



# NABORS

**COMPLETION  
& PRODUCTION  
SERVICES CO.**

**COMPENSATED  
DENSITY / NEUTRON  
PE LOG**

Company	MULL DRILLING COMPANY, INC.		
Well	CHAMPLIN - ALDRICH 'A' #7		
Field	CHEYENNE WELLS		
County	CHEYENNE	State	COLORADO
Location:	APL # : 05-017-07795-00		Other Services DIL/MEL SONIC
1982' FSL & 900' FEL			
Permanent Datum	GROUND LEVEL	Elevation	4265
Log Measured From	KELLY BUSHING 11' A.G.L.		
Drilling Measured From	KELLY BUSHING		
SEC 33 TWP 13S RGE 44W			
Date	9/16/14		
Run Number	ONE		
Depth Driller	5510		
Depth Logger	5510		
Bottom Logged Interval	5486		
Top Log Interval	4000		
Casing Driller	8 5/8" @ 1745'		
Casing Logger	1738		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3,300 PPM	
Density / Viscosity	9.1/56		
pH / Fluid Loss	9.0/8.0		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	.950 @ 70F		
Rmf @ Meas. Temp	.713 @ 70F		
Rmc @ Meas. Temp	1.14 @ 70F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.512 @ 130F		
Time Circulation Stopped	3 HOURS		
Time Logger on Bottom	12:30 A.M.		
Maximum Recorded Temperature	130F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	PHIL ASKEY		

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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

THANK YOU FOR USING "NABORS" HAYS, KANSAS (785) 628-6395  
DIRECTIONS  
CHEYENNE WELLS, CO., 3N. ON HWY 385 TO "RD. U", 1E. TO "RD. 45", 1/2N., W. INTO



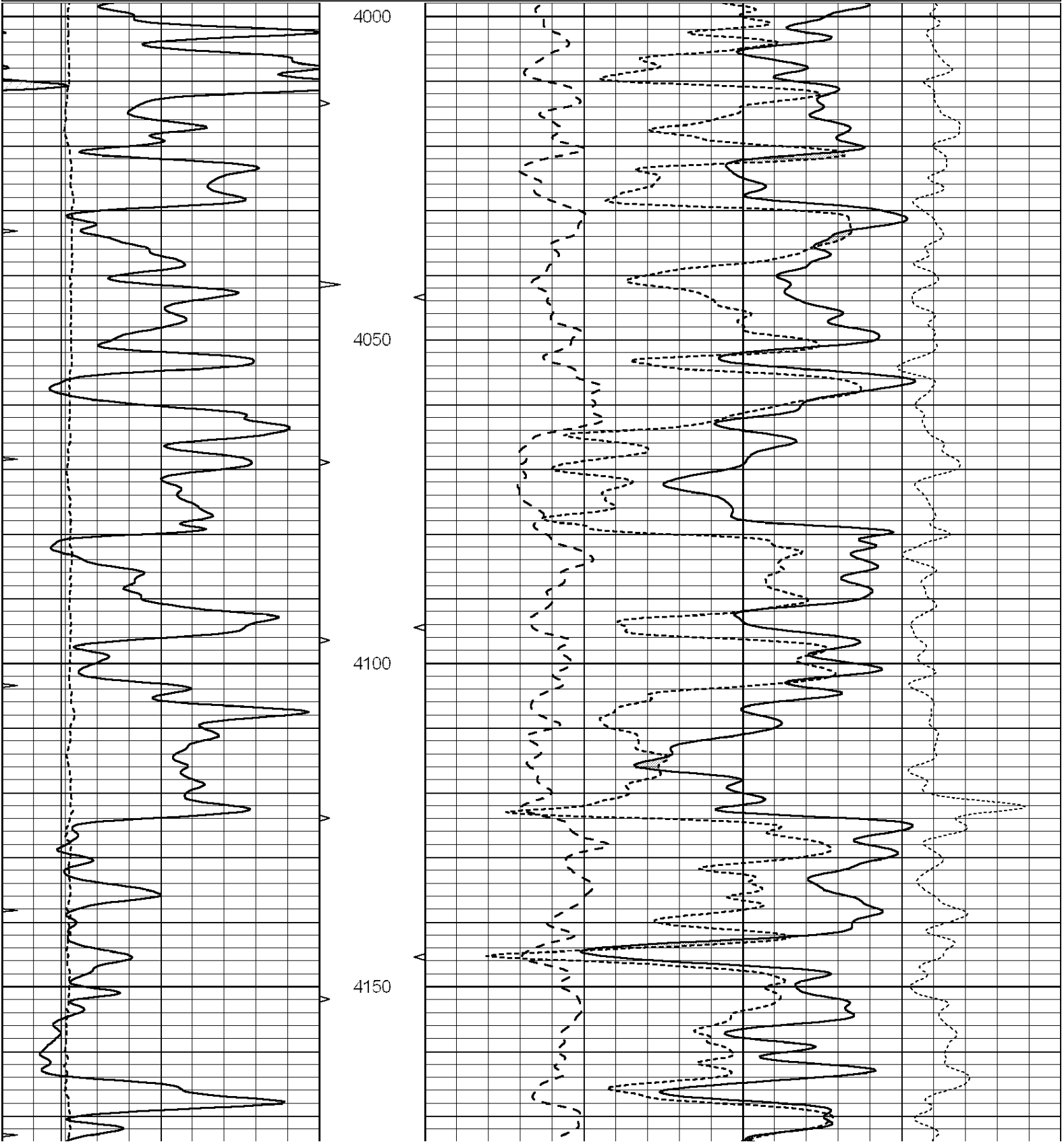
# NABORS

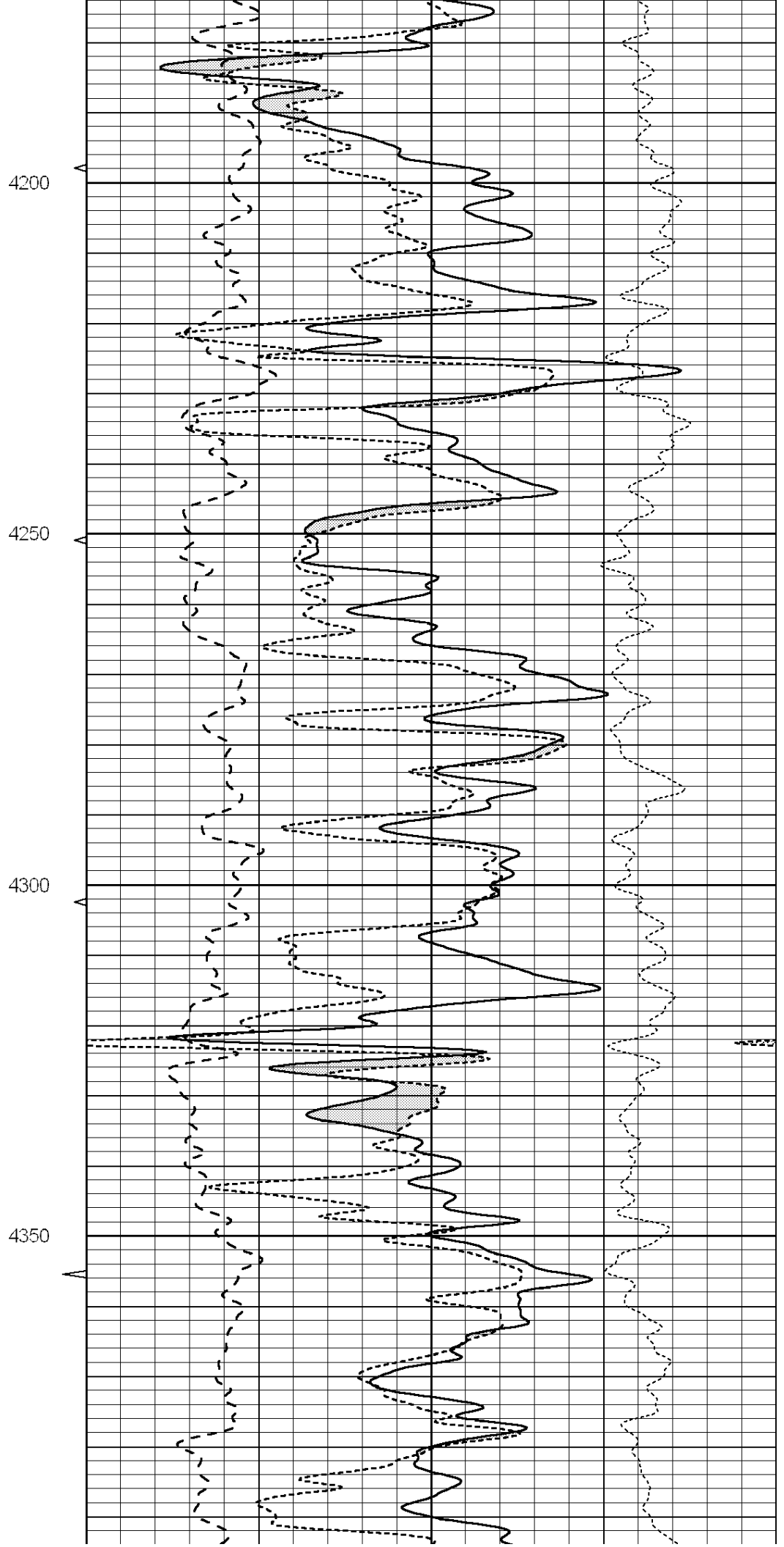
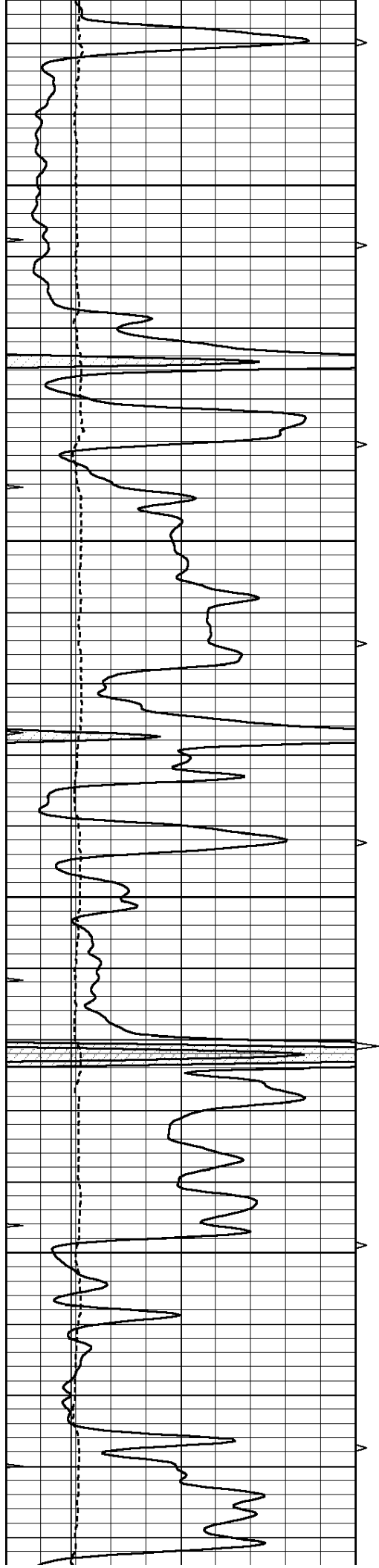
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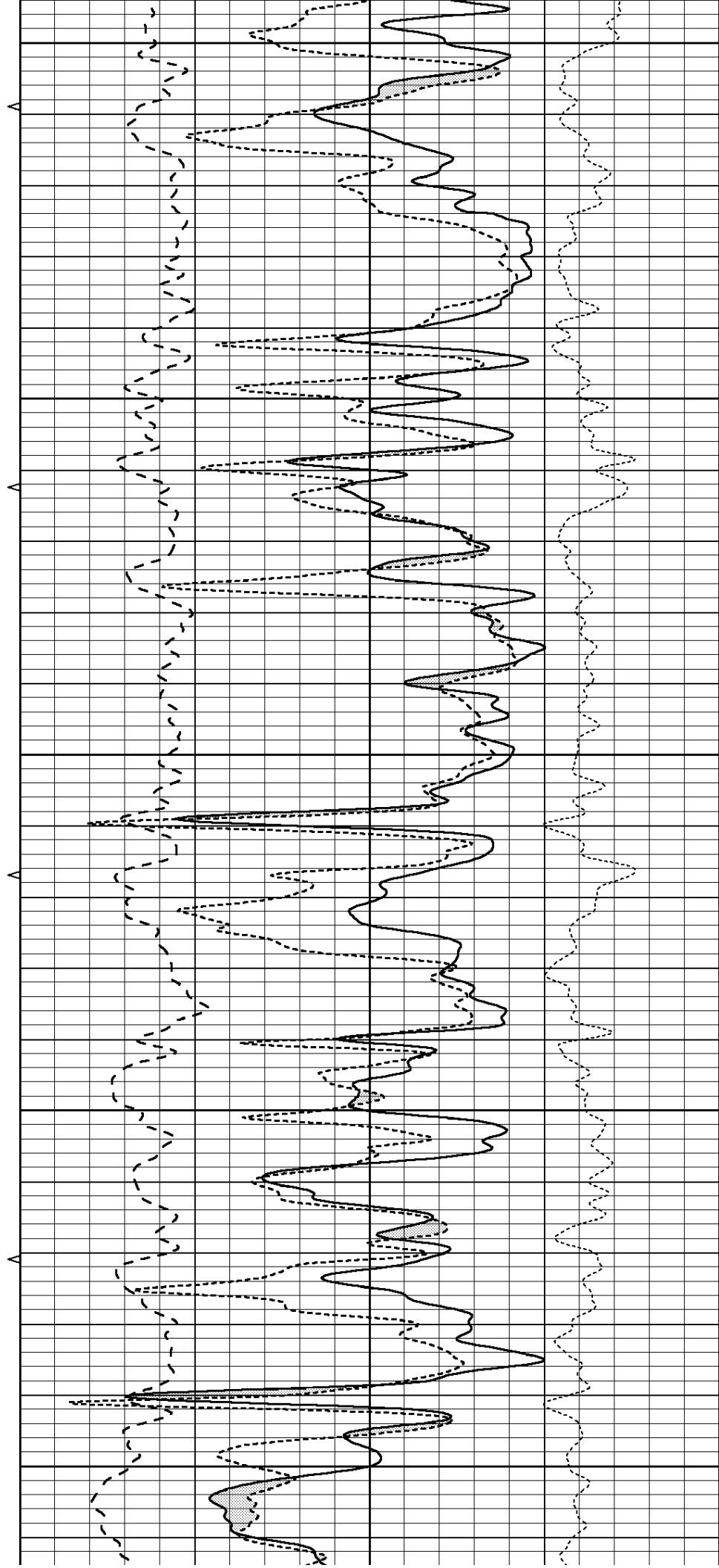
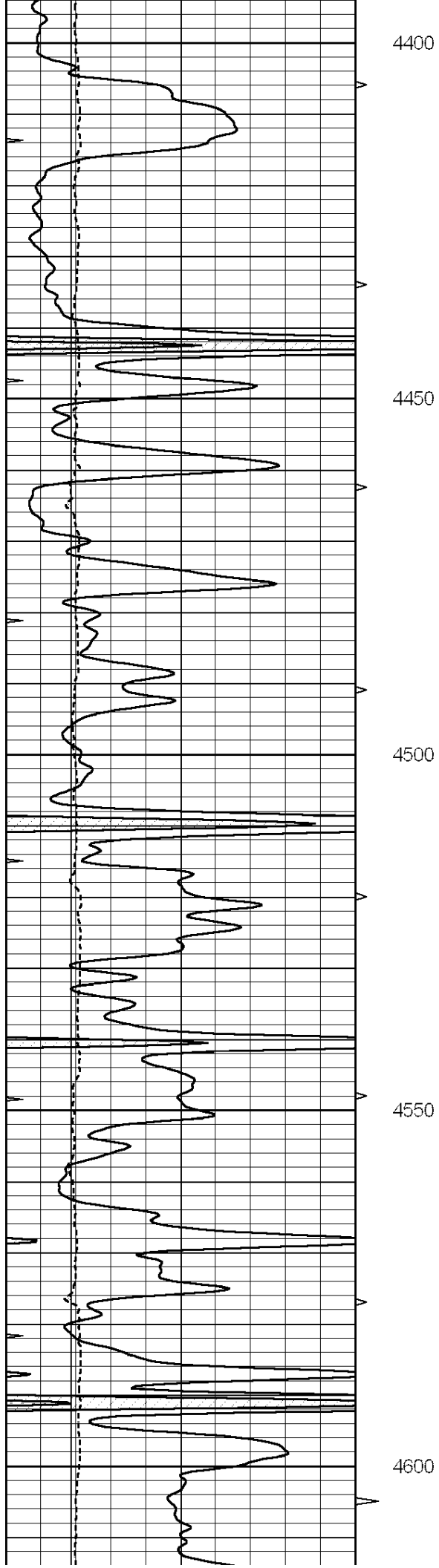
# MAIN SECTION

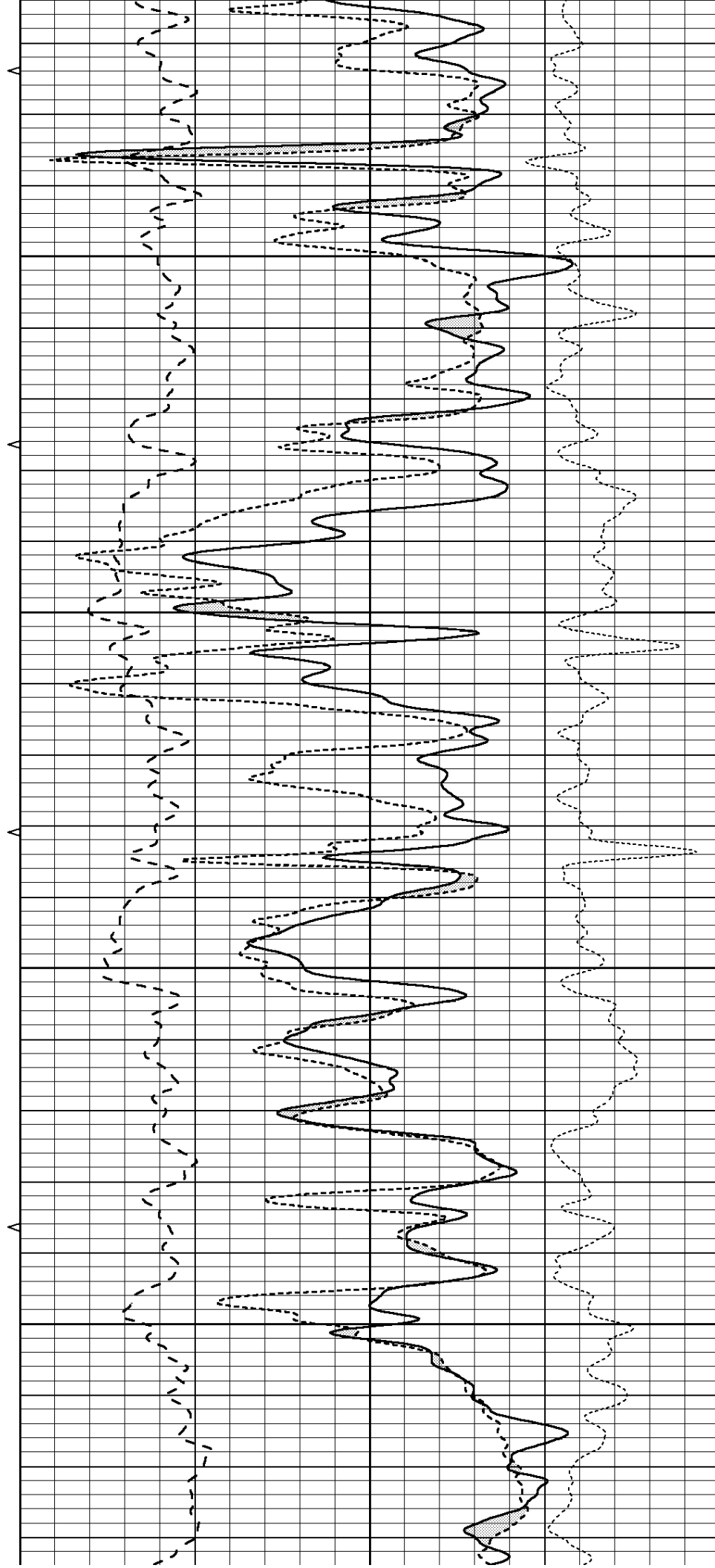
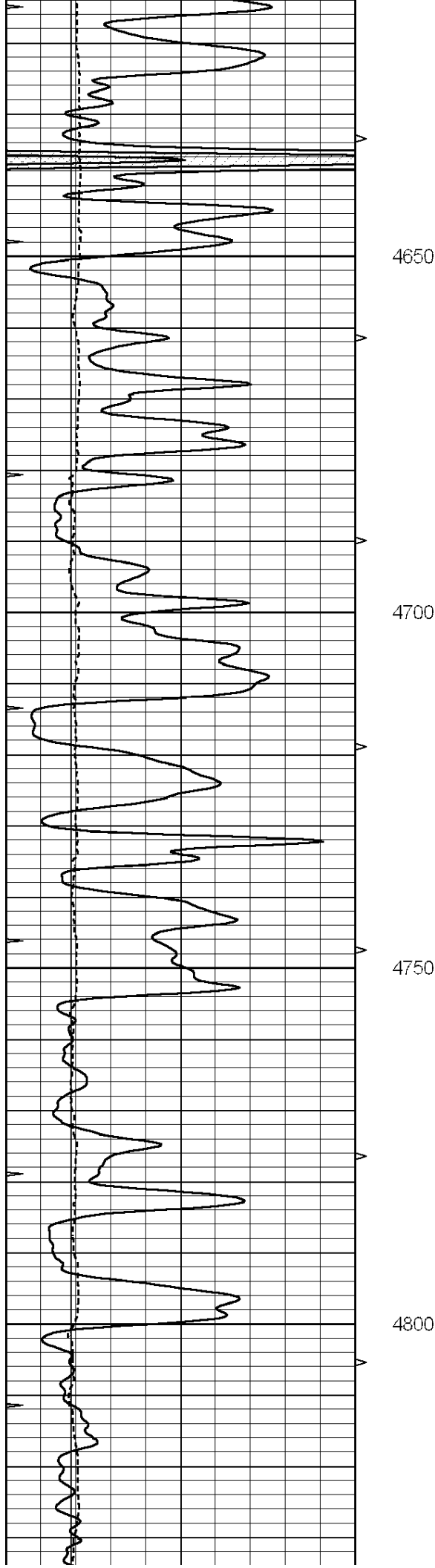
Database File: 25880pe.db  
Dataset Pathname: pass5.7  
Presentation Format: ldt\_neu  
Dataset Creation: Tue Sep 16 02:26:21 2014  
Charted by: Depth in Feet scaled 1:240

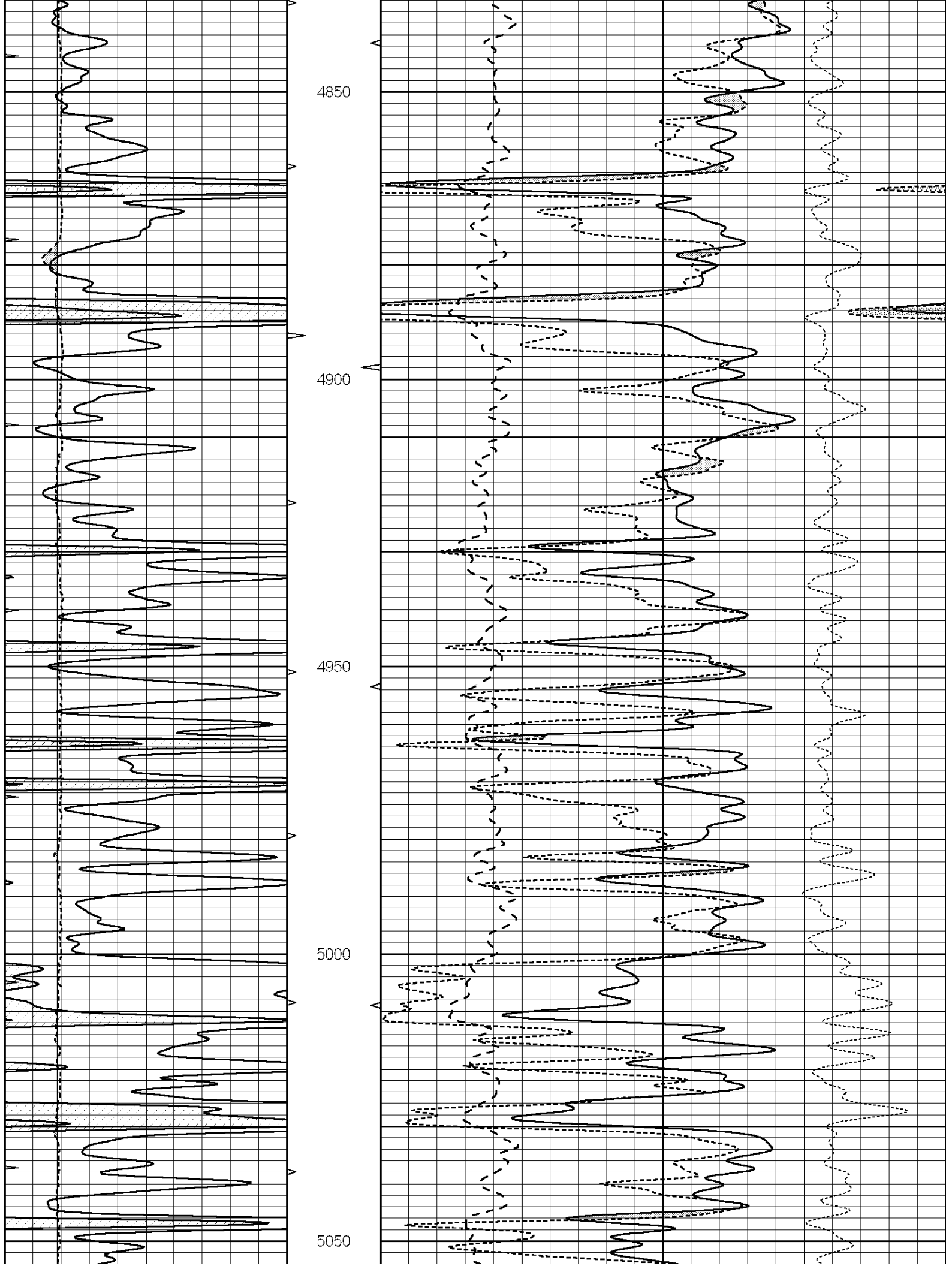
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6	CALIPER (in)	16	10 (ft3)	0	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV	0	PE	10 -0.25 CORRECTION (g/cc) 0.25
			0 (ft3)	10		

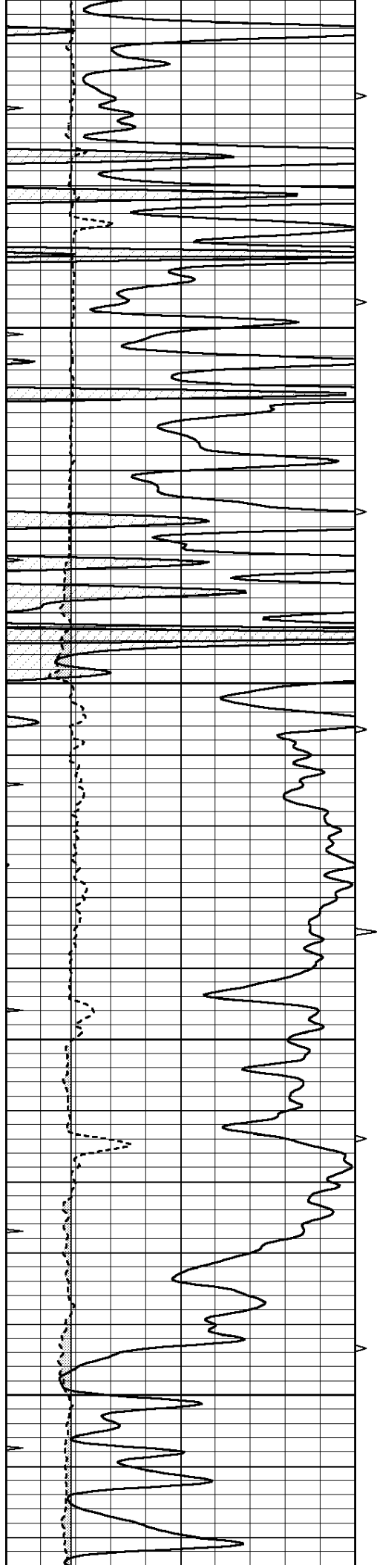










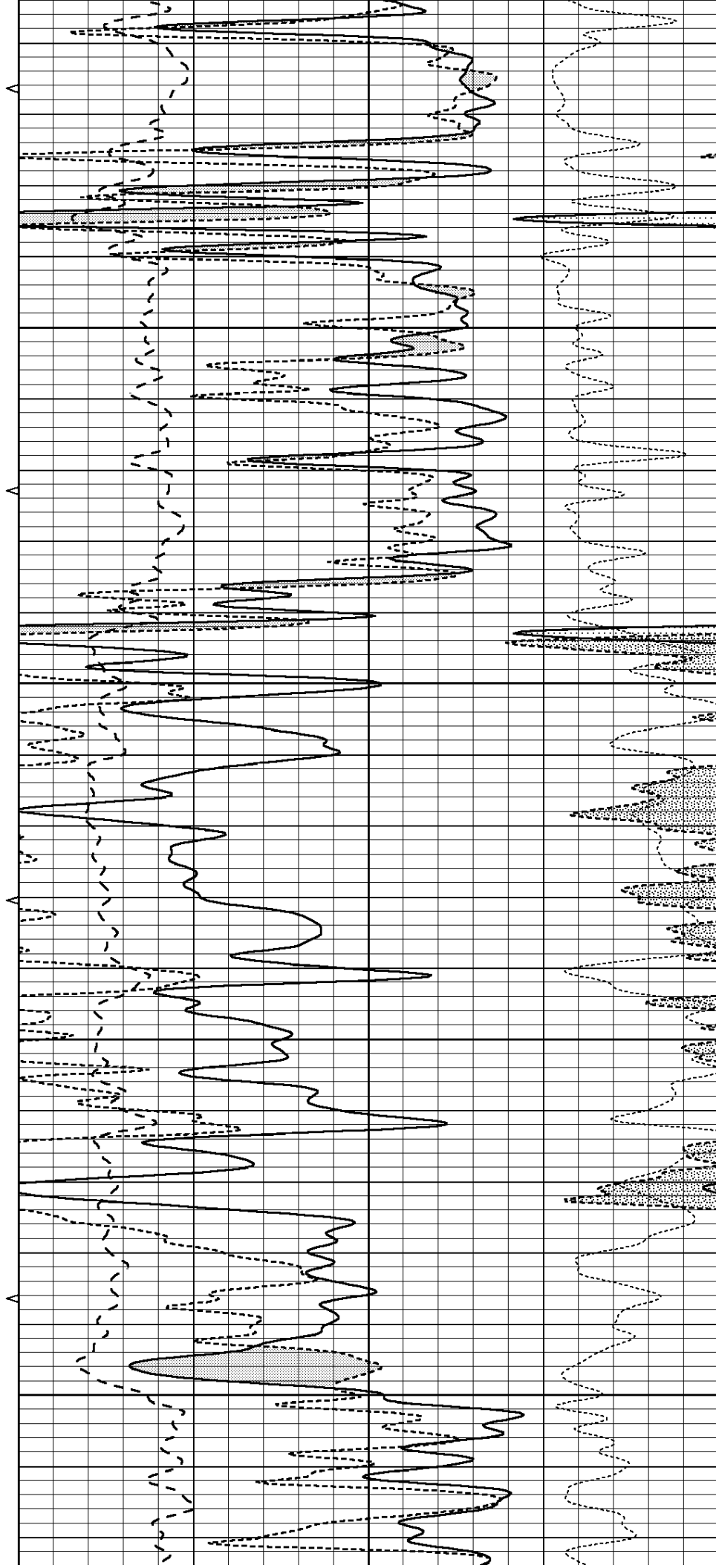


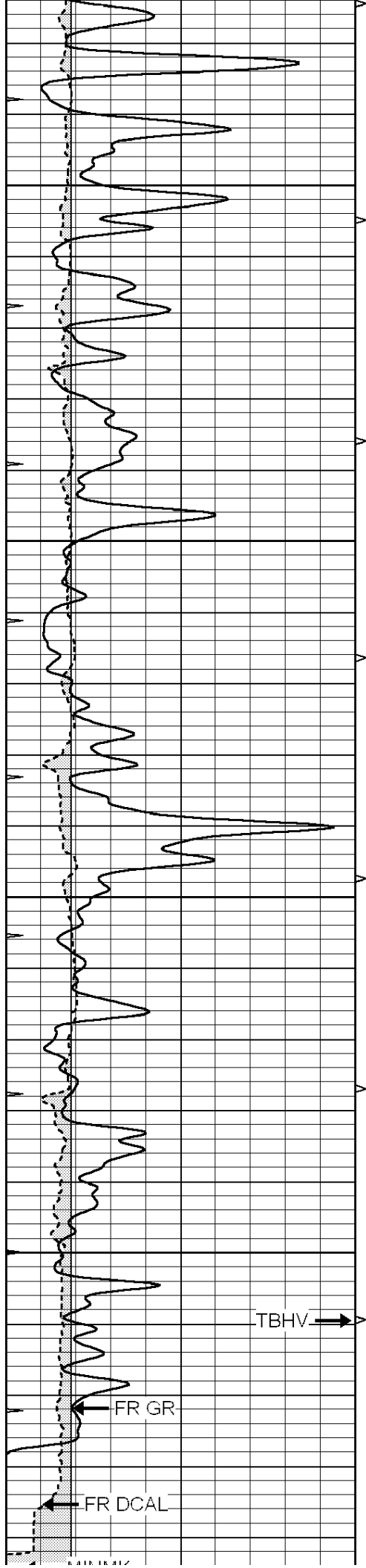
5100

5150

5200

5250





5300

5350

5400

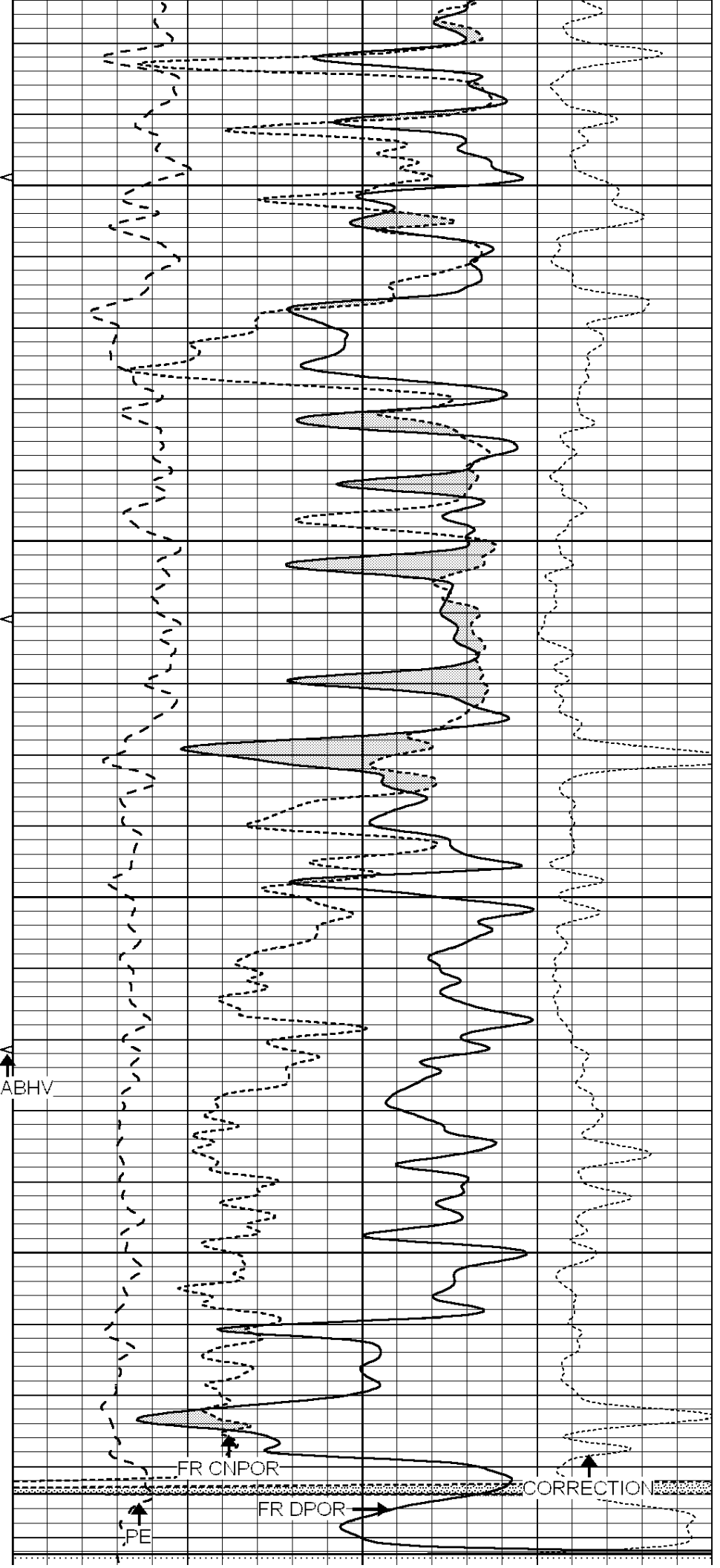
5450

TBHV →

FR GR ←

FR DCAL ←

5.5" ABHV ↑



FR CNPOR ↑

FR DPOR →

PE ↑

CORRECTION ↑



MINMK			5500														
			LTD 5510			2.71 LIMESTONE MATRIX											
0	GAMMA RAY (GAPI)		150	ABHV	30	COMPENSATED DENSITY (pu)										-10	
6	CALIPER (in)		16	10 (ft3)	0	30	COMPENSATED NEUTRON (pu)										-10
-----				-----										-----			
0	MINMK		20	TBHV	0	PE	10	-0.25	CORRECTION (g/cc)					0.25			
				0 (ft3)	10												

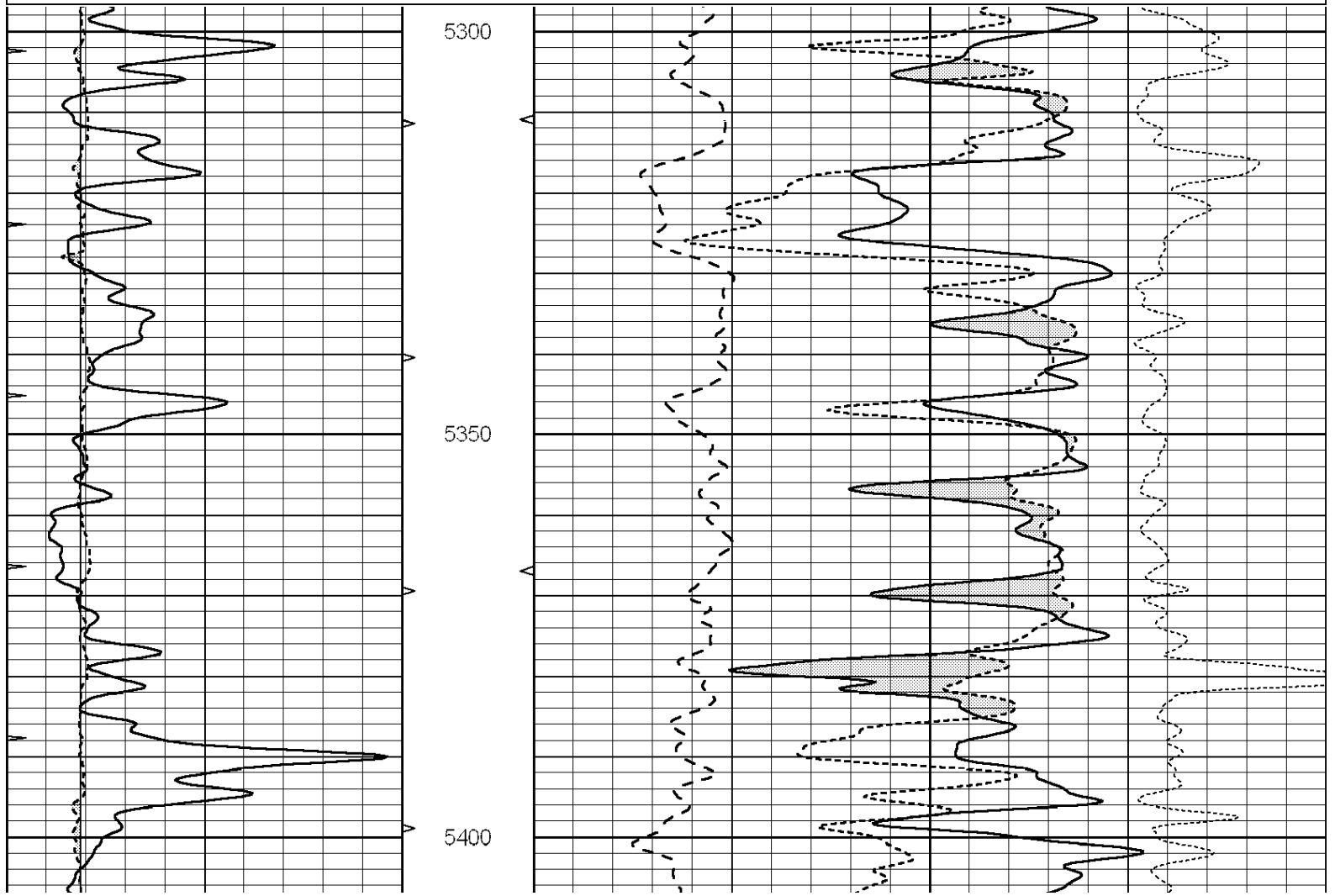


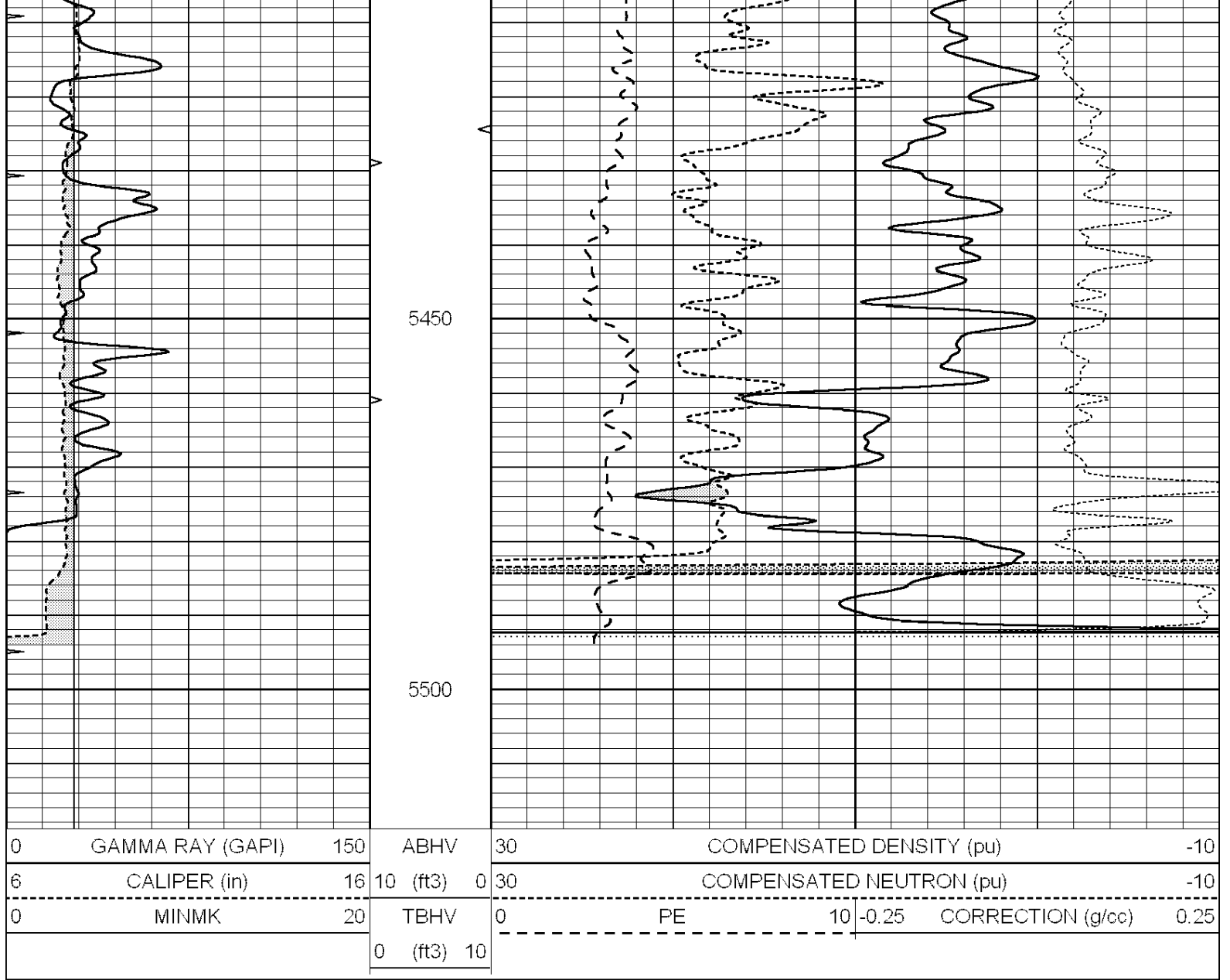
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# REPEAT SECTION

Database File: 25880pe.db  
Dataset Pathname: pass4.4  
Presentation Format: ldt\_neu  
Dataset Creation: Tue Sep 16 01:19:33 2014  
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)				-10
6	CALIPER (in)	16	10 (ft3) 0	30	COMPENSATED NEUTRON (pu)				-10
0	MINMK	20	TBHV	0	PE	10	-0.25	CORRECTION (g/cc)	0.25
			0 (ft3) 10						





### Calibration Report

Database File: 25880pe.db  
 Dataset Pathname: pass5.7  
 Dataset Creation: Tue Sep 16 02:26:21 2014

### Dual Induction Calibration Report

Serial-Model: PROBE9-DILG  
 Surface Cal Performed: Tue Sep 16 00:06:09 2014  
 Downhole Cal Performed: Mon Jul 28 12:02:56 2008  
 After Survey Verification Performed: Mon Jul 28 12:02:56 2008

#### Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	670.000	-10.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	670.000	-24.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.011	0.610	V	0.000	400.000	mmho/m	667.135	-7.256
Medium	0.005	0.712	V	0.000	464.000	mmho/m	655.677	-3.102

#### Downhole Calibration

Downhole Calibration								
Readings				References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	14.508	388.384	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	166.367	504.400	mmho/m	1.000	0.000
LL3		7.500	V		1400.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		4000.000	mmho-m		

After Survey Verification								
Readings				Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
Medium	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
LL3		1.000	Ohm-m		1.000	Ohm-m		
		0.000	Ohm-m		0.000	Ohm-m		
		1.000	mmho-m		1.000	mmho-m		

Litho Density Calibration Report								
Serial: 004N      Model: PRB								

Master Calibration					Performed Fri May 30 11:01:00 2014			
	Background	Magnesium	Aluminum	Sandstone				
Window 1	1378.8	10804.6	3492.0	12453.4	cps			
Window 2	1262.4	9313.5	3076.7	10594.7	cps			
Window 3	1077.6	5668.7	2076.0	6314.8	cps			
Window 4	306.4	313.0	306.4	315.6	cps			
Long Space	0.0	8051.0	1814.3	9332.3	cps			
Short Space	1.9	1706.1	1146.0	1707.6	cps			
Rho		1.7100	2.5900	1.3800	g/cc			
Pe		0.0000	2.5700	1.5500				
Rib Angle	: 45.0	Rib Slope	: 1.002	Density/Spine Ratio	: 0.571			
Spine Angle	: 75.0	Spine Slope	: 3.745	Spine Intercept	: -18.9			

Before Survey Verification					Performed Wed Dec 31 18:00:00 1969			
Window 1	0.0	0.0	0.0	0.0	cps			
Window 2	0.0	0.0	0.0	0.0	cps			
Window 3	0.0	0.0	0.0	0.0	cps			
Window 4	0.0	0.0	0.0	0.0	cps			
Long Space	0.0	0.0	0.0	0.0	cps			
Short Space	0.0	0.0	0.0	0.0	cps			
Measured Rho		0.0000	0.0000	0.0000	g/cc			
Measured Correction		0.0000	0.0000	0.0000	g/cc			
Measured Pe			0.0000	0.0000				

After Survey Verification					Performed Wed Dec 31 18:00:00 1969			
Window 1	0.0	0.0	0.0	0.0	cps			
Window 2	0.0	0.0	0.0	0.0	cps			
Window 3	0.0	0.0	0.0	0.0	cps			
Window 4	0.0	0.0	0.0	0.0	cps			
Long Space	0.0	0.0	0.0	0.0	cps			
Short Space	0.0	0.0	0.0	0.0	cps			
Measured Rho		0.0000	0.0000	0.0000	g/cc			
Measured Correction		0.0000	0.0000	0.0000	g/cc			
Measured Pe			0.0000	0.0000				

Compensated Neutron Calibration Report			
Serial Number:		070808	
Tool Model:		Probe	
PRE-SURVEY VERIFICATION			
Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu
POST-SURVEY VERIFICATION			
Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu
Gamma Ray Calibration Report			
Serial Number:	070558		
Tool Model:	OPEN_GR		
Performed:	Mon Jun 30 21:53:39 2014		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.2800	GAPI/cps	