



**COMPENSATED
DENSITY / NEUTRON
PE LOG**

Company HARTMAN OIL COMPANY, INC.
Well SANDERS #2
Field DUQUOIN TOWNSITE
County HARPER
State KANSAS

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County HARPER State KANSAS

Location: API # : 15-077-22180-0000
4290' FSL & 1980' FEL
S/2 - NW - NE
Permanent Datum GROUND LEVEL Elevation 1587
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING
Other Services DIL/MEL
Elevation
K.B. 1592
D.F. 1590
G.L. 1587

Date	12/20/18		
Run Number	ONE		
Depth Driller	4400		
Depth Logger	4401		
Bottom Logged Interval	4377		
Top Log Interval	3100		
Casing Driller	8 5/8"@287'		
Casing Logger	287		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 5,500 PPM	
Density / Viscosity	9.4/52		
pH / Fluid Loss	10.0/8.8		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	.600@80F		
Rmf @ Meas. Temp	.450@80F		
Rmc @ Meas. Temp	.720@80F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.720@80F		
Time Circulation Stopped	2.5 HOURS		
Time Logger on Bottom	8:30 A.M.		
Maximum Recorded Temperature	120F		
Equipment Number	922339		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	LOREN DEEVER		

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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

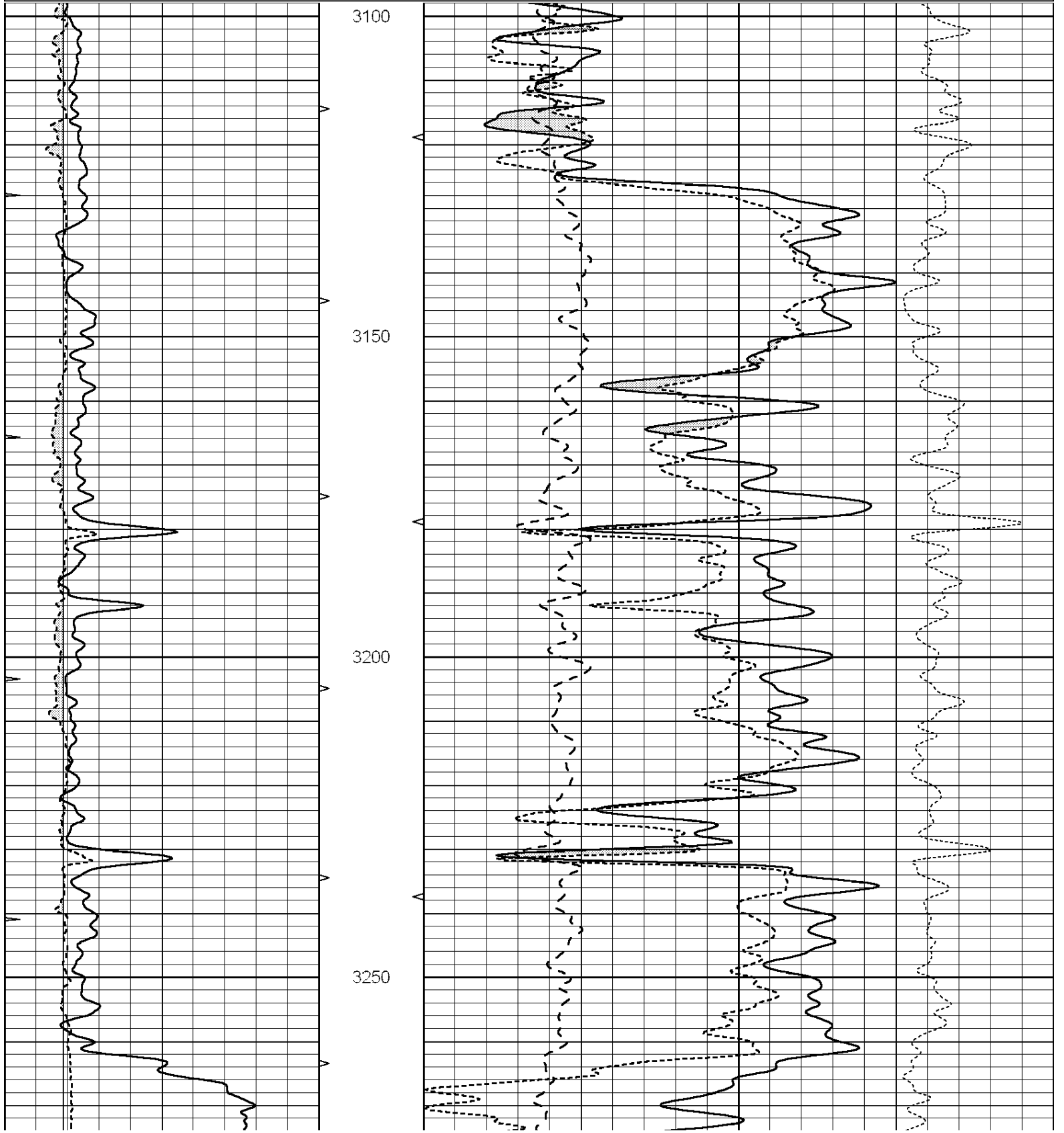
THANK YOU FOR USING ELI WIRELINE HAYS, KANSAS (785) 628-6395
DIRECTIONS
RAGO, KS., 5S. ON HWY 14. TO "RD. 180", 3/4W., S. INTO

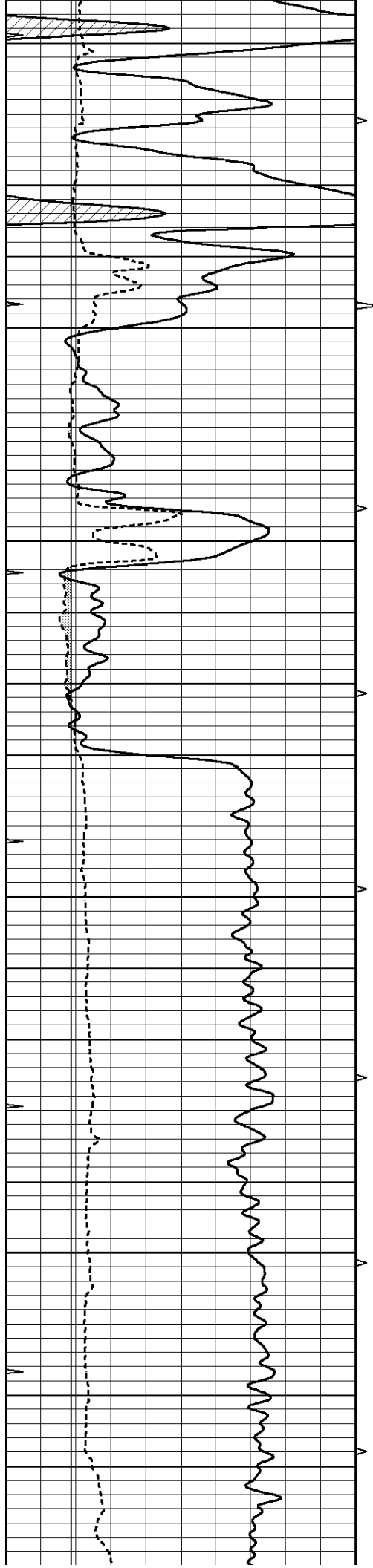


MAIN SECTION

Database File: 3326pe.db
 Dataset Pathname: pass3.2
 Presentation Format: ldt_neu
 Dataset Creation: Thu Dec 20 10:21:37 2018 by Calc SOC 120430
 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	COMPENSATED NEUTRON (pu)		-10
0	MINMK	20	TBHV	0	PE	10	-0.25 CORRECTION (g/cc) 0.25
			0 (ft3)	10			



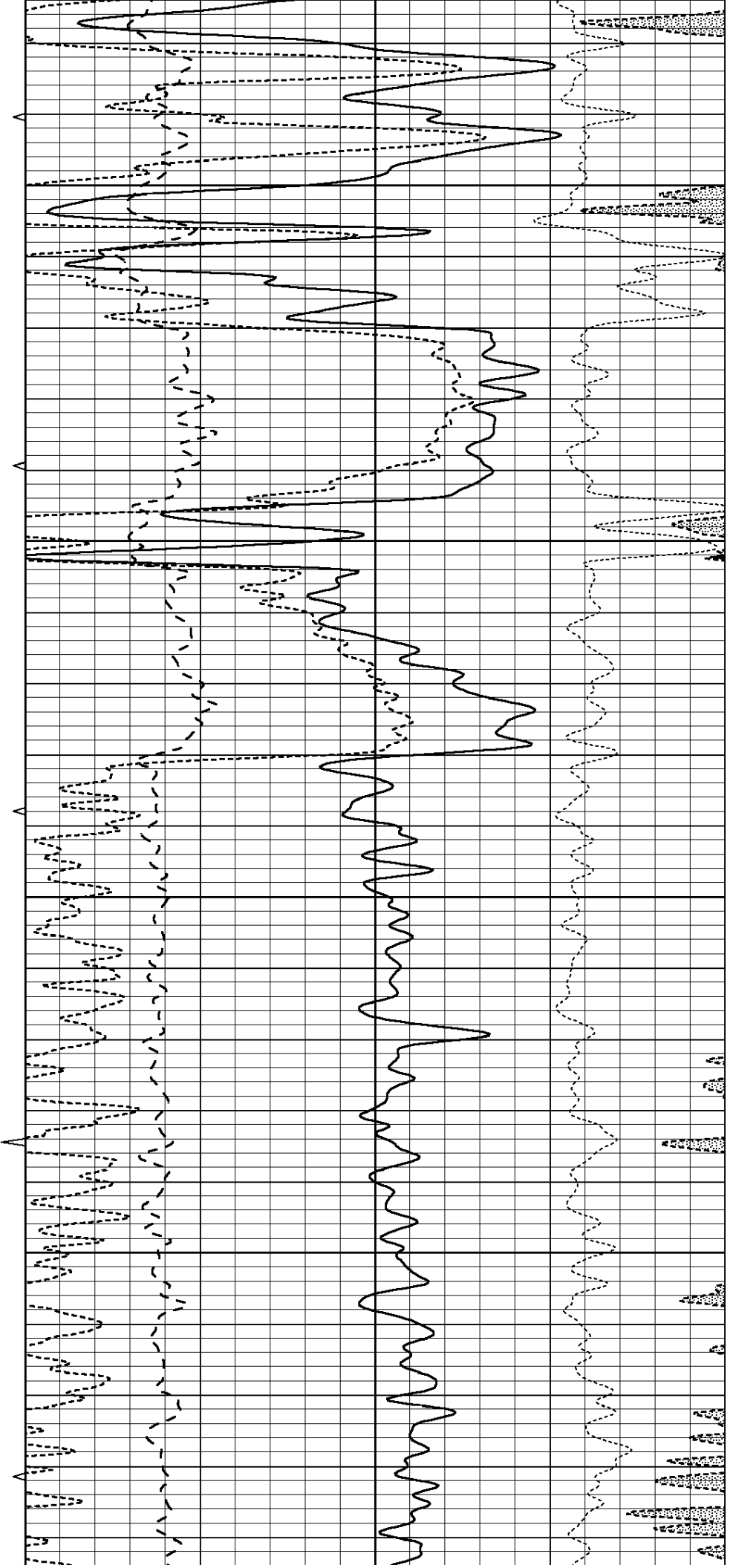


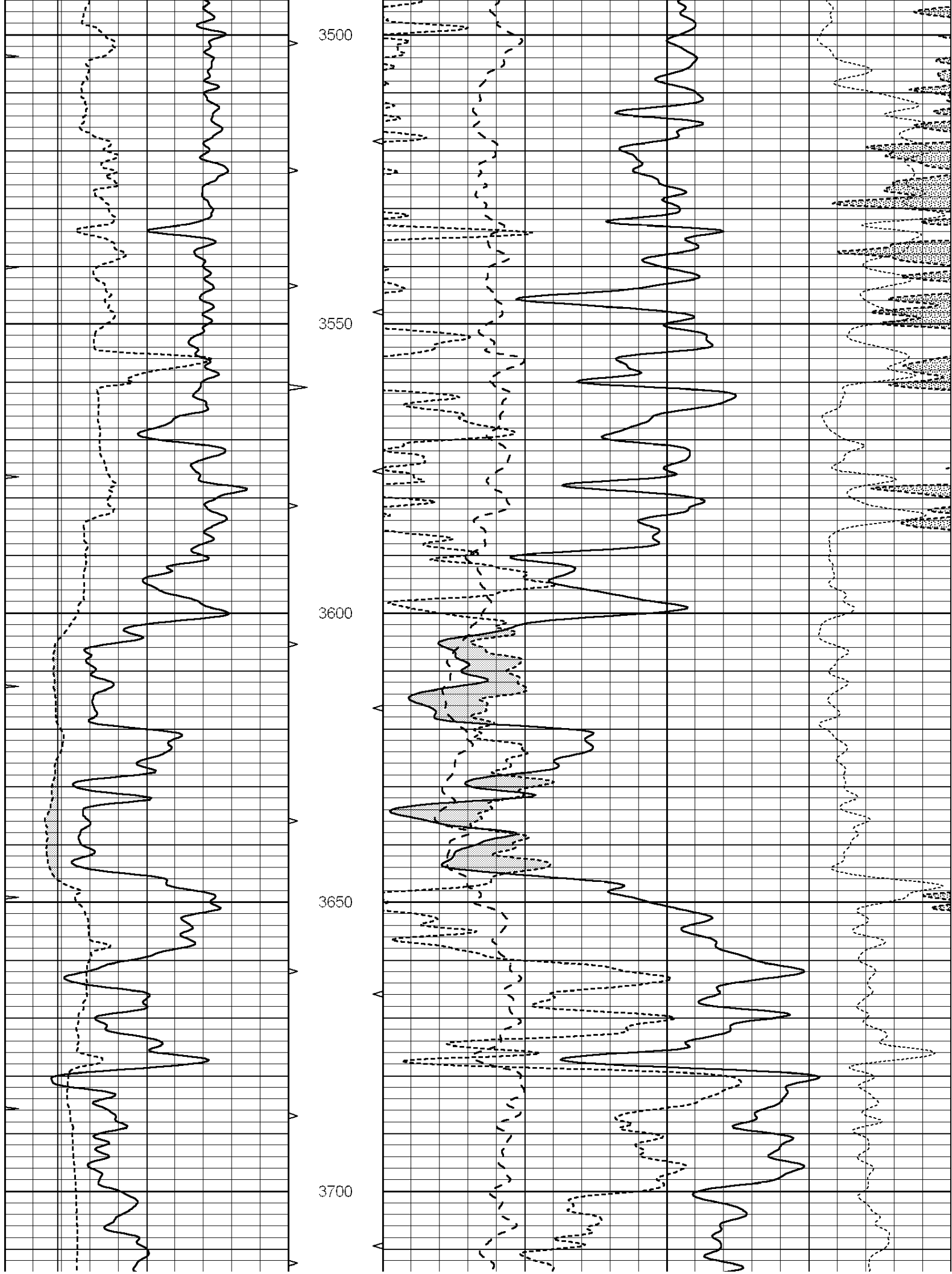
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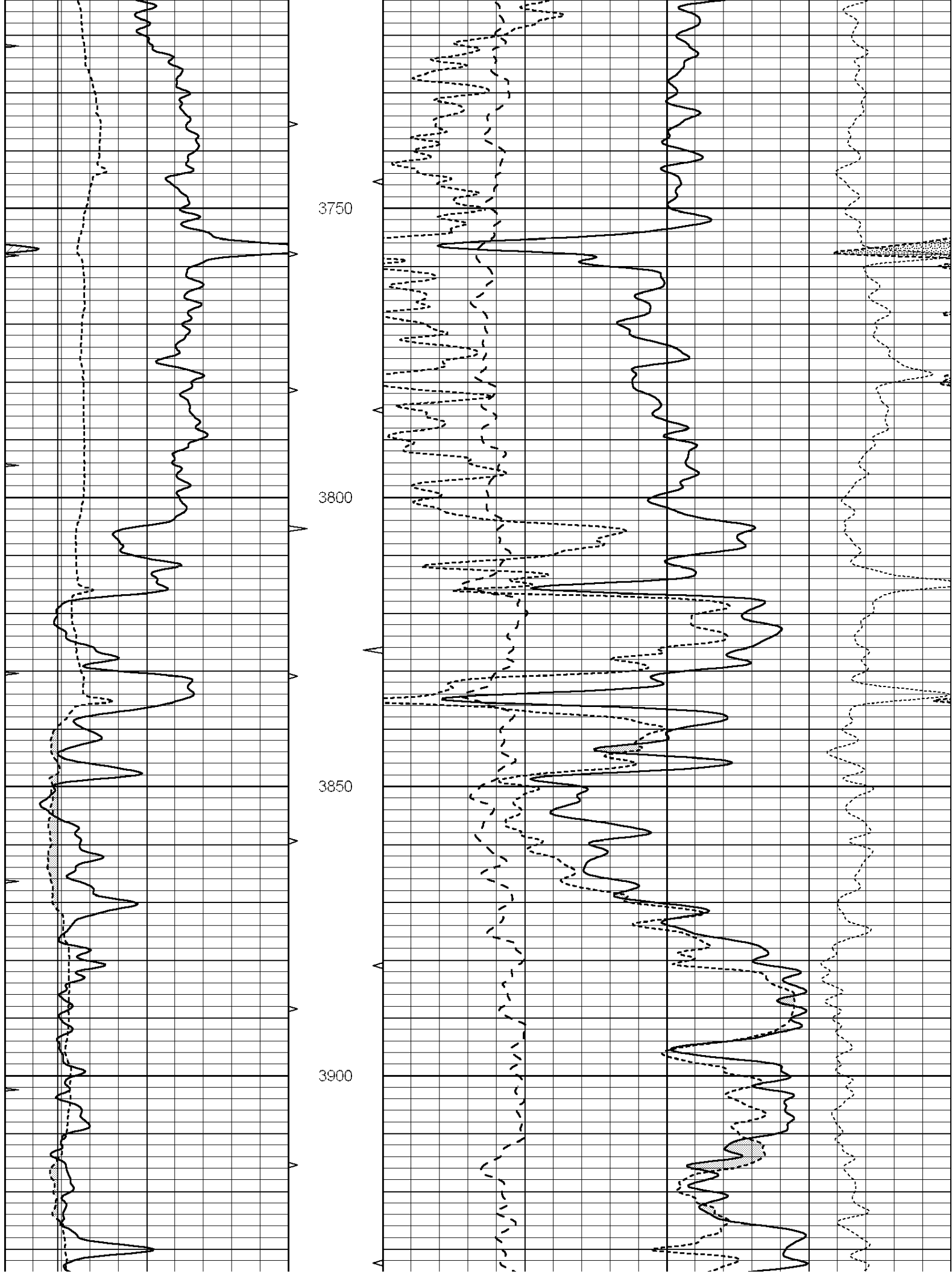
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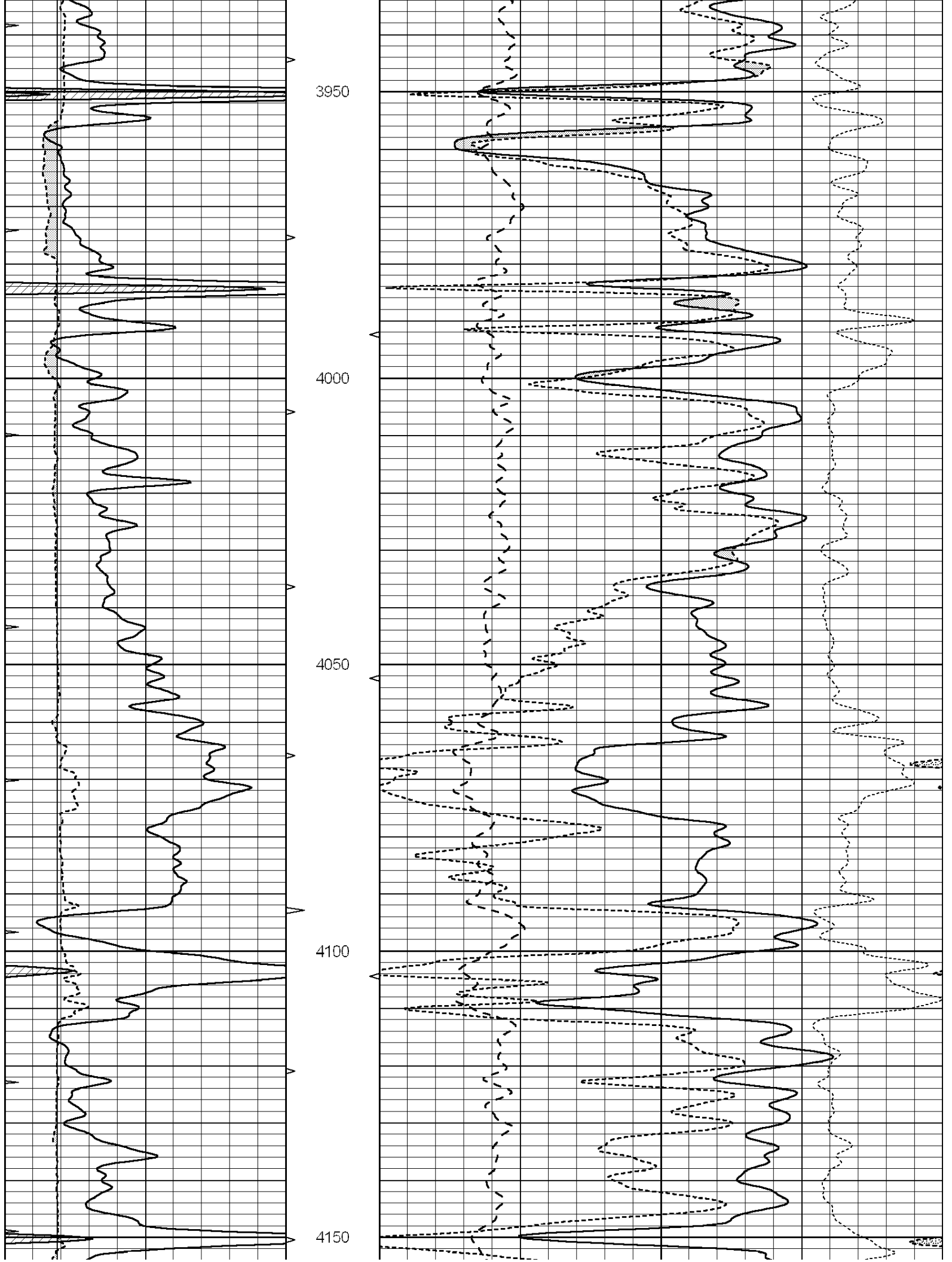
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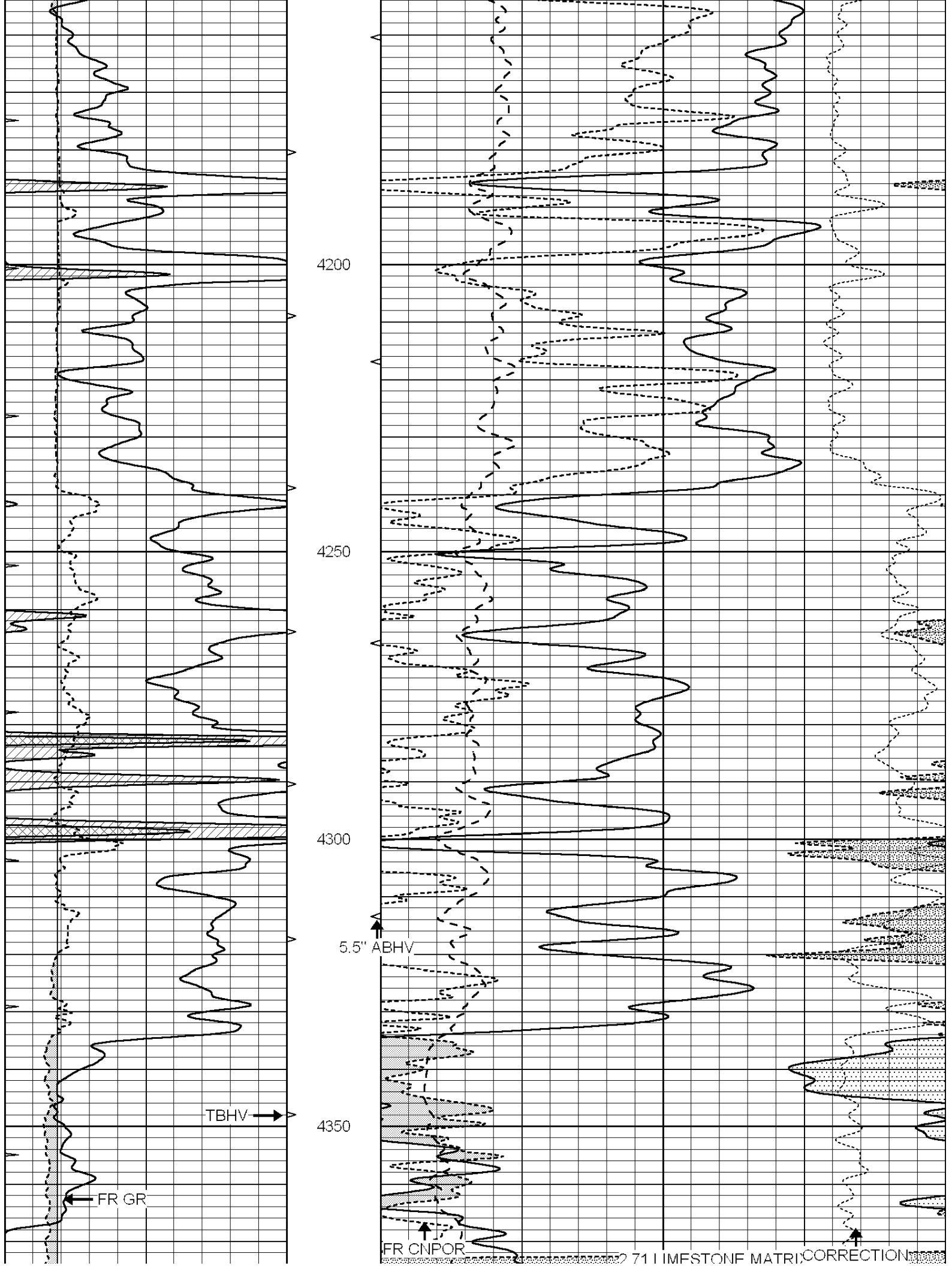
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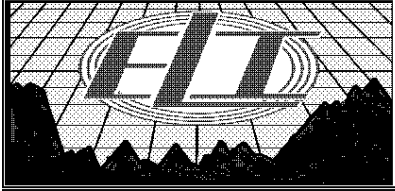
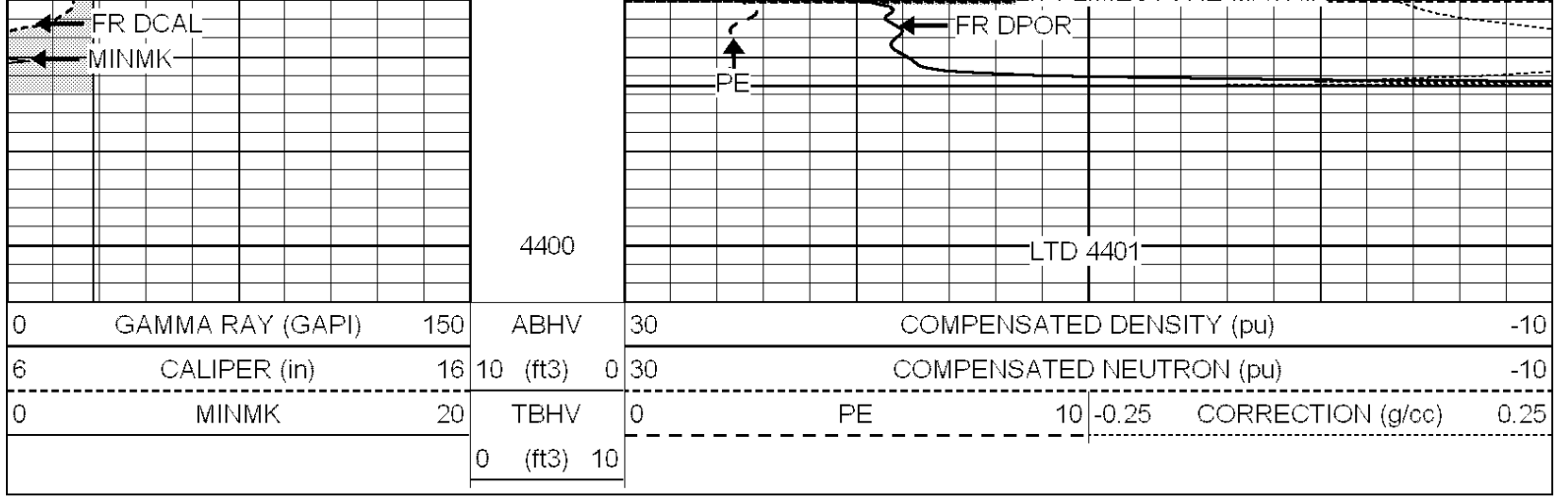






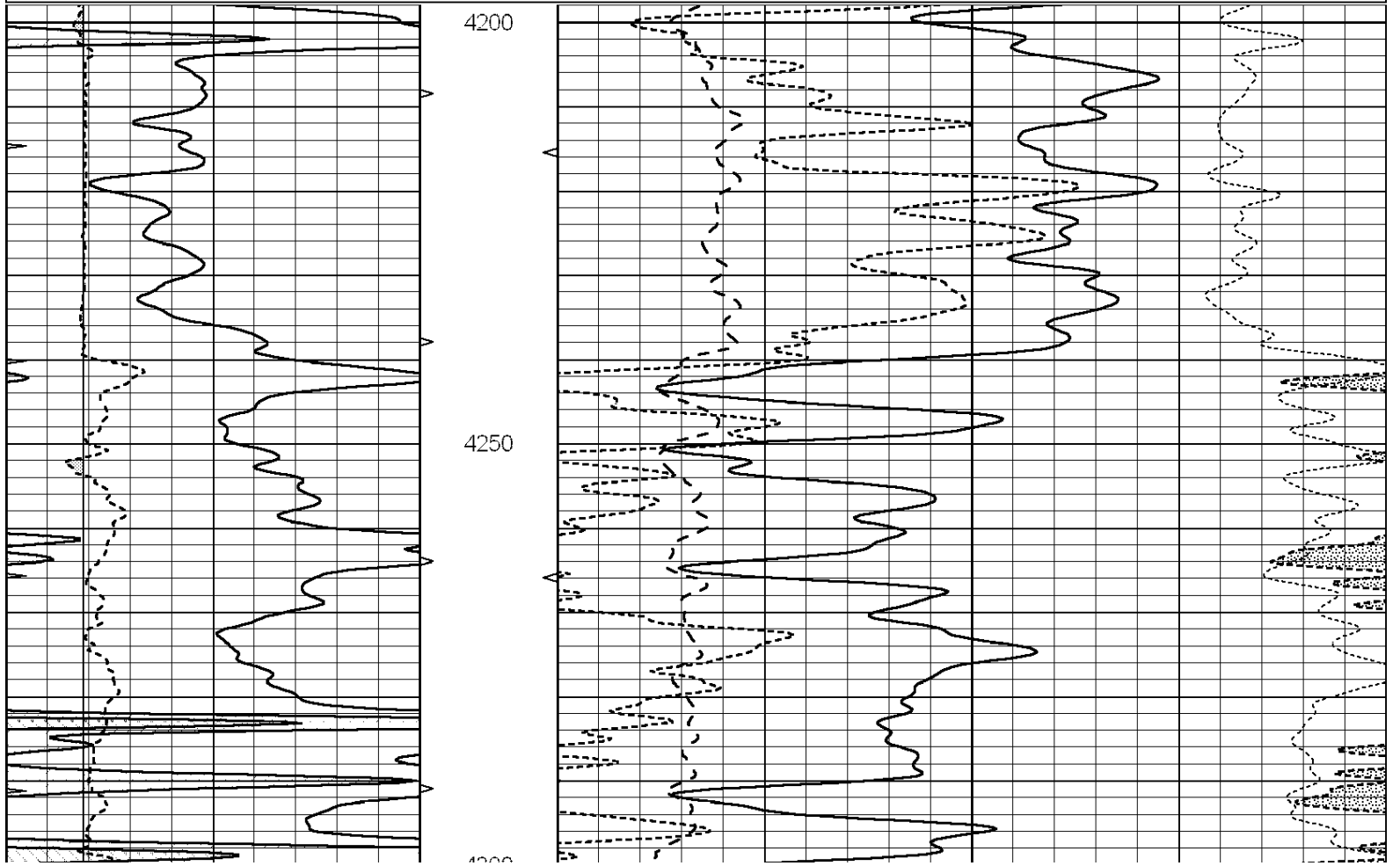
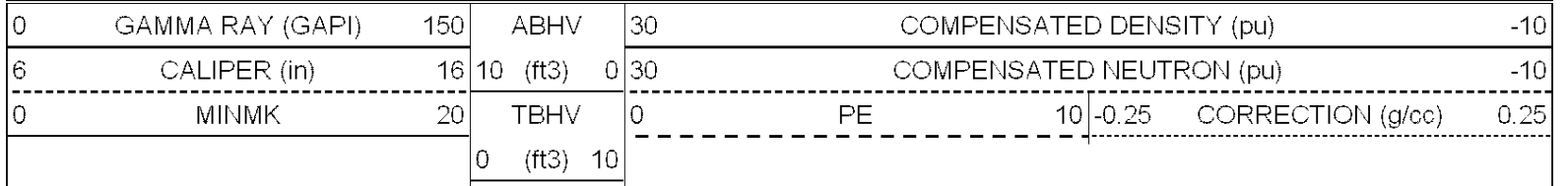






REPEAT SECTION

Database File: 3326pe.db
 Dataset Pathname: pass2.6
 Presentation Format: ldt_neu
 Dataset Creation: Thu Dec 20 10:23:18 2018 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:240



	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: 002 Model: PRB

Master Calibration		Performed Mon Aug 21 11:27:42 2017				
	Background	Magnesium	Aluminum	Sandstone		
Window 1	837.1	10632.5	2945.1	12110.1	cps	
Window 2	772.0	9117.4	2570.1	10197.3	cps	
Window 3	631.7	4669.0	1481.9	5042.9	cps	
Window 4	187.0	187.5	185.9	189.9	cps	
Long Space	0.0	8345.4	1798.1	9425.3	cps	
Short Space	1.1	1927.9	1285.9	2050.2	cps	
Rho		1.7100	2.5960	1.3800	g/cc	
Pe		0.0000	2.5700	1.5500		
Rib Angle	: 45.2	Rib Slope	: 1.008	Density/Spine Ratio	: 0.558	
Spine Angle	: 75.2	Spine Slope	: 3.790	Spine Intercept	: -19.6	

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: Wed May 31 00:09:32 2017

Calibrator Value: 1.0 GAPI
 Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps
 Sensitivity: 0.2800 GAPI/cps