



PIONEER

Pioneer Energy Services

DUAL COMP POROSITY LOG

Company **COBALT ENERGY, LLC**
Well **BILLY GENE 'A' #1-3**
Field **FRANK NORTH**
County **BARTON** State **KANSAS**

Location: API #: 15-009-26195-00-00

2223' FSL & 1883' FWL

Other Services
DIL/MEL

SEC 3 TWP 19S RGE 12W

Permanent Datum **GROUND LEVEL** Elevation **1804'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 1809'
D.F. N/A
G.L. 1804'

Date **2/15/2018**

Run Number **ONE**

Type Log **CNL/CDL**

Depth Driller **3420'**

Depth Logger **3419'**

Bottom Logged Interval **3390'**

Top Logged Interval **2700'**

Type Fluid In Hole **CHEMICAL**

Salinity, PPM CL **15200**

Density **9.1**

Level **FULL**

Max. Rec. Temp. F **110**

Operating Rig Time **3 HOURS**

Equipment -- Location **91 HAYS**

Recorded By **D. SCHMIDT**

Witnessed By **BOB O'DELL**

Borehole Record

Casing Record

Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	320'	8.625"	23#	0'	320'
TWO	7.875"	320'	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.

GREAT BEND,
EAST TO HWY 156, NORTH TO 40 RD, 1 EAST,
NORTH AND WEST 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

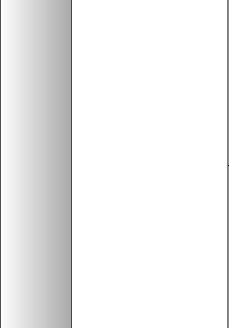
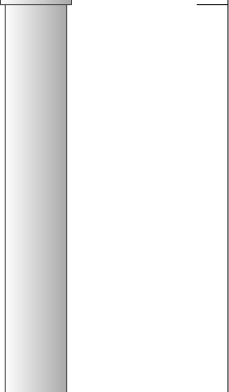
Engineer: **D. SCHMIDT**
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: **BOB O'DELL**
Secondary Witness:
Secondary Witness:
Secondary Witness:

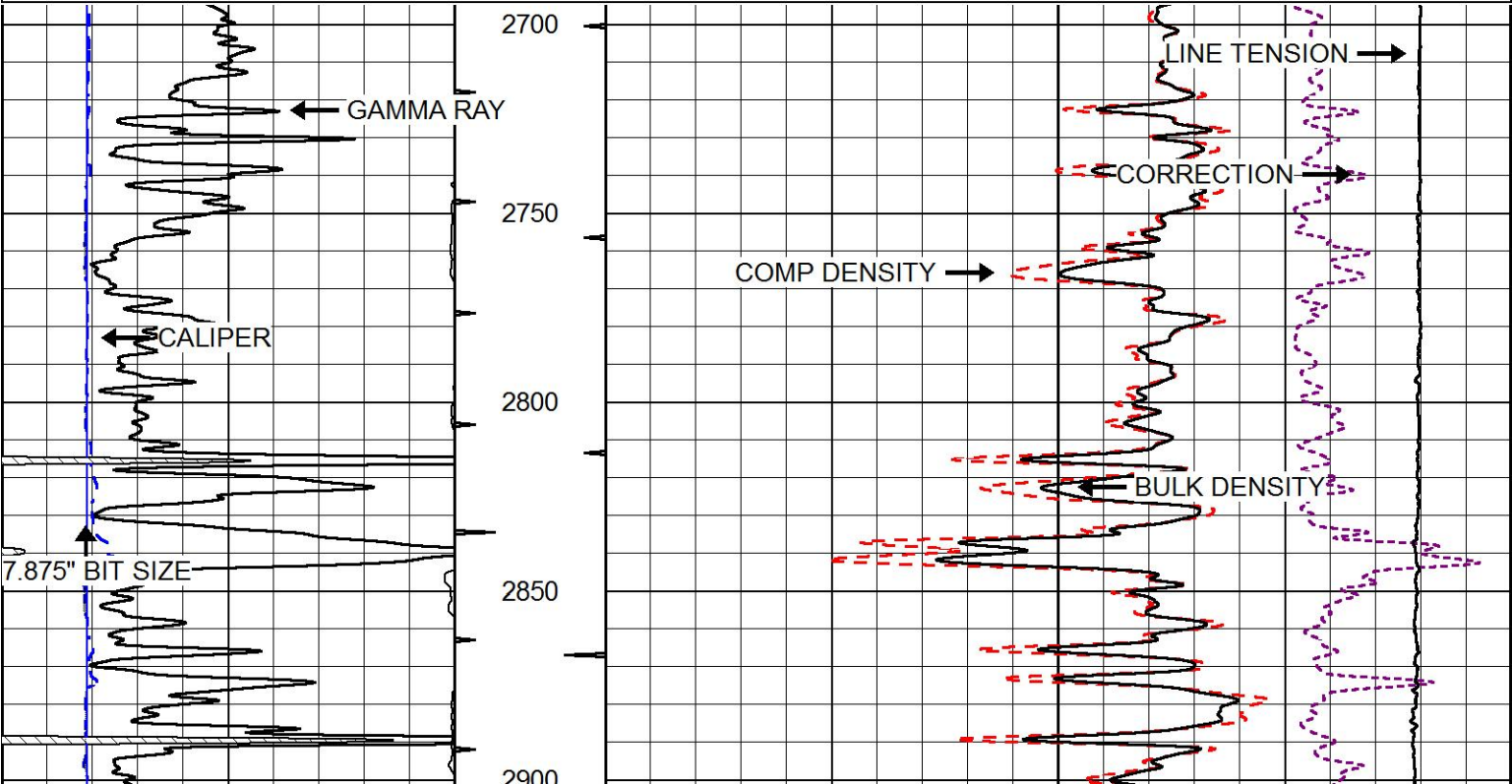
Top - Bottom

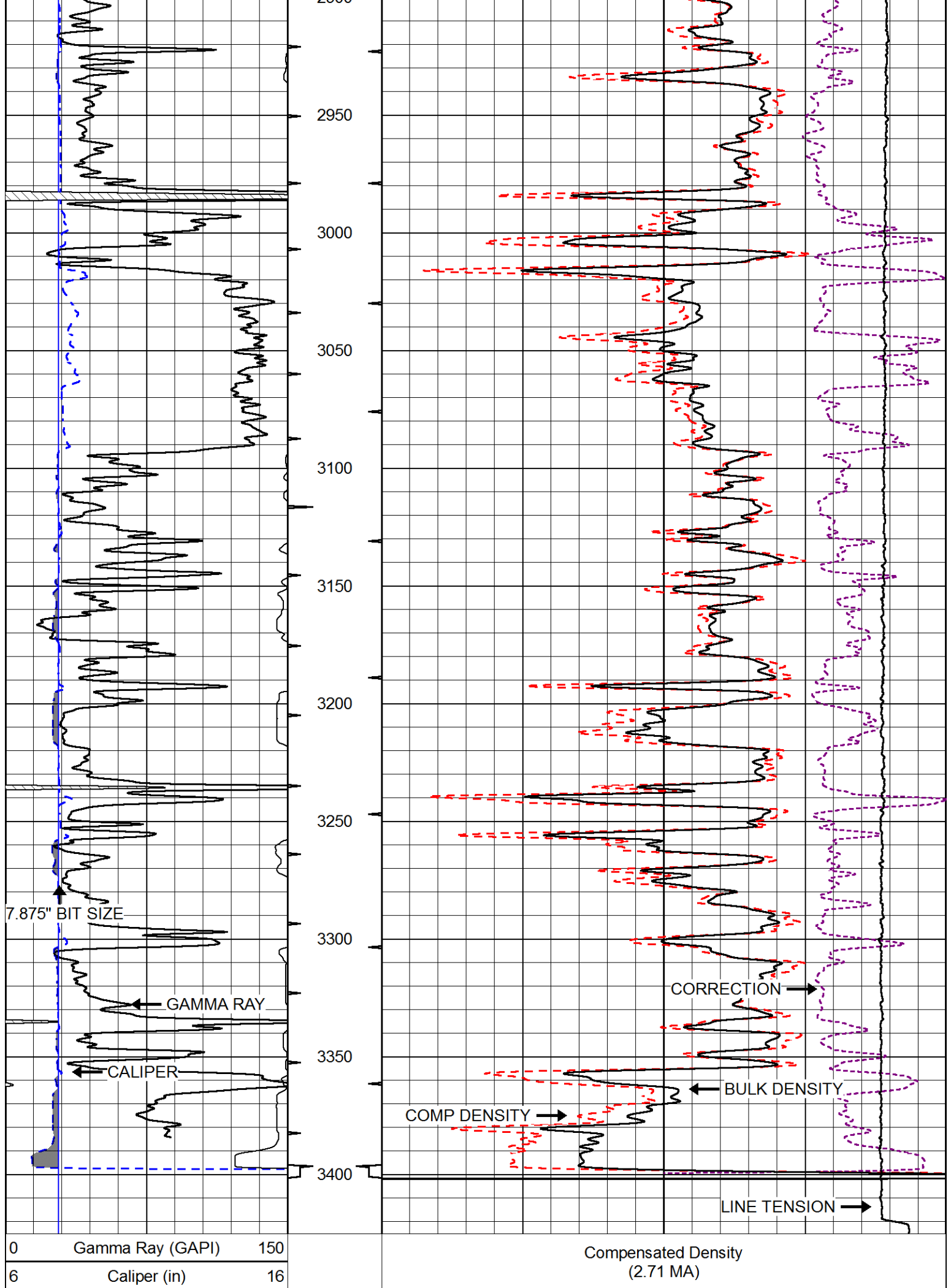
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	-85	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	50	0	5.5	0	3419	110	7.875

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: cobalt_billy gene a 1-3.db: field/well/STKML/pass3.3 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in							

		MAIN PASS	
Database File	cobalt_billy gene a 1-3.db		
Dataset Pathname	STKML/pass3.1		
Presentation Format	cdl		
Dataset Creation	Thu Feb 15 20:11:43 2018		
Charted by	Depth in Feet scaled 1:600		
0	Gamma Ray (GAPI)	150	
6	Caliper (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





30	(pu)	-10
2	Bulk Density (g/cc)	3
15000	Line Tension (lb)	0
	-0.25 Correction (g/cc)	0.25

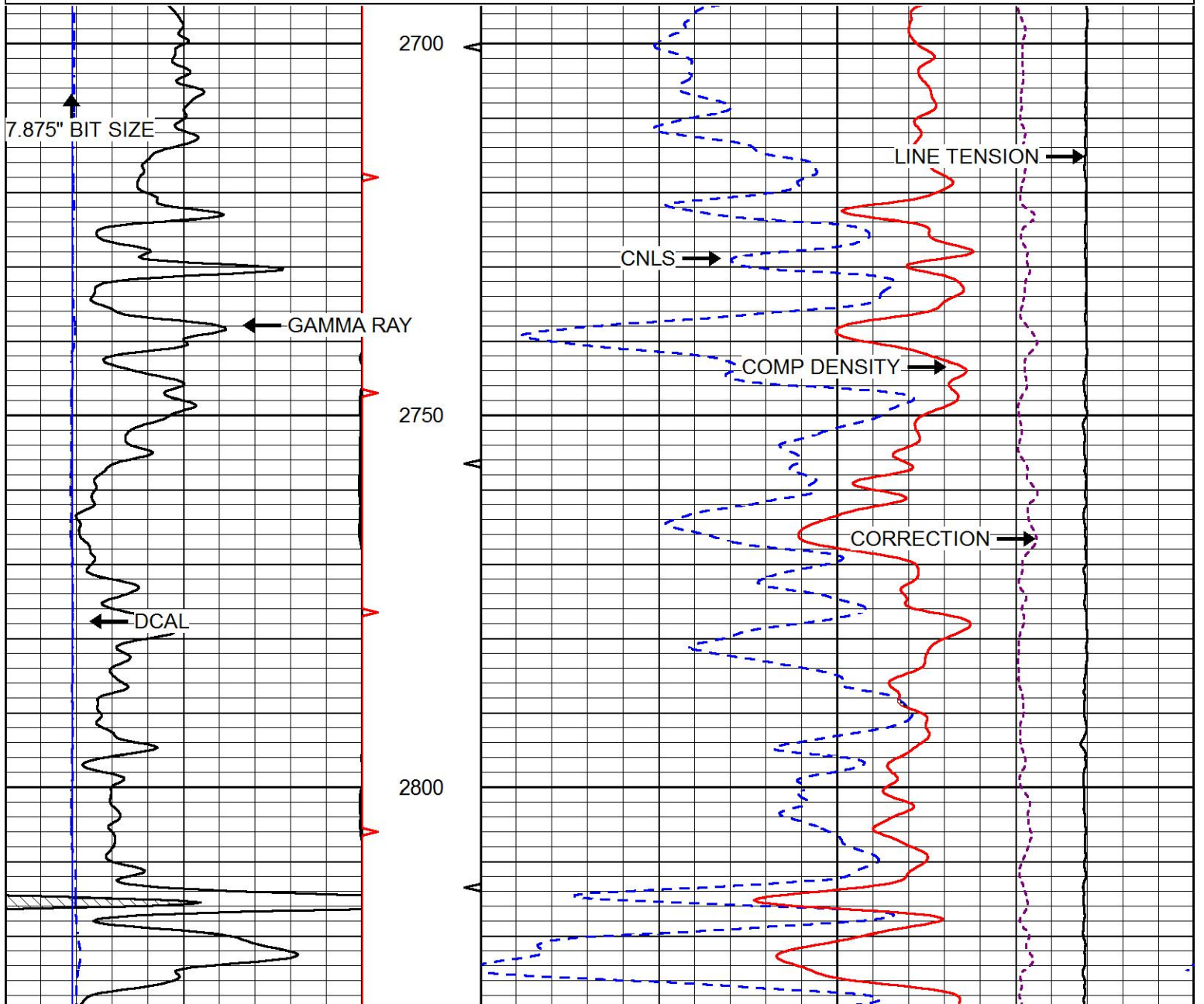


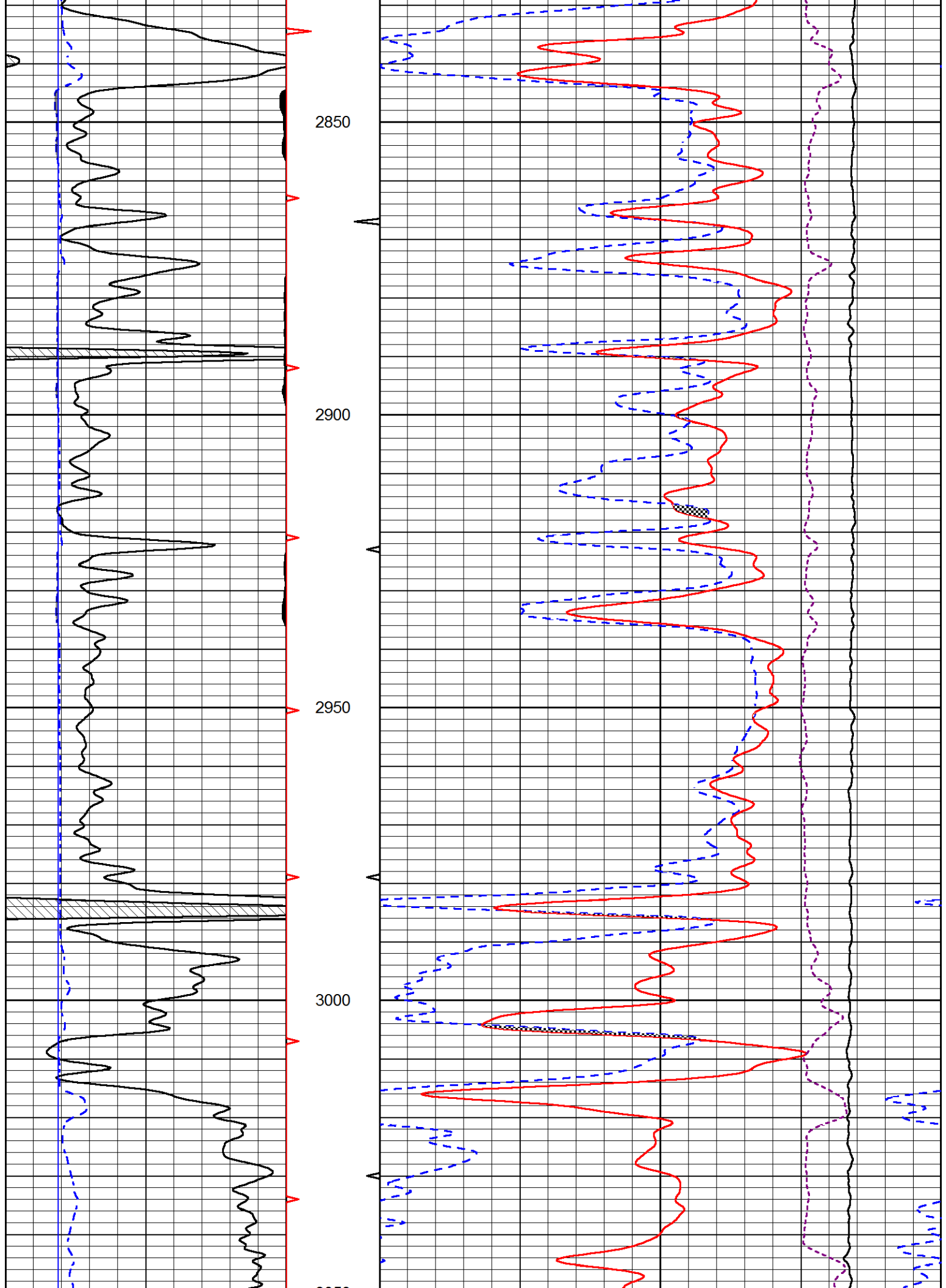
MAIN PASS

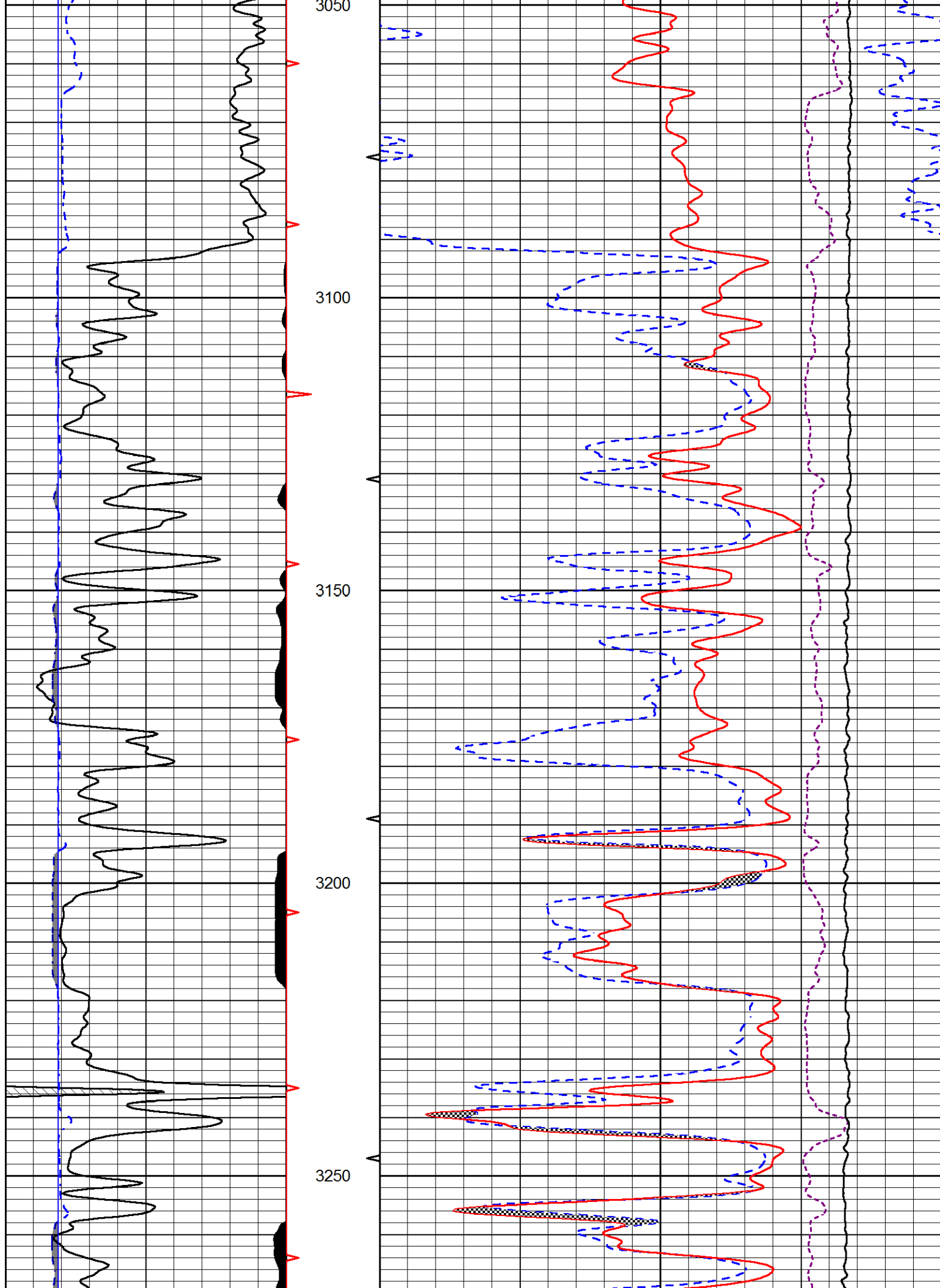
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Dataset Pathname STKML/pass3.1
Presentation Format cndlspec
Dataset Creation Thu Feb 15 20:11:43 2018
Charted by Depth in Feet scaled 1:240

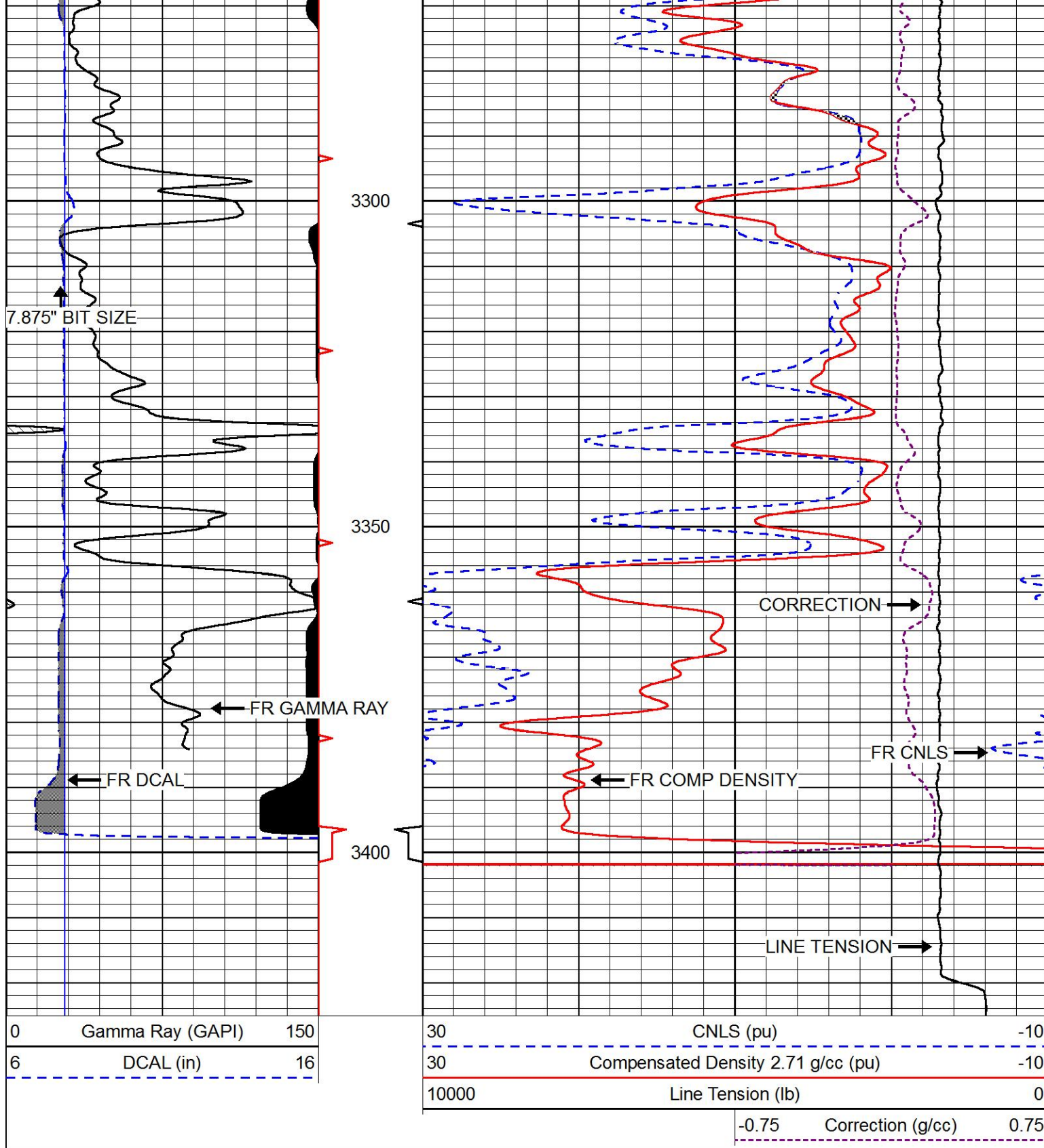
0	Gamma Ray (GAPI)	150
6	DCAL (in)	16

30	CNLS (pu)	-10
30	Compensated Density 2.71 g/cc (pu)	-10
10000	Line Tension (lb)	0
	-0.75 Correction (g/cc)	0.75







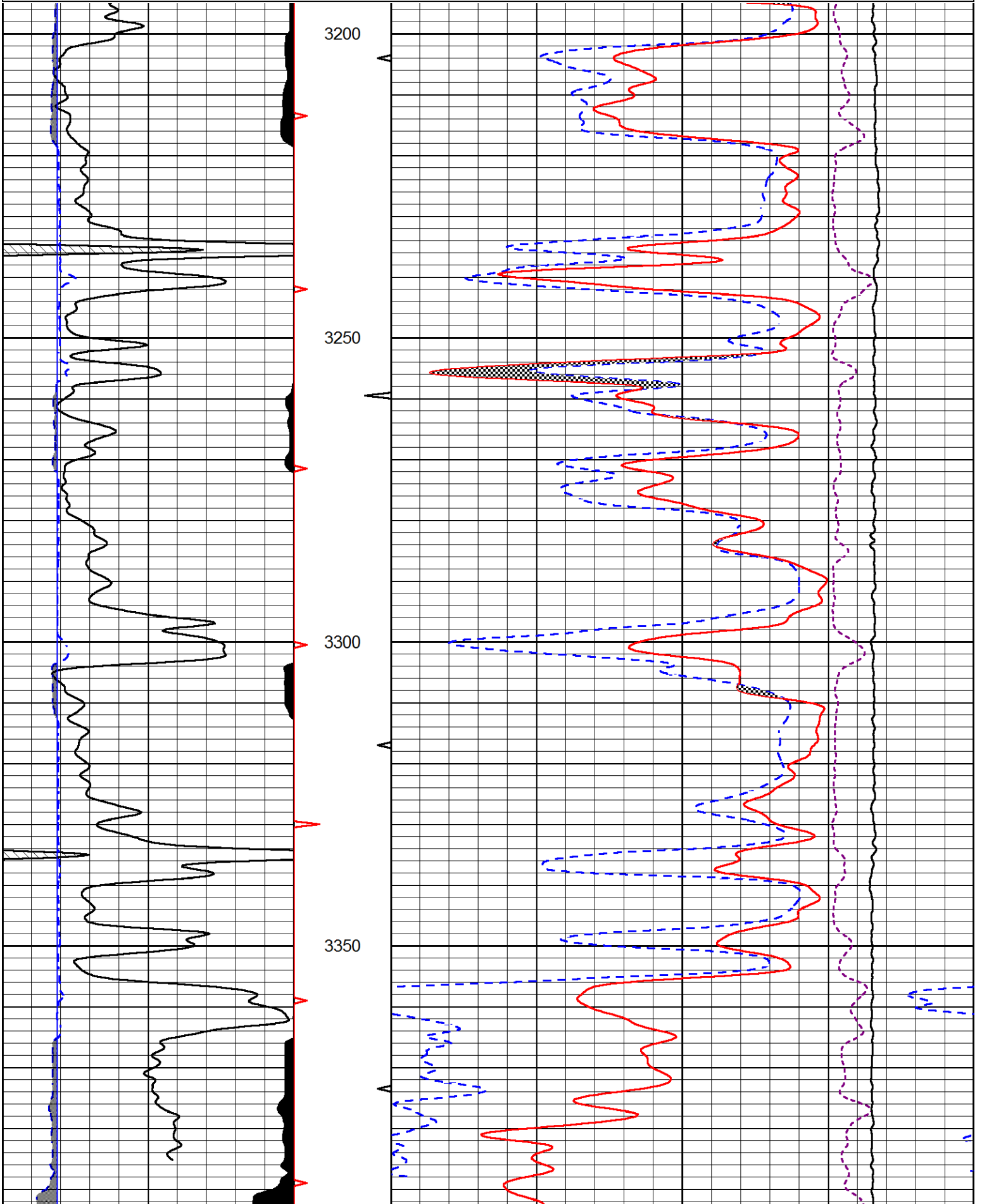


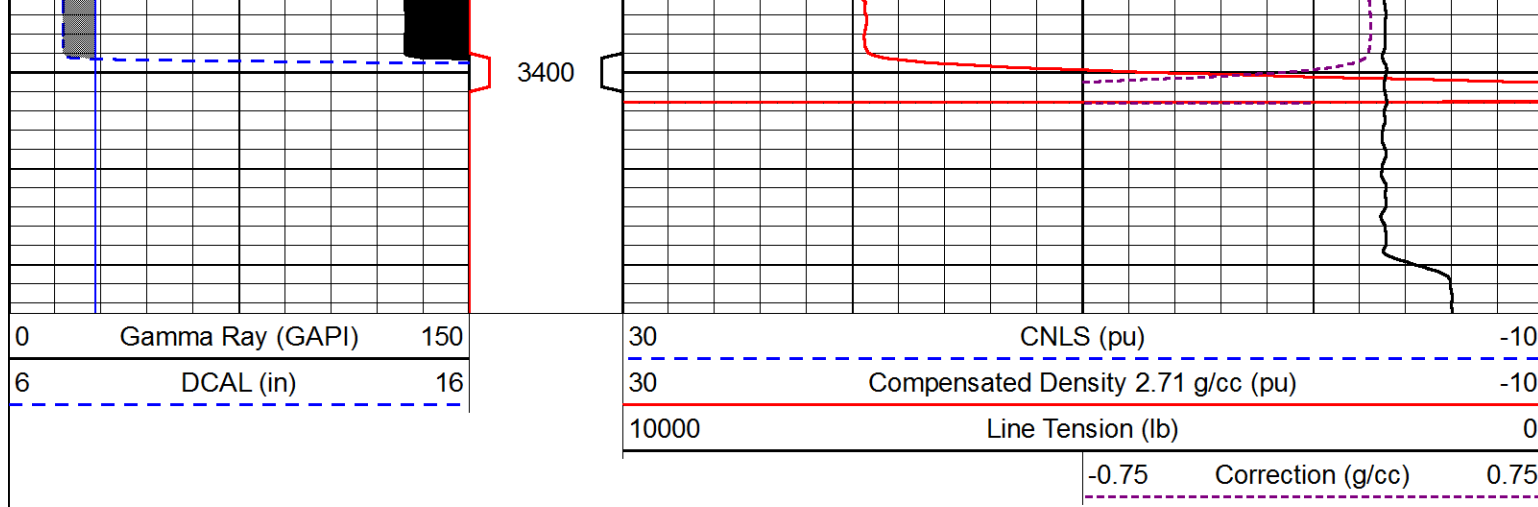
REPEAT SECTION

Database File cobalt_billy gene a 1-3.db
 Dataset Pathname STKML/pass2.1
 Presentation Format cndlspec
 Dataset Creation Thu Feb 15 20:00:03 2018
 Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
6	DCAL (in)	16

30	CNLS (pu)	-10
30	Compensated Density 2.71 g/cc (pu)	-10
10000	Line Tension (lb)	0
	-0.75	Correction (g/cc) 0.75





Calibration Report		
Database File	cobalt_billy gene a 1-3.db	
Dataset Pathname	STKML/pass3.3	
Dataset Creation	Thu Feb 15 19:51:26 2018	

Dual Induction Calibration Report		
Serial-Model:	933 (HT)-PSI HIGH TEMP	
Calibration Performed:	Mon Feb 12 17:16:25 2018	

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.720	-18.350
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.560	-63.000

Microlog Calibration Report		
Serial-Model:	PSI-01-PSIML	
Performed:	Mon Jan 15 11:19:55 2018	

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	32000.0000	-1.2000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	36500.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.3800

Compensated Density Calibration Report		
Serial-Model:	182-152-M&W	
Source / Verifier:	16955B / 2ci	
Master Calibration Performed:	Mon Feb 12 16:20:26 2018	

Master Calibration						
	Density		Far Detector		Near Detector	
Magnesium	1.755	g/cc	4992.81		6098.44	cps
Aluminum	2.675	g/cc	945.67		3945.60	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.535			

	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 JAN 15 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	COBALT ENERGY, LLC
	Well	BILLY GENE 'A' #1-3
	Field	FRANK NORTH
	County	BARTON
	State	KANSAS