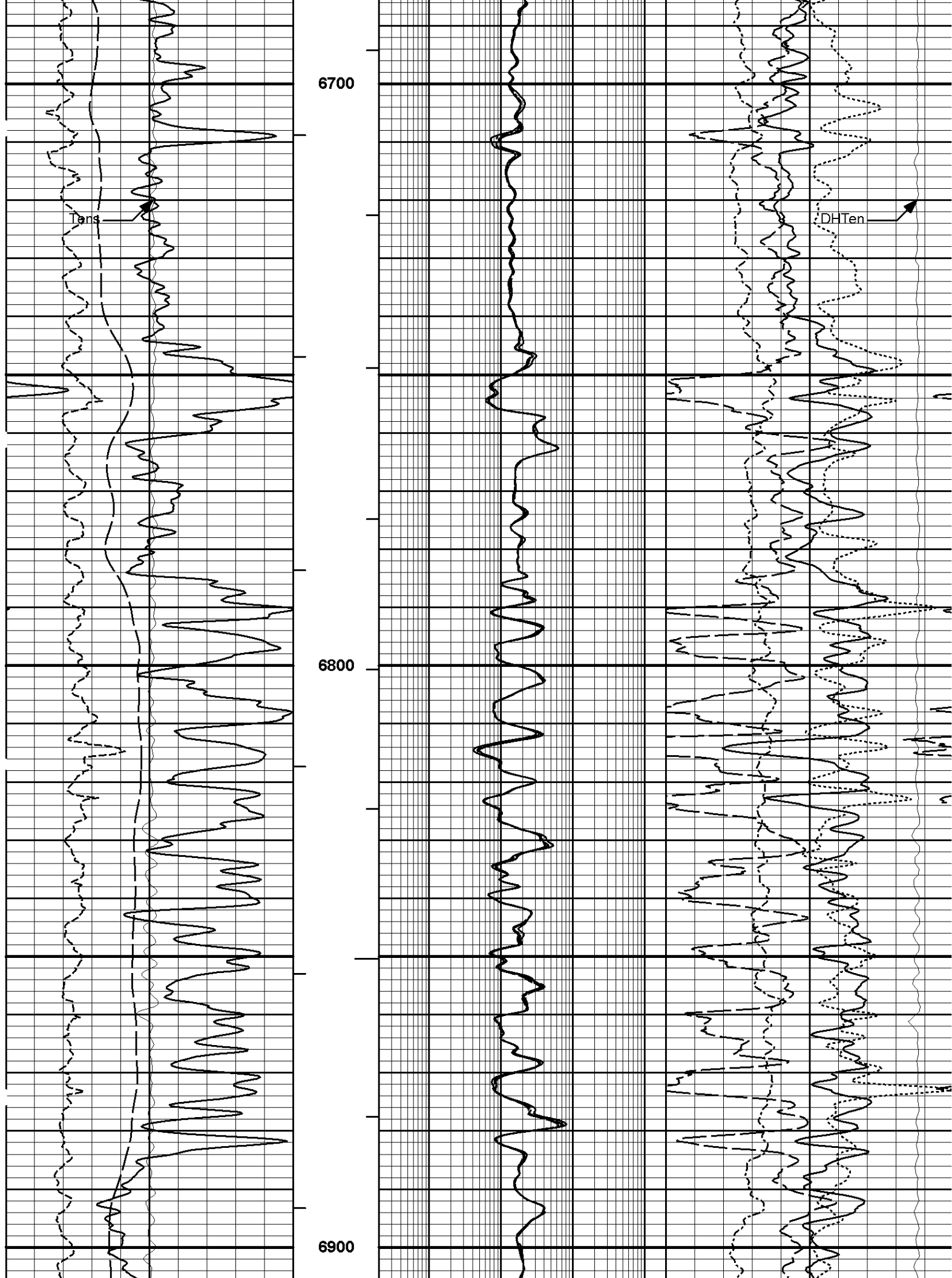
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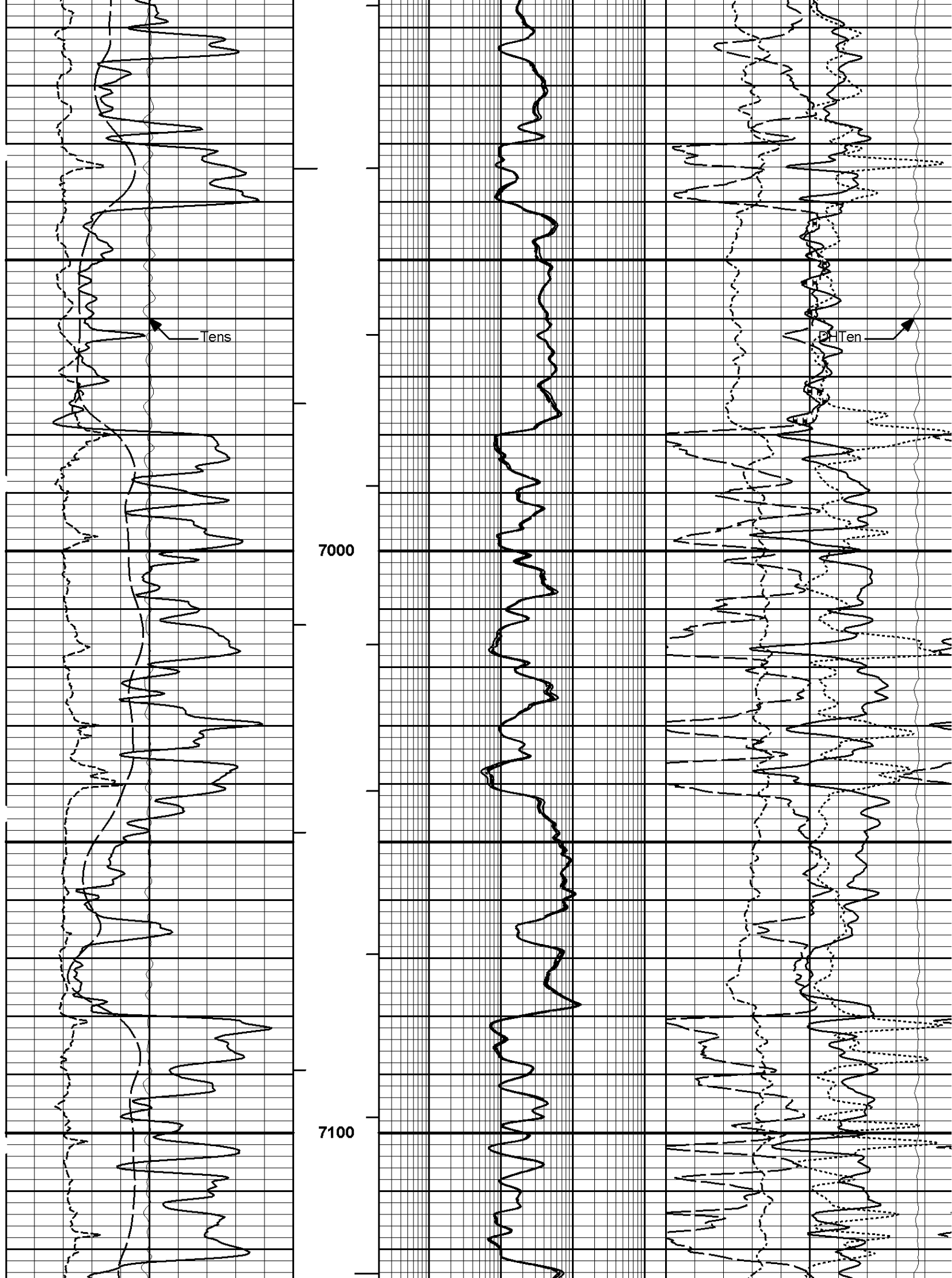
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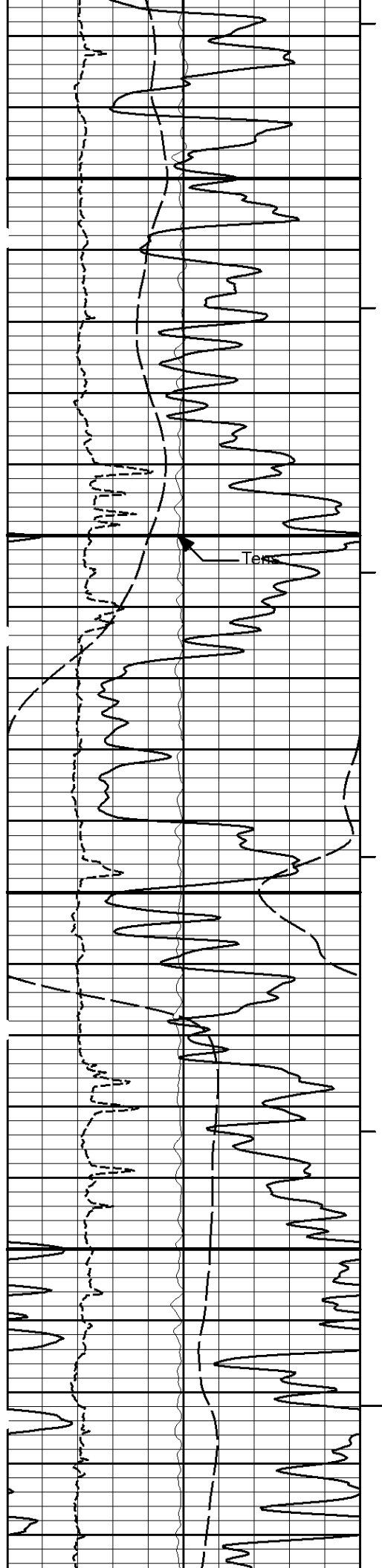






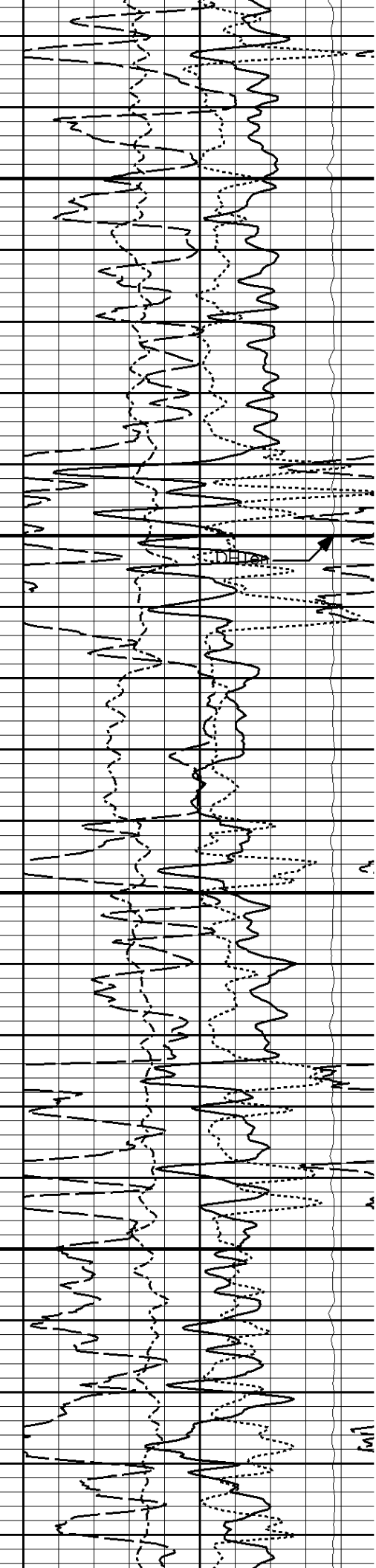
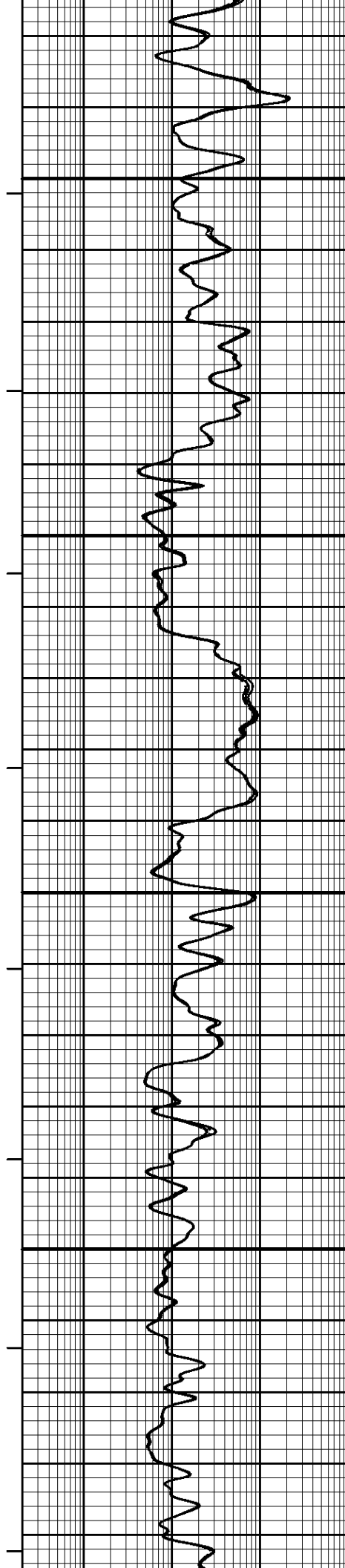


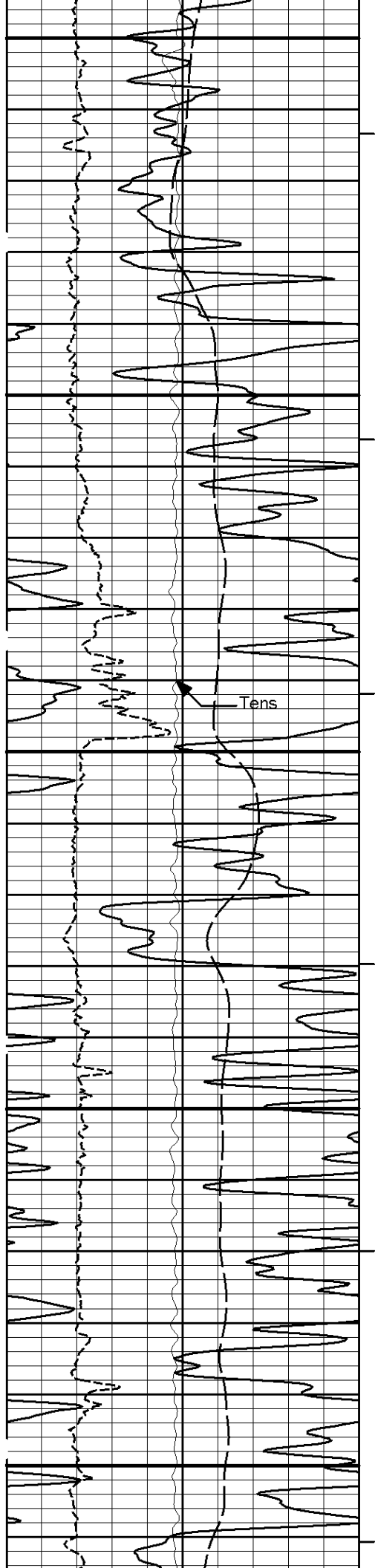




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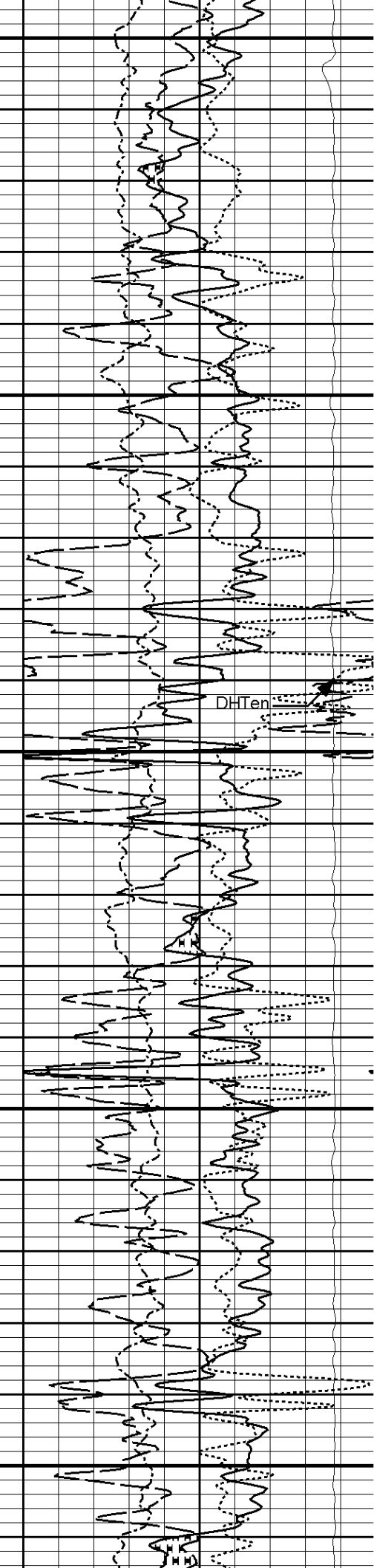
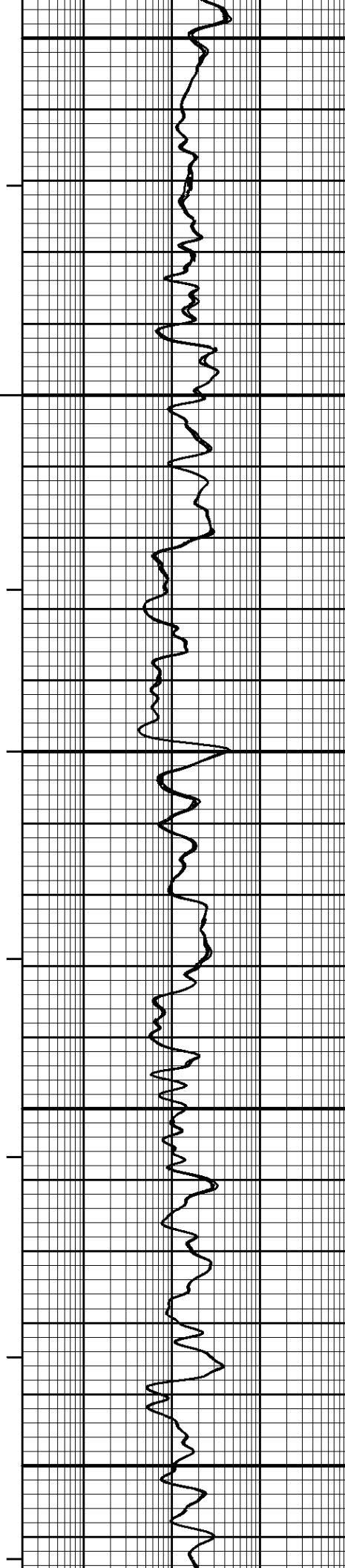
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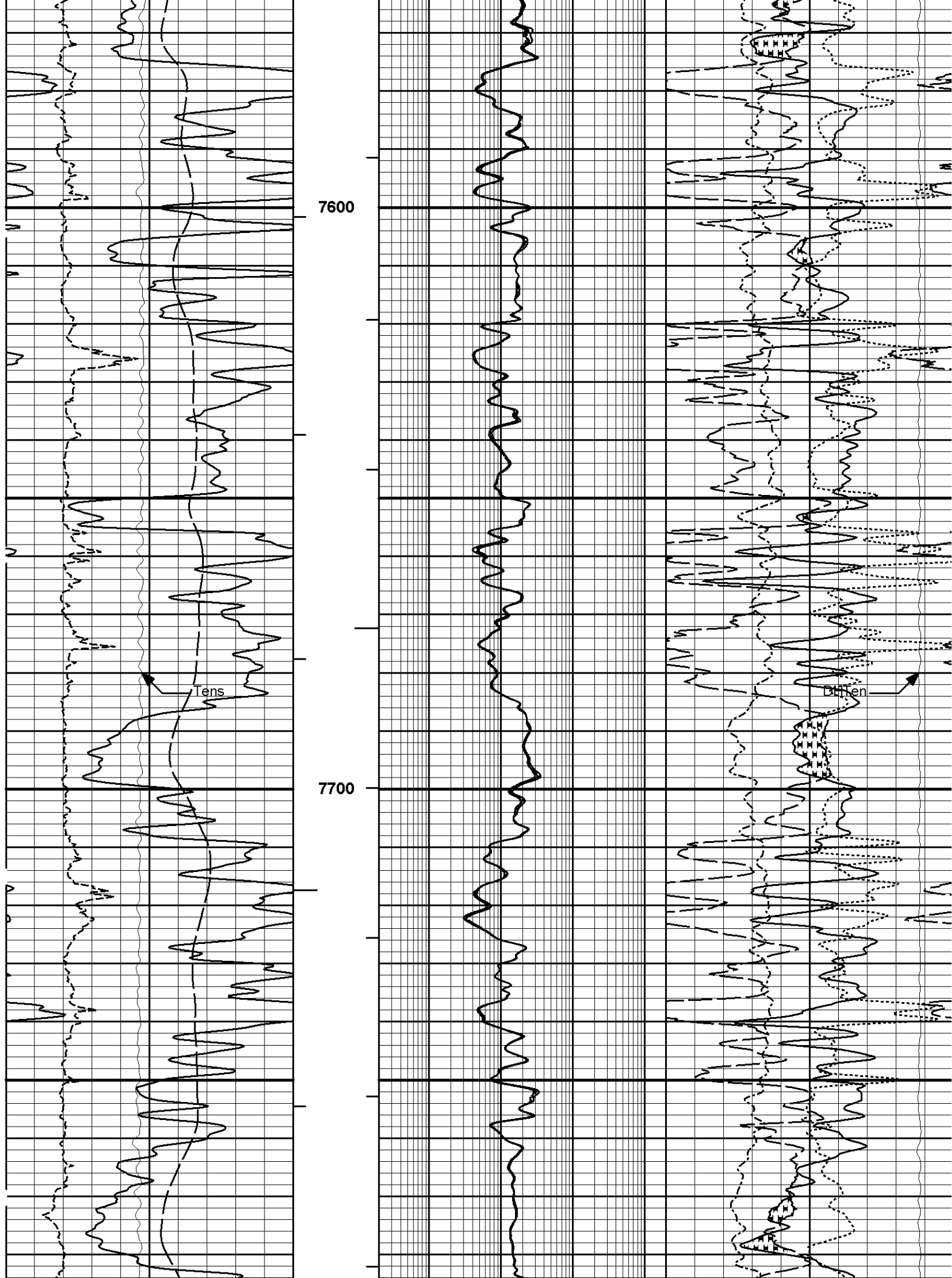


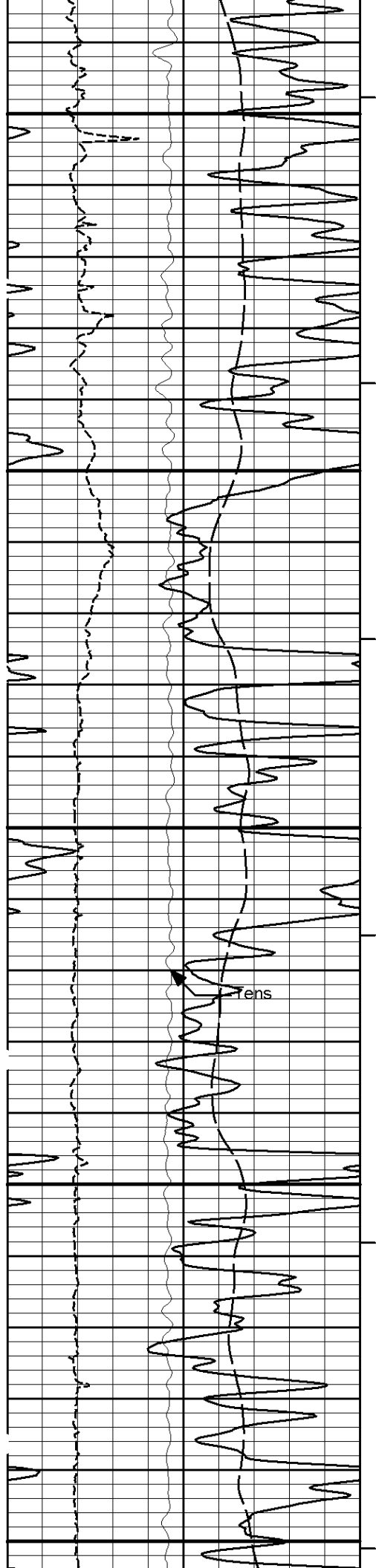


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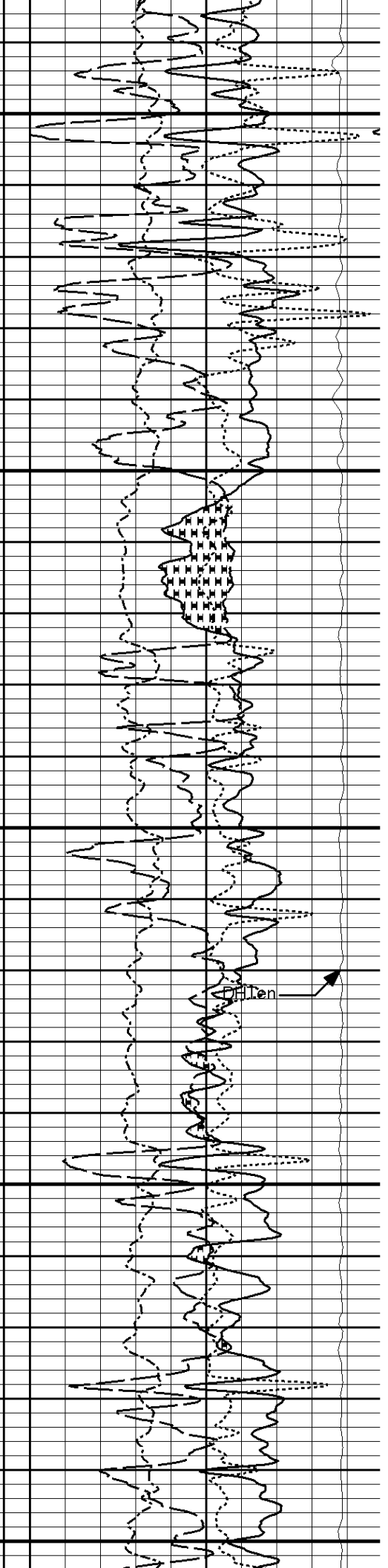
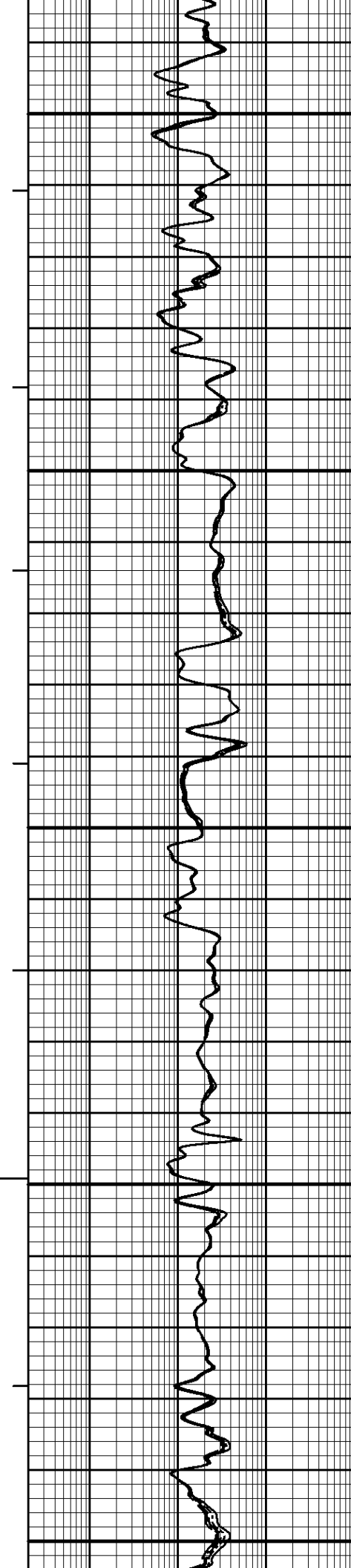


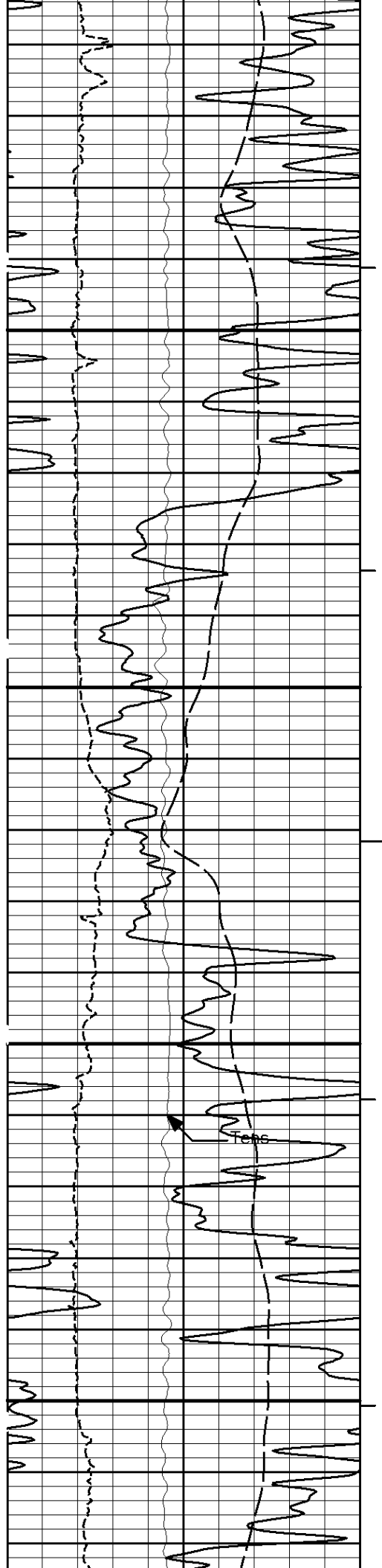


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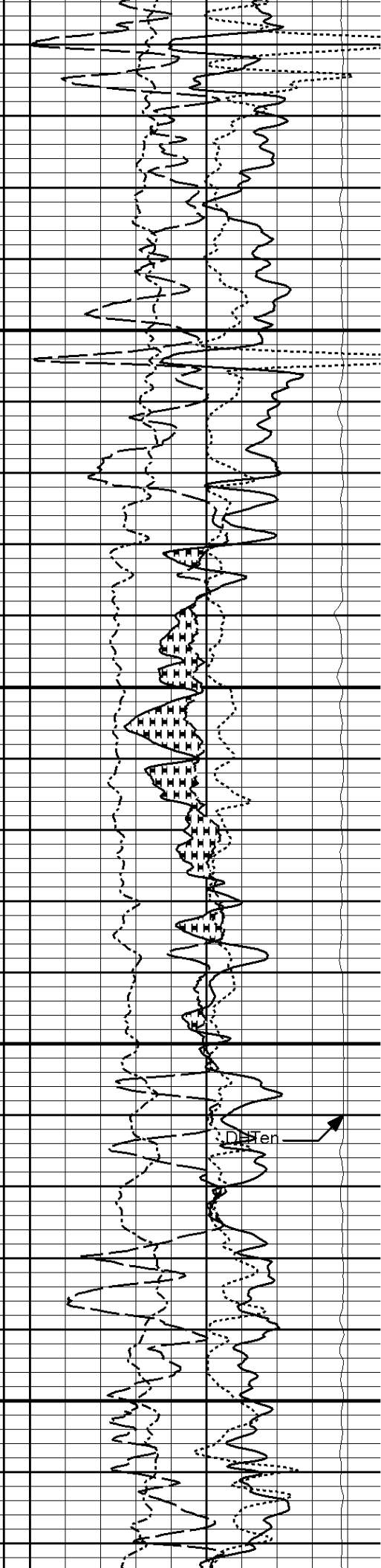
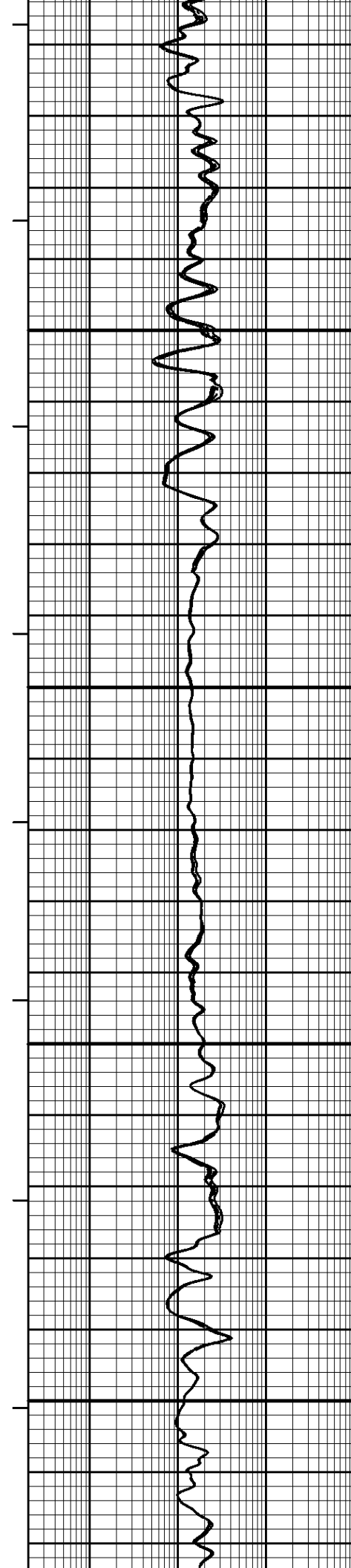
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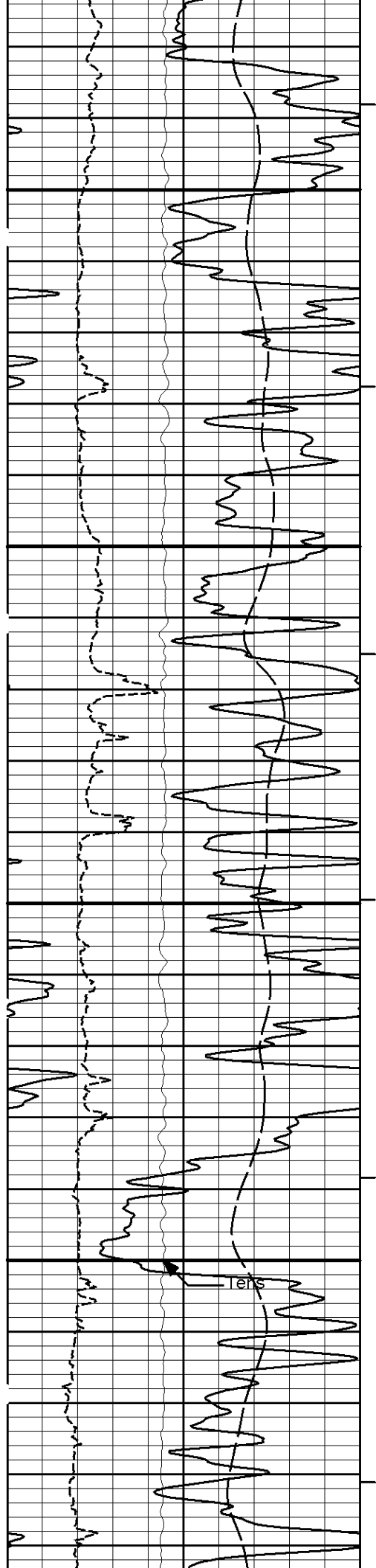




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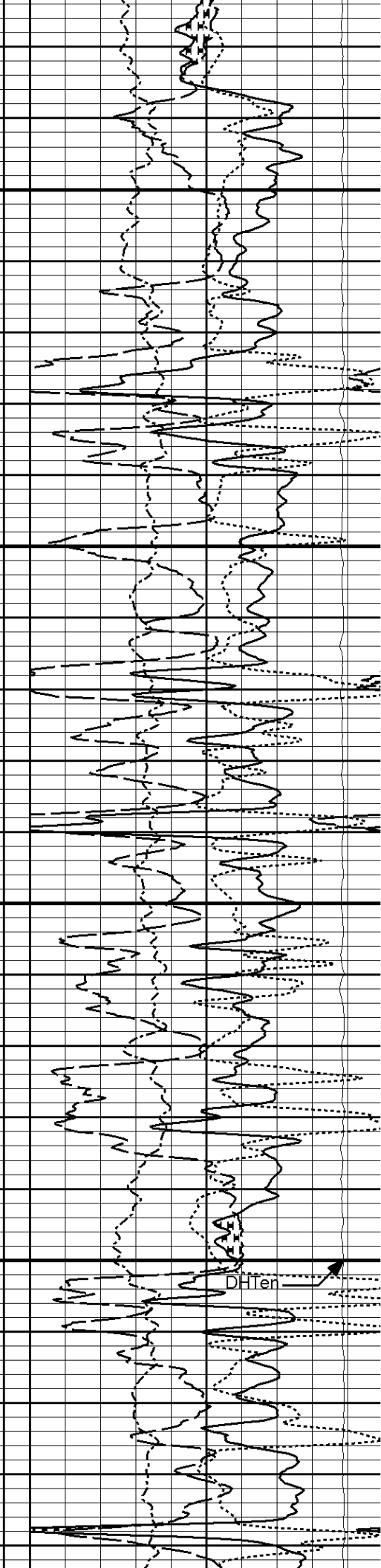
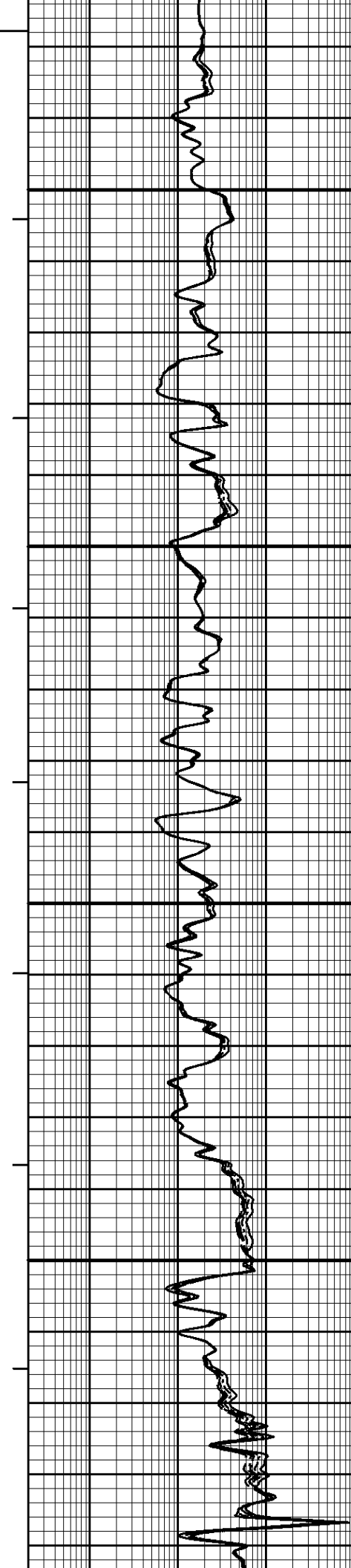
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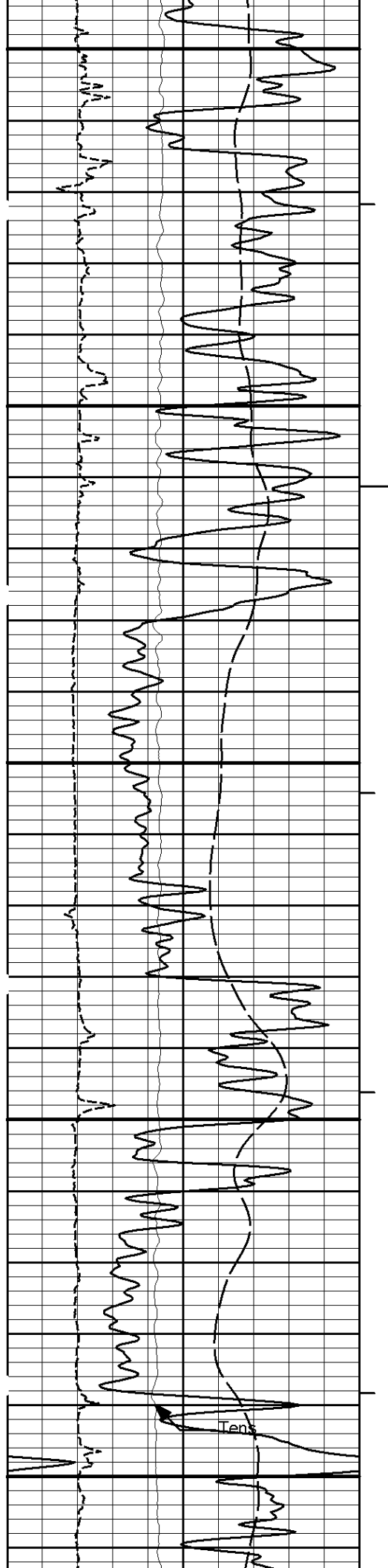




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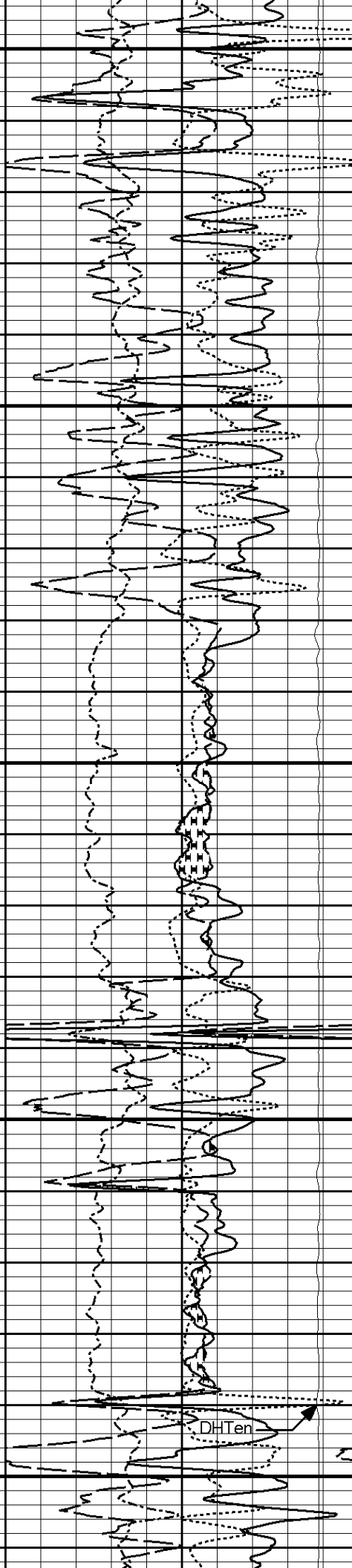
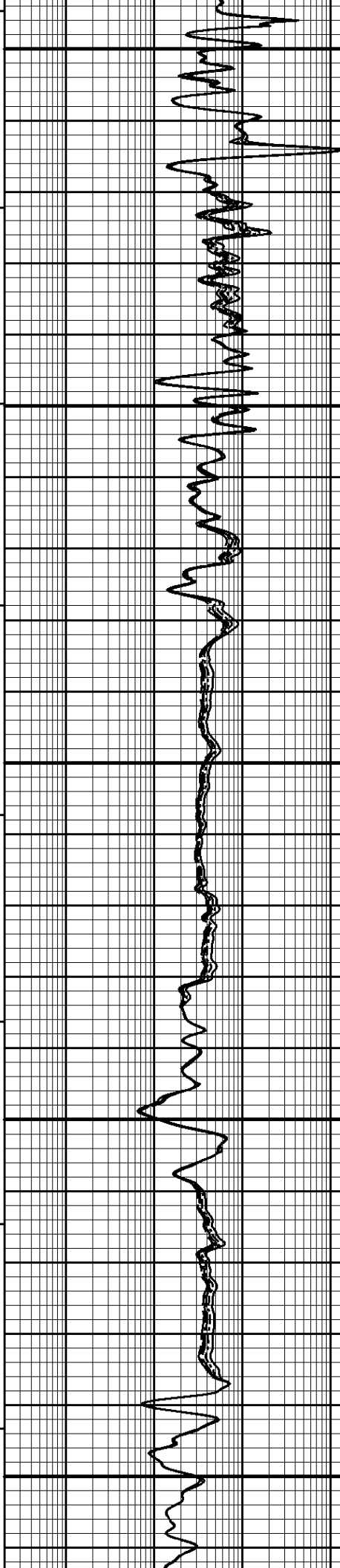
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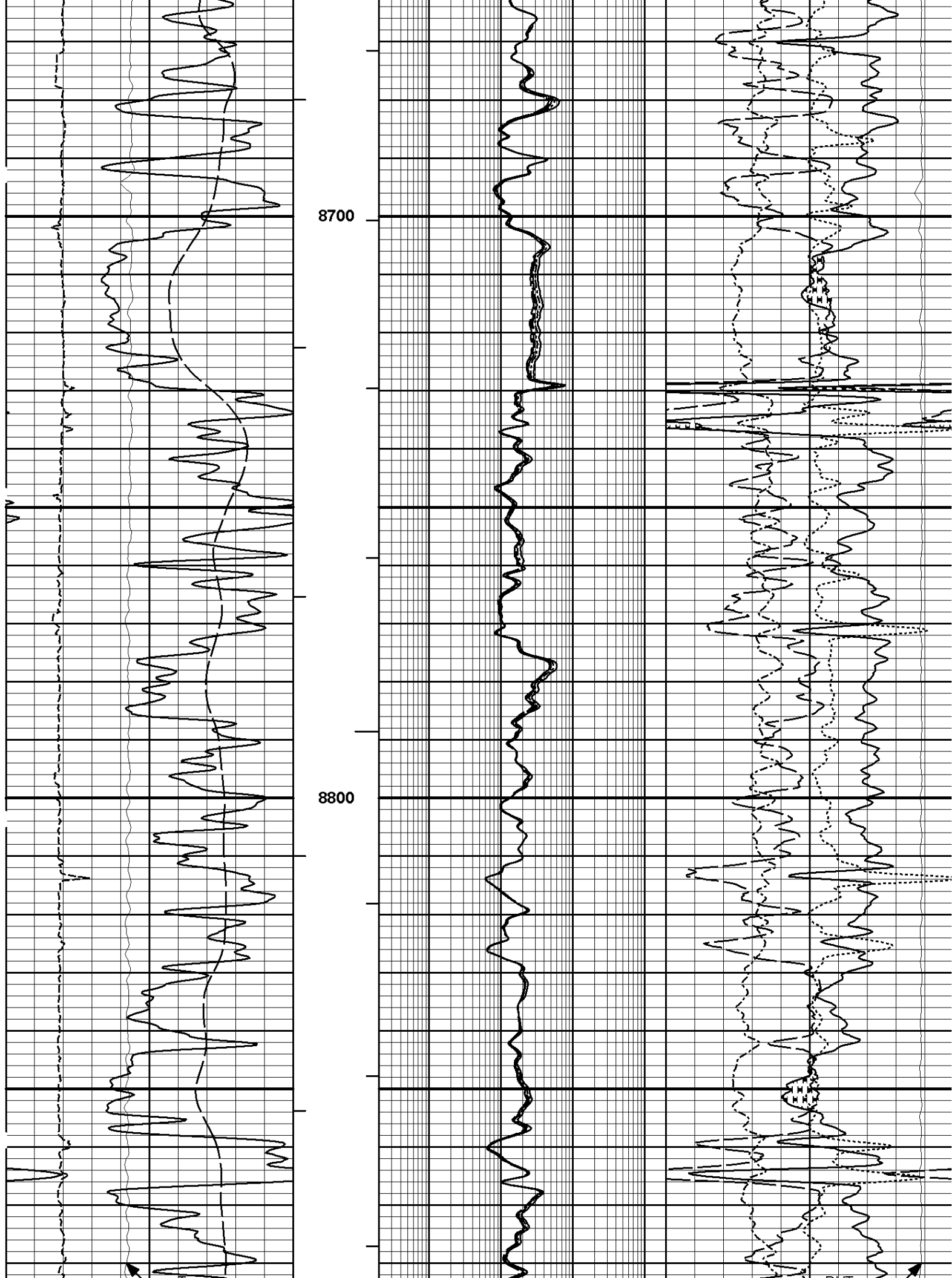


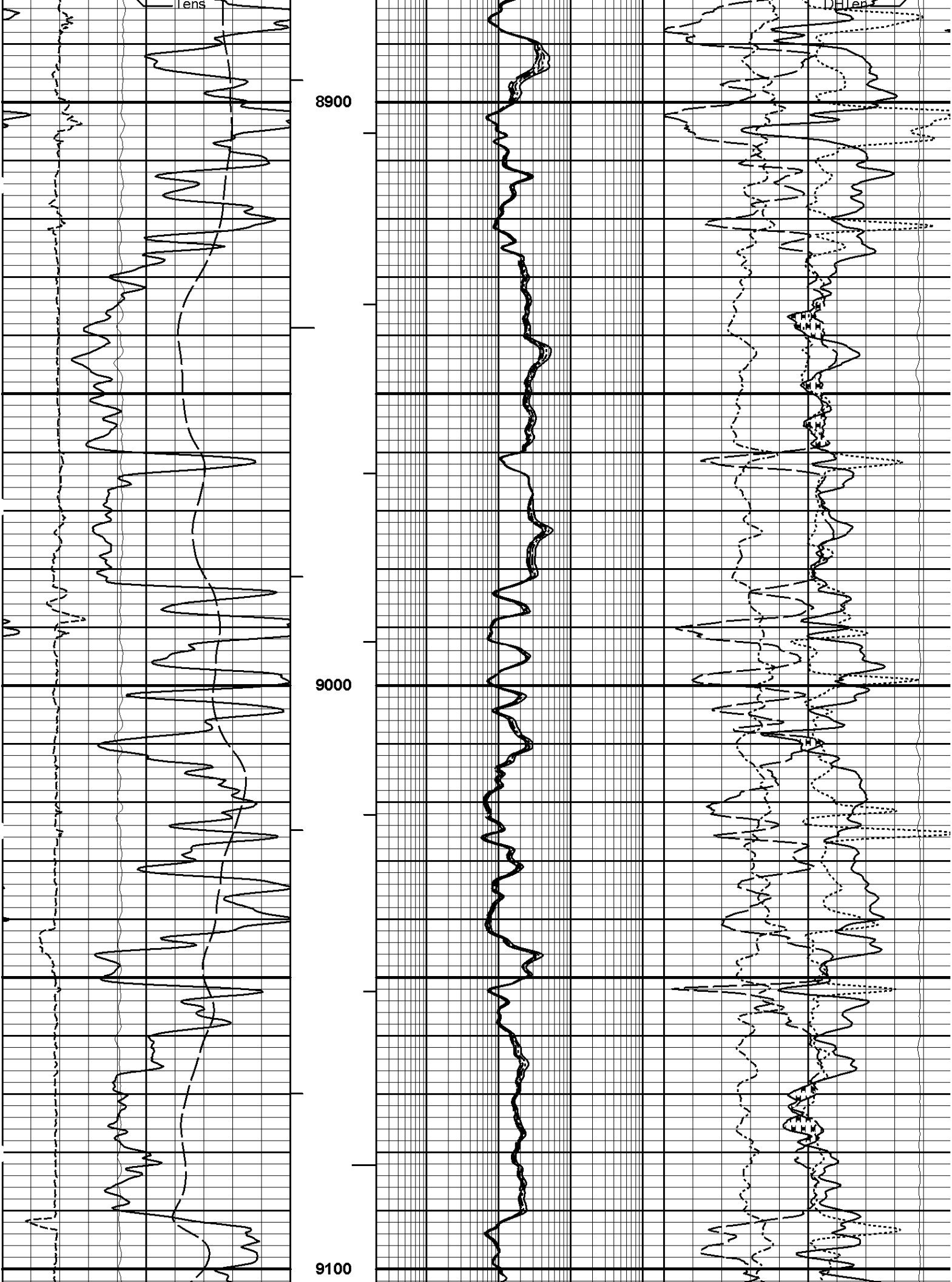


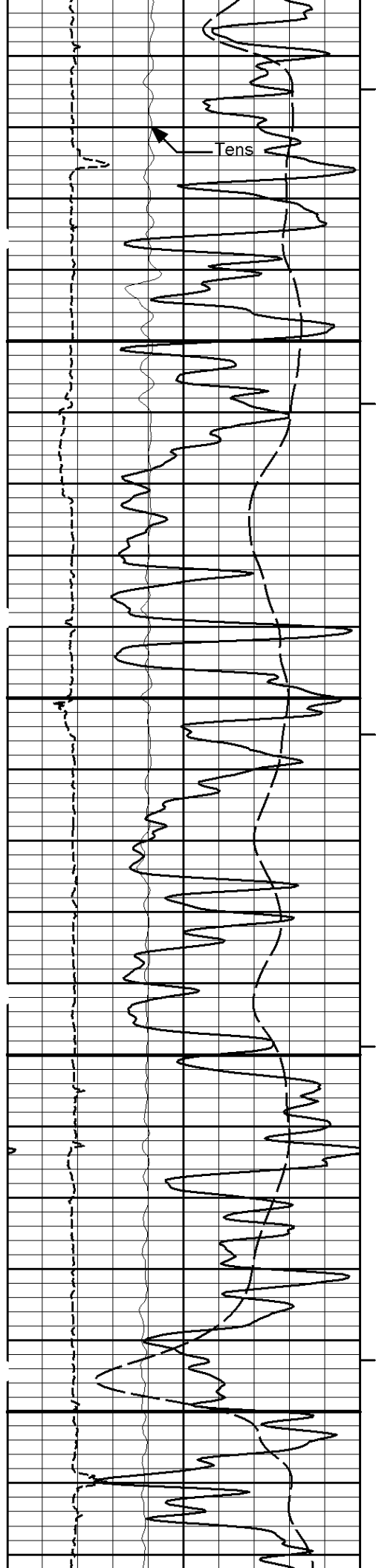
8500

8600



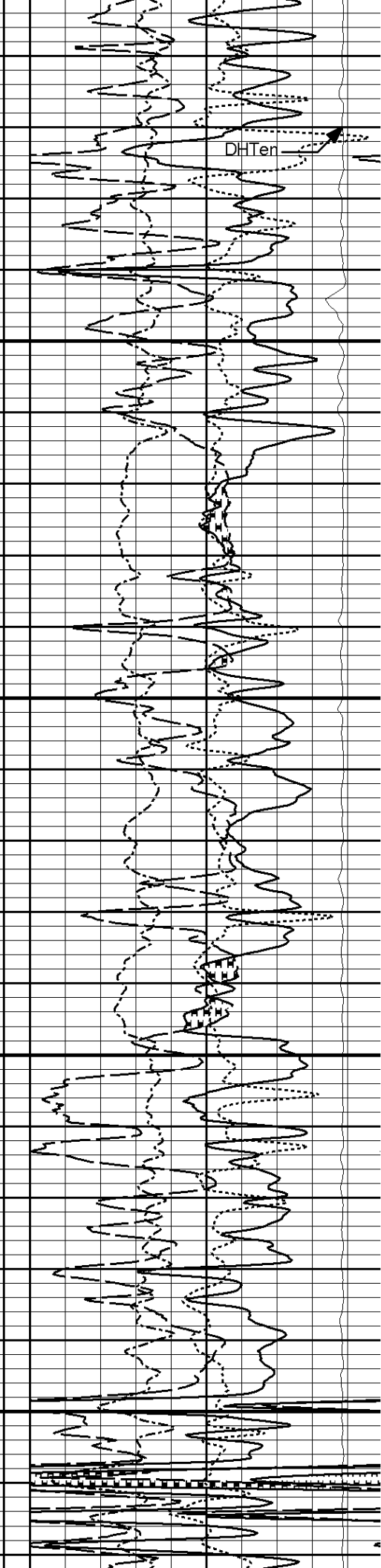
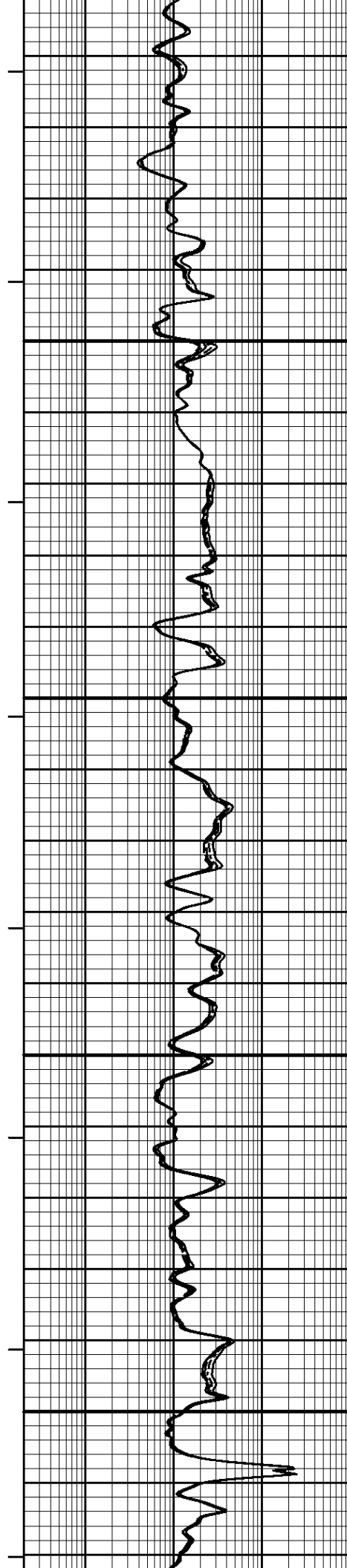


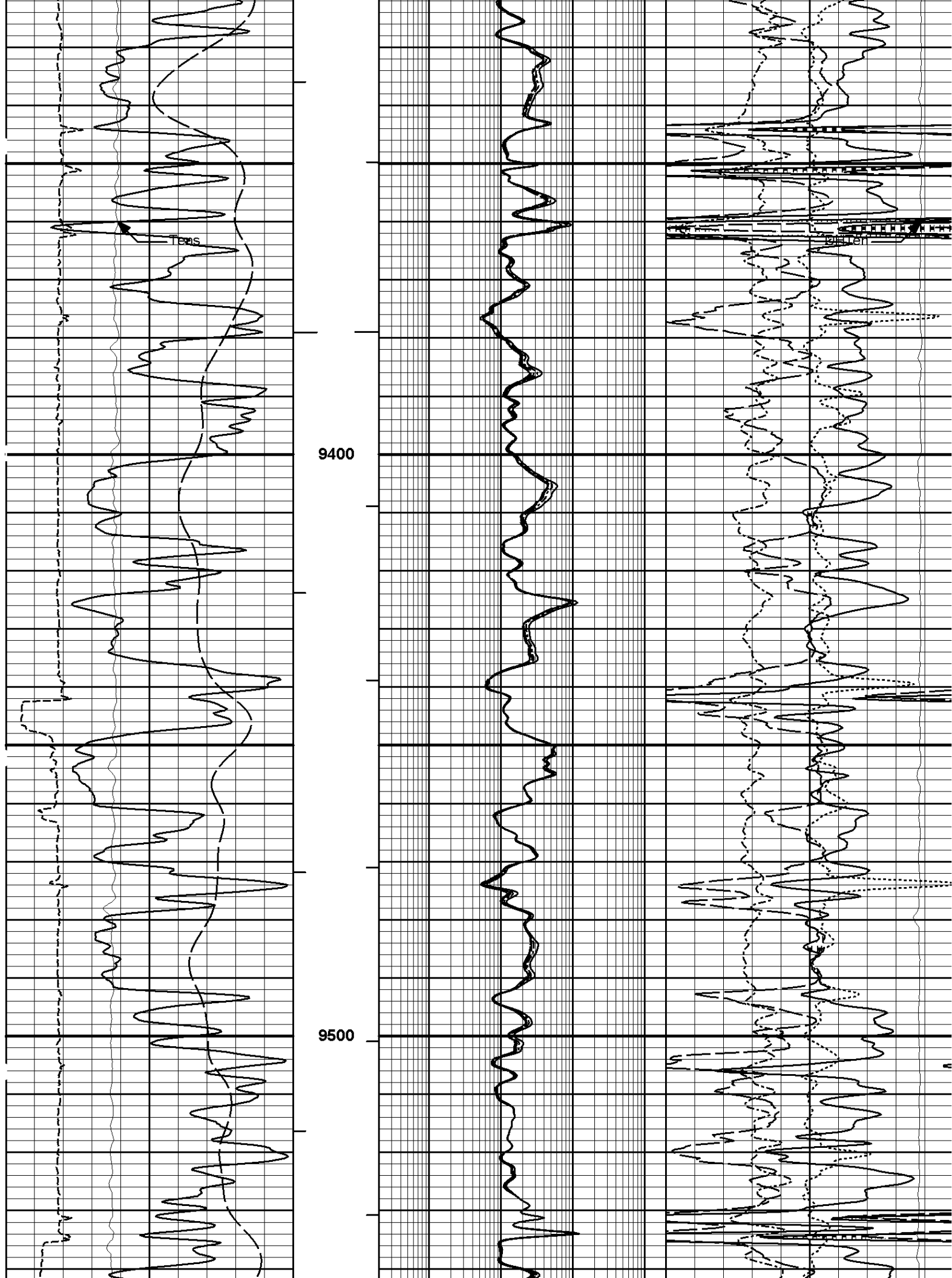


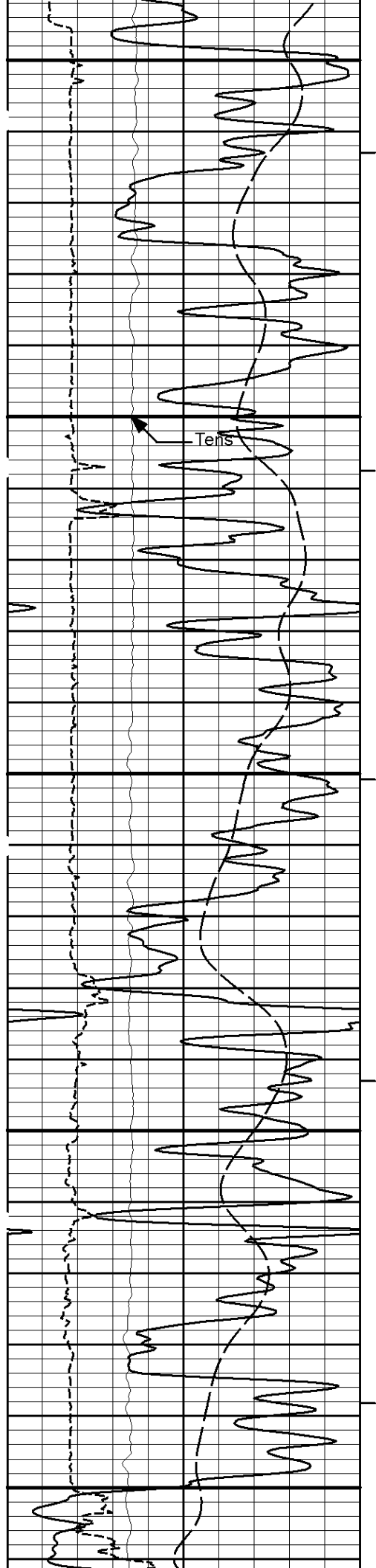


9200

9300

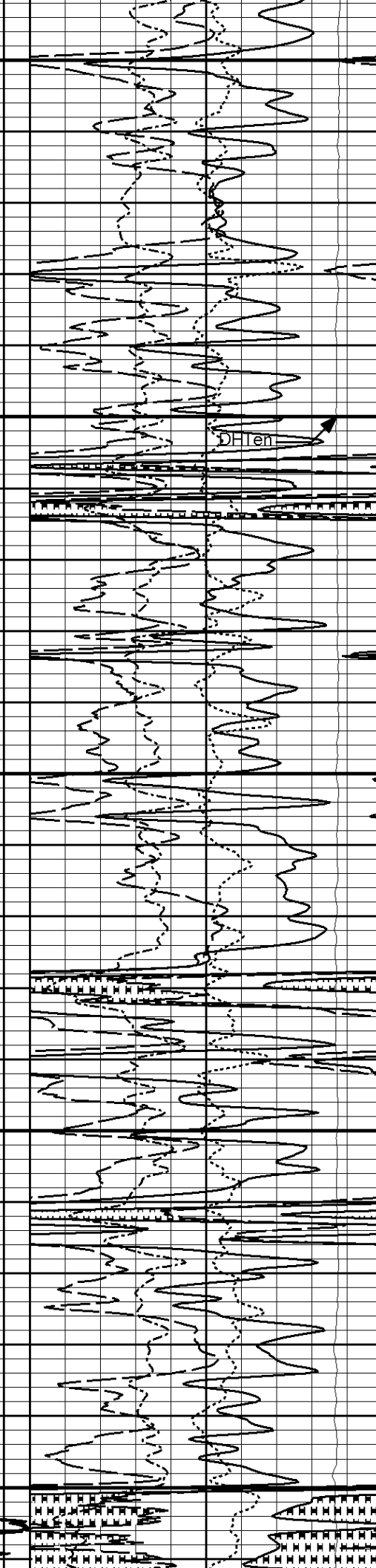
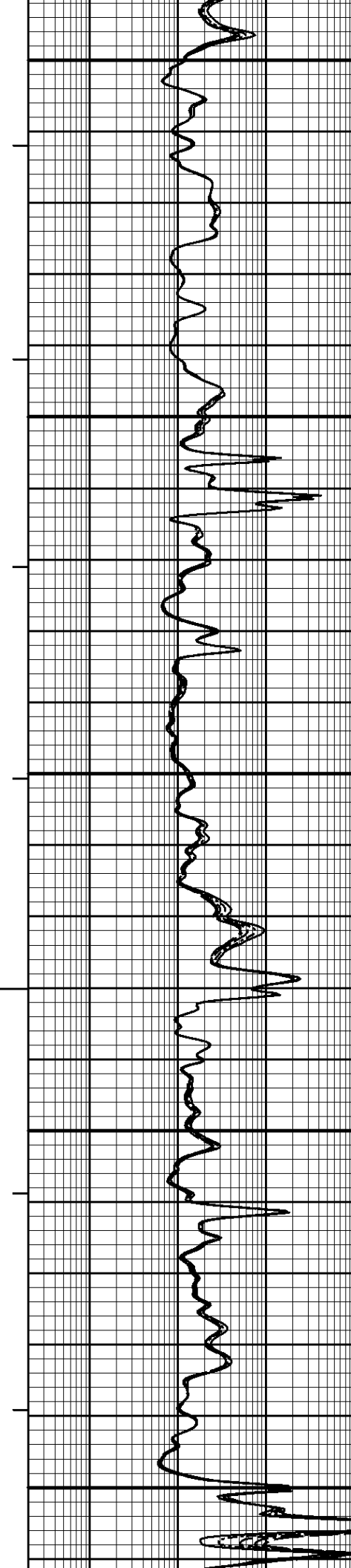


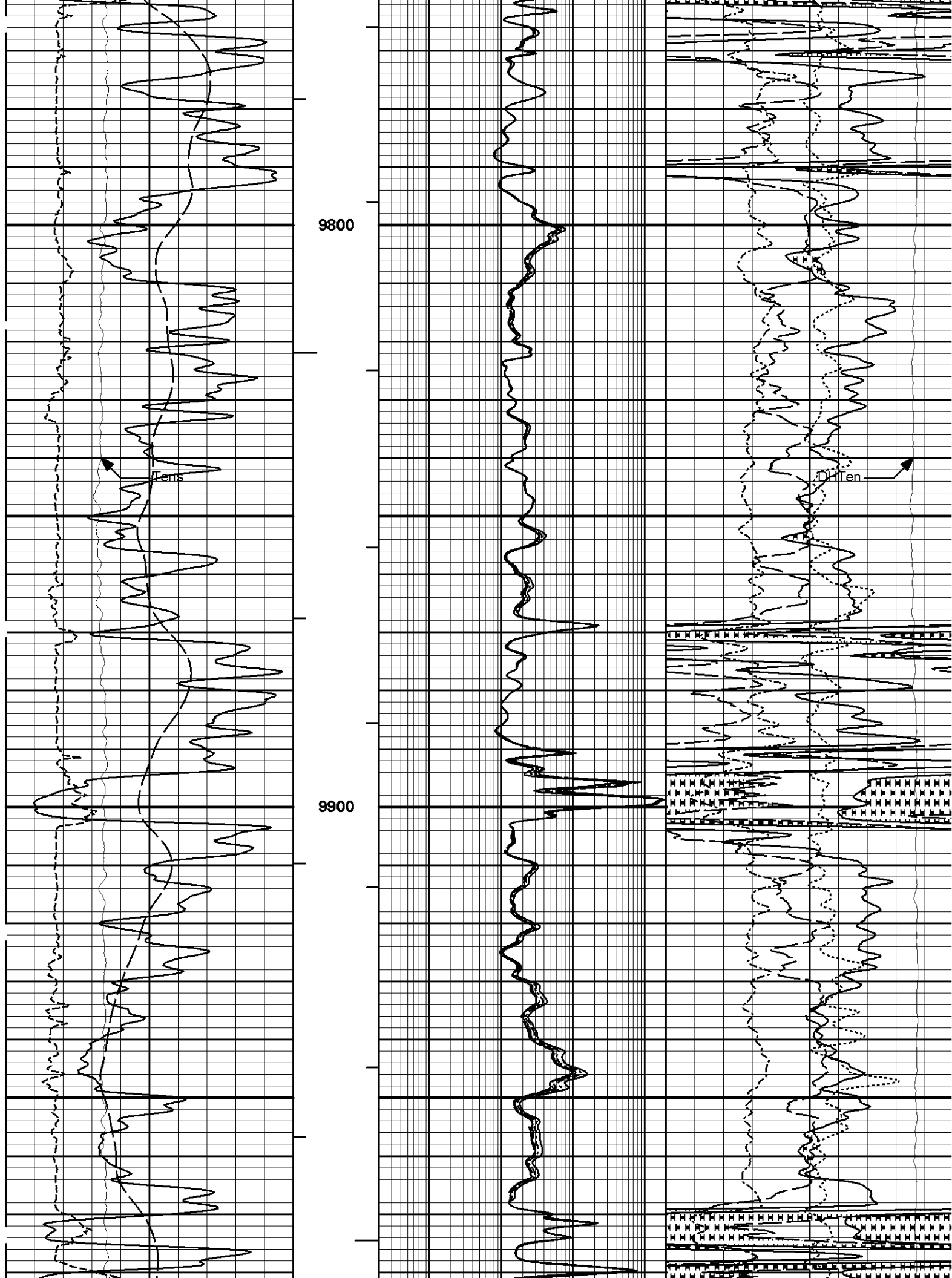


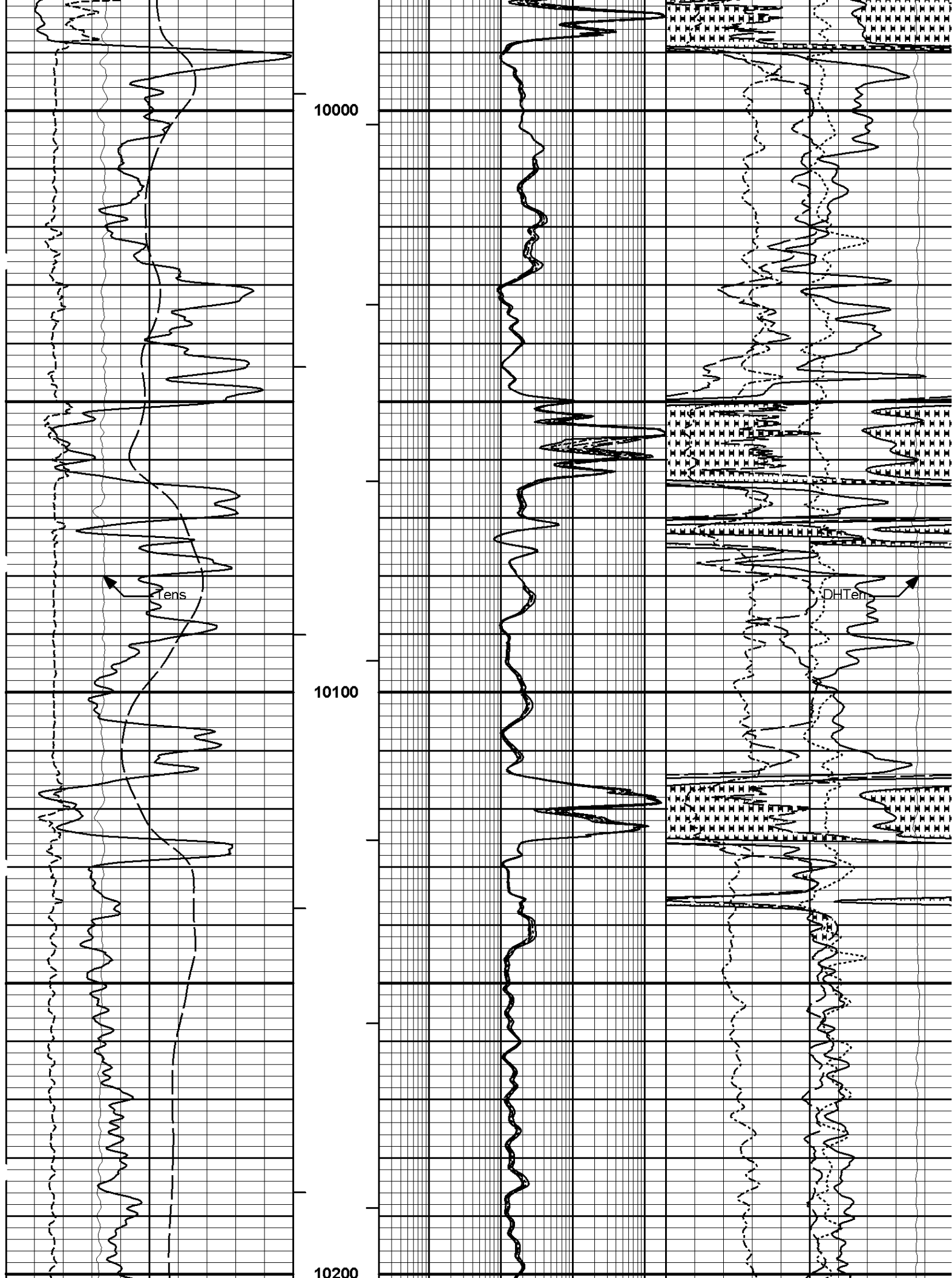


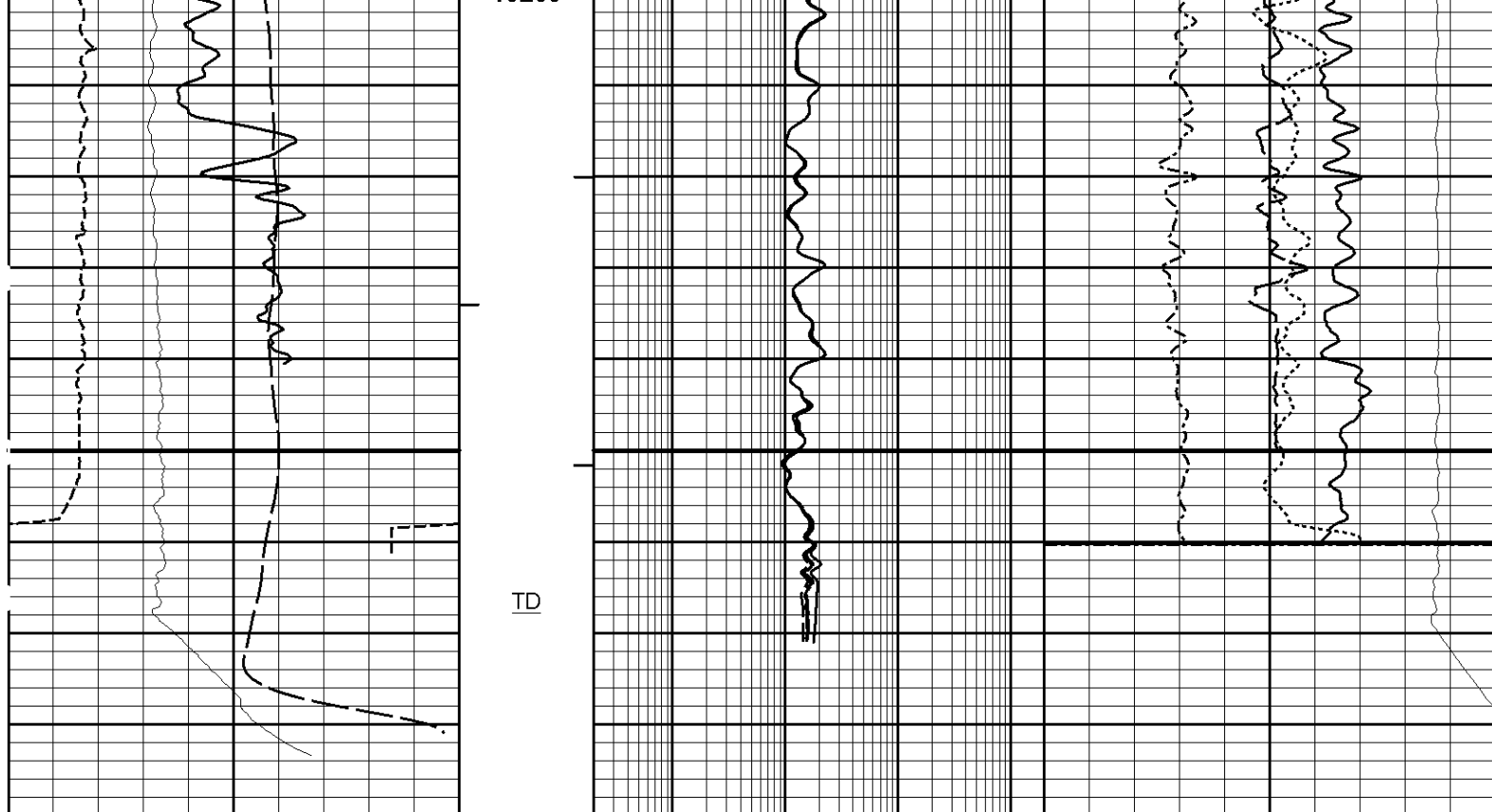
9600

9700









0	SP	100	1 : 240	0.2	RT90	2K	-0.25	Density Corr	0.25
	millivolts				Ohm-m			gram per cc	
0	Gamma API	150	BHVT	0.2	RT60	2K	0	Pe	10
	api				Ohm-m				
6	Caliper	16	AHVT	0.2	RT30	2K	30	Density Porosity	-10
	inches				Ohm-m			percent	
10K	Tens	0		0.2	RT20	2K	30	Neutron Porosity	-10
	pounds				Ohm-m			percent	
				0.2	RT10	2K	10K	DHTen	0
					Ohm-m			pounds	

HALLIBURTON

Plot Time: 20-May-09 11:19:08
Plot Range: 98 ft to 10290 ft
Data: S_LEVRCH_13_10A\Well Based**
Plot File: \\TRIPLE\BP_5IN_COMP_M

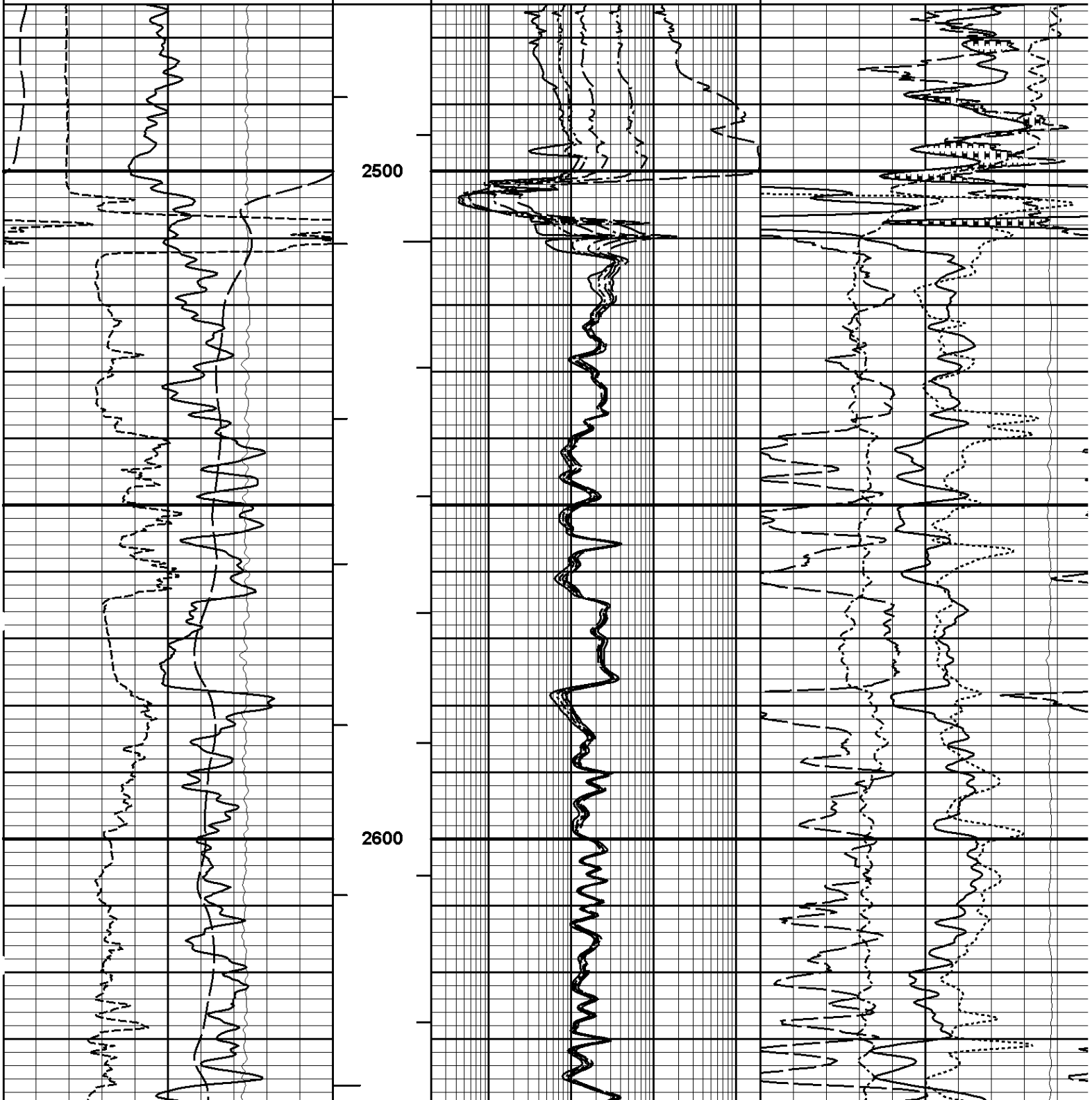
MAIN PASS 5" = 100'

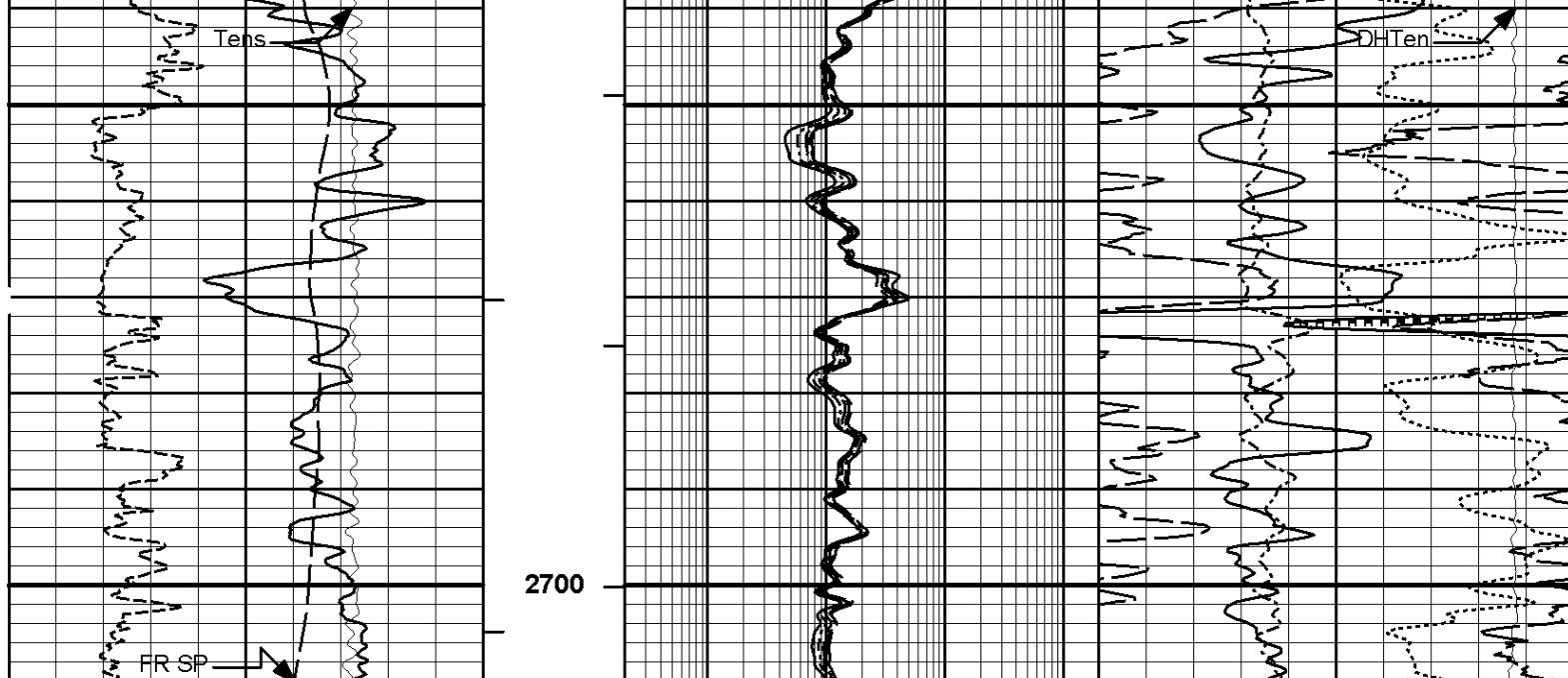
HALLIBURTON

Plot Time: 20-May-09 11:19:08
Plot Range: 2475 ft to 2710 ft
Data: S_LEVRCH_13_10A\Well Based\RPT*
Plot File: \\TRIPLE\BP_5IN_COMP_R

REPEAT SECTION 5" = 100'

10K	Tens	0	AHVT	0.2	RT10	2K	10K	DHTen	0
	pounds				Ohm-m			pounds	
				0.2	RT20	2K	30	Neutron Porosity	-10
					Ohm-m			percent	
	6	Caliper		16	0.2	RT30	2K	30	Density Porosity
	inches				Ohm-m			percent	
0	Gamma API	150	BHVT	0.2	RT60	2K	0	Pe	10
	api				Ohm-m				
0	SP	100		0.2	RT90	2K	-0.25	Density Corr	0.25
	millivolts		1 : 240		Ohm-m			gram per cc	





0	SP	100	1: 240	0.2	RT90	2K	-0.25	Density Corr	0.25
	millivolts				Ohm-m			gram per cc	
0	Gamma API	150	BHVT	0.2	RT60	2K	0	Pe	10
	api				Ohm-m				
6	Caliper	16	AHVT	0.2	RT30	2K	30	Density Porosity	-10
	inches				Ohm-m			percent	
10K	Tens	0		0.2	RT20	2K	30	Neutron Porosity	-10
	pounds				Ohm-m			percent	
				0.2	RT10	2K	10K	DHTen	0
					Ohm-m			pounds	

HALLIBURTON

Plot Time: 20-May-09 11:19:10
 Plot Range: 2475 ft to 2710 ft
 Data: S_LEVRCH_13_10A\Well Based\RPT*
 Plot File: \\TRIPLE\BP_5IN_COMP_R

REPEAT SECTION 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 10832795

Reference Calibration Date: 16-May-09 01:07:14

Engineer: D. CULVER

Calibration Date: 19-May-09 17:51:26

Software Version: WL INSITE R2.4 (Build 11)

Calibration Version: 1

Calibrator Source S/N: TB-738

Calibrator API Reference: 218.00 api

Measurement	Measured	Calibrated	Units
Background	55.4	53.2	api
Background + Calibration	222.4	274.2	api

Background + Calibrator	282.4	271.2	api
Calibrator	215.8	218.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	GTET - 10832795	Reference Calibration Date:	19-May-09 17:51:26
Engineer:	D. CULVER	Calibration Date:	19-May-09 19:29:40
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Calibrator Source S/N: TB-738
Calibrator API Reference: 218.00 api

Field Verification	Shop	Field	Units
Background	53.2	69.1	api
Background + Calibrator	271.2	278.9	api
Calibrator	218.0	209.8	api

Shop	Field	Difference	Tolerance
218.0	209.8	8.2	+/- 9.00

NATURAL GAMMA RAY TOOL POST CALIBRATION

Tool Name:	GTET - 10832795	Reference Calibration Date:	19-May-09 19:29:40
Engineer:	D. CULVER	Calibration Date:	20-May-09 11:06:14
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Calibrator Source S/N: TB-738
Calibrator API Reference: 218.00 api

Post Verification	Field	Post	Units
Background	69.1	36.8	api
Background + Calibrator	278.9	251.0	api
Calibrator	209.8	214.2	api

Shop	Field	Post	Difference	Tolerance
218.0	209.8	214.2	-4.4	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 10839203	Reference Calibration Date:	19-May-09 18:25:31
Engineer:	D. CULVER	Calibration Date:	19-May-09 18:41:18
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Logging Source S/N: 21480B
Tank Serial Number: GRAND JUNCTION
Reference value assigned to Tank: 52.750
Snow Block S/N: SNOW BLOCK
Calibration Tank Water Temperature: 70 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.983	0.984	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decip):	0.2165	0.2169	0.0005	+/- 0.0020
Calibrated Ratio:	9.91	9.93	0.015	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0674	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 - 10839203	Reference Calibration Date:	19-May-09 18:41:18
Engineer:	D. CULVER	Calibration Date:	19-May-09 19:36:05
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Logging Source S/N: 21480B
Snow Block S/N: SNOW BLOCK

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decps):	0.0674	0.0728	0.0054	+/- 0.0150

PASS/FAIL SUMMARY

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

DUAL SPACED NEUTRON POST CALIBRATION

Tool Name:	DSNT - 10839203	Reference Calibration Date:	19-May-09 19:36:05
Engineer:	D. CULVER	Calibration Date:	20-May-09 11:17:18
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Logging Source S/N: 21480B
Snow Block S/N: SNOW BLOCK

NEUTRON POST-CHECK SUMMARY

	Field Value	Post Value	Difference	Control Limit On Change
Snow-Block Porosity (decps):	0.0728	0.0589	-0.0139	+/- 0.0150

PASS/FAIL SUMMARY

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT - 10733075	Reference Calibration Date:	19-May-09 16:45:08
Engineer:	D. CULVER	Calibration Date:	19-May-09 17:04:25
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

Logging Source S/N: 20785B
Aluminum Block S/N: 63094
Magnesium Block S/N: 63387

Density: 2.610g/cc
Density: 1.685g/cc

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0987	1.0861	0.99 - 1.10

Near Bar Gain	1.0987	1.0801	0.90 - 1.10
Near Dens Gain	1.0366	1.0189	0.90 - 1.10
Near Peak Gain	1.0249	0.9767	0.90 - 1.10
Near Lith Gain	0.9610	0.9323	0.90 - 1.10
Far Bar Gain	1.0207	1.0193	0.90 - 1.10
Far Dens Gain	1.0020	1.0012	0.90 - 1.10
Far Peak Gain	0.9933	0.9904	0.90 - 1.10
Far Lith Gain	0.9614	0.9583	0.90 - 1.10
Near Bar Offset	-0.8438	-0.7308	NONE
Near Dens Offset	-0.2609	-0.1066	NONE
Near Peak Offset	-0.1553	0.2494	NONE
Near Lith Offset	0.3339	0.5726	NONE
Far Bar Offset	-0.2247	-0.2116	NONE
Far Dens Offset	-0.0598	-0.0527	NONE
Far Peak Offset	-0.0032	0.0207	NONE
Far Lith Offset	0.1967	0.2185	NONE
Near Bar Background	918.16	917.93	700 - 1450
Near Dens Background	305.65	304.32	230 - 480
Near Peak Background	131.36	132.26	100 - 210
Near Lith Background	164.09	164.51	125 - 260
Far Bar Background	551.30	550.20	450 - 900
Far Dens Background	213.58	214.60	175 - 345
Far Peak Background	83.18	85.19	70 - 140
Far Lith Background	87.56	88.29	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.690	1.685	-0.005	+/- 0.015
Pe	2.560	2.594	0.034	+/- 0.150
ALUMINUM				
Density (g/cc)	2.612	2.610	-0.002	+/- 0.01500
Pe	3.107	3.100	-0.007	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0008	+/- 0.0110	0.0004	+/- 0.0140
Magnesium Block	-0.0009	+/- 0.0110	-0.0015	+/- 0.0140
Aluminum Block	-0.0004	+/- 0.0110	-0.0003	+/- 0.0140
Resolution	9.94	6.00 - 11.50	9.33	6.00 - 11.50
Internal Verifier(B+D+P+L)	1519	1200 - 2700	938	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 - 10733075

Reference Calibration Date: 19-May-09 17:04:25

Engineer: D. CULVER

Calibration Date: 19-May-09 19:29:48

Software Version: WL INSITE R2.4 (Build 11)

Calibration Version: 1

Aluminum Block S/N: 63094

Density: 2.610g/cc

Magnesium Block S/N: 63387

Density: 1.685g/cc

Pad Temperature: 78.8 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1519.019	1519.574	0.555	15.698
Far (B+D+P+L) cps	938.285	937.373	-0.912	16.552
Near Resolution	9.94	10.17	0.230	0.50
Far Resolution	9.33	9.46	0.130	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:

Passed

Bkg Resolution Check:

Passed

Bkg Verification Check:

Passed

SPECTRAL DENSITY POST CHECK

Tool Name: SDLT - 10733075

Reference Calibration Date: 19-May-09 19:29:48

Engineer: D. CULVER

Calibration Date: 20-May-09 11:05:40

Software Version: WL INSITE R2.4 (Build 11)

Calibration Version: 1

Aluminum Block S/N: 63094

Density: 2.610g/cc

Magnesium Block S/N: 63387

Density: 1.685g/cc

Pad Temperature: 75.2 degF

DENSITY POST CALIBRATION SUMMARY

Measurement	Field	Post	Change	Control Limit +/-
Near (B+D+P+L) cps	1519.574	1519.326	-0.248	15.698
Far (B+D+P+L) cps	937.373	943.309	5.936	16.552
Near Resolution	10.17	10.11	-0.060	0.50
Far Resolution	9.46	9.59	0.130	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:

Passed

Bkg Resolution Check:

Passed

Bkg Verification Check:

Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10733075

Reference Calibration Date: 17-Apr-09 11:05:20

Engineer: D. CULVER

Calibration Date: 19-May-09 17:25:40

Software Version: WL INSITE R2.4 (Build 11)

Calibration Version: 1

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2070.73	-1781.96	-7000.00 - -1000.00
Pad Gain	0.0003808	0.0003708	0.000200 - 0.000600
Arm Offset	-2863.57	-3077.51	-5000.00 - -3000.00

Arm Offset	2.000000	0.000000	0.000000
Arm Gain	0.0005517	0.0005525	0.000300 - 0.000700
Arm Power	-0.000004620	-0.000004777	-0.000010 - 0.000010

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)	1.94	2.00	0.06	+/- 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)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.01	15.00	-0.01	+/- 0.20

PASS/FAIL SUMMARY

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

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
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SDLT CALIPER FIELD CALIBRATION

Tool Name:	SDLT - 10733075	Reference Calibration Date:	19-May-09 17:25:40
Engineer:	D. CULVER	Calibration Date:	19-May-09 19:33:37
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.76	0.01	+/- 0.10
Ring Diameter	8.25	8.22	-0.03	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

SDLT CALIPER POST CALIBRATION

Tool Name:	SDLT - 10733075	Reference Calibration Date:	19-May-09 19:33:37
Engineer:	D. CULVER	Calibration Date:	20-May-09 11:10:26
Software Version:	WL INSITE R2.4 (Build 11)	Calibration Version:	1

MEASURED CALIPER VALUES

Measurement	Field	Post	Change	Control Limit On New Value
Pad Extension	3.76	3.77	0.01	+/- 0.10
Ring Diameter	8.22	8.33	0.11	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	ACRt - E171_S970	Reference Calibration Date:	14-Apr-09 09:51:52
Engineer:	L. SMITH	Calibration Date:	12-May-09 10:54:42

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0045	1.05	0.95	1.0092	1.05	0.95	1.0075	1.05
A2 (50")	0.95	1.0058	1.05	0.95	1.0114	1.05	0.95	1.0115	1.05
A3 (29")	0.95	1.0055	1.05	0.95	1.0102	1.05	0.95	1.0084	1.05
A4 (17")	0.95	1.0002	1.05	0.95	1.0029	1.05	0.95	1.0026	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9935	1.05	0.95	0.9919	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9802	1.05	0.95	0.9785	1.05

TYPICAL SONDE OFFSET RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-0.991	2	-6	-3.810	-2	-8	-4.678	-2
A2 (50")	-7	-2.058	-2	-6	-3.625	-2	-7	-4.414	-2
A3 (29")	-27	-12.797	-9	-9	-3.739	-3	-7	-2.911	-1
A4 (17")	-180	-93.607	-60	-45	-29.631	-15	-39	-25.012	-13
A5 (10")	N/A	N/A	N/A	-150	-105.798	-50	-80	-50.762	-10
A6 (6")	N/A	N/A	N/A	175	332.292	525	90	159.206	270

TRANSMITTER CURRENT GAIN

R-MUD VERIFICATION

Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohmm)	Upper (ohm-m)
12K	0.6	0.8494	1.3	Mud Cell	0.95	1.001	1.05
36K	1.0	1.3140	2.0				
72K	1.0	1.6069	2.0				

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-10832795						
Gamma Ray Calibrator	218.0	209.8	214.2	-4.4	+/- 9.00	api
DSNT-10839203						
Snow-Block Porosity	0.0674	0.0728	0.0589	0.0139	+/- 0.0150	decg
SDLT-10733075						
Near(B+D+P+L)	1519.019	1519.574	1519.326	0.248	+/-15.698	cps
Far(B+D+P+L)	938.285	937.373	943.309	-5.936	+/-16.552	cps
Pad Extension	3.75	3.76	3.77	-0.01	+/-0.10	in
Ring Diameter	8.25	8.22	8.33	-0.110	+/-0.15	in
ACRt-E171_S970						
Mud Cell	1.001	-----	-----	0.000	-----	ohmm

Data: S_LEVRCH_13_10A\0001 IQ-TRIPLE\IDLE

Date: 20-May-09 11:18:05

HALLIBURTON

CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	20-May-09 05:42:01	2960.25	Logging 001 20-May-09 05:41 Up @2960.3f
	20-May-09 05:56:28	2348.79	Halting 001 20-May-09 05:41 Up @2960.3f
	20-May-09 06:01:17	2372.50	Logging 002 20-May-09 06:01 Dn @2372.5f

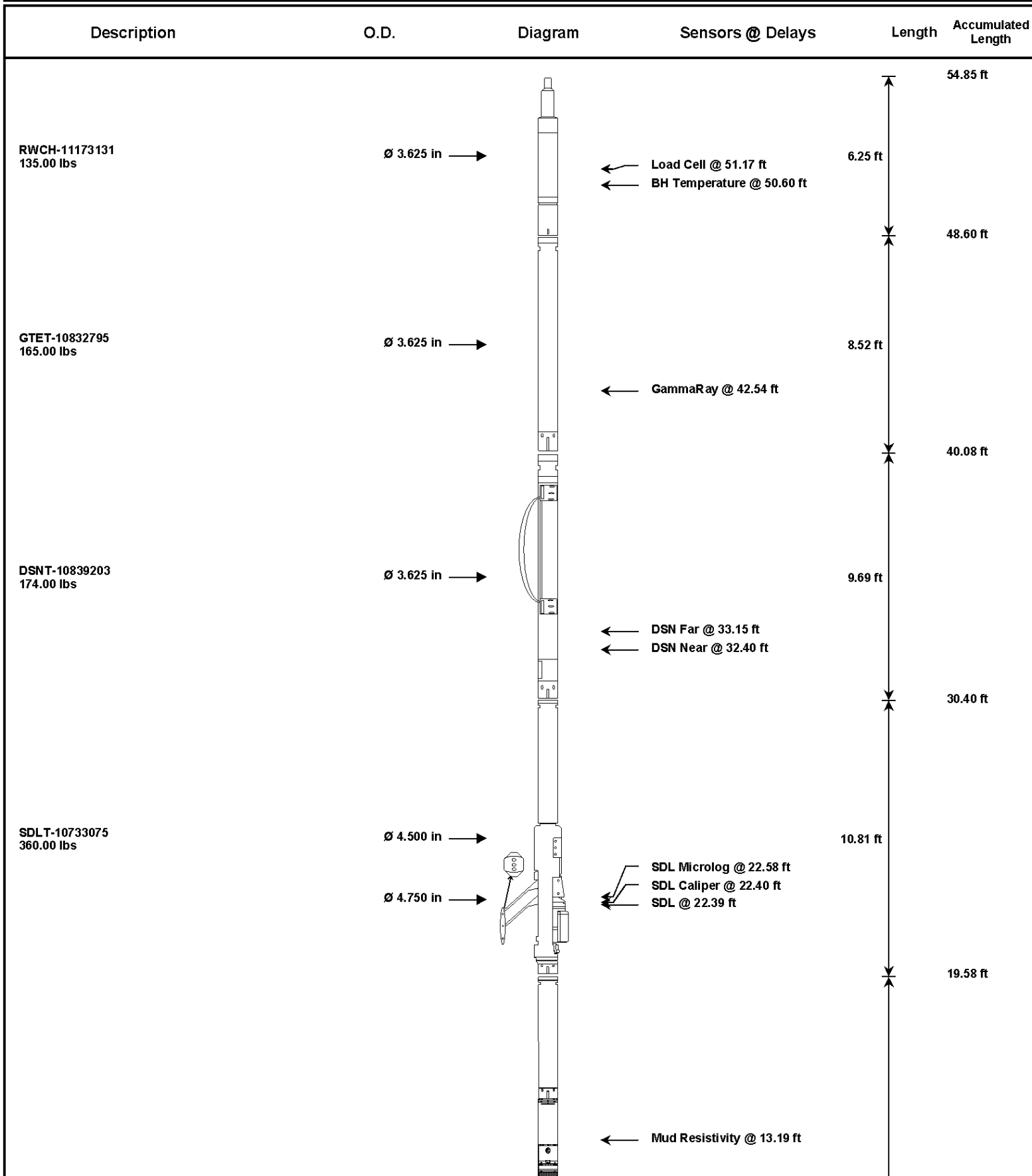
20-May-09 06:52:11 9970.53 Halting 002 20-May-09 06:01 Dn @2372.5f
20-May-09 06:59:04 10282.75 Logging 003 20-May-09 06:59 Up 10282.8f
20-May-09 10:03:35 97.33 Halting 003 20-May-09 06:59 Up 10282.8f

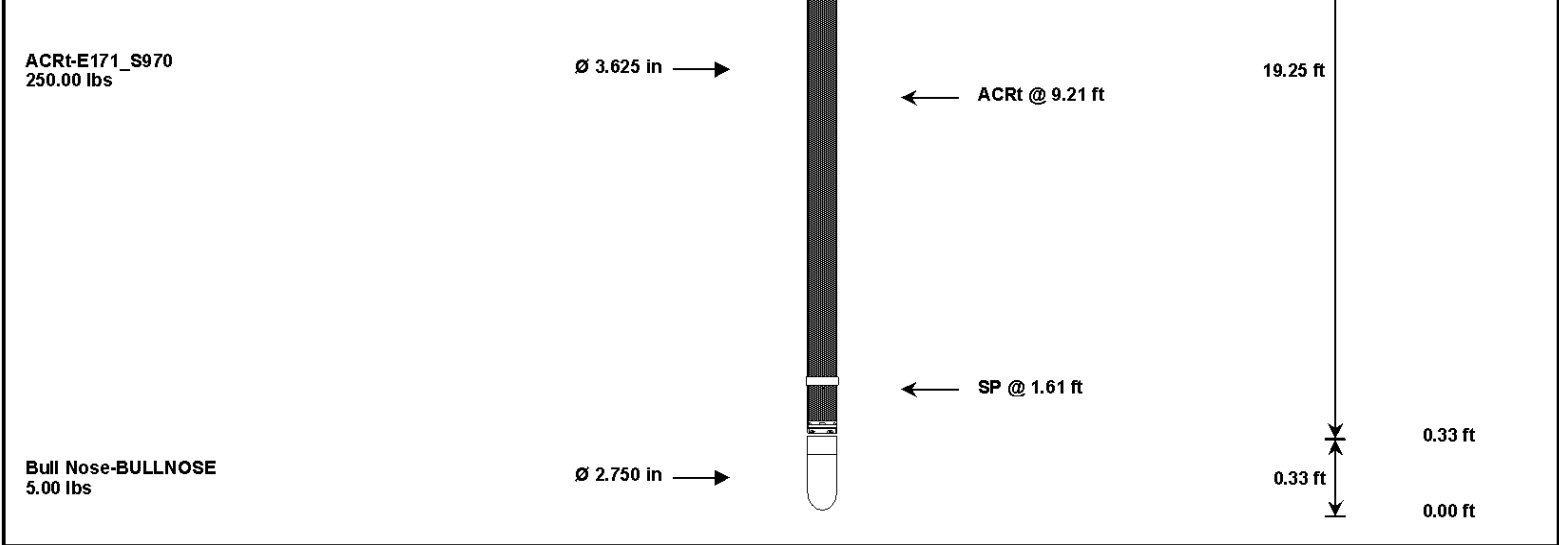
Data: S_LEVRCH_13_10A\0001 IQ-TRIPLE\HW10991

Date: 20-May-09 10:14:01

HALLIBURTON

TOOL STRING DIAGRAM REPORT





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
RWCH	Releasable Wireline Cable Head	11173131	135.00	6.25	48.60	300.00	
GTET	Natural Gamma Ray Tool	10832795	165.00	8.52	40.08	60.00	
DSNT	Dual Spaced Neutron	10839203	174.00	9.69	30.40	60.00	
DCNT	DSN Decentralizer	10845743	50.00	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	10733075	360.00	10.81	19.58	60.00	
ACRt	Array Compensated True Resistivity	E171_S970	250.00	19.25	0.33	300.00	
SP	SP Ring	PROTO1	0.00	0.25	*	1.61	300.00
BLNS	Bull Nose	BULLNOSE	5.00	0.33	0.00	300.00	
Total			1,139.00	54.85			
* Not included in Total Length and Length Accumulation.							
Data: S_LEVRCH_13_10A\0001 IQ-TRIPLE\NDLE					Date: 20-May-09 05:12:51		

COMPANY	LARAMIE ENERGY		
WELL	SOUTH LEVERICH 13-10A		
FIELD	RULISON		
COUNTY	GARFIELD	STATE	COLORADO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY	