

Induction Array Log

Company Berexco, LLC.
Well Bailey OE #3-27
Field Amazon East Ditch
County Finney State Kansas

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Well Bailey OE #3-27
Field Amazon East Ditch
County Finney
State Kansas

Location: 1490' FNL & 983' FWL
NWNE SWNW
SEC 27 TWP 22S RGE 34W
Permanent Datum G.L. Elevation 2940 ft.
Log Measured From K.B. , 12 ft. above perm. datum
Drilling Measured From K.B.
Other Services
CNL, LDT, MEL
Elevation
K.B. 2952 ft.
D.F. 2950 ft.
G.L. 2940 ft.

Date 25-Feb-2019

Run Number	One		
Depth Driller	4850'		
Depth Logger	4840'		
Bottom Logged Interval	4839'		
Top Log Interval	3600'		
Casing Driller	8.625" @ 1774'	@	@
Casing Logger	1774'		
Bit Size	7.875"	@	@
Type Fluid in Hole	WBM		
Density / Viscosity	9.4 / 53		
pH / Fluid Loss	10.5 / 7.2		
Source of Sample	Mud Tank		
Rm @ Meas. Temp	0.898 @ 75 °F	@	@
Rmf @ Meas. Temp	0.673 @ 75 °F	@	@
Rmc @ Meas. Temp	1.22 @ 75 °F	@	@
Source of Rmf / Rmc	Calculated		
Rm @ BHT	0.106 @ 94 °F	@	@
Time Circulation Stopped	8:00		
Time Logger on Bottom	11:30		
Maximum Recorded Temperature	94 °F		
Equipment Number	10002		
Location	OKC		
Recorded By	B. Oetting		
Witnessed By	E. Grieves		

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Equipment and Log Data

Service Order: 12734

Gamma		Density		Neutron		Sonic		IAT/DLL	
Run No.	One	Run No.	One	Run No.	One	Run No.	One	Run No.	One
Serial No.	5939	Serial No.	112	Serial No.	2542	Serial No.		Serial No.	106
O.D.	3.375 in.	Source No.	50129B	Source No.	87624G	Centralizers		Standoffs	2 @ 0.5"
		O.D.	4.5 in.	O.D.	3.375 in.	O.D.	3.375 in.	O.D.	3.875 in.

Logging Pass Data

General			Gamma		Density		Neutron		Sonic		IAT/DLL	
			Scales		Scales		Scales		Scales		Scales	
Run	Depths		Left	Right	Left	Right	Matrix	Left	Right	Matrix	Left	Right
One	TD	CSG	0	150	0.3	-0.1	2.71 g/cc	0.3	-0.1	Lime		2000

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

Toolstring ran as per diagram
Density is presented on a 2.71g/cc Matrix, Neutron is presented on a Limestone Matrix,
Chlorides 3400 ppm
Annular volume computed using 5.5" Casing
Washouts and borehole rugosity affect data quality and repeatability

LCM reported 2 #bbl could cause MEL to show increased separation
More separation shown on Main Pass than RepeatPass

YOUR CREW TODAY: J. Washington, R. Valdez

THANK YOU FOR CHOOSING ALLIED HORIZONTAL WIRELINE. OKLAHOMA CITY. (405) 445-7135.

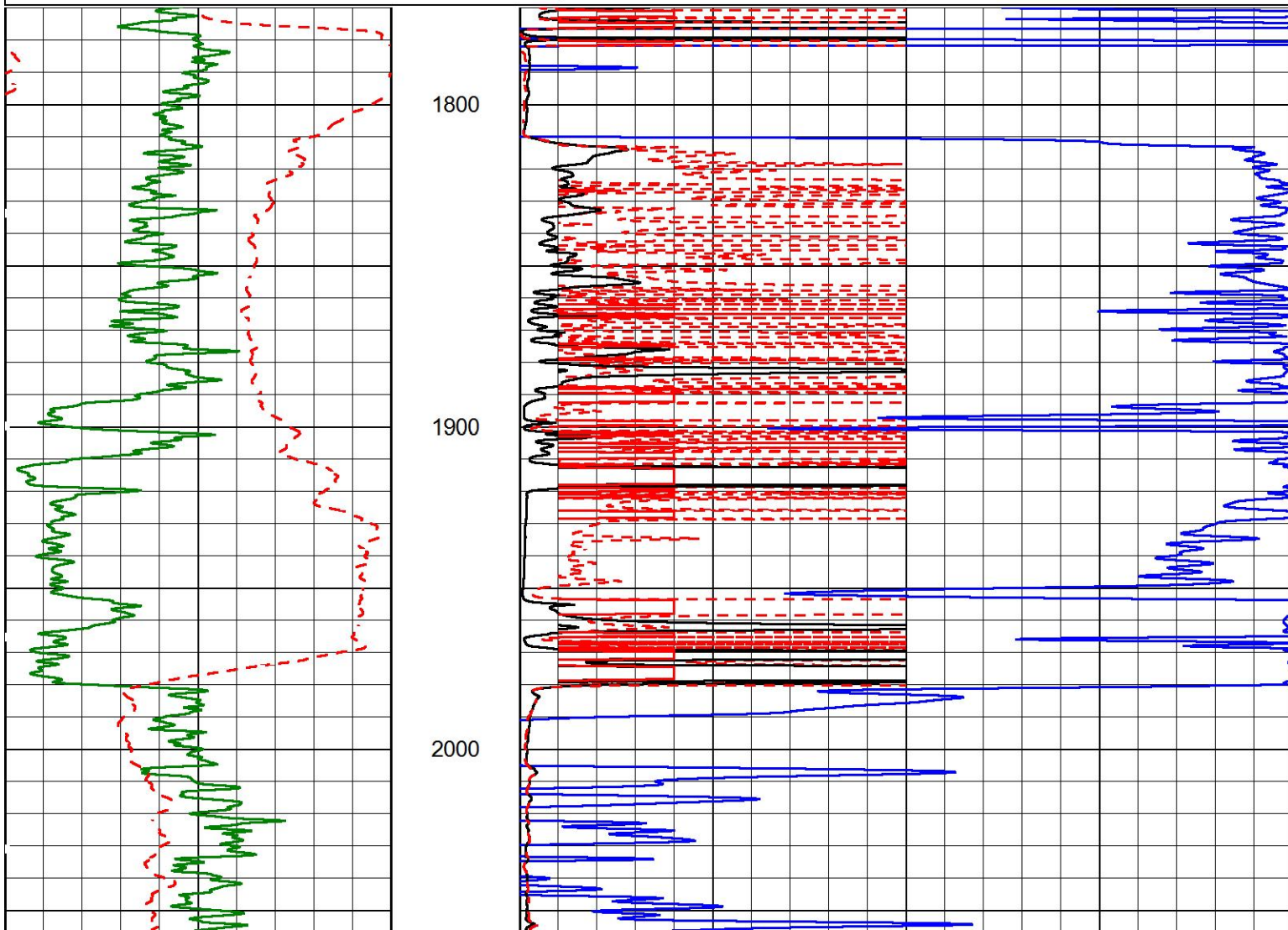


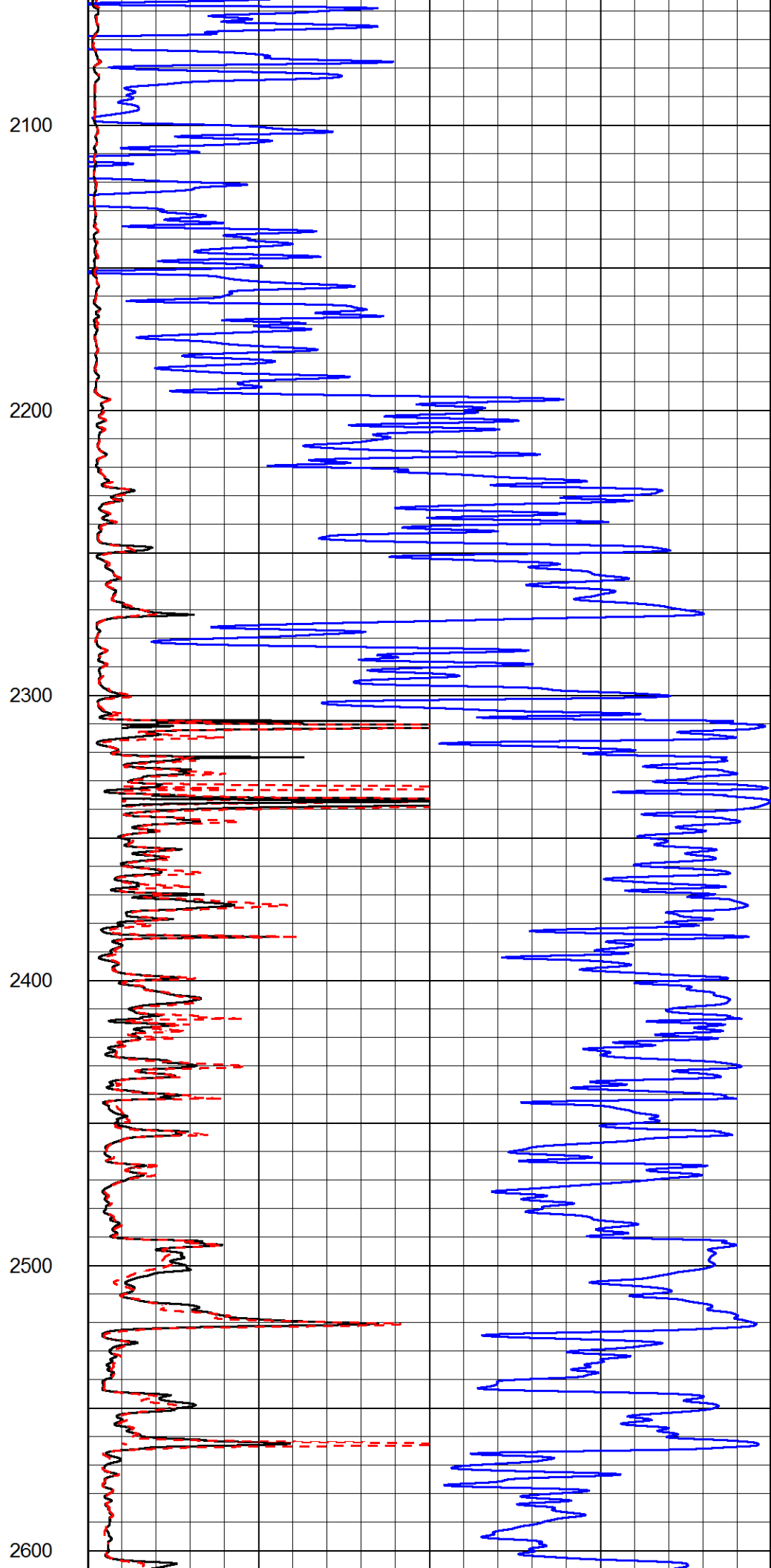
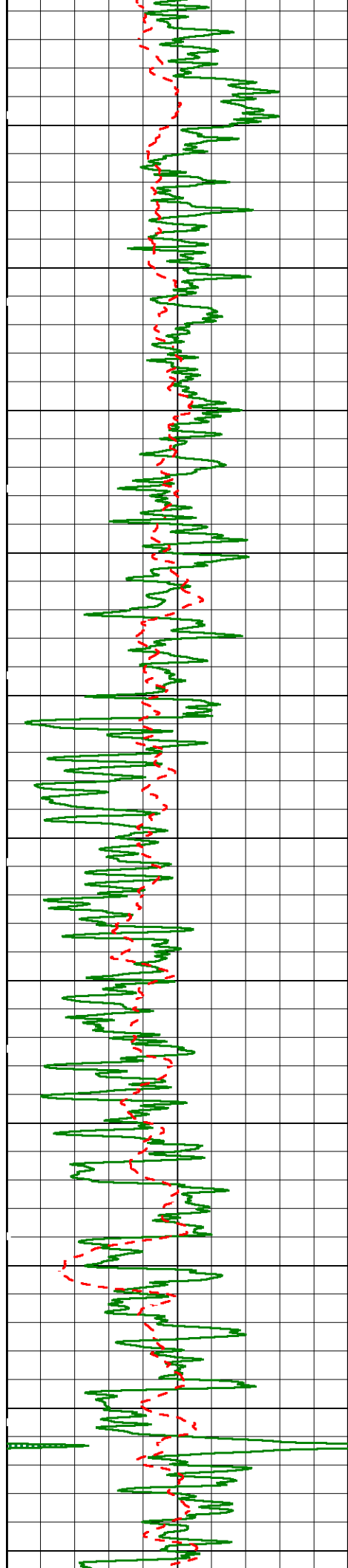
Main Pass

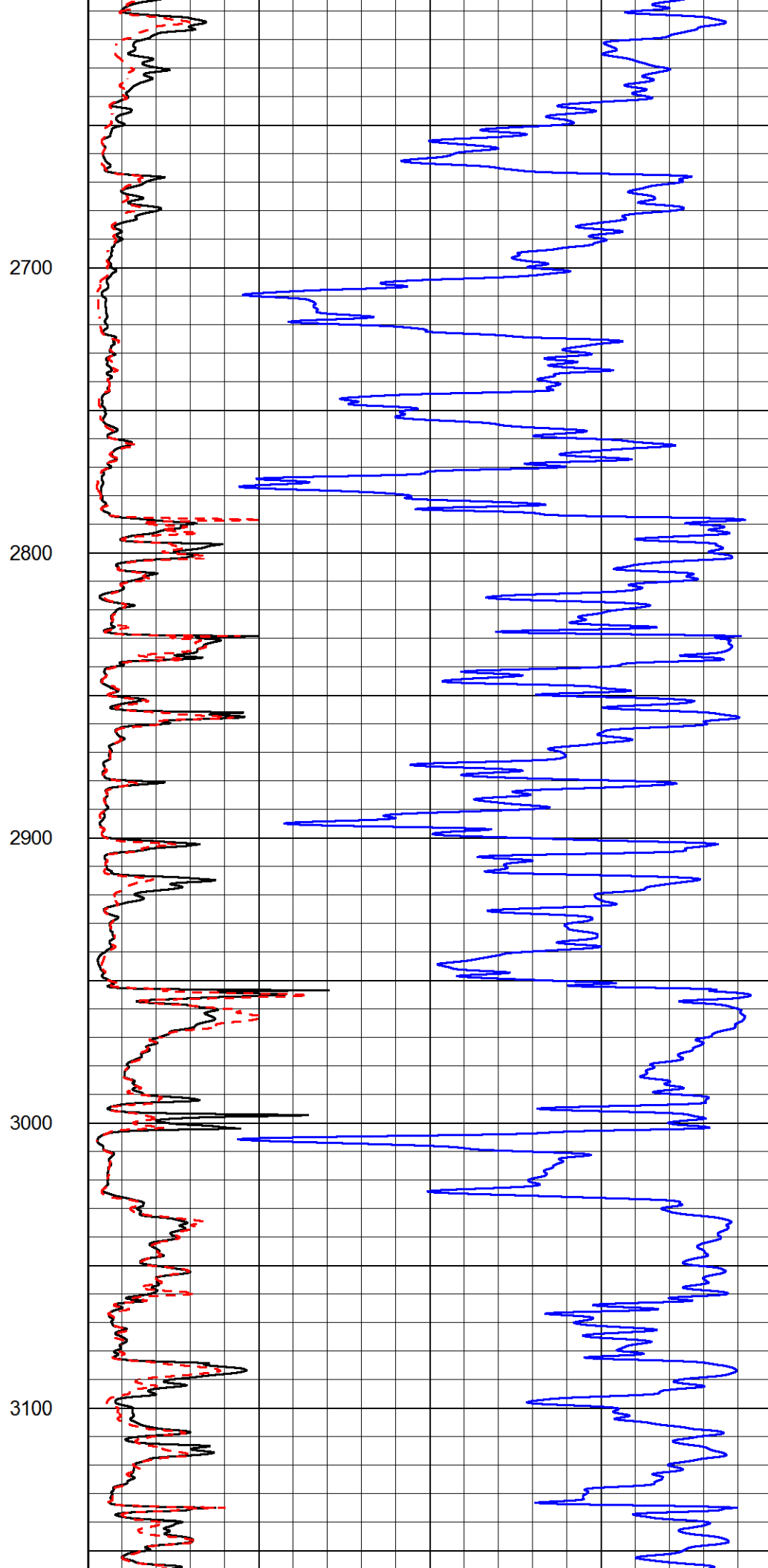
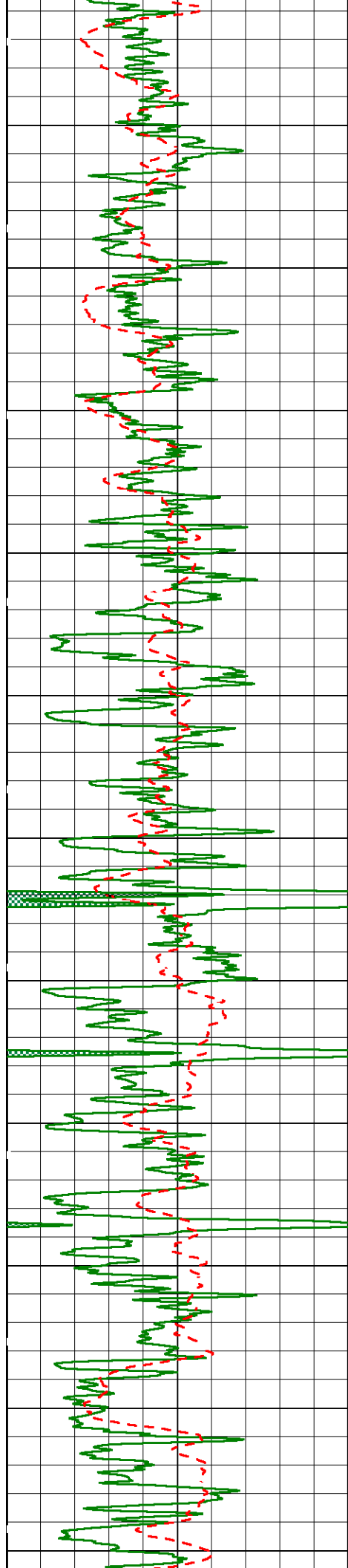
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Dataset Pathname pass5
Presentation Format OKC-AC~1
Dataset Creation Mon Feb 25 12:20:11 2019 by Log Sondex
Charted by Depth in Feet scaled 1:600

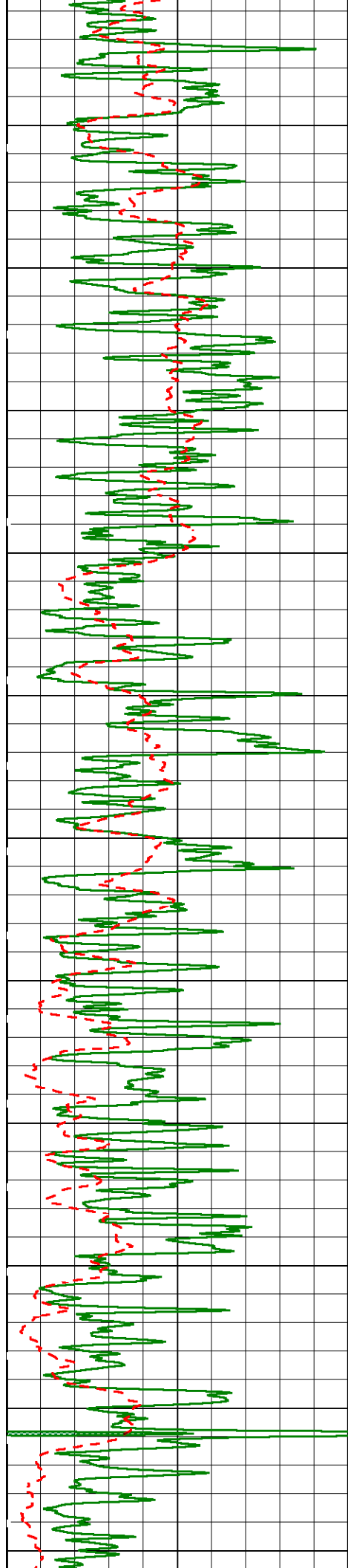
0 Gamma Ray (GAPI) 150
SP (mV)

1000 90" Conductivity (mmho/m) 0
0 Shallow Resistivity (Ohm-m) 50
0 Deep Resistivity (Ohm-m) 50
500 IA20_2 (Ohm-m) 5000
500 IA90_2 (Ohm-m) 5000









3200

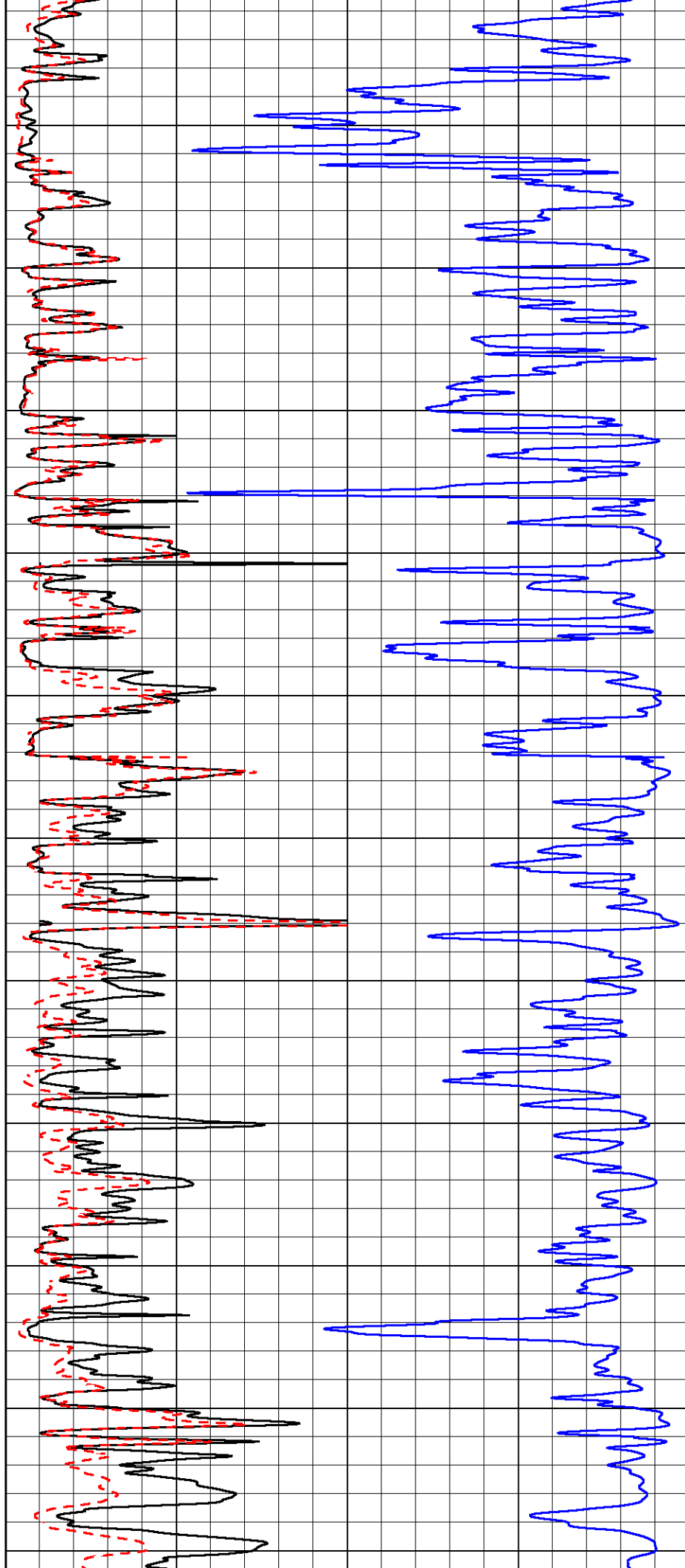
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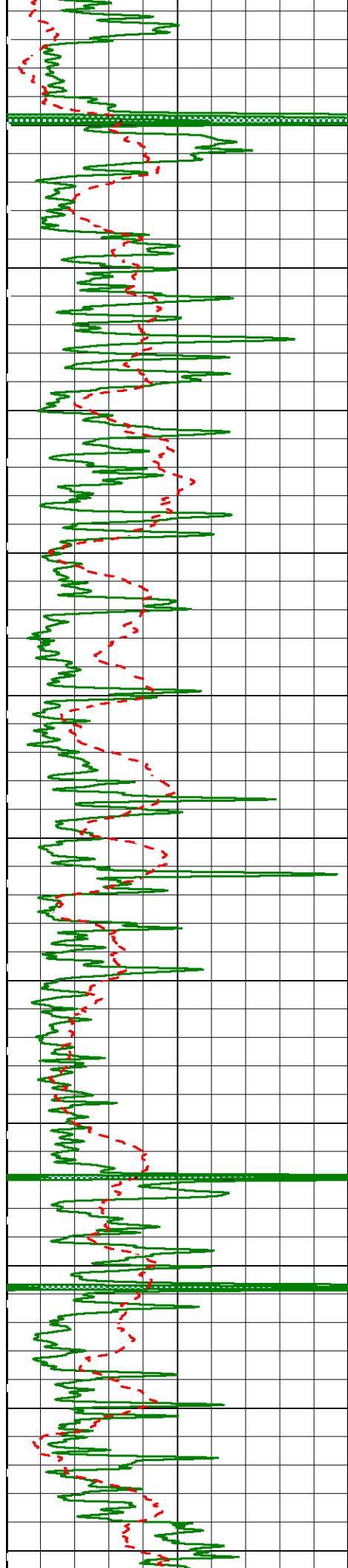
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3500

3600

3700





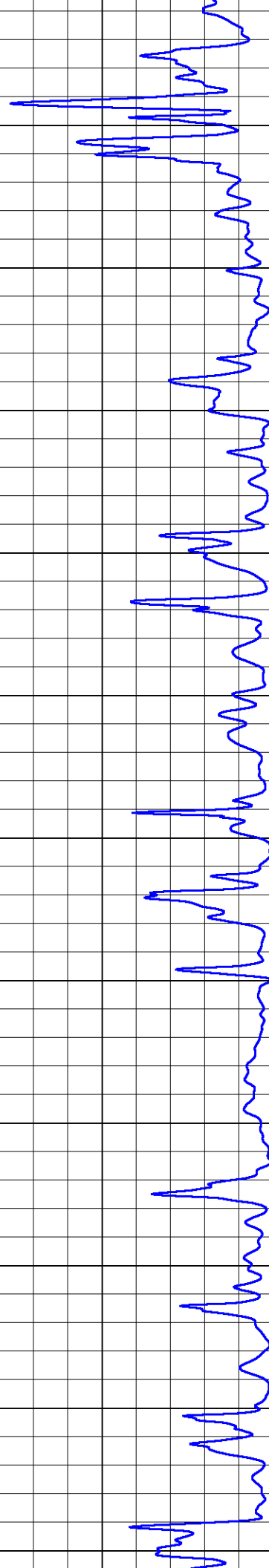
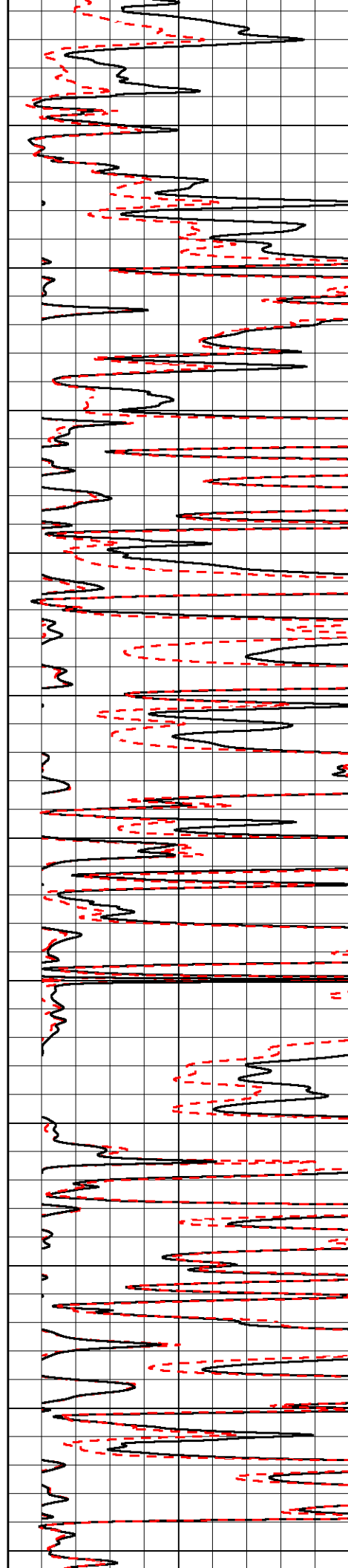
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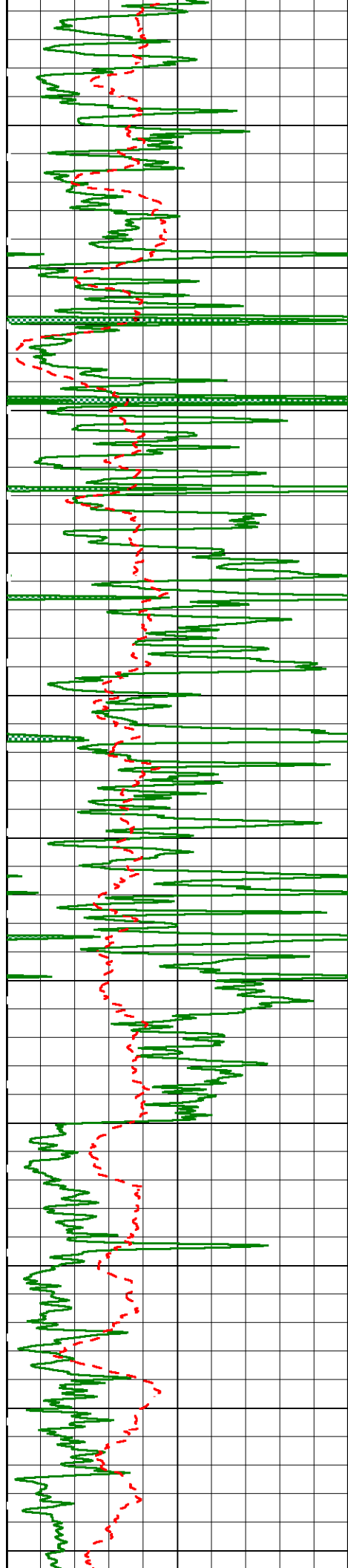
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4000

4100

4200





4300

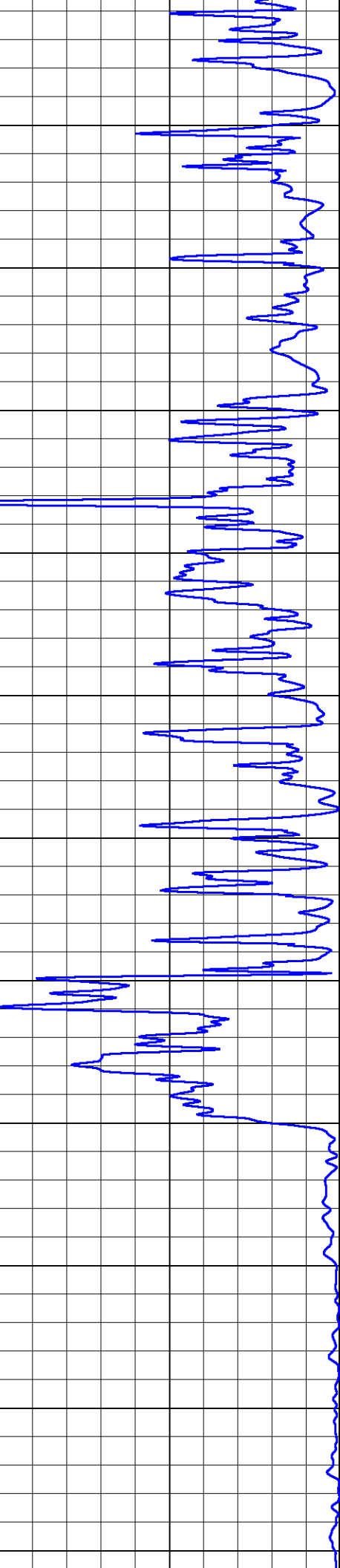
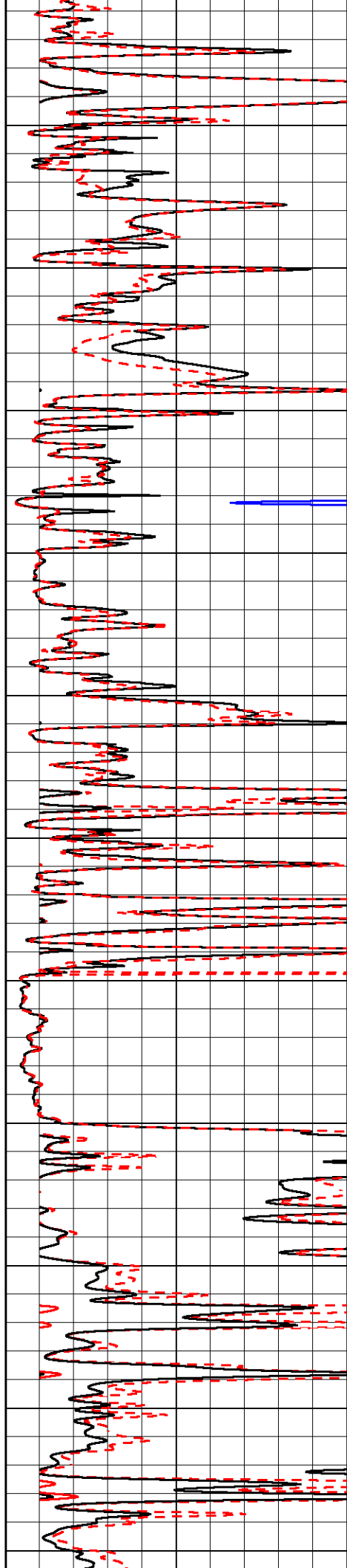
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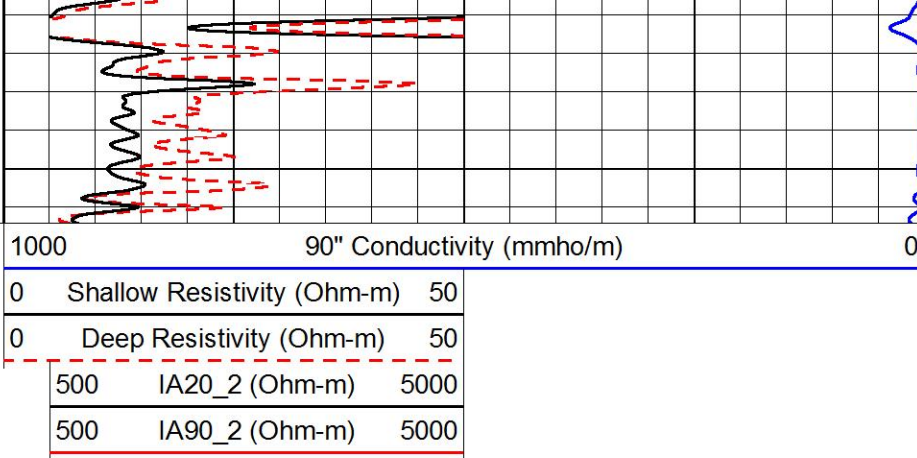
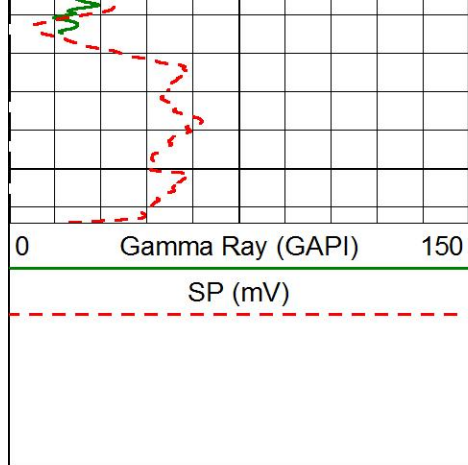
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4700

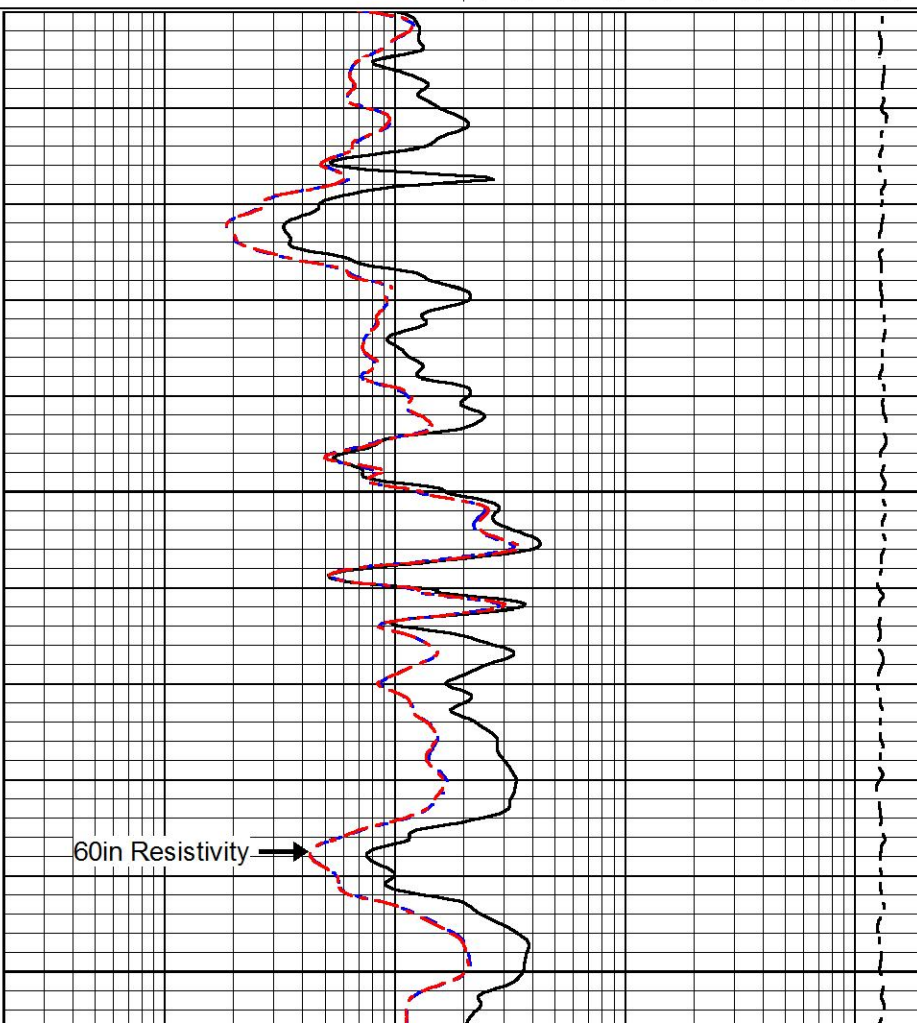
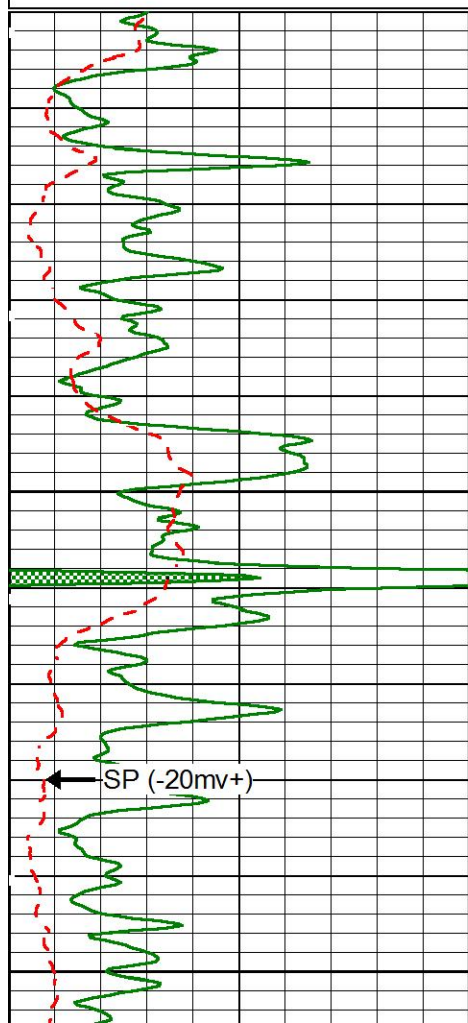
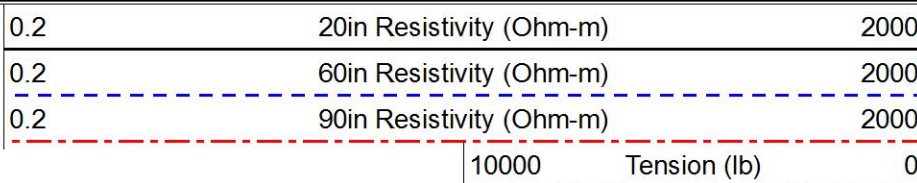
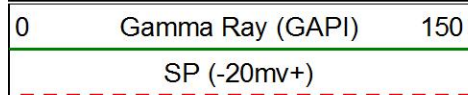
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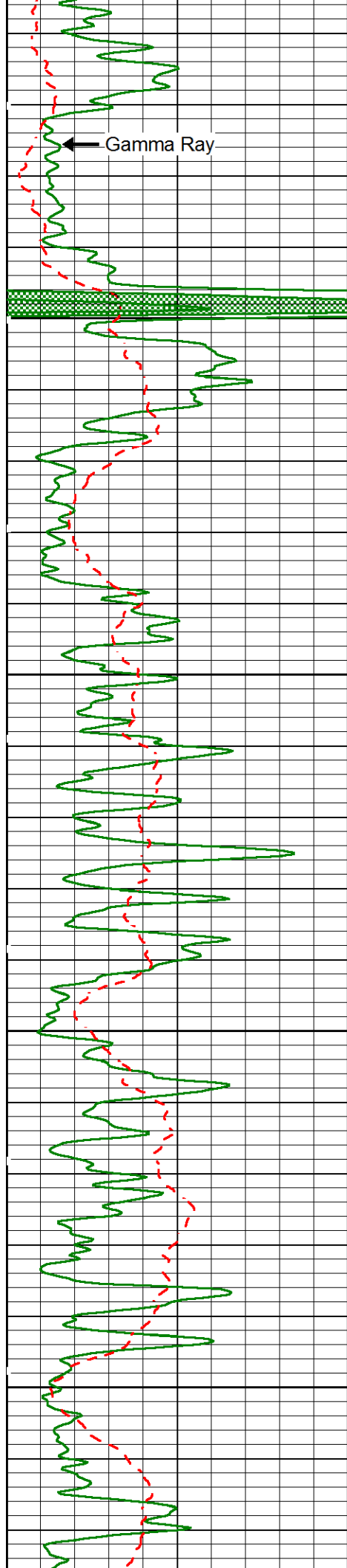




Main Pass

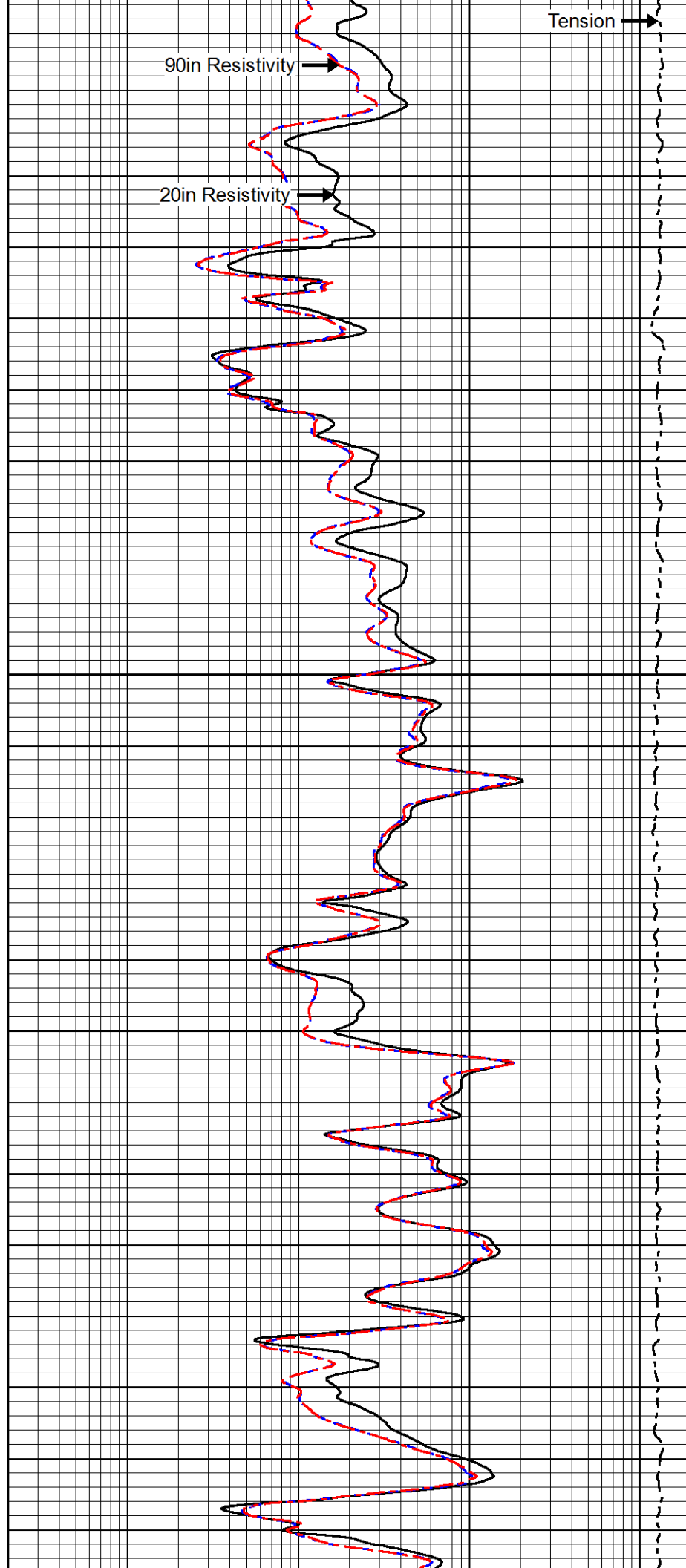
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 Dataset Creation Mon Feb 25 12:20:11 2019 by Log Sondex
 Charted by Depth in Feet scaled 1:240

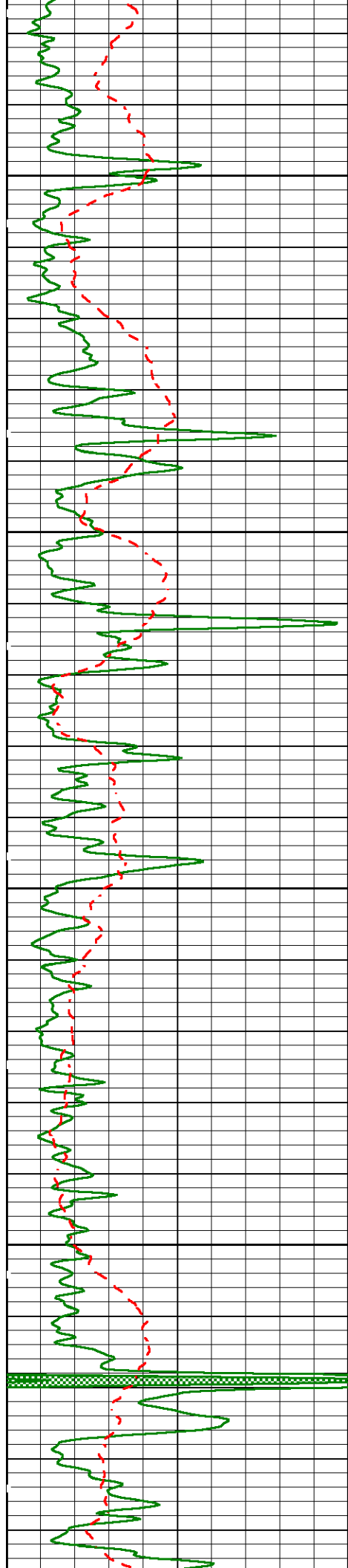




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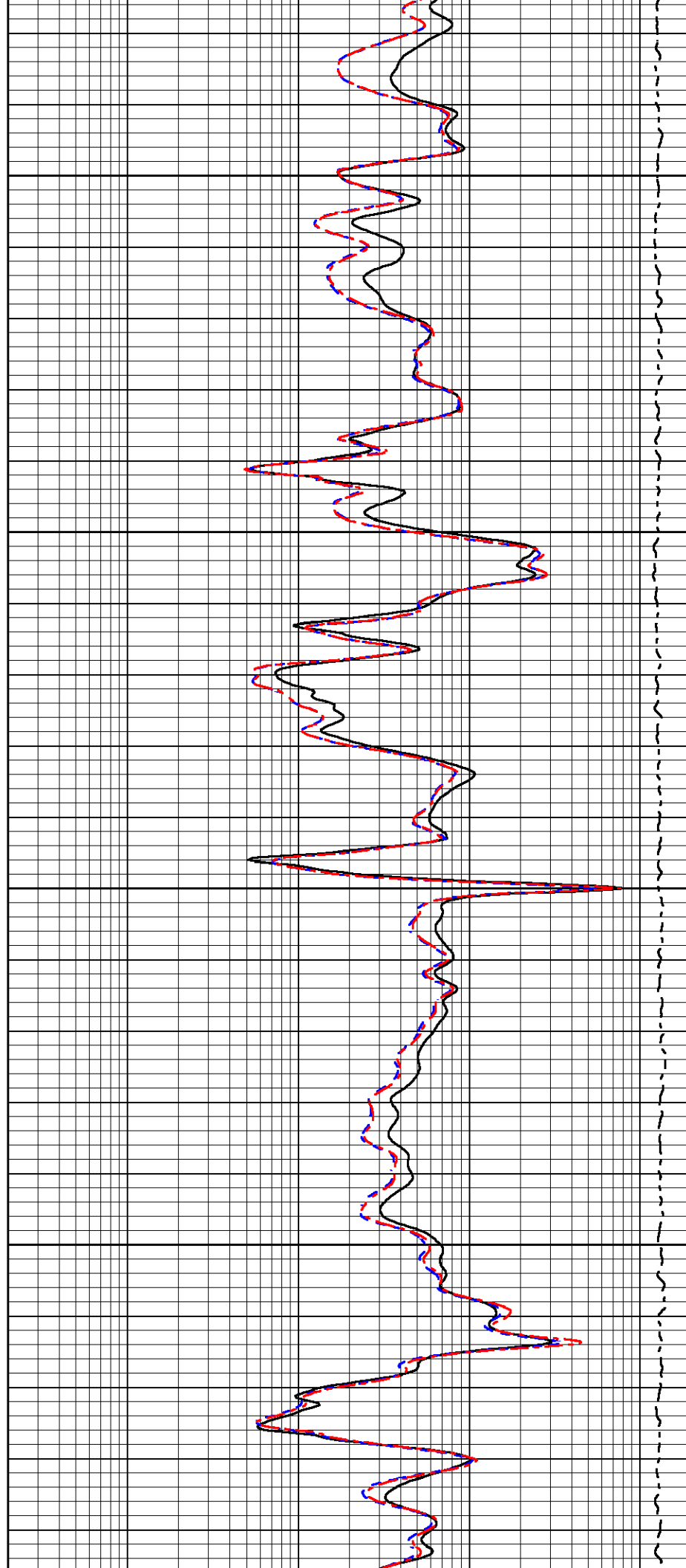
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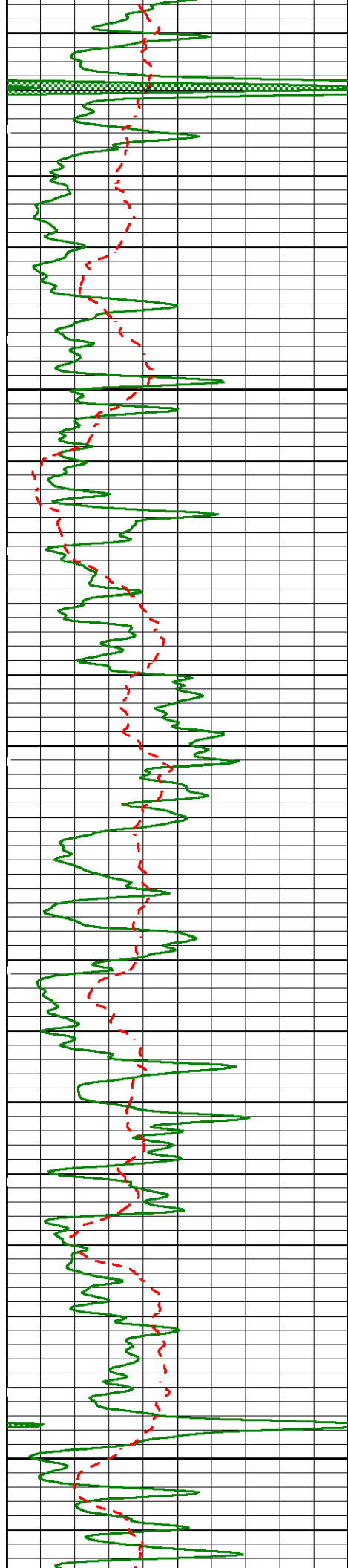




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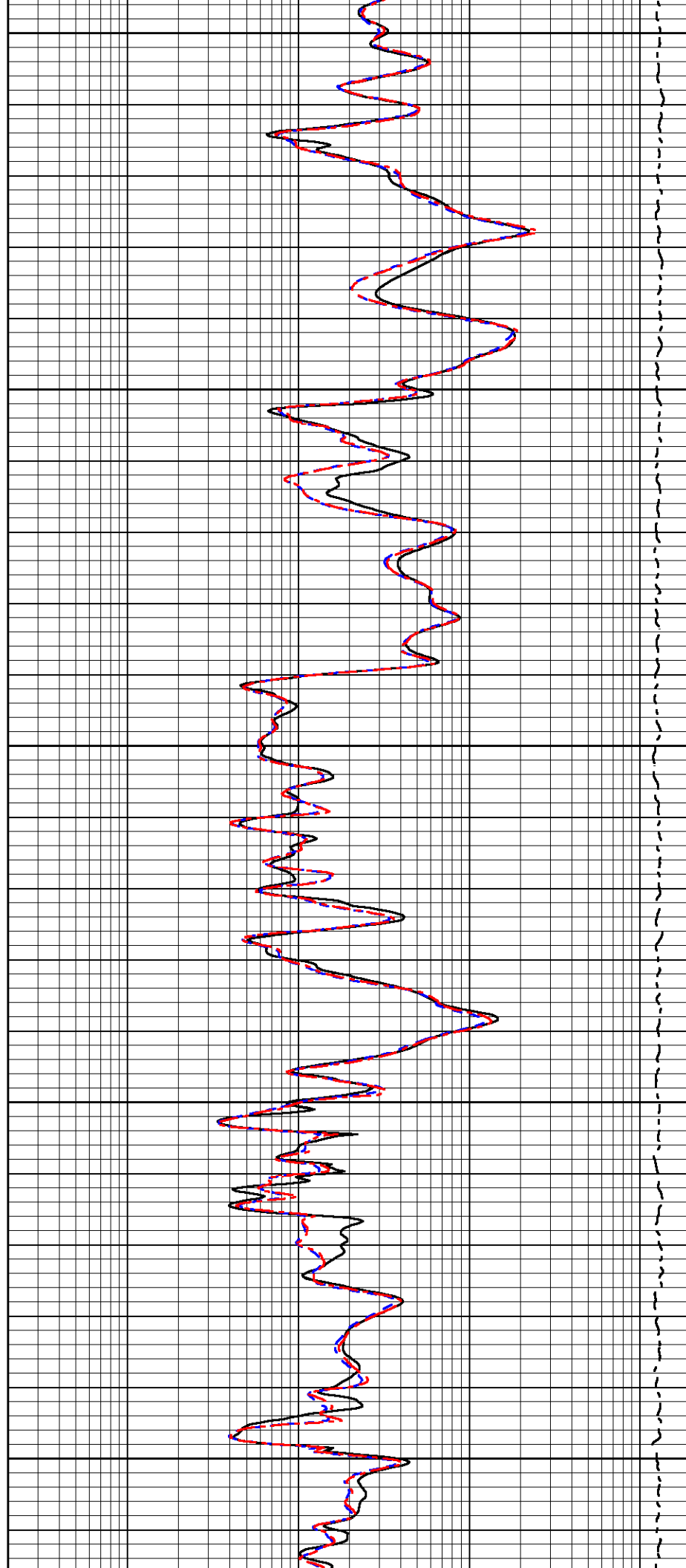
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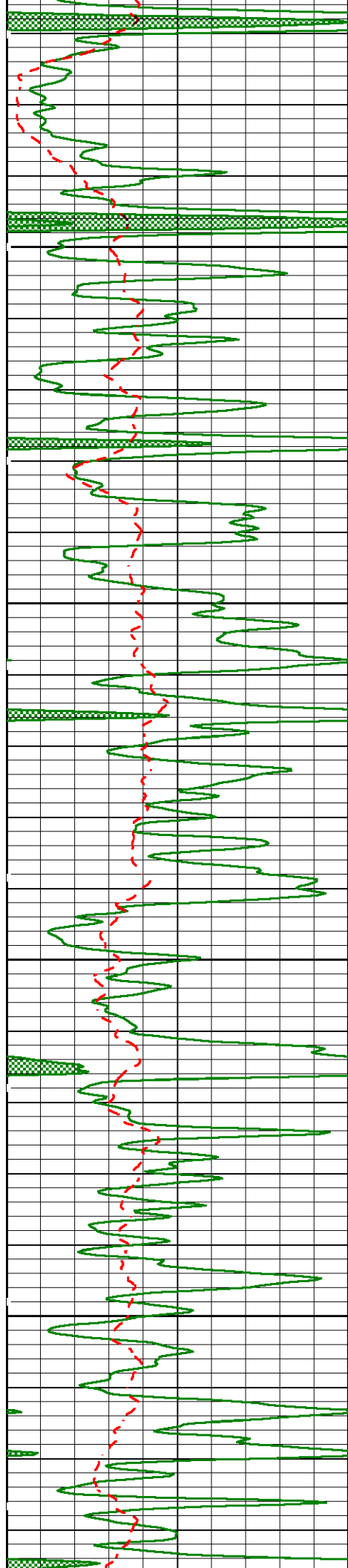




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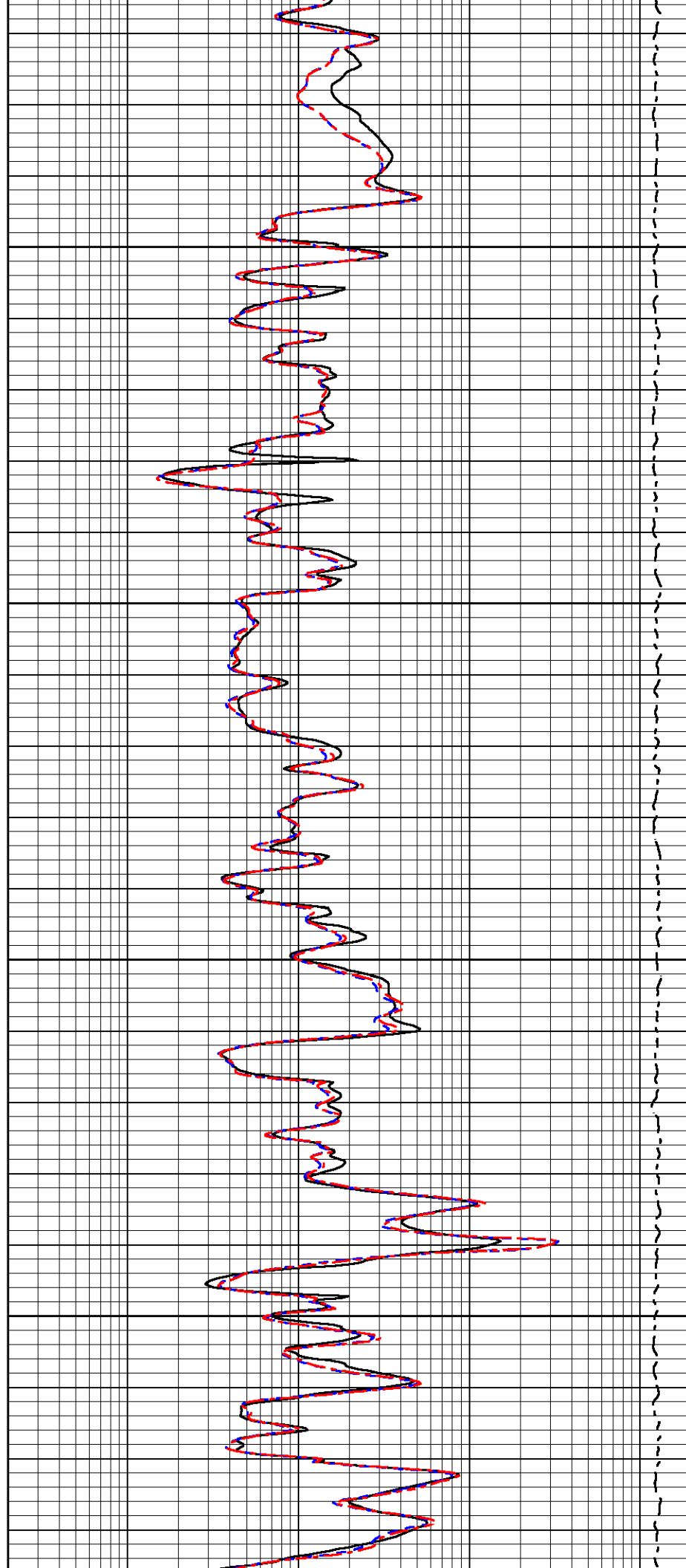
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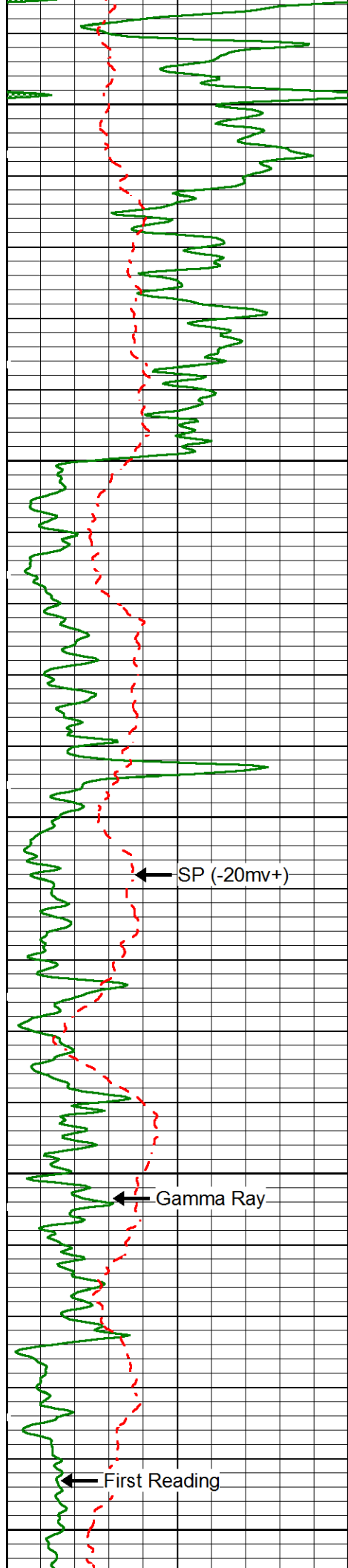




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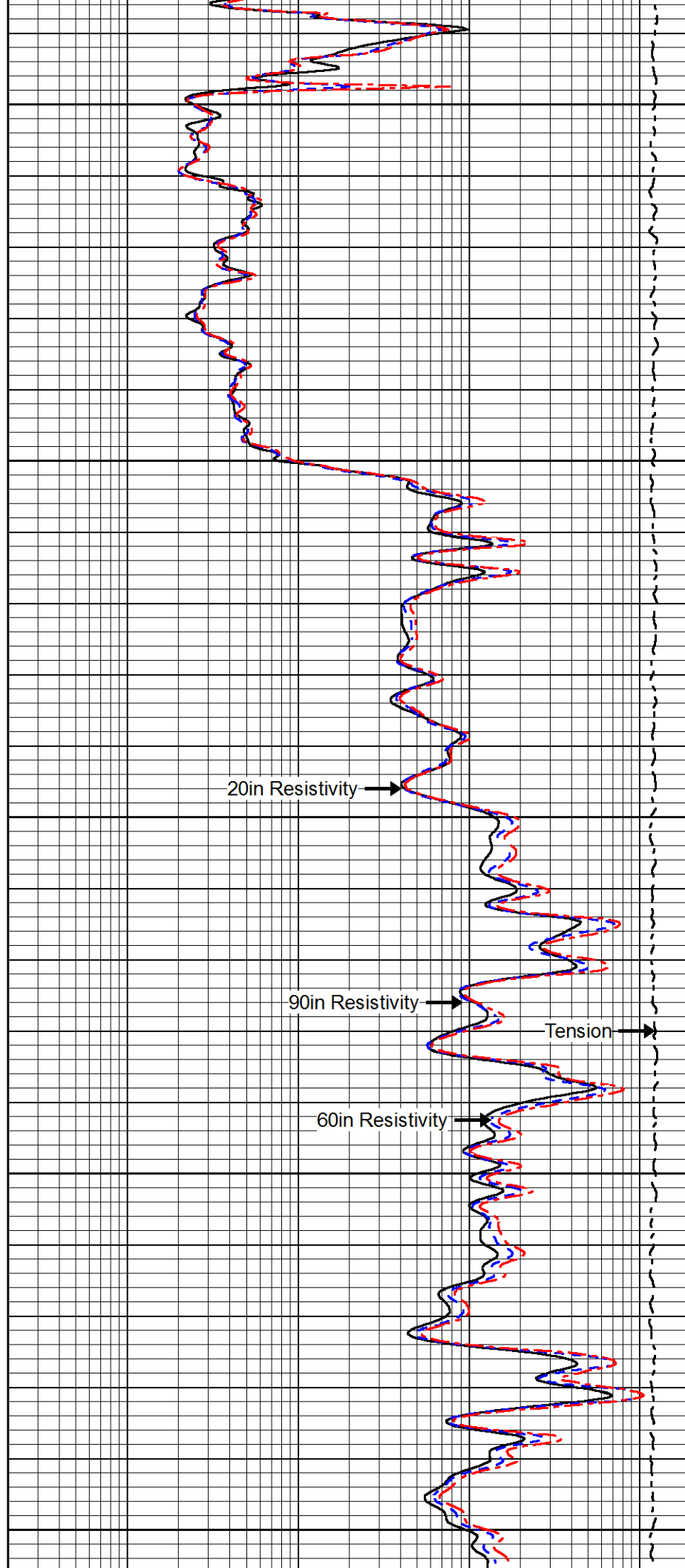


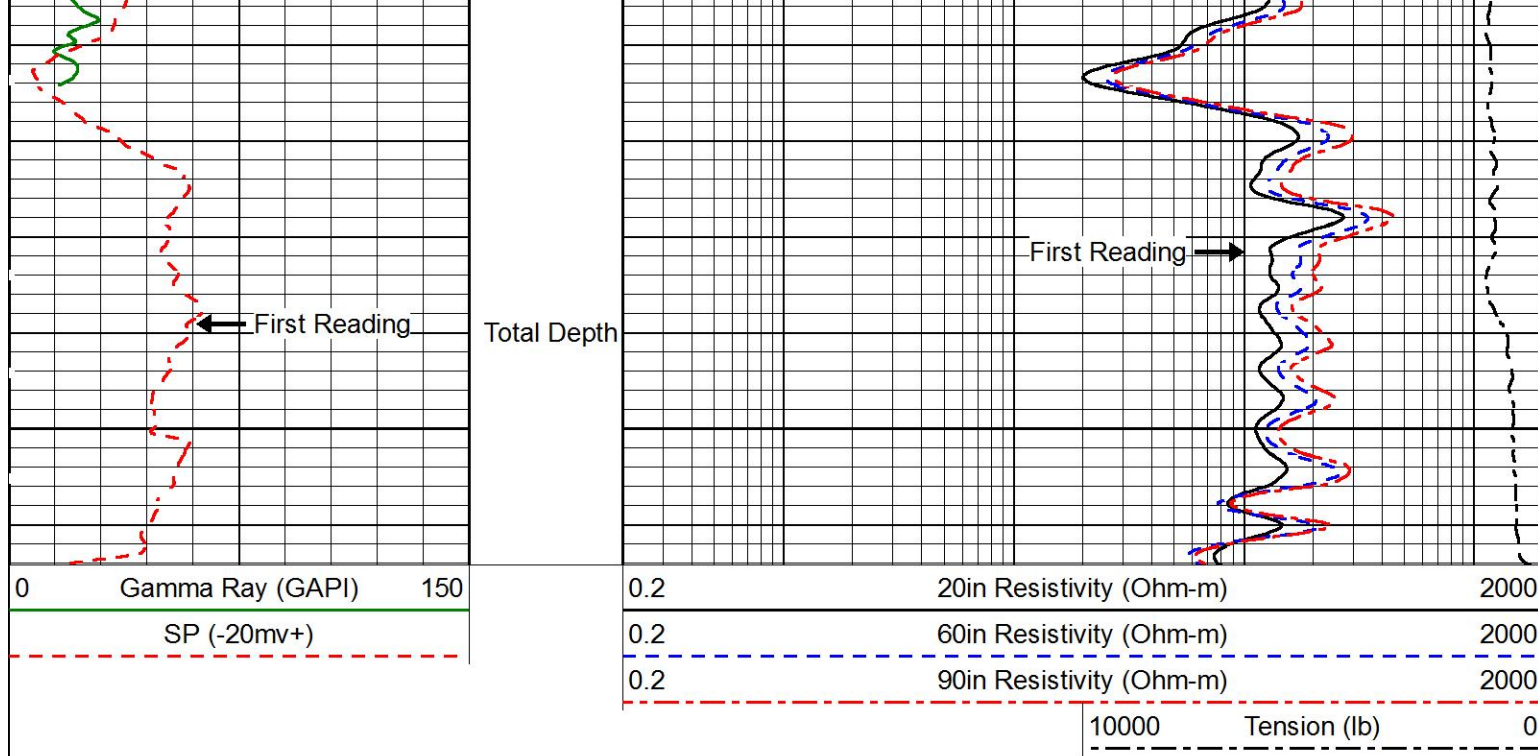


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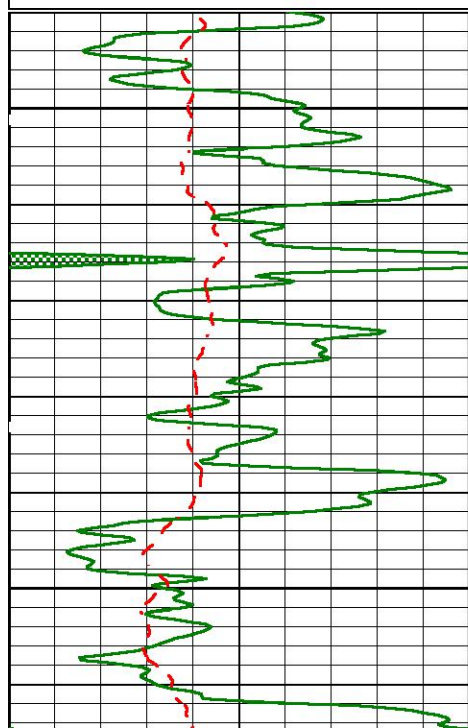
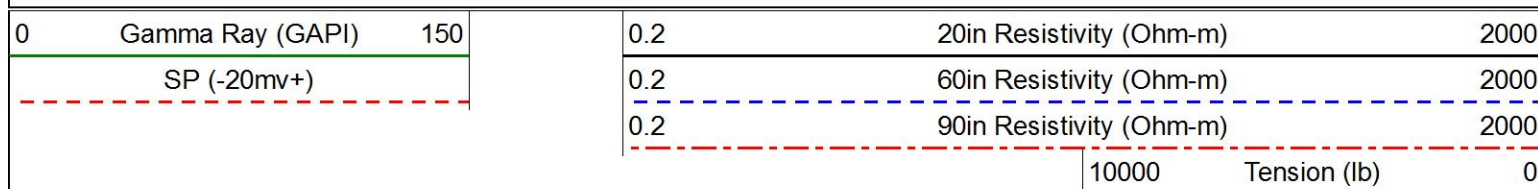
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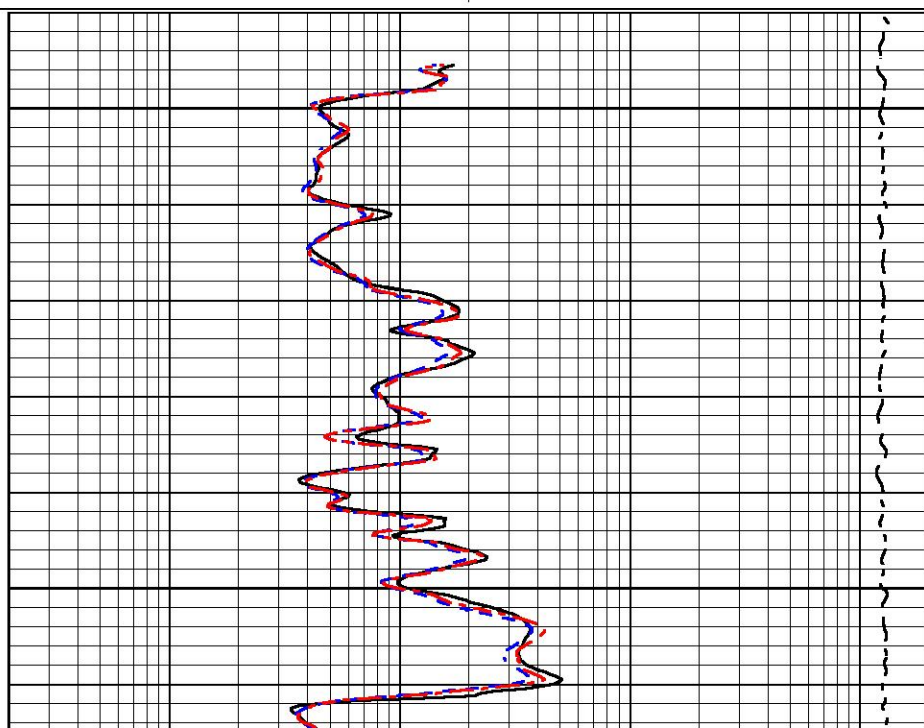


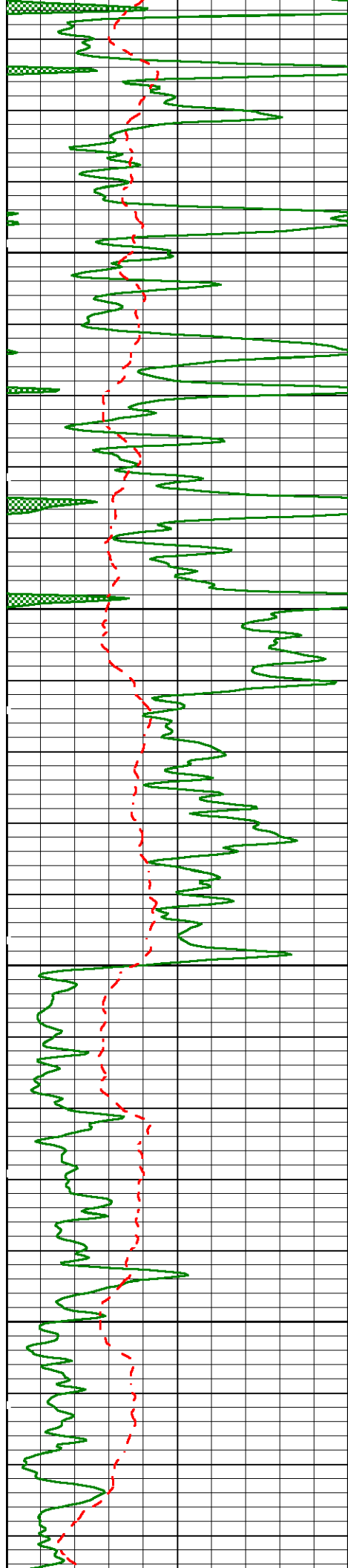
Repeat Pass

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 Dataset Creation Mon Feb 25 11:59:57 2019 by Log Sondex
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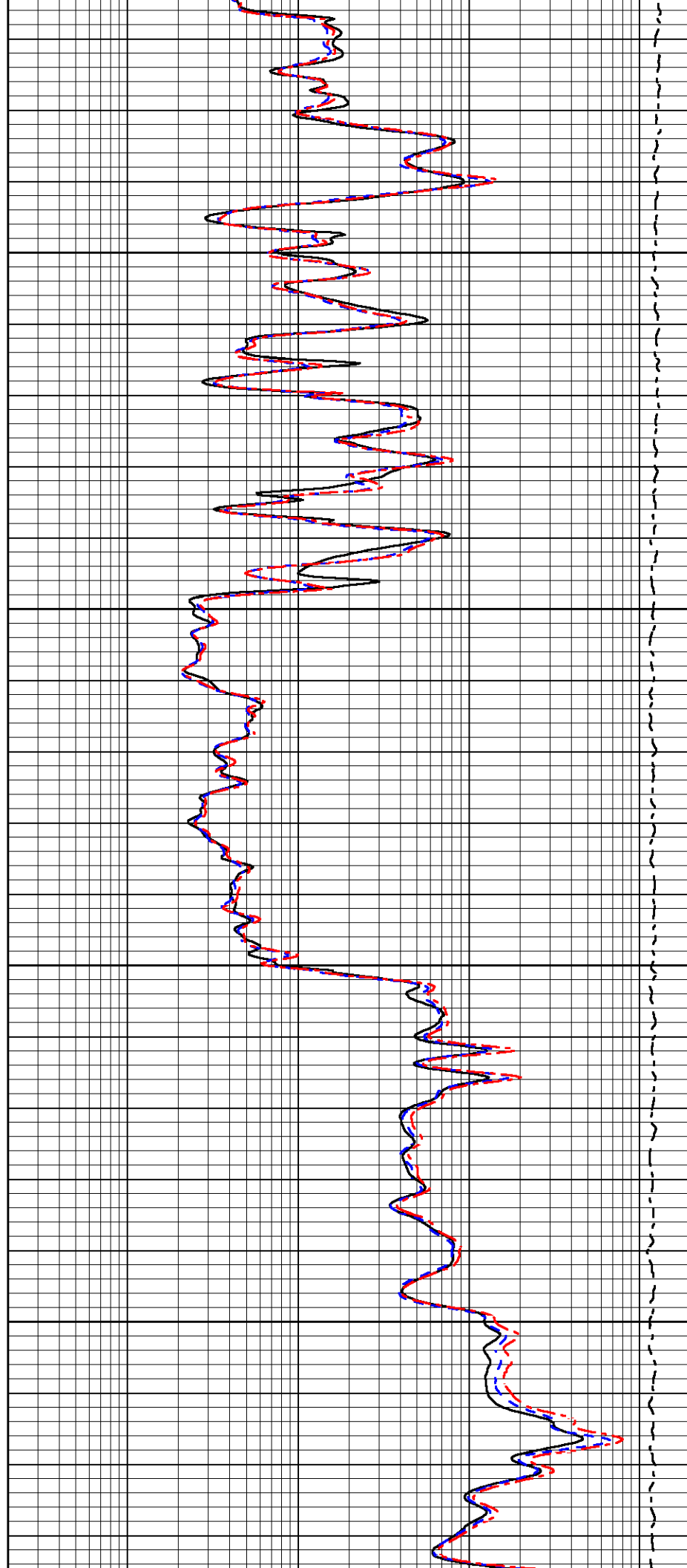
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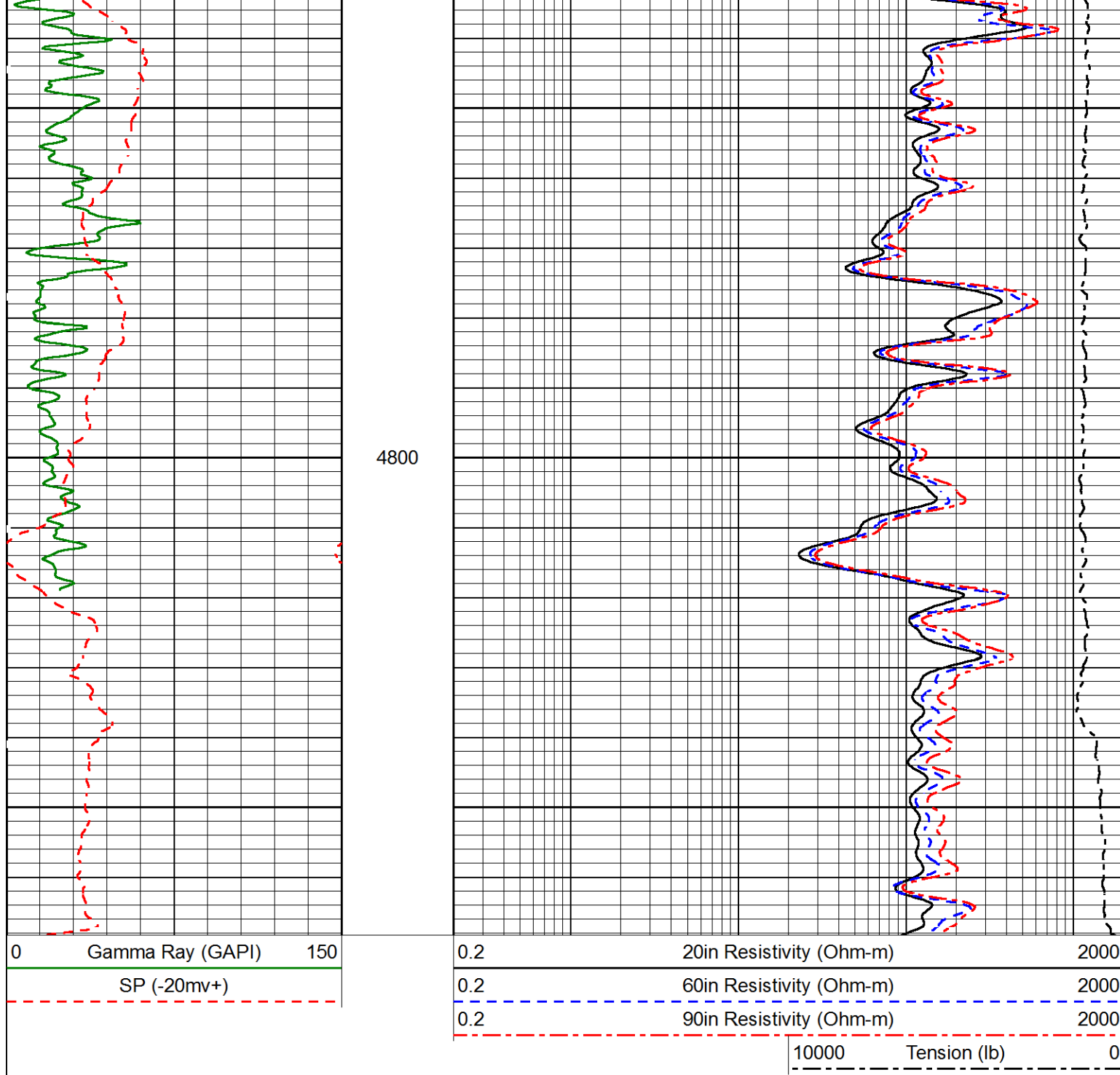




4600

4700





Log Variables

DatabaseC:\Sondex\Sondex Warrior\Data\berexco_bailey_oe_3-27.db

Dataset field/well/run1/pass5/_vars_

Top - 1774.00 ft

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI deg 0	SRFTEMP degF 68	SO in 0.25	DE-CENT Yes	CASED? Yes	CASEWGHT lb/ft 24
NPORSEL Limestone	AIR_HOLE? No	MudWgt lb/gal 9.4	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV 0	CASETHCK in 0	CASEOD in 8.625
PERFS 0	TDEPTH ft 4850	BOTTEMP degF 110	BOREID in 12.25				

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI deg 0	SRFTEMP degF 68	SO in 0.25	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 15.5
NPORSEL Limestone	AIR_HOLE? No	MudWgt lb/gal 9.4	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV 0	CASETHCK in 0	CASEOD in 5.5
PERFS 0	TDEPTH ft 4850	BOTTEMP degF 110	BOREID in 7.875				

Calibration Report

Database File berexco_bailey_oe_3-27.db
Dataset Pathname pass5
Dataset Creation Mon Feb 25 12:20:11 2019 by Log Sondex

Induction Array Tool Calibration Report

Serial Number: B10106
Tool Model: 002

Master Calibration Performed: Tue Nov 28 10:59:51 2018
Temperature: 68.7 degF

Sonde Error:

Array	1	2	3	4	5	6	7	
Real	192.8	-11.9	-39.2	-13.2	-1.7	1.8	6.3	mmho/m
Imaginary	-65.1	-116.4	-28.7	-0.7	-6.9	-21.0	-0.3	mmho/m

Loop Gain:

Array	1	2	3	4	5	6	7	
Loop (real)	537.7	678.5	1295.3	1394.1	1144.8	712.8	404.8	mmho/m
Loop (imaginary)	73.3	92.5	389.8	419.5	344.5	214.5	121.8	mmho/m
Real	751.4	713.1	1269.0	1383.2	1170.0	744.4	431.8	mmho/m
Imaginary	7.4	-22.6	351.2	413.7	341.5	200.9	128.1	mmho/m
Gain (real)	0.963	0.936	0.990	0.998	0.977	0.960	0.951	
Gain (imaginary)	1.012	0.986	1.026	1.012	0.989	0.967	0.948	

Before Survey Verification Performed: Tue Aug 04 09:42:06 2015
Sonde 1 Temperature: 83.1 degF
Sonde 2 Temperature: 79.2 degF
Array 1 Temperature: 81.6 degF

Array	1	2	3	4	5	6	7
TxIR	-0.0	-0.0	0.1	0.1	0.1	0.1	0.1
TxIX	-0.0	-0.0	-0.2	-0.2	-0.2	-0.2	-0.2
Tx Magnitude	0.0	0.0	0.2	0.2	0.2	0.2	0.2
Gain	50.5	64.5	54.5	66.5	80.2	108.5	158.9
RxCR	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
RxCX	0.1	0.1	0.1	0.1	0.2	0.1	0.1
RxC Magnitude	0.1	0.1	0.1	0.1	0.2	0.1	0.1

Tool Module Parameters

Software Version: 8.0.0.4
Borehole Size Source: CALI
Mud Resistivity Source: MUDRES
Mud Resistivity At Surface: N/A
Mud Resistivity Surface Temperature: N/A
Borehole Corrections: Automatic

Minimum Standoff:

0.4 in

Litho Density Tool Calibration Report

Serial Number:

B10112S50129B

Tool Model:

002

Caliper Calibration Performed:

Fri Jan 18 17:23:35 2019

	Diameter		Reading	
Small Ring:	9.000	in	1790.600	cps
Large Ring:	13.000	in	2200.200	cps
Gain:	0.0098			
Offset:	-8.4863			

Master Calibration Performed:

Fri Jan 18 14:46:32 2019

Source Number:

50129B

Medium:

Water

Al Block Density:

2.6027 g/cc

	Background	Al Block	Al Block + Fe	
SS1	704.1	4883.0	4756.3	cps
SS2	1949.6	30593.7	29601.7	cps
SSTOTAL	4605.5	49303.4	47172.0	cps
LITH	93.3	547.6	374.8	cps
LL	183.4	852.0	880.0	cps
LU	528.9	1098.5	1129.5	cps
LS	712.3	1950.4	2009.5	cps
LSTOTAL	1340.9	4848.2	4509.7	cps
SSHV	1584.3	1588.9	1589.5	V
LSHV	1516.3	1520.9	1522.0	V
SSFF	-0.009	0.008	0.002	
LSFF	0.002	-0.009	-0.008	

Before Survey Verification Performed:

Fri Jan 18 12:24:18 2019

After Survey Verification Performed:

Fri Jan 18 12:26:48 2019

	Master Background	Before Survey Background	After Survey Background	
SS1	704.1	729.3	739.0	cps
SS2	1949.6	2097.0	2081.2	cps
SSTOTAL	4605.5	4887.8	4867.8	cps
LITH	93.3	102.0	104.9	cps
LL	183.4	204.5	199.1	cps
LU	528.9	587.0	578.5	cps
LS	712.3	791.5	777.7	cps
LSTOTAL	1340.9	1480.8	1478.2	cps
SSHV	1584.3	1456.7	1456.8	V
LSHV	1516.3	1408.7	1409.0	V
SSFF	-0.009	0.007	0.009	
LSFF	0.002	0.008	-0.001	

Tool Module Parameters

Software Version:

8.0.0.6

Borehole Size Source:

CALI

Pad Type:

2

Compensated Neutron Tool Calibration Report

Serial Number:

10012542

Serial Number:		10012542	
Tool Model:		009	
Master Calibration Performed:		Fri Jan 04 14:52:52 2019	
Source Number:		87624G	
Short Spacing Counts:	6709.01	cps	
Long Spacing Counts:	255.50	cps	
High Voltage:	1342.39	V	
Target Ratio:	27.2000		
Ratio:	26.2583		
K-Factor:	1.0359		
Before Survey Verification Performed:		Fri Jan 04 15:03:09 2019	
After Survey Verification Performed:		Fri Jan 04 15:04:18 2019	
Verifier Number:		6489	
Verifier Values	Master Cal	Before Survey	After Survey
Short Spacing Counts:	256.34	255.21	253.84 cps
Long Spacing Counts:	249.52	244.92	245.49 cps
High Voltage:	1342.40	1342.41	1342.41 V
Ratio:	1.0273	1.0420	1.0340
Tool Module Parameters			
Software Version:		8.0.0.5	
Borehole Size Source:		CALI	
Clip Crossplot Porosity:		YES	
Lithology Identification Parameters:			
	Calcite	Quartz	Dolomite
Uma:	13.77	4.79	9.03 barns/cc
RHOma:	2.71	2.65	2.88 g/cc
Micro Electric Log Calibration Report			
Serial Number:		10022649	
Tool Model:		003	
Caliper Calibration Performed:		Mon Nov 13 12:40:50 2017	
Pad Arm		Backup Arm	
	Radius	Reading	Radius Reading
Small Jig:	9.000 in	1847.200	9.000 in 1677.000
Large Jig:	13.000 in	2371.600	13.000 in 2315.300
Gain:		0.0076	0.0063
Offset:		-5.0900	-1.5092
Pad Calibration			
		Inverse	Normal
Gain:		0.5000	1.0000
Offset:		0.0000	0.0000
Tool Module Parameters			
Software Version:		8.0.0.4	
Gamma Ray Calibration Report			
Serial Number:		10015939	
Tool Model:		001	
Performed:		Mon Nov 13 12:01:40 2017	

Calibrator Value:	156.0	GAPI
Background Reading:	117.4	cps
Calibrator Reading:	567.2	cps
Sensitivity:	0.3468	GAPI/cps
Borehole Fluid Resistivity Calibration Report		
Serial Number:	P004	
Tool Model:	002	
Master Calibration Performed:	Wed May 25 15:17:37 2016	
Resistivity Polynomial Equation:	0.1429x^3 - 0.4495x^2 + 1.2097x - 0.2854	
Temperature Calibration:		
Reference		Reading
71.60	degF	559.80 bits
167.00	degF	659.50 bits
Head Tension Unit Calibration Report		
Serial Number:	00001	
Tool Model:	011	
Performed:	Tue Nov 29 12:33:39 2016	
Point #	Reference	Reading
1	-19894.000 lb	8957.860 cps
2	-15010.000 lb	13965.100 cps
3	-9998.000 lb	19076.100 cps
4	-5007.000 lb	24133.000 cps
5	-1009.000 lb	28232.100 cps
6	1017.000 lb	30185.400 cps
7	5040.000 lb	34439.700 cps
8	9970.000 lb	39346.900 cps
9	14955.000 lb	44466.000 cps
10	19770.000 lb	49397.800 cps

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
HTEN	53.95		CHD-001 (000004) Cable Head	2.19	3.38	35.00
			XTU-008 (C10067) Crossover Ultrawire Toolbus to Ultralink	2.08	3.38	47.00
			HTU-011 (00001) Head Tension Unit	2.18	3.38	55.00
BFR	50.31		BFR-002 (P004) Borehole Fluid Resistivity	4.39	3.38	94.00
GR	47.56		GRT-001 (10015939) Gamma Ray Tool	3.22	3.38	69.00
MEL	37.55		MEL-003 (10022649) Micro Electric Log	9.17	3.38	190.00

CNLSC CNSSC	25.59		CEN-001 (C10025) Inline OH Springbow Centraliser	4.27	3.38	66.00
	25.09		KJT-001 (10002141) Knuckle Joint	2.86	3.38	72.00
			CNL-009 (10012542) Compensated Neutron Logging Tool	5.28	3.38	100.00
LDT	15.44		LDT-002 (B10112S50129B) Litho Density Tool	9.75	4.50	310.00
IAT	8.44		Standoff-Rubber Rubber Fin Standoff	1.08	4.88	3.00
			IAT-002 (B10106) Induction Array Tool	13.22	3.88	196.00
SP	0.43		Short-1 (Shorty) Short Hole Finder	0.38	3.88	6.00
Dataset: berexco_bailey_oe_3-27.db: field/well/run1/pass5 Total length: 58.99 ft Total weight: 1248.00 lb O.D.: 6.88 in						

	Company	Berexco, LLC.
	Well	Bailey OE #3-27
	Field	Amazon East Ditch
	County	Finney
	State	Kansas