BORE HOLE PROFILE LOG

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD State KANSAS

Location: API # : 15-073-24242-0000
1525' FSL & 4200' FEL
SE - SE - NW - SW

SEC 23 TWP 23S RGE 10E

Other Services
CDL/CNL/PE
DIL/MEL/SON

Elevation
K.B. 1297
D.F. 1295
G.L. 2191

Permanent Datum	GROUND LEVEL	Elevation	1291
Log Measured From	GROUND LEVEL		
Drilling Measured From	GROUND LEVEL		

Date	12/4/18		
Run Number	ONE		
Depth Driller	2318		
Depth Logger	2320		
Bottom Logged Interval	2296		
Top Log Interval	200		
Casing Driller	8 5/8"@209'		
Casing Logger	209		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 900 PPM	
Density / Viscosity	9.3/34		
pH / Fluid Loss	10.0/9.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.60@50F		
Rmf @ Meas. Temp	1.20@50F		
Rmc @ Meas. Temp	1.92@50F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	.792@101F		
Time Circulation Stopped	2.5 HOURS		
Time Logger on Bottom	12:45 A.M.		
Maximum Recorded Temperature	101F		
Equipment Number	922339		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	VERN SCHRAG	ALBERT BRENSING	

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD
State KANSAS

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Comments

THANK YOU FOR USING ELI WIRELINE HAYS, KANSAS (785) 628-6395

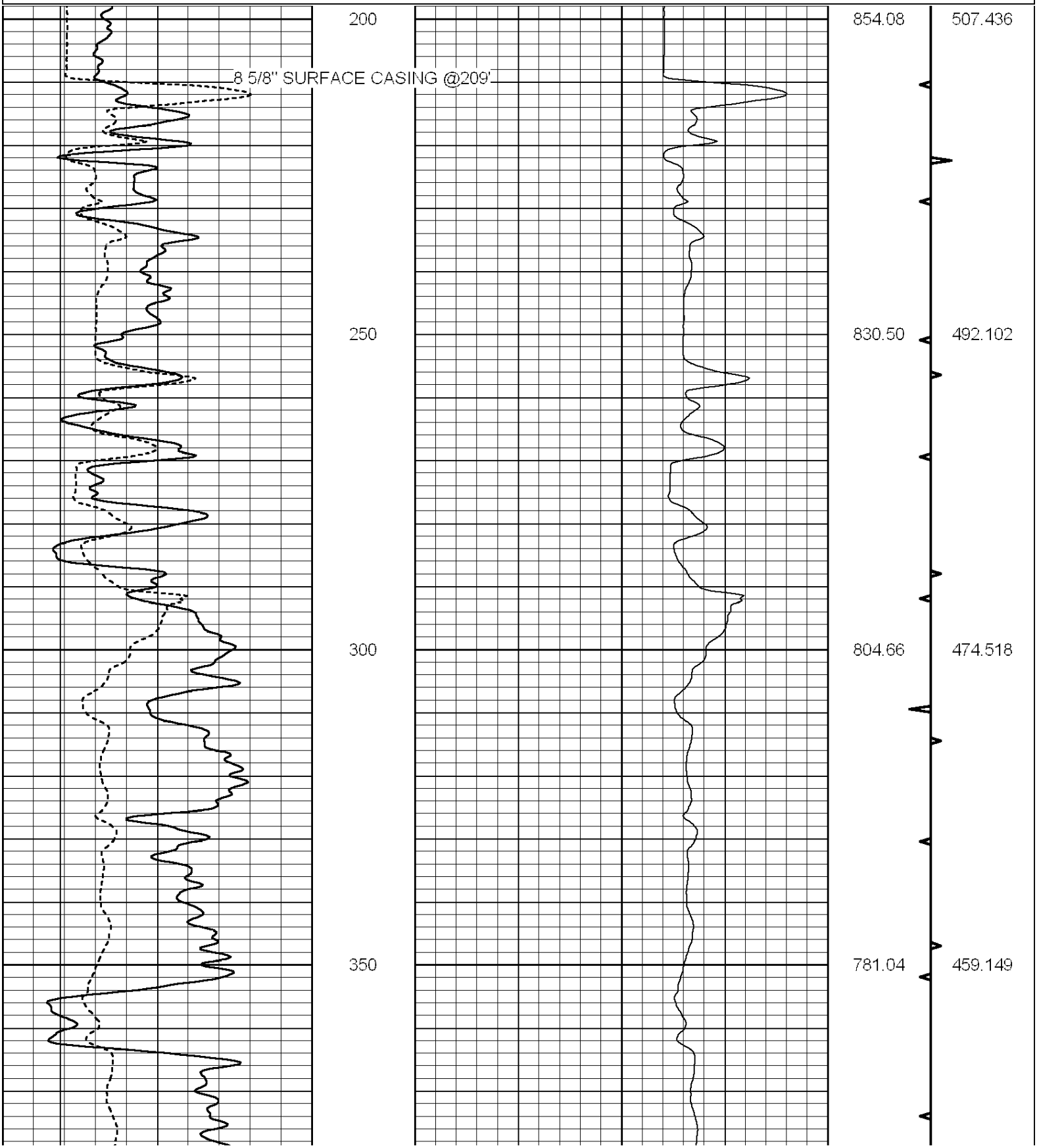
DIRECTIONS

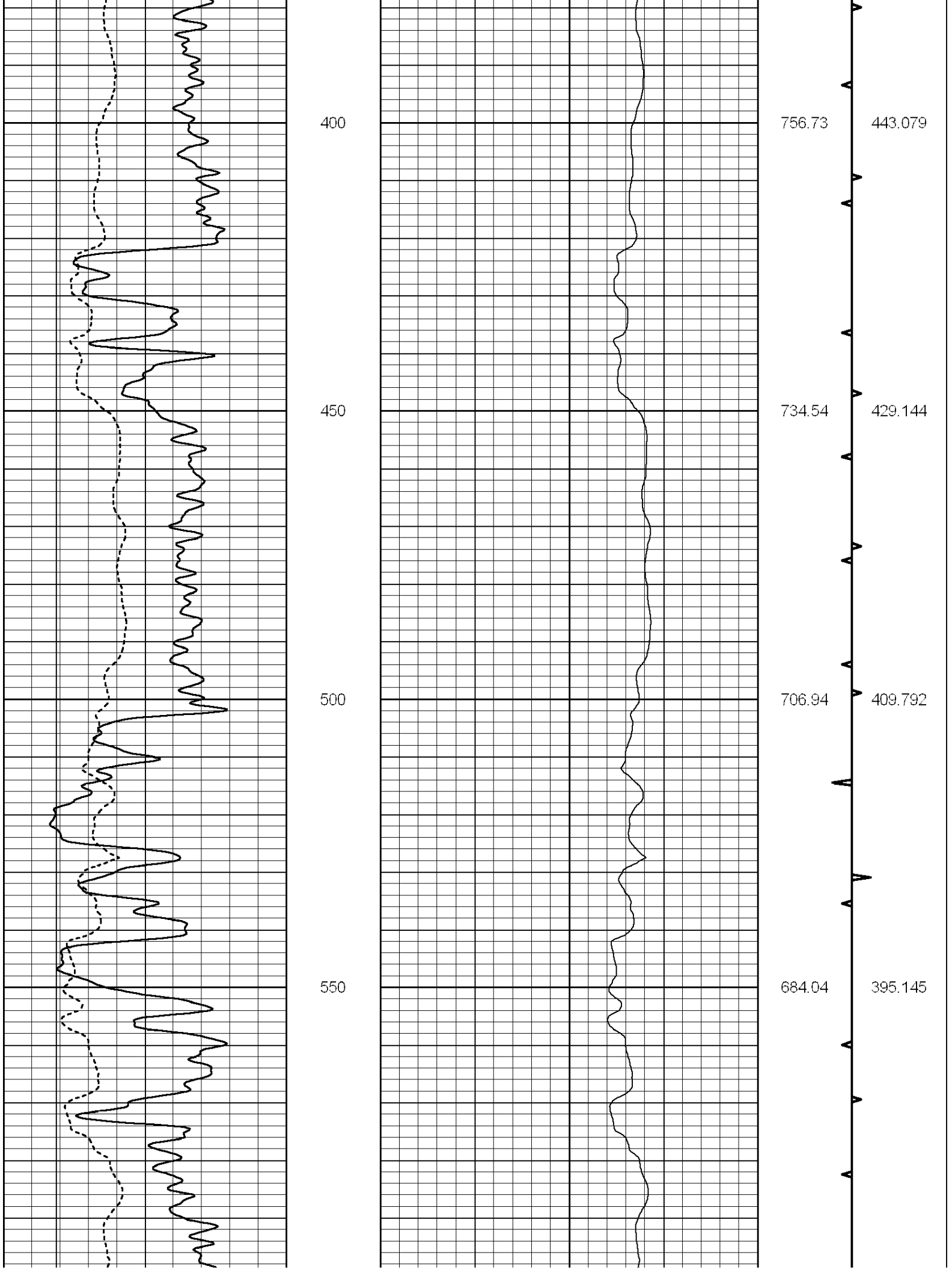
EUREKA, KS., (HWY 54 & MAIN ST.) N. TO A THROUGH ST., 1/2E. TO "CR P", 10N. TO "Y" INTERSECTION, 1E., 4N., 3/4 W. INTO GATE

MAIN SECTION

Database File:	3066pe.db
Dataset Pathname:	pass3.9
Presentation Format:	obrbore
Dataset Creation:	Tue Dec 04 03:23:38 2018 by Calc SOC 120430
Charted by:	Depth in Feet scaled 1:240

0	GR (GAPI)	150	RIGHT CALIPER	BVTX (ft3)	AVTX (ft3)
6	DCAL (in)	16	6 (in) 16	TBHV (ft3)	ABHV (ft3)

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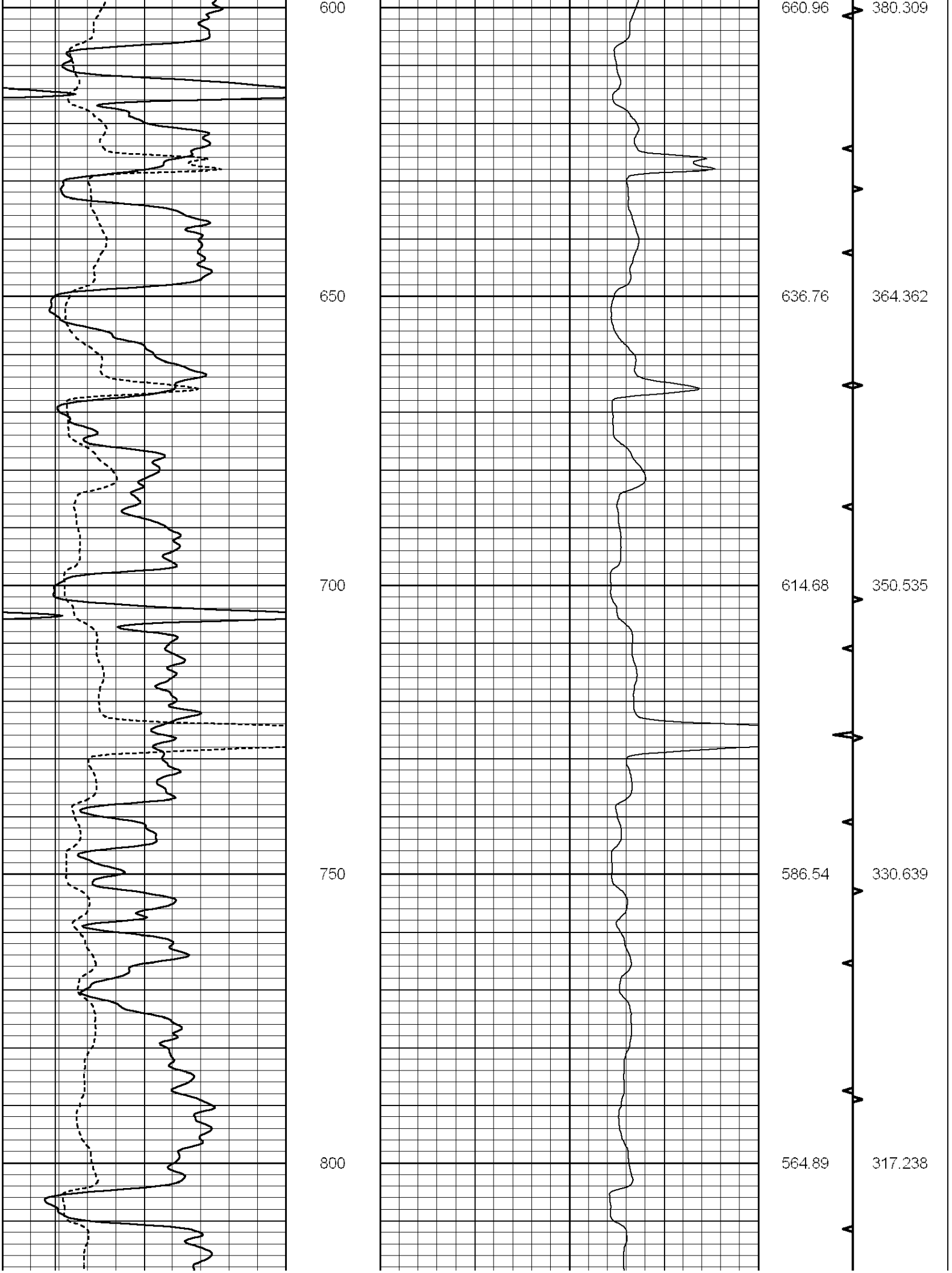
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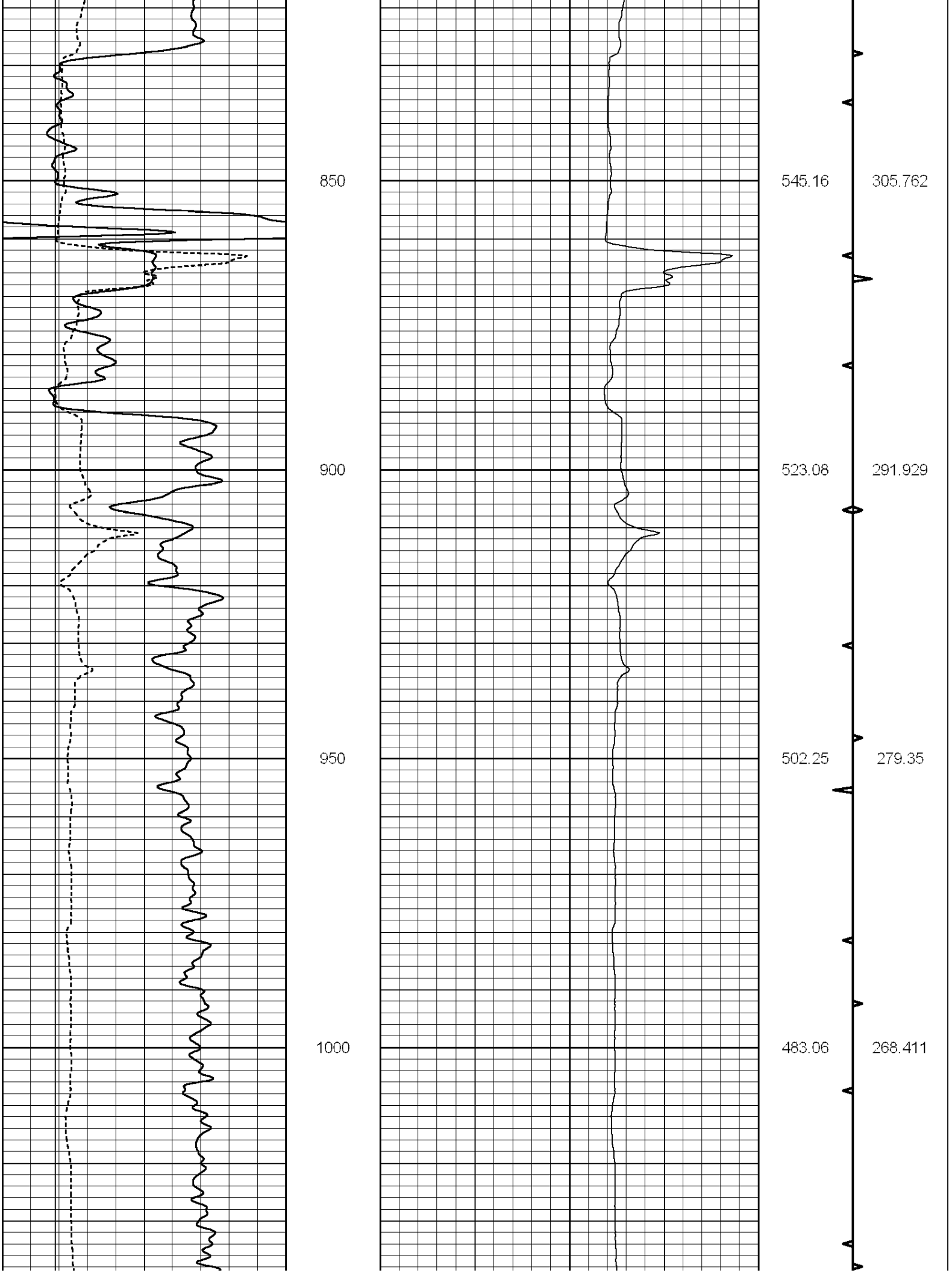
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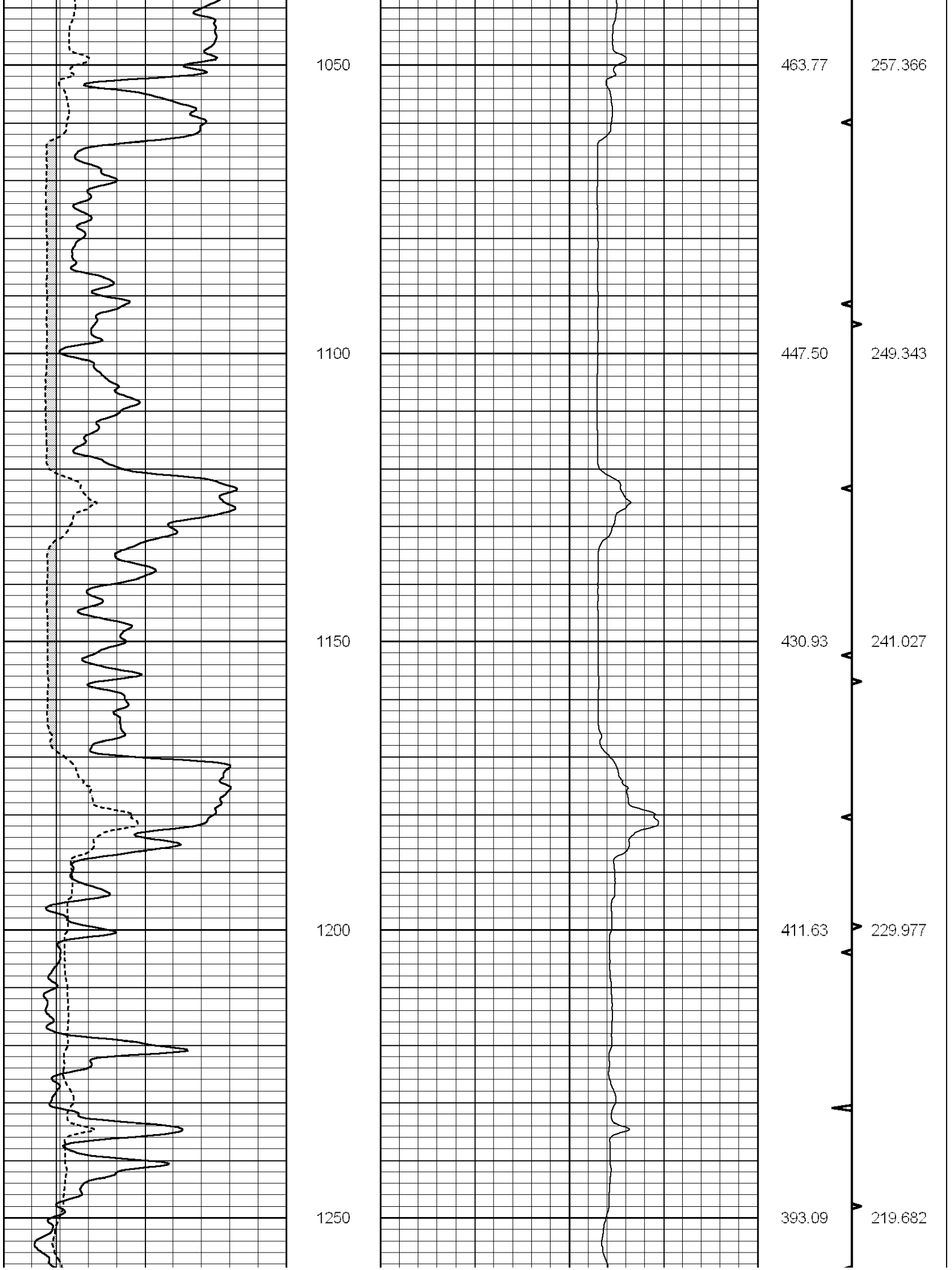
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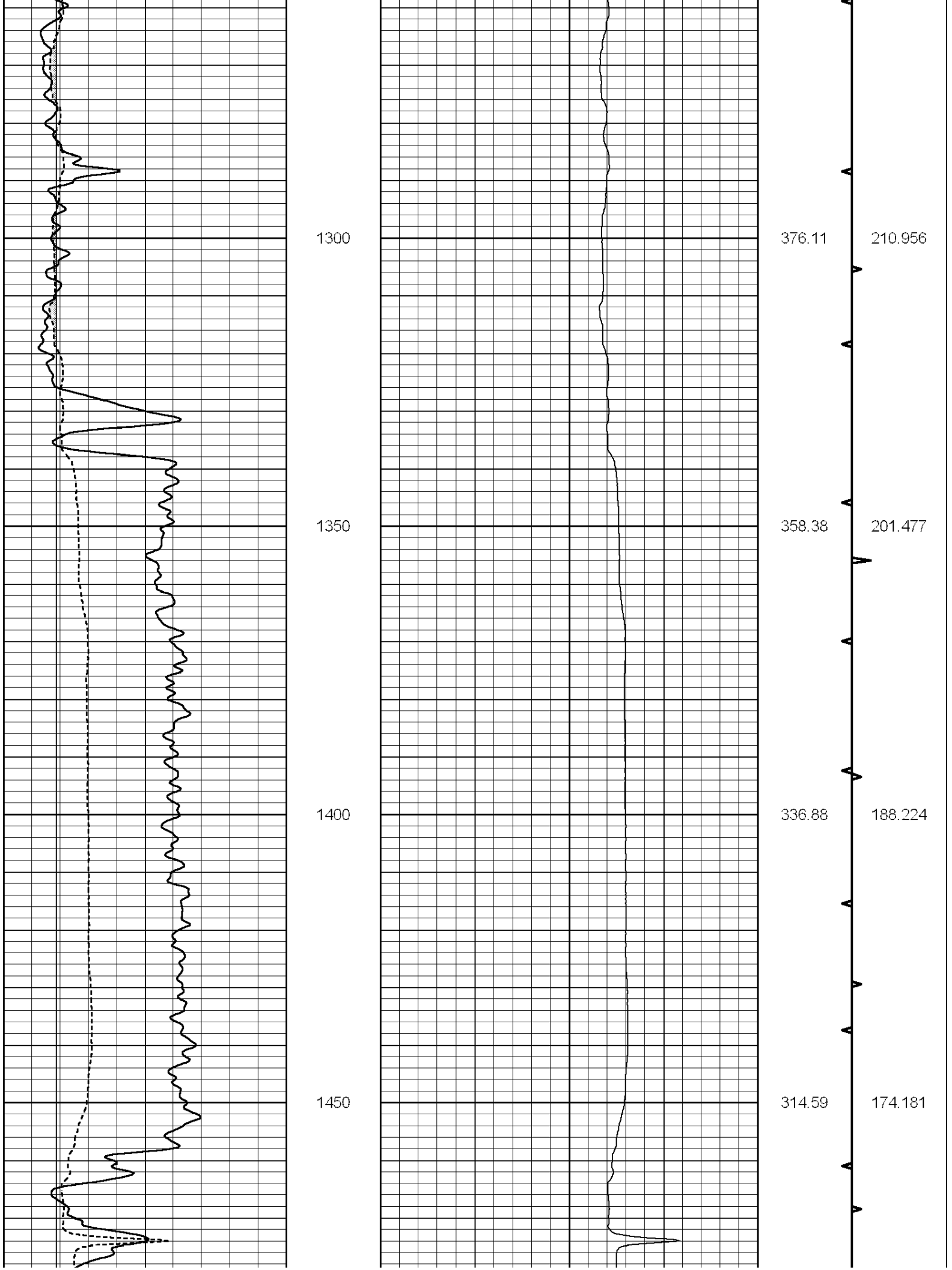
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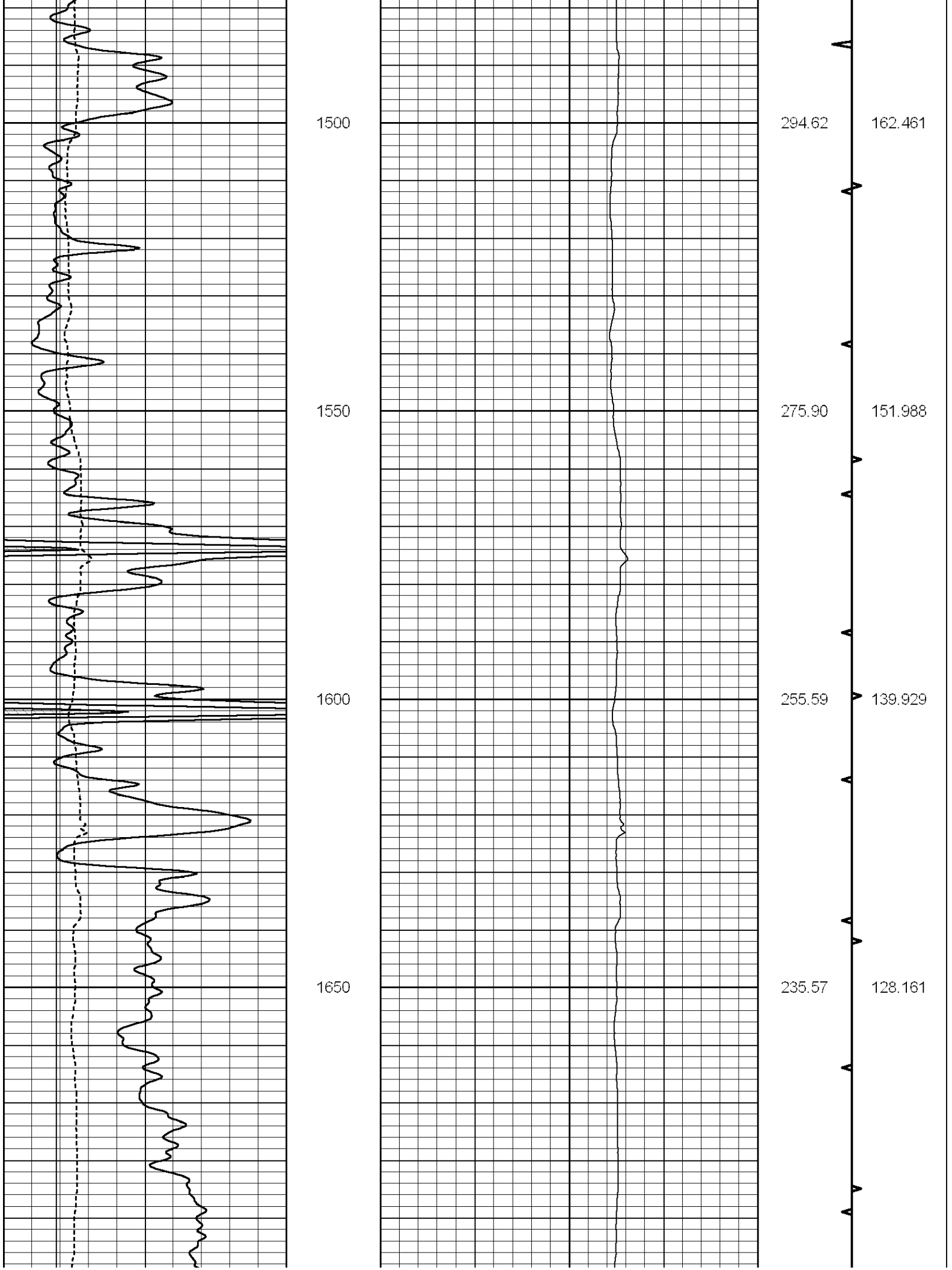
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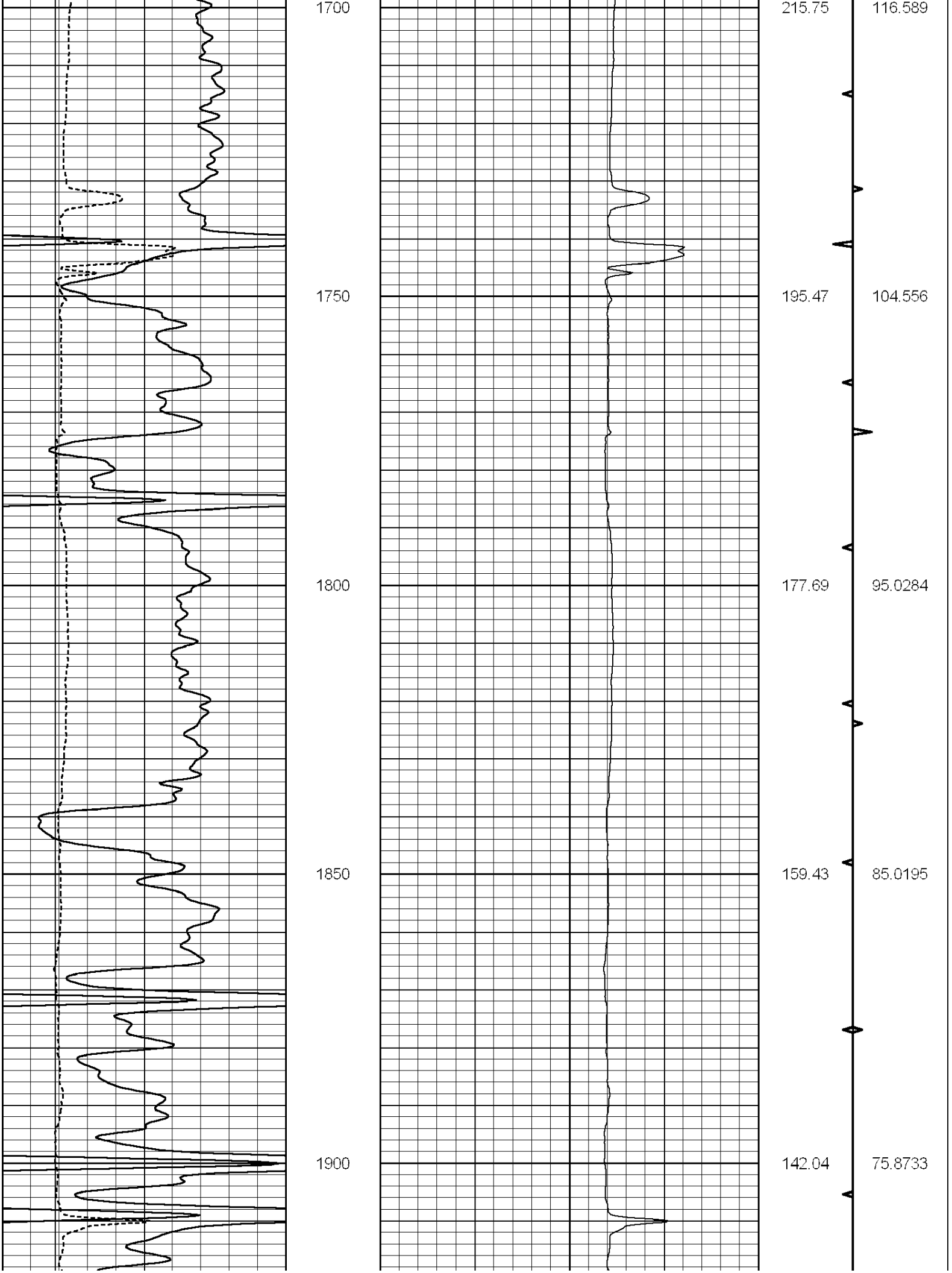
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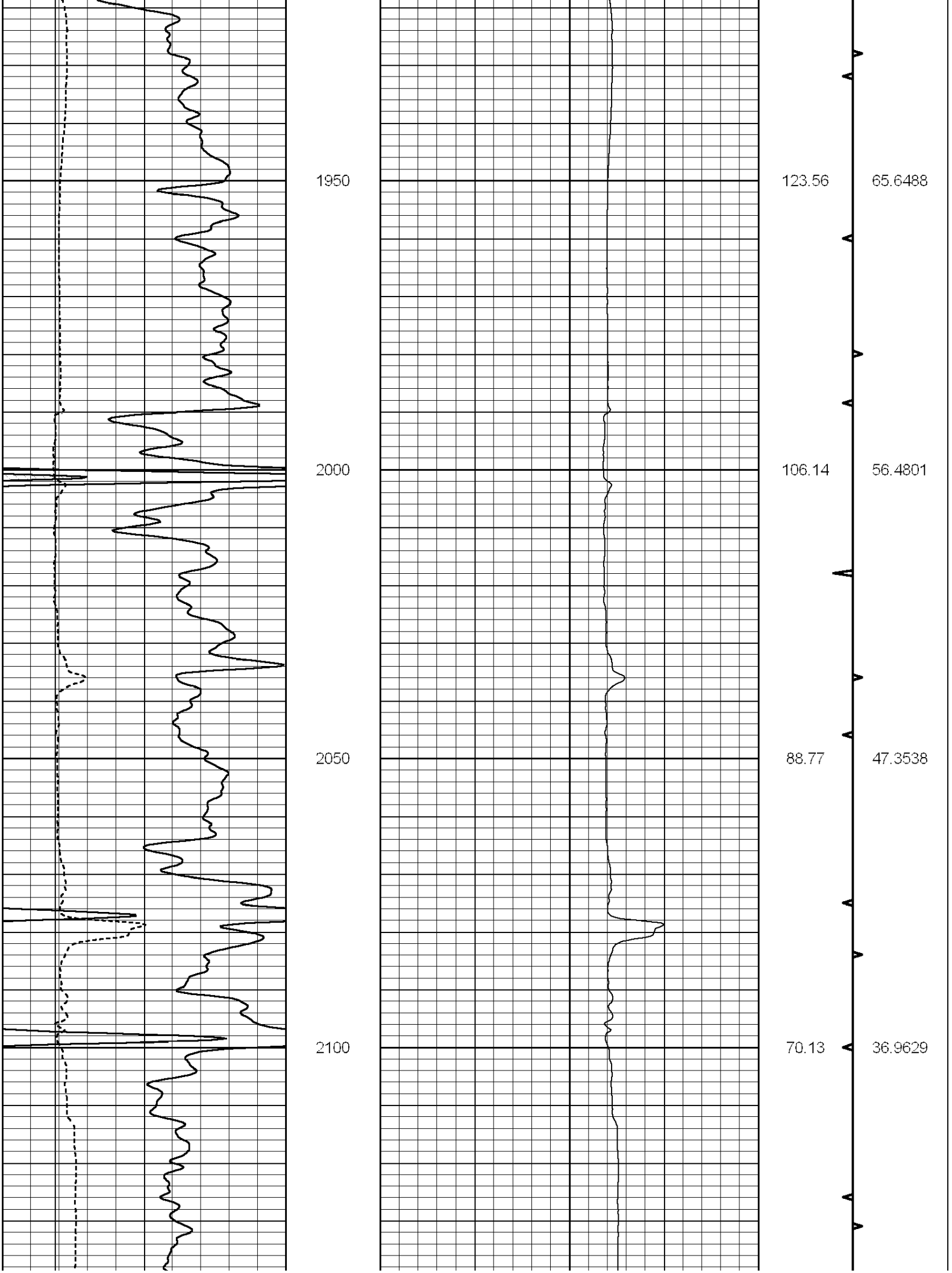
75.8733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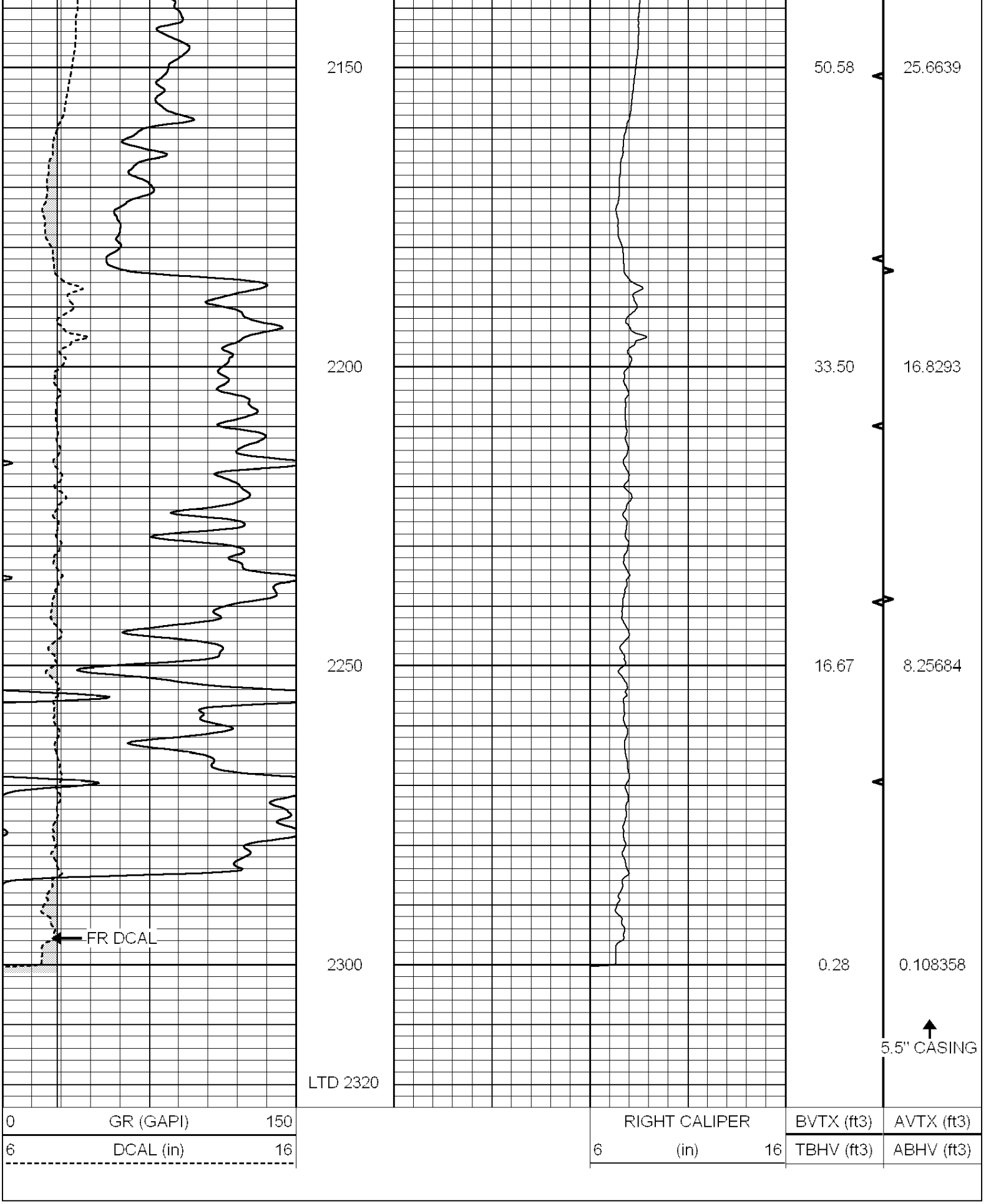
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2200
2250
2300
LTD 2320
50.58
25.6639
33.50
16.8293
16.67
8.25684
0.28
0.108358
FR DCAL
5.5" CASING
0
GR (GAPI)
150
6
DCAL (in)
16
RIGHT CALIPER
6
(in)
16
BVTX (ft3)
AVTX (ft3)
TBHV (ft3)
ABHV (ft3)

DUAL INDUCTION LOG

Company	CROSS BAR ENERGY, LLC.
Well	BURKETT "E" #51
Field	BURKETT
County	GREENWOOD
State	KANSAS

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD State KANSAS
Location: API # : 15-073-24242-0000
1525' FSL & 4200' FEL
SE - SE - NW - SW
SEC 23 TWP 23S RGE 10E

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Drilling Measured From	GROUND LEVEL		D.F. 1295 G.L. 2191

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Rmf @ Meas. Temp	1.20@50F		
Rmc @ Meas. Temp	1.92@50F		
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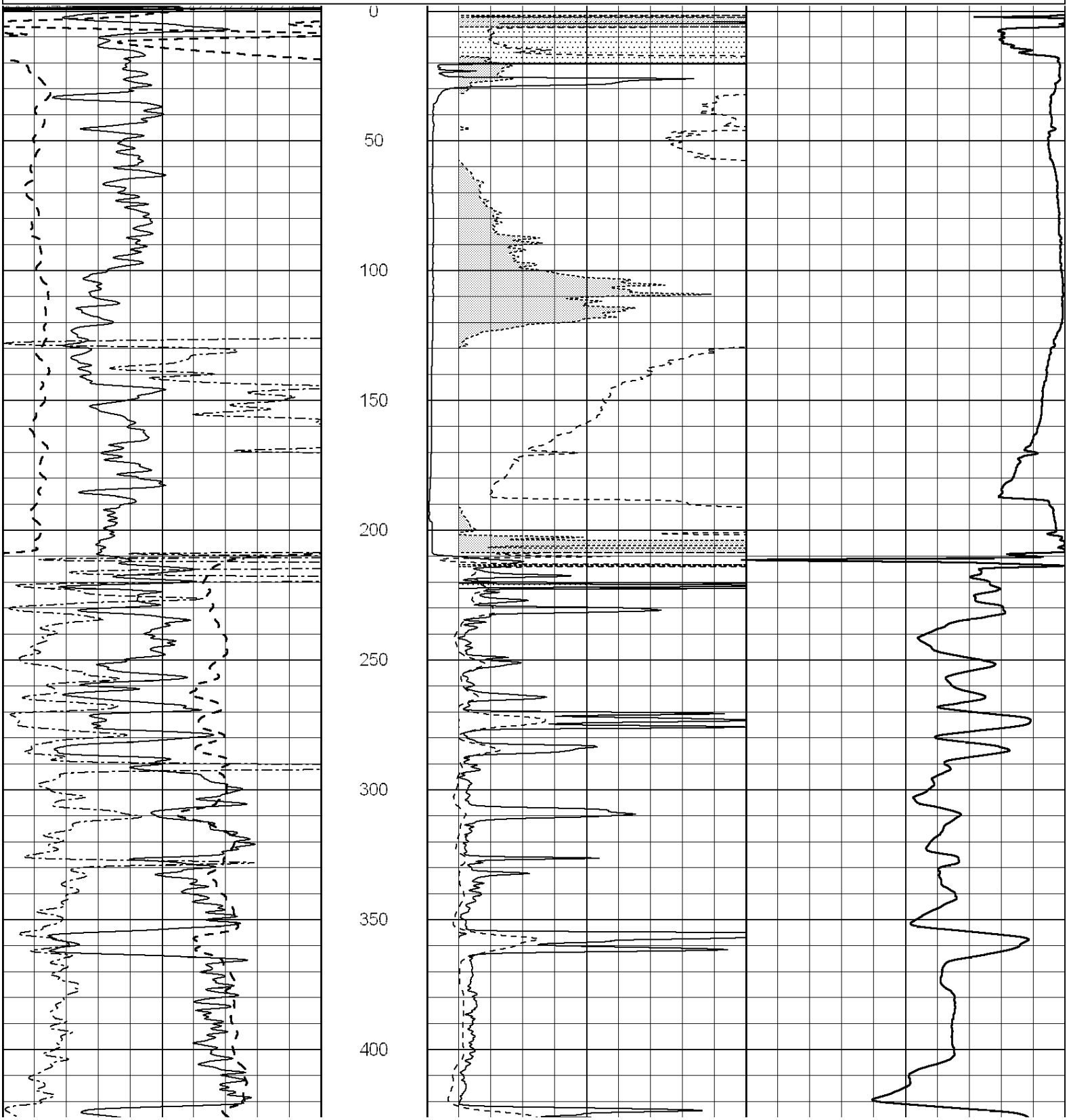
DIRECTIONS
EUREKA, KS., (HWY 54 & MAIN ST.) N. TO A THROUGH ST., 1/2E. TO "CR P", 10N. TO "Y" INTERSECTION, 1E., 4N., 3/4 W. INTO GATE

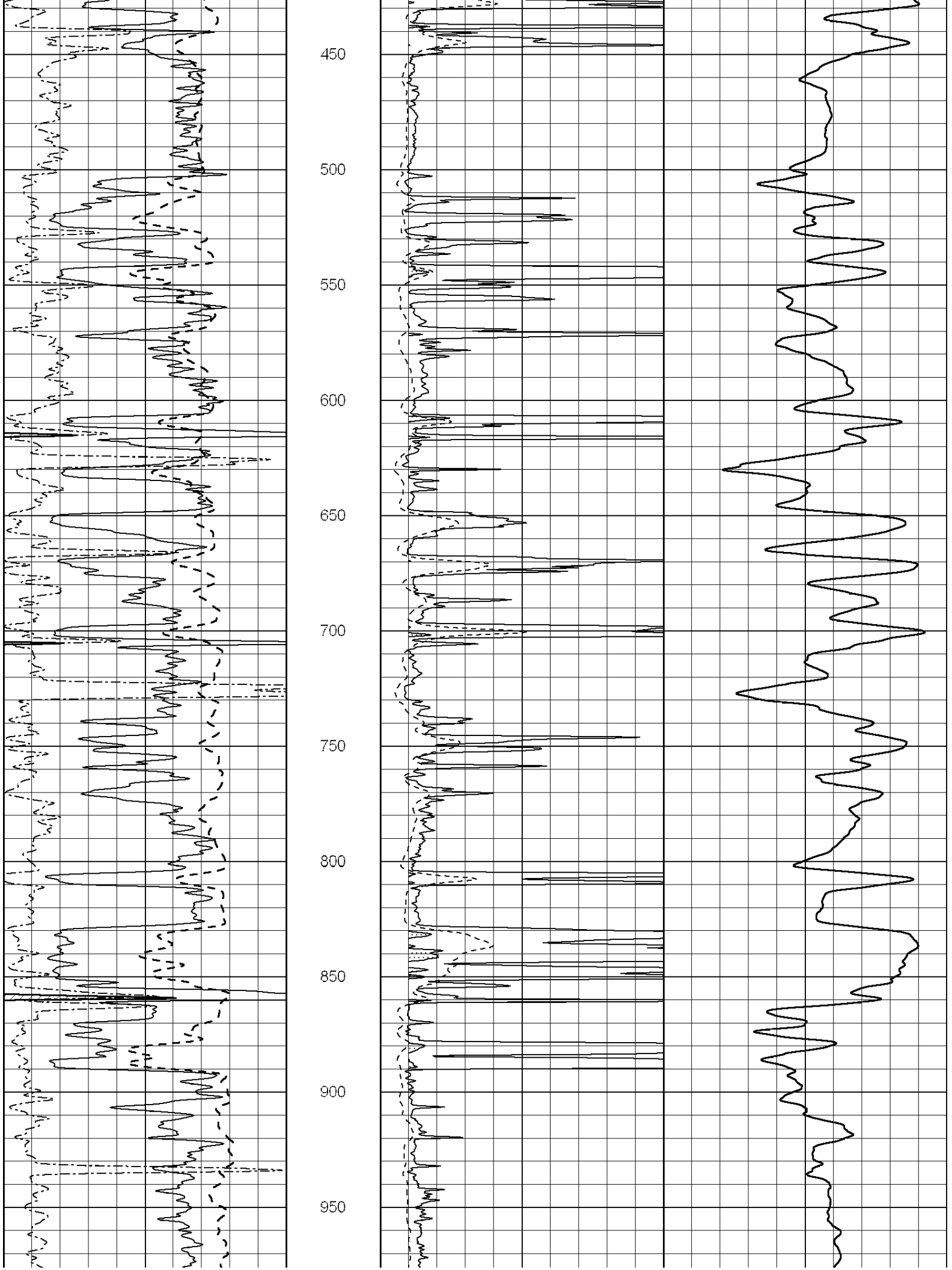
MAIN SECTION

Database File: 3066pe.db
Dataset Pathname: pass3.8
Presentation Format: dil2
Dataset Creation: Tue Dec 04 02:12:04 2018
Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100
0	RWA (Ohm-m)	1

0	RLL3 (Ohm-m)	50
0	RILD (Ohm-m)	50
1000	CILD (mmho/m)	0
50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500

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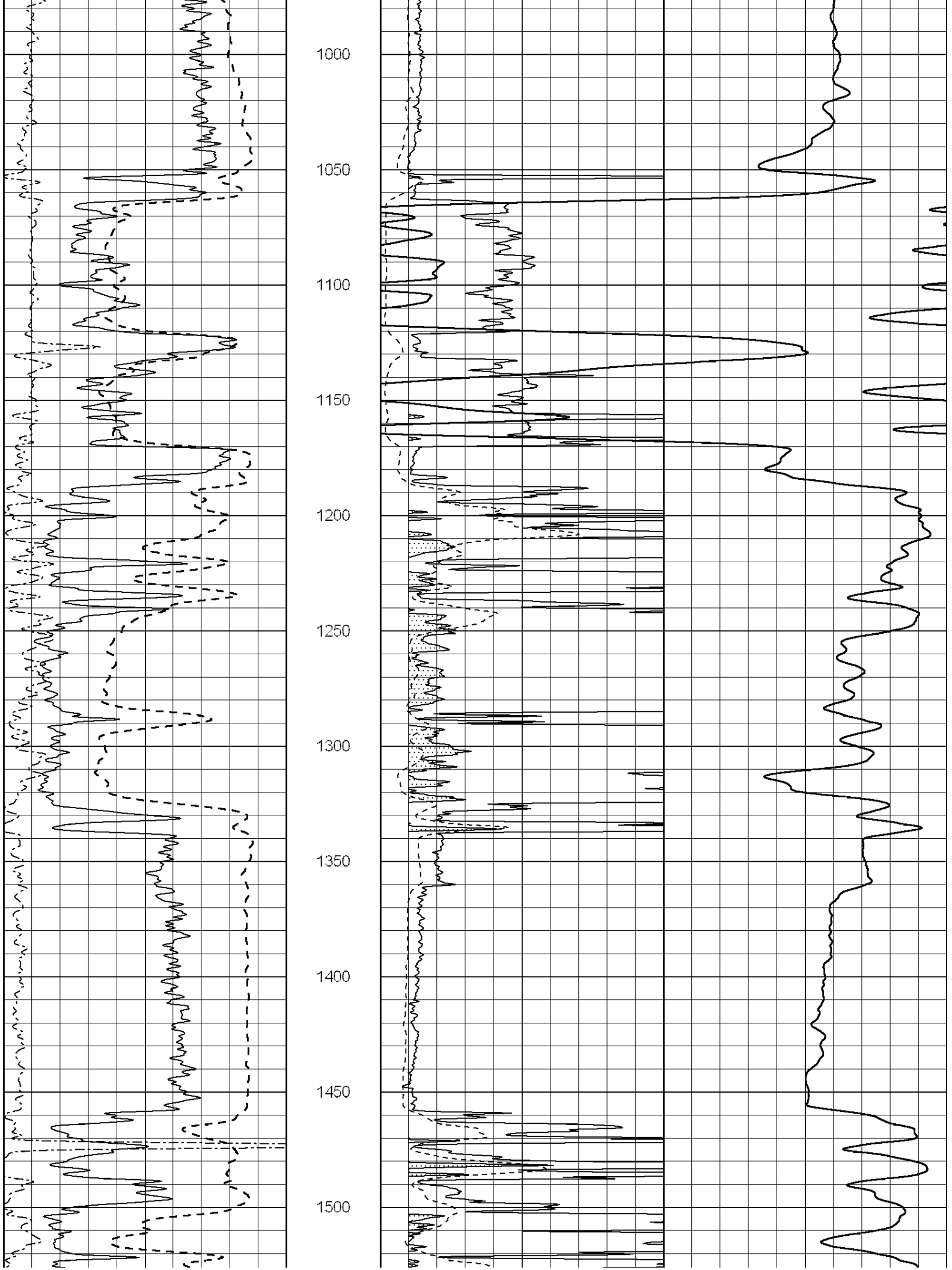
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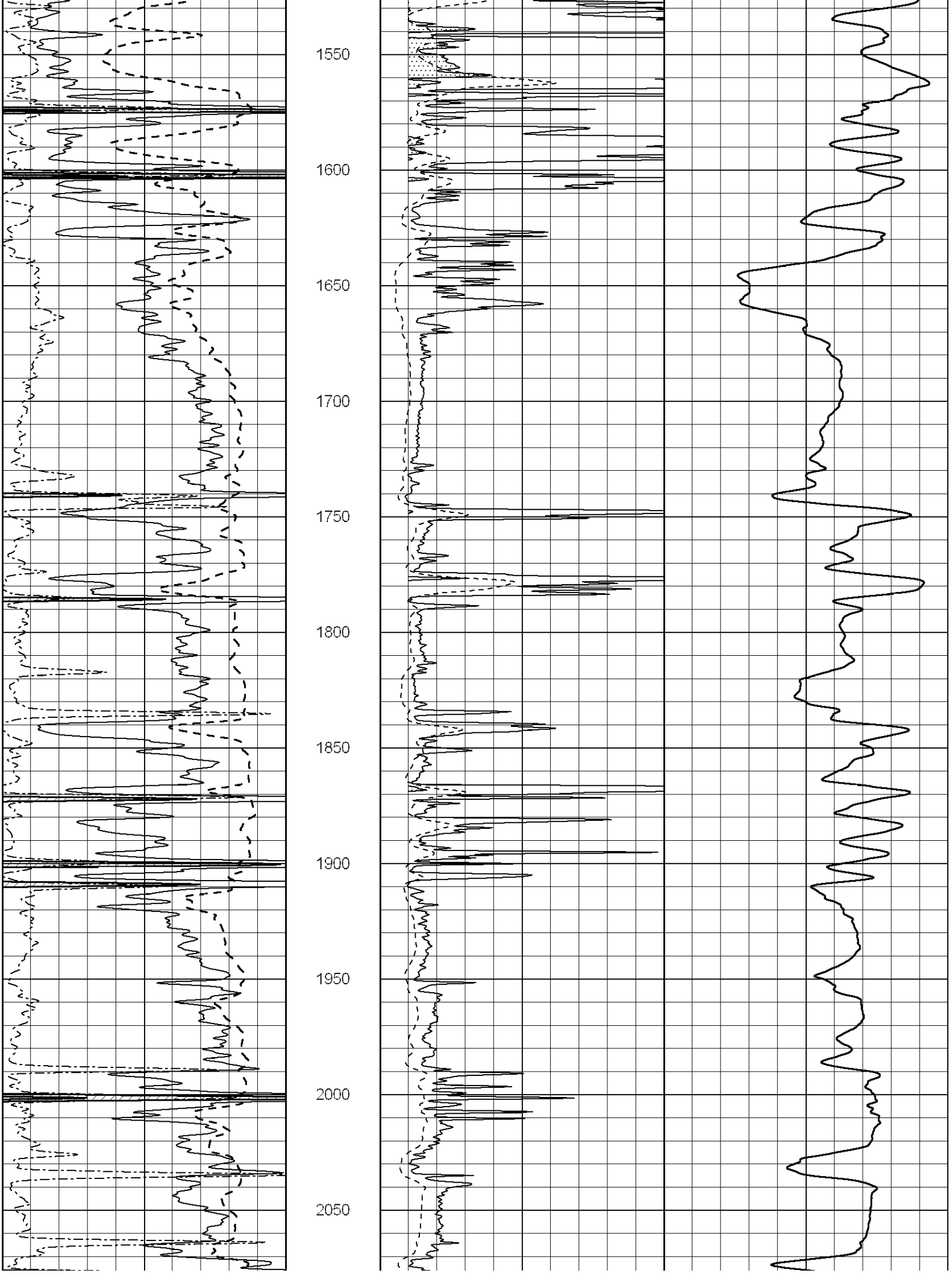
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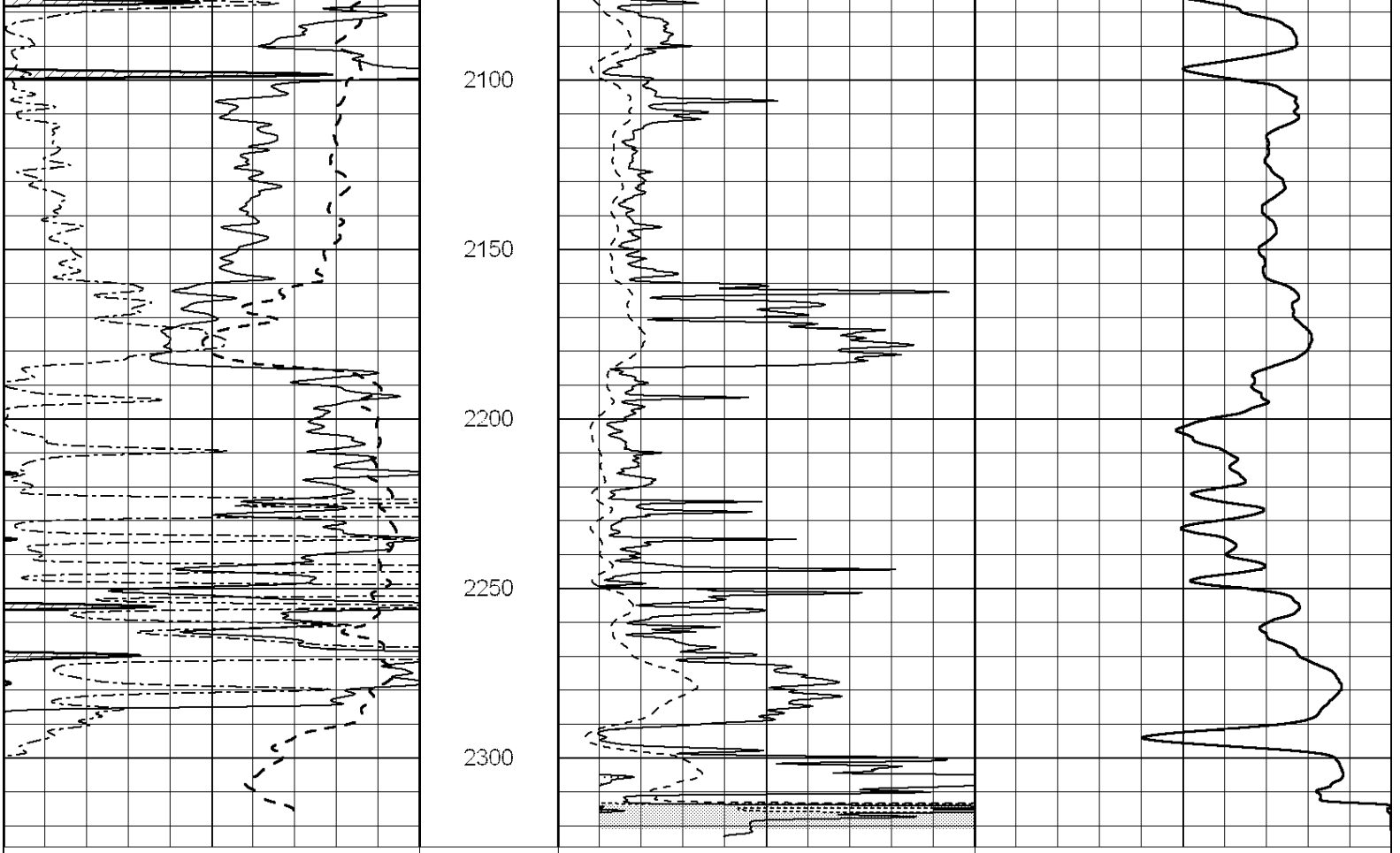
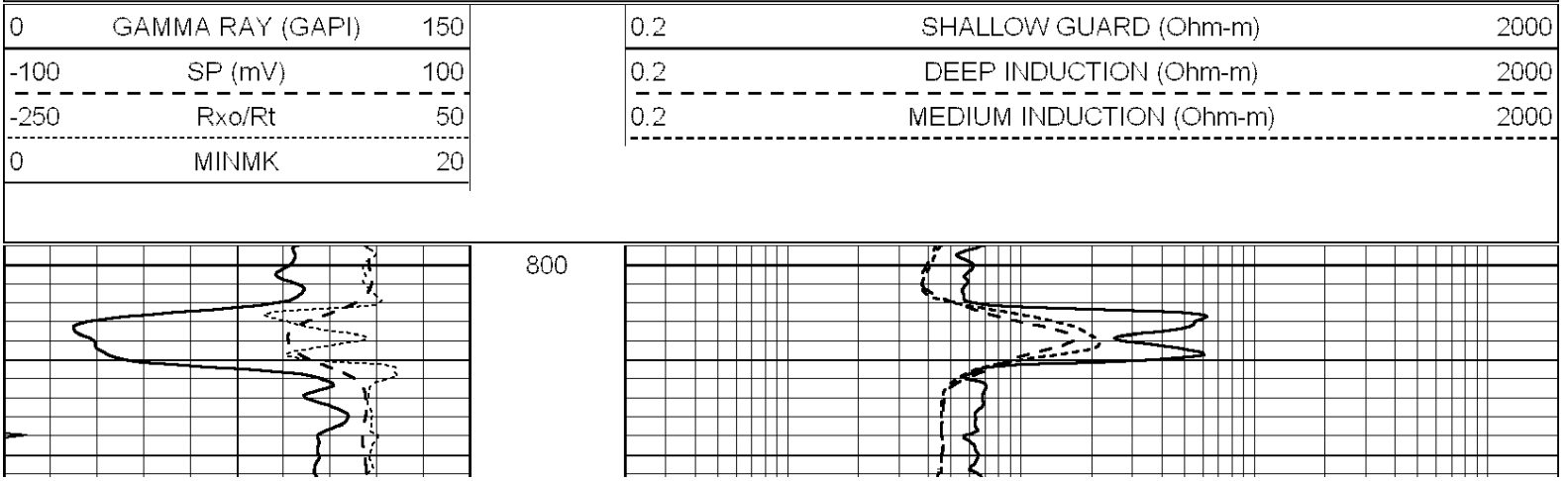
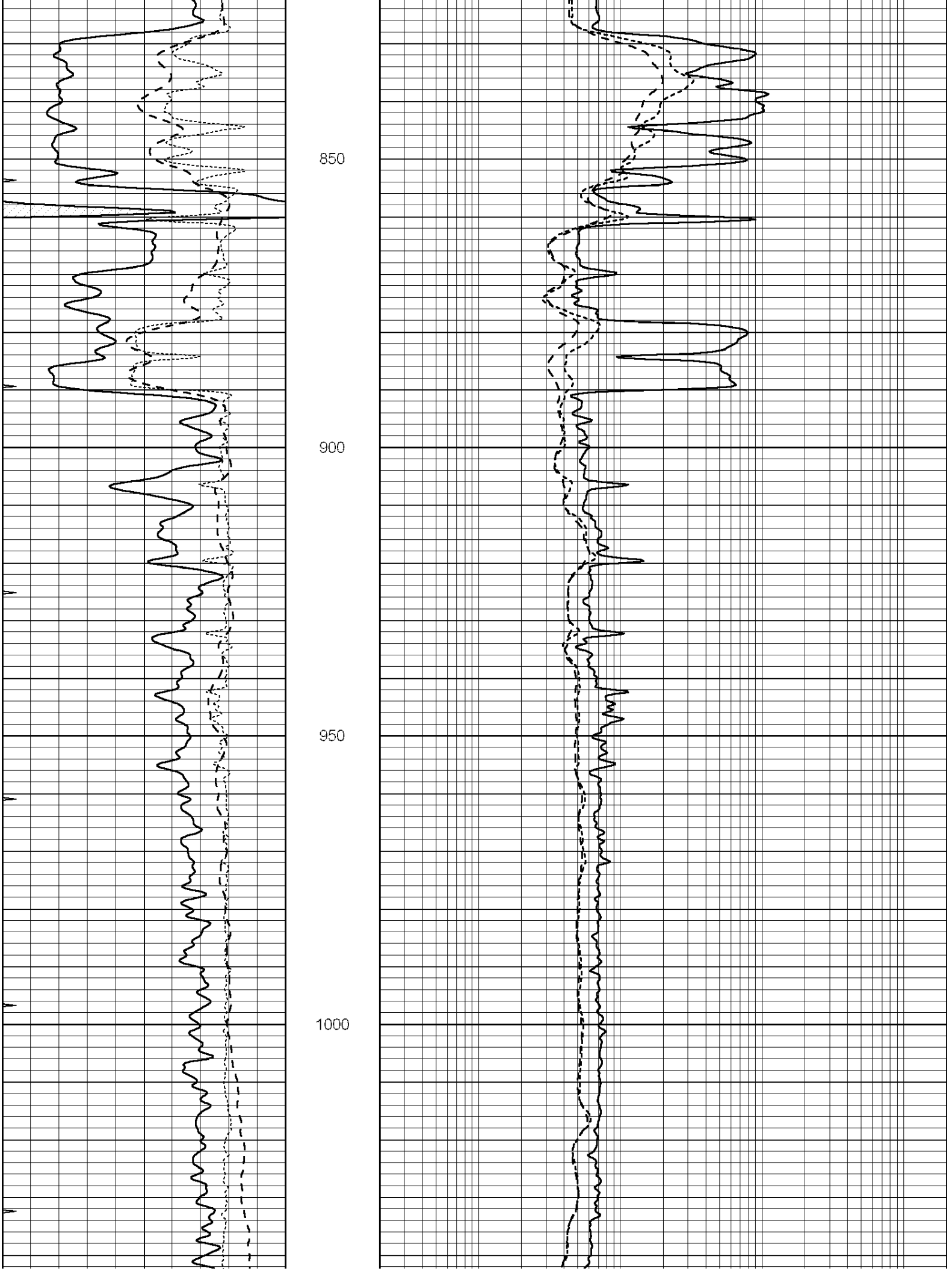
2050



MAIN SECTION

Database File:	3066pe.db
Dataset Pathname:	pass3.8
Presentation Format:	_dil
Dataset Creation:	Tue Dec 04 02:12:04 2018
Charted by:	Depth in Feet scaled 1:240

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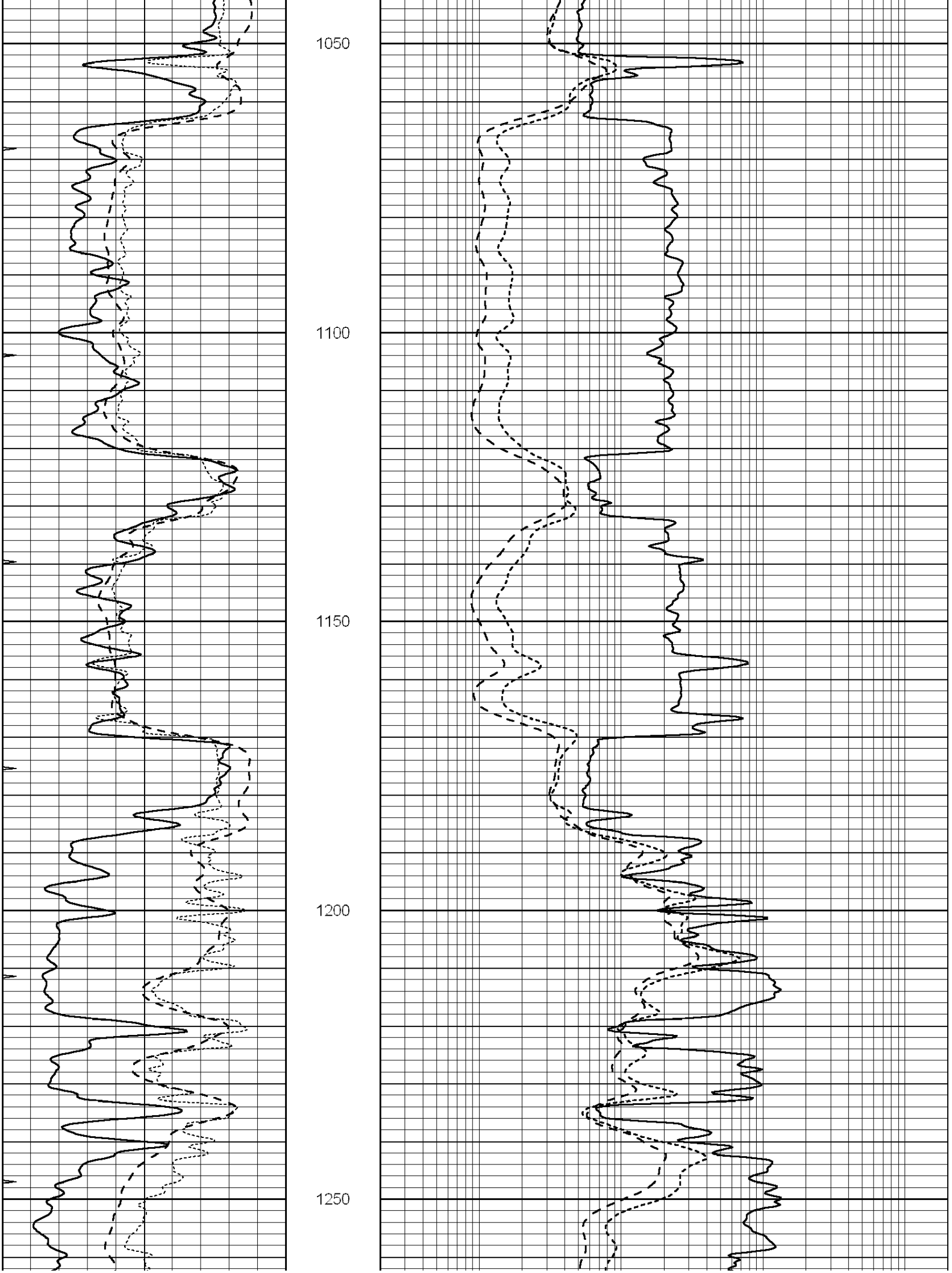
900
950
1000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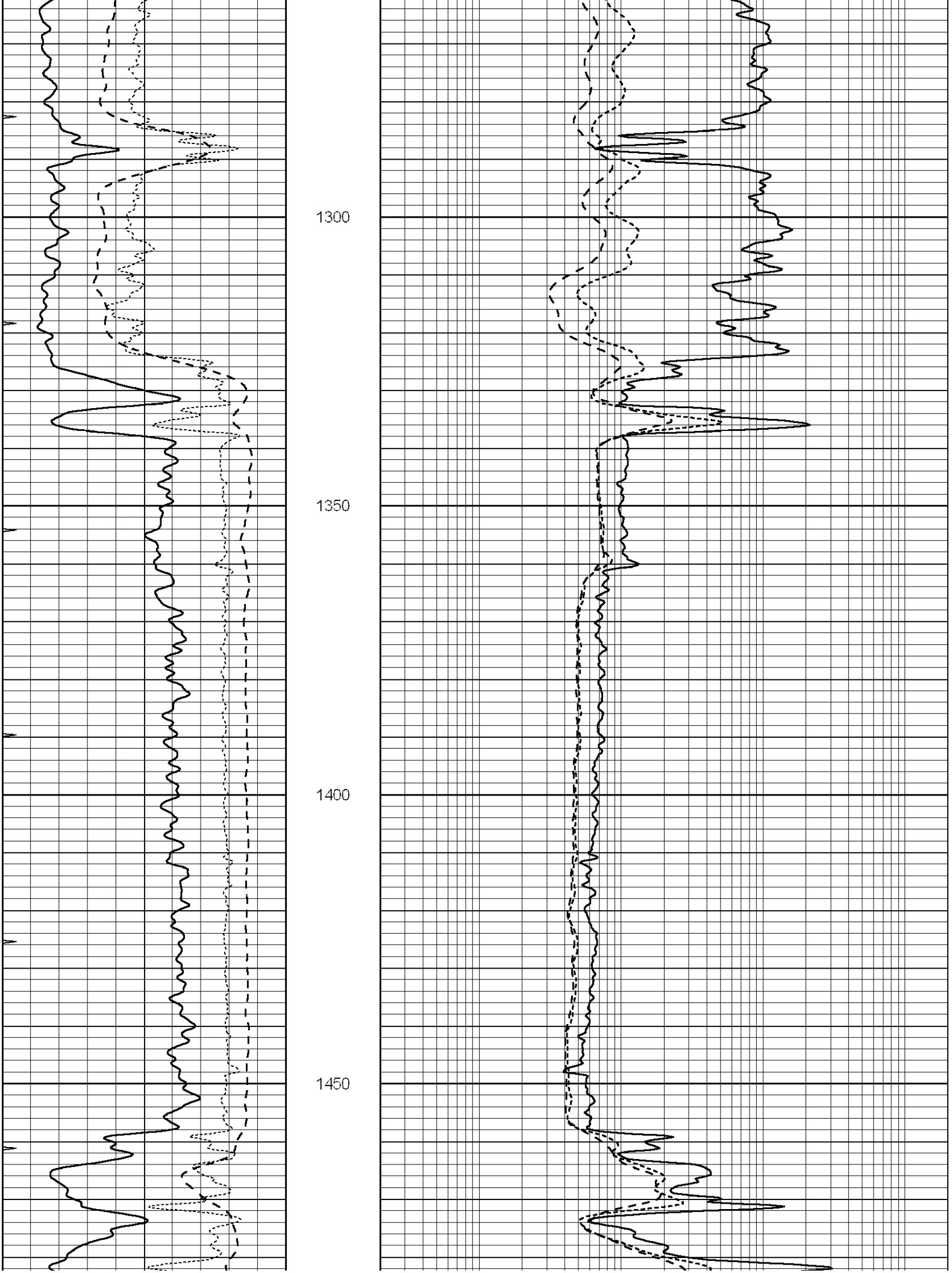
1100
1150
1200
1250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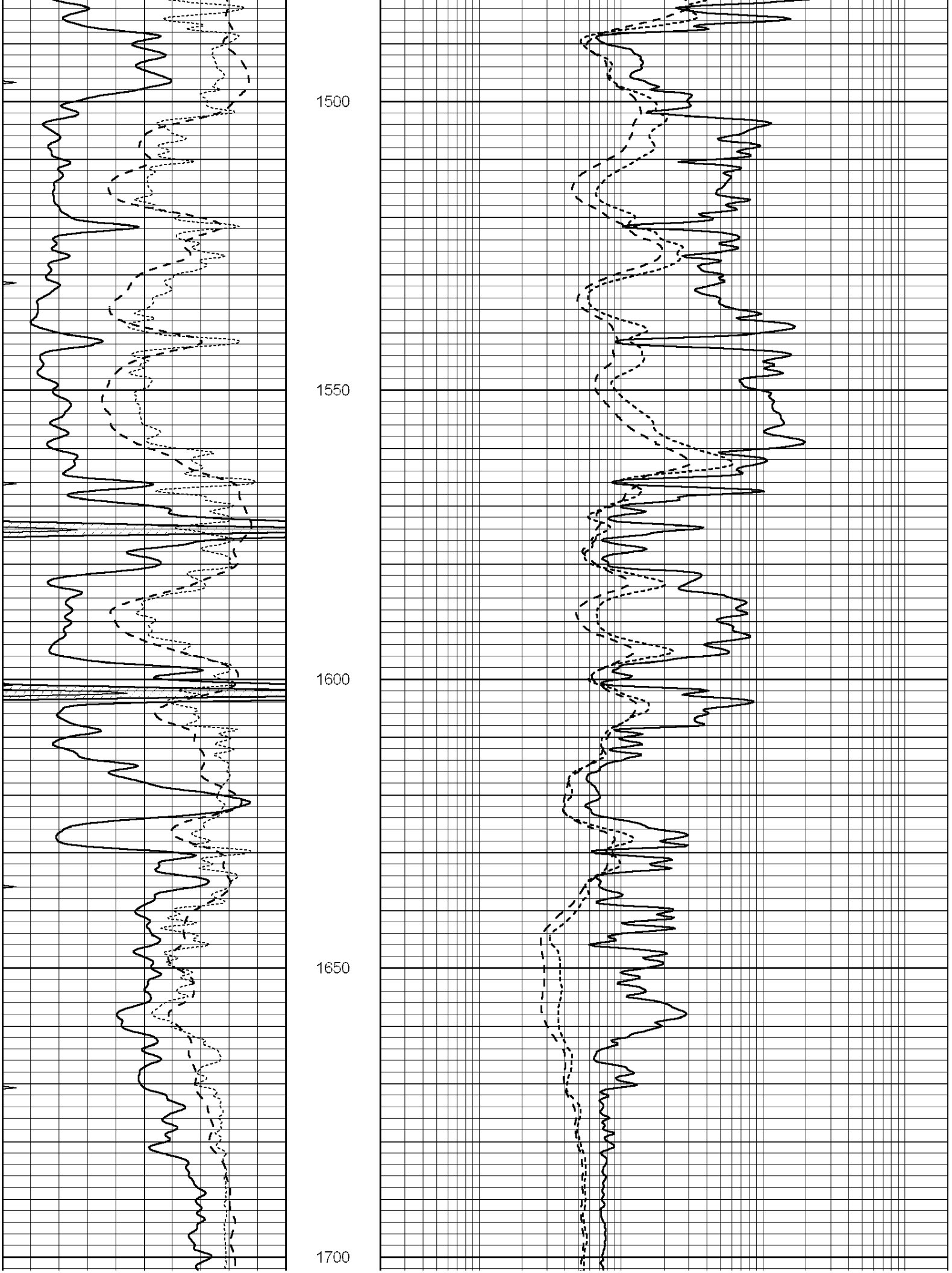
1400
1450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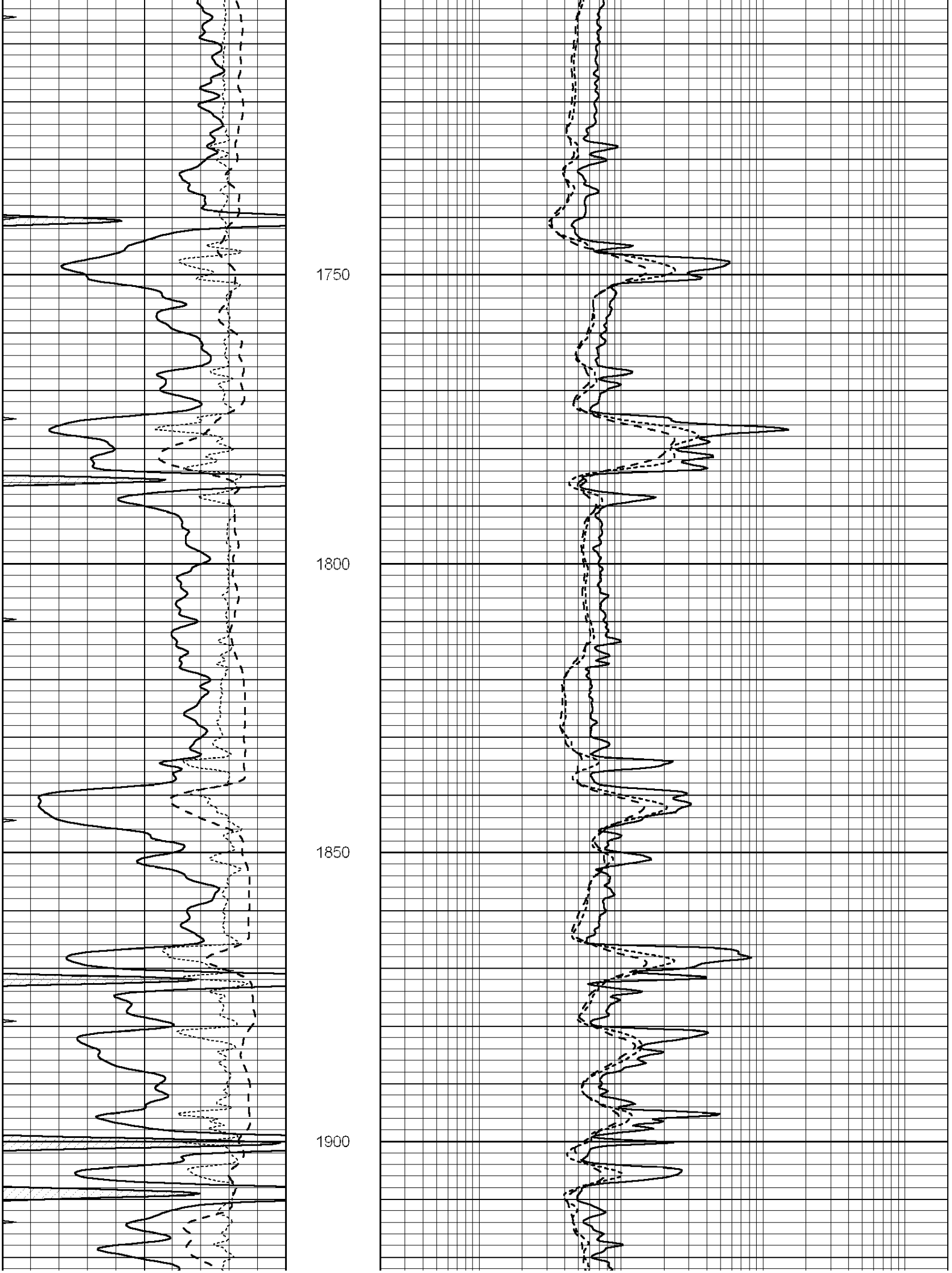
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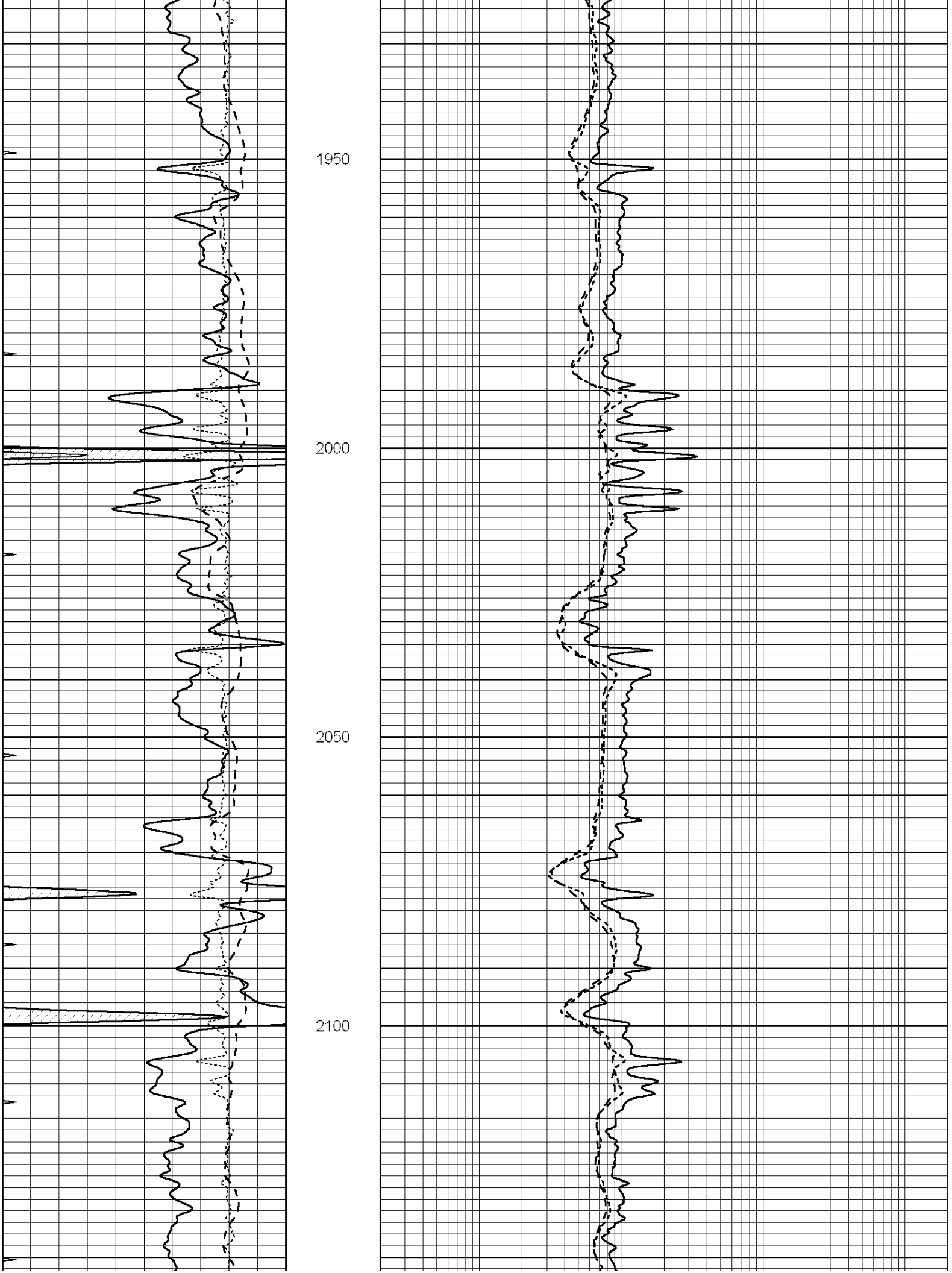
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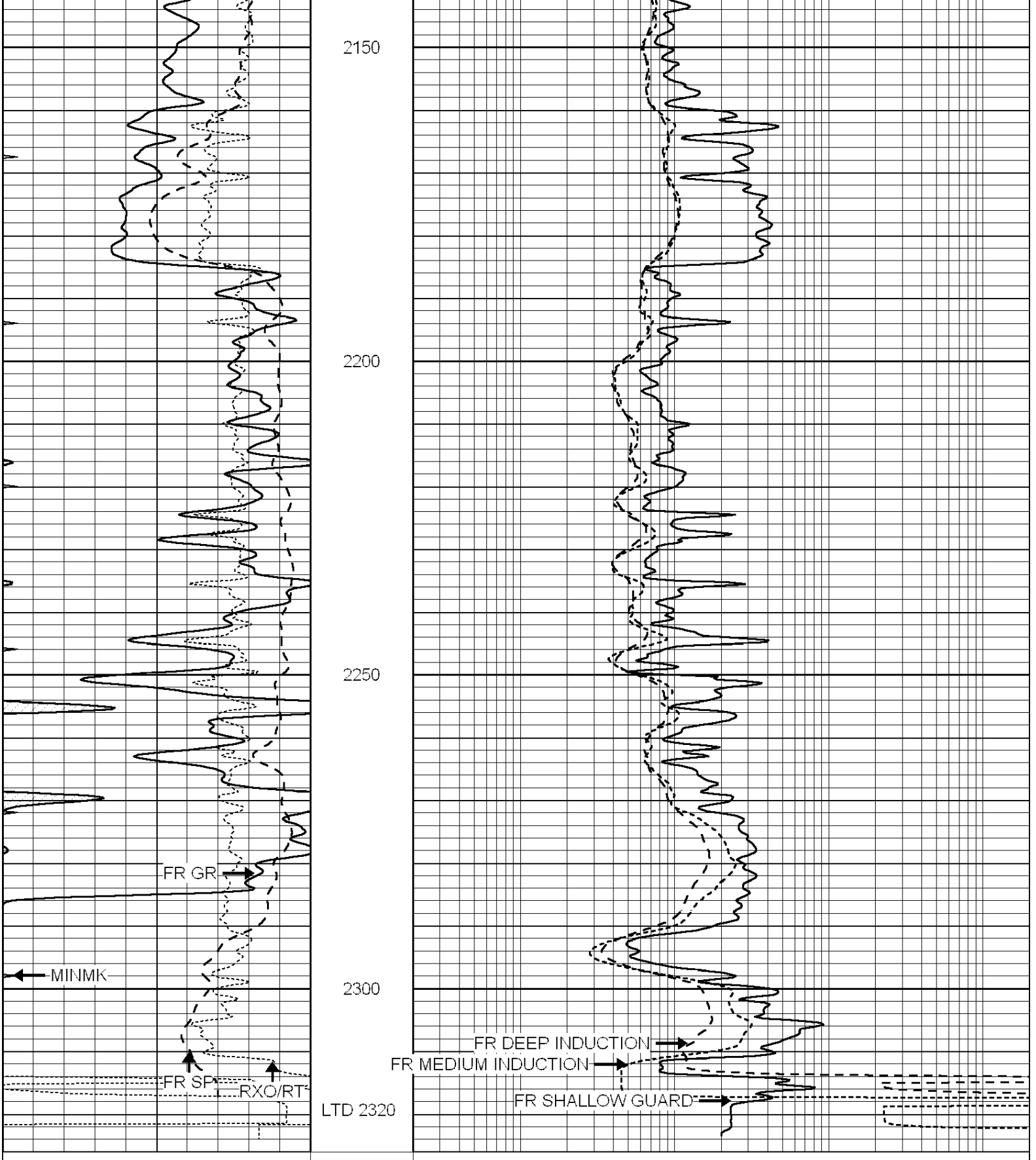
2000
2050
2100

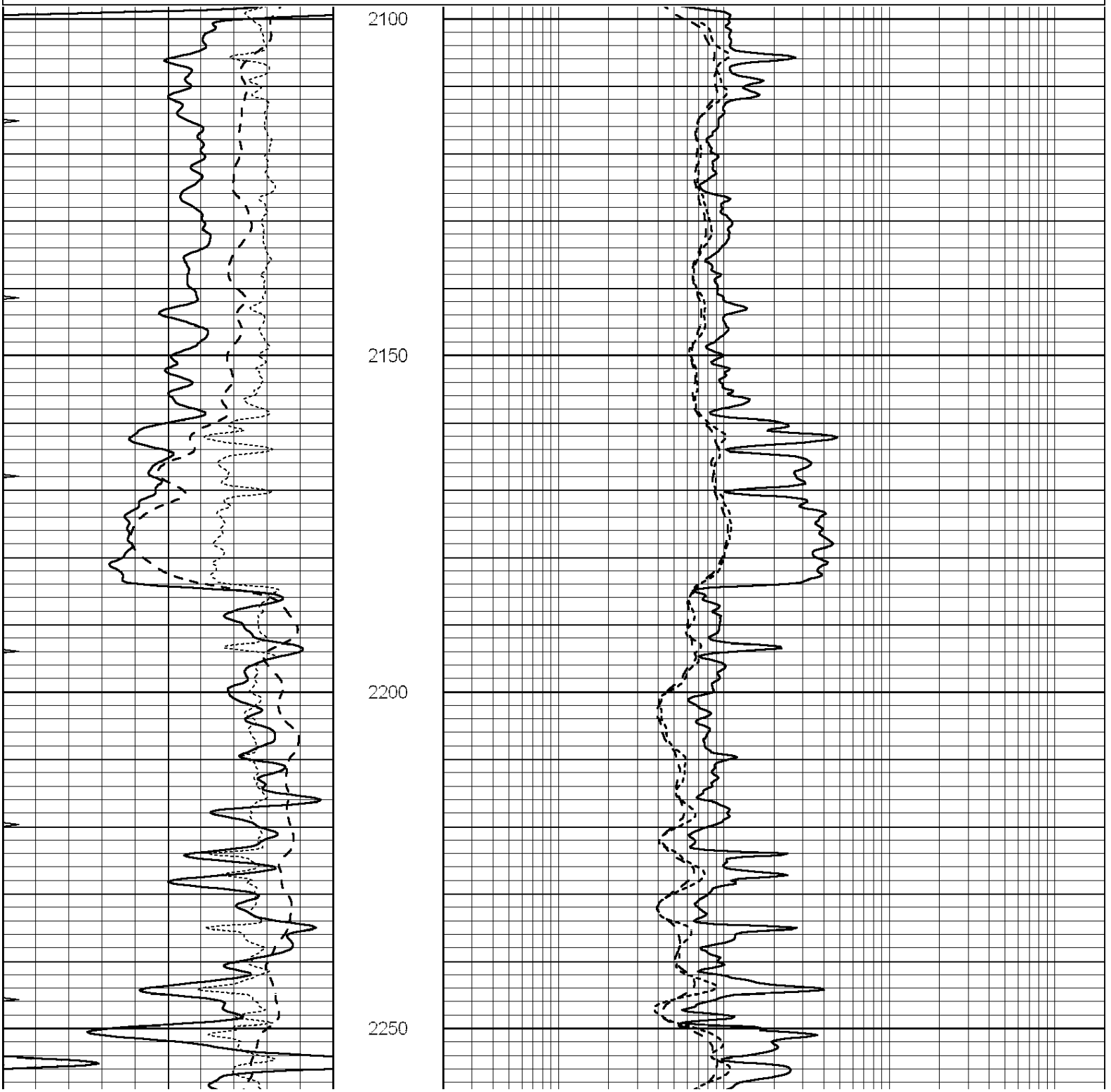

2150
2200
2250
2300
FR GR
MINMK
FR SP
RXO/RT
LTD 2320
FR DEEP INDUCTION
FR MEDIUM INDUCTION
FR SHALLOW GUARD
0 GAMMA RAY (GAPI) 150
-100 SP (mV) 100
-250 Rxo/Rt 50
0 MINMK 20
0.2 SHALLOW GUARD (Ohm-m) 2000
0.2 DEEP INDUCTION (Ohm-m) 2000
0.2 MEDIUM INDUCTION (Ohm-m) 2000

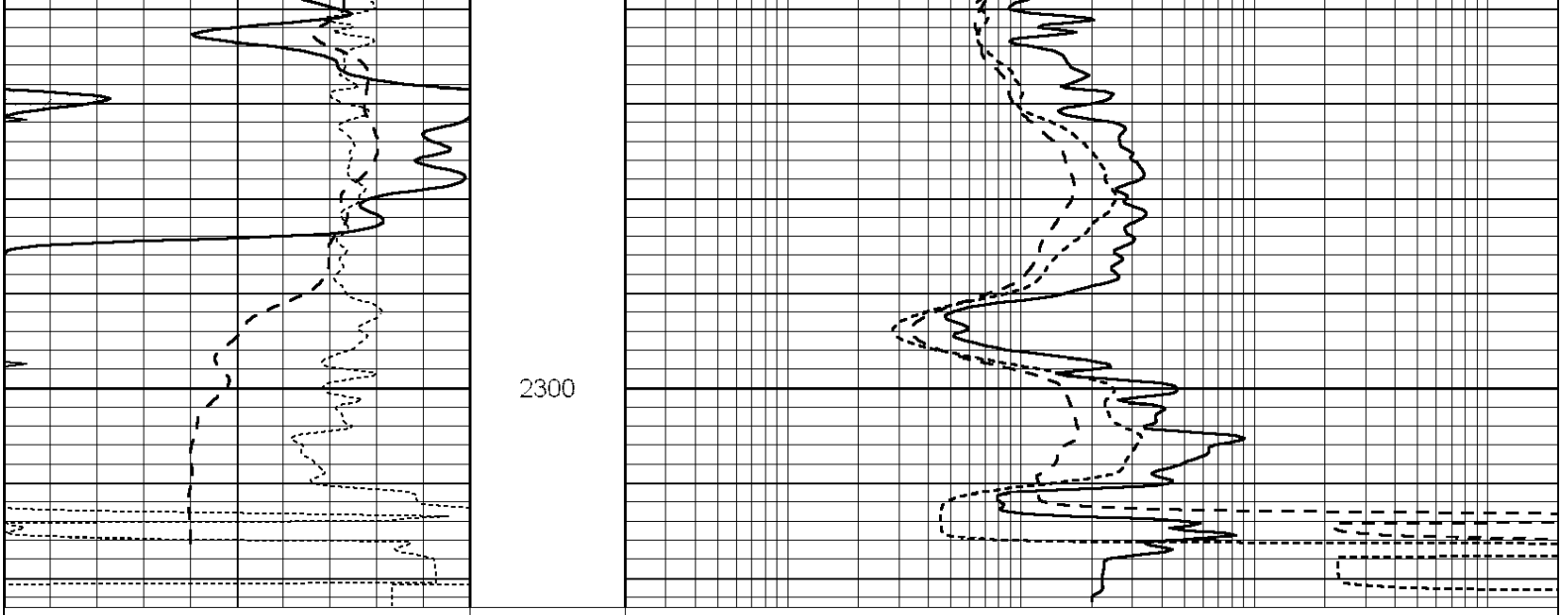
REPEAT SECTION

Database File:	3066pe.db
Dataset Pathname:	pass2.12
Presentation Format:	_dil
Dataset Creation:	Tue Dec 04 02:42:59 2018 by Calc SOC 120430
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





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

Calibration Report

Database File: 1598ddn.db
Dataset Pathname: pass4
Dataset Creation: Wed Aug 30 02:13:00 2017 by Log SOC 120430

Dual Induction Calibration Report

Serial-Model:	PROBE7-DILG
Surface Cal Performed:	Wed Aug 30 00:06:33 2017
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	620.000	0.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	675.000	-44.000
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: 002 Model: PRB

Master Calibration — Performed Mon Aug 21 11:27:42 2017

	Background	Magnesium	Aluminum	Sandstone	
Window 1	837.1	10632.5	2945.1	12110.1	cps
Window 2	772.0	9117.4	2570.1	10197.3	cps
Window 3	631.7	4669.0	1481.9	5042.9	cps
Window 4	187.0	187.5	185.9	189.9	cps
Long Space	0.0	8345.4	1798.1	9425.3	cps
Short Space	1.1	1927.9	1285.9	2050.2	cps
Rho		1.7100	2.5960	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle	: 45.2	Rib Slope	: 1.008	Density/Spine Ratio	: 0.558
Spine Angle	: 75.2	Spine Slope	: 3.790	Spine Intercept	: -19.6

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 May 31 00:09:32 2017	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.2800	GAPI/cps

MICRO LOG

Company	CROSS BAR ENERGY, LLC.
Well	BURKETT "E" #51
Field	BURKETT
County	GREENWOOD
State	KANSAS

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD State KANSAS
Location: API # : 15-073-24242-0000
1525' FSL & 4200' FEL
SE - SE - NW - SW
SEC 23 TWP 23S RGE 10E

Other Services
CDL/CNL/PE
DIL/SONIC

Permanent Datum GROUND LEVEL Elevation 1291
Log Measured From GROUND LEVEL
Drilling Measured From GROUND LEVEL

Elevation
K.B. 1297
D.F. 1295
G.L. 2191

Date	12/4/18	
Run Number	TWO	
Depth Driller	2318	
Depth Logger	2320	
Bottom Logged Interval	2304	
Top Log Interval	800	
Casing Driller	8 5/8"@209'	
Casing Logger	209	
Bit Size	7 7/8"	
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 900 PPM
Density / Viscosity	9.3/34	
pH / Fluid Loss	10.0/9.8	
Source of Sample	FLOWLINE	
Rm @ Meas. Temp	1.60@50F	
Rmf @ Meas. Temp	1.20@50F	
Rmc @ Meas. Temp	1.92@50F	
Source of Rmf / Rmc	MEASUREMENT	
Rm @ BHT	.792@101F	
Time Circulation Stopped	4 HOURS	
Time Logger on Bottom	2:45 A.M.	
Maximum Recorded Temperature	101F	
Equipment Number	922339	
Location	HAYS, KANSAS	
Recorded By	JEFF LUEBBERS	
Witnessed By	VERN SCHRAG	ALBERT BRENSING

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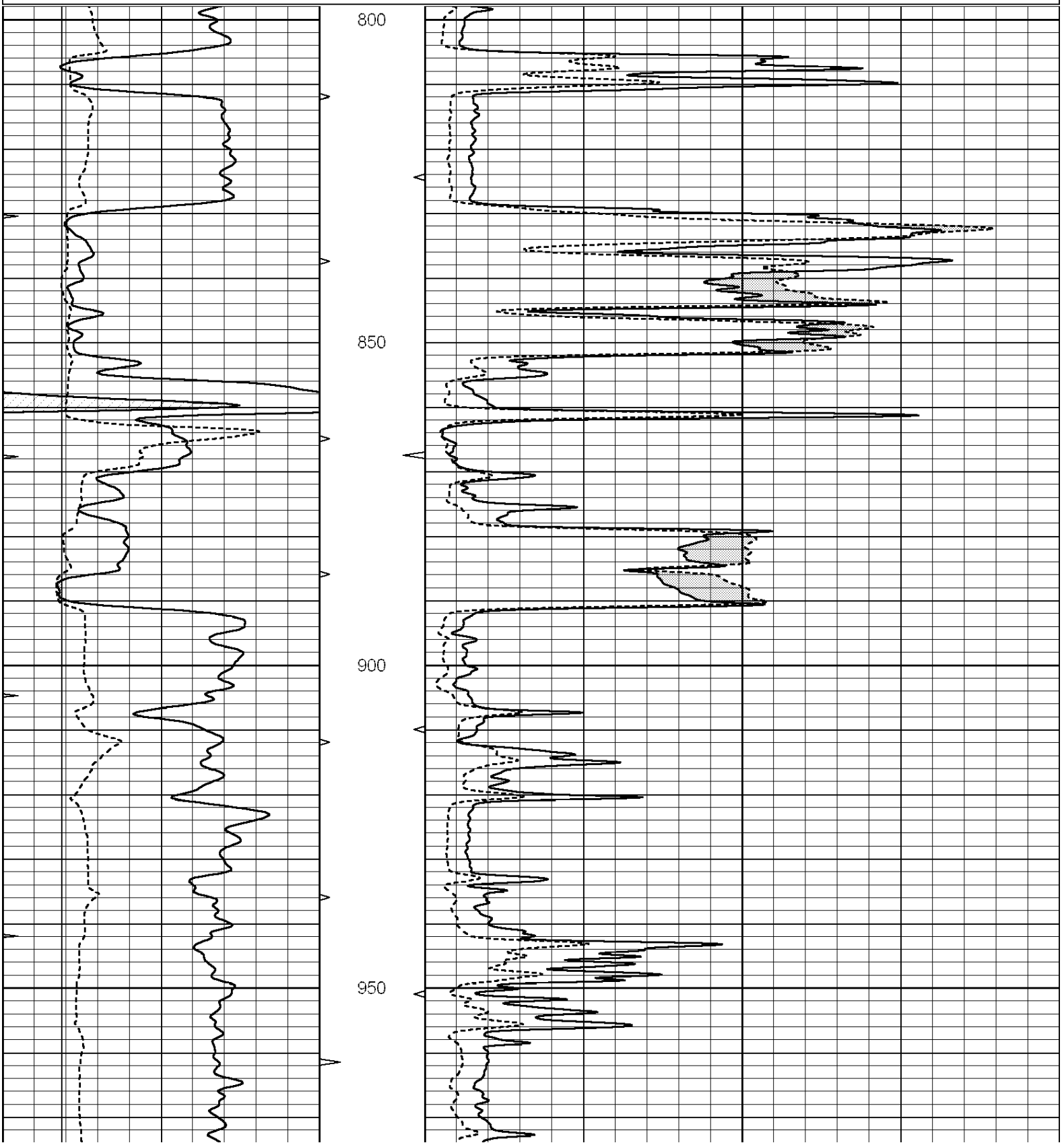
Comments

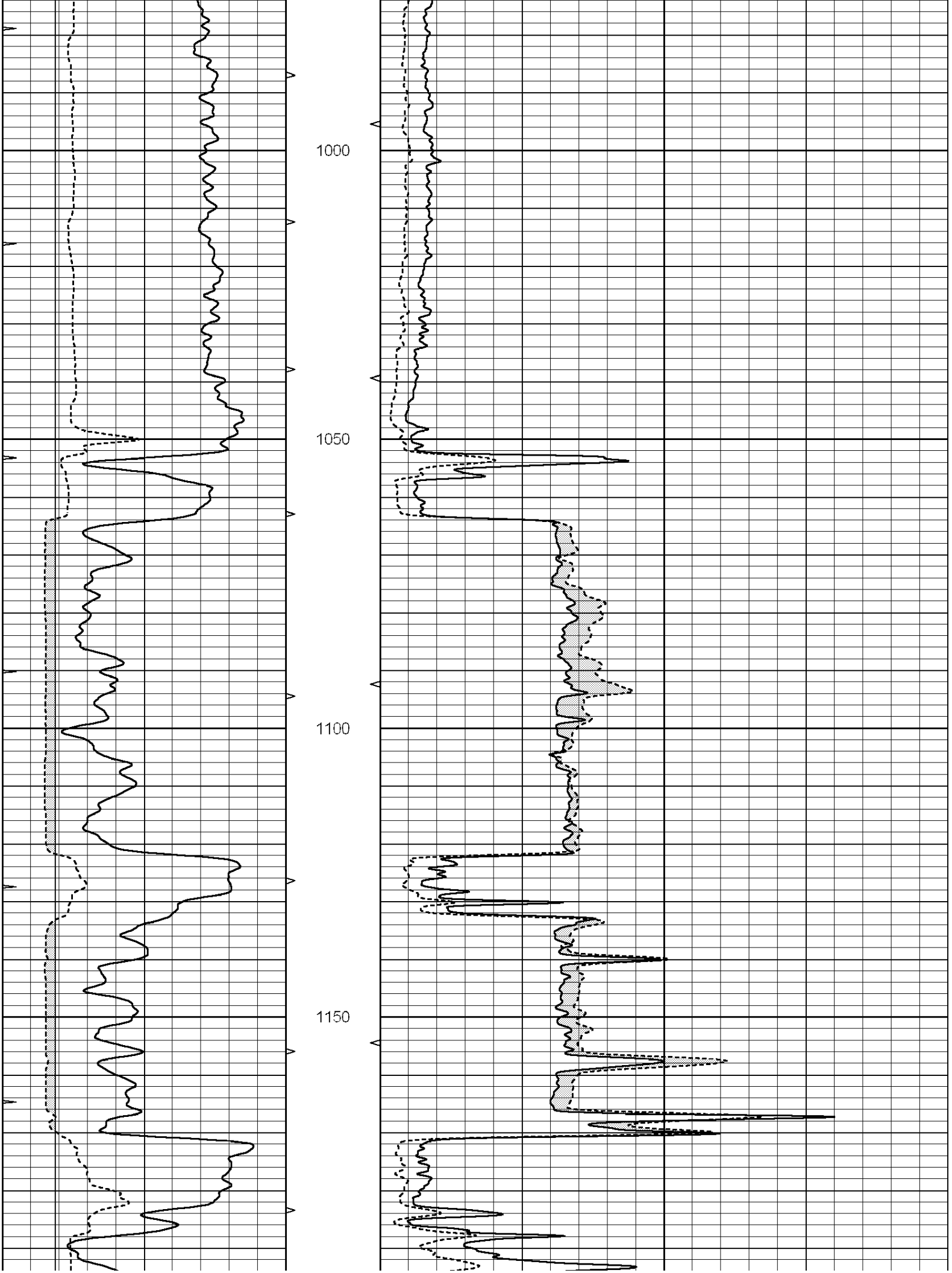
THANK YOU FOR USING ELI WIRELINE HAYS, KANSAS (785) 628-6395
DIRECTIONS
EUREKA, KS., (HWY 54 & MAIN ST.) N. TO A THROUGH ST., 1/2E. TO "CR P", 10N. TO "Y" INTERSECTION, 1E., 4N., 3/4 W. INTO GATE

MAIN SECTION

Database File:	3066pe.db
Dataset Pathname:	pass6.4
Presentation Format:	micro
Dataset Creation:	Tue Dec 04 03:56:59 2018 by Calc SOC 120430
Charted by:	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	ABHV	0	MEL1.5 (Ohm-m)	40
6	CALIPER (in)	16	10 (ft3) 0	0	MEL 20 (Ohm-m)	40
0	MINMK	20	TBHV			
			0 (ft3) 10			

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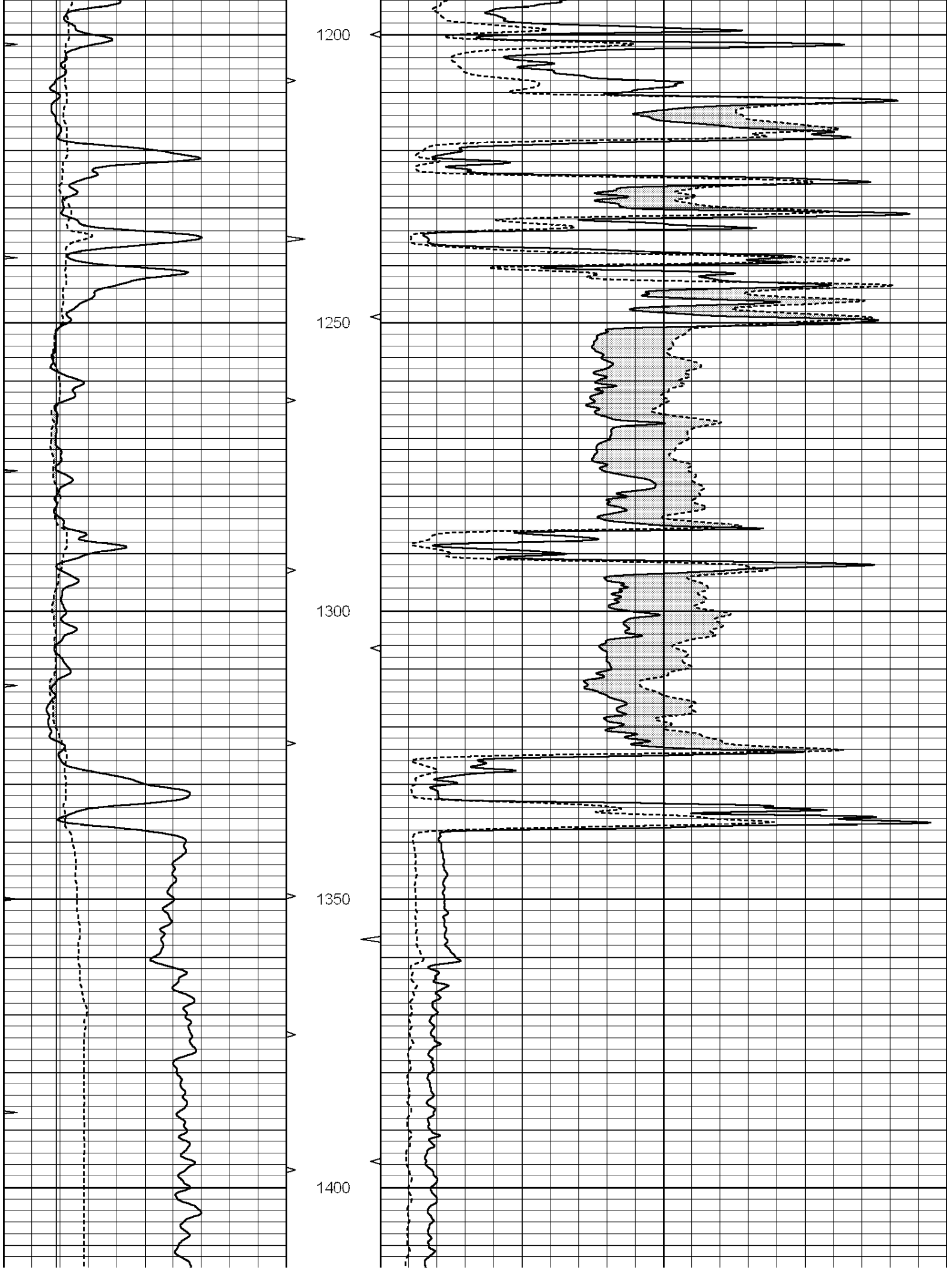
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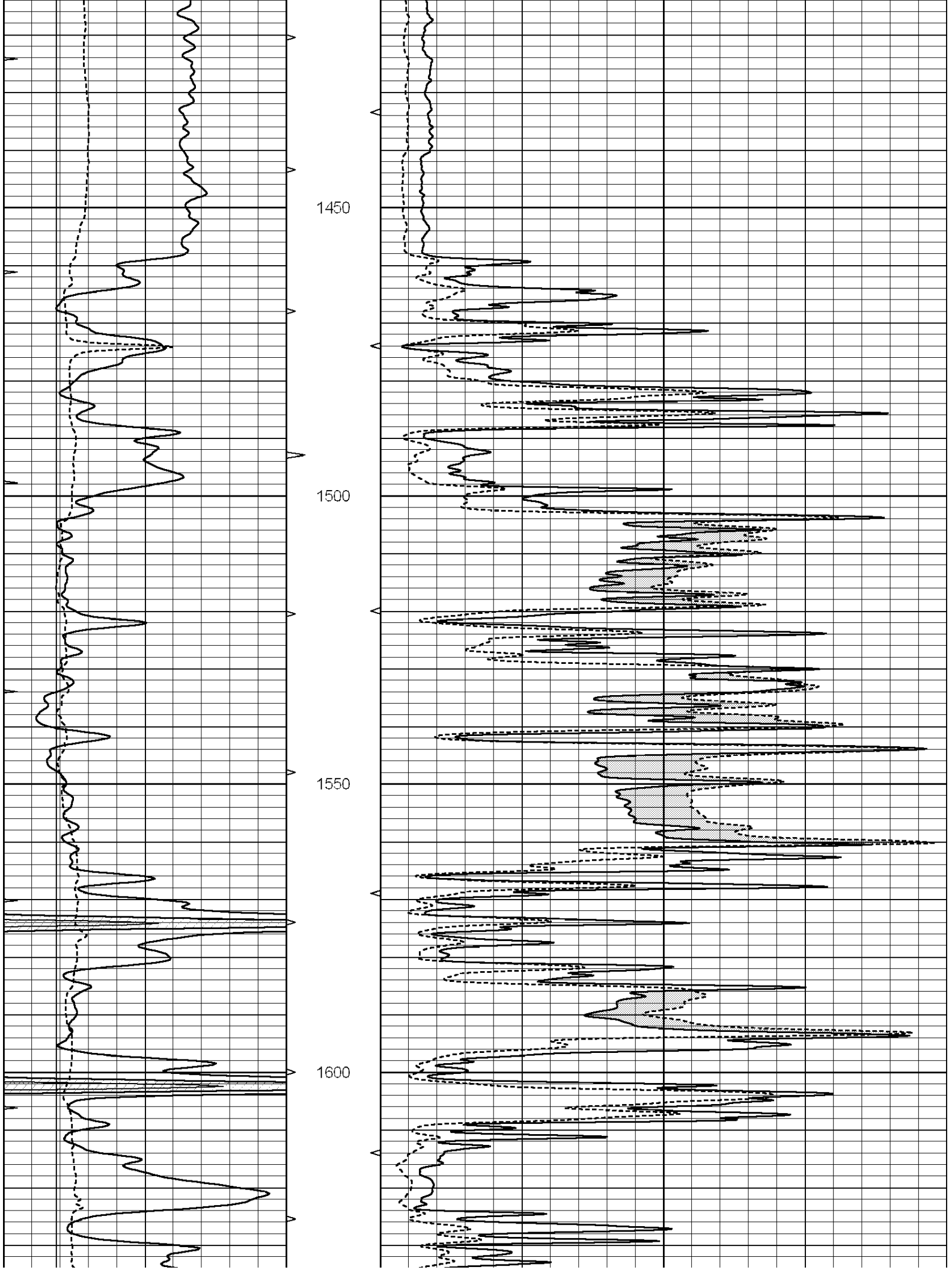
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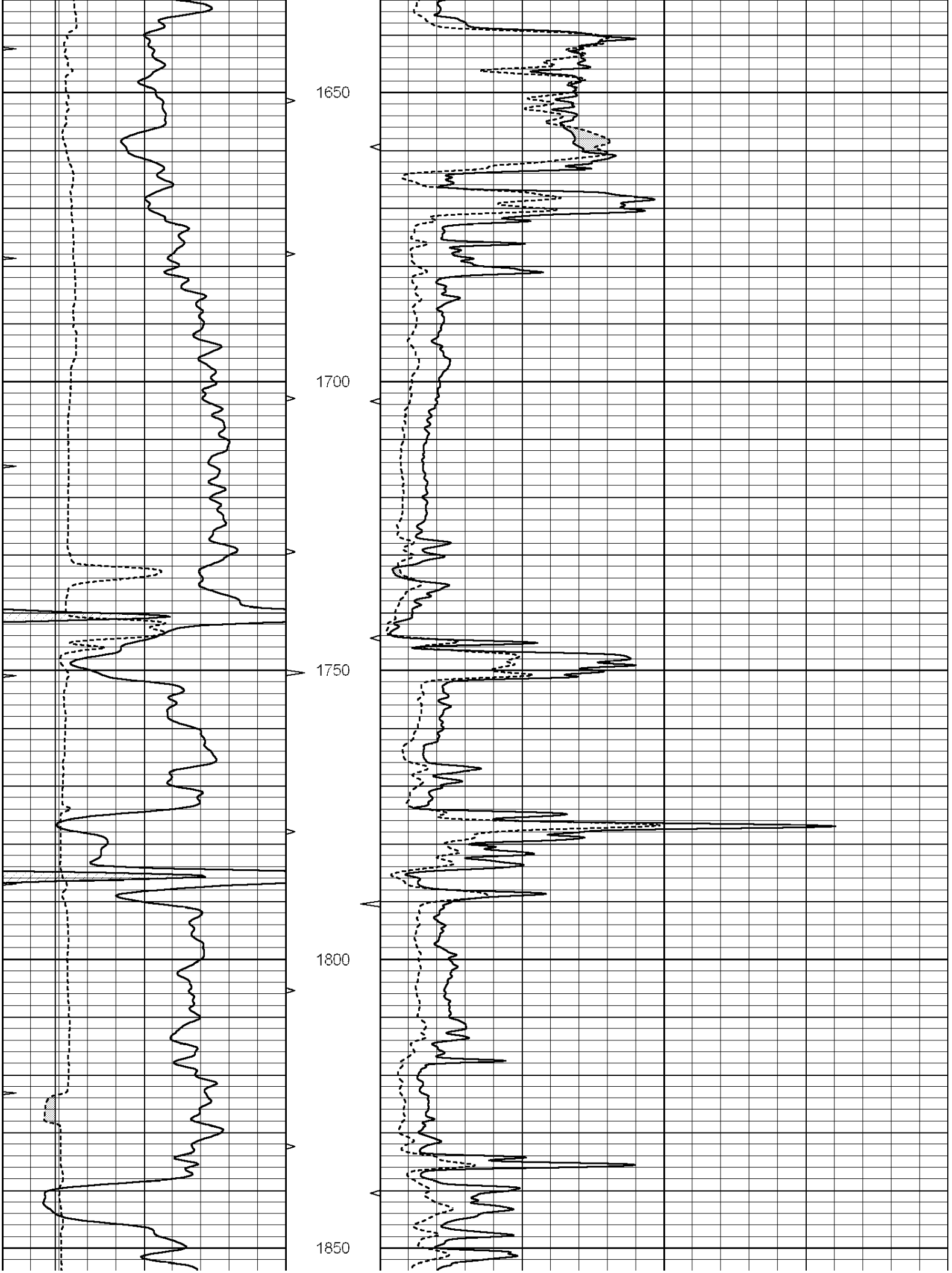
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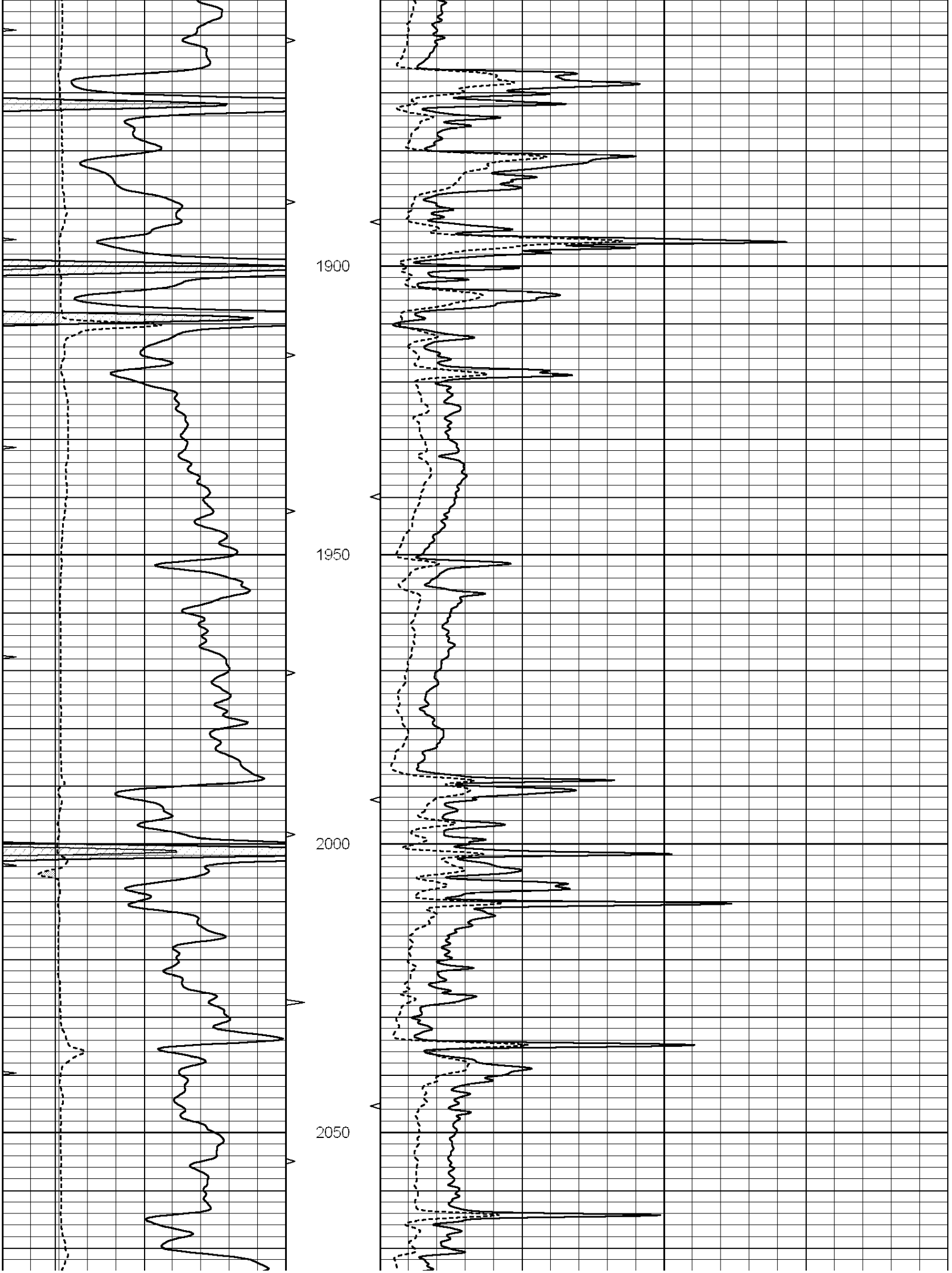
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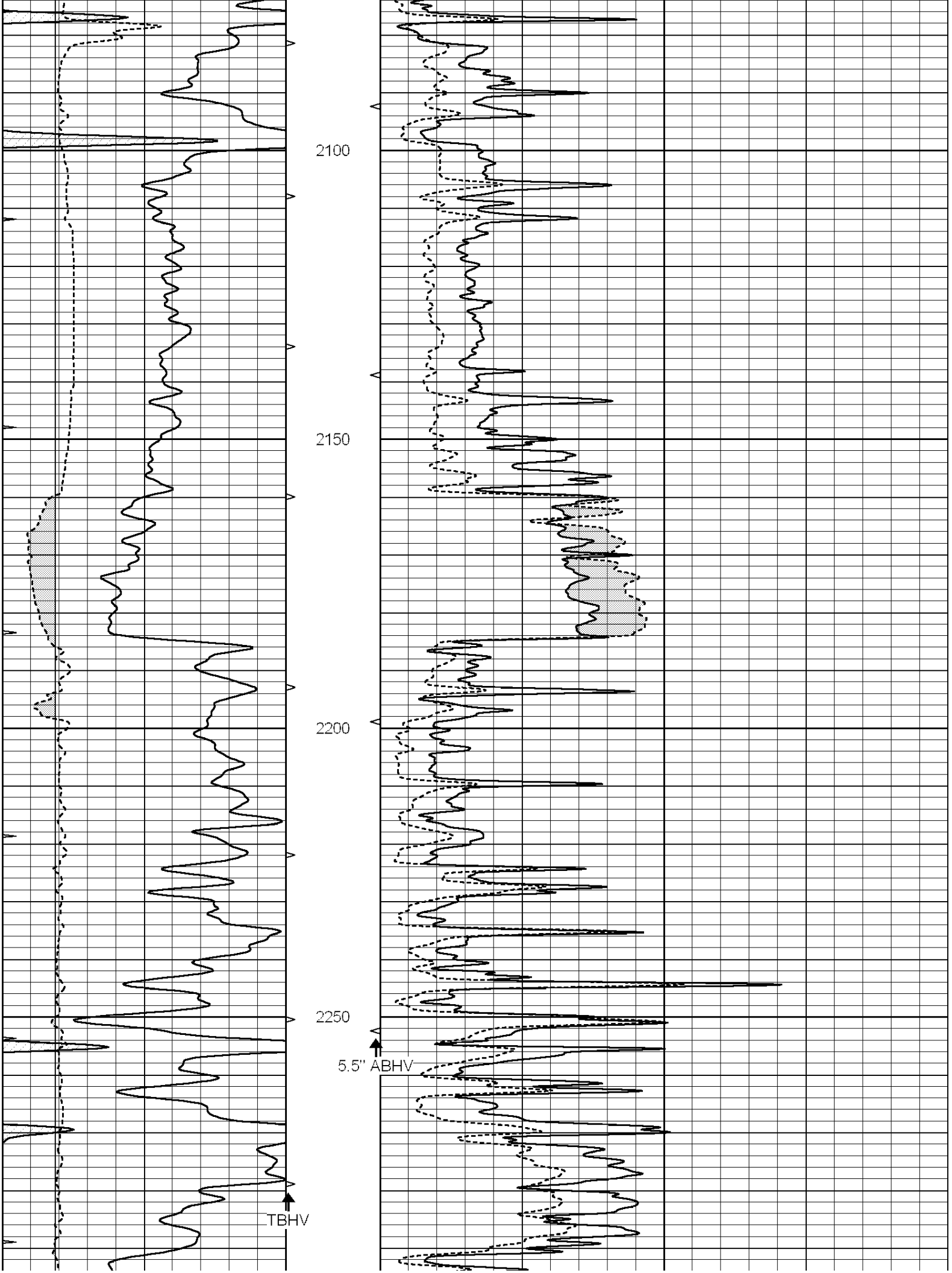
1950
2000
2050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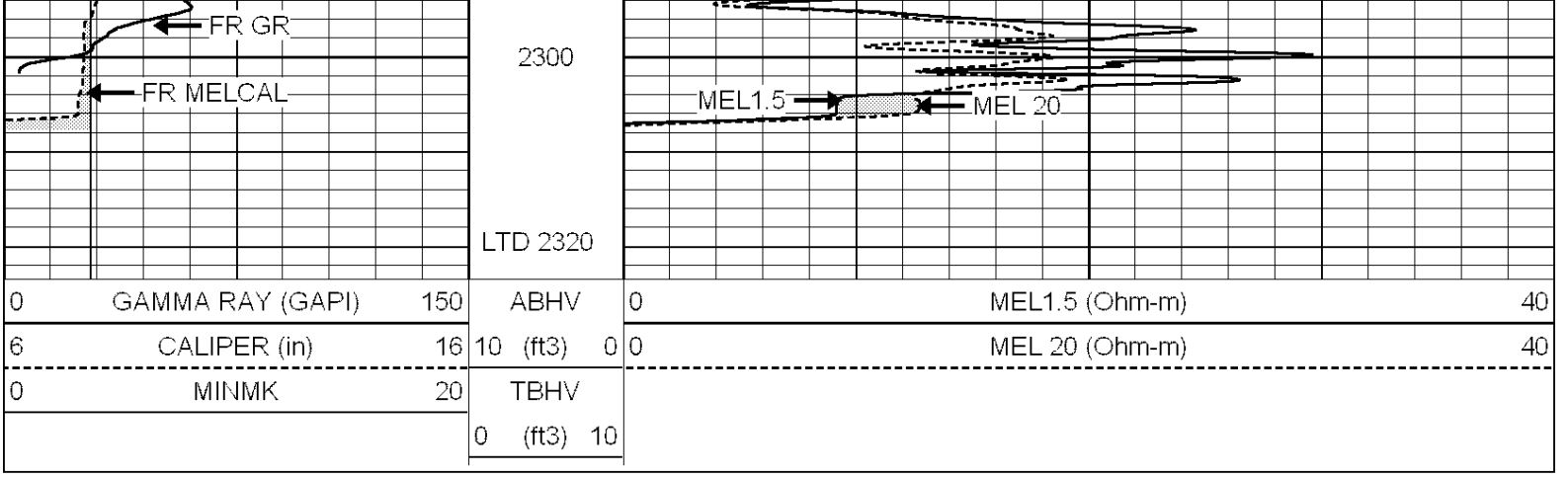
2150
2200
2250
5.5" ABHV
TBHV

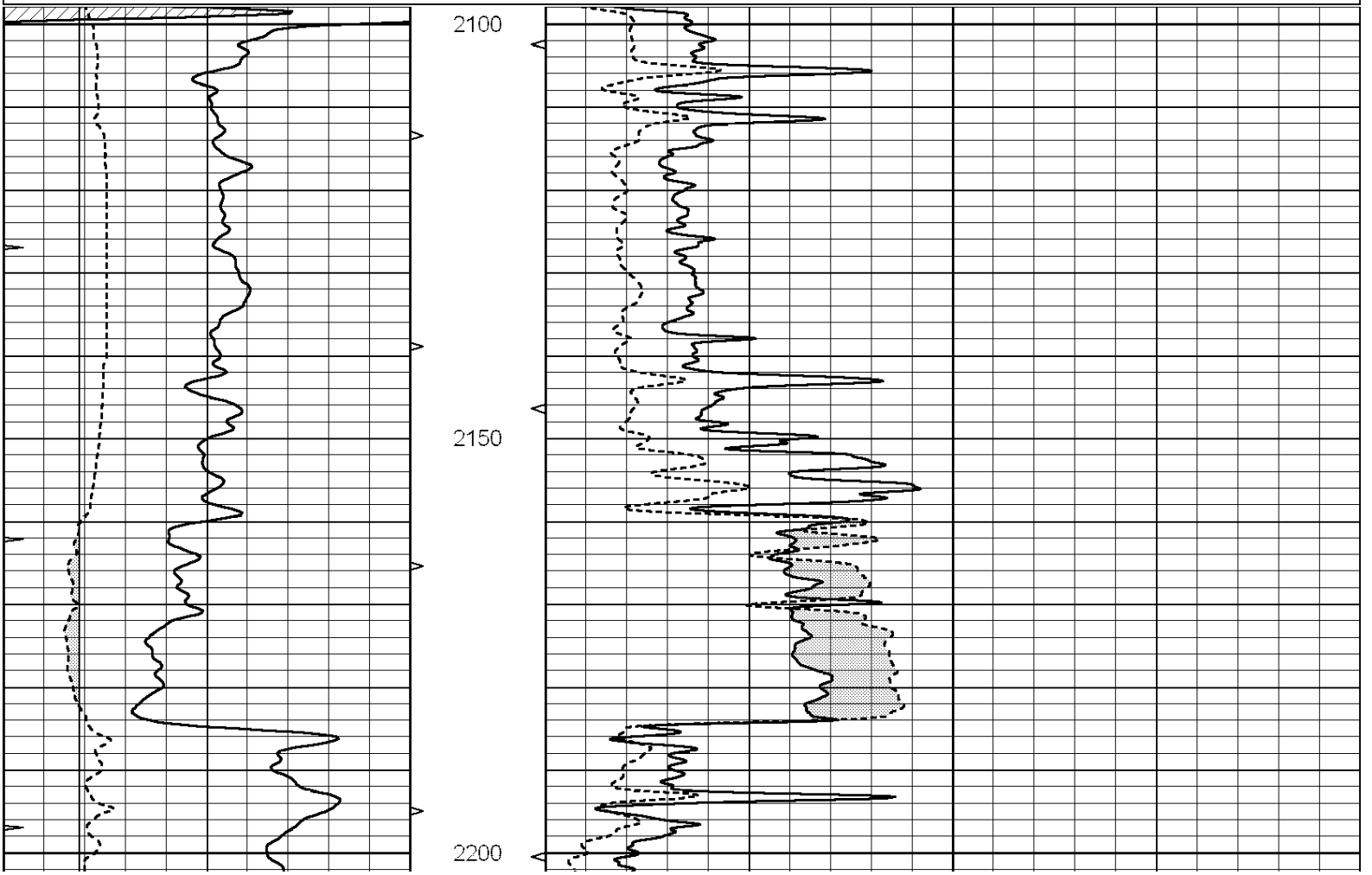


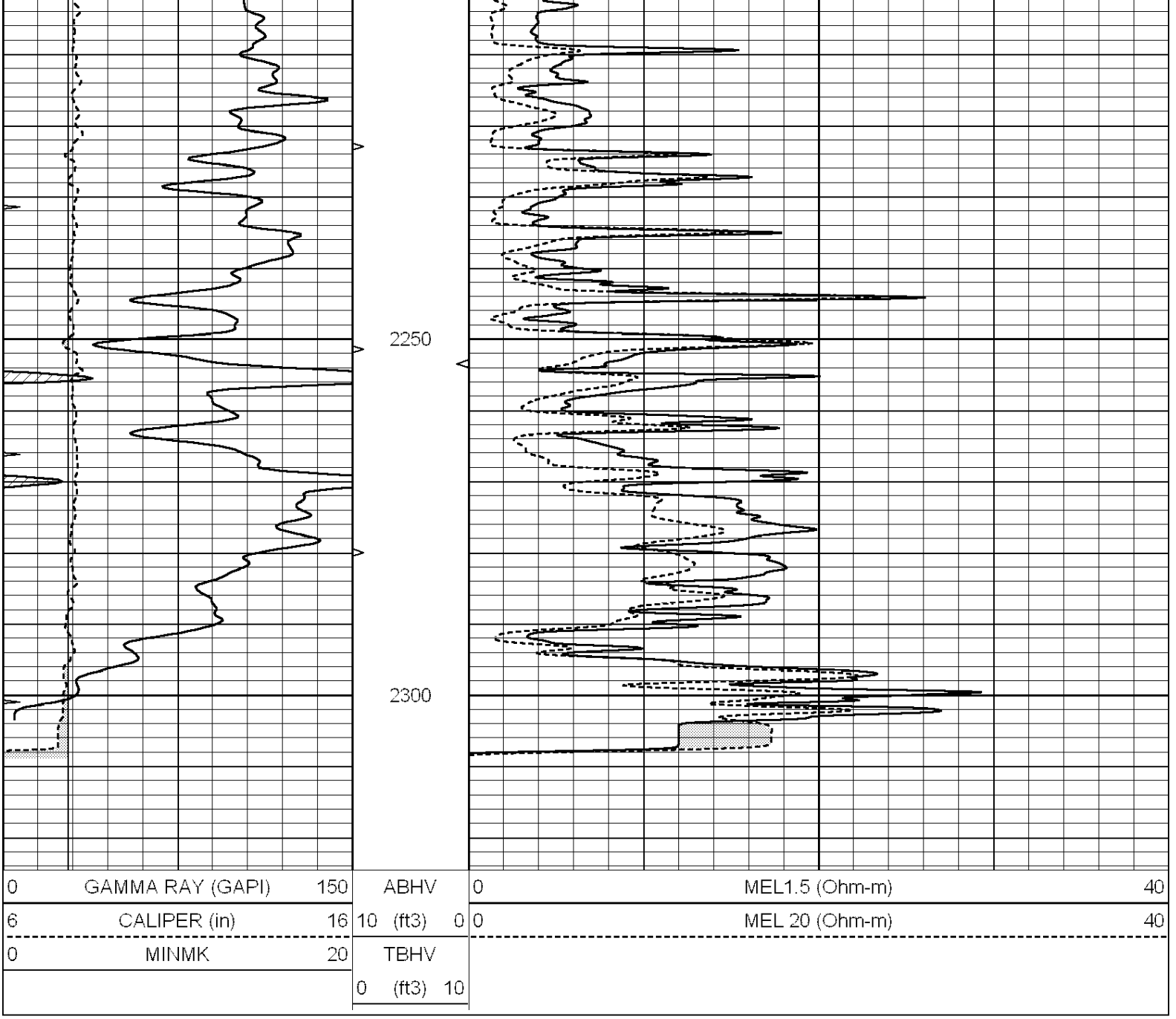
0	GAMMA RAY (GAPI) 150	ABHV		0	MEL1.5 (Ohm-m) 40
6	CALIPER (in) 16	10 (ft3) 0		0	MEL 20 (Ohm-m) 40
0	MINMK 20	TBHV			
		0 (ft3) 10			

REPEAT SECTION

Database File: 3066pe.db
Dataset Pathname: pass5.7
Presentation Format: micro
Dataset Creation: Tue Dec 04 04:12:18 2018 by Calc SOC 120430
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI) 150	ABHV		0	MEL1.5 (Ohm-m) 40
6	CALIPER (in) 16	10 (ft3) 0		0	MEL 20 (Ohm-m) 40
0	MINMK 20	TBHV			
		0 (ft3) 10			





Calibration Report

Database File: 3066pe.db
Dataset Pathname: pass6.4
Dataset Creation: Tue Dec 04 03:56:59 2018 by Calc SOC 120430

MICRO Calibration Report

Serial Number:	070911	
Tool Model:	ProbeN	
Performed:	Sat Nov 24 18:27:47 2018	
Caliper Calibration:	Gain=4.650	Offset=1.050
	Low Cal	High Cal
References	7.700	20.000
Readings	1.430	4.075
1.5" Calibration:	Gain=20.000	Offset=-2.000
	Low Cal	High Cal
References	0.000	20.000
Readings	0.001	1.240

2" Calibration:	Gain=22.000	Offset=-1.500
	Low Cal	High Cal
References	0.000	20.000
Readings	0.001	1.076

Gamma Ray Calibration Report

Serial Number:	110959	
Tool Model:	OPEN_GR	
Performed:	Wed Oct 17 13:39:46 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.2300	GAPI/cps

SONIC LOG

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD State KANSAS

Location: API # : 15-073-24242-0000
1525' FSL & 4200' FEL
SE - SE - NW - SW
SEC 23 TWP 23S RGE 10E

Permanent Datum GROUND LEVEL Elevation 1291
Log Measured From GROUND LEVEL
Drilling Measured From GROUND LEVEL

Other Services
CDL/CNL/PE
DIL/MEL

Elevation
K.B. 1297
D.F. 1295
G.L. 2191

Date	12/4/18		
Run Number	TWO		
Depth Driller	2318		
Depth Logger	2320		
Bottom Logged Interval	2312		
Top Log Interval	200		
Casing Driller	8 5/8"@209'		
Casing Logger	209		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 900 PPM	
Density / Viscosity	9.3/34		
pH / Fluid Loss	10.0/9.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.60@50F		
Rmf @ Meas. Temp	1.20@50F		
Rmc @ Meas. Temp	1.92@50F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	.792@101F		
Time Circulation Stopped	4 HOURS		
Time Logger on Bottom	2:45 A.M.		
Maximum Recorded Temperature	101F		
Equipment Number	922339		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	VERN SCHRAG	ALBERT BRENSING	

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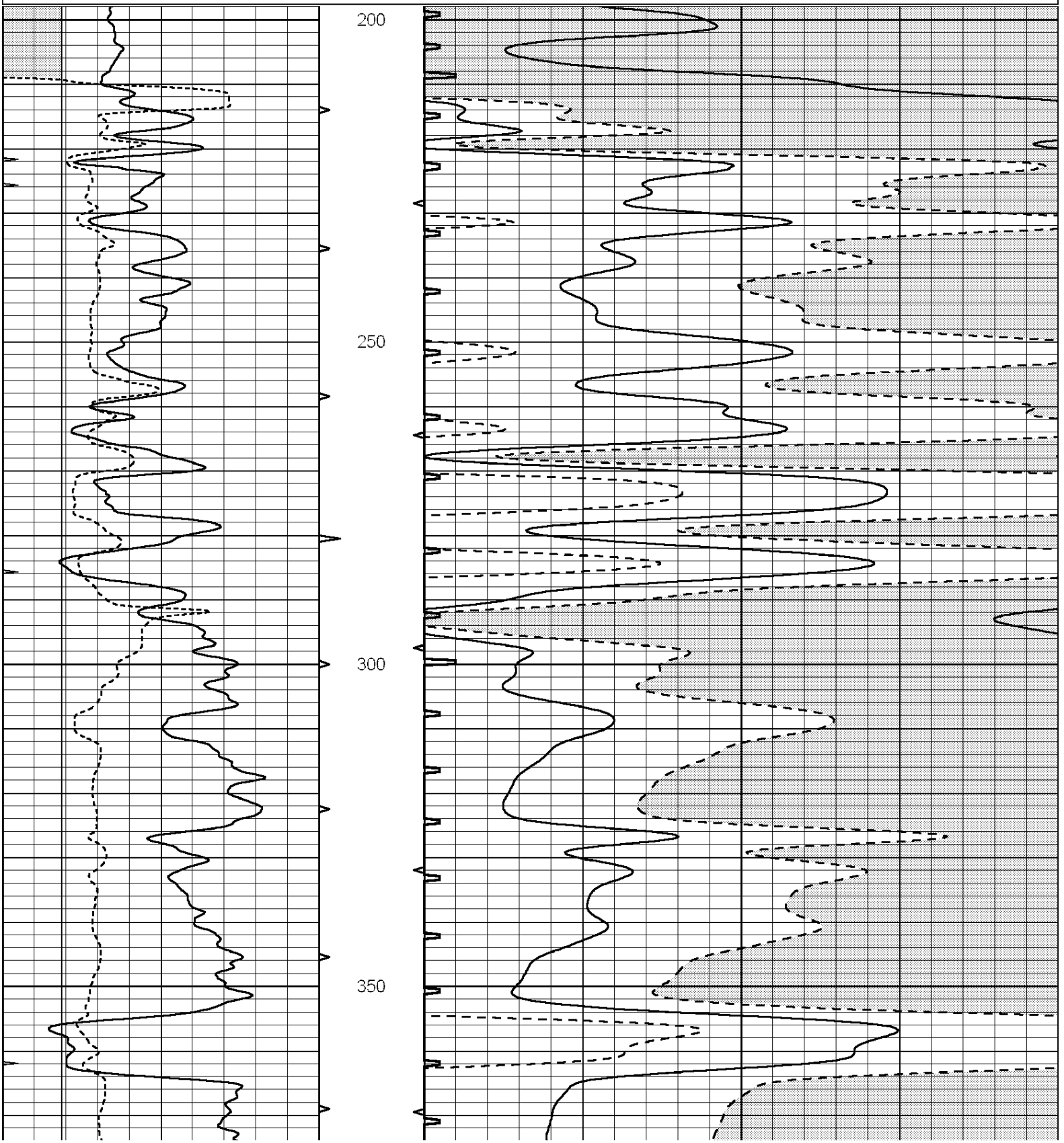
Comments

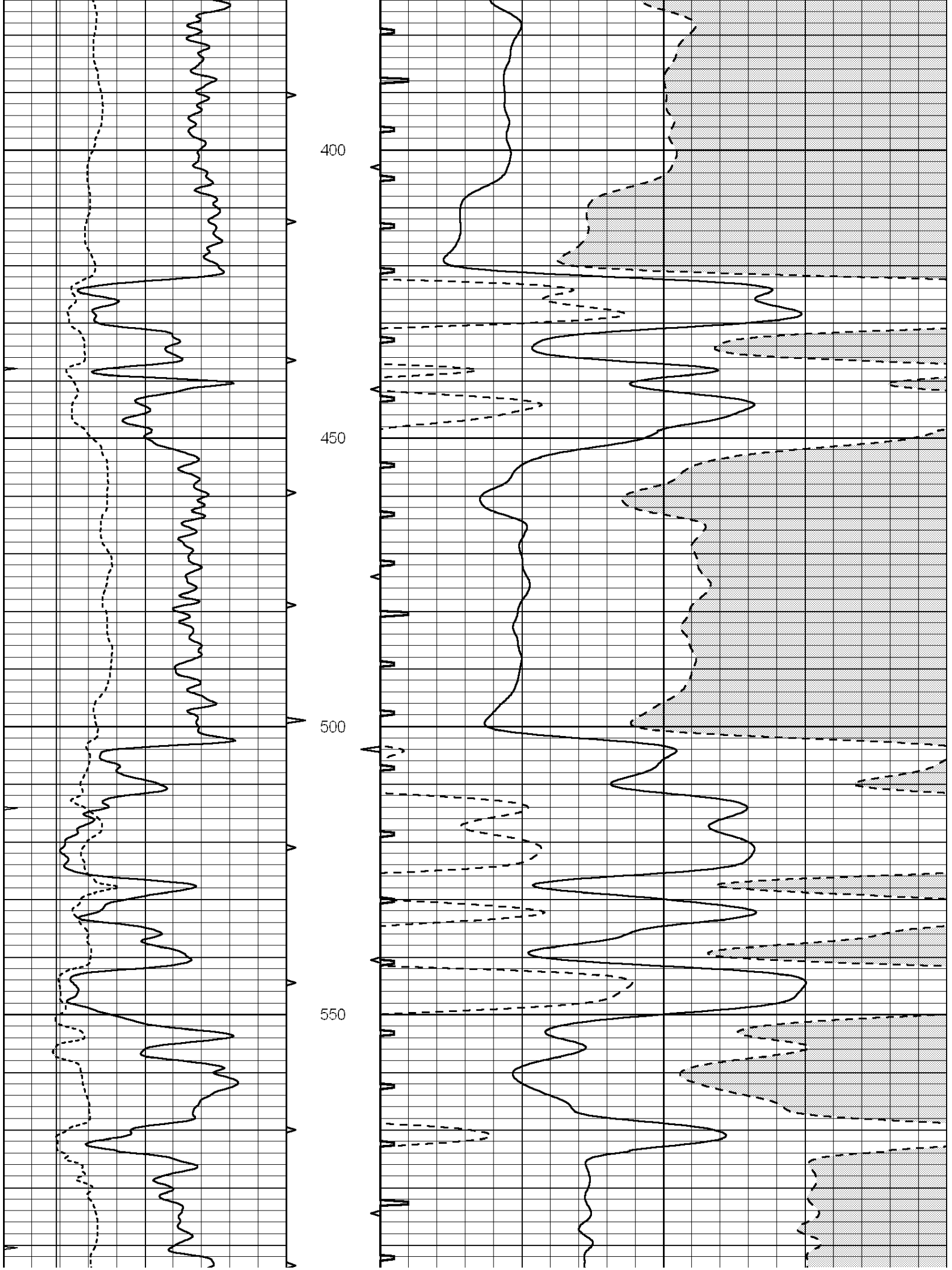
THANK YOU FOR USING ELI WIRELINE HAYS, KANSAS (785) 628-6395
DIRECTIONS
EUREKA, KS., (HWY 54 & MAIN ST.) N. TO A THROUGH ST., 1/2E. TO "CR P", 10N. TO "Y" INTERSECTION, 1E., 4N., 3/4 W. INTO GATE

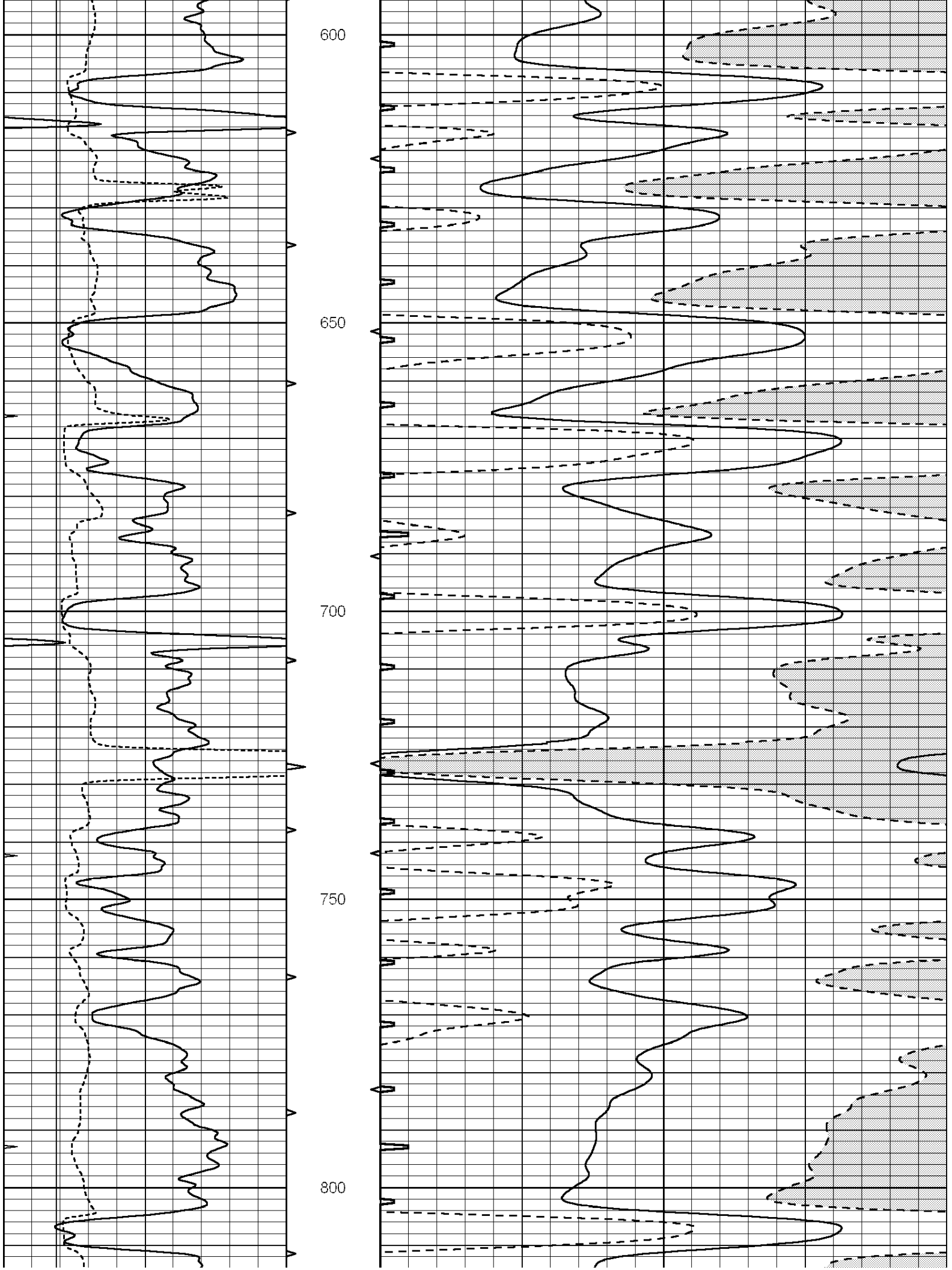
MAIN SECTION

Database File: 3066pe.db
Dataset Pathname: pass6.6
Presentation Format: slt
Dataset Creation: Tue Dec 04 04:20:48 2018
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI) 150		ABHV	140	DELTA TIME (usec/ft) 40
6	CALIPER (in) 16	10	(ft3) 0	30	SONIC POROSITY (pu) -10
0	MINMK 20		TBHV	0	ITT (msec) 20
		0	(ft3) 10		




400
450
500
550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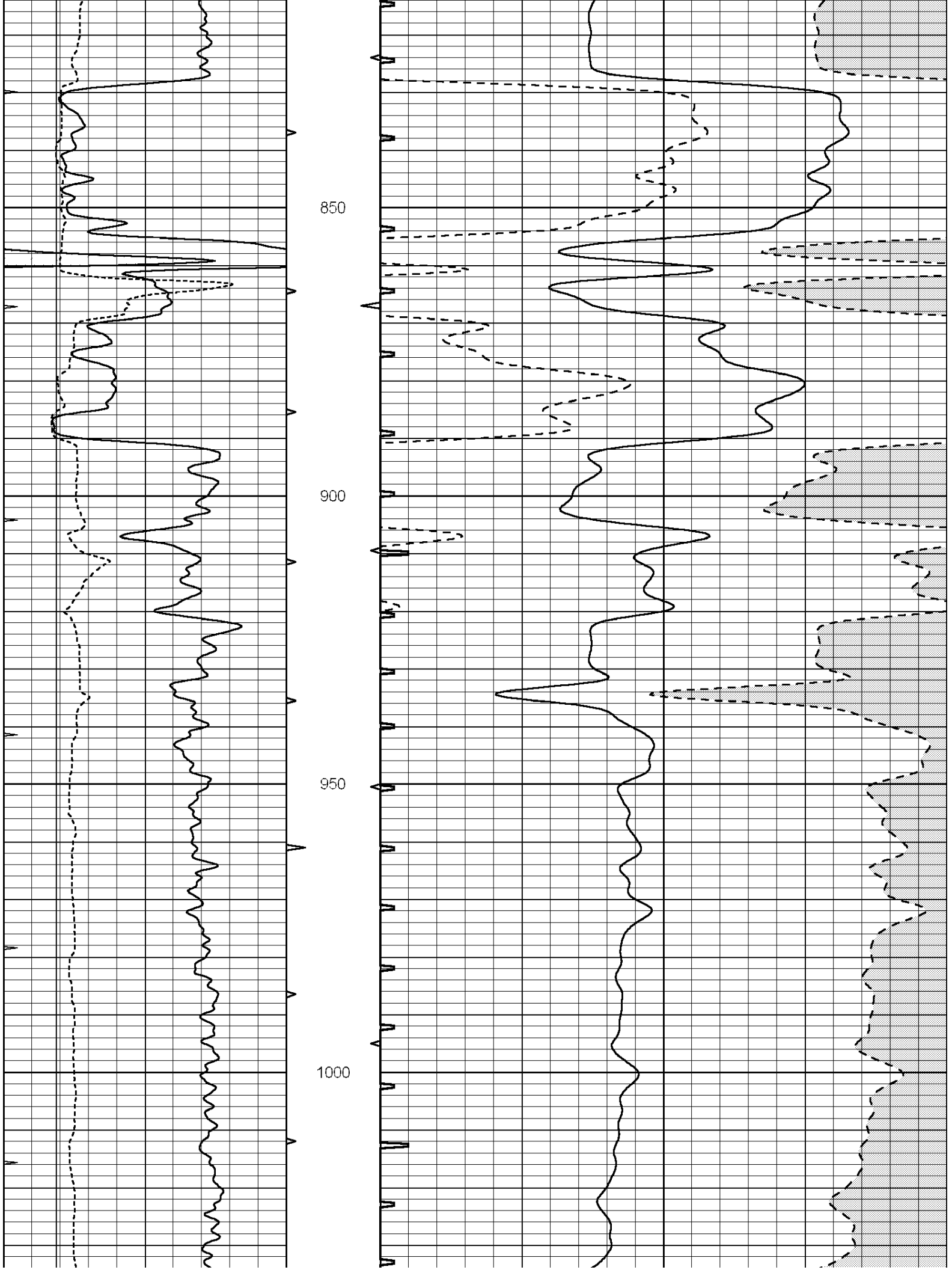
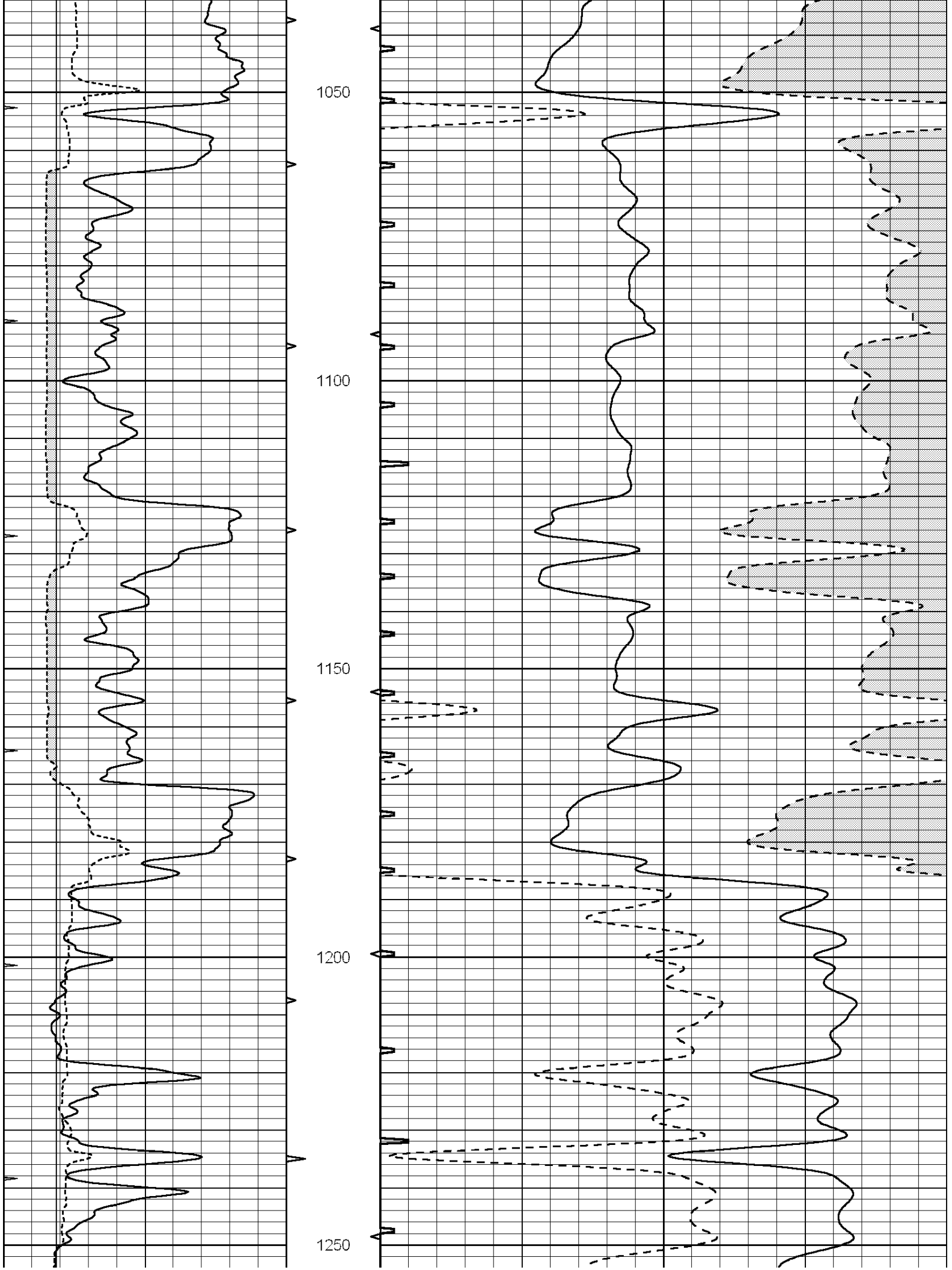
650
700
750
800


850
900
950
1000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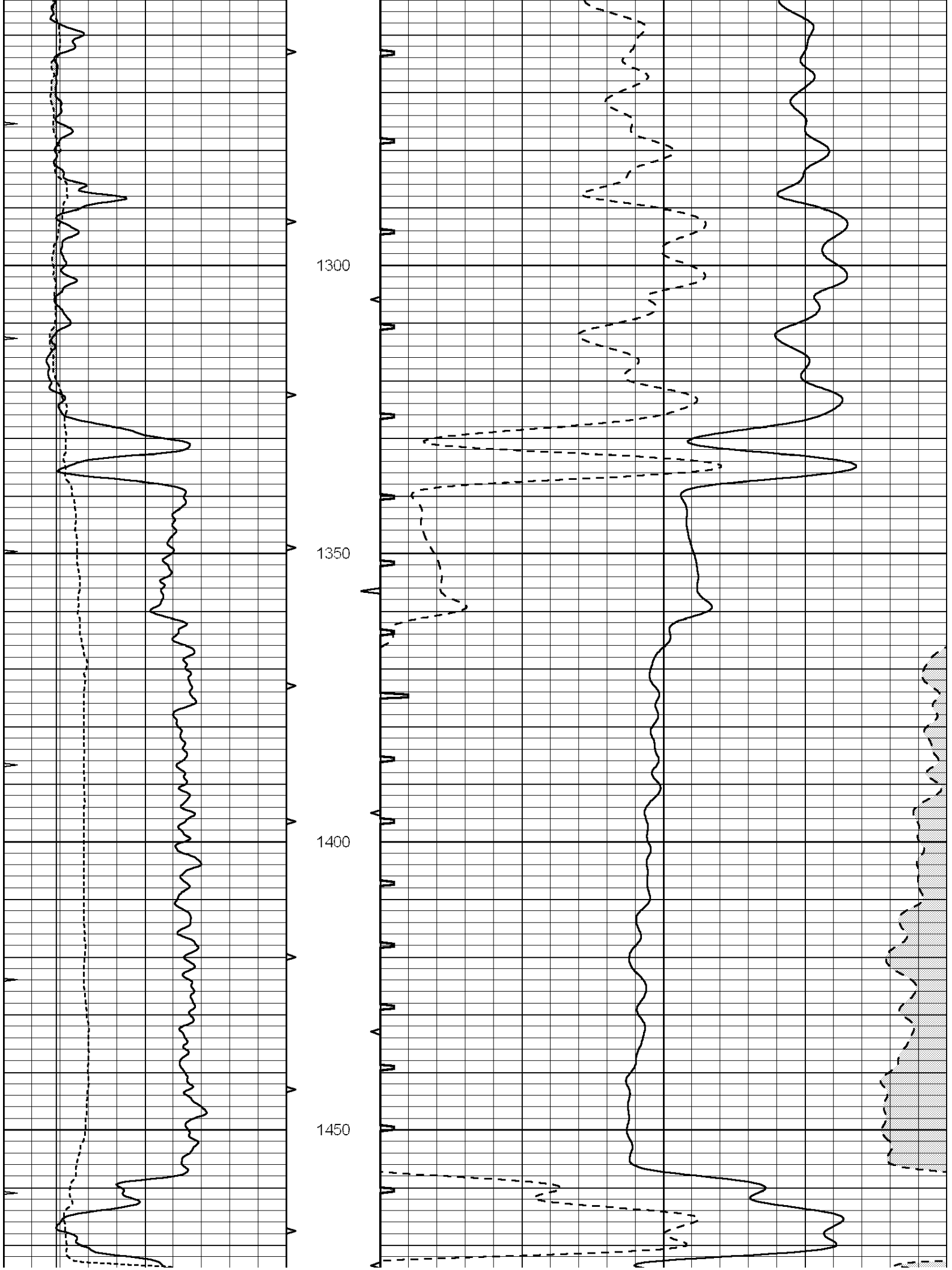
1100
1150
1200
1250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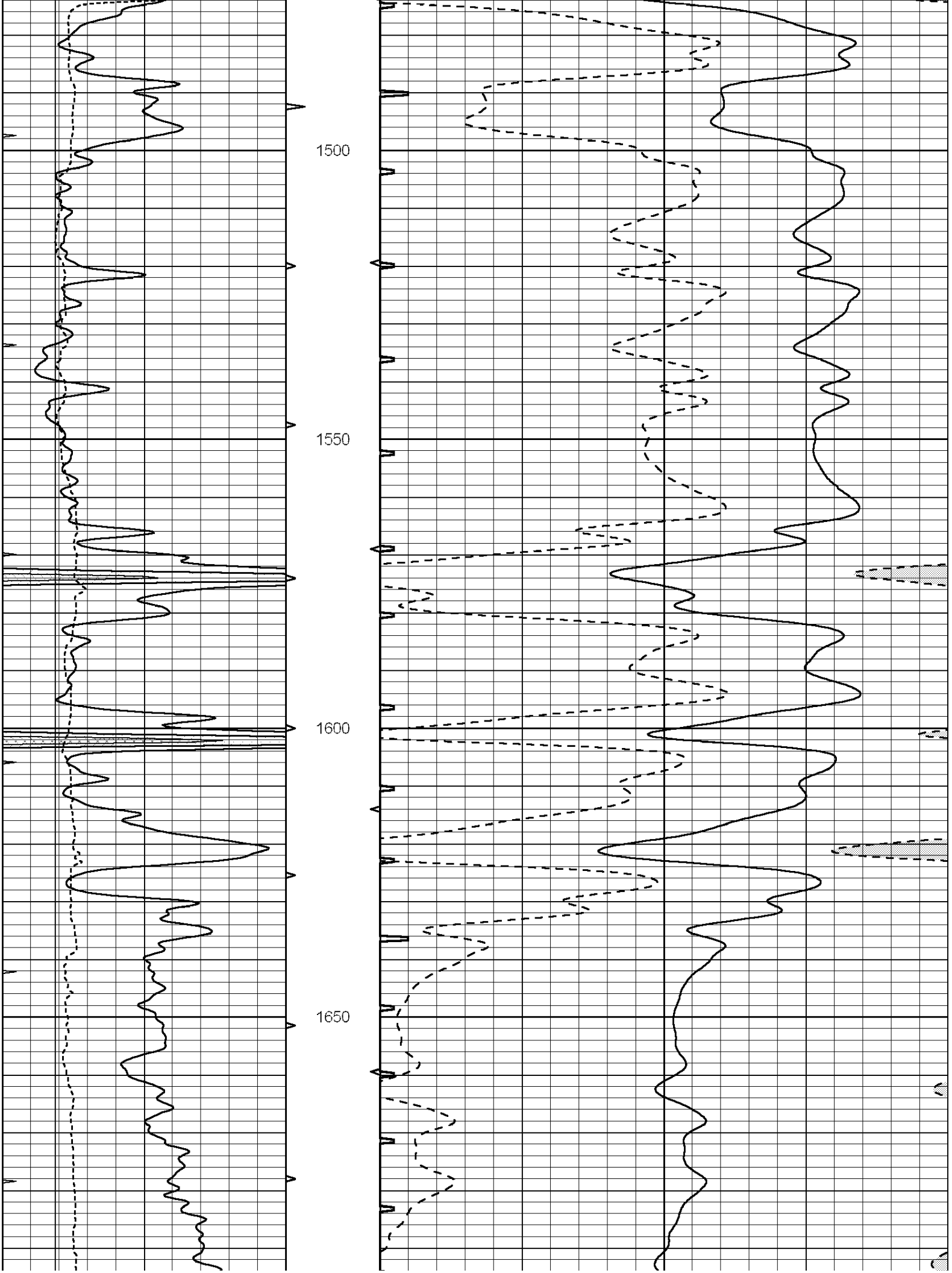
1350
1400
1450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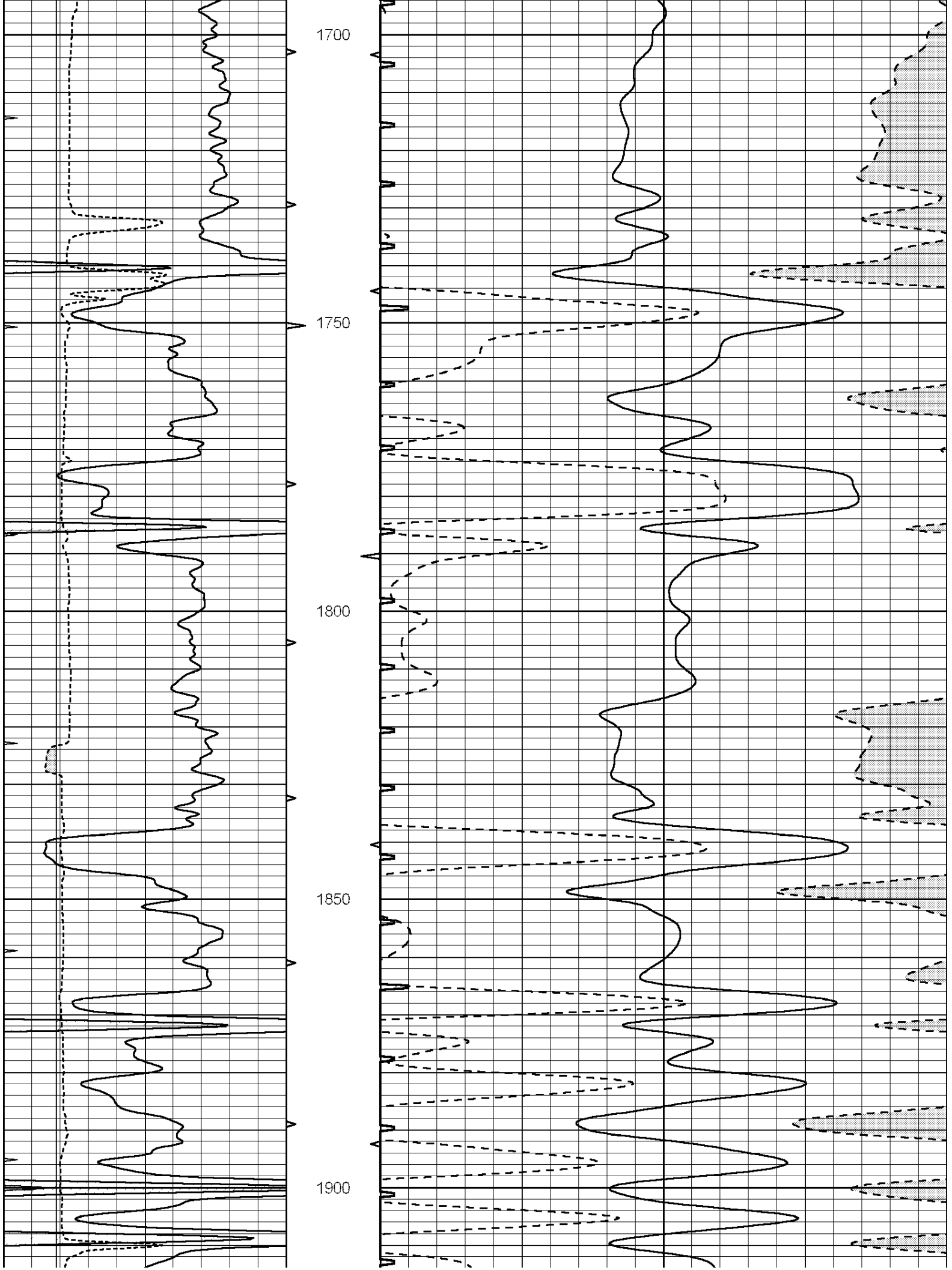
1550
1600
1650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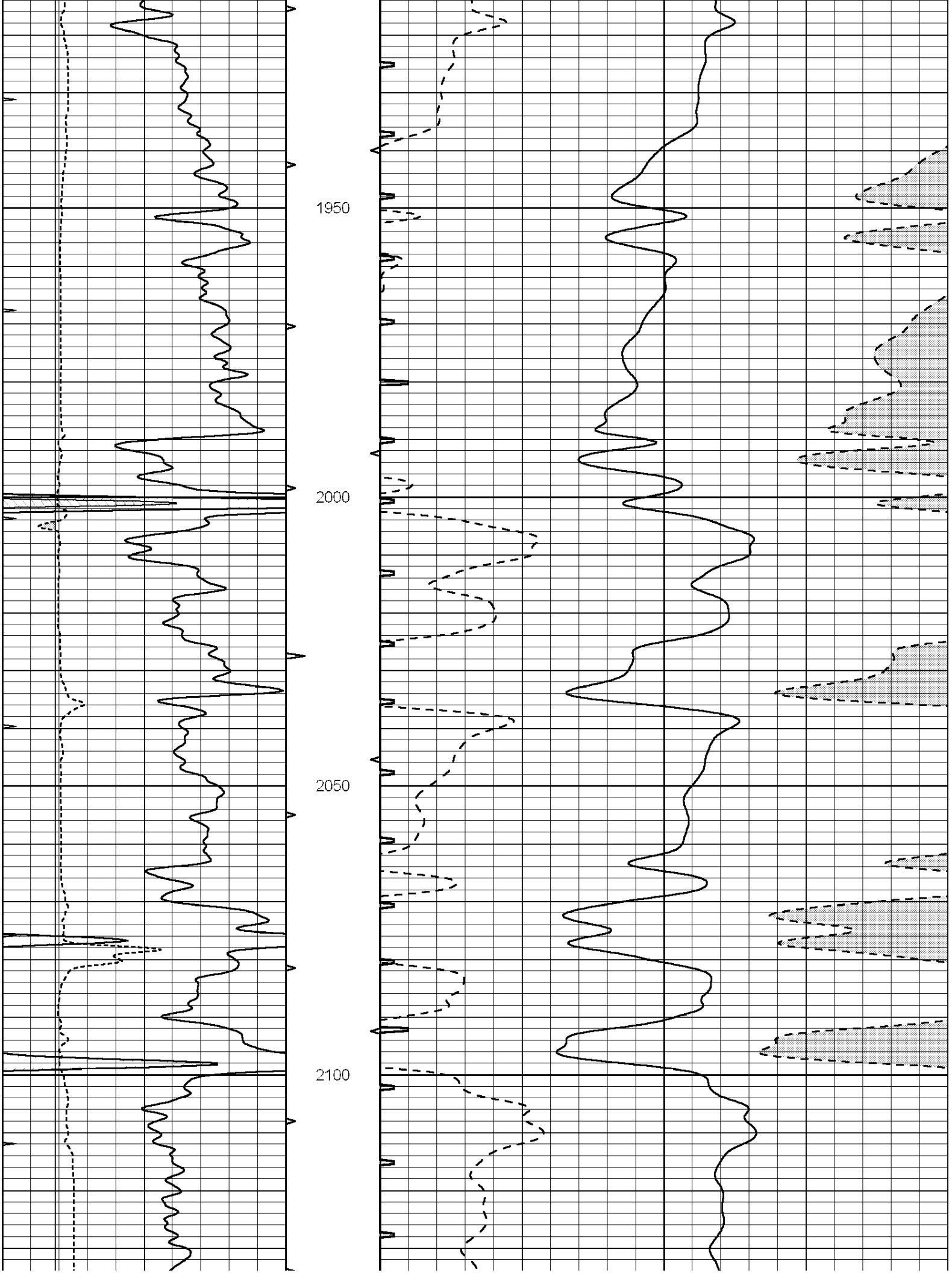
1750
1800
1850
1900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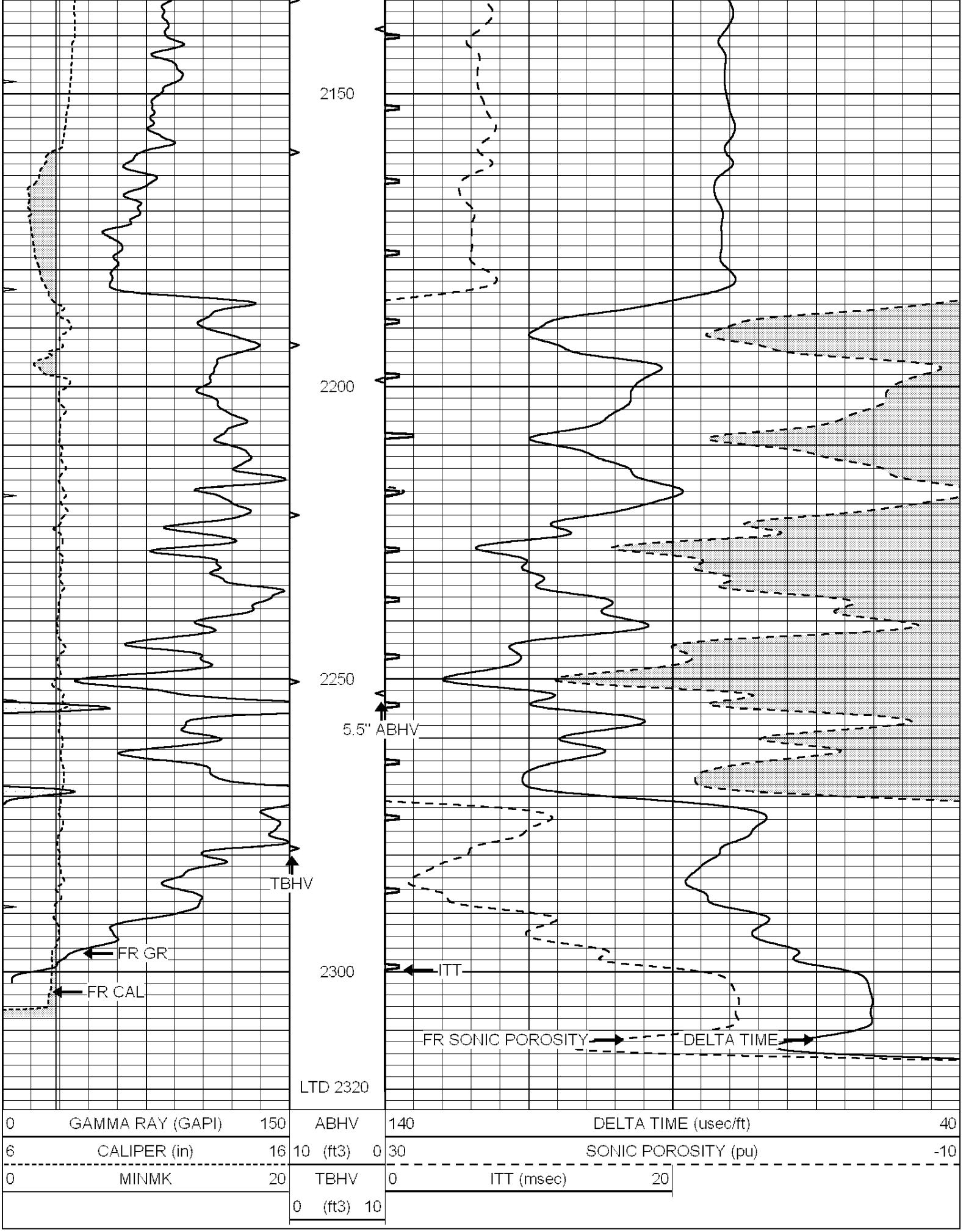
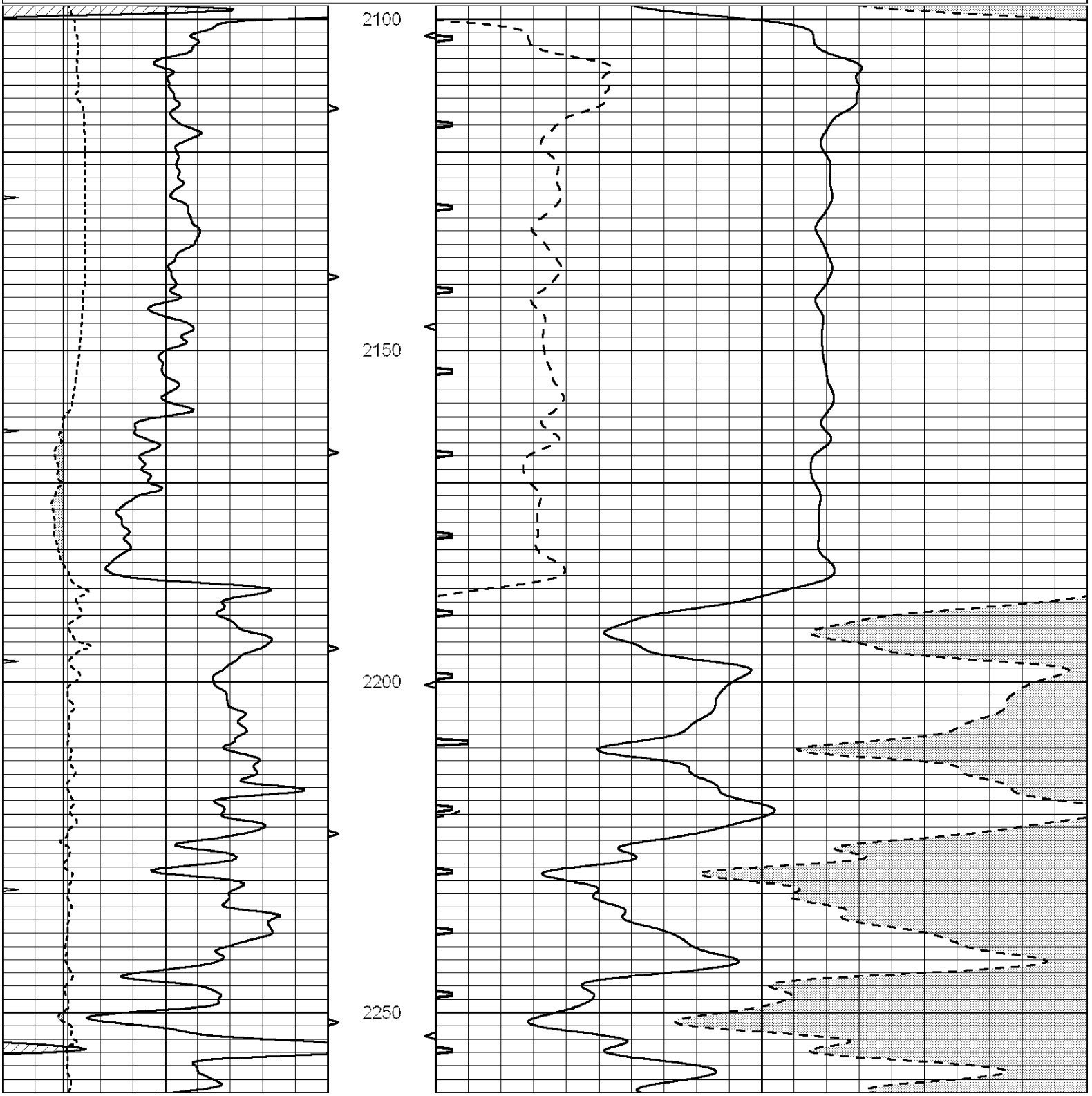
2000
2050
2100

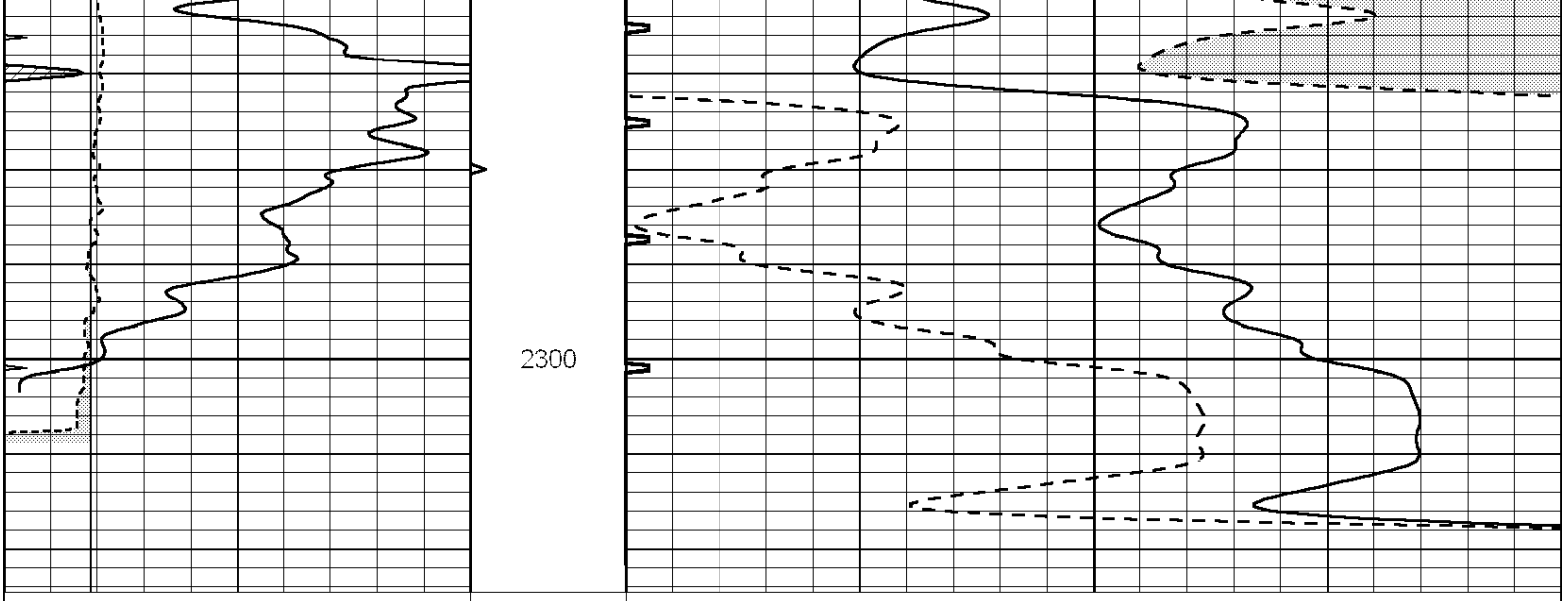

2150
2200
2250
2300
5.5" ABHV
TBHV
FR GR
FR CAL
ITT
FR SONIC POROSITY
DELTA TIME
LTD 2320
0 GAMMA RAY (GAPI) 150
6 CALIPER (in) 16
0 MINMK 20
ABHV
10 (ft3) 0
TBHV
0 (ft3) 10
140 DELTA TIME (usec/ft) 40
30 SONIC POROSITY (pu) -10
0 ITT (msec) 20

REPEAT SECTION

Database File:	3066pe.db
Dataset Pathname:	pass5.7
Presentation Format:	slt
Dataset Creation:	Tue Dec 04 04:12:18 2018 by Calc SOC 120430
Charted by:	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI) 150	ABHV	140	DELTA TIME (usec/ft)	40
6	CALIPER (in) 16	10 (ft3) 0	30	SONIC POROSITY (pu)	-10
0	MINMK 20	TBHV	0	ITT (msec) 20	
		0 (ft3) 10			





0	GAMMA RAY (GAPI)	150	ABHV	140	DELTA TIME (usec/ft) 40
6	CALIPER (in)	16	10 (ft3) 0	30	SONIC POROSITY (pu) -10
0	MINMK	20	TBHV	0	ITT (msec) 20
			0 (ft3) 10		

COMPENSATED DENSITY / NEUTRON PE LOG

Company CROSS BAR ENERGY, LLC.
Well BURKETT "E" #51
Field BURKETT
County GREENWOOD State KANSAS
Location: API # : 15-073-24242-0000
1525' FSL & 4200' FEL
SE - SE - NW - SW
SEC 23 TWP 23S RGE 10E

Permanent Datum	GROUND LEVEL	Elevation 1291	Other Services DIL/MEL SONIC
Log Measured From	GROUND LEVEL		Elevation K.B. 1297
Drilling Measured From	GROUND LEVEL		D.F. 1295 G.L. 2191

Company	CROSS BAR ENERGY, LLC.		
Well	BURKETT "E" #51		
Field	BURKETT		
County	GREENWOOD	State	KANSAS
Location:	API # : 15-073-24242-0000		
	1525' FSL & 4200' FEL		
	SE - SE - NW - SW		
	SEC 23 TWP 23S RGE 10E		
Permanent Datum	GROUND LEVEL	Elevation 1291	Other Services DIL/MEL SONIC
Log Measured From	GROUND LEVEL		Elevation K.B. 1297
Drilling Measured From	GROUND LEVEL		D.F. 1295 G.L. 2191

Date	12/4/18	
Run Number	ONE	
Depth Driller	2318	
Depth Logger	2320	
Bottom Logged Interval	2296	
Top Log Interval	800	
Casing Driller	8 5/8"@209'	
Casing Logger	209	
Bit Size	7 7/8"	
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 900 PPM
Density / Viscosity	9.3/34	
pH / Fluid Loss	10.0/9.8	
Source of Sample	FLOWLINE	
Rm @ Meas. Temp	1.60@50F	
Rmf @ Meas. Temp	1.20@50F	
Rmc @ Meas. Temp	1.92@50F	
Source of Rmf / Rmc	MEASUREMENT	
Rm @ BHT	.792@101F	
Time Circulation Stopped	2.5 HOURS	
Time Logger on Bottom	12:45 A.M.	
Maximum Recorded Temperature	101F	
Equipment Number	922339	
Location	HAYS, KANSAS	
Recorded By	JEFF LUEBBERS	
Witnessed By	VERN SCHRAG	ALBERT BRENSING

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Comments

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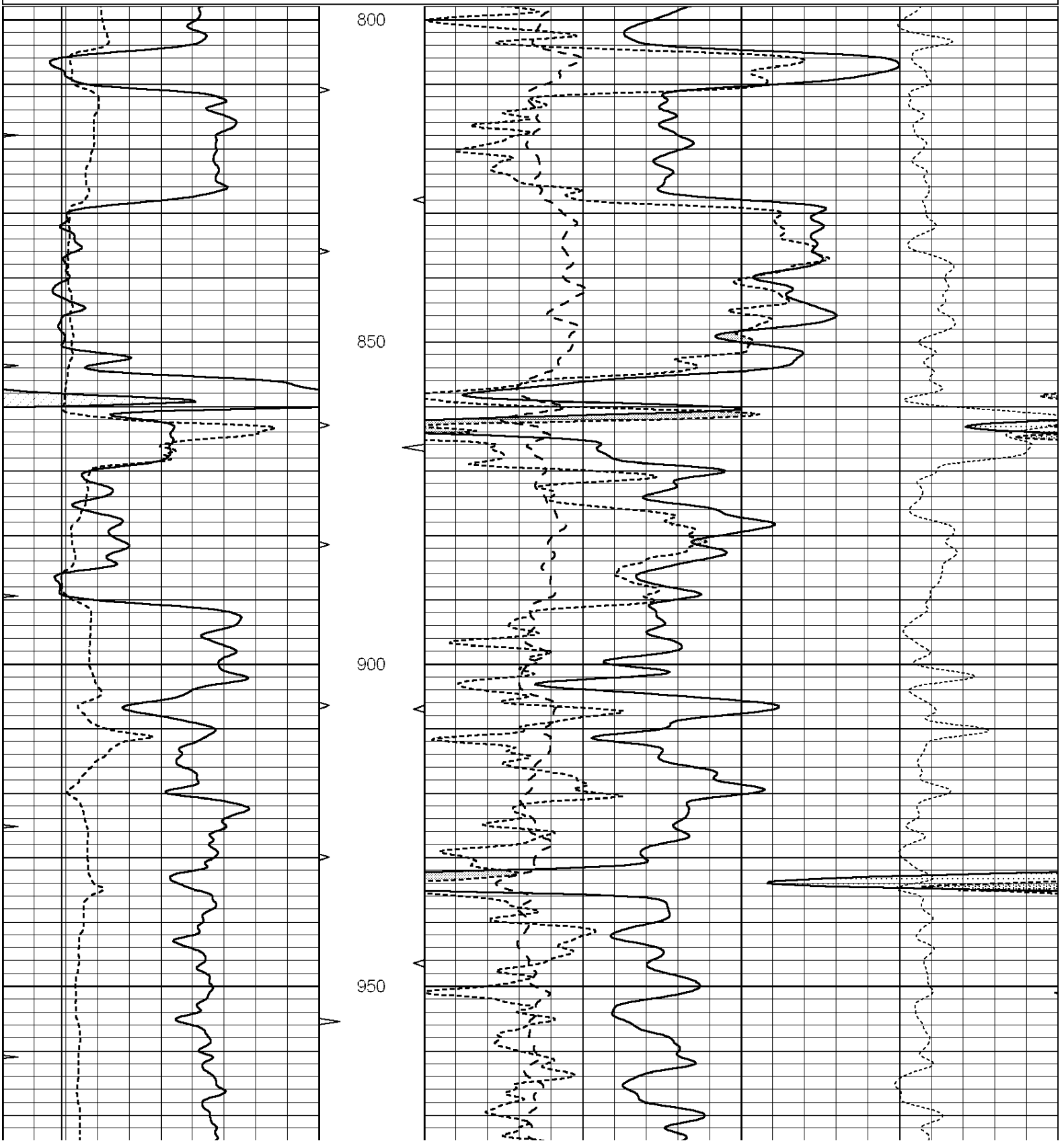
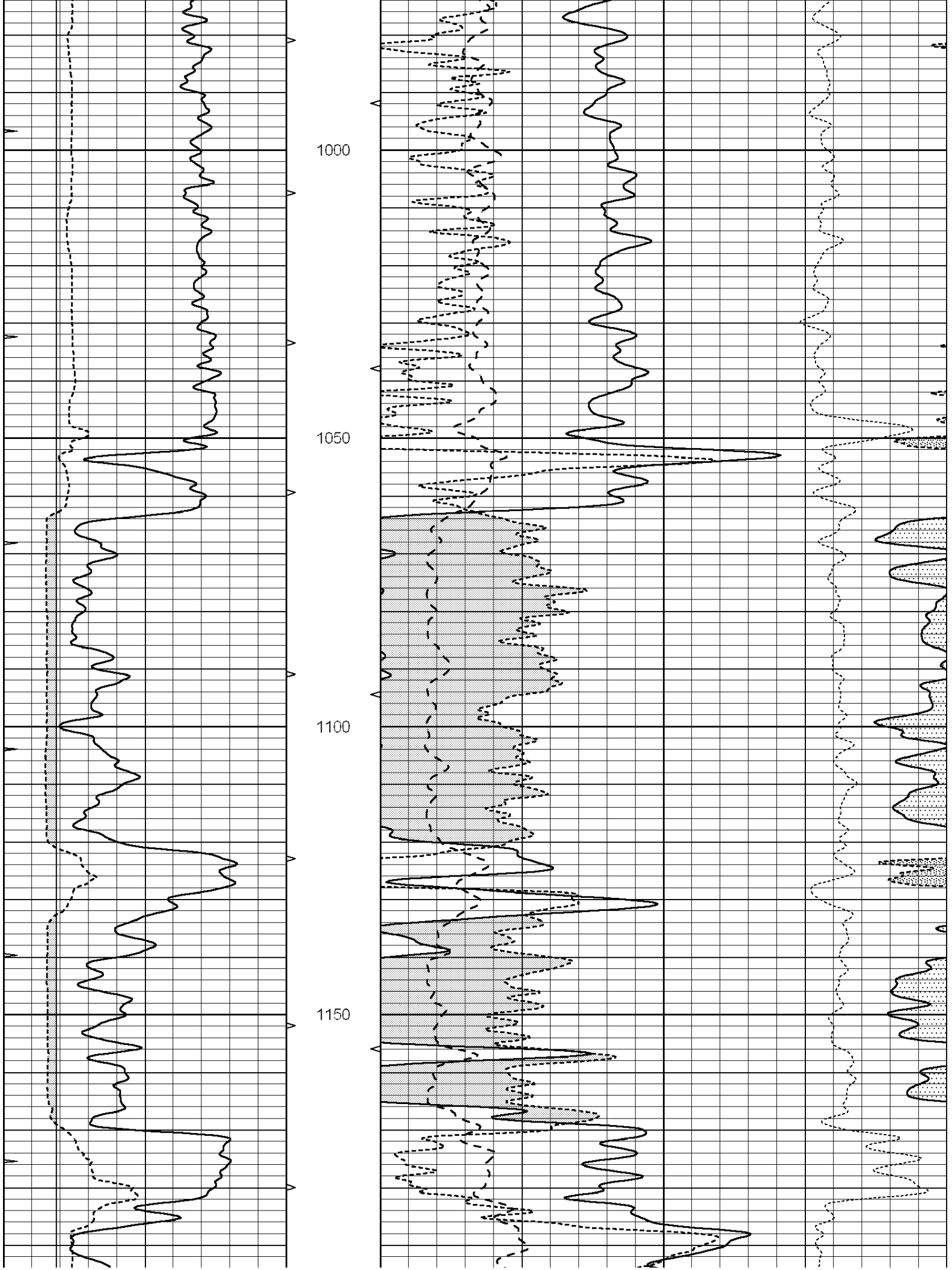
DIRECTIONS
EUREKA, KS., (HWY 54 & MAIN ST.) N. TO A THROUGH ST., 1/2E. TO "CR P", 10N. TO "Y" INTERSECTION, 1E., 4N., 3/4 W. INTO GATE

MAIN SECTION

Database File: 3066pe.db
Dataset Pathname: pass3.8
Presentation Format: ldt_neu
Dataset Creation: Tue Dec 04 02:12:04 2018
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				

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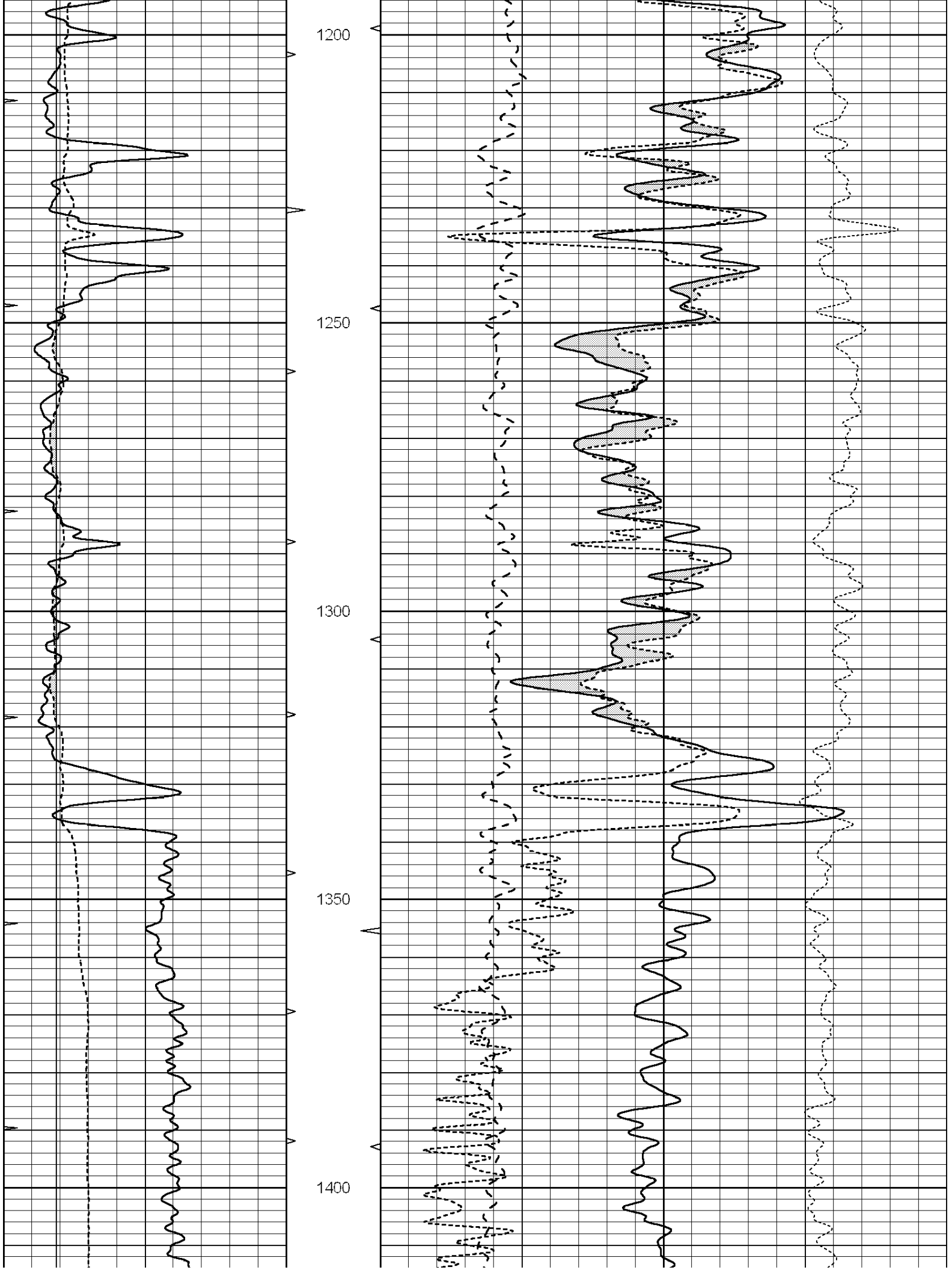
1050
1100
1150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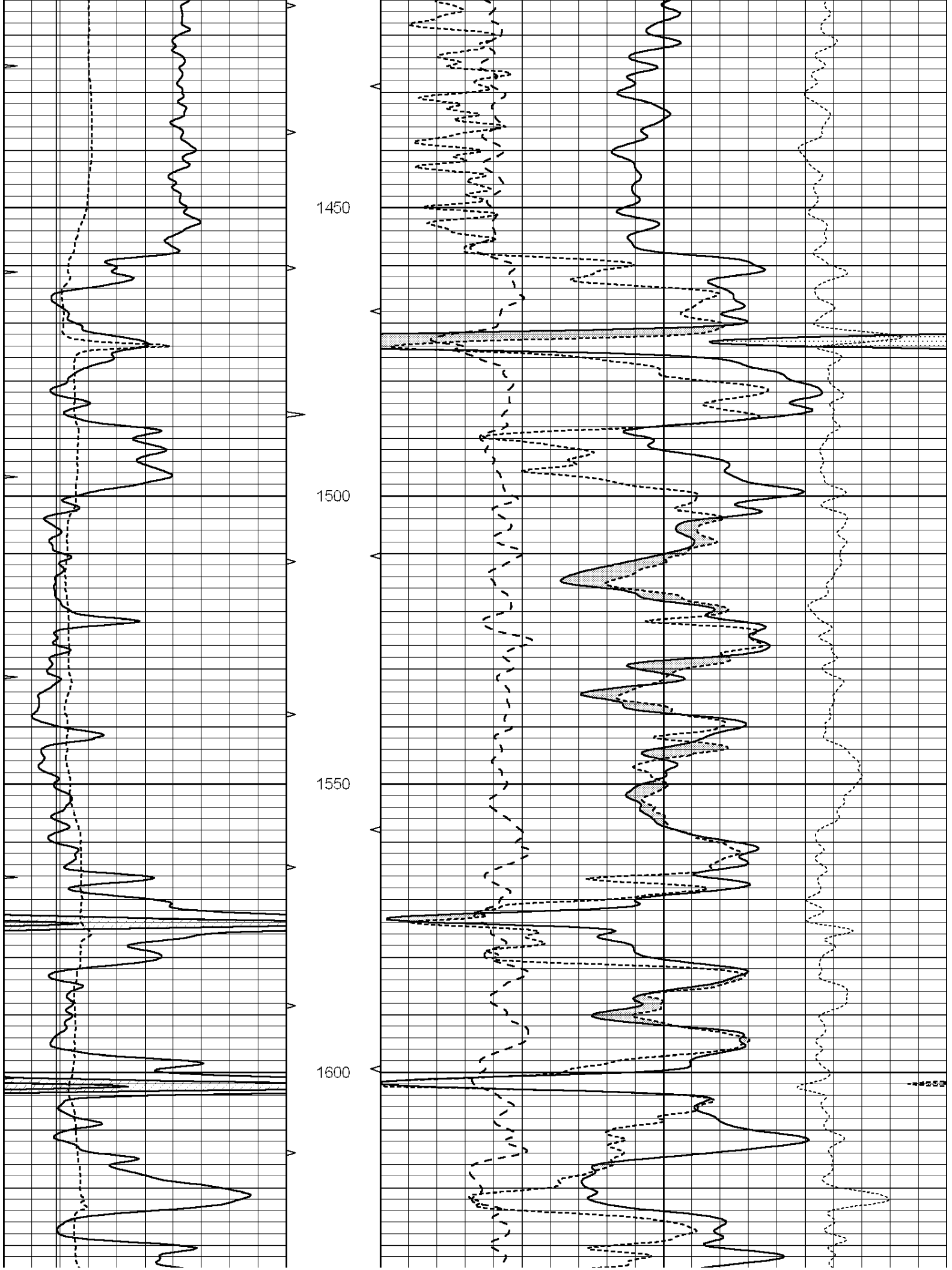
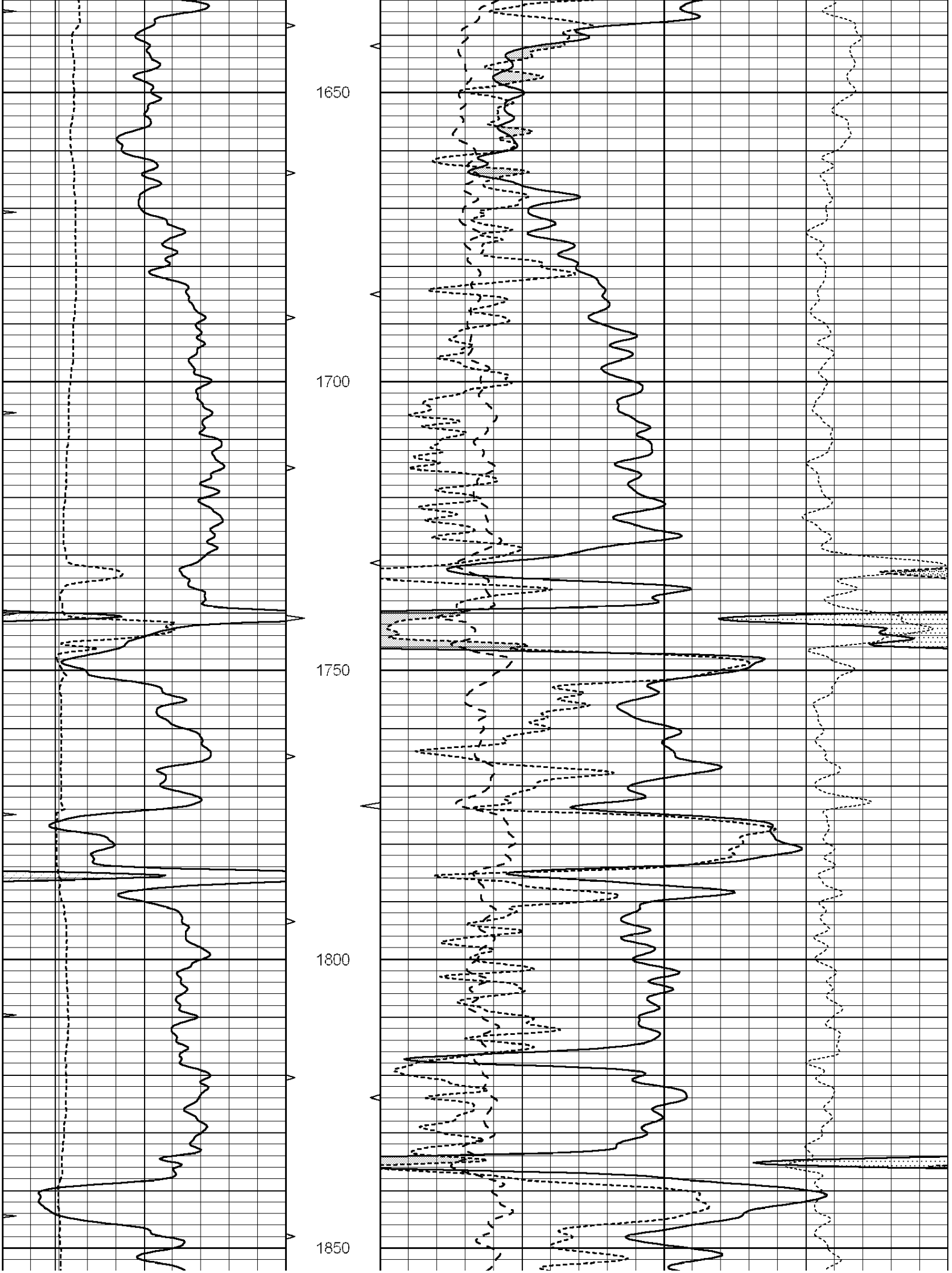
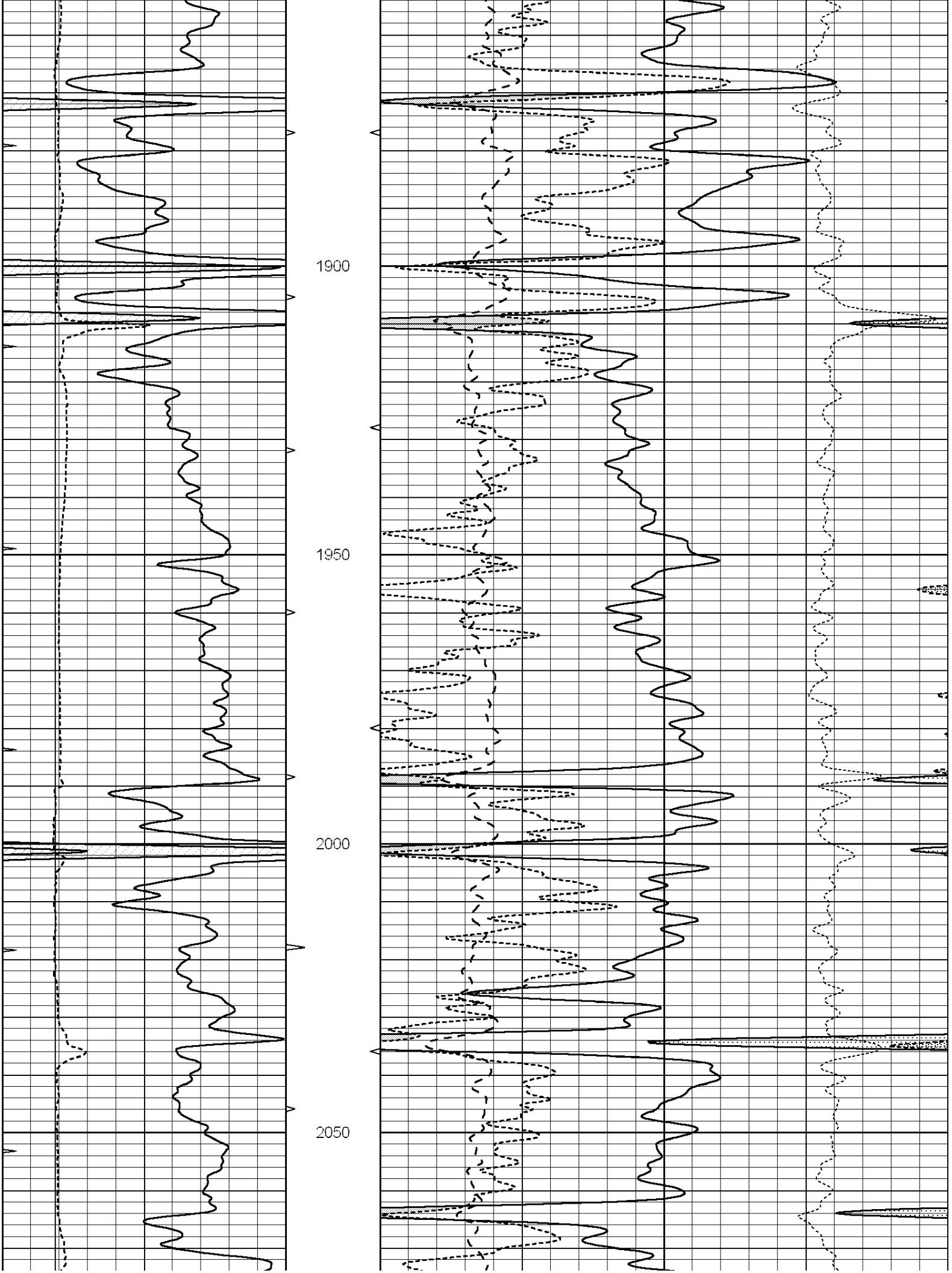
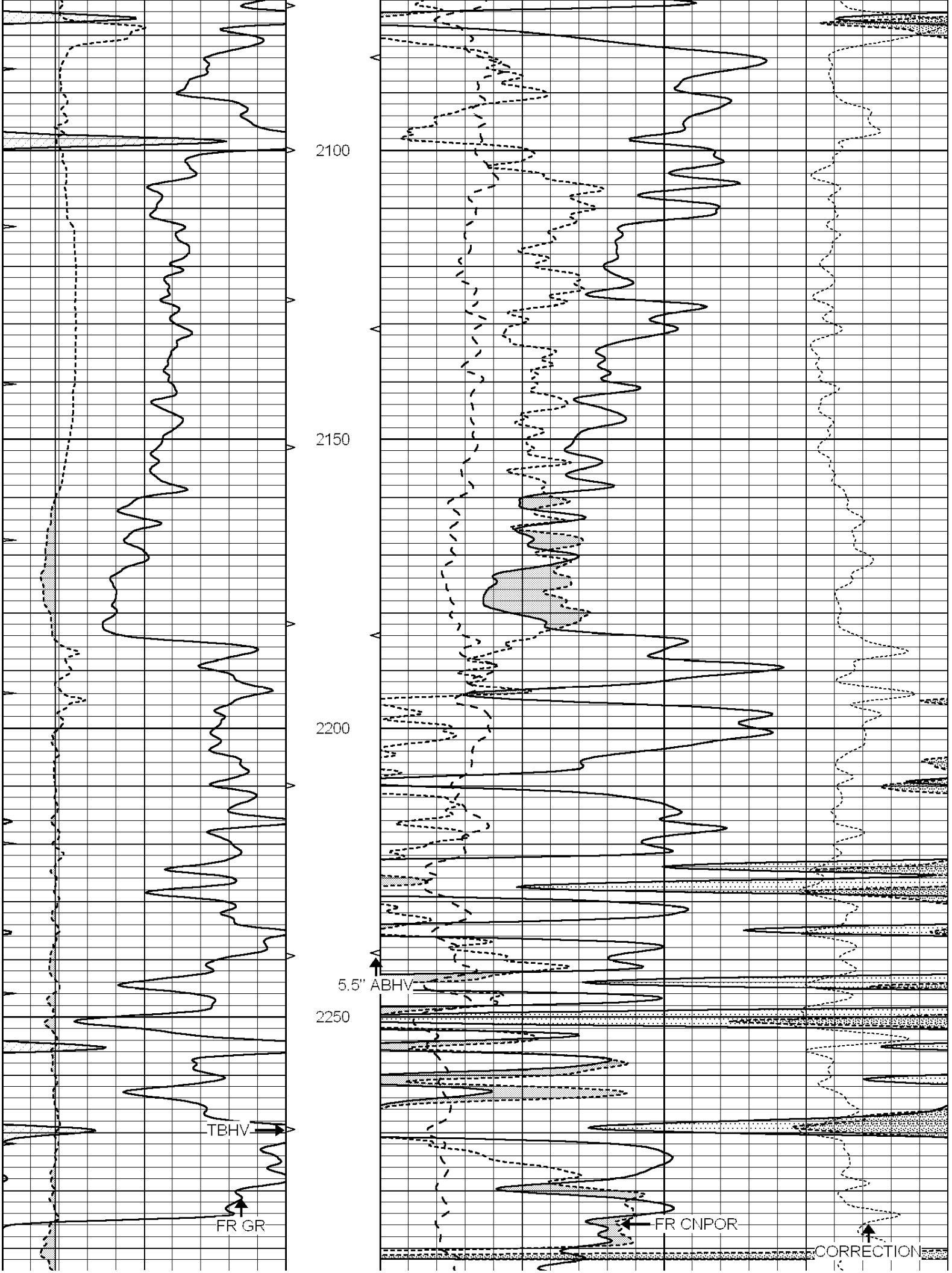
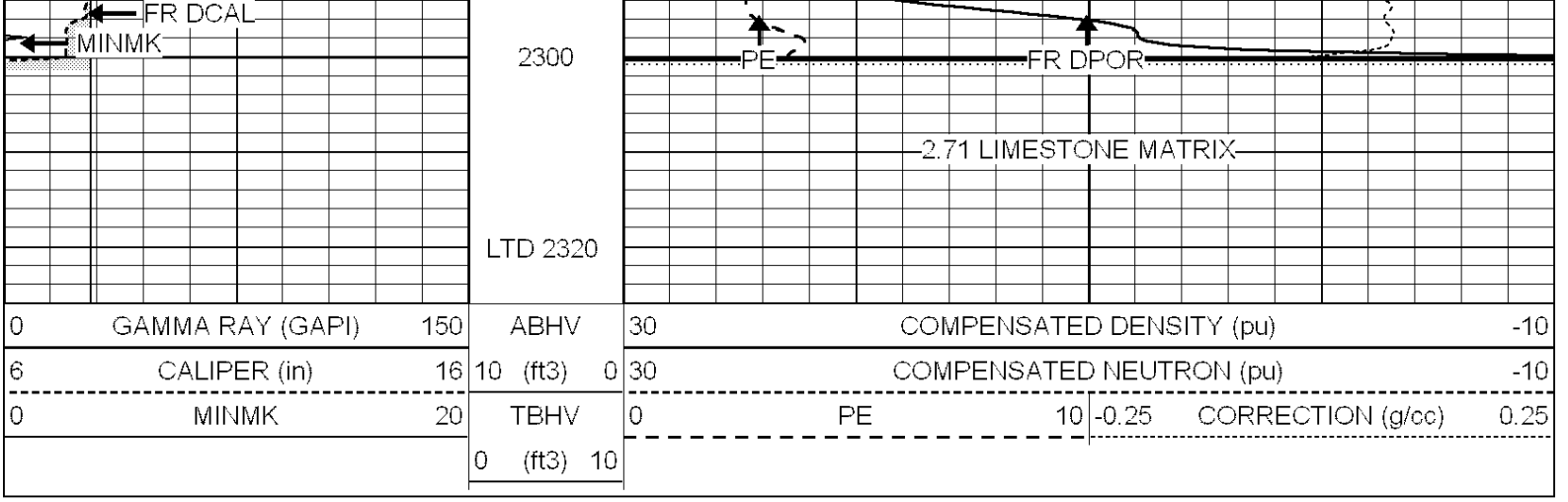
1250
1300
1350
1400


1450
1500
1550
1600


1650
1700
1750
1800
1850

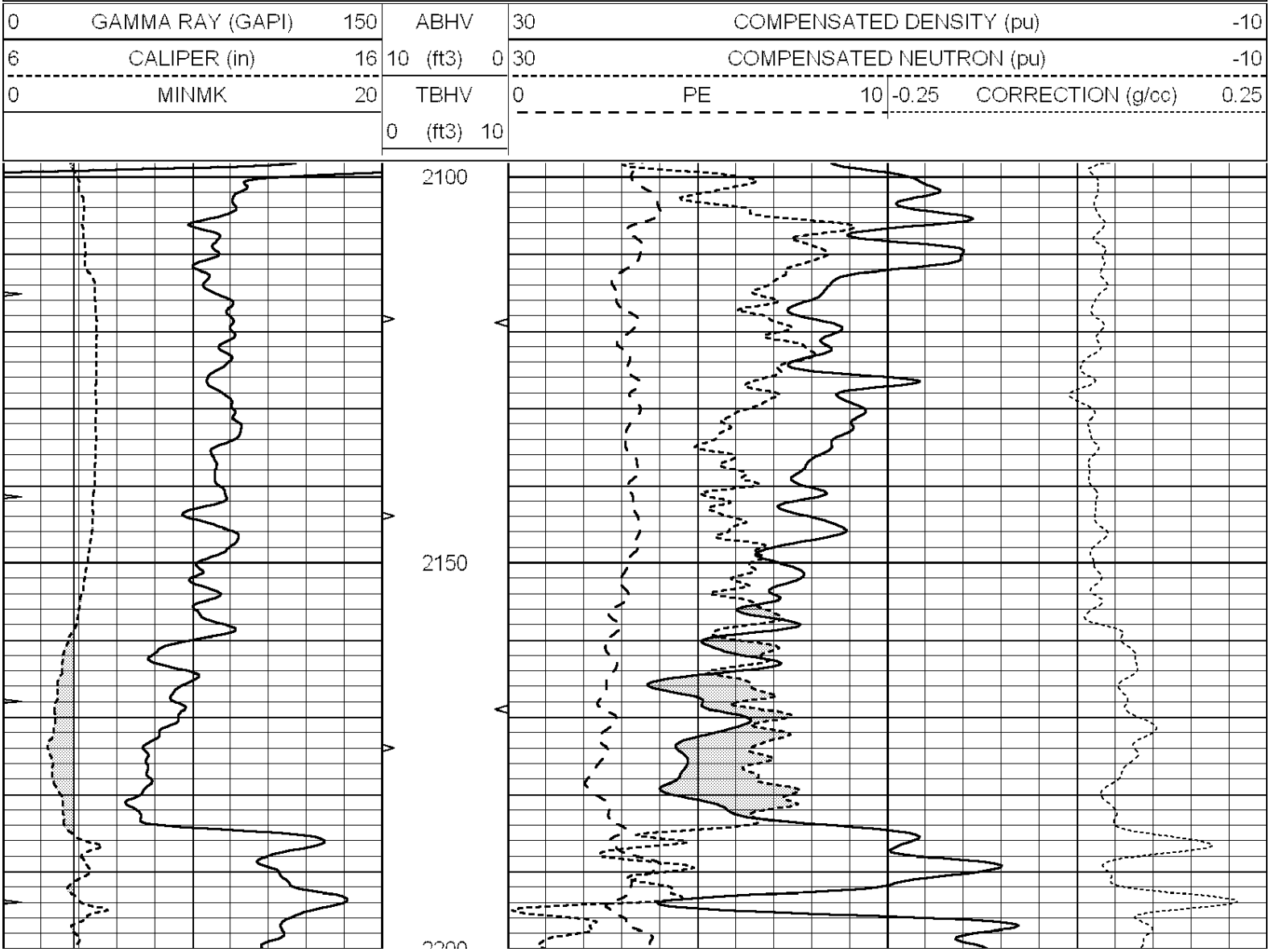

1900
1950
2000
2050

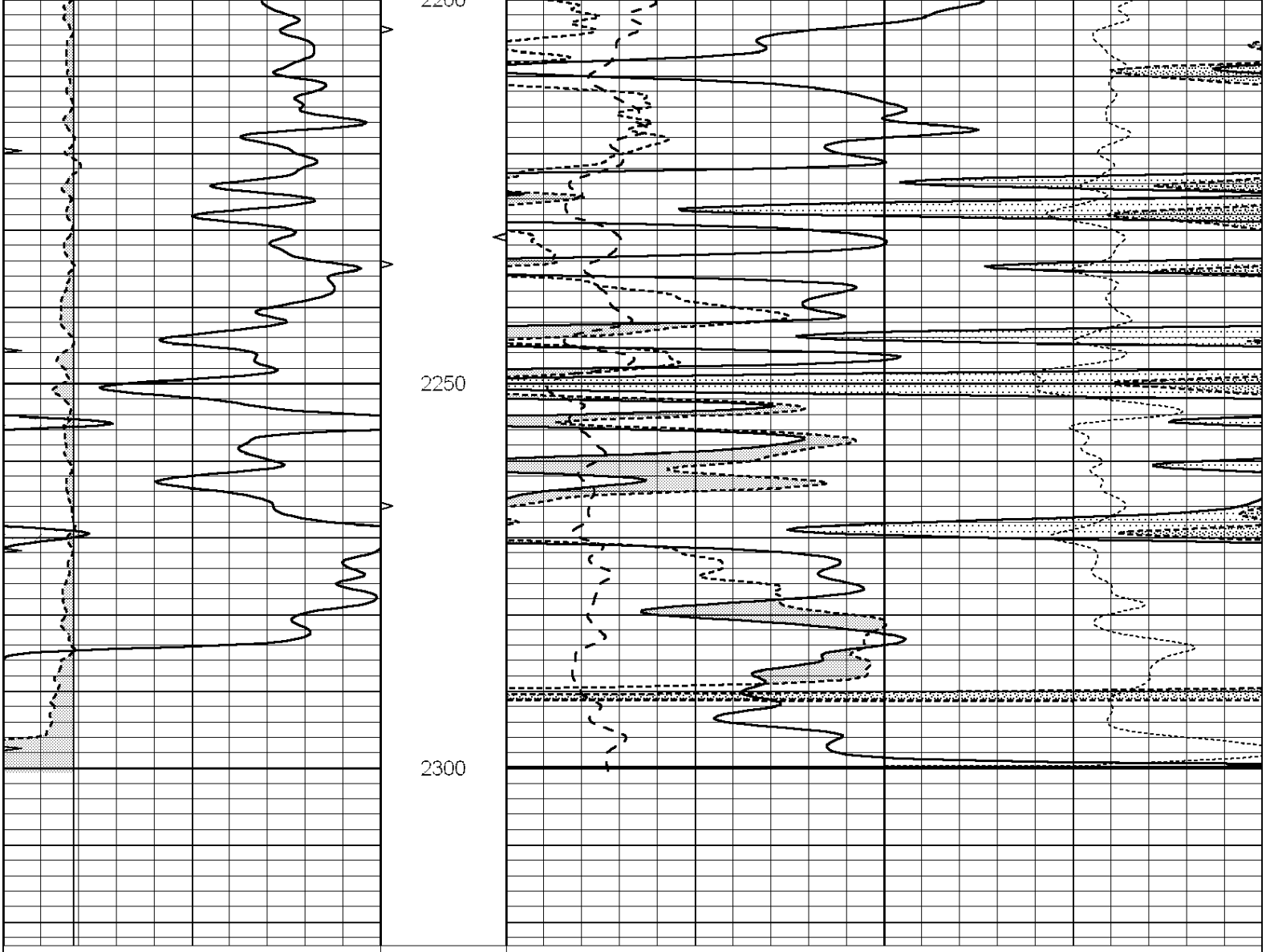

2100
2150
2200
5.5" ABHV
2250
TBHV
FR GR
FR CNPOR
CORRECTION



REPEAT SECTION

Database File: 3066pe.db
Dataset Pathname: pass2.12
Presentation Format: ldt_neu
Dataset Creation: Tue Dec 04 02:42:59 2018 by Calc SOC 120430
Charted by: Depth in Feet scaled 1:240





Calibration Report

Database File: 1598ddn.db
Dataset Pathname: pass4
Dataset Creation: Wed Aug 30 02:13:00 2017 by Log SOC 120430

Dual Induction Calibration Report

Serial-Model:	PROBE7-DILG
Surface Cal Performed:	Wed Aug 30 00:06:33 2017
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	620.000	0.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	675.000	-44.000
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: 002 Model: PRB

Master Calibration — Performed Mon Aug 21 11:27:42 2017

	Background	Magnesium	Aluminum	Sandstone	
Window 1	837.1	10632.5	2945.1	12110.1	cps
Window 2	772.0	9117.4	2570.1	10197.3	cps
Window 3	631.7	4669.0	1481.9	5042.9	cps
Window 4	187.0	187.5	185.9	189.9	cps
Long Space	0.0	8345.4	1798.1	9425.3	cps
Short Space	1.1	1927.9	1285.9	2050.2	cps
Rho		1.7100	2.5960	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle	: 45.2	Rib Slope	: 1.008	Density/Spine Ratio	: 0.558
Spine Angle	: 75.2	Spine Slope	: 3.790	Spine Intercept	: -19.6

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 May 31 00:09:32 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.2800 GAPI/cps

LEETH EVALUATION

Company	**CROSS BAR ENERGY, LLC**
Well	**BURKETT "E" #51**
Field	**BURKETT "E" #51**
County	**GREENWOOD** **State** **KANSAS**

Location	SEC	**23**	TWP	**23S**	RGE	**10E**
Spot	**1525'FSL 4200'FEL**					

API Well Number	**15-073-24242**		Elevation
Permanent Datum	**GROUND LEVEL**	Elevation	K.B.
Log Measured From	**K.B.**	**A.G.L.**	D.F.
Drilling Measured From	**KELLY BUSHING**		G.L.

Description	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Date	12/18/18					
Top Parameter Depth	2100					
Bottom Parameter Depth	2200					
Bit Size	7.875					
BHT	129					
Rmf @ FT	0.37					
Rw @ FT	0.05					
Location	WICHITA					
Evaluation By	R. LEETH					
Recommended Perf / SPF						
Recommended Perf / SPF						

We do not guarantee results, nor make warranties either expressly or implied. Under no circumstances shall we be liable damages relative to this evaluation.

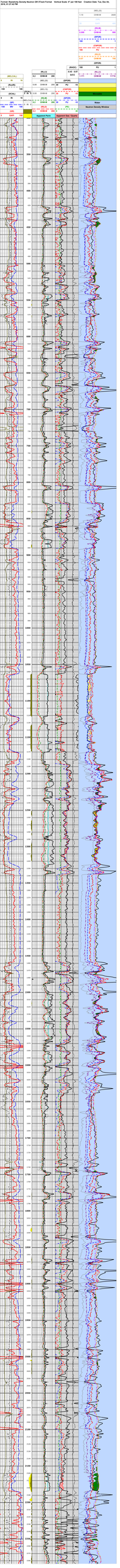
LOG DATA

Name	Description
DEPTH.FT	depth
CNPOR.PU	Compensated Neutron porosity
DCAL.IN	Compensated Density caliper
DPOR.PU	Compensated Density porosity
GR.API	gamma ray
MEL15.OHM-M	1 5 inch Microinverse resistivity
MEL20.OHM-M	2 inch Micronormal resistivity
MELCAL.IN	Microlog caliper
PE.	Photoelectric Pffect
RHOC.G/CC	Compensated Density correction
RILD.OHM-M	Deep Induction resistivity
RILM.OHM-M	Medium Induction resistivity
RLL3.OHM-M	Short Guard resistivity
RxoRt.	ratio of shallow resistivity to deep resistivity
SP.MV	spontaneous potential
SPOR.PU	Sonic porosity

EVALUATION DATA

Name	Description
DEPTH.FT	depth
BIT.IN	bit size
BVWb.V/V	bulk volume water in matrix porosity system
BVWs.V/V	bulk volume water in secondary porosity system
BVWsgxo.V/V	bulk volume water in the flushed zone system
CALI.IN	caliper
Dh.G/CC	hydrocarbon density
DMAA.G/CC	apparent matrix density
DSRGIP.MMCFG	delta sum recoverable gas in place
DSROIP.BO	delta sum recoverable oil in place
DSUMQg.MCFGPD	delta sum of productive gas
DSUMQo.BOPD	delta sum of productive oil
DSUMQw.BWPD	delta sum of productive water
GR.API	gamma ray
Khb.MD	permeability to hydrocarbon from matrix porosity system
Khs.MD	permeability to hydrocarbon from secondary porosity system
ms.DEC	cementation exponent for secondary porosity system
OOM.DEC	oomoldic flag
PSGC.V/V	gas corrected sonic porosity
PX.V/V	crossplot porosity
Rds.OHMM	calculated deep resistivity
SP.MV	spontaneous potential
SUMQg.MCFGPD	sum of productive gas
SUMQo.BOPD	sum of productive oil
SUMQw.BWPD	sum of productive water
SUMRGIP.MMCFG	sum of recoverable gas in place
SUMROIP.BO	sum of recoverable oil in place
Swb.V/V	water saturation in matrix porosity system
Sws.V/V	water saturation in secondary porosity system
Sxo.V/V	water saturation of the flushed zone
VSH.V/V	shale volume

Format: Resistivity Density Neutron GR 3Track Format Vertical Scale: 5" per 100 feet Creation Date: Tue, Dec 04, 2018, 01:27:22 PM



Format: Blank 3Track Vertical Scale: 5" per 100 Ft Creation Date: Thu, Dec 13, 2018, 02:04:53 PM

(QUARTZp)		
0	V/V	1
(DOLOp)		
0	V/V	1
(CALCp)		
0	V/V	1
(ANHYp)		
0	V/V	1
(GR)		
0	API	150
(VSH)		
0	V/V	1
(SP)		
-100	MV	100
(CALI)		
6	IN	16

Rw = 0.05

(BVWsgxo)		
0	V/V	0.4
(BVWs)		
0	V/V	0.4
(PX)		
0	V/V	0.4
Hydrocarbon		
Light Hydrocarbon		
Water		

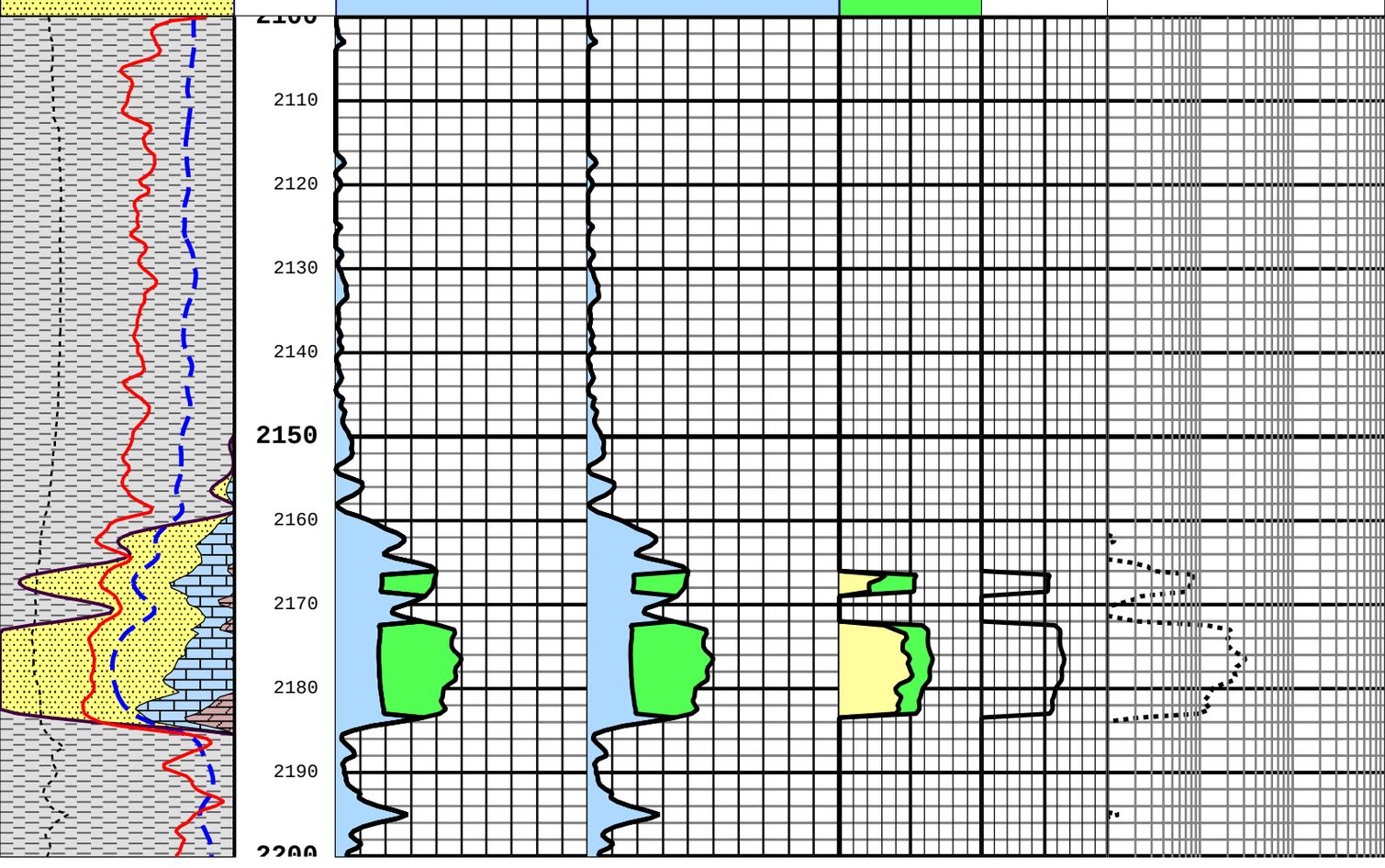
(PSGC)		
0	V/V	0.4
(BVWb)		
0	V/V	0.4
Hydrocarbon		
Water		

(Sxo)		
1	V/V	0
(Sws)		
1	V/V	0
Residual		
Moveable		

(Swb)		
1	V/V	0

(Khb)		
0.1	MD	1000
(Khs)		
0.1	MD	1000

Mudcake
ANHYDRITE
Clay-Shale
DOLOMITE
CALCITE
QUARTZ



Sonic Cement Bond Log

XCEL WIRELINE

API No. 15-073-24242-0000

Company Cross Bar Energy, LLC.
Well Burkett "E" #51
Field Burkett
County Greenwood State Kansas

Location 1525' FSL & 4200' FEL
SE - SE - NW - SW
Sec: 23 Twp: 23S Rge: 10E

Other Services
Perforate

Elevation
K.B. 1297
D.F. 1295
G.L. 1291

Permanent Datum Ground Level Elevation 1291
Log Measured From Ground Level 0 Ft. Above Perm. Datum
Drilling Measured From Ground Level

Run Number	One	
Date Survey	1/4/2019	
Date Cementing	12/5/2018	
Type Cementing Operation	Primary	
Depth Driller	2318	
Depth Logger	2298	
Logged Interval	2297 to 12	to
Casing Driller	5.5 @ TD	@
Float Collar -- D.V. Tool	//// | 1446	|
Squeeze Depth	////	
Amount & Type Cement	////	
Amount & Type Admix	////	
Type Fluid In Hole	KCL Water	
Fluid Level	Full	
Salinity PPM CL	////	
Weight lb/gal -- Vis.	//// | ////	|
Approx. Logged Cement Top	Surface	
Calculated Cement Top		
Max. Hole Temperature	////	
Tool No.	DIG02	
Spacing Recorded	3-5	
Equipment -- Location	02 | Pratt	|
Recorded By	N. Schmeidler	
Witnessed By	Albert Brensing	Andrew Brensing

<< 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 Excel Wireline (620) 388-5676

Cassoday
E on150th to Q Rd
1/2 S
W into

Main Pass

XCEL WIRELINE

Database File	cross_bar_burkett_e_51.db
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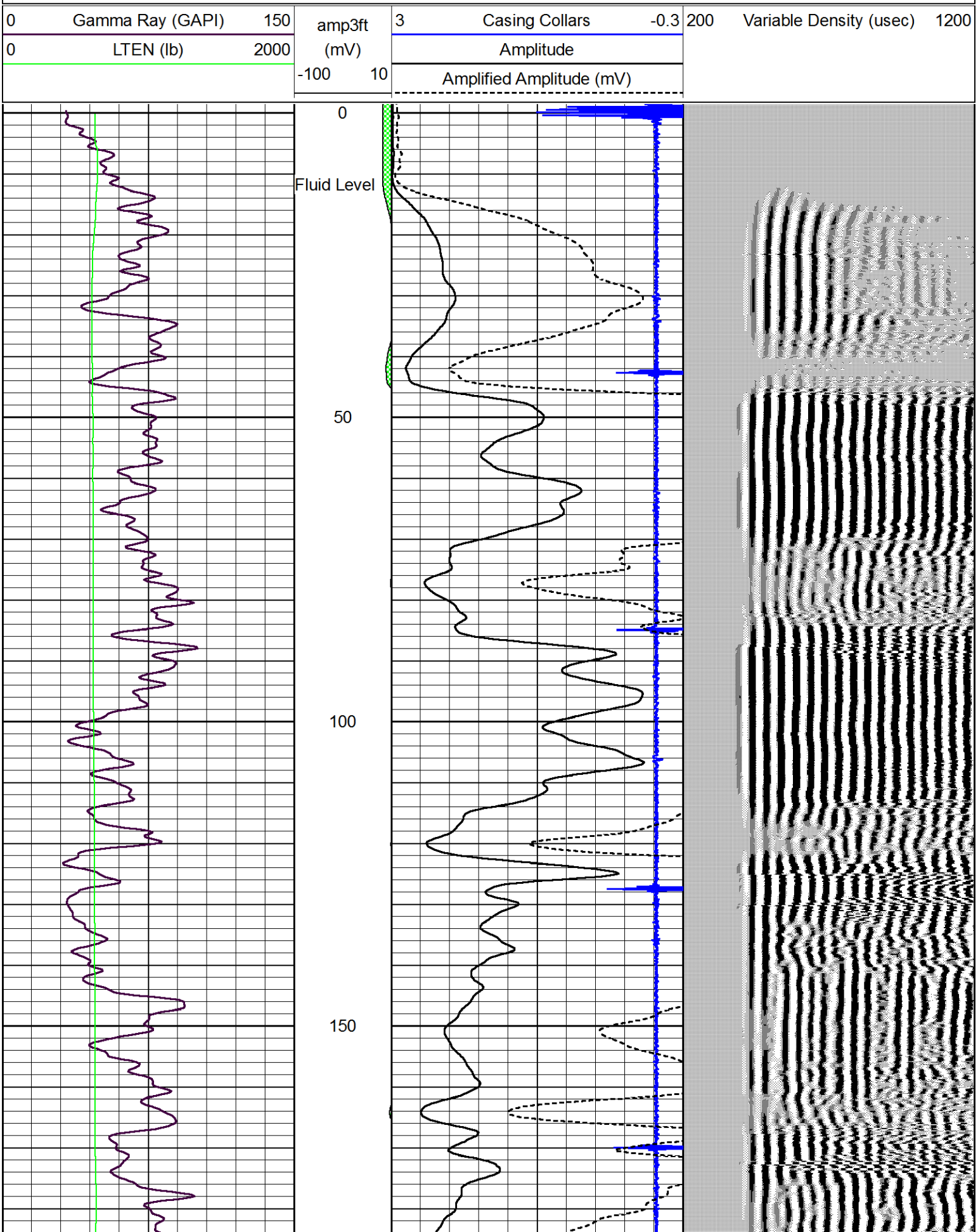
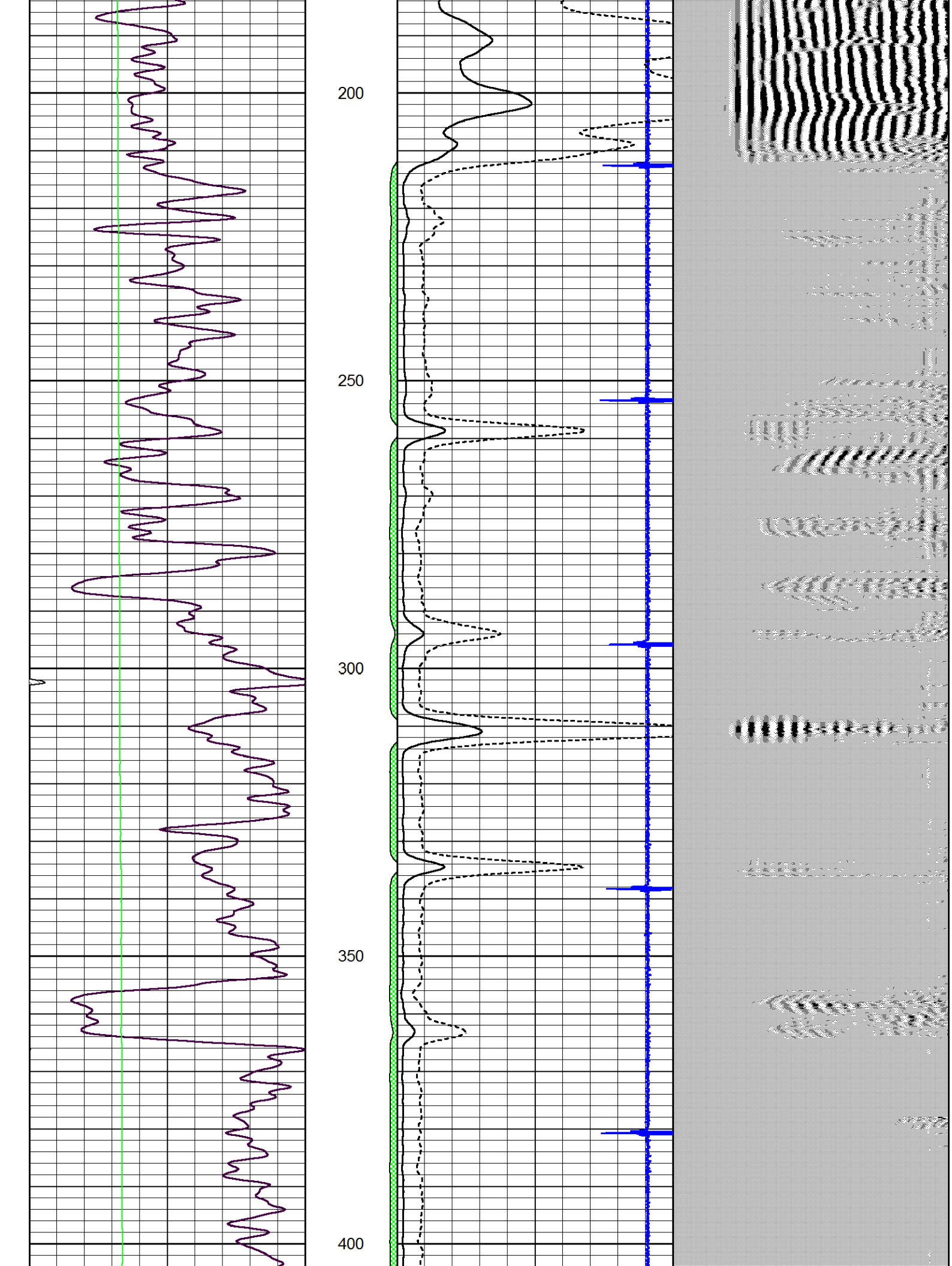
Presentation Format	excel
Dataset Creation	Fri Jan 04 12:14:57 2019
Charted by	Depth in Feet scaled 1:240

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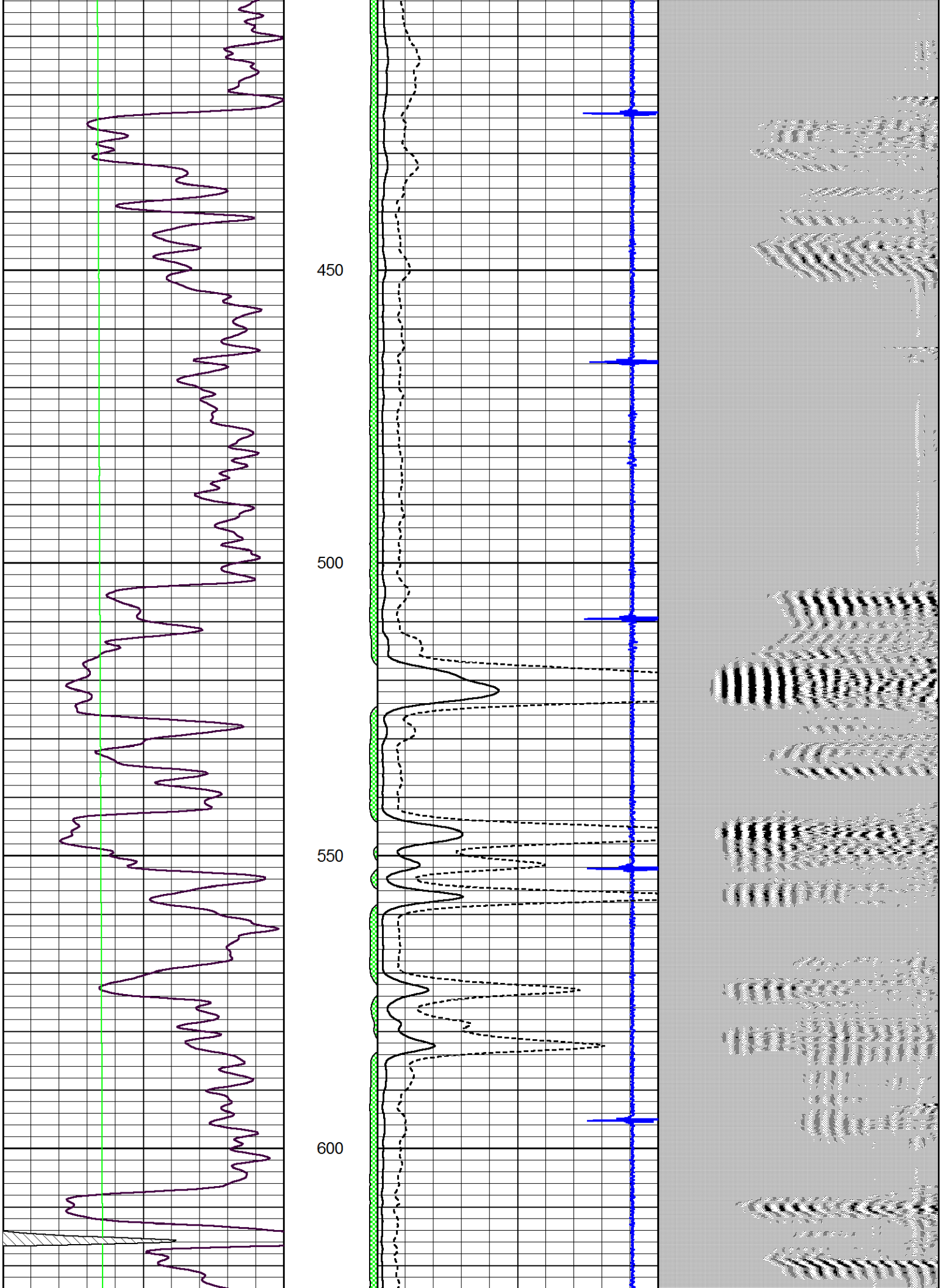
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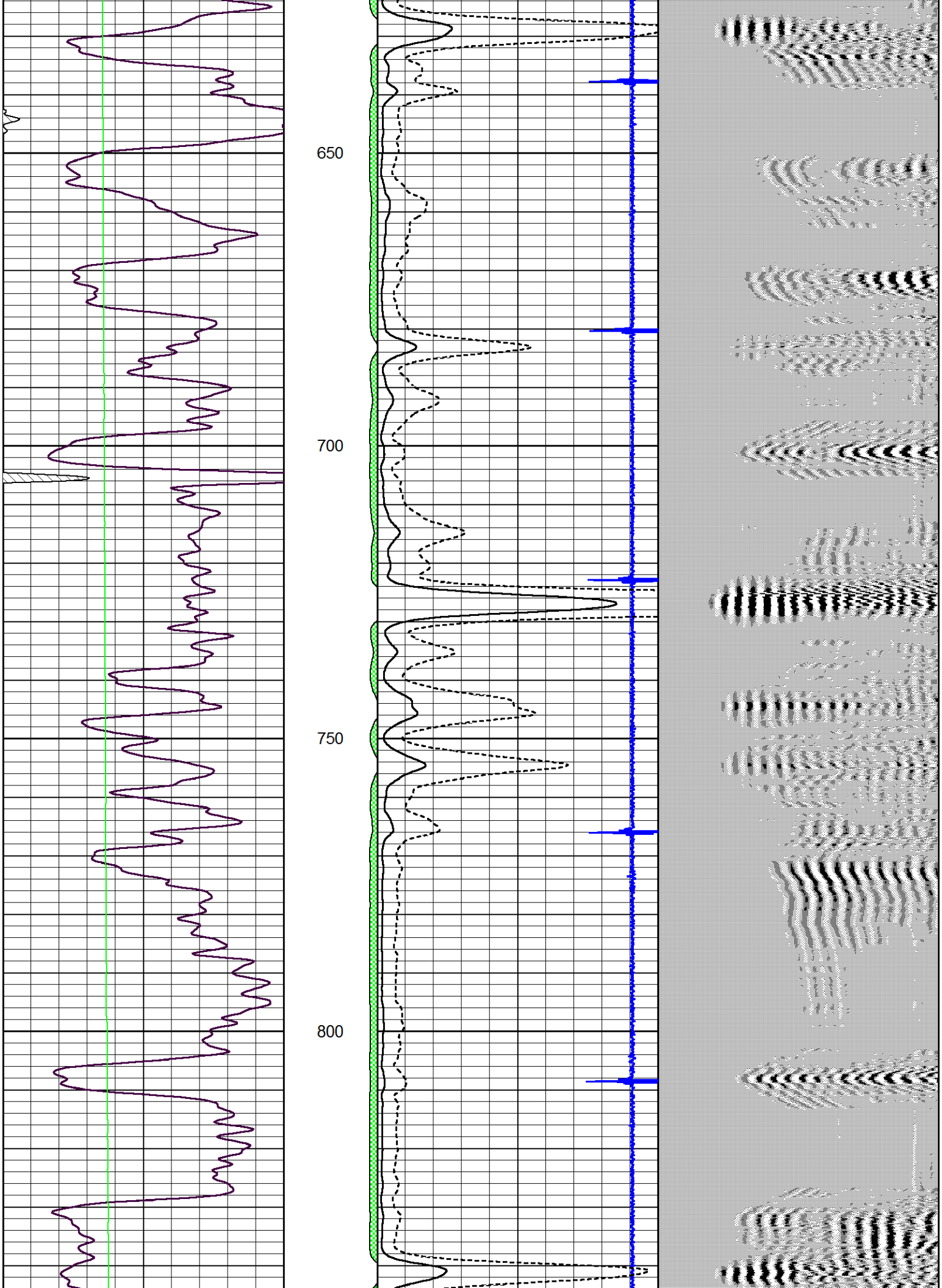
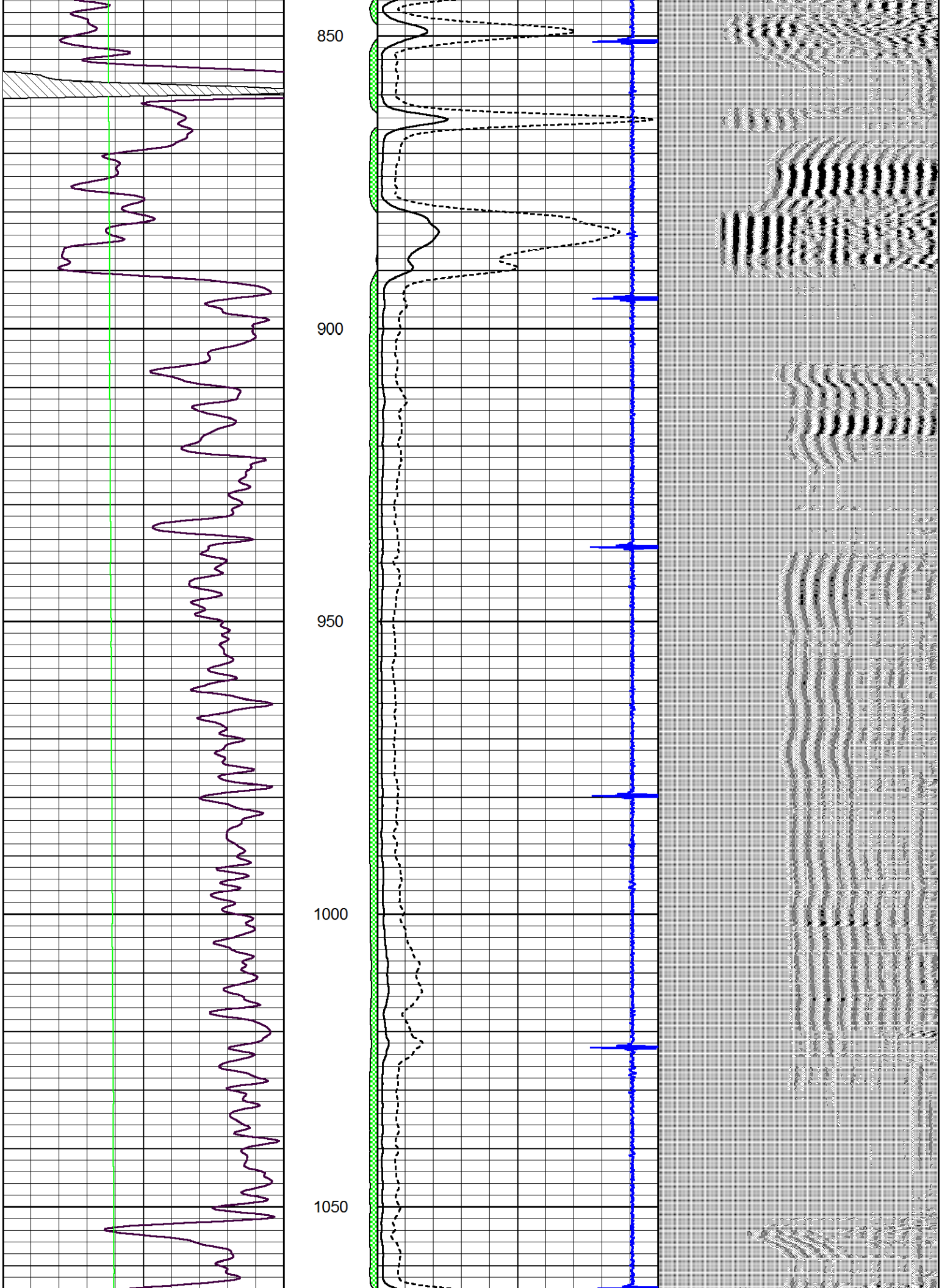
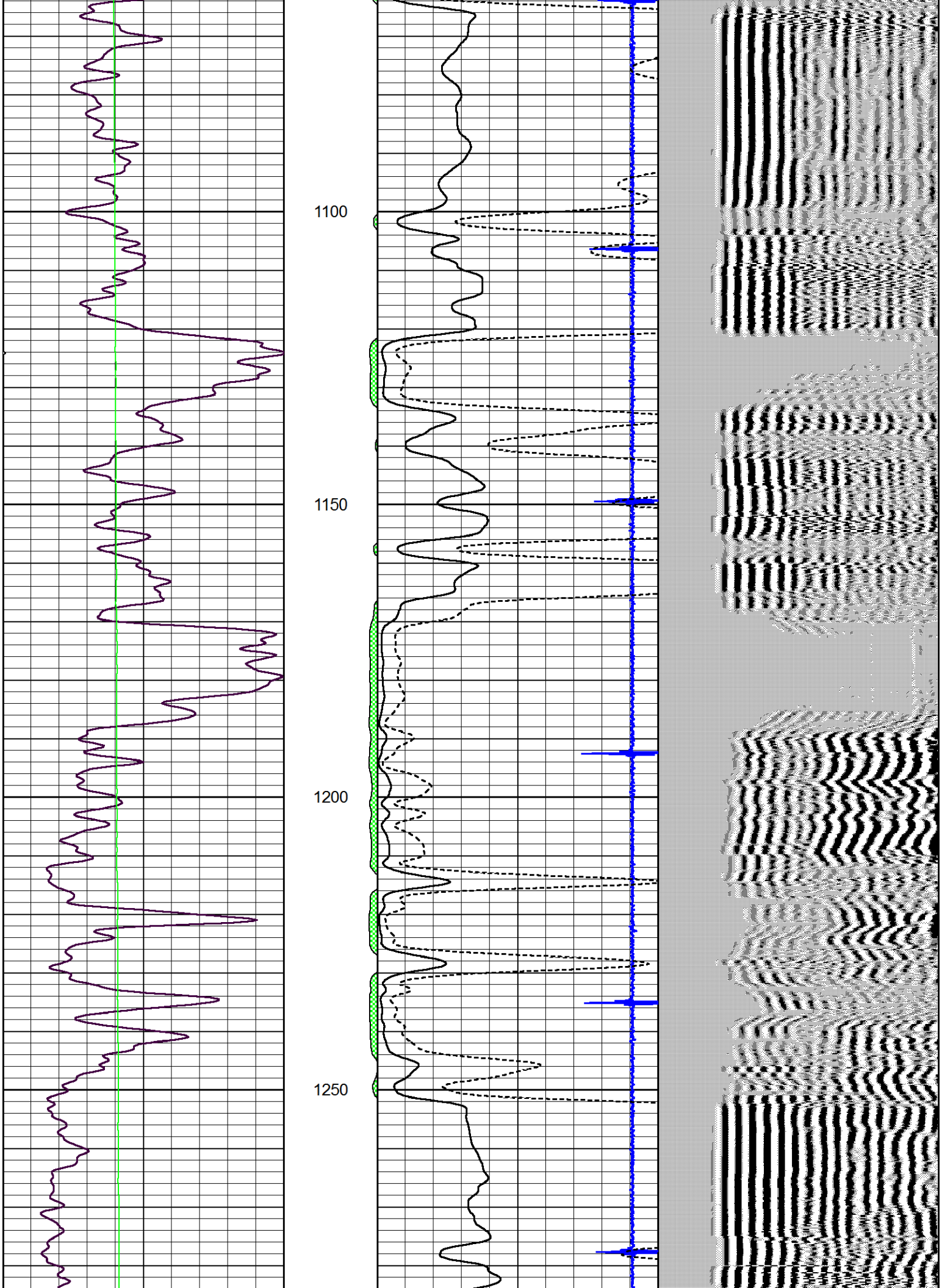
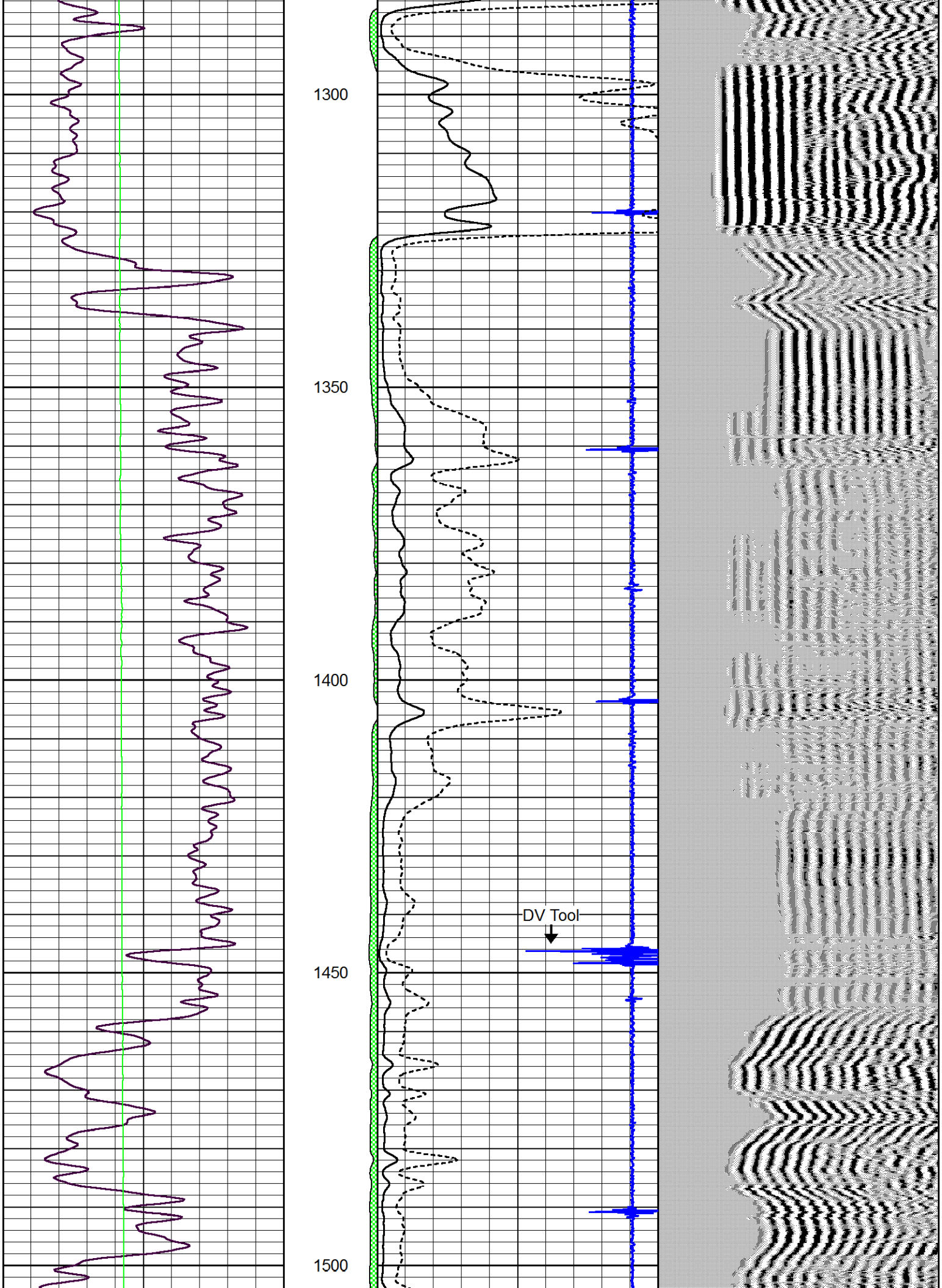
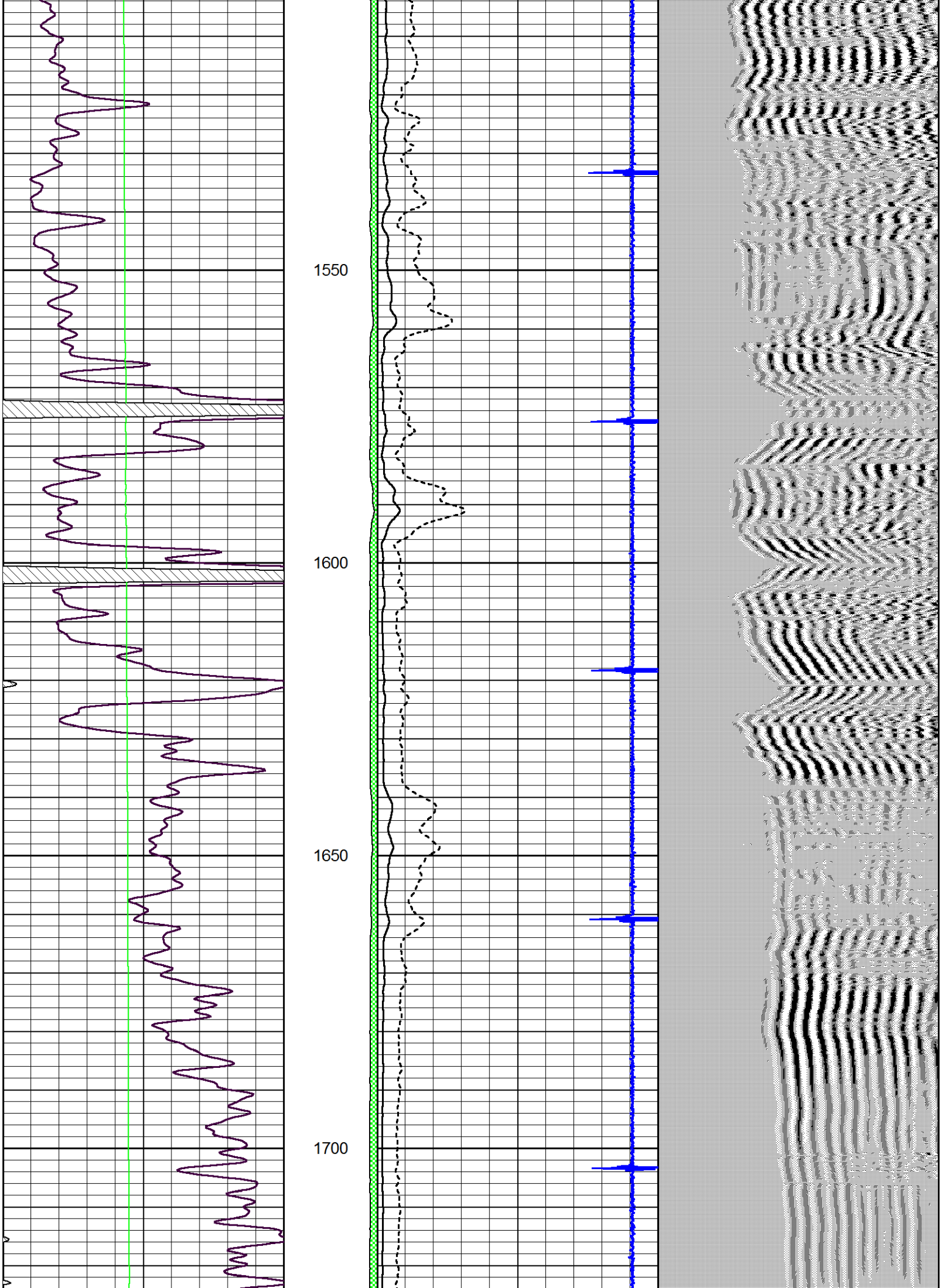
500
550
600

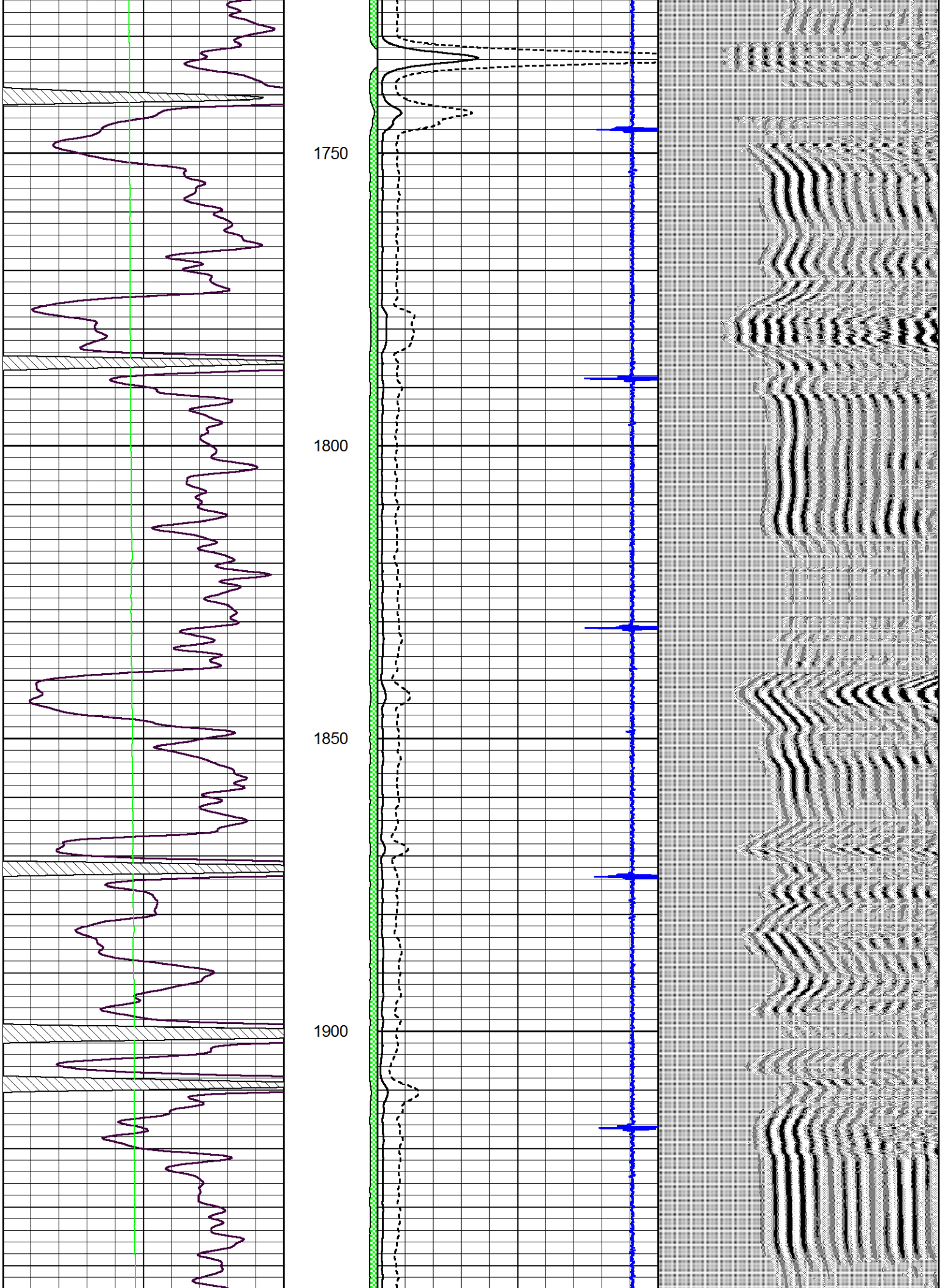

650
700
750
800

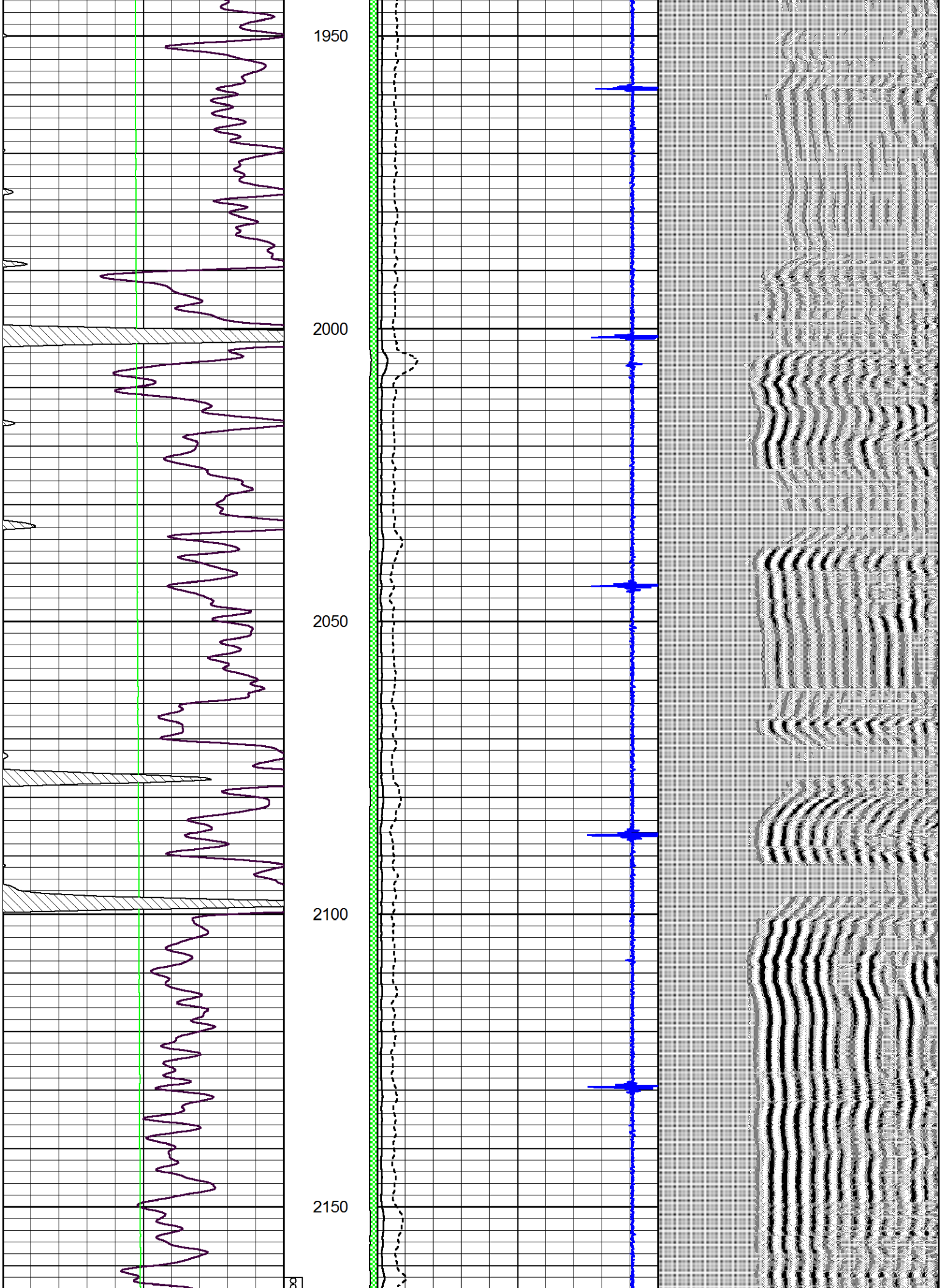

850
900
950
1000
1050

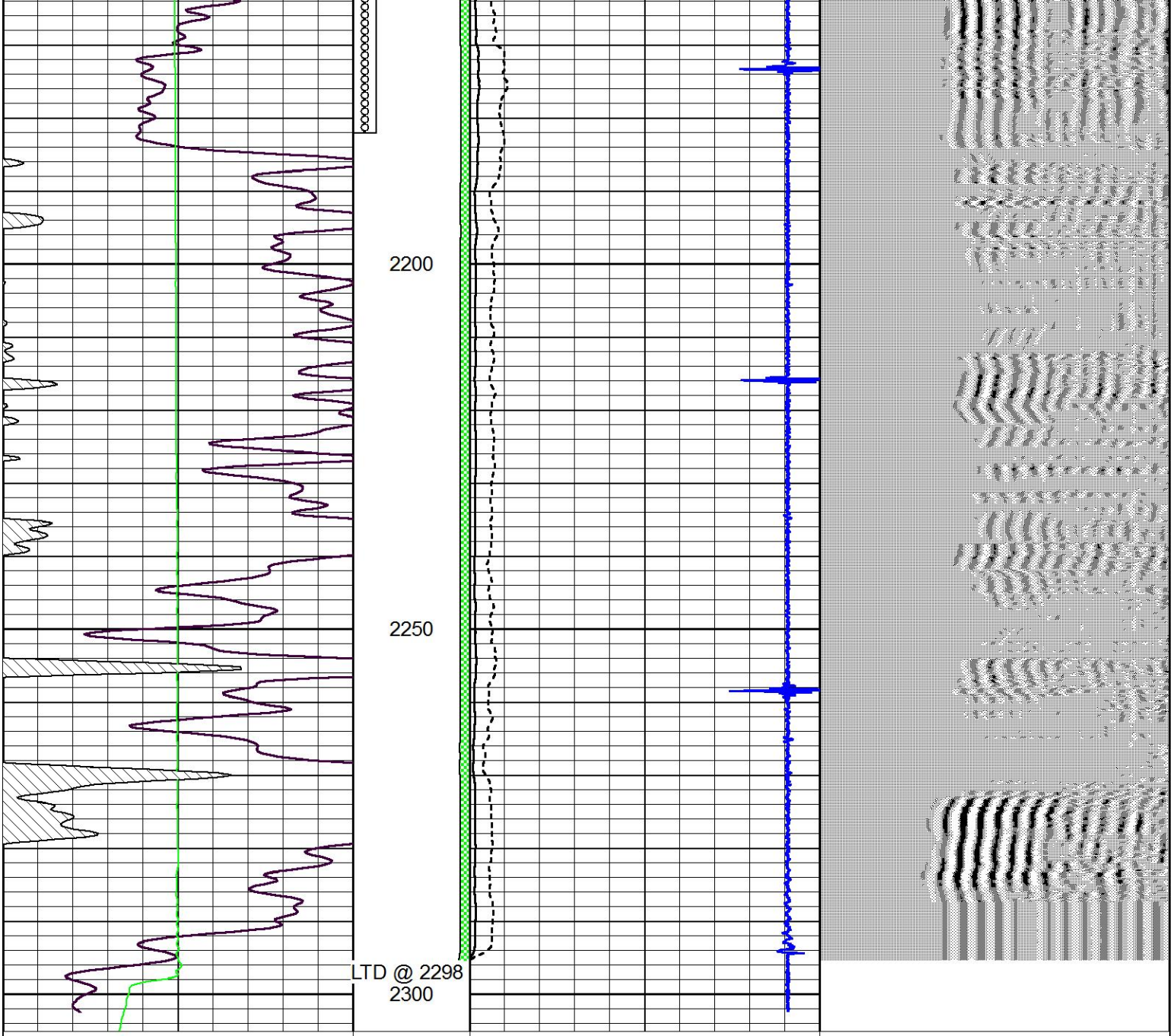

1100
1150
1200
1250


1300
1350
1400
DV Tool
1450
1500


1550
1600
1650
1700


1750
1800
1850
1900


1950
2000
2050
2100
2150



Repeat Section

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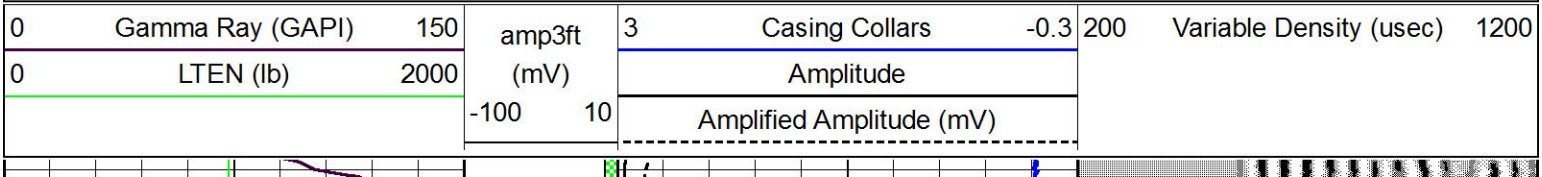
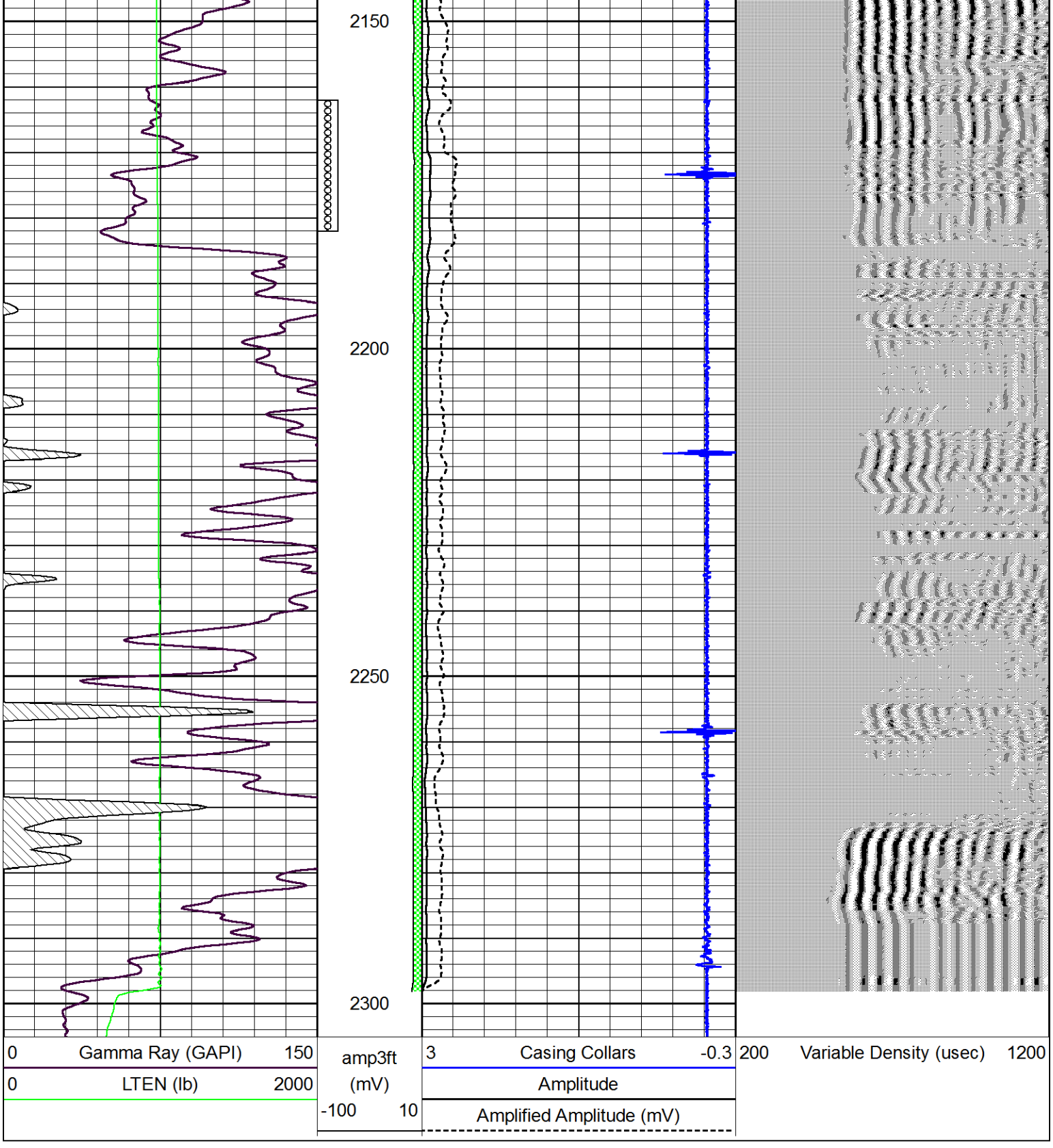
Presentation Format	excel
Dataset Creation	Fri Jan 04 12:10:24 2019
Charted by	Depth in Feet scaled 1:240




2150
2200
2250
2300
0
Gamma Ray (GAPI)
150
0
LTEN (lb)
2000
amp3ft
(mV)
-100
10
3
Casing Collars
-0.3
Amplitude
Amplified Amplitude (mV)
200
Variable Density (usec)
1200

WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST

Scale 1:240 (5"=100') Imperial

Well Name:	**BURKETT 'E' #51**		
Location:	**SE SE NW SW SEC. 23-23S-10E**		
Licence Number:	**API: 15-073-24242**	**Region:**	**Greenwood Co., KS**
Spud Date:	**November 27, 2017**	**Drilling Completed:**	**December 3, 2018**
Surface Coordinates:	**1525' FSL & 4200' FEL**		
Bottom Hole Coordinates:	**Vertical Hole Measured from GL**		
Ground Elevation (ft):	**1291'**	**K.B. Elevation (ft):**	**1297'**
Logged Interval (ft):	**1400'** **To: RTD**	**Total Depth (ft):**	**2318'**
Formation:	**Mississippi**		
Type of Drilling Fluid:	**Chemical Premix (Displaced)**		

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR:

Company: CROSS BAR ENERGY, LLC
Address: 1700 N. Waterfront Parkway
Bldg. 300, Suite A
Wichita, KS 67206

DRILLING CONTRACTOR:

Three Rivers Exploration Co., Rig #1

CASING:

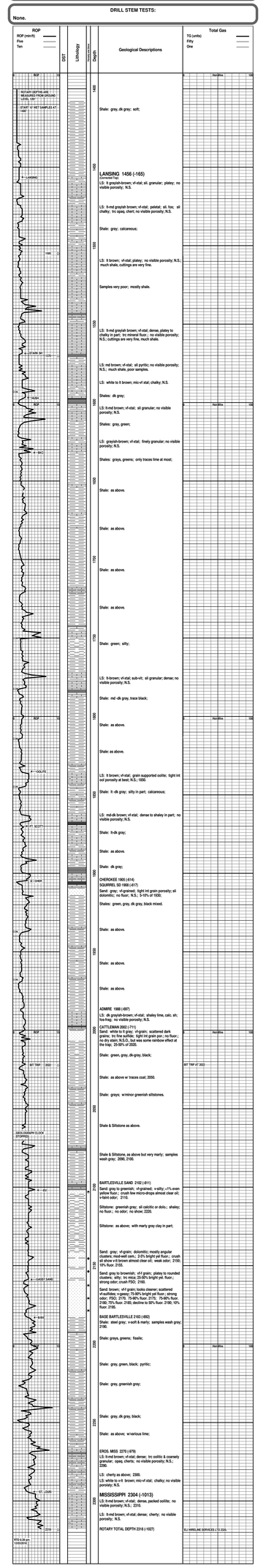
8-5/8" at 209' GL

COMMENTS:

Due to favorable shows of oil & gas found in the lower Bartlesville section the decision was made to set production casing for further testing.

DRILL STEM TESTS:

None.



1400 — Shale: gray, dk gray; soft;

LANSING 1456 (-165)
(Corrected Top)

LS: lt grayish-brown; vf-stat; sil. granular; platey; no visible porosity; N.S.

LS: lt-md grayish brown; vf-stat; pelelstd; sil. foss; sli chalky; trc opaq, chert; no visible porosity; N.S.

Shale: gray; calcareous;

LS: lt brown; vf-stat; platey; no visible porosity; N.S.; much shale, cuttings are very fine.

Samples very poor; mostly shale.

LS: lt-md grayish brown; vf-stat; dense, platey to chalky in part; trc mineral fluor.; no visible porosity; N.S.; cuttings are very fine, much shale.

LS; md brown; vf-stat; sli pyritic; no visible porosity; N.S.; much shale, poor samples.

LS: white to lt brown; mic-vf stat; chalky; N.S.

Shales: dk gray;

1650 — LS: lt-md brown; vf-stat; sli granular; no visible porosity; N.S.

Shales: gray, green;

LS: grayish-brown; vf-stat; finely granular; no visible porosity; N.S.

Shales: grays, greens; only traces lime at most;

Shale: as above.

Shale: as above.

Shale: as above.

1750 — Shale: as above.

Shale: as above.

Shale: green; silty;

LS: lt brown; vf-stat; sub-vfc; sil granular; dense; no visible porosity; N.S.

1800 — Shale: md -dk gray, trace black;

Shale: as above.

Shale: as above.

LS: lt brown; vf-stat; grain supported oolitic; tight int oul porosity at best; N.S.; 1850.

1850 — Shale: lt -dk gray; silty in part; calcareous;

LS; md-dk brown; vf-stat; dense to shaley in part; no visible porosity; N.S.

Shale: lt-dk gray;

Shale: as above.

1900 — Shale: dk gray;

CHEROKEE 1905 (-614)
SQUIRREL SD 1908 (-617)

Sand: gray; vf-stained; tight int grain porosity; sli dolomitic; no fluor; N.S.; 5-10% of 1930;

Shales: green, gray, dk gray, black mixed.

Shale: as above.

1950 — Shale: as above.

Shale: as above.

ADMIRE 1998 (-697)

LS: dk grayish-brown; vf-stat; shaley lime, calc. sh; fos-frag; no visible porosity; N.S.

2000 — **CATTLEMAN 2002 (-701)**
Sand: gray; vf-grain; sl dolomitic; scattered dark grains, mic fine sub/rd; tight int grain por.; no fluor.; no dry stain; N.S.G., but was some rainbow effect at the trap; 25-50% of 2020.

Shale: green, gray, dk-gray, black;

Shale: as above w/ traces coal; 2050.

2050 — Shale: grays; w/minor greenish siltstones.

Shale & Siltstone as above.

2100 — **BARTLESVILLE SAND 2102 (-811)**

Sand: gray to greenish; vf-grained; v-silty; +1% even yellow fluor.; crush few micro-drops almost clear oil; +faint odor; 2116.

Siltstone: greenish gray; sli calcitic or dolo.; shaley; no fluor.; no odor; no show; 2220.

2150 — Siltstone: as above; with marly grey clay in part;

Sand: gray; vf-grain; dolomitic; mostly angular clusters; mod-well cem.; 2-3% bright yel fluor.; crush sli show +/-fr brown almost clear oil; weak odor; 2156; 10% fluor. 2155.

Sand: grey to brownish; vf-f grain; platey to rounded clusters; silty; trc mica; 25-50% bright yel. fluor.; strong odor; crush FSO; 2180.

2200 — Sand: brown; vf-f grain; looks cleaner; scattered vf-subfloks; v-gassy; 75-90% bright yel fluor.; strong odor; FSO; 2175. 75-90% fluor. 2175. 75-90% fluor. 2180; 75% fluor. 2185; decline to 50% fluor. 2190; 10% fluor. 2195.

BASE BARTLESVILLE 2183 (-882)

Shale: steel gray; v-soft & marly; samples wash grey; 2190.

2250 — Shale: grays, greens; fissile;

Shale: gray, green, black; pyritic;

Shale; gray, greenish grey;

2300 — Shale; gray, dk gray, black;

Shale: as above; w/various lime;

EROS MISS 2270 (-979)

LS: lt-md brown; vf-stat; dense; trc oolitic & coarsely crystalline; opaq, cherts; no visible porosity; N.S.; 2290.

LS: cherty as above; 2300.

LS: white to v-lt brown; mic-vf stat; chalky; no visible porosity; N.S.

MISSISSIPPI 2304 (-1013)

LS: lt-md brown; vf-stat; dense, packed oolitic; no visible porosity; N.S.; 2310.

LS: lt-md brown; vf-stat; dense; cherty; no visible porosity; N.S.

ROTARY TOTAL DEPTH 2318 (-1027)

ELI WIRELINE SERVICES LTD 2324

WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST

Scale 1:240 (5"=100') Imperial

Well Name: BURKETT 'E' #51
Location: SE SE NW SW SEC. 23-23S-10E
Licence Number: API: 15-073-24242
Spud Date: November 27, 2018
Surface Coordinates: 1525' FSL & 4200' FEL

Region: Greenwood Co., KS
Drilling Completed: December 3, 2018

Bottom Hole Coordinates: Vertical Hole Measured from GL
Ground Elevation (ft): 1291' K.B. Elevation (ft): 1297'
Logged Interval (ft): 1400' To: RTD Total Depth (ft): 2318'
Formation: Mississippi
Type of Drilling Fluid: Chemical Premix (Displaced)

Printed by MUDLOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR:

Company: CROSS BAR ENERGY, LLC
Address: 1700 N. Waterfront Parkway
Bldg. 300, Suite A
Wichita, KS 67206

DRILLING CONTRACTOR:

Three Rivers Exploration Co., Rig #1

CASING:

8-5/8" at 209' GL

COMMENTS:

Due to favorable shows of oil & gas found in the lower Bartlesville section the decision was made to set production casing for further testing.

DRILL STEM TESTS:

None.

ROP (min/ft) — Five — Ten

DST

Lithology

Geological Descriptions

Total Gas (units) — Fifty — One

ROP 0 — 30

Gas Ratio 0 — 100

ROTARY DEPTHS ARE MEASURED FROM GROUND LEVEL 1297'

START 10' WET SAMPLES AT 1400'

K.C.

MKC

STARK SH

BKC

HUSH

BVC

Tucumcari Sh
Amoret Lm
Bandera Sh

PAWNEE

ALTAMONT

CHEROKEE

ACMRE

MT TRIP

BEGIN DRAMPA FLOW STOPPED

BVU

SAND LENS

CHERT SAND

BASE BARTLESVILLE

BVM

1400
1450
1500
1550
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
2150
2200
2250
2300
2318

Shale: gray, dk gray; soft;

KANS. CITY 1456 (-165)
(Cherokee Top)
LS: lt grayish-brown; vf-stat; sli. granular; platey; no visible porosity; N.S.

LS: lt-md grayish brown; vf-stat; peletal; sli. foss; sli chalky; trc opaq, chert; no visible porosity; N.S.

Shale: gray; calcareous;

LS: lt brown; vf-stat; platey; no visible porosity; N.S.; much shale, cuttings are very fine.

Samples very poor; mostly shale.

LS: lt-md grayish brown; vf-stat; dense, platey to blocky in part; tr-mineral fluor.; no visible porosity; N.S.; cuttings are very fine, much shale.

LS: md brown; vf-stat; sli pyritic; no visible porosity; N.S.; much shale, poor samples.

LS: white to lt brown; mic-vf stat; chalky; N.S.

Shales: dk grey;

LS: lt-md brown; vf-stat; sli granular; no visible porosity; N.S.

Shales: grey, green;

LS: grayish-brown; vf-stat; finely granular; no visible porosity; N.S.

Shales: grays, greens; only traces lime at most;

Shale: as above.

Shale: as above.

Shale: as above.

Shale: as above.

Shale: as above.

Shale: green; silty;

LS: b-brown; vf-stat; sub-vfc; sli granular; dense; no visible porosity; N.S.

Shale: md -dk gray; trace black;

Shale: as above.

Shale: as above.

LS: lt brown; vf-stat; grain supported oolits; tight int ost porosity wt bet; N.S.; 1650.

Shale: lt -dk gray; silty in part; calcareous;

LS; md-dk brown; vf-stat; dense to shaley in part; no visible porosity; N.S.

Shale: fr-dk gray;

Shale: as above.

Shale: dk gray;

CHEROKEE 1905 (-614)
SQUIRREL SD 1908 (-617)
Sand: grey; vf-grained; tight int grain porosity; sli dolomitic; no fluor.; N.S.; 5-15% of 1930.

Shales: green, gray, dk gray, black mixed.

Shale: as above.

Shale: as above.

Shale: as above.

ACMRE 1988 (-697)
LS: dk grayish-brown; vf-stat; shaley lime, calc; sli; fos-frag; no visible porosity; N.S.

CATTLEMAN 2002 (-711)
Sand: white to lt gray; vf-grain; scattered dark grains; tr-fine sulfide; tight int grain por.; no fluor.; no dry stain; N.S.O., but was some rainbow effect at the trap; 25-30% of 2020.

Shale: green, gray, dk-gray, black;

MT TRIP 47 2023

Shale: as above w/ traces coal; 2050.

Shale: grays; w/minor greenish siltstones.

Shale & Siltstone as above.

Shale & Siltstone, as above but very marly; samples wash grey; 2096, 2100.

BARTLESVILLE 2102 (-811)
Sand: grey to greenish; vf-grained; wshly; <1% even yellow fluor.; crush few micro-drops almost clear oil; v-faint odor; 2110.

Siltstone: greenish-grey; sli calcitic or dolo.; shaley; no fluor.; no odor; no show; 2220.

Siltstone: as above; with marly gray clay in part;

Sand: grey; vf-grain; dolomitic; mostly angular clusters; mod-well com.; crush sli show v-fl brown almost clear oil; weak odor; 2-5% bright yel fluor. 2130; 10% fluor. 2155.

Sand: grey to brownish; vf-f grain; platey to rounded clusters; silty; tr-mica; 25-30% bright yel. fluor.; strong odor; crush FSO; 2160.

Sand brown; vf-f grain; looks cleaner; scattered vf-sulfides; v-grassy; 75-90% bright yel fluor., strong odor; 2165; 2175; 75-90% fluor. 2175; 75-90% fluor. 2180; 75% fluor. 2185; decline to 50% fluor. 2190; 10% fluor. 2195.

Shale: steel gray; v-soft & marly; samples wash gray; 2180.

Shale: grays, greens; fissile;

Shale: grey, green, black; pyritic;

Shale: grey, greenish gray;

Shale: grey, dk gray, black;

Shale: as above; w/various lime;

EROS. MISS 2270 (-979)
LS: lt-md brown; vf-stat; dense; trc oolitic & coarsely granular; opaq, cherts; no visible porosity; N.S.; 2290.

LS: cherty as above; 2295.

LS: white to v-lt brown; mic-vf stat; chalky; no visible porosity; N.S.

LS: lt-md brown; vf-stat; dense, packed oolitic; no visible porosity; N.S.; 2315. Looks like St. Louis LS.

LS; lt-md brown; vf-stat; dense; cherty; no visible porosity; N.S.

ROTARY TOTAL DEPTH 2318 (-1027)

RTD 6:30 pm 12/02/2018

ELI WIRELINE SERVICES LTD 2320.