

HALLIBURTON

CEMENT BOND
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:				
200' FNL & 2640' FWL				
		Other Services		
4.70" GAUGE RING DSN				

Permanent Datum	Elevation 3028'		Elevation	
Log Measured From	KB , 7 Ft. above perm. datum		K.B. 3035'	
Drilling Measured From			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	Liner
Date / Time Cemented				
Primary / Squeeze				
Expected				
Compressive Strength	psi@ hrs	psi@ hrs	psi@ hrs	psi@ hrs
Cement Volume				
Cement Type / Weight	/	/	/	/
Formulation				
Mud Type / Mud Wgt.	/	/	/	/
Borehole Record				
Run Number	Bit	From	To	Size
ONE	12.25"	SURFACE	606'	8.625"
TWO	7.875"	606'	3095'	5.5"
Casing & Tubing Record				
		Weight	24#	
		From	SURFACE	606'
				3095'

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

CORRELATED TO HES DSN LOG DATED 27 APR 2011.

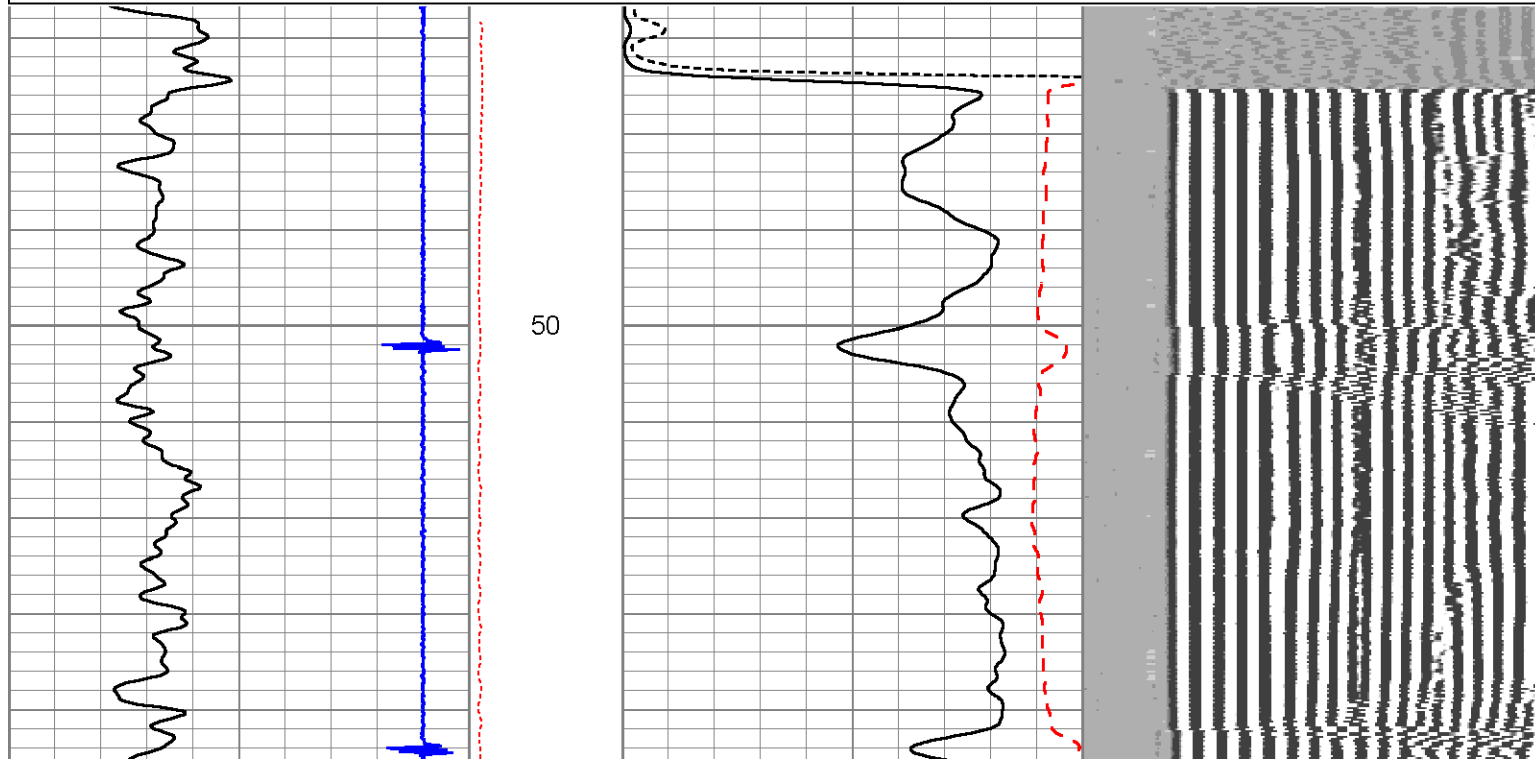
MARKER JOINT @ 2321' - 2335'

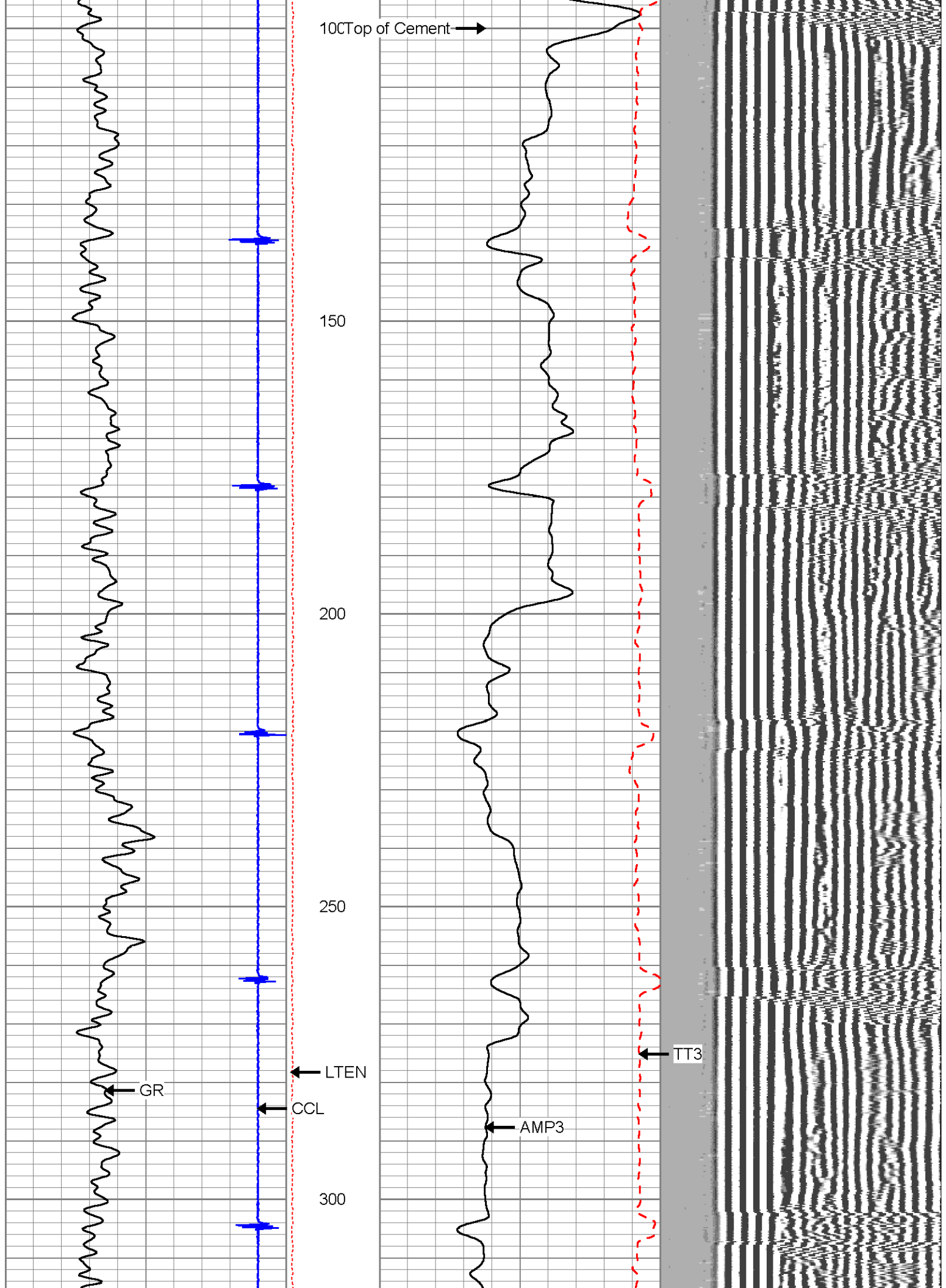
PREVIOUS 5.50" 17# TOOL CALIBRATION
THANKYOU FOR USING HALLIBURTON SERVICES.
CREW: HAMMOND, HUMISTON.

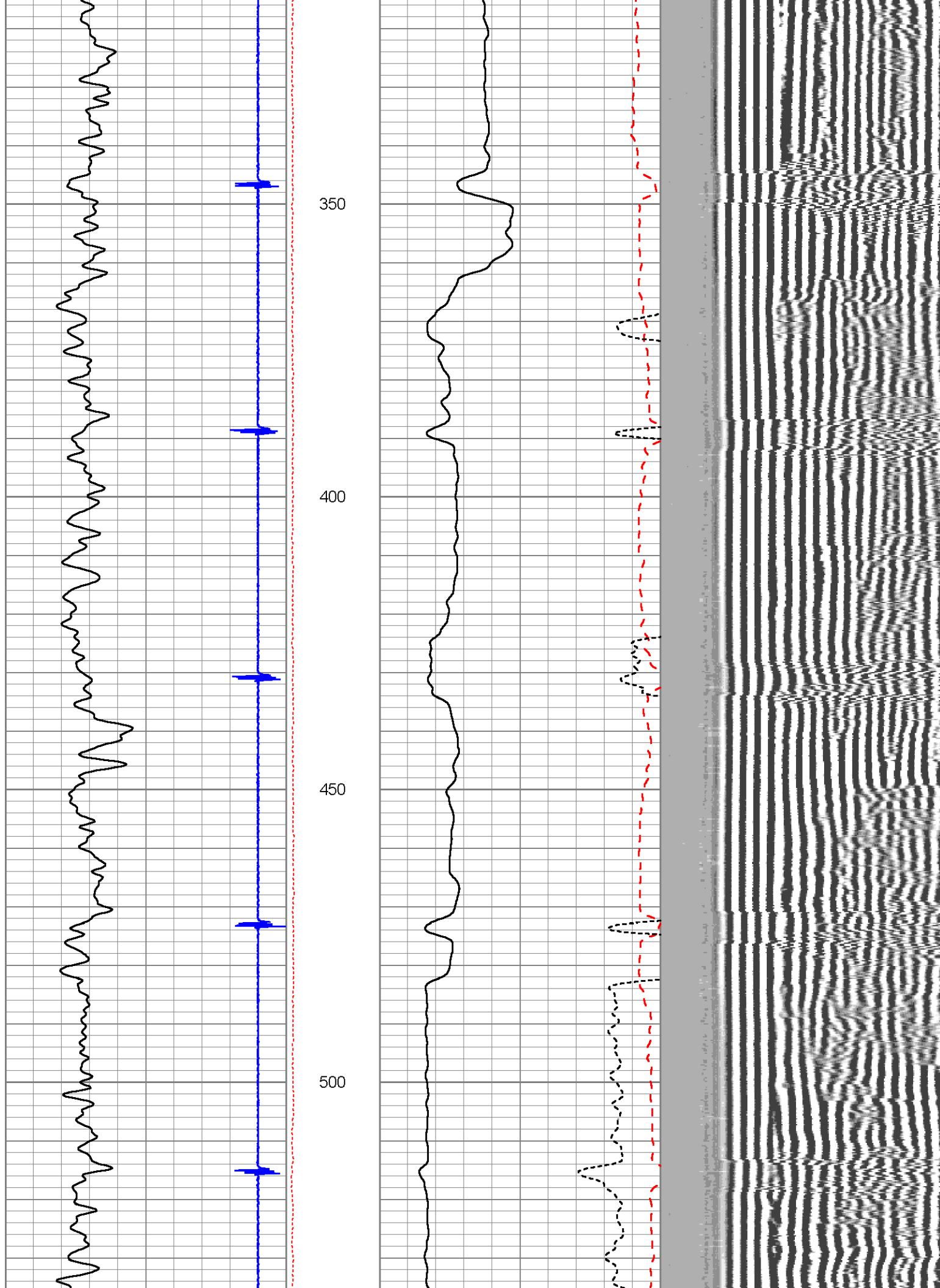
Service Ticket No.	8130109	API No.	15-067-21722	PGM Ver	WARRIOR 7.0
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
CBL		GAMMA RAY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE

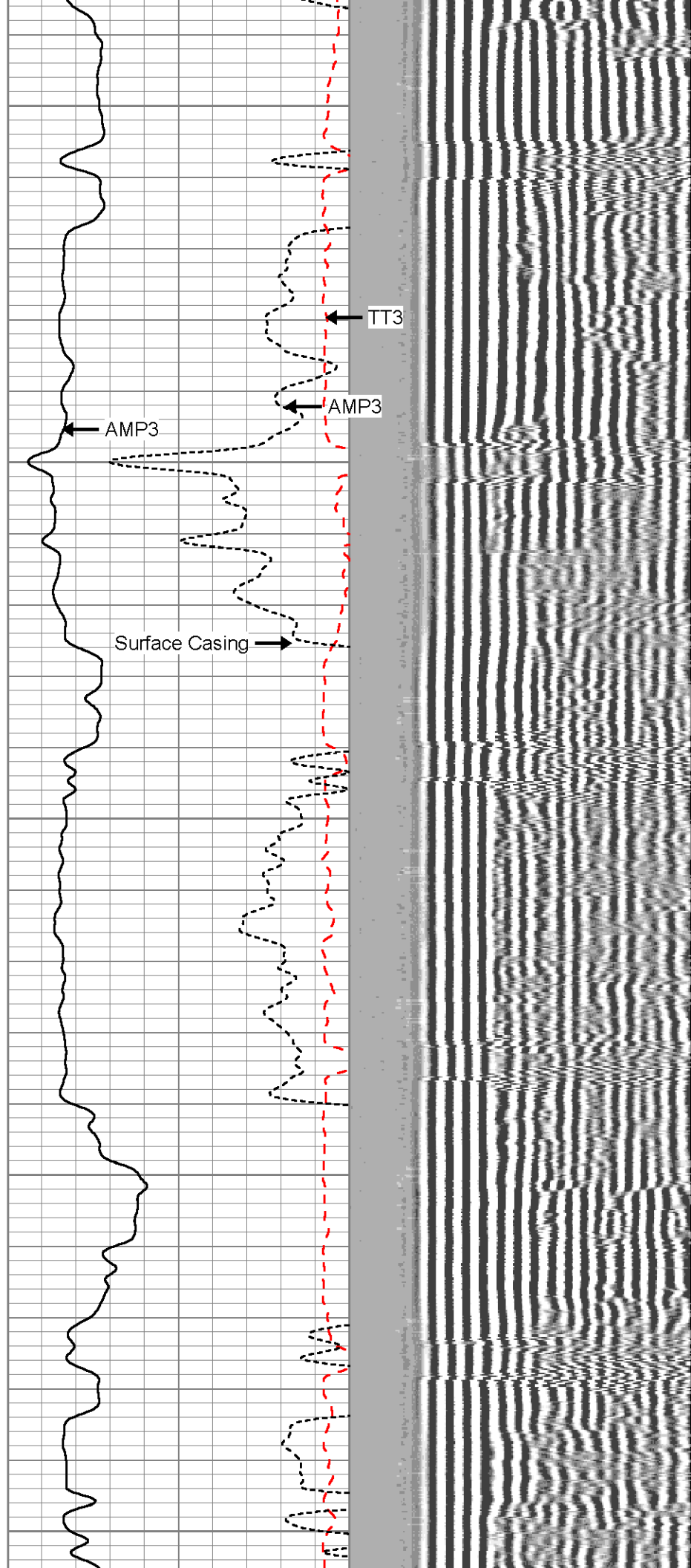
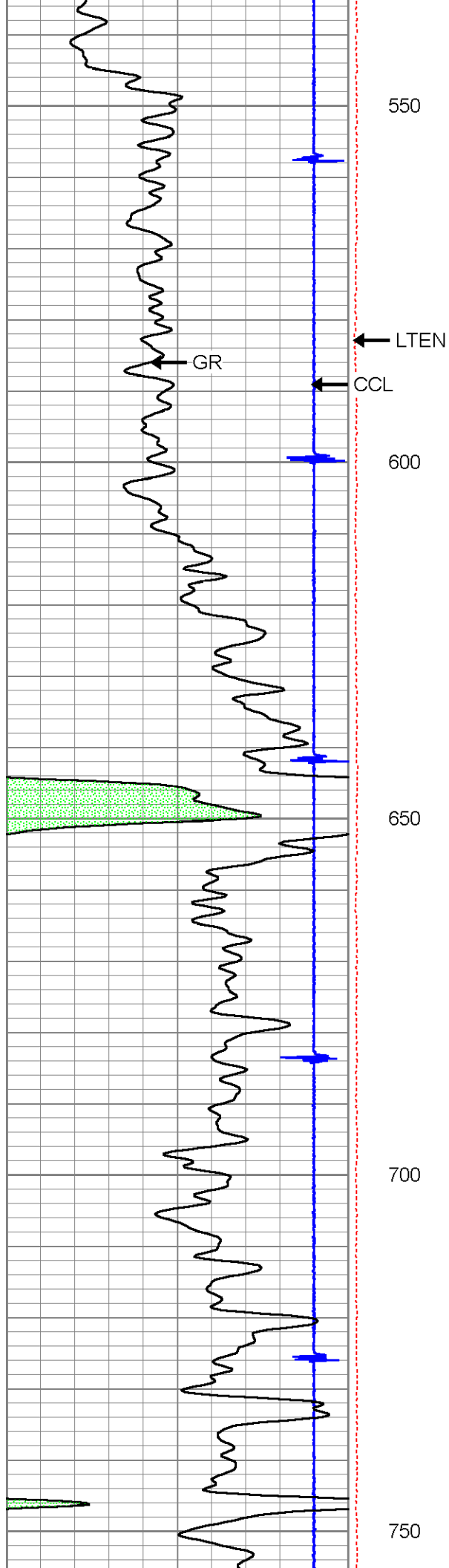
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	
Serial No.	060801A	Serial No.	070738	Serial No.	070817	Serial No.	
Model No.	PROBE	Model No.	PROBE	Model No.	PROBE	Model No.	
Diameter	2.75"	Diameter	2.75"	Diameter	2.75"	Diameter	
LOGGING DATA							
General Data							
Pass	Depths		Well Head	Speed	Logging 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		

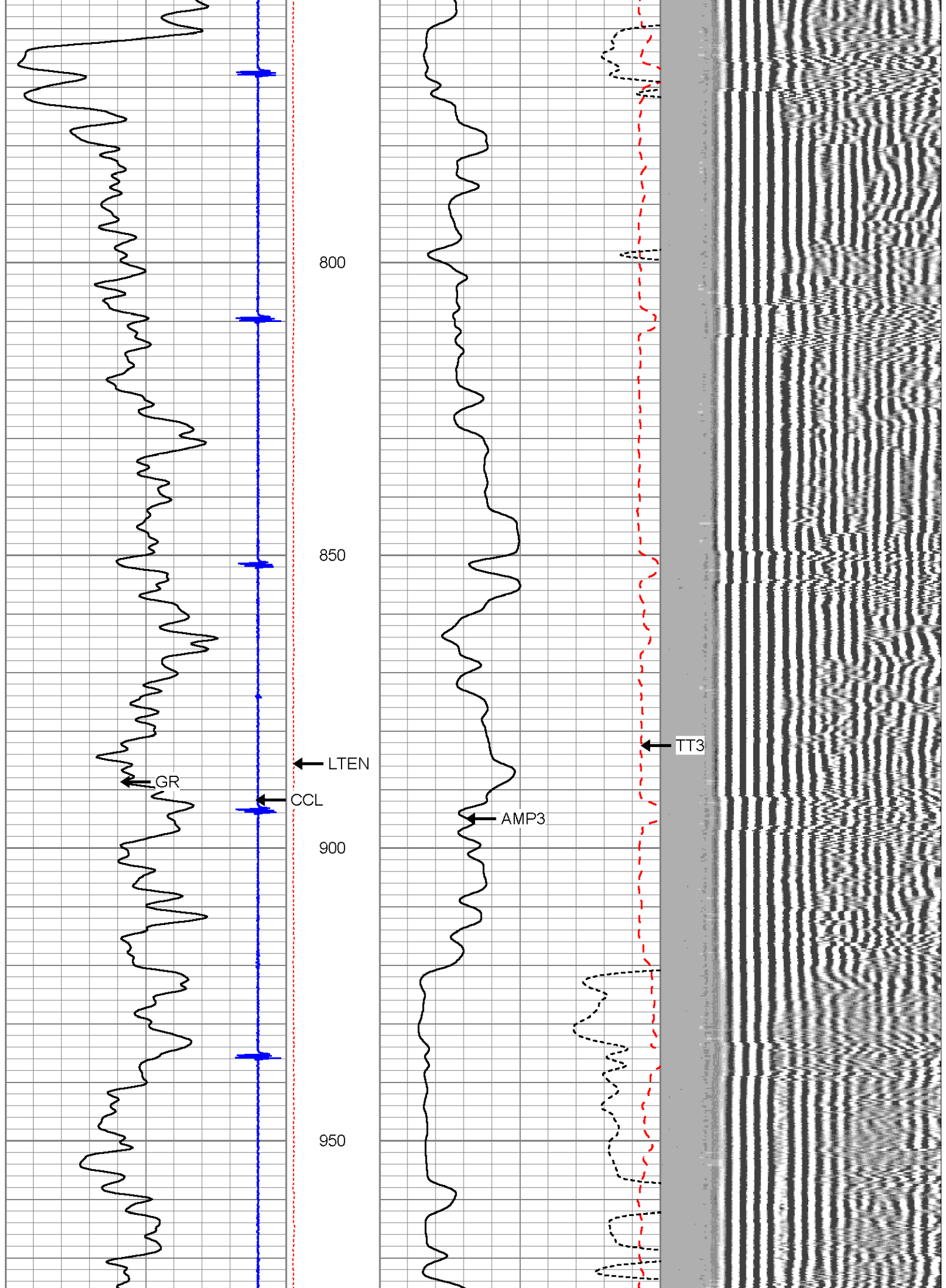
HALLIBURTON MAIN LOG SECTION SCALE 1:240							
Database File:		pnr_atu1_cbl_dsn.db					
Dataset Pathname:		pass4					
Presentation Format:		cbl_pn					
Dataset Creation:		Wed Apr 27 12:58:14 2011 by Log Halliburton Casedho					
Charted by:		Depth in Feet scaled 1:240					
9	Collar Locator	-1	LTEN	0	Amplitude (mV)	100	200 MSG 1200
0	GR (GAPI)	150	0 (lb)'1500	180	Travel Time (usec)	280	
150	gr (GAPI)	300		0	AAMP (mV)	20	

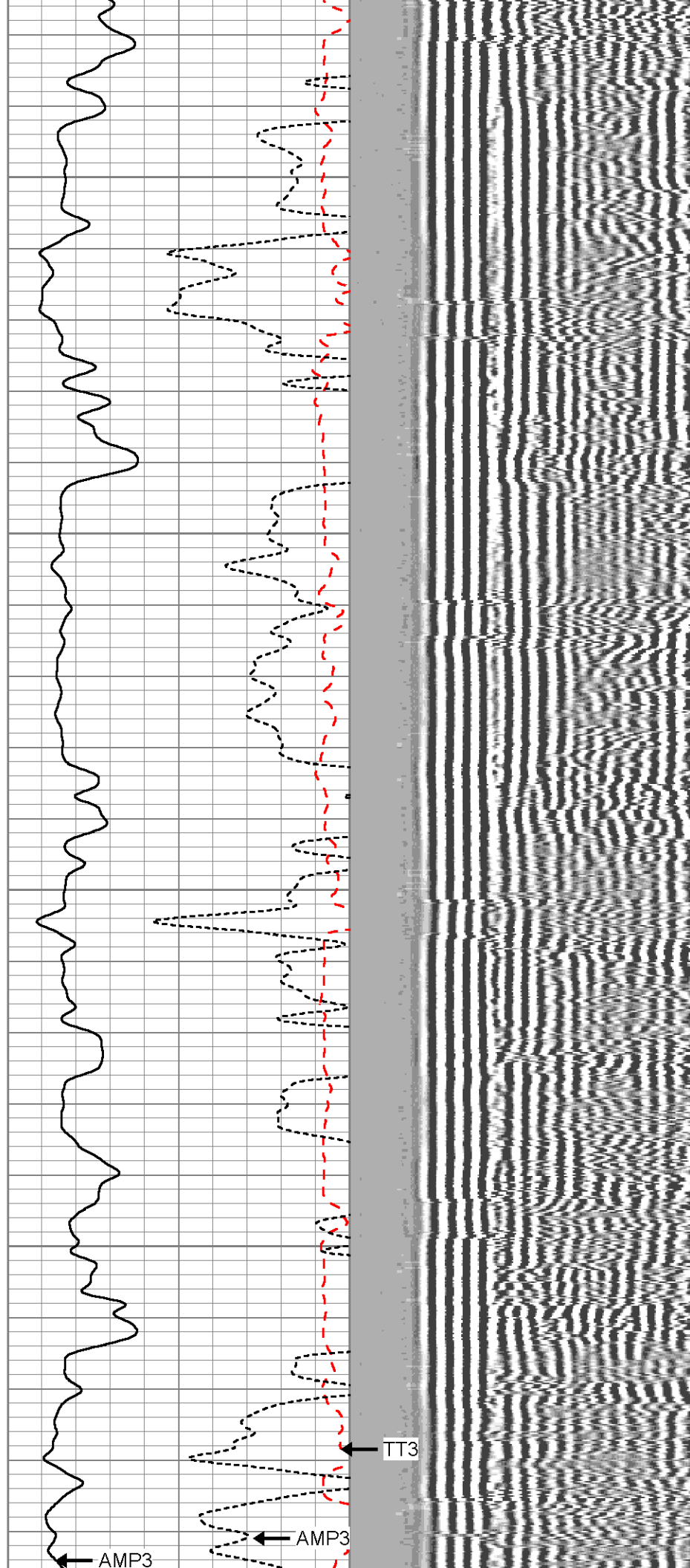
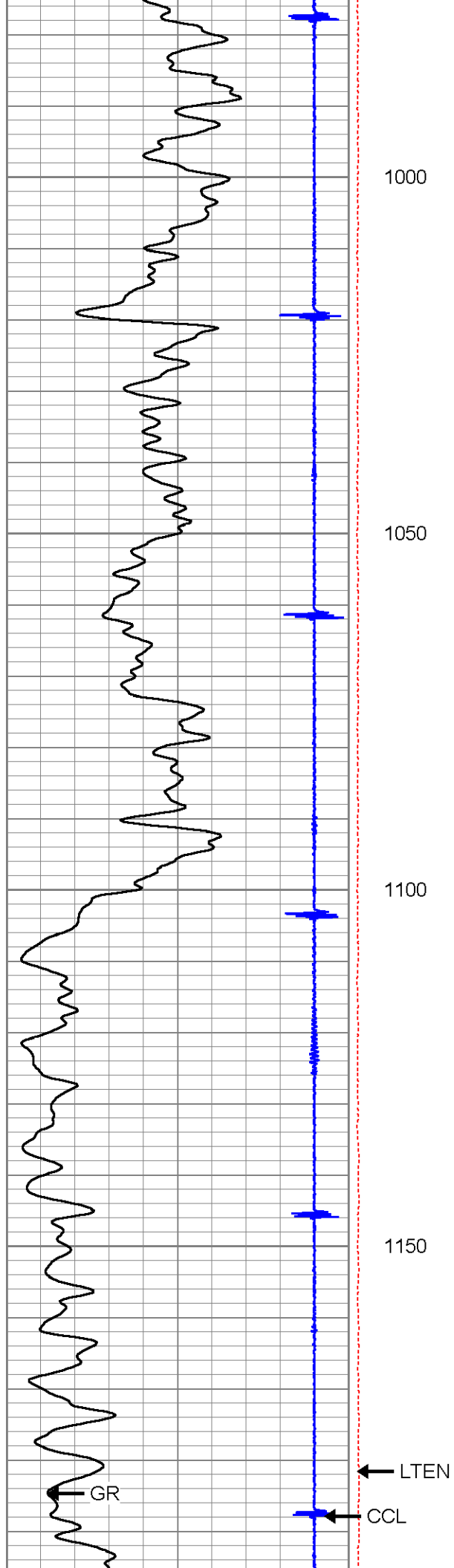


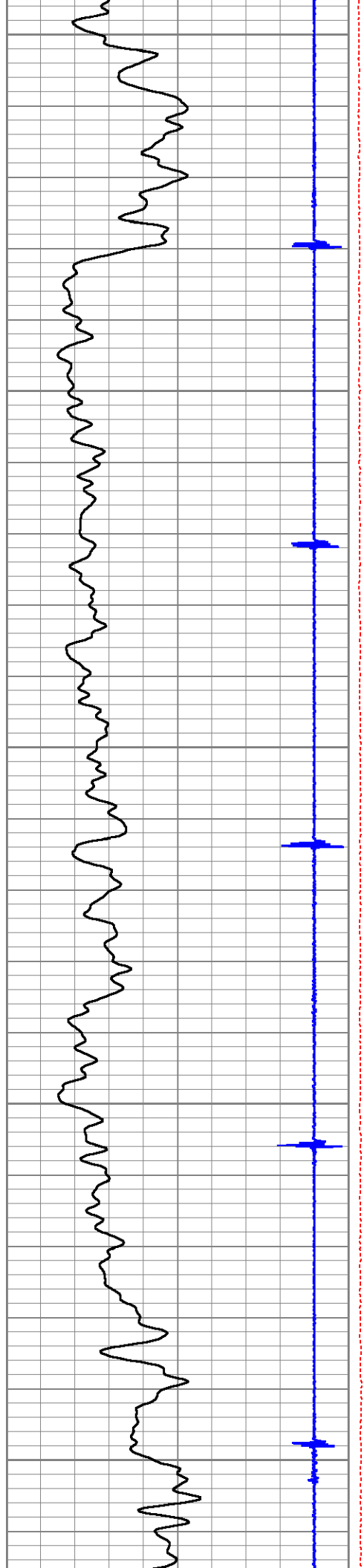












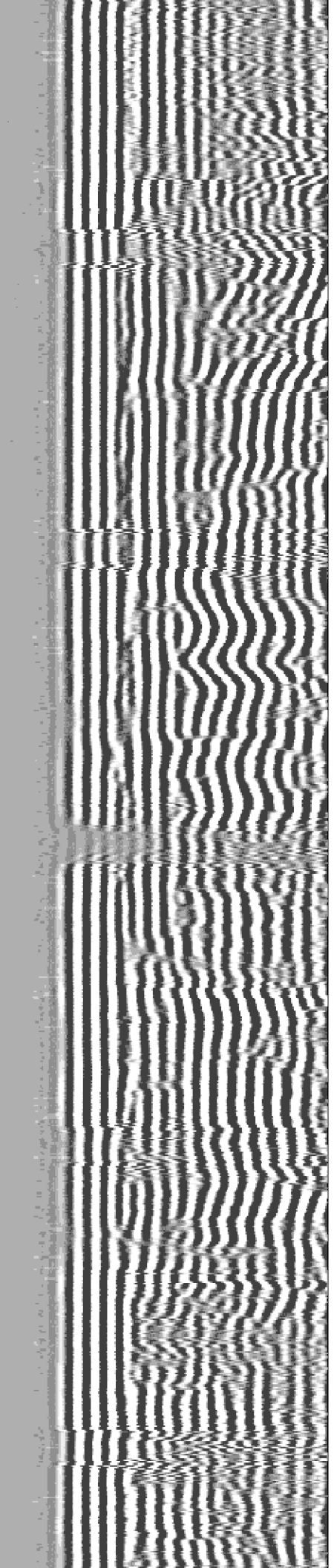
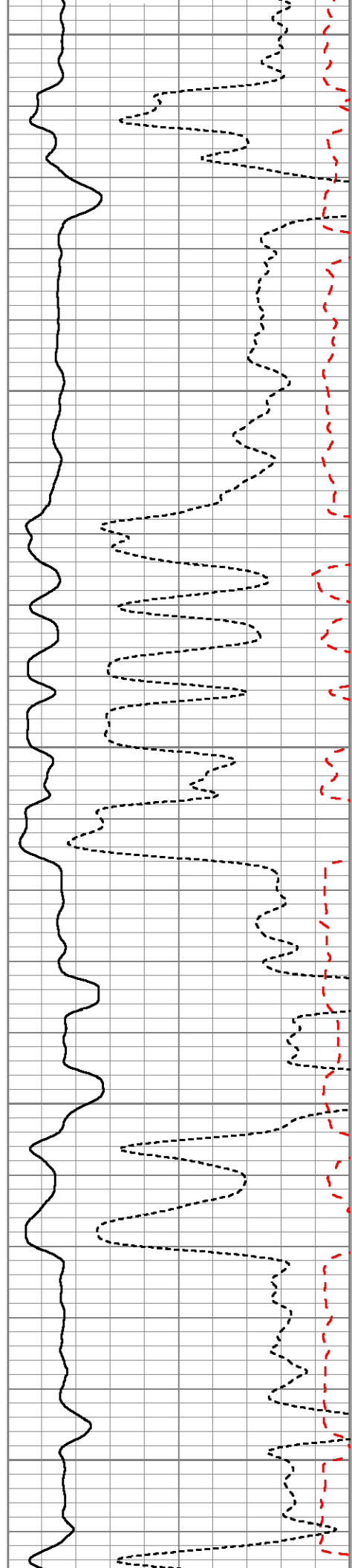
1200

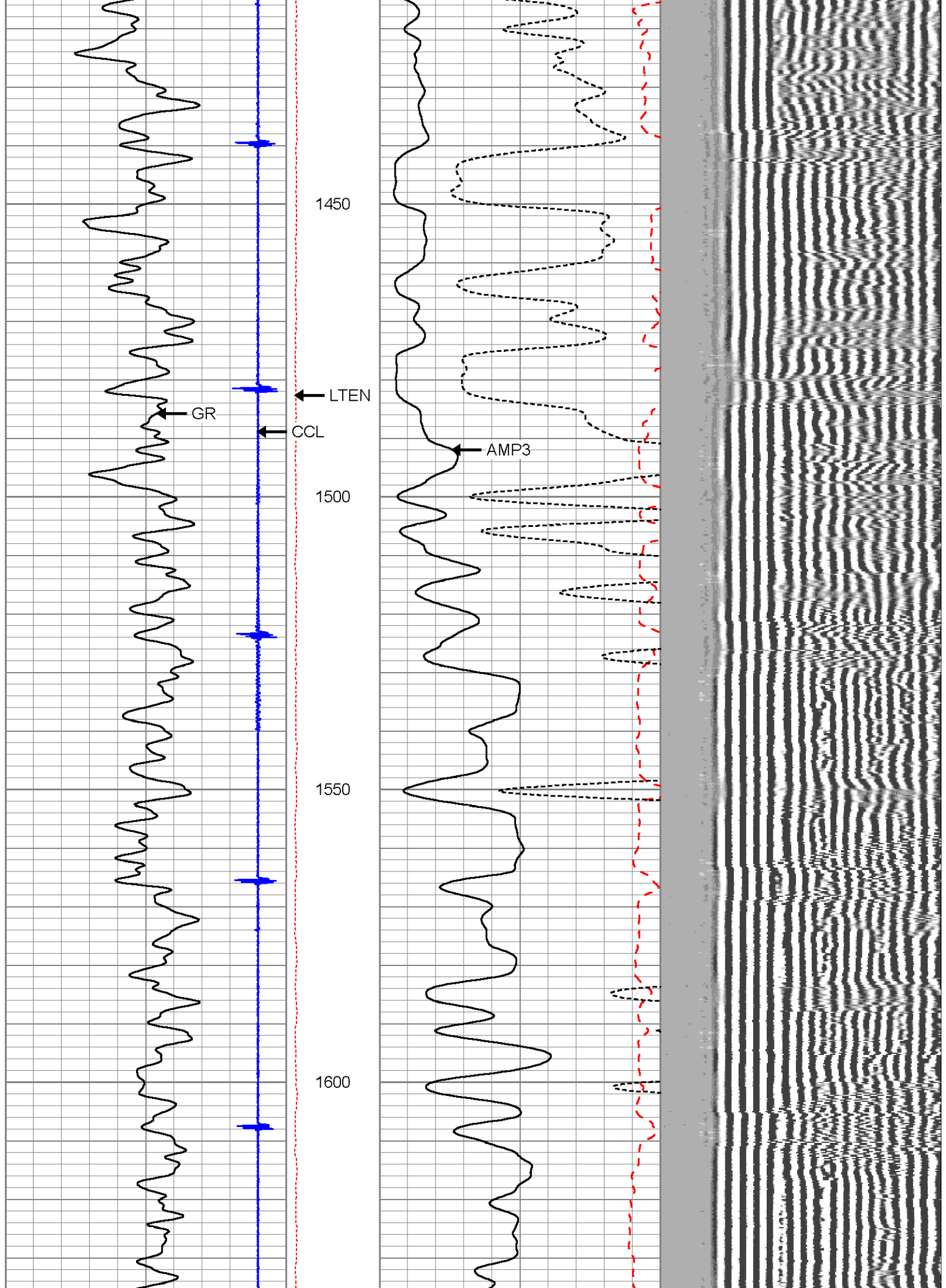
1250

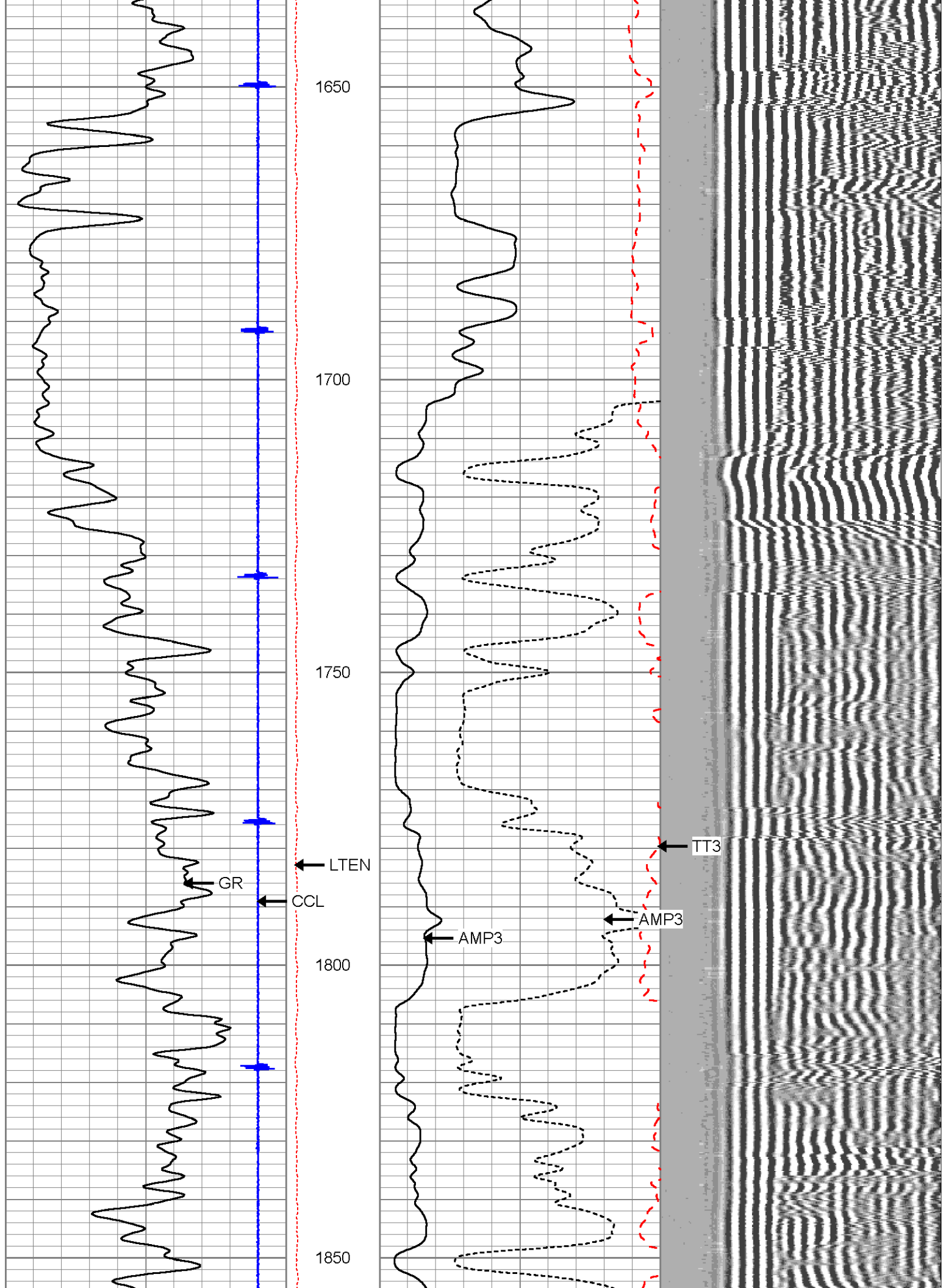
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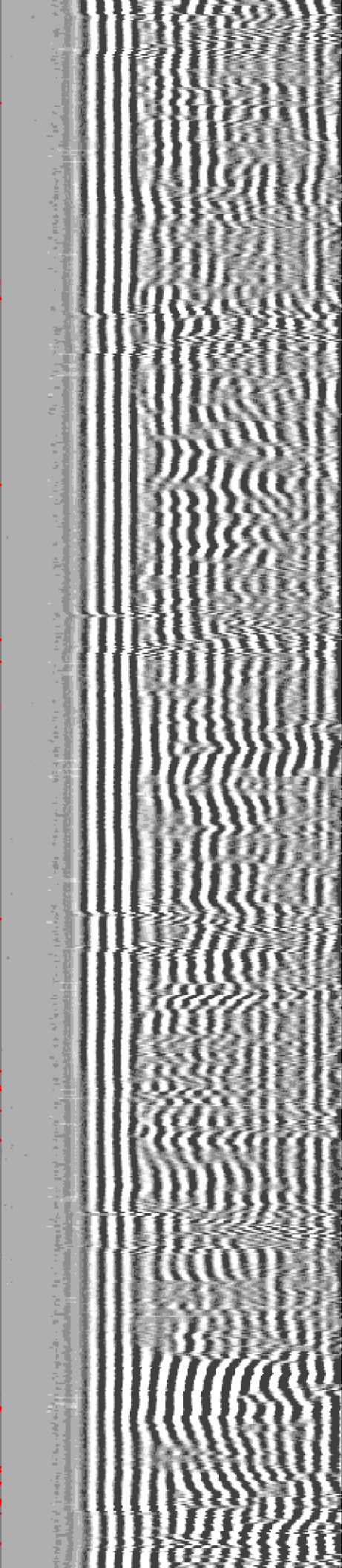
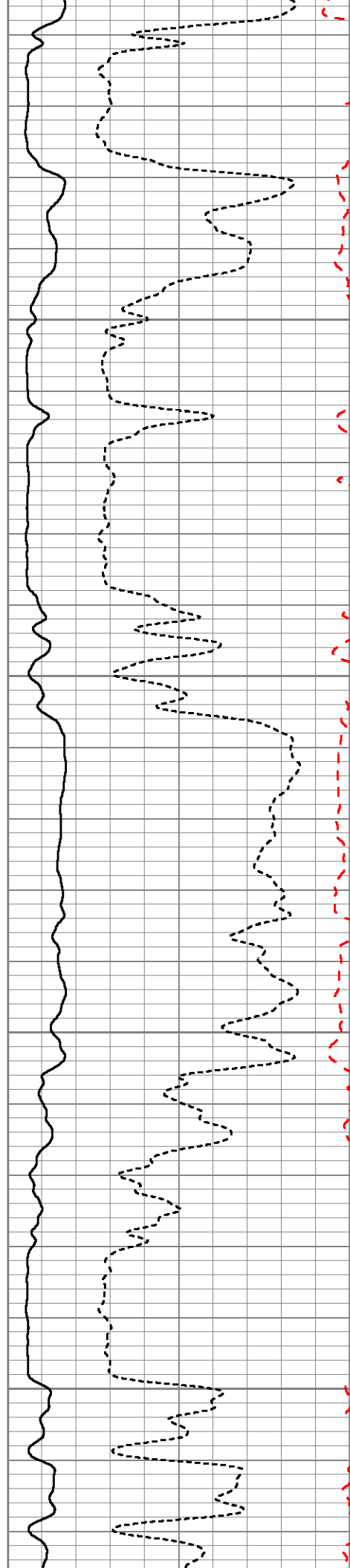
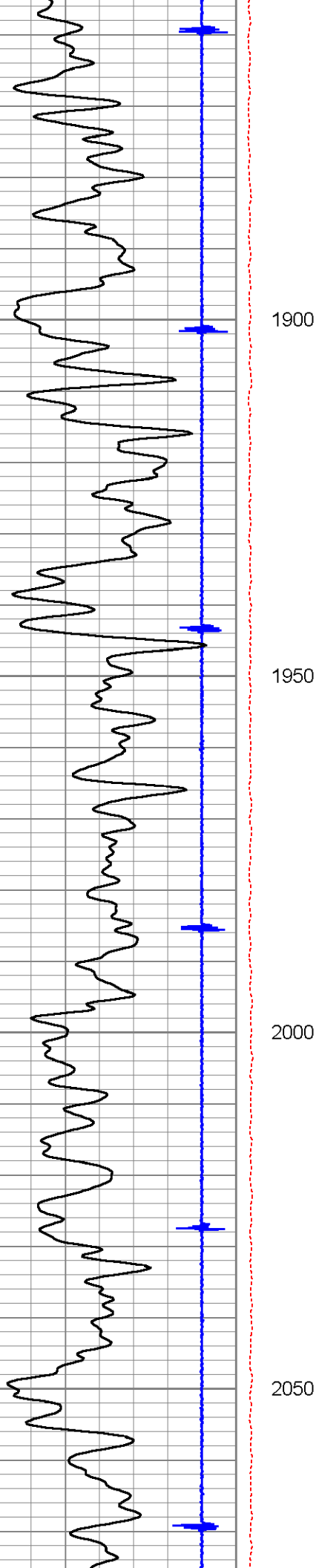
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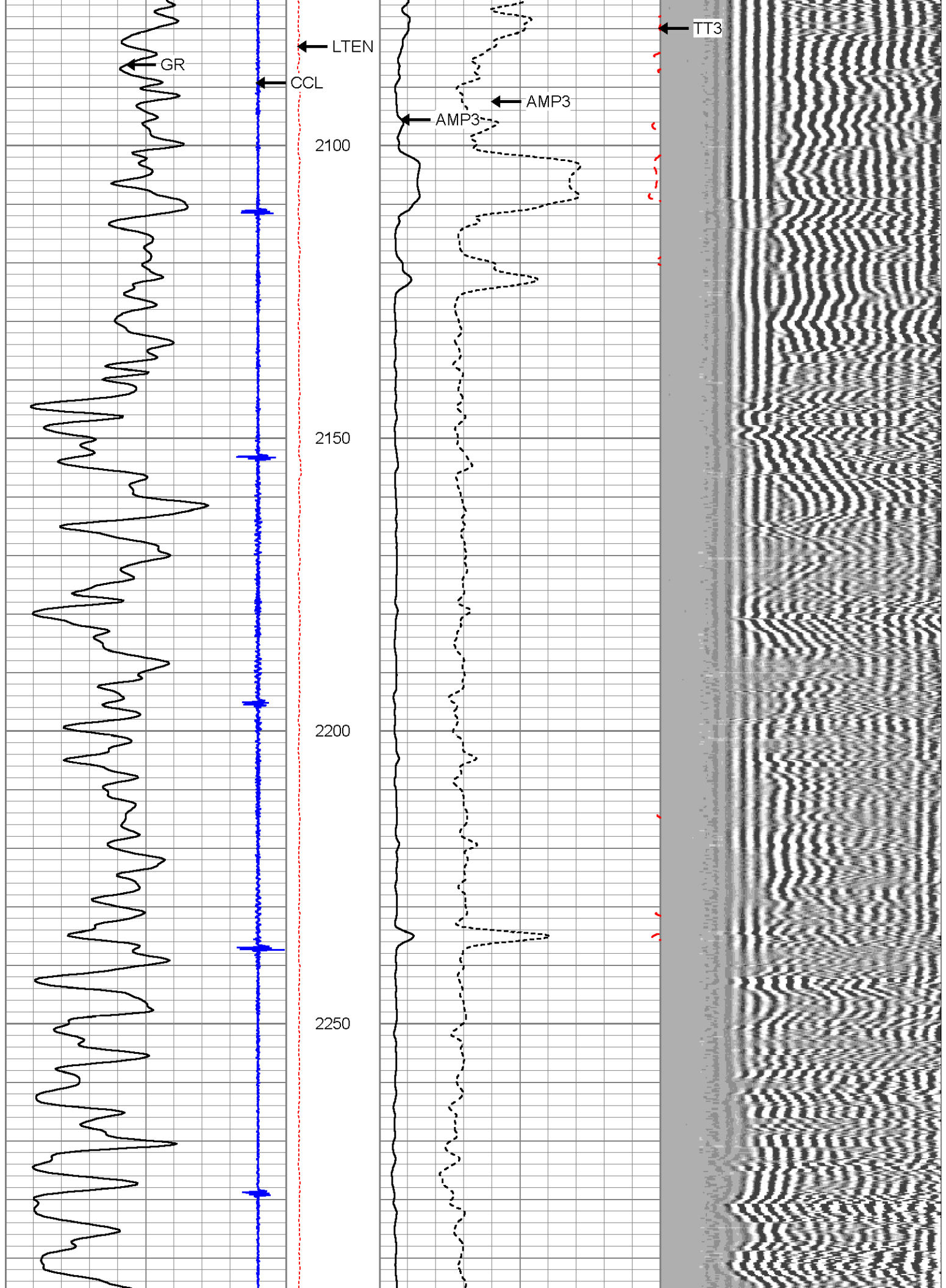
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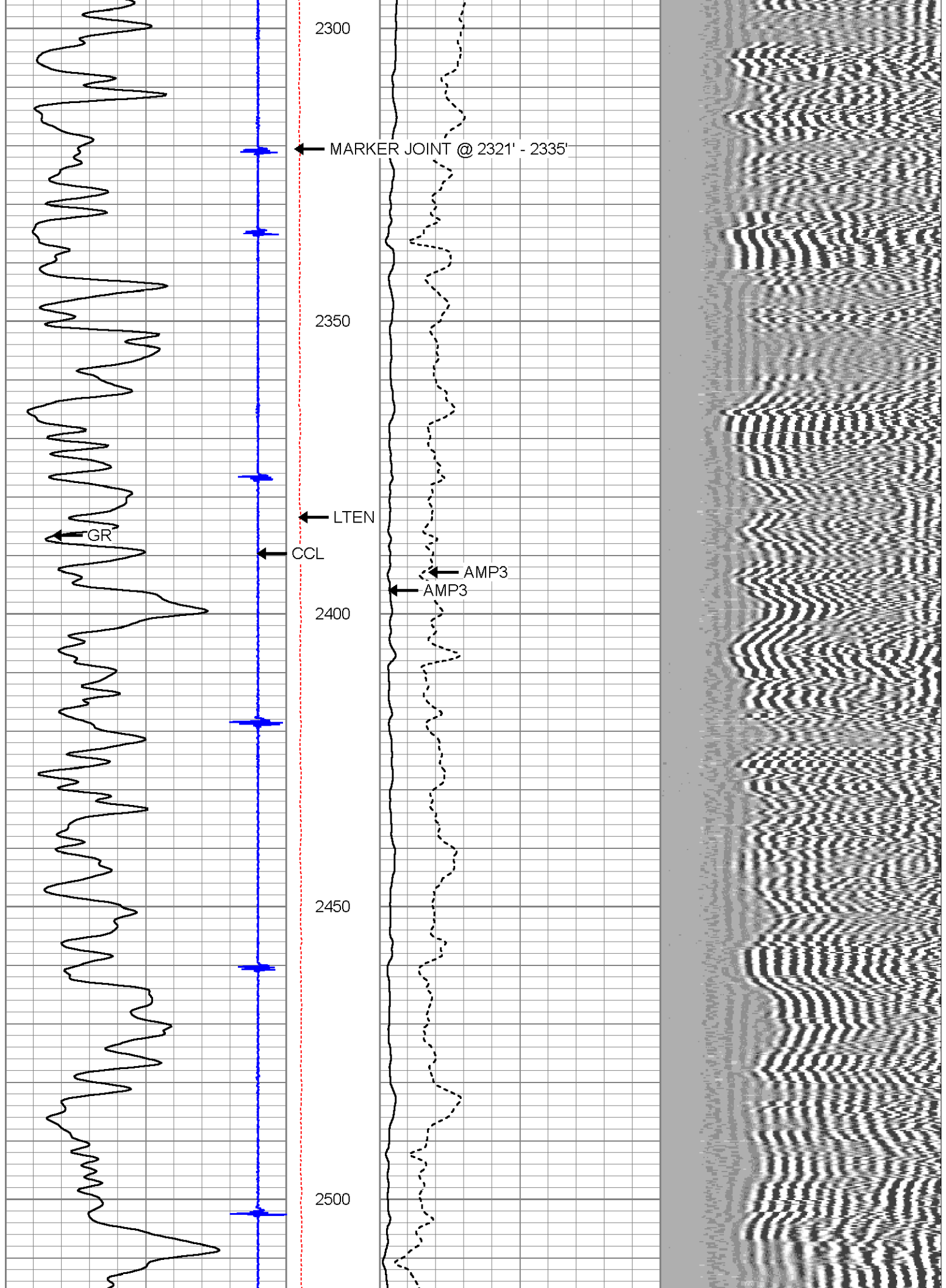


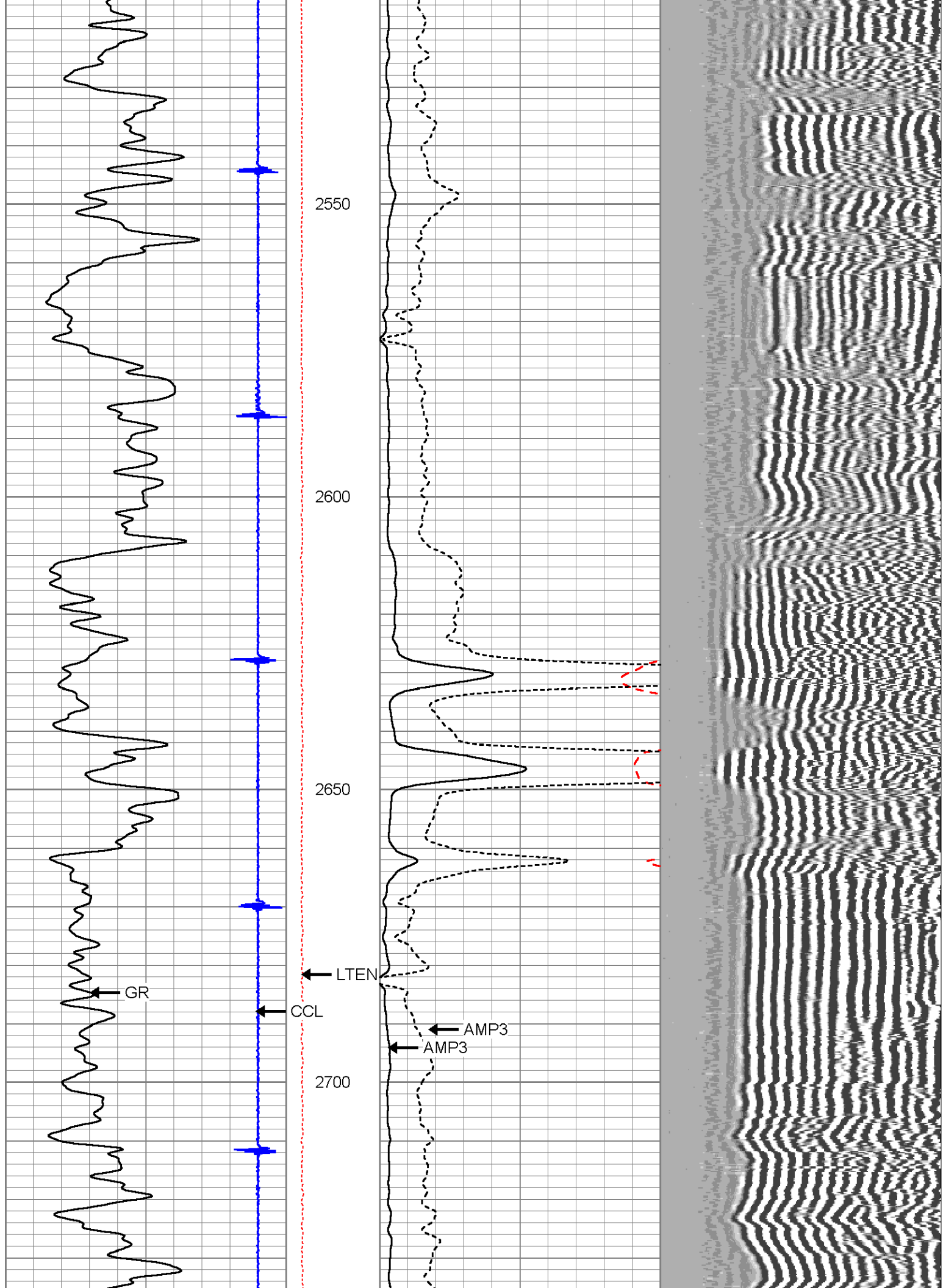


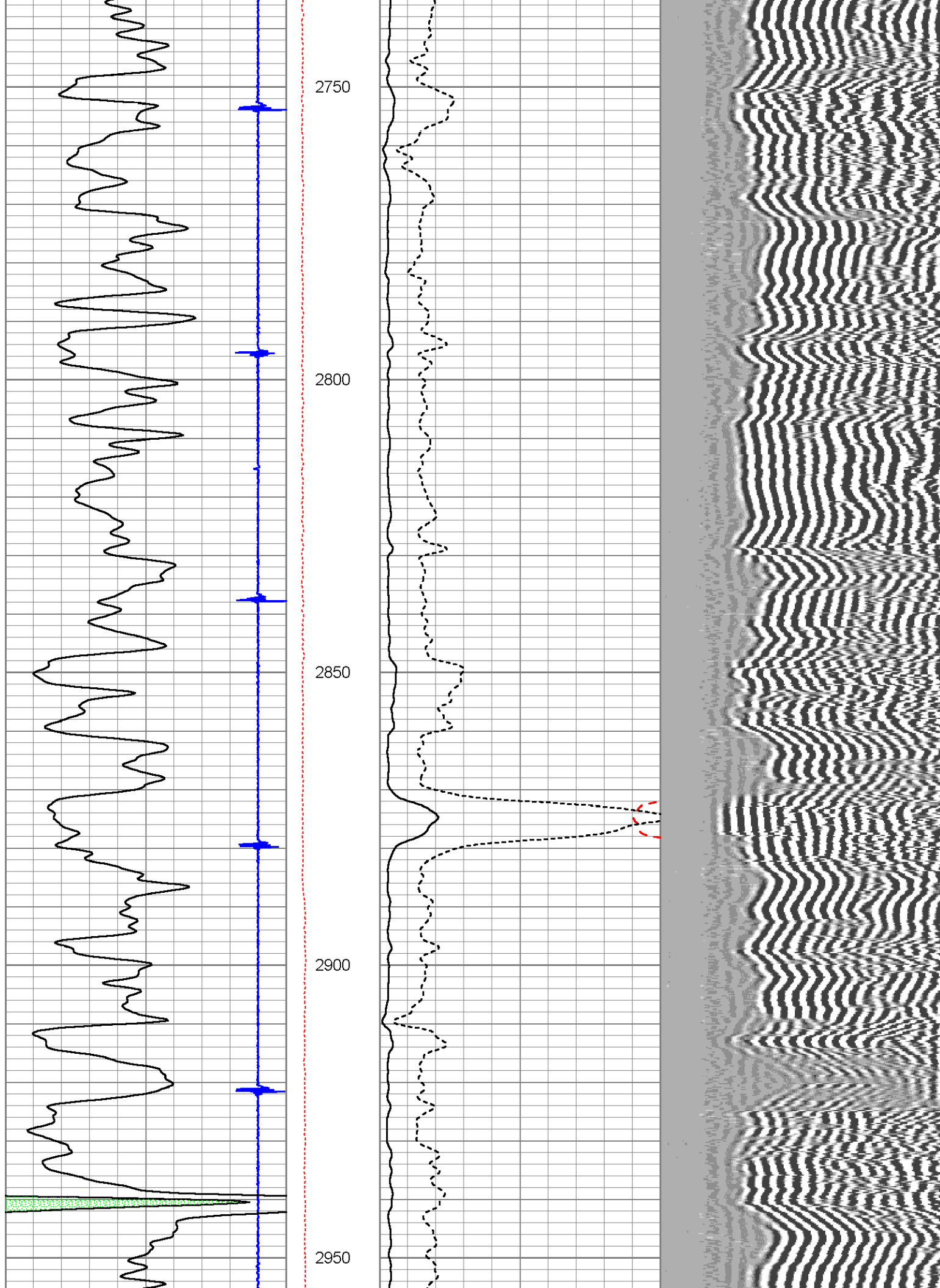


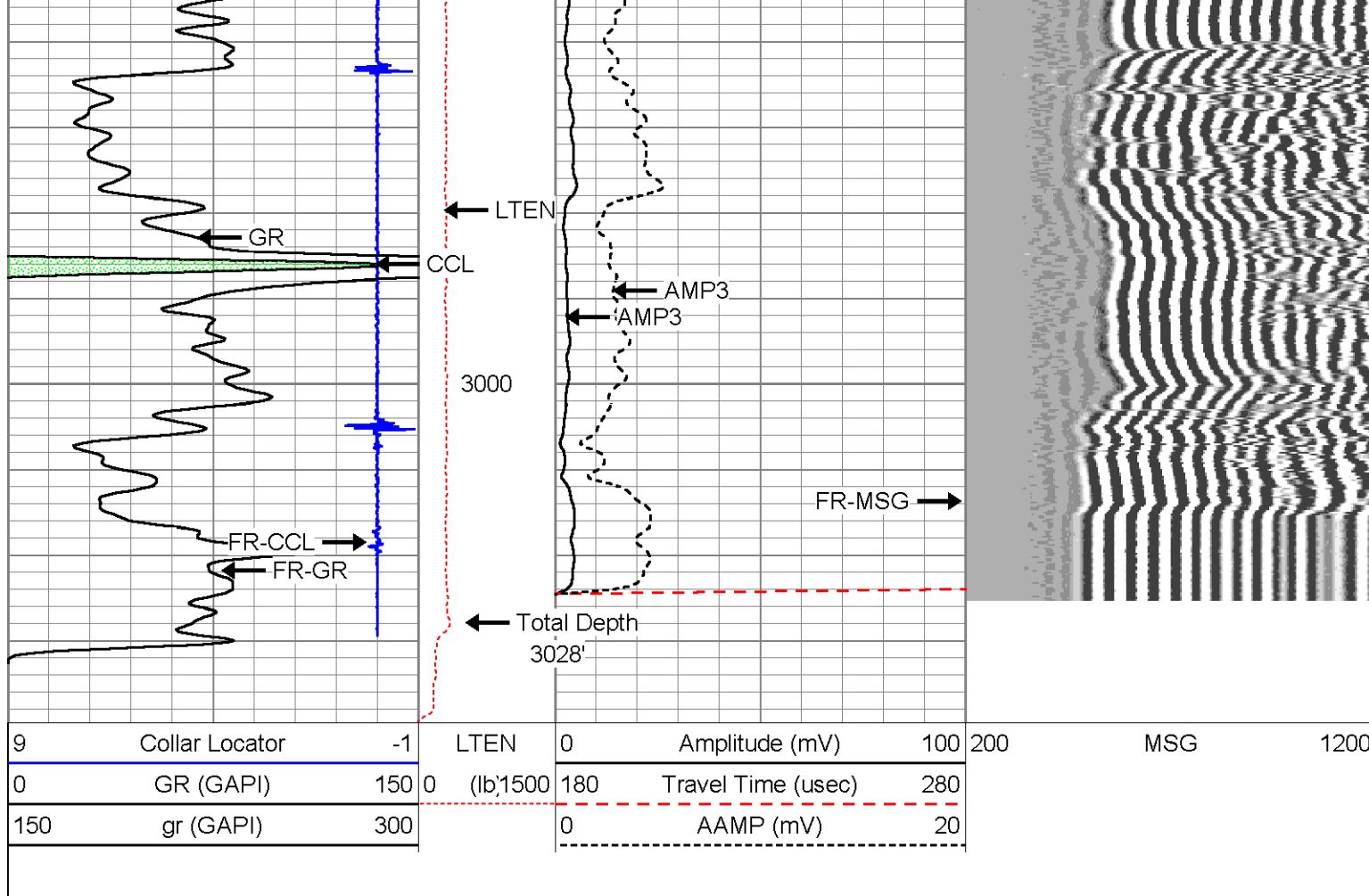










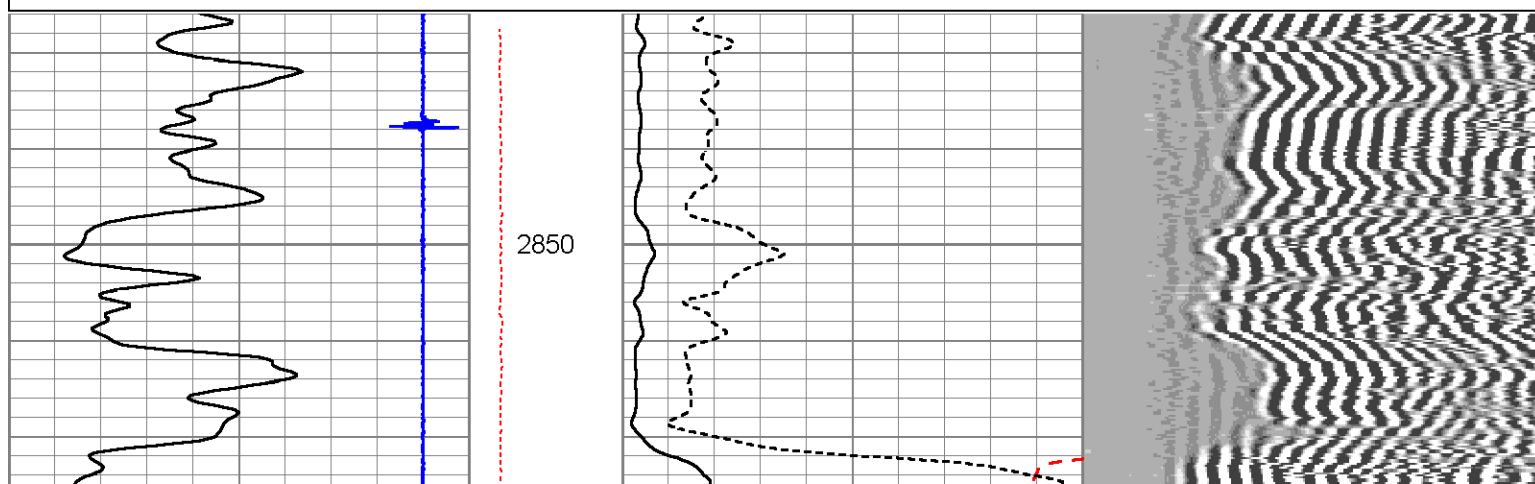


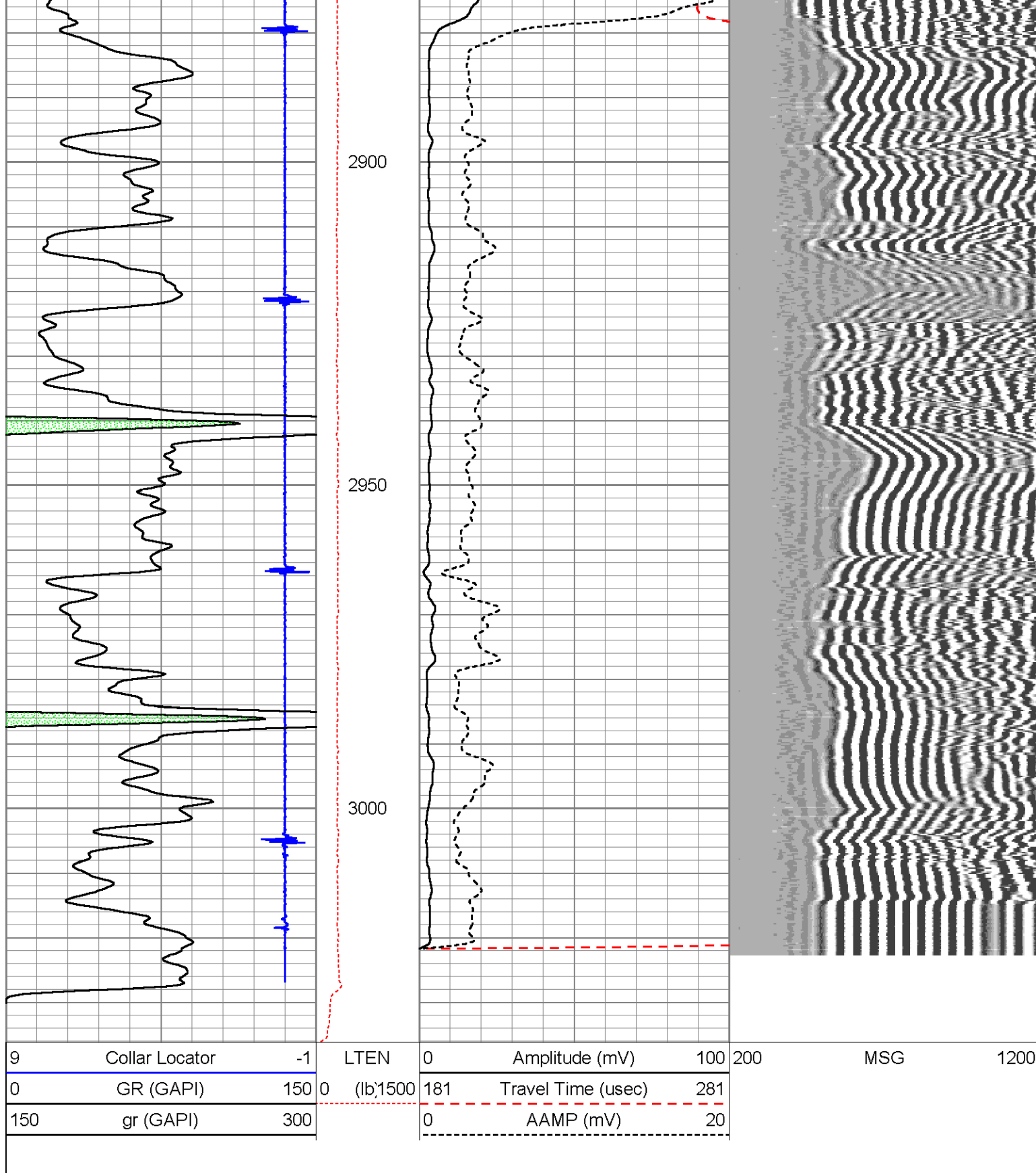
REPEAT SECTION

HALLIBURTON

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

9	Collar Locator	-1	LTEN	0	Amplitude (mV)	100	200	MSG	1200
0	GR (GAPI)	150	0	(lb)1500	181	Travel Time (usec)	281		
150	gr (GAPI)	300			0	AAMP (mV)	20		





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	

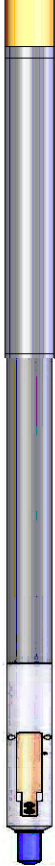
Log Variables

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
			CNT-275Dig (060817) Probe Digital CNL	5.29	2.75	40.00
CNLSC	1.91					
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						

Company	PIONEER NATURAL RESOURCES				
Well	THUROW-TATE ATU1				
Field	HUGOTON-PANOMA				
County	GRANT	State	KANSAS		
HALLIBURTON		CEMENT BOND LOG SCALE 1:240			