



DUAL COMP POROSITY LOG

Company COBALT ENERGY LLC
 Well RADNOR A #1-30
 Field N/A
 County LOGAN
 State KANSAS

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Location: API #: 15-109-21540-00-00
 NE NW SE SW
 1218' FSL & 1878' FWL
 SEC 30 TWP 15S RGE 33W
 Permanent Datum GROUND LEVEL Elevation 2925'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services DIL/MEL
 K.B. 2930'
 D.F. 2928'
 G.L. 2925'

Date	4/6/2018						
Run Number	ONE						
Type Log	CNL/CDL						
Depth Driller	4680'						
Depth Logger	4681'						
Bottom Logged Interval	4653'						
Top Logged Interval	3600'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	8000						
Density	9.3						
Level	FULL						
Max. Rec. Temp. F	123 DEG F						
Operating Rig Time	2 1/2 HOURS						
Equipment -- Location	108 HAYS						
Recorded By	T. MARTIN						
Witnessed By	COREY BAKER						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	00'	218'	8.625"	23#	00'	218'
TWO	7.875"	218'					
Casing Record							

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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.

PENCE, 2 E TO EAGLE RD, 4.5 N, E AND S INTO

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

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

Your Pioneer Energy Services Crew		This Log Record Was Witnessed By	
Engineer: T. MARTIN	Operator:	Primary Witness: COREY BAKER	Secondary Witness:
Operator:	Operator:	Secondary Witness:	Secondary Witness:
Operator:		Secondary Witness:	

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
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-02) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79		DIL-M&W (PSI 978)	18.50	3.50	220.00
CILD	8.00		CILM	4.70		
SP	0.20					

Dataset: cobalt_radnor a_#1-30.db: field/well/stkml/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt_radnor a_#1-30.db
 Dataset field/well/stkml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	123	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	-310	50	Off	4681



PIONEER
Pioneer Energy Services

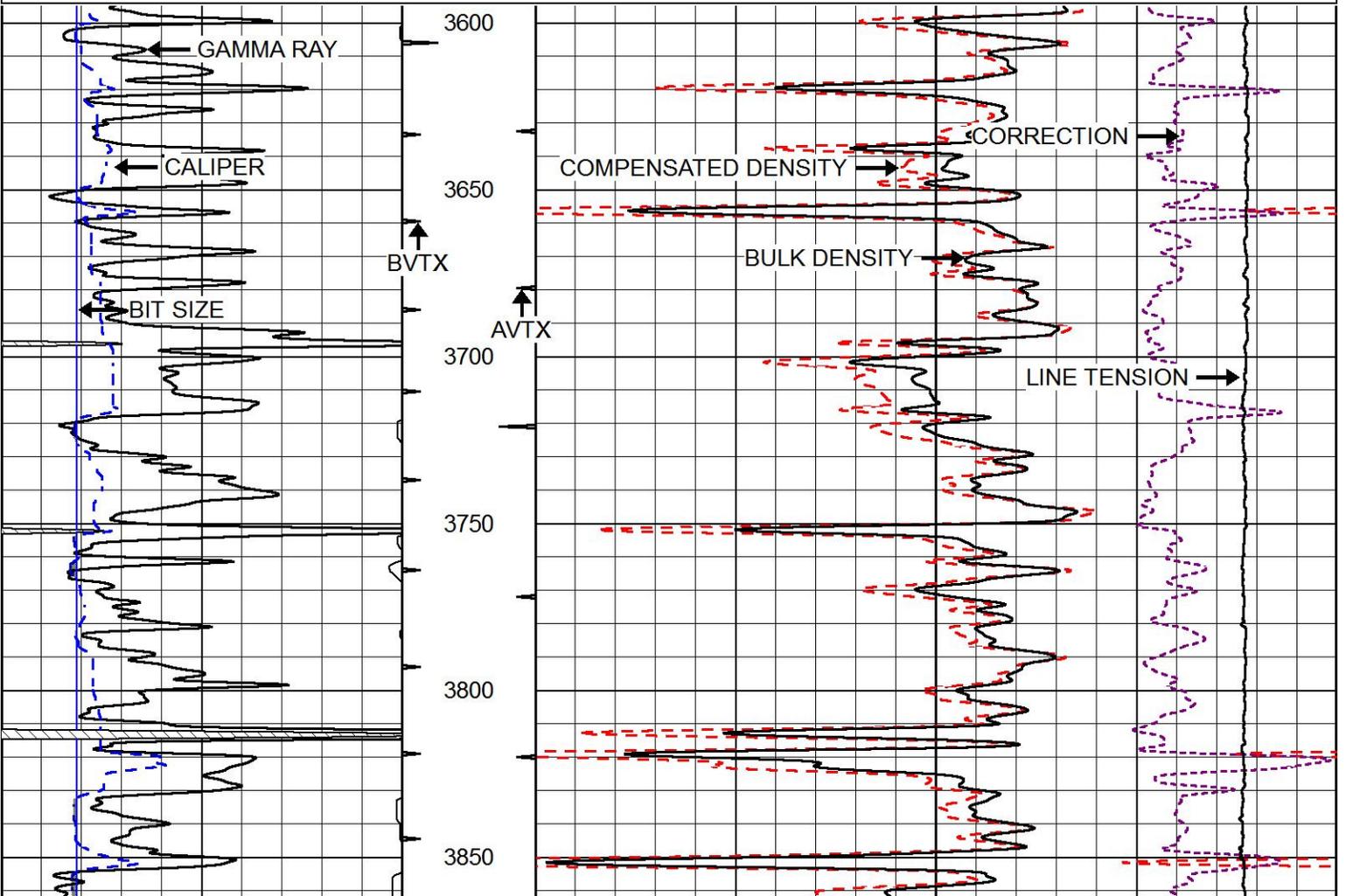
2" SCALE BULK DENSITY

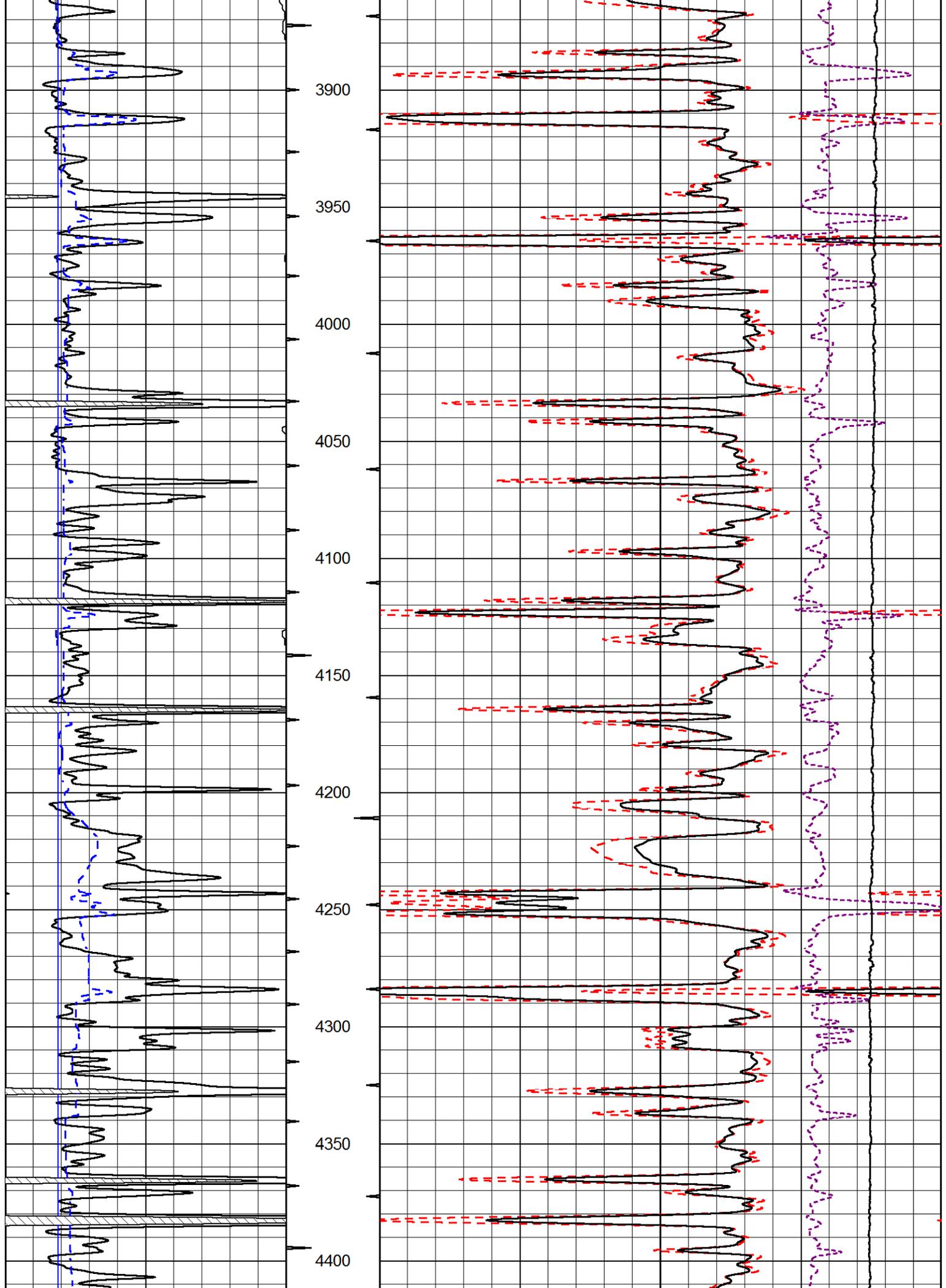
MAIN PASS

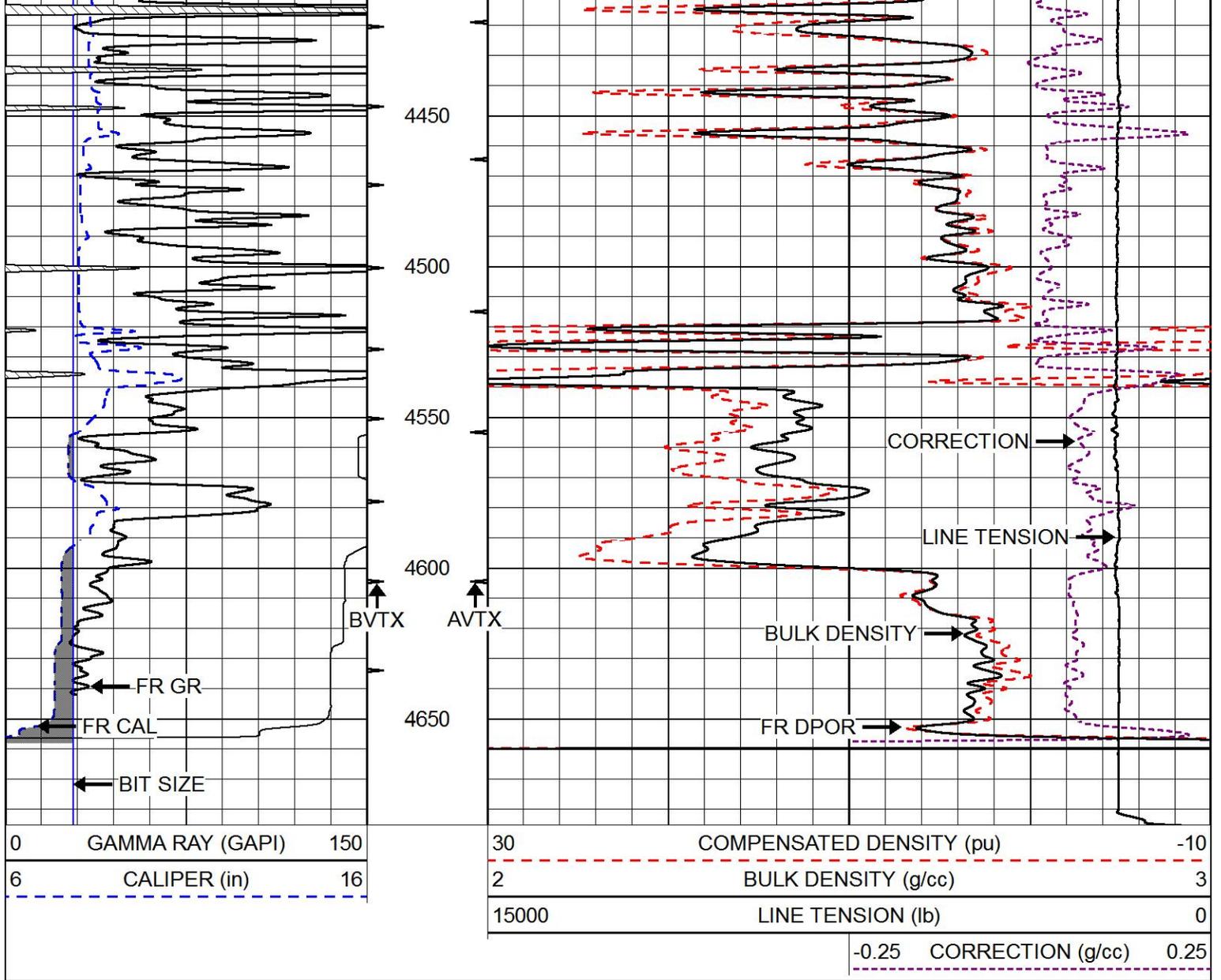
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 Dataset Pathname stkml/pass3.3
 Presentation Format cdl
 Dataset Creation Fri Apr 06 23:55:14 2018
 Charted by Depth in Feet scaled 1:600

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

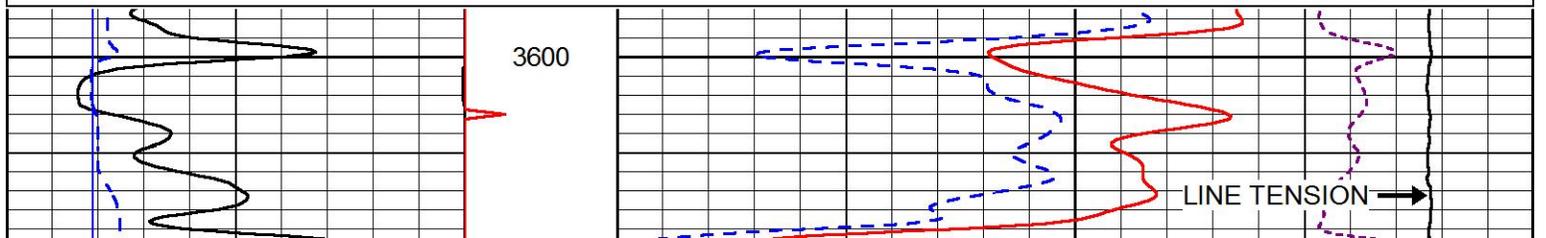
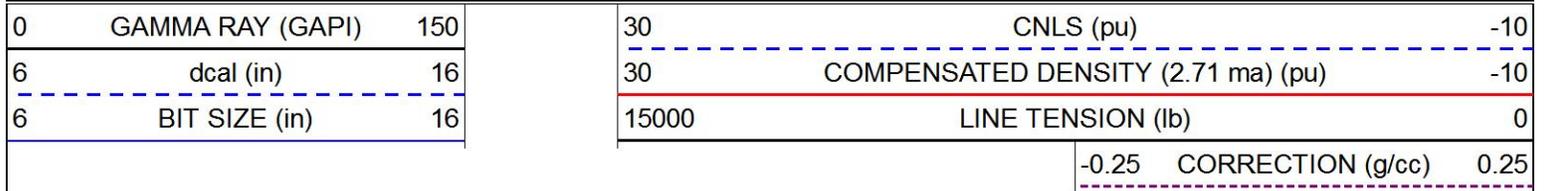


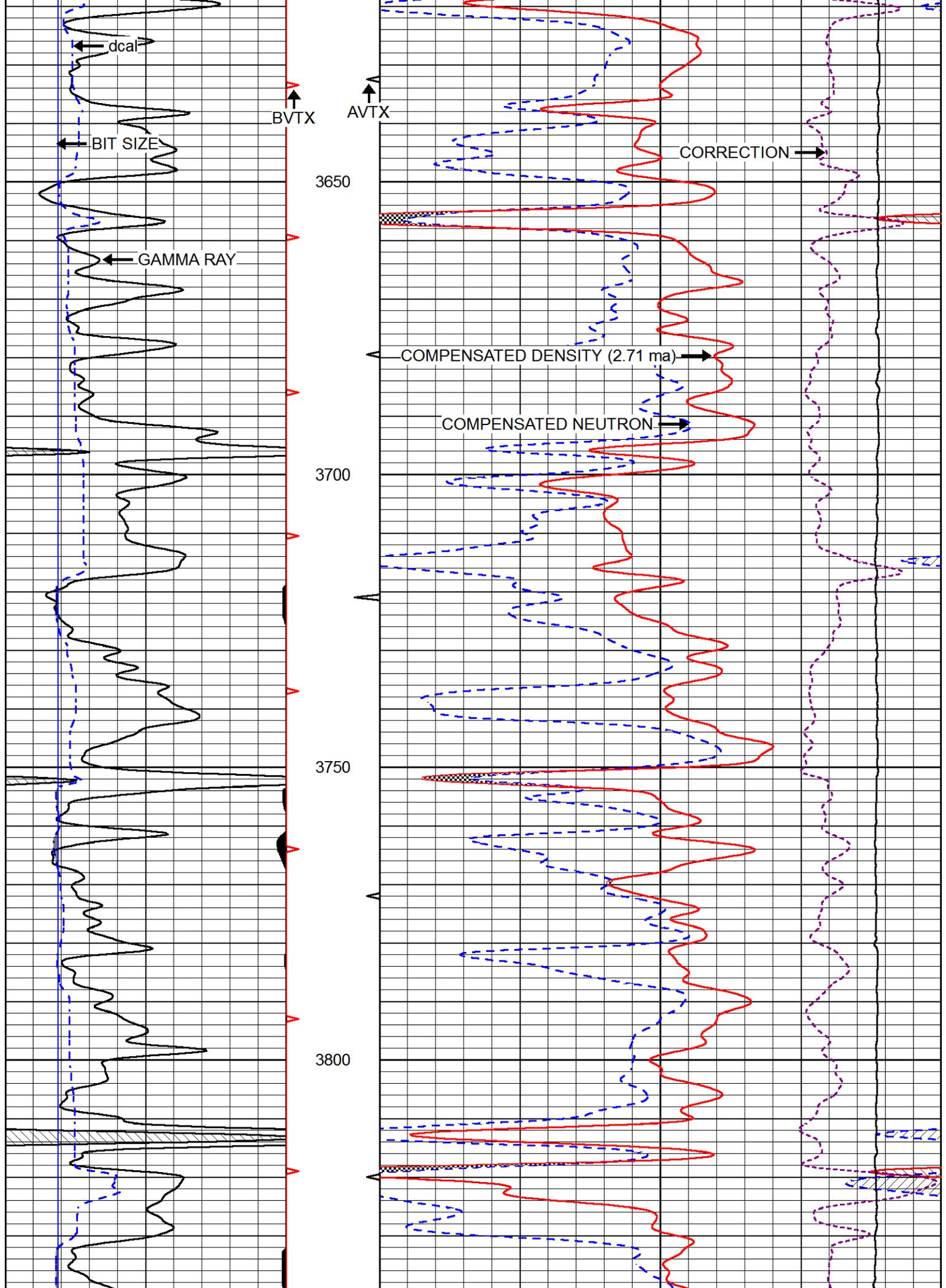


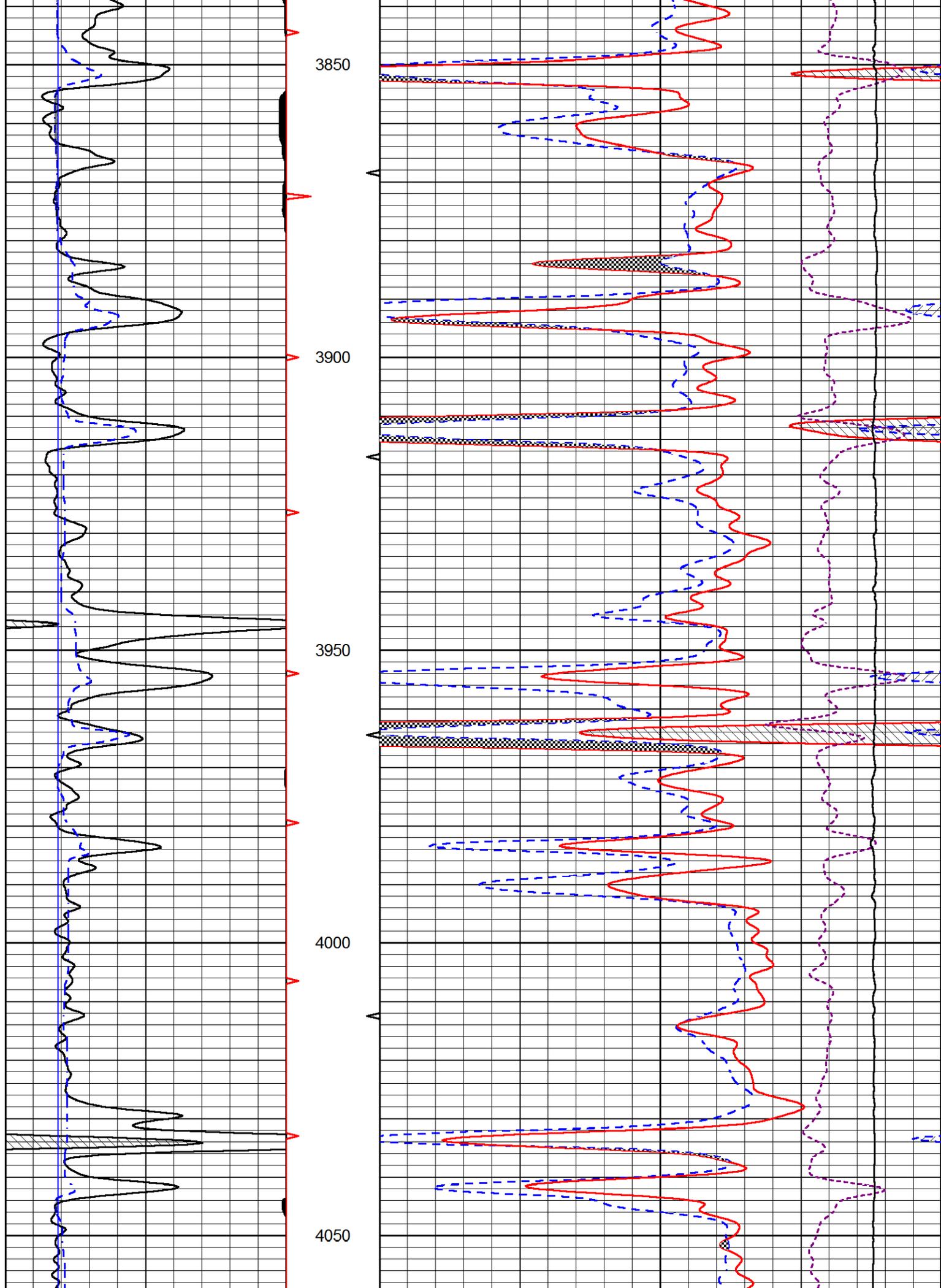


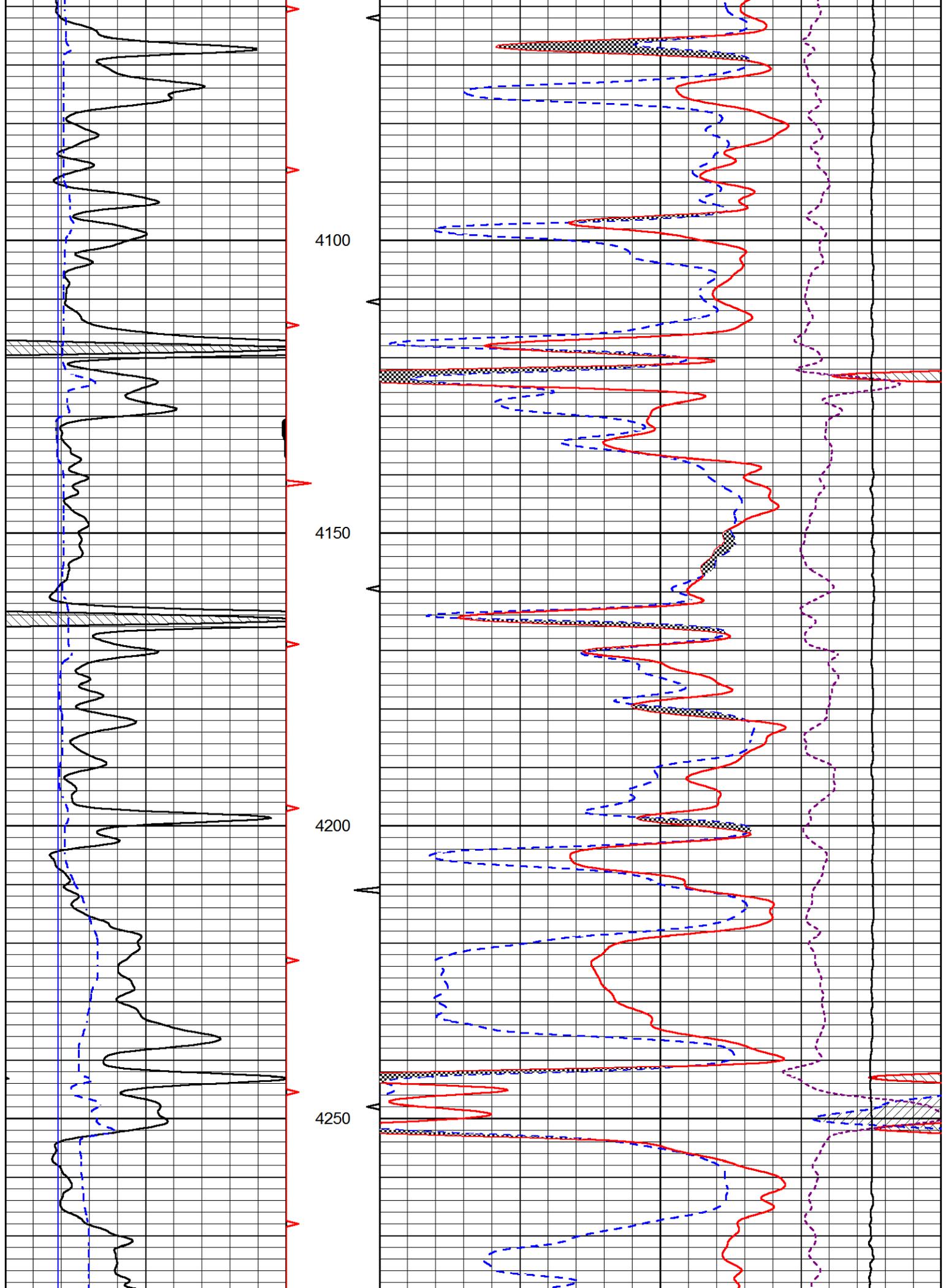
MAIN PASS

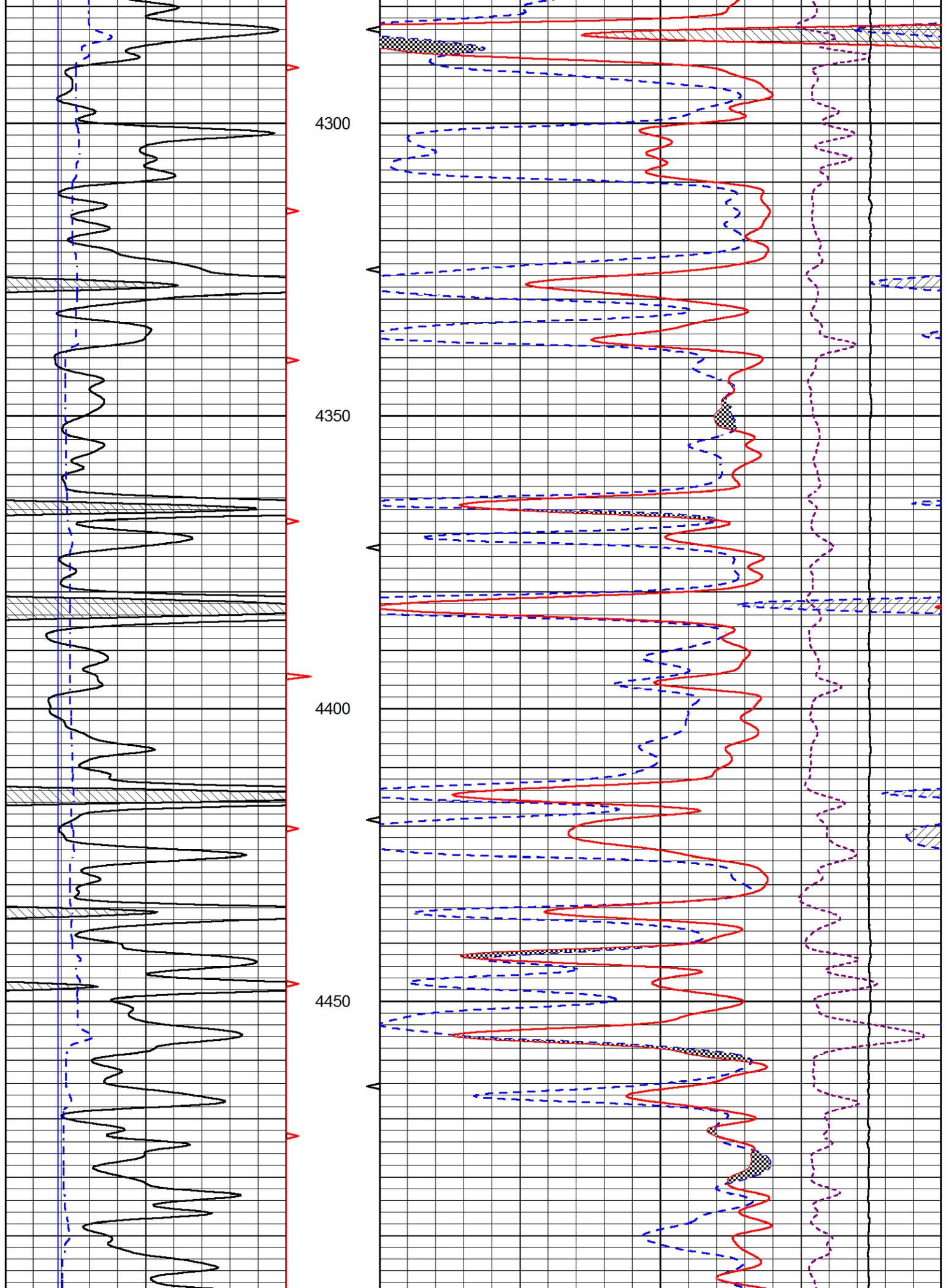
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 Presentation Format cndlspec
 Dataset Creation Sat Apr 07 00:42:18 2018
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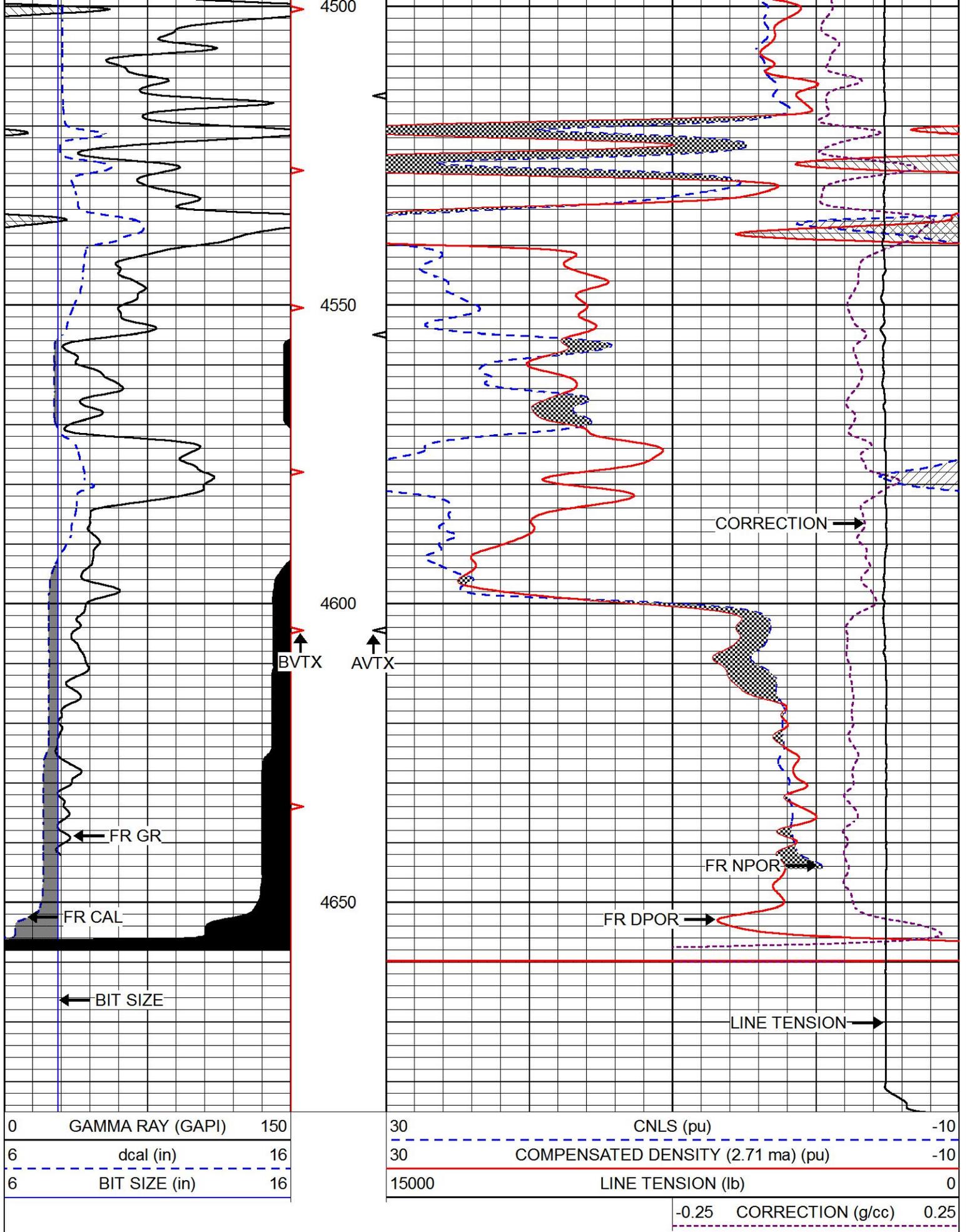










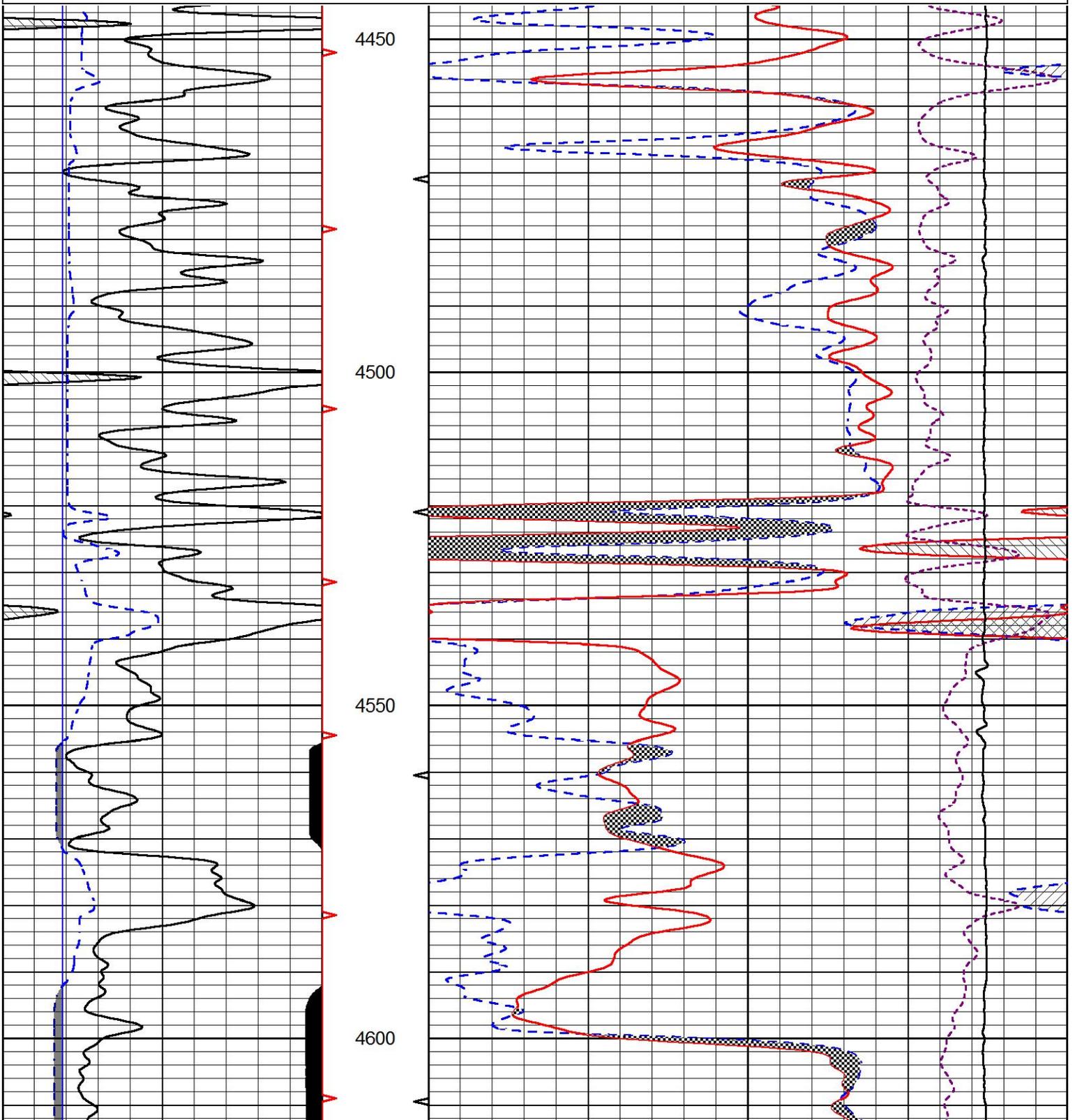


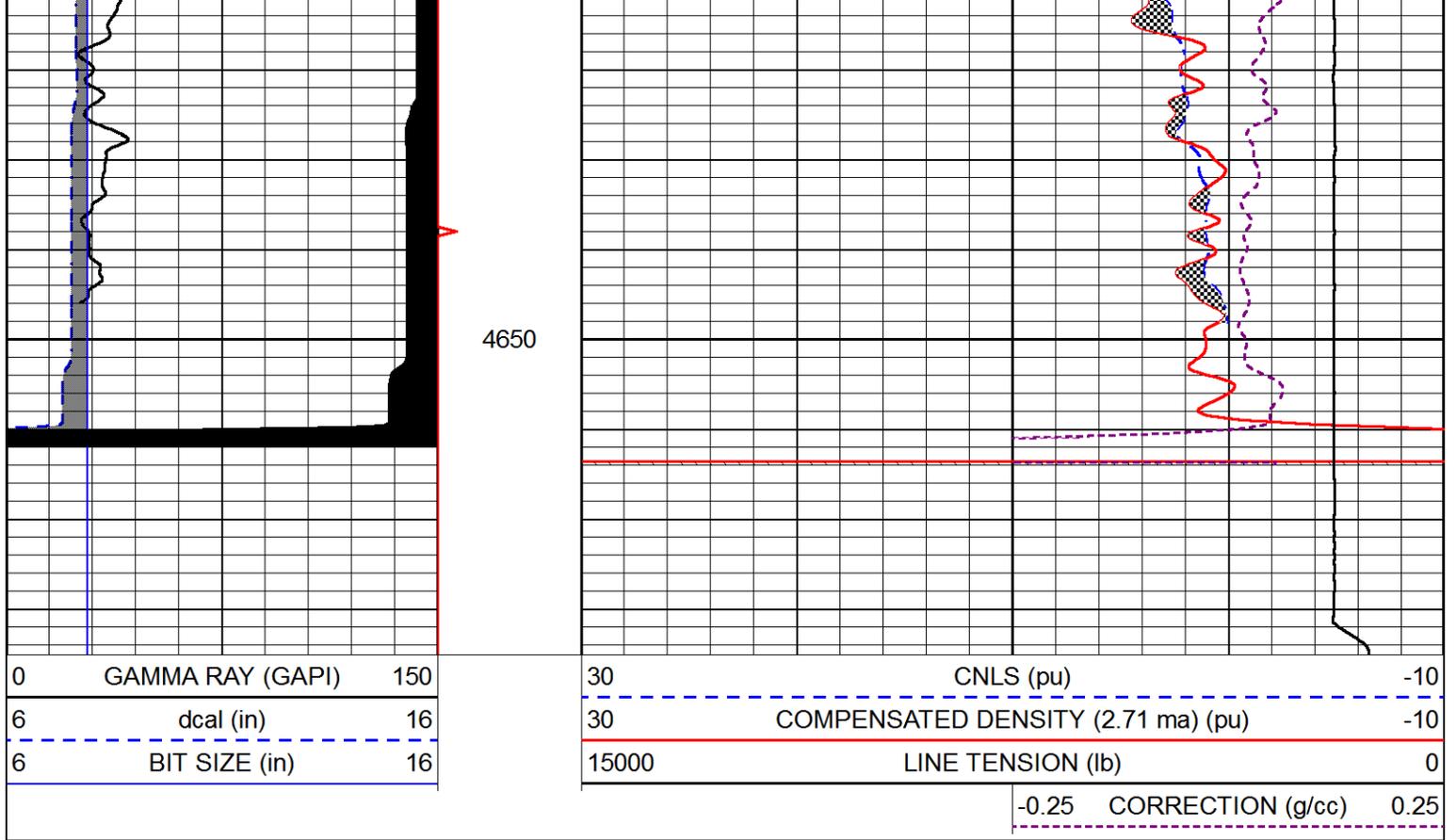
REPEAT SECTION

Database File cobalt_radnor a_#1-30.db
 Dataset Pathname stkml/pass2.1
 Presentation Format cndlspec
 Dataset Creation Sat Apr 07 00:18:24 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 cobalt_radnor a_#1-30.db
 Dataset Pathname stkml/pass3.1
 Dataset Creation Sat Apr 07 00:42:18 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	-39.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-34.500

Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML
 Performed: Fri Jun 23 01:25:19 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0031	0.0043	0.0000	10.0000	Ohm-m	27000.0000	-1.5000
Inverse	0.0000	0.0013	0.0000	10.0000	Ohm-m	20000.0000	0.0000
Caliper	1.0020	1.0834	5.5000	16.5000	in	135.1560	-131.8000

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	1.00		
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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