Casedhole Solutions

COMPENSATED DENSITY / NEUTRON LOG

Company	PHILLIPS EXPLORATION CO. L.C.
Well	WERTH #1-30
Field	WILDCAT
County	TREGO
State	KANSAS

Company PHILLIPS EXPLORATION COMPANY, L.C.

Well WERTH #1-30

Field WILDCAT

County TREGO State KANSAS

Location: API # : 15-195-23002-0000

1380' FNL & 1250' FEL

NW - NW - SE - NE

SEC 30 TWP 13S RGE 25W

Other Services: DIL/MEL

Permanent Datum	GROUND LEVEL	Elevation 2405	Elevation K.B. 2410
Log Measured From	KELLY BUSHING 5' A.G.L.		D.F. 2408
Drilling Measured From	KELLY BUSHING		G.L. 2405

Date	12/9/15		
Run Number	ONE		
Depth Driller	4399		
Depth Logger	4400		
Bottom Logged Interval	4376		
Top Log Interval	3400		
Casing Driller	8 5/8"@217'		
Casing Logger	217		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3,700 PPM	
Density / Viscosity	9.5/46		
pH / Fluid Loss	9.5/8.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.20@75F		
Rmf @ Meas. Temp	.900@75F		
Rmc @ Meas. Temp	1.44@75F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	.750@120F		
Time Circulation Stopped	2.5 HOURS		
Time Logger on Bottom	8:45 A.M.		
Maximum Recorded Temperature	120F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	PAT DEENIHAN		

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Comments

THANK YOU FOR USING "NABORS" HAYS, KANSAS (785) 628-6395

DIRECTIONS

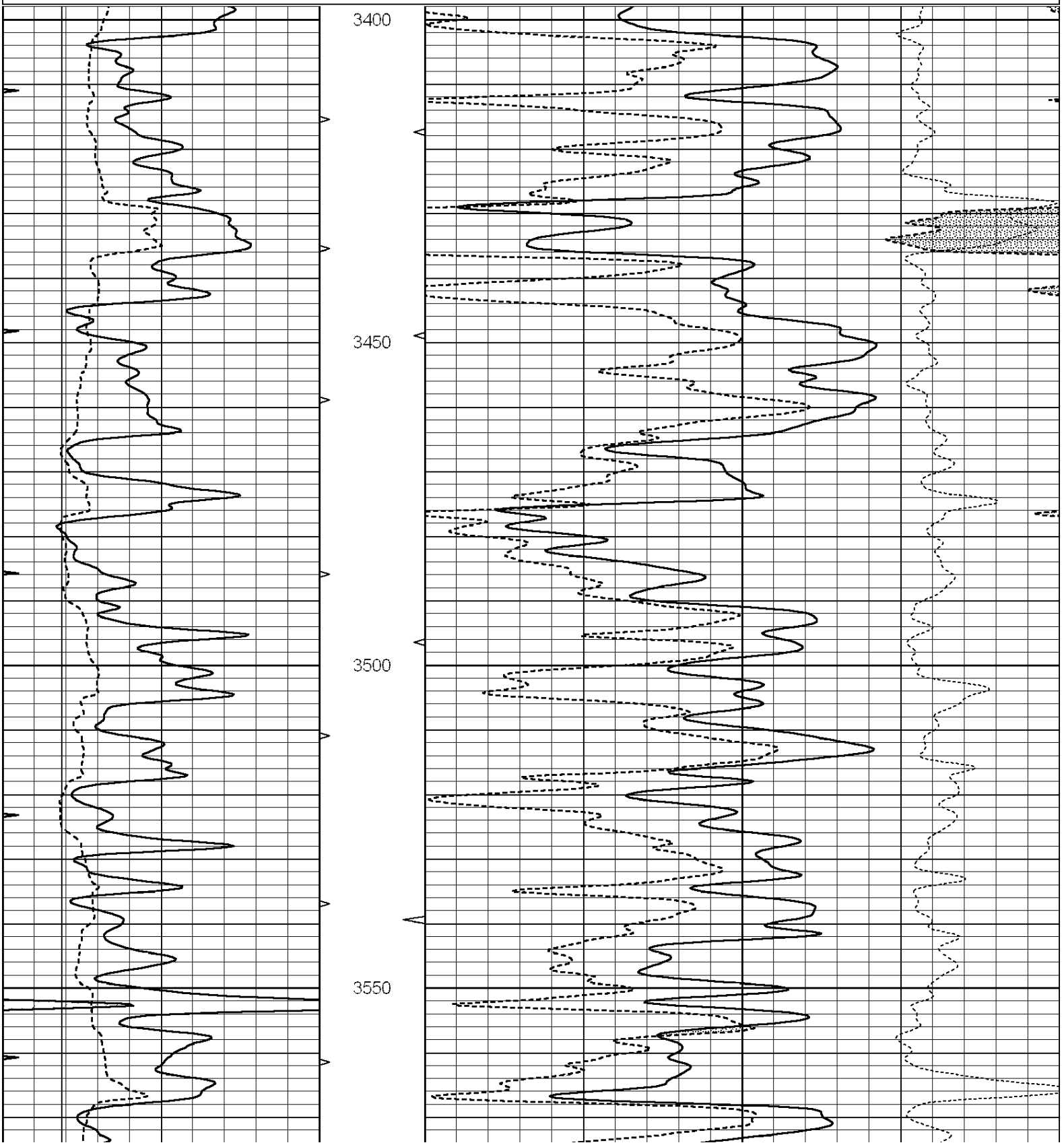
COLLYER, KS. & I-70 EXIT, 9S. TO "RD. Q", 1 1/2W., S. INTO AT TREE ROW

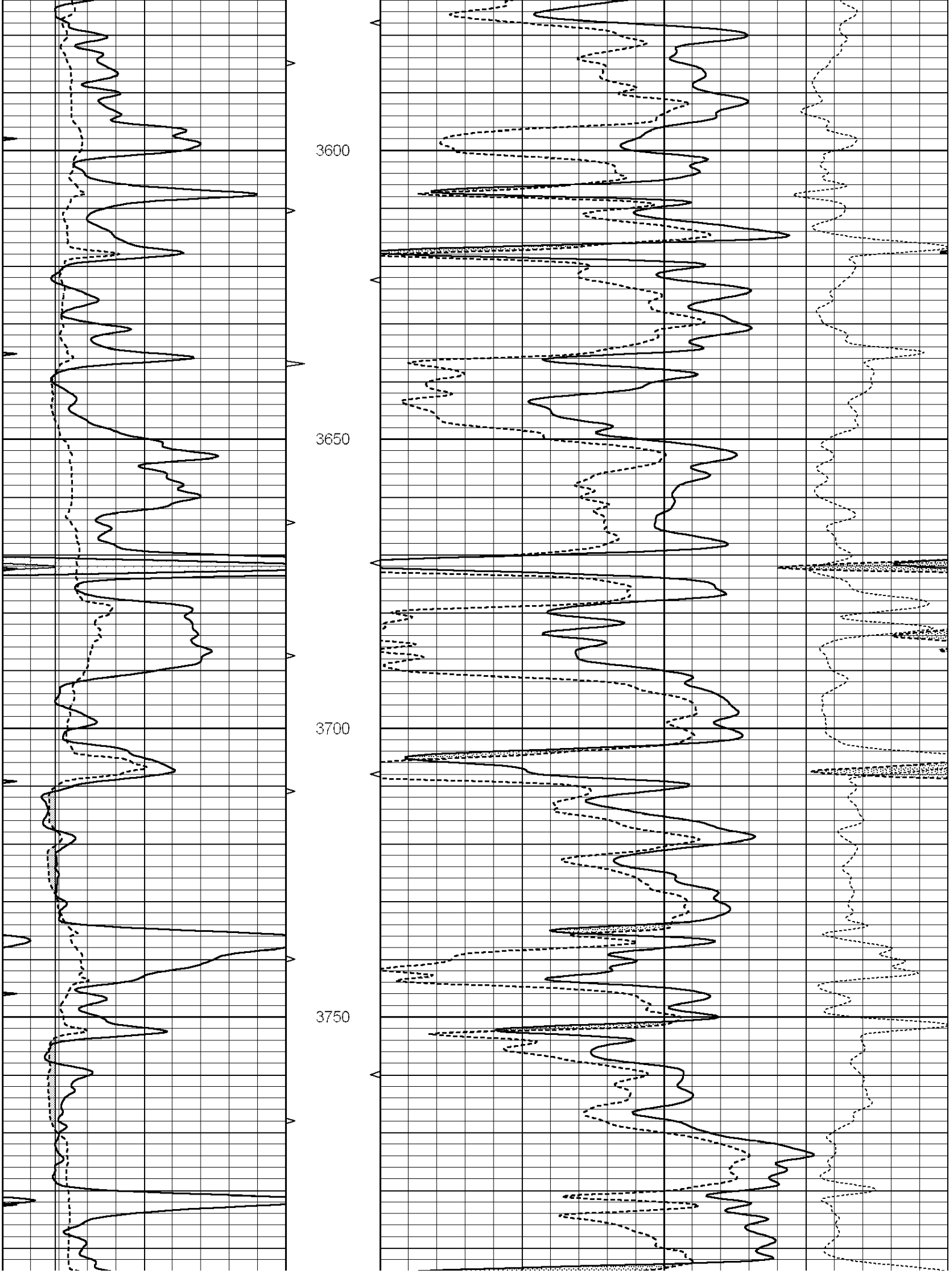
Casedhole Solutions

MAIN SECTION

Database File:	30680ddn.db
Dataset Pathname:	pass3.8
Presentation Format:	den_neu
Dataset Creation:	Wed Dec 09 10:07:30 2015
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		

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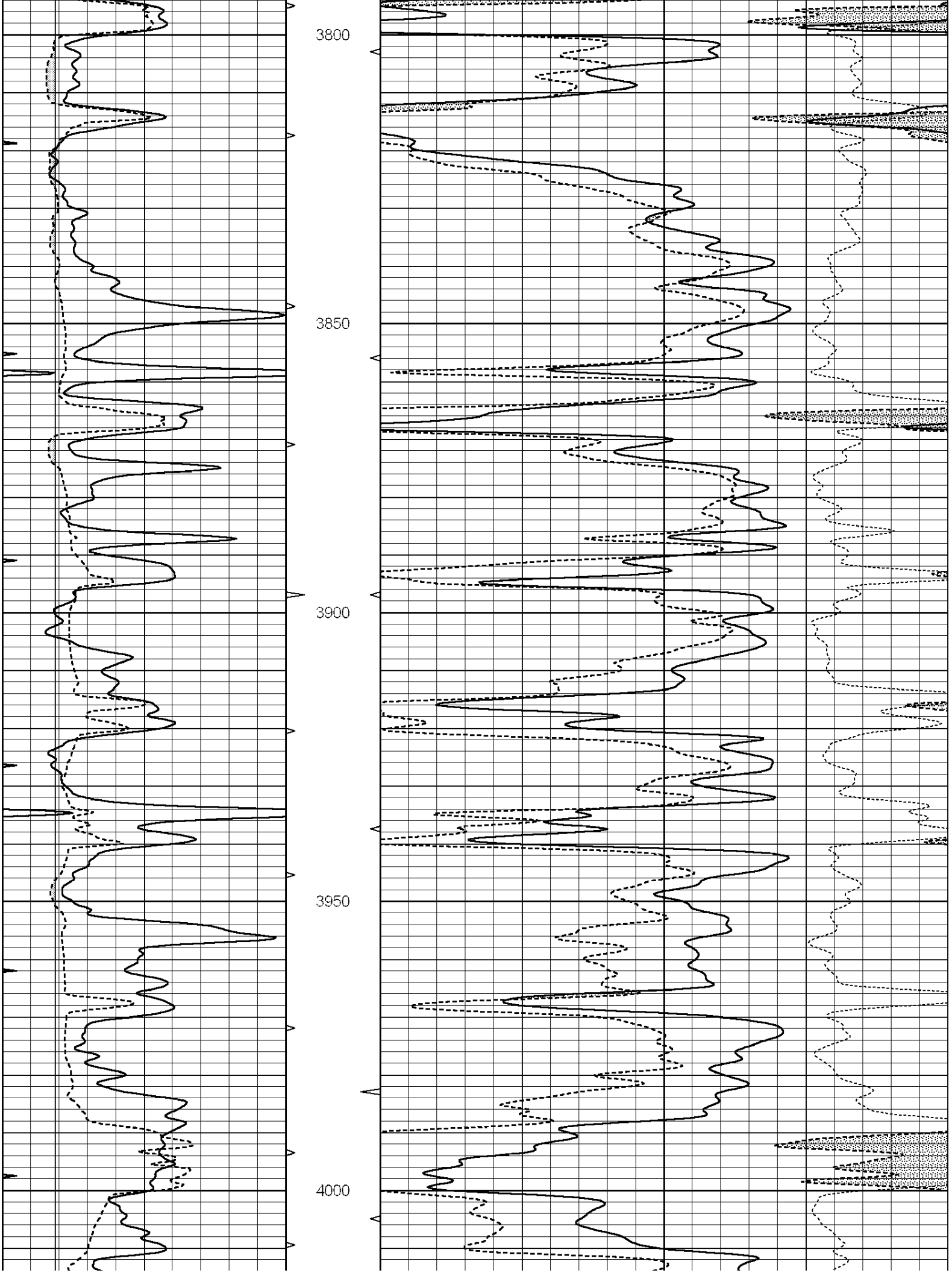
3700
3750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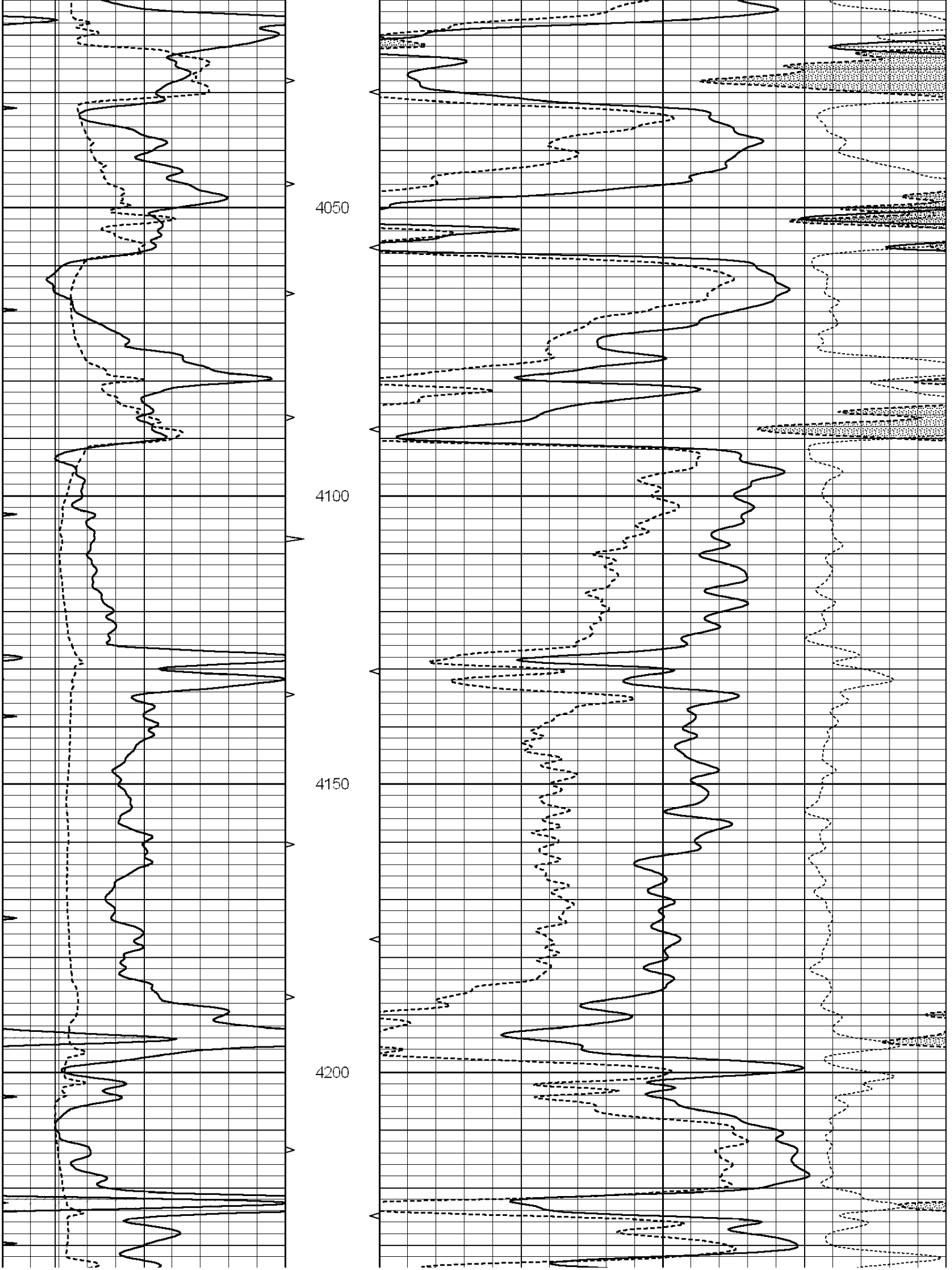
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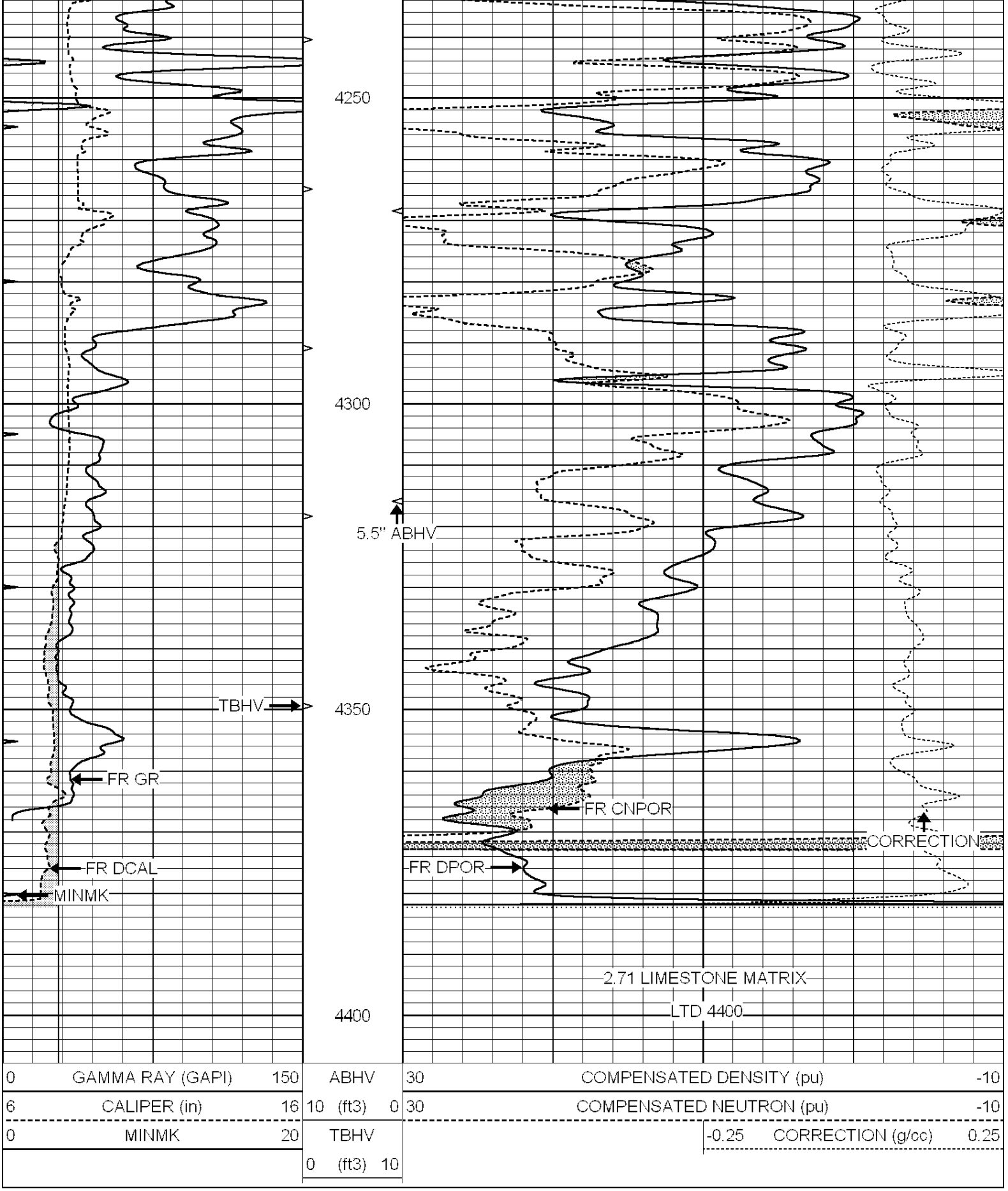

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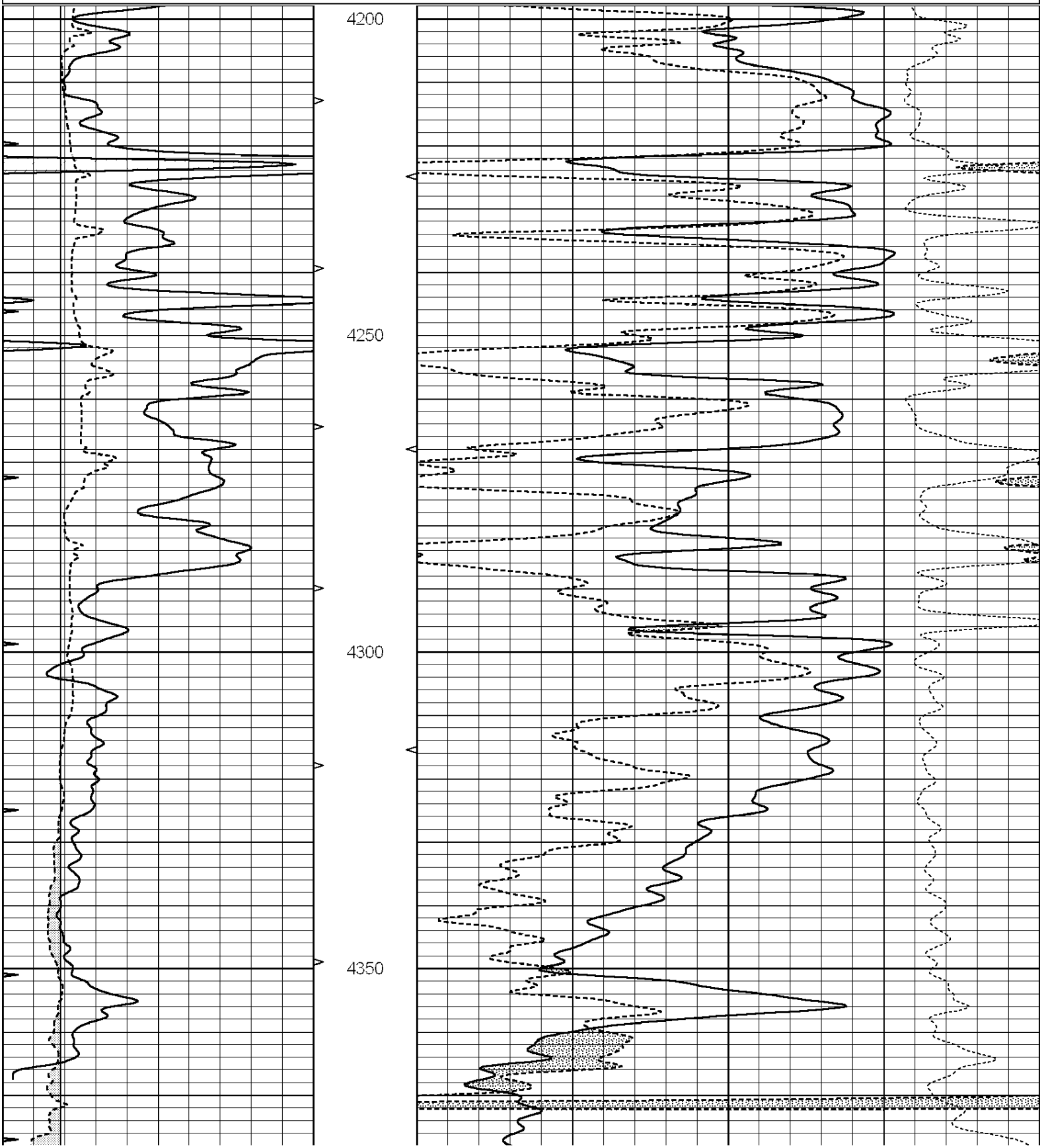
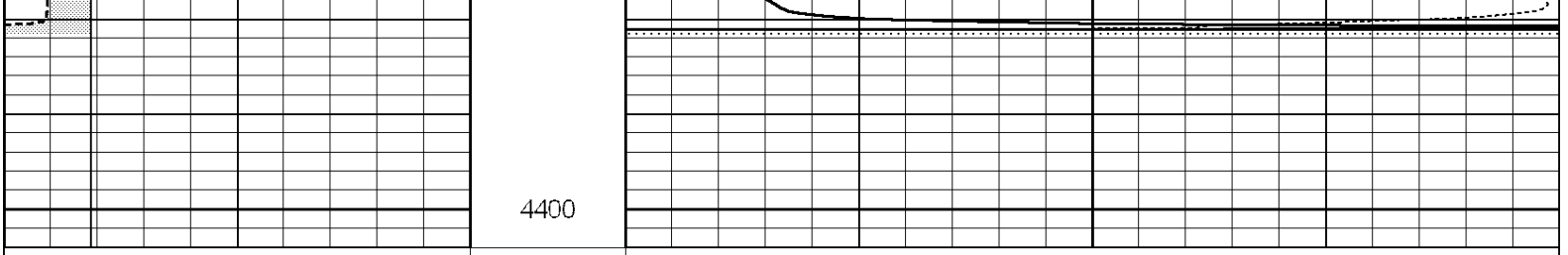
REPEAT SECTION

Database File: 30680ddn.db
Dataset Pathname: pass2.3
Presentation Format: den_neu
Dataset Creation: Wed Dec 09 09:45:34 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		-0.25 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	30	COMPENSATED NEUTRON (pu)		-10
0	MINMK	20	TBHV		-0.25	CORRECTION (g/cc)	0.25
			0 (ft3) 10				

Calibration Report

Database File: 30680ddn.db
Dataset Pathname: pass3.8
Dataset Creation: Wed Dec 09 10:07:30 2015

Dual Induction Calibration Report

Serial-Model: PROBE9-DILG
Surface Cal Performed: Wed Dec 09 07:37:49 2015
Downhole Cal Performed: Mon Jul 28 12:02:56 2008
After Survey Verification Performed: Mon Jul 28 12:02:56 2008

Surface Calibration

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	670.000	-20.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	685.000	-30.000
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

	Background	Magnesium	Aluminium	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: Wed Dec 02 21:48:59 2015

Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.2800	GAPI/cps