



RESERVOIR PERFORMANCE MONITOR

FILE NO:
CH145365
API NO:
05077105180000

COMPANY
WELL
FIELD
COUNTY
LARAMIE ENERGY LLC
BCU 0993-21-04E
BUZZARD CREEK
MESA

STATE
COLORADO

Ver. 4.11

LOCATION:

SHL: 868.0' FNL & 1324.0' FEL
BHL: 868.0' FNL & 1324.0' FEL

OTHER SERVICES
RAL

SEC 21 TWP 9S RGE 93W

PERMANENT DATUM
LOG MEASURED FROM
DRILL. MEAS. FROM
GL
KB
KB
ELEVATION
30 FT
7257 FT
ABOVE P.D.

ELEVATIONS:
KB 7287 FT
DF
GL 7257 FT

DATE	29-NOV-2018
RUN	2
TRIP	2
SERVICE ORDER	US145365J
DEPTH DRILLER	8441 FT
DEPTH LOGGER	8384 FT
BOTTOM LOGGED INTERVAL	8384 FT
TOP LOGGED INTERVAL	2590 FT
TIME STARTED	09:30
TIME FINISHED	15:00
OPERATOR RIG TIME	5.5 HRS
TYPE OF FLUID IN HOLE	WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	58 FT
LOGGED CEMENT TOP	2010 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	17 FMN
MAX. RECORDED TEMP.	252 DEGF
REFERENCE LOG	BAKER HUGHES RAL
REFERENCE LOG DATE	28-NOV-2018
EQUIP. NO.	ML-4291
LOCATION	GRAND JCT.
RECORDED BY	M. BAUKA
WITNESSED BY	NA

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 2: *2 OPERATIONS IN WELLBORE*

OPERATION 1: RAL/GR/CCL RUN CENTRALIZED

OPERATION 2: RPM/GR/CCL RUN IN PNC-3D

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 6434' - 6454'

SJ: 7508' - 7528'

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
2	2	PCM	8250EA	10513556	FREE
2	2	TEL/CCL	8248ED	10578541	FREE
2	2	GR	2812LA	11926514	FREE

2	2	RPM	8281EA	10294755	FREE
2	2	RPM	8283PA	10322619	FREE
2	2	RPM	8281FA	10066992	FREE
2	2	TEMP	8255XA	120518	FREE

RPM MAIN PASS G-SAND

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017

Updates: 1,32

Plotted: Thu Nov 29 14:40:35 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BCU_0993-21-04E/p354h03.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 2584.750 ft BOTTOM DEPTH: 3235.616 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	7.87	in	" "
	LARGEST CASING OD	4.50	in	" "
	MATRIX	SANDSTONE		" "

CURVE DESCRIPTION REPORT

CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Nov 29 13:55:59 2018	CASING COLLAR LOCATOR
F1:GR	Nov 29 13:55:59 2018	GAMMA RAY
F1:ISS	Nov 29 13:55:59 2018	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Nov 29 13:55:59 2018	LONG SPACE COUNT RATE
F1:RATO	Nov 29 13:55:59 2018	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Nov 29 13:55:59 2018	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Nov 29 13:55:59 2018	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	Nov 29 13:55:59 2018	SHORT SPACE COUNT RATE

CURVE MEASURE POINT OFFSET

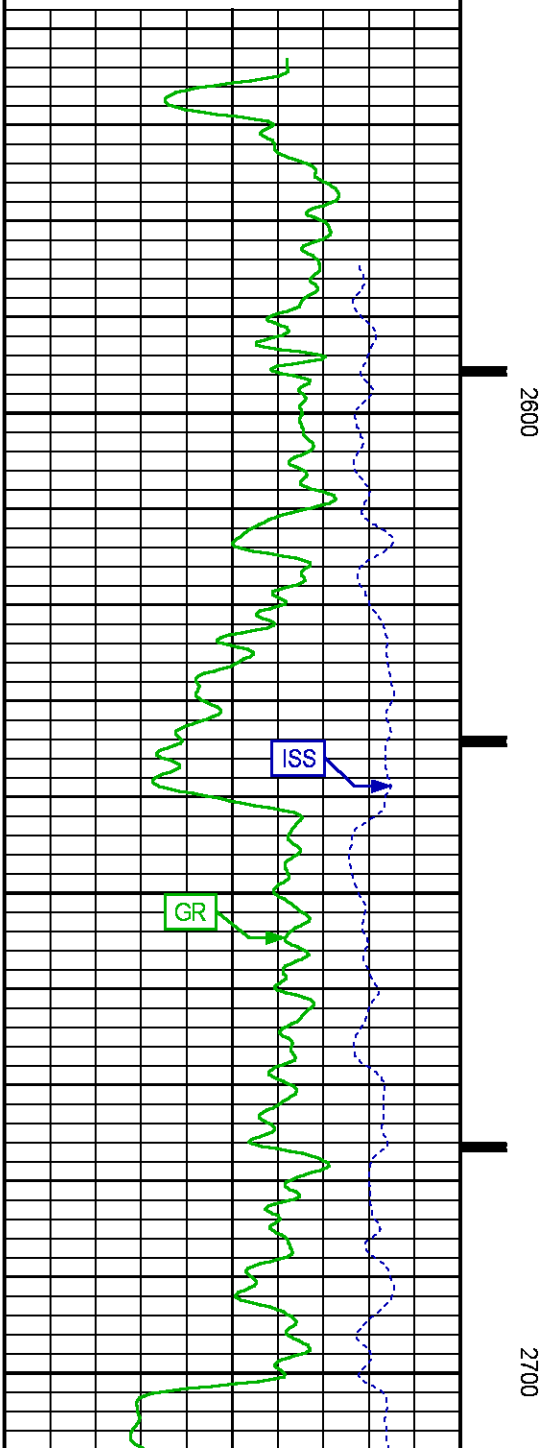
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	-25.00	ISS	-12.75	RATO	-12.75	SGFC	-12.75
GR	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE_BCU_0993-21-04E/BCU_0993-21-04E_RPM_GS.fvpdf [5"/100' Scale]
 Plot Interval : 2559.75 - 3232 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE_BCU_0993-21-04E/45_LARAMIE_BCU_0993-21-04E_RPM_GS.xtf
 Created On : Nov 29 13:55:59 2018
 Company : LARAMIE ENERGY LLC
 Well : BCU 0993-21-04E
 Field : BUZZARD CREEK
 File Interval : 2559 - 3232.25 Feet
 OCT : p354h

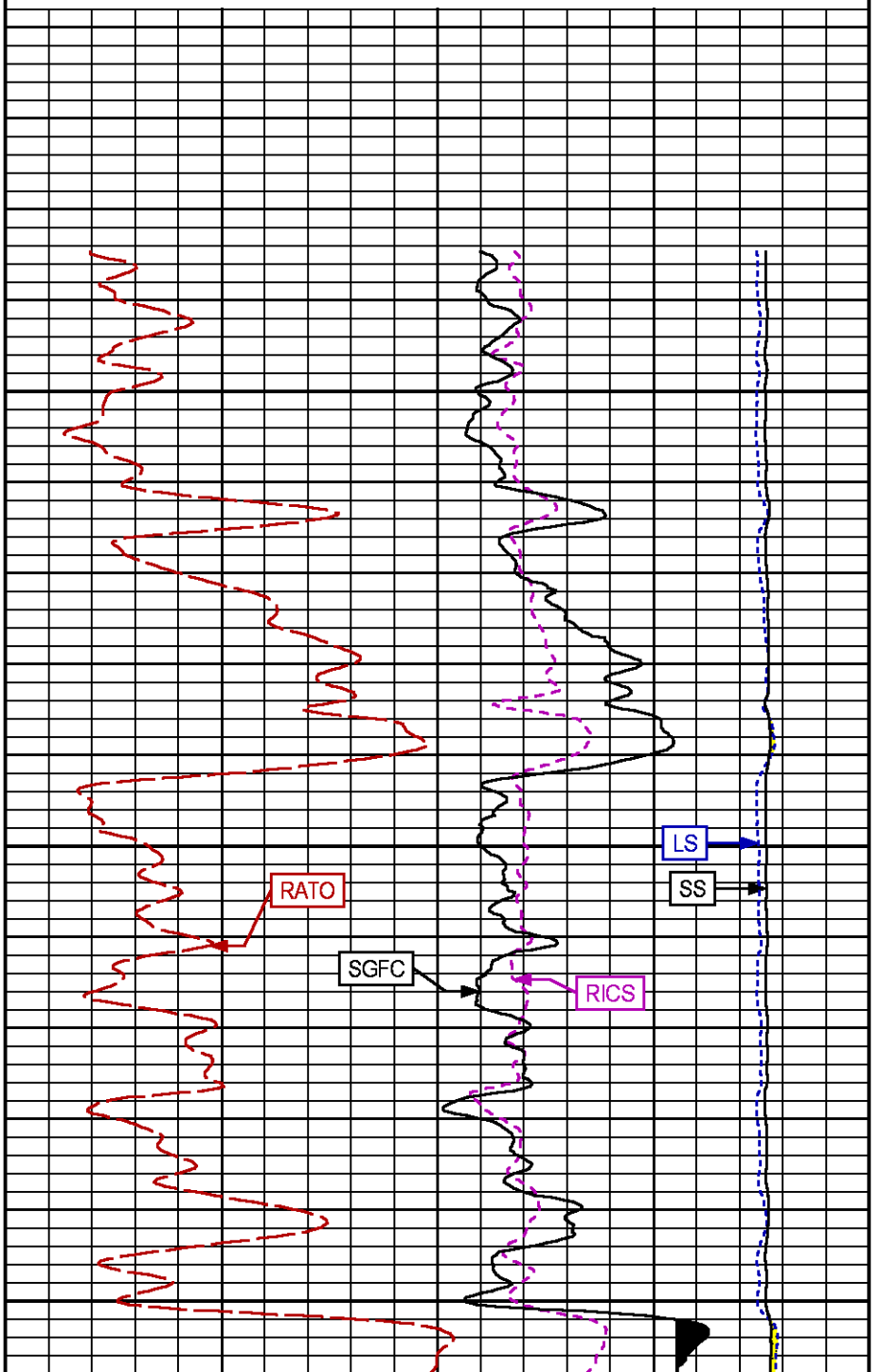
FEET

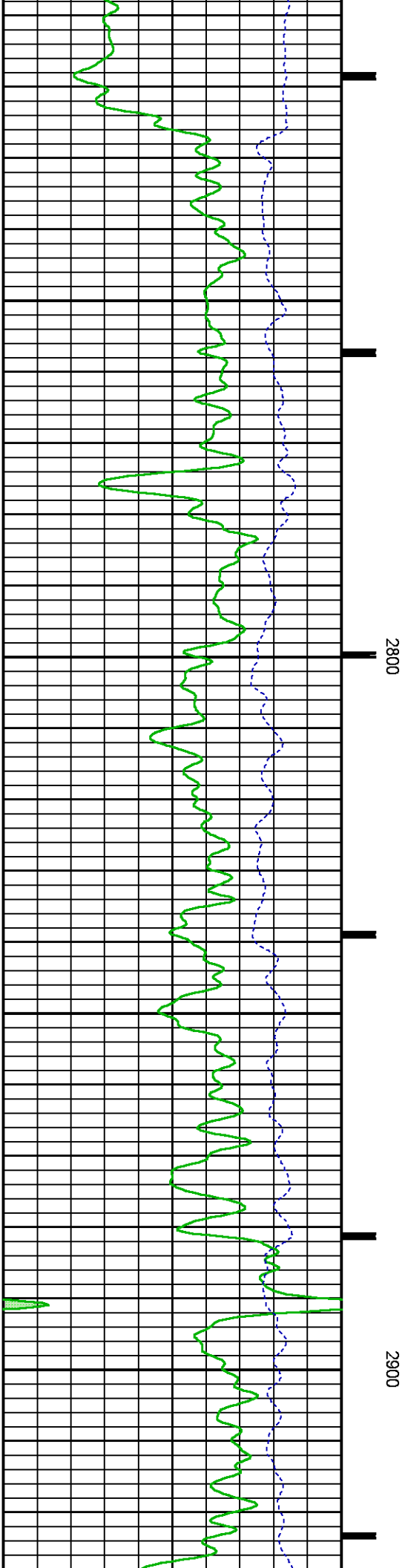
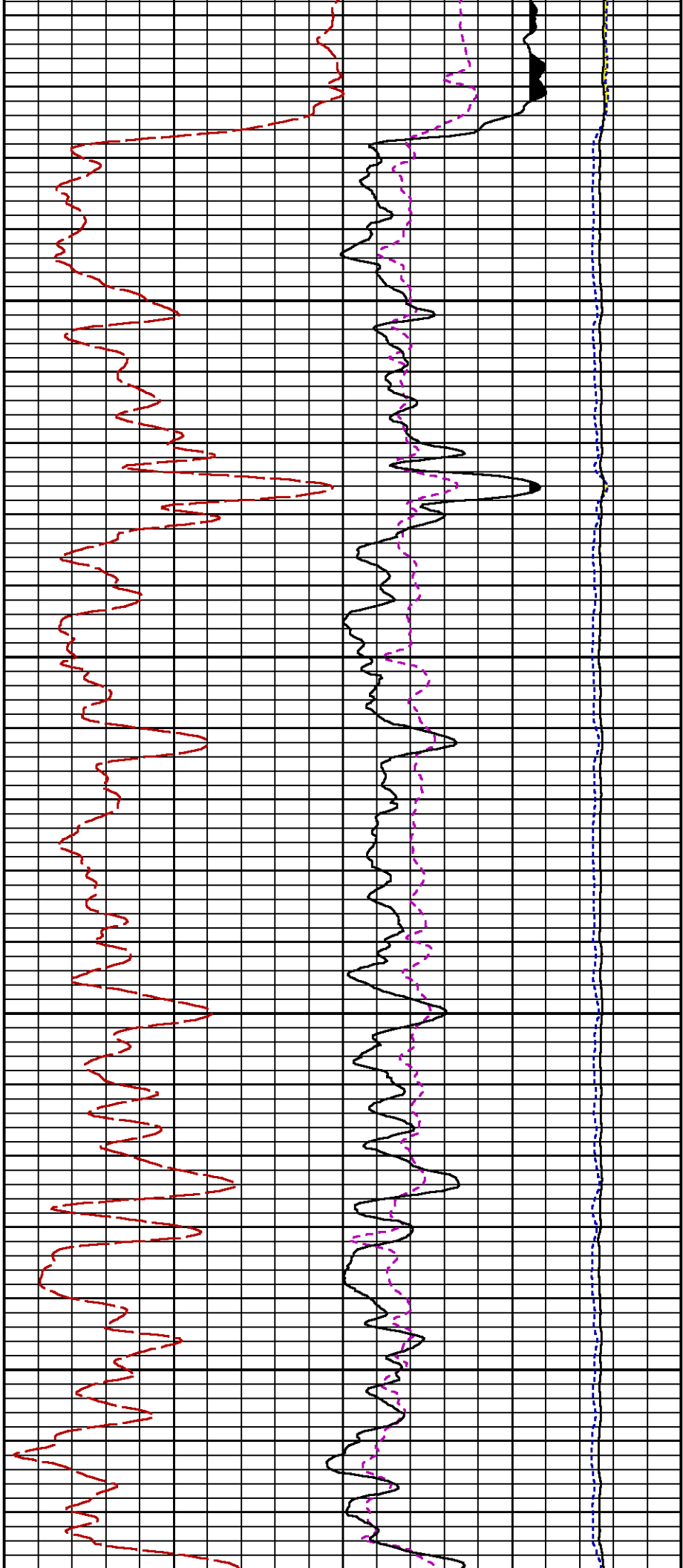
GAMMA RAY [gr]
0 150 CCL (mV)
(gAPI)
ISS [iss] 0 1E+06
((cts/s))

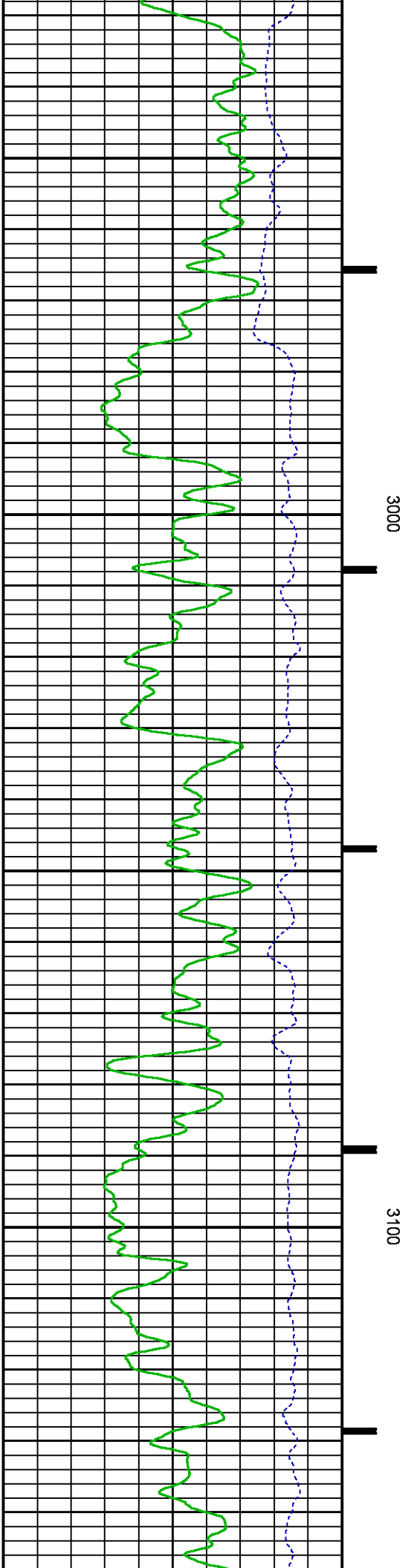
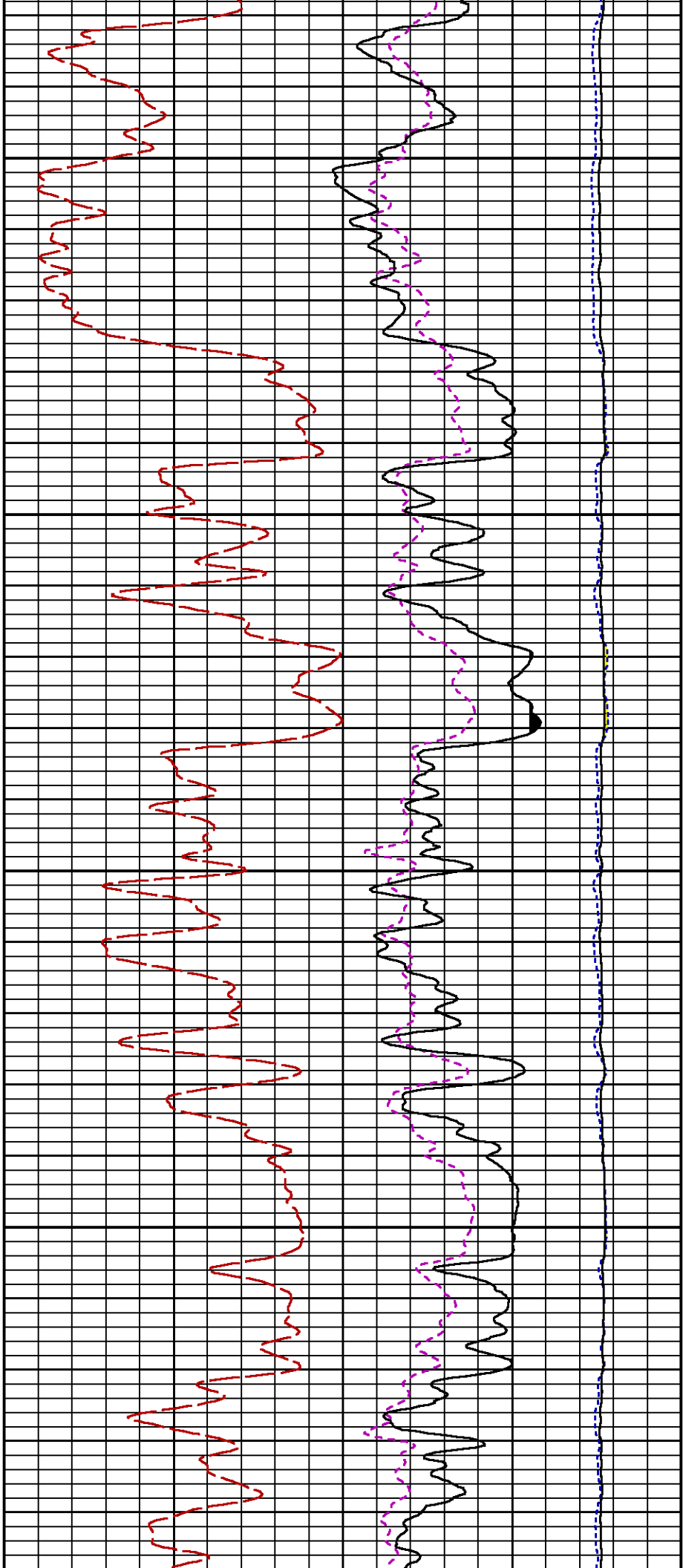


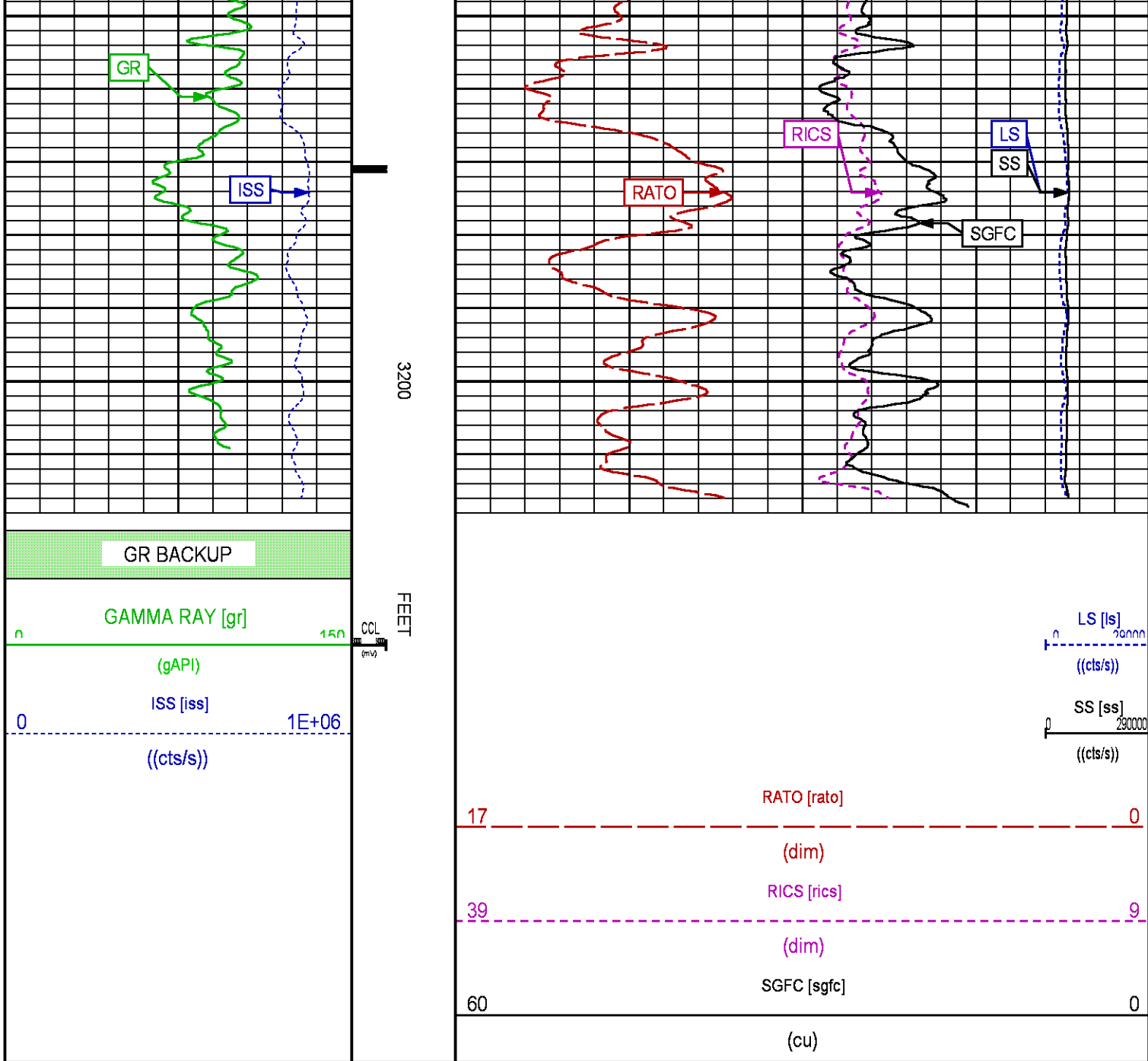
LS [ls] 0 29000
((cts/s))
SS [ss] 0 290000
((cts/s))

RATO [rato] 17 0
(dim)
RICS [rics] 39 9
(dim)
SGFC [sgfc] 60 0
(cu)









RPM MAIN PASS WILLIAMS FORK

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017

Updates: 1,32

Plotted: Thu Nov 29 14:19:55 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BCU_0993-21-04E/p354h02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 4966.231 ft BOTTOM DEPTH: 8400.775 ft

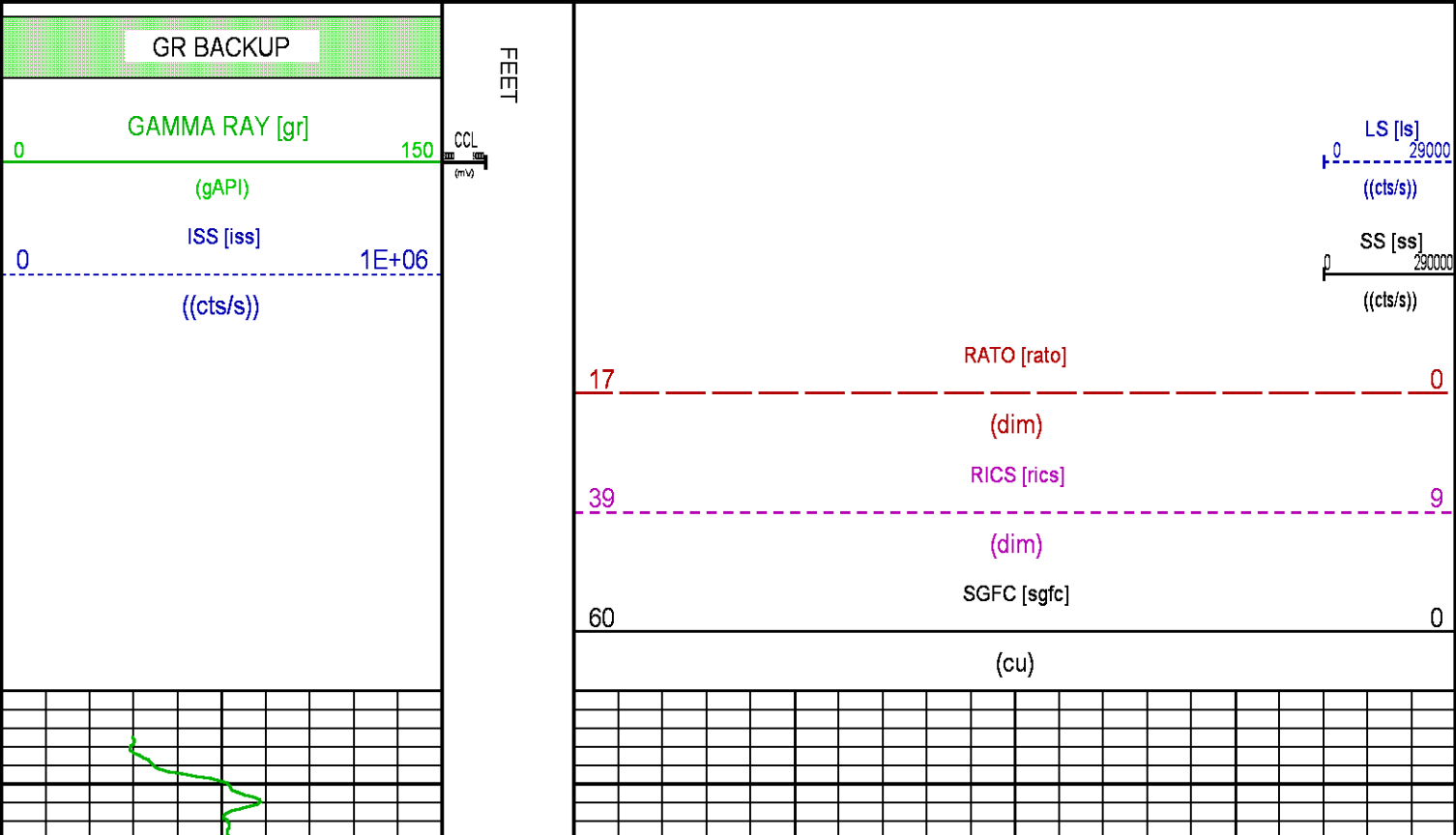
SYMMETRIC FILTER

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	7.87	in	"	"
	LARGEST CASING OD	4.50	in	"	"
	MATRIX	SANDSTONE		"	"

CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Nov 29 10:36:50 2018	CASING COLLAR LOCATOR
F1:GR	Nov 29 10:36:50 2018	GAMMA RAY
F1:ISS	Nov 29 10:36:50 2018	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Nov 29 10:36:50 2018	LONG SPACE COUNT RATE
F1:RATO	Nov 29 10:36:50 2018	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Nov 29 10:36:50 2018	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Nov 29 10:36:50 2018	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	Nov 29 10:36:50 2018	SHORT SPACE COUNT RATE

CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	-25.00	ISS	-12.75	RATO	-12.75	SGFC	-12.75
GR	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation	: SysA:/dat1a/LARAMIE_BCU_0993-21-04E/BCU_0993-21-04E_RPM_WF.fvpdf [5"/100' Scale]
Plot Interval	: 4941.5 - 8402.75 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_BCU_0993-21-04E/45_LARAMIE_BCU_0993-21-04E_RPM_WF.xtf
Created On	: Nov 29 10:36:50 2018
Company	: LARAMIE ENERGY LLC
Well	: BCU 0993-21-04E
Field	: BUZZARD CREEK
File Interval	: 4940.75 - 8403 Feet
OCT	: p354h



5000

5100

GR

ISS

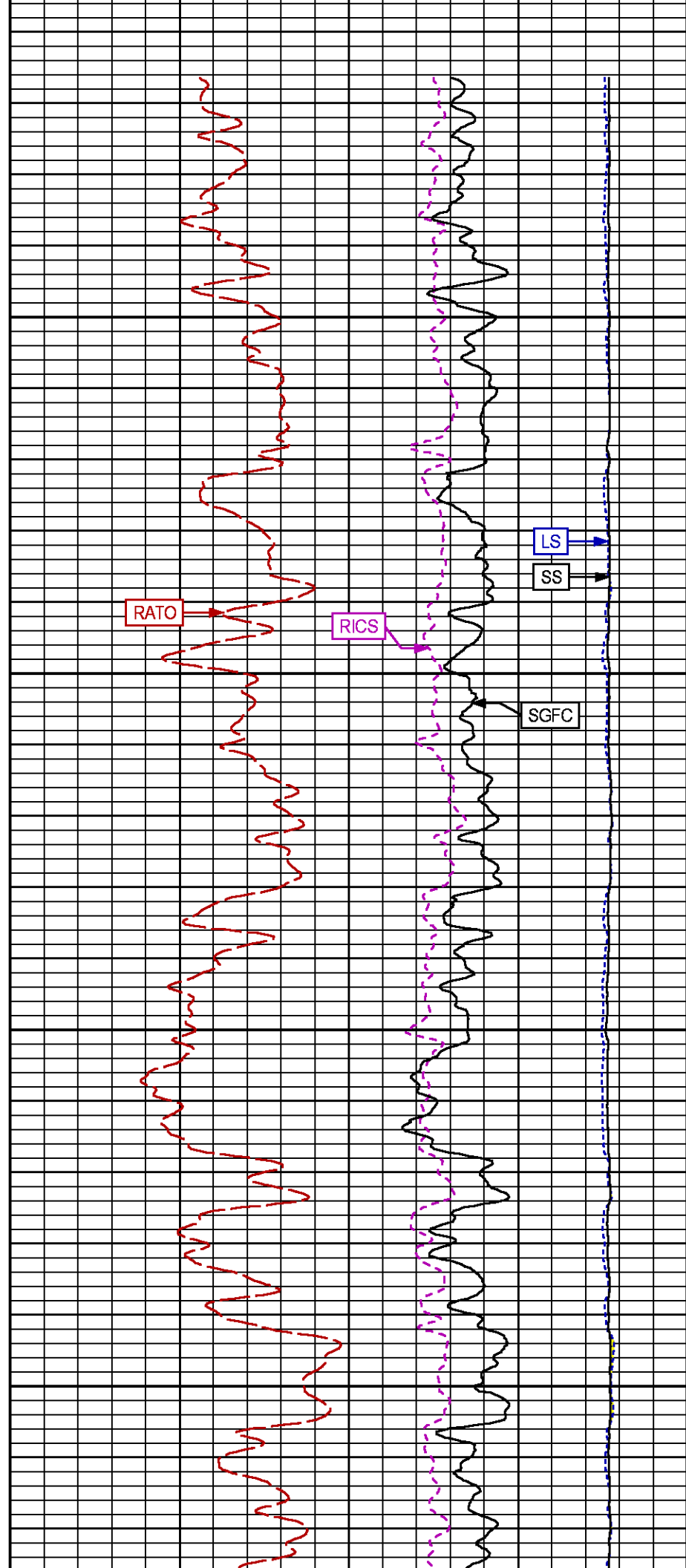
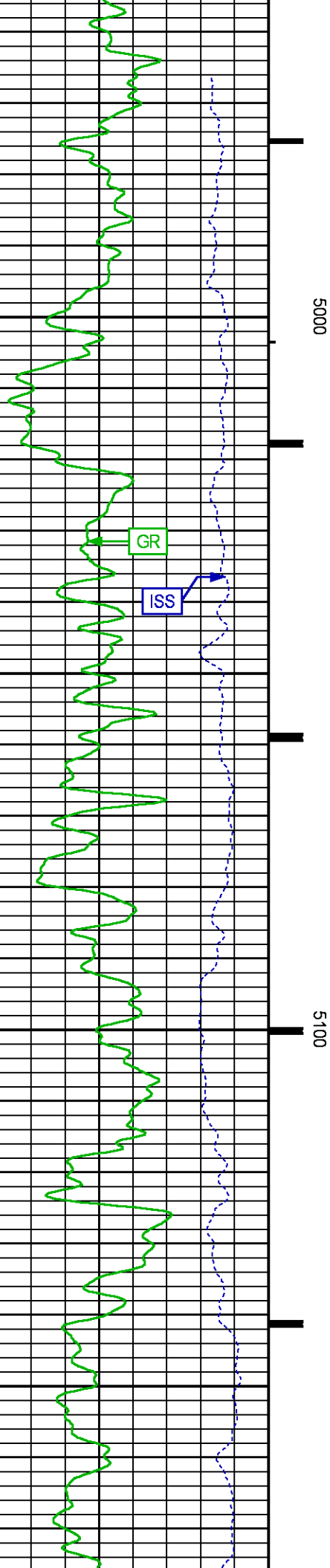
RATO

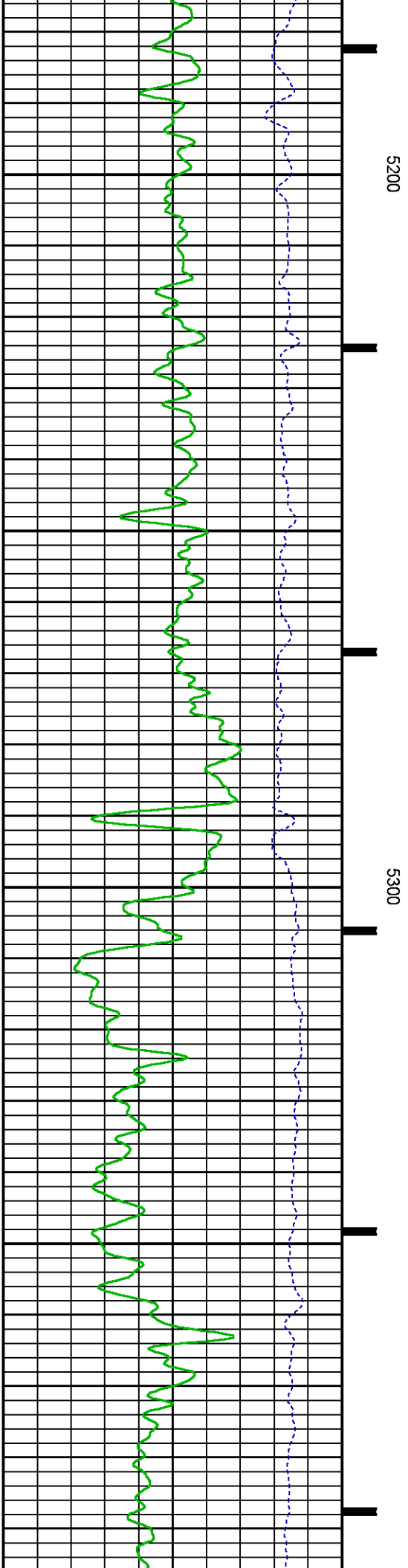
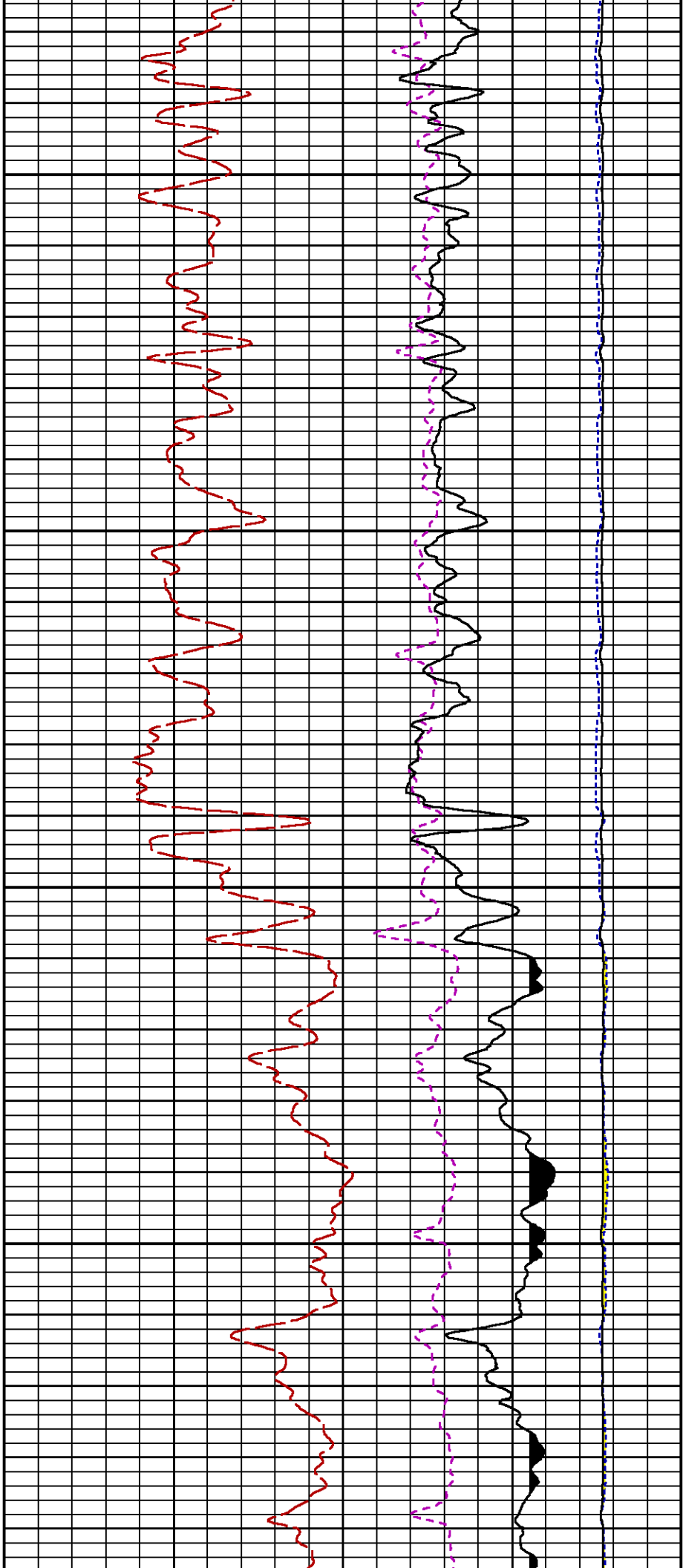
RICS

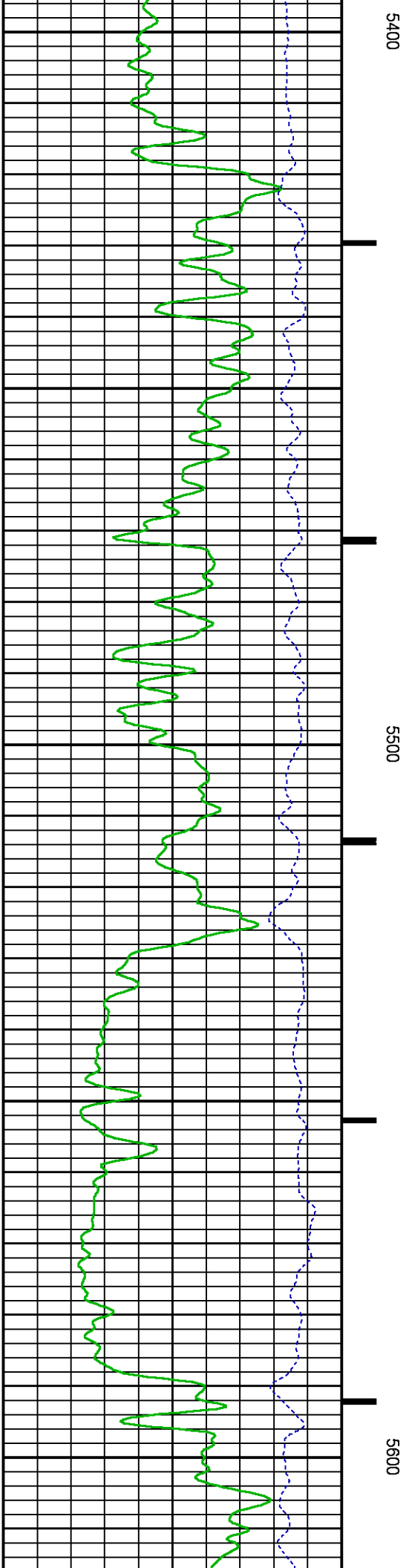
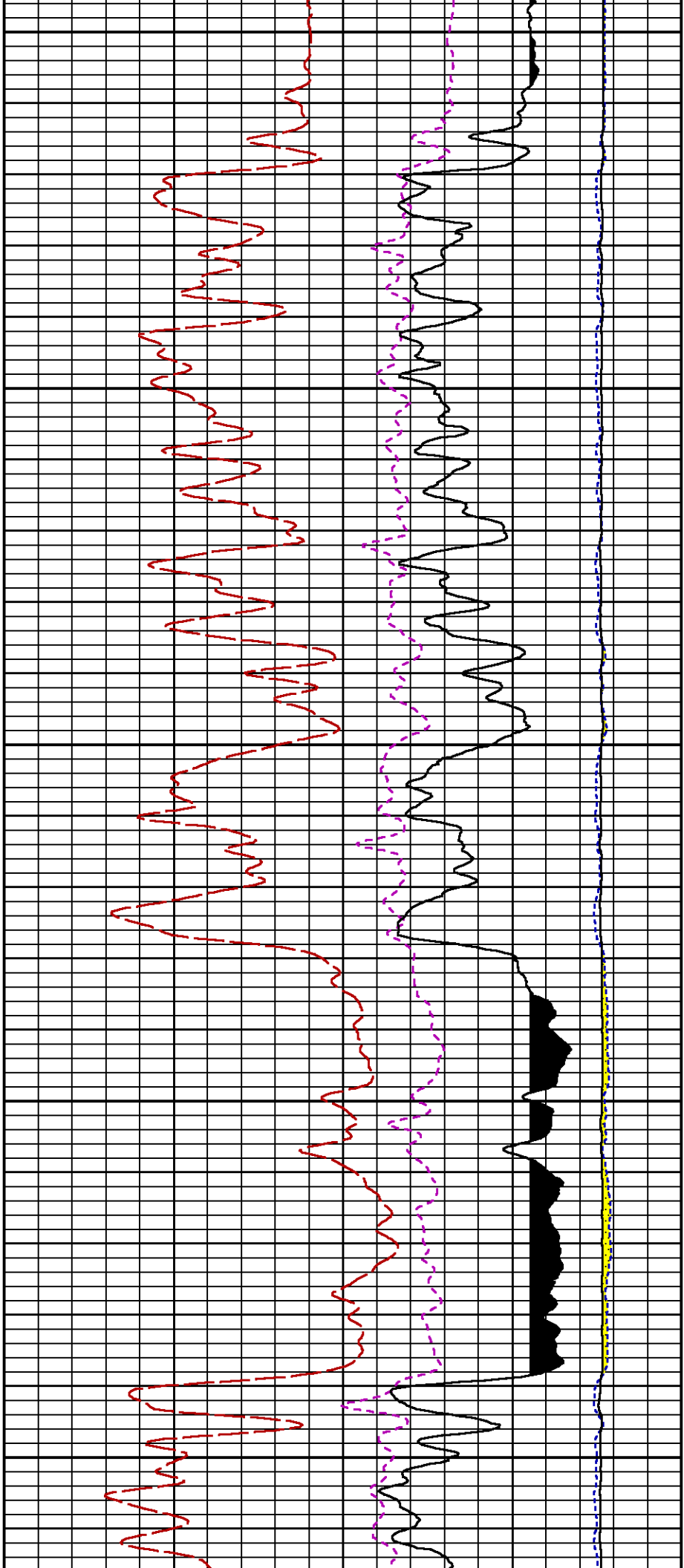
LS

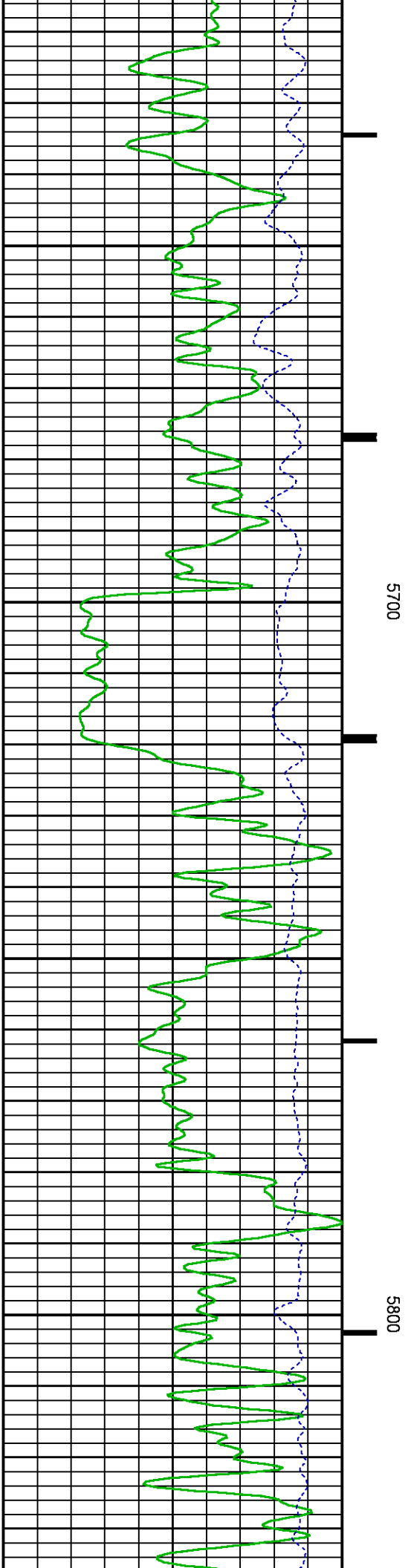
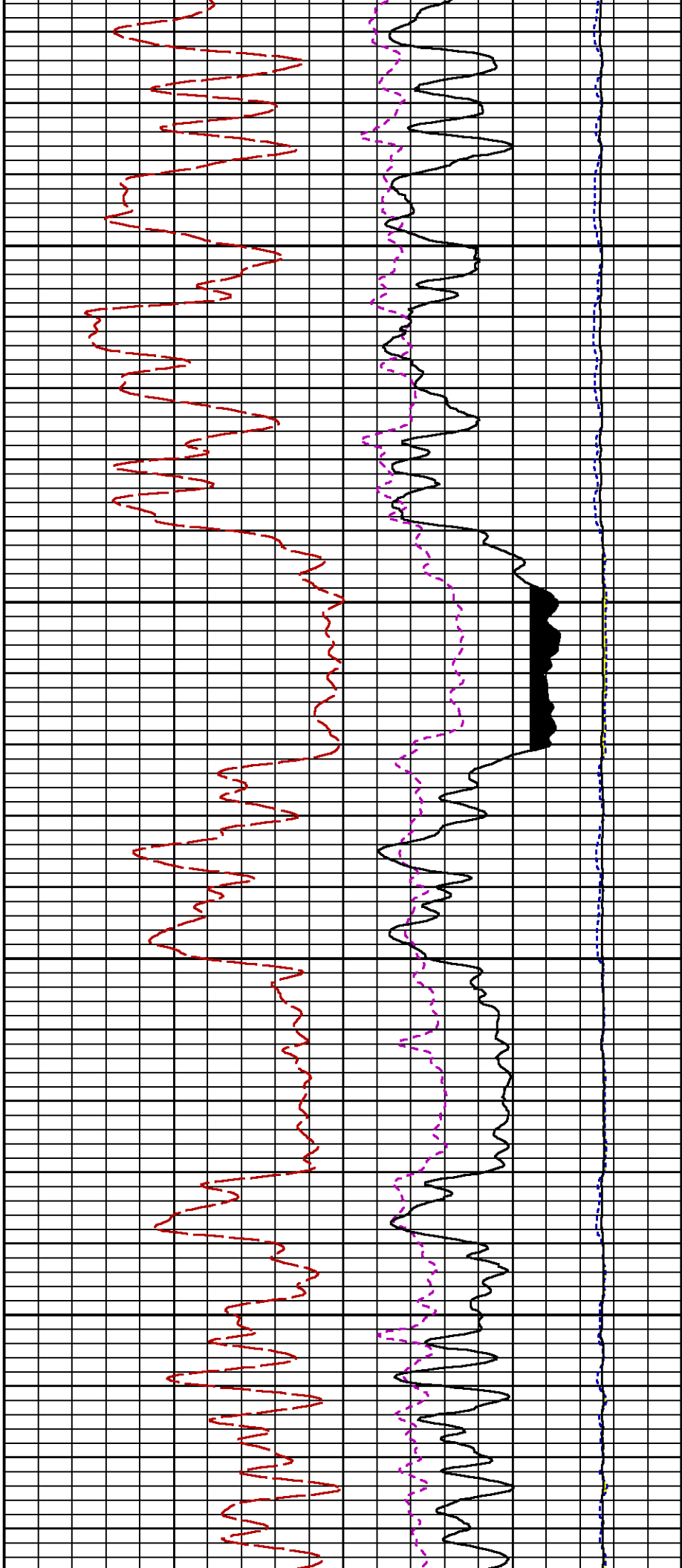
SS

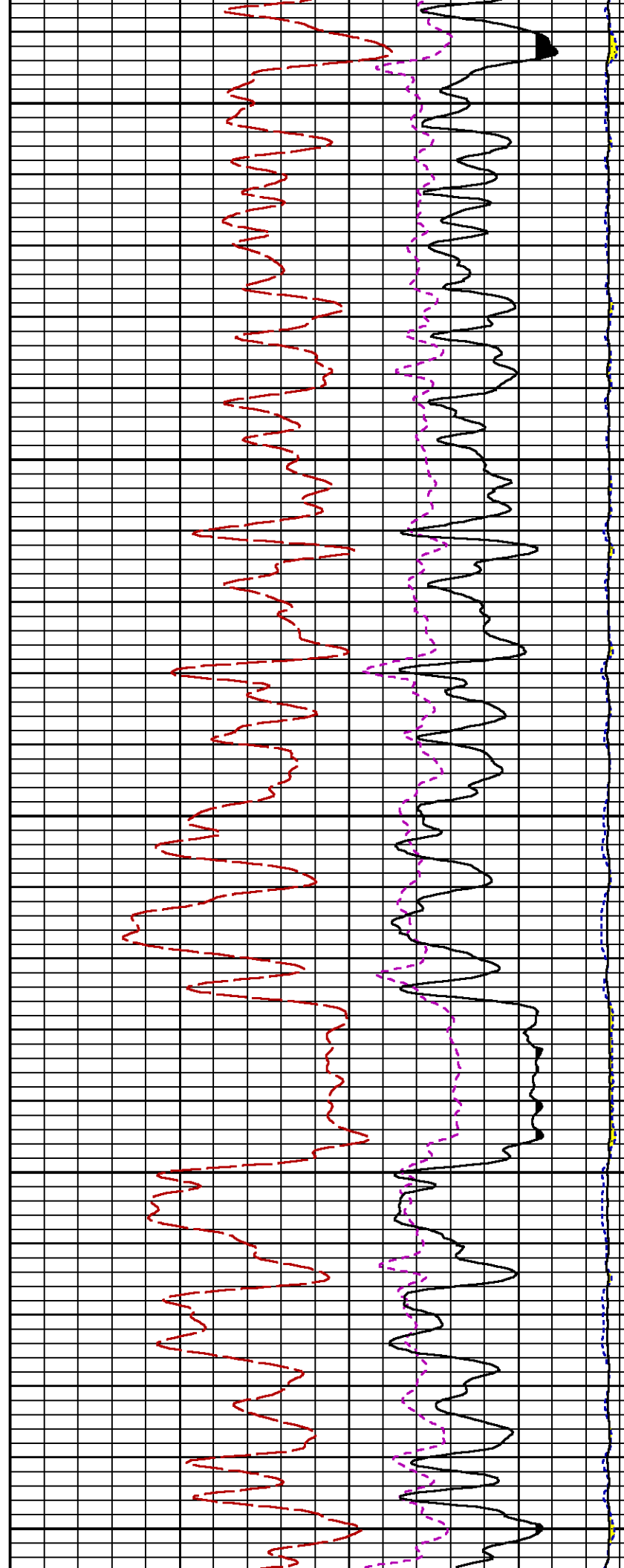
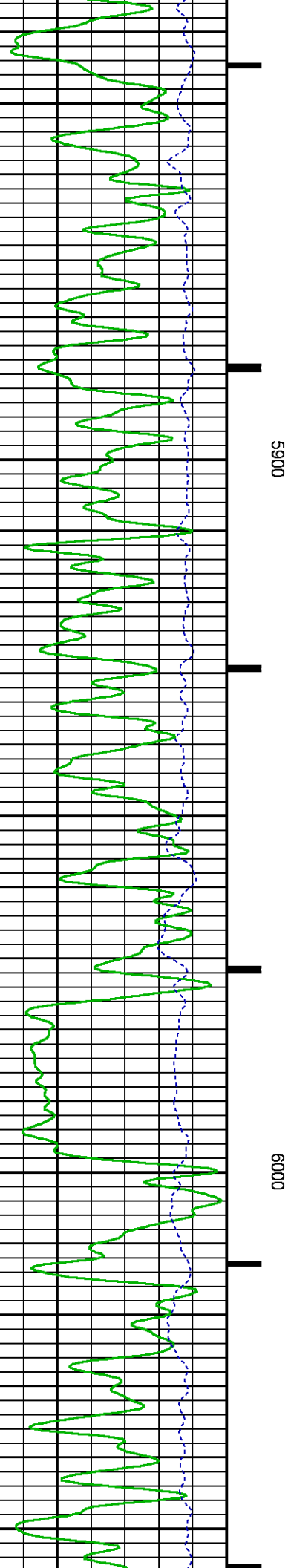
SGFC

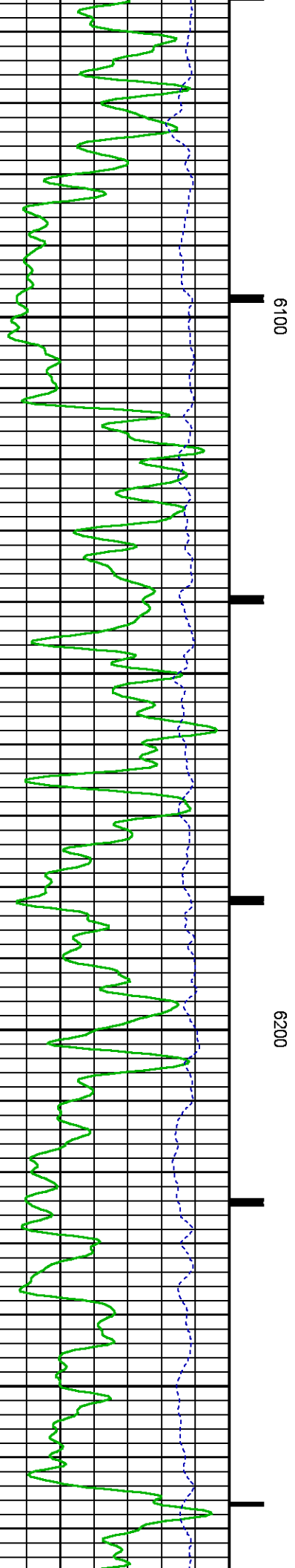
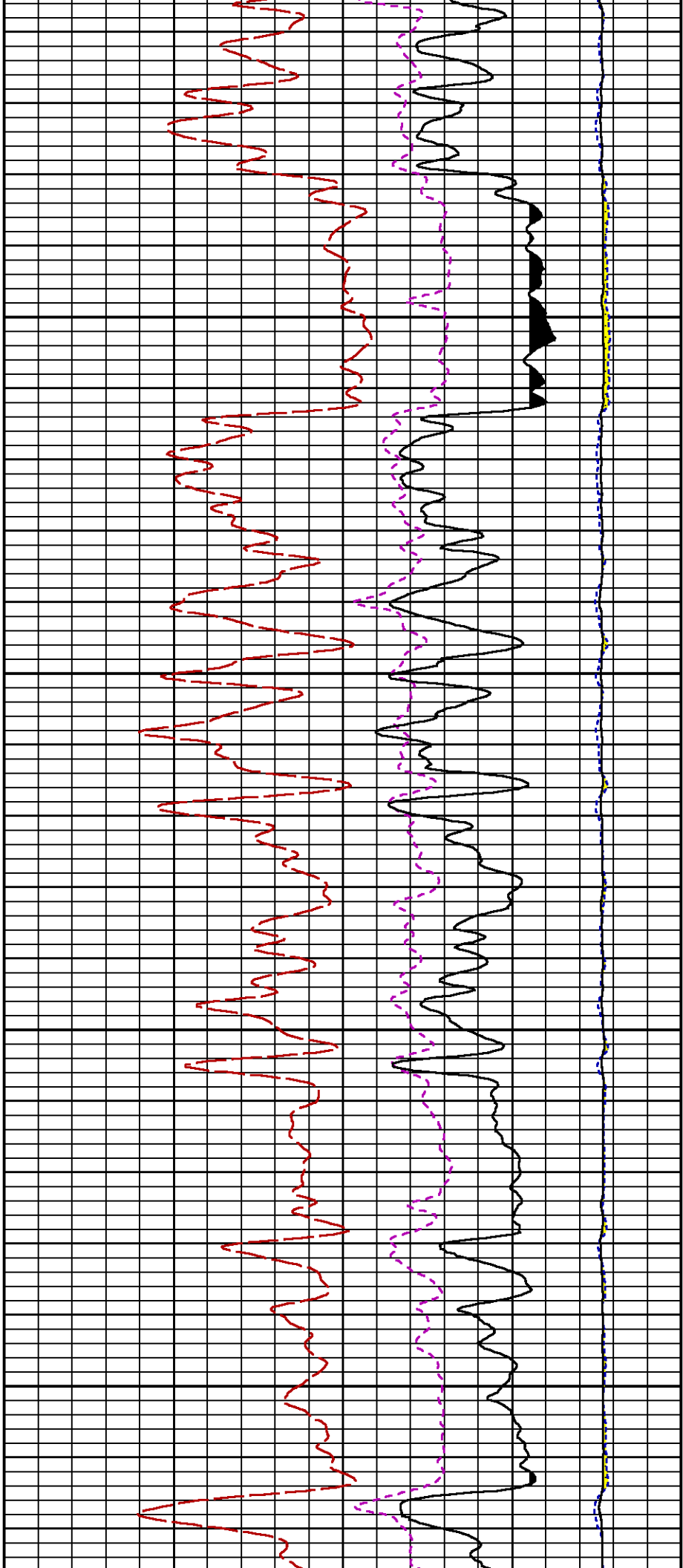


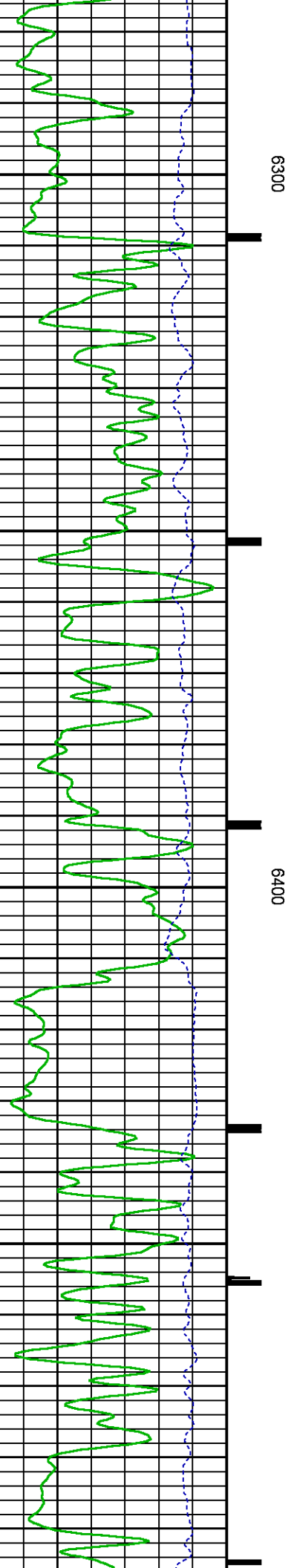
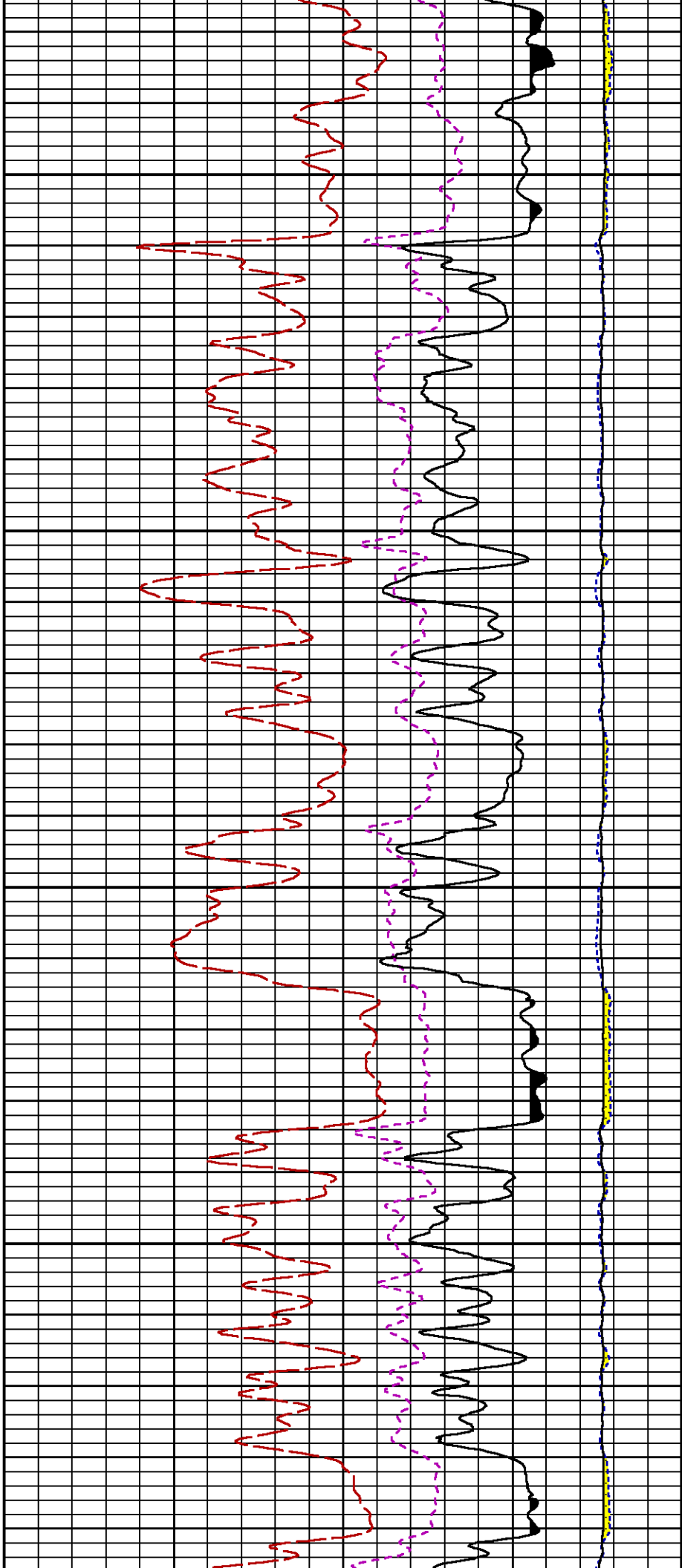


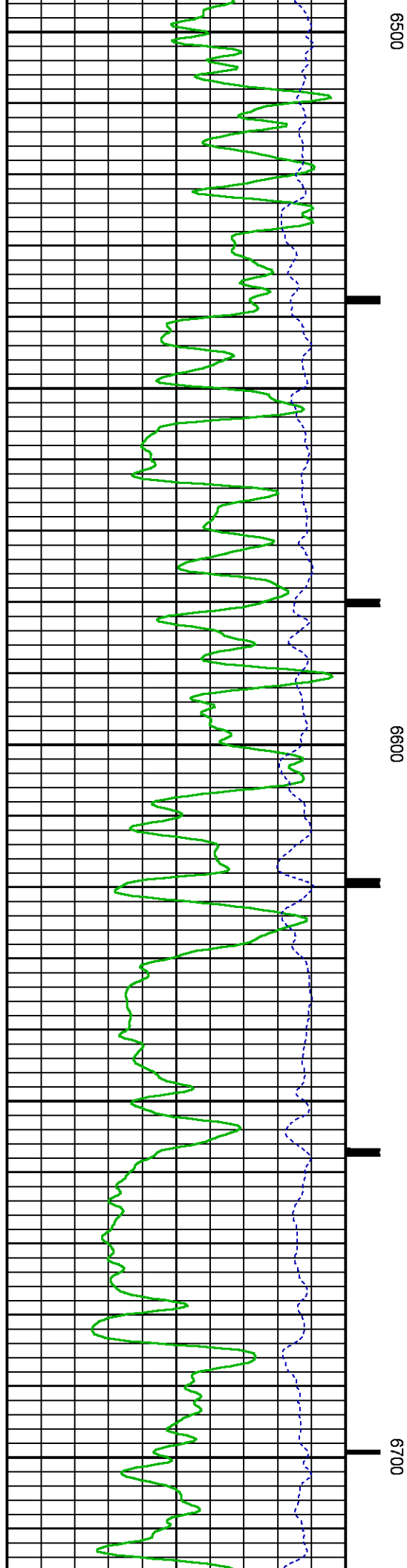
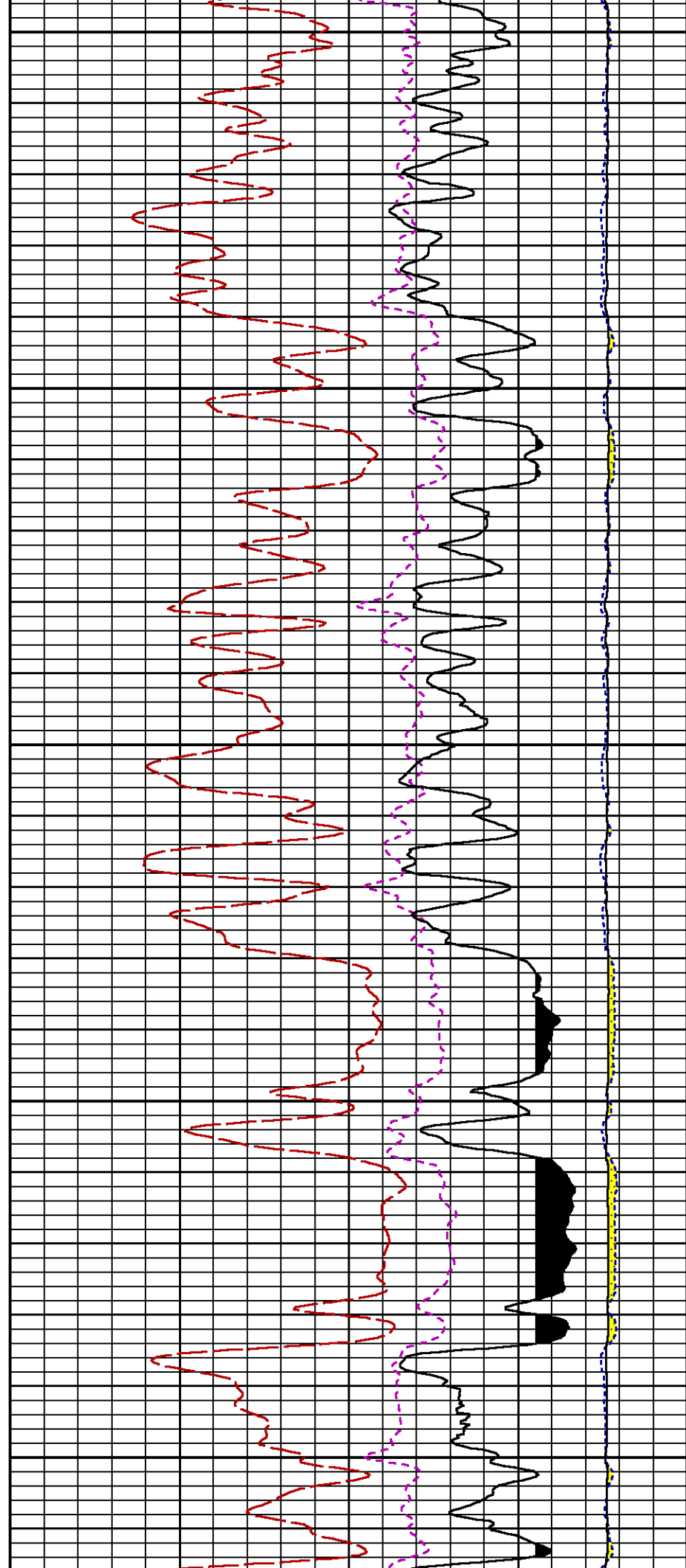


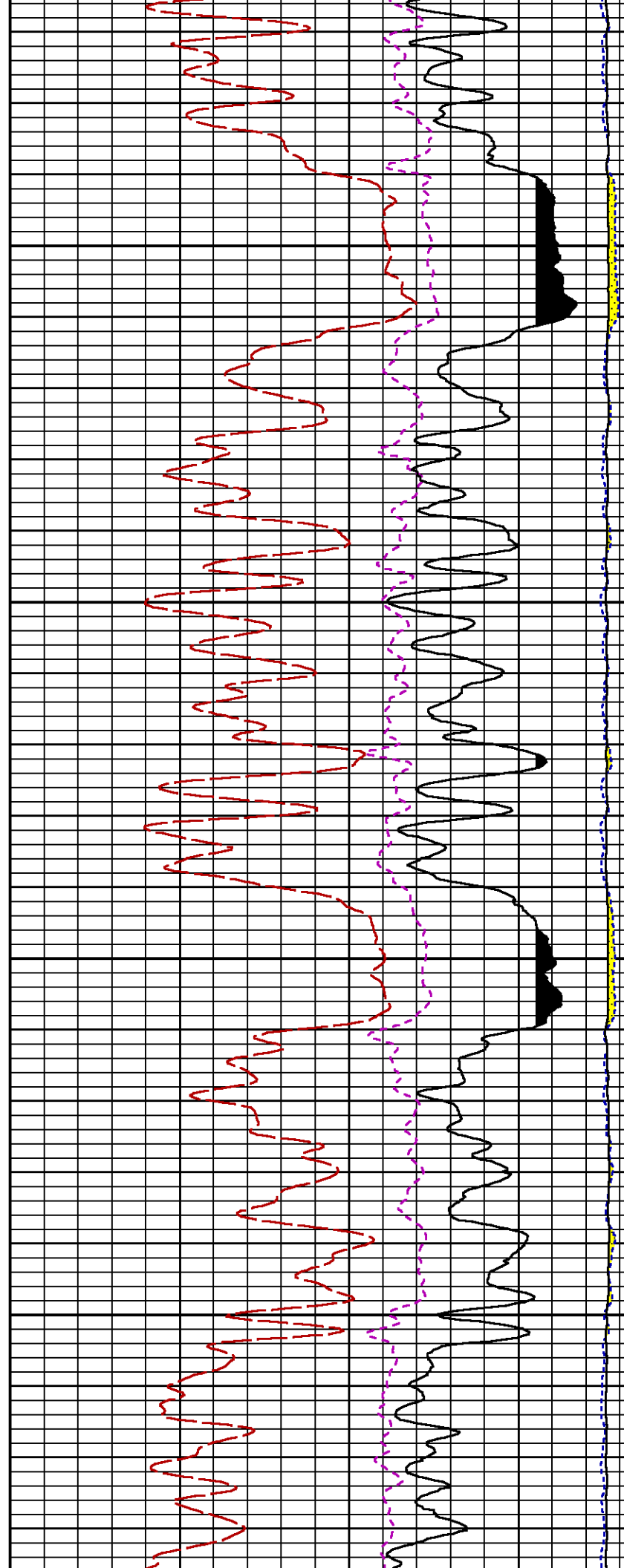
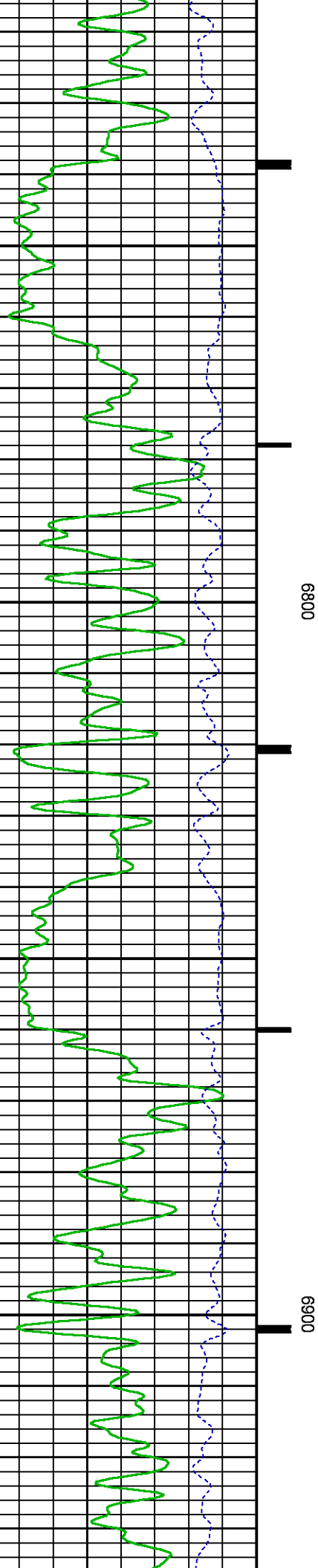


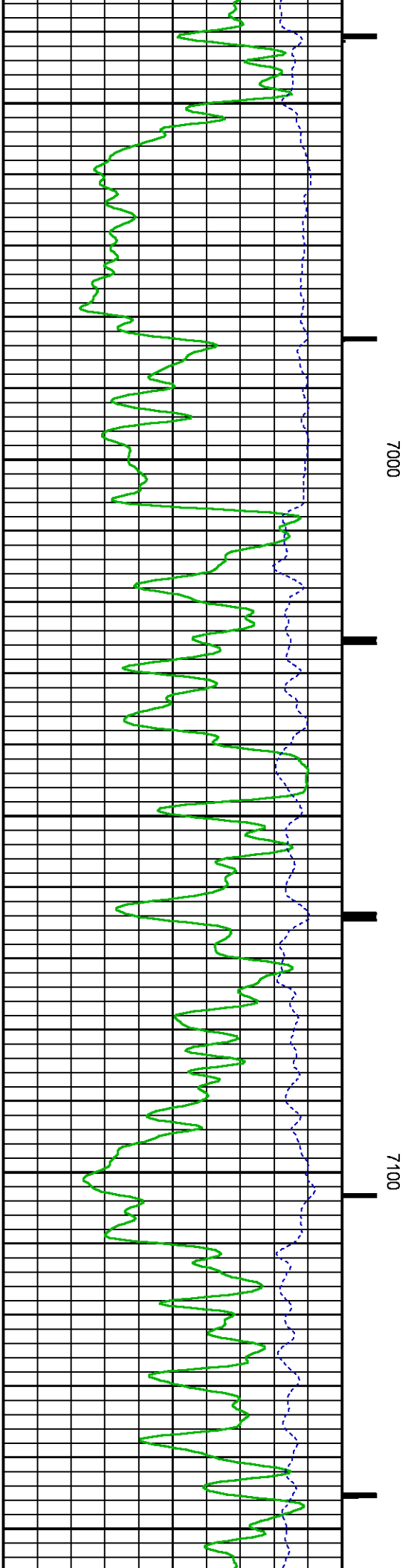
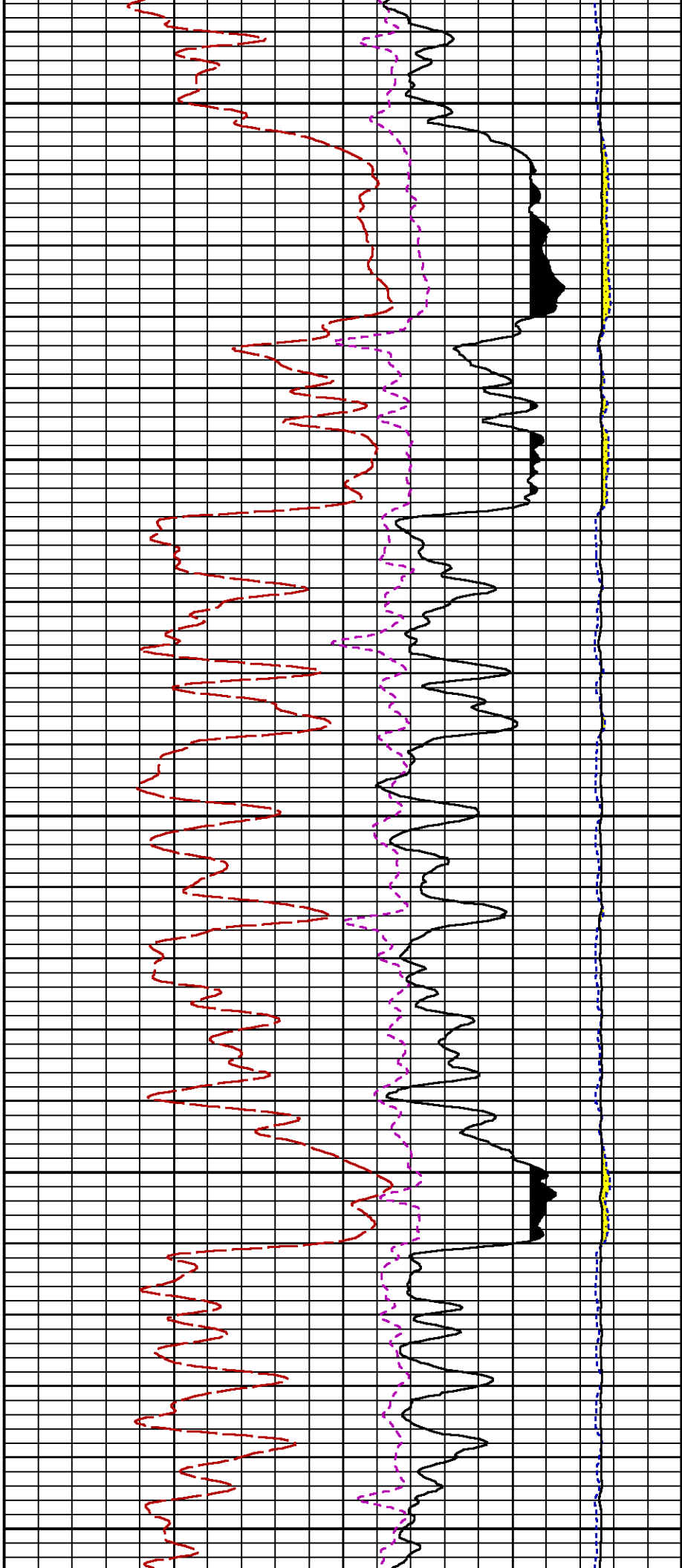


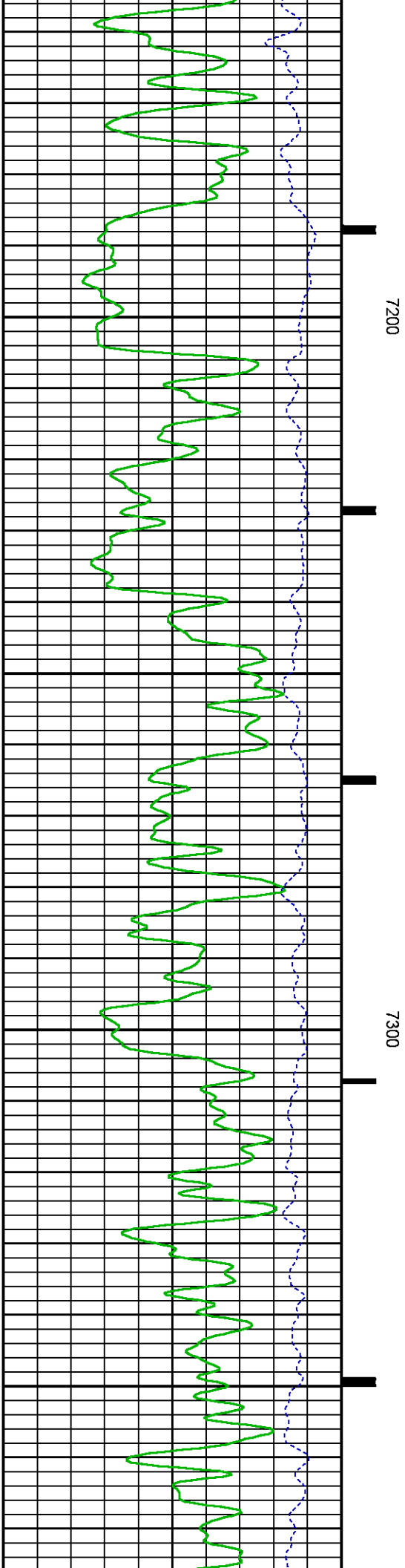
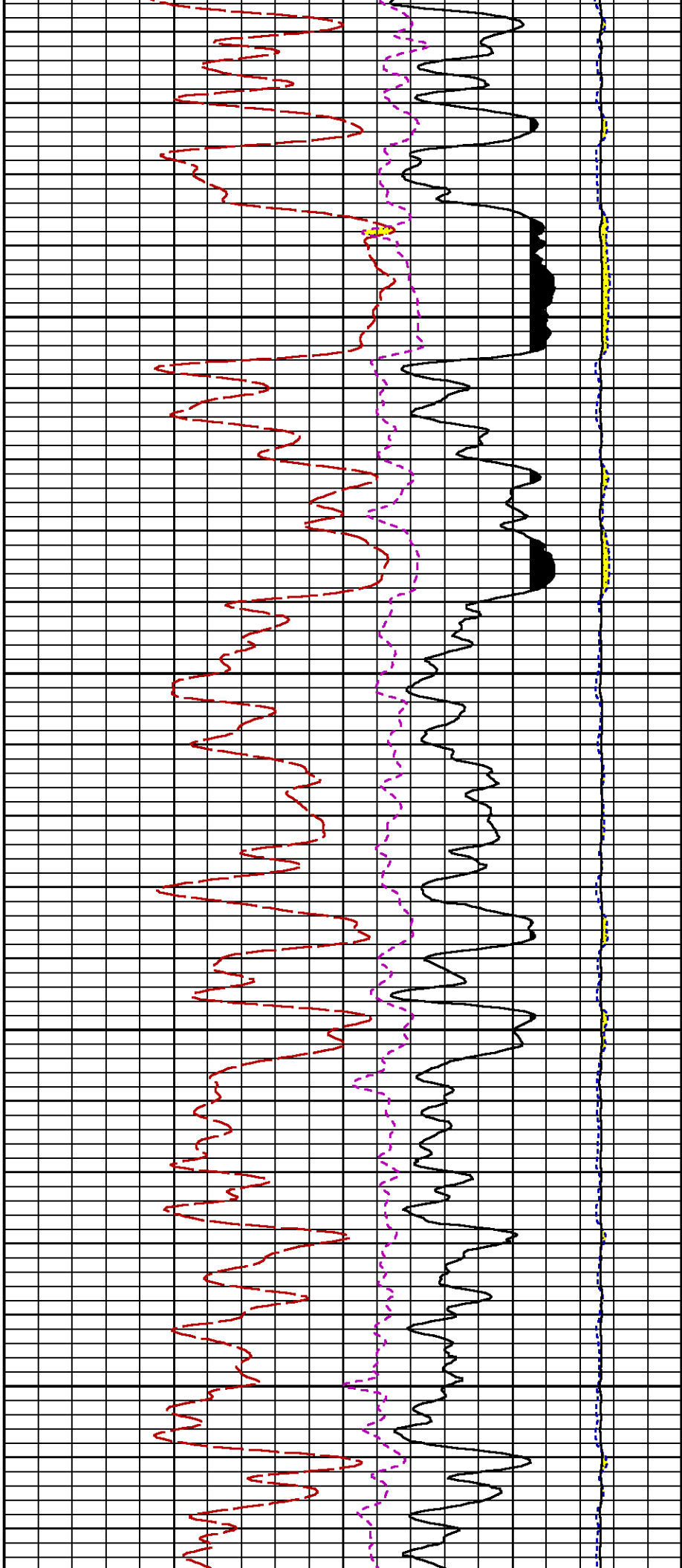


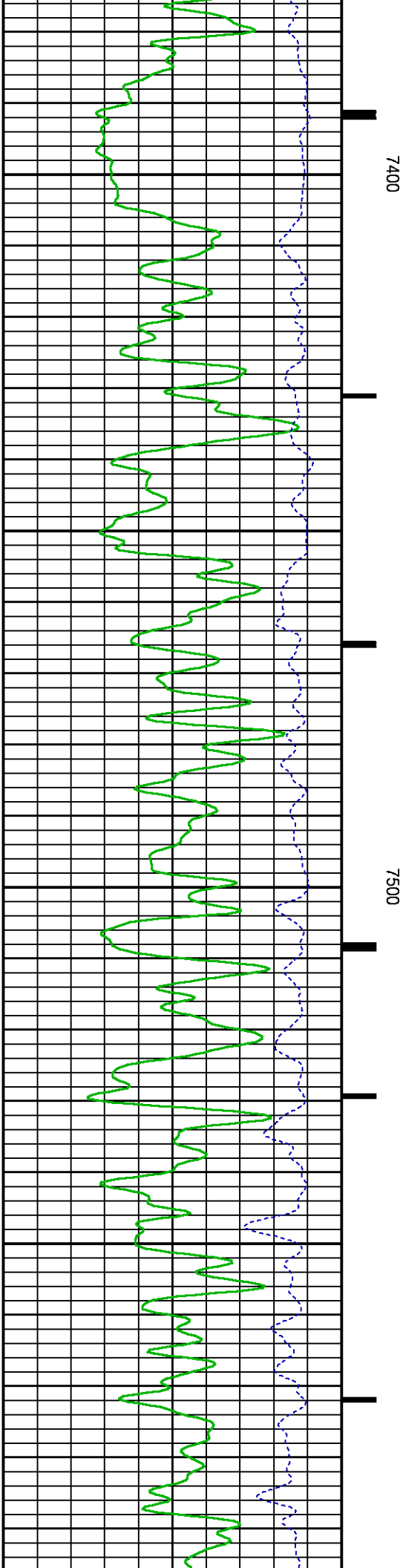
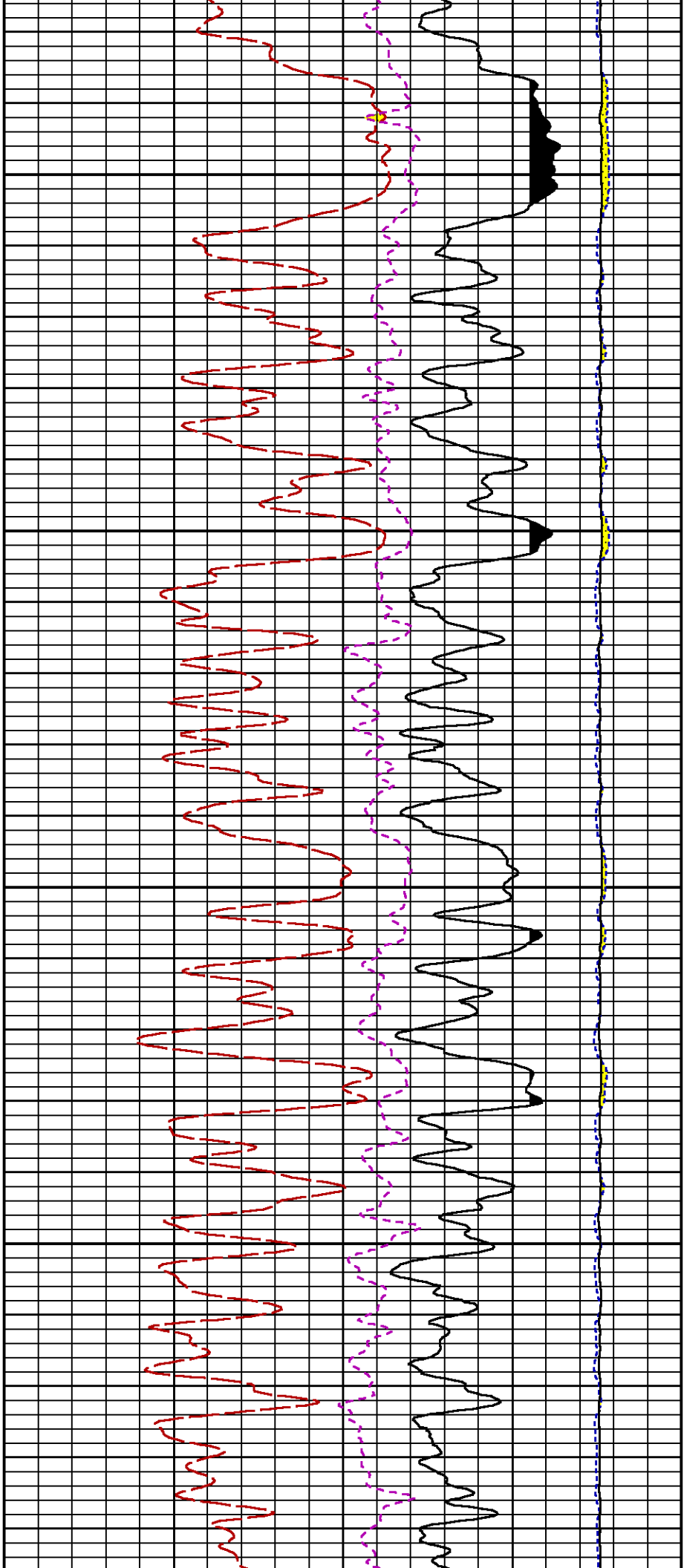


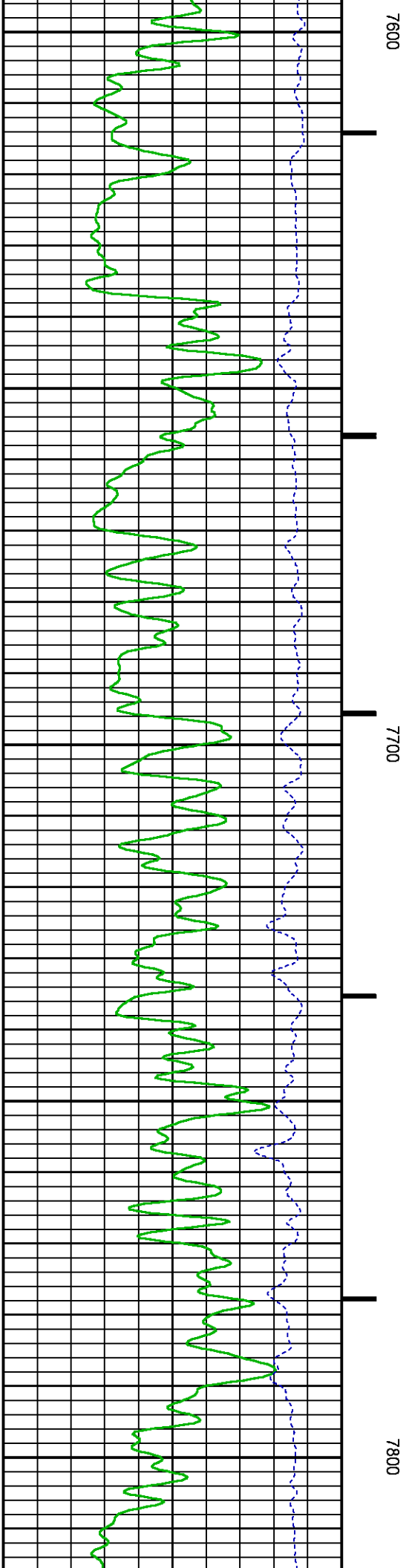
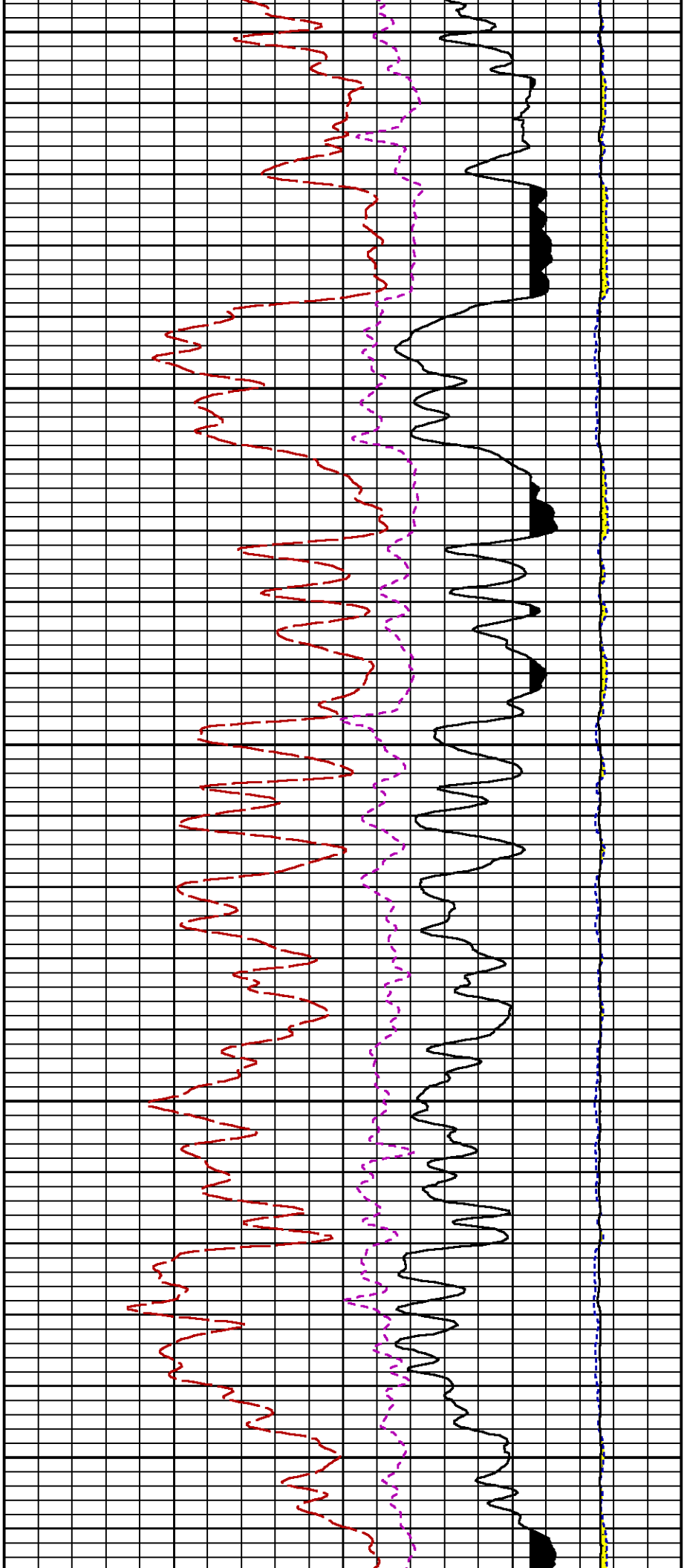


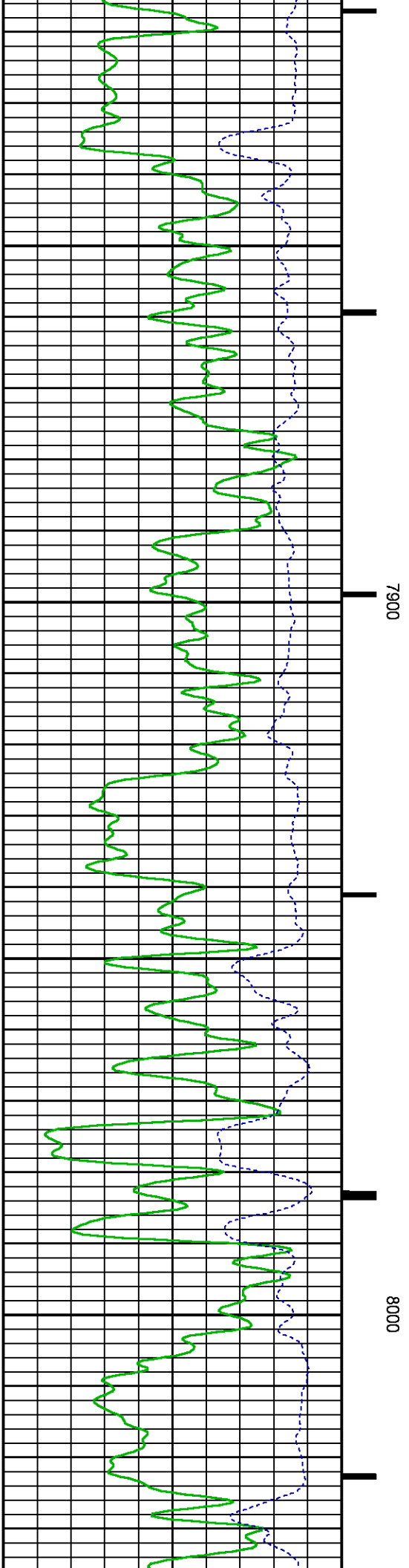
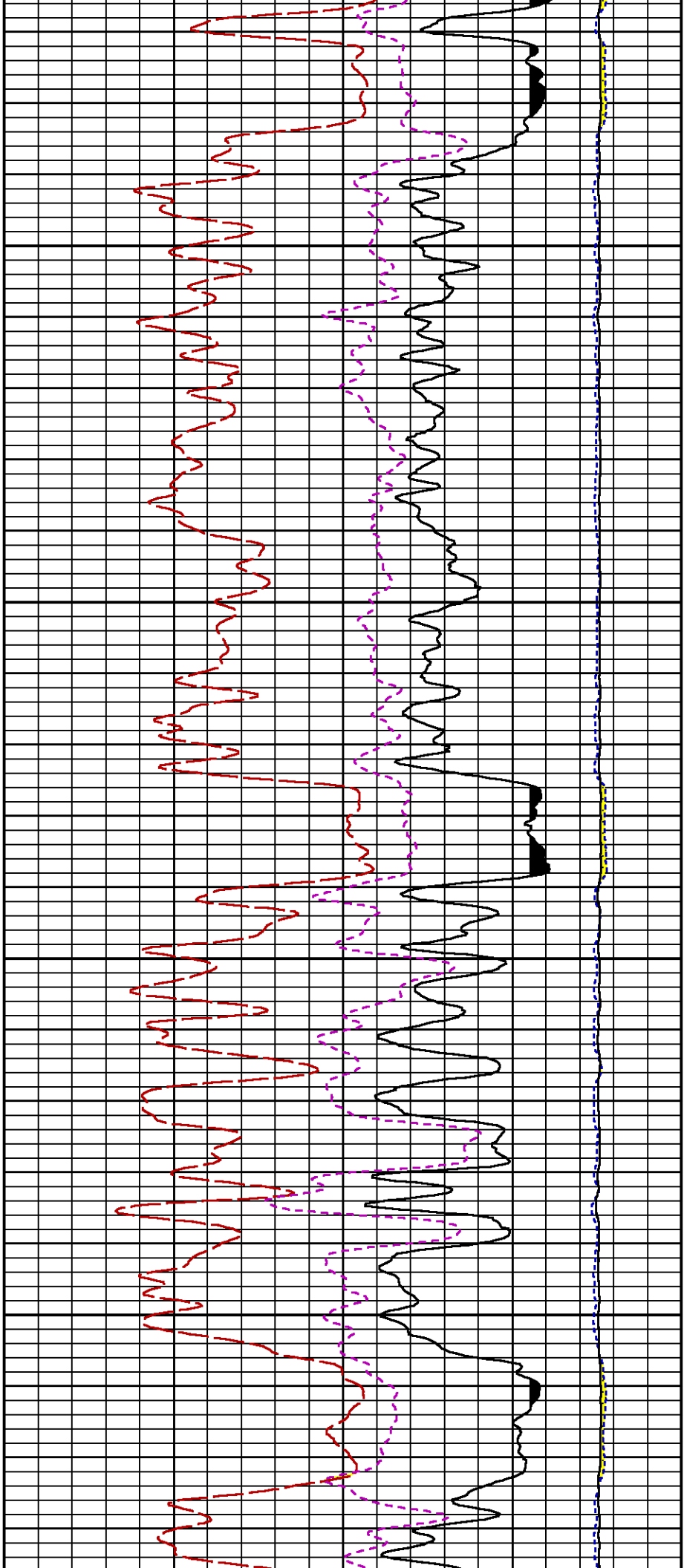


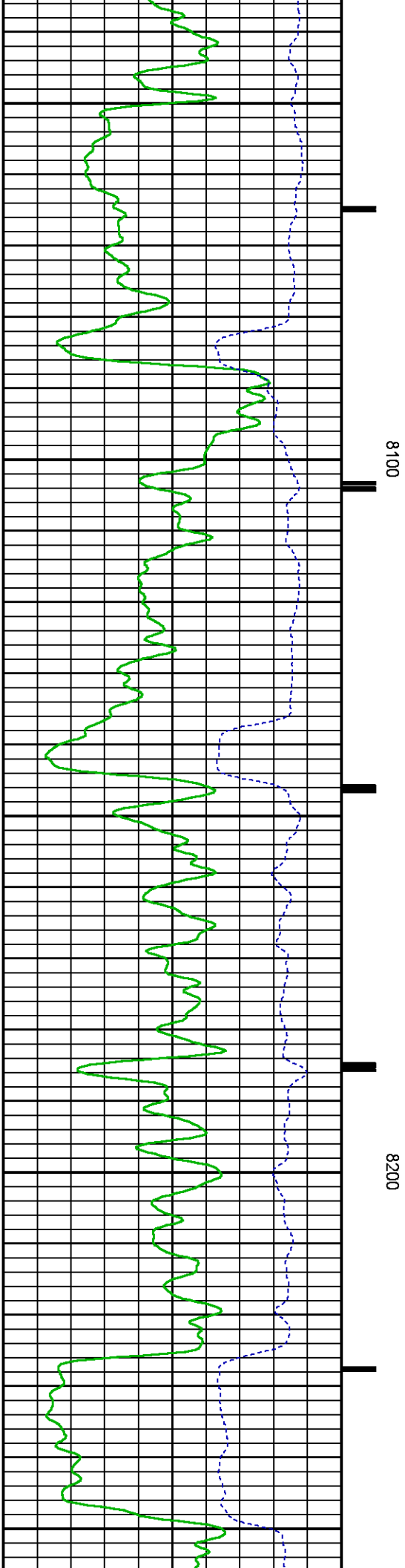
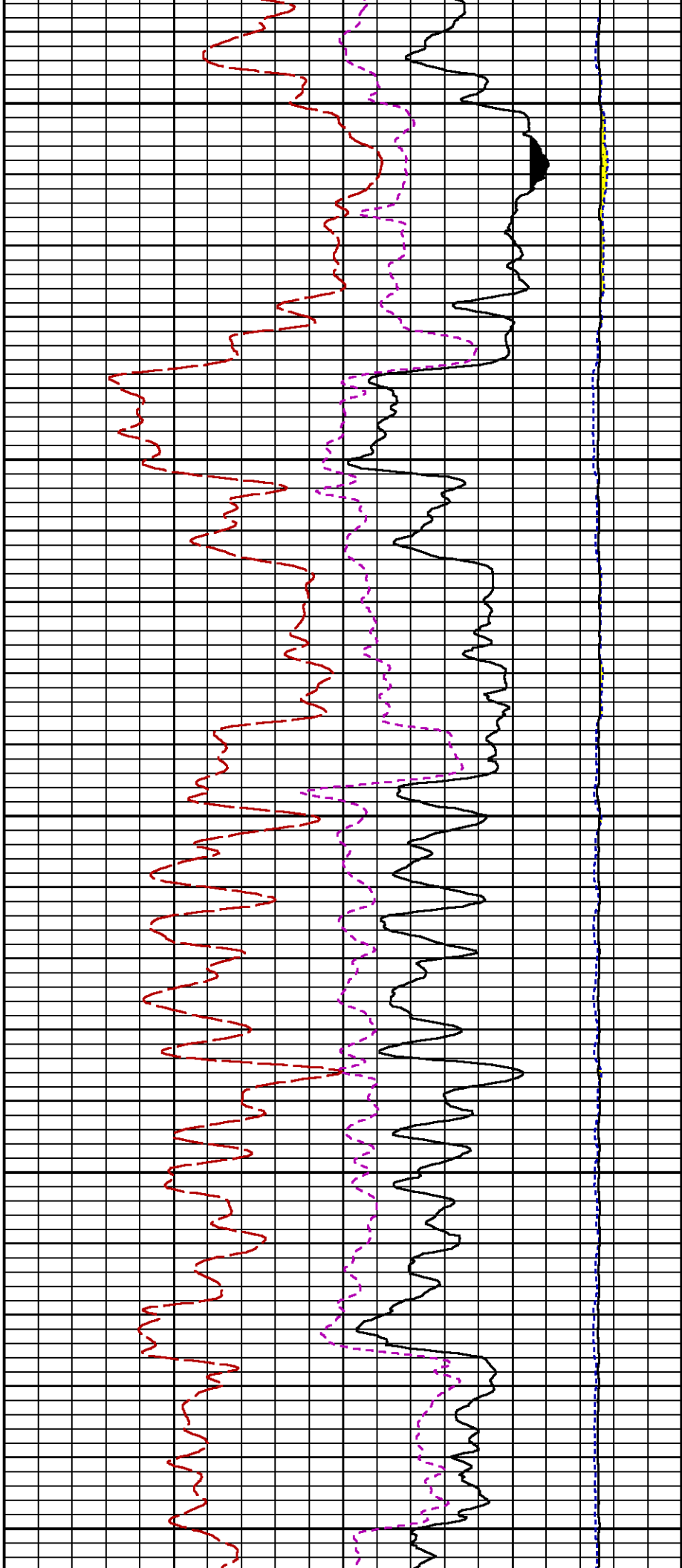


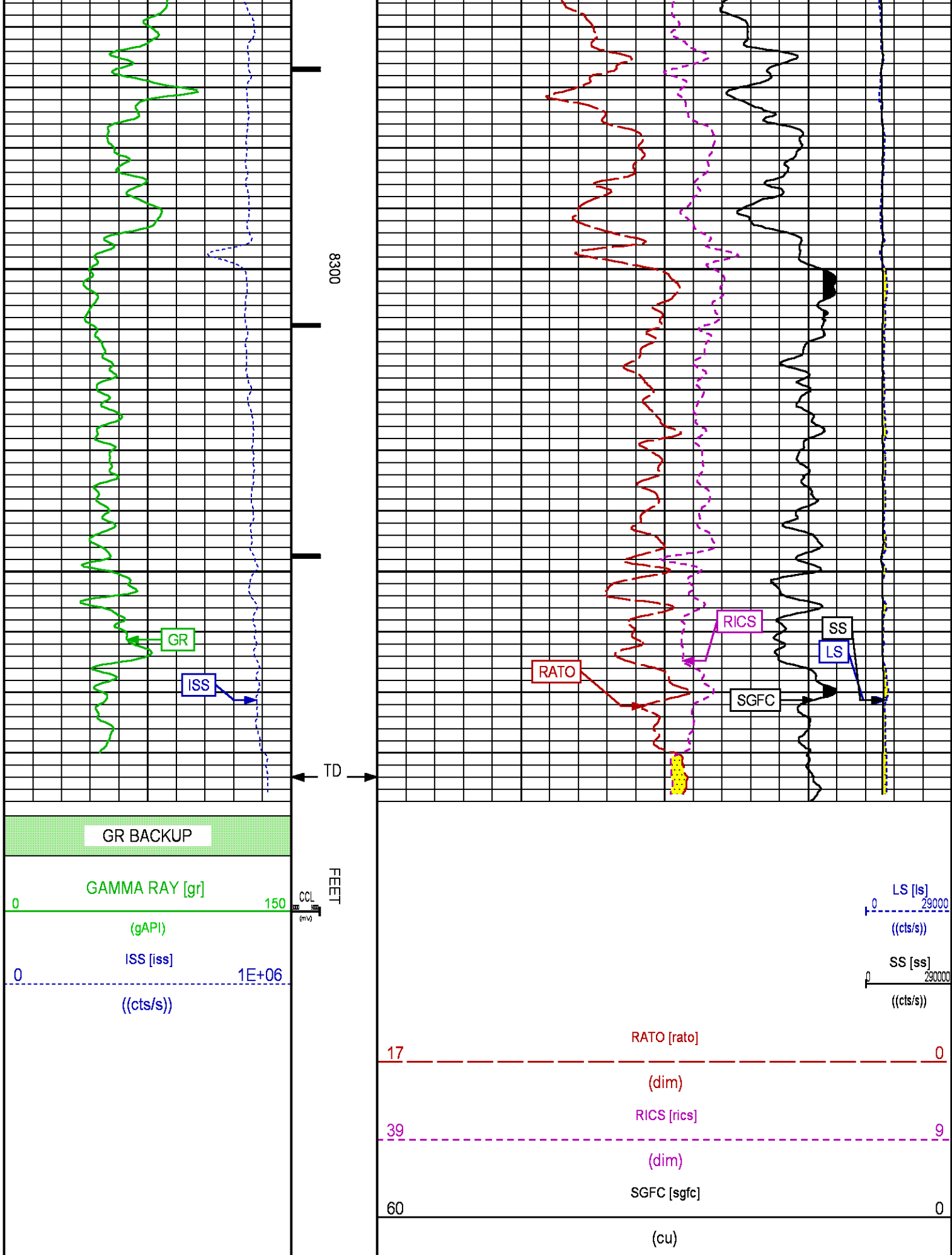












REPEAT PASS

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017
Updates: 1,32

Plotted: Thu Nov 29 10:42:01 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BCU_0993-21-04E/p354h01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 5455.570 ft BOTTOM DEPTH: 5701.687 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	7.87	in	" "
	LARGEST CASING OD	4.50	in	" "
	MATRIX	SANDSTONE		" "

CURVE DESCRIPTION REPORT

CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Nov 29 10:07:11 2018	CASING COLLAR LOCATOR
F1:GR	Nov 29 10:07:11 2018	GAMMA RAY
F1:ISS	Nov 29 10:07:11 2018	INELASTIC SHORT SPACE COUNT RATE
F1:LS	Nov 29 10:07:11 2018	LONG SPACE COUNT RATE
F1:RATO	Nov 29 10:07:11 2018	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	Nov 29 10:07:11 2018	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	Nov 29 10:07:11 2018	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	Nov 29 10:07:11 2018	SHORT SPACE COUNT RATE

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	-25.00	ISS	-12.75	RATO	-12.75	SGFC	-12.75
GR	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE_BCU_0993-21-04E/BCU_0993-21-04E_RPM_REPEAT.fvpdf [5"/100' Scale]
Plot Interval : 5431 - 5706.25 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE_BCU_0993-21-04E/45_LARAMIE_BCU_0993-21-04E_RPM_REPEAT.xtf
Created On : Nov 29 10:07:11 2018
Company : LARAMIE ENERGY LLC
Well : BCU 0993-21-04E
Field : BUZZARD CREEK
File Interval : 5430.25 - 5706.5 Feet
OCT : p354h

GR BACKUP

GAMMA RAY [gr]

(gAPI)

ISS [iss]

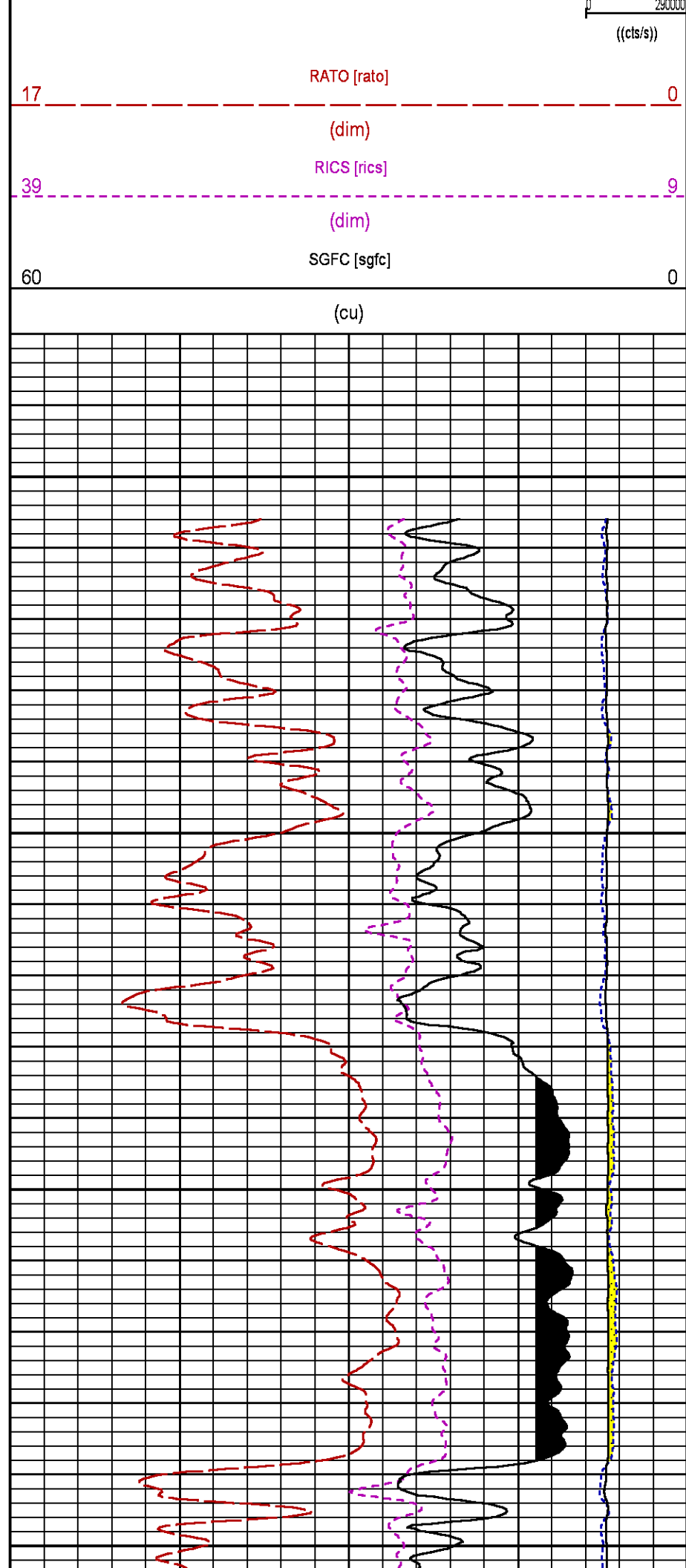
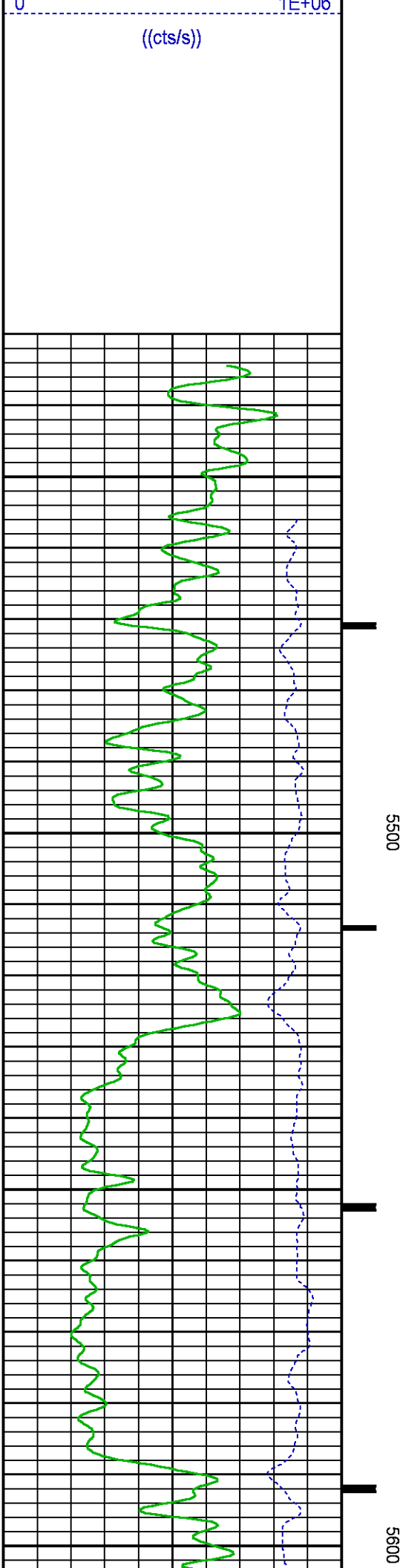
FEET

CCL
(mV)

LS [ls]

((cts/s))

SS [ss]



GR BACKUP

GAMMA RAY [gr]

0 150

(gAPI)

ISS [iss]

0 1E+06

((cts/s))

FEET

CCL
(m)

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: /dat1a/LARAMIE_BCU_0993-21-04E/p354h.tp1

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 2812LA 10384613

DATE/TIME PERFORMED: Fri Sep 14 14:41:20 2018

UNIT #: 5753XD 10412898

CALB JIG #: 4702NK BA-869

BACKGROUND CALBRTR ON

CR DIFF

MULT

BACKGROUND CALBRTR ON

CALBRTR

	(cts/s)	(cts/s)	(cts/s)		(gAPI)	(gAPI)	(gAPI)
GR	87.71	303.38	215.7	0.974	85.41	295.41	210

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 2812LA 10384613 DATE/TIME PERFORMED: Fri Sep 14 14:43:26 2018

UNIT #: 5753XD 10412898 VERI JIG #: 4702NK BA-869

	BACKGROUND CALBRTR ON	MULT	BACKGROUND CALBRTR ON	DIFF.
	(cts/s)	(cts/s)	(gAPI)	(gAPI)
GR	89.42	305.58	0.974	87.07
				297.55
				210.48
				200.00 220.00

RPM_PNC_3D PRIMARY CALIBRATION SUMMARY

TOOL: 8283PA 10322619 DATE/TIME PERFORMED: Thu Nov 8 16:23:48 2018

UNIT: 5753XD 10412898 CALIBRATOR: 2437XB 112674 SOURCE: 8281AA 10220684 HOURS: 8281AA 86

	ISS	Mtr Vlts (V)	SS Gain	LS Gain	XLS Gain	EA Temp (degF)	Sync Delay (usec)	RCAL
Raw Data	810154	126	2257	2201	2241	100	9.5	0.9755
Interpolated	1300000	152	2235	2196	2240			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	810154	8400	1349	235	26.28	0.14	24.45	0.32
					25.35 26.40	0.00 0.20	23.60 24.80	0.00 0.40

	ISS	ILS	IXS	SS	SS2	LS	CSS	CLS
Raw Data	810154	179852	26218	95922	34036	8806	57967	14175
Fit Quality %		1.149	1.438	1.249	1.253	1.335	1.111	1.320

	ISS	RBOR	RIN	RIN13	RICS	RATO	RTWO	RONE
			ISS/LS	ISS/XS	ISS/CSS	SS/LS	SS2/LS	CSS/CLS
Raw Data	810154	1.43	4.50	30.91	13.98	10.90	3.87	4.09
		1.42 1.45	3.55 5.52	22.20 32.70	10.99 16.34	10.06 11.10	3.57 3.95	3.76 4.22
Fit Quality %		0.125	0.273	0.214	0.238	0.040	0.042	0.056
Reduced	1392742	1.43	4.51	30.97	14.01	10.90	3.87	4.09
		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 120518 DATE/TIME PERFORMED: Mon Jul 30 13:10:04 2018

UNIT #: 5753XD 10412898

	T(0)	T(1)	T(2)	T(3)
Corr Coeff for Temp	1.263535E+01	1.089486E-01	6.182099E-07	-8.937567E-10

TPSITEMP PRIMARY CALIBRATION SUMMARY

TOOL #: 8255XA 120518 DATE/TIME PERFORMED: Mon Jul 30 13:12:49 2018

UNIT #: 5753XD 10412898

	T(0)	T(1)	T(2)	T(3)
Corr Coeff for Ptf's	-9.260743E+00	1.040803E-01	8.157774E-06	-1.948001E-09

INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE_BCU_0993-21-04E/p354h~GR_SONDEX-tdg

A3 CABLEHEAD

Diameter : 1.37"

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 : 8248EA
Mnemonic : PCM
Measure Point: 1.00': CCL MP

GAMMA RAY, 1 11/16"

Diameter : 1.69"
Length : 2.17'
Weight : 10 lbs
Series : 2812LA
Mnemonic : GR
Measure Point: 0.62': GR MP

RPM ELECTRONICS

Diameter : 1.70"
Length : 4.48'
Weight : 16 lbs
Series : 8281EA
Mnemonic : RPM

RPM C DETECTOR SECTION

Diameter : 1.70"
Length : 9.40'
Weight : 41 lbs
Series : 8283PA

33.24'

CCL MP — 25.19'

GR MP — 22.64'

XLS MP — 13.58'

LS MP — 13.16'

SS MP — 12.91'

Mnemonic : RPM
Measure Point: 5.45': XLS MP
Measure Point: 5.04': LS MP
Measure Point: 4.79': SS MP

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
PRES MP

1.65'

BULL PLUG 1 11/16

0.00'

TOTAL LENGTH: 33.24'
TOTAL WEIGHT: 140 lbs
MAX DIAMETER: 0'1.70"

**BAKER
HUGHES**
a GE company



COMPANY

LARAMIE ENERGY LLC

WELL

BCU 0993-21-04E

FIELD

BUZZARD CREEK

COUNTY

MESA

STATE COLORADO

FILE NO:

CH145365

API NO:

05077105180000

LOCATION:

SHL: 868.0' FNL & 1324.0' FEL

BHL: 868.0' FNL & 1324.0' FEL

ELEVATIONS:

KB 7287 FT

DF

GL 7257 FT

SEC **21**

TWP **9S**

RGE **93W**

DATE

29-NOV-2018

ECLIPS