

Tucker
ENERGY SERVICES

COMPOSITE LOG

Company: LACHENMAYR OIL LLC
Well: GOODRICH #L-1
Field: GOODRICH
Country: KANSAS
State: KANSAS
Country: USA
API No.: 15-173-21038-0000

File No.: TUL-60398
Company: LACHENMAYR OIL LLC
Well: GOODRICH #L-1
Field: GOODRICH
Country: SEDGWICK
State: SEDGWICK
Country: KANSAS
API No.: 15-173-21038-0000

Location:
 2265' FNL & 995' FWL
 SE SW NW

LSD: **Sect:** 16 **Twp:** 25S **Rge:** 1E

Permanent Datum:	GL	Elevations:		Services:	
Drilling Measured From:	KB	KB 1436.00	Ft	CNT	MLT
Log Measured From:	KB	DF 1435.00	Ft	LDT	PIT
Above Permanent Datum:	10.00 Ft	GL 1426.00	Ft	CST	
Date:	05-20-2015				
Run Number:	1				
Depth--Driller	3413.0	Ft			
Depth--Logger	3413.0	Ft			
First Reading	3413.0	Ft			
Last Reading	212.0	Ft			
Casing--Driller	212.0	Ft			
Casing--Logger	212.0	Ft			
Bit Size	7.875	In			
Casing Size	8.625	In			
Hole Fluid Type	CHEM-GEL				
Density	9.5				
Fluid Loss	7.2				
PH/Viscosity	10.0	54.0			
Sample Source	MEASURED				
RM@Measured Temp.	2.000	@ 60 F			
RMF@Measured Temp	1.600	@ 60 F			
RMG@Measured Temp.	2.400	@ 60 F			
Source RMF/RMC	CALCULATED/CALCULATED				
RM@BHT	1.140	@ 110 F			
Time Circulation Stopped					
Max Recorded Temp.	110	F			
Equipment/Base	1022	TULSA			
Recorded By	SHELDON TYLER / AMOUR DIAHO				
Witnessed By	TYLER SANDERS				

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)	Top (Ft)
7.875	3413.00	8.625	32.00	212.00	0.00

Run Number	1
Date	05-20-2015
Date/Time On Bottom	
Depth to Fluid	0.0 Ft
Salinity	1900.000
RMF@BHT	0.910 @ 110 F
RMC@BHT	1.370 @ 110 F

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST
 GRT, CNT, LDT, CST, MLT AND PIT RUN IN COMBINATION
 CALIPERS ORIENTED ON X-Y AXIS
 2.71 G/CC USED TO CALCULATE POROSITY
 ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING
 PHIN IS CALIPER CORRECTED

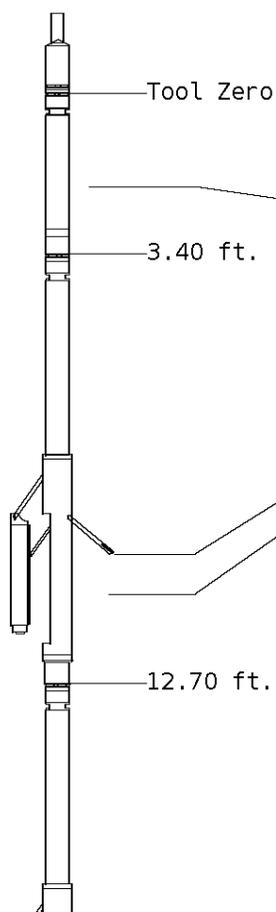
CUSTOMER REQUESTED DETAIL PULLED TO 1900'
 2ND RUN TO GET GAMMA RAY CLOSER TO BOTTOM

GRT: GRP, GRX
 CST: PORS, CDTF, TTIPF, TT2PF, TT3PF, TT4PF, ITT
 CNT: PHIN, CLCNIN, PHXN
 LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX
 MLT: NOR_RF, INV_RF, MSCLPIN
 PIT: ILD, ILM, SPU, SFLAEC, CIRD

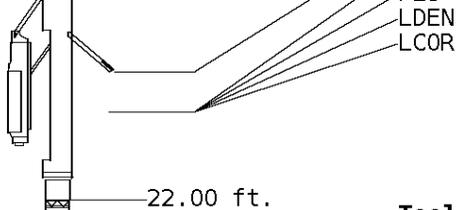
OPERATORS: +3
 B.BROWN
 J.OFFEIGHU

Tool String Schematic

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



Tool: GRT-B Gamma Ray Controller	Length: 3.40 ft.	O.D.: 3.60 in.		
Sonde ID :GRT-BA-121				
Measure Point	Tool Offset	Stack Offset	Bottom Offset	
GRP	2.00	2.00	64.95	
Tool: CNT-AA Compensated Neutron A Pad on NDT-A	Length: 9.30 ft.	O.D.: 4.36 in.		
Sonde ID :NDT-BB-115				
Source ID :N-1044				
Pad ID :CNP-AA-101				
Measure Point	Tool Offset	Stack Offset	Bottom Offset	
CLCN	6.00	9.40	57.55	
PHIN	6.80	10.20	56.75	
Tool: LDT-DA Litho Density D Pad on NDT-A	Length: 9.30 ft.	O.D.: 4.80 in.		
Sonde ID :PDT-GA-426				
Source ID :CSV-587				
Pad ID :LDP-DA-50				
Measure Point	Tool Offset	Stack Offset	Bottom Offset	
CLLD	6.00	18.70	48.25	
PEL	7.00	19.70	47.25	
PES	7.40	20.10	46.85	

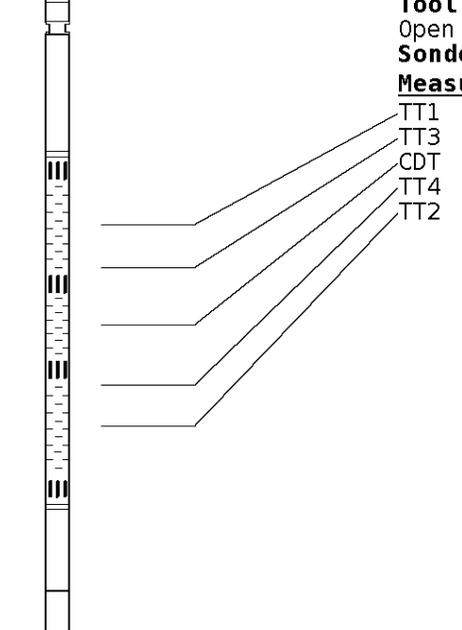


7.20 19.90 47.05
 7.20 19.90 47.05

22.00 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
 Open Hole Sonic
Sonde ID :CST-AB-012

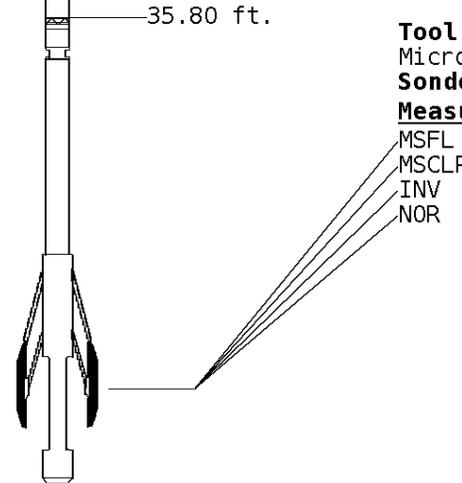
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	26.80	40.15
TT3	5.80	27.80	39.15
CDT	7.30	29.30	37.65
TT4	8.80	30.80	36.15
TT2	9.80	31.80	35.15



35.80 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID :MLT-DA-21

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	43.40	23.55
MSCLP	7.60	43.40	23.55
INV	7.60	43.40	23.55
NOR	7.60	43.40	23.55



45.46 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-075

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: LACHENMAYR GOODRICH L-1_MAY20_QUINT

Scale: 1:240

Format: COMSAT

Segment: V1.D3.S2 DS FINAL MAIN

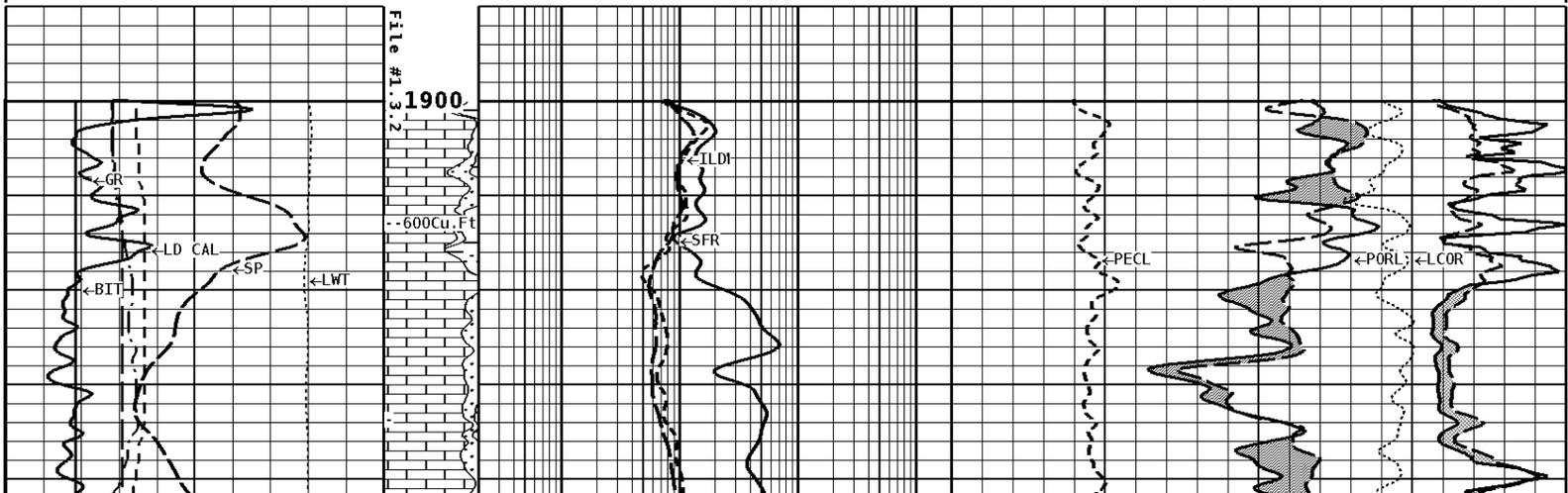
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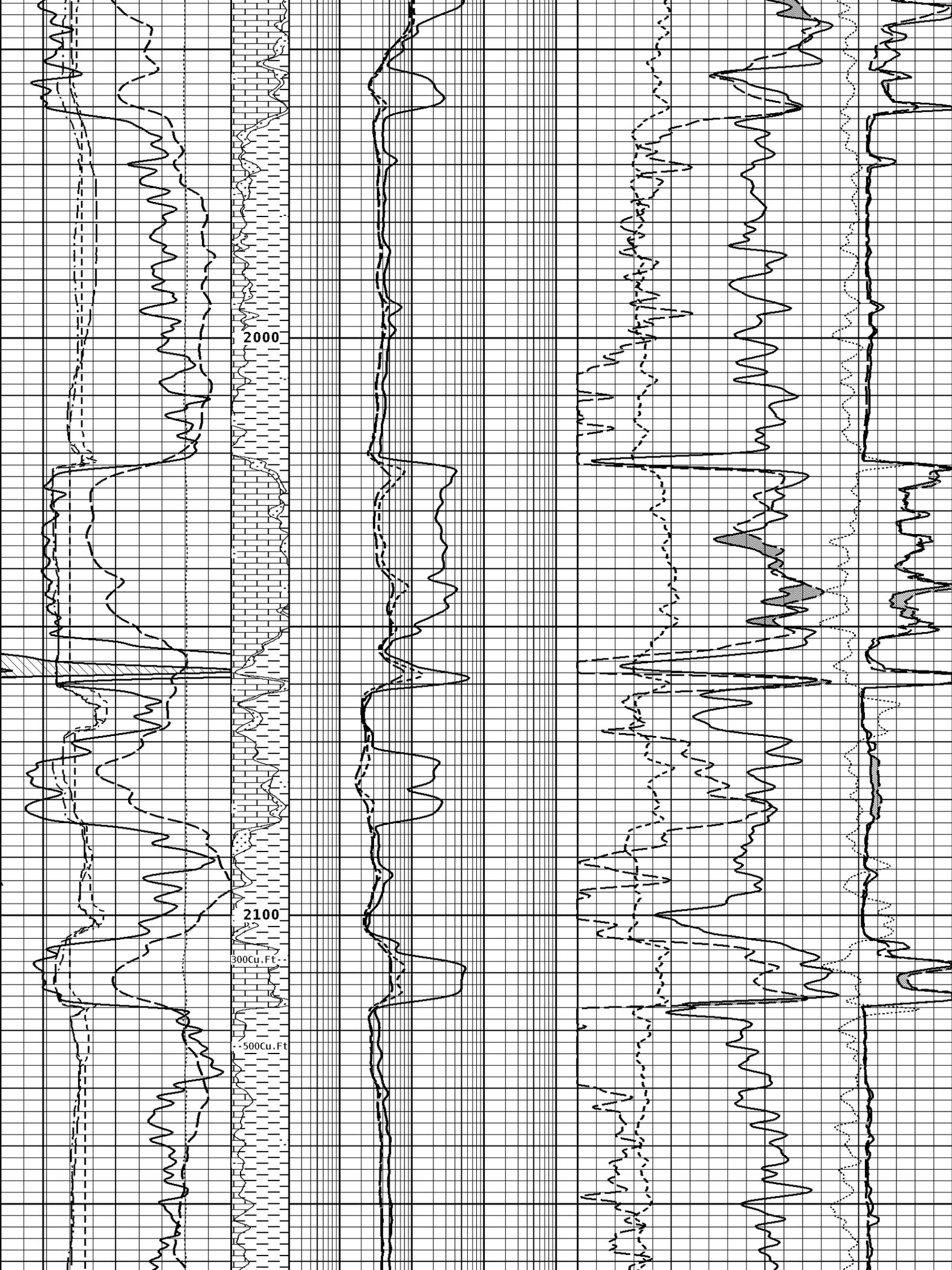
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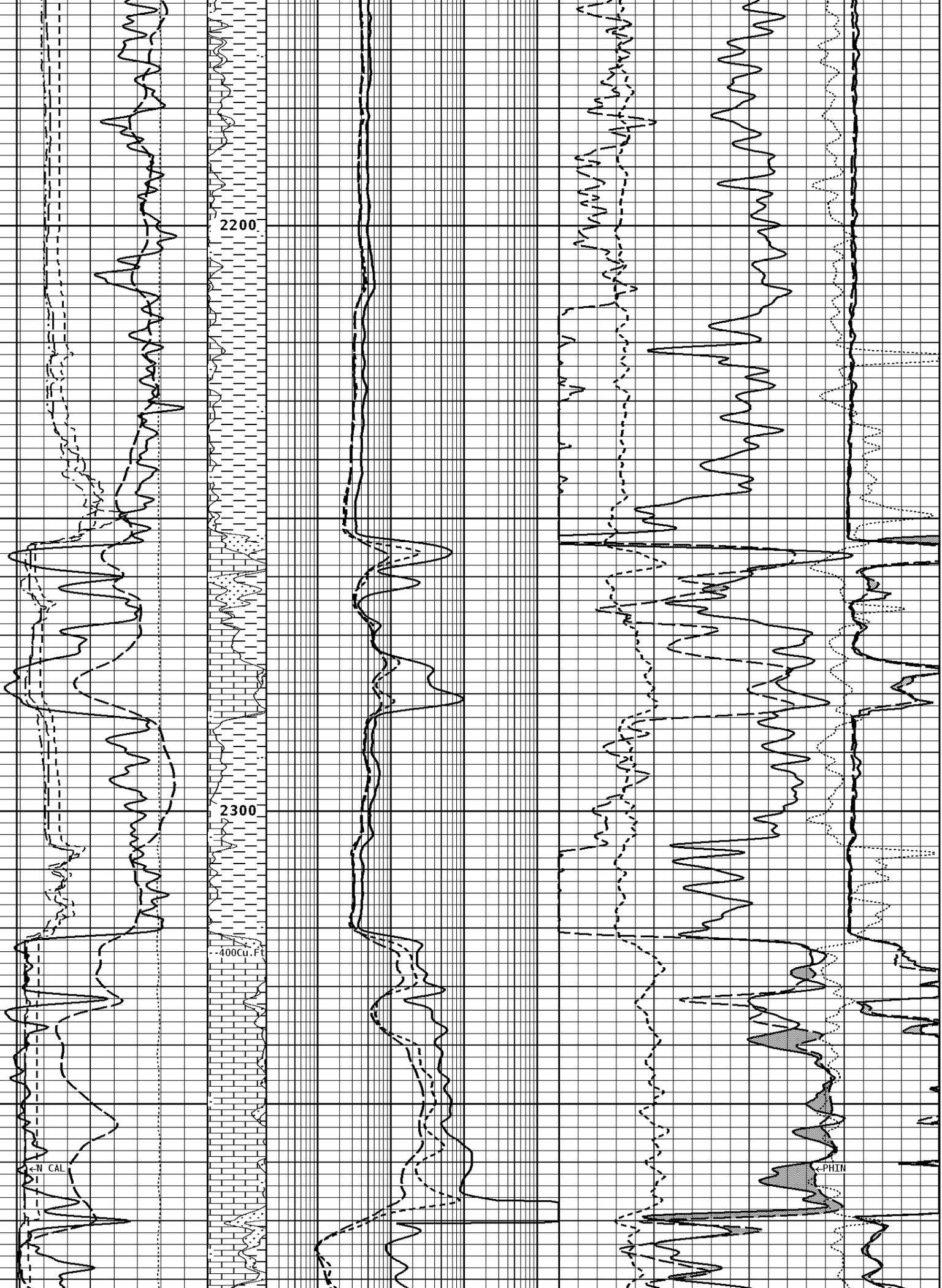
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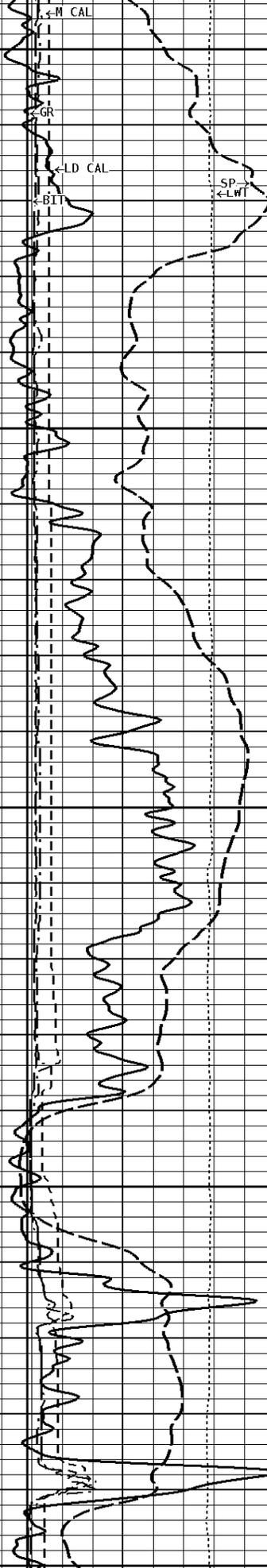
CALIPER MICRO INCHES (IN) 16 26 6 16					
BIT SIZE INCHES (IN) 6 16				NORMAL OHMM 0 40	
NEUTRON (Y) CALIPER INCHES (IN) 16 26 6 16				INVERSE OHMM 0 40	
DENSITY (X) CALIPER INCHES (IN) 16 26 6 16		Volume Quartz 	DENSITY CORRECTION G/CC -0.75 0.25		
TENSION LBS 10000 0		Volume Calcite 	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0 0		PE CROSS-SECTION BARNS/ELECTRON 20
SPONTANEOUS POTENTIAL mV → ← 20		Volume Dolo/Shale 	DEEP INDUCTION OHMM 0.2 2000.0		DENSITY POROSITY (2.71g/cc) PERCENT 70 30 30 -10 -10 -50
GAMMA RAY API UNITS 150 300 0 150		BHV AHV CU. FT 0.2 2000.0 30	MEDIUM INDUCTION OHMM		NEUTRON POROSITY (LIMESTONE) PERCENT -10

1:240 MAIN SECTION









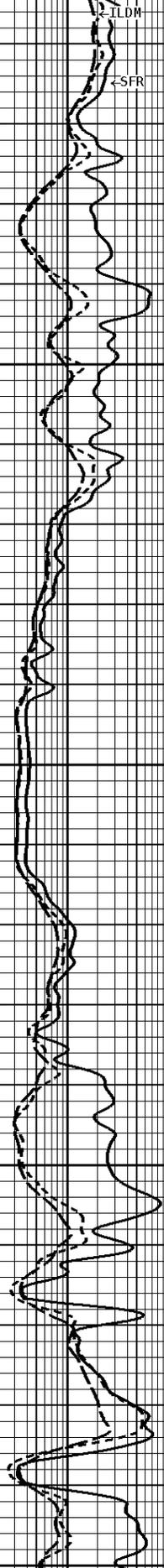
2400

200Cu.Ft.

2500

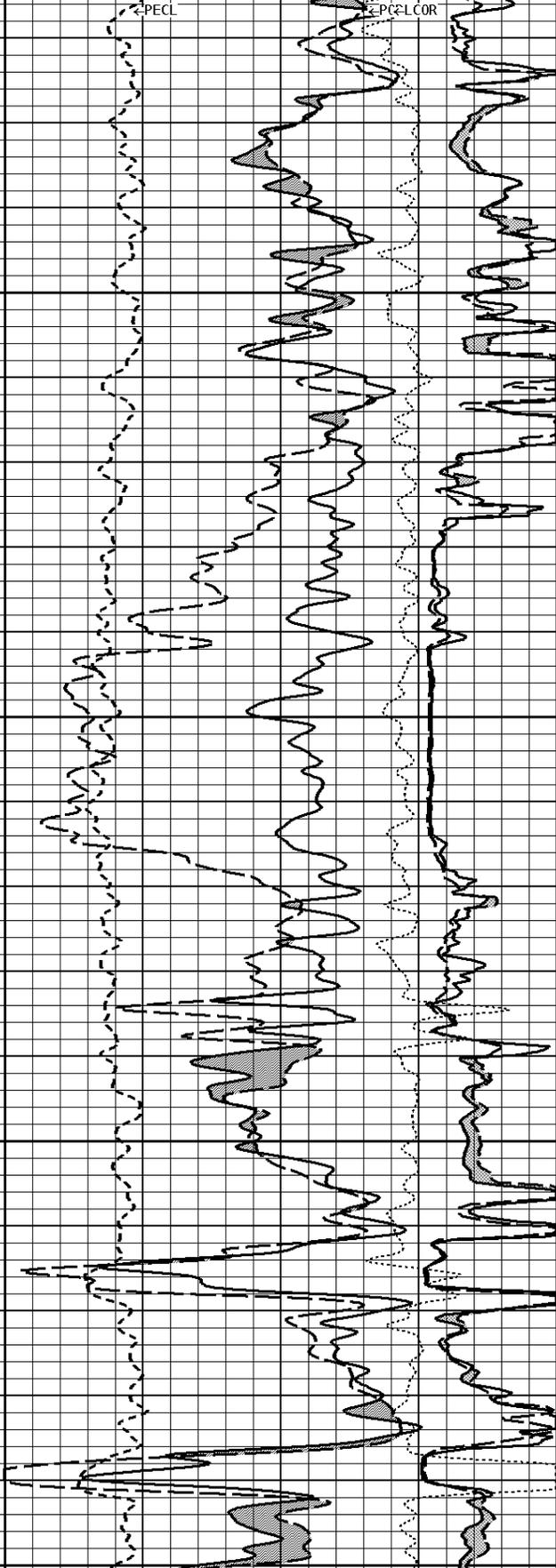
-300Cu.Ft.

2600



LDOM

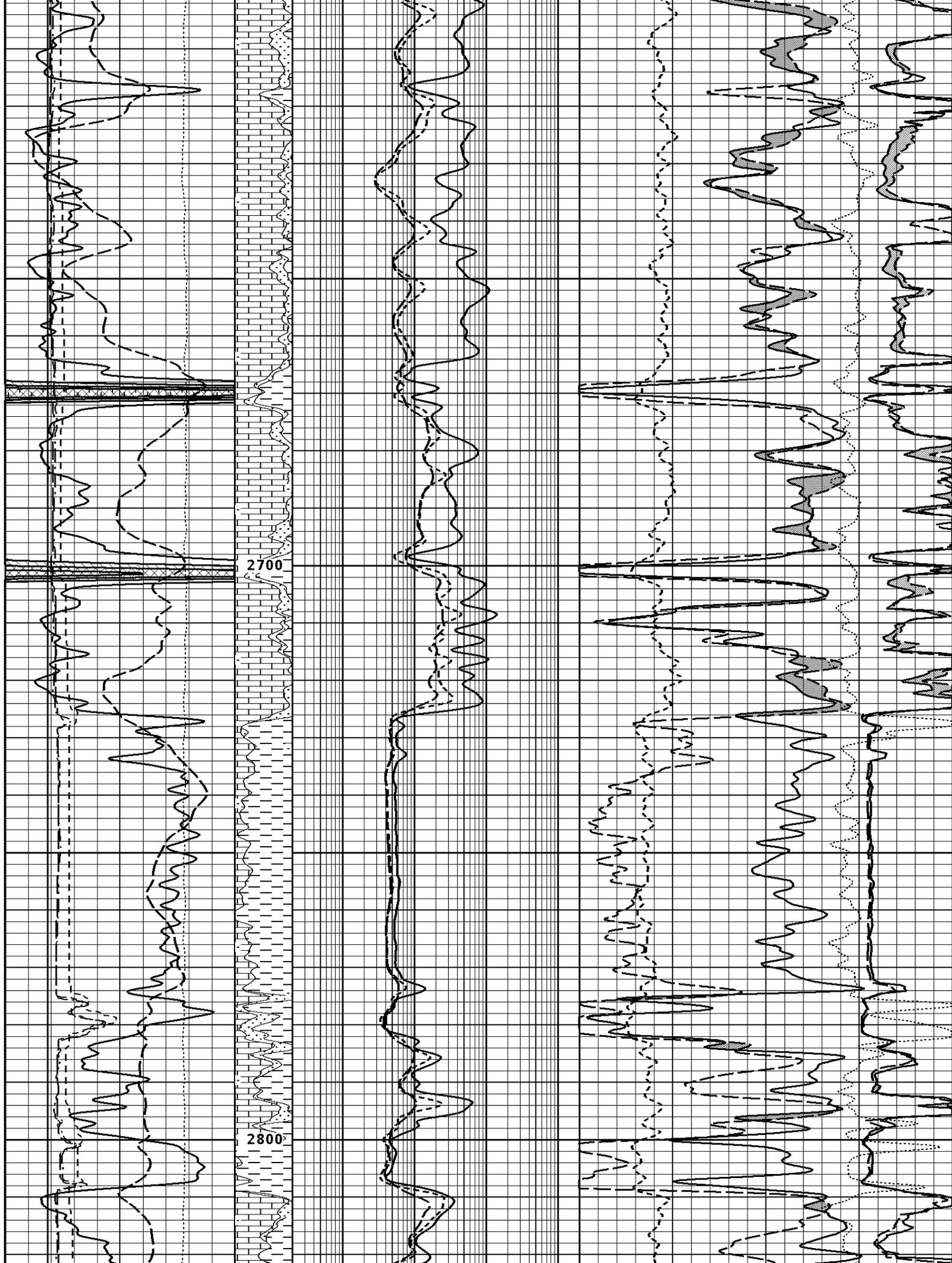
SFR

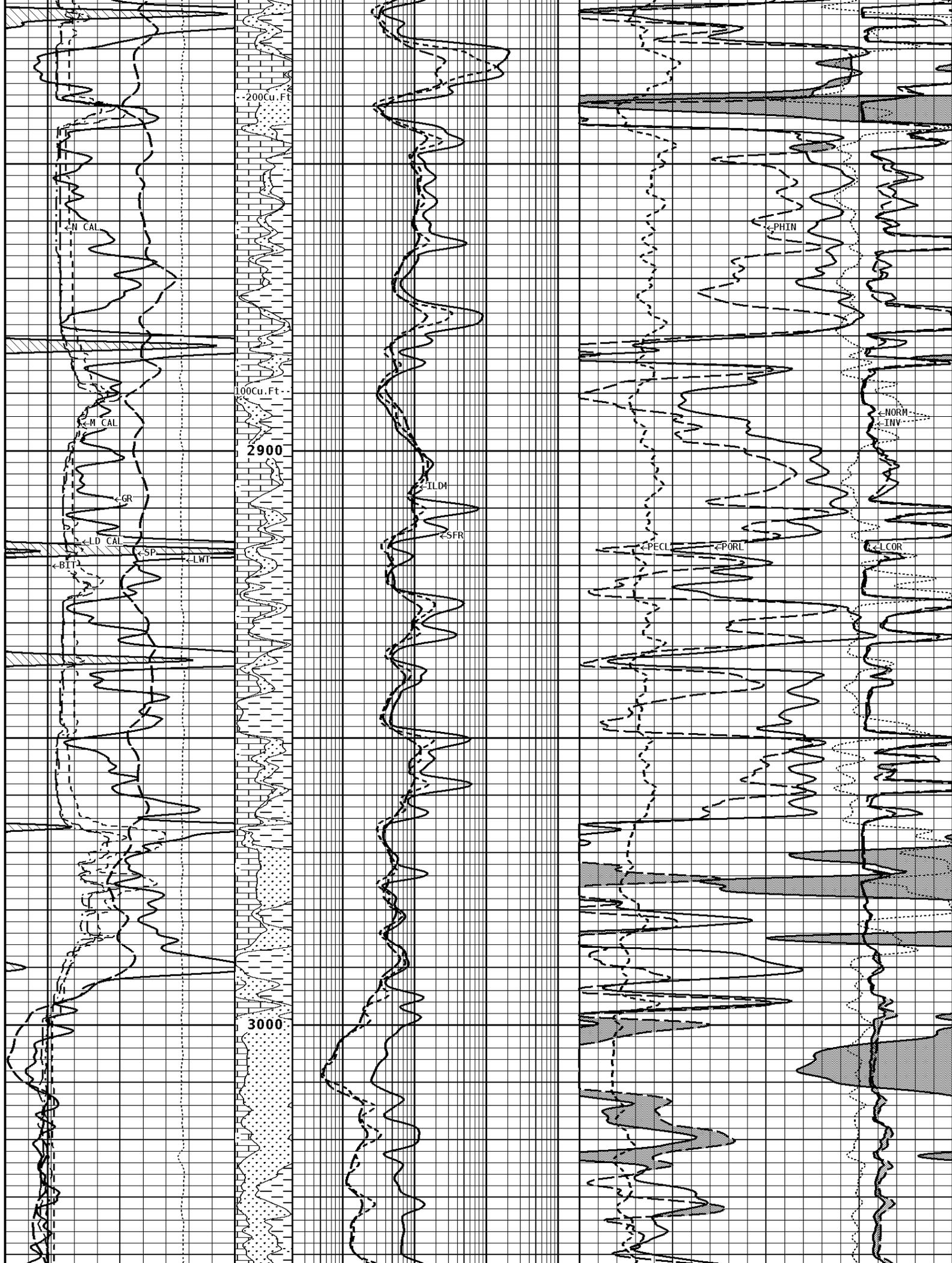


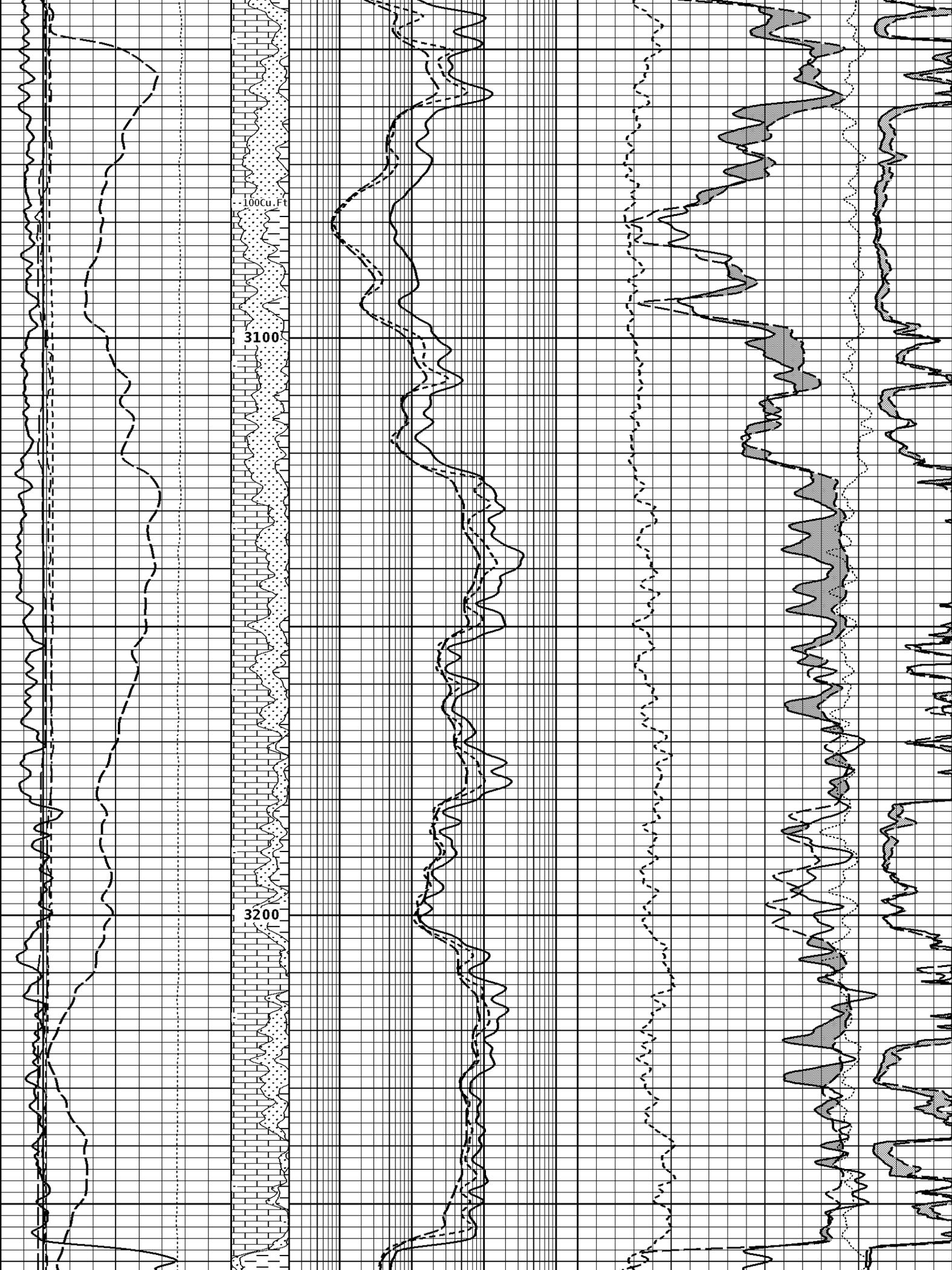
PECL

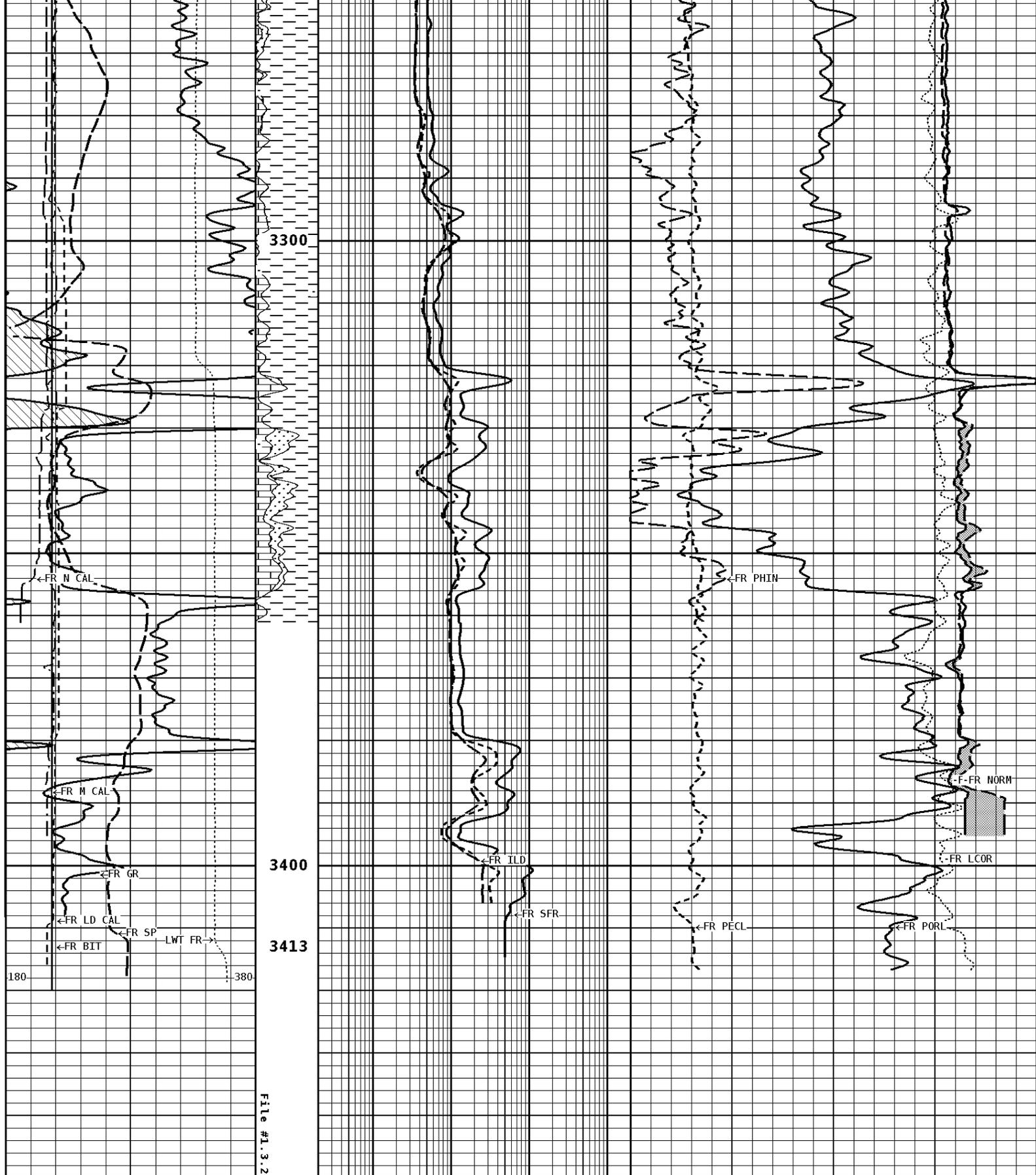
PC2L COR

NORTH
INVERT

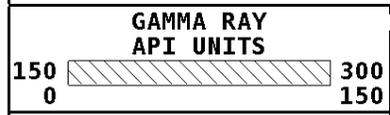




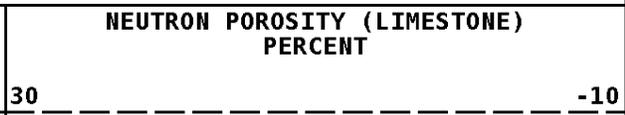
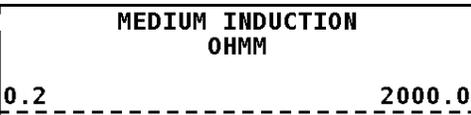




1:240 MAIN SECTION

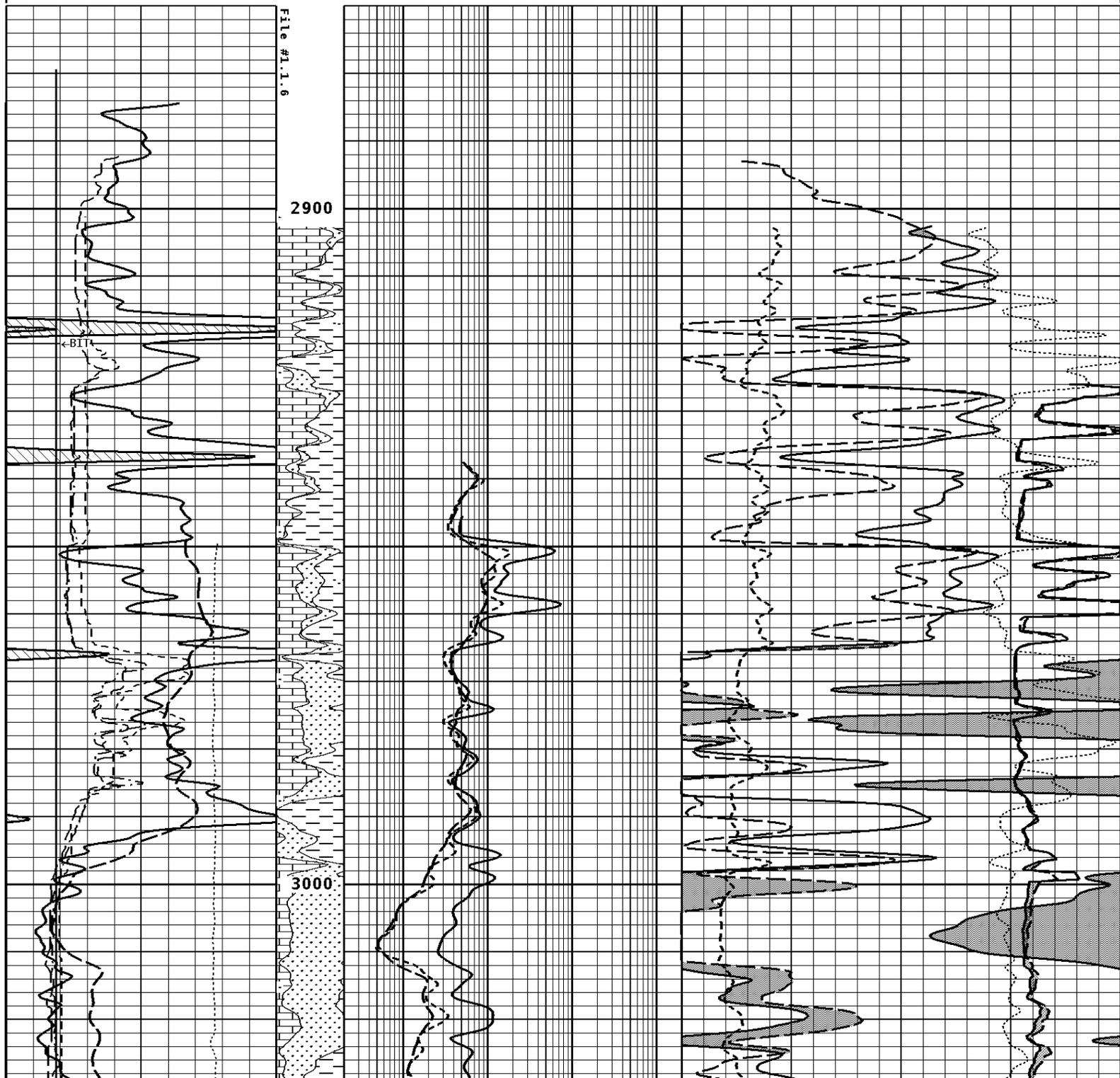


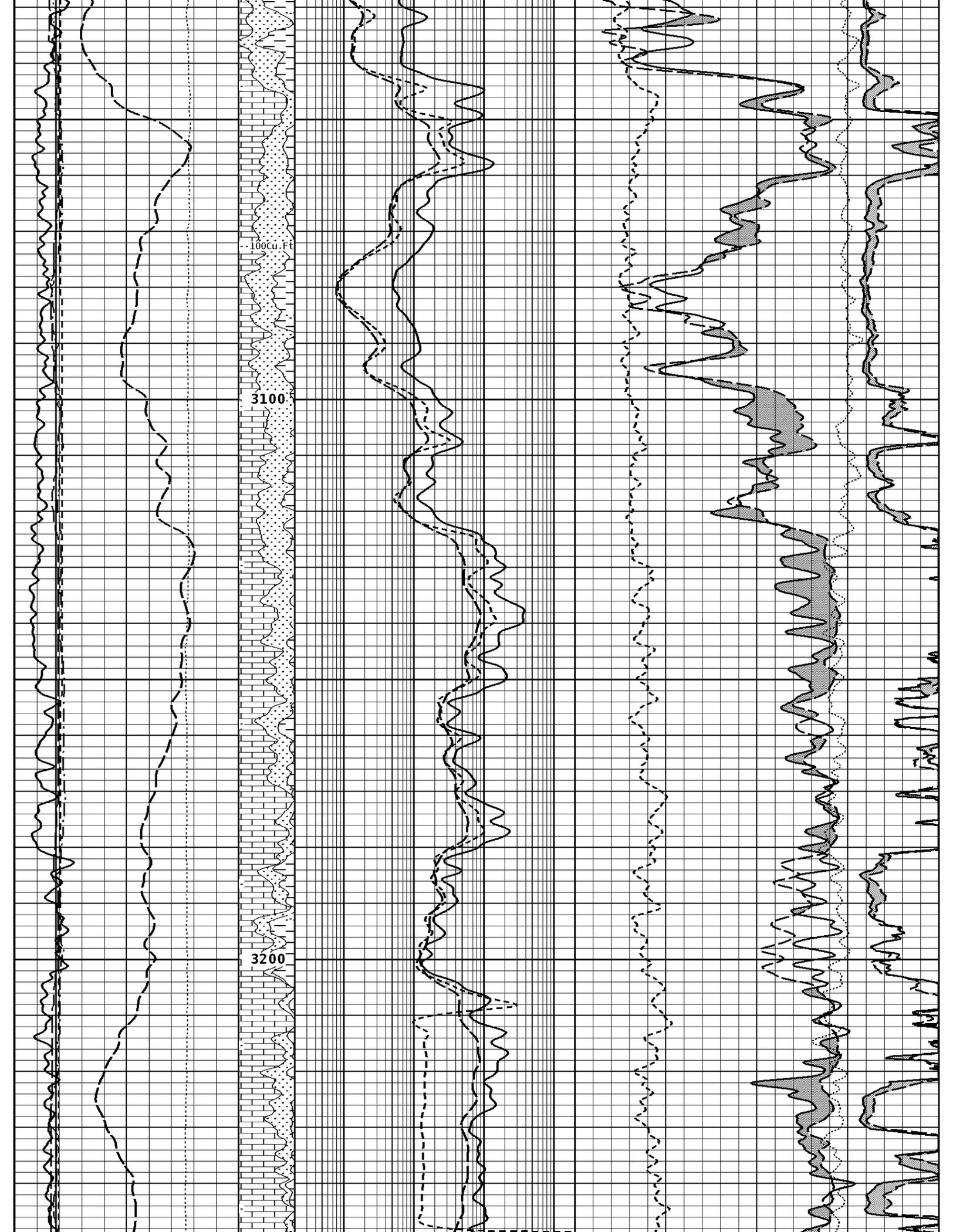
BHV AHV
CU. FT

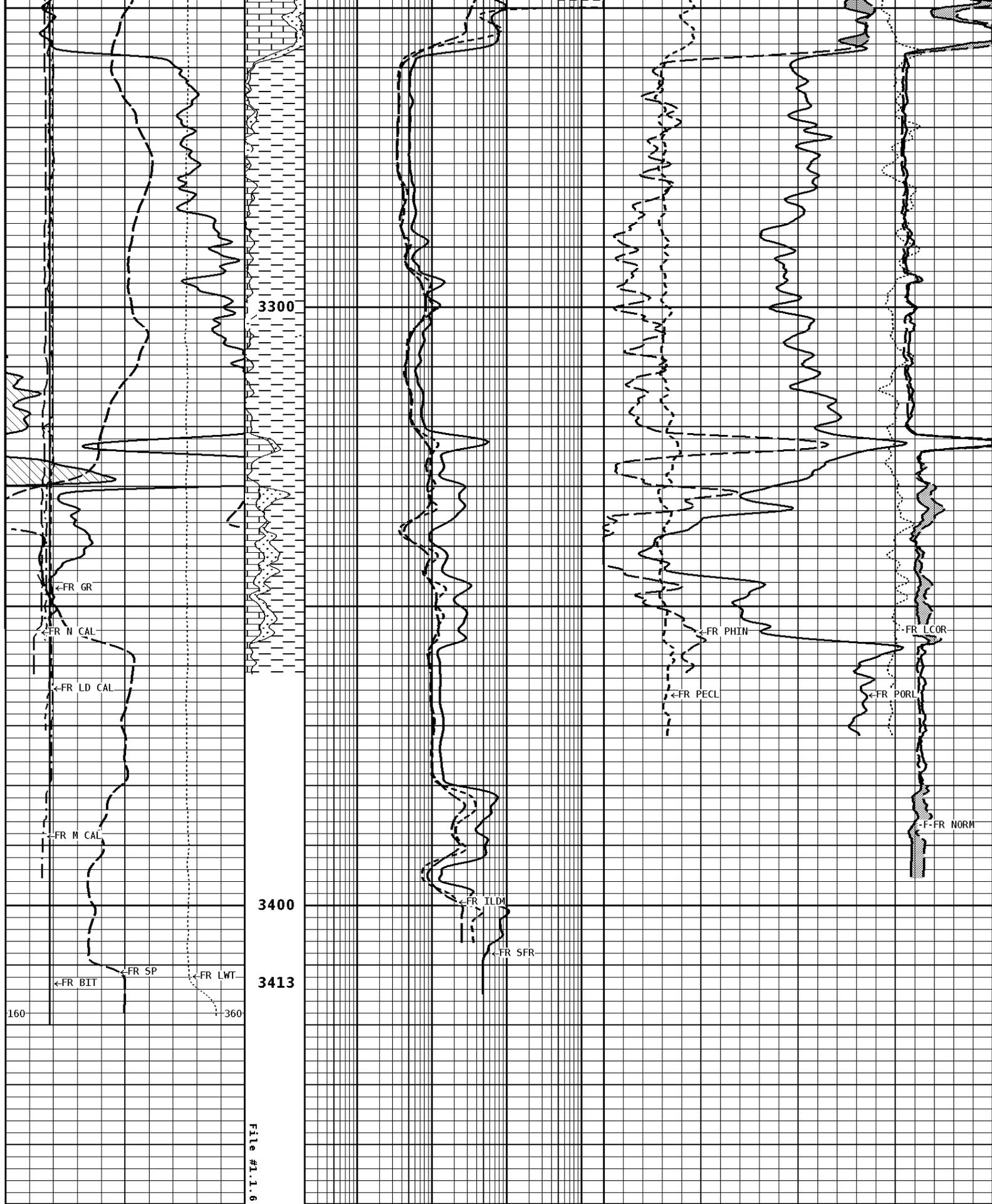


TENSION LBS	Volume Calcite	SHALLOW FOCUSED RESISTIVITY OHMM	PE CROSS-SECTION BARNES/ELECTRON
10000	0	0.2	2000.0 0
SPONTANEOUS POTENTIAL mV	Volume Dolo/Shale	DEEP INDUCTION OHMM	DENSITY POROSITY (2.71g/cc) PERCENT
→ ← 20		0.2	70 30
		2000.0	-10
			-10
GAMMA RAY API UNITS	BHV AHV CU. FT	MEDIUM INDUCTION OHMM	NEUTRON POROSITY (LIMESTONE) PERCENT
150 0 300 150		0.2	30
		2000.0	-10

1:240 REPEAT SECTION







1:240 REPEAT SECTION

GAMMA RAY

RHV ANV

MEDIUM INDUCTION

NEUTRON POROSITY (LIMESTONE)

API UNITS 150 0	300 150	Cu. FT	DEEP INDUCTION OHMM	NEUTRON POROSITY (LIMESTONE) PERCENT
			0.2	2000.0 30

SPONTANEOUS POTENTIAL mV	Volume Dolo/Shale		DEEP INDUCTION OHMM	DENSITY POROSITY (2.71g/cc) PERCENT
→ ← 20			0.2	2000.0 70 30

				-10
				-50
TENSION LBS	Volume Calcite		SHALLOW FOCUSED RESISTIVITY OHMM	PE CROSS-SECTION BARN/ELECTRON
10000			0.2	2000.0 0

				20
DENSITY (X) CALIPER INCHES (IN)	Volume Quartz			DENSITY CORRECTION G/CC
16 6				-0.75

				0.25
NEUTRON (Y) CALIPER INCHES (IN)				INVERSE OHMM
16 6				0

				40
BIT SIZE INCHES (IN)				NORMAL OHMM
6				0

				40
CALIPER MICRO INCHES (IN)				
16 6				

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 Feet		
Matrix Density	2.71	g/cc
Fluid Density	1.00	g/cc
Matrix Transit Time	47.5	us/ft
Fluid Transit Time	189.0	us/ft
Formation Matrix	Limestone	
Drill Bit Size	7.875	in
Casing Diameter	5.500	in
Casing Thickness	0.250	in
Casing Correction (PHI N)	Disable	
Hole Substance	Fluid	
BHT Depth	3413.000	ft
Borehole Temperature	110.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	2.000	ohm/m
MSTNG Normal Correction	0.00	ohm/m
MSTNG Inverse Correction	0.00	ohm/m

*** Calibration Summary ***

Shop Calibration GRT-B					
Performed : 19-May-2015			Time : 11:16		
Sensor Suite : GR-GR5			ID : GRT-BA-121		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		
	43	343	175	GRAPI	

Shop Calibration CNT-AA					
Performed : 19-MAY-2015			Time : 10:41		
Sensor Suite : CALI-BCN			ID : NDT-BB-115		
	Jig - Measured		Jig - Calibrated		Units
CL # 1	Ring#1	Ring#2	Ring#1	Ring#2	IN.
	9.4	14.0	6.0	12.0	

Performed : 19-May-2015 Time : 10:47

Sensor Suite : BHC NEUT ID : CNP-AA-101
 Source ID : N-1044

	Tank		Verification	Units
	Measured	Calibrated	Jig	
N/F	3.4541	3.6893	3.7093	
Porosity	17.1	20.5	20.8	%

**Shop Calibration
LDT-DA**

Performed : 19-MAY-2015 Time : 09:26
 Sensor Suite : CALI-LTH ID : PDT-GA-426

CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
	7.5	11.2	6.0	12.0	IN.

Performed : 19-May-2015 Time : 09:46
 Sensor Suite : BHCPELNG ID : LDP-DA-50
 Source ID : CSV-587

	Short Space				Units
	BKGD	Al	Mg	Al+Fe	
LSW1	70	473	763	325	CPS
LSW2	76	540	849	408	CPS
LSW3	276	1293	2013	1138	CPS
LSW4	336	1227	1690	1121	CPS
LSW5	32	39	41	38	CPS
LSW6	93	94	94	92	CPS
LSW7	58	58	56	60	CPS
LSW8	1	2	3	2	CPS
QS	0.235	0.240	0.250	0.215	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

	Long Space				Units
	BKGD	Al	Mg	Al+Fe	
LLW1	103	559	2349	370	CPS
LLW2	113	881	3591	677	CPS
LLW3	421	1725	6245	1539	CPS
LLW4	543	1046	2588	985	CPS
LLW5	64	67	80	67	CPS
LLW6	166	164	162	165	CPS
LLW7	112	109	106	111	CPS
LLW8	5	6	10	6	CPS
QL	0.194	0.204	0.208	0.193	
PEL			2.697	5.458	
LSDN		2.600	1.680		G/CC

**Shop Calibration
CST-AD**

Performed : 24-MAR-2015 Time : 21:06
 Sensor Suite : SON-ANA ID : CST-AB-012

T/R Pair	Transit Time		Units
	Measured	Calibrated	
T1R1	208.5	208.5	uS
T2R2	208.5	208.5	uS
T1R2	322.5	322.5	uS
T2R1	322.5	322.5	uS

T/R Pair	Amplitude		Units
	Measured	Calibrated	
T1R1	90.00	90.00	mV
T2R2	90.00	90.00	mV
T1R2	78.00	78.00	mV
T2R1	78.00	78.00	mV

**Shop Calibration
MST-DA**

Performed : 13-APR-2015 Time : 10:46
 Sensor Suite : CALI-MSN ID : MLT-DA-21

CL # 1	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
	8.0	12.4	6.0	12.0	IN.

Performed : 13-APR-2015 Time : 10:46
 Sensor Suite : MSTDA-NI ID : MLT-DA-21

	Internal					
	Measured		Units	Calibrated		Units
	Zero	Reference		Zero	Reference	
INV-V	0.0	29815.7		0.00	1746.00	MV
NOR-V	49.2	30179.6		0.00	1546.00	MV
TH-C	0.0	29517.3		0.00	1546.00	uA

IN-C	0.0	60547.2	0.00	15.46	UA
INV-R				36.53	OHMM
NOR-R				55.11	OHMM

**Shop Calibration
PIT-CA**

Performed : 24-Mar-2015 Time : 15:07
 Sensor Suite : P-IND-T ID : PIT-CA-075

Medium

	Measured		Calibrated		Units
	R	X	R	X	
Air	131411	129941	0.7	0.1	MMHOS
Zero	131070	131065	-10.5	45.2	MMHOS
Reference	250996	249179	4989.5	5045.2	MMHOS
Loop	130557	216346	3622.8	3693.4	MMHOS
Sonde Error			0.6	-6.3	MMHOS
Cond			4989.5	5045.2	MMHOS

Deep

	Measured		Calibrated		Units
	R	X	R	X	
Air	128160	131891	0.1	-0.6	MMHOS
Zero	131065	131057	51.6	-18.6	MMHOS
Reference	238795	236664	2051.6	1981.4	MMHOS
Loop	127663	223540	1726.6	1744.3	MMHOS
Sonde Error			-5.4	0.1	MMHOS
Cond			2051.6	1981.4	MMHOS

Temperature

	Measured		Calibrated		Units
	Low	High	Low	High	
	16980.0	56920.0	70.0	350.0	DEGF

Performed : 24-Mar-2015 Time : 14:55
 Sensor Suite : SFL ID : PIT-CA-075

Internal

	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
Im	32734.8	46427.9	0.0	7028.0	uA
Ib	32765.9	49037.6	0.0	1750.0	mA
MOM1	32796.9	56595.9	0.0	175.0	mV
Equivalent SFL				43.97	OHMM

Performed : 24-Mar-2015 Time : 14:52
 Sensor Suite : P-SP ID : PIT-CA-075

Internal

	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
	32767.2	58946.4	0.0	1000.0	mV



Tucker
ENERGY SERVICES

Company: LACHENMAYR OIL LLC
 Well: GOODRICH #L-1
 Location: 2265' FNL & 995' FWL
 Logged: 05-20-2015
 K.B. Elev: 1436.0 Ft