



FILE NO:

COMPANY

LARAMIE ENERGY

API NO:

WELL

GUNDERSON BCU 20-08E

05077103560000

FIELD

VEGA

COUNTY

MESA

STATE COLORADO

Ver. 4.06

LOCATION:

SHL: LAT:39.266756N; LONG:107.795281W

OTHER SERVICES  
RALBHL: LAT:39.264441N; LONG:107.788397W  
SEC 20 TWP 9S RGE 93WPERMANENT DATUM GL ELEVATION 7144 FT  
LOG MEASURED FROM KB 30 FT ABOVE P.D.  
DRILL. MEAS. FROM KBELEVATIONS:  
KB 7176 FT  
DF 7176 FT  
GL 7146 FT

DATE 26-AUG-2017

RUN 2 TRIP 1

SERVICE ORDER US126643

DEPTH DRILLER 7929 FT

DEPTH LOGGER 7854 FT

BOTTOM LOGGED INTERVAL 7854 FT

TOP LOGGED INTERVAL 2316 FT

TIME STARTED 15:00

TIME FINISHED 21:00

OPERATOR RIG TIME 6 HOURS

TYPE OF FLUID IN HOLE WATER

FLUID DENSITY NA

FLUID SALINITY NA

FLUID LEVEL 54 FT

LOGGED CEMENT TOP 1550 FT

WELLHEAD PRESSURE 0 PSI

MAXIMUM HOLE DEVIATION NA

NOMINAL LOGGING SPEED 15 FMIN

MAX. RECORDED TEMP. 245 DEGF

REFERENCE LOG BAKER GR/RAL

REFERENCE LOG DATE 26-AUG-2017

EQUIP. NO. LOCATION HL-6670 WOODWARD

RECORDED BY S.YASSAL.SINICKI

WITNESSED BY MR. CHUCK MALLARY

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE THE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

## REMARKS

RUN 2 TRIP 1: \*2 OPERATIONS IN WELL\*

\*\*OPERATION 2: RPM/GR/CCL/TEMP RUN IN COMBINATION \*\*

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 6063' - 6081'

SJ: 7058' - 7078'

CREW: D.HUTCHINSON, J.PENA

## EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
2	1	TELEMETRY	8250EA/8248EA	10185091/10323398	FREE
2	1	GAMMA RAY	8262XA	10485470	FREE
2	1	RPM	8281EA	10387162	FREE
2	1	RPM	8283PA	10184883	FREE
2	1	RPM	8281FA	10315572	FREE
2	1	TEMP	8255XA	120516	FREE

## G-SAND PASS PNC-3D MODE

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013

Updates: 1 Patches: 9

Plotted: Sat Aug 26 21:32:42 2017

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_GUNDERSON\_20\_08E/RPM3D03.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 2281.000 ft BOTTOM DEPTH: 2975.750 ft

#### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
GR	FILTER ( )	medium (1)		TOP BOTTOM

#### RPM PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
PNC Parameters	BOREHOLE CONTENTS	FLUID		TOP BOTTOM
	OPEN/CASED HOLE	CASED HOLE		" "
	BOREHOLE SIZE	7.88	in	" "
	CASING SIZE	4.50	in	" "
	MATRIX	SANDSTONE		" "
	CORRECTION BUFFER	11		" "

### CURVE DESCRIPTION REPORT

CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Aug 26 20:42:08 2017	CASING COLLAR LOCATOR
F1:GR	Aug 26 20:42:08 2017	GAMMA RAY
F1:ISS	Aug 26 20:42:08 2017	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Aug 26 20:42:08 2017	LONG SPACE COUNT RATE
F1:RATO	Aug 26 20:42:08 2017	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Aug 26 20:42:08 2017	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Aug 26 20:42:08 2017	CORRECTED FORMATION SIGMA
F1:SS	Aug 26 20:42:08 2017	SHORT SPACE COUNT RATE

### CURVE MEASURE POINT OFFSET

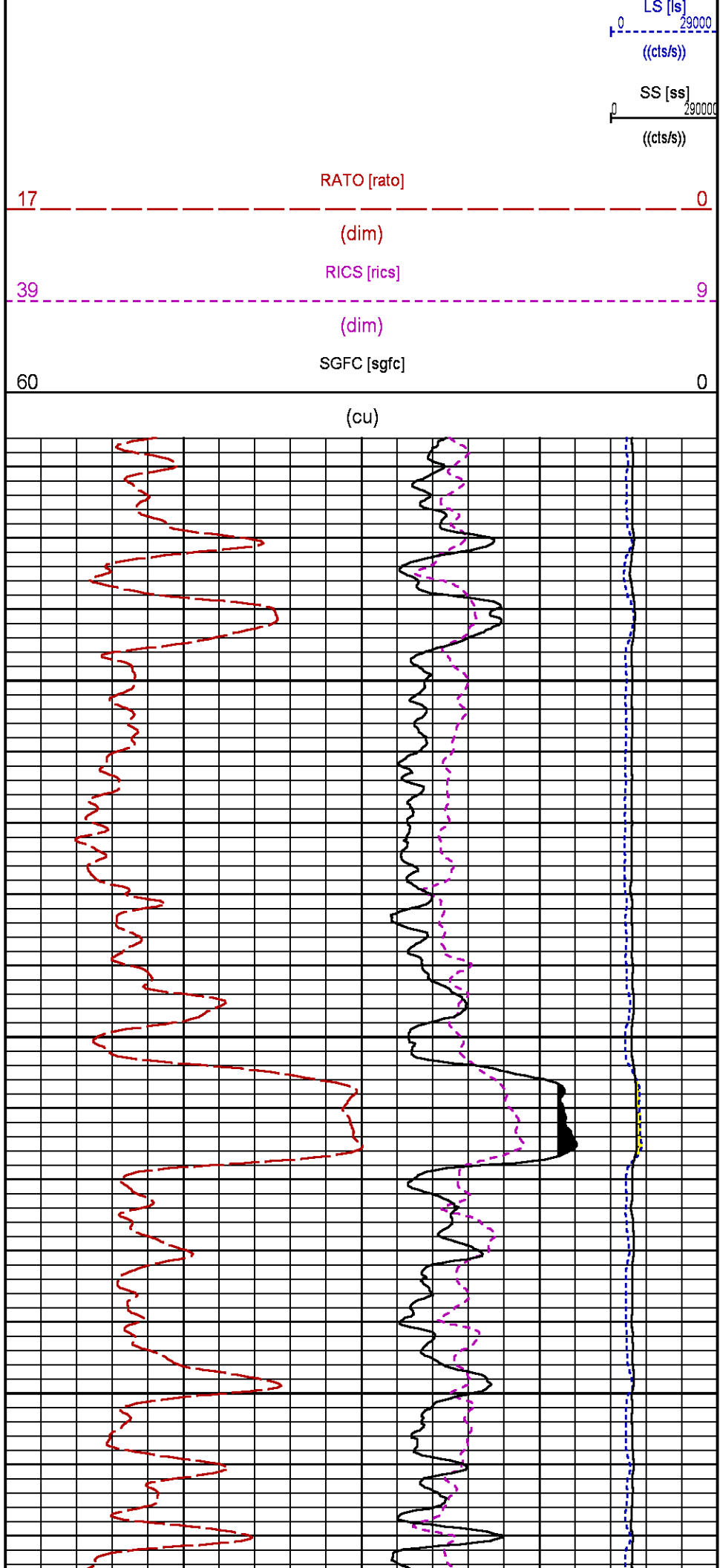
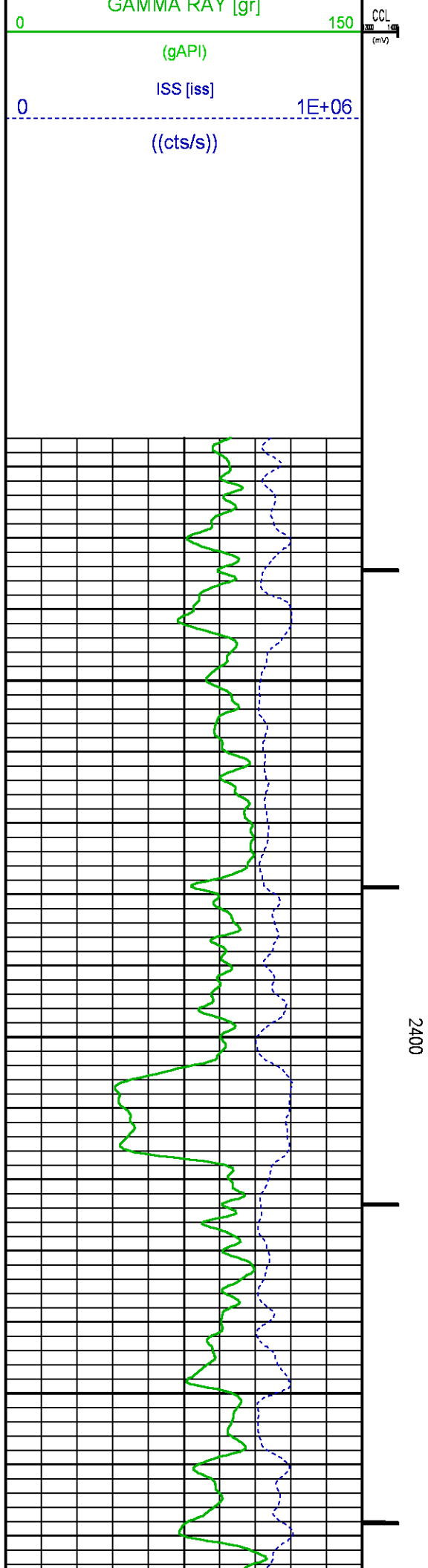
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	26.00	ISS	12.75	RATO	12.75	SGFC	12.75
GR	23.00	LS	12.75	RICS	12.75	SS	12.75

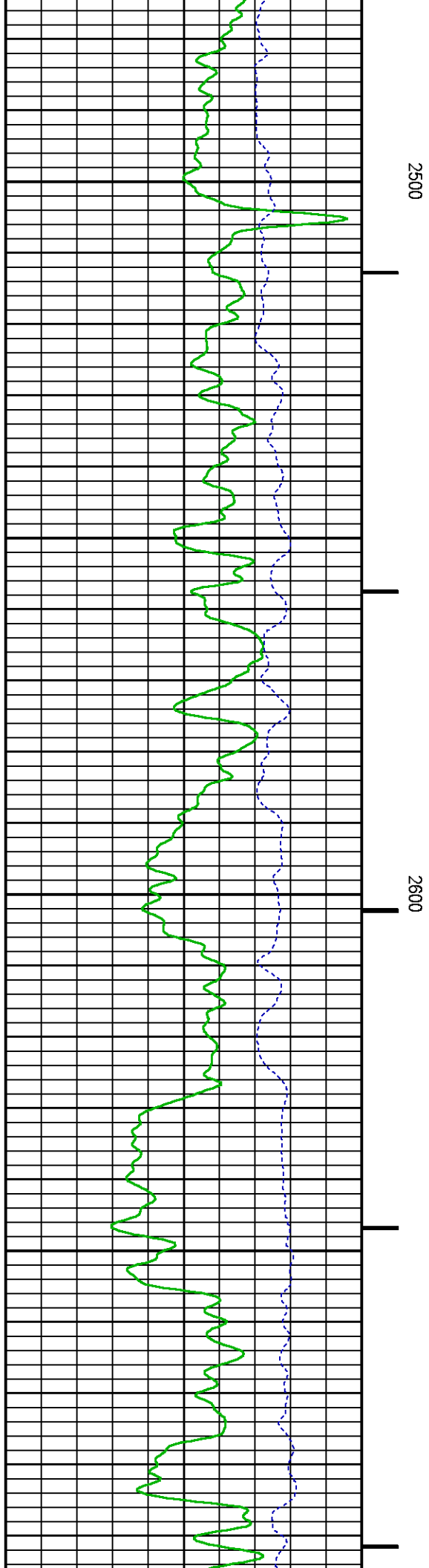
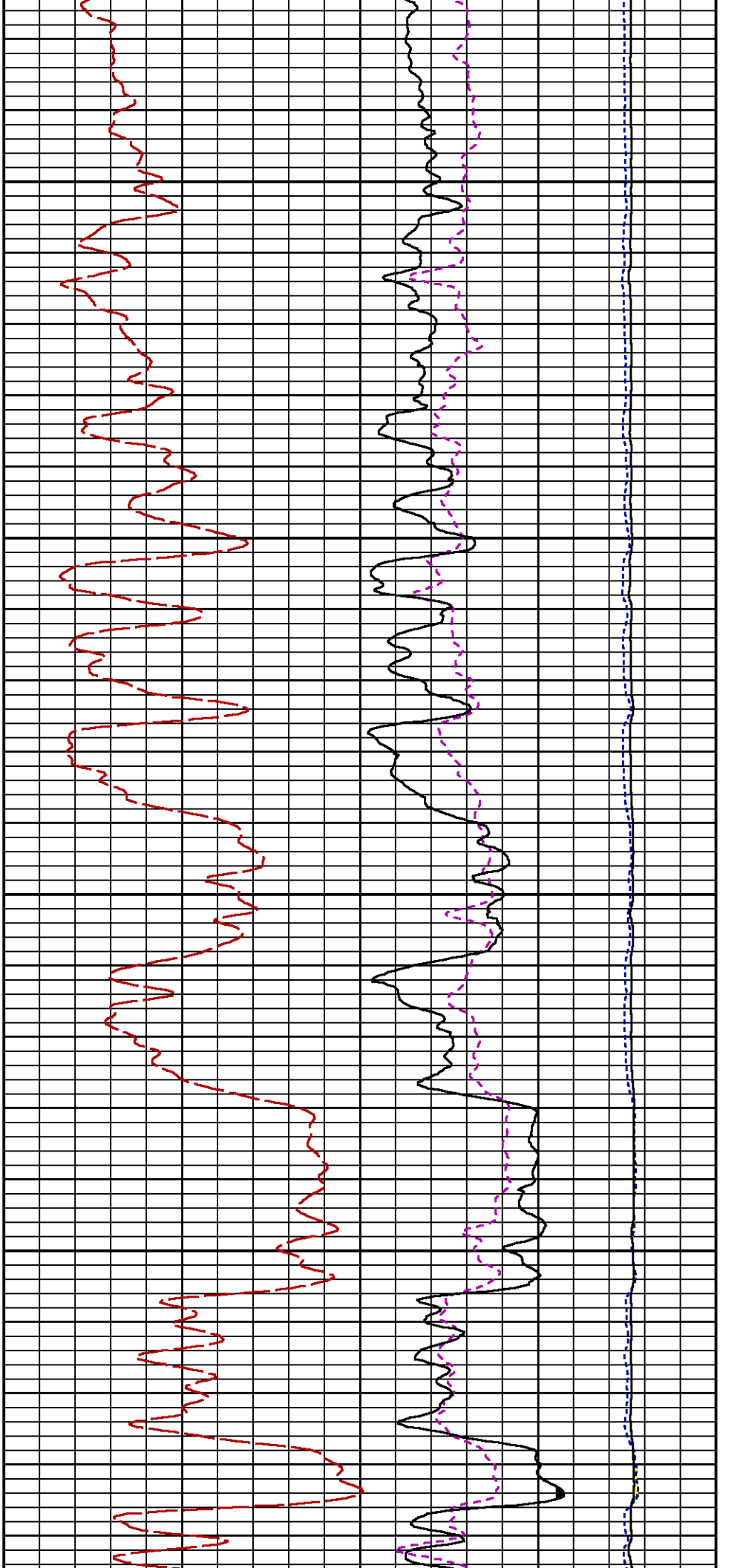
Presentation : cpu100:/dat1a/LARAMIE\_GUNDERSON\_20\_08E/GUNDERSON\_20\_08E\_RPM\_GSAND.fvpdf [5"/100' Scale]  
Plot Interval : 2316 - 2916 Feet

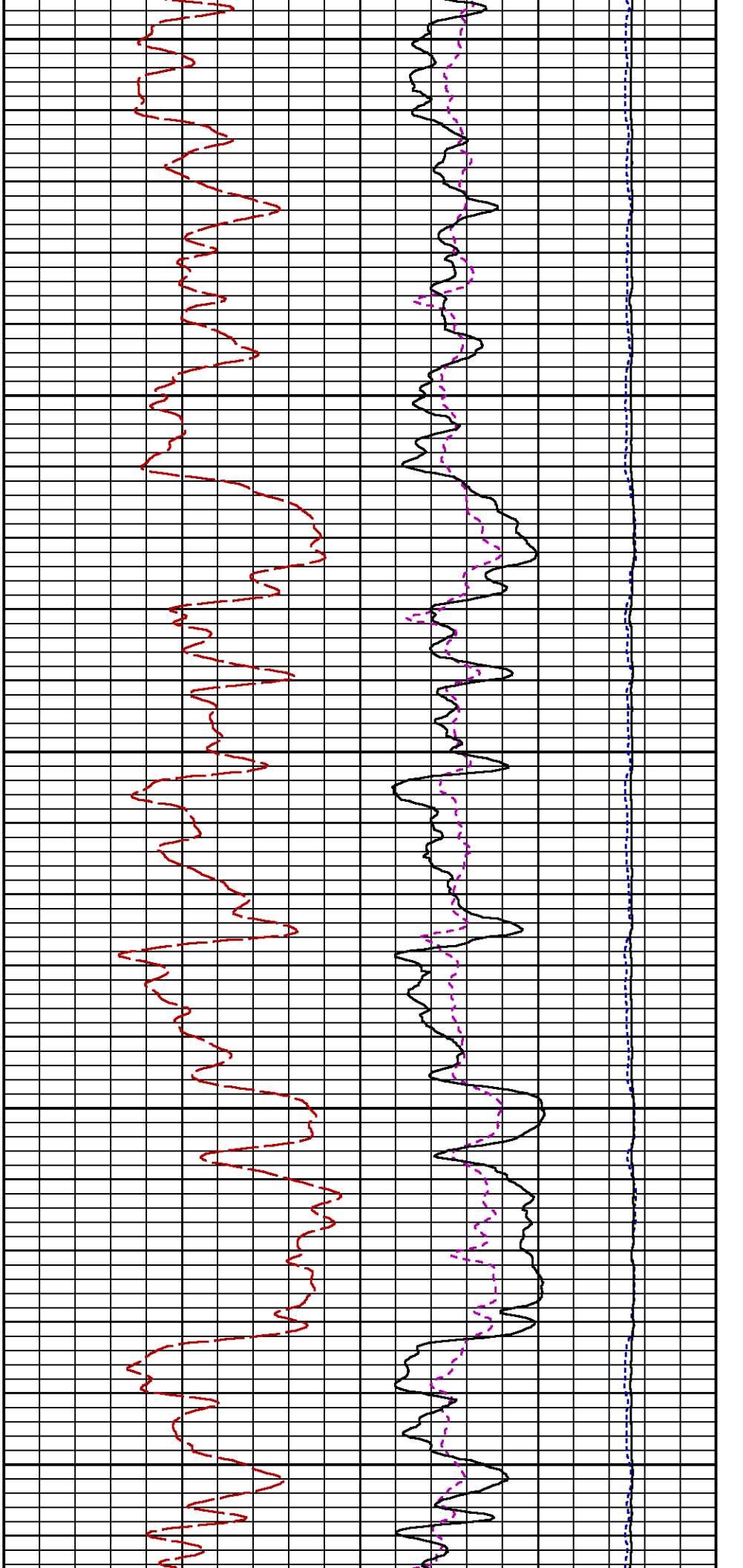
Data File 1 : F1 : cpu100:/dat1a/LARAMIE\_GUNDERSON\_20\_08E/GUNDERSON\_20\_08E\_RPM\_GSAND.xtf  
Created On : Aug 26 20:42:08 2017  
Company : LARAMIE ENERGY  
Well : GUNDERSON BCU 20-08E  
Field : VEGA  
File Interval : 2256.5 - 2977 Feet  
OCT : RPM3D

GR BACKUP

FEET



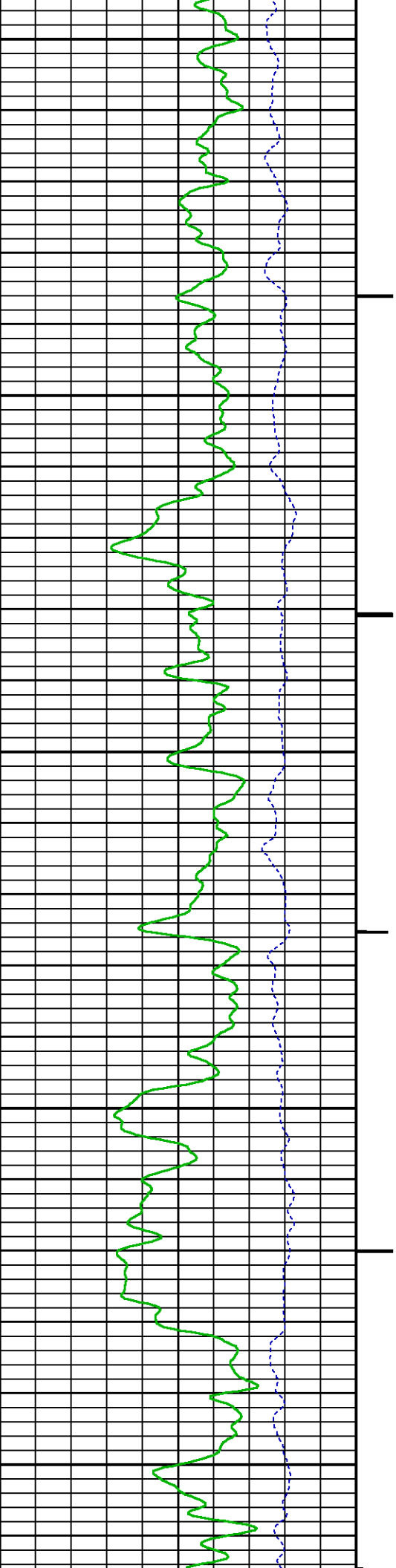


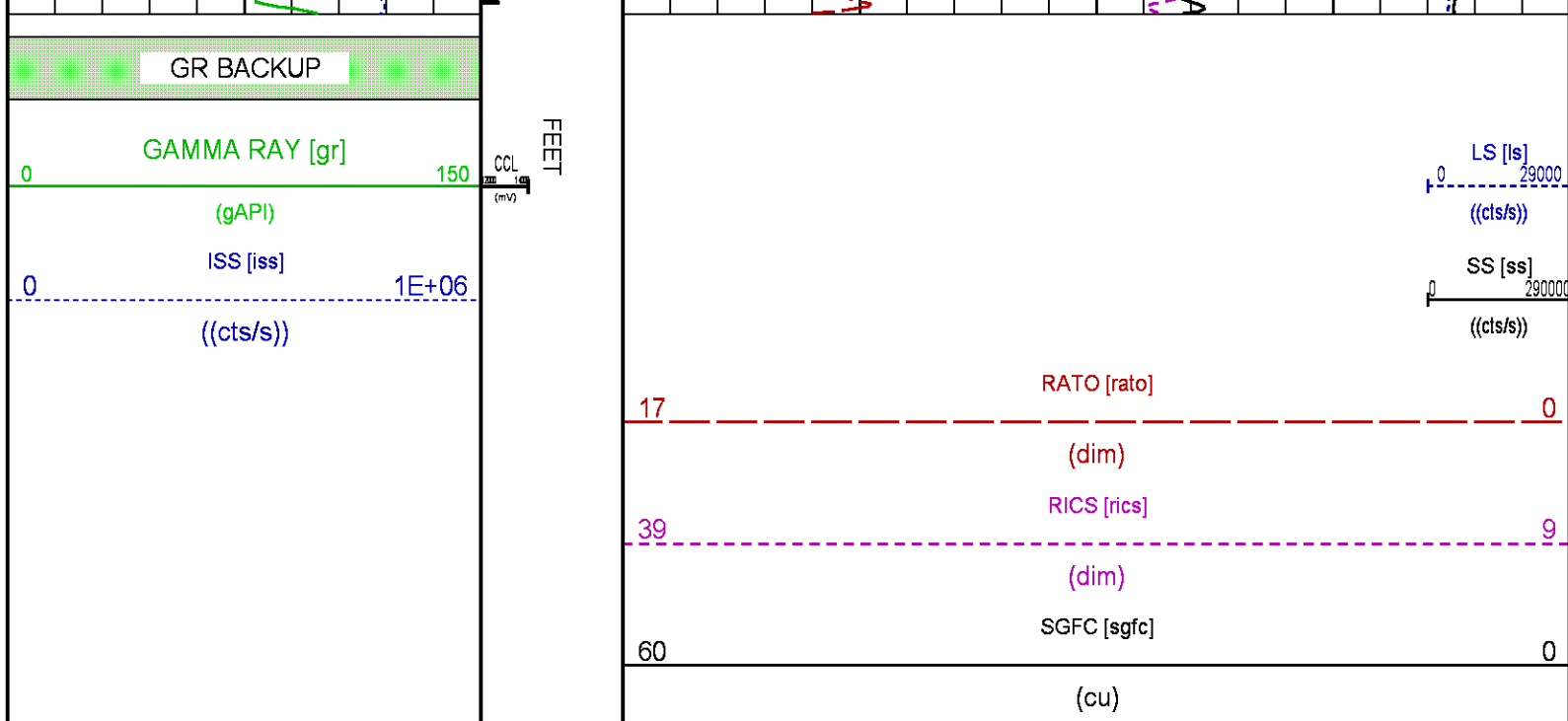


2700

2800

2900





## MAIN PASS PNC-3D MODE

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013  
Updates: 1 Patches: 9

Plotted: Sat Aug 26 20:31:16 2017

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_GUNDERSON\_20\_08E/RPM3D02.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 4147.250 ft BOTTOM DEPTH: 7864.000 ft

#### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
GR	FILTER ()	medium (1)		TOP BOTTOM

#### RPM PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
PNC Parameters	BOREHOLE CONTENTS	FLUID		TOP BOTTOM
	OPEN/CASED HOLE	CASED HOLE		" "
	BOREHOLE SIZE	7.88	in	" "
	CASING SIZE	4.50	in	" "
	MATRIX	SANDSTONE		" "
	CORRECTION BUFFER	11		" "

### CURVE DESCRIPTION REPORT

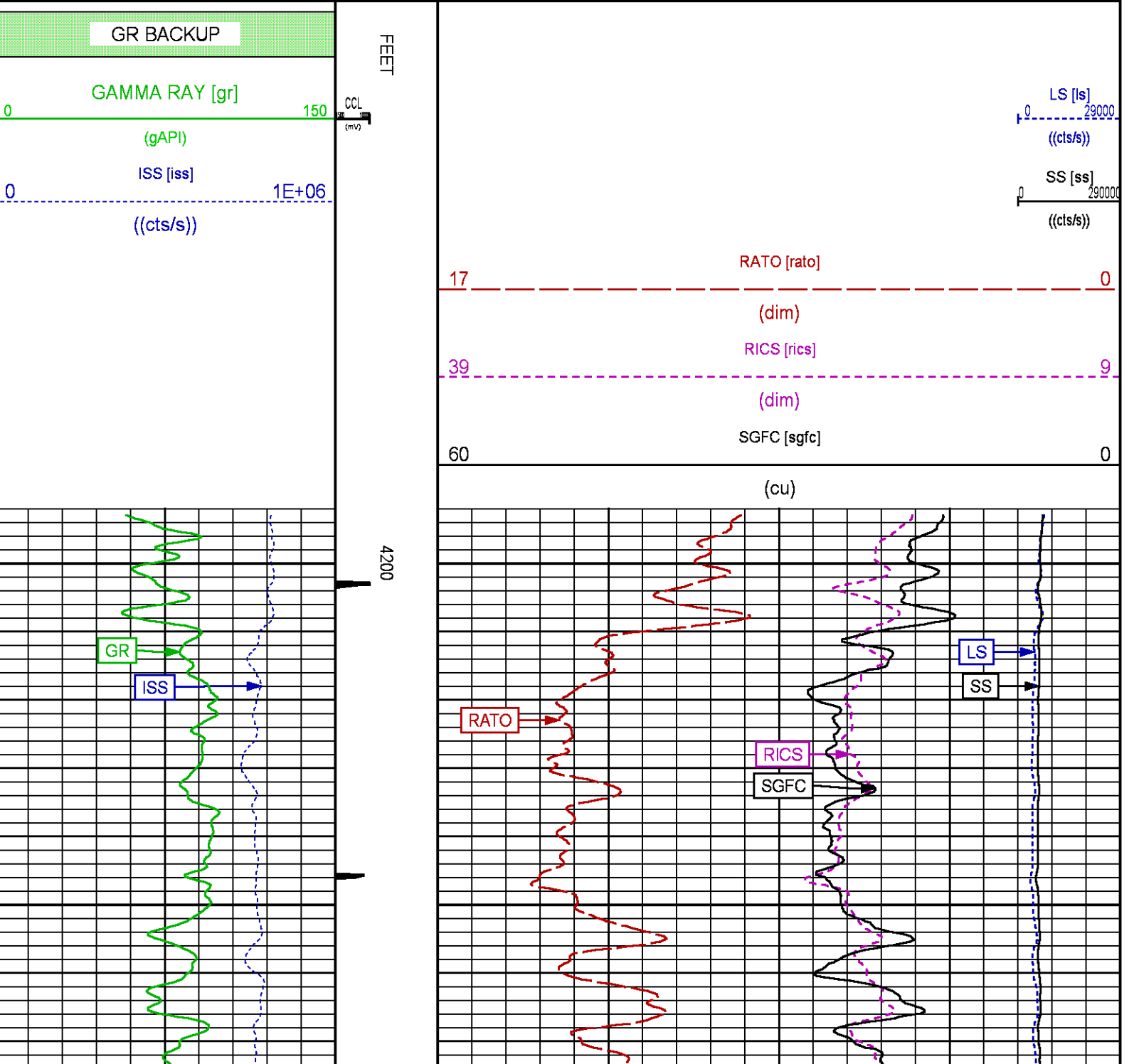
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Aug 26 16:31:42 2017	CASING COLLAR LOCATOR
F1:GR	Aug 26 16:31:42 2017	GAMMA RAY
F1:ISS	Aug 26 16:31:42 2017	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Aug 26 16:31:42 2017	LONG SPACE COUNT RATE
F1:RATO	Aug 26 16:31:42 2017	SHORT/LONG SPACE COUNT RATE RATIO

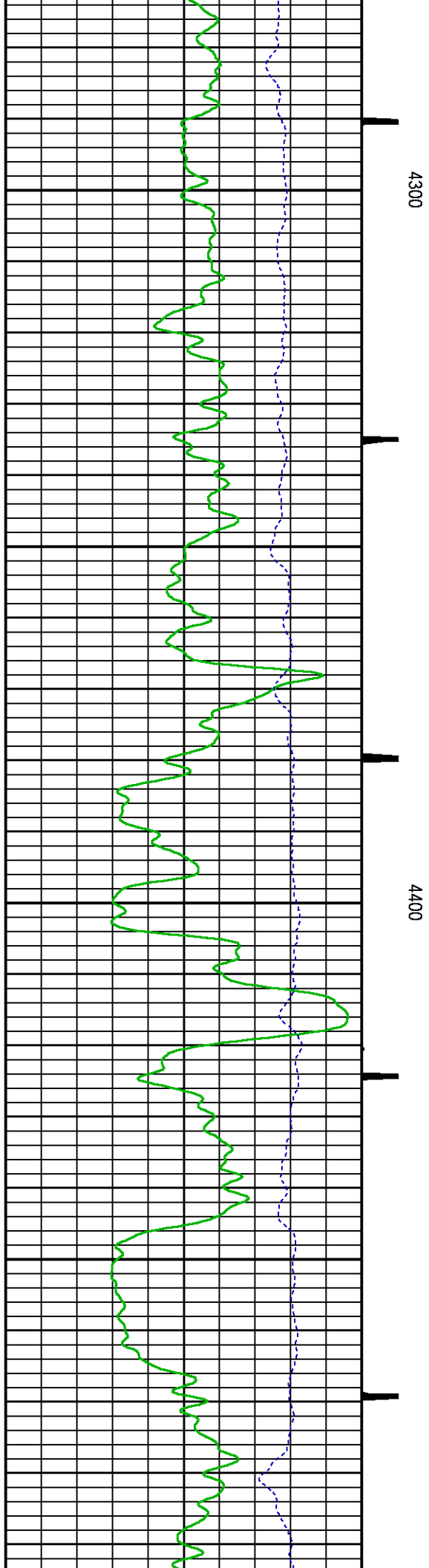
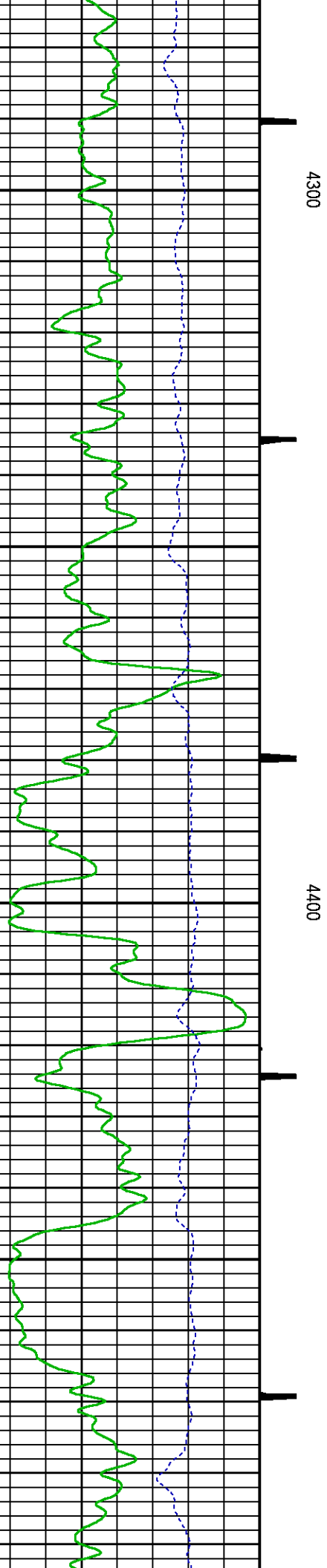
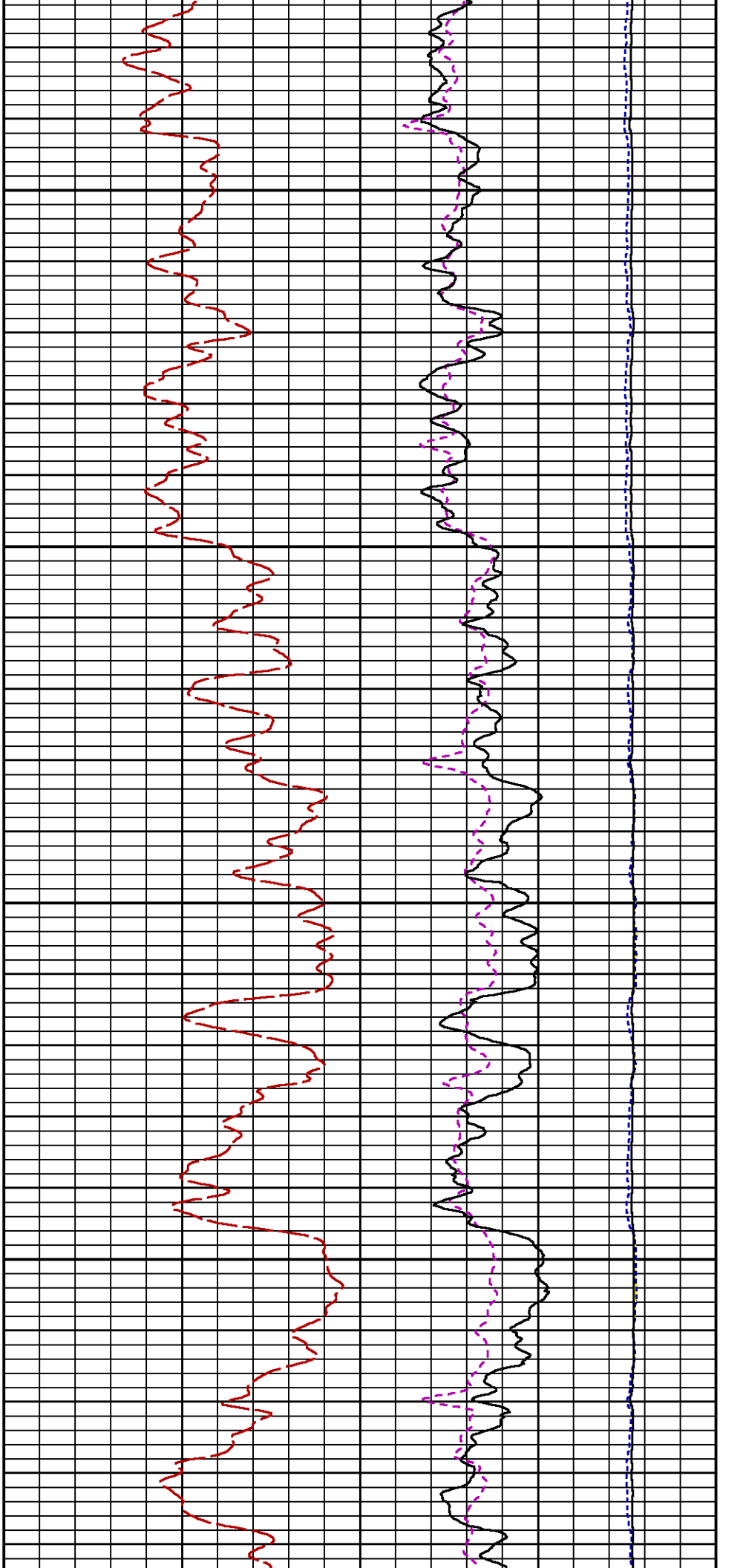
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	26.00	ISS	12.75	RATO	12.75	SGFC	12.75
GR	23.00	LS	12.75	RICS	12.75	SS	12.75

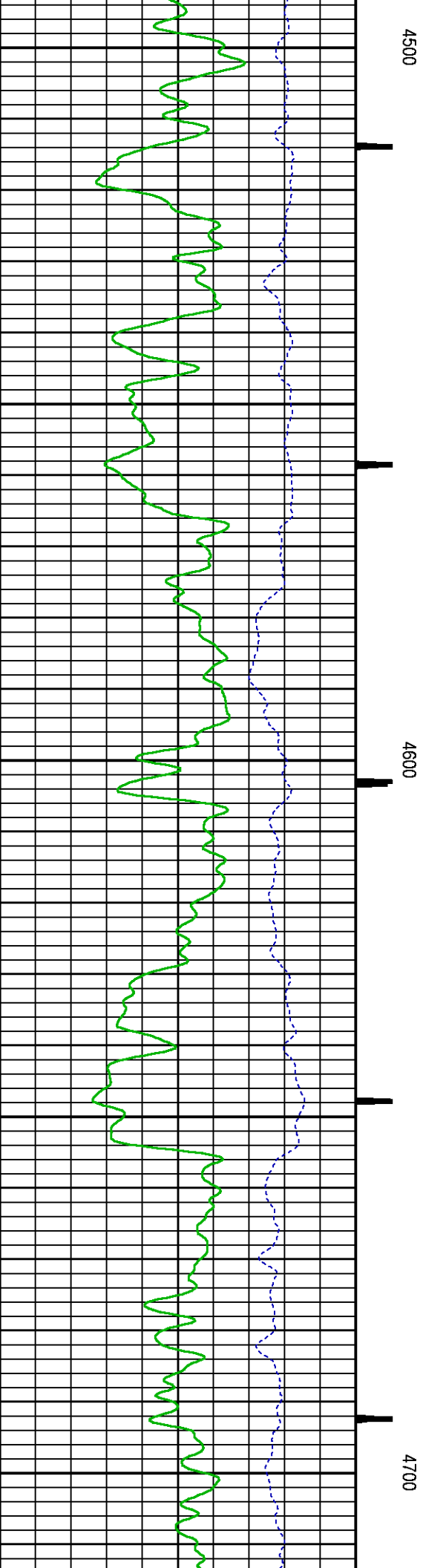
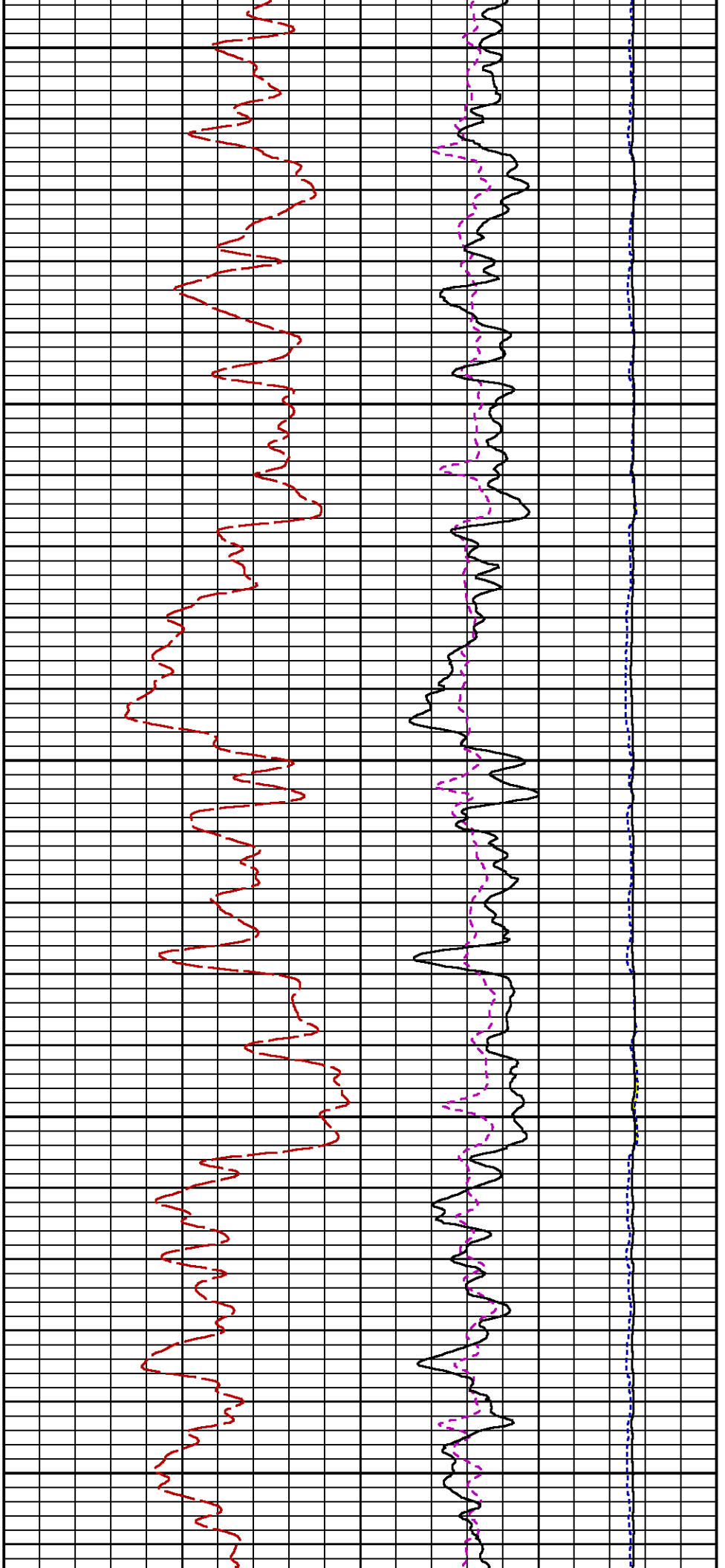
Presentation : cpu100:/dat1a/LARAMIE\_GUNDERSON\_20\_08E/GUNDERSON\_20\_08E\_RPM\_MAIN.fvpdf [5"/100' Scale]  
Plot Interval : 4193 - 7864.5 Feet

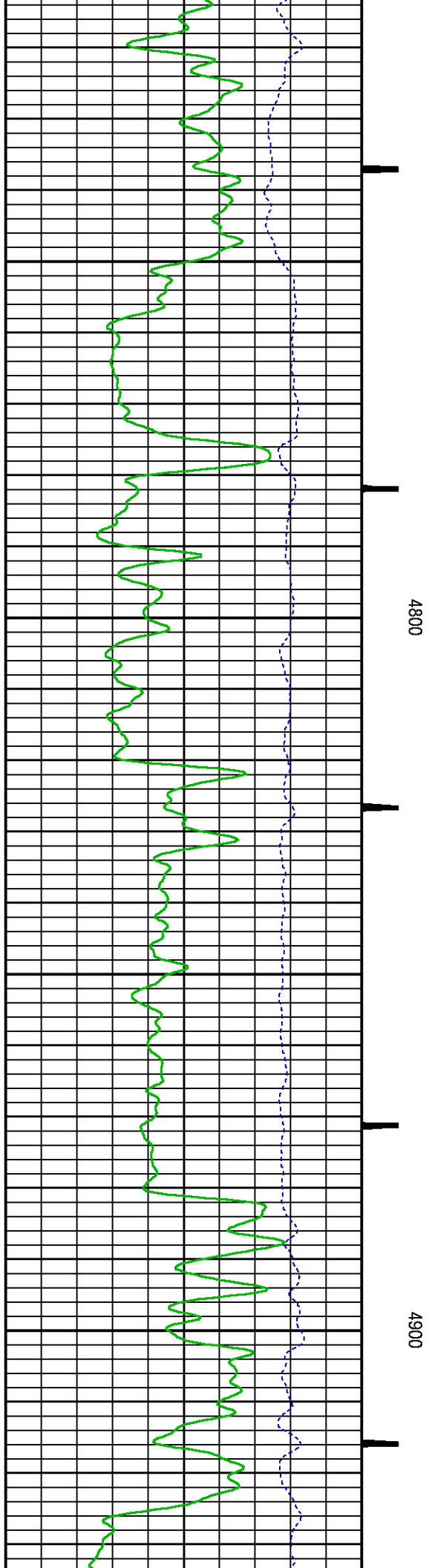
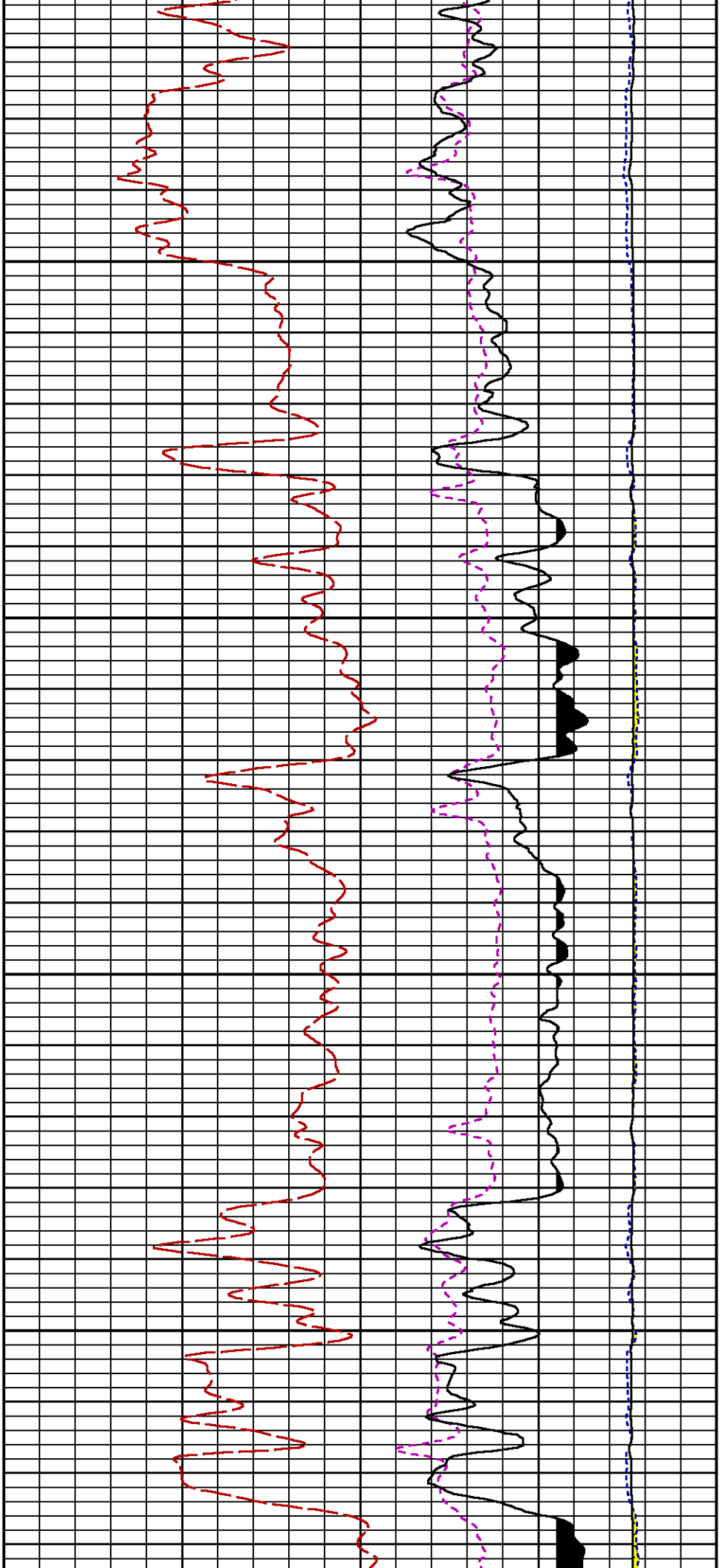
Data File 1 : F1 : cpu100:/dat1a/LARAMIE\_GUNDERSON\_20\_08E/GUNDERSON\_20\_08E\_RPM\_MAIN.xtf  
Created On : Aug 26 16:31:42 2017  
Company : LARAMIE ENERGY  
Well : GUNDERSON BCU 20-08E  
Field : VEGA  
File Interval : 4122.25 - 7866 Feet  
OCT : RPM3D

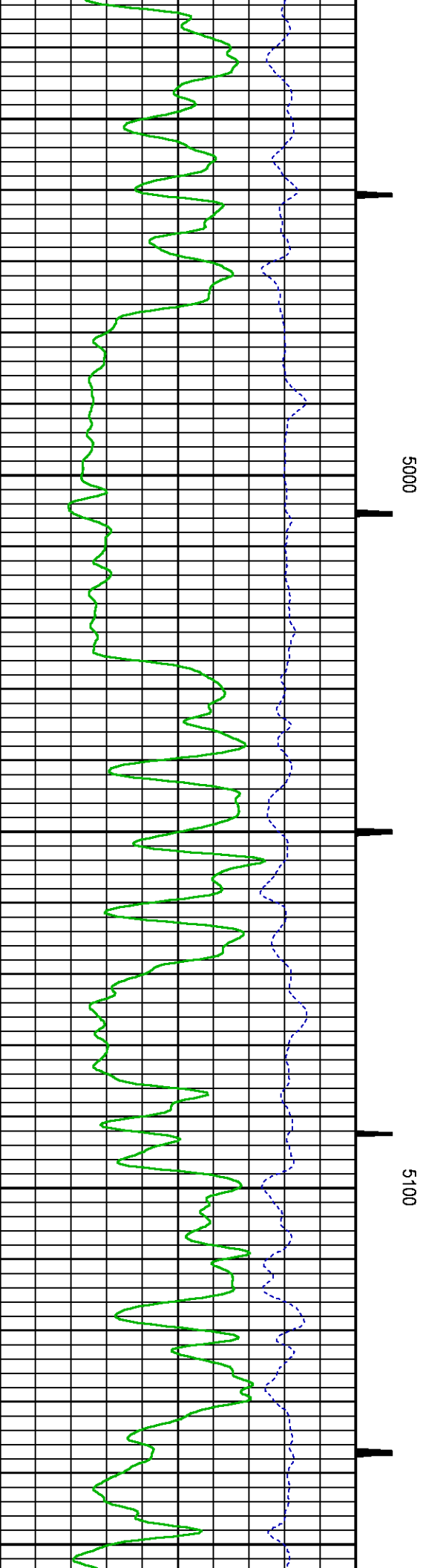
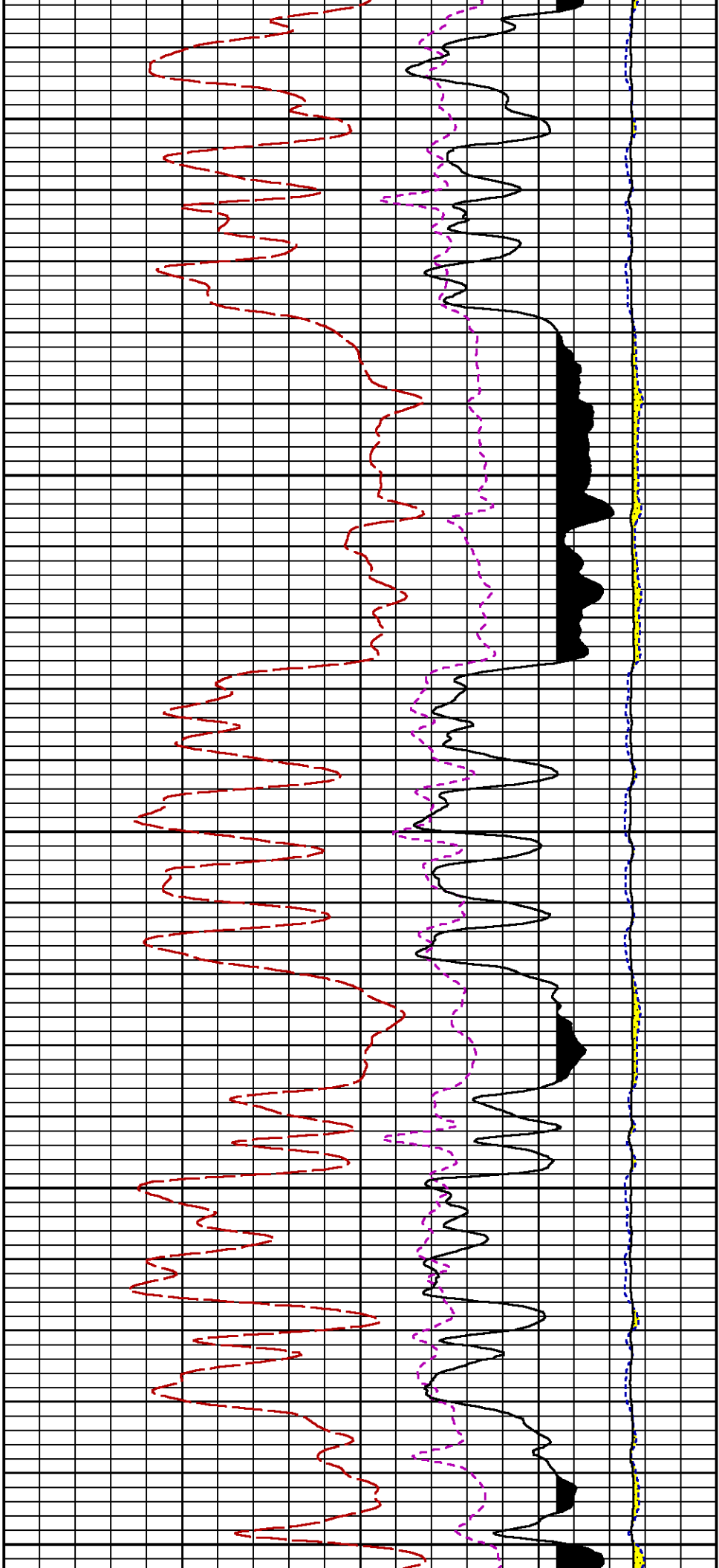


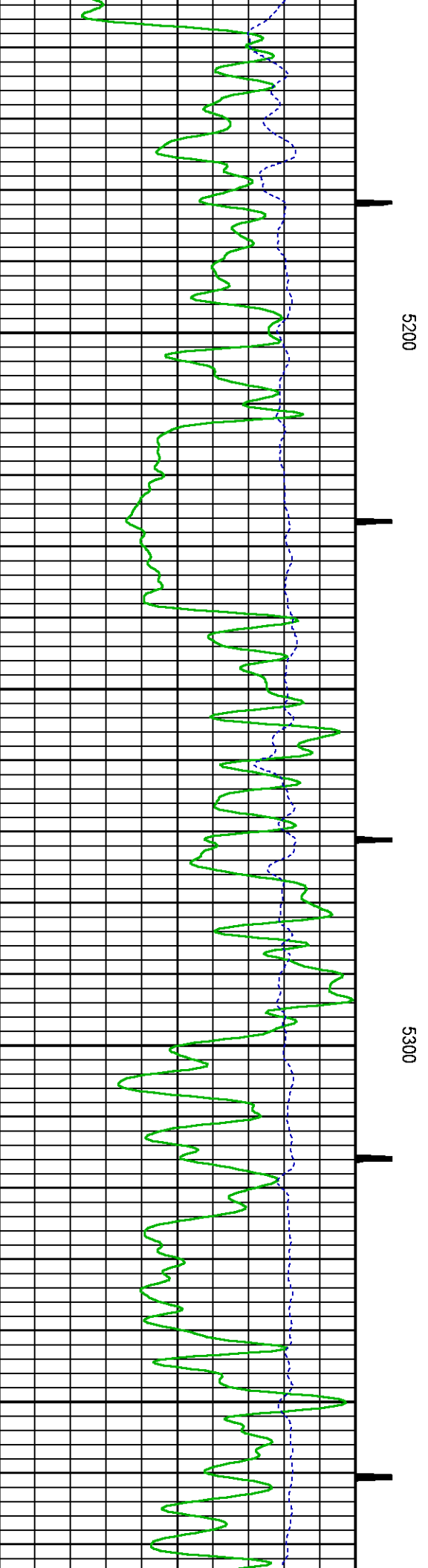
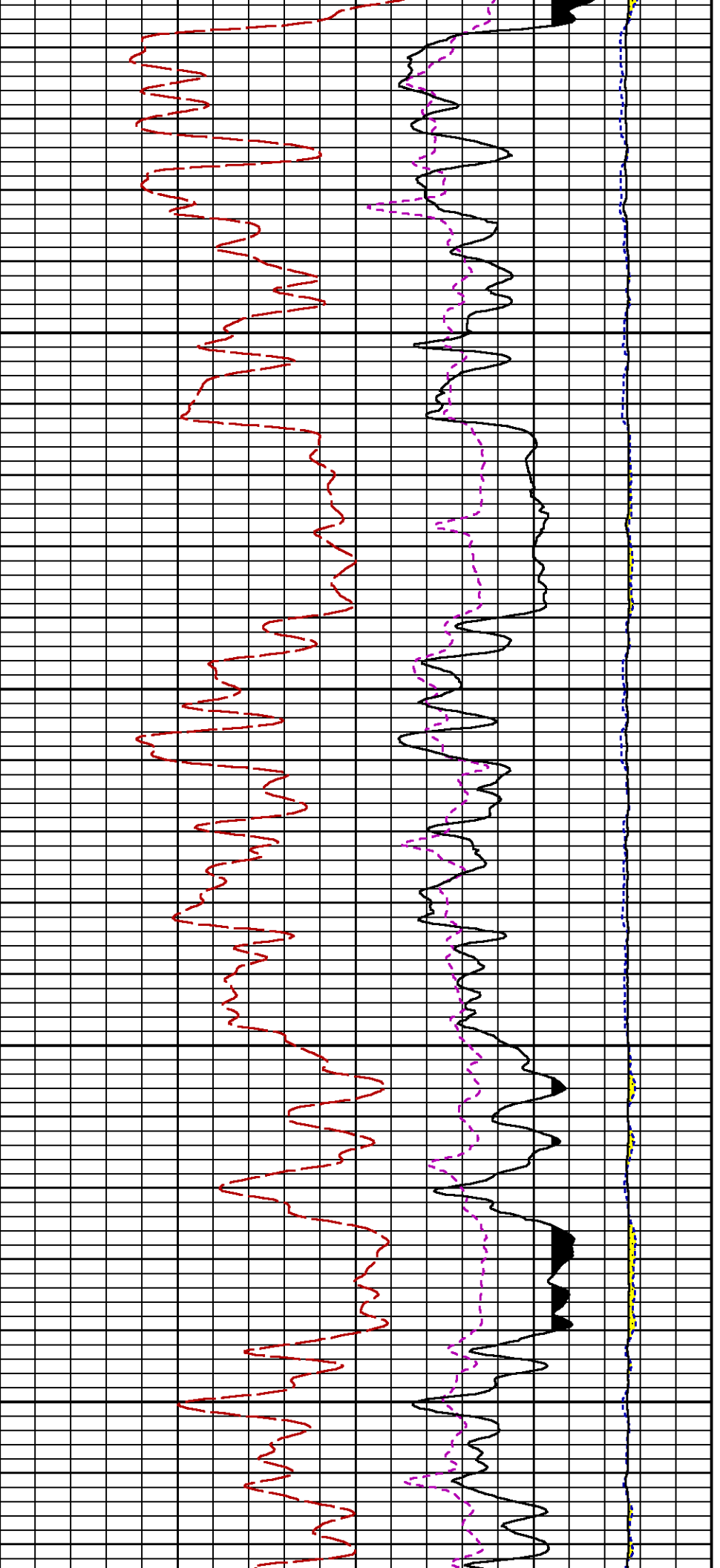


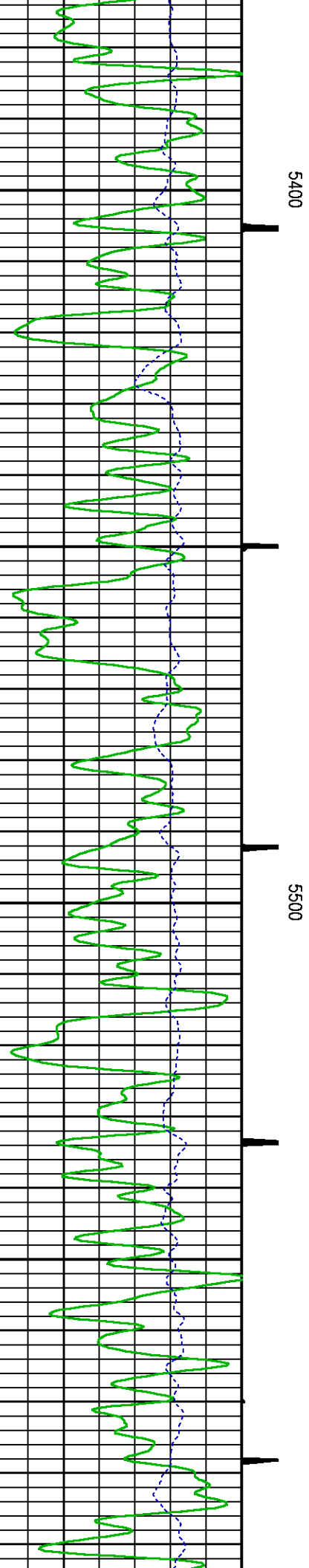
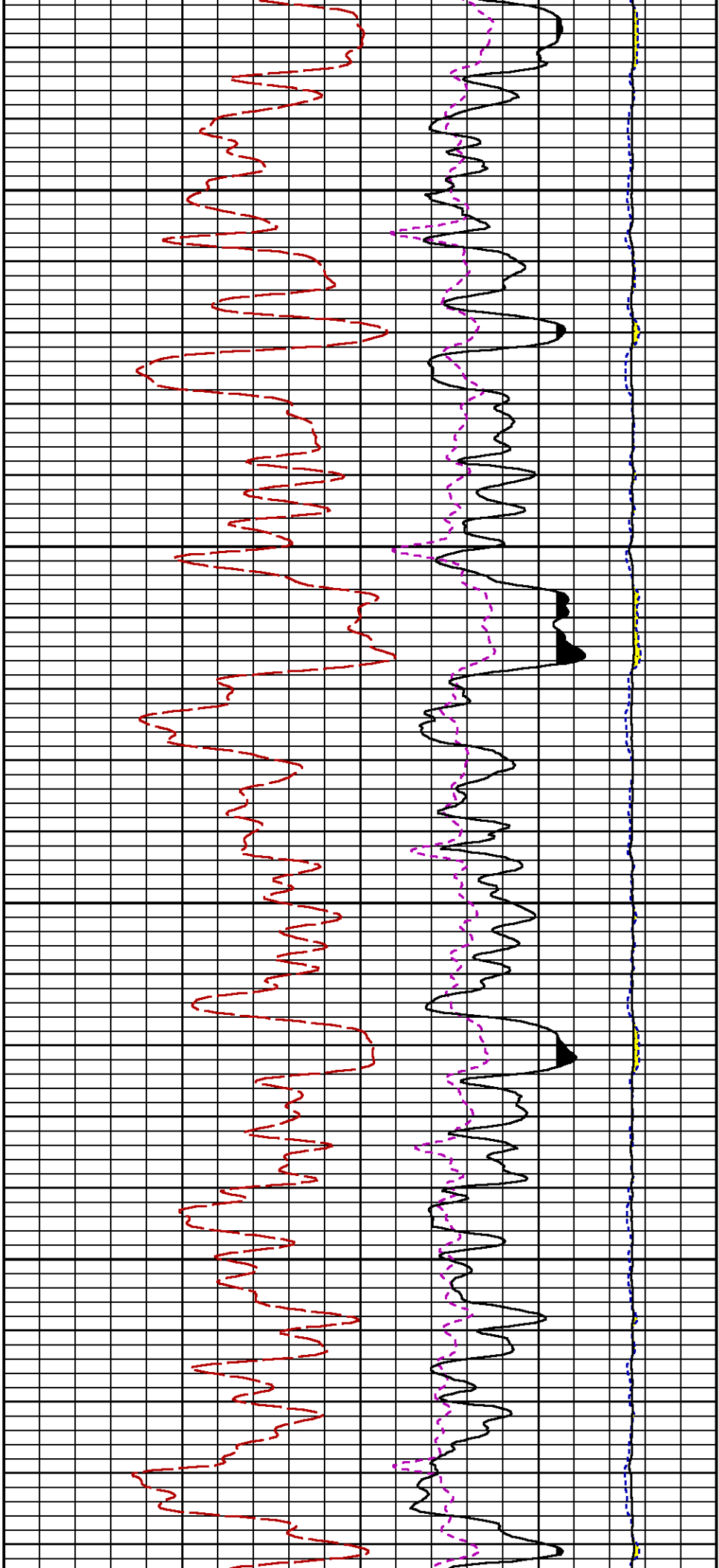


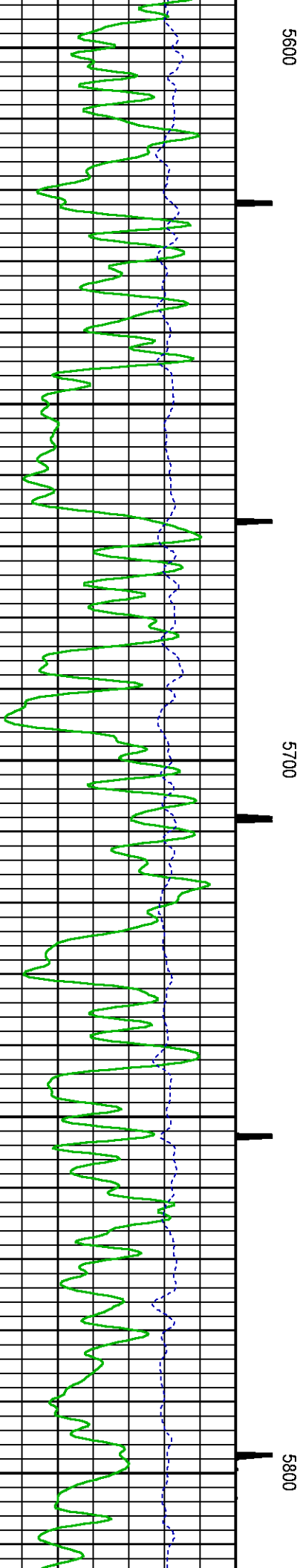
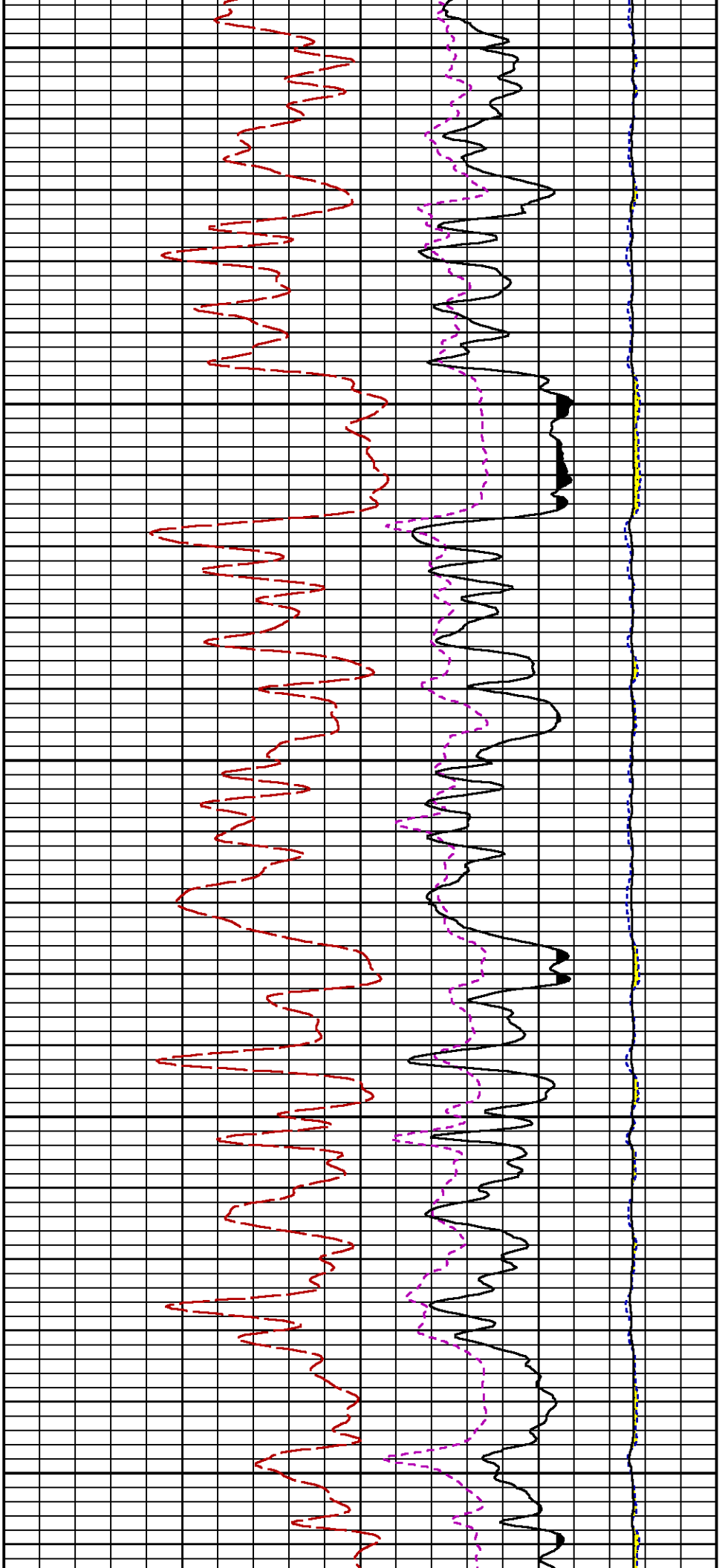


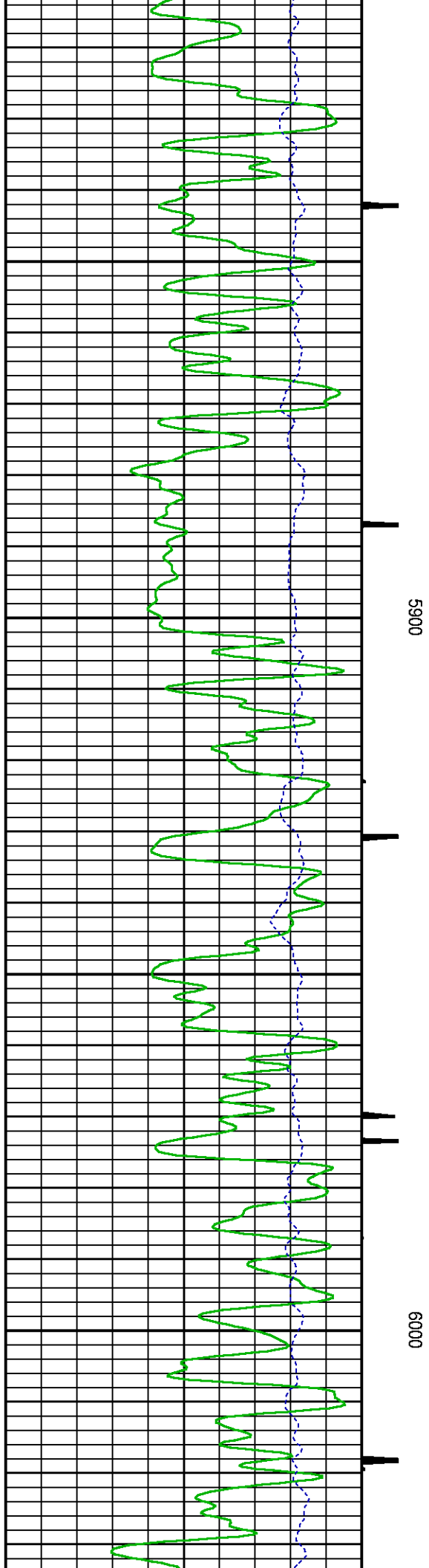
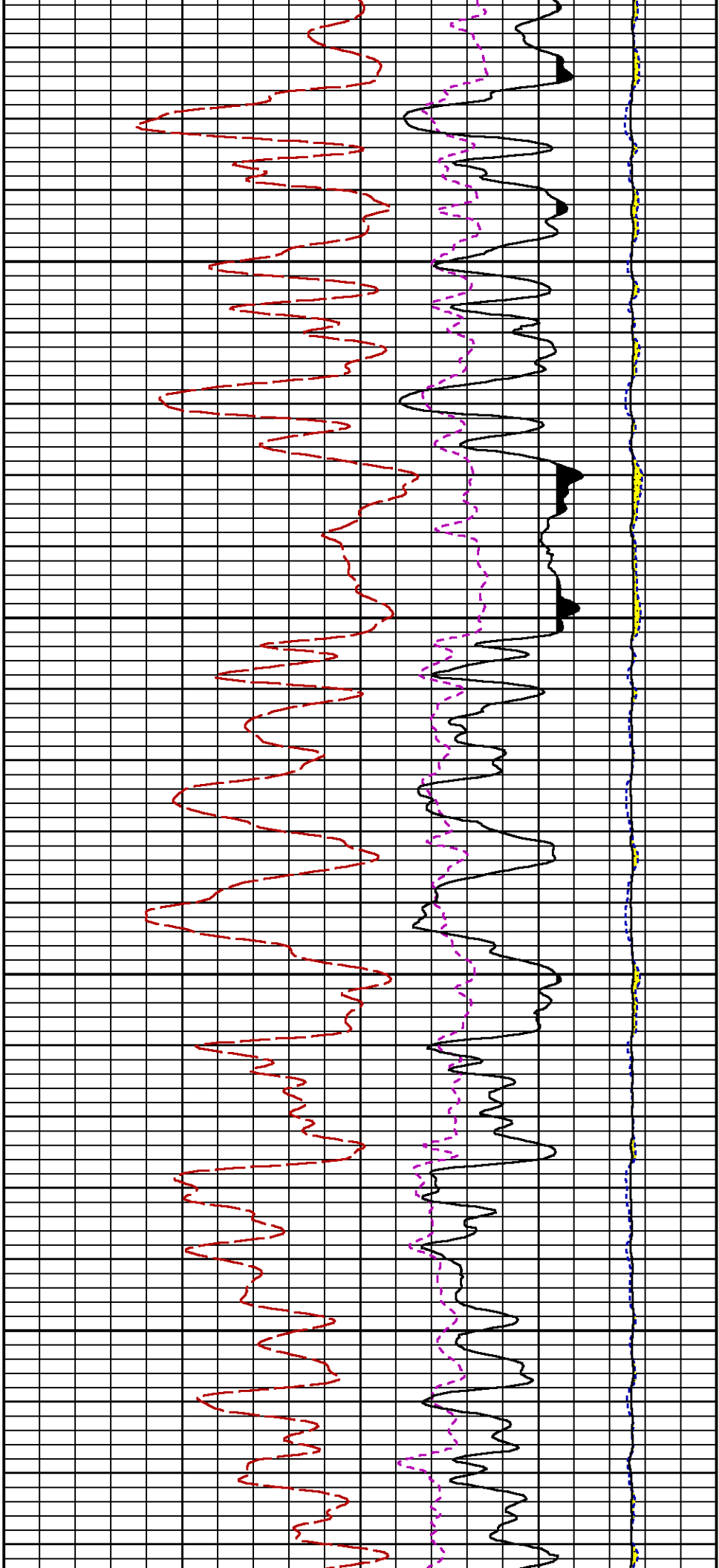


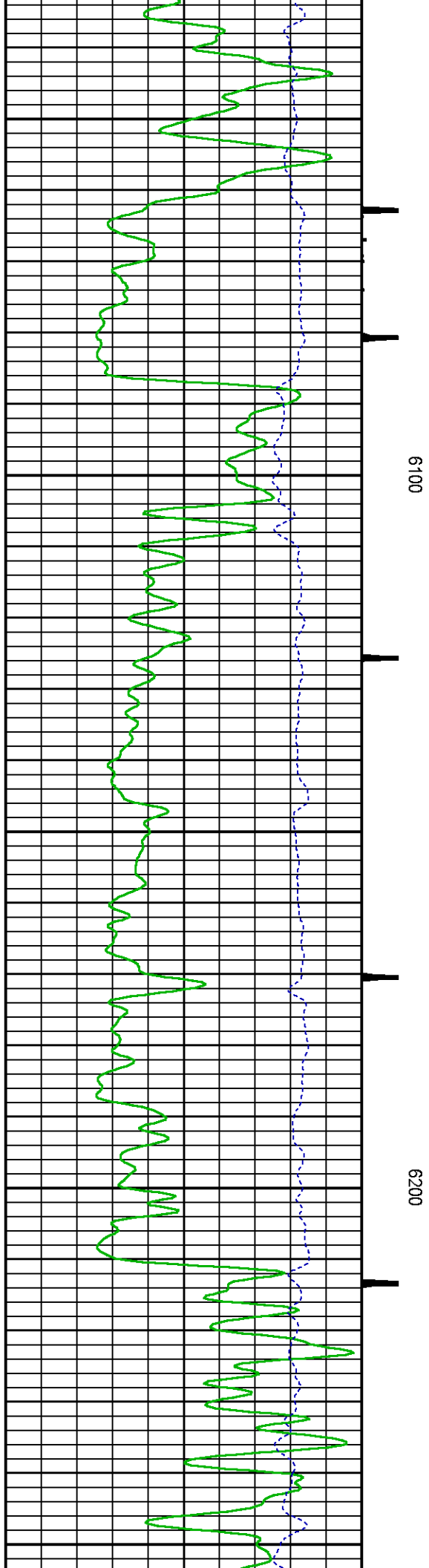
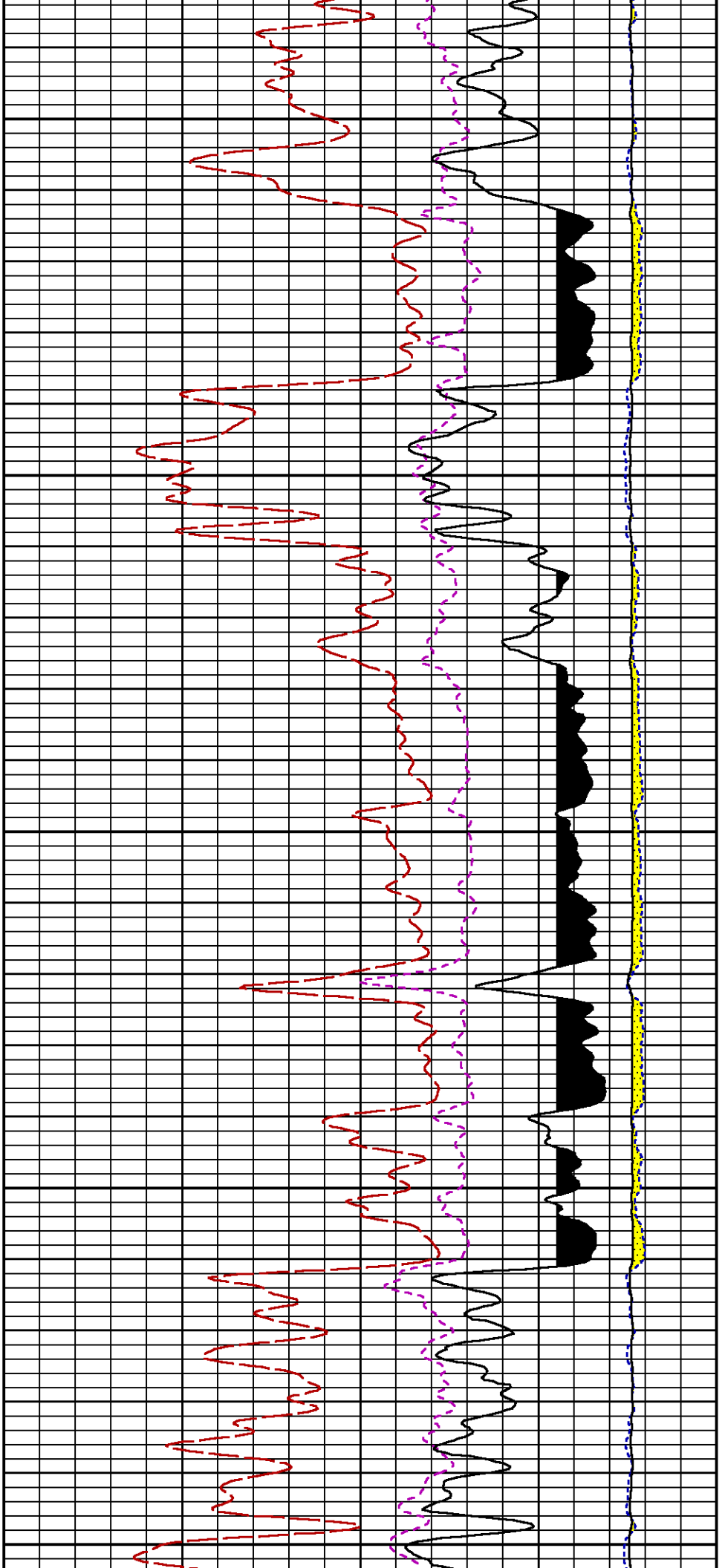




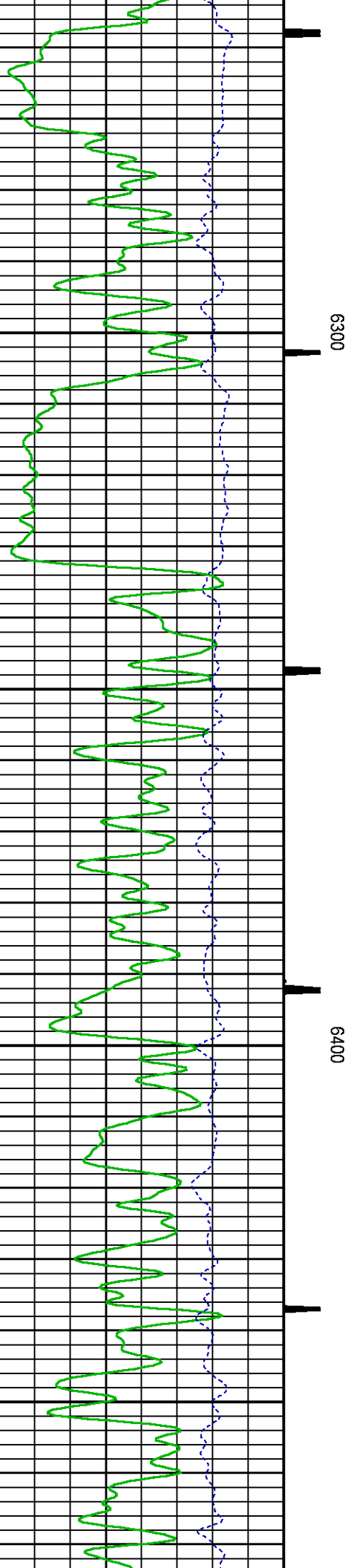
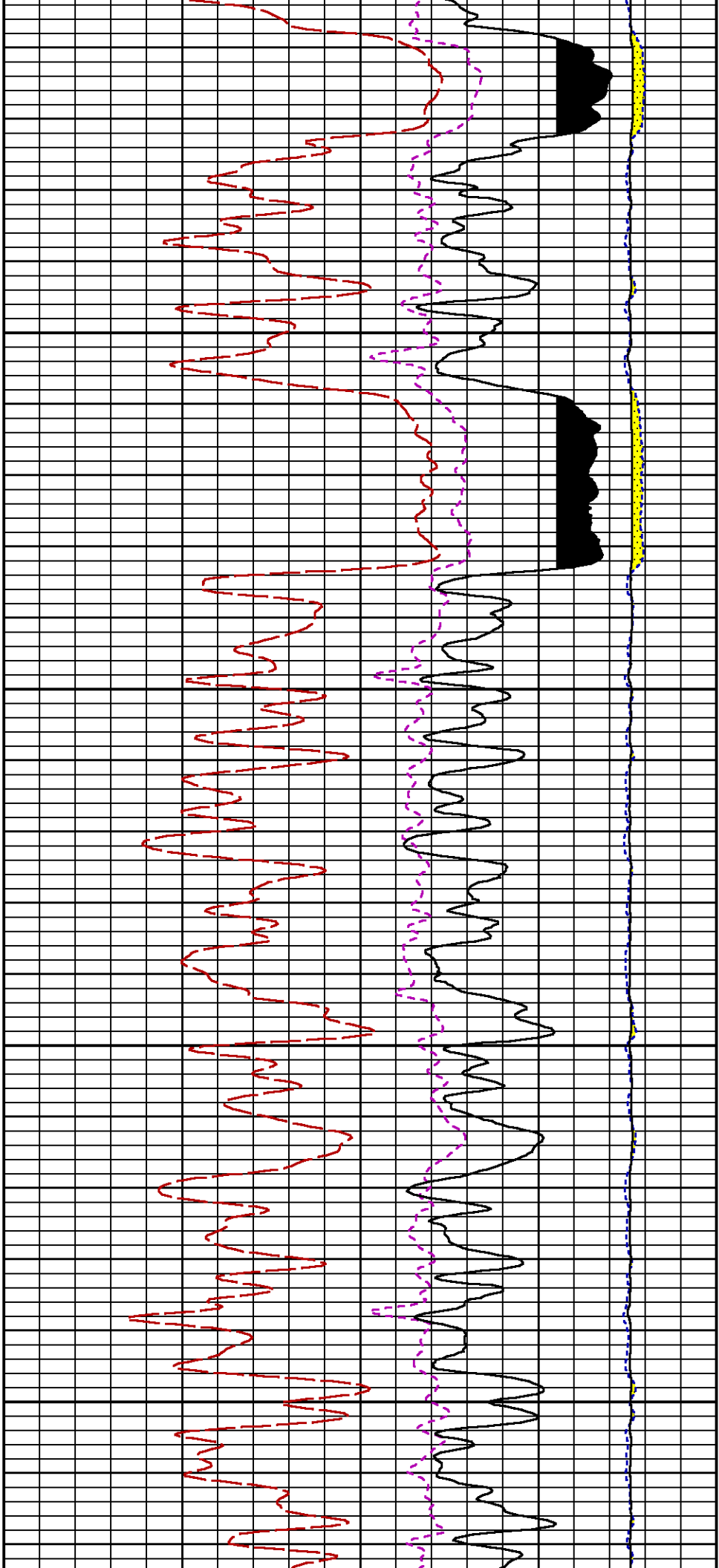


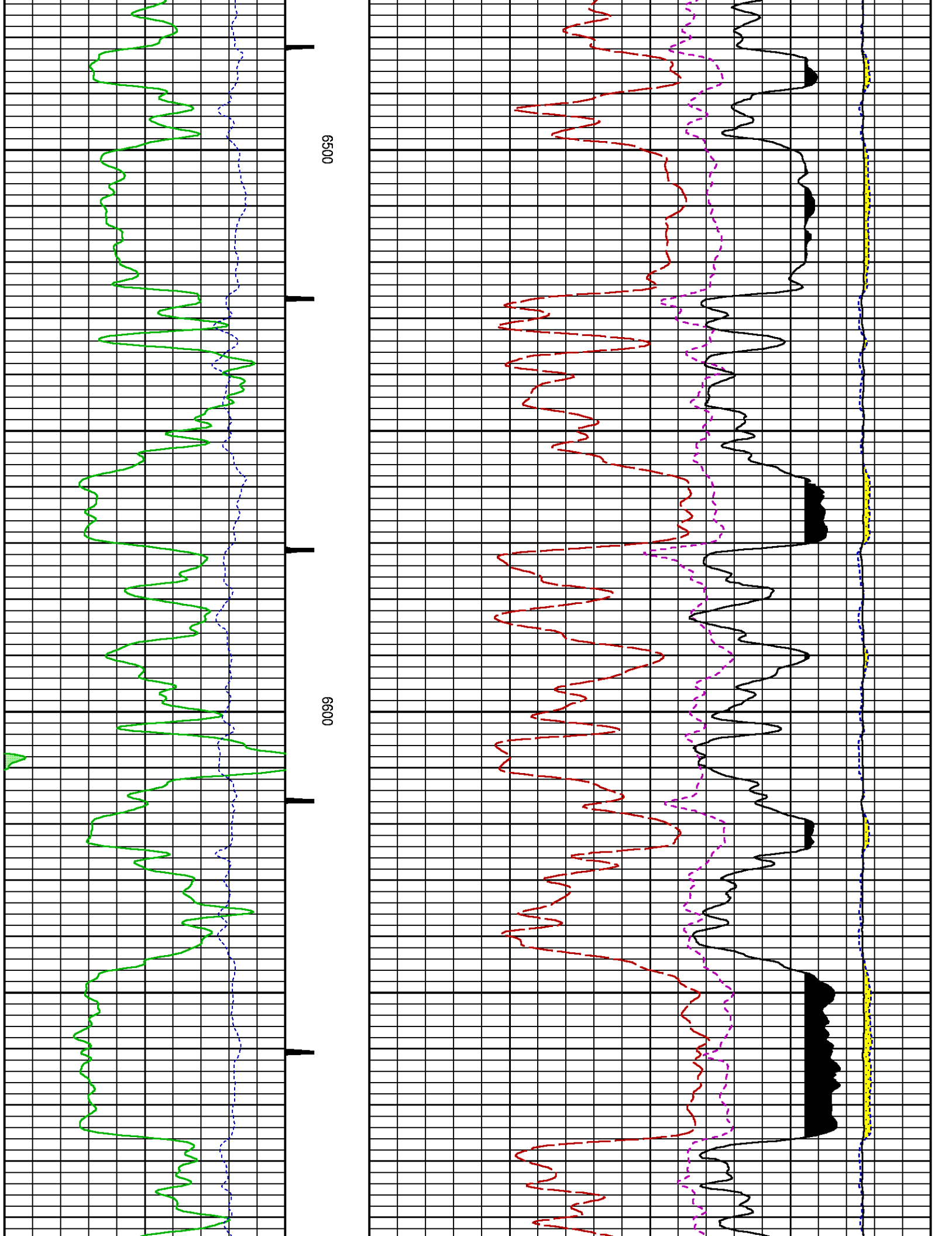


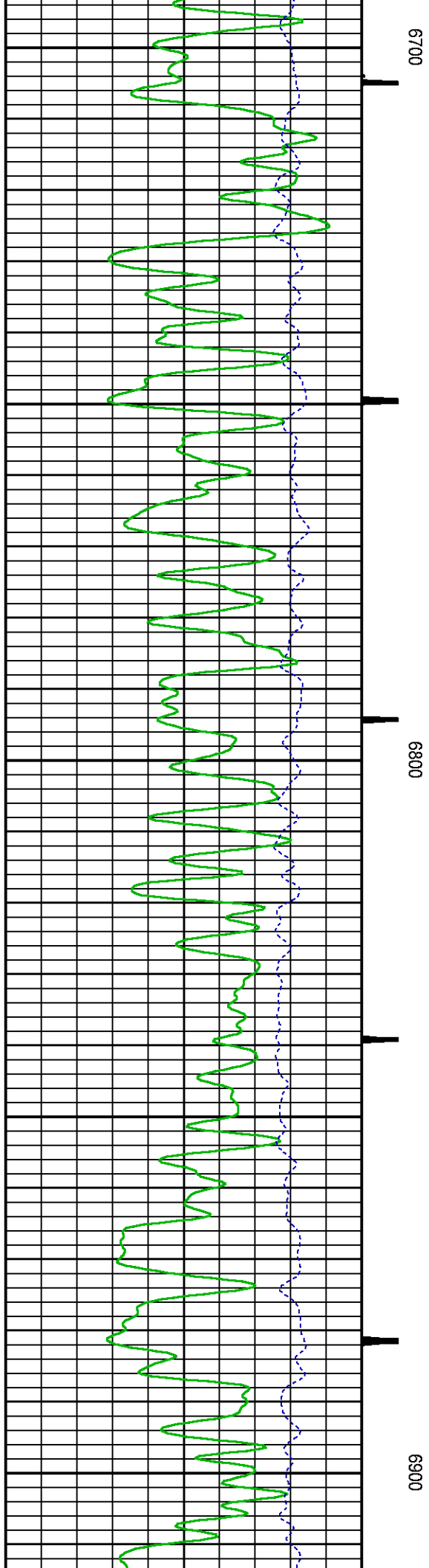
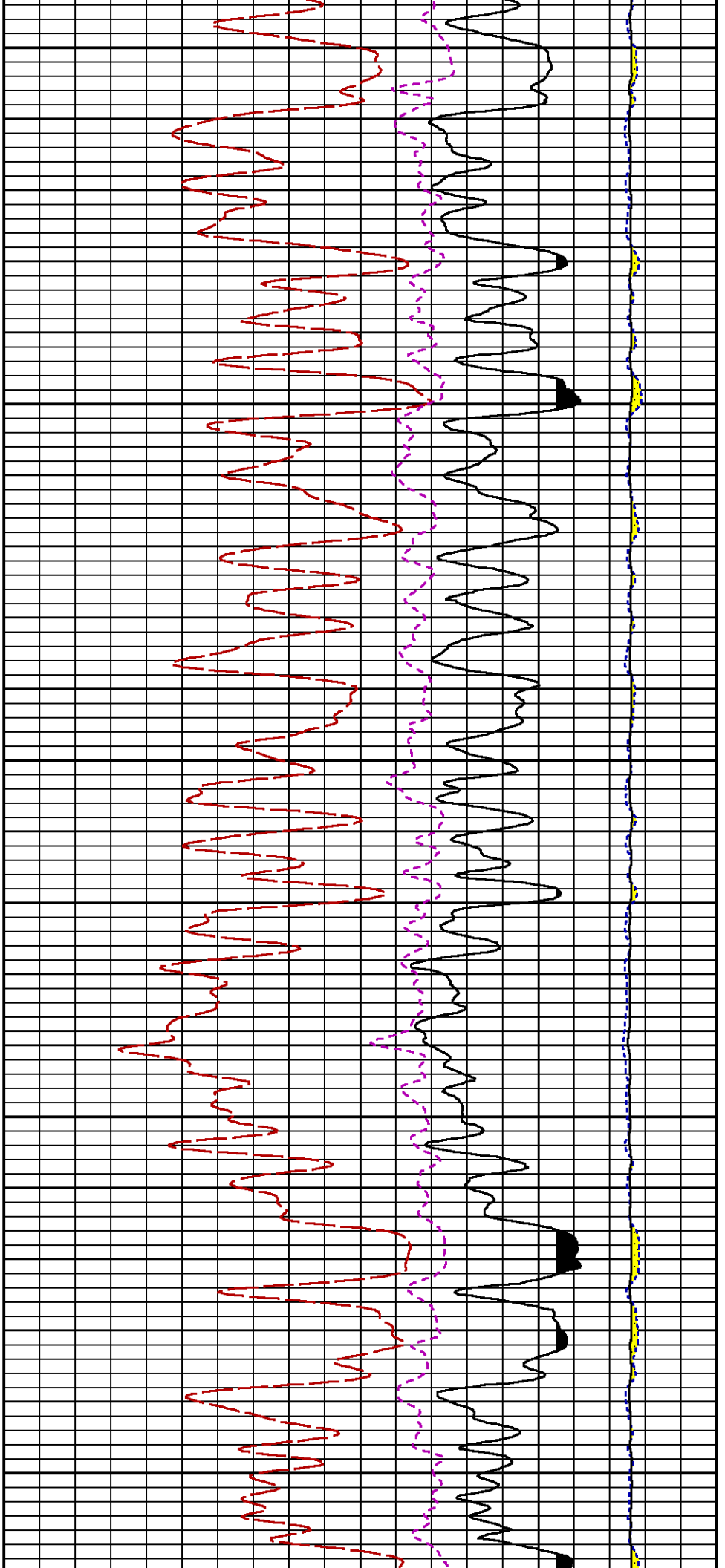


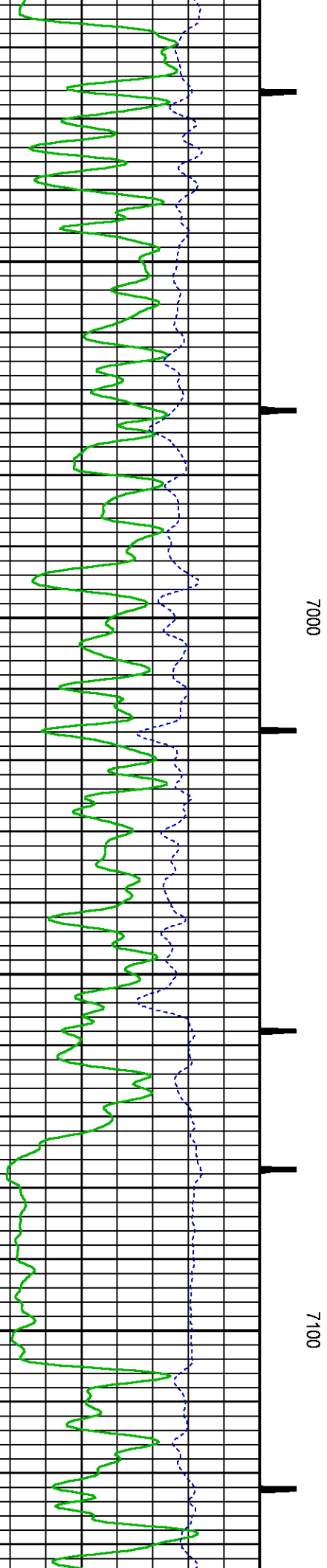
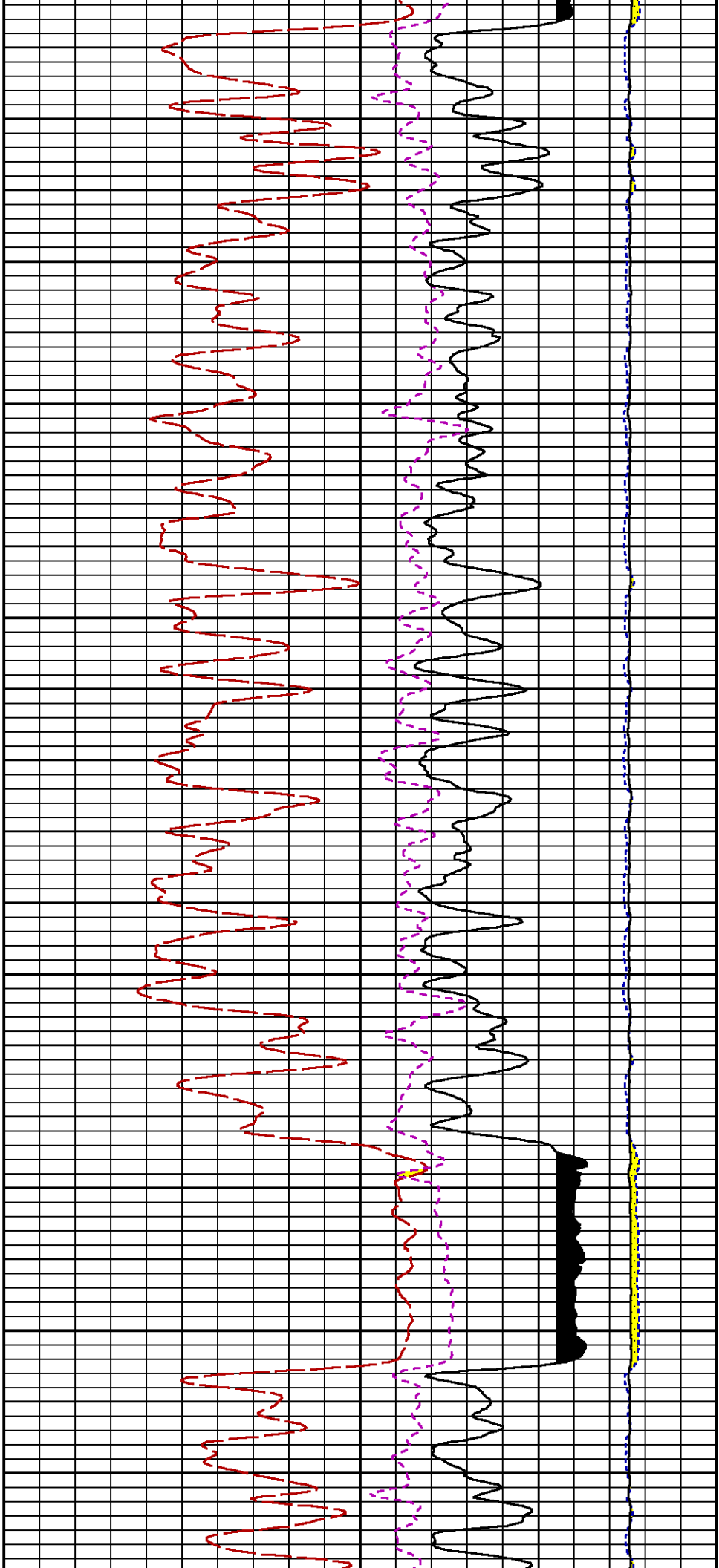


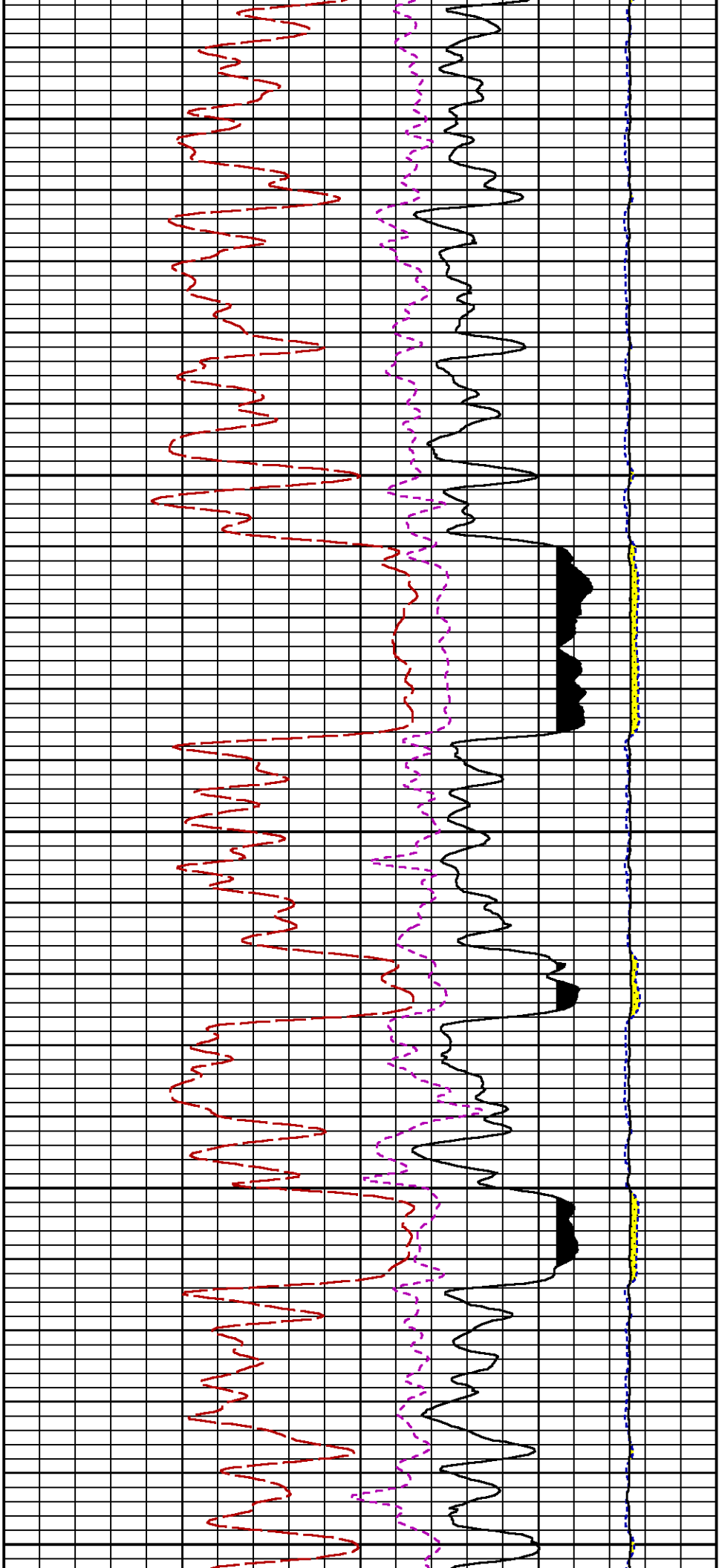






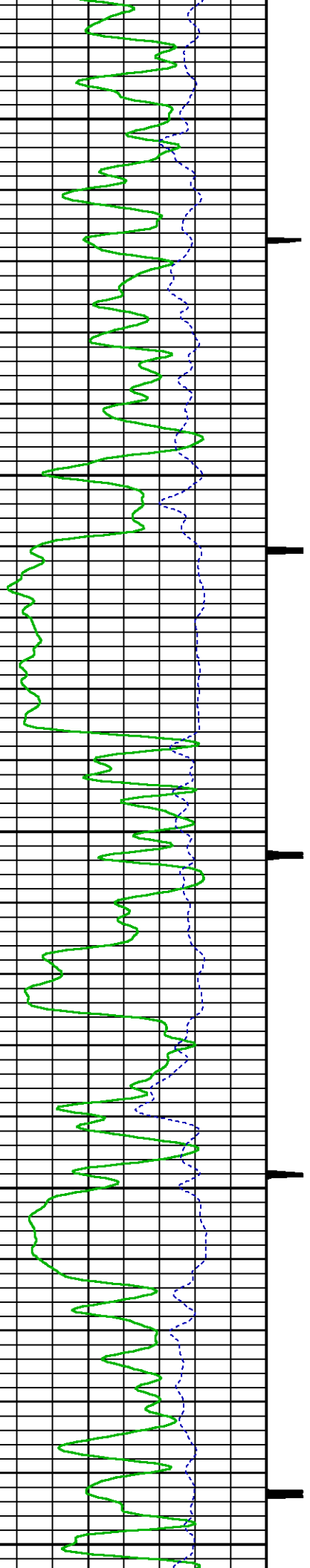


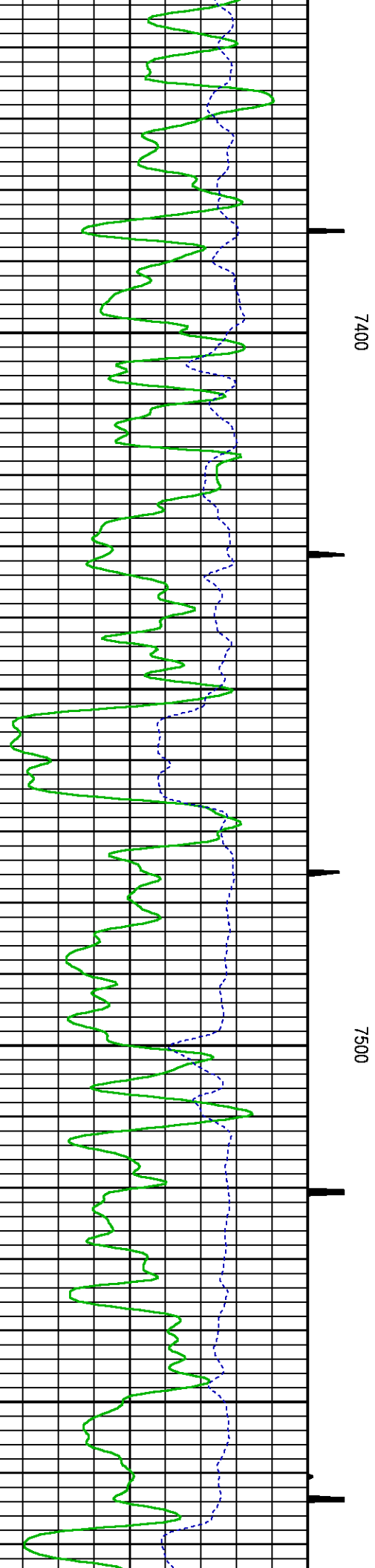
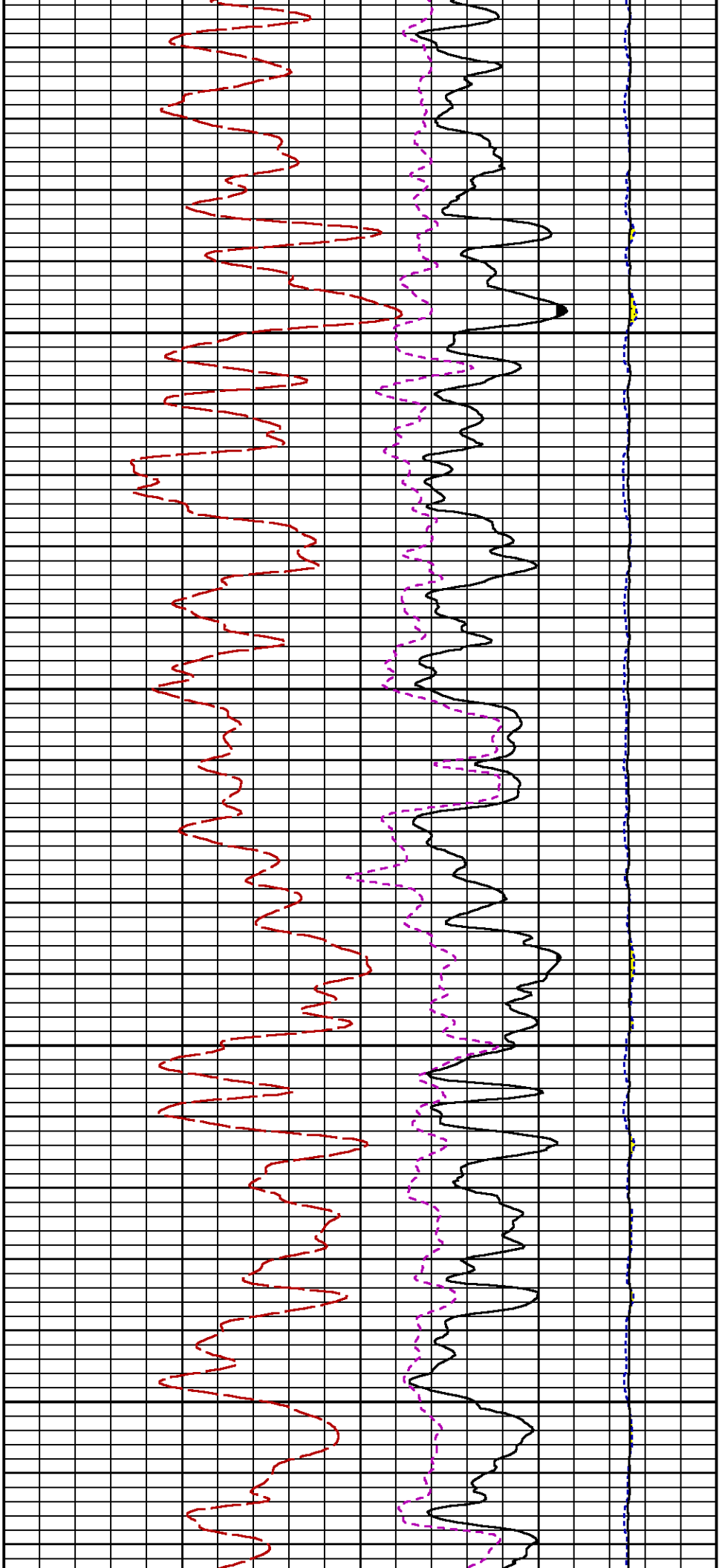


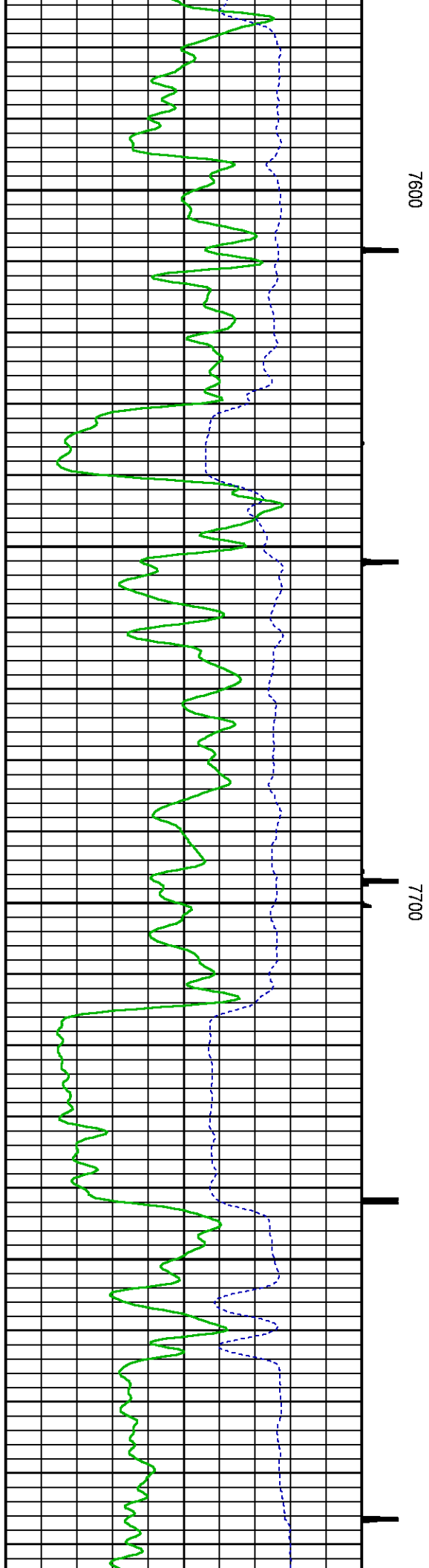
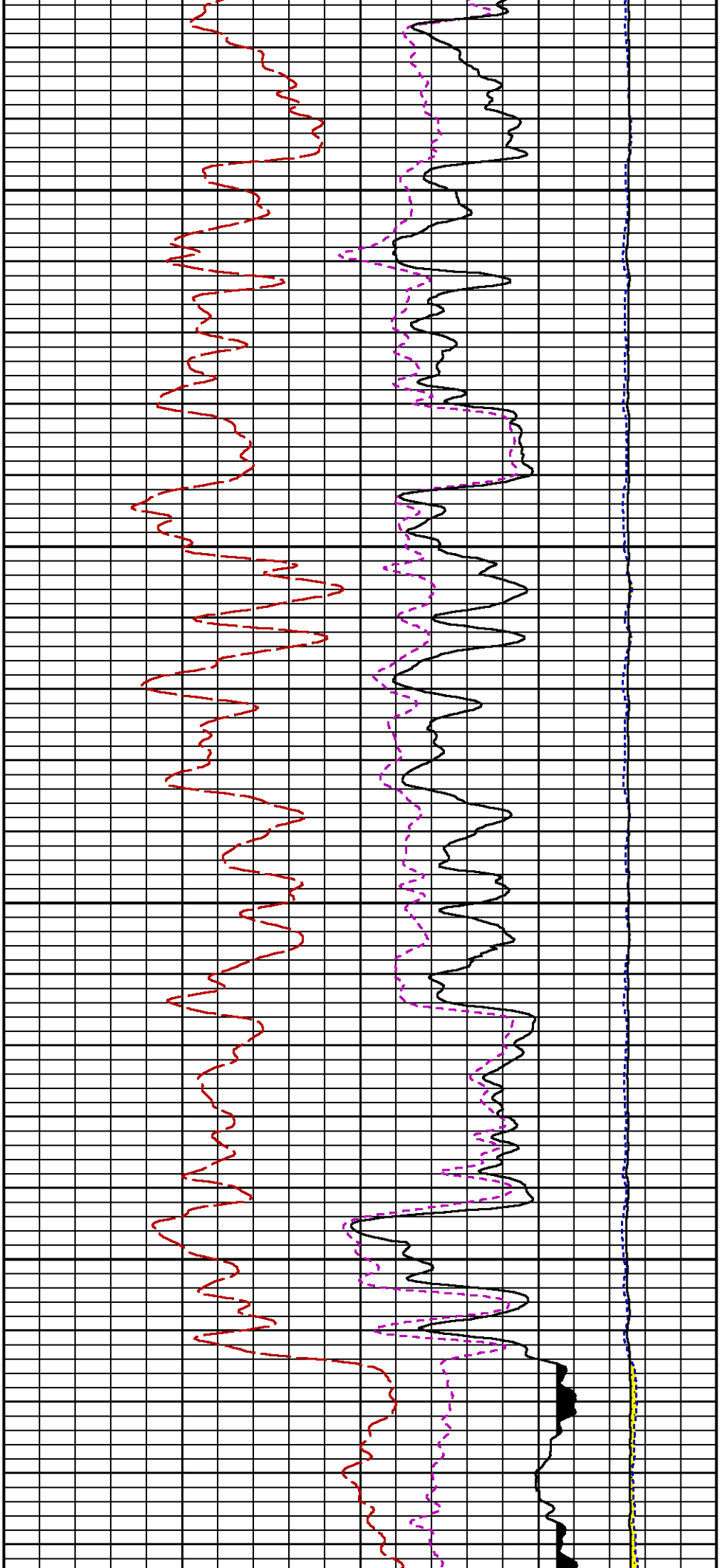


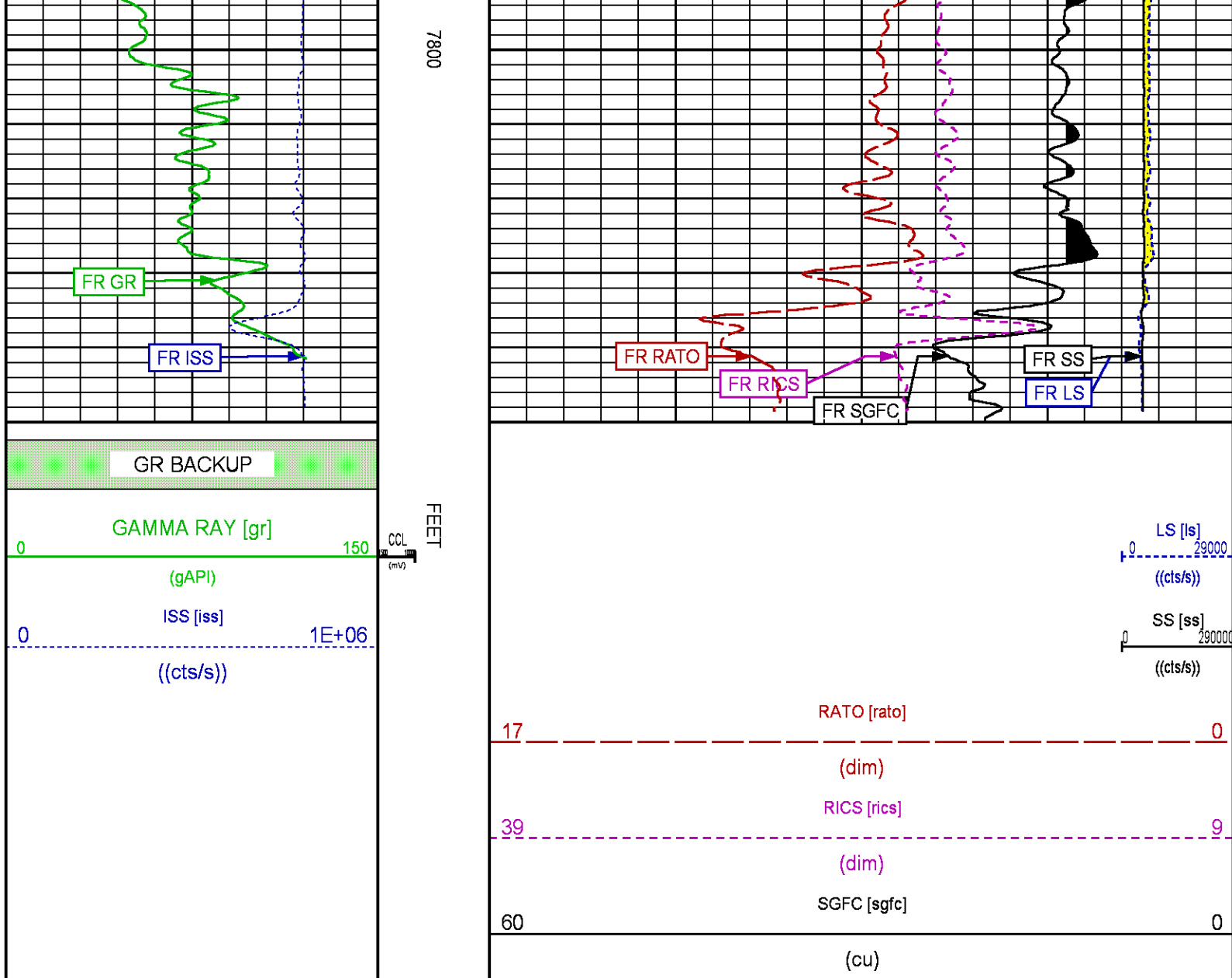
7200

7300









REPEAT PASS PNC-3D MODE

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013  
Updates: 1 Patches: 9

Plotted: Sat Aug 26 20:31:57 2017

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_GUNDERSON\_20\_08E/RPM3D01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 7174.000 ft BOTTOM DEPTH: 7391.750 ft

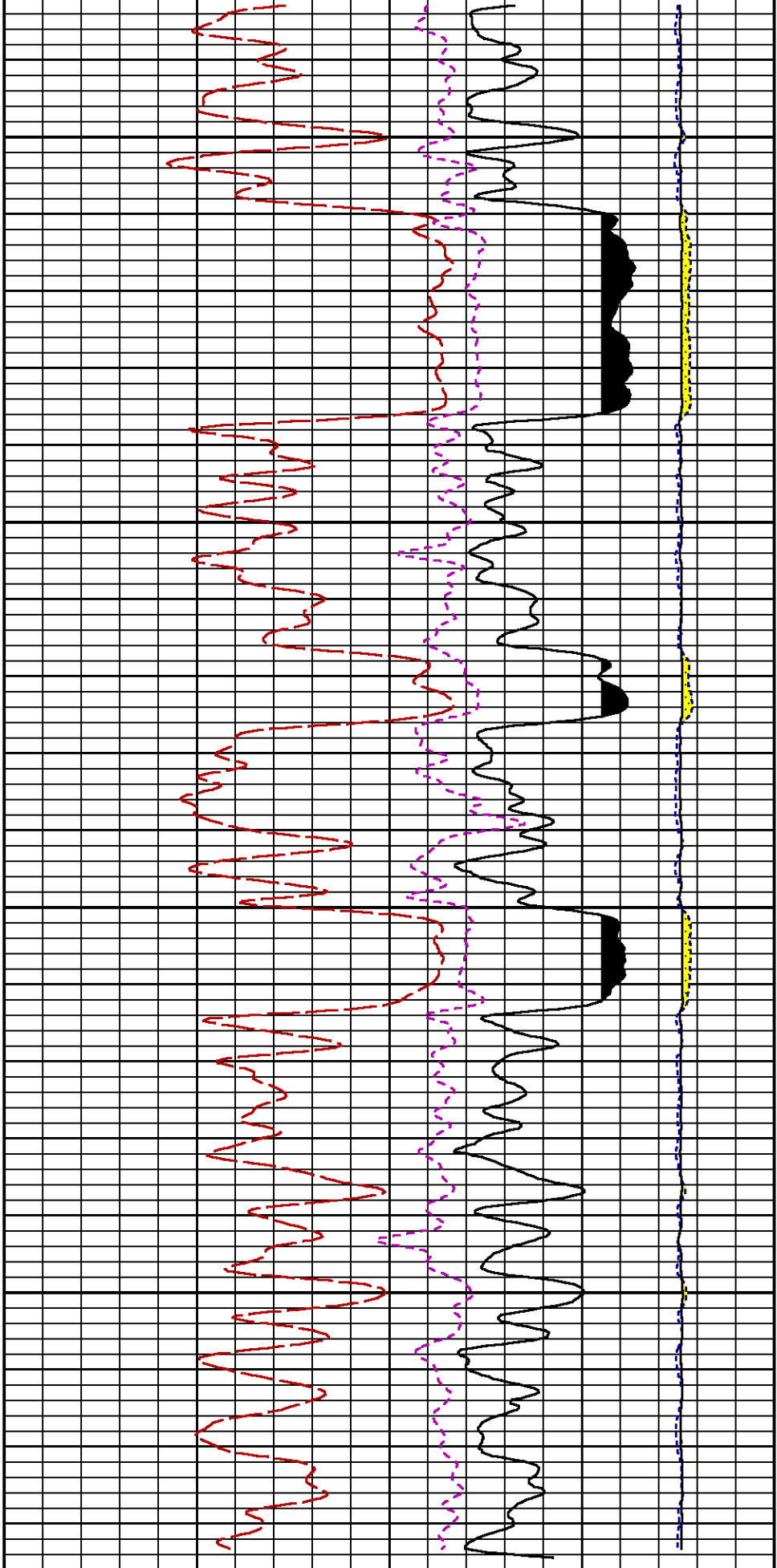
### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
GR	FILTER ( )	medium (1)		TOP BOTTOM

### RPM PROCESSING



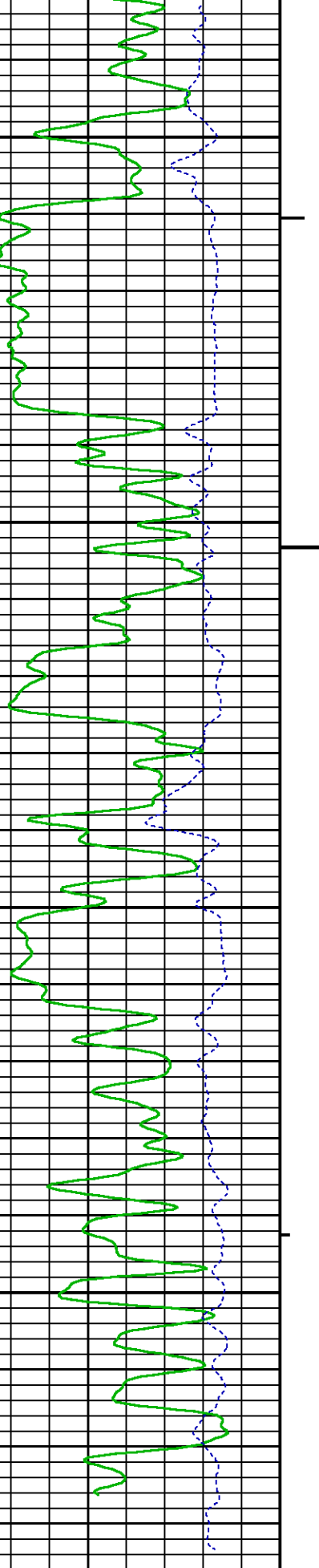
## INTERVAL (ft)



7200

7300

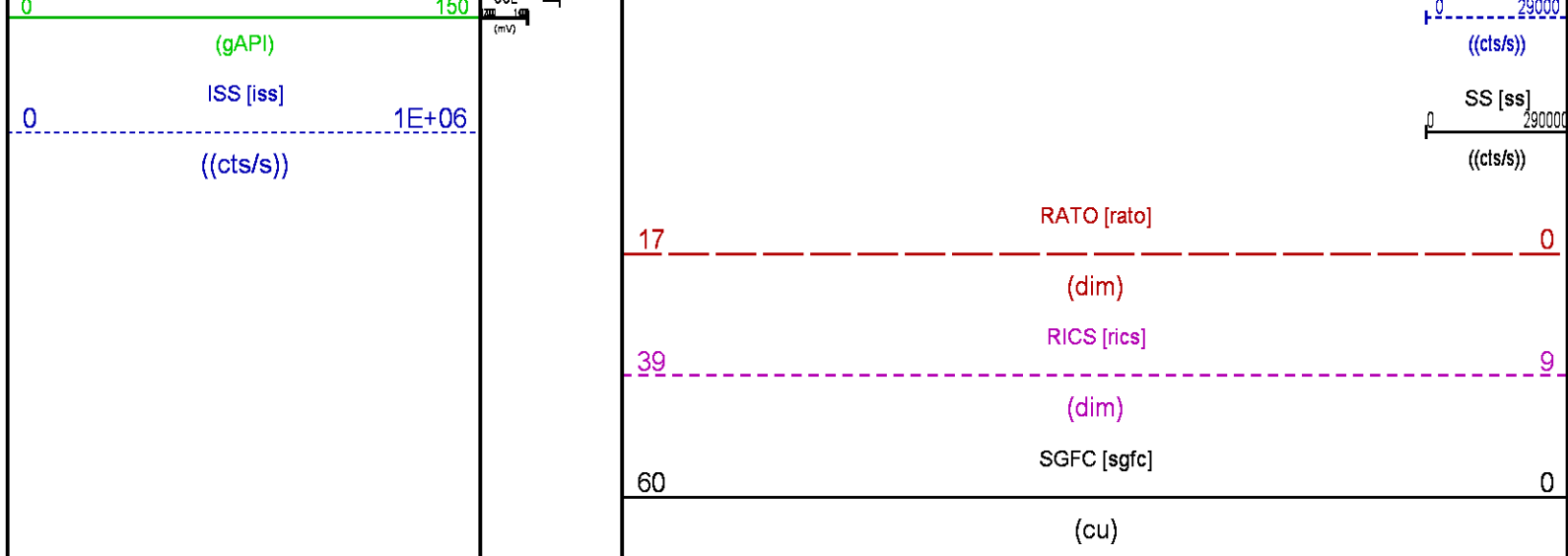
FEET



GR BACKUP

GAMMA RAY [gr]

LS [ls]



## CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE\_GUNDERSON\_20\_08E/RPM3D.lp1

### GR PRIMARY CALIBRATION SUMMARY

TOOL #: 8262XA 10485470

DATE/TIME PERFORMED: Tue Jan 17 13:32:11 2017

UNIT #: 3882ML ML4352

CALB JIG #: 4702NK DA\_228

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	63.76	399.13	335.4	0.552	35.17	220.17	185

### GR PRIMARY VERIFICATION SUMMARY

TOOL #: 8262XA 10485470

DATE/TIME PERFORMED: Tue Jan 17 13:34:45 2017

UNIT #: 3882ML ML4352

VERI JIG #: 4702NK DA\_228

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	63.44	394.18	0.552	35.00	217.44	182.44
						175.00 195.00

### RPM\_PNC\_3D PRIMARY CALIBRATION SUMMARY

TOOL: 8283PA 10184883

DATE/TIME PERFORMED: Thu Jul 13 15:06:49 2017

UNIT: 3882TD HL6728

CALIBRATOR: 2437XB 120057

SOURCE: 8281AA 10160595

HOURS: 8281AA 228

	ISS	Mtr Vltz (V)	SS Gain	LS Gain	XLS Gain	EA Temp (degF)	Sync Delay (usec)	RCAL
Raw Data	807240	123	2232	2259	2285	137	9.0	0.9874
Interpolated	1300000	146	2216	2251	2283			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	807240	6543	1352	236	25.88	0.15	24.03	0.34
					25.35 26.40	0.00 0.20	23.60 24.80	0.00 0.40

ISS ILS IYS SS SS2 LS CSS CLS

Raw Data	807240	164687	25336	86104	30690	8086	52299	12945
Fit Quality %		0.492	0.443	0.487	0.490	0.506	0.462	0.494
	ISS	RBOR	RIN	RIN13	RICS	RATO	RTWO	RONE
			ISS/ILS	ISS/IXS	ISS/CSS	SS/LS	SS2/LS	CSS/CLS
Raw Data	807240	1.44	4.90	31.88	15.44	10.65	3.80	4.04
		1.42 1.45	3.55 5.52	22.20 32.70	10.89 16.34	10.06 11.10	3.57 3.95	3.76 4.22
Fit Quality %		0.052	0.128	0.117	0.144	0.021	0.011	0.031
Reduced	1232260	1.44	4.91	31.91	15.45	10.65	3.80	4.04
		1.42 1.45	4.33 5.52	27.60 32.70	13.70 16.34	10.06 11.10	3.57 3.95	3.76 4.22

## TPSETEMP PRIMARY CALIBRATION SUMMARY

TOOL #: 8255XA 120516

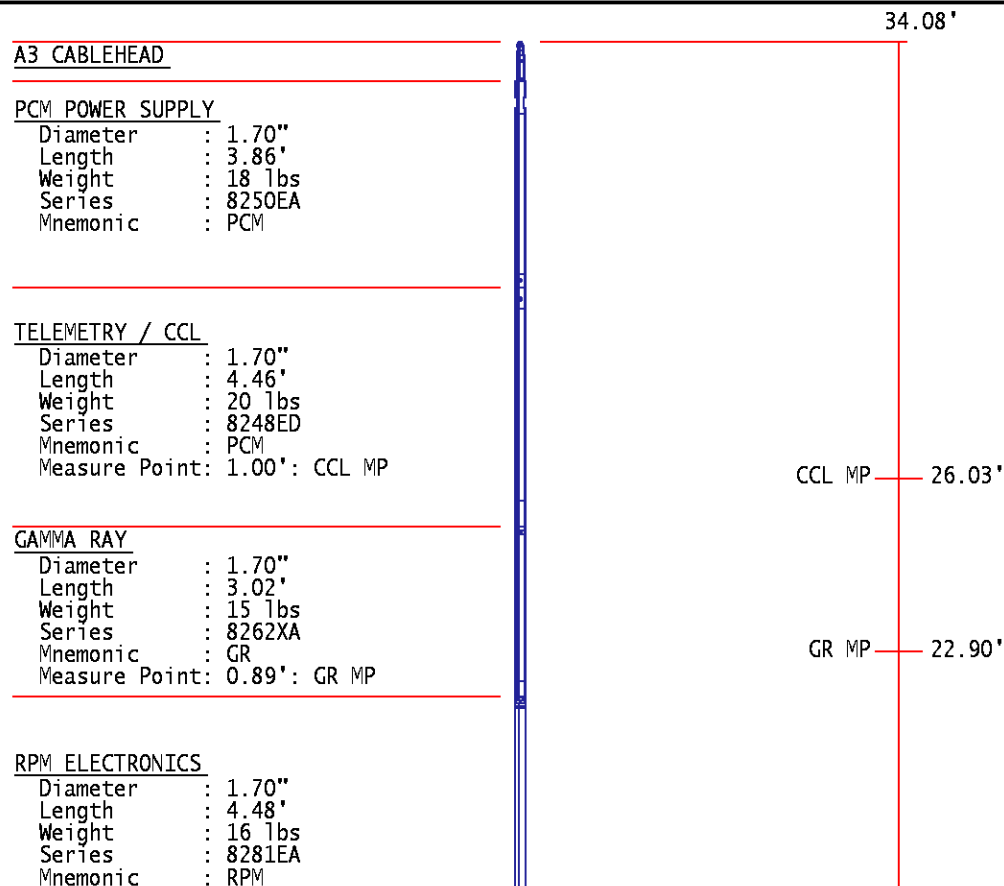
DATE/TIME PERFORMED: Mon Jul 11 10:30:57 2016

UNIT #: 3880TA HL6670

	T(0)	T(1)	T(2)	T(3)
Corr Coeff for Temp	-1.840167E+01	1.009373E-01	3.960064E-06	-4.985002E-10

## INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE\_GUNDERSON\_20\_08E/RPM-tdg



**RPM C DETECTOR SECTION**

Diameter : 1.70"  
Length : 9.40'  
Weight : 41 lbs  
Series : 8283PA  
Mnemonic : RPM  
Measure Point: 5.45': XLS DETECTOR  
Measure Point: 5.04': LS DETECTOR  
Measure Point: 4.79': SS DETECTOR

XLS DETECTOR 13.58'  
LS DETECTOR 13.16'  
SS DETECTOR 12.91'

**RPM SOURCE SECTION**

Diameter : 1.70"  
Length : 4.70'  
Weight : 18 lbs  
Series : 8281FA  
Mnemonic : RPM

**TEMPERATURE / PRESSURE**


Diameter : 1.70"  
Length : 3.30'  
Weight : 13 lbs  
Series : 8255XA  
Mnemonic : SRPL  
Measure Point: 1.52': TEMP MP

TEMP MP 1.65'  
PRES MP

**BULL PLUG 1 11/16**

0.00'

TOTAL LENGTH: 34.08'  
TOTAL WEIGHT: 144 lbs  
MAX DIAMETER: 0'1.70"

	<b>COMPANY</b>	<u>LARAMIE ENERGY</u>		<b>FILE NO:</b>	
	<b>WELL</b>	<u>GUNDERSON BCU 20-08E</u>			
	<b>FIELD</b>	<u>VEGA</u>		<b>API NO:</b>	
	<b>COUNTY</b>	<u>MESA</u>	<b>STATE</b>	<u>COLORADO</u>	<u>05077103560000</u>
<b>LOCATION:</b>			<b>ELEVATIONS:</b>		
<u>SHL: LAT:39.266756N;LONG:107.795281W</u>			KB 7176 FT		
<u>BHL: LAT:39.264441N;LONG:107.788397W</u>			DF 7176 FT		
<u>SEC 20 TWP 9S RGE 93W</u>			GL 7146 FT		
			DATE		<u>26-AUG-2017</u>