



# DUAL COMP POROSITY LOG

Company RITCHIE EXPLORATION, INC.  
 Well BLAU-SCHROEDER NO.1  
 Field TWIN BUTTE  
 County LOGAN  
 State KANSAS

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Location: API #: 15-109-21517-00-00  
 610' FSL & 2570' FWL  
 SEC 16 TWP 15S RGE 36W  
 Permanent Datum GROUND LEVEL Elevation 3339'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services DIL/MEL BHCs  
 Elevation K.B. 3344'  
 D.F. N/A  
 G.L. 3339'

Date	9/4/2017						
Run Number	ONE						
Type Log	CNL/CDL						
Depth Driller	5010'						
Depth Logger	5009'						
Bottom Logged Interval	4980'						
Top Logged Interval	3600'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	6,400						
Density	9.3						
Level	FULL						
Max. Rec. Temp. F	126 DEG/F						
Operating Rig Time	4 HOURS						
Equipment -- Location	108 HAYS						
Recorded By	J. HENRICKSON						
Witnessed By	JOHN GOLDSMITH						
Borehole Record		Casing Record					
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0	268'	8.625"	23#	0	268'
TWO	7.875"	268'		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.  
 RUSSELL SPRINGS  
 SOUTH TO DAKOTA ROAD, 2 1/2 EAST, NORTH INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

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

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\ritchie\_blaui\_schroeder\_1.db  
Dataset field/well/stackml/pass3.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	126	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	-86	75	Off	5009

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
ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools			ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
MCAL MI MN	19.83 19.83 19.83					
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (1987)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: ritchie\_blau\_schroeder\_1.db: field/well/stackml/pass3.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

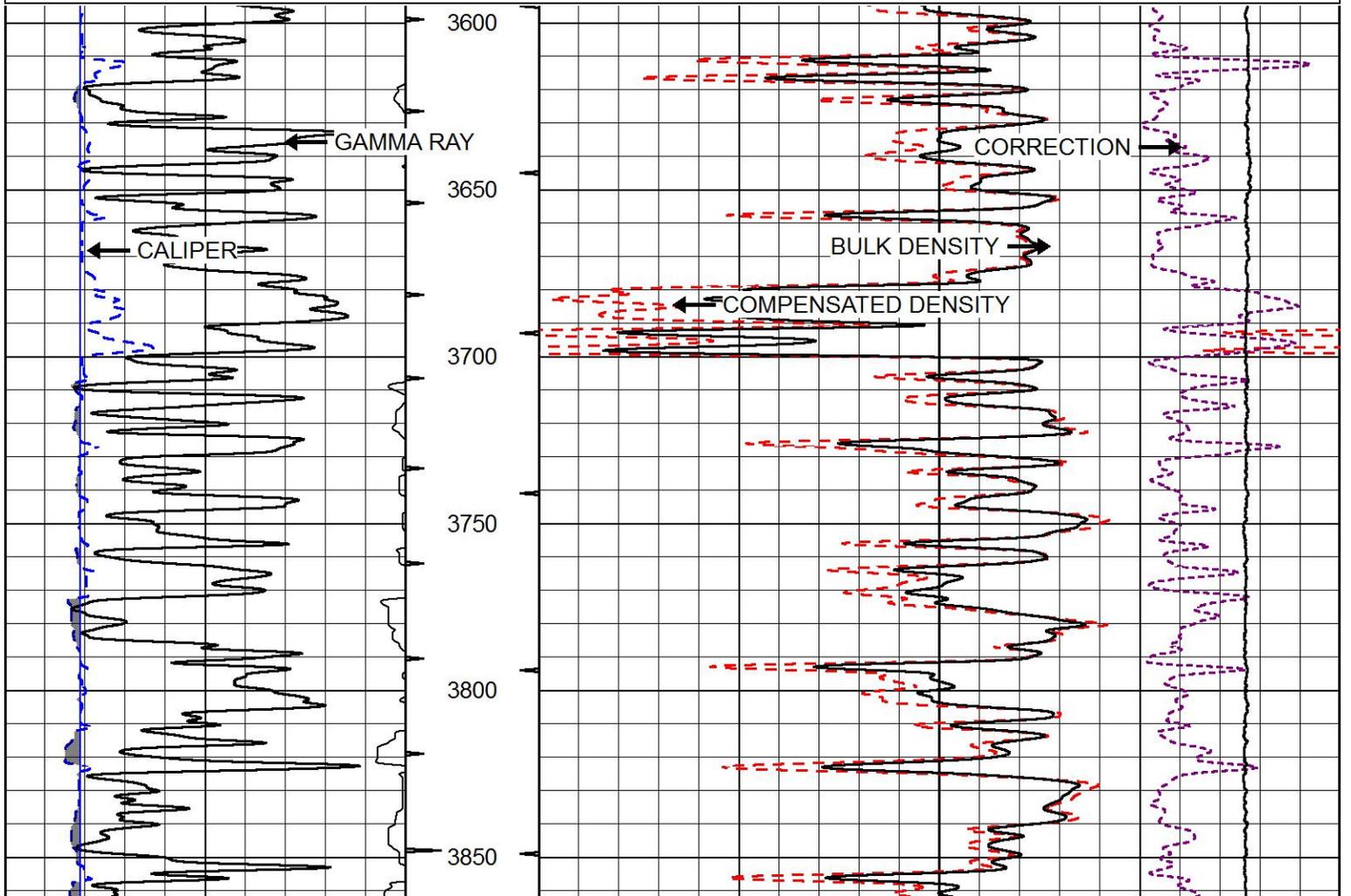


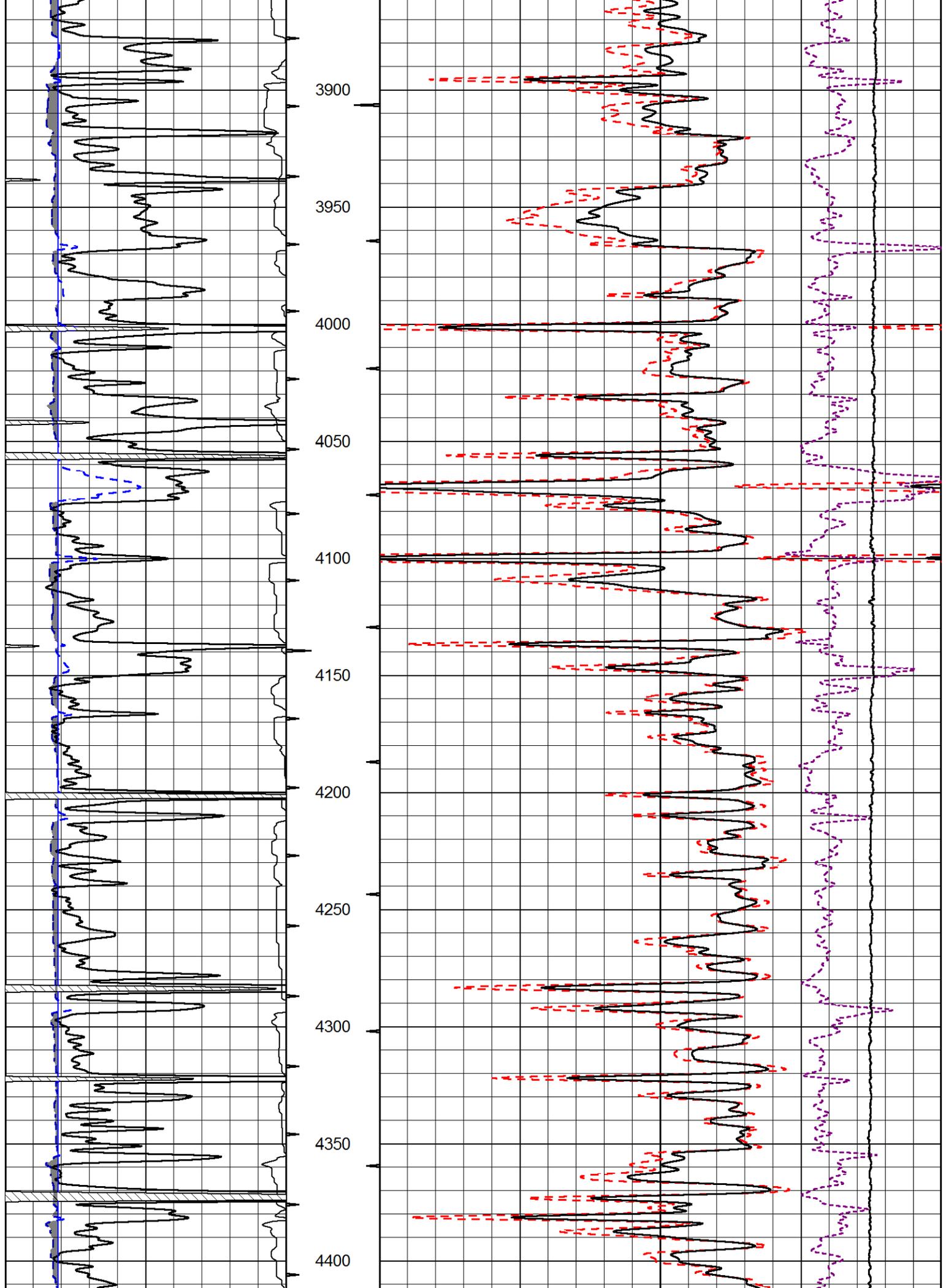
# MAIN PASS

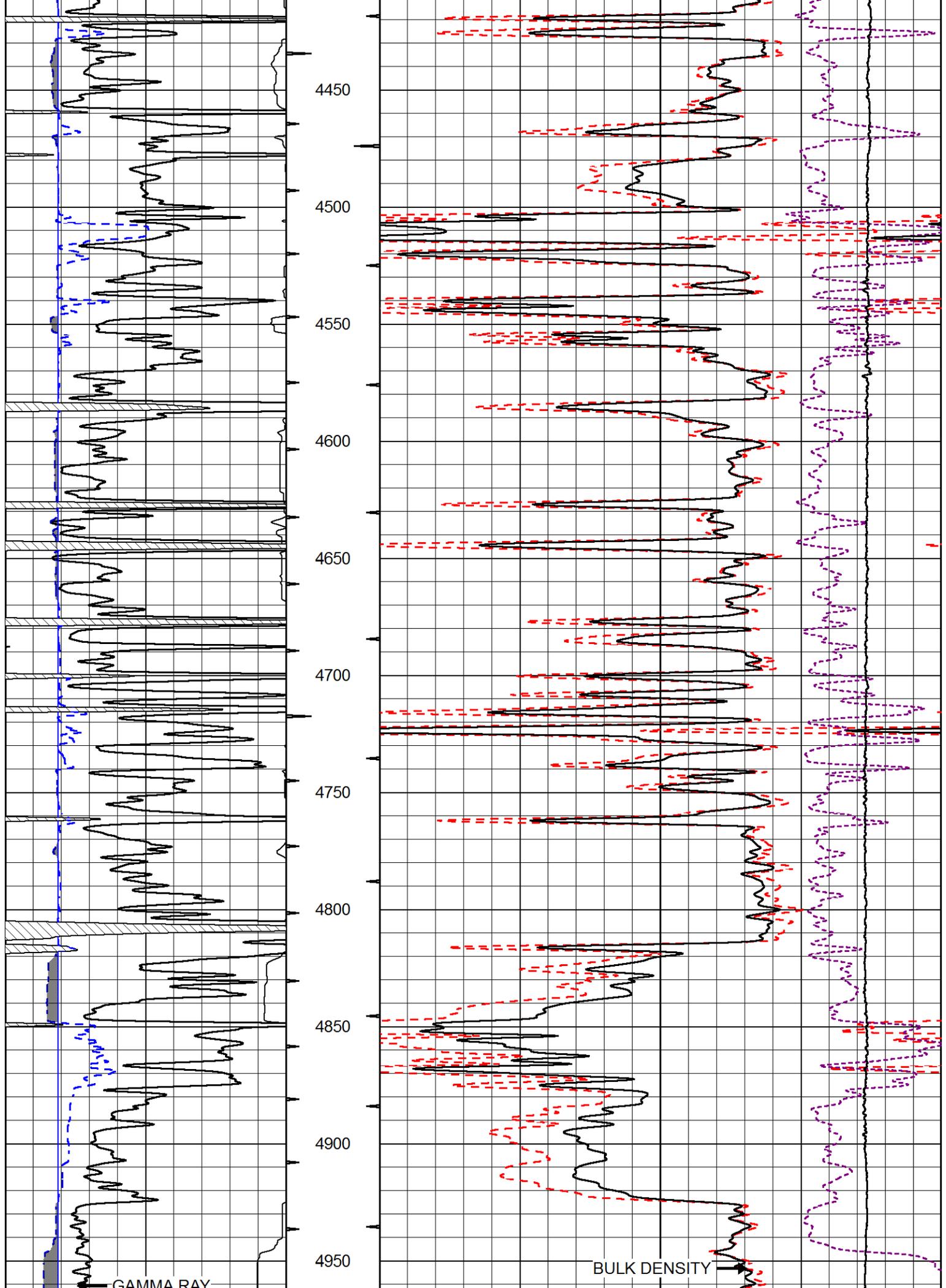
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 Dataset Pathname stackml/pass3.1  
 Presentation Format cdl  
 Dataset Creation Mon Sep 04 13:37:48 2017  
 Charted by Depth in Feet scaled 1:600

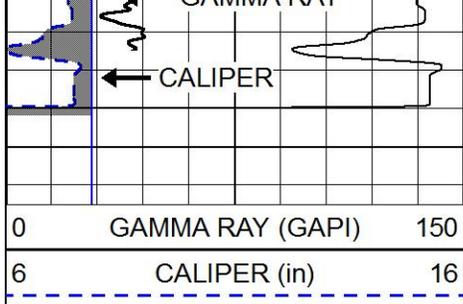
0	GAMMA RAY (GAPI)	150
6	CALIPER (in)	16

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

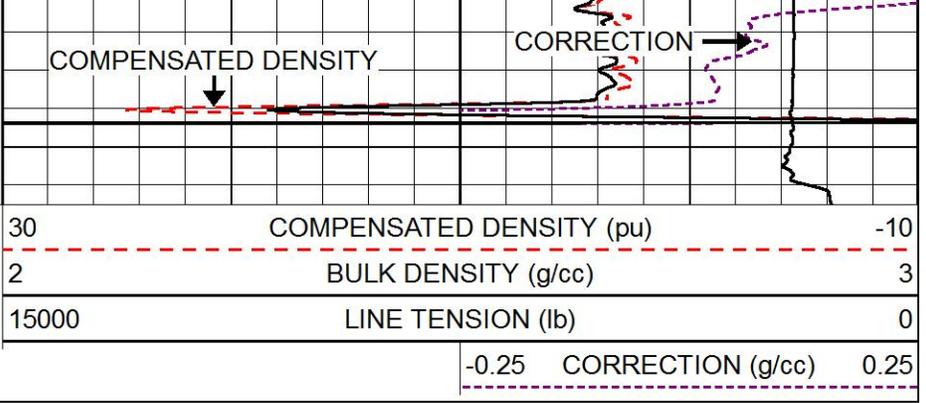








5000



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

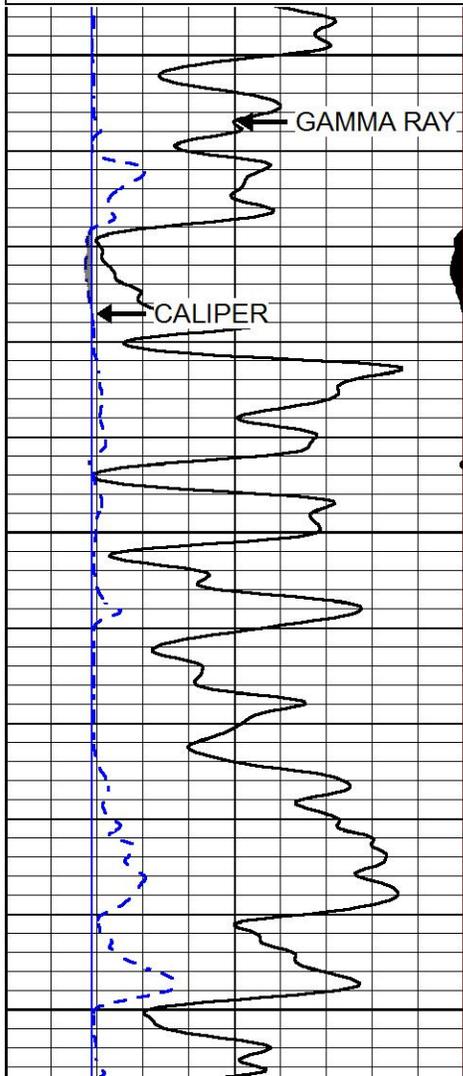


# MAIN PASS

Database File      ritchie\_blaue\_schroeder\_1.db  
 Dataset Pathname    stackml/pass3.1  
 Presentation Format    cndlspec  
 Dataset Creation      Mon Sep 04 13:37:48 2017  
 Charted by            Depth in Feet scaled 1:240

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

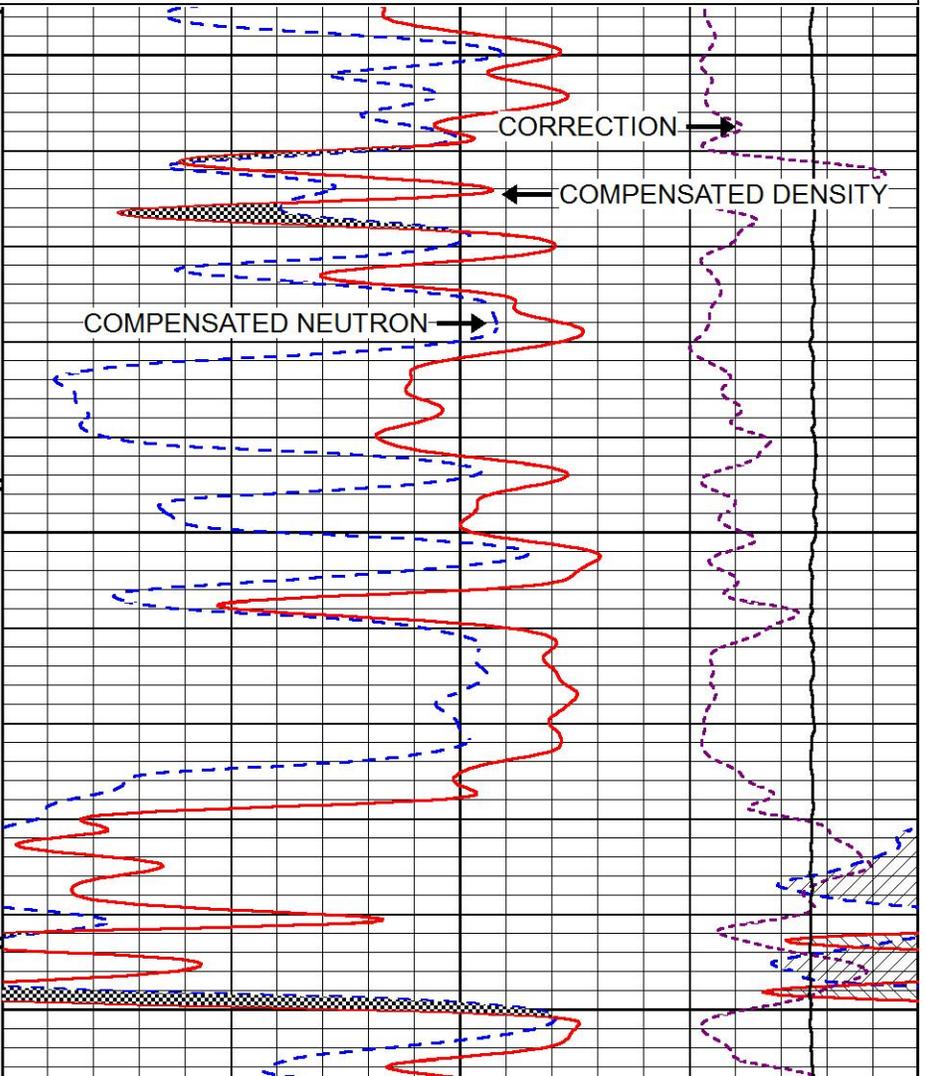
30	COMPENSATED NEUTRON (pu)	-10
30	COMPENSATED DENSITY (2.71 ma) (pu)	-10
15000	LINE TENSION (lb)	0
-0.25	CORRECTION (g/cc)	0.25



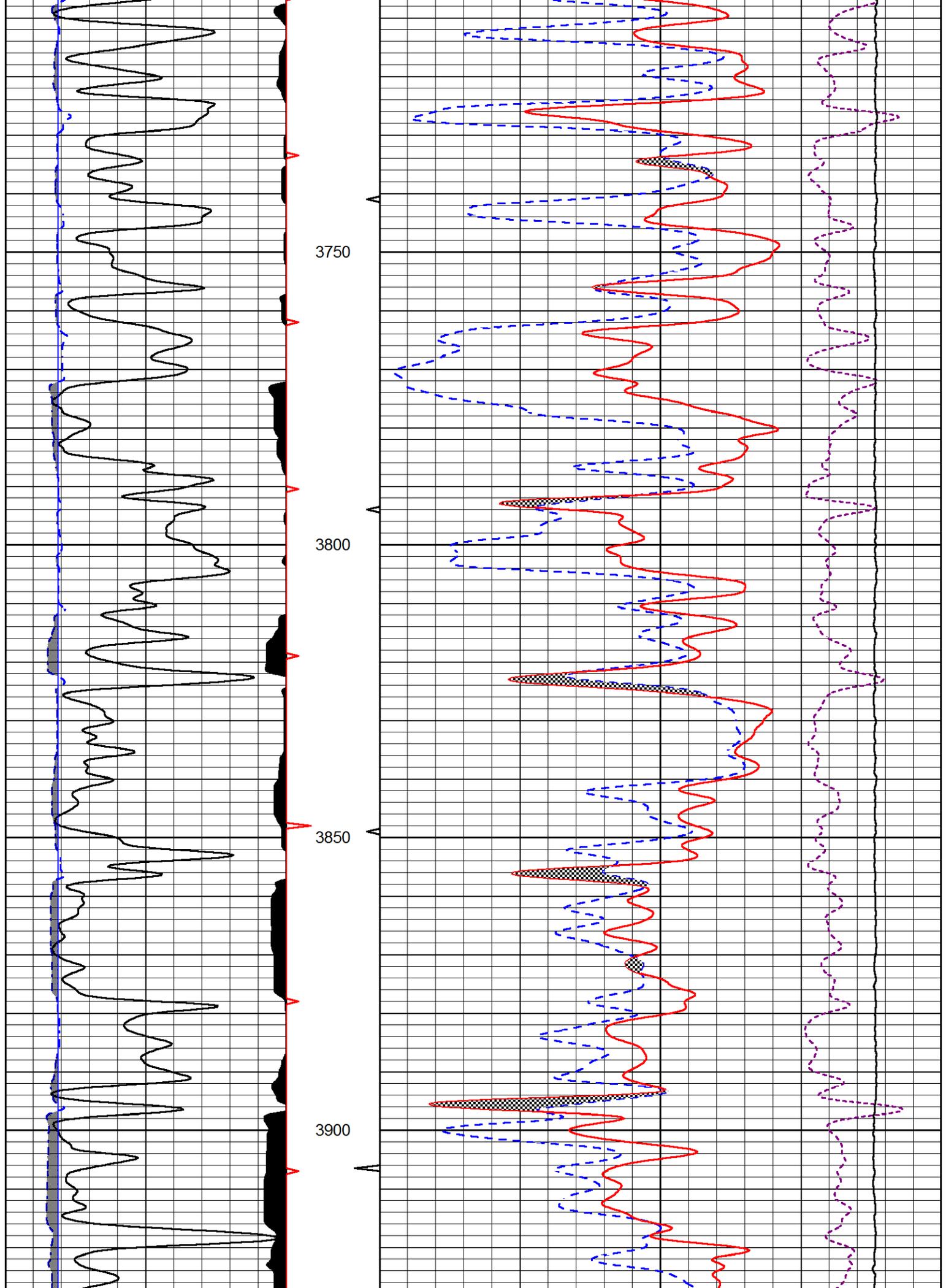
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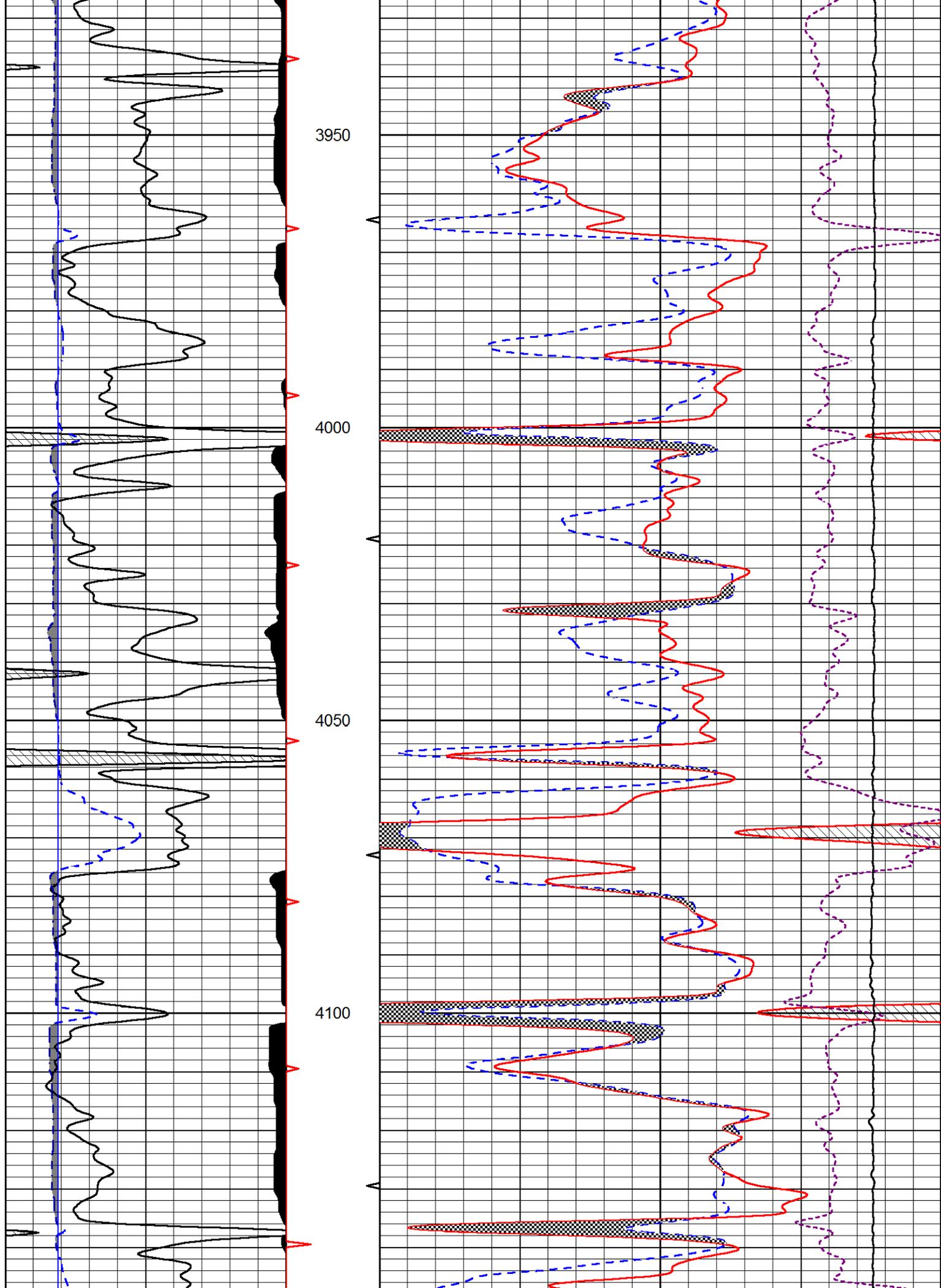
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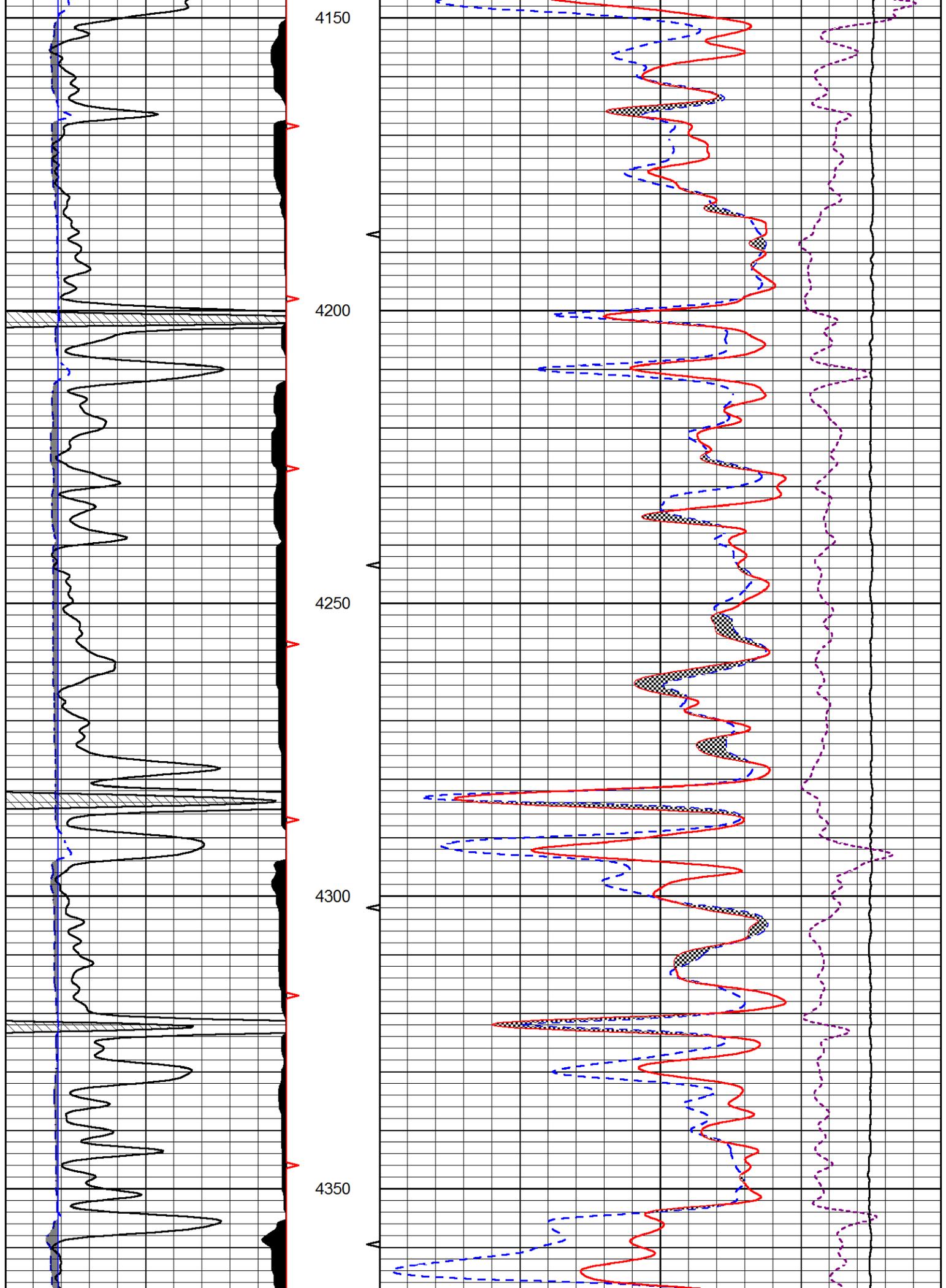
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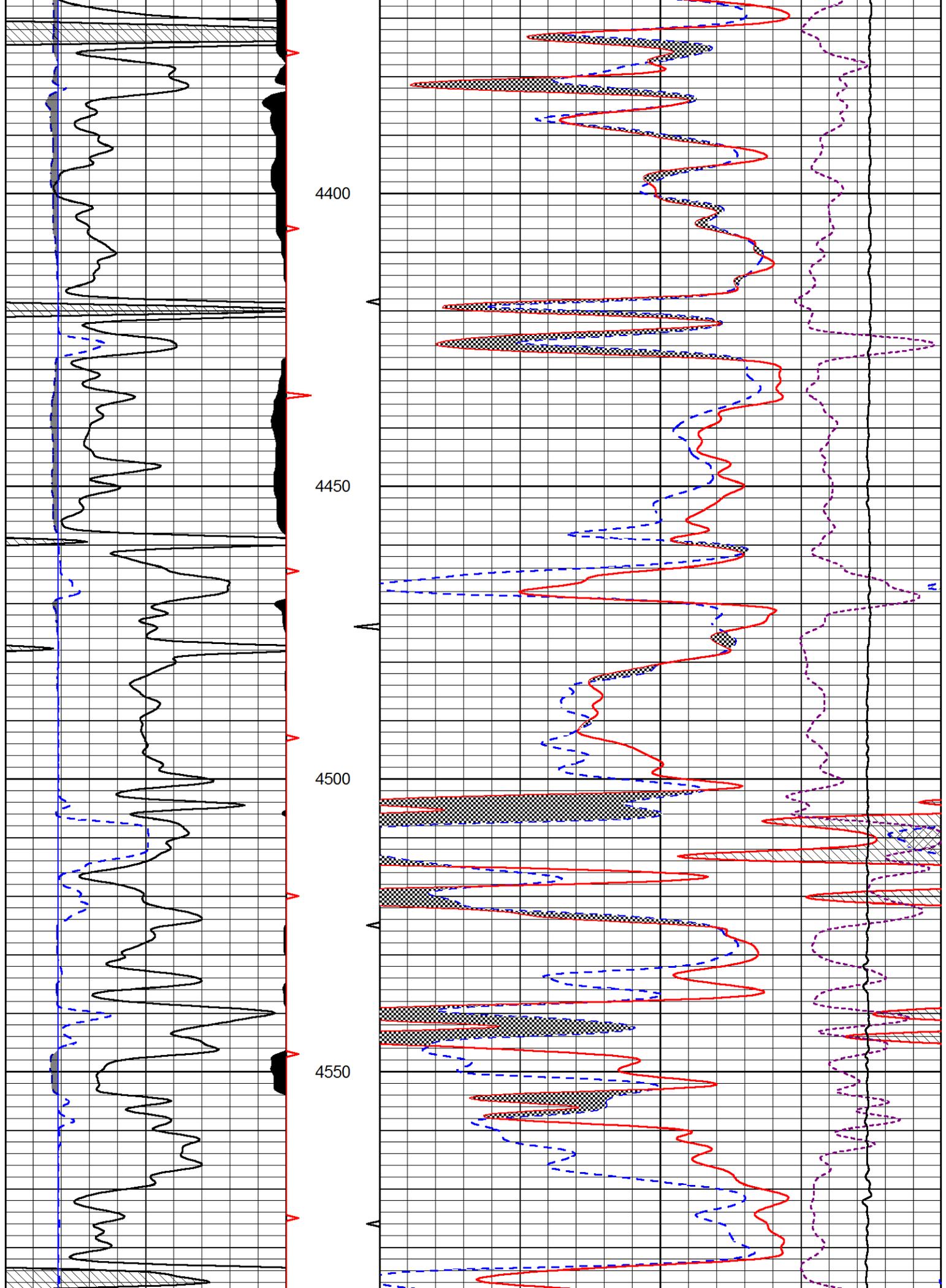


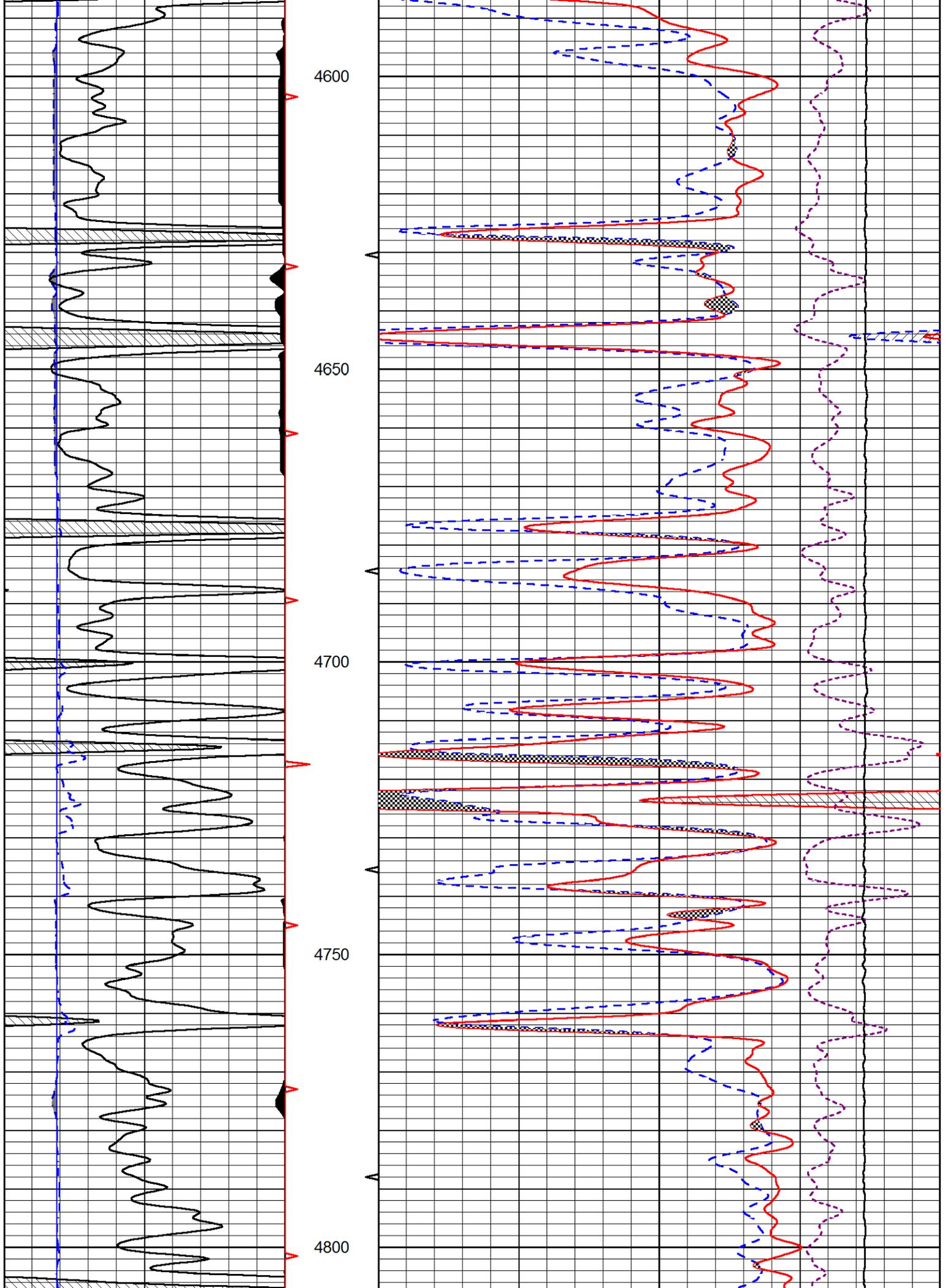
30	COMPENSATED NEUTRON (pu)	-10
30	COMPENSATED DENSITY (2.71 ma) (pu)	-10
15000	LINE TENSION (lb)	0
-0.25	CORRECTION (g/cc)	0.25

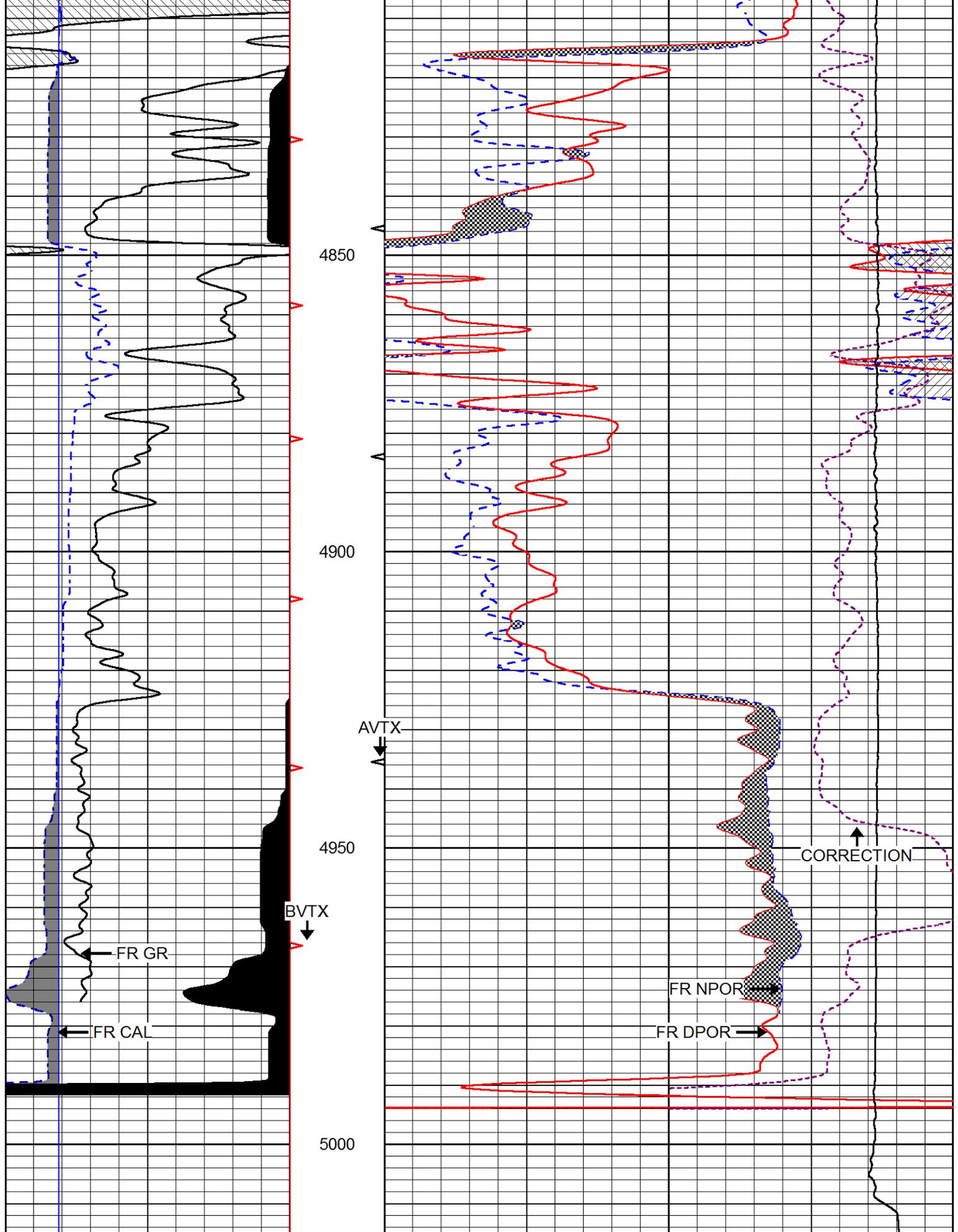












0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

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

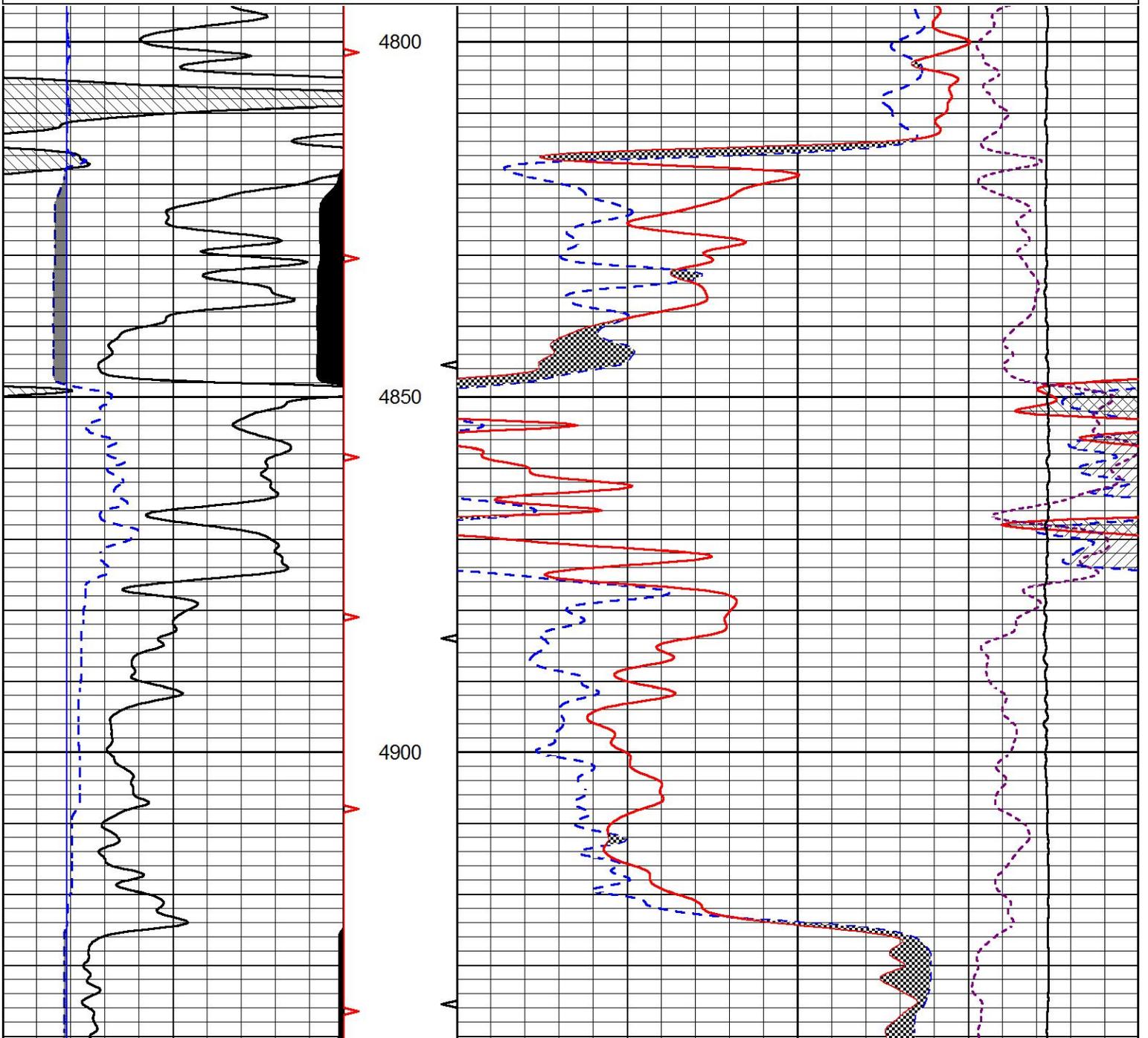


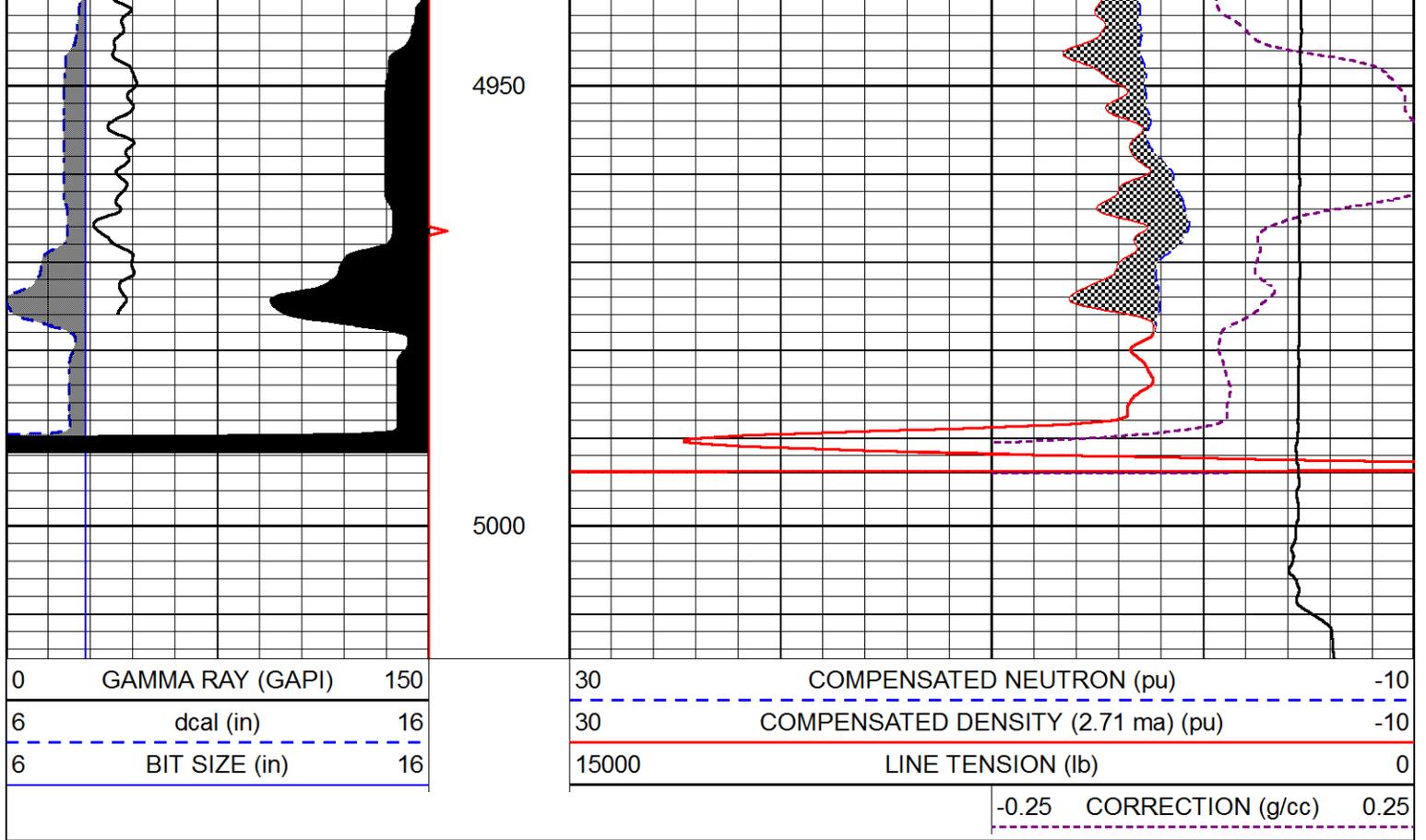
# REPEAT SECTION

Database File      ritchie\_blau\_schroeder\_1.db  
 Dataset Pathname  stackml/pass2.1  
 Presentation Format cndlspec  
 Dataset Creation   Mon Sep 04 12:37:28 2017  
 Charted by         Depth in Feet scaled 1:240

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

30	COMPENSATED NEUTRON (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     ritchie\_blau\_schroeder\_1.db  
 Dataset Pathname stackml/pass3.1  
 Dataset Creation   Mon Sep 04 13:37:48 2017

### Dual Induction Calibration Report

Serial-Model:                     1987-M&W  
 Calibration Performed:         Tue Apr 11 16:07:38 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

### Microlog Calibration Report

Serial-Model:                     PSI-02-PSI STKBL ML  
 Performed:                       Fri Jun 23 00:25:19 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	23000.0000	0.0000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	25000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.3500

### Compensated Density Calibration Report

Serial-Model:                     168-986-M&W  
 Source / Verifier:

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	1.03		
Large Ring	14.00	in	1.23		

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 16:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps  
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



**PIONEER**  
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