



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company AMERICAN WARRIOR, INC.
Well CHARVAT NO. 1-25
Field WILDCAT
County RUSSELL
State KANSAS

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Well CHARVAT NO. 1-25
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County RUSSELL State KANSAS

Location: API #: 15-167-24047-00-00

480' FNL & 1,636' FEL

SEC 25 TWP 15S RGE 11W

Permanent Datum GROUND LEVEL Elevation 1775'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
MEL
Elevation
K.B. 1783'
D.F. N/A
G.L. 1775'

Date	6/26/2016		
Run Number	ONE		
Depth Driller	3385'		
Depth Logger	3385'		
Bottom Logged Interval	3384'		
Top Log Interval	450'		
Casing Driller	8.625" @ 489'		
Casing Logger	487'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	4700		
Density / Viscosity	9.35 55		
pH / Fluid Loss	10.5 9.6		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.68 @ 88		
Rmt @ Meas. Temp	.51 @ 88		
Rmc @ Meas. Temp	.92 @ 88		
Source of Rmt / Rmc	CHARTS		
Rm @ BHT	.54 @ 110		
Operating Rig Time	2 HOURS		
Max Rec. Temp. F	110		
Equipment Number	108		
Location	COLBY		
Recorded By	J. LONG		
Witnessed By	JASON ALM		

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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.

WILSON, 7 SOUTH TO STICKNEY ROAD, 1/3 WEST, SOUTH INTO

Log Measured From: KELLY BUSHING 8 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

Your Pioneer Energy Services Crew

Engineer: J. LONG
Operator: T. MARTIN
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: JASON ALM
Secondary Witness:
Secondary Witness:
Secondary Witness:

DatabaseC:\ProgramData\Warrior\Data\amwarrior_charvat_1-25.db
Dataset field/well/stack/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	110	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	-347	84	Off	3385

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)		
GR	40.58			GR-M&W (89-M&W)	3.00	3.50	50.00		
CNLSC	37.48			CNT-M&W (tk10-MW)	5.50	3.50	100.00		
CNSSC	36.73								
LSD	28.43			CDL-M&W (168-986)	8.50	4.00	250.00		
								DCAL	28.42
								SSD	27.93
ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools					7.58	4.00	65.00		
MCAL	19.83								
MI	19.83								
MN	19.83								
RLL3	15.80								
RLL3F	15.79								
CILD	8.00			DIL-M&W (1987)	18.50	3.50	220.00		

CILM

4.70

SP

0.20

Dataset: amwarrior_charvat_1-25.db: field/well/stack/pass3.1
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in



MAIN PASS

2" SCALE RESISTIVITY

Database File amwarrior_charvat_1-25.db
Dataset Pathname stack/pass3.2
Presentation Format dil2in
Dataset Creation Thu Jun 23 15:23:20 2016
Charted by Depth in Feet scaled 1:600

0 GAMMA RAY (GAPI) 150

1000 CONDUCTIVITY (mmho/m) 0

SHALLOW RESISTIVITY

0 (Ohm-m) 50

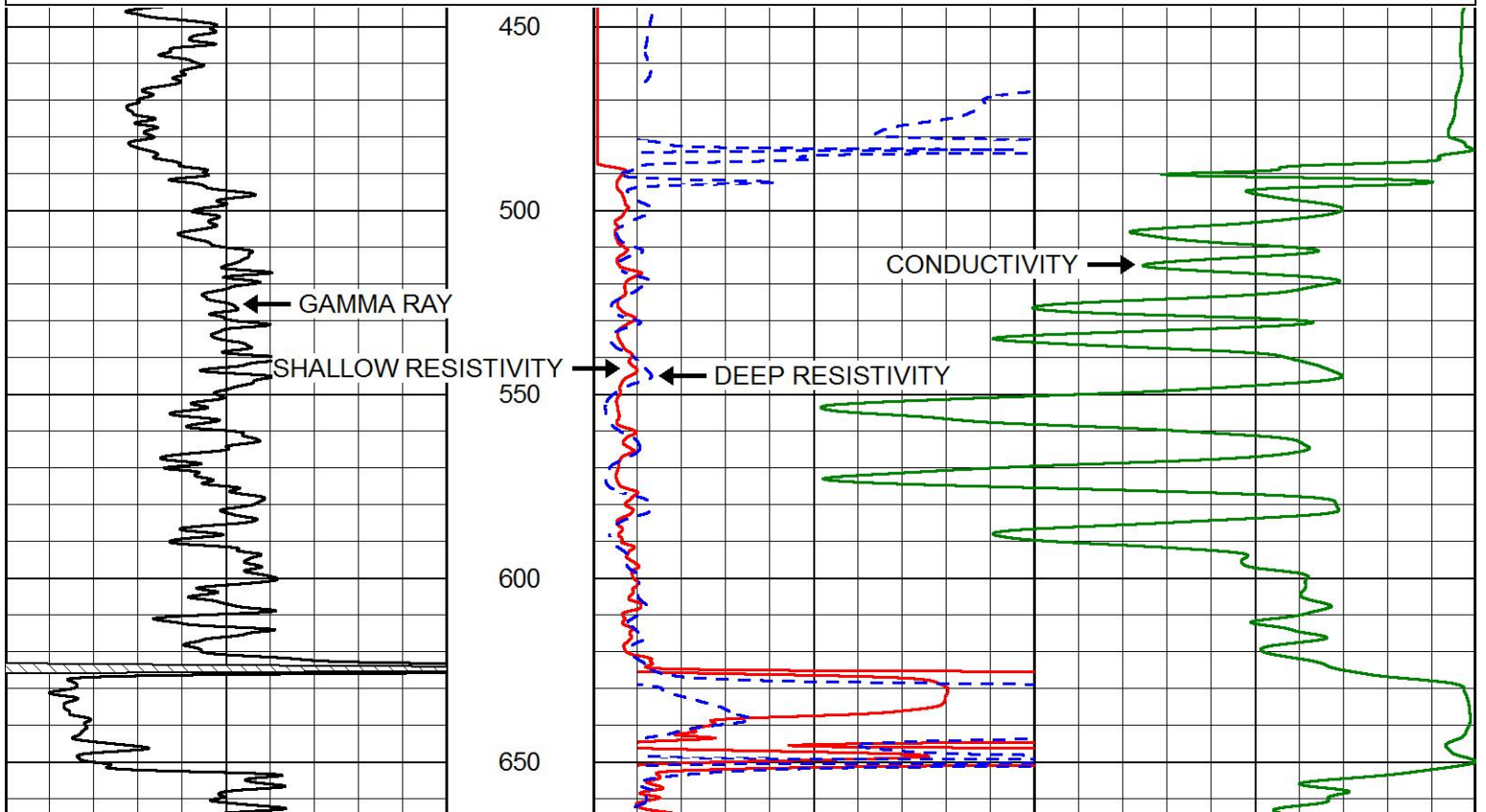
0 DEEP RESISTIVITY (Ohm-m) 50

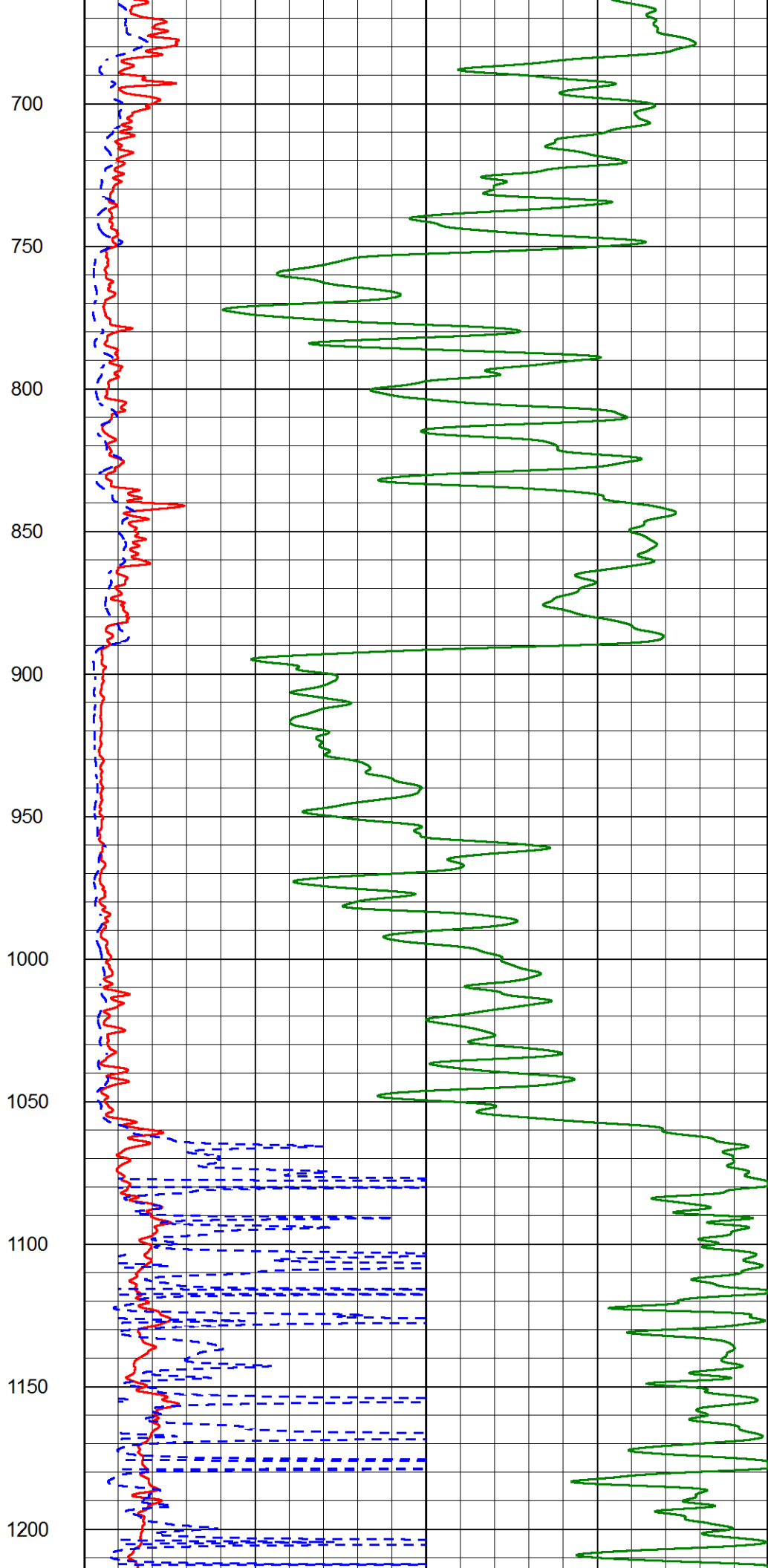
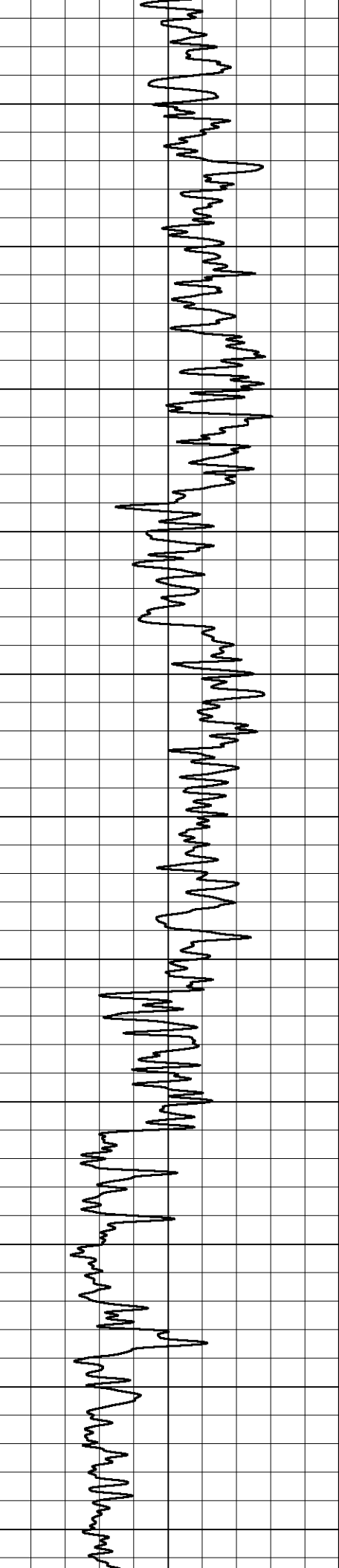
SHALLOW RESISTIVITY

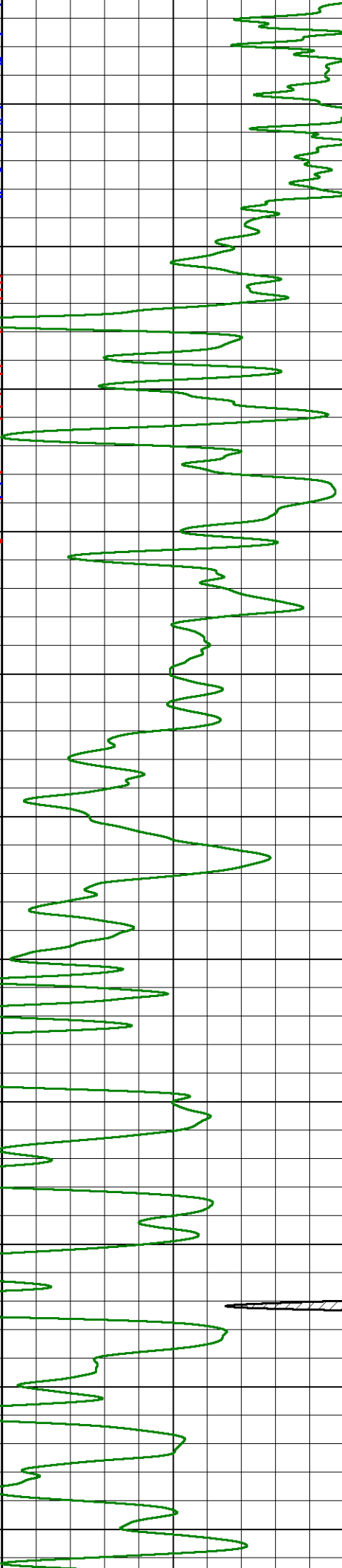
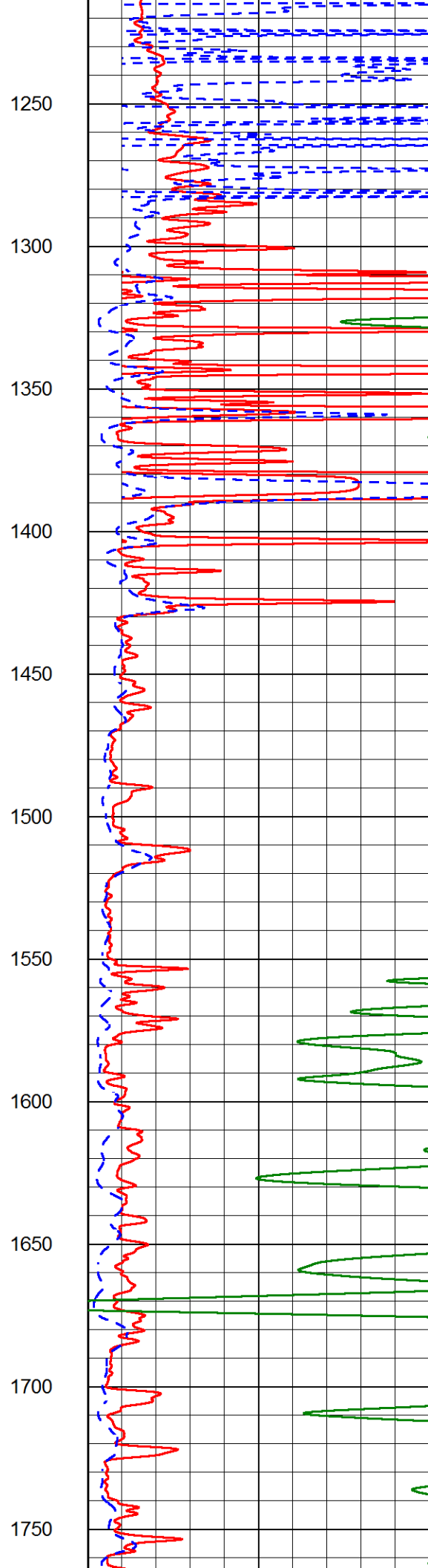
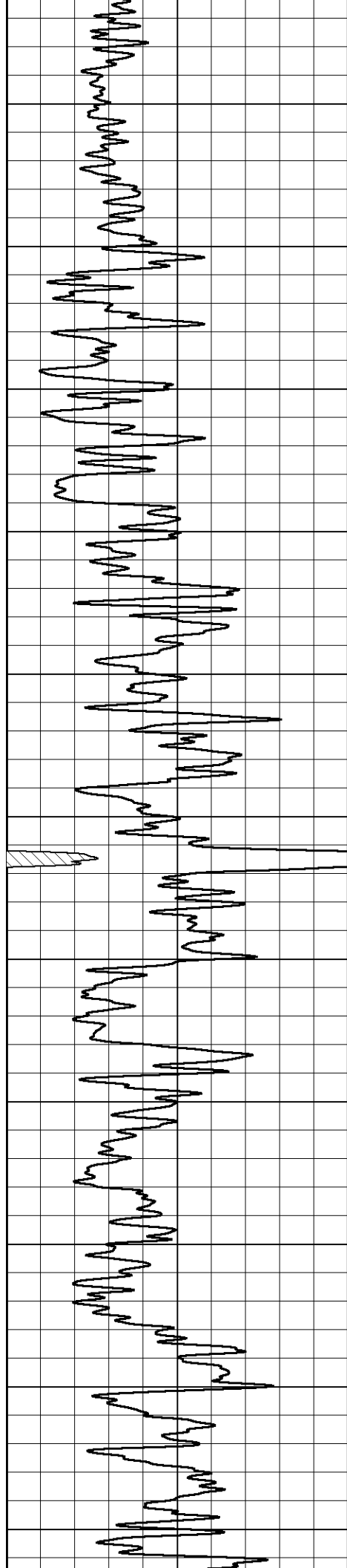
50 (Ohm-m) 500

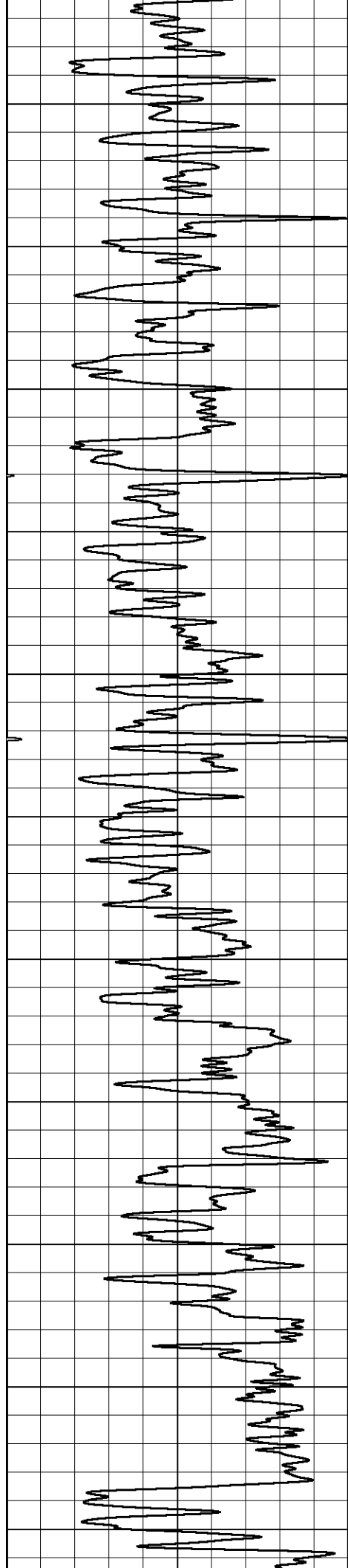
DEEP RESISTIVITY

50 (Ohm-m) 500









1800

1850

1900

1950

2000

2050

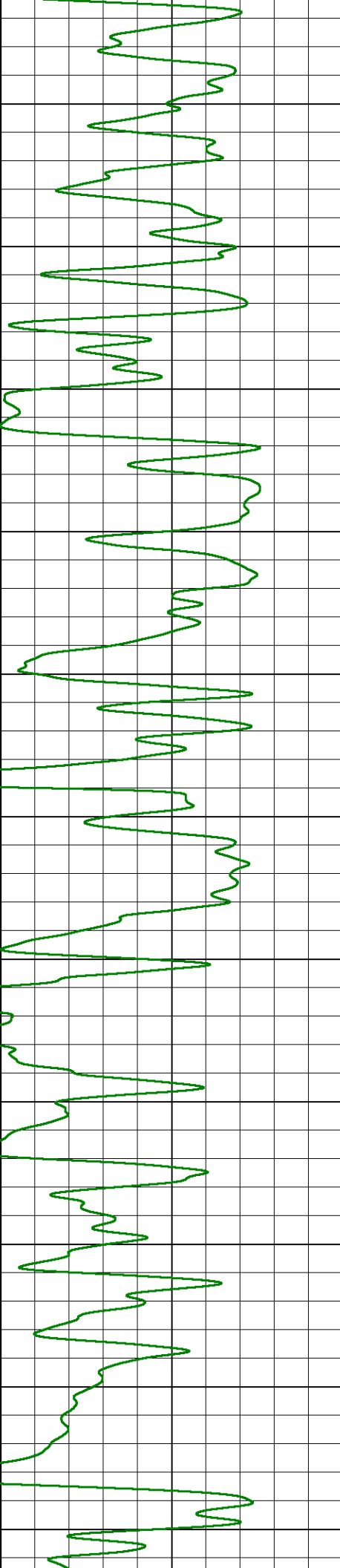
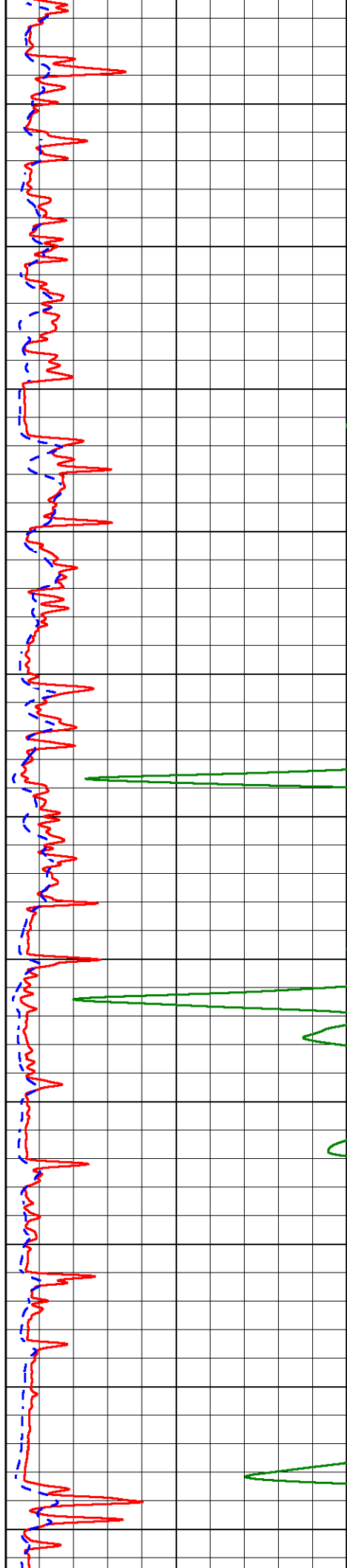
2100

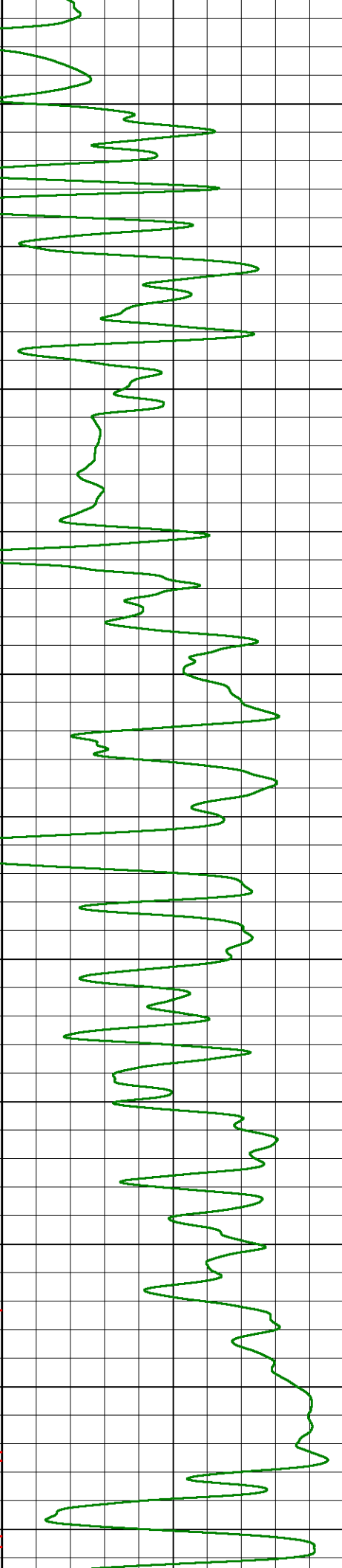
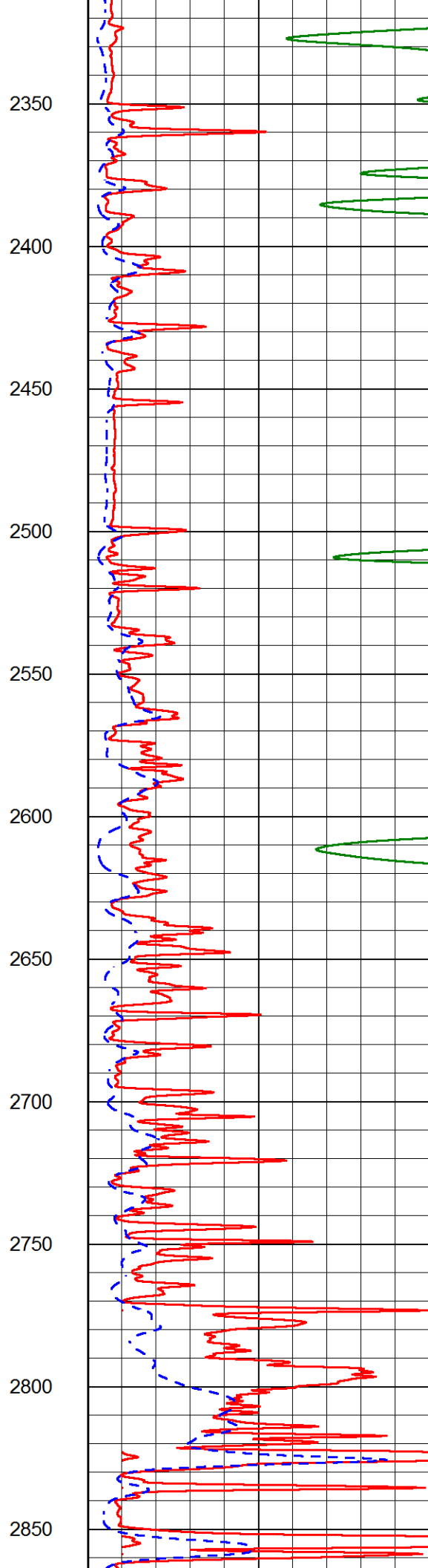
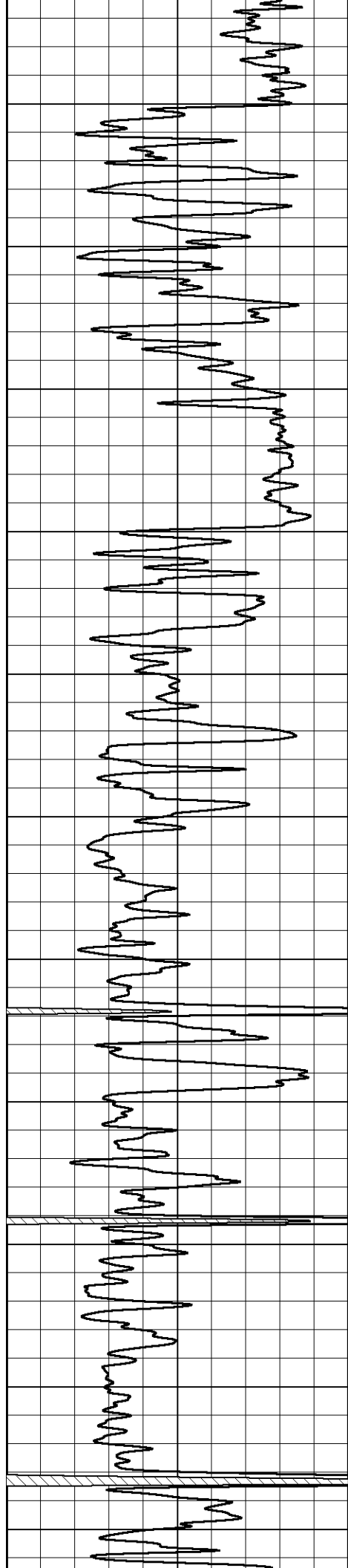
2150

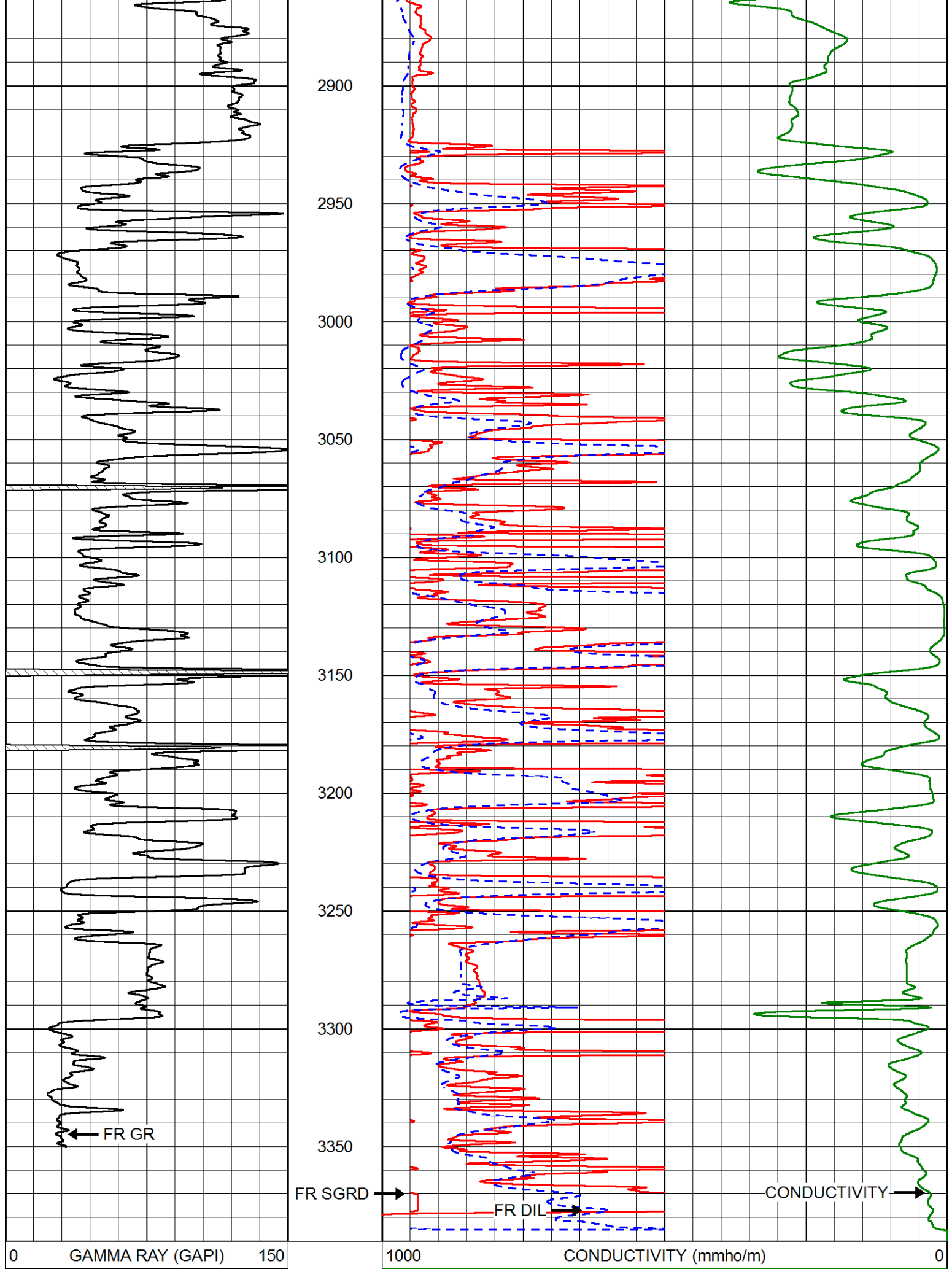
2200

2250

2300







0	(Ohm-m)	50
0	DEEP RESISTIVITY (Ohm-m)	50
SHALLOW RESISTIVITY		
50	(Ohm-m)	500
DEEP RESISTIVITY		
50	(Ohm-m)	500



MAIN PASS

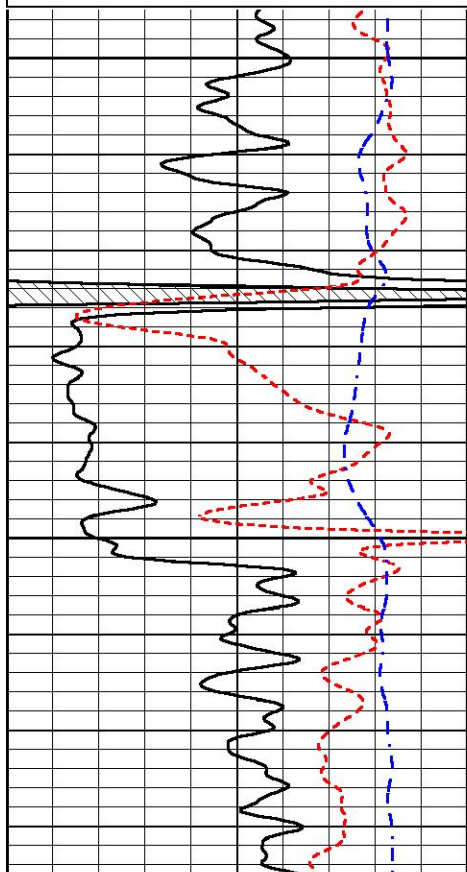
ANHYDRITE SECTION

Database File amwarrior_charvat_1-25.db
Dataset Pathname stack/pass3.4
Presentation Format dil
Dataset Creation Thu Jun 23 15:19:46 2016
Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

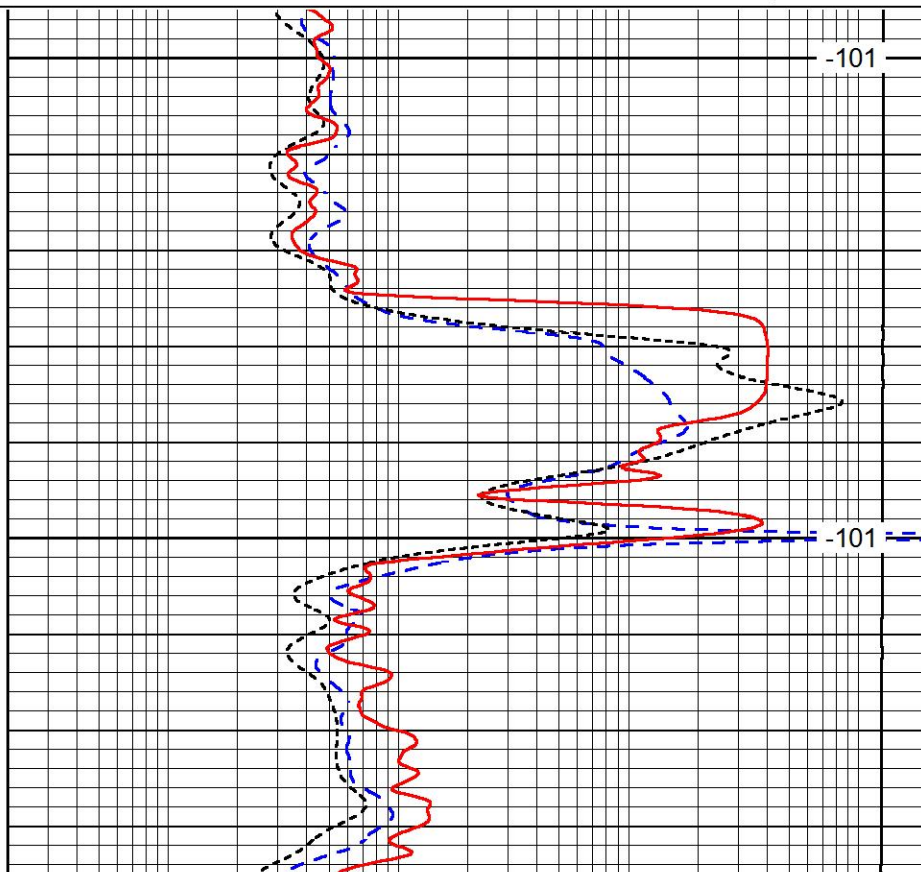
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

LINE SPEED
(ft/min)



600

650



-101

-101

0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

LINE SPEED

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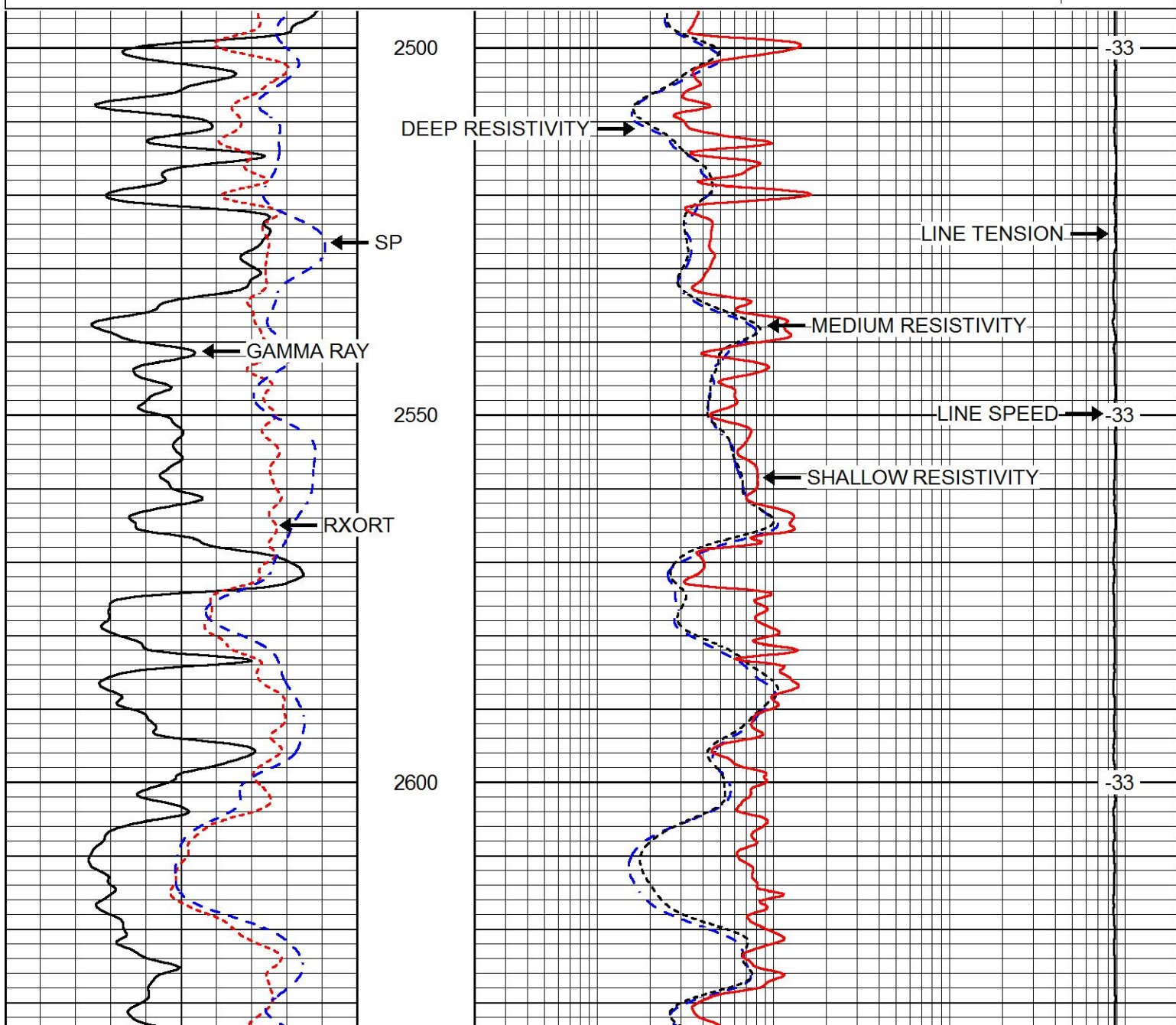
MAIN PASS

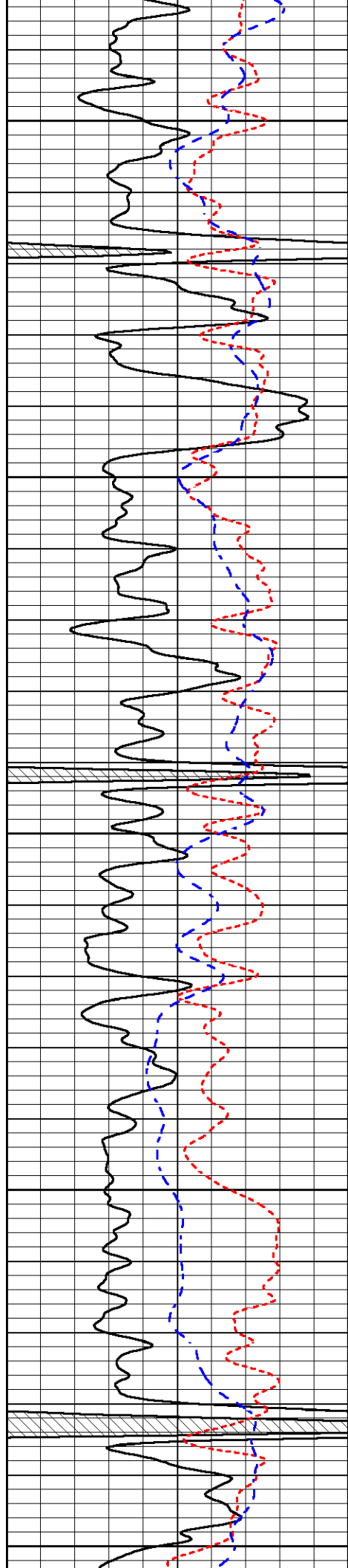
Database File amwarrior_charvat_1-25.db
Dataset Pathname stack/pass3.1
Presentation Format dil
Dataset Creation Thu Jun 23 15:22:57 2016
Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

LINE SPEED
(ft/min)





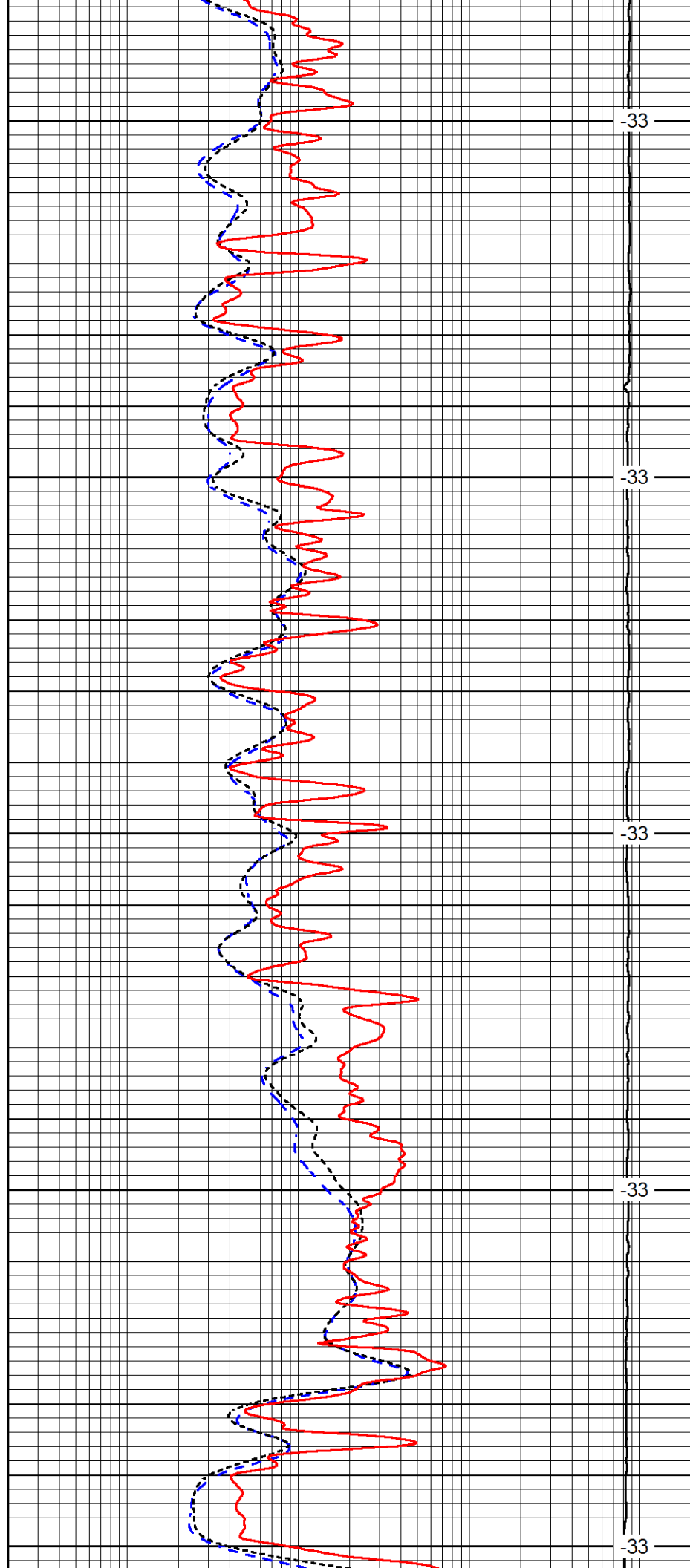
2650

2700

2750

2800

2850



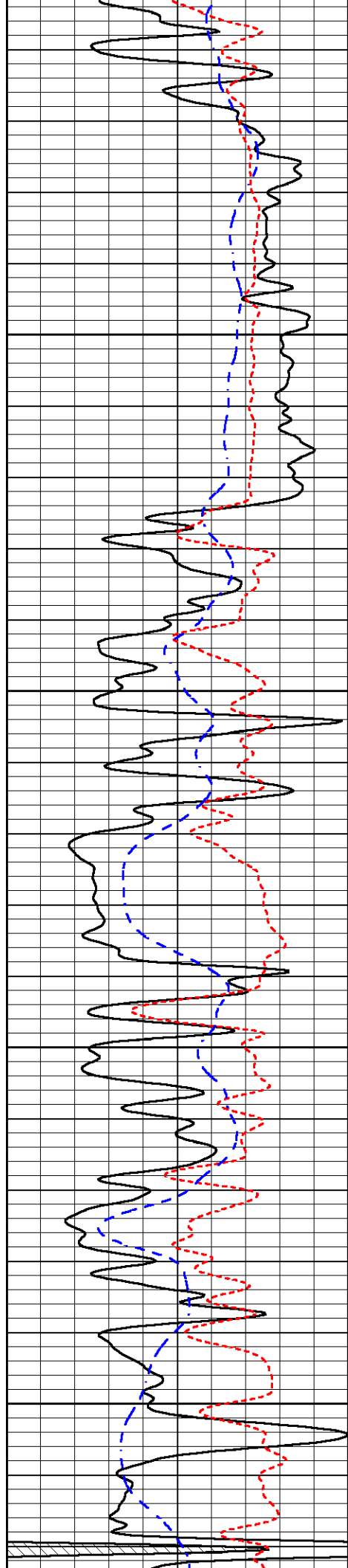
-33

-33

-33

-33

-33

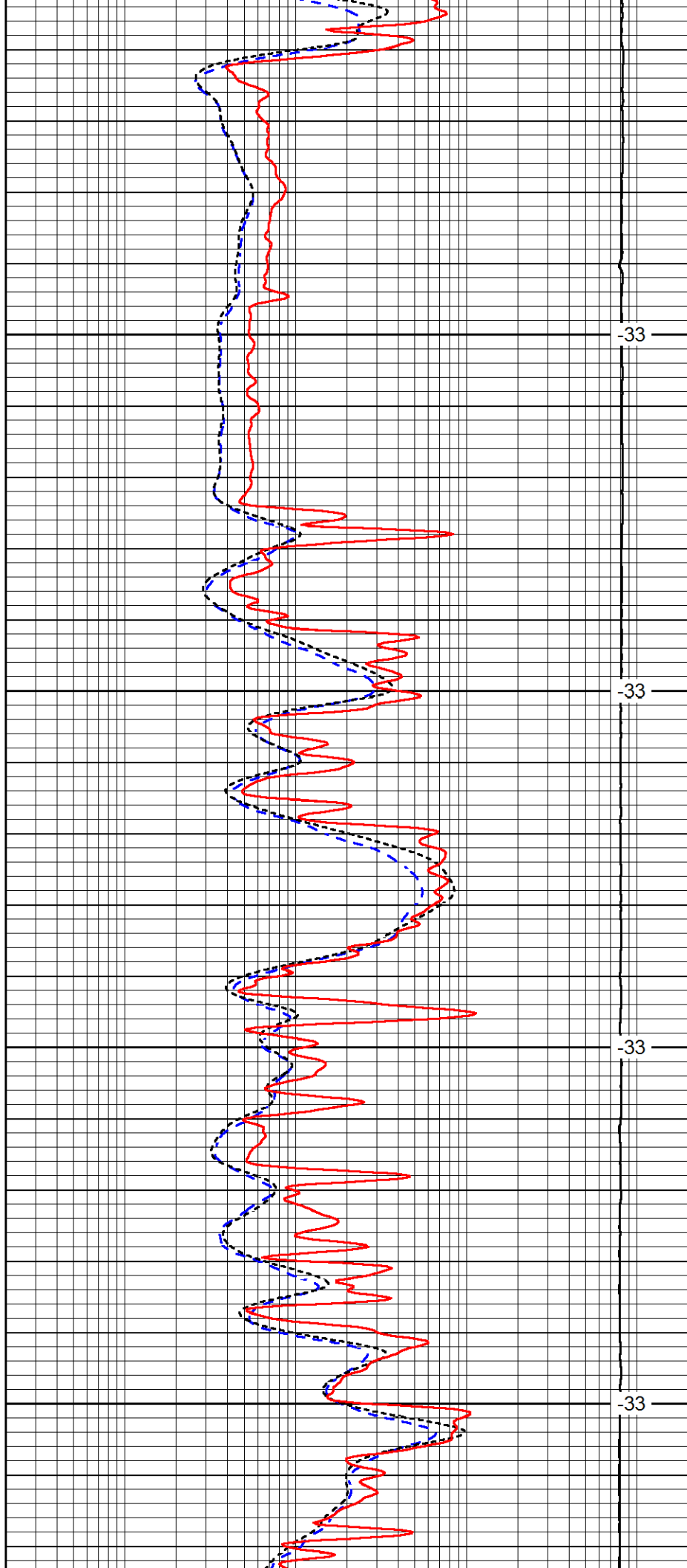


2900

2950

3000

3050

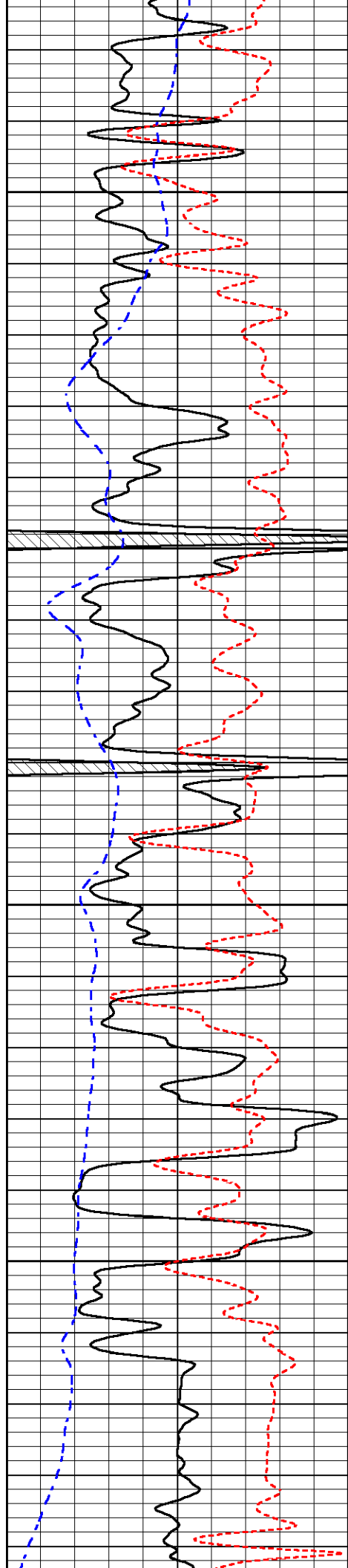


-33

-33

-33

-33

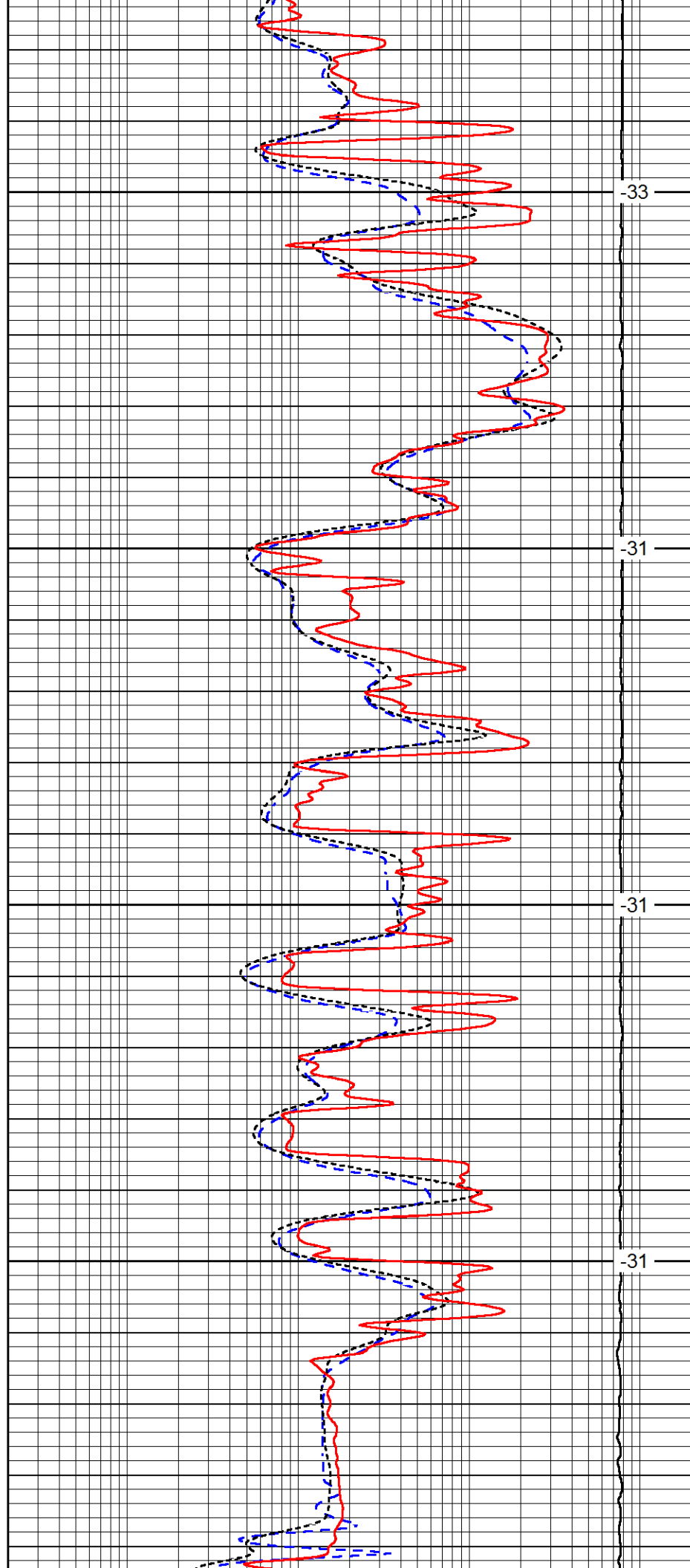


3100

3150

3200

3250

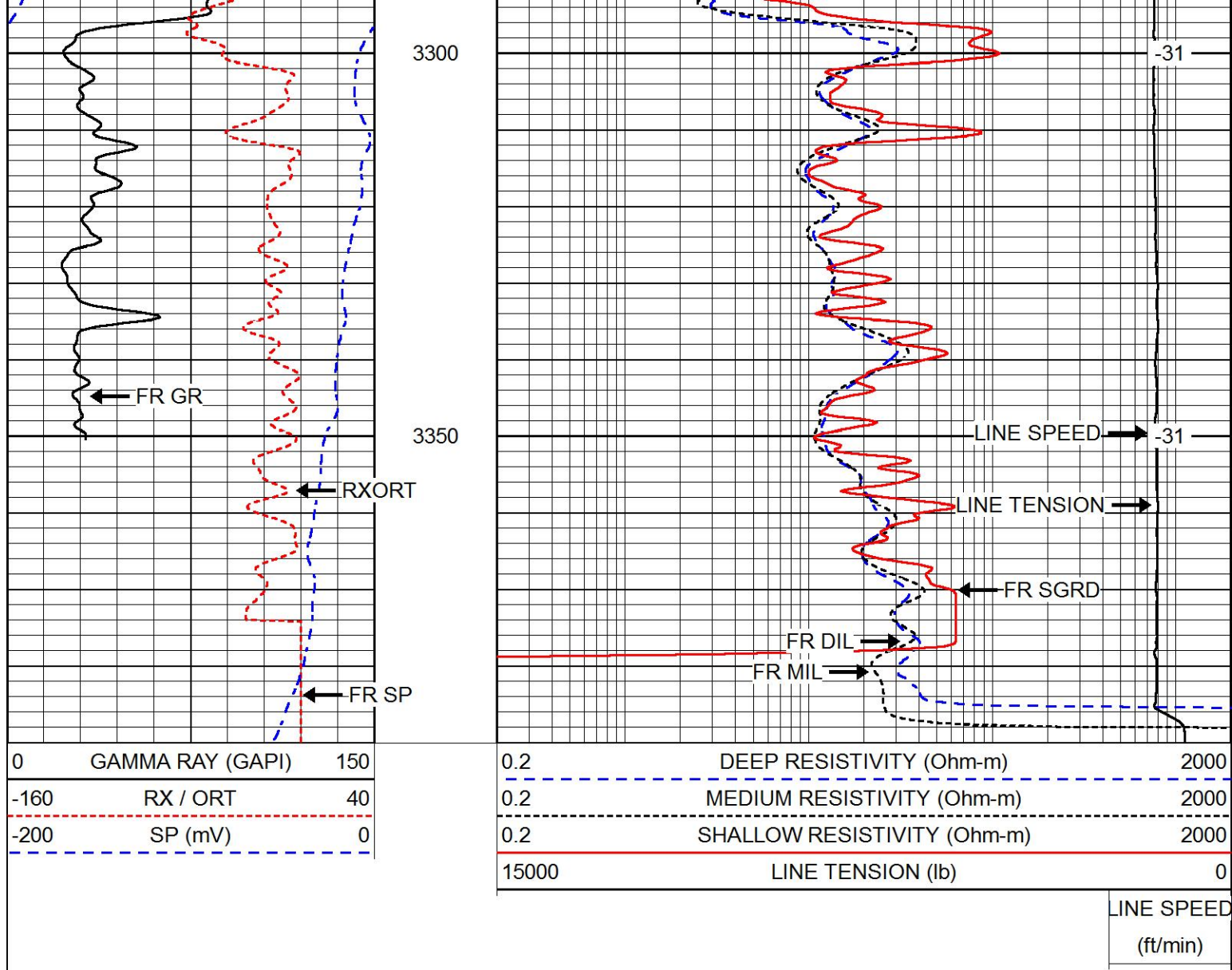


-33

-31

-31

-31





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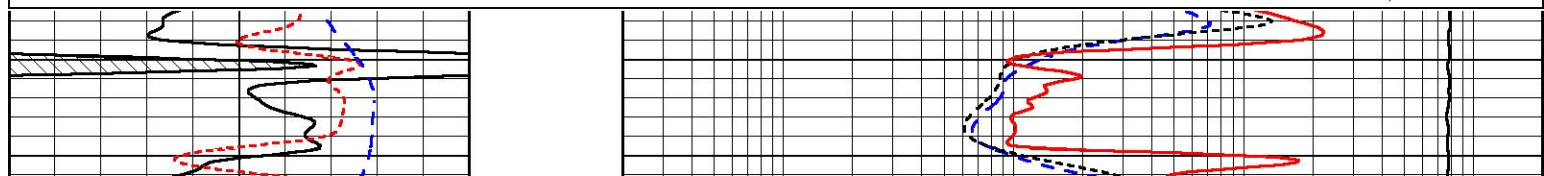
REPEAT SECTION

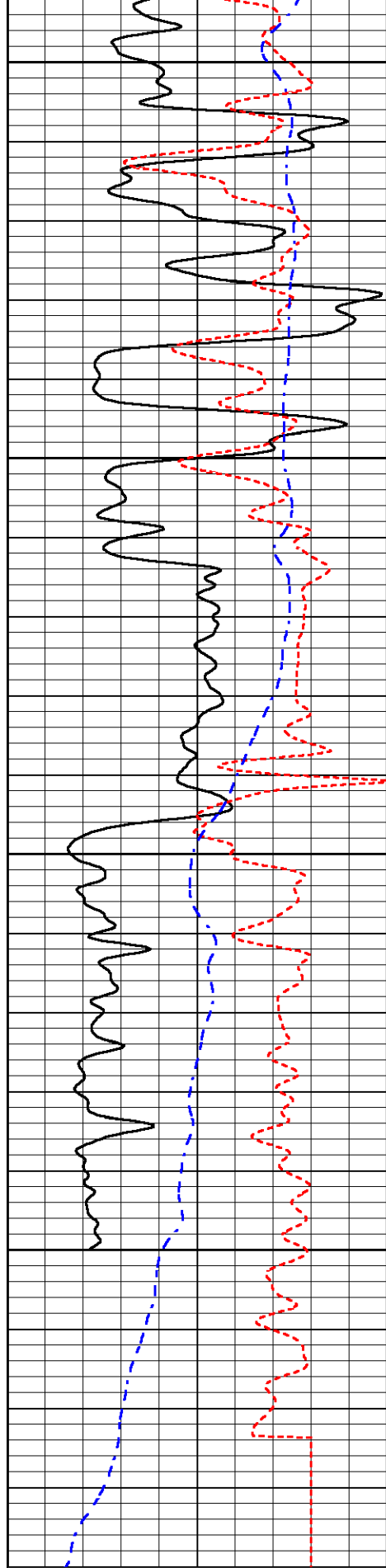
Database File	amwarrior_charvat_1-25.db
Dataset Pathname	stack/pass2.1
Presentation Format	dil
Dataset Creation	Thu Jun 23 15:07:45 2016
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

LINE SPEED
(ft/min)





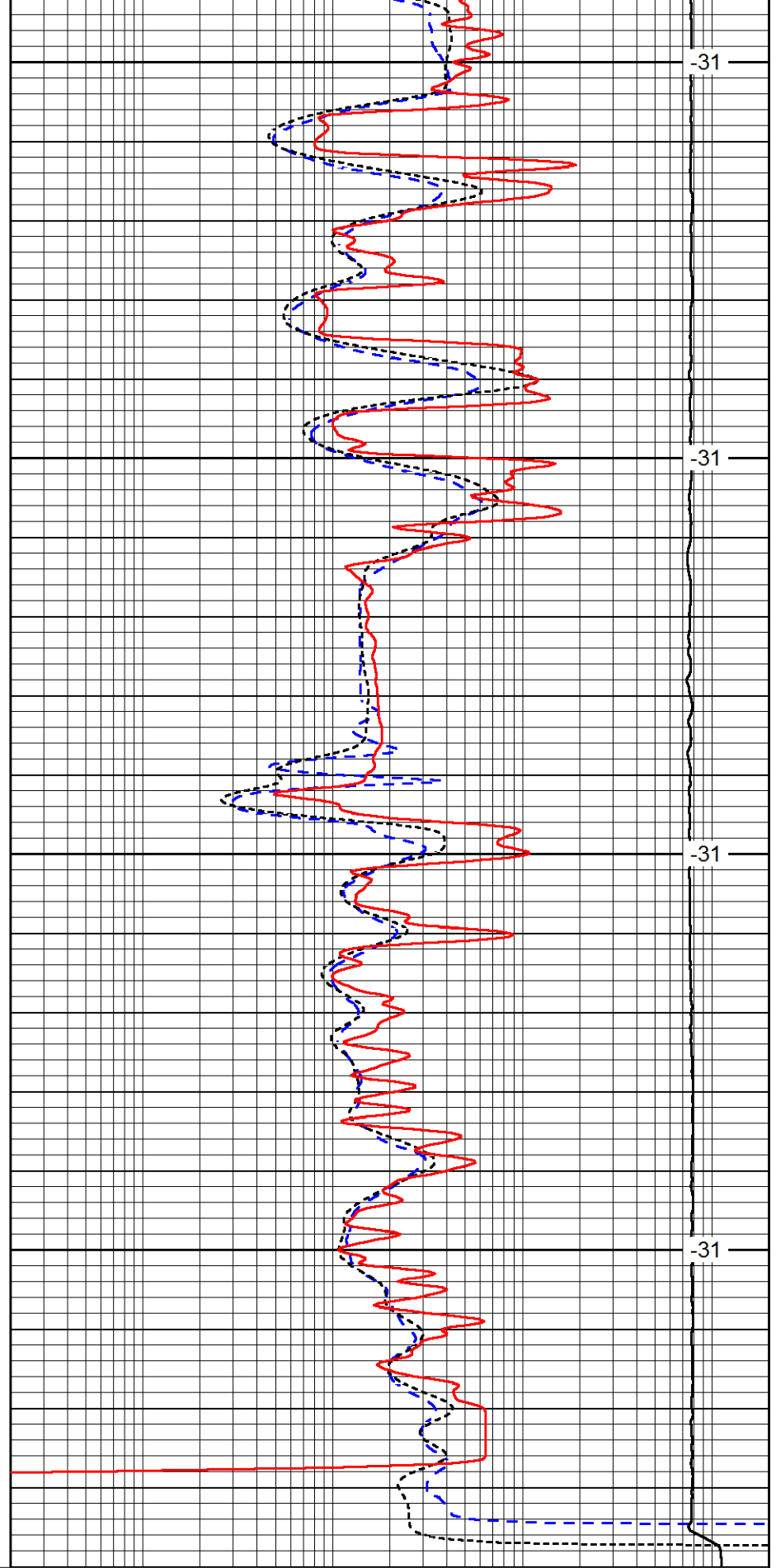
0	GAMMA RAY (GAPI)	150
-160	RX / ORT	40
-200	SP (mV)	0

3200

3250

3300

3350



0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
15000	LINE TENSION (lb)	0

31

31

31

31

LINE SPEED

Calibration Report

Database File amwarrior_charvat_1-25.db
 Dataset Pathname stack/pass3.1
 Dataset Creation Thu Jun 23 15:22:57 2016

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Thu May 05 13:07:05 2016

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-37.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-109.000

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Sun May 22 04:14:29 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	8808.9400	-0.2000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	7967.2700	-0.0096
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.2800

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
 Source / Verifier: /
 Master Calibration Performed: Thu Mar 31 16:31:00 2016

Master Calibration

	Density		Far Detector	Near Detector
Magnesium	1.755	g/cc	4691.86	4818.19 cps
Aluminum	2.690	g/cc	859.57	3020.22 cps
Spine Angle = 74.61		Density/Spine Ratio = 0.531		
	Size		Reading	
Small Ring	4.00	in	1.03	
Large Ring	14.00	in	1.23	

Compensated Neutron Calibration Report

Serial Number: tk10-MW
 Tool Model: M&W
 Calibration Performed: Wed May 4 11:04:05 2016

Detector	Readings	Target	Normalization
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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-M&W		
Tool Model:	M&W		
Calibration Performed:	Sun May 22 04:14:23 2016		
Calibrator Value:	1000.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	6.2	cps	
Sensitivity:	0.5200	GAPI/cps	



Company	AMERICAN WARRIOR, INC.
Well	CHARVAT NO. 1-25
Field	WILDCAT
County	RUSSELL
State	KANSAS