



# DUAL COMP POROSITY LOG

Company TDI, INC.  
Well FURTHMYER #4  
Field DREILING EAST  
County ELLIS  
State KANSAS

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County ELLIS State KANSAS

Location: API #: 15-051-26935-00-00  
330' FSL & 1190' FWL  
SEC 23 TWP 14S RGE 16W  
Permanent Datum GROUND LEVEL Elevation 1888'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING  
Other Services  
DIL  
MEL  
Elevation  
K.B. 1893'  
D.F. N/A  
G.L. 1888'

Date	11/15/2018						
Run Number	ONE						
Type Log	CNL/CDL						
Depth Driller	3510'						
Depth Logger	3502'						
Bottom Logged Interval	3472'						
Top Logged Interval	2500'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	4600						
Density	9.0						
Level	FULL						
Max. Rec. Temp. F	111 DEG/F						
Operating Rig Time	2 HOURS						
Equipment -- Location	108 HAYS						
Recorded By	J. HENRICKSON						
Witnessed By	TOM DENNING						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0	215'	8.625"	23#	0	215'
TWO	7.875"	215'	TD				
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.

WALKER EXIT I 70  
3 1/2 SOUTH, 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      785-625-3858

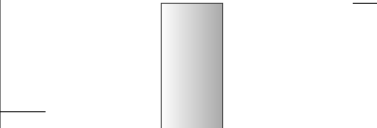
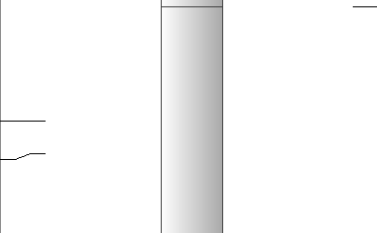
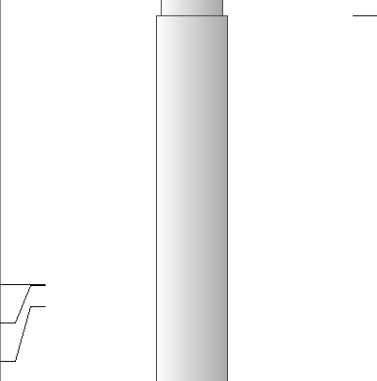
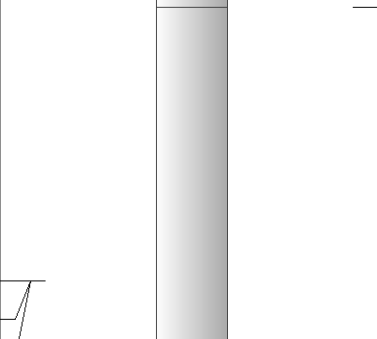
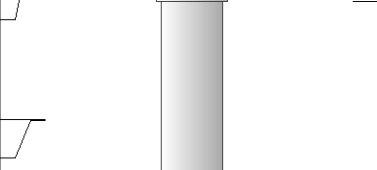
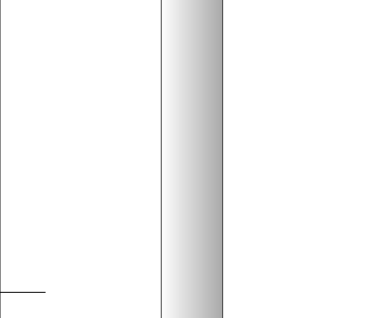
<p>Your Pioneer Energy Services Crew</p> <p>Engineer: J. HENRICKSON</p> <p>Operator:</p> <p>Operator:</p> <p>Operator:</p>	<p>This Log Record Was Witnessed By</p> <p>Primary Witness: TOM DENNING</p> <p>Secondary Witness: HERB DEINES</p> <p>Secondary Witness:</p> <p>Secondary Witness:</p>
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# Log Variables

DatabaseC:\ProgramData\Warrior\Data\tdi\_furthmyer\_4.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	111	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	390	47	Off	0

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 (96-916)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (976)	18.50	3.50	220.00

CILM 4.70

SP 0.20

Dataset: tdi\_furthmyer\_4.db: field/well/stackml/pass3.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in

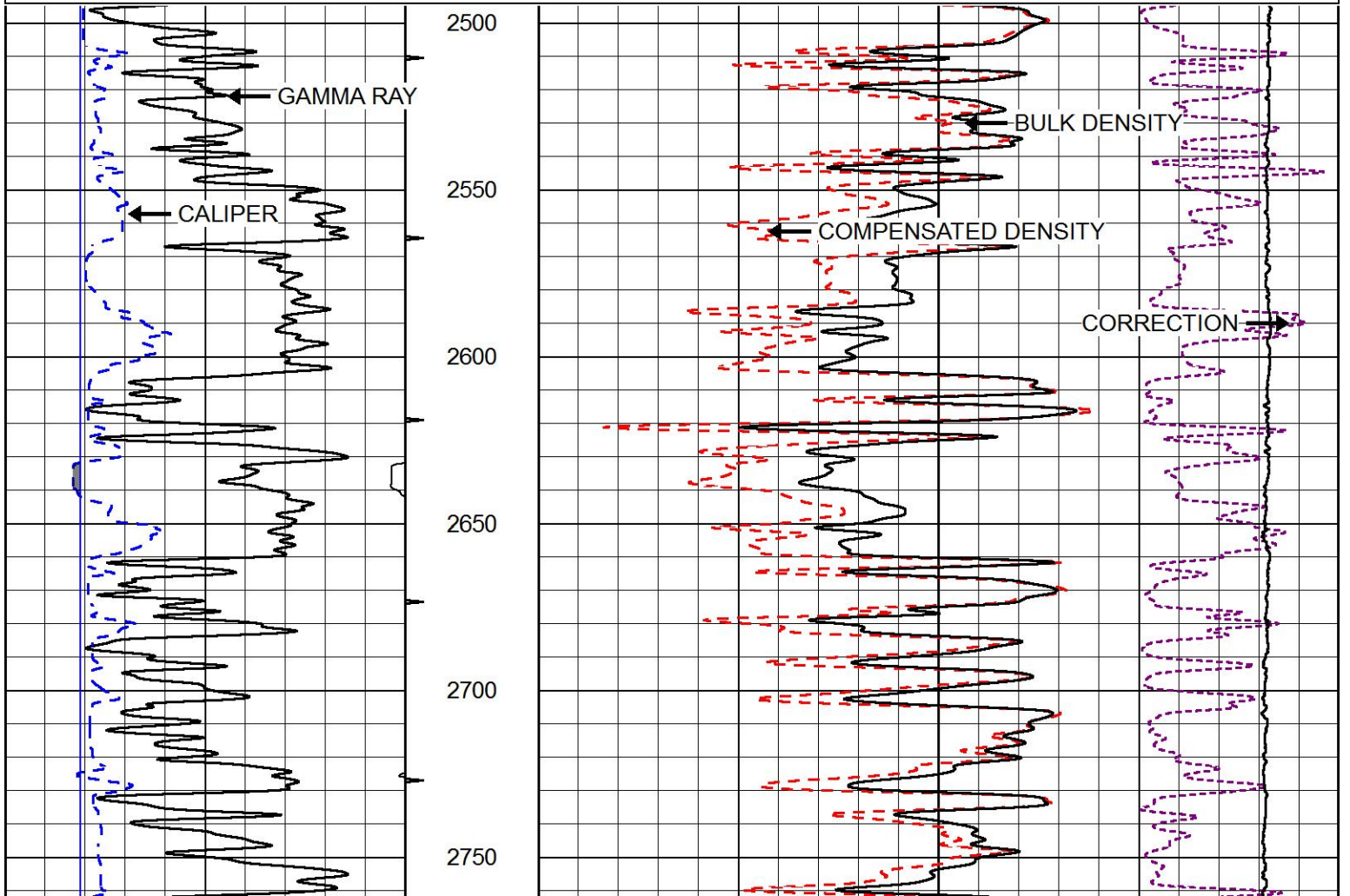


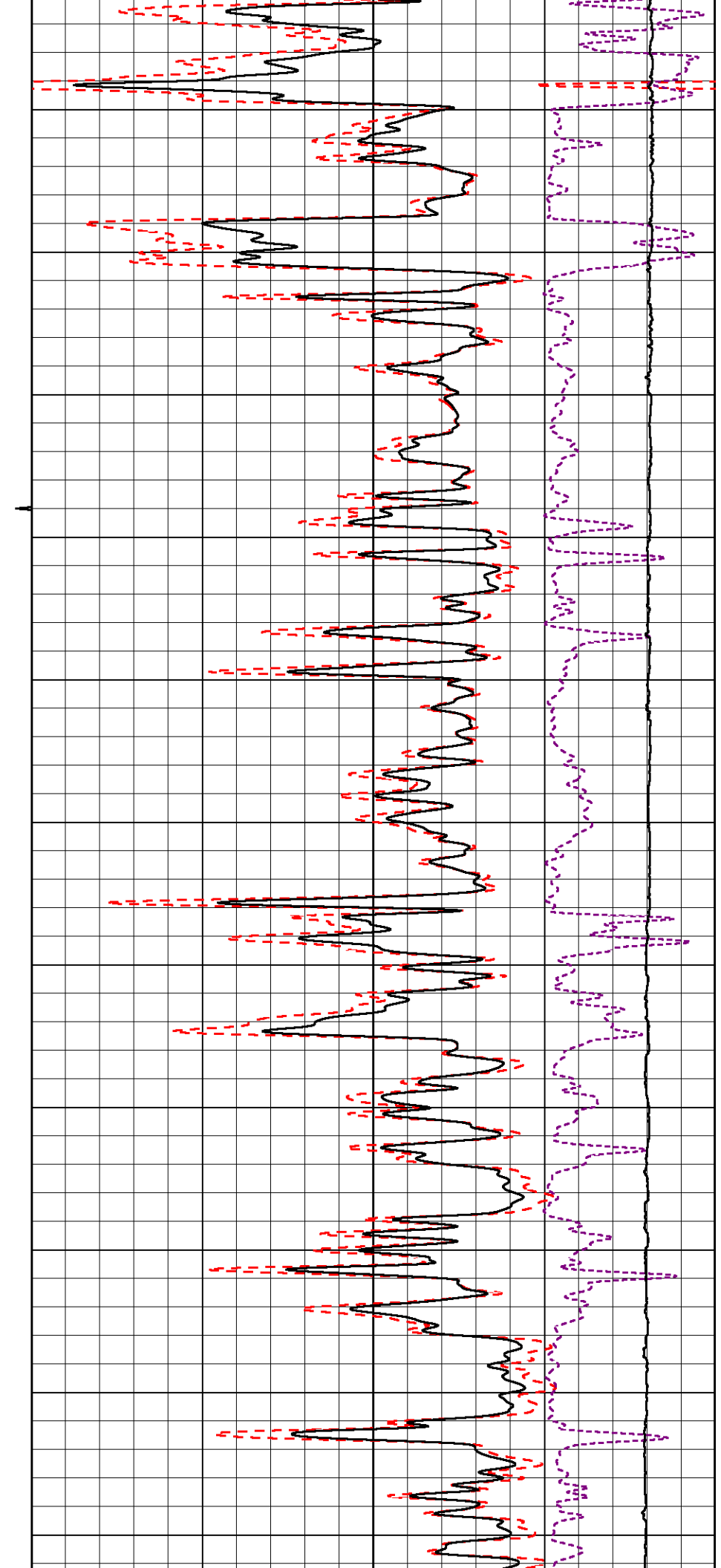
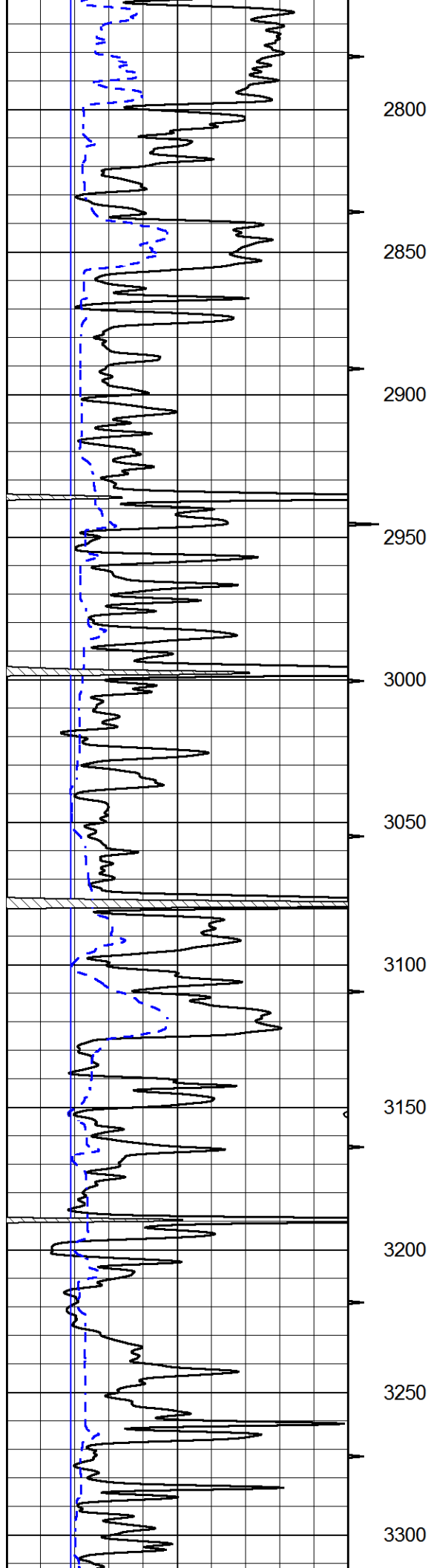
# MAIN PASS

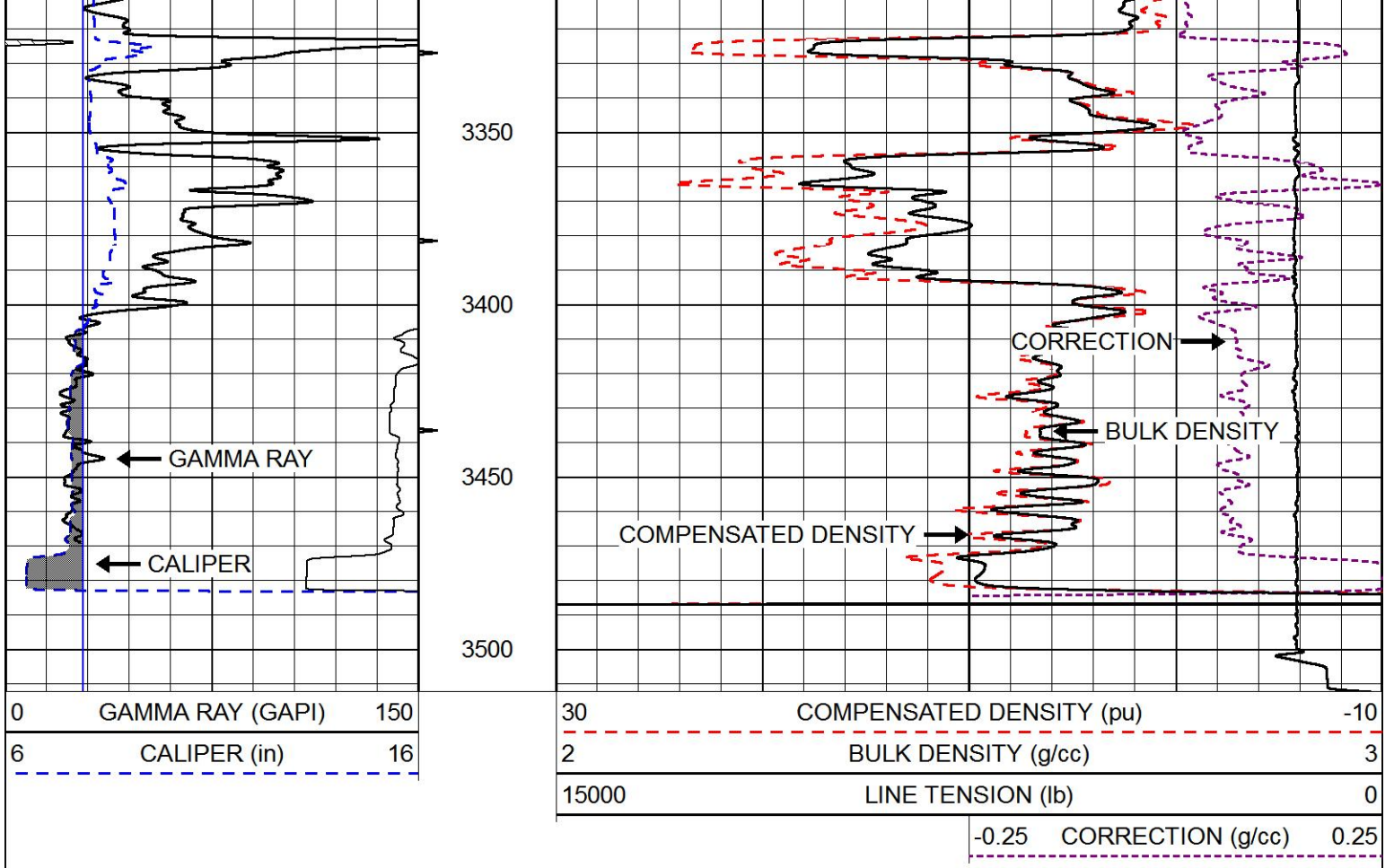
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 Dataset Pathname stackml/pass3.1  
 Presentation Format cdl  
 Dataset Creation Thu Nov 15 23:44:11 2018  
 Charted by Depth in Feet scaled 1:600

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

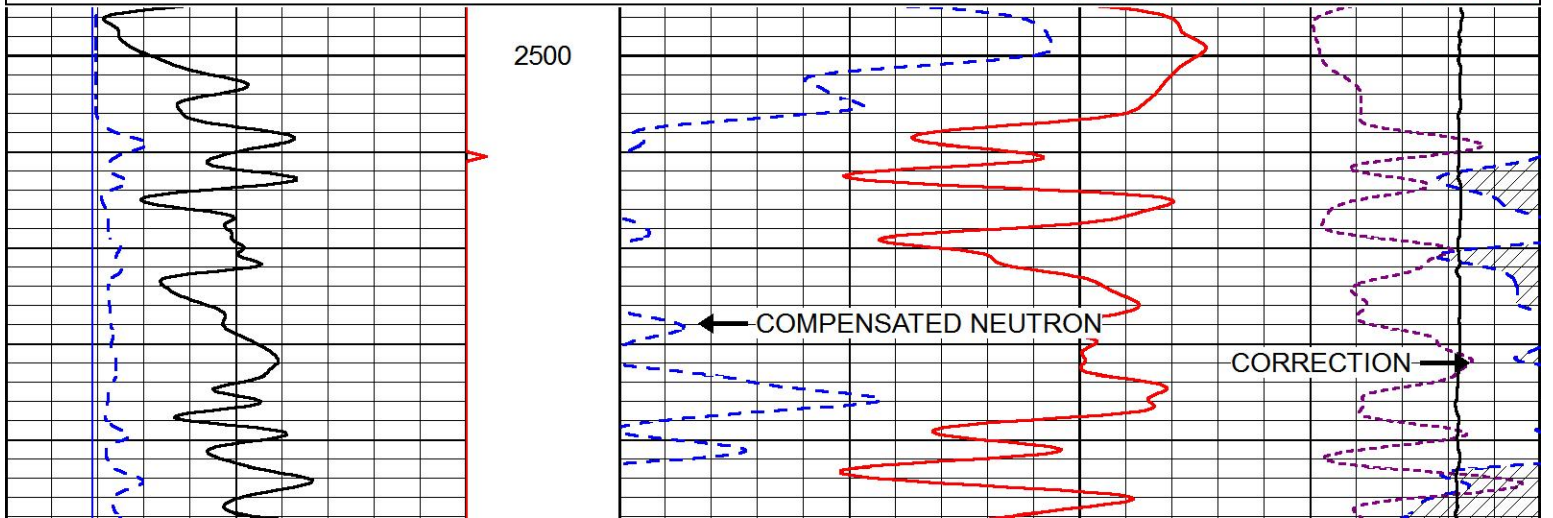
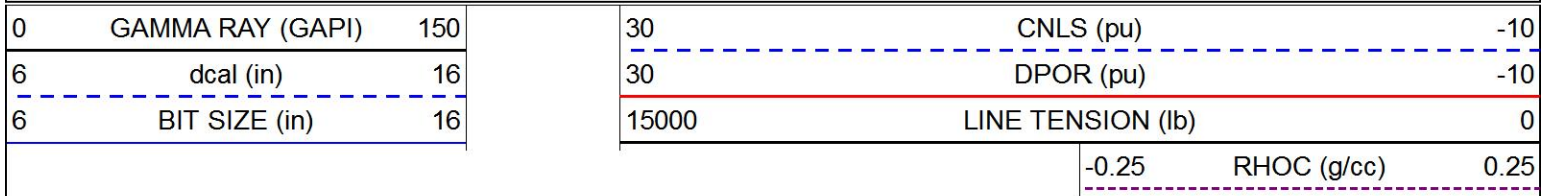


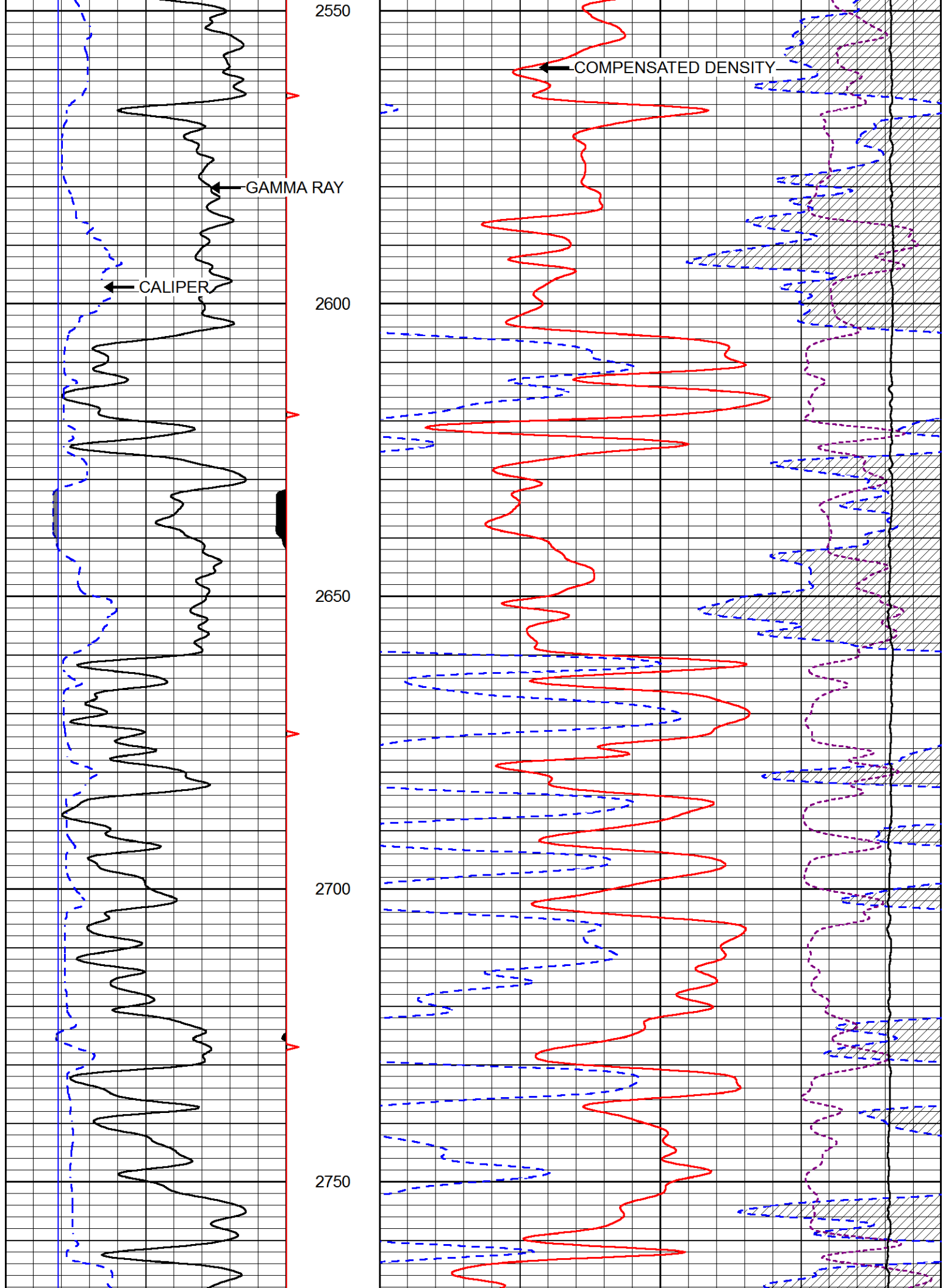


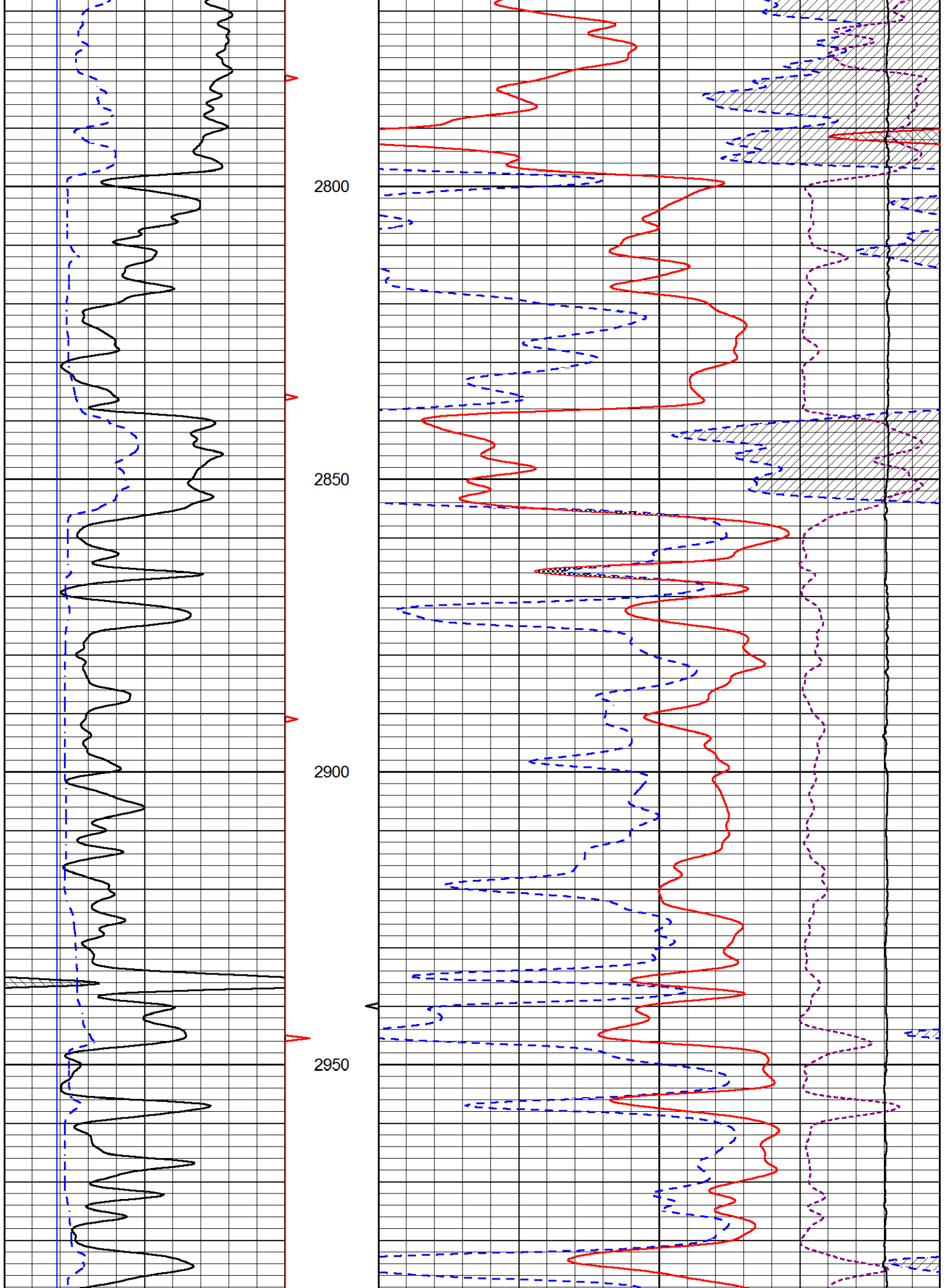


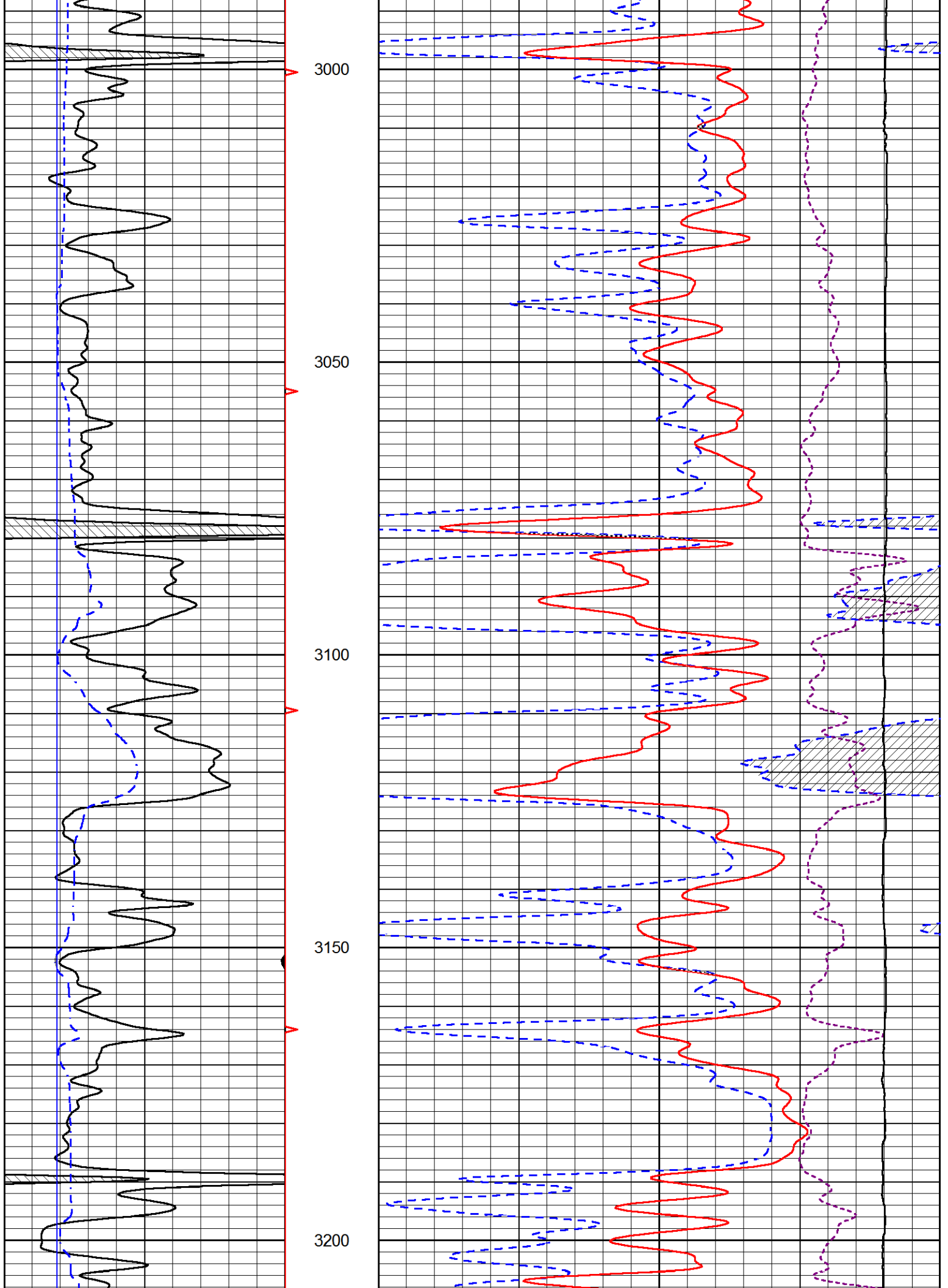
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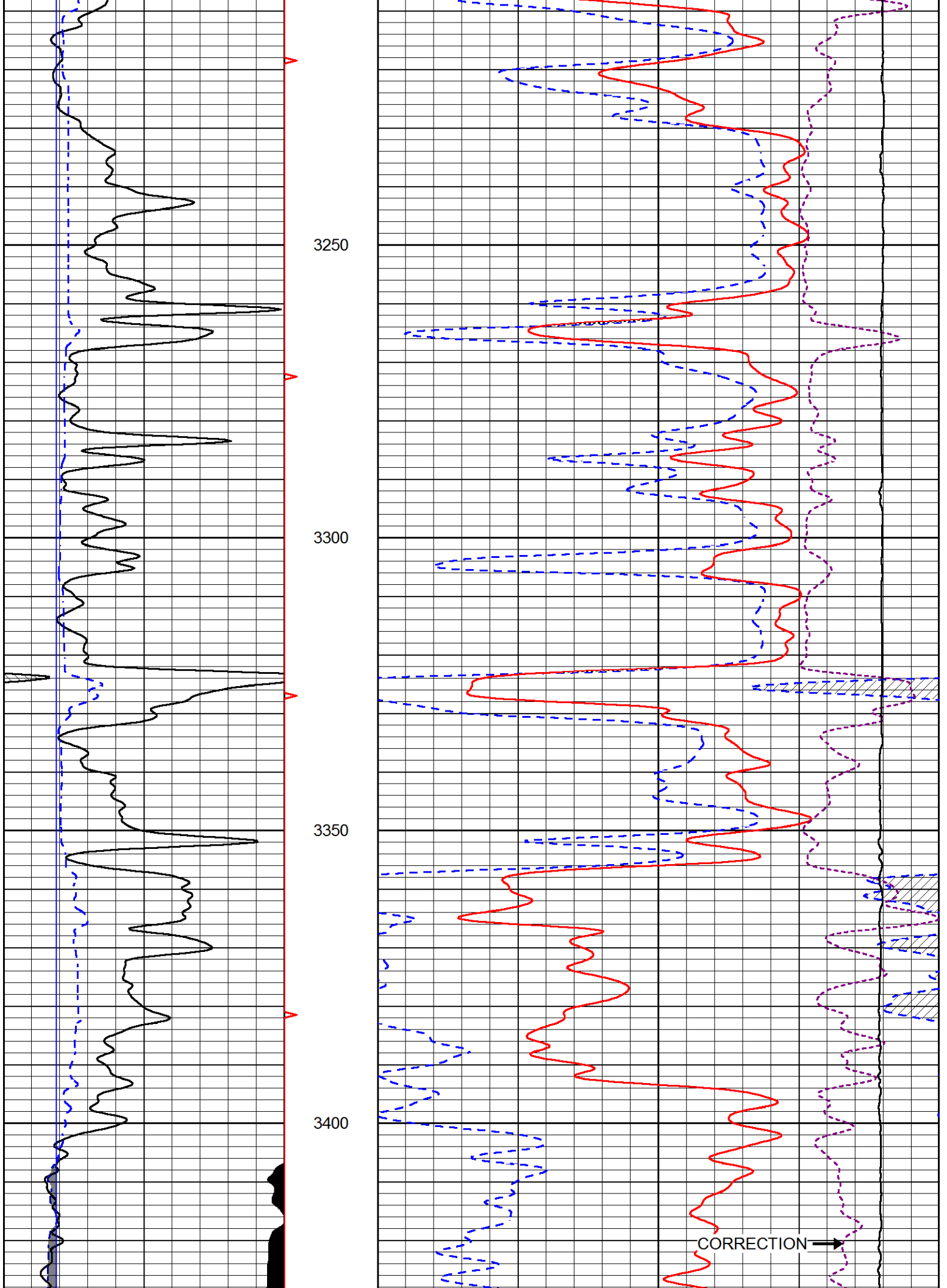
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 Dataset Pathname stackml/pass3.1  
 Presentation Format cndlspec  
 Dataset Creation Thu Nov 15 23:44:11 2018  
 Charted by Depth in Feet scaled 1:240

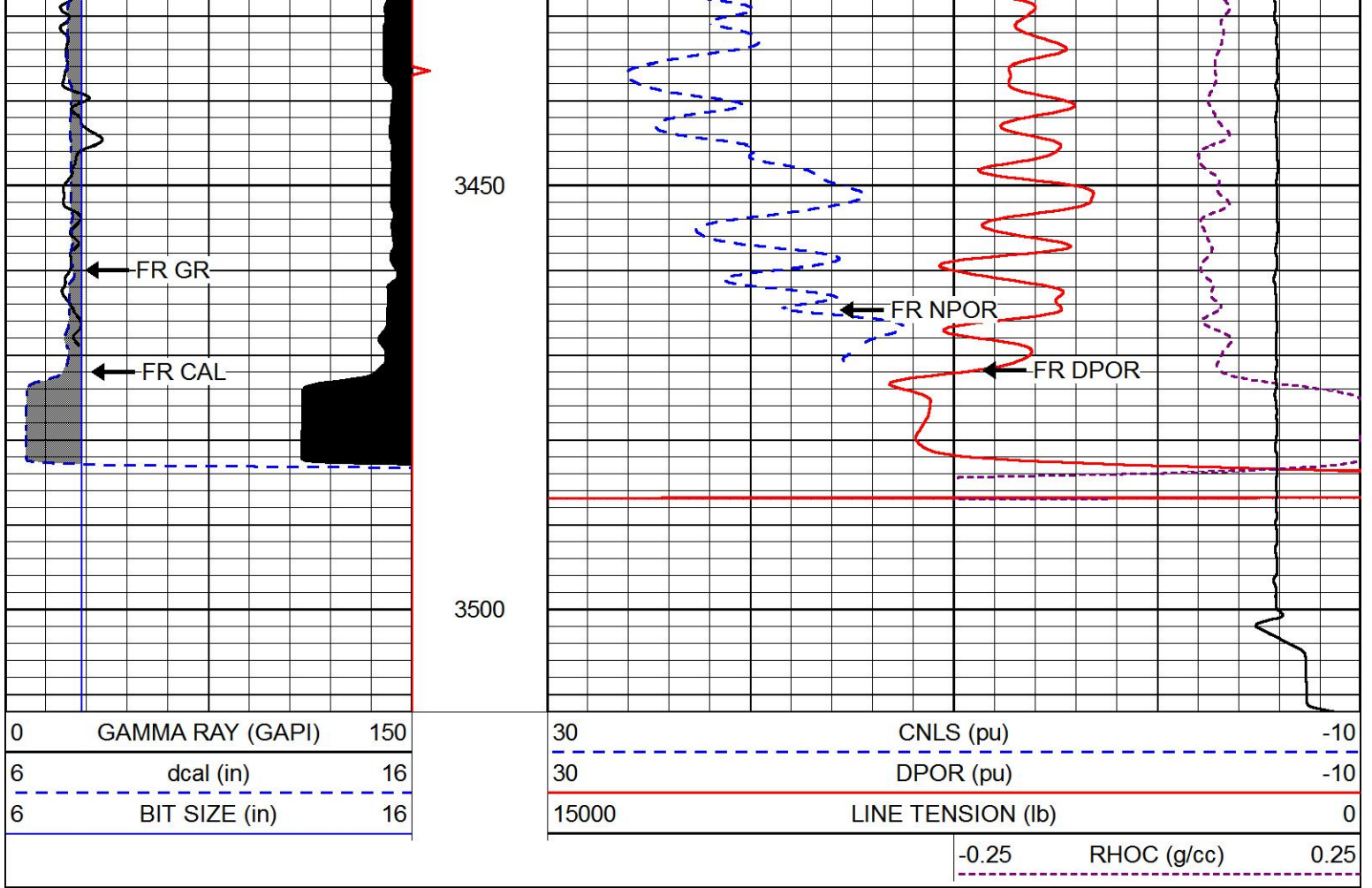






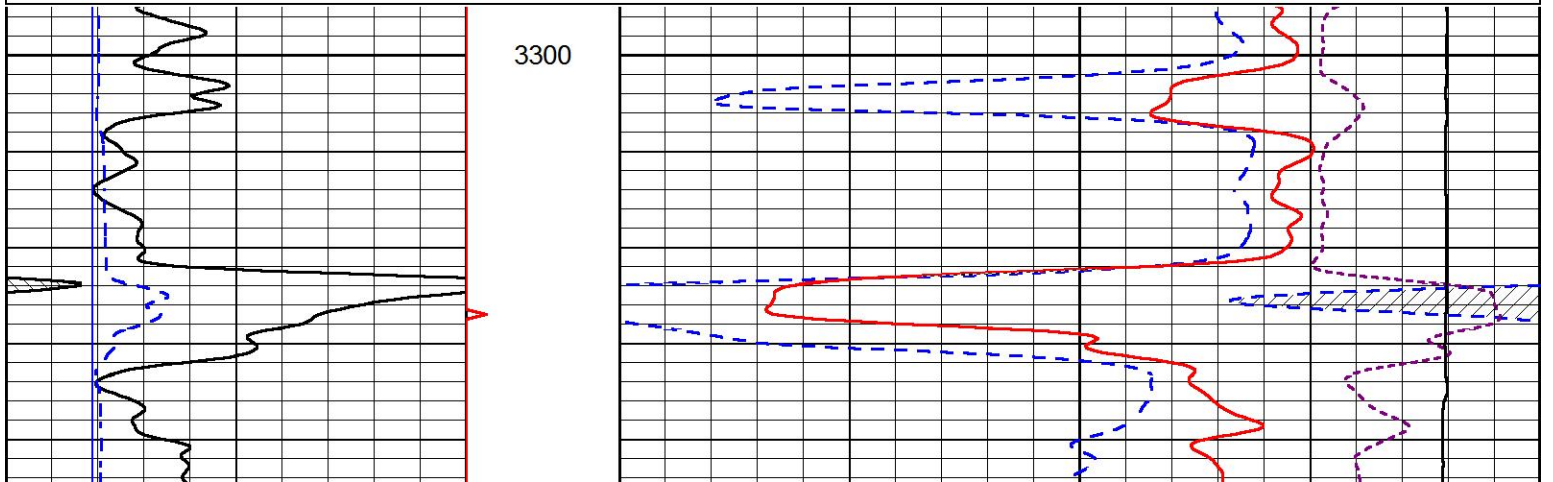
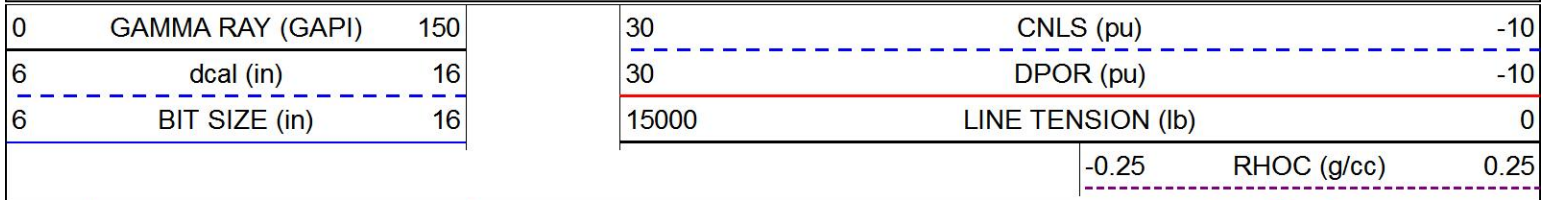


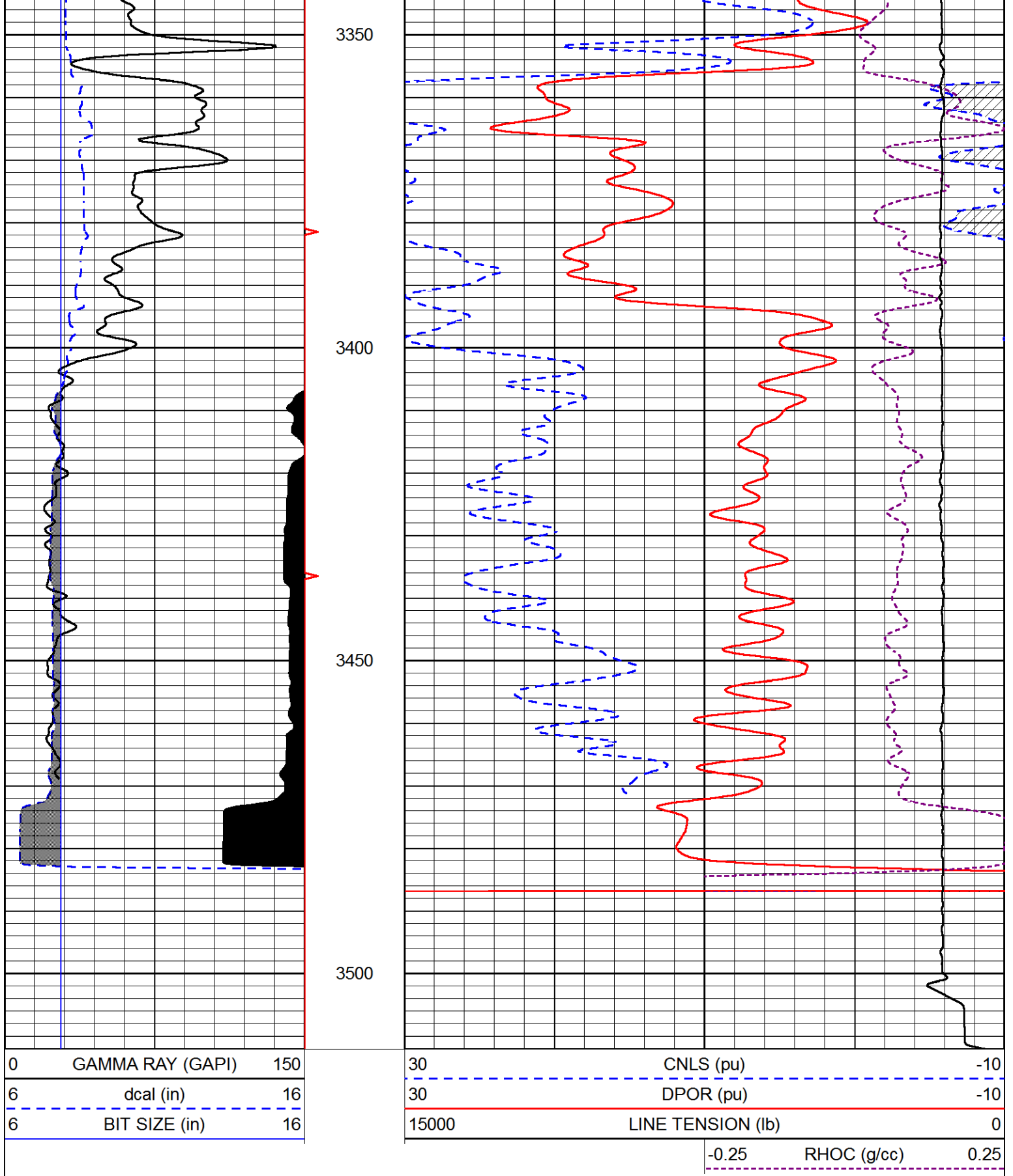





# REPEAT SECTION

Database File tdi\_furthmyer\_4.db  
 Dataset Pathname stackml/pass2.1  
 Presentation Format cndlspec  
 Dataset Creation Thu Nov 15 23:51:08 2018  
 Charted by Depth in Feet scaled 1:240





Calibration Report

Database File tdi\_furthmyer\_4.db  
 Dataset Pathname stackml/pass3.1  
 Dataset Creation Thu Nov 15 23:44:11 2018

Dual Induction Calibration Report

Serial Model: 976-M&W

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.620	-17.500
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.430	-40.000

Microlog Calibration Report

Serial-Model:  
Performed:

PSI-01-PSI STKBL ML  
Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	22500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	29500.0000	-1.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.4800

Compensated Density Calibration Report

Serial-Model:  
Source / Verifier:  
Master Calibration Performed:

96-916-M&W  
/  
Wed Nov 14 15:40:42 2018

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	7965.66	8750.45	cps
Aluminum	2.635	g/cc	1433.52	5335.67	cps
Spine Angle = 73.91			Density/Spine Ratio = 0.493		
	Size		Reading		
Small Ring	4.00	in	2.61		
Large Ring	14.00	in	1.67		

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



**PIONEER**  
Pioneer Energy Services

Company	TDI, INC.
Well	FURTHMYER #4
Field	DREILING EAST
County	ELLIS
State	KANSAS