

**COMPENSATED  
DENSITY/NEUTRON  
LOG**

Company MTM PETROLEUM, INC.  
Well HUFFORD #2-23  
Field SPIVEY-GRABS-BASIL  
County KINGMAN  
State KANSAS

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County KINGMAN State KANSAS

Location: API # : 15-095-22317-00-00  
1400' FSL & 770' FEL  
SEC 23 TWP 30S RGE 7W  
Permanent Datum GROUND LEVEL Elevation 1503'  
Log Measured From KELLY BUSHING 8' A.G.L.  
Drilling Measured From KELLY BUSHING  
Other Services DIL/MEL  
Elevation  
K.B. 1511'  
D.F. 1509  
G.L. 1503

Date	12/10/17
Run Number	ONE
Depth Driller	4325
Depth Logger	4330
Bottom Logged Interval	4306
Top Log Interval	3000
Casing Driller	8 5/8" @ 221
Casing Logger	221
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	9.3/55
pH / Fluid Loss	10.0/10.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.80@48
Rmt @ Meas. Temp	.60@48
Rmc @ Meas. Temp	.96@48
Source of Rmf / Rmc	MEASURED
Rm @ BHT	.32@119
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	///
Maximum Recorded Temperature	119F
Equipment Number	4010
Location	HAYS, KANSAS
Recorded By	GUS PFANENSTIEL
Witnessed By	JERRY A. SMITH
	MARVIN A. MILLER

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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, KS. (785) 628-6395

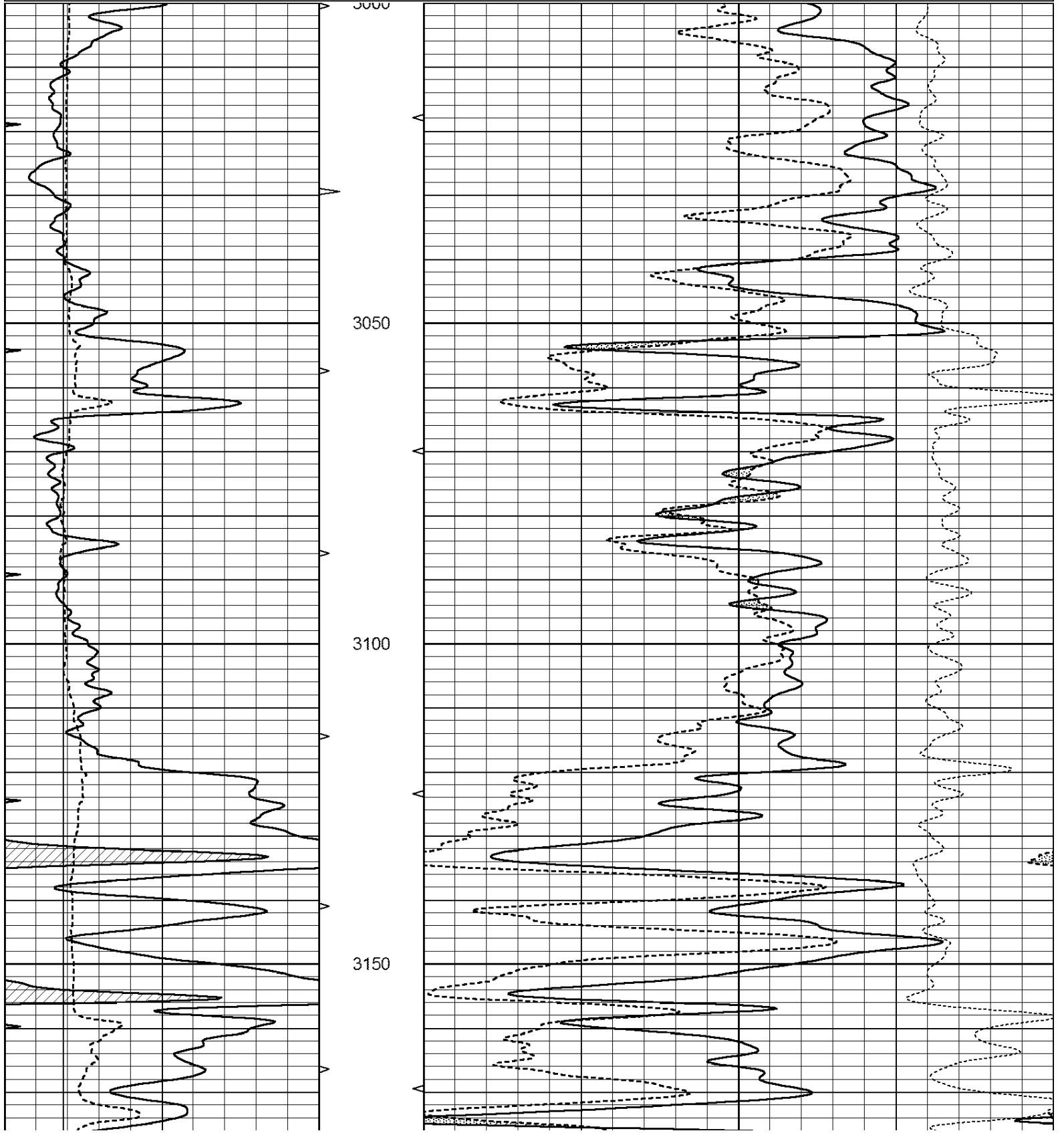
DIRECTIONS  
RAGO SOUTH 2 MILES, EAST 2 MILES,  
SOUTH INTO.

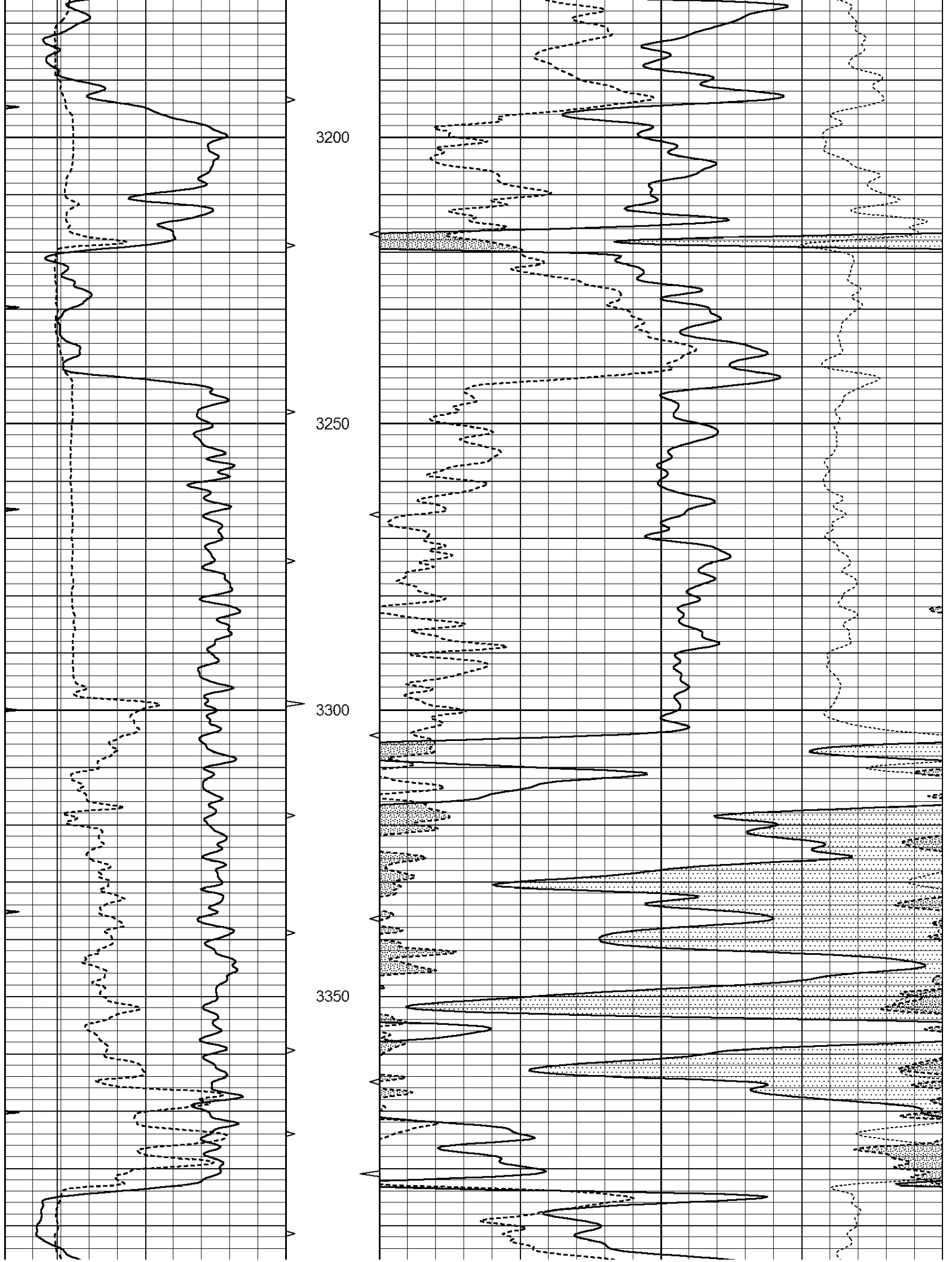


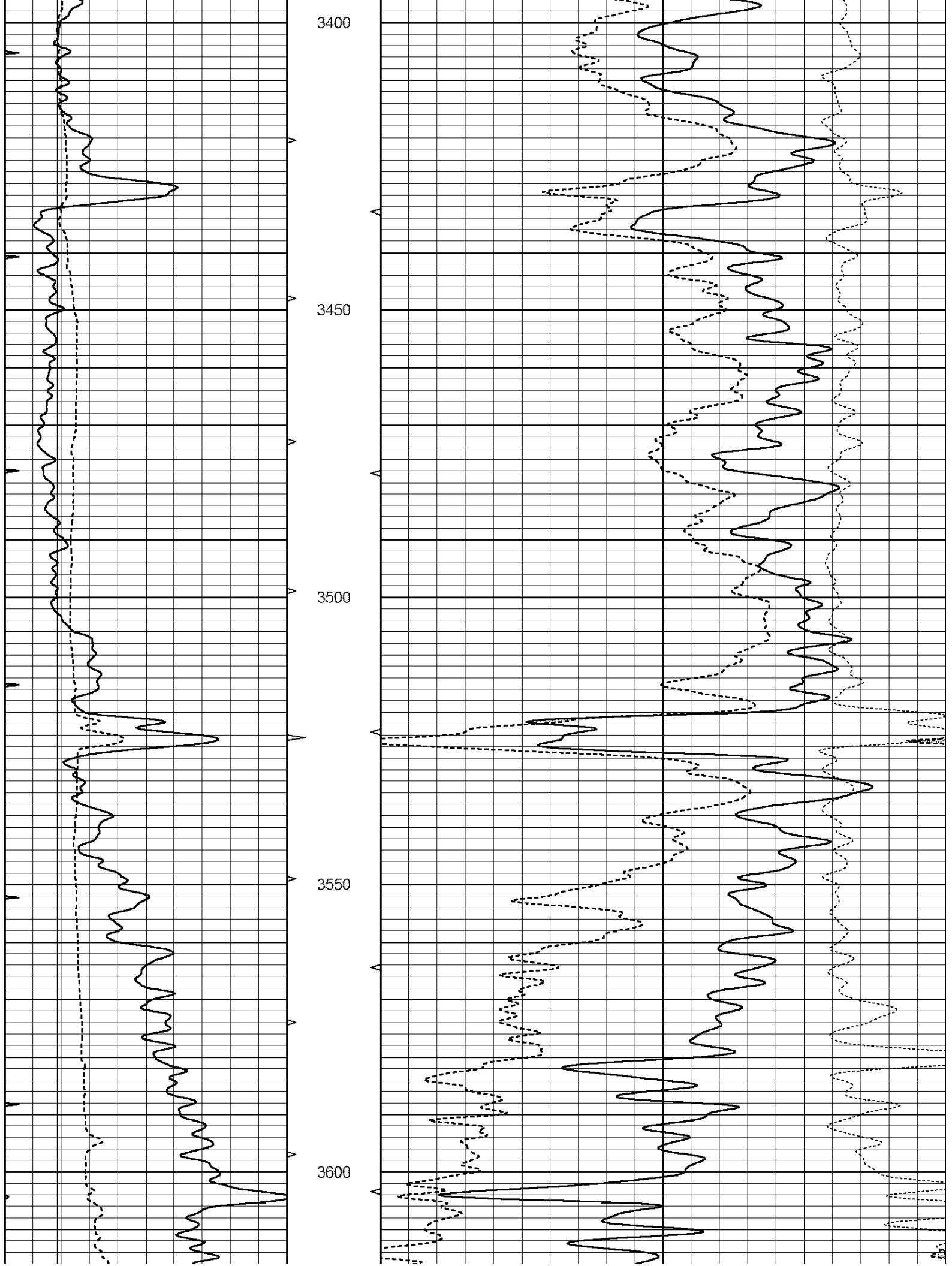
**MAIN PASS**

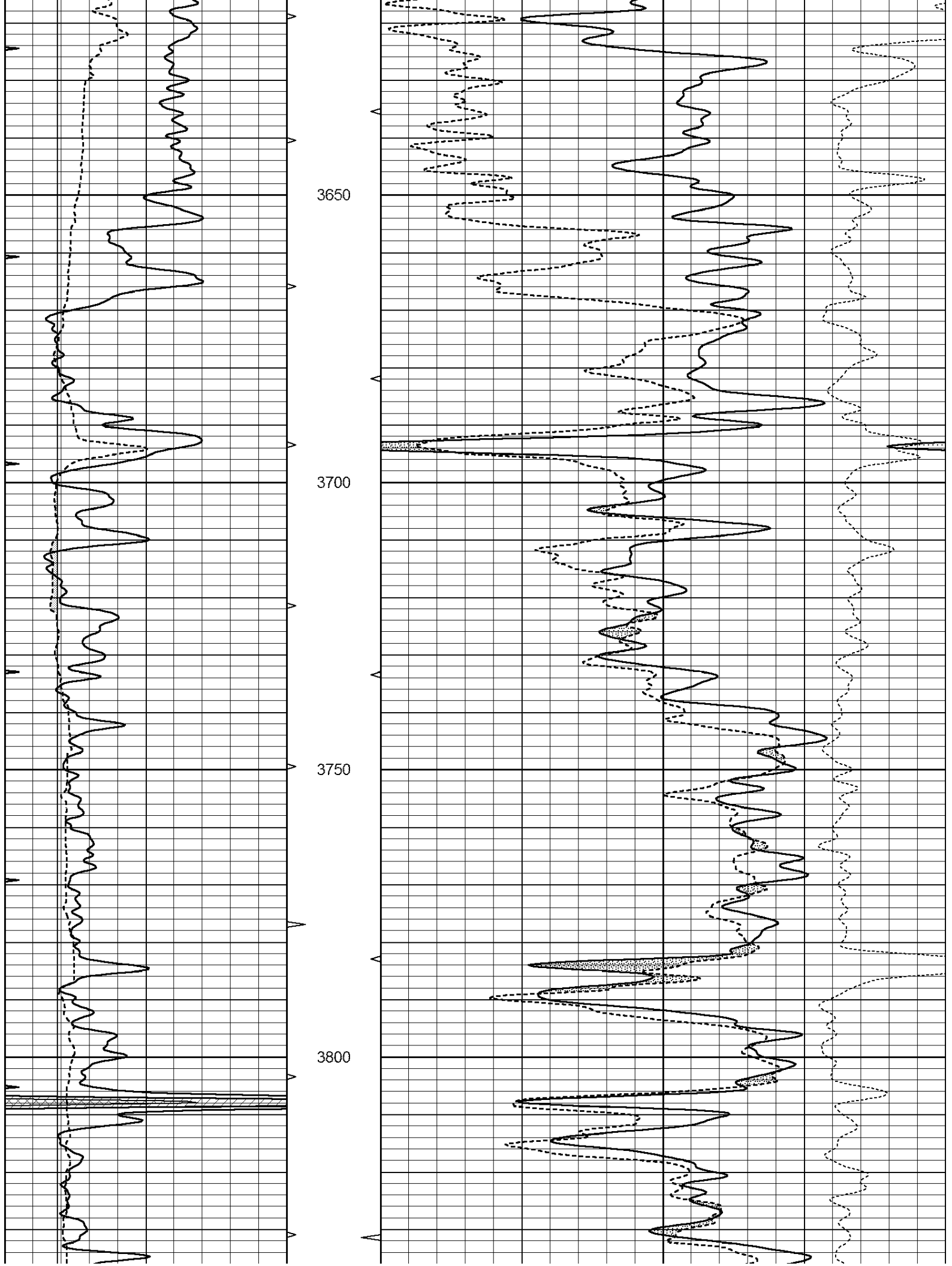
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 Dataset Creation: Sun Dec 10 08:14:32 2017 by Calc Open-Cased 090629  
 Charted by: Depth in Feet scaled 1:240

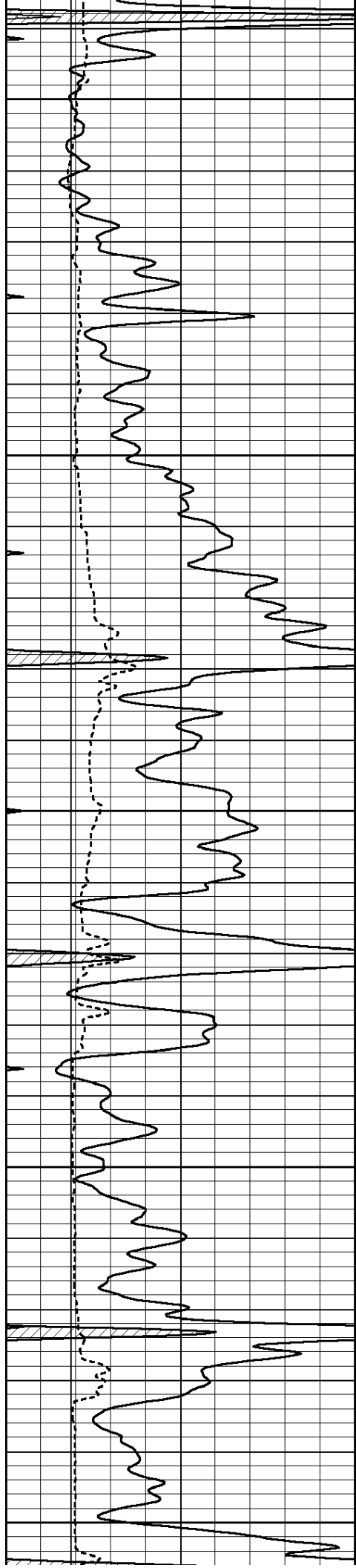
0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		











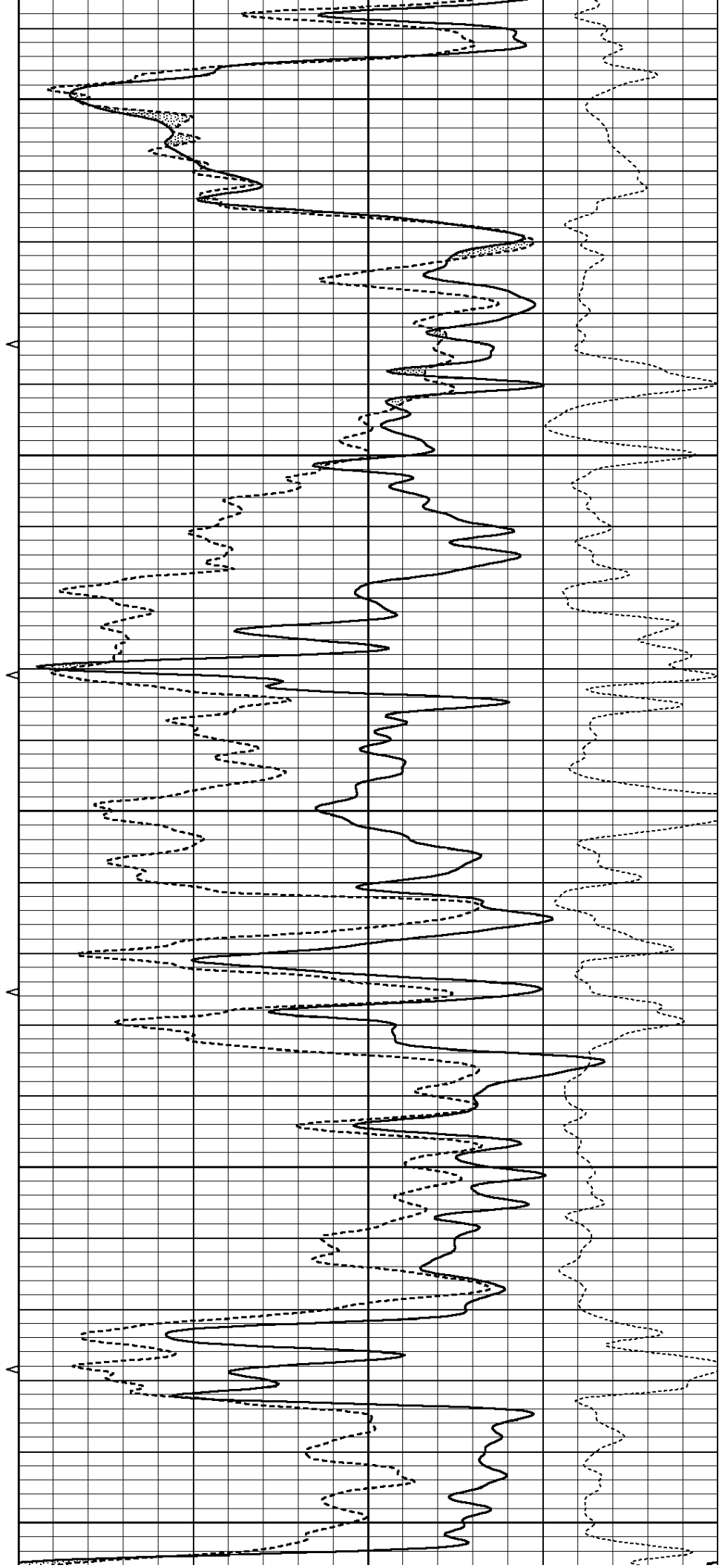
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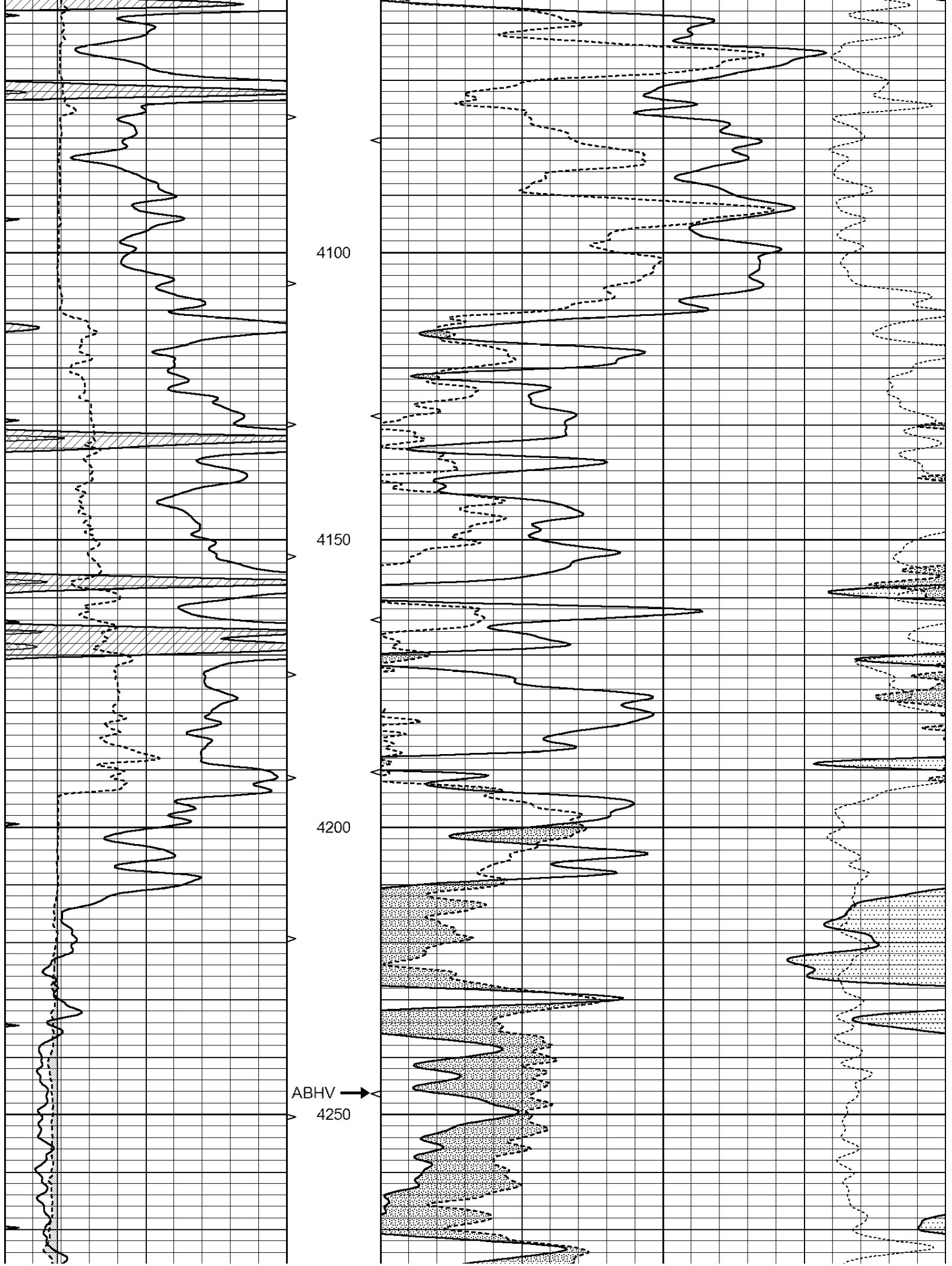
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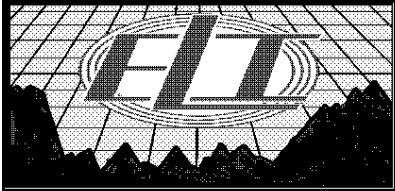
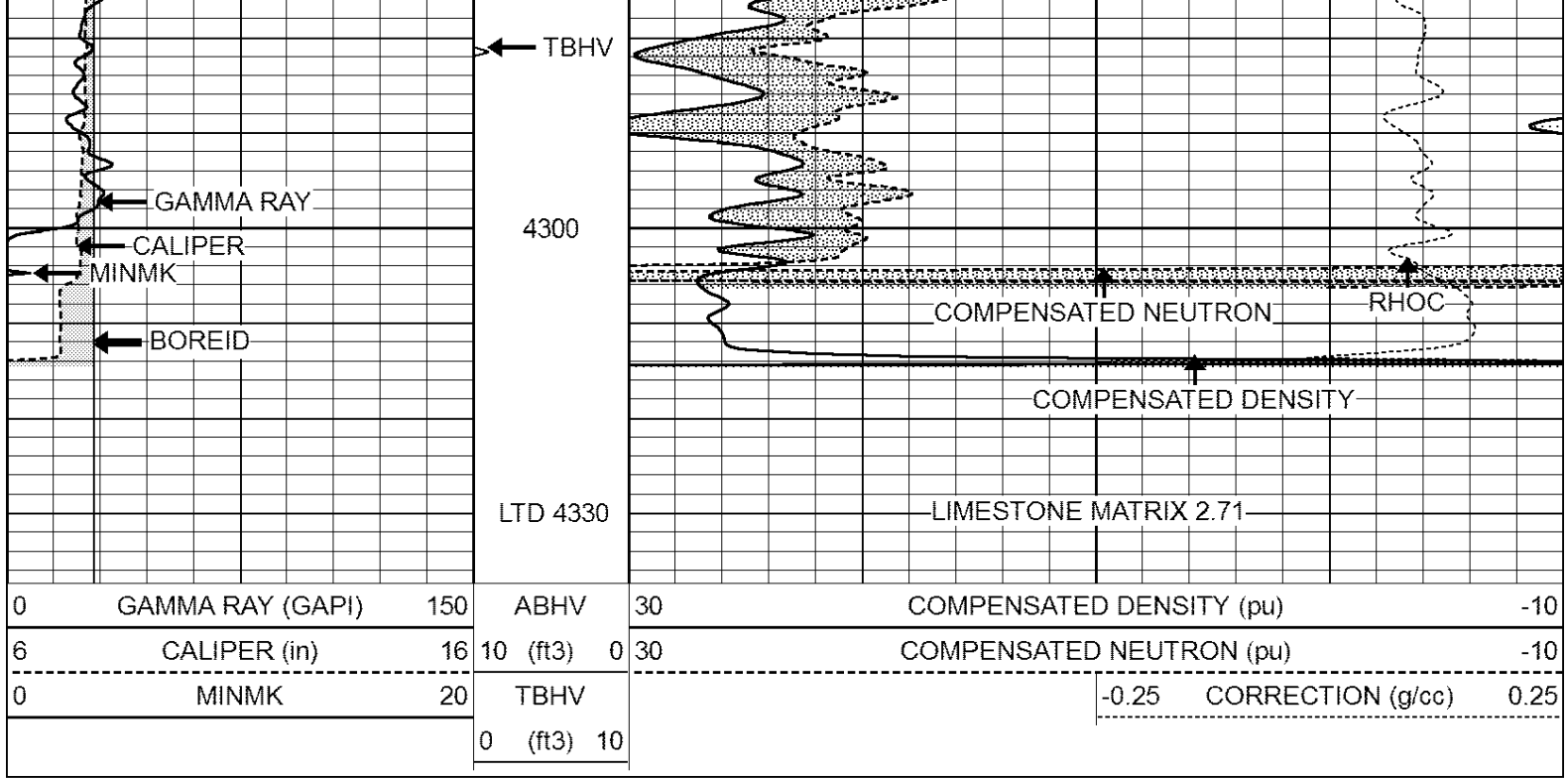
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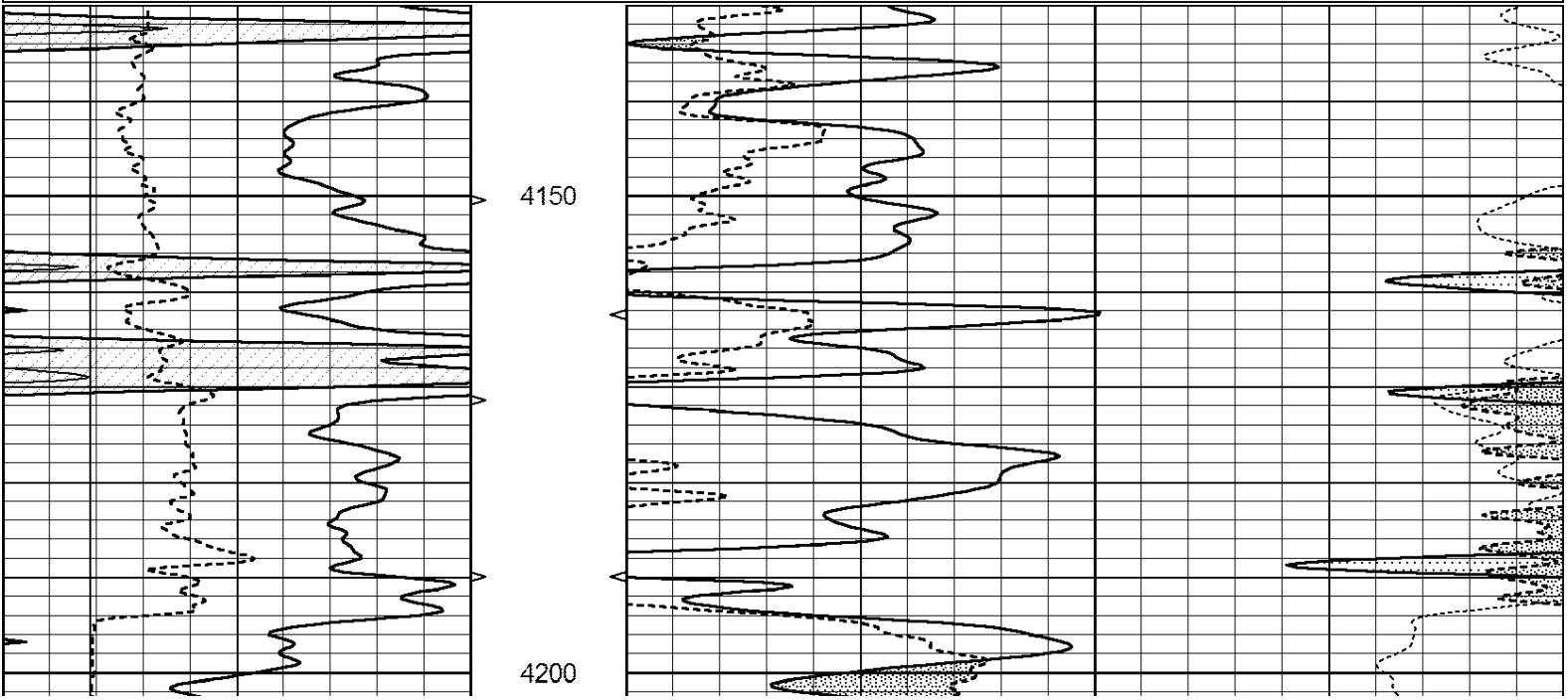




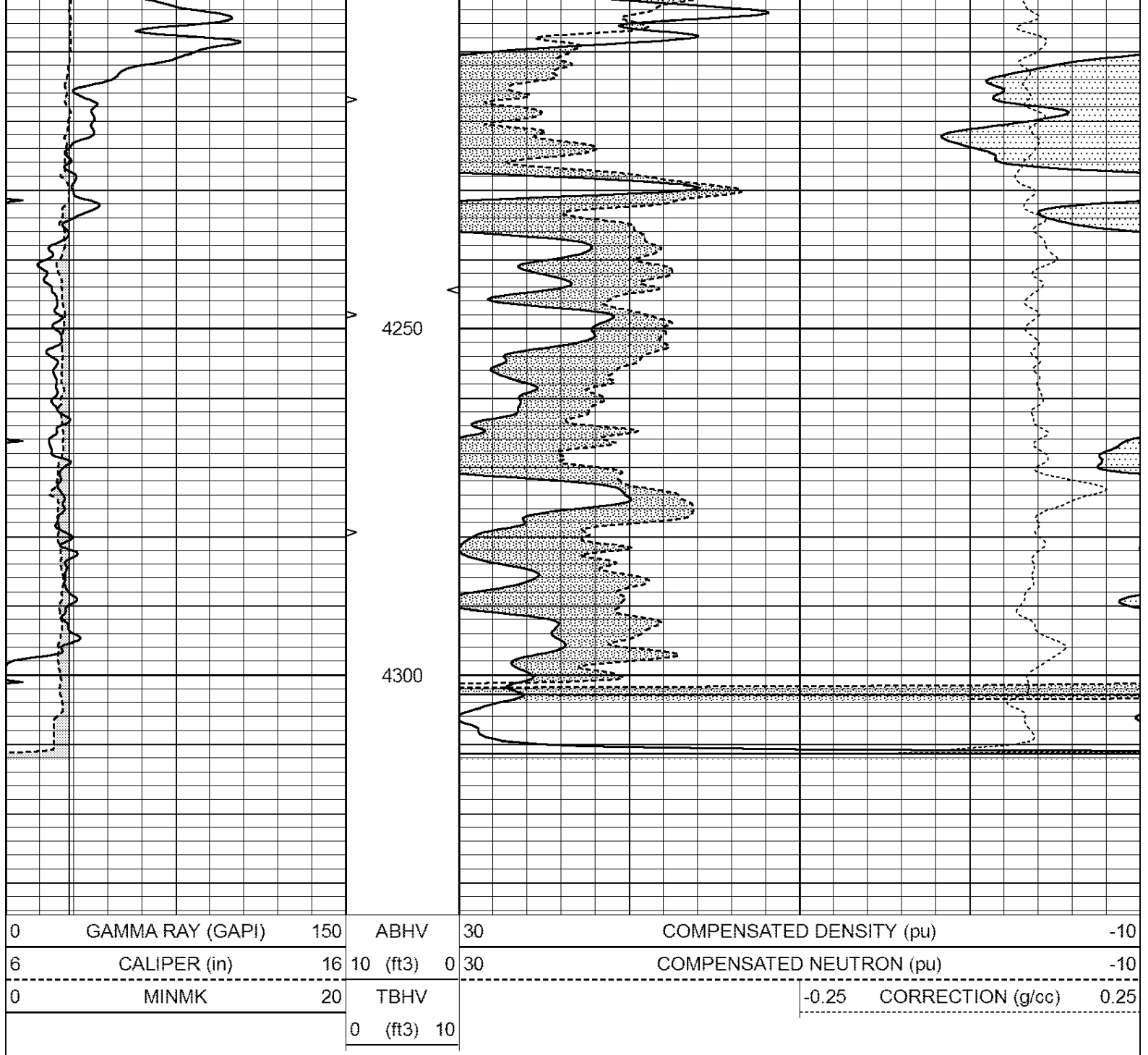
# REPEAT SECTION

Database File: 2116ddn.db  
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 Dataset Creation: Sun Dec 10 07:42:47 2017 by Calc Open-Cased 090629  
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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		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		







### Calibration Report

Database File: pe2.db  
 Dataset Pathname: pass2  
 Dataset Creation: Mon Aug 21 11:58:02 2017 by Log Open-Cased 090629

### Dual Induction Calibration Report

Serial-Model: PROBE8-DILG  
 Surface Cal Performed: Mon Aug 21 11:58:18 2017  
 Downhole Cal Performed: Mon Aug 21 11:58:21 2017  
 After Survey Verification Performed: Mon Aug 21 11:58:23 2017

### Surface Calibration

Loop:	Readings			V	References		Results		
	Air	Loop			Air	Loop	m	b	
Deep	0.015	0.648		V	0.000	400.000	mmho/m	620.000	0.000
Medium	0.029	0.796		V	0.000	464.000	mmho/m	590.000	-12.000

Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.017	0.657	V	0.000	400.000	mmho/m	625.153	-10.619
Medium	0.016	0.757	V	0.000	464.000	mmho/m	625.992	-9.739

Downhole Calibration								
	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	2.011	405.777	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	7.590	503.393	mmho/m	1.000	0.000
LL3		7.500	V		1500.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		3800.000	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 11:56:41 2017				
	Background	Magnesium	Aluminum	Sandstone		
Window 1	833.6	7394.2	2287.3	8111.8	cps	
Window 2	768.9	6322.3	1995.6	6800.0	cps	
Window 3	621.5	3261.9	1186.4	3380.9	cps	
Window 4	184.2	185.7	184.9	184.8	cps	
Long Space	0.0	5553.4	1226.6	6031.1	cps	
Short Space	1.2	1307.5	903.9	1387.7	cps	
Rho		1.7100	2.5900	1.3800	g/cc	
Pe		0.0000	2.5700	1.5500		
Rib Angle	: 46.3	Rib Slope	: 1.045	Density/Spine Ratio	: 0.566	
Spine Angle	: 76.3	Spine Slope	: 4.090	Spine Intercept	: -20.7	

Before Survey Verification		Performed Wed Dec 31 18:00:00 1969				
	Background	Magnesium	Aluminum	Sandstone		
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				
	Background	Magnesium	Aluminum	Sandstone		
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: 61  
Tool Model: G

CALIBRATION

Detector	Readings	Target	Normalization
Short Space	1.00 cps	1.00 cps	1.0000
Long Space	1.00 cps	1.00 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

Serial Number: GR6  
Tool Model: OPEN  
Performed: Mon Aug 21 11:59:01 2017

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 276.0 cps

Sensitivity: 0.5500 GAPI/cps