COMPENSATED DENSITY NEUTRON LOG

Company PATTERSON ENERGY, LLC.
Well ZWILLICH #2
Field LORRAINE
County ELLSWORTH State Kansas

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Well ZWILLICH #2
Field LORRAINE
County ELLSWORTH
State Kansas

Location: API # : 15 053 21380

1320' FNL & 2310' FEL

SEC 23 TWP 17S RGE 9W

Other Services
DIL
ML

Elevation
K.B. 1783
D.F. 1781
G.L. 1778

Permanent Datum	Ground Level	Elevation	1778
Log Measured From	KB 5' AGL		
Drilling Measured From	KB		

Date	5/23/22		
Run Number	One		
Depth Driller	3570		
Depth Logger	3569		
Bottom Logged Interval	3549		
Top Log Interval	2400		
Casing Driller	8 5/8" @ 260		
Casing Logger	260		
Bit Size	7 7/8"		
Type Fluid in Hole	Chemical		
Density / Viscosity	9.3/65		
pH / Fluid Loss	9.5/8.4		
Source of Sample	Calculated		
Rm @ Meas. Temp	.6@70degf		
Rmf @ Meas. Temp	.45@70degf		
Rmc @ Meas. Temp	.72@70degf		
Source of Rmf / Rmc	Calculated		
Rm @ BHT	.42@100degf		
Time Circulation Stopped	1:30 a.m		
Time Logger on Bottom	4:30 a.m		
Maximum Recorded Temperature	100degf		
Equipment Number	T127		
Location	Hays, KS		
Recorded By	GUS PFANENSTIEL		
Witnessed By	AUSTIN KLAUS		

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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

SOUTH OF LORRAINE TO V RD EAST 1.5 MILES SOUTH INTO.

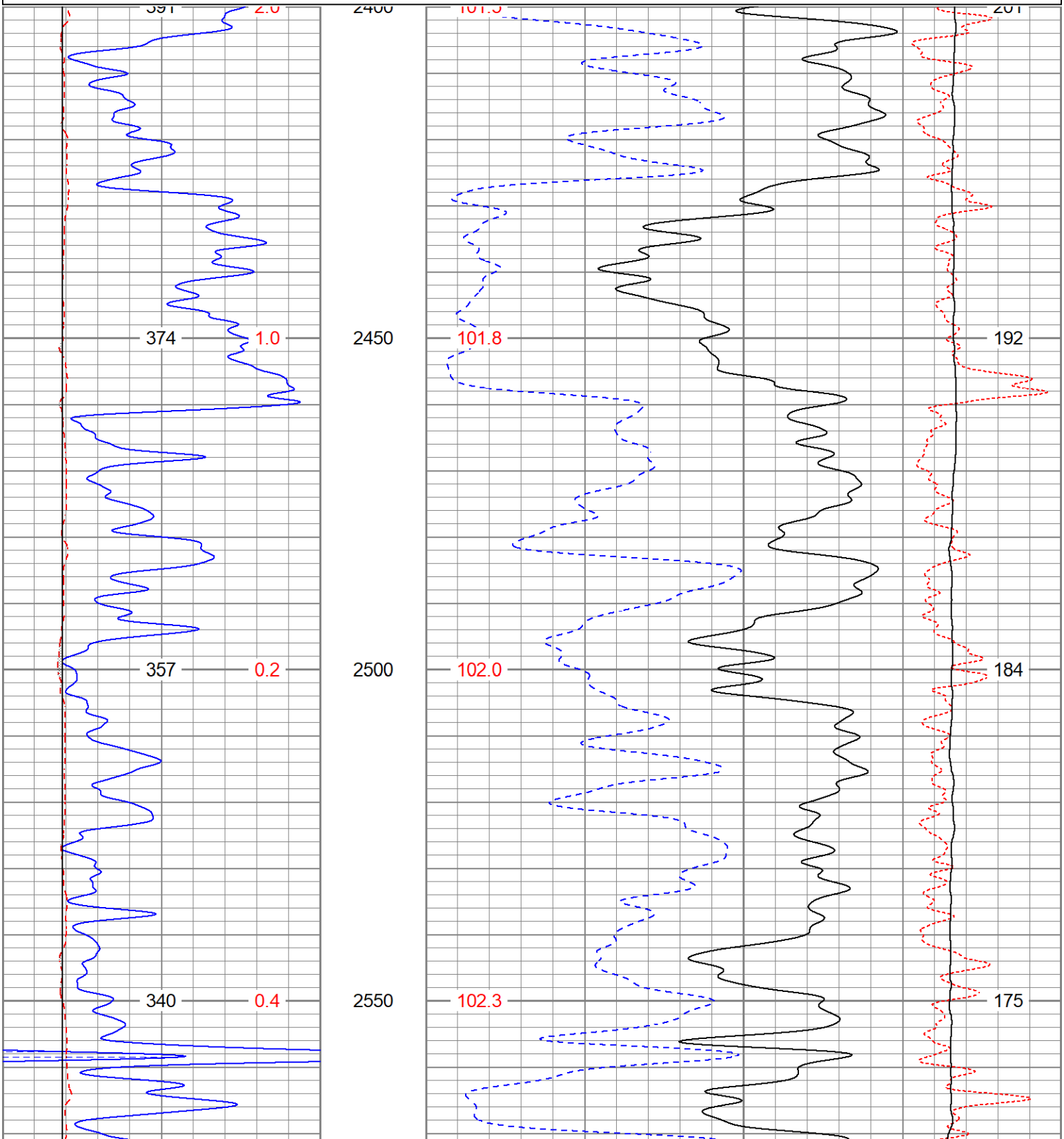
Thanks for using Gemini Wireline LLC
785-625-1182

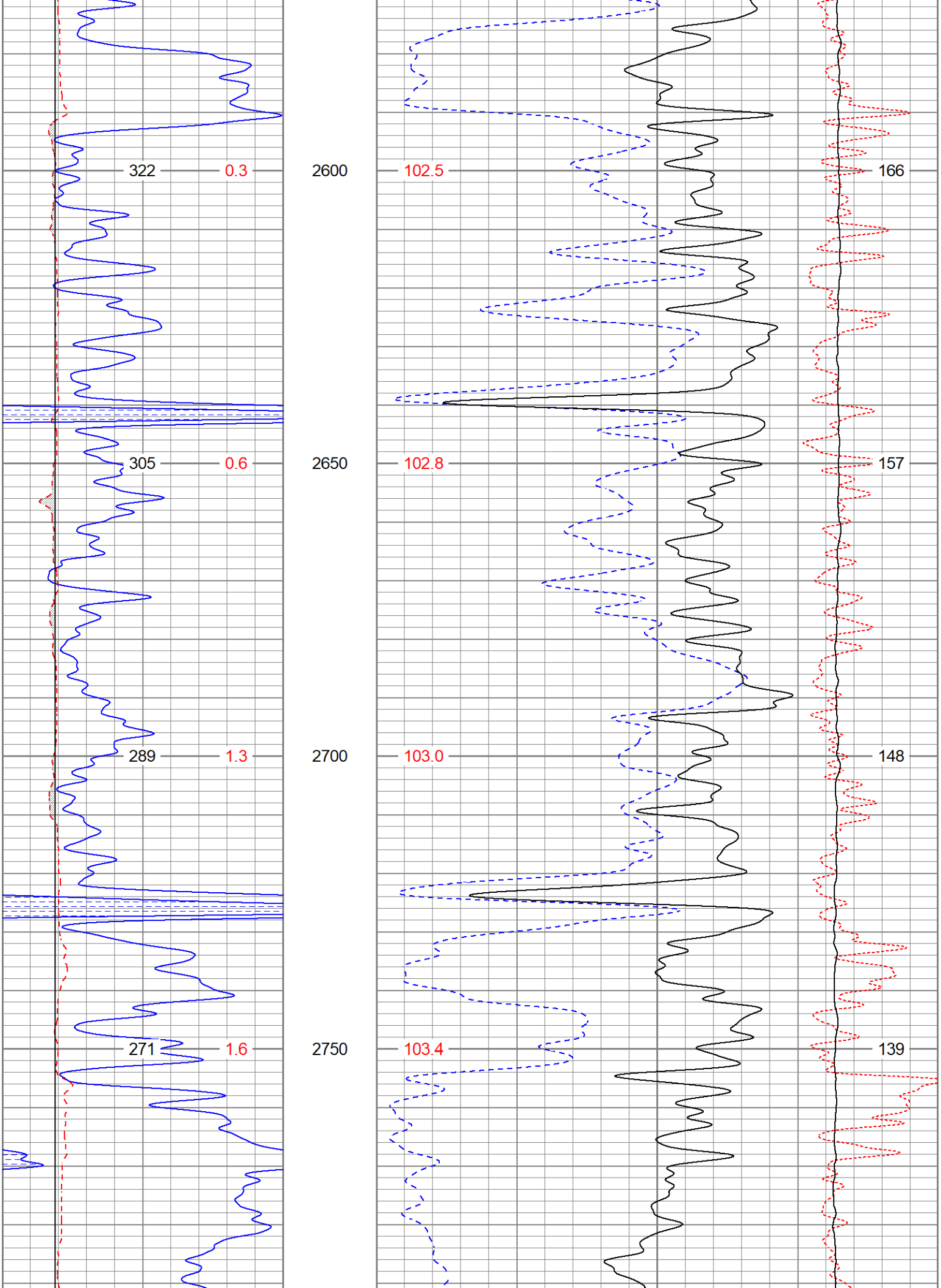
MAIN PASS

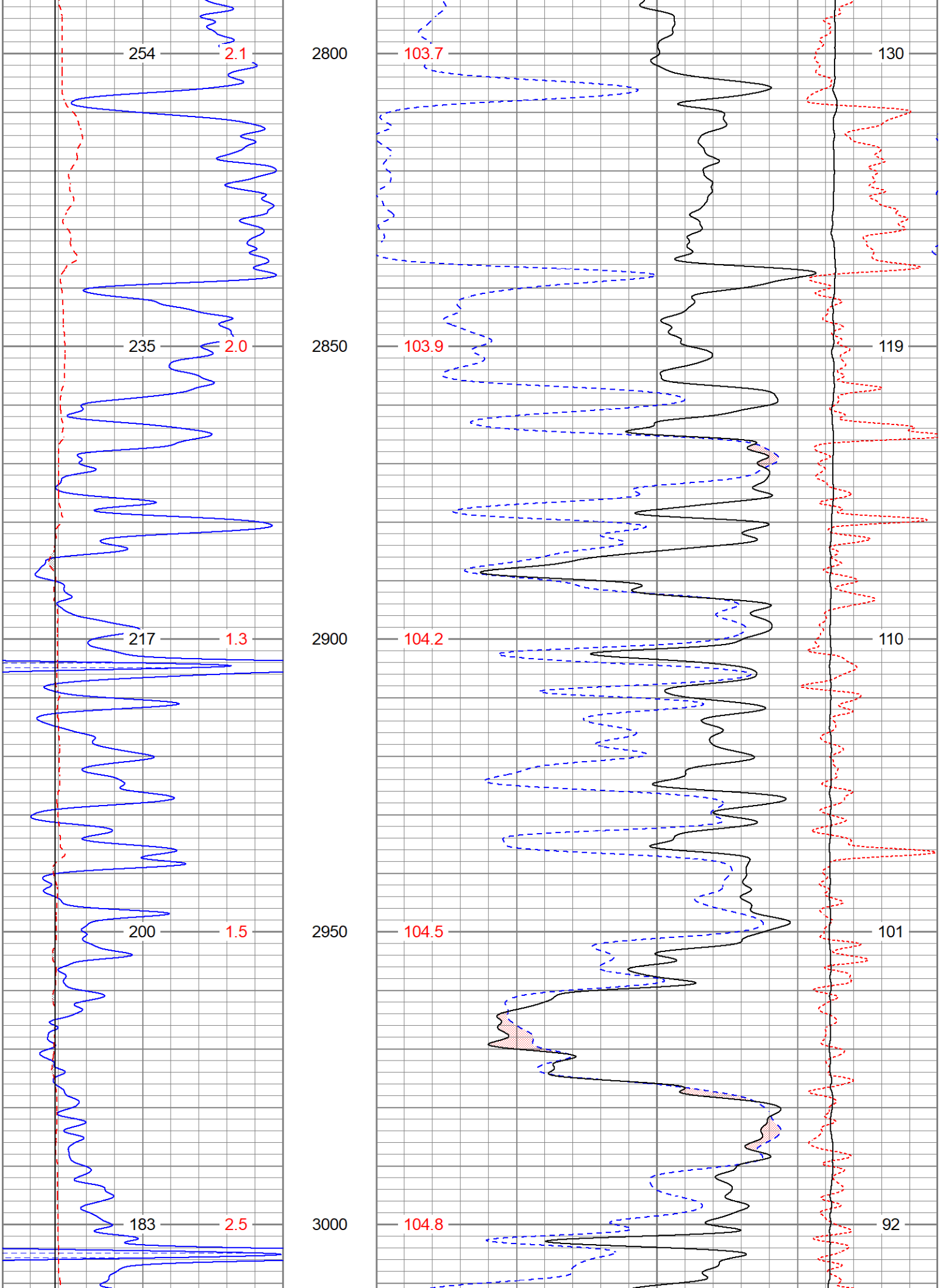
Database File	pezwillich#2oh.db
Dataset Pathname	pass3.1
Presentation Format	digital_kcdnl
Dataset Creation	Mon May 23 06:59:40 2022
Charted by	Depth in Feet scaled 1:240

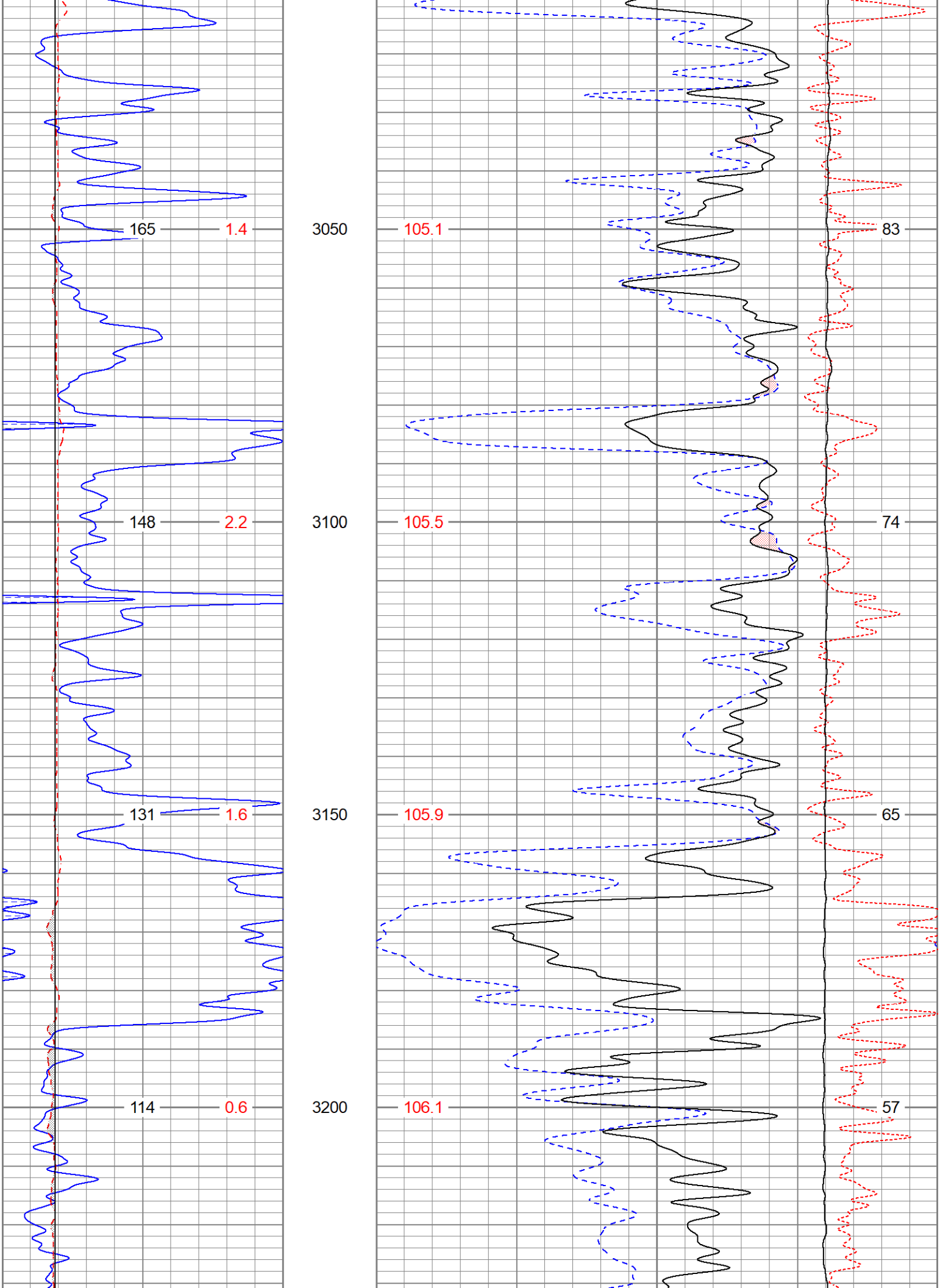
0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16
	TBHV (ft3) / DEVI (deg)	

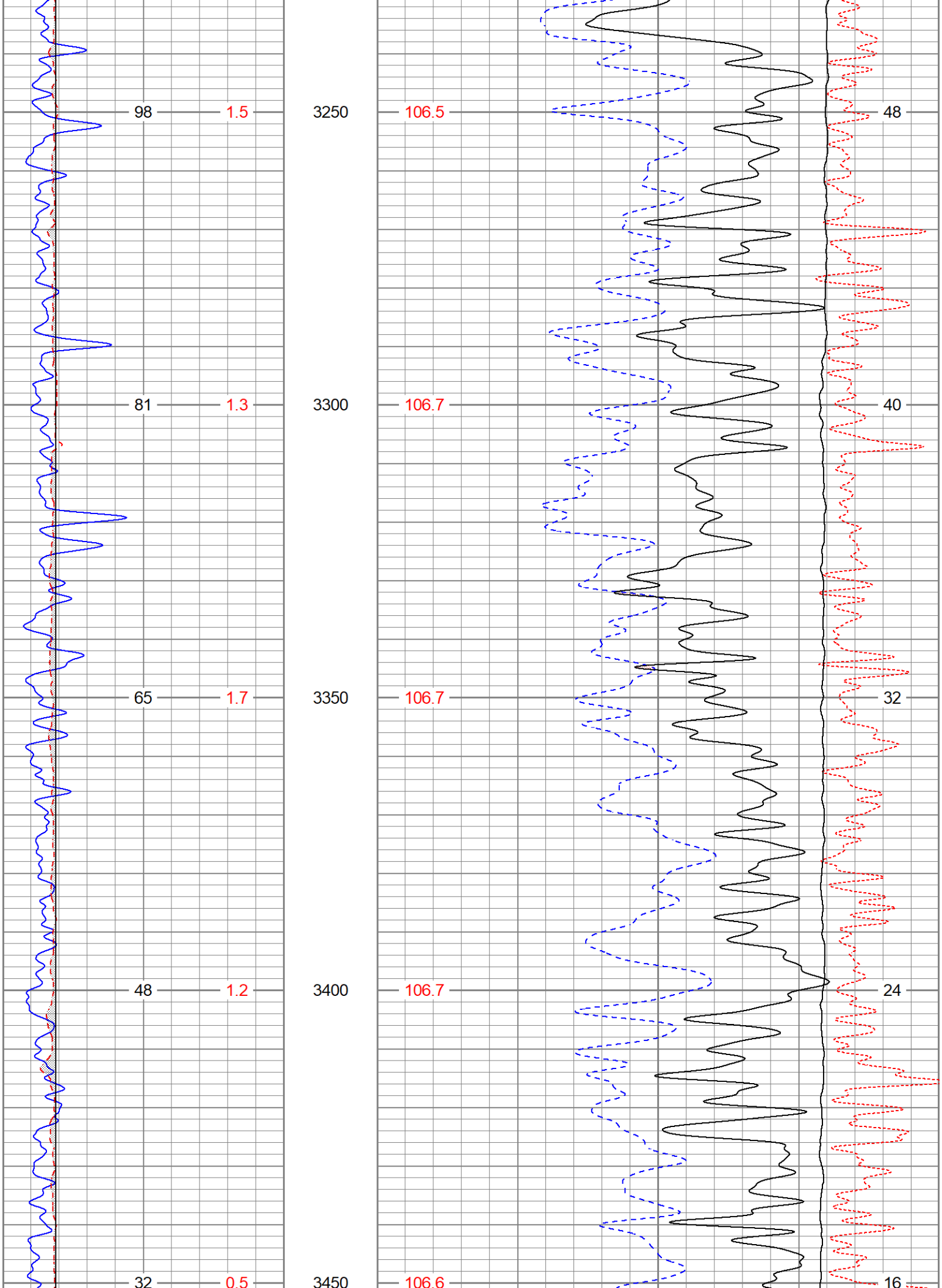
30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30
TEMP (degF)		
-0.25	RHOC (g/cc)	0.25
8000	LTEN (lb)	0
	ABHV (ft3)	

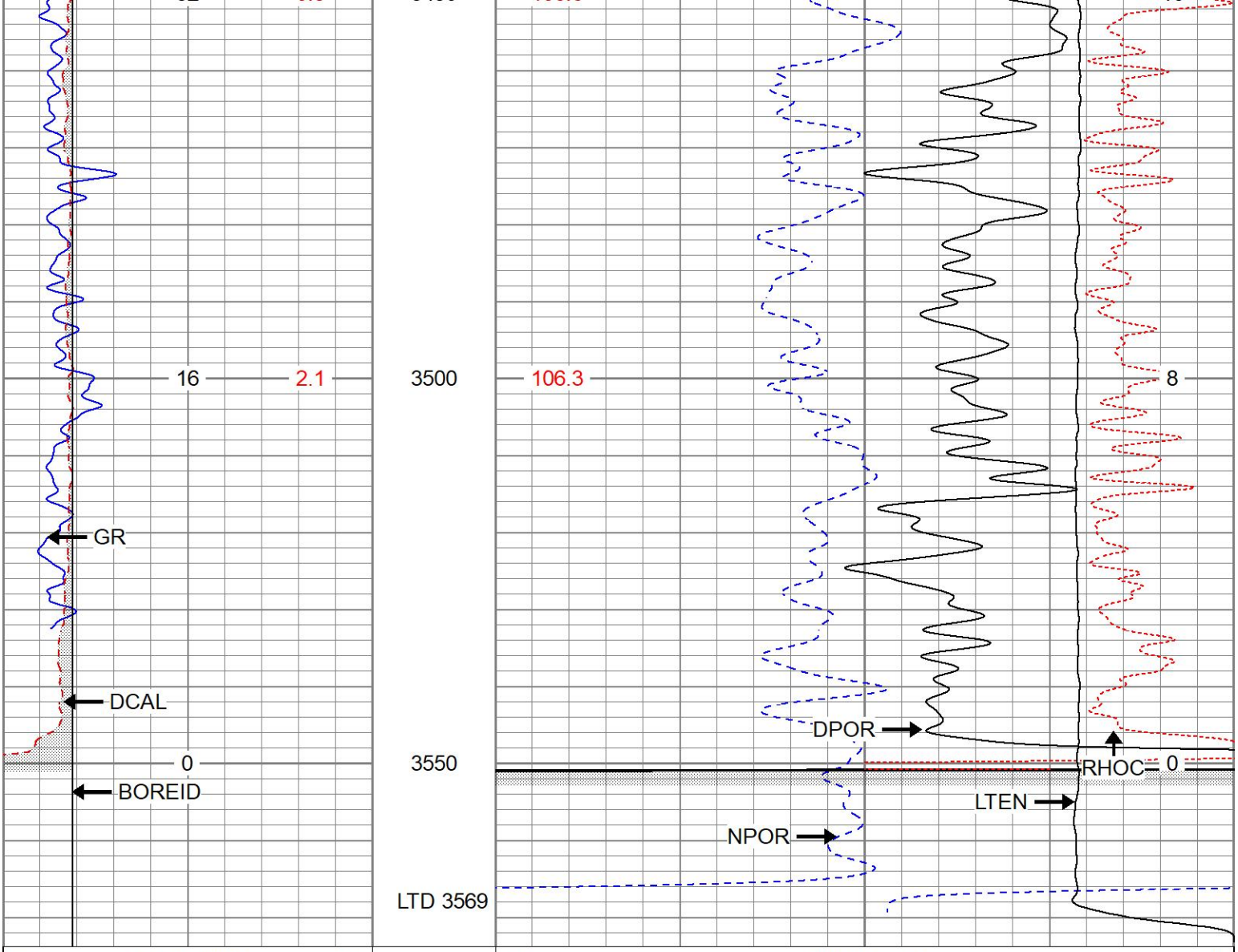



322
0.3
2600
102.5
166
305
0.6
2650
102.8
157
289
1.3
2700
103.0
148
271
1.6
2750
103.4
139


254
2.1
2800
103.7
130
235
2.0
2850
103.9
119
217
1.3
2900
104.2
110
200
1.5
2950
104.5
101
183
2.5
3000
104.8
92


165
1.4
3050
105.1
83
148
2.2
3100
105.5
74
131
1.6
3150
105.9
65
114
0.6
3200
106.1
57


98
1.5
3250
106.5
48
81
1.3
3300
106.7
40
65
1.7
3350
106.7
32
48
1.2
3400
106.7
24
32
0.5
3450
106.6
16



0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16
	TBHV (ft3) / DEVI (deg)	

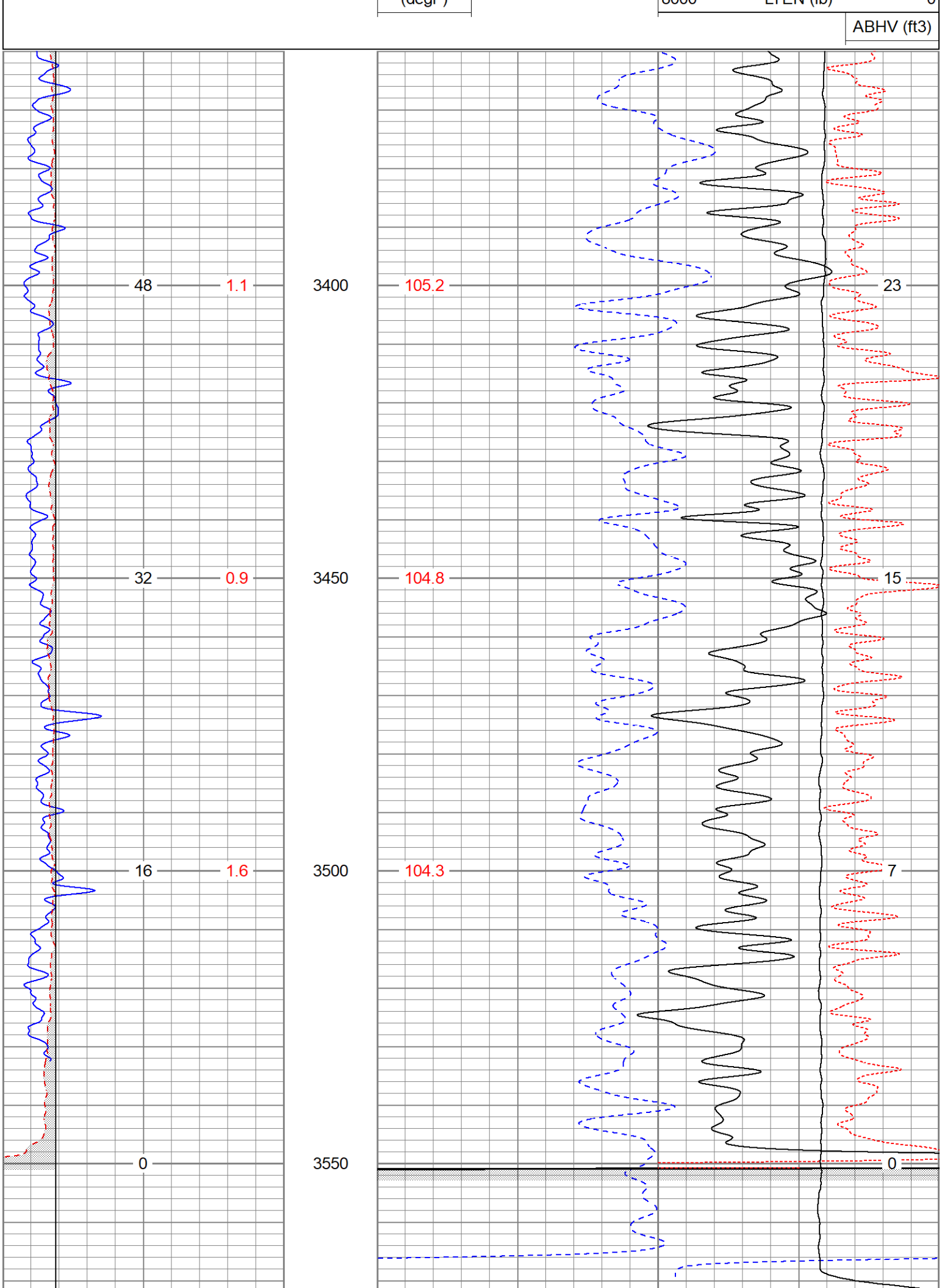
30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30
TEMP (degF)		
-0.25	RHOC (g/cc)	0.25
8000	LTEN (lb)	0
	ABHV (ft3)	

REPEAT SECTION

Database File	pezwillich#2oh.db
Dataset Pathname	pass2RP
Presentation Format	digital_kcdnl
Dataset Creation	Mon May 23 07:21:23 2022
Charted by	Depth in Feet scaled 1:240

0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16
	TBHV (ft3) / DEVI (deg)	

30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30
TEMP (degF)		
-0.25	RHOC (g/cc)	0.25
8000	LTEN (lb)	0


(degF)
8000
LTEN (lb)
0
ABHV (ft3)
48
1.1
3400
105.2
23
32
0.9
3450
104.8
15
16
1.6
3500
104.3
7
0
3550
0

0	GR (GAPI)	150
6	DCAL (in)	16
6	BOREID (in)	16

TBHV (ft3)	DEVI (deg)

30	NPOR (pu)	-10
30	DPOR (pu)	-10
70	DPOR (pu)	30

TEMP (degF)		-0.25	RHOC (g/cc)	0.25
		8000	LTEN (lb)	0
				ABHV (ft3)

Calibration Report

Database File pezwillich#2oh.db
Dataset Pathname pass2.1
Dataset Creation Mon May 23 07:17:53 2022

Dual Induction Calibration Report

Serial-Model: 0352-ADM
Surface Cal Performed: Mon Sep 20 22:00:42 2021
Downhole Cal Performed: Wed Mar 30 09:59:17 2022
After Survey Verification Performed: Wed Mar 30 09:59:17 2022

Surface Calibration

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.018	0.672	V	0.000	350.000	mmho/m	535.475	-9.896
Medium	0.003	0.769	V	0.000	400.000	mmho/m	522.607	-1.745
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.018	0.672	V	0.000	350.000	mmho/m	535.240	-9.549
Medium	0.003	0.768	V	0.000	550.000	mmho/m	718.637	-2.088

Downhole Calibration

	Readings			References			Results	
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	-9.739	334.888	mmho/m	-0.343	349.810	mmho/m	1.016	9.552
Medium	-0.093	389.879	mmho/m	-0.226	399.745	mmho/m	1.026	-0.132
Shallow	2.545	0.014	V	500.000	2.000	Ohm-m	196.757	-0.781

After Survey Verification

	Readings			Targets			Results	
Internal:	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	-9.739	334.888	mmho/m	1.016	9.552
Medium	0.000	0.000	mmho/m	-0.093	389.879	mmho/m	1.026	-0.132
Shallow	0.000	0.000	Ohm-m	500.000	2.000	Ohm-m	1.000	0.000

Neutron Calibration Report

Serial Number: AD5139
Tool Model: ADMY5139
Performed: (Not Performed)

Calibrator Value: 1 NAPI

Calibrator Reading: 1 cps

Sensitivity:	1	NAPI/cps

Temperature Calibration Report

Serial Number:	111			
Tool Model:	ADTS1			
Performed:	(Not Performed)			
	Reference		Reading	
Low Reference:	0.00	degF	0.00	degF
High Reference:	1.00	degF	1.00	degF
Gain:	1.00			
Offset:	0.00			
Delta Spacing	1			

Inclinometer Calibration Report

Performed: Thu Feb 17 11:11:25 2022

	Low Read.	High Read.	Low Ref.	High Ref.	
X Accelerometer	205.00	1843.00	-1.00	1.00	gee
Y Accelerometer	205.00	1843.00	-1.00	1.00	gee
Z Accelerometer					gee

Gamma Ray Calibration Report

Serial Number:	111	
Tool Model:	ADTS1	
Performed:	(Not Performed)	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	1.0000	GAPI/cps