



PIONEER

Pioneer Energy Services

DUAL COMP POROSITY LOG

Company **PALMER OIL, INC.**
Well **WILLIS #1-20**
Field **UNKNOWN**
County **FINNEY** State **KANSAS**

Location: API #: 15-055-22478-00-00

Other Services

NE SW SE NE
2038' FNL & 737' FEL
SEC 20 TWP 26S RGE 33W

DIL
MEL/BHCS

Permanent Datum **GROUND LEVEL** Elevation **2926'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 2937'
D.F. N/A
G.L. 2926'

Date **2/24/2018**

Run Number **ONE**

Type Log **CNL/CDL**

Depth Driller **5400'**

Depth Logger **5400'**

Bottom Logged Interval **5379'**

Top Logged Interval **3800'**

Type Fluid In Hole **CHEMICAL**

Salinity, PPM CL **2600**

Density **9.25**

Level **FULL**

Max. Rec. Temp. F **130 DEG F**

Operating Rig Time **4 HOURS**

Equipment -- Location **108 HAYS**

Recorded By **T. MARTIN**

Witnessed By **LUKE THOMPSON**

Borehole Record

Casing Record

Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	00'	1780'	8.625"	23#	00'	1780'
TWO	7.875"	1780'	TD				

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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.

GARDEN CITY, S ON 83 APPX 14 MI TO W TV RD,
5 W TO SANDHILL RD, 1/4 S, W INTO

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

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

Your Pioneer Energy Services Crew

Engineer: **T. MARTIN**
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: **LUKE THOMPSON**
Secondary Witness:
Secondary Witness:
Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\palmer_willis_#1-20.db
Dataset field/well/stack/pass3.1/_vars_

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc	2	g/cc
	7.875	130	5.5	0	1		2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		0	0	-210	30		5400



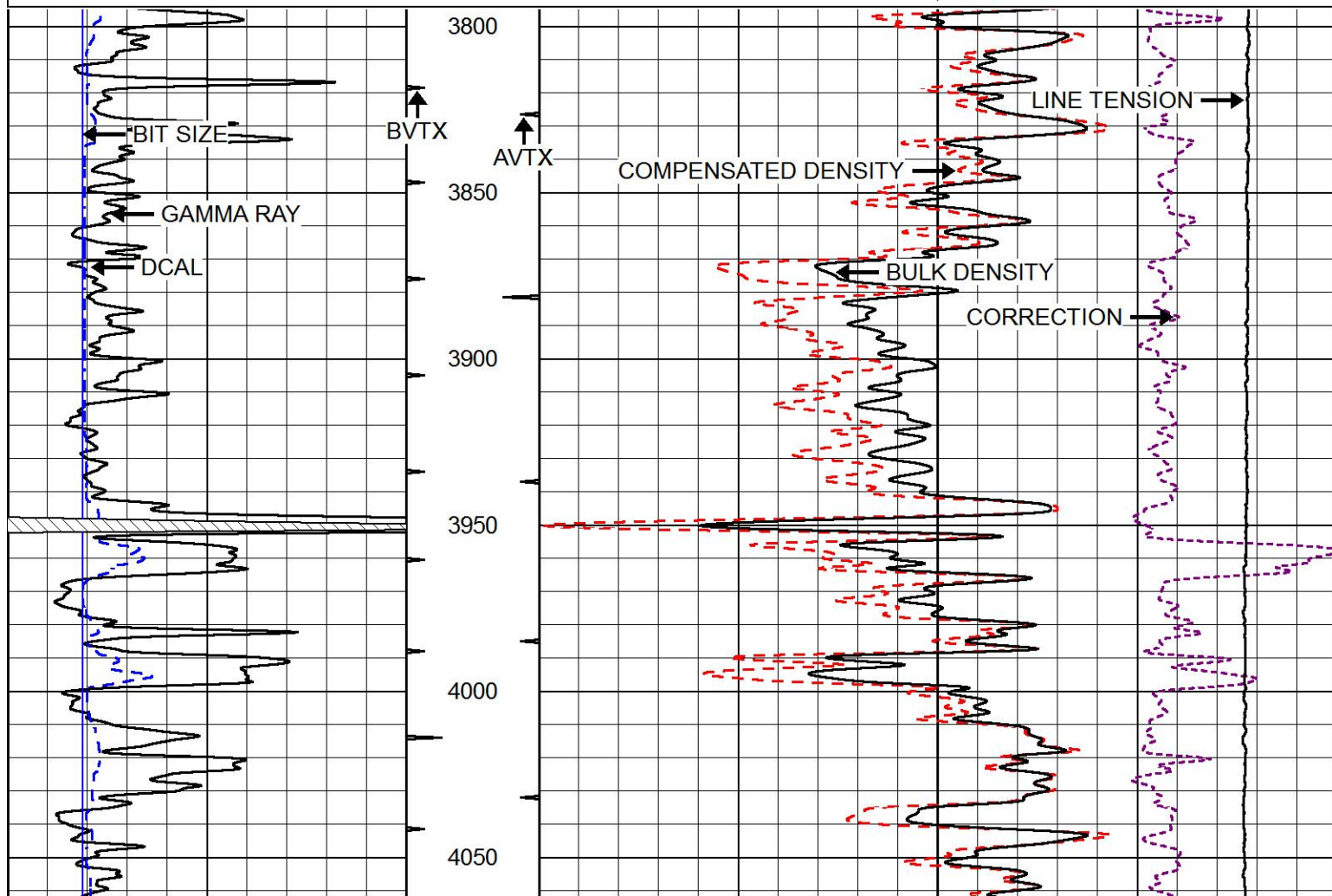
2" SCALE BULK DENSITY

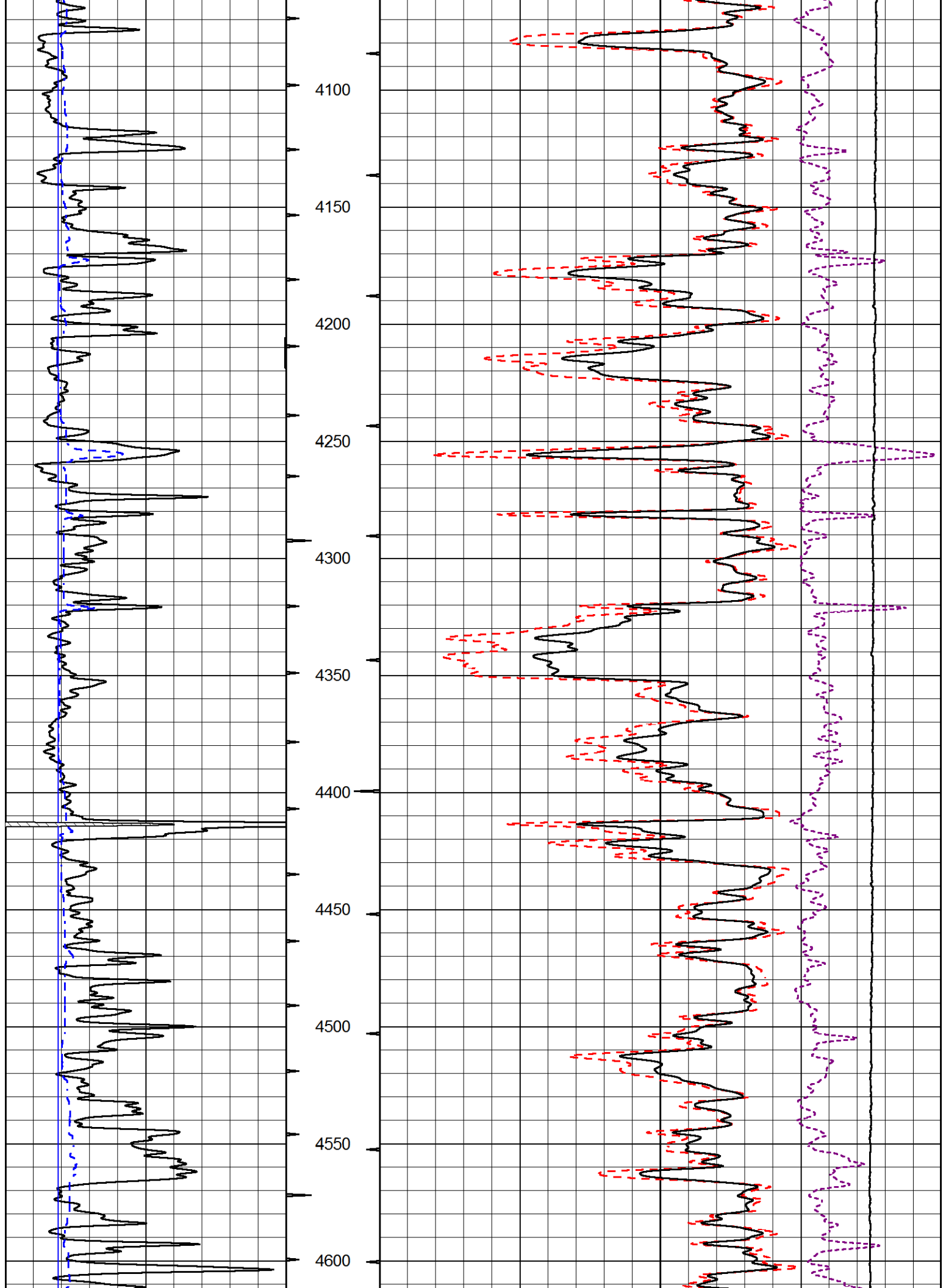
MAIN PASS

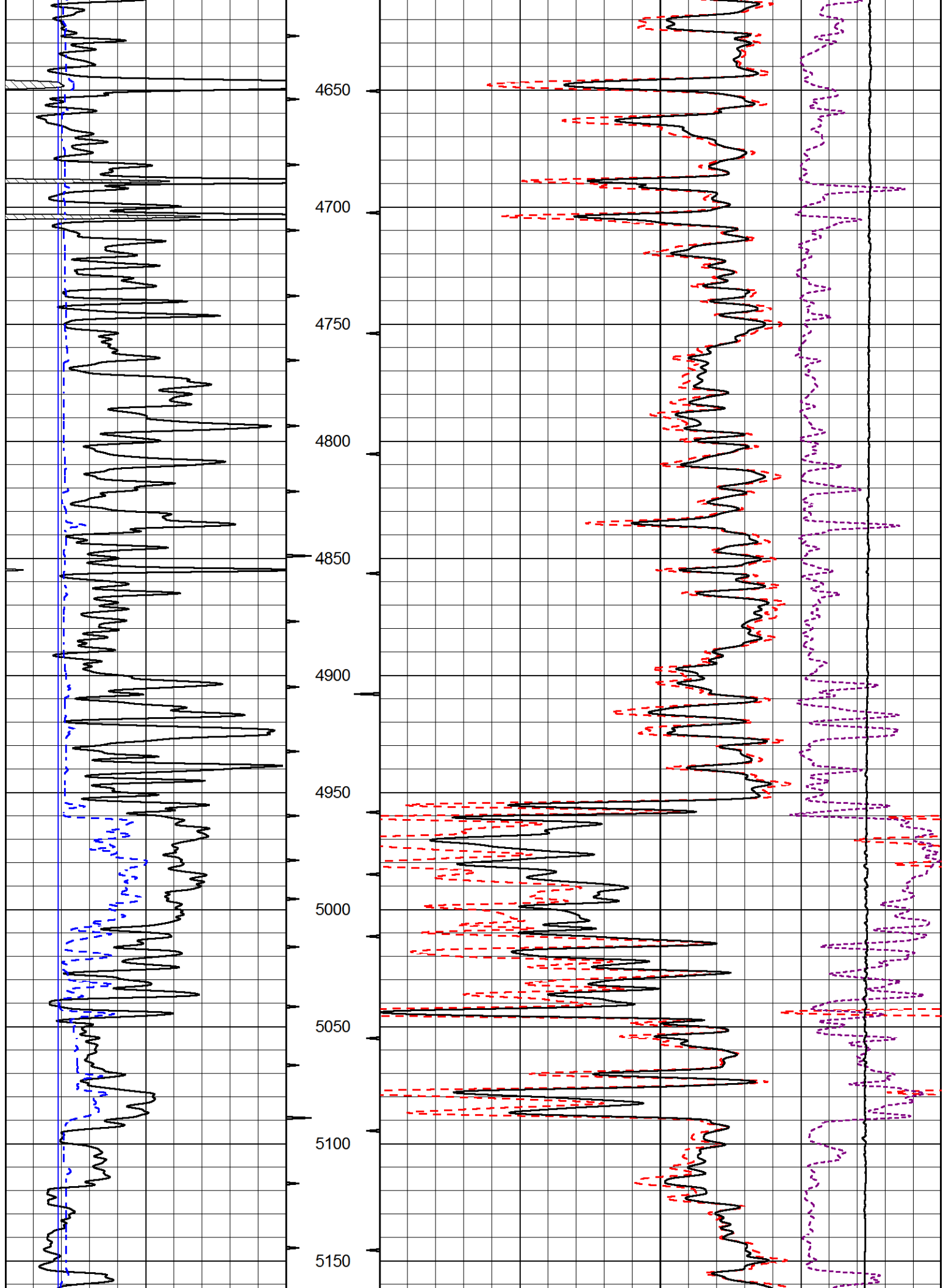
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Dataset Pathname stack/pass3.3
Presentation Format cdl
Dataset Creation Sat Feb 24 07:26:28 2018
Charted by Depth in Feet scaled 1:600

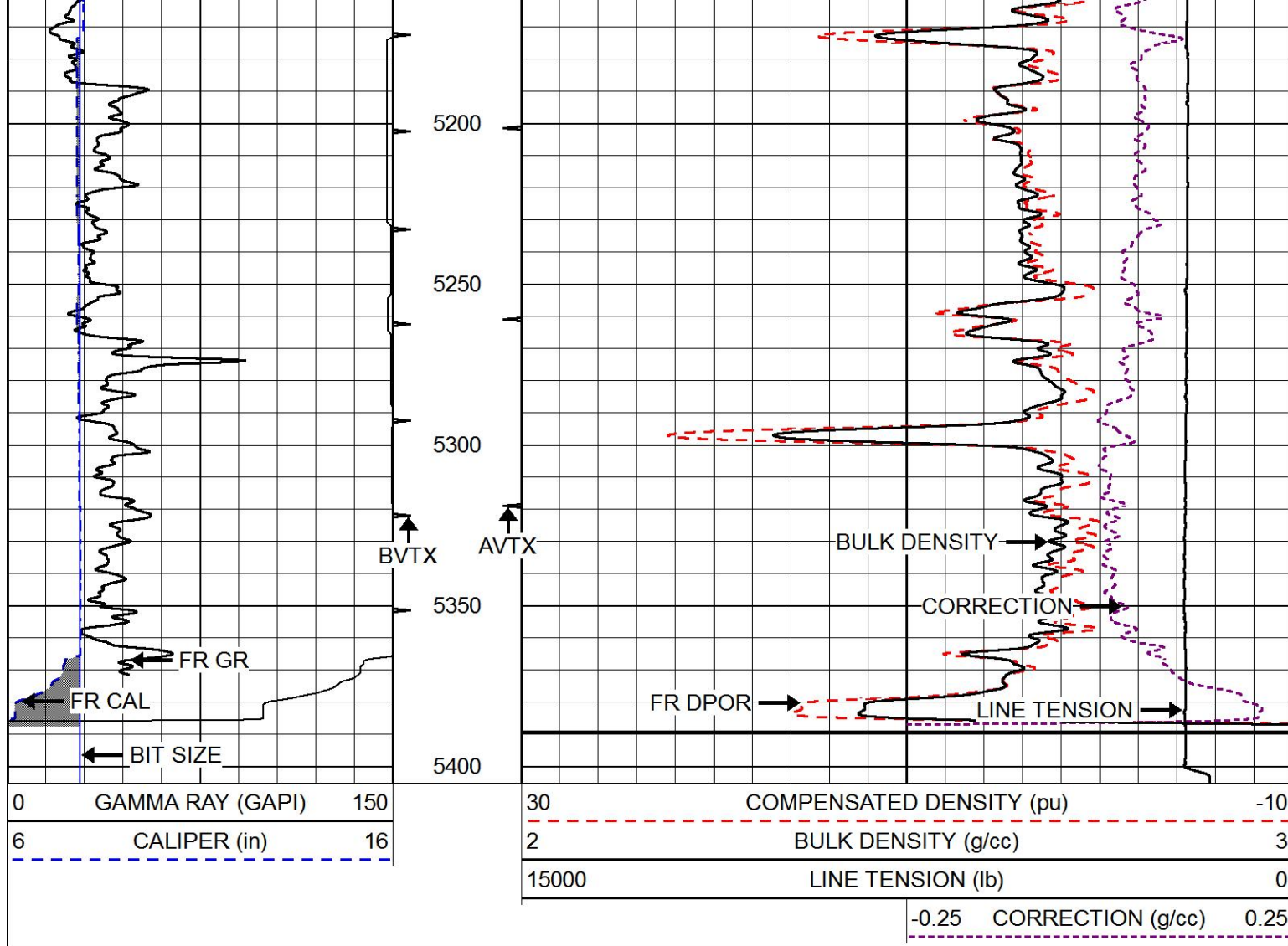
0	GAMMA RAY (GAPI)	150
6	CALIPER (in)	16

30	COMPENSATED DENSITY (pu)	-10
2	BULK DENSITY (g/cc)	3
15000	LINE TENSION (lb)	0
-0.25	CORRECTION (g/cc)	0.25



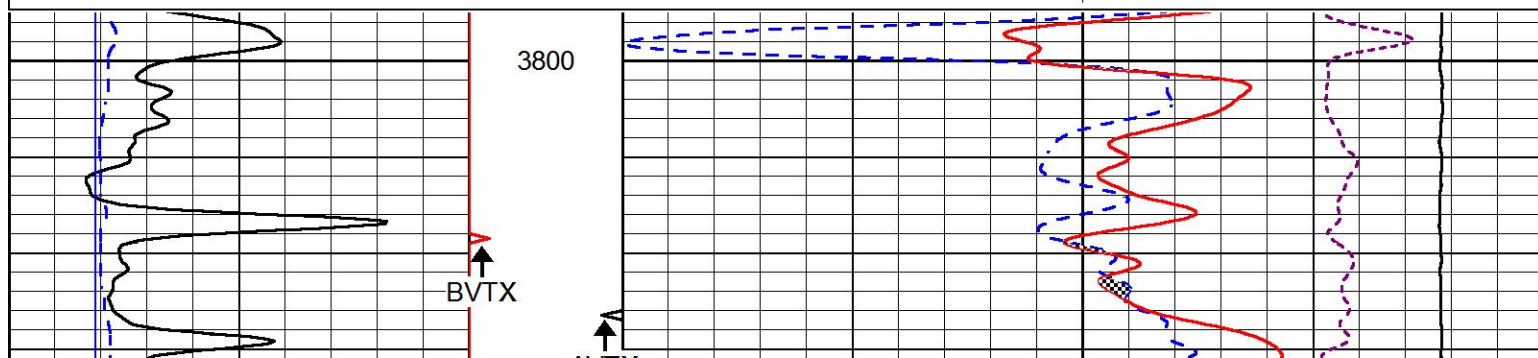
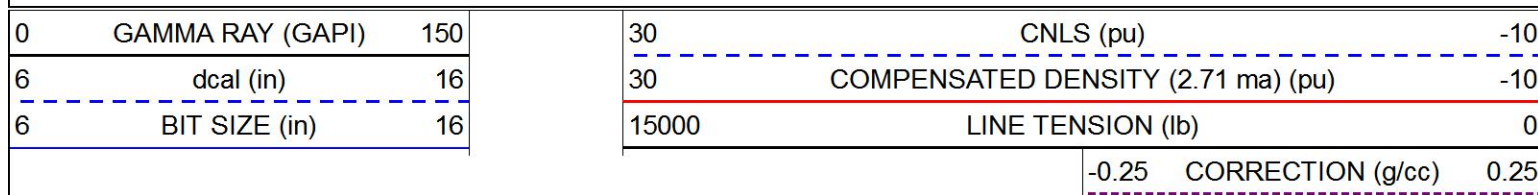


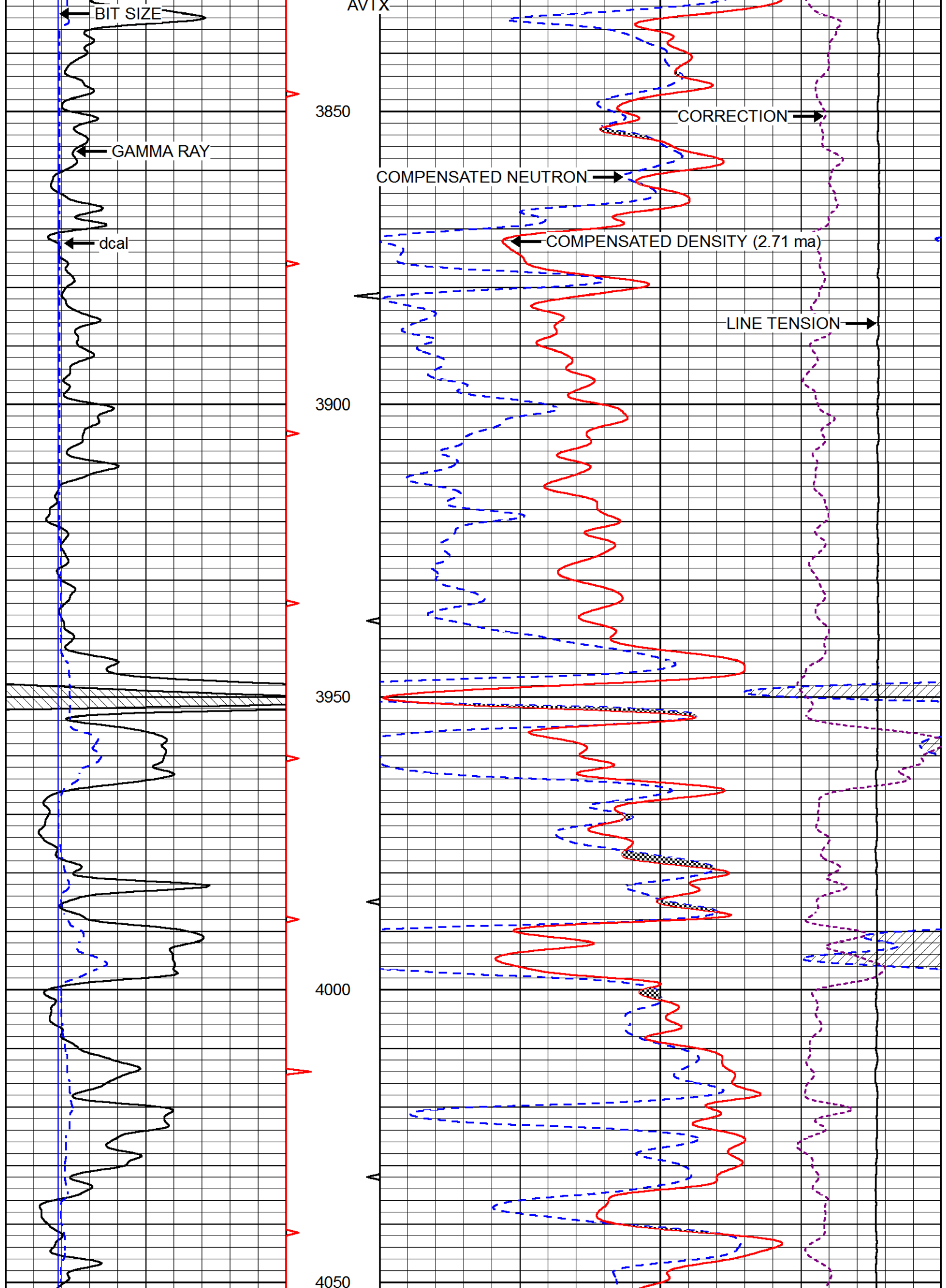


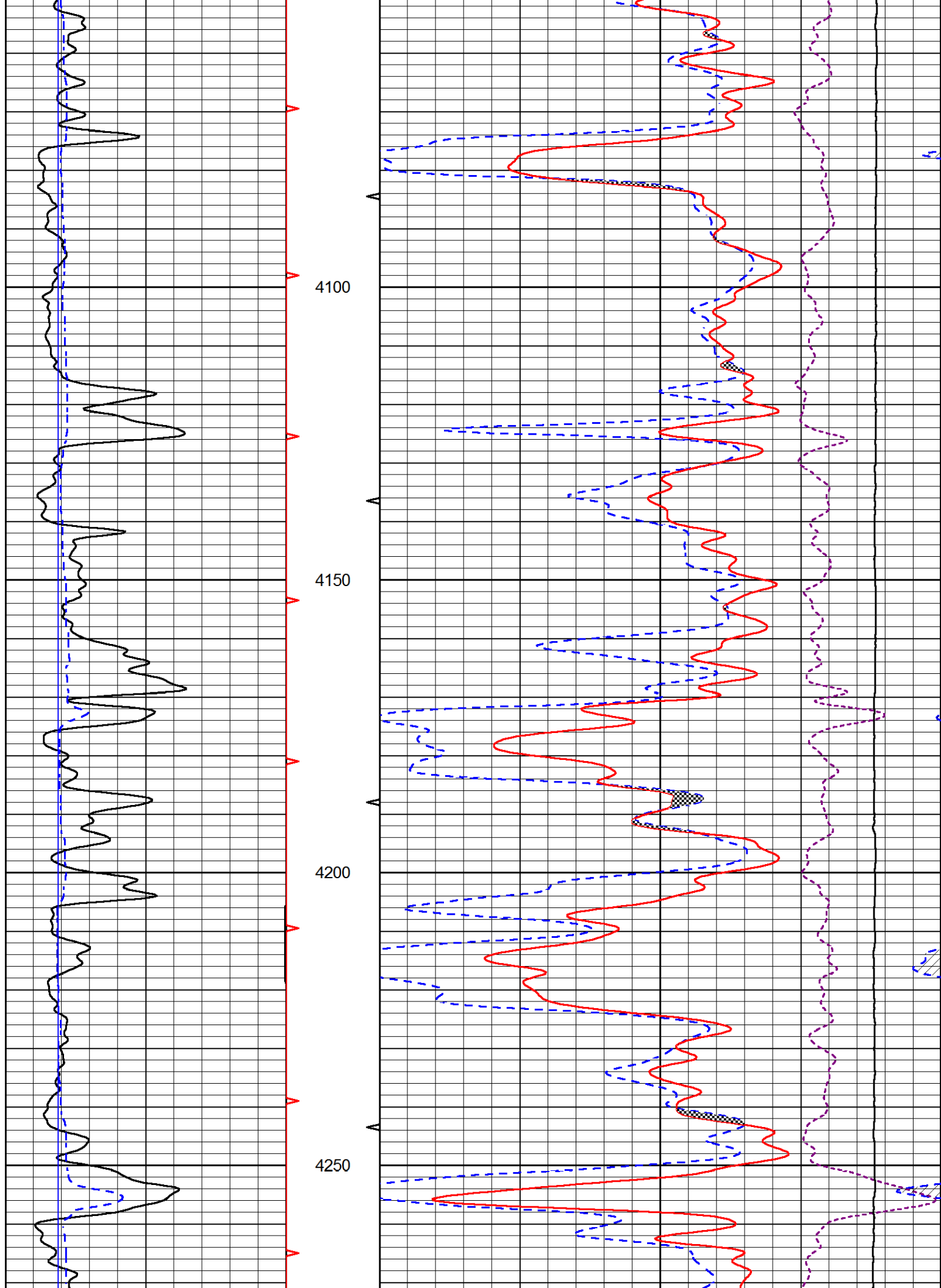


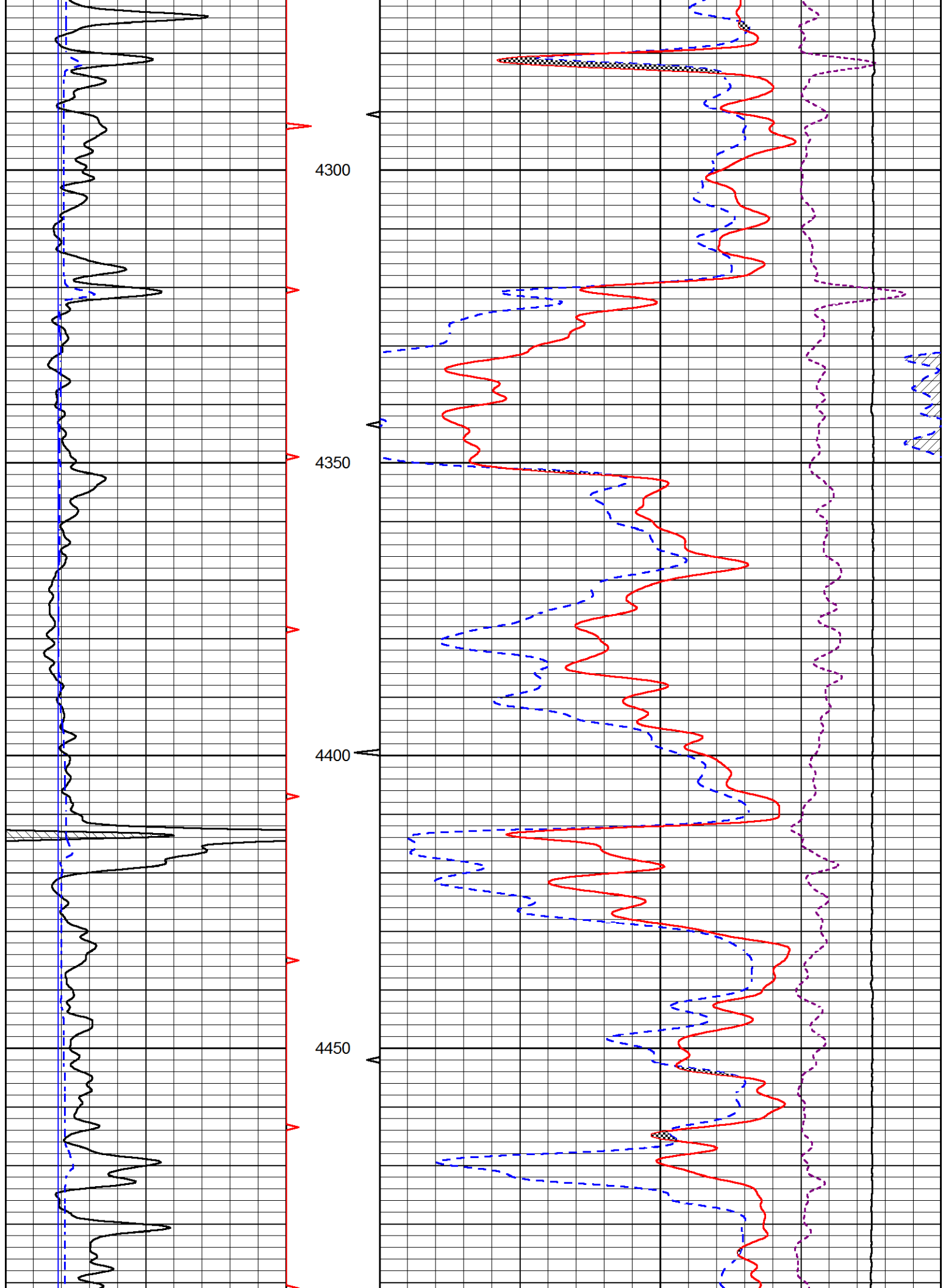
MAIN PASS

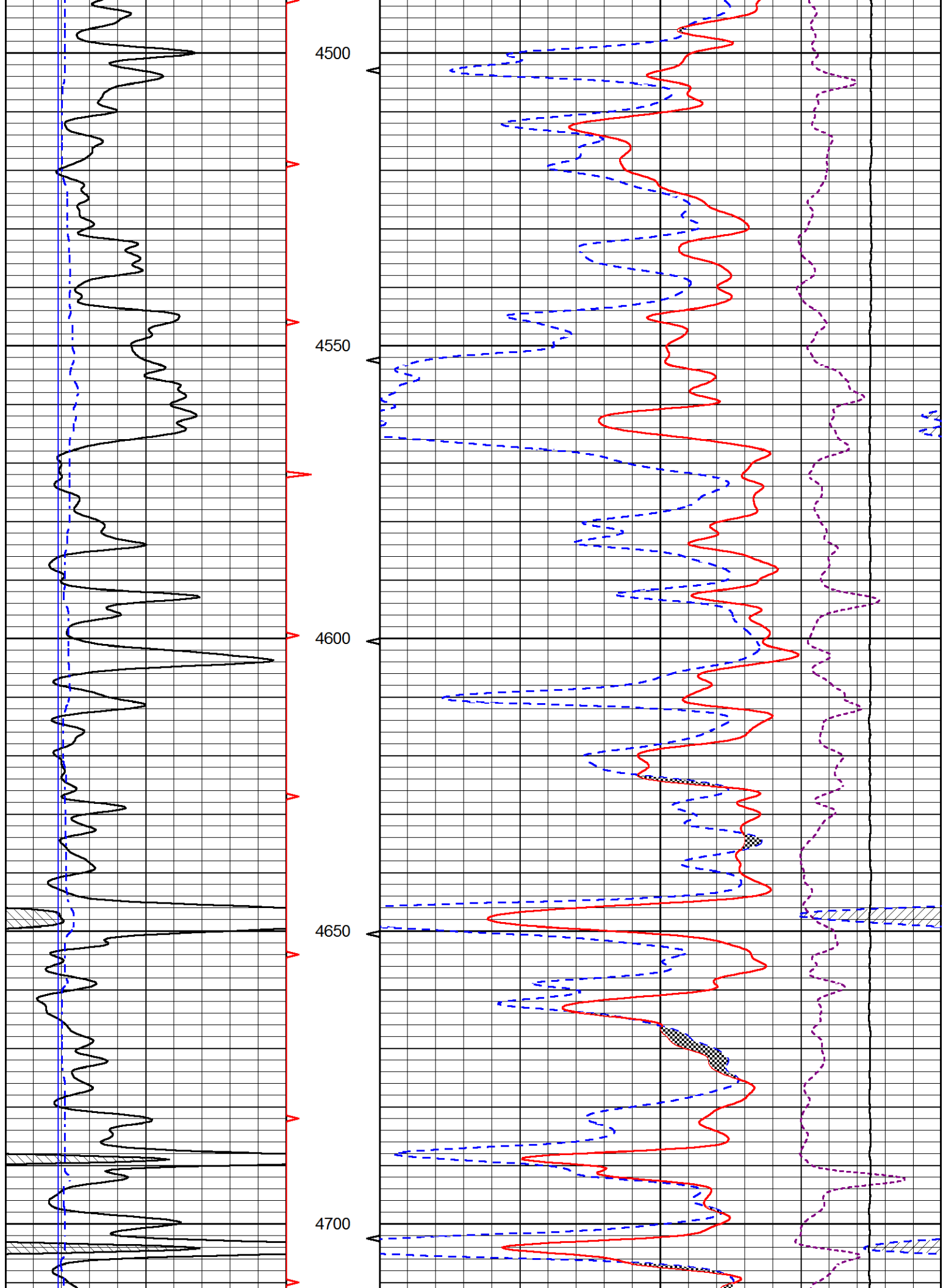
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 Dataset Pathname stack/pass3.1
 Presentation Format cndlspec
 Dataset Creation Sat Feb 24 07:55:27 2018
 Charted by Depth in Feet scaled 1:240

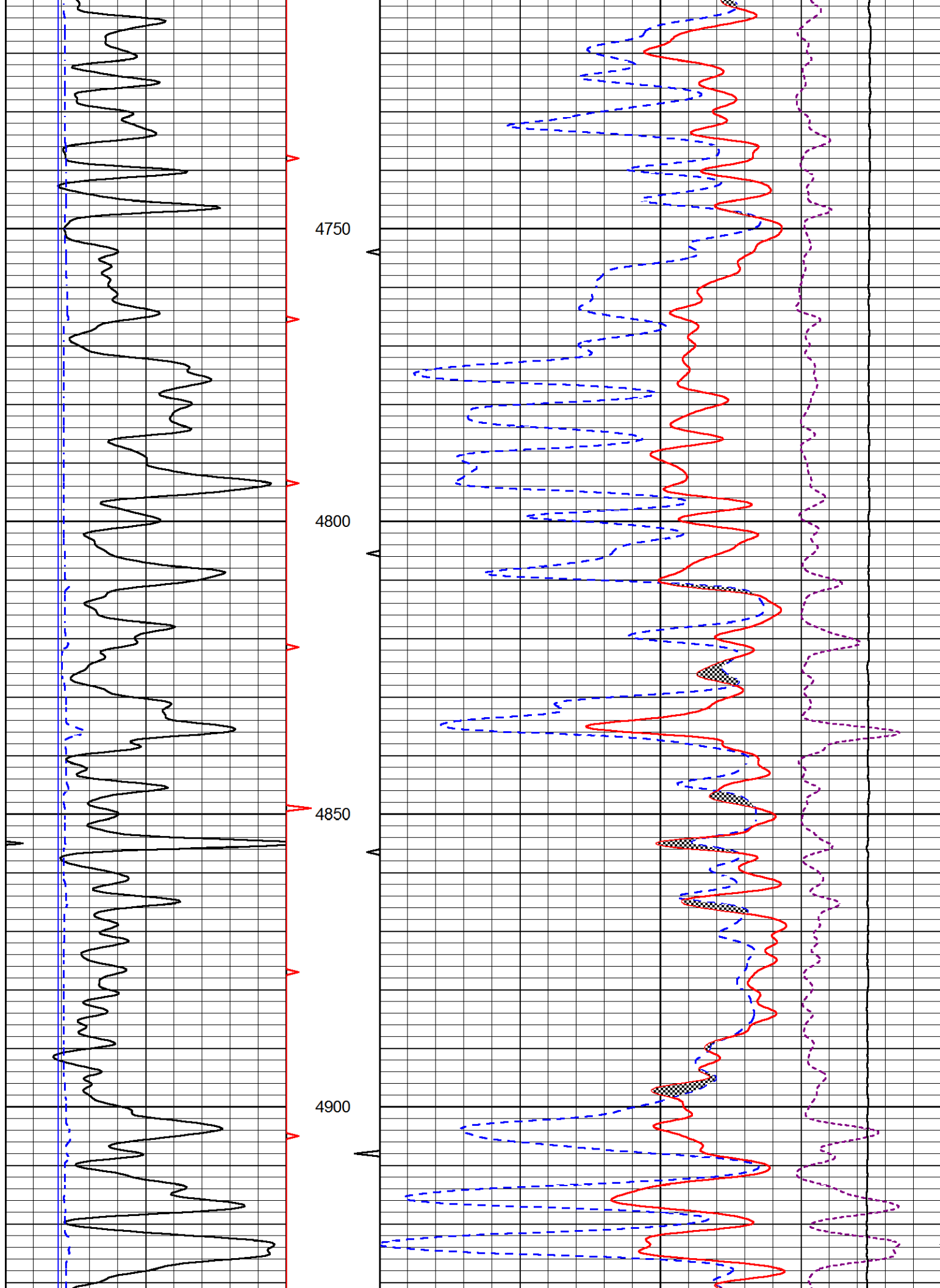


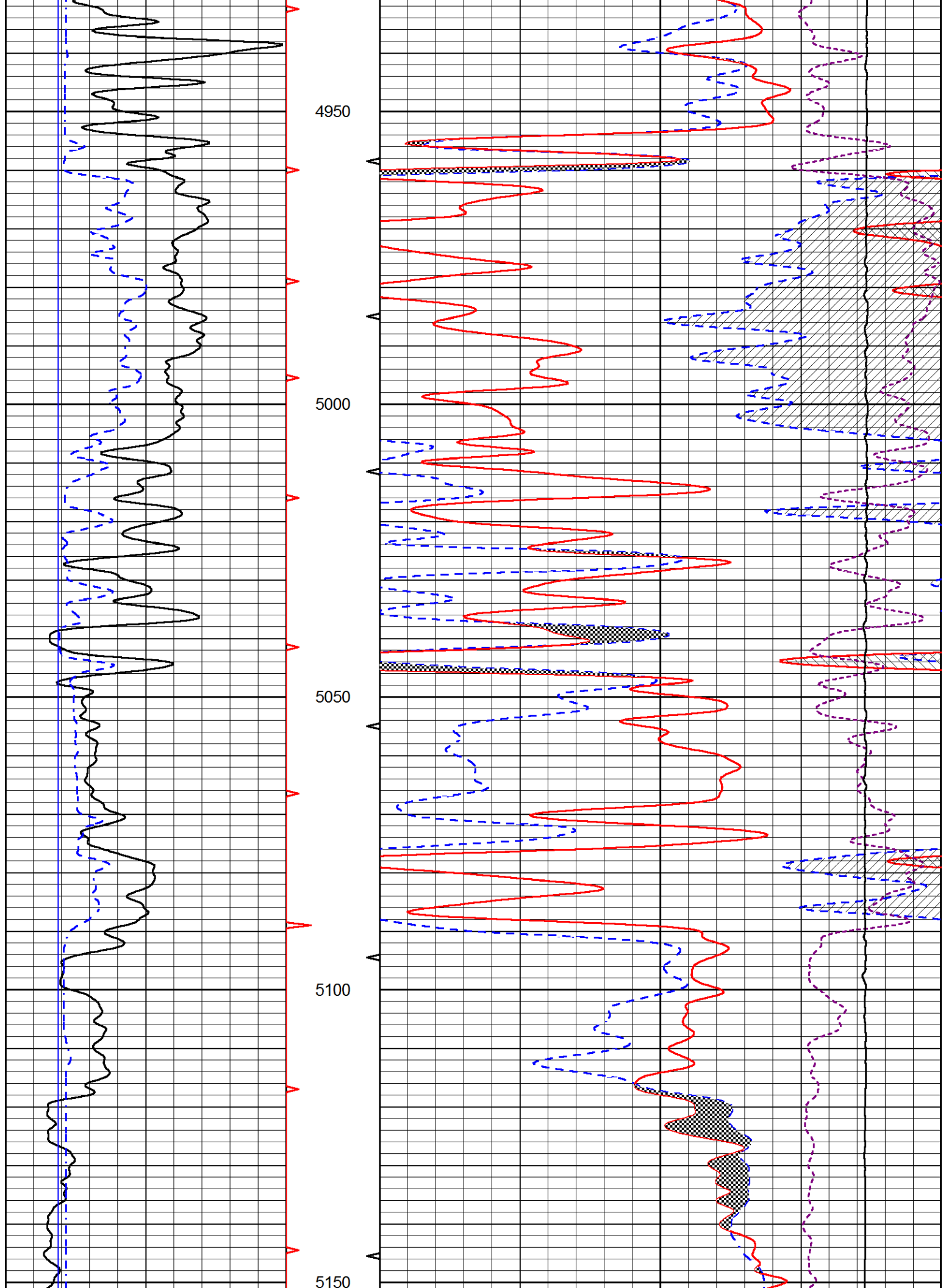


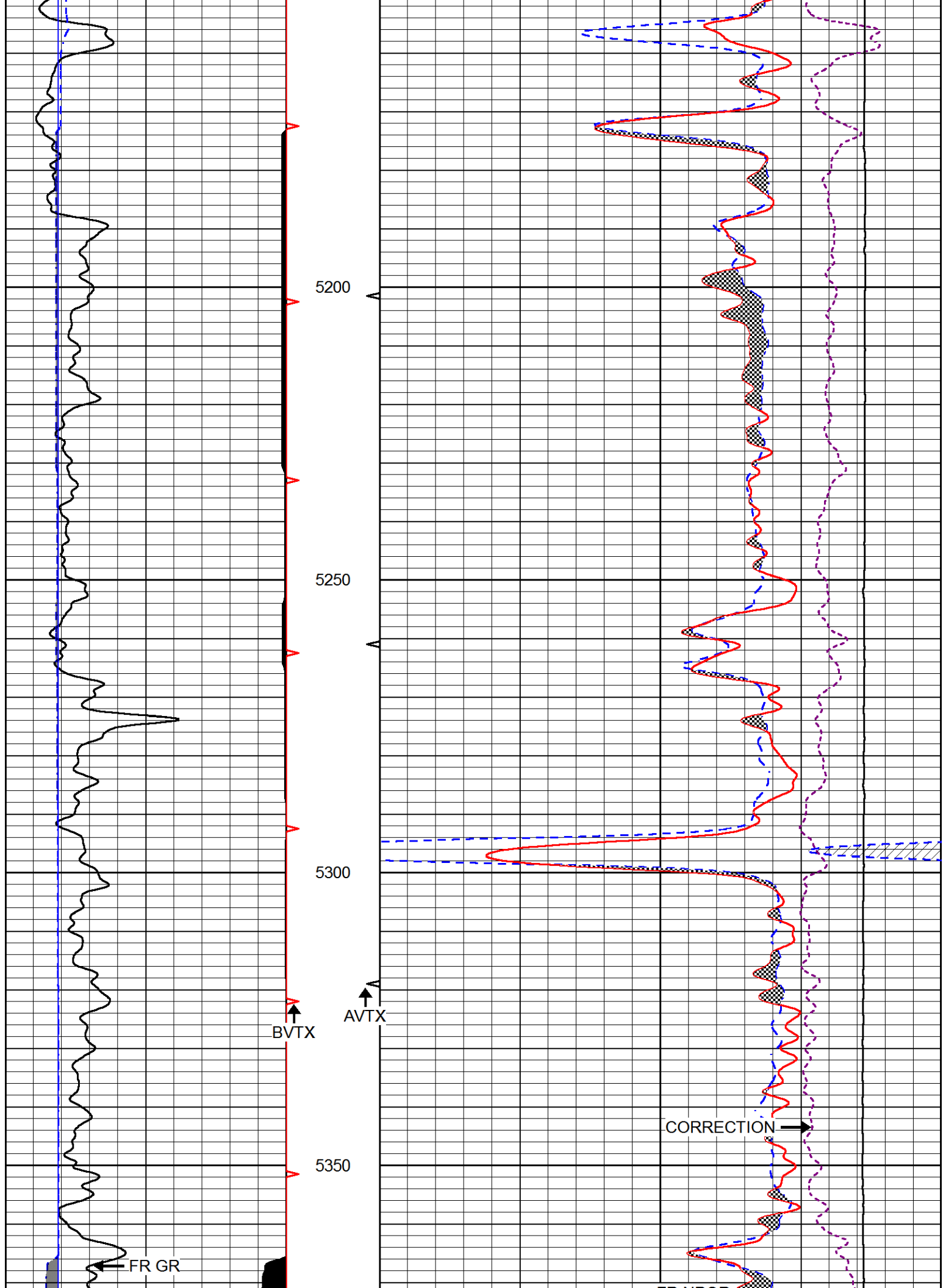


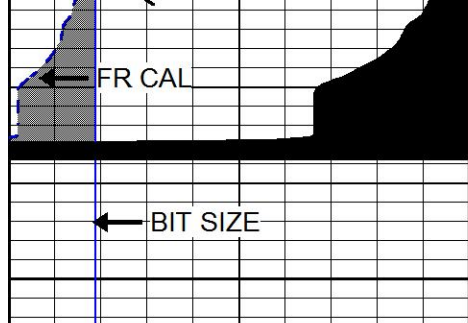






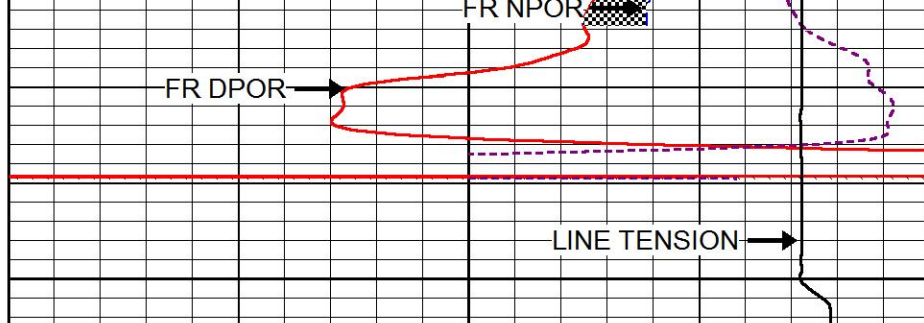






0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

5400



30	CNLS (pu)	-10
30	COMPENSATED DENSITY (2.71 ma) (pu)	-10
15000	LINE TENSION (lb)	0

-0.25 CORRECTION (g/cc) 0.25



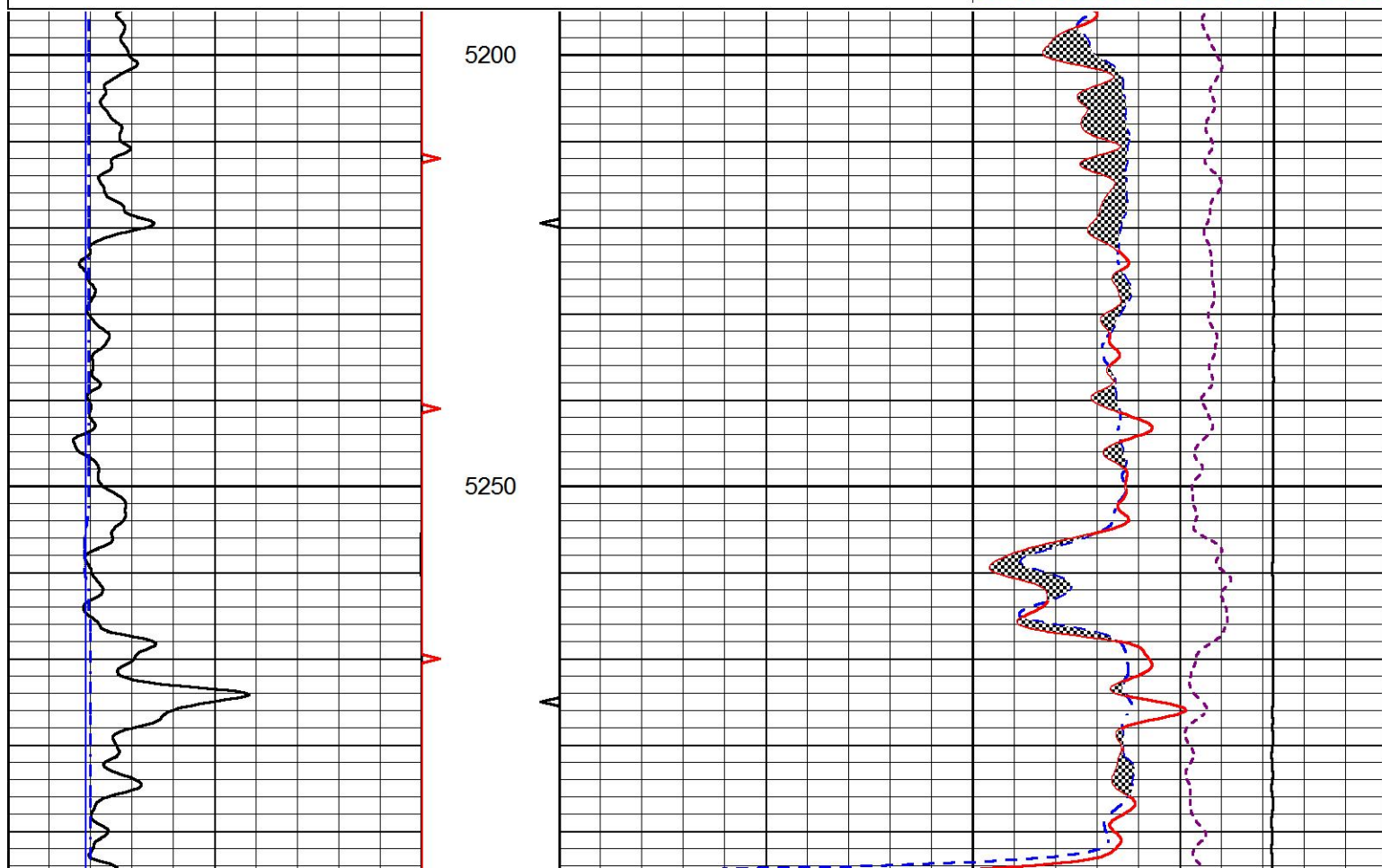
REPEAT SECTION

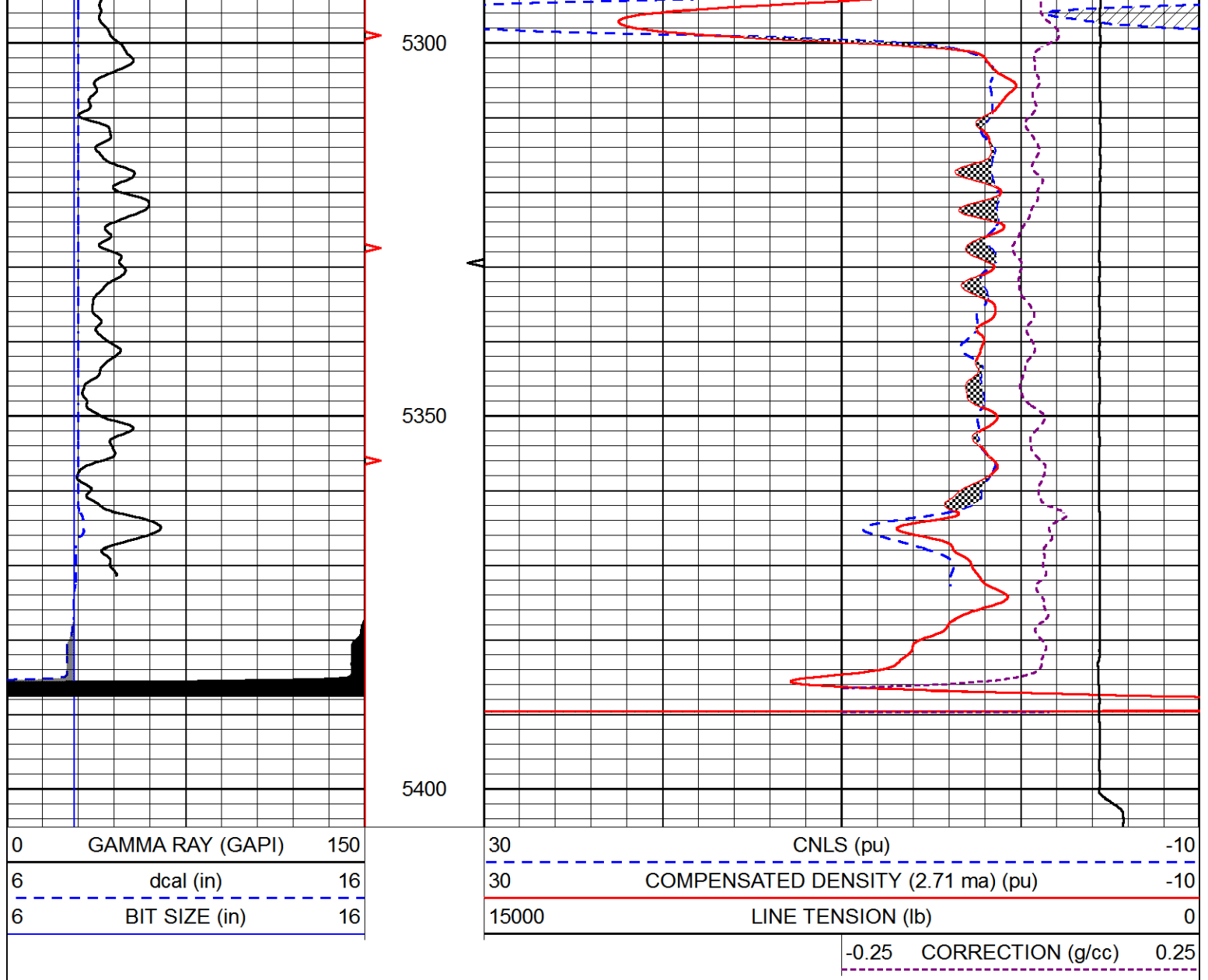
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 Dataset Pathname stack/pass2.1
 Presentation Format cndlspec
 Dataset Creation Sat Feb 24 07:09:43 2018
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

30	CNLS (pu)	-10
30	COMPENSATED DENSITY (2.71 ma) (pu)	-10
15000	LINE TENSION (lb)	0

-0.25 CORRECTION (g/cc) 0.25





Calibration Report

Database File palmer_willis_#1-20.db
 Dataset Pathname stack/pass3.1
 Dataset Creation Sat Feb 24 07:55:27 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	-34.000

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	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



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County FINNEY
State KANSAS