

FILE NO: 087237  
API NO: 05045222650000  
COMPANY: WPX ENERGY ROCKY MOUNTAIN LLC  
WELL: C&C ENERGY GM 23-13  
FIELD: GRAND VALLEY  
COUNTY: GARFIELD STATE: CO

Ver. 3.87  
S13 T7S R96W  
GM 24-12  
H&P318  
LOCATION: SHL: 286' FSL: 1004' FWL: S12 T7S R96W  
BHL: 1555' FNL: 1205' FWL: S13 T7S R96W  
SEC 13 TWP 7S RGE 96W  
OTHER SERVICES: NONE

PERMANENT DATUM: GL ELEVATION 5141 FT  
LOG MEASURED FROM: KB 24 FT ABOVE P.D.  
DRILL MEAS. FROM: KB  
ELEVATIONS: KB 5165 FT  
DF  
GL 5141 FT

DATE	12-Jun-2014
RUN	1
SERVICE ORDER	087237
DEPTH DRILLER	6445 FT
DEPTH LOGGER	6445 FT
BOTTOM LOGGED INTERVAL	6436 FT
TOP LOGGED INTERVAL	0 FT
CASING DRILLER	9.625 IN @ 1388 FT
CASING LOGGER	1387 FT
BIT SIZE	8.75 IN
TYPE OF FLUID IN HOLE	LSND
DENSITY	10.75 LB/G
PH	8.9
SOURCE OF SAMPLE	FLOWLINE
RM AT MEAS. TEMP.	0.35 OHMM @ 79 DEGF
RMF AT MEAS. TEMP.	0.26 OHMM @ 79 DEGF
RMC AT MEAS. TEMP.	0.43 OHMM @ 79 DEGF
SOURCE OF RMF	CALCULATED
RM AT BHT	0.58 OHMM @ 165.5 DEGF
TIME SINCE CIRCULATION	4 HRS
MAX. RECORDED TEMP.	168 DEGF
EQUIP. NO.	6670
RECORDED BY	PATTON
WITNESSED BY	TOWERS

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.

BOREHOLE RECORD		
BIT SIZE	FROM	TO
8.75 IN	0 FT	6445 FT

CASING RECORD				
SIZE	WEIGHT	GRADE	FROM	TO
9.625 IN	32 LB/F		0 FT	1388 FT

#### REMARKS

RUN 1 TRIP 1: HDIL ZDL CN GR RUN IN COMBINATION

BVOL CVOL CALCULATED IN CUBIC FEET  
BVOL CALCULATED USING PROPOSED 4.5" CASING  
CALIPER VERIFIED INSIDE CASING

CN MATRIX: SANDSTONE  
CN RAN DECENTRALIZED

RHO MATRIX: 2.68 G/CC  
RHO FLUID: 1.00 G/CC

HDIL RAN WITH 1.5" STANDOFFS  
ABC TO CALCULATE MUD CONDUCTIVITY

THANK YOU FOR CHOOSING BAKER HUGHES WIRLEINE SERVICES  
 CREW: PATTON/HOLLAR/FAVORITE  
 RIG: H&P 318

#### EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	TTMA	3980XA	10120299	FREE
1	1	TEL/GR	3518EB/3518EG	10127973/10137522	FREE
1	1	CN	2436XA	10137930	DECENTRALIZED
1	1	ZDL	2223XA	10102922	DECENTRALIZED
1	1	KNJT	3930XA	10139400	FREE
1	1	HDIL	1530XA	10121806	STOOD OFF

### MAIN LOG 2"/100FT SCALE

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

Plotted: Thu Jun 12 13:57:01 2014

#### PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/OH087237/n970a02.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 1243.500 ft BOTTOM DEPTH: 6465.485 ft

#### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR MED RES	FILTER Ø	medium (1)		TOP	BOTTOM
CALIPER	FILTER Ø	medium (1)		"	"
TENSION	FILTER Ø	medium (1)		"	"
SP-SPDH	FILTER Ø	heavy (3)		"	"

#### BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
BIT SIZE	BIT SIZE	8.750	in	TOP	BOTTOM
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mbh*)	8.750	in	"	"
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	79.0	degF	"	"
	MUD SAMPLE RES	0.350	ohm.m	"	"
BH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDIL)	TOOL MEASURED		"	"
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	79.0	degF	"	"
	at BH REF DEPTH	0.0	ft	"	"
	with TEMP GRADIENT	1.200	0.01 degF/ft	"	"

#### ACCELERATION PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
ACCEL CORR SWITCH	ACCEL DEPTH CORR	CORRECTION ON		TOP	BOTTOM

#### HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORRECTION	ON		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	MUD CONDUCTIVITY		"	"
	STANDOFF	1.50	in	"	"
	TOOL POSITION	ECCENTERED		"	"

## CURVE DESCRIPTION REPORT

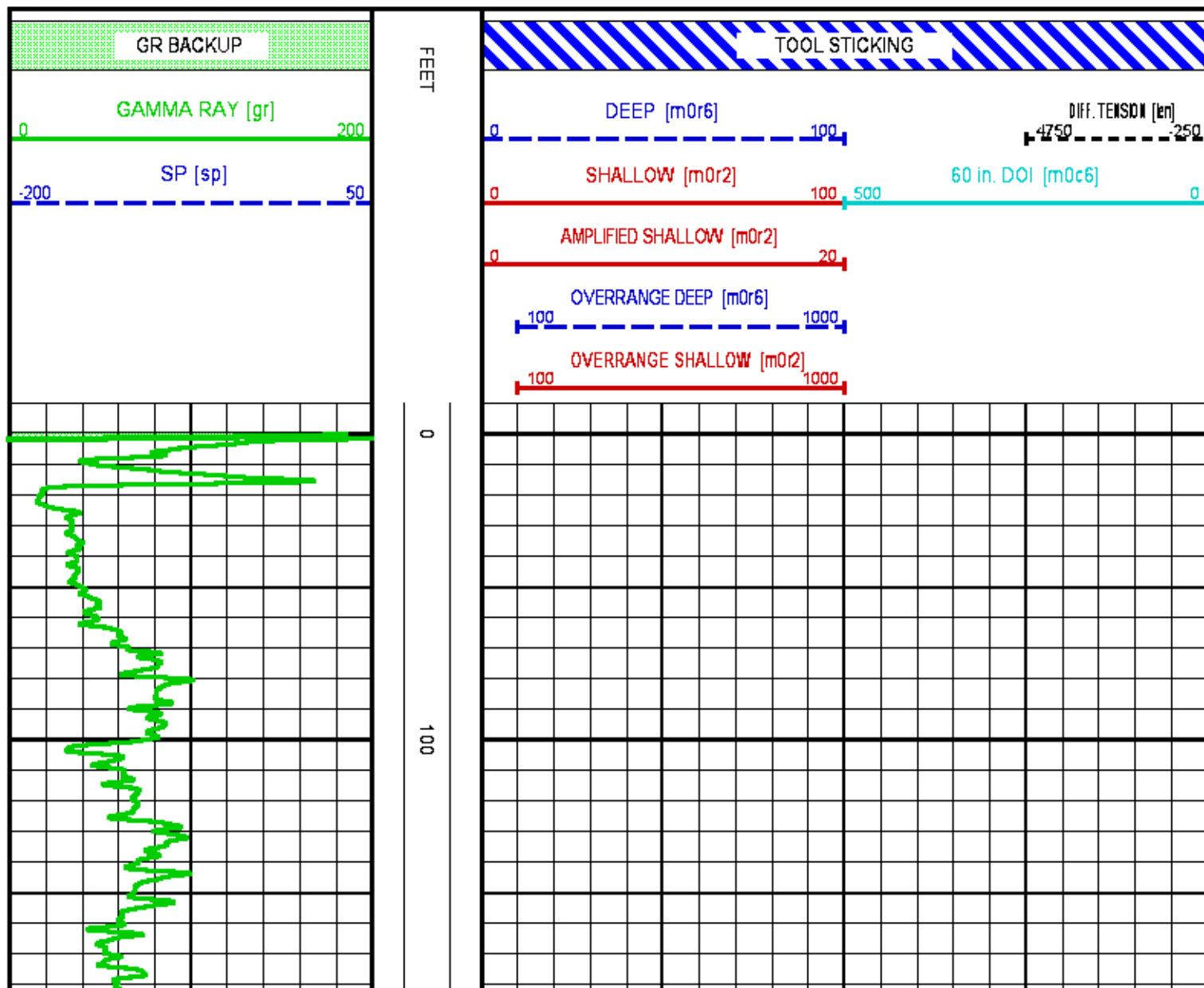
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:GR	Jun 12 12:10:47 2014	GAMMA RAY
F1:MOC6	Jun 12 12:10:47 2014	FOCUSED CONDUCTIVITY, 60-INCH DOI
F1:MOR2	Jun 12 12:10:47 2014	TRUE FOCUSED RESISTIVITY FOR HDIL, 20-INCH DOI
F1:MOR6	Jun 12 12:10:47 2014	TRUE FOCUSED RESISTIVITY FOR HDIL, 60-INCH DOI
F1:SP	Jun 12 12:10:47 2014	SPONTANEOUS POTENTIAL
F1:TEN	Jun 12 12:10:47 2014	DIFFERENTIAL TENSION

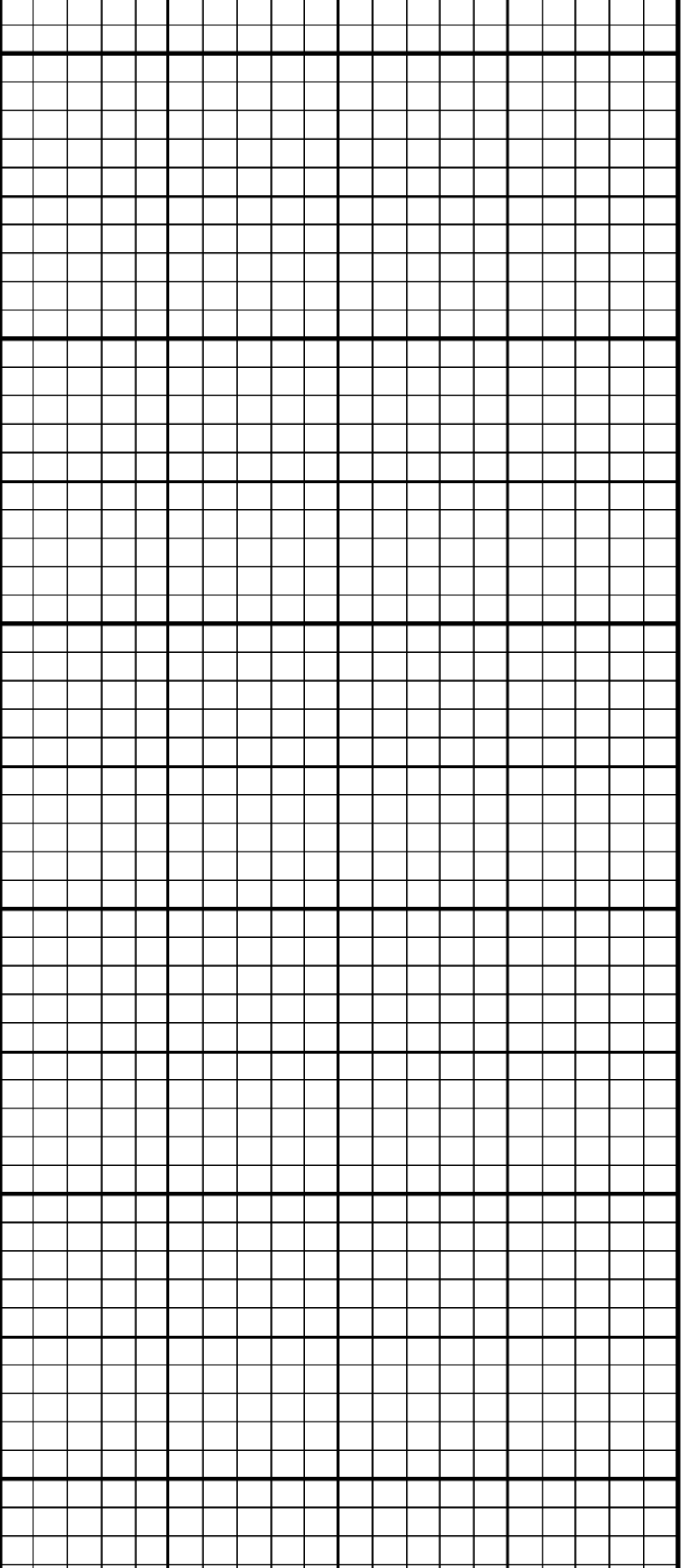
## CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
GR	35.00	MOR2	2.75	SP	1.25		
MOC6	2.75	MOR6	2.75	TEN	0.00		

**Presentation** : HL6670:/dat1a/OH087237/WPX\_2IN.fvpdf [2"/100' Scale]  
**Plot Interval** : 1228.75 - 6473.5 Feet

**Data File 1** : F1 : HL6670:/dat1a/OH087237/n970a02-MAIN.xtf  
**Created On** : Jun 12 12:10:47 2014  
**Company** : WPX ENERGY ROCKY MOUNTAIN LLC  
**Well** : C&C ENERGY GM 23-13  
**Field** : GRAND VALLEY  
**File Interval** : 0 - 6479.5 Feet  
**OCT** : n970a





200

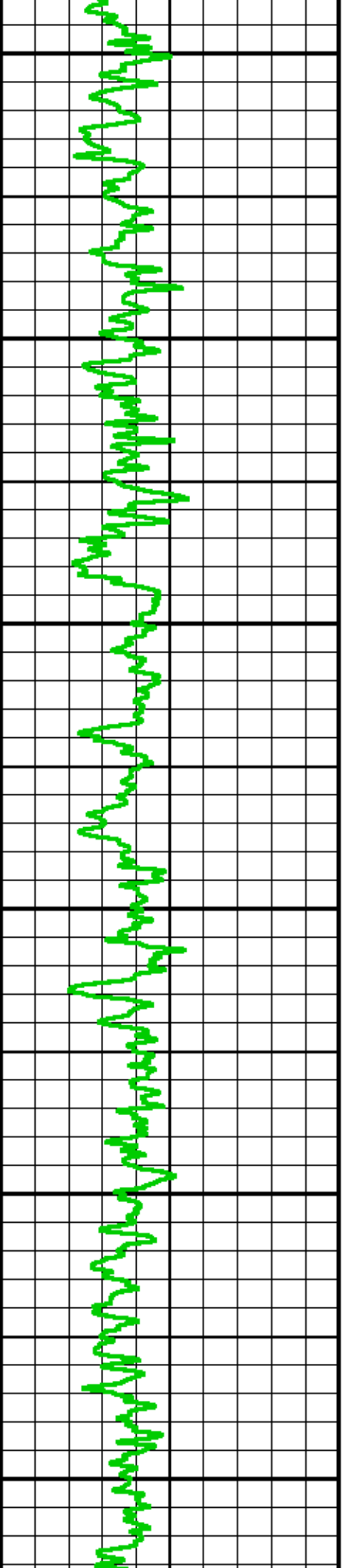
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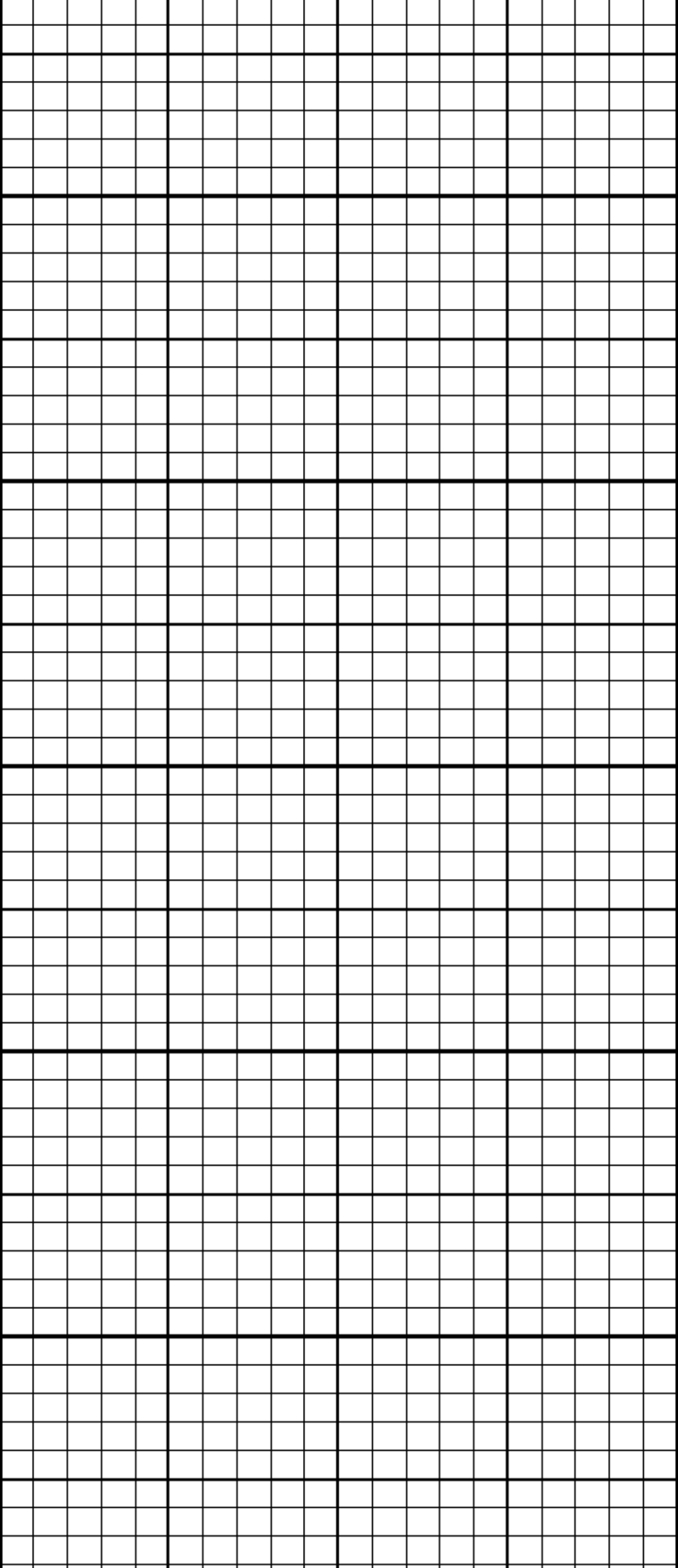
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500

600

700





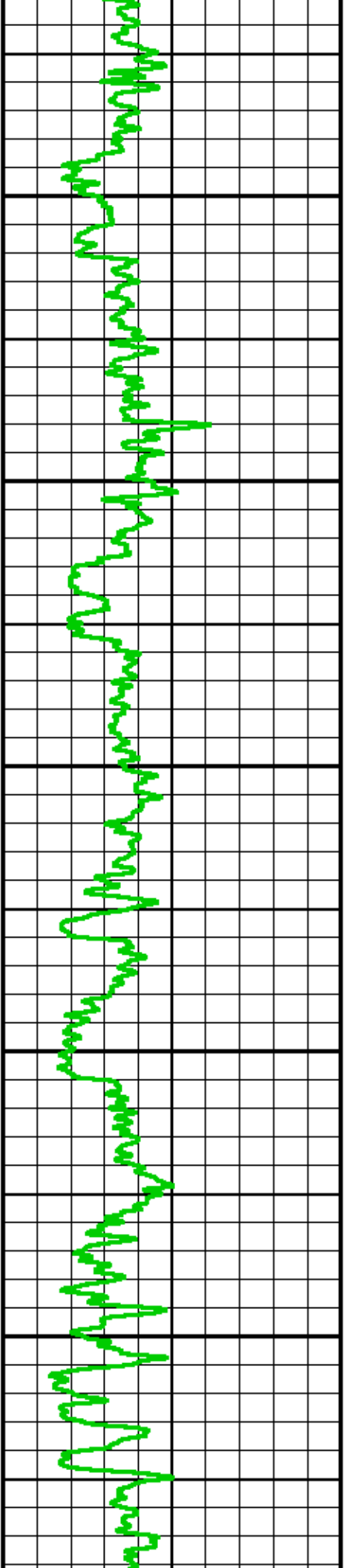
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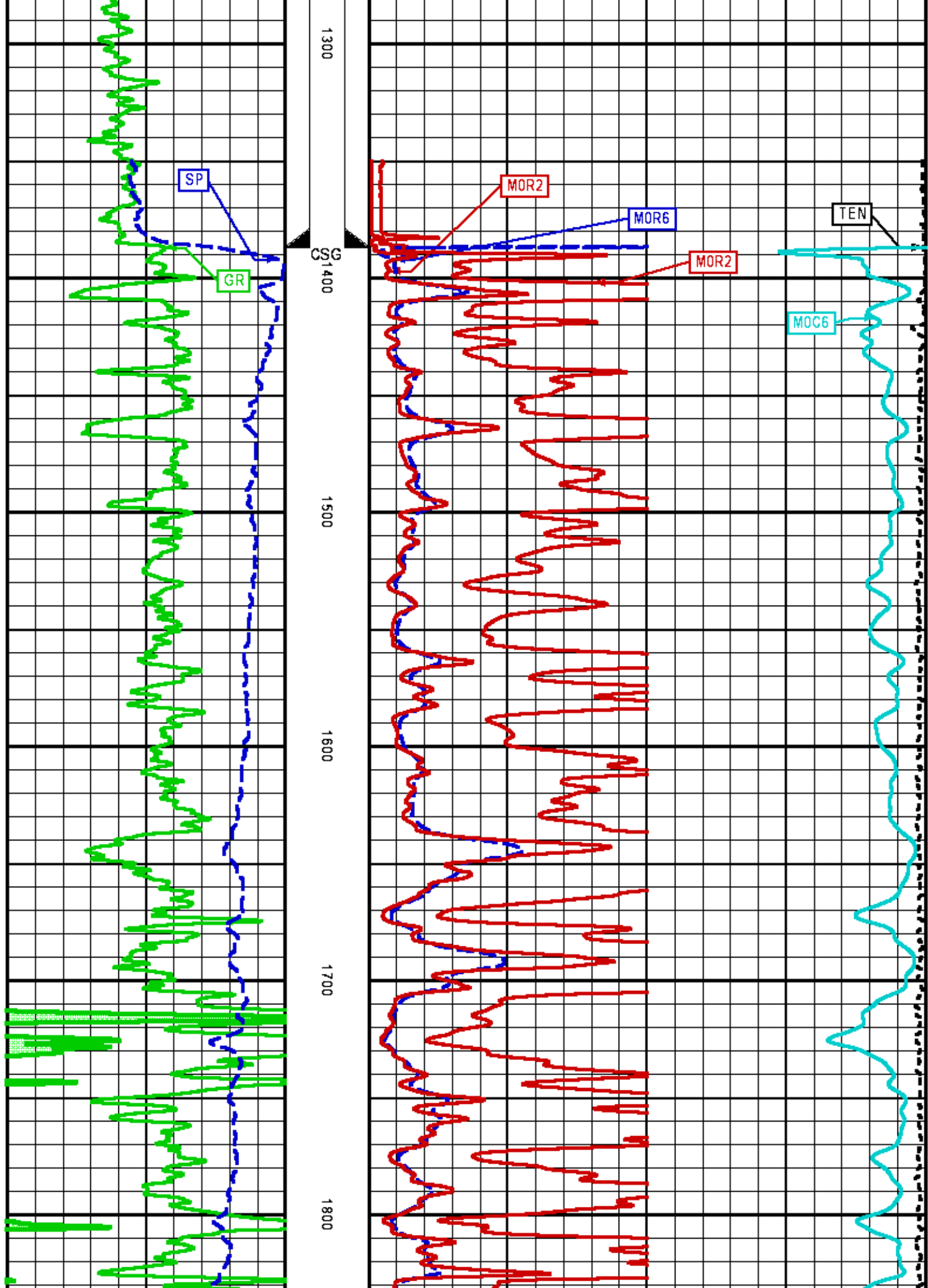
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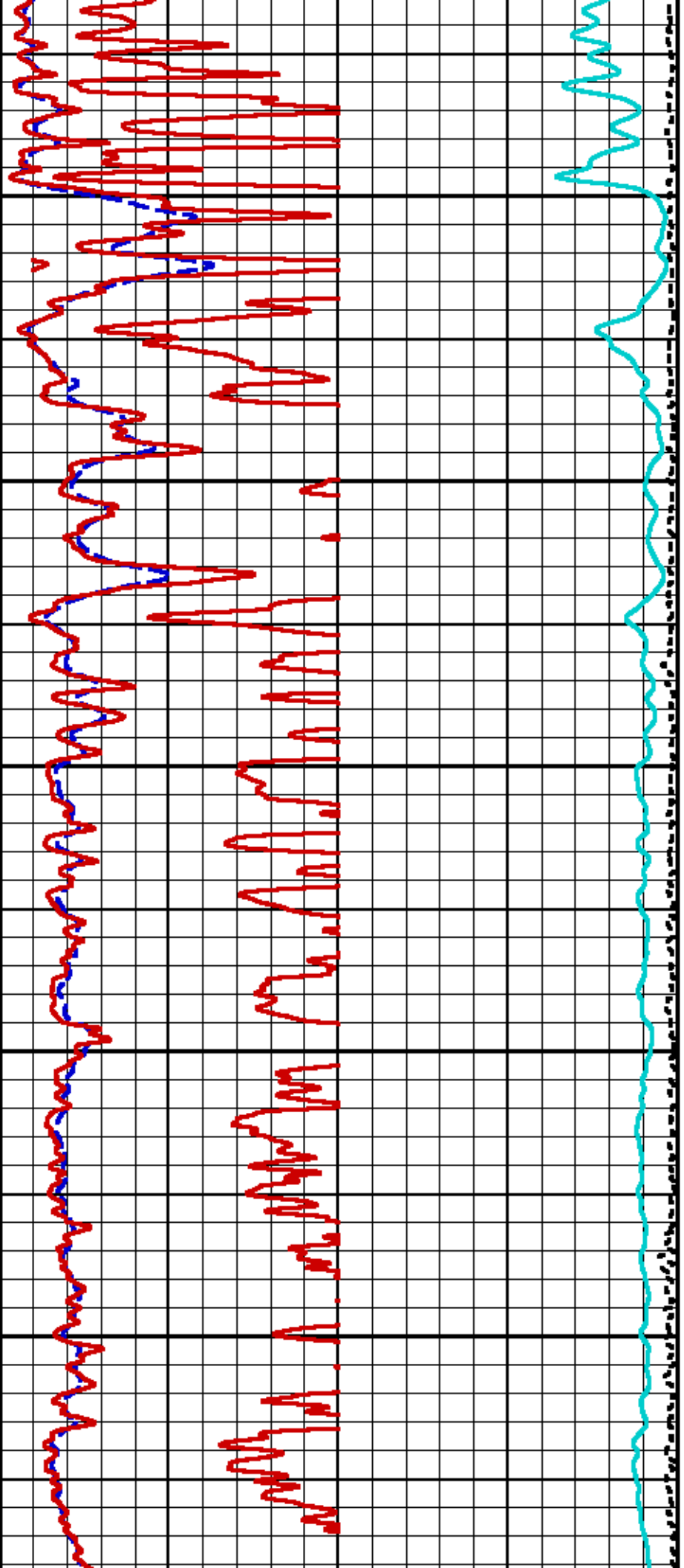
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1100

1200







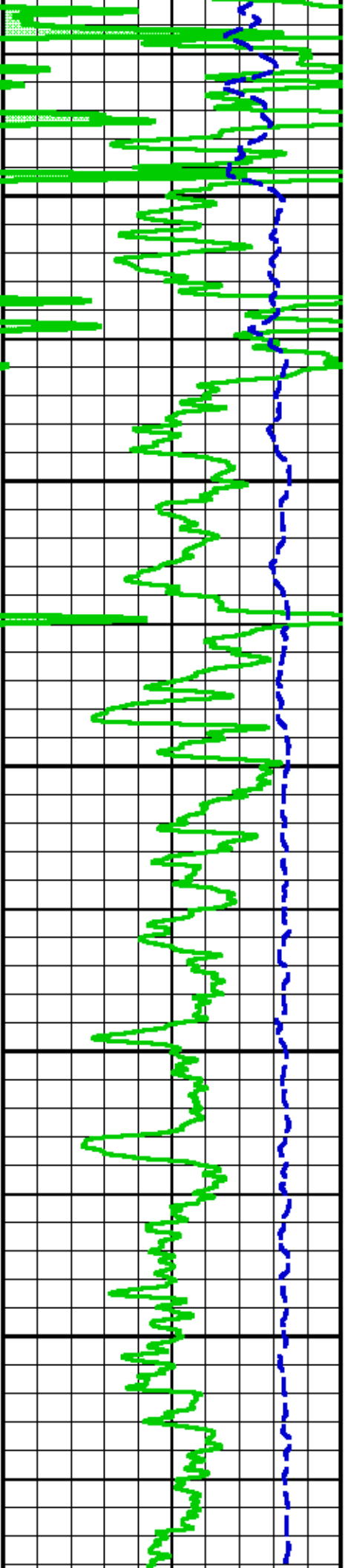
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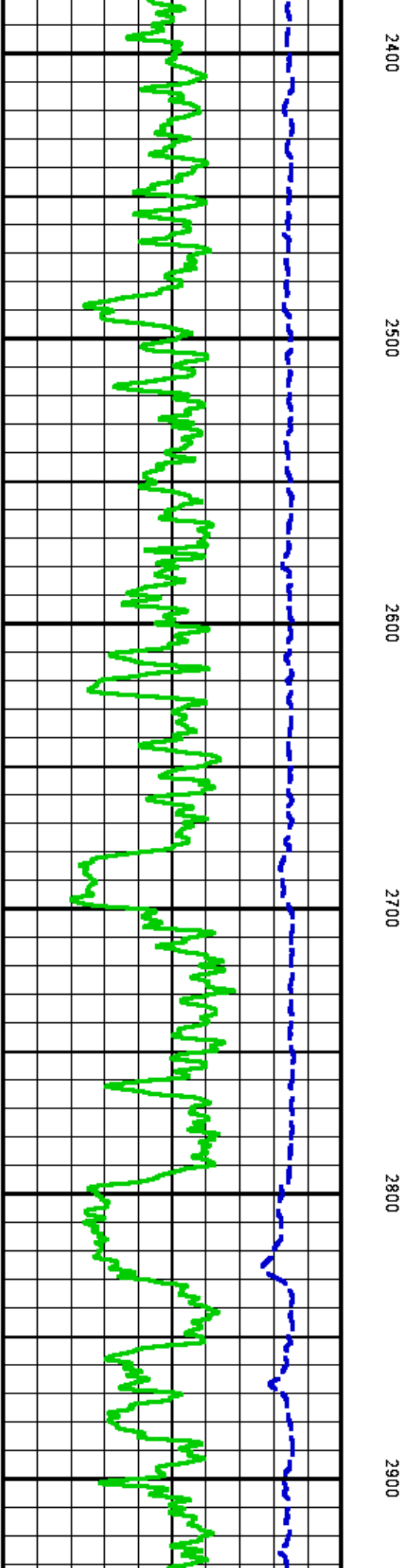
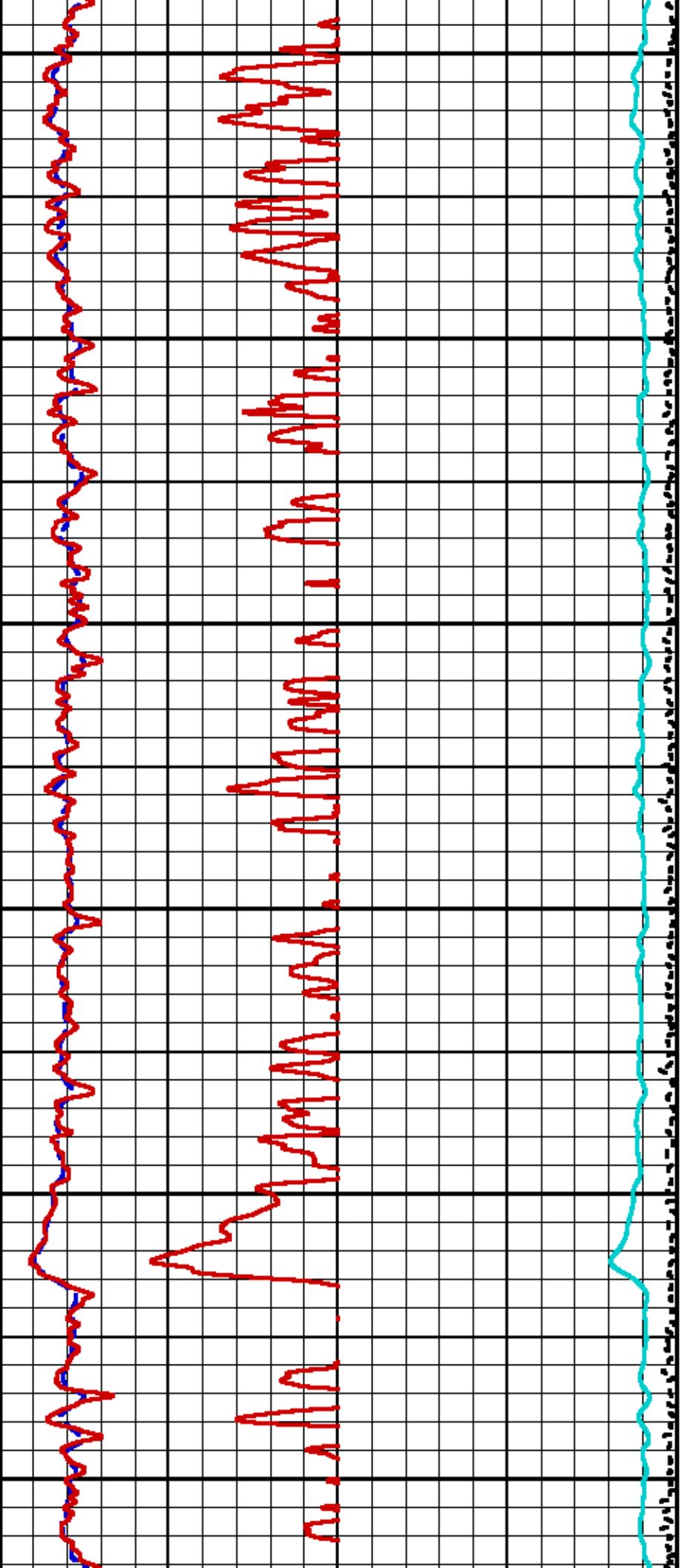
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2100

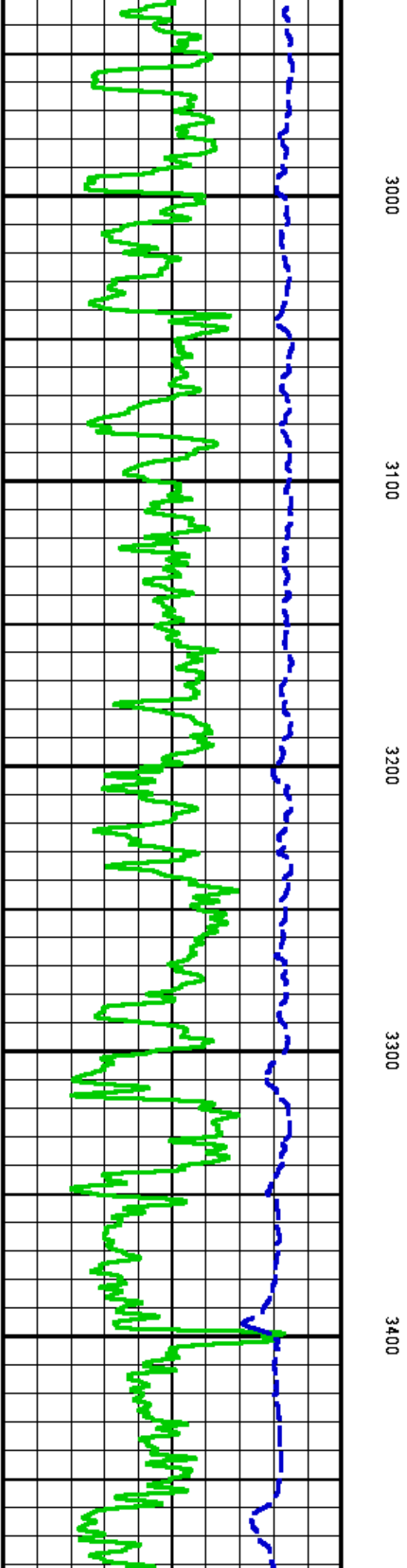
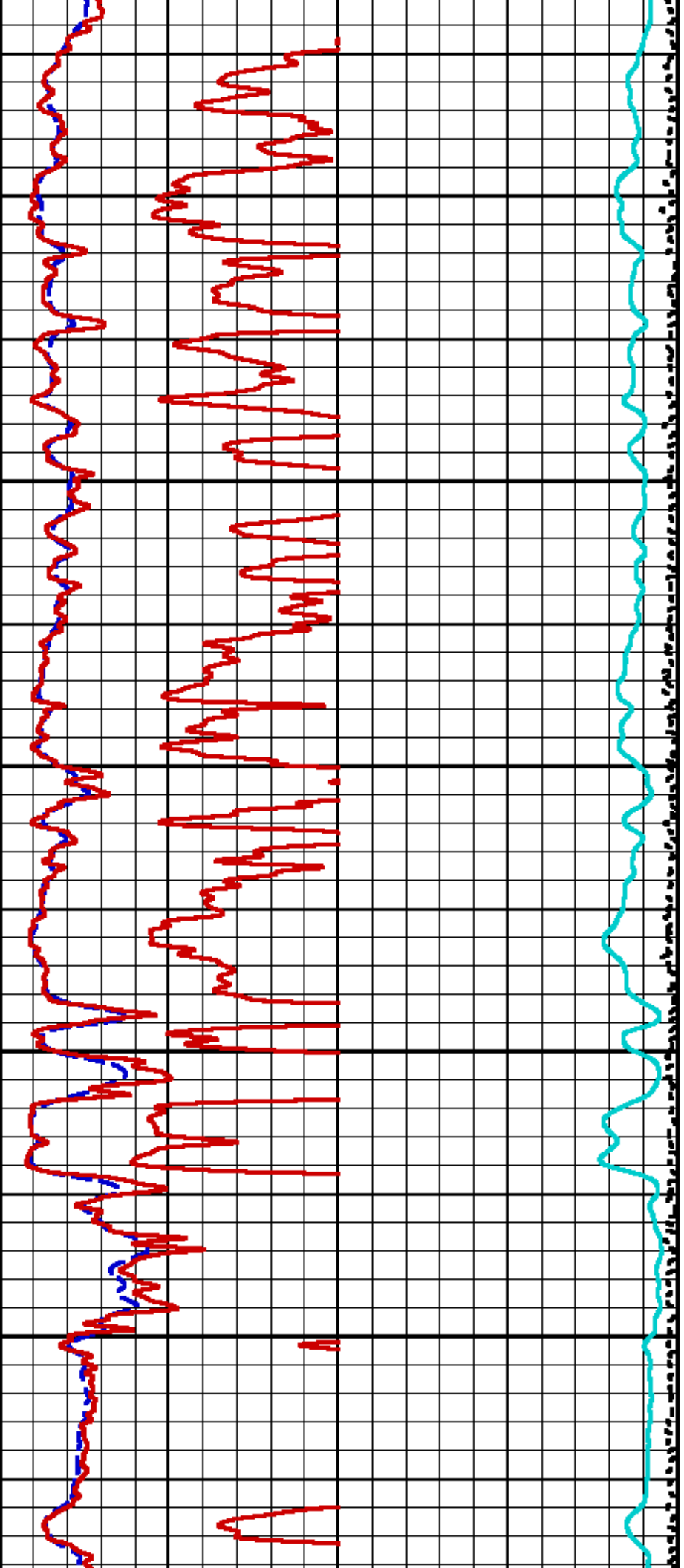
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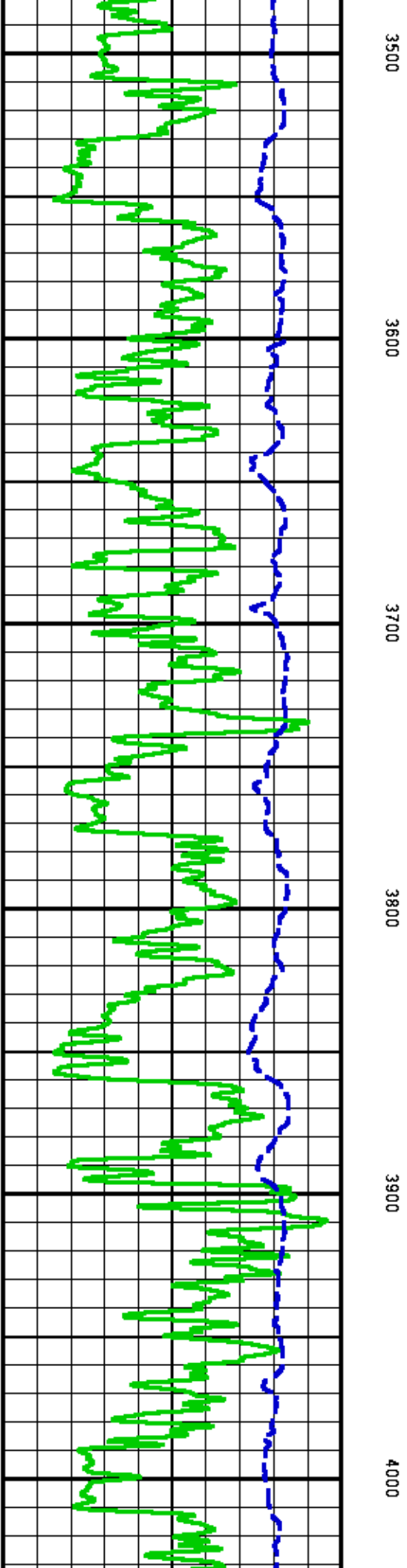
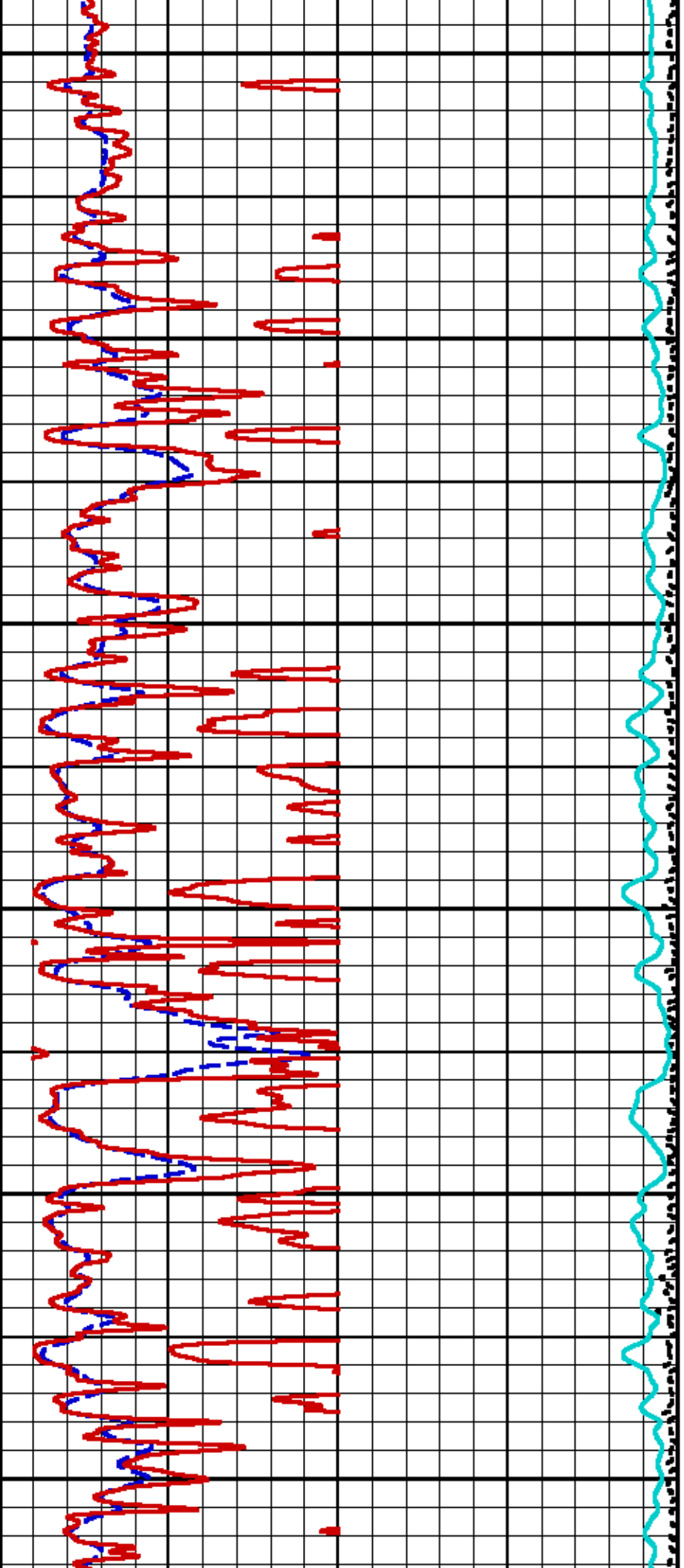
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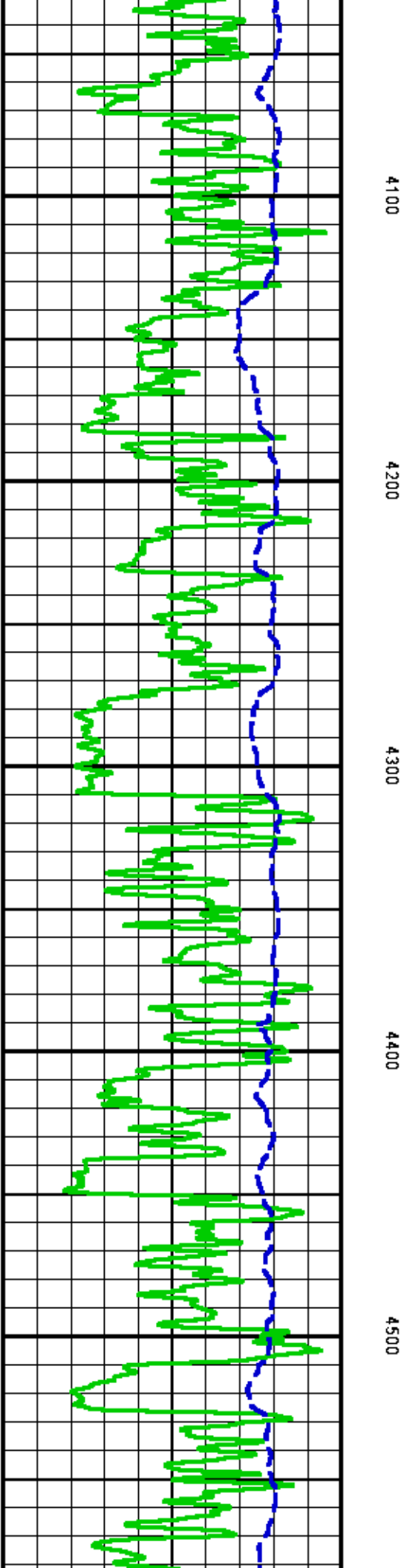
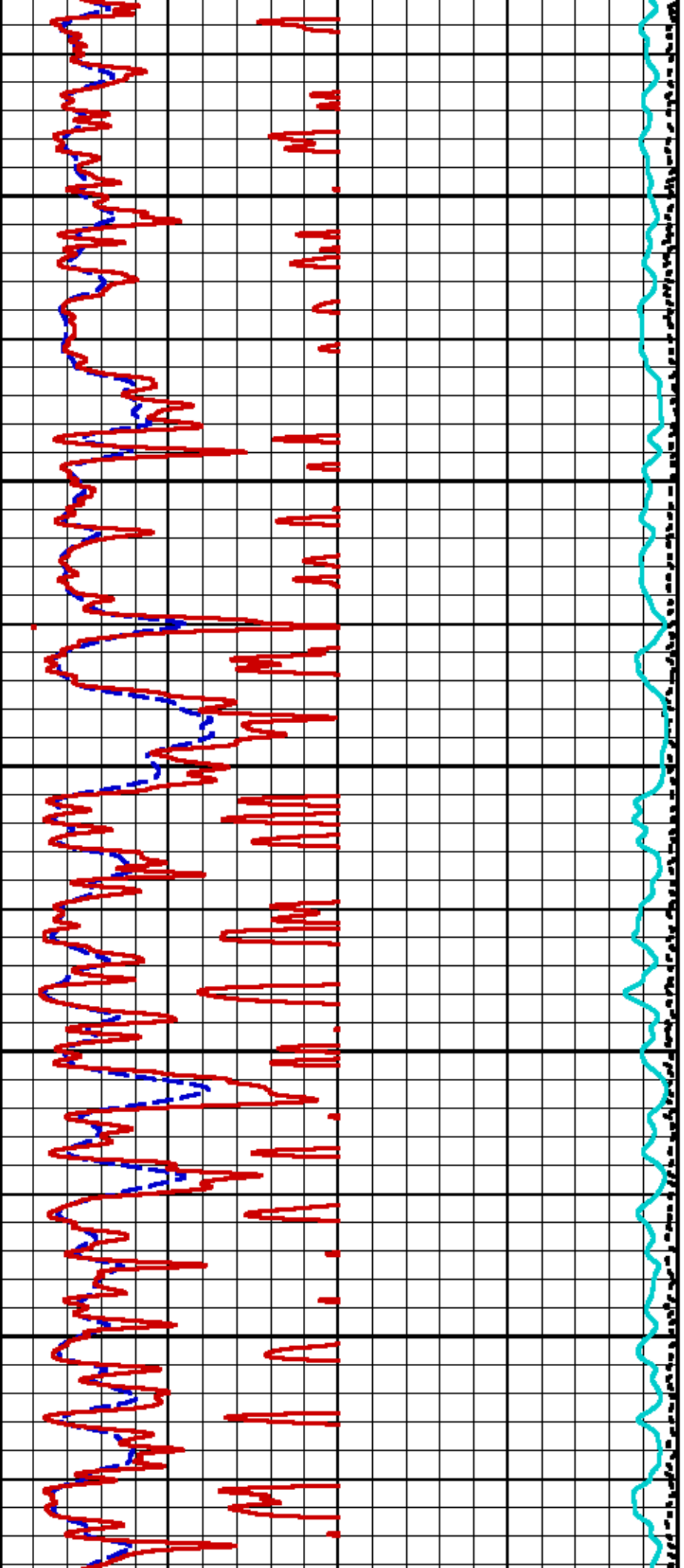


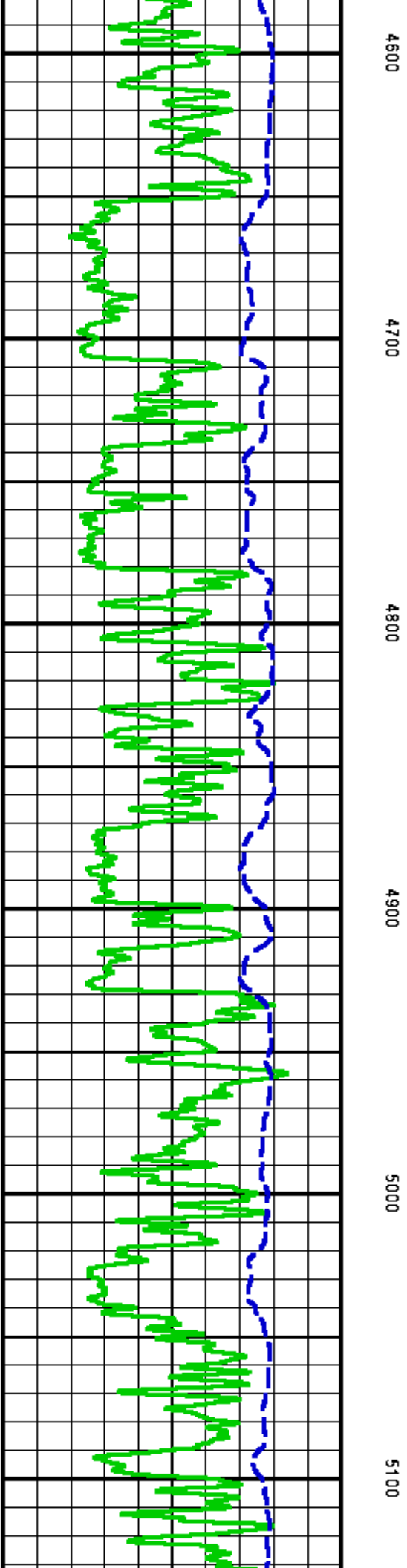
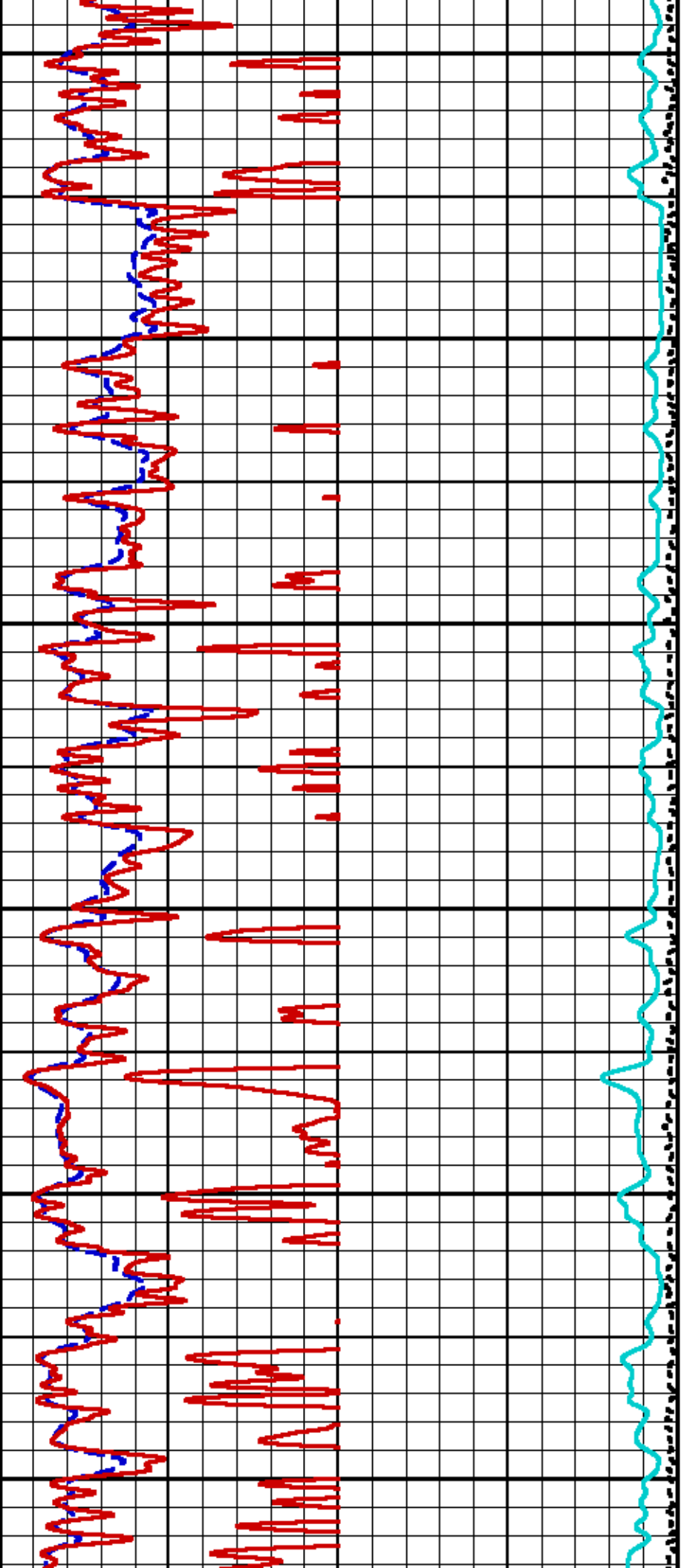


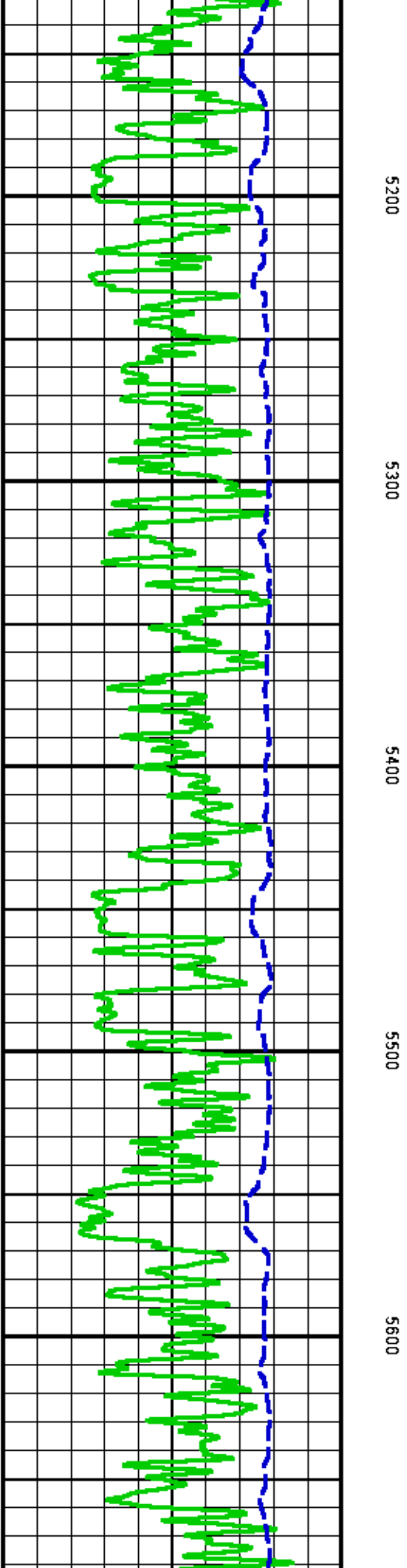
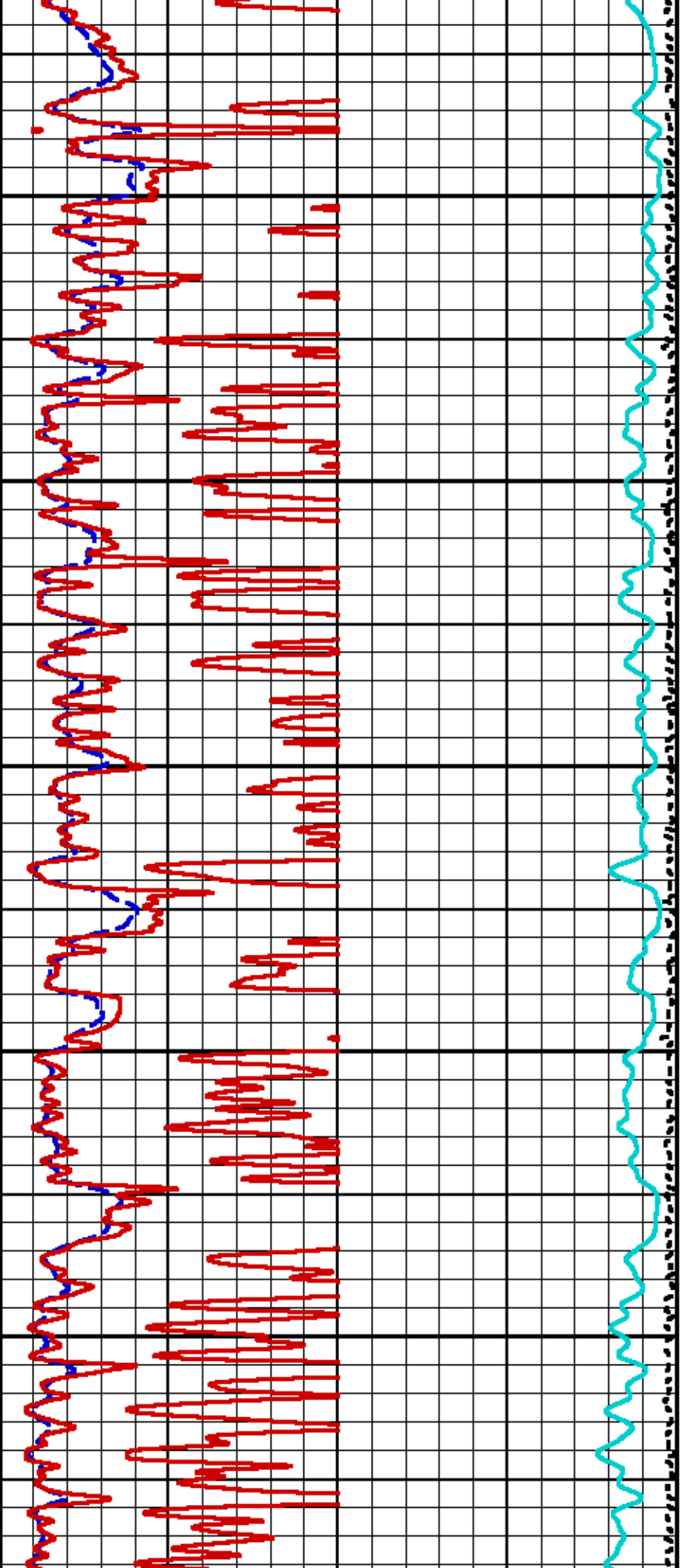


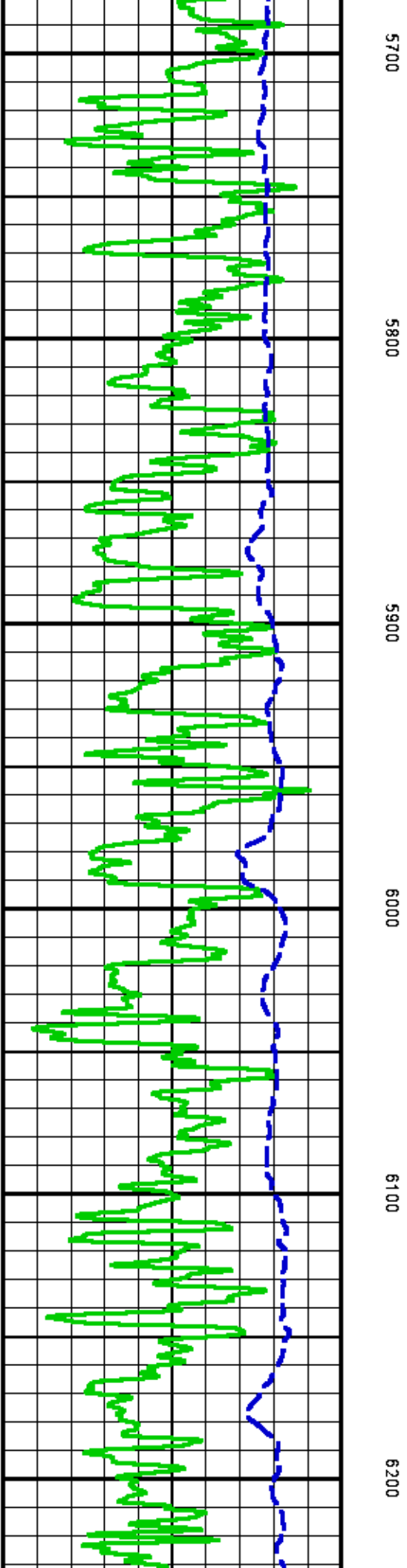
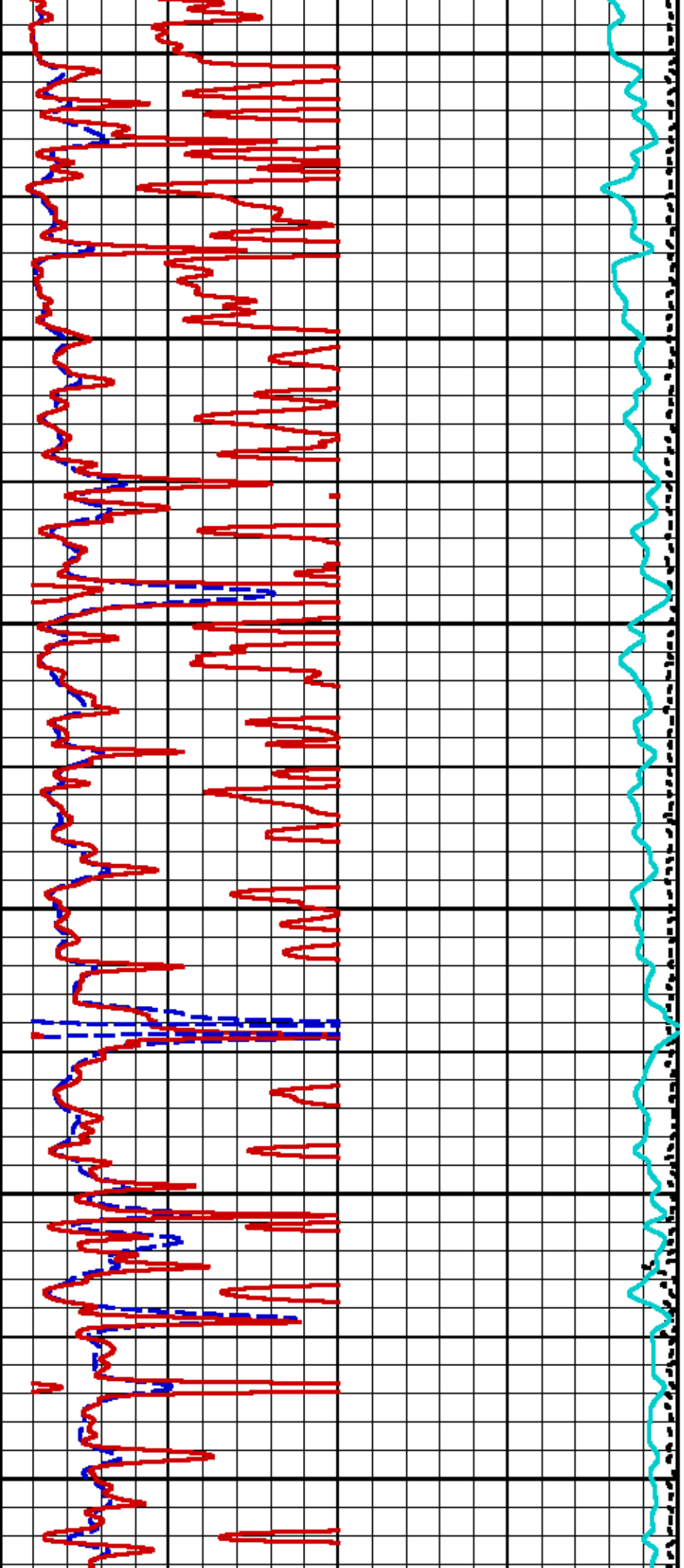


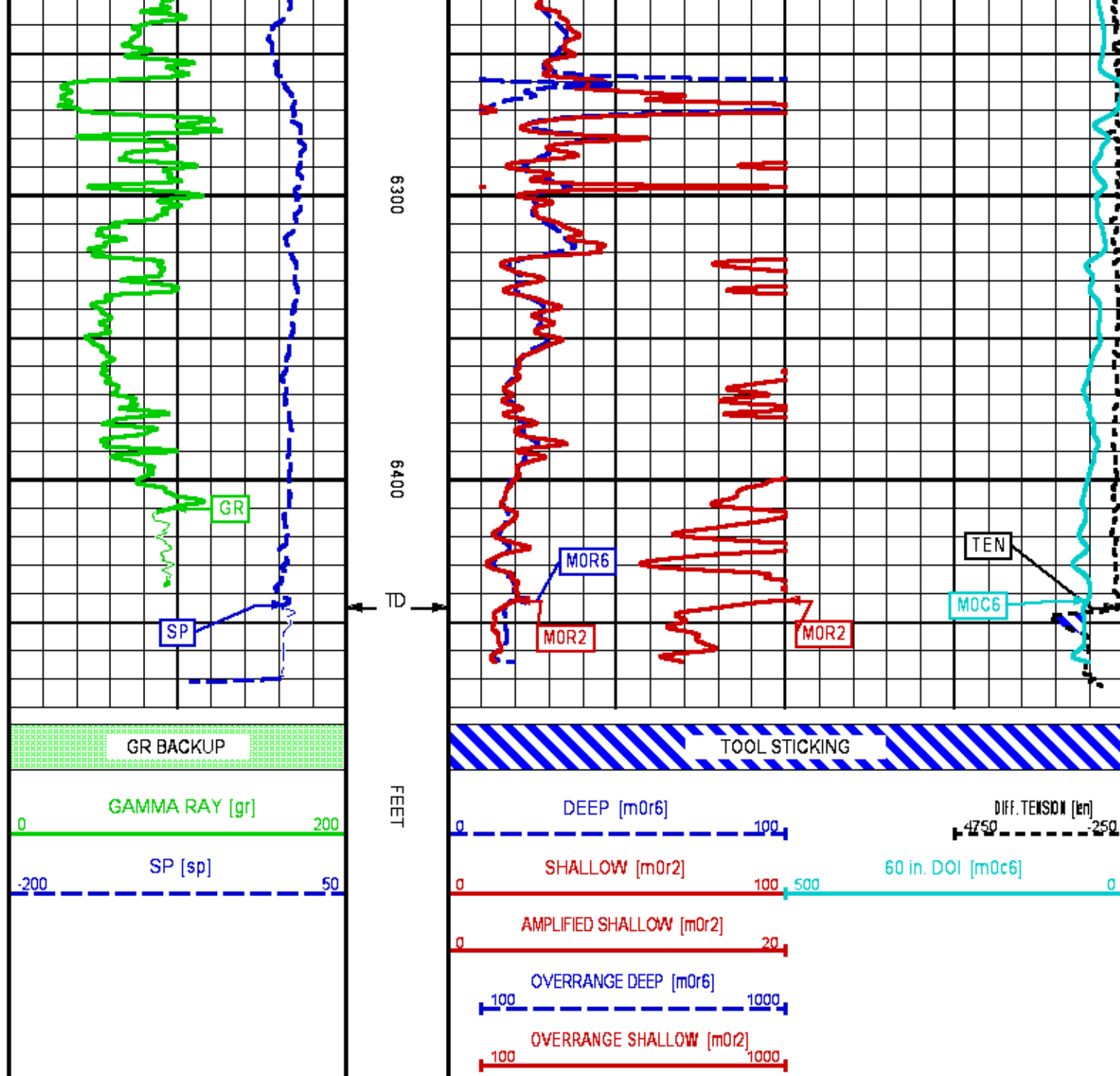












## MAIN LOG 5"/100FT SCALE

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

Plotted: Thu Jun 12 14:16:03 2014

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/OH087237/n970a02.prm  
LOGGING MODE: DEPTH  
TOP DEPTH: 1243.500 ft  
DIRECTION: UP  
BOTTOM DEPTH: 6465.485 ft

SYMMETRIC FILTER					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR MED RES	FILTER (j)	medium (1)		TOP	BOTTOM
CALIPER	FILTER (j)	medium (1)		"	"
TENSION	FILTER (j)	medium (1)		"	"
CN MED RES	FILTER (j)	medium (1)		"	"
ZDL MED RES	FILTER (hrd1*)	medium		"	"
	FILTER (hrd1s*)	medium		"	"
	FILTER (hrd2*)	medium		"	"
	FILTER (hrd2s*)	medium		"	"
	FILTER (soft*)	medium		"	"
SP-SPDH	FILTER (j)	heavy (3)		"	"

BOREHOLE & CEMENT					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	4.500	in	TOP	BOTTOM
	CASING THICKNESS	0.000	in	"	"
BIT SIZE	BIT SIZE	8.750	in	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cnbh*)	8.750	in	"	"
	FIXED DIAMETER (mbh*)	8.750	in	"	"
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	79.0	degF	"	"
	MUD SAMPLE RES	0.350	ohm.m	"	"
BH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDIL)	TOOL MEASURED		"	"
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	79.0	degF	"	"
	at BH REF DEPTH	0.0	ft	"	"
	with TEMP GRADIENT	1.200	0.01 degF/ft	"	"

ACCELERATION PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
ACCEL CORR SWITCH	ACCEL DEPTH CORR	CORRECTION ON		TOP	BOTTOM

CN PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CN MATRIX	2436 MATRIX	SANDSTONE		TOP	BOTTOM
CN BOREHOLE CORRECTION	SALINITY	1500	ppm	"	"
	BOREHOLE CORRECTION	ON		"	"
CN TOOL STANDOFF	ENABLE STANDOFF CORR	OFF		"	"
	STANDOFF AMOUNT	0.00	in	"	"
CN CASING & CEMENT CORRECTION	CORRECTION	OFF		"	"
	BIT SIZE BEHIND CSNG	7.875	in	"	"

ZDL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
DENSITY POROSITY	Air Filled Borehole	NO		TOP	BOTTOM
	RHOmatrix	2.680	g/cm3	"	"
	RHOfluid	1.000	g/cm3	"	"

HDIL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORRECTION	ON		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	MUD CONDUCTIVITY		"	"
	STANDOFF	1.50	in	"	"
	TOOL POSITION	ECCENTERED		"	"
	Rmud MULTIPLIER	1.000		"	"

CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:BIT	Jun 12 12:10:47 2014	BIT SIZE
F1:BVOL	Jun 12 12:10:47 2014	BOREHOLE VOLUME
F1:CAL	Jun 12 12:10:47 2014	CALIPER



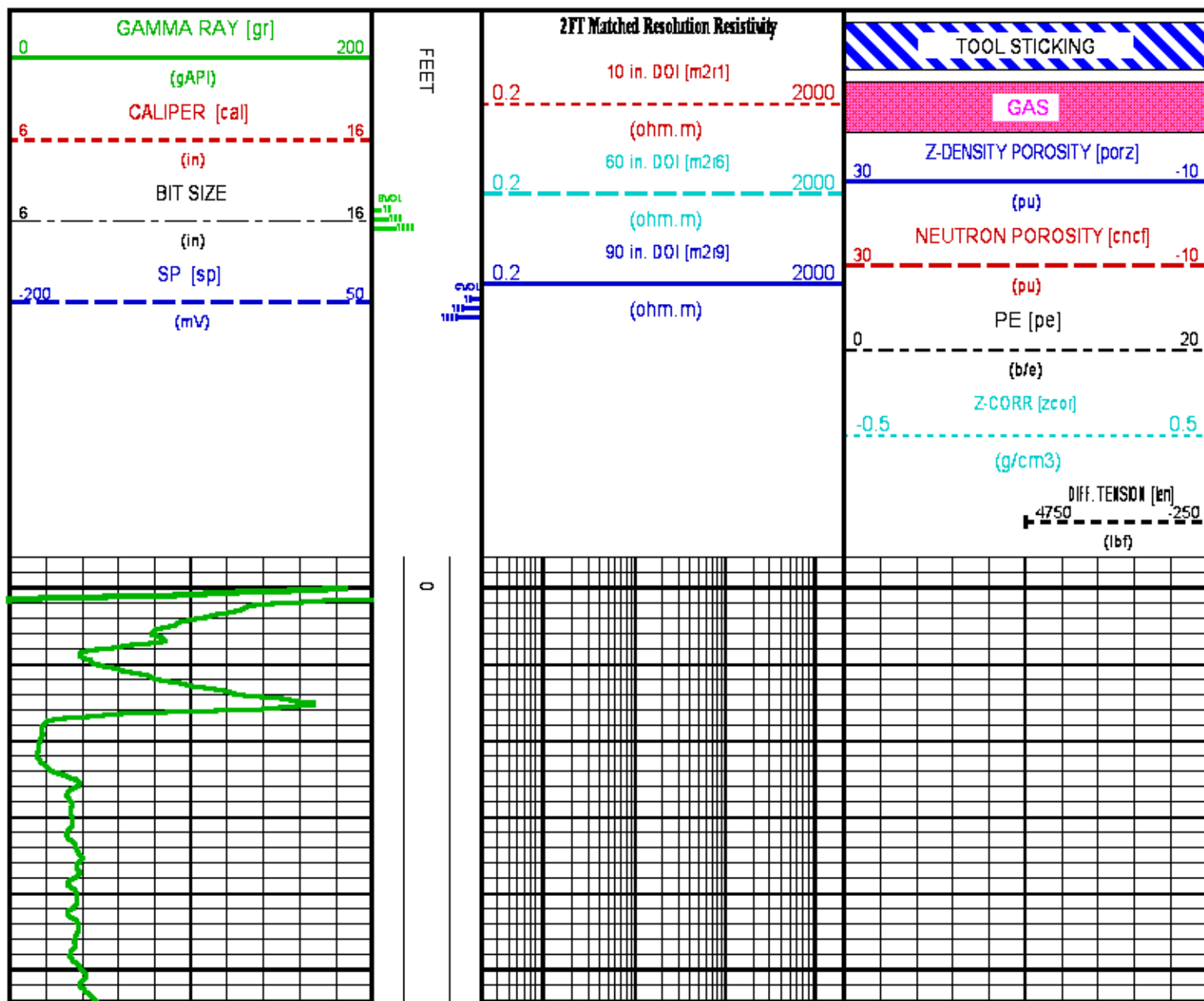
F1:CNC	Jun 12 12:10:47 2014	FIELD NORMALIZED COMPENSATED NEUTRON POROSITY
F1:CVOL	Jun 12 12:10:47 2014	CEMENT VOLUME
F1:GR	Jun 12 12:10:47 2014	GAMMA RAY
F1:M2R1	Jun 12 12:10:47 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 10-INCH DOI
F1:M2R6	Jun 12 12:10:47 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 60-INCH DOI
F1:M2R9	Jun 12 12:10:47 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 90-INCH DOI
F1:PE	Jun 12 12:10:47 2014	PHOTO ELECTRIC CROSS-SECTION
F1:PORZ	Jun 12 12:10:47 2014	POROSITY FOR SELECTABLE MATRIX
F1:SP	Jun 12 12:10:47 2014	SPONTANEOUS POTENTIAL
F1:TEN	Jun 12 12:10:47 2014	DIFFERENTIAL TENSION
F1:ZCOR	Jun 12 12:10:47 2014	DENSITY CORRECTION

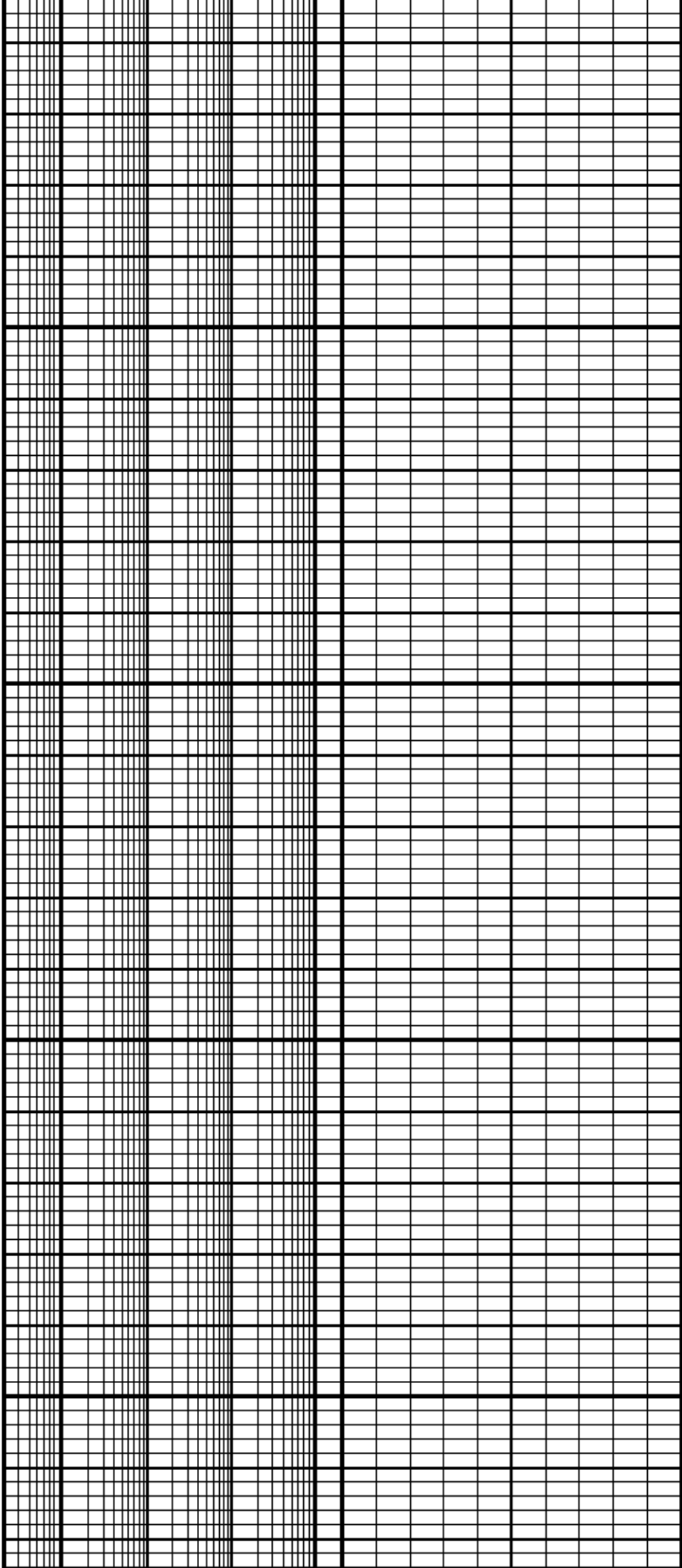
### CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
BIT	0.00	GR	35.00	M2R9	2.75	SP	1.25
CAL	18.12	M2R1	2.75	PE	18.00	TEN	0.00
CNCF	27.38	M2R6	2.75	PORZ	18.00	ZCOR	18.00

**Presentation** : HL6670:/dat1a/OH087237/WPX\_MAIN.fvpdf [5"/100' Scale]  
**Plot Interval** : -3.25 - 6479.5 Feet

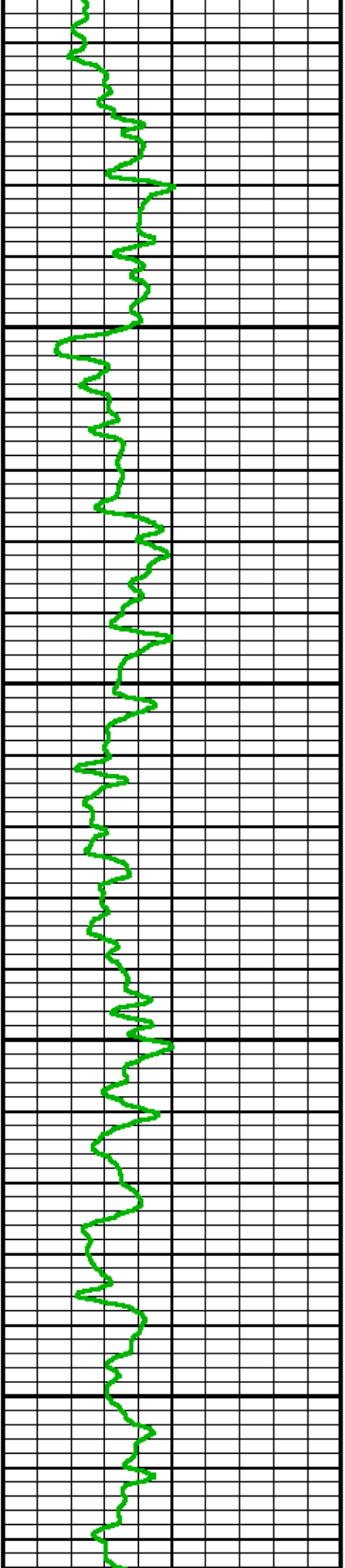
**Data File 1** : F1 : HL6670:/dat1a/OH087237/n970a02-MAIN.xtf  
**Created On** : Jun 12 12:10:47 2014  
**Company** : WPX ENERGY ROCKY MOUNTAIN LLC  
**Well** : C&C ENERGY GM 23-13  
**Field** : GRAND VALLEY  
**File Interval** : -3.25 - 6479.5 Feet  
**OCT** : n970a

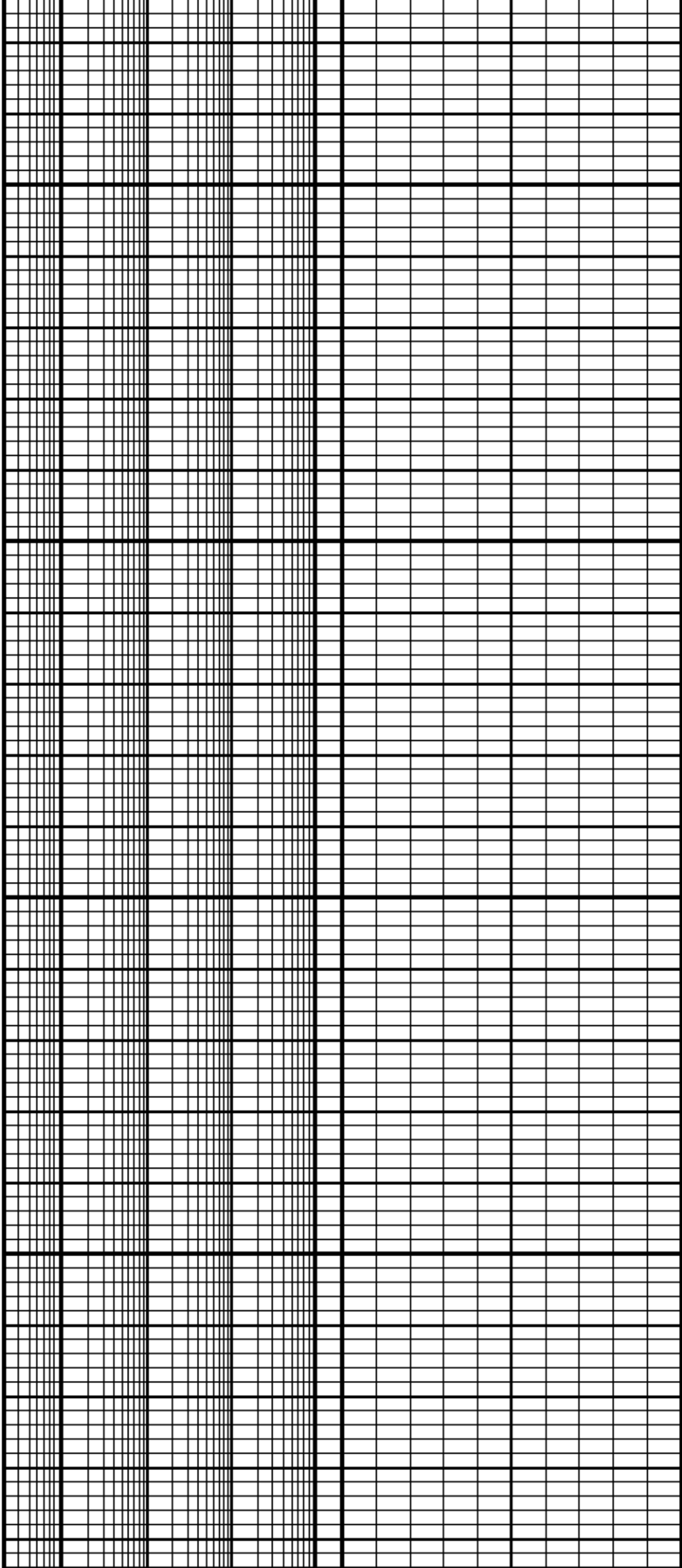




100

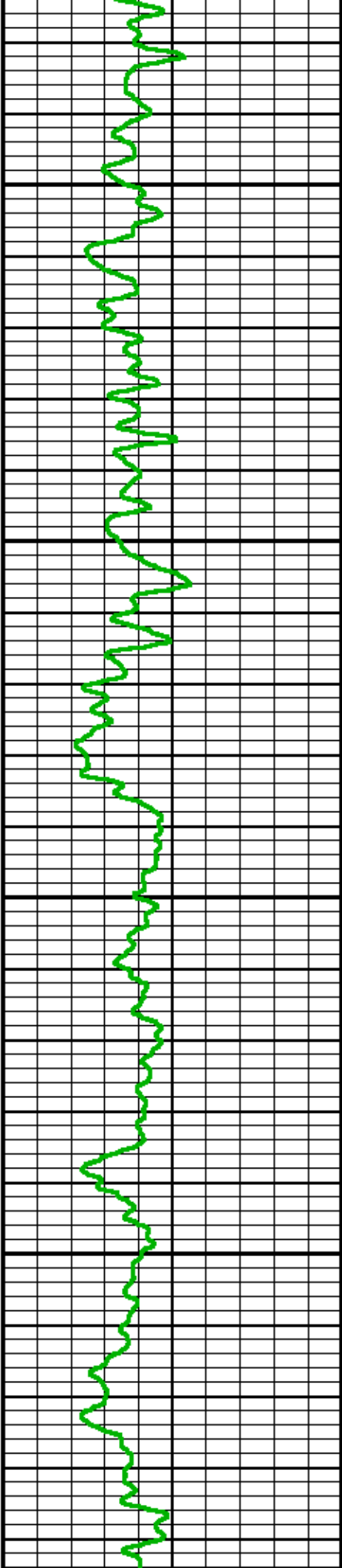
200

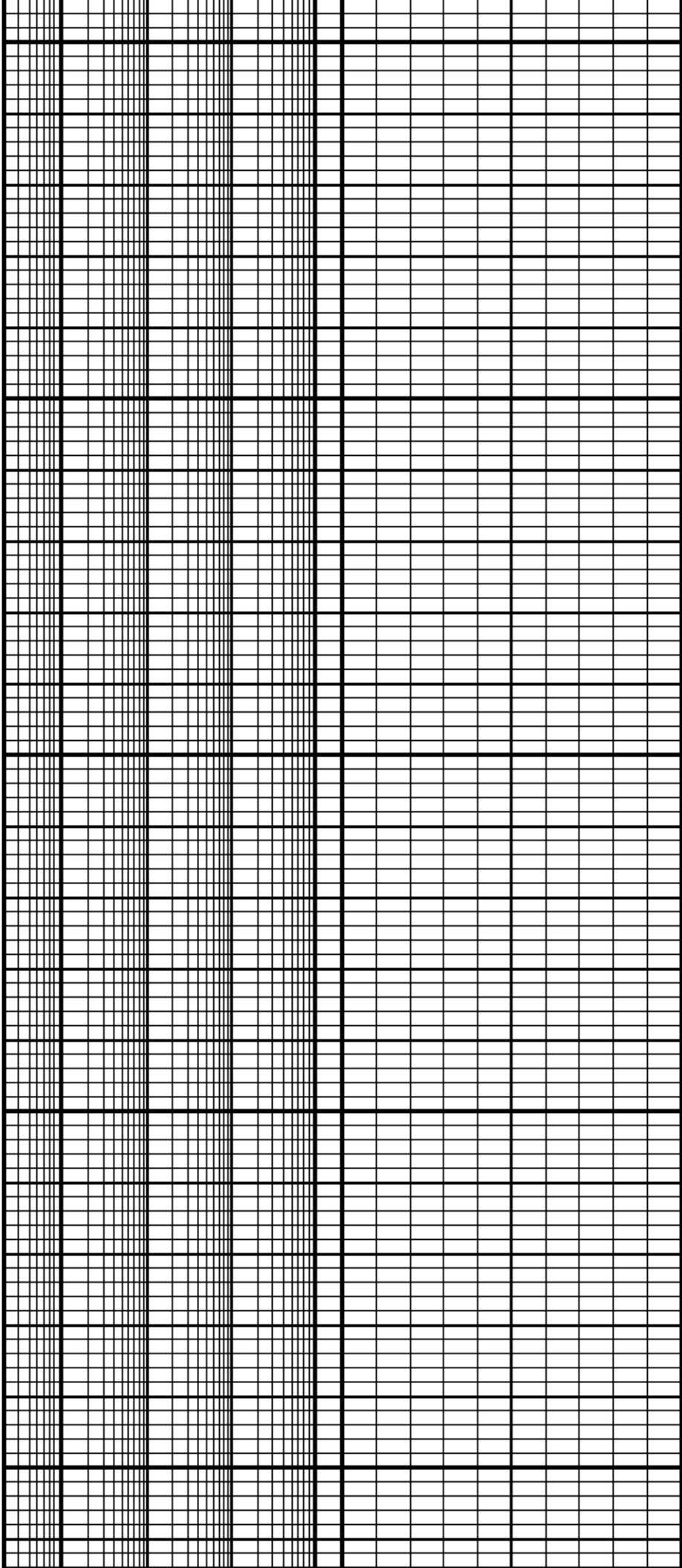




300

400

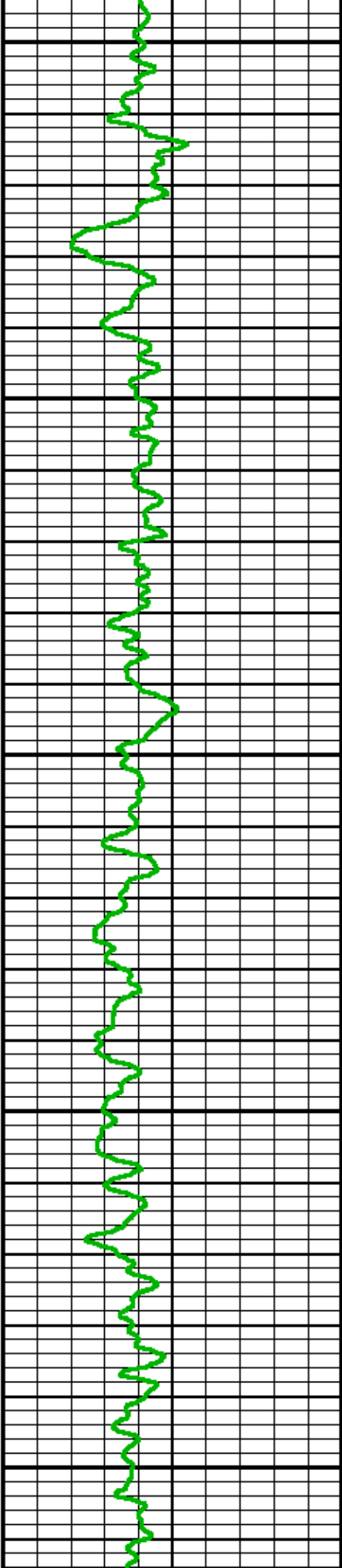


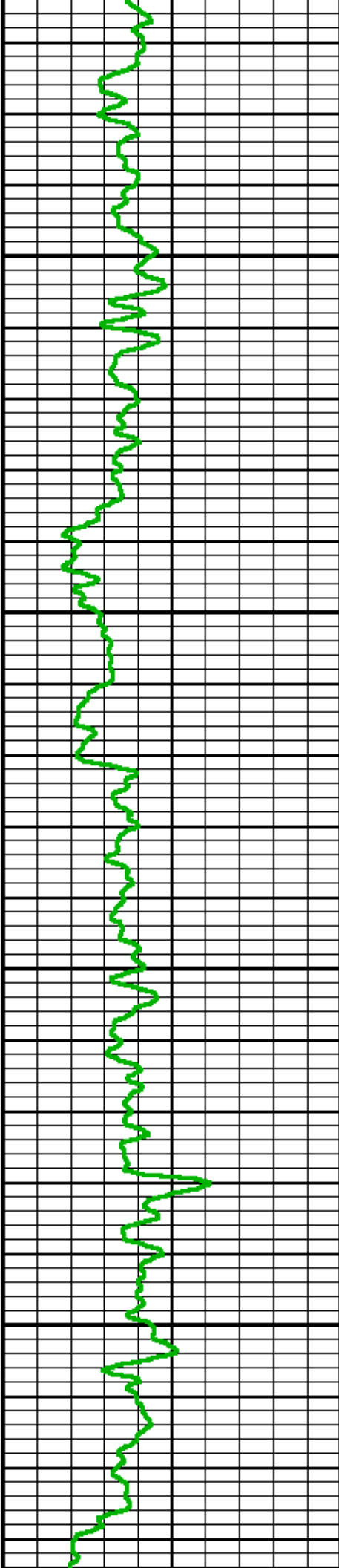


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600

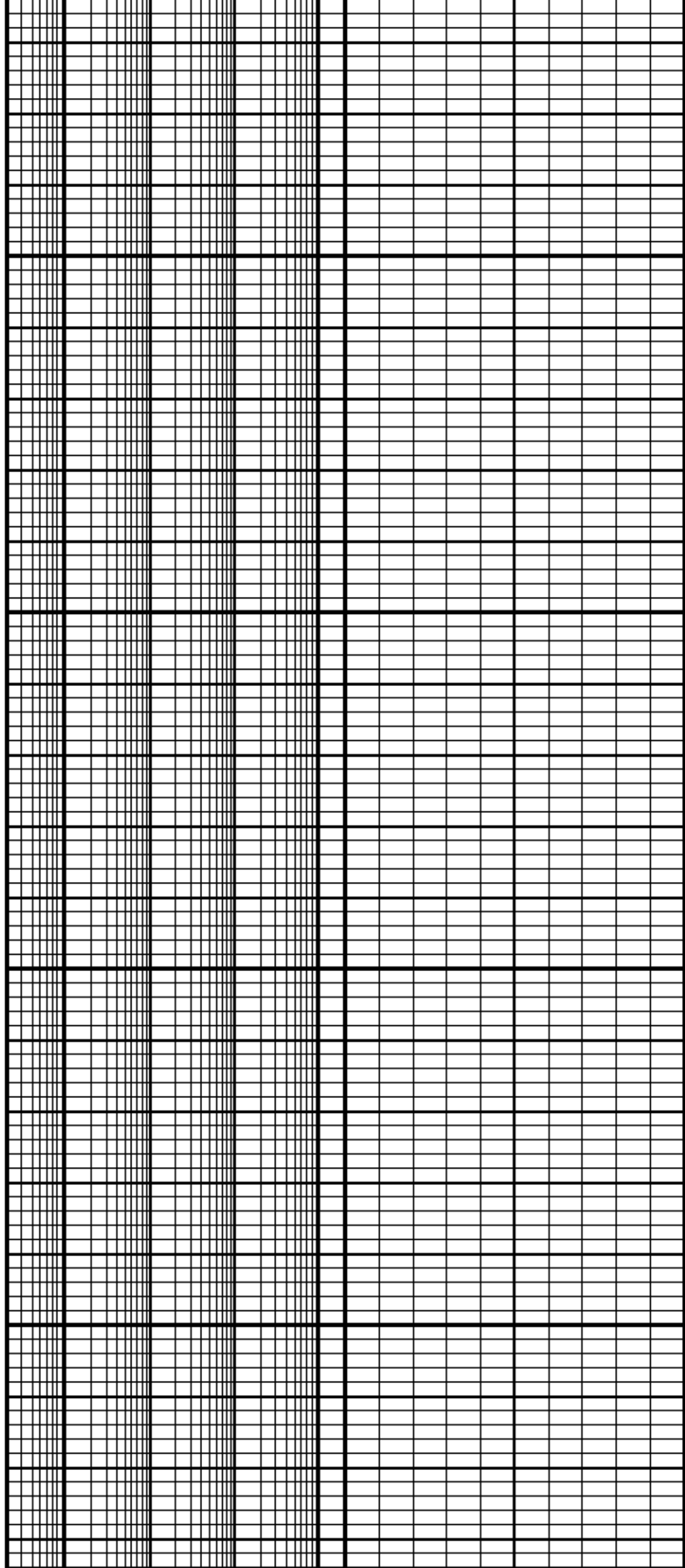
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008

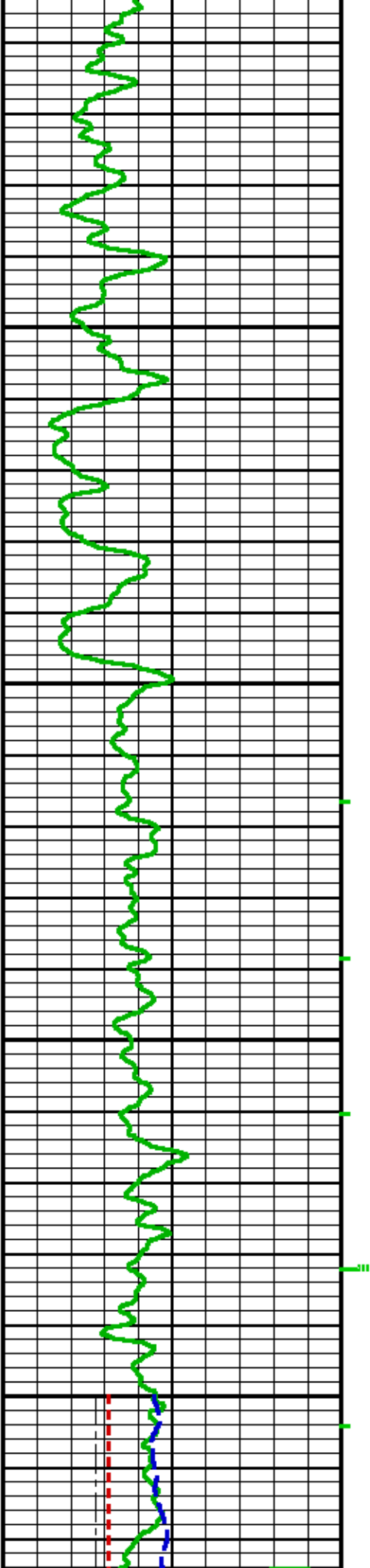
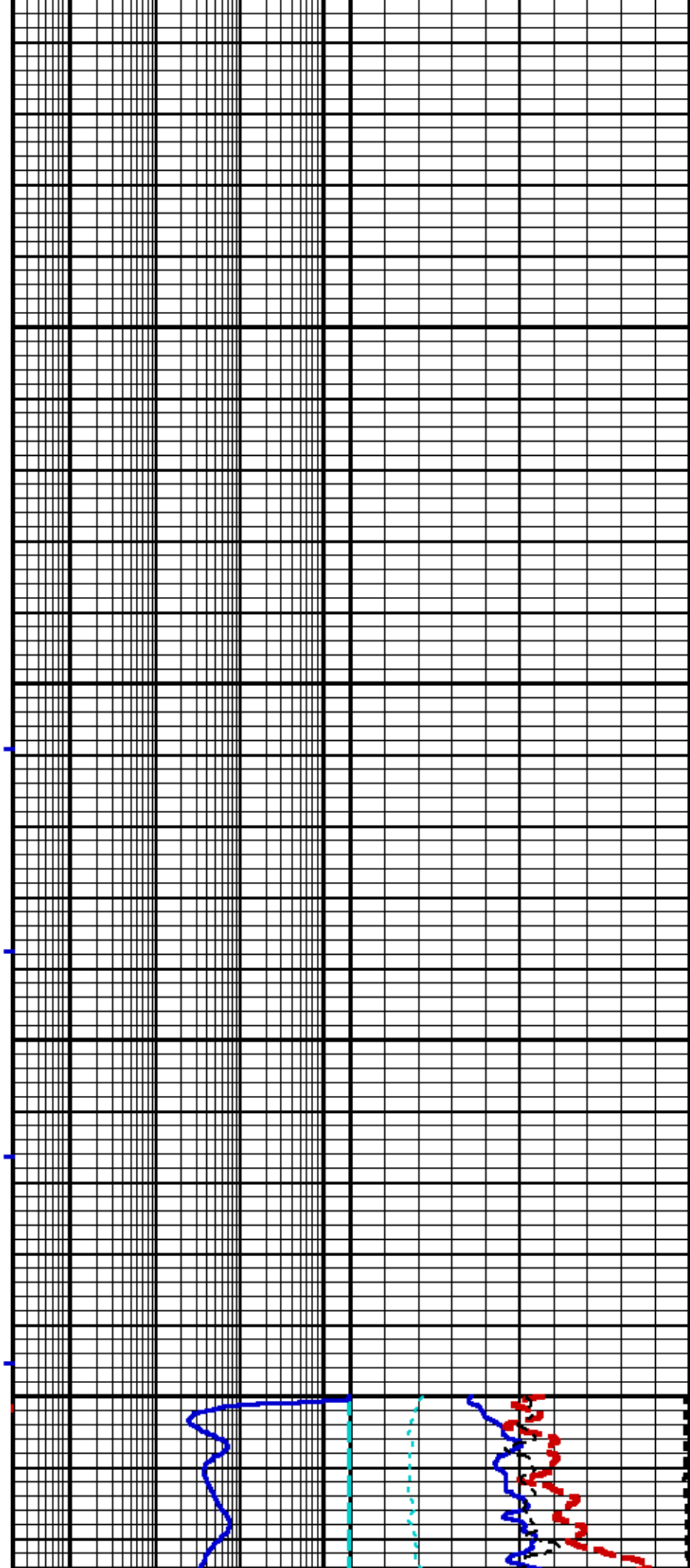
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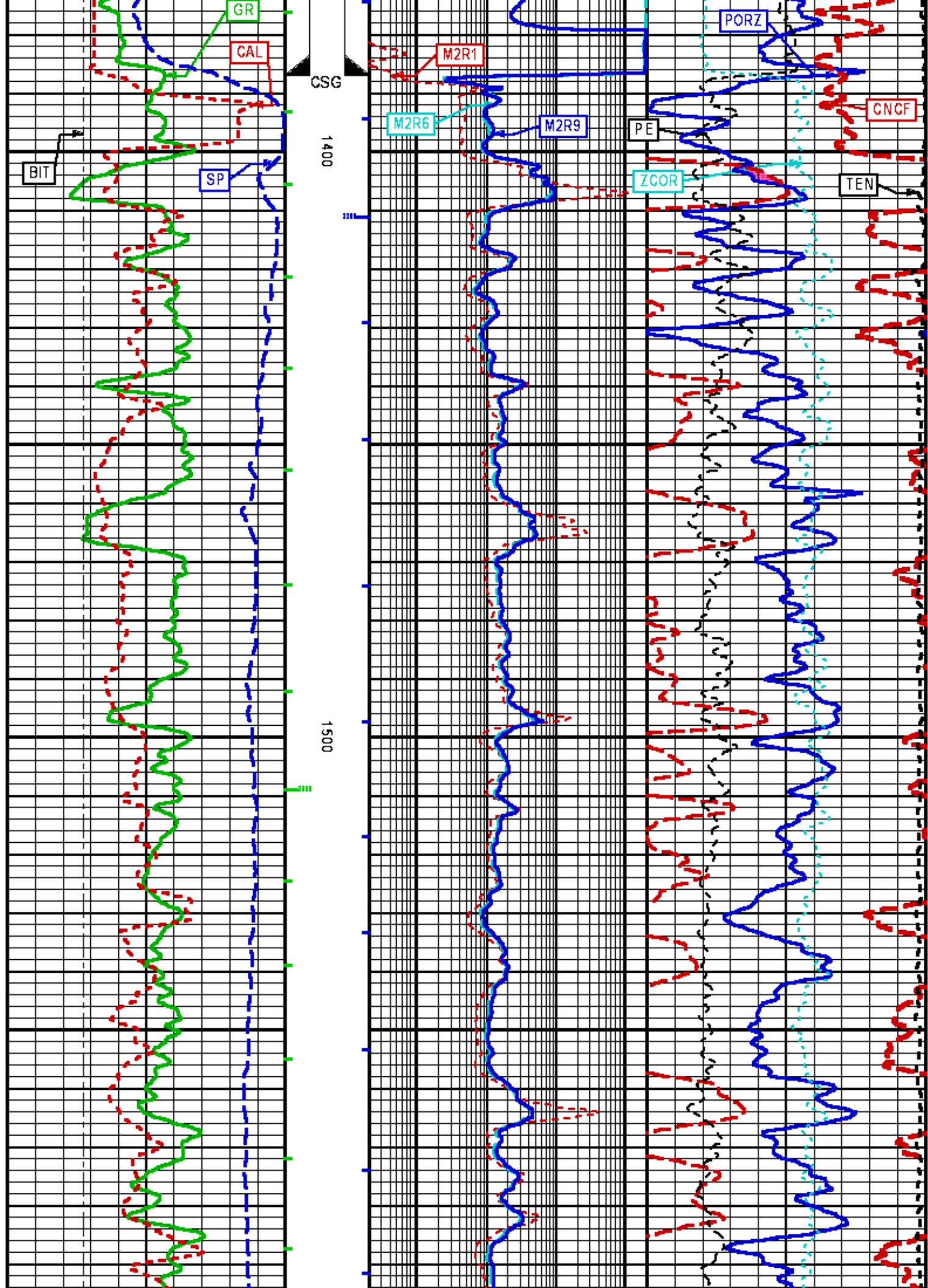


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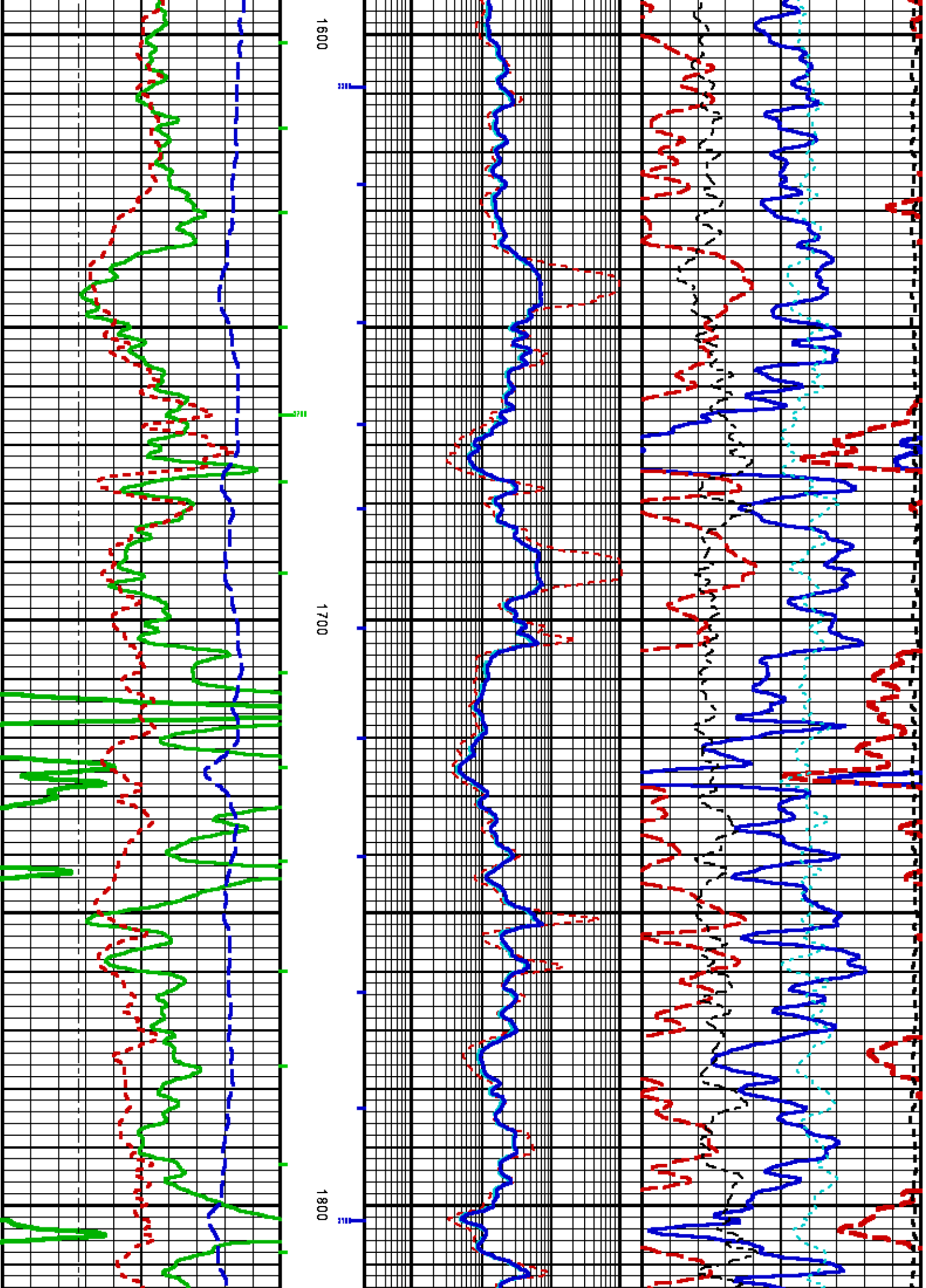
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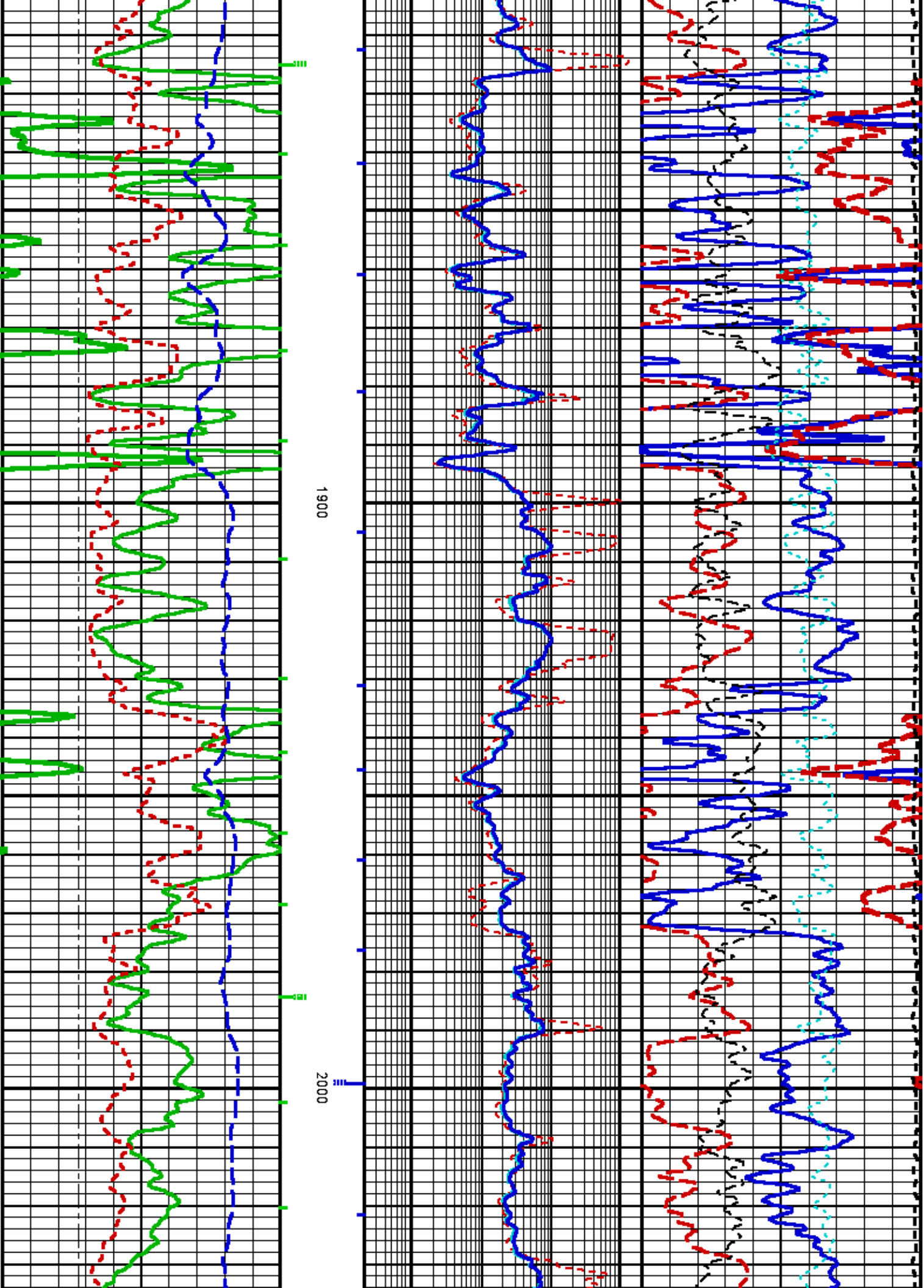


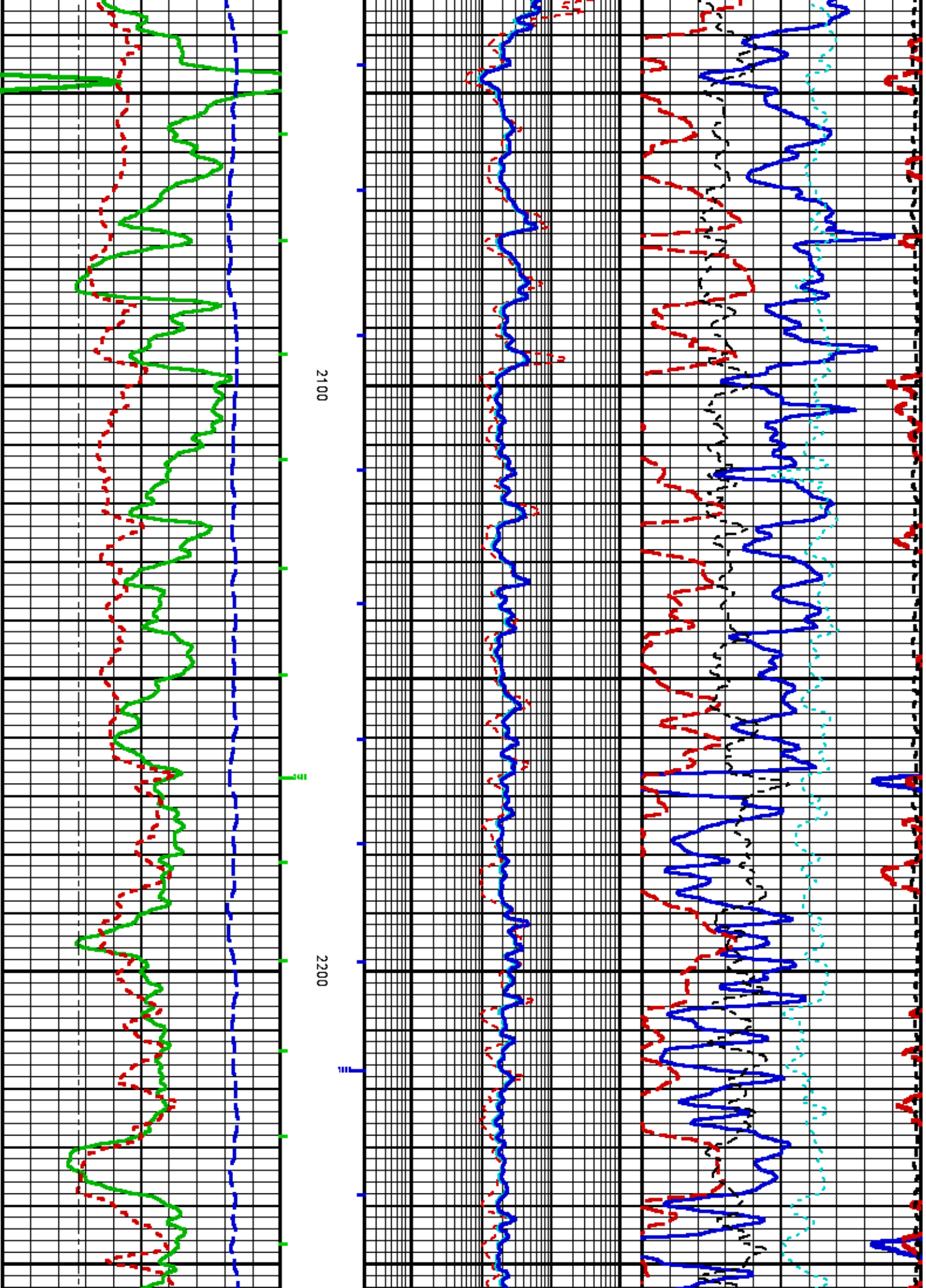


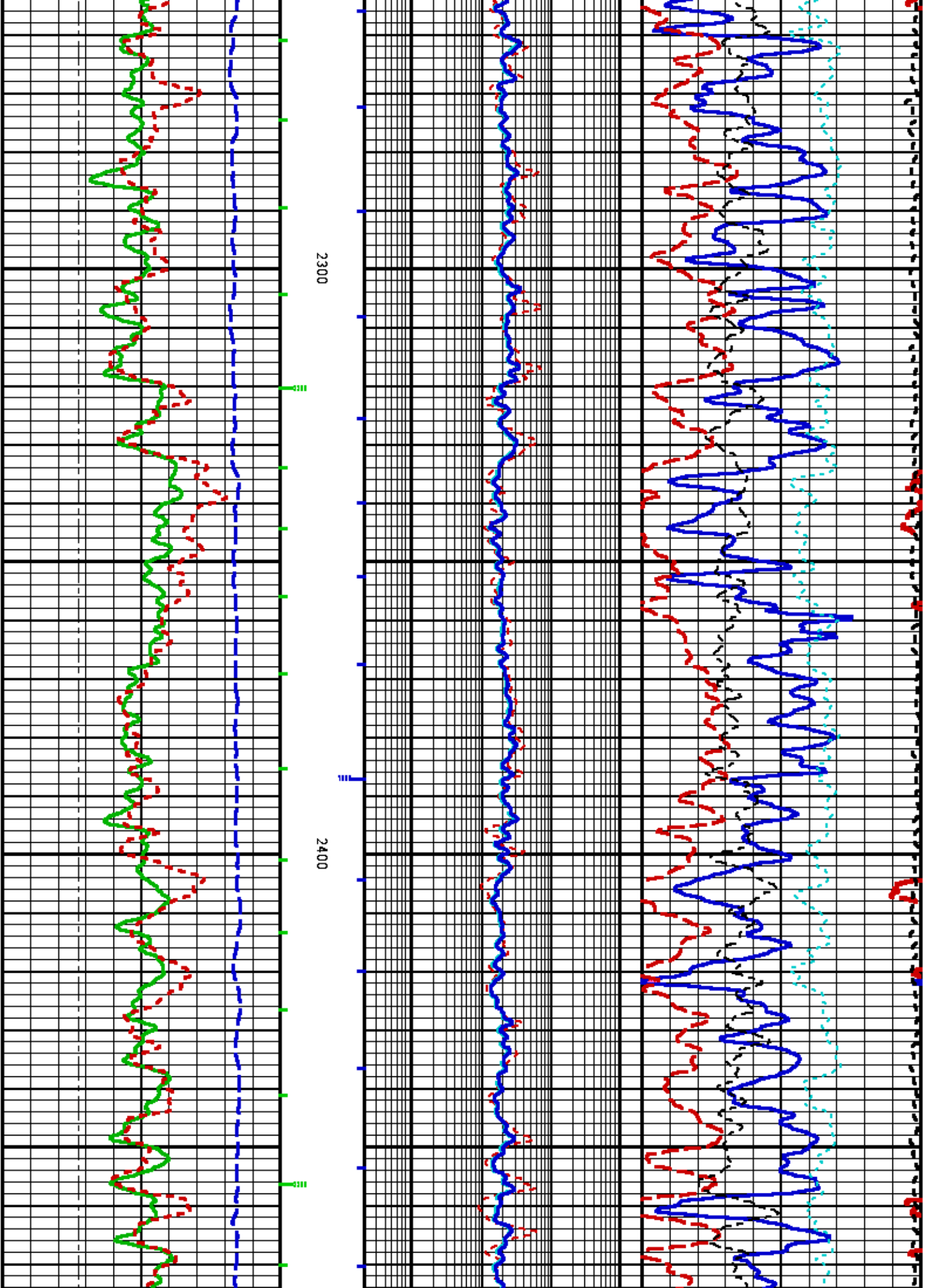


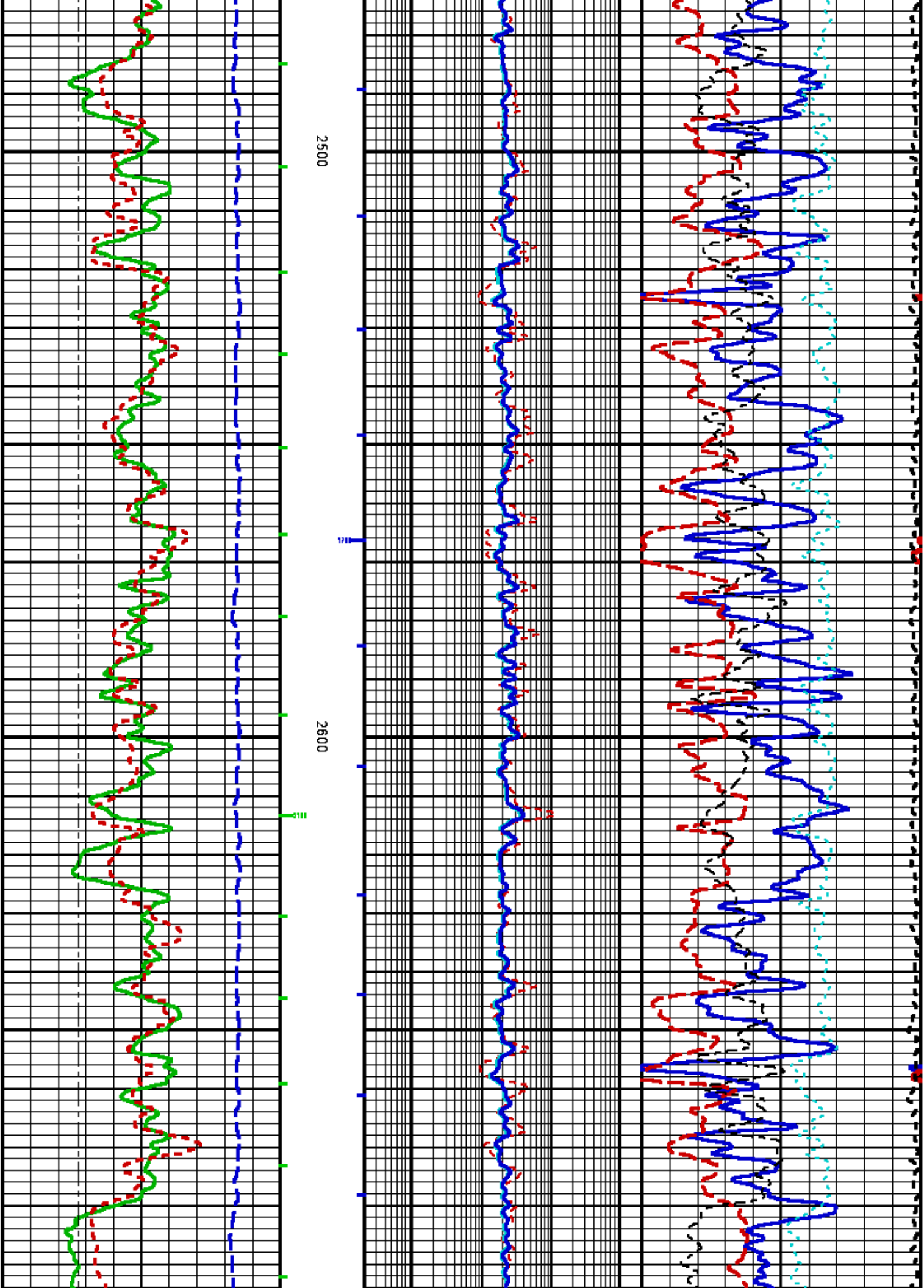




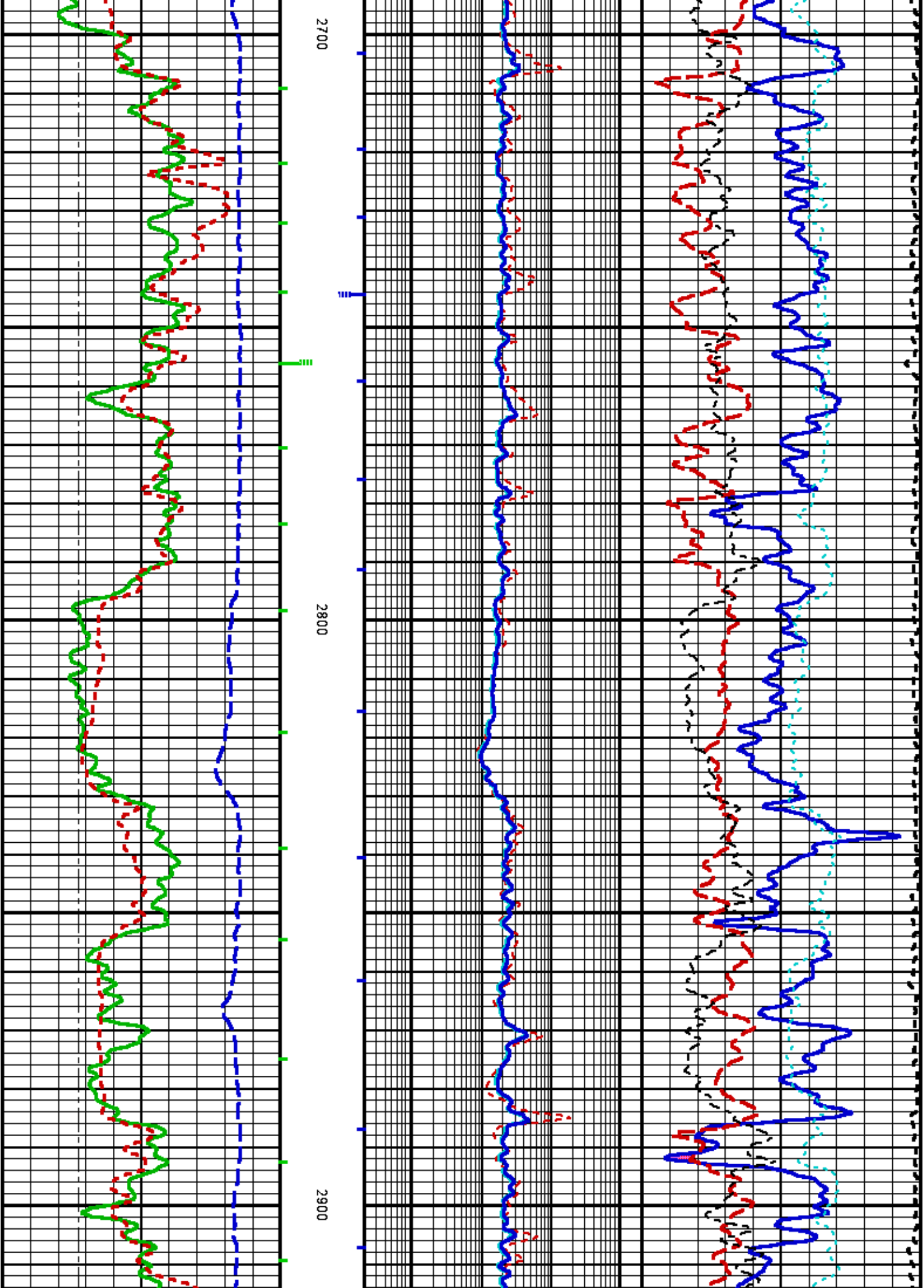


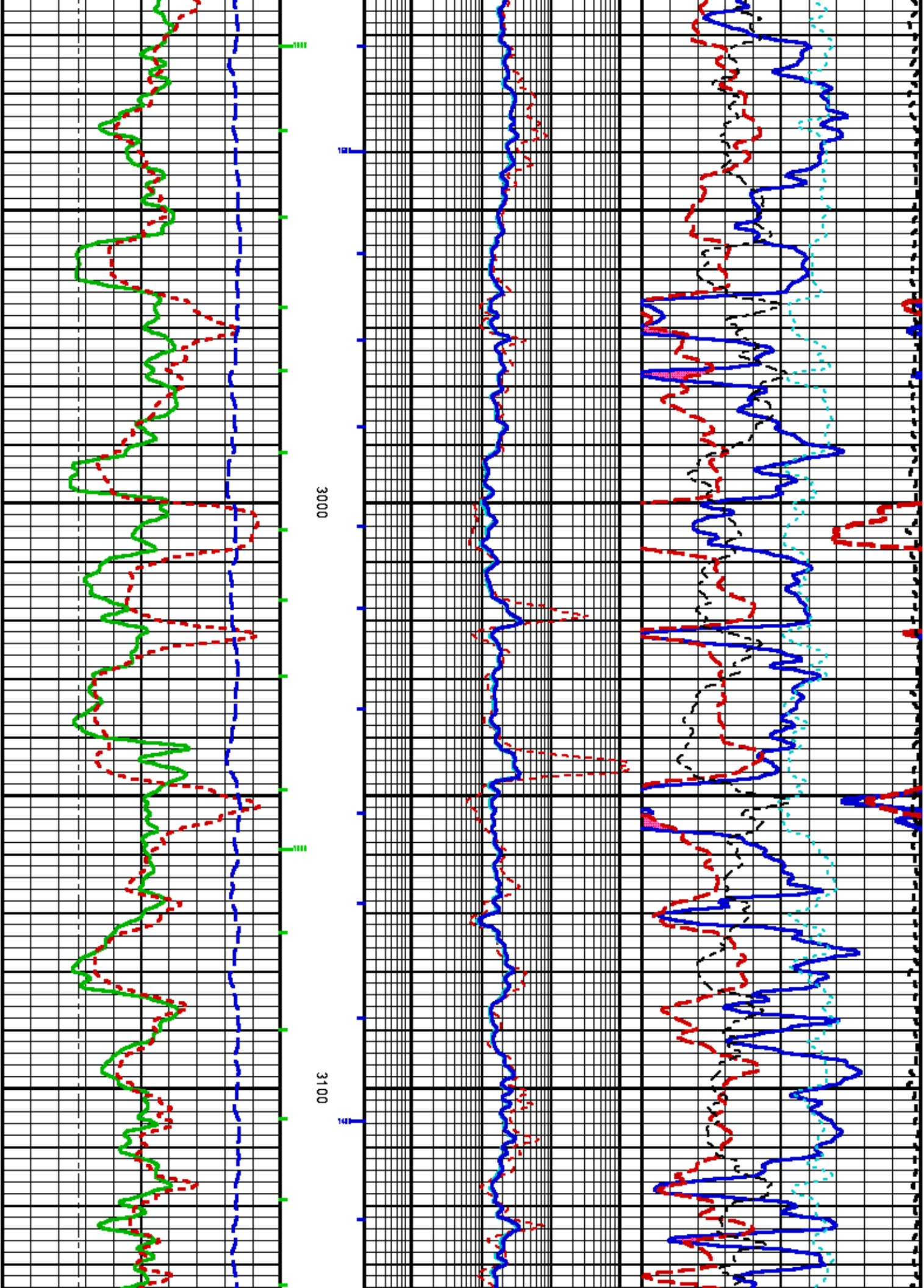


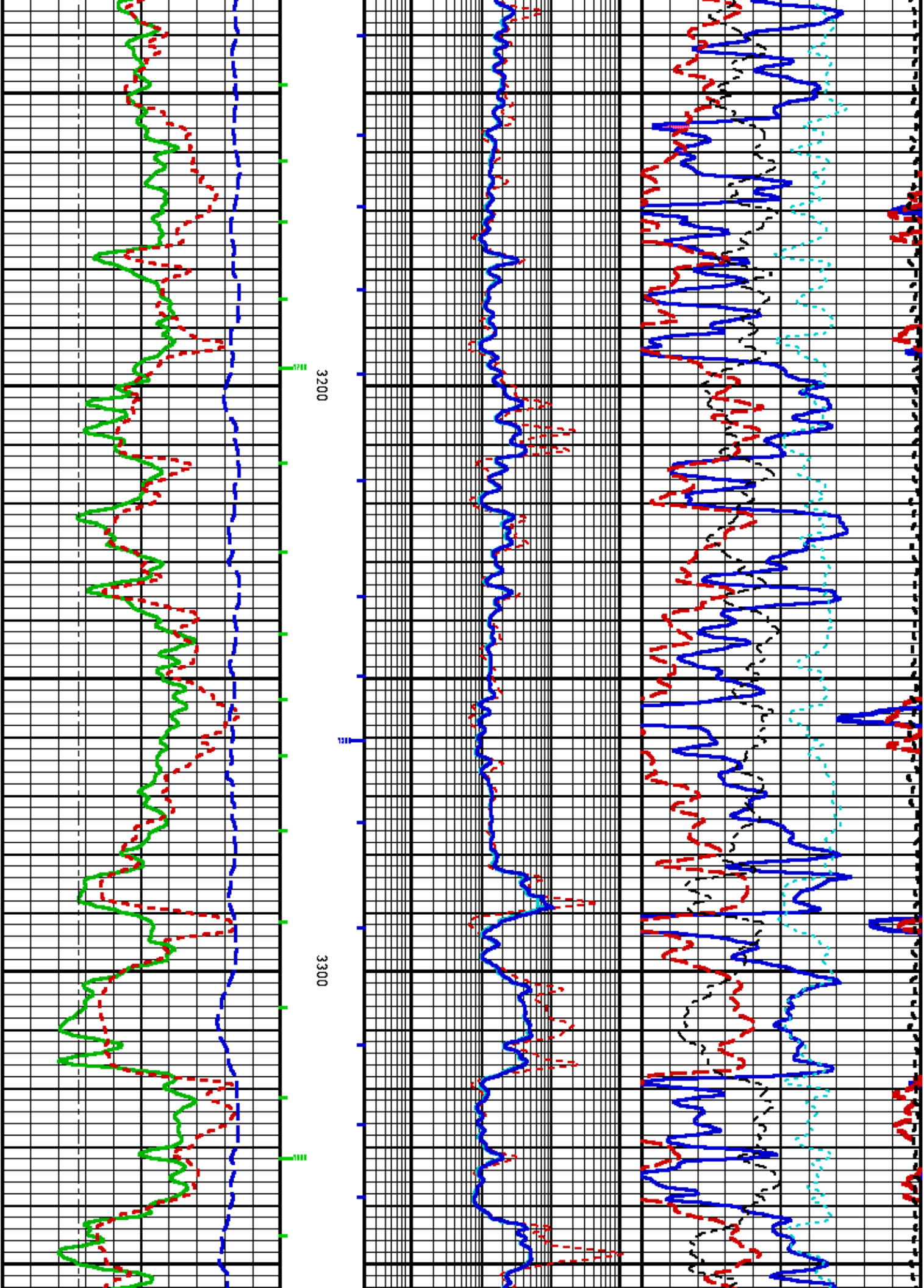




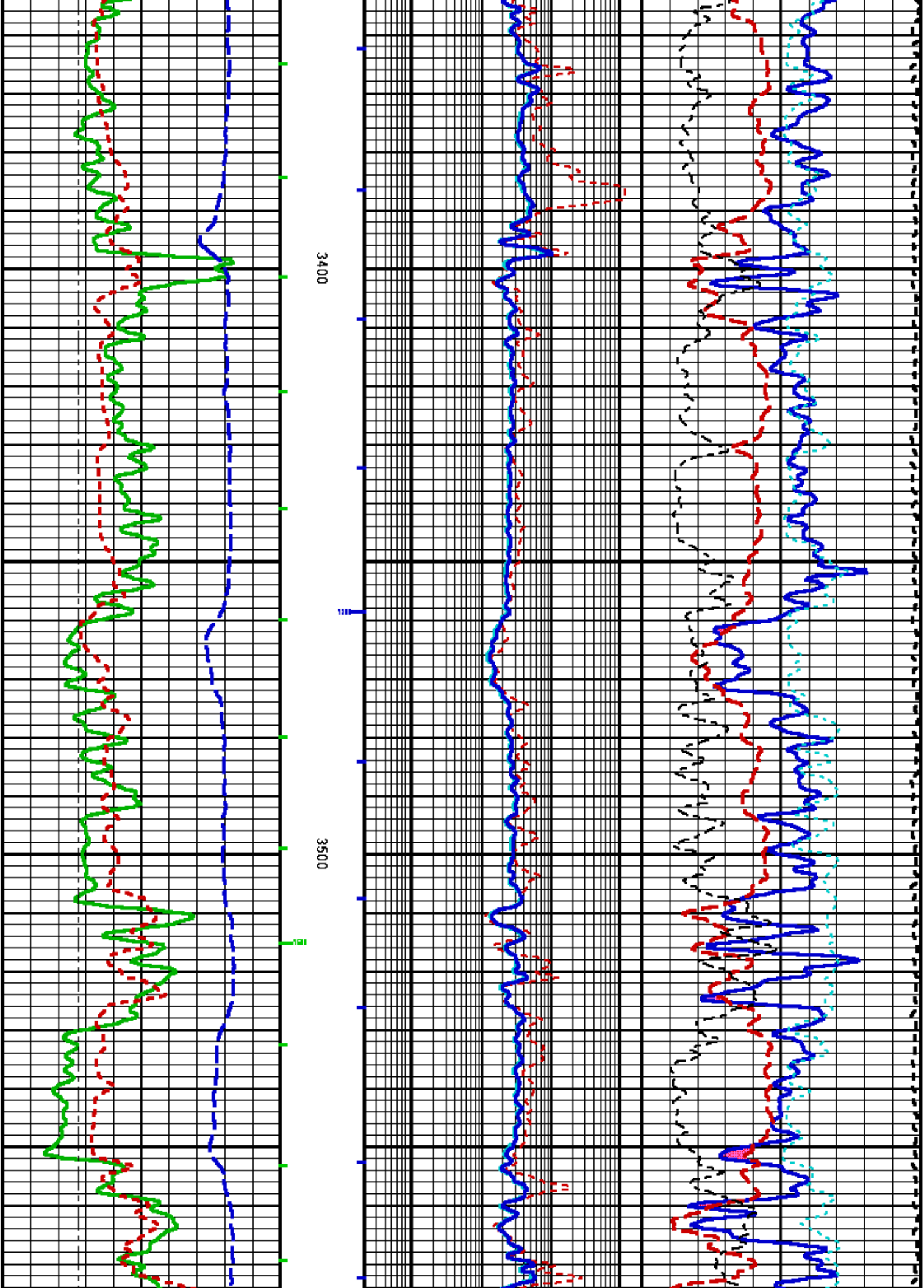


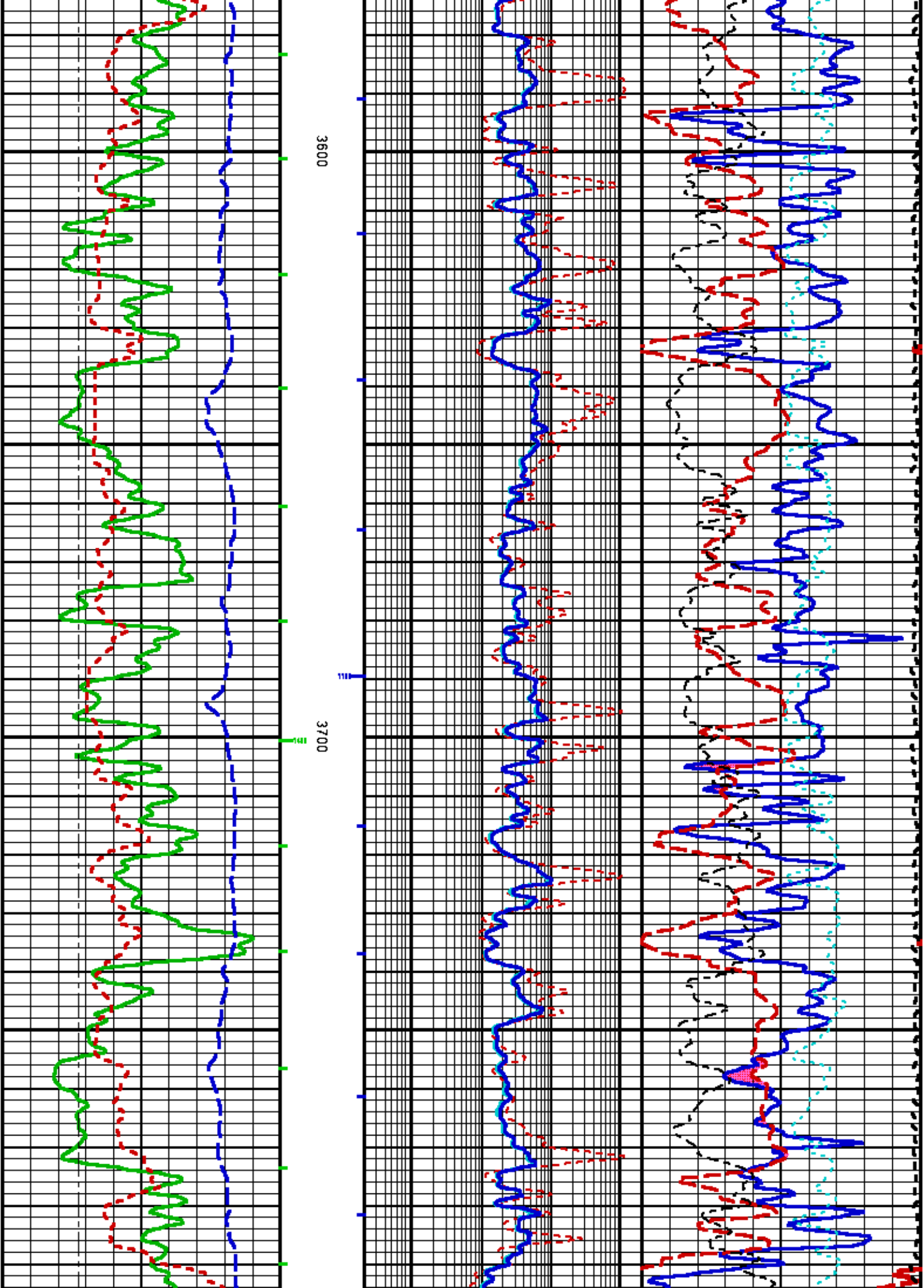


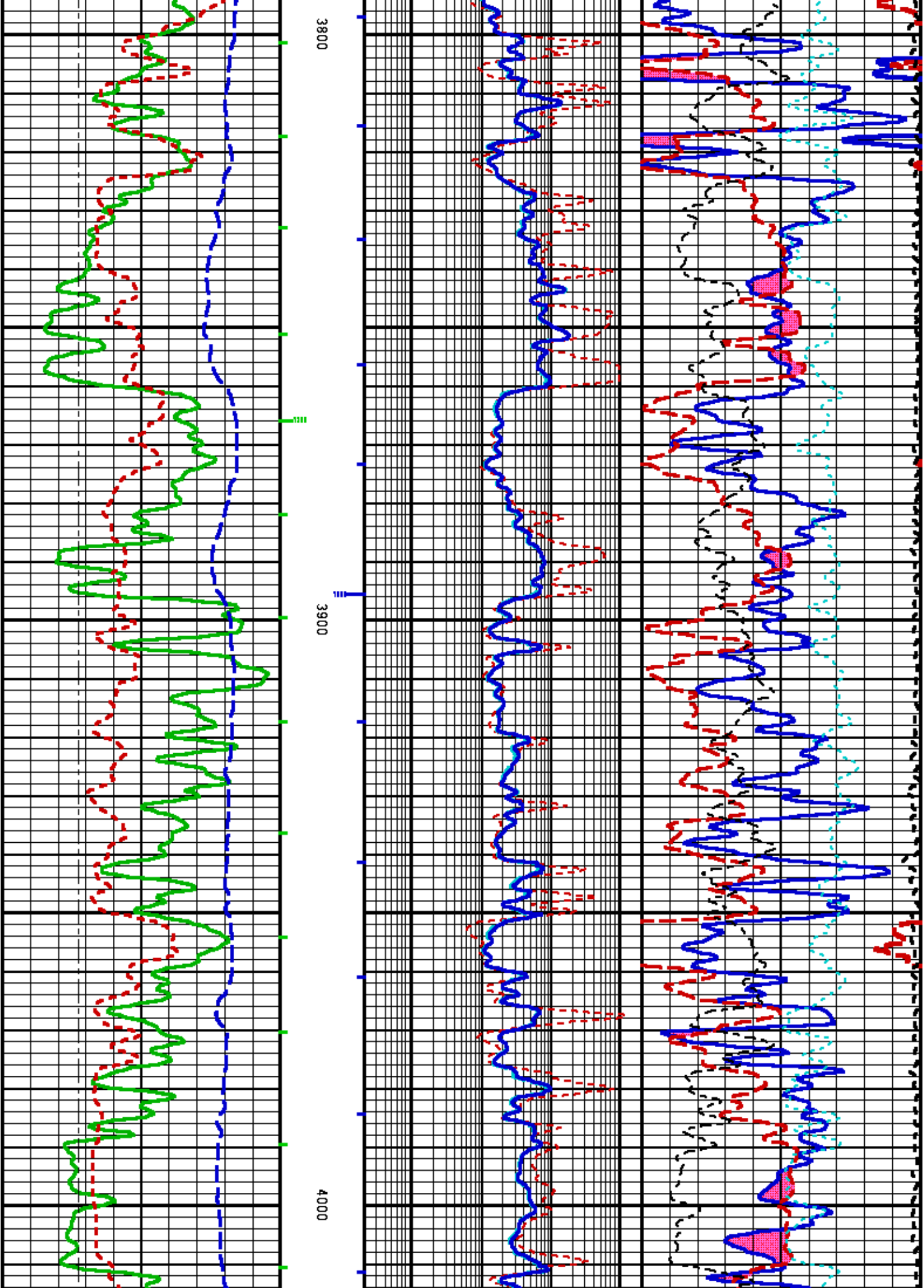


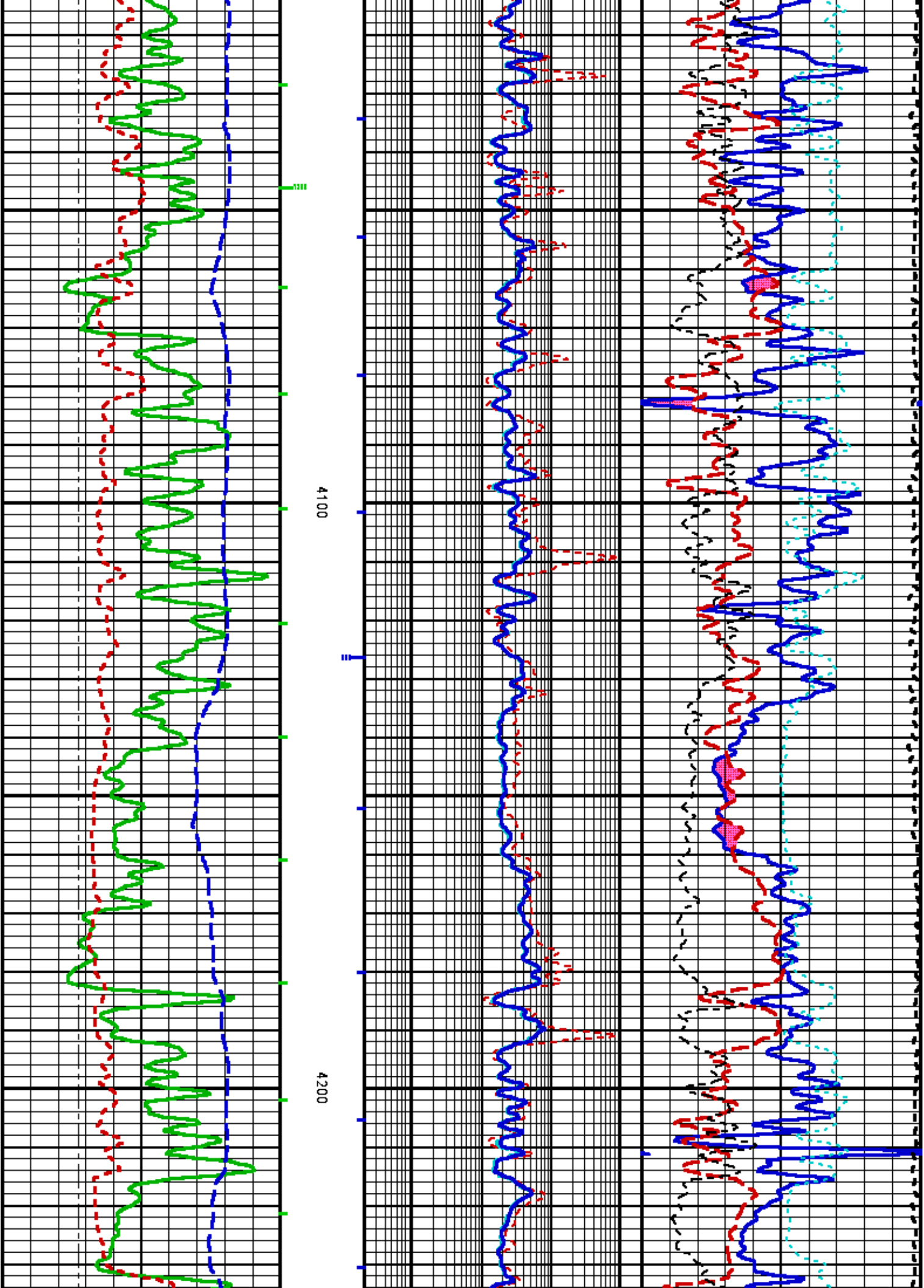




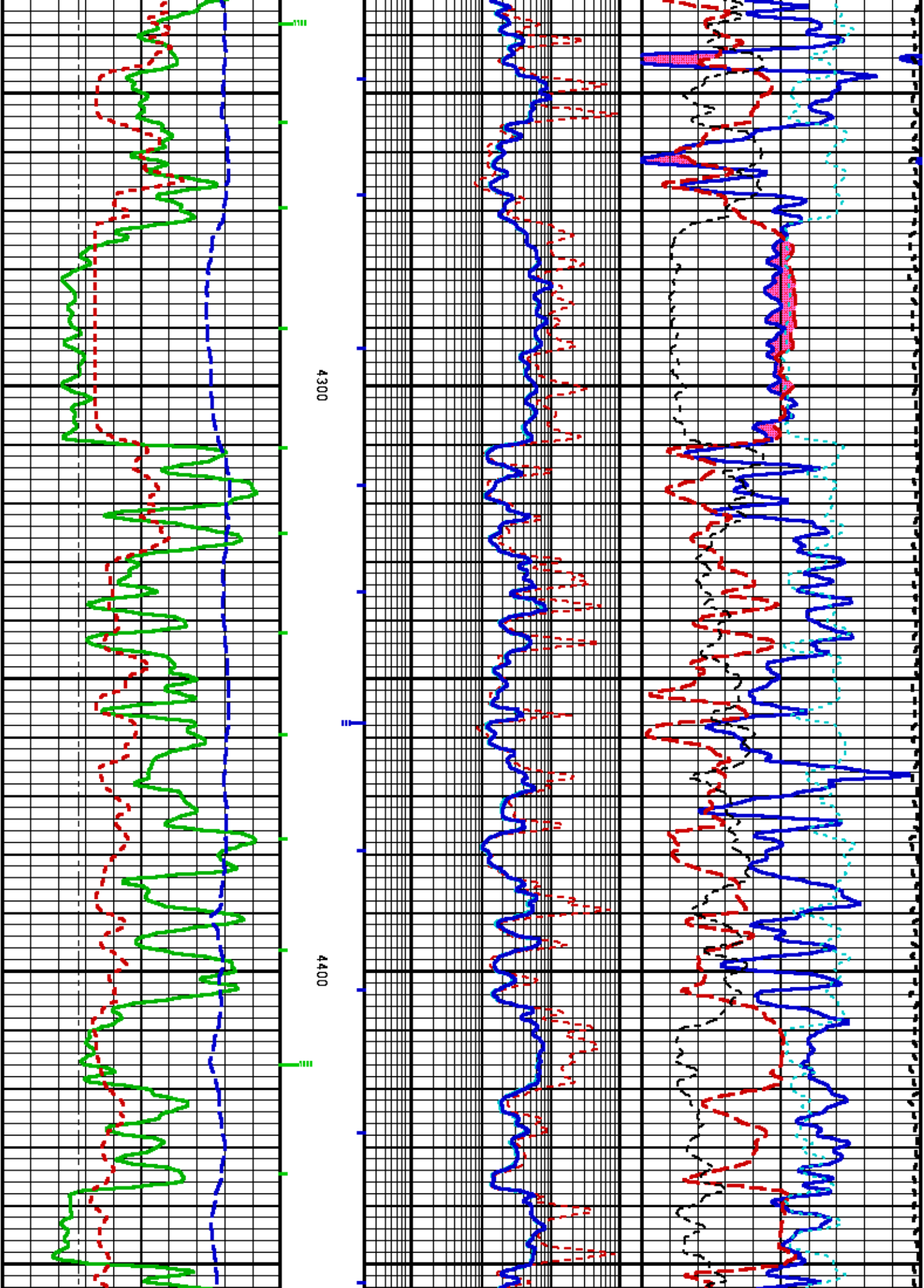


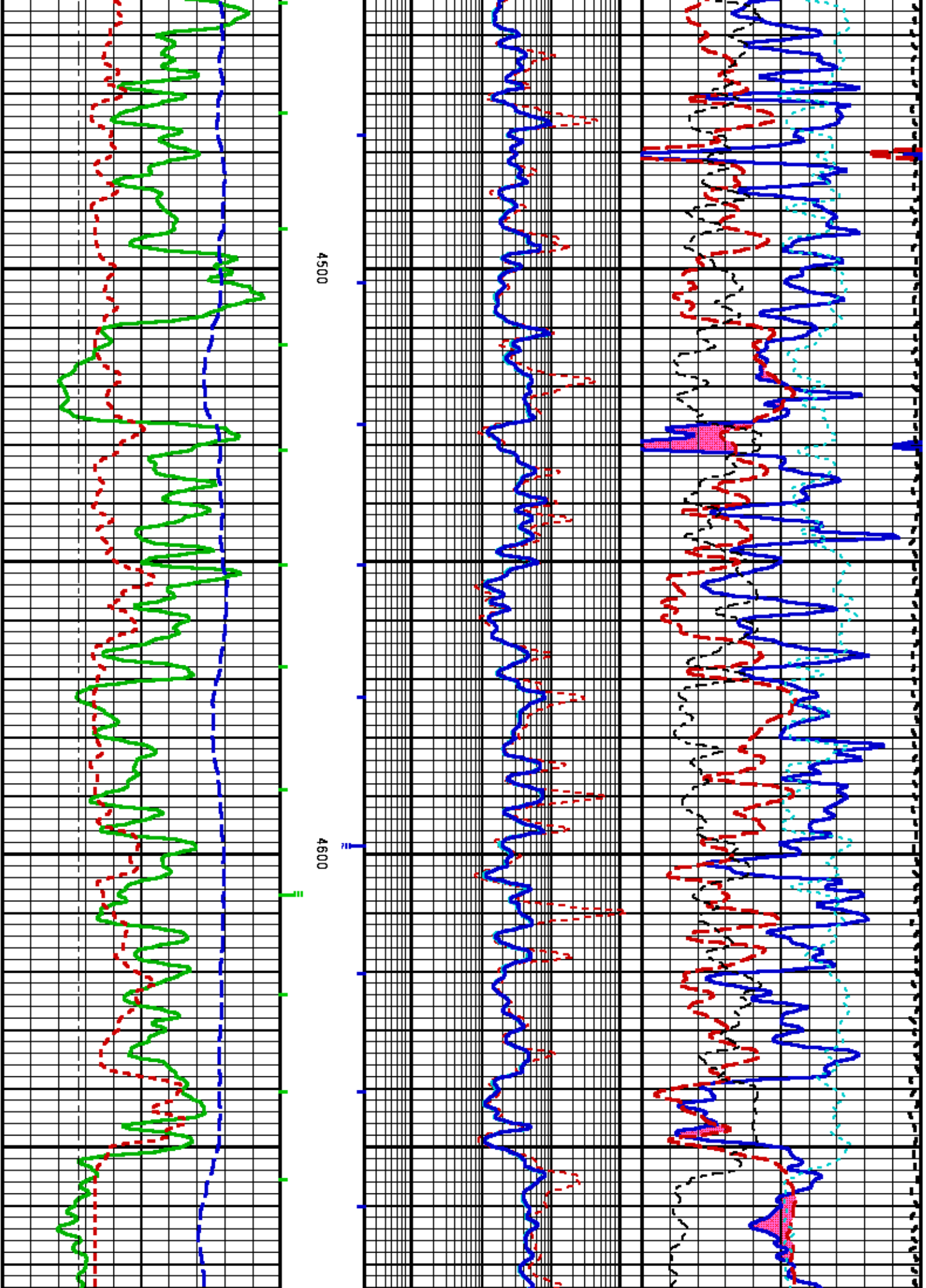


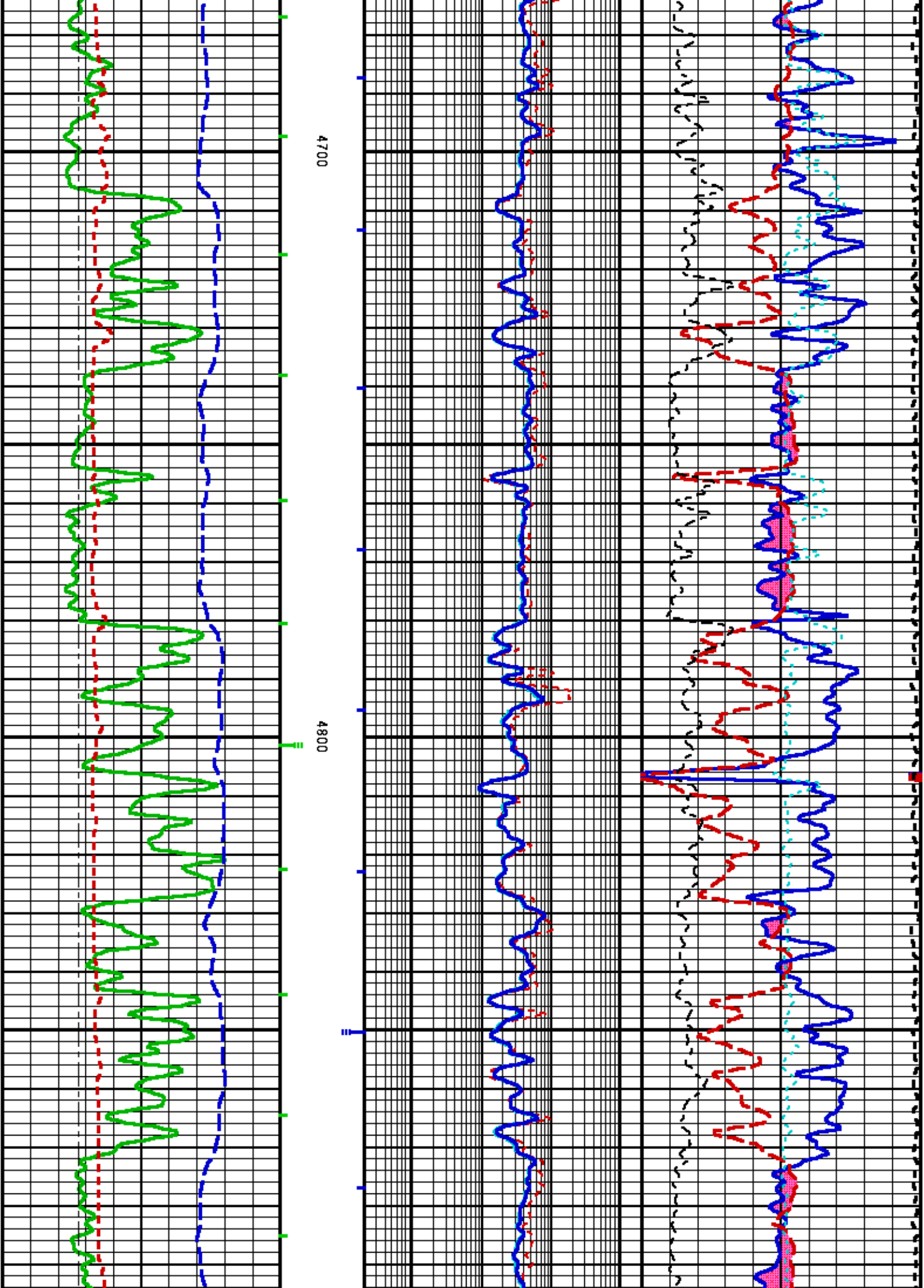


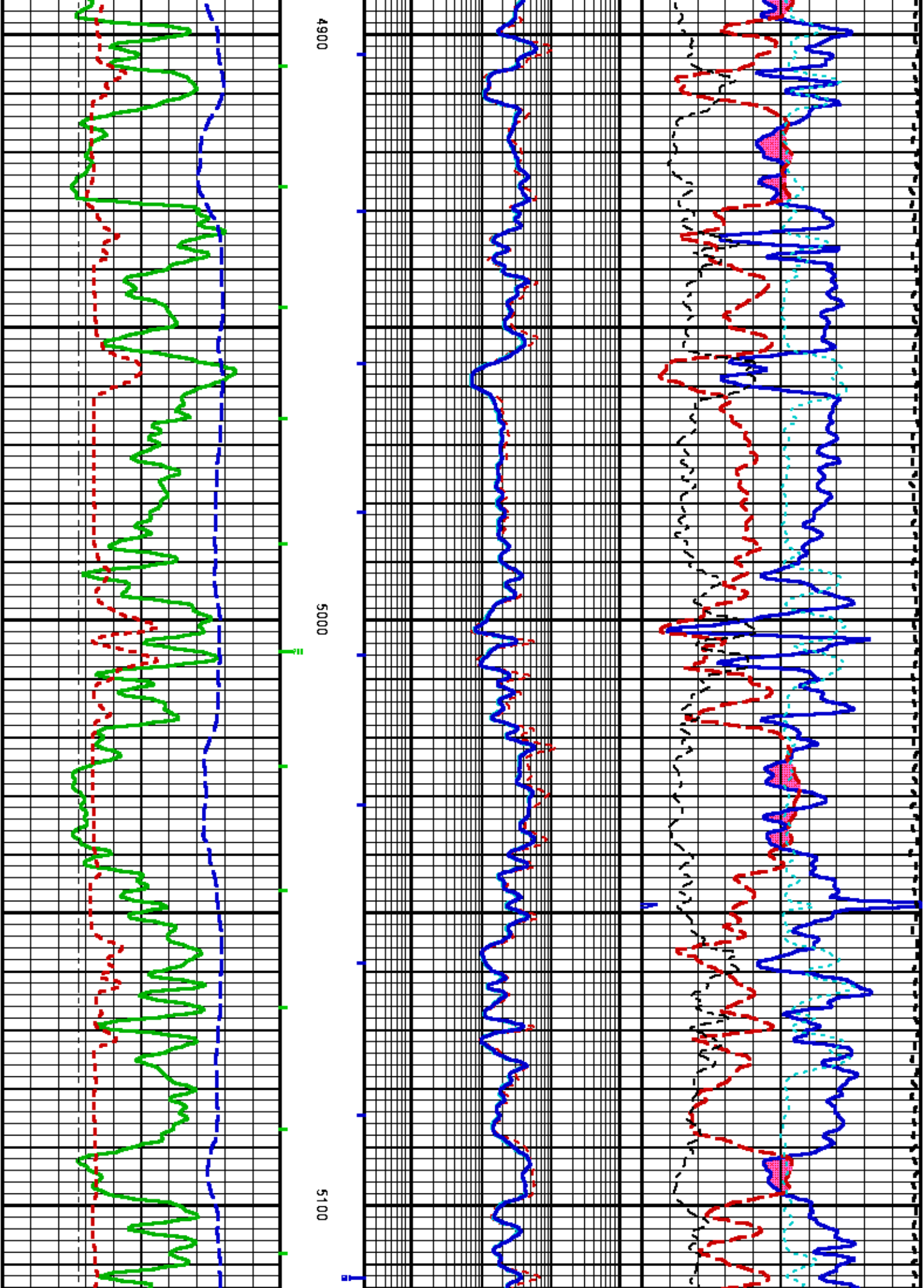




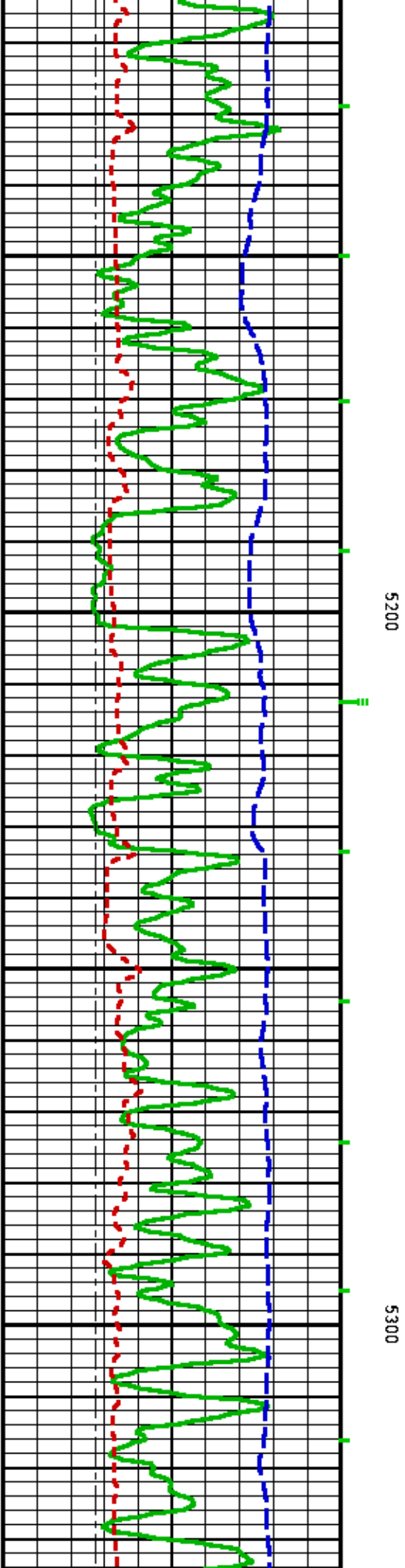
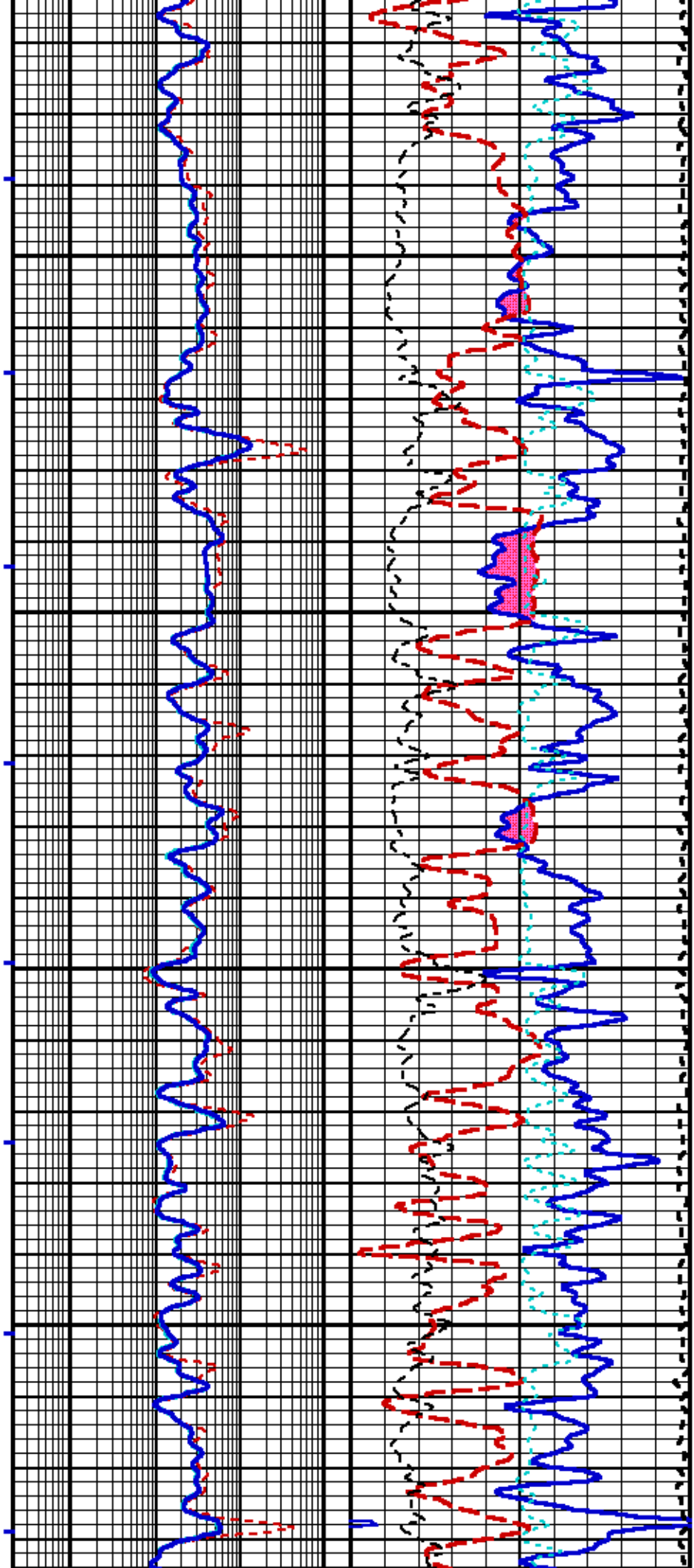


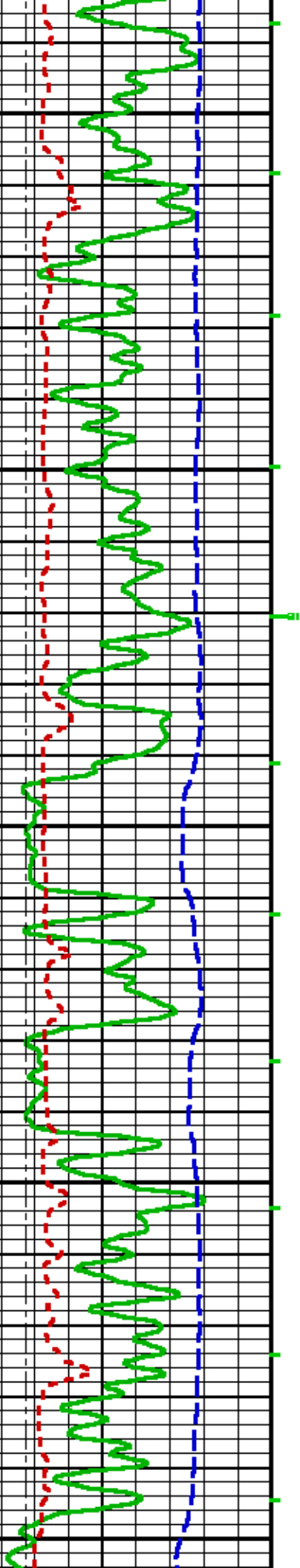
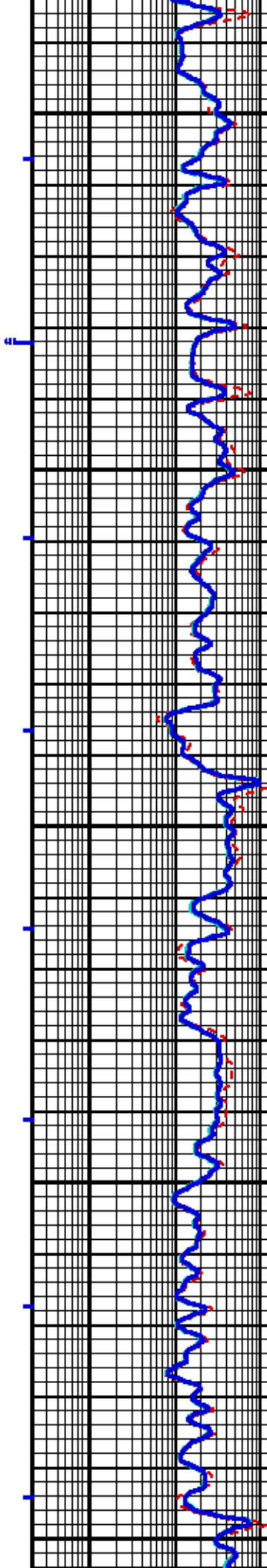
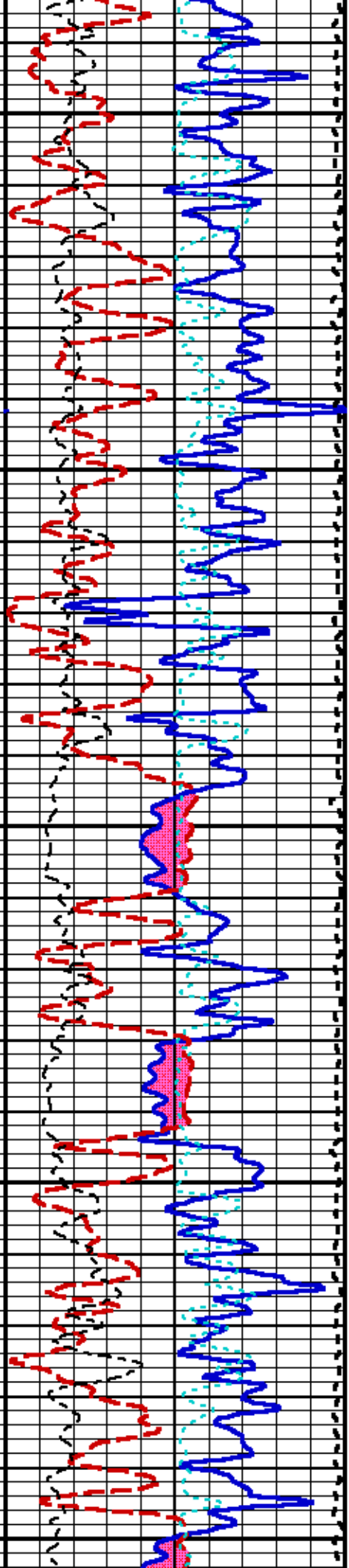


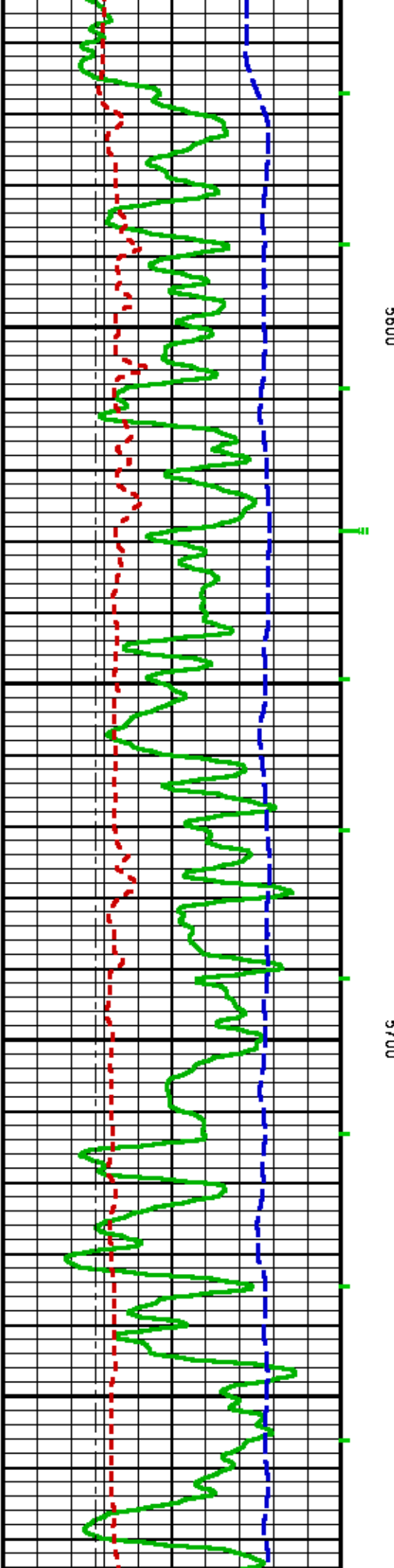
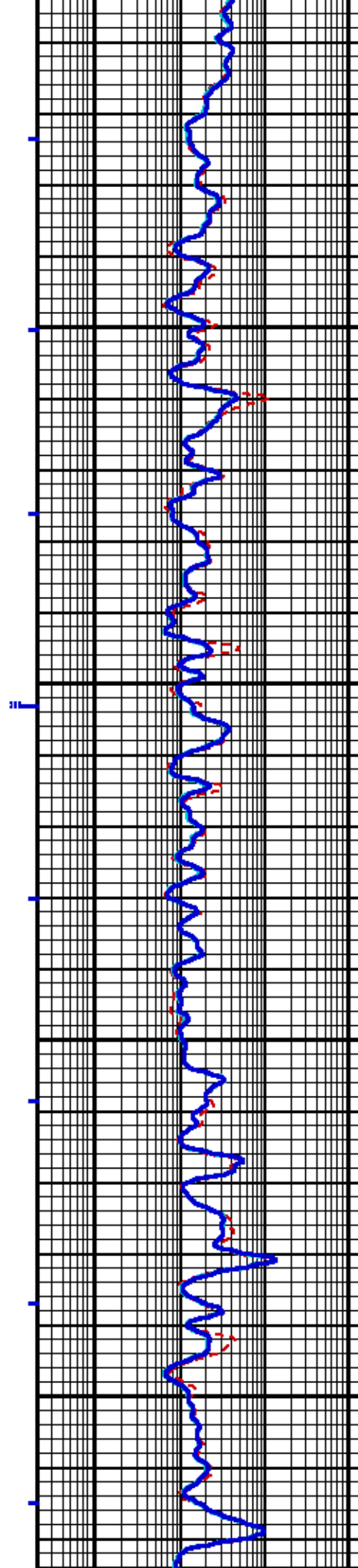
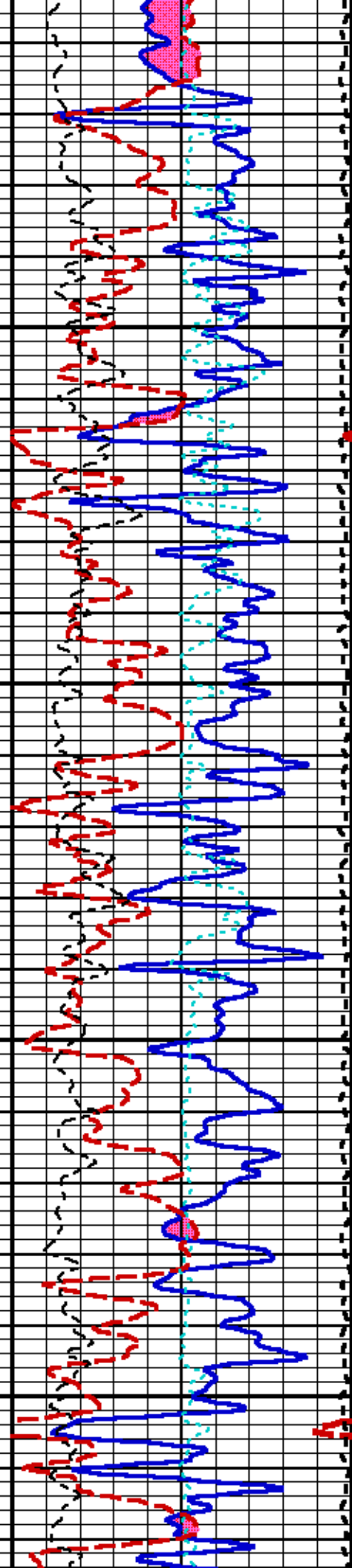


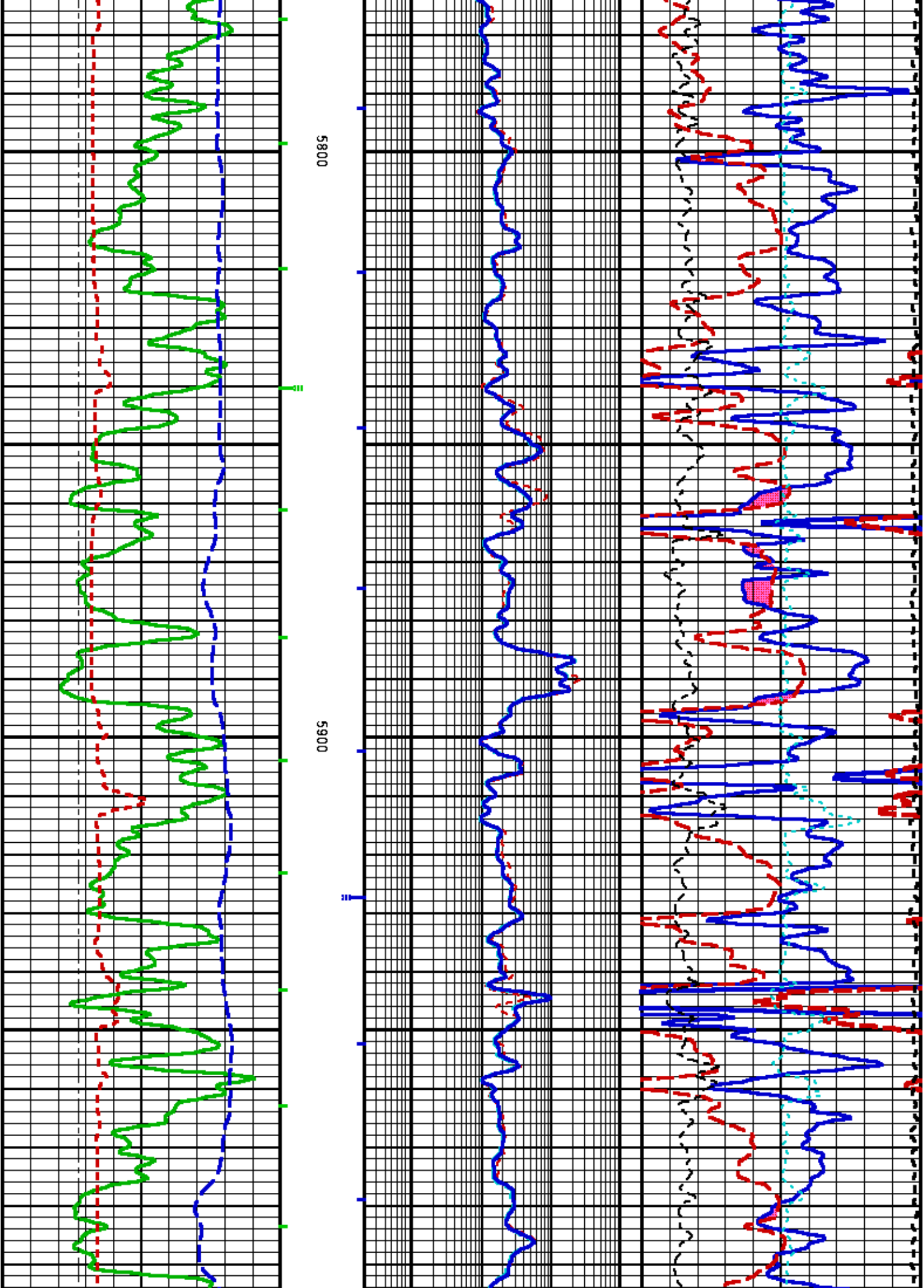


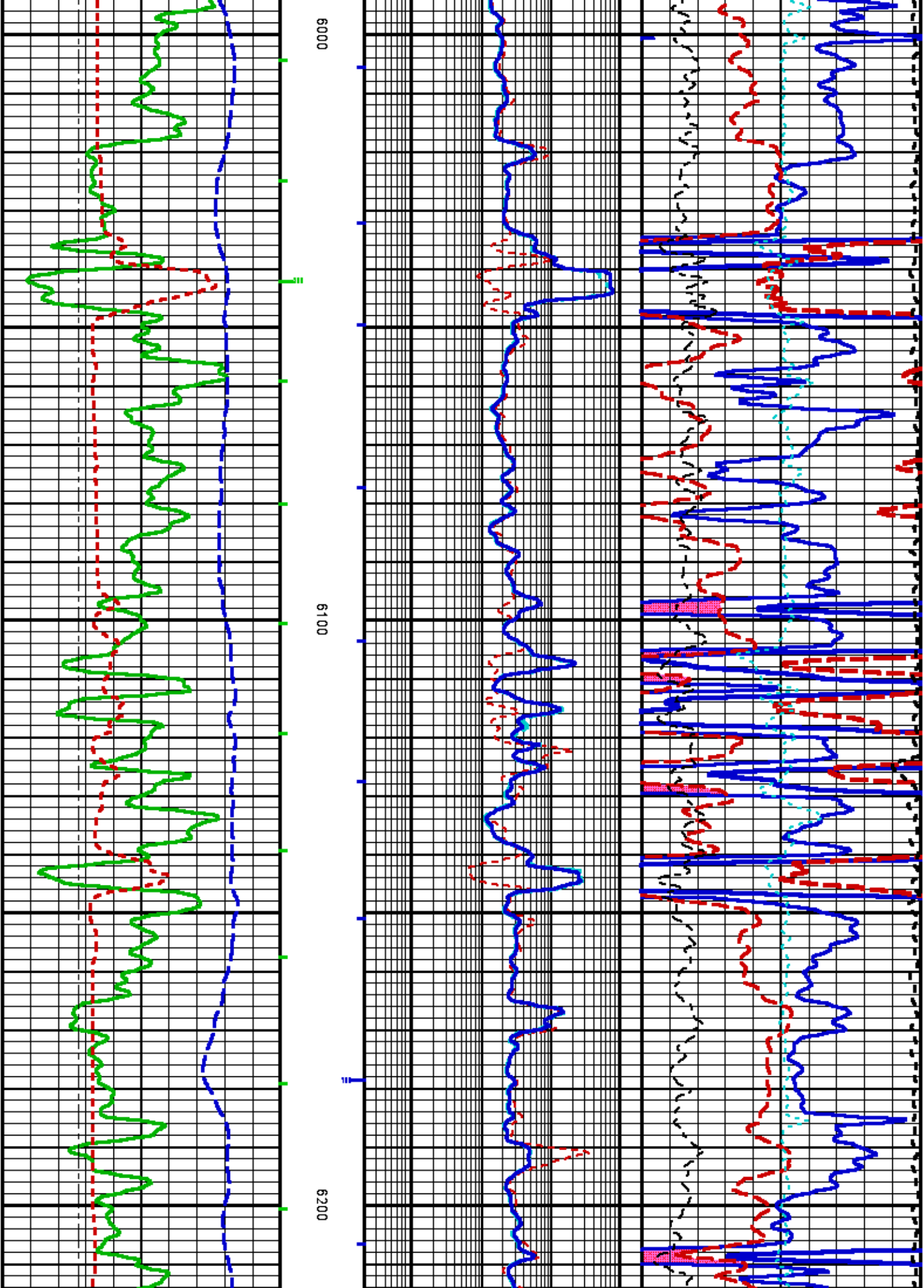




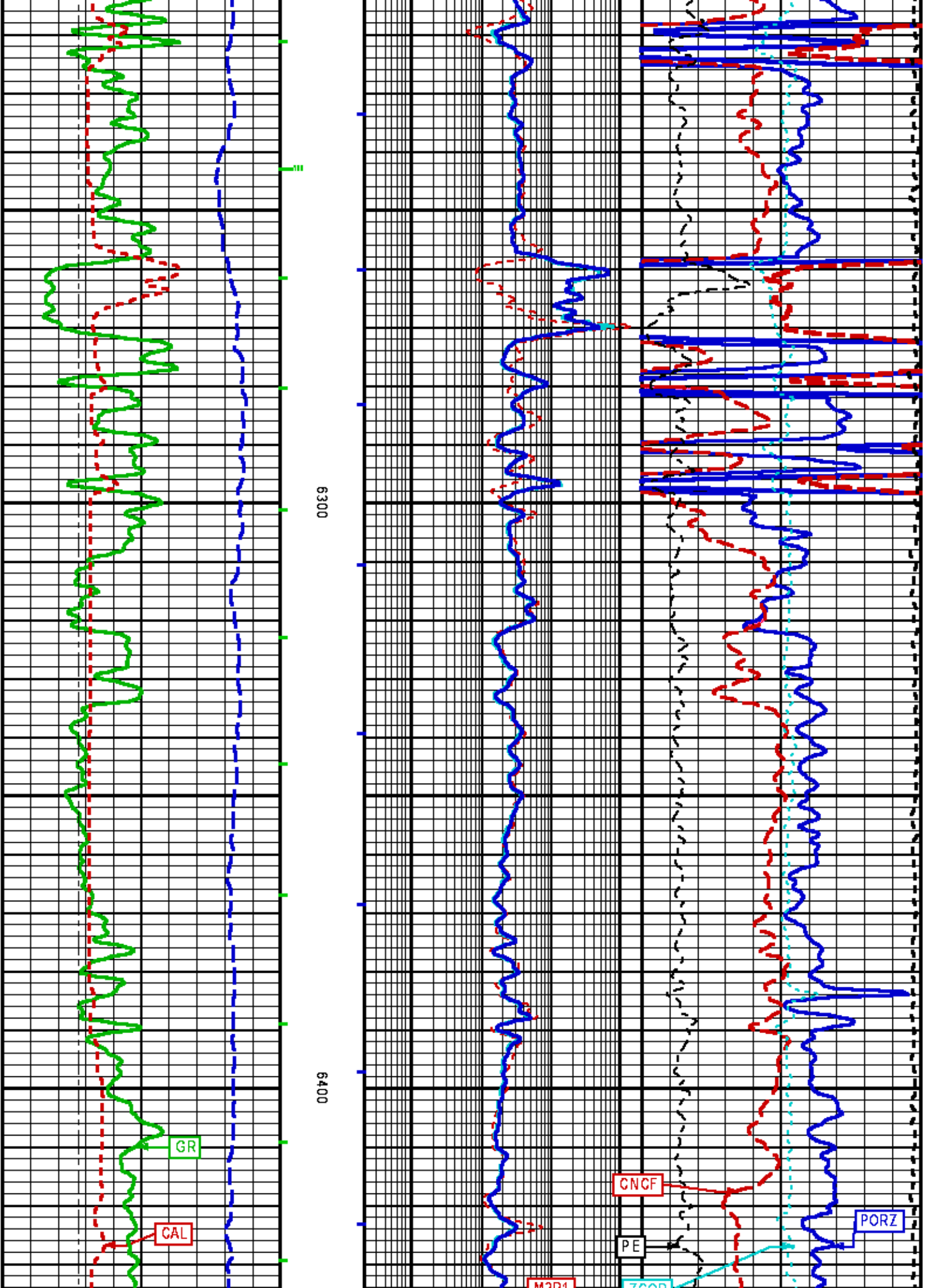


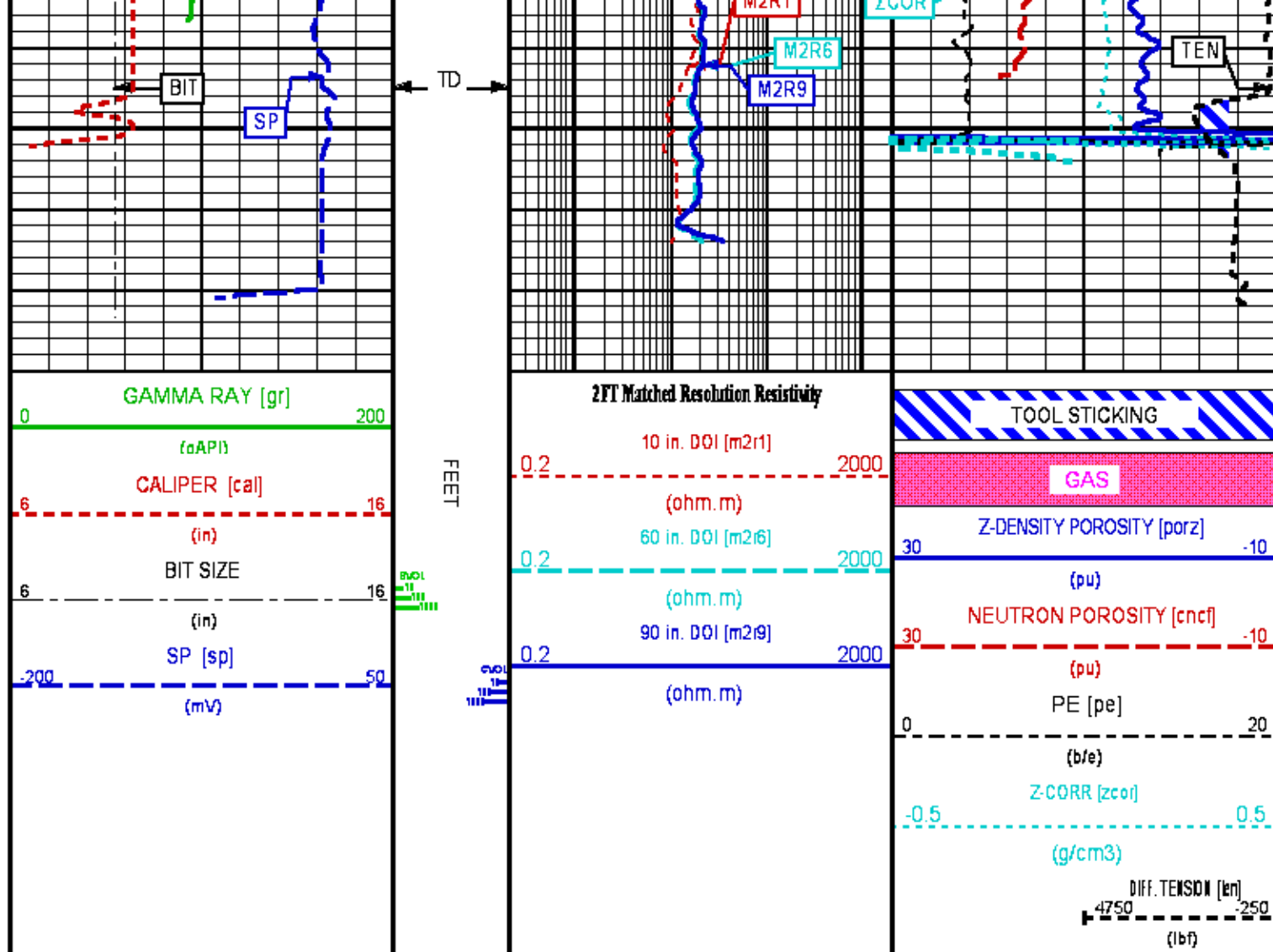












## MAIN LOG 5"/100FT SCALE

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

Plotted: Thu Jun 12 11:40:13 2014

## PARAMETER AND FILTER SUMMARY REPORT

File: /dat1a/OH087237/n970a01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 1257.500 ft BOTTOM DEPTH: 1711.483 ft

### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR MED RES	FILTER ()	medium (1)		TOP	BOTTOM
CALIPER	FILTER ()	medium (1)		"	"
TENSION	FILTER ()	medium (1)		"	"
CN MED RES	FILTER ()	medium (1)		"	"
ZDL MED RES	FILTER (hrd1*)	medium		"	"
	FILTER (hrd1*)	medium		"	"
	FILTER (hrd2*)	medium		"	"



	FILTER (hrd2s*)	medium	"	"
	FILTER (soft*)	medium	"	"
SP-SPDH	FILTER Q	heavy (3)	"	"

BOREHOLE & CEMENT					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	4.500	in	TOP	BOTTOM
	CASING THICKNESS	0.000	in	"	"
BIT SIZE	BIT SIZE	8.750	in	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cnbh*)	8.750	in	"	"
	FIXED DIAMETER (mbh*)	8.750	in	"	"
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	79.0	degF	TOP	1724.500
		77.0	degF	1724.500	BOTTOM
	MUD SAMPLE RES	0.350	ohm.m	TOP	1720.000
		1.000	ohm.m	1720.000	BOTTOM
BH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDIL)	TOOL MEASURED		TOP	BOTTOM
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	79.0	degF	TOP	1716.750
		77.0	degF	1716.750	BOTTOM
	at BH REF DEPTH	0.0	ft	TOP	BOTTOM
	with TEMP GRADIENT	1.200	0.01 degF/ft	"	"

ACCELERATION PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
ACCEL CORR SWITCH	ACCEL DEPTH CORR	CORRECTION ON		TOP	BOTTOM

CN PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CN MATRIX	2436 MATRIX	SANDSTONE		TOP	BOTTOM
CN BOREHOLE CORRECTION	SALINITY	1500	ppm	"	"
	BOREHOLE CORRECTION	ON		"	"
CN TOOL STANDOFF	ENABLE STANDOFF CORR	OFF		"	"
	STANDOFF AMOUNT	0.00	in	"	"
CN CASING & CEMENT CORRECTION	CORRECTION	OFF		"	"
	BIT SIZE BEHIND CSNG	7.875	in	"	"

ZDL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
DENSITY POROSITY	Air Filled Borehole	NO		TOP	BOTTOM
	RHOmatrix	2.680	g/cm3	"	"
	RHOfluid	1.000	g/cm3	"	"

HDIL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORRECTION	ON		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	MUD CONDUCTIVITY		"	"
	STANDOFF	1.50	in	"	"
	TOOL POSITION	ECCENTERED		"	"
	Rmud MULTIPLIER	1.000		"	"

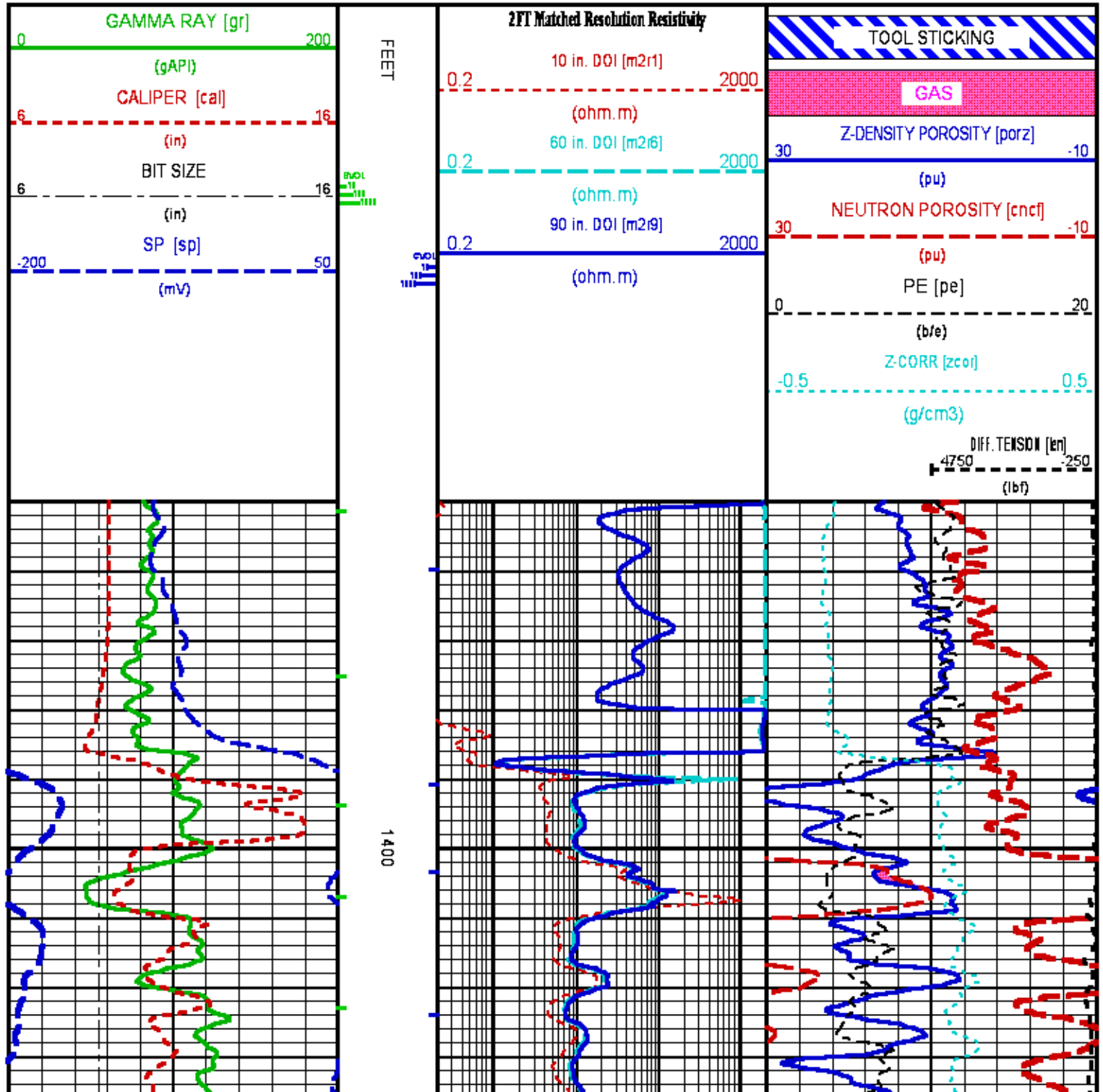
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:BIT	Jun 12 11:27:39 2014	BIT SIZE
F1:BVOL	Jun 12 11:27:39 2014	BOREHOLE VOLUME
F1:CAL	Jun 12 11:27:39 2014	CALIPER
F1:CNCF	Jun 12 11:27:39 2014	FIELD NORMALIZED COMPENSATED NEUTRON POROSITY
F1:CVOL	Jun 12 11:27:39 2014	CEMENT VOLUME
F1:GR	Jun 12 11:27:39 2014	GAMMA RAY
F1:M2R1	Jun 12 11:27:39 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 10-INCH DOI
F1:M2R6	Jun 12 11:27:39 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 60-INCH DOI
F1:M2R9	Jun 12 11:27:39 2014	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 90-INCH DOI
F1:PE	Jun 12 11:27:39 2014	PHOTO ELECTRIC CROSS-SECTION
F1:PORZ	Jun 12 11:27:39 2014	POROSITY FOR SELECTABLE MATRIX
F1:SP	Jun 12 11:27:39 2014	SPONTANEOUS POTENTIAL
F1:TEM	Jun 12 11:27:39 2014	DIFFERENTIAL TENSION

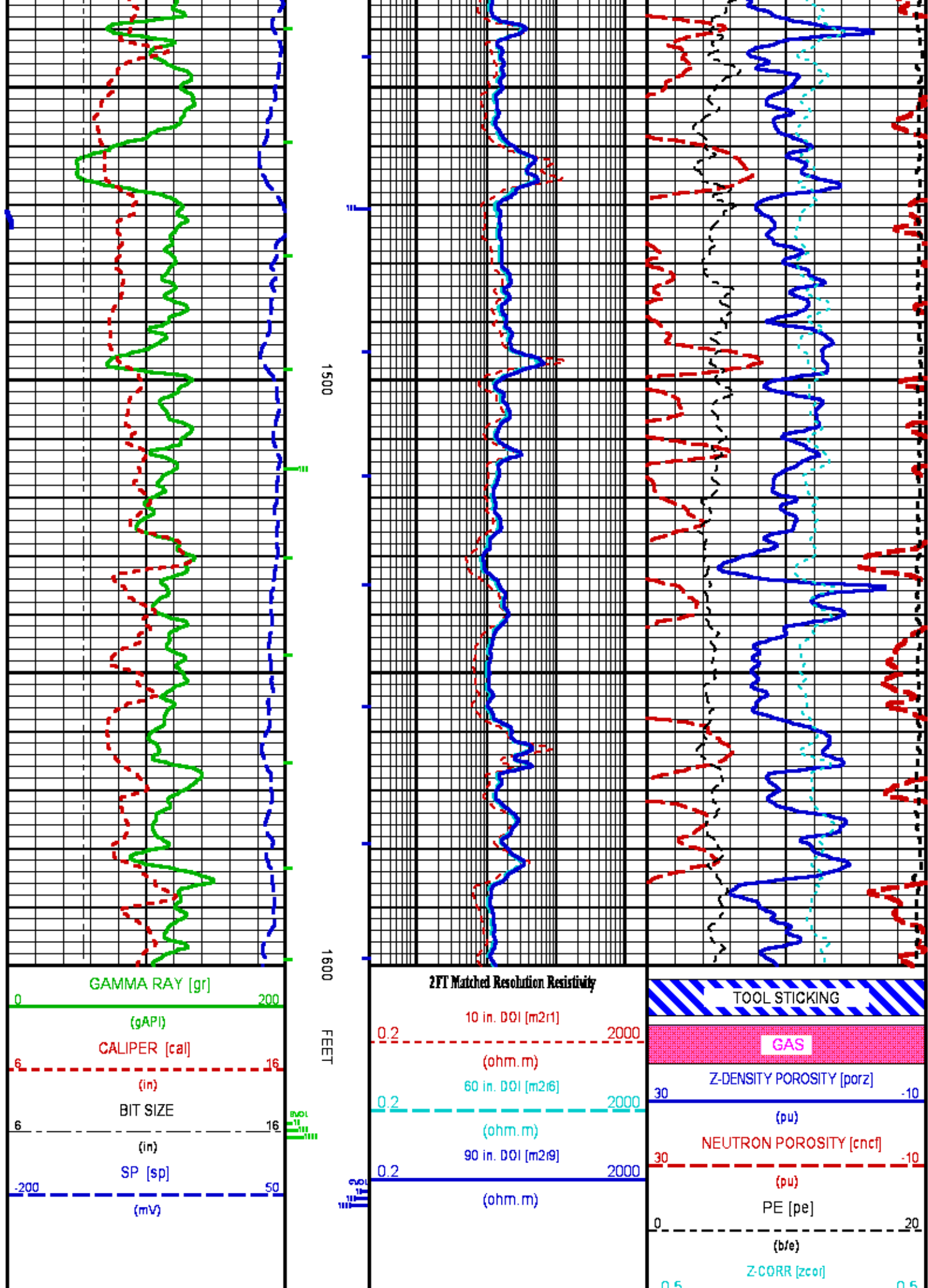
## CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
BIT	0.00	GR	35.00	M2R9	2.75	SP	1.25
CAL	18.12	M2R1	2.75	PE	18.00	TEN	0.00
CNCF	27.38	M2R6	2.75	PORZ	18.00	ZCOR	18.00

**Presentation** : HL6670:/dat1a/OH087237/WPX\_REPEAT.fvpdf [5"/100' Scale]  
**Plot Interval** : 1350 - 1600 Feet

**Data File 1** : F1 : HL6670:/dat1a/OH087237/n970a01-REPEAT.xtf  
**Created On** : Jun 12 11:27:39 2014  
**Company** : WPX ENERGY ROCKY MOUNTAIN LLC  
**Well** : C&C ENERGY GM 23-13  
**Field** : GRAND VALLEY  
**File Interval** : 0 - 1717.5 Feet  
**OCT** : n970a





(g/cm3)

DIFF. TENSION (lbf)  
 4750 -250  
 (lbf)

## CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/OH087237/n970a.tp1

### TTMA PRIMARY CALIBRATION SUMMARY

TOOL #: 3980XA 10120299 DATE/TIME PERFORMED: Wed Jul 31 10:29:42 2013  
 UNIT #: 3880TA HL6670 ACCEL #: 3980XA 10120299 ACCEL CAL DATE: 14:43 05/21/2004

GAIN OFFSET  
 (ohm.m)  
 Rm K Factors 0.14570 -0.01679

Sig Low Sig High Mult Factor Add Factor Engr Low Engr High  
 (ohm) (ohm) (ohm) (ohm)  
 Rm Measurements 0.25 9.97 1.003059 0.000362 0.25 10.00  
 0.20 0.30 8.00 12.00

### TTMA BEFORE LOG VERIFICATION SUMMARY

TOOL #: 3980XA 10120299 DATE/TIME PERFORMED: Thu Jun 12 11:12:28 2014 DAYS SINCE CAL: 316  
 UNIT #: 3880TA HL6670

CHT MUD TEMP RES M Q ACCEL Q  
 (lbf) (degF) (ohm)  
 CAL 18834 498.84 9.96 997.70  
 18000 19000 481.36 505.76 8.00 12.00 990.00 1000.00  
 ZERO -23331 -436.02 0.249 997.499  
 -24131 -22531 -443.20 -428.80 0.200 0.300 990.000 1000.000

### TTMA AFTER LOG VERIFICATION SUMMARY

TOOL #: 3980XA 10120299 DATE/TIME PERFORMED: Thu Jun 12 13:46:32 2014 DAYS SINCE CAL: 316  
 UNIT #: 3880TA HL6670

CHT MUD TEMP RES M Q ACCEL Q  
 (lbf) (degF) (ohm)  
 CAL 18837 499.93 9.95 996.64  
 18000 19000 481.36 505.76 8.00 12.00 990.00 1000.00  
 ZERO -23331 -436.02 0.249 996.477  
 -24131 -22531 -443.20 -428.80 0.200 0.300 990.000 1000.000

### GR PRIMARY CALIBRATION SUMMARY

Tool #: 3518EG 10127973 DATE/TIME PERFORMED: Sun May 18 12:21:40 2014  
 Unit #: 3885TC 6685 Jig Series: 4702NK VBA-905

Background Calibrator ON Jig Value Mult Background Calibrator ON  
 (gAPI) (gAPI) (gAPI)  
 93.99 763.66 185 0.276 25.97 210.97  
 0.200 0.200

## GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 3518EG 1D127973

DATE/TIME PERFORMED:

Thu Jun 12 11:12:32 2014

DAYS SINCE CAL:

24

UNIT #:

388QTA HL667D

Jig:

INTRNL N/A

Counts	TEMP (degF)	HV (V)
976.67	98.20	1364.70
529.00 1027.00	536.00	1237.00 1512.00

## GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 3518EG 1D127973

DATE/TIME PERFORMED:

Thu Jun 12 13:46:30 2014

DAYS SINCE CAL:

25

UNIT #:

388QTA HL667D

Jig:

INTRNL N/A

Counts	TEMP (degF)	HV (V)
976.67	124.99	1366.18
529.00 1027.00	536.00	1237.00 1512.00

## CN PRIMARY CALIBRATION SUMMARY

TOOL #: 2436XA 1D13793D

DATE/TIME PERFORMED:

Wed Apr 2 14:18:58 2014

UNIT #:

388QTA HL667D

CALIBRATOR #:

2437XB 112674

SOURCE #:

4718XA N-0897

SSN DT CPS	LSN DT CPS	SSN/LSN	MCF	CNRATIO	CN PU
4697.69	785.20	5.98276	0.95892	5.73700	25.241
			0.95000 1.05000		

## CN BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2436XA 1D13793D

DATE/TIME PERFORMED:

Thu Jun 12 11:12:35 2014

DAYS SINCE CAL:

70

UNIT #:

388QTA HL667D

CALIBRATOR #:

INTRNL N/A

SSN DT CPS	LSN DT CPS	SSN/LSN	TEMP (degF)	HV (V)	LV (V)
991.06	993.42	0.99762	94.5	1360.1	4.612
		0.95000 1.05000	260.4	1250.0 1450.0	4.300 5.000

## CN AFTER LOG VERIFICATION SUMMARY

TOOL #: 2436XA 1D13793D

DATE/TIME PERFORMED:

Thu Jun 12 13:46:39 2014

DAYS SINCE CAL:

70

UNIT #:

388QTA HL667D

CALIBRATOR #:

INTRNL N/A

SSN DT CPS	LSN DT CPS	SSN/LSN	TEMP (degF)	HV (V)	LV (V)
992.07	993.75	0.99831	122.0	1364.4	4.614
		0.95000 1.05000	260.4	1250.0 1450.0	4.300 5.000

## CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2223XA 1D102922

DATE/TIME PERFORMED:

Fri May 2 09:59:35 2014

UNIT #:

388QTA HL667D

	SIZE (in)	VALUE	MULTIPLIER	ADD
SMALL RING (Arm)	7.000	1580.0		
LARGE RING (Arm)	11.000	2828.0	0.00321	1.93590
PAD CLOSED		1292.0	0.00250	-3.23000

## CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2223XA 10102922      DATE/TIME PERFORMED: Thu Jun 12 11:23:14 2014      DAYS SINCE CAL: 41

UNIT #: 3880TA HL667D

	VALUE	MULTIPLIER	ADD	SIZE (in)
ARM	2200.0	0.00321	1.93590	9.0
PAD	1368.0	0.00250	-3.23000	0.2

	ACTUAL (in)	MEASURED (in)
DIAMETER (arm+pad)	9.001	9.0
		8.6      9.4

## CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2223XA 10102922      DATE/TIME PERFORMED: Thu Jun 12 13:45:01 2014      DAYS SINCE CAL: 41

UNIT #: 3880TA HL667D

	VALUE	MULTIPLIER	ADD	SIZE (in)
ARM	2244.0	0.00321	1.93590	9.1
PAD	1316.0	0.00250	-3.23000	0.1

	ACTUAL (in)	MEASURED (in)
DIAMETER (arm+pad)	9.001	9.2
		8.6      9.4

## ZDL PRIMARY CALIBRATION SUMMARY

TOOL: 2223XA 10102922      DATE/TIME PERFORMED: Fri May 2 09:51:52 2014

UNIT: 3880TA HL667D      CALB BLKS: 2225XA 094292F      CS SRC: 4705XA 16068B      PAD TYPE: PADTYP 7.5" PAD

	SS CS PK (Channel)	LS CS PK (Channel)	SS_BKGD (cps)	LS_BKGD (cps)		
	226.8	224.4	1249.2	1392.4		
	230.0      230.0	230.0      230.0				
	SS (cps)	LS (cps)	SHR	DEN (g/cm3)	CORR (g/cm3)	PE (b/e)
MG (LO PE)	35985.6	12033.6	0.755	1.679	0.000	1.900
			0.720      0.890			
AL	22653.8	1363.9		2.667	-0.016	
AL + SHIM	29963.5	2367.5		2.558	0.098	
MG + SHIM (HI PE)	17647.4	5705.7	0.299			8.550
			0.260      0.360			
RATIO AL + SHIM/AL	1.32	1.74				
	1.30      1.40	1.60      1.80				
RATIO MG/AL	1.59	8.82				
	1.58      1.70	8.55      9.55				

## ZDL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2223XA 10102922      DATE/TIME PERFORMED: Thu Jun 12 11:13:00 2014      DAYS SINCE CAL: 41

UNIT #: 3880TA HL667D

	TOTAL (cps)	CSPK (Channel)	HV (V)
LS	3342.1	224.9	1370.0
	3332.1      3352.1	230.0      230.0	1250.0      1500.0

SS

22354.8	224.2	1326.3
22344.8	22364.8	230.0
2230.0	230.0	1250.0
1590.0	1590.0	

LV

PAD CURRENT

(V)	(mA)
5.0	94.4
4.8	5.2
50.0	120.0

## ZDL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2223XA 10102922

DATE/TIME PERFORMED: Thu Jun 12 13:46:02 2014

DAYS SINCE CAL: 41

UNIT #: 3880TA HL6670

	TOTAL (cps)	CSPK (Channel)	HV (V)
LS	3342.1	224.8	1429.0
	3332.1	3352.1	230.0
	2230.0	230.0	1250.0
SS	22354.8	225.4	1332.3
	22344.8	22364.8	230.0
	2230.0	230.0	1250.0
	1590.0	1590.0	
	Lv	PAD CURRENT	
	(V)	(mA)	
	5.0	98.1	
	4.8	5.2	
	50.0	120.0	

## HDIL PRIMARY CALIBRATION SUMMARY

TOOL #: 1530XA 10121806

DATE/TIME PERFORMED: Tue Jan 7 14:33:41 2014

UNIT #: 3880TA HL6670

GRCOND ID &amp; DATE: 94 101801

ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	0.0037 -0.2000 0.2000	-0.0008 -0.1000 0.1000	-0.0003 -0.1000 0.1000	0.0007 -0.1000 0.1000	-0.0014 -0.1000 0.1000	0.0002 -0.1000 0.1000	-0.0004 -0.1000 0.1000	-0.0000 -0.1000 0.1000
Coil 0 Q	-0.0039 -0.5000 0.5000	-0.0008 -0.2000 0.2000	0.0005 -0.1000 0.1000	-0.0012 -0.1000 0.1000	0.0004 -0.1000 0.1000	0.0003 -0.1000 0.1000	0.0000 -0.1000 0.1000	-0.0004 -0.1000 0.1000
Coil 1 R	0.0008 -0.2000 0.2000	-0.0004 -0.1000 0.1000	0.0018 -0.1000 0.1000	-0.0009 -0.1000 0.1000	-0.0004 -0.1000 0.1000	-0.0003 -0.1000 0.1000	-0.0002 -0.1000 0.1000	0.0006 -0.1000 0.1000
Coil 1 Q	-0.0178 -0.5000 0.5000	-0.0015 -0.2000 0.2000	0.0010 -0.1000 0.1000	-0.0012 -0.1000 0.1000	0.0008 -0.1000 0.1000	-0.0007 -0.1000 0.1000	-0.0006 -0.1000 0.1000	-0.0011 -0.1000 0.1000
Coil 2 R	0.0055 -0.2000 0.2000	-0.0012 -0.1000 0.1000	0.0043 -0.1000 0.1000	-0.0024 -0.1000 0.1000	0.0006 -0.1000 0.1000	-0.0000 -0.1000 0.1000	-0.0000 -0.1000 0.1000	0.0016 -0.1000 0.1000
Coil 2 Q	-0.0108 -0.5000 0.5000	-0.0007 -0.2000 0.2000	-0.0037 -0.1000 0.1000	-0.0003 -0.1000 0.1000	-0.0013 -0.1000 0.1000	-0.0013 -0.1000 0.1000	0.0006 -0.1000 0.1000	-0.0012 -0.1000 0.1000
Coil 3 R	0.0113 -0.3000 0.3000	-0.0008 -0.1000 0.1000	-0.0016 -0.1000 0.1000	0.0012 -0.1000 0.1000	0.0002 -0.1000 0.1000	0.0008 -0.1000 0.1000	0.0033 -0.1000 0.1000	0.0012 -0.1000 0.1000
Coil 3 Q	-0.0126 -0.5000 0.5000	0.0028 -0.2000 0.2000	0.0037 -0.1000 0.1000	-0.0006 -0.1000 0.1000	-0.0010 -0.1000 0.1000	-0.0014 -0.1000 0.1000	0.0038 -0.1000 0.1000	0.0020 -0.1000 0.1000
Coil 4 R	0.0190 -0.5000 0.5000	-0.0089 -0.2000 0.2000	-0.0002 -0.2000 0.2000	0.0046 -0.2000 0.2000	0.0026 -0.2000 0.2000	-0.0029 -0.2000 0.2000	0.0066 -0.2000 0.2000	0.0043 -0.2000 0.2000
Coil 4 Q	-0.0187 -1.0000 1.0000	-0.0122 -0.4000 0.4000	0.0007 -0.2000 0.2000	0.0041 -0.2000 0.2000	0.0051 -0.2000 0.2000	0.0076 -0.2000 0.2000	-0.0023 -0.2000 0.2000	0.0004 -0.2000 0.2000
Coil 5 R	0.0512 -1.2000 1.2000	-0.0214 -0.4000 0.4000	-0.0173 -0.4000 0.4000	0.0092 -0.4000 0.4000	0.0079 -0.4000 0.4000	-0.0070 -0.4000 0.4000	0.0171 -0.4000 0.4000	0.0147 -0.4000 0.4000
Coil 5 Q	-0.0400 -1.5000 1.5000	-0.0261 -0.8000 0.8000	0.0143 -0.4000 0.4000	-0.0158 -0.4000 0.4000	0.0060 -0.4000 0.4000	-0.0097 -0.4000 0.4000	0.0083 -0.4000 0.4000	-0.0060 -0.4000 0.4000

ELEC. GAINS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	163.06 136.00 186.00	161.65 134.00 184.00	158.79 131.00 181.00	154.56 126.00 176.00	148.96 122.00 170.00	142.06 118.00 161.00	133.99 112.00 150.00	124.73 105.00 139.00
Coil 0 P	7.674 6.000 9.000	25.240 21.000 30.000	42.370 35.000 50.000	59.458 49.000 71.000	76.552 63.000 91.000	93.666 77.000 109.000	110.821 92.000 130.000	127.954 106.000 151.000
Coil 1 M	281.66 236.00 326.00	279.14 236.00 326.00	274.04 230.00 320.00	266.44 225.00 312.00	256.48 218.00 302.00	244.13 209.00 289.00	229.67 196.00 266.00	213.18 184.00 244.00
Coil 1 P	7.844 6.000 9.000	25.720 21.000 30.000	43.167 35.000 51.000	60.580 49.000 71.000	77.996 63.000 92.000	95.415 78.000 112.000	112.883 93.000 130.000	130.299 107.000 151.000
Coil 2 M	578.47 479.00 659.00	573.60 474.00 654.00	563.68 463.00 643.00	548.89 450.00 622.00	529.31 432.00 602.00	504.78 412.00 572.00	475.98 380.00 540.00	442.89 359.00 499.00
Coil 2 P	7.964 6.000 9.000	26.114 21.000 31.000	43.846 35.000 51.000	61.558 49.000 71.000	79.291 63.000 92.000	97.067 76.000 115.000	114.892 92.000 135.000	132.704 106.000 156.000
Coil 3 M	925.75 772.00 1060.00	917.66 764.00 1050.00	901.13 752.00 1030.00	876.42 729.00 1010.00	844.08 700.00 970.00	803.95 665.00 925.00	756.94 626.00 868.00	702.73 599.00 799.00
Coil 3 P	7.757 6.000 9.000	25.817 21.000 30.000	43.226 35.000 51.000	60.855 49.000 71.000	77.916 63.000 92.000	95.255 78.000 112.000	112.887 93.000 130.000	130.299 107.000 151.000



Coil 3 P	7.787	25.548	42.898	60.208	77.518	94.862	112.225	129.553
	6.000	10.000	21.000	30.000	49.000	63.000	90.000	104.000
Coil 4 M	1453.6	1440.2	1412.5	1371.6	1318.0	1252.8	1176.7	1090.2
	1210.0	1700.0	1205.0	1690.0	1180.0	1680.0	1140.0	1530.0
Coil 4 P	7.866	25.838	43.376	60.844	78.277	95.713	113.107	130.407
	6.000	10.000	21.000	31.000	49.000	63.000	90.000	104.000
Coil 5 M	2983.3	2960.7	2911.3	2836.3	2735.9	2611.5	2463.8	2292.2
	2450.0	3450.0	2420.0	3400.0	2390.0	3380.0	2360.0	3350.0
Coil 5 P	7.916	26.013	43.723	61.396	79.117	96.902	114.759	132.605
	6.000	10.000	20.000	31.000	49.000	63.000	90.000	106.000

AM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil D R	-1097	-658	-537	-464	-412	-373	-342	-318
	-3200	940	-1400	-20	-930	-150	-600	-120
Coil D Q	-1163	-686	-547	-490	-460	-442	-431	-425
	-15000	11000	-5900	3900	-3700	2100	-2700	1400
Coil 1 R	-141	-154	-146	-134	-123	-114	-106	-99
	-750	460	-360	60	-290	9	-230	-10
Coil 1 Q	-121	-79	-75	-77	-78	-79	-79	-80
	-3000	3000	-1100	960	-630	530	-470	360
Coil 2 R	2.3	-34.0	-36.0	-33.9	-31.1	-28.4	-25.6	-23.7
	-85.0	76.0	-64.0	-0.4	-57.0	-12.0	-51.0	-16.0
Coil 2 Q	422.6	141.1	80.2	54.6	40.6	32.6	27.9	25.4
	-1500.0	1900.0	-500.0	610.0	-290.0	350.0	-320.0	260.0
Coil 3 R	1.3	-7.5	-8.9	-8.6	-9.0	-8.1	-7.8	-7.5
	-23.0	21.0	-32.0	1.6	-21.0	-1.3	-20.0	-1.8
Coil 3 Q	124.6	45.6	31.0	25.3	23.3	23.0	23.2	24.6
	-540.0	530.0	-180.0	180.0	-100.0	110.0	-71.0	81.0
Coil 4 R	0.46	-1.57	-1.66	-1.72	-3.24	-1.70	-1.38	-1.38
	-18.00	13.00	-12.00	2.70	-11.00	1.50	-8.90	0.96
Coil 4 Q	1.20	2.60	3.65	4.85	7.87	8.01	9.87	10.34
	-250.00	260.00	-79.00	96.00	-43.00	64.00	-27.00	51.00
Coil 5 R	1.03	0.44	-0.40	-0.20	-1.64	-0.31	-0.38	0.29
	-66.00	51.00	-8.40	3.60	-6.90	1.10	-6.90	1.20
Coil 5 Q	0.20	2.11	3.66	4.49	3.78	6.86	8.64	9.90
	-89.00	69.00	-26.00	27.00	-14.00	32.00	-7.00	22.00

MM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil D M	0.966	0.975	0.979	0.981	0.982	0.982	0.983	0.982
	0.890	1.100	0.890	1.100	0.890	1.100	0.890	1.100
Coil D P	-0.316	-0.485	-0.379	-0.260	-0.175	-0.101	-0.026	-0.005
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500
Coil 1 M	0.961	0.970	0.974	0.976	0.977	0.977	0.977	0.977
	0.890	1.100	0.890	1.100	0.890	1.100	0.890	1.100
Coil 1 P	-0.296	-0.476	-0.360	-0.238	-0.134	-0.087	-0.032	0.016
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500
Coil 2 M	0.986	0.987	0.987	0.986	0.986	0.985	0.985	0.985
	0.890	1.100	0.890	1.100	0.890	1.100	0.890	1.100
Coil 2 P	0.044	0.046	0.090	0.134	0.151	0.175	0.211	0.219
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500
Coil 3 M	0.994	0.994	0.994	0.994	0.993	0.992	0.992	0.990
	0.900	1.100	0.900	1.100	0.900	1.100	0.900	1.100
Coil 3 P	0.048	0.082	0.138	0.198	0.236	0.286	0.334	0.350
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500
Coil 4 M	0.999	0.999	1.000	0.999	1.000	1.000	1.000	0.999
	0.900	1.100	0.900	1.100	0.900	1.100	0.900	1.100
Coil 4 P	0.116	0.124	0.210	0.286	0.396	0.454	0.525	0.577
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500
Coil 5 M	1.003	1.002	1.003	1.003	1.002	1.005	1.007	1.007
	0.900	1.100	0.900	1.100	0.900	1.100	0.900	1.100
Coil 5 P	0.040	0.106	0.264	0.377	0.561	0.694	0.775	0.910
	-1.500	1.500	-1.500	1.500	-1.500	1.500	-1.500	1.500

PARMS	TCID 0	TCID 1	Cal Temp (degF)	T Factor
IDs	2.831	0.846	50.4	1.00

## HDIL BEFORE LOG VERIFICATION SUMMARY

TOOL #:	1530XA 10121806	DATE/TIME PERFORMED:	Thu Jun 12 11:13:55 2014	DAYS SINCE CAL:	155
UNIT #:	3880TA HL6670				

ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil D R	0.003	0.001	0.000	0.000	-0.002	0.001	-0.001	0.000

Coil 0 Q	-0.005 -0.500 0.500	-0.000 -0.200 0.200	-0.000 -0.100 0.100	0.002 -0.100 0.100	-0.001 -0.100 0.100	0.000 -0.100 0.100	-0.001 -0.100 0.100	0.000 -0.100 0.100
Coil 1 R	0.003 -0.200 0.200	-0.001 -0.100 0.100	0.000 -0.100 0.100	-0.000 -0.100 0.100	-0.001 -0.100 0.100	-0.001 -0.100 0.100	0.000 -0.100 0.100	0.000 -0.100 0.100
Coil 1 Q	-0.019 -0.500 0.500	-0.001 -0.200 0.200	0.000 -0.100 0.100	0.002 -0.100 0.100	0.000 -0.100 0.100	0.001 -0.100 0.100	-0.002 -0.100 0.100	0.001 -0.100 0.100
Coil 2 R	0.004 -0.200 0.200	0.002 -0.100 0.100	0.003 -0.100 0.100	-0.001 -0.100 0.100	0.001 -0.100 0.100	0.003 -0.100 0.100	-0.000 -0.100 0.100	-0.004 -0.100 0.100
Coil 2 Q	-0.009 -0.500 0.500	-0.001 -0.200 0.200	-0.006 -0.100 0.100	-0.005 -0.100 0.100	-0.000 -0.100 0.100	-0.003 -0.100 0.100	0.001 -0.100 0.100	-0.001 -0.100 0.100
Coil 3 R	0.005 -0.300 0.300	0.001 -0.100 0.100	0.002 -0.100 0.100	-0.002 -0.100 0.100	0.001 -0.100 0.100	0.002 -0.100 0.100	0.002 -0.100 0.100	0.004 -0.100 0.100
Coil 3 Q	-0.015 -0.500 0.500	-0.007 -0.200 0.200	0.002 -0.100 0.100	-0.000 -0.100 0.100	0.003 -0.100 0.100	-0.000 -0.100 0.100	0.004 -0.100 0.100	-0.002 -0.100 0.100
Coil 4 R	0.024 -0.500 0.500	-0.004 -0.200 0.200	-0.002 -0.200 0.200	-0.000 -0.200 0.200	0.010 -0.200 0.200	0.008 -0.200 0.200	-0.004 -0.200 0.200	0.002 -0.200 0.200
Coil 4 Q	-0.017 -1.000 1.000	-0.016 -0.400 0.400	0.010 -0.200 0.200	-0.001 -0.200 0.200	0.003 -0.200 0.200	0.002 -0.200 0.200	0.000 -0.200 0.200	-0.001 -0.200 0.200
Coil 5 R	0.002 -1.200 1.200	-0.021 -0.400 0.400	-0.007 -0.400 0.400	-0.003 -0.400 0.400	0.004 -0.400 0.400	0.022 -0.400 0.400	0.021 -0.400 0.400	0.010 -0.400 0.400
Coil 5 Q	0.012 -1.500 1.500	-0.013 -0.800 0.800	0.003 -0.400 0.400	-0.003 -0.400 0.400	-0.024 -0.400 0.400	0.026 -0.400 0.400	0.005 -0.400 0.400	-0.008 -0.400 0.400

#### ELEC. GAINS

10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil 0 M	162.54 136.00 186.00	161.12 134.00 184.00	158.27 131.00 181.00	154.04 126.00 176.00	148.47 122.00 170.00	141.64 118.00 161.00	133.57 112.00 160.00	124.32 105.00 139.00
Coil 0 P	7.575 -1.000 12.000	25.270 19.000 30.000	42.467 36.000 50.000	59.613 49.000 71.000	76.752 63.000 91.000	93.924 77.000 110.000	111.117 92.000 130.000	128.311 105.000 151.000
Coil 1 M	281.69 237.00 327.00	279.16 226.00 326.00	274.07 230.00 340.00	266.52 226.00 312.00	256.54 218.00 302.00	244.29 206.00 289.00	229.90 196.00 266.00	213.36 184.00 244.00
Coil 1 P	7.749 -1.000 12.000	25.740 19.000 30.000	43.244 36.000 51.000	60.699 48.000 71.000	78.167 63.000 92.000	95.647 77.000 112.000	113.137 92.000 132.000	130.621 105.000 153.000
Coil 2 M	577.48 479.00 669.00	572.60 474.00 664.00	562.76 463.00 643.00	547.99 460.00 632.00	528.46 432.00 602.00	504.20 412.00 572.00	475.46 380.00 540.00	442.34 369.00 499.00
Coil 2 P	7.864 -1.000 12.000	26.142 19.000 31.000	43.941 36.000 51.000	61.697 49.000 71.000	79.490 63.000 92.000	97.308 77.000 114.000	115.185 92.000 136.000	133.060 105.000 156.000
Coil 3 M	924.98 772.00 1060.00	916.84 764.00 1060.00	900.31 752.00 1030.00	875.65 728.00 1010.00	843.21 700.00 970.00	803.19 666.00 926.00	756.16 628.00 898.00	702.23 589.00 799.00
Coil 3 P	7.641 -2.000 13.000	25.577 19.000 31.000	43.001 36.000 52.000	60.361 48.000 72.000	77.740 63.000 93.000	95.127 77.000 114.000	112.549 92.000 136.000	129.939 105.000 156.000
Coil 4 M	1456.8 1210.0 1700.0	1443.2 1205.0 1680.0	1415.6 1180.0 1660.0	1374.5 1140.0 1620.0	1320.9 1120.0 1530.0	1255.6 1070.0 1460.0	1179.5 1000.0 1360.0	1093.1 942.0 1240.0
Coil 4 P	7.775 -2.000 13.000	25.876 19.000 31.000	43.474 36.000 52.000	60.982 49.000 73.000	78.494 63.000 93.000	95.945 78.000 114.000	113.391 92.000 136.000	130.784 105.000 156.000
Coil 5 M	2980.0 2460.0 3460.0	2957.1 2420.0 3400.0	2907.4 2410.0 3320.0	2832.8 2360.0 3300.0	2734.1 2280.0 3060.0	2610.6 2160.0 2960.0	2461.9 2020.0 2790.0	2288.6 1870.0 2670.0
Coil 5 P	7.822 -2.000 13.000	26.071 19.000 31.000	43.850 36.000 52.000	61.606 49.000 73.000	79.409 63.000 94.000	97.229 79.000 114.000	115.188 93.000 136.000	133.117 105.000 156.000

### HDIL AFTER LOG VERIFICATION SUMMARY

TOOL #: 1530XA 10121806

DATE/TIME PERFORMED: Thu Jun 12 13:46:12 2014

DAYS SINCE CAL: 155

UNIT #: 3880TA HL6670

#### ZERO DATA(mv)

10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil 0 R	0.002 -0.077 0.069	0.000 -0.069 0.061	-0.002 -0.030 0.030	-0.000 -0.030 0.030	-0.000 -0.032 0.028	-0.001 -0.029 0.031	-0.001 -0.031 0.029	-0.000 -0.030 0.030
Coil 0 Q	-0.005 -0.045 0.036	-0.001 -0.120 0.120	0.000 -0.030 0.030	-0.000 -0.038 0.032	0.000 -0.031 0.029	-0.001 -0.030 0.030	0.000 -0.031 0.029	0.001 -0.030 0.030
Coil 1 R	0.004 -0.077 0.069	-0.005 -0.061 0.048	-0.003 -0.030 0.030	0.001 -0.030 0.030	-0.002 -0.031 0.029	-0.000 -0.031 0.029	0.000 -0.030 0.030	0.001 -0.030 0.030
Coil 1 Q	-0.017 -0.419 0.361	-0.001 -0.101 0.099	0.000 -0.030 0.030	0.001 -0.028 0.032	-0.001 -0.030 0.030	0.001 -0.029 0.031	-0.000 -0.032 0.028	0.000 -0.029 0.031
Coil 2 R	0.005 -0.066 0.074	0.002 -0.028 0.032	-0.005 -0.027 0.033	0.002 -0.031 0.029	0.001 -0.029 0.031	-0.000 -0.027 0.033	0.002 -0.030 0.030	0.001 -0.034 0.036
Coil 2 Q	-0.010 -0.369 0.341	0.005 -0.101 0.099	-0.002 -0.036 0.024	0.003 -0.036 0.026	-0.002 -0.030 0.030	0.002 -0.033 0.027	-0.002 -0.029 0.031	-0.001 -0.031 0.029
Coil 3 R	0.014 -0.026 0.046	-0.003 -0.039 0.041	-0.001 -0.038 0.042	-0.001 -0.042 0.036	-0.002 -0.039 0.041	0.001 -0.036 0.042	0.004 -0.036 0.042	0.008 -0.036 0.044
Coil 3 Q	-0.006 -0.216 0.186	-0.012 -0.087 0.073	0.004 -0.038 0.042	0.003 -0.040 0.040	0.003 -0.037 0.043	-0.003 -0.040 0.040	-0.002 -0.036 0.044	0.001 -0.042 0.038
Coil 4 R	0.010 -0.036 0.064	-0.004 -0.064 0.056	-0.009 -0.062 0.058	0.004 -0.060 0.060	-0.012 -0.060 0.070	0.001 -0.062 0.068	0.004 -0.064 0.056	0.001 -0.068 0.062
Coil 4 Q	-0.010 -0.317 0.269	-0.002 -0.116 0.084	-0.006 -0.050 0.070	-0.012 -0.061 0.069	0.004 -0.067 0.063	0.008 -0.068 0.062	0.001 -0.060 0.060	-0.000 -0.061 0.069

Coil 5 R	0.061	-0.008	-0.007	-0.003	-0.018	0.001	-0.008	-0.004
	-0.118	0.122	-0.141	0.099	-0.127	0.113	-0.123	0.117
Coil 5 Q	-0.039	-0.034	0.029	0.001	0.020	0.013	-0.009	-0.001
	-0.598	0.612	-0.263	0.297	-0.117	0.123	-0.123	0.117

ELEC. GAINS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	162.21 159.29 165.79	160.78 157.90 164.34	157.93 155.10 161.43	153.88 150.96 157.12	148.12 145.50 151.44	141.27 138.81 144.47	133.19 130.90 135.24	123.97 121.89 126.80
Coil 0 P	7.228 4.575 10.575	25.217 22.270 28.270	42.508 39.467 45.467	59.711 56.613 62.613	76.914 73.752 79.752	94.116 90.924 96.924	111.335 108.117 114.117	128.552 125.311 131.311
Coil 1 M	281.71 276.06 287.33	279.16 273.58 284.74	274.03 268.59 279.55	266.47 261.19 271.85	256.50 251.41 261.67	244.19 239.41 248.18	229.80 225.30 234.48	213.27 209.09 217.63
Coil 1 P	7.417 4.748 10.748	25.684 22.740 28.740	43.275 40.244 46.244	60.789 57.699 63.699	78.291 75.167 81.167	95.806 92.647 98.647	113.347 110.137 116.137	130.865 127.621 133.621
Coil 2 M	576.83 565.93 589.03	571.97 561.15 584.06	562.01 551.51 574.02	547.27 537.03 558.95	527.75 517.89 539.03	503.39 494.12 514.29	474.67 465.95 484.95	441.42 433.49 451.18
Coil 2 P	7.497 4.864 10.864	26.088 23.142 29.142	43.981 40.941 46.941	61.810 58.697 64.697	79.645 76.490 82.490	97.525 94.309 100.309	115.424 112.185 118.185	133.323 130.060 136.060
Coil 3 M	924.18 905.49 943.48	916.01 898.51 935.18	899.27 882.31 918.30	874.63 858.14 893.16	842.14 826.34 859.07	801.99 787.13 819.25	754.79 741.03 771.28	700.52 688.18 716.27
Coil 3 P	7.272 4.641 10.641	25.522 22.577 28.577	43.049 40.001 46.001	60.484 57.361 63.361	77.912 74.740 80.740	95.346 92.127 98.127	112.796 109.549 115.549	130.244 126.999 132.999
Coil 4 M	1458.0 1429.6 1485.9	1444.4 1414.3 1472.1	1416.4 1387.3 1443.9	1375.5 1347.0 1402.0	1321.8 1294.5 1347.3	1256.4 1230.5 1280.7	1179.7 1155.9 1203.1	1093.1 1071.2 1114.9
Coil 4 P	7.435 4.775 10.775	25.827 22.876 28.876	43.524 40.474 46.474	61.103 57.962 63.962	78.640 75.494 81.494	96.174 92.945 98.945	113.671 110.391 116.391	131.093 127.784 133.784
Coil 5 M	2977.1 2930.4 3039.6	2953.9 2897.9 3016.2	2904.2 2848.3 2965.5	2828.9 2776.1 2889.4	2729.9 2679.4 2789.7	2605.2 2559.4 2662.8	2456.5 2412.6 2511.1	2285.6 2242.9 2334.4
Coil 5 P	7.484 4.822 10.822	26.040 23.071 29.071	43.932 40.890 46.890	61.746 58.606 64.606	79.597 76.409 82.409	97.526 94.229 100.229	115.452 112.188 118.188	133.441 130.117 136.117

## INSTRUMENT CONFIGURATION

Source File: /data1a/OH087237/m970a~.tdg

### FOCUS CABLEHEAD

Diameter : 3.13"  
Length : 3.17'  
Weight : 15 lbs  
Series : CABL31B  
Mnemonic : CBLH

### FOCUS SWIVEL

Diameter : 3.13"  
Length : 3.58'  
Weight : 50 lbs  
Series : 3950XA  
Mnemonic : SWVL

### FOCUS TEN/TEMP/MUD RES/ACCEL

Diameter : 3.13"  
Length : 4.31'  
Weight : 61 lbs  
Series : 3980XA  
Mnemonic : TTMA

### FOCUS TELEMETRY (POWER SECTION)

Diameter : 3.13"  
Length : 3.71'  
Weight : 48 lbs  
Series : 351BFB  
Mnemonic : TMGR

### FOCUS EB/EG TELEMETRY GAMMA RAY

Diameter : 3.13"  
Length : 5.83'  
Weight : 63 lbs  
Series : 351BEG  
Mnemonic : TMGR

52.34'

GR MP 36.97'

Mnemonic : GR  
Measure Point: 4.24': GR MP

#### FOCUS COMPENSATED NEUTRON

Diameter : 3.13"  
Length : 4.81'  
Weight : 65 lbs  
Series : 2436XA  
Mnemonic : CN  
Measure Point: 1.92': LSN MP  
Measure Point: 1.46': SSN MP

LSN MP : 29.83'  
SSN MP : 29.38'

#### FOCUS Z-DENSILOG

Diameter : 3.75"  
Length : 9.58'  
Weight : 200 lbs  
Series : 3233XA  
Mnemonic : ZDL  
Measure Point: 4.33': CR1 MP  
Measure Point: 1.69': LSD / CR2 MP  
Measure Point: 1.39': SSD MP

CR1 MP : 22.67'

LSD / CR2 MP : 30.03'  
SSD MP : 19.63'

#### FOCUS KNUCKLE JOINT

Diameter : 3.13"  
Length : 1.50'  
Weight : 30 lbs  
Series : 3930XA

#### FOCUS KNUCKLE JOINT

Diameter : 3.13"  
Length : 1.50'  
Weight : 30 lbs  
Series : 3930XA

#### FOCUS HIGH DEFINITION INDUCTION TOOL

Diameter : 3.13"  
Length : 13.33'  
Weight : 115 lbs  
Series : 1530XA  
Mnemonic : HDIL  
Measure Point: 7.17': COIL 5 MP  
Measure Point: 5.67': COIL 4 MP  
Measure Point: 4.17': COIL 3 MP  
Measure Point: 3.67': COIL 2 MP  
Measure Point: 3.17': COIL 1 MP  
Measure Point: 2.67': COIL 0 MP  
Measure Point: 1.14': SP MP

COIL 5 MP : 9.17'

COIL 4 MP : 7.67'

COIL 3 MP : 6.17'

COIL 2 MP : 5.67'

COIL 1 MP : 5.17'

COIL 0 MP : 4.67'

SP MP : 3.14'


#### FOCUS PINEAPPLE / CABBAGE

##### HOLE FINDER

Diameter : 2.63"  
Length : 1.50'  
Weight : 7 lbs  
Series : HFND1B

0.00'

TOTAL LENGTH: 53.34'  
TOTAL WEIGHT: 703 lbs  
MAX DIAMETER: 0'6.13"

	COMPANY	WPX ENERGY ROCKY MOUNTAIN LLC		FILE NO:	
	WELL	C&C ENERGY GM 23-13			087237
	FIELD	GRAND VALLEY		API NO:	
	COUNTY	GARFIELD	STATE	CO	05045222650000
LOCATION:		ELEVATIONS:		S13 T7S R96W	
SHL: 286' FSL; 1004' FWL: S12 T7S R96W		KB 5165 FT		GM 24-12	
BHL: 1555' FNL; 1205' FWL: S13 T7S R96W		DF		H&P318	
SEC 13 TWP 7S RGE 96W		GL 5141 FT			
		DATE		12-Jun-2014	

