



**COMPLETION  
& PRODUCTION  
SERVICES CO.**

**COMPENSATED  
DENSITY / NEUTRON  
PE LOG**

Company HERMAN L. LOEB, LLC.  
Well CLARK #8  
Field MOYER NORTHWEST  
County SUMNER  
State KANSAS

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Location: API # : 15-191-22767-0000  
1686' FNL & 1980' FEL  
S/2 - N/2 - SW - NE  
SEC 2 TWP 31S RGE 3W  
Permanent Datum GROUND LEVEL Elevation 1290  
Log Measured From KELLY BUSHING 9' A.G.L.  
Drilling Measured From KELLY BUSHING  
Other Services DIL/MEL  
Elevation K.B. 1299  
D.F. 1297  
G.L. 1290

Date	1/14/15
Run Number	ONE
Depth Driller	3400
Depth Logger	3398
Bottom Logged Interval	3374
Top Log Interval	2000
Casing Driller	8 5/8"@259'
Casing Logger	259
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	9.4/53
pH / Fluid Loss	11.0/9.0
Source of Sample	FLOWLINE
Rim @ Meas. Temp	.900@50F
Rmf @ Meas. Temp	.675@50F
Rmc @ Meas. Temp	1.08@50F
Source of Rmf / Rmc	MEASUREMENT
Rim @ BHT	.405@111F
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	8:45 A.M.
Maximum Recorded Temperature	111F
Equipment Number	4854
Location	HAYS, KANSAS
Recorded By	JEFF LUEBBERS
Witnessed By	JON CHRISTENSEN

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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**

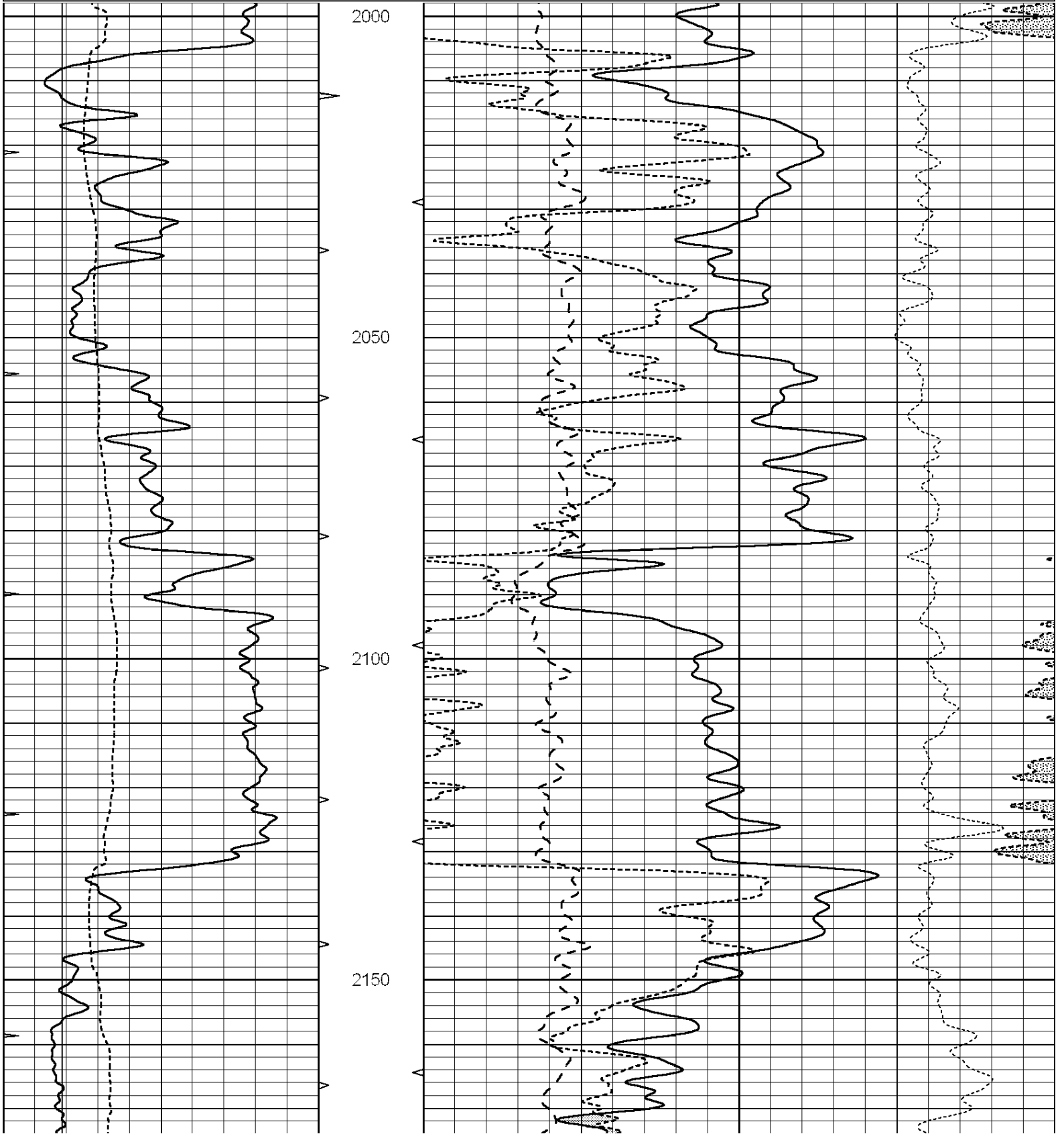
THANK YOU FOR USNG "NABORS" HAYS, KANSAS (785) 628-6395  
DIRECTIONS  
CONWAY SPRINGS, KS., (HWY 49 & PARALLEL RD.) S. SIDE OF TOWN, 2E. TO "CALDWELL RD.",  
1/2S.TO TANK BATTERY, W. INTO & BACK NORTH

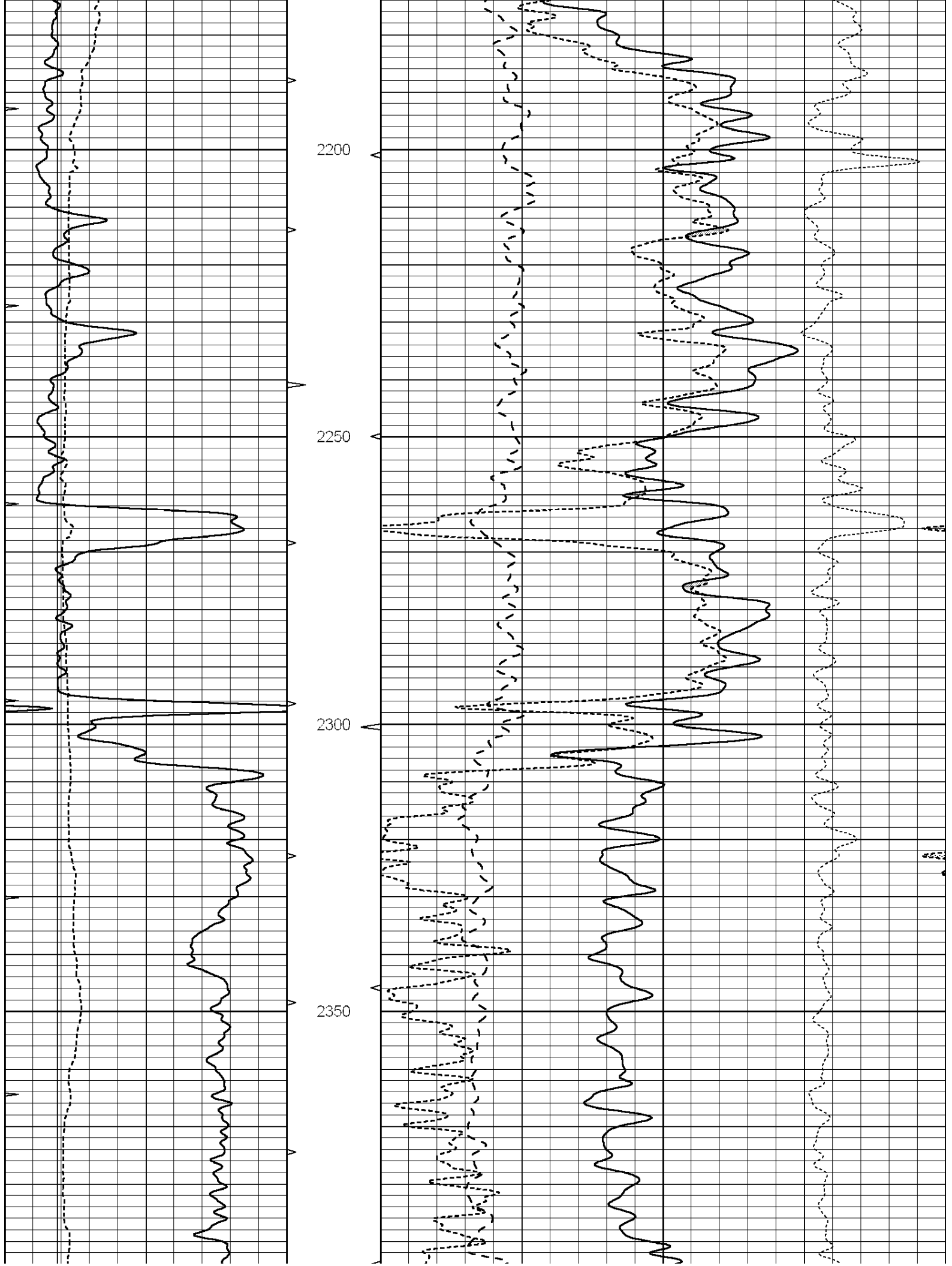


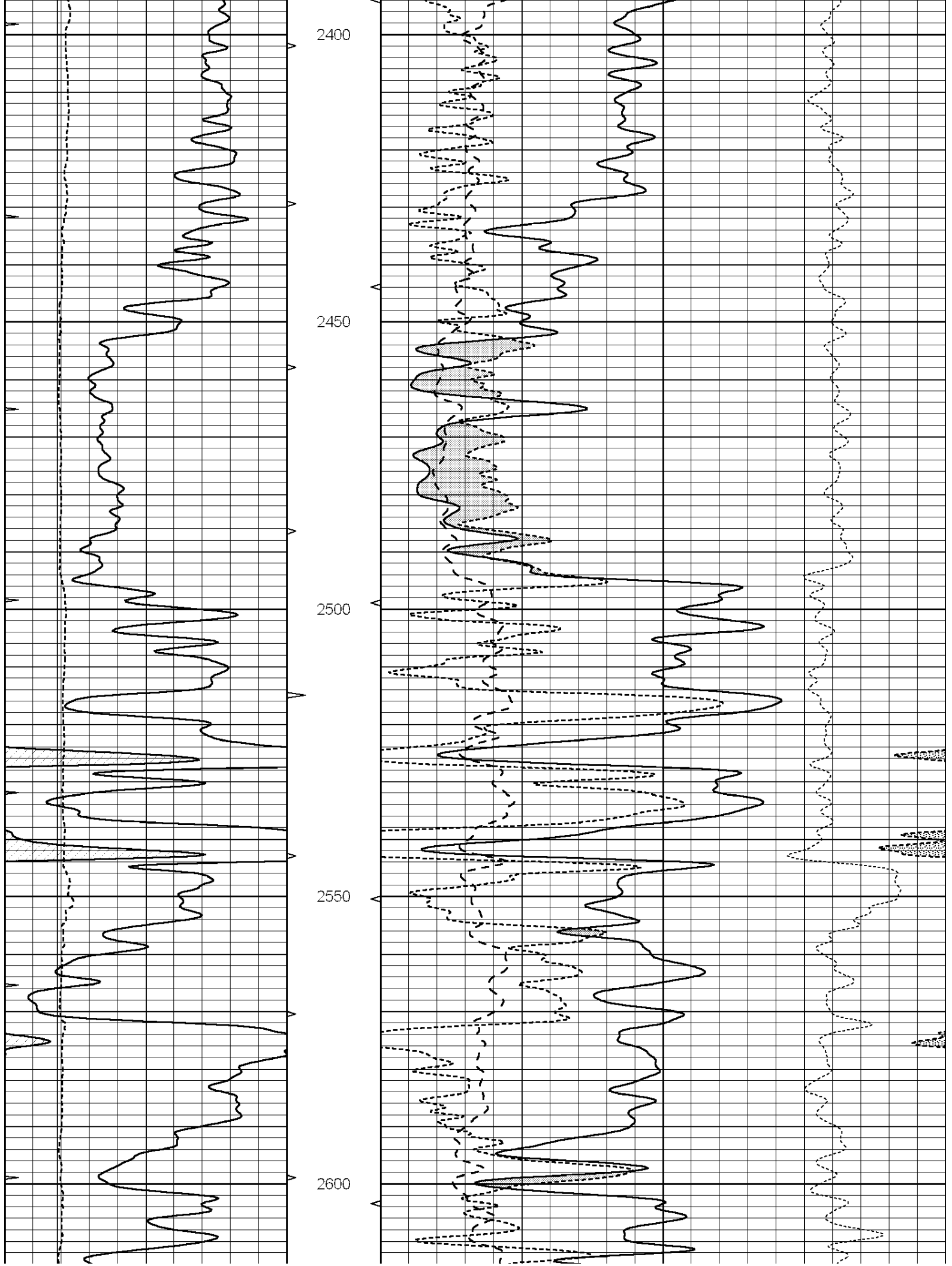
**MAIN SECTION**

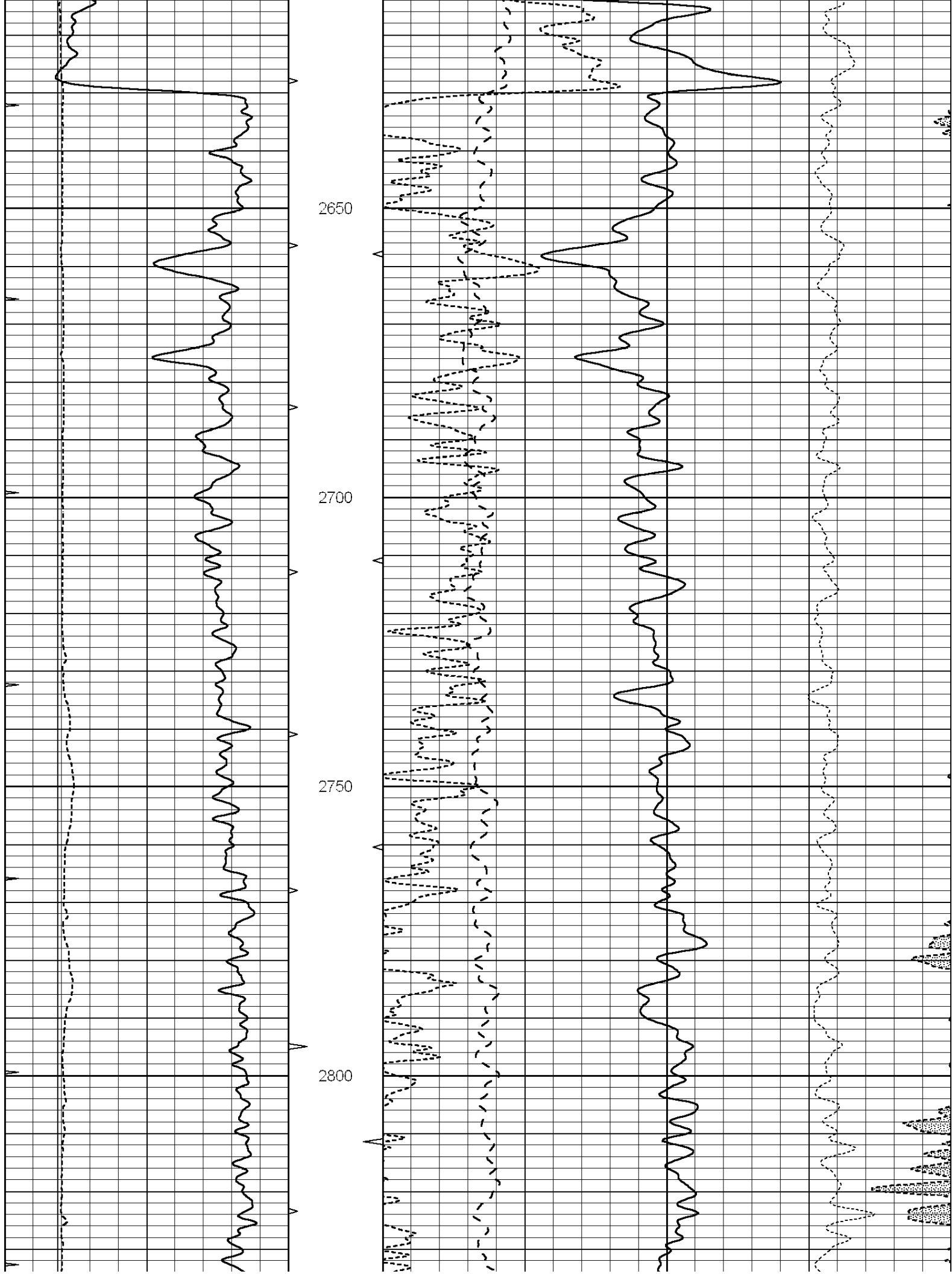
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 Dataset Pathname: pass3.5  
 Presentation Format: ldt\_neu  
 Dataset Creation: Wed Jan 14 10:09:36 2015 by Calc SOC 120430  
 Charted by: Depth in Feet scaled 1:240

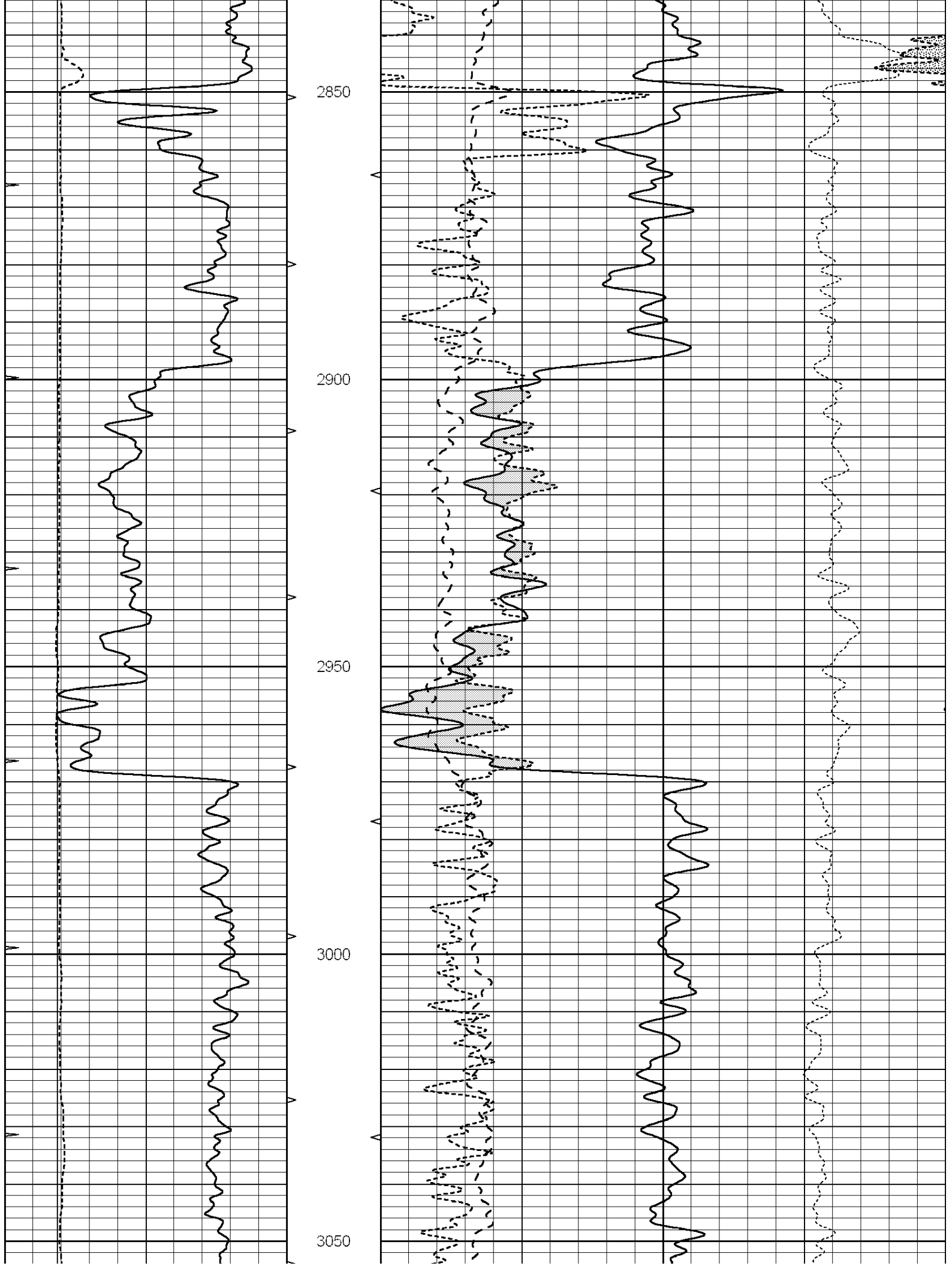
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6	CALIPER (in)	16	10 (ft3)	0	30	COMPENSATED NEUTRON (pu)		-10	
0	MINMK	20	TBHV	0	PE	10	-0.25	CORRECTION (g/cc)	0.25
			0 (ft3)	10					

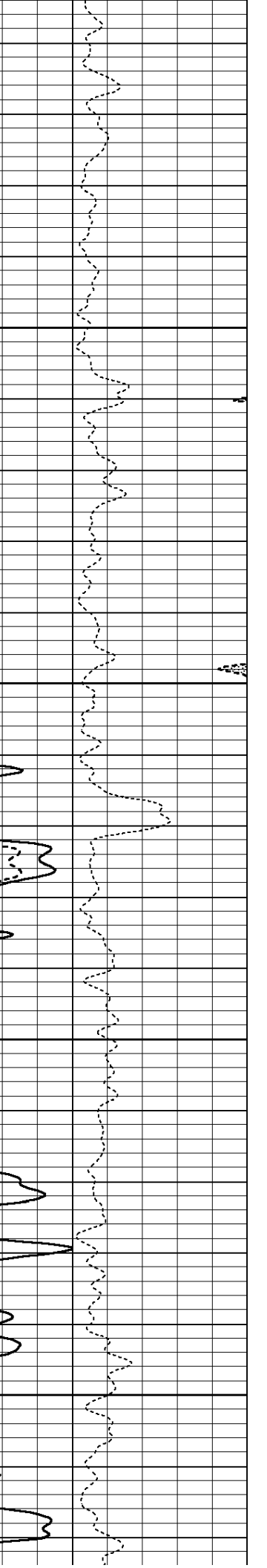
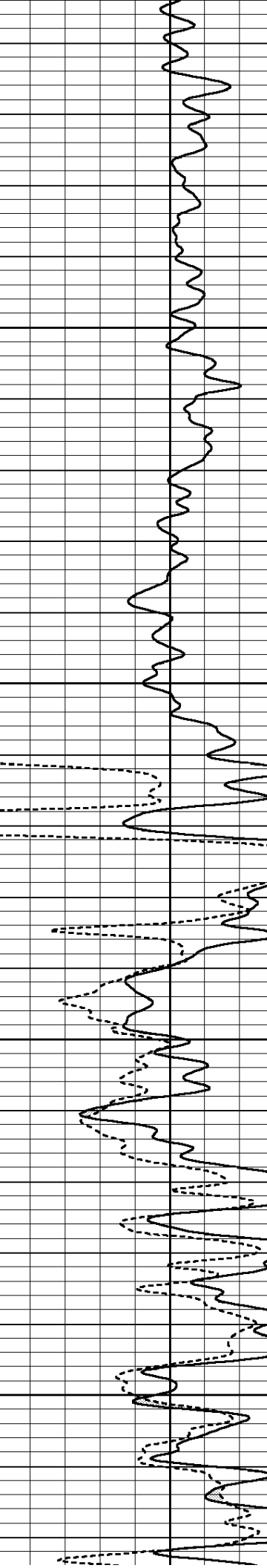
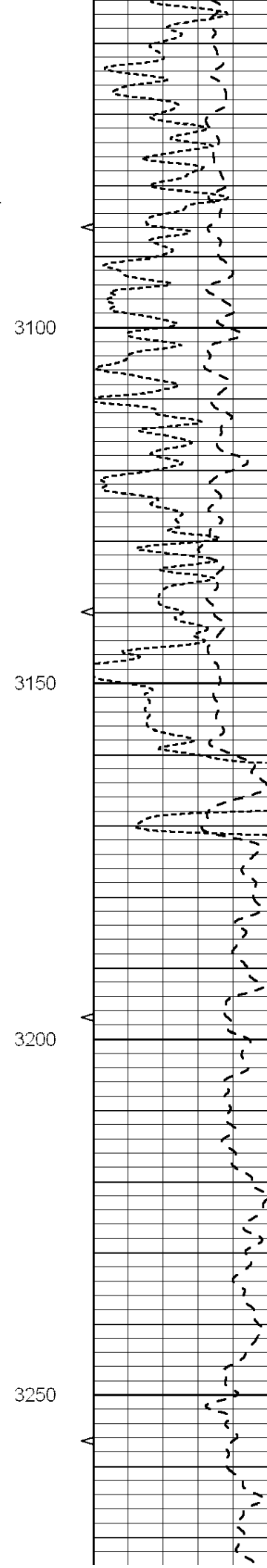
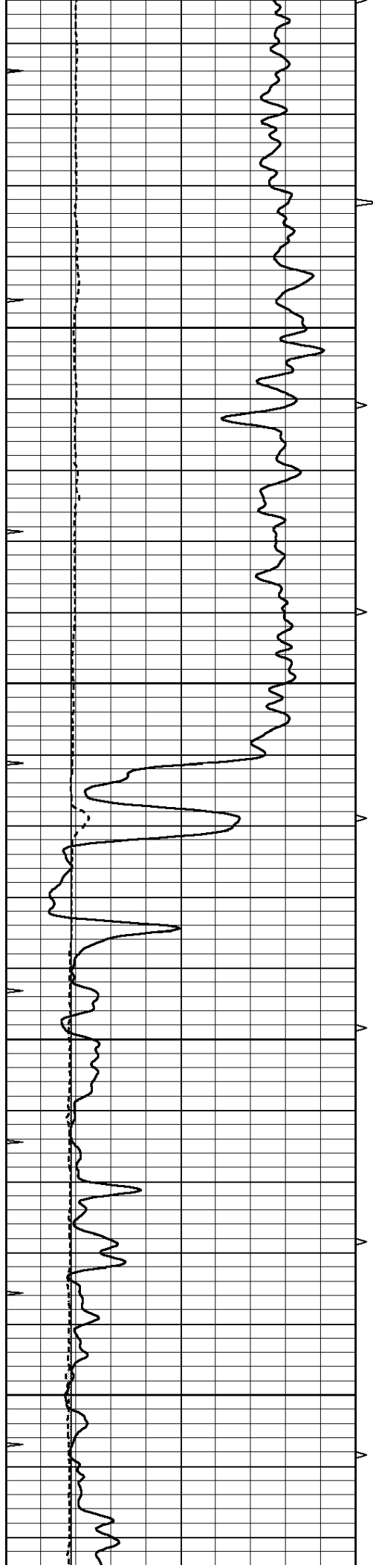


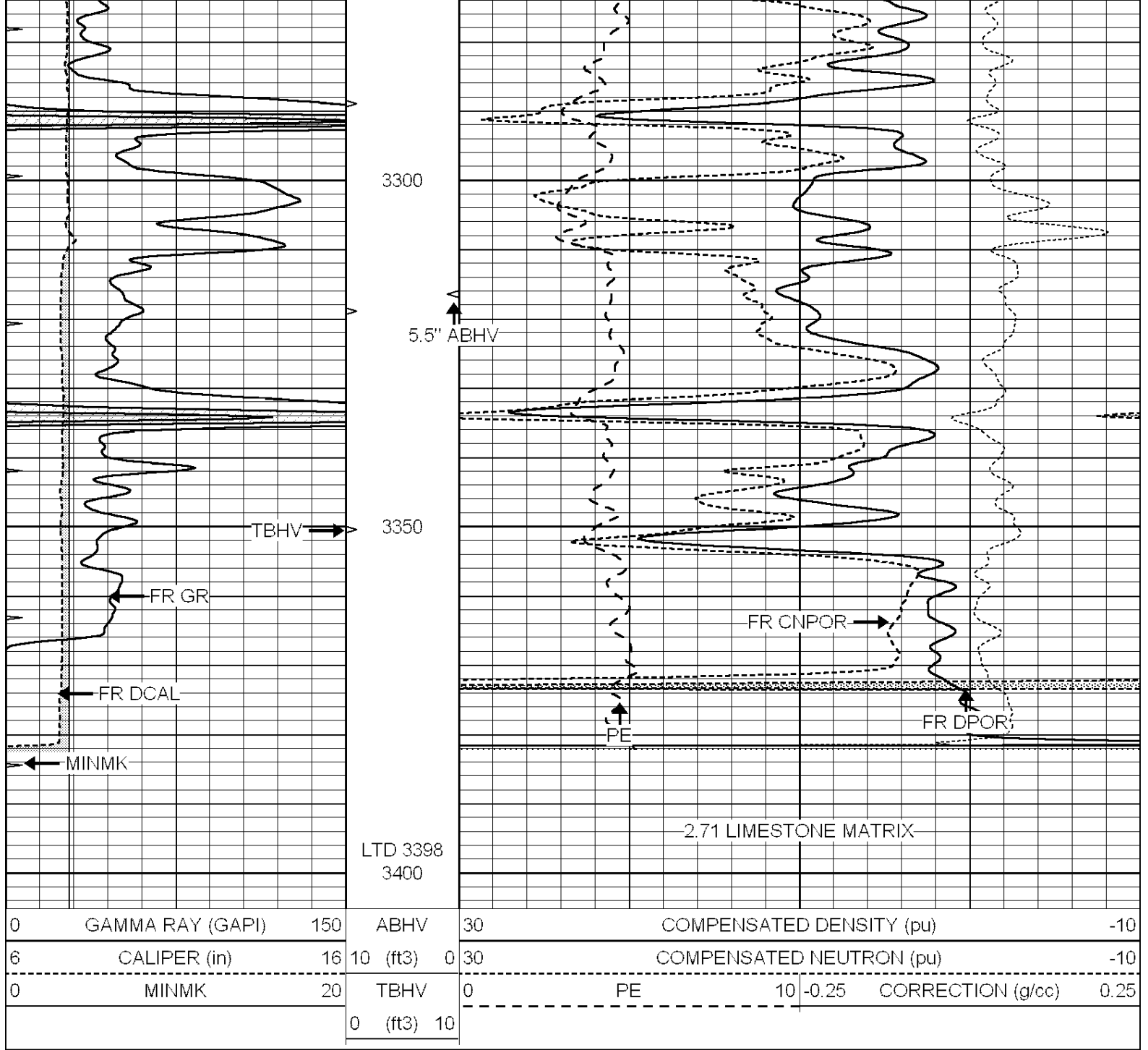










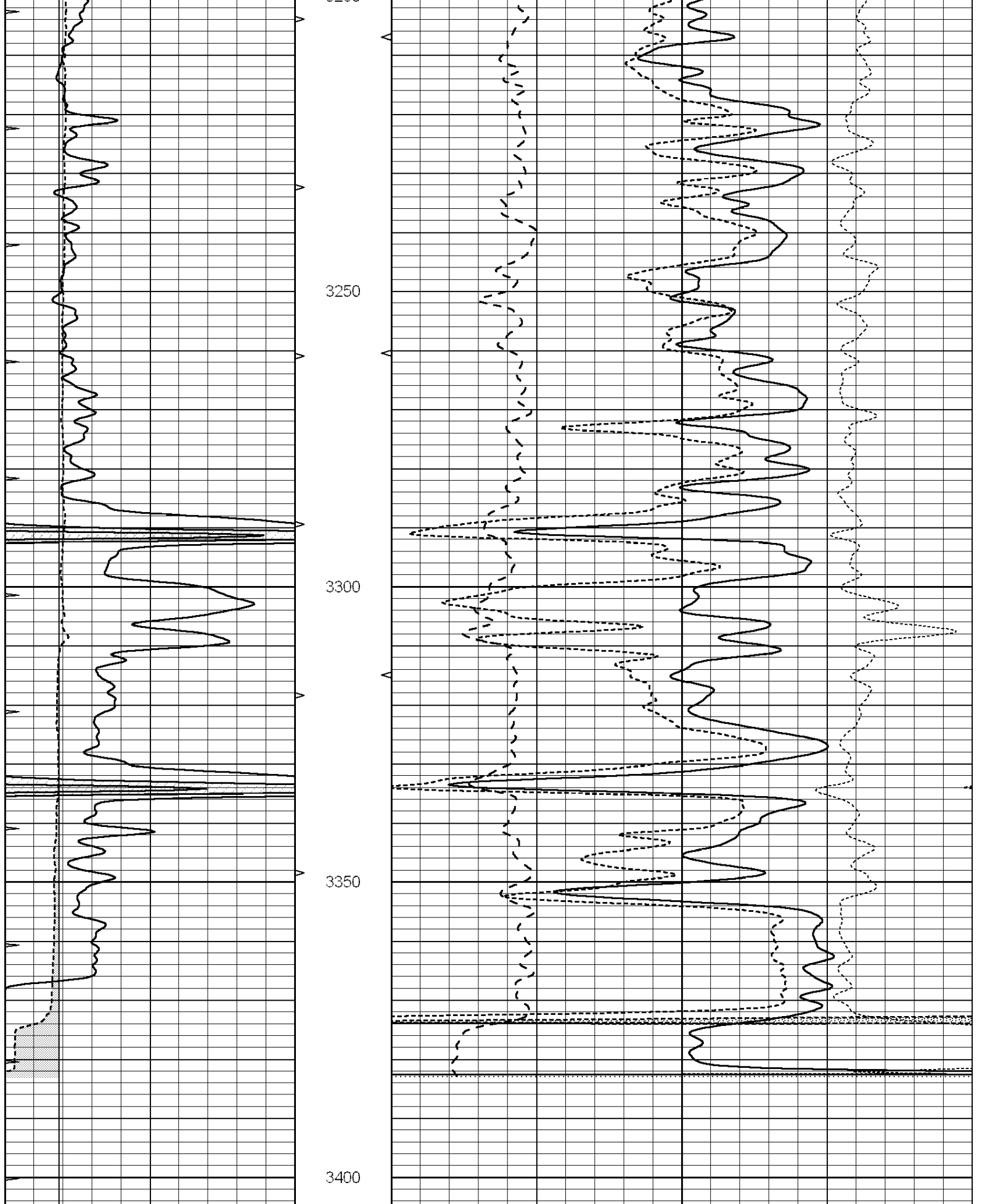


**NABORS**  
**COMPLETION & PRODUCTION SERVICES CO.**

# REPEAT SECTION

Database File: 266337pe.db  
 Dataset Pathname: pass2.3  
 Presentation Format: ldt\_neu  
 Dataset Creation: Wed Jan 14 10:08:31 2015 by Calc SOC 120430  
 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					



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

## Calibration Report

Database File: 266337pe.db  
 Dataset Pathname: pass3.5  
 Dataset Creation: Wed Jan 14 10:09:36 2015 by Calc SOC 120430

## Dual Induction Calibration Report

Serial-Model: PROBE9-DILG  
 Surface Cal Performed: Wed Jan 14 09:02:31 2015  
 Downhole Cal Performed: Mon Jul 28 12:02:56 2008  
 After Survey Verification Performed: Mon Jul 28 12:02:56 2008

## Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	670.000	-18.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	670.000	-26.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.011	0.610	V	0.000	400.000	mmho/m	667.135	-7.256
Medium	0.005	0.712	V	0.000	464.000	mmho/m	655.677	-3.102

## Downhole Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	14.508	388.384	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	166.367	504.400	mmho/m	1.000	0.000
LL3		7.500	V		1400.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		4000.000	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: 004N Model: PRB

## Master Calibration

Performed Fri May 30 11:01:00 2014

	Background	Magnesium	Aluminum	Sandstone	
Window 1	1378.8	10804.6	3492.0	12453.4	cps
Window 2	1262.4	9313.5	3076.7	10594.7	cps
Window 3	1077.6	5668.7	2076.0	6314.8	cps
Window 4	306.4	313.0	306.4	315.6	cps
Long Space	0.0	8051.0	1814.3	9332.3	cps
Short Space	1.9	1706.1	1146.0	1707.6	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	
Rib Angle	: 45.0	Rib Slope	: 1.002	Density/Spine Ratio	: 0.571
Spine Angle	: 75.0	Spine Slope	: 3.745	Spine Intercept	: -18.9

Before 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	

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: 070808  
Tool Model: Probe

PRE-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

POST-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number: 070558  
 Tool Model: OPEN\_GR  
 Performed: Mon Nov 17 10:01:40 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
 Calibrator Reading: 1.0 cps

Sensitivity: 0.2800 GAPI/cps