

**COMPLETION  
& PRODUCTION  
SERVICES CO.**

**COMPENSATED  
DENSITY / NEUTRON  
LOG**

Company I.A. OPERATING, INC.  
Well ARCHER #21-1  
Field  
County SHERIDAN State KANSAS

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Field  
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State KANSAS

Location: API #: 15-179-21328-0000  
2456' FSL & 545' FEL  
NW - NE - NE - SE  
SEC 21 TWP 8S RGE 26W  
Permanent Datum GROUND LEVEL Elevation 2483  
Log Measured From KELLY BUSHING 8' A.G.L.  
Drilling Measured From KELLY BUSHING  
Other Services  
DIL/SON  
Elevation  
K.B. 2491  
D.F. 2489  
G.L. 2483

Date	5/1/13		
Run Number	ONE		
Depth Driller	3925		
Depth Logger	3925		
Bottom Logged Interval	3901		
Top Log Interval	3200		
Casing Driller	222		
Casing Logger	221		
Bit Size	7.875		
Type Fluid in Hole	CHEMICAL MUD		
Density / Viscosity	9.3 / 66	CHLORIDES 1,000 PPM	
pH / Fluid Loss	9.5 / 7.4		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	1.40 @ 60F		
Rmf @ Meas. Temp	1.05 @ 60F		
Rmc @ Meas. Temp	1.68 @ 60F		
Source of Rmf / Rmc	MEASURED		
Rim @ BHT	0.73 @ 115F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	115F		
Equipment Number	860		
Location	HAYS, KS.		
Recorded By	JEFF GRONEWEG		
Witnessed By	TERRY McLEOD		

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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

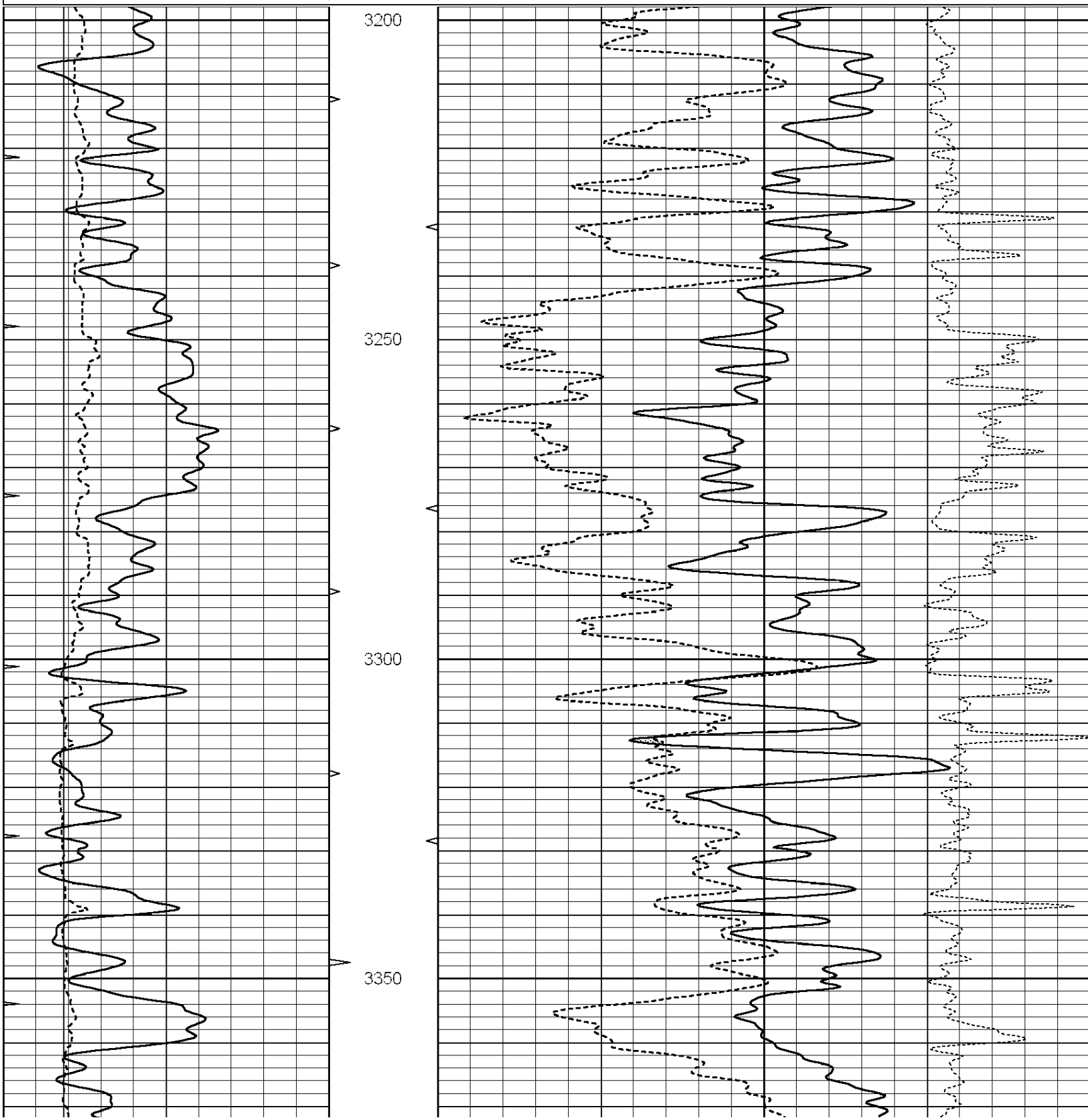
DIRECTIONS: HILL CITY, KS - WEST ON HWY 24 TO COUNTY LINE - 6 MILES WEST TO RD 90  
.3 MILES SOUTH TO RD 10 - 1 MILE EAST TO RD 100 - TURN NORTHEAST ON DEAD END RD  
EAST 1 MILE - SOUTH 1 MILE TO CATTLE GUARD - .2 MILES SOUTH TO NORTH SIDE OF CATTLE PEN  
.7 MILES NORTH - EAST - SOUTH TO Y IN RD - TAKE Y .7 MILES NORTH - EAST TO GATE  
.5 MILES NORTH TO LOCATION

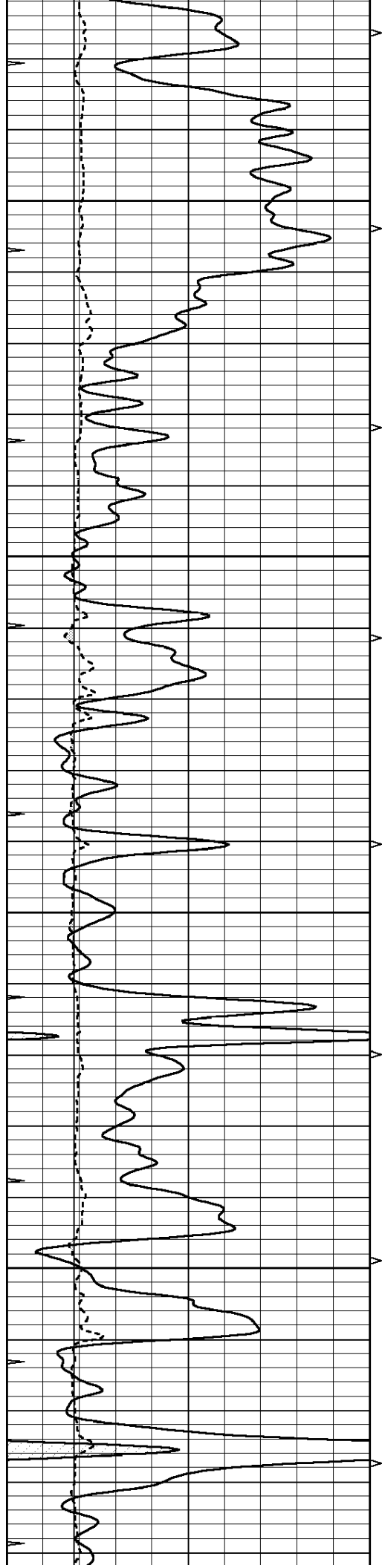


**COMPLETION  
& PRODUCTION**

Database File: 010994ddn.db  
 Dataset Pathname: pass4.4  
 Presentation Format: \_den\_neu  
 Dataset Creation: Thu May 02 00:32:56 2013  
 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		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		



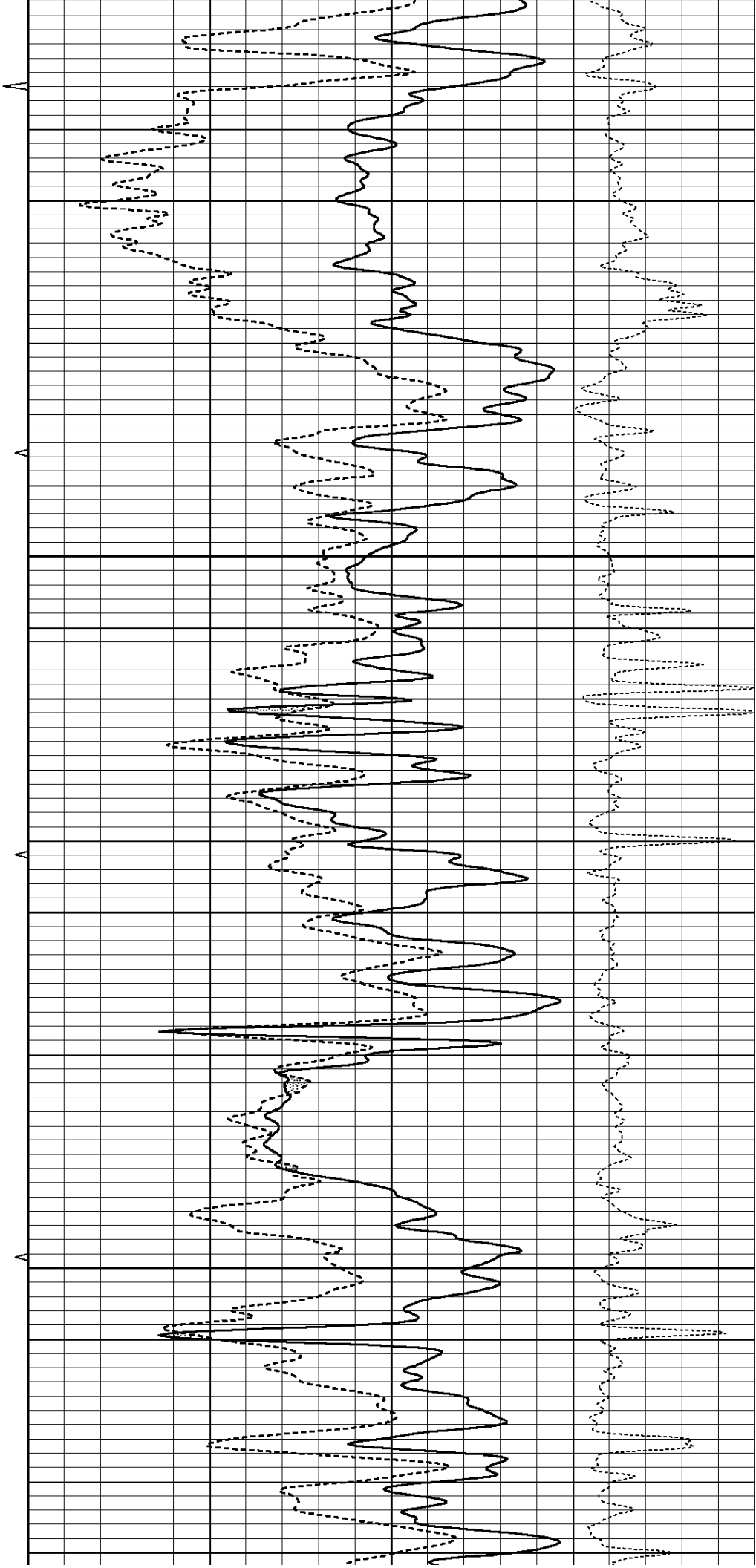


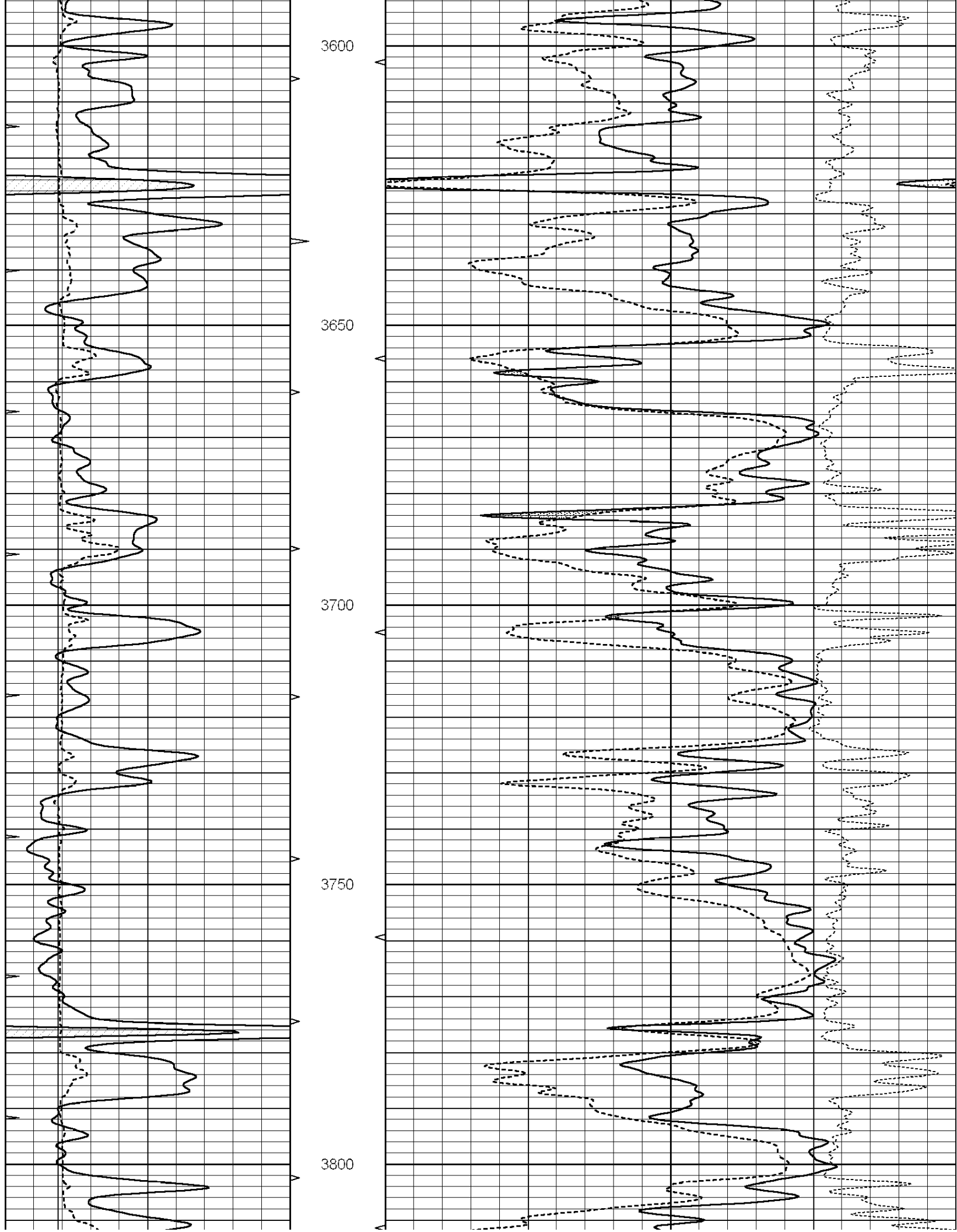
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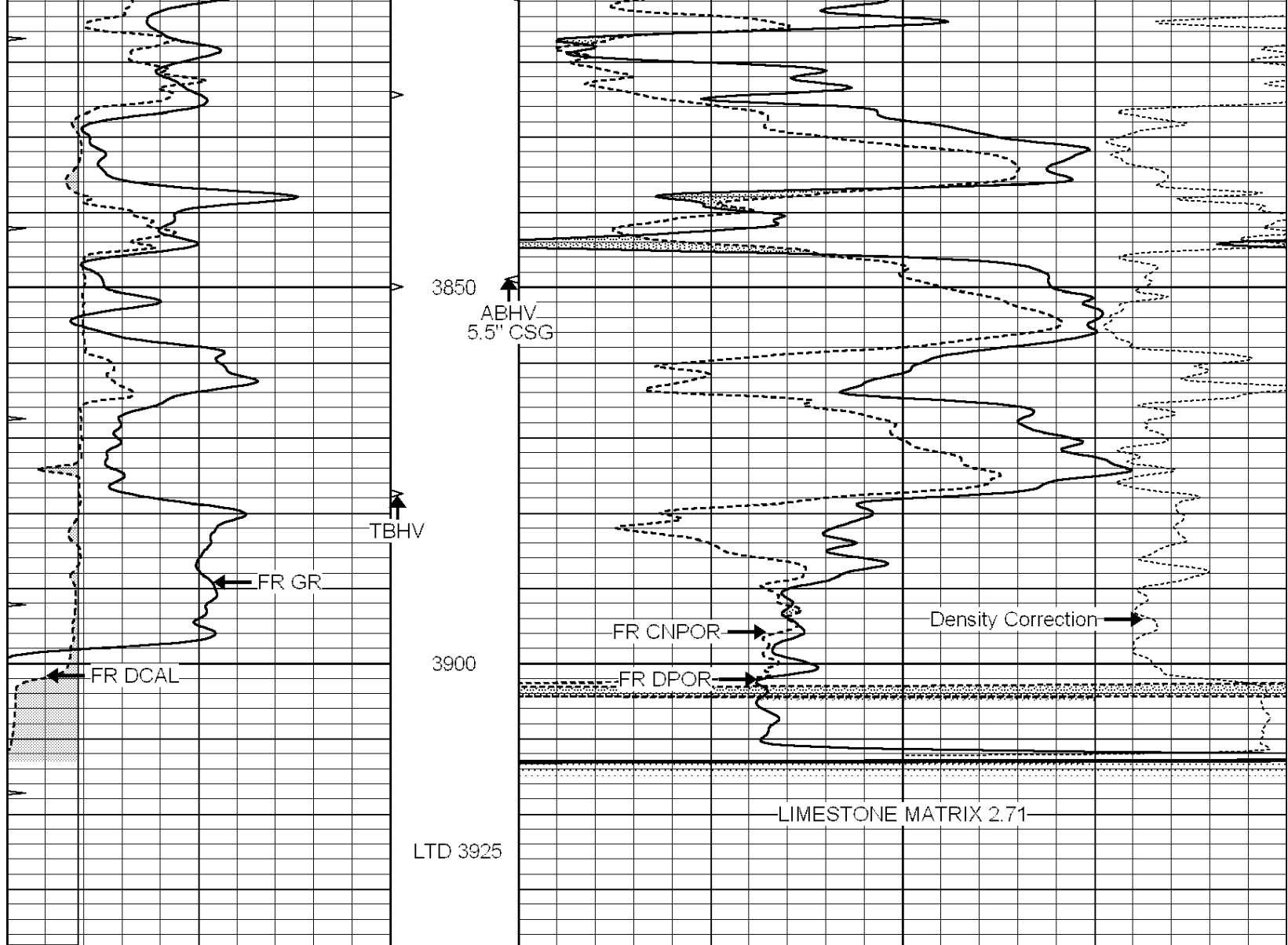
3450

3500

3550







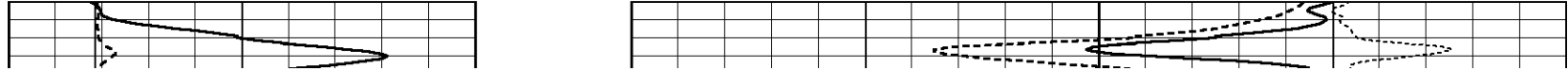
0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		

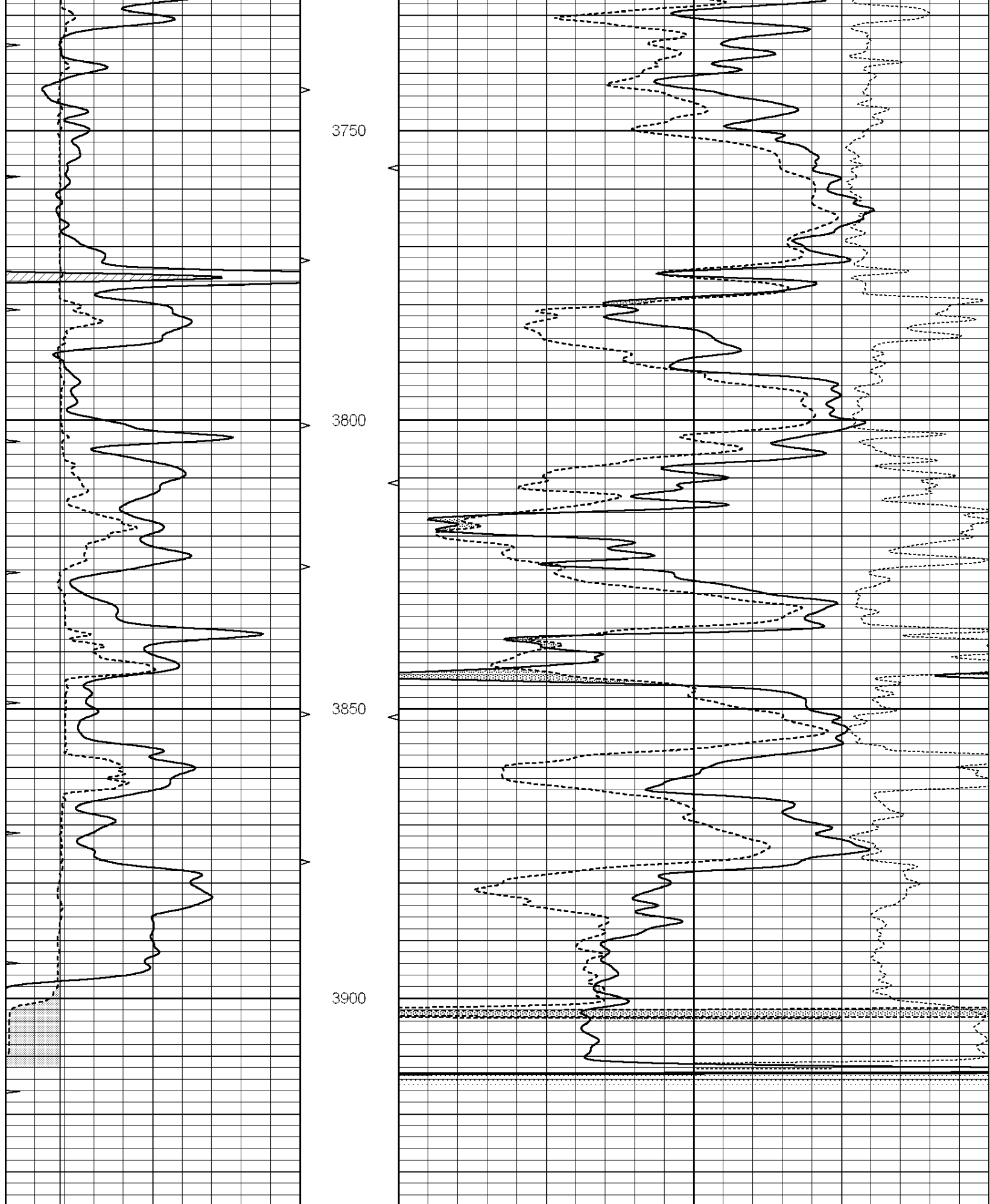


# REPEAT SECTION

Database File: 010994ddn.db  
 Dataset Pathname: pass3.3  
 Presentation Format: \_den\_neu  
 Dataset Creation: Thu May 02 01:01:07 2013  
 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

### Calibration Report

Database File: 010994ddn.db  
 Dataset Pathname: pass4.4  
 Dataset Creation: Thu May 02 00:32:56 2013

### Dual Induction Calibration Report

Serial-Model: PROBE7-DILG  
 Surface Cal Performed: Thu Apr 25 07:54:19 2013  
 Downhole Cal Performed: Sat Jan 19 19:51:38 2013  
 After Survey Verification Performed: Sat Jan 19 19:51:38 2013

#### Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	0.793	0.790	V	0.000	400.000	mmho/m	620.000	4.000
Medium	0.992	1.002	V	0.000	464.000	mmho/m	680.000	-42.000
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: Thu Apr 25 08:46:02 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	7.60	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: GR5  
Tool Model: OPEN  
Performed: Fri Apr 26 22:00:59 2013

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 3.0000 GAPI/cps