

HALLIBURTON

NEUTRON POROSITY
LOG
(PRIMARY LOG)

SCALE 1:240

Company	PIONEER NATURAL RESOURCES			
Well	THUROW-TATE ATU-1			
Field	HUGOTON PANOMA			
County	GRANT	State	KANSAS	
Company PIONEER NATURAL RESOURCES				
Well THUROW-TATE ATU-1				
Field HUGOTON PANOMA				
County GRANT		State KANSAS		
API No.: 15-067-21722		Serv #: 8		
Location:		Other Services		
200' FNL & 2640' FWL		4.70" GAUGE RING CBL		

Sec: 33 Twp: 30S Rge: 36W

Sec: 33 Twp: 30S Rge: 36W

KB , 7 Ft. above perm. datum

Elevation 3028'

Elevation

Permanent Datum
Log Measured From
Drilling Measured From

KB

Elevation 3028'

K.B. 3035'
D.F. N/A
G.L. 3028'

Date @ Time Logged 27 APR 2010 @ 14:00

Type Fluid in Hole

WATER

Run No. ONE

Density of Fluid

8.3

Depth - Driller 3095'

Fluid Level

30'

Depth - Logger 3028'

Cement Top Est. Logged

100'

Bottom - Logged Interval 3045.5'

Equipment / Location

10011366 / LIB

Top - Log Interval 30'

Recorded by

P.NICHOLS

Max. Recorded Temp. N/A

Witnessed by

S.HADDOCK

CEMENTING DATA

Surface String

Protection String

Production String

Date / Time Cemented

String

Liner

Primary / Squeeze

String

String

Expected

String

String

Compressive Strength

String

String

Cement Volume

String

String

Cement Type / Weight

String

String

Formulation

String

String

Mud Type / Mud Wgt.

String

String

Run Number

String

String

ONE

String

String

TWO

String

String

7.875"

String

String

606'

String

String

3095'

String

String

8.625"

String

String

5.5"

String

String

24#

String

String

17#

String

String

SURFACE

String

String

606'

String

String

3095'

String

String

606'

String

String

3095'

String

String

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.

Comments

PRIMARY LOG

MARKER JOINT @ 2321' - 2335'

PREVIOUS 5.5" 17# CASING CALIBRATION
THANKYOU FOR USING HALLIBURTON SERVICES.
CREW: HAMMOND, HUMISTON.

Service Ticket No. 8130109 API No. 15-067-21722 PGM Ver WARRIOR 7.0

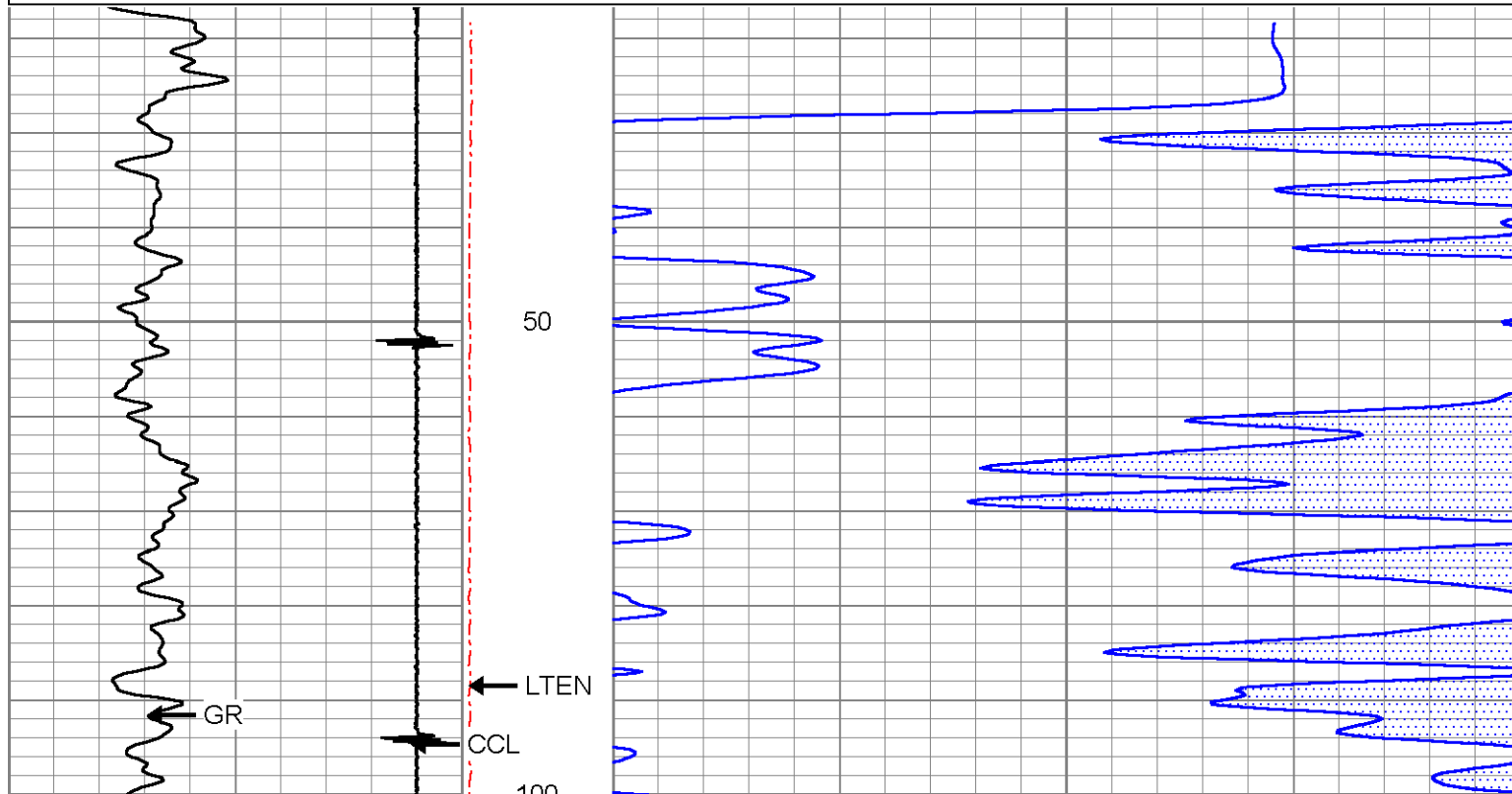
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client

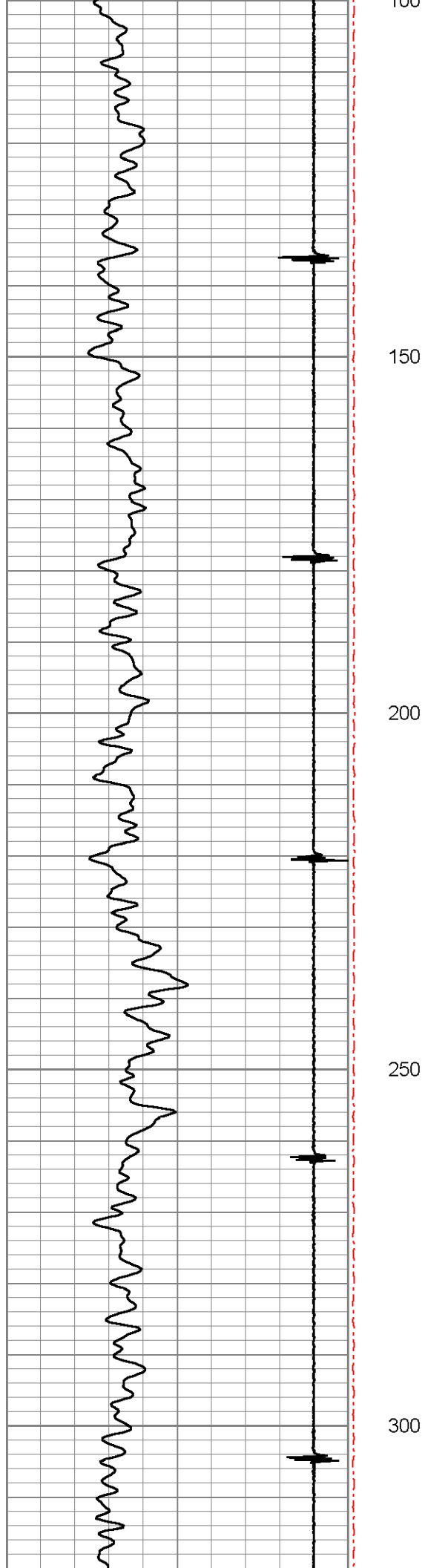
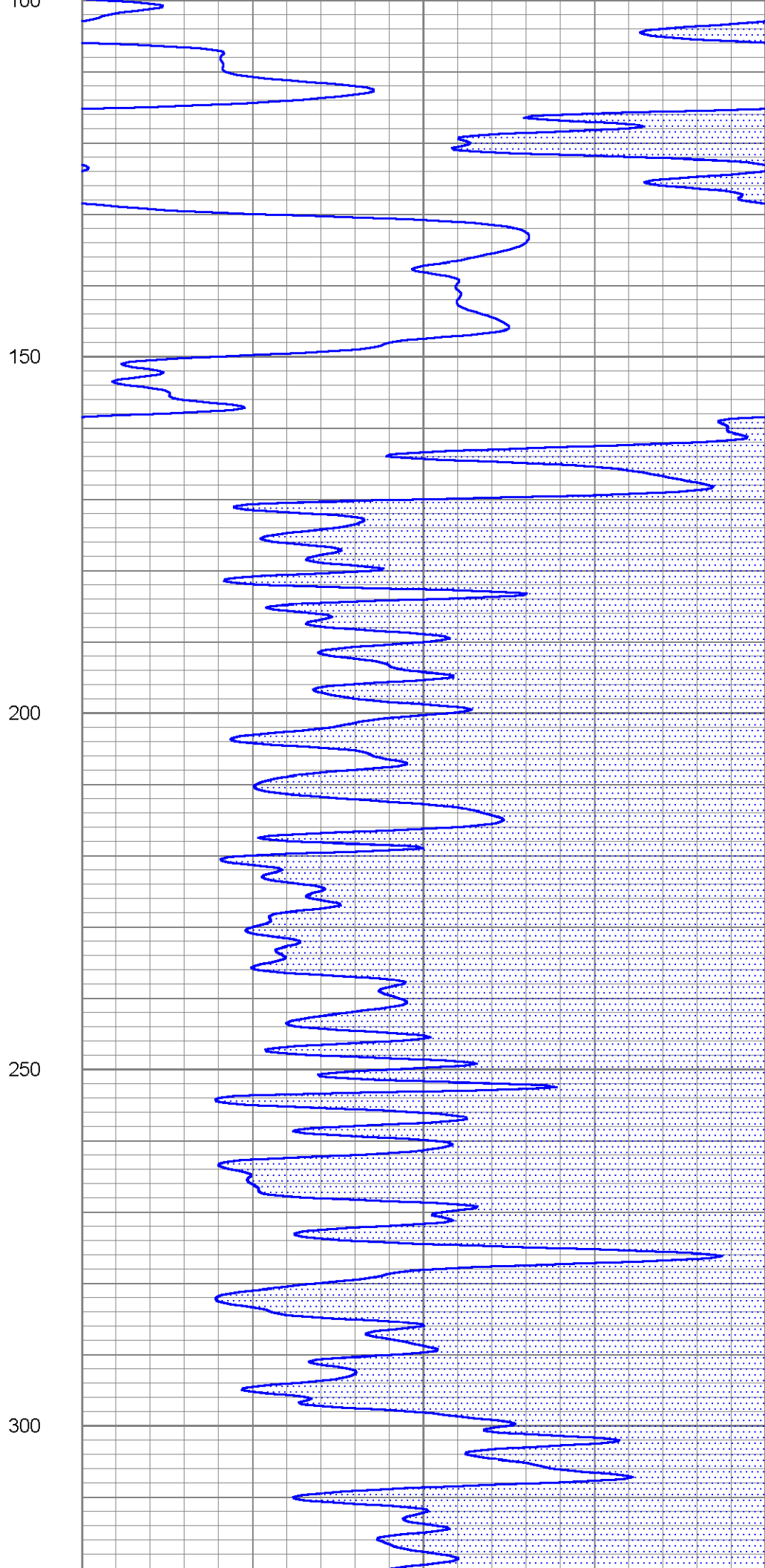
EQUIPMENT DATA

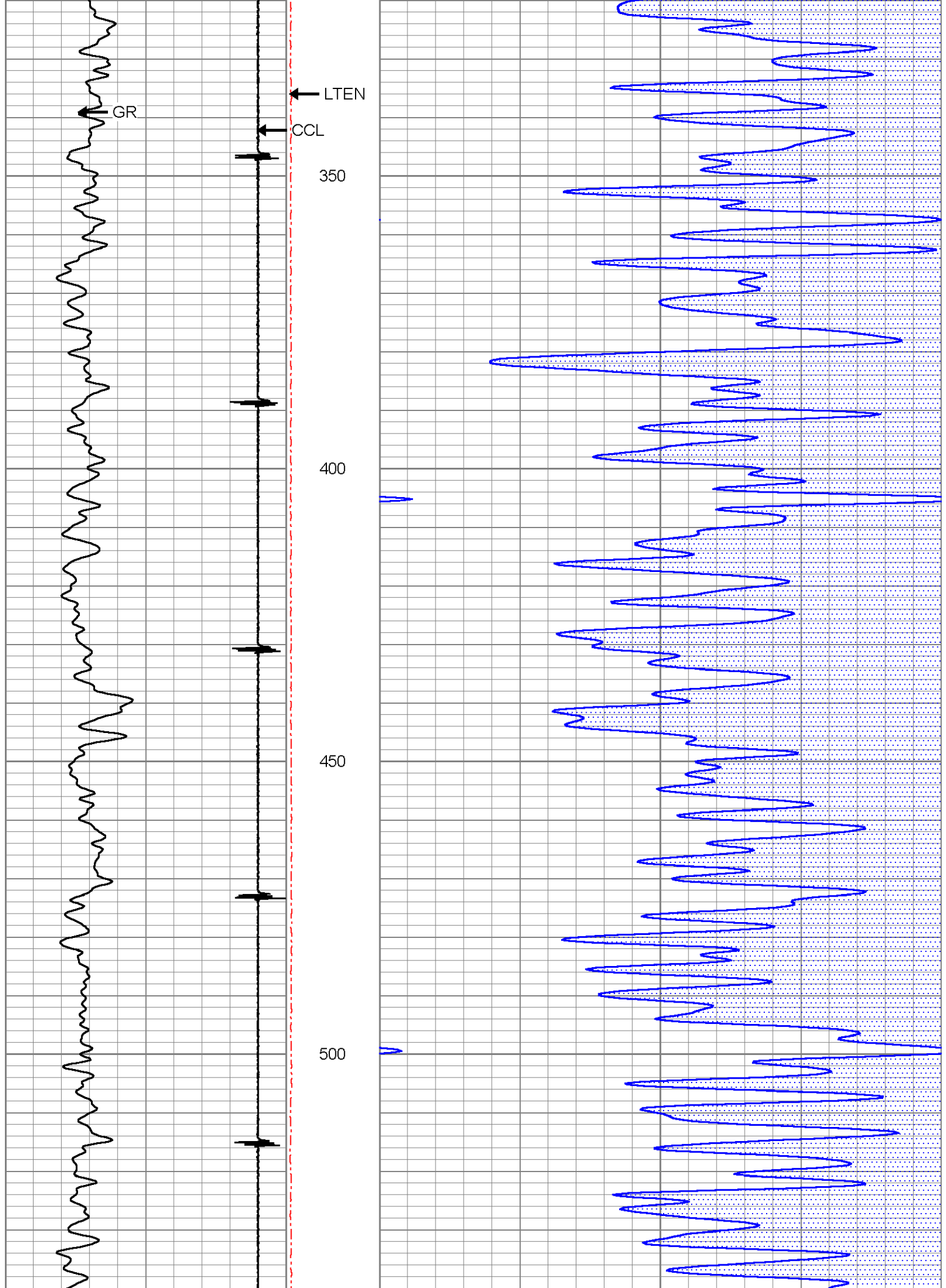
CBL		GAMMA RAY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE

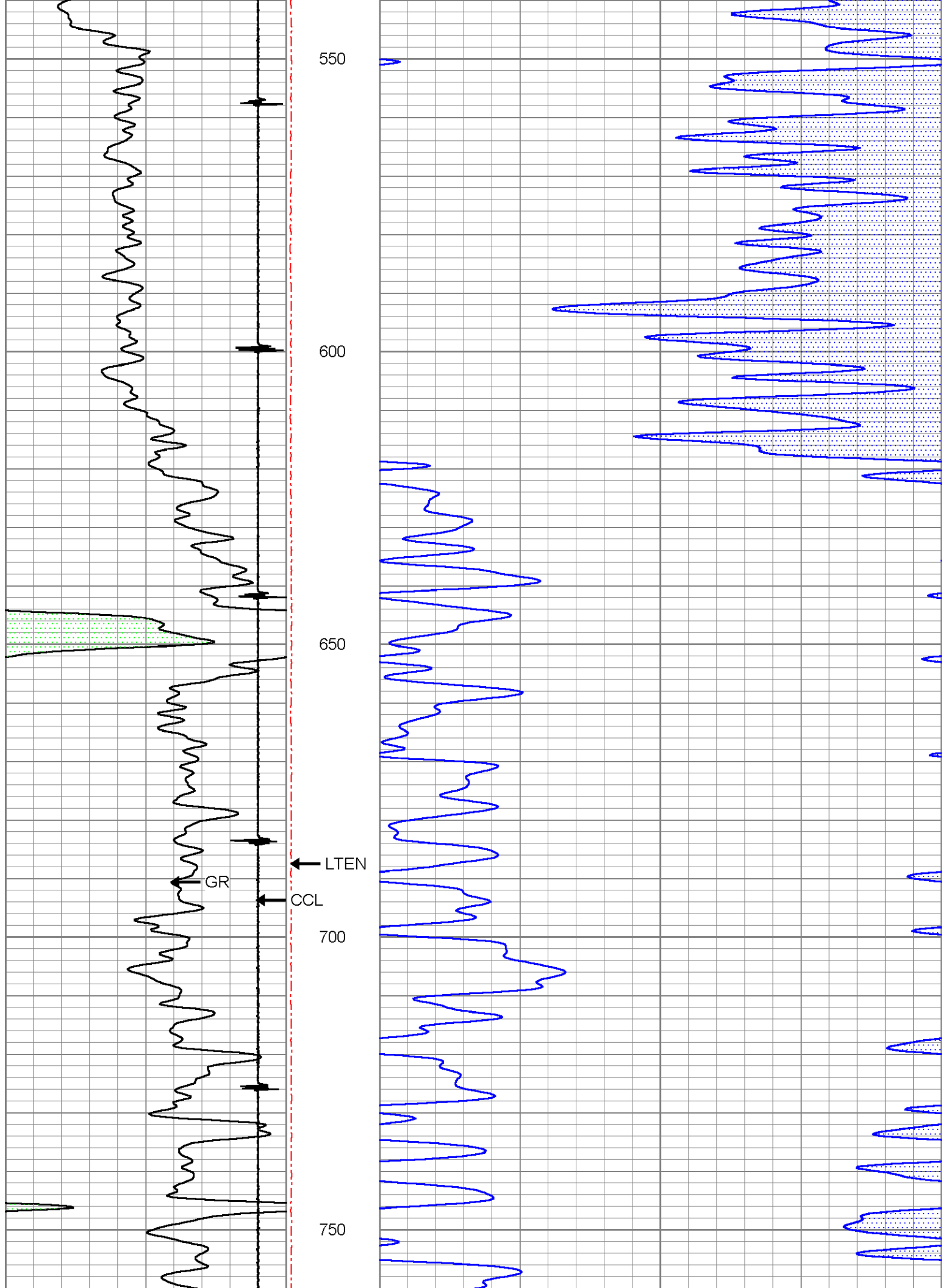
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	
Serial No.	060801A	Serial No.	070738	Serial No.	070817	Serial No.	
Model No.	PROBE	Model No.	PROBE	Model No.	PROBE	Model No.	
Diameter	2.75"	Diameter	2.75"	Diameter	2.75"	Diameter	
LOGGING DATA							
General Data							
Pass	Depths		Well Head	Speed	Logging Run Comments		
No.	From	To	Pressure	Ft/Min			
ONE	3028'	30'	0	38	MAIN PASS		
	GAMMA		TRAVEL TIME		AMP		MSG
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L
ONE	0	150	181	281	0	100	200
	150	300			0	20	1200
DIRECTIONAL INFORMATION							
Maximum Deviation	N/A	deg. @	N/A	KOP	N/A		

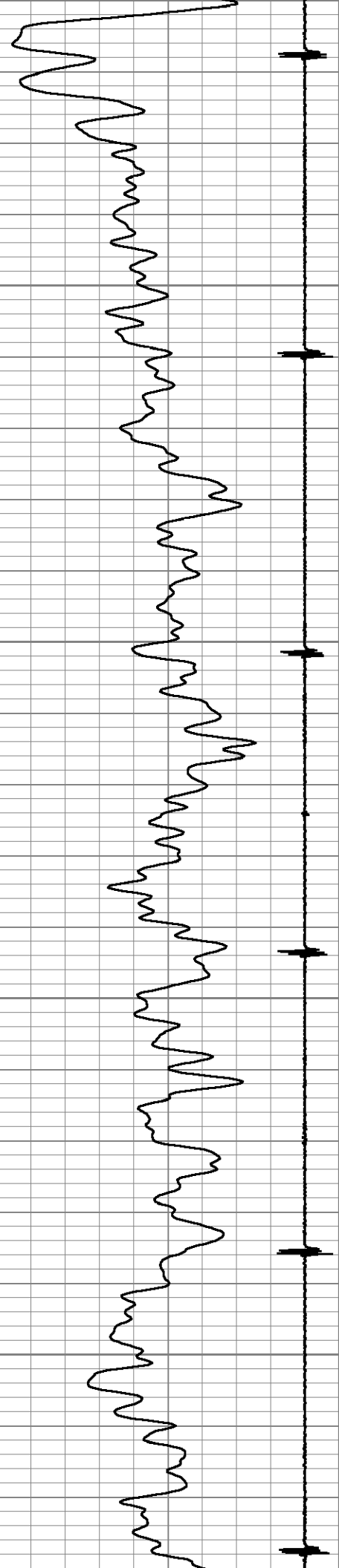
HALLIBURTON MAIN LOG SECTION SCALE 1:240 Database File: pnr_atu1_cbl_dsn.db Dataset Pathname: pass4 Presentation Format: dsplib Dataset Creation: Wed Apr 27 12:58:14 2011 by Log Halliburton Casedho Charted by: Depth in Feet scaled 1:240							
0	GR (GAPI)	150	LTEN	30	NEUTRON POR (pu)		-10
9	CCL	-1	0 (lb)2000	70	CNPOR2 (pu)		30









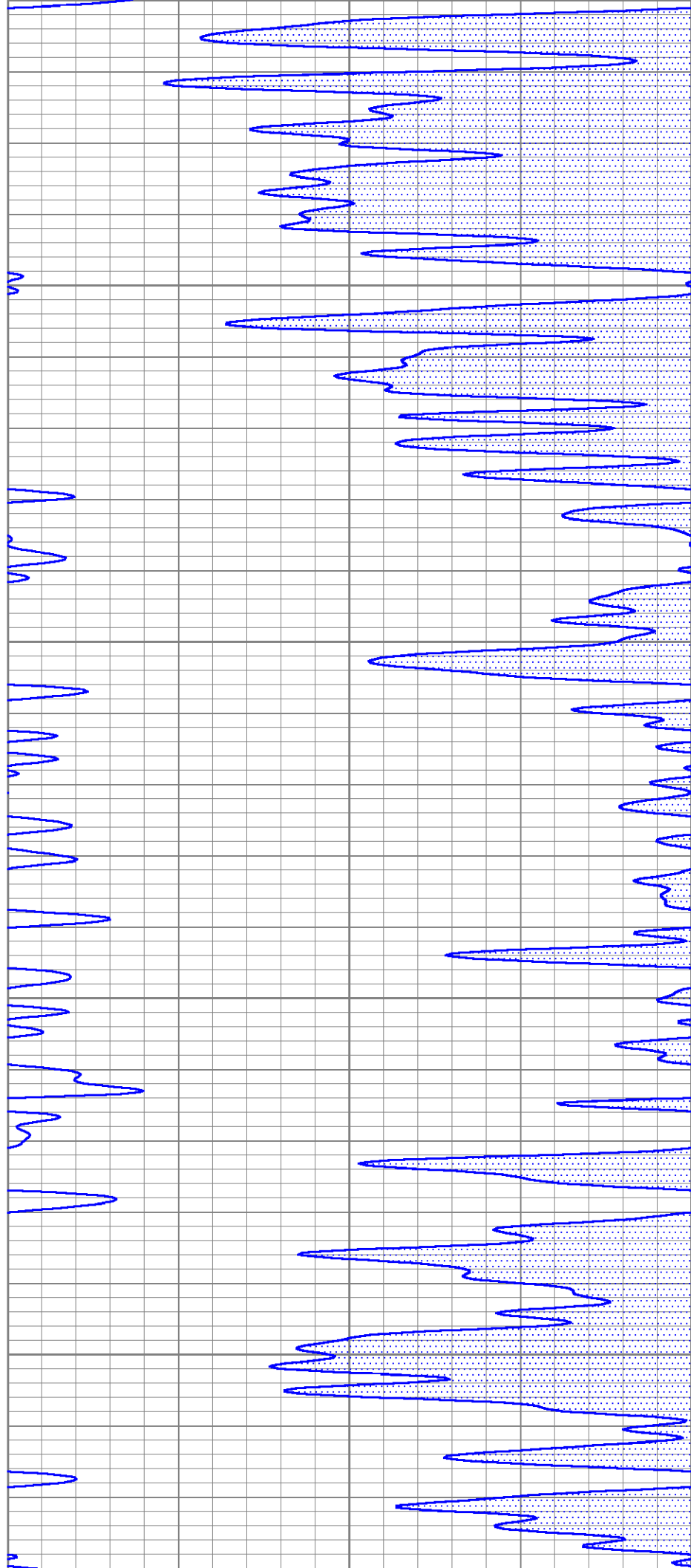


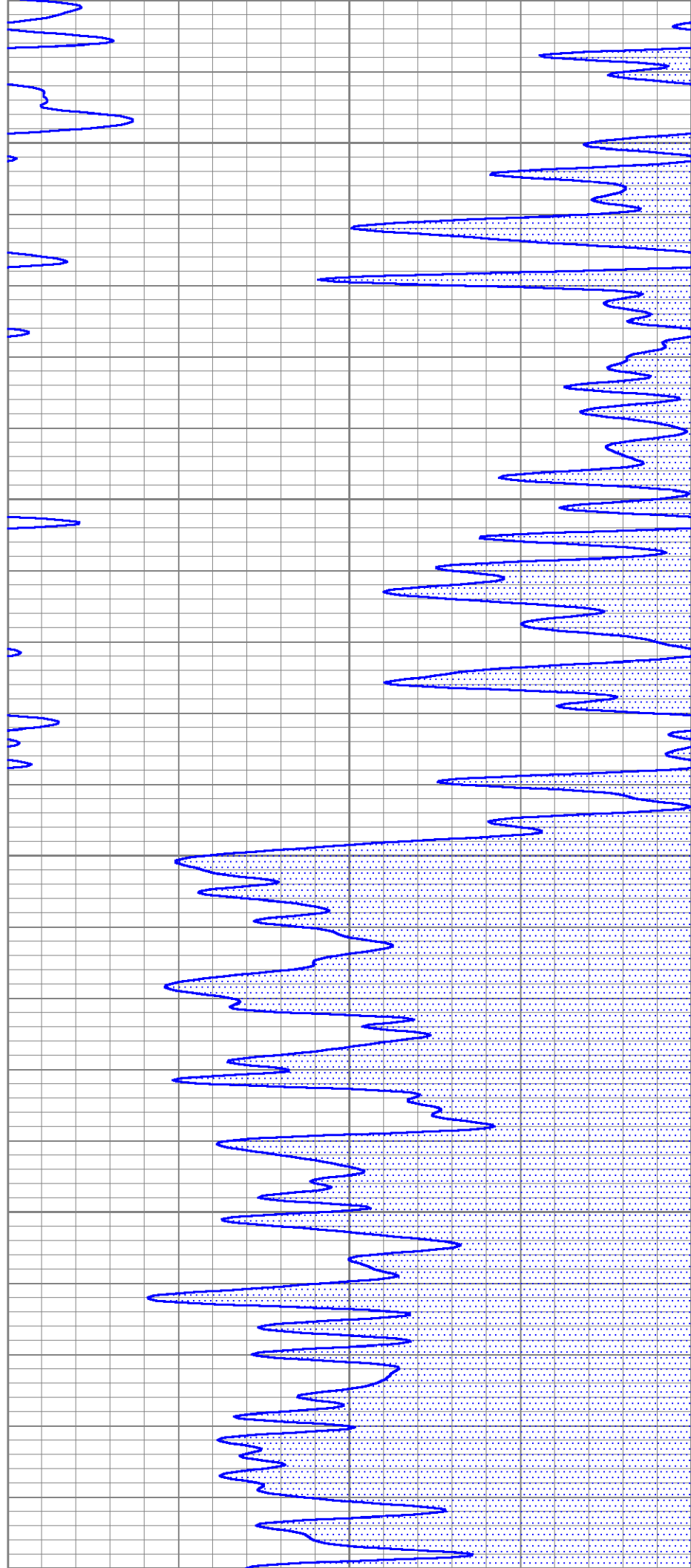
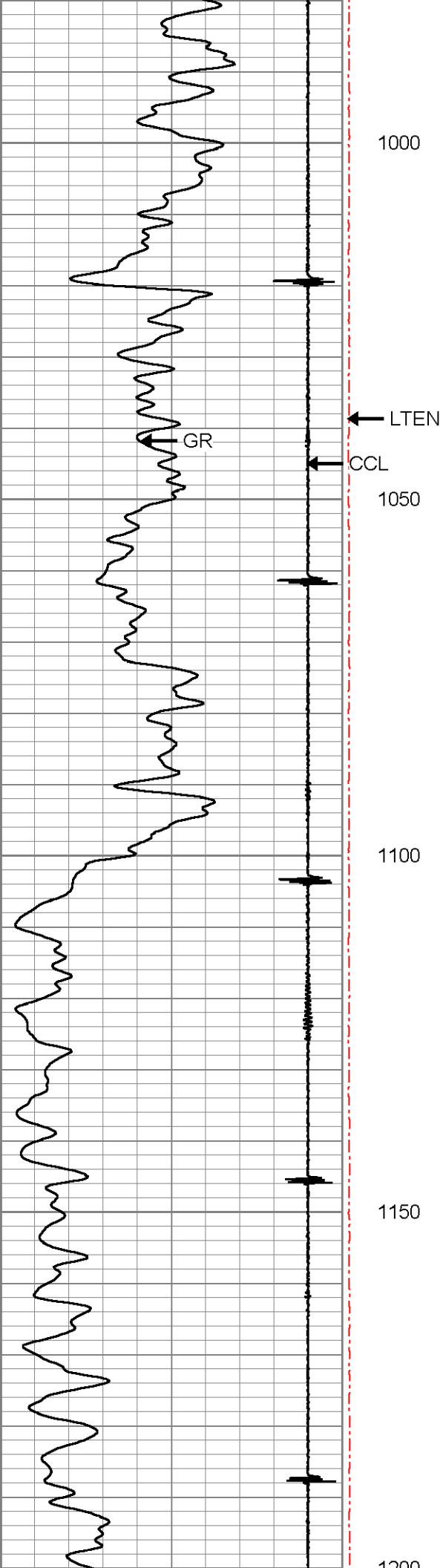
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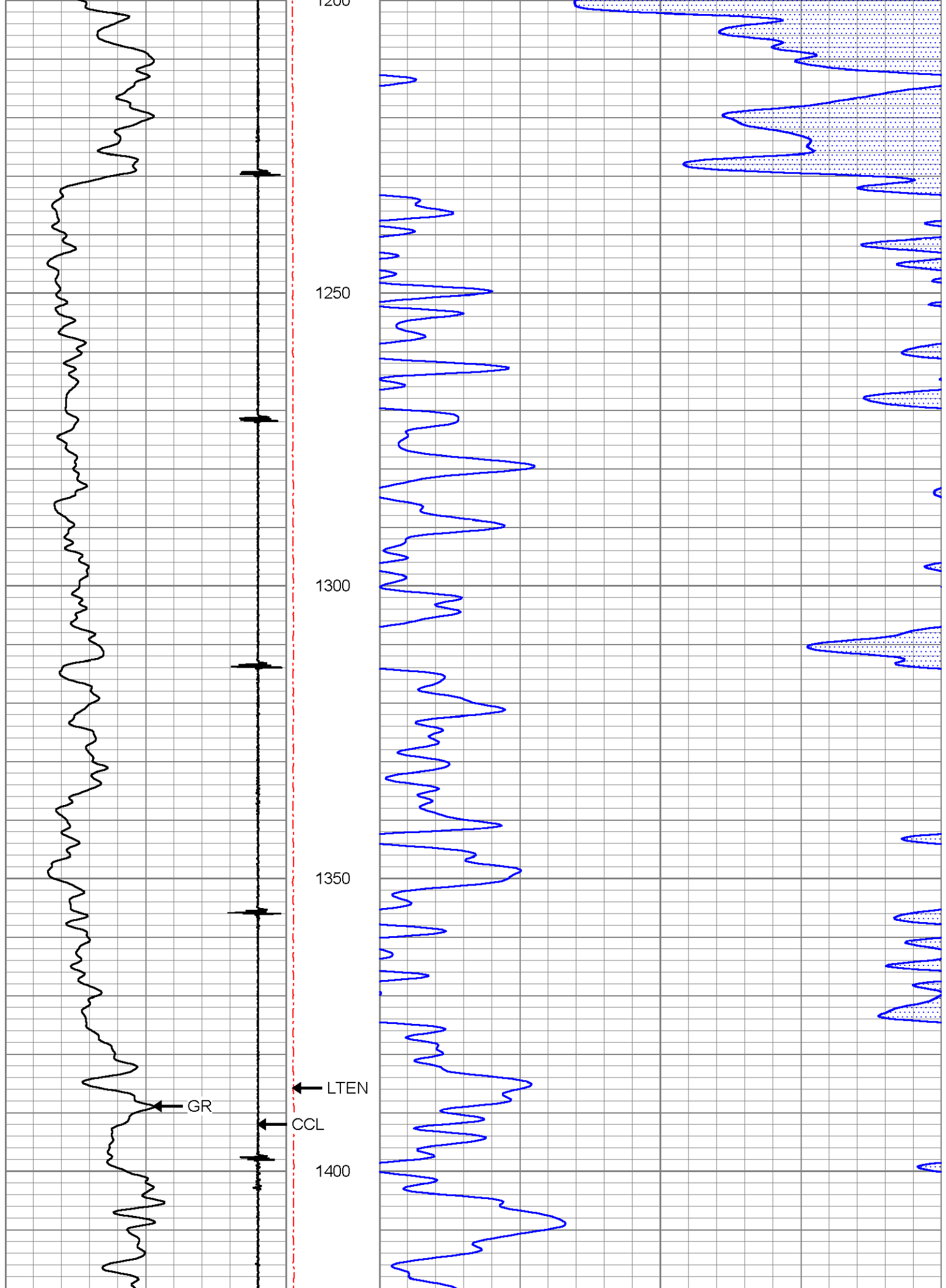
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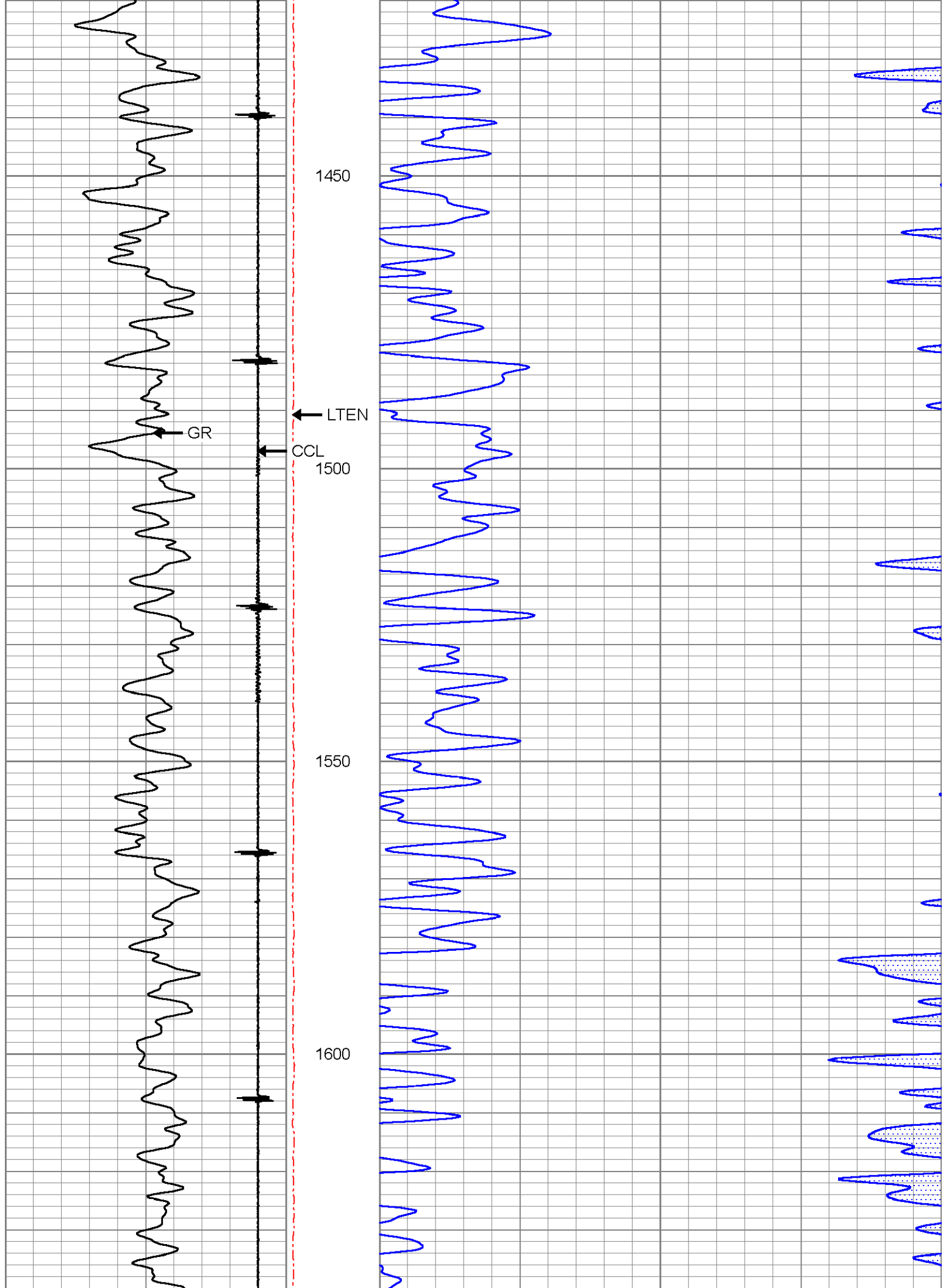
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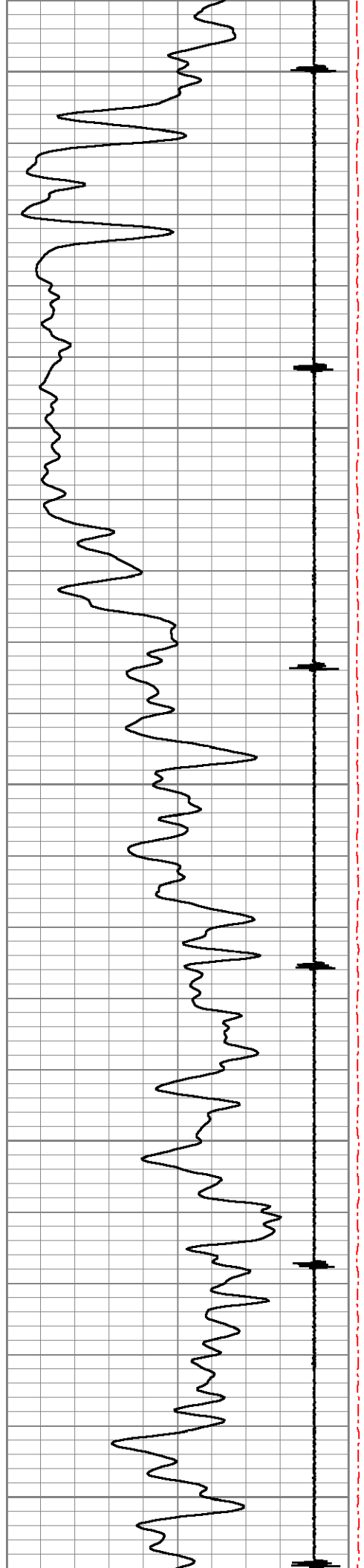
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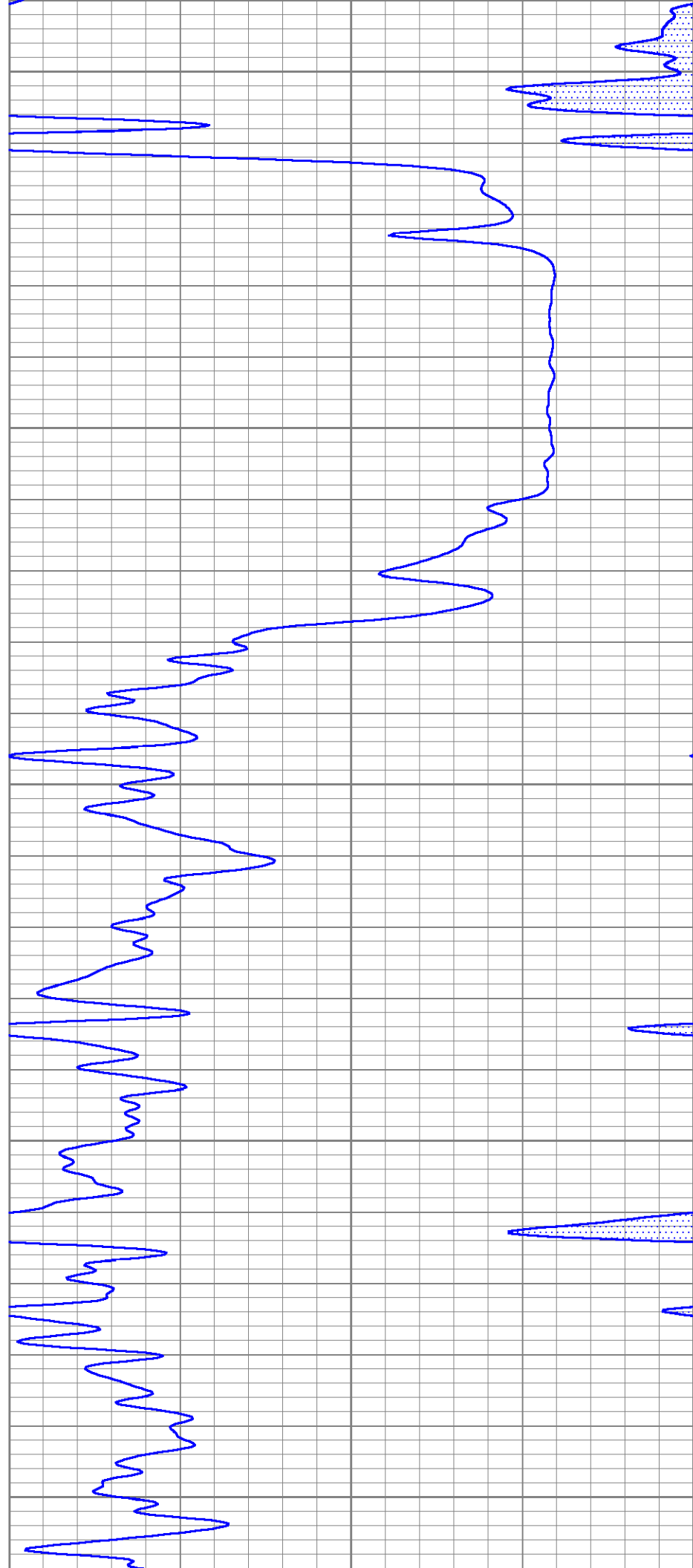
1650

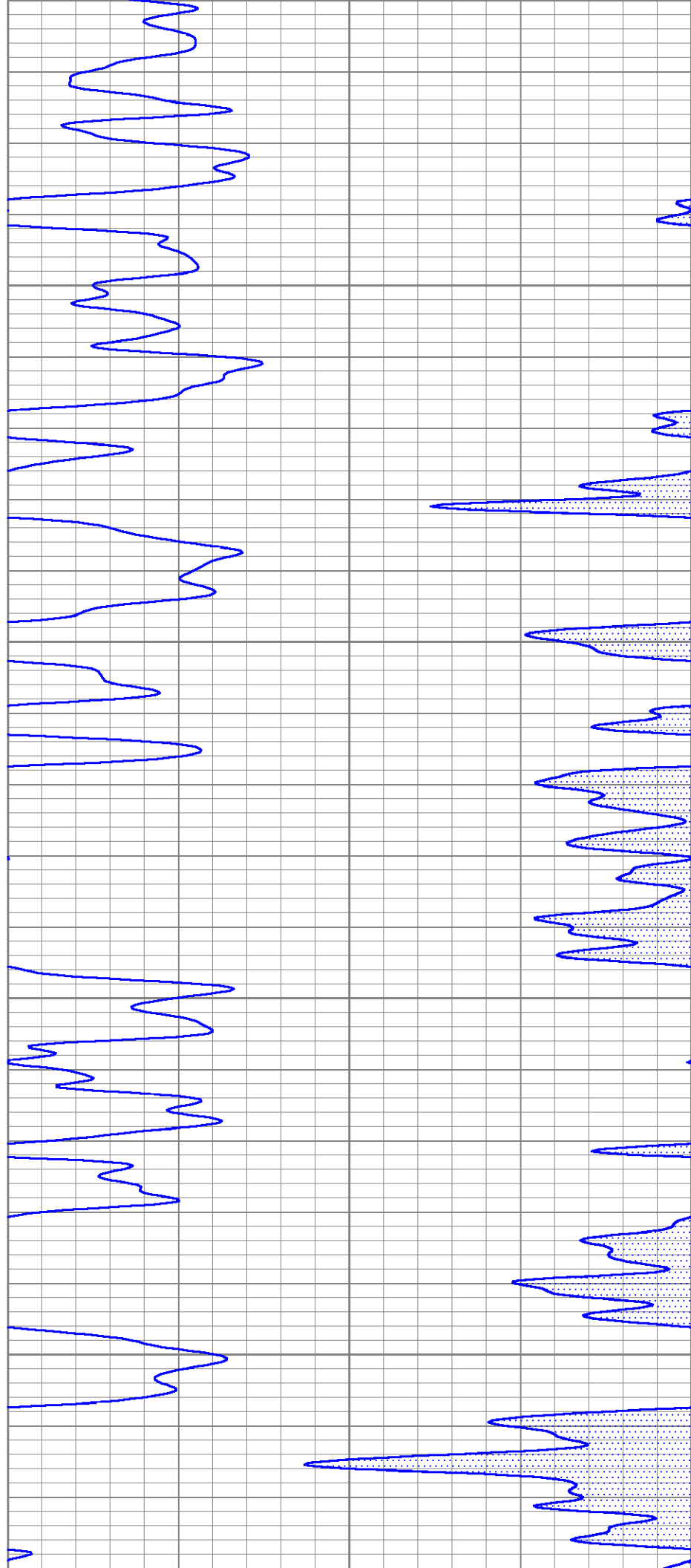
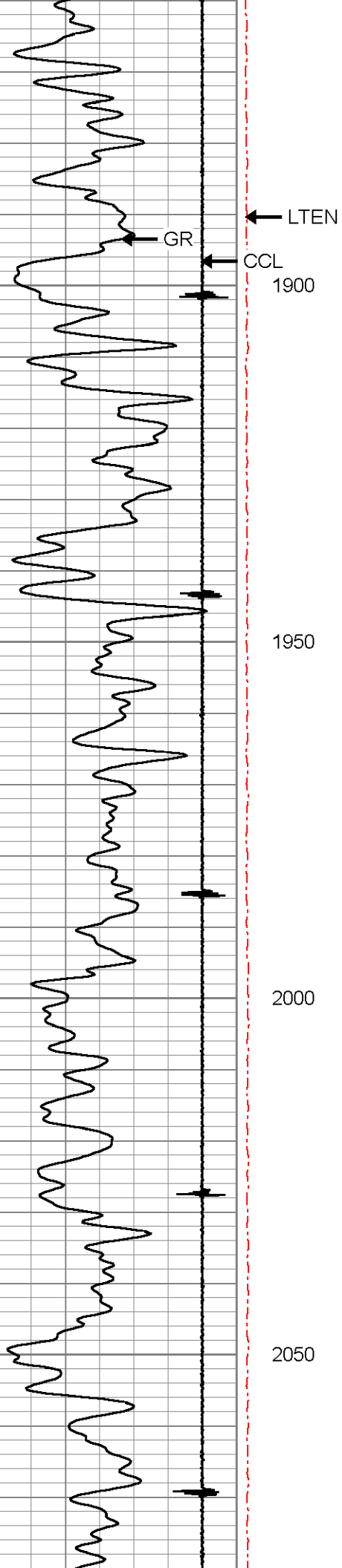
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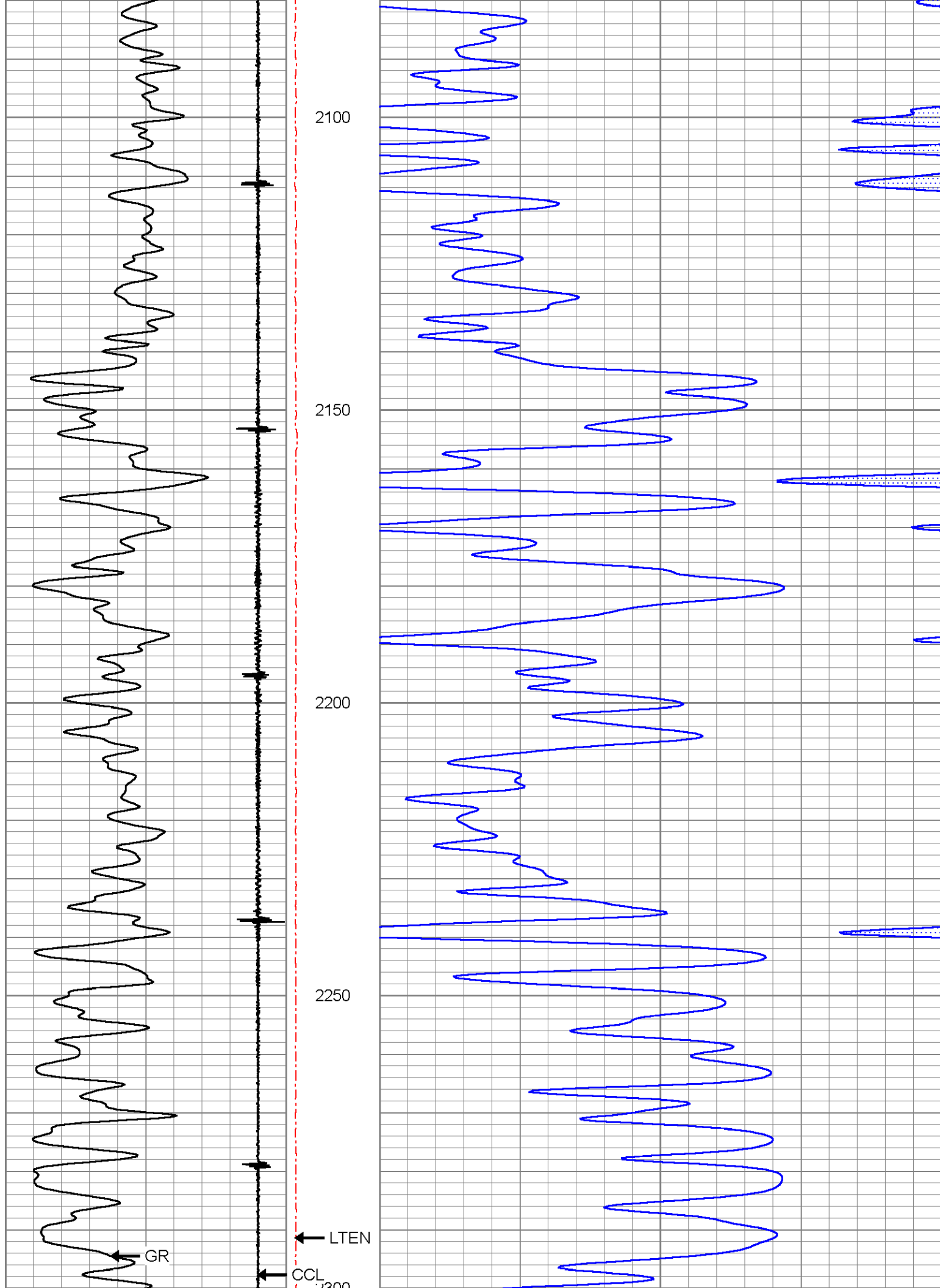
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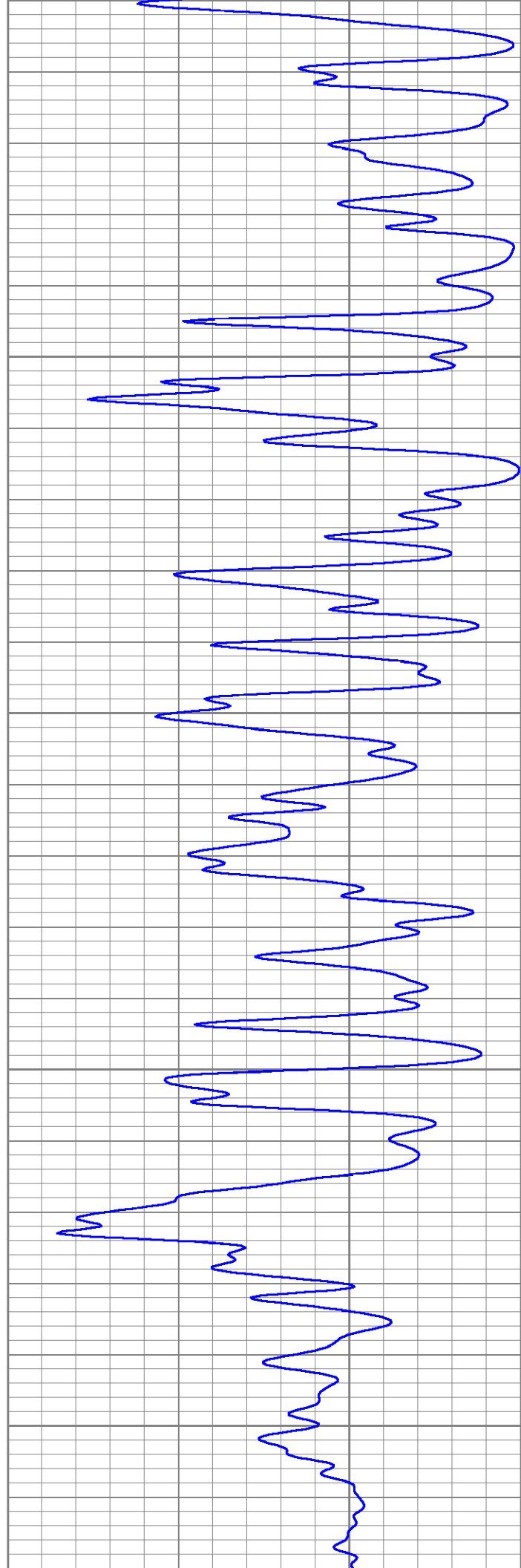
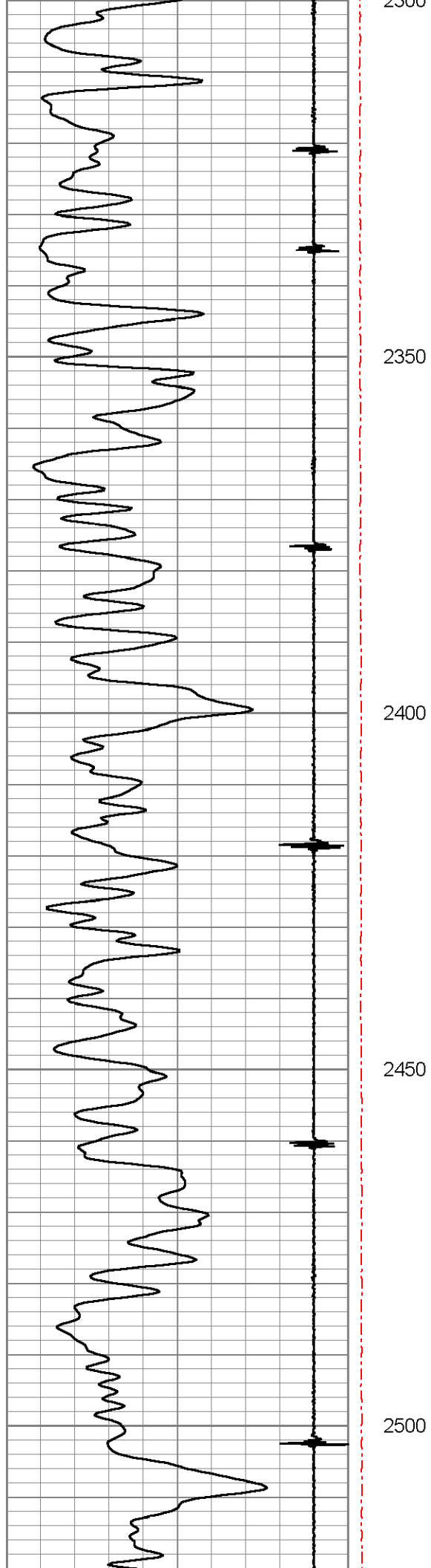
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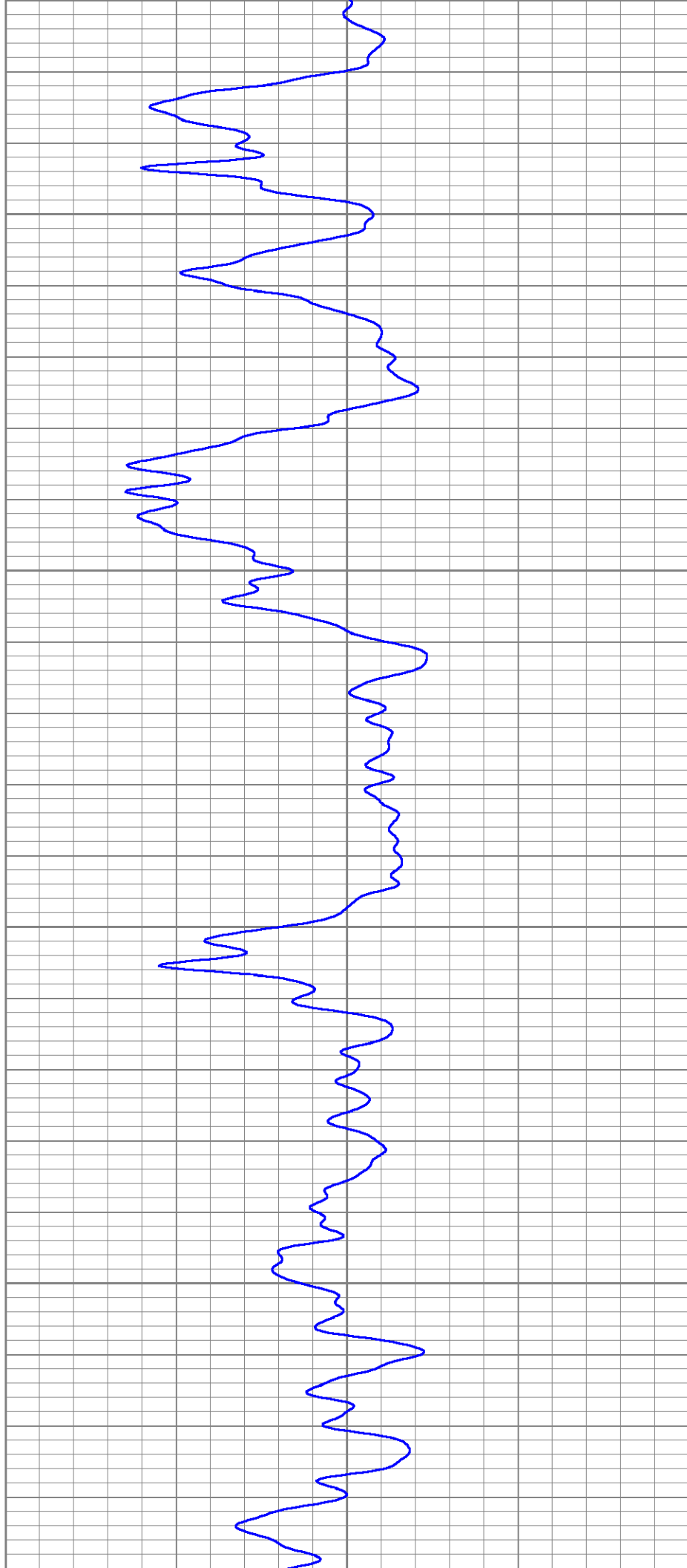
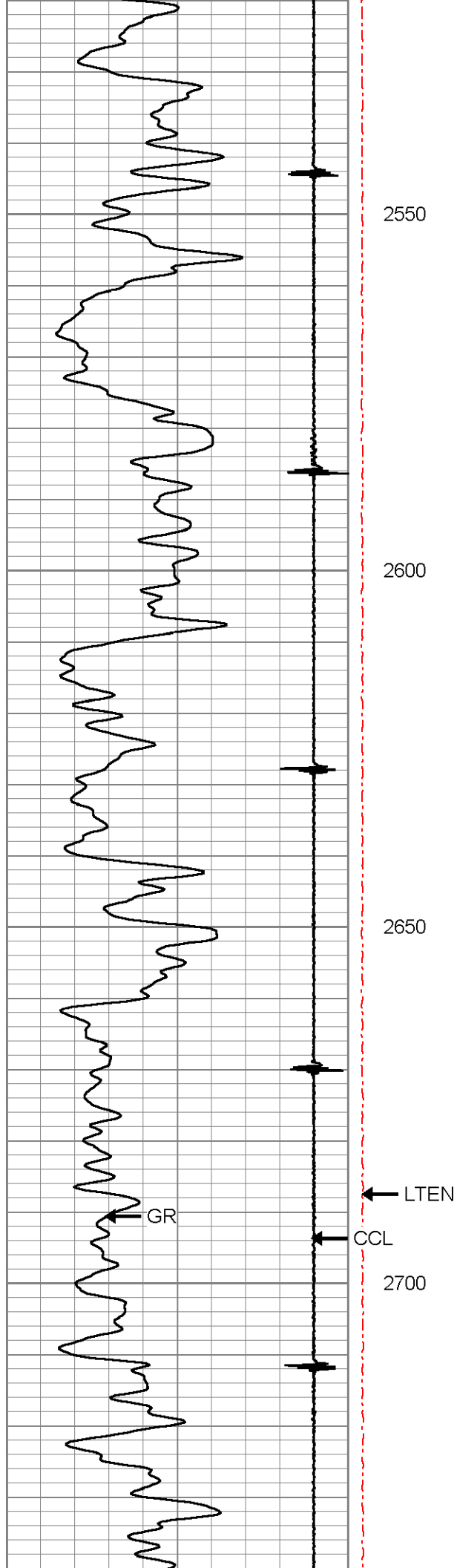
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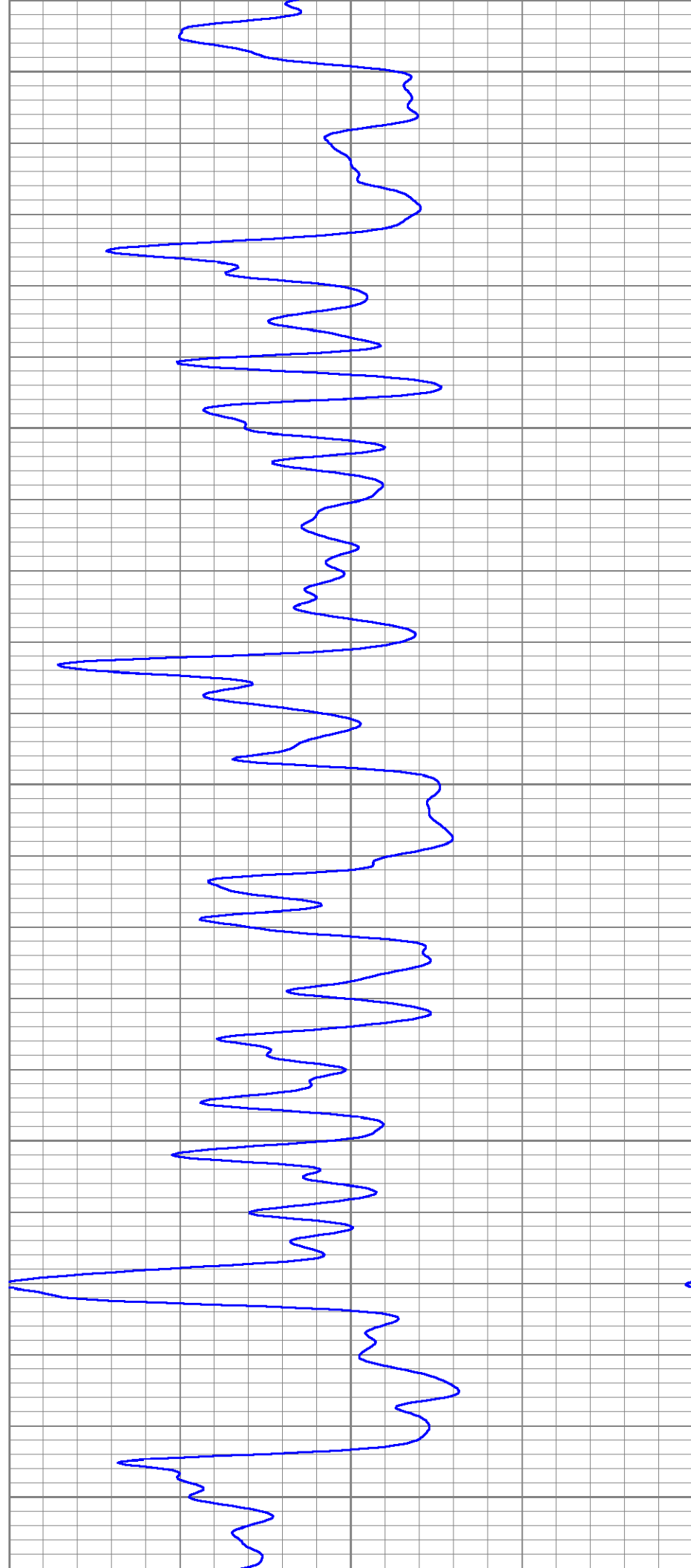
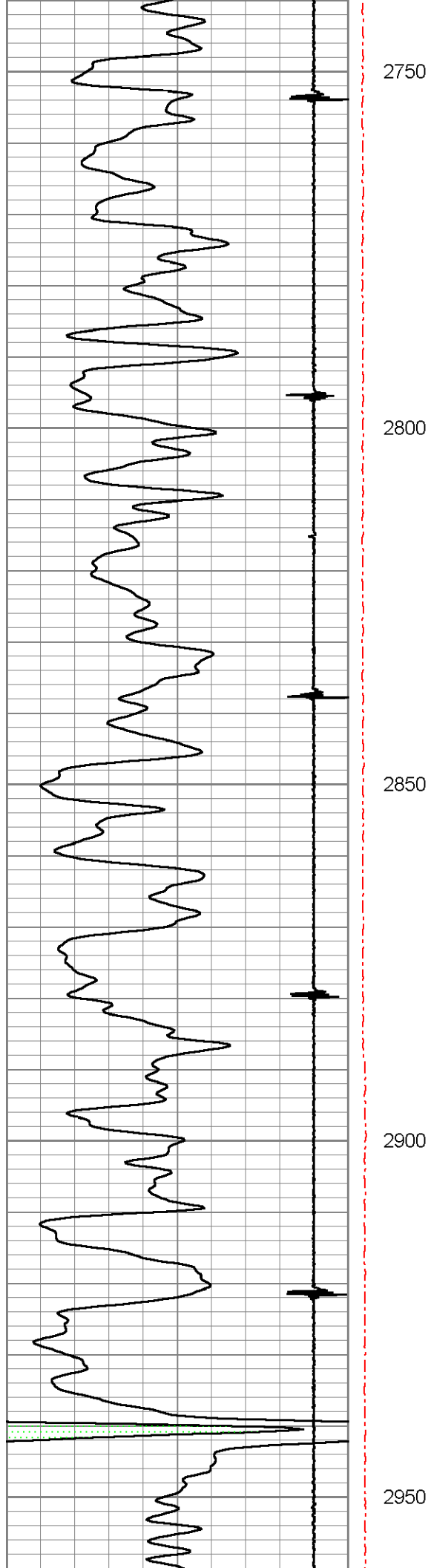


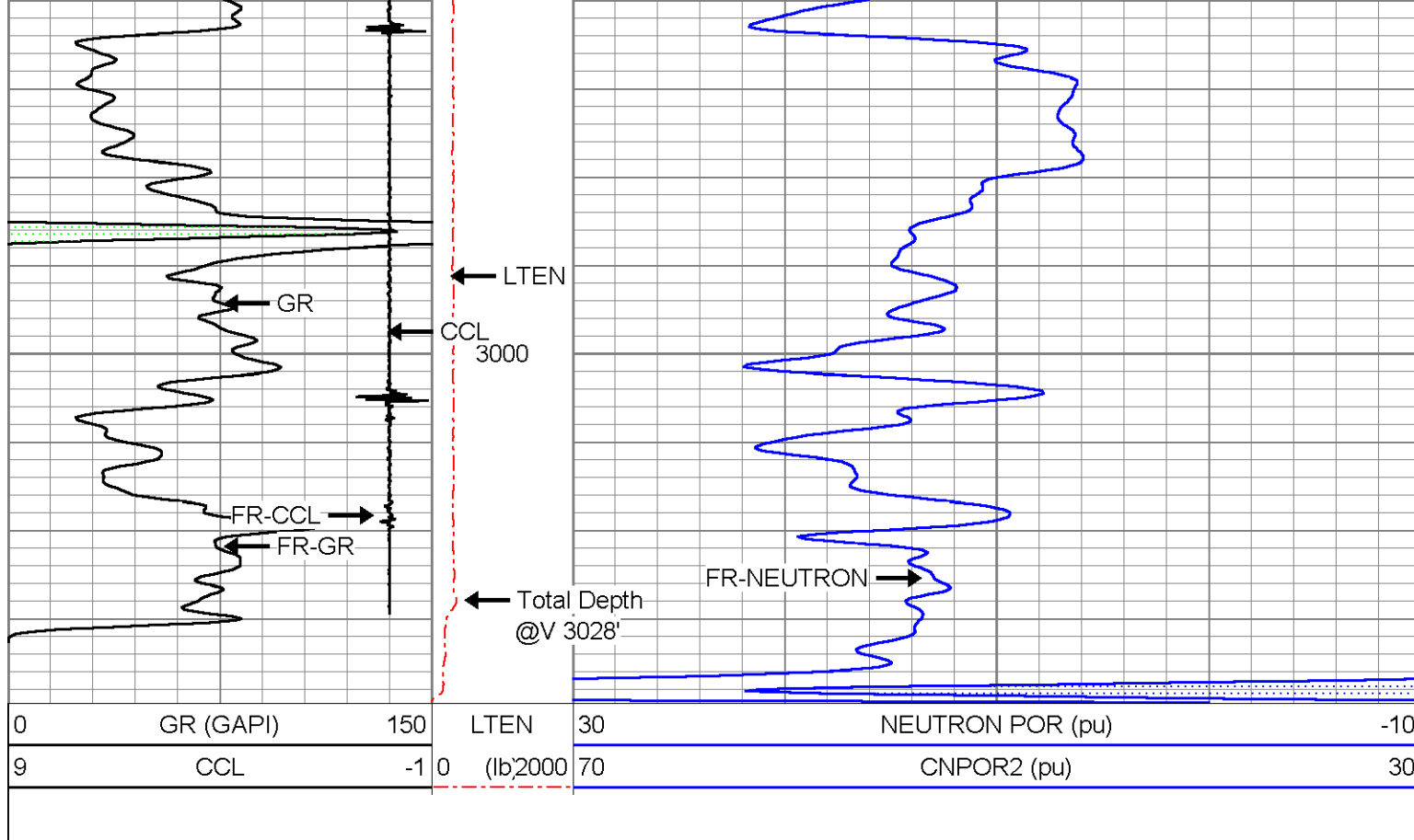








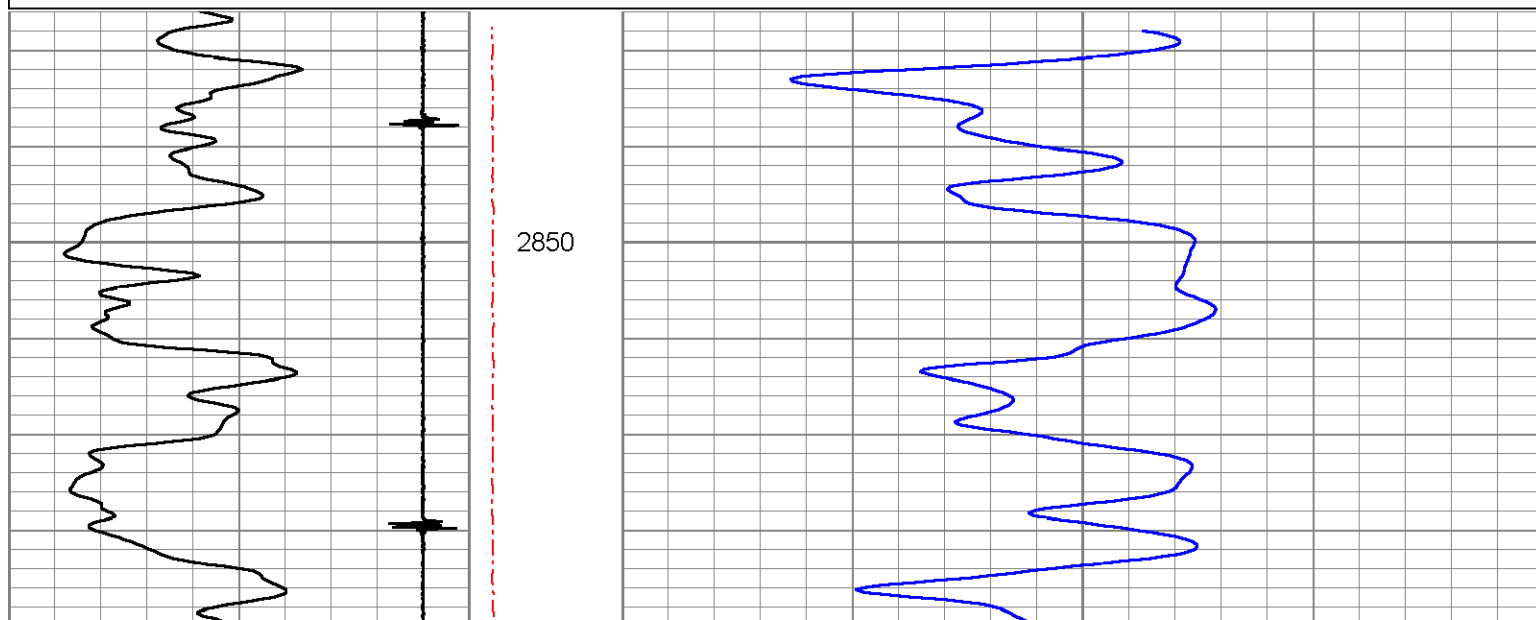


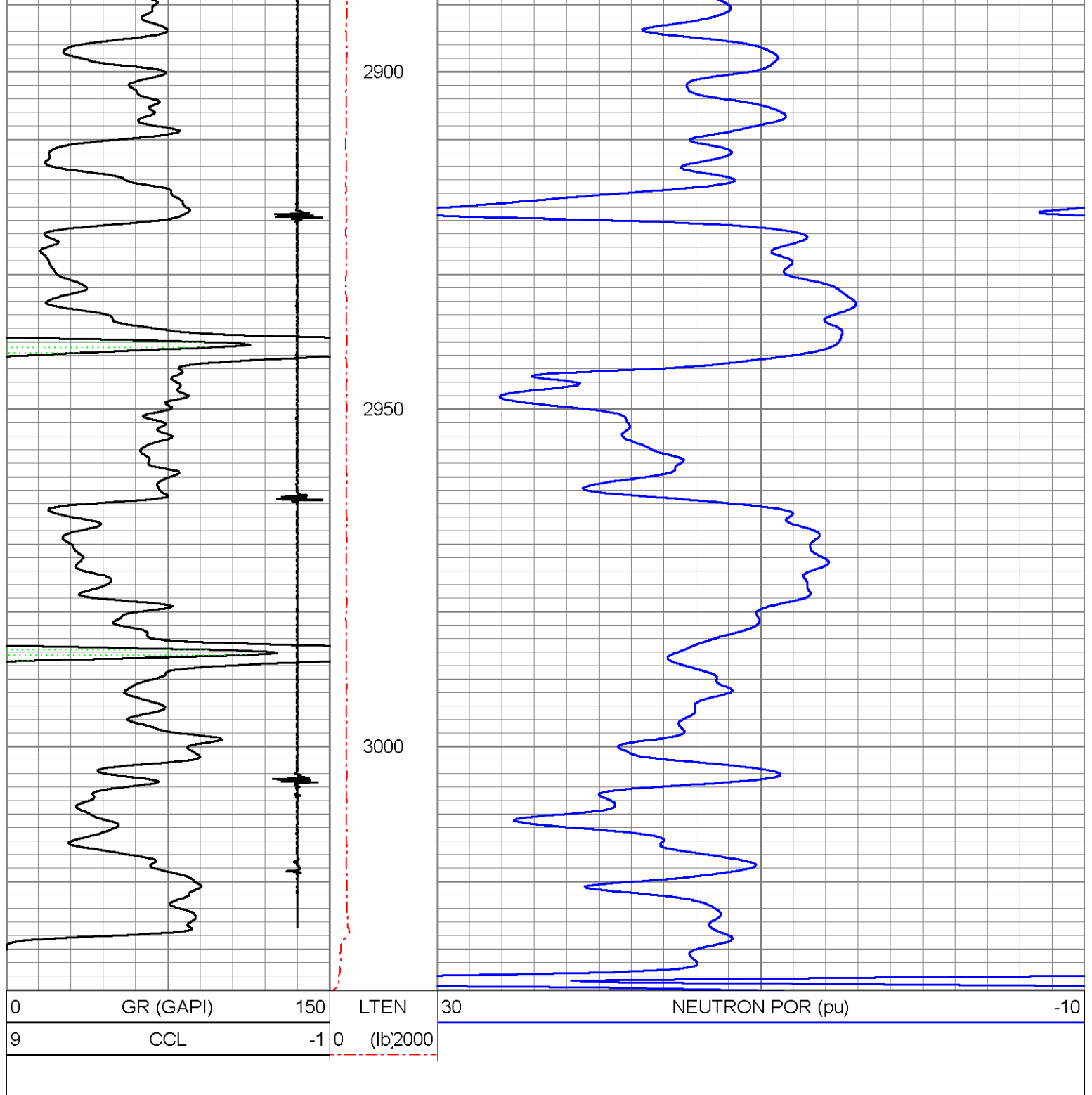


REPEAT SECTION

Database File: pnr_atu1_cbl_dsn.db
 Dataset Pathname: pass3
 Presentation Format: dsplib
 Dataset Creation: Wed Apr 27 12:51:59 2011 by Log Halliburton Casedho
 Charted by: Depth in Feet scaled 1:240

0	GR (GAPI)	150	LTEN	30	NEUTRON POR (pu)	-10
9	CCL	-1	0 (lb)2000			





Calibration Report

Database File: pnr_atu1_cbl_dsn.db
 Dataset Pathname: pass4
 Dataset Creation: Wed Apr 27 12:58:14 2011 by Log Halliburton Casedho

Compensated Neutron Calibration Report

Serial Number: 060817
 Tool Model: 275Dig

CALIBRATION

Mon Apr 25 15:39:28 2011

Detector	Readings	Target	Normalization
Short Space	761.21 cps	0.00 cps	1.0000
Long Space	67.08 cps	0.00 cps	1.0000

PRE-SURVEY VERIFICATION						
	Detector	Readings	Measured	Target		
1)	Short Space	cps				
	Long Space	cps	pu		pu	
2)	Short Space	cps				
	Long Space	cps	pu			
3)	Short Space	cps				
	Long Space	cps	pu			
POST-SURVEY VERIFICATION						
	Detector	Readings	Measured	Target		
1)	Short Space	cps				
	Long Space	cps	pu		pu	
2)	Short Space	cps				
	Long Space	cps	pu		pu	
3)	Short Space	cps				
	Long Space	cps	pu		pu	
Gamma Ray Calibration Report						
Type / Serial:			Probe275dig / 060738			
SHOP CALIBRATION						
Wed Apr 27 12:21:05 2011						
		Counts/Sec.	Gain	Offset	Jig	Units
Background		70.9				cps
Calibrator		323.7				cps
			0.9257			GAPI/cps
PRIMARY VERIFICATION						
Fri Mar 11 07:39:25 2011						
Background		66.2				cps
Calibrator		295.6				cps
Difference					229.4	GAPI
BEFORE SURVEY VERIFICATION						
Background		0.0				cps
Calibrator		0.0				cps
Difference					0.0	GAPI
AFTER SURVEY VERIFICATION						
Background		0.0				cps
Calibrator		0.0				cps
Difference					0.0	GAPI
Cement Bond Log Calibration Report						
Serial Number:		070801A				
Tool Model:		Probe275Digital				
Performed:		Wed Apr 27 12:43:57 2011				
Depth:		1655.4		ft		
Casing Diameter:		5.5		in		
		3' Spacing		5' Spacing		
Signal Zero:		0		0		mV

Calibrated Amplitude:	71.921	71.921	mV
Reading at Signal Zero:	0.0315674	0.0309814	V
Reading in Free Pipe:	0.529785	0.465674	V
Gain:	144.357	165.453	
Offset:	-4.55696	-5.12596	

Log Variables

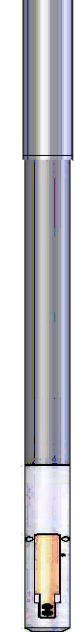
Database: C:\Warrior\Data\pnr_atu1_cbl_dsn.db

Dataset: field/well/run1/pass4

Top - Bottom

PPT usec 0	MAXAMPL mV 72	MINAMPL mV 0.5	MINATTN db/ft 0.8	CMTTKCOR On	CSTKCOR On	SZCOR On	CASED? Yes
NPORSEL Limestone	CMNTTHCK in 1.25	CASETHCK in 0.304	CASEOD in 5.5	PERFS 0	TDEPTH ft 3028	BOTTEMP degF 100	BOREID in 7.875

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			STND_CH 1.4375 IN CABLE HEAD	0.92	1.44	1.00
WVF3	14.29		CBL-Probe275Digital (070801A) Digital 3' 5' CBL Move voltage to +/- 150 for cal mode	8.75	2.75	92.00
WVF5	13.29					
CCL	9.21					
GR	7.83		GR-Probe275dig (060738) Probe Digital Gamma CCL	4.75	2.75	57.00

CNLSC	1.91			CNT-275Dig (060817) Probe Digital CNL	5.29	2.75	40.00
CNSSC	1.48						
LLMTEN	0.00						
		Dataset:		pnr_atu1_cbl_dsn.db: field/well/run1/pass4			
		Total Length:		19.70 ft			
		Total Weight:		190.00 lb			
		O.D.		2.75 in			