SUPERIOR WELL SERVICES

SUPERIOR
Hays,
Kansas

COMPENSATED NEUTRON / DENSITY PE LOG

Company MULL DRILLING COMPANY, INC.
Well SMITH-RUFENACHT UNIT #1-11
Field
County NESS State KANSAS
Location: API # : 15-135-25421-0000
2561' FSL & 647' FEL
NE/4 - SE/4
SEC 11 TWP 17S RGE 24W

Other Services
DIL
MEL/SON

Permanent Datum GROUND LEVEL Elevation 2476
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2481
D.F. 2479
G.L. 2476

Date	7/25/12		
Run Number	ONE		
Depth Driller	4550		
Depth Logger	4548		
Bottom Logged Interval	4524		
Top Log Interval	3700		
Casing Driller	8 5/8" @ 234		
Casing Logger	233		
Bit Size	7 7/8		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 5900 PPM	
Density / Viscosity	9.1/44		
pH / Fluid Loss	9.5/12.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	0.57 @ 93F		
Rmf @ Meas. Temp	0.43 @ 93F		
Rmc @ Meas. Temp	0.68 @ 93F		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	0.44 @ 121F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	121F		
Equipment Number	680		
Location	HAYS, KS.		
Recorded By	JEFF GRONEWEG		
Witnessed By	KEVIN KESSLER		

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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 SUPERIOR WELL SERVICE (785) 628-6395
DIRECTIONS
RANSOM, KS - WEST EDGE OF TOWN TO RD Q - 3 MILES SOUTH
WEST INTO

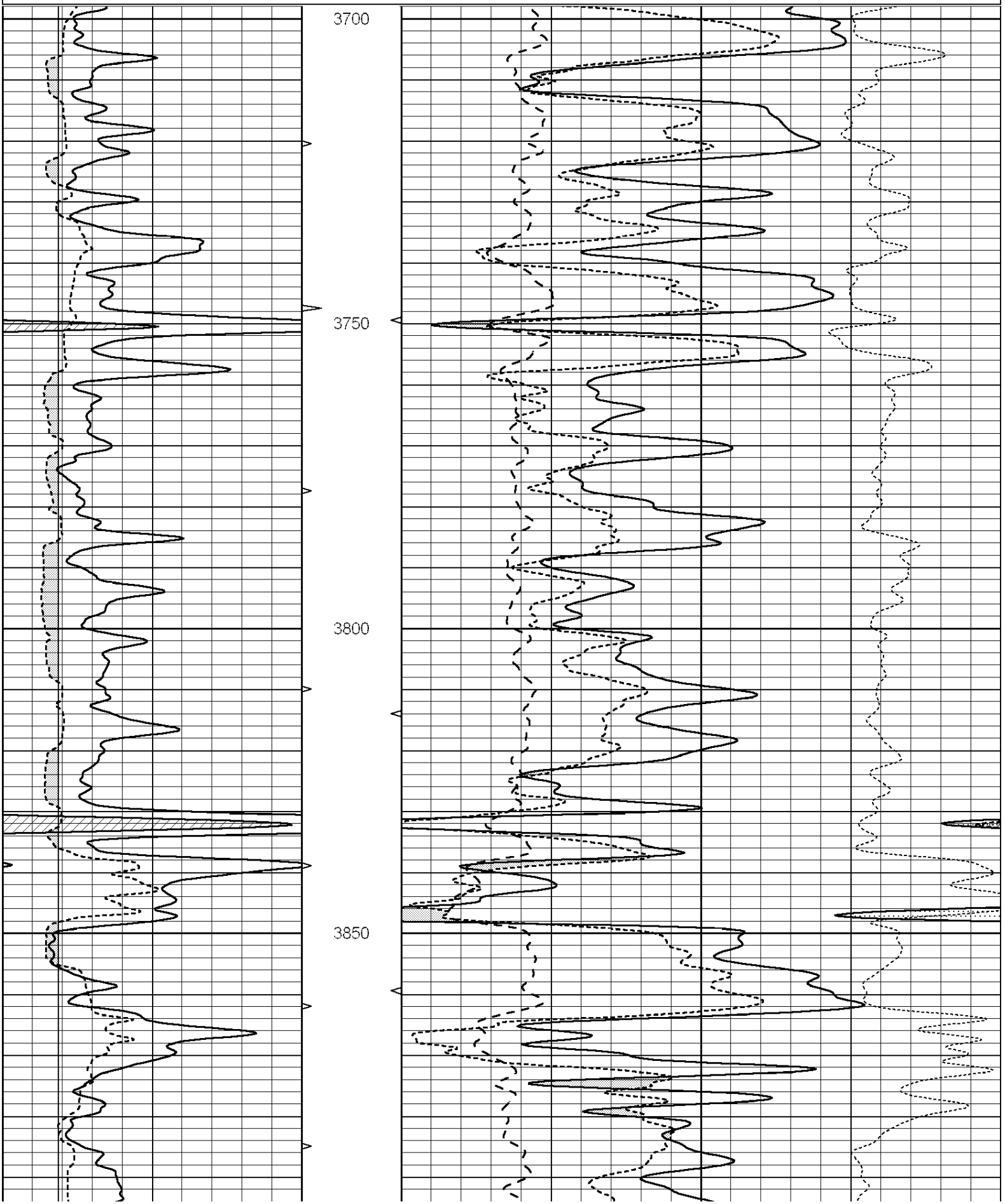
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Dataset Pathname: pass3.3.1
Presentation Format: _ldt_neu
Dataset Creation: Wed Jul 25 13:50:07 2012
Charted by: Depth in Feet scaled 1:240

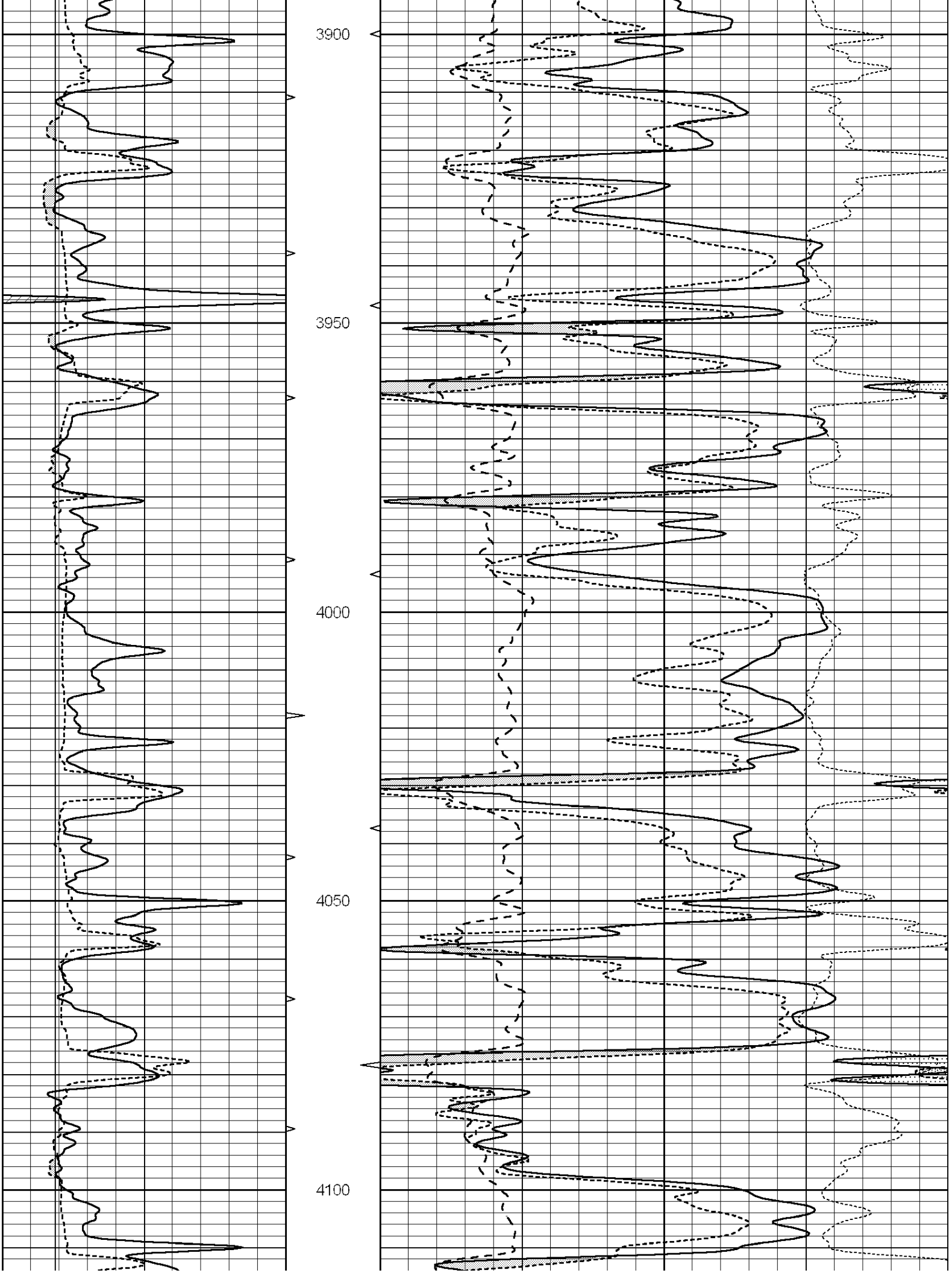
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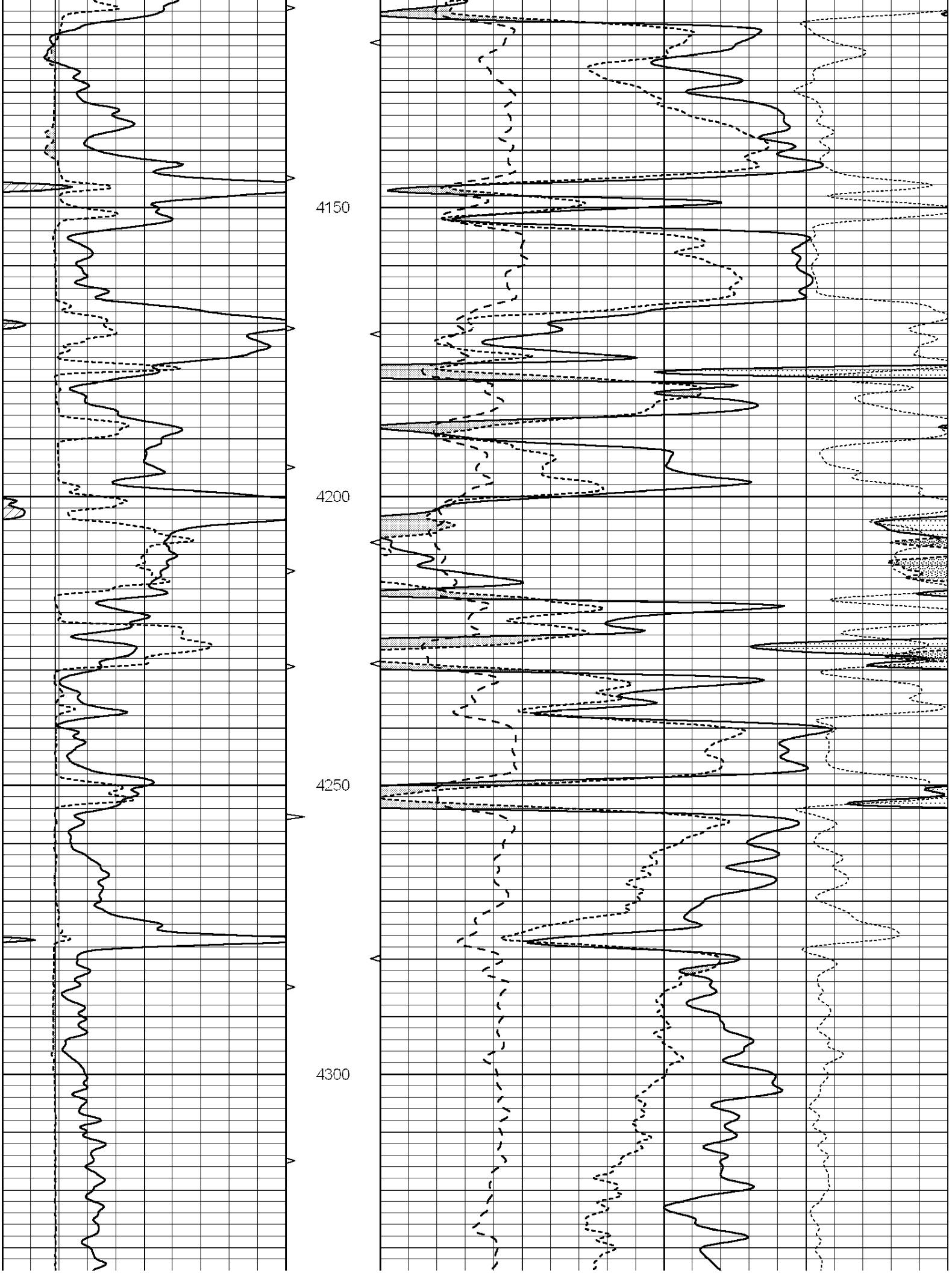
0	GAMMA RAY (GAPI)	150
6	CALIPER (in)	16

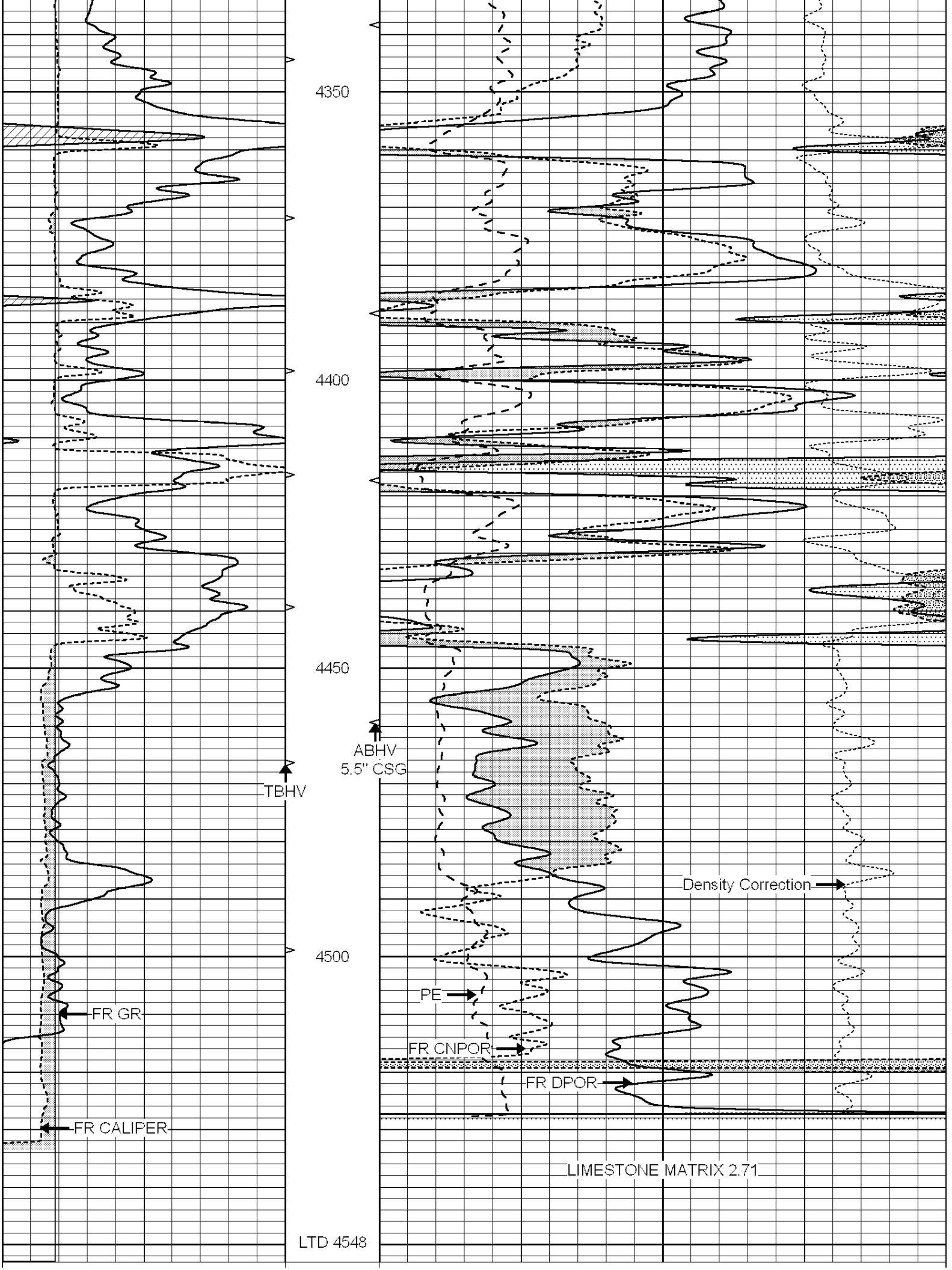
ABHV		
10	(ft3)	0
TBHV		
0	(ft3)	10

30	COMPENSATED DENSITY (pu)	-10
30	COMPENSATED NEUTRON (pu)	-10
0	PE 10	-0.25 CORRECTION (g/cc) 0.25




3900
3950
4000
4050
4100


4150
4200
4250
4300


4350
4400
4450
4500
ABHV
5.5" CSG
TBHV
Density Correction
PE
FR GR
FR CNPOR
FR DPOR
FR CALIPER
LIMESTONE MATRIX 2.71
LTD 4548

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

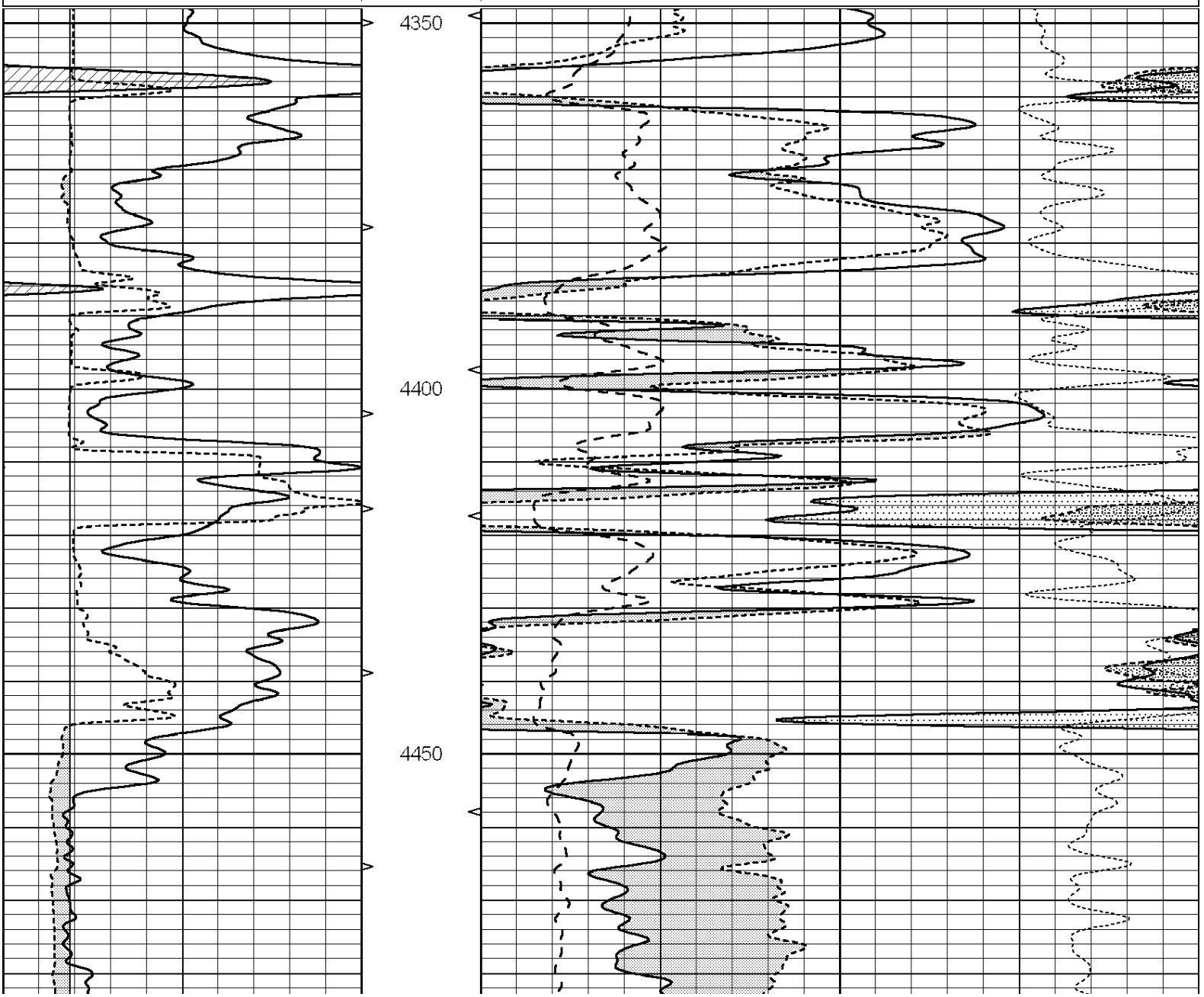
SUPERIOR WELL SERVICES

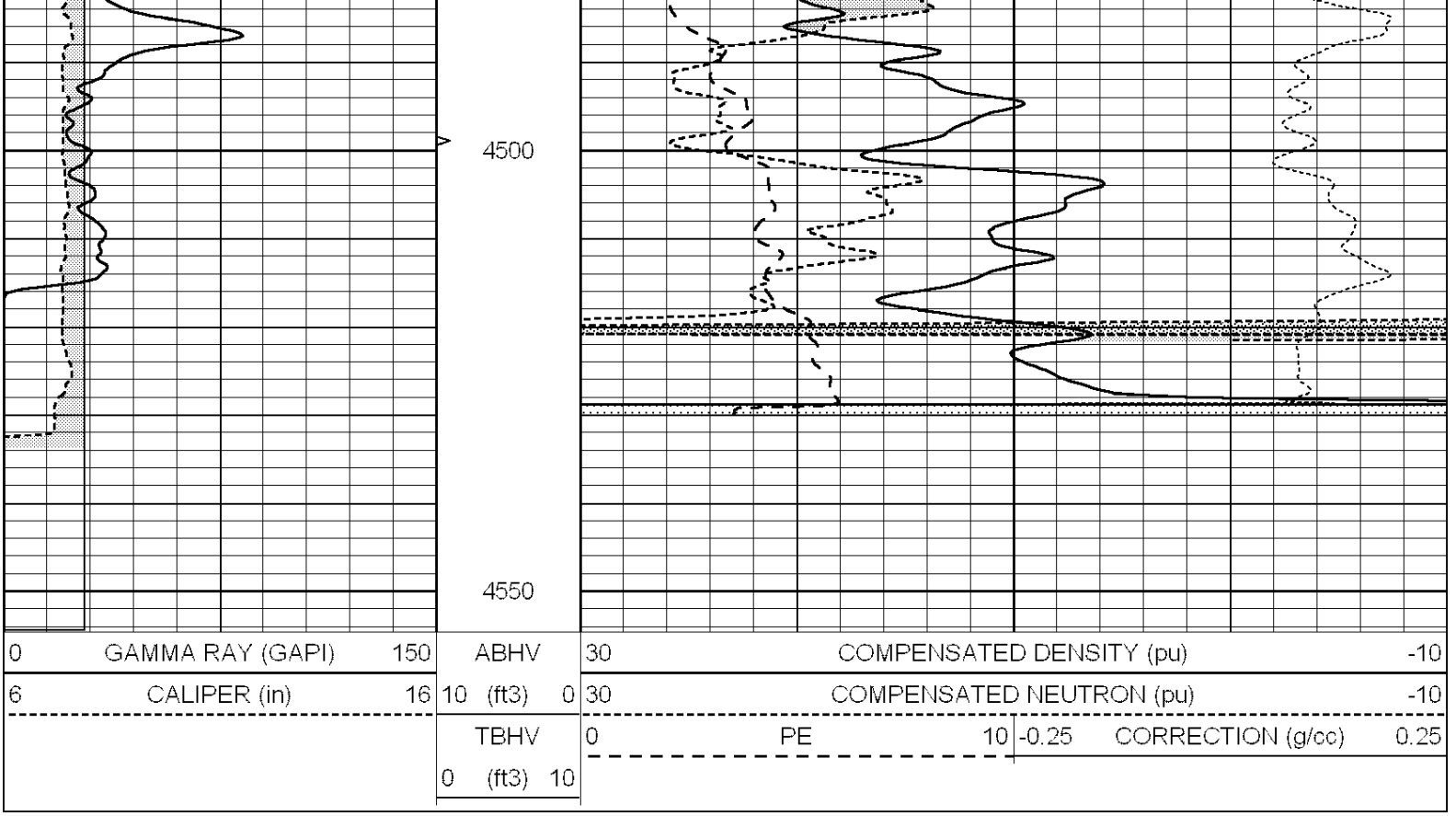
SUPERIOR
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Kansas

REPEAT SECTION

Database File:	009473pe.db
Dataset Pathname:	pass2.3.1
Presentation Format:	_ldt_neu
Dataset Creation:	Wed Jul 25 13:18:37 2012
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
			TBHV		0	PE 10	-0.25 CORRECTION (g/cc) 0.25
			0 (ft3)	10			





Calibration Report

Database File: 009473pe.db
Dataset Pathname: pass3.3.1
Dataset Creation: Wed Jul 25 13:50:07 2012

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

Surface Calibration

	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		

Litho Density Calibration Report

Serial: 001 Model: PRB
Performed Thu Sep 17 09:57:21 2009

Litho Density Calibration

	Background	Magnesium	Aluminum	Sandstone	
Window 1	2056.0	9796.8	3673.1	10821.3	cps
Window 2	1920.0	8541.1	3303.5	9307.2	cps
Window 3	1563.1	4735.7	2212.8	5017.5	cps
Window 4	466.0	466.1	465.6	471.5	cps
Long Space	0.0	6621.1	1383.5	7387.2	cps
Short Space	2.5	2361.7	1523.2	2534.0	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe			2.5700	1.5500	

Rib Angle	: 44.4	Rib Slope	: 0.978	Density/Spine Ratio	: 0.541
Spine Angle	: 74.4	Spine Slope	: 3.570	Spine Intercept	: -18.9

Caliper

	Readings	Reference
Low Ref	3.1	8.4
High Ref	4.3	14.3

Gain: 4.6 Offset: -7.7

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

Gamma Ray Calibration Report

Serial Number: #8
Tool Model: OPEN
Performed: Mon Jun 13 16:56:43 2011

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 175.0 cps

Sensitivity: 0.8371 GAPI/cps