



**COMPLETION
& PRODUCTION
SERVICES CO.**

**COMPENSATED
DENSITY/NEUTRON
PE LOG**

LIBERTY OPERATIONS & COMPLETIONS, INC.

Company LIBERTY OPERATIONS & COMPLETIONS, INC.

Well GREEN #2

Field LYND POOL

County ROOKS State KANSAS

Location: 380' FNL & 1650' FWL

API # : 15-163-24157-0000

Other Services
DIL/MEL
SONIC

SEC 33 TWP 9S RGE 19W

GROUND LEVEL Elevation 2222

Permanent Datum Log Measured From
Drilling Measured From
KELLY BUSHING 5' A.G.L.
KELLY BUSHING

Elevation
K.B. 2227
D.F. 2225
G.L. 2222

Date	9/25/13		
Run Number	ONE		
Depth Driller	3795		
Depth Logger	3794		
Bottom Logged Interval	3770		
Top Log Interval	3100		
Casing Driller	8 5/8" @ 213		
Casing Logger	214		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 2500 PPM	
Density / Viscosity	9.2/50		
pH / Fluid Loss	9.0/8.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.65 @ 98F		
Rmt @ Meas. Temp	.48 @ 98F		
Rmc @ Meas. Temp	.78 @ 98F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	.55 @ 114F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	114F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JASON CAPPELLUCCI		
Witnessed By	TONY RICHARDSON		

<<< Fold Here >>>

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

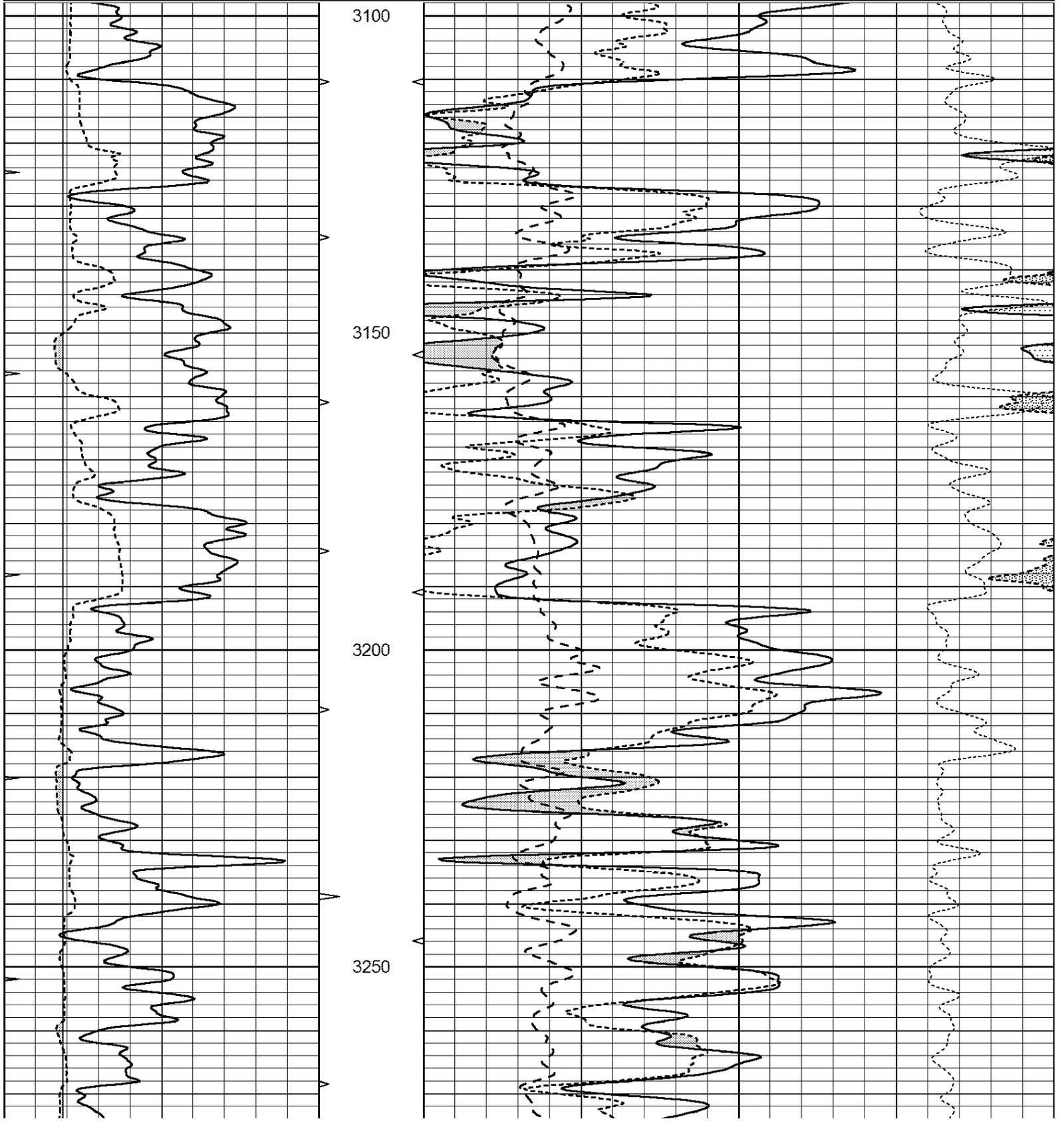
THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395
DIRECTIONS:
ZURICH, KS. - 3/4 W. - S. INTO

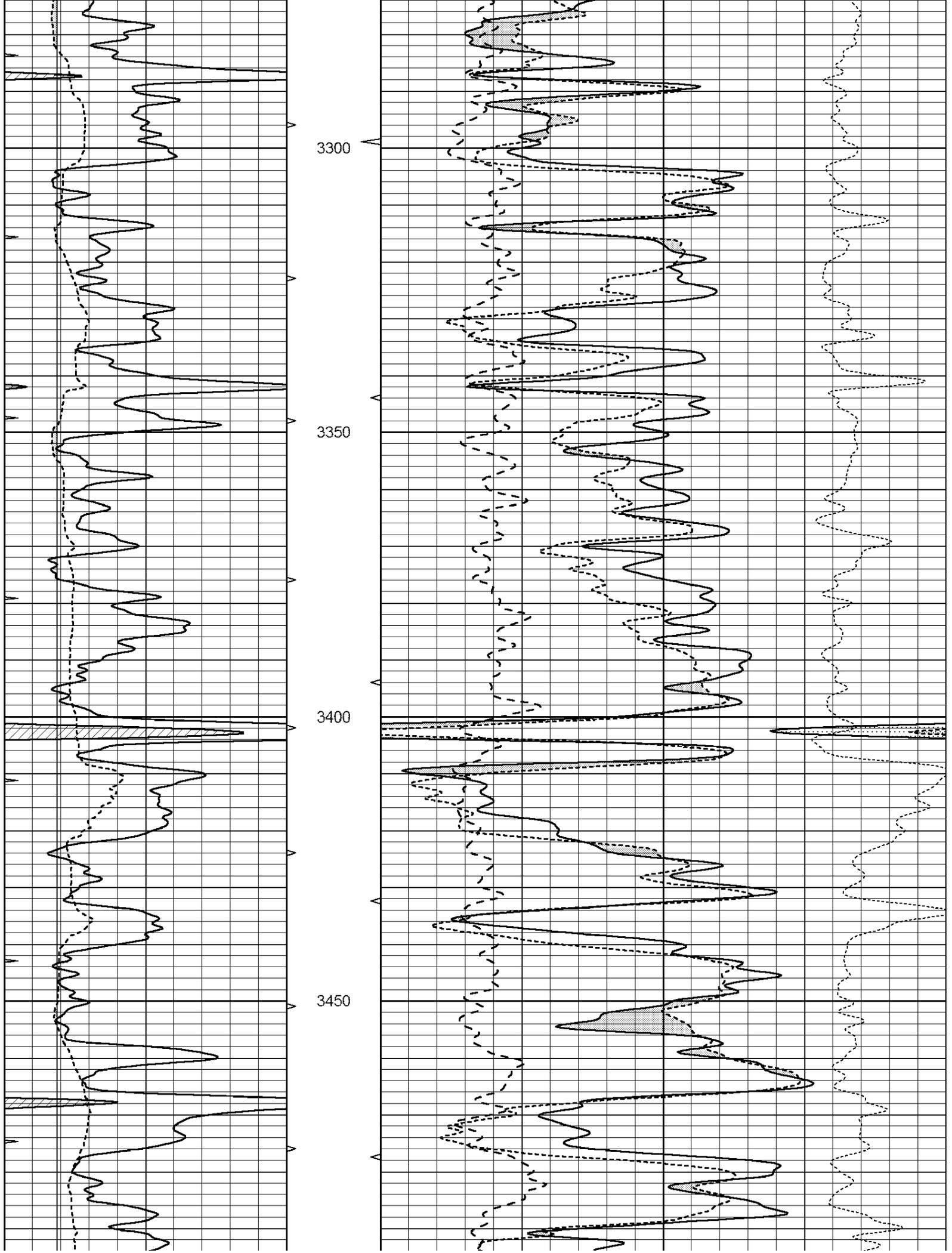


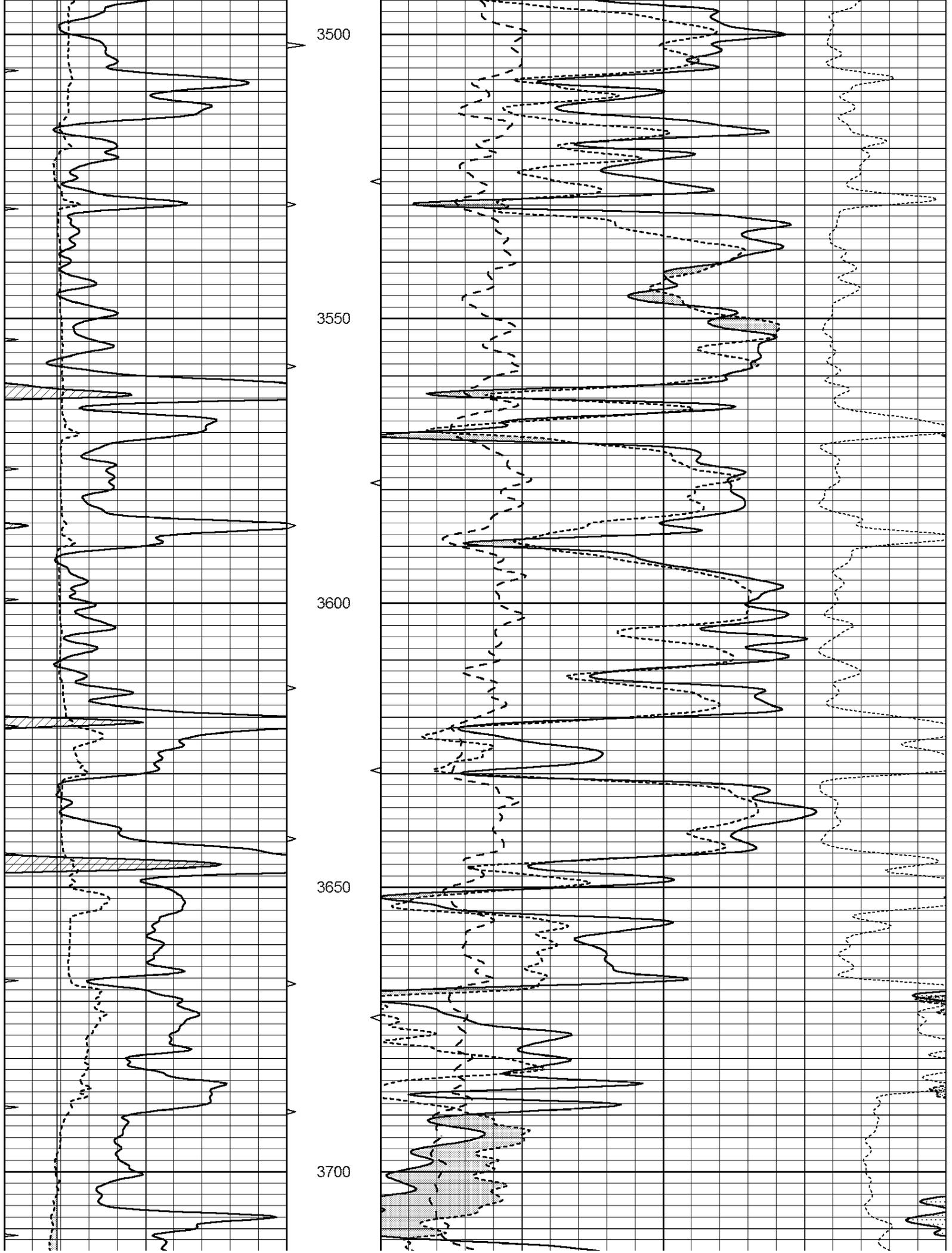
MAIN SECTION

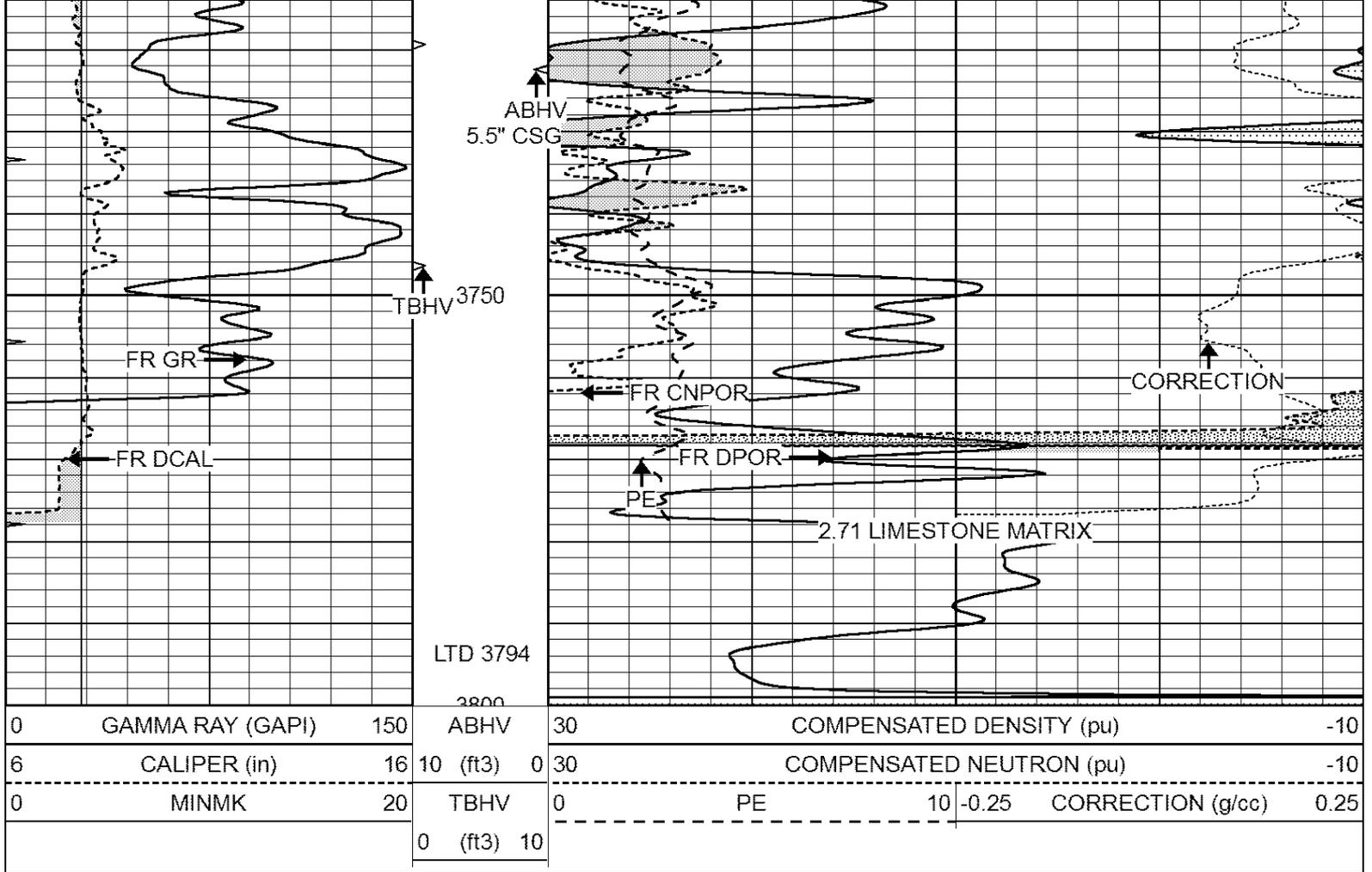
Database File: 011785pe.db
 Dataset Pathname: pass3.1
 Presentation Format: _ldt_neu
 Dataset Creation: Wed Sep 25 17:31:04 2013 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

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





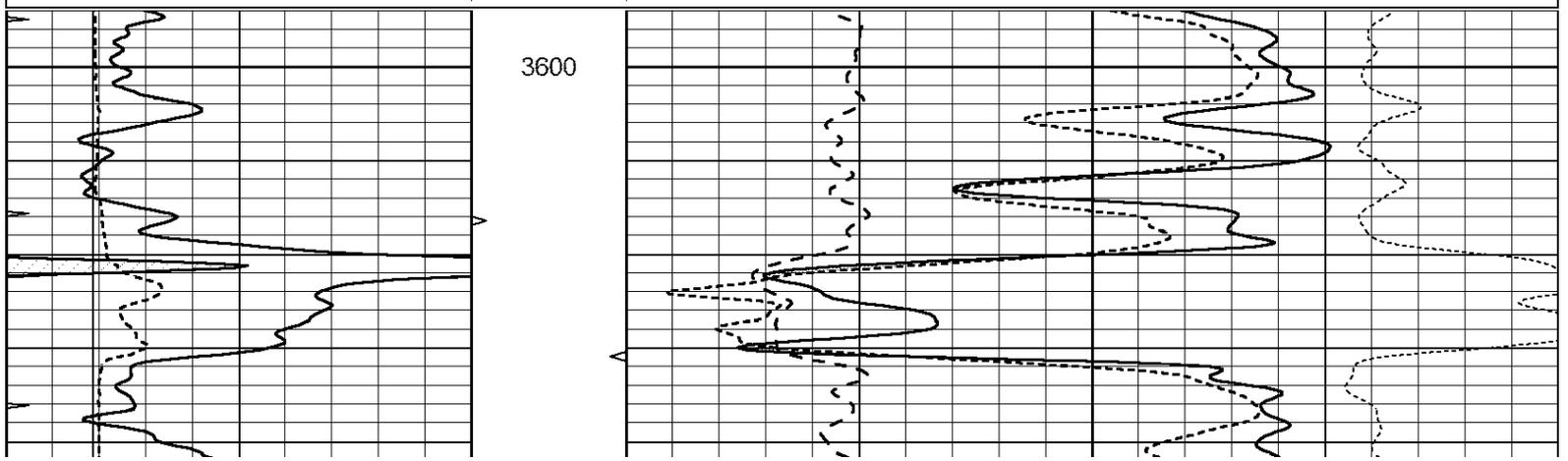


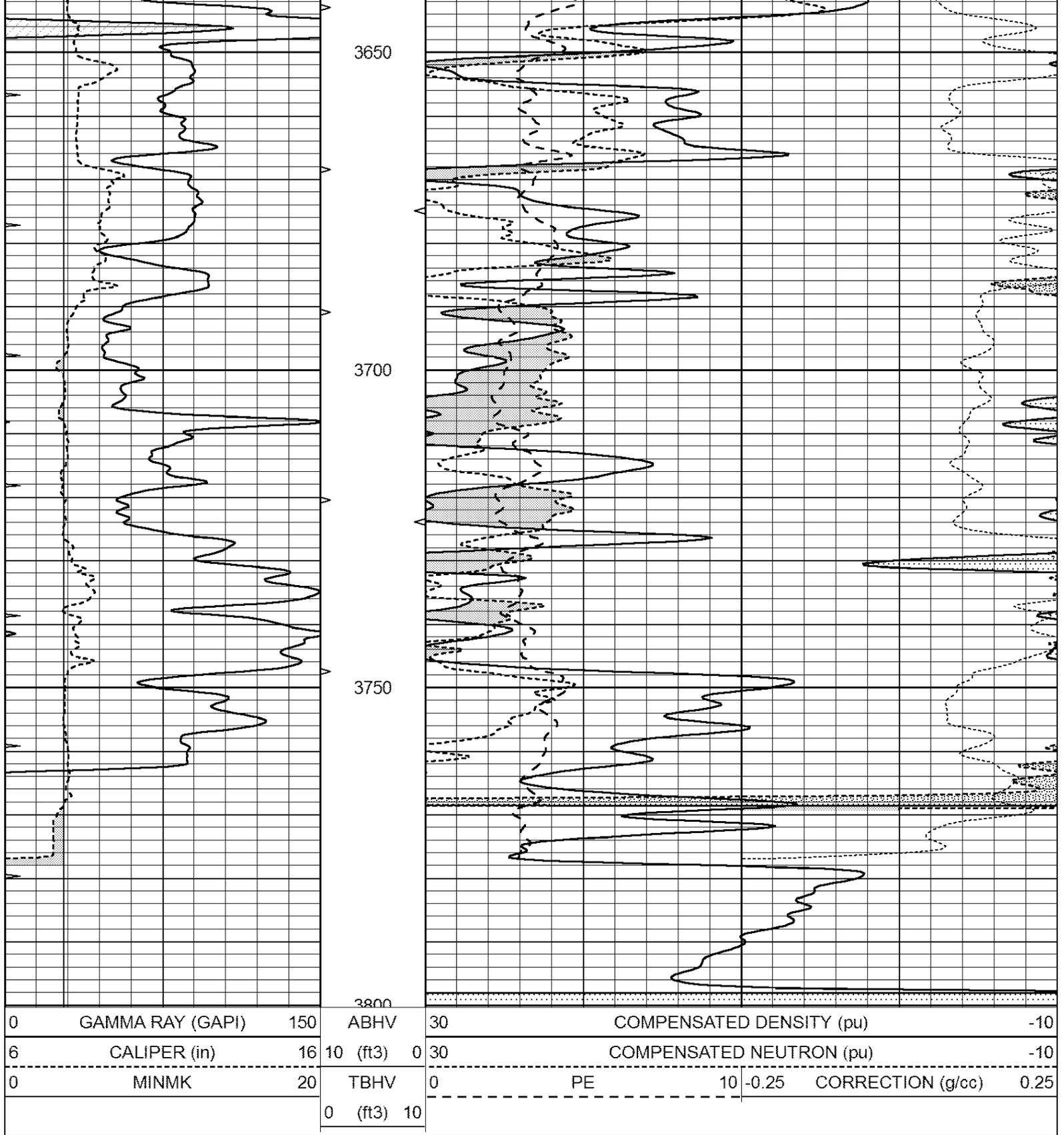


REPEAT SECTION

Database File: 011785pe.db
 Dataset Pathname: pass2.1
 Presentation Format: _ldt_neu
 Dataset Creation: Wed Sep 25 17:30:23 2013 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	PE	10	-0.25	CORRECTION (g/cc)	0.25
			0 (ft3)	10					





Calibration Report

Database File: 011785pe.db
 Dataset Pathname: pass2.1
 Dataset Creation: Wed Sep 25 17:30:23 2013 by Calc Open-Cased 090629

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								
Loop:	Readings			References			Results	
	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: 002 Model: PRB

Master Calibration		Performed Wed Sep 25 08:38:51 2013				
	Background	Magnesium	Aluminum	Sandstone		
Window 1	877.2	7604.0	2389.0	8855.4	cps	
Window 2	807.1	5964.7	1961.6	6794.7	cps	
Window 3	653.2	3191.5	1207.1	3567.2	cps	
Window 4	193.6	194.6	192.5	194.2	cps	
Long Space	0.0	5157.6	1154.5	5987.6	cps	
Short Space	0.9	1099.6	749.9	1233.2	cps	
Rho		1.7100	2.5900	1.3800	g/cc	
Pe		0.0000	2.5700	1.5500		
Rib Angle	: 45.7	Rib Slope	: 1.023	Density/Spine Ratio	: 0.570	
Spine Angle	: 75.7	Spine Slope	: 3.910	Spine Intercept	: -18.8	

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

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: 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 Jun 18 19:34:11 2013

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 175.0 cps

Sensitivity: 0.8371 GAPI/cps