



FILE NO: CH137654	COMPANY <b>LARAMIE ENERGY LLC</b>
API NO: 05077103860000	WELL <b>NICHOLS FEDERAL 0994-24-18E</b>
	FIELD <b>VEGA</b>
	COUNTY <b>MESA</b> STATE <b>COLORADO</b>

Ver. 4.10	LOCATION: SHL: 2309' FNL & 2791' FWL BHL: 942' FSL & 1430' FEL SEC <u>24</u> TWP <u>9S</u> RGE <u>94W</u>	OTHER SERVICES RAL
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL ELEVATION 7212 FT 24 FT ABOVE P.D. KB 7236 FT DF 7212 FT GL
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DATE	RUN	TRIP	
	1	1	
SERVICE ORDER	US137654		
DEPTH DRILLER	7885 FT		
DEPTH LOGGER	7842 FT		
BOTTOM LOGGED INTERVAL	7842 FT		
TOP LOGGED INTERVAL	2287 FT		
TIME STARTED	10:30		
TIME FINISHED	16:30		
OPERATOR RIG TIME	6 HOURS		
TYPE OF FLUID IN HOLE	WATER		
FLUID DENSITY	NA		
FLUID SALINITY	NA		
FLUID LEVEL	65 FT		
LOGGED CEMENT TOP	190 FT		
WELLHEAD PRESSURE	0 PSI		
MAXIMUM HOLE DEVIATION	NA		
NOMINAL LOGGING SPEED	10 FMIN		
MAX. RECORDED TEMP.	228 DEGF		
REFERENCE LOG	BAKER HUGHES RAL		
REFERENCE LOG DATE	25-Jun-2018		
EQUIP. NO.	LOCATION	ML-4268	GRAND JCT.
RECORDED BY	T. NEWELL		
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 1 TRIP 1: 2 OPERATIONS RUN IN THE WELL

\*OPERATION 1: RAL/GR/CCL RUN CENTRALIZED\*

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

SJ: 6175' - 6196'

SJ: 7026' - 7048'

### EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	PCM	8250EA	11908682	FREE
1	1	TEL/CCL	8248ED	10460602	FREE
1	1	GR	2812LB	11621284	FREE
1	1	RPM	8281EA	10190985	FREE
1	1	RPM	8283PA	10068031	FREE
1	1	RPM	8281FA	10076673	FREE
1	1	TEMP	8255XXA	166341	FREE

# RPM MAIN PASS G-SAND

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

Patches: 4

Plotted: Mon Jul 2 17:59:27 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/p354h03.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 2258.250 ft BOTTOM DEPTH: 2906.806 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	" "
	LARGEST CASING OD	4.50	in	" "
	MATRIX	SANDSTONE		" "

## CURVE DESCRIPTION REPORT

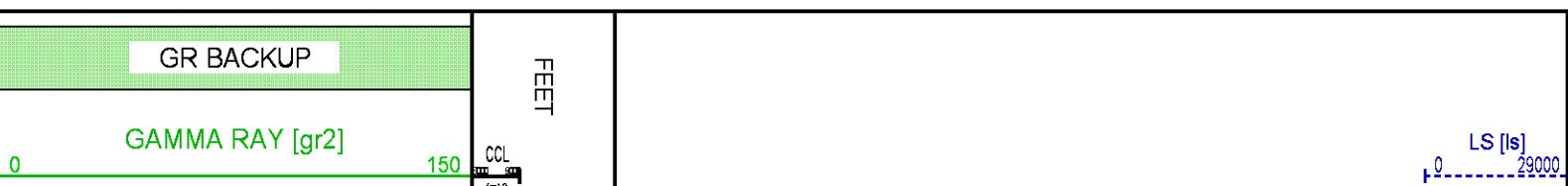
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:GR2	N/A	GAMMA RAY 2
F1:ISS	N/A	INELASTIC SHORT SPACE COUNT RATE
F1:LS	N/A	LONG SPACE COUNT RATE
F1:RATO	N/A	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	N/A	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	N/A	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	N/A	SHORT SPACE COUNT RATE

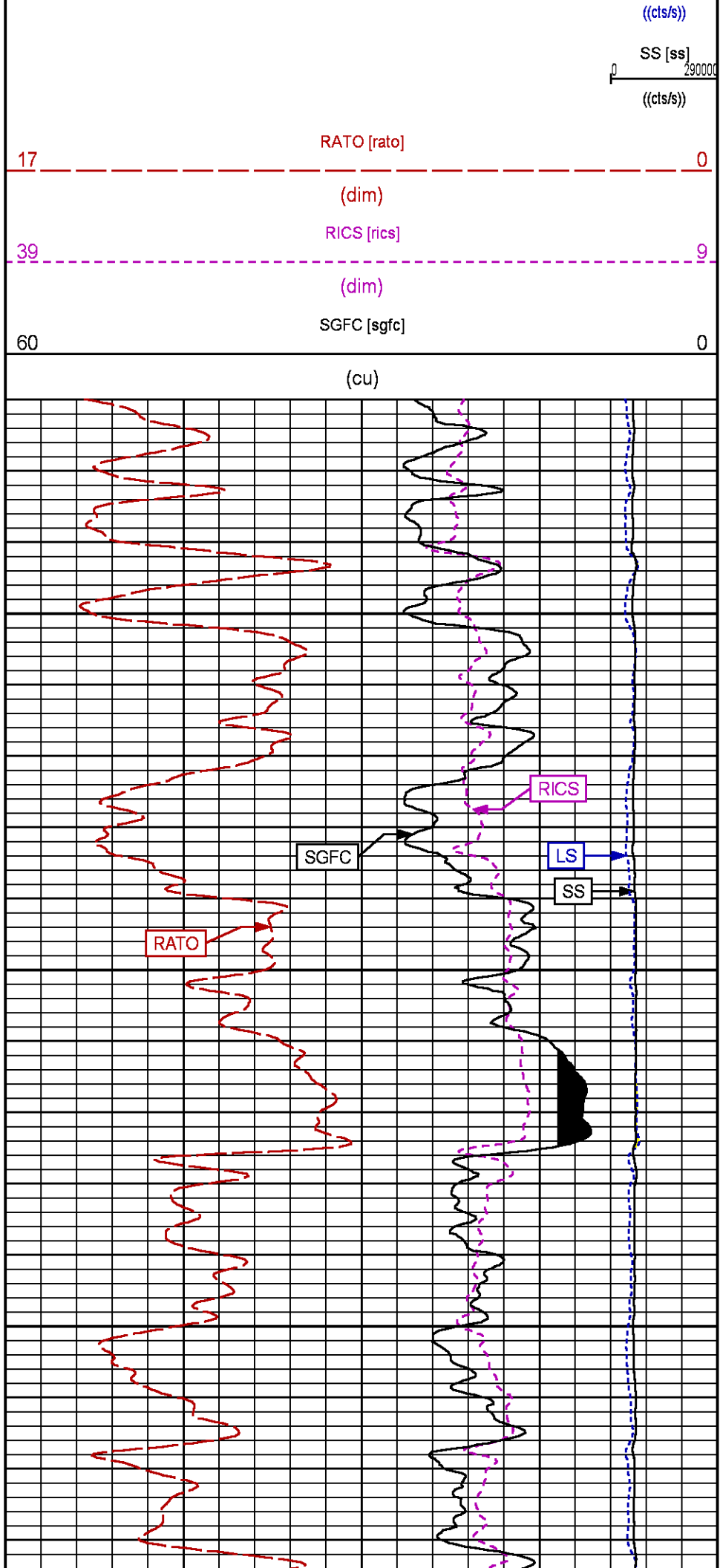
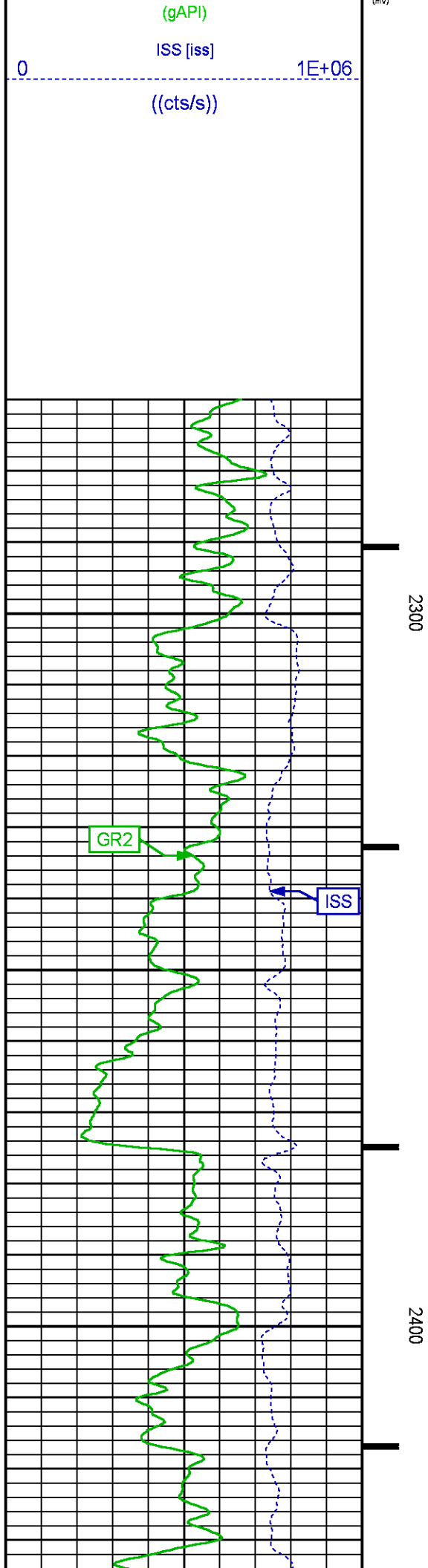
## CURVE MEASURE POINT OFFSET

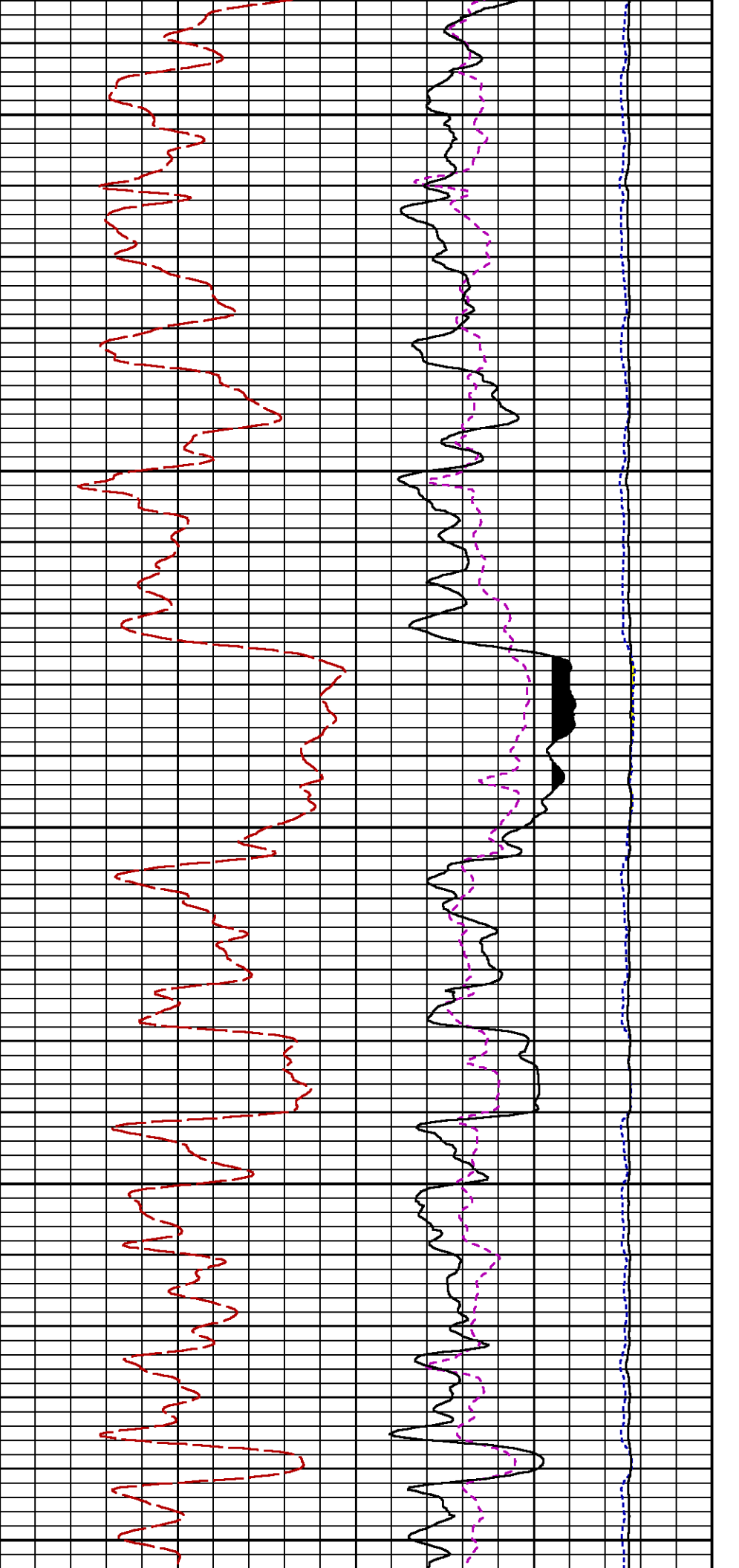
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	-25.00	ISS	-12.75	RATO	-12.75	SGFC	-12.75
GR2	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/18E\_RPM\_GS.fvpdf [5"/100' Scale]  
 Plot Interval : 2270 - 2890 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/18E\_RPM\_GS.xtf  
 Created On : N/A  
 Company : LARAMIE ENERGY LLC  
 Well : NICHOLS FEDERAL 0994-24-18E  
 Field : VEGA  
 File Interval : 2243.25 - 2913.25 Feet  
 OCT : p354h

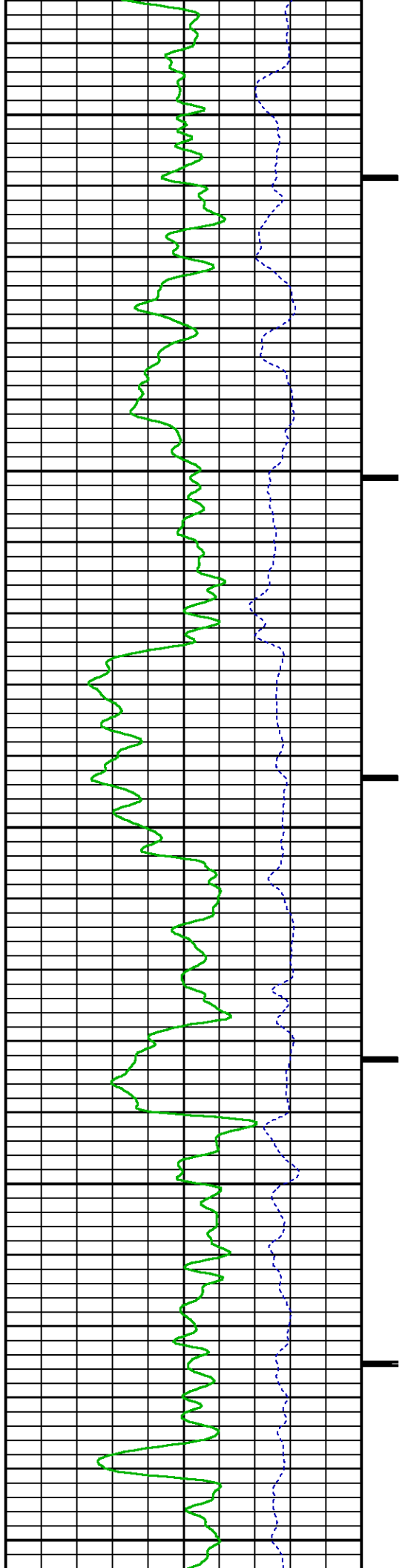


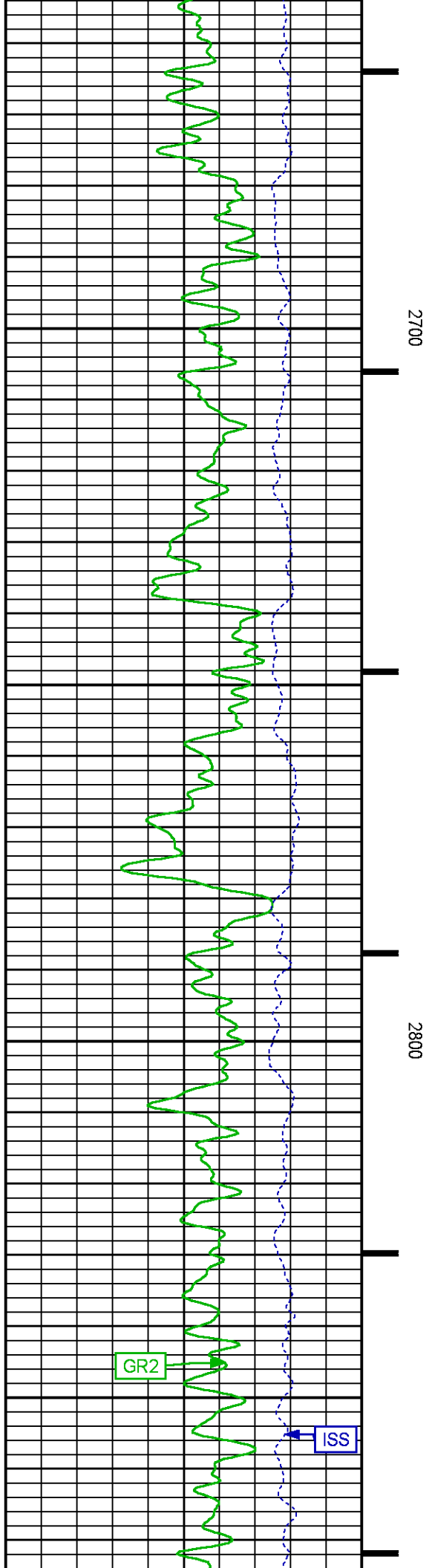
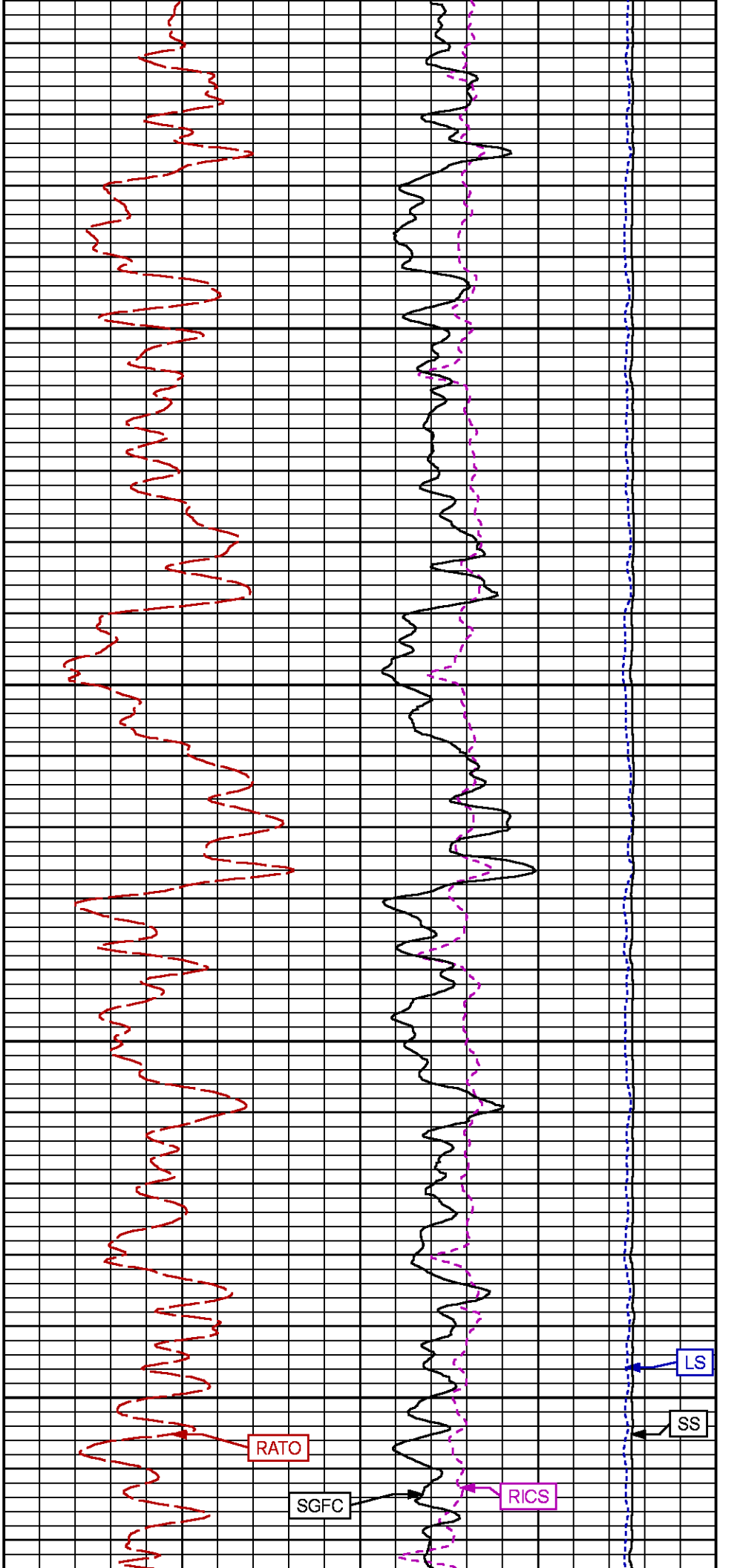


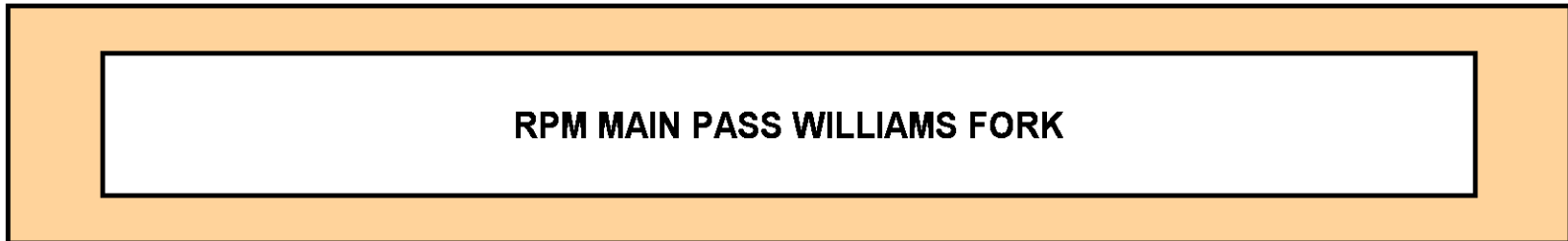


2500

2600







## RPM MAIN PASS WILLIAMS FORK

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017  
Patches: 4

Plotted: Mon Jul 2 18:01:50 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/p354h02.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 4308.250 ft BOTTOM DEPTH: 7841.384 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	"	"
	LARGEST CASING OD	4.50	in	"	"
	MATRIX	SANDSTONE		"	"

## CURVE DESCRIPTION REPORT

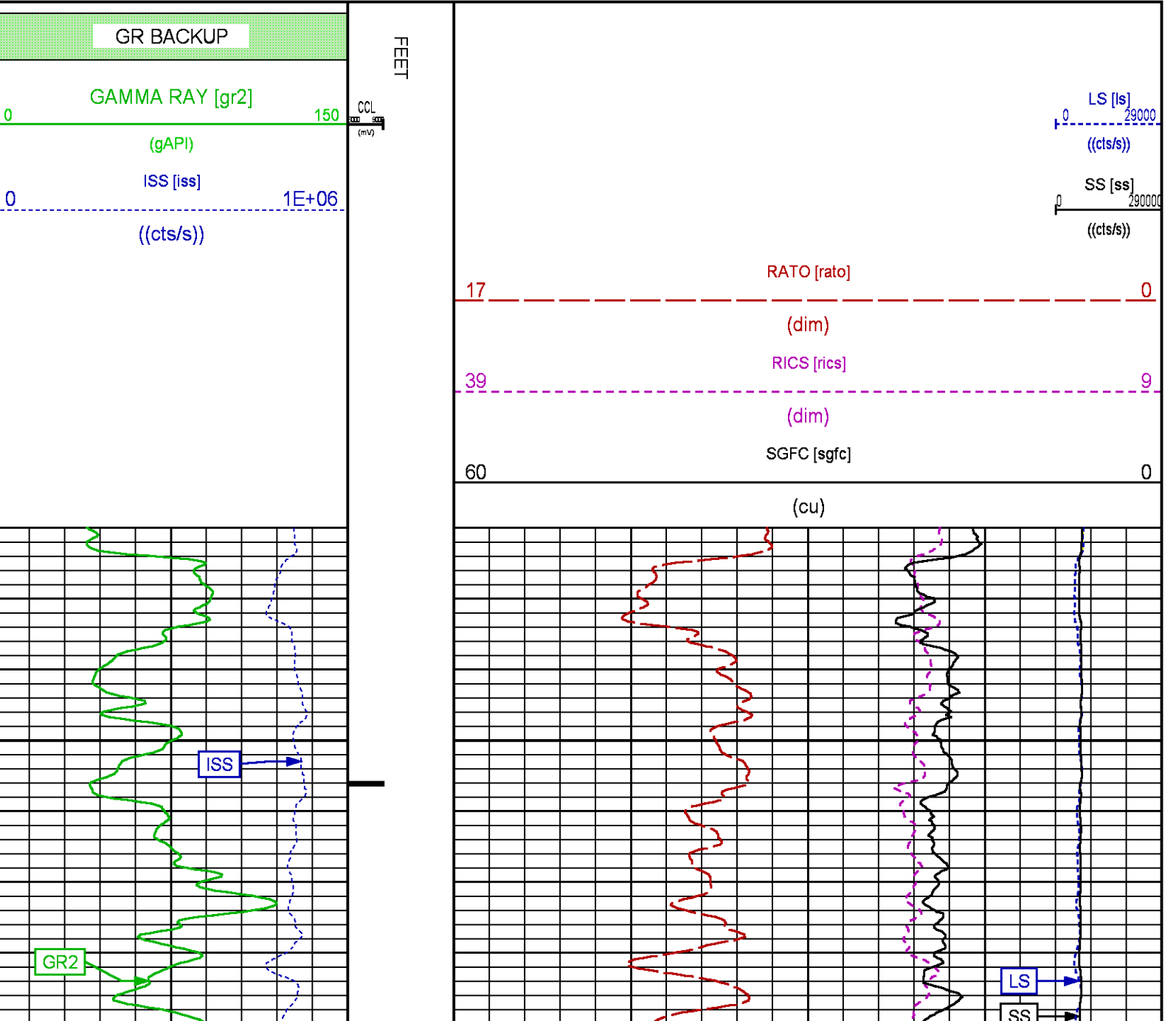
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	N/A	CASING COLLAR LOCATOR

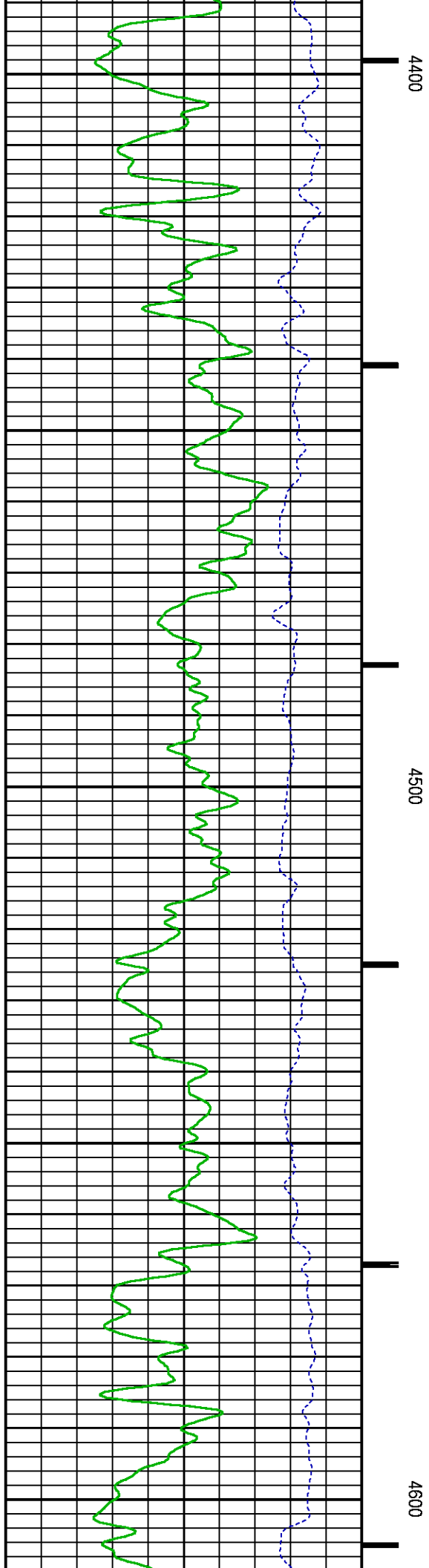
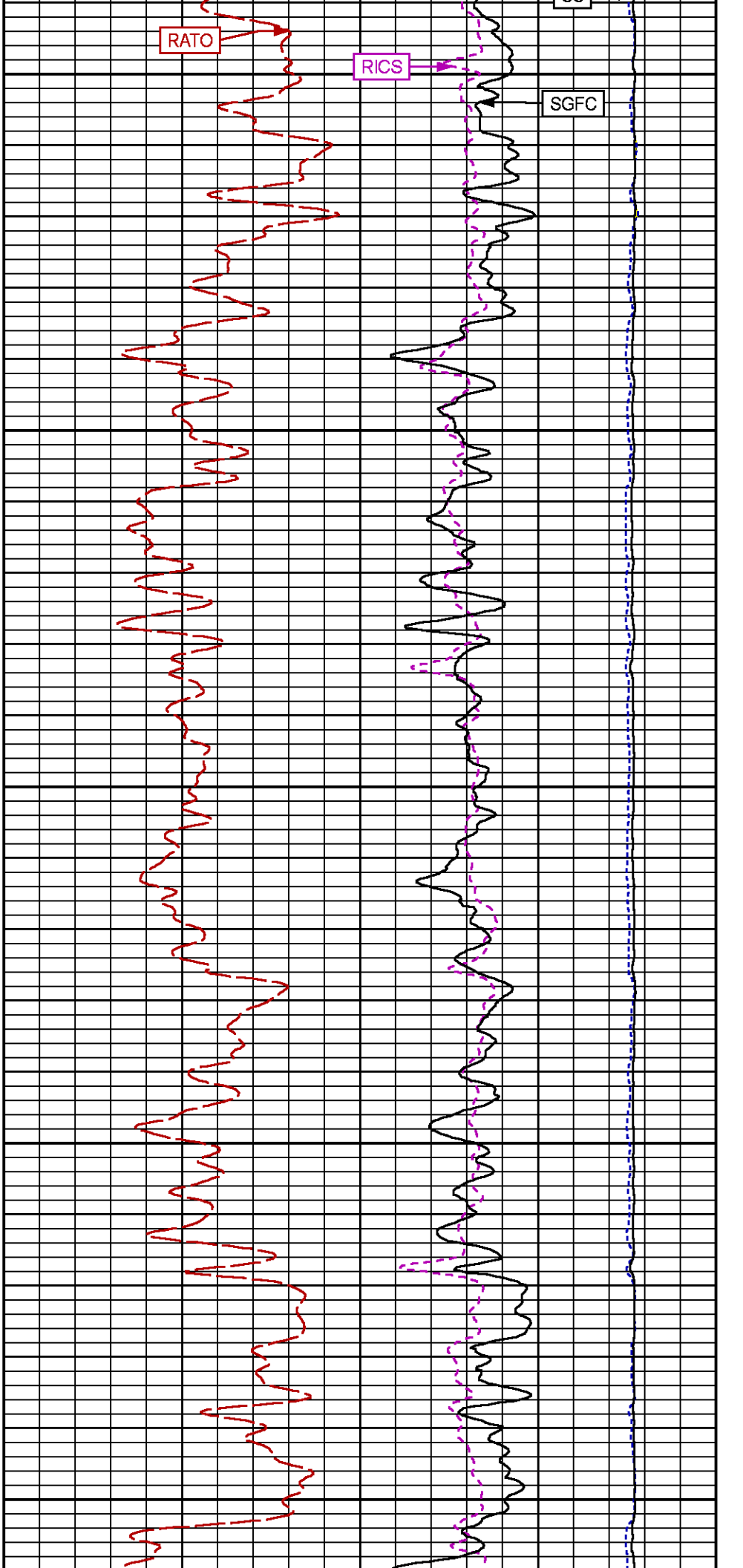
F1:GR2	N/A	GAMMA RAY 2
F1:ISS	N/A	INELASTIC SHORT SPACE COUNT RATE
F1:LS	N/A	LONG SPACE COUNT RATE
F1:RATO	N/A	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	N/A	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	N/A	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	N/A	SHORT SPACE COUNT RATE

CURVE MEASURE POINT OFFSET

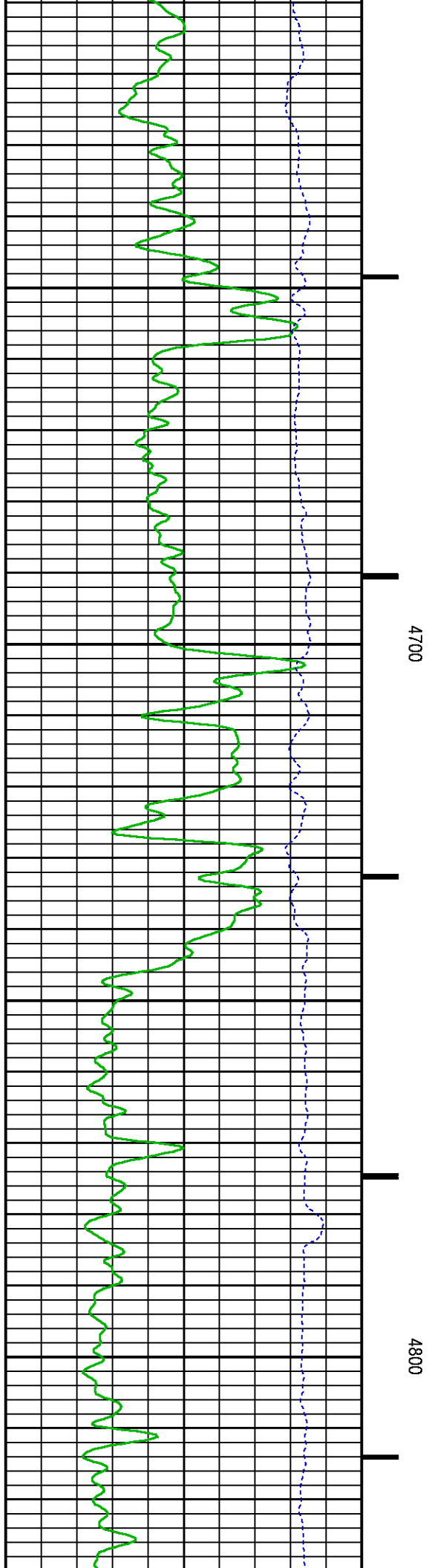
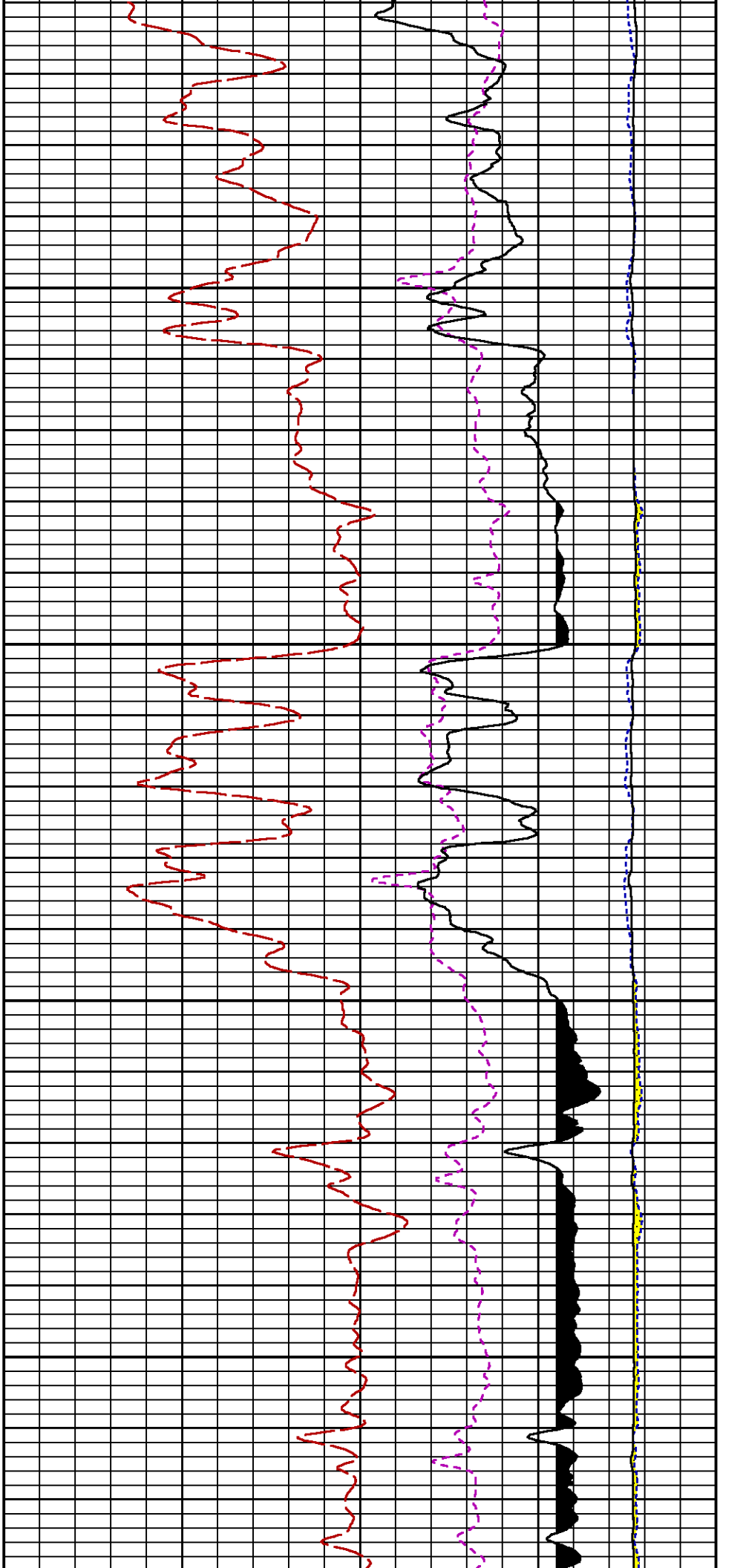
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	-25.00	ISS	-12.75	RATO	-12.75	SGFC	-12.75
GR2	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

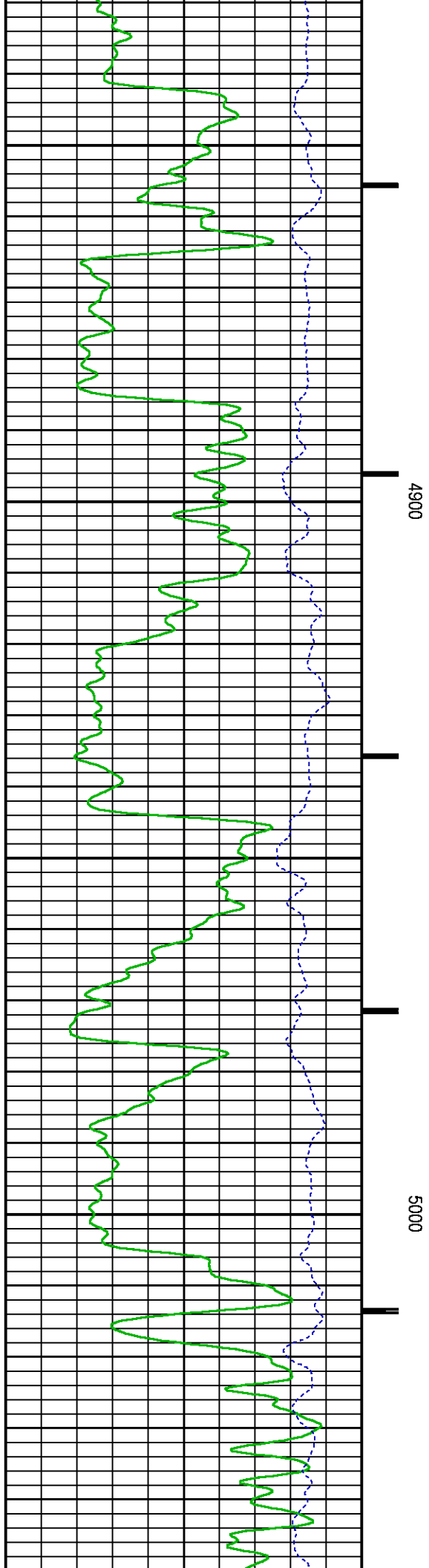
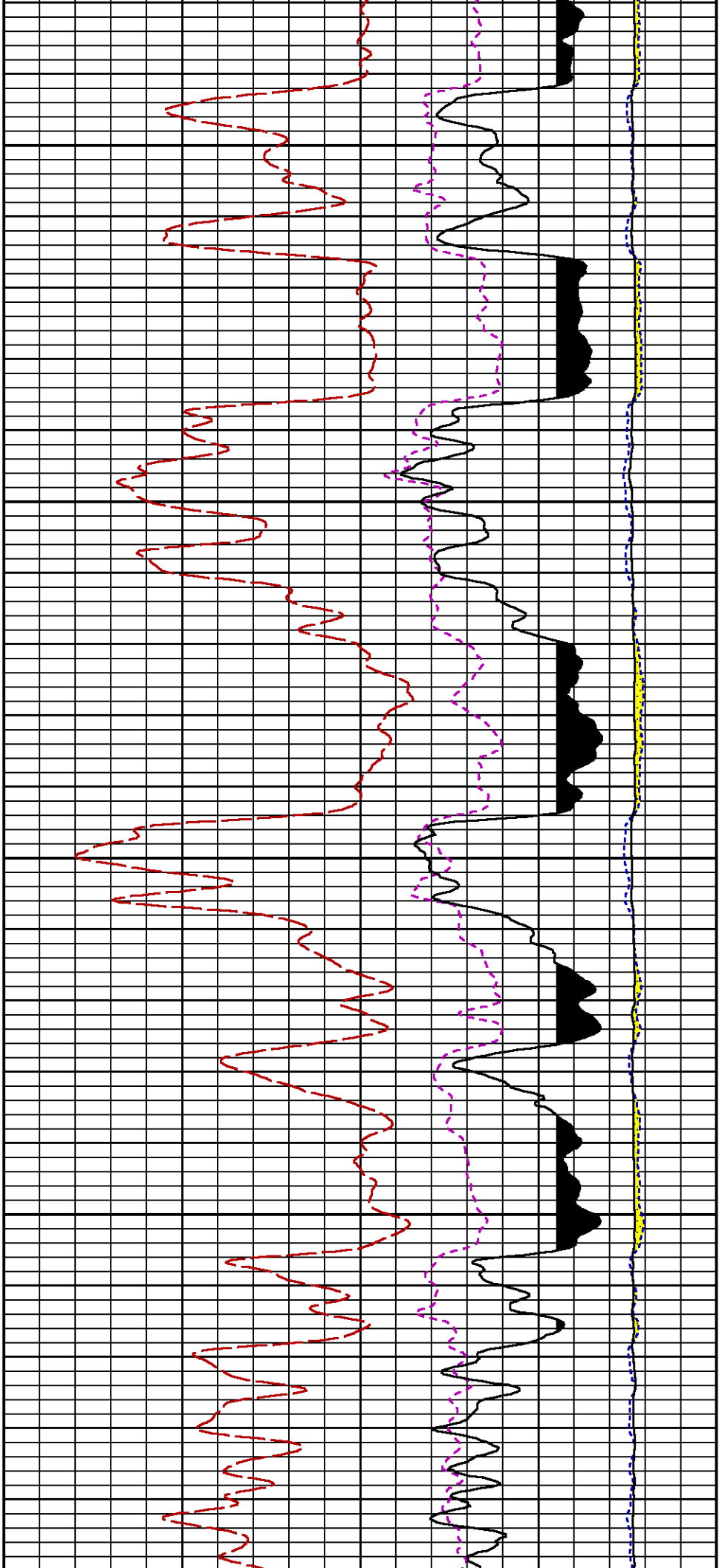
Presentation	: SysA:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/18E_RPM_WF.fvpdf [5"/100' Scale]
Plot Interval	: 4320 - 7847.25 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/18E_RPM_WF.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: NICHOLS FEDERAL 0994-24-18E
Field	: VEGA
File Interval	: 4293.25 - 7847.5 Feet
OCT	: p354h

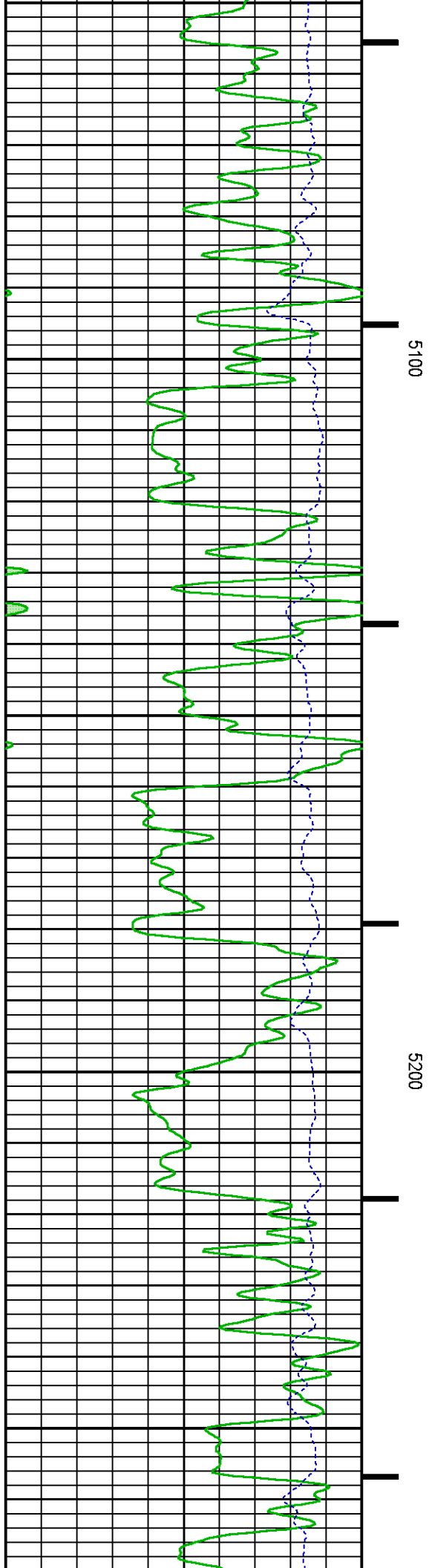
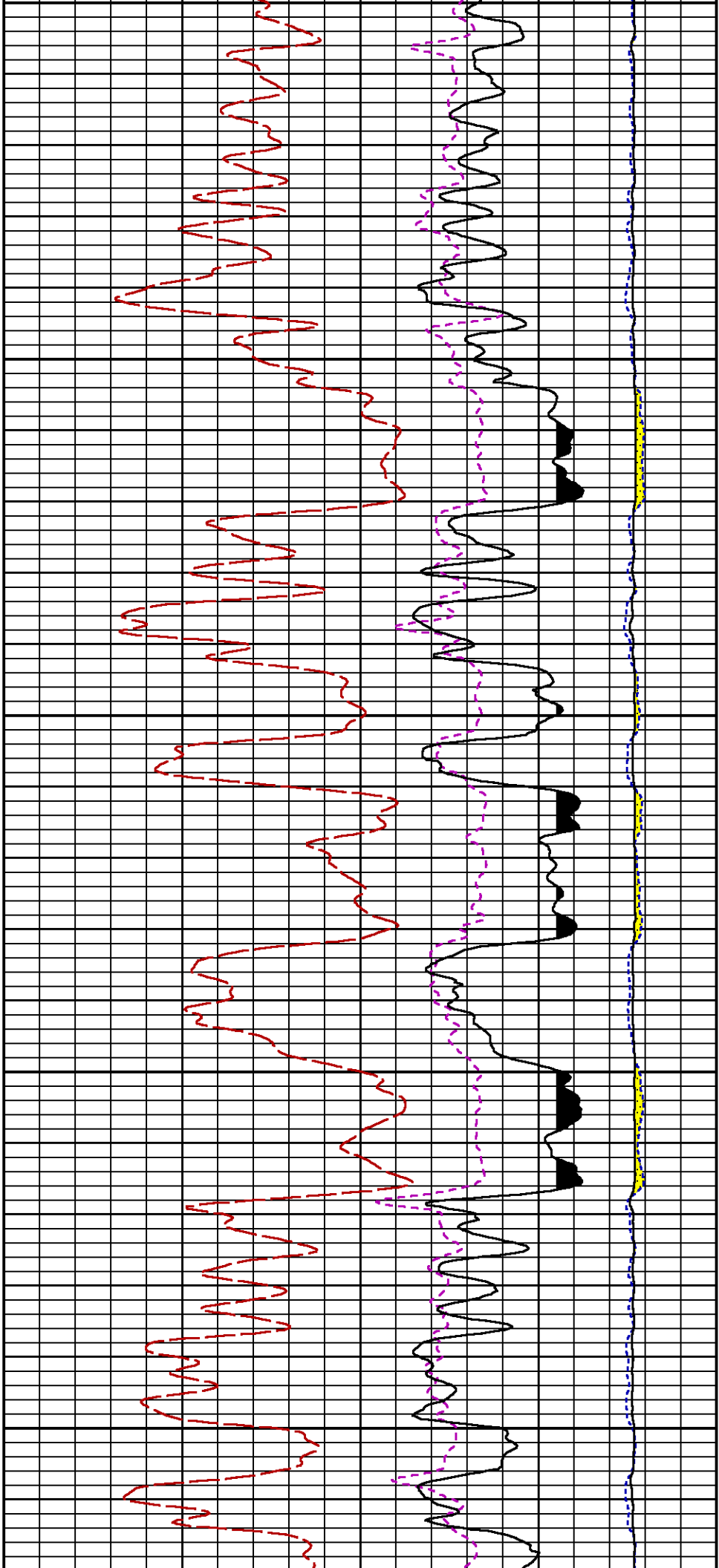


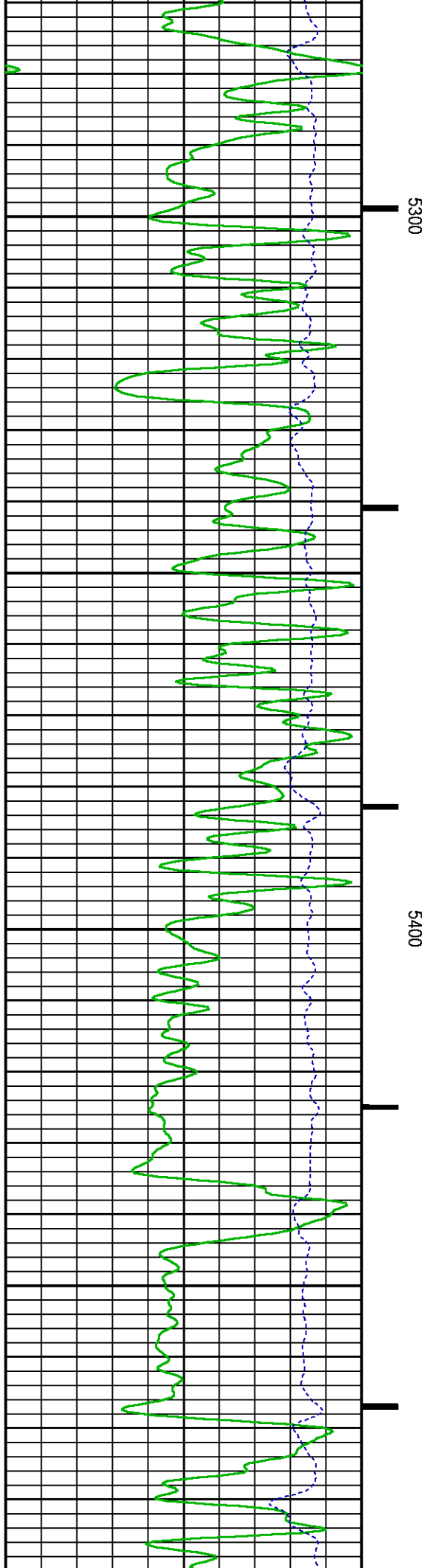
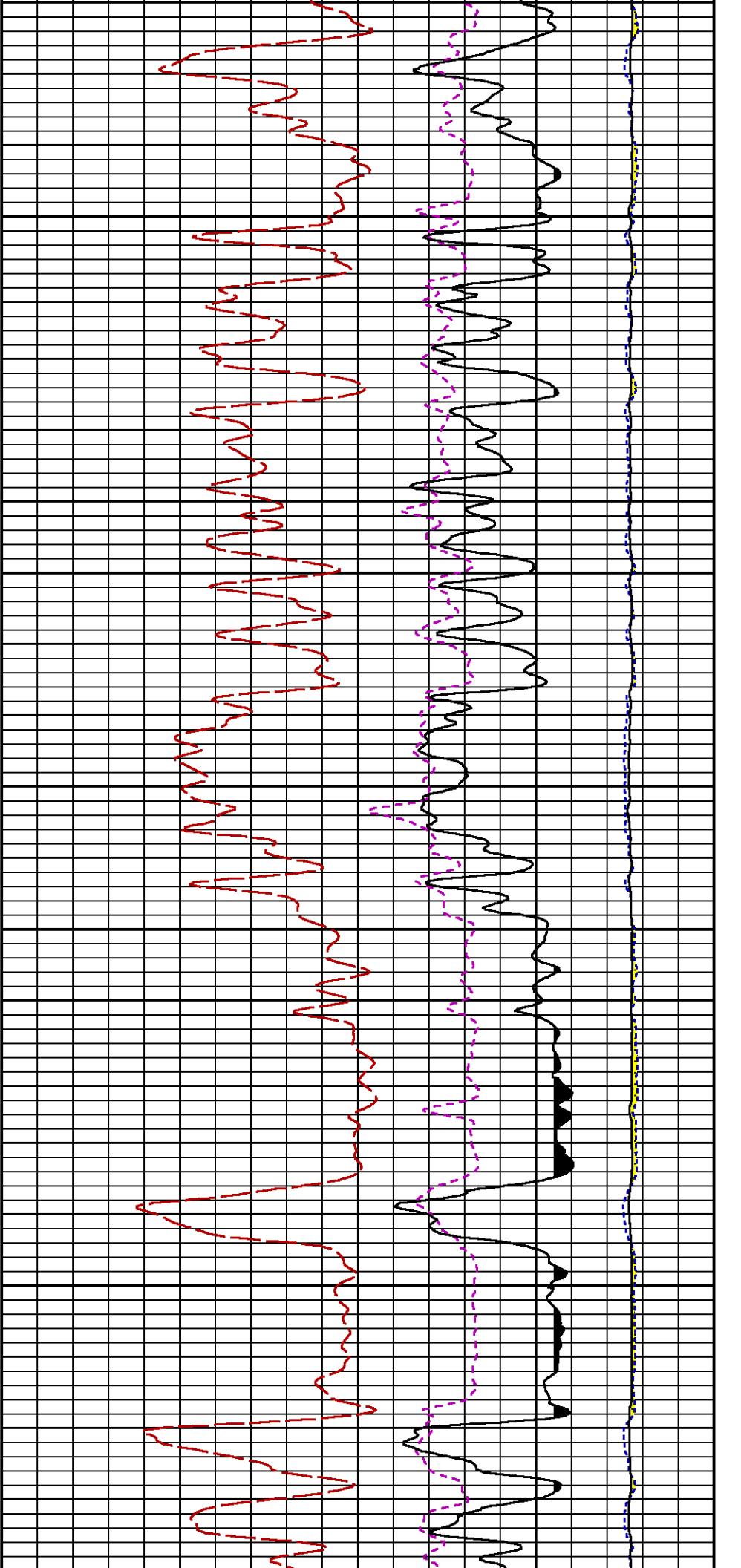


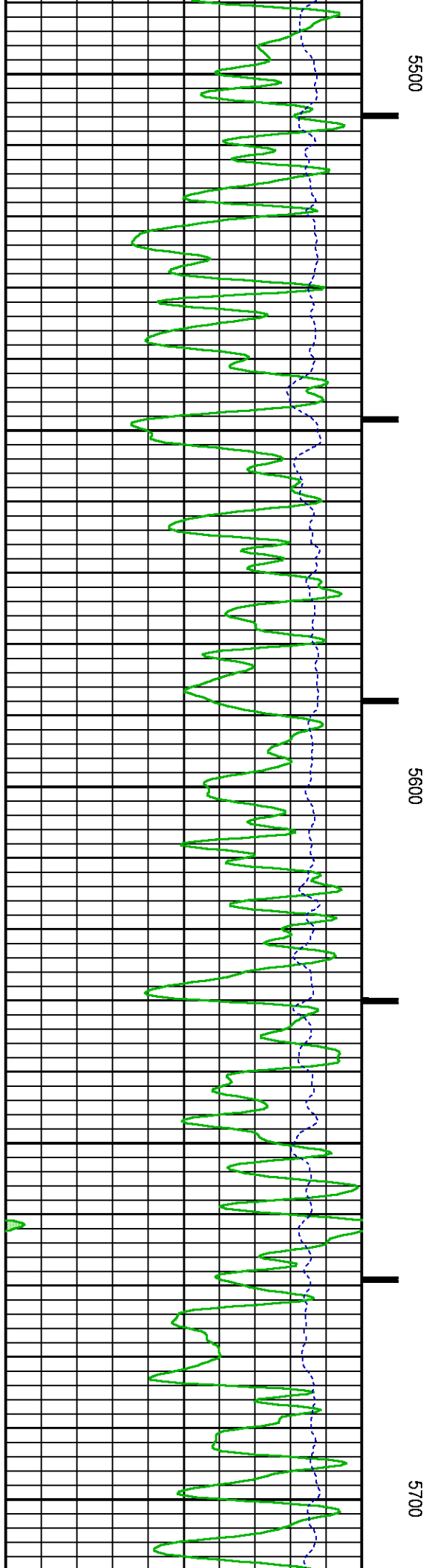
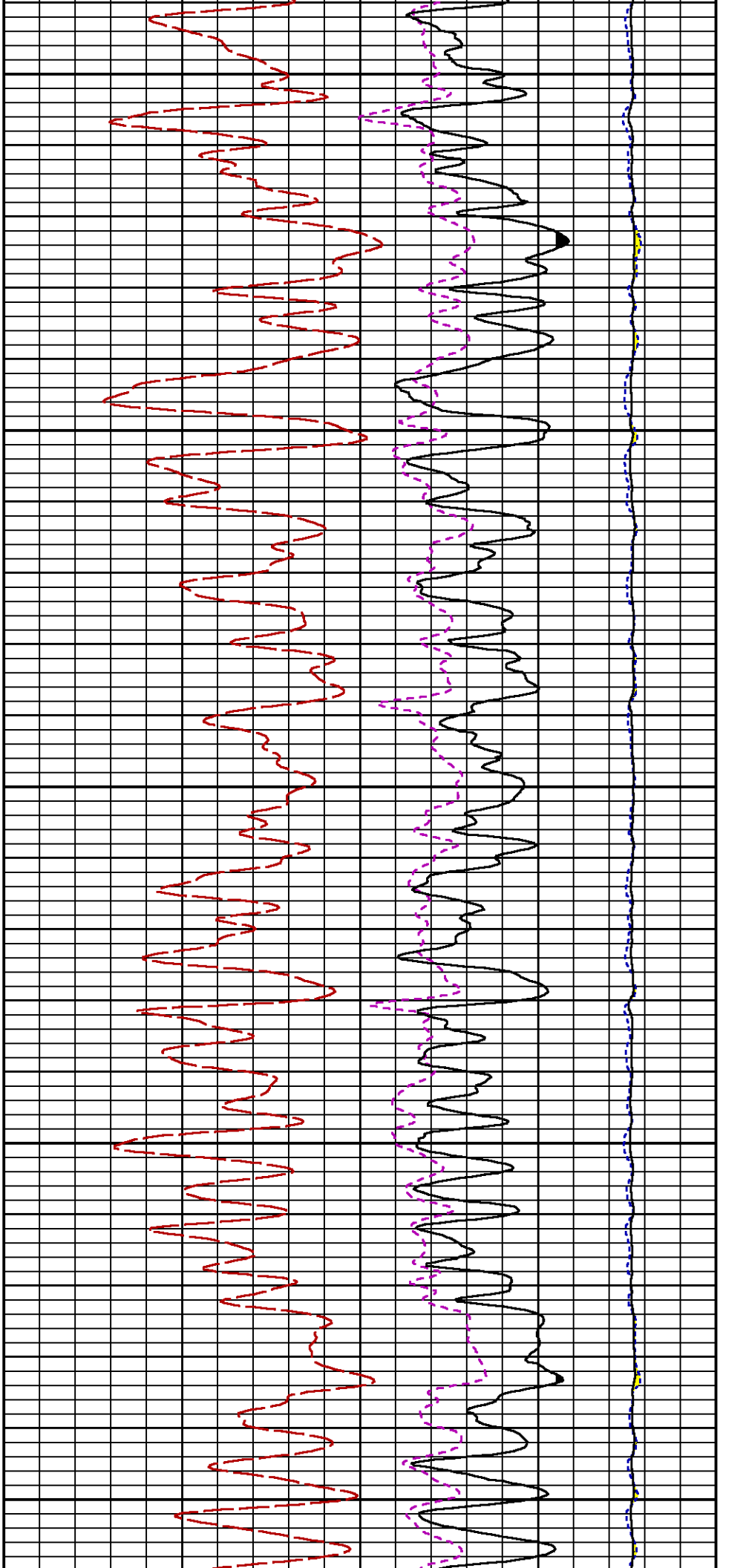


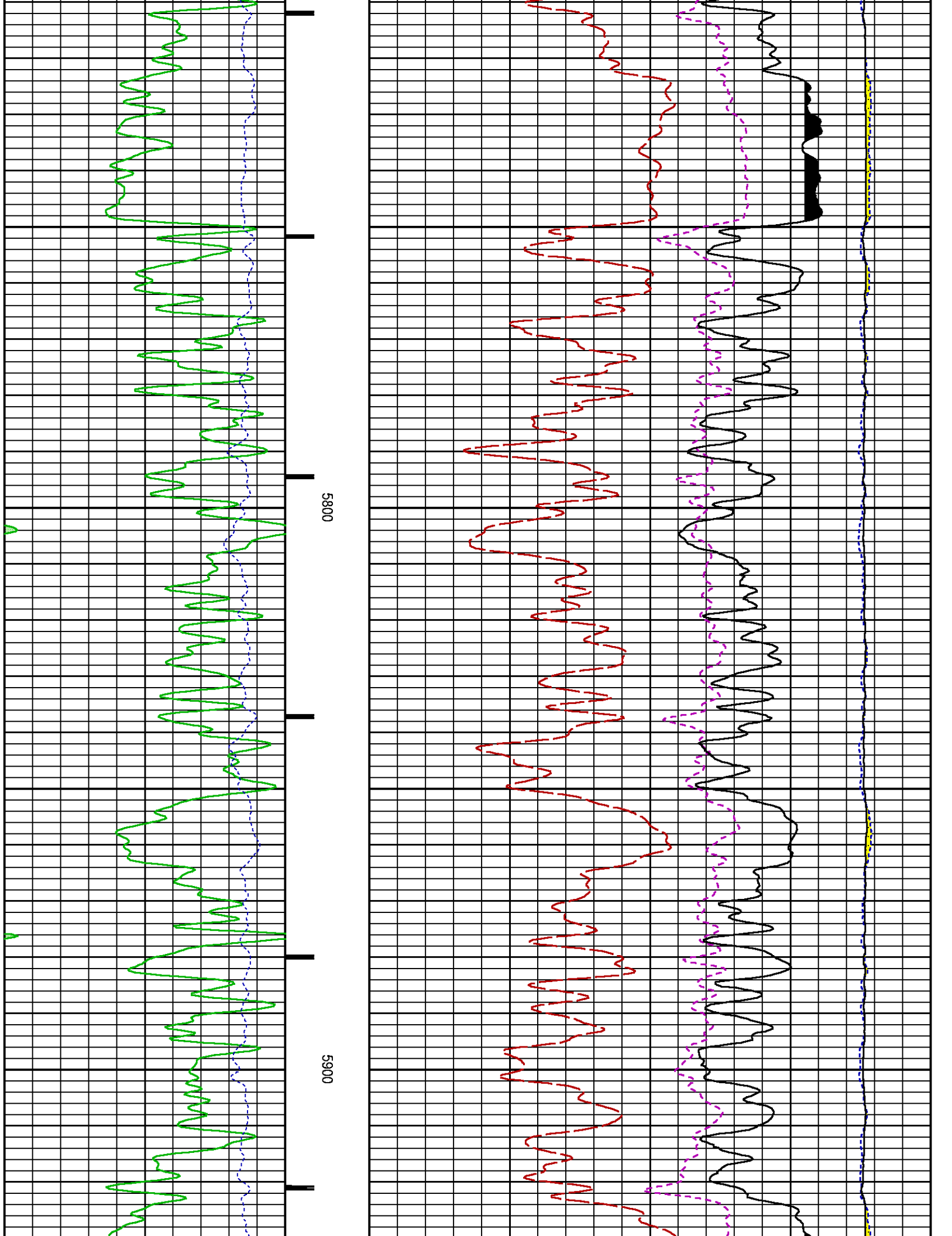


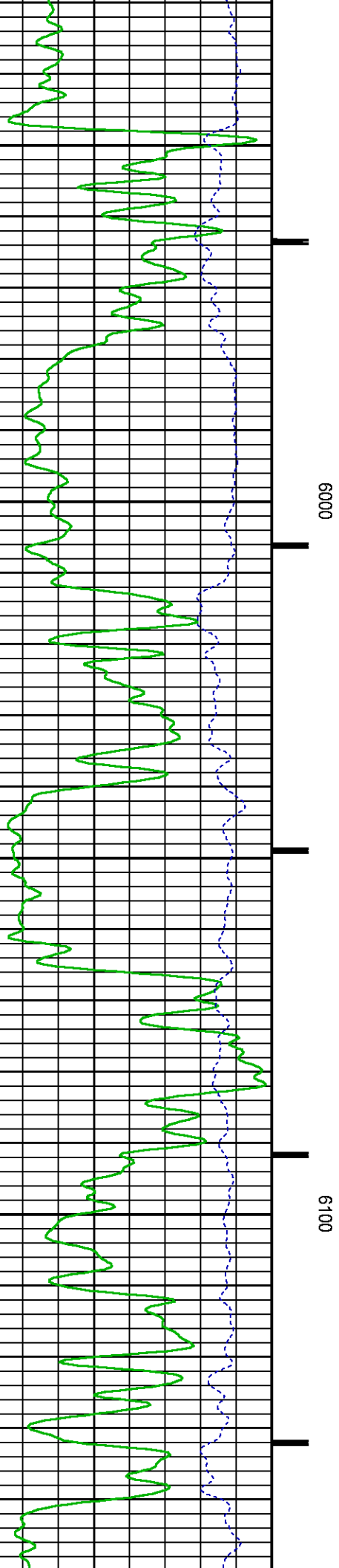
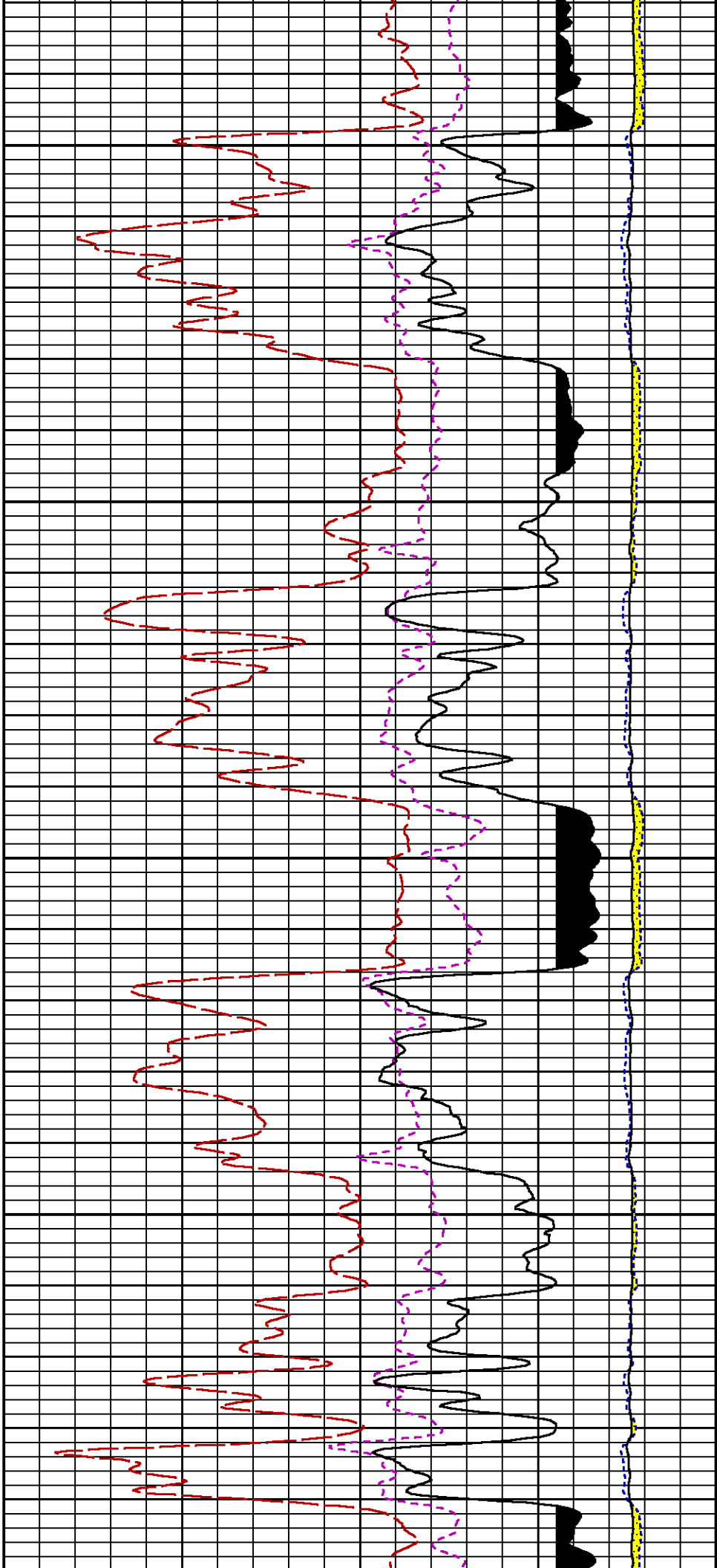


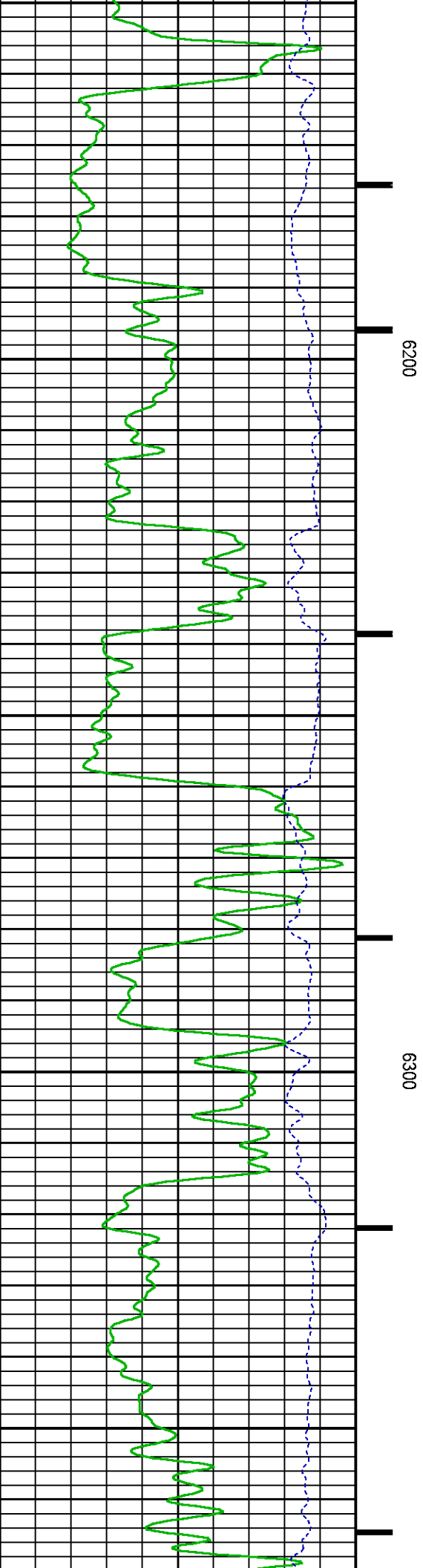
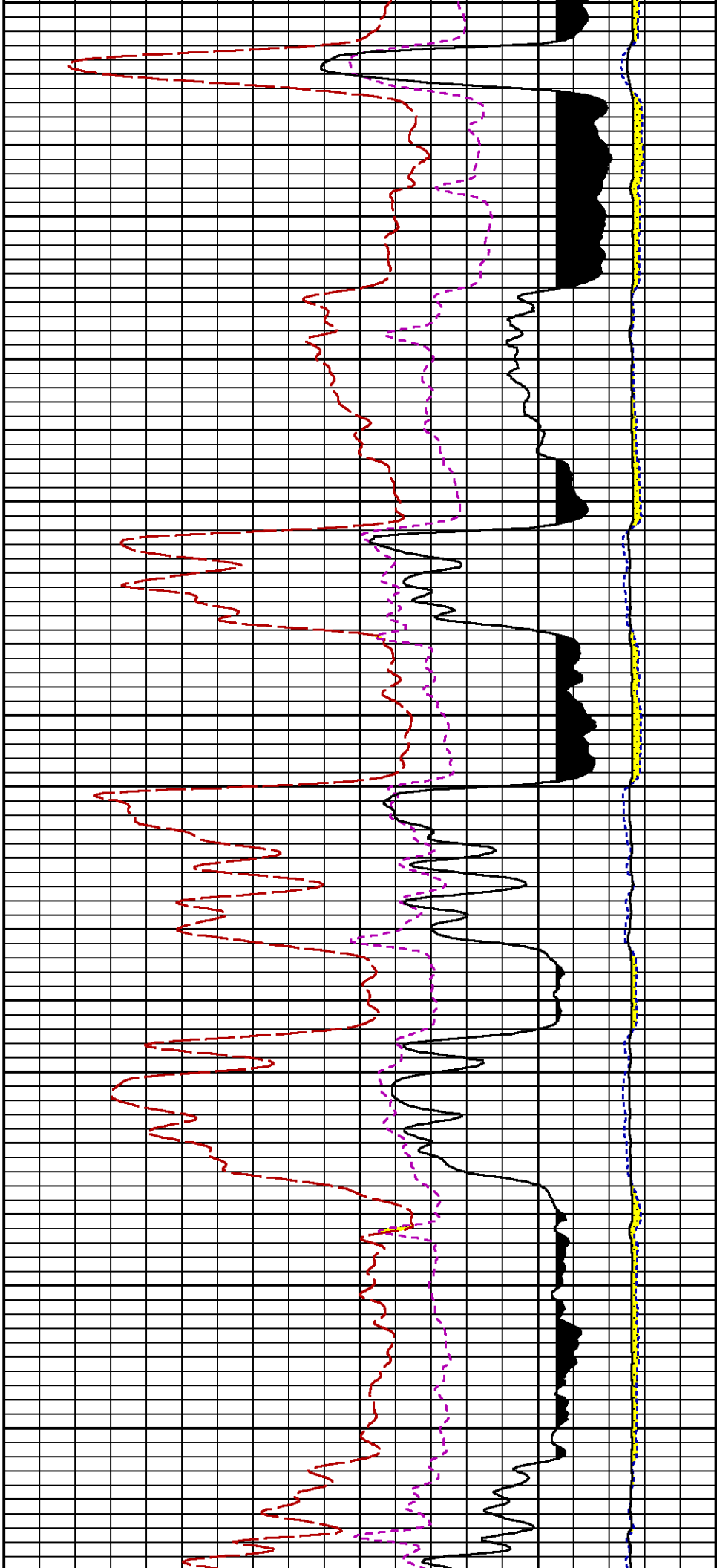




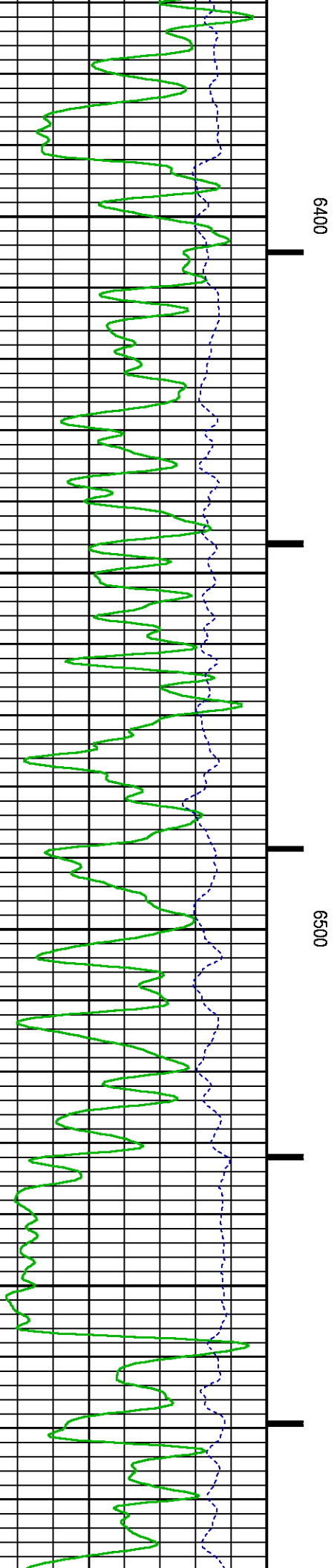
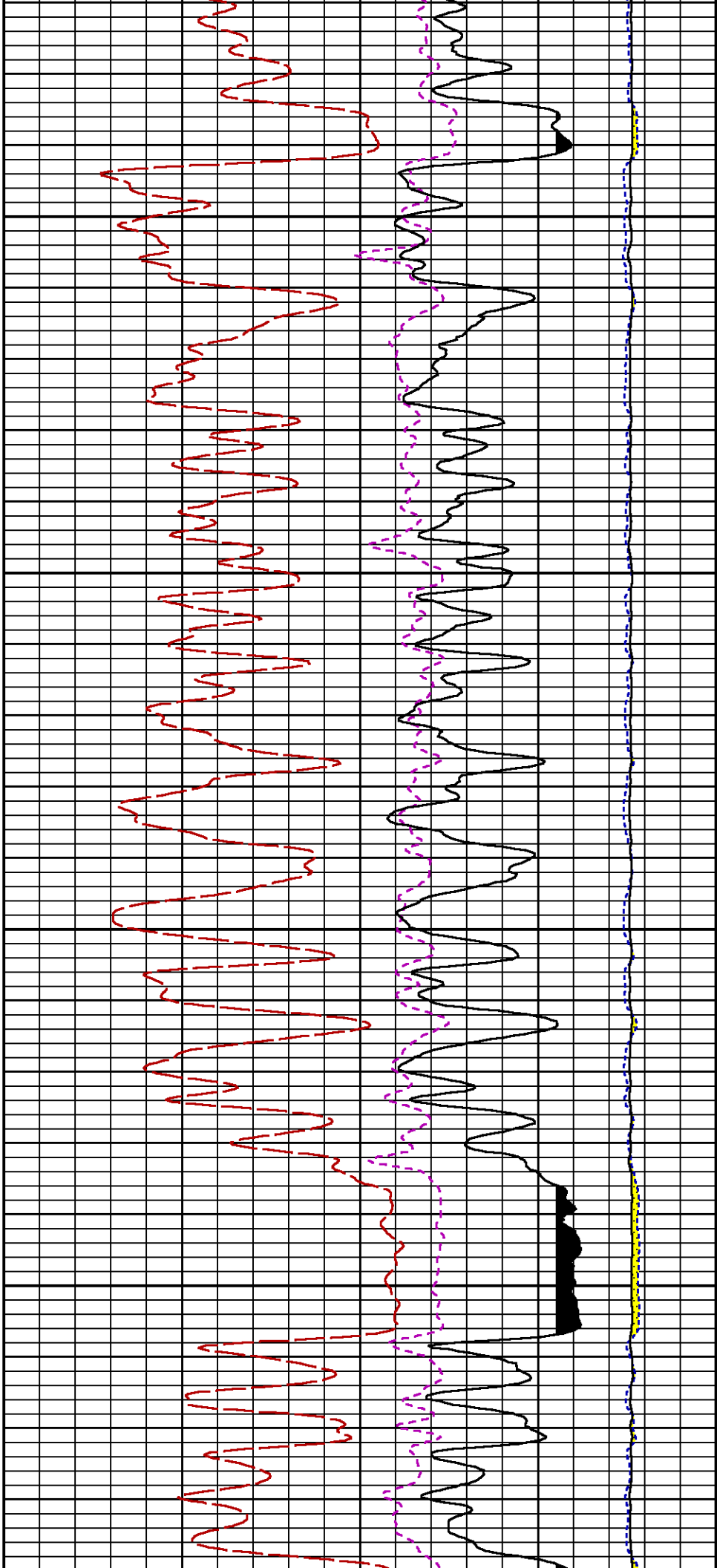


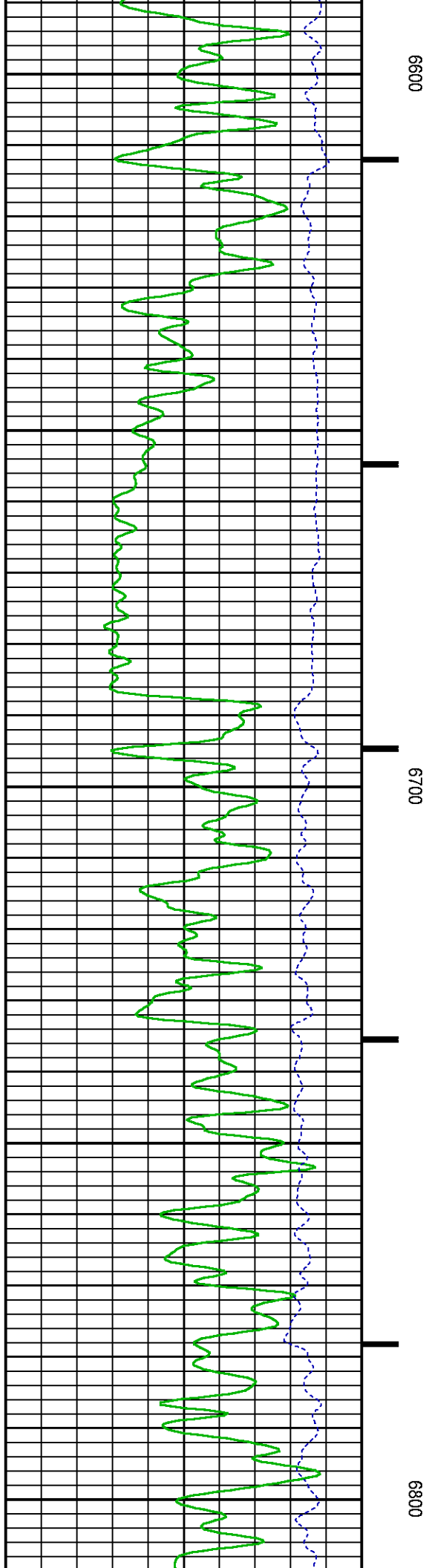
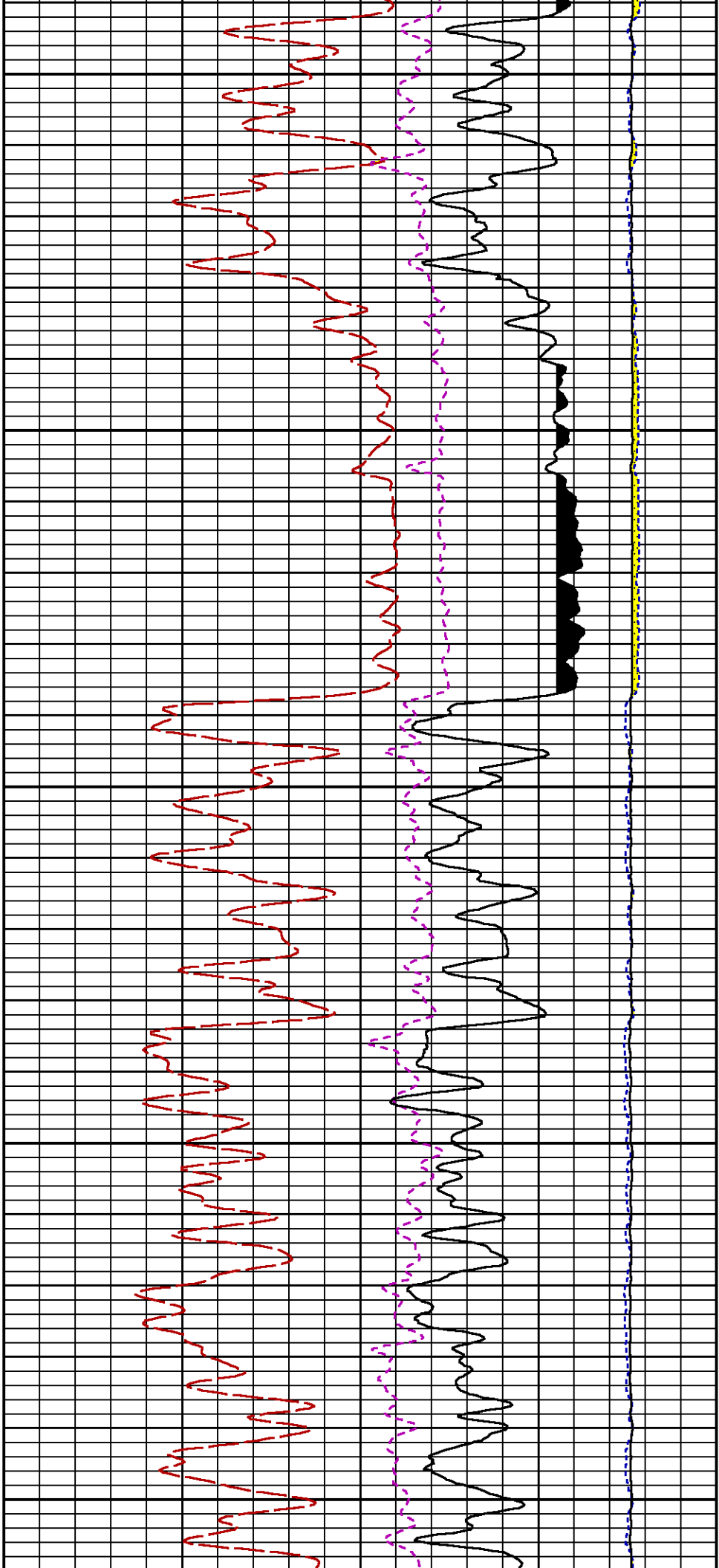


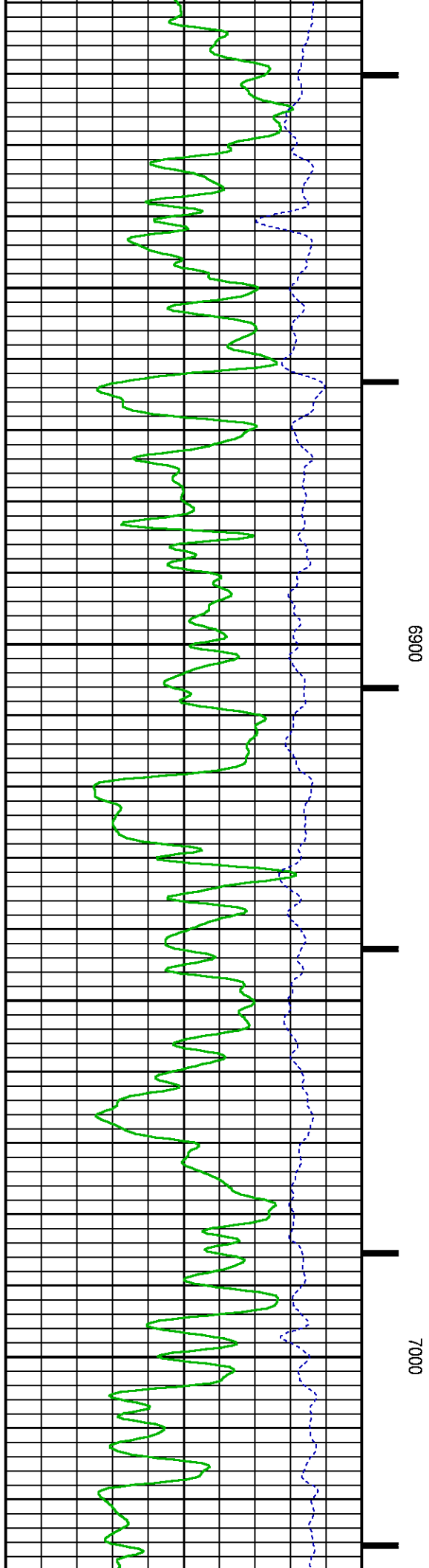
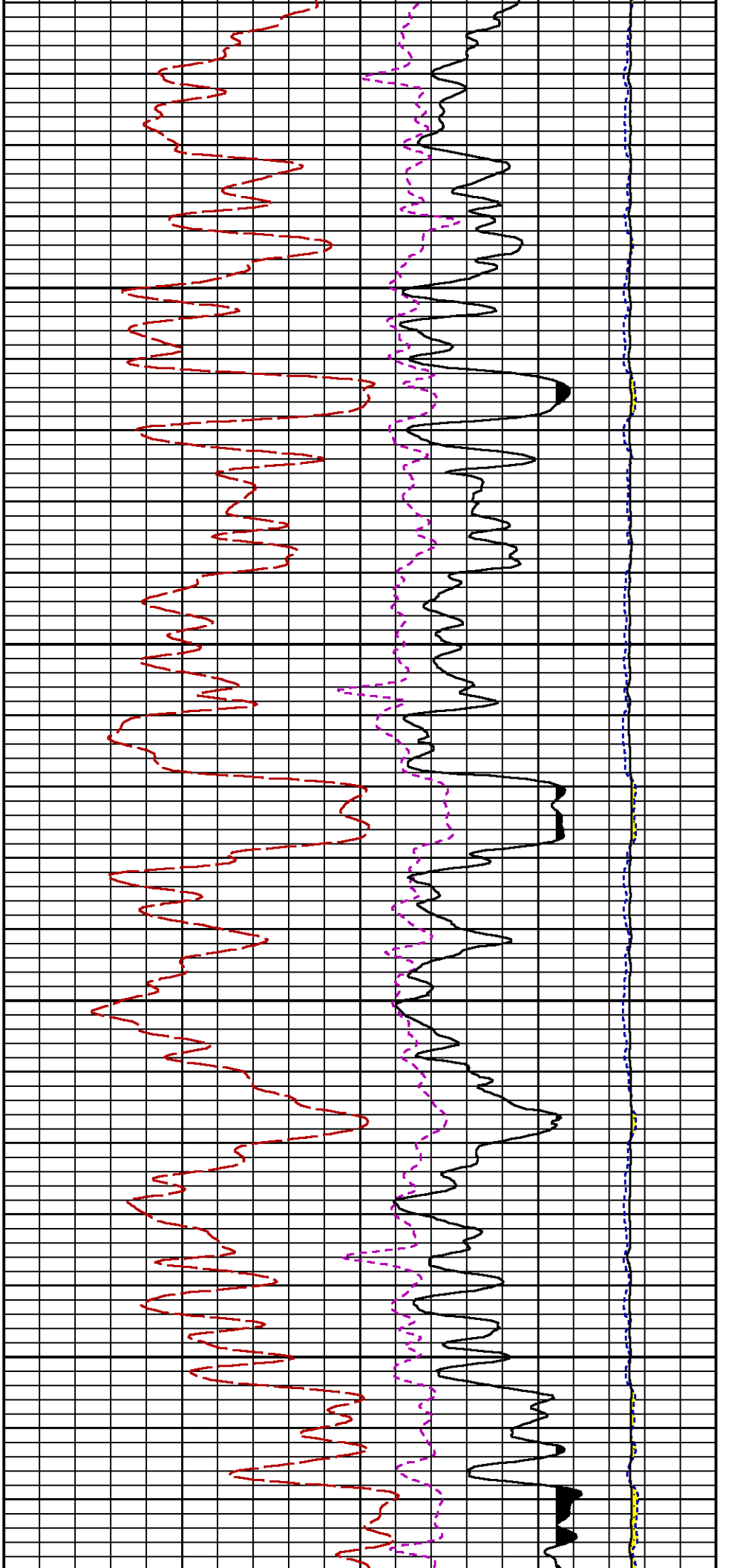


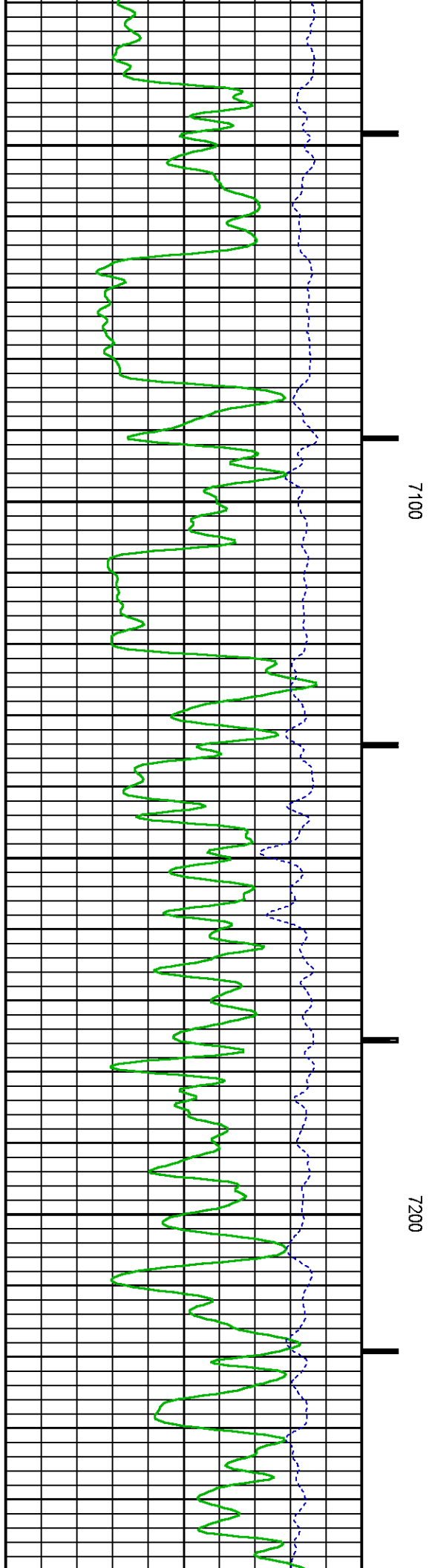
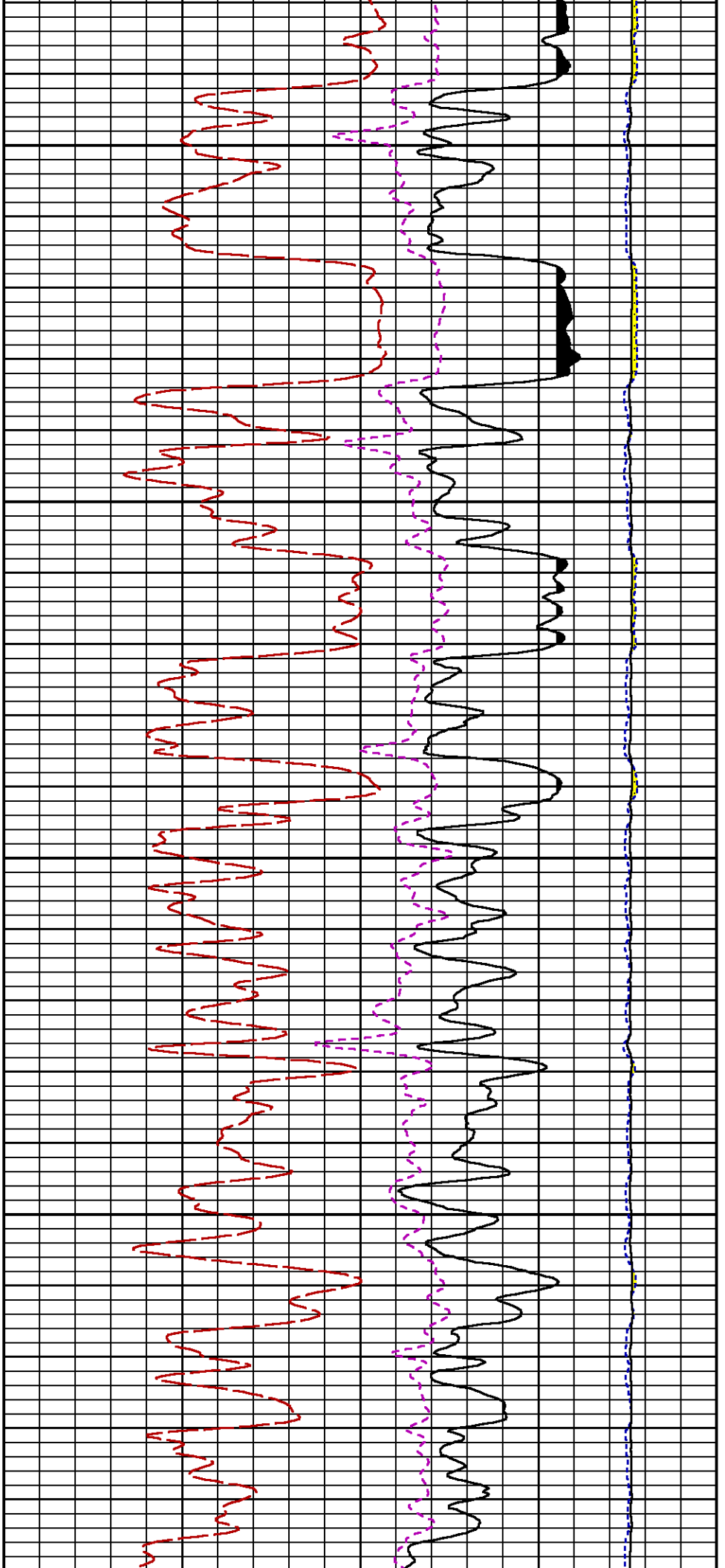


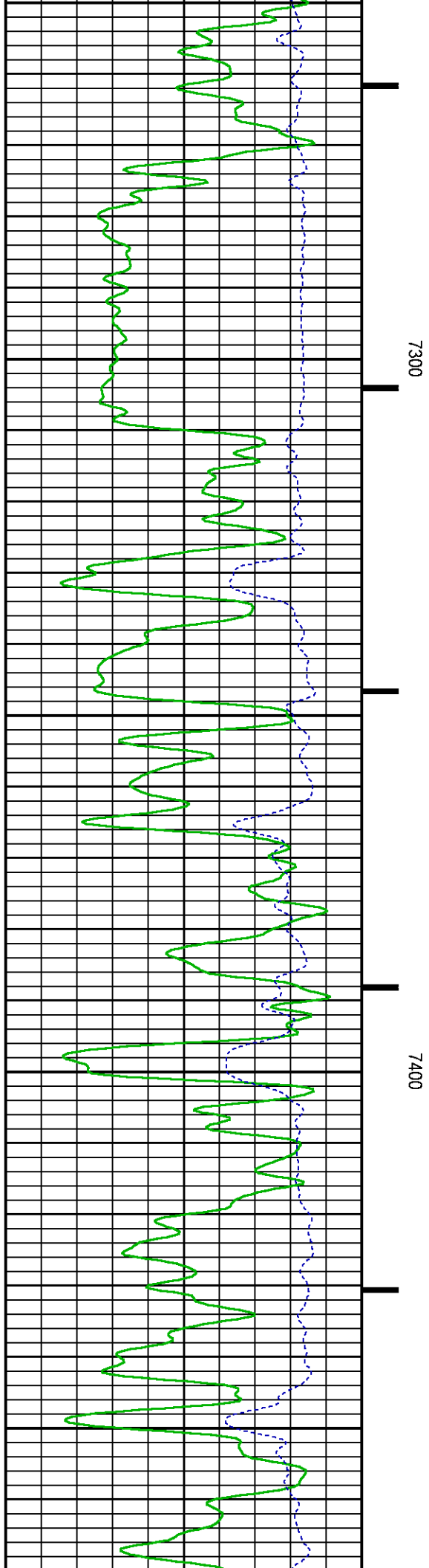
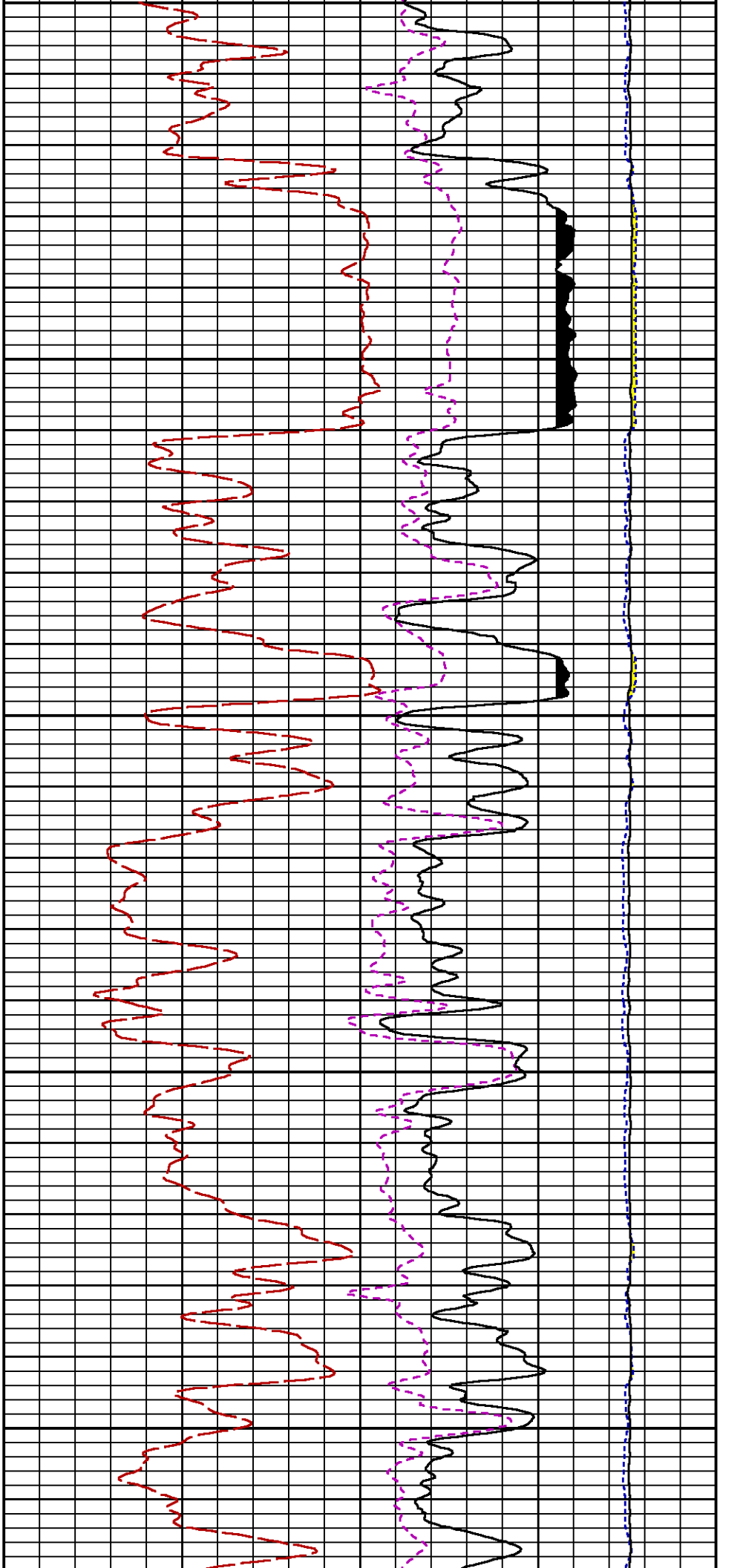


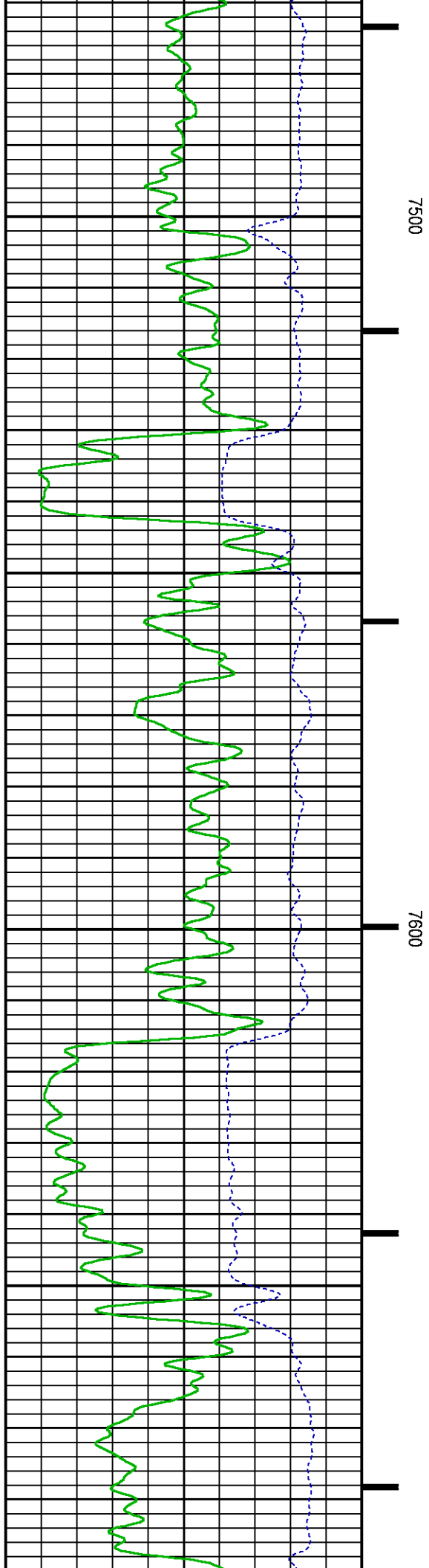
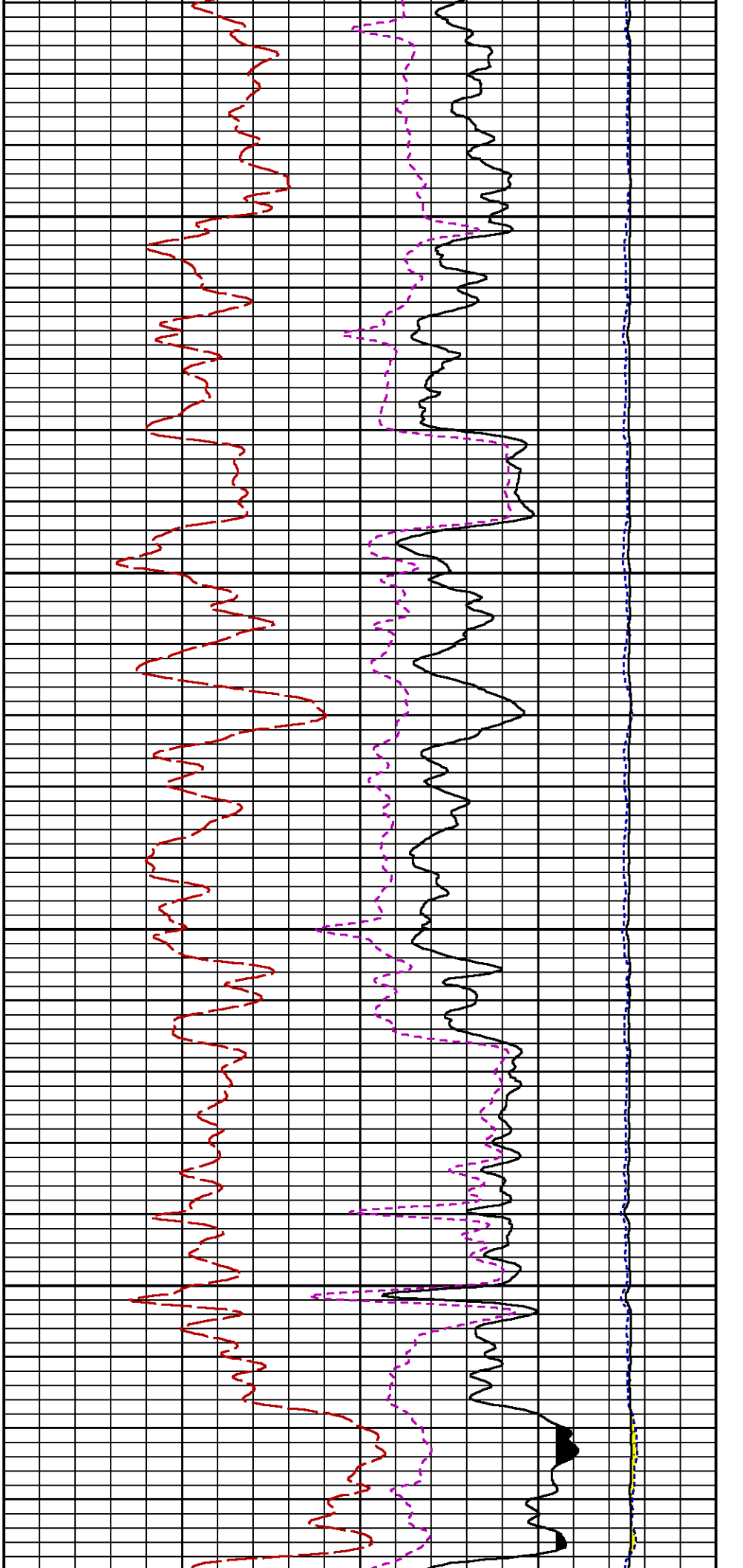


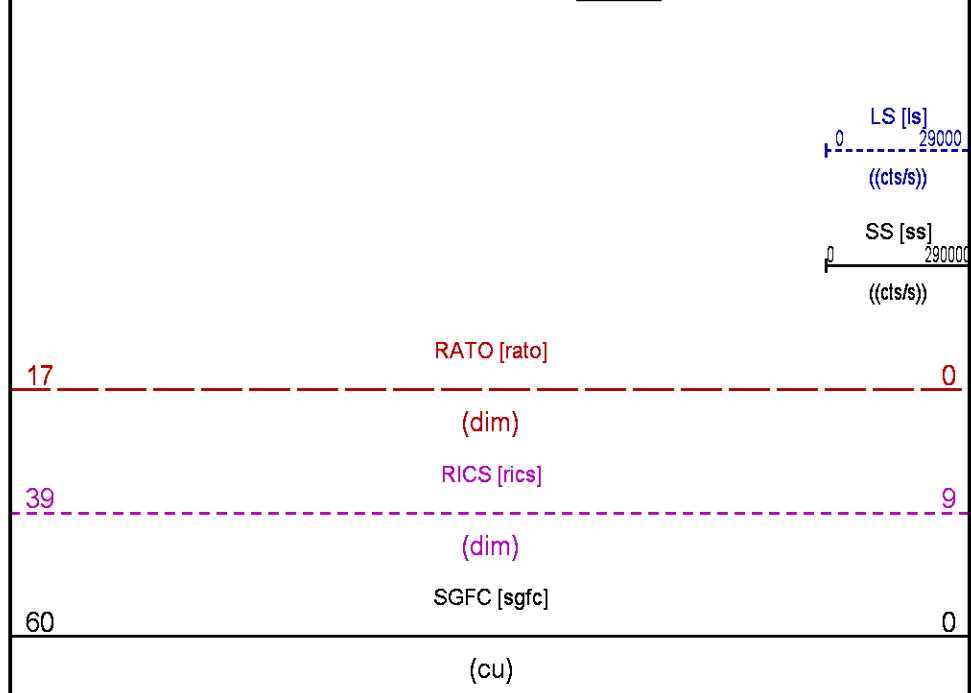
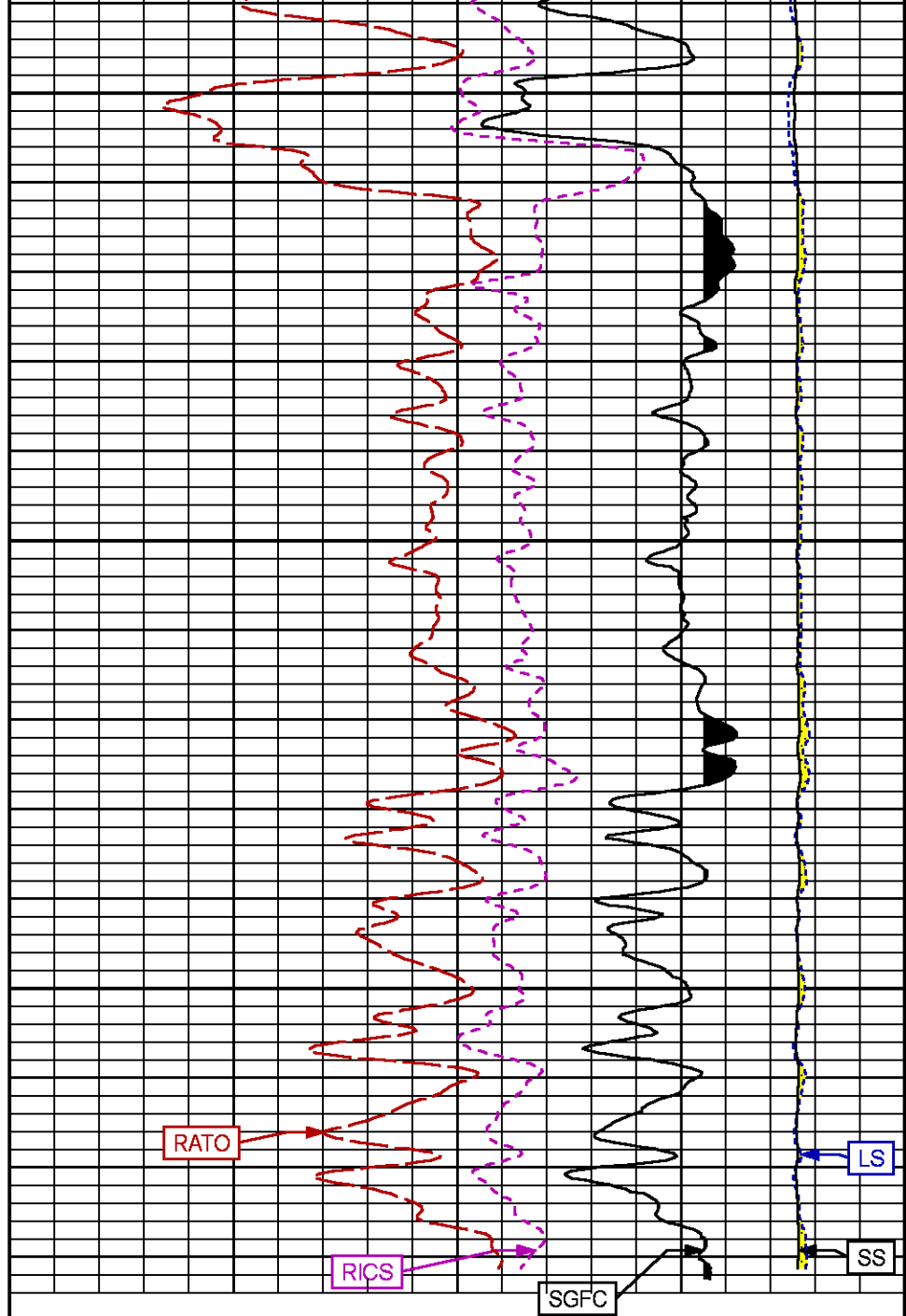
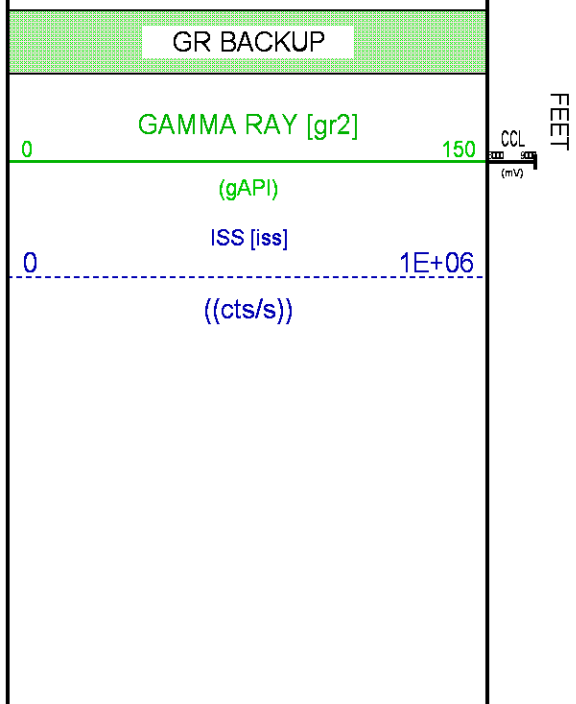
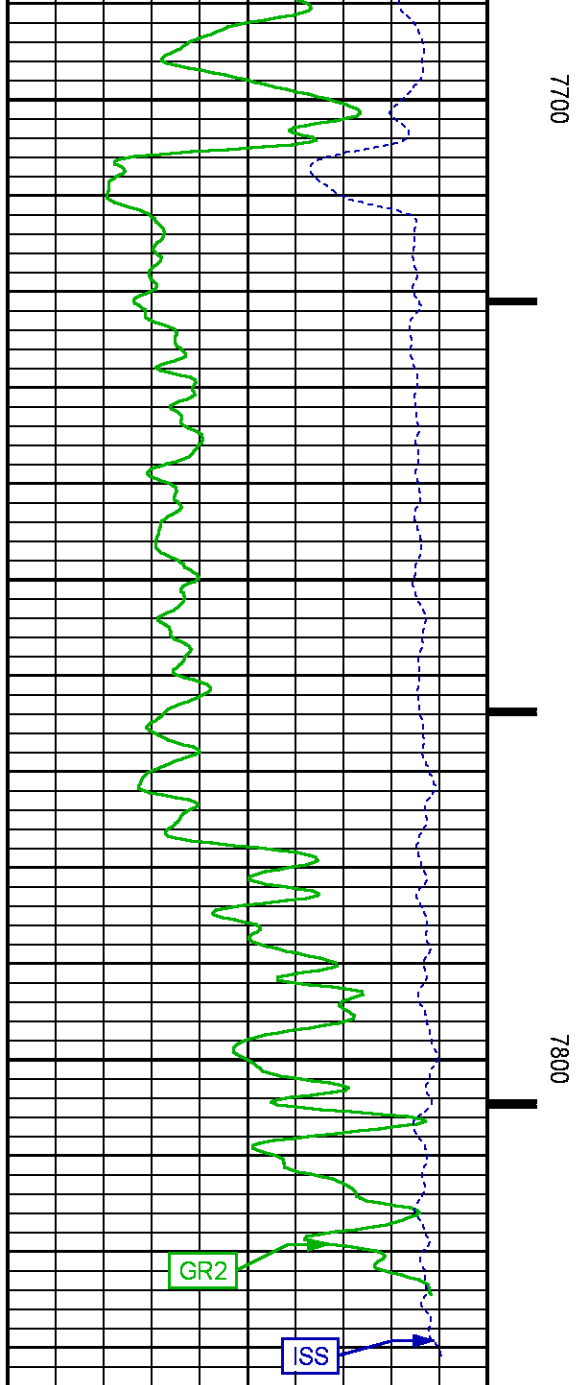












## REPEAT PASS

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

Patches: 4

Plotted: Mon Jul 2 18:01:15 2018

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/p354h01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 5521.146 ft BOTTOM DEPTH: 5787.619 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	"	"
	LARGEST CASING OD	4.50	in	"	"
	MATRIX	SANDSTONE		"	"

### CURVE DESCRIPTION REPORT

CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:GR2	N/A	GAMMA RAY 2
F1:ISS	N/A	INELASTIC SHORT SPACE COUNT RATE
F1:LS	N/A	LONG SPACE COUNT RATE
F1:RATO	N/A	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	N/A	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	N/A	BOREHOLE AND DIFFUSION CORRECTED SIGMA
F1:SS	N/A	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
GR2	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/18E\_RPM\_REPEAT.fvpdf [5"/100' Scale]  
Plot Interval : 5550 - 5750 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/18E\_RPM\_REPEAT.xtf  
Created On : N/A  
Company : LARAMIE ENERGY LLC  
Well : NICHOLS FEDERAL 0994-24-18E  
Field : VEGA  
File Interval : 5526.75 - 5814.25 Feet  
OCT : p354h

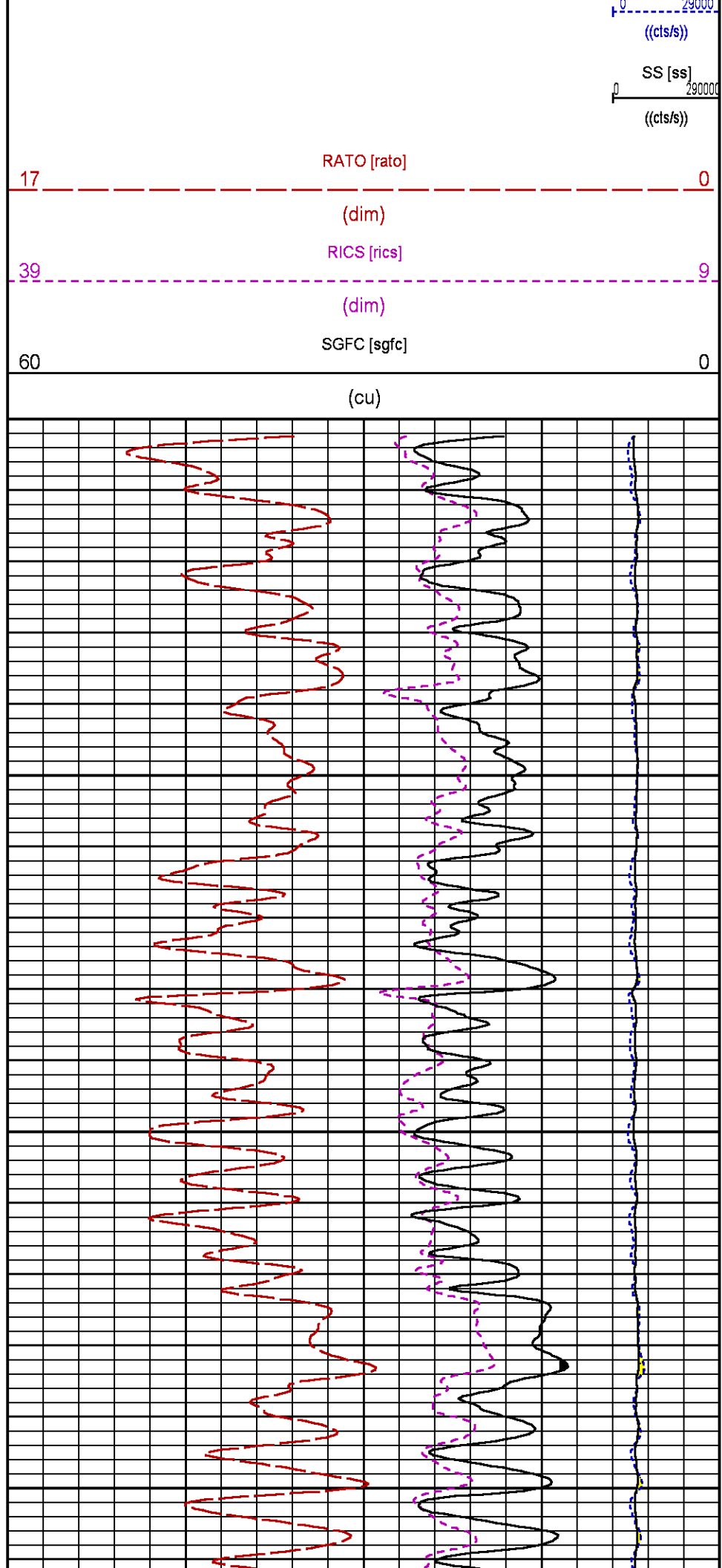
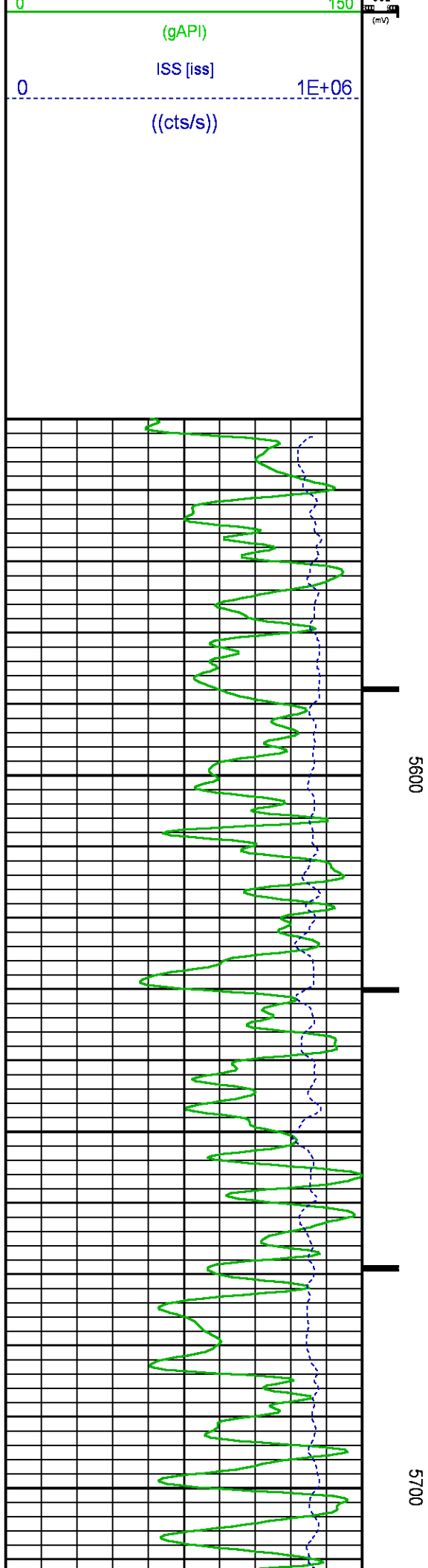
GR BACKUP

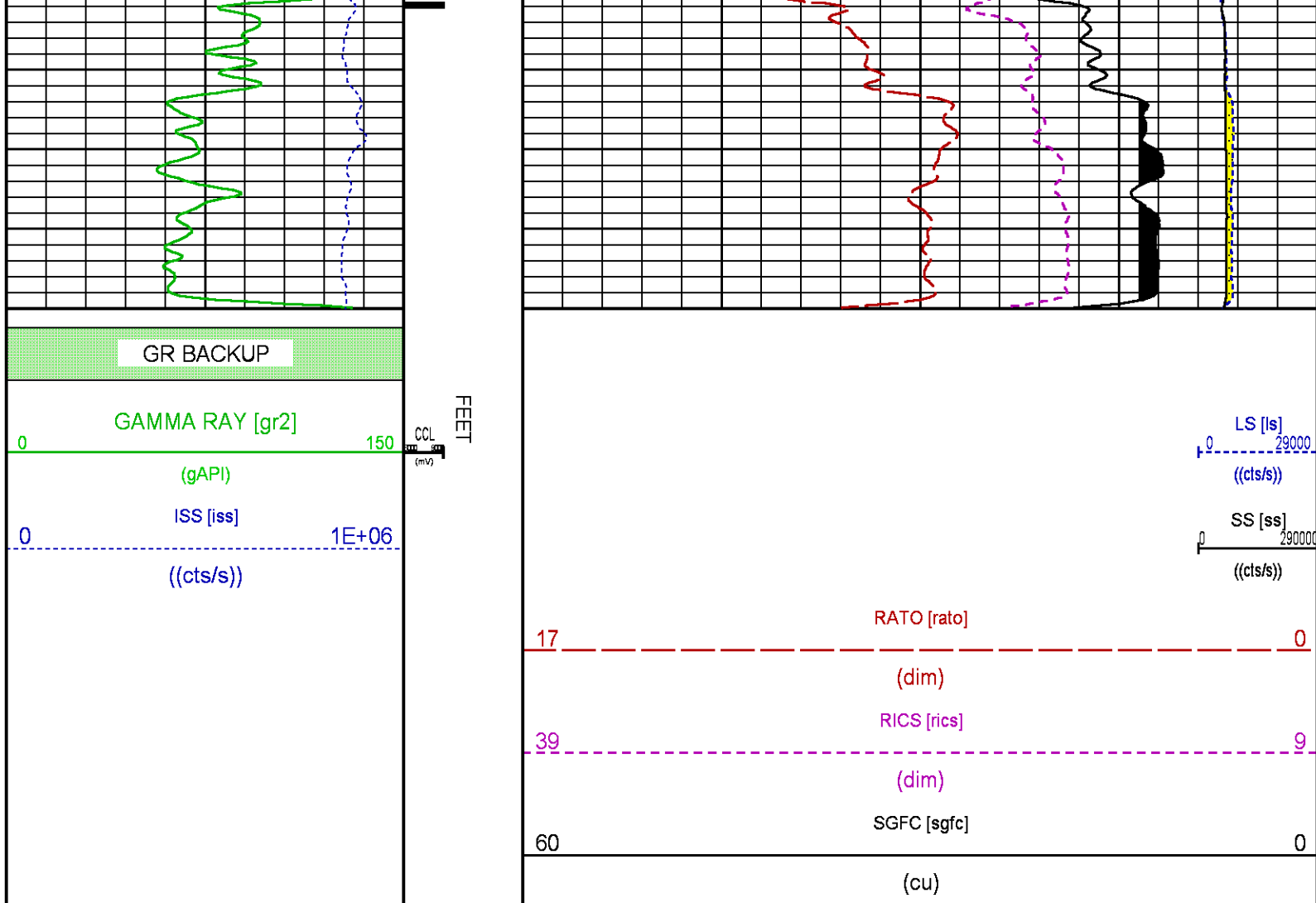
GAMMA RAY [gr2]

FEET

LS [ls]







## CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE\_NICHOLS\_FEDERAL\_0994-24-18E/p354h.tp1

### GR PRIMARY CALIBRATION SUMMARY

TOOL #: 2812LB 11621284

DATE/TIME PERFORMED: Fri May 11 07:38:13 2018

UNIT #: 3885TD SHAFT1

CALB JIG #: 4702NK BA-930

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	63.62	275.42	211.8	0.992	63.08	273.08	210

### GR PRIMARY VERIFICATION SUMMARY

TOOL #: 2812LB 11621284

DATE/TIME PERFORMED: Fri May 11 07:40:26 2018

UNIT #: 3885TD SHAFT1

VERI JIG #: 4702NK BA-930

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	58.89	276.18	0.992	58.39	273.83	215.44
						200.00 220.00

# RPM\_PNC\_3D PRIMARY CALIBRATION SUMMARY

TOOL: 8283PA 10068031

DATE/TIME PERFORMED: Mon May 7 23:51:27 2018

UNIT: 5753XD 111111

CALIBRATOR: 2437XB 112674

SOURCE: 8281AA 10047980

HOURS: 8281AA 63

	ISS	Mtr Vlt (V)	SS Gain	LS Gain	XLS Gain	EA Temp (degF)	Sync Delay (usec)	RCAL
Raw Data	802814	119	2217	2481	2198	114	8.0	1.0138
Interpolated	1300000	139	2201	2485	2184			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	802814	7129	1185	158	25.96	0.15	24.13	0.33
					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	802814	174125	28683	86762	30909	8359	52608	13370
Fit Quality %		0.791	0.627	0.866	0.857	0.798	0.841	0.839

	ISS	RBOR	RIN ISS/ILS	RIN13 ISS/IXS	RICS ISS/CSS	RATO SS/LS	RTWO SS2/LS	RONE CSS/CLS
Raw Data	802814	1.44	4.61	28.00	15.26	10.38	3.70	3.94
		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 %		0.030	0.272	1.006	0.137	0.113	0.110	0.077
Reduced	1449874	1.44	4.61	27.83	15.26	10.37	3.69	3.93
		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

## INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE\_GUNDERSON\_0994-14-17E/RPM-tdg

A3 CABLEHEAD  
Diameter : 1.37"

PCM POWER SUPPLY  
Diameter : 1.70"  
Length : 3.86"  
Weight : 16 lbs  
Series : 8250EA  
Mnemonic : PCM

TELEMETRY / CCL  
Diameter : 1.70"  
Length : 4.46"  
Weight : 20 lbs  
Series : 8248ED  
Mnemonic : PCM  
Measure Point: 1.00' CCL MP

GAMMA RAY, 1 11/16"  
Diameter : 1.89"  
Length : 2.17"  
Weight : 10 lbs  
Series : 2812LA  
Mnemonic : GR

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

33.24'

CCL MP 25.19'

GR MP 22.64'

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

XLS MP 13.58'  
LS MP 13.16'  
SS MP 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: 33.24'  
TOTAL WEIGHT: 140 lbs  
MAX DIAMETER: 0"1.70"



COMPANY	LARAMIE ENERGY LLC	
WELL	NICHOLS FEDERAL 0994-24-18E	
FIELD	VEGA	
COUNTY	MESA	STATE COLORADO

FILE NO:	CH137654
API NO:	05077103860000

**LOCATION:**

SHL: 2309' FNL & 2791' FWL  
BHL: 942' FSL & 1430' FEL

SEC 24 TWP 9S RGE 94W

**ELEVATIONS:**

KB 7236 FT  
DF  
GL 7212 FT

DATE 02-Jul-2018