



PIONEER

Pioneer Energy Services

DUAL COMP POROSITY LOG

Company **COBALT ENERGY, LLC**
Well **ELIZABETH A #2-36**
Field **WILDCAT**
County **Graham** State **KANSAS**

Location: API #: 15-065-24182-00-00

Other Services

947' FSL & 1016'
SE - NE - SW - SW
SEC 36 TWP 8S RGE 22W

DIL/MEL

Permanent Datum **GROUND LEVEL** Elevation **2160'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 2165'
D.F. N/A
G.L. 2160'

Date **02/25/2020**

Run Number **ONE**

Type Log **CNL/CDL**

Depth Driller **3800'**

Depth Logger **3801'**

Bottom Logged Interval **3772'**

Top Logged Interval **3100'**

Type Fluid In Hole **CHEMICAL**

Salinity, PPM CL **3200**

Density **9.3**

Level **FULL**

Max. Rec. Temp. F **114**

Operating Rig Time **3 HOURS**

Equipment -- Location **P-24 HAYS**

Recorded By **IAN MABB**

Witnessed By **LARRY NICHOLSON**

Borehole Record

Casing Record

Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	220'	8.625"	23#	0'	220'
TWO	7.875"	220'	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.

BOGUE, KS.

SOUTH 3 MILES TO L RD, WEST TO RD 340,
NORTH 1 MILE & EAST 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

Engineer: **IAN MABB**
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: **LARRY NICHOLSON**
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 100	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 0	mV 0	degF 0	Off	ft 3801

Sensor	Offset (ft)	Schematic		Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58			GR-M&W (233-M&W)	3.00	3.50	50.00
CNLSC	37.48			CNT-M&W (207-MW)	5.50	3.50	100.00
CNSSC	36.73						
LSD	28.43			CDL-M&W (817-947)	8.50	4.00	250.00
	28.42						
	27.93						
MCAL	19.83			ML-PSIML (PSI-01)	7.58	4.00	65.00
	19.83			GO Micro log tools converted to Simplec electronics			
	19.83						
RLL3F	15.80						
RLL3	15.80						
CILD	8.00			DIL-PSI HIGH TEMP (952-828)	18.50	3.50	220.00

CILM

4.70

SP

0.20

Dataset: cobalt_elizabeth_a_2_36.db: field/well/stackmel/pass3
Total length: 43.08 ft
Total weight: 685.00 lb
O.D.: 4.00 in

PIONEER

Pioneer Energy Services

MAIN PASS

Database File cobalt_elizabeth_a_2_36.db
Dataset Pathname stackmel/pass3.1
Presentation Format _cdl
Dataset Creation Mon Feb 24 23:57:53 2020
Charted by Depth in Feet scaled 1:600

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

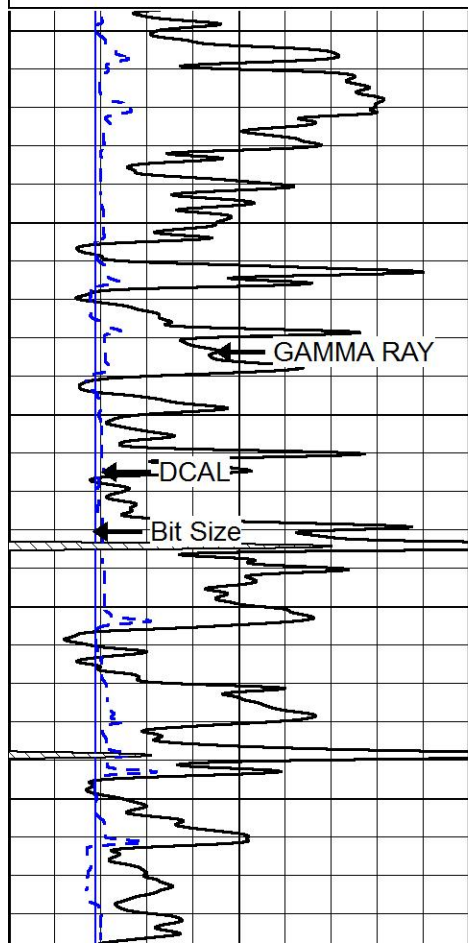
COMPENSATED DENSITY
(2.71 MA)

30 (pu) -10

2 BULK DENSITY (g/cc) 3

15000 LINE TENSION (lb) 0

-0.25 CORRECTION (g/cc) 0.25



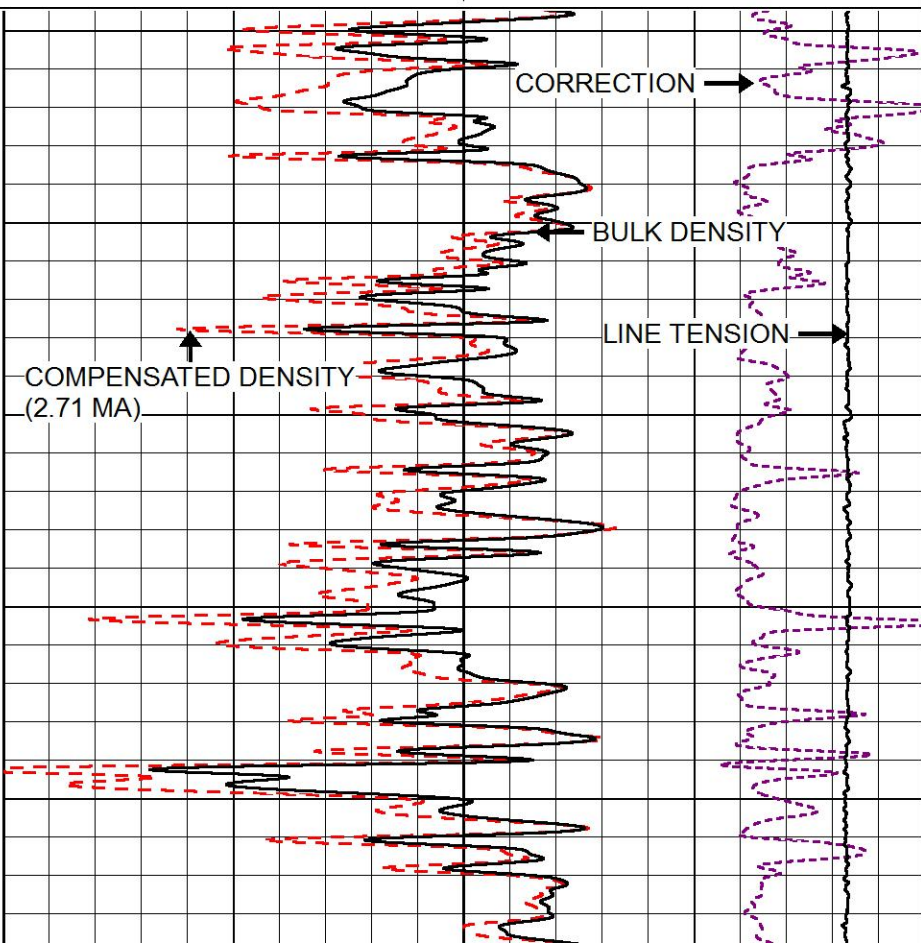
3100

3150

3200

3250

3300

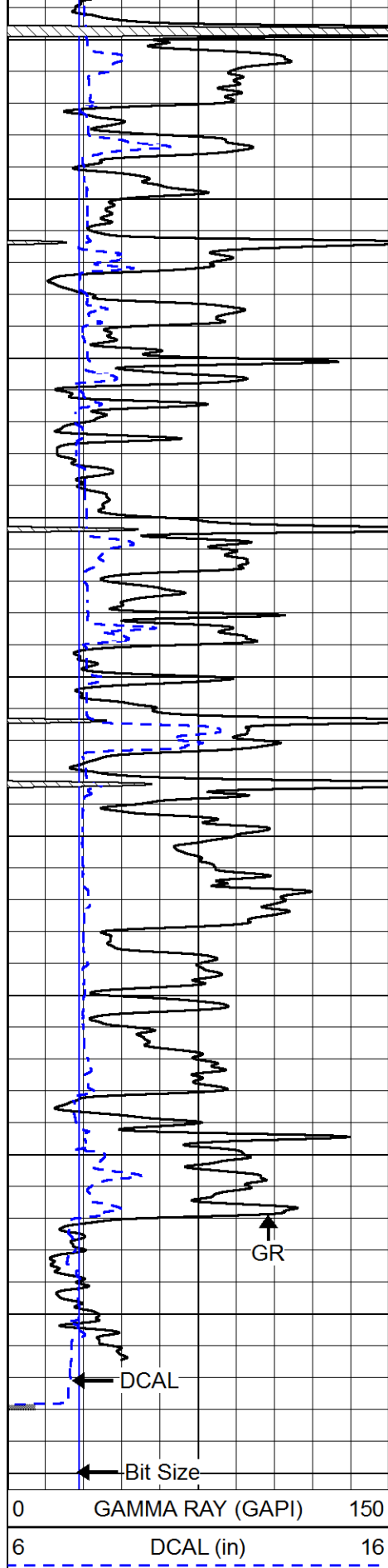


CORRECTION →

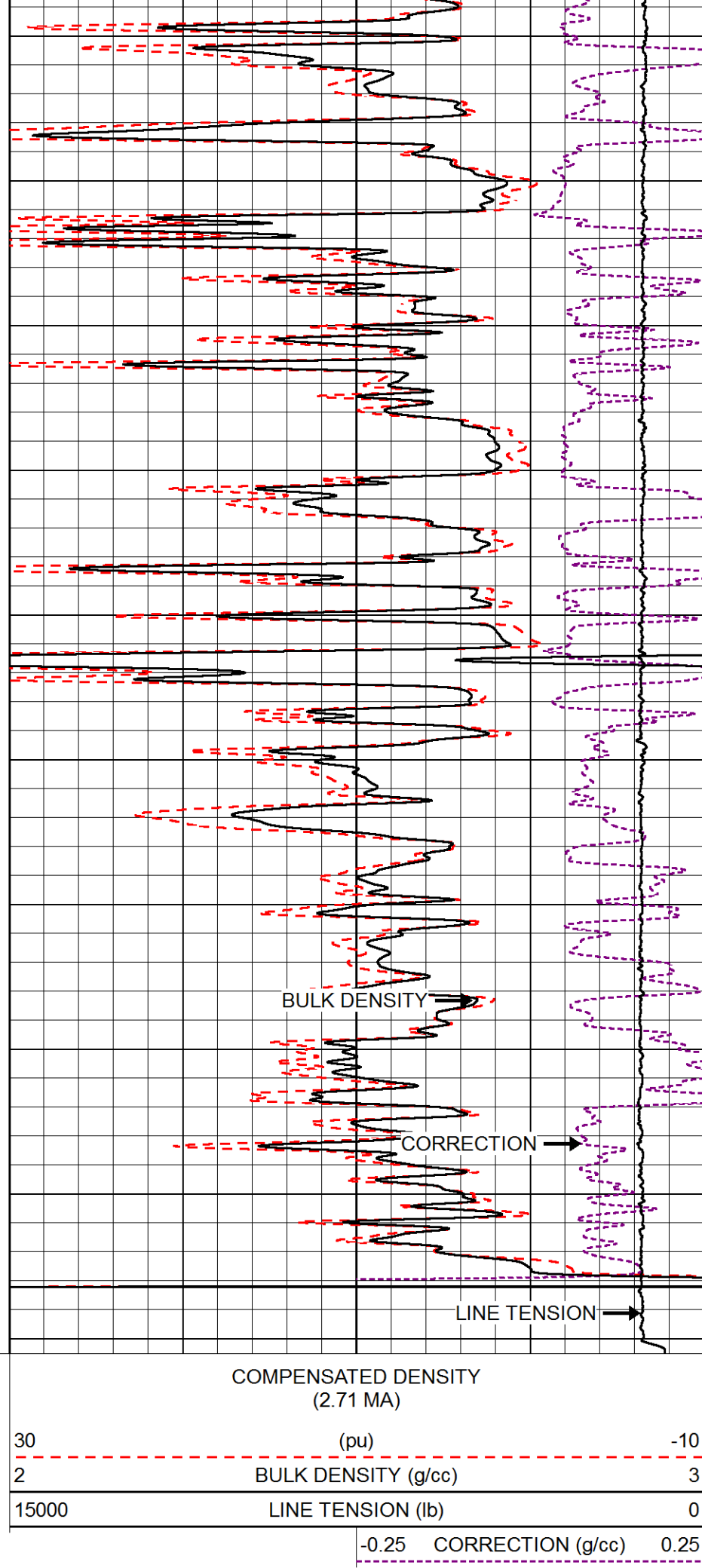
BULK DENSITY →

LINE TENSION →

COMPENSATED DENSITY
(2.71 MA)



3350
3400
3450
3500
3550
3600
3650
3700
3750
3800

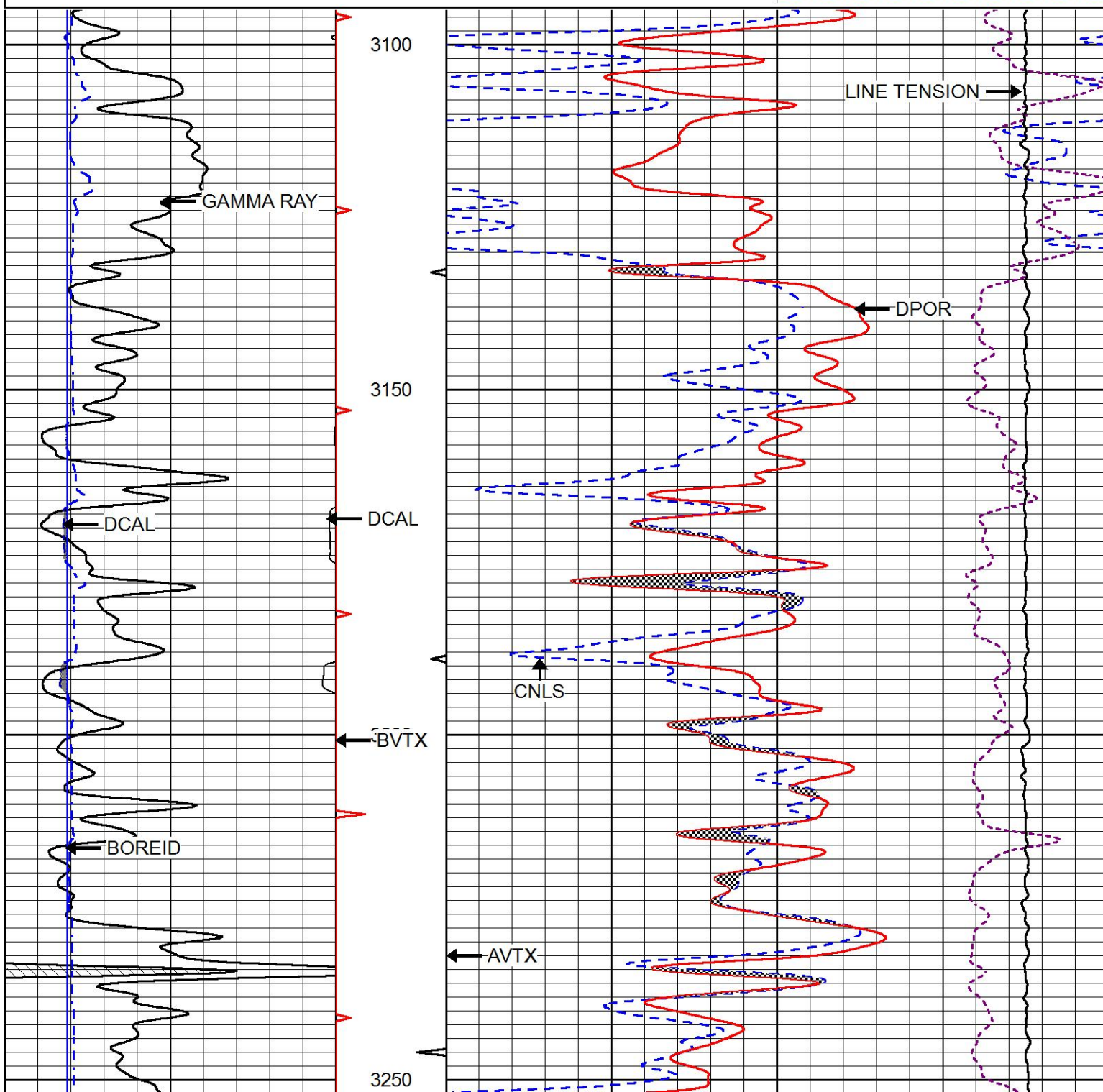


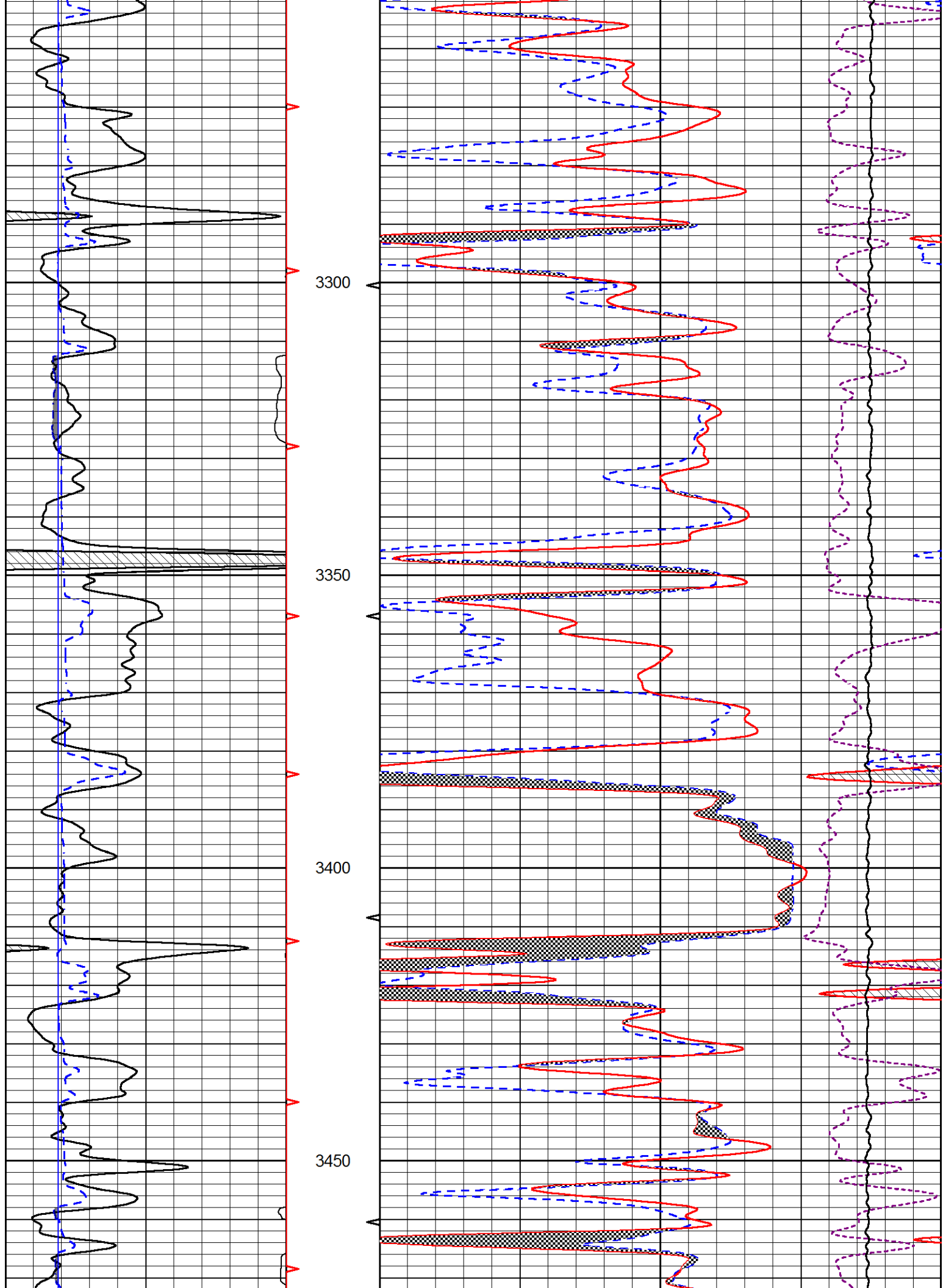
MAIN PASS

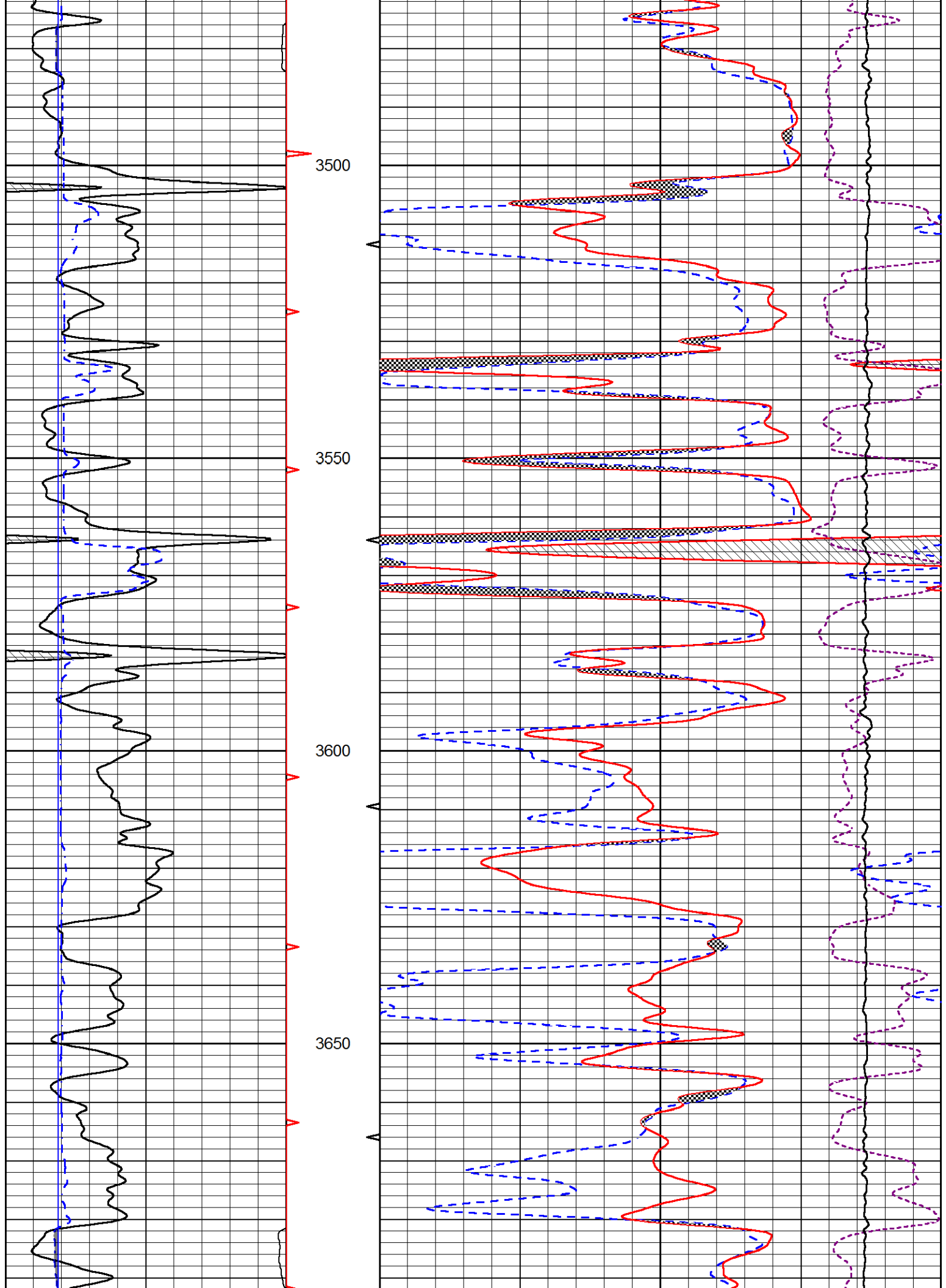
Database File cobalt_elizabeth_a_2_36.db
Dataset Pathname stackmel/pass3.1
Presentation Format _CNDLS~1
Dataset Creation Mon Feb 24 23:57:53 2020
Charted by Depth in Feet scaled 1:240

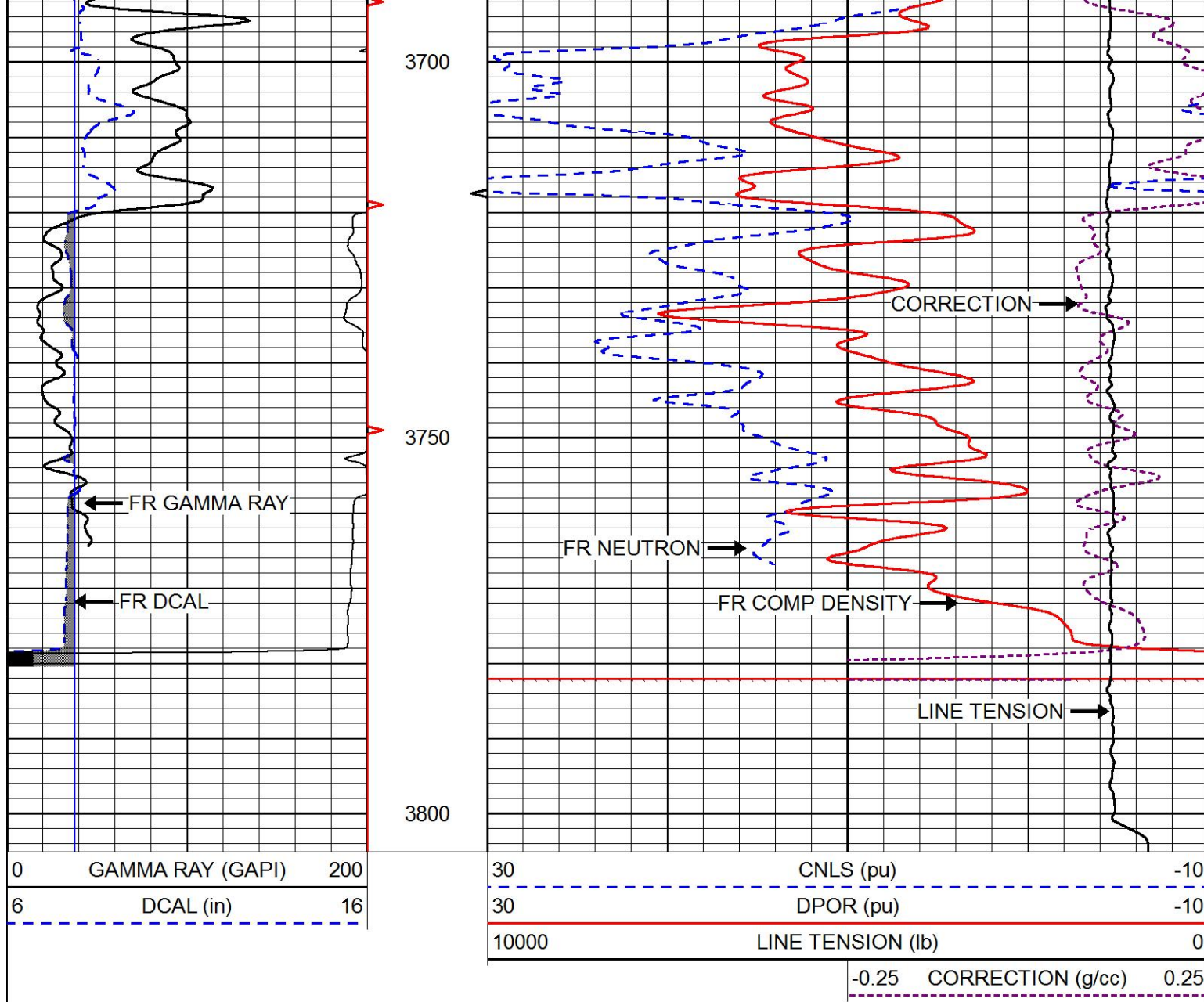
0	GAMMA RAY (GAPI)	200
6	DCAL (in)	16

30	CNLS (pu)	-10
30	DPOR (pu)	-10
10000	LINE TENSION (lb)	0
-0.25	CORRECTION (g/cc)	0.25



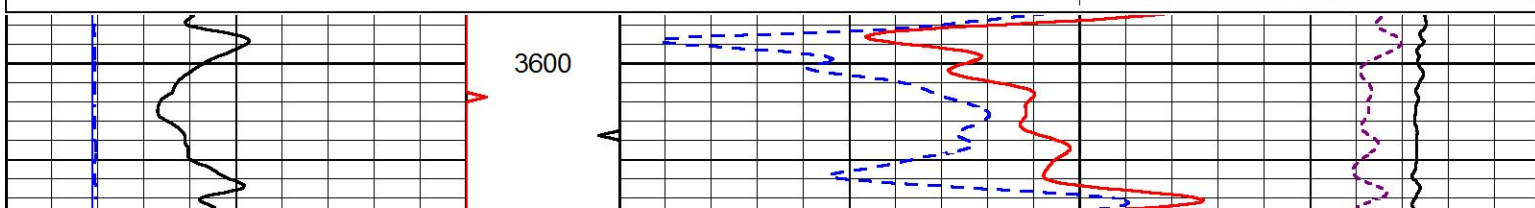
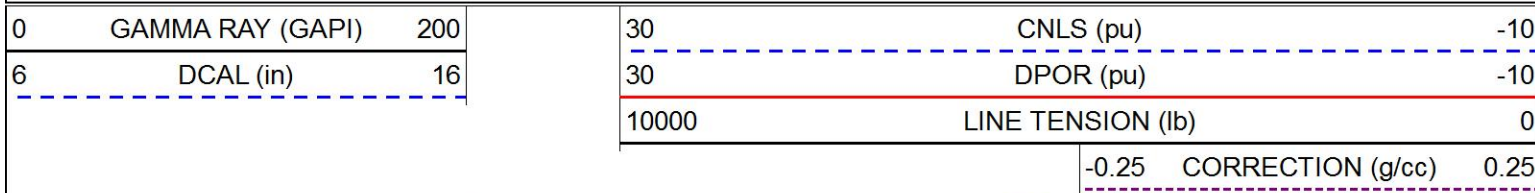


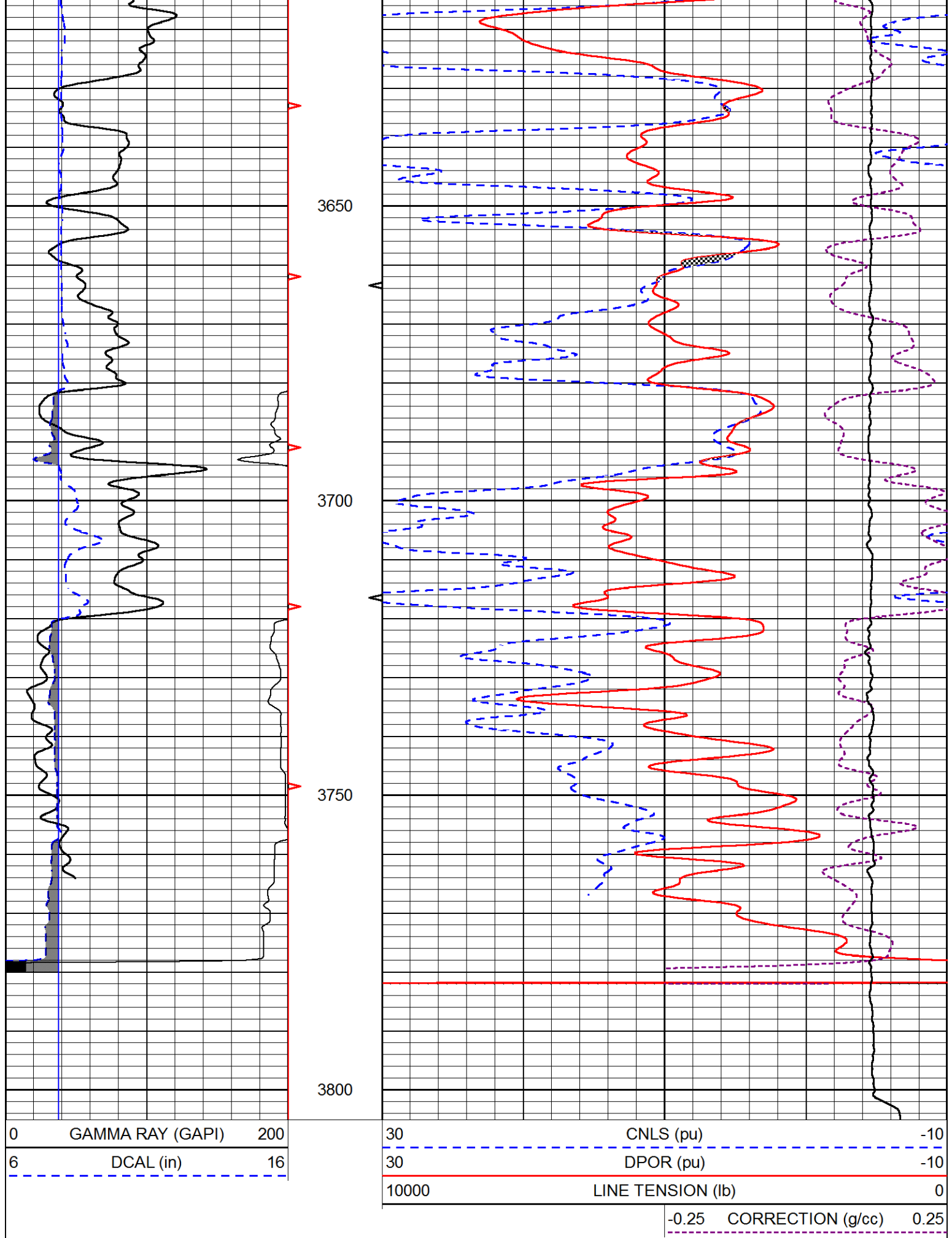




REPEAT SECTION

Database File cobalt_elizabeth_a_2_36.db
 Dataset Pathname stackmel/pass2.1
 Presentation Format _CNDLS~1
 Dataset Creation Mon Feb 24 23:42:51 2020
 Charted by Depth in Feet scaled 1:240





Database File cobalt_elizabeth_a_2_36.db
Dataset Pathname stackmel/pass3.1
Dataset Creation Mon Feb 24 23:57:53 2020

Dual Induction Calibration Report

Serial-Model: 952-828-PSI HIGH TEMP
Calibration Performed: Wed Oct 09 13:38:53 2019

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.400	-27.500
Medium	0.000	1348.000	142.000	255.000	mmho/m	0.275	-27.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
Performed: Sat Feb 01 06:29:21 2020

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	11000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	15000.0000	-1.3000
Caliper	1.0000	1.0827	5.0000	16.5000	in	139.1950	-135.8000

Compensated Density Calibration Report

Serial-Model: 817-947-M&W
Source / Verifier: 16955B / 2ci
Master Calibration Performed: Tue Sep 24 21:18:50 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	6127.15	5922.31	cps
Aluminum	2.680	g/cc	1141.85	3762.09	cps
Spine Angle = 74.89			Density/Spine Ratio = 0.532		
	Size		Reading		
Small Ring	4.50	in	1.02		
Large Ring	15.00	in	1.33		

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: WED FEB 13 10:30:30 2019

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:	233-M&W
Tool Model:	M&W
Calibration Performed:	Fri Feb 07 01:42:40 2014

Calibrator Value:	1.0	GAPI
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Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps

Sensitivity:	0.5500	GAPI/cps
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Well	ELIZABETH A #2-36
Field	WILDCAT
County	Graham
State	KANSAS