



**RESERVOIR PERFORMANCE MONITOR**

FILE NO: CH136074  
 COMPANY **LARAMIE ENERGY LLC**  
 WELL **NICHOLS FEDERAL 0994-24-21E**  
 FIELD **VEGA**  
 API NO: 05077103890000  
 COUNTY **MESA** STATE **COLORADO**

Ver. 4.10  
 LOCATION: SHL: 2332' FNL & 2789' FWL  
 BHL: 212' FSL & 1538' FEL  
 SEC 24 TWP 9 S RGE 94 W  
 OTHER SERVICES **RAL**

PERMANENT DATUM GL ELEVATION 7212 FT  
 LOG MEASURED FROM KB 24 FT ABOVE P.D.  
 DRILL. MEAS. FROM KB  
 ELEVATIONS:  
 KB 7236 FT  
 DF  
 GL 7212 FT

DATE	25-Jun-2018
RUN	2
TRIP	2
SERVICE ORDER	US136074
DEPTH DRILLER	8088 FT
DEPTH LOGGER	8016 FT
BOTTOM LOGGED INTERVAL	8016 FT
TOP LOGGED INTERVAL	2200 FT
TIME STARTED	08:30
TIME FINISHED	14:30
OPERATOR RIG TIME	6 HRS
TYPE OF FLUID IN HOLE	WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	52 FT
LOGGED CEMENT TOP	1604 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	15 FMIN
MAX. RECORDED TEMP.	226 DEGF
REFERENCE LOG	BAKER HUGHES RAL
REFERENCE LOG DATE	24-Jun-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 2: RPM/GR/CCL RUN IN PNC-3D\*\*

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 6270' - 6290'  
 SJ: 7200' - 7220'

**EQUIPMENT DATA**

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
2	2	PCM	8250EA	11908682	FREE
2	2	TEL/CCL	8248ED	10460262	FREE
2	2	GR	2812LA	10384613	FREE
2	2	RPM	8281EA	10294755	FREE
2	2	RPM	8283PA	10066691	FREE
2	2	RPM	8281FA	10066992	FREE
2	2	TEMP	8255XA	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 Jun 25 17:06:10 2018

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/p354h03.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 2202.056 ft BOTTOM DEPTH: 2875.771 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	N/A	CASING COLLAR LOCATOR
F1:GR	N/A	GAMMA RAY
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
GR	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/0994\_24\_21E\_RPM\_MAIN\_GS.fvpdf [5"/100' Scale]  
Plot Interval : 2210 - 2870 Feet

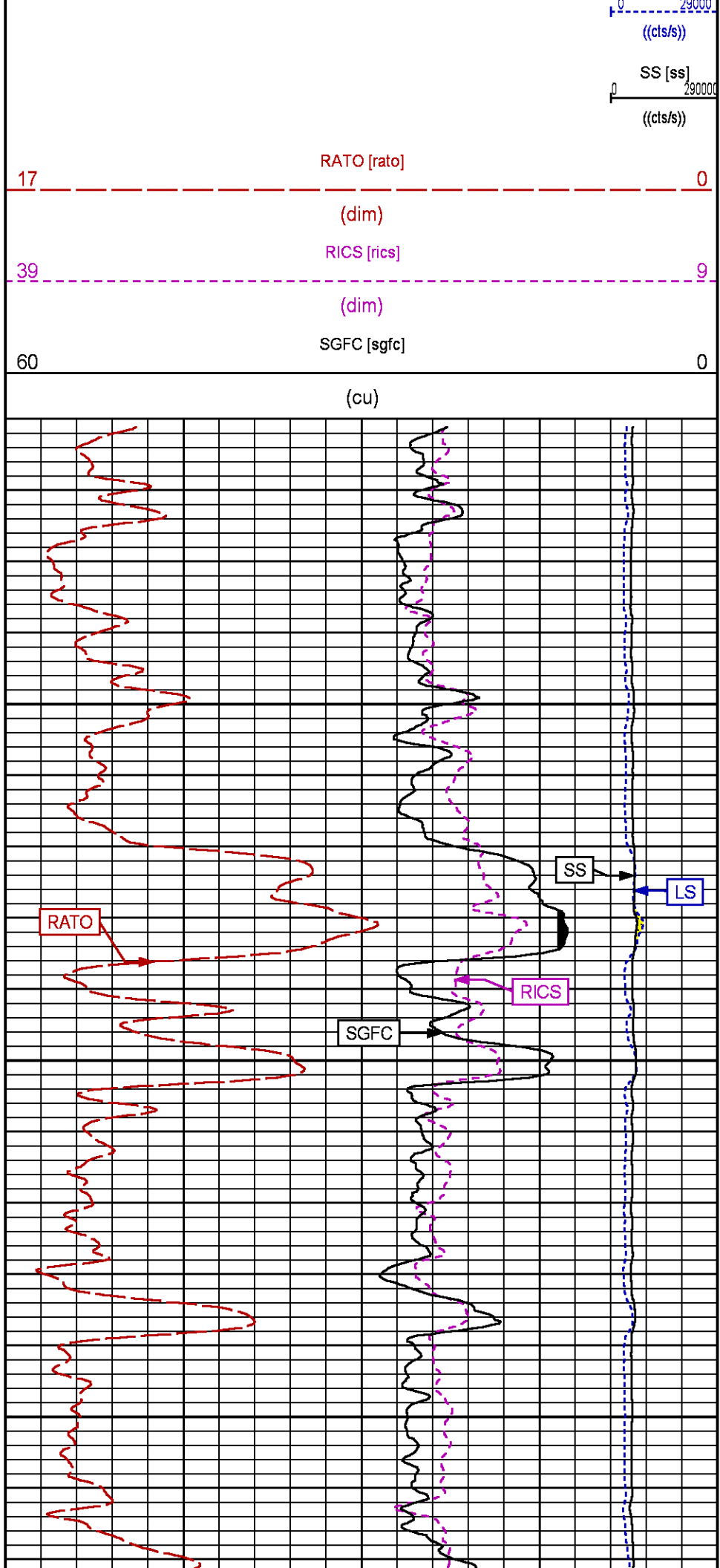
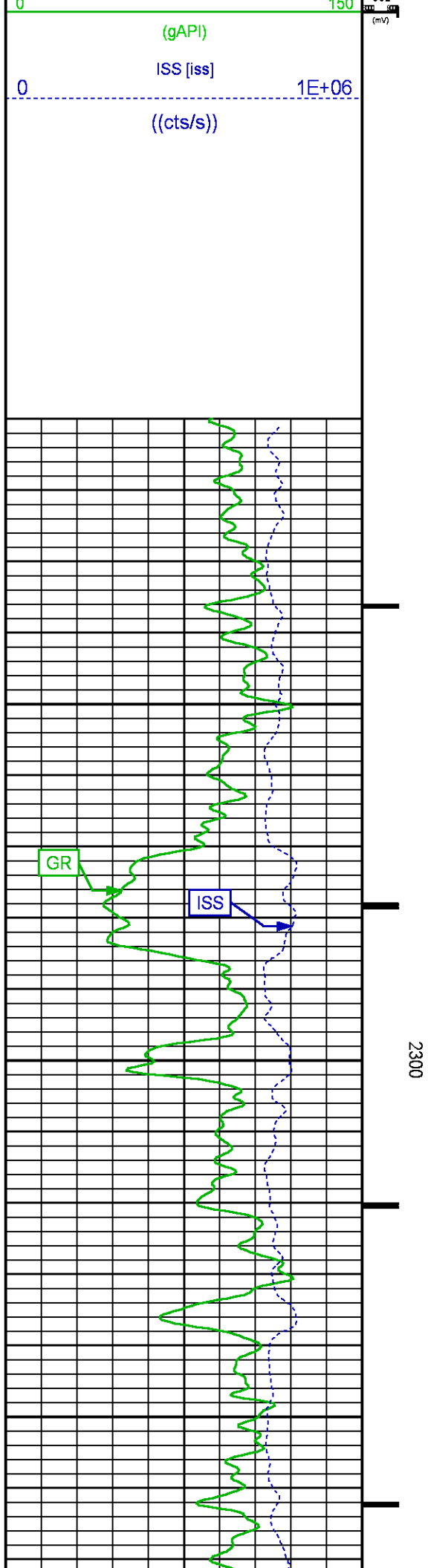
Data File 1 : F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/0994\_24\_21E\_RPM\_MAIN\_GS.xtf  
Created On : N/A  
Company : LARAMIE ENERGY LLC  
Well : NICHOLS FEDERAL 0994-24-21E  
Field : VEGA  
File Interval : 2185.5 - 2882 Feet  
OCT : p354h

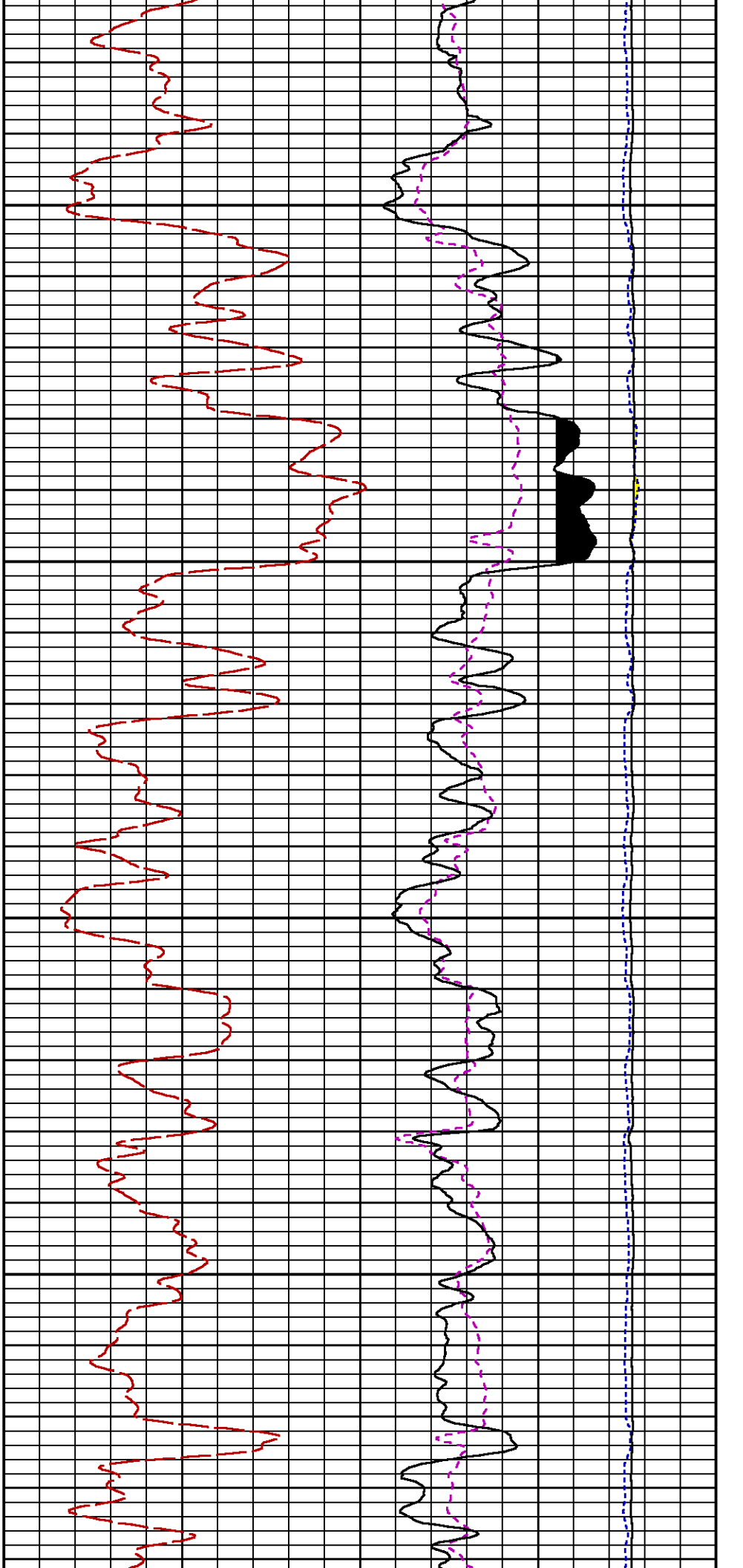
GR BACKUP

GAMMA RAY [gr]

FEET

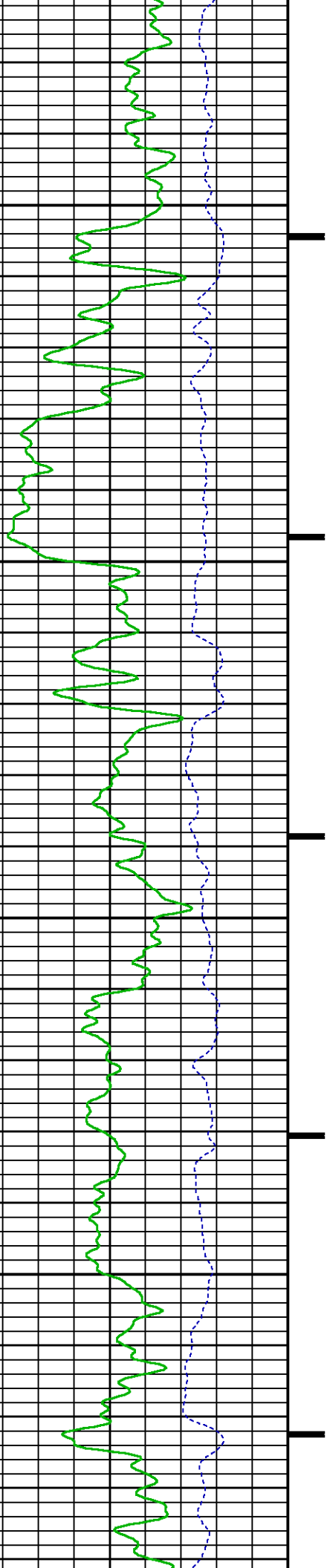
LS [ls]

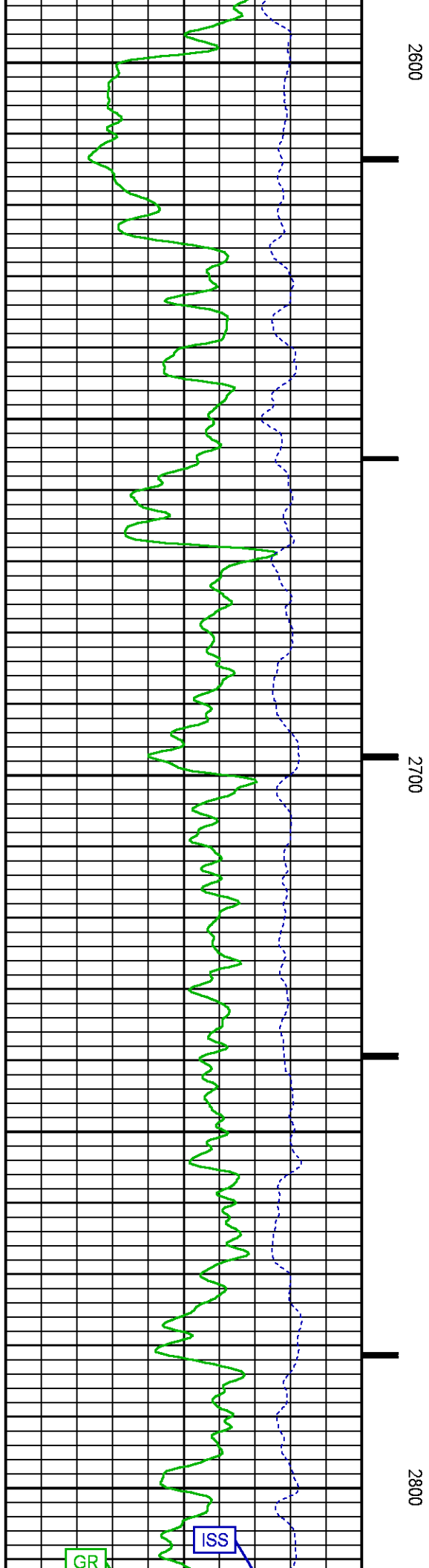
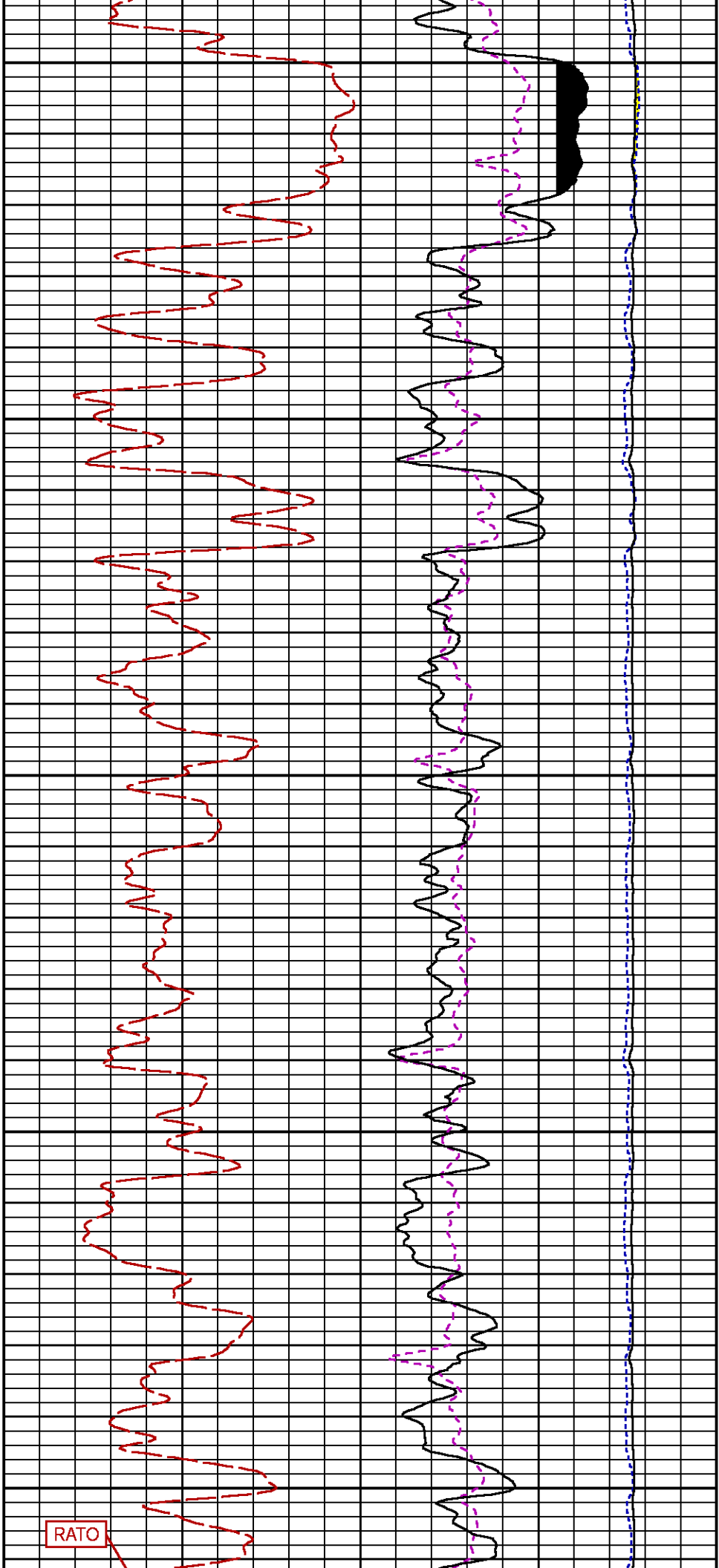


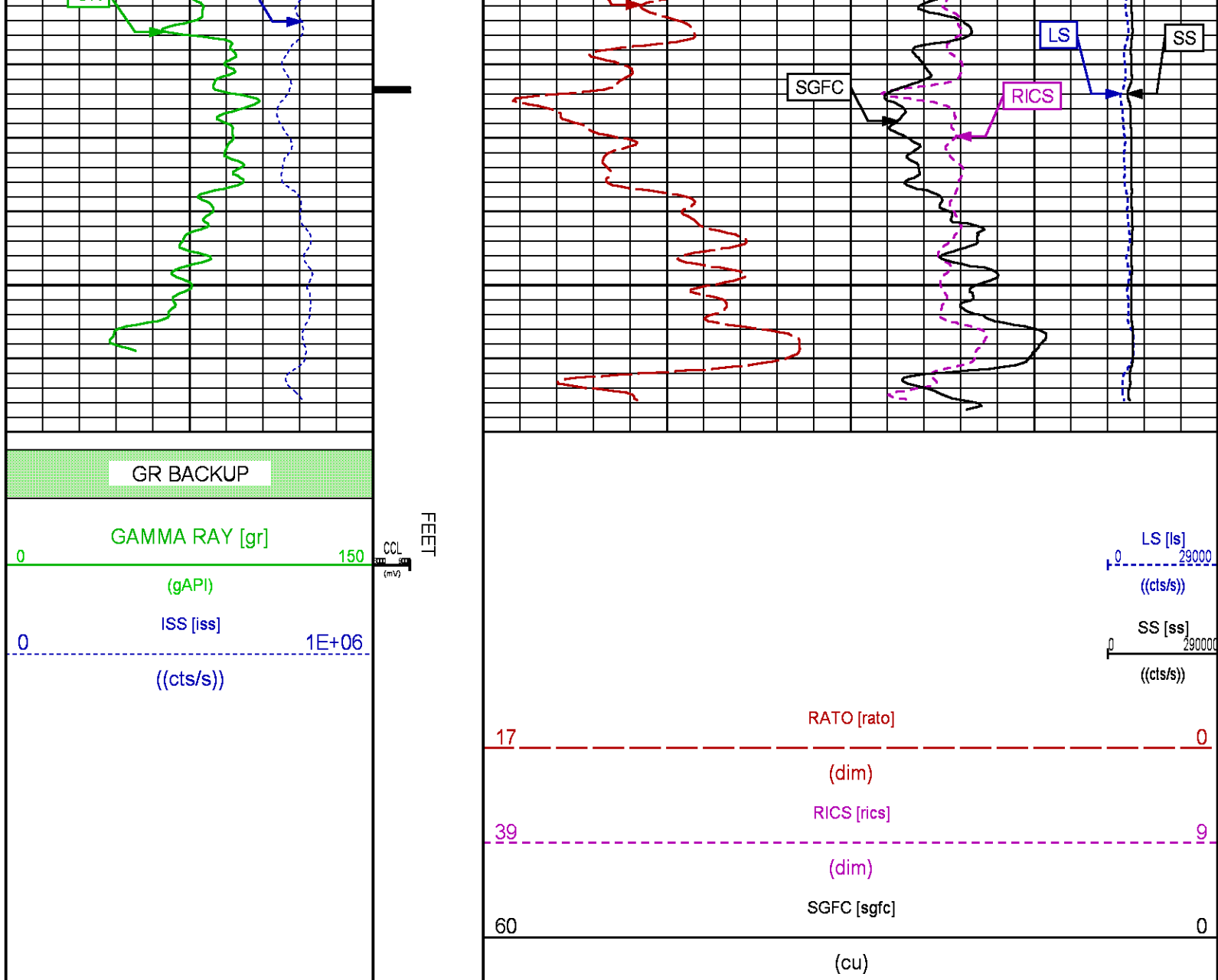


2400

2500







## 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 Jun 25 16:29:03 2018

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/p354h02.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 4535.018 ft BOTTOM DEPTH: 8033.221 ft

### SYMMETRIC FILTER

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

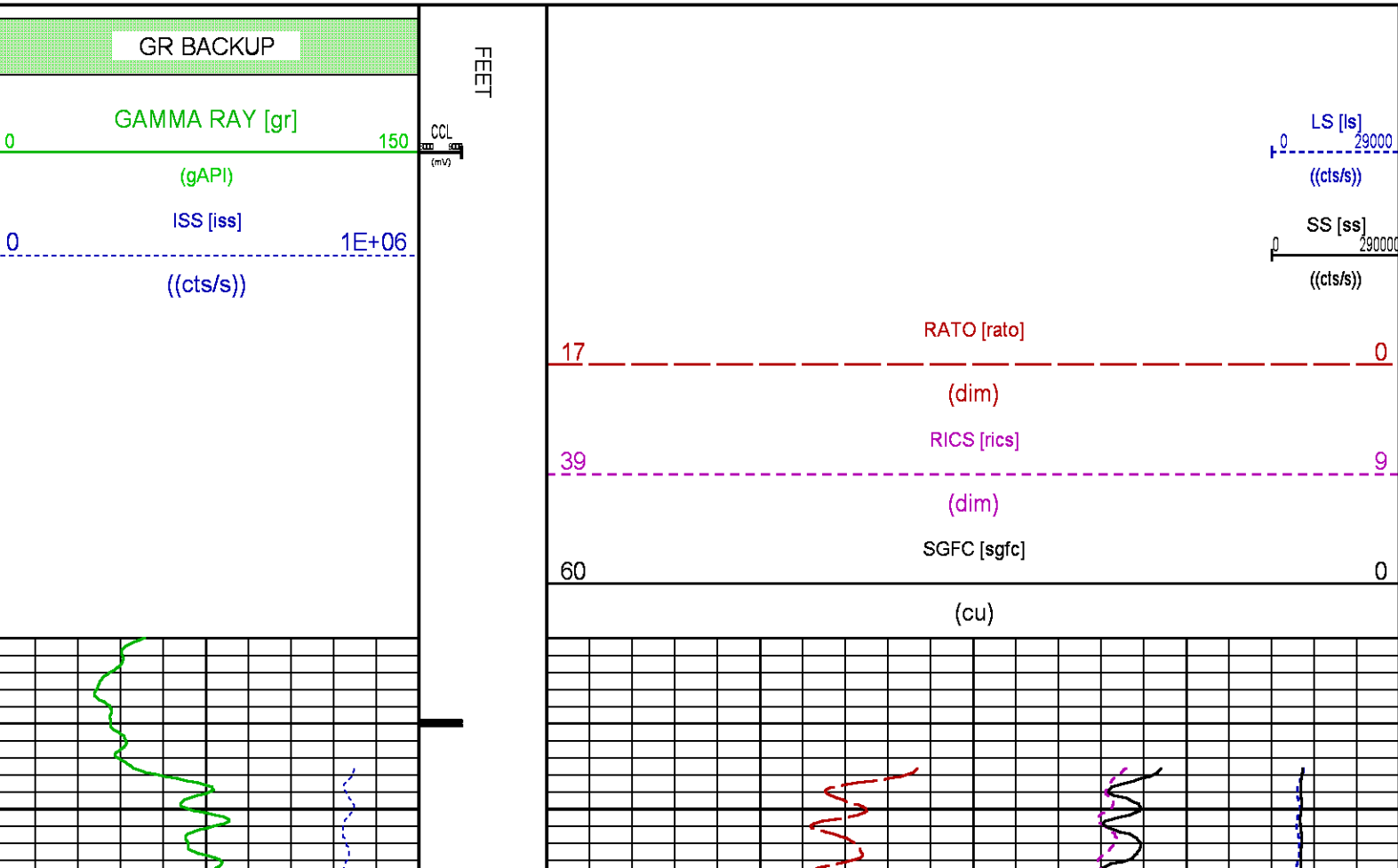
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
PNC Parameters	BOREHOLE CONTENTS	FLUID		TOP	BOTTOM
	OPEN/CASED HOLE	CASED HOLE		"	"
	BOREHOLE SIZE	7.87	in	"	"
	LARGEST CASING OD	4.50	in	"	"
	MATRIX	SANDSTONE		"	"

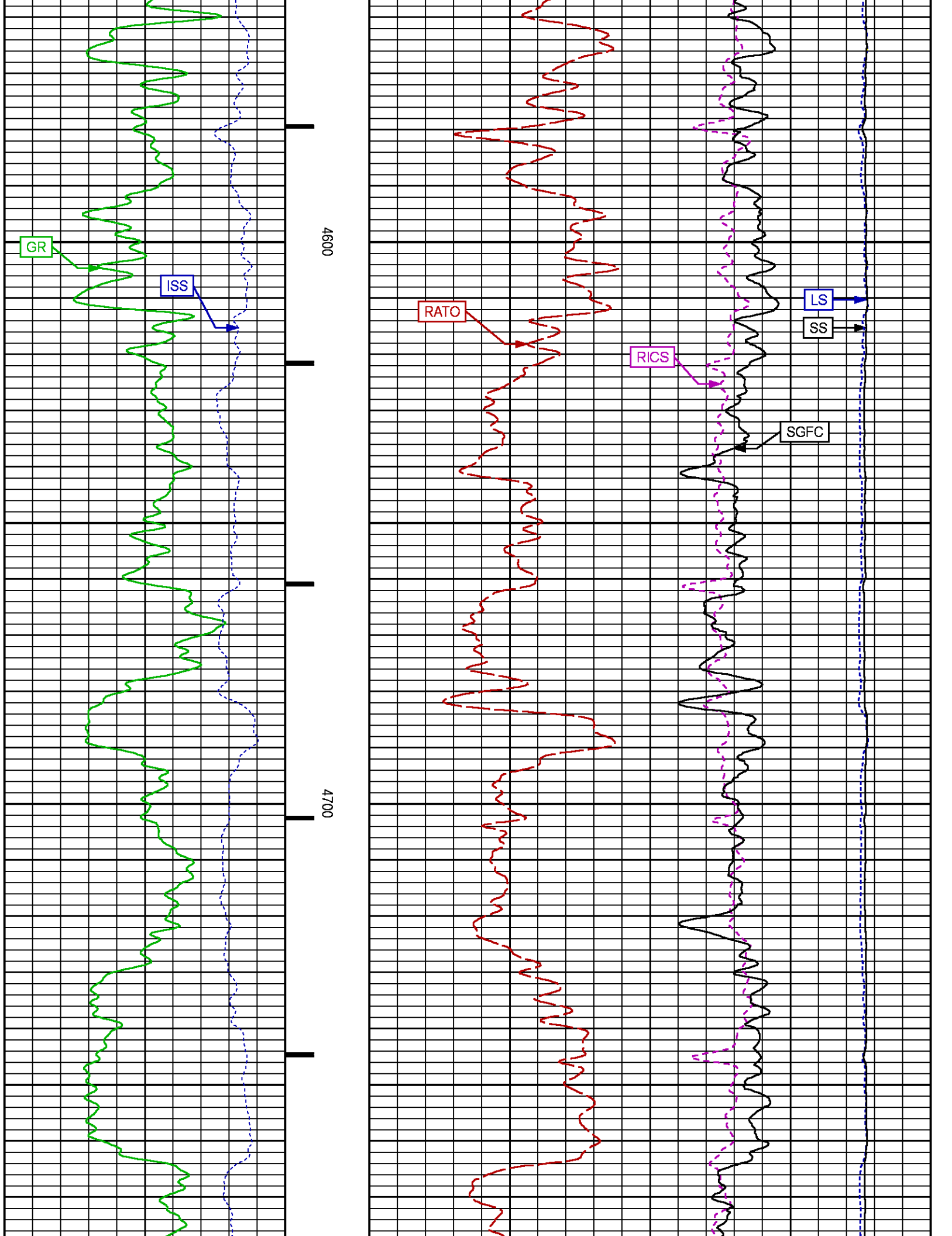
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:GR	N/A	GAMMA RAY
F1:ISS	N/A	INELASTIC SHORT SPACE COUNT RATE
F1:LS	N/A	LONG SPACE COUNT RATE
F1:RATO	N/A	SHORT/LONG SPACE COUNT RATE RATIO
F1:RICS	N/A	SHORT SPACE INELASTIC TO CAPTURE COUNT RATE RATIO (ISS/CSS)
F1:SGFC	N/A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

CURVE	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

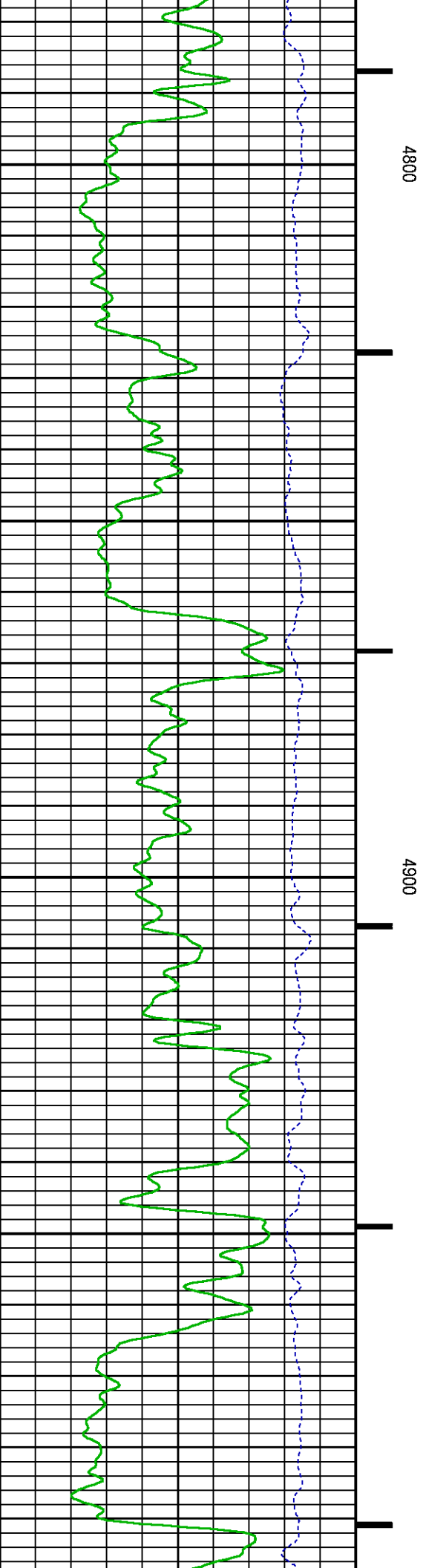
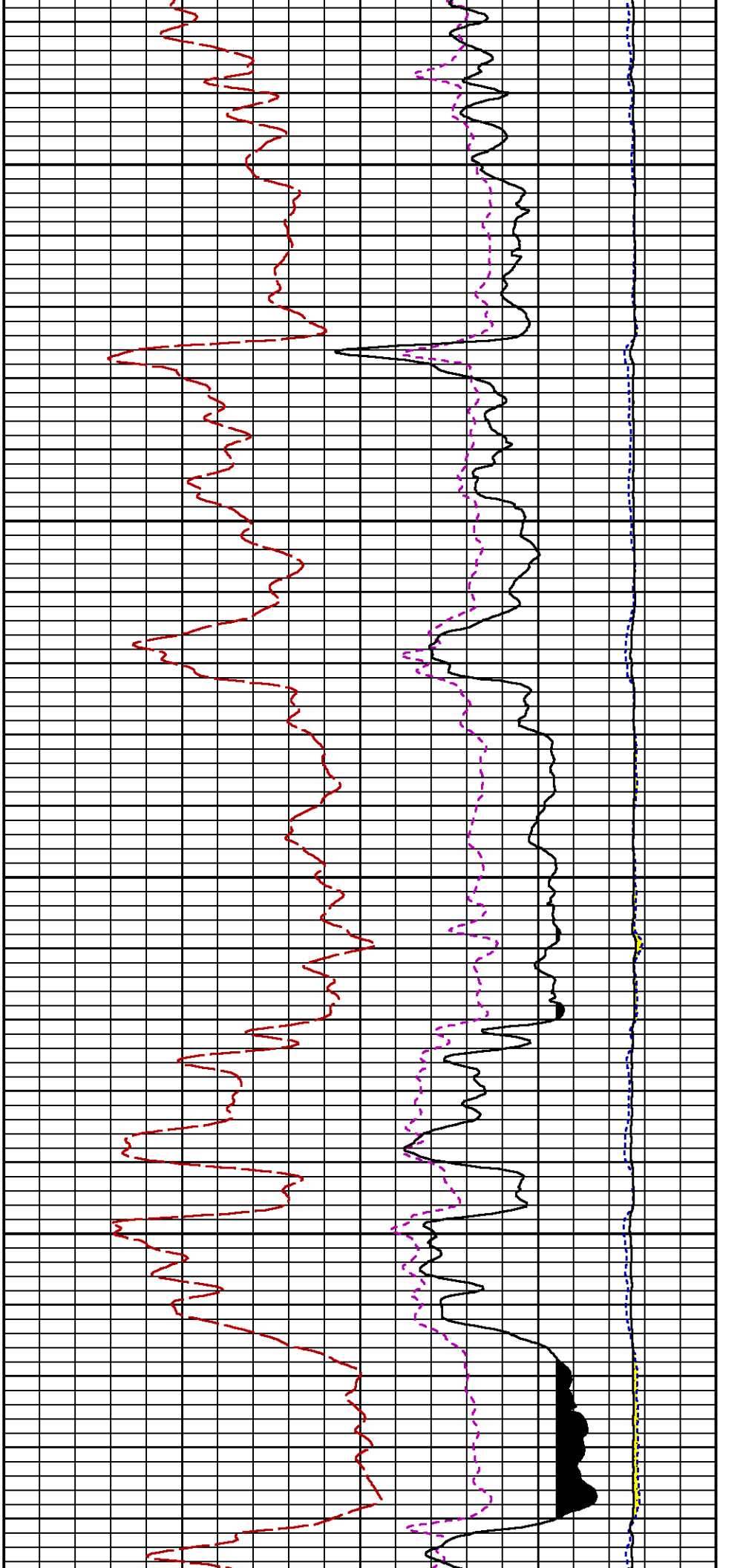
**Presentation** : SysA:/dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/0994\_24\_21E\_RPM\_MAIN\_WF.fvpdf [5"/100' Scale]  
**Plot Interval** : 4530 - 8030 Feet

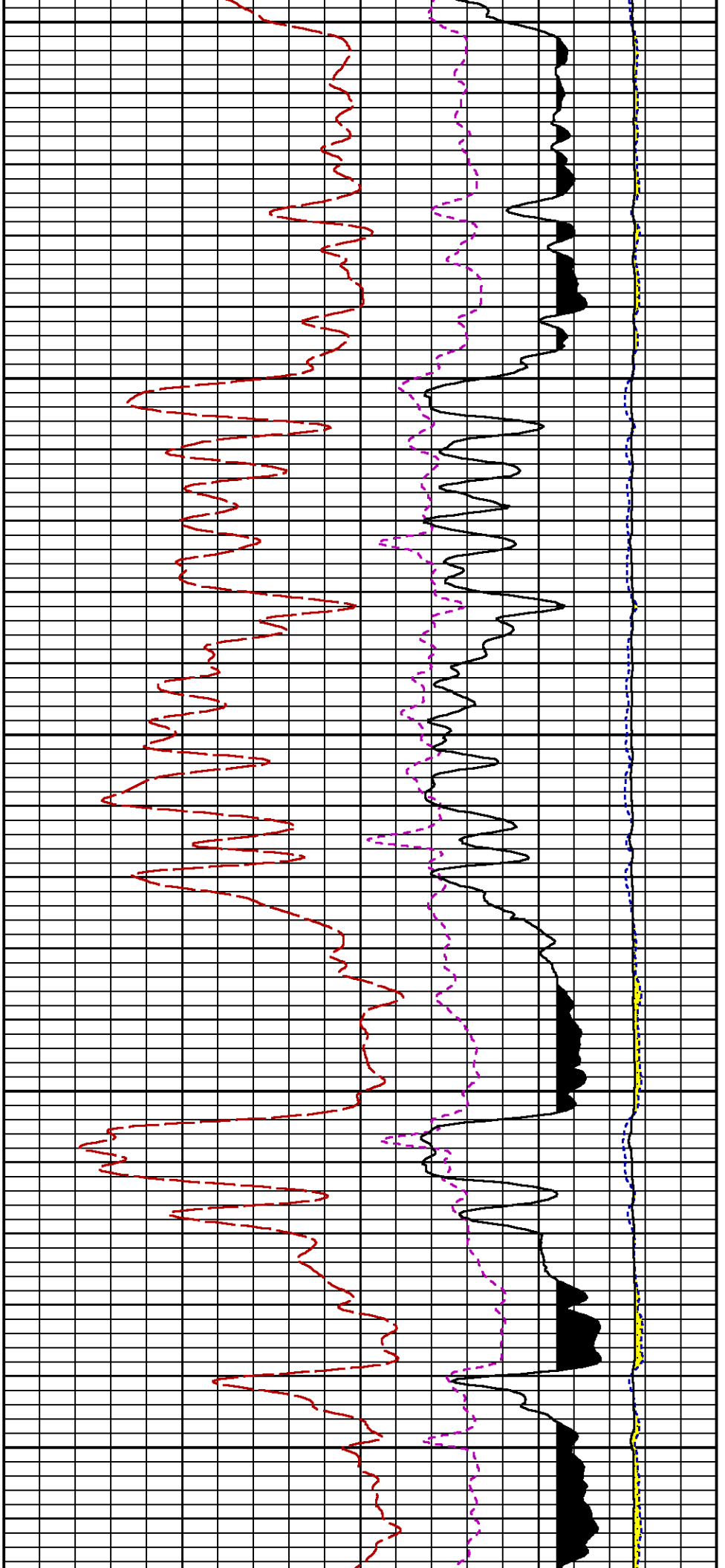
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**Created On** : N/A  
**Company** : LARAMIE ENERGY LLC  
**Well** : NICHOLS FEDERAL 0994-24-21E  
**Field** : VEGA  
**File Interval** : 4519.5 - 8040.5 Feet  
**OCT** : p354h







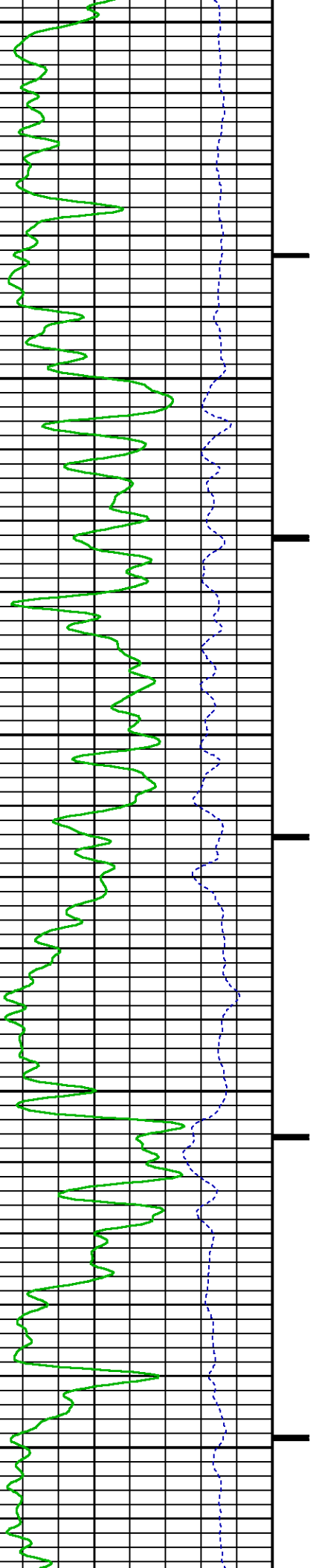


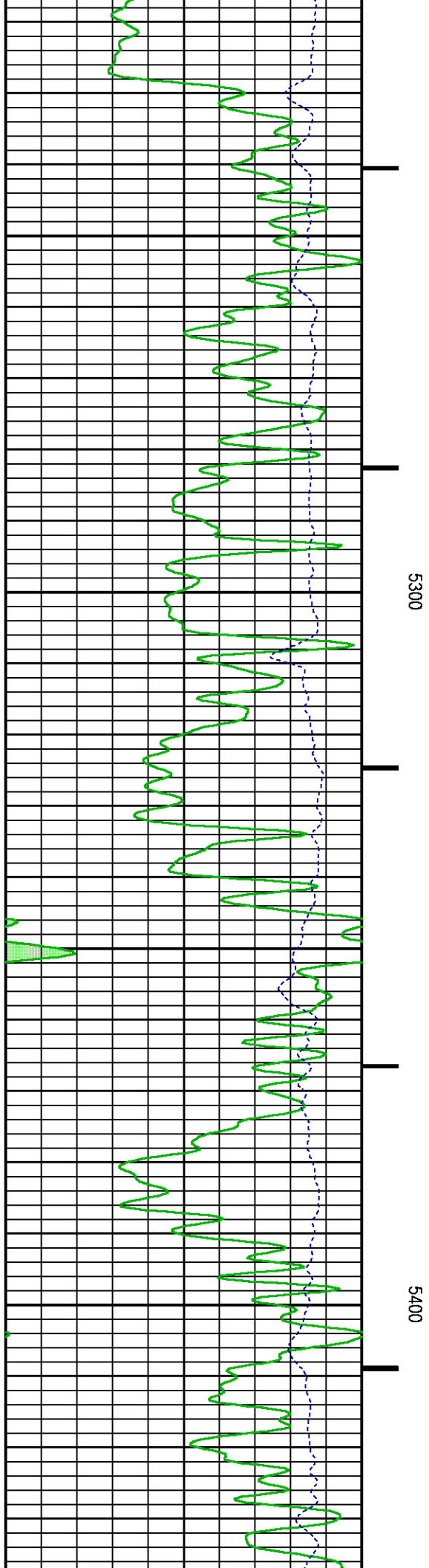
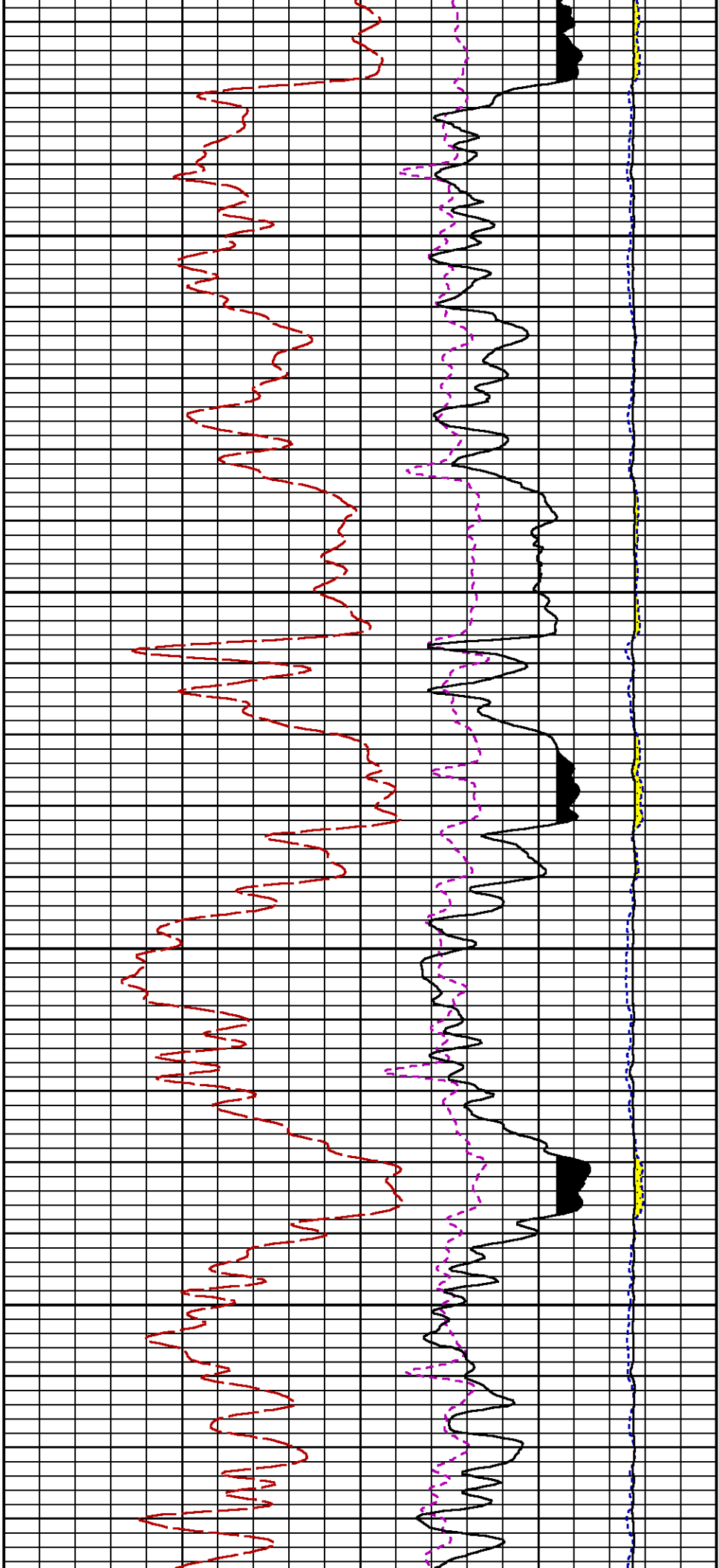


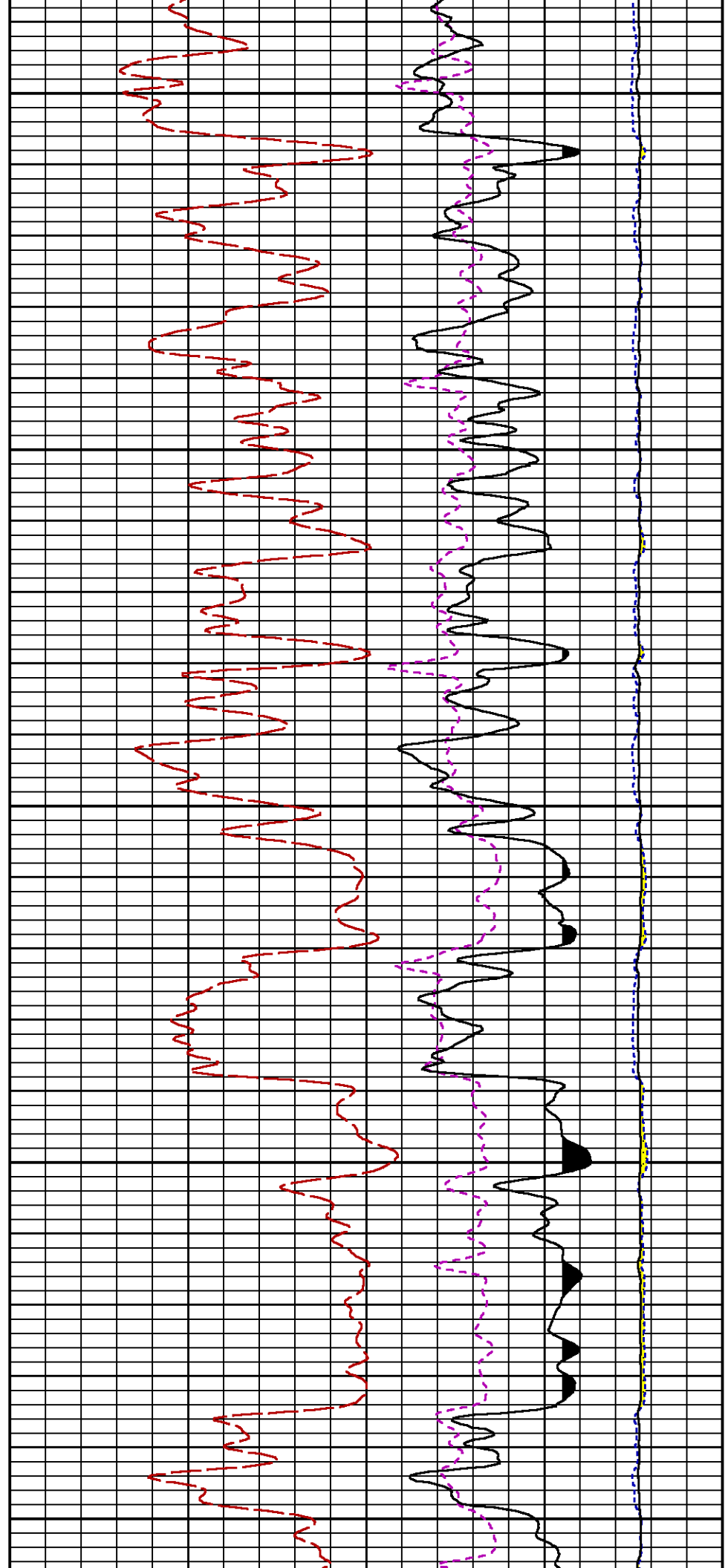
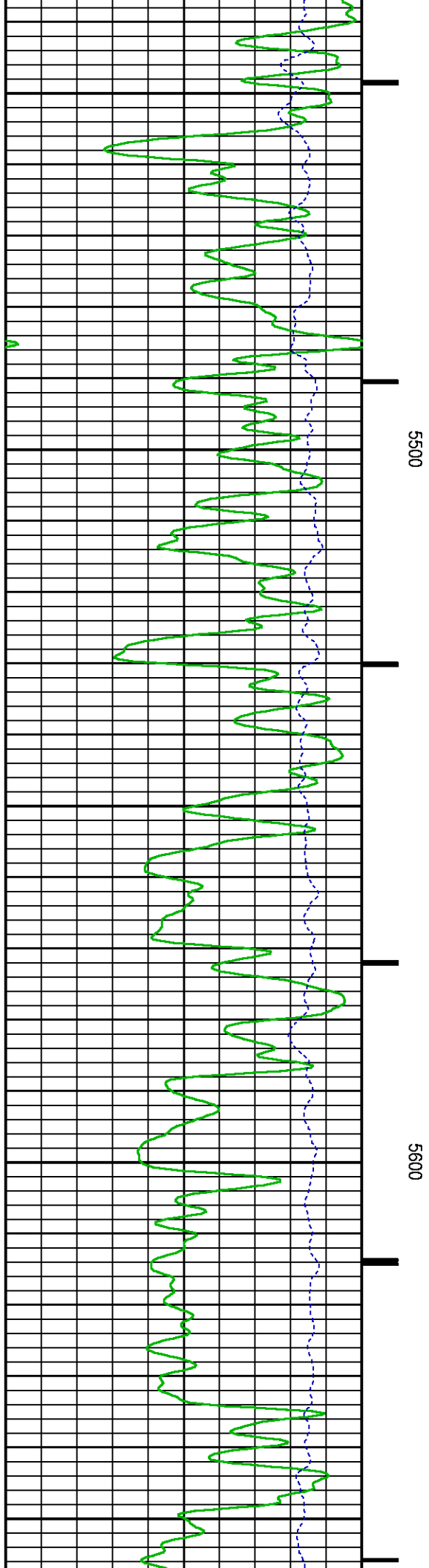
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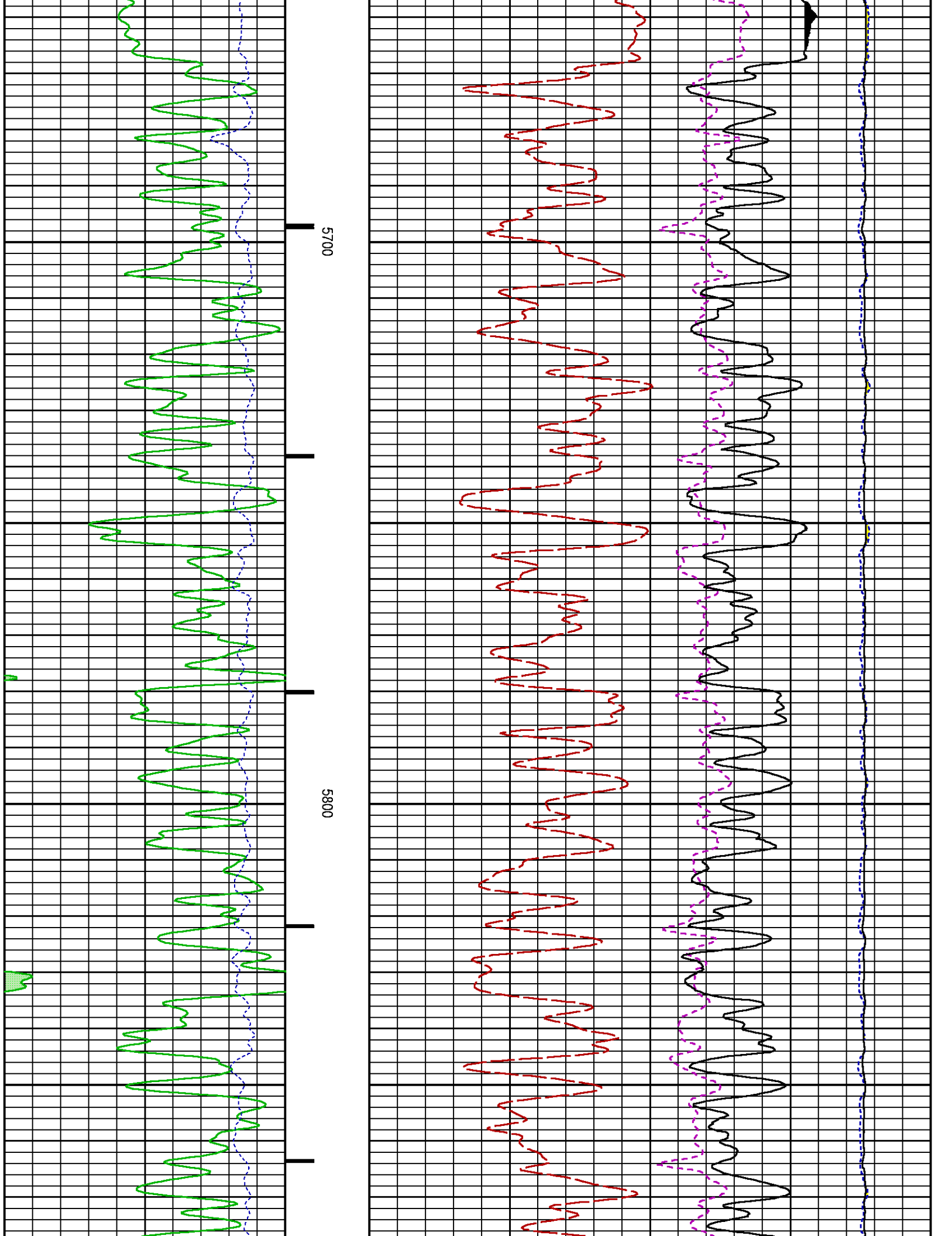
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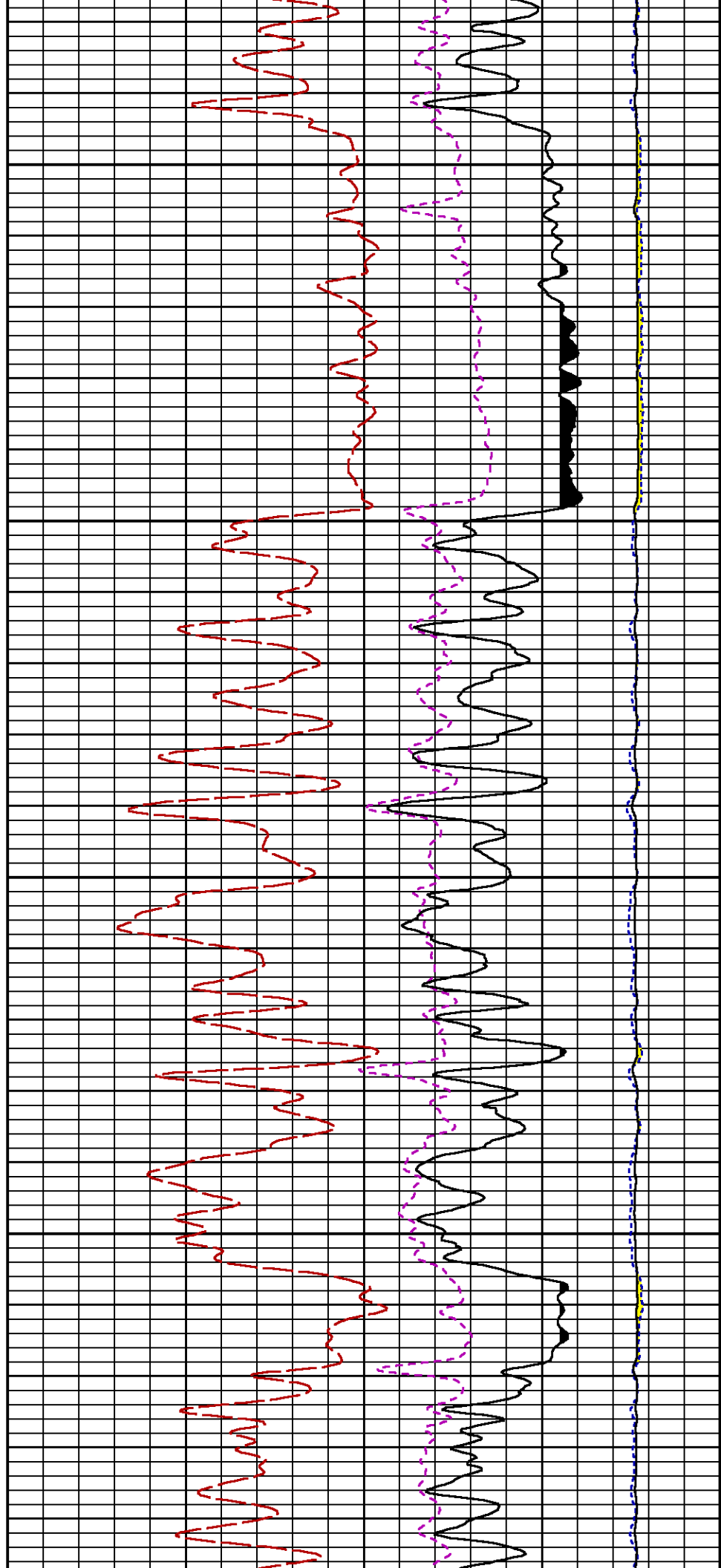
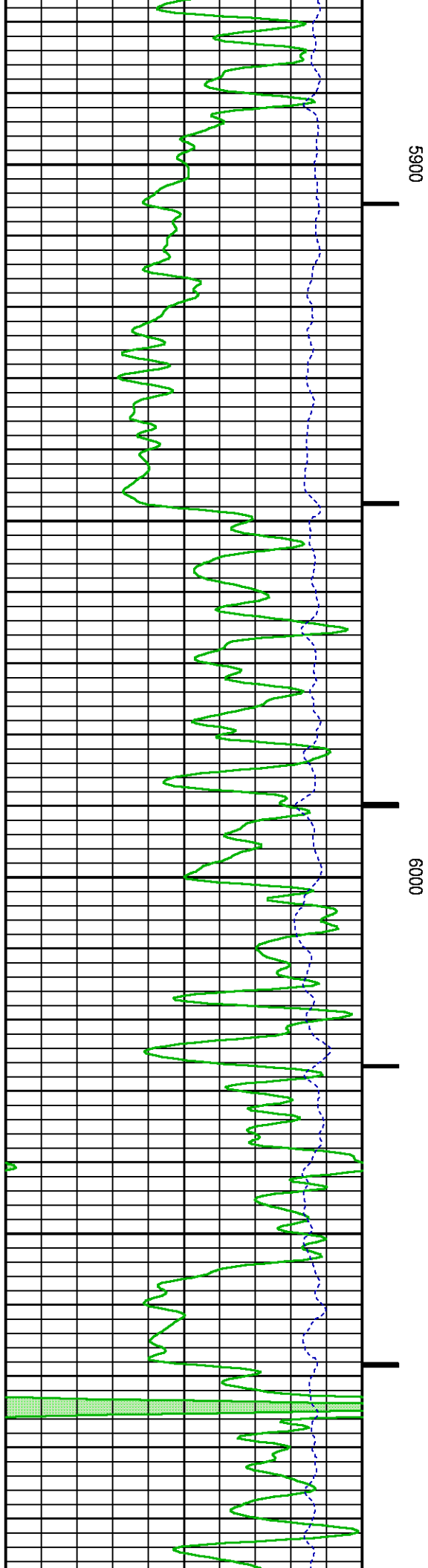
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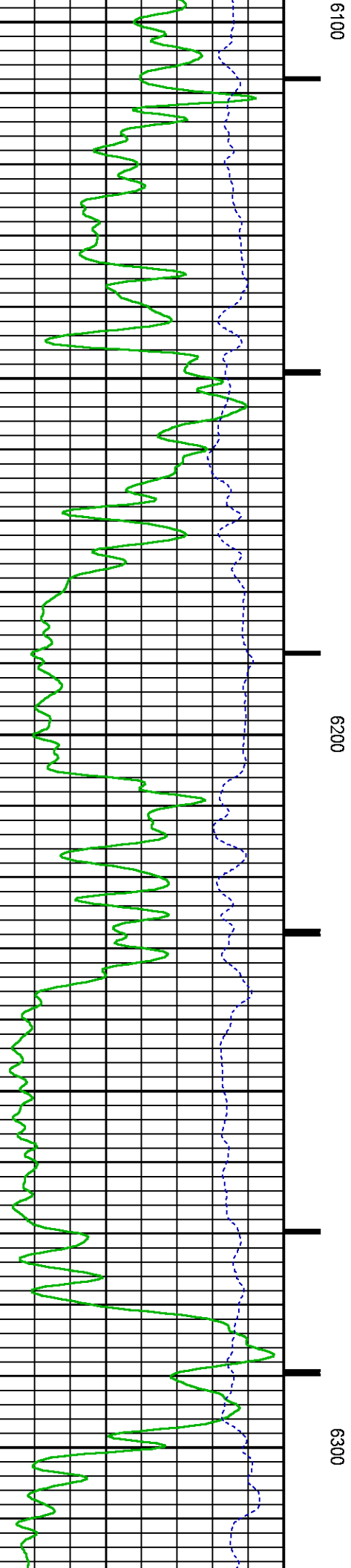
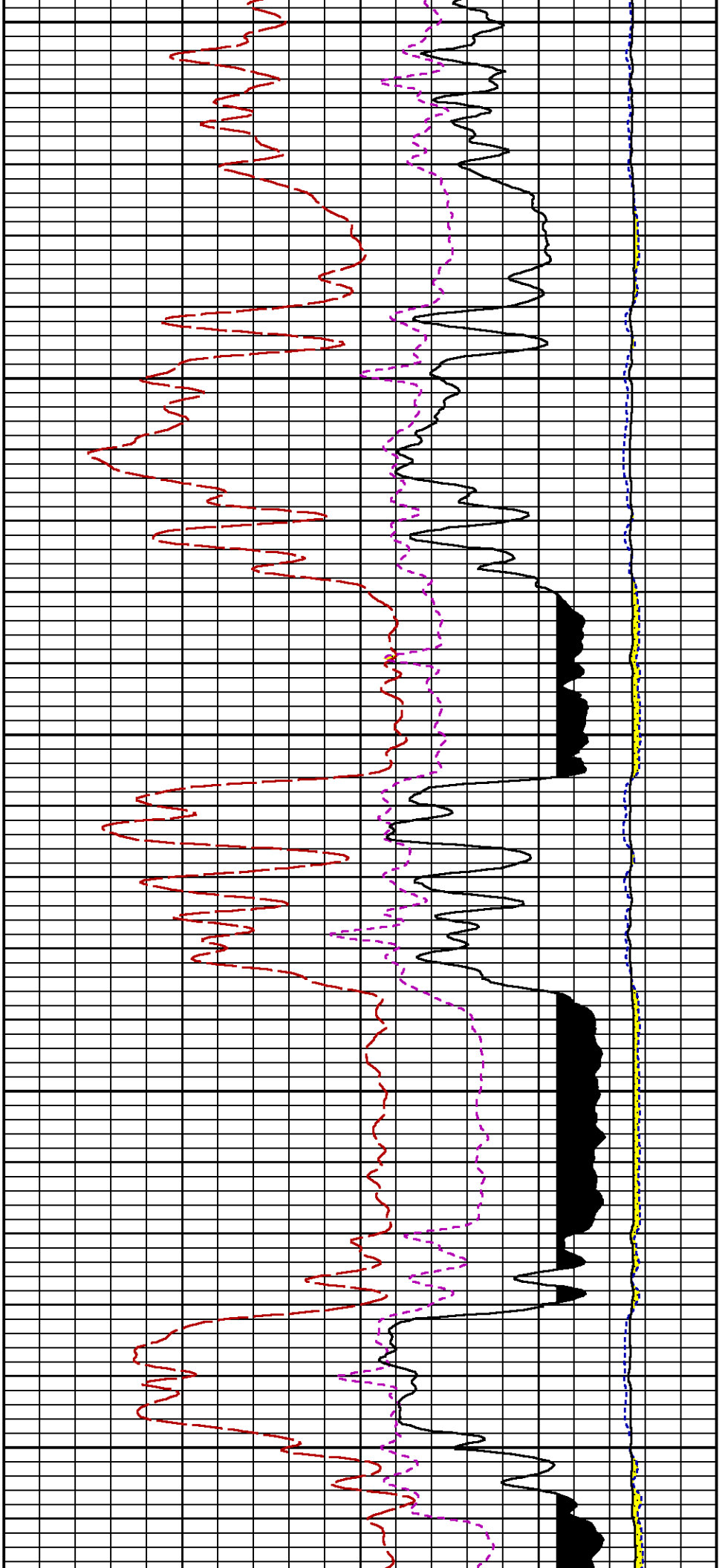


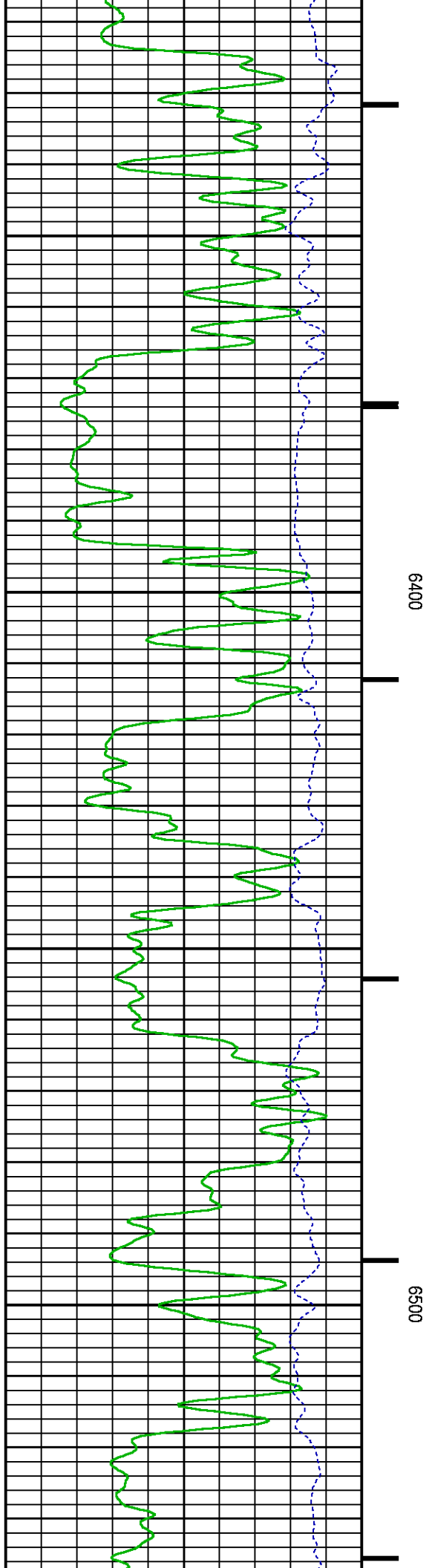
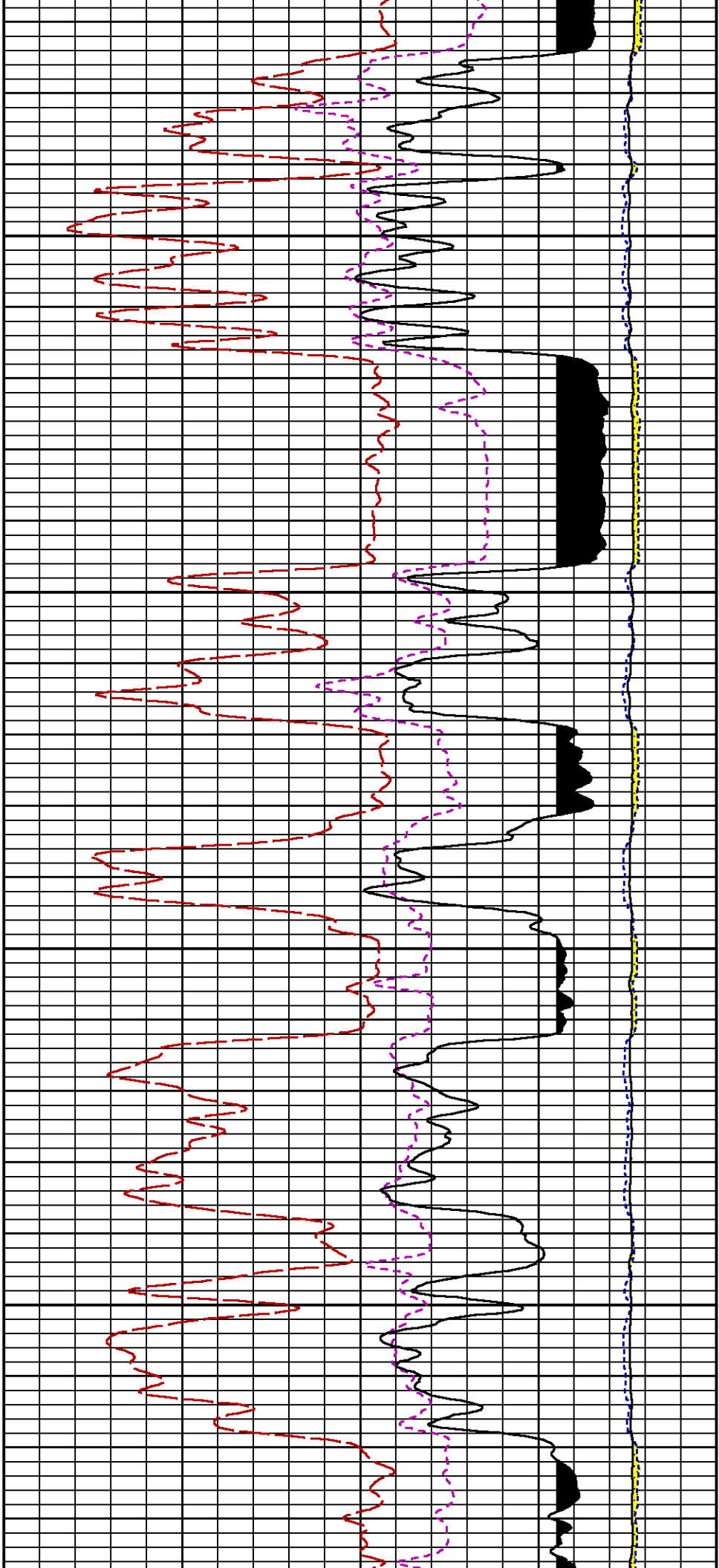




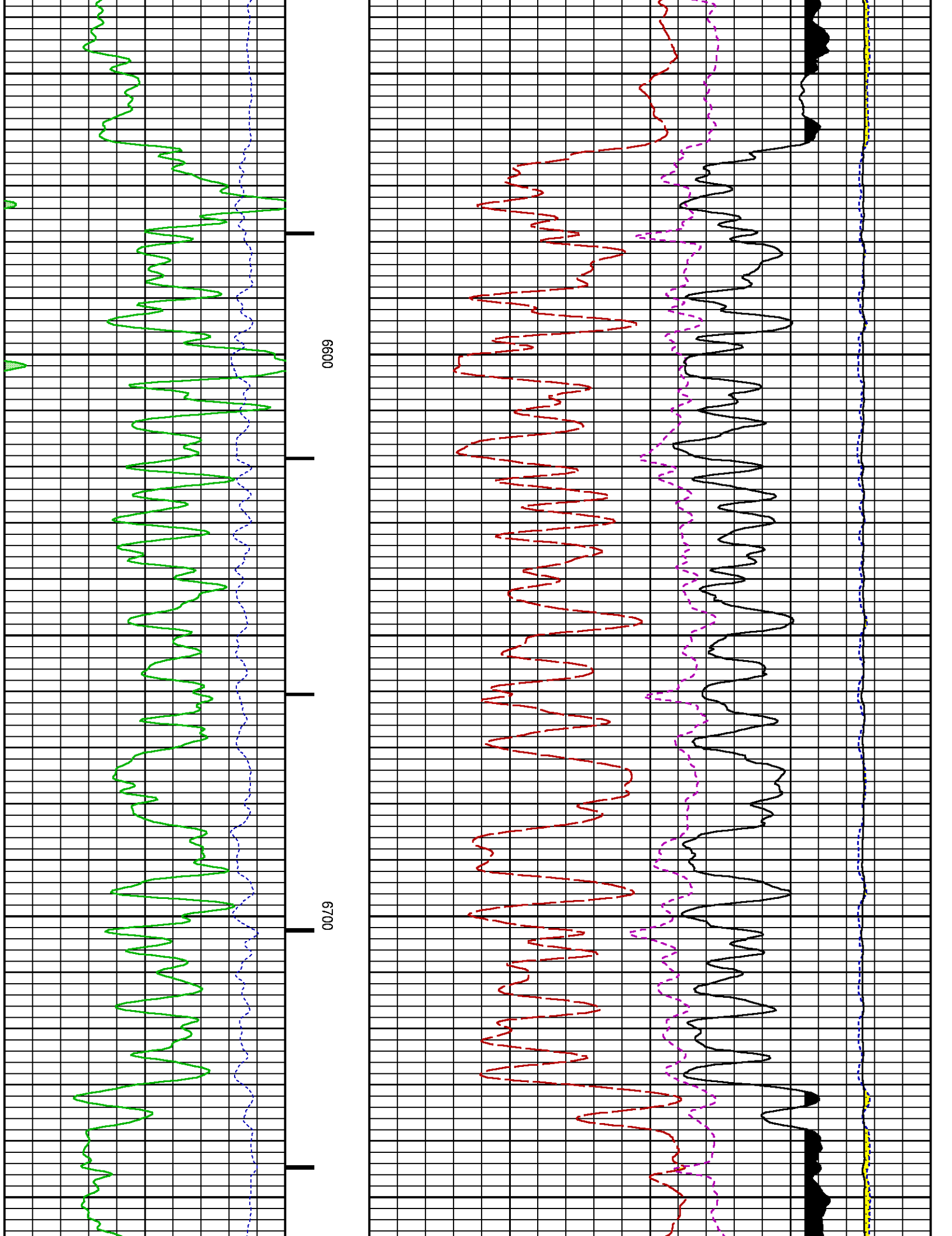


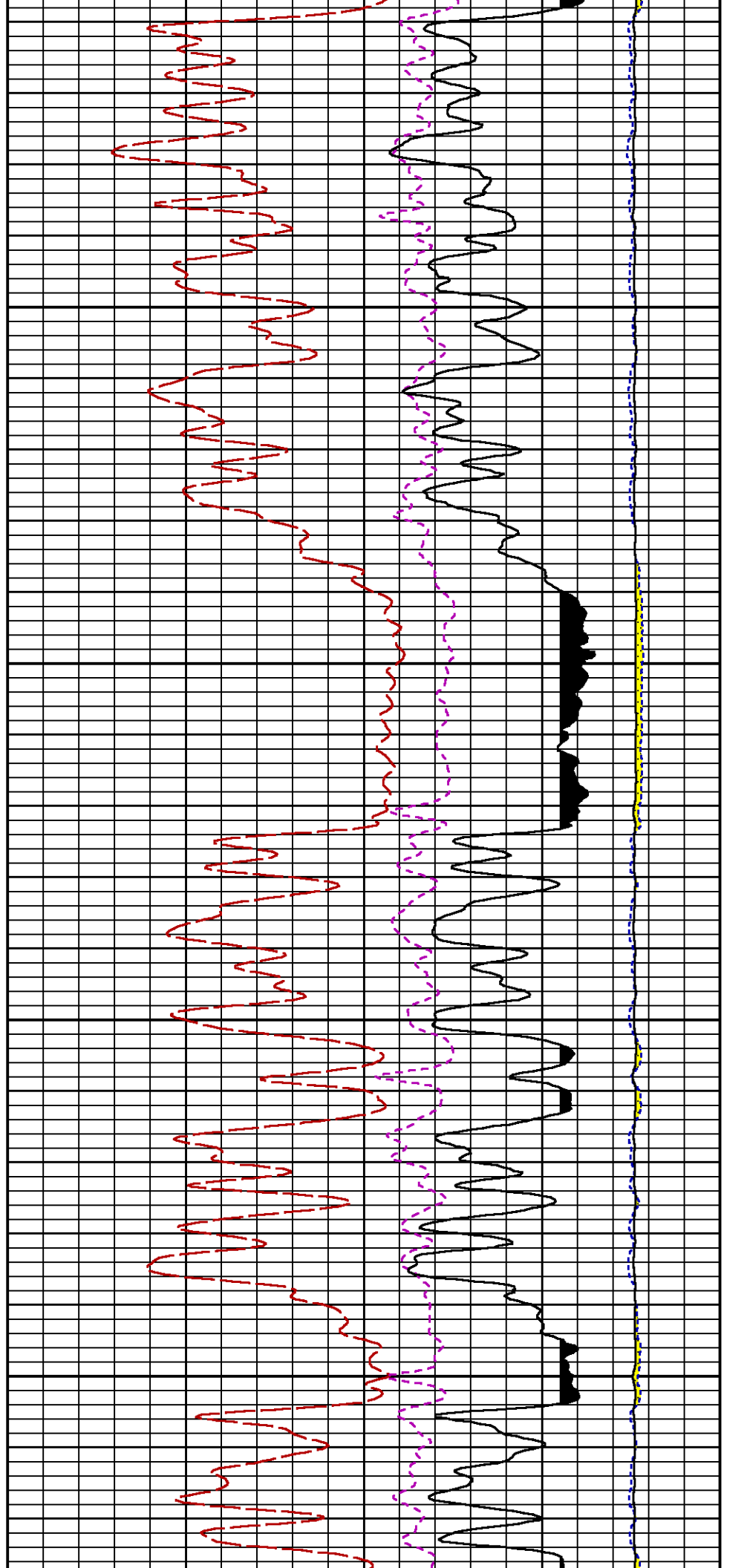
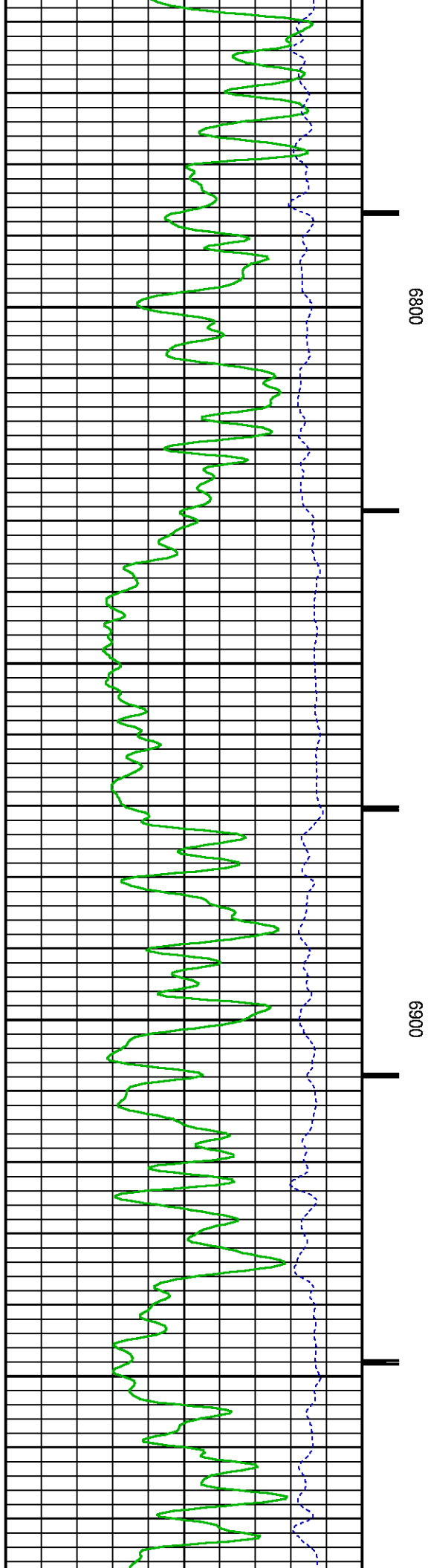


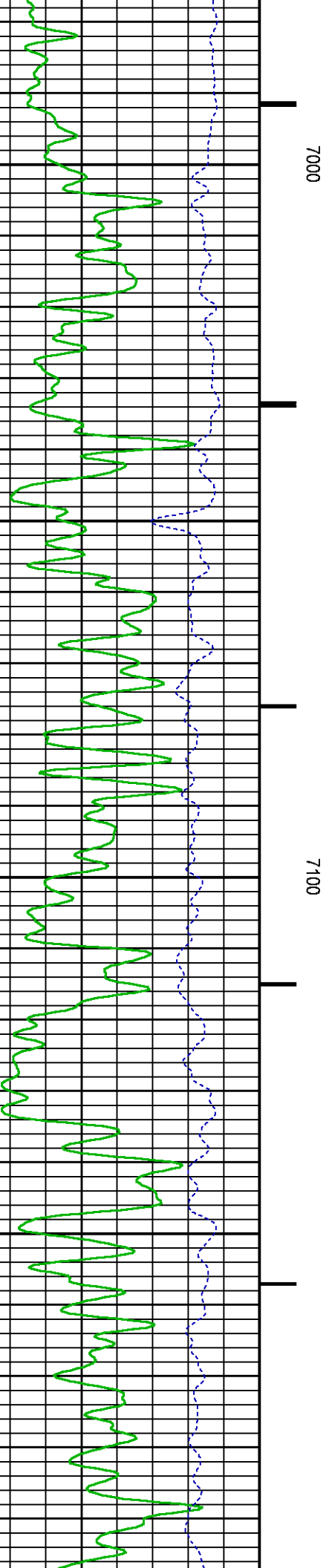
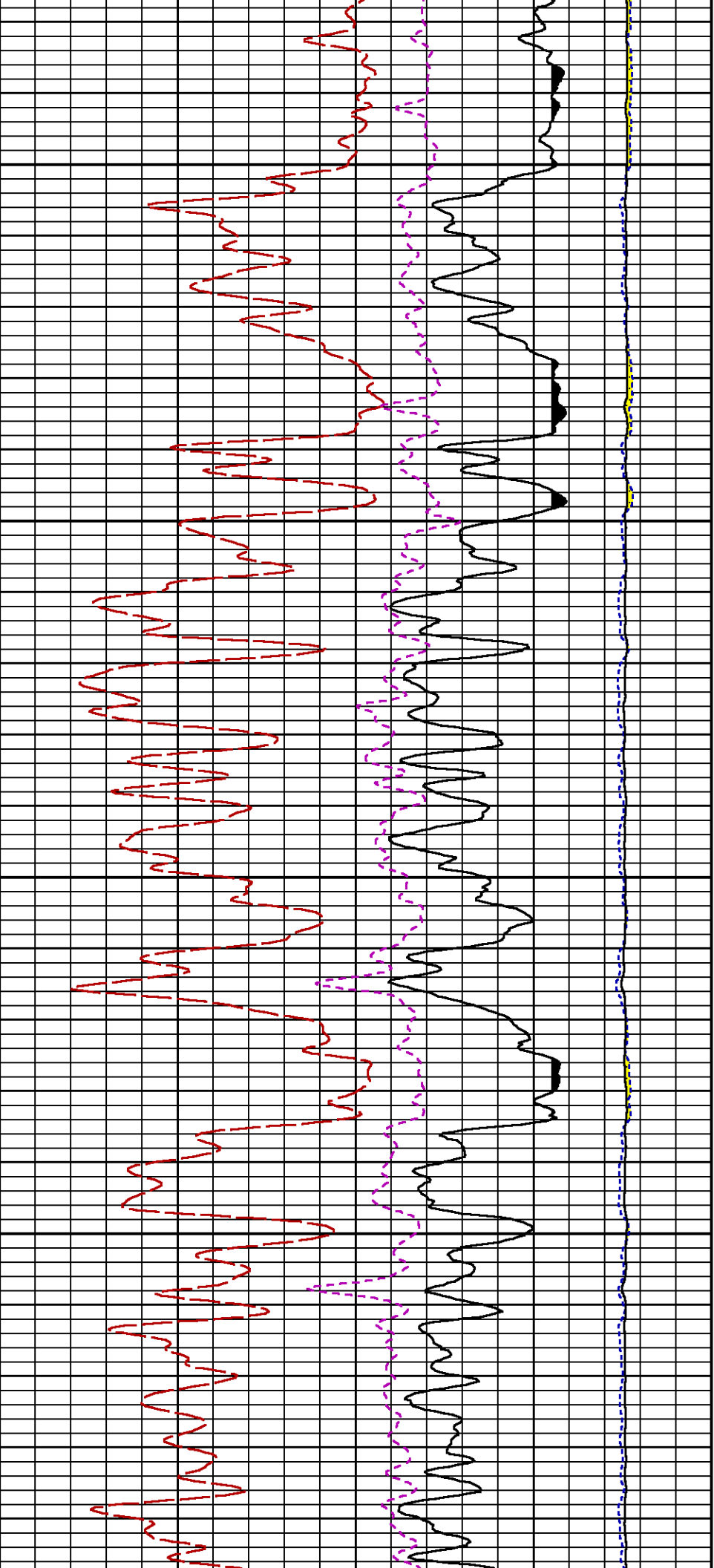


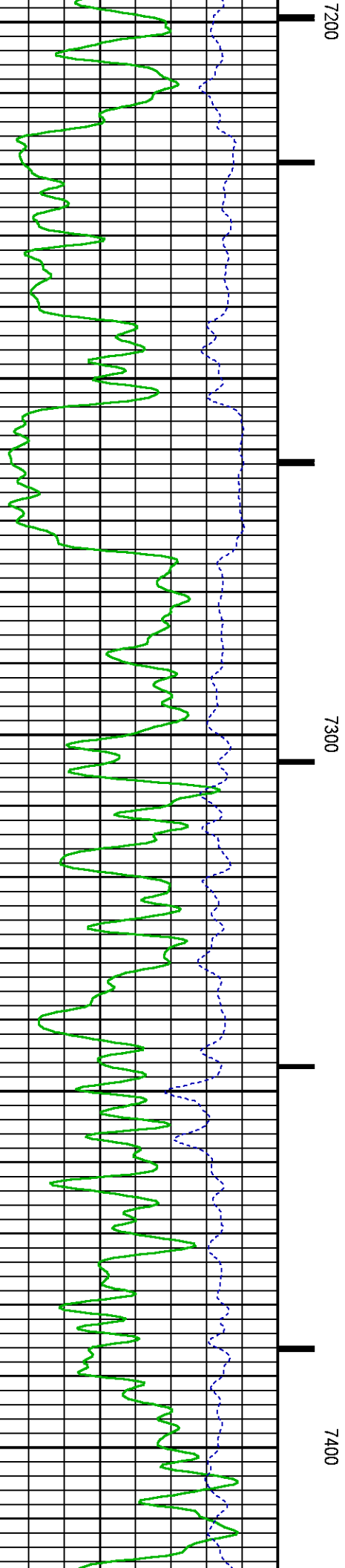
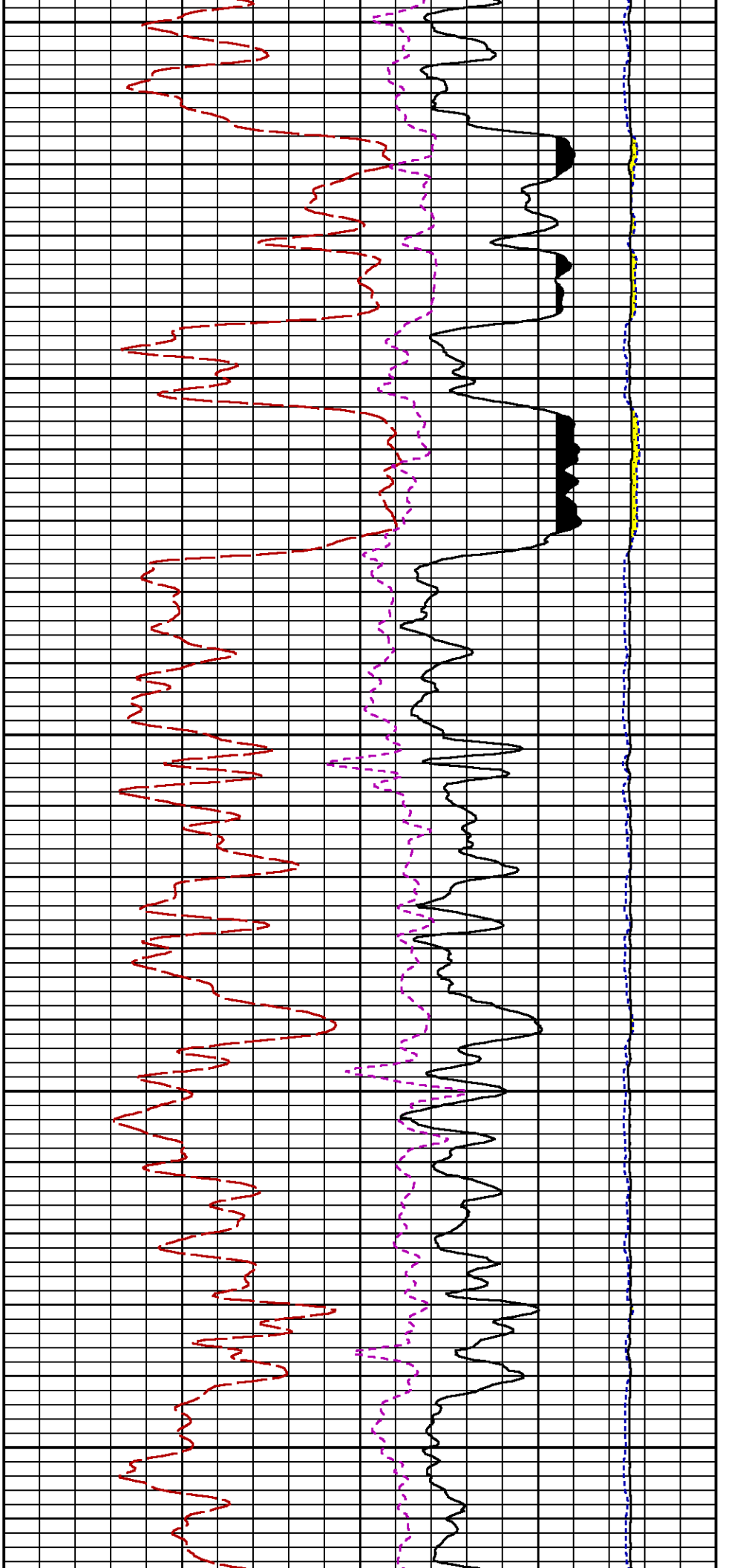


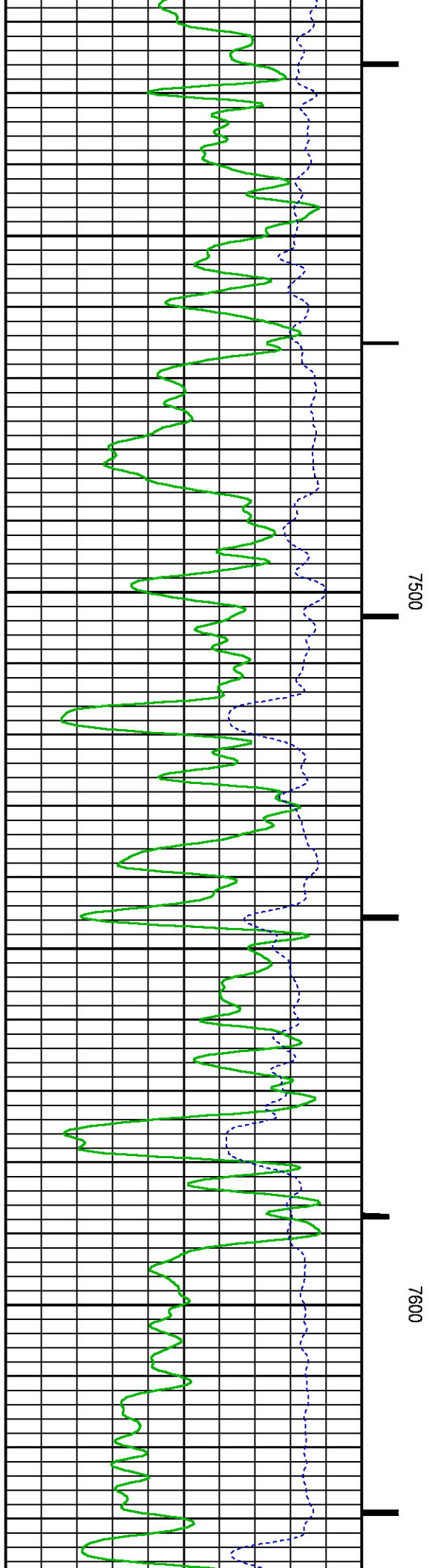
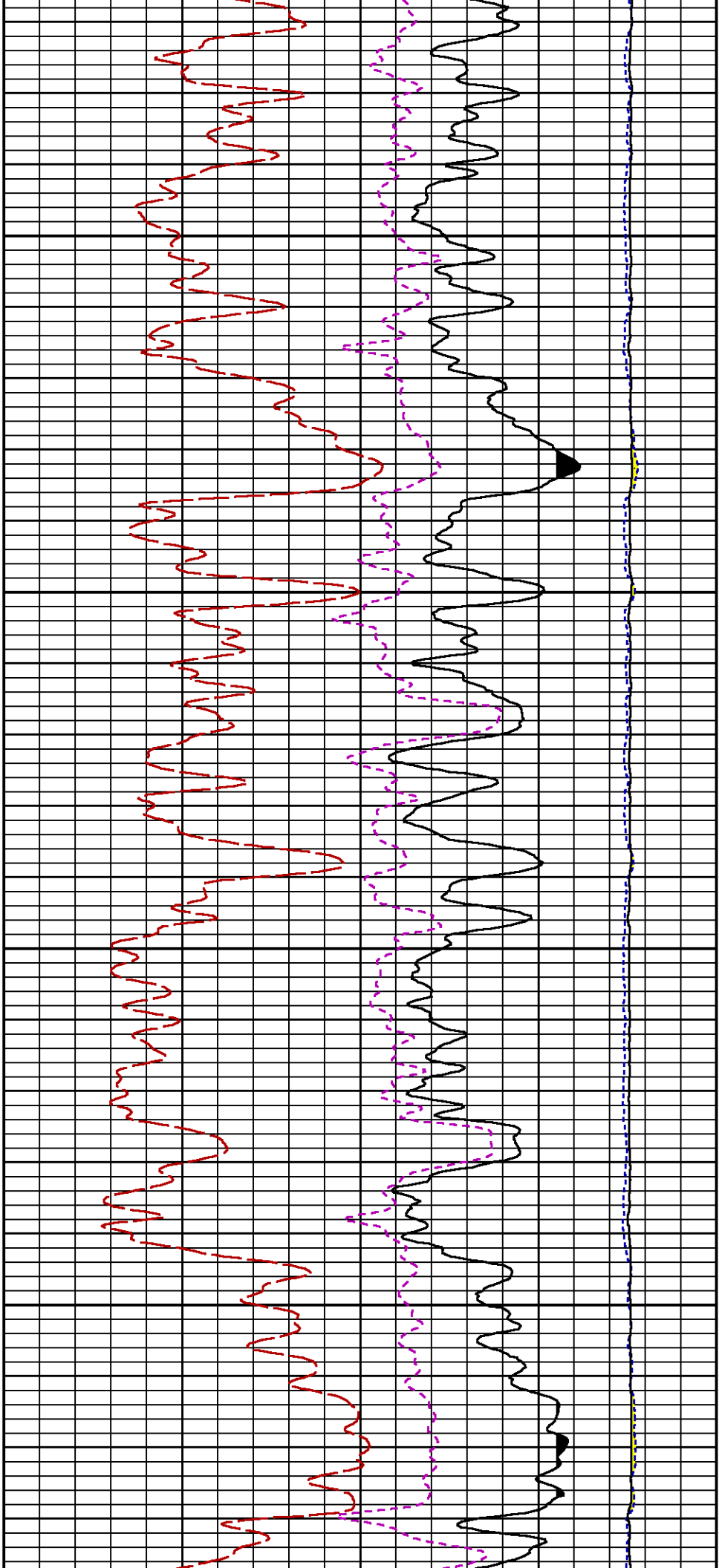


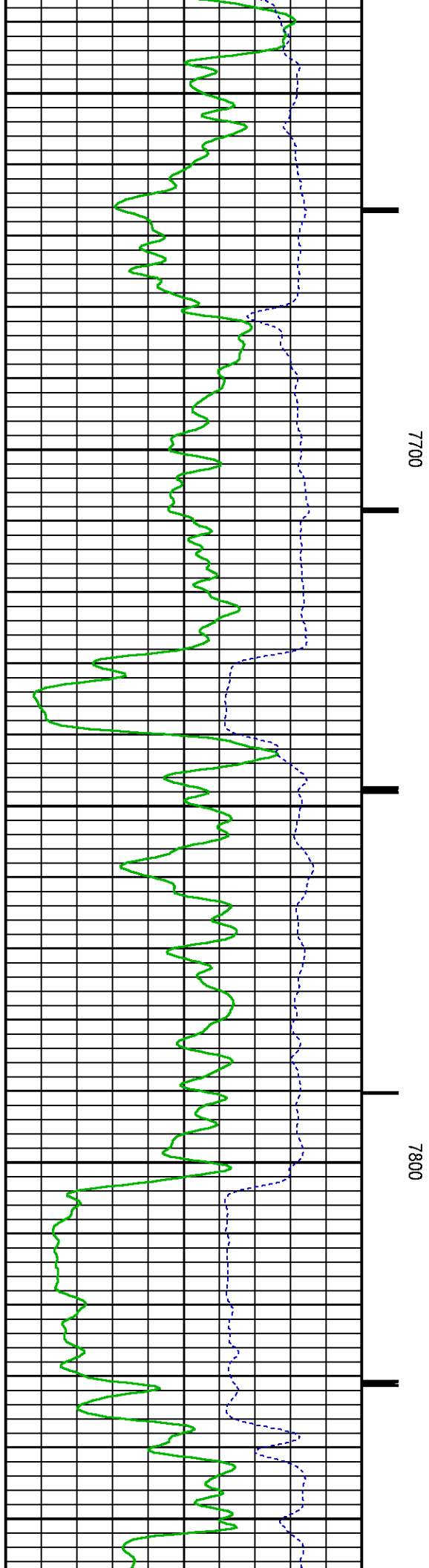
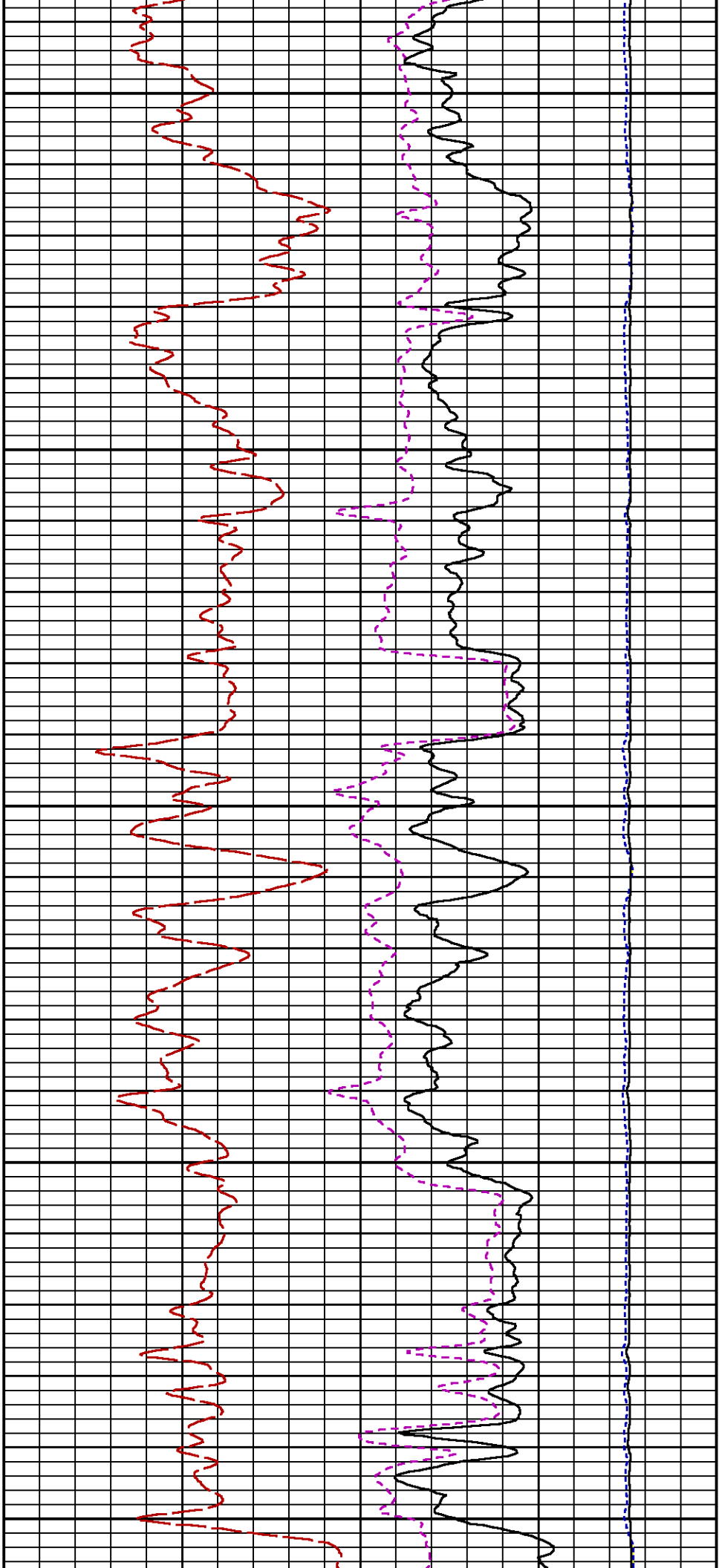


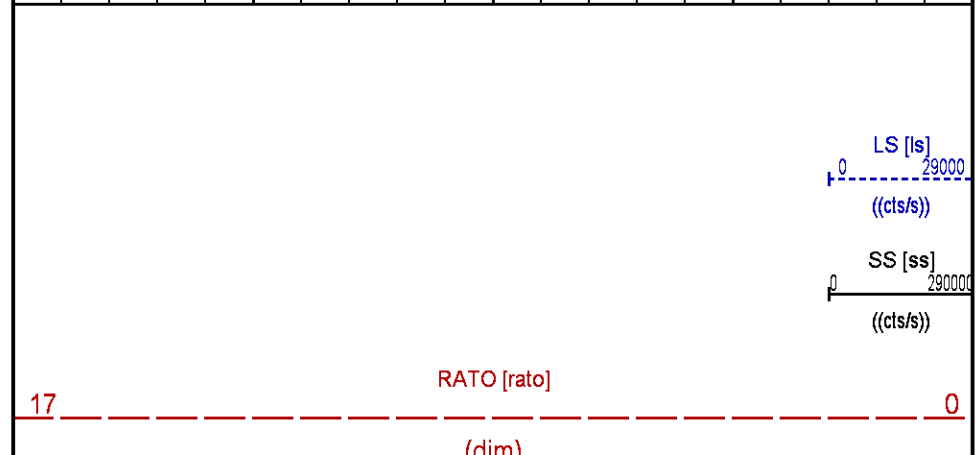
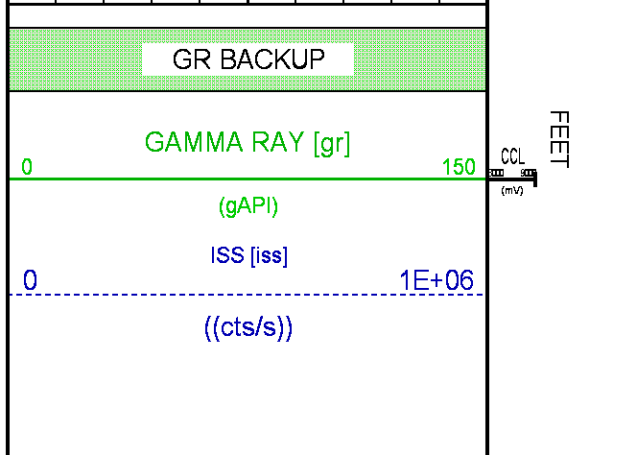
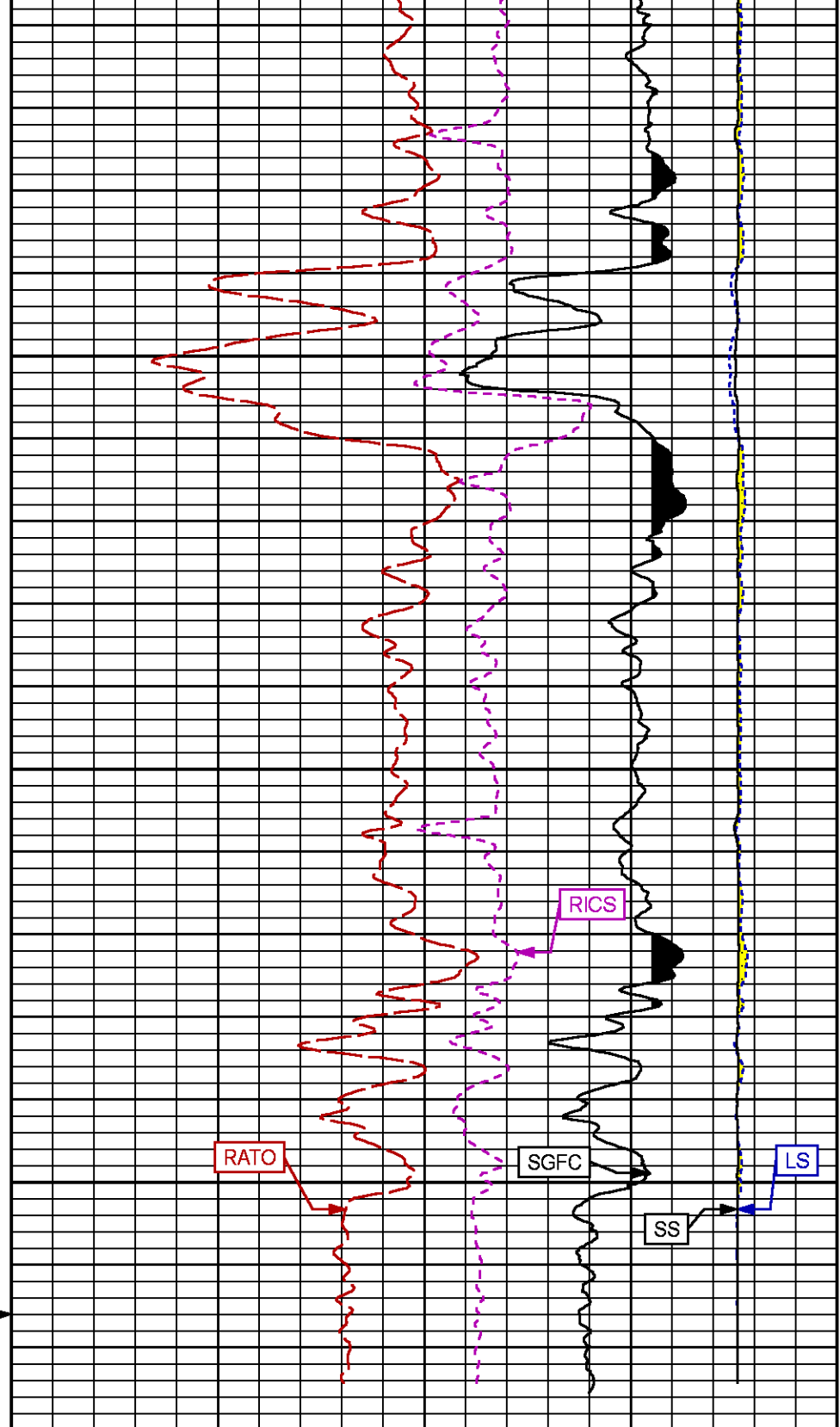
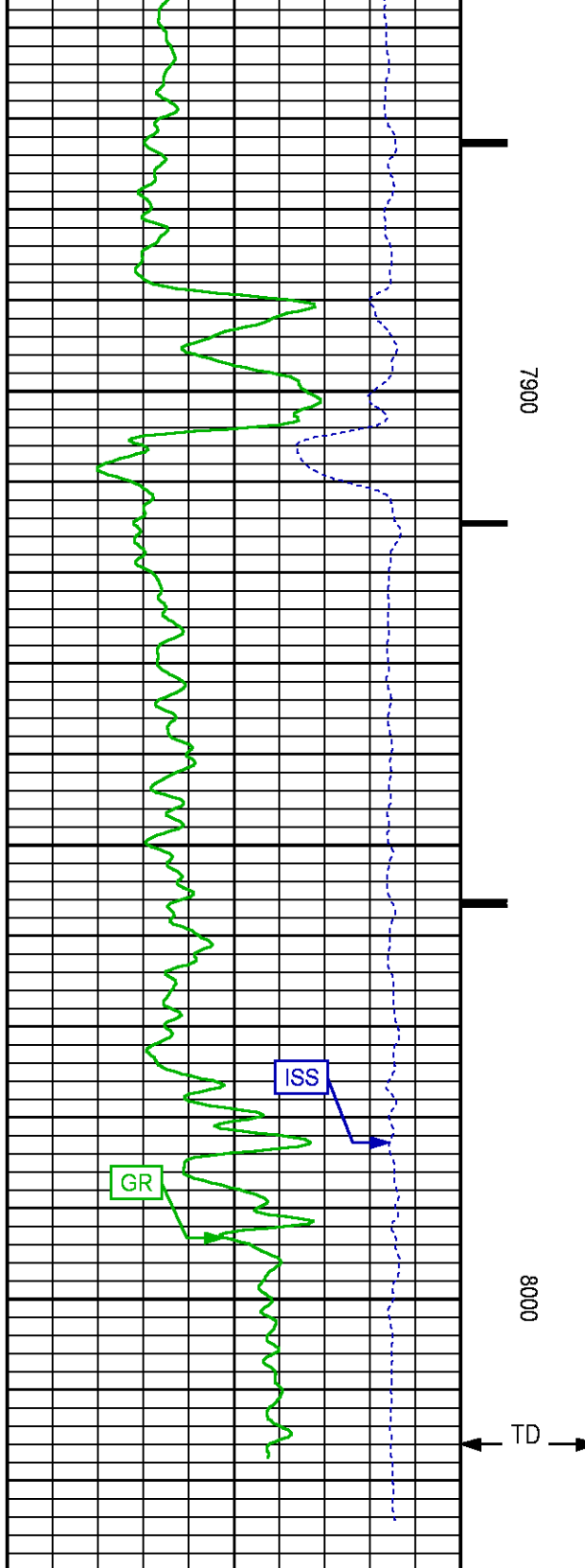












		(dim)	
		RICS [rics]	9
	39	(dim)	
		SGFC [sgfc]	0
	60	(cu)	

REPEAT PASS

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

Plotted: Mon Jun 25 10:55:24 2018

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/p354h01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 5033.188 ft BOTTOM DEPTH: 5300.533 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	N/A	CASING COLLAR LOCATOR
F1:GR	N/A	GAMMA RAY
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
GR	-22.75	LS	-12.75	RICS	-12.75	SS	-12.75

Presentation : SysA:/dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/0994\_24\_21E\_RPM\_REPEAT.fvpdf [5"/100' Scale]  
Plot Interval : 5030 - 5304 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/0994\_24\_21E\_RPM\_REPEAT.xtf  
Created On : N/A  
Company : LARAMIE ENERGY LLC  
Well : NICHOLS FEDERAL 0994-24-21E



Well : NICHOLS FEDERAL 0334-24-21E  
Field : VEGA  
File Interval : 5014.25 - 5304.25 Feet  
OCT : p354h

GR BACKUP

FEET

GAMMA RAY [gr]

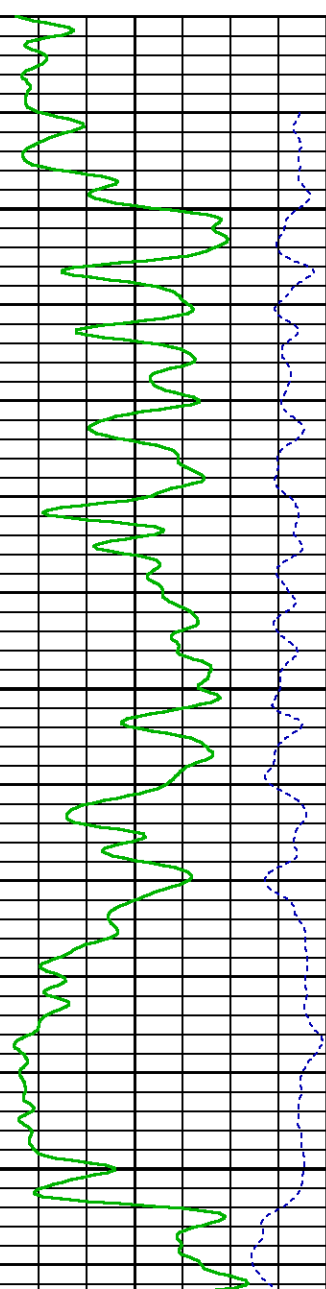
0 150 CCL (mV)

(gAPI)

ISS [iss]

0 1E+06

((cts/s))



5100

RATO [rato]

17 0

(dim)

RICS [rics]

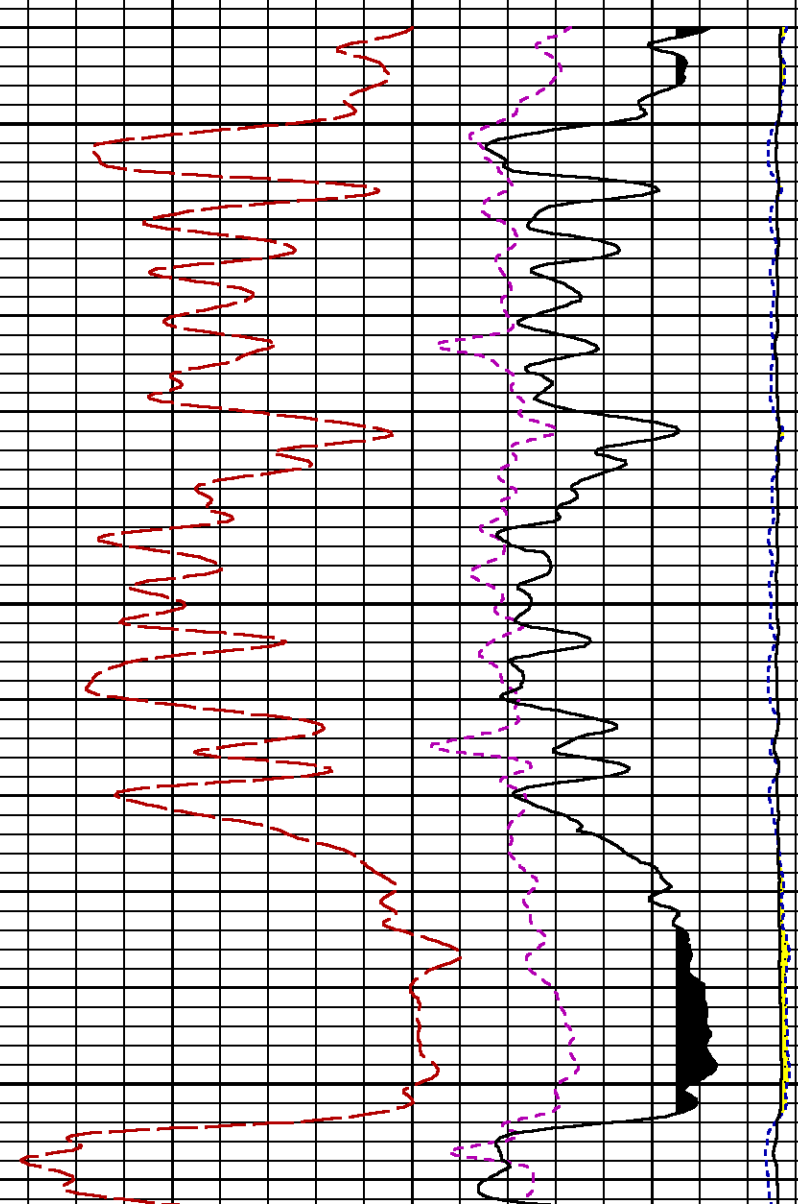
39 9

(dim)

SGFC [sgfc]

60 0

(cu)



LS [ls]

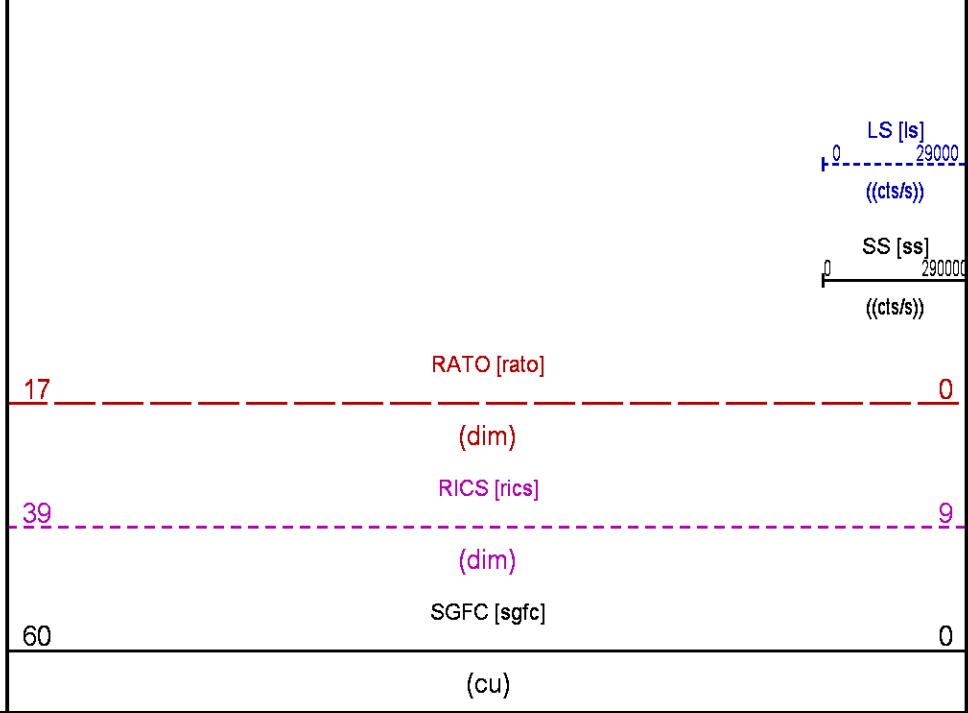
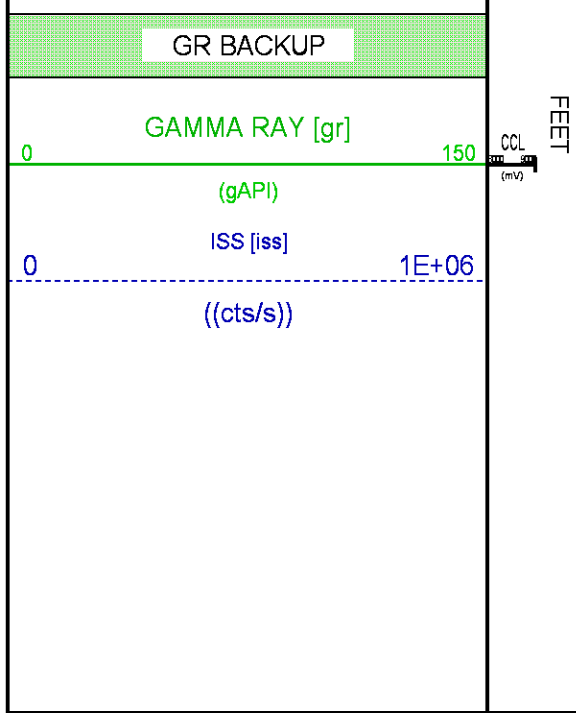
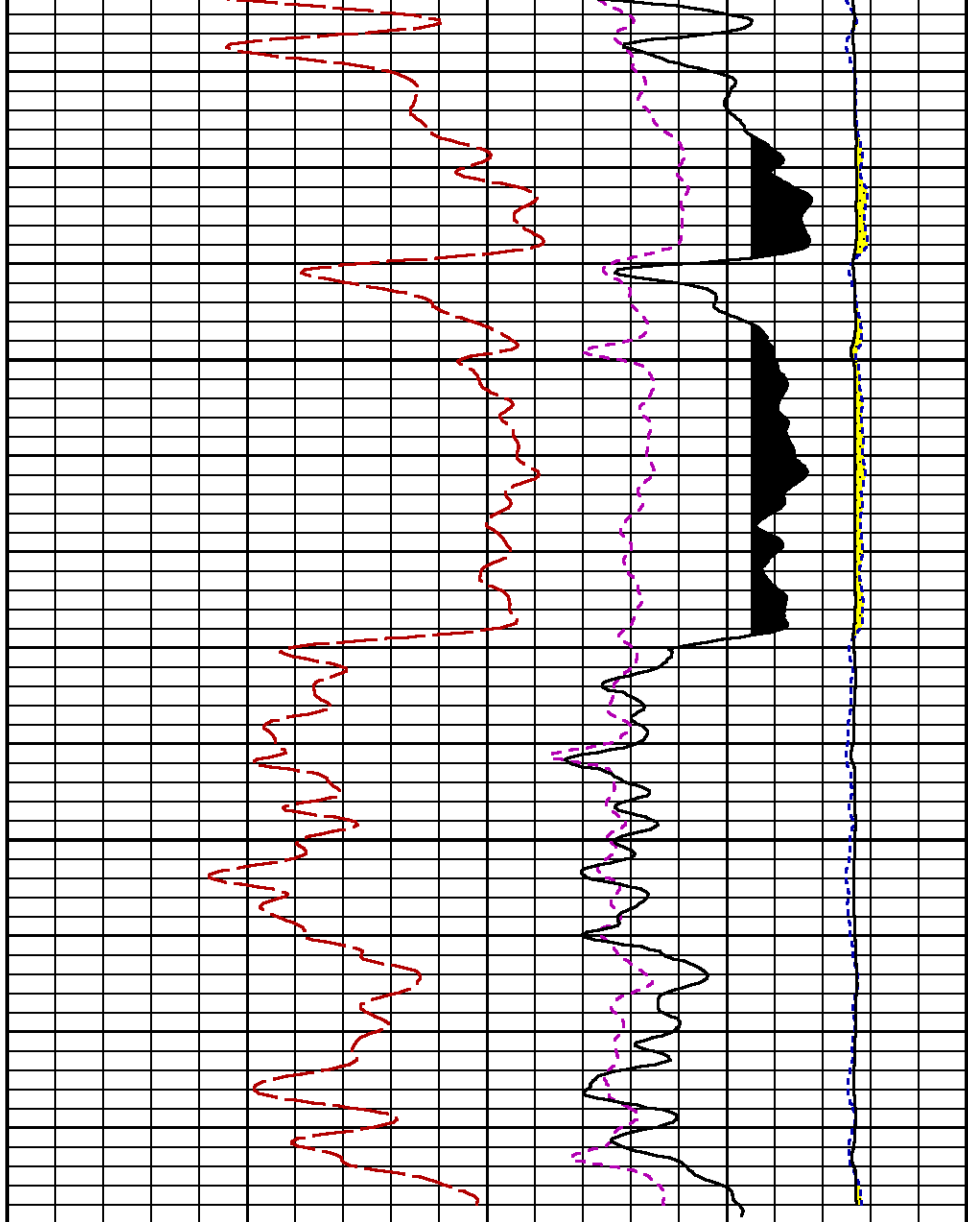
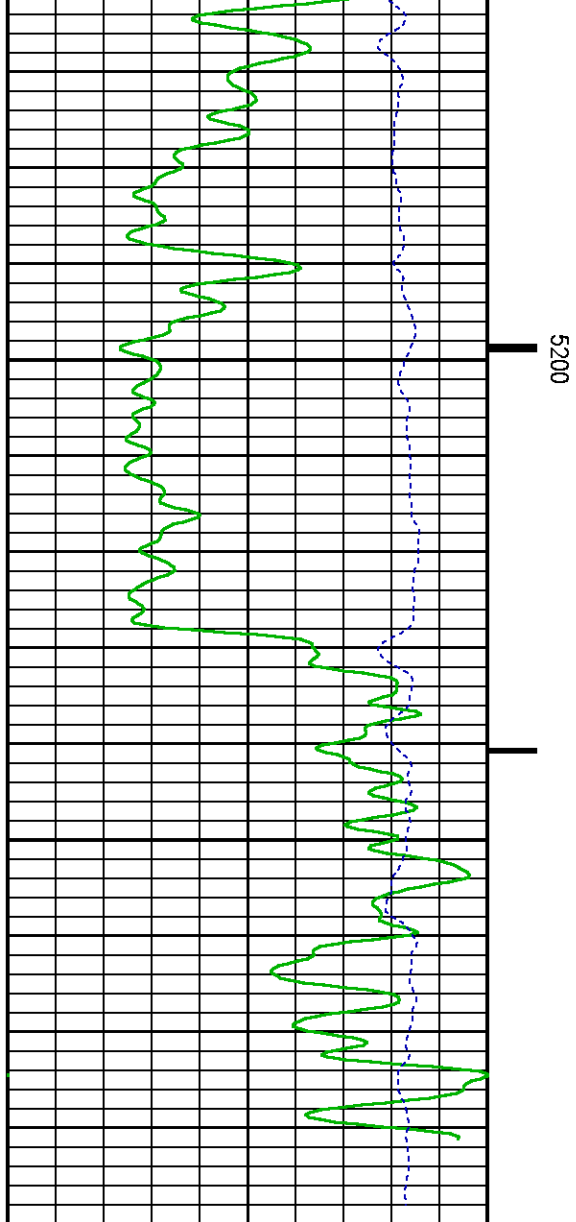
0 29000

((cts/s))

SS [ss]

0 290000

((cts/s))



# CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE\_NICHOLS\_FED\_0994\_24\_21E/p354h.tp1

## GR PRIMARY CALIBRATION SUMMARY

TOOL #: 2812LA 10384613      DATE/TIME PERFORMED: Fri May 11 07:48:58 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	63.60	272.31	208.7	1.006	63.99	273.99	210

## GR PRIMARY VERIFICATION SUMMARY

TOOL #: 2812LA 10384613      DATE/TIME PERFORMED: Fri May 11 07:52:37 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	61.64	278.96	1.006	62.03	280.68	218.65
						200.00    220.00

## RPM\_PNC\_3D PRIMARY CALIBRATION SUMMARY

TOOL: 8283PA 1006991      DATE/TIME PERFORMED: Mon May 7 15:09:32 2018

UNIT: 5753XD 111111      CALIBRATOR: 2437XB 112674      SOURCE: 8281AA 10430258      HOURS: 8281AA 88

	ISS	Mtr Vits (V)	SS Gain	LS Gain	XLS Gain	EA Temp (degF)	Sync Delay (usec)	RCAL
Raw Data	794247	124	2139	2383	2237	120	8.0	1.0374
Interpolated	1300000	145	2128	2374	2232			

	ISS	BKS	BKL	BKX	SGA1	SDA1	SGA2	SDA2
Raw Data	794247	6835	1065	142	25.87	0.15	24.10	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	794247	178007	27088	88699	31638	8729	53712	13968
Fit Quality %		0.926	0.946	0.726	0.765	0.956	0.682	0.966

	ISS	RBOR	RIN ISS/LS	RIN13 ISS/IXS	RICS ISS/CSS	RATO SS/LS	RTWO SS2/LS	RONE CSS/CLS
Raw Data	794247	1.43	4.46	29.33	14.79	10.16	3.63	3.85
		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 %		0.119	0.323	0.318	0.028	0.337	0.297	0.353
Reduced	1412538	1.43	4.47	29.36	14.77	10.20	3.64	3.86
		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

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

33.24'

CCL MP — 25.19'

GR MP — 22.64'

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  
 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



**ECLIPS**

COMPANY

LARAMIE ENERGY LLC

WELL

NICHOLS FEDERAL 0994-24-21E

FIELD

VEGA

COUNTY

MESA

STATE COLORADO

FILE NO:

CH136074

API NO:

05077103890000

LOCATION:

SHL: 2332' FNL &amp; 2789' FWL

BHL: 212' FSL &amp; 1538' FEL

ELEVATIONS:

KB 7236 FT

DF

GL 7212 FT

SEC 24 TWP 9 S RGE 94 W

DATE 25-Jun-2018