



# DUAL COMP POROSITY LOG

Company RITCHIE EXPLORATION, INC.  
 Well BANGERTER 12C NO.1  
 Field WILDCAT  
 County WICHITA  
 State KANSAS

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 County WICHITA State KANSAS

Location: API #: 15-203-203335-00-00  
 343' FSL & 925' FWL  
 SEC 12 TWP 15S RGE 38W  
 Permanent Datum GROUND LEVEL Elevation 3419'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services  
 Elevation  
 K.B. 3431'  
 D.F. N/A  
 G.L. 3419'

Date	5/31/2018
Run Number	ONE
Type Log	CNL/CDL
Depth Driller	5085'
Depth Logger	5090'
Bottom Logged Interval	5069'
Top Logged Interval	3600'
Type Fluid In Hole	CHEMICAL
Salinity, PPM CL	5400
Density	9.6
Level	FULL
Max. Rec. Temp. F	127 DEG/F
Operating Rig Time	5 HOURS
Equipment -- Location	108 HAYS
Recorded By	J. HENRICKSON
Witnessed By	MAX LOVELLY

Borehole Record				Casing Record			
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0	267'	8.625"	23#	0	267'
TWO	7.875"	267'		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 D ROAD, 5 WEST, 1 NORTH, 3/4 WEST, NORTH INTO

Log Measured From: KELLY BUSHING      12 Ft. Above Permanent Datum

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

<b>Your Pioneer Energy Services Crew</b> Engineer: J. HENRICKSON Operator: Operator: Operator:	<b>This Log Record Was Witnessed By</b> Primary Witness: MAX LOVELLY Secondary Witness: Secondary Witness: Secondary Witness:
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# Log Variables

DatabaseC:\ProgramData\Warrior\Data\ritchie\_bangerter\_12c\_1.db  
 Dataset field/well/stack/pass4.1/\_vars\_

## Top - 4104.00 ft

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	8	-2	-140	82	Off	5090

## 4104.00 ft - 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	8	-2	-140	82	Off	5090

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (128-4110)	8.50	4.00	250.00
RLL3 RLL3F	15.80 15.79					

CILD 8.00

CILM 4.70

SP 0.20

DIL-M&W (1987)

18.50

3.50

220.00

Dataset: ritchie\_bangerter\_12c\_1.db: field/well/stack/pass4.1  
 Total length: 35.50 ft  
 Total weight: 620.00 lb  
 O.D.: 4.00 in

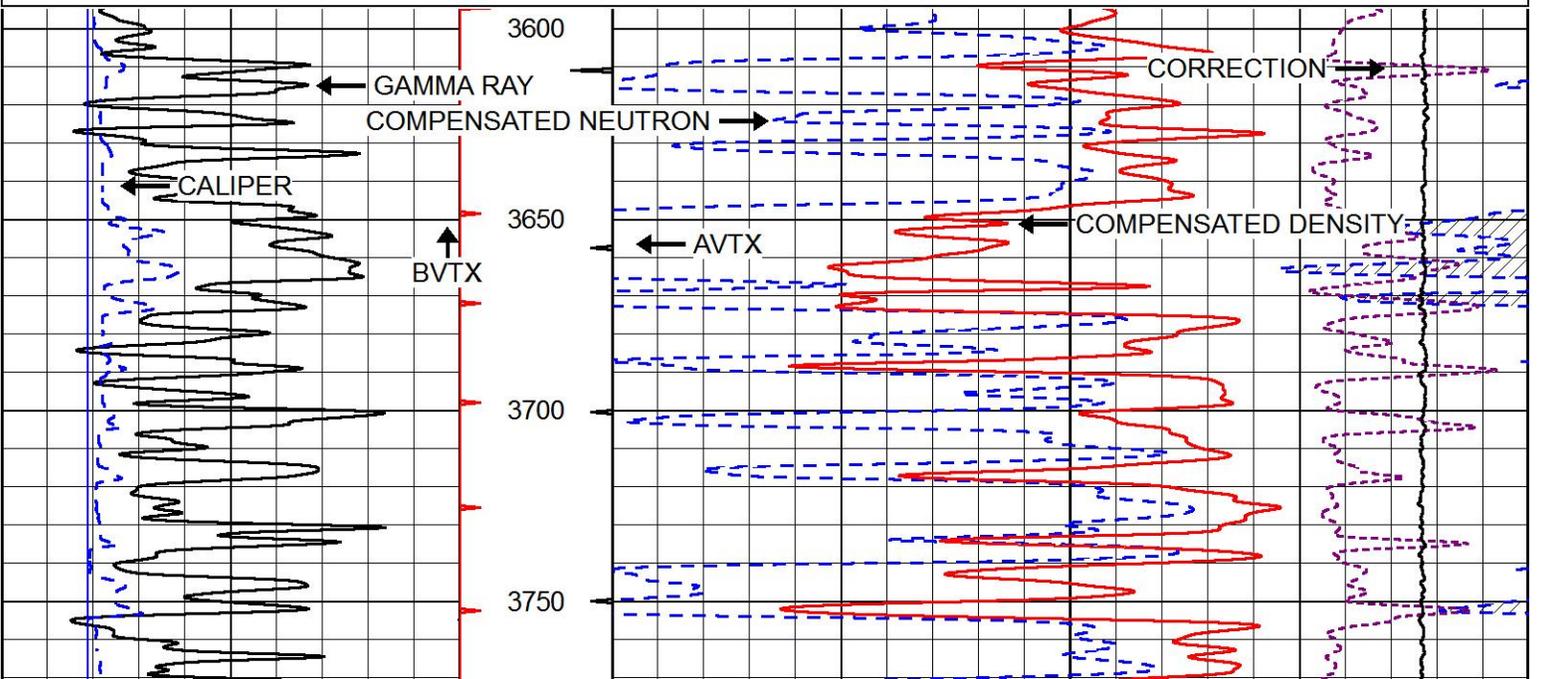


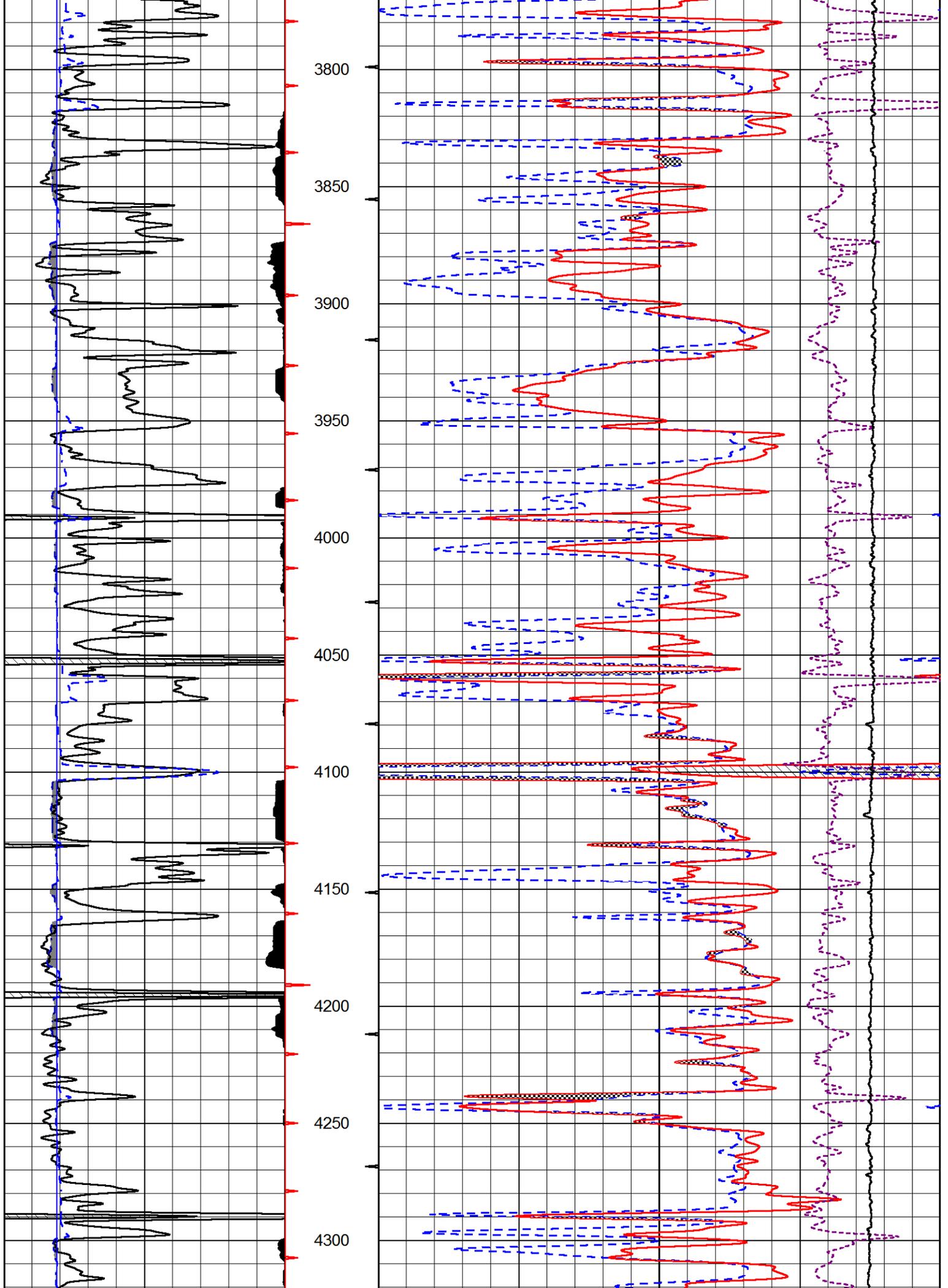
# MAIN PASS

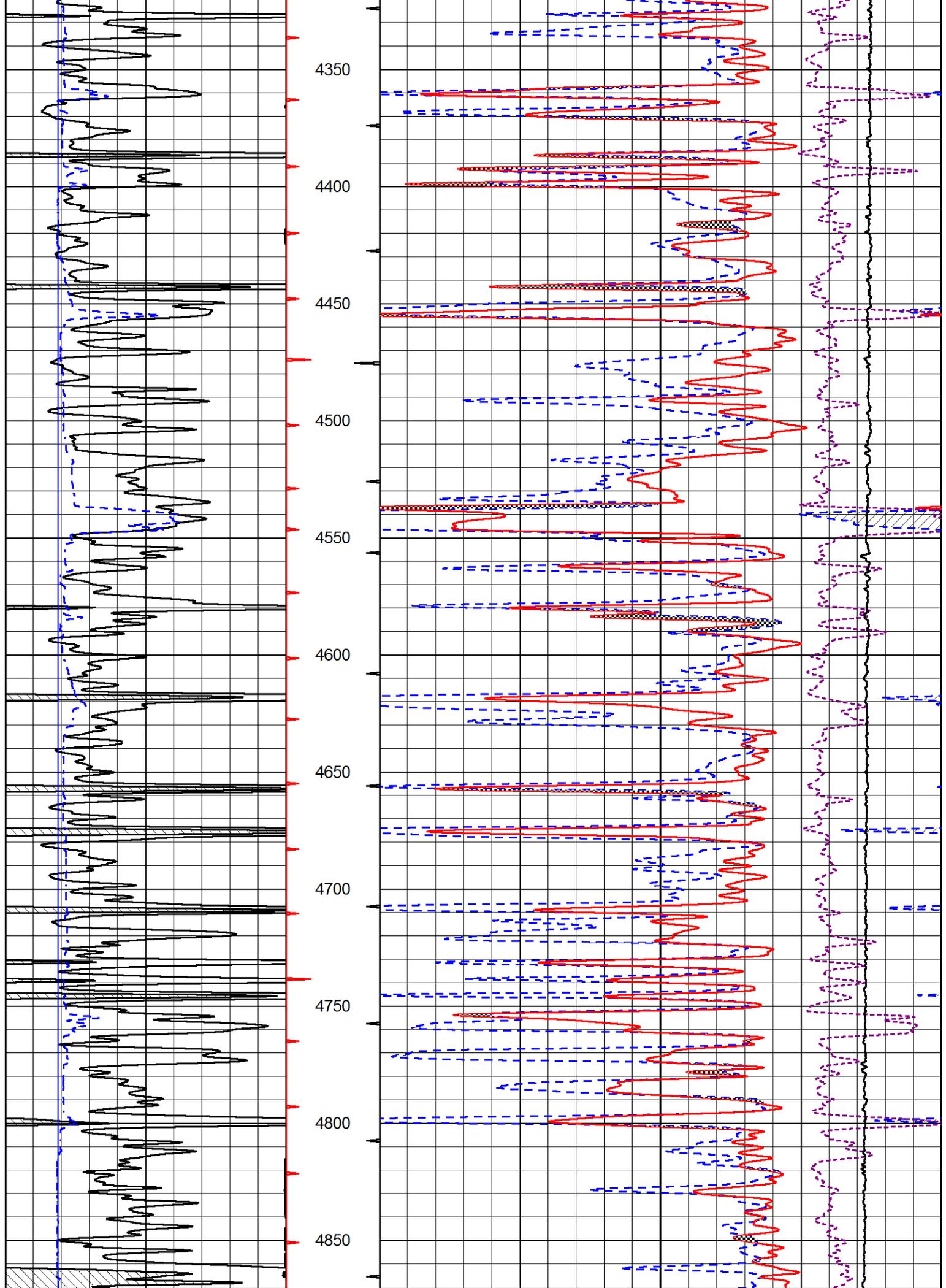
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 Dataset Pathname stack/pass4.1  
 Presentation Format cndlspec  
 Dataset Creation Thu May 31 22:25:31 2018  
 Charted by Depth in Feet scaled 1:600

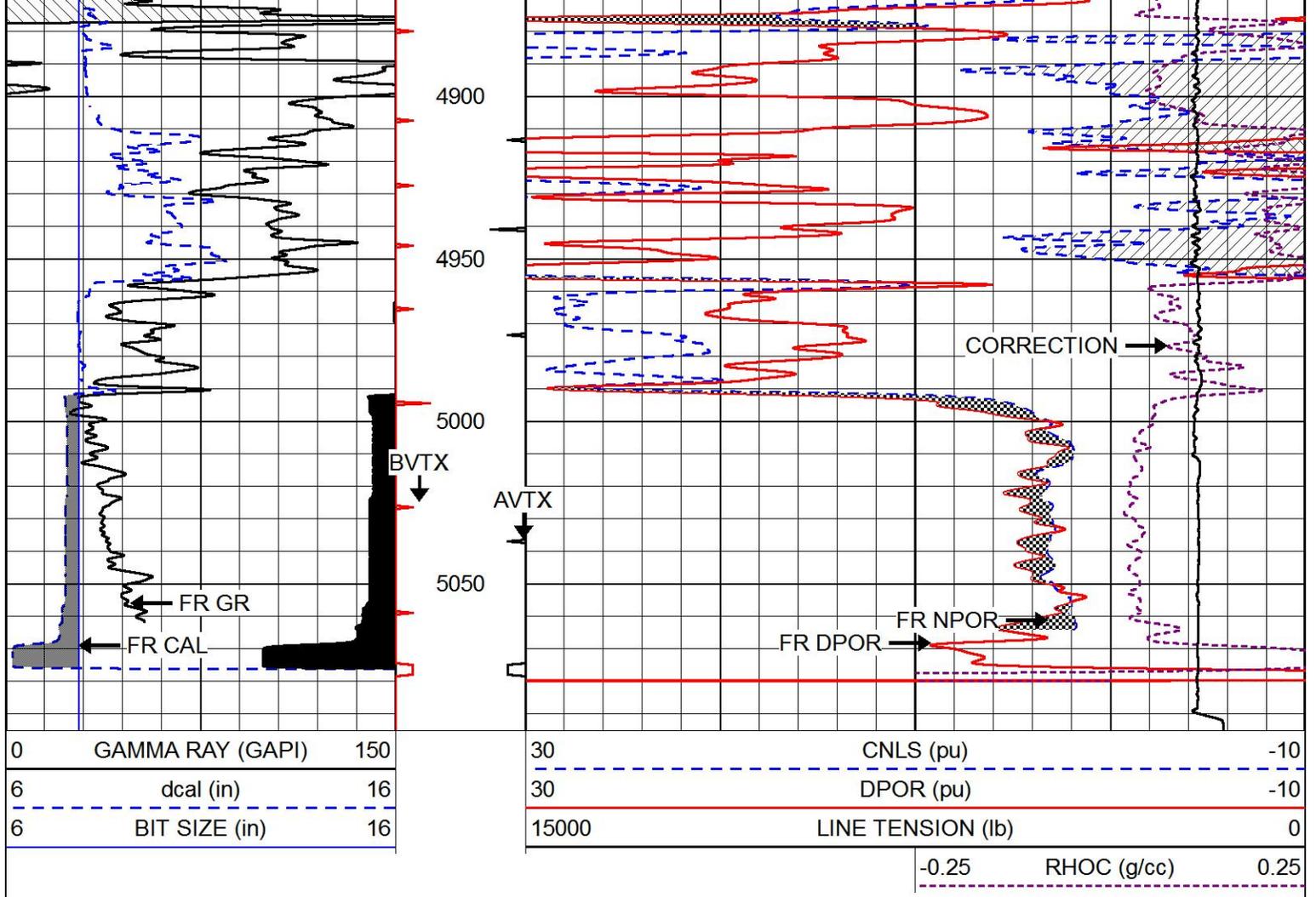
0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

30	CNLS (pu)	-10
30	DPOR (pu)	-10
15000	LINE TENSION (lb)	0
-0.25	RHOC (g/cc)	0.25



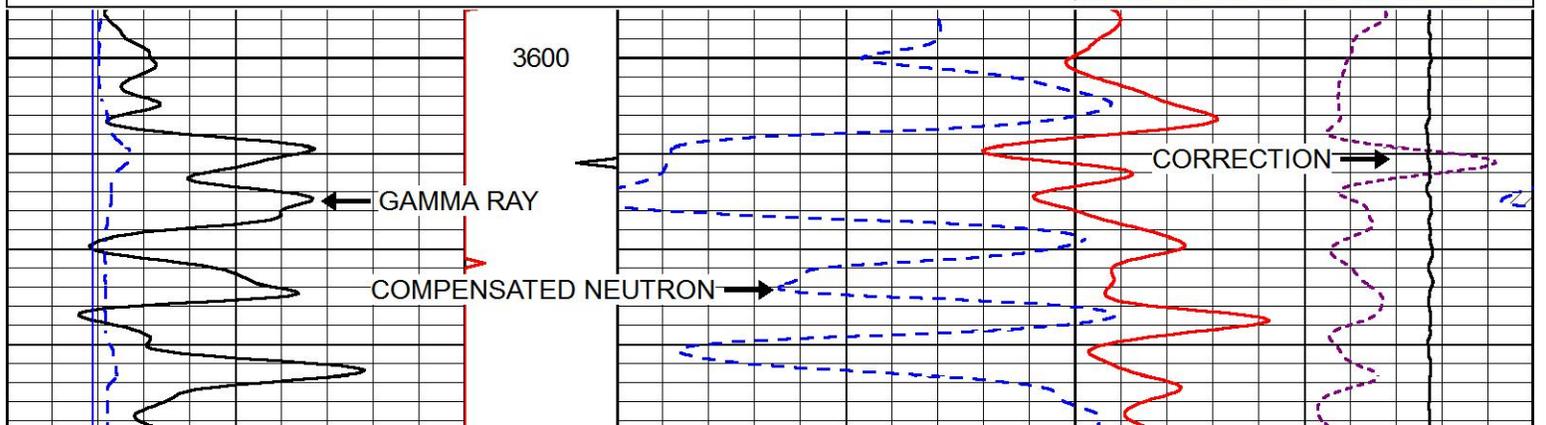
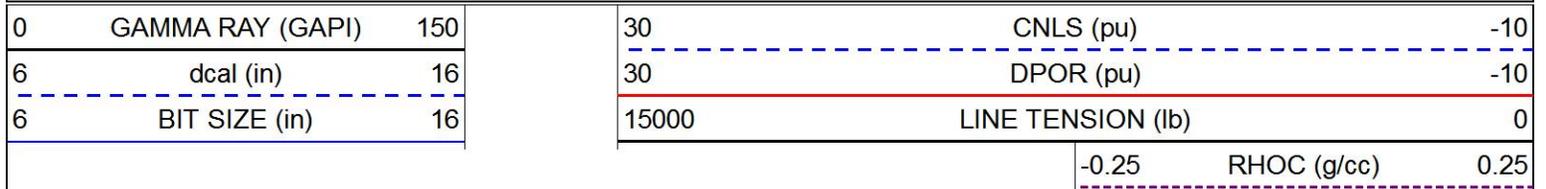


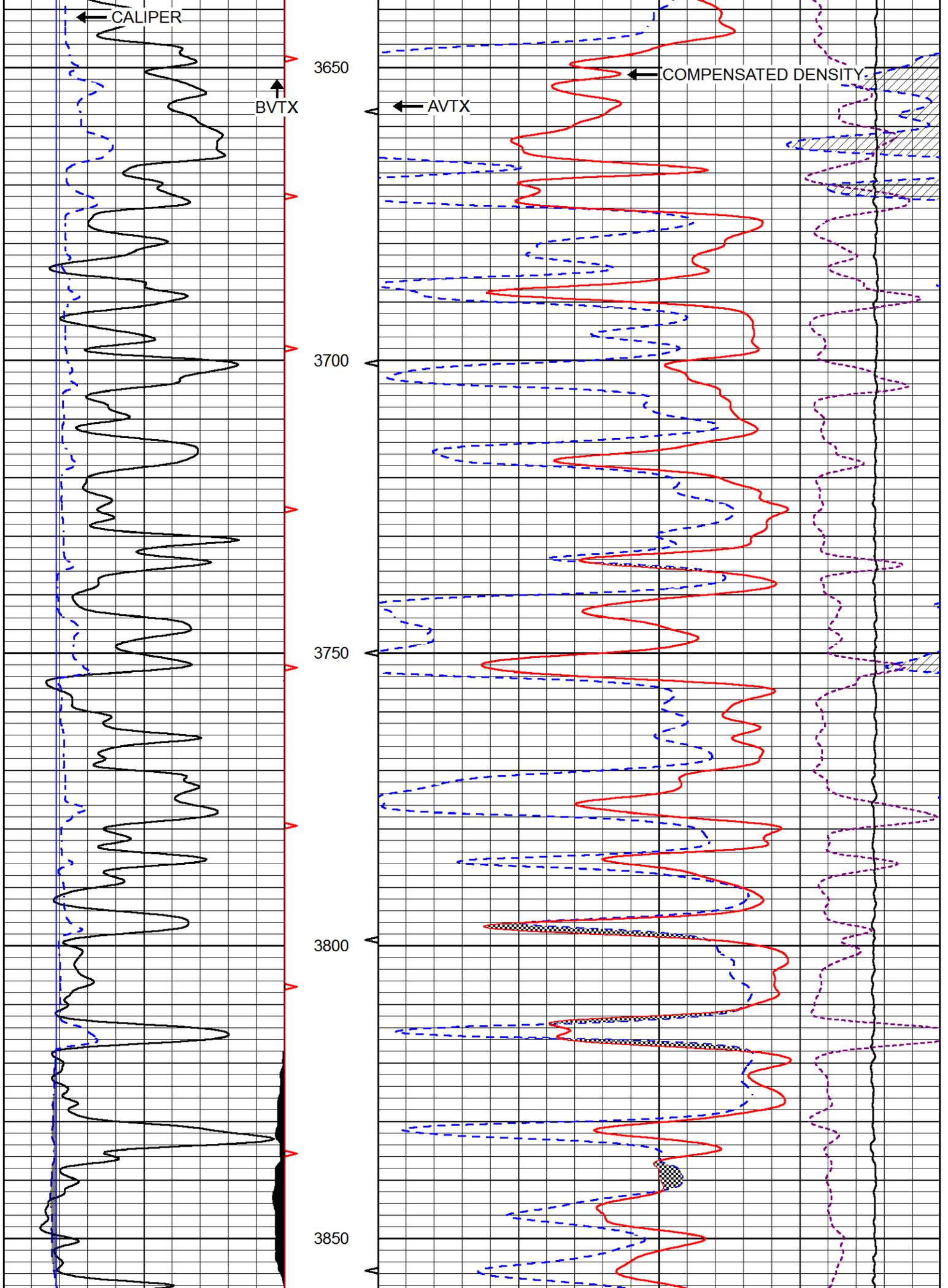


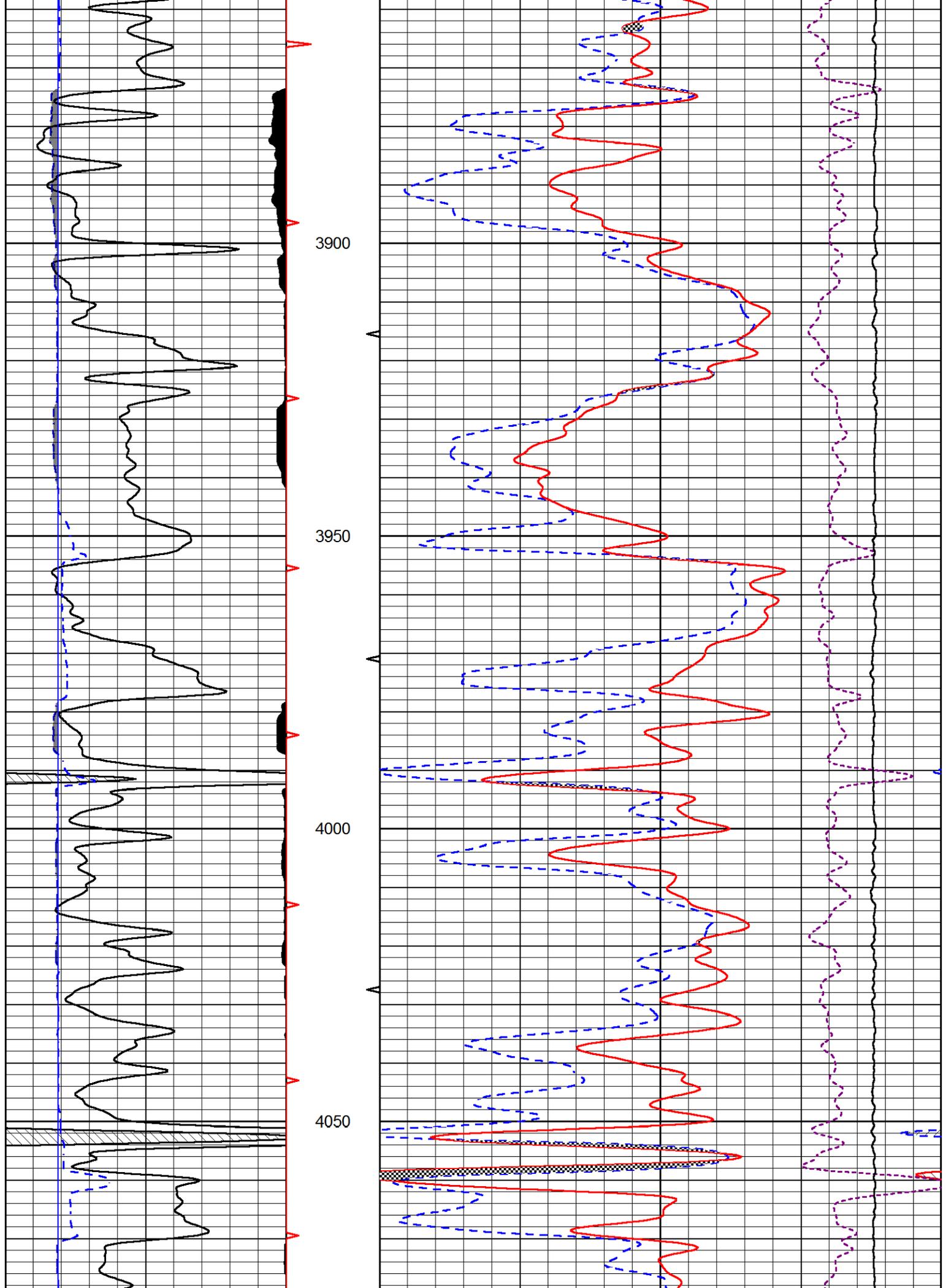


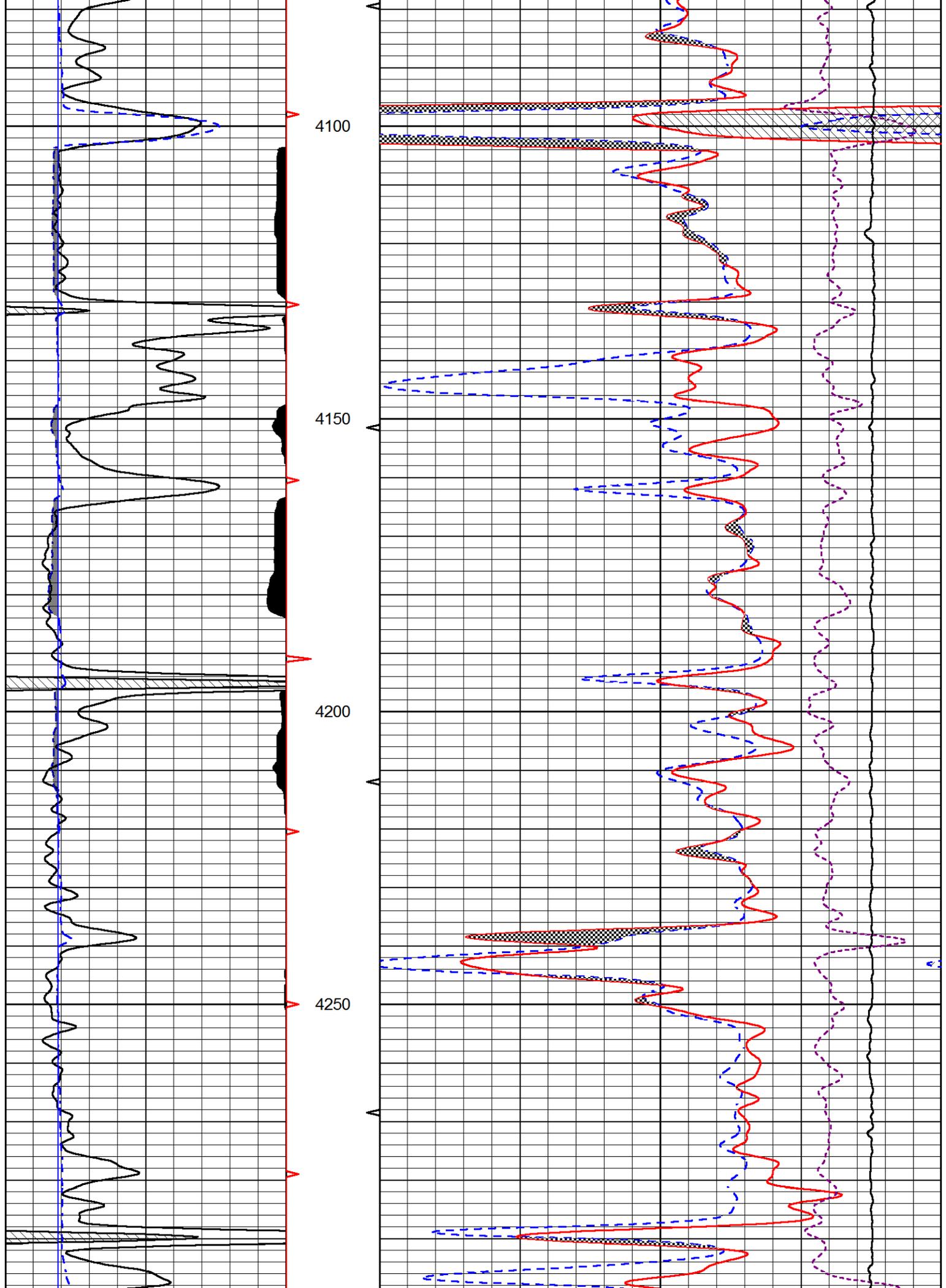
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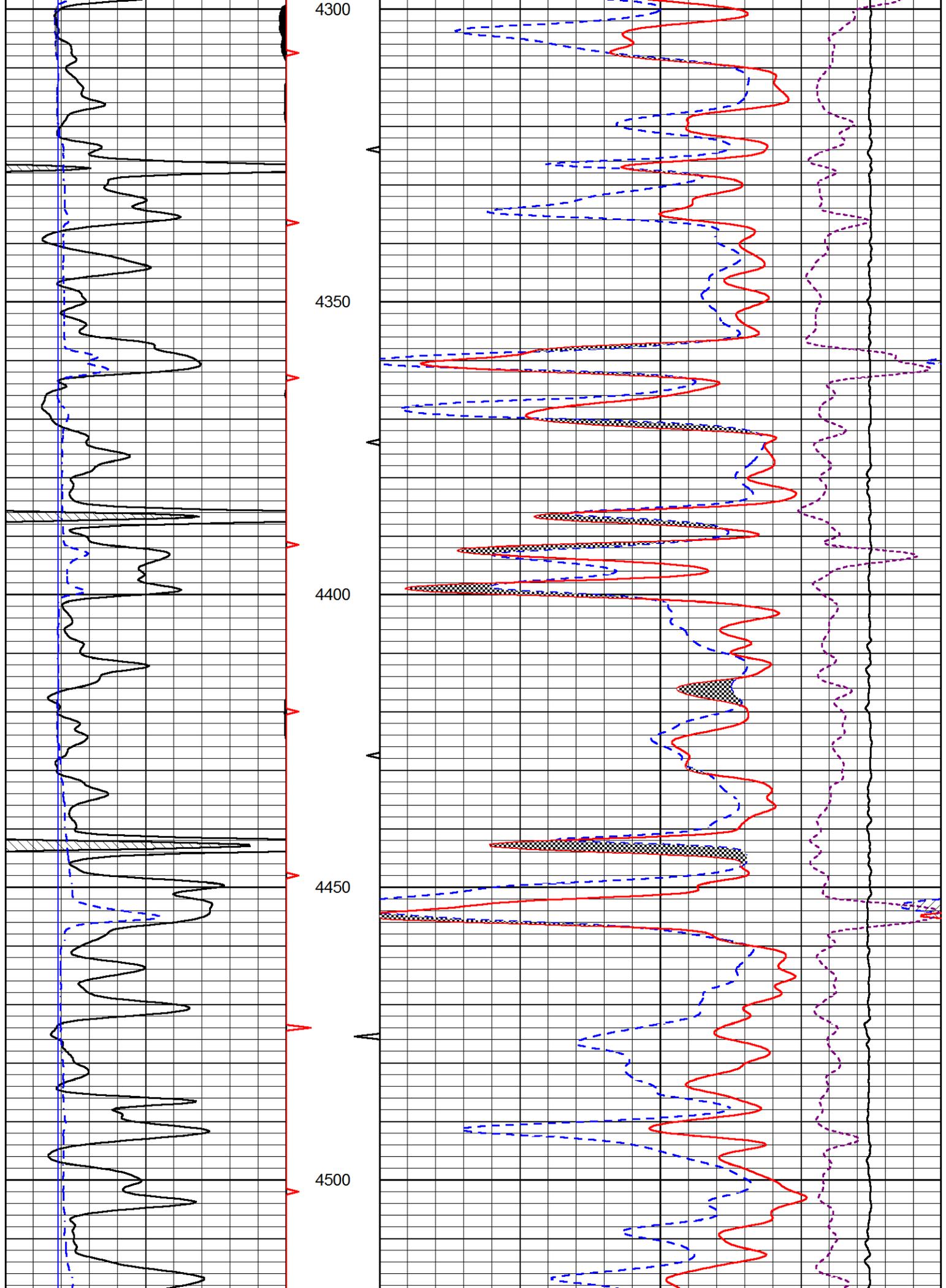
Database File     ritchie\_bangerter\_12c\_1.db  
 Dataset Pathname   stack/pass4.1  
 Presentation Format   cndlspec  
 Dataset Creation    Thu May 31 22:25:31 2018  
 Charted by         Depth in Feet scaled 1:240

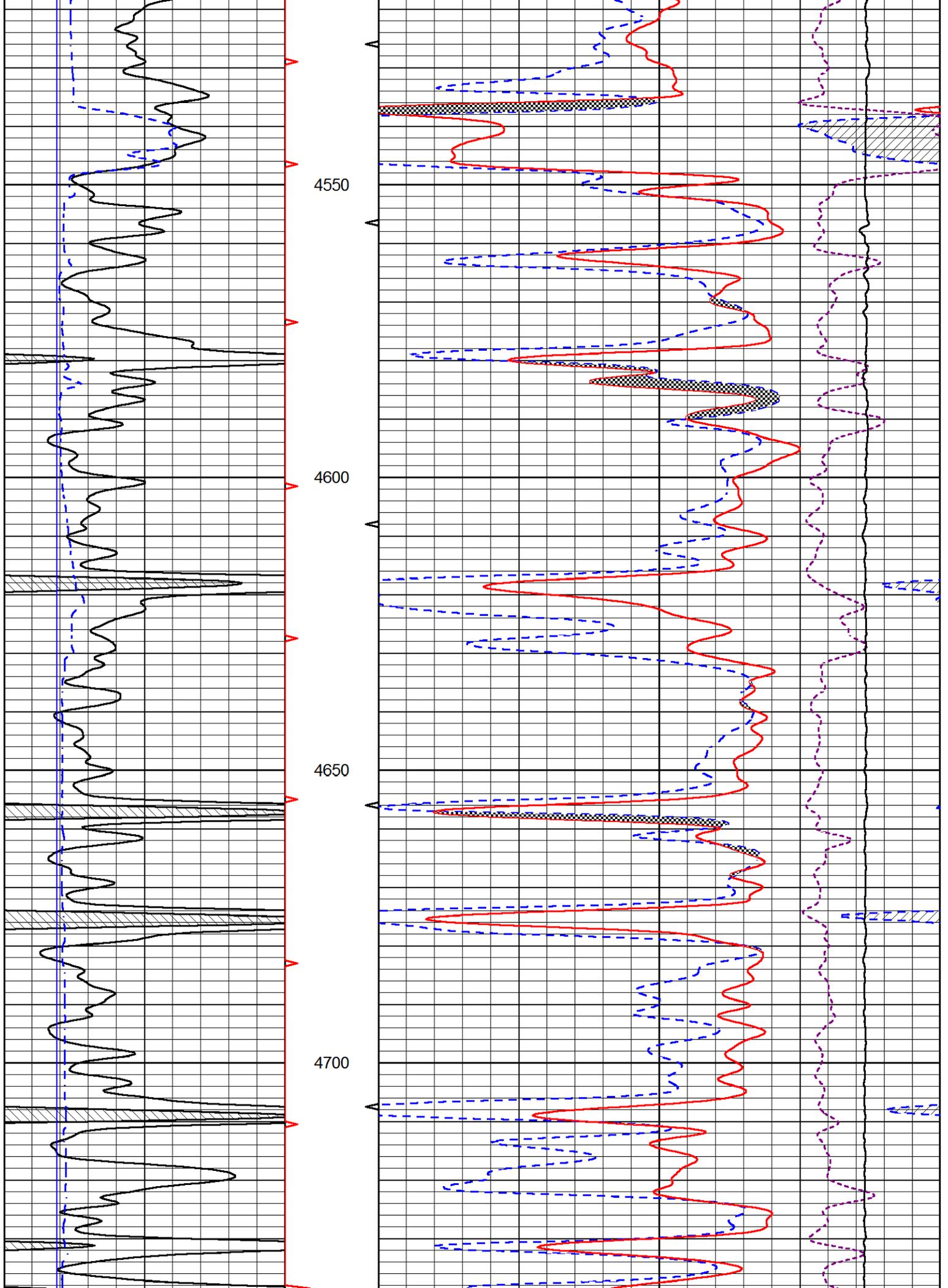


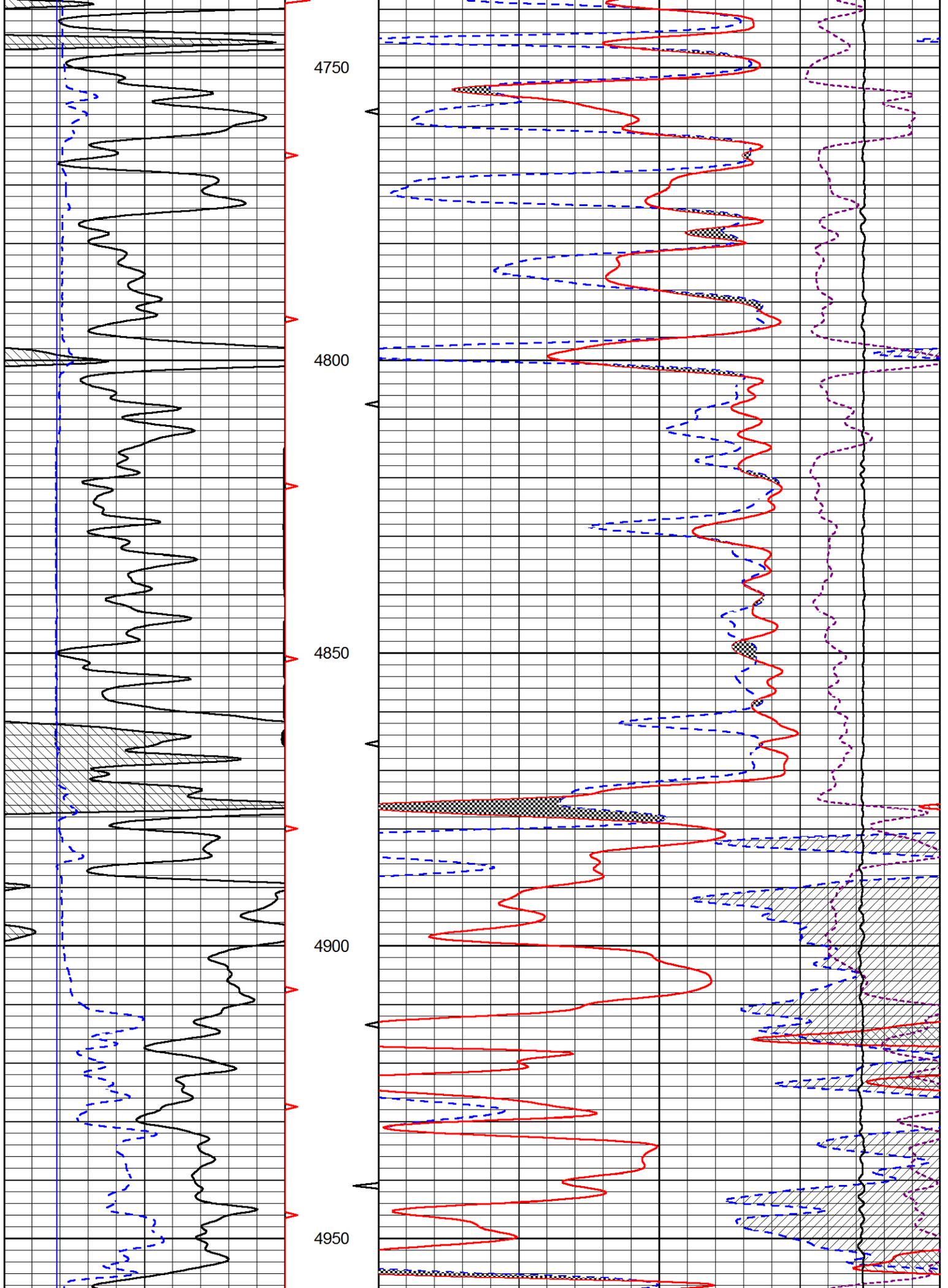


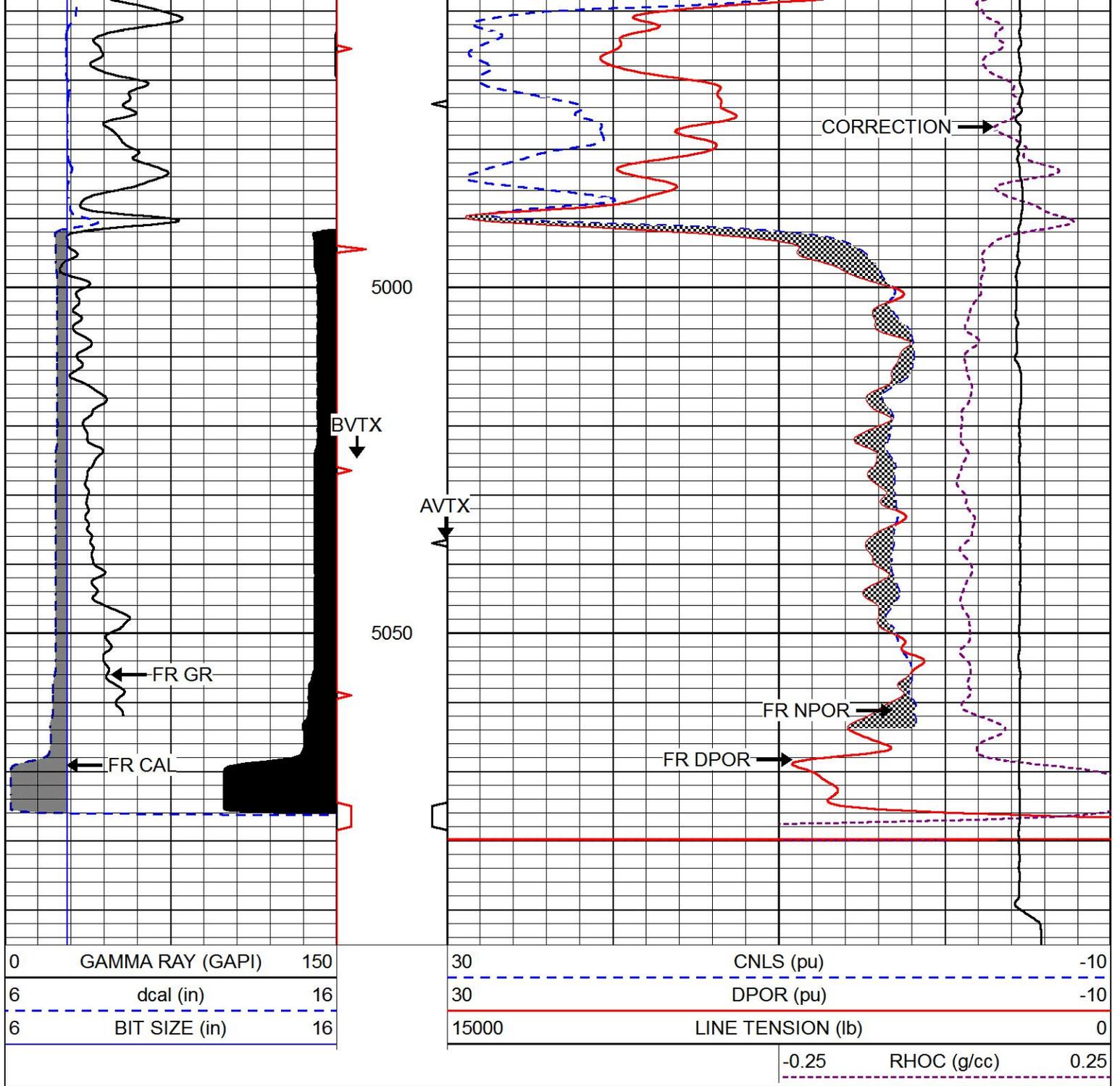








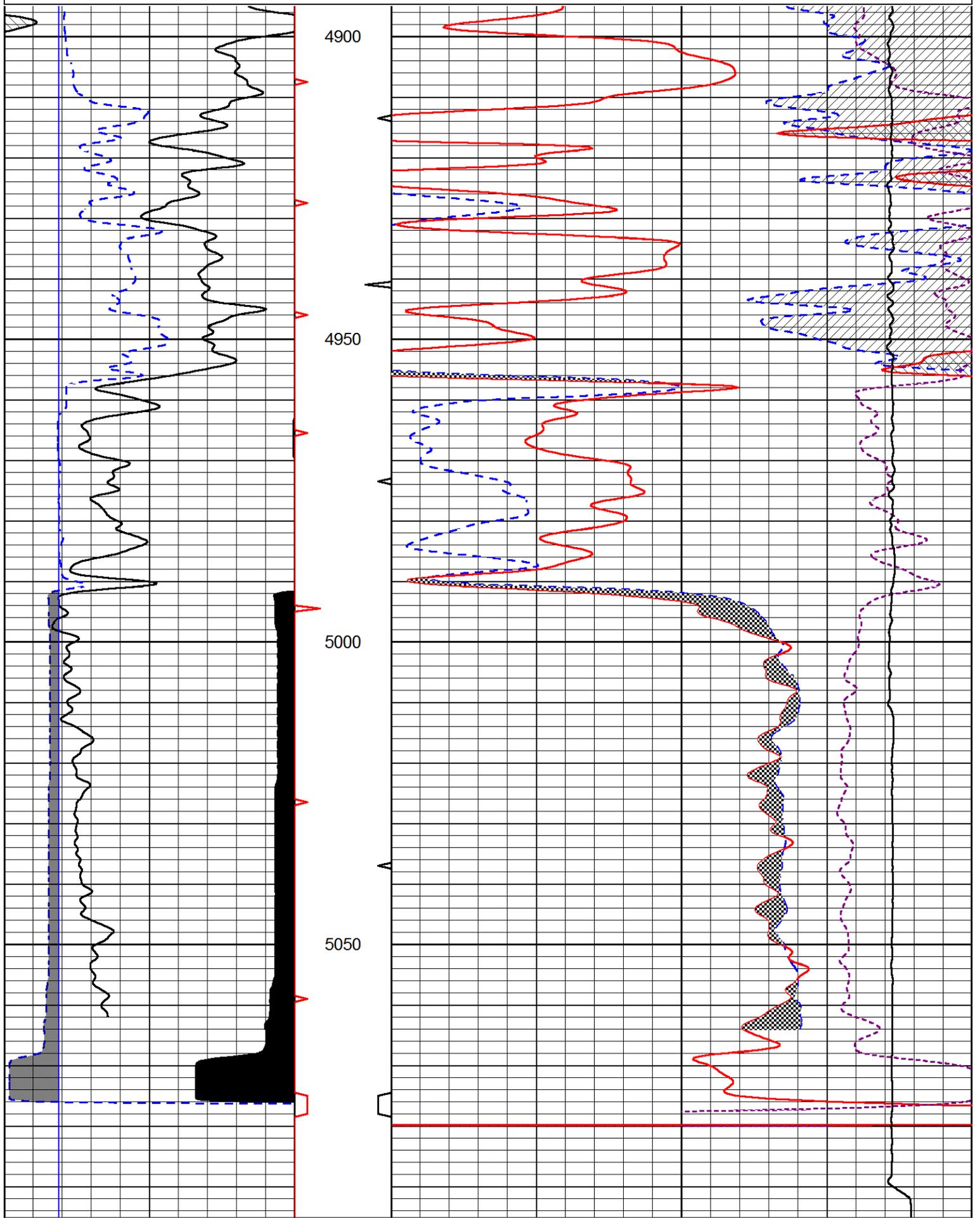




# REPEAT SECTION

Database File     ritchie\_bangerter\_12c\_1.db  
 Dataset Pathname   stack/pass3.1  
 Presentation Format   cndlspec  
 Dataset Creation    Thu May 31 22:36:23 2018  
 Charted by         Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	30	CNLS (pu)	-10	
6	dcal (in)	16	30	DPOR (pu)	-10	
6	BIT SIZE (in)	16	15000	LINE TENSION (lb)	0	
				-0.25	RHOC (g/cc)	0.25



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

30	CNLS (pu)	-10
30	DPOR (pu)	-10
15000	LINE TENSION (lb)	0

0.25 PLQC (g/cc) 0.25

Calibration Report

Database File     ritchie\_bangerter\_12c\_1.db  
 Dataset Pathname stack/pass4.1  
 Dataset Creation   Thu May 31 22:25:31 2018

Dual Induction Calibration Report

Serial-Model:                     1987-M&W  
 Calibration Performed:         Tue Apr 11 17:07:38 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

Compensated Density Calibration Report

Serial-Model:                     128-4110-M&W  
 Source / Verifier:               /  
 Master Calibration Performed:   Thu Mar 02 17:30:49 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.750	g/cc	4555.61	2204.19	cps
Aluminum	2.650	g/cc	856.69	1405.61	cps
Spine Angle = 74.93			Density/Spine Ratio = 0.520		
	Size		Reading		
Small Ring	4.00	in	1.15		
Large Ring	14.00	in	1.04		

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



**PIONEER**

Pioneer Energy Services

Company	RITCHIE EXPLORATION, INC.
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State	KANSAS