



Pioneer Energy Services

# Microresistivity Log

API No.	15-101-22,460-00-00		
Company	Larson Engineering, Inc.		
Well	Cleo #1-20		
Field	Cowdery		
County	Lane	State	Kansas
Location	NE SE SW SE 345' FSL & 1397' FEL		
Sec: 20	Twp: 18S	Rge: 30W	Other Services CNL/CDL DIL

Permanent Datum	Ground Level	Elevation 2891	K.B. 2898 D.F. G.L. 2891
Log Measured From	Kelly Bushing	7 Ft. Above Perm. Datum	
Drilling Measured From	Kelly Bushing		
Date	9/23/2013		
Run Number	Two		
Depth Driller	4614		
Depth Logger	4612		
Bottom Logged Interval	4611		
Top Log Interval	3600		
Casing Driller	8.625 @ 276		
Casing Logger	272		
Bit Size	7.875		
Type Fluid in Hole	Chemical		
Salinity, ppm CL	3000		
Density / Viscosity	9.2	60	
pH / Fluid Loss	10.0	8.0	
Source of Sample	Flowline		
Rm @ Meas. Temp	0.56 @ 78		
Rmf @ Meas. Temp	0.42 @ 78		
Rmc @ Meas. Temp	0.76 @ 78		
Source of Rmf / Rmc	Charts		
Rm @ BHT	0.36 @ 122		
Operating Rig Time	4 Hours		
Max Rec. Temp. F	122		
Equipment Number	15		
Location	Hays		
Recorded By	D Kerr		
Witnessed By	Vern Schrag		

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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

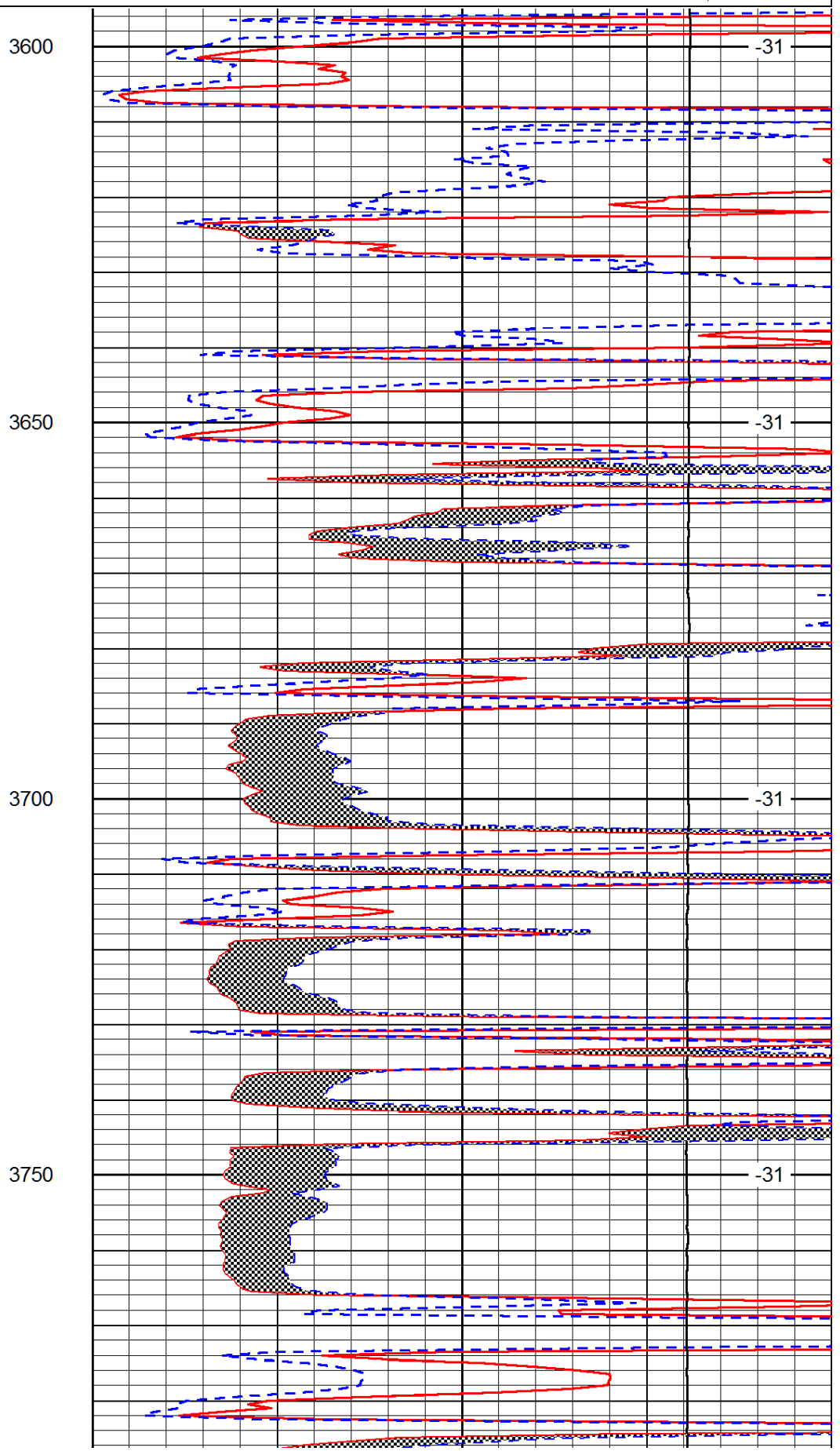
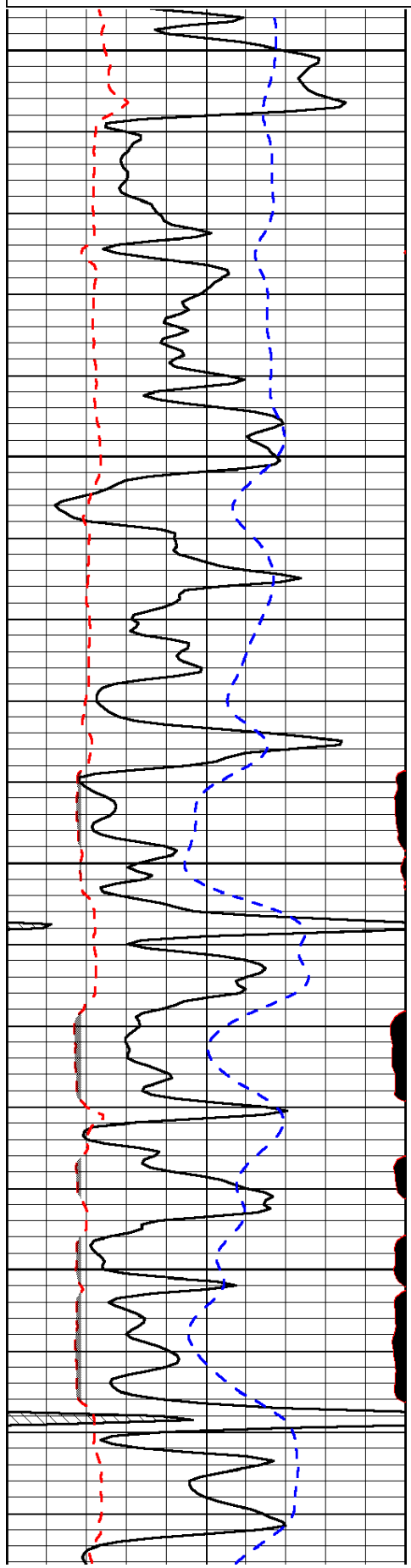
Thank you for using Log-Tech, Inc.  
(785) 625-3858

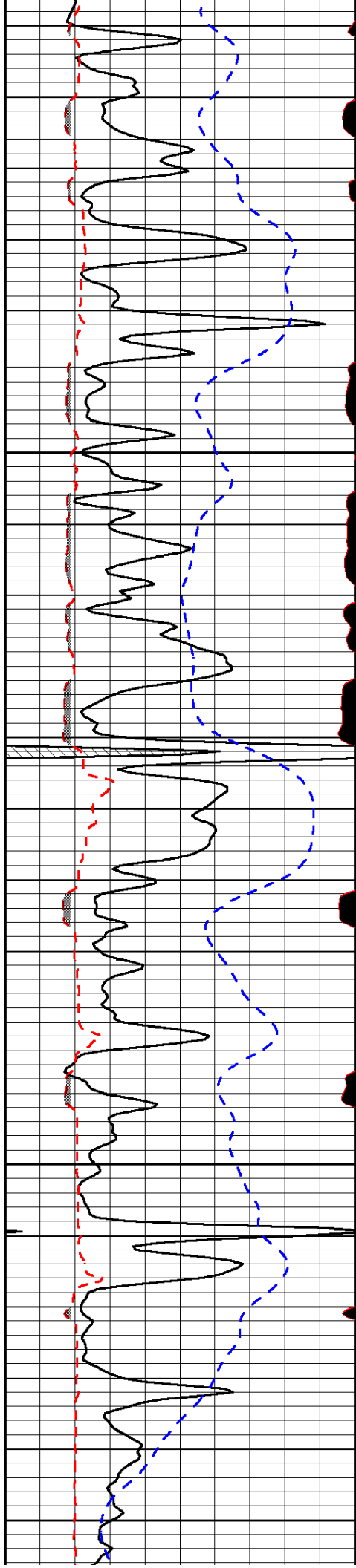
Dighton KS, 10 West to Bison Rd,  
1 South, 1/8 West, North Into

0	Gamma Ray (GAPI)	150
6	MCAL (in)	16
2.875	Mud Cake (in)	7.875
-200	SP (mV)	0

0	Micro Inverse 1 X 1 (Ohm-m)	40
0	Micro Normal 2" (Ohm-m)	40
10000	Line Weight (lb)	0

LSPD  
(ft/min)





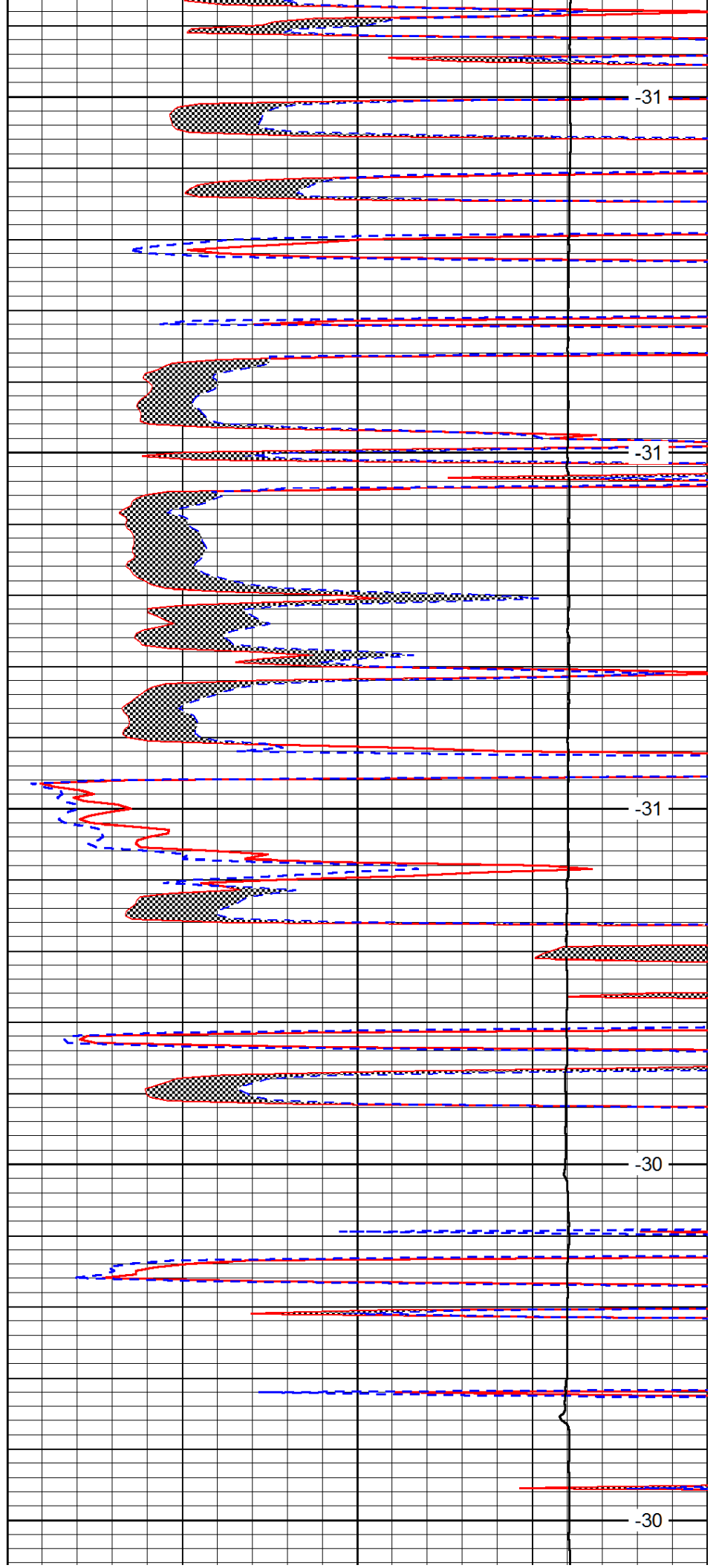
3800

3850

3900

3950

4000



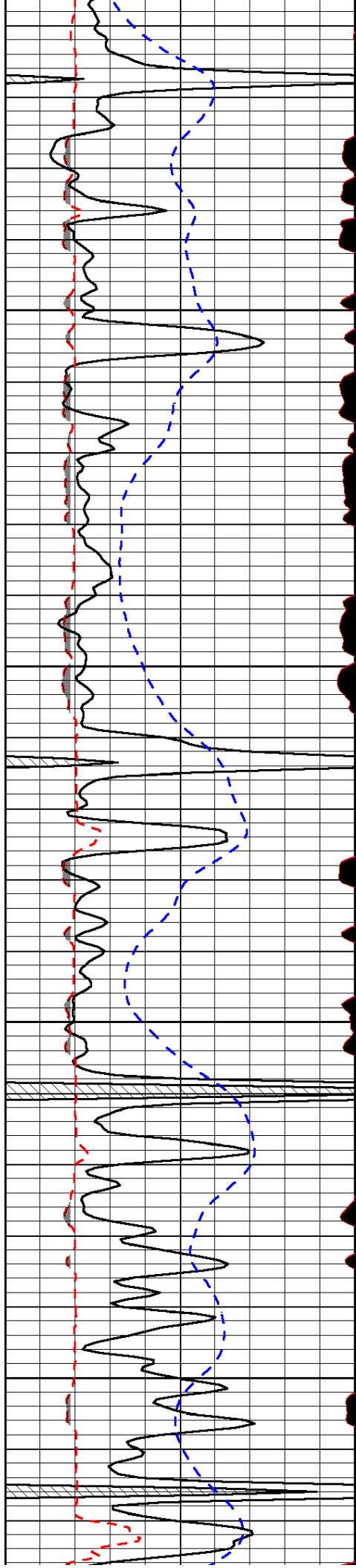
-31

-31

-31

-30

-30

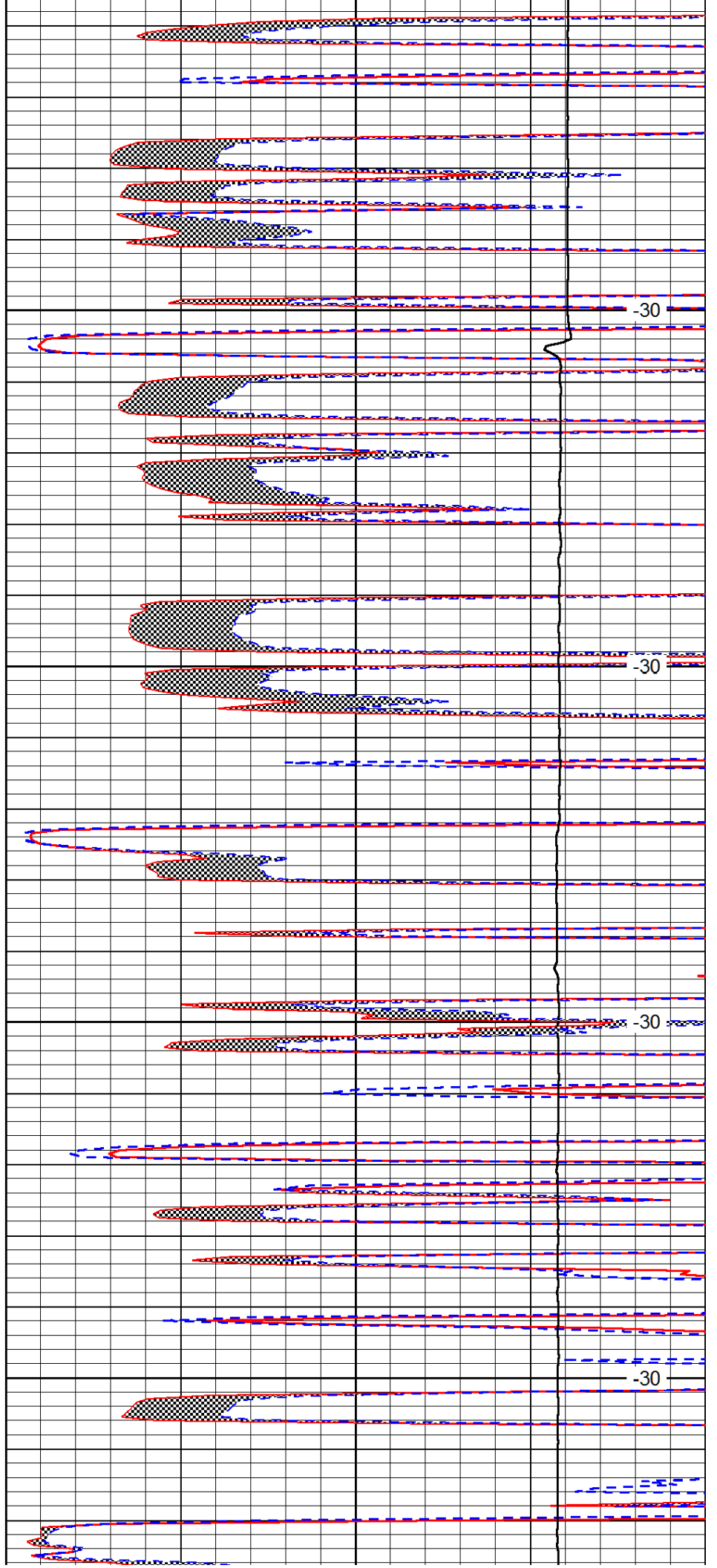


4050

4100

4150

4200

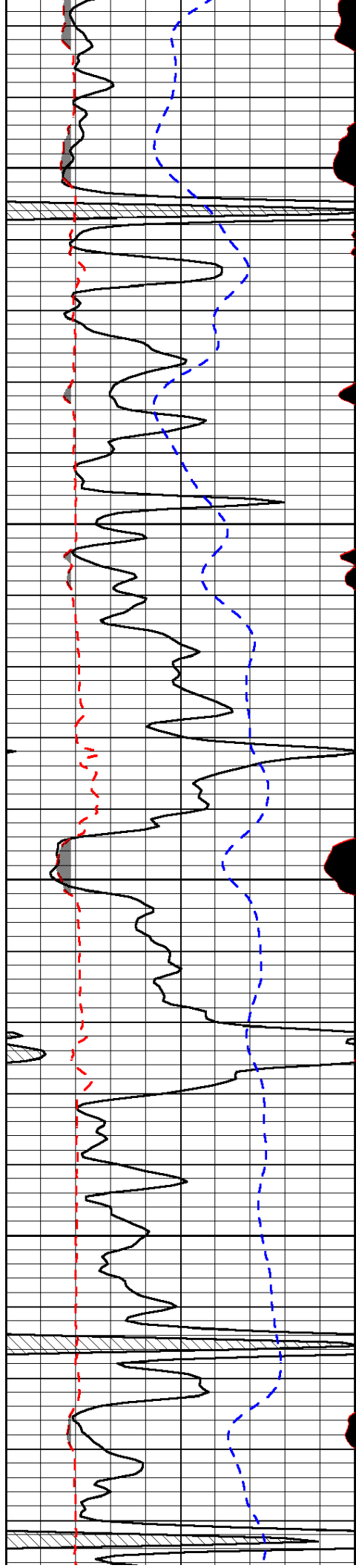


-30

-30

-30

-30

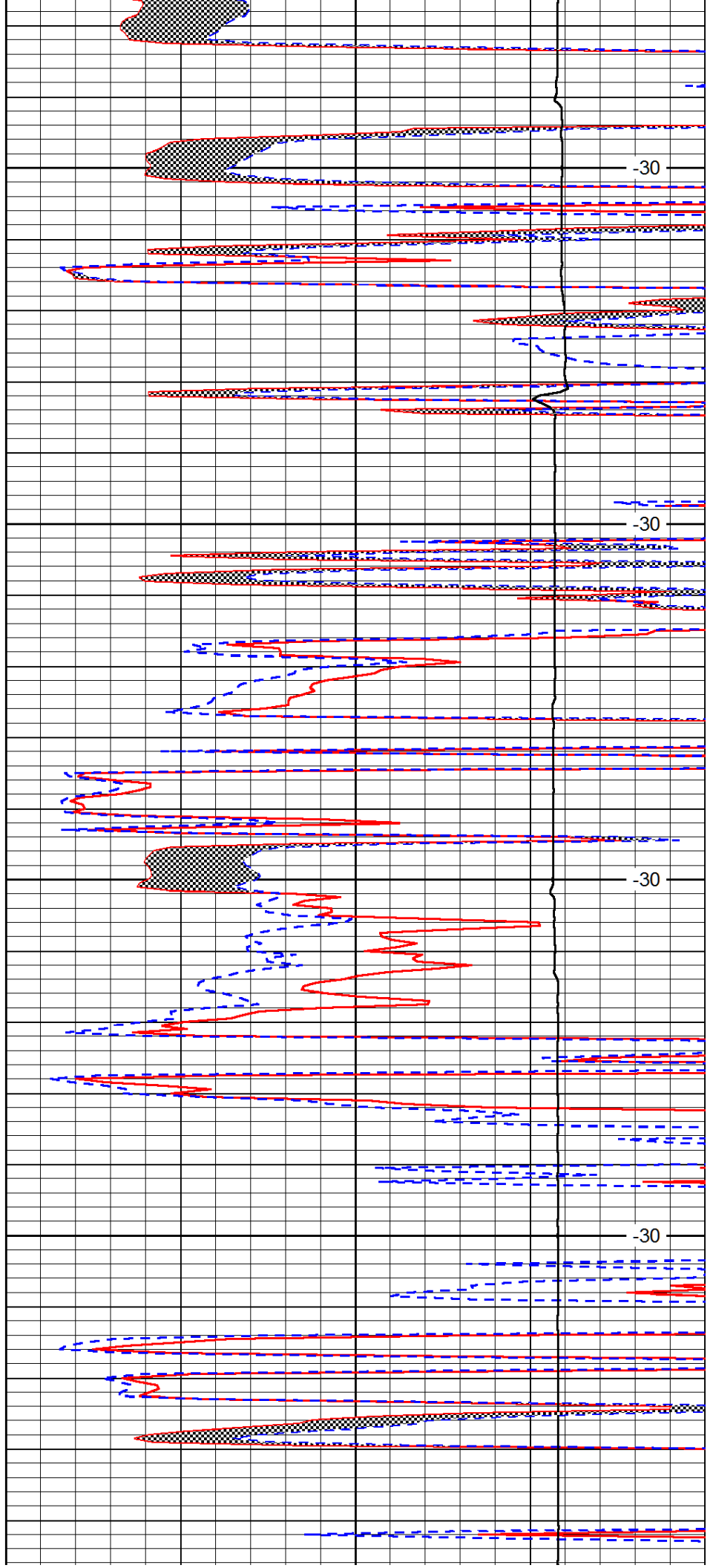


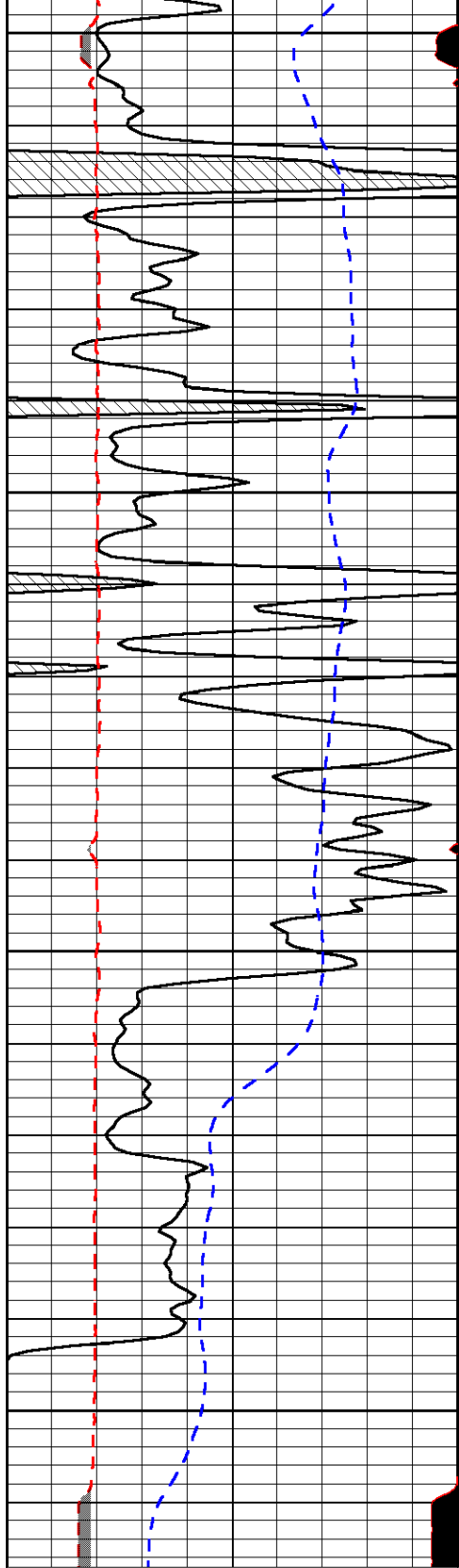
4250

4300

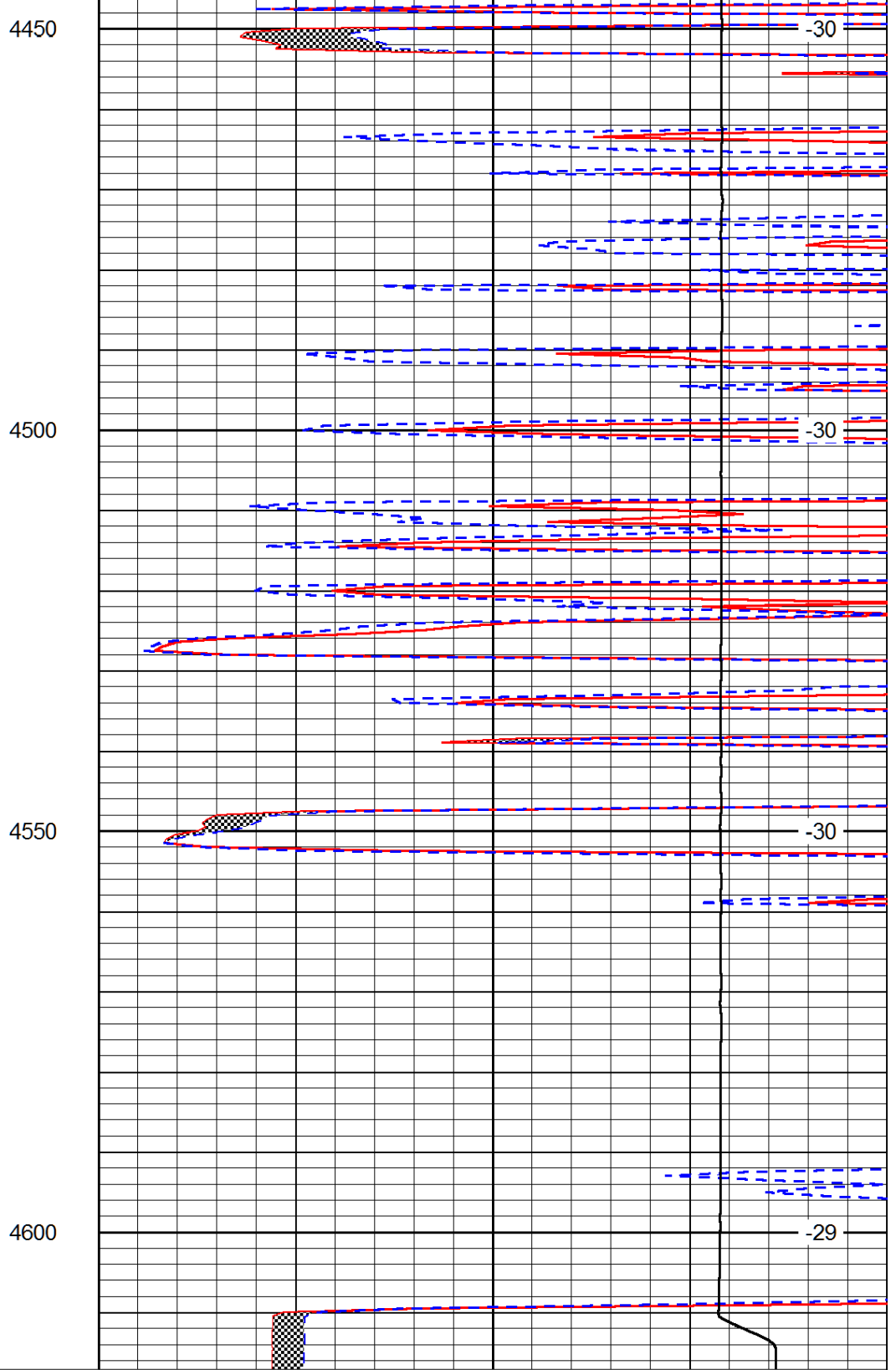
4350

4400





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