



Pioneer Energy Services

Dual Induction Log

API No.

15-179-21348-00-00

Company Dan Haffner

Well Haffner #4-18

Field Haffner Southwest

County Sheridan State

Kansas

Location SW NW SE SW
690' FSL / 1600' FWL

Sec: 18 Twp: 9S Rge: 27W

Other Services
CNL/CDL
MEL

Permanent Datum Ground Level Elevation 2766
Log Measured From Kelly Bushing 8 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Date 1/19/2014

Run Number One

Depth Driller 4200

Depth Logger 4196

Bottom Logged Interval 4195

Top Log Interval 250

Casing Driller 8.625 @ 277

Casing Logger 277

Bit Size 7.875

Type Fluid in Hole Chemical

Salinity, ppm CL 900

Density / Viscosity 9.3 50

pH / Fluid Loss 10.5 6.4

Source of Sample Flowline

Rm @ Meas. Temp 0.90 @ 60

Rmf @ Meas. Temp 0.68 @ 60

Rmc @ Meas. Temp 1.22 @ 60

Source of Rmf / Rmc Charts

Rm @ BHT 0.46 @ 118

Operating Rig Time 4 Hours

Max Rec. Temp. F 118

Equipment Number 15

Location Hays

Recorded By R. Barnhart

Witnessed By Richard Bell

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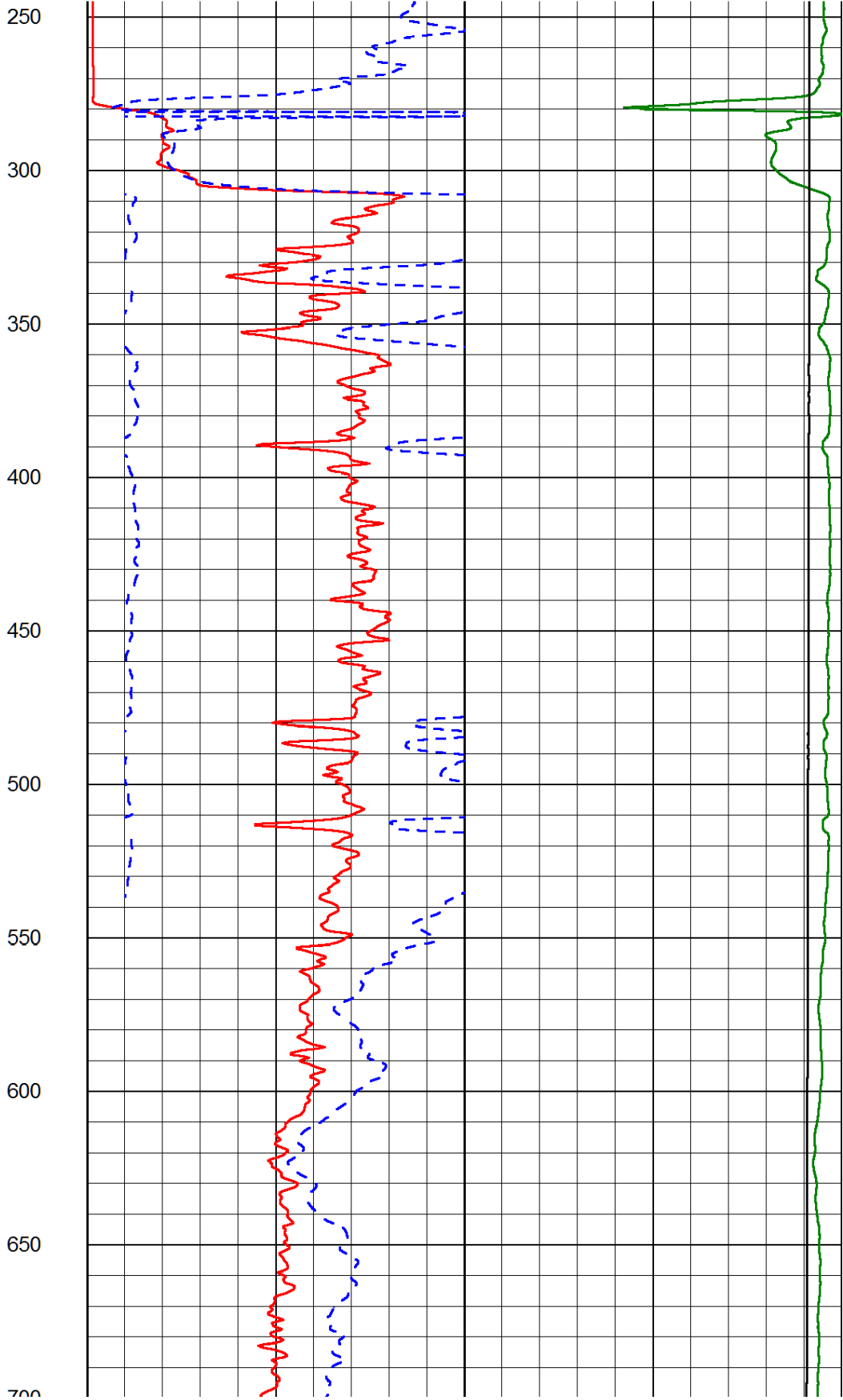
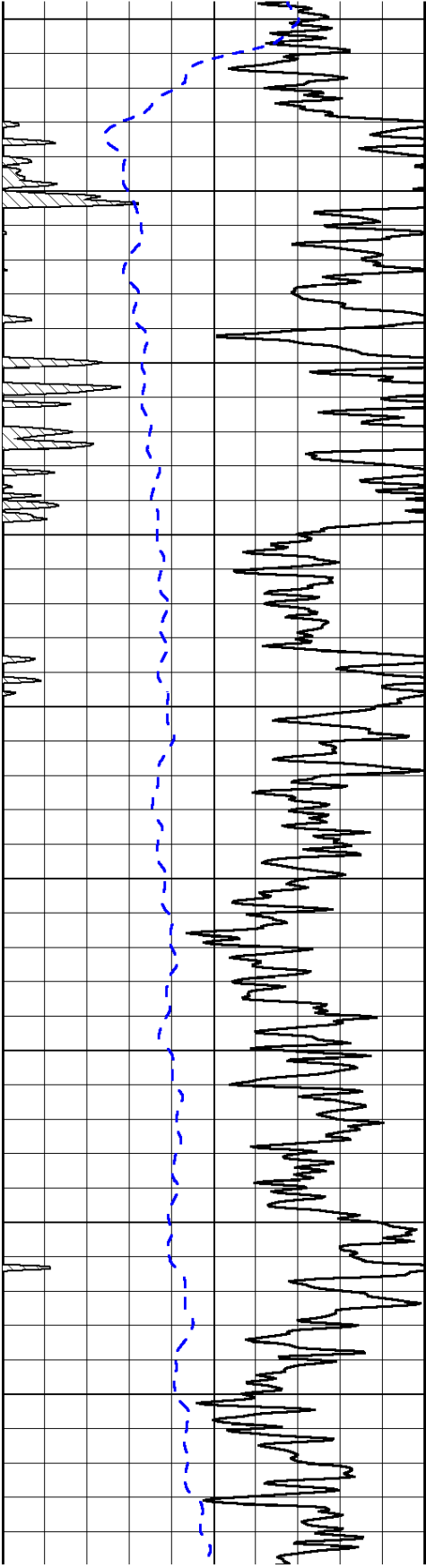
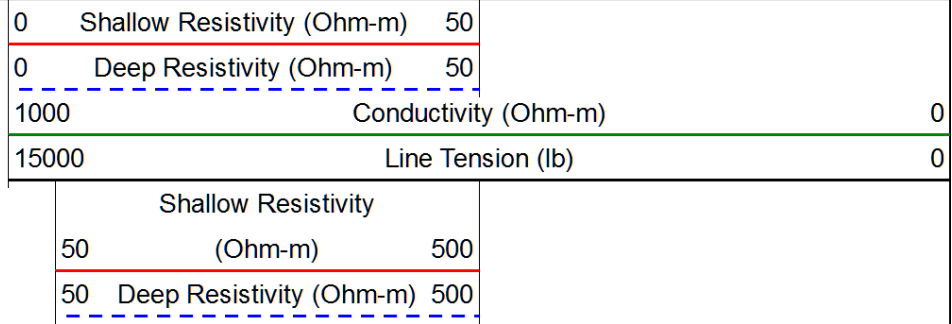
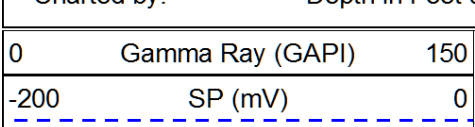
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

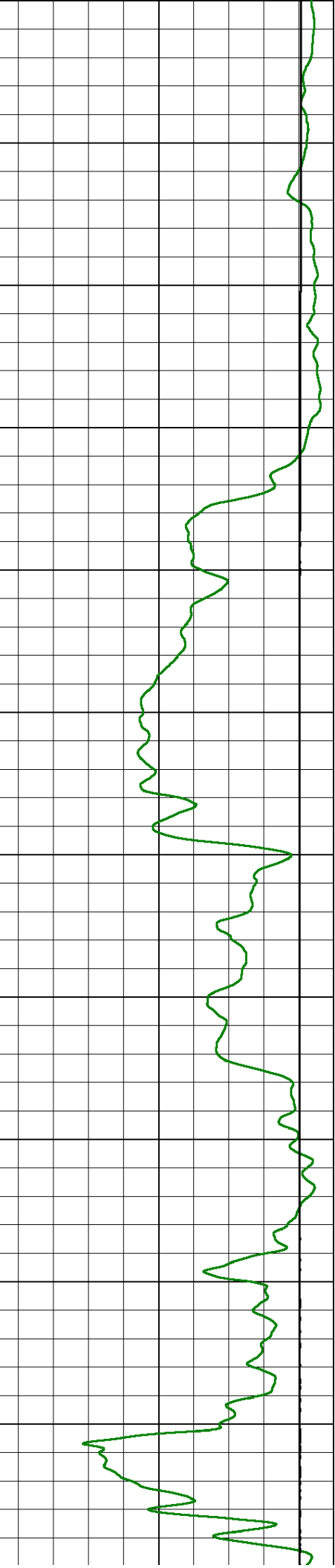
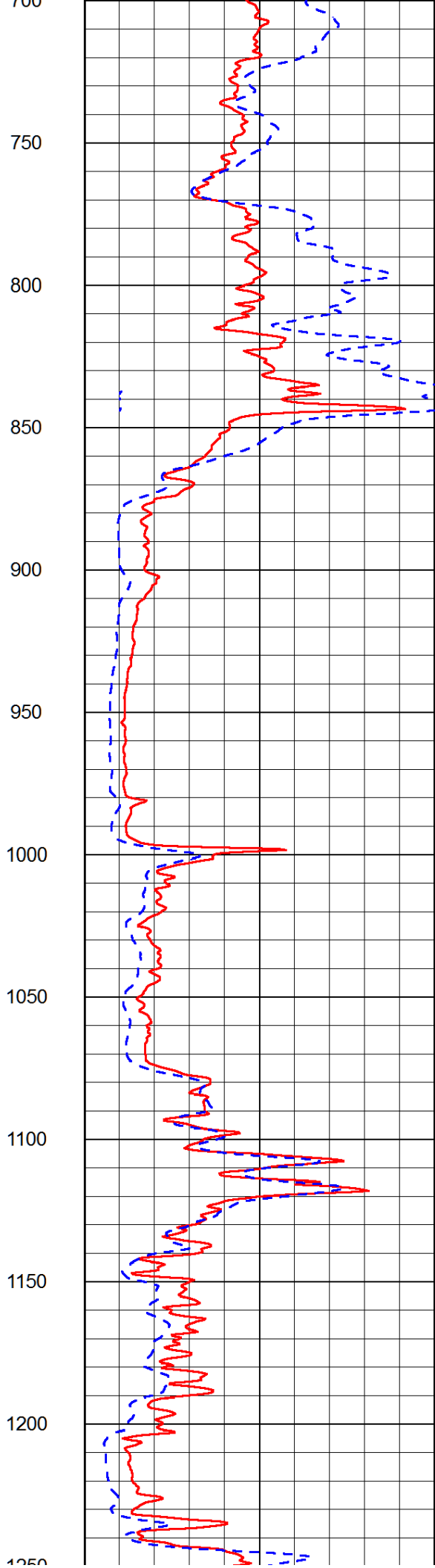
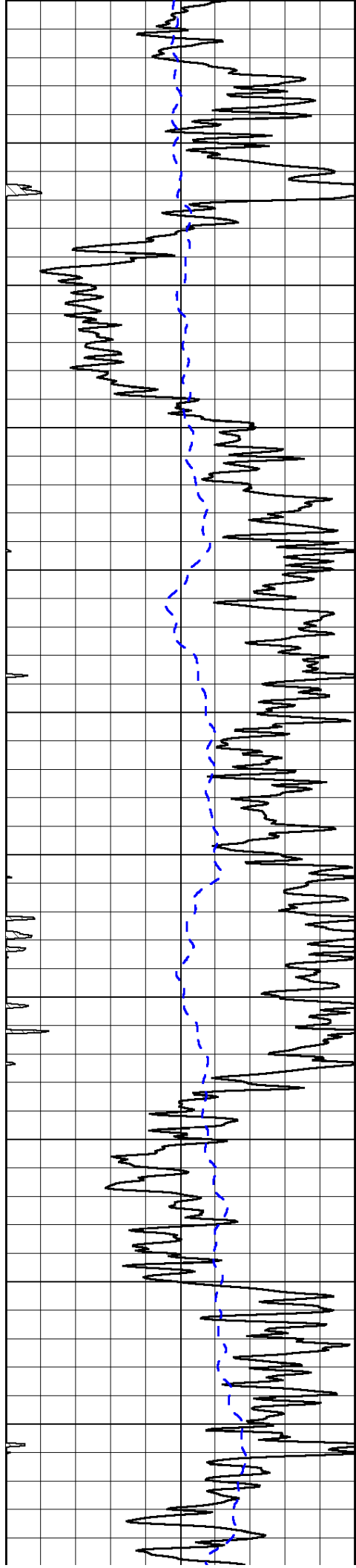
Comments

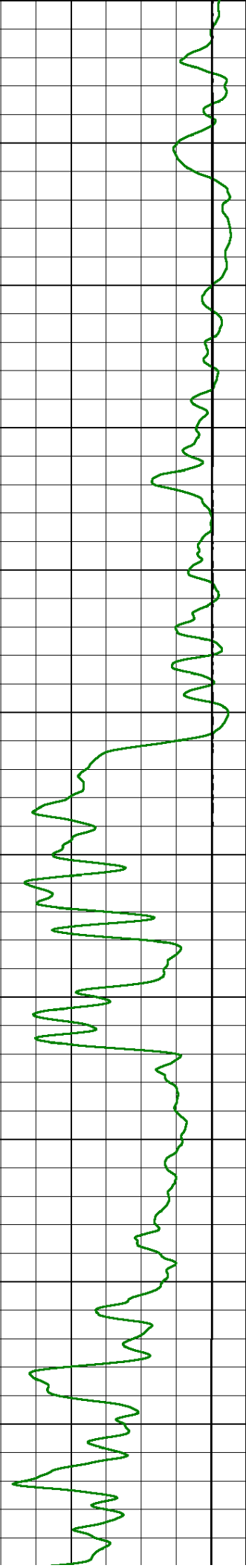
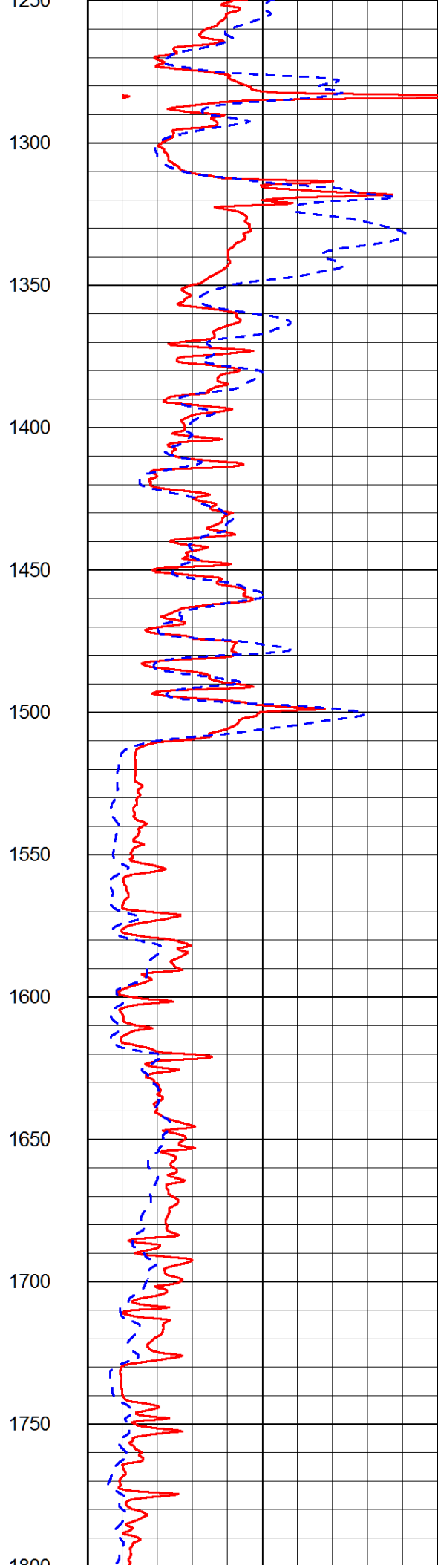
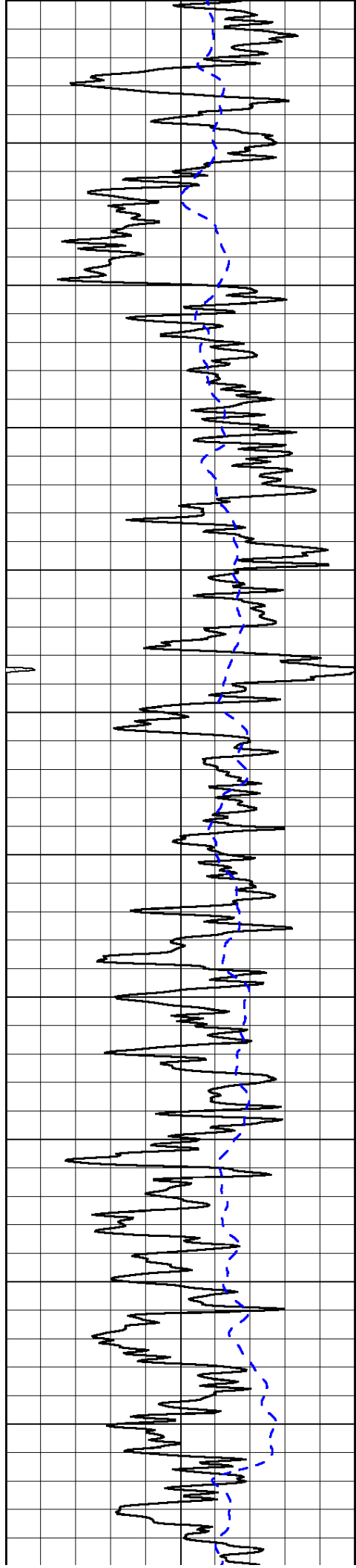
Thank you for using Log-Tech, Inc.
(785) 625-3858

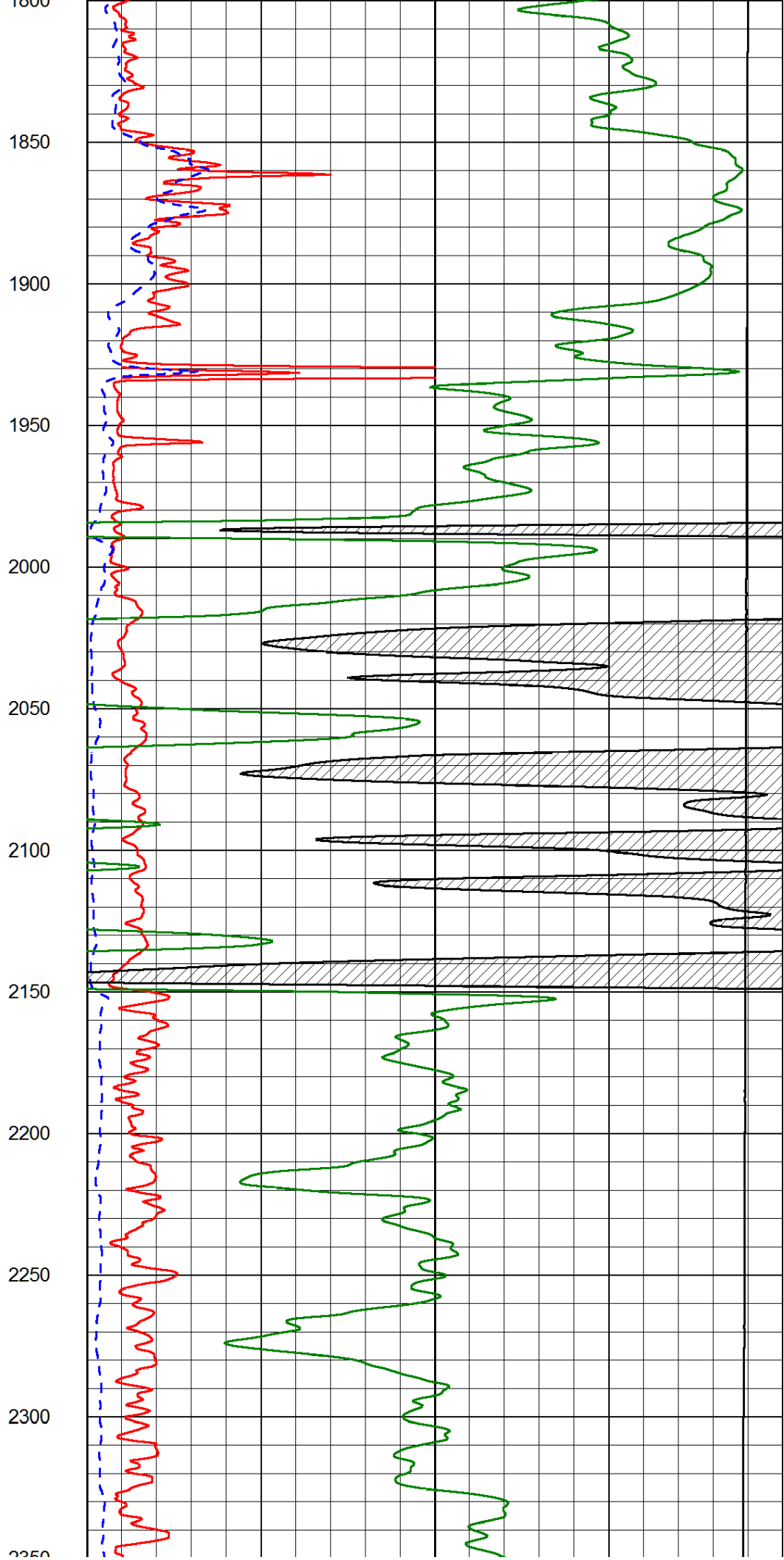
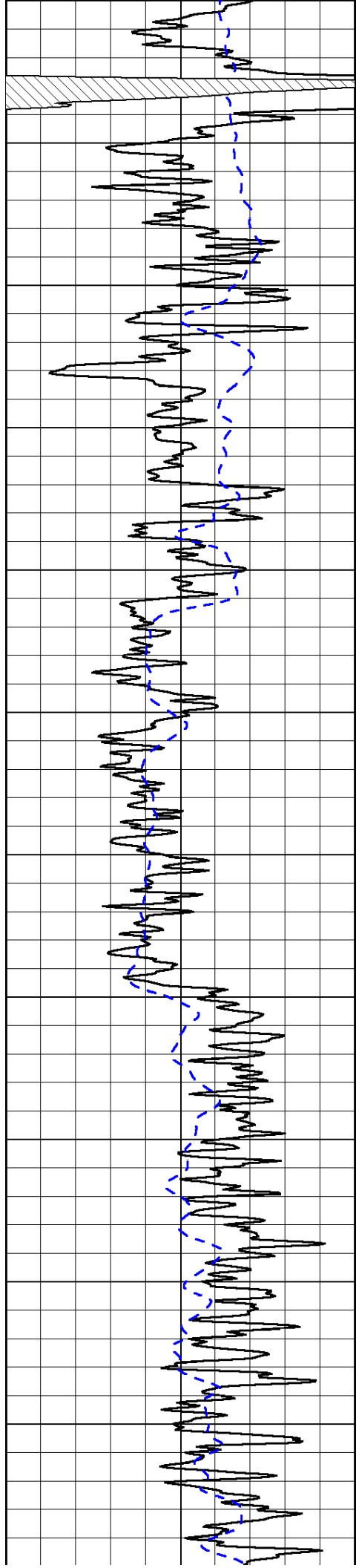
Grainfield, KS:
Grainfield Exit: N to Rd. 406, 4E, N into

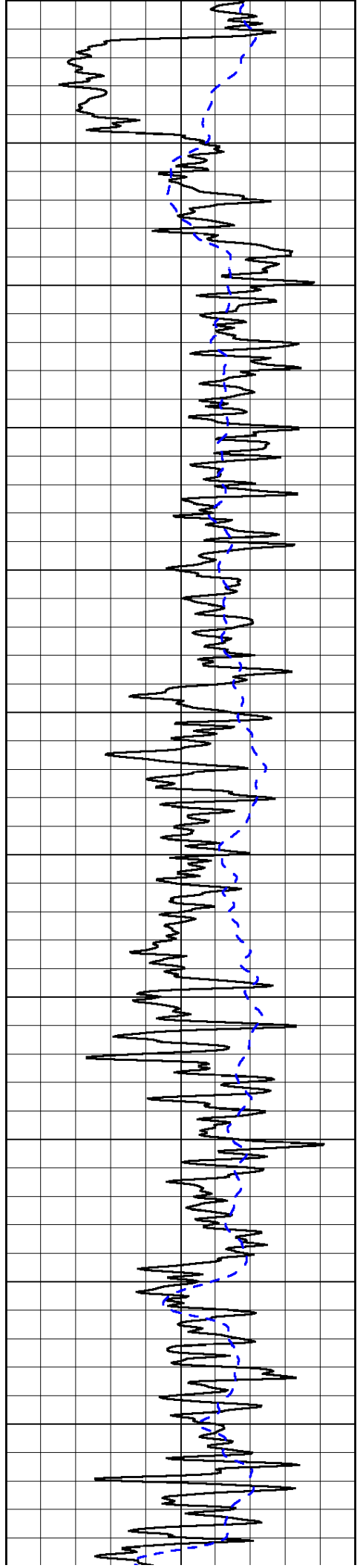
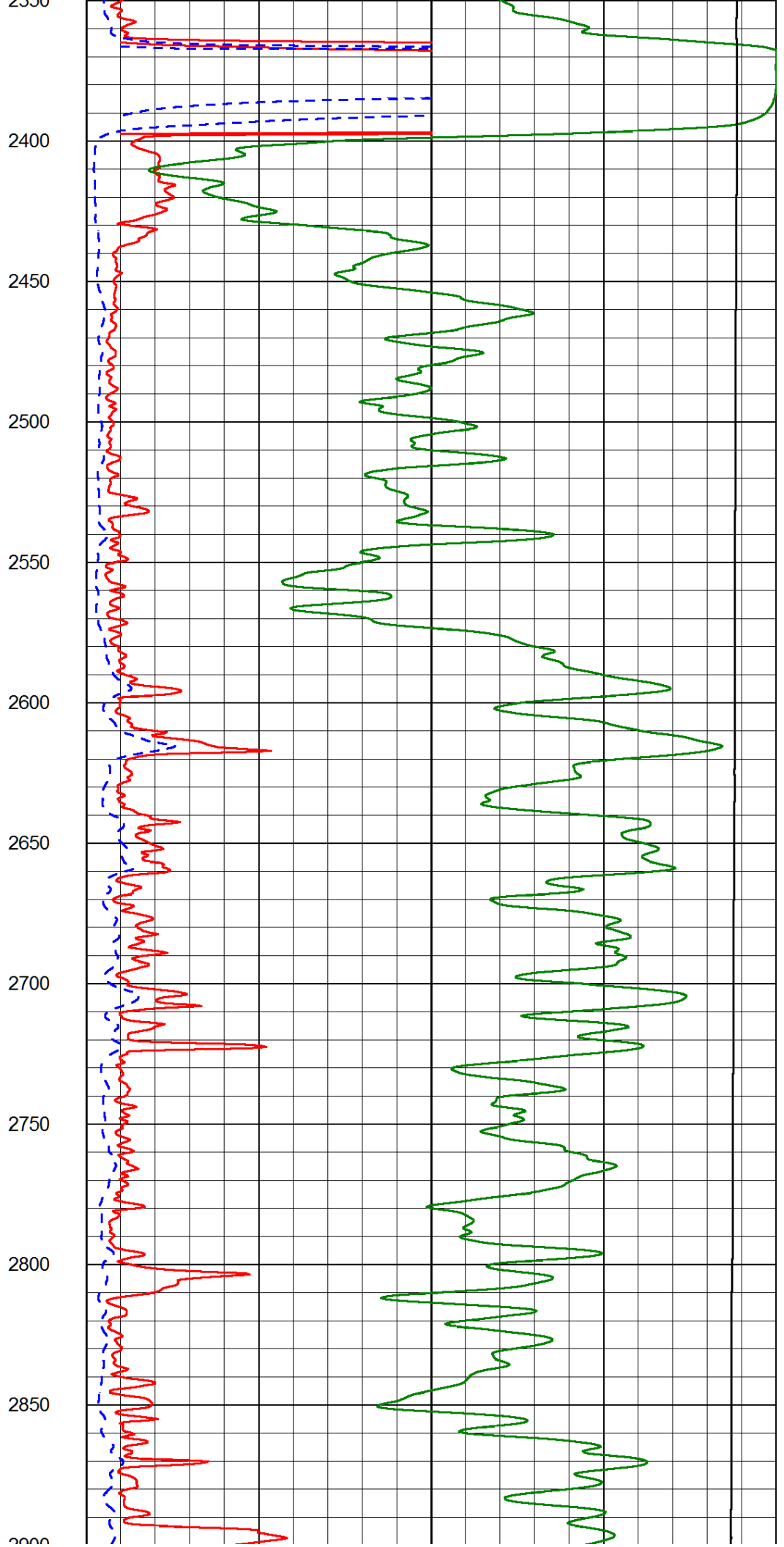
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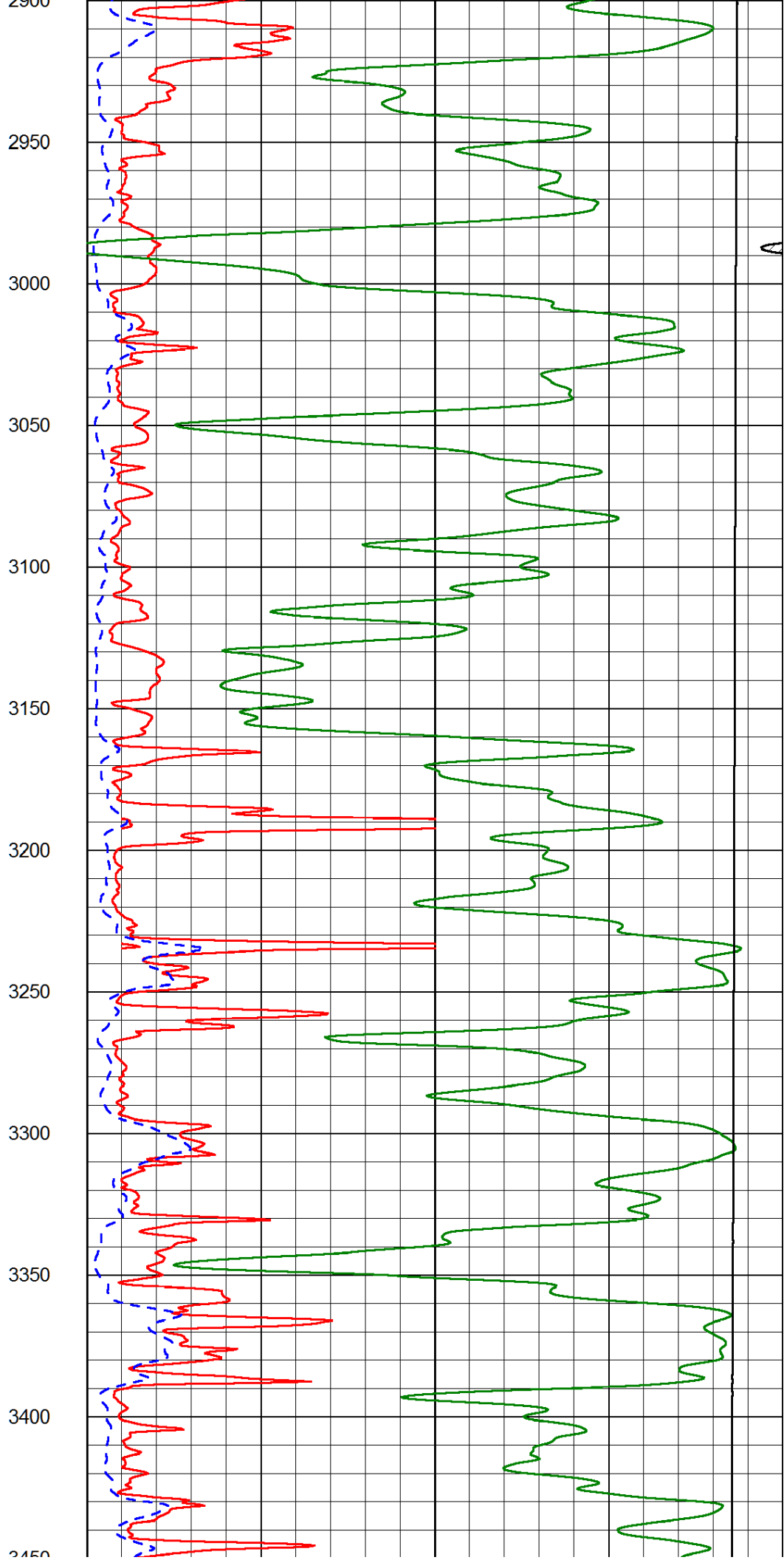
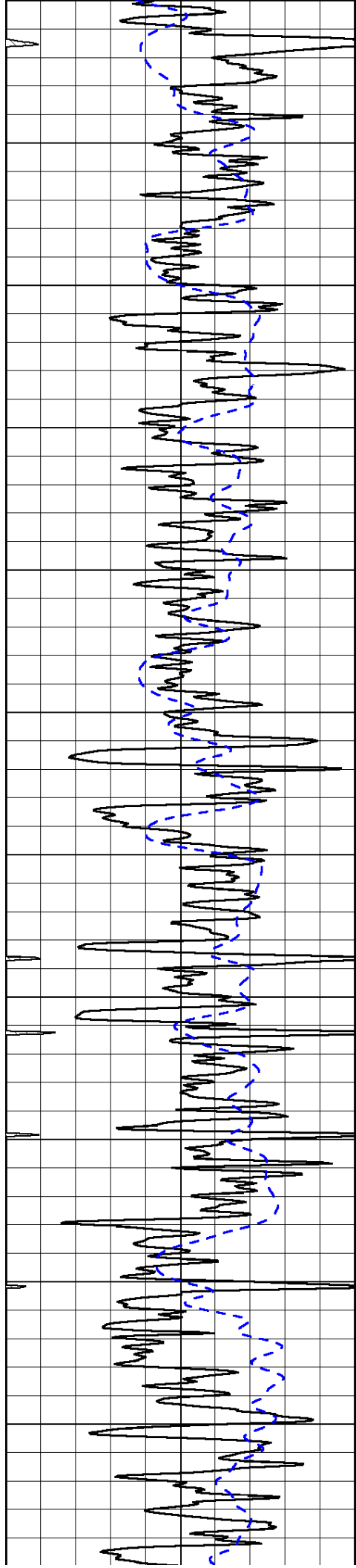


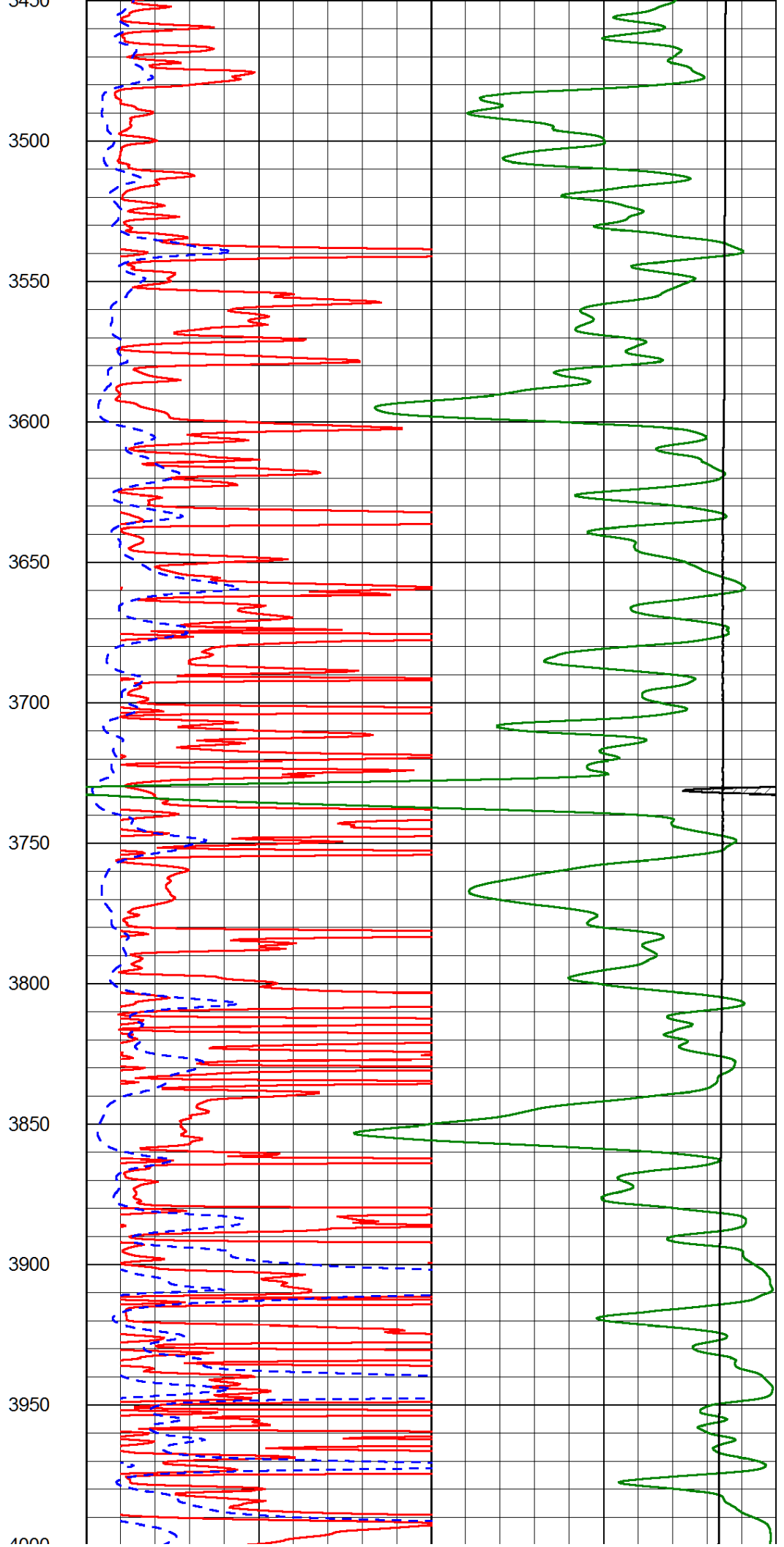
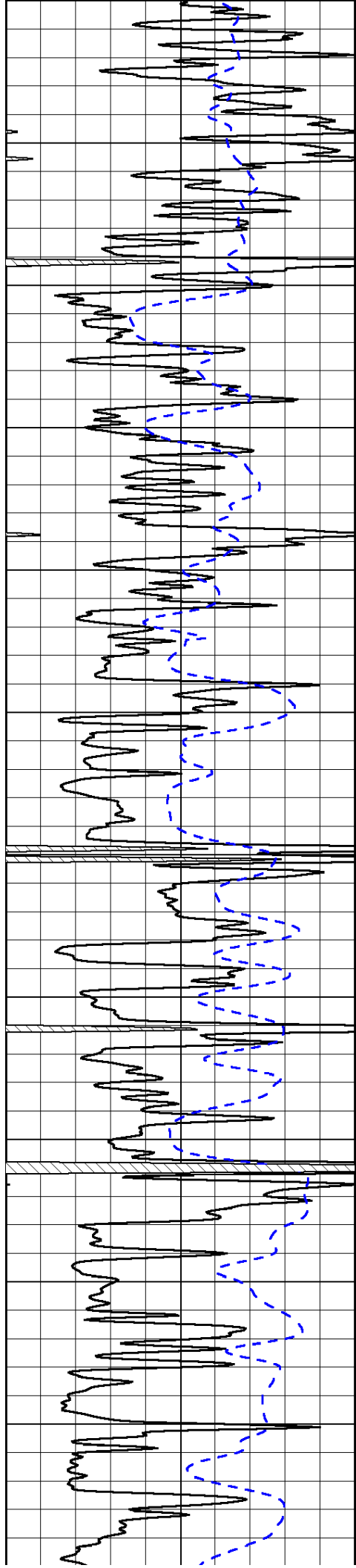


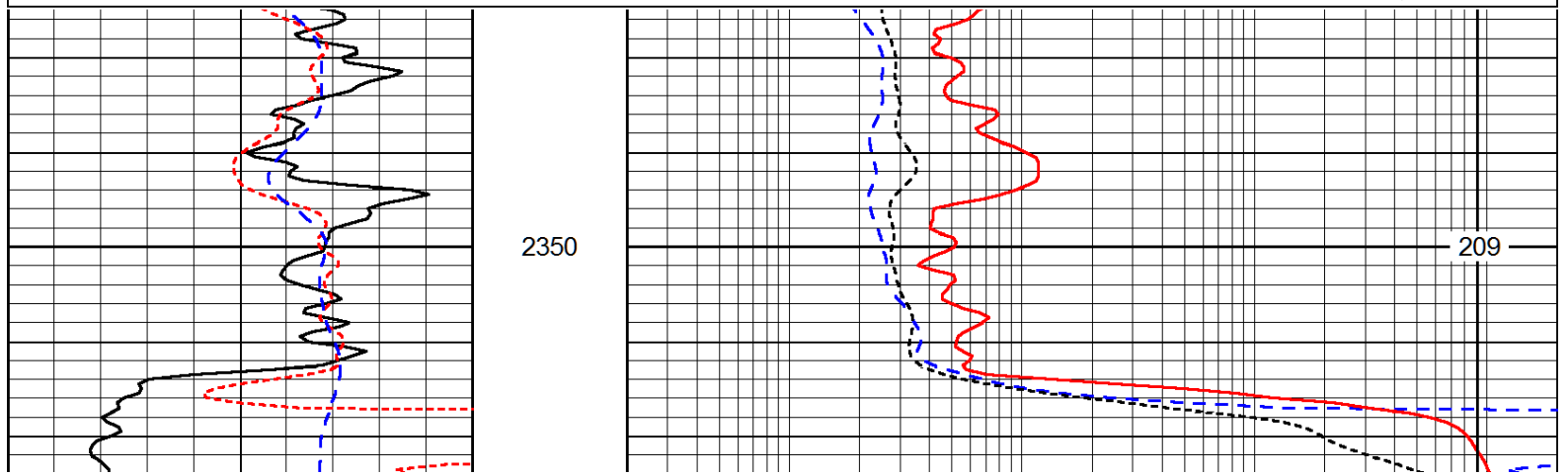
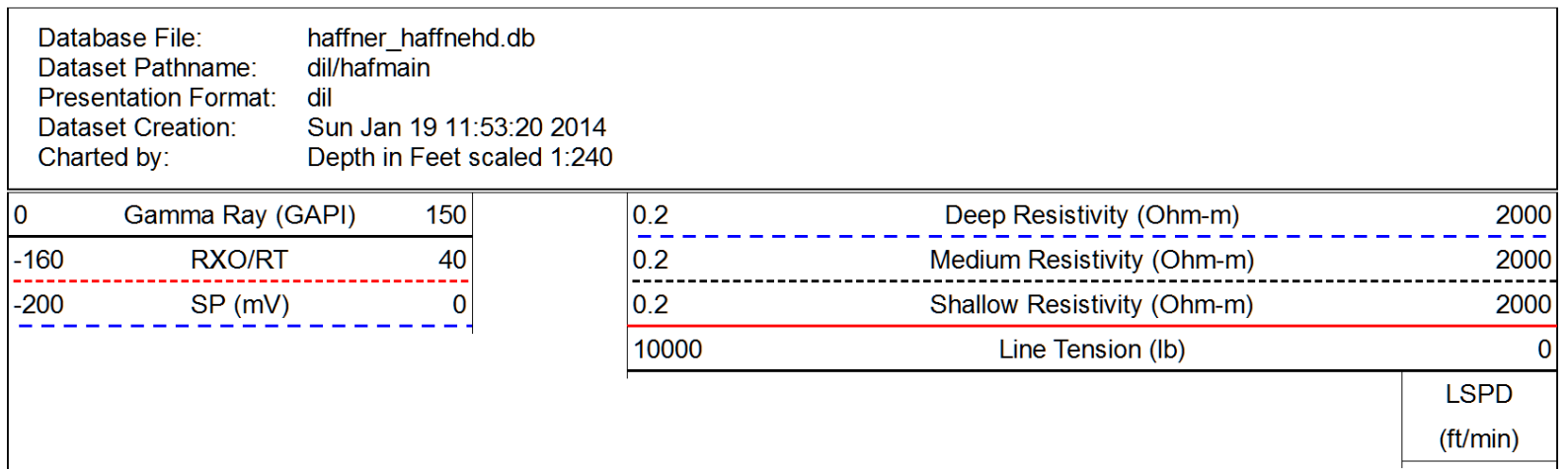
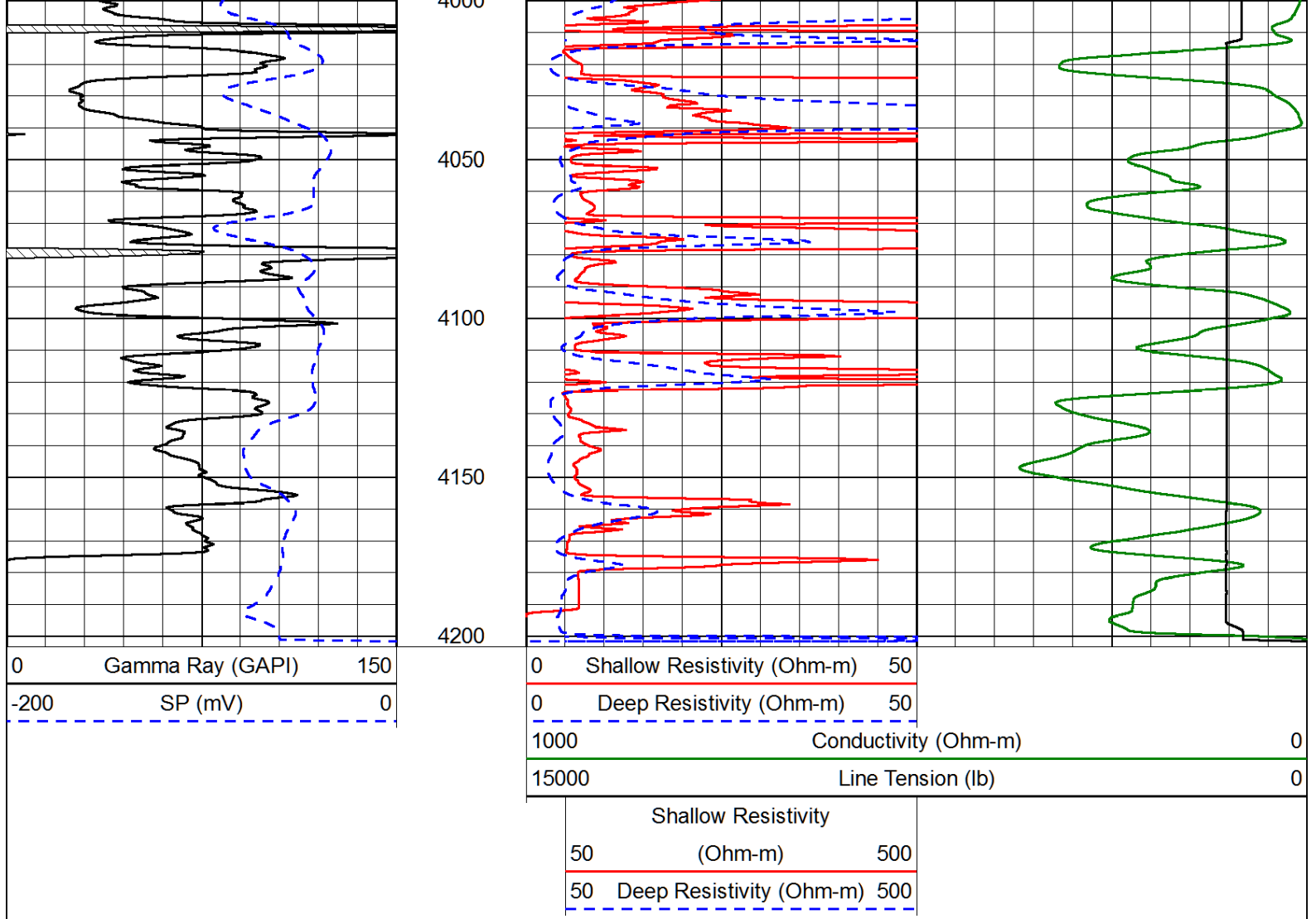


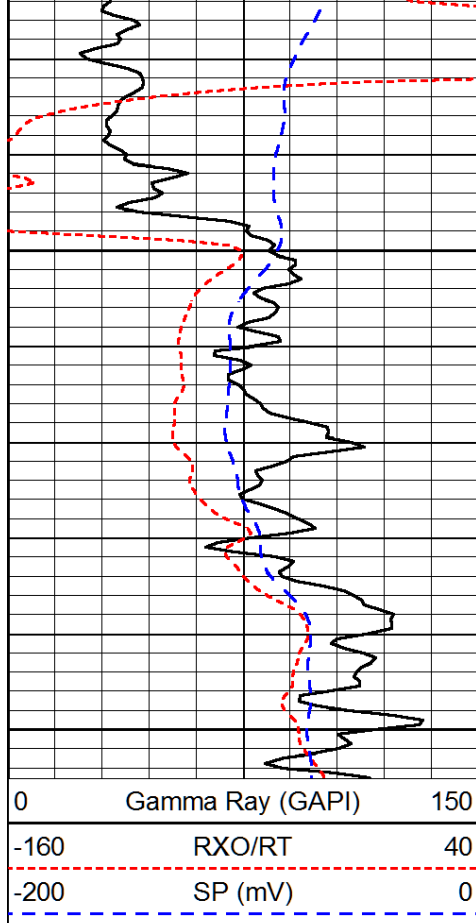






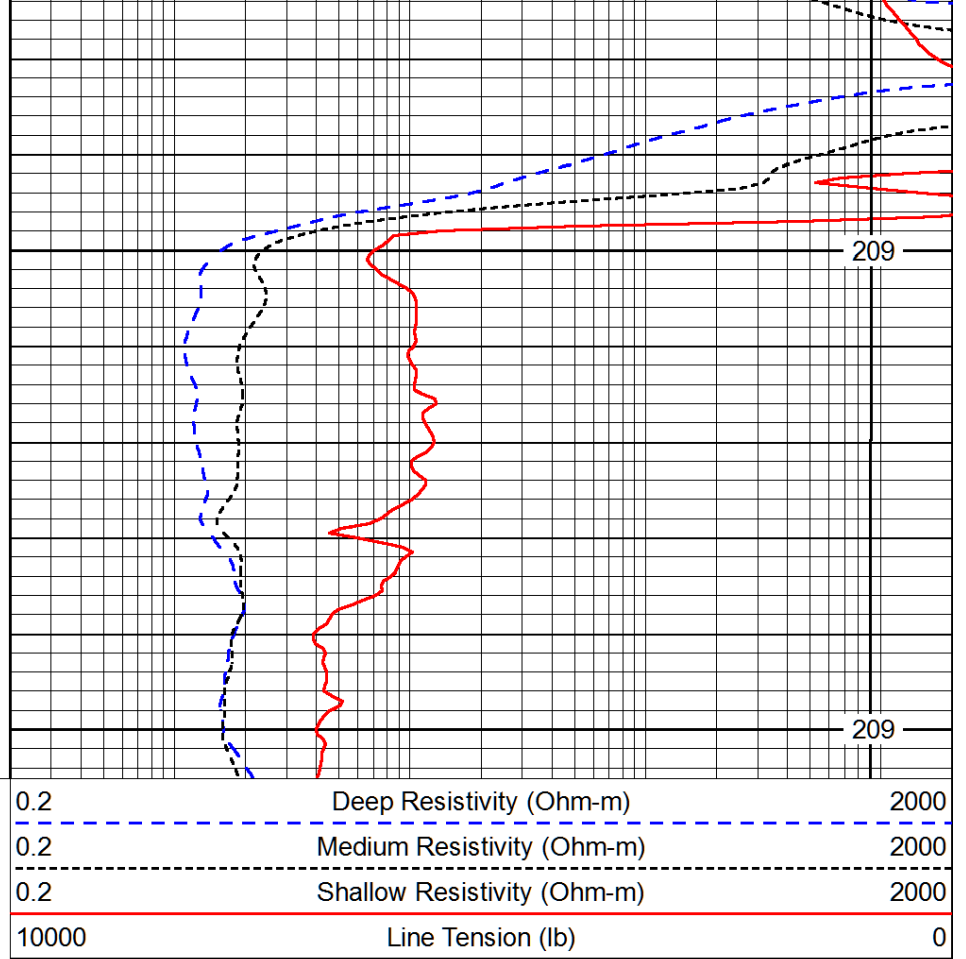






2400

2450

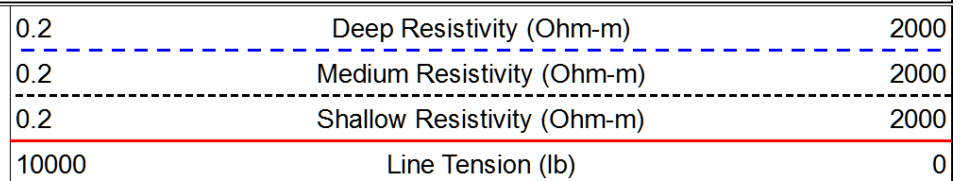
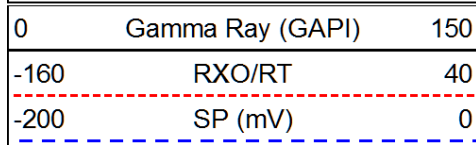


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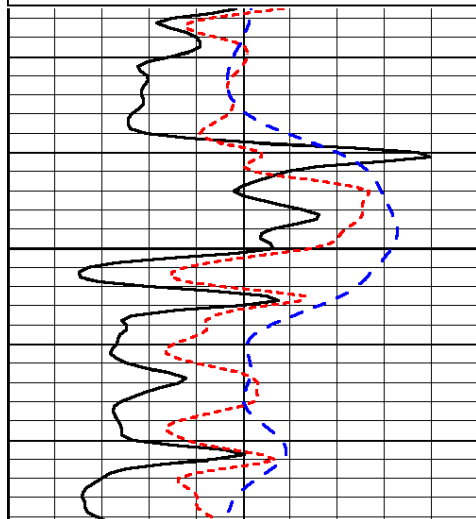
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LSPD
(ft/min)

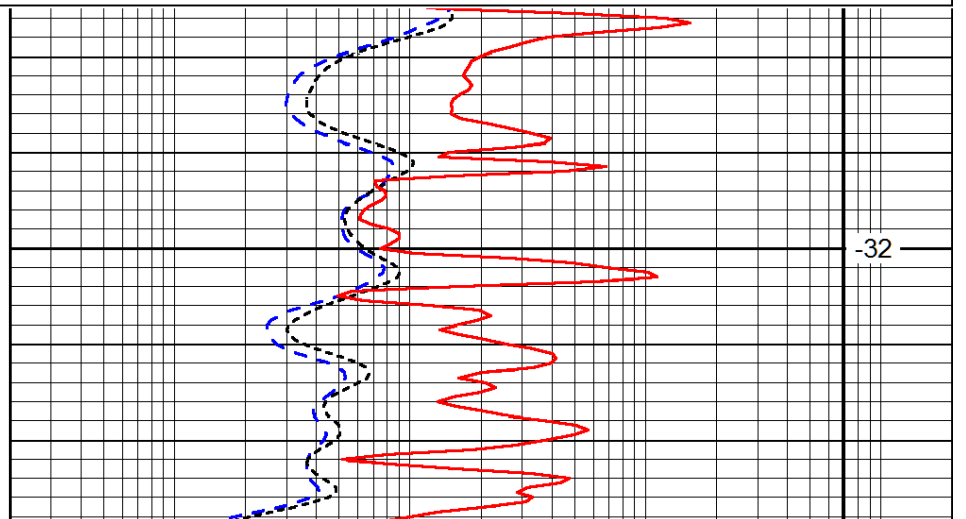
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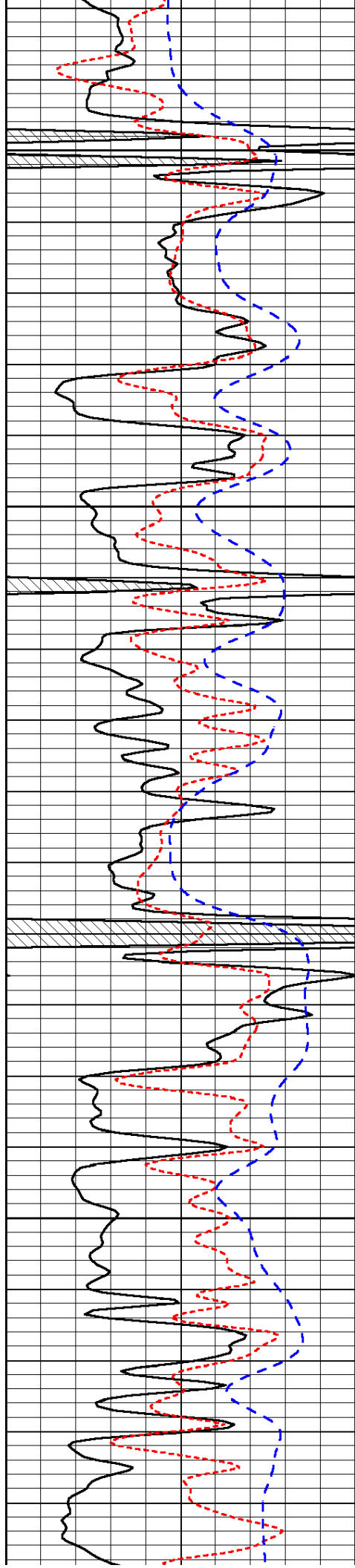
LSPD
(ft/min)



3700



-32

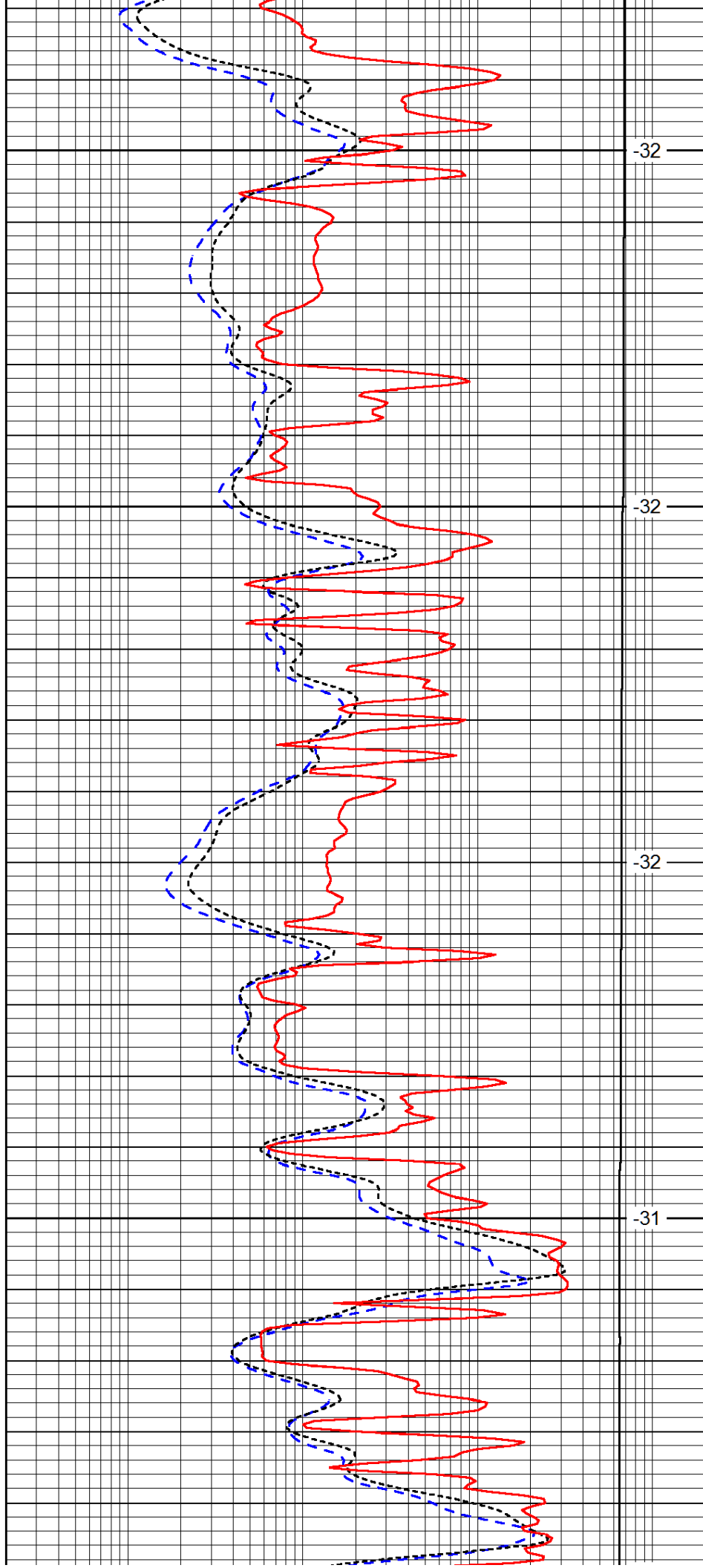


3750

3800

3850

3900

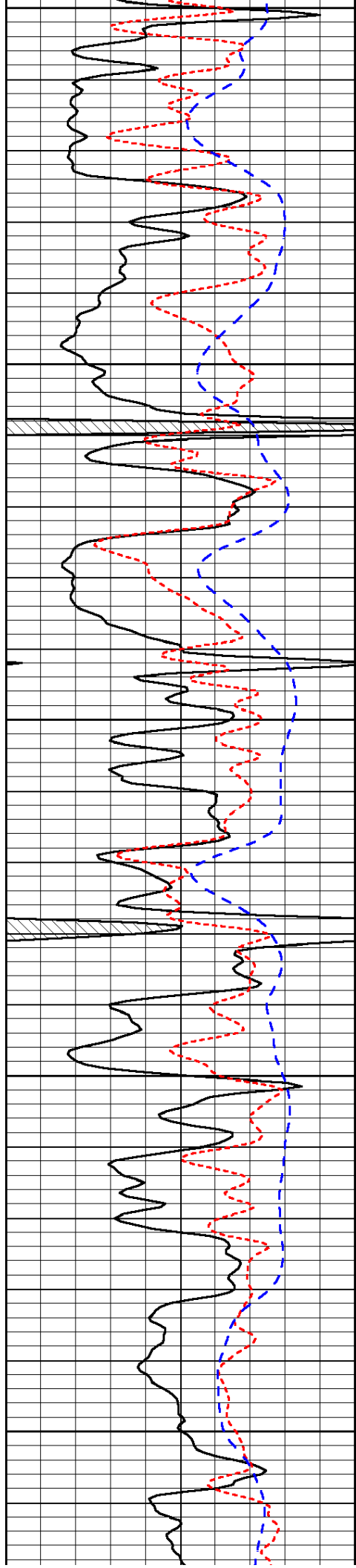


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-32

-32

-31



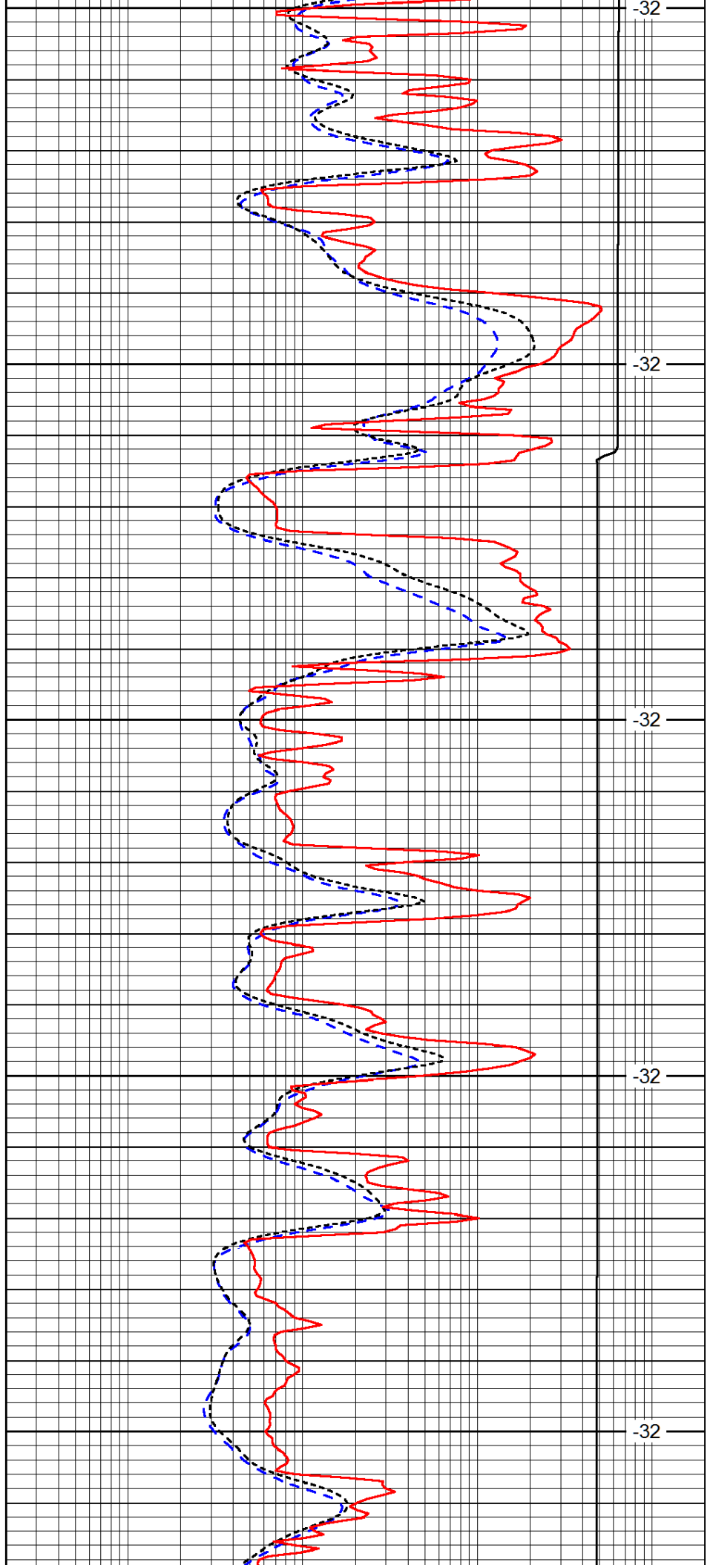
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4000

4050

4100

4150



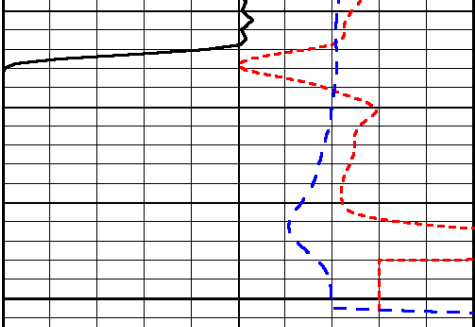
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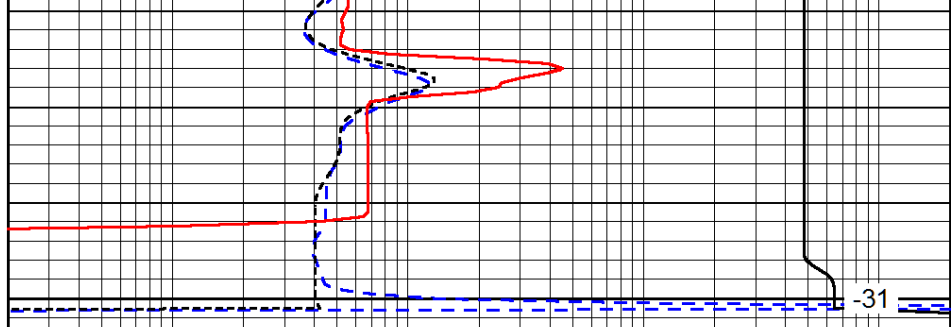
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-32



0	Gamma Ray (GAPI)	150
-160	RXO/RT	40
-200	SP (mV)	0

4200



0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	Shallow Resistivity (Ohm-m)	2000
10000	Line Tension (lb)	0

LSPD
(ft/min)

-31