



# DUAL COMP POROSITY LOG

Company COBALT ENERGY LLC  
 Well ELIZABETH A # 1-36  
 Field WILDCAT  
 County GRAHAM  
 State KANSAS

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 Field WILDCAT  
 County GRAHAM State KANSAS

Location: API #: 15-065-24148-00-00  
 590' FSL & 440' FEL  
 NW - SE - SE - SE  
 SEC 36 TWP 8S RGE 22W  
 Permanent Datum GROUND LEVEL Elevation 2180'  
 Log Measured From KELLY BUSHING  
 Drilling Measured From KELLY BUSHING

Other Services  
 DIL/MEL  
 BHCS

Date	7/17/2018						
Run Number	ONE						
Type Log	CNL/CDL						
Depth Driller	3825'						
Depth Logger	3823'						
Bottom Logged Interval	3794'						
Top Logged Interval	3100'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	3500						
Density	9.0						
Level	FULL						
Max. Rec. Temp. F	114						
Operating Rig Time	4 HOURS						
Equipment -- Location	91 HAYS						
Recorded By	IAN MABB						
Witnessed By	LARRY NICHOLSON						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0'	217'	8.625"	23#	0'	217'
TWO	7.875"	217'					
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.  
 BOGUE, KS.  
 2 MILE SOUTH & WEST FOLLOWING THE CURVE, ONE MILE SOUTH ON 350TH AVE TO N RD. WEST 1 MILES SOUTH TO M RD, WEST 1/4 NORTH INTO

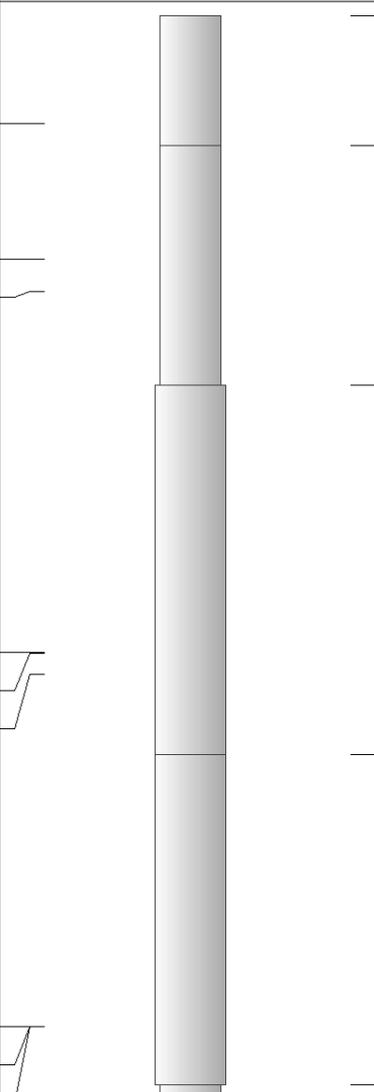
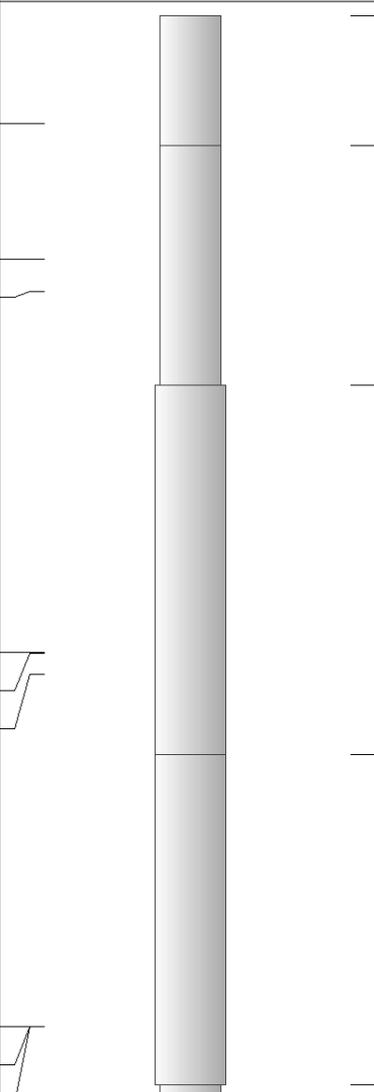
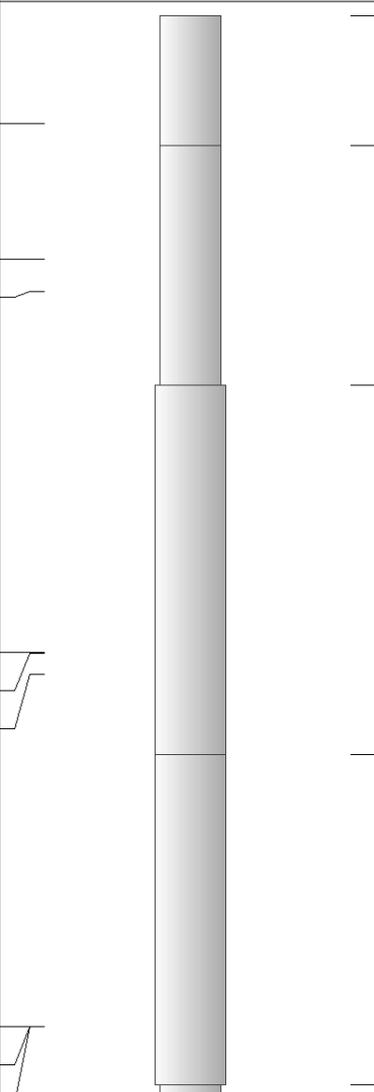
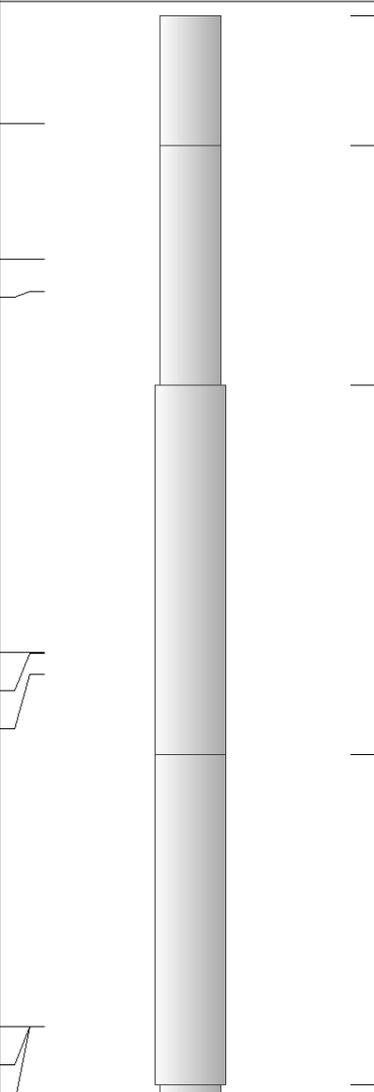
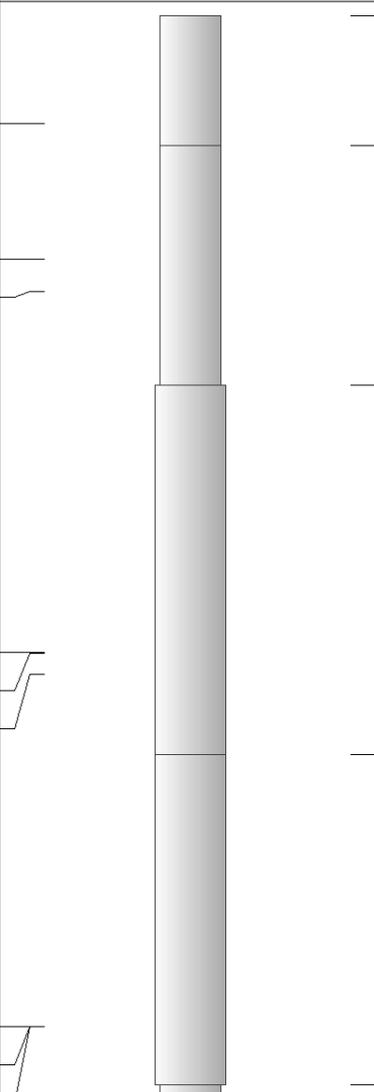
Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

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

Your Pioneer Energy Services Crew		This Log Record Was Witnessed By	
Engineer: IAN MABB	Operator:	Primary Witness: LARRY NICHOLSON	Secondary Witness:
Operator:	Operator:	Secondary Witness:	Secondary Witness:
Operator:		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	-45	2
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	85	0	5.5	0	3823	114	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 (797-152)	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					

CILD 8.00

CILM 4.70

SP 0.20

DIL-PSI HIGH TEMP (933 (HT))

18.50

3.50

220.00

Dataset: cobalt\_energy\_a\_1\_36.db: field/well/stackmel/pass3.1  
 Total length: 43.08 ft  
 Total weight: 685.00 lb  
 O.D.: 4.00 in



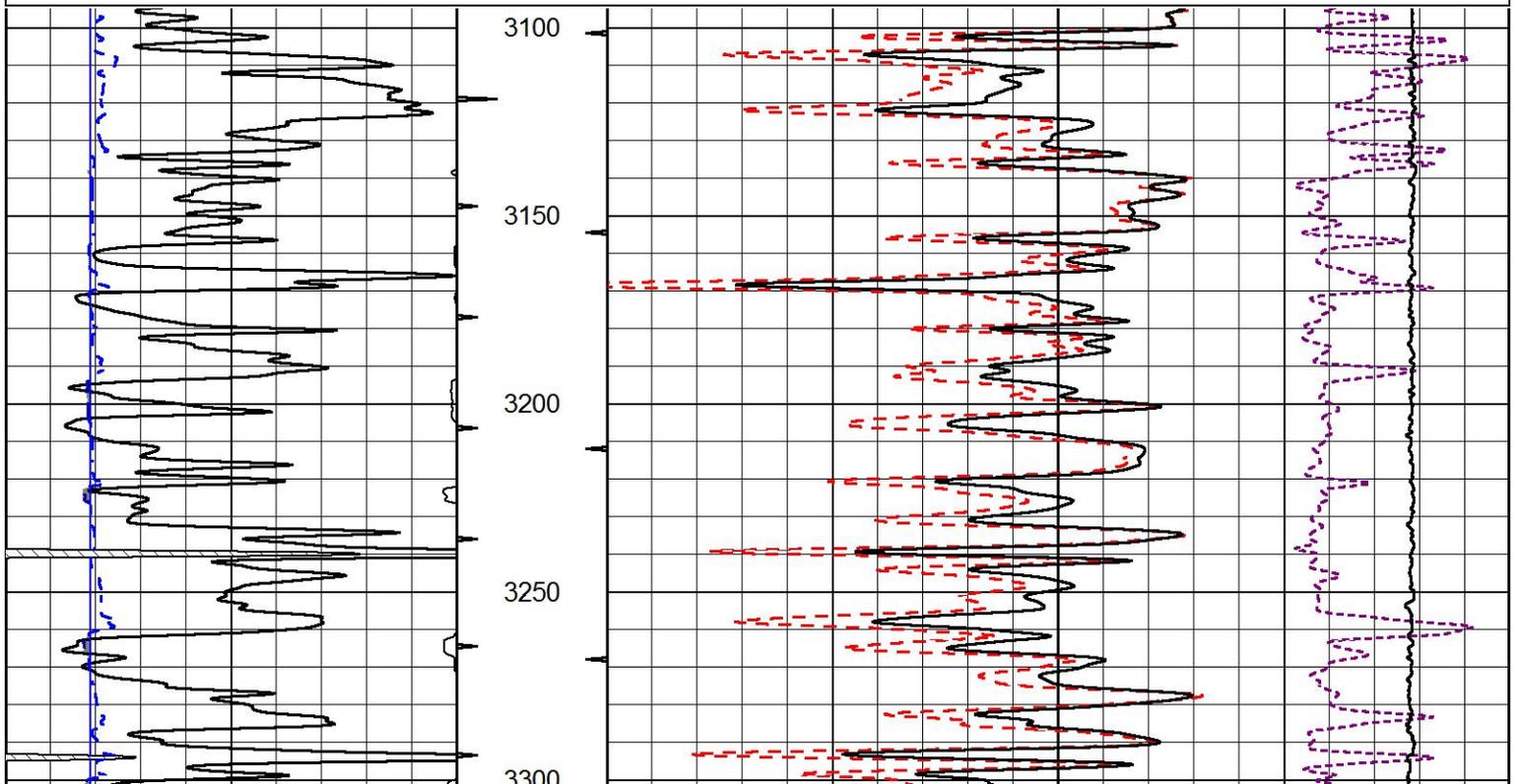
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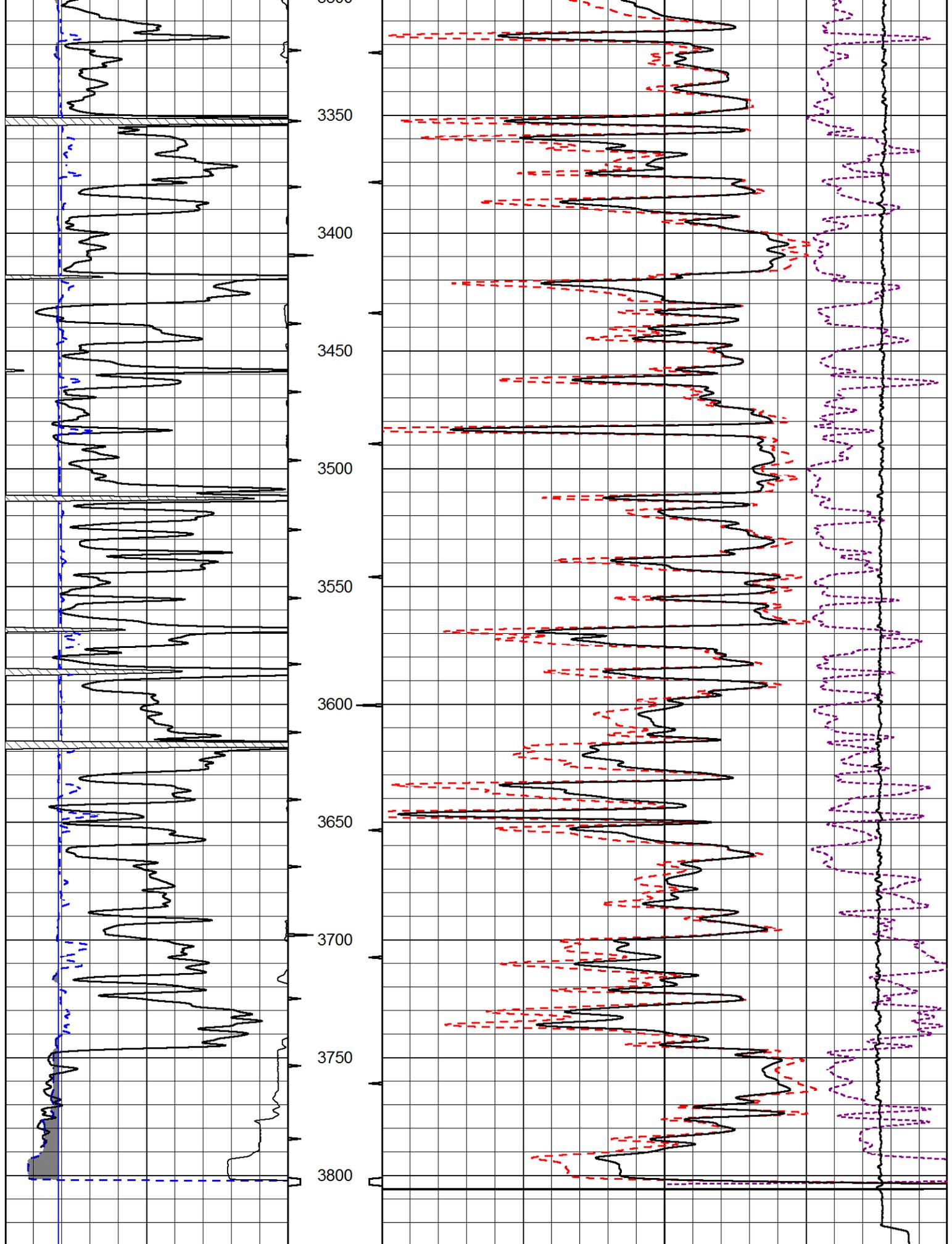
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 Dataset Pathname stackmel/pass3.1  
 Presentation Format cdl  
 Dataset Creation Tue Jul 17 19:03:31 2018  
 Charted by Depth in Feet scaled 1:600

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





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

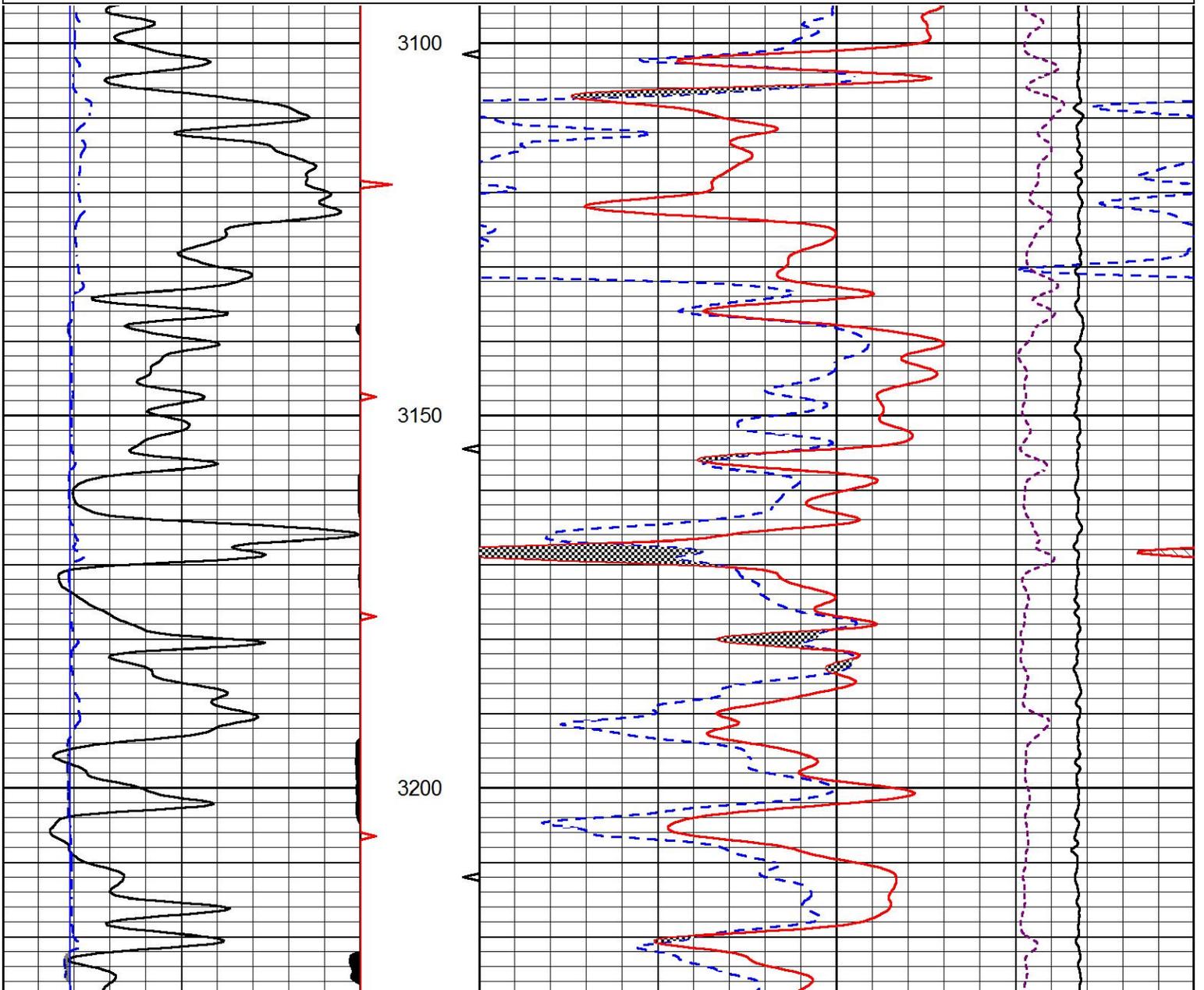


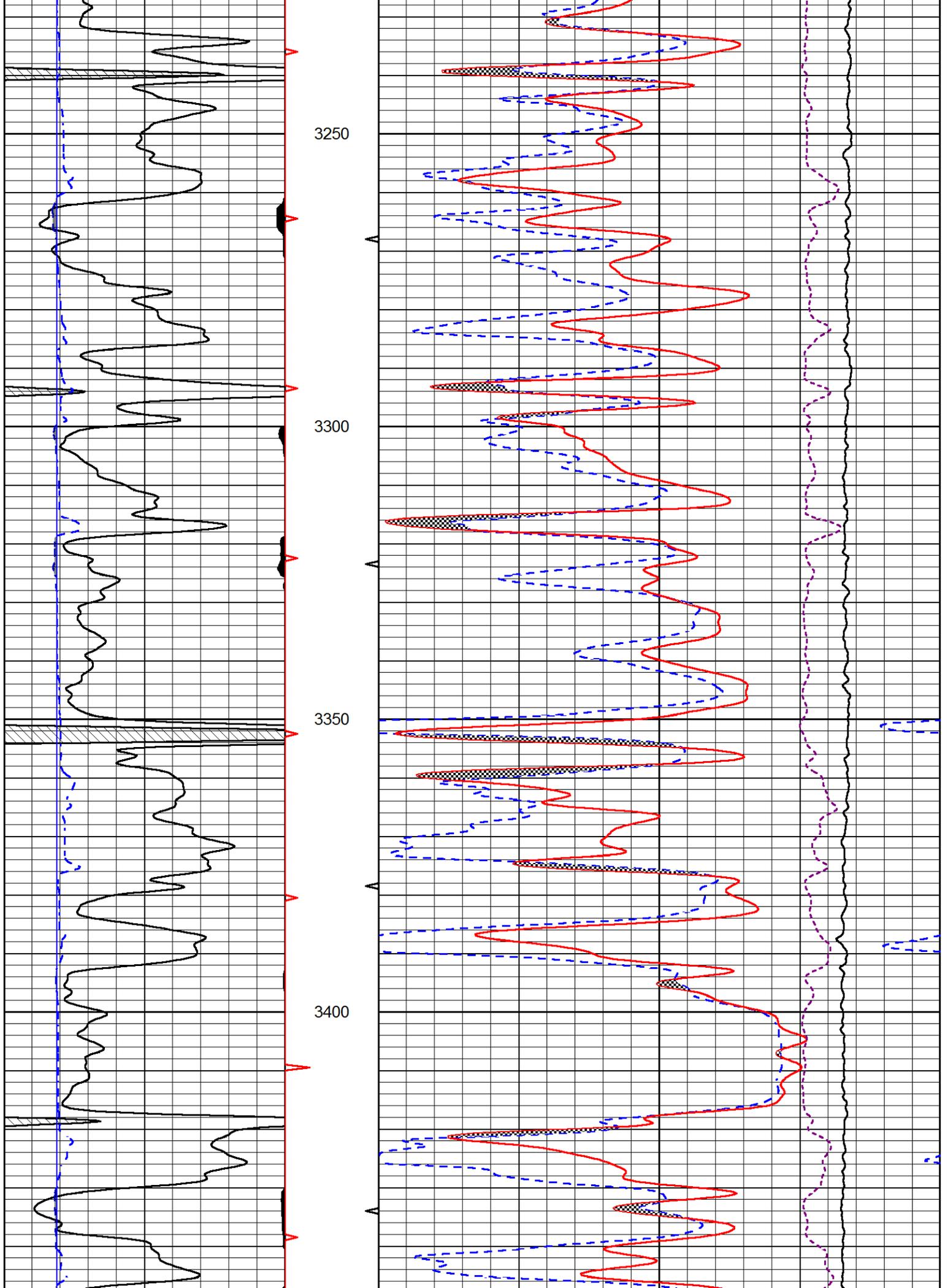
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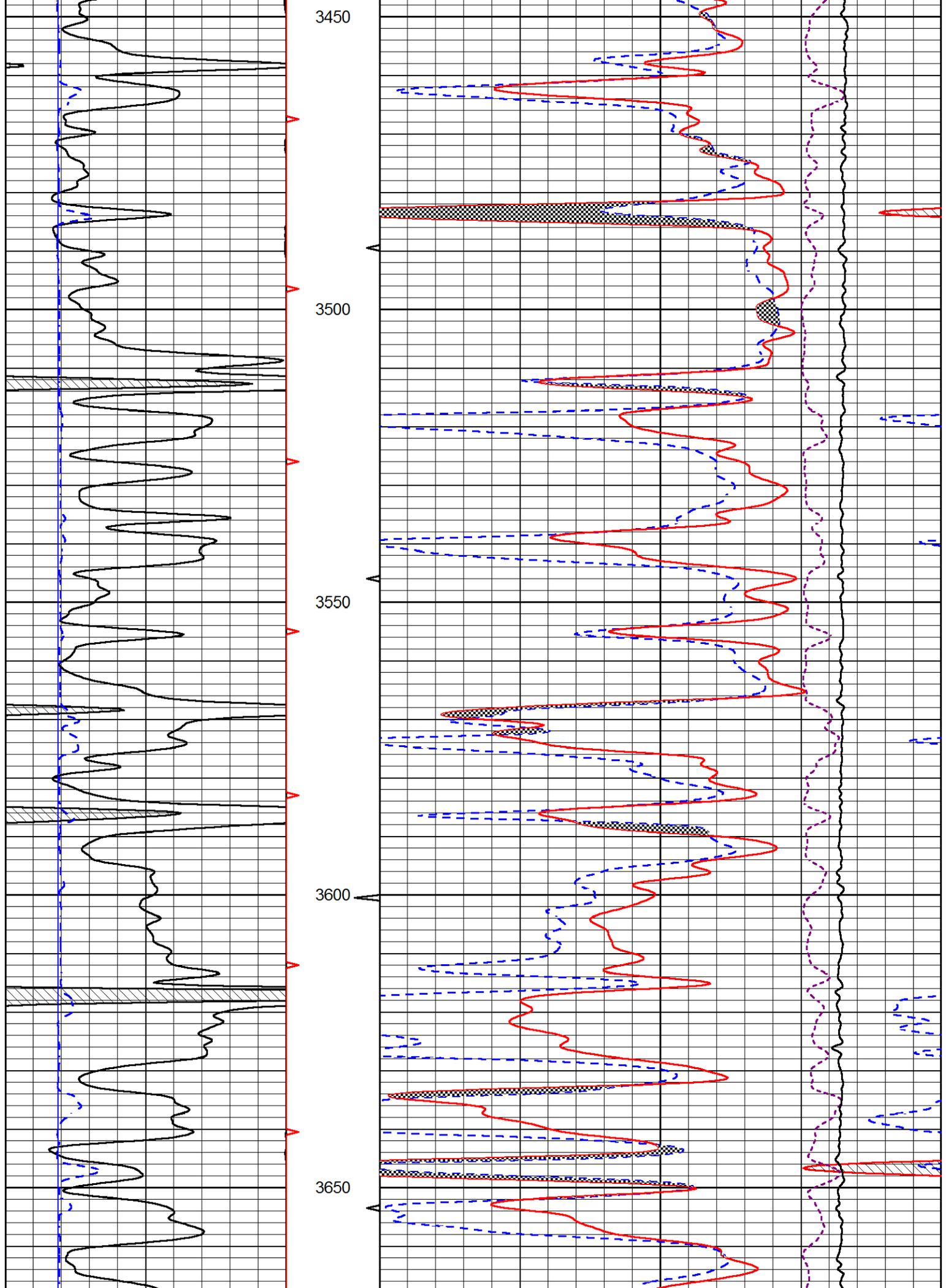
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 Presentation Format cndlspec  
 Dataset Creation Tue Jul 17 19:03:31 2018  
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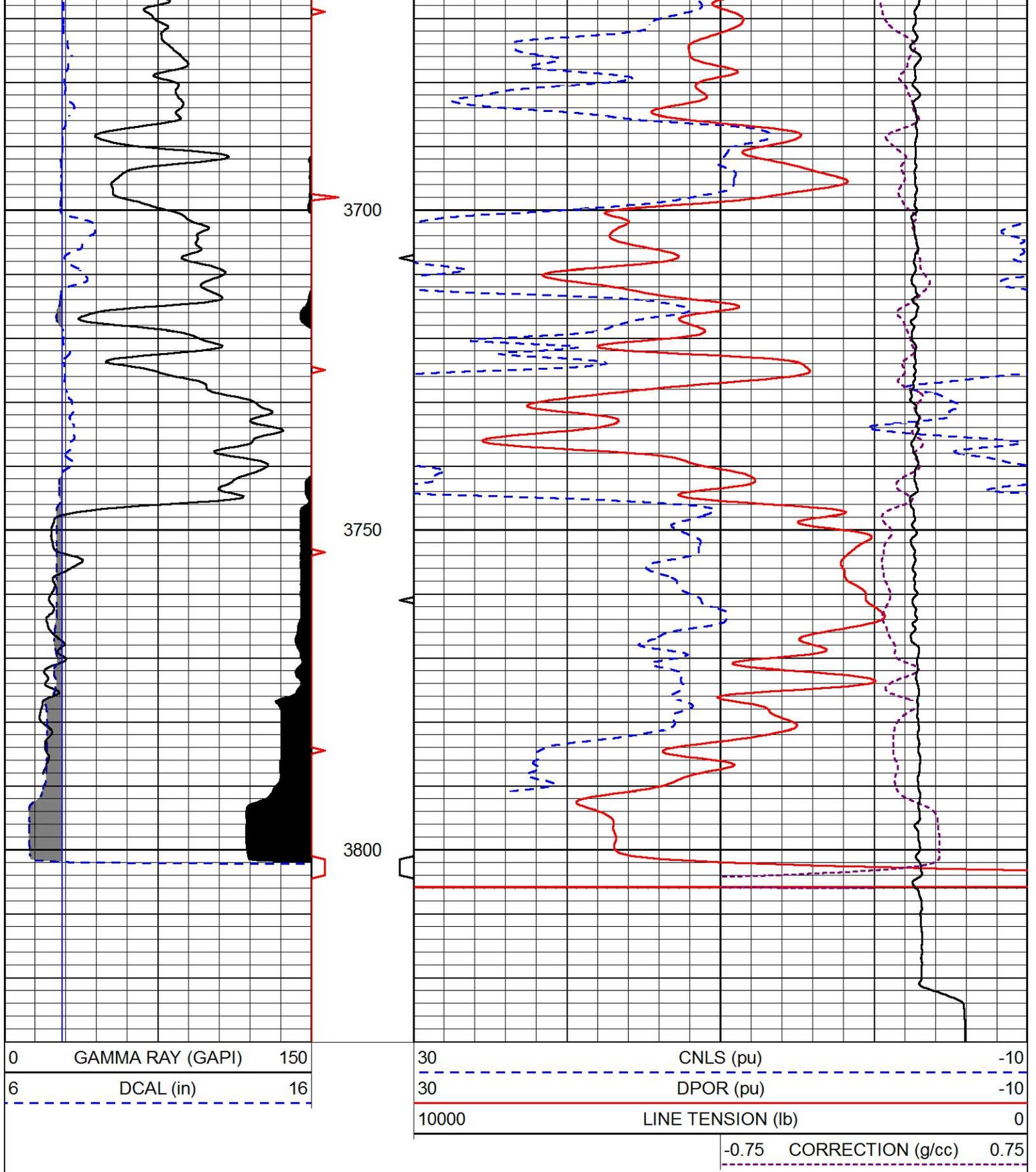
0	GAMMA RAY (GAPI)	150
6	DCAL (in)	16

30	CNLS (pu)	-10
30	DPOR (pu)	-10
10000	LINE TENSION (lb)	0
	-0.75 CORRECTION (g/cc)	0.75







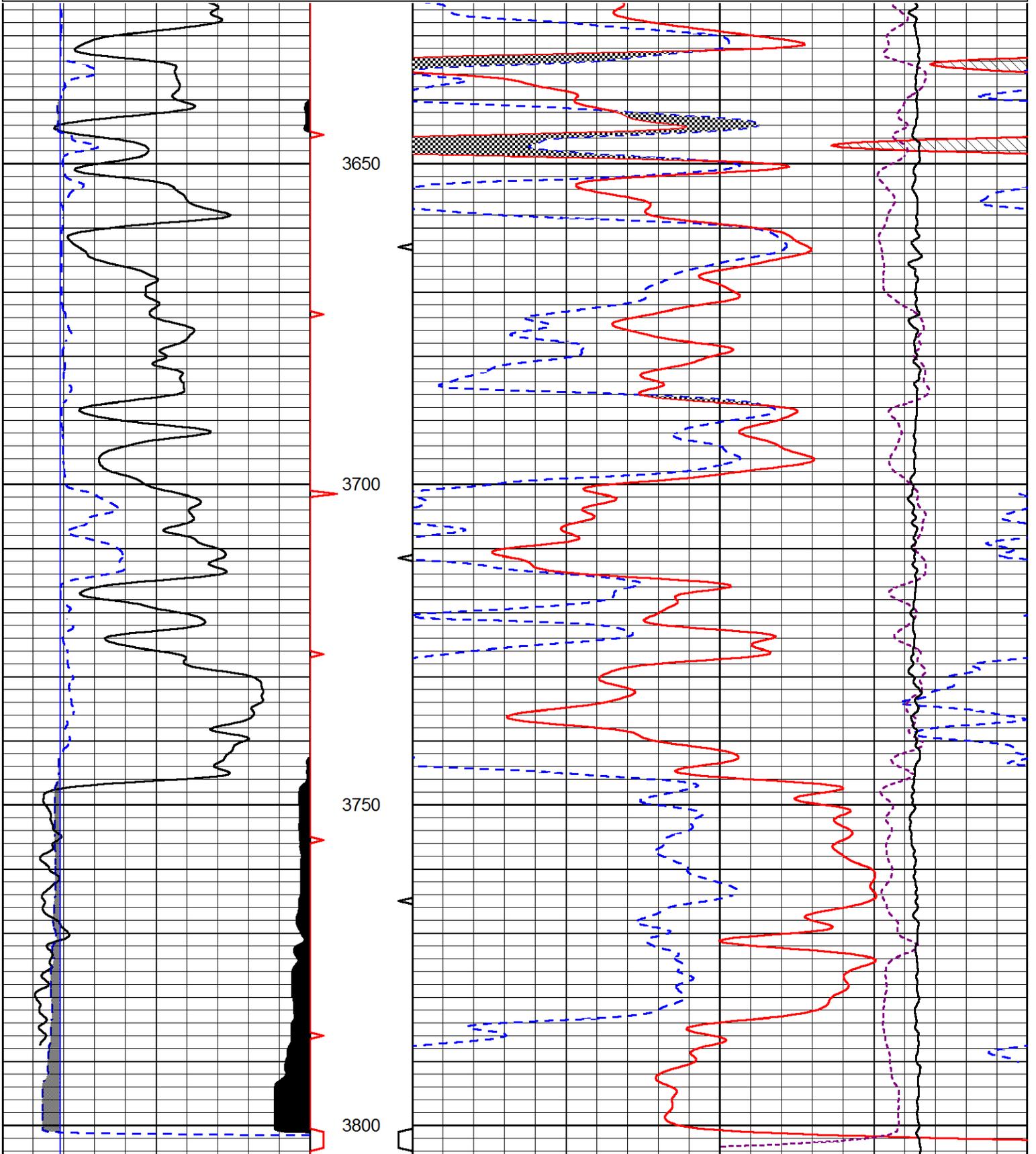


# REPEAT SECTION

Database File cobalt\_energy\_a\_1\_36.db  
 Dataset Pathname stackmel/pass2.1  
 Presentation Format cndlspec

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

30	CNLS (pu)	-10
30	DPOR (pu)	-10
10000	LINE TENSION (lb)	0
-0.75	CORRECTION (g/cc)	0.75



0	GAMMA RAY (GAPI)	150	30	CNLS (pu)	-10
6	DCAL (in)	16	30	DPOR (pu)	-10
			10000	LINE TENSION (lb)	0
				-0.75 CORRECTION (g/cc)	0.75

### Calibration Report

Database File cobalt\_energy\_a\_1\_36.db  
 Dataset Pathname stackmel/pass3.1  
 Dataset Creation Tue Jul 17 19:03:31 2018

### Dual Induction Calibration Report

Serial-Model: 933 (HT)-PSI HIGH TEMP  
 Calibration Performed: Sun Jul 15 05:36:29 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.000	mmho/m	0.700	-17.000
Medium	142.000	1349.000	0.000	255.000	mmho/m	0.565	-60.500

### Microlog Calibration Report

Serial-Model: PSI-01-PSIML  
 Performed: Sun Jul 15 07:40:28 2018

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	24000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	30000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-65.8500

### Compensated Density Calibration Report

Serial-Model: 797-152-M&W  
 Source / Verifier: 16955B / 2ci  
 Master Calibration Performed: Tue May 01 13:38:28 2018

### Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4933.40	5500.86	cps
Aluminum	2.650	g/cc	928.80	3521.29	cps
Spine Angle = 75.04			Density/Spine Ratio = 0.518		
	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: SUN JUL 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: Sun Jul 15 05:37:08 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



**PIONEER**  
Pioneer Energy Services

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