



FILE NO: COMPANY LARAMIE ENERGY

WELL GUNDERSON BCU 20-05E

API NO: FIELD VEGA

05077103440000 COUNTY MESA STATE COLORADO

Ver. 4.06 LOCATION: LAT:39.266864N;LONG:107.795281W OTHER SERVICES RAL

BHL: LAT:39.266459N;LONG:107.788396W
SEC 20 TWP 9S RGE 93W

PERMANENT DATUM GL ELEVATION 7144 FT
LOG MEASURED FROM KB 30 FT ABOVE P.D.
DRILL. MEAS. FROM KB

ELEVATIONS:
KB 7176 FT
DF 7176 FT
GL 7146 FT

DATE 27-AUG-2017

RUN 2 TRIP 1

SERVICE ORDER US125427

DEPTH DRILLER 7848 FT

DEPTH LOGGER 7783 FT

BOTTOM LOGGED INTERVAL 7783 FT

TOP LOGGED INTERVAL 2224 FT

TIME STARTED 11:30

TIME FINISHED 17:30

OPERATOR RIG TIME 6 HOURS

TYPE OF FLUID IN HOLE WATER

FLUID DENSITY NA

FLUID SALINITY NA

FLUID LEVEL 54 FT

LOGGED CEMENT TOP 1460 FT

WELLHEAD PRESSURE 0 PSI

MAXIMUM HOLE DEVIATION NA

NOMINAL LOGGING SPEED 15 FMN

MAX. RECORDED TEMP. 244 DEGF

REFERENCE LOG BAKER GR/RAL

REFERENCE LOG DATE 27-AUG-2017

EQUIP. NO. LOCATION HL-6670 WOODWARD

RECORDED BY S.YASSA

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: 5977' - 5996'

SJ: 6974' - 6994'

CREW: D.HUTCHINSON, G.SUAREZ

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 SECTION 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: Sun Aug 27 17:34:54 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_GUNDERSON_20_05E/RPM3D03.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 2212.750 ft BOTTOM DEPTH: 2854.250 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

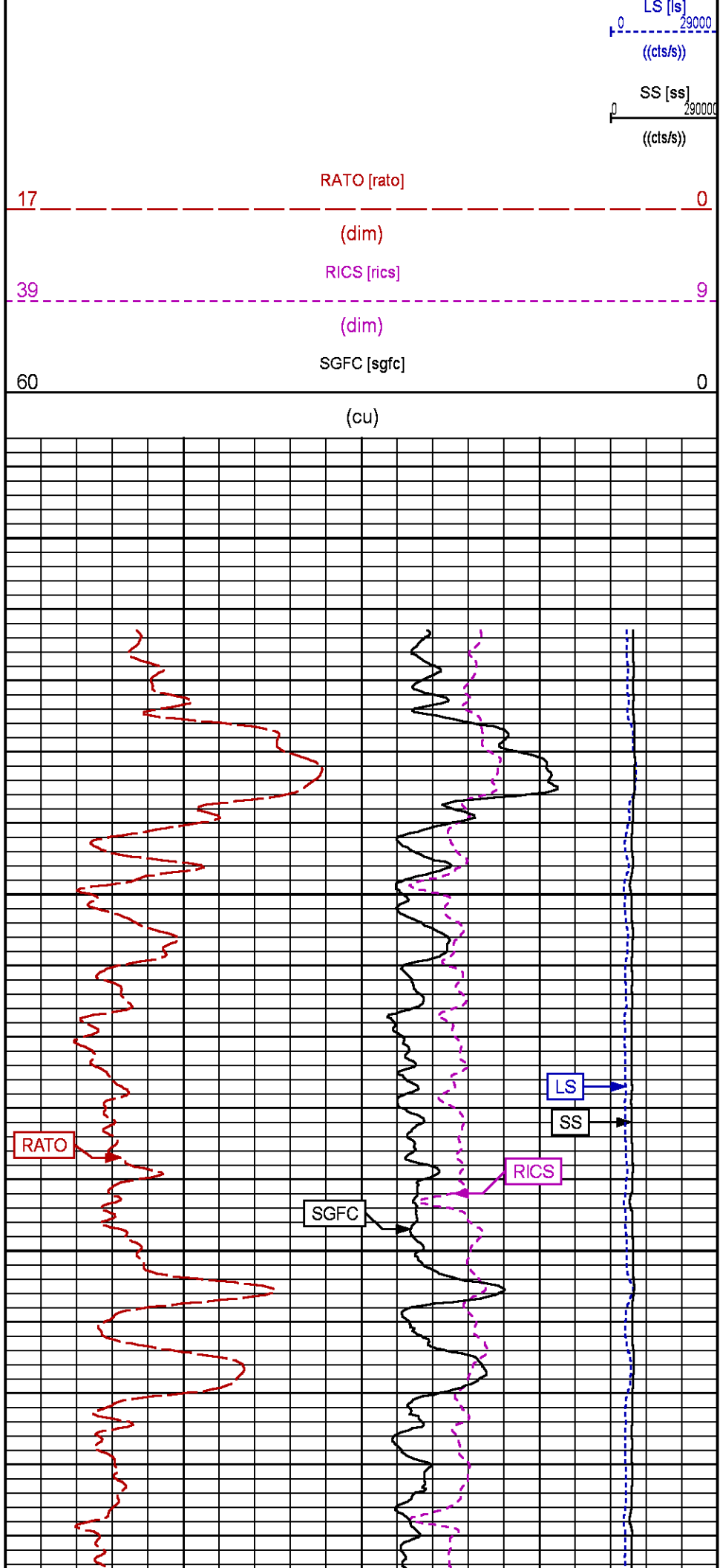
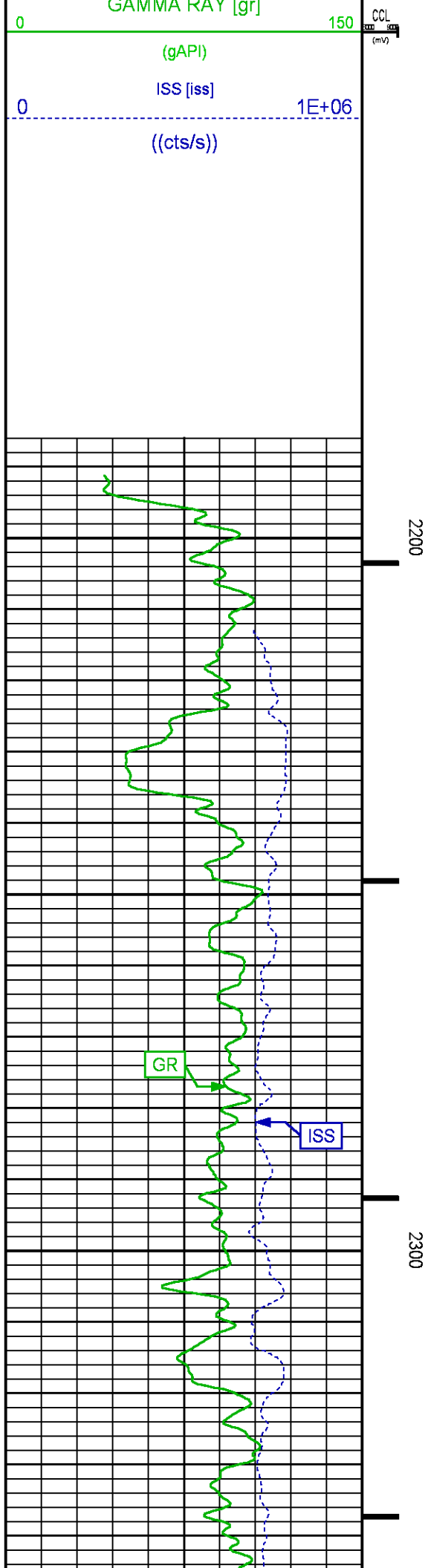
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Aug 27 16:50:35 2017	CASING COLLAR LOCATOR
F1:GR	Aug 27 16:50:35 2017	GAMMA RAY
F1:ISS	Aug 27 16:50:35 2017	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Aug 27 16:50:35 2017	LONG SPACE COUNT RATE
F1:RATO	Aug 27 16:50:35 2017	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Aug 27 16:50:35 2017	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Aug 27 16:50:35 2017	CORRECTED FORMATION SIGMA
F1:SS	Aug 27 16:50:35 2017	SHORT SPACE COUNT RATE

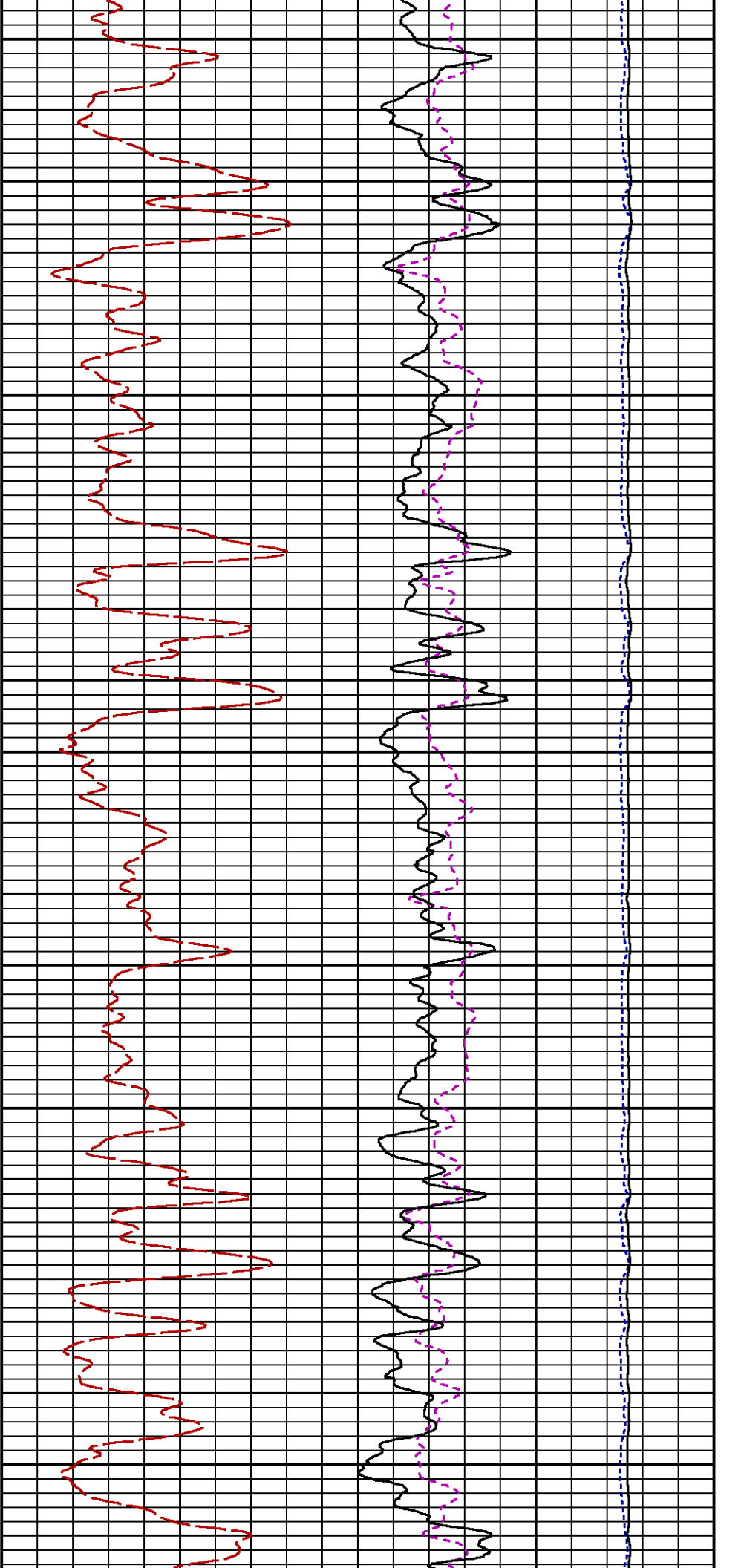
CURVE MEASURE POINT OFFSET

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_05E/GUNDERSON_20_05E_RPM_GSAND.fvpdf [5"/100' Scale]
Plot Interval	: 2187 - 2844.75 Feet
Data File 1	: F1 : cpu100:/dat1a/LARAMIE_GUNDERSON_20_05E/GUNDERSON_20_05E_RPM_GSAND.xtf
Created On	: Aug 27 16:50:35 2017
Company	: LARAMIE ENERGY
Well	: GUNDERSON BCU 20-05E
Field	: VEGA
File Interval	: 2186.25 - 2853.5 Feet
OCT	: RPM3D

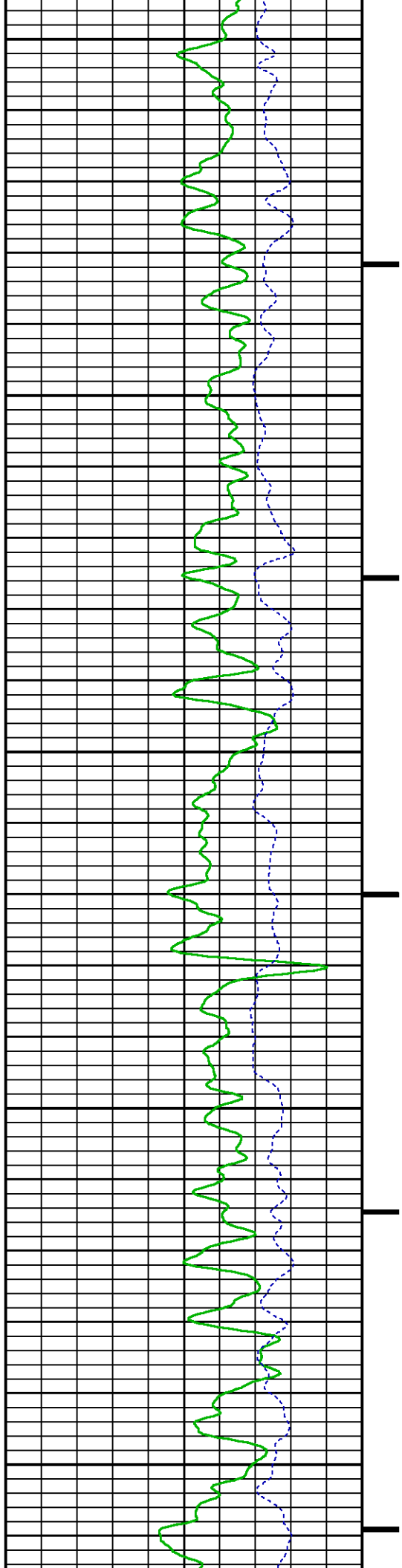
GR BACKUP	FEET	
GAMMA RAY		

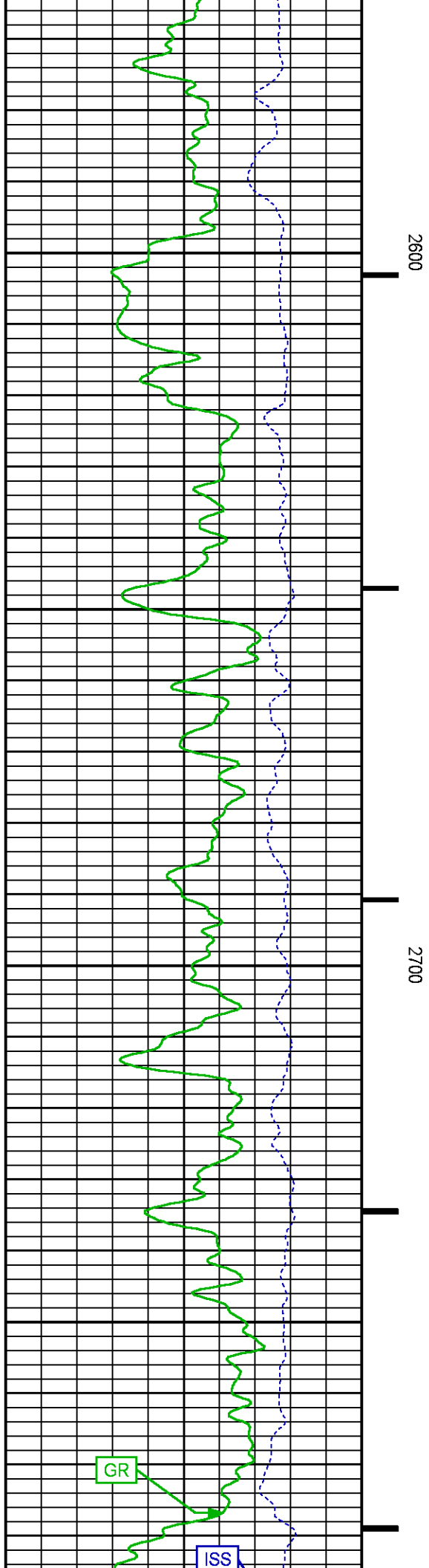
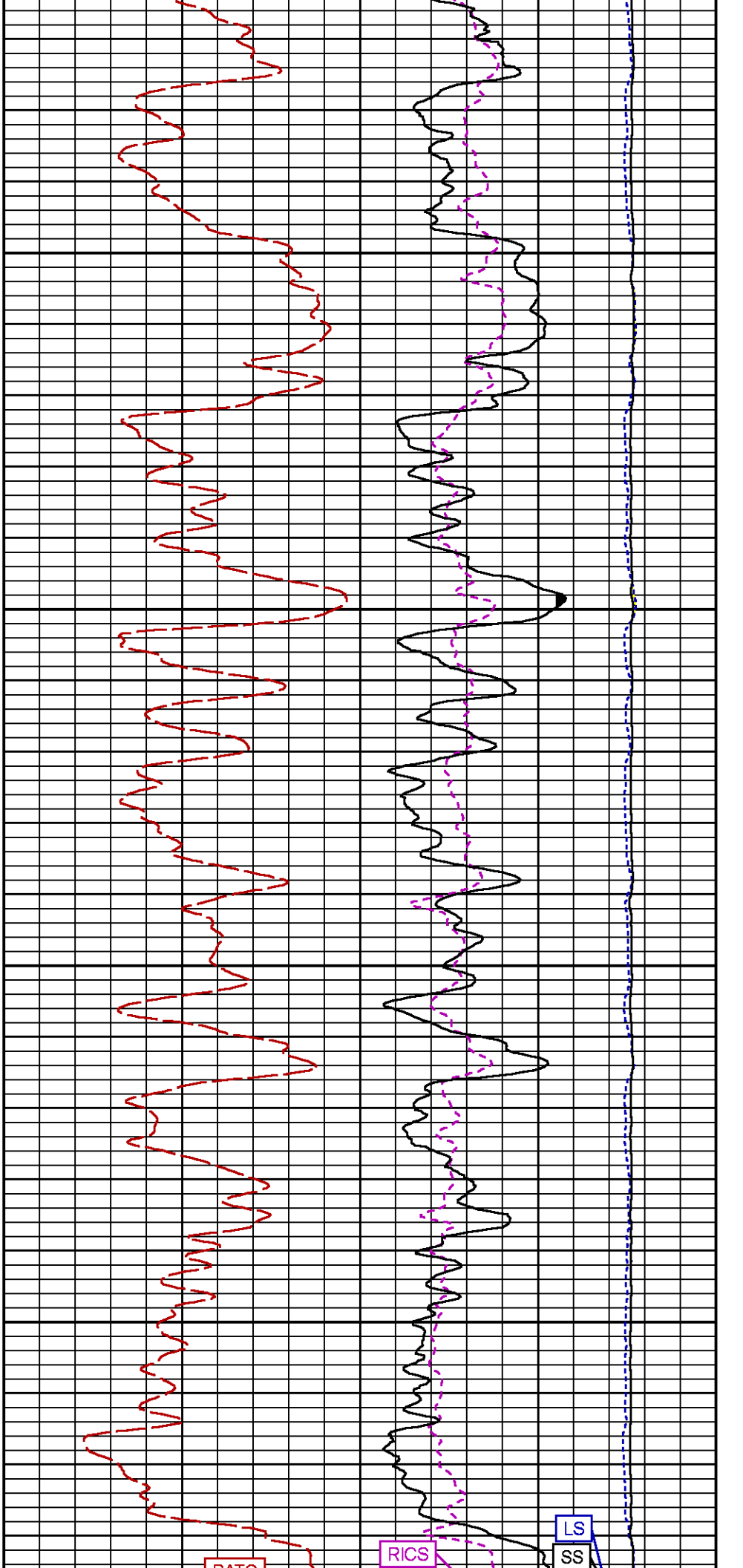




2400

2500



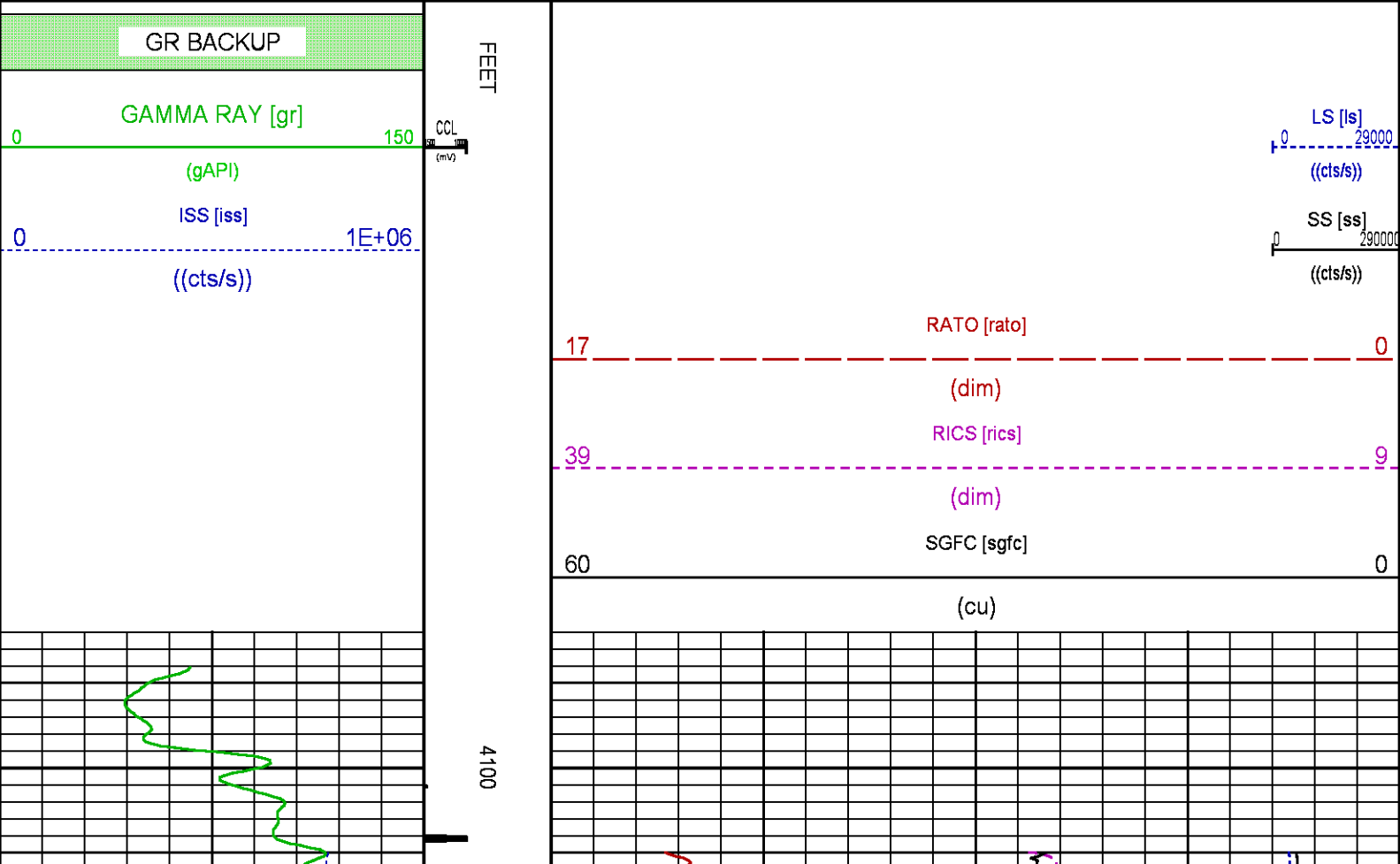


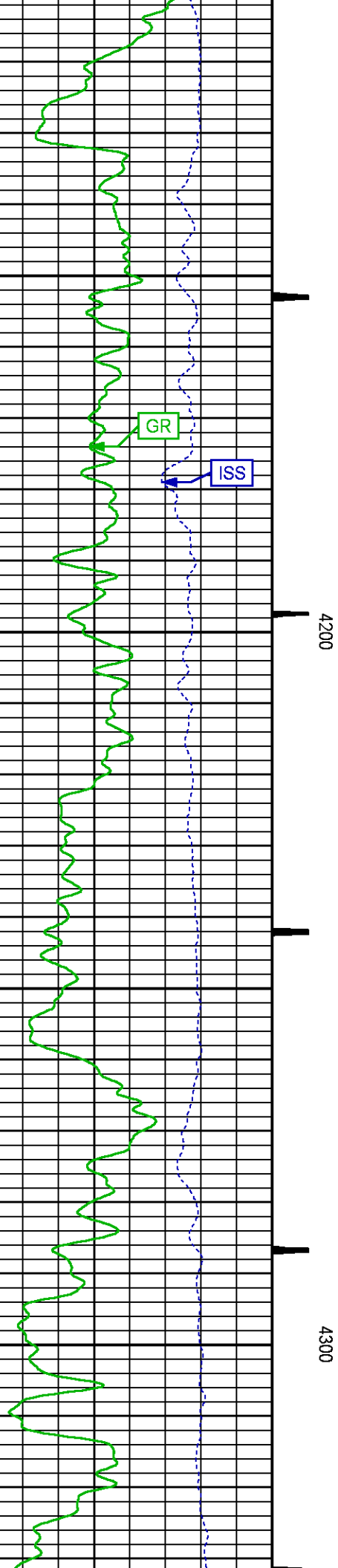
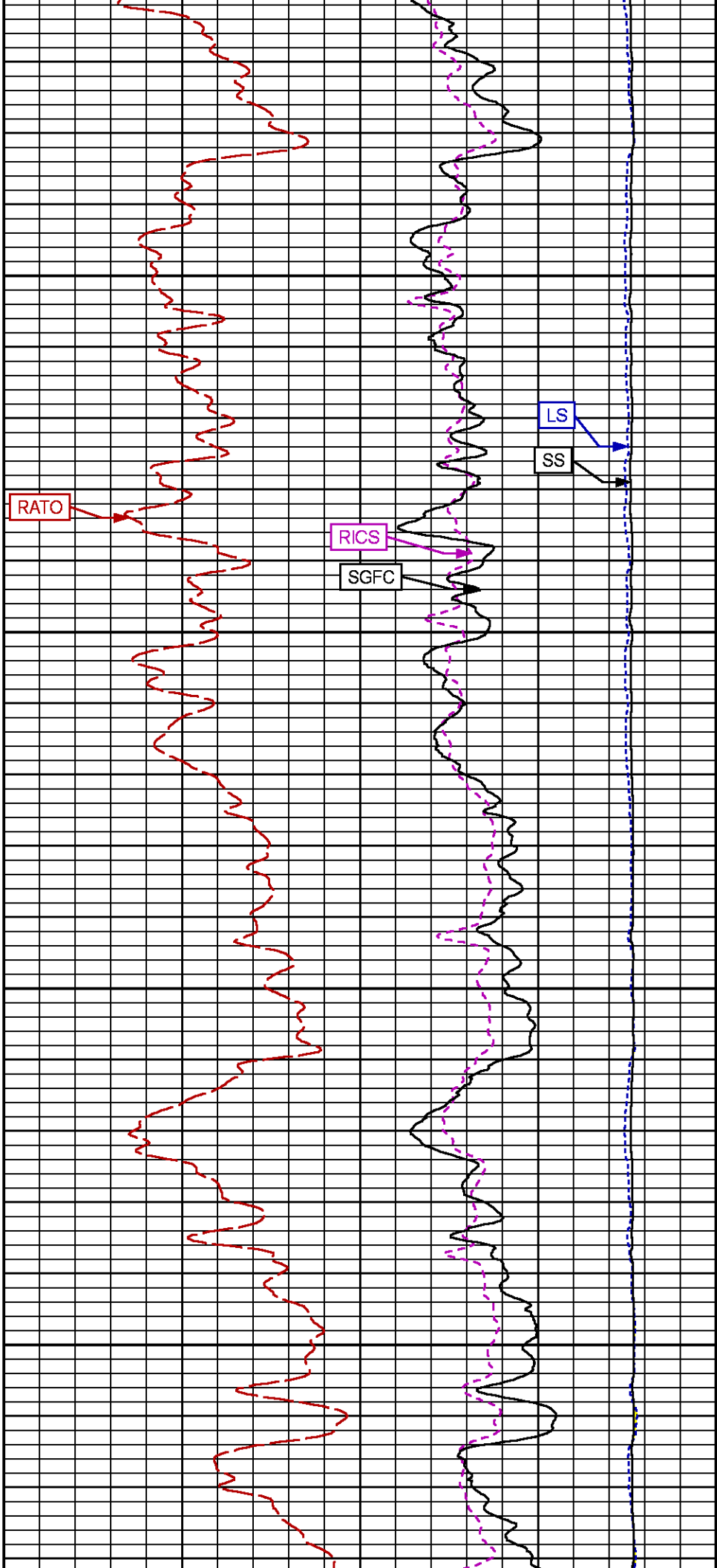
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
PNC Parameters	BOREHOLE CONTENTS	FLUID		TOP	BOTTOM
	OPEN/CASED HOLE	CASED HOLE		"	"
	BOREHOLE SIZE	7.88	in	"	"
	CASING SIZE	4.50	in	"	"
	MATRIX	SANDSTONE		"	"
	CORRECTION BUFFER	11		"	"

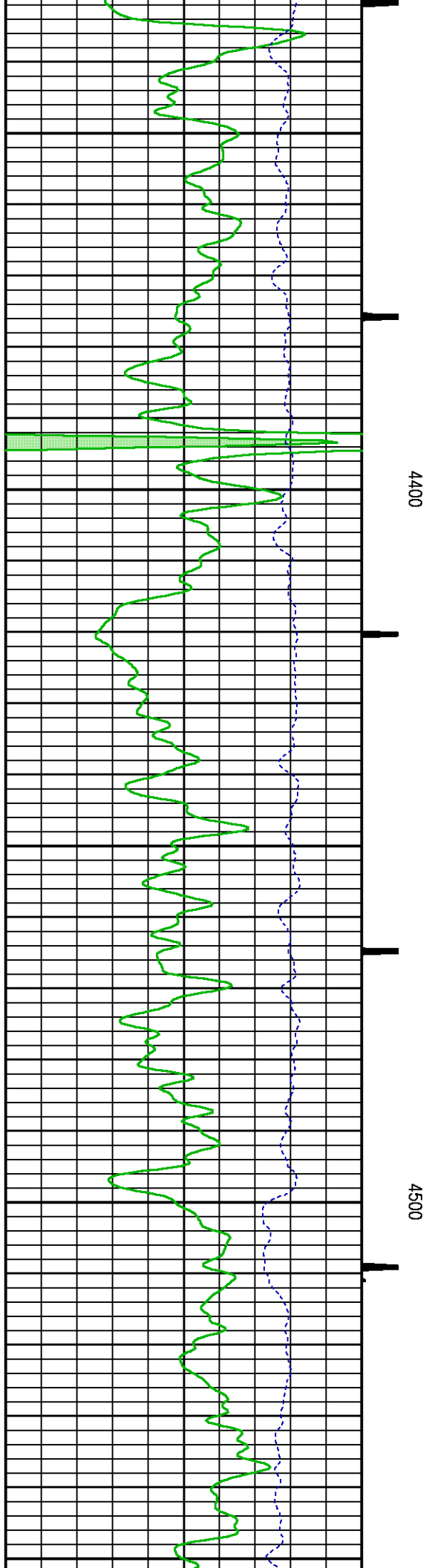
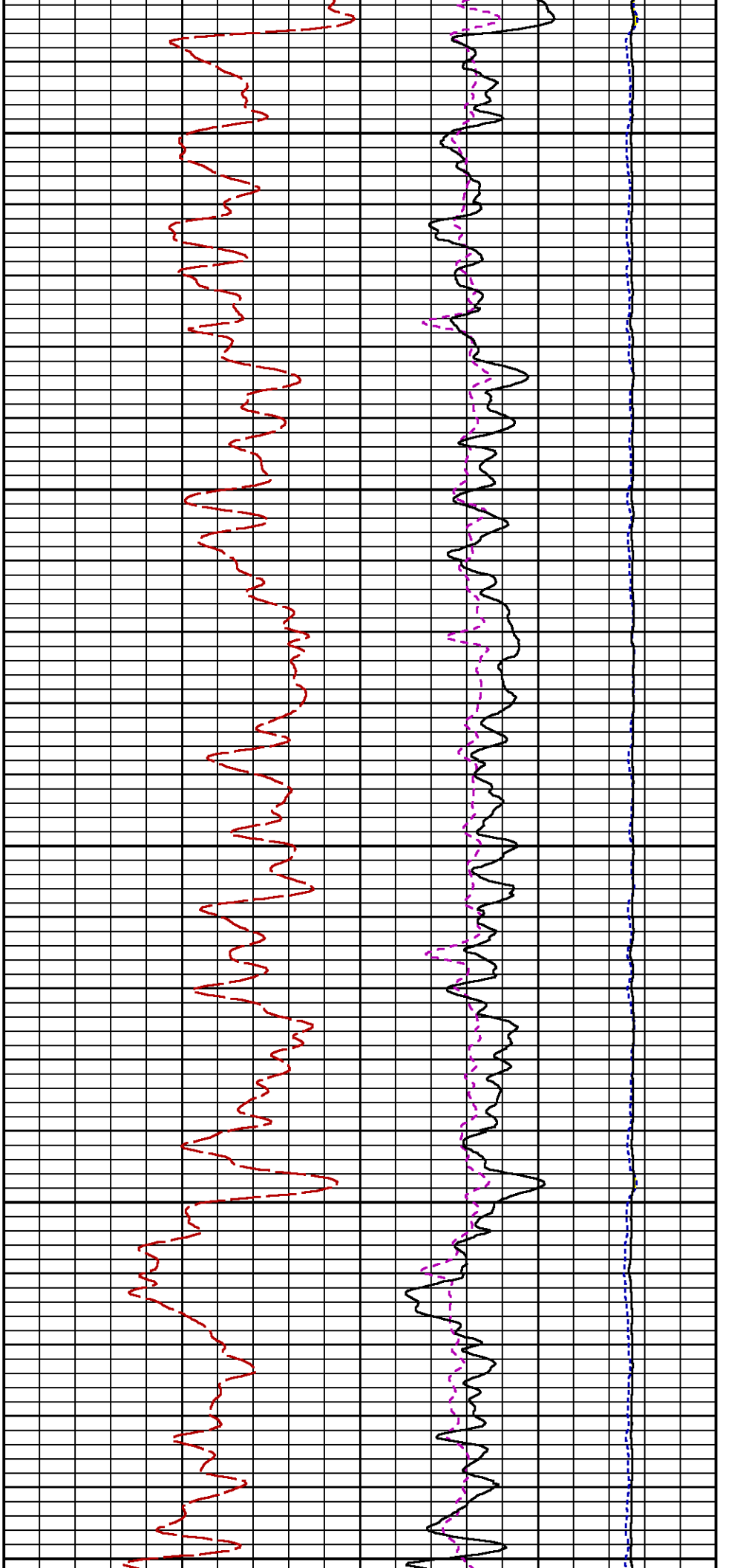
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Aug 27 12:56:10 2017	CASING COLLAR LOCATOR
F1:GR	Aug 27 12:56:10 2017	GAMMA RAY
F1:ISS	Aug 27 12:56:10 2017	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Aug 27 12:56:10 2017	LONG SPACE COUNT RATE
F1:RATO	Aug 27 12:56:10 2017	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Aug 27 12:56:10 2017	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Aug 27 12:56:10 2017	CORRECTED FORMATION SIGMA
F1:SS	Aug 27 12:56:10 2017	SHORT SPACE COUNT RATE

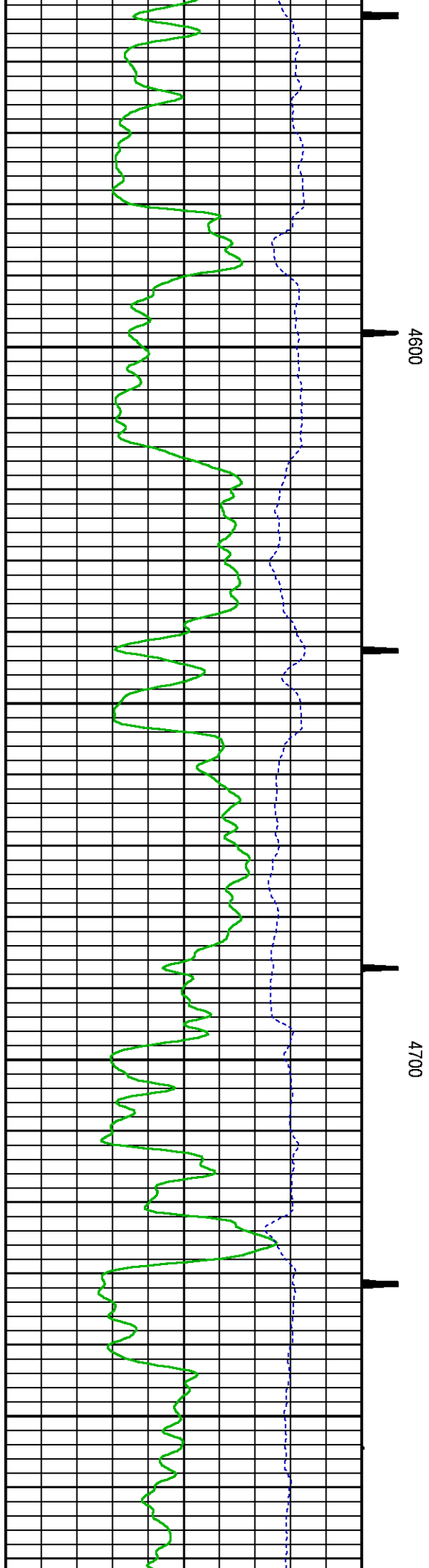
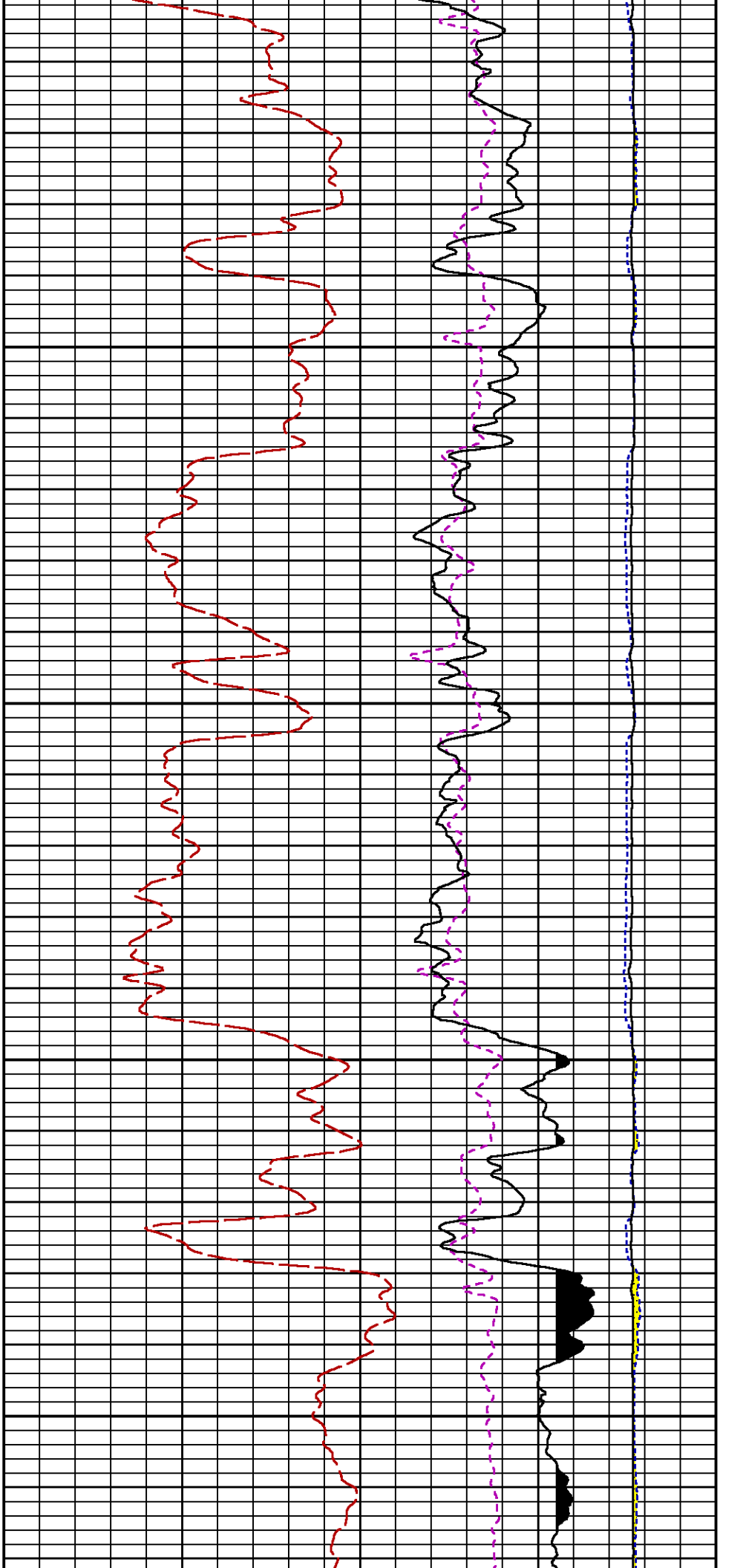
CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	26.00	ISS	12.75	RATO	12.75	SGFC	12.75
GR	23.00	LS	12.75	RICS	12.75	SS	12.75

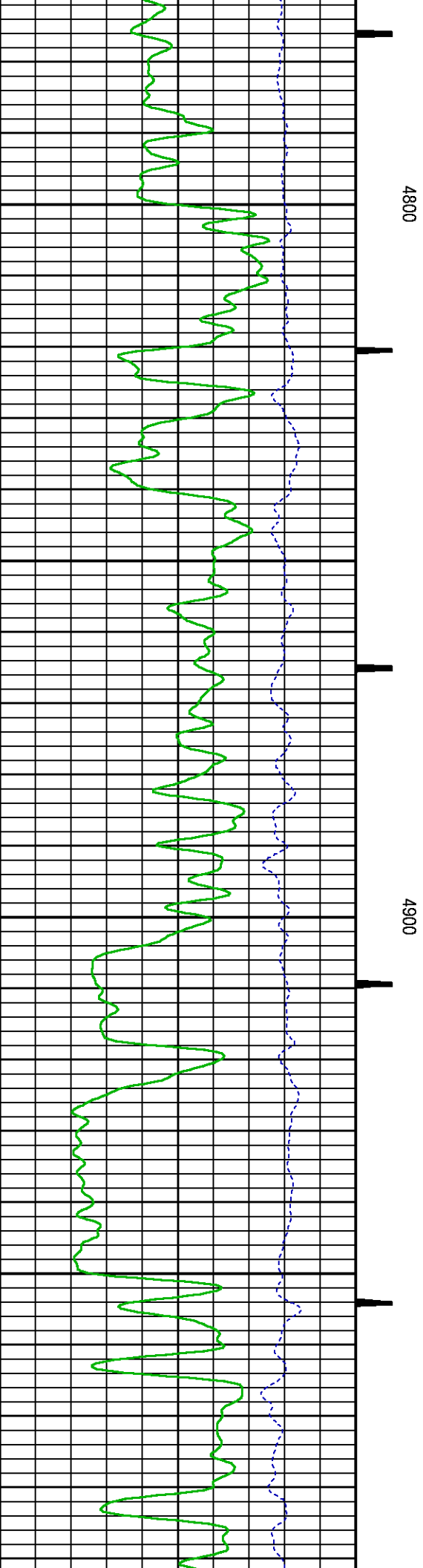
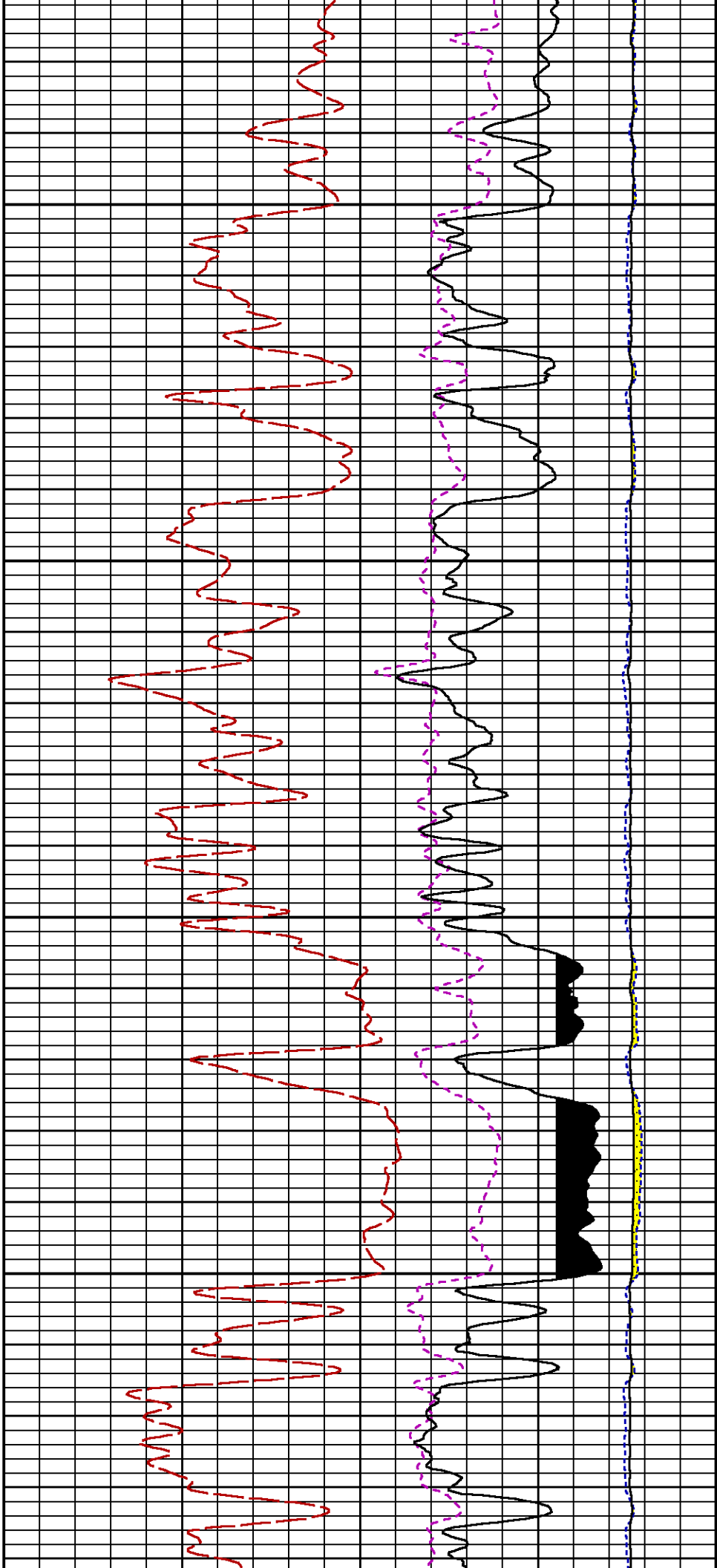
Presentation	: cpu100:/dat1a/LARAMIE_GUNDERSON_20_05E/GUNDERSON_20_05E_RPM_MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 4084 - 7786.5 Feet
Data File 1	: F1 : cpu100:/dat1a/LARAMIE_GUNDERSON_20_05E/GUNDERSON_20_05E_RPM_MAIN.xtf
Created On	: Aug 27 12:56:10 2017
Company	: LARAMIE ENERGY
Well	: GUNDERSON BCU 20-05E
Field	: VEGA
File Interval	: 4083.25 - 7795.25 Feet
OCT	: RPM3D

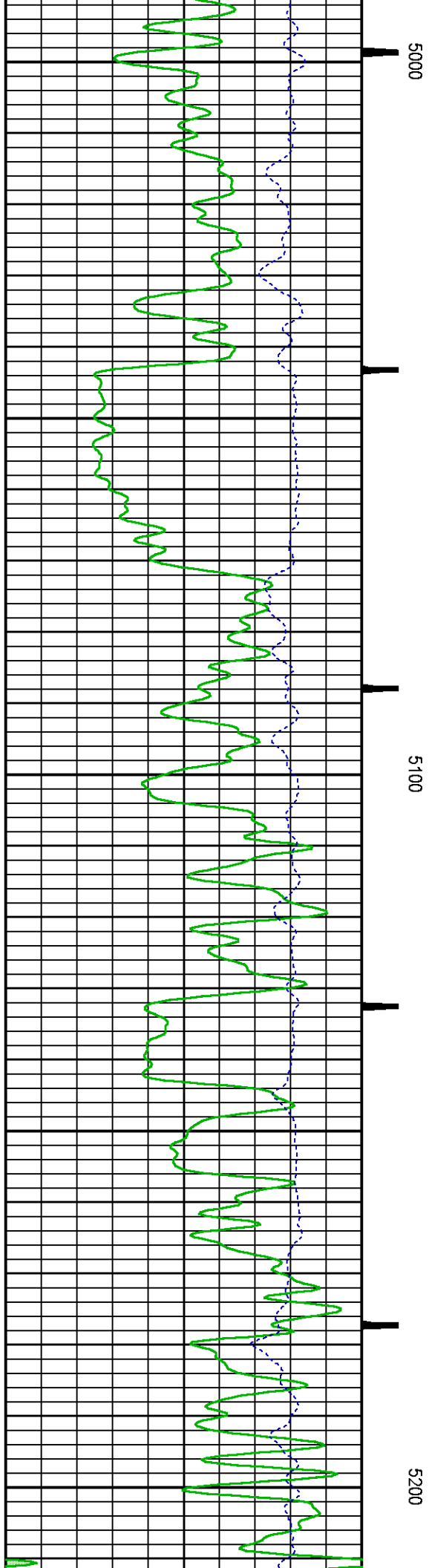
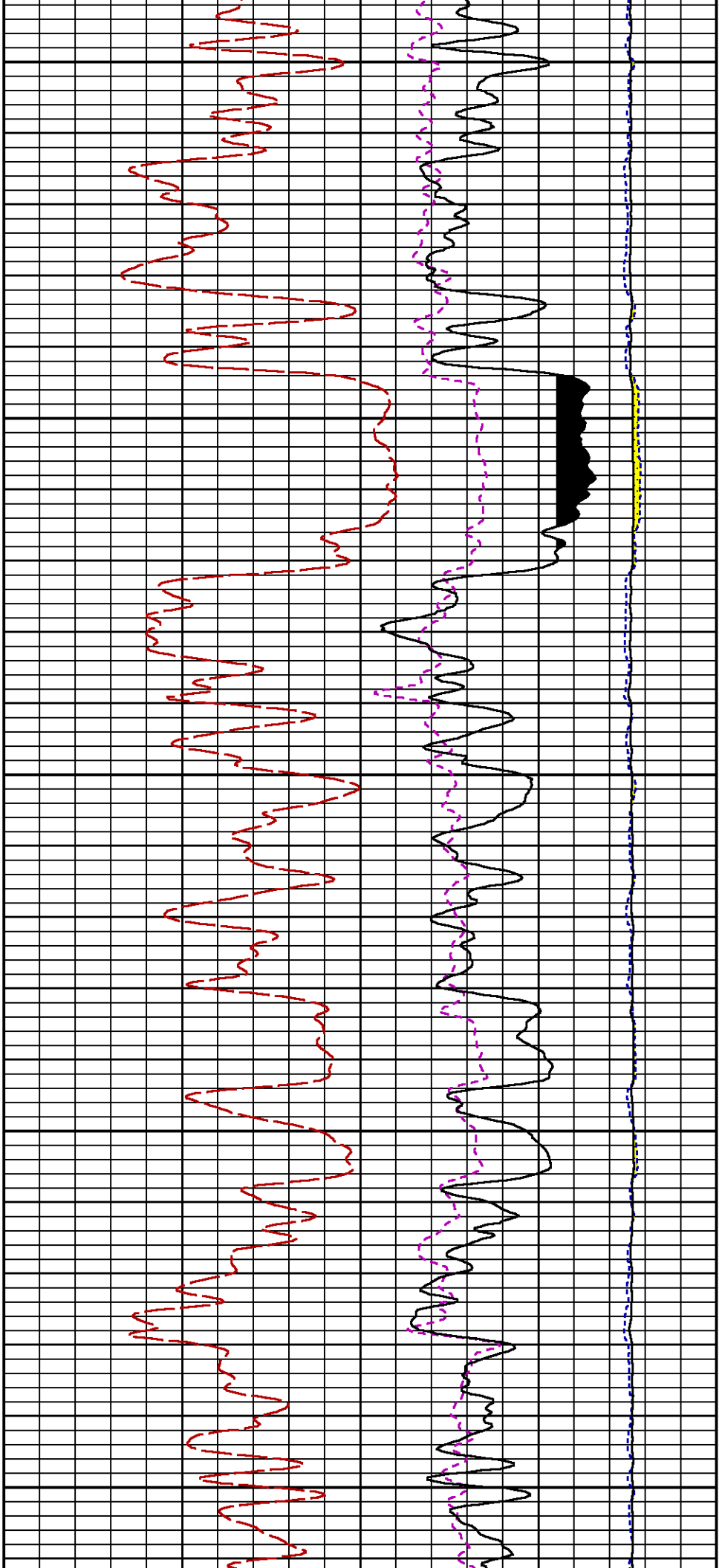


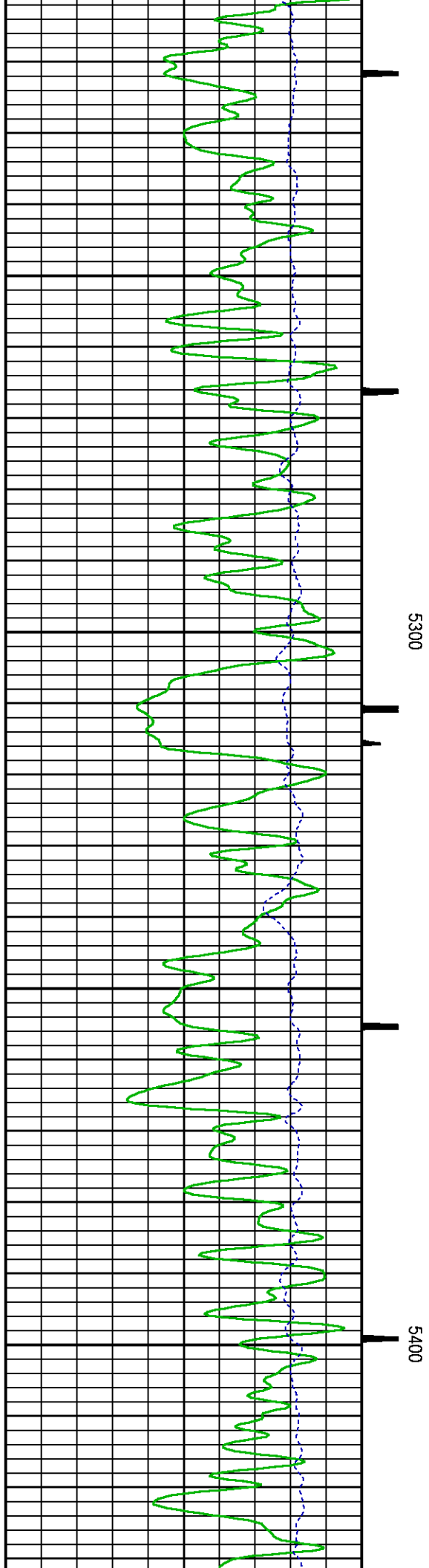
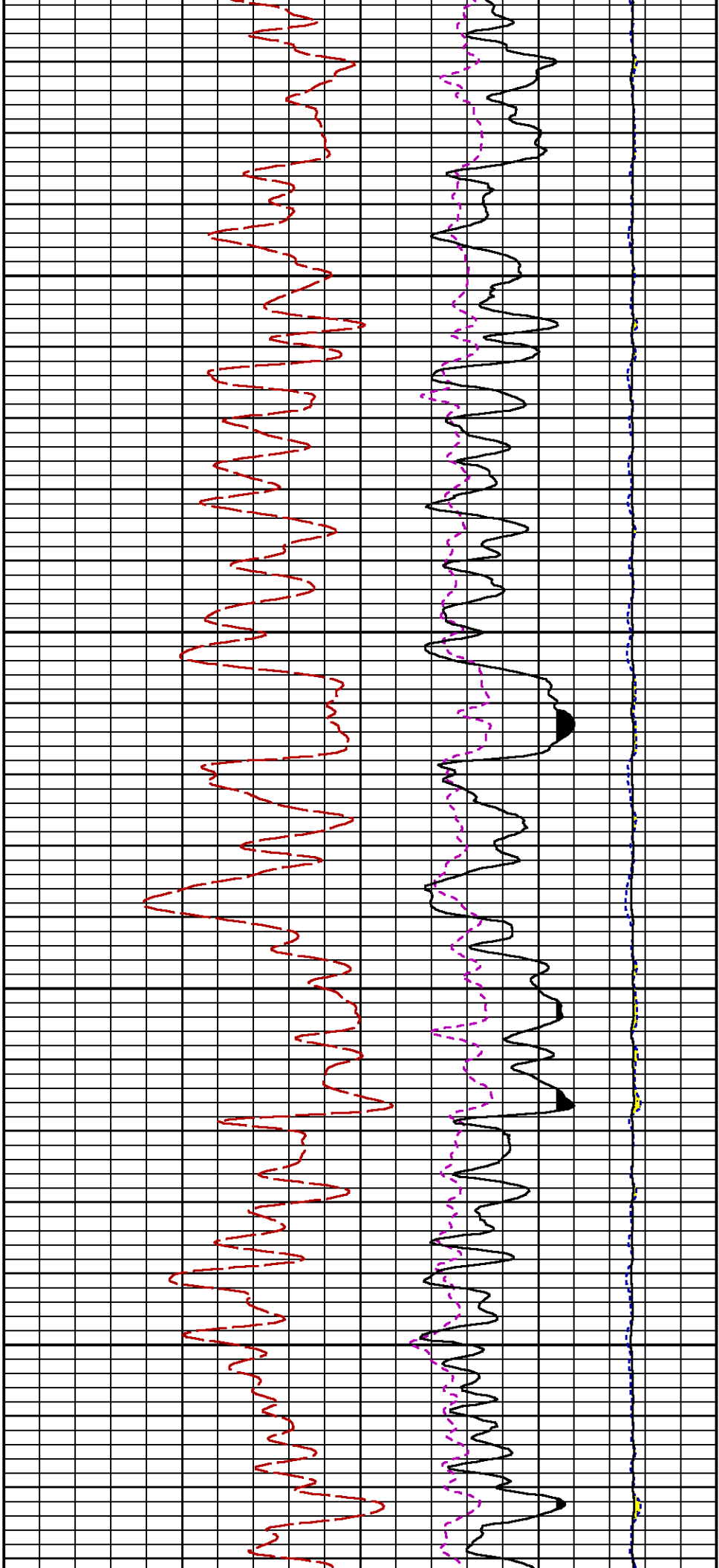


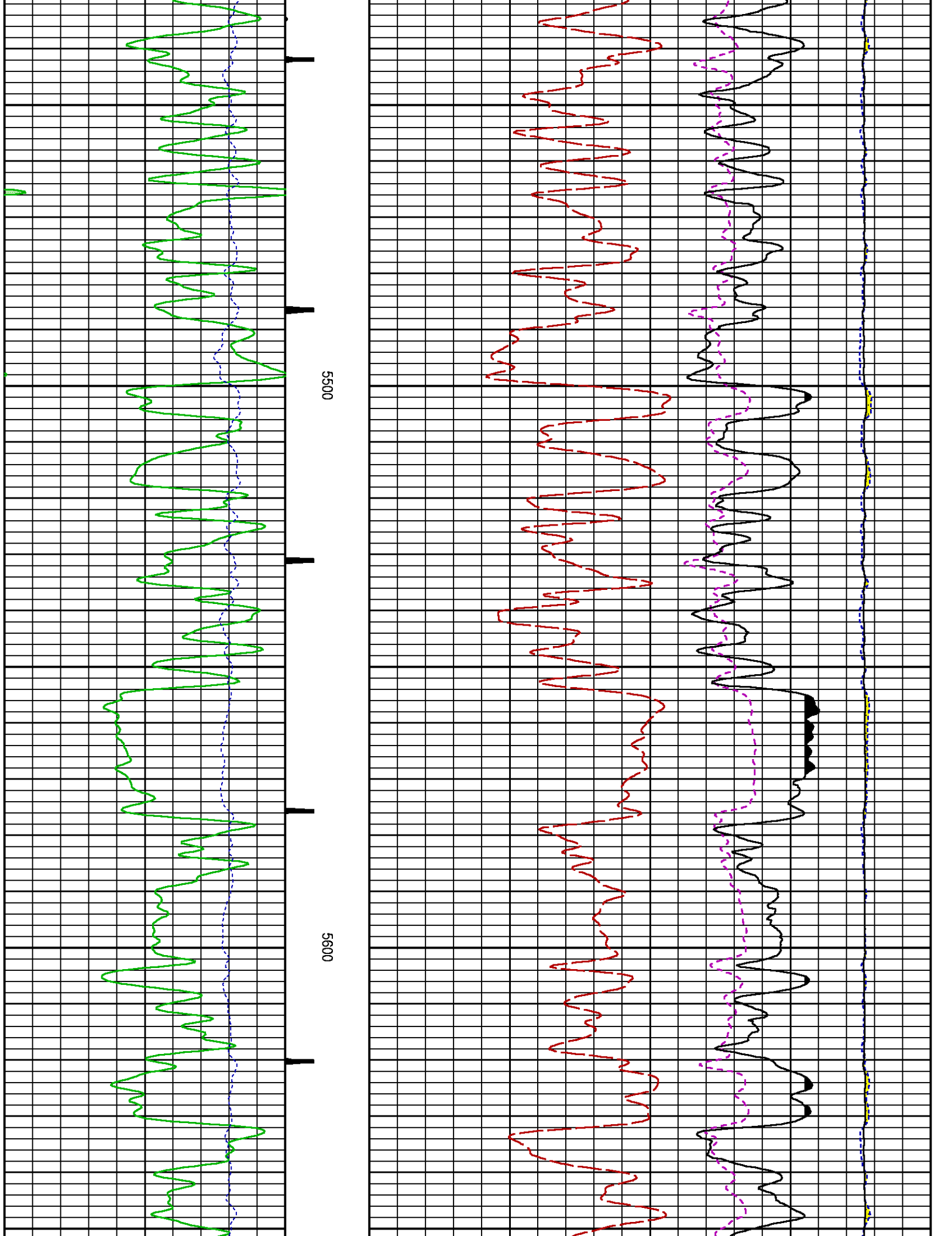


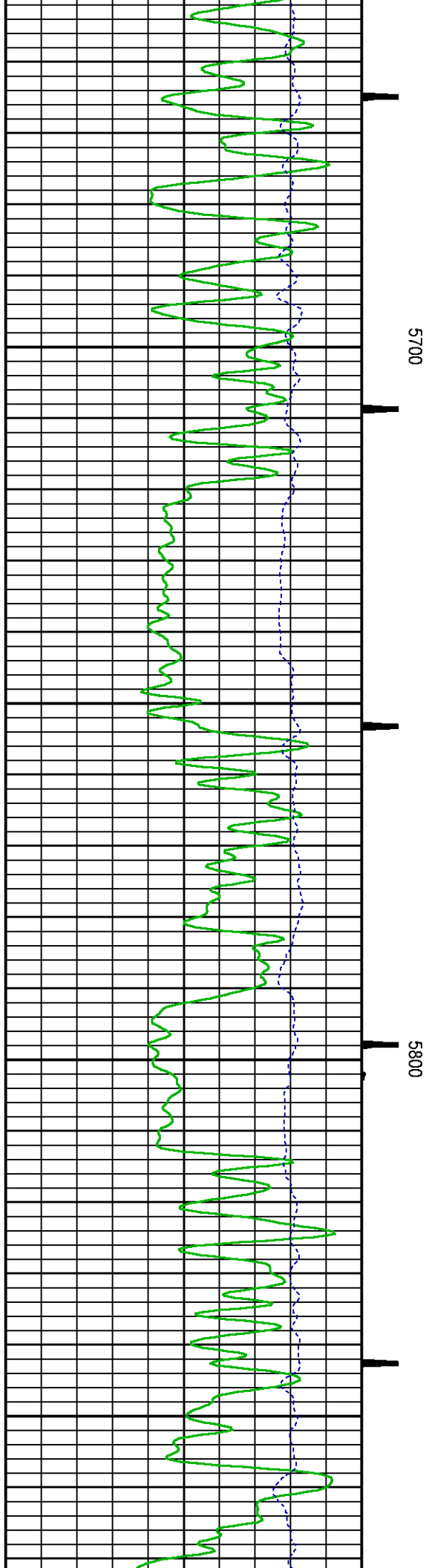
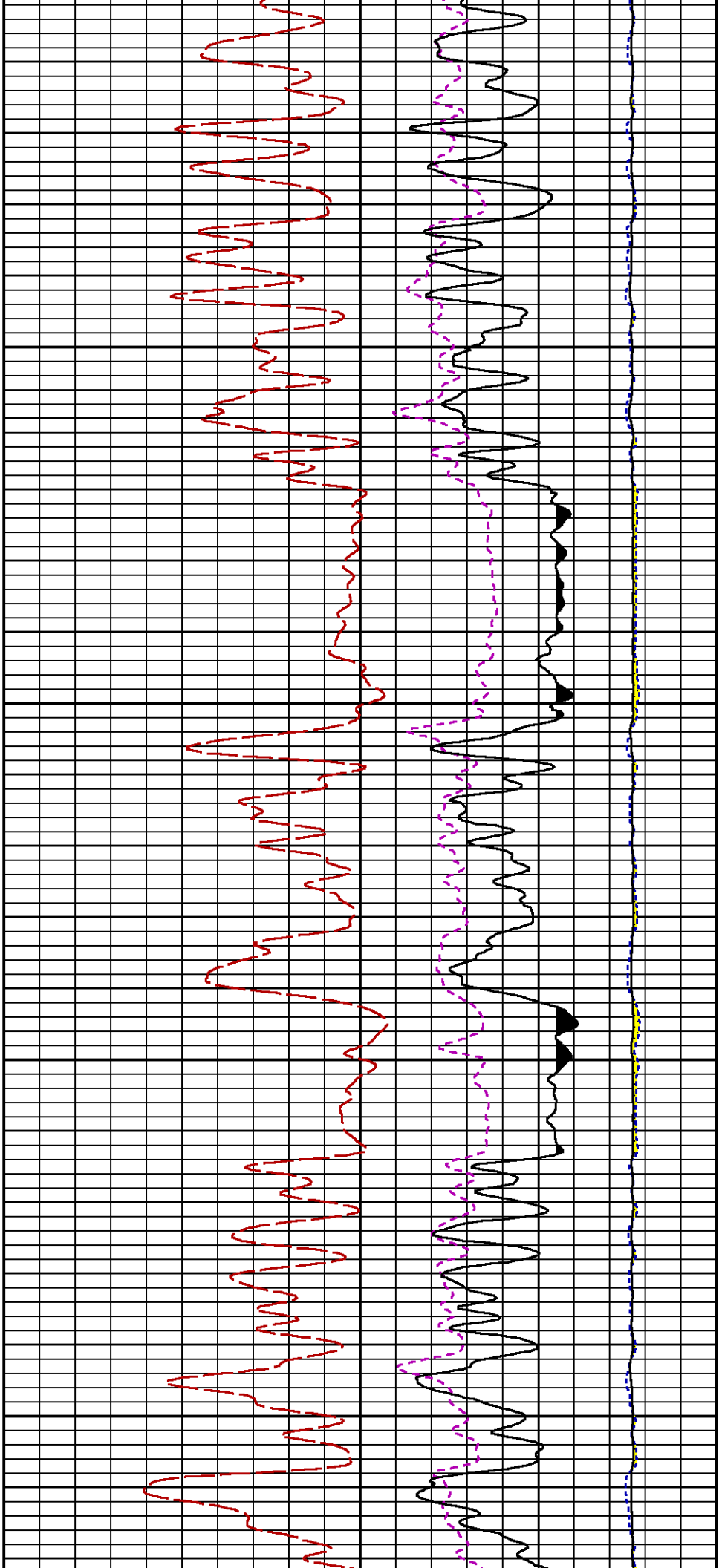


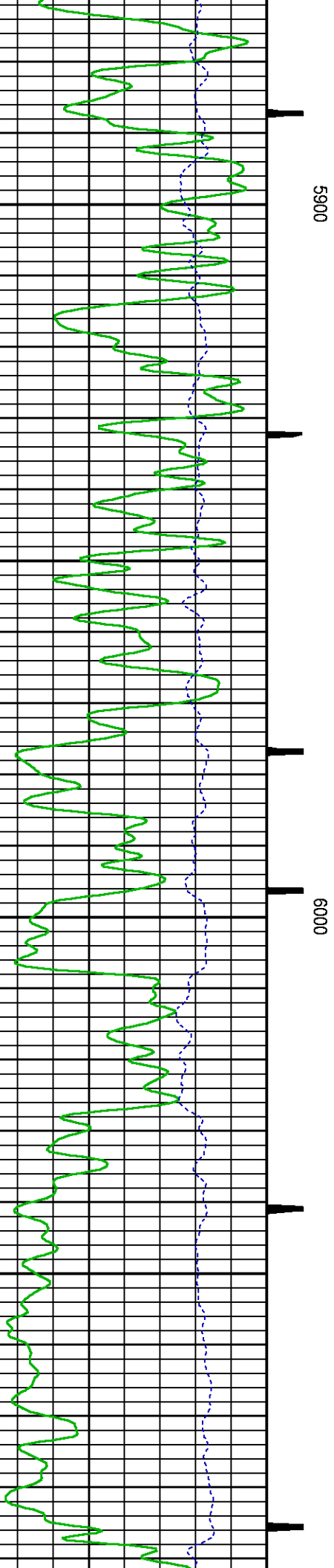
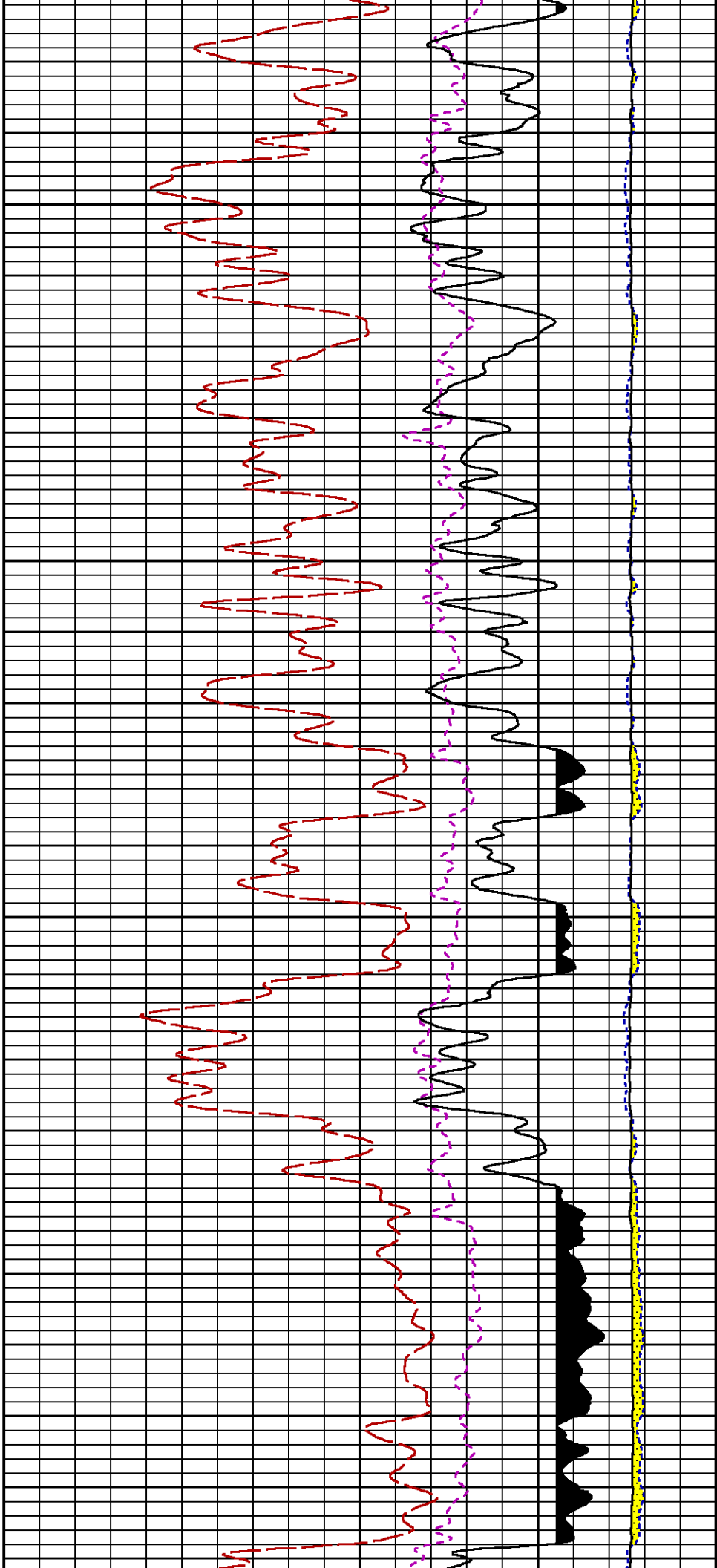


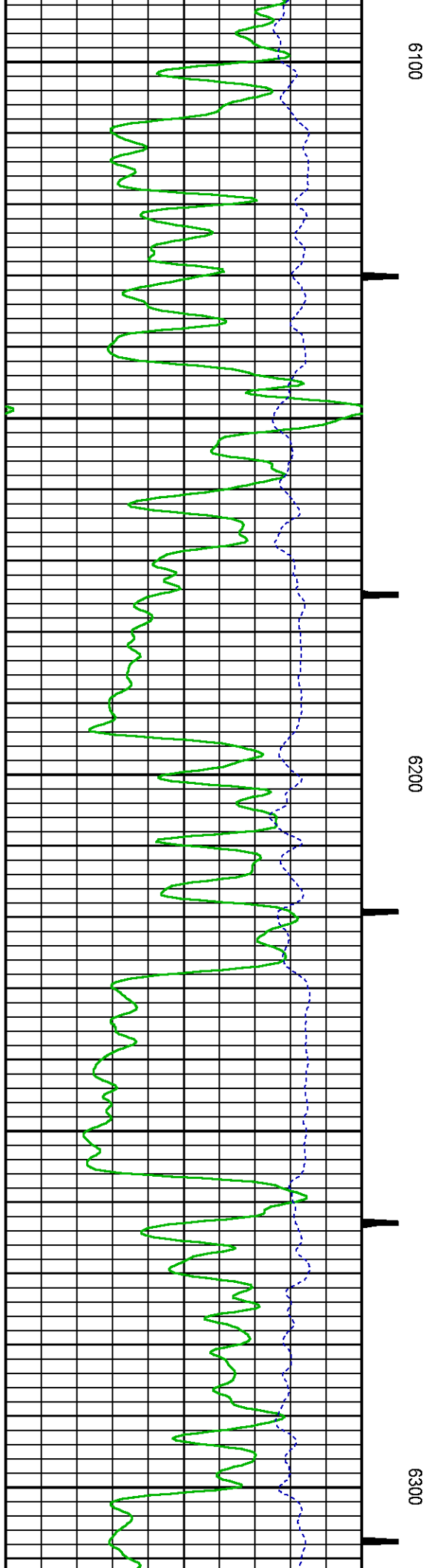
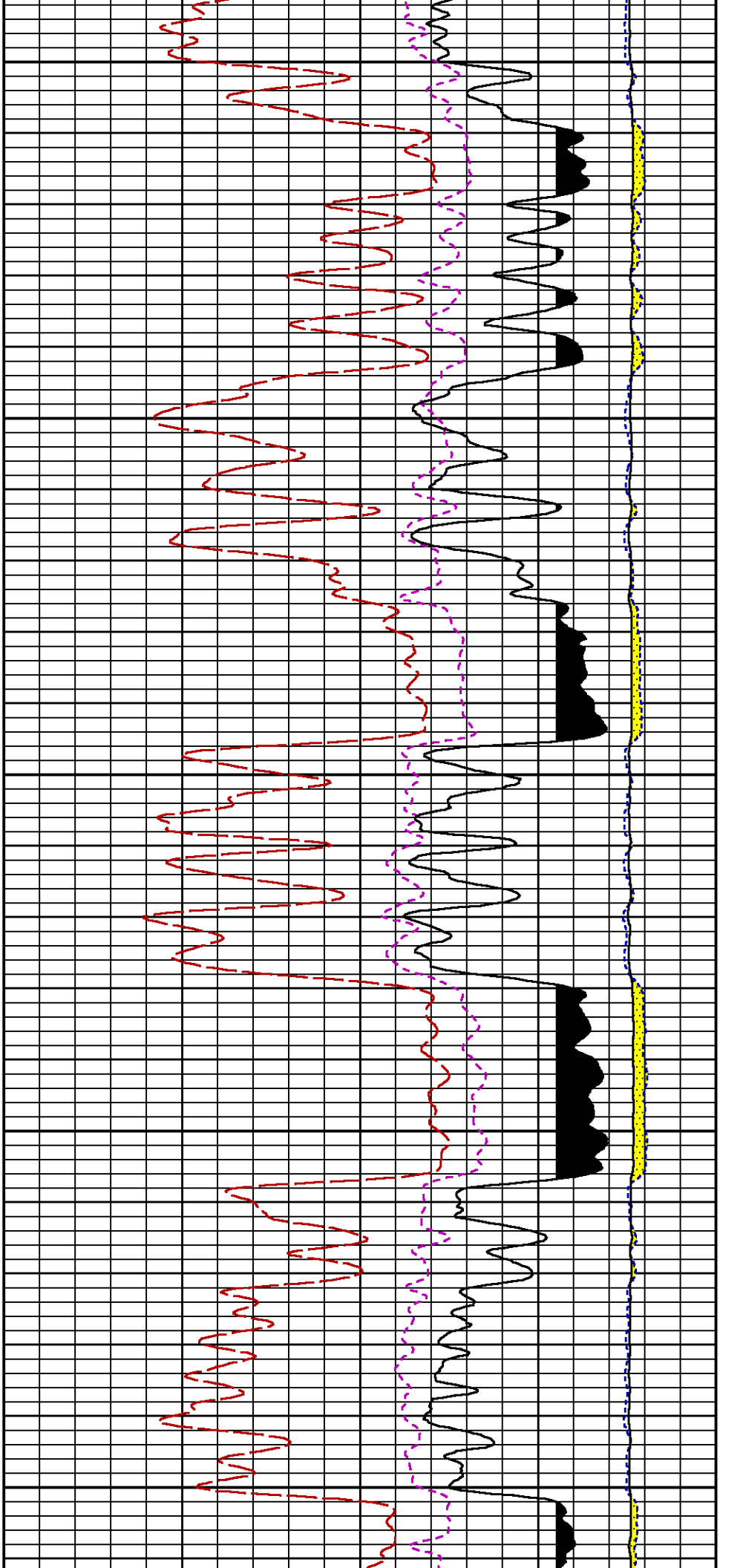


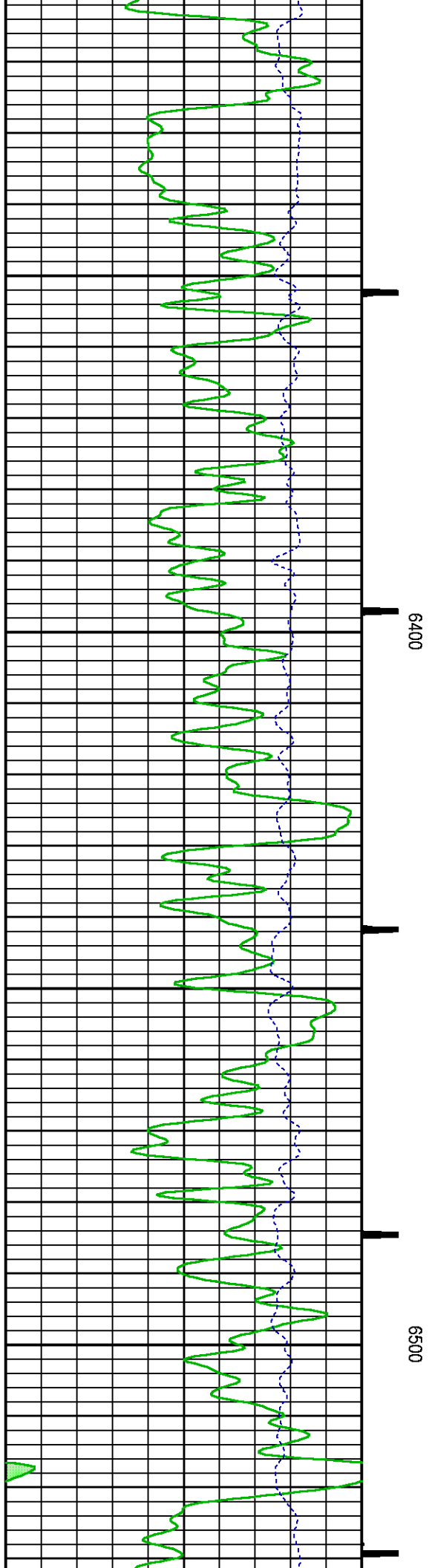
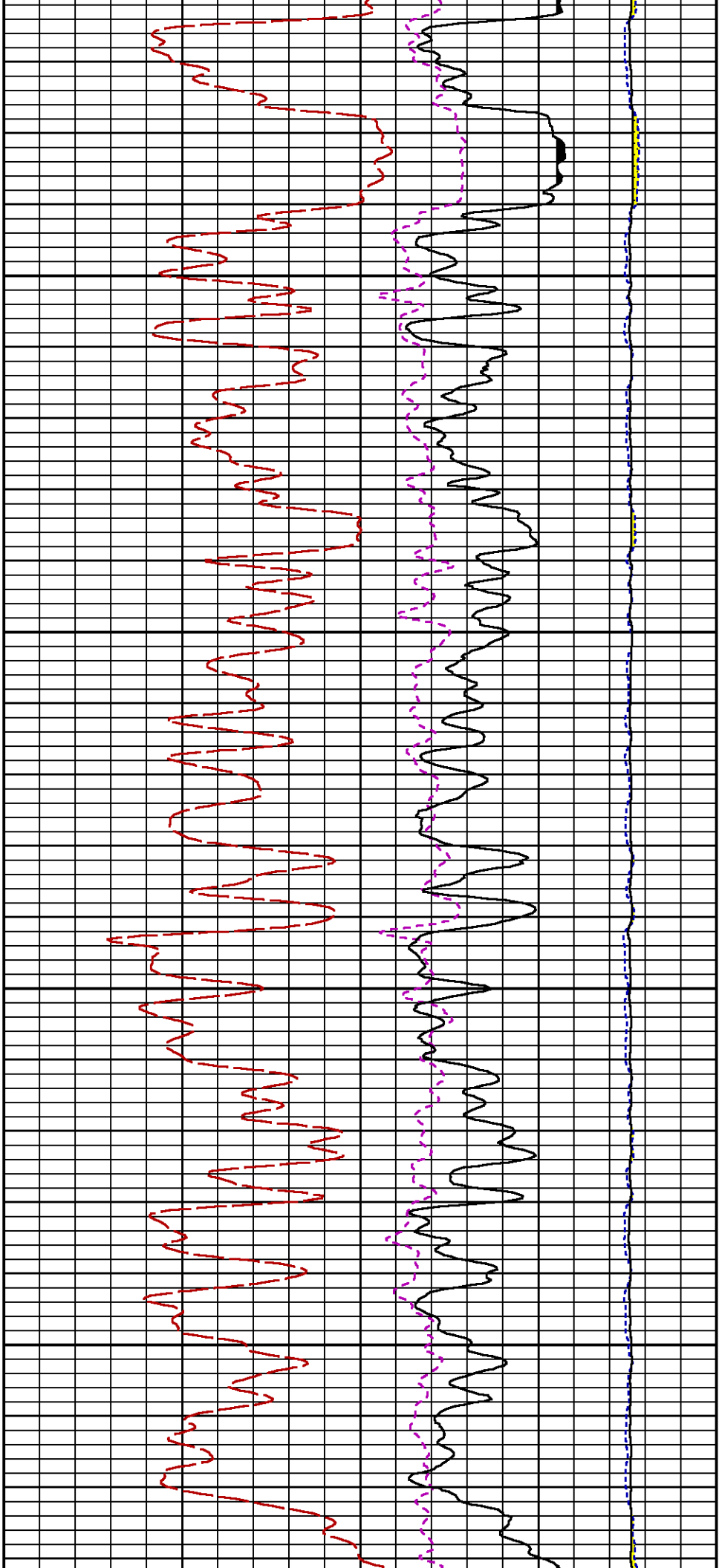


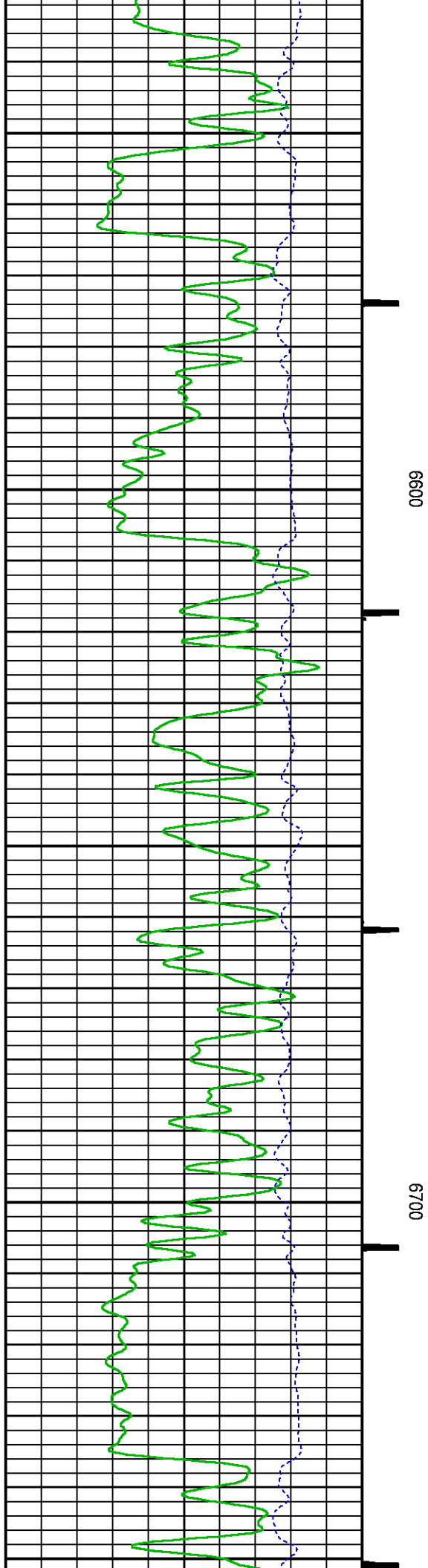
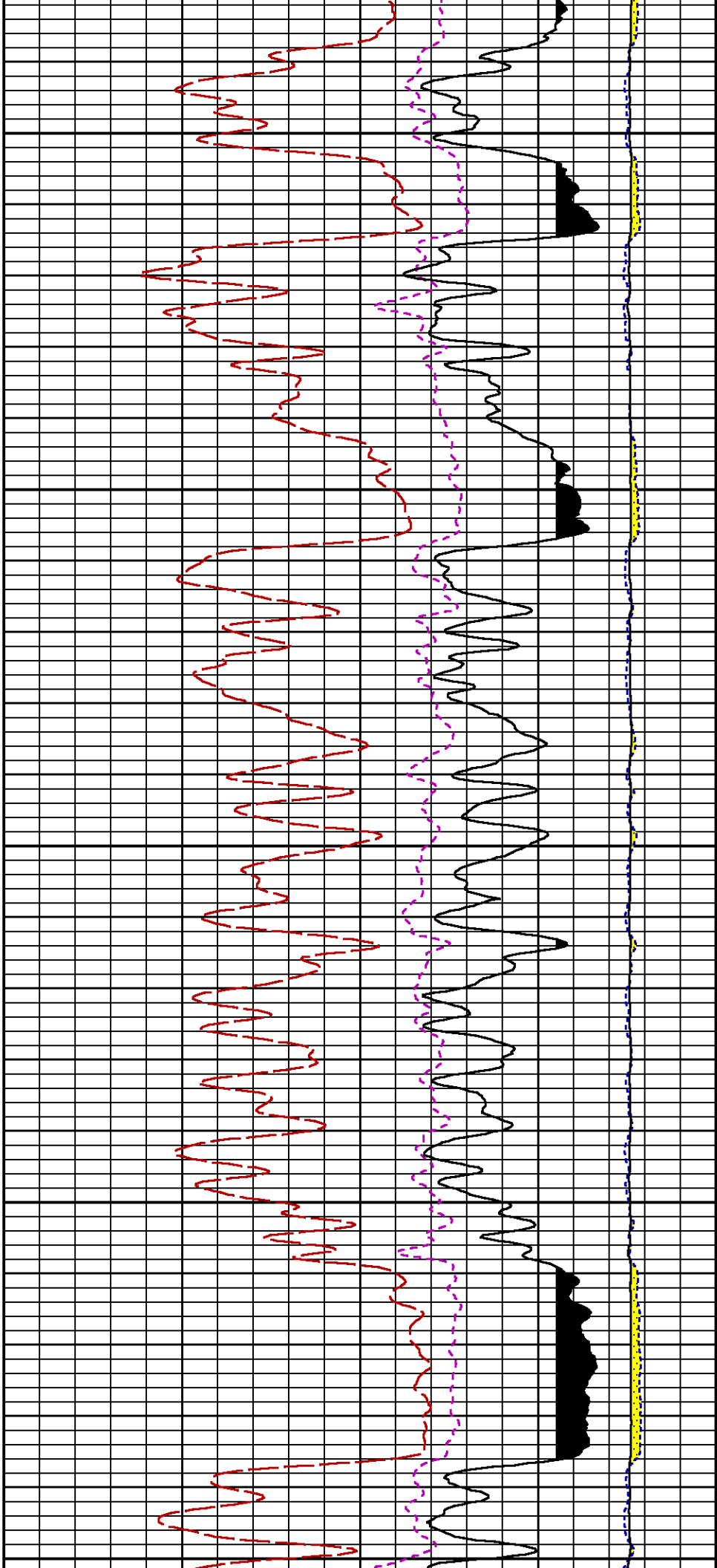


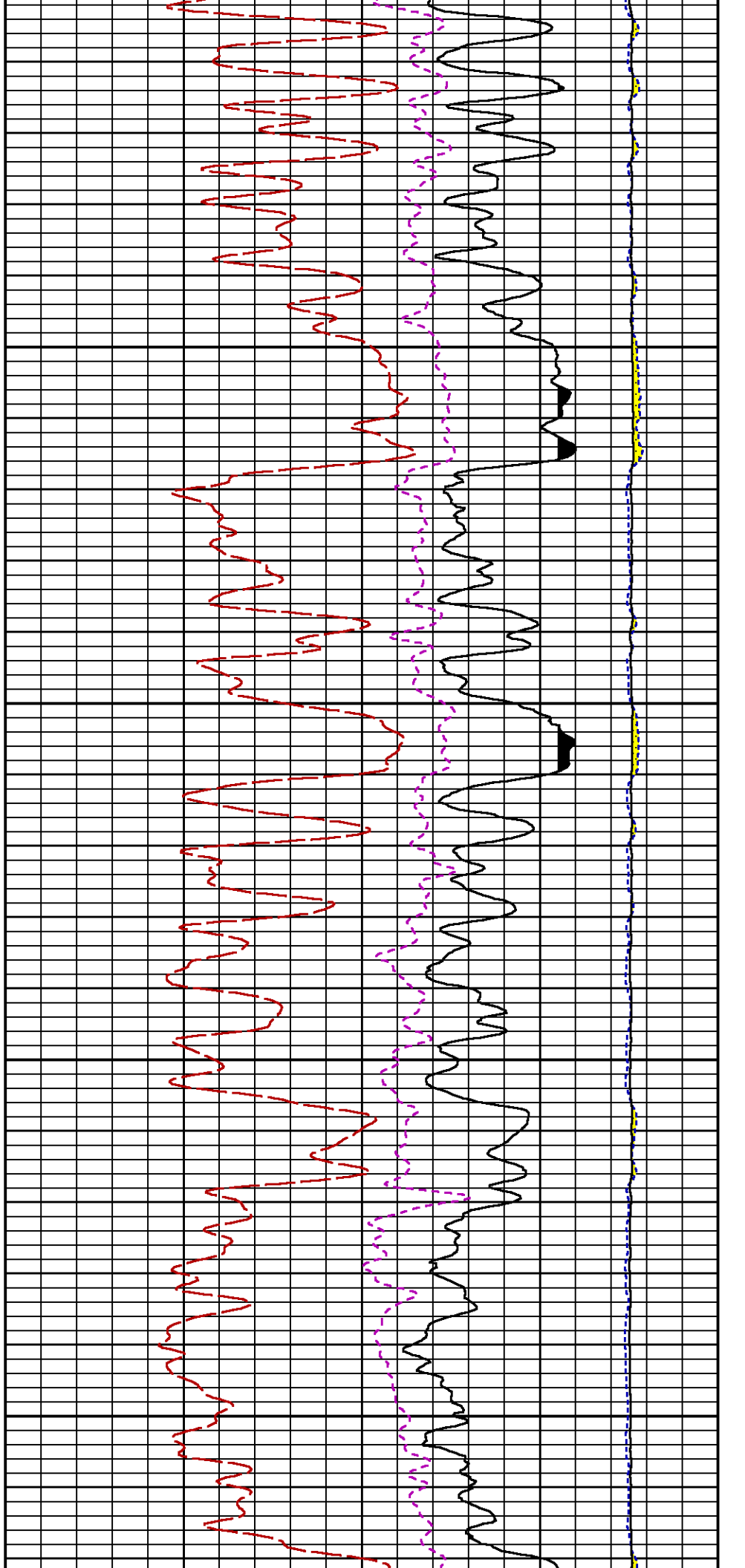
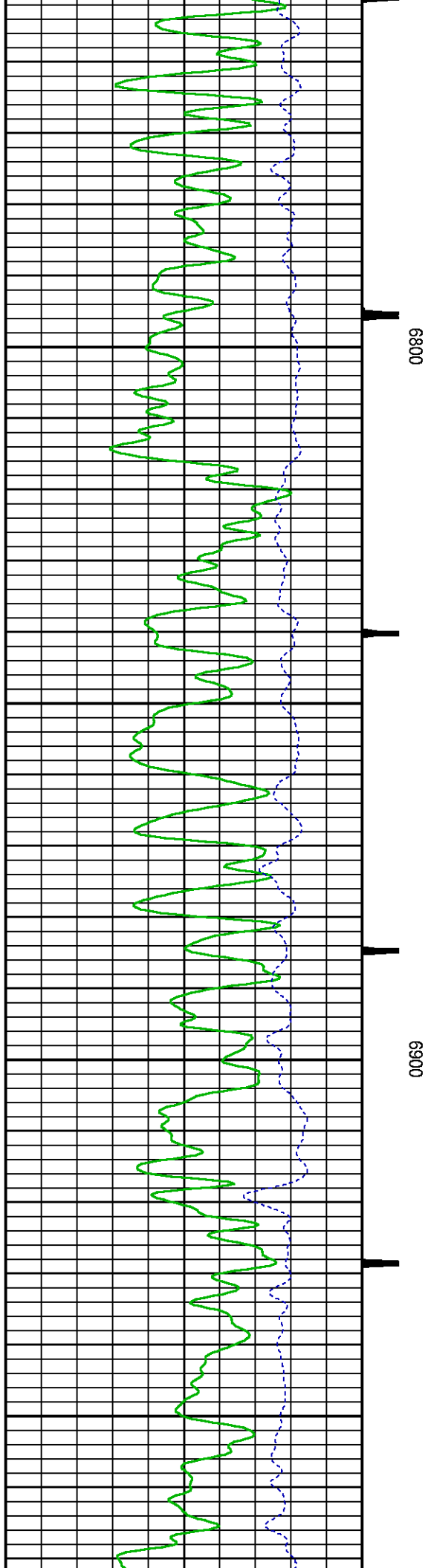


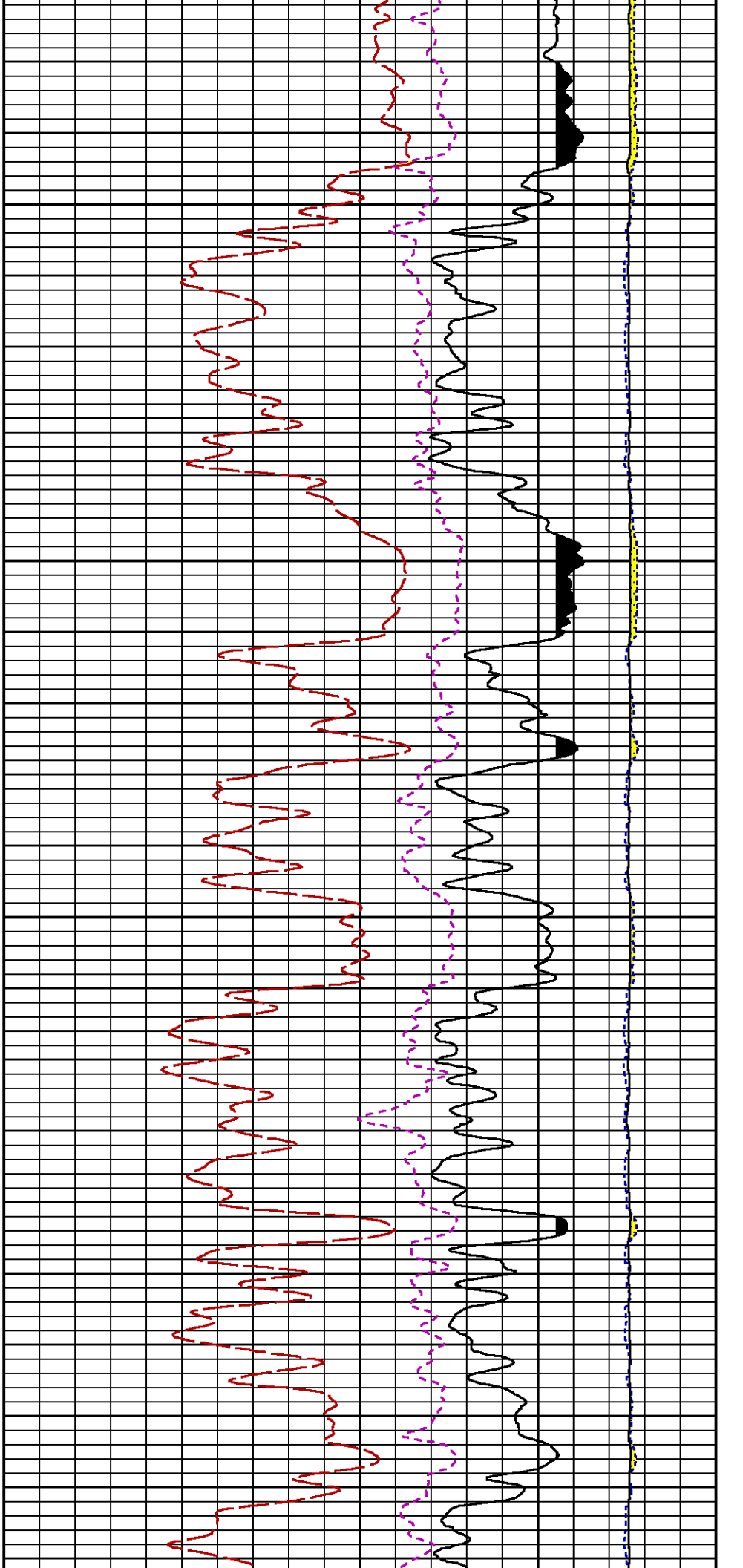






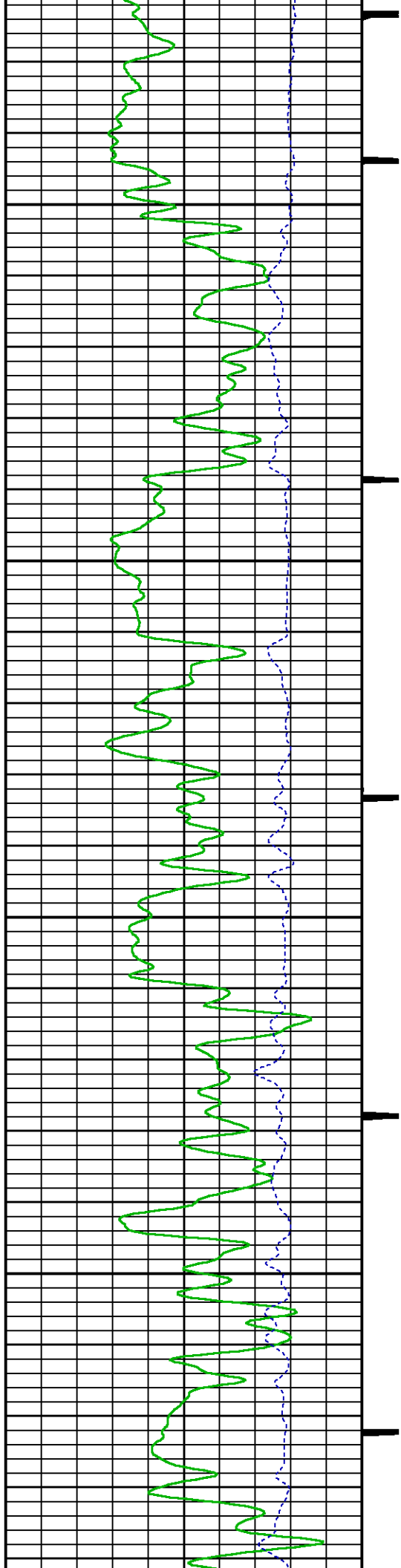


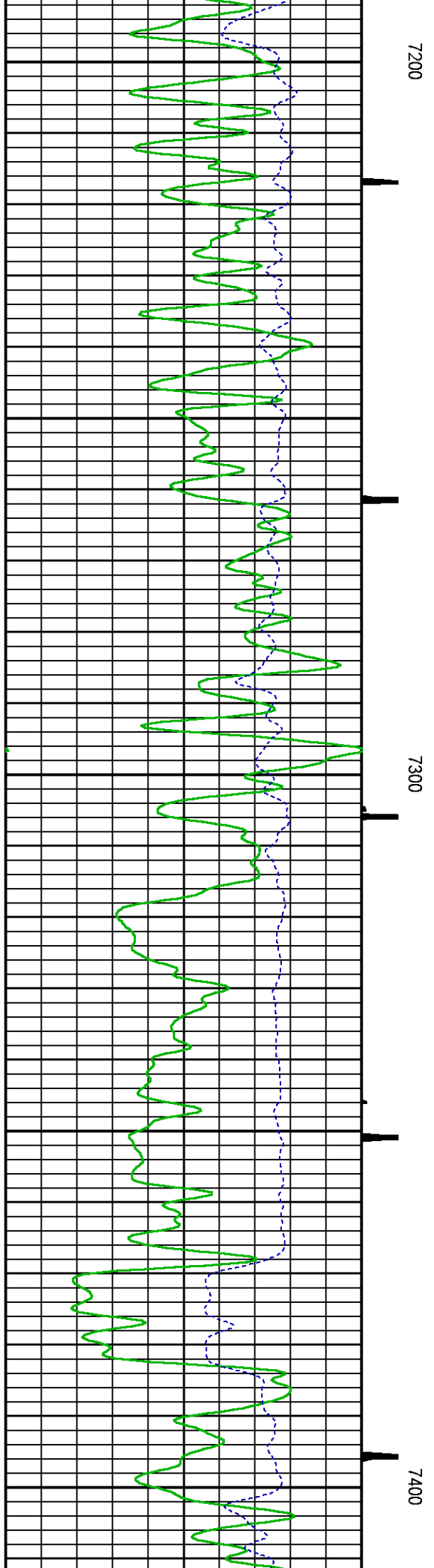
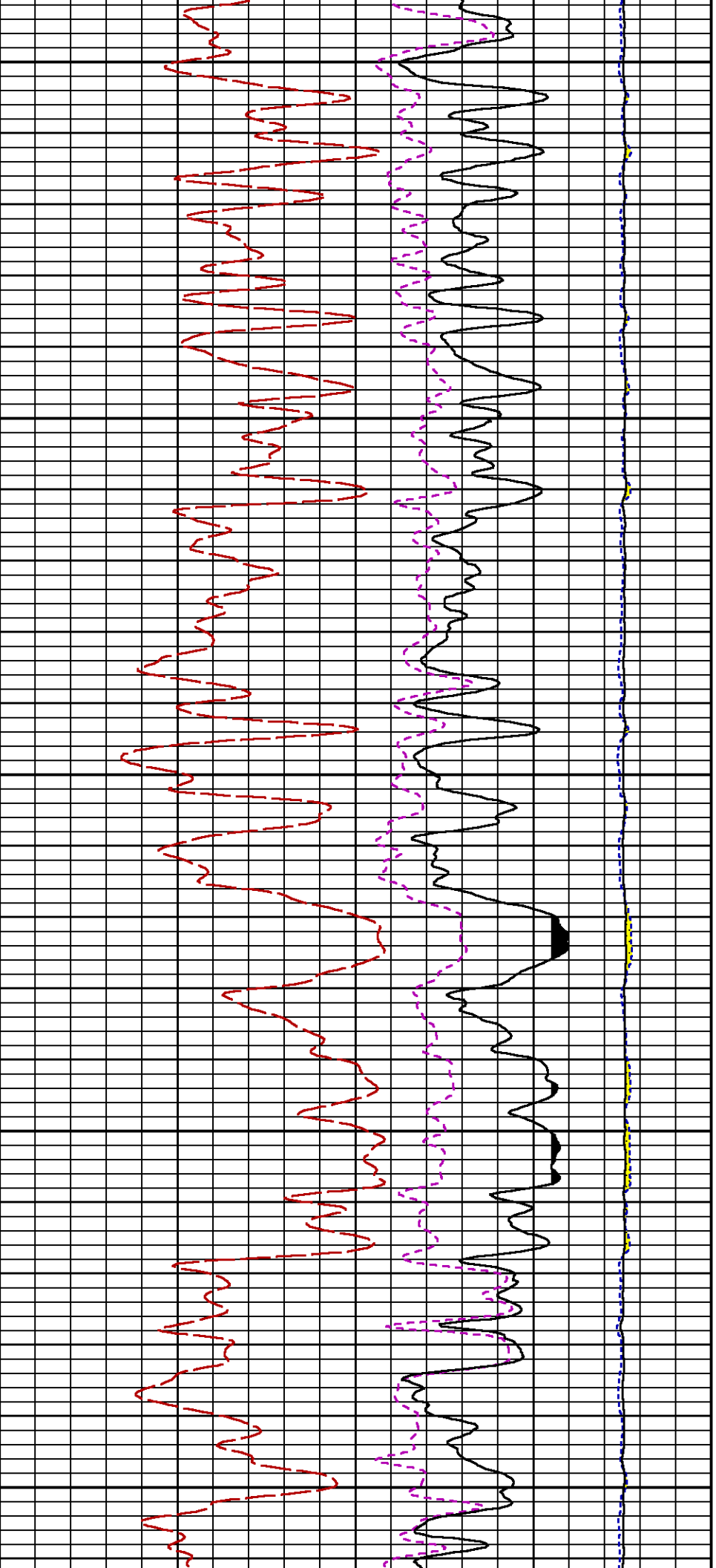


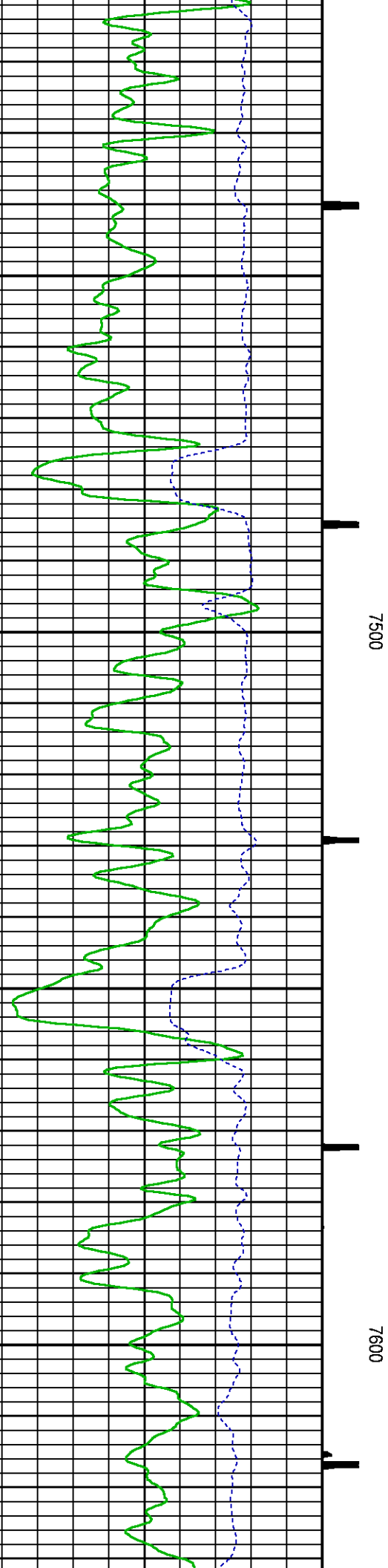
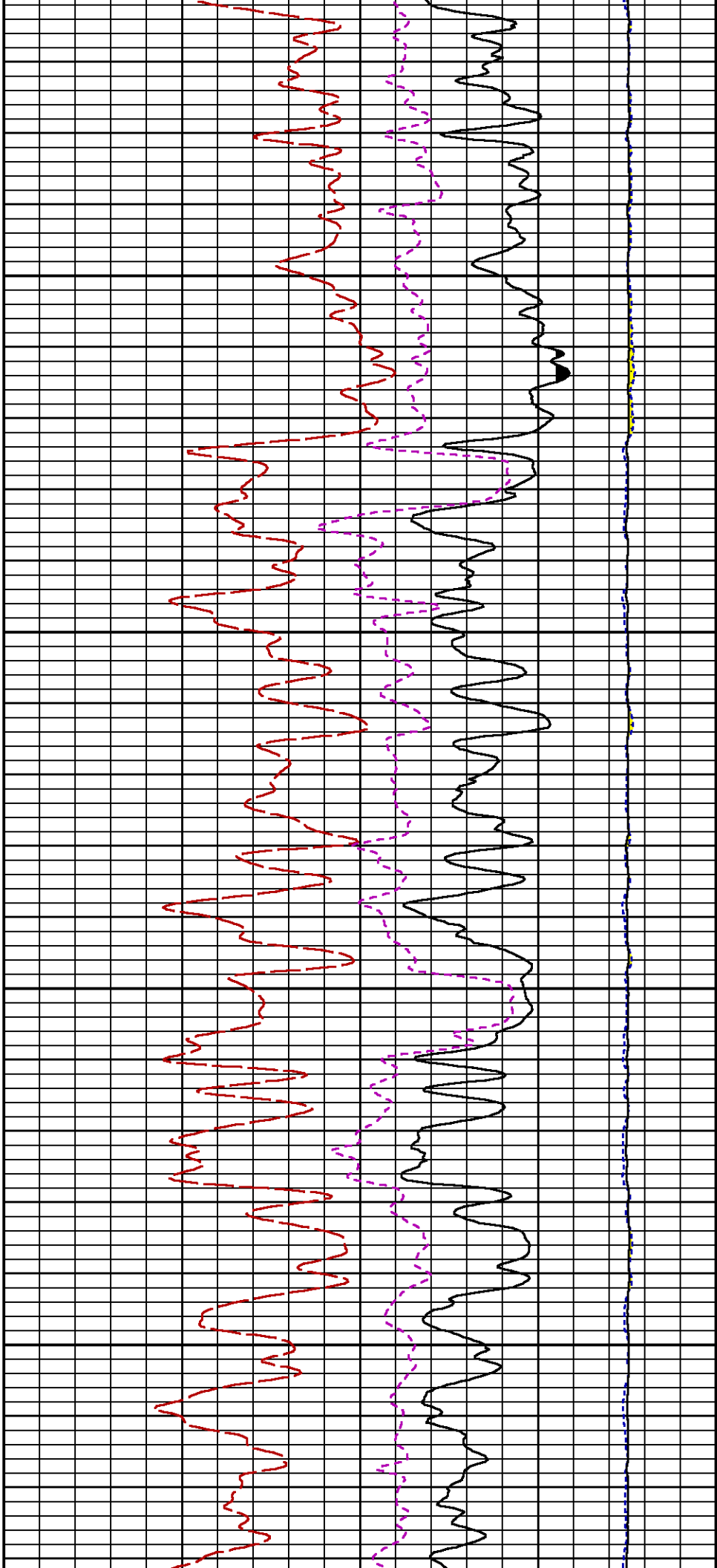


7000

7100









FR GR

FR ISS

GR BACKUP

GAMMA RAY [gr]

(gAPI)

ISS [iss]

 $((\text{cts/s}))$

FEEET

CCL

FR RATO

FR RICS

FRISGAC

FRIS

FR SS

LS [ls]

29000

((cts/s))

CC [cc]

SS [SS] 290000

((cts/s))

RATO [rato]

17

0

(dim)

RICS [rics]

39

9

(dim)

SGFC [sgfc]

60

0

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: Sun Aug 27 12:54:29 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_GUNDERSON_20_05E/RPM3D01.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 7114.250 ft BOTTOM DEPTH: 7385.000 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

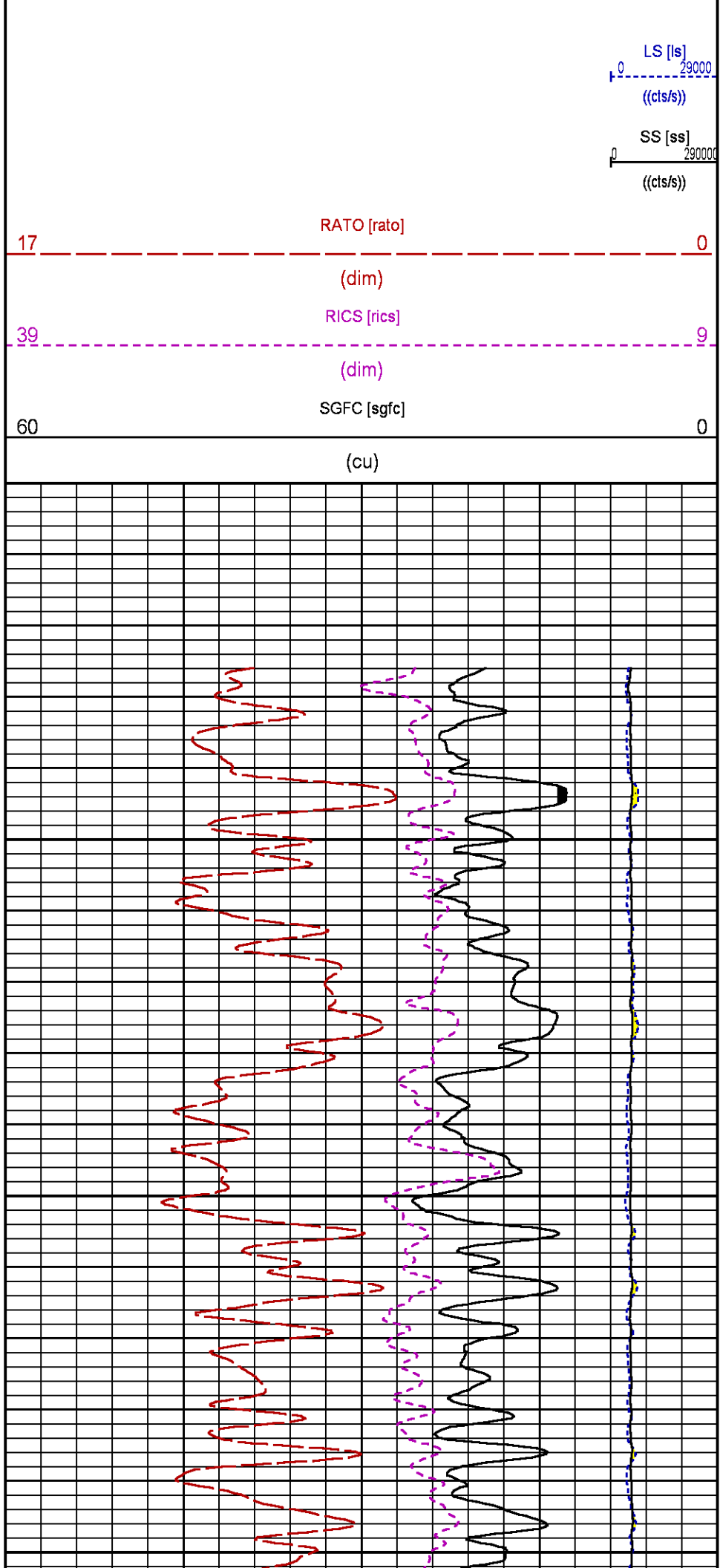
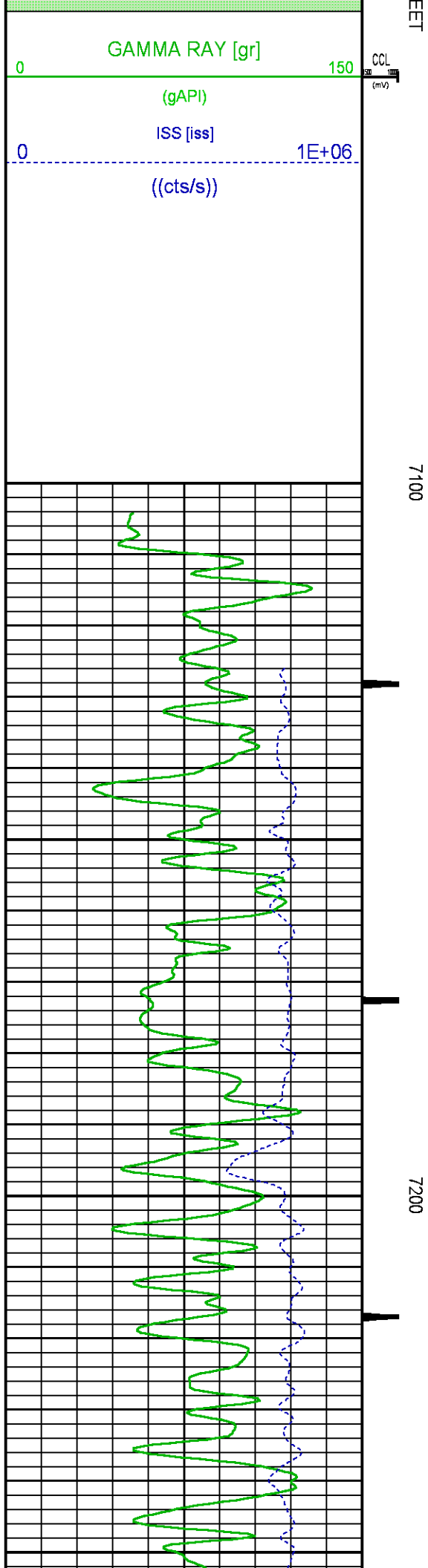
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Aug 27 12:35:44 2017	CASING COLLAR LOCATOR
F1:GR	Aug 27 12:35:44 2017	GAMMA RAY
F1:ISS	Aug 27 12:35:44 2017	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Aug 27 12:35:44 2017	LONG SPACE COUNT RATE
F1:RATO	Aug 27 12:35:44 2017	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Aug 27 12:35:44 2017	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Aug 27 12:35:44 2017	CORRECTED FORMATION SIGMA
F1:SS	Aug 27 12:35:44 2017	SHORT SPACE COUNT RATE

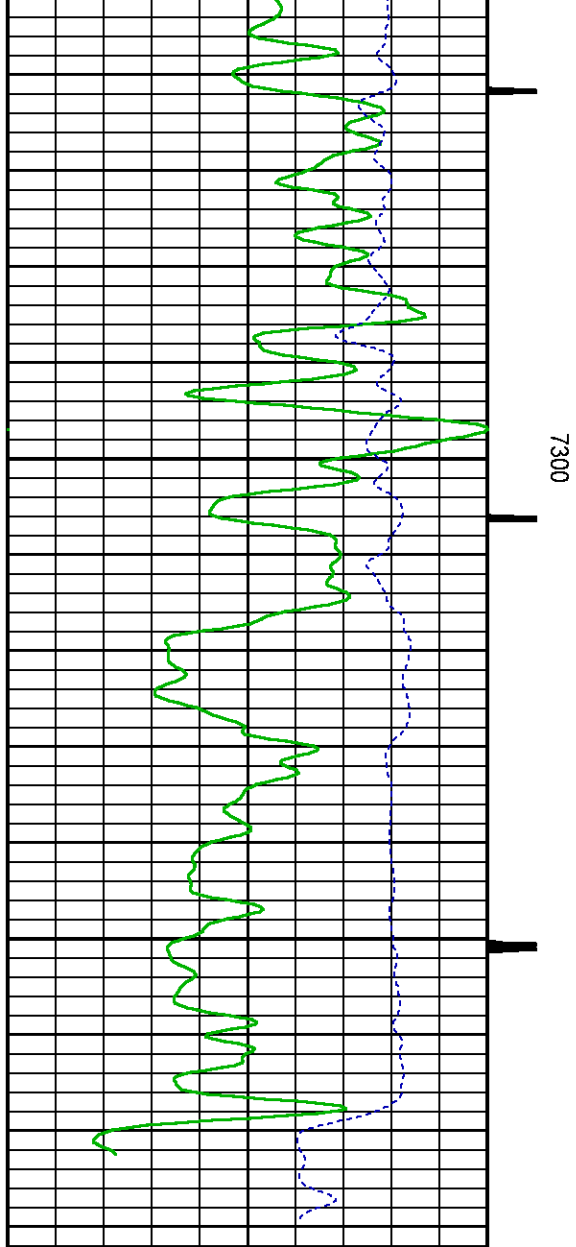
CURVE MEASURE POINT OFFSET

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:GUNDERSON_20_05E_RPM_REPEAT.fvpdf [5"/100' Scale]
Plot Interval : 7088 - 7375 Feet

Data File 1 : F1 : cpu100:/dat1a/LARAMIE_GUNDERSON_20_05E/GUNDERSON_20_05E_RPM_REPEAT.xtf
Created On : Aug 27 12:35:44 2017
Company : LARAMIE ENERGY
Well : GUNDERSON BCU 20-05E
Field : VEGA
File Interval : 7087.25 - 7385 Feet
OCT : RPM3D





7300

FEET

GR BACKUP

GAMMA RAY [gr]

0 150

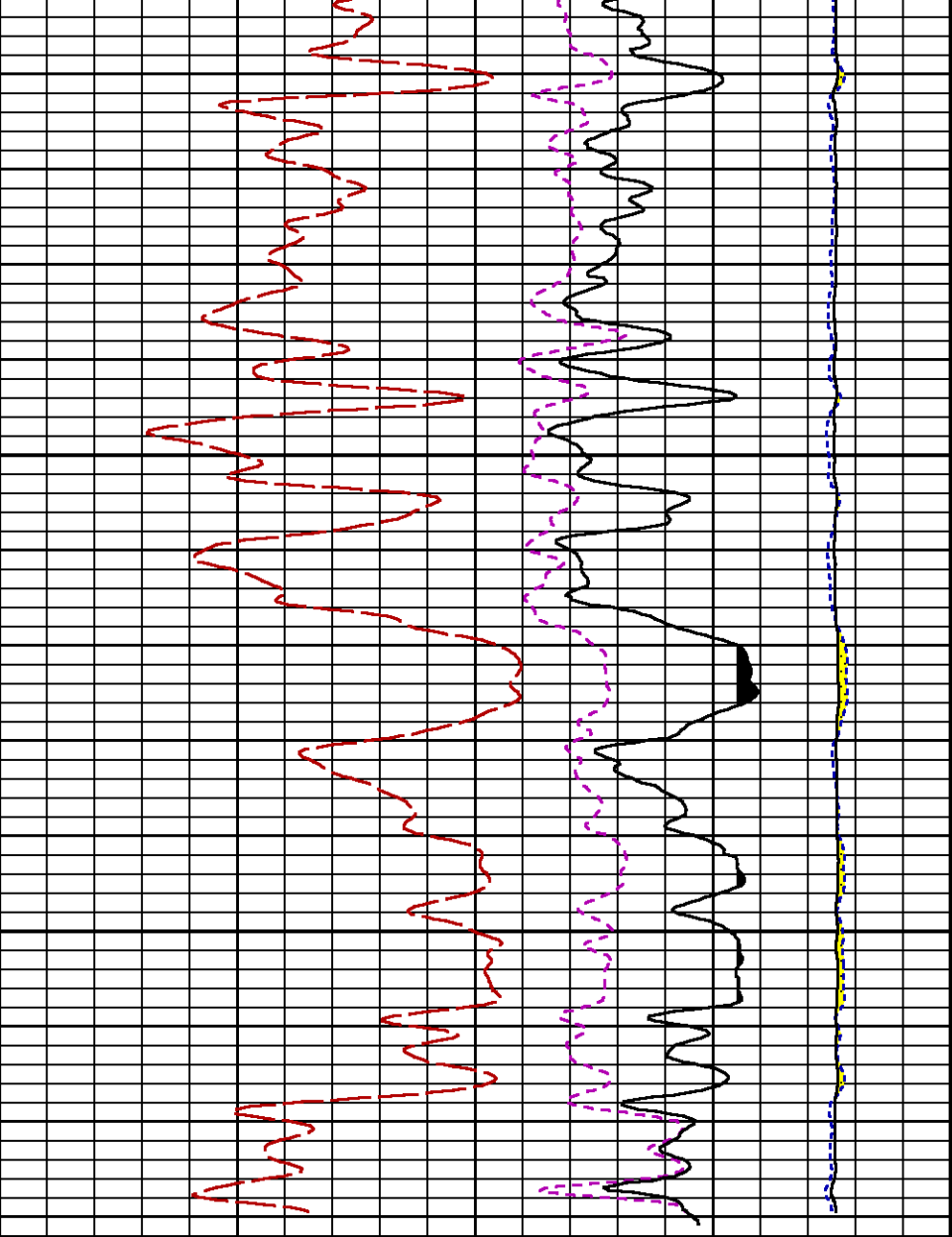
(gAPI)

ISS [iss]

0 1E+06

((cts/s))

CCL
(mV)



LS [ls]

0 29000

((cts/s))

SS [ss]

0 290000

((cts/s))

RATO [rato]

17

0

(dim)

RICS [rics]

39

9

(dim)

SGFC [sgfc]

60

0

(cu)

CALIBRATION / VERIFICATION SUMMARY

Source File: /data1a/LARAMIE_GUNDERSON_20_05E/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	CALBRTR ON	CR DIFF	MULT	BACKGROUND	CALBRTR ON	CALBRTR
	(cts/s)	(cts/s)	(cts/s)		(gAPI)	(gAPI)	(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 CALBRTR ON		MULT		BACKGROUND CALBRTR ON		DIFF.	
(cts/s)		(cts/s)		(gAPI)		(gAPI)	
GR	63.44	394.18	0.552	35.00	217.44	182.44	
						175.00	185.00

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 10180595

HOURS: 8281AA 228

	ISS	Mtr Vits (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 25.35 26.40	0.15 0.00 0.20	24.03 23.60 24.00	0.34 0.00 0.40

	ISS	ILS	IXS	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 ISS/ILS	RIN13 ISS/IXS	RICS ISS/CSS	RATO SS/LS	RTWO SS2/LS	RONE CSS/CLS
Raw Data	807240	1.44 1.42 1.46	4.90 3.55 5.52	31.88 22.20 32.70	15.44 10.88 16.34	10.65 10.08 11.10	3.80 3.57 3.95	4.04 3.76 4.22
Fit Quality %		0.052	0.128	0.117	0.144	0.021	0.011	0.031
Reduced	1232260	1.44 1.42 1.46	4.91 4.33 5.52	31.91 27.60 32.70	15.45 13.70 16.34	10.65 10.08 11.10	3.80 3.57 3.95	4.04 3.76 4.22

INSTRUMENT CONFIGURATION

Source File: /data1a/LARAMIE_GUNDERSON_20_05E/RPM-1dg

A3_CABLEHEAD

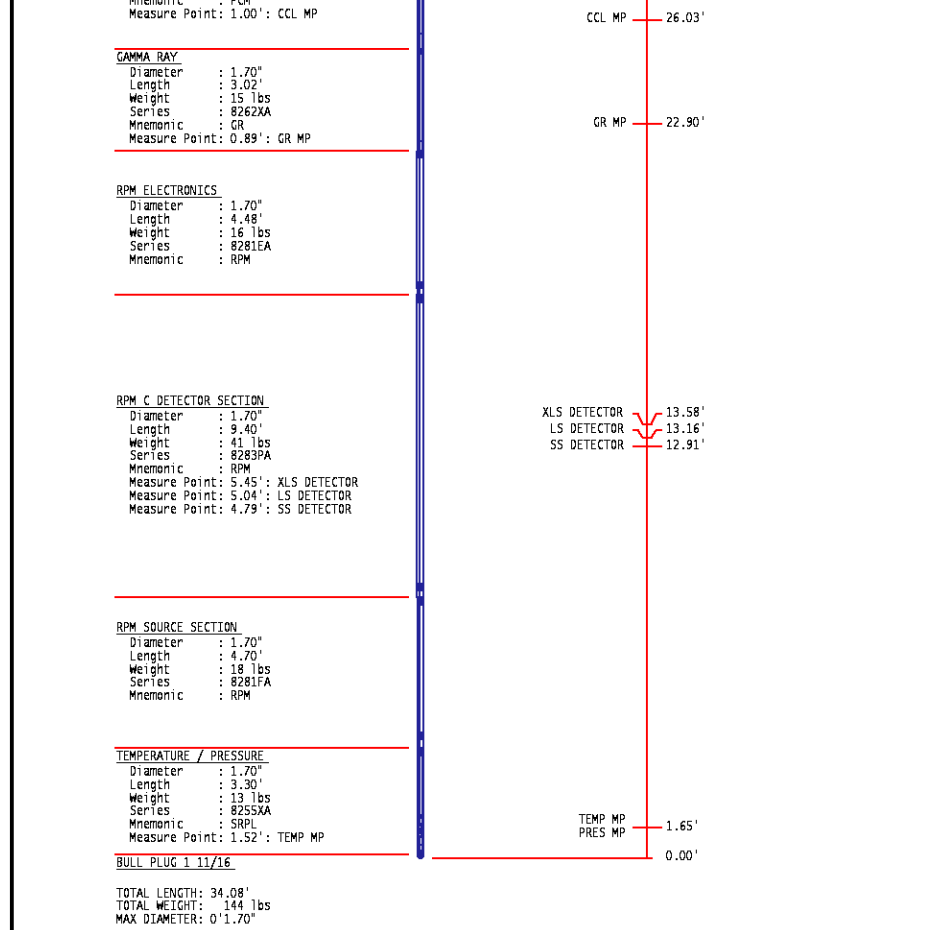
PCM POWER SUPPLY


Diameter : 1.70"
Length : 3.86"
Weight : 18 lbs
Series : 8250EA
Mnemonic : PCM

TELEMETRY / CCL

Diameter : 1.70"
Length : 4.46"
Weight : 20 lbs
Series : 8248ED
Mnemonic : CCL

34.08'



	COMPANY <u>LARAMIE ENERGY</u>		FILE NO: _____
	WELL <u>GUNDERSON BCU 20-05E</u>		API NO: _____
	FIELD <u>VEGA</u>	STATE <u>COLORADO</u>	<u>05077103440000</u>
	COUNTY <u>MESA</u>		
LOCATION: LAT:39.266864N;LONG:107.795281W BHL: LAT:39.266459N;LONG:107.788396W SEC <u>20</u> TWP <u>9S</u> RGE <u>93W</u>		ELEVATIONS: KB 7176 FT DF 7176 FT GL 7146 FT	
		DATE <u>27-AUG-2017</u>	