



**COMPENSATED
DENSITY/NEUTRON
LOG**

Company BRUNGARDT OIL & LEASING CO.
Well REICH B #2
Field DREHER
County RUSSELL
State KANSAS

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Field DREHER
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Location: API # : 15-167-24082-0000
1775' FNL & 2295' FWL
SEC 22 TWP 11S RGE 15W

Permanent Datum GROUND LEVEL Elevation 1808
Log Measured From KELLY BUSHING 8' A.G.L.
Drilling Measured From KELLY BUSHING

Other Services
DILMEL
Elevation
K.B. 1816
D.F. 1814
G.L. 1808

Date	11/21/18
Run Number	ONE
Depth Driller	3335
Depth Logger	3337
Bottom Logged Interval	3317
Top Log Interval	2600
Casing Driller	8 5/8" @ 224
Casing Logger	224
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	8.9/50
pH / Fluid Loss	10.5/8.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.60@60
Rmt @ Meas. Temp	.45@60
Rmc @ Meas. Temp	.72@60
Source of Rmt / Rmc	MEASURED
Rm @ BHT	.36 @ 110F
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	////
Maximum Recorded Temperature	110F
Equipment Number	1523
Location	HAYS, KANSAS
Recorded By	GUS PFANENSTIEL
Witnessed By	ROGER FISHER

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

THANK YOU FOR USING ELI WIRELINE, HAYS, KS. (785) 628-6395

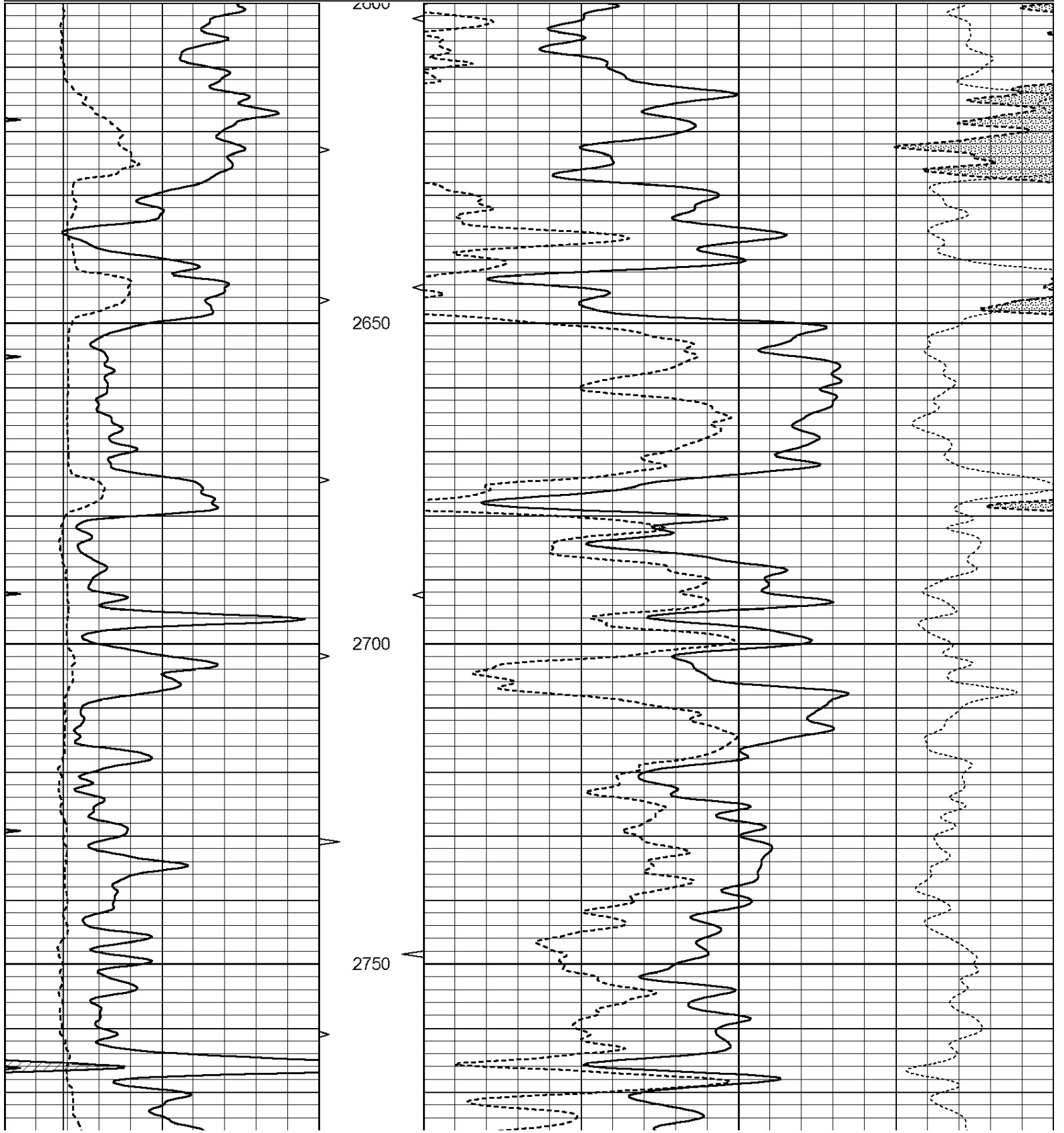
DIRECTIONS
GORHAM BLACK TOP NORTH TO SALINE LN.(RD. BEFORE CURVE)
EAST 1, BACK NORTH TO PARADISE RD., EAST 3/4,
SOUTH INTO.

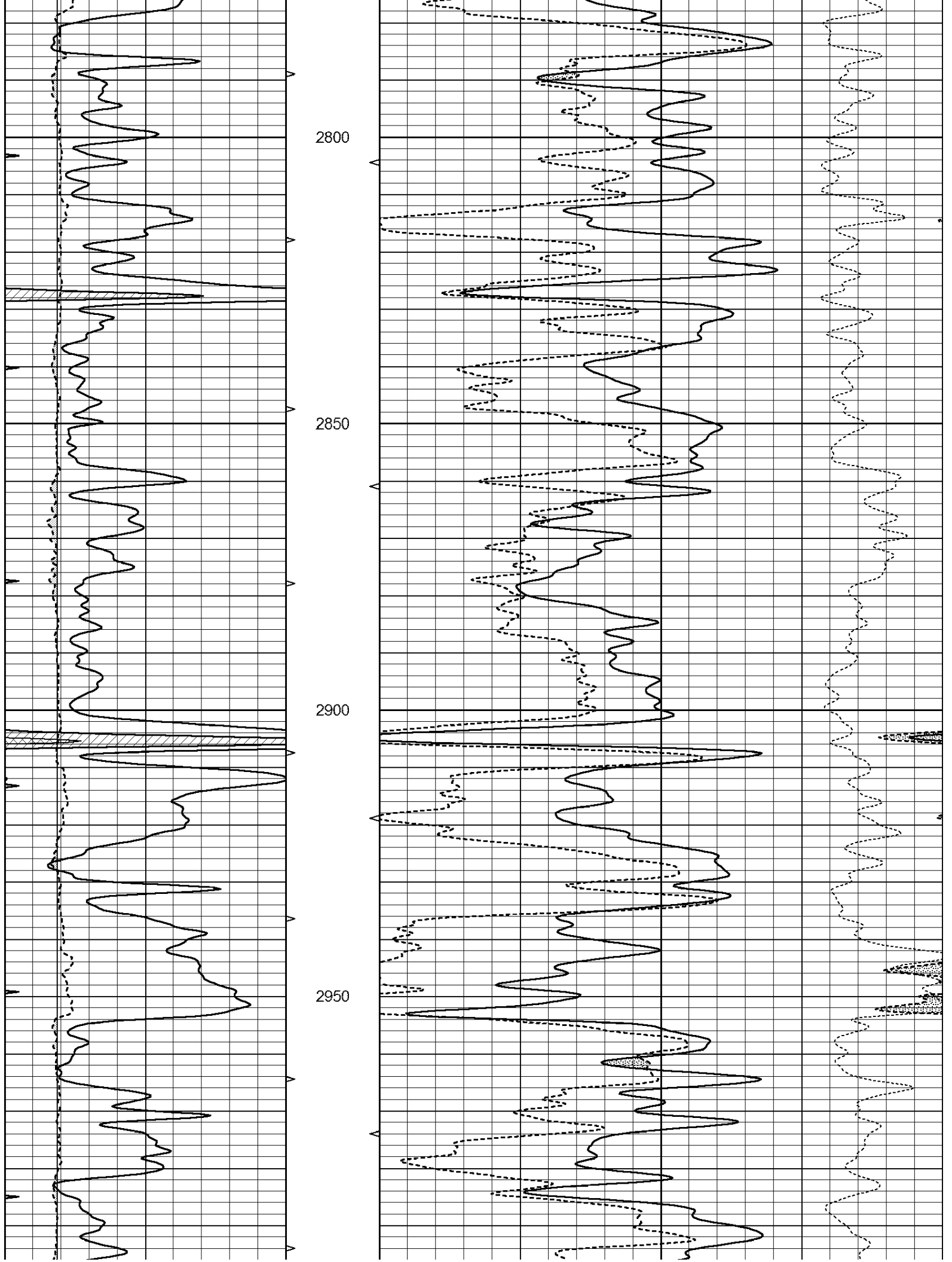


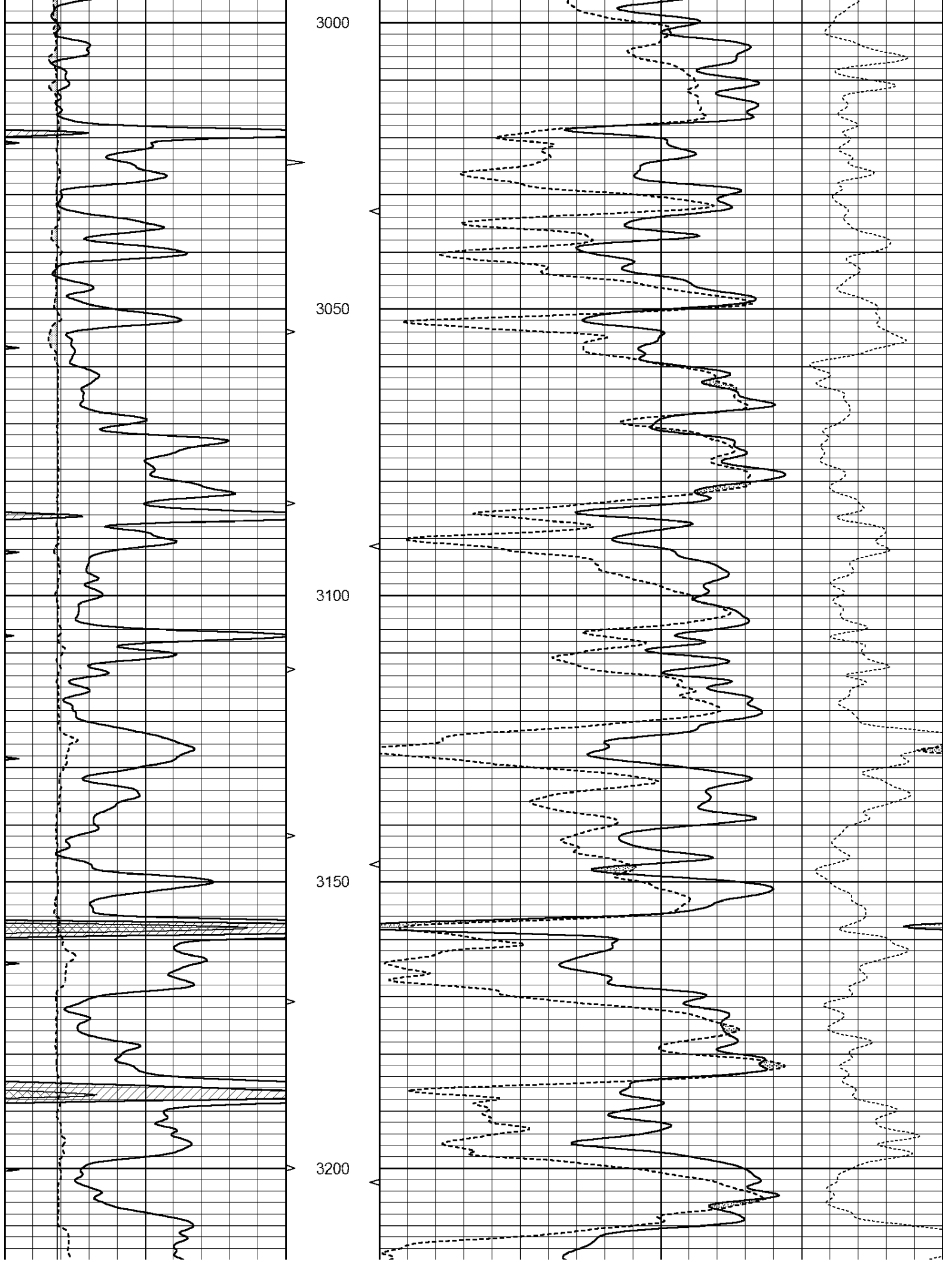
MAIN PASS

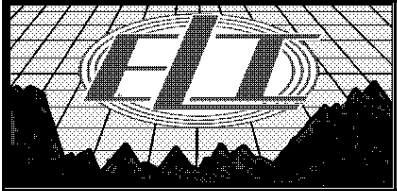
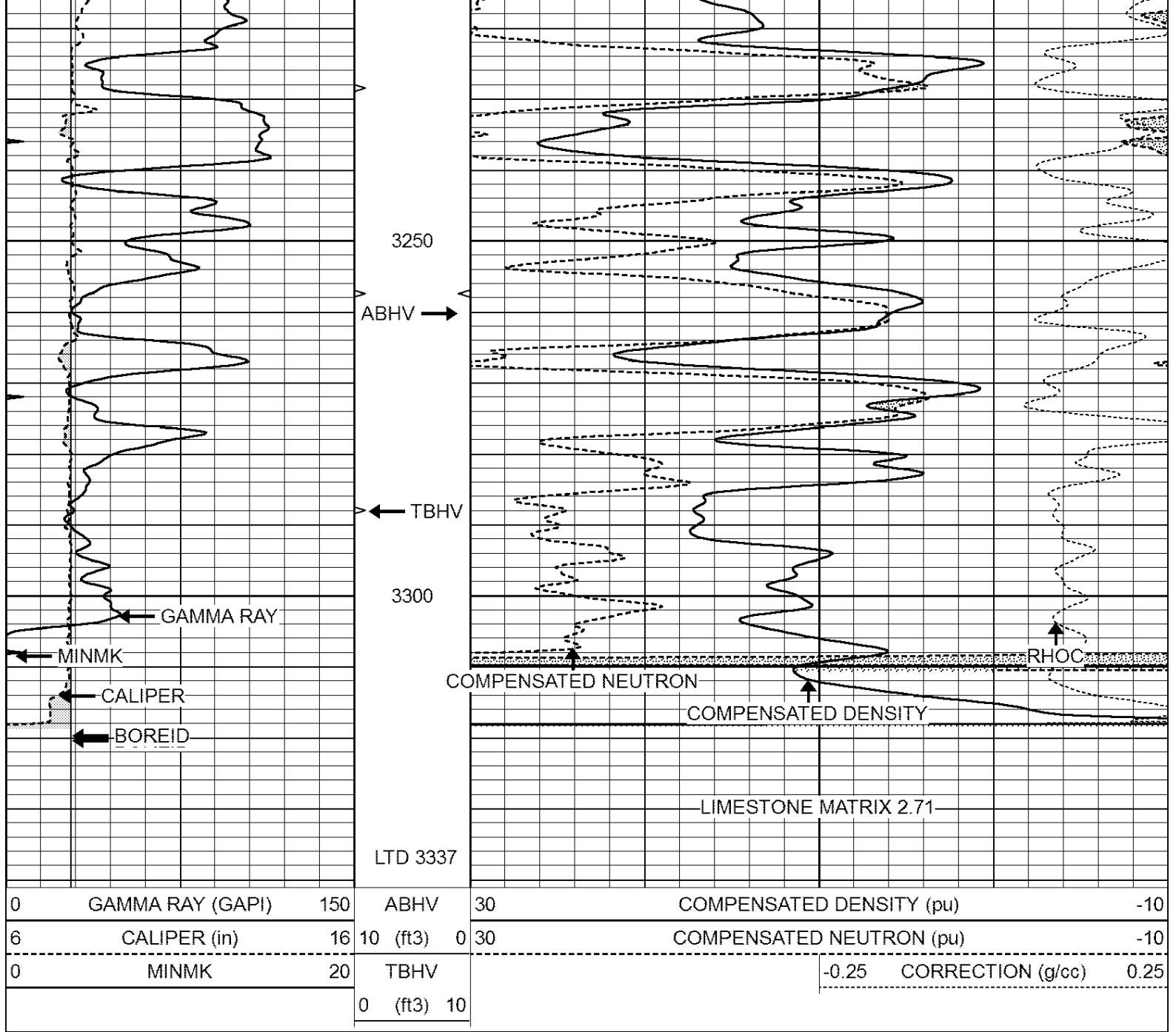
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 Dataset Pathname: pass3MAIN
 Presentation Format: den_neu
 Dataset Creation: Wed Nov 21 10:41:51 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		





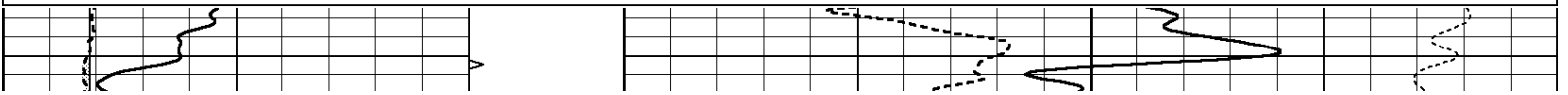


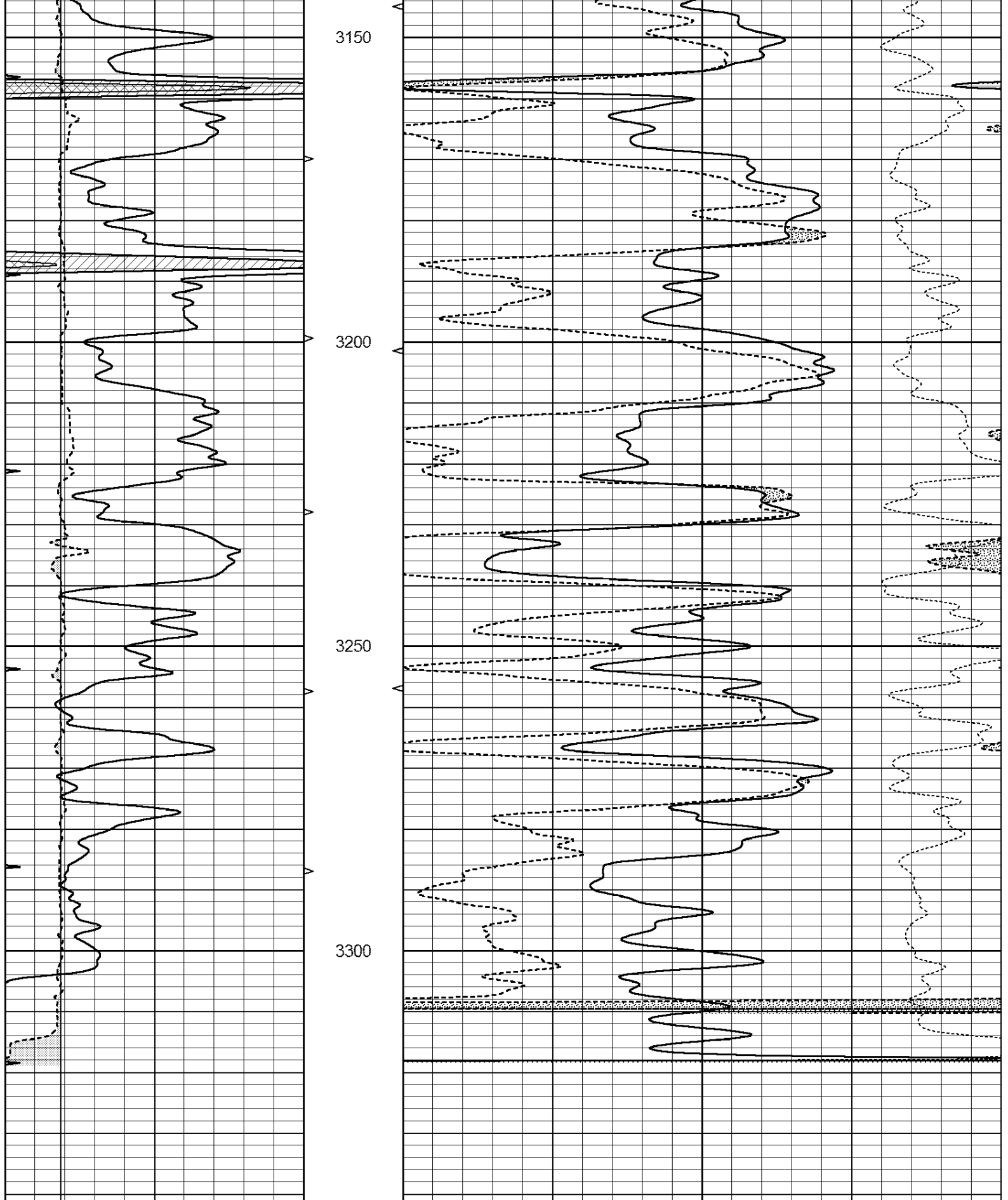


REPEAT SECTION

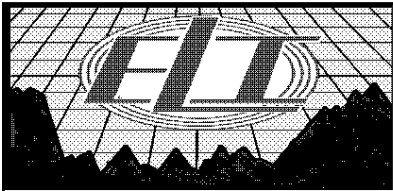
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 Dataset Pathname: pass2.1
 Presentation Format: den_neu
 Dataset Creation: Wed Nov 21 09:54:31 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		





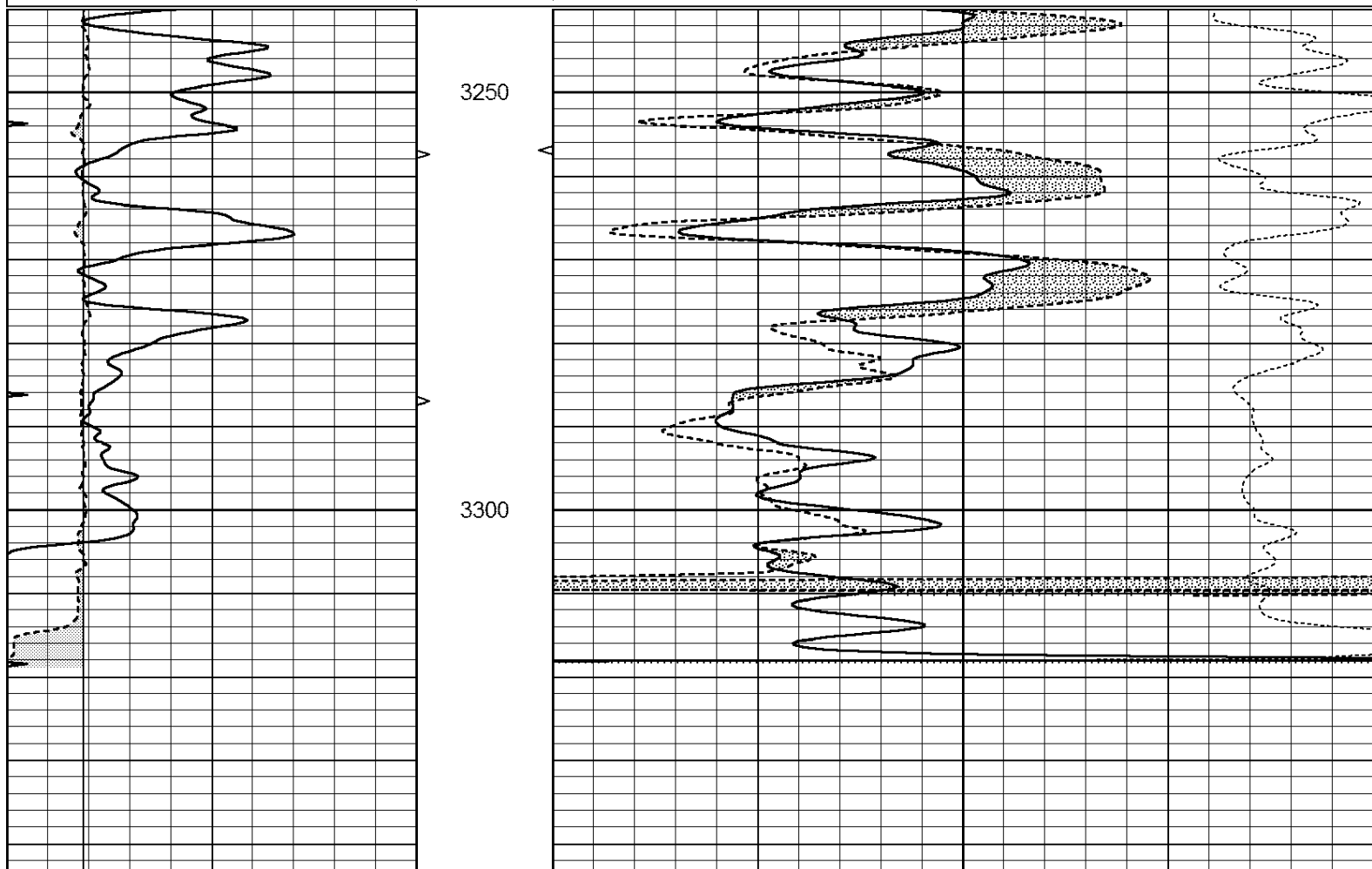
0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		



DOLOMITE MATRIX 2.81

Database File: 3161ddn.db
 Dataset Pathname: pass2DOL
 Presentation Format: den_neu
 Dataset Creation: Wed Nov 21 10:51:55 2018
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		



0	GAMMA RAY (GAPI)	150	ABHV	30	COMPENSATED DENSITY (pu)	-10
6	CALIPER (in)	16	10 (ft3)	0 30	COMPENSATED NEUTRON (pu)	-10
0	MINMK	20	TBHV		-0.25 CORRECTION (g/cc)	0.25
			0 (ft3)	10		

Calibration Report

Database File: 3161ddn.db
 Dataset Pathname: pass2DOL
 Dataset Creation: Wed Nov 21 10:51:55 2018

Dual Induction Calibration Report

Serial-Model:

PROBE8-DILG

Surface Cal Performed:
 Downhole Cal Performed:
 After Survey Verification Performed:

Mon Sep 10 14:28:35 2018
 Mon Sep 10 14:28:38 2018
 Mon Sep 10 14:28:40 2018

Surface Calibration								
Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	0.015	0.648	V	0.000	400.000	mmho/m	620.000	0.000
Medium	0.029	0.796	V	0.000	464.000	mmho/m	590.000	-12.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.017	0.657	V	0.000	400.000	mmho/m	625.153	-10.619
Medium	0.016	0.757	V	0.000	464.000	mmho/m	625.992	-9.739

Downhole Calibration								
	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	2.011	405.777	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	7.590	503.393	mmho/m	1.000	0.000
LL3		7.500	V		1500.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		3800.000	mmho-m		

After Survey Verification								
	Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
Medium	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
LL3		1.000	Ohm-m		1.000	Ohm-m		
		0.000	Ohm-m		0.000	Ohm-m		
		1.000	mmho-m		1.000	mmho-m		

Litho Density Calibration Report
 Serial: 006 Model: PRB

Master Calibration					Performed Thu Sep 27 12:07:11 2018			
	Background	Magnesium	Aluminum	Sandstone				
Window 1	1185.6	7077.4	2520.9	8182.4				cps
Window 2	1116.8	5910.1	2163.2	6739.4				cps
Window 3	880.1	3145.8	1325.0	3461.2				cps
Window 4	289.5	295.8	290.8	295.3				cps
Long Space	0.0	4793.3	1046.5	5622.7				cps
Short Space	2.9	1608.0	1038.9	1622.7				cps
Rho		1.7100	2.5960	1.3800				g/cc
Pe		0.0000	2.5700	1.5500				
Rib Angle	: 44.0	Rib Slope	: 0.965	Density/Spine Ratio				: 0.560
Spine Angle	: 74.0	Spine Slope	: 3.484	Spine Intercept				: -17.2

Before Survey Verification					Performed Wed Dec 31 18:00:00 1969			
Window 1	0.0	0.0	0.0	0.0				cps
Window 2	0.0	0.0	0.0	0.0				cps
Window 3	0.0	0.0	0.0	0.0				cps
Window 4	0.0	0.0	0.0	0.0				cps
Long Space	0.0	0.0	0.0	0.0				cps
Short Space	0.0	0.0	0.0	0.0				cps
Measured Rho		0.0000	0.0000	0.0000				g/cc

Measured Correction		0.0000	0.0000	0.0000	g/cc
Measured Pe			0.0000	0.0000	
After Survey Verification		Performed Wed Dec 31 18:00:00 1969			
Window 1	0.0	0.0	0.0	0.0	cps
Window 2	0.0	0.0	0.0	0.0	cps
Window 3	0.0	0.0	0.0	0.0	cps
Window 4	0.0	0.0	0.0	0.0	cps
Long Space	0.0	0.0	0.0	0.0	cps
Short Space	0.0	0.0	0.0	0.0	cps
Measured Rho		0.0000	0.0000	0.0000	g/cc
Measured Correction		0.0000	0.0000	0.0000	g/cc
Measured Pe			0.0000	0.0000	

Compensated Neutron Calibration Report

Serial Number: 6I
Tool Model: G

CALIBRATION						
	Detector	Readings		Target		Normalization
	Short Space	1.00	cps	1.00	cps	1.0000
	Long Space	1.00	cps	1.00	cps	1.0000

PRE-SURVEY VERIFICATION						
	Detector	Readings		Measured		Target
1)	Short Space		cps			
	Long Space		cps	pu		pu
2)	Short Space		cps			
	Long Space		cps	pu		
3)	Short Space		cps			
	Long Space		cps	pu		

POST-SURVEY VERIFICATION						
	Detector	Readings		Measured		Target
1)	Short Space		cps			
	Long Space		cps	pu		pu
2)	Short Space		cps			
	Long Space		cps	pu		pu
3)	Short Space		cps			
	Long Space		cps	pu		pu

Gamma Ray Calibration Report

Serial Number: GR6
Tool Model: OPEN
Performed: Mon Sep 10 14:29:23 2018

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 276.0 cps

sensitivity:

0.5000

GARCH(1,1)