



**RADIAL CEMENT BOND LOG**  
**GAMMA RAY**  
**CCL**

Company KERR-McGEE OIL & GAS ONSHORE LP  
Well PEAKS 33-2  
Field WATTENBERG  
County WELD  
State COLORADO

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County WELD State COLORADO

Location: API # : 05-123-32125  
SE/SW  
LAT: 40.07660 & LONG: -104.97420  
SEC 2 TWP 1N RGE 68W  
Permanent Datum GL  
Log Measured From KB 15' Elevation 5032'  
Drilling Measured From KB  
Other Services  
K.B. 5047'  
D.F. 5046'  
G.L. 5032'

Date 8-11-2015

Run Number ONE  
Depth Driller 8590'  
Depth Logger 3016'  
Bottom Logged Interval 3016'  
Top Log Interval SURFACE  
Open Hole Size 7 7/8  
Type Fluid WATER  
Density / Viscosity 1.0  
Max. Recorded Temp. 111 Deg. F  
Estimated Cement Top 2821'  
Time Well Ready N/A  
Time Logger on Bottom N/A  
Equipment Number 4495  
Location GREELEY  
Recorded By M. JANDREAU  
Witnessed By NICK LANG

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE							
TWO							

	Size	Wgt/Ft	Top	Bottom
Casing Record				
Surface String	8 5/8	24#	SURFACE	930'
Prot. String				
Production String	4 1/2"	11.6#	SURFACE	8577'
Liner				

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

NOT CORRELATED  
LOGGED UNDER 1000 PSI  
THANK YOU FOR USING WARRIOR ENERGY SERVICES!!!!

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
CENT	18.91					

			PTS275	2.83	2.75	
HEADVOLT	16.08					
RBT	16.08					
IntTemp	14.66					
WVF3FT	11.41					
WVFCAL	11.41					
WVFS1	11.41					
WVFS2	11.41					
WVFS3	11.41					
WVFS4	11.41					
WVFS5	11.41					
WVFS6	11.41					
WVFS7	11.41					
WVFS8	11.41					
WVF5FT	10.41					
CNLSC	6.00					
CNSSC	5.17					
GR	4.33					
CCL	3.64					
GR	0.90					
Dataset: peaks 33-2.db: field/well/run1/pass3						
Total Length: 18.91 ft						
Total Weight: 160.00 lb						
O.D. 2.75 in						

## Gamma Ray Calibration Report

Serial Number: 275  
 Tool Model: Probe  
 Performed: Fri Nov 07 09:08:01 2014  
  
 Calibrator Value: 120.0 cps  
  
 Background Reading: 30.0 cps  
 Calibrator Reading: 210.0 cps  
  
 Sensitivity: 1.1000 cps/cps

## Compensated Neutron Calibration Report

Serial Number: 275  
 Tool Model: Probe\_B

CALIBRATION Wed Jul 30 08:47:19 2008

Detector	Readings	Target	Normalization
Short Space	5001.20 cps	0.00 cps	1.0000
Long Space	1029.31 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

## Segmented Cement Bond Log Calibration Report

Serial Number: Base  
 Tool Model: Probe  
  
 Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 976.042 ft

Master Calibration, performed Tue Aug 11 12:18:25 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.003	2.211	1.500	81.196	36.104	1.374
CAL	1.039	2.449				

CAL	0.000	2.110	1.500	81.196	37.820	1.355
5'						
SUM						
S1	0.002	2.345	0.500	81.000	34.367	0.419
S2	0.006	2.260	0.500	81.000	35.711	0.302
S3	0.004	2.069	0.500	81.000	38.984	0.328
S4	0.004	1.954	0.500	81.000	41.295	0.316
S5	0.005	2.012	0.500	81.000	40.110	0.288
S6	0.006	2.112	0.500	81.000	38.221	0.284
S7	0.006	2.223	0.500	81.000	36.310	0.276
S8	0.004	2.310	0.500	81.000	34.916	0.349

Internal Reference Calibration, performed Tue Jun 05 07:53:42 2012:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	1.039	2.449	1.000	0.000

Air Zero Calibration, performed Tue Aug 11 12:09:30 2015:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	
SUM						
S1	0.000		0.000		0.000	
S2	0.000		0.000		0.000	
S3	0.000		0.000		0.000	
S4	0.000		0.000		0.000	
S5	0.000		0.000		0.000	
S6	0.000		0.000		0.000	
S7	0.000		0.000		0.000	
S8	0.000		0.000		0.000	



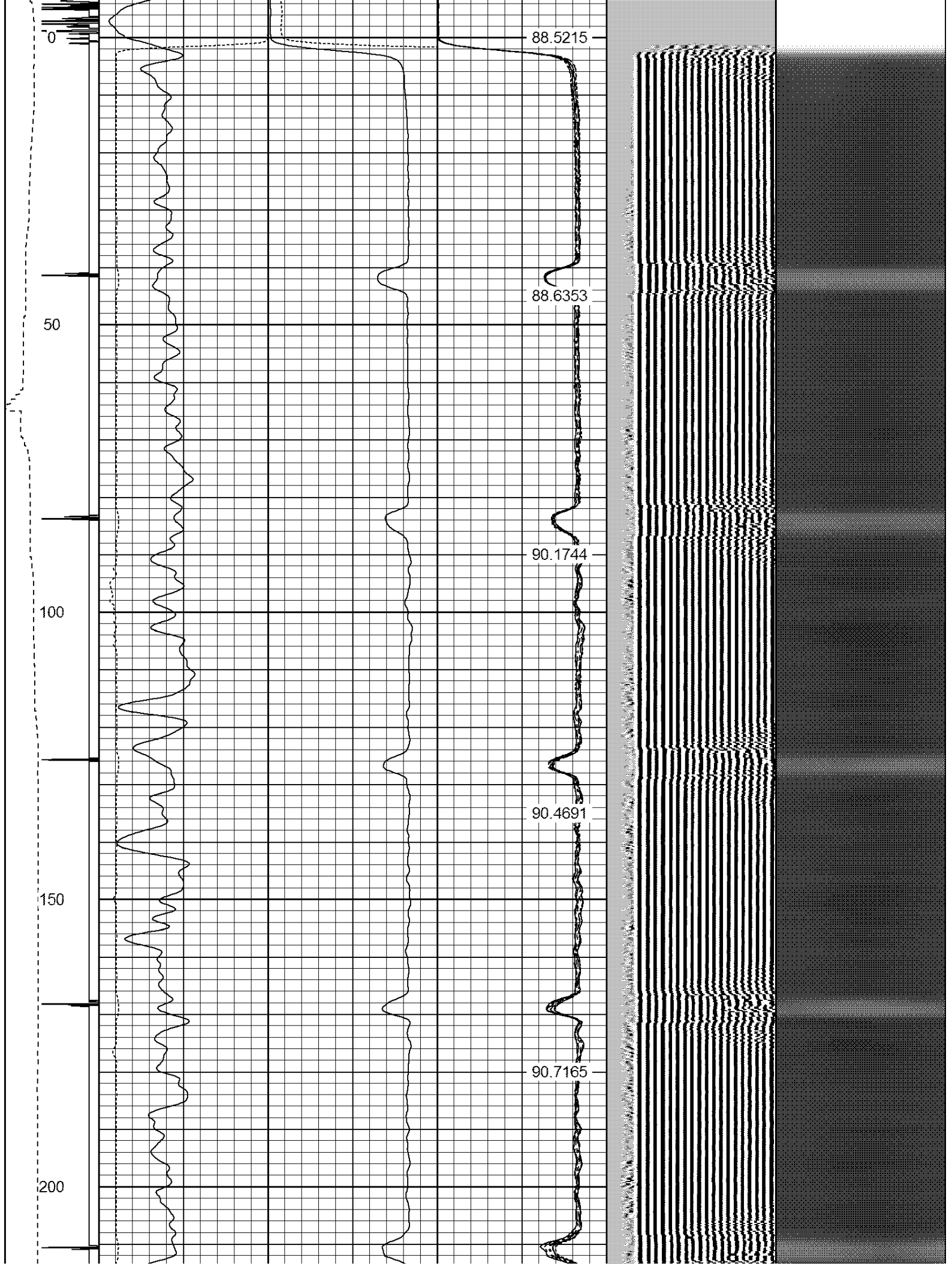
**WARRIOR**  
ENERGY SERVICES

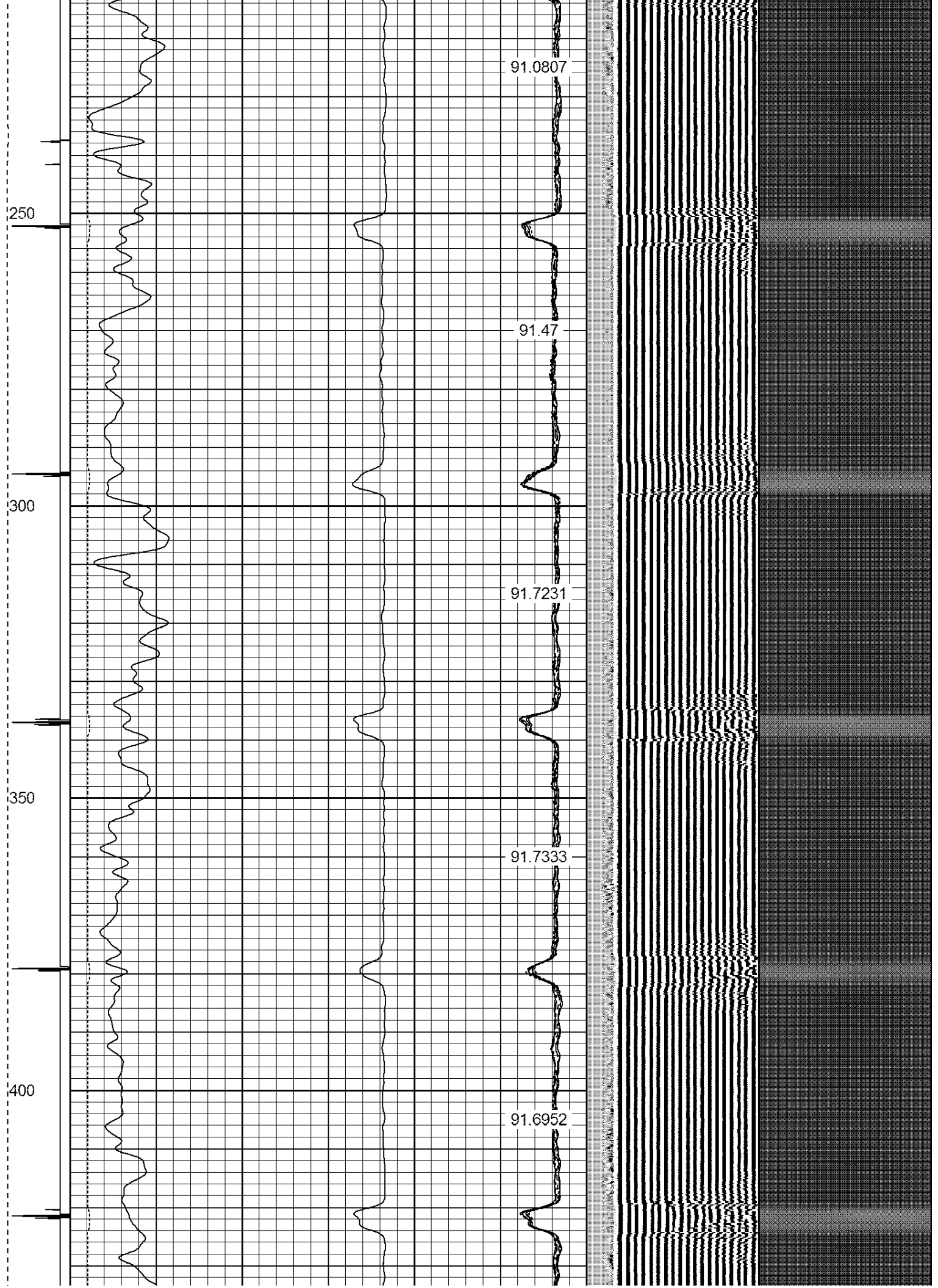
## MAIN PASS

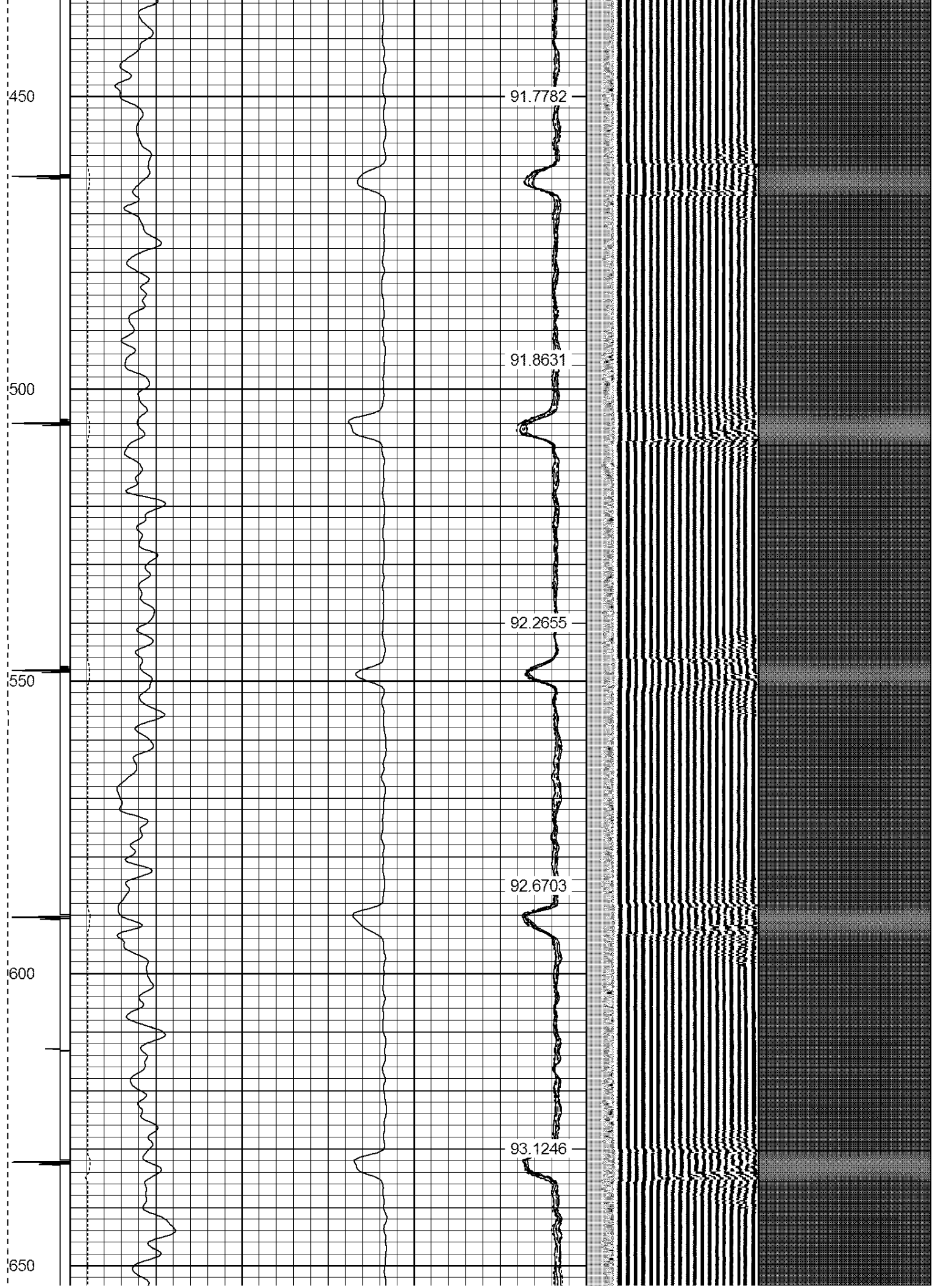
LOGGED UNDER 1000 PSI

Database File: peaks 33-2.db  
Dataset Pathname: pass3  
Presentation Format: ips\_rbt  
Dataset Creation: Tue Aug 11 12:32:35 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

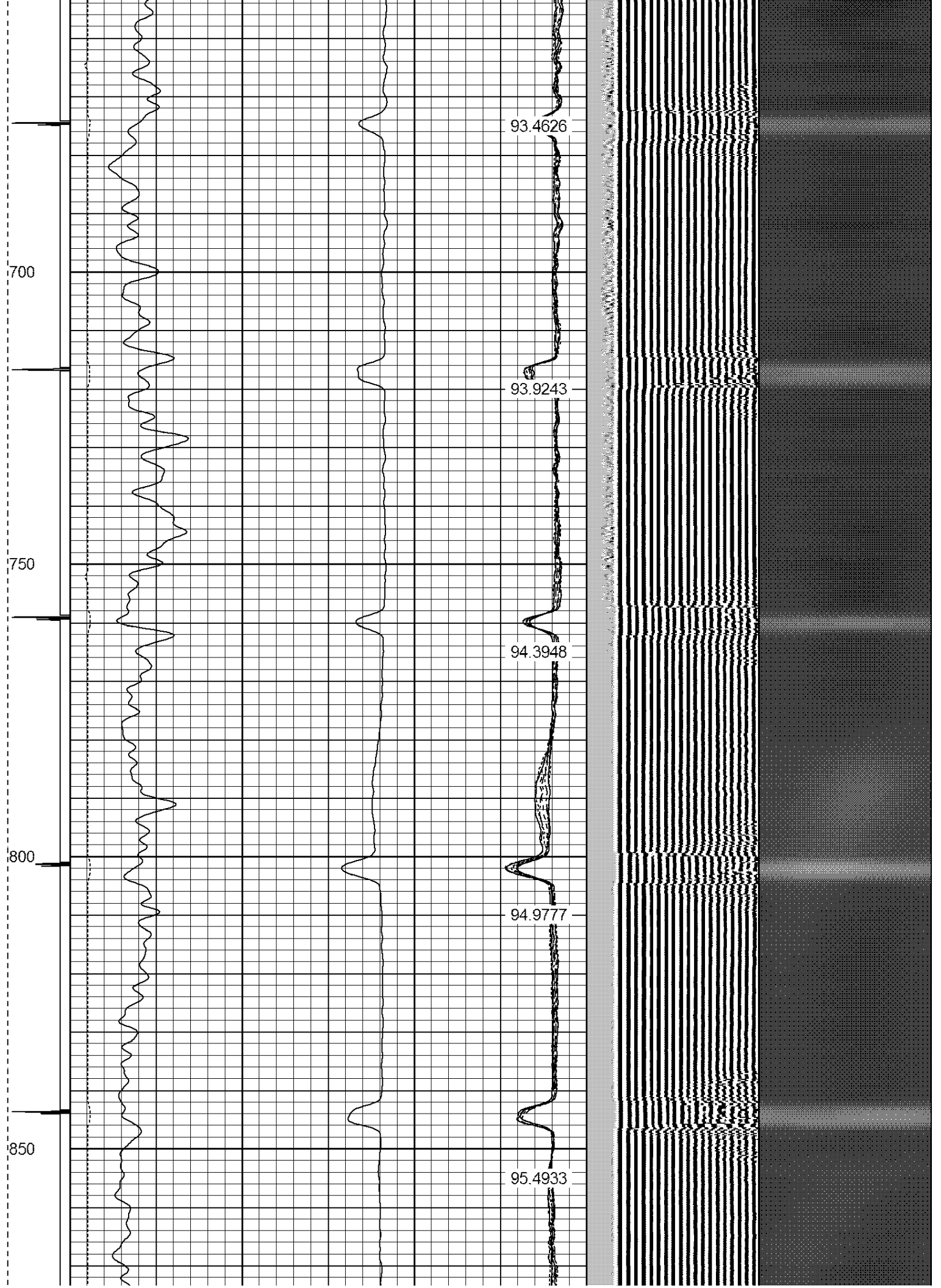
-9	CCL	1	200	TT (usec)	800	0	AMP (mV)	100	0	AMPS1	100	200	VDL	1200	1	Cement Map	8
LSPD			0	GR (cps)	200	0	AMPx5 (mV)	20	0	AMPS2	100				1		100
(ft/min)			200	GR (cps)	400				0	AMPS4	100						
0		250							0	AMPS5	100						
									0	AMPS6	100						
									0	AMPS7	100						
									0	AMPS8	100						
										IntTemp							
										(degF)							



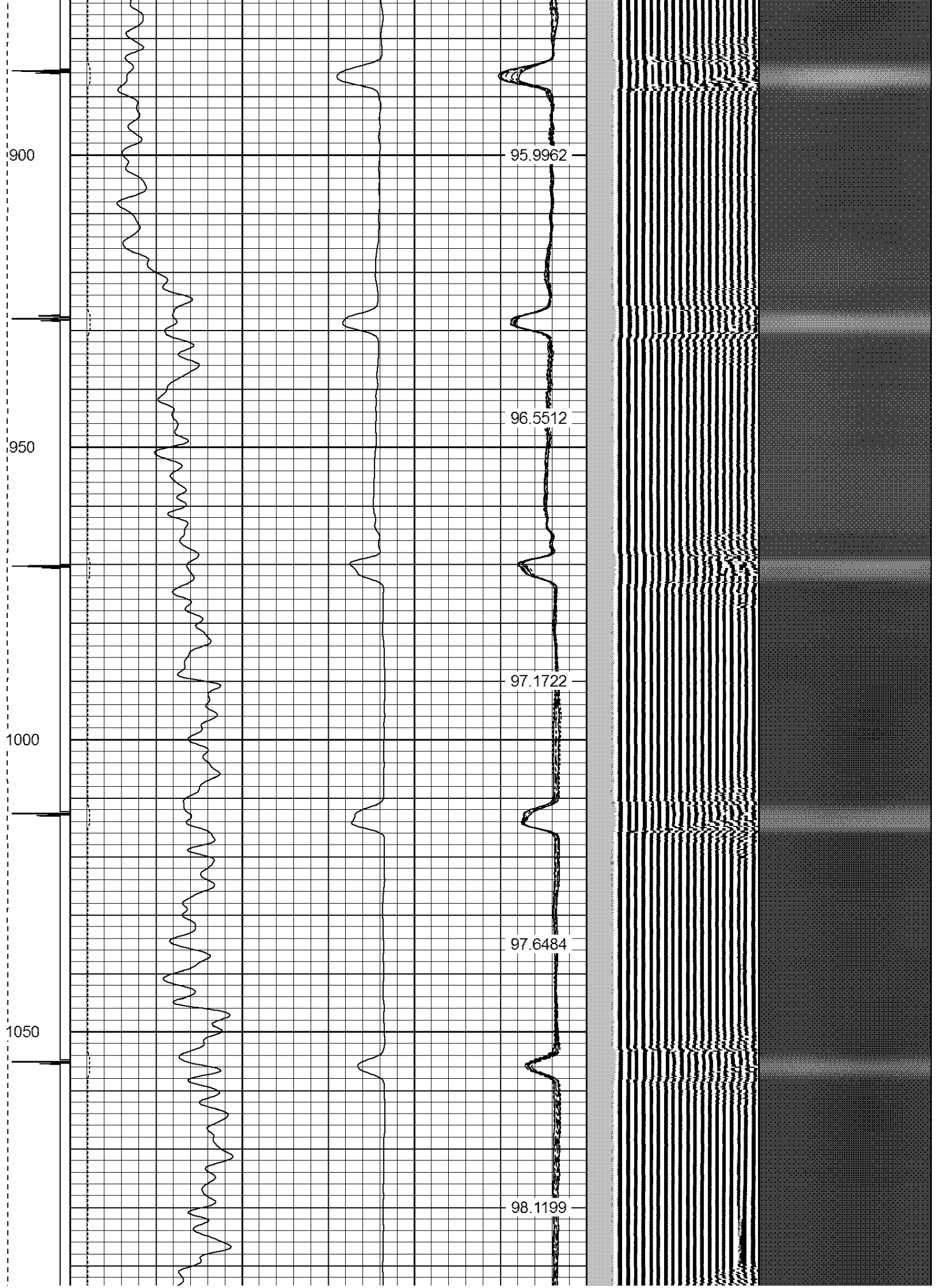












1100

1150

1200

1250

1300

98.6598

99.1511

99.6375

100.092

100.649





1550

1600

1650

1700

1750

103.624

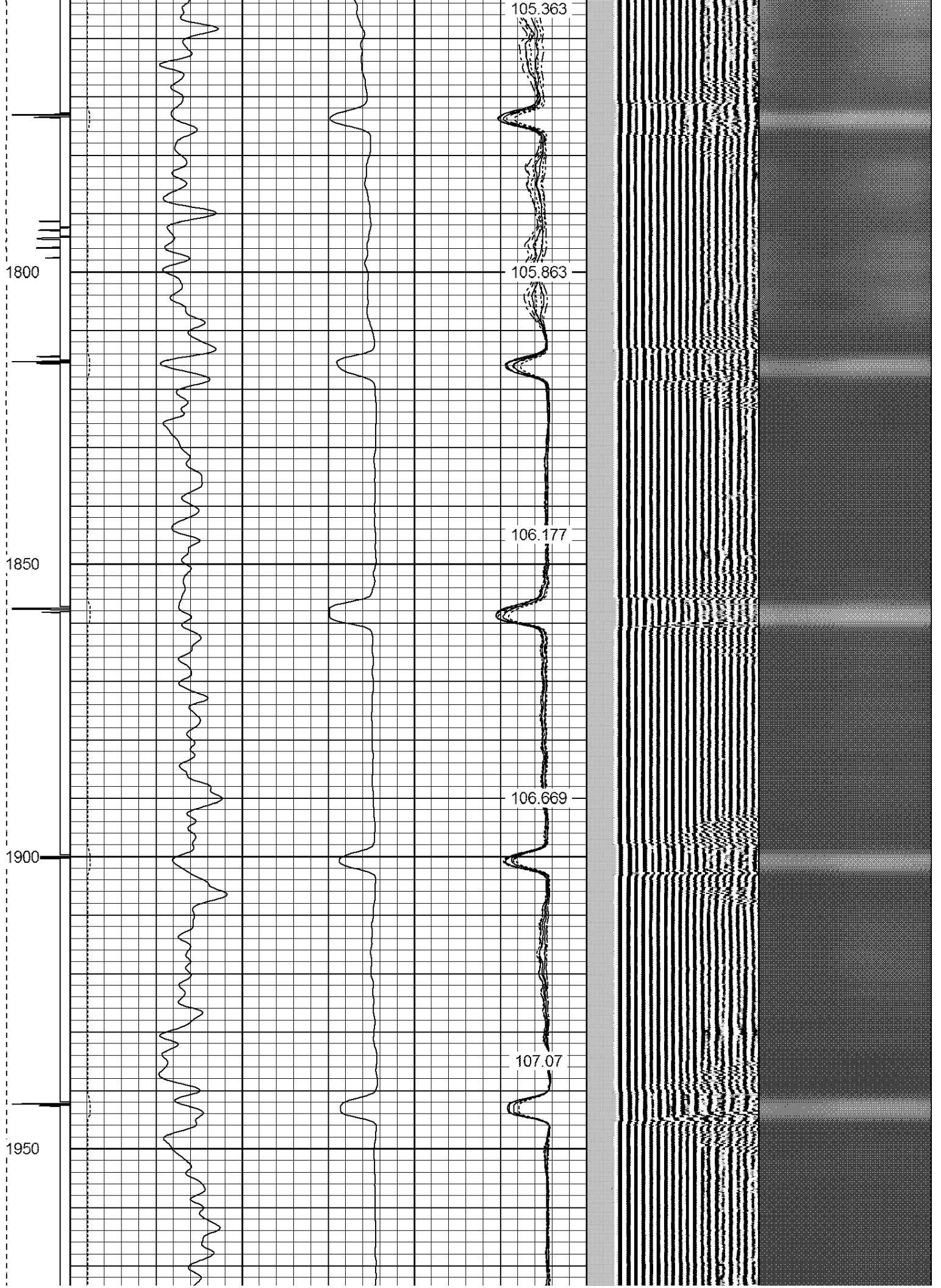
103.98

104.479

104.925









2200

2250

2300

2350

2400

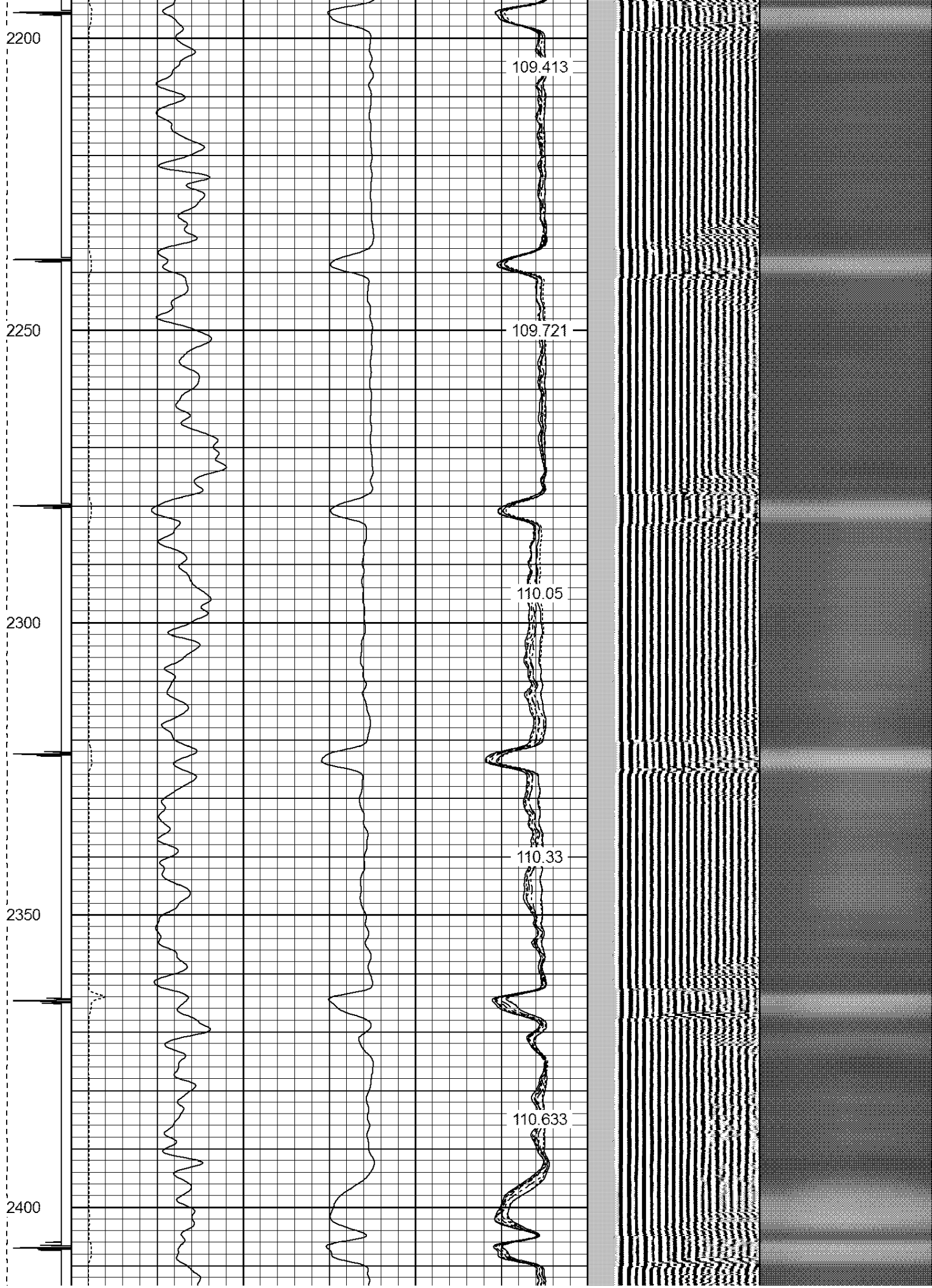
109.413

109.721

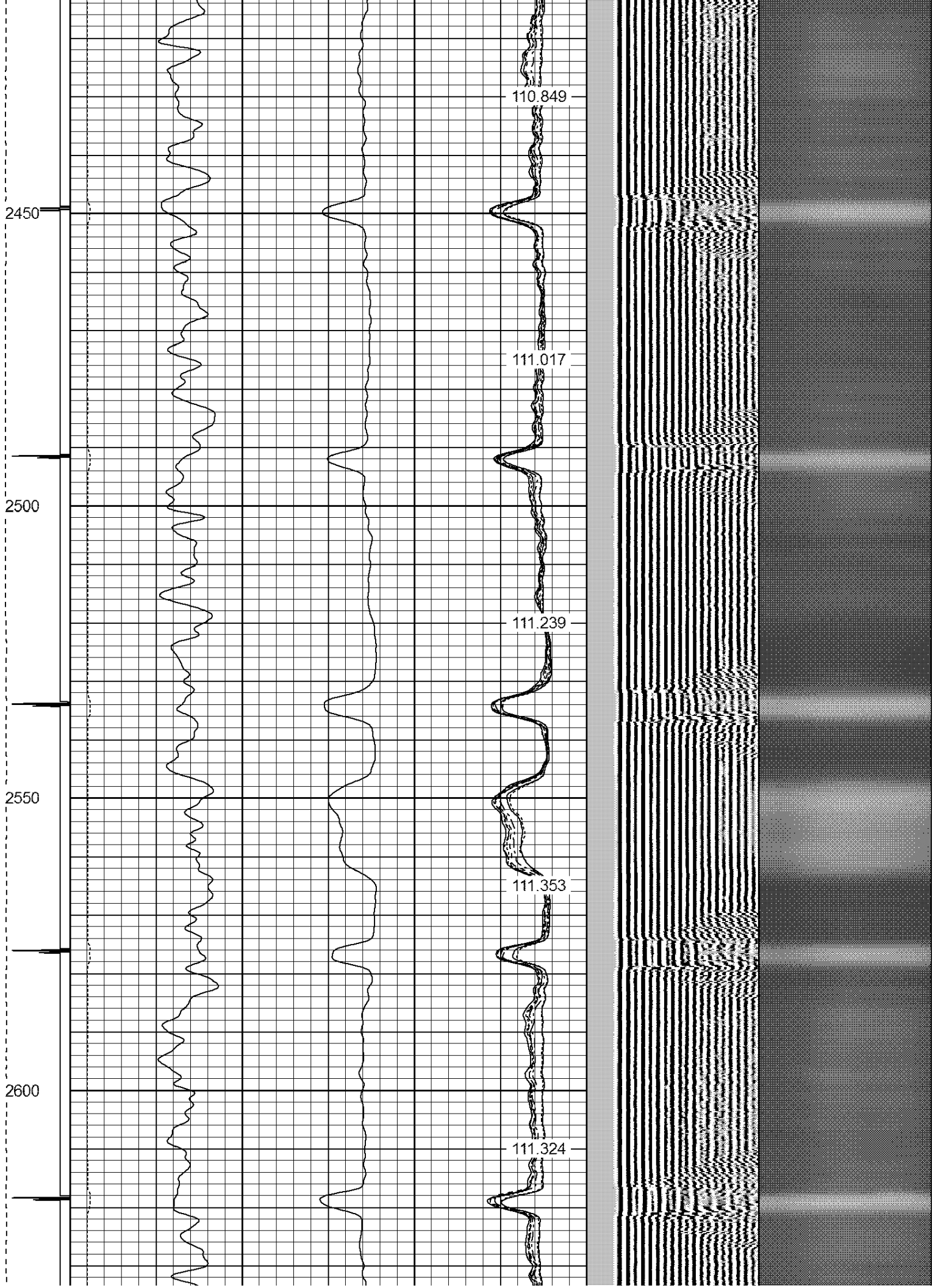
110.05

110.33

110.633







2650

111.329

2700

111.351

2750

111.23

2800

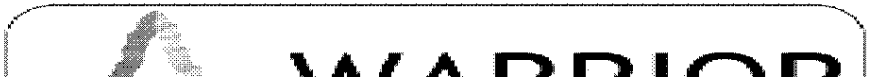
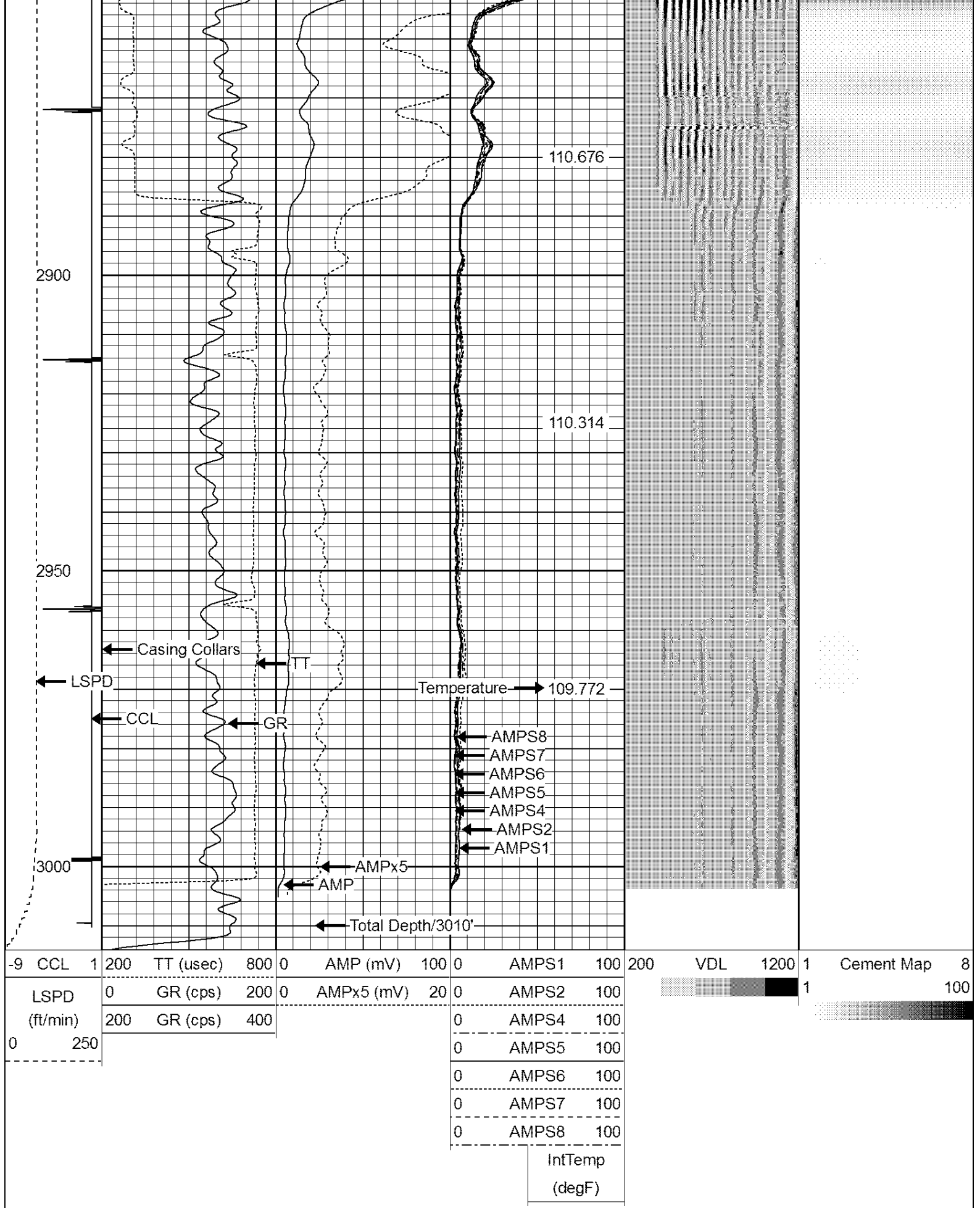
111.144

Top of Cement

111.035

2850







**WARRIOR**  
**ENERGY SERVICES**

Well	PEAKS 33-2
Field	WATTENBERG
County	WELD
State	COLORADO