



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

COMPENSATED DENSITY/NEUTRON LOG

Company RICHLAN DRILLING Well UMMEL BROTHERS TRUST #4 Field MINER County NESS State KANSAS		Company RICHLAN DRILLING Well UMMEL BROTHERS TRUST #4 Field MINER County NESS State KANSAS	
Location: 1177' FSL & 371' FEL NW - NE - SE - SE		API # : 15-135-25696-00-00 DIL	
Permanent Datum Log Measured From Drilling Measured From		SEC 24 TWP 18S RGE 24W GROUND LEVEL Elevation 2165 KELLY BUSHING 9' A.G.L. KELLY BUSHING	
Date 11/19/13		Elevation K.B. 2174 D.F. 2172 G.L. 2165	
Run Number	ONE		
Depth Driller	4385		
Depth Logger	4386		
Bottom Logged Interval	4362		
Top Log Interval	3400		
Casing Driller	8 5/8" @ 220'		
Casing Logger	218		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3,000 PPM	
Density / Viscosity	9.2 / 56		
pH / Fluid Loss	9.5 / 9.6		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	0.50 @ 67F		
Rmt @ Meas. Temp	0.38 @ 67F		
Rmc @ Meas. Temp	0.60 @ 67F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	0.28 @ 119F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	119F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	IAN MABB		
Witnessed By	BOB SCHREIBER		

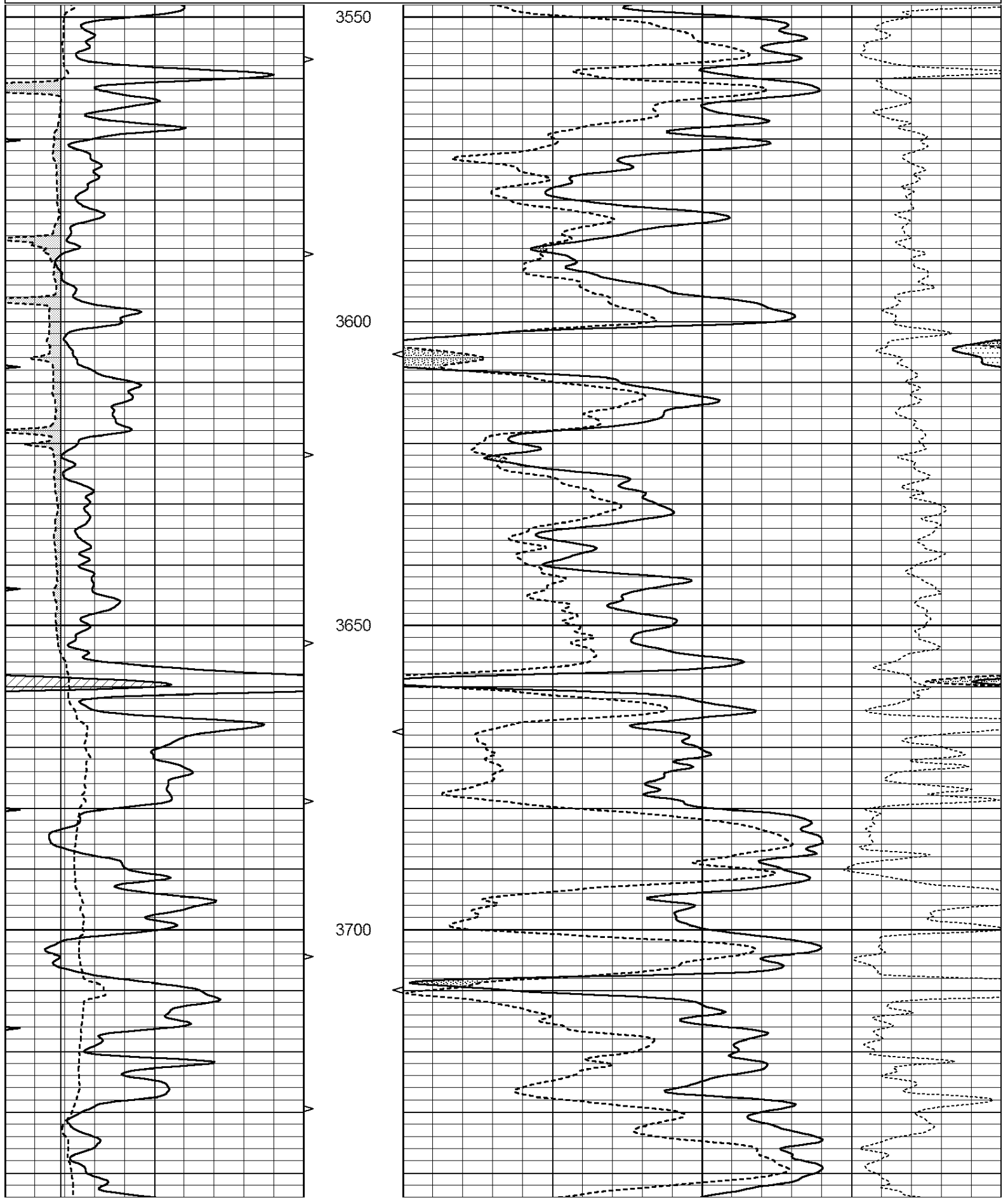
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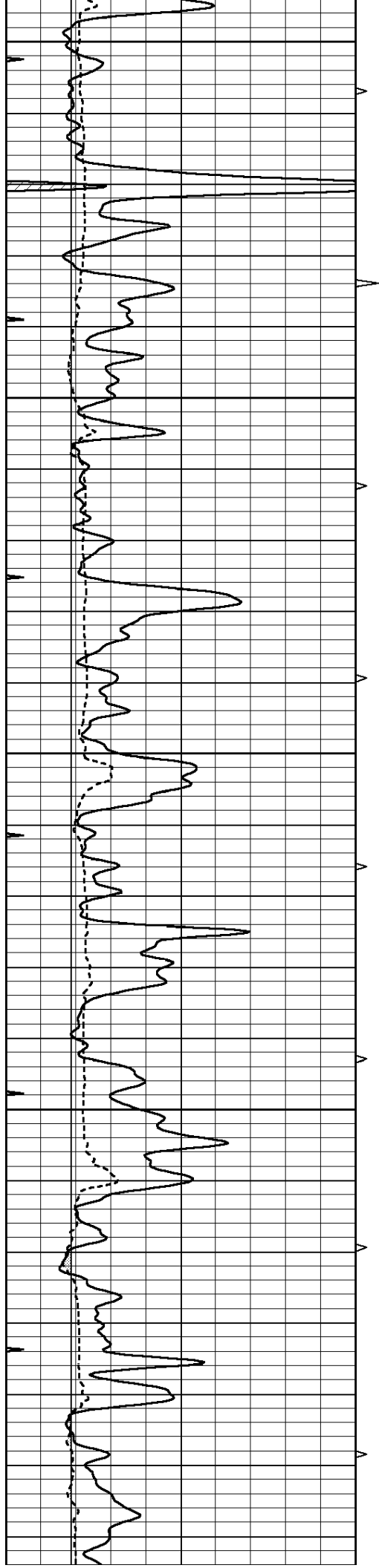
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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, KS. (785) 628-6395
 DIRECTIONS:
 NESS CITY, KS. - 1 MILE NORTH - WEST 1 MILE - NORTH 1/4 WEST INTO

Charted by:		Depth in Feet scaled 1:2.10			
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		





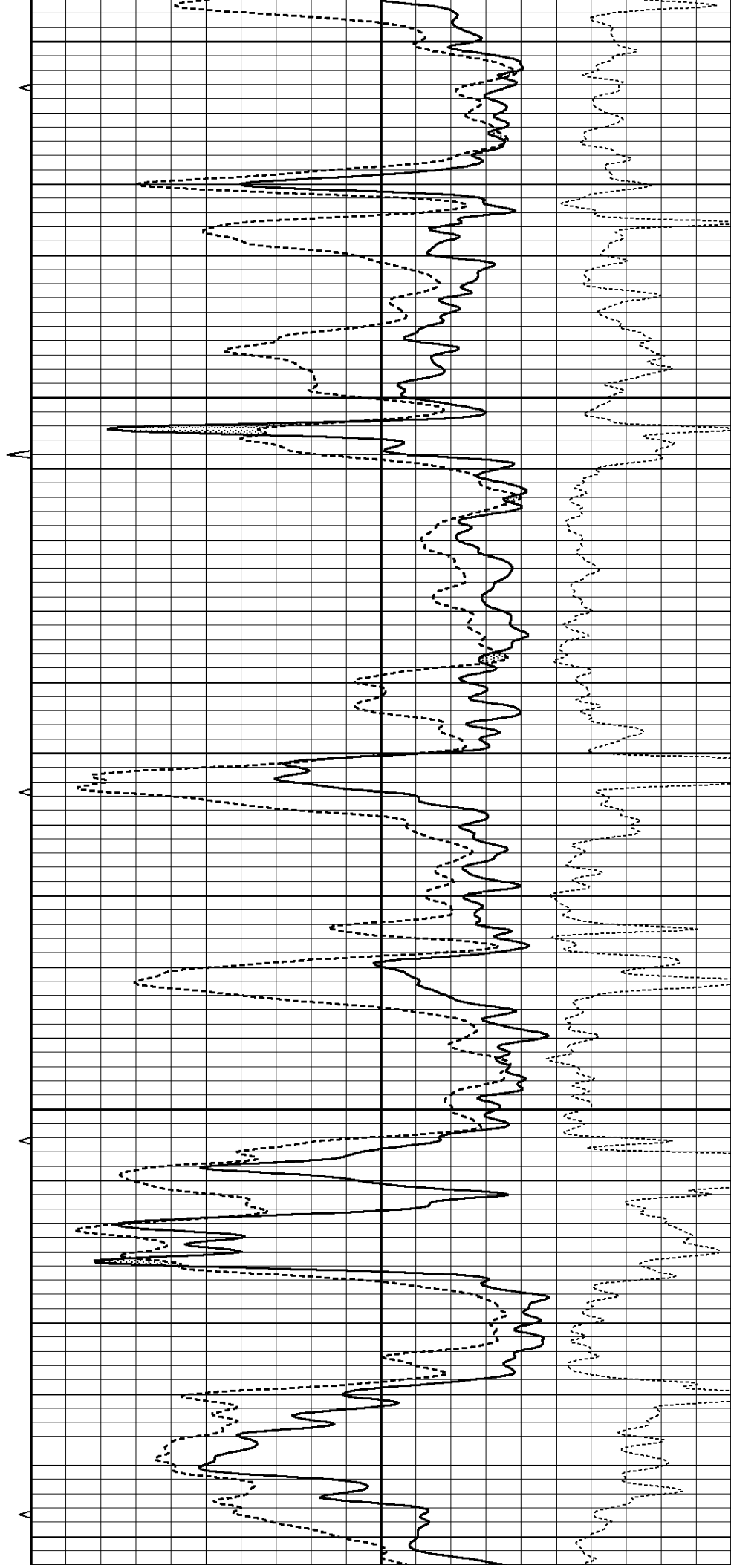
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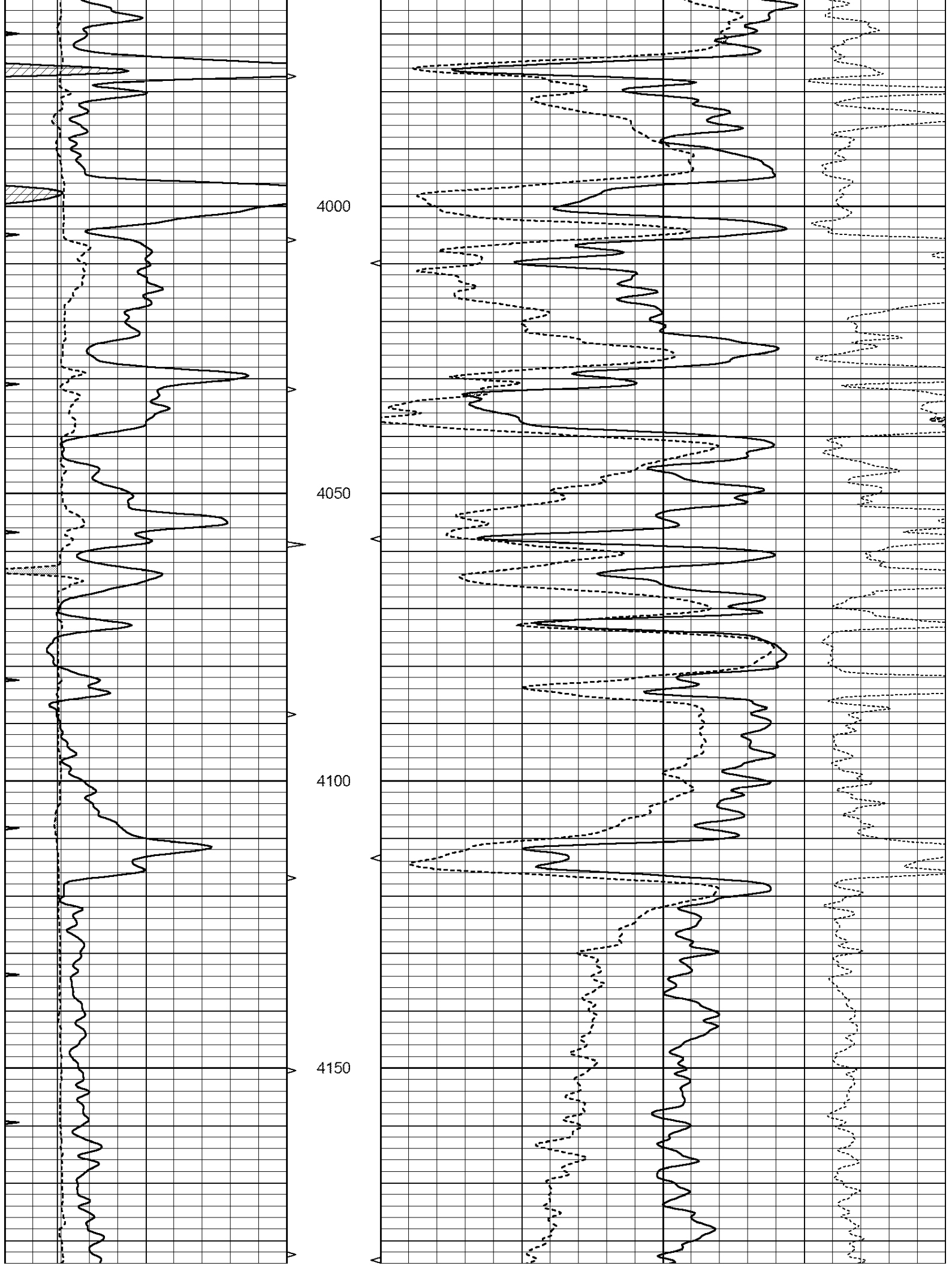
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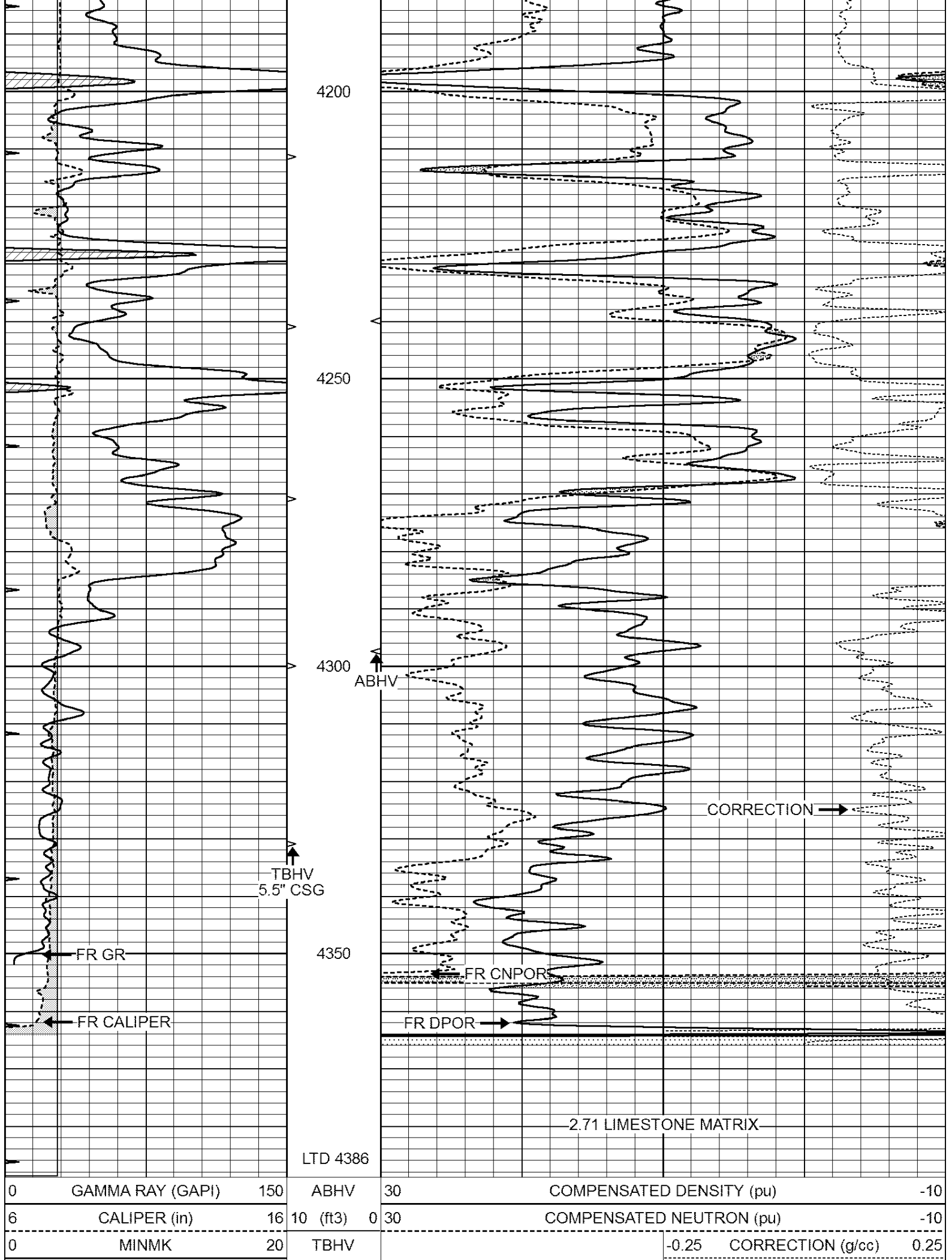
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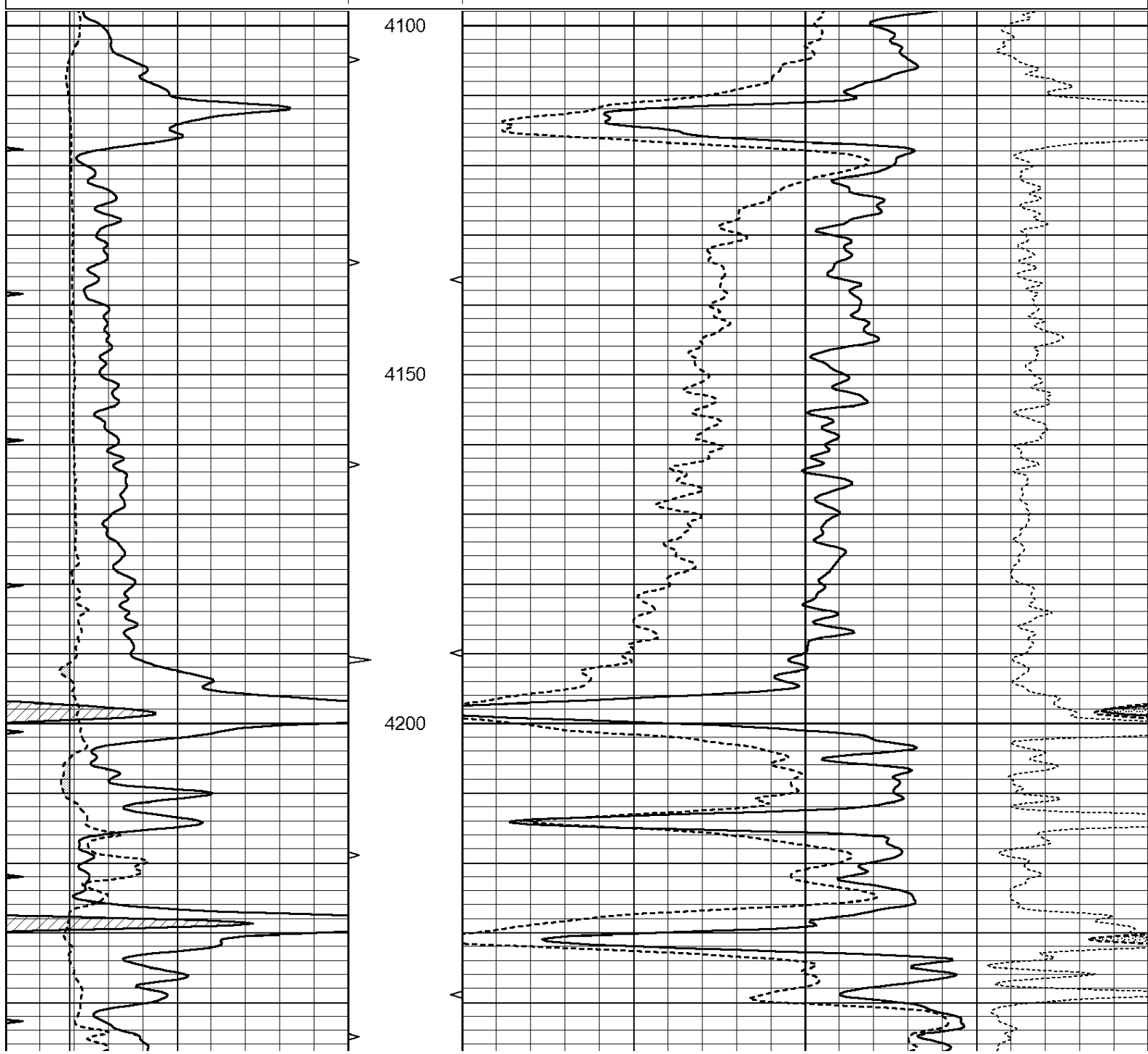


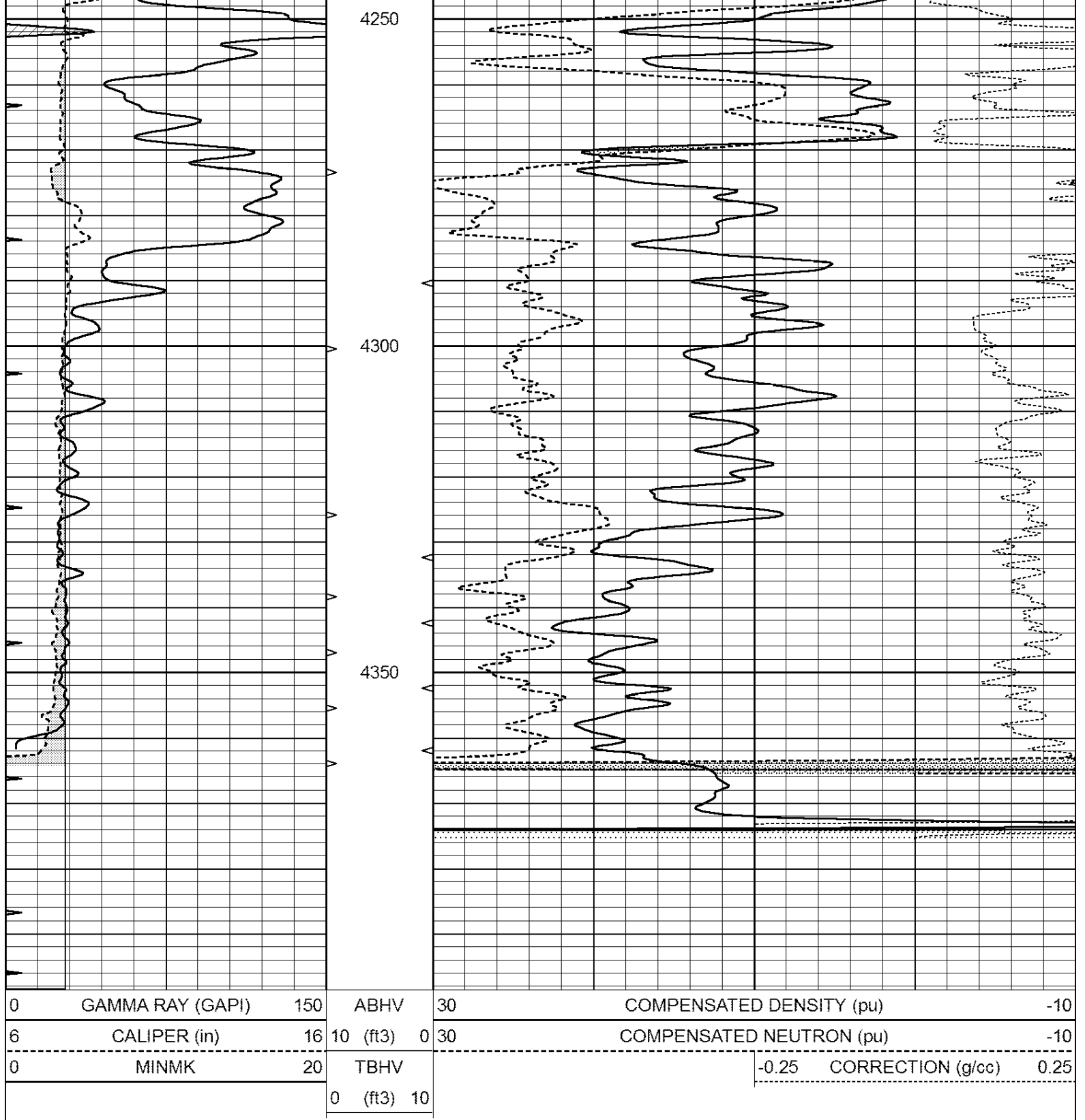


REPEAT SECTION

Database File: 012095ddn.db
Dataset Pathname: pass3.3
Presentation Format: den_neu
Dataset Creation: Tue Nov 19 08:28:45 2013
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		





Calibration Report

Database File: 012095ddn.db
Dataset Pathname: pass4.3
Dataset Creation: Tue Nov 19 08:57:45 2013

Dual Induction Calibration Report

Serial-Model: PROBE8-DILG
Surface Cal Performed: Fri Aug 01 06:33:19 2008
Downhole Cal Performed: Mon Jul 28 11:08:27 2008
After Survey Verification Performed: Mon Jul 28 11:08:27 2008

Readings				References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.015	0.648	V	0.000	400.000	mmho/m	632.616	-9.730
Medium	0.029	0.796	V	0.000	464.000	mmho/m	605.049	-17.680
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		

Compensated Density Calibration Report

Serial-Model:	GEAR4-GEARHART
Source / Verifier:	143 / 143
Master Calibration Performed:	Wed Sep 18 03:03:09 2013
Before Survey Verification Performed:	
After Survey Verification Performed:	

Master Calibration						
	Density			Far Detector		Near Detector
Magnesium	1.710	g/cc		1075.98	532.39	cps
Aluminum	2.560	g/cc		286.51	422.88	cps
Spine Angle = 80.13				Density/Spine Ratio = 0.633		
	Size			Reading		
Small Ring	8.00	in		3.21	V	
Large Ring	14.00	in		5.46	V	

Before Survey Verification						
	Target			Measured		
			g/cc			g/cc
			g/cc			g/cc
			g/cc			g/cc

After Survey Verification						
	Target			Measured		
			g/cc			g/cc
			g/cc			g/cc

		g/cc			g/cc	
Compensated Neutron Calibration Report						
		Serial Number:	6I			
		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:		#8				
Tool Model:		OPEN				
Performed:		Tue Nov 19 07:23:02 2013				
Calibrator Value:		150.0	GAPI			
Background Reading:		0.0	cps			
Calibrator Reading:		175.0	cps			
Sensitivity:		0.8371	GAPI/cps			