



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

**COMPENSATED
DENSITY / NEUTRON
LOG**

Company	PIONEER RESOURCES	Company	PIONEER RESOURCES
Well	KNOPP #6	Well	KNOPP #6
Field		Field	
County	LOGAN	County	LOGAN
State	KANSAS	State	KANSAS
Location:	API # : 15-109-21179-00-00 2590' FSL & 335' FWL NE - NW - NW - SW	Other Services	DIL
Permanent Datum	SEC 13 TWP 14S RGE 32W	Elevation	
Log Measured From	GROUND LEVEL	K.B. 2803	
Drilling Measured From	KELLY BUSHING 10' A.G.L. KELLY BUSHING	D.F. 2801	
		G.L. 2793	
Date	5/30/13		
Run Number	ONE		
Depth Driller	4520		
Depth Logger	4520		
Bottom Logged Interval	4496		
Top Log Interval	3600		
Casing Driller	224		
Casing Logger	223		
Bit Size	7.875		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3.300	
Density / Viscosity	9.2 / 50		
pH / Fluid Loss	10.0 / 8.0		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	0.60 @ 90F		
Rinf @ Meas. Temp	0.45 @ 90F		
Rinc @ Meas. Temp	0.72 @ 90F		
Source of Rinf / Rinc	MEASURED		
Rim @ BHT	0.45 @ 121F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	121F		
Equipment Number	860		
Location	HAYS, KS.		
Recorded By	JEFF GRONEWEG		
Witnessed By	STEVE MURPHY		

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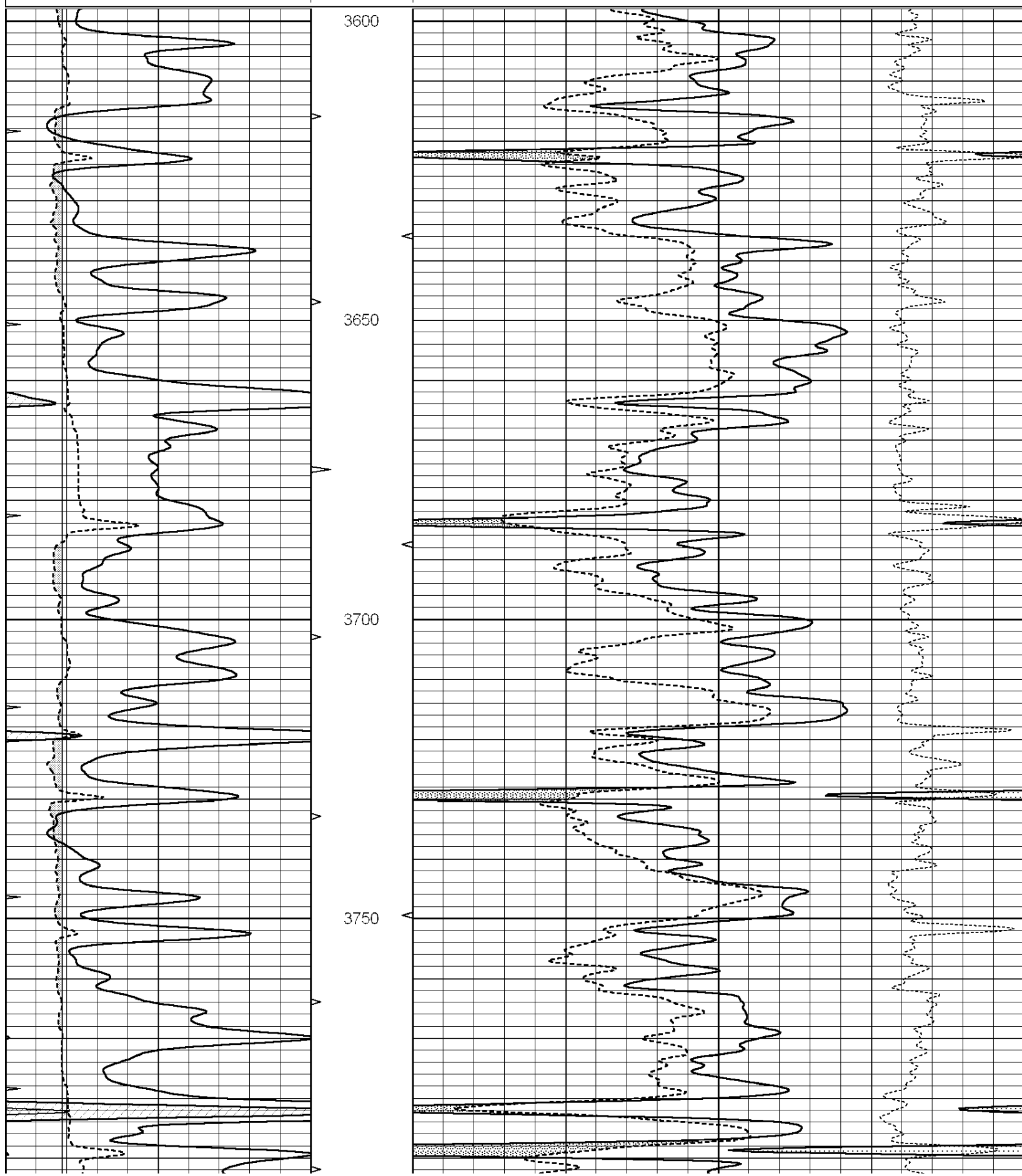
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

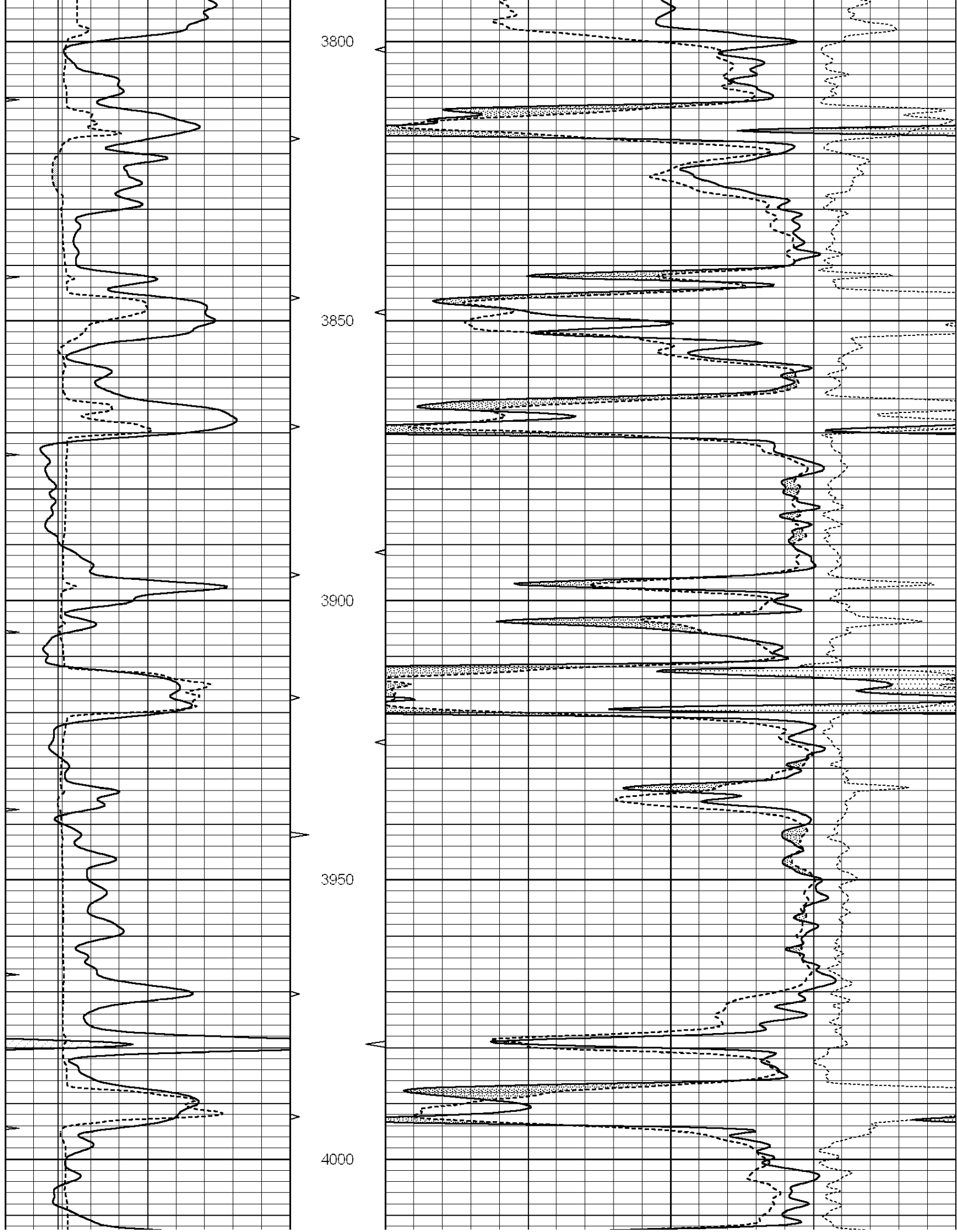
Comments

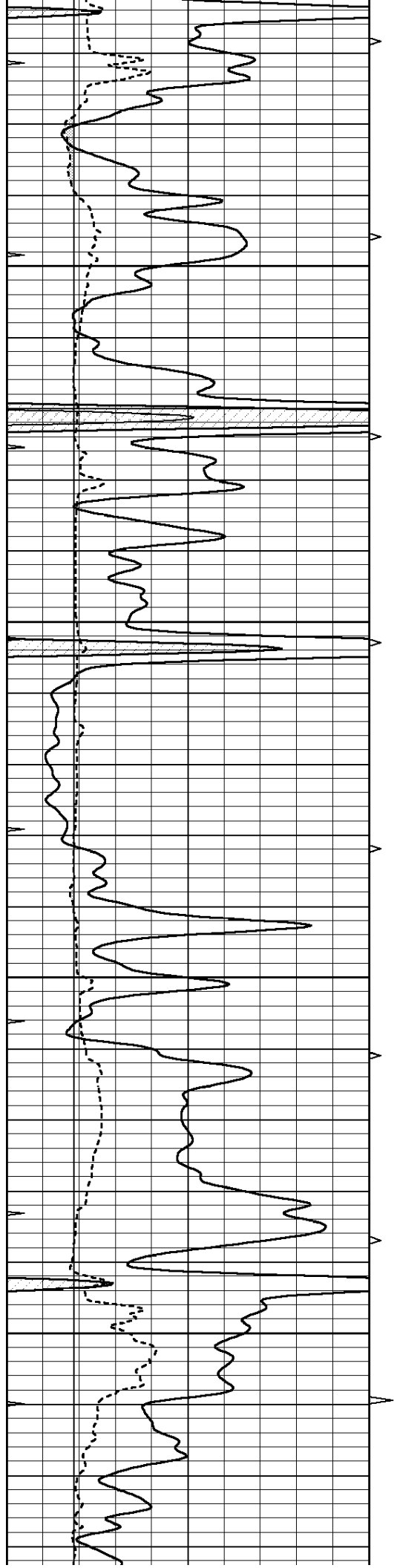
NABORS COMPLETION & PRODUCTION SERVICES
785-628-6395
THANK YOU FOR YOUR BUSINESS
DIRECTIONS: OAKLEY, KS - SOUTH TO JAYHAWK RD - 1 MILE EAST
1/2 MILE NORTH - EAST INTO

Database File: 010184ddn.db
Dataset Pathname: pass3.2
Presentation Format: _den_neu
Dataset Creation: Thu May 30 17:13:22 2013 by Calc Open-Cased 090629

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			





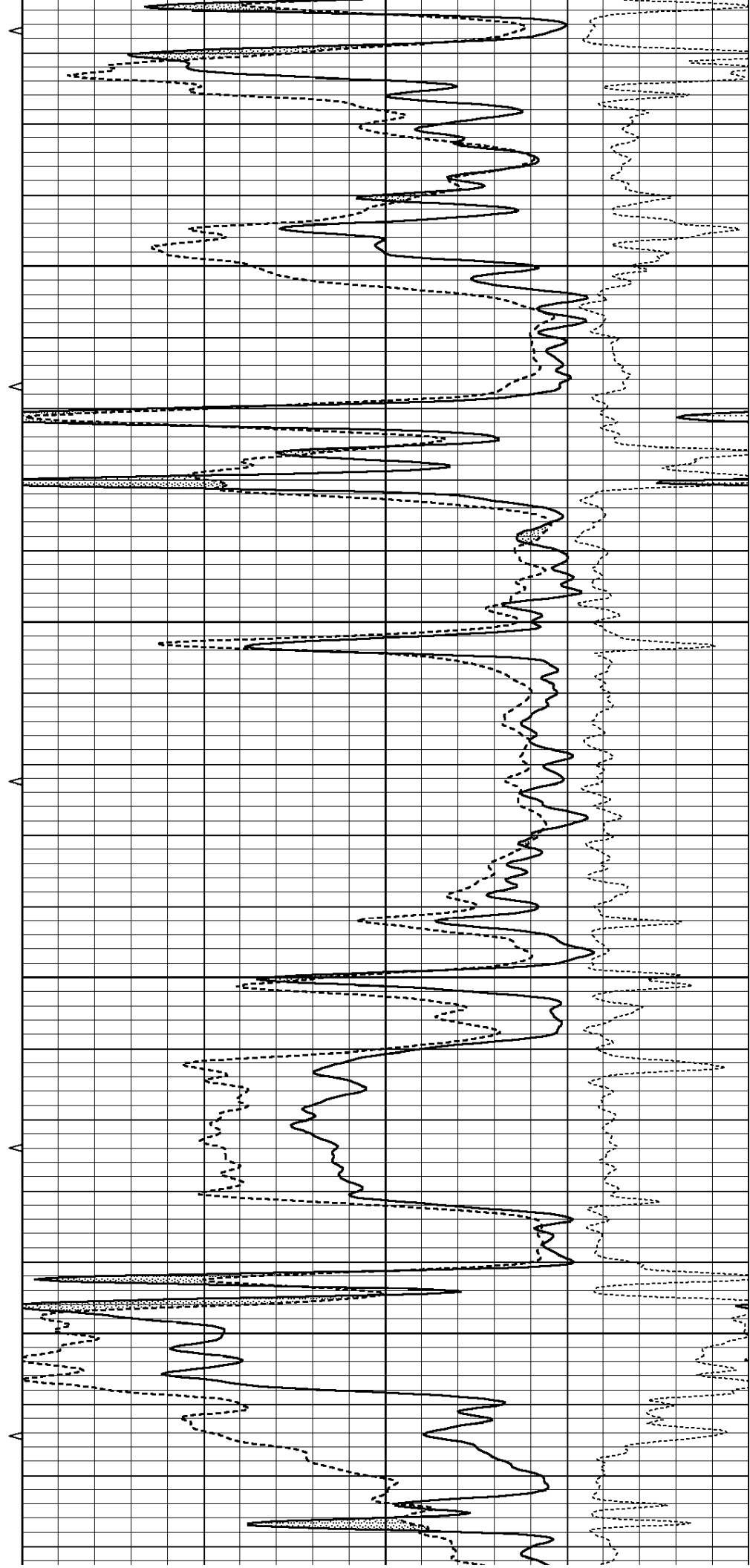


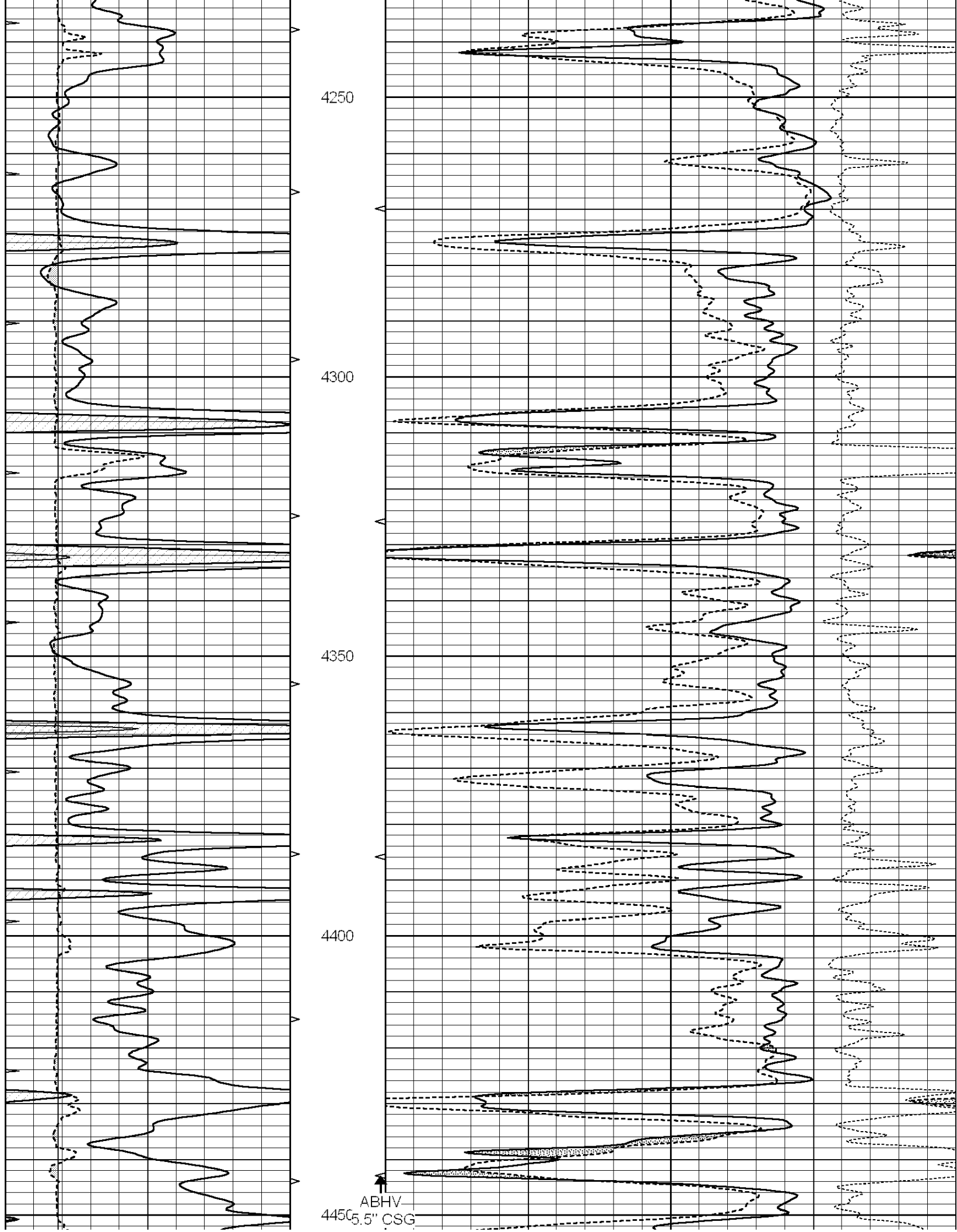
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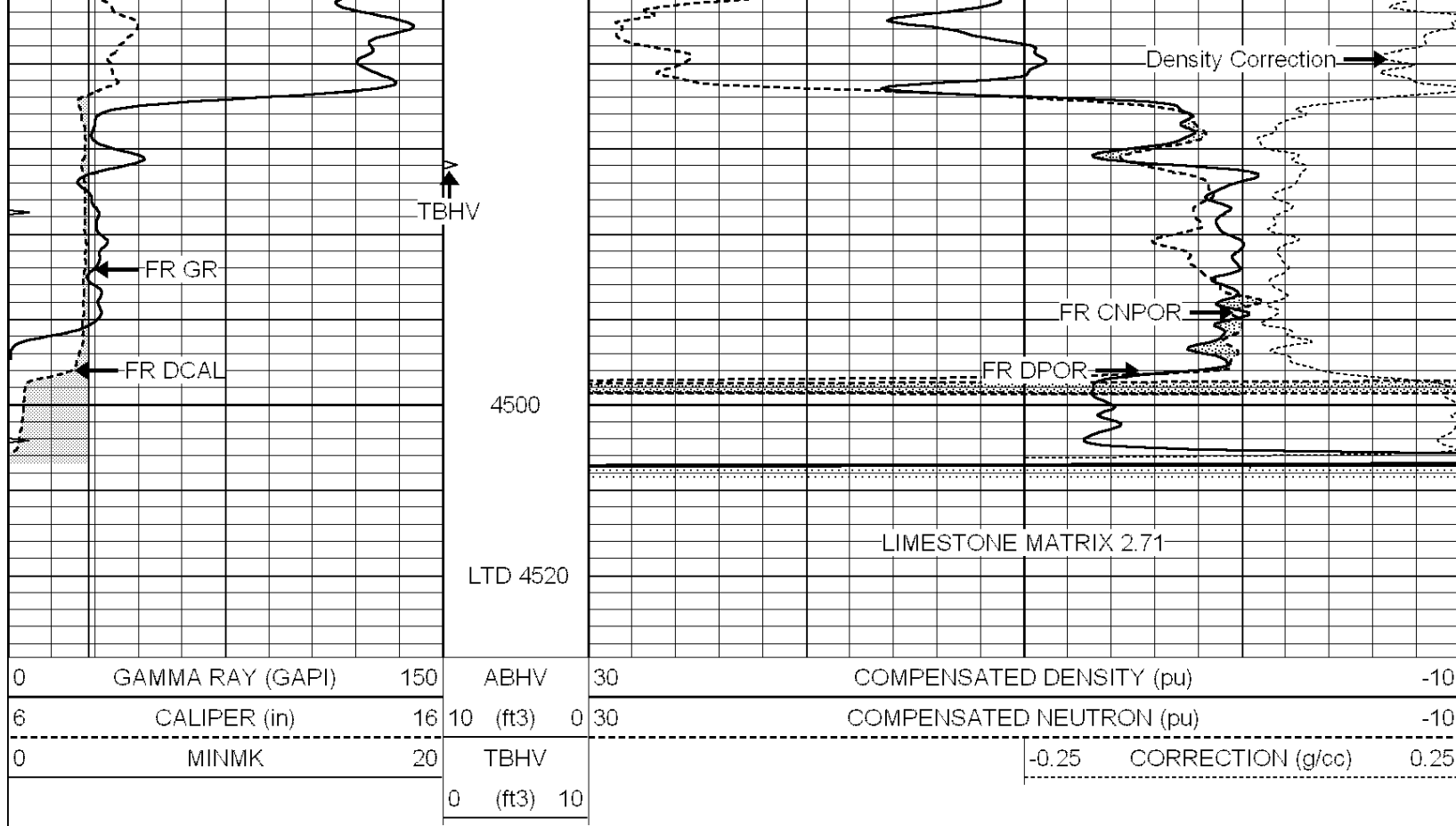
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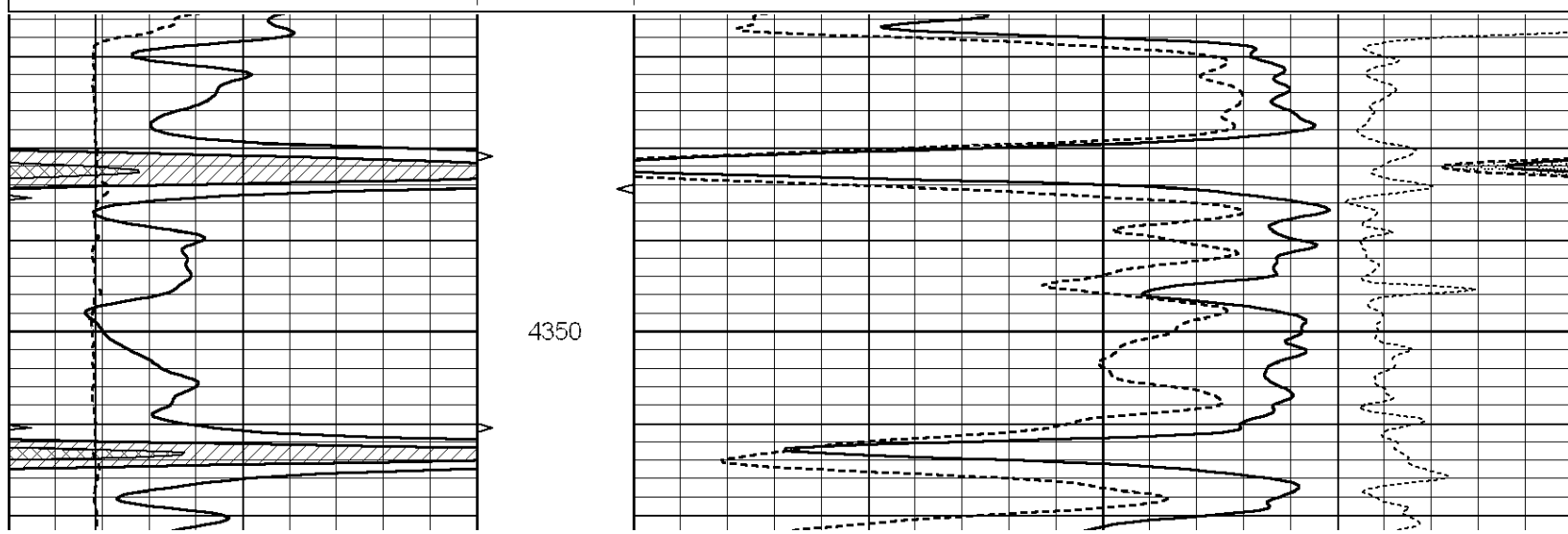
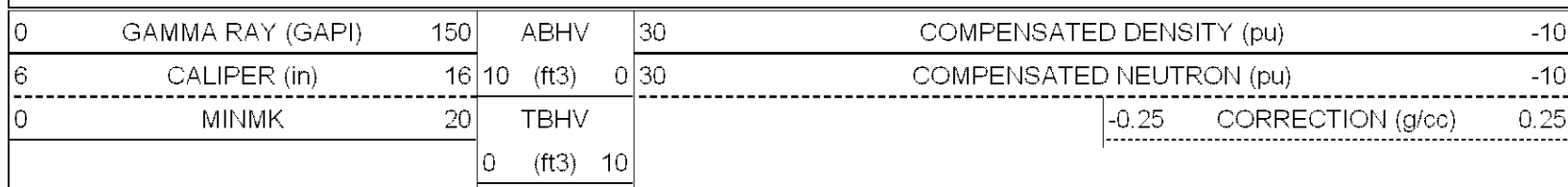


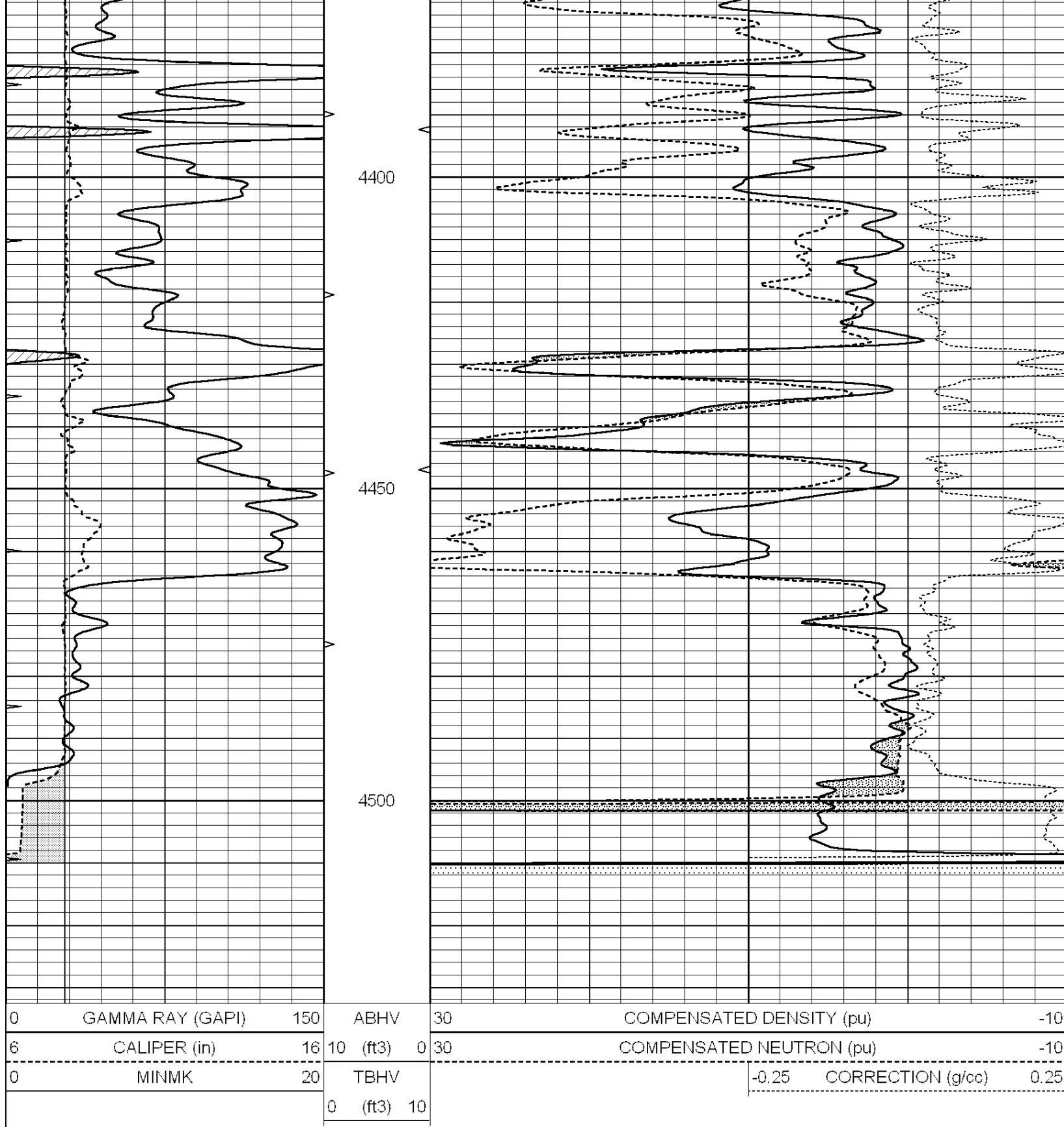




REPEAT SECTION

Database File: 010184ddn.db
 Dataset Pathname: pass2.3
 Presentation Format: _den_neu
 Dataset Creation: Thu May 30 17:16:36 2013 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240





Calibration Report

Database File: 010184ddn.db
Dataset Pathname: pass3.2
Dataset Creation: Thu May 30 17:13:22 2013 by Calc Open-Cased 090629

Dual Induction Calibration Report

Serial-Model: PROBE7-DILG
Surface Cal Performed: Sun May 19 13:30:40 2013
Downhole Cal Performed: Sat Jan 19 19:51:38 2013

Surface Calibration								
Readings			References			Results		
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.793	0.790	V	0.000	400.000	mmho/m	620.000	7.000
Medium	0.992	1.002	V	0.000	464.000	mmho/m	660.000	-38.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.041	0.642	V	0.000	400.000	mmho/m	664.874	-27.011
Medium	0.035	0.802	V	0.000	464.000	mmho/m	604.936	-21.367

Downhole Calibration								
Readings			References			Results		
	Zero	Cal		Zero	Cal		m'	b'
Deep	135384.000	27094.500	mmho/m	135400.000	27082.400	mmho/m	1.000	-19.259
Medium	-47330.100	-9381.740	mmho/m	-47327.100	-9389.280	mmho/m	1.000	-10.154
LL3		7.322	V		1400.000	Ohm-m		
		0.038	V		20.000	Ohm-m		
		-7.273	V		4000.000	mmho-m		

After Survey Verification								
Readings			Targets			Results		
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	135384.000	27094.500	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	-47330.100	-9381.740	mmho/m	1.000	0.000
LL3		0.000	Ohm-m		1400.000	Ohm-m		
		0.000	Ohm-m		20.000	Ohm-m		
		0.000	mmho-m		4000.000	mmho-m		

Compensated Density Calibration Report

Serial-Model: GEAR1-GEARHART
Source / Verifier: 147 / 147
Master Calibration Performed: Mon May 13 17:25:39 2013

Master Calibration						
Density			Far Detector		Near Detector	
Magnesium	1.710	g/cc	1205.77		610.74	cps
Aluminum	2.600	g/cc	271.21		419.72	cps
Spine Angle = 75.89			Density/Spine Ratio = 0.579			
Size			Reading			
Small Ring	7.70	in	4.69		V	
Large Ring	14.00	in	6.52		V	

Compensated Neutron Calibration Report

Serial Number: NEU_4I
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

Gamma Ray Calibration Report

Serial Number:	GR1	
Tool Model:	OPEN	
Performed:	Mon May 20 17:04:25 2013	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.9500	GAPI/cps