



# DUAL COMP POROSITY LOG

Company COBALT ENERGY, LLC  
 Well CHERYL NO.1-17  
 Field ALLODIUM NORTHEAST  
 County GRAHAM  
 State KANSAS

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Location: API #: 15-065-24180-00-00  
 1845' FSL & 2065' FWL  
 SEC 17 TWP 6S RGE 25W  
 Permanent Datum GROUND LEVEL Elevation 2541'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING  
 Other Services DIL/MEL  
 K.B. 2546'  
 D.F. N/A  
 G.L. 2541'

Date	2/13/2020
Run Number	ONE
Type Log	CNL/CDL
Depth Driller	3880'
Depth Logger	3884'
Bottom Logged Interval	3882'
Top Logged Interval	3400'
Type Fluid In Hole	CHEMICAL
Salinity, PPM CL	900
Density	9.0
Level	FULL
Max. Rec. Temp. F	115 DEG. F.
Operating Rig Time	2 HOURS
Equipment -- Location	P-108 HAYS
Recorded By	M. HISS
Witnessed By	COREY BAKER

Run No.	Bit	Borehole Record		Casing Record			
		From	To	Size	Wgt.	From	To
ONE	12.25"	00'	220'	8.625"	24#	00'	TD
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.

STUDLEY KANSAS,  
 NORTH 13 MILES ON RD 100 TO RD CC,  
 1 1/2 EAST, SOUTH INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES  
[www.pioneerenergy.com](http://www.pioneerenergy.com) 785-625-3858

Your Pioneer Energy Services Crew

Engineer: M. HISS  
 Operator:  
 Operator:  
 Operator:

This Log Record Was Witnessed By

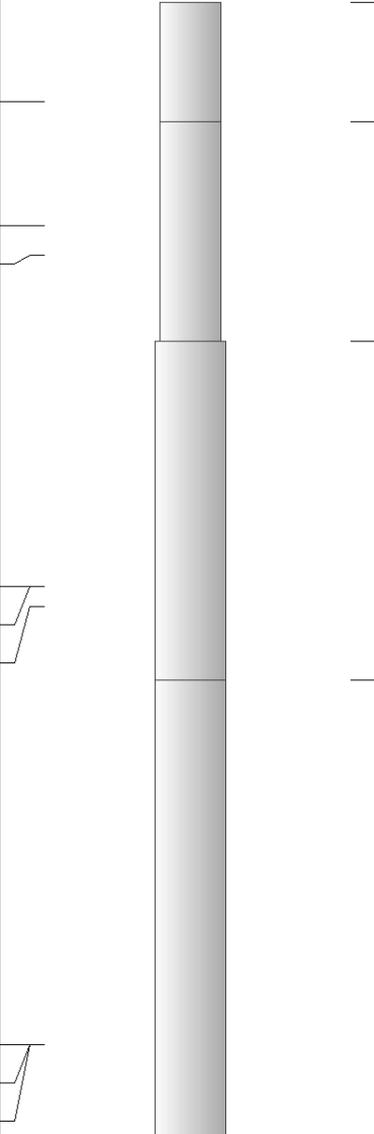
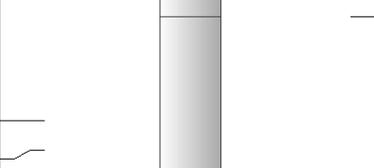
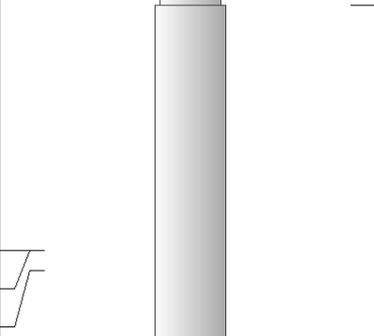
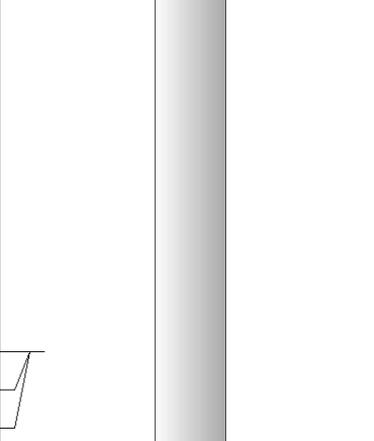
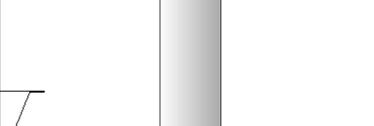
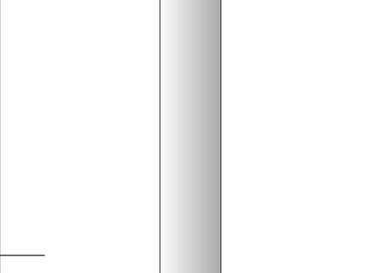
Primary Witness: COREY BAKER  
 Secondary Witness:  
 Secondary Witness:  
 Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\cobalt\_cheryl\_#1\_17.db  
Dataset field/well/stackmel/pass4.1/\_vars\_

## Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	115	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	213	50	Off	3884

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	44.50		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	41.40 40.65		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	32.35 32.33 31.85		CDL-M&W (934-229)	8.50	4.00	250.00
MCAL MI MN	20.87 20.87 20.87		ML-PSI UDM ML (UDM-01) Stackable Microlog Tools	11.50	4.00	215.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (55-222)	18.50	3.50	220.00

CILM 4.70

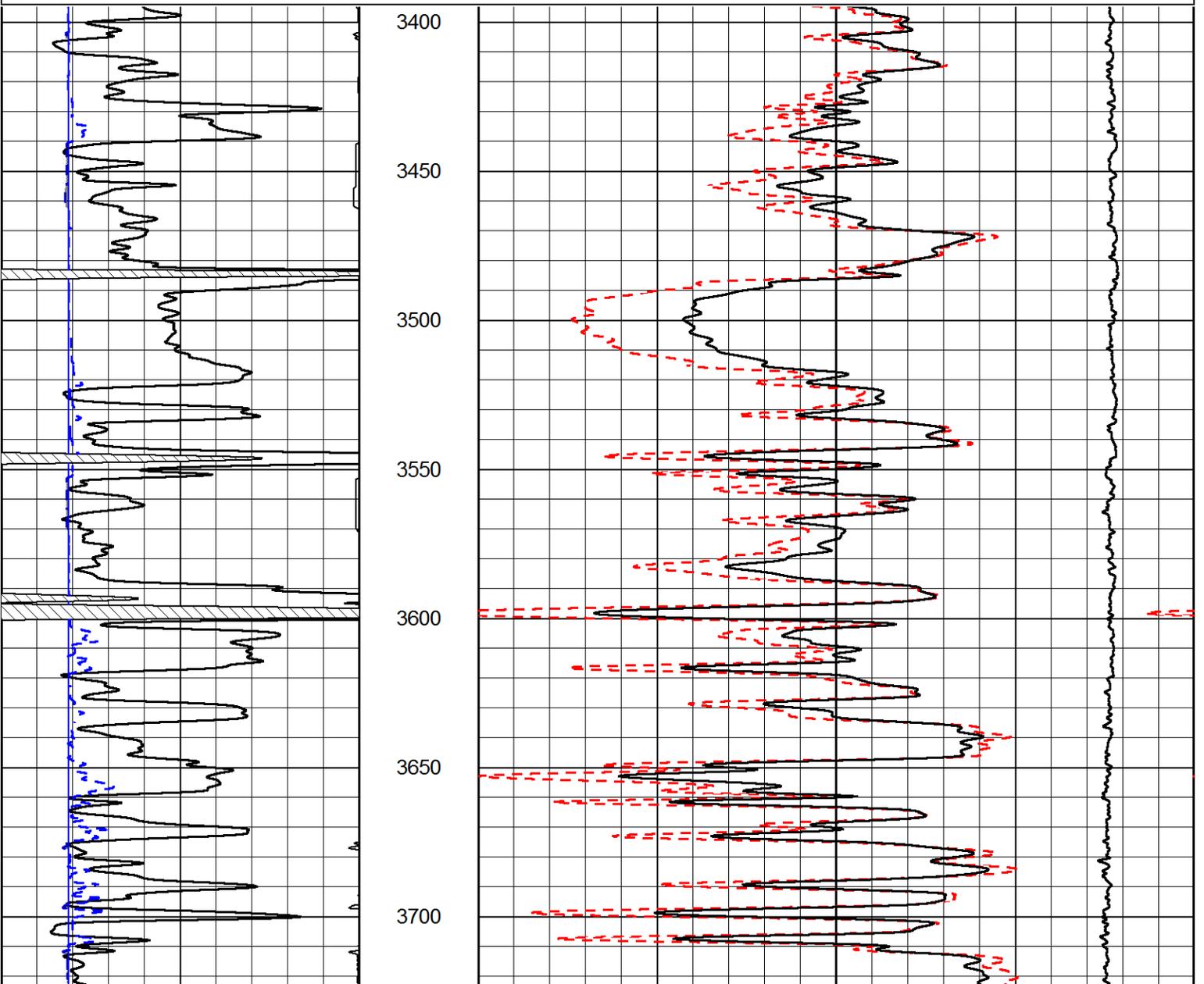
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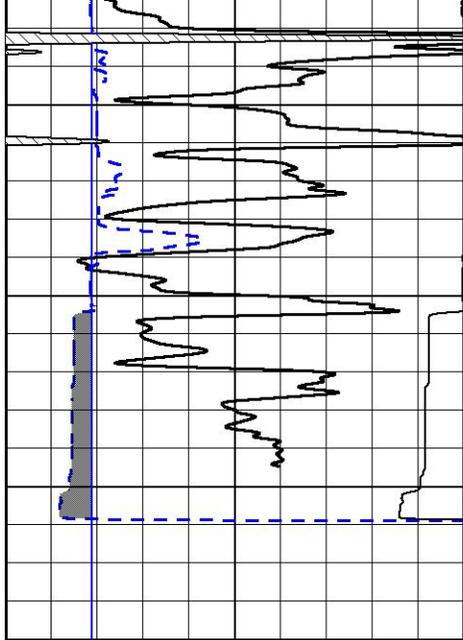
Dataset: cobalt\_cheryl\_#1\_17.db: field/well/stackmel/pass4.1  
Total length: 47.00 ft  
Total weight: 835.00 lb  
O.D.: 4.00 in

Database File cobalt\_cheryl\_#1\_17.db  
Dataset Pathname stackmel/pass4.11  
Presentation Format cdl  
Dataset Creation Thu Feb 13 02:45:23 2020  
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



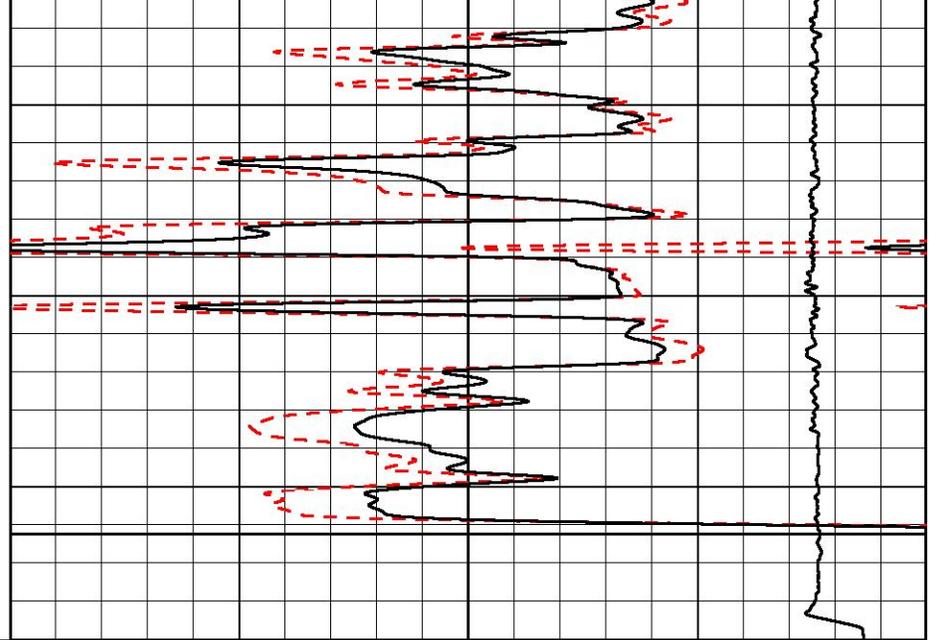


3750

3800

3850

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



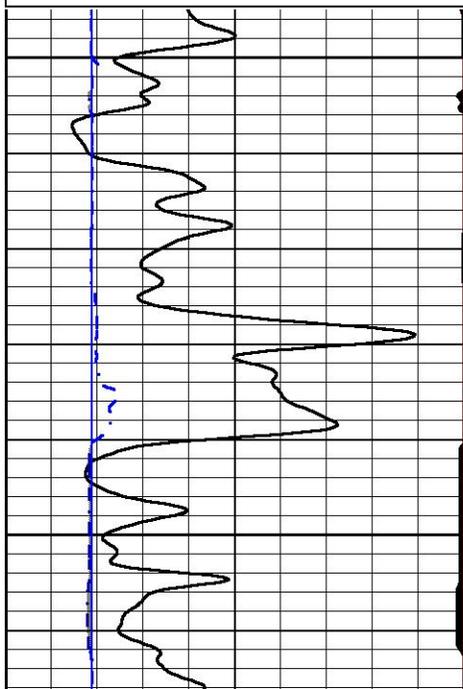
# MAIN PASS

Database File cobalt\_cheryl\_#1\_17.db  
 Dataset Pathname stackmel/pass4.1  
 Presentation Format cndlspec  
 Dataset Creation Thu Feb 13 03:20:08 2020  
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

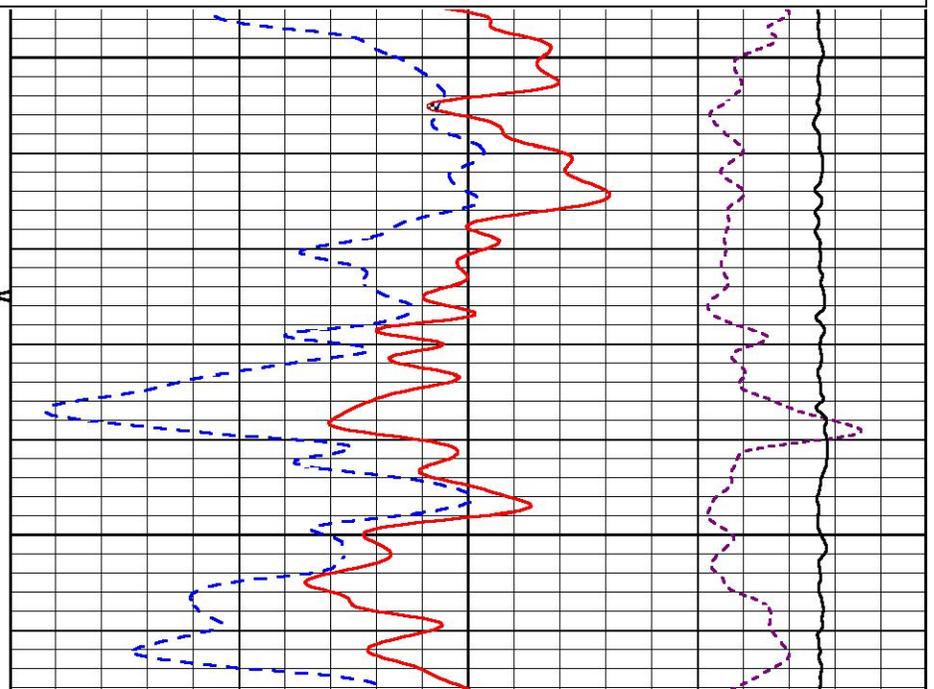
30	CNPOR (pu)	-10
30	DPOR (pu)	-10
15000	LINE TENSION (lb)	0

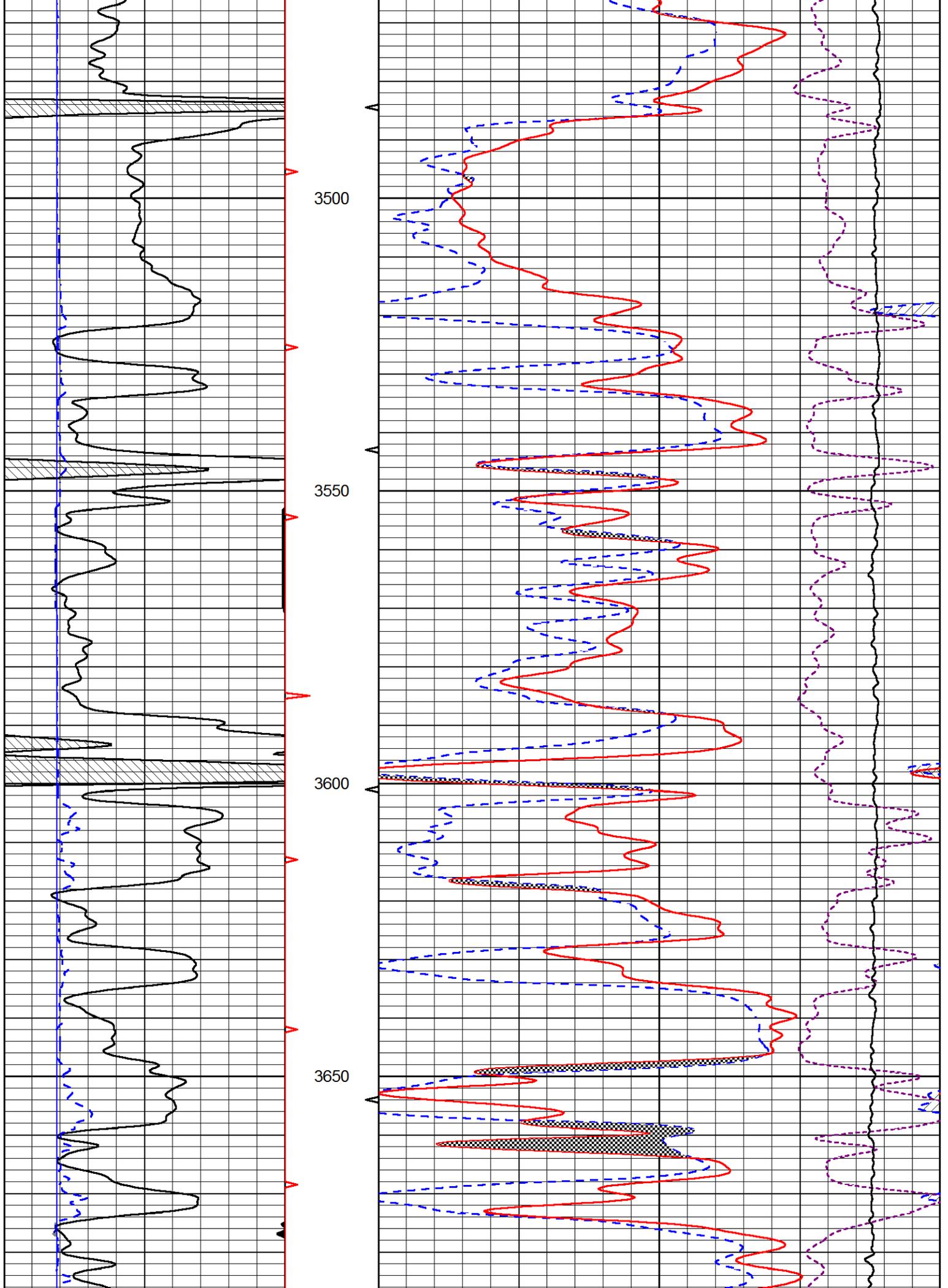
-0.25 RHOC (g/cc) 0.25

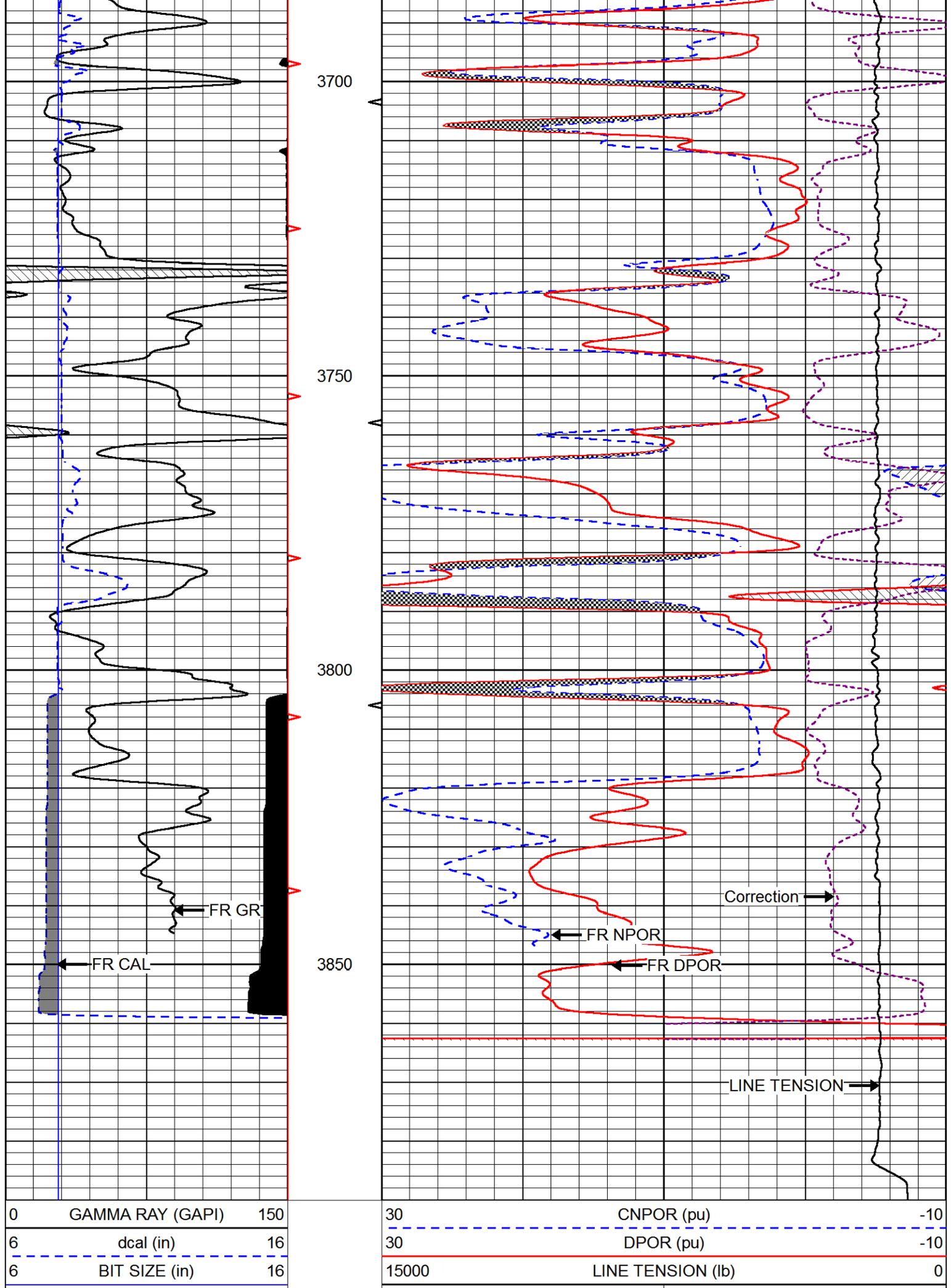


3400

3450







0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

30	CNPOR (pu)	-10
30	DPOR (pu)	-10
15000	LINE TENSION (lb)	0



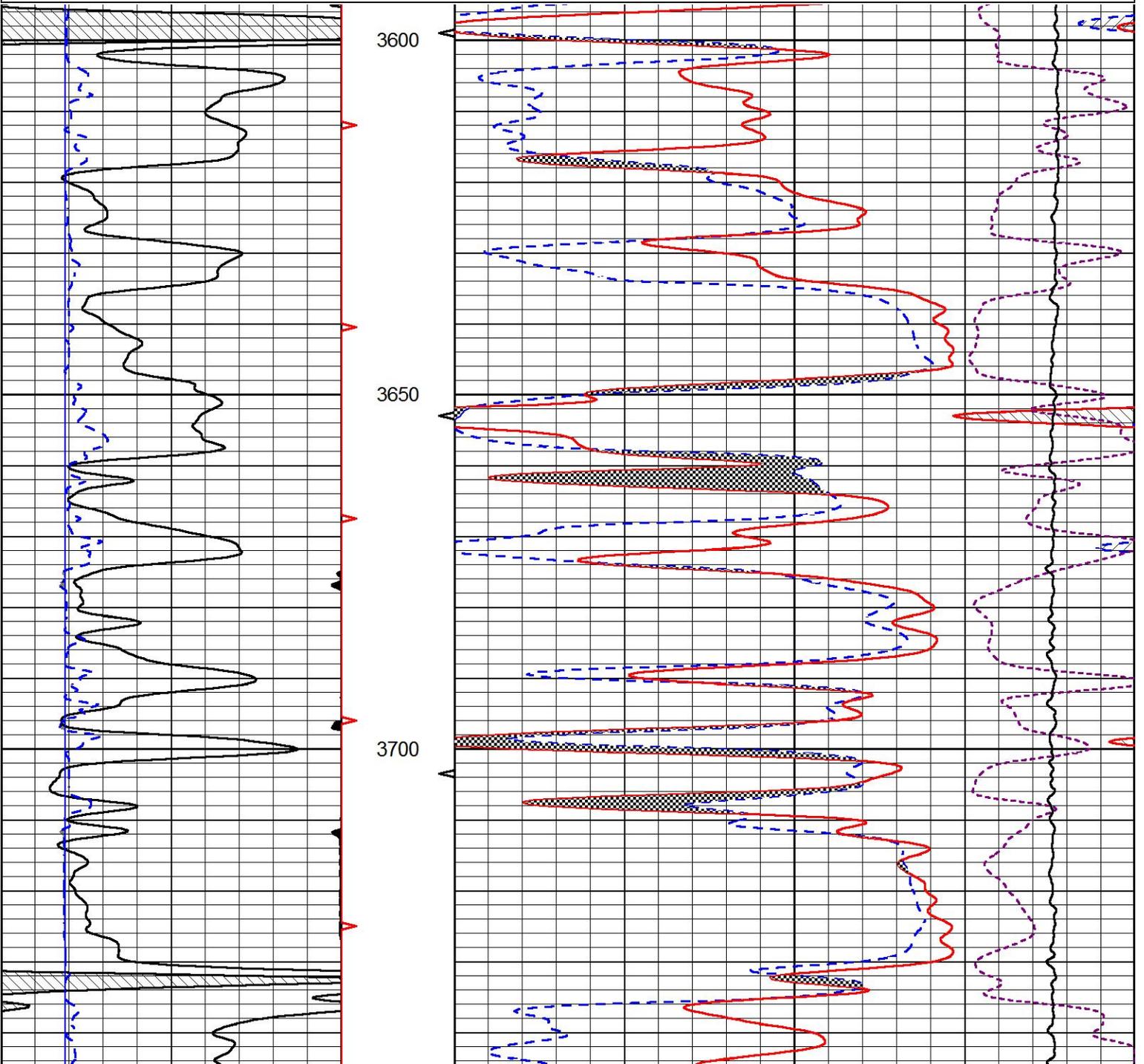
# REPEAT SECTION

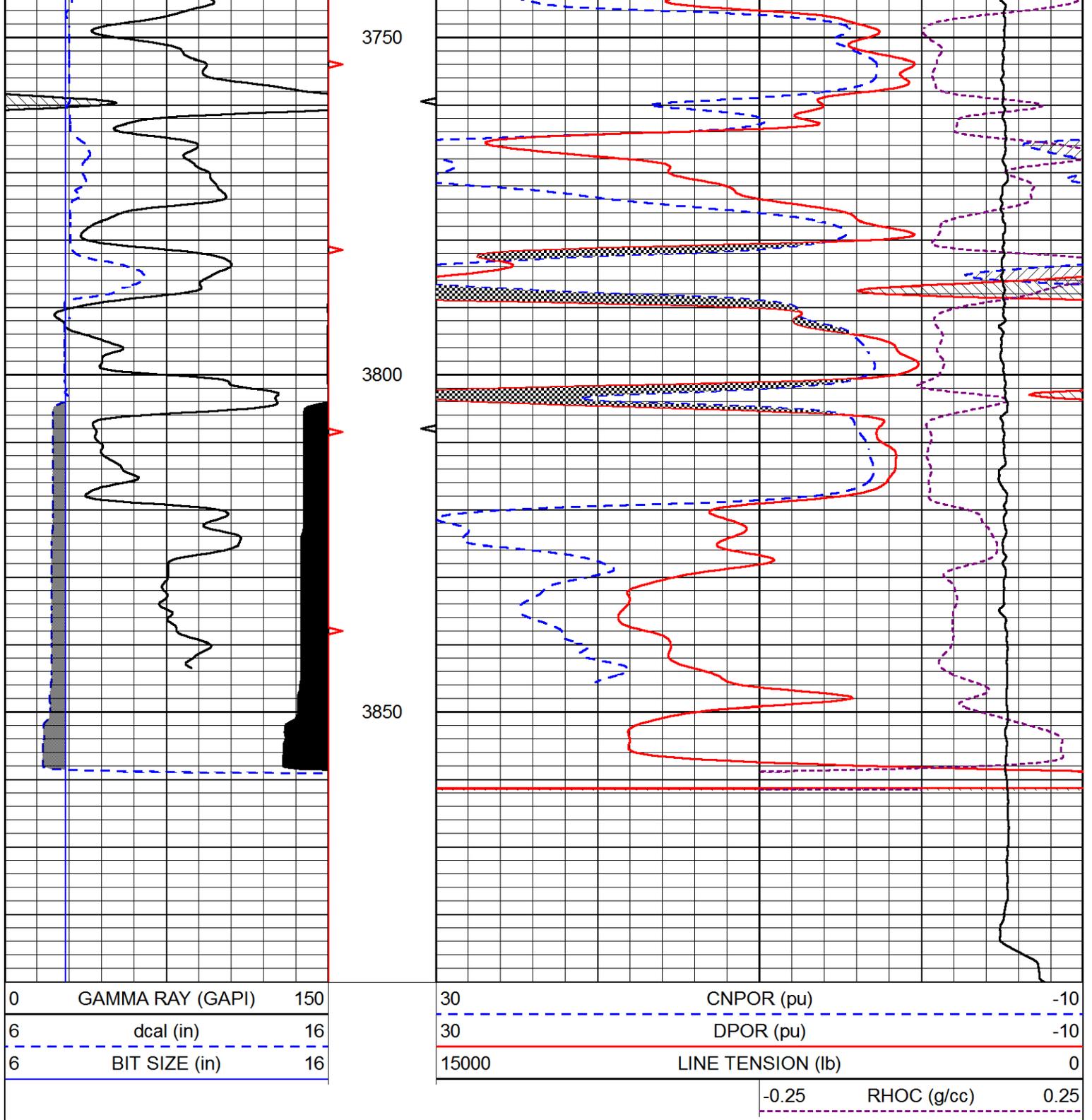
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 Dataset Pathname stackmel/pass3.1  
 Presentation Format cndlspec  
 Dataset Creation Thu Feb 13 03:06:17 2020  
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	dcal (in)	16
6	BIT SIZE (in)	16

30	CNPOR (pu)	-10
30	DPOR (pu)	-10
15000	LINE TENSION (lb)	0

-0.25 RHOC (g/cc) 0.25





### Calibration Report

Database File cobalt\_cheryl\_#1\_17.db  
 Dataset Pathname stackmel/pass4.11  
 Dataset Creation Thu Feb 13 02:45:23 2020

### Dual Induction Calibration Report

Serial-Model: 55-222-M&W  
 Calibration Performed: Tue Dec 10 05:11:10 2019

#### Readings

#### References

#### Results

Loop: Air Loop Air Loop Gain Offset

Deep	167.000	835.000	0.000	255.800	mmho/m	0.500	-41.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.370	-15.000

**Microlog Calibration Report**

Serial-Model: UDM-01-PSI UDM ML  
 Performed: Fri May 31 06:10:42 2019

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-1.0000
Caliper	1.0019	1.2642	8.0000	22.0000	in	53.3774	-47.5000

**Compensated Density Calibration Report**

Serial-Model: 934-229-M&W  
 Source / Verifier: 21170B /  
 Master Calibration Performed: Thu Dec 19 15:46:53 2019

**Master Calibration**

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3391.68	2392.26	cps
Aluminum	2.670	g/cc	645.86	1568.99	cps
Spine Angle = 75.73		Density/Spine Ratio = 0.535			
	Size		Reading		
Small Ring	4.00	in	1.39		
Large Ring	14.00	in	1.04		

**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 Dec 10 05:11:34 2019

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	COBALT ENERGY, LLC
Well	CHERYL NO.1-17
Field	ALLODIUM NORTHEAST
County	GRAHAM
State	KANSAS