



PIONEER

Pioneer Energy Services

DUAL COMP POROSITY LOG

Company **RICHLAND OIL INVESTMENTS, LLC**
Well **MICHAELIS #25-1**
Field **WILDCAT**
County **LOGAN** State **KANSAS**

Location: API #: 15-109-21541-00-00

Other Services

SEC 25 TWP 11S RGE 33W
653' FSL & 1913' FWL

DIL/MEL

Permanent Datum **GROUND LEVEL** Elevation **3077'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 3087'
D.F. N/A
G.L. 3077'

Date **4/19/2018**

Run Number **ONE**

Type Log **CNL/CDL**

Depth Driller **4730'**

Depth Logger **4729'**

Bottom Logged Interval **4700'**

Top Logged Interval **3700'**

Type Fluid In Hole **CHEMICAL**

Salinity, PPM CL **4000**

Density **9.3**

Level **FULL**

Max. Rec. Temp. F **123**

Operating Rig Time **3 HOURS**

Equipment -- Location **91 HAYS**

Recorded By **D. SCHMIDT**

Witnessed By **STEVE MURPHY**

Borehole Record

Casing Record

Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	226'	8.625"	23#	0'	226'
TWO	7.875"	226'	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.

OAKLEY (HWY 40 & 83),
4 WEST TO 400 RD, 4 SOUTH,
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

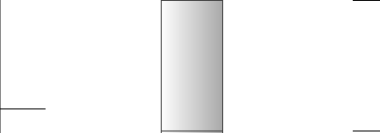
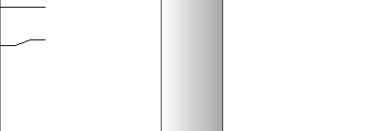
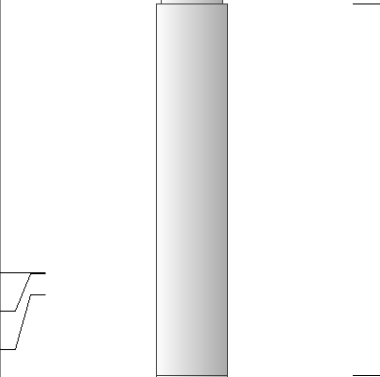
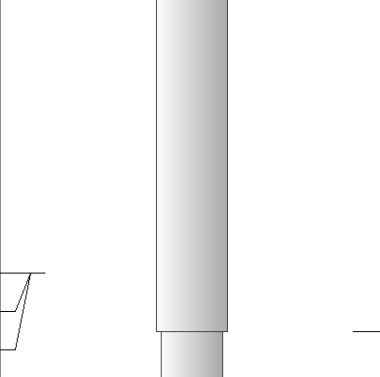
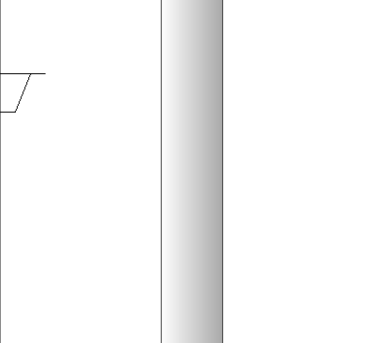
Engineer: **D. SCHMIDT**
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: **STEVE MURPHY**
Secondary Witness:
Secondary Witness:
Secondary Witness:

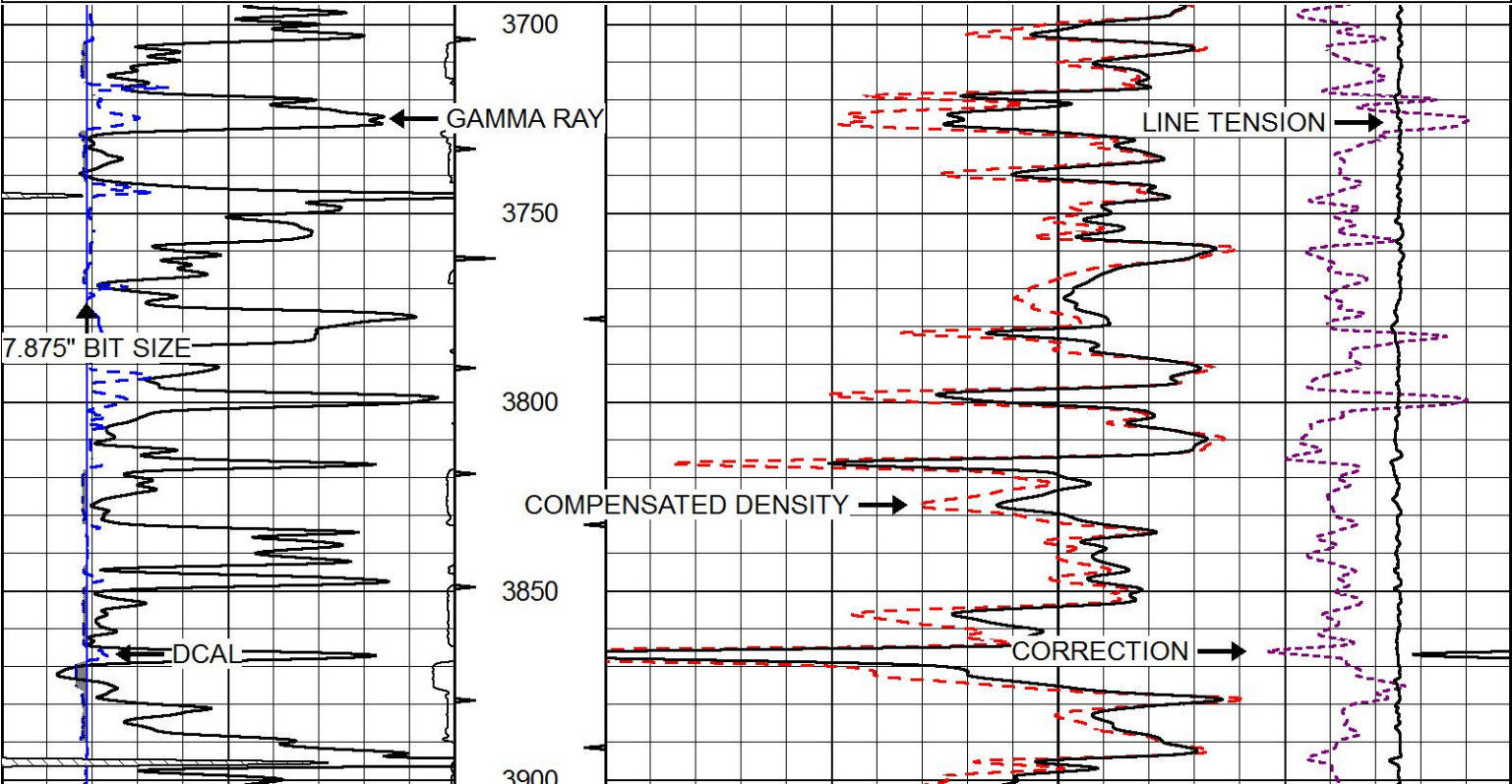
Top - Bottom

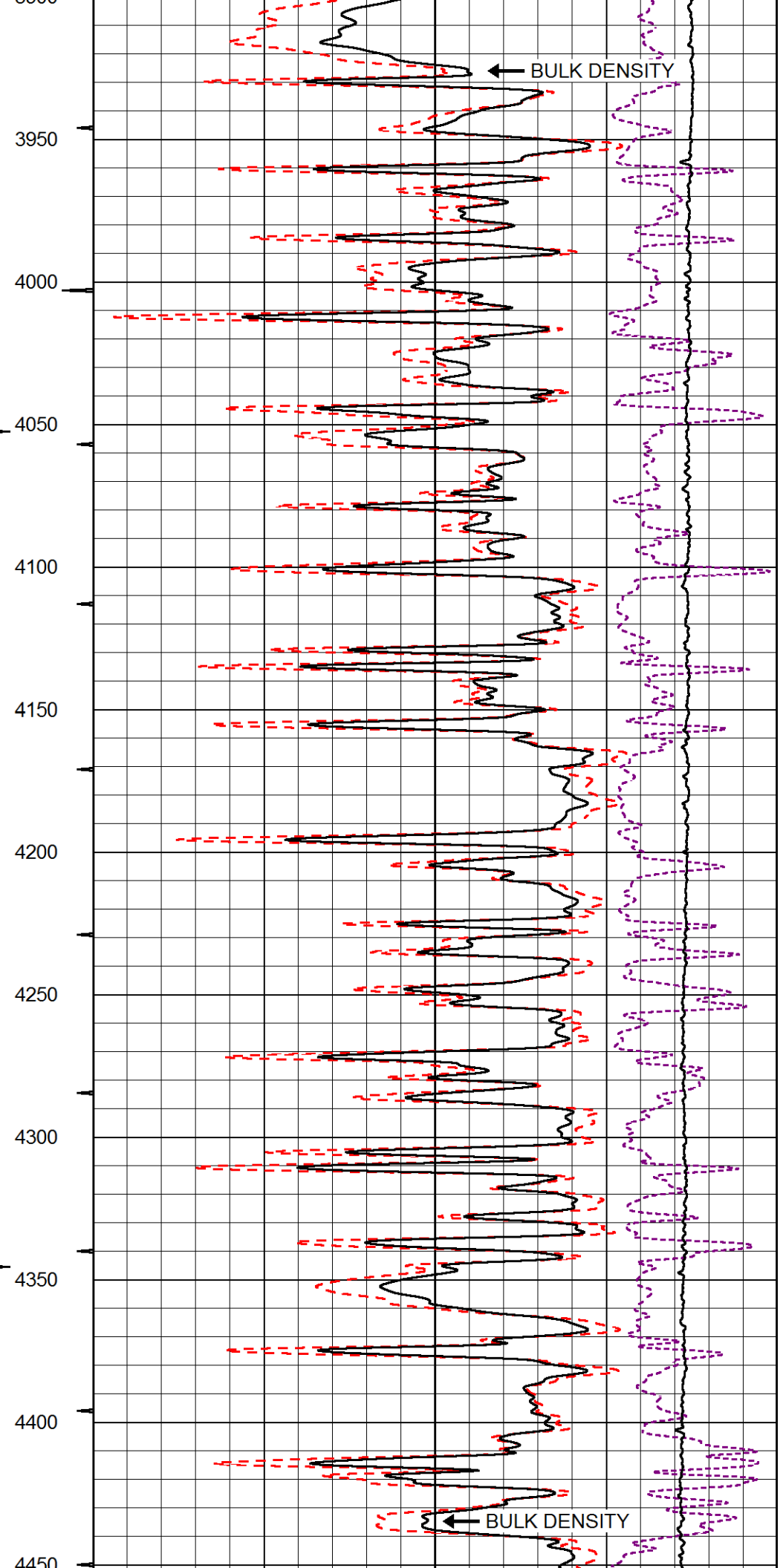
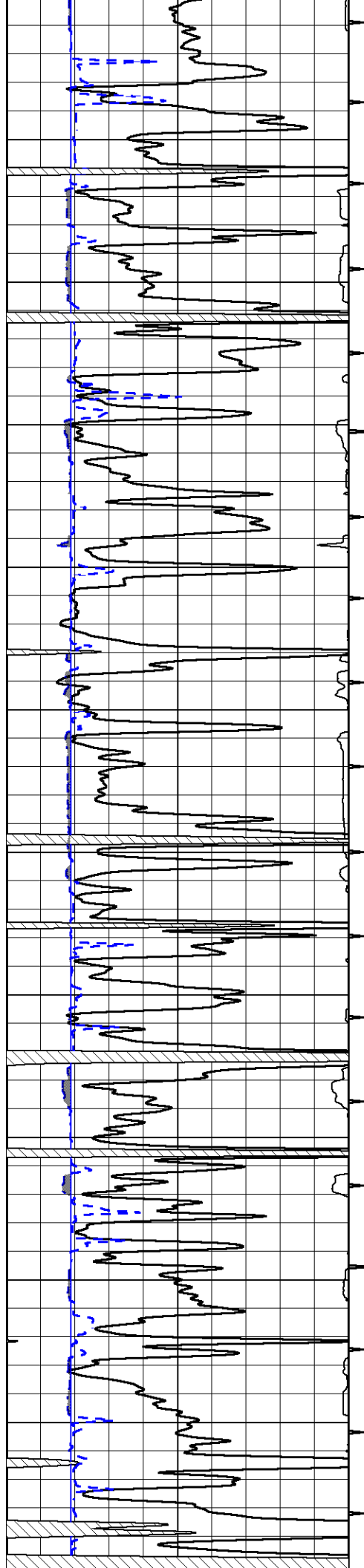
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-94	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	50	0	5.5	0	4729	123	7.875

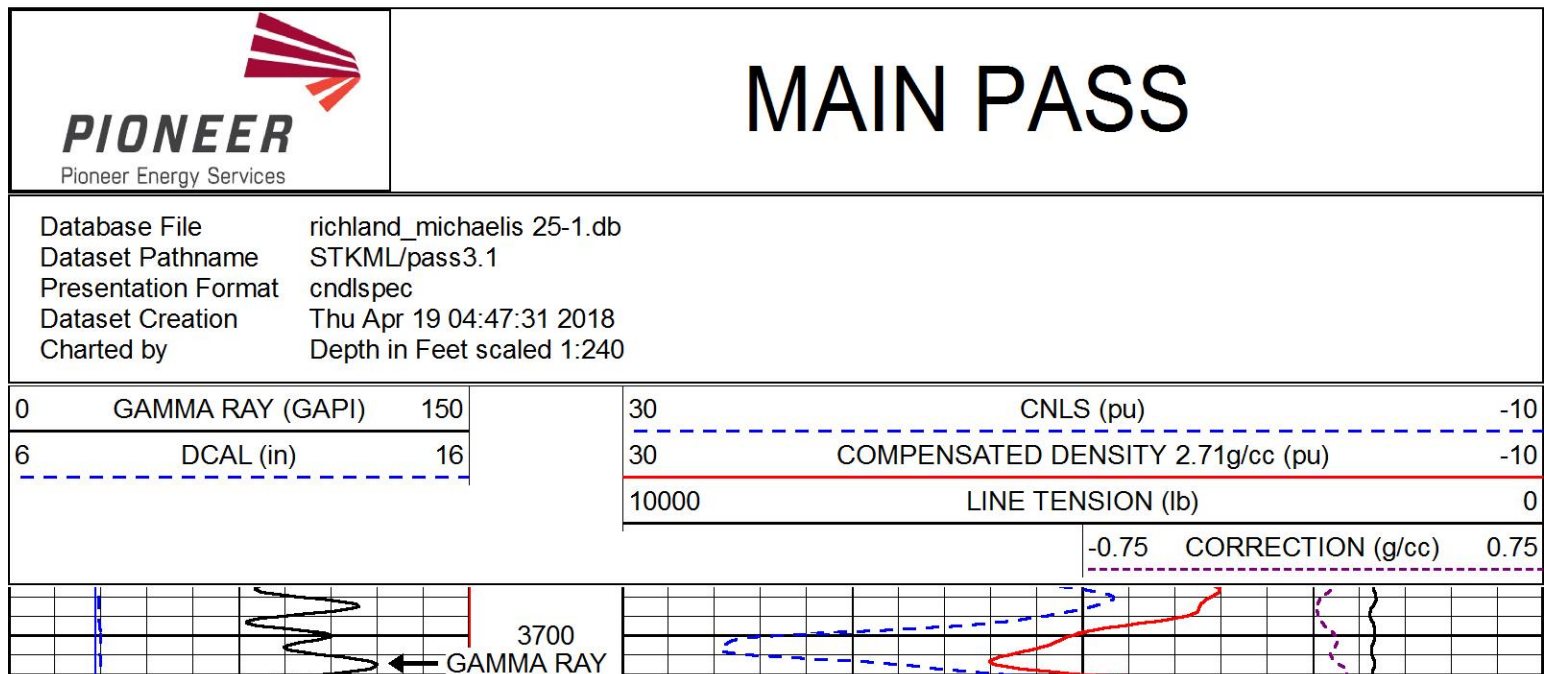
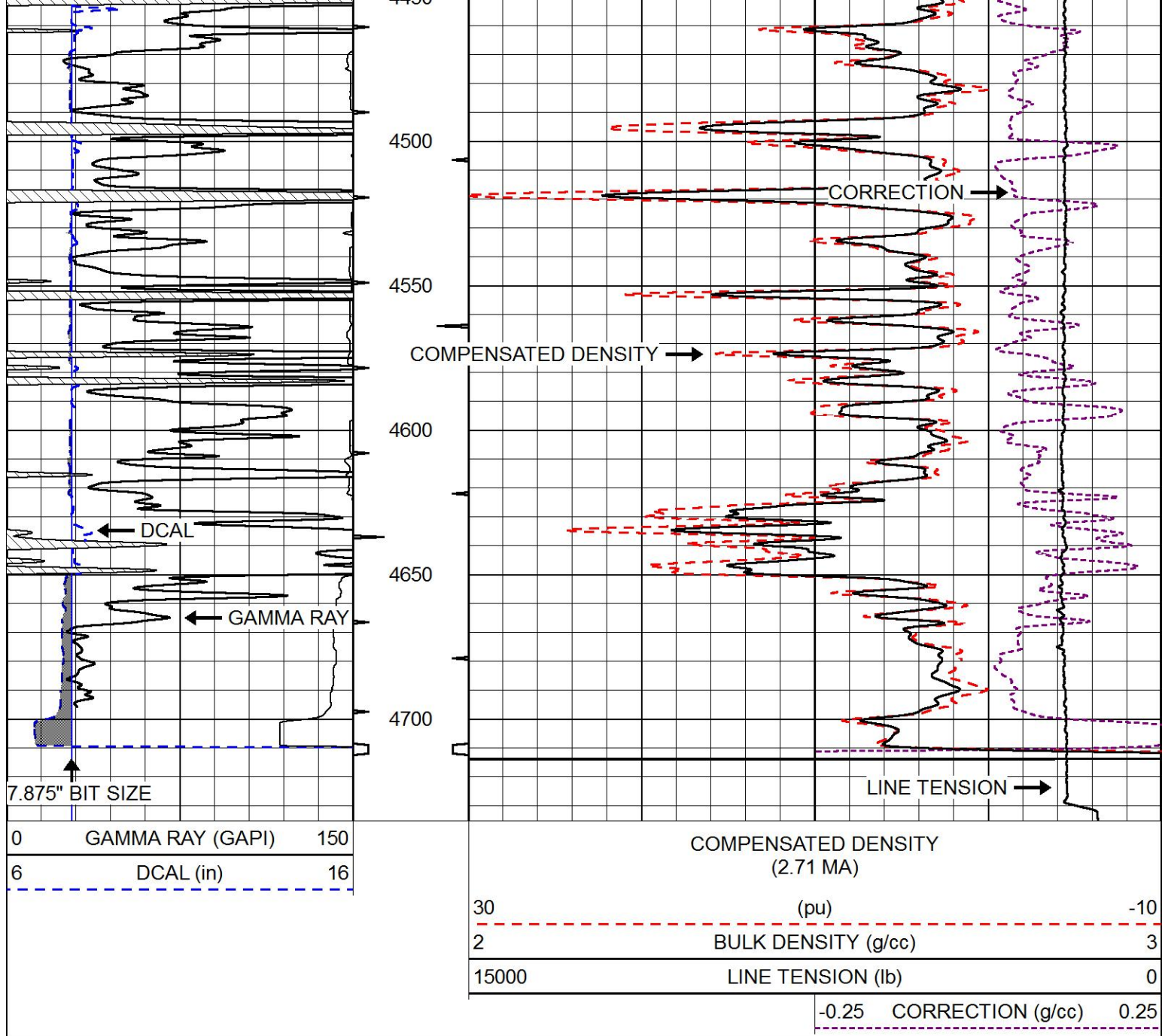
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (182-152)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					

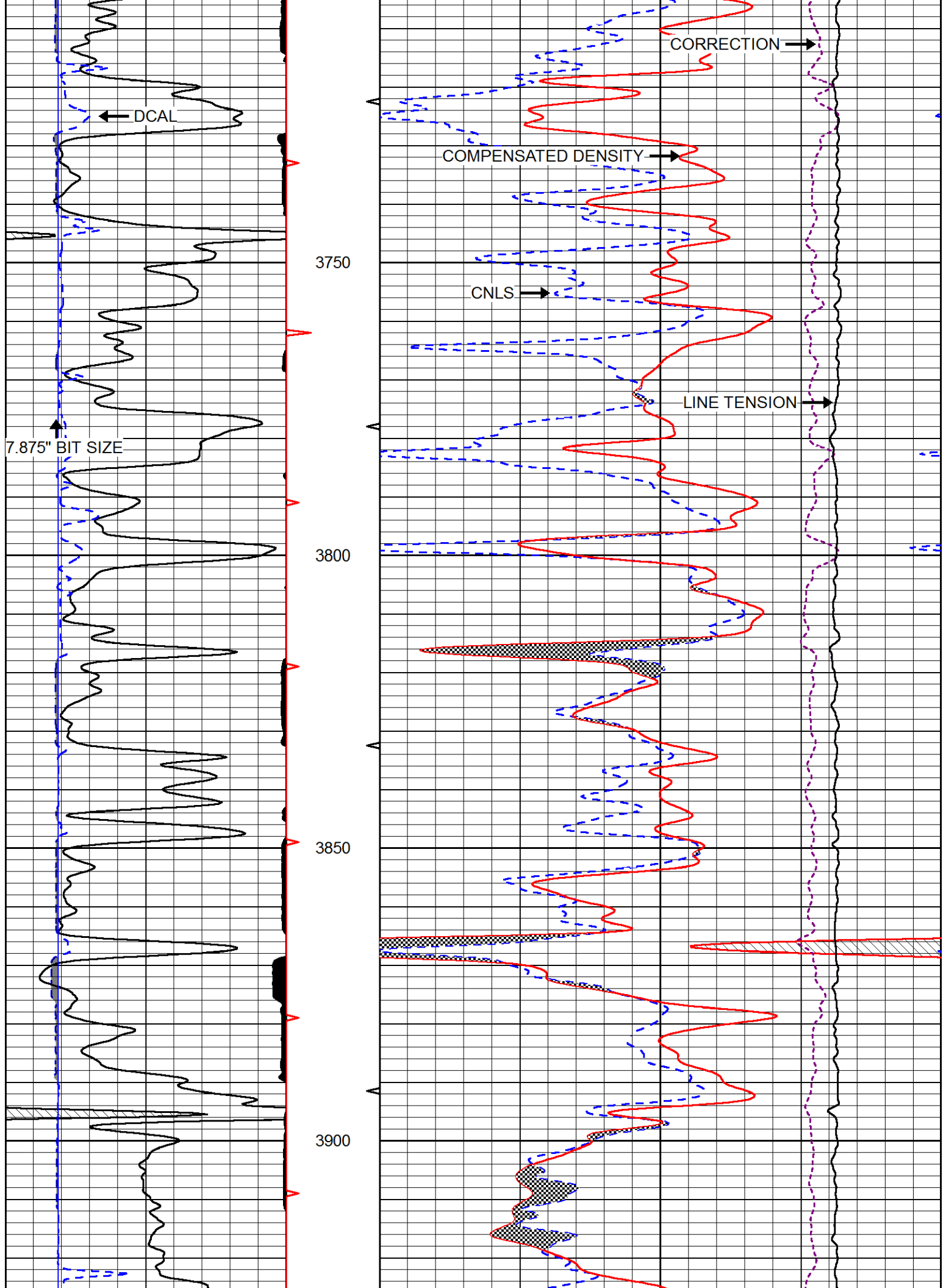
				DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILD	8.00						
CILM	4.70						
SP	0.20						
Dataset: richland_michaelis 25-1.db: field/well/STKML/pass3.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in							

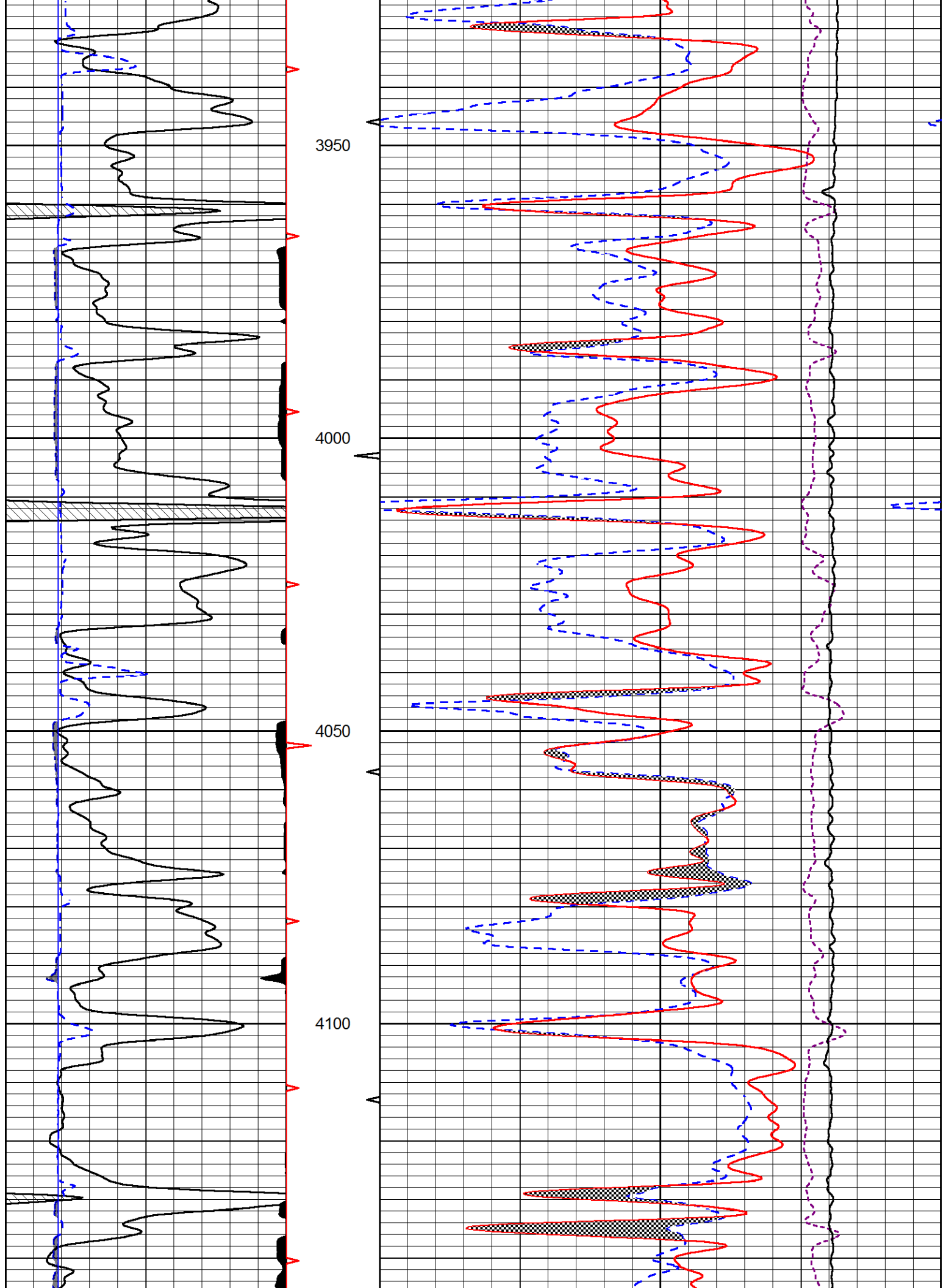
		MAIN PASS	
Database File	richland_michaelis 25-1.db		
Dataset Pathname	STKML/pass3.1		
Presentation Format	cdl		
Dataset Creation	Thu Apr 19 04:47:31 2018		
Charted by	Depth in Feet scaled 1:600		
0	GAMMA RAY (GAPI)	150	
6	DCAL (in)	16	
COMPENSATED DENSITY (2.71 MA)			
30	(pu)	-10	
2	BULK DENSITY (g/cc)	3	
15000	LINE TENSION (lb)	0	
	-0.25	CORRECTION (g/cc)	0.25

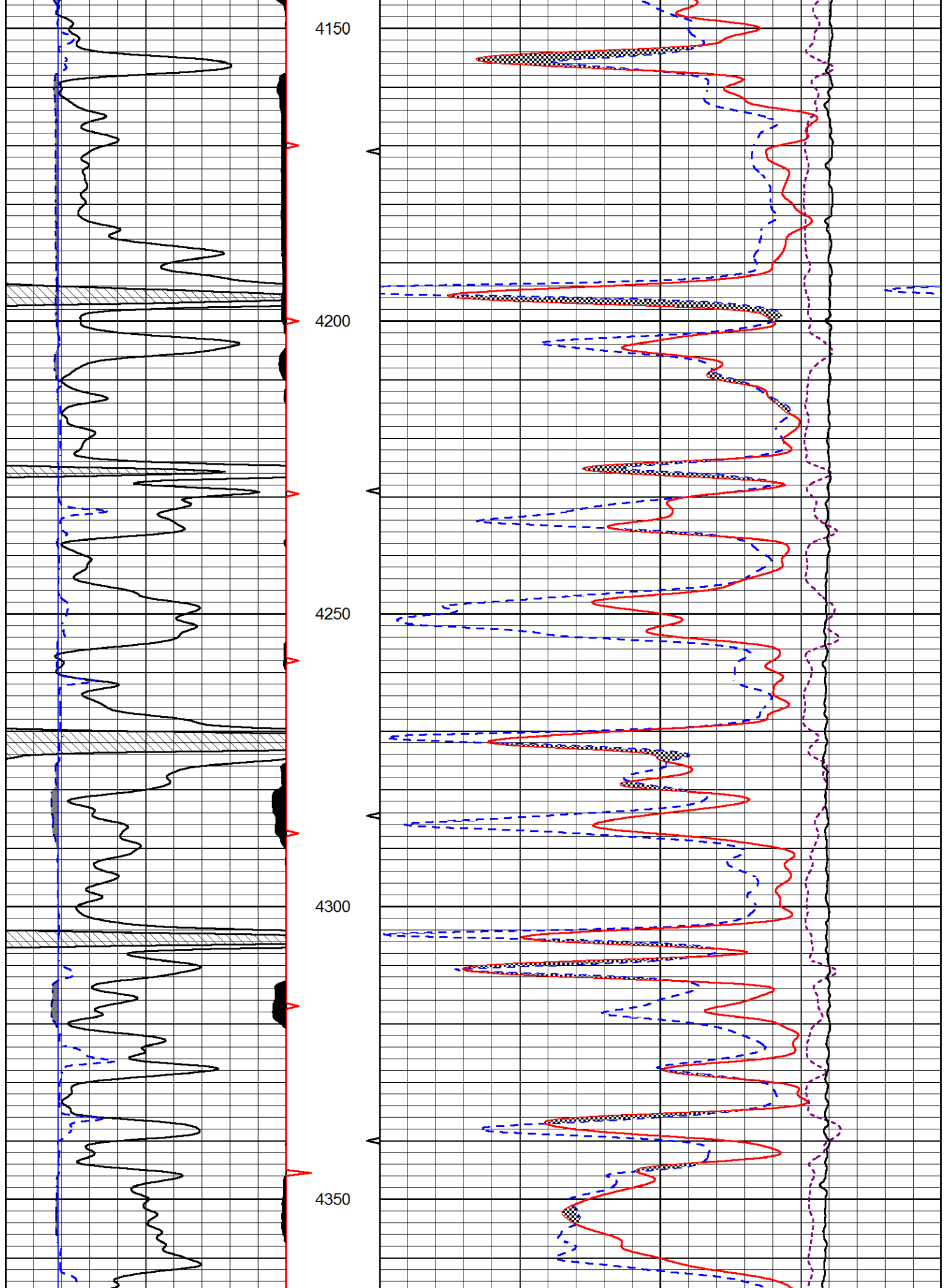


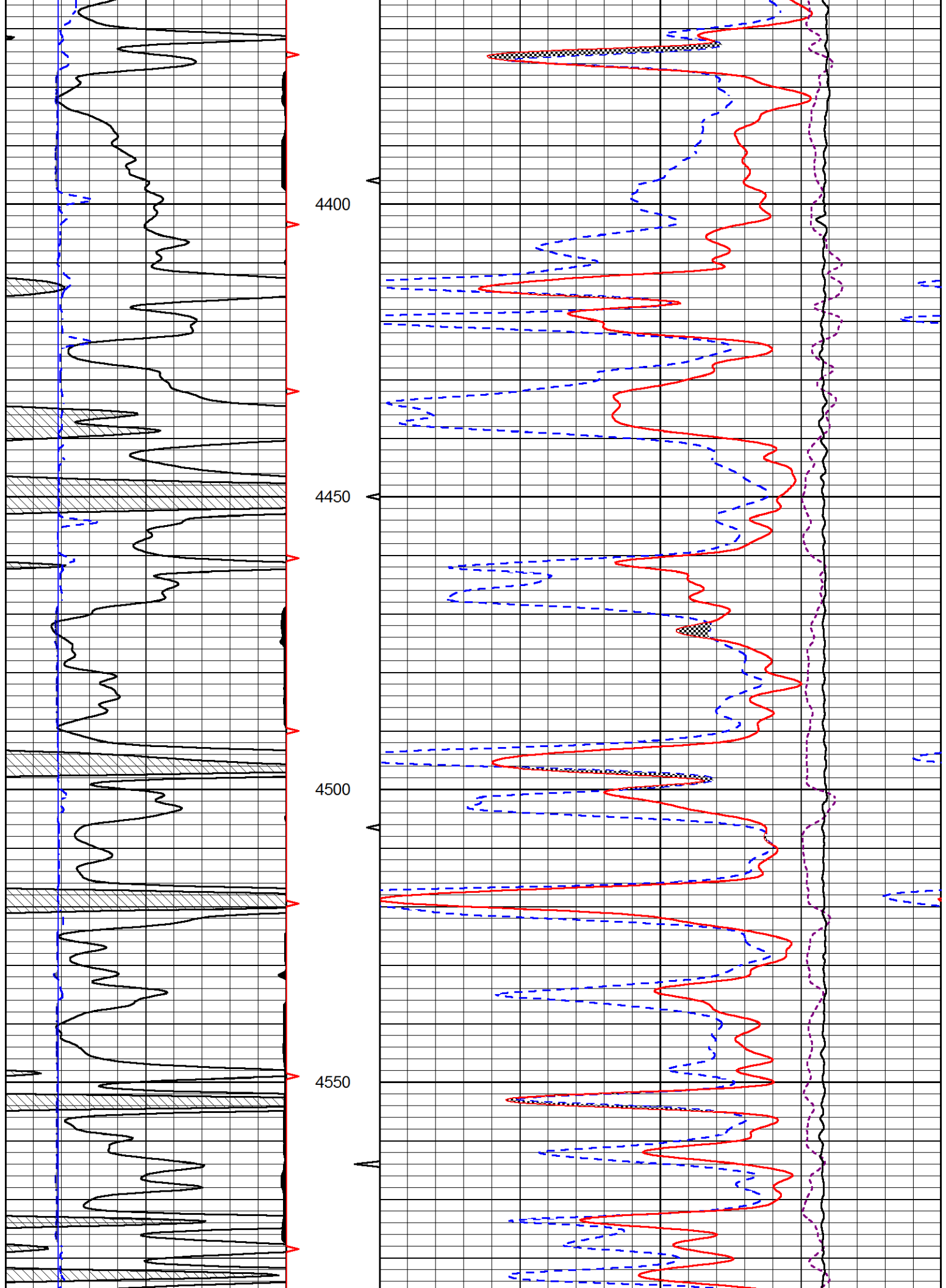


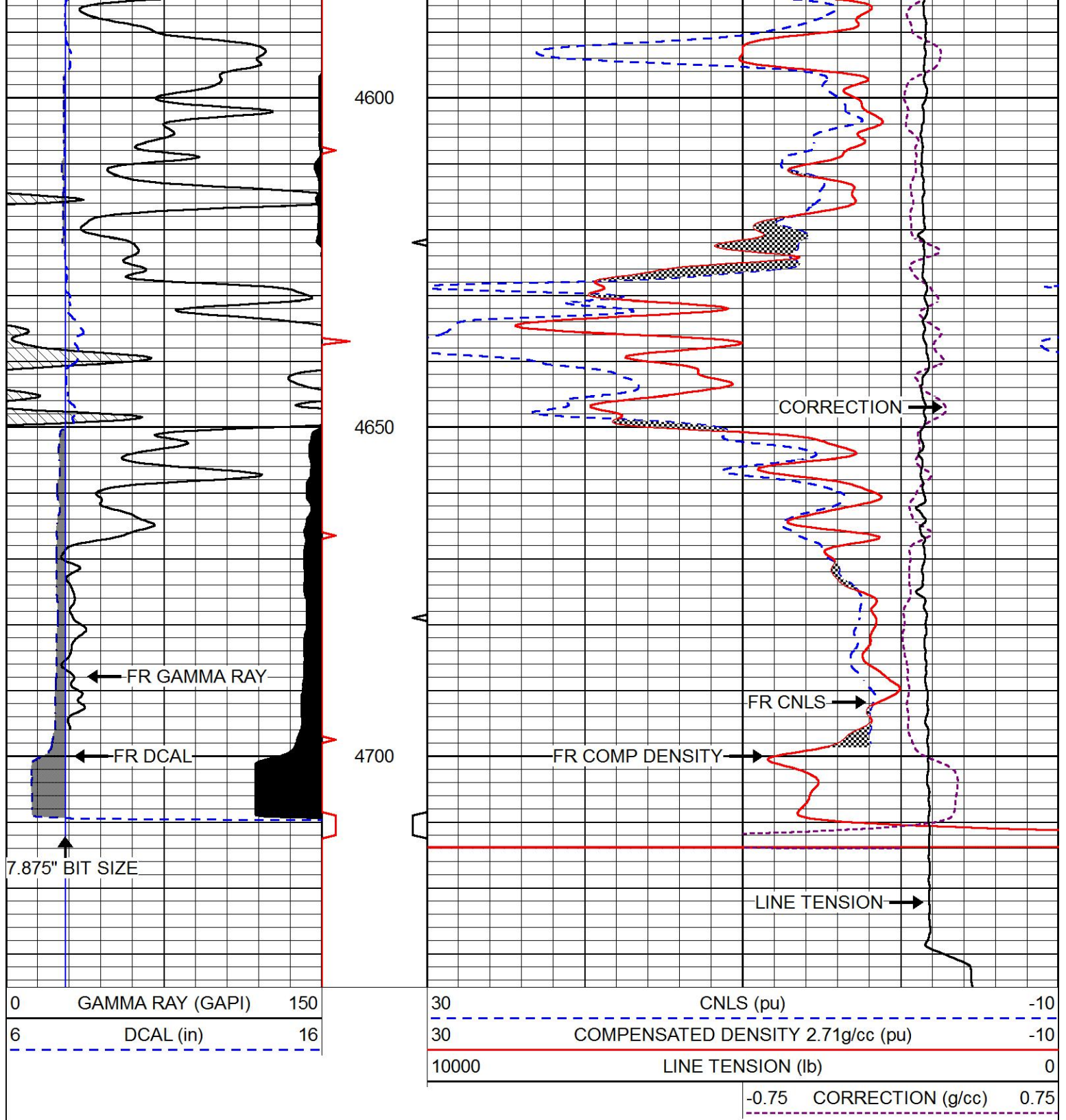










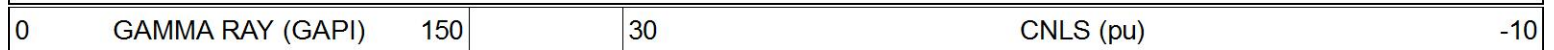




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REPEAT SECTION

Database File	richland_michaelis 25-1.db
Dataset Pathname	STKML/pass2.1
Presentation Format	cnlsspec
Dataset Creation	Thu Apr 19 04:42:57 2018
Charted by	Depth in Feet scaled 1:240

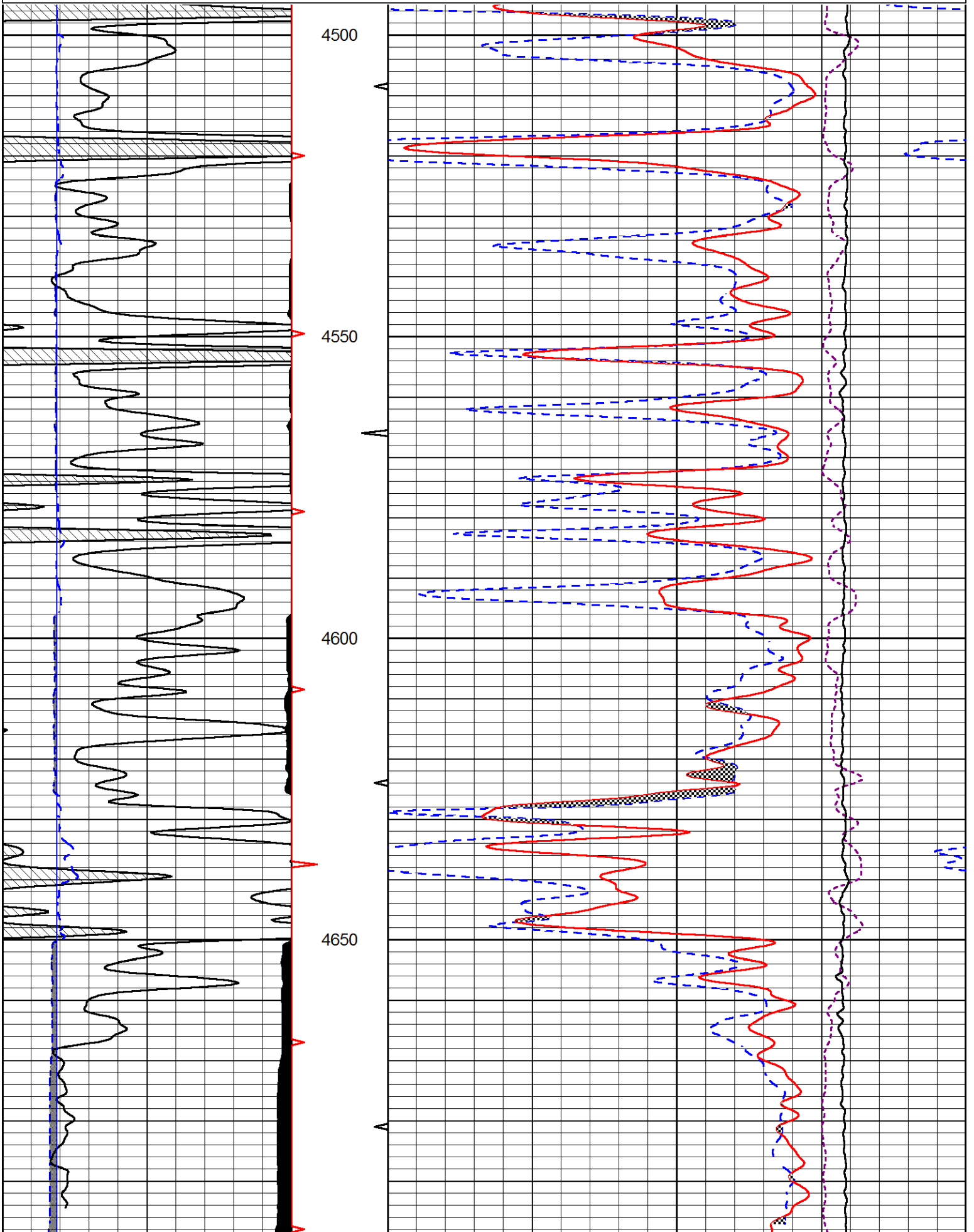


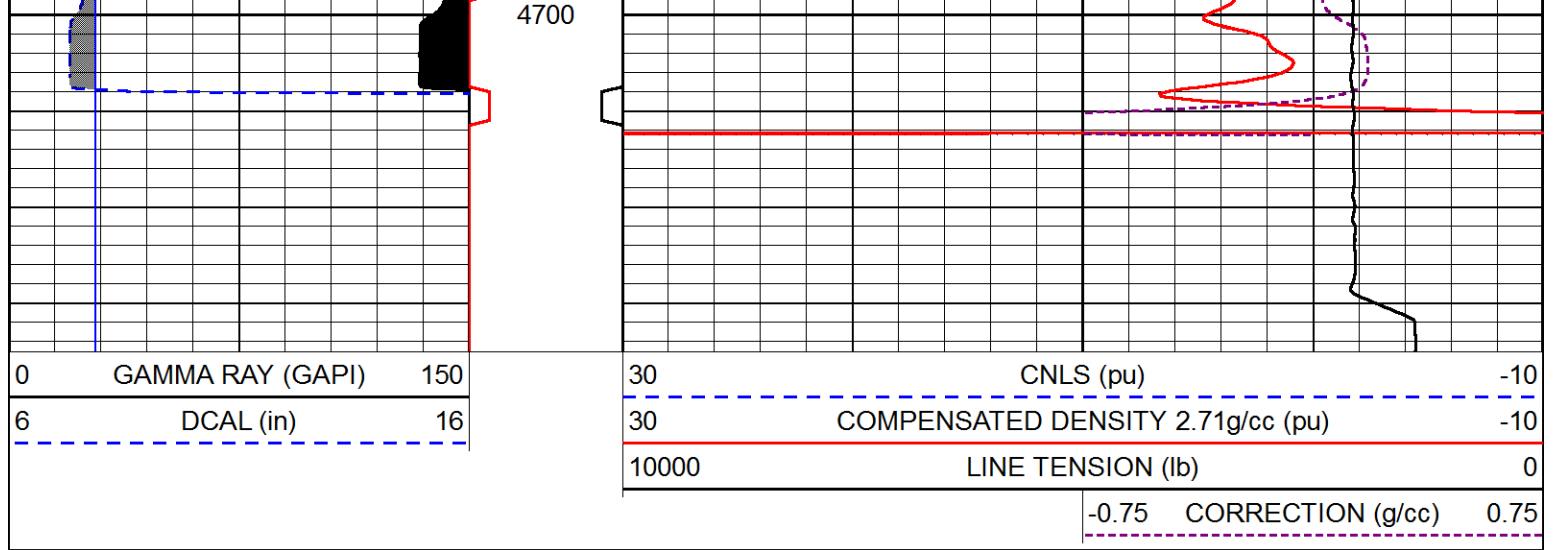
6 DCAL (in) 16

30 COMPENSATED DENSITY 2.71g/cc (pu) -10

10000 LINE TENSION (lb) 0

-0.75 CORRECTION (g/cc) 0.75





Calibration Report	
Database File	richland_michaelis 25-1.db
Dataset Pathname	STKML/pass3.1
Dataset Creation	Thu Apr 19 04:47:31 2018

Dual Induction Calibration Report

Serial-Model:	933 (HT)-PSI HIGH TEMP
Calibration Performed:	Mon Apr 16 20:15:16 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-18.200
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-60.500

Microlog Calibration Report

Serial-Model:	PSI-01-PSIML
Performed:	Mon Apr 16 11:11:21 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	25000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	32000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8750

Compensated Density Calibration Report

Serial-Model:	182-152-M&W
Source / Verifier:	16955B / 2ci
Master Calibration Performed:	Thu Apr 19 03:28:52 2018

Master Calibration						
	Density		Far Detector	Near Detector		
Magnesium	1.755	g/cc	4992.81	6098.44	cps	
Aluminum	2.660	g/cc	945.67	3945.60	cps	
Online Apples	75.22		Density/Online Ratio	0.586		

Spine Angle = 75.33

Density/Spine Ratio = 0.526

	Size		Reading
Small Ring	4.50	in	1.09
Large Ring	15.00	in	1.03

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



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Field WILDCAT
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