



DUAL INDUCTION LOG

Company: RJM COMPANY
 Well: SPRAWKA NO. 1
 Field: TRITSCH
 County: BARTON
 State: KANSAS

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 Well: SPRAWKA NO. 1
 Field: TRITSCH
 County: BARTON
 State: KANSAS

Location: API #: 15-009-26197-00-00
 2310' FNL & 330' FWL
 SEC 12 TWP 18S RGE 12W
 Permanent Datum: GROUND LEVEL Elevation 1848'
 Log Measured From: KELLY BUSHING
 Drilling Measured From: KELLY BUSHING
 Other Services: CNL/CDL MEL
 Elevation: K.B. 1856', D.F. N/A, G.L. 1848'

Date	1/18/2018
Run Number	ONE
Depth Driller	3409'
Depth Logger	3408'
Bottom Logged Interval	3407'
Top Log Interval	350'
Casing Driller	8.625" @ 370'
Casing Logger	369'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	5000
Density / Viscosity	9.1 48
pH / Fluid Loss	10.0 9.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.75 @ 56
Rmt @ Meas. Temp	.56 @ 56
Rmc @ Meas. Temp	1.01 @ 56
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.38 @ 110
Operating Rig Time	3 HOURS
Max Rec. Temp. F	110 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
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.

CLAFLIN KANSAS
 4 WEST TO 90 RD, 1 1/2 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: JIM MUSGROVE Secondary Witness: Secondary Witness: Secondary Witness:
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Log Variables






DatabaseC:\ProgramData\Warrior\Data\rm_sprawka_1.db
Dataset field/well/stackml/pass3.1/_vars_

Top - 3352.00 ft

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	-220	21	Off	3408

3352.00 ft - 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	-220	21	Off	3408

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 CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (168-986)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					

CILD 8.00

CILM 4.70

SP 0.20

DIL-M&W (PSI 978)

18.50

3.50

220.00

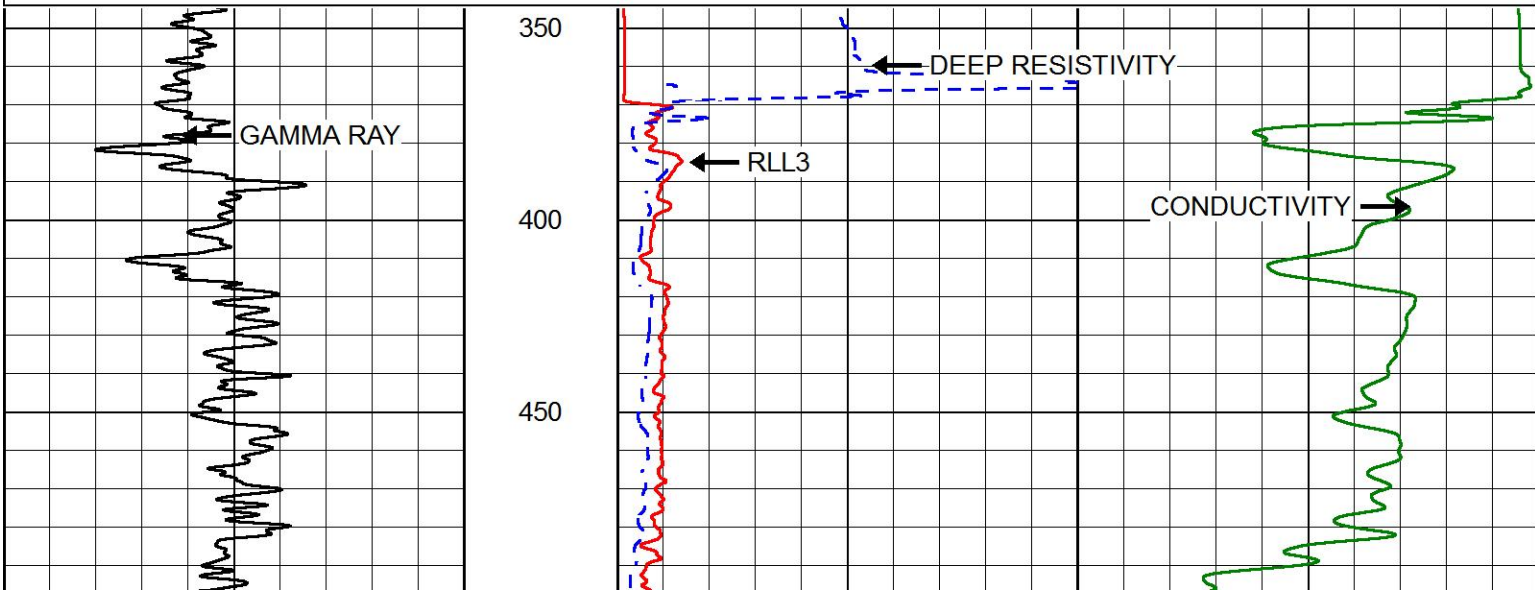
Dataset: rjm_sprawka_1.db: field/well/stackml/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

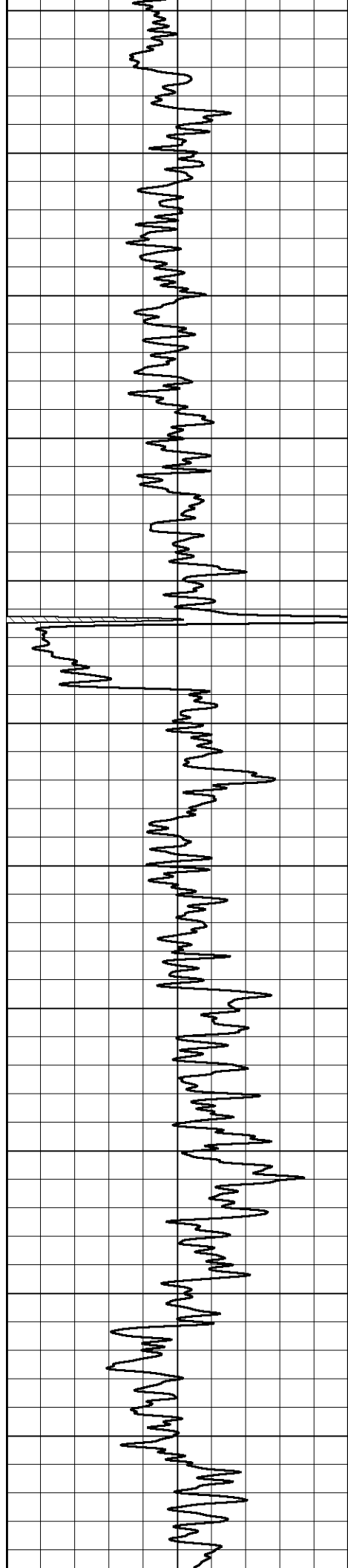


MAIN PASS

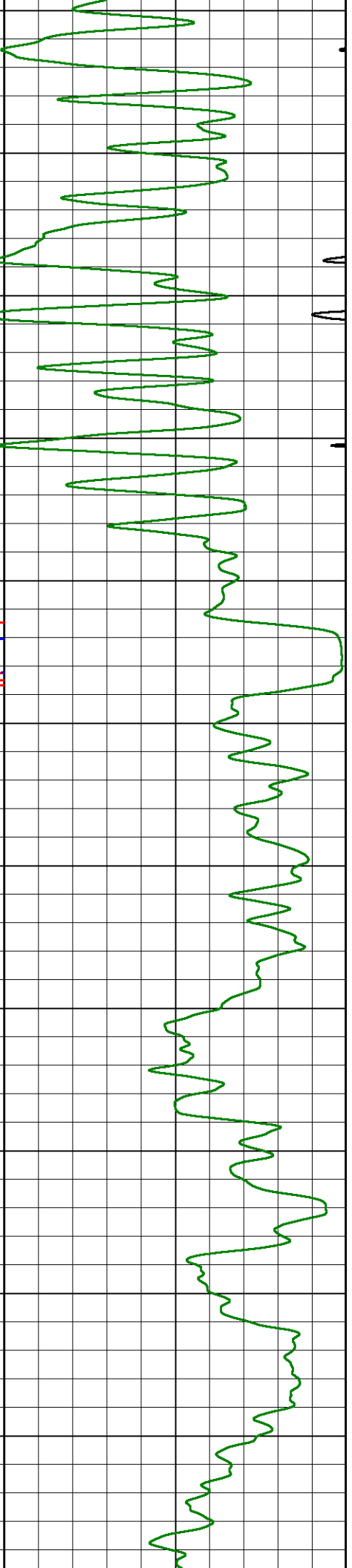
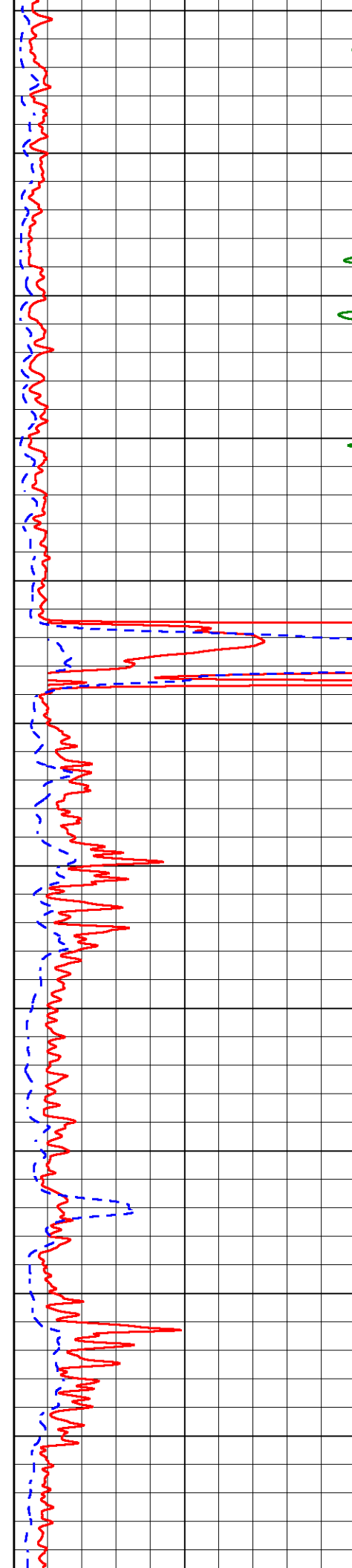
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 Dataset Pathname stackml/pass3.1
 Presentation Format dil2in
 Dataset Creation Thu Jan 18 08:38:17 2018
 Charted by Depth in Feet scaled 1:600

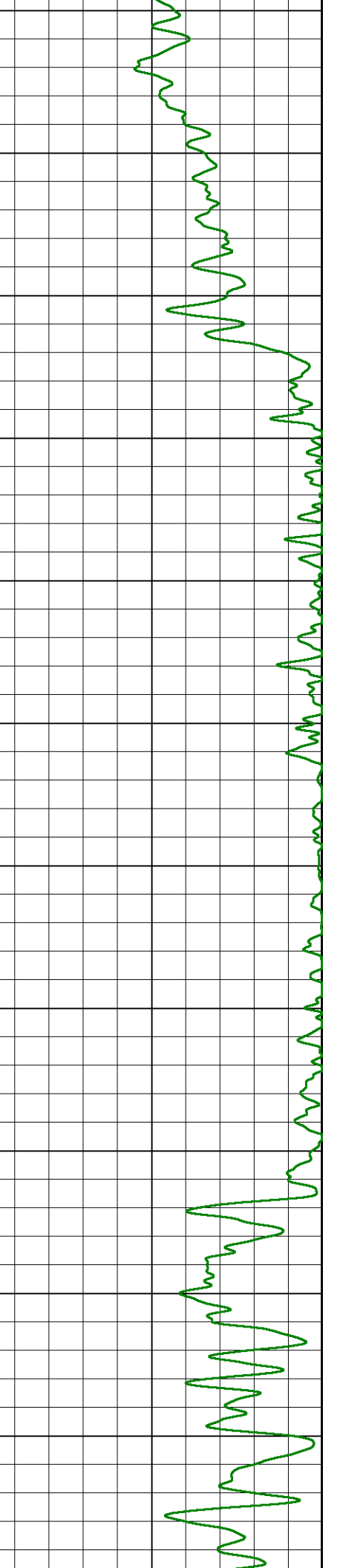
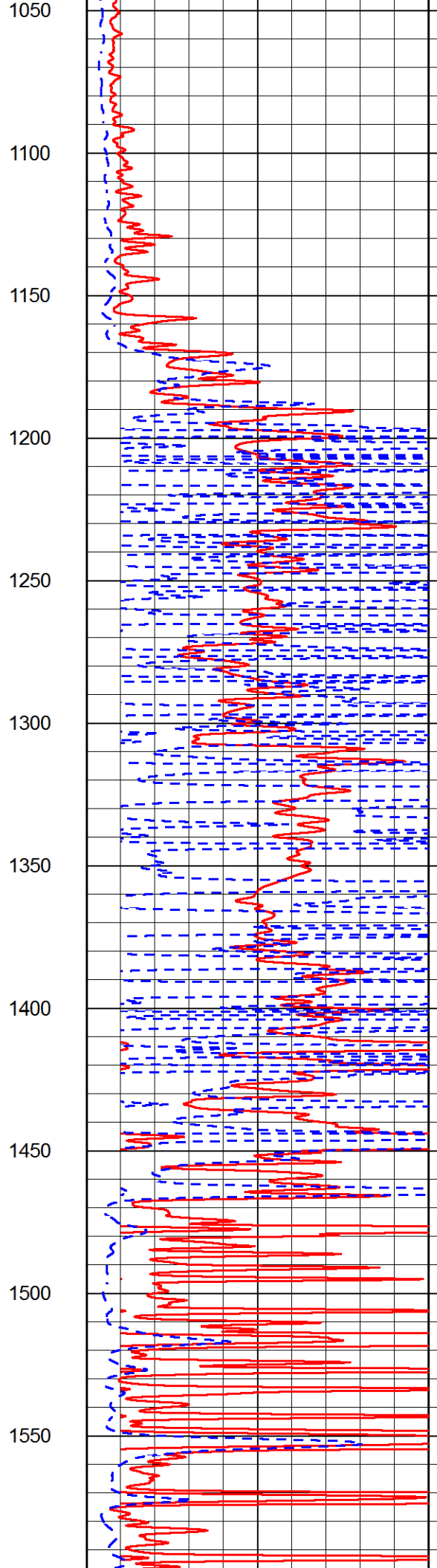
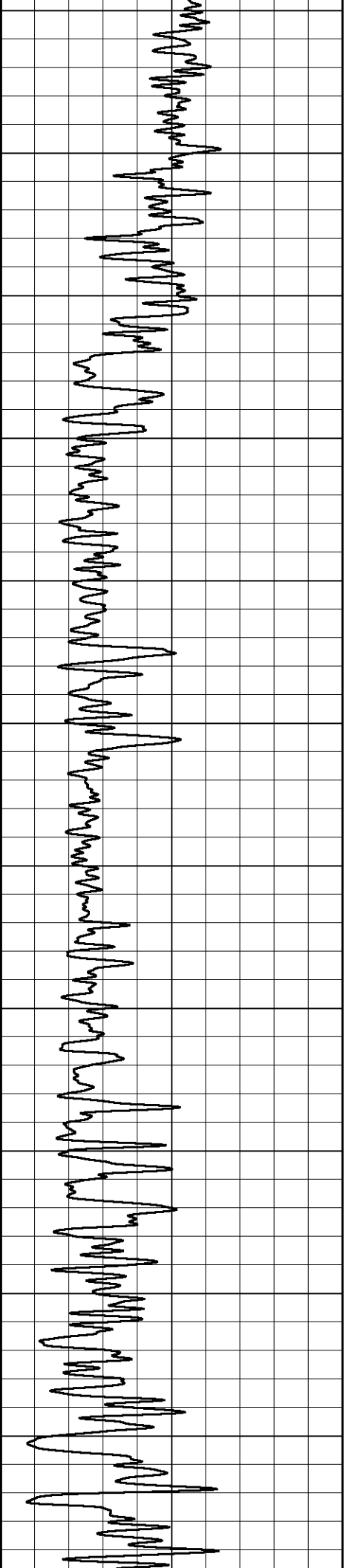
0	GAMMA RAY (GAPI)	150	2000	CONDUCTIVITY (mmho/m)	0
0	RLL3 (Ohm-m)	50			
0	DEEP RESISTIVITY (Ohm-m)	50			
50	RLL3 (Ohm-m)	500			
	DEEP RESISTIVITY				
50	(Ohm-m)	500			

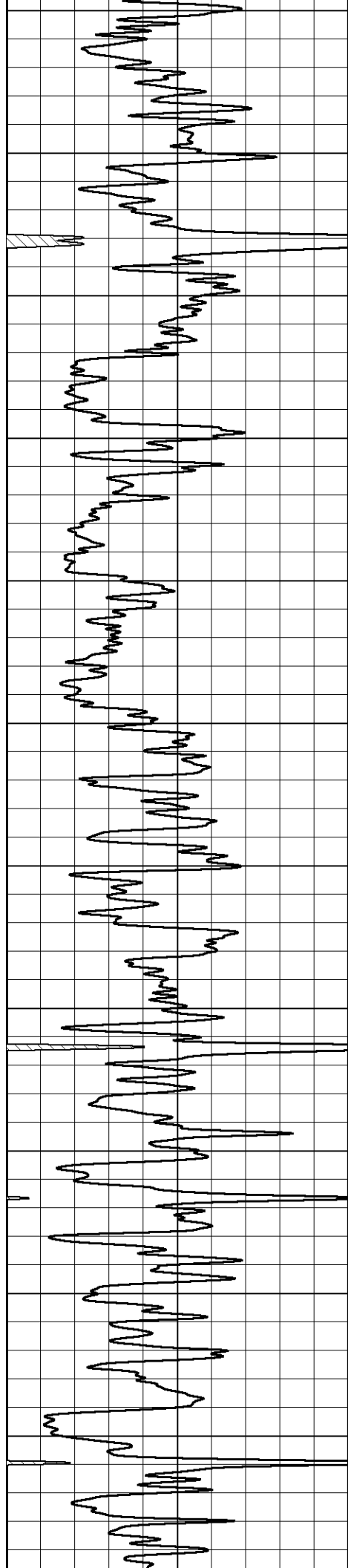




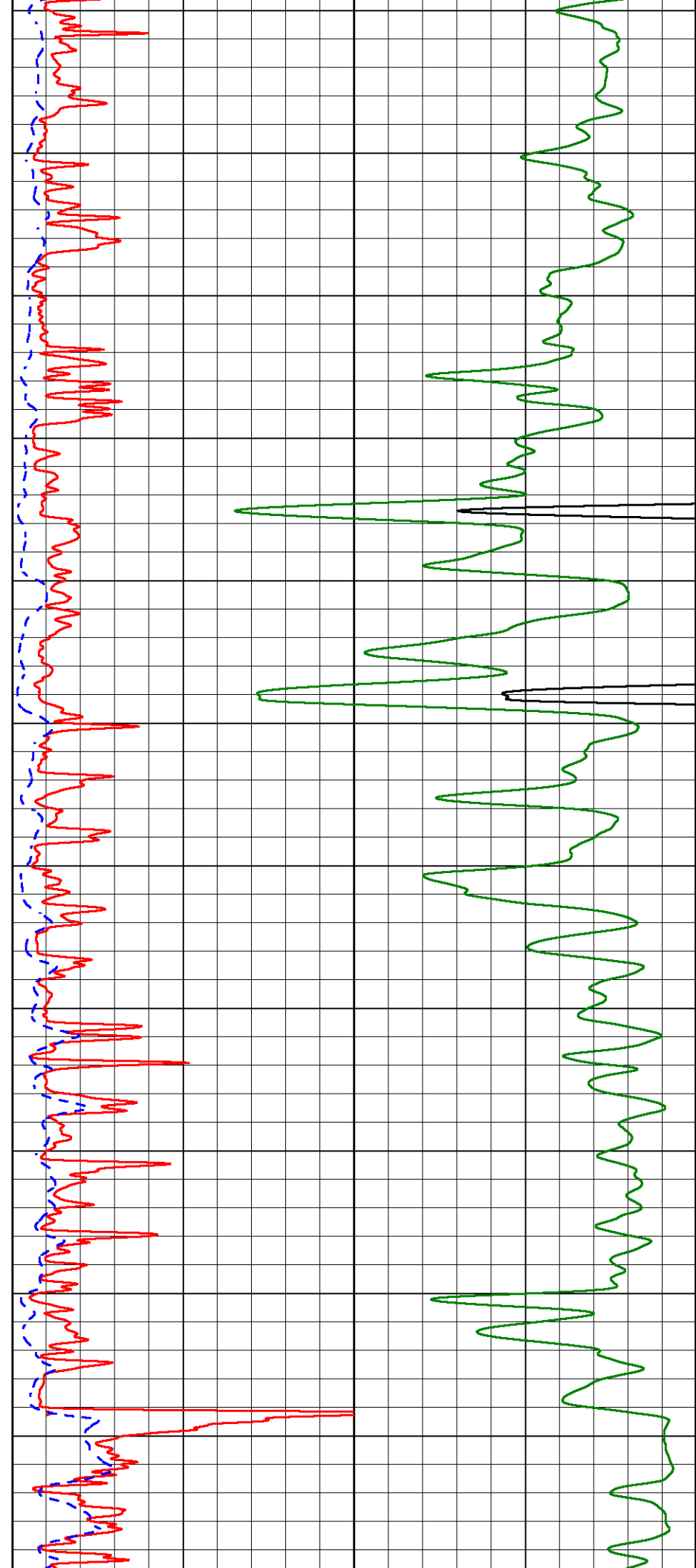
500
550
600
650
700
750
800
850
900
950
1000

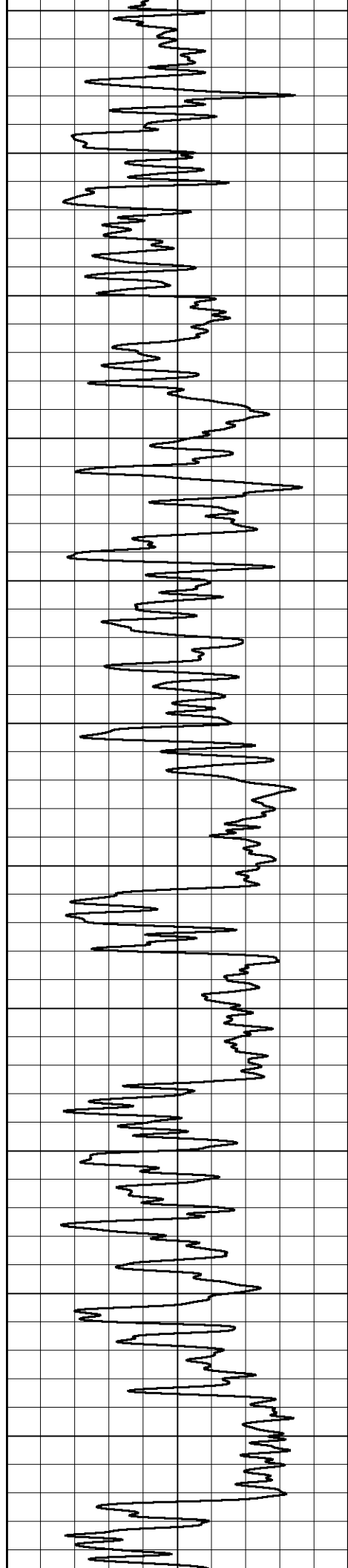




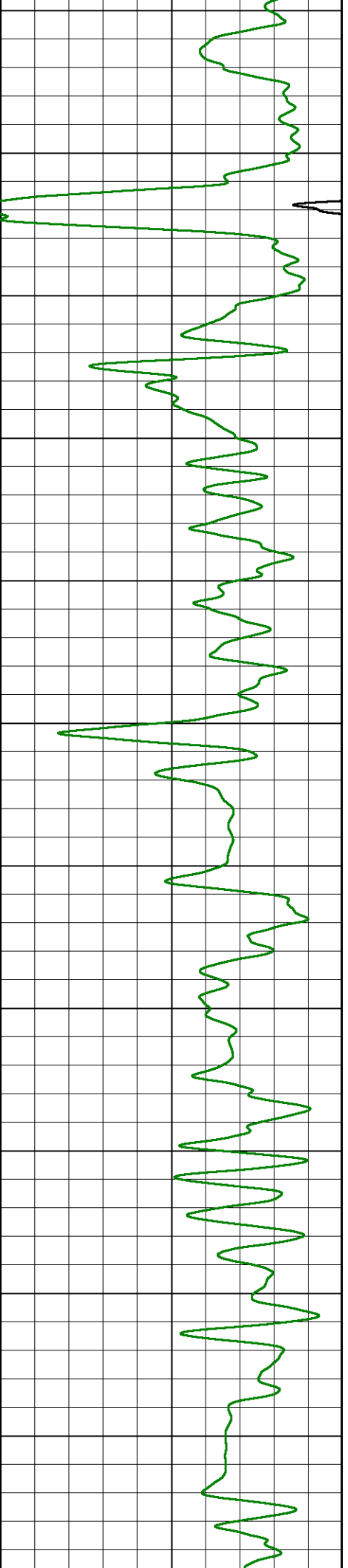
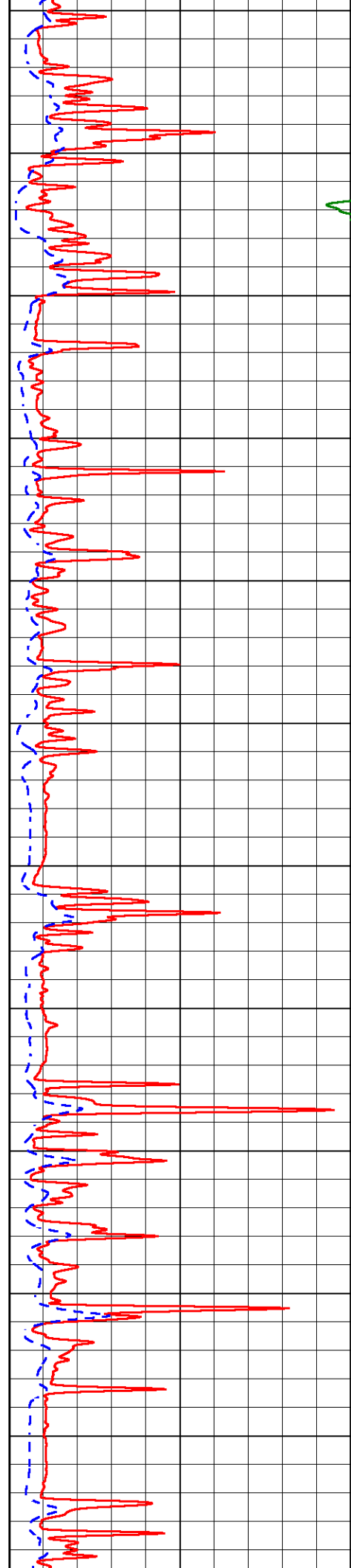


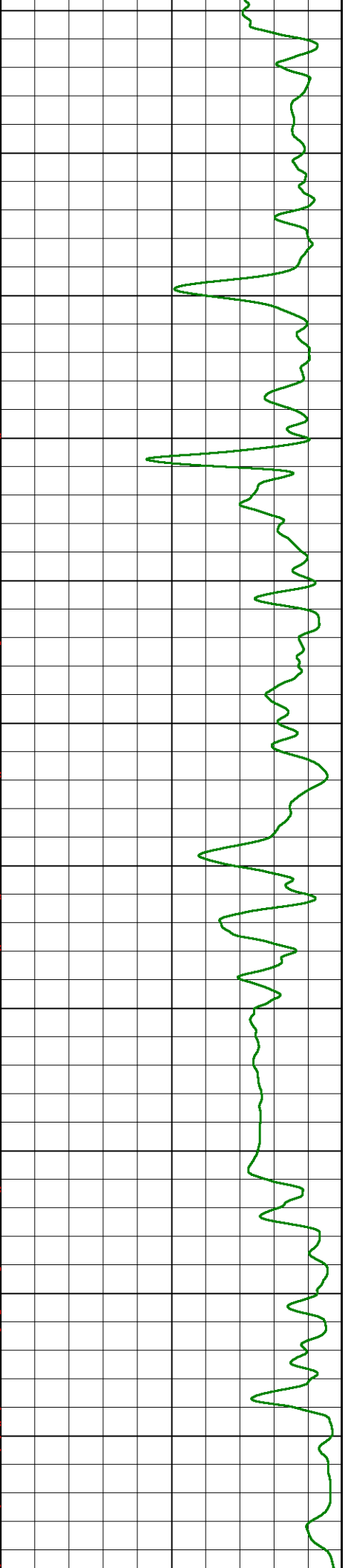
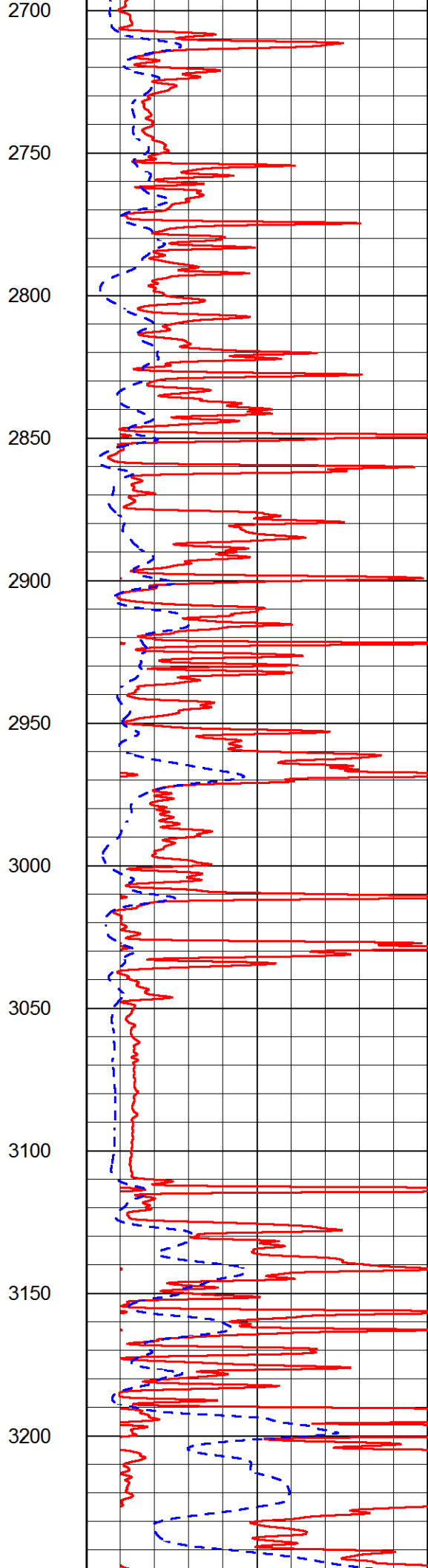
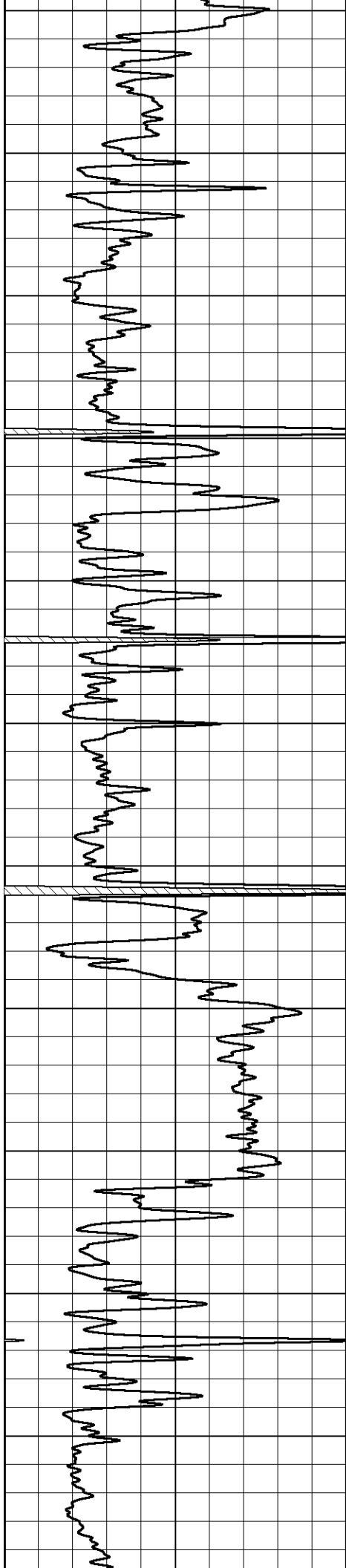
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100

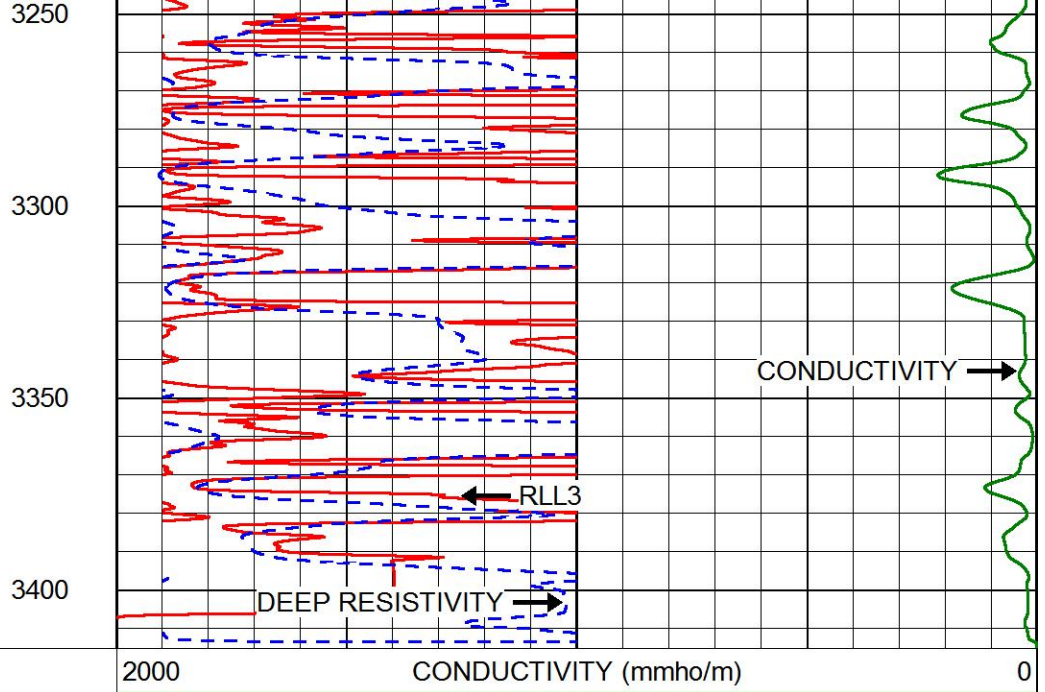
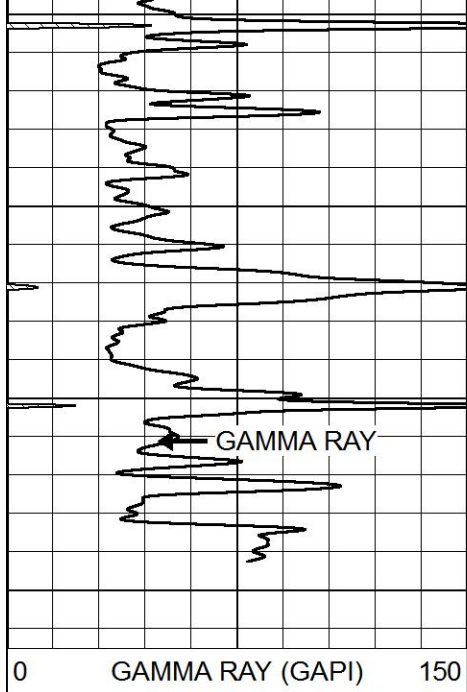




2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650







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

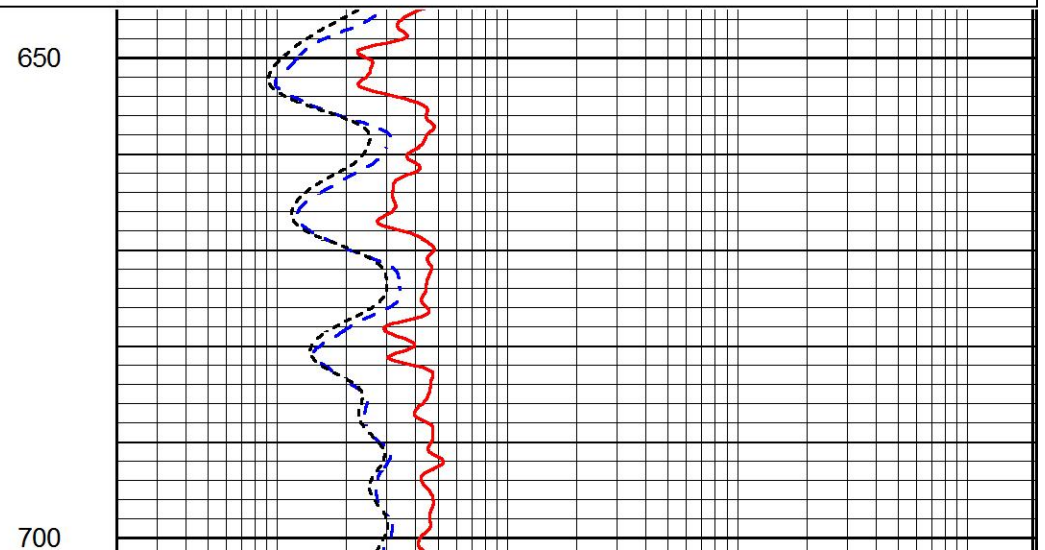
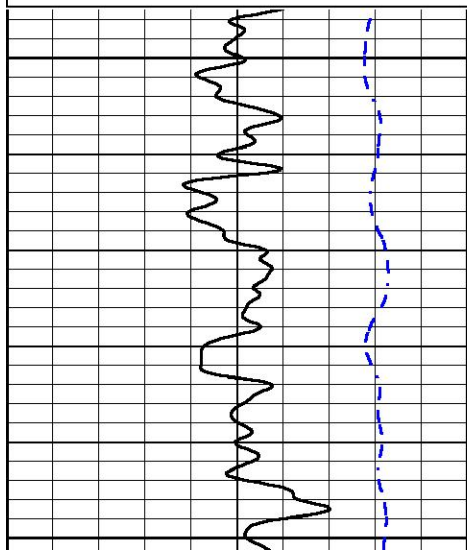


MAIN PASS

Database File rjm_sprawka_1.db
 Dataset Pathname stackml/pass3.1
 Presentation Format dil
 Dataset Creation Thu Jan 18 08:38:17 2018
 Charted by Depth in Feet scaled 1:240

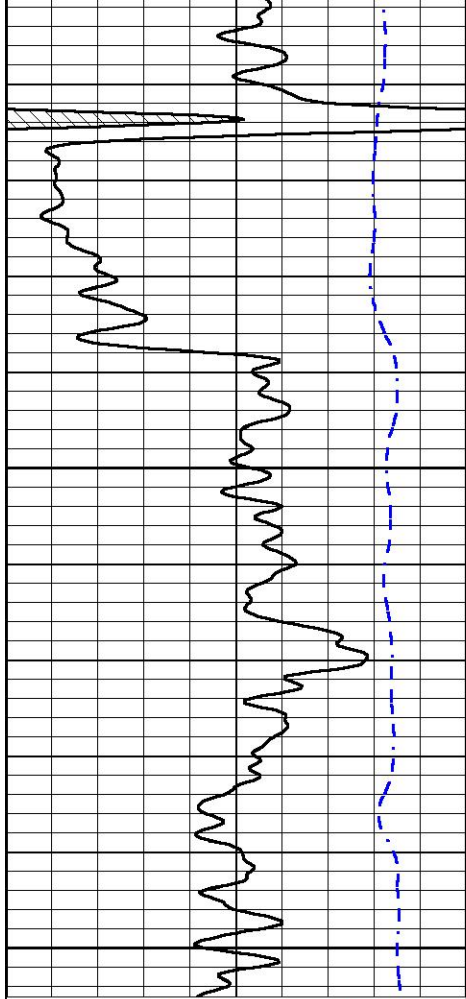
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

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



650

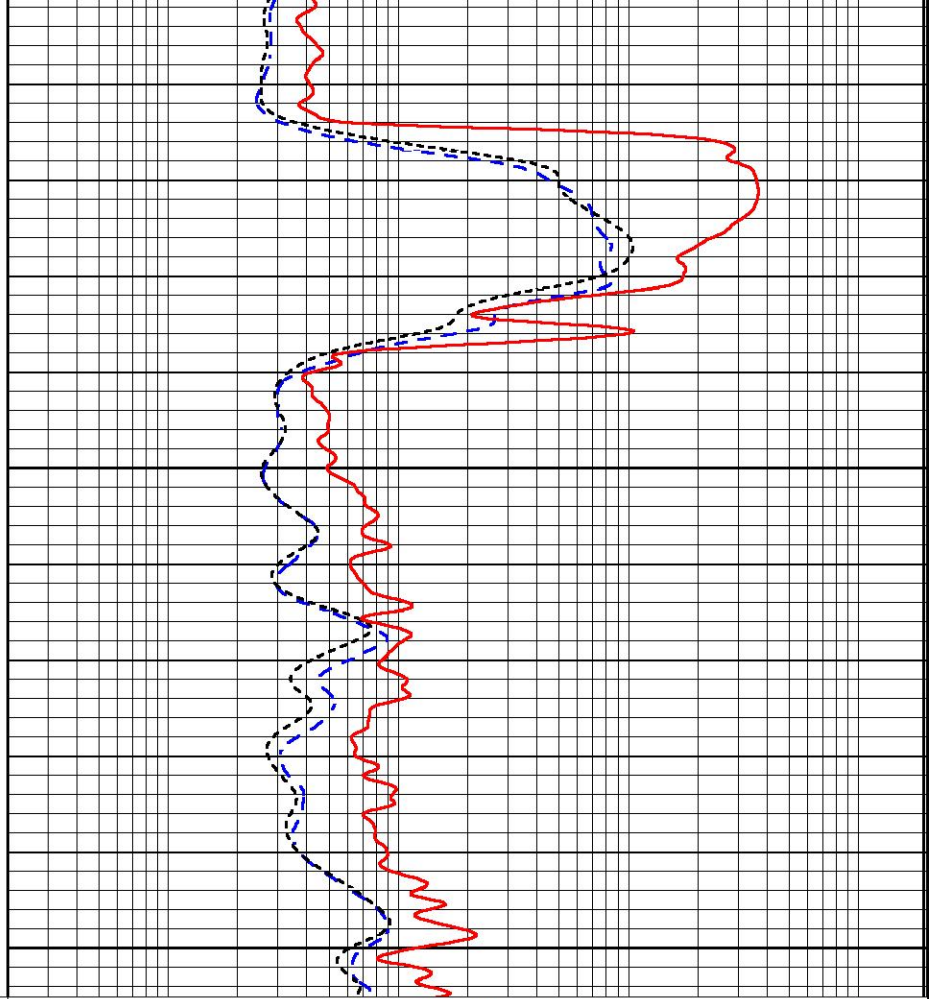
700



750

800

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

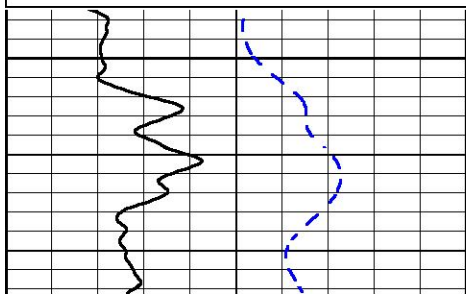


MAIN PASS

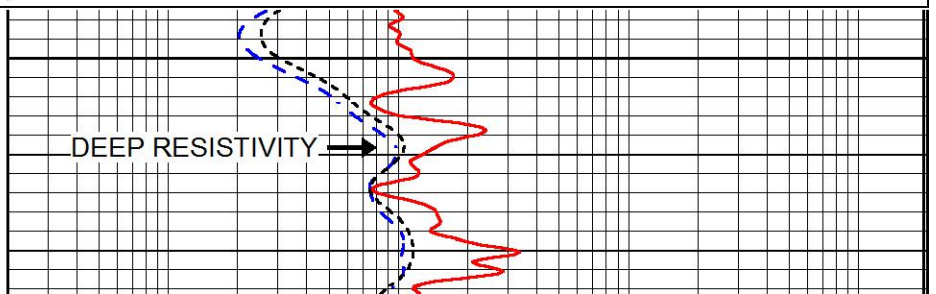
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 Dataset Creation Thu Jan 18 08:38:17 2018
 Charted by Depth in Feet scaled 1:240

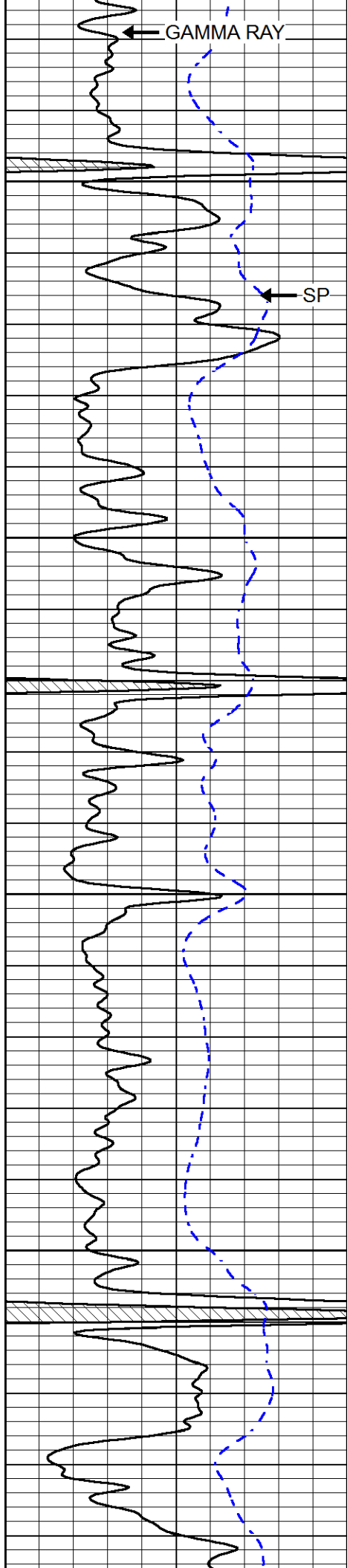
0 GAMMA RAY (GAPI) 150
 -200 SP (mV) 0

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



2800



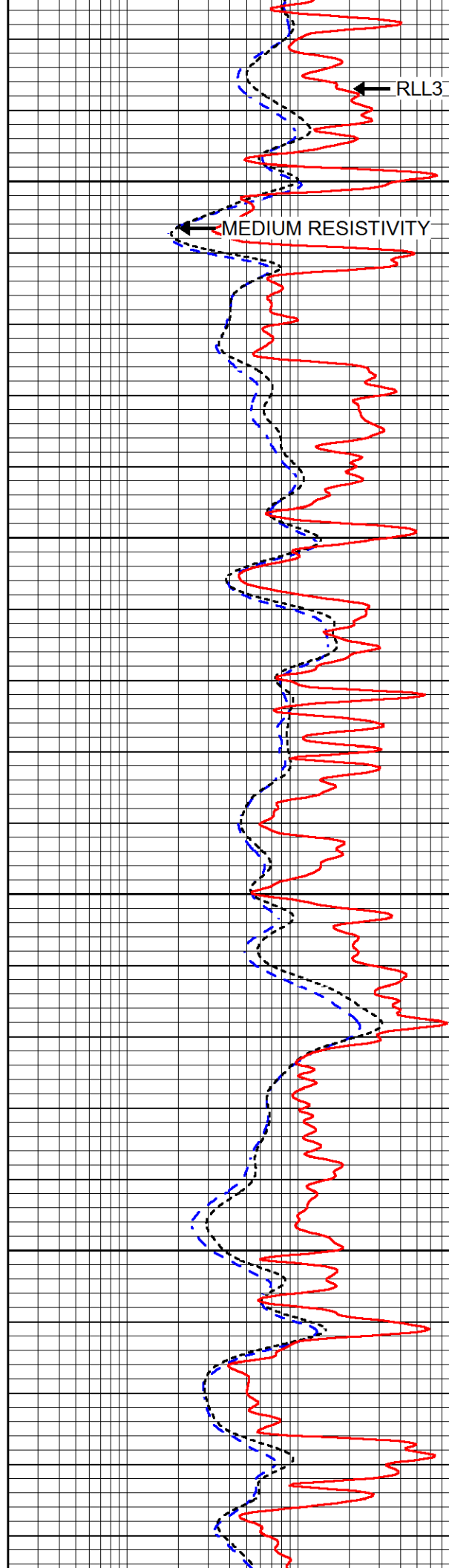


2850

2900

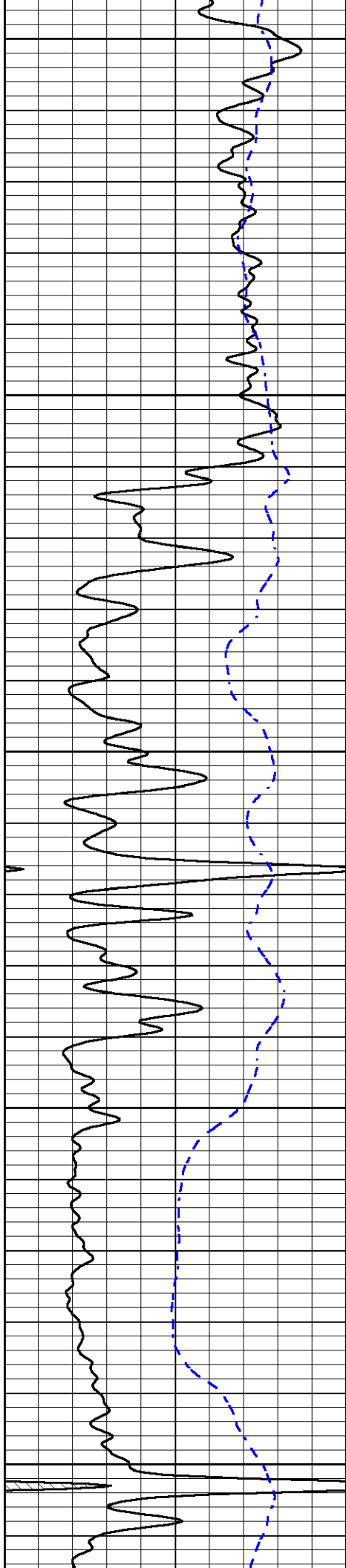
2950

3000



RLL3

MEDIUM RESISTIVITY



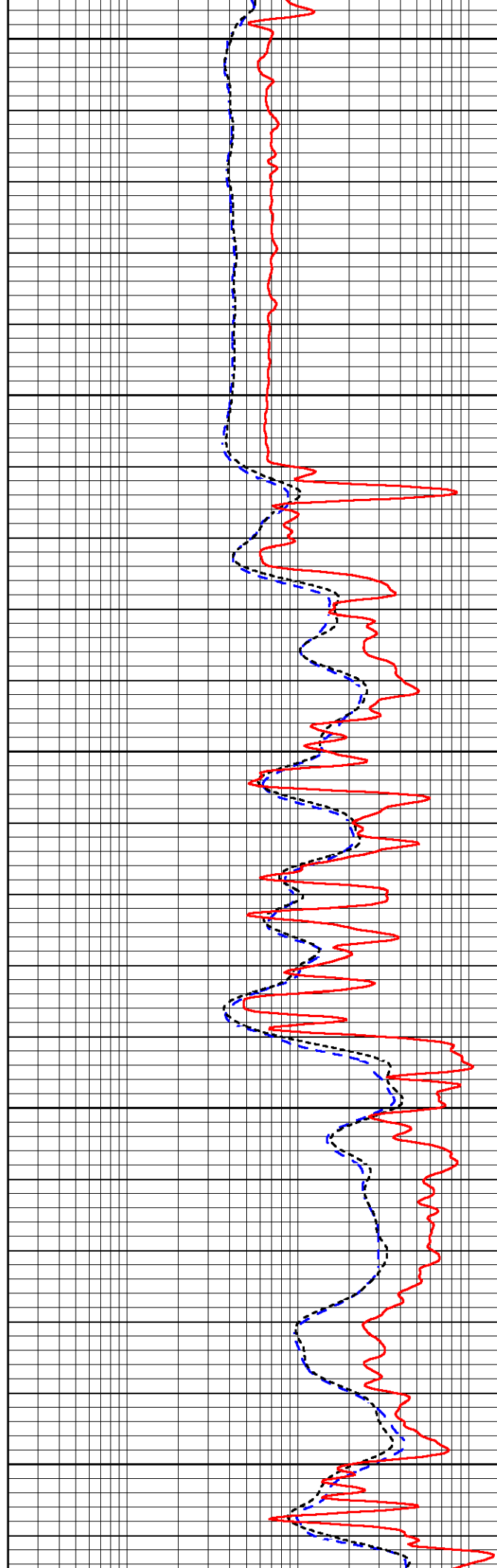
3050

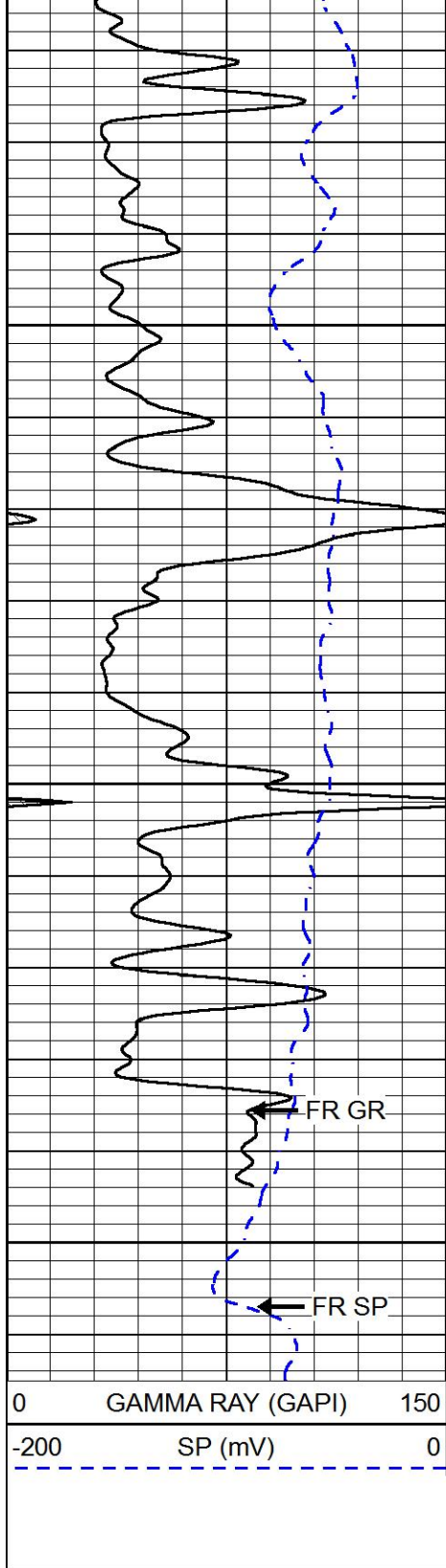
3100

3150

3200

3250





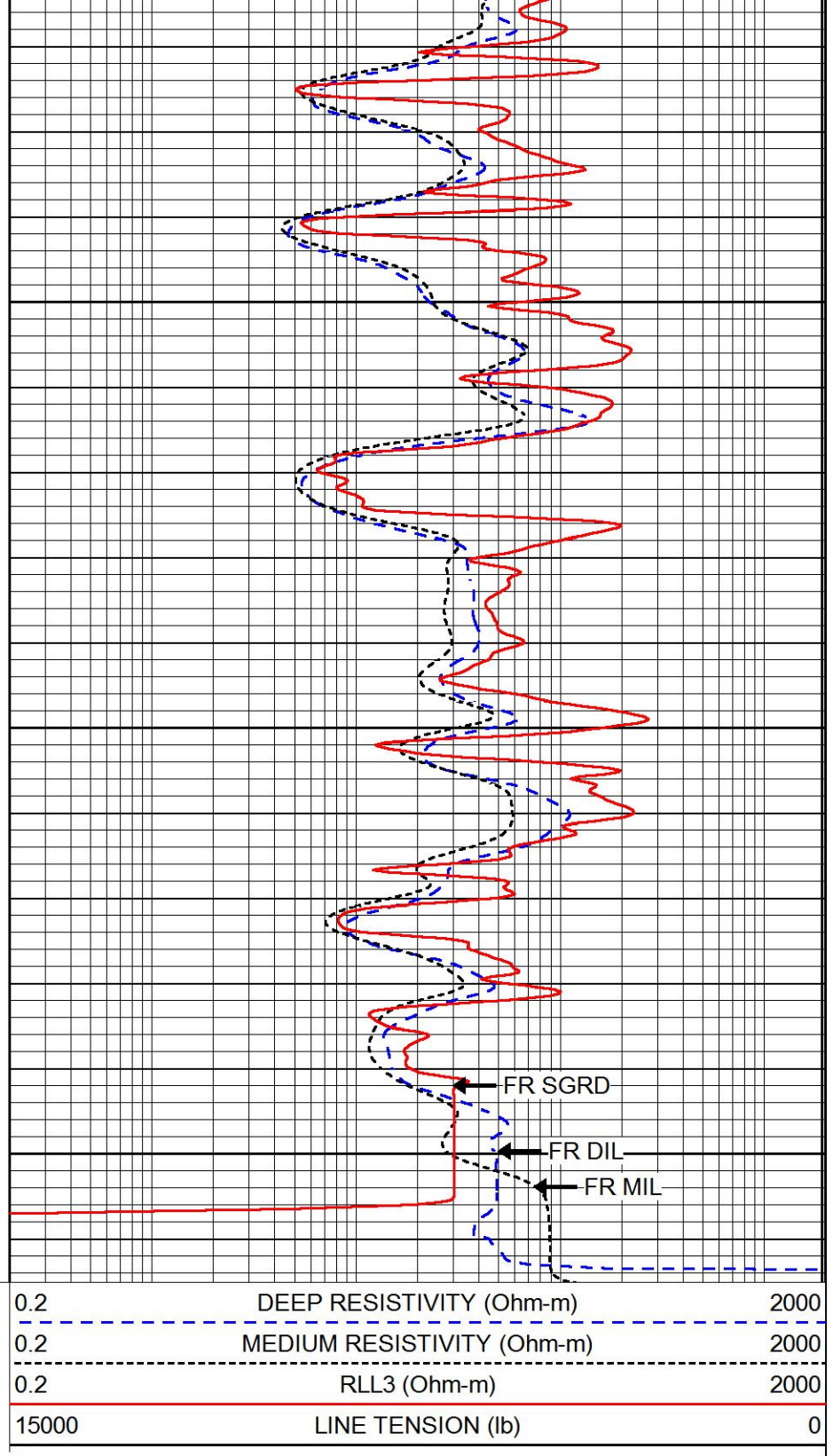
3300

3350

3400

FR GR

FR SP



REPEAT SECTION

Database File rjm_sprawka_1.db
Dataset Pathname stackml/pass2.1
Presentation Format dil
Dataset Creation Thu Jan 18 08:38:41 2018
Charted by Depth in Feet scaled 1:240

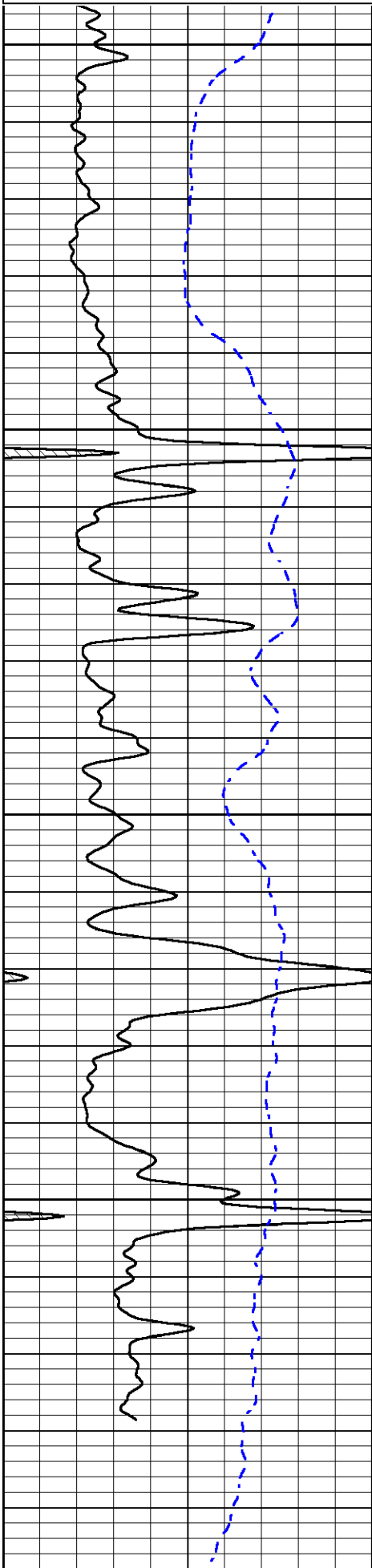


-200 SP (mV) 0

0.2 MEDIUM RESISTIVITY (Ohm-m) 2000

0.2 RLL3 (Ohm-m) 2000

15000 LINE TENSION (lb) 0

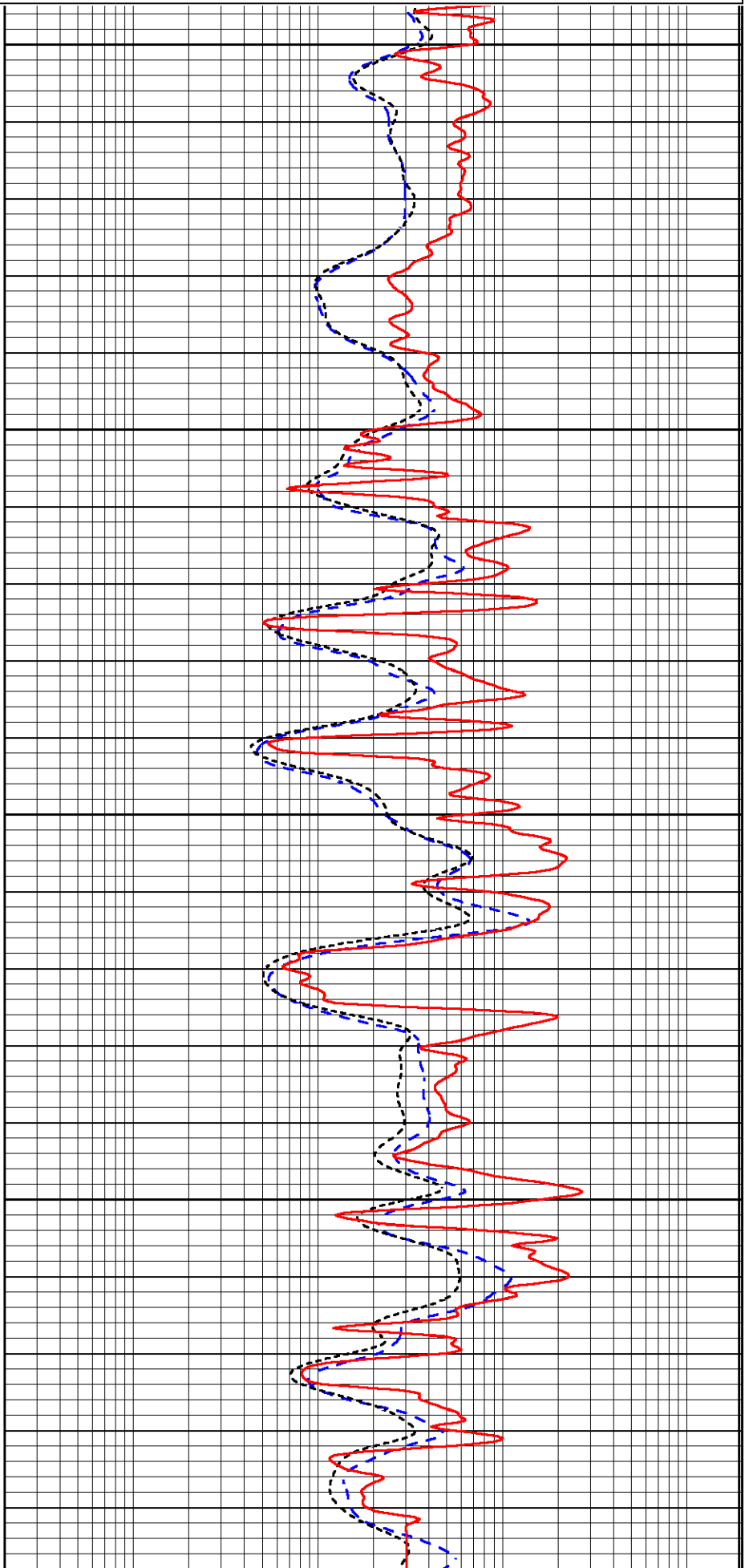


3200

3250

3300

3350

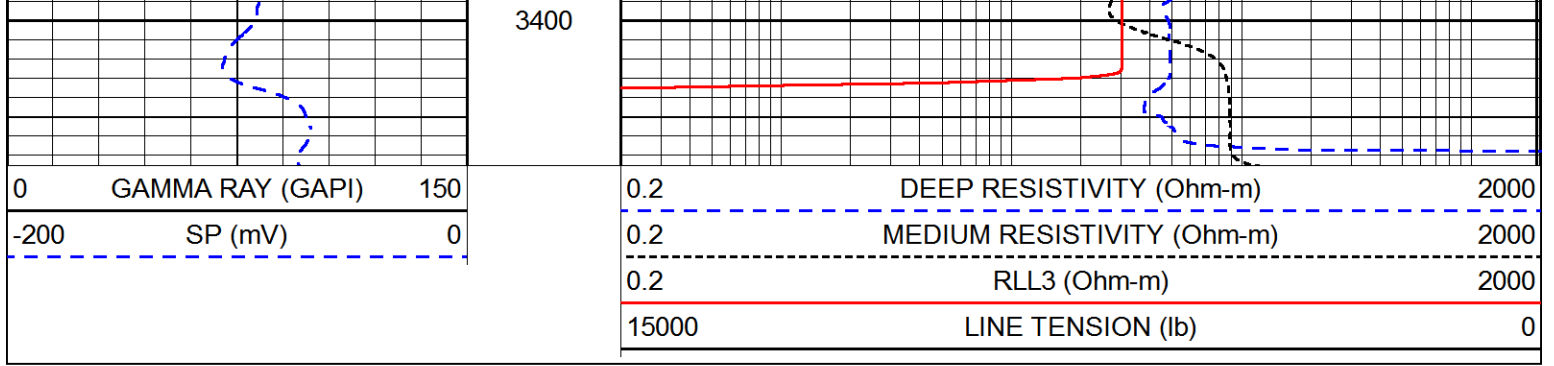


3200

3250

3300

3350



Calibration Report

Database File rjm_sprawka_1.db
 Dataset Pathname stackml/pass3.1
 Dataset Creation Thu Jan 18 08:38:17 2018

Dual Induction Calibration Report

Serial-Model: PSI 978-M&W
 Calibration Performed: Wed Dec 13 12:45:09 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.570	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-35.000

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Fri Jun 23 01:25:19 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	13000.0000	0.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	15000.0000	-0.3000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.6500

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	2.705	g/cc	859.57	3020.22	cps
Spine Angle = 74.61			Density/Spine Ratio = 0.540		
	Size		Reading		
Small Ring	4.00	in	1.00		
Large Ring	14.00	in	1.20		

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



PIONEER
Pioneer Energy Services

Company RJM COMPANY
Well SPRAWKA NO. 1
Field TRITSCH
County BARTON
State KANSAS