



# DUAL INDUCTION LOG

Company PIONEER OIL COMPANY, INC.  
 Well SCHAMBERGER #1-28  
 Field FREDA  
 County SHERIDAN  
 State KANSAS

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 Well SCHAMBERGER #1-28  
 Field FREDA  
 County SHERIDAN State KANSAS

Location: API #: 15-179-21460-00-00  
 330' FSL & 1785' FWL  
 SEC 28 TWP 8S RGE 28W  
 Permanent Datum GROUND LEVEL Elevation 2738'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services CNL/CDL MEL/BHCS  
 Elevation K.B. 2746'  
 D.F. N/A  
 G.L. 2738'

Date	4/6/2019
Run Number	ONE
Depth Driller	4200
Depth Logger	4202'
Bottom Logged Interval	4201'
Top Log Interval	200'
Casing Driller	8.625" @ 279'
Casing Logger	242'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1500
Density / Viscosity	9.3 60
pH / Fluid Loss	10.5 7.6
Source of Sample	FLOWLINE
Rm @ Meas. Temp	1.10 @ 74
Rmt @ Meas. Temp	0.83 @ 74
Rmc @ Meas. Temp	1.49 @ 74
Source of Rmf / Rmc	CHARTS
Rm @ BHT	1.49 @ 124
Operating Rig Time	4 HOURS
Max Rec. Temp. F	124
Equipment Number	P-24
Location	HAYS
Recorded By	IAN MABB
Witnessed By	JIM MUSGROVE

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

HOXIE, KS.  
 SOUTH TO RD 30S,  
 WEST 3/4, NORTH INTO

Log Measured From: KELLY BUSHING Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

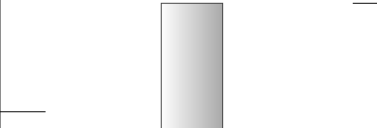
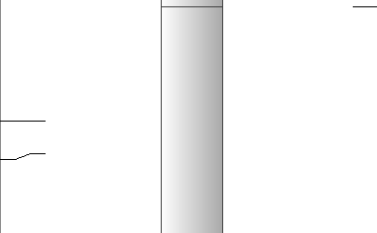
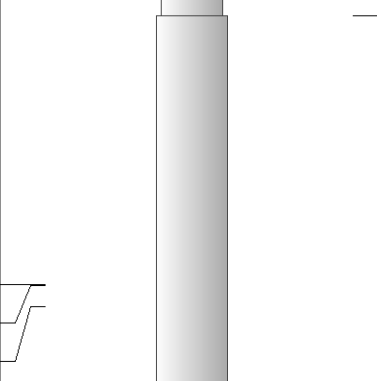
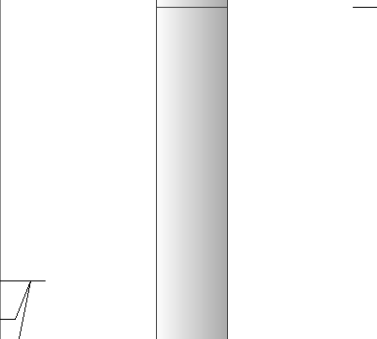
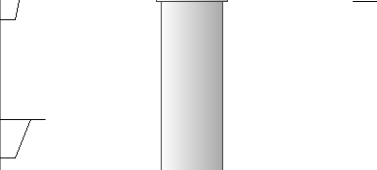
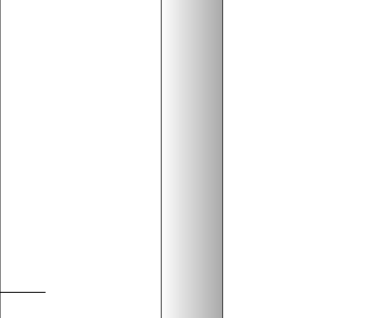
Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: IAN MABB	Primary Witness: JIM MUSGROVE
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\pioneer\_oil\_schamberger\_1\_28.db  
 Dataset field/well/stackmel/pass3.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	124	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	597	71	Off	4202

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (96-916)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					
CILD	8.00		DIL-PSI HIGH TEMP (967 (HT))	18.50	3.50	220.00

CILM 4.70

SP 0.20

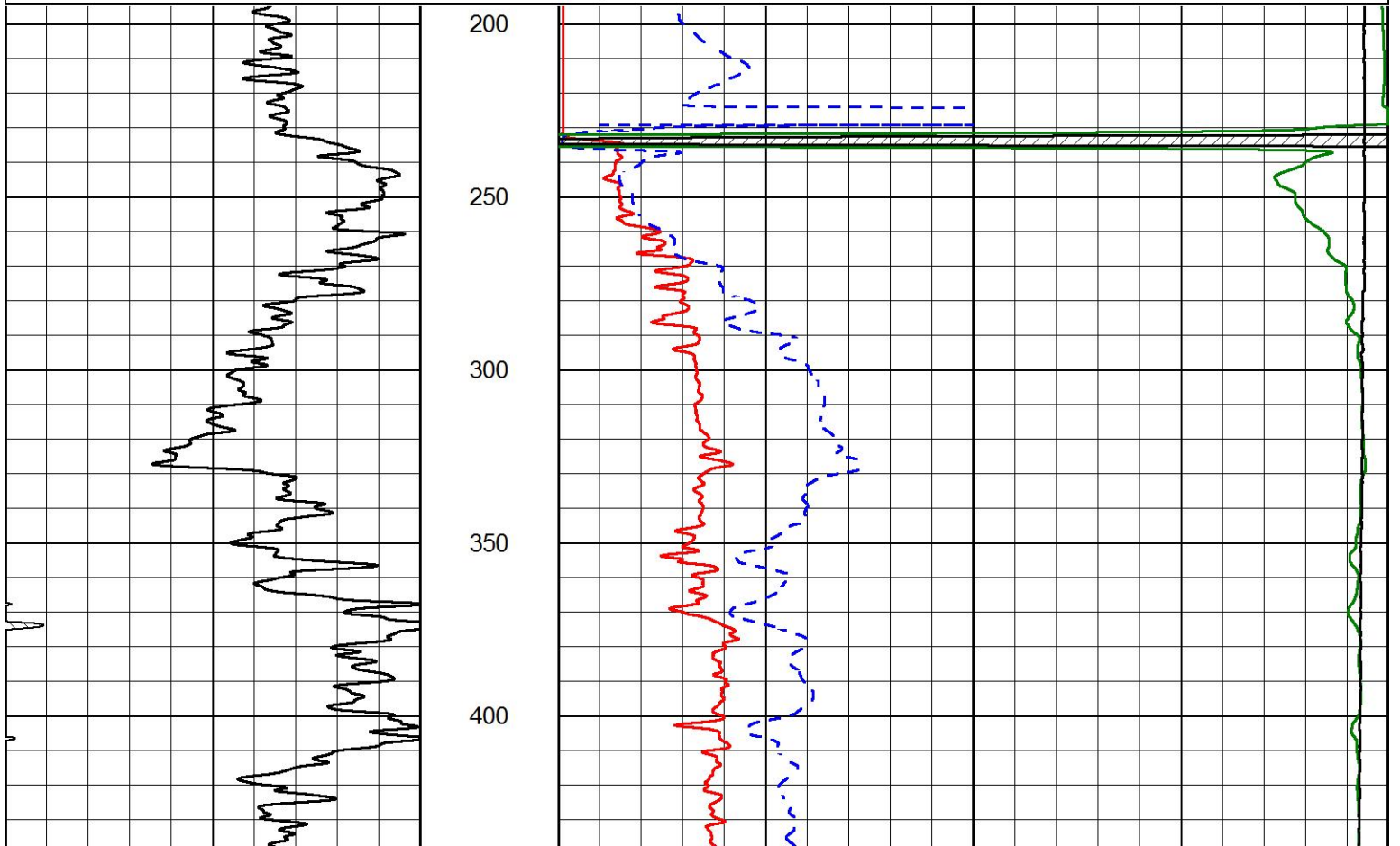
Dataset: pioneer\_oil\_schamberger\_1\_28.db: field/well/stackmel/pass3.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

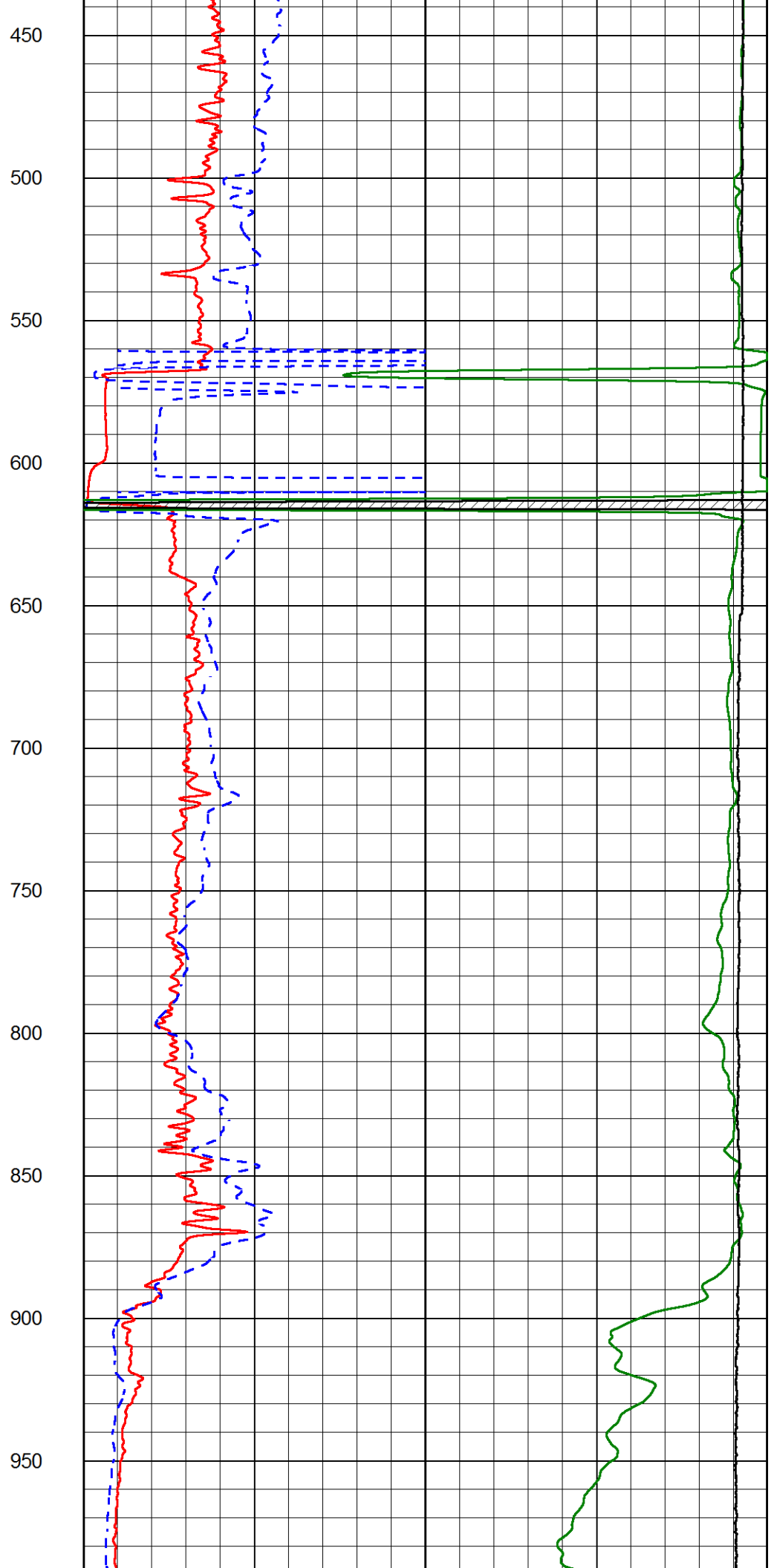
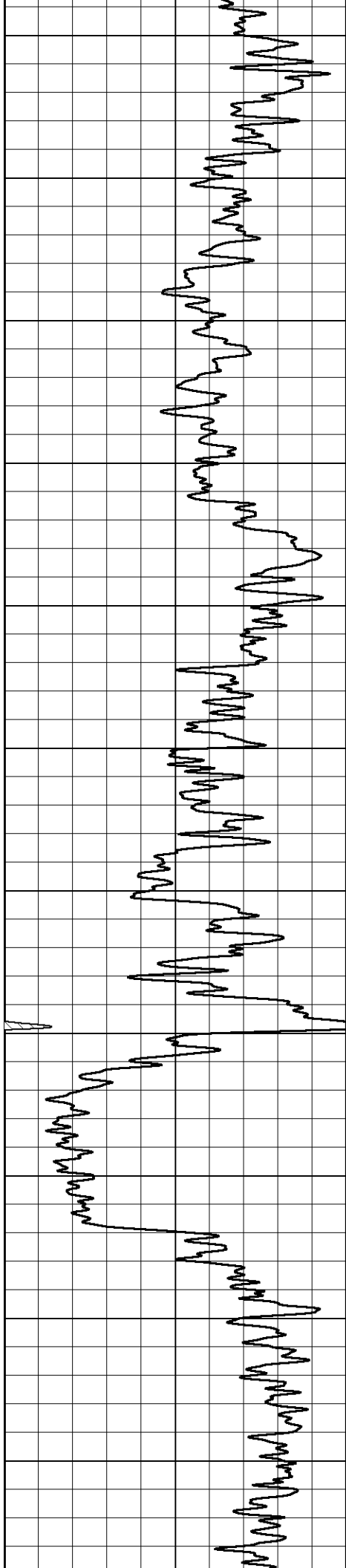


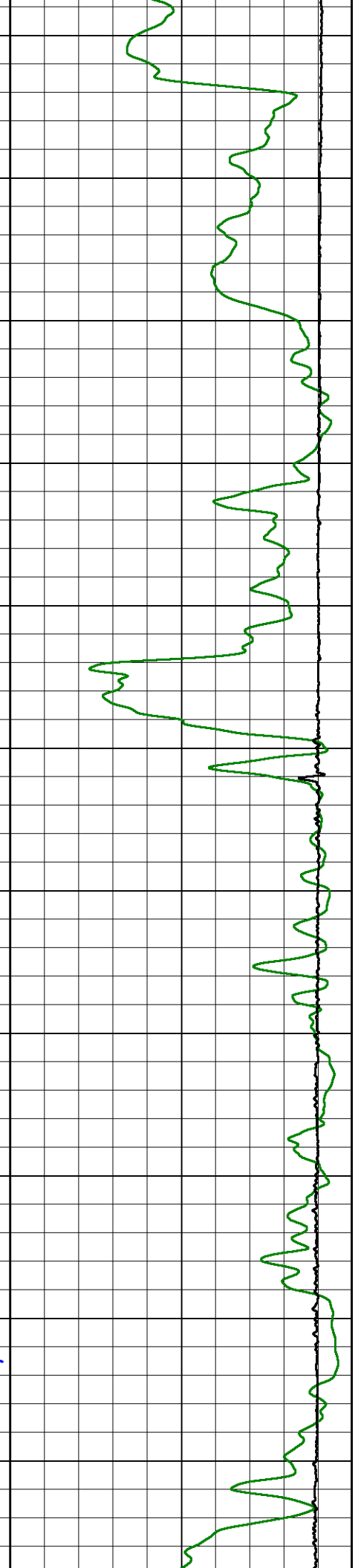
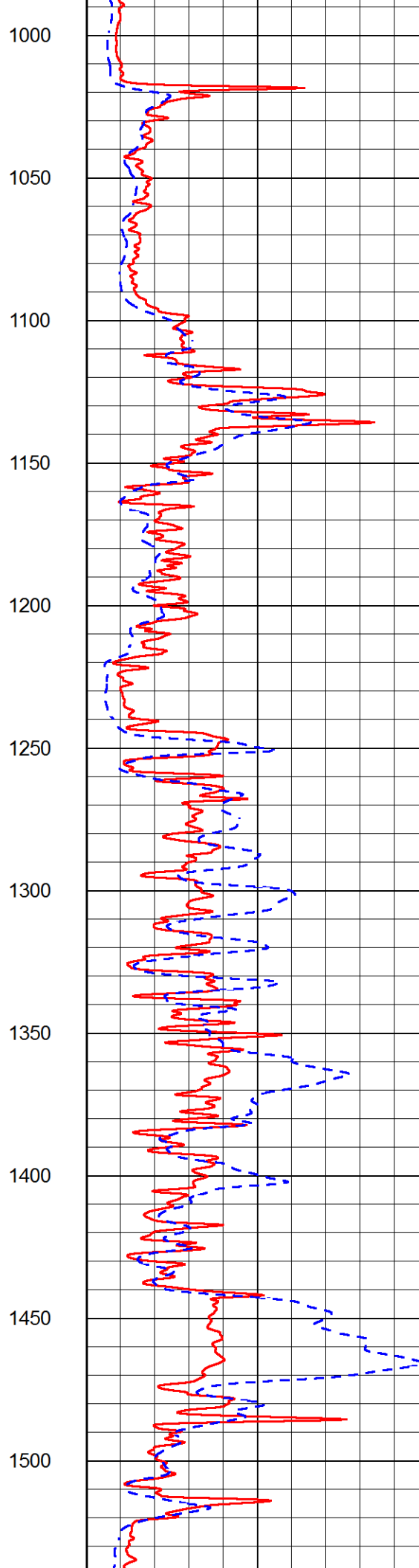
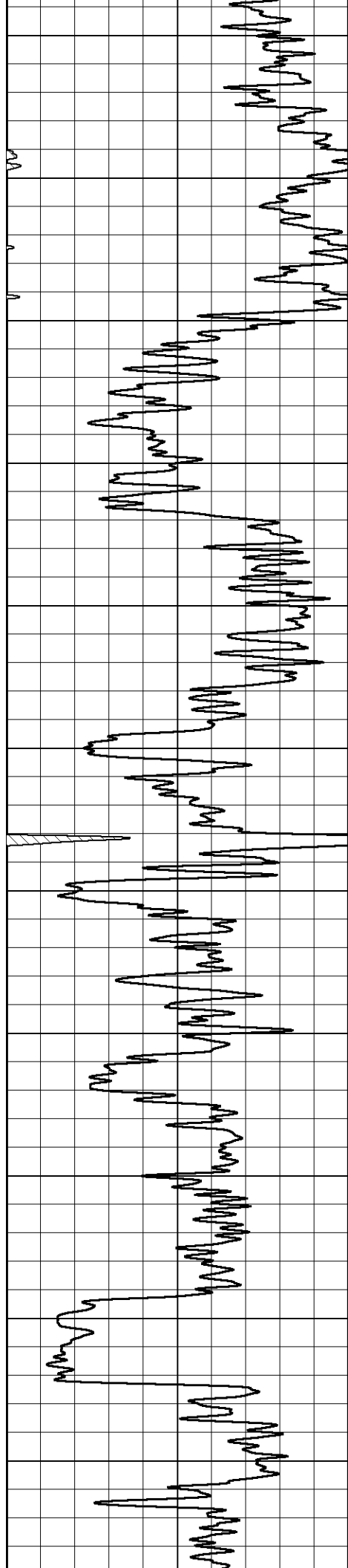
# MAIN PASS

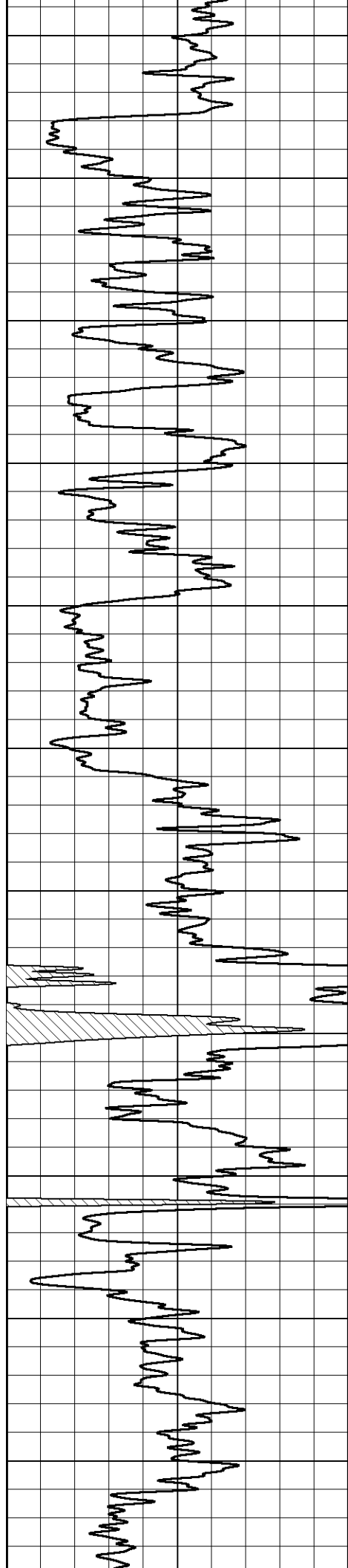
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 Dataset Pathname: stackmel/pass3.1  
 Presentation Format: \_dil2in  
 Dataset Creation: Sat Apr 06 17:43:35 2019  
 Charted by: Depth in Feet scaled 1:600

GAMMA RAY  (GAPI)	1000	CONDUCTIVITY (mmho/m)	0
	15000	Line Tension (lb)	0
	0	RLL3 (Ohm-m)	50
	0	DEEP RESISTIVITY (Ohm-m)	50
	50	RLL3 (Ohm-m)	500
	50	Deep Resistivity (Ohm-m)	500









1550

1600

1650

1700

1750

1800

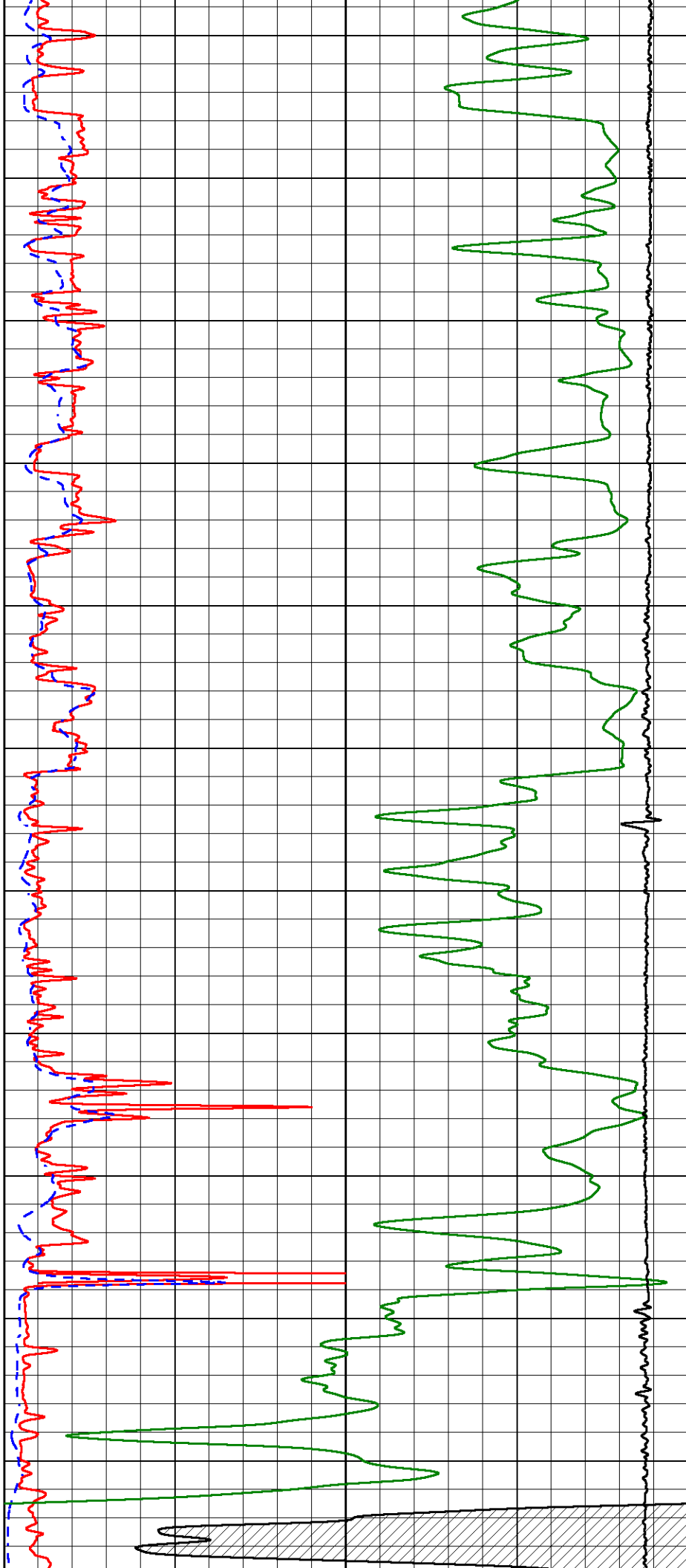
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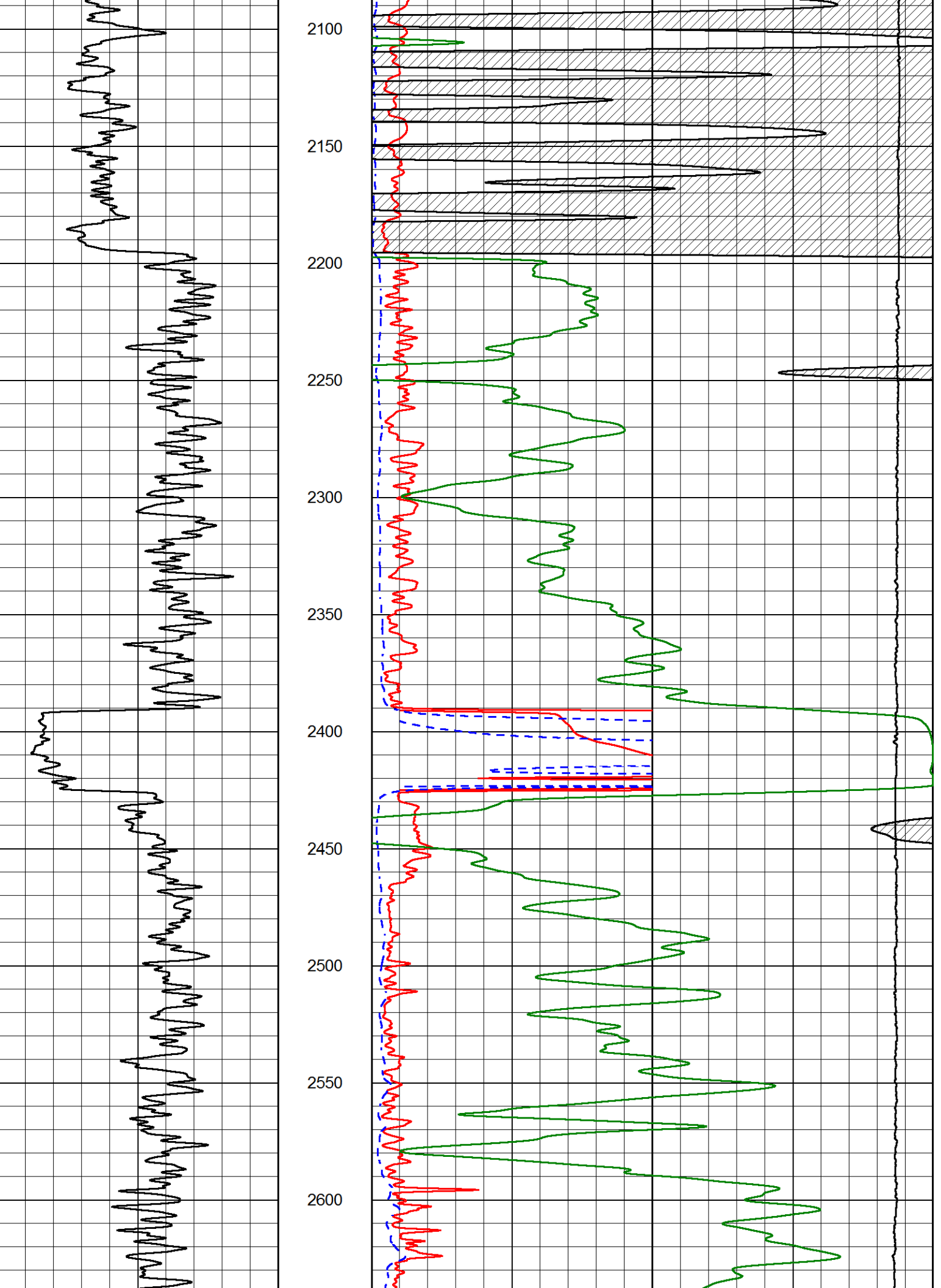
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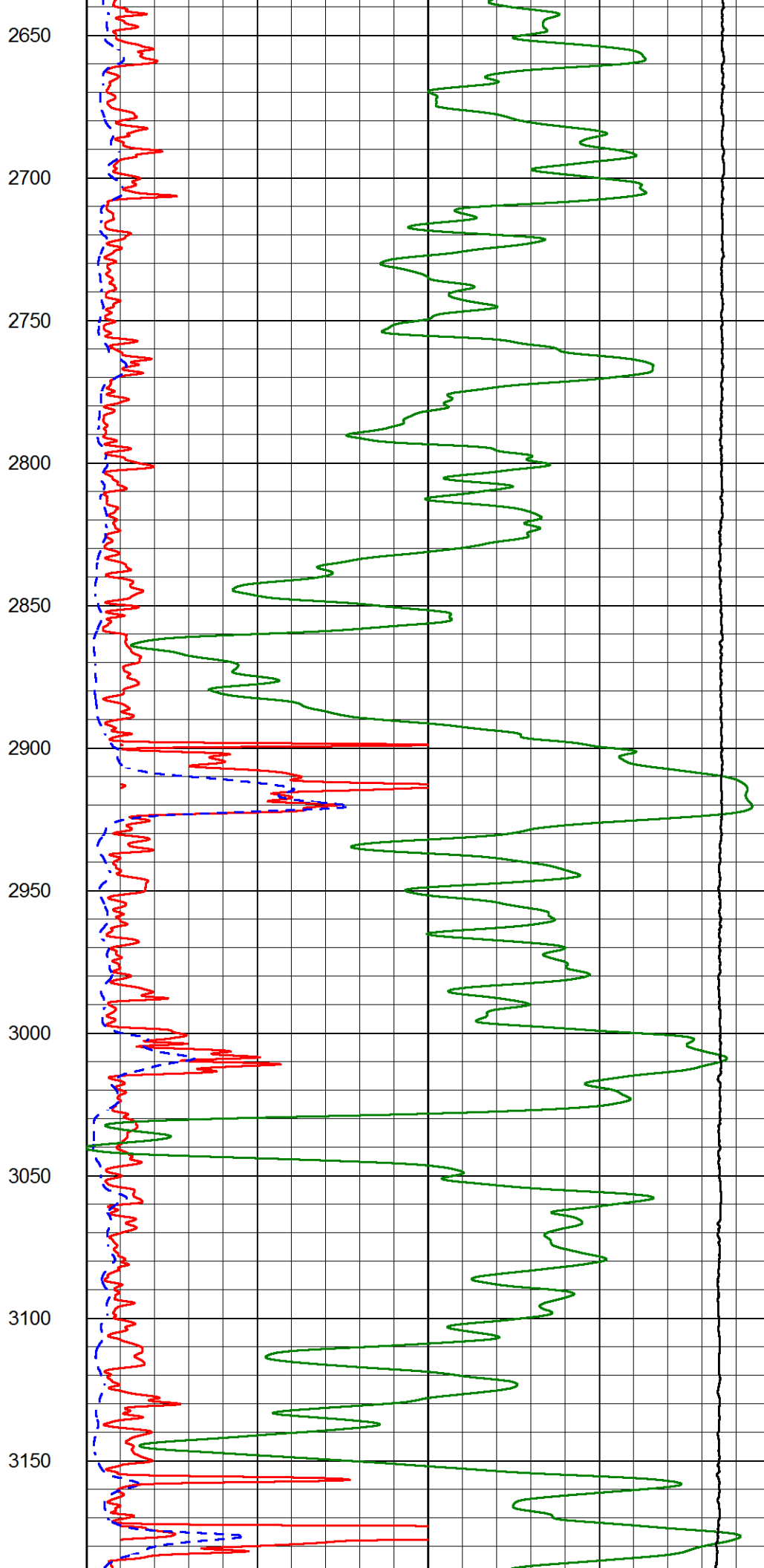
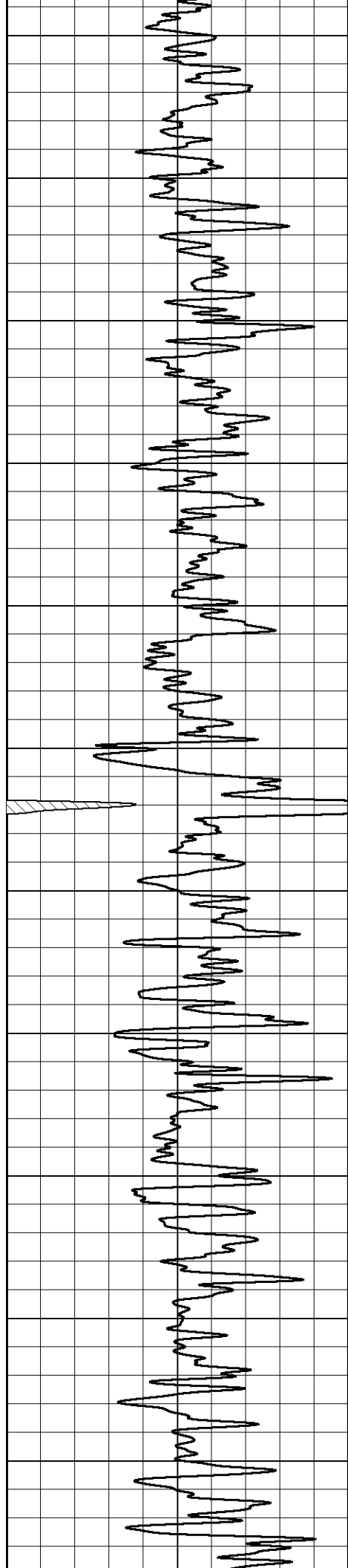
1950

2000

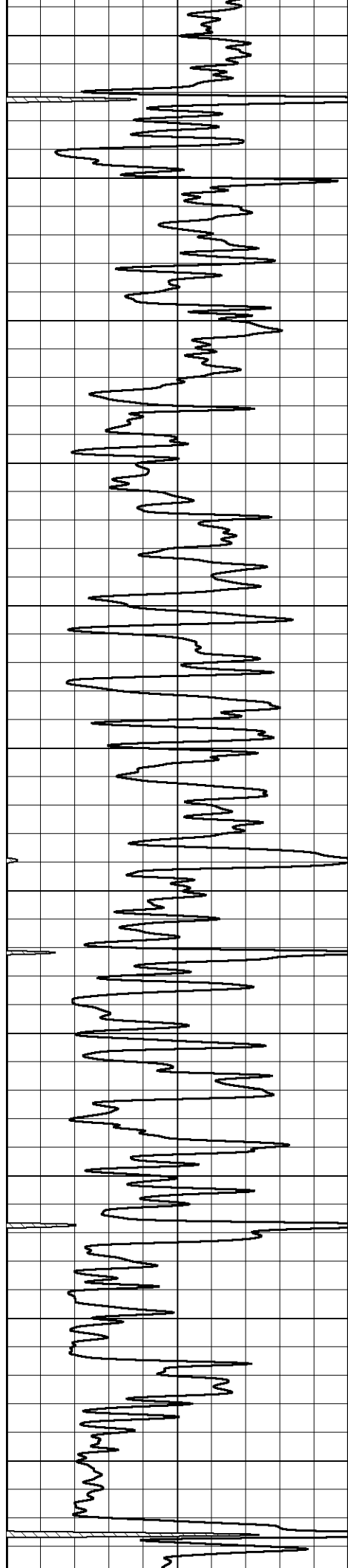
2050











3200

3250

3300

3350

3400

3450

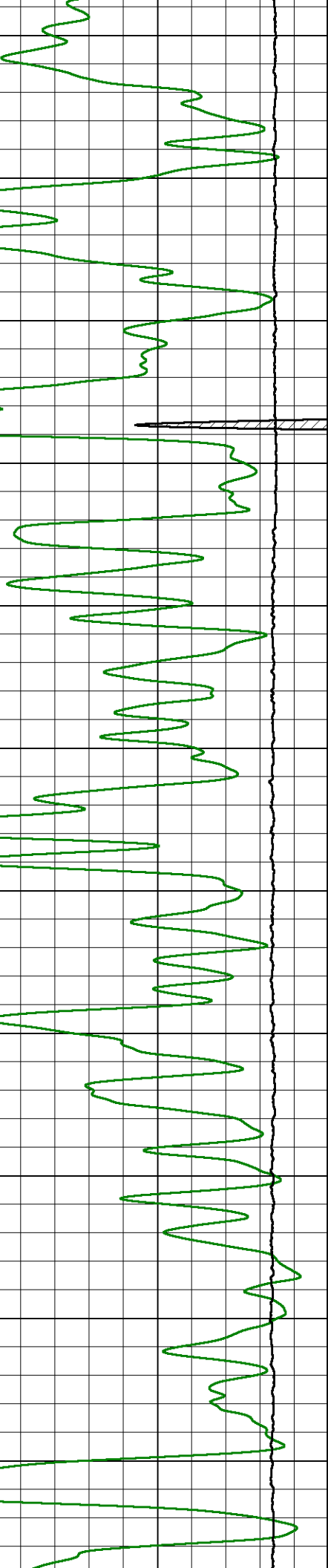
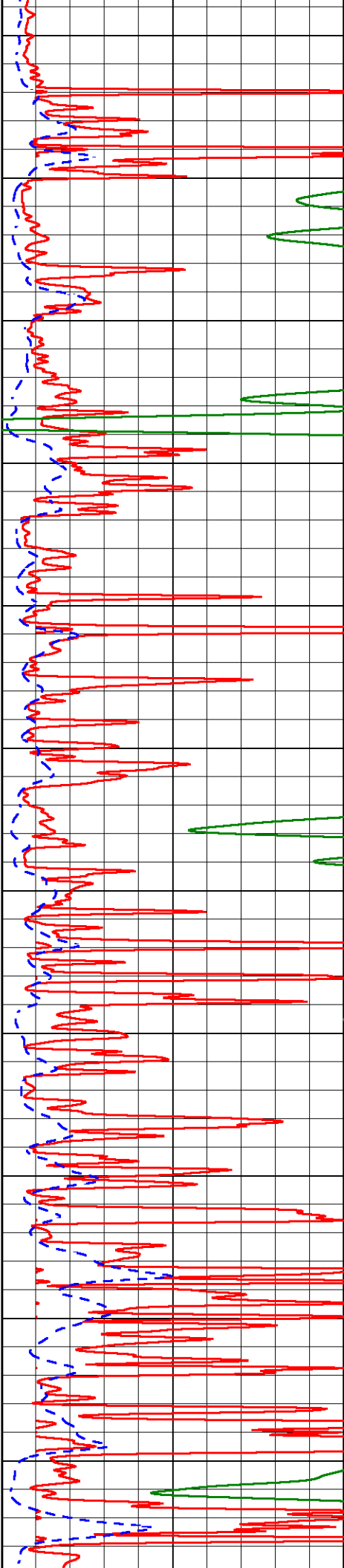
3500

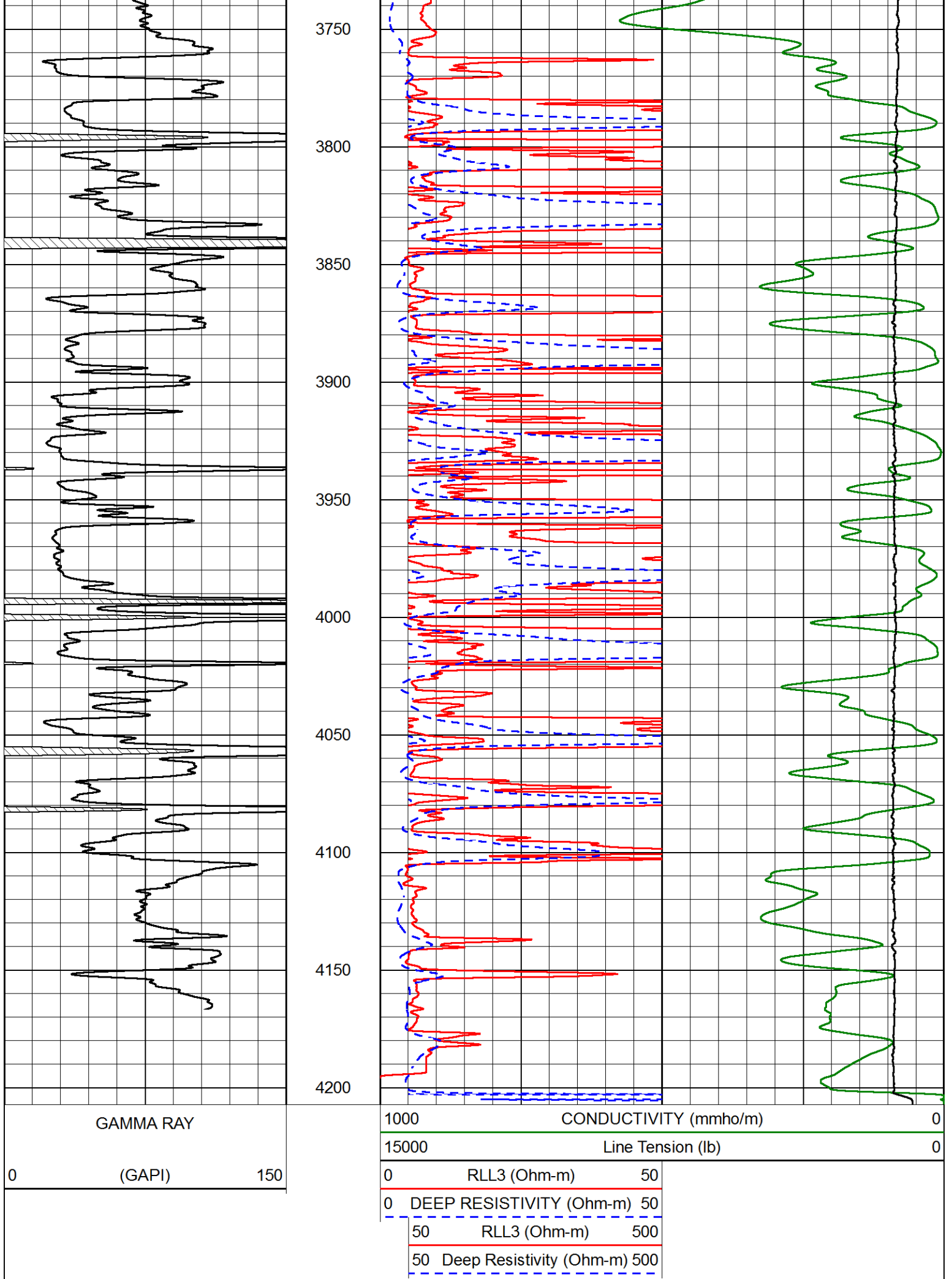
3550

3600

3650

3700



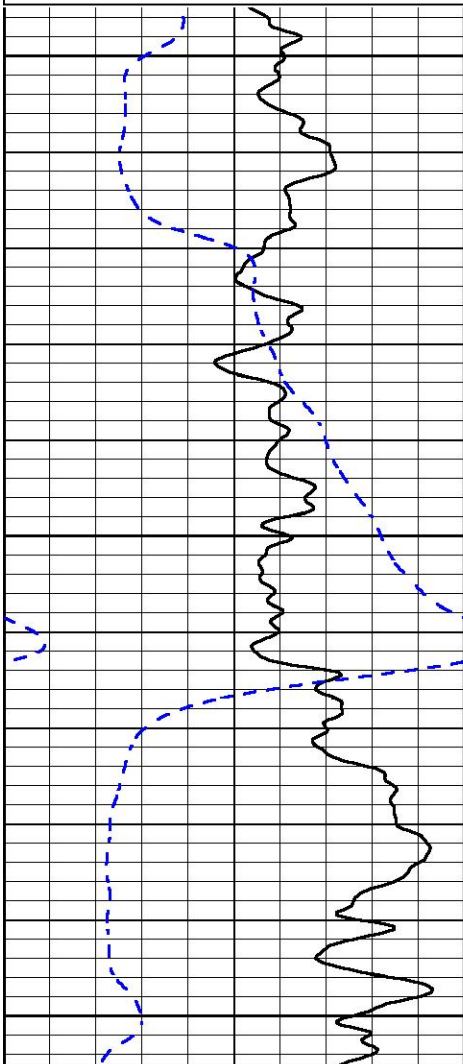


# MAIN PASS

Database File      pioneer\_oil\_schamberger\_1\_28.db  
 Dataset Pathname    stackmel/pass3.1  
 Presentation Format    \_dil  
 Dataset Creation      Sat Apr 06 17:43:35 2019  
 Charted by            Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

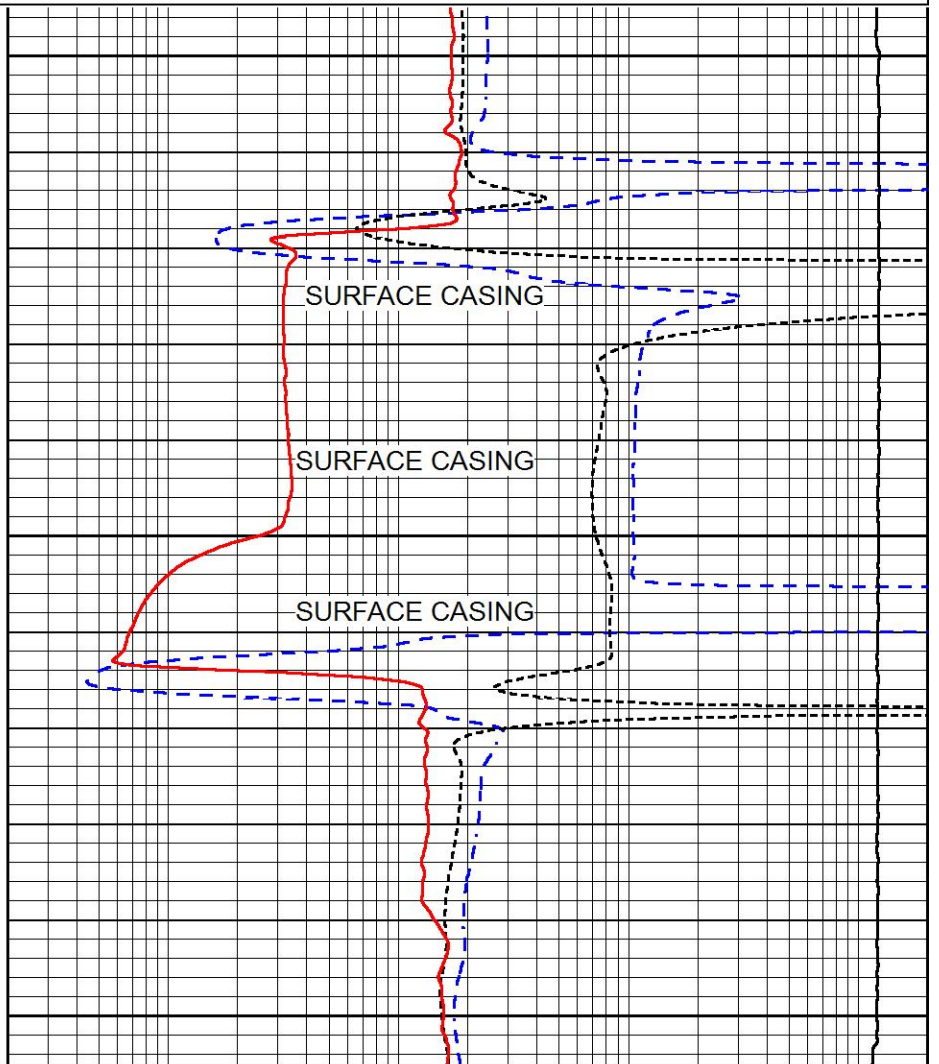
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



550

600

650



SURFACE CASING

SURFACE CASING

SURFACE CASING

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

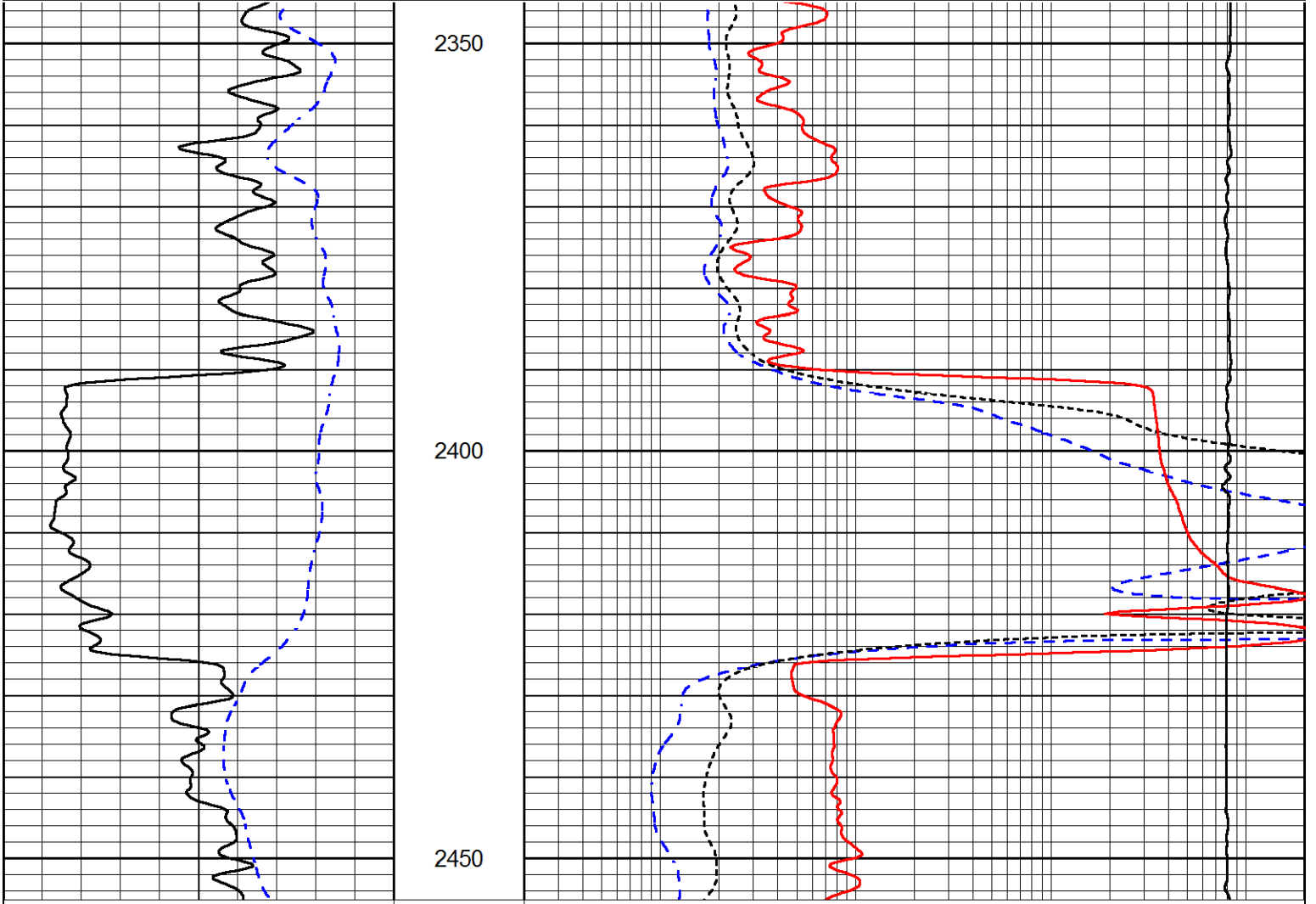
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

# MAIN PASS

Database File pioneer\_oil\_schamberger\_1\_28.db  
 Dataset Pathname stackmel/pass3.1  
 Presentation Format \_dil  
 Dataset Creation Sat Apr 06 17:43:35 2019  
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



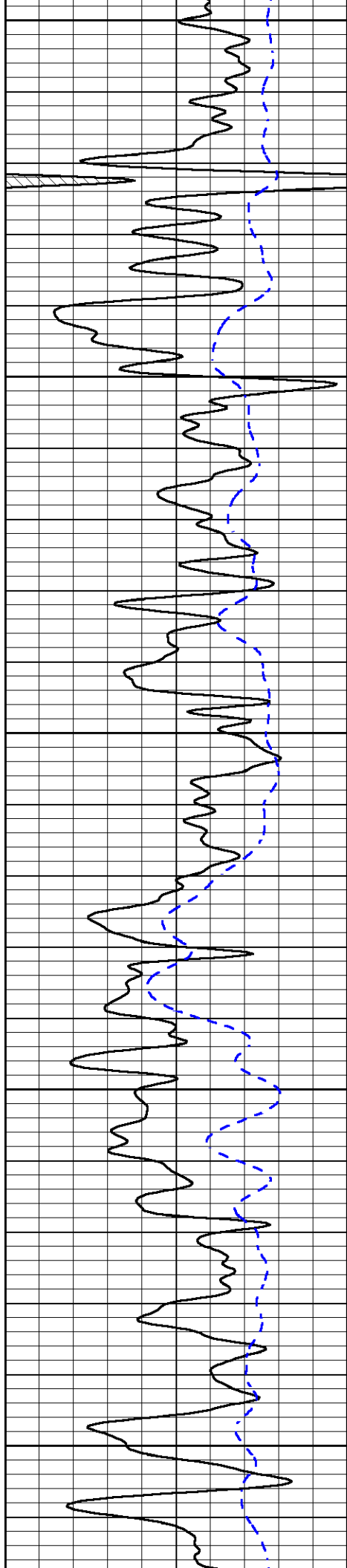
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0

Database File pioneer\_oil\_schamberger\_1\_28.db  
 Dataset Pathname stackmel/pass3.28  
 Presentation Format \_dil  
 Dataset Creation Sat Apr 06 16:58:13 2019  
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	LINE TENSION (lb)	0



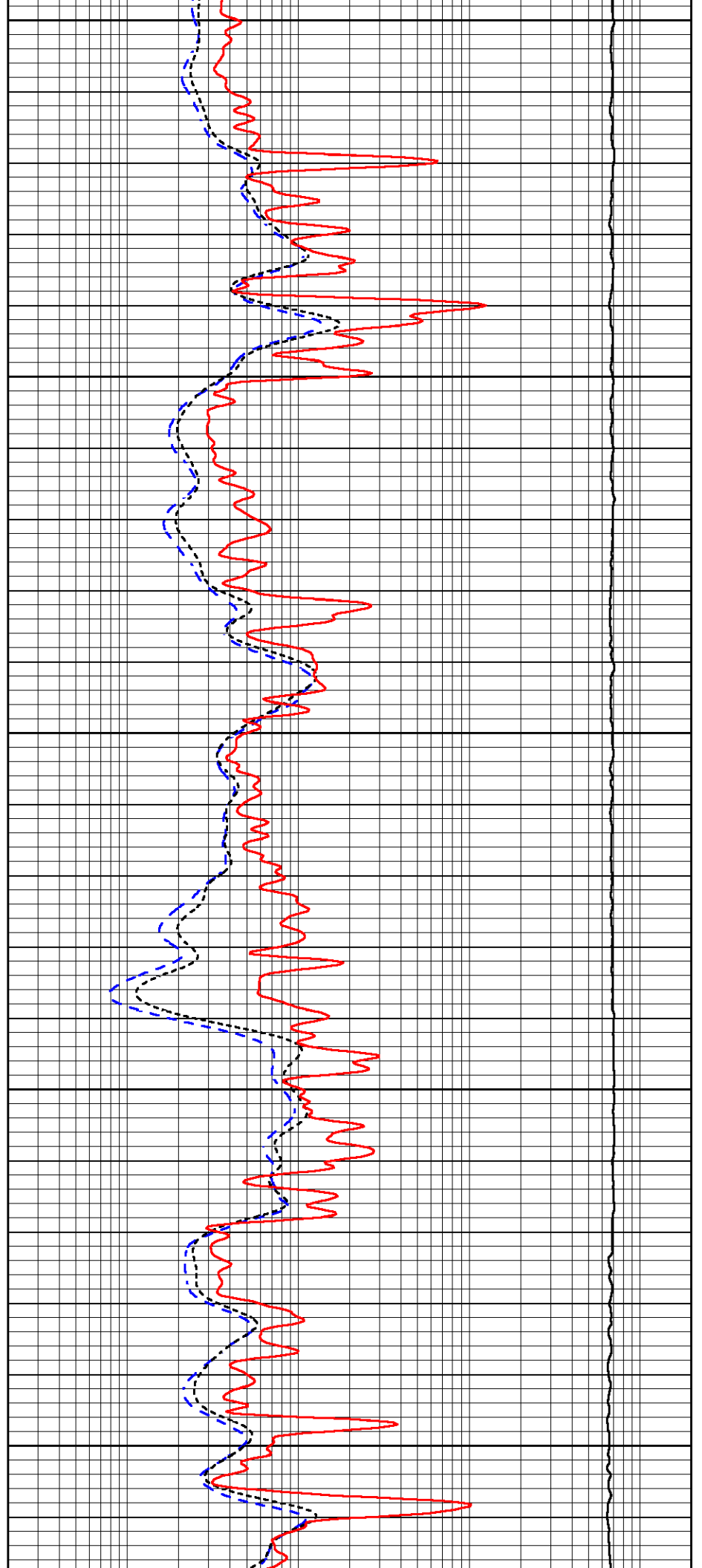
3200

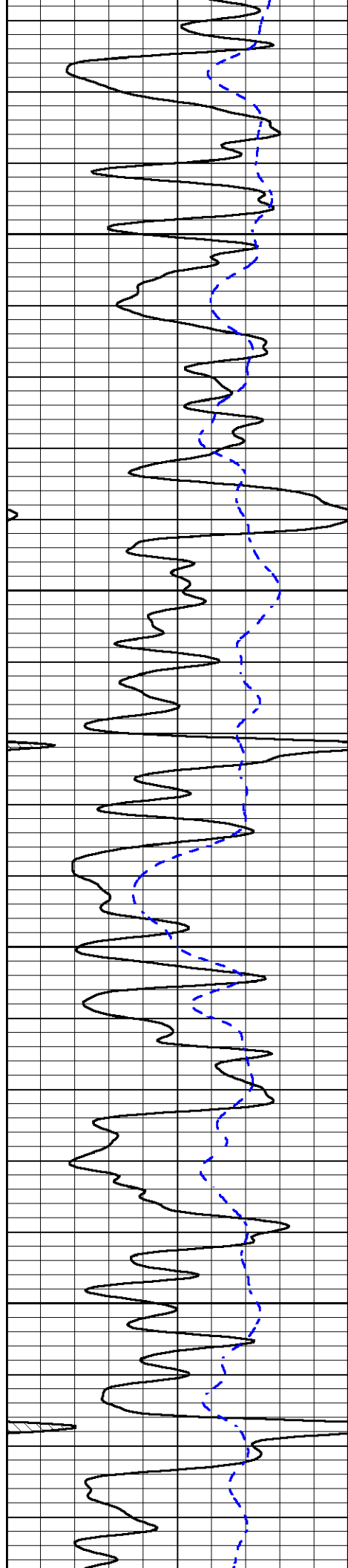
3250

3300

3350

3400



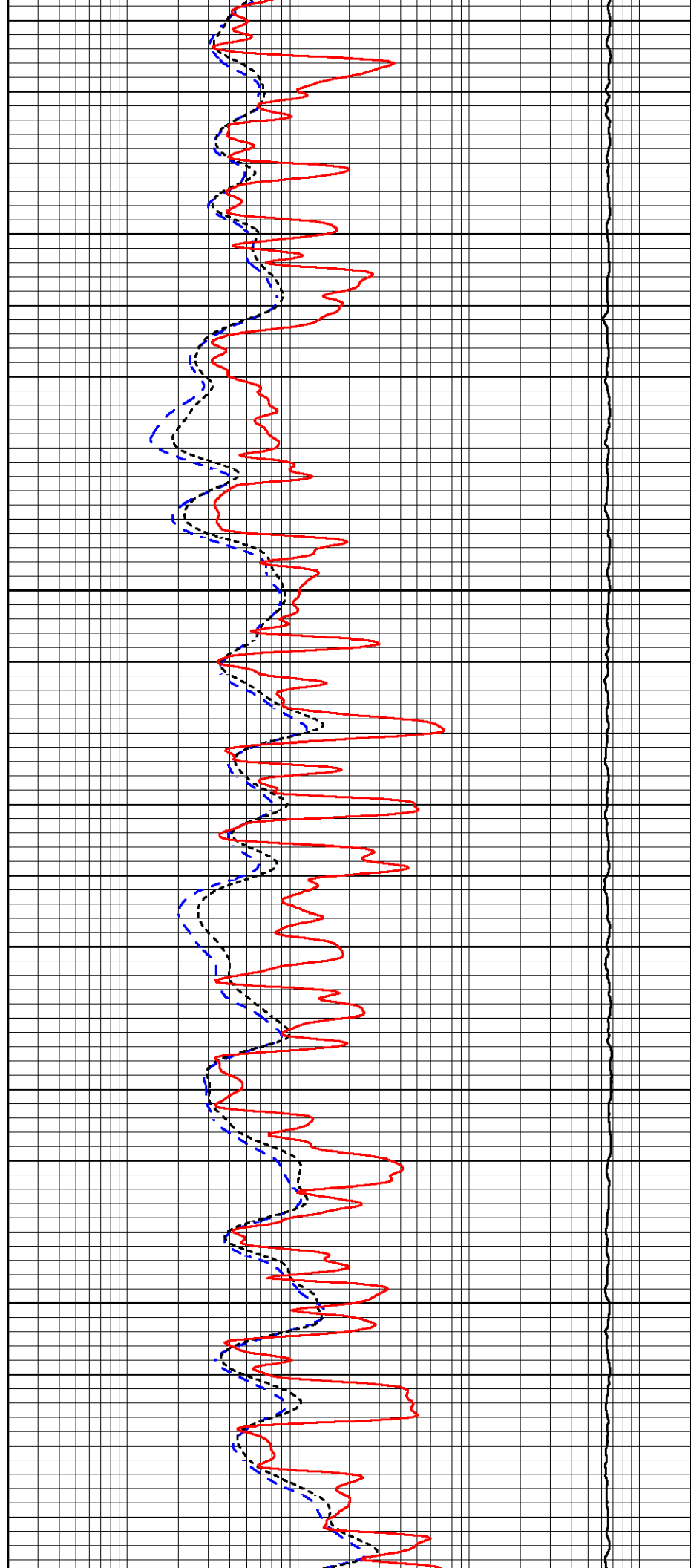


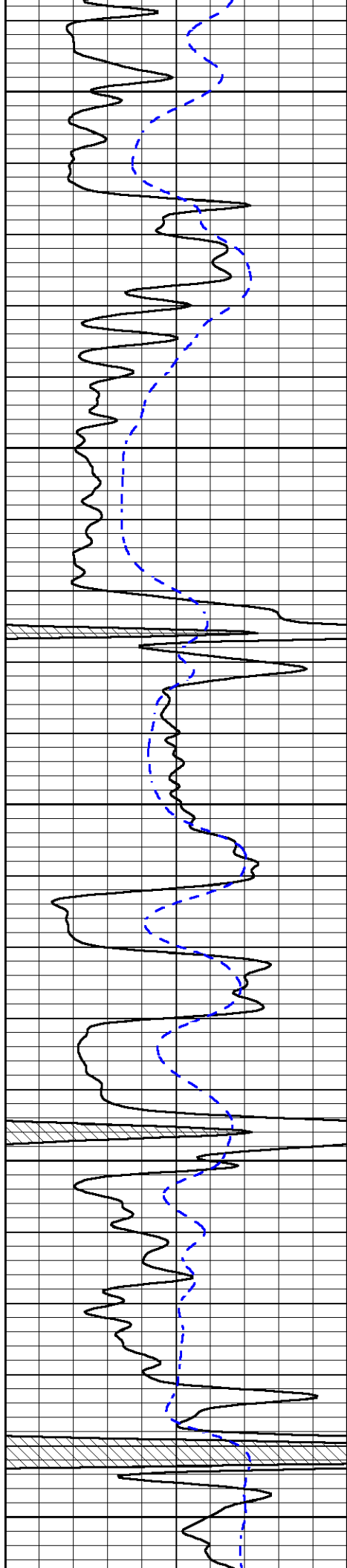
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3500

3550

3600





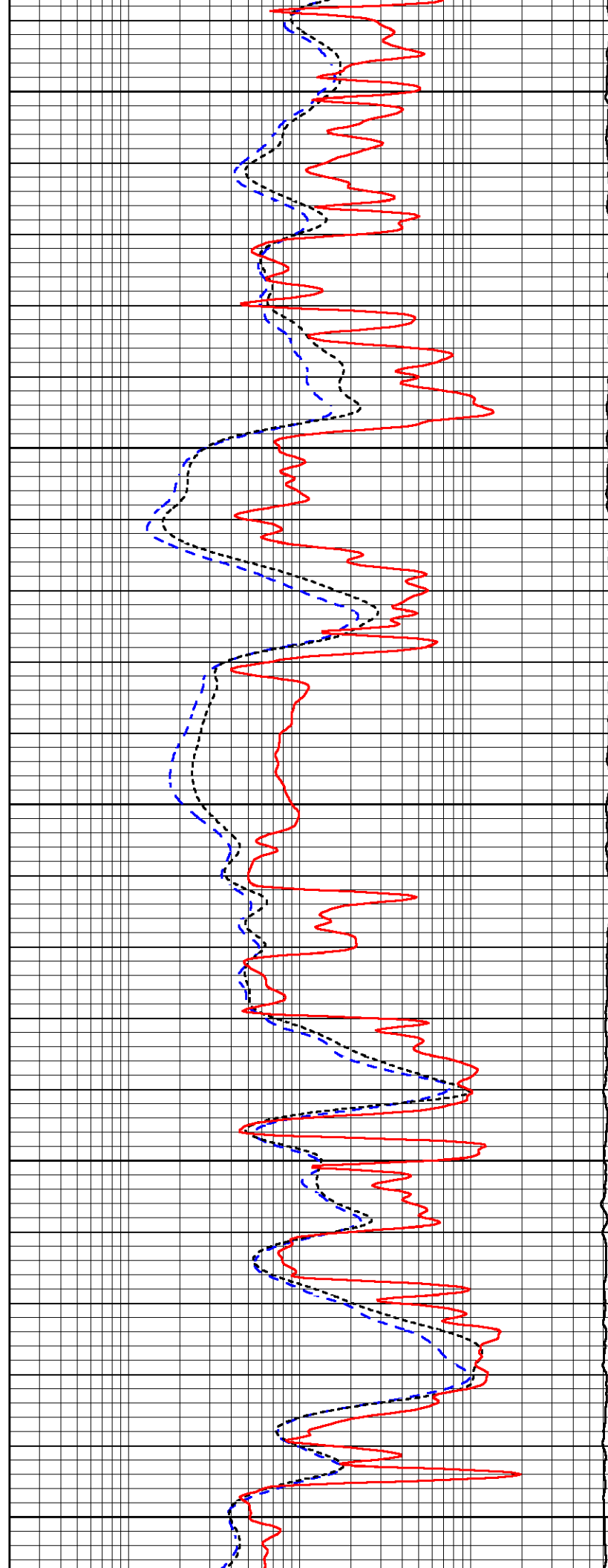
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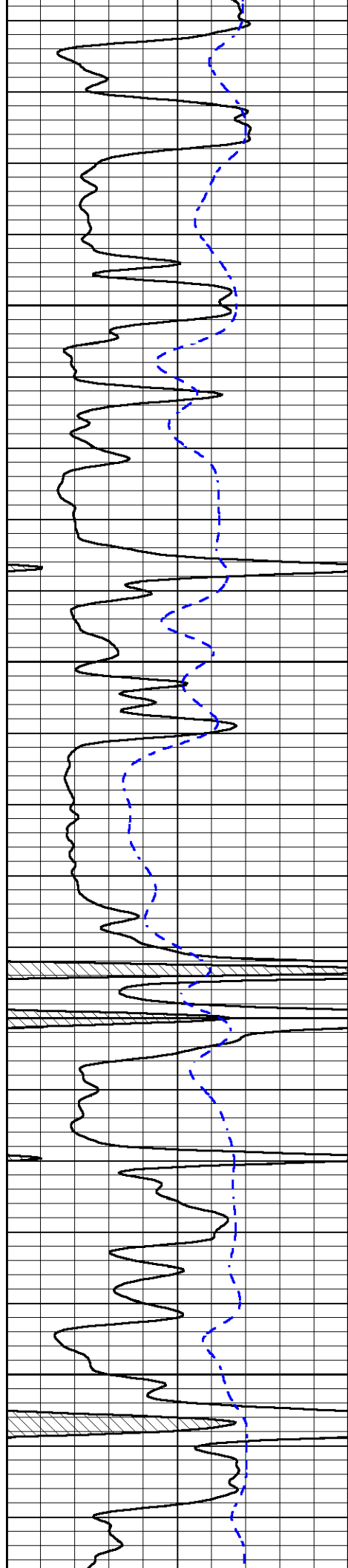
3700

3750

3800

3850



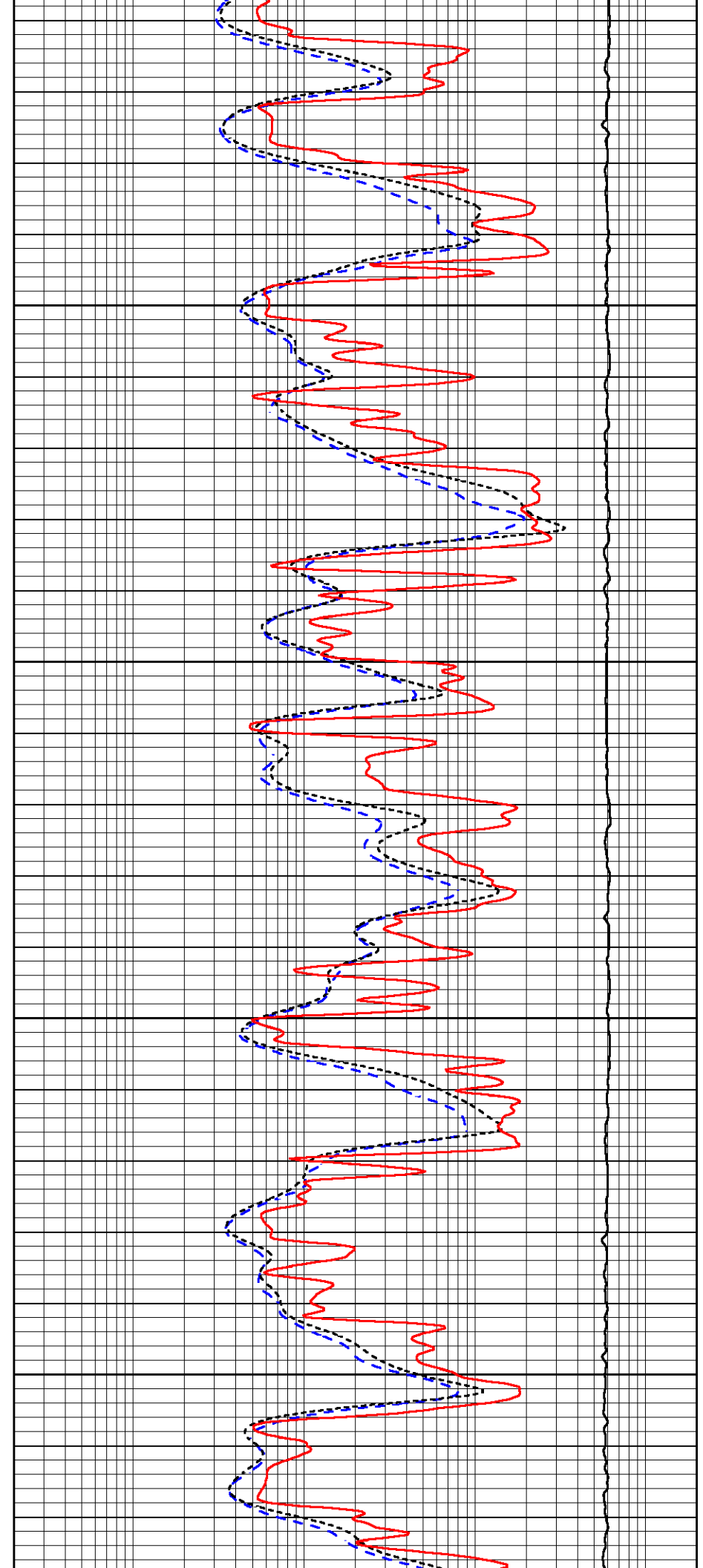


3900

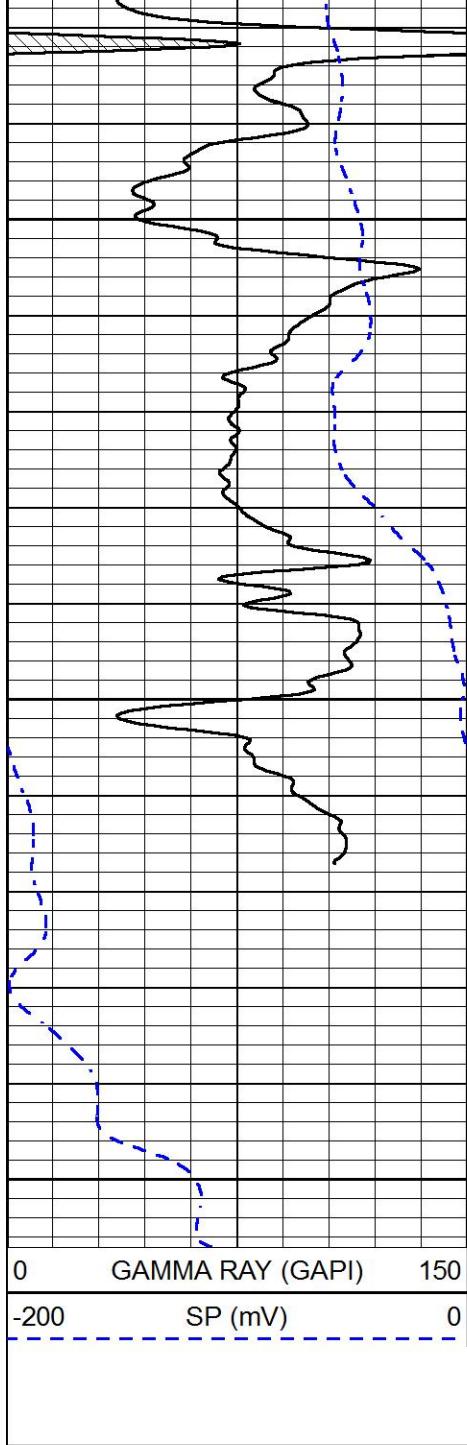
3950

4000

4050





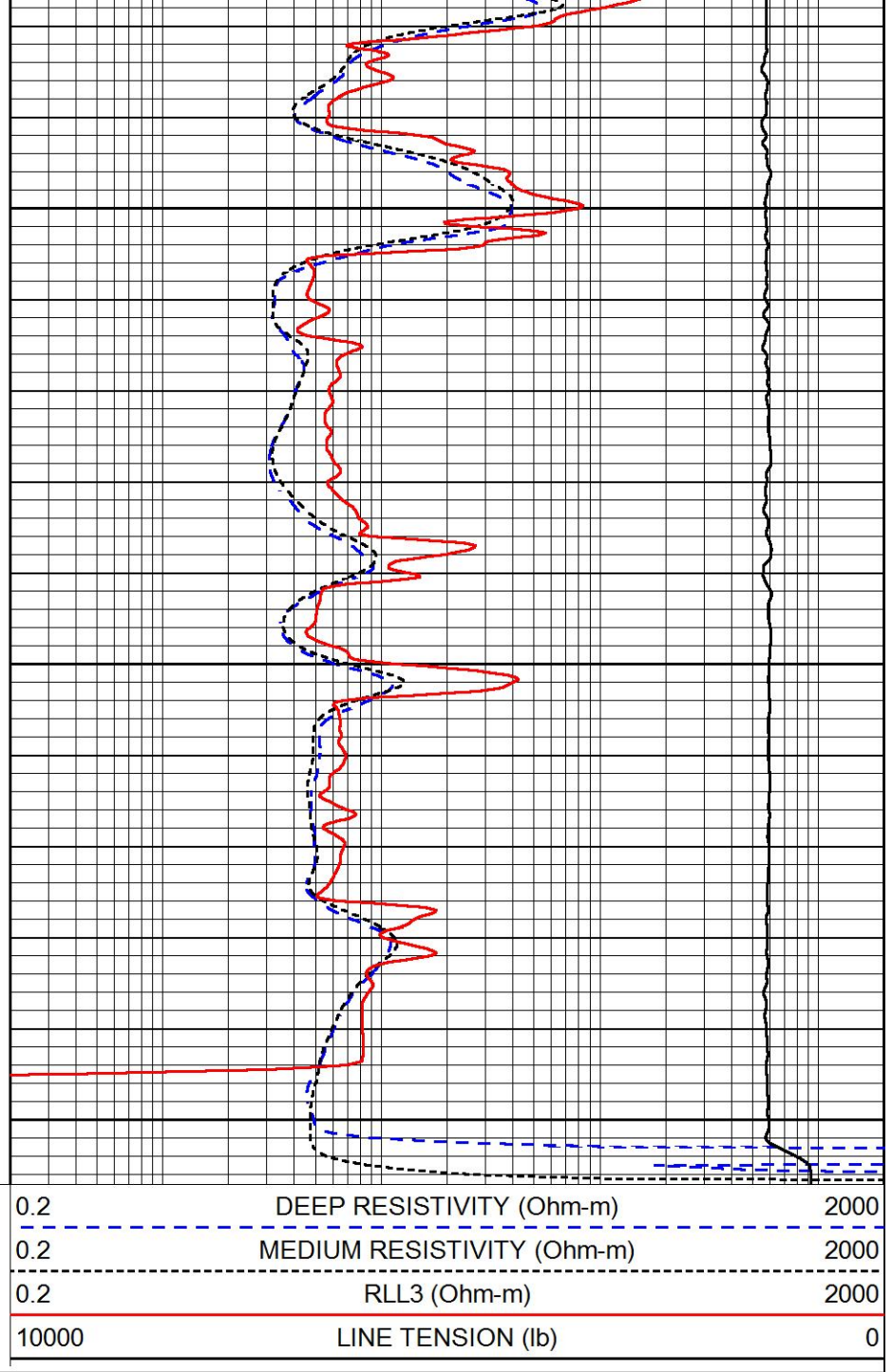


4100

4150

4200

0      GAMMA RAY (GAPI)      150  
 -200      SP (mV)      0



0.2      DEEP RESISTIVITY (Ohm-m)      2000  
 0.2      MEDIUM RESISTIVITY (Ohm-m)      2000  
 0.2      RLL3 (Ohm-m)      2000  
 10000      LINE TENSION (lb)      0



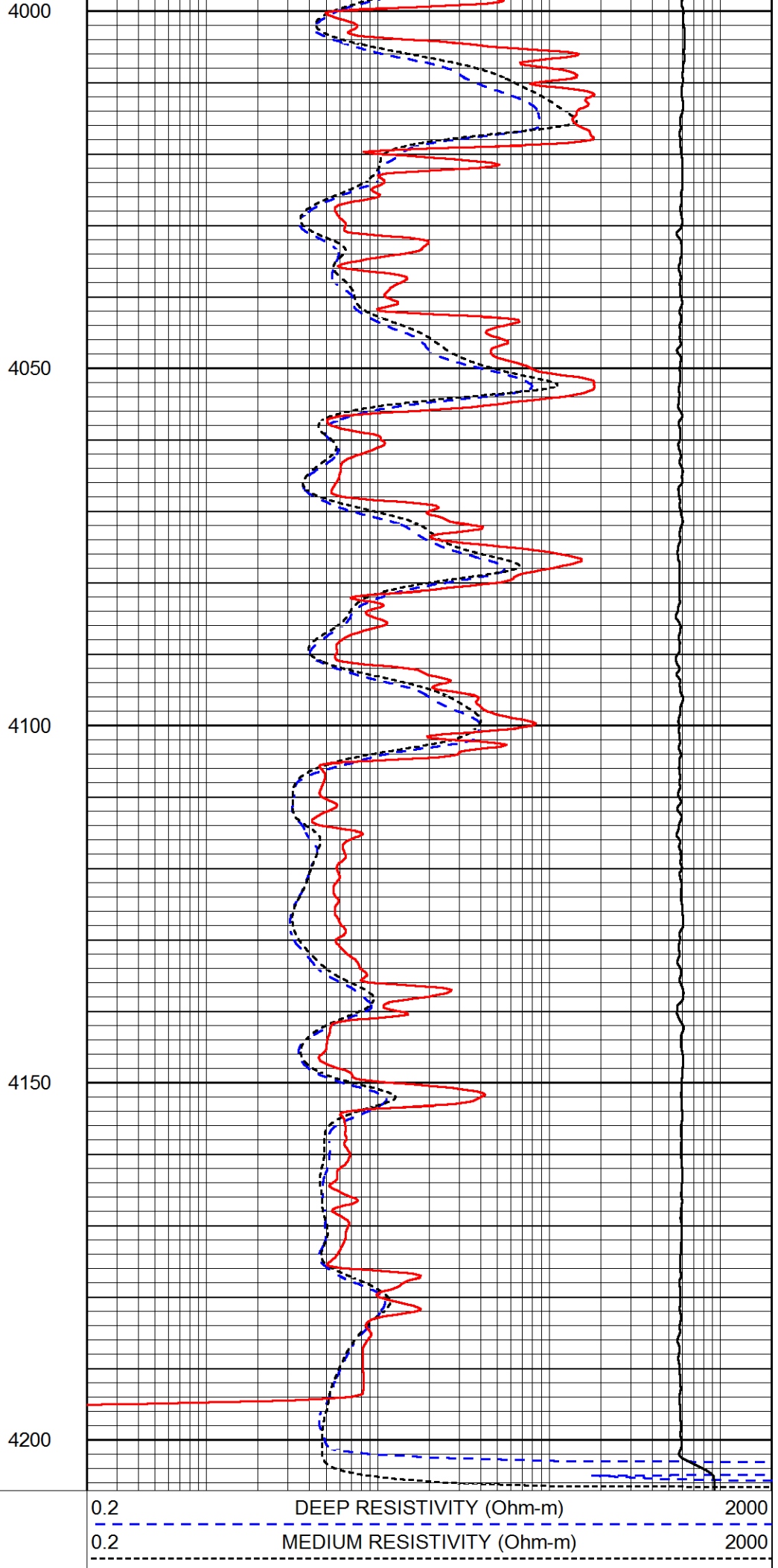
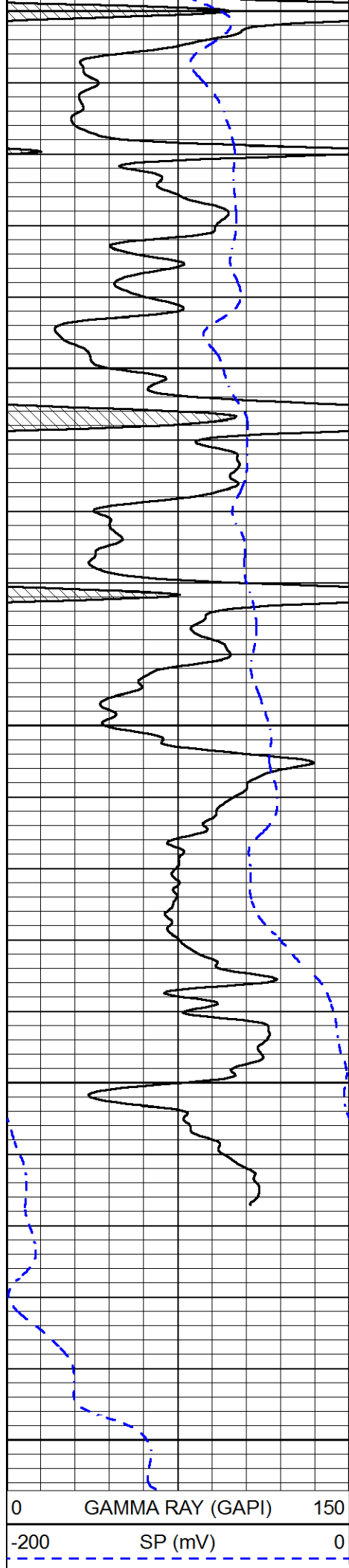
# REPEAT SECTION

Database File      pioneer\_oil\_schamberger\_1\_28.db  
 Dataset Pathname      stackmel/pass2.1  
 Presentation Format      \_dil  
 Dataset Creation      Sat Apr 06 17:44:16 2019  
 Charted by      Depth in Feet scaled 1:240

0      GAMMA RAY (GAPI)      150  
 -200      SP (mV)      0

0.2      DEEP RESISTIVITY (Ohm-m)      2000  
 0.2      MEDIUM RESISTIVITY (Ohm-m)      2000  
 0.2      RLL3 (Ohm-m)      2000  
 10000      LINE TENSION (lb)      0





Calibration Report

Database File      pioneer\_oil\_schamberger\_1\_28.db  
 Dataset Pathname    stackmel/pass3.1  
 Dataset Creation    Sat Apr 06 17:43:35 2019

Dual Induction Calibration Report

Serial-Model:                      967 (HT)-PSI HIGH TEMP  
 Calibration Performed:            Sun Oct 07 19:24:22 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.565	-17.500
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.390	-40.000

Microlog Calibration Report

Serial-Model:                      PSI-01-PSIML  
 Performed:                         Sun Feb 24 09:53:40 2019

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	35000.0000	-2.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	50000.0000	-2.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.7000

Compensated Density Calibration Report

Serial-Model:                      96-916-M&W  
 Source / Verifier:                16955B / 2ci  
 Master Calibration Performed:    Wed Mar 27 11:00:53 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.655	g/cc	1595.61	6242.82	cps
Spine Angle = 74.54			Density/Spine Ratio = 0.503		
	Size		Reading		
Small Ring	6.00	in	1.75		
Large Ring	16.00	in	1.46		

Compensated Neutron Calibration Report

Serial Number:                      207-MW  
 Tool Model:                         M&W  
 Calibration Performed:            WED FEB 13 10:30:30 2019

Detector	Readings	Target	Normalization
Short Space	6240.00 cps	1000.00 cps	1.6025
Long Space	460.00 cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number:	89	
Tool Model:	M&W	
Calibration Performed:	Fri Aug 24 11:16:10 2018	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps



**PIONEER**  
Pioneer Energy Services

Company	PIONEER OIL COMPANY, INC.
Well	SCHAMBERGER #1-28
Field	FREDA
County	SHERIDAN
State	KANSAS