



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

DUAL INDUCTION LOG

Company HUTCHINSON OIL COMPANY		Company HUTCHINSON OIL COMPANY	
Well OSBORNE #2 B		Well OSBORNE #2 B	
Field SANDAGO WEST		Field SANDAGO WEST	
County STAFFORD		County STAFFORD	
State KANSAS		State KANSAS	
Location: API # : 15-185-23799-0000		Other Services CDL/CNL MEL/SON	
Permanent Datum Log Measured From Drilling Measured From		2293' FSL & 894' FEL E/2 - NW - NE - SE SEC 12 TWP 21S RGE 12W GROUND LEVEL Elevation 1812 KELLY BUSHING 11' A.G.L. KELLY BUSHING	
Date 4/12/13		Elevation K.B. 1823 D.F. 1821 G.L. 1812	
Run Number	ONE		
Depth Driller	3520		
Depth Logger	3522		
Bottom Logged Interval	3520		
Top Log Interval	00		
Casing Driller	8 5/8" @ 604'		
Casing Logger	603		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 5000 PPM	
Density / Viscosity	9.1/5.1		
pH / Fluid Loss	10.0/8.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.80 @ 65F		
Rmt @ Meas. Temp	.60 @ 65F		
Rmc @ Meas. Temp	.96 @ 65F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	.46 @ 112F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	112F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JASON CAPPELLUCCI		
Witnessed By	JEFFERY BURK		

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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 NABORS, HAYS, KS. (785) 628-6395
DIRECTIONS:
ELLINWOOD KS. - S. ON MAIN STREET TO CURVE WEST - 1/2 W. TO RD 100
S. TO RD. 190TH - 1 E. - 1/4 N. - W. INTO

Database File:

010870ddn.db

Dataset Pathname:

pass3.2

Presentation Format:

_dil2

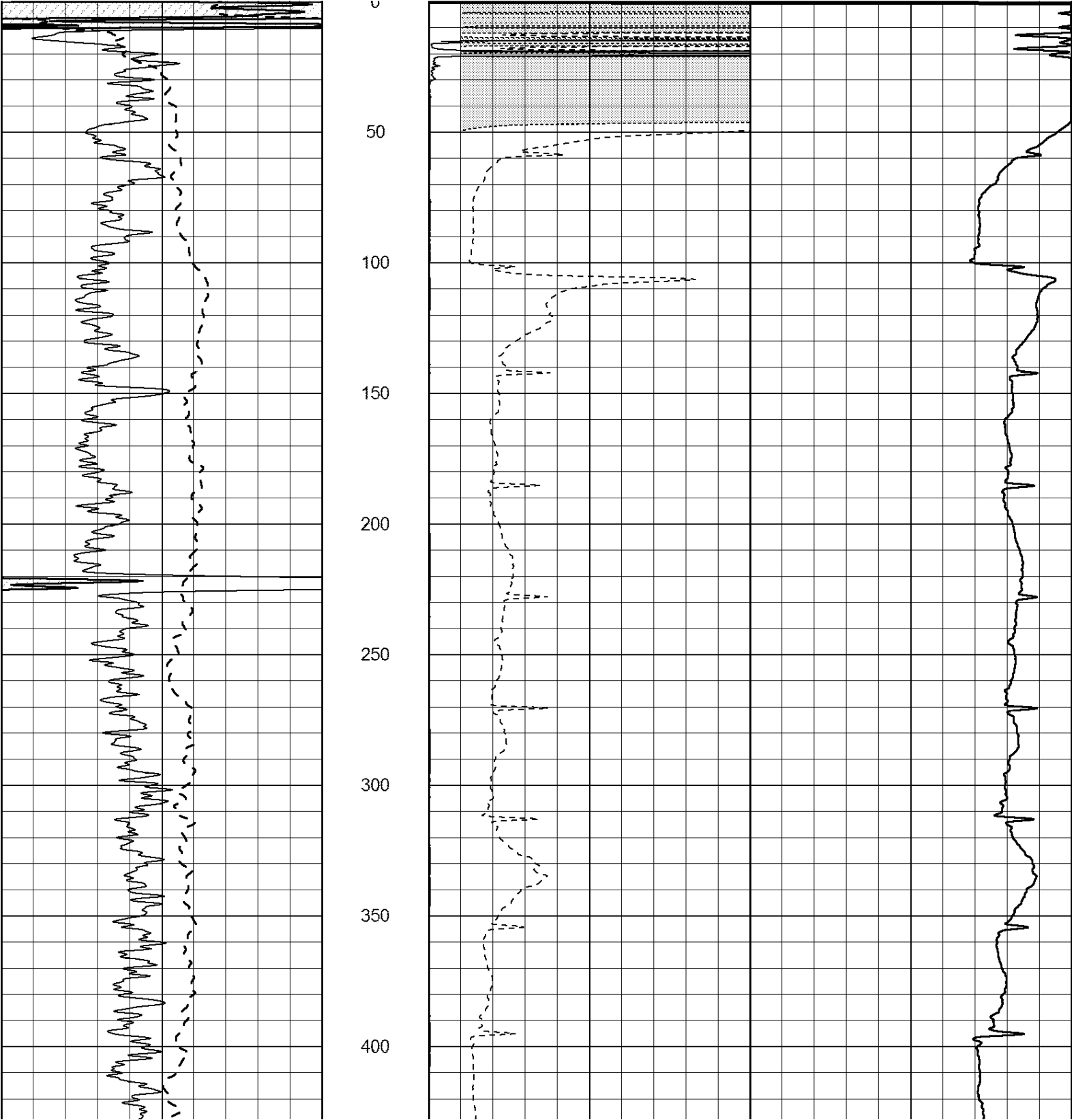
Dataset Creation:

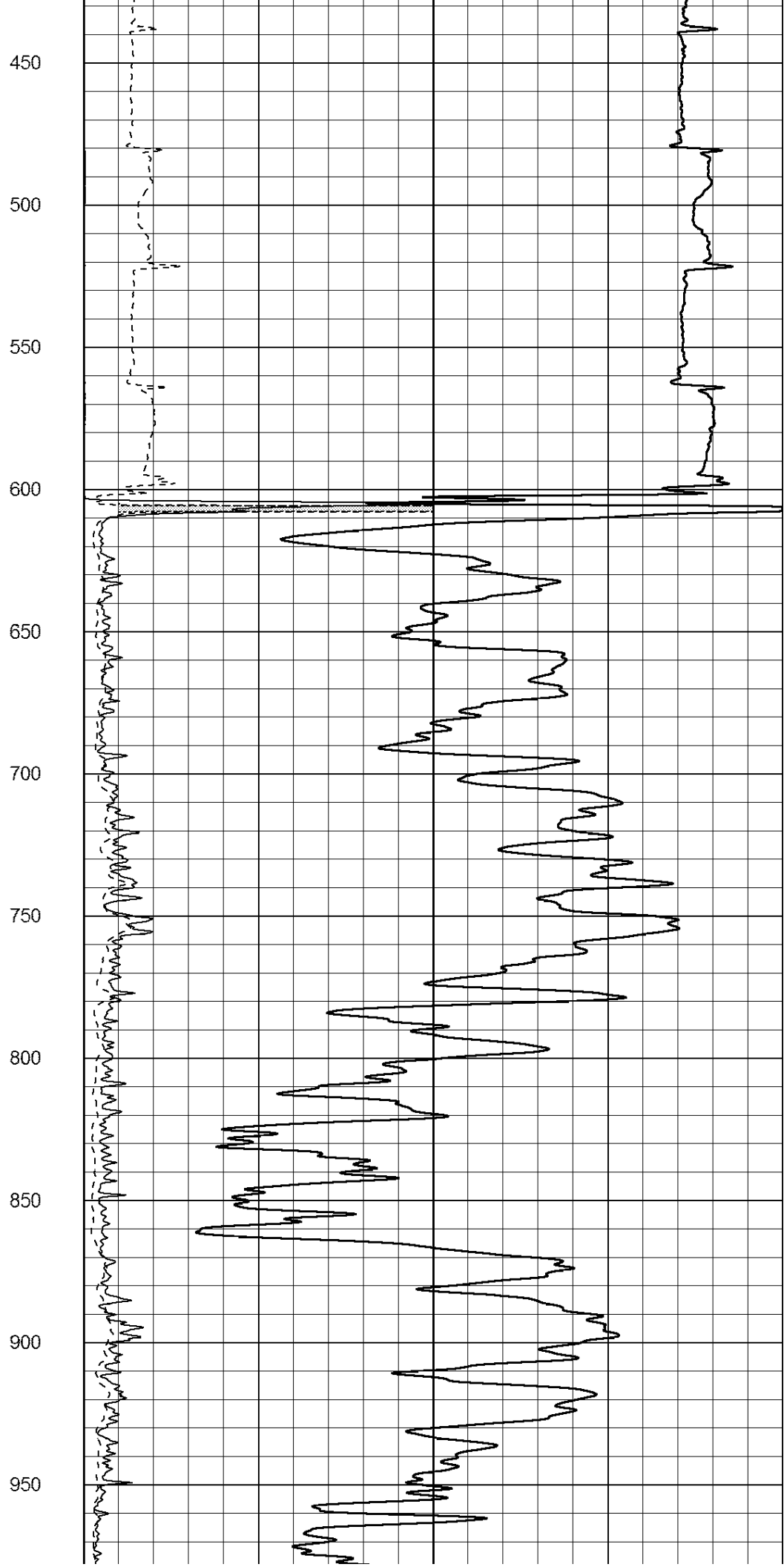
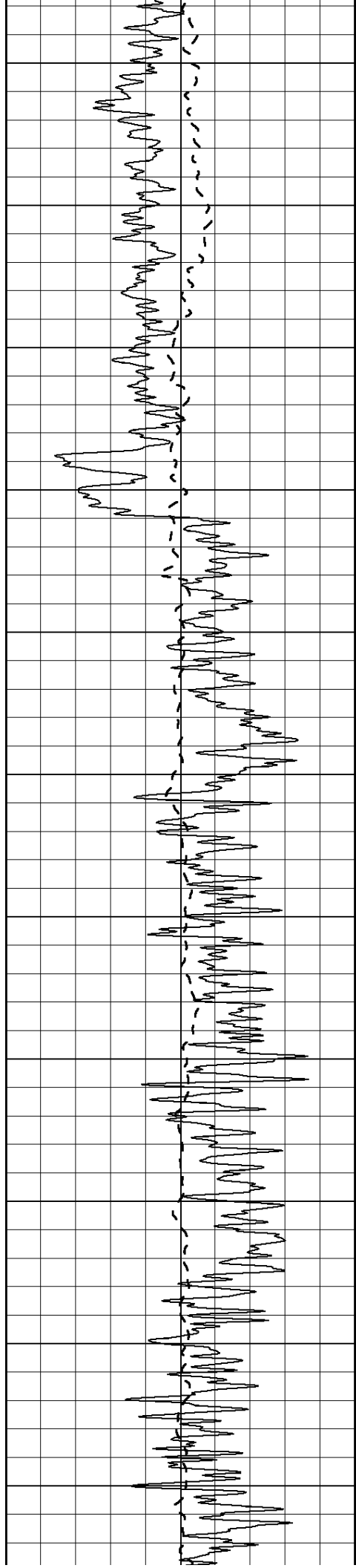
Fri Apr 12 08:19:02 2013 by Calc Open-Cased 090629

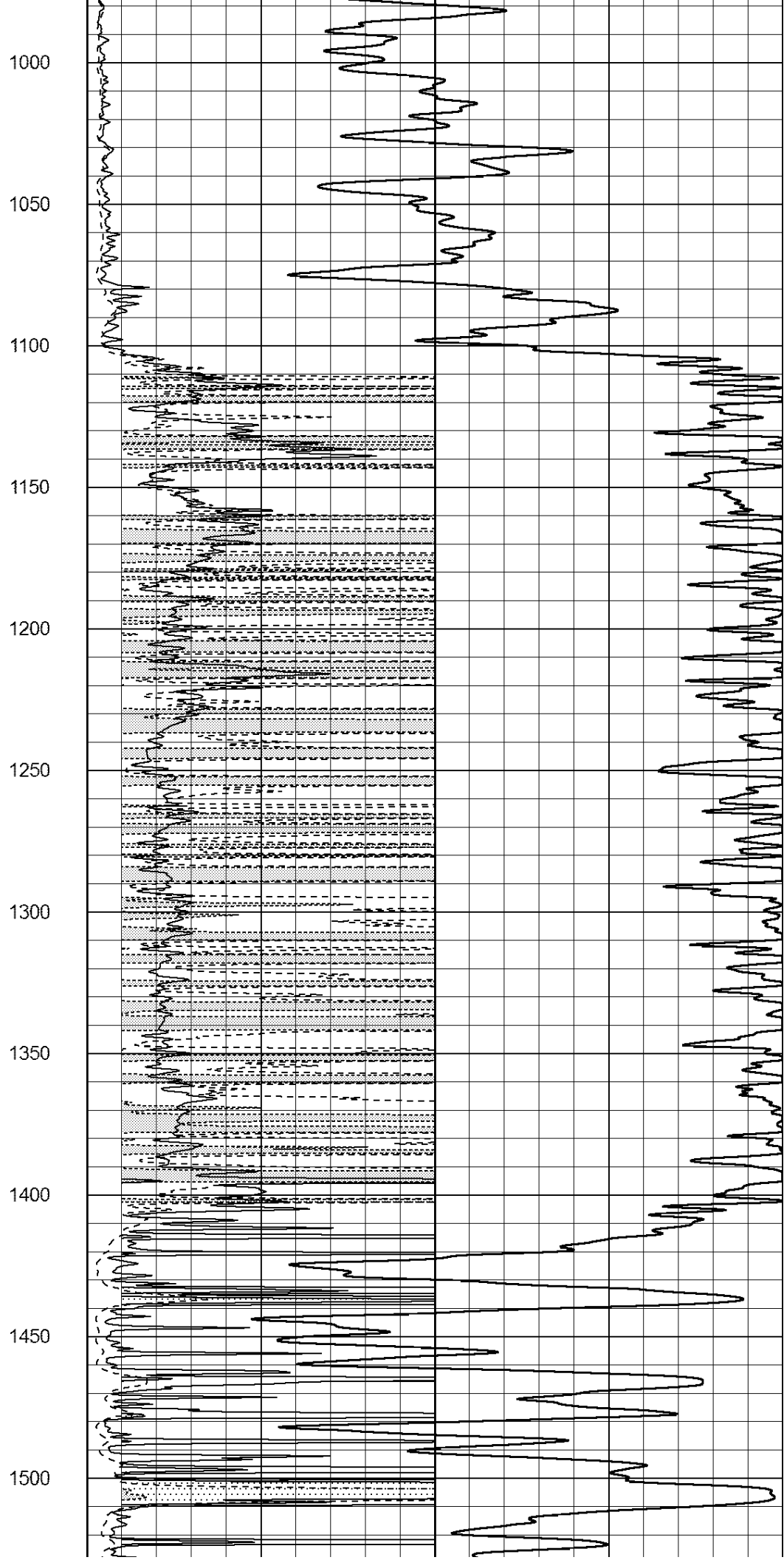
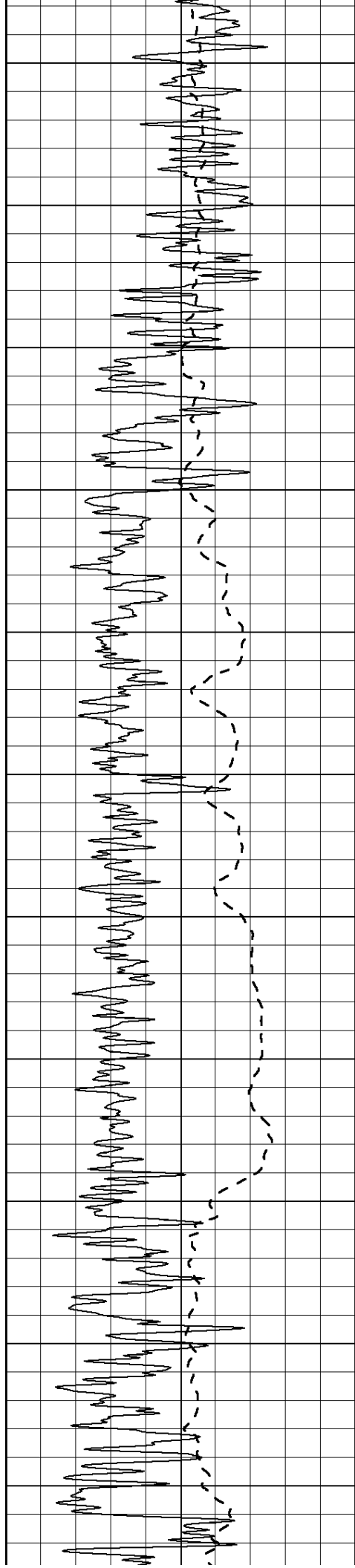
Charted by:

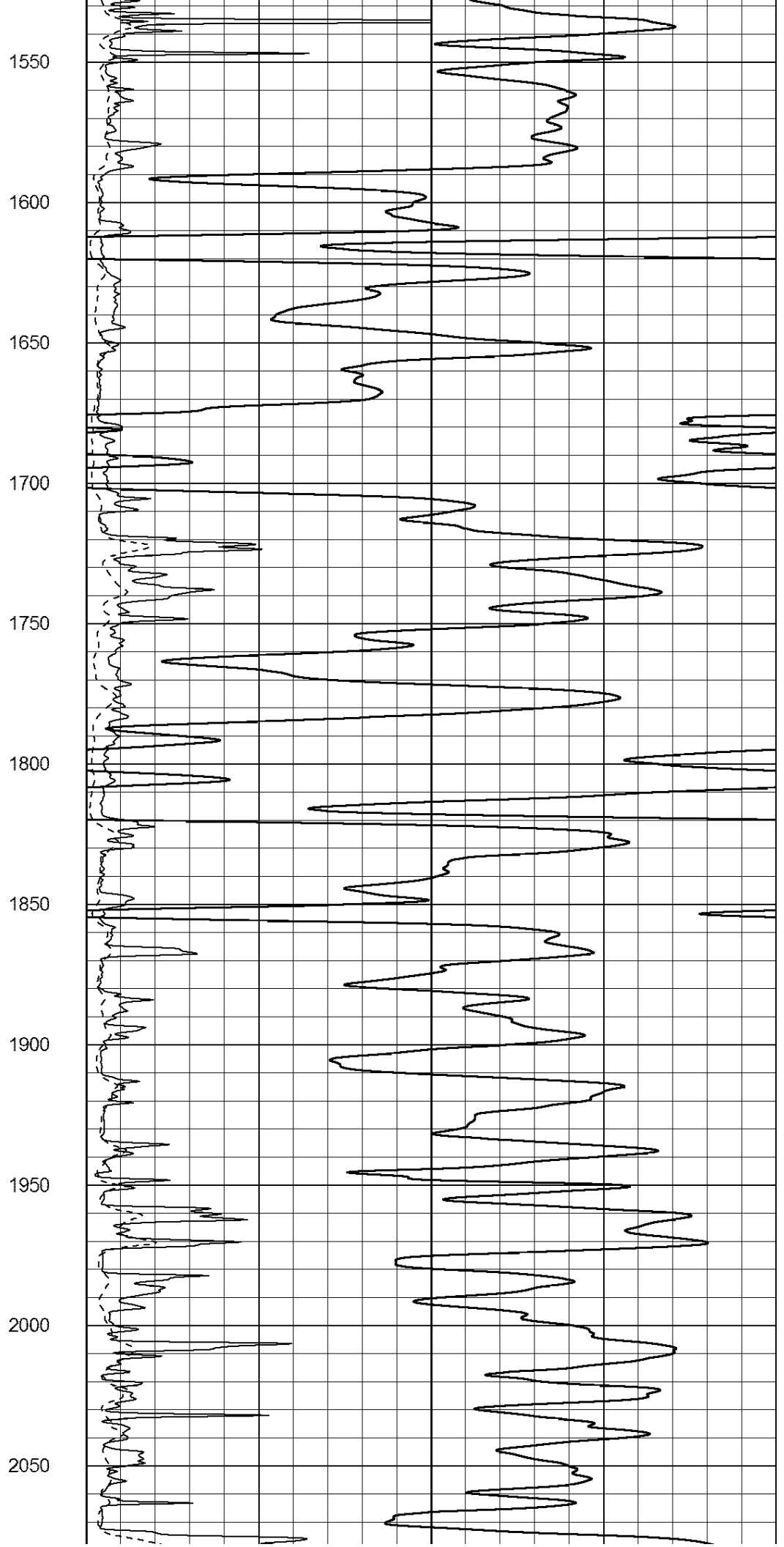
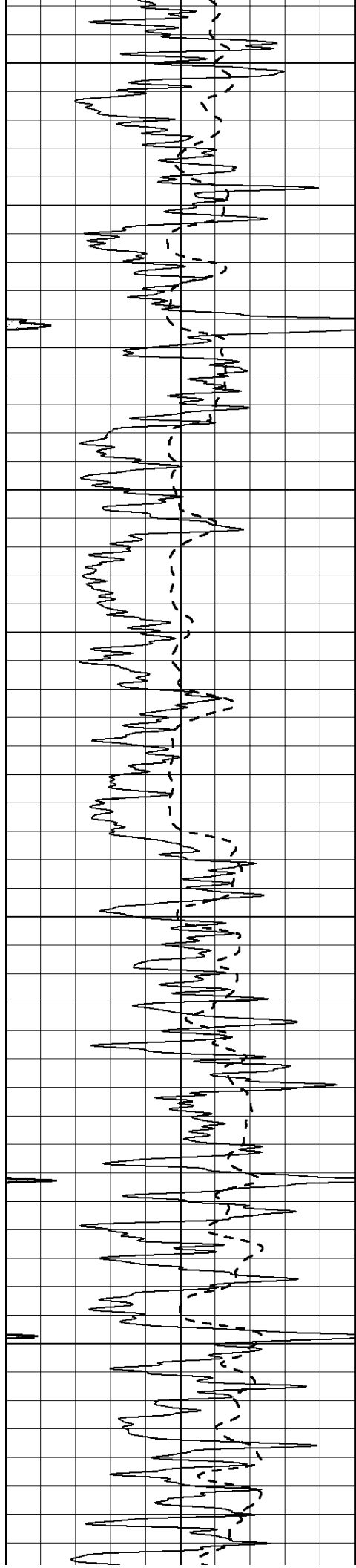
Depth in Feet scaled 1:600

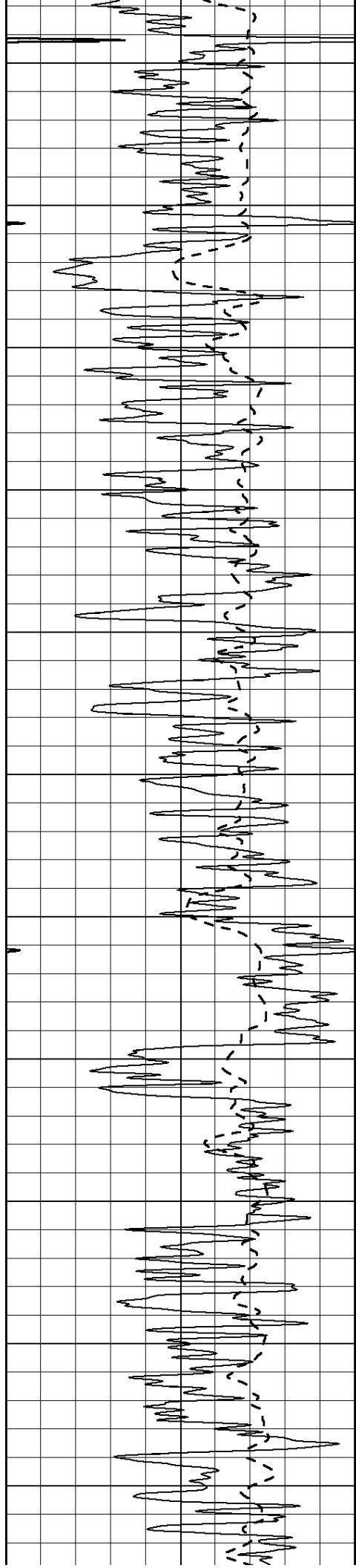
0	Gamma Ray (GAPI)	150	0	RLL3 (Ohm-m)	50
-100	SP (mV)	100	0	RILD (Ohm-m)	50
-----			1000 CILD (mmho/m) 0		
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500











2100

2150

2200

2250

2300

2350

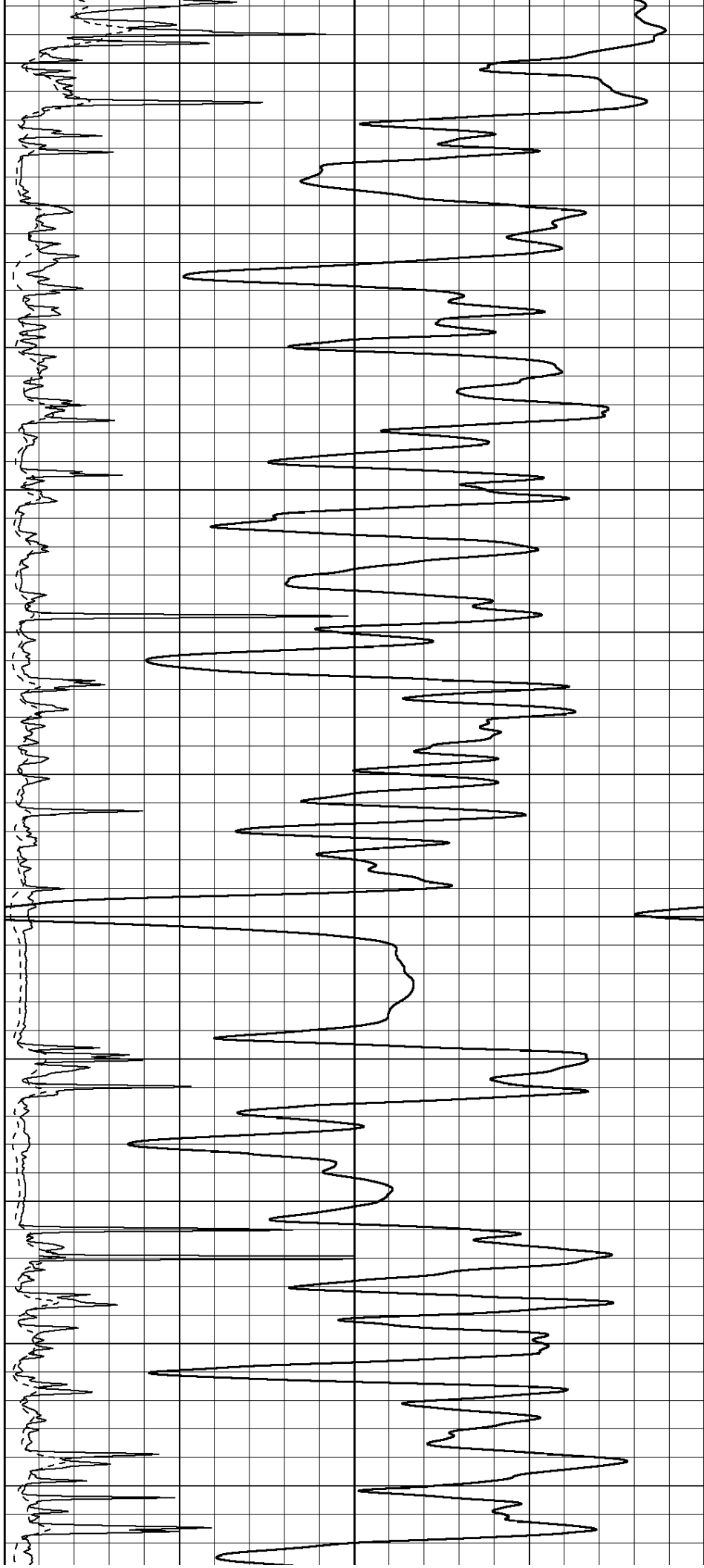
2400

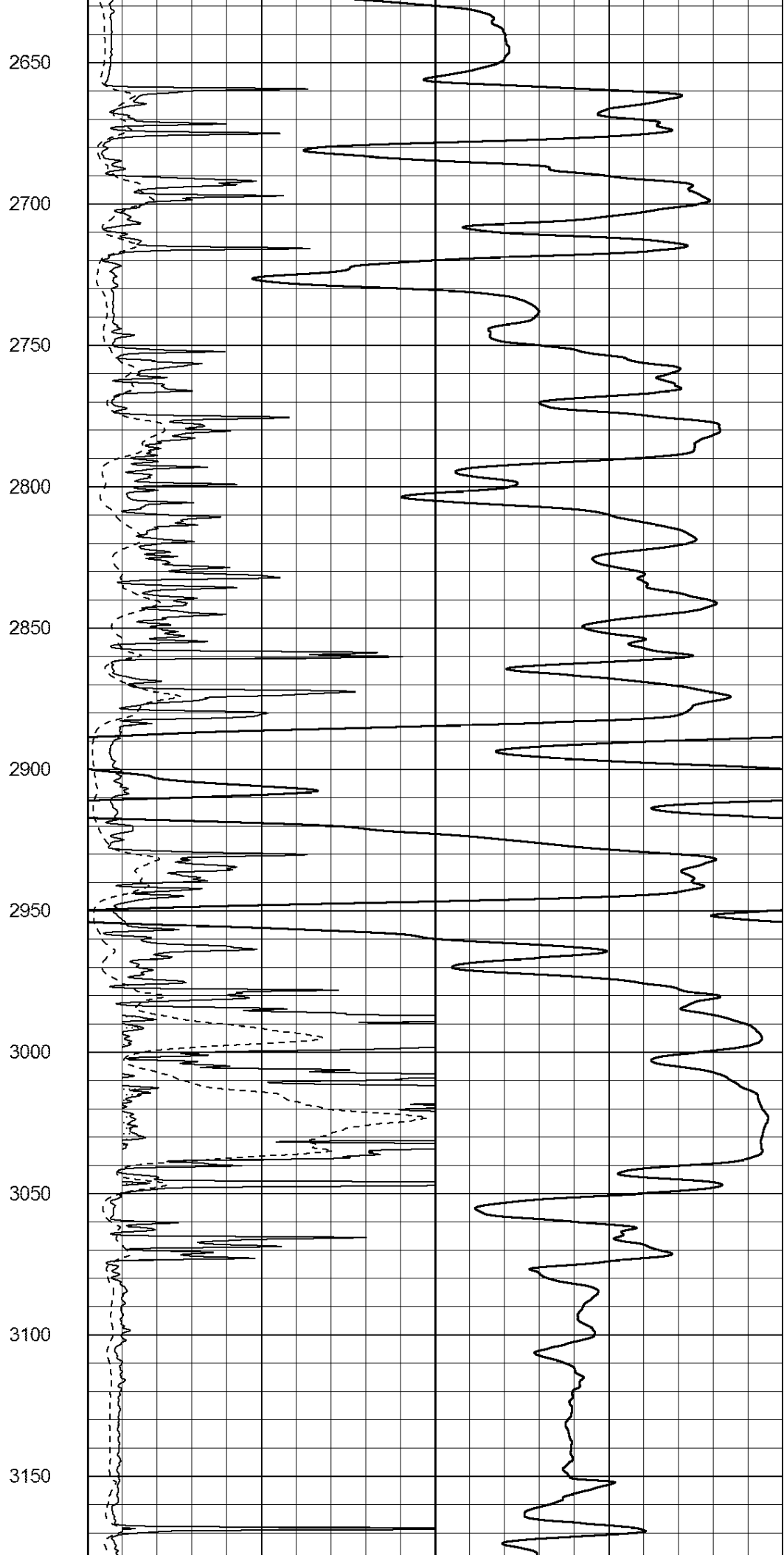
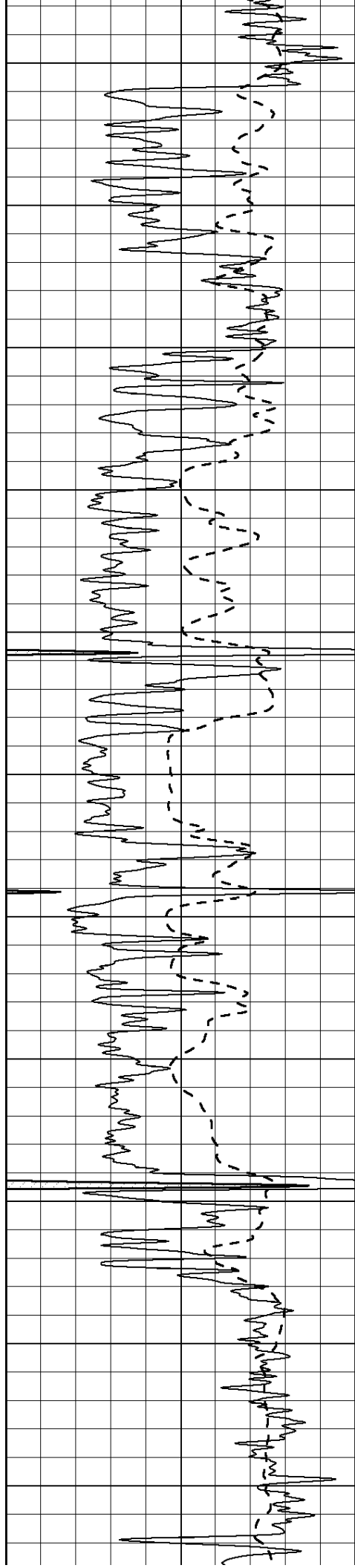
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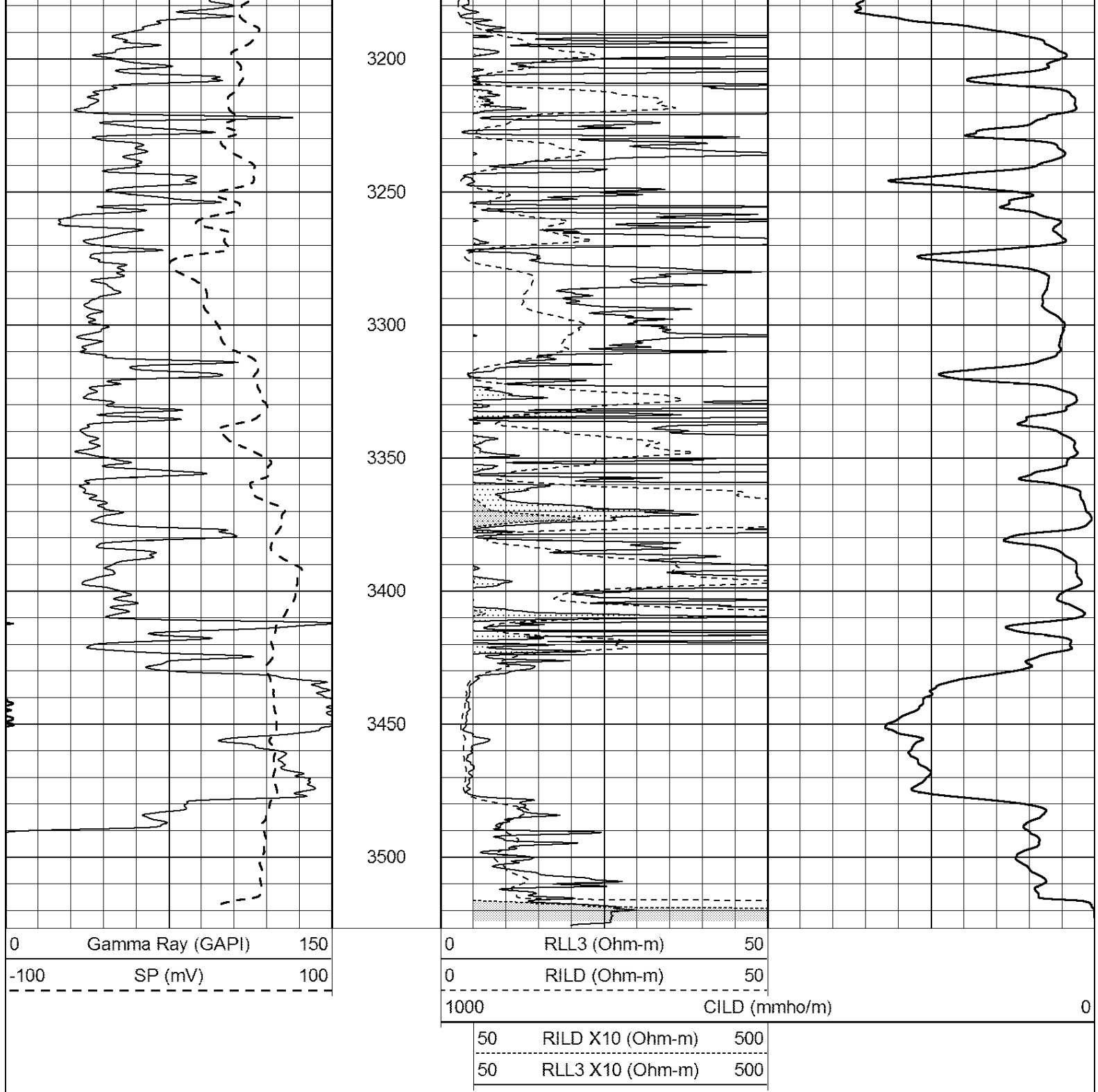
2500

2550

2600







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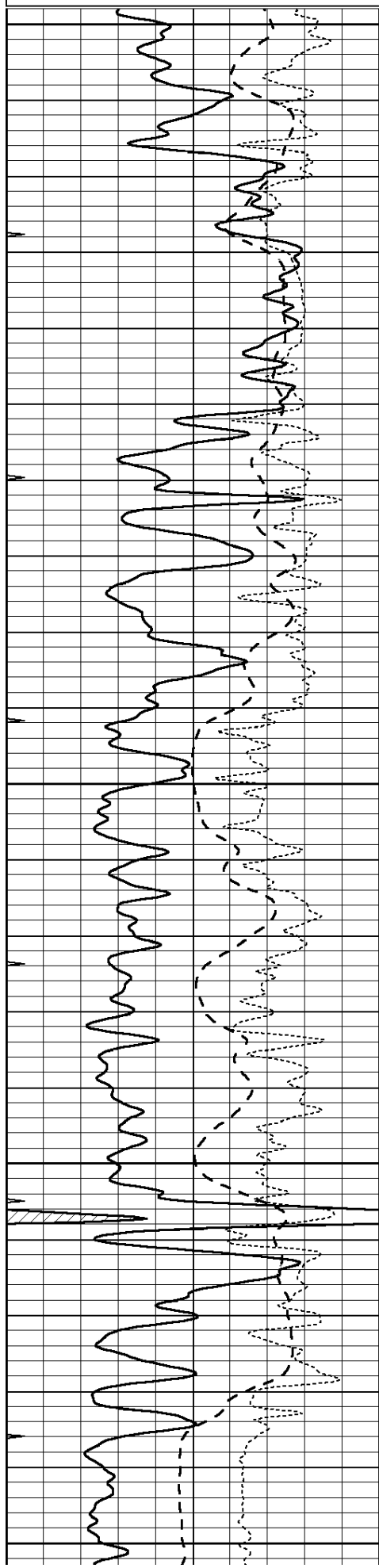
MAIN SECTION

Database File: 010870ddn.db
Dataset Pathname: pass3.1
Presentation Format: _dil
Dataset Creation: Fri Apr 12 07:31:39 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000

-250	Rxo/Rt	50
0	MINMK	20

0.2	MEDIUM INDUCTION (Ohm-m)	2000
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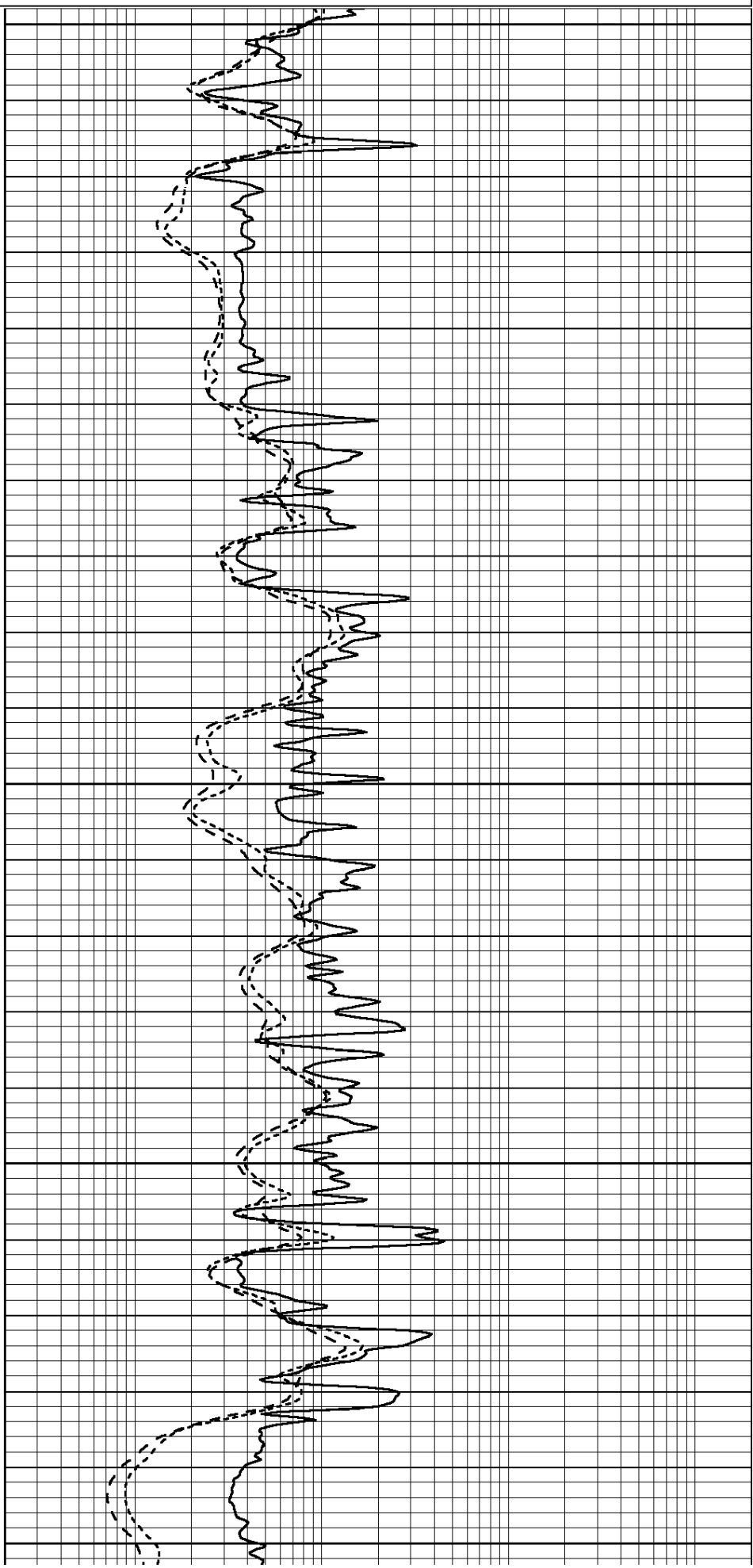
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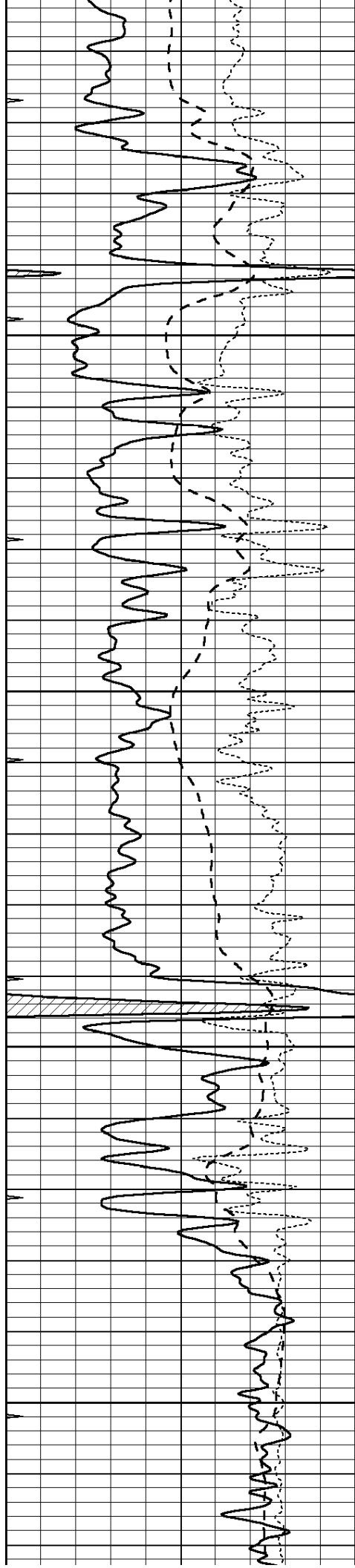
2750

2800

2850

2900



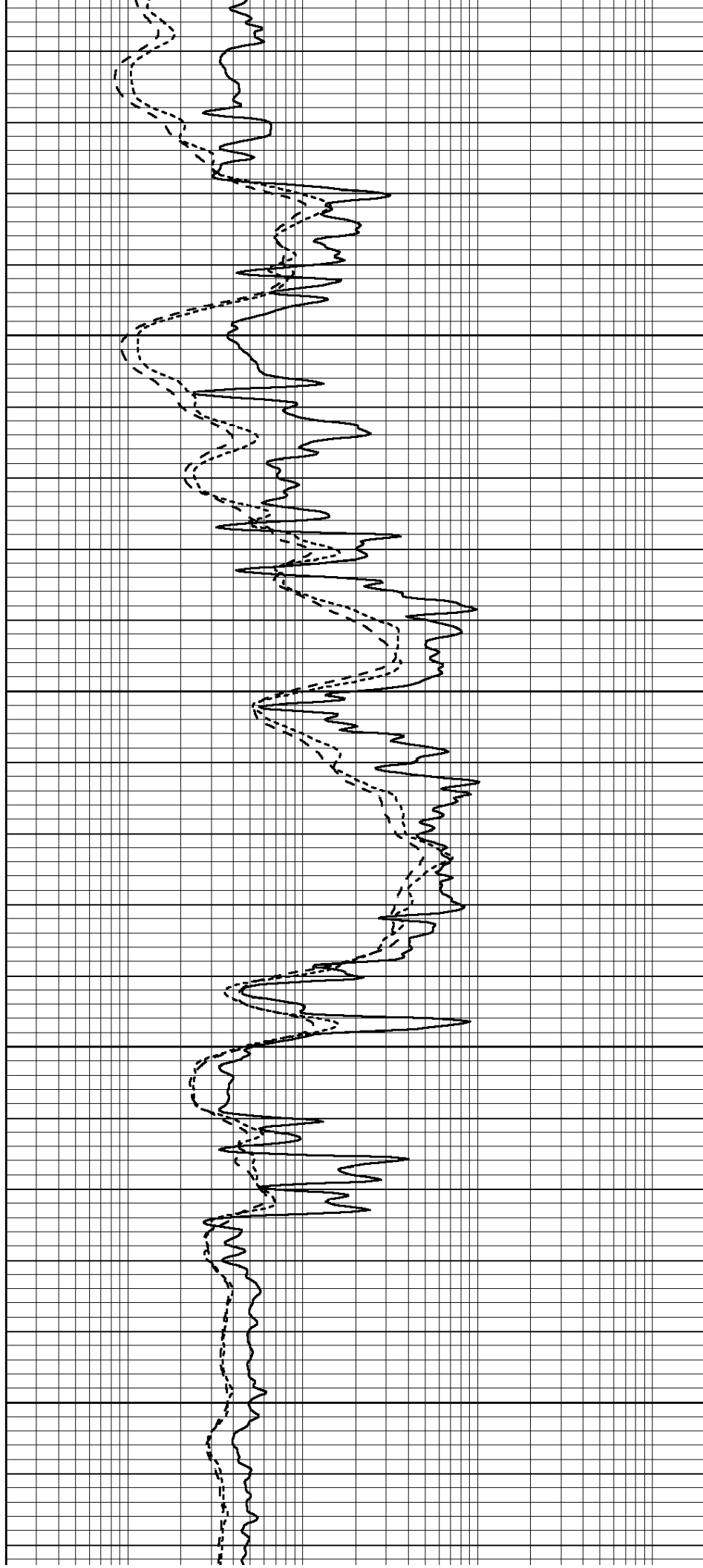


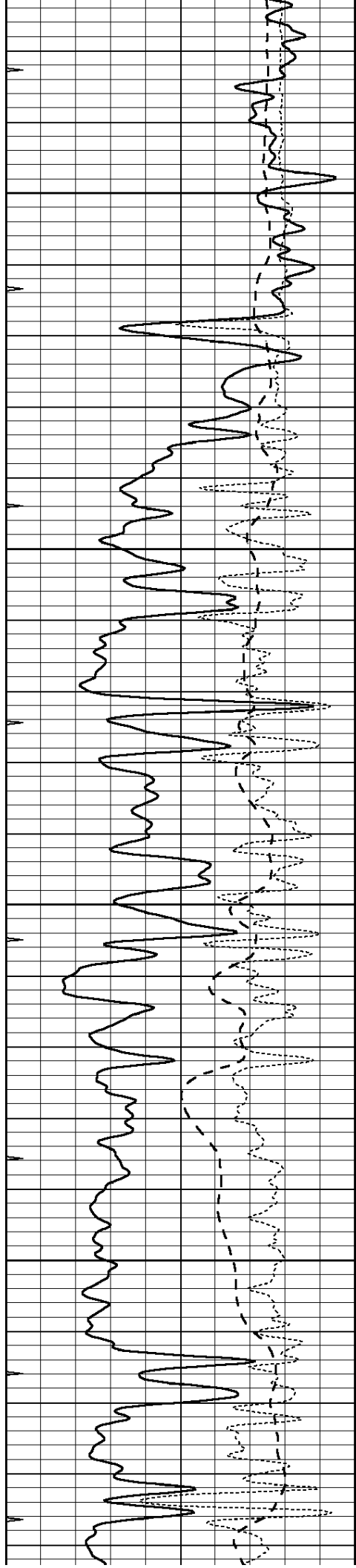
2950

3000

3050

3100



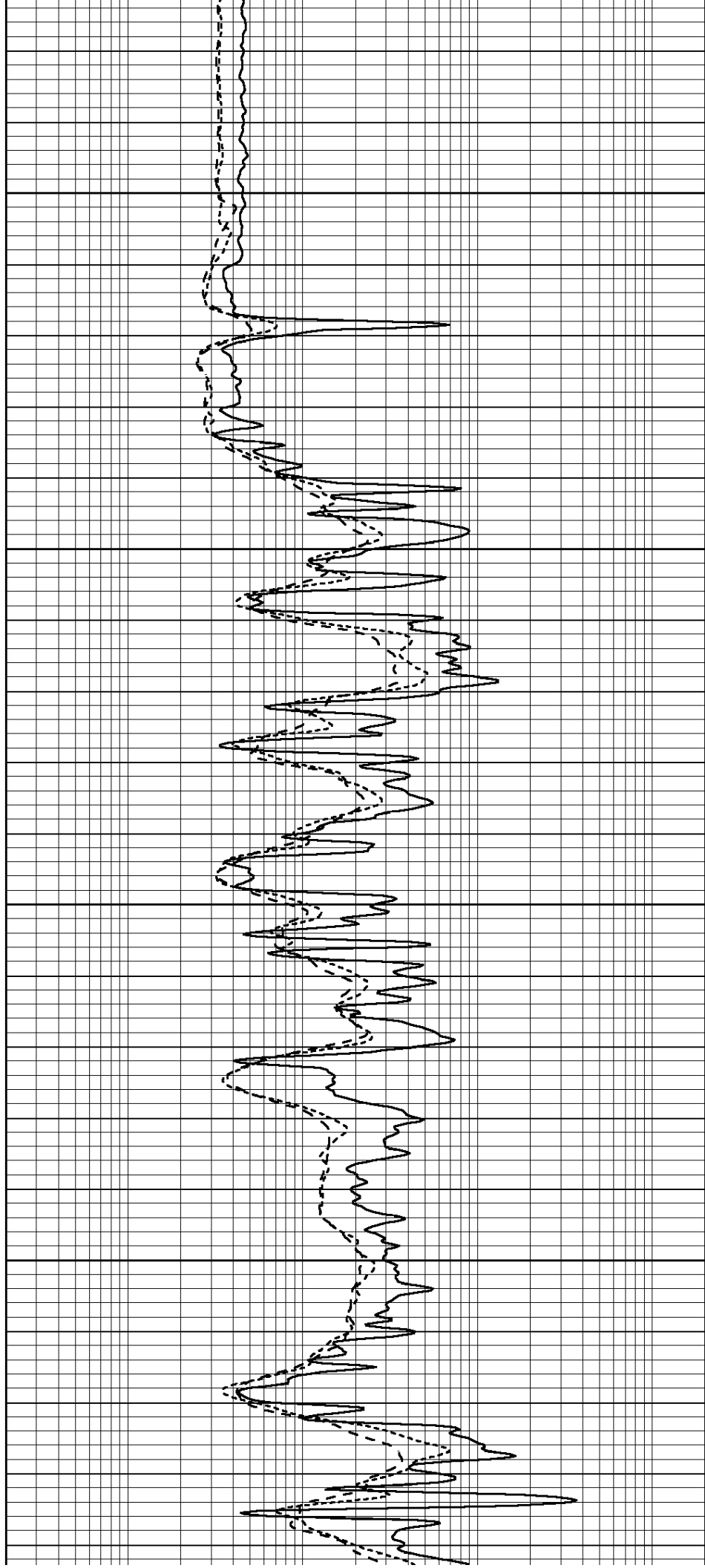


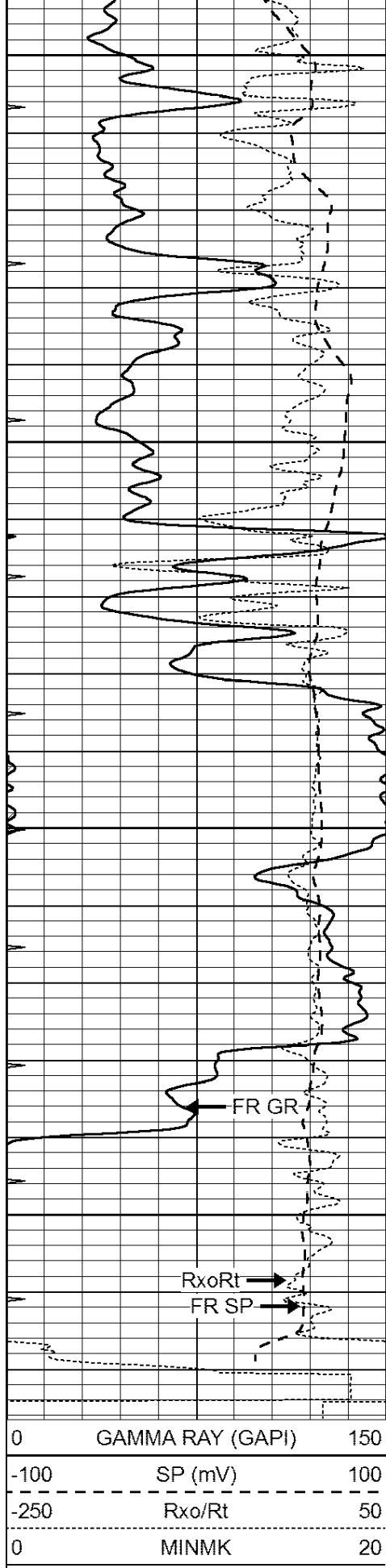
3150

3200

3250

3300





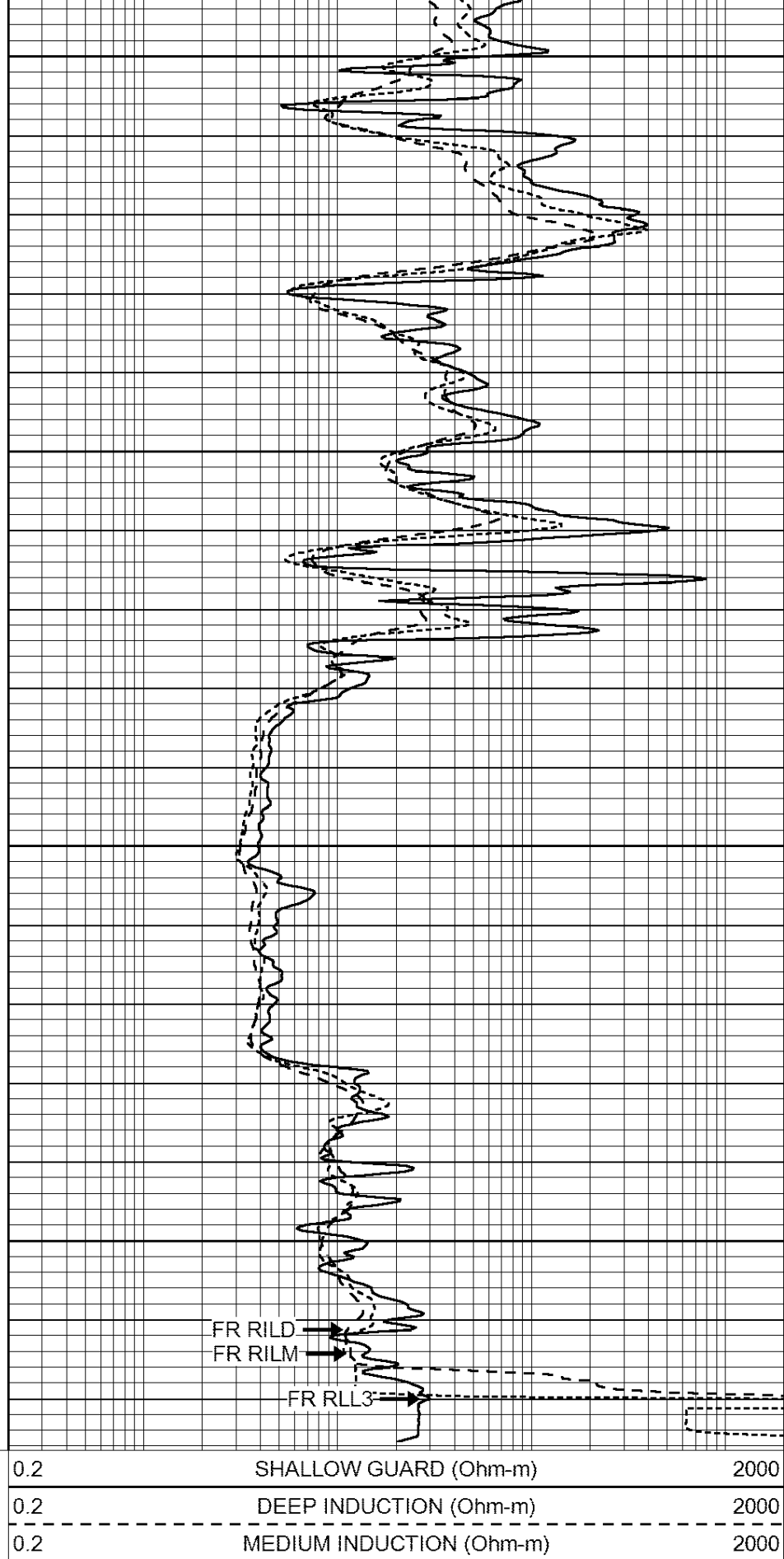
3350

3400

3450

3500

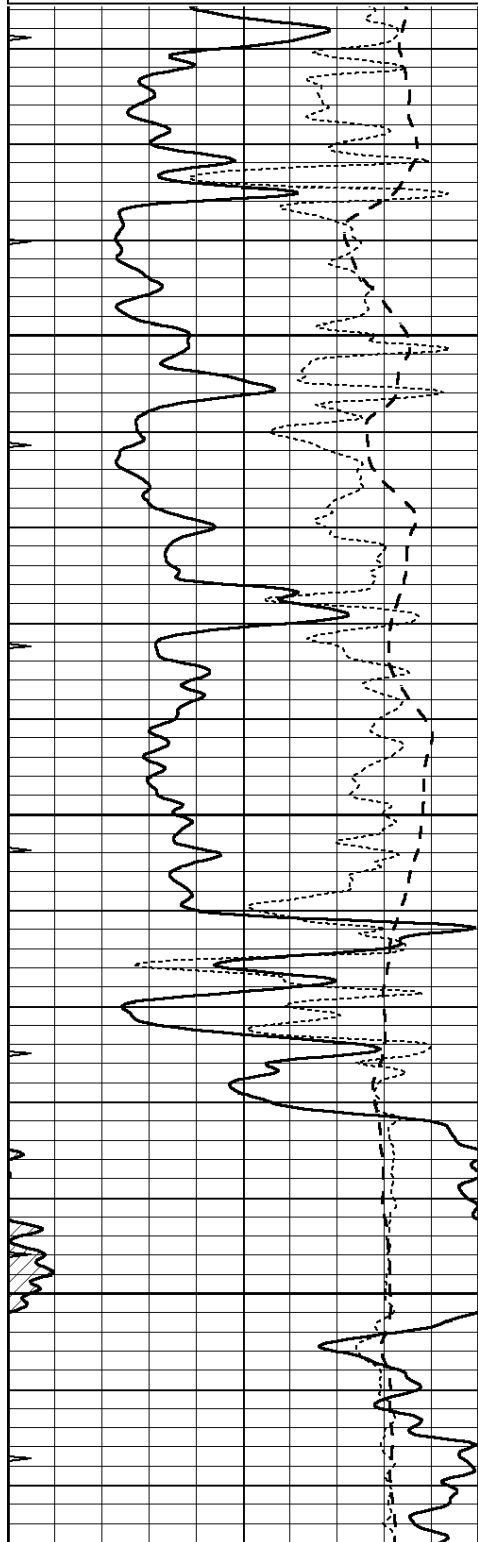
LTD 3522



Database File: 010870ddn.db
Dataset Pathname: pass2.1
Presentation Format: _dil
Dataset Creation: Fri Apr 12 07:23:34 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

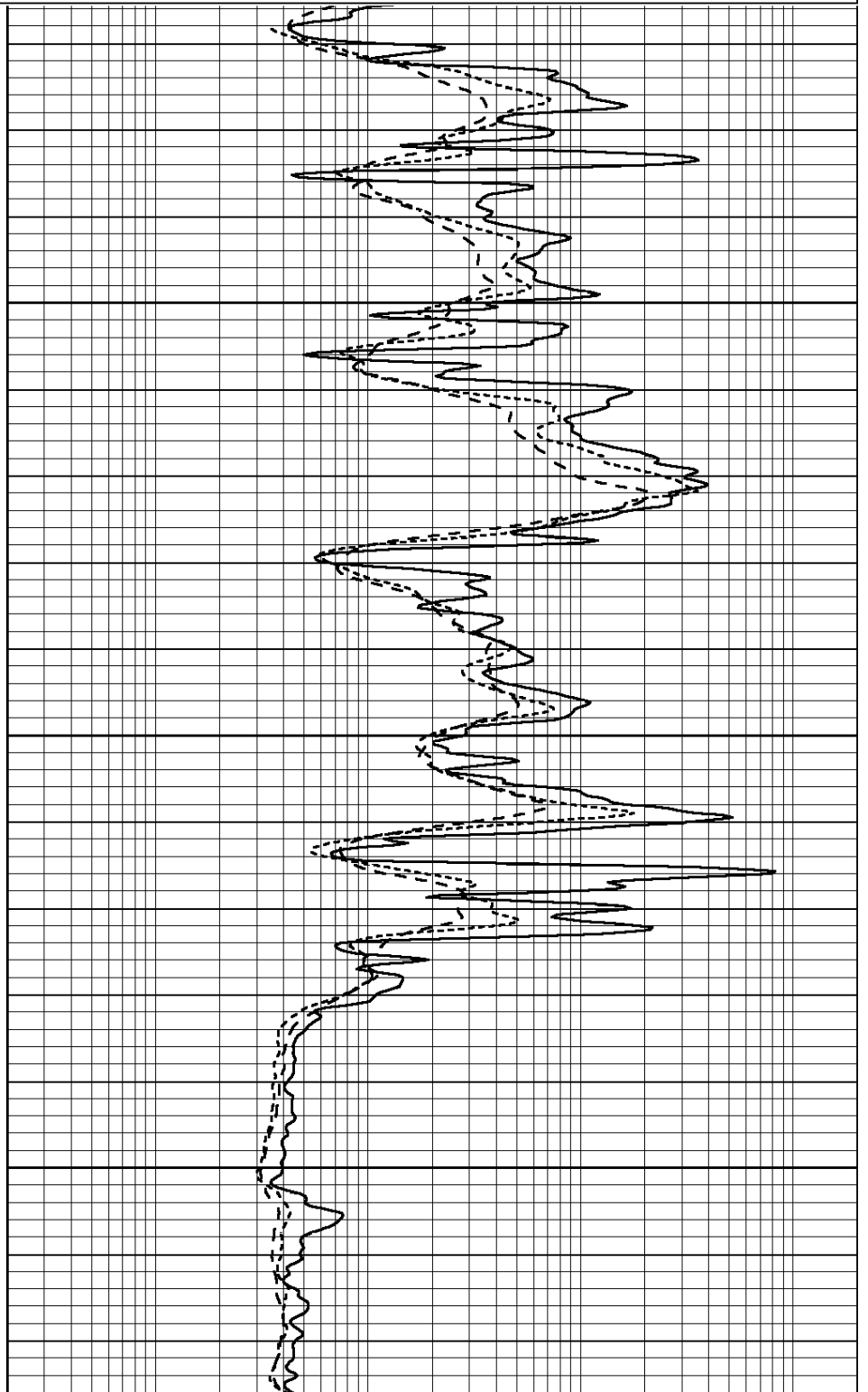
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

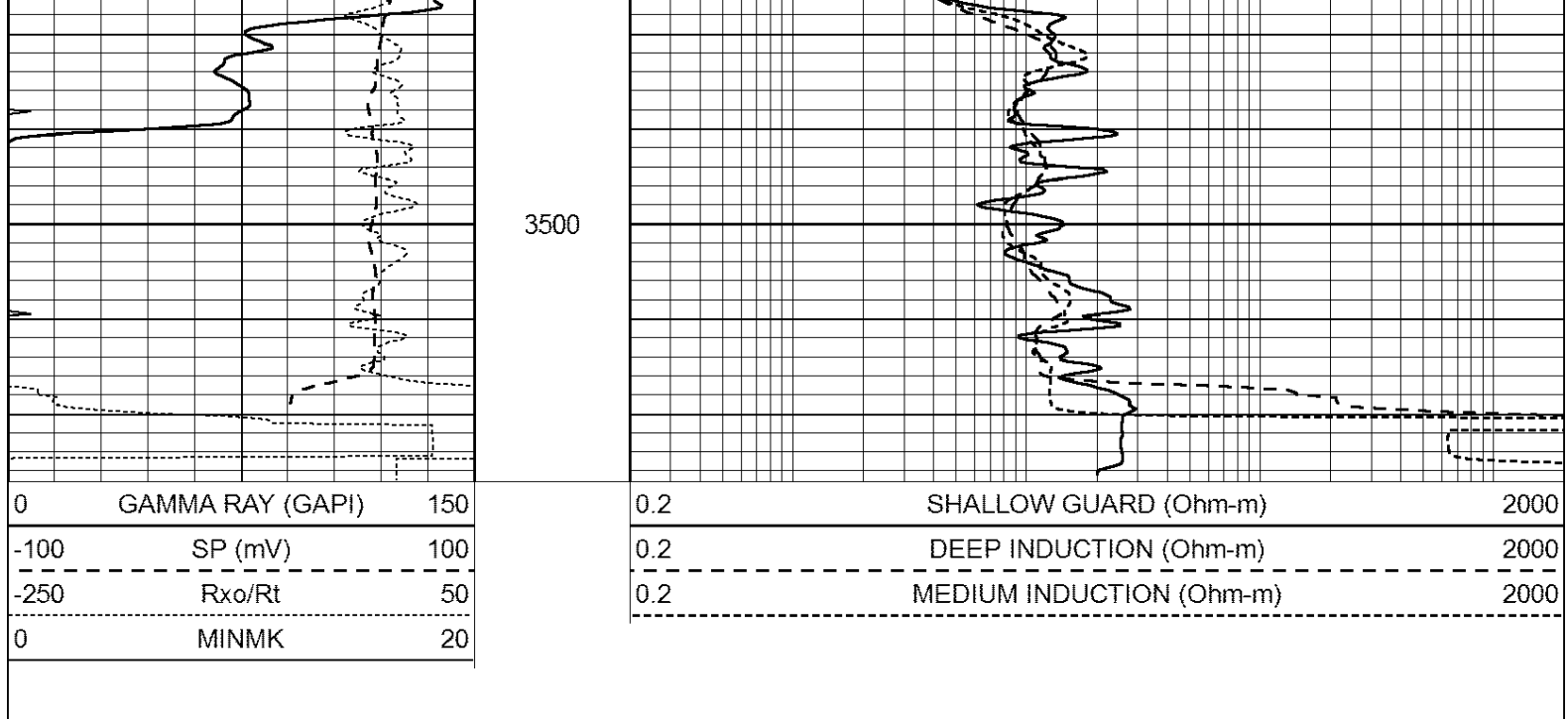


3350

3400

3450





Calibration Report

Database File: 010870ddn.db
 Dataset Pathname: pass3.1
 Dataset Creation: Fri Apr 12 07:31:39 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

Compensated Density Calibration Report

Serial-Model:	GEAR3-GEARHART
Source / Verifier:	143 / 143
Master Calibration Performed:	Fri Jan 04 15:48:16 2013
Before Survey Verification Performed:	
After Survey Verification Performed:	

Master Calibration					
	Density		Far Detector		Near Detector
Magnesium	1.710	g/cc	935.36	501.55	cps
Aluminum	2.580	g/cc	209.32	357.01	cps
Spine Angle = 77.21			Density/Spine Ratio = 0.567		
	Size		Reading		
Small Ring	8.00	in	4.29	V	
Large Ring	14.00	in	6.24	V	

Before Survey Verification					
	Target		Measured		
		g/cc			g/cc
		g/cc			g/cc
		g/cc			g/cc

After Survey Verification					
	Target		Measured		
		g/cc			g/cc
		g/cc			g/cc
		g/cc			g/cc

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 Long Space	cps cps	pu	pu
2)	Short Space Long Space	cps cps	pu	pu
3)	Short Space Long Space	cps cps	pu	pu

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