

COMPOSITE LOG

LSD : **Sect :** 27 **Twp :** 25S **Rge :** 33W

The customer is hereby warned that by providing the log data herein, STEP Energy Services does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. STEP Energy Services 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 STEP Energy Services 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 STEP Energy Services 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.

Run Number	1		
Date	02-21-2020		
Date/Time On Bottom	02-21-2020 00:45		
Depth to Fluid	0.0 Ft		
Salinity	1250.000		
RMF@BHT	0.570 @ 135 F		
RMC@BHT	0.770 @ 135 F		

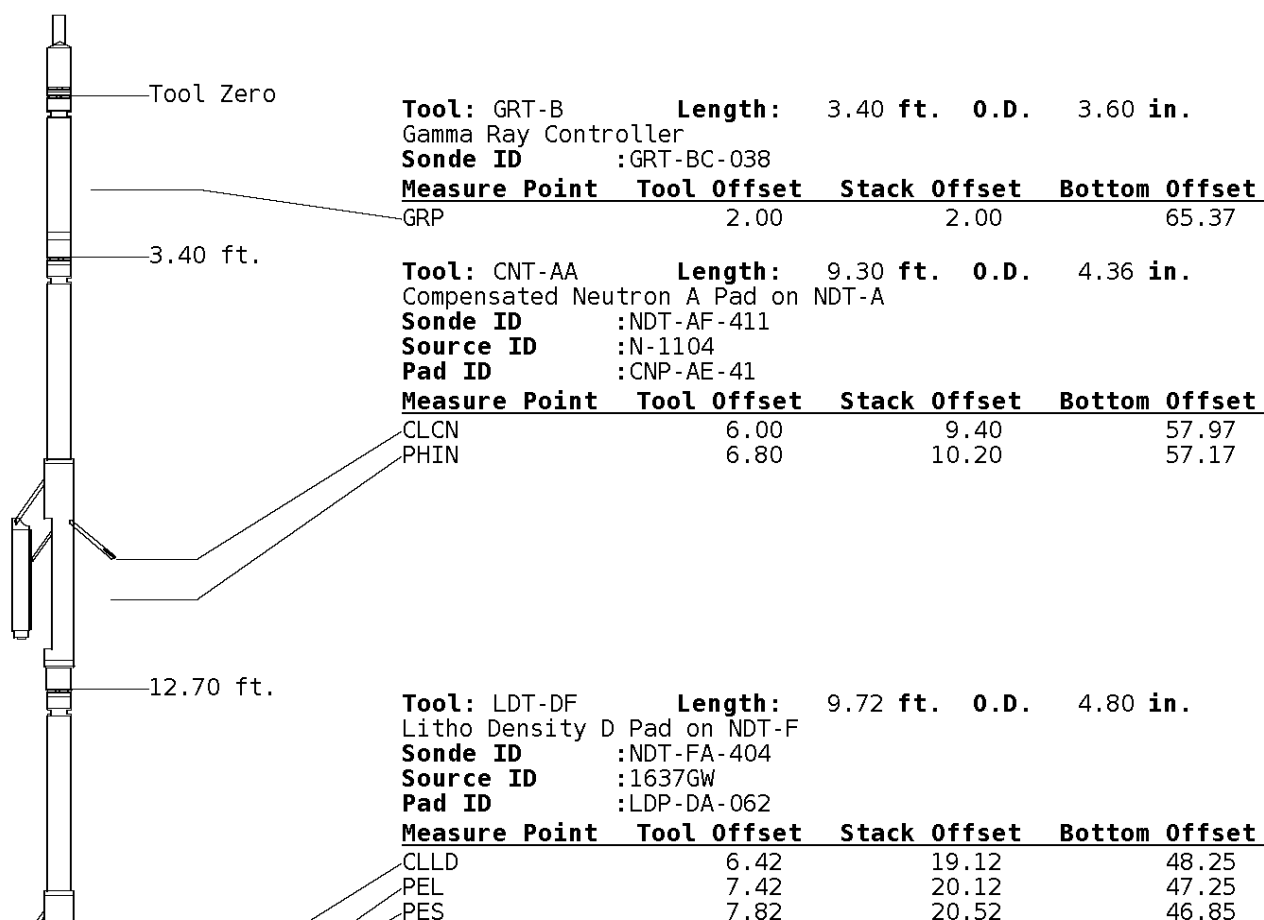
ALL PRESENTATIONS AS PER CUSTOMER REQUEST
GRT, CNT, LDT, CST, MLT AND PIT RUN IN COMBINATION
CALIPERS ORIENTED ON X-Y AXIS
2.71 G/CC USED TO CALCULATE POROSITY
ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING
PHIN IS CALIPER CORRECTED

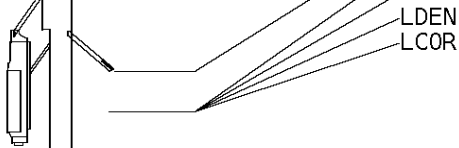
GRT: GRP
CNT: PHIN, CLCNIN,
LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN
CST: PORS, CDTF, TTIPF, TT2PF, TT3PF, TT4PF, ITT
MLT: NOR_RF, INV_RF, MSCLPIN
PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS:
D. RAGSDALE
J. VAUGHN
D.LEGLEITER

Tool String Schematic

Total Tool Length - 67.37 ft.
Maximum Outside diameter - 6.00 in.
Net Weight in Air - 1171.00 lbs.



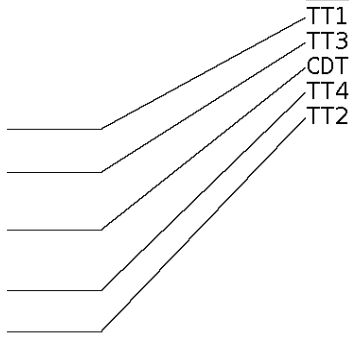


7.62	20.32	47.05
7.62	20.32	47.05

22.42 ft.

Tool: CST-AD **Length:** 13.80 ft. **O.D.** 3.60 in.
 Open Hole Sonic
Sonde ID : CST-AB-21

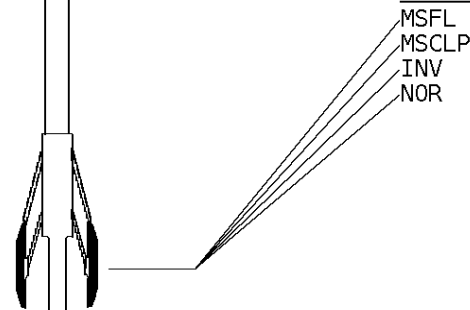
Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	27.22	40.15
TT3	5.80	28.22	39.15
CDT	7.30	29.72	37.65
TT4	8.80	31.22	36.15
TT2	9.80	32.22	35.15



36.22 ft.

Tool: MST-DA **Length:** 9.66 ft. **O.D.** 6.00 in.
 Micro Spherically Focused (IC)
Sonde ID : MST-DA-13

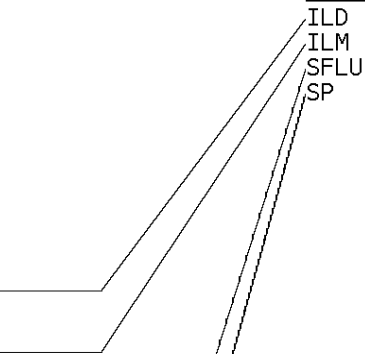
Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	43.82	23.55
MSCLP	7.60	43.82	23.55
INV	7.60	43.82	23.55
NOR	7.60	43.82	23.55



45.88 ft.

Tool: PIT-CA **Length:** 21.49 ft. **O.D.** 3.62 in.
 Phased Dual Induction w/ RM & D
Sonde ID : PIT-AC-043

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	54.80	12.56
ILM	10.10	55.98	11.39
SFLU	17.49	63.37	4.00
SP	20.60	66.48	0.88



LWT 67.37 ft.

Well File: MERIT_DRUSSEL_A-11_FEB_20_QUINT

Segment: V1.D1.S6 MAIN

Reference: 0

Scale: 1:240

Format: COM-meri

Acquired: 2020-02/21 01:21 3.4.1-13972

Processed: 2020-02/21 03:32 3.4.1-13972

CALIPER MICRO
INCHES (IN)

16 26
6 16

BIT SIZE
INCHES (IN)

6 16

NEUTRON (Y) CALIPER
INCHES (IN)

16 26
6 16

SONIC POROSITY
Percent

30 -10

DENSITY (X) CALIPER
INCHES (IN)

16 26
6 16

NORMAL
OHMM

0 40

SHALLOW FOCUSED RESISTIVITY
OHMM

0.2 2000.0

PE CROSS-SECTION
BARNES/ELECTRON

0 10

SPONTANEOUS POTENTIAL
mV

→ ←20

INVERSE
OHMM

0 40

DEEP INDUCTION
OHMM

0.2 2000.0

DENSITY POROSITY (2.71g/cc)
PERCENT

30 -10

GAMMA RAY
API UNITS

150 300
0 150

TENSION
LBS

4000 2000

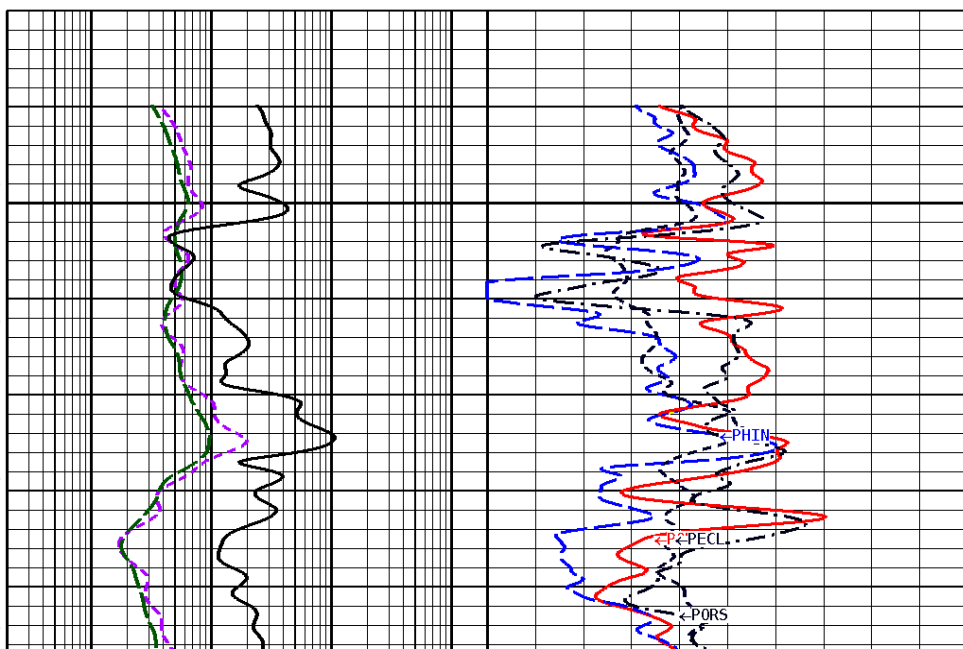
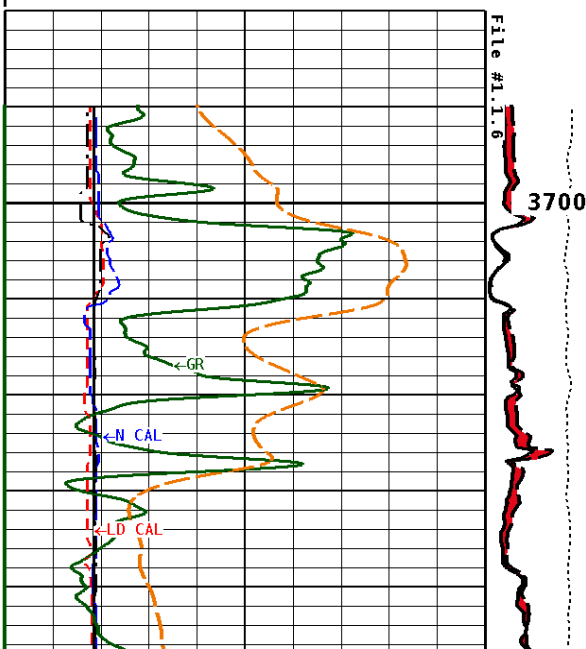
MEDIUM INDUCTION
OHMM

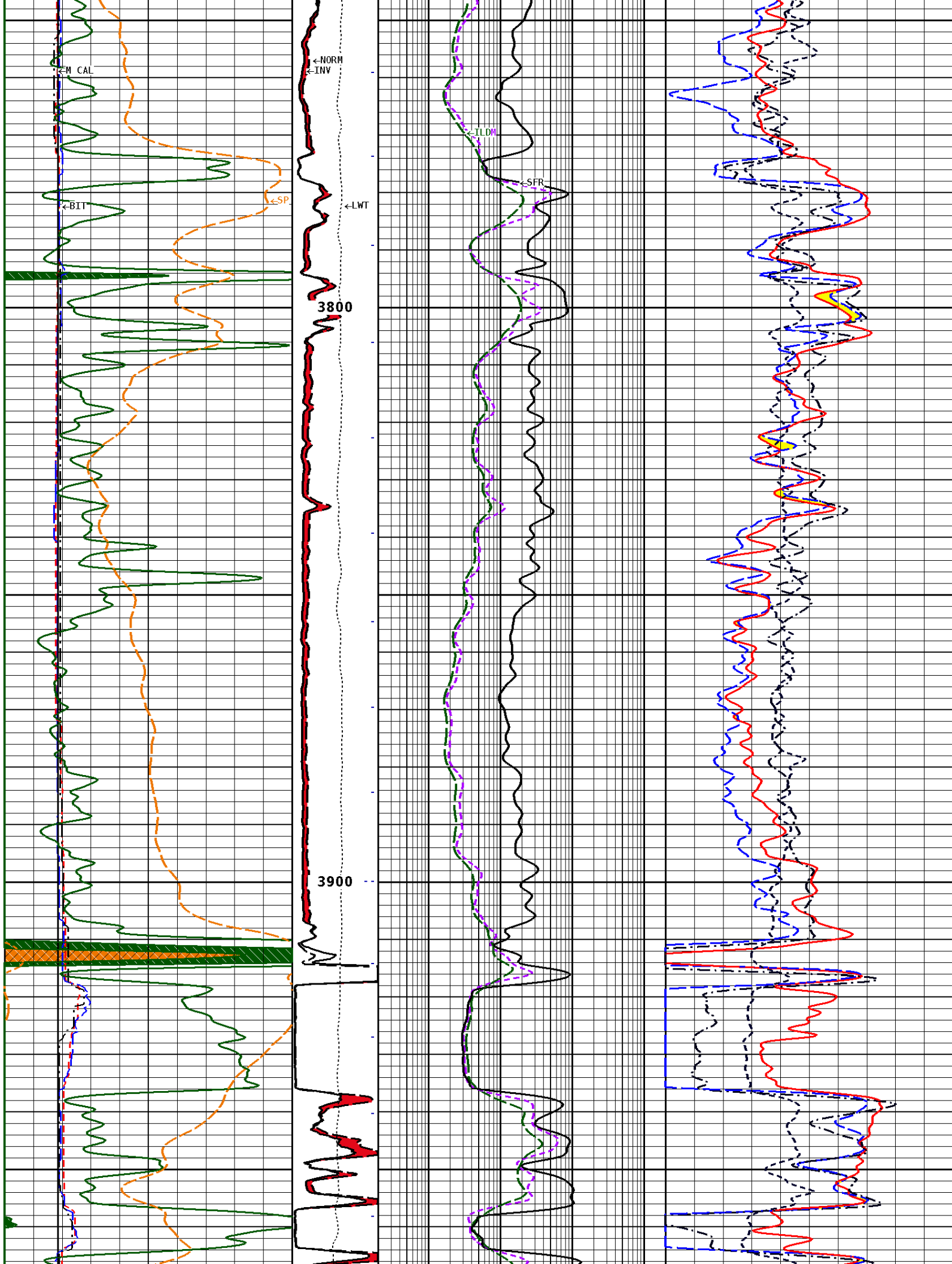
0.2 2000.0

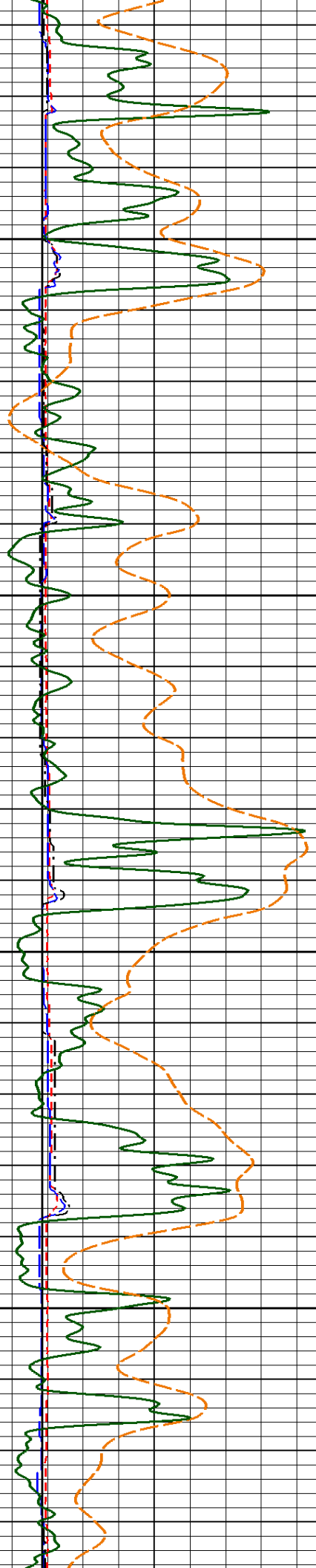
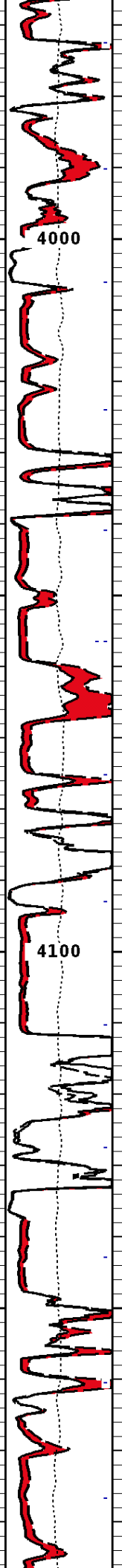
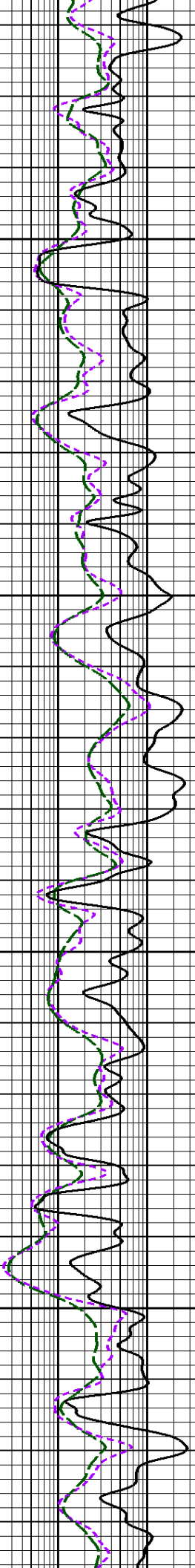
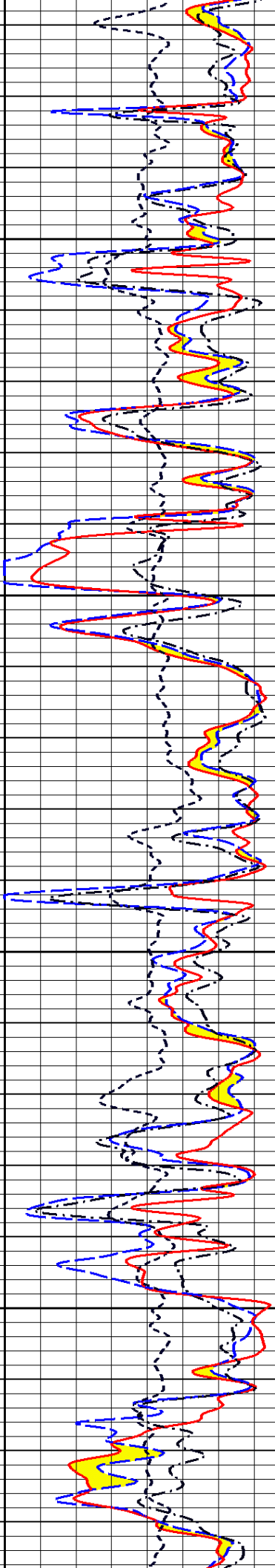
NEUTRON POROSITY (LIMESTONE)
PERCENT

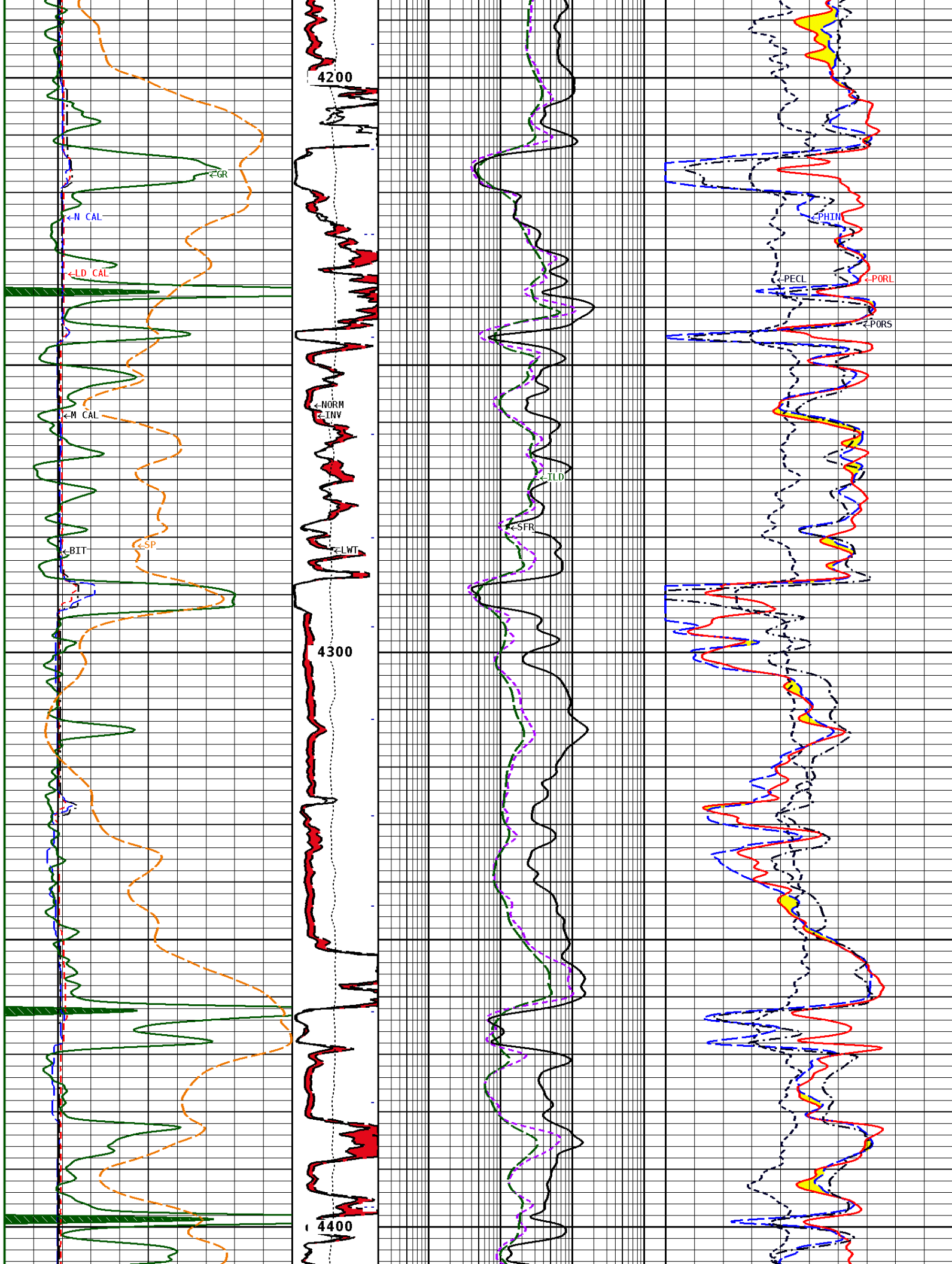
30 -10

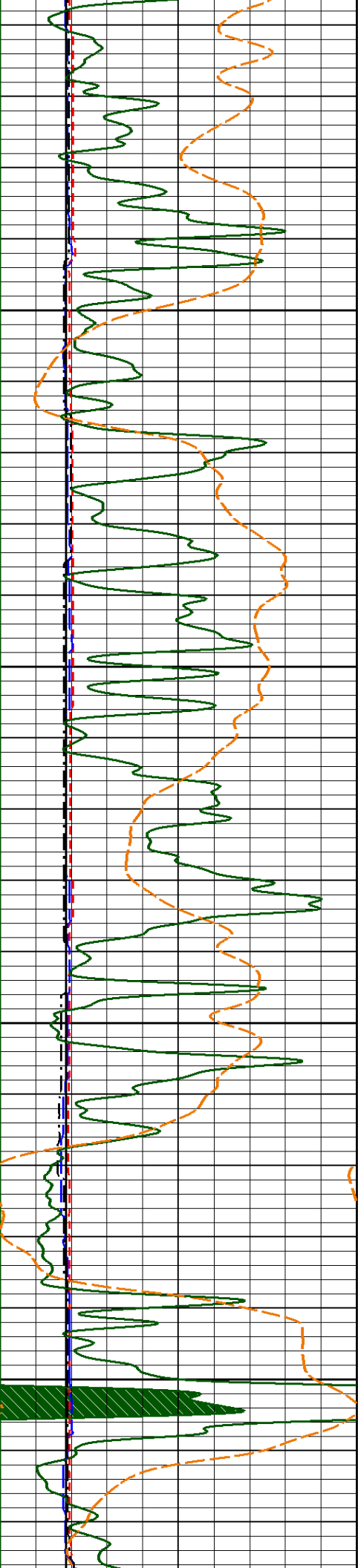
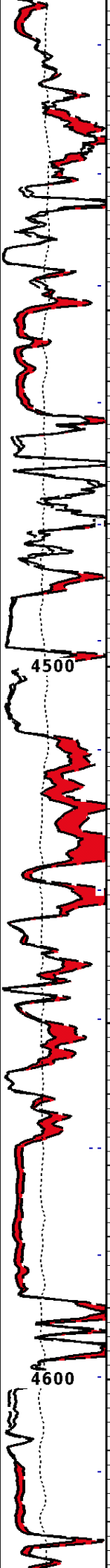
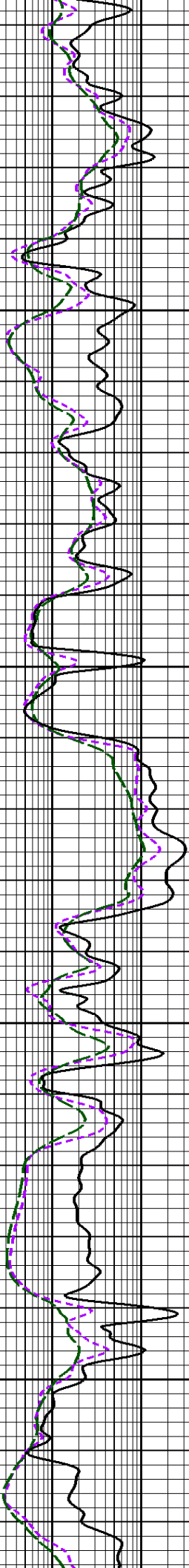
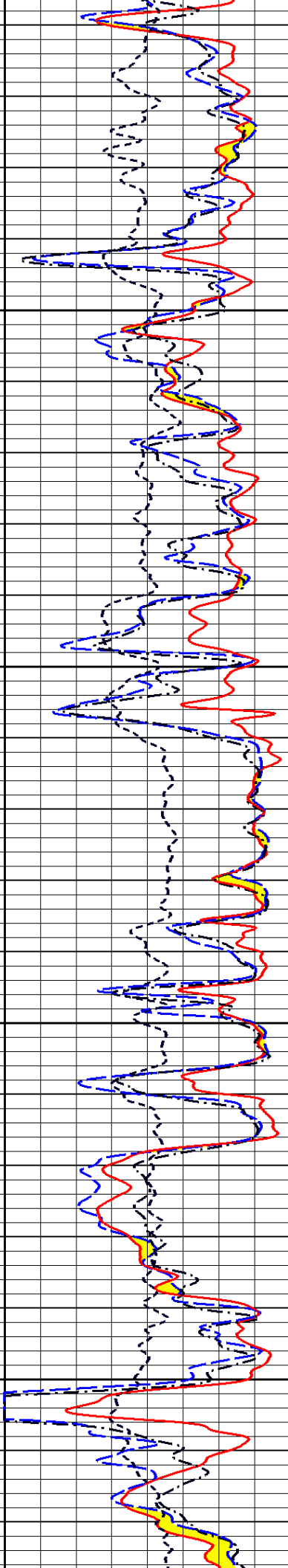
1:240 MAIN SECTION

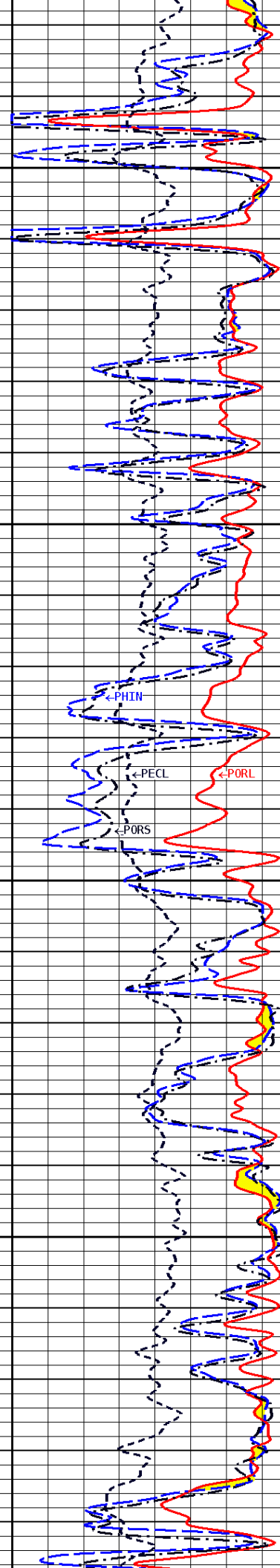
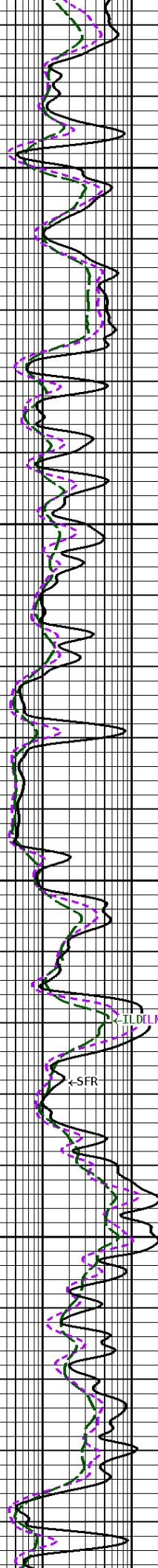
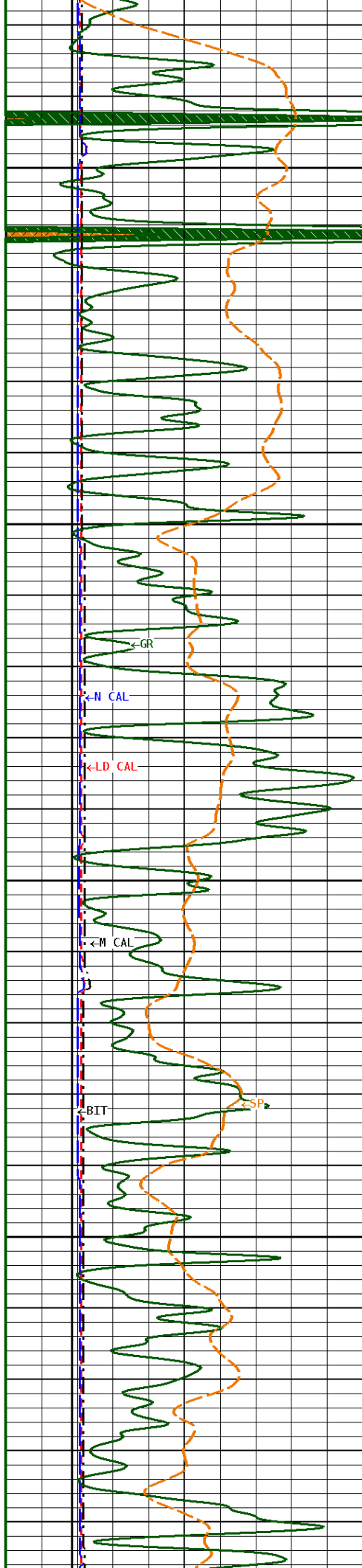


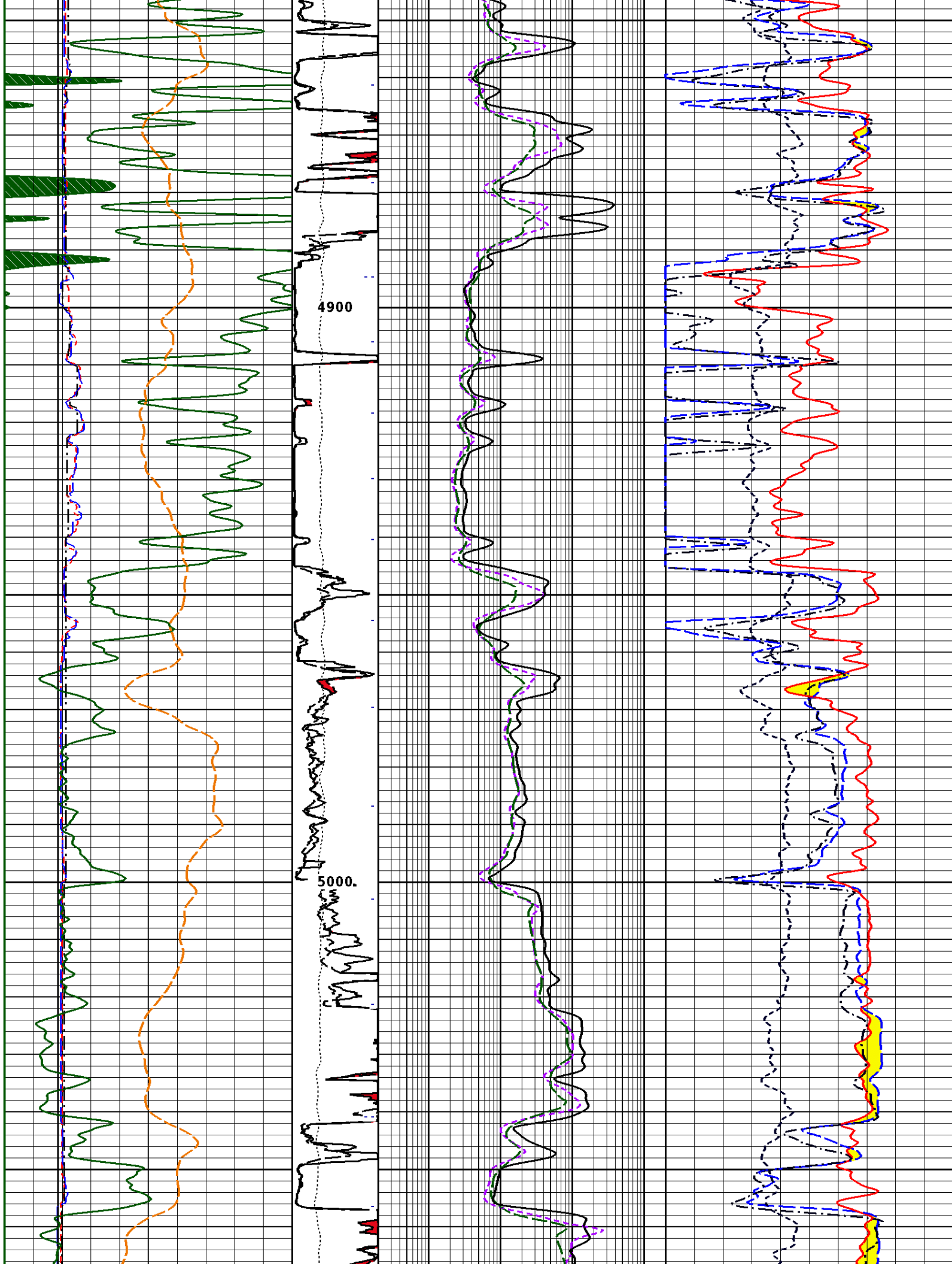


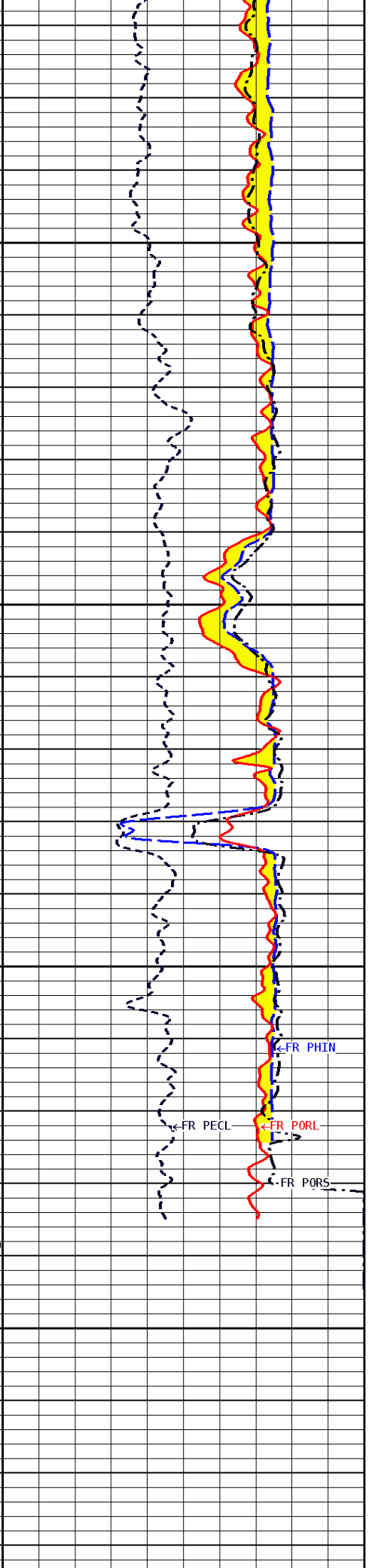
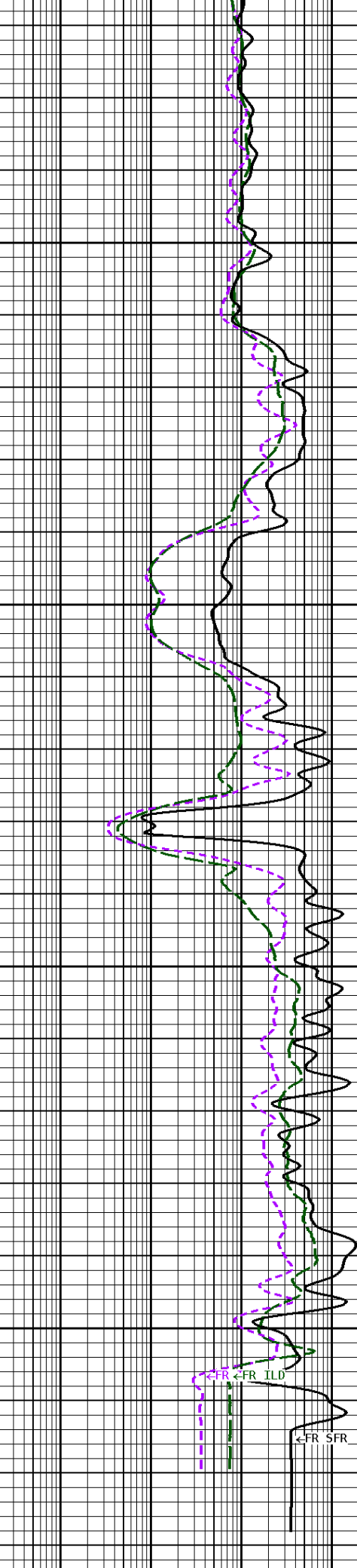
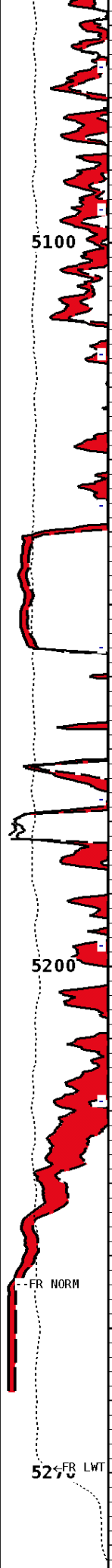
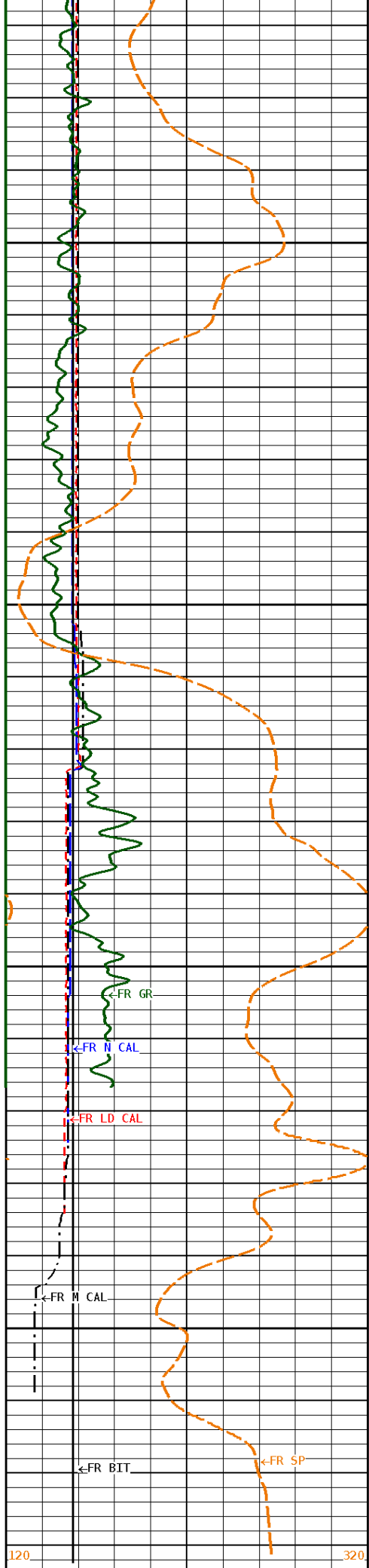












1:240 MAIN SECTION

GAMMA RAY API UNITS 150 0  300 0 150	TENSION LBS 4000 2000	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
SPONTANEOUS POTENTIAL mV → ← 20	INVERSE OHMM 0 40	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 30 -10
DENSITY (X) CALIPER INCHES (IN) 16 6 26 16	NORMAL OHMM 0 40	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0	PE CROSS-SECTION BARN/ELECTRON 0 10
NEUTRON (Y) CALIPER INCHES (IN) 16 6 26 16			SONIC POROSITY Percent 30 -10
BIT SIZE INCHES (IN) 6 16			
CALIPER MICRO INCHES (IN) 16 6 26 16			

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet		
Matrix Density	2.71	g/cc
Cementation Exponent	2.00	
A	1.00	
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	5270.000	ft
Borehole Temperature	135.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	1.400	ohmm
U Fluid	0.398	
Grain Density Mineral 1	2.710	g/cc
Grain Density Mineral 2	2.644	g/cc
Grain Density Mineral 3	2.877	g/cc
U Mineral 1	13.770	
U Mineral 2	4.779	
U Mineral 3	8.997	
Resistivity Of Mud Temperature	61.00	degF
MSTNG Normal Correction	0.00	ohmm
MSTNG Inverse Correction	0.00	ohmm

Well File: MERIT_DRUSSEL_A-11_FEB_20_QUINT

Scale: 1:240 Format: COM-meri

Segment: V1.D1.S4 REPEAT

Acquired: 2020-02/21 00:45 3.4.1-13972

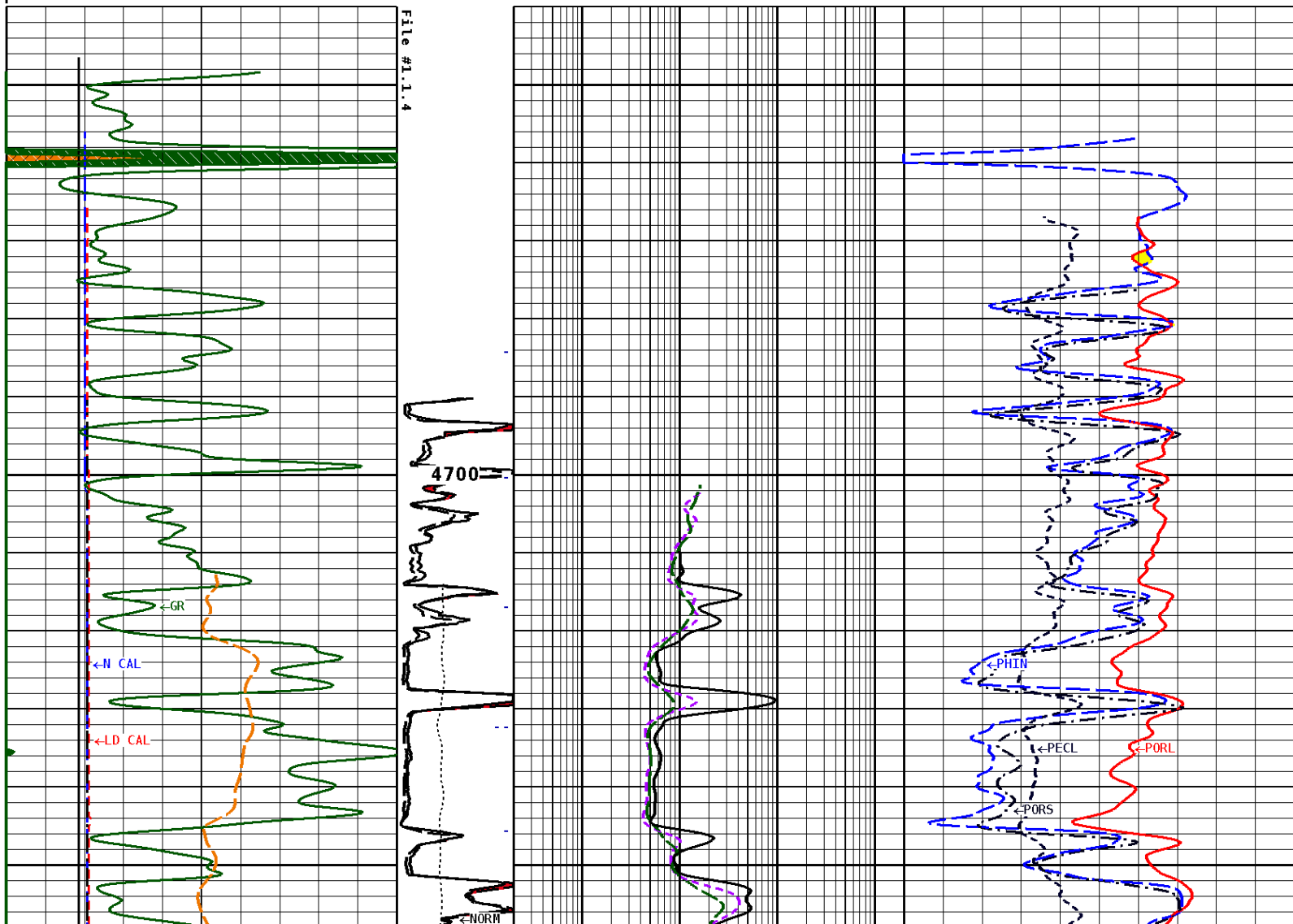
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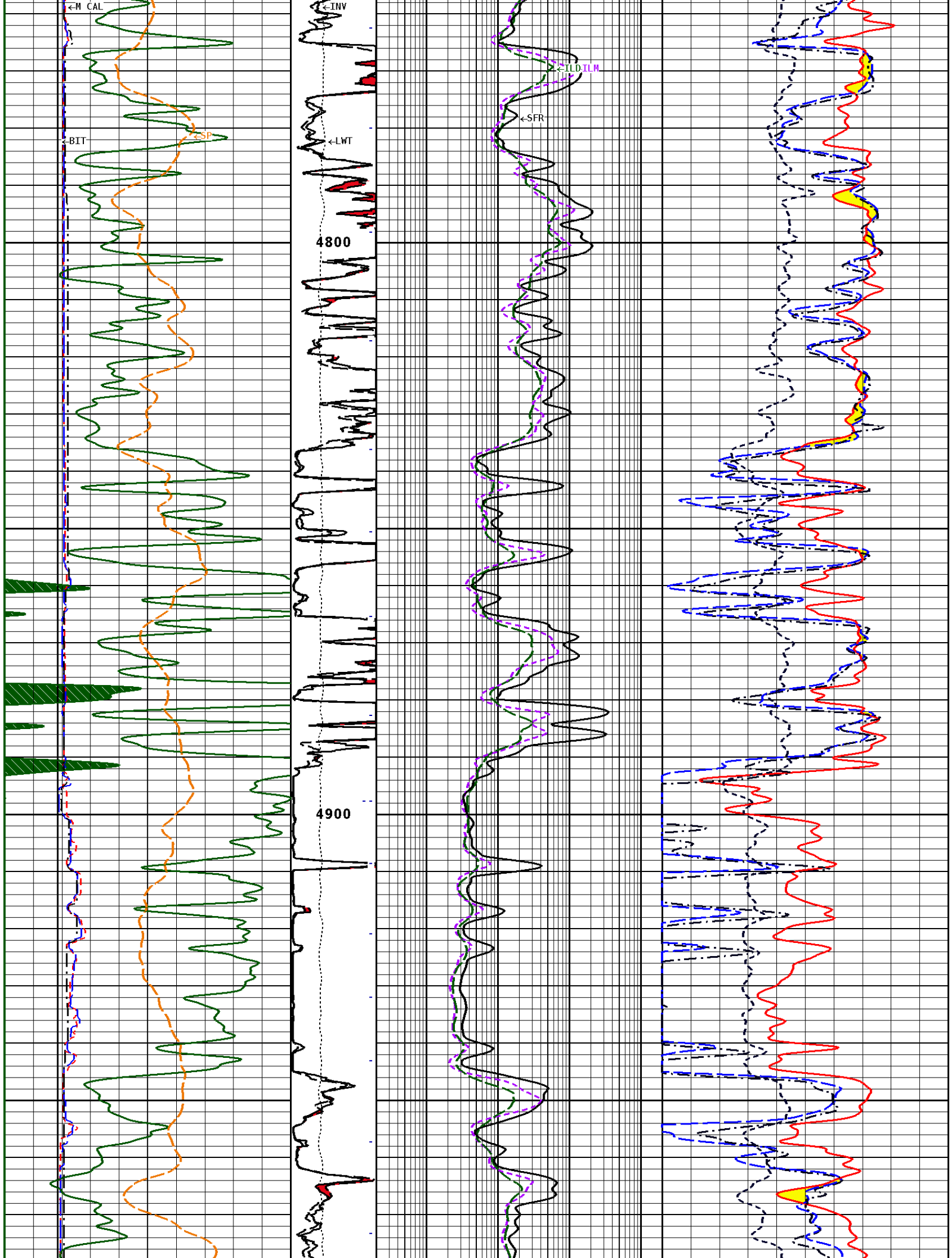
Processed: 2020-02/21 01:11 3.4.1-13972

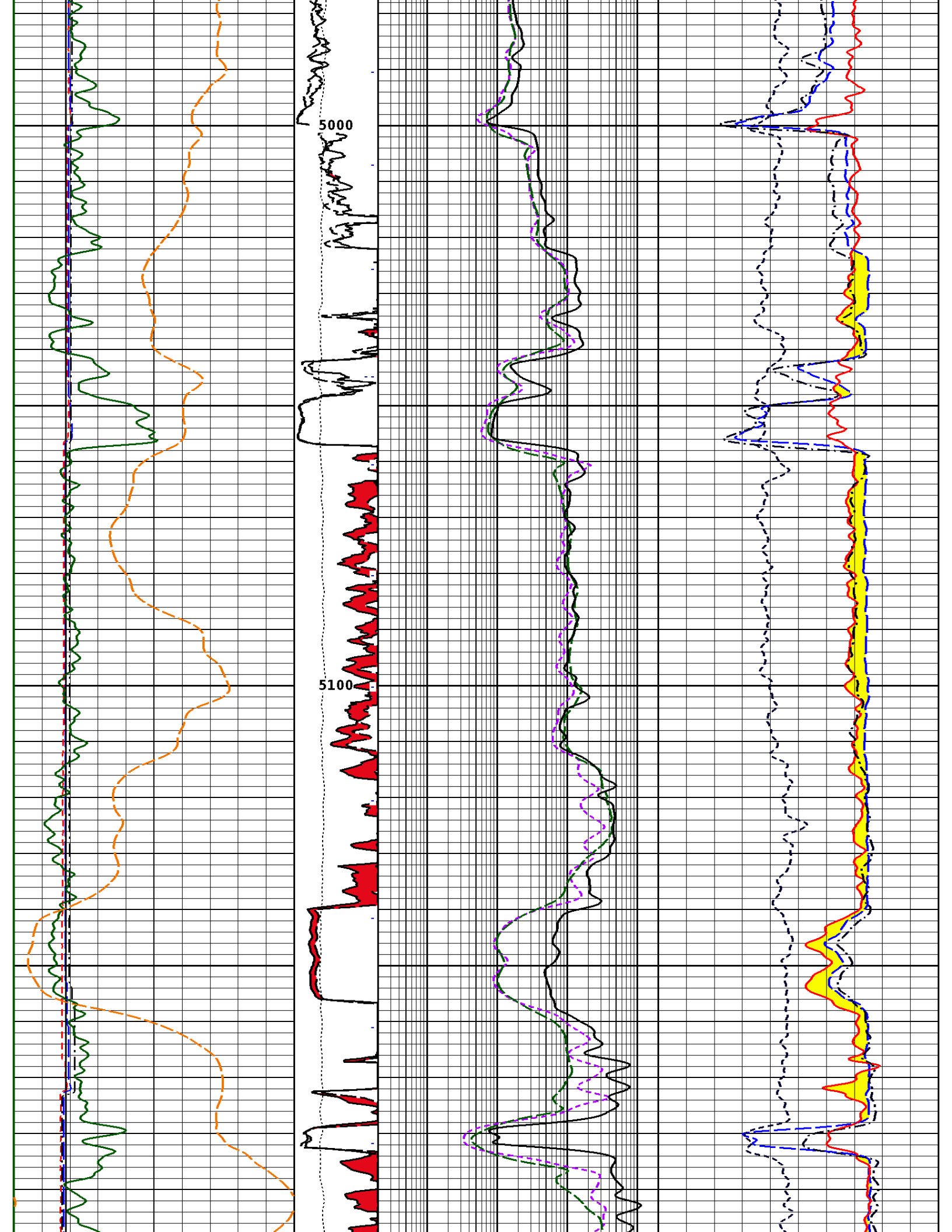
CALIPER MICRO
INCHES (IN)

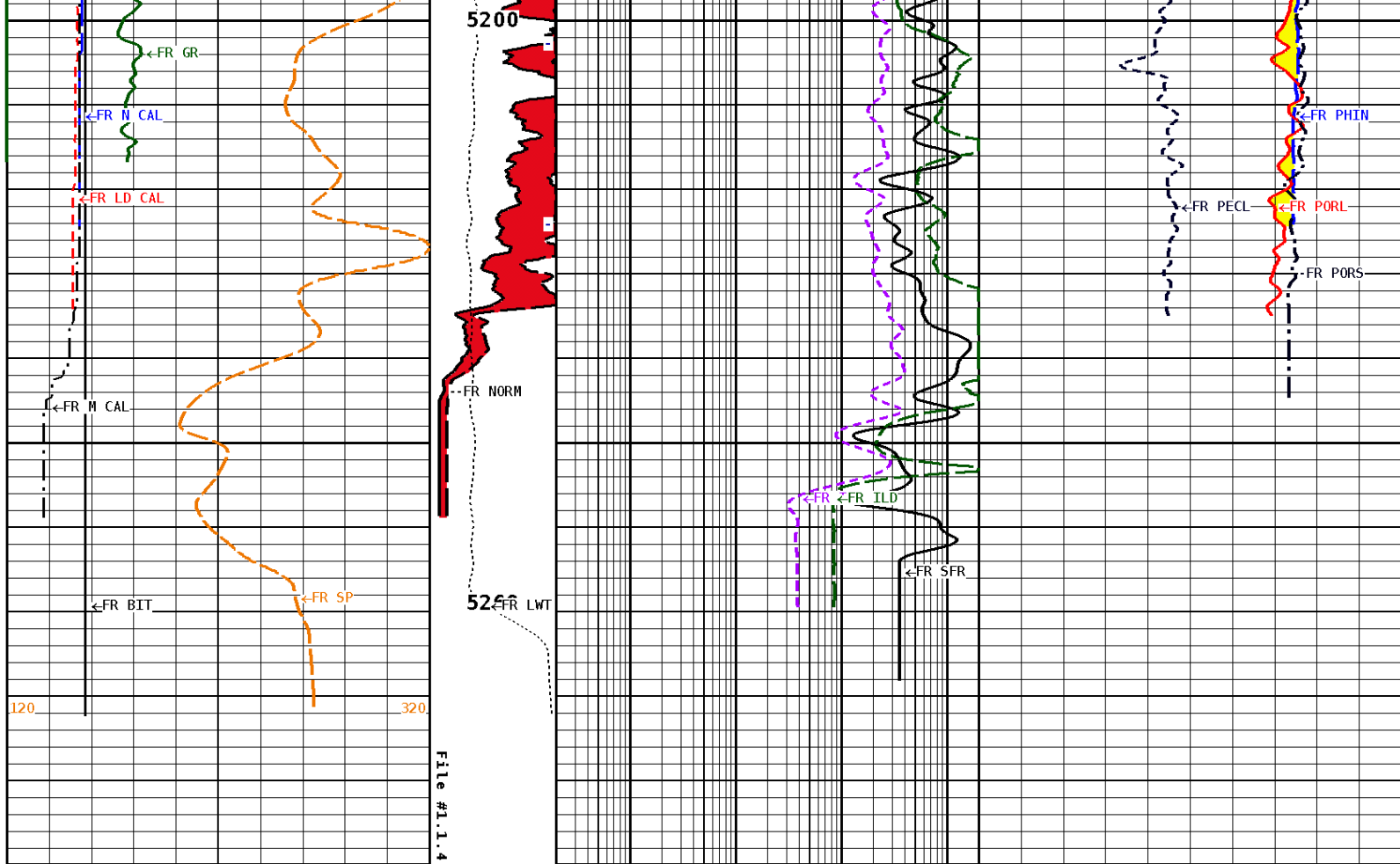
INCHES (IN)		16		26	
6		16			
BIT SIZE INCHES (IN)					
6		16			
NEUTRON (Y) CALIPER INCHES (IN)				SONIC POROSITY Percent	
16		26		30	
6		16		-10	
DENSITY (X) CALIPER INCHES (IN)		NORMAL OHMM	SHALLOW FOCUSED RESISTIVITY OHMM		PE CROSS-SECTION BARNS/ELECTRON
16		0	40	0.2	2000.0
6				0	10
26					
SPONTANEOUS POTENTIAL mV		INVERSE OHMM	DEEP INDUCTION OHMM		DENSITY POROSITY (2.71g/cc) PERCENT
→ ←20		0	40	0.2	2000.0
				30	-10
GAMMA RAY API UNITS		TENSION LBS	MEDIUM INDUCTION OHMM		NEUTRON POROSITY (LIMESTONE) PERCENT
150 0 300 150		4000 2000	0.2		2000.0
			30		-10

1:240 MAIN SECTION









1:240 MAIN SECTION

GAMMA RAY API UNITS 150 0 300 150	TENSION LBS 4000 2000	MEDIUM INDUCTION OHMM 0.2 2000.0	NEUTRON POROSITY (LIMESTONE) PERCENT 30 -10
SPONTANEOUS POTENTIAL mV → ←20	INVERSE OHMM 0 40	DEEP INDUCTION OHMM 0.2 2000.0	DENSITY POROSITY (2.71g/cc) PERCENT 30 -10
DENSITY (X) CALIPER INCHES (IN) 16 6 26 16	NORMAL OHMM 0 40	SHALLOW FOCUSED RESISTIVITY OHMM 0.2 2000.0	PE CROSS-SECTION BARN/ELECTRON 0 10
NEUTRON (Y) CALIPER INCHES (IN) 16 6 26 16			SONIC POROSITY Percent 30 -10
BIT SIZE INCHES (IN) 6 16			
CALIPER MICRO INCHES (IN) 16 6 26 16			

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet

Matrix Density	2.71	g/cc
Cementation Exponent	2.00	
A	1.00	
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	5270.000	ft
Borehole Temperature	123.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	1.700	ohmm
U Fluid	0.398	
Grain Density Mineral 1	2.710	g/cc
Grain Density Mineral 2	2.644	g/cc
Grain Density Mineral 3	2.877	g/cc
U Mineral 1	13.770	
U Mineral 2	4.779	
U Mineral 3	8.997	
Resistivity Of Mud Temperature	67.00	degF
MSTNG Normal Correction	0.00	ohmm
MSTNG Inverse Correction	0.00	ohmm

*** Calibration Summary ***

Shop Calibration GRT-B					
Performed : 24-JUN-2019			Time : 12:20		
Sensor Suite : GR-GR5			ID : GRT-BC-038		
	Measured	Units	Calibrated	Units	
GR	Background	Jig	Jig		GRAPI
	36	266	160		
Shop Calibration CNT-AA					
Performed : 03-JUN-2019			Time : 11:01		
Sensor Suite : CALI-BCN			ID : NDT-AF-411		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	7.7	12.7	6.0	12.0	IN.
Shop Calibration LDT-DF					
Performed : 12-FEB-2020			Time : 10:01		
Sensor Suite : BHC NEUT			ID : CNP-AE-41		
Source ID : N-1104					
	Tank		Verification	Units	
	Measured	Calibrated	Jig		
N/F	3.5474	3.6893	3.6873		
Porosity	18.4	20.5	20.5		%
Shop Calibration LDT-DF					
Performed : 21-DEC-2019			Time : 21:43		
Sensor Suite : CALI-LTH			ID : NDT-FA-404		
	Jig - Measured		Jig - Calibrated	Units	
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	8.5	13.4	6.0	12.0	IN.
Shop Calibration LDP-DA					
Performed : 29-Jan-2020			Time : 14:42		
Sensor Suite : BHCPELNG			ID : LDP-DA-062		
Source ID : 1637GW					
	Short Space				
	BKGD	Al	Mg	Al+Fe	Units
LSW1	59	960	1557	625	CPS
LSW2	61	1121	1778	816	CPS
LSW3	228	2554	4127	2191	CPS
LSW4	286	2191	3138	1951	CPS
LSW5	25	44	49	41	CPS
LSW6	79	82	79	83	CPS
LSW7	50	54	53	53	CPS
LSW8	1	3	4	3	CPS
QS	0.227	0.208	0.194	0.217	
PES			2.778	5.967	
SSDN		2.600	1.680		G/CC

LSDN	2.000	1.000	0/CC
Long Space			
BKGD	Al	Mg	Al+Fe
LLW1	84	1100	4544
LLW2	94	1944	7684
LLW3	352	3530	13460
LLW4	463	1657	5105
LLW5	52	64	102
LLW6	146	154	134
LLW7	95	101	92
LLW8	3	6	14
QL	0.213	0.209	0.187
PEL			0.205
LSDN		2.600	1.680
			G/CC

Shop Calibration			
CST-AD			
Performed : 09-FEB-2020		Time : 05:45	
Sensor Suite : SON-ANA		ID : CST-AB-21	
Transit Time			
T/R Pair	Measured	Calibrated	Units
T1R1	205.0	208.5	uS
T2R2	205.0	208.5	uS
T1R2	326.3	322.5	uS
T2R1	326.3	322.5	uS
Amplitude			
T/R Pair	Measured	Calibrated	Units
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 : 22-JAN-2020		Time : 09:27	
Sensor Suite : CALI-MSN		ID : MST-DA-13	
Jig - Measured		Jig - Calibrated	
CL # 1	Ring#1 Ring#2	Ring#1 Ring#2	Units
	6.8 11.8	6.0 12.0	IN.

Performed : 07-FEB-2020			Time : 09:52				
Sensor Suite : MSTDA-NI			ID : MST-DA-13				
Internal							
	Measured			Calibrated			
	Zero	Reference	Units	Zero	Reference	Units	
INV-V	0.0	29663.4		0.00	1276.00	MV	
NOR-V	5.5	29968.6		0.00	1020.00	MV	
IN-C	0.0	60262.5		0.00	15.46	UA	
					26.70	OHMM	
INV-R							
NOR-R						36.36	OHMM

Performed : 22-Oct-2014		Time : 09:22				
Sensor Suite : MSTDAMSF		ID : MST-DA-13				
Internal						
	Measured	Calibrated				
	Zero	Reference	Units	Zero	Reference	Units
MSFC	16.0	42014.6		0.00	1522.00	UA
MSFB	32733.0	54896.5		0.00	1522.00	MA
MOM1	0.0	42954.5		0.00	1522.00	MV
MSFRA					43.30	OHMM

Shop Calibration					
PIT-CA					
Performed : 21-DEC-2019			Time : 21:46		
Sensor Suite : P-IND-T			ID : PIT-AC-043		
Medium					
	Measured		Calibrated		
	R	X	R	X	Units
Air	131492	129685	0.0	0.0	MMHOS
Zero	131066	131062	-18.1	59.6	MMHOS
Reference	244915	244454	4981.9	5059.6	MMHOS
Loop	130404	210498	3515.7	3611.2	MMHOS
Sonde Error			-0.5	-1.7	MMHOS
Cond			4981.9	5059.6	MMHOS
Deep					
	Measured		Calibrated		

	R	X	R	X	Units
Air	131939	129230	0.0	-0.0	MMHOS
Zero	131079	131067	-15.6	35.3	MMHOS
Reference	220620	224092	1984.4	2035.3	MMHOS
Loop	129308	206166	1595.4	1712.8	MMHOS
Sonde Error			-0.6	-7.8	MMHOS
Cond			1984.4	2035.3	MMHOS
Temperature					
	Measured		Calibrated		Units
	Low	High	Low	High	DEGF
	16980.0	56920.0	70.0	350.0	
Performed : 21-DEC-2019 Time : 21:46 Sensor Suite : SFL ID : PIT-AC-043					
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
Im	32732.6	48929.1	0.0	7028.0	uA
Ib	32768.6	49680.1	0.0	1750.0	mA
MOM1	32722.0	56290.6	0.0	175.0	mV
Equivalent SFL				43.97	OHMM
Performed : 21-DEC-2019 Time : 21:47 Sensor Suite : P-SP ID : PIT-AC-043					
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
	32774.5	58935.9	0.0	1000.0	mV
Performed : 21-DEC-2019 Time : 21:47 Sensor Suite : P-RMUD ID : PIT-AC-043					
Internal					
	Measured		Calibrated		Units
	Zero	Reference	Zero	Reference	
Rmi	0.0	34825.0	0.0	290.6	mA
Rmv	0.0	34825.0	0.0	290.6	mV
Equivalent Rm				0.0871	OHMM



Company: MERIT ENERGY COMPANY
 Well: DRUSSEL A-11
 Location: 314' FWL & 2359' FSL
 Logged: 02-21-2020
 K.B. Elev: 2927.0 Ft