

Tucker
ENERGY SERVICES

COMPENSATED NEUTRON

PEL DENSITY LOG

Company AZTEC OIL CO. Well COOPER D #4 Field BUTLER County KANSAS State USA Country USA API No. 15-015-23950-0000		File No : TUL-57363 Company : AZTEC OIL CO. Well : COOPER D #4 Field : County : BUTLER State : KANSAS Country : USA API No : 15-015-23950-0000	
Location : 2250' FNL & 820' FEL SW SE NE		LSD : Sect : 31 Twp : 28S Rge : 8E	
Permanent Datum:	GL	Elevations:	Services:
Drilling Measured From:	KB	KB 1623.00	GRT
Log Measured From:	KB	DF 1622.00	CNT
Above Permanent Datum:	10.00 Ft	GL 1613.00	LDT
Date	2012-08-09		
Run Number	1		
Depth--Driller	3300.0	Ft	
Depth--Logger	3296.0	Ft	
First Reading	3249.0	Ft	
Last Reading	2000.0	Ft	
Casing--Driller	224.0	Ft	
Casing--Logger	224.0	Ft	
Bit Size	7.875	In	
Casing Size	8.625	In	
Hole Fluid Type	GEL		
Density	9.5	LBS/GAL	
Fluid Loss	9.0	CC	
PH/Viscosity	9.0	50.0 SEC	
Sample Source	MEASURED		
RM@Measured Temp.	4.000 @ 79 F		
RMF@Measured Temp	3.000 @ 79 F		
RMC@Measured Temp.	5.000 @ 79 F		
Source RMF/RMC	CALCULATED/CALCULATED		
RM@BHT	2.960 @ 109 F		
Time Circulation Stopped	2012-08-09 06:00		
Max Recorded Temp.	109 F		
Equipment/Base	TRUCK 119 TULSA		
Recorded By	R. FRANKLIN / C. PAYNE		
Witnessed By	M. CROSS / B. STOUT		

The customer is hereby warned that by providing the log data herein, T. E. S. does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. T. E. S. does not guarantee or warrant either expressly or impliedly, the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by T. E. S. personnel. Any interpretation, conversion or recommendation is not part of the consideration for the agreement between the parties and is not part of any part of the charge by T. E. S. for its services. Any user of the log data is warned that said user is not entitled to rely on interpretations, conversions or recommendations as aforesaid.

Bitsize Intervals		Casing Strings		
Size (In)	Bottom (Ft)	Size (In)	Weight (Lbs)	Bottom (Ft)
7.875	3300.00	8.625	24.00	224.00

Run Number	1	
Date	2012-08-09	
Date/Time On Bottom	2012-08-09 10:00	
Depth to Fluid	0.0 Ft	
Salinity	800.000 PPM	
RMF@BHT	2.220 @ 109 F	
RMC@BHT	3.700 @ 109 F	

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST
 GRT, CNT, LDT, MLT, CST AND PIT RUN IN COMBINATION.
 CALIPERS ORIENTED ON X-Y AXIS.
 2.71 G/CC USED TO CALCULATED POROSITY.
 ANNULAR HOLE VOLUME CALCULATED UISING 5.500" PRODUCTION CASING.

SP SPIKE AT 2000' DUE TO SPLICE.

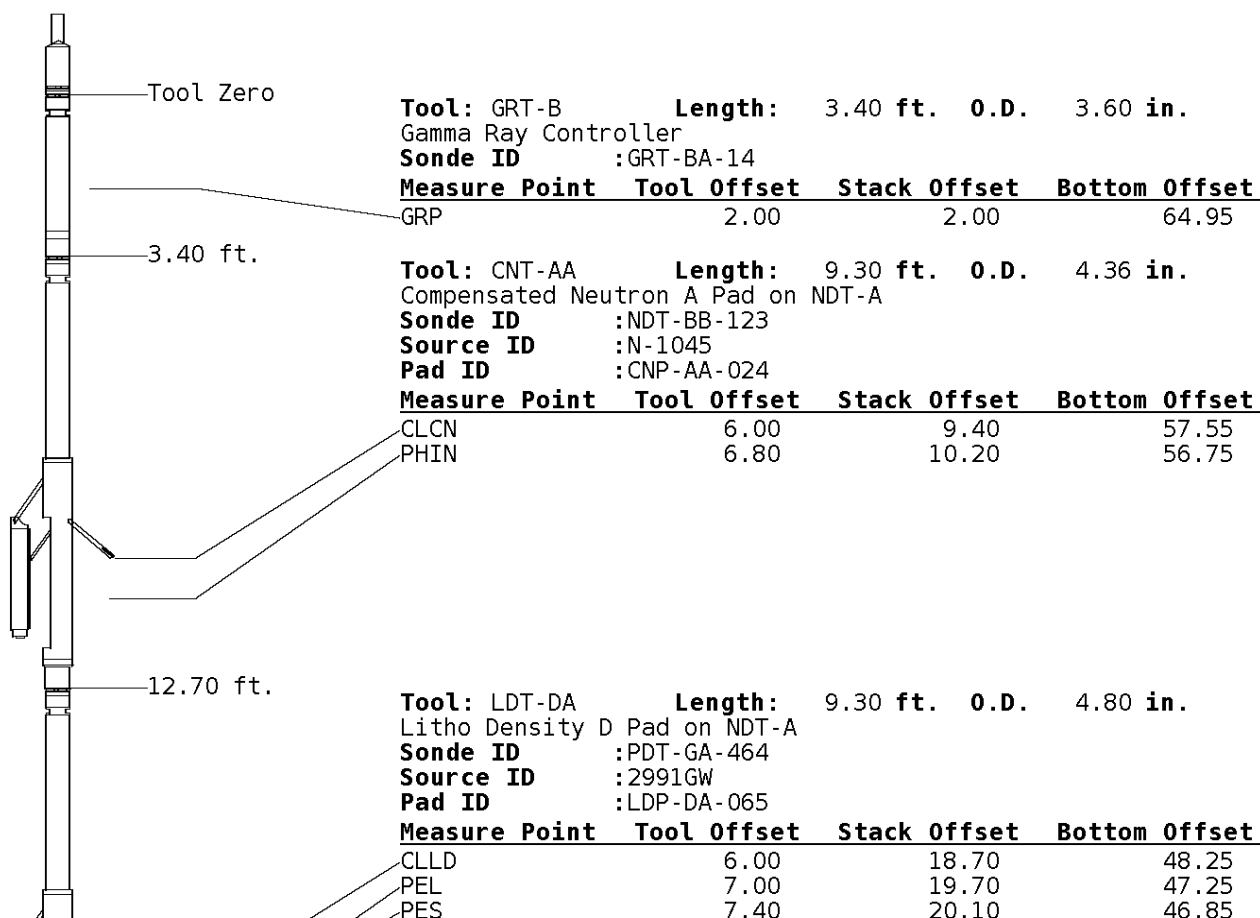
GRT: GRP.
 CNT: PHIN, CLCNIN
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN.
 MLT: NOR_R, INV_R, MSCLPIN.
 CST: PORS, DDCDTF, TT1PF, TT3PF, ITT.
 PIT: ILD, ILM, SPU, SFLAEC

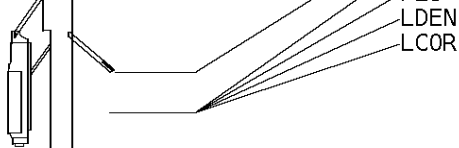
OPERATORS:

J. THOMAS
 D. HOPPER

Tool String Schematic

Total Tool Length - 66.95 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



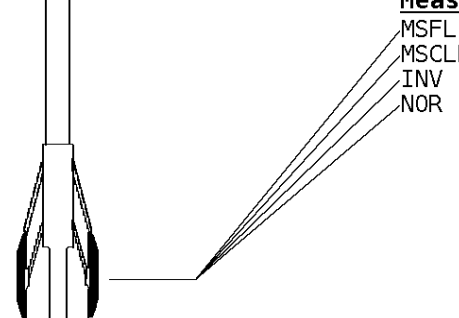


7.20 19.90 47.05
7.20 19.90 47.05

22.00 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
Micro Spherically Focused (IC)
Sonde ID :MST-DA-36

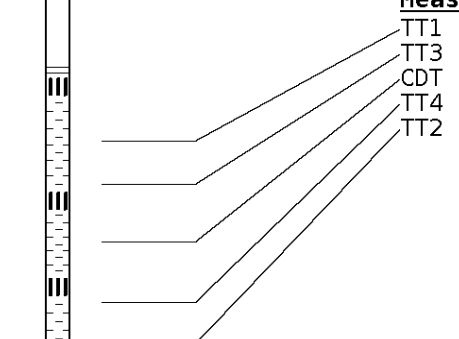
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	29.60	37.35
MSCLP	7.60	29.60	37.35
INV	7.60	29.60	37.35
NOR	7.60	29.60	37.35



31.66 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
Open Hole Sonic
Sonde ID :CST-AD-078

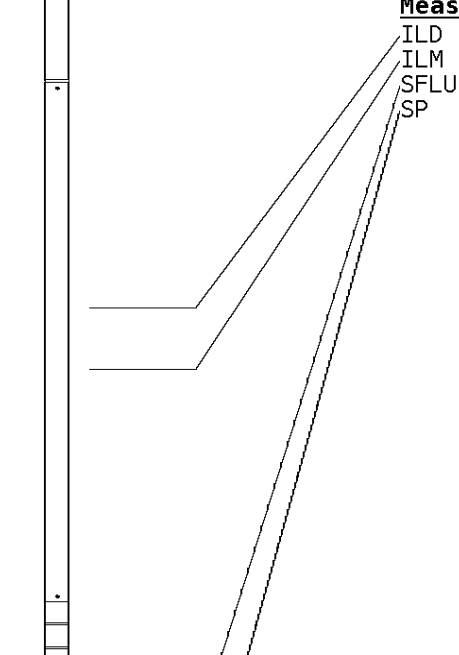
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	36.46	30.49
TT3	5.80	37.46	29.49
CDT	7.30	38.96	27.99
TT4	8.80	40.46	26.49
TT2	9.80	41.46	25.49



45.46 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
Phased Dual Induction w/ RM & D
Sonde ID :PIT-AC-022

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	54.38	12.56
ILM	10.10	55.56	11.39
SFLU	17.49	62.95	4.00
SP	20.60	66.06	0.88



LWT 66.95 ft.

Well File: AZTEC_COOPER-D-4_AUG9_QUINT

Scale: 1:240

Segment: V1.D1.S19 MAIN

Acquired: Not Available

Reference: 0

Processed: Not Available

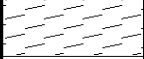
TENSION
LBS

10000 0

BIT SIZE
INCHES (IN)

6 16

Volume
Dolo/Shale



DENSITY (X) CALIPER
INCHES (IN)

16 26
6 16

Volume
Quartz



PE CROSS-SECTION
BARNES/ELECTRON

0 10

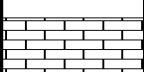
DENSITY CORRECTION
G/CC

-0.25 0.25

NEUTRON (Y) CALIPER
INCHES (IN)

16 26
6 16

Volume
Calcite



NEUTRON POROSITY
PERCENT (LIMESTONE MATRIX)

30 -10

GAMMA RAY
API UNITS

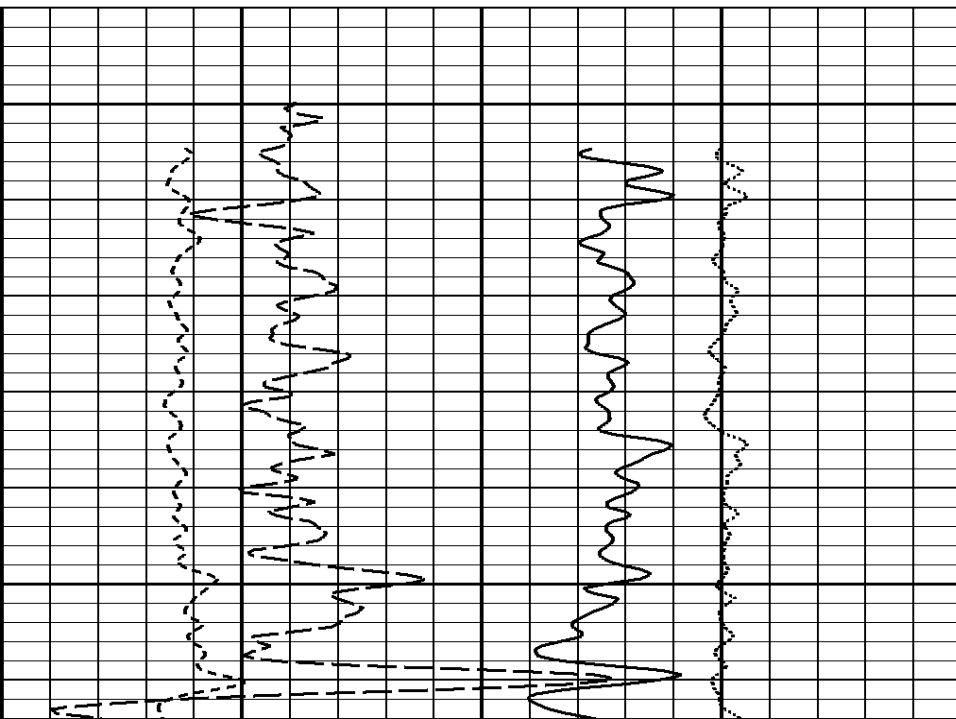
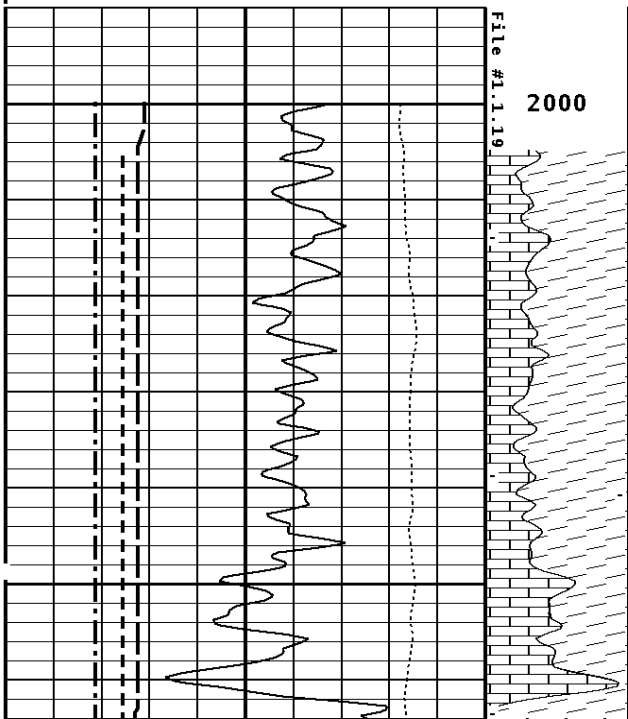
150 300
0 150

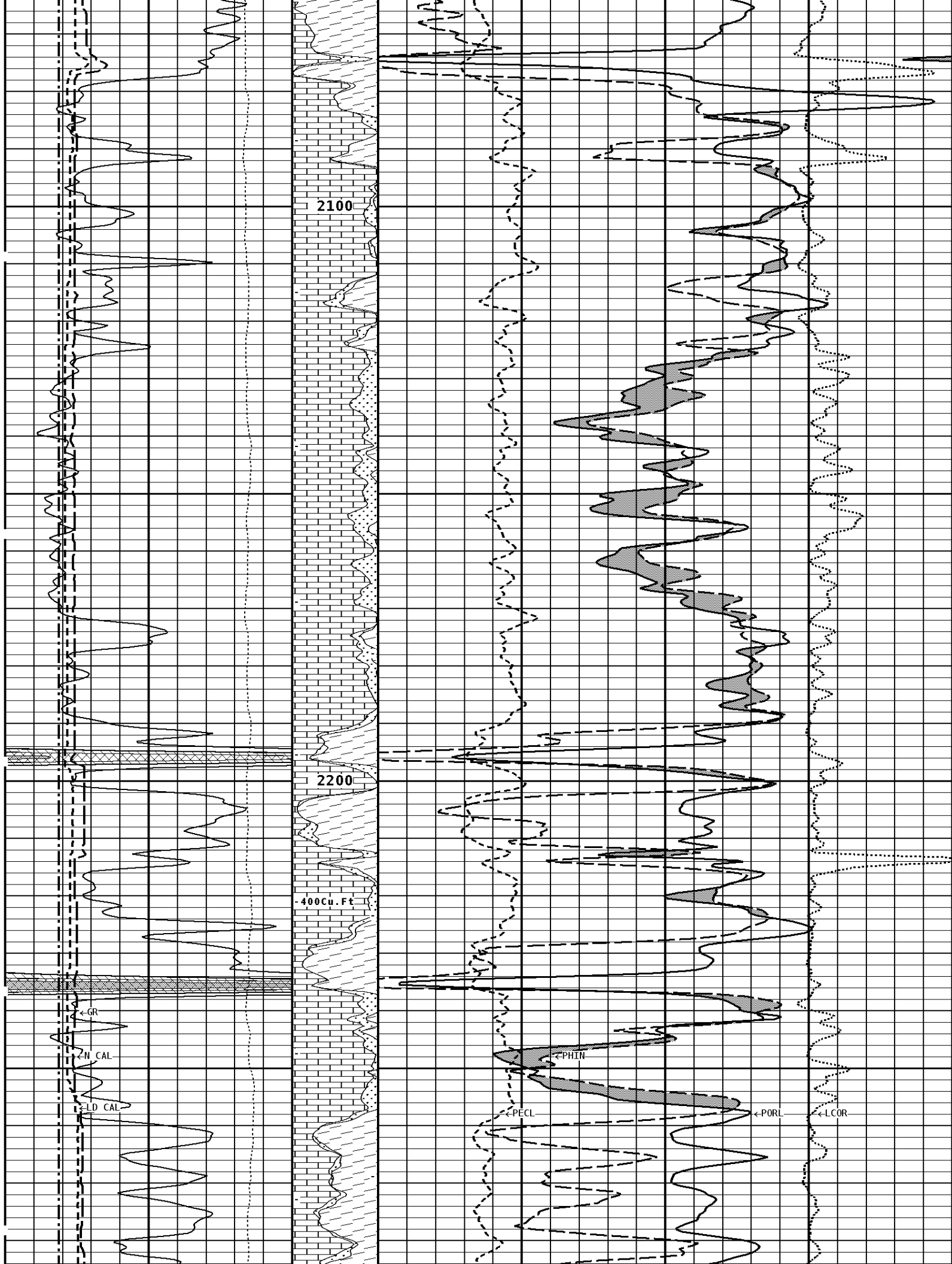
- BHV AHV -
CU. FT

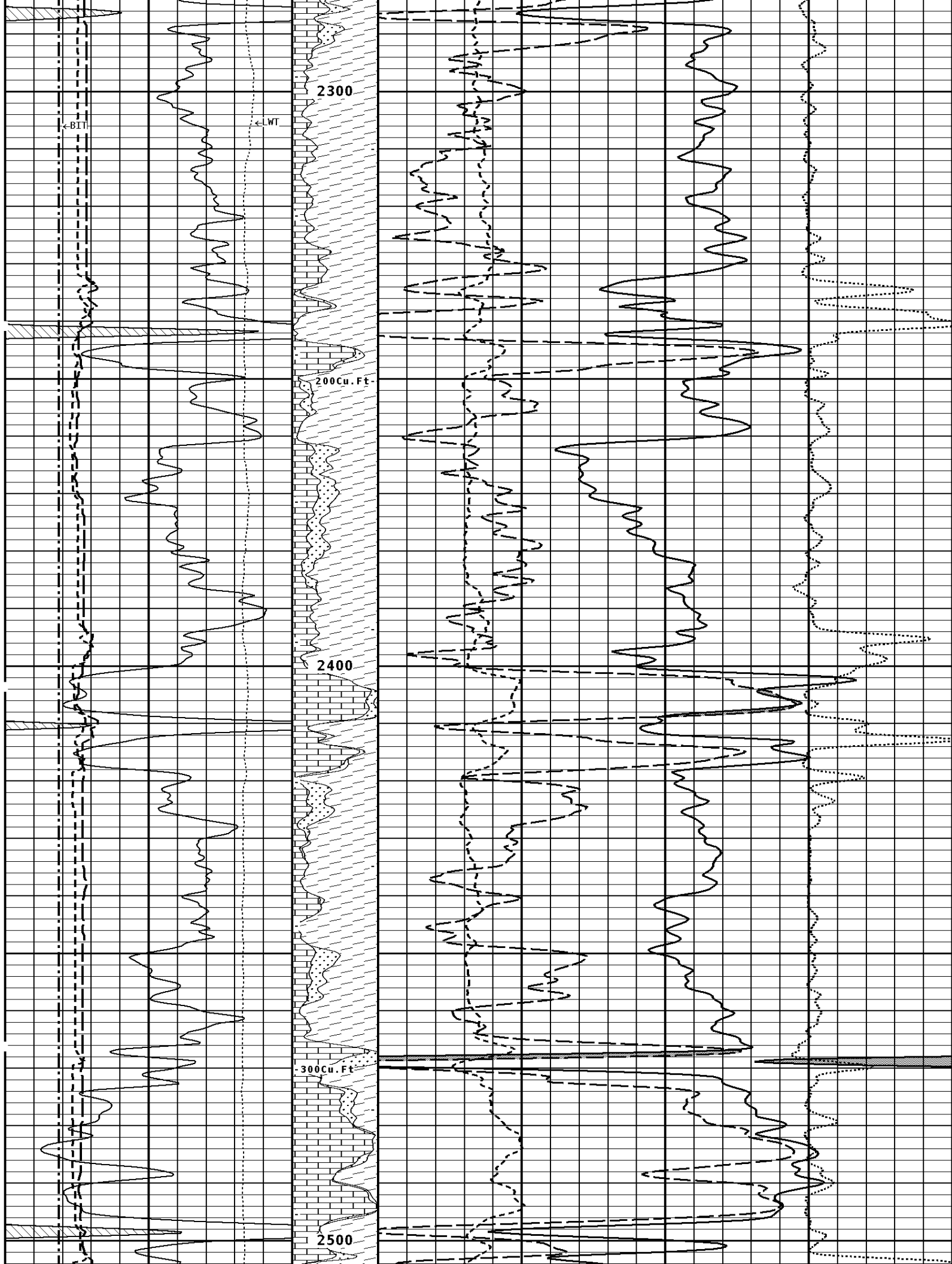
DENSITY POROSITY
PERCENT (2.71 g/cc)

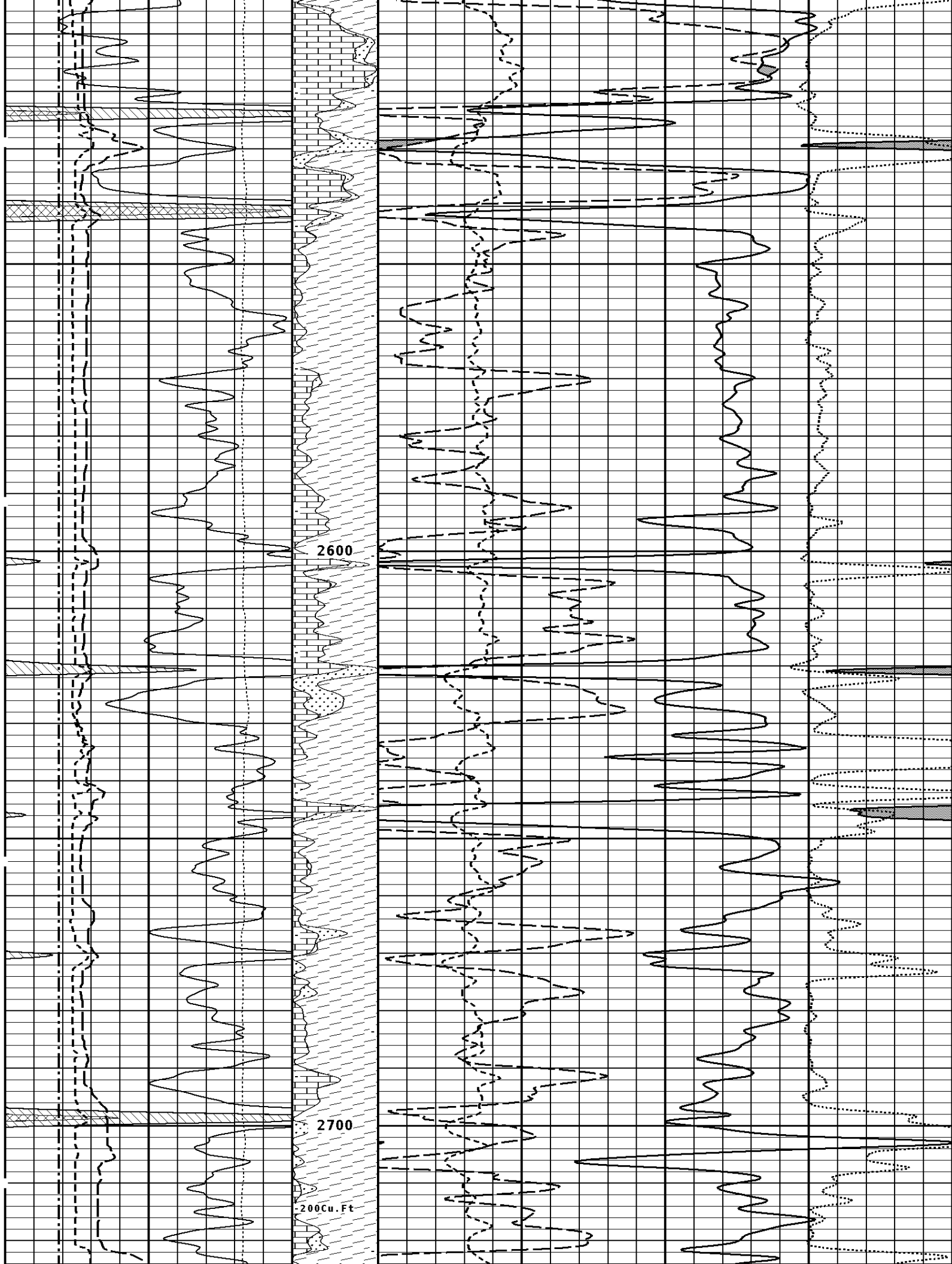
70 30
30 -10
-10 -50

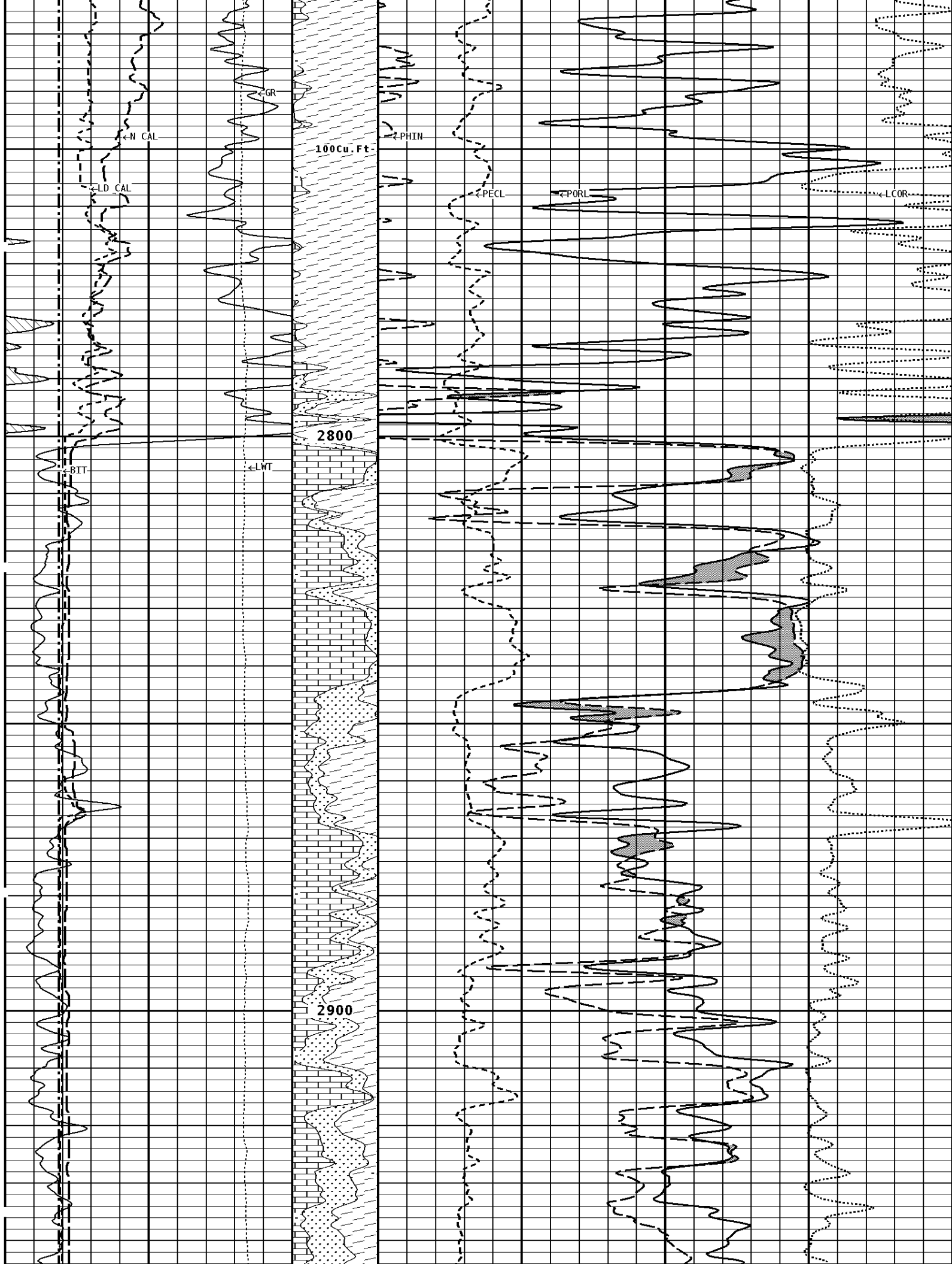
1:240 MAIN SECTION

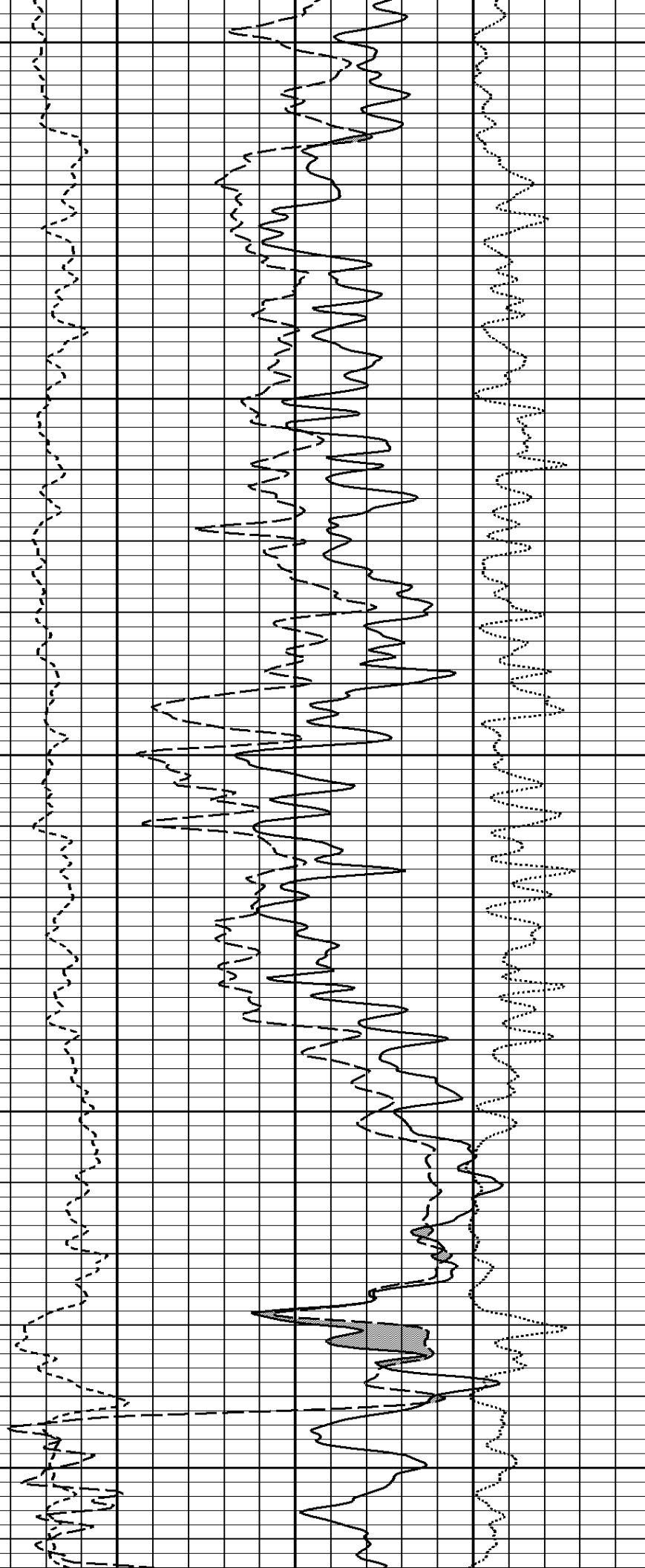
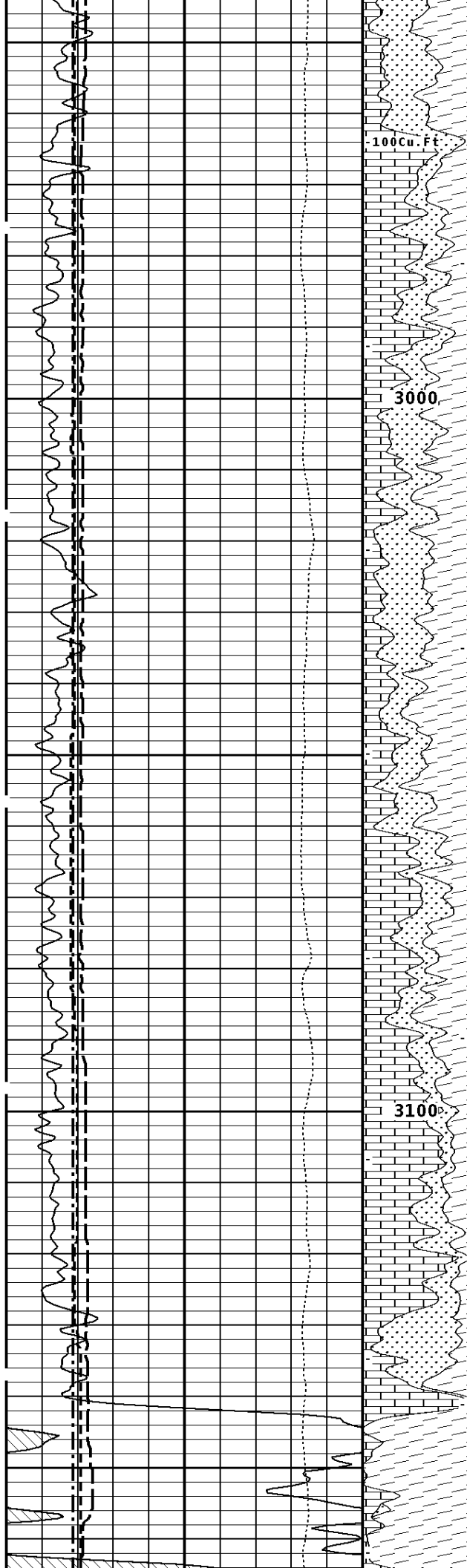


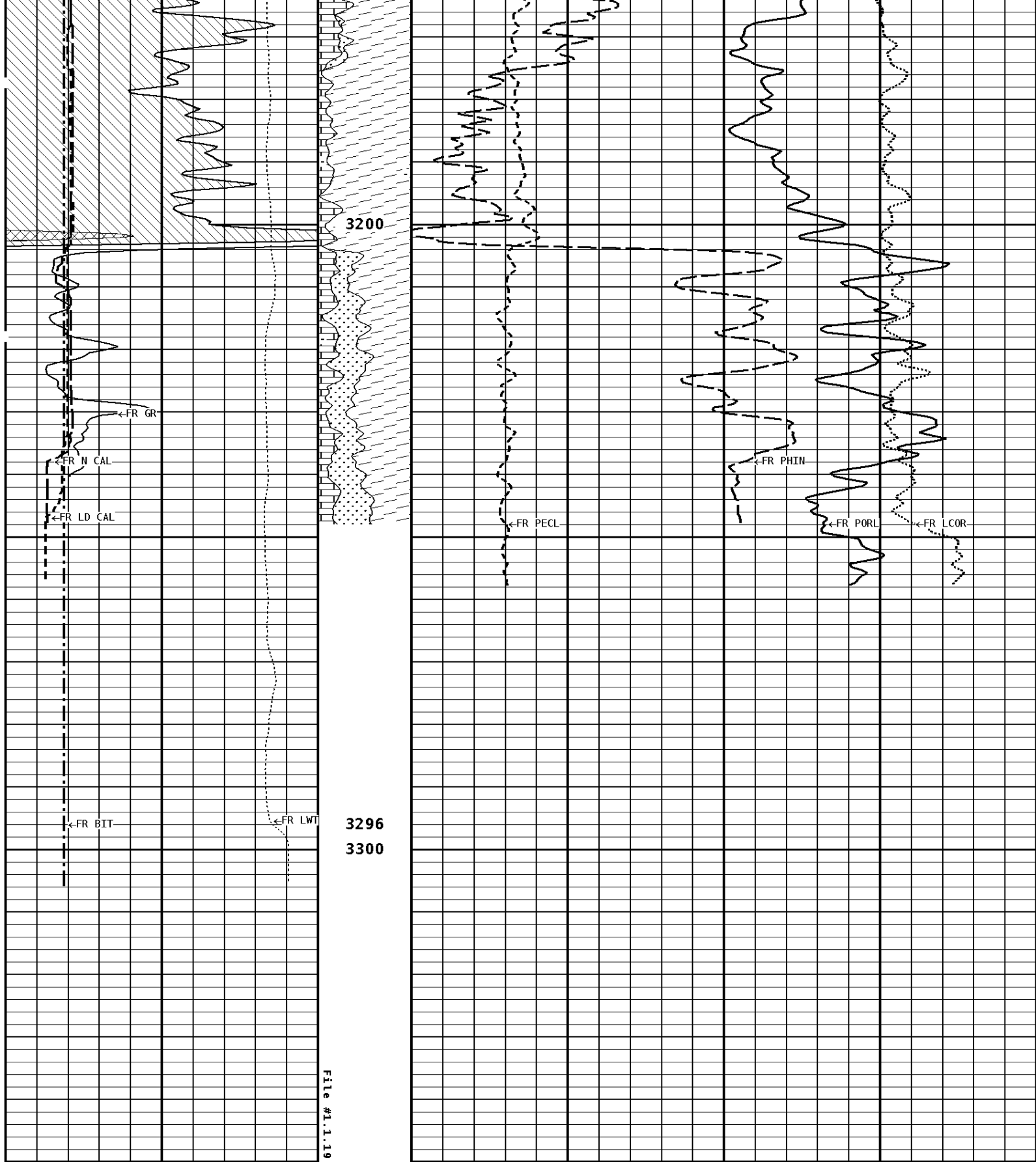






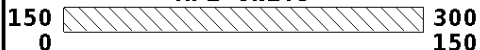






1:240 MAIN SECTION

GAMMA RAY
API UNITS

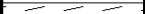


-BHV AHV-
CU.FT

70
30

DENSITY POROSITY
PERCENT (2.71 g/cc)

30
-10

NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)		
16 6	26 16		30	-10	
					
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON		DENSITY CORRECTION G/CC
16 6	26 16		0	10	-0.25
BIT SIZE INCHES (IN)		Volume Dolo/Shale			
6	16				
TENSION LBS					
10000	0				

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 Feet	
Drill Bit Size_____	7.875 in
Casing Diameter_____	5.500 in
Casing Correction (PHI N)_____	Disable
Fluid Density_____	1.00 g/cc
Matrix Density_____	2.71 g/cc
Formation Matrix_____	Limestone

Well File: AZTEC_COOPER-D-4_AUG9_QUINT	Scale: 1:240
Segment: V1.D1.S20 REPEAT	Acquired: 2012-08/09 11:44 3.2.0-11172
Reference: 0	Processed: 2012-08/09 14:22 3.2.0-11172

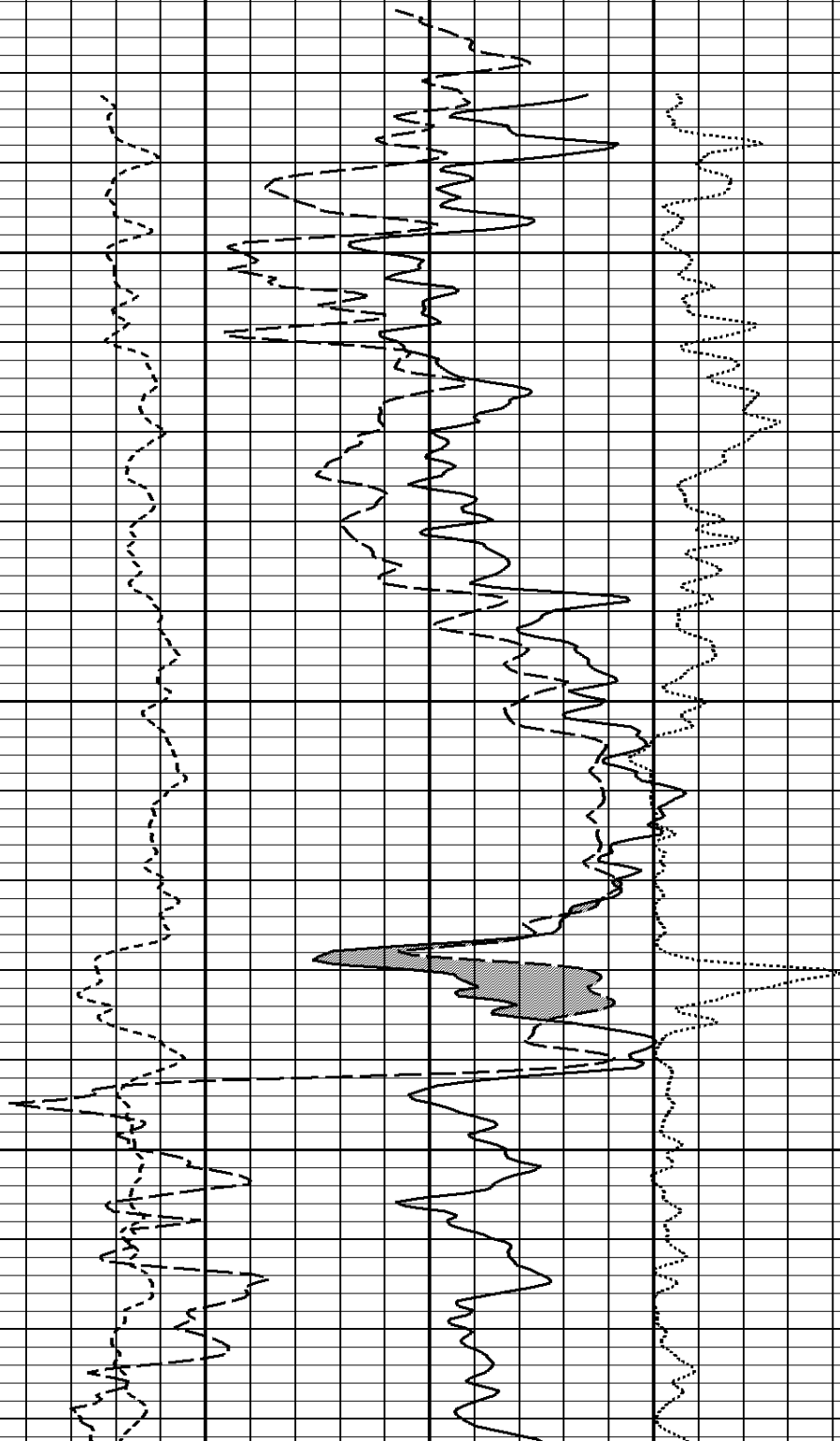
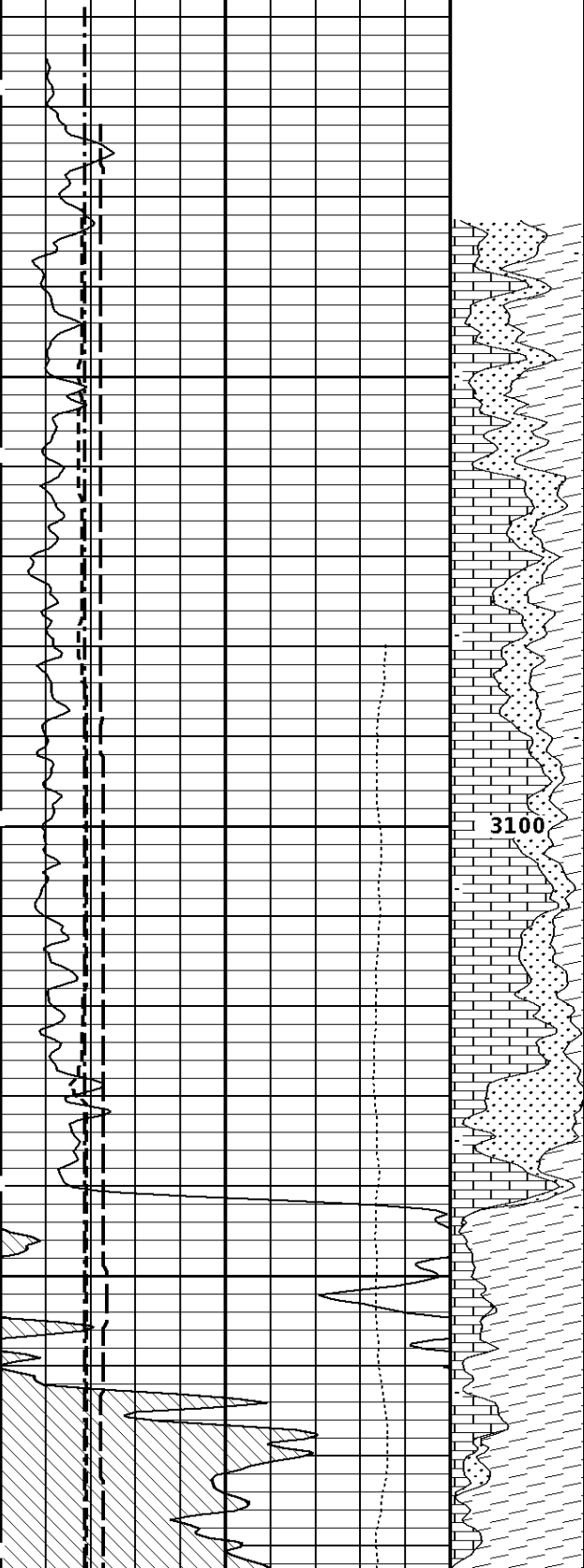
TENSION LBS					
10000	0				
BIT SIZE INCHES (IN)		Volume Dolo/Shale			
6	16				
DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON	DENSITY CORRECTION G/CC	
16	26				
6	16		0	10	-0.25 0.25
NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)		
16	26				
6	16		30	-10	
GAMMA RAY API UNITS		-BHV AHV- CU.FT	DENSITY POROSITY PERCENT (2.71 g/cc)		
150	300		70	30	
0	150		30	-10	
			-10	-50	

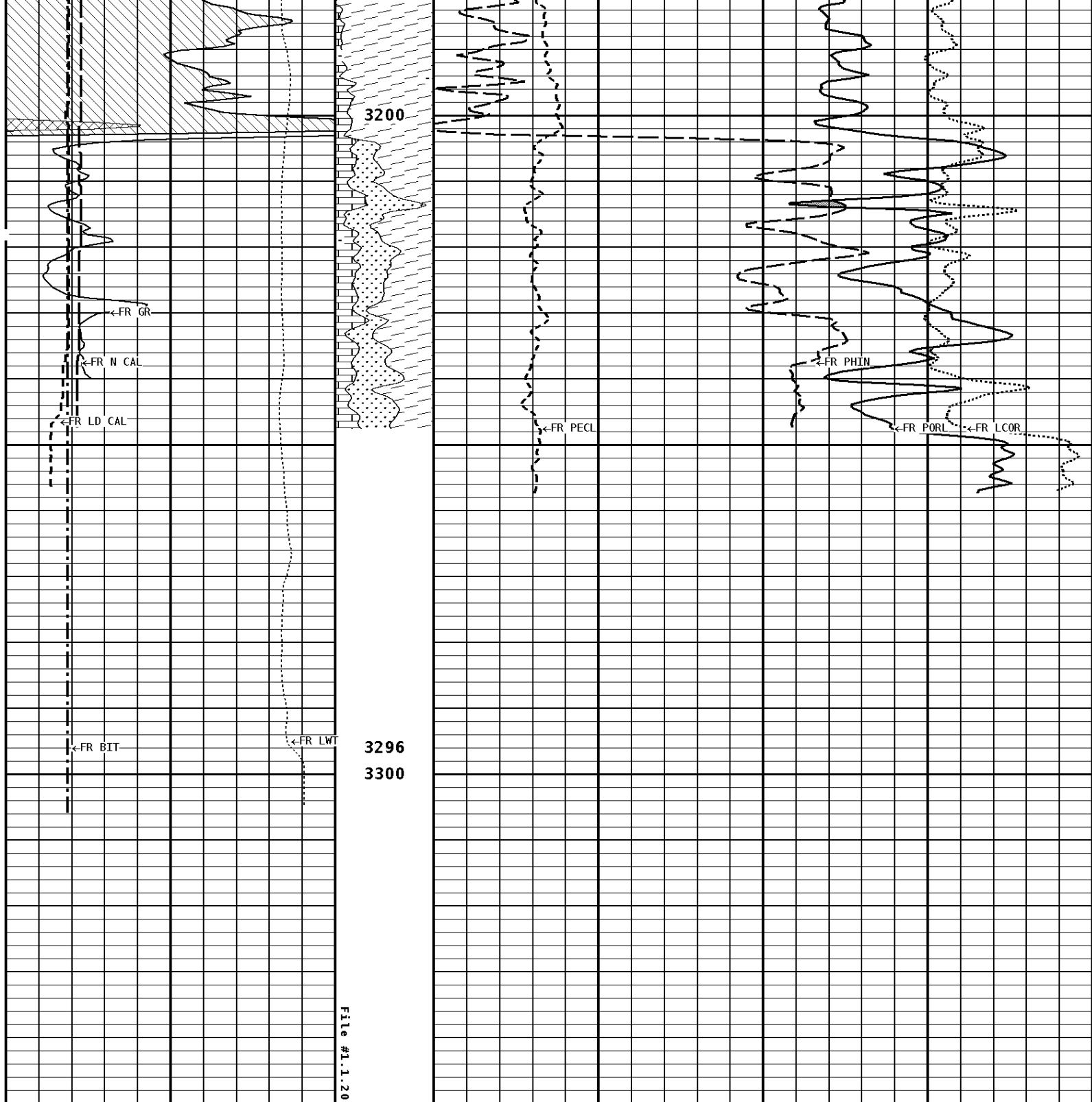
1:240 REPEAT SECTION

File #1.1.1.	
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3000

3100





1:240 REPEAT SECTION

GAMMA RAY API UNITS		- BHV AHV - CU. FT	DENSITY POROSITY PERCENT (2.71 g/cc)	
150 0	300 150		70 30 -10	30 -10 -50
NEUTRON (Y) CALIPER INCHES (IN)		Volume Calcite	NEUTRON POROSITY PERCENT (LIMESTONE MATRIX)	
16 6	26 16		30	-10

DENSITY (X) CALIPER INCHES (IN)		Volume Quartz	PE CROSS-SECTION BARNs/ELECTRON		DENSITY CORRECTION G/CC	
16	26					
6	16		0	10	-0.25	0.25
BIT SIZE INCHES (IN)		Volume Dolo/Shale				
6	16					
TENSION LBS						
10000	0					

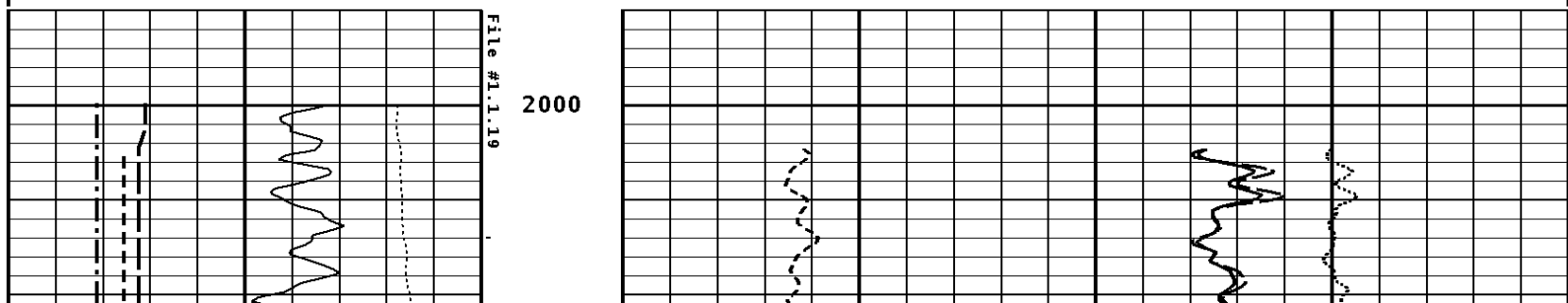
*** Borehole Zone Factors ***

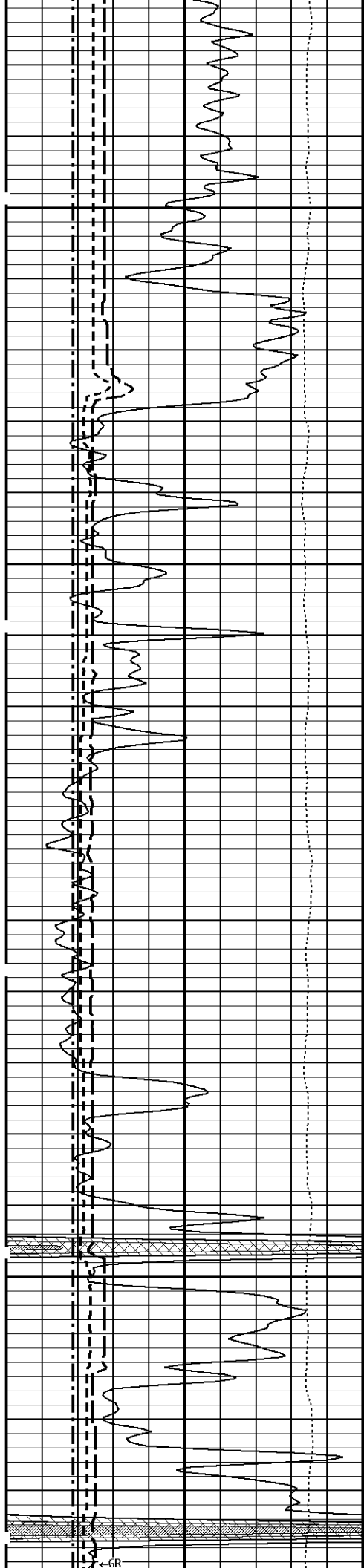
Zone 1 99999.0 to 0.0 Feet			
Matrix Density		2.71	g/cc
Fluid Density		1.00	g/cc
Formation Matrix		Limestone	
Drill Bit Size		7.875	in
Casing Diameter		5.500	in
Casing Correction (PHI N)		Disable	

Well File: AZTEC_COOPER-D-4_AUG9_QUINT	Scale: 1:240
Segment: V1.D1.S19 MAIN	Acquired: Not Available
Reference: 0	Processed: Not Available

TENSION LBS					
10000	0				
BIT SIZE INCHES (IN)					
6	16				
DENSITY (X) CALIPER INCHES (IN)		PE CROSS-SECTION BARNs/ELECTRON		DENSITY CORRECTION G/CC	
16	26	0	10	-0.25	0.25
6	16				
NEUTRON (Y) CALIPER INCHES (IN)		DENSITY POROSITY PERCENT (2.71 g/cc)			
16	26	70			30
6	16	30			-10
		-10			-50
GAMMA RAY API UNITS		COMPENSATED BULK DENSITY G/CC			
150	300	3.0			4.0
0	150	2.0			3.0
		1.0			2.0

**1:240 MAIN SECTION
BULK DENSITY**

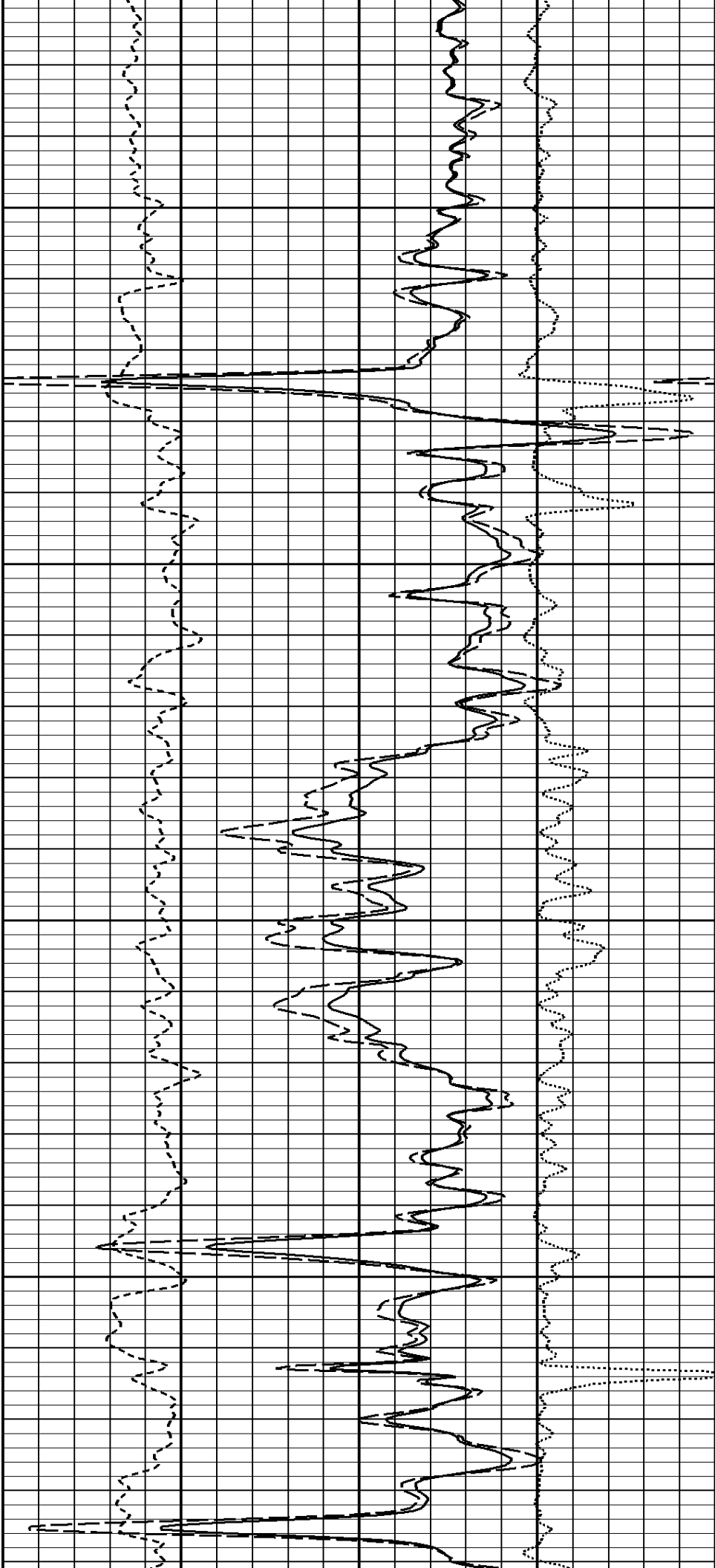




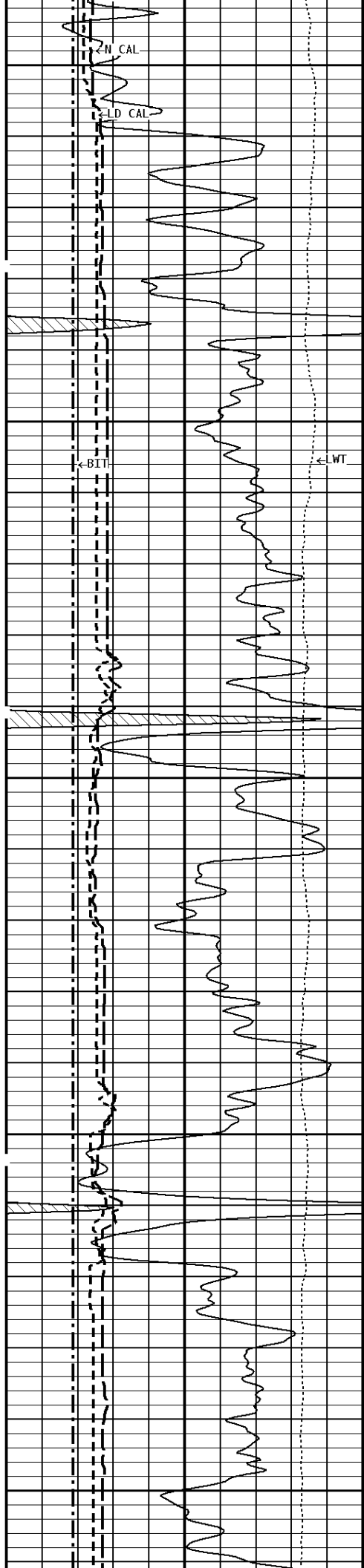
2100

2200

--400Cu.Ft



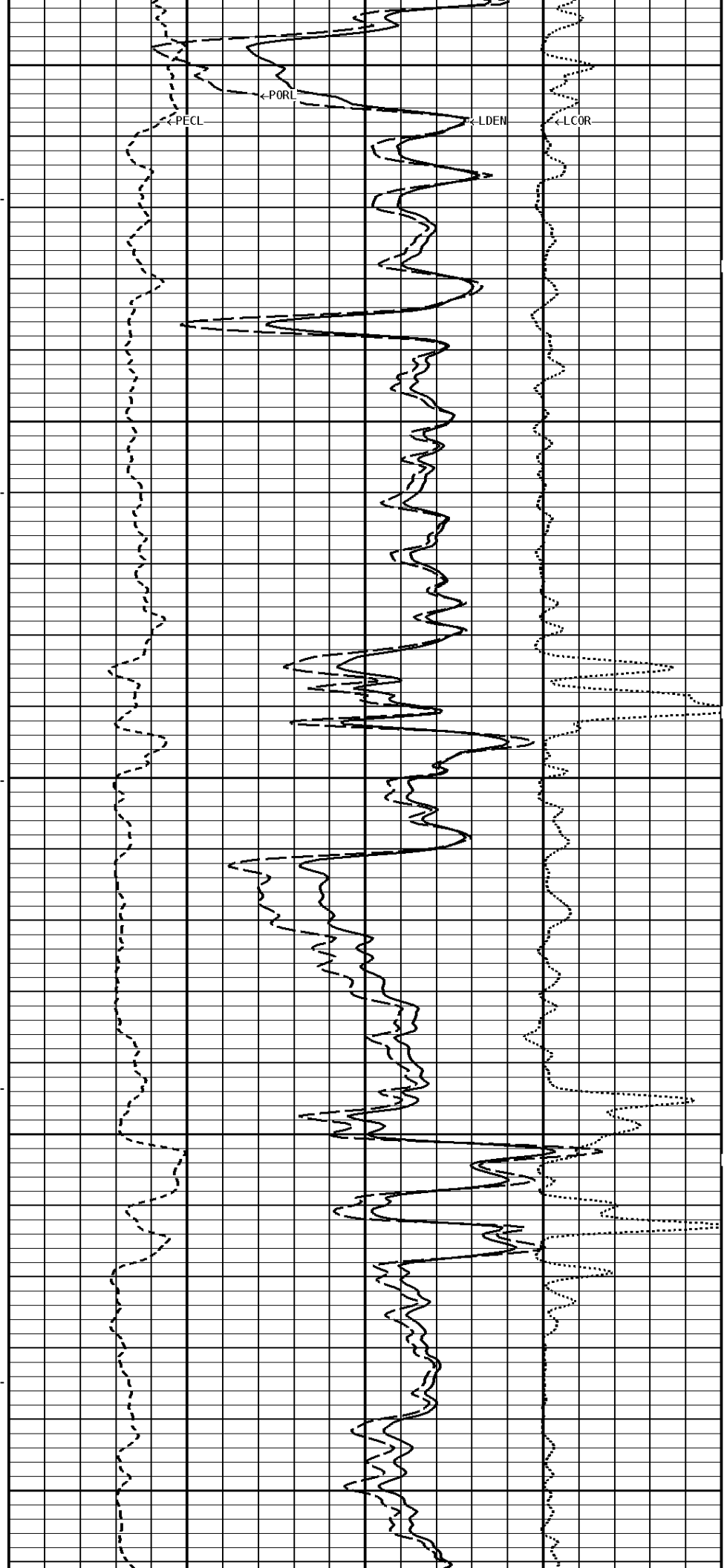
← GR

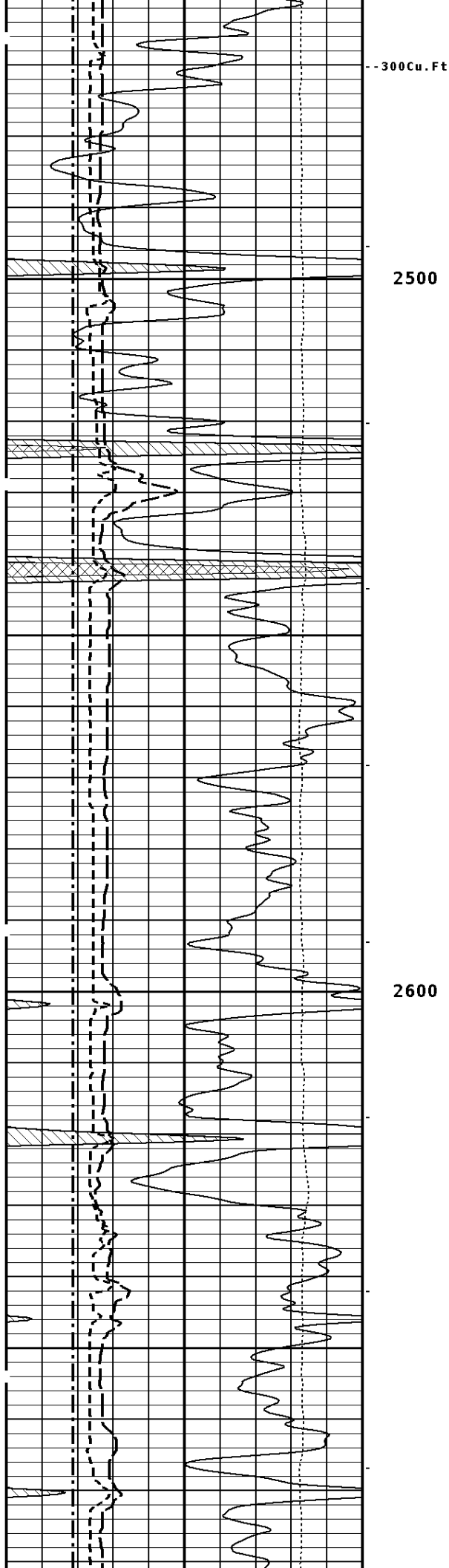


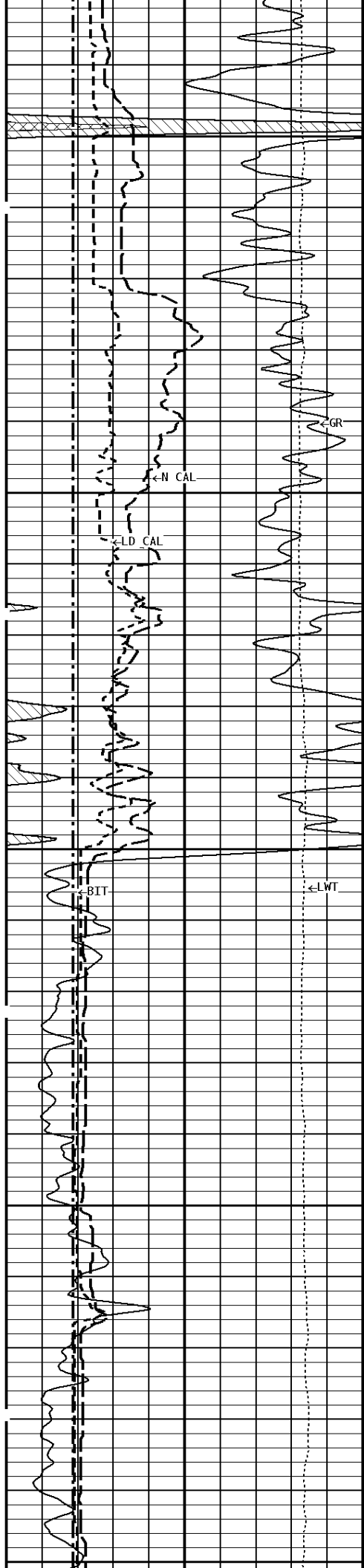
2300

200Cu.Ft--

2400







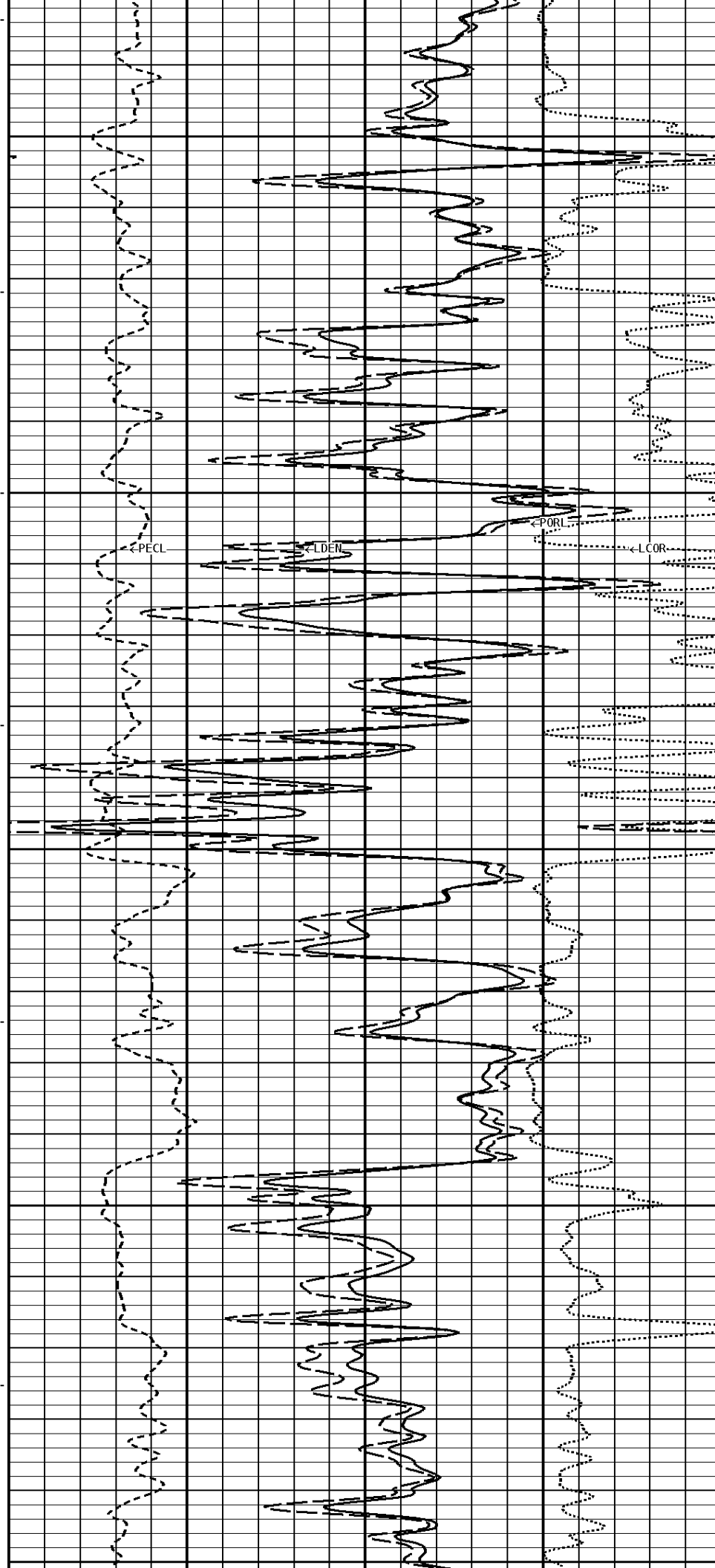
2700

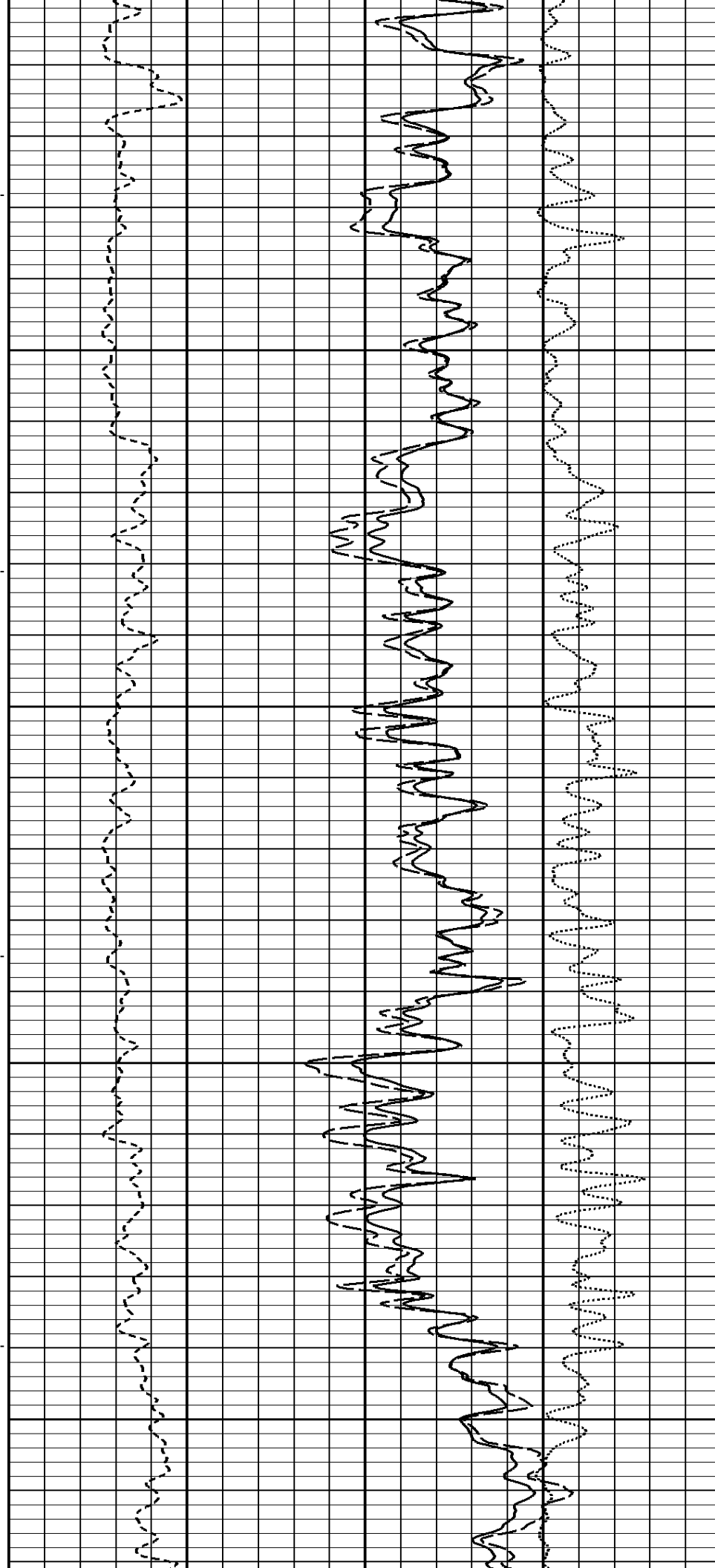
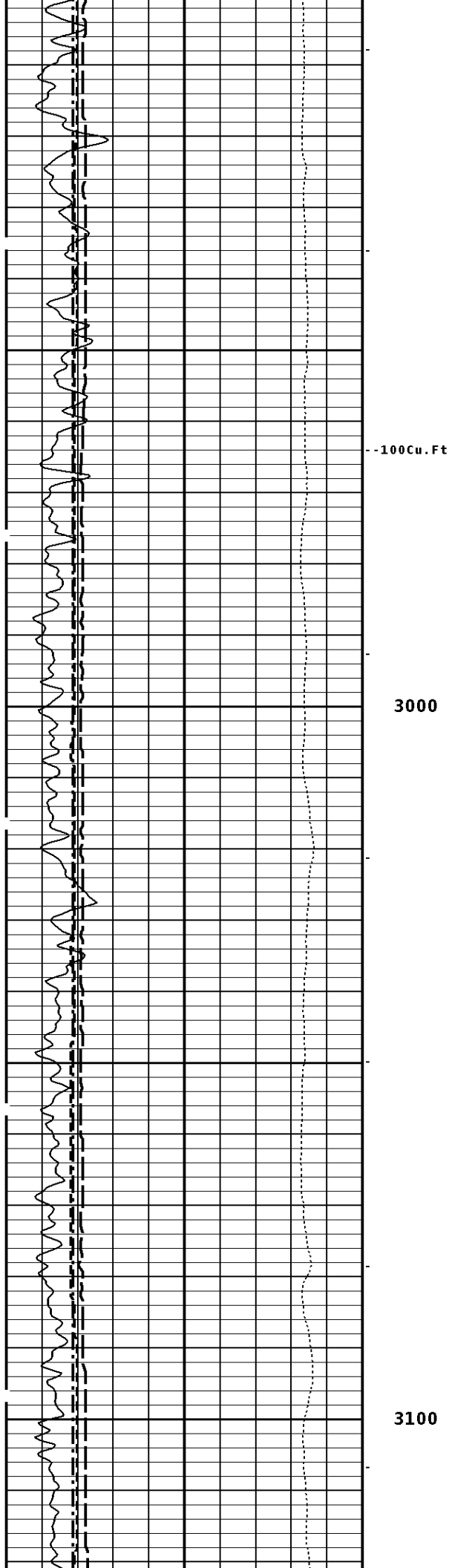
--200Cu.Ft--

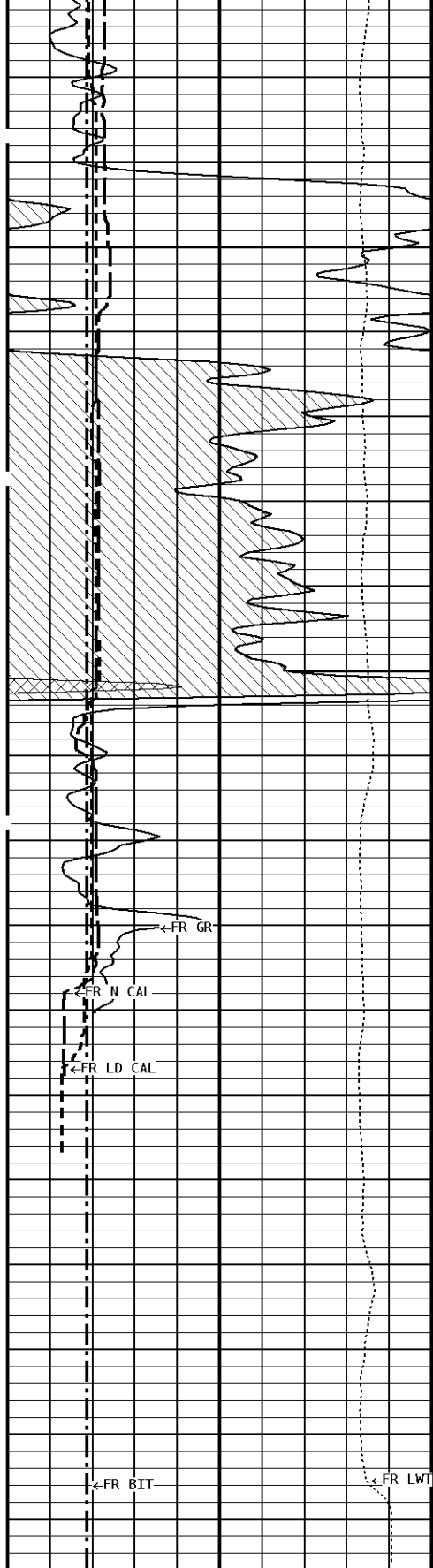
100Cu.Ft--

2800

2900



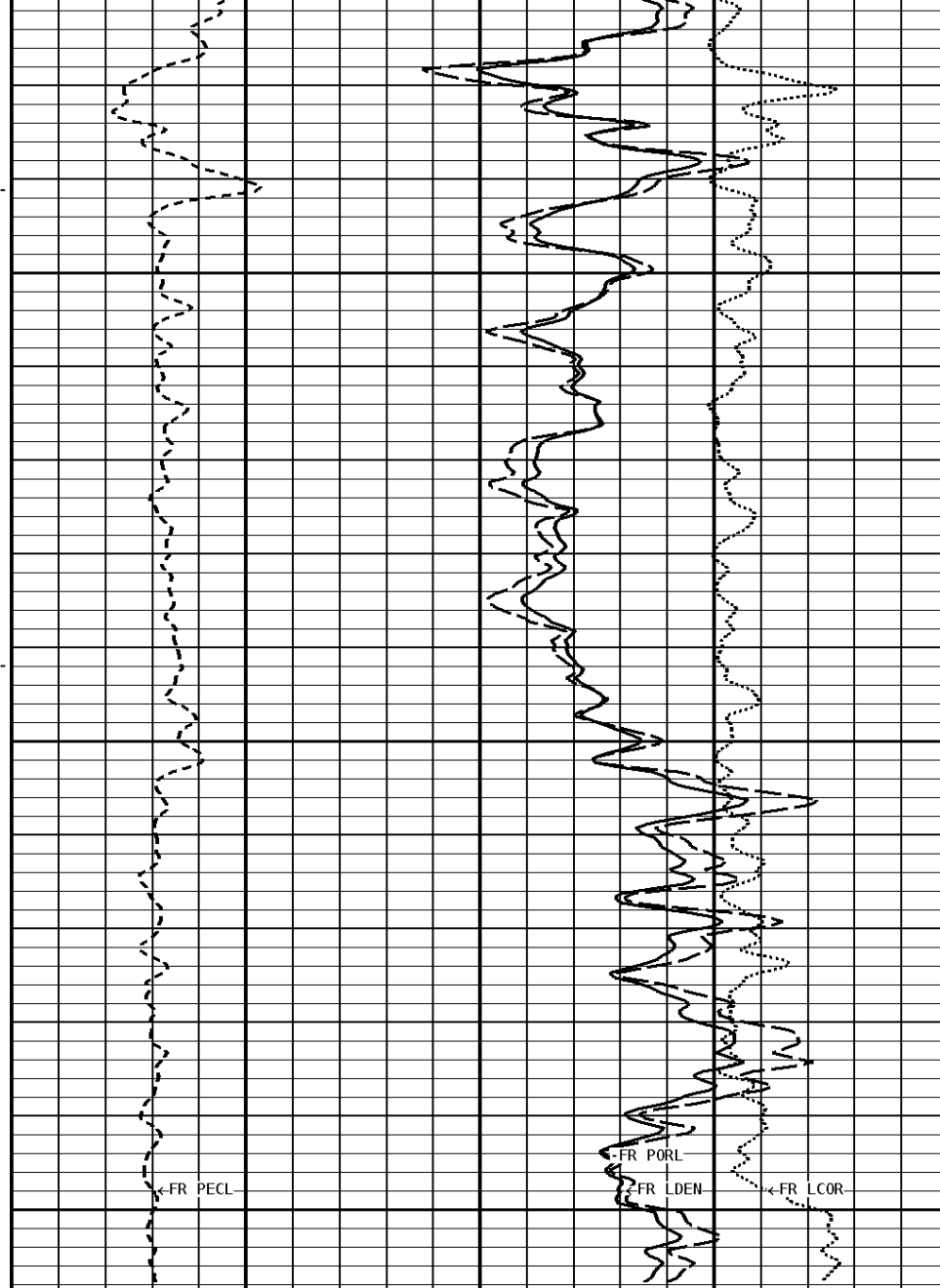




3200

3296
3300

File



1:240 MAIN SECTION BULK DENSITY

GAMMA RAY API UNITS		- BHV AHV - CU. FT	COMPENSATED BULK DENSITY G/CC		
150 0	300 150		3.0 2.0 1.0	4.0 3.0 2.0	
NEUTRON (Y) CALIPER INCHES (IN)			DENSITY POROSITY PERCENT (2.71 g/cc)		
16 6	26 16		70 30 -10	30 -10 -50	
DENSITY (X) CALIPER INCHES (IN)			PE CROSS-SECTION BARNS/ELECTRON		
16 6	26 16		DENSITY CORRECTION G/CC		
		0	10	-0.25	0.25
BIT SIZE INCHES (IN)					
6	16				
TENSION LBS					
10000	0				

* Borehole Zone Factors *

Zone 1		99999.0	to	0.0	Feet
Drill Bit Size				7.875	in
Casing Diameter				5.500	in
Casing Correction (PHI N)				Disable	
Fluid Density				1.00	g/cc
Matrix Density				2.71	g/cc
Formation Matrix				Limestone	

* Calibration Summary *

Shop Calibration GRT-B					
Performed : 16-MAY-2011			Time : 09:49		
Sensor Suite : GR-GR5			ID : GRT-BA-14		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	50	361	175	GRAPI	
Shop Calibration CNT-AA					
Performed : 25-JUL-2012			Time : 10:26		
Sensor Suite : CALI-BCN			ID : NDT-BB-123		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1 Ring#2		Ring#1 Ring#2		
CL # 1	6.3 11.1		6.0 12.0	IN.	
Shop Calibration BHC-NEUT					
Performed : 09-Jul-2012			Time : 10:52		
Sensor Suite : BHC NEUT			ID : CNP-AA-024		
Source ID : N-1045					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.8603	3.6893	3.6993		
Porosity	23.2	20.5	20.6	%	

Shop Calibration LDT-DA

Performed : 01-Aug-2012 Time : 11:07
Sensor Suite : CALI-LTH ID : PDT-GA-464

	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	7.6	10.8	6.0	12.0	IN.

Performed : 22-Jul-2012 Time : 17:52
Sensor Suite : BHCPELNG ID : LDP-DA-065
Source ID : 2991GW

	Short Space				Units
	BKGD	Al	Mg	Al+Fe	
LSW1	68	1156	1858	747	CPS
LSW2	74	1365	2154	993	CPS
LSW3	275	3112	5000	2659	CPS
LSW4	333	2764	3982	2431	CPS
LSW5	29	56	62	52	CPS
LSW6	91	94	95	97	CPS
LSW7	56	61	62	60	CPS
LSW8	2	4	6	3	CPS
QS	0.240	0.214	0.211	0.233	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

	Long Space				Units
	BKGD	Al	Mg	Al+Fe	
LLW1	99	1327	5476	808	CPS
LLW2	110	2156	8430	1600	CPS
LLW3	416	3962	14864	3411	CPS
LLW4	527	1951	6128	1764	CPS
LLW5	61	73	131	70	CPS
LLW6	166	161	153	163	CPS
LLW7	106	107	102	107	CPS
LLW8	4	8	19	7	CPS
QL	0.222	0.200	0.199	0.210	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC



Company: AZTEC OIL CO.
Well: COOPER D #4
Location: 2250' FNL & 820' FEL
Logged: 2012-08-09
K.B. Elev: 1623.0