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DUAL INDUCTION LOG

Company HARTMAN OIL COMPANY, INC.
Well HADLEY NO.1 TWIN
Field TRICO
County TREGO
State KANSAS

Location: API # : 15-195-23069-00-00
2260' FSL & 760' FEL
SEC 3 TWP 11S RGE 21W

Other Services
CNL/CDL
MEL

Permanent Datum GROUND LEVEL Elevation 2080'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2091'
D.F. N/A
G.L. 2080'

Date	9/8/2018			
Run Number	ONE			
Depth Driller	3760'			
Depth Logger	3756'			
Bottom Logged Interval	3755'			
Top Log Interval	250'			
Casing Driller	8.625" @ 273'			
Casing Logger	274'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	6600			
Density / Viscosity	9.4 58			
pH / Fluid Loss	10.0 8.0			
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	.75 @ 71			
Rmf @ Meas. Temp	.56 @ 71			
Rmc @ Meas. Temp	1.01 @ 71			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	.47 @ 114			
Operating Rig Time	4 HOURS			
Max Rec. Temp. F	114 DEG/F			
Equipment Number	108			
Location	HAYS			
Recorded By	J. HENRICKSON			
Witnessed By	KITT NOAH			

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Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

RIGA EXIT I 70
NORTH TO B ROAD, 1 EAST, 1/2 NORTH, WEST INTO

Log Measured From: KELLY BUSHING 11 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: J. HENRICKSON	Primary Witness: KITT NOAH
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

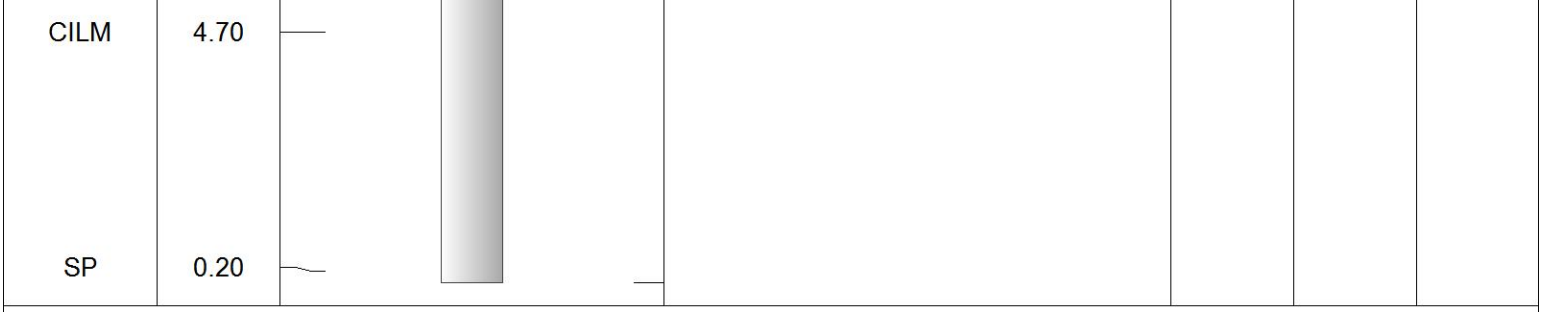
DatabaseC:\ProgramData\Warrior\Data\hartman_hadley_twin_1.db
Dataset field/well/stack/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	114	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	22	-400	60	Off	3756

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			GR-M&W (89-M&W)	3.00	3.50	50.00
GR	33.00					
CNLSC	29.90		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	29.15					
			CDL-M&W (126-186)	8.50	4.00	250.00
LSD	20.85					
DCAL	20.83					
SSD	20.35					
RLL3	15.80					
RLL3F	15.79					
			DIL-M&W (PSI 988)	18.50	3.50	220.00
CILD	8.00					



Dataset:	hartman_hadley_twin_1.db: field/well/stack/pass3.1
Total length:	35.50 ft
Total weight:	620.00 lb
O.D.:	4.00 in

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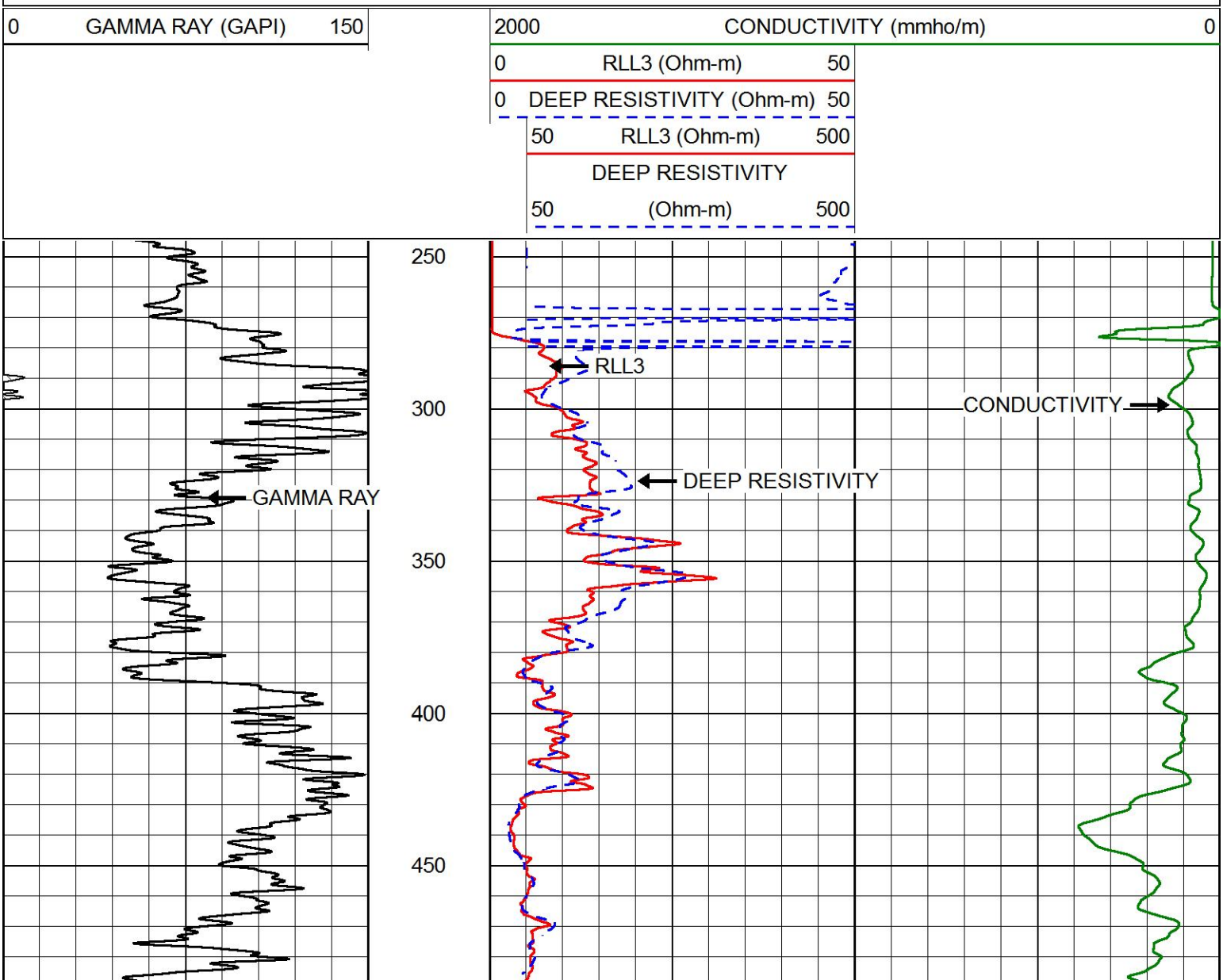
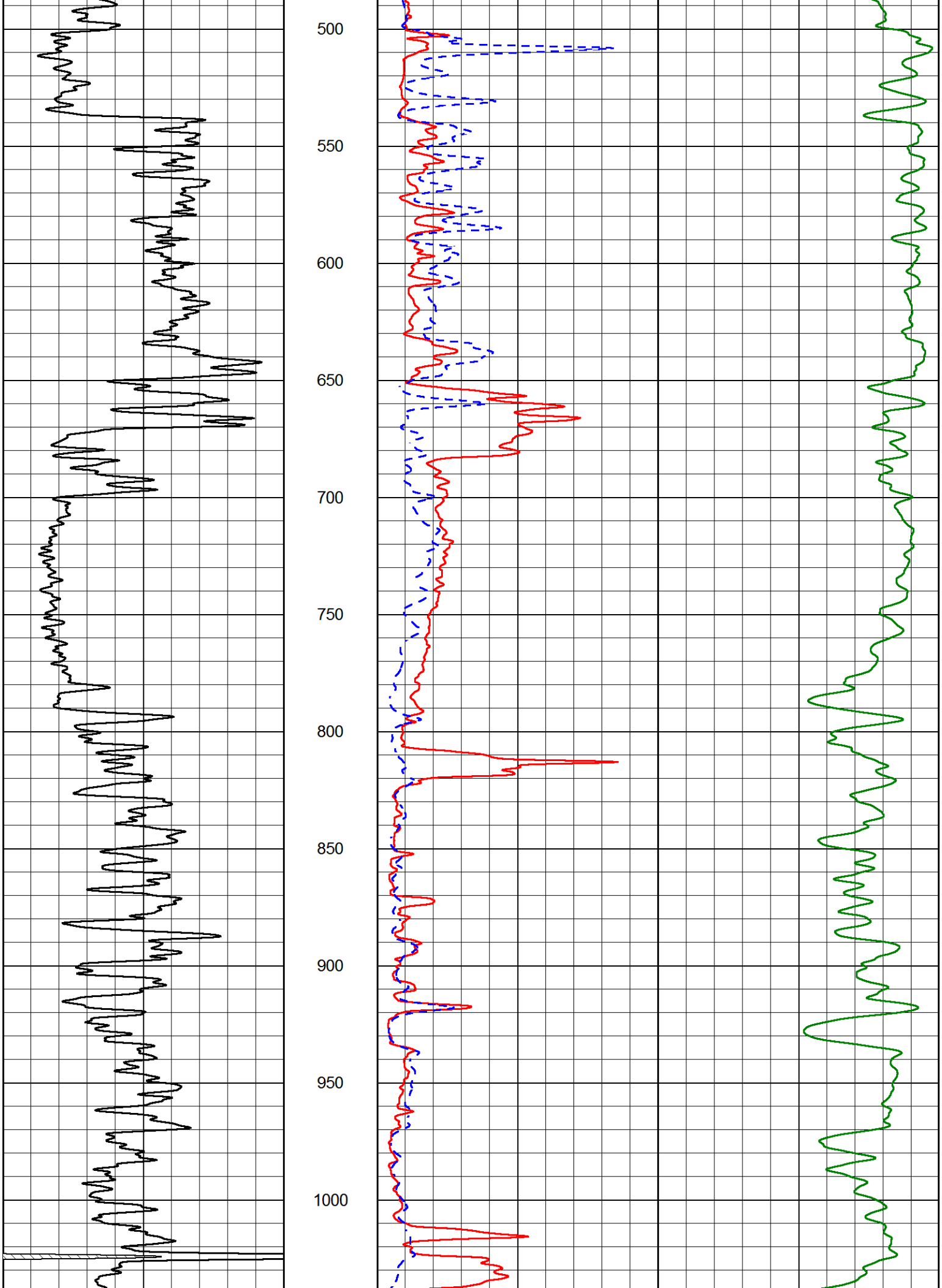
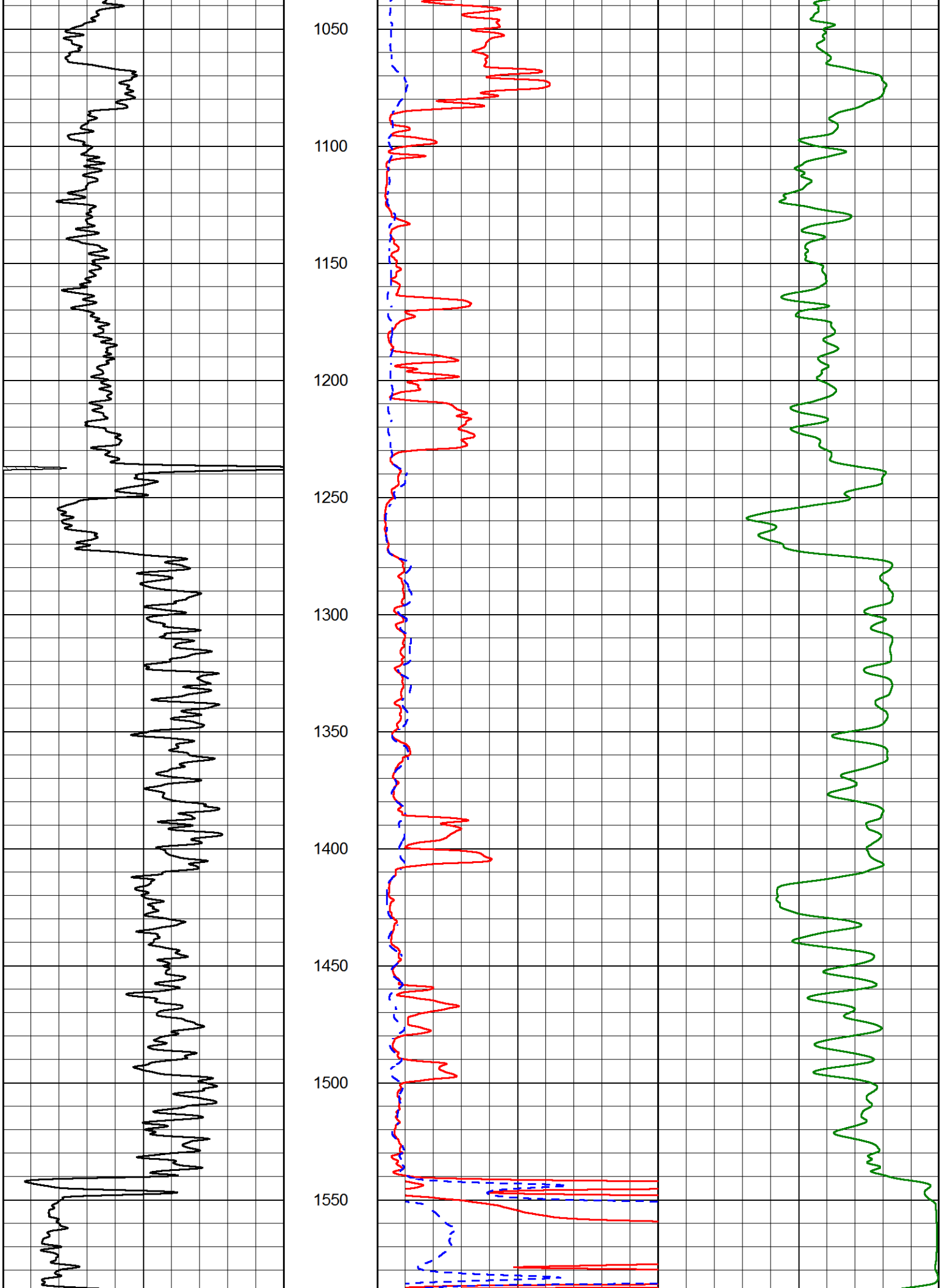
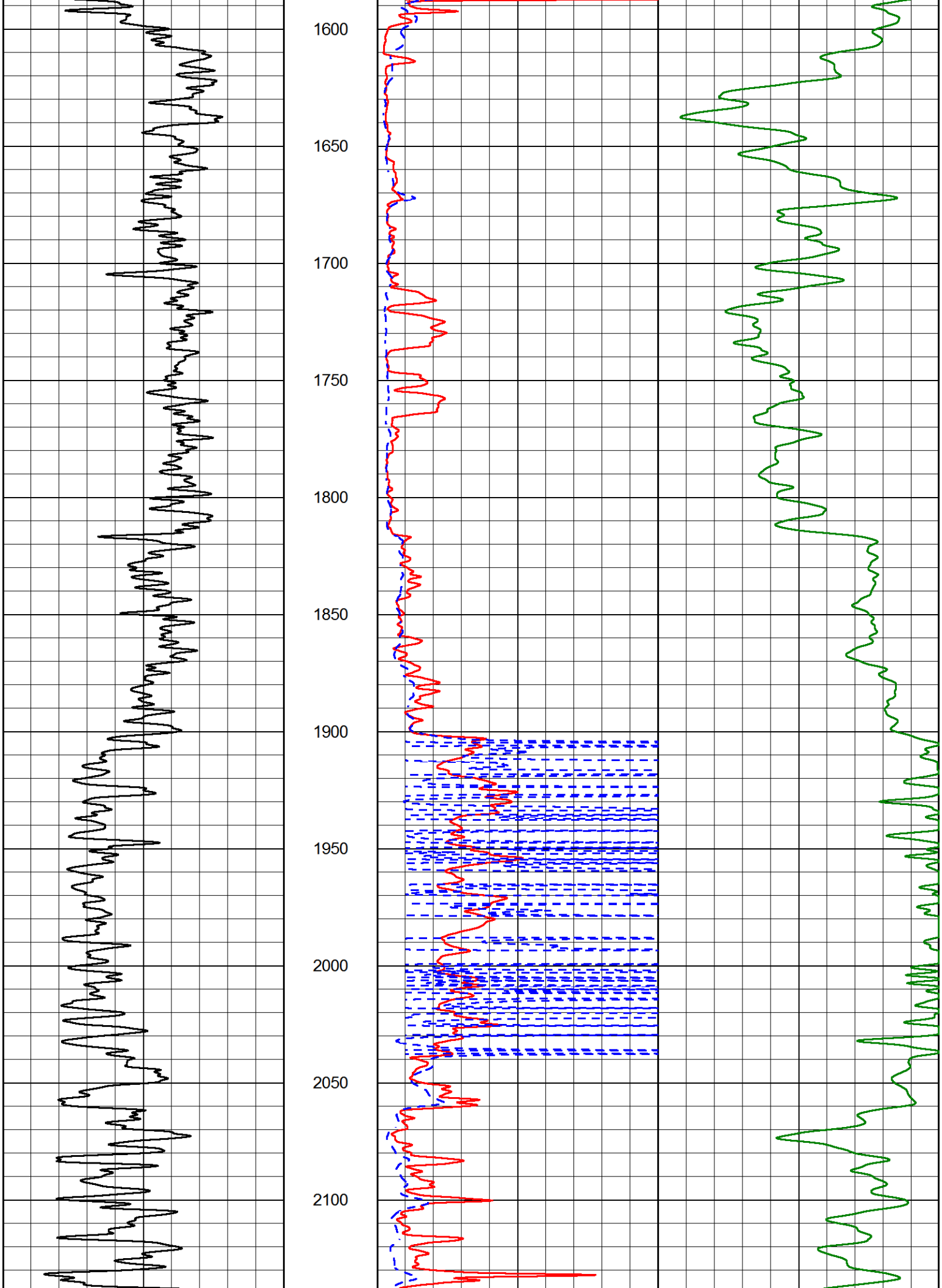
MAIN PASS

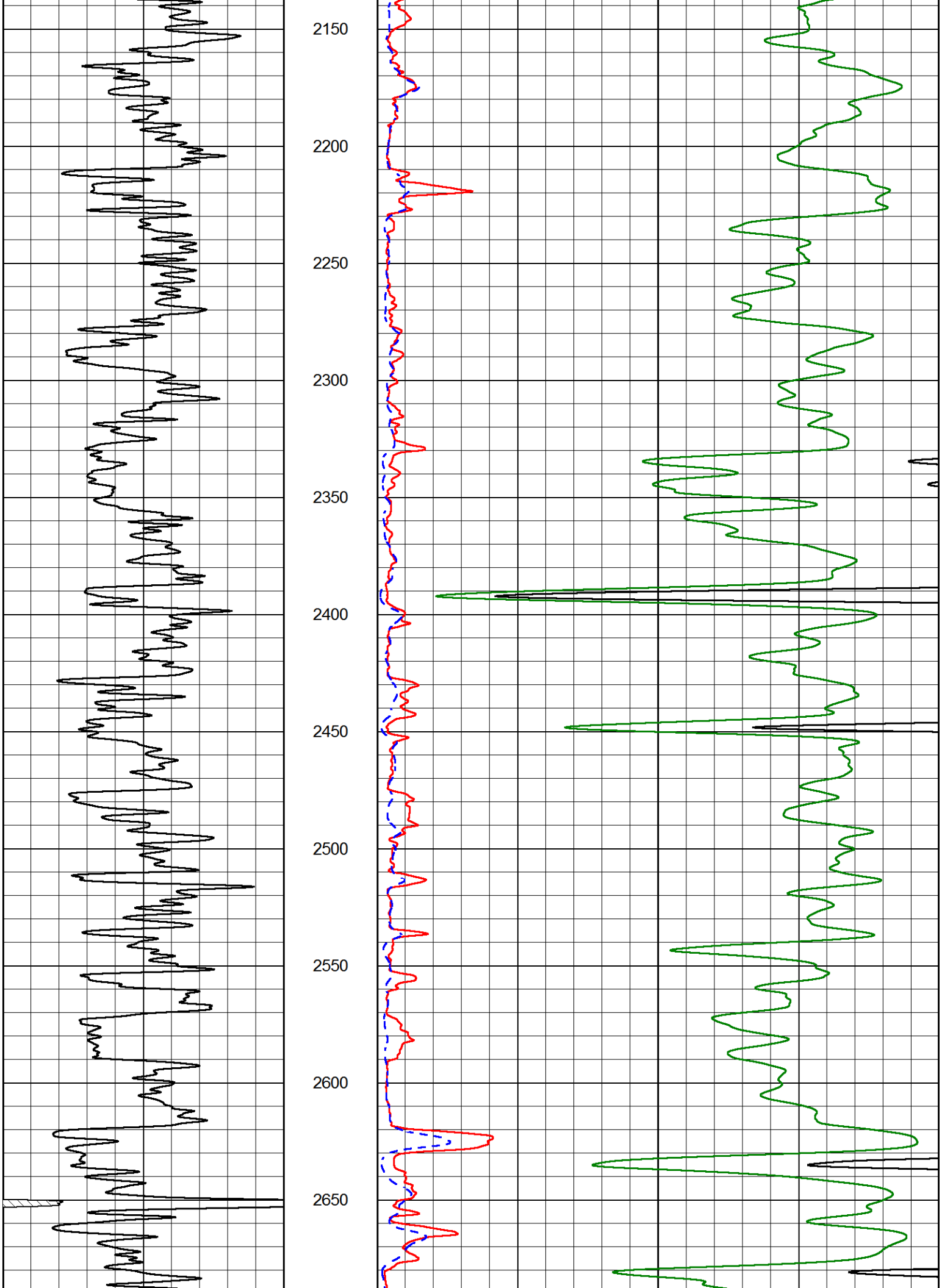
Database File	hartman_hadley_twin_1.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil2in
Dataset Creation	Sat Sep 08 02:52:28 2018
Charted by	Depth in Feet scaled 1:600

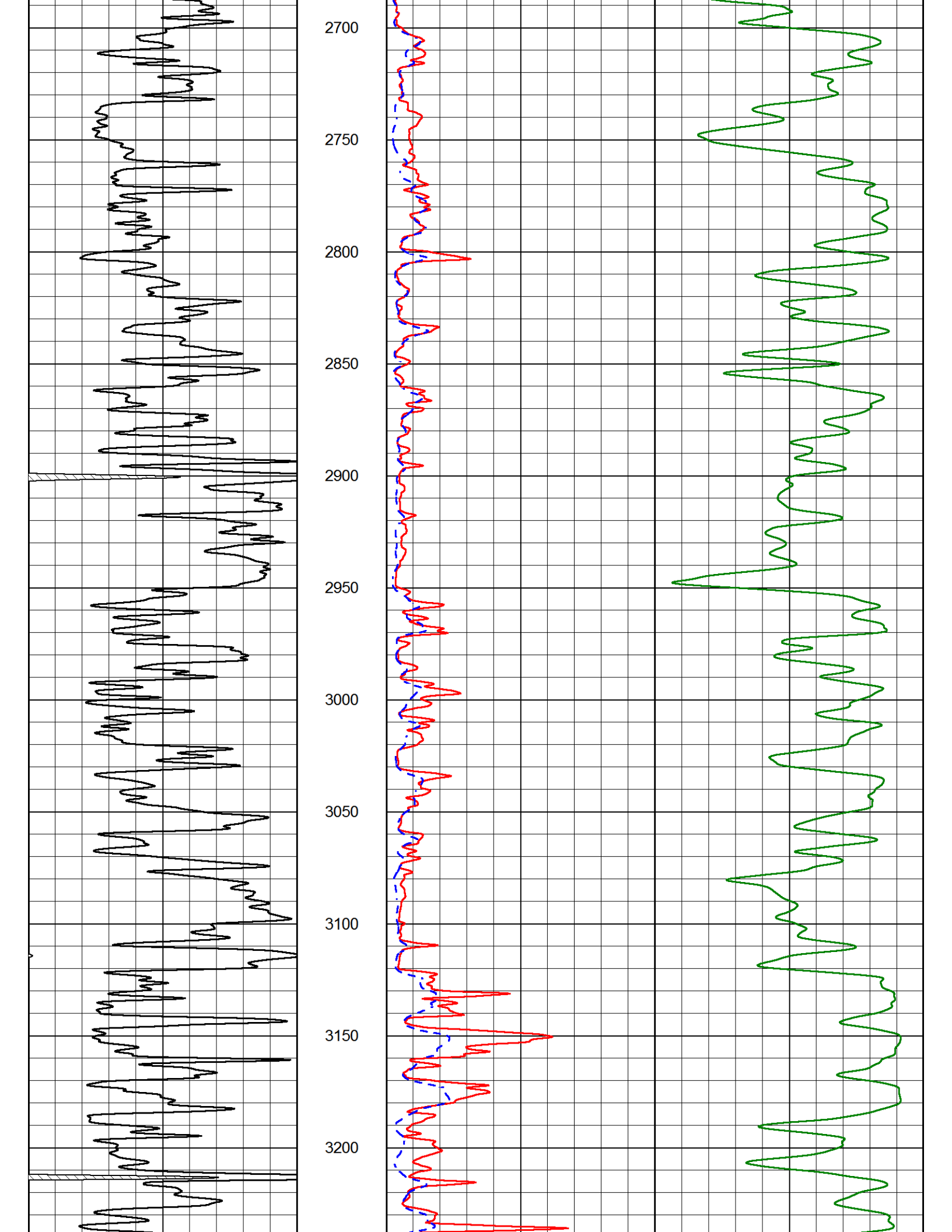


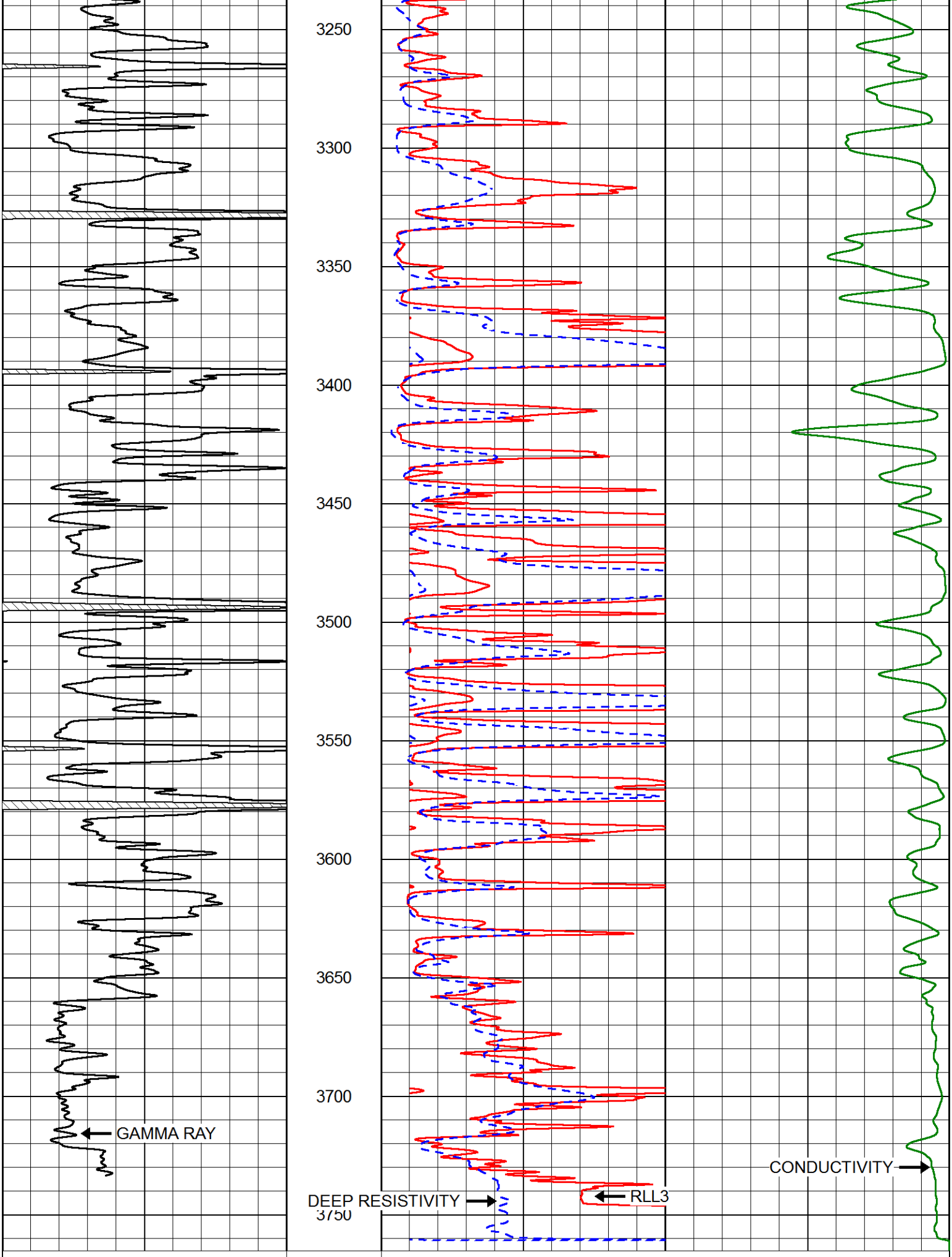

500
550
600
650
700
750
800
850
900
950
1000


1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550


1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100


2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650


2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200


3250
3300
3350
3400
3450
3500
3550
3600
3650
3700
3750
GAMMA RAY
DEEP RESISTIVITY
RLL3
CONDUCTIVITY
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
50	DEEP RESISTIVITY (Ohm-m)	500

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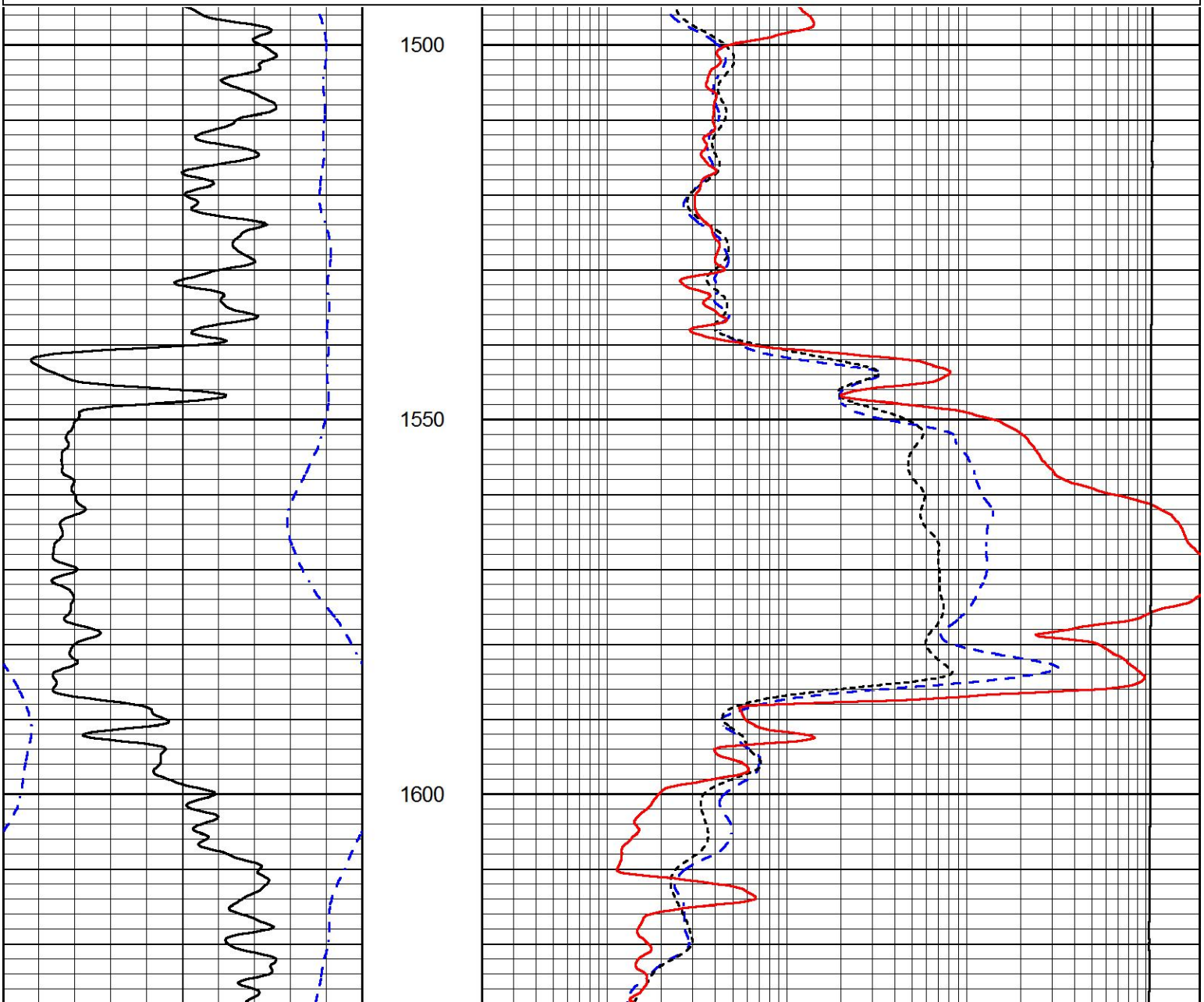
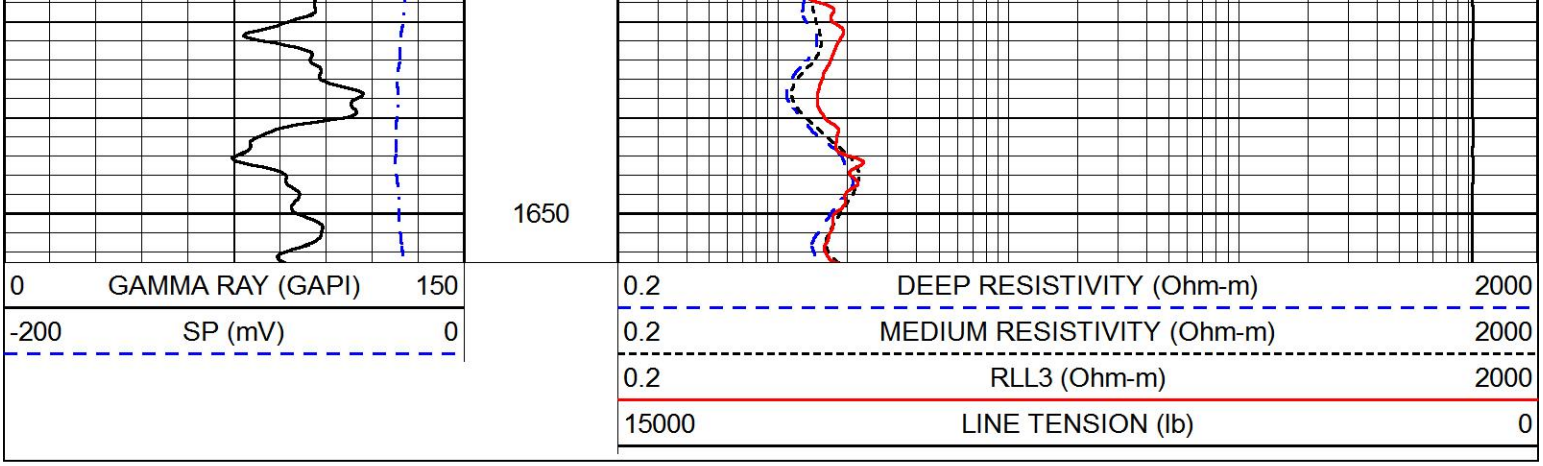
MAIN PASS

Database File	hartman_hadley_twin_1.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Sat Sep 08 02:52:28 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





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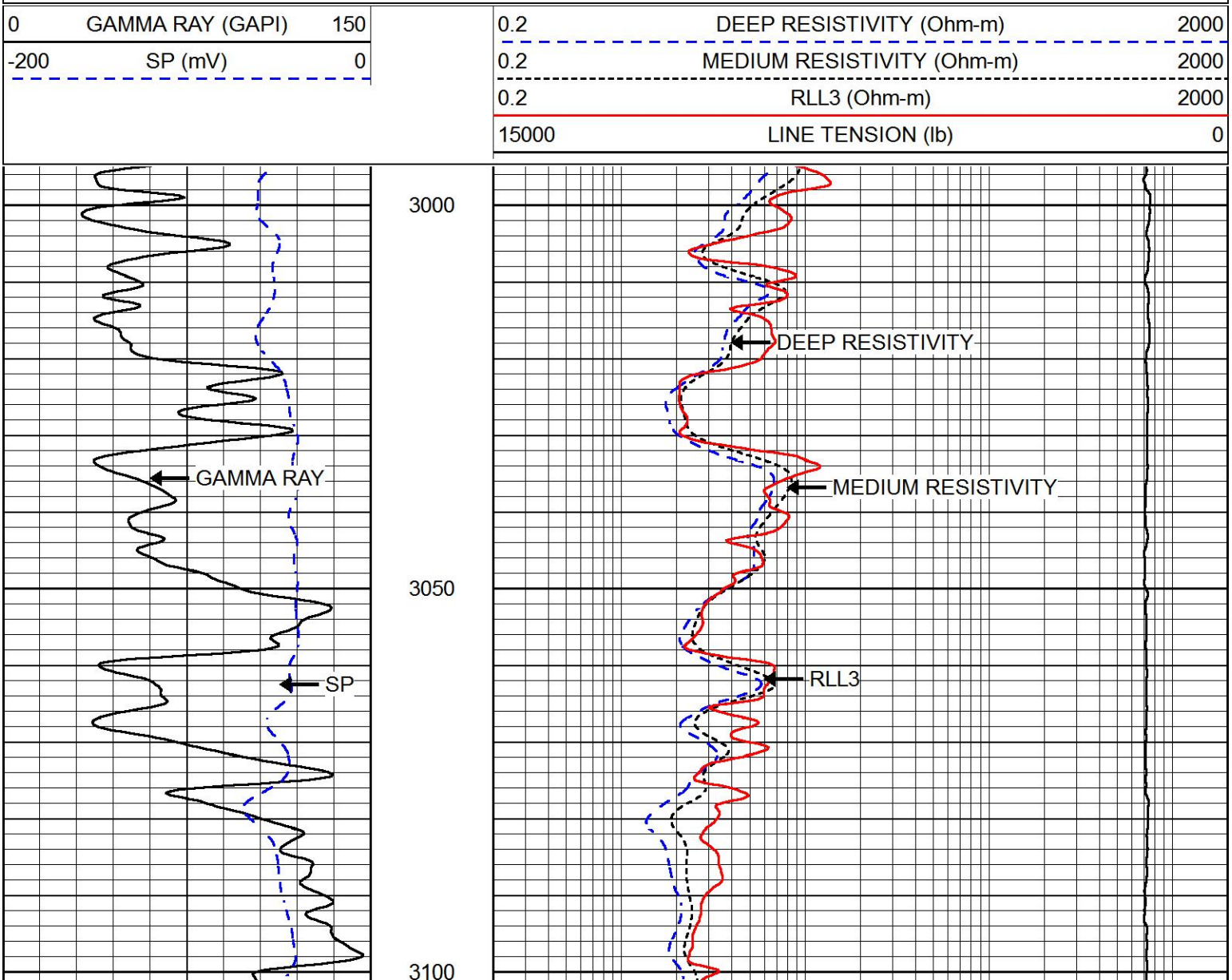
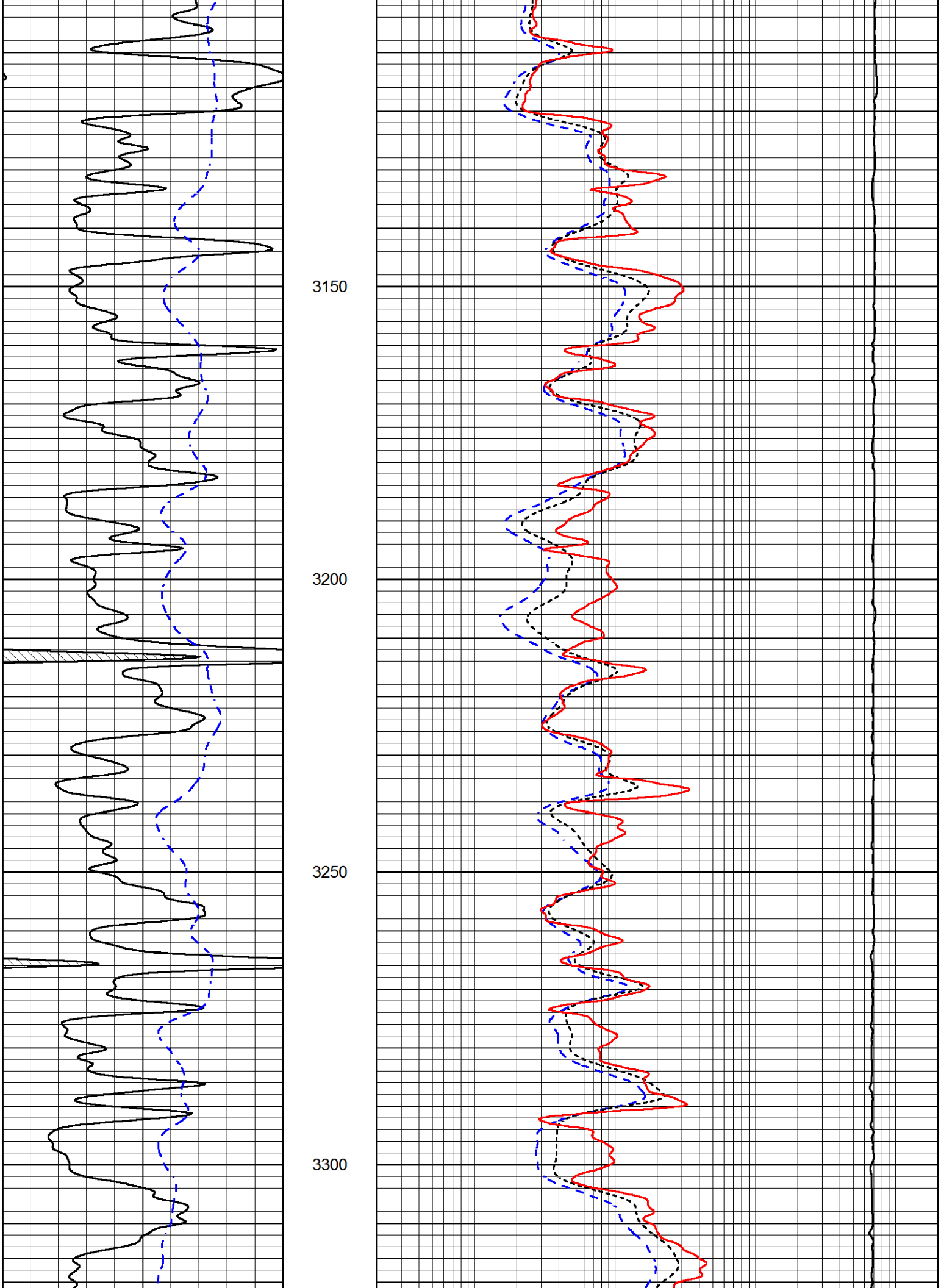
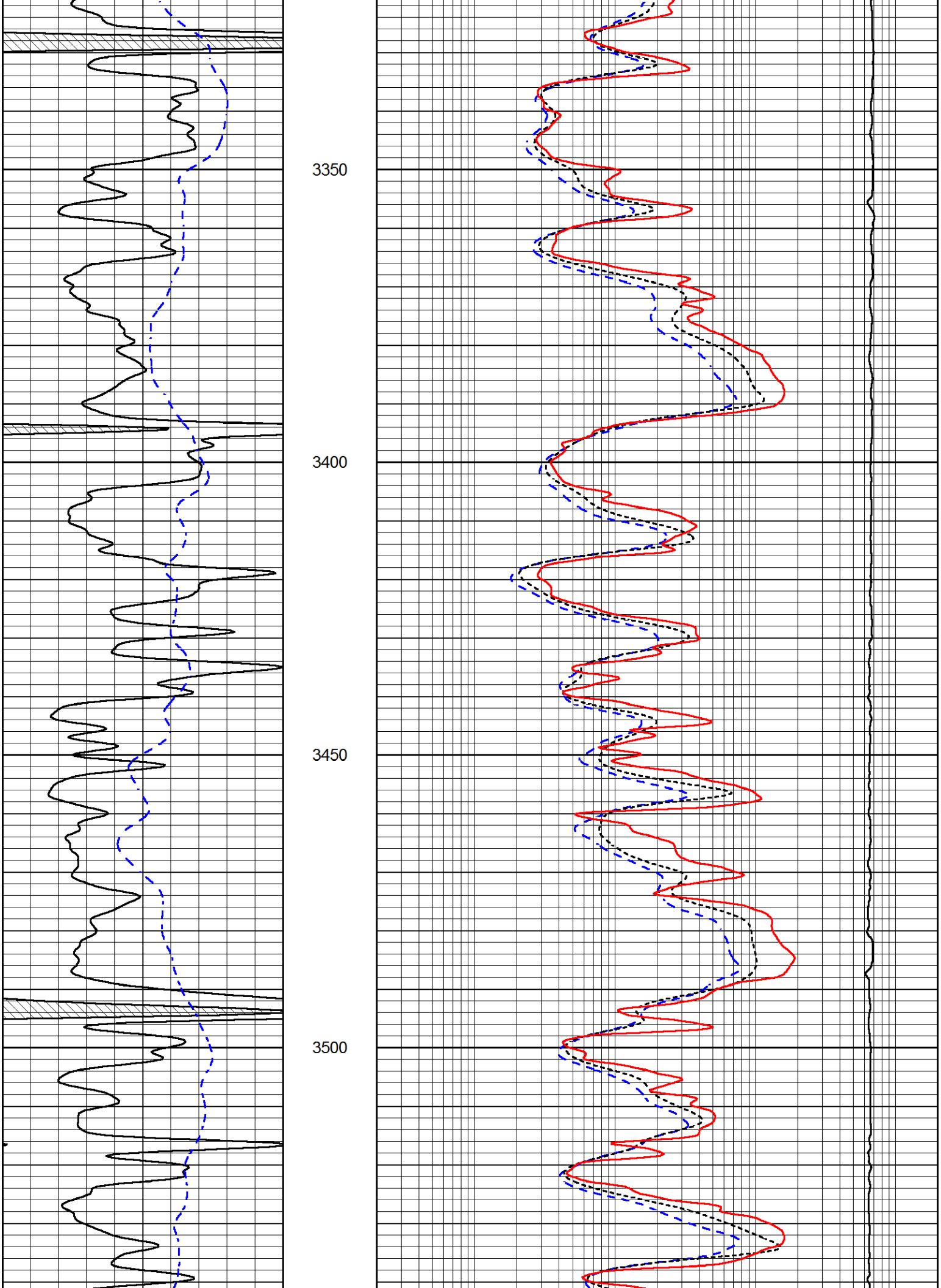
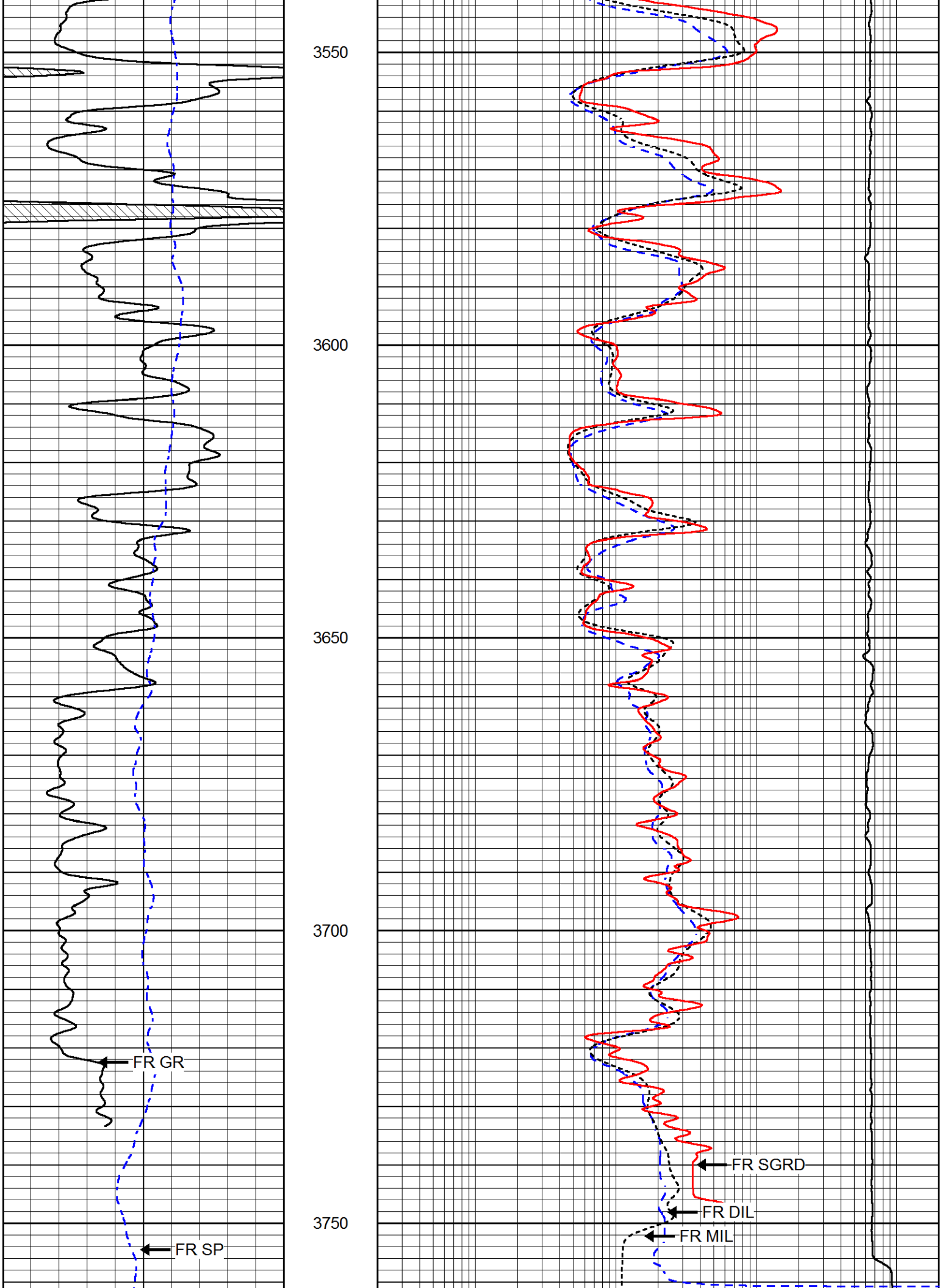
MAIN PASS

Database File	hartman_hadley_twin_1.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Sat Sep 08 02:52:28 2018
Charted by	Depth in Feet scaled 1:240




3150
3200
3250
3300


3350
3400
3450
3500


3550
3600
3650
3700
3750
FR GR
FR SP
FR SGRD
FR DIL
FR MIL

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

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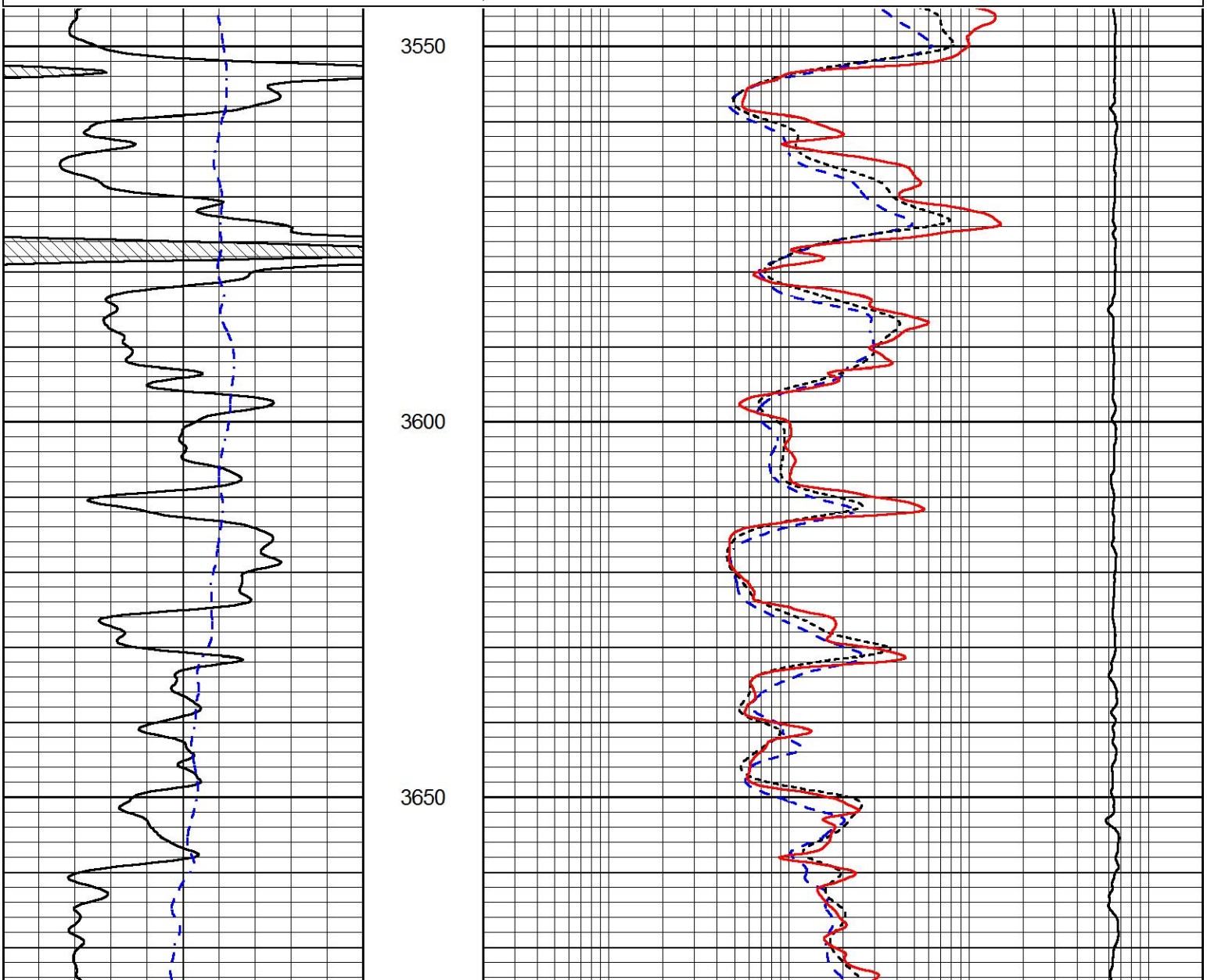
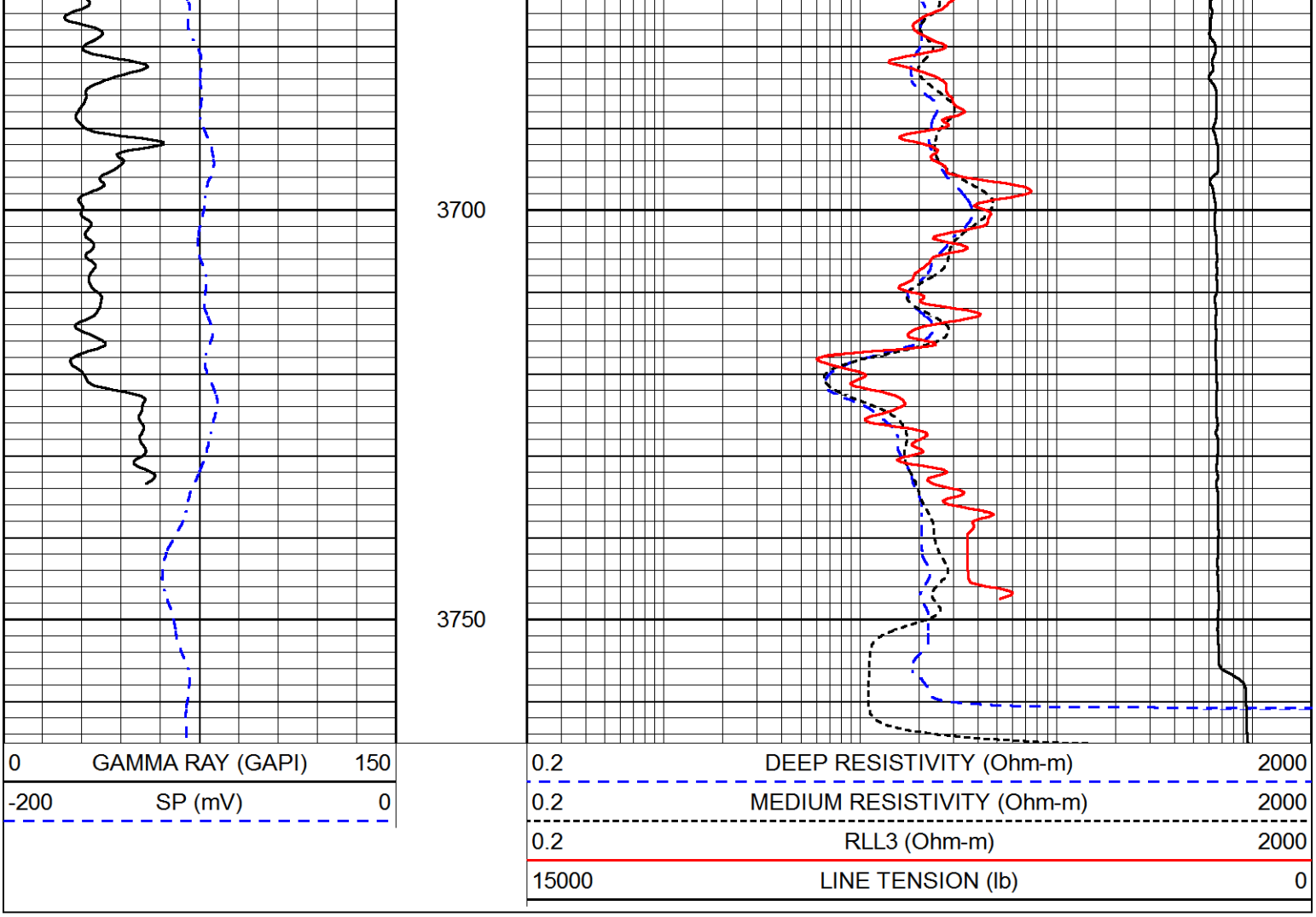
REPEAT SECTION

Database File	hartman_hadley_twin_1.db
Dataset Pathname	stack/pass2.1
Presentation Format	dil
Dataset Creation	Sat Sep 08 02:54:24 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





Calibration Report

Database File	hartman_hadley_twin_1.db
Dataset Pathname	stack/pass3.1
Dataset Creation	Sat Sep 08 02:52:28 2018

Dual Induction Calibration Report

Serial-Model:	PSI 988-M&W
Calibration Performed:	Thu Sep 06 14:52:38 2018

	Readings		References			Results	
Loop:	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:	126-186-M&W
Source / Verifier:	/
Master Calibration Performed:	Wed Aug 29 10:37:15 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4403.06	6298.47	cps

Magnesium	1.755	g/cc	4405.66	6296.47	cps
Aluminum	2.660	g/cc	836.60	3999.09	cps

Spine Angle = 74.70 Density/Spine Ratio = 0.526

	Size		Reading
Small Ring	4.00	in	2.62
Large Ring	16.00	in	1.66

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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Company	HARTMAN OIL COMPANY, INC.
Well	HADLEY NO.1 TWIN
Field	TRICO
County	TREGO
State	KANSAS