



PIONEER
Pioneer Energy Services

MICRORESISTIVITY 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
CNL/CDL
DIL

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	
Depth Driller	3420'	
Depth Logger	3419'	
Bottom Logged Interval	3418'	
Top Log Interval	2700'	
Casing Driller	8.625" @ 320'	
Casing Logger	318'	
Bit Size	7.875"	
Type Fluid in Hole	CHEMICAL	
Salinity, ppm CL	15200	
Density / Viscosity	9.1 48	
pH / Fluid Loss	9.5 10.4	
Source of Sample	FLOWLINE	
Rm @ Meas. Temp	0.30 @ 60	
Rmt @ Meas. Temp	0.23 @ 60	
Rmc @ Meas. Temp	0.41 @ 60	
Source of Rmt / Rmc	CHARTS	
Rm @ BHT	0.16 @ 110	
Operating Rig Time	3 HOURS	
Max Rec. Temp. F	110	
Equipment Number	91	
Location	HAYS	
Recorded By	D. SCHMIDT	
Witnessed By	BOB O'DELL	

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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

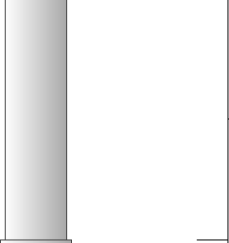
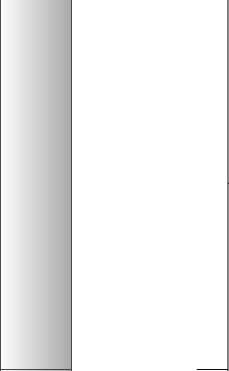
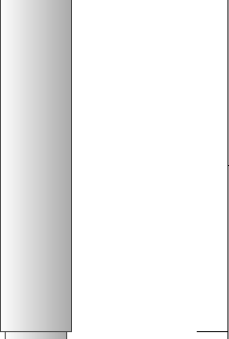
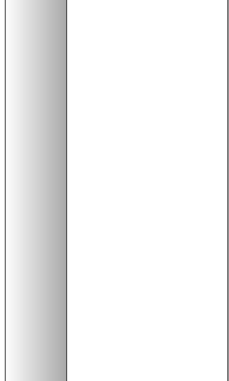
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

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					

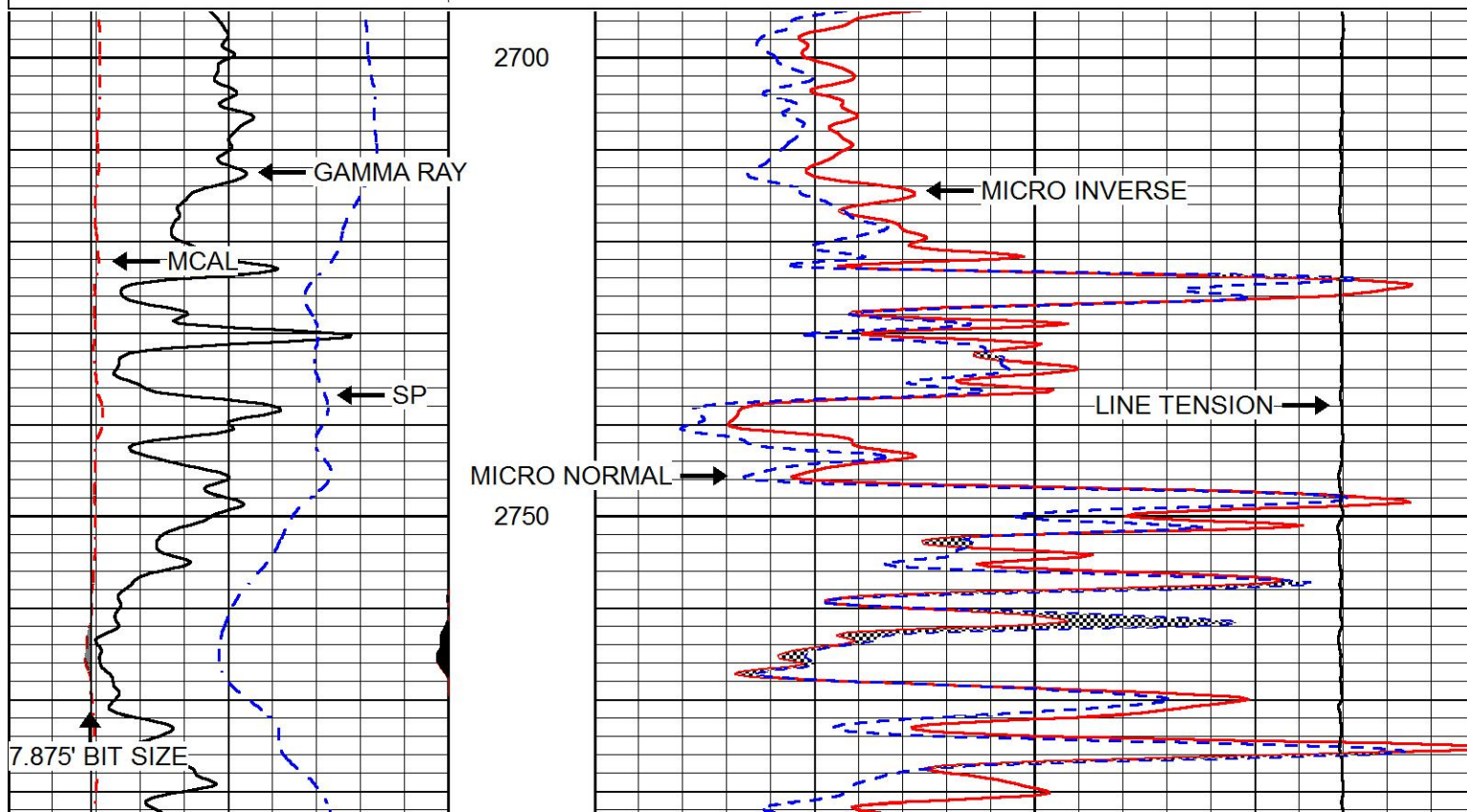
				DIL-PSI HIGH TEMP (933 (HT))	18.50	3.50	220.00
CILD	8.00						
CILM	4.70						
SP	0.20						
Dataset: cobalt_billy gene a 1-3.db: field/well/STKML/pass3.3 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in							

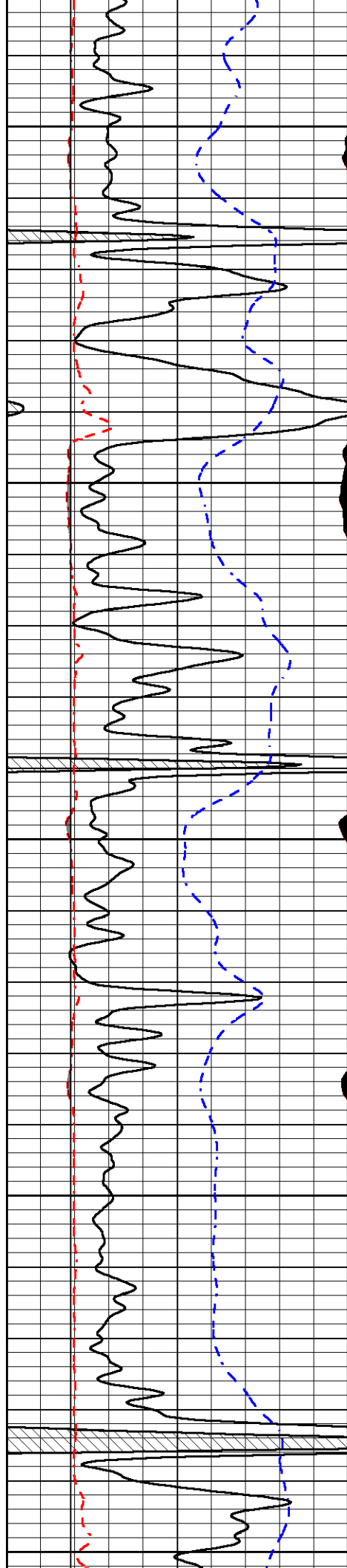


MAIN PASS

Database File	cobalt_billy gene a 1-3.db
Dataset Pathname	STKML/pass3.1
Presentation Format	micro
Dataset Creation	Thu Feb 15 20:11:43 2018
Charted by	Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	0	Micro Inverse 1 X 1 (Ohm-m)	40
6	MCAL (in)	16	0	Micro Normal 2" (Ohm-m)	40
2.875	mcals (in)	7.875	10000	Line Weight (lb)	0
6	Bit Size (in)	16			
-200	SP (mV)	0			





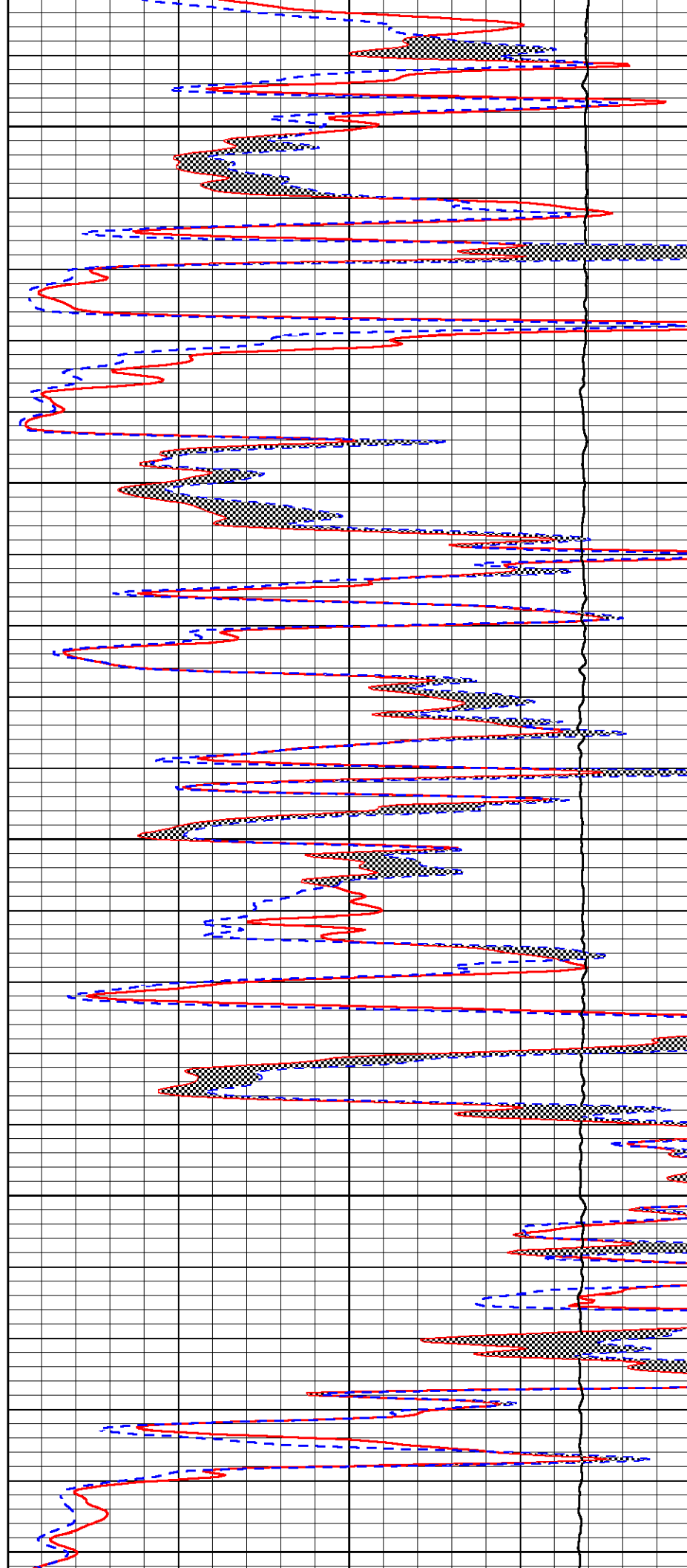
2800

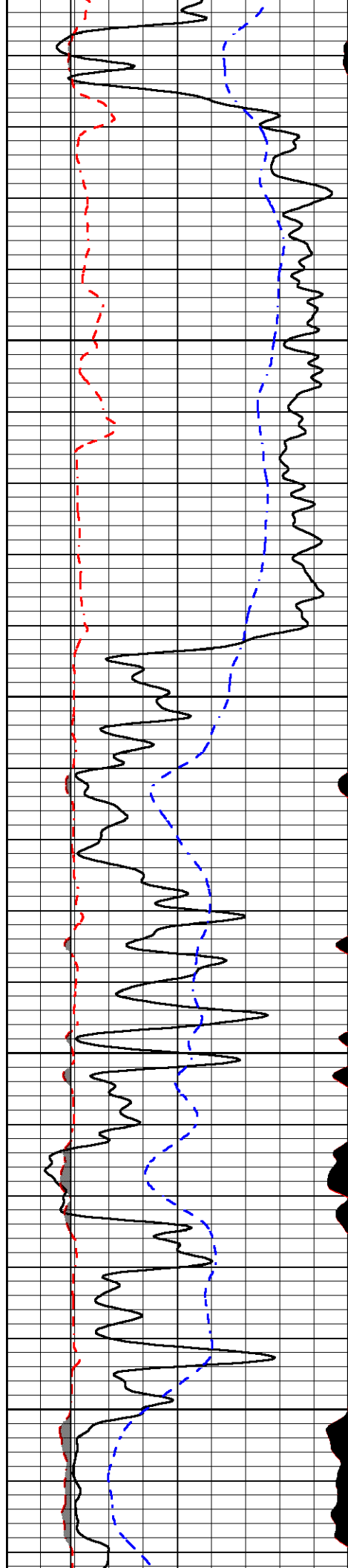
2850

2900

2950

3000



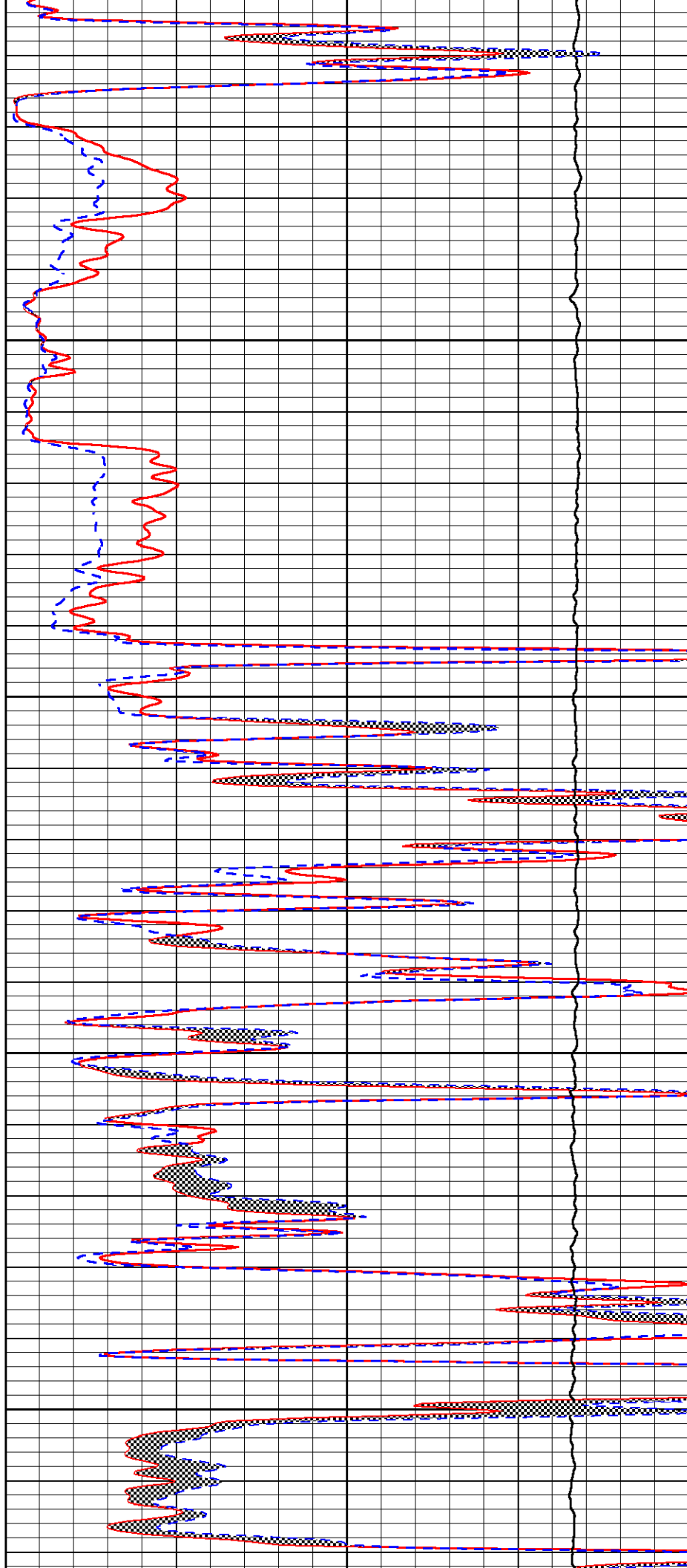


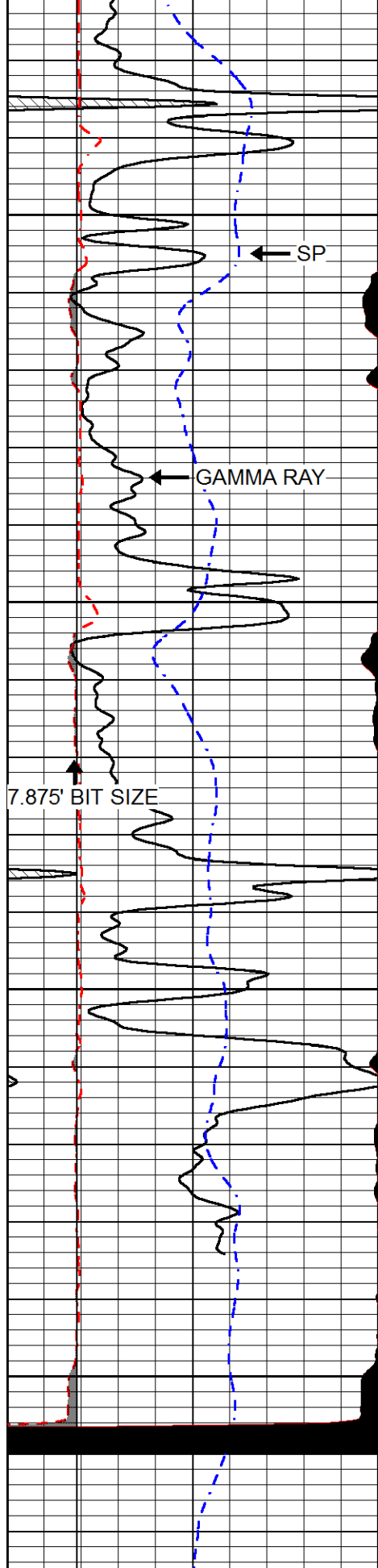
3050

3100

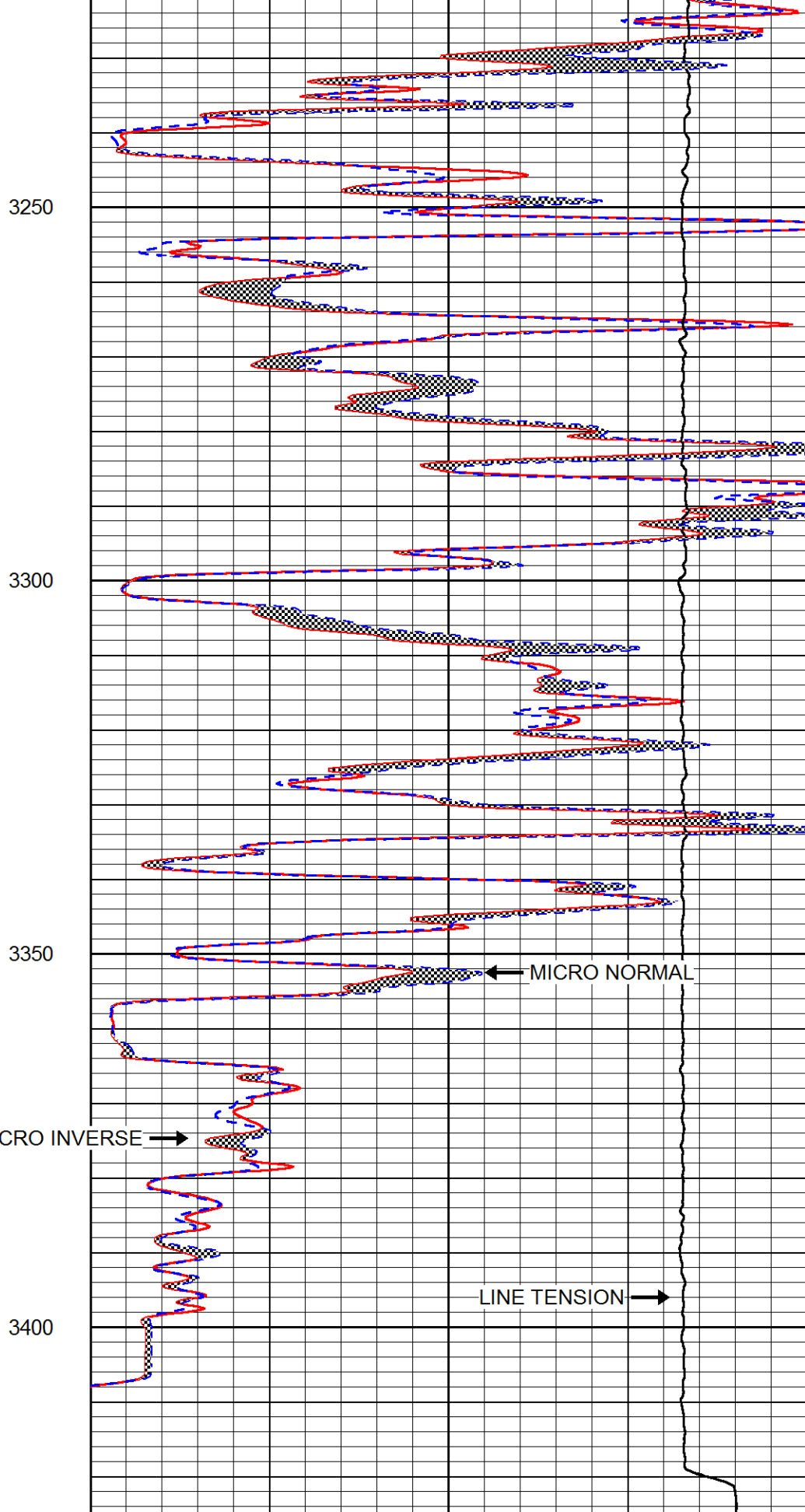
3150

3200





0	Gamma Ray (GAPI)	150
6	MCAL (in)	16
2.875	mcal (in)	7.875
6	Bit Size (in)	16



0	Micro Inverse 1 X 1 (Ohm-m)	40
0	Micro Normal 2" (Ohm-m)	40
10000	Line Weight (lb)	0

0	Bit Size (in)	16
-200	SP (mV)	0

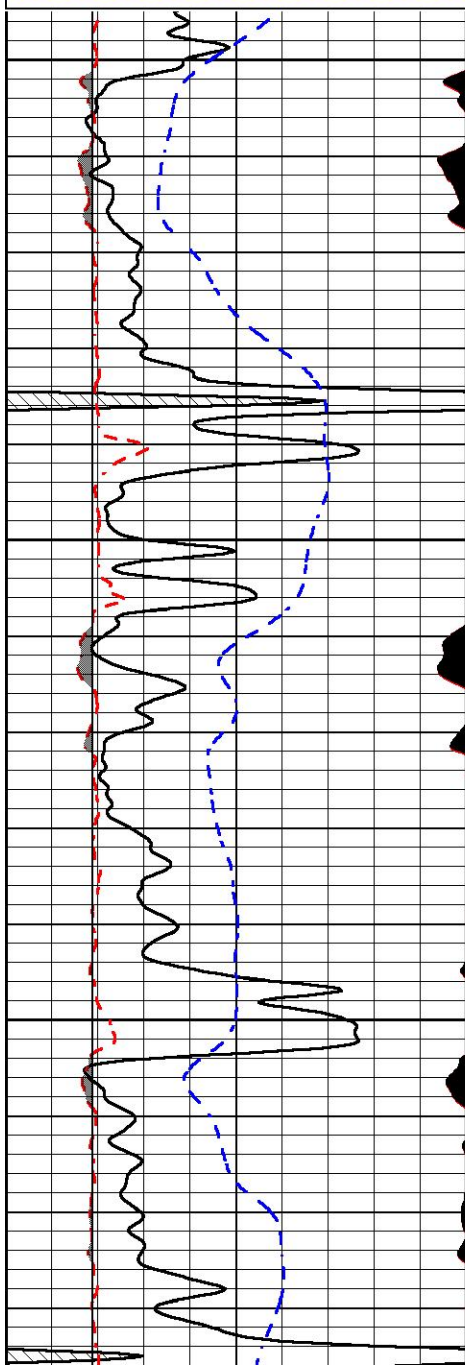


REPEAT SECTION

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

0	Gamma Ray (GAPI)	150
6	MCAL (in)	16
2.875	mcals (in)	7.875
6	Bit Size (in)	16
-200	SP (mV)	0

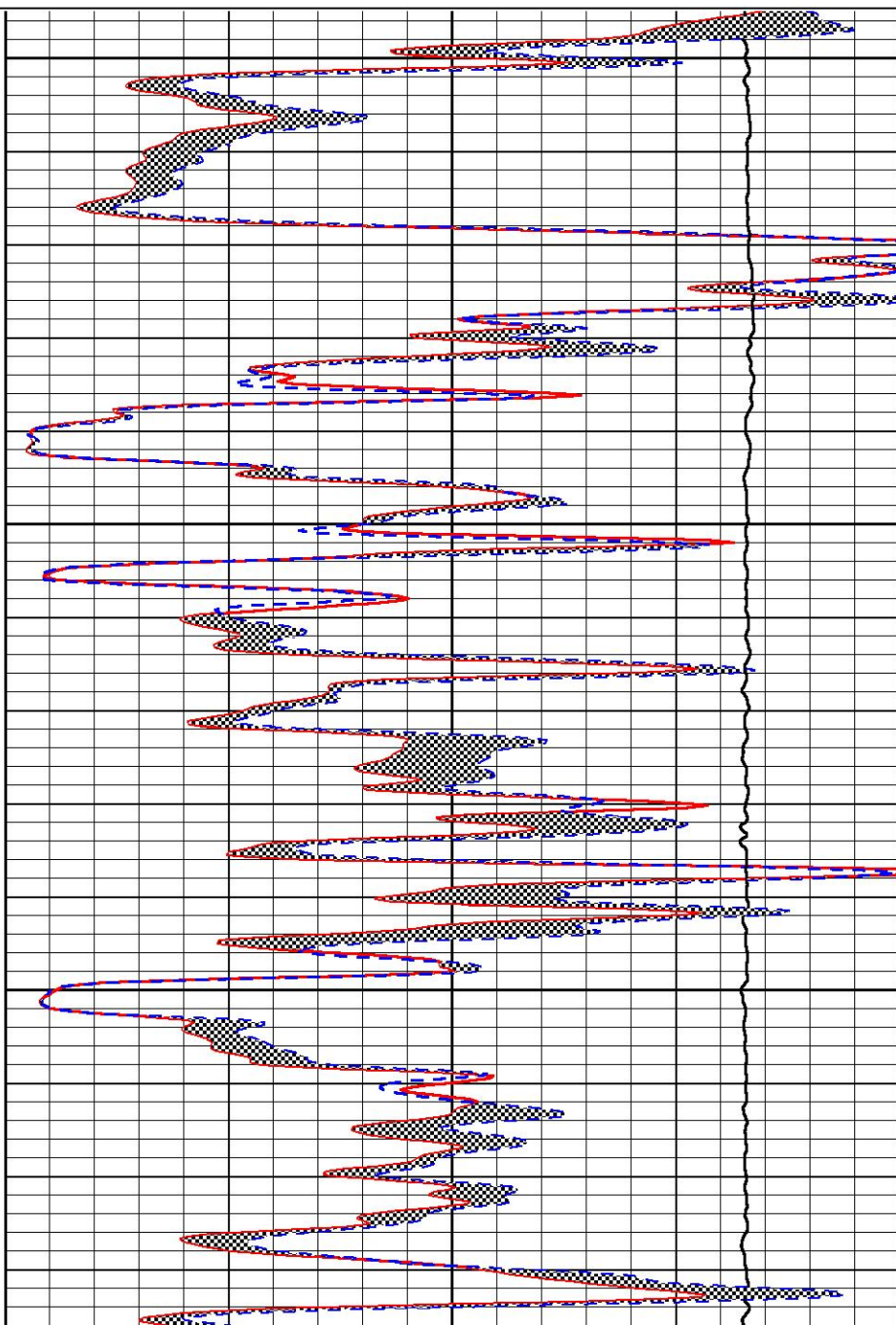
0	Micro Inverse 1 X 1 (Ohm-m)	40
0	Micro Normal 2" (Ohm-m)	40
10000	Line Weight (lb)	0

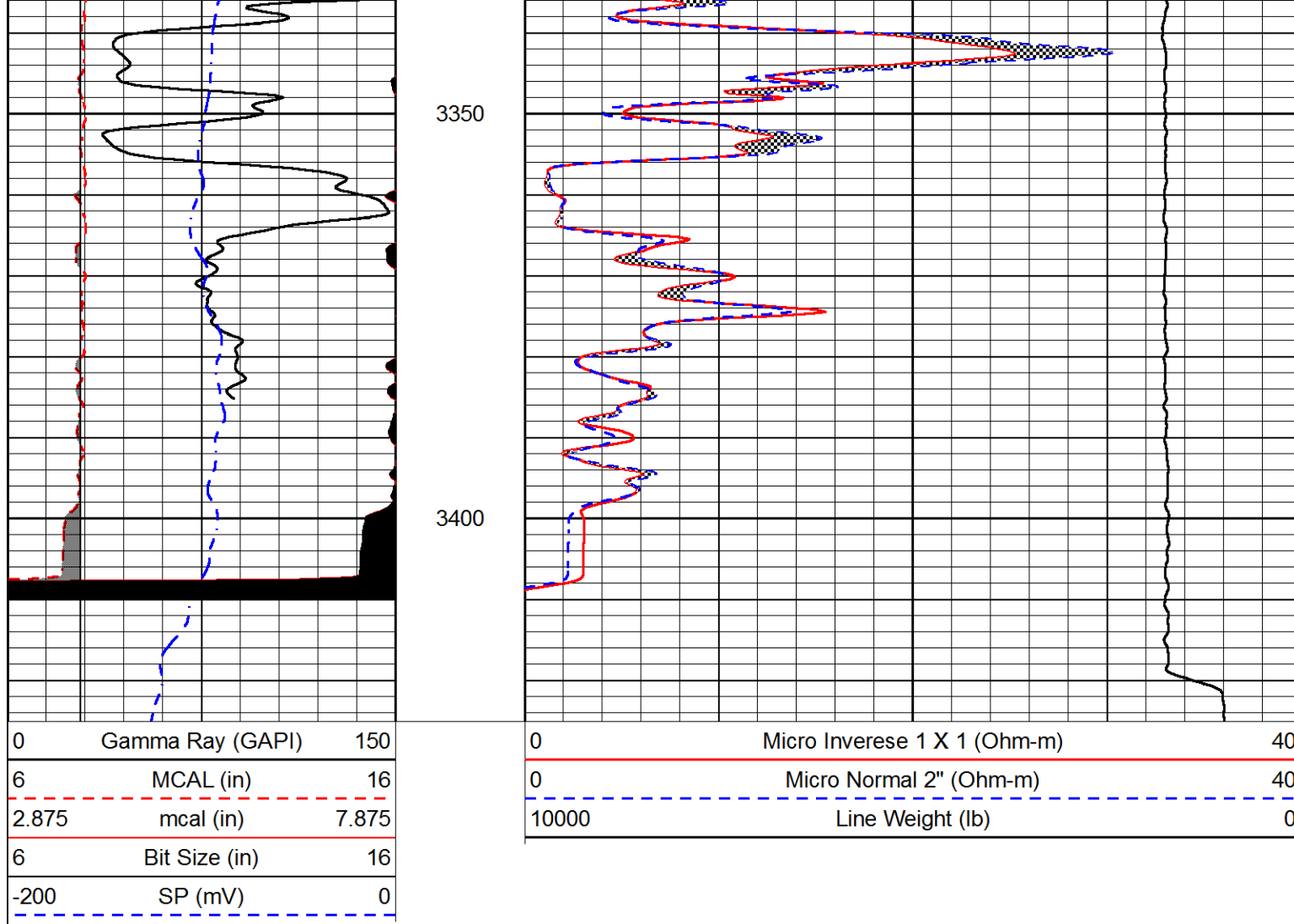


3200

3250

3300





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
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
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



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