



Pioneer Energy Services

# Dual Induction Log

15-035-24,494-00-00

API No.

Company **Range Oil Company, Inc.**

Well **Hale # 13**

Field **Black Creek**

County **Cowley** State **Kansas**

Location **1650' FNL & 1320' FWL**

Sec: **27** Twp: **34S** Rge: **3E**

Permanent Datum **Ground Level** Elevation **1146**  
 Log Measured From **Kelly Bushing** **10 Ft. Above Perm. Datum**  
 Drilling Measured From **Kelly Bushing**

Other Services

CNL/CDL  
 Elevation  
 K.B. 1156  
 D.F. 1146  
 G.L. 1146

Date	3/10/2013	
Run Number	One	
Depth Driller	3452	
Depth Logger	3452	
Bottom Logged Interval	3451	
Top Log Interval	300	
Casing Driller	8.625 @ 320	
Casing Logger	319	
Bit Size	7.875	
Type Fluid in Hole	Chemical	
Salinity, ppm CL	1800	
Density / Viscosity	9.7   61	
pH / Fluid Loss	9.5   8.2	
Source of Sample	Flowline	
Rm @ Meas. Temp	1.10 @ 62	
Rmf @ Meas. Temp	.83 @ 62	
Rmc @ Meas. Temp	1.49 @ 62	
Source of Rmf / Rmc	Charts	
Rm @ BHT	.62 @ 111	
Operating Rig Time	4 Hours	
Max Rec. Temp. F	111	
Equipment Number	15	
Location	Hays	
Recorded By	D.Kerr	
Witnessed By	Ken Wallace	John Washburn

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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 Pioneer Energy Services  
[www.pioneerenergy.com](http://www.pioneerenergy.com)  
 785 625 3858

Ark City KS, 2 West to 131 RD,  
 1 North, 1/8 East, North Into

Database File: c:\warrior\data\range\_hale # 13\range\_hale\_13hd.db  
 Dataset Pathname: DIL\rangstk  
 Presentation Format: dil2in  
 Dataset Creation: Sun Mar 10 06:31:50 2013  
 Charted by: Depth in Feet scaled 1:600

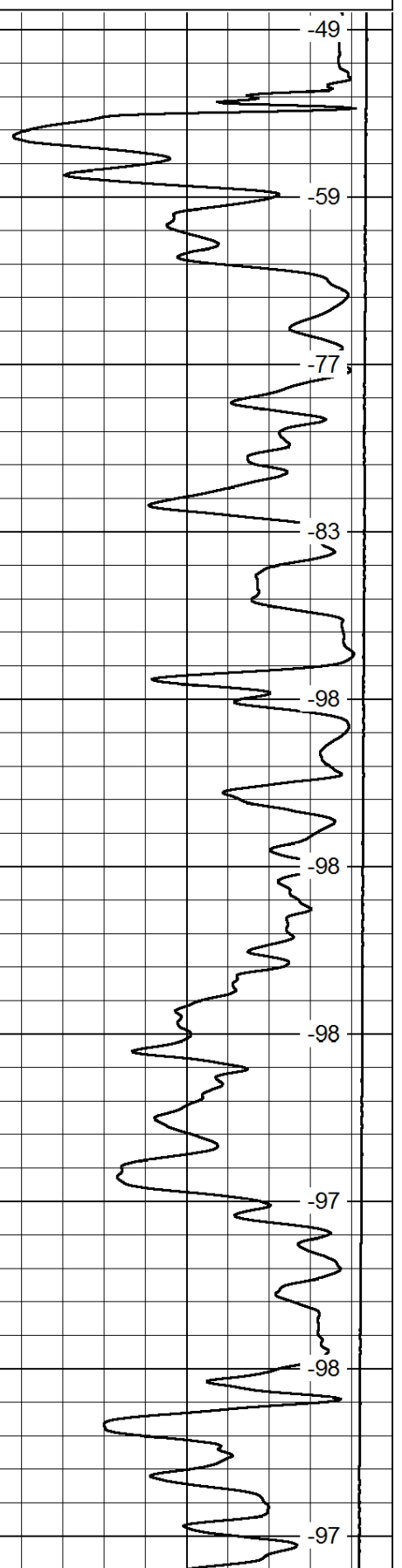
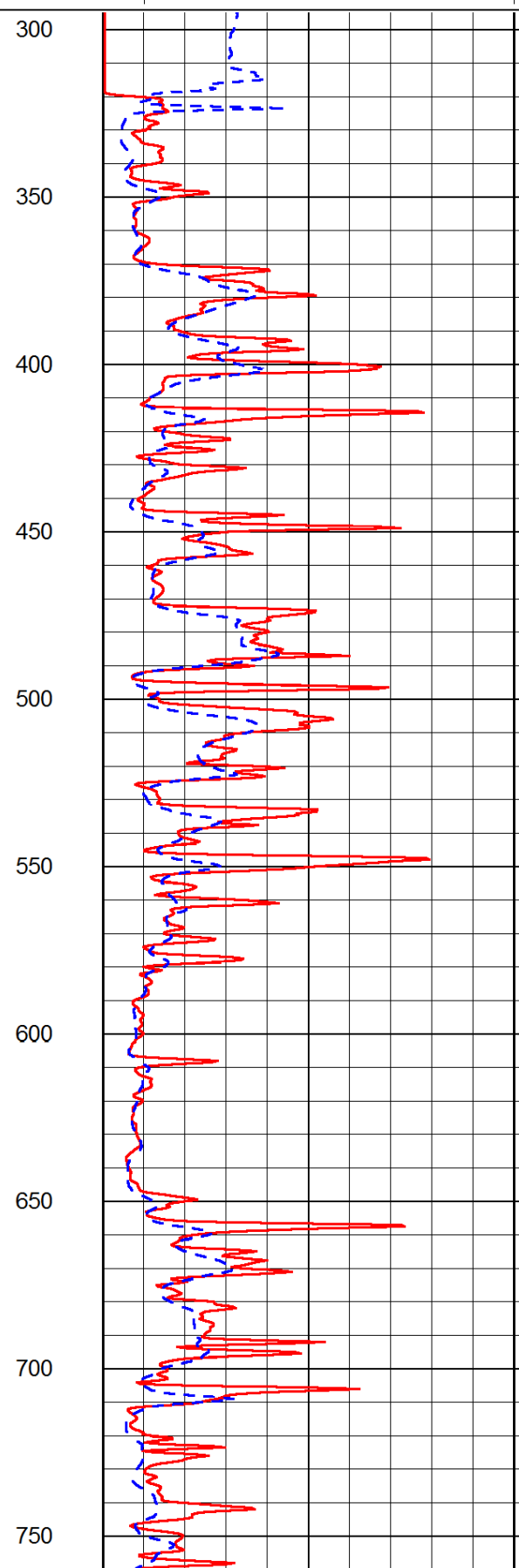
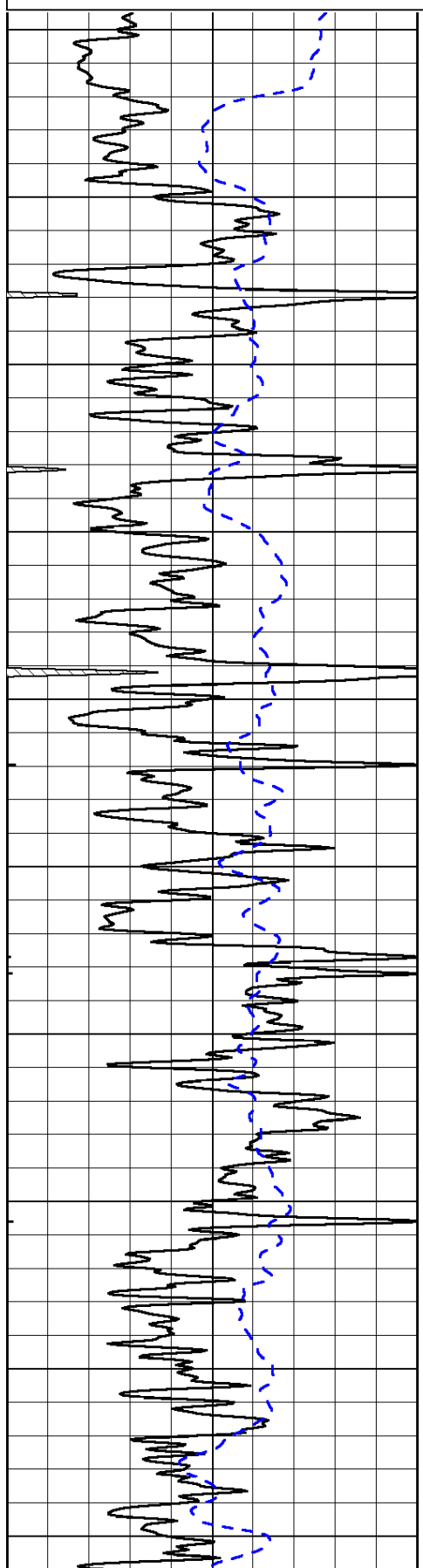
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-200	SP (mV)	0

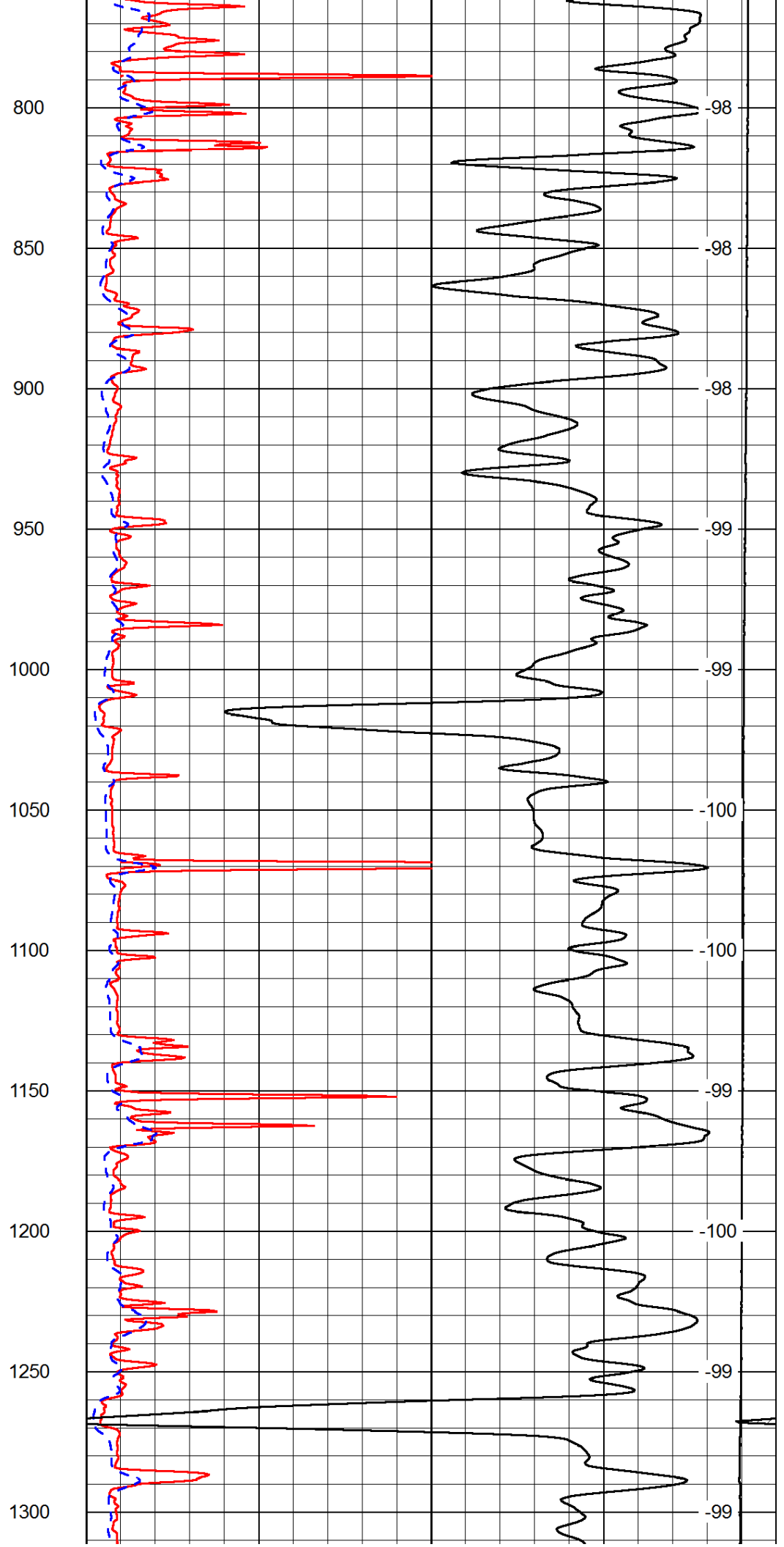
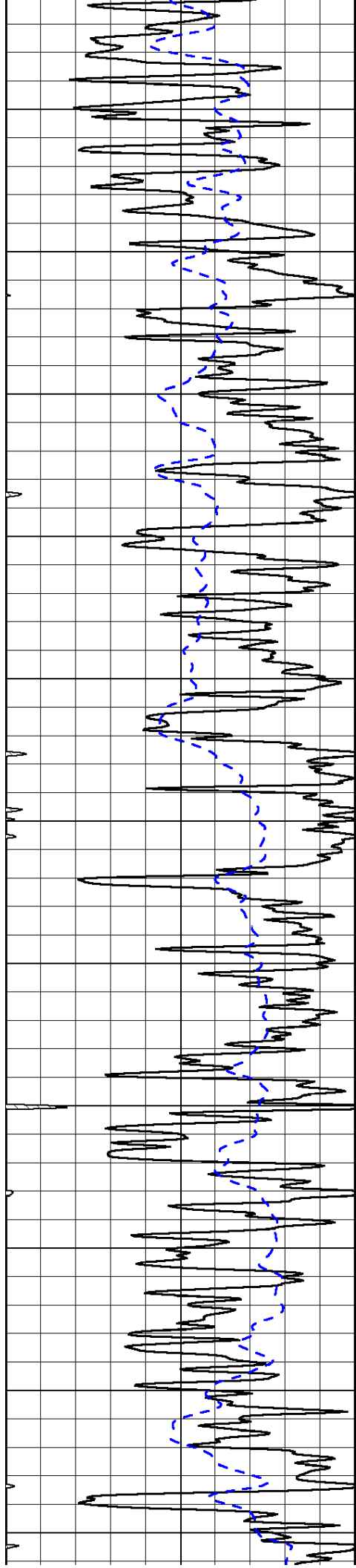
0	Shallow Resistivity	50
0	Deep Resistivity	50

LSPD

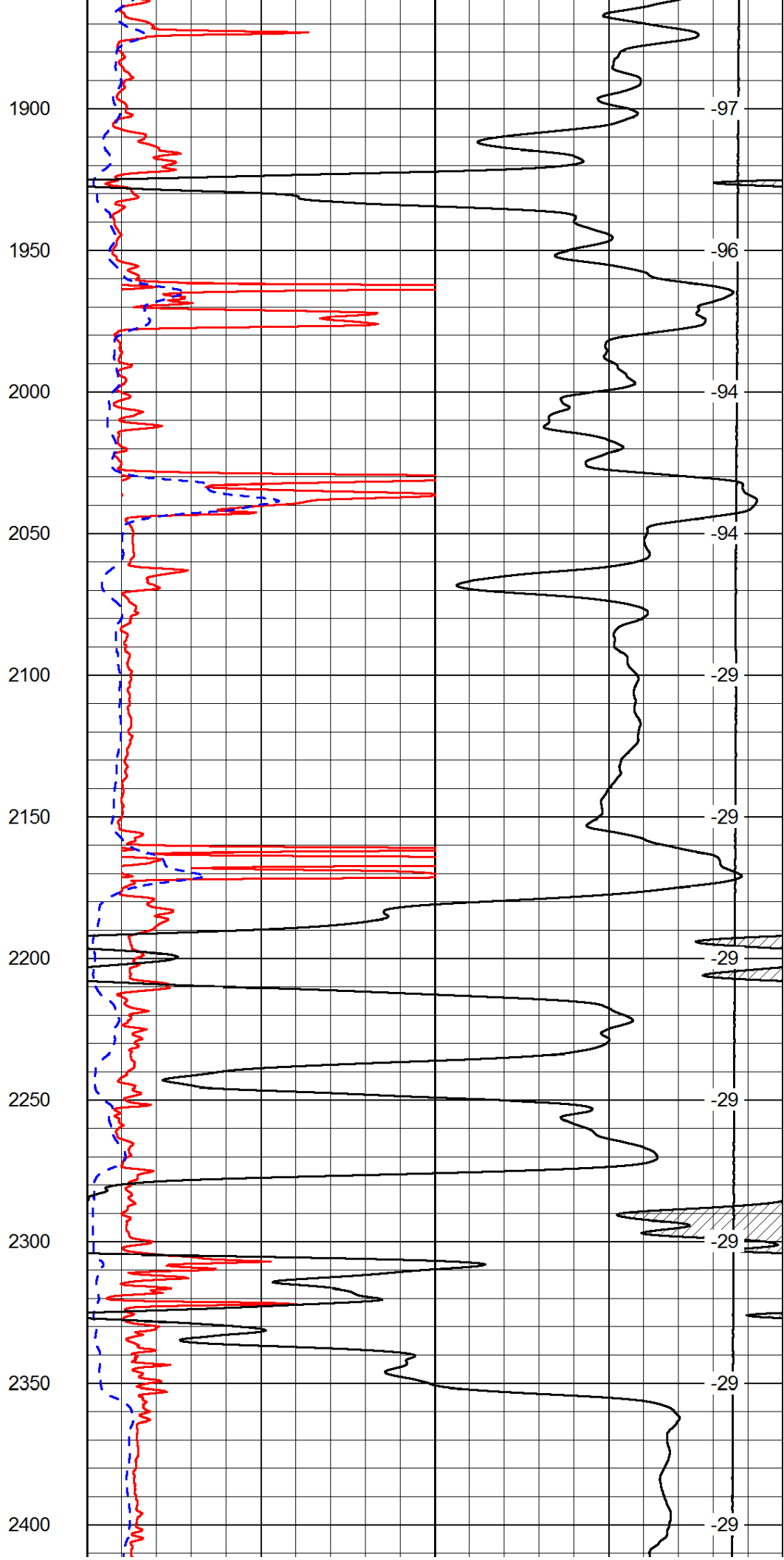
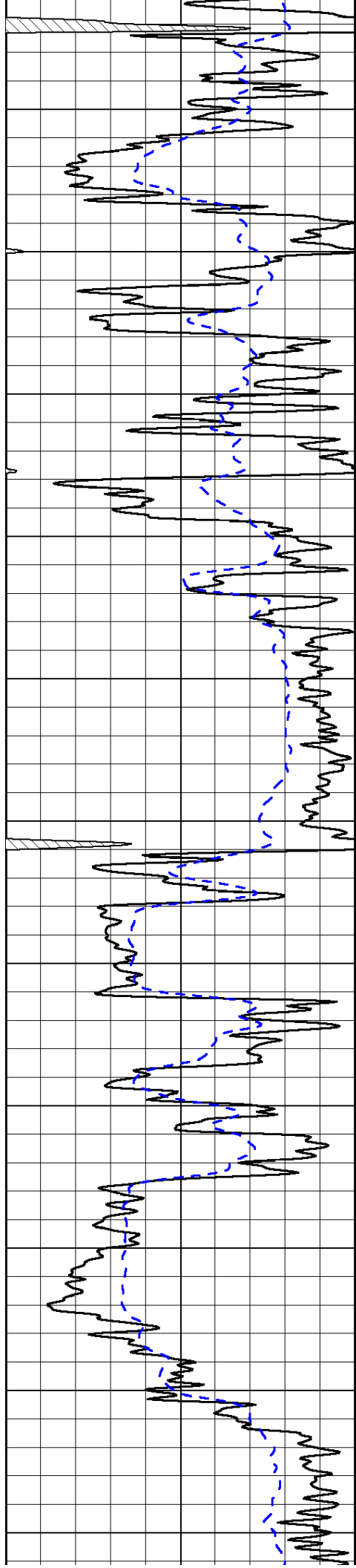
1000	Conductivity	0
15000	Line Tension	0

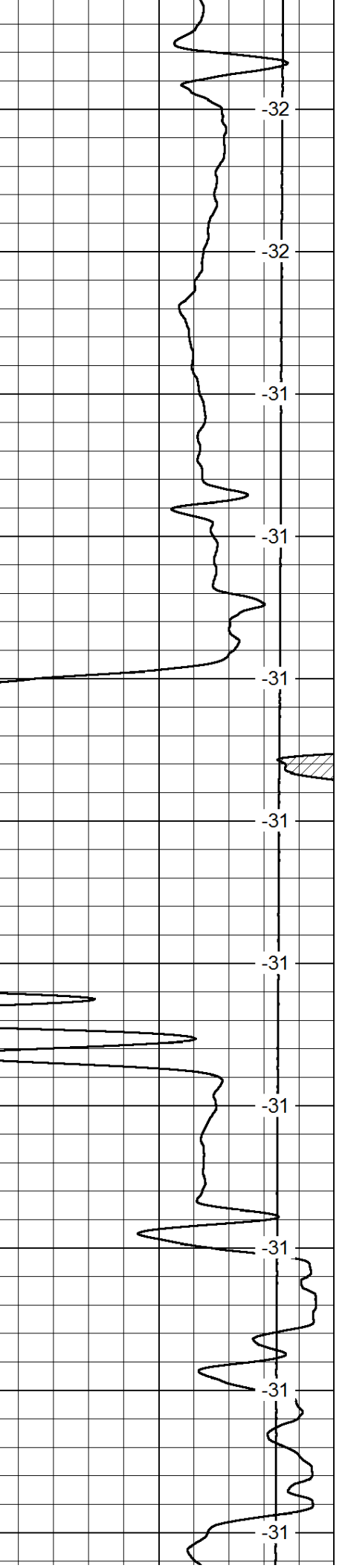
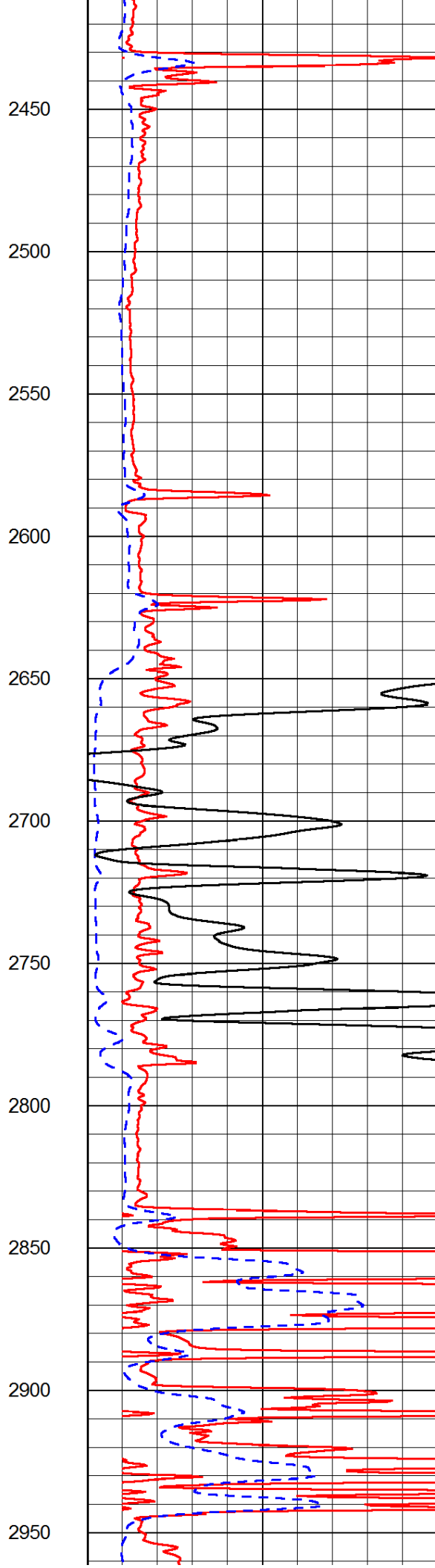
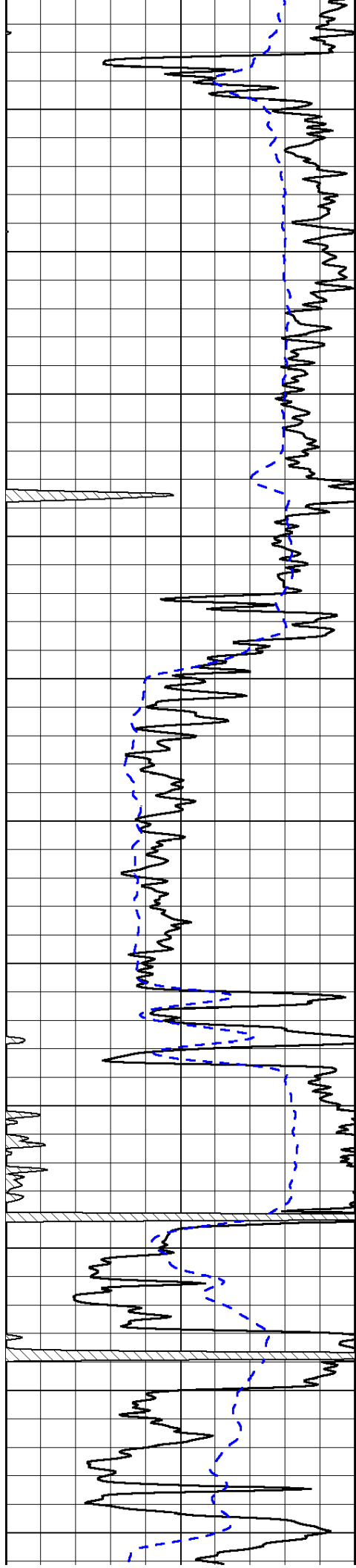
50	Shallow Resistivity	500
50	Deep Resistivity	500

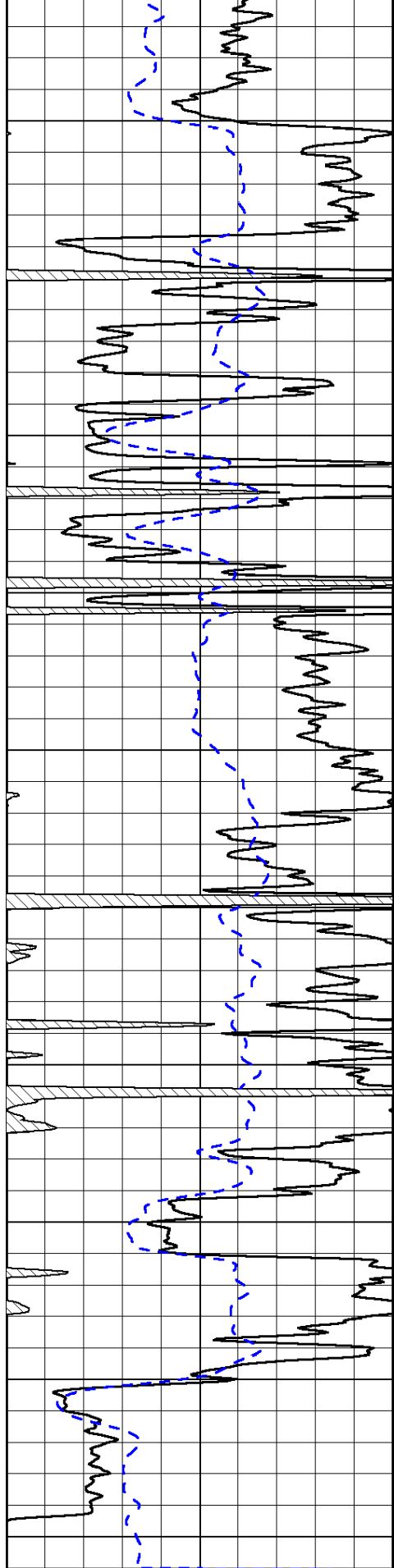




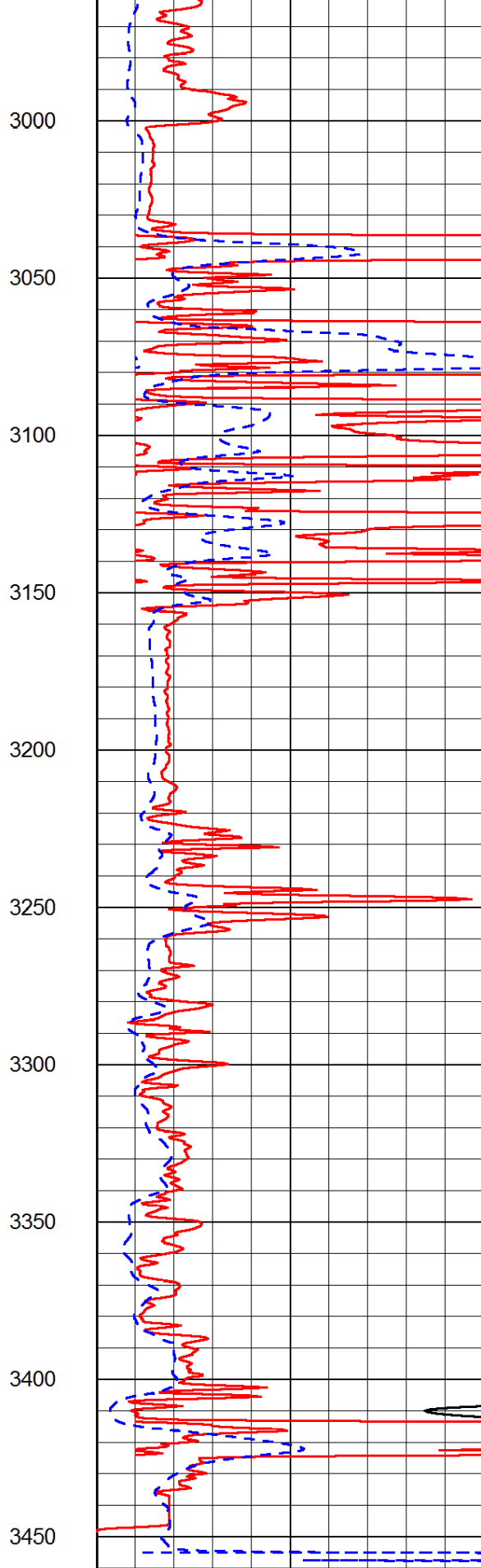




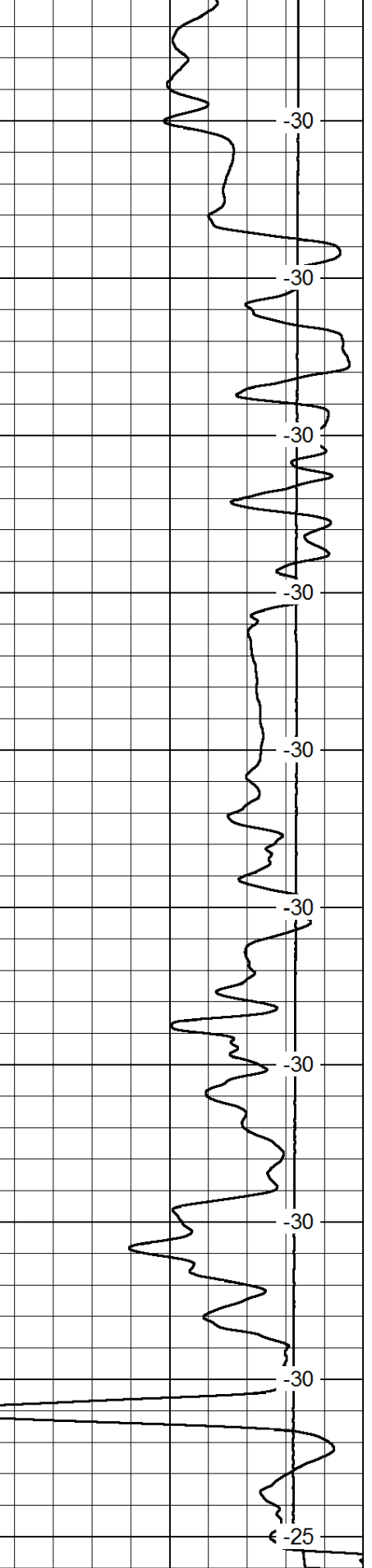




0      Gamma Ray      150  
 -200      SP (mV)      0



0      Shallow Resistivity      50  
 0      Deep Resistivity      50



1000      Conductivity      0  
 15000      Line Tension      0

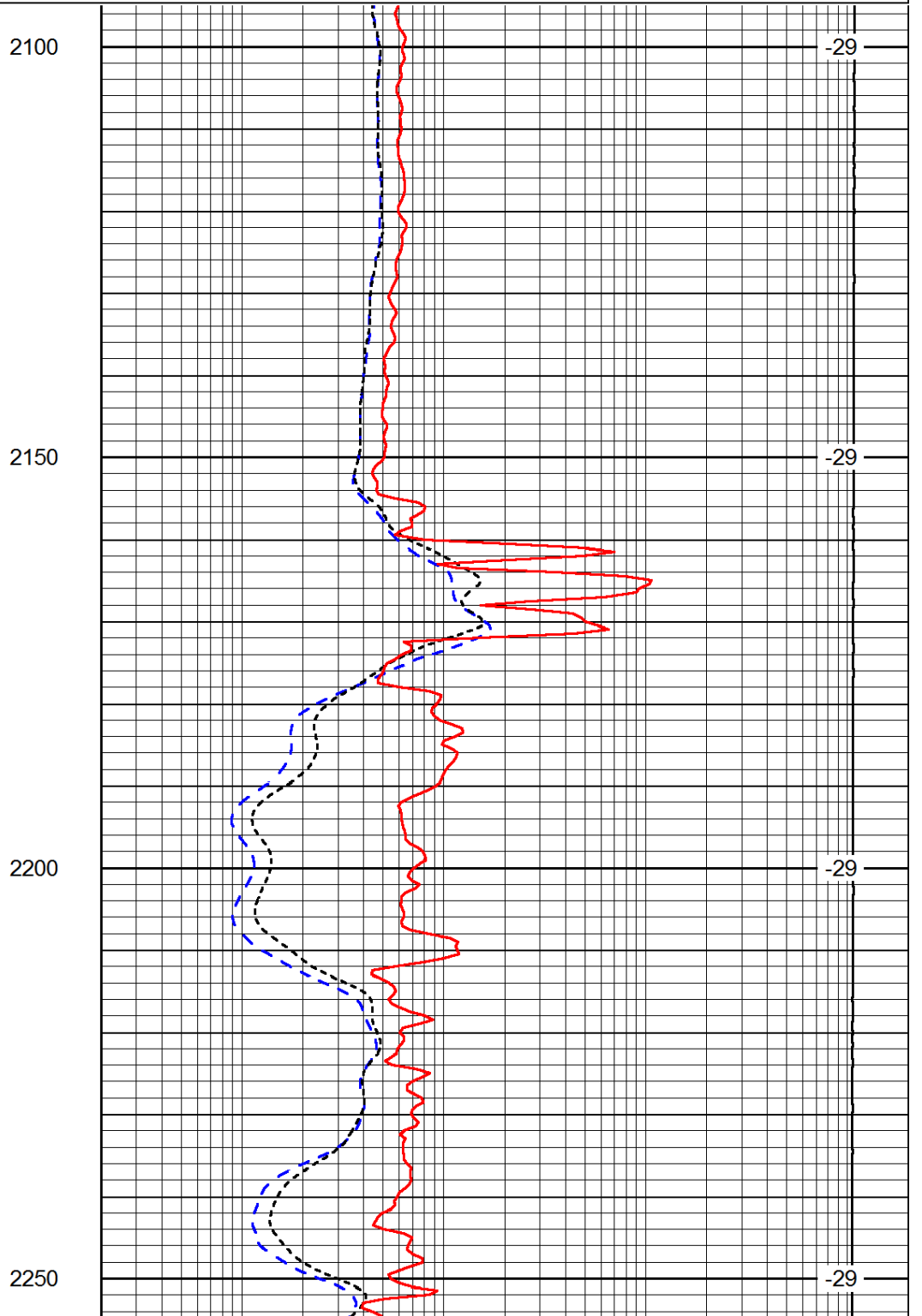
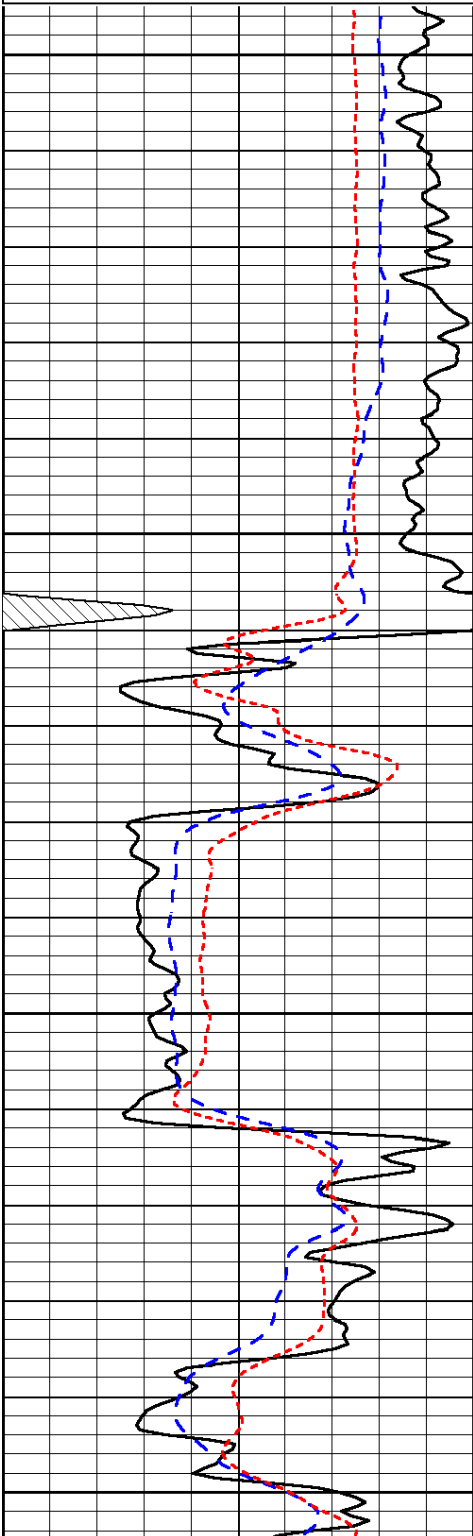
50	Shallow Resistivity	500
50	Deep Resistivity	500

Database File: c:\warrior\data\range\_hale # 13\range\_hale\_13hd.db  
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 Presentation Format: dil  
 Dataset Creation: Sun Mar 10 06:31:50 2013  
 Charted by: Depth in Feet scaled 1:240

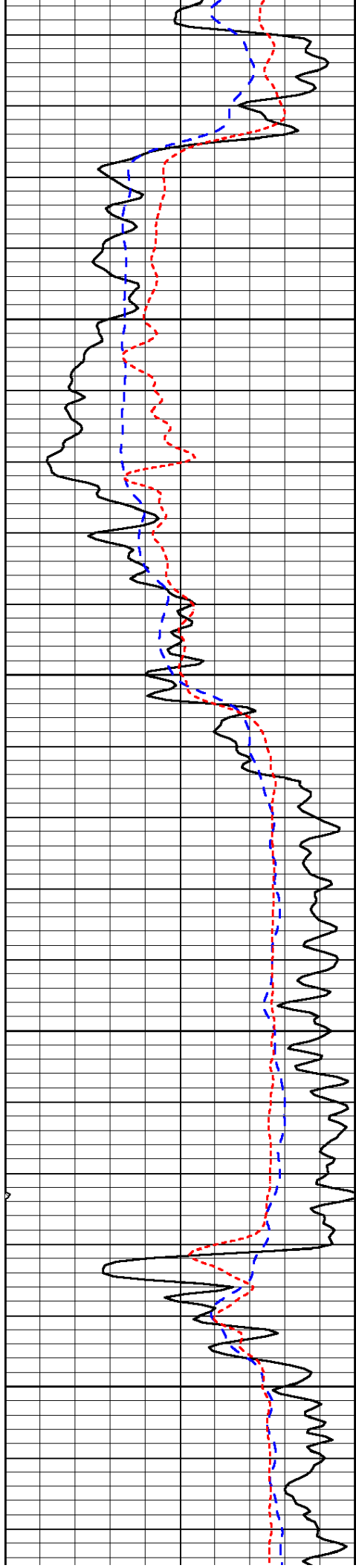
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-200	SP (mV)	0
-160	RxoRt	40

0.2	Deep Resistivity	2000
0.2	Medium Resistivity	2000
0.2	Shallow Resistivity	2000
15000	Line Tension	0

LSPD





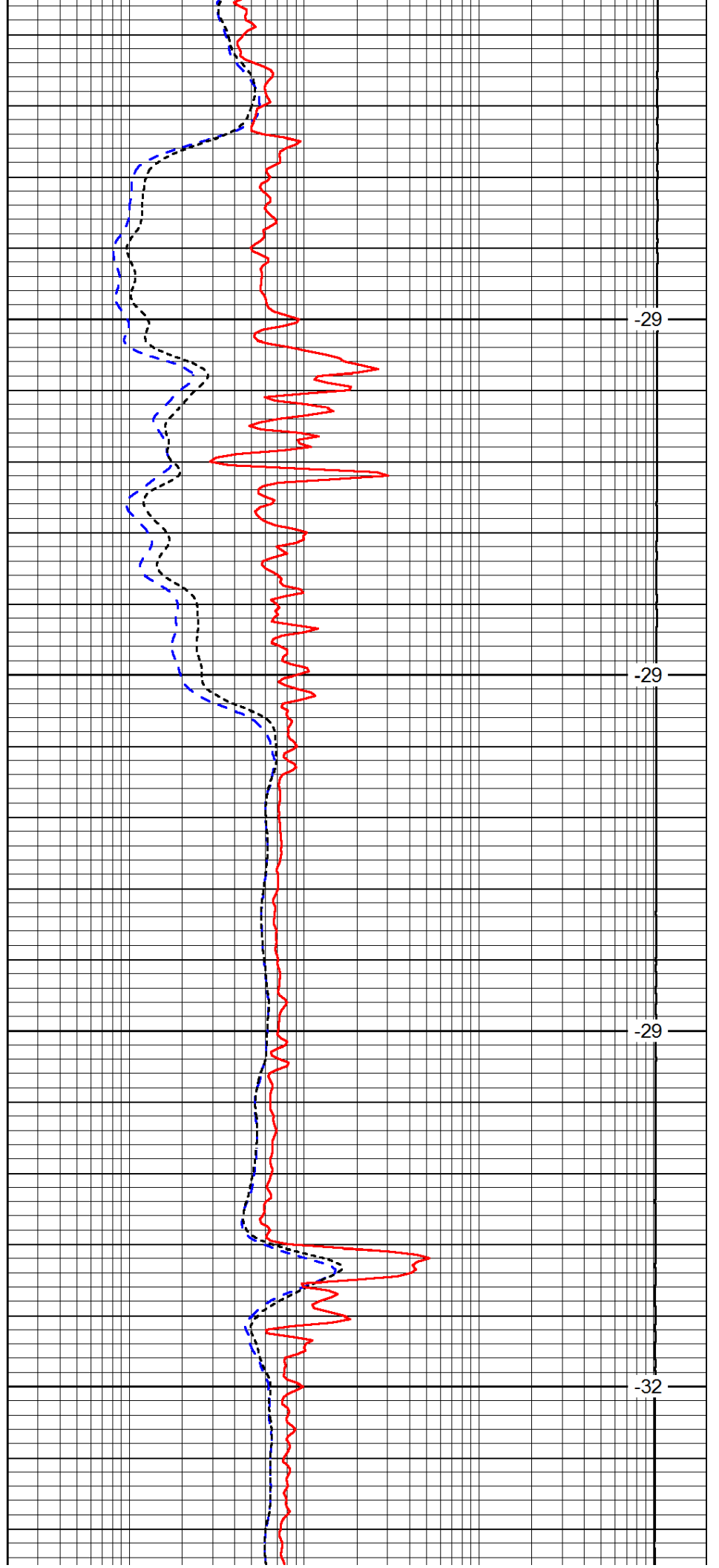


2300

2350

2400

2450

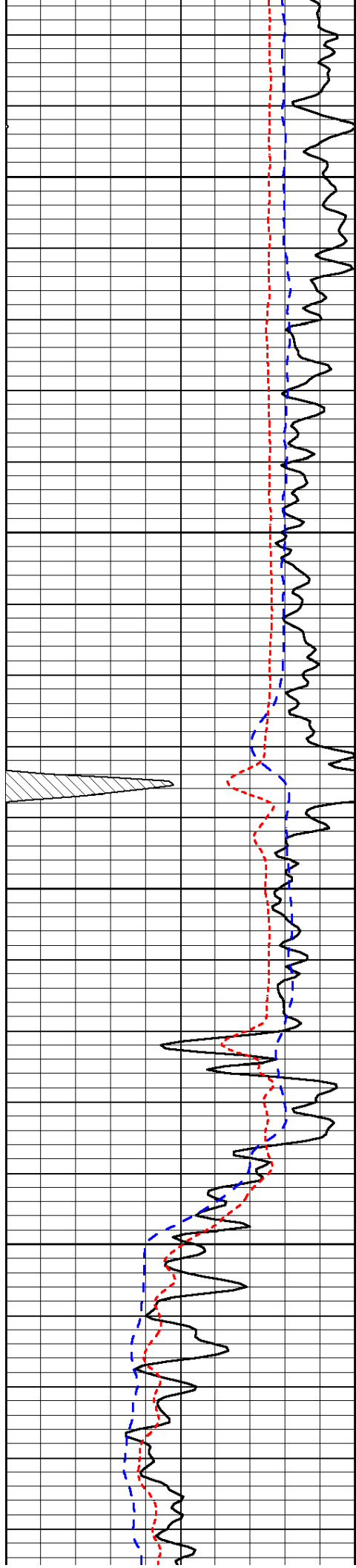


-29

-29

-29

-32



2500

2550

2600

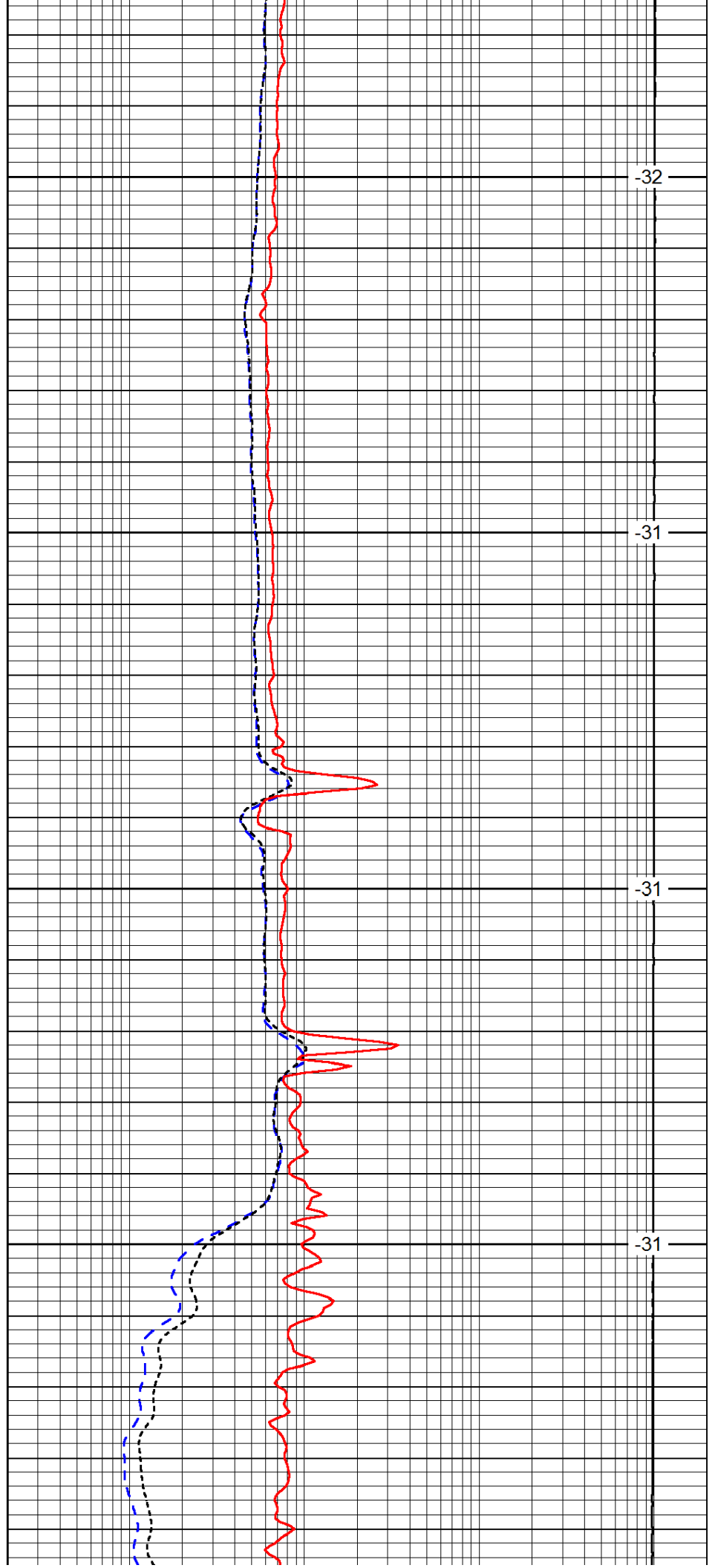
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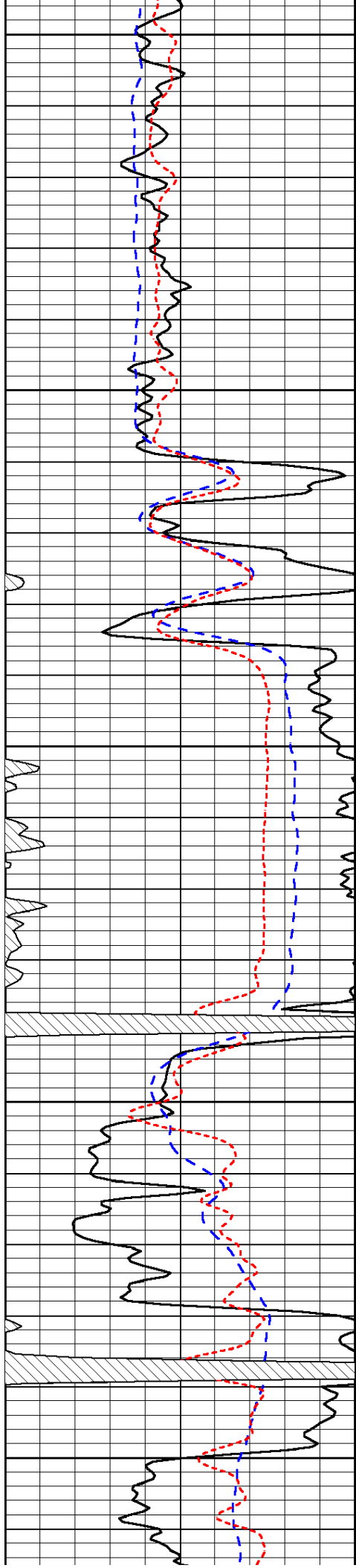
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-31

-31

-31





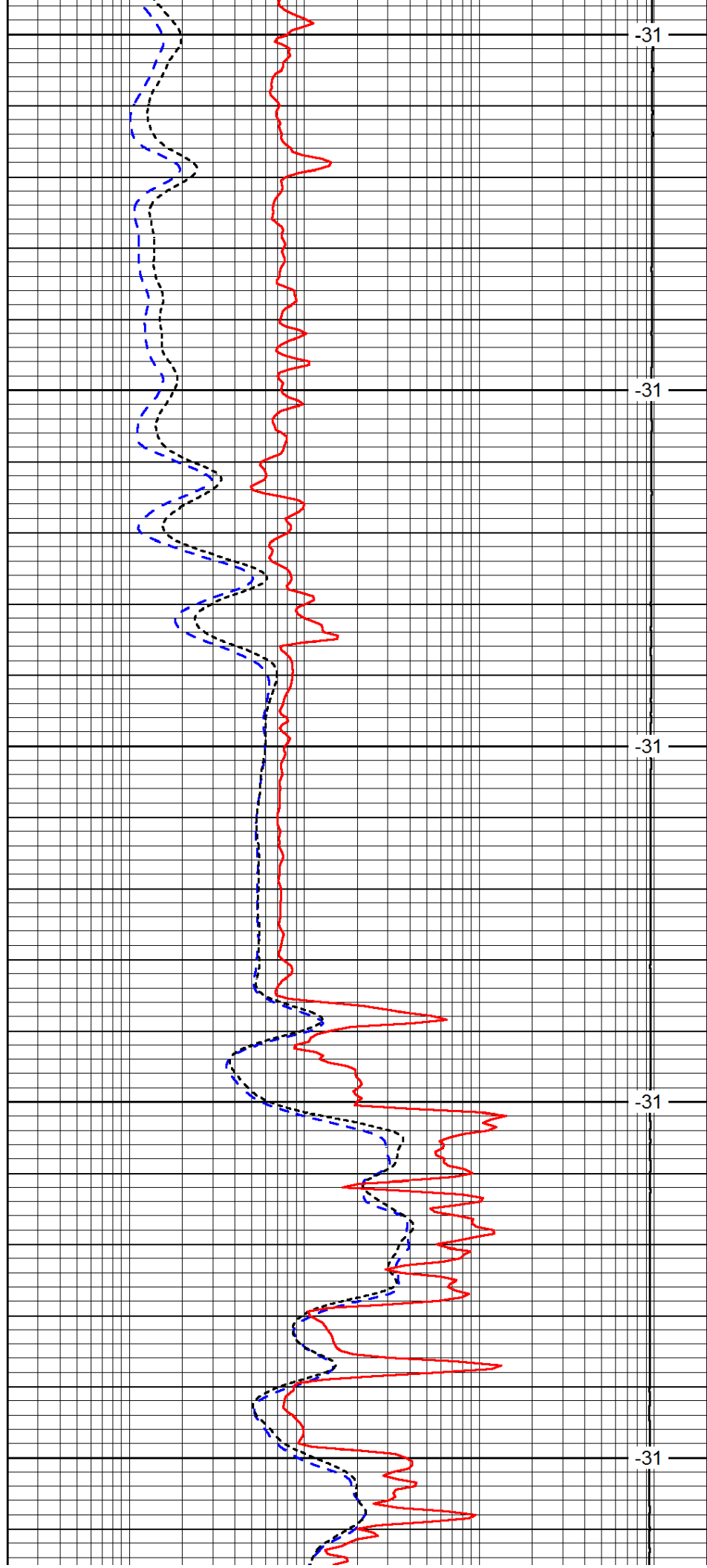
2700

2750

2800

2850

2900



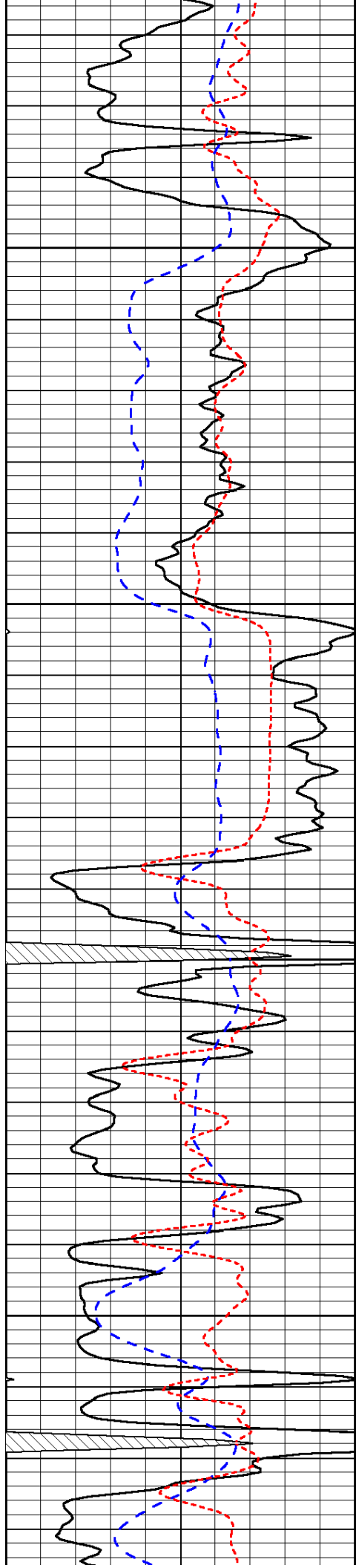
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-31

-31

-31

-31

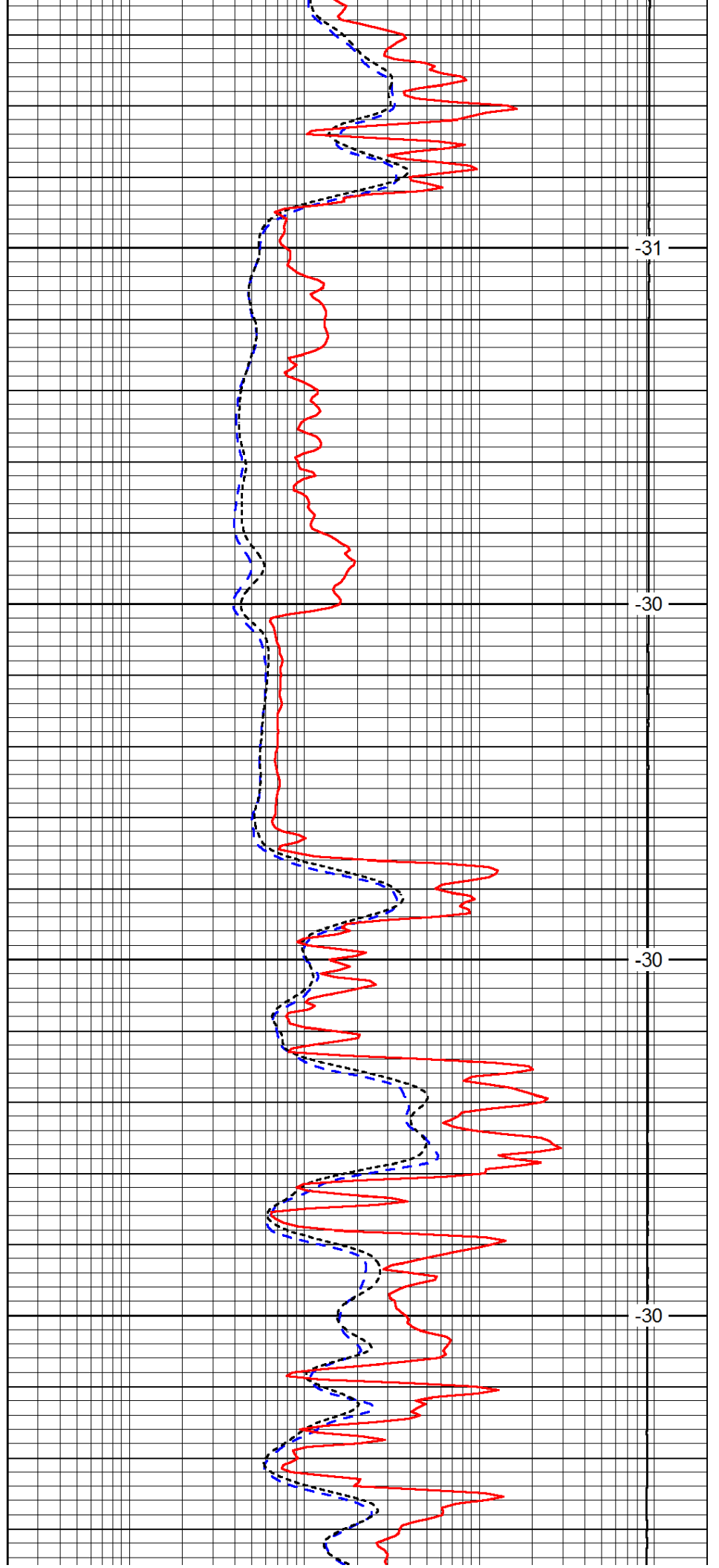


2950

3000

3050

3100

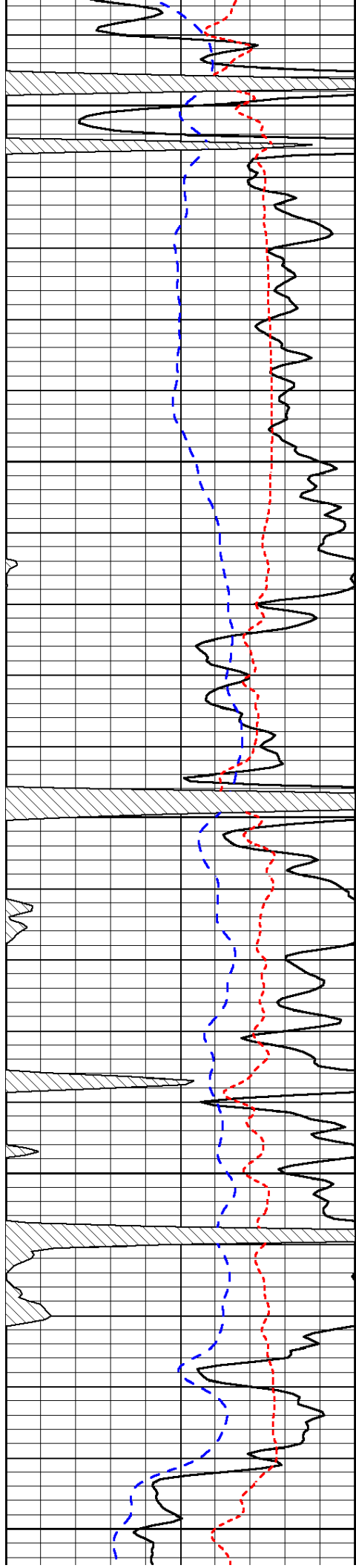


-31

-30

-30

-30



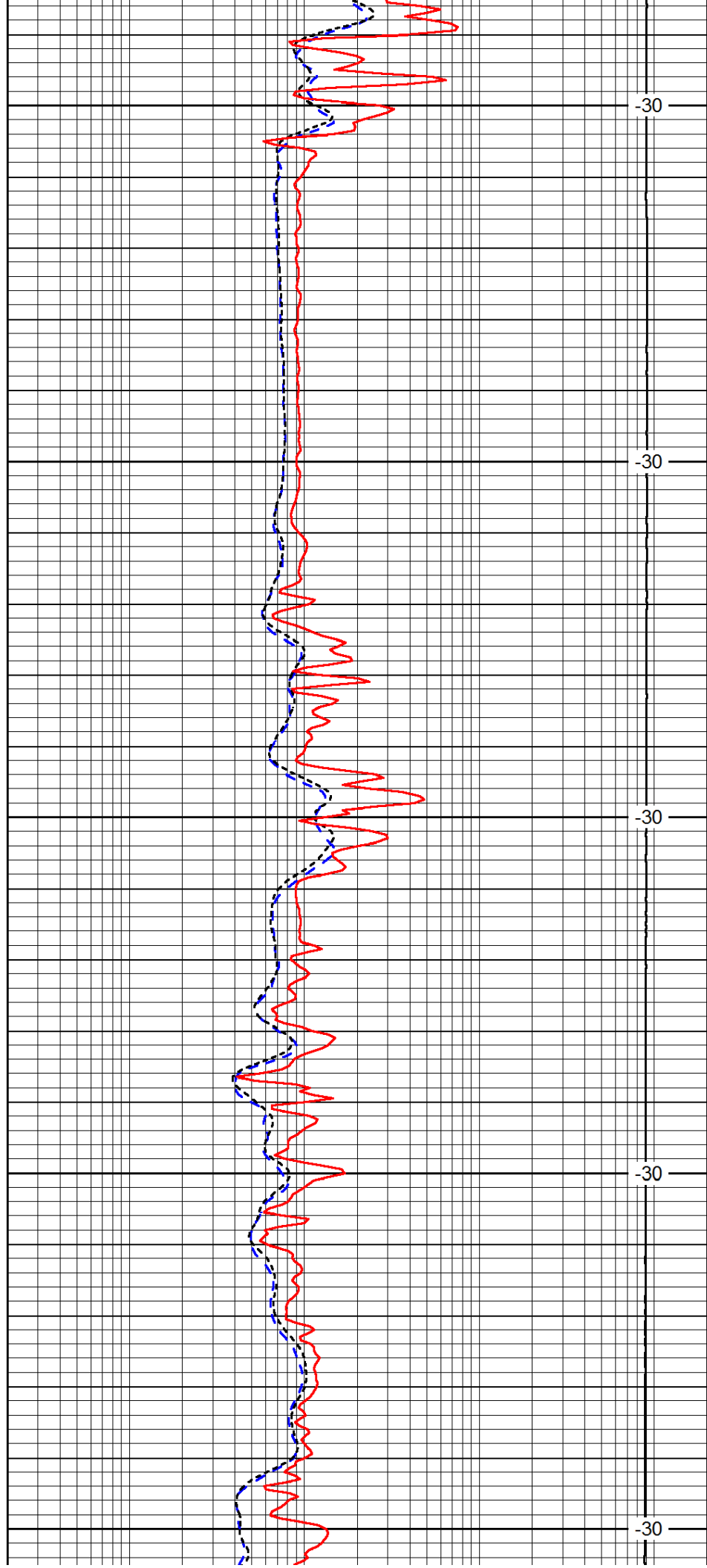
3150

3200

3250

3300

3350



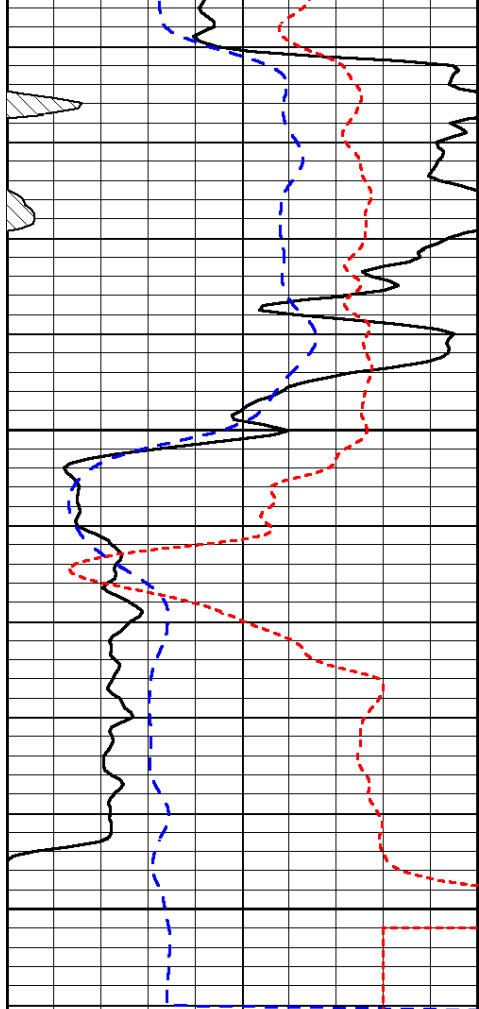
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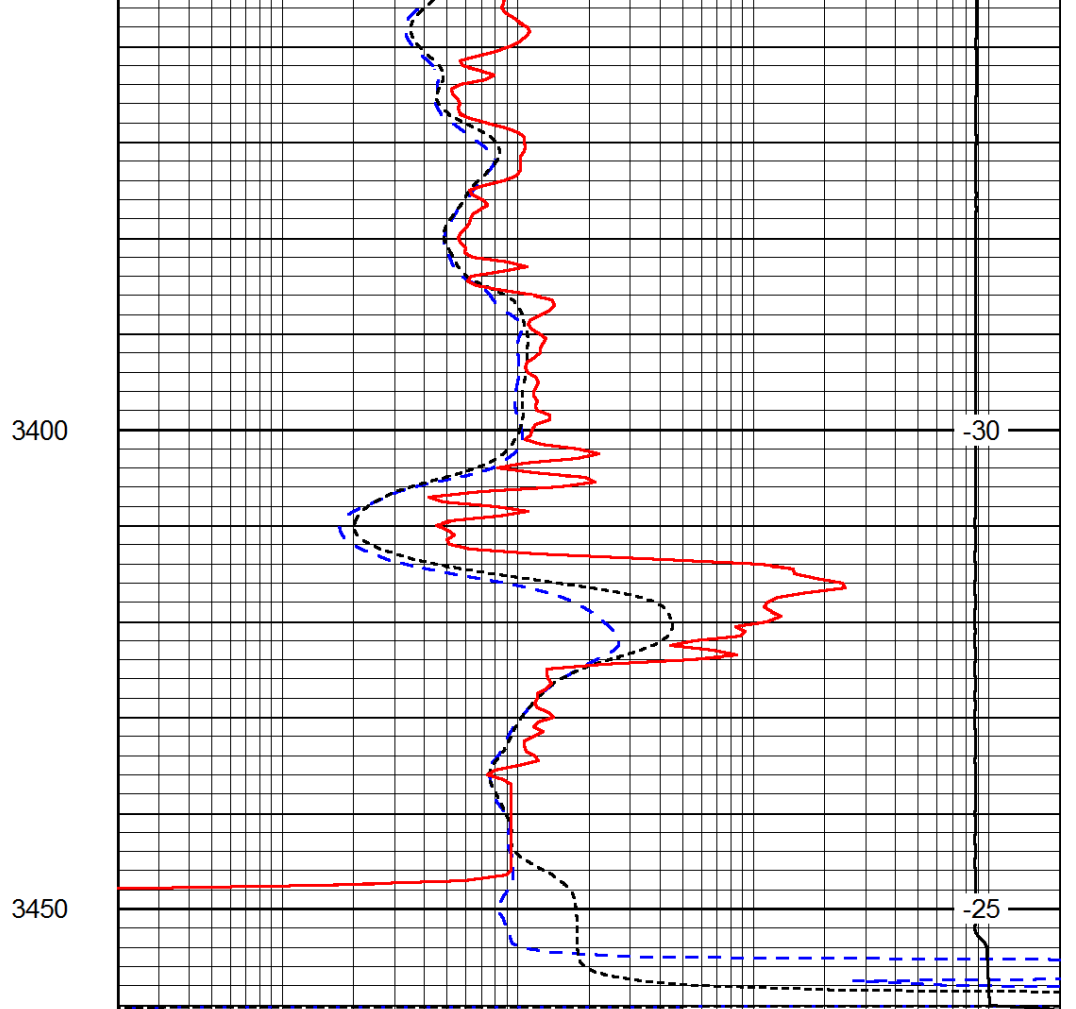
-30

-30

-30



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0.2	Medium Resistivity	2000
0.2	Shallow Resistivity	2000
15000	Line Tension	0

LSPD