



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company AMERICAN WARRIOR, INC.
Well WHISLER NO. 1-20
Field STOLTENBERG
County ELLSWORTH
State KANSAS

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Field STOLTENBERG
County ELLSWORTH State KANSAS

Location: API #: 15-053-21361-00-00

Other Services

SEC 20 TWP 16S RGE 10W
1874' FNL & 1134' FWL

CNL/CDL
MEL/BHCS

Permanent Datum GROUND LEVEL Elevation 1875'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1883'
D.F. N/A
G.L. 1875'

Date 5/6/2018

Run Number ONE

Depth Driller 3474'

Depth Logger 3472'

Bottom Logged Interval 3471'

Top Log Interval 400'

Casing Driller 8.625" @ 432'

Casing Logger 435'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 9600

Density / Viscosity 9.1 54

pH / Fluid Loss 9.0 12.0

Source of Sample FLOWLINE

Rm @ Meas. Temp .35 @ 64

Rmf @ Meas. Temp .26 @ 64

Rmc @ Meas. Temp .47 @ 64

Source of Rmf / Rmc CHARTS

Rm @ BHT .20 @ 111

Operating Rig Time 4 HOURS

Max Rec. Temp. F 111 DEGF

Equipment Number 108

Location HAYS

Recorded By J. HENRICKSON

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 KANSAS

SOUTH TO P ROAD, 1 EAST, 1/4 SOUTH, EAST 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. HENRICKSON
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

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

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 111	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 4	mV -113	degF 53	Off	ft 3472

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00			GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90			CNT-M&W (tk10-MW)	5.50	3.50	100.00
	29.15						
LSD DCAL SSD	20.85			CDL-M&W (168-986)	8.50	4.00	250.00
	20.83						
	20.35						
RLL3 RLL3F	15.80 15.79			DIL-M&W (PSI 978)	18.50	3.50	220.00
CILD	8.00						

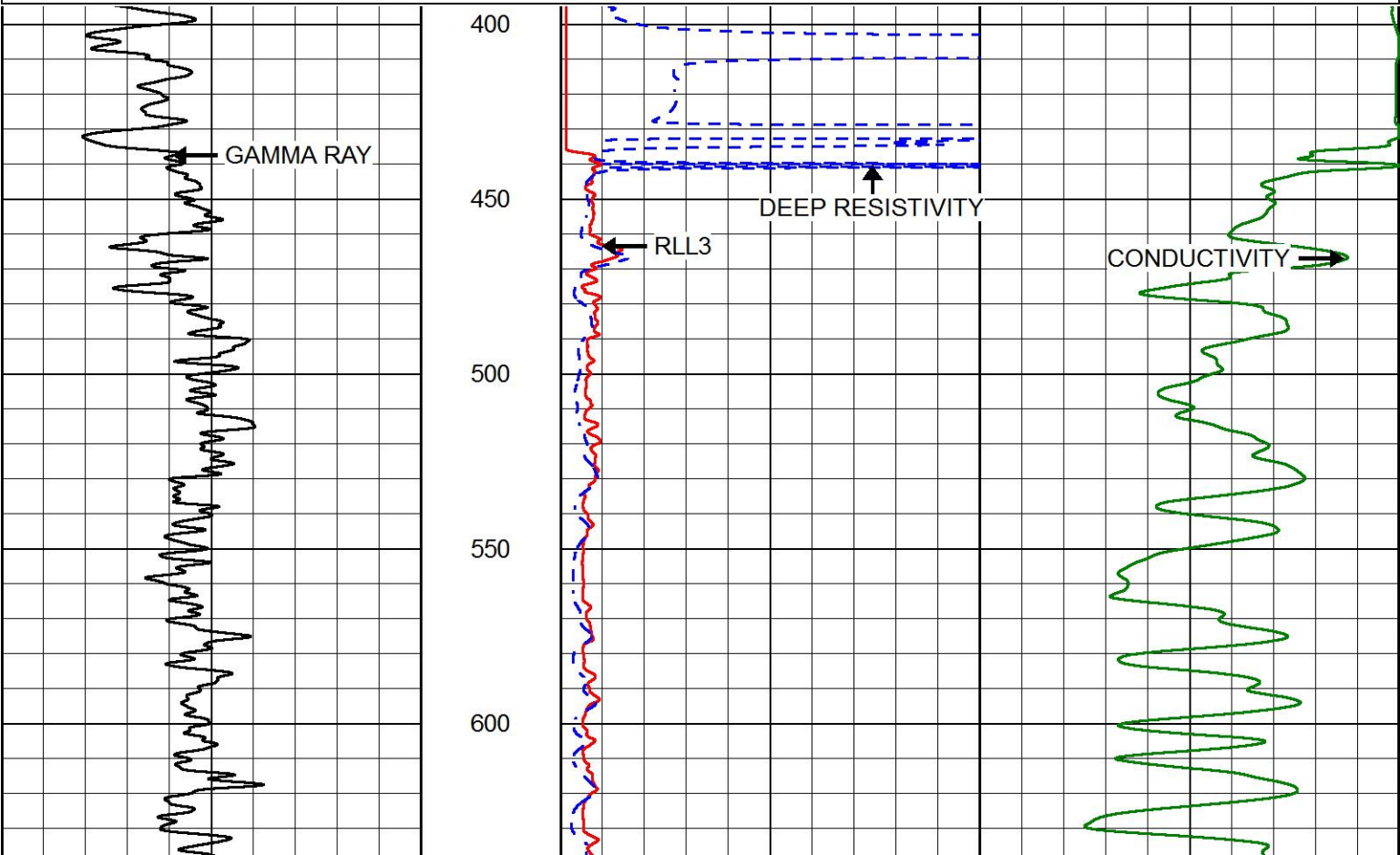
CILM	4.70								
SP	0.20								
Dataset: american_warrior_whisler_1_20.db: field/well/stack/pass3.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

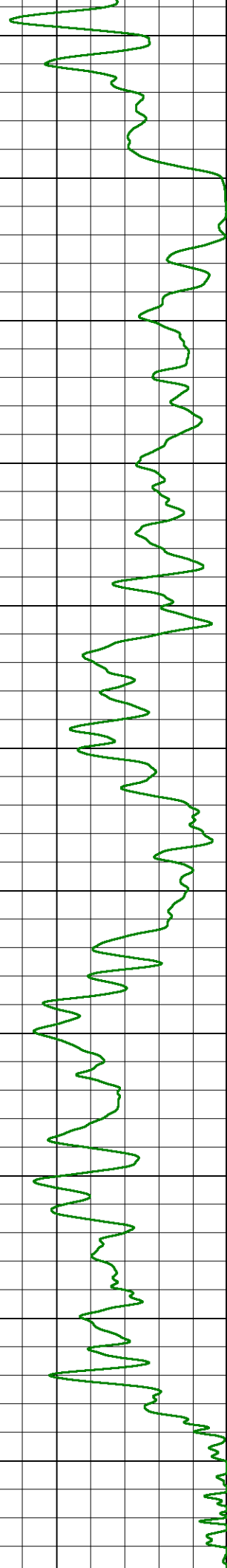
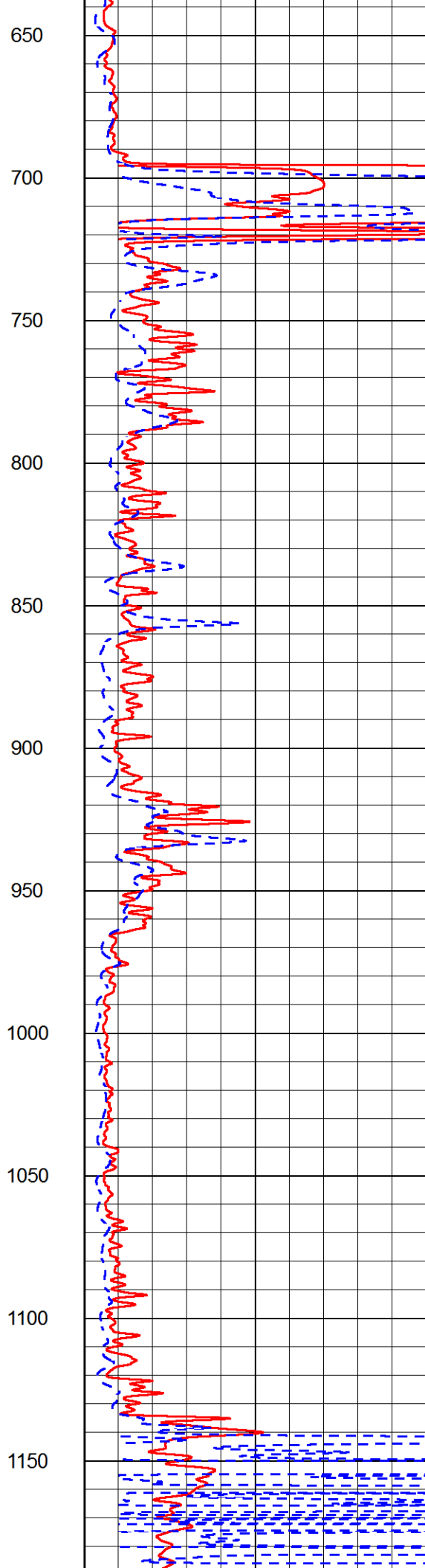
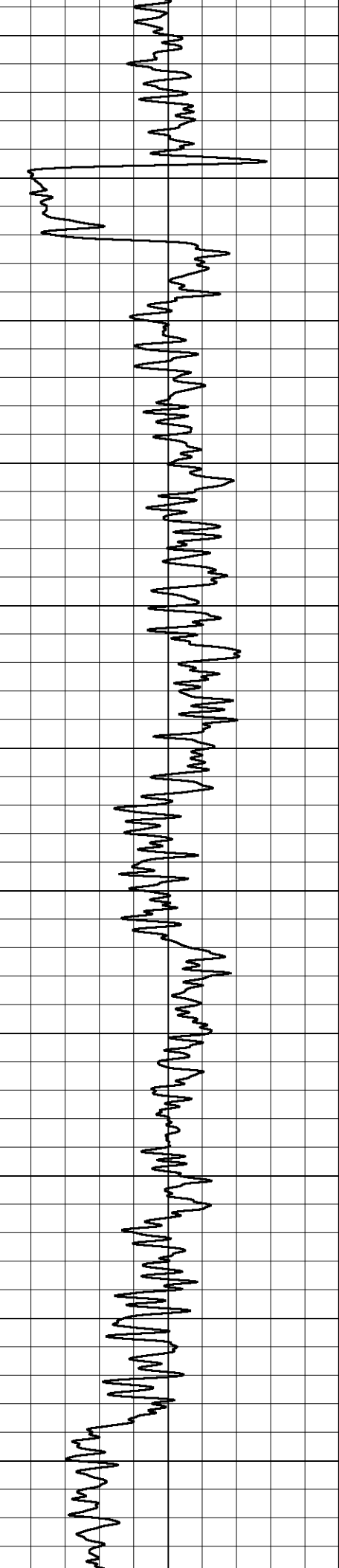


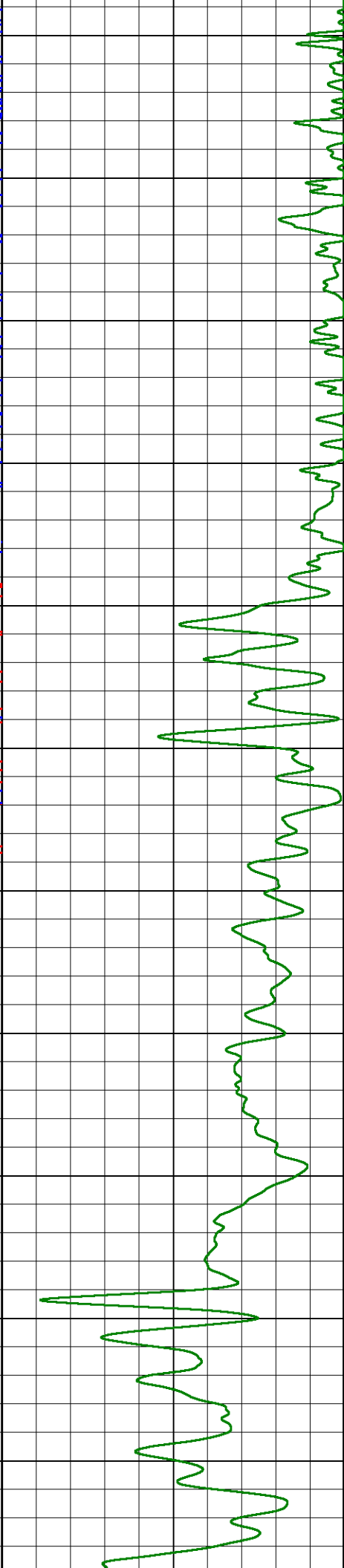
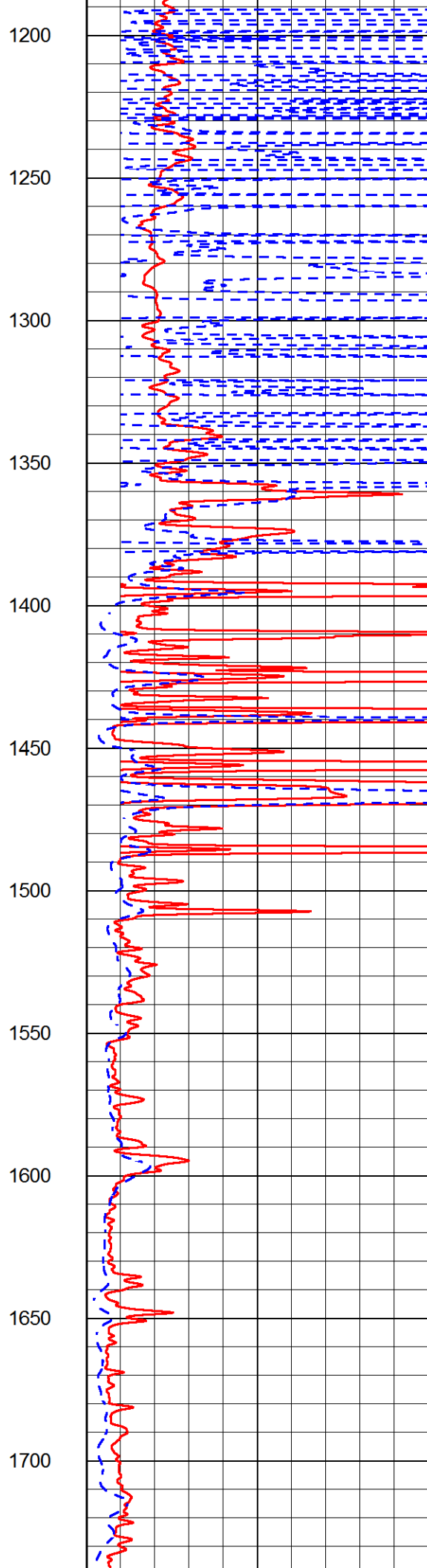
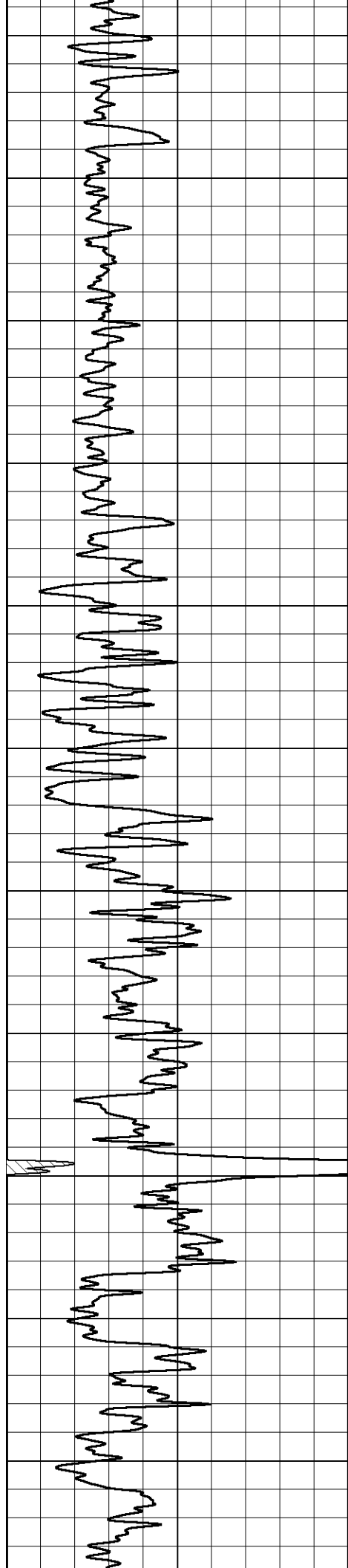
MAIN PASS

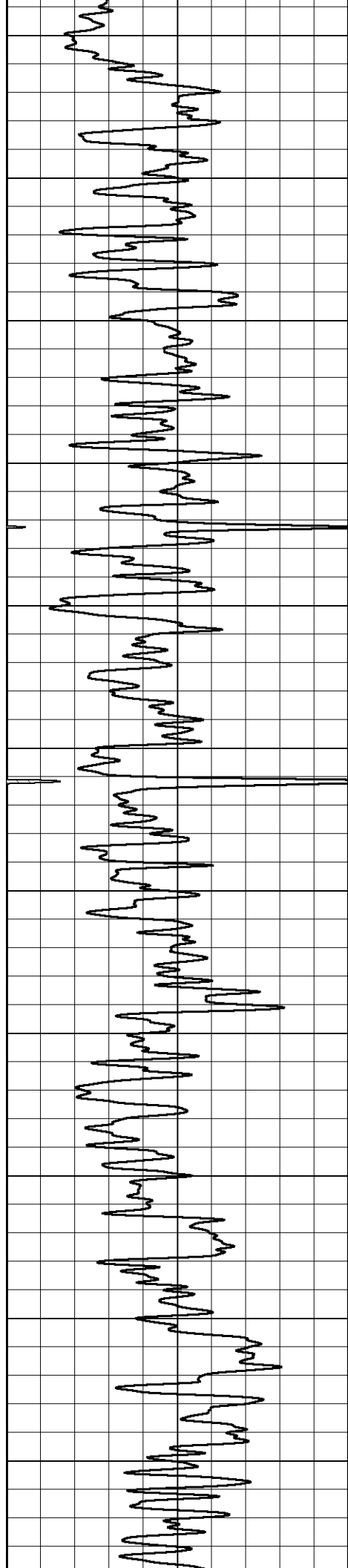
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Dataset Pathname	stack/pass3.1
Presentation Format	dil2in
Dataset Creation	Sun May 06 09:08:18 2018
Charted by	Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	150	2000	CONDUCTIVITY (mmho/m)	0
			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
				DEEP RESISTIVITY	
			50	(Ohm-m)	500









1750

1800

1850

1900

1950

2000

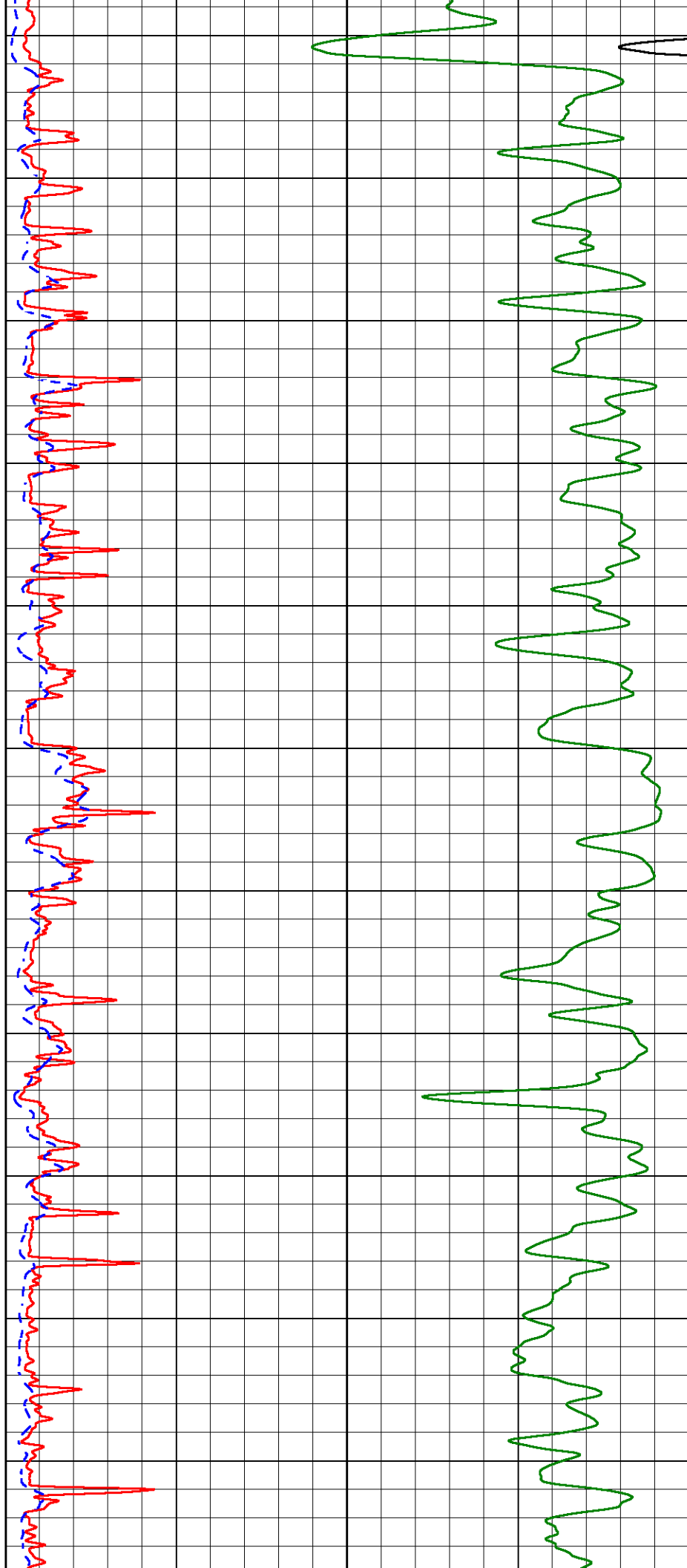
2050

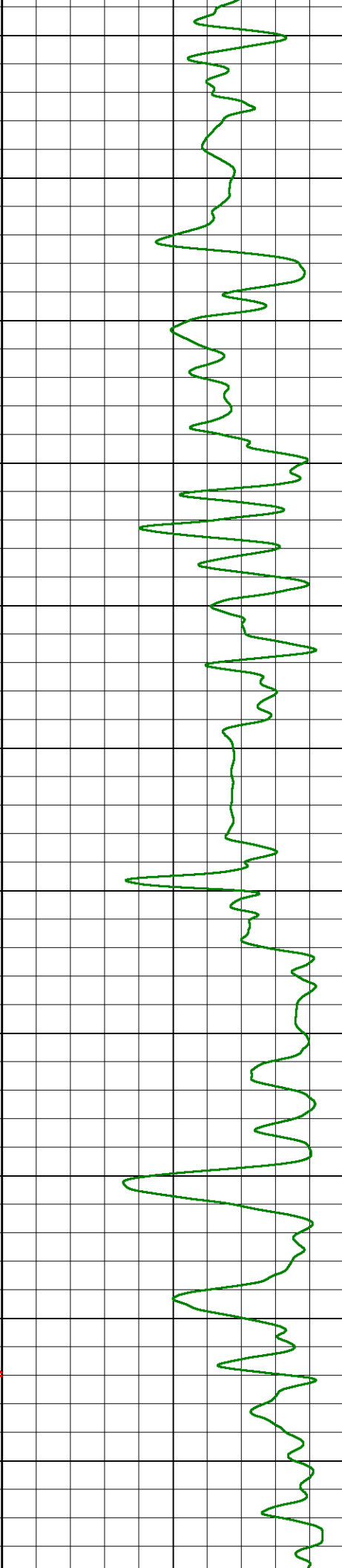
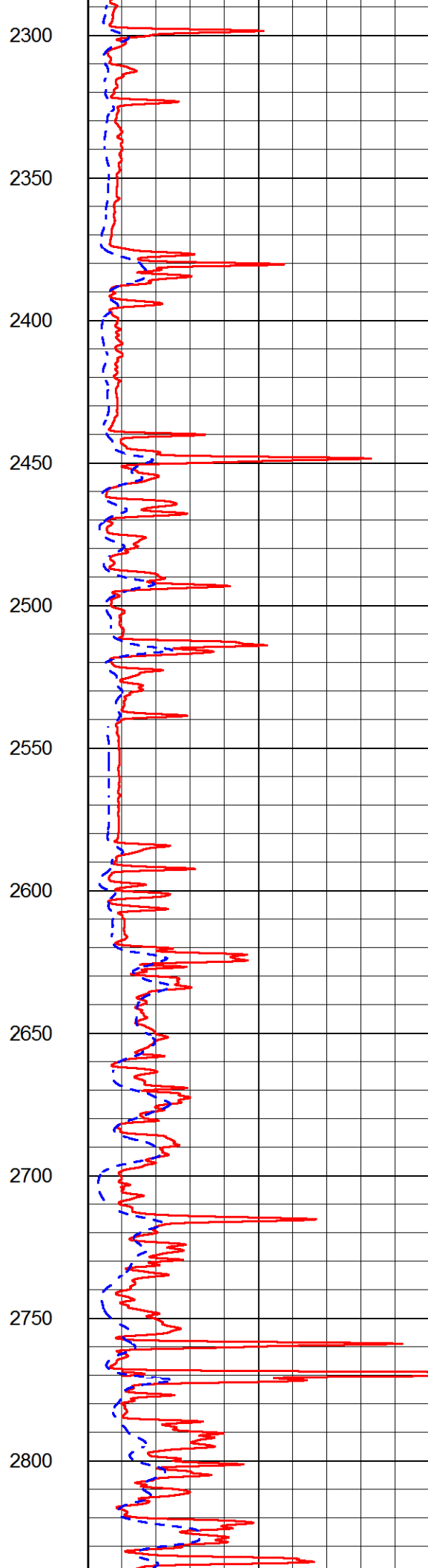
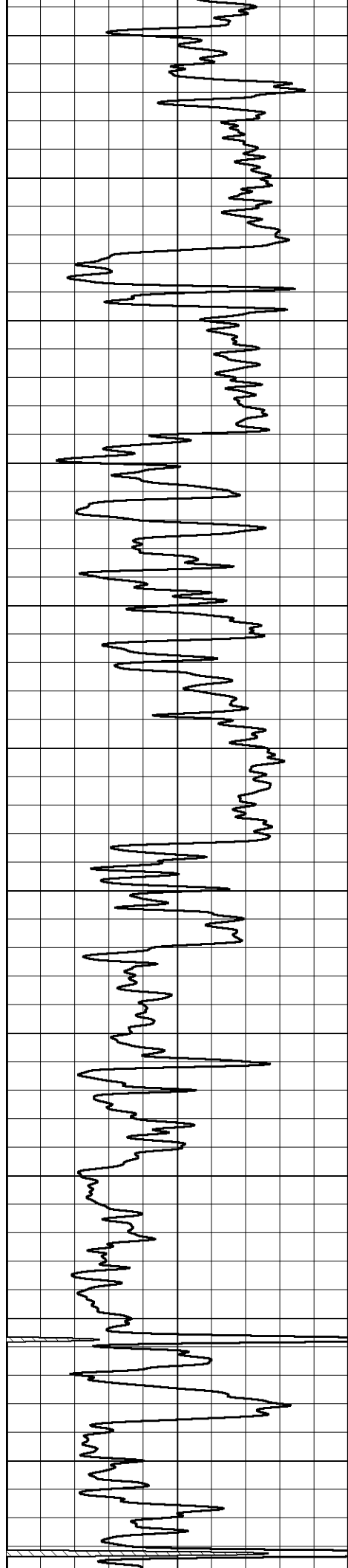
2100

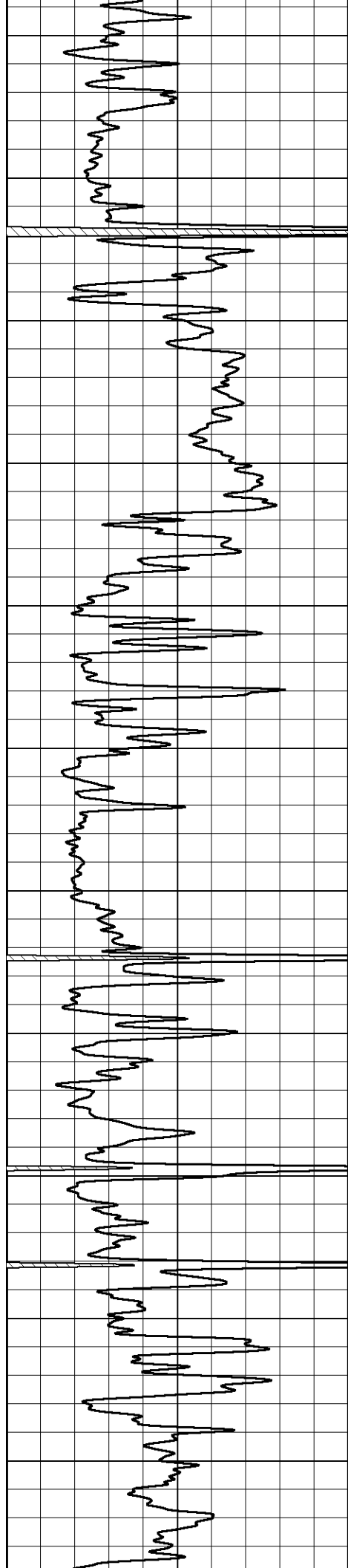
2150

2200

2250







2850

2900

2950

3000

3050

3100

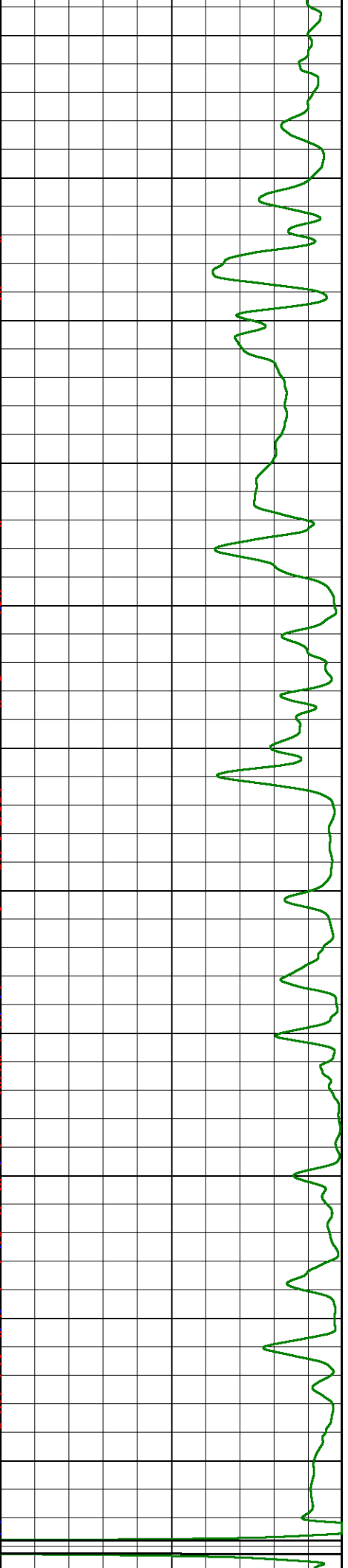
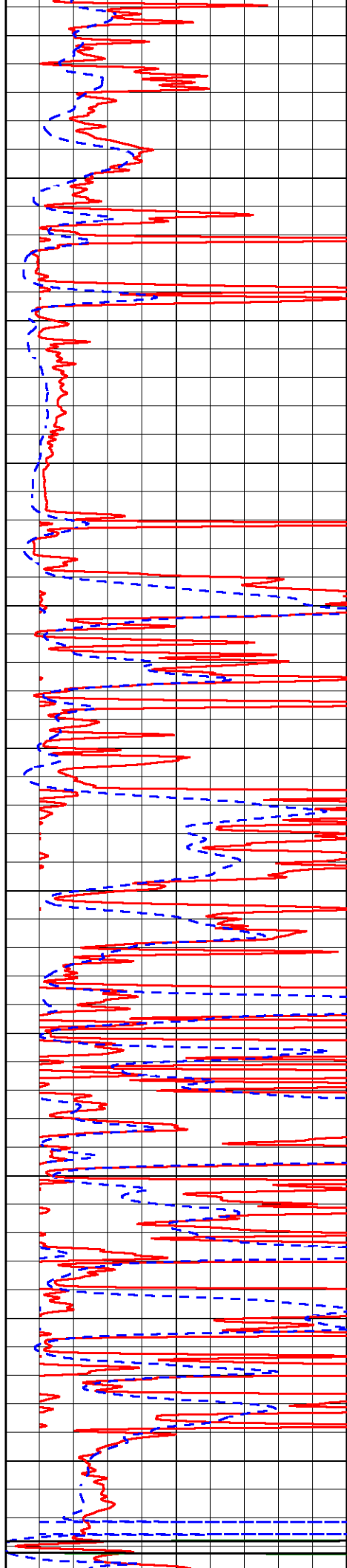
3150

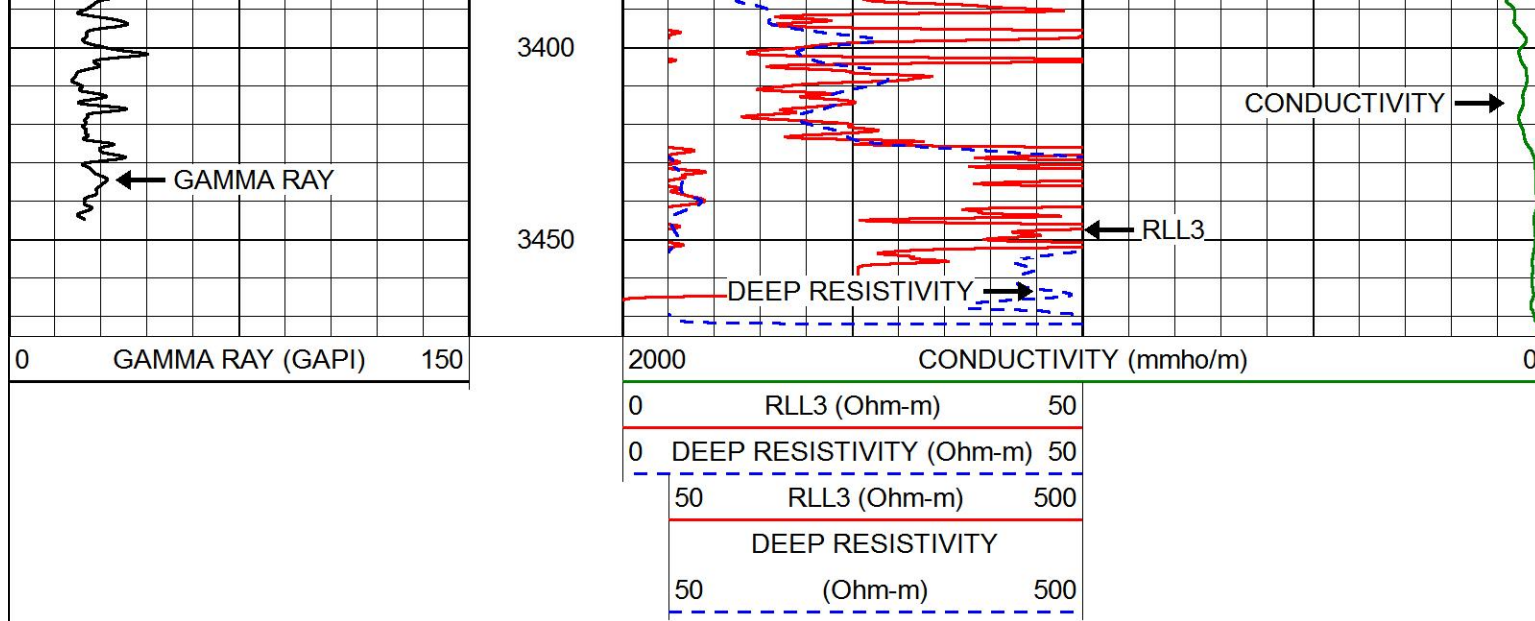
3200

3250

3300

3350





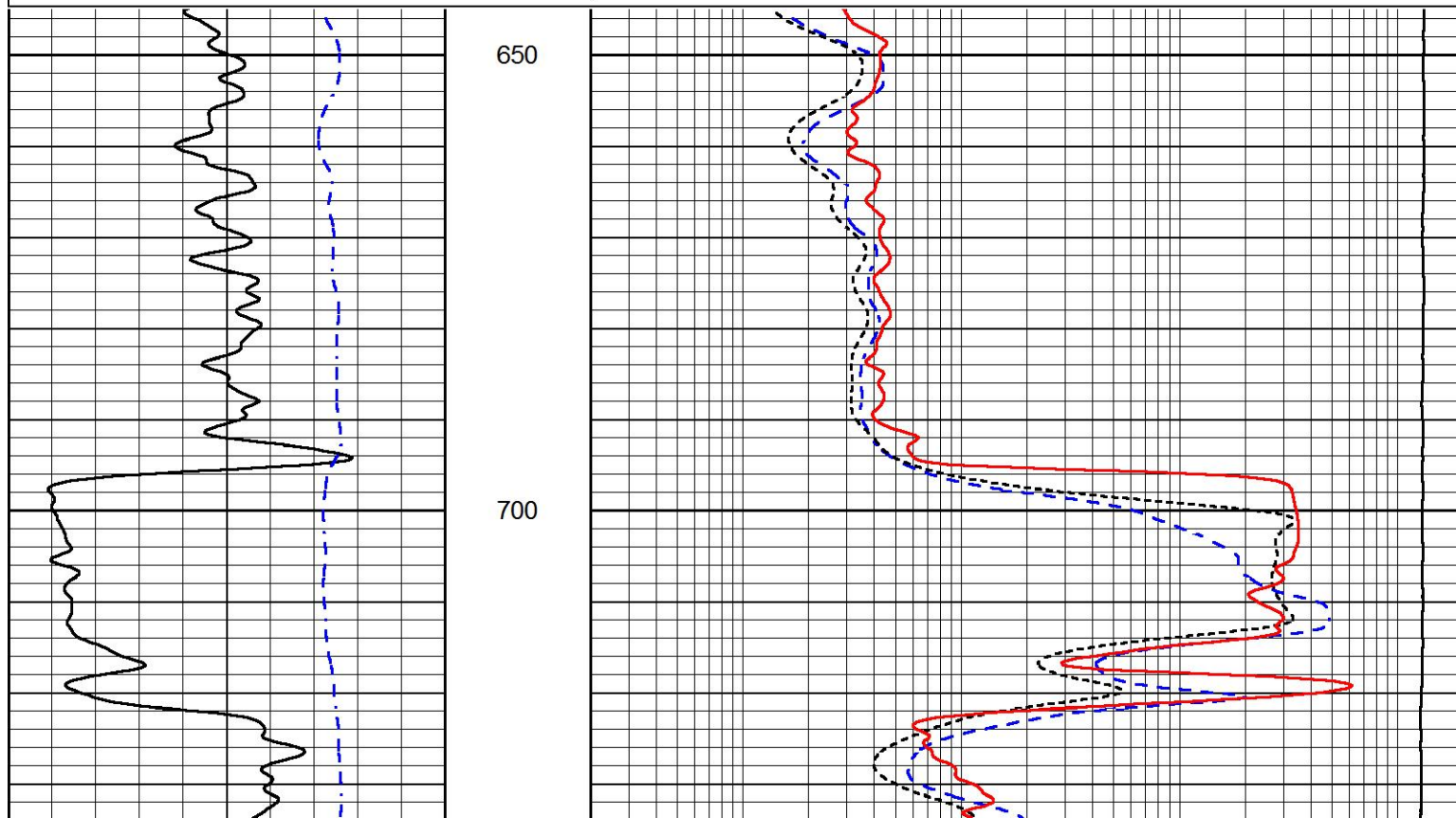


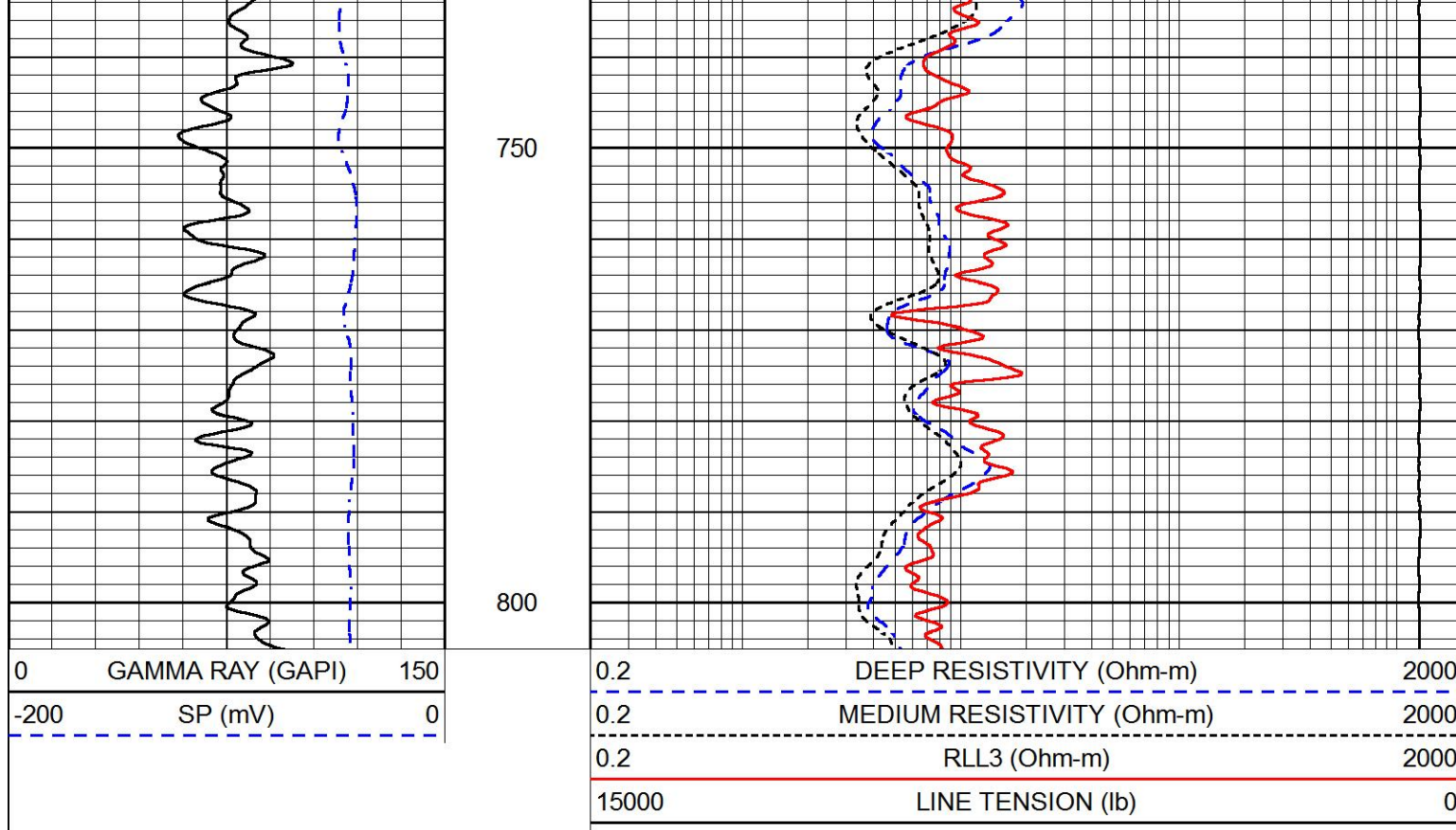
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MAIN PASS

Database File: american_warrior_whisler_1_20.db
 Dataset Pathname: stack/pass3.1
 Presentation Format: dil
 Dataset Creation: Sun May 06 09:08:18 2018
 Charted by: Depth in Feet scaled 1:240

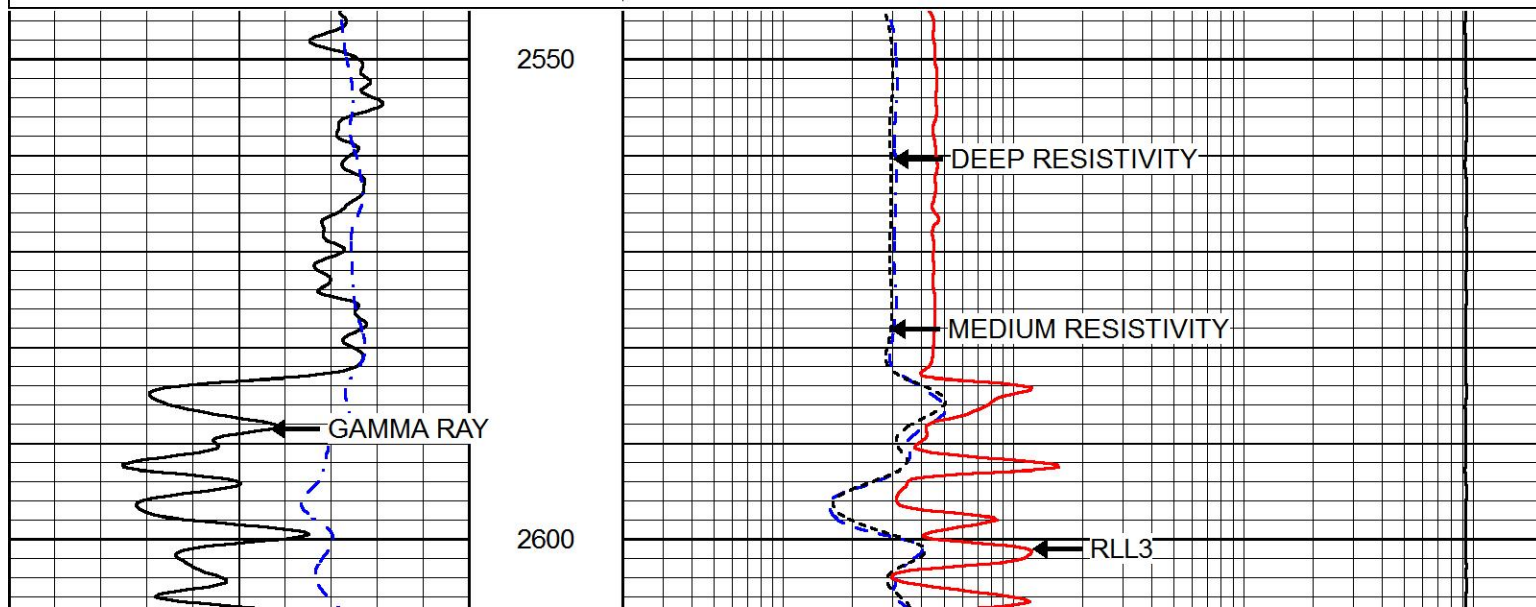
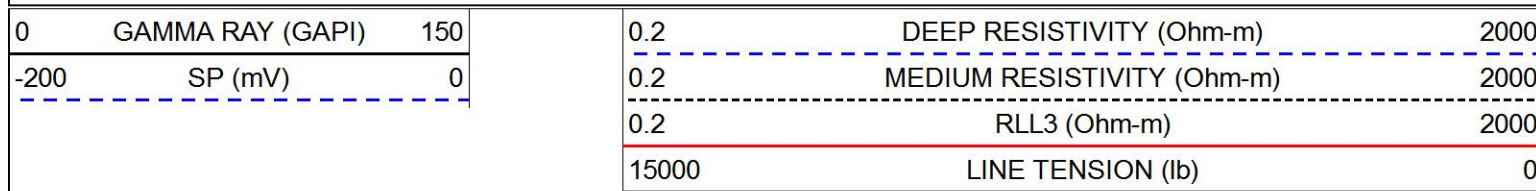
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

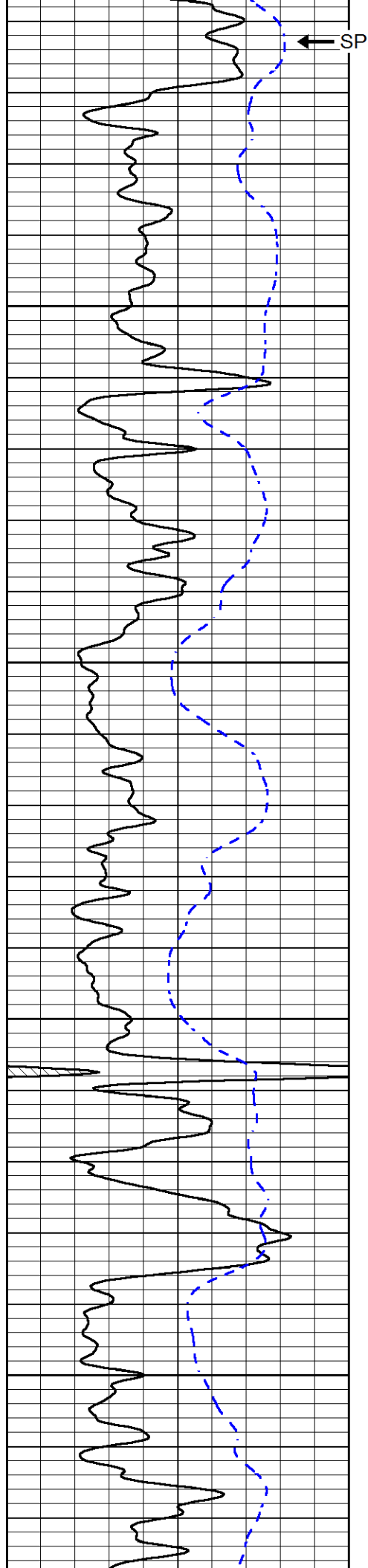




MAIN PASS

Database File american_warrior_whisler_1_20.db
Dataset Pathname stack/pass3.1
Presentation Format dil
Dataset Creation Sun May 06 09:08:18 2018
Charted by Depth in Feet scaled 1:240



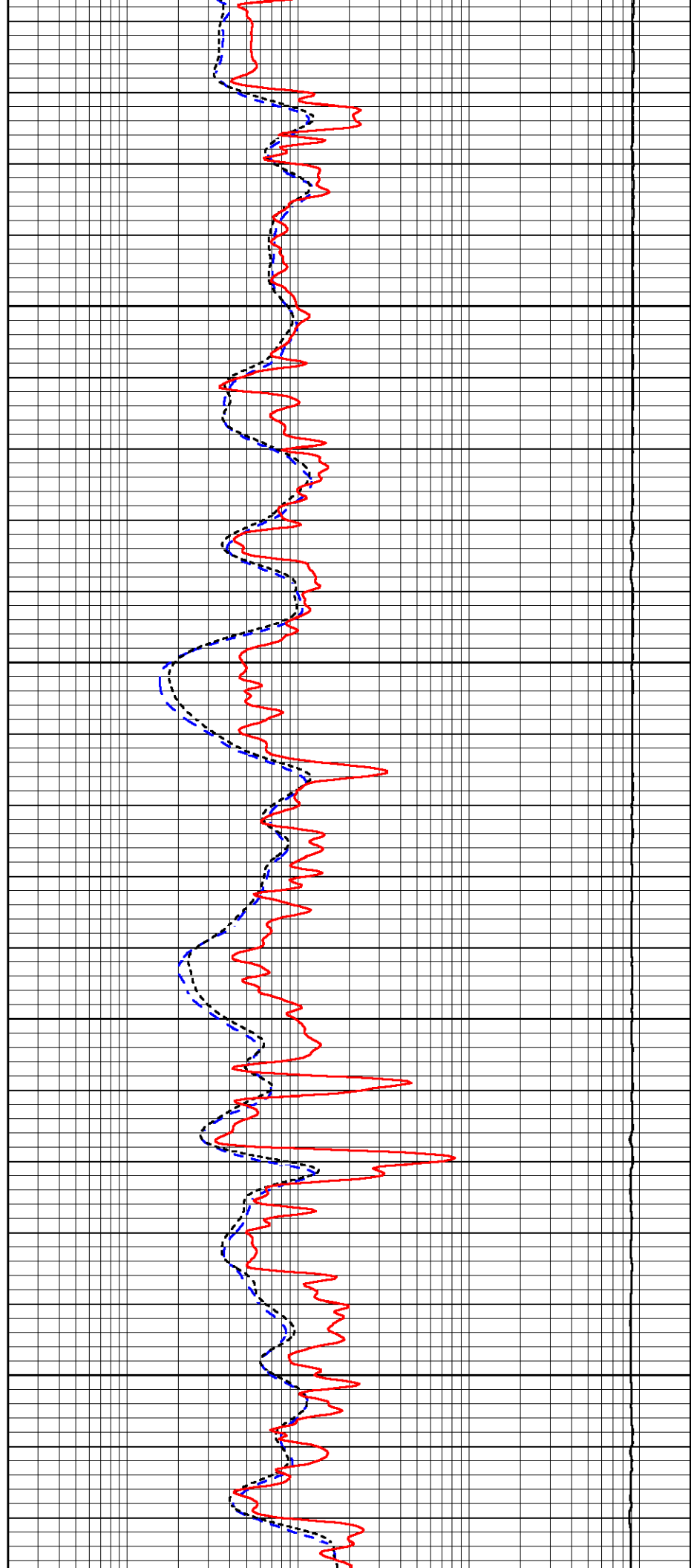


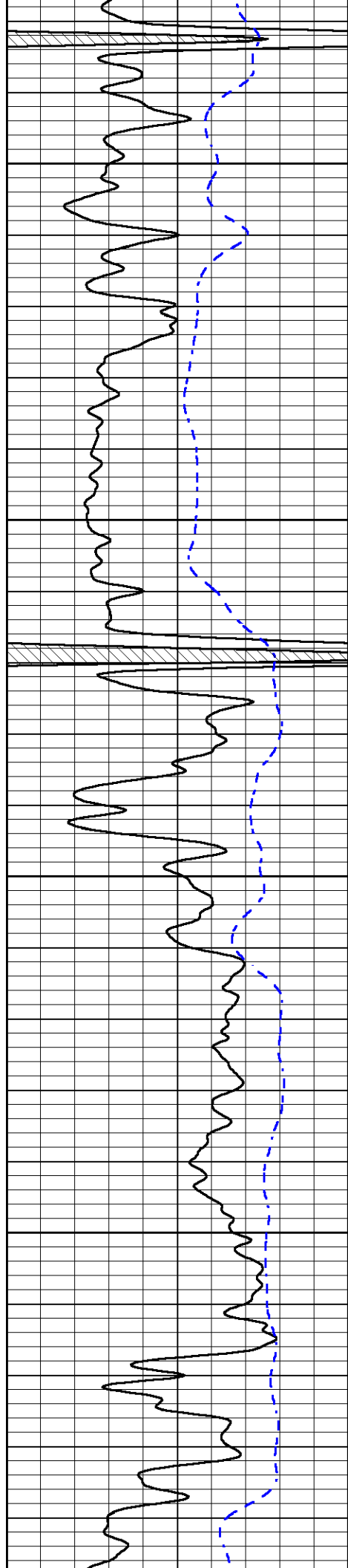
2650

2700

2750

2800



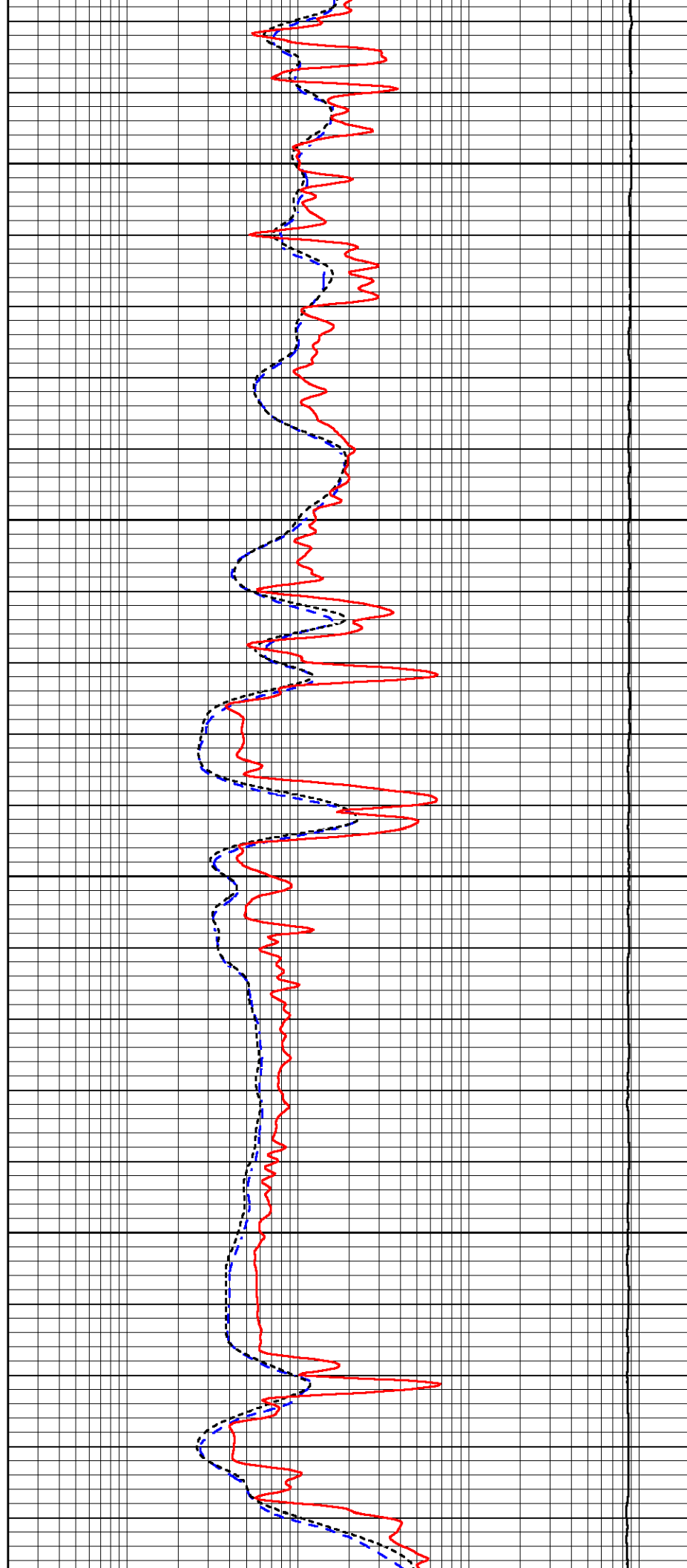


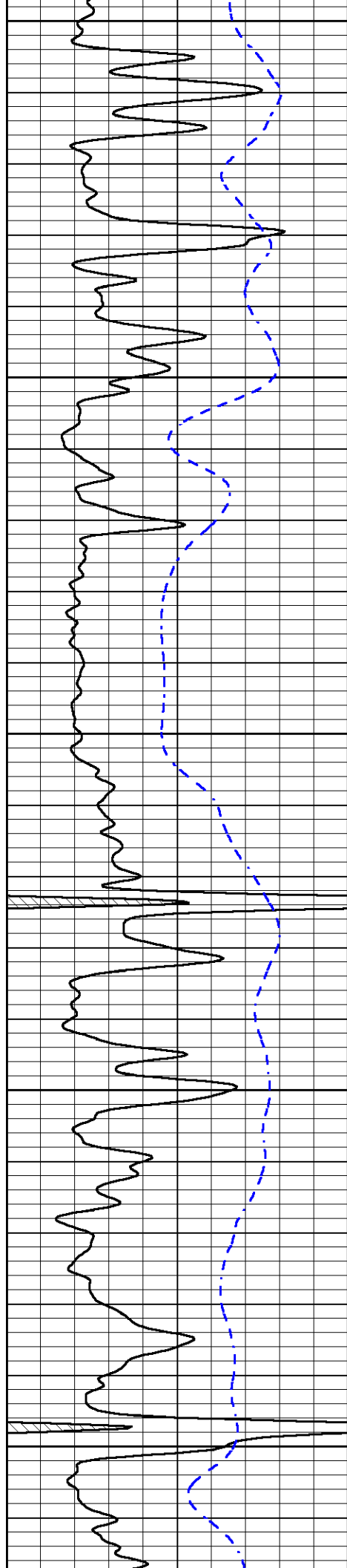
2850

2900

2950

3000





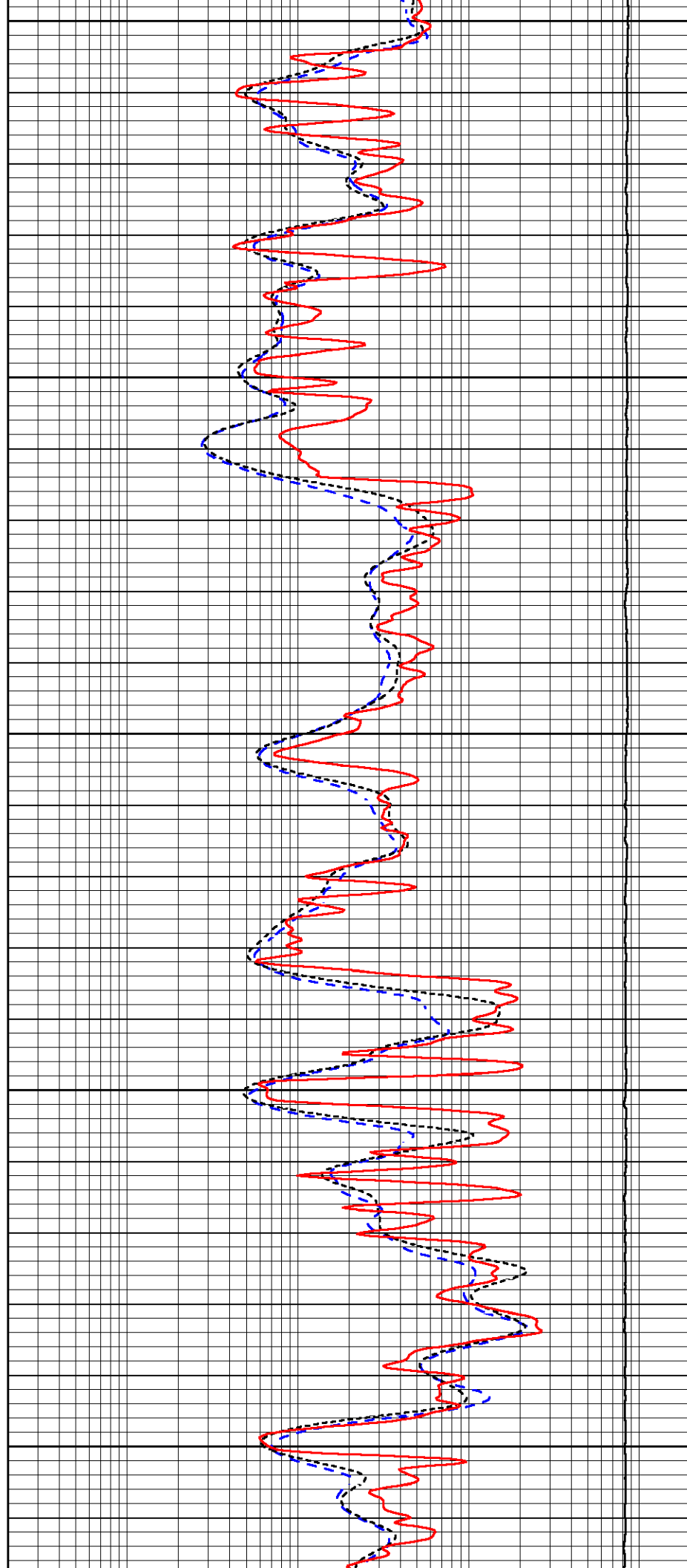
3050

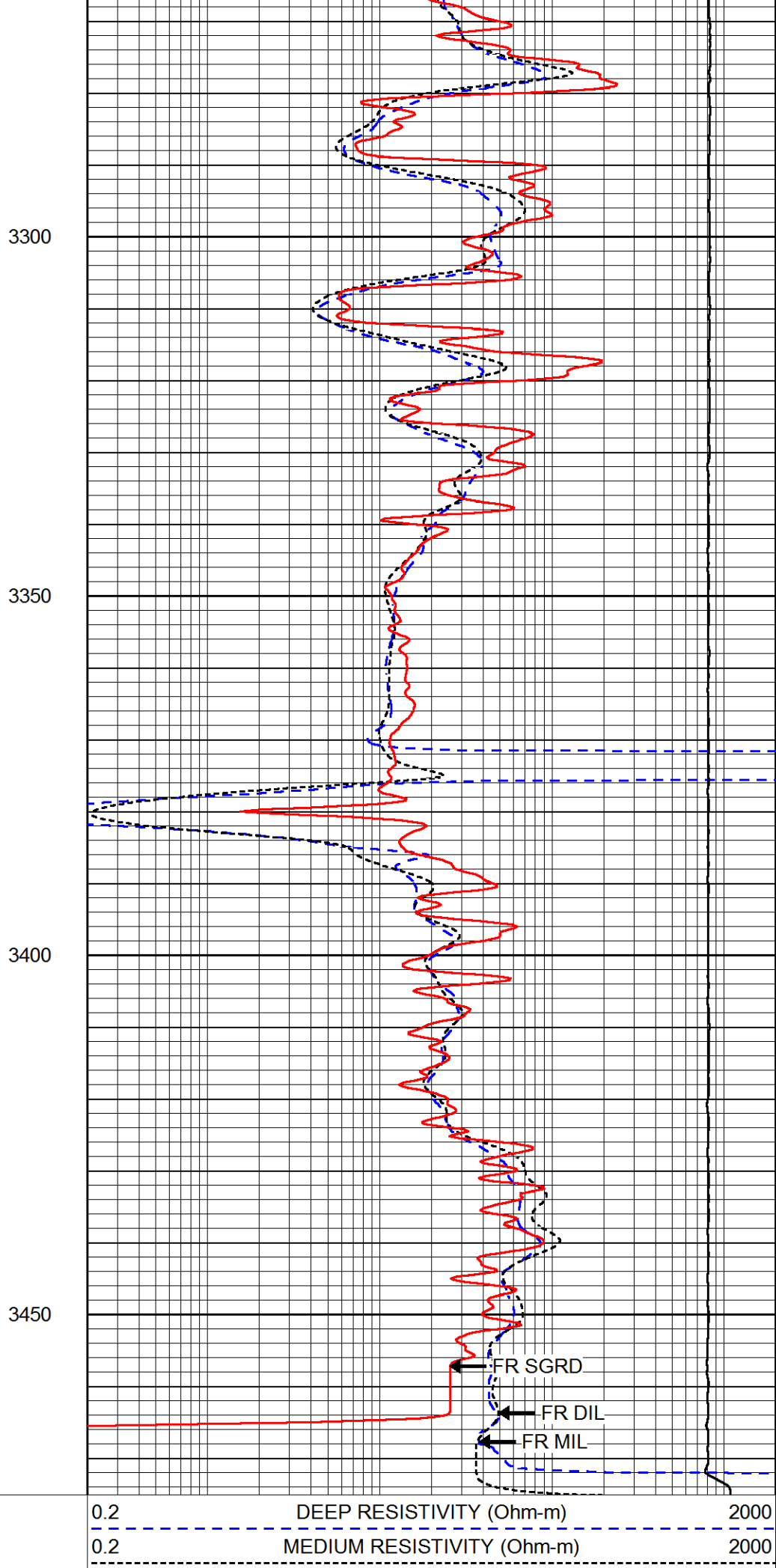
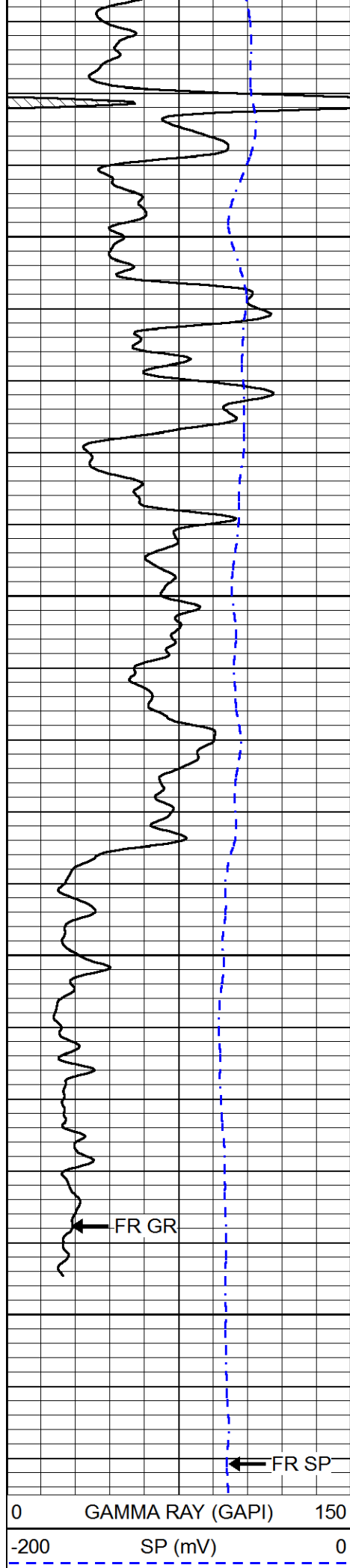
3100

3150

3200

3250





0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

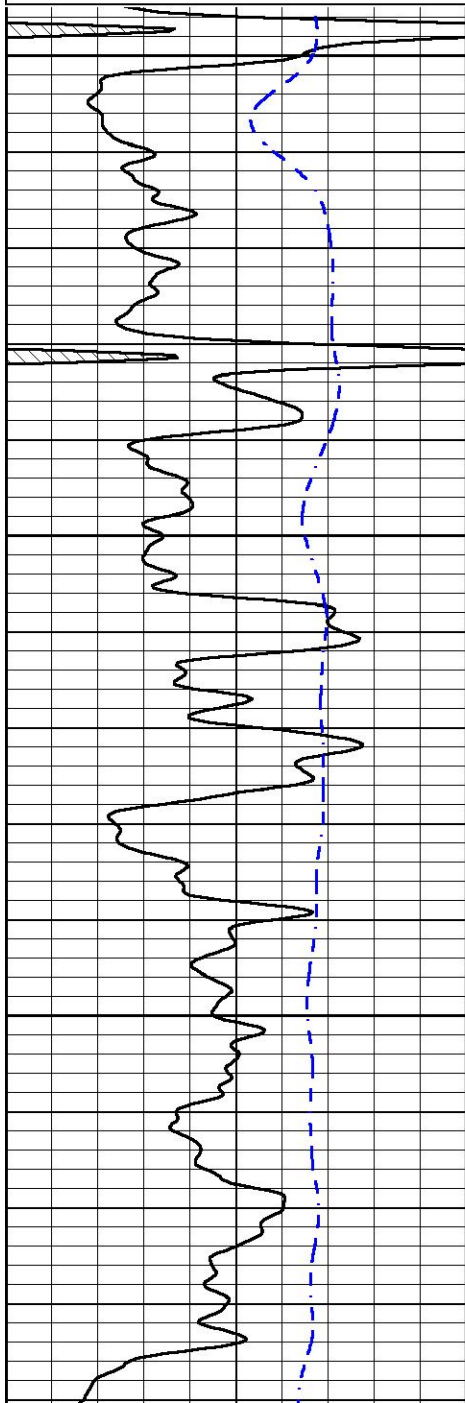


REPEAT SECTION

Database File american_warrior_whisler_1_20.db
Dataset Pathname stack/pass2.1
Presentation Format dil
Dataset Creation Sun May 06 09:08:28 2018
Charted by Depth in Feet scaled 1:240

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

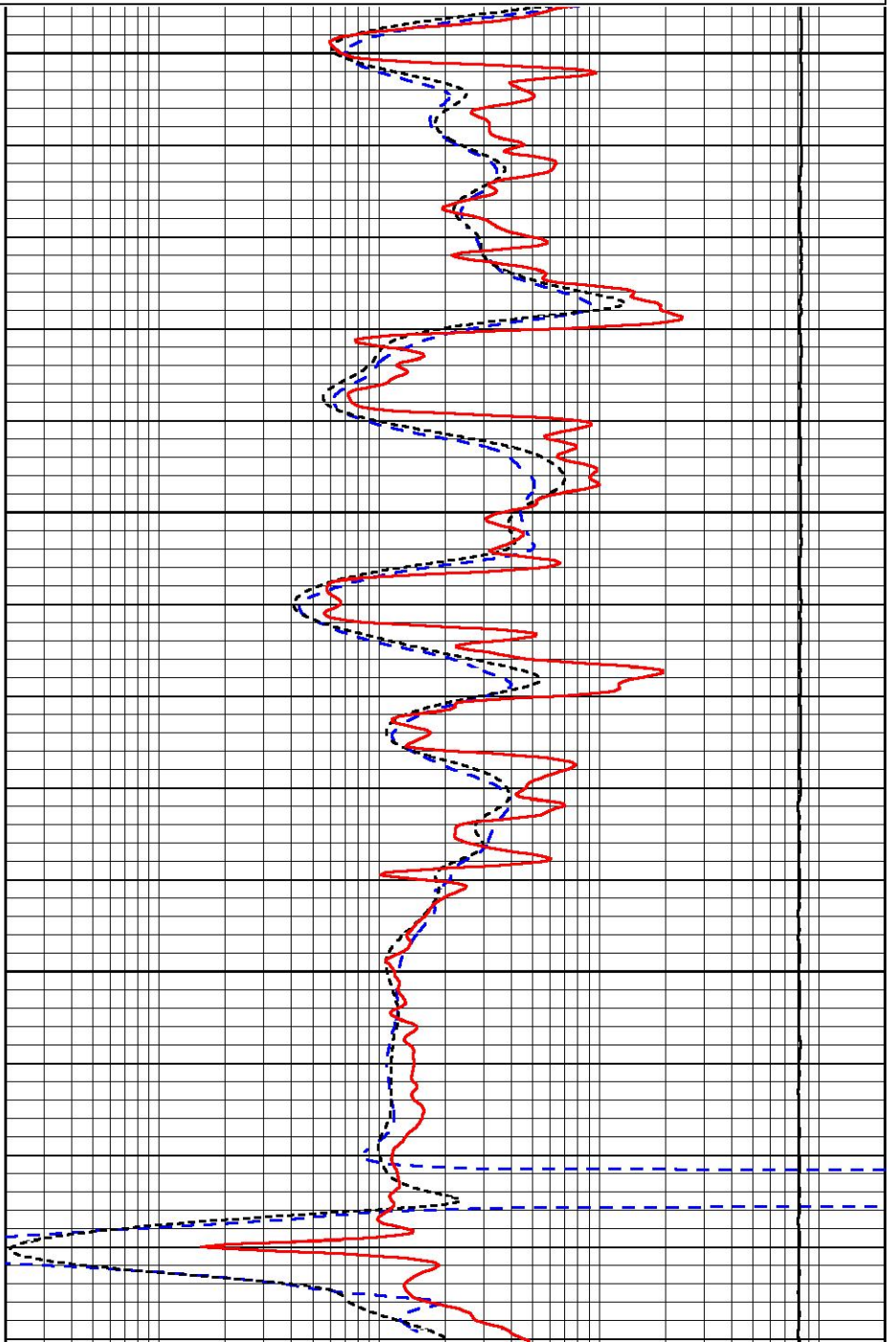
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

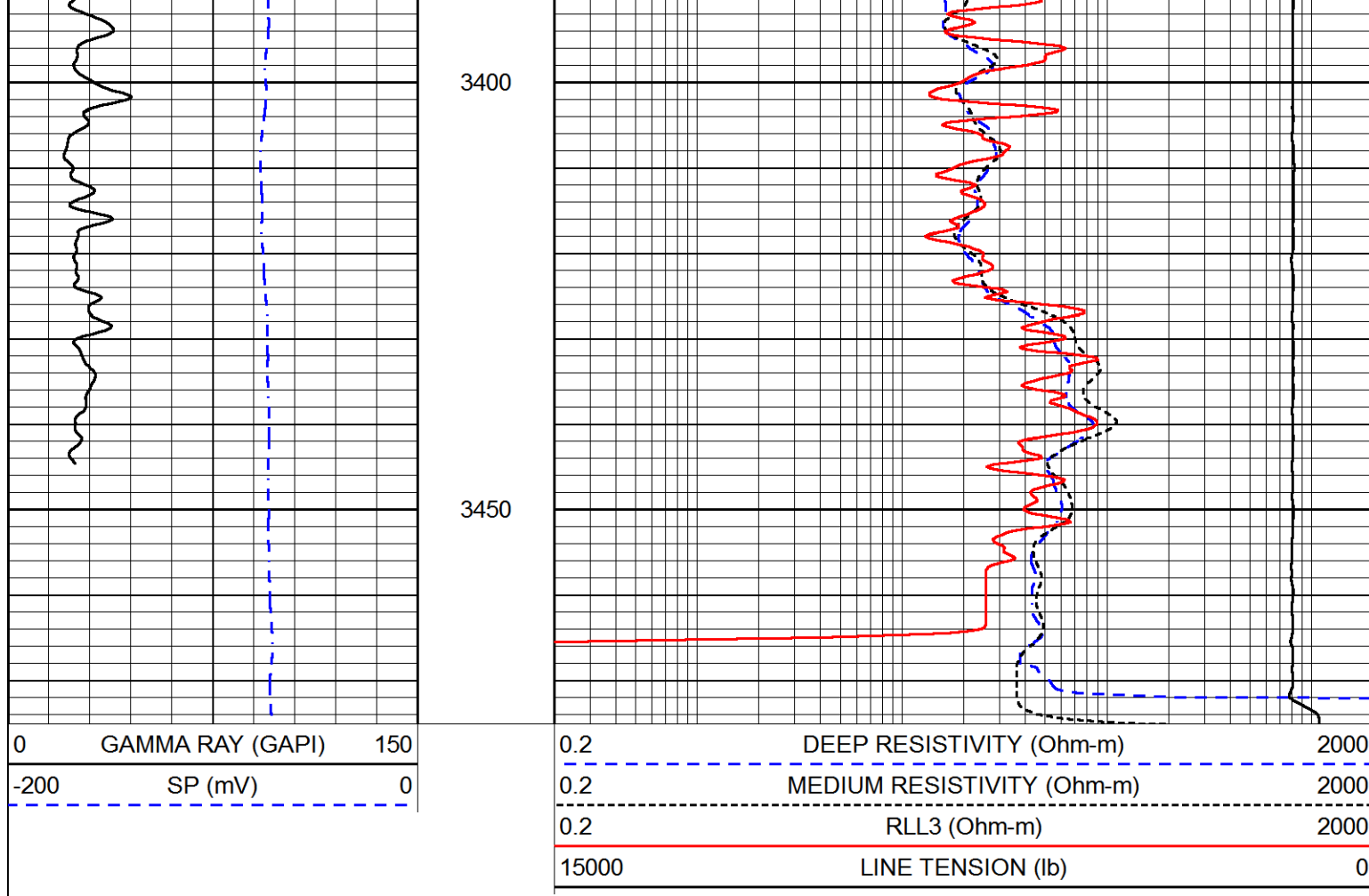


3250

3300

3350





Calibration Report

Database File american_warrior_whisler_1_20.db
 Dataset Pathname stack/pass3.1
 Dataset Creation Sun May 06 09:08:18 2018

Dual Induction Calibration Report

Serial-Model: PSI 978-M&W
 Calibration Performed: Sun Feb 04 11:50:02 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.570	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-37.000

Compensated Density Calibration Report

Serial-Model: 168-986-M&W
 Source / Verifier: /
 Master Calibration Performed: Tue Apr 11 17:07:47 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.675	g/cc	859.57	3020.22	cps

Spine Angle = 74.61

Density/Spine Ratio = 0.523

	Size		Reading
Small Ring	4.00	in	1.00
Large Ring	16.00	in	1.22

Compensated Neutron Calibration Report

Serial Number: tk10-MW
Tool Model: M&W
Calibration Performed: Wed Nov 16 11:21:36 2016

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: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



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