



PIONEER

Pioneer Energy Services

DUAL COMP POROSITY LOG

Company **RICHLAN DRILLING**
Well **HILLERY #1**
Field **WILDCAT**
County **LOGAN** State **KANSAS**

Location: API #: 15-109-21550-00-00

Other Services

SEC 19 TWP 15S RGE 34W
2300' FSL & 2500' FEL

DIL/MEL
SON

Permanent Datum GROUND LEVEL Elevation 3137'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Elevation
K.B. 3147'
D.F. N/A
G.L. 3137'

Date 6/15/2018

Run Number ONE

Type Log CNL/CDL

Depth Driller 4800'

Depth Logger 4796'

Bottom Logged Interval 4767'

Top Logged Interval 3600'

Type Fluid In Hole CHEMICAL

Salinity, PPM CL 5500

Density 9.4

Level FULL

Max. Rec. Temp. F 124

Operating Rig Time 4 HOURS

Equipment -- Location 91 HAYS

Recorded By IAN MABB

Witnessed By JIM MUSGROVE

Borehole Record

Casing Record

Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	374'	8.625"	23#	0'	374'
TWO	7.875"	374'	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.

PENCE, KS.
3 MILES WEST TO COUNTY LINE
NORTH 6 MILES, WEST INTO

Log Measured From: KELLY BUSHING 10 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew

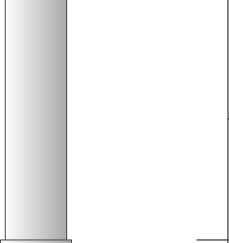
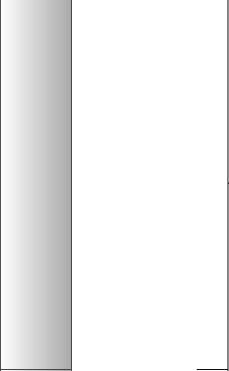
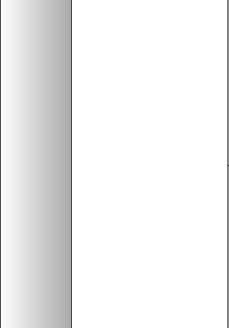
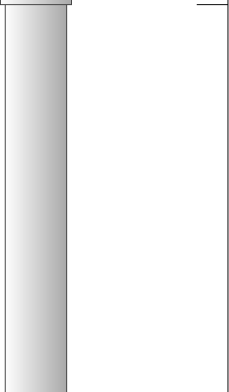
Engineer: IAN MABB
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: JIM MUSGROVE
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	140	2
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
6	85	0	5.5	0	4796	124	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (817-947)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

			DIL-PSI HIGH TEMP (PSI 971 HT)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: richlan_hillery_1.db: field/well/stkmel/pass3.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						



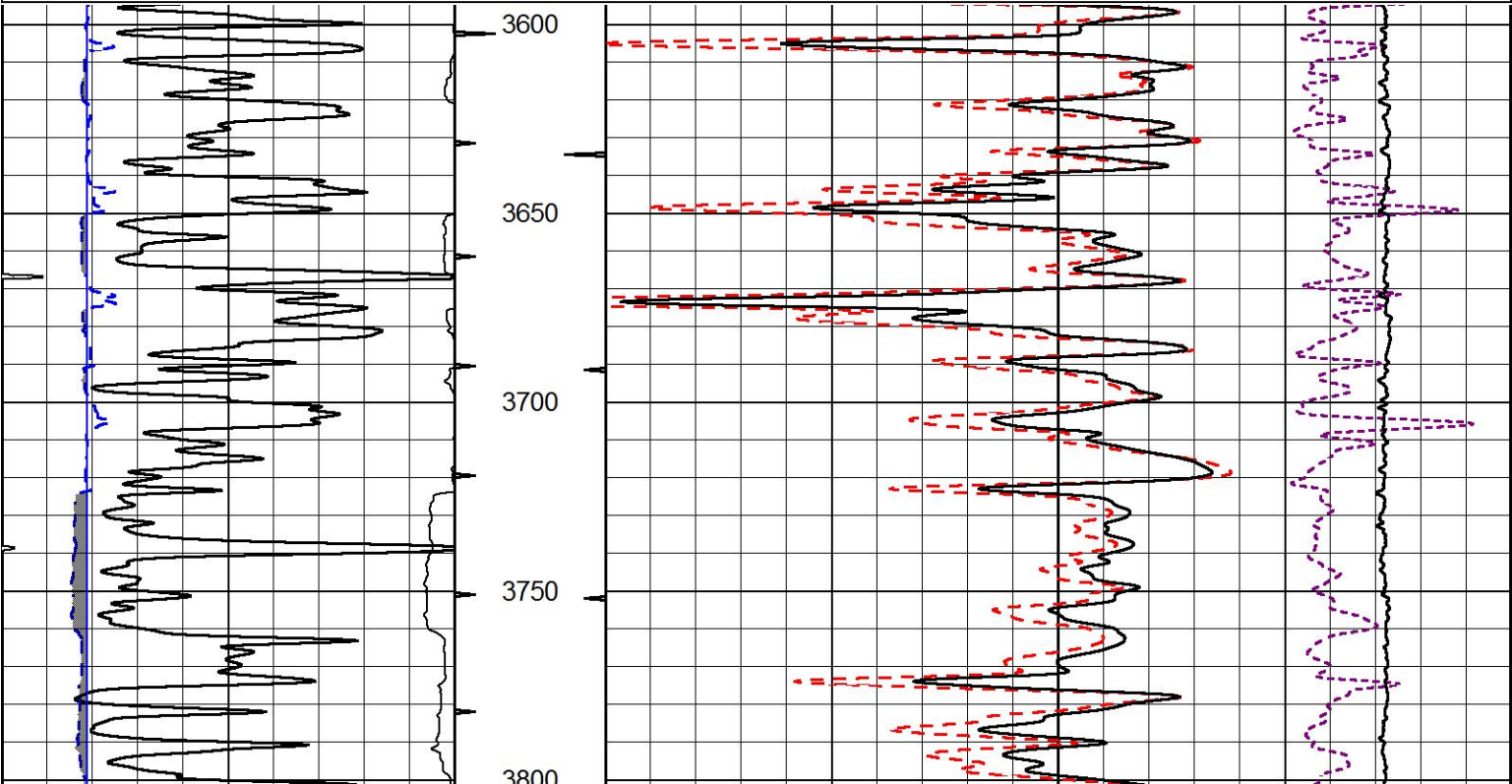
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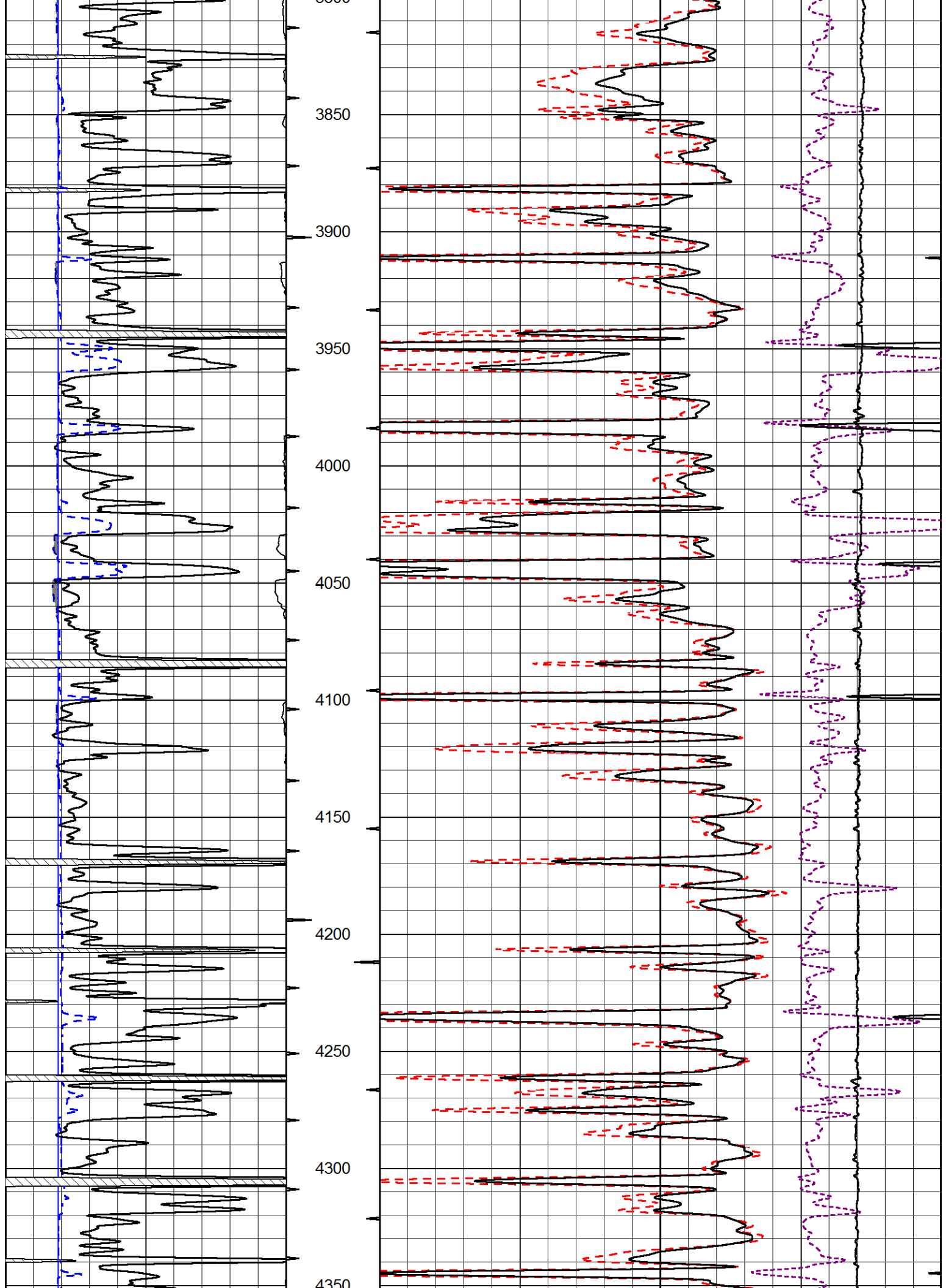
MAIN PASS

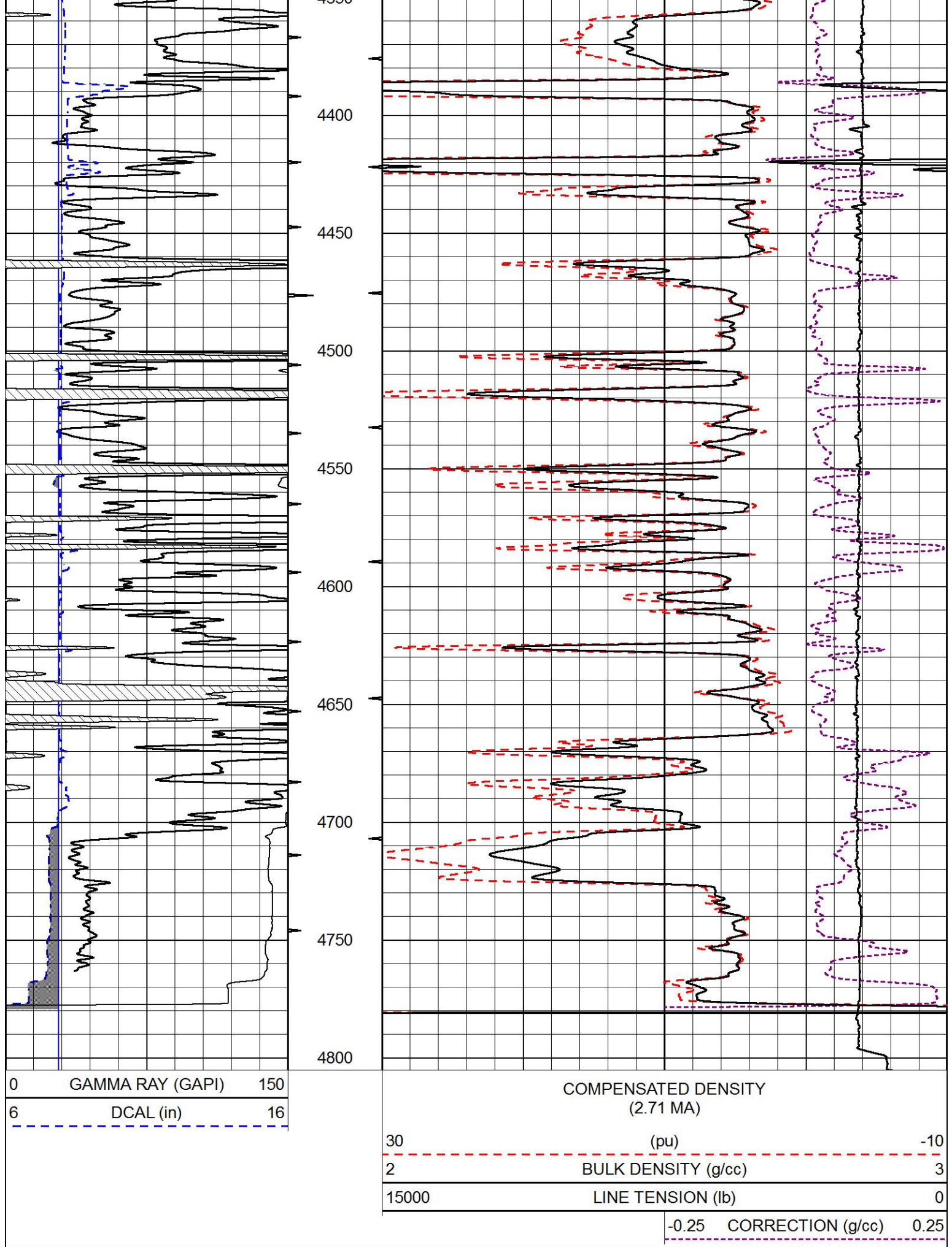
Database File
Dataset Pathname
Presentation Format
Dataset Creation
Charted by

richlan_hillery_1.db
stkmel/pass3.1
cdl
Fri Jun 15 14:04:20 2018
Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	150	COMPENSATED DENSITY (2.71 MA)	
6	DCAL (in)	16	30 (pu)	-10
			2 BULK DENSITY (g/cc)	3
			15000 LINE TENSION (lb)	0
			-0.25 CORRECTION (g/cc)	0.25



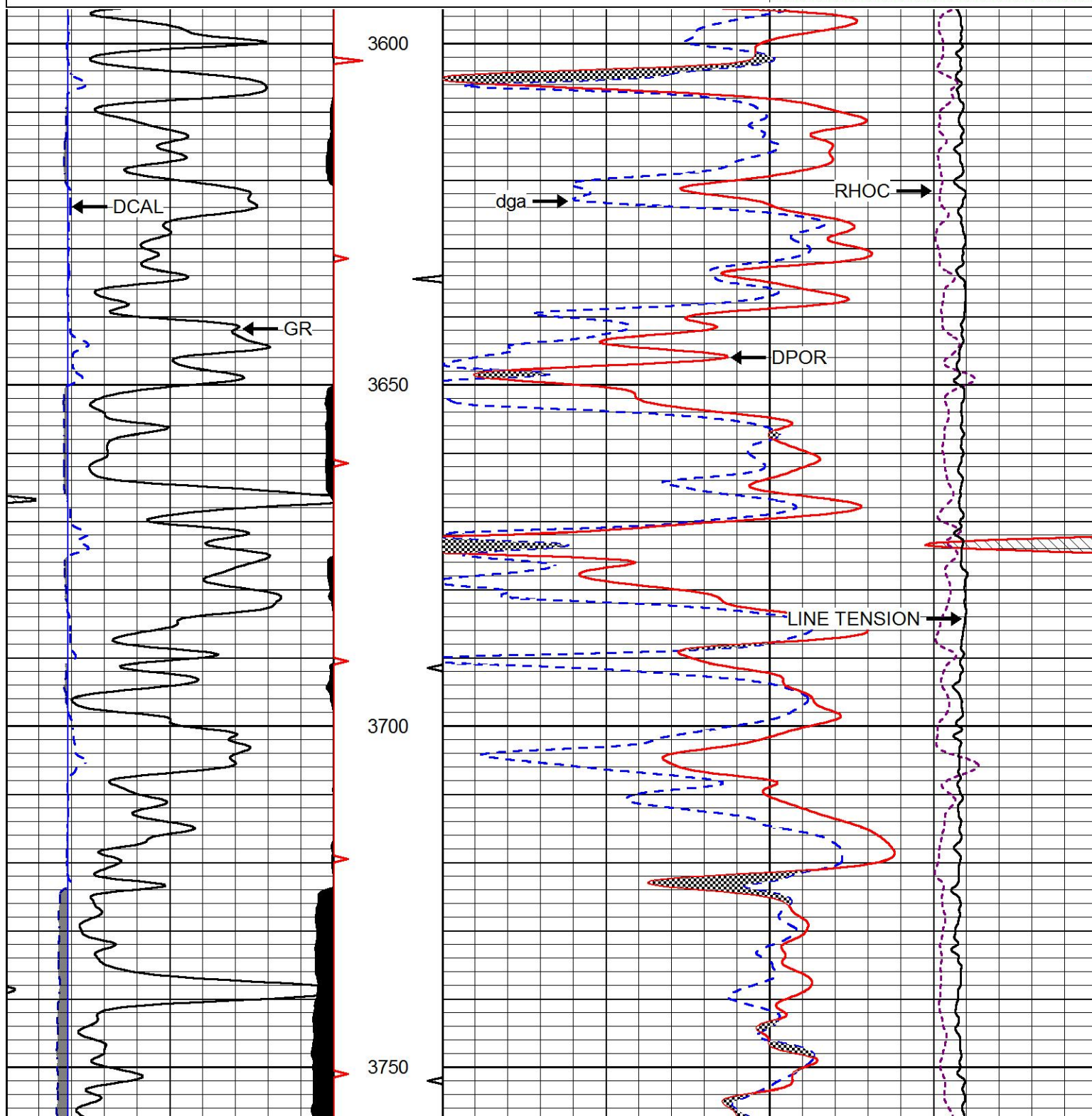


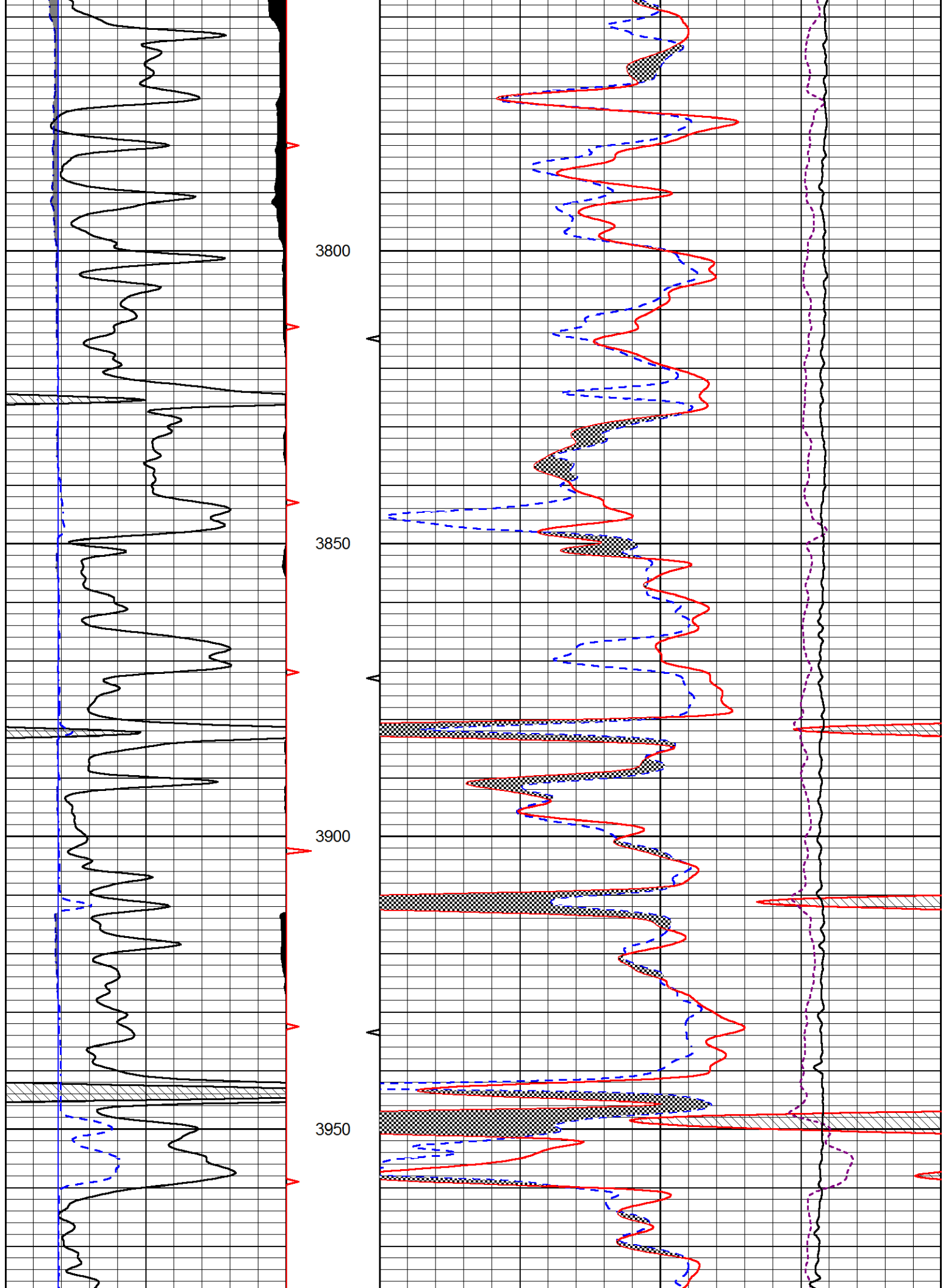


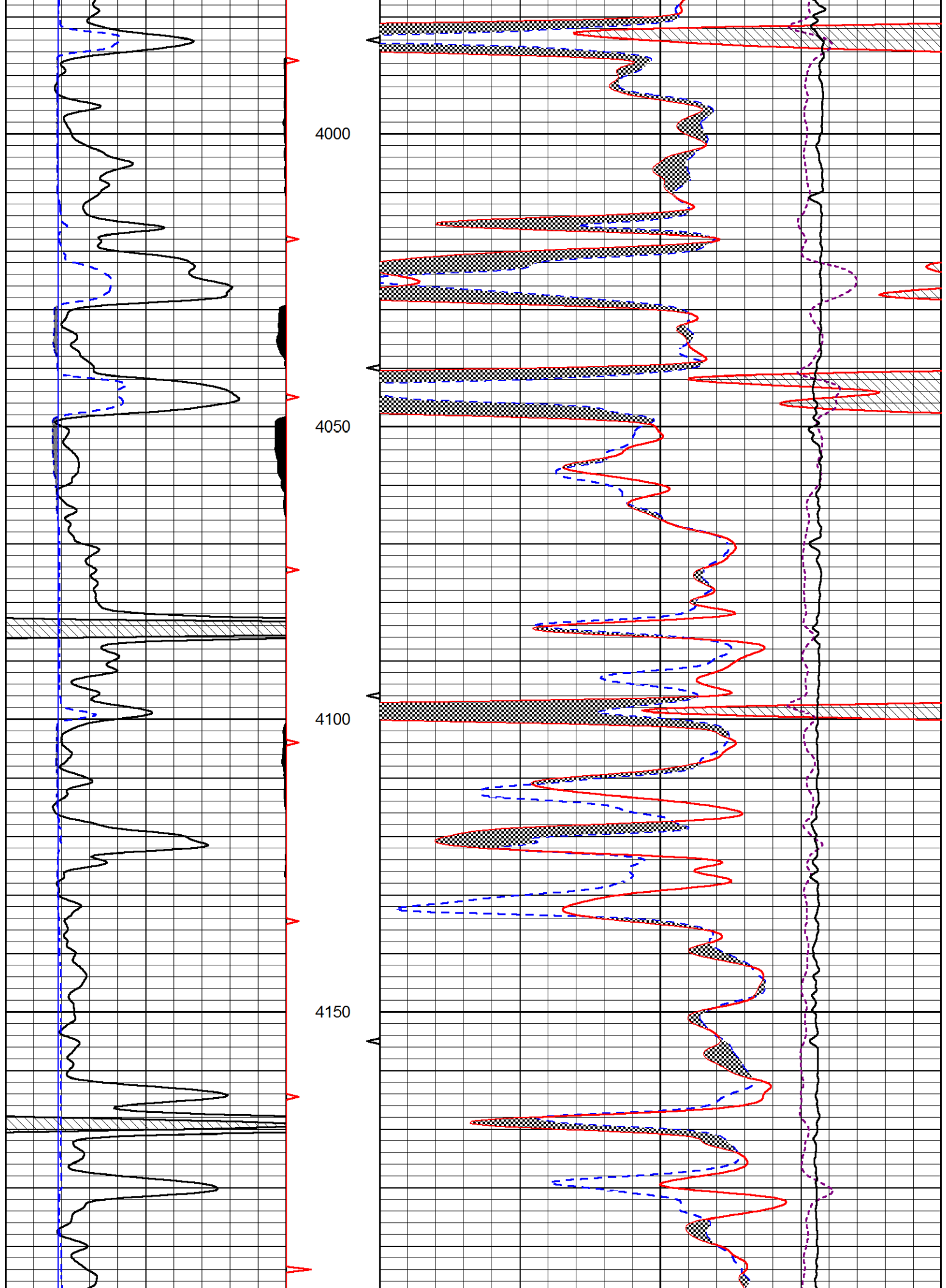
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 Dataset Pathname stkmel/pass3.1
 Presentation Format cndlspec
 Dataset Creation Fri Jun 15 14:04:20 2018
 Charted by Depth in Feet scaled 1:240

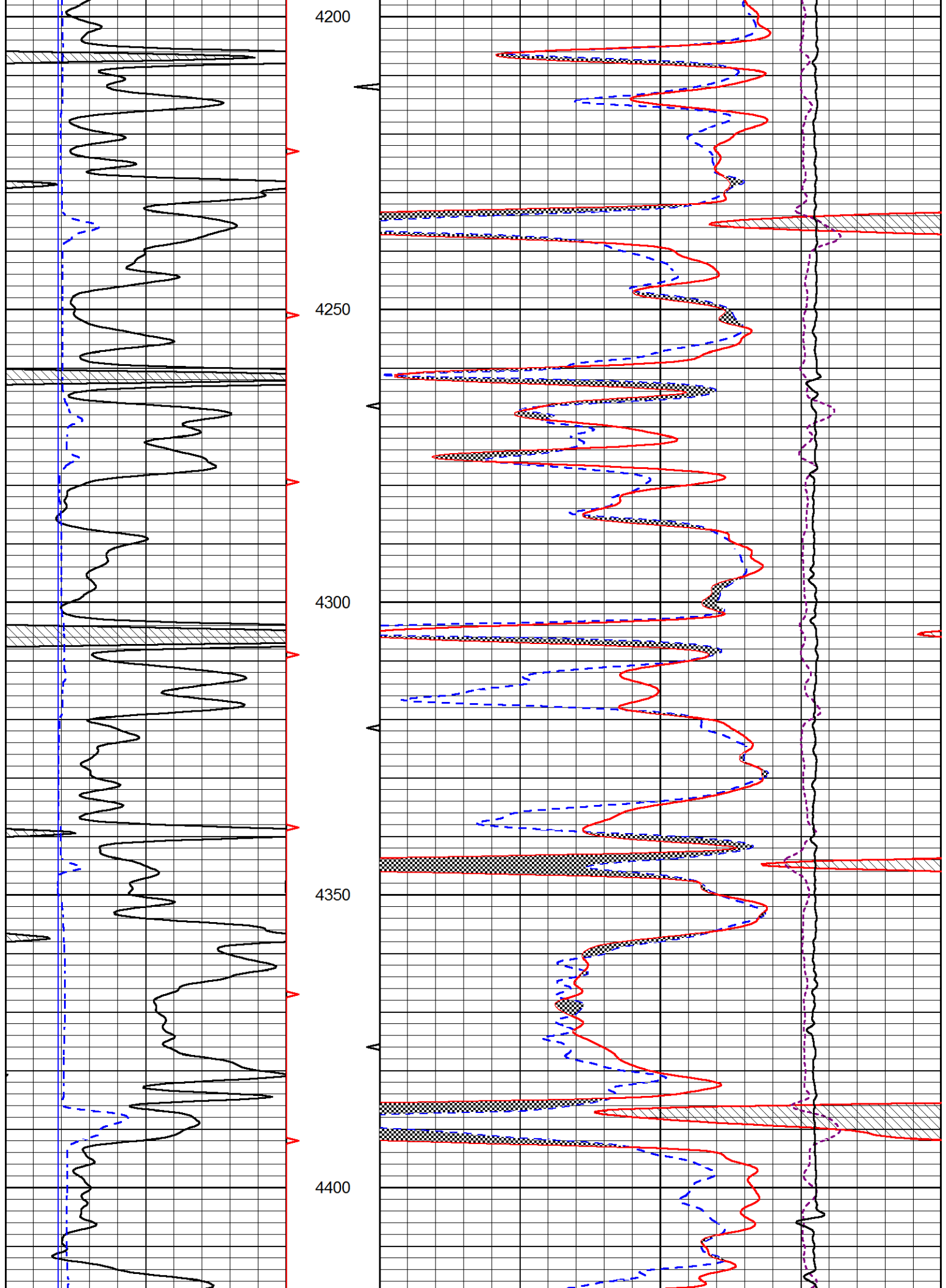
0 GAMMA RAY (GAPI) 150
 6 DCAL (in) 16

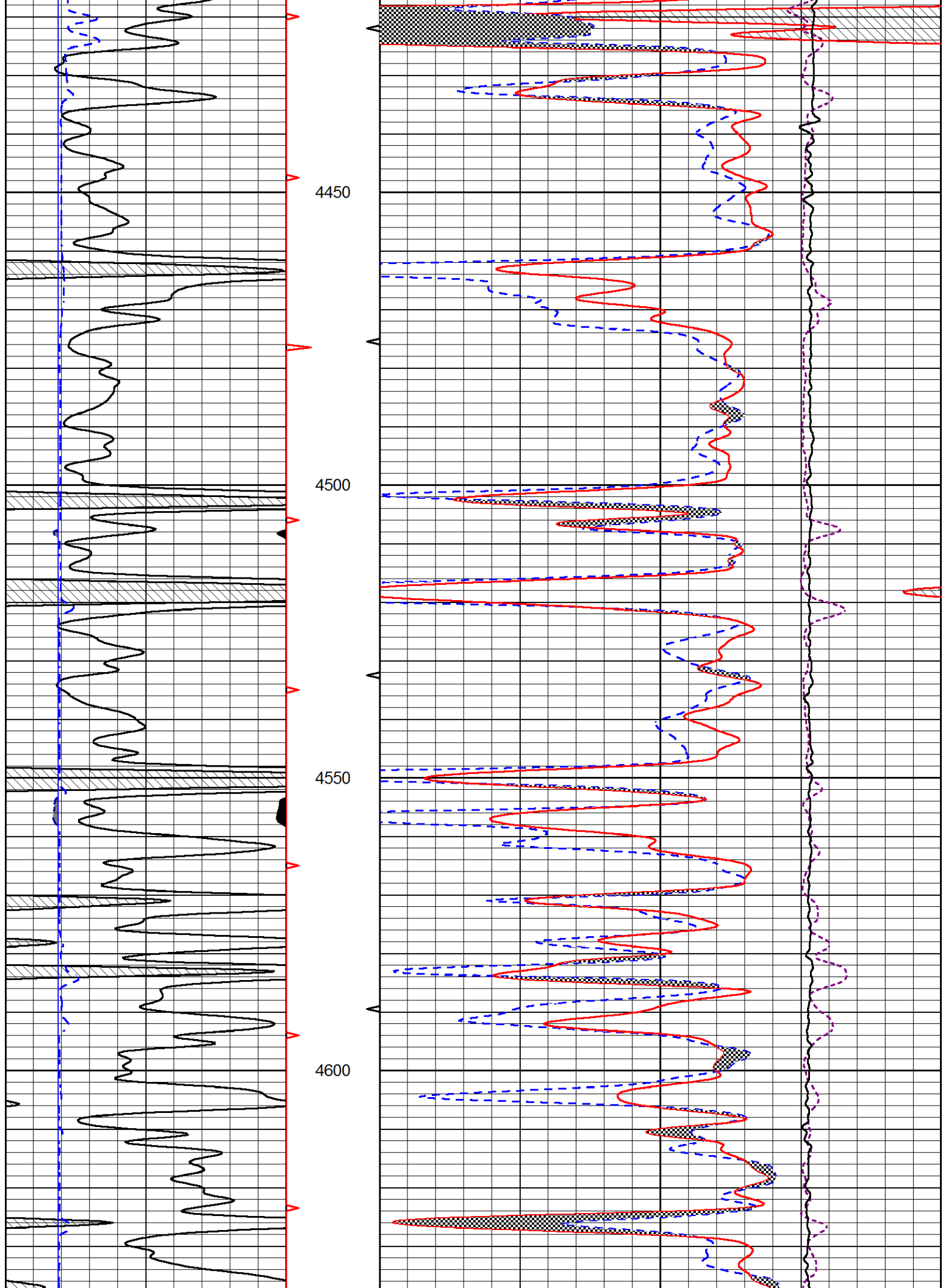
30 CNLS (pu) -10
 30 DPOR (pu) -10
 10000 LINE TENSION (lb) 0
 -0.75 CORRECTION (g/cc) 0.75

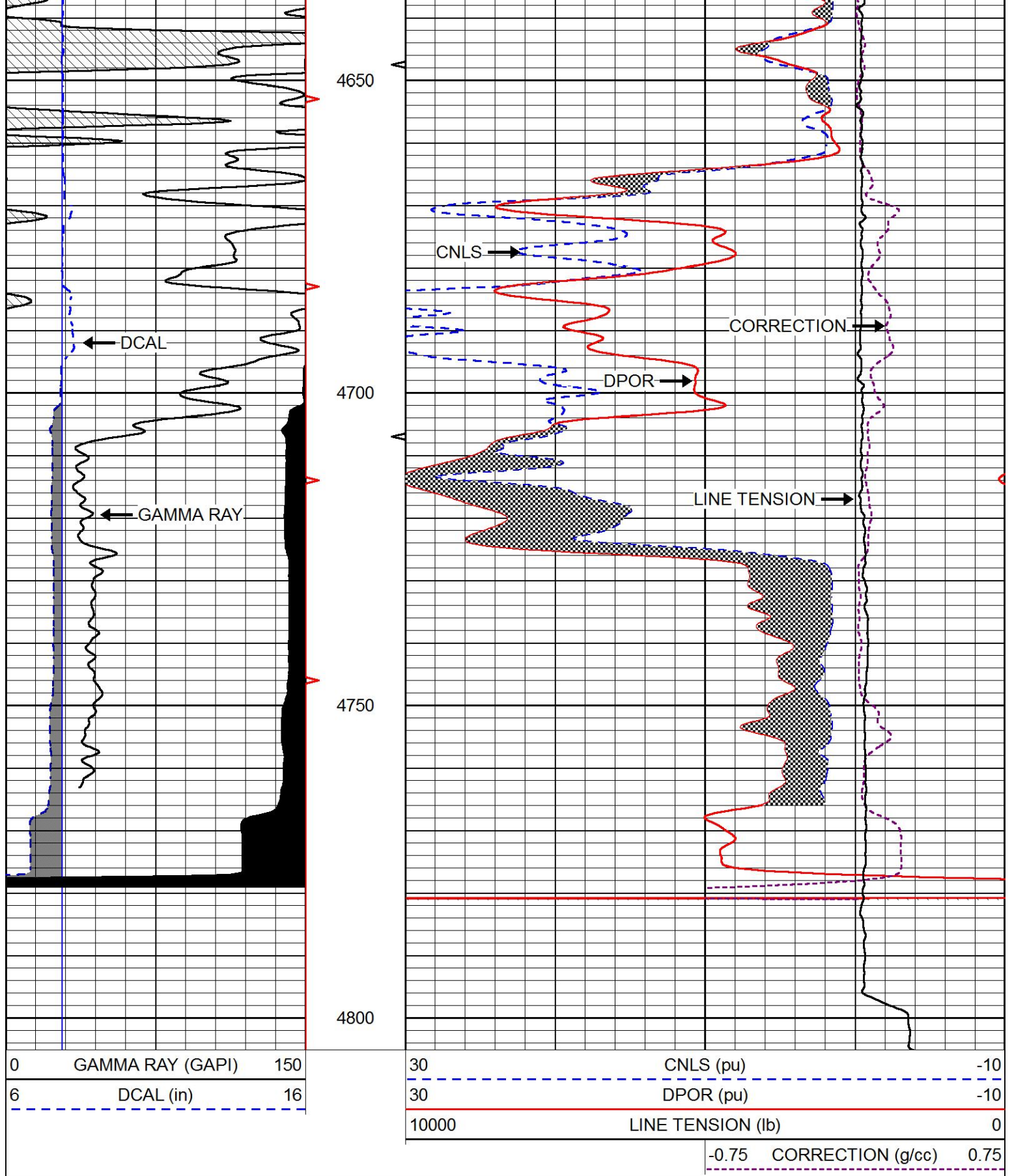








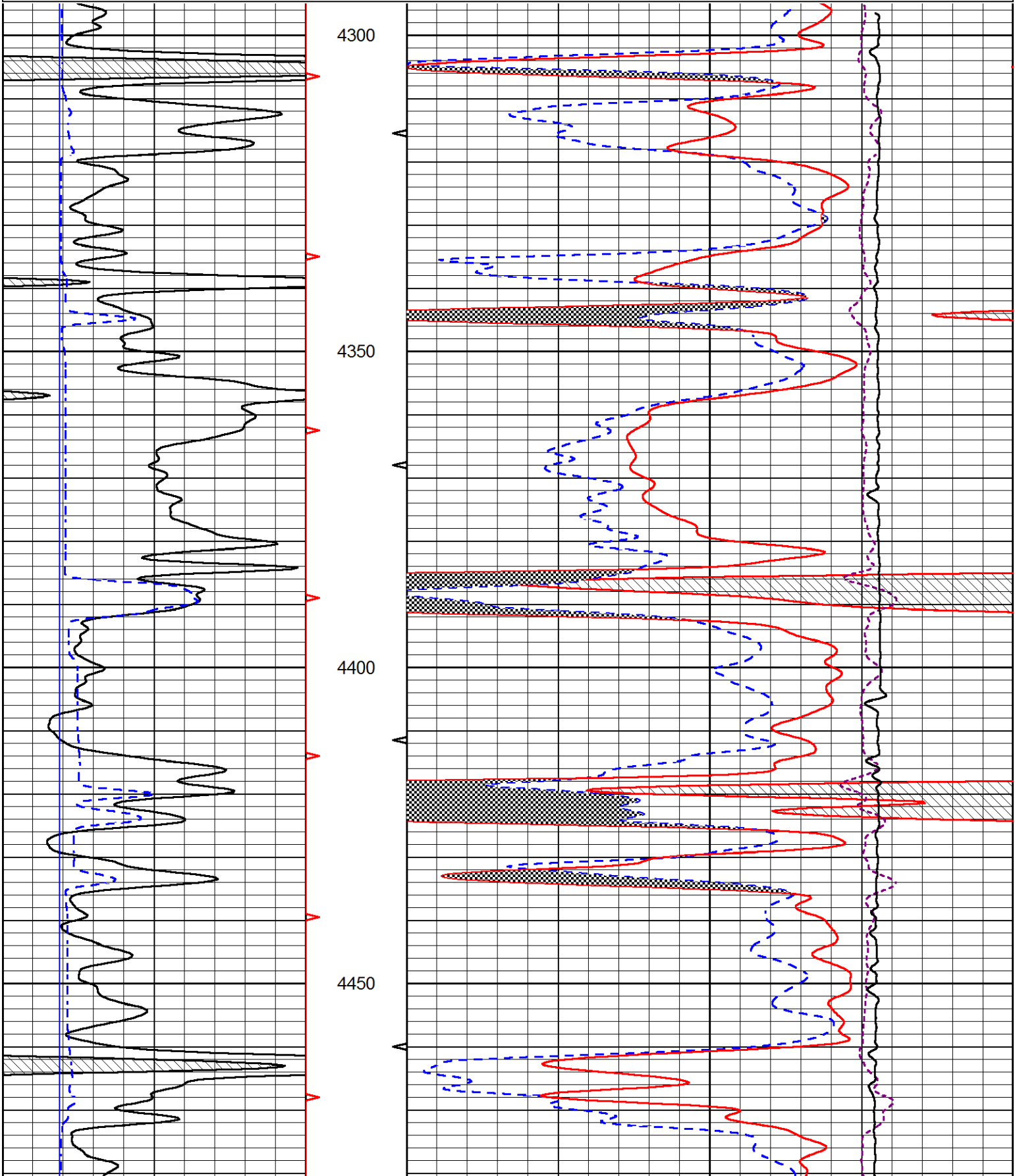


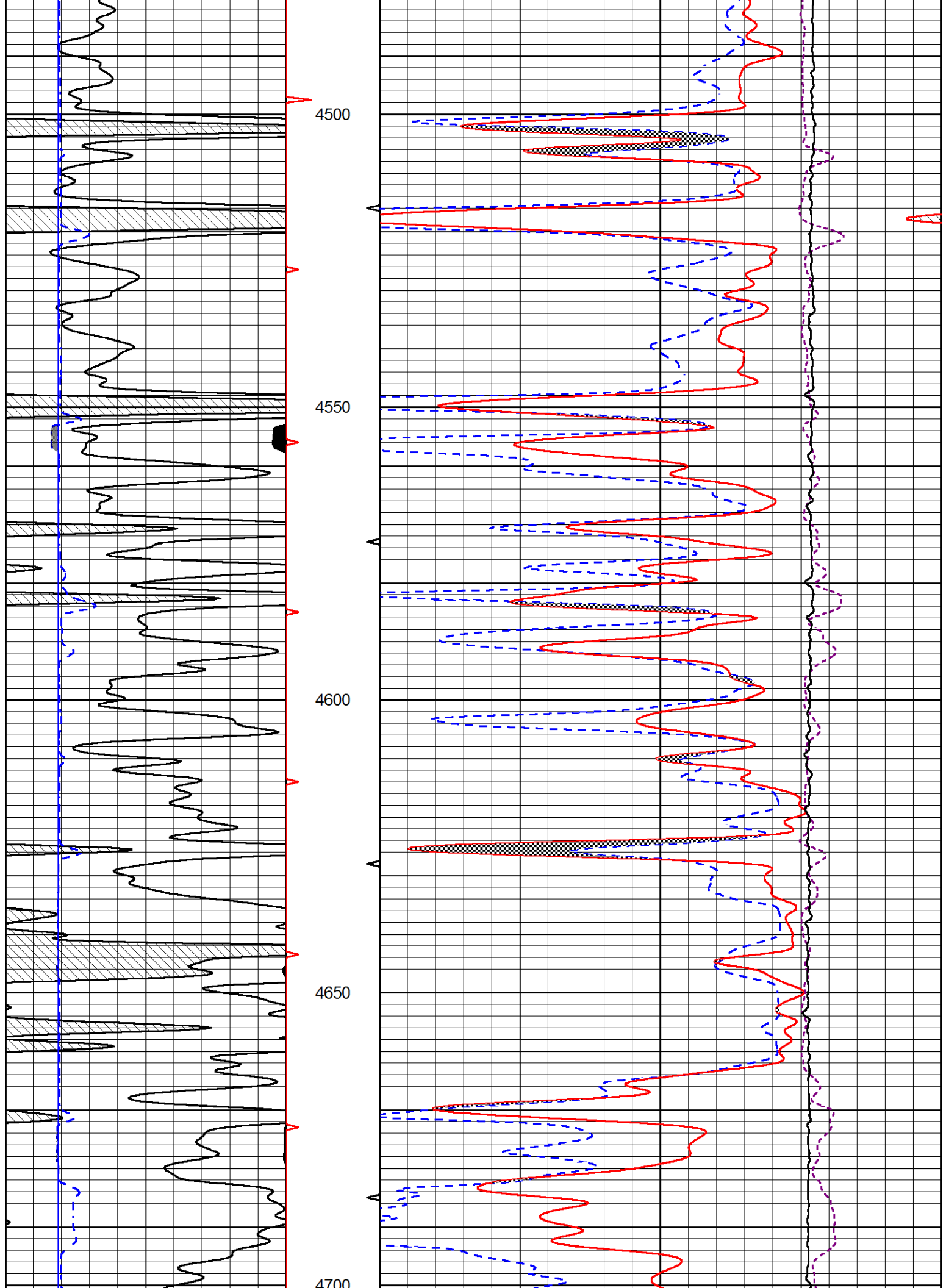


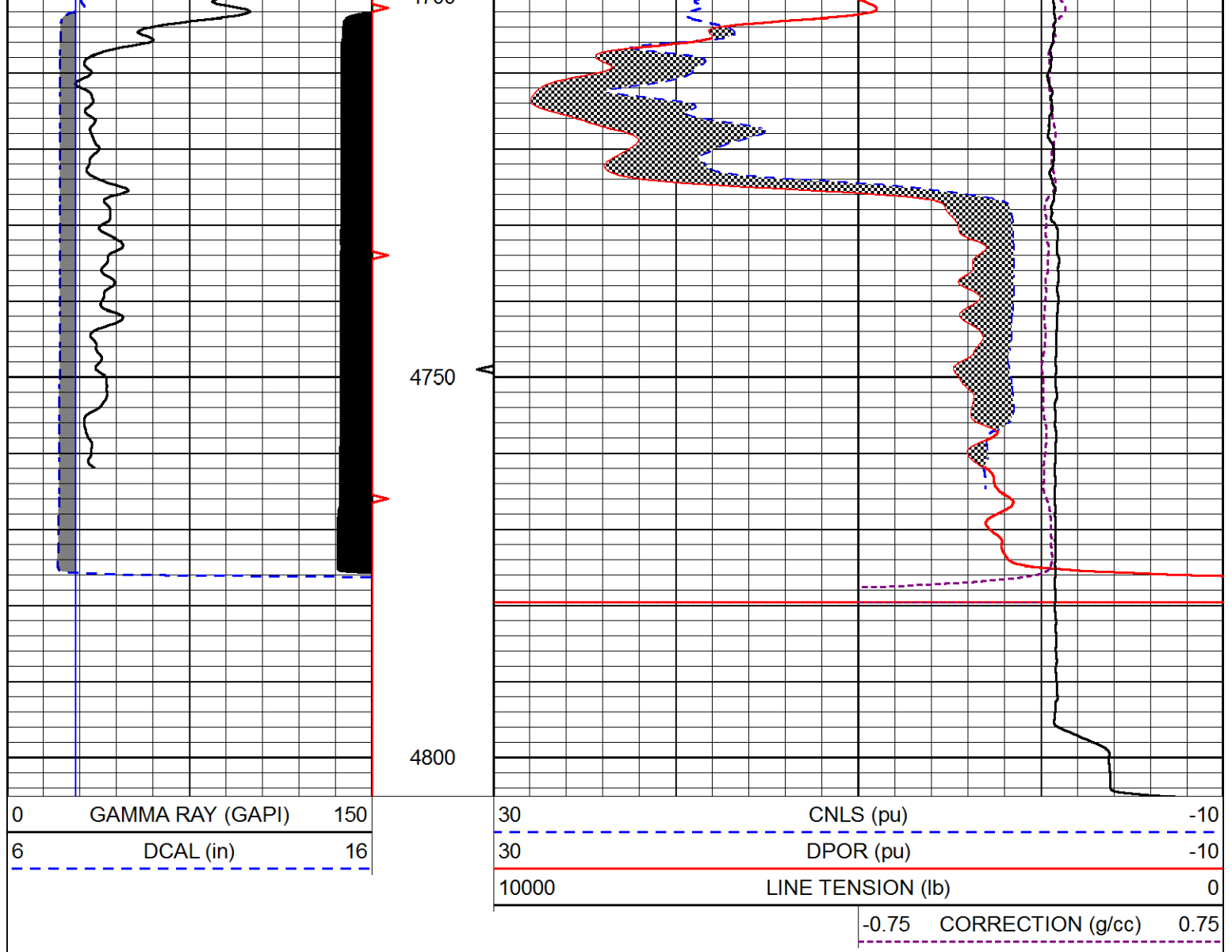
REPEAT SECTION

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

30	CNLS (pu)	-10
30	DPOR (pu)	-10
10000	LINE TENSION (lb)	0
-0.75	CORRECTION (g/cc)	0.75







Calibration Report

Database File richlan_hillery_1.db
 Dataset Pathname stkmel/pass3.1
 Dataset Creation Fri Jun 15 14:04:20 2018

Dual Induction Calibration Report

Serial-Model: PSI 971 HT-PSI HIGH TEMP
 Calibration Performed: Sun May 27 00:33:10 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.430	-30.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.375	-30.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Sun May 27 00:33:27 2018

Readings		References		Results	
Zero	Cal	Zero	Cal	m	b

Normal	0.0000	1.0000		0.0000	1.0000	Ohm-m	39000.0000	-0.8000
Inverse	0.0000	1.0000		0.0000	1.0000	Ohm-m	40000.0000	-0.4000
Caliper	1.0001	1.1397		6.5000	18.5000	in	70.0000	-66.7000
Compensated Density Calibration Report								
Serial-Model:			817-947-M&W					
Source / Verifier:			16955B / 2ci					
Master Calibration Performed:			Tue May 01 14:00:17 2018					
Master Calibration								
	Density			Far Detector		Near Detector		
Magnesium	1.755	g/cc		6127.15		5922.31	cps	
Aluminum	2.650	g/cc		1141.85		3762.09	cps	
	Spine Angle = 74.89			Density/Spine Ratio = 0.514				
	Size			Reading				
Small Ring	4.50	in		1.02				
Large Ring	15.00	in		1.15				
Compensated Neutron Calibration Report								
Serial Number:			207-MW					
Tool Model:			M&W					
Calibration Performed:			MON APR 16 10:30:30 2018					
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						
Tool Model:		M&W						
Calibration Performed:		Mon Jan 15 11:20:44 2018						
Calibrator Value:		1.0		GAPI				
Background Reading:		0.0		cps				
Calibrator Reading:		1.0		cps				
Sensitivity:		0.6000		GAPI/cps				

	Company	RICHLAN DRILLING
	Well	HILLERY #1
	Field	WILDCAT
	County	LOGAN
	State	KANSAS