



**HIGH DEFINITION INDUCTION LOG  
COMPENSATED NEUTRON LOG  
COMPENSATED Z-DENSILOG  
GAMMA RAY LOG  
CALIPER LOG**

FILE NO:

COMPANY

LARAMIE ENERGY

WELL

NICHOLS 0994-24-06W

FIELD

VEGA

API NO:  
05077104150000

COUNTY

MESA

STATE COLORADO

Version

LOCATION:

LAT: 39.2645944N, LONG: 107.8306361

OTHER SERVICES  
GR/CAL

SEC 24 TWP 9S RGE 94W

PERMANENT DATUM GL ELEVATION 7137 FT  
LOG MEASURED FROM KB 24 FT ABOVE P.D.  
DRILL. MEAS. FROM KB

ELEVATIONS:  
KB 7161 FT  
DF 7160 FT  
GL 7137 FT

DATE 13-DEC-2017

RUN 1 TRIP 1

SERVICE ORDER US130698

DEPTH DRILLER 7658 FT

DEPTH LOGGER 7651 FT

BOTTOM LOGGED INTERVAL 7651 FT

TOP LOGGED INTERVAL 1549 FT

CASING DRILLER 8.625 IN @ 1549 FT

CASING LOGGER 1549 FT

BIT SIZE 7.875 IN

TYPE OF FLUID IN HOLE WBM

DENSITY 9.9 LB/G 65 CP

PH 8.9 NA

SOURCE OF SAMPLE FLOWLINE

RM AT MEAS. TEMP. 2.08 OHMM @ 75 DEGF

RMF AT MEAS. TEMP. 1.55 OHMM @ 75 DEGF

RMC AT MEAS. TEMP. 2.60 OHMM @ 75 DEGF

SOURCE OF RMF RMC CALCULATED CALCULATED

RM AT BHT 1.43 OHMM @ 112 DEGF

TIME SINCE CIRCULATION 7 HRS

MAX. RECORDED TEMP. 192 DEGF

EQUIP. NO. LOCATION HL 6741 WOODWARD

RECORDED BY S.YASSA

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: 1 OPERATION IN WELL  
HDIL/ZDL/CN/GR RUN IN COMBINATION

BVOL & CVOL CALCULATED IN CUBIC FEET  
CVOL CALCULATED FOR PROPOSED 4.5" CASING  
CALIPER VERIFIED IN CASING

ZDL & CN RUN ON LIMESTONE MATRIX  
RHO MATRIX: 2.68 G/CC

HDIL RUN WITH 1.5" STANDOFFS  
ABC TO CALCULATED: MUD CONDUCTIVITY

WELLBORE RUGOSITY WILL AFFECT THE ACCURACY OF MEASUREMENTS

CREW: J.PENA,  
RIG: H&P 290

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	TTRM	3981XA	10045153	FREE
1	1	CR	3514XB	10226222	DECENTRALIZED
1	1	GR	1329XA	179184	DECENTRALIZED
1	1	CN	2446XA	10378389	FREE
1	1	ZDL	2234XA	10231795	PAD DEVICE
1	1	DKJT	3939XA	12093196	FREE
1	1	HDJL	1545FA/1515MA	1032170/1170552	FREE

# MAIN LOG 2"/100FT SCALE

ECLIPS 7.0w PC-ECLIPS General Release Rel 7.0w Fri Jun 09 11:02:06 Central Daylight Time 2017  
Patches: 2

Plotted: Wed Dec 13 09:43:17 2017

## PARAMETER AND FILTER SUMMARY REPORT

File: C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06\WMSALM03.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 1484.750 ft BOTTOM DEPTH: 7578.750 ft

SYMMETRIC FILTER				
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
TTRM	FILTER (i)	heavy (3)		TOP	BOTTOM
	FILTER (.h)	heavy (3)		"	"
	FILTER (.i)	heavy (3)		"	"
Y AXIS CALIPER	FILTER (i)	medium (1)		"	"
TENSION	FILTER (i)	heavy (3)		"	"
GR	FILTER (i)	medium (1)		"	"
CALIPER	FILTER (i)	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
SP-SPDH	FILTER (i)	heavy (3)		"	"

BOREHOLE & CEMENT				
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
BIT SIZE	BIT SIZE	7.875	in	TOP	BOTTOM
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	77.0	degF	"	"
	MUD SAMPLE RES	1.000	ohm.m	"	"
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	77.0	degF	"	"
	at BH REF DEPTH	0.0	ft	"	"
	with TEMP GRADIENT	1.200	0.01 degF/ft	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mbh*)	7.875	in	"	"
RH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDII )	TOOL MEASURED		"	"

HDIL PROCESSING				
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RXTEMP		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	STANDOFF		"	"
	STANDOFF	1.00	in	"	"
	TOOL POSITION	ECCENTERED		"	"
	Rmud MULTIPLIER	1.000		"	"
HDIL High RESISTIVITY Normalization	VRM Norm	ON		"	"

## CURVE DESCRIPTION REPORT

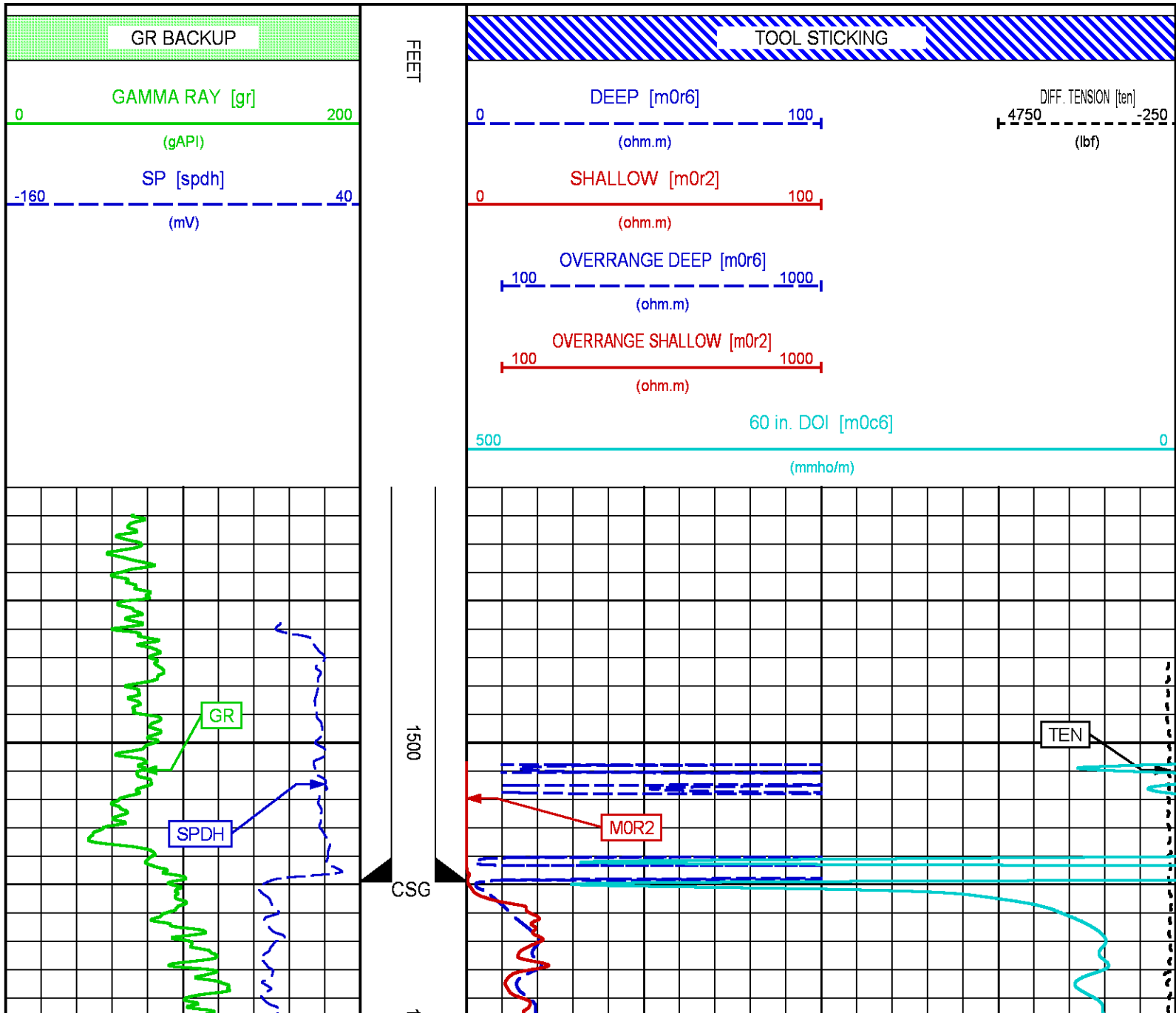
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:GR	N/A	GAMMA RAY
F1:M0C6	N/A	FOCUSED CONDUCTIVITY, 60-INCH DOI
F1:M0R2	N/A	TRUE FOCUSED RESISTIVITY FOR HDIL, 20-INCH DOI
F1:M0R6	N/A	TRUE FOCUSED RESISTIVITY FOR HDIL, 60-INCH DOI
F1:SPDH	N/A	SPONTANEOUS POTENTIAL PROCESSED IN COMMON REMOTE
F1:TEN	N/A	DIFFERENTIAL TENSION

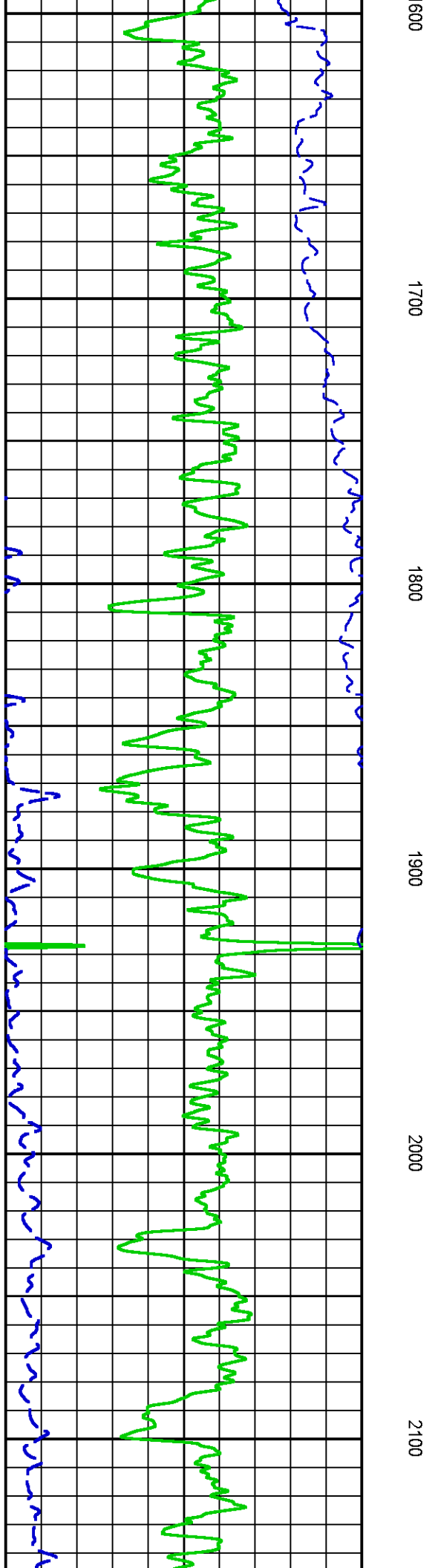
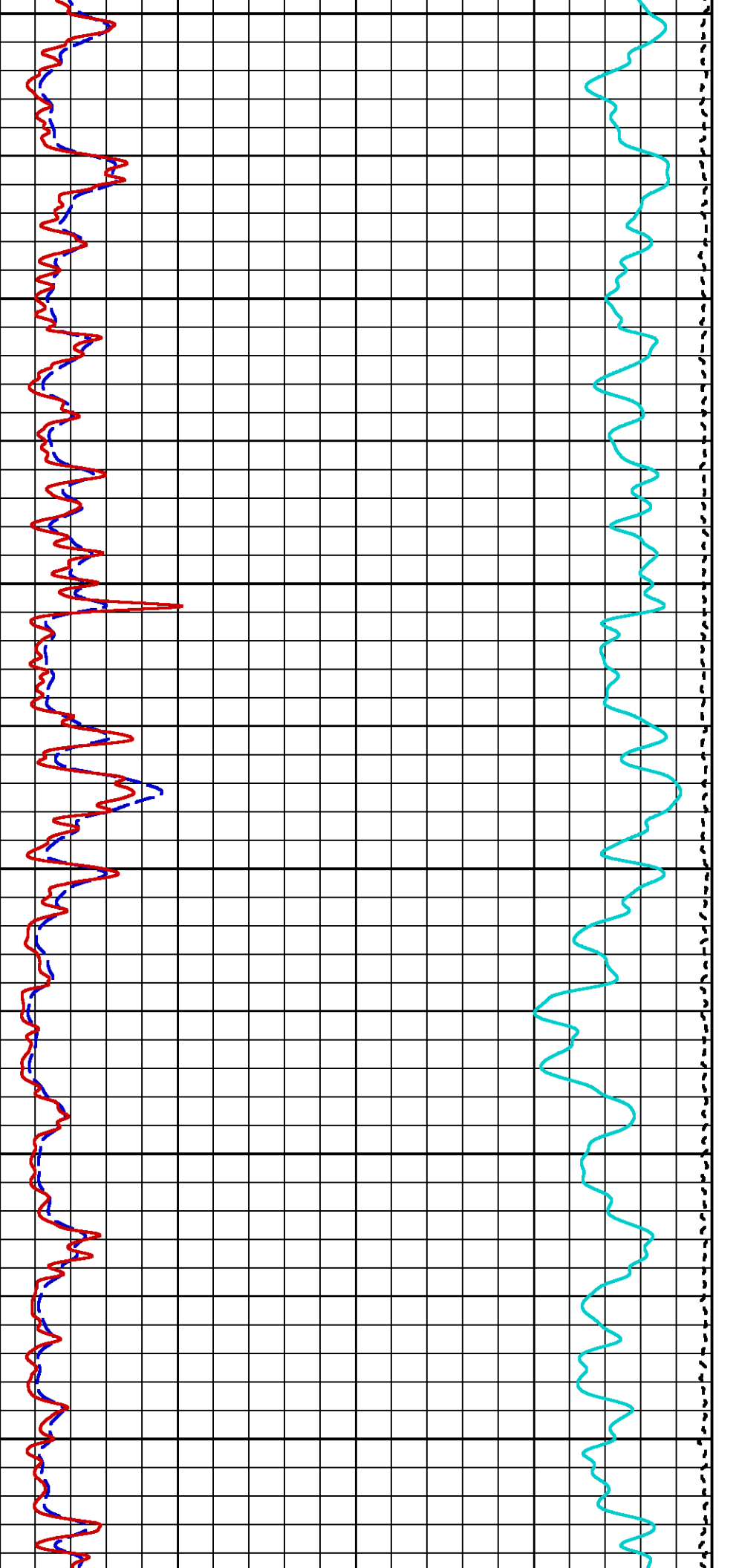
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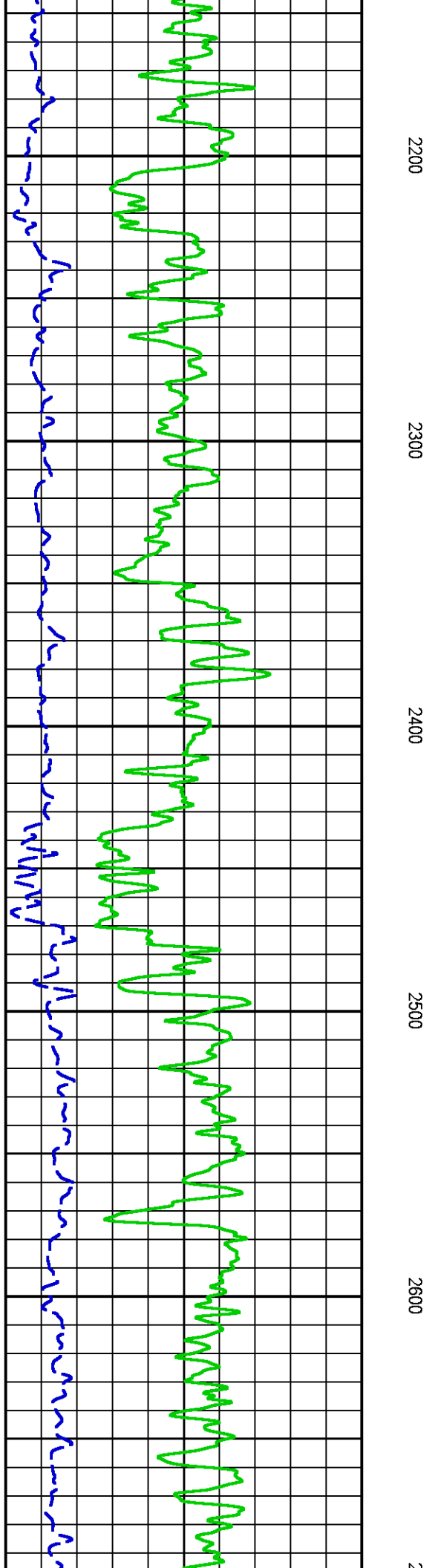
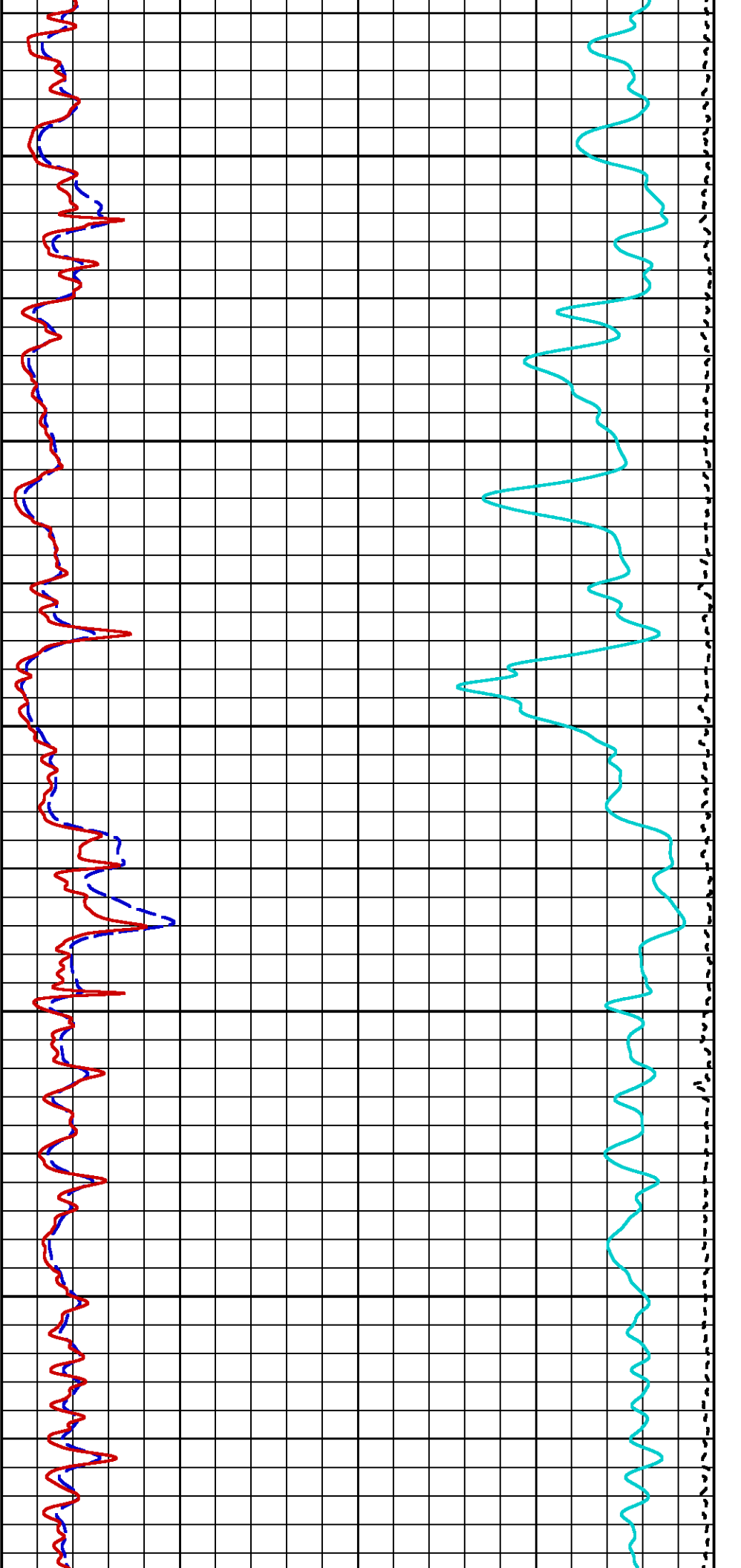
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
GR	-52.25	M0R2	-8.00	SPDH	-14.00		
M0C6	-8.00	M0R6	-8.00	TEN	0.00		

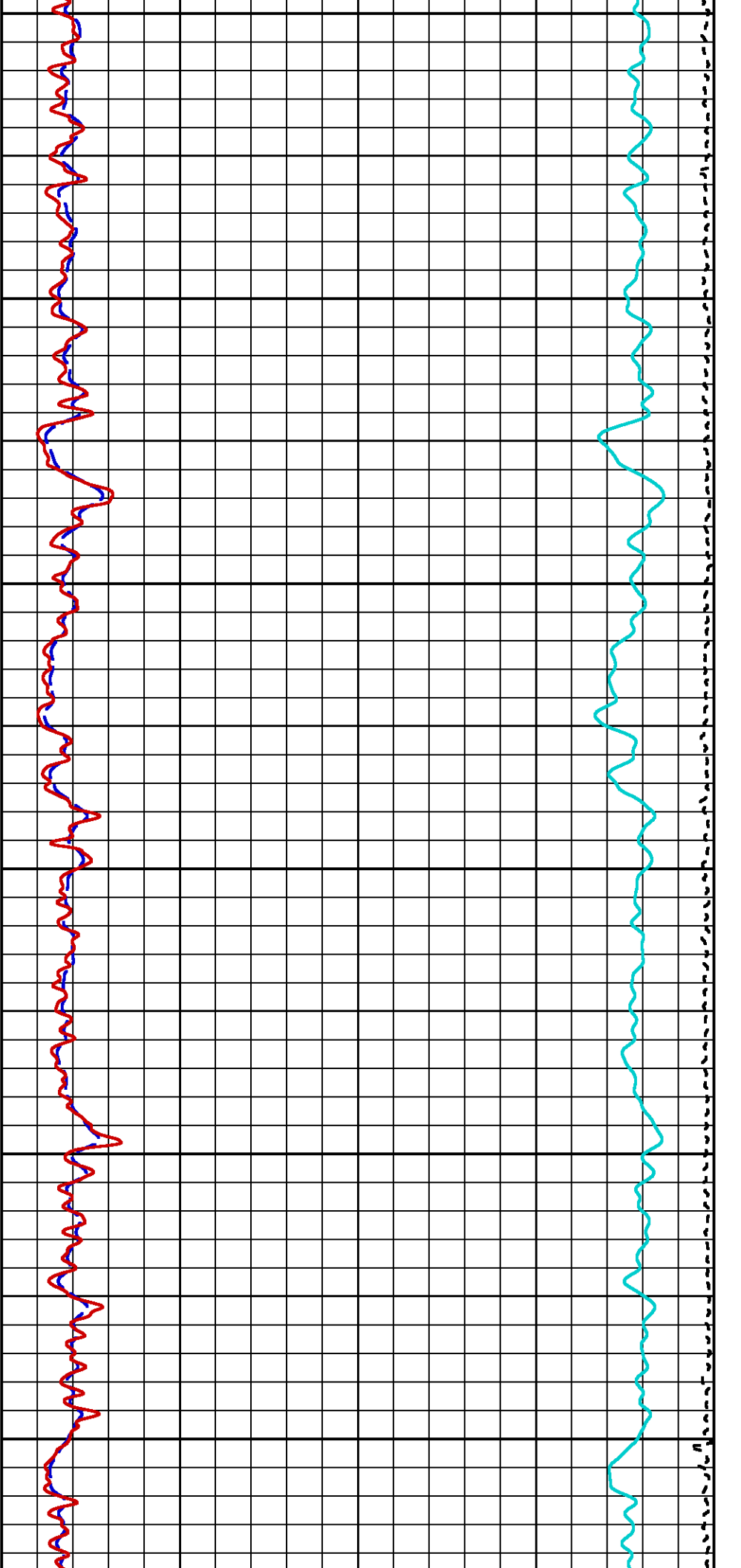
**Presentation** : BHI78FR4H2:C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06W\hdillin+01-MAIN-MN-2.fvpdf [2"/100' Scale]  
**Plot Interval** : 1419.75 - 7563.5 Feet

**Data File 1** : F1 : BHI78FR4H2:C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06W\MAIN.xtf  
**Created On** : N/A  
**Company** : LARAMIE ENERGY LLC  
**Well** : Nichols 0994-24-06W  
**Field** : VEGA  
**File Interval** : 1405.25 - 7578.75 Feet  
**OCT** : MSALM

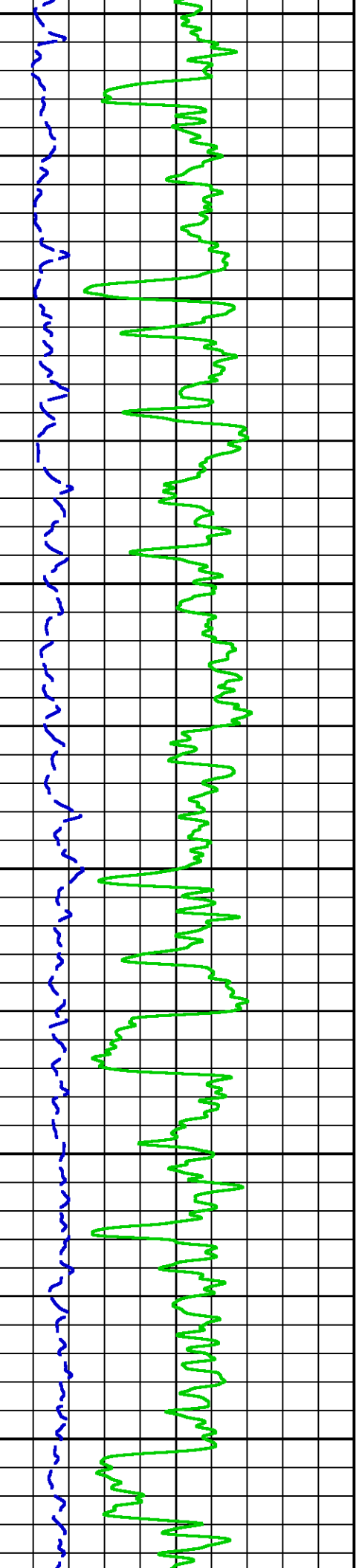


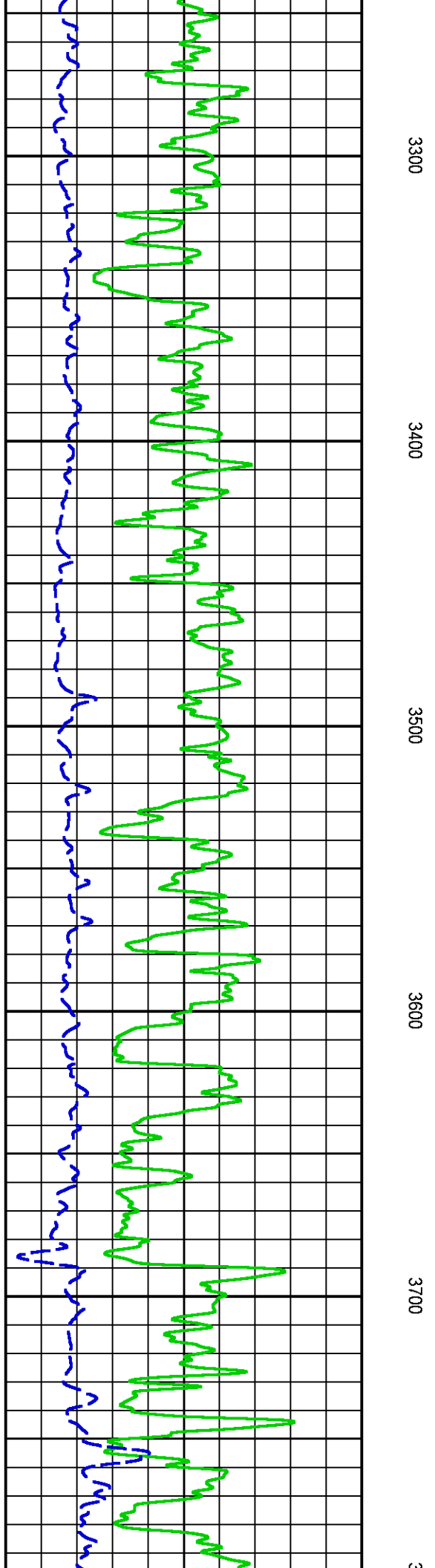
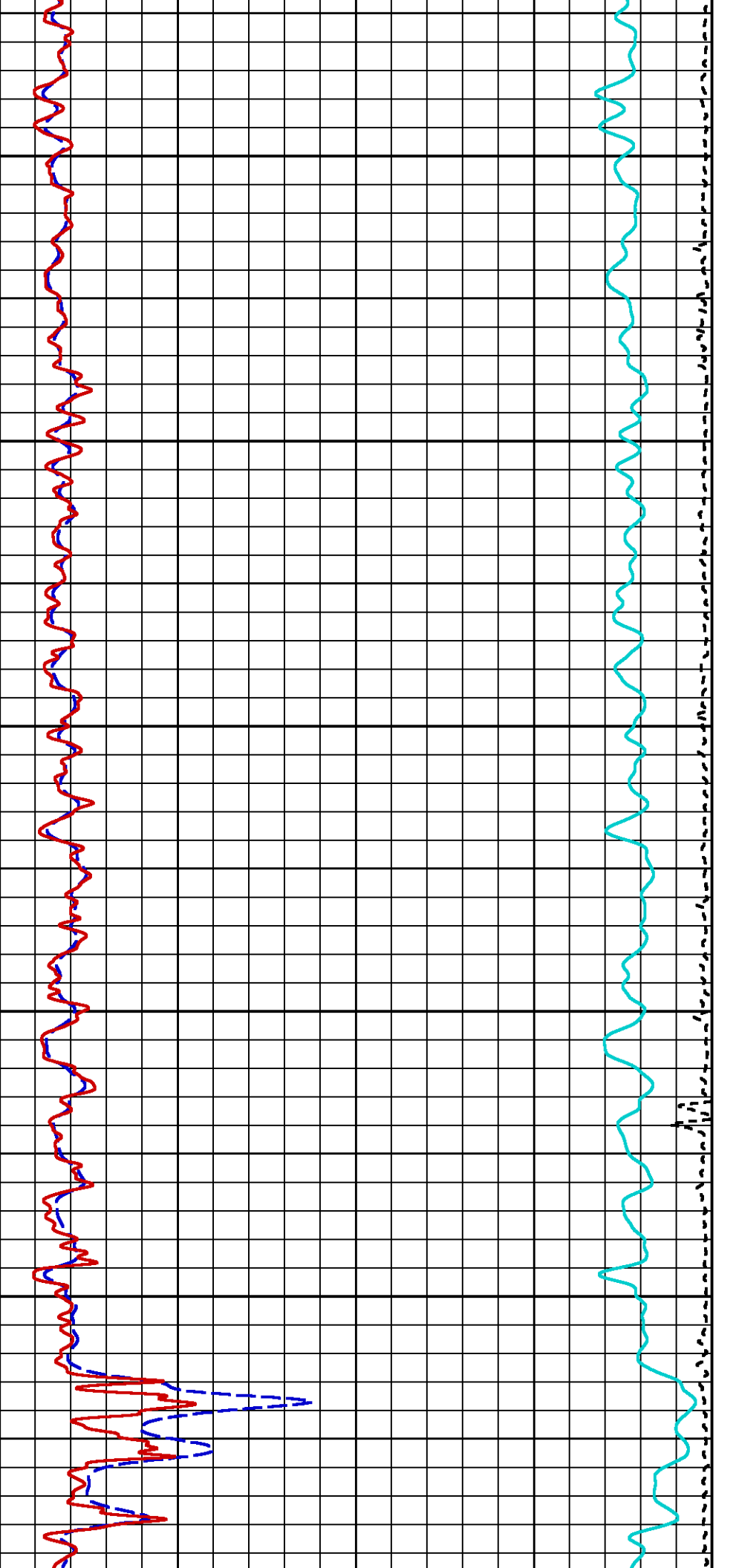


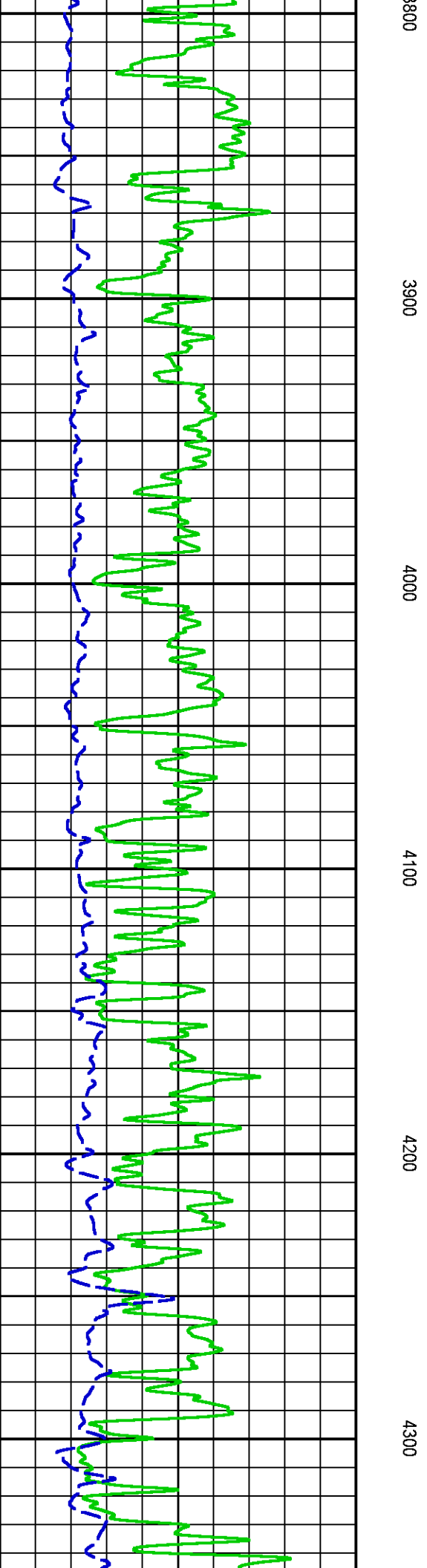
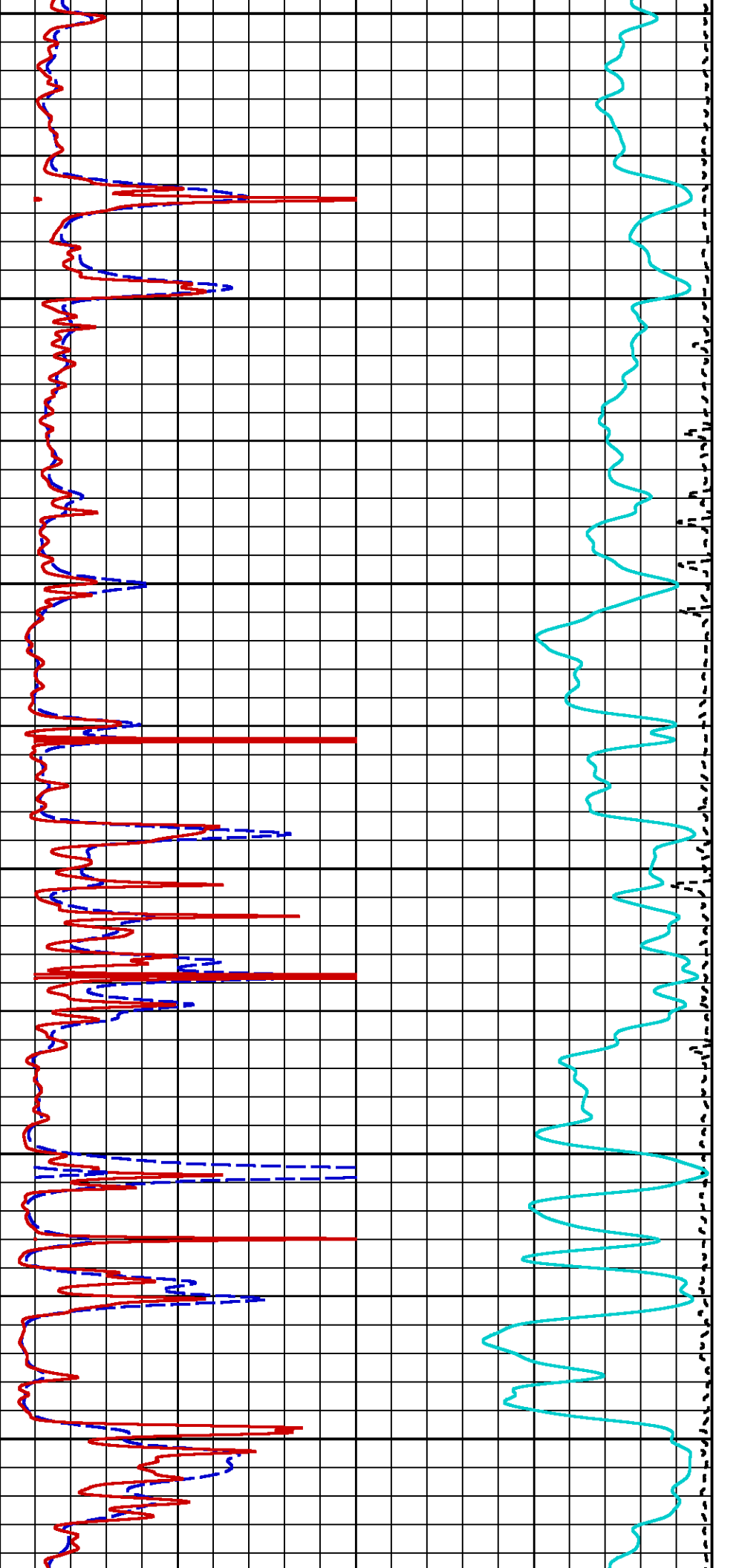


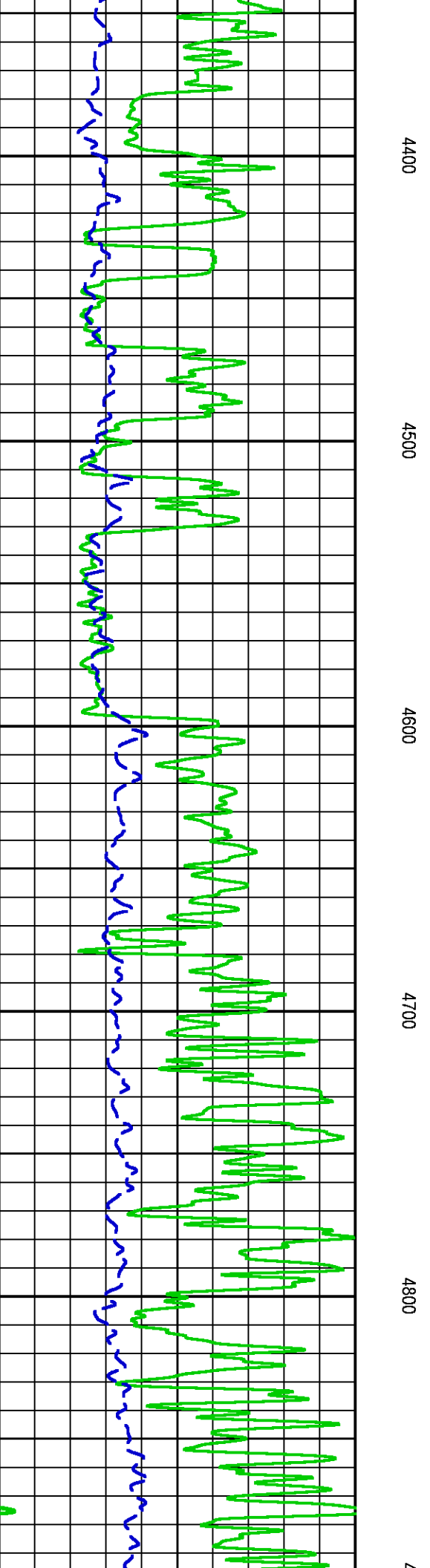
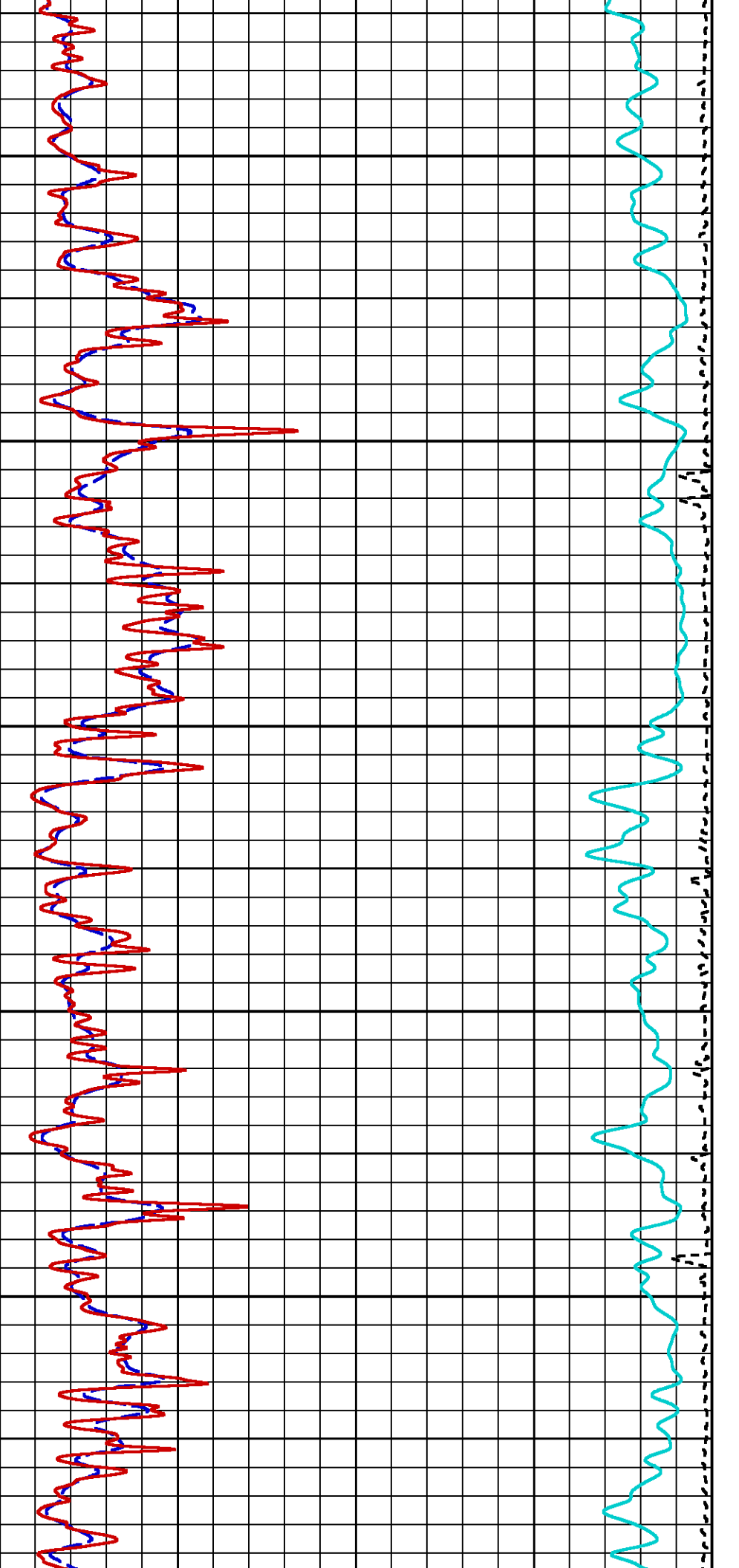


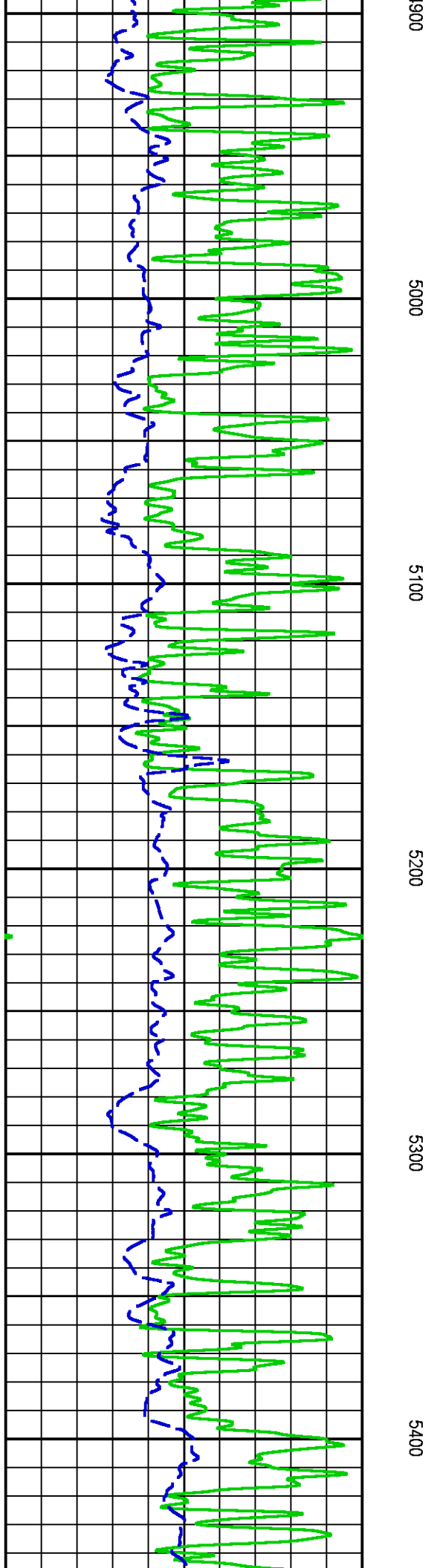
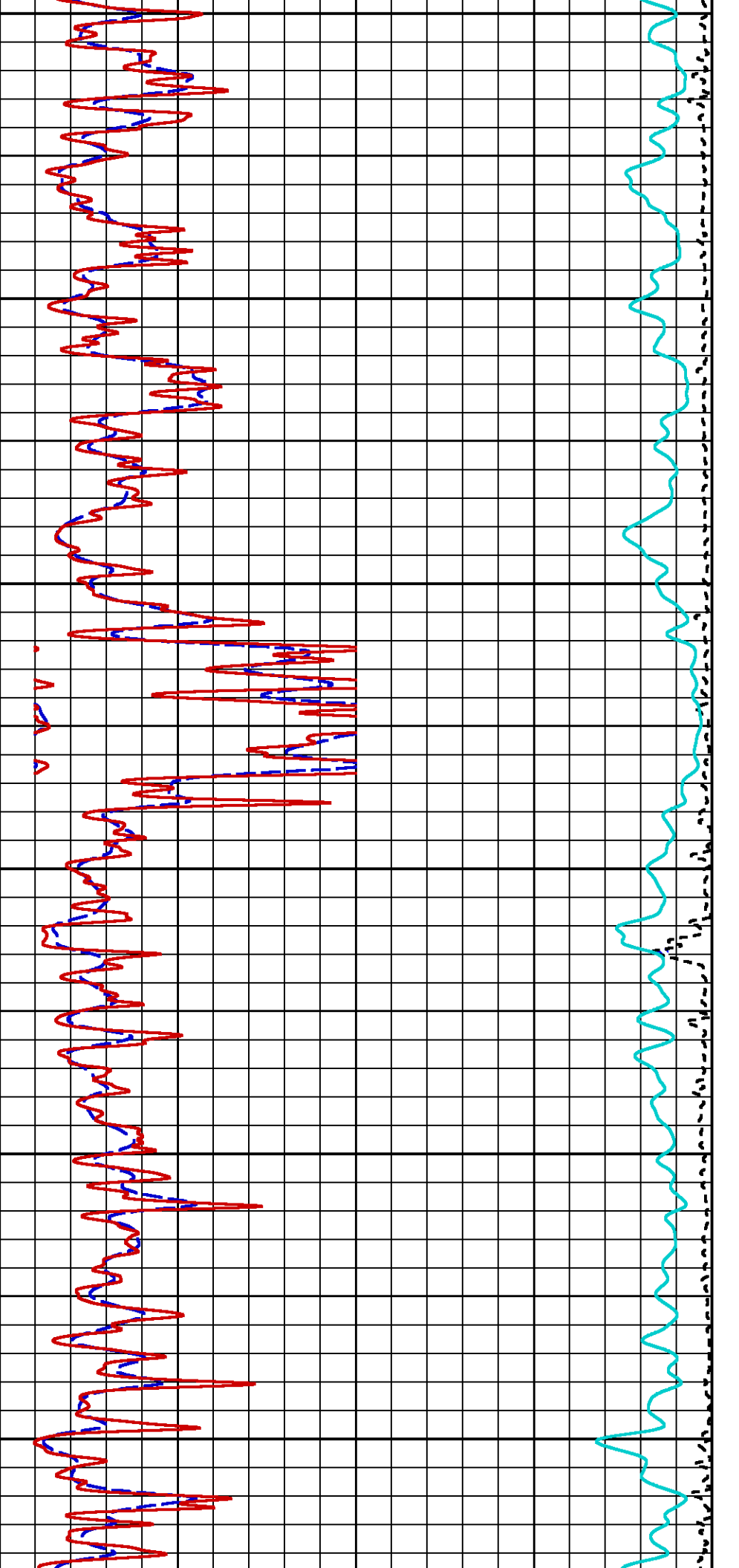
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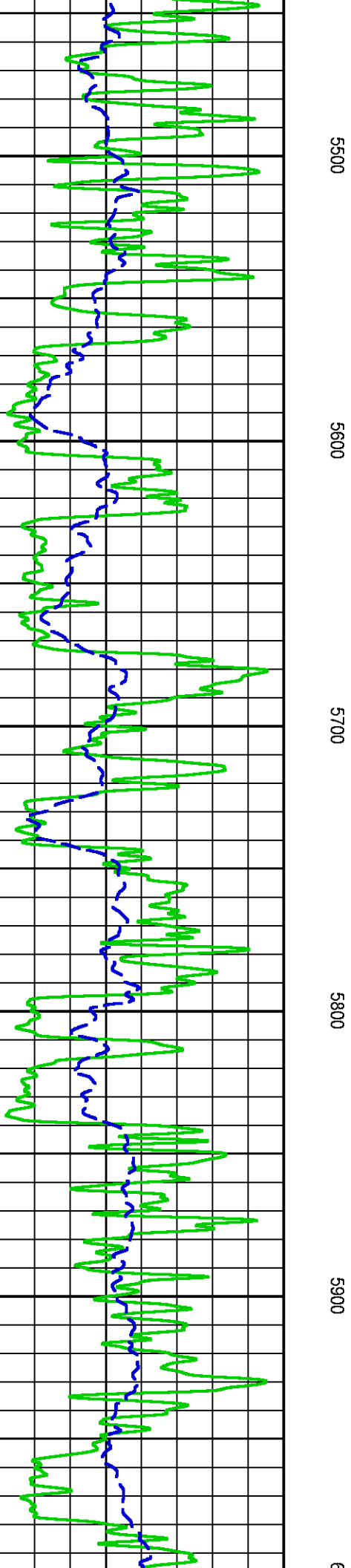
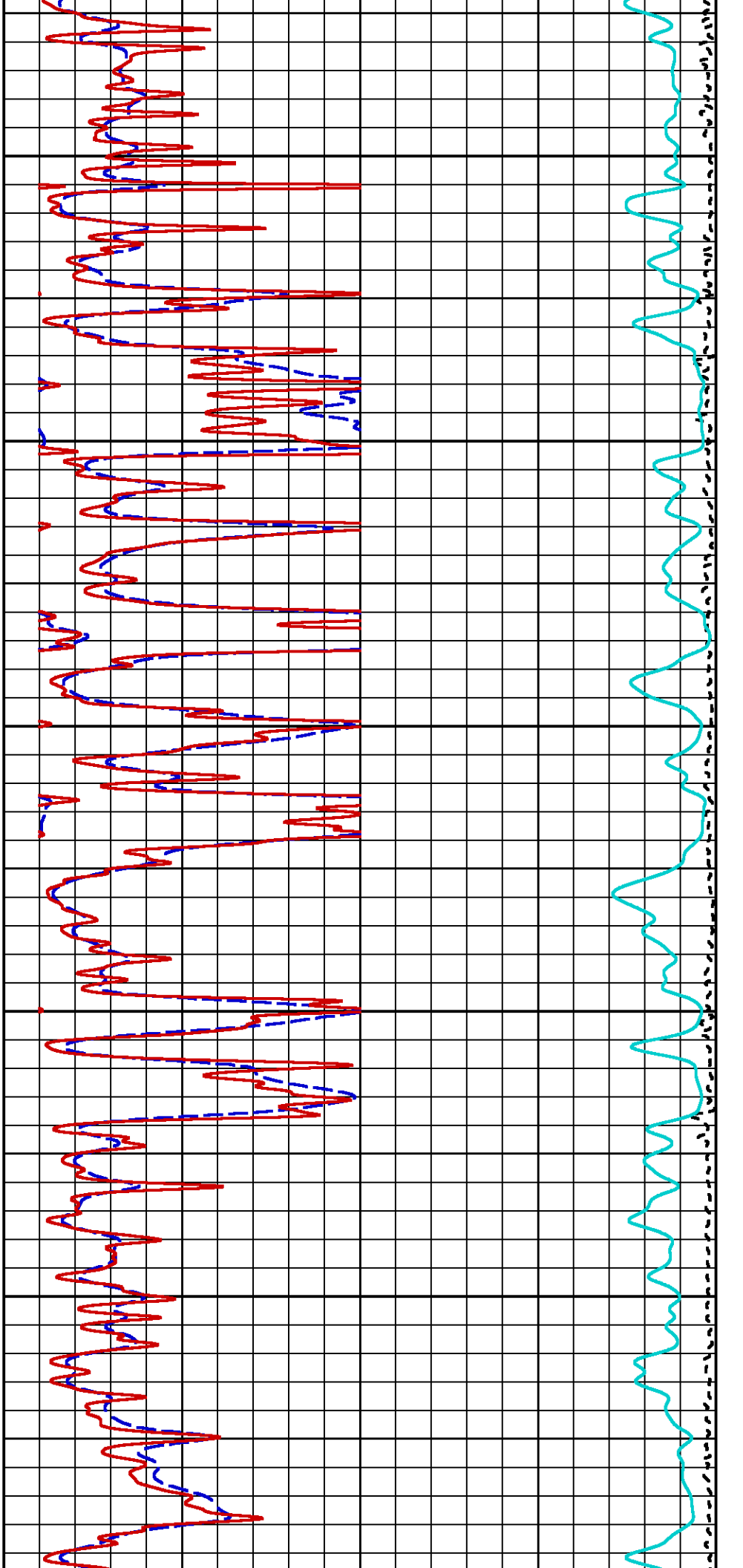


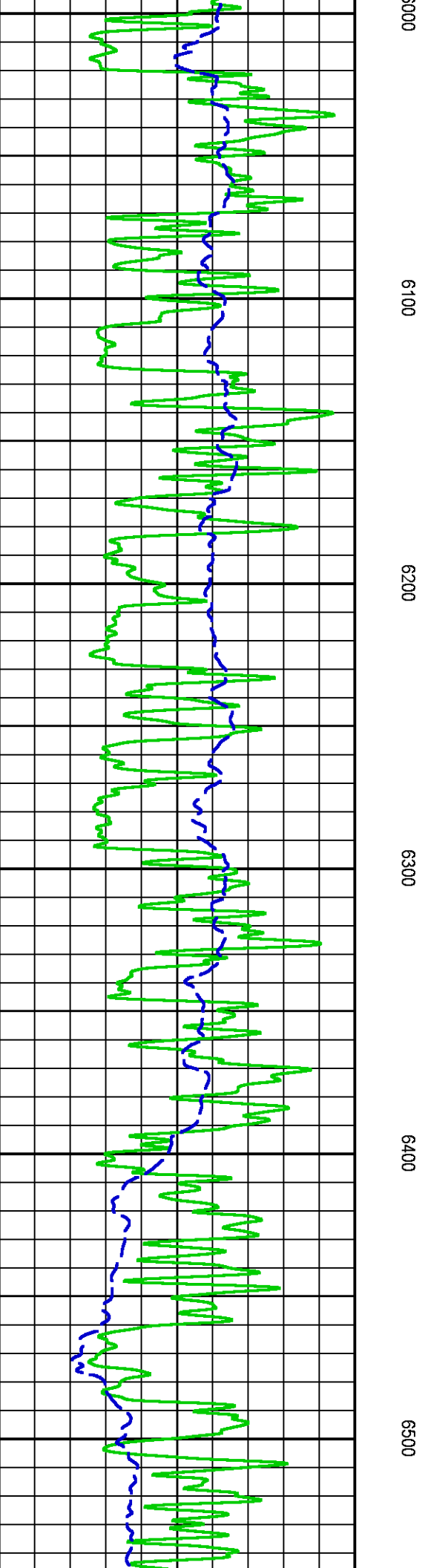
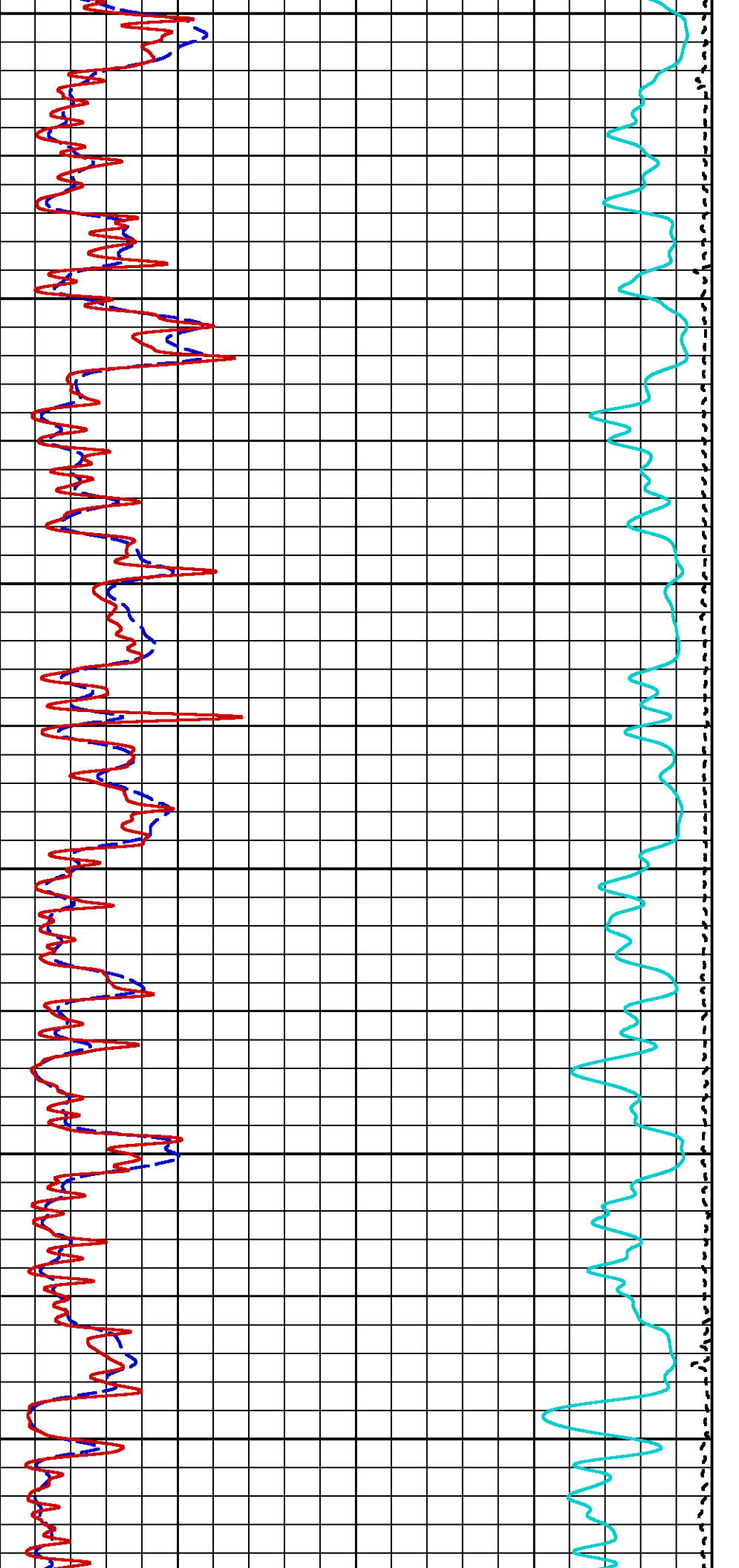


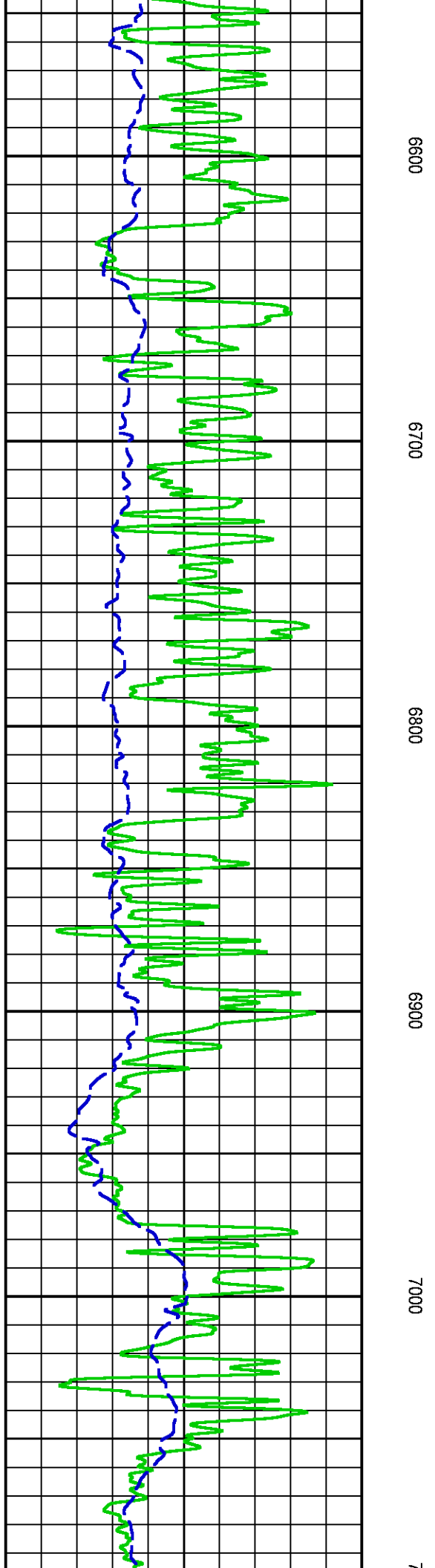
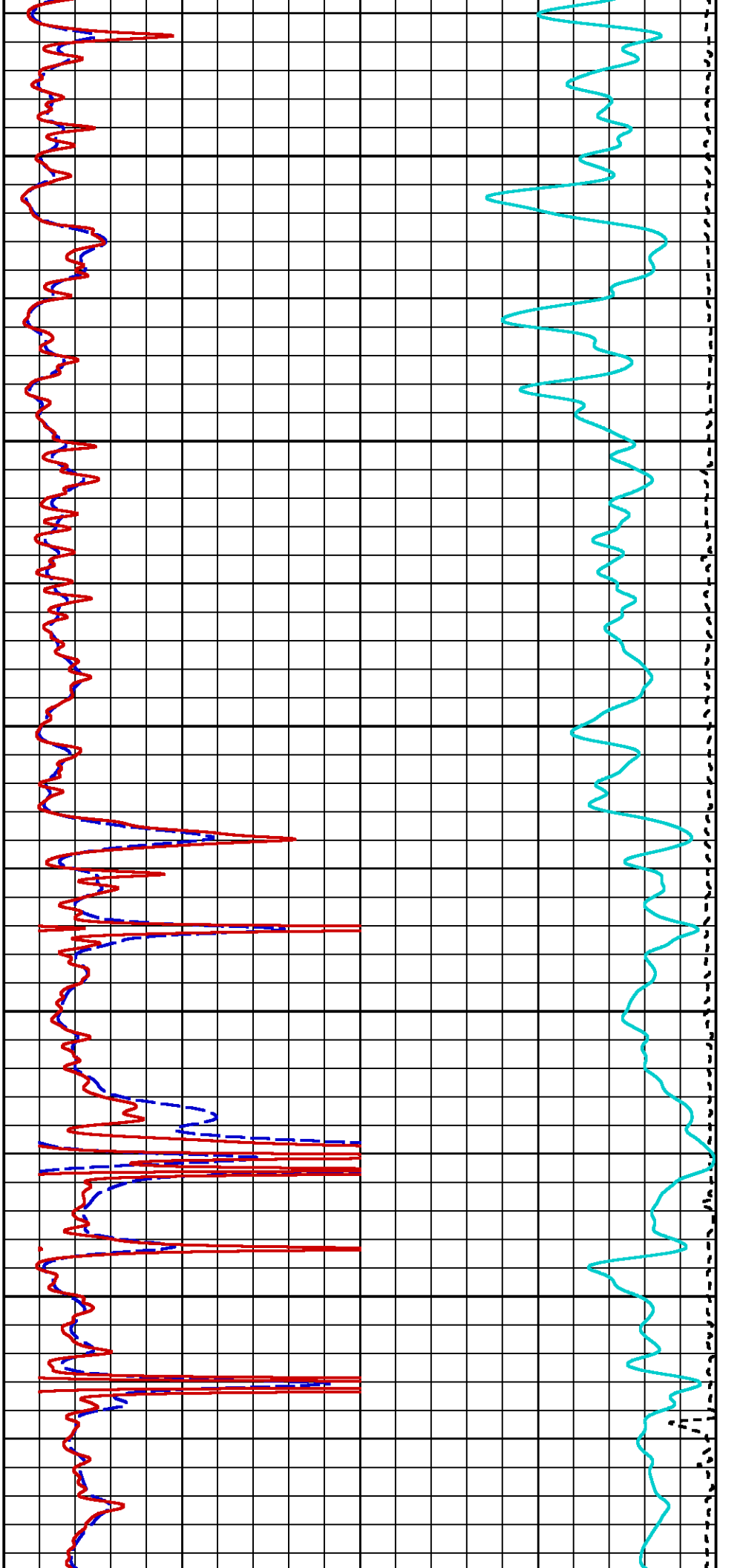


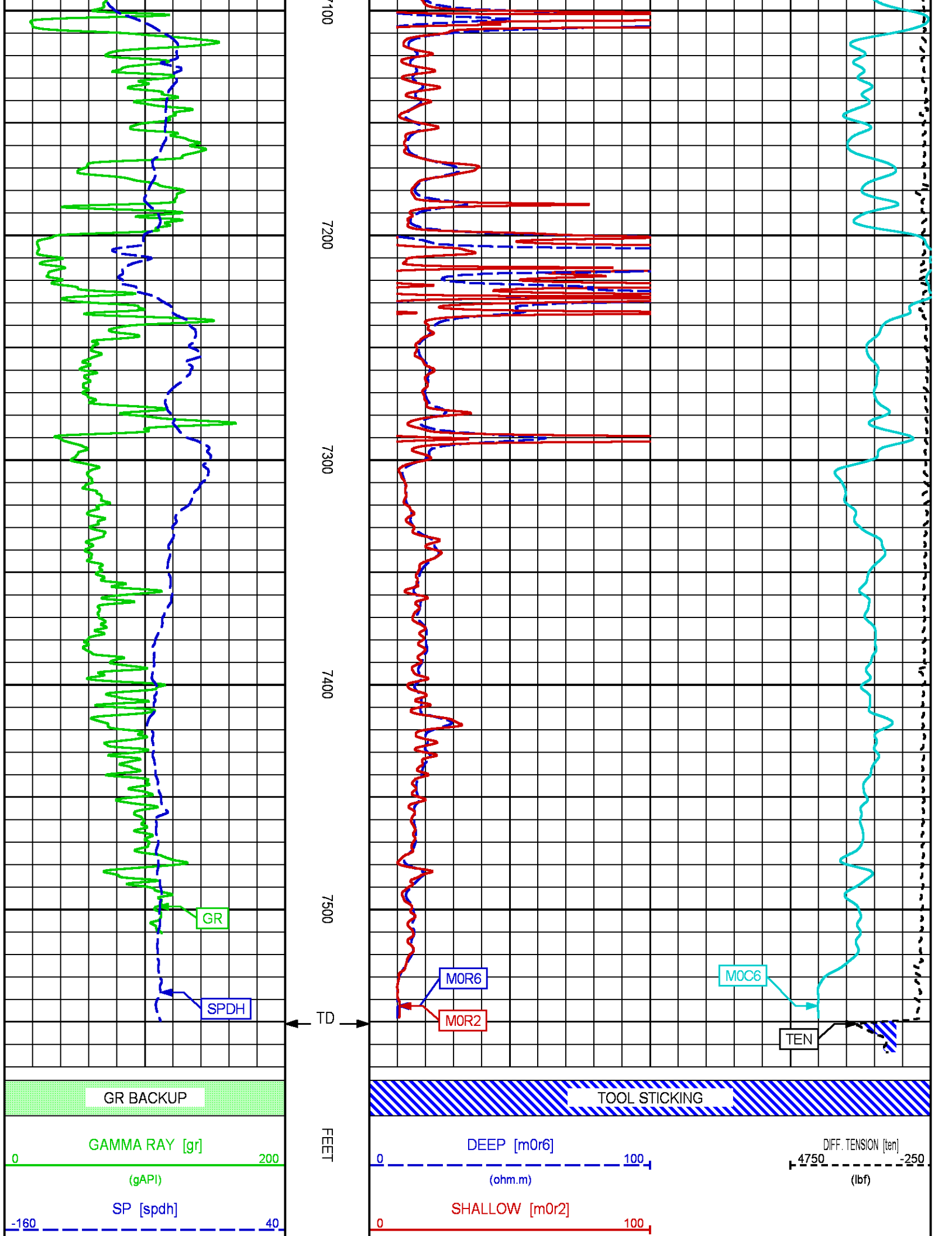












(mV)

(ohm.m)

OVERRANGE DEEP [m0r6]  
 100 ——— 1000  
 (ohm.m)

OVERRANGE SHALLOW [m0r2]  
 100 ——— 1000  
 (ohm.m)

500 60 in. DOI [m0c6] 0  
 (mmho/m)

## MAIN PASS

ECLIPS 7.0w PC-ECLIPS General Release Rel 7.0w Fri Jun 09 11:02:06 Central Daylight Time 2017  
 Patches: 2

Plotted: Wed Dec 13 10:37:37 2017

### PARAMETER AND FILTER SUMMARY REPORT

File: C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06\WMSALM03.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 1484.750 ft BOTTOM DEPTH: 7578.750 ft

### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
TTRM	FILTER ( )	heavy (3)		TOP	BOTTOM
	FILTER (.h)	heavy (3)		"	"
	FILTER (.i)	heavy (3)		"	"
Y AXIS CALIPER	FILTER ( )	medium (1)		"	"
TENSION	FILTER ( )	heavy (3)		"	"
GR	FILTER ( )	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
CN	FILTER ( )	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
CALIPER	FILTER ( )	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
ZDL MED RES	FILTER (hrd1*)	medium		"	"
	FILTER (hrd1s*)	medium		"	"
	FILTER (hrd2*)	medium		"	"
SP-SPDH	FILTER (hrd2s*)	medium		"	"
	FILTER (soft*)	medium		"	"
	FILTER ( )	heavy (3)		"	"
	FILTER (.i)	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	7.875	in	"	"
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	77.0	degF	"	"
	MUD SAMPLE RES	1.000	ohm.m	"	"
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	77.0	degF	"	"
	at BH REF DEPTH	0.0	ft	"	"
	with TEMP GRADIENT	1.200	0.01 degF/ft	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (zdbh*)	USE CALIPER		"	"

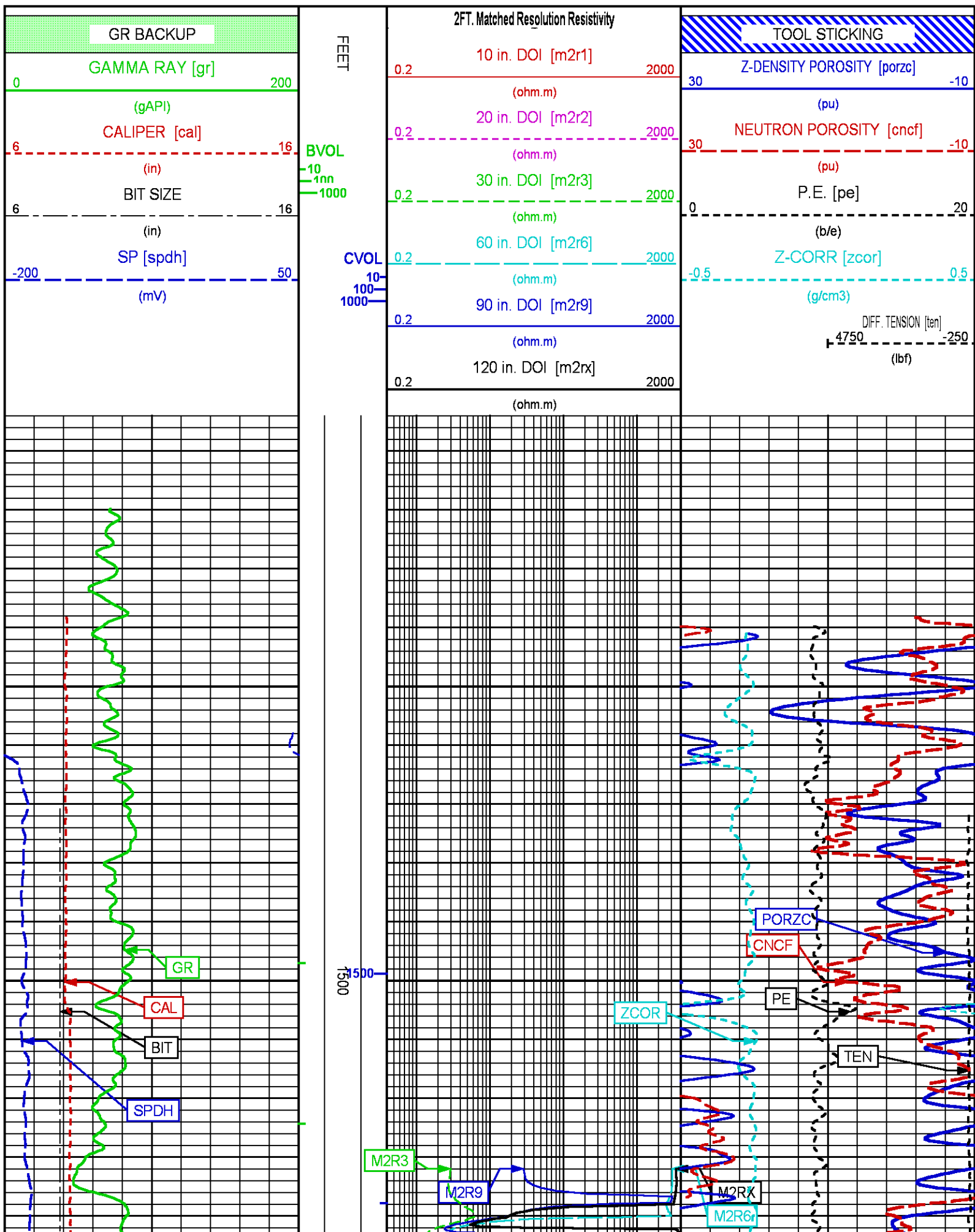
BOREHOLE CORR DIAMETER	SCREEN ENHANCED DIA. (cubh*)	7.875	in	"	"
	FIXED DIAMETER (cnbh*)	7.875	in	"	"
BH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDIL)	TOOL MEASURED		"	"
CN PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
2446 CN MATRIX	2446 MATRIX	SANDSTONE		TOP	BOTTOM
CN SALINITY CORRECTION	SALINITY CORR (2446)	SAL & BH SIZE ON		"	"
	SALINITY	0	ppm	"	"
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)	
MUD DENSITY	MUD DENSITY	9.90	lbm/gal	TOP	BOTTOM
DENSITY POROSITY	RHOMatrix	2.680	g/cm3	"	"
	RHOfluid	1.000	g/cm3	"	"
ZDL	DENX TRACKING	ON		"	"
TRACKING TIME	Logging Spd for Gain	Over 10 ft/min		"	"
HDIL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RXTEMP		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	STANDOFF		"	"
	STANDOFF	1.00	in	"	"
	TOOL POSITION	ECCENTERED		"	"
	Rmud MULTIPLIER	1.000		"	"
HDIL High RESISTIVITY Normalization	VRM Norm	ON		"	"

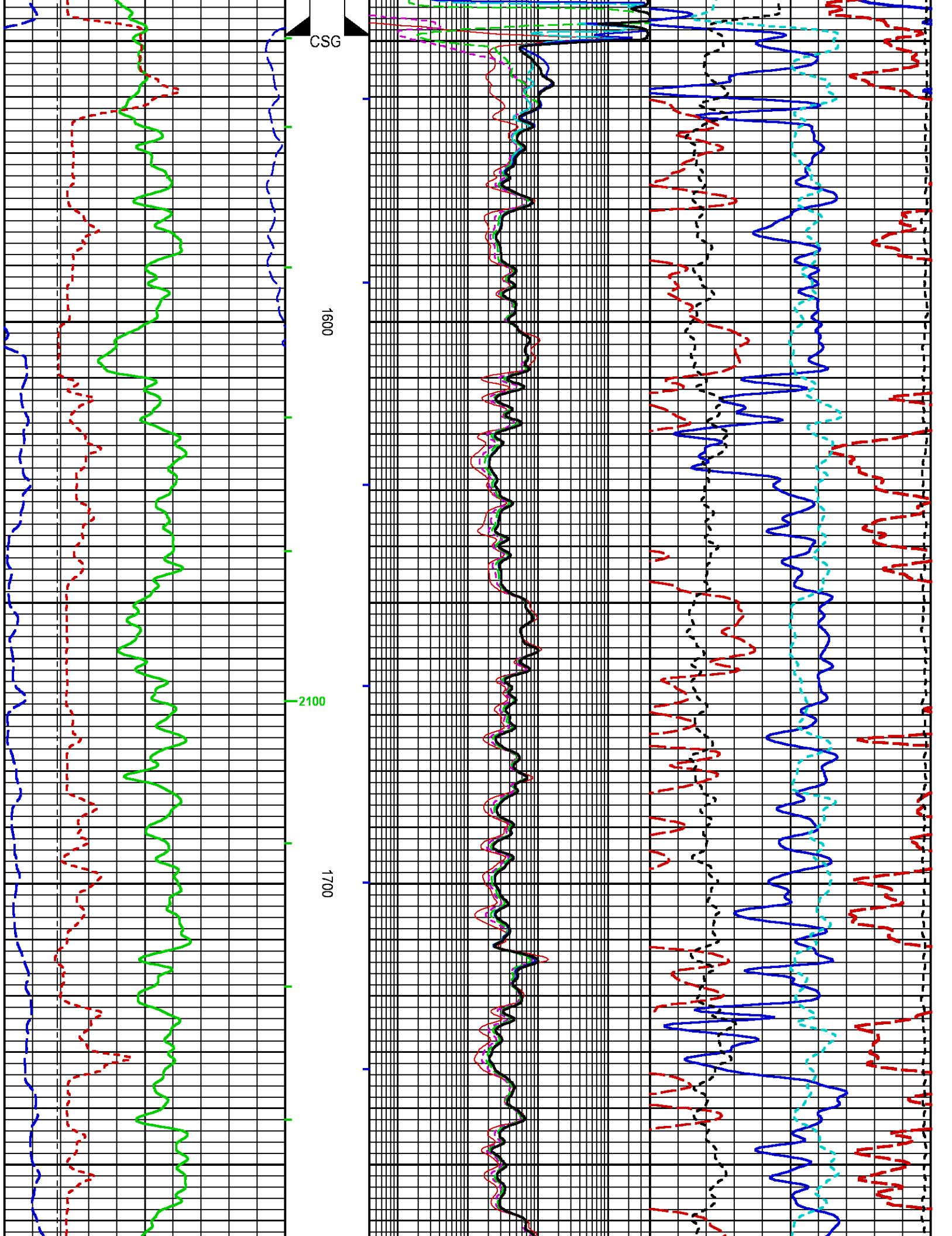
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:BIT	N/A	BIT SIZE
F1:BVOL	N/A	BOREHOLE VOLUME
F1:CAL	N/A	CALIPER
F1:CNCF	N/A	FIELD NORMALIZED COMPENSATED NEUTRON POROSITY
F1:CVOL	N/A	CEMENT VOLUME
F1:GR	N/A	GAMMA RAY
F1:M2R1	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 10-INCH DOI
F1:M2R2	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 20-INCH DOI
F1:M2R3	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 30-INCH DOI
F1:M2R6	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 60-INCH DOI
F1:M2R9	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 90-INCH DOI
F1:M2RX	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 120-INCH DOI
F1:PE	N/A	PHOTO ELECTRIC CROSS-SECTION
F1:PORZC	N/A	CORRECTED POROSITY
F1:SPDH	N/A	SPONTANEOUS POTENTIAL PROCESSED IN COMMON REMOTE
F1:TEN	N/A	DIFFERENTIAL TENSION
F1:ZCOR	N/A	DENSITY CORRECTION

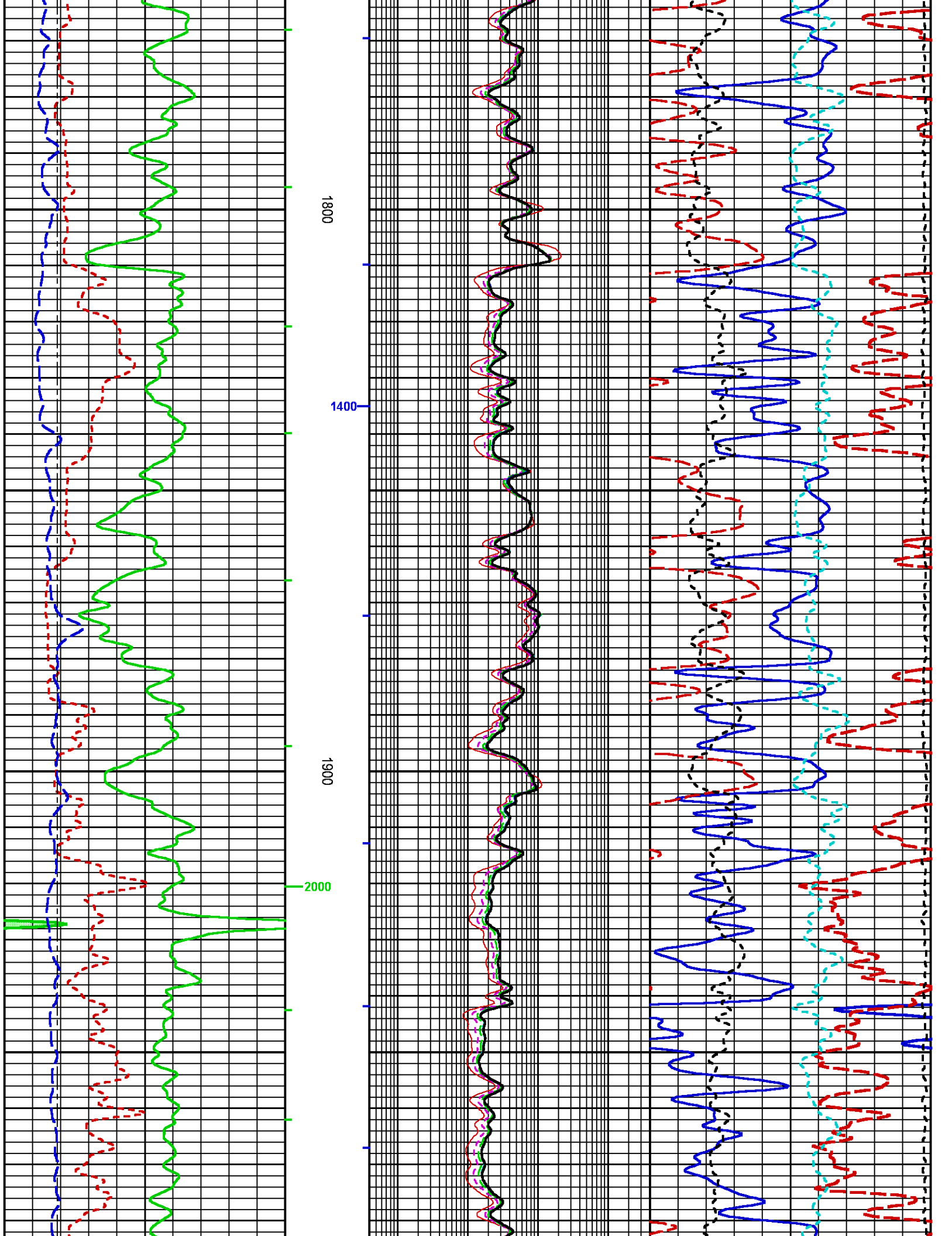
CURVE MEASURE POINT OFFSET					
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
BIT	0.00	M2R1	-8.00	M2R9	-8.00
CAL	-35.00	M2R2	-8.00	M2RX	-8.00
CNCF	-45.25	M2R3	-8.00	PE	-34.25
GR	-52.25	M2R6	-8.00	PORZC	-34.25
				SPDH	-14.00
				TEN	0.00
				ZCOR	-34.25

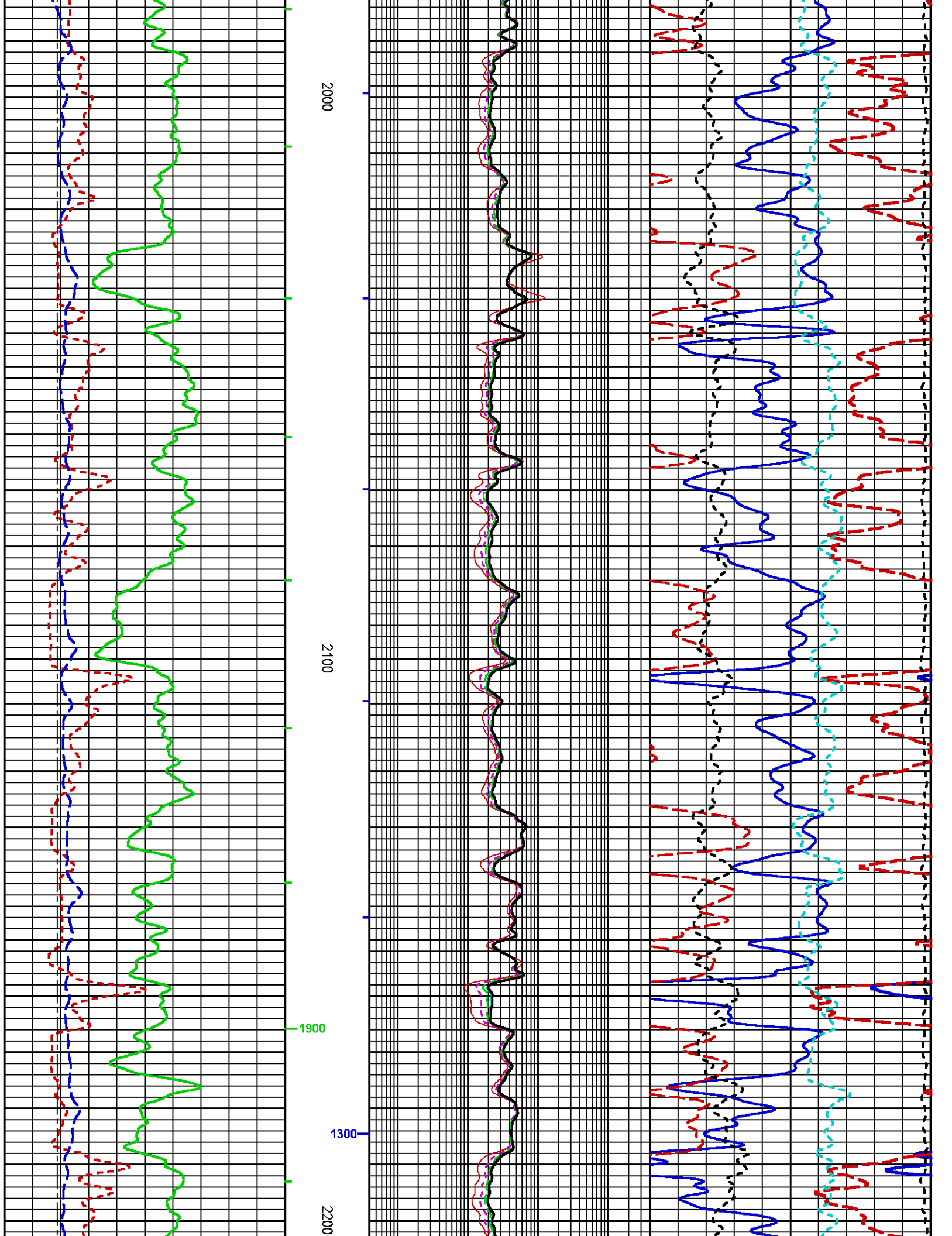
Presentation	: BHI78FR4H2:C:\dat1a\LARAMIE_Nichols_0994_24_06WMSLM_OH_MAIN-5.fvpdf [5"/100' Scale]
Plot Interval	: 1405.25 - 7564.75 Feet
Data File 1	: F1 : BHI78FR4H2:C:\dat1a\LARAMIE_Nichols_0994_24_06WMAIN.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: Nichols 0994-24-06W

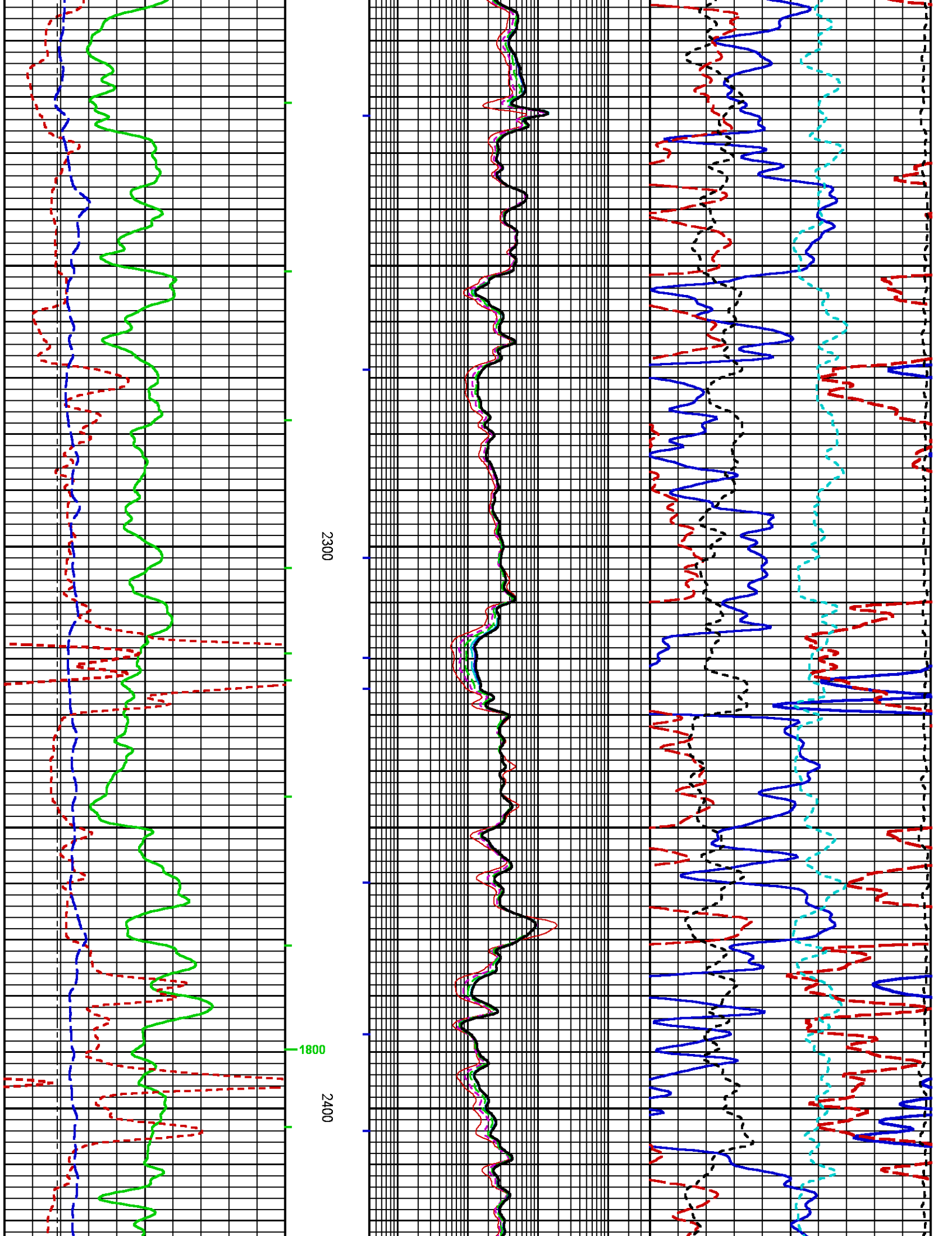
Field : VEGA  
File Interval : 1405.25 - 7578.75 Feet  
OCT : MSALM

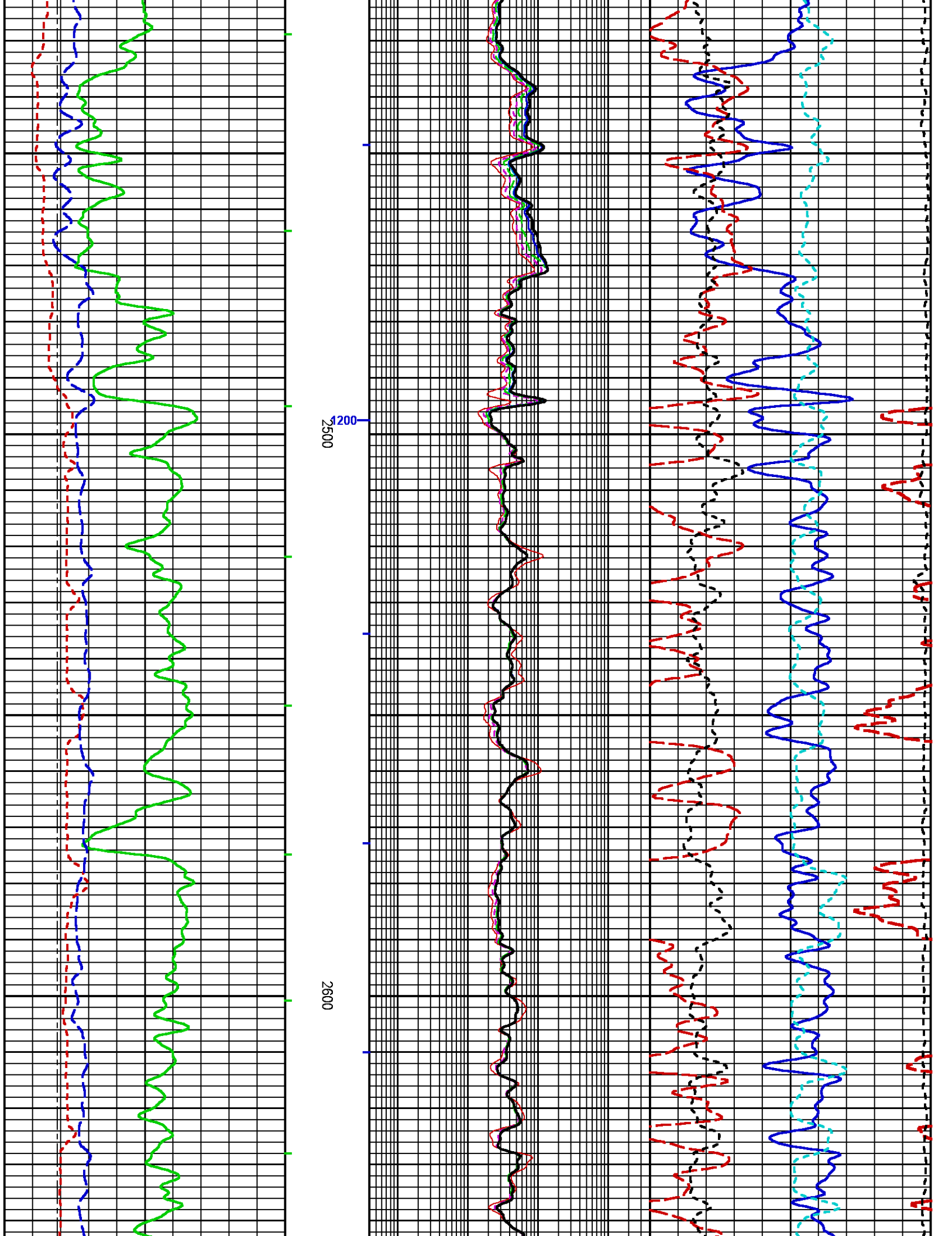


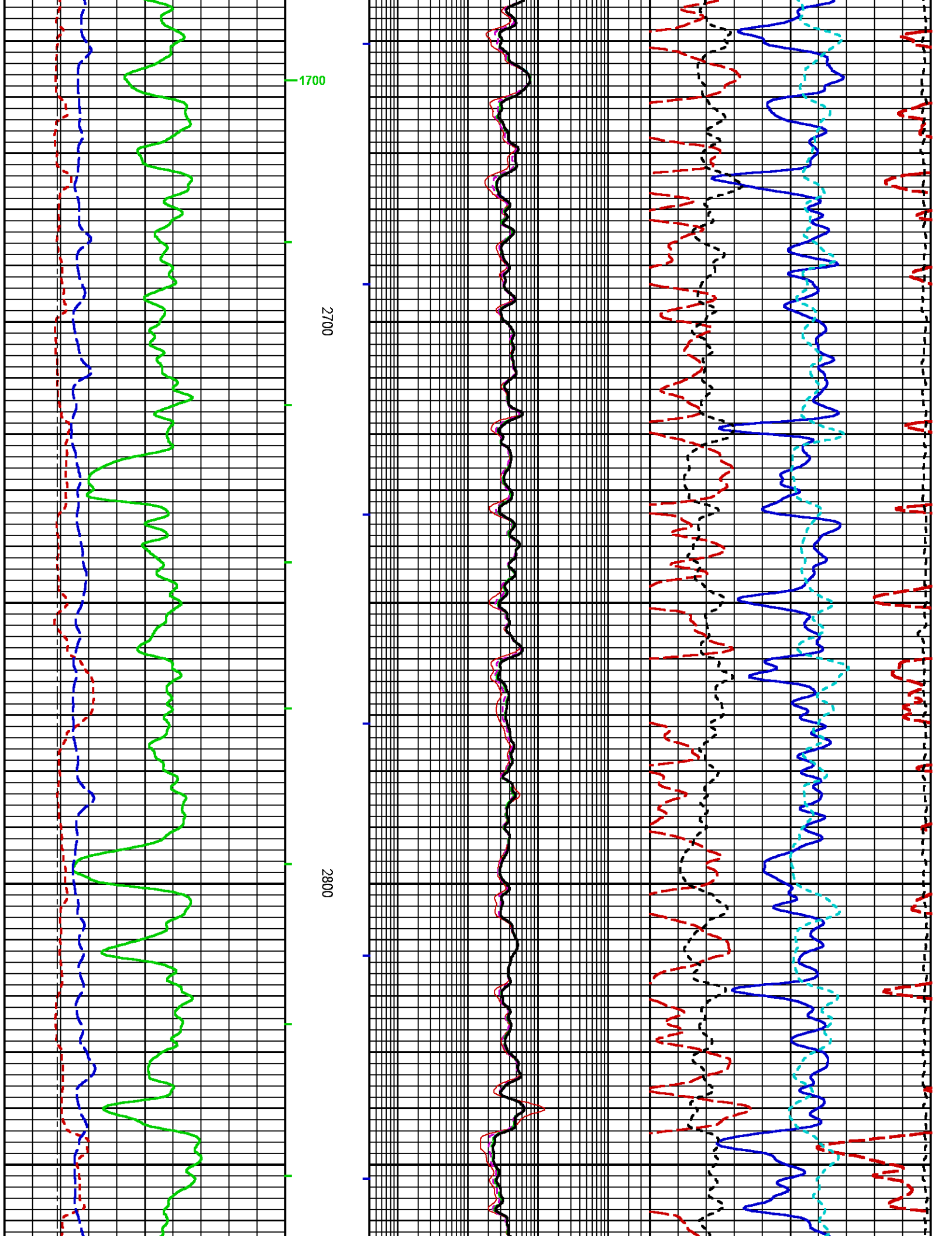


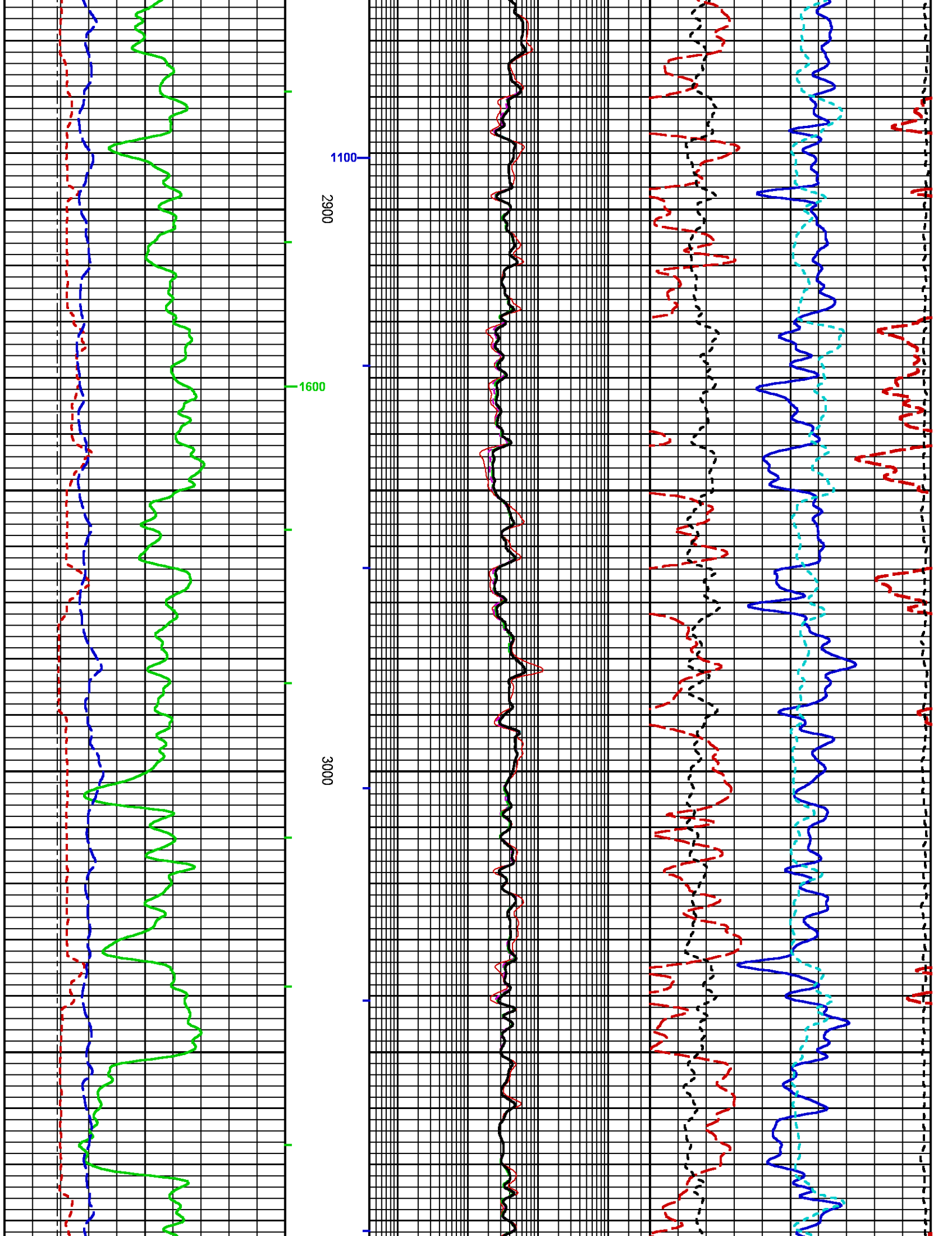


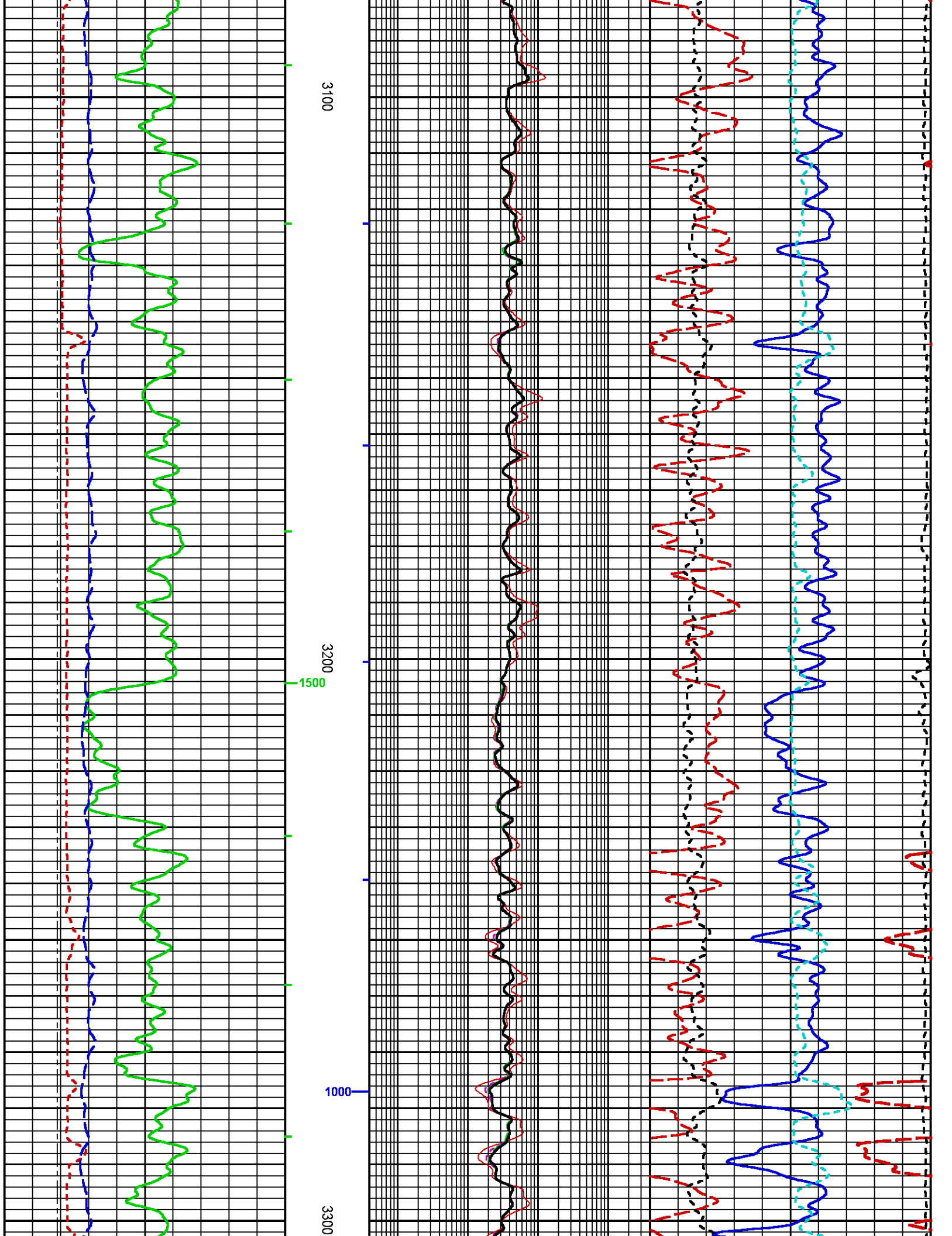


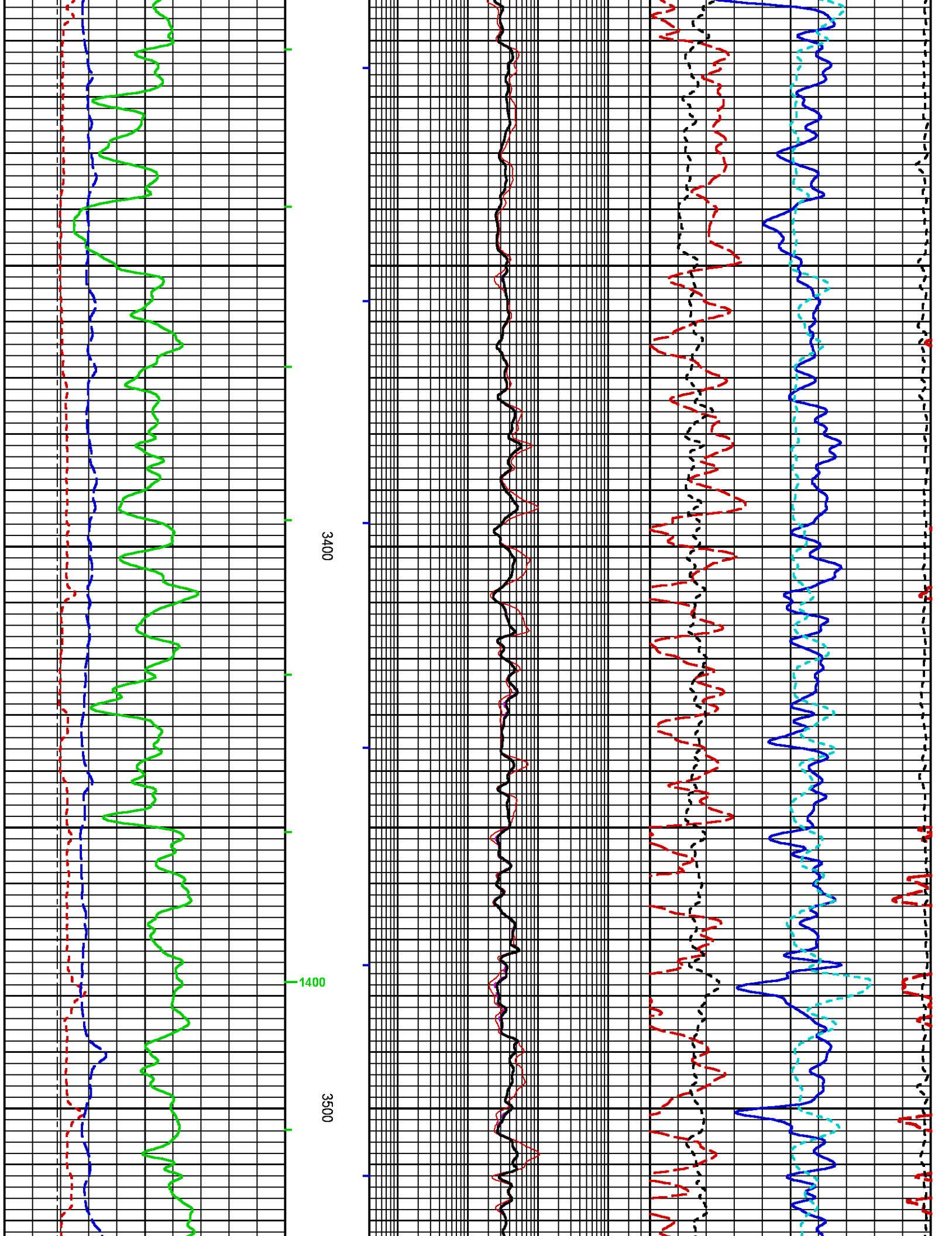


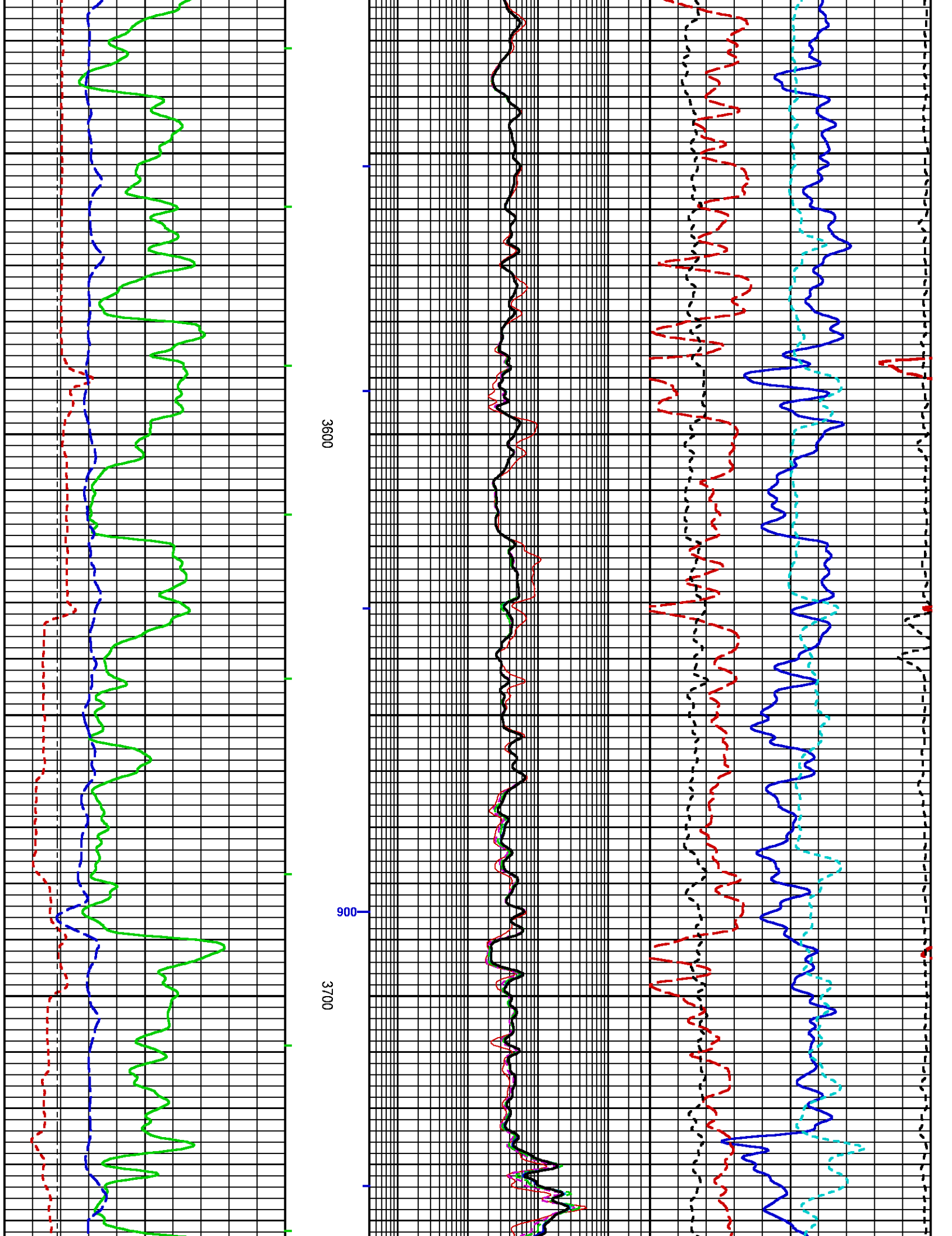


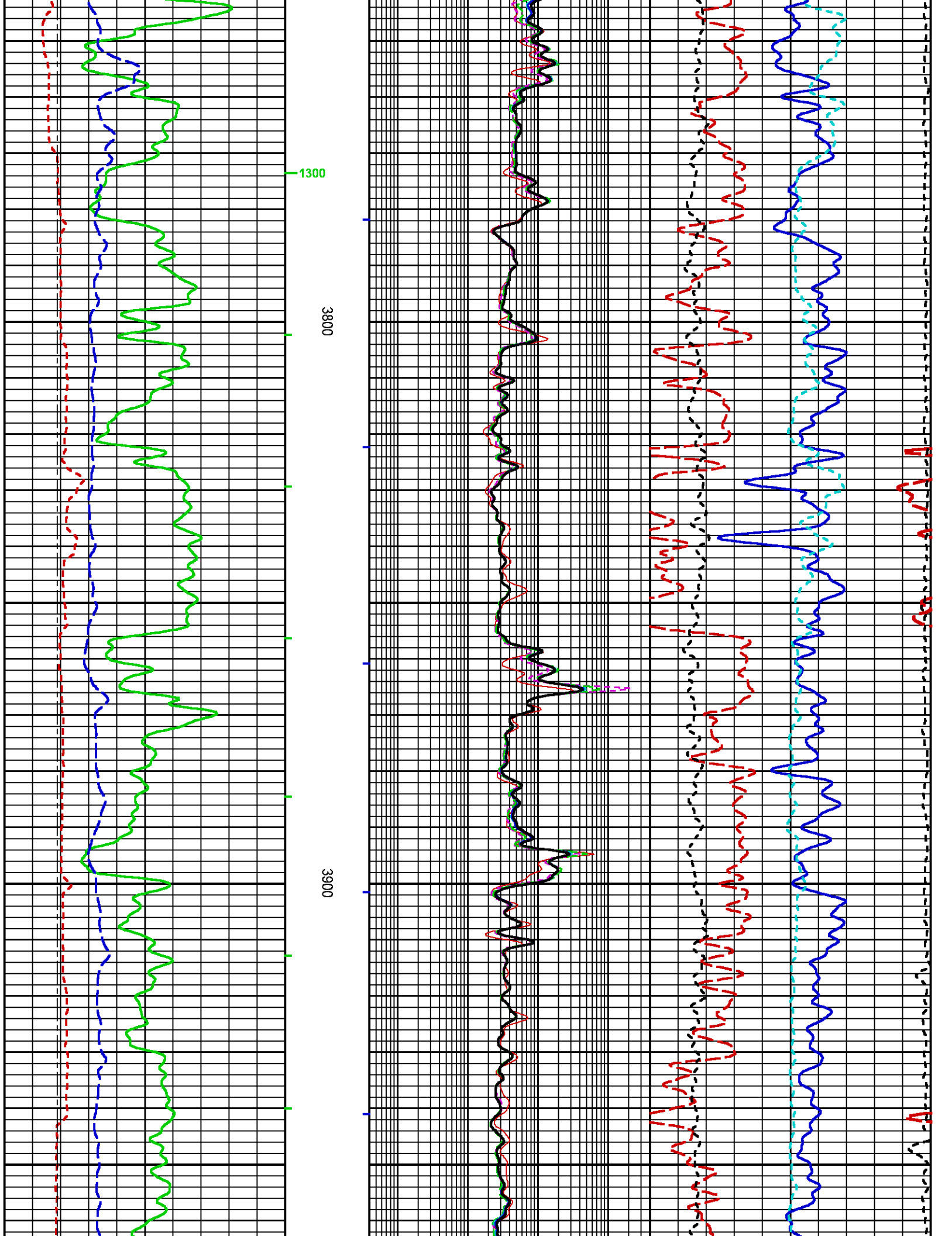


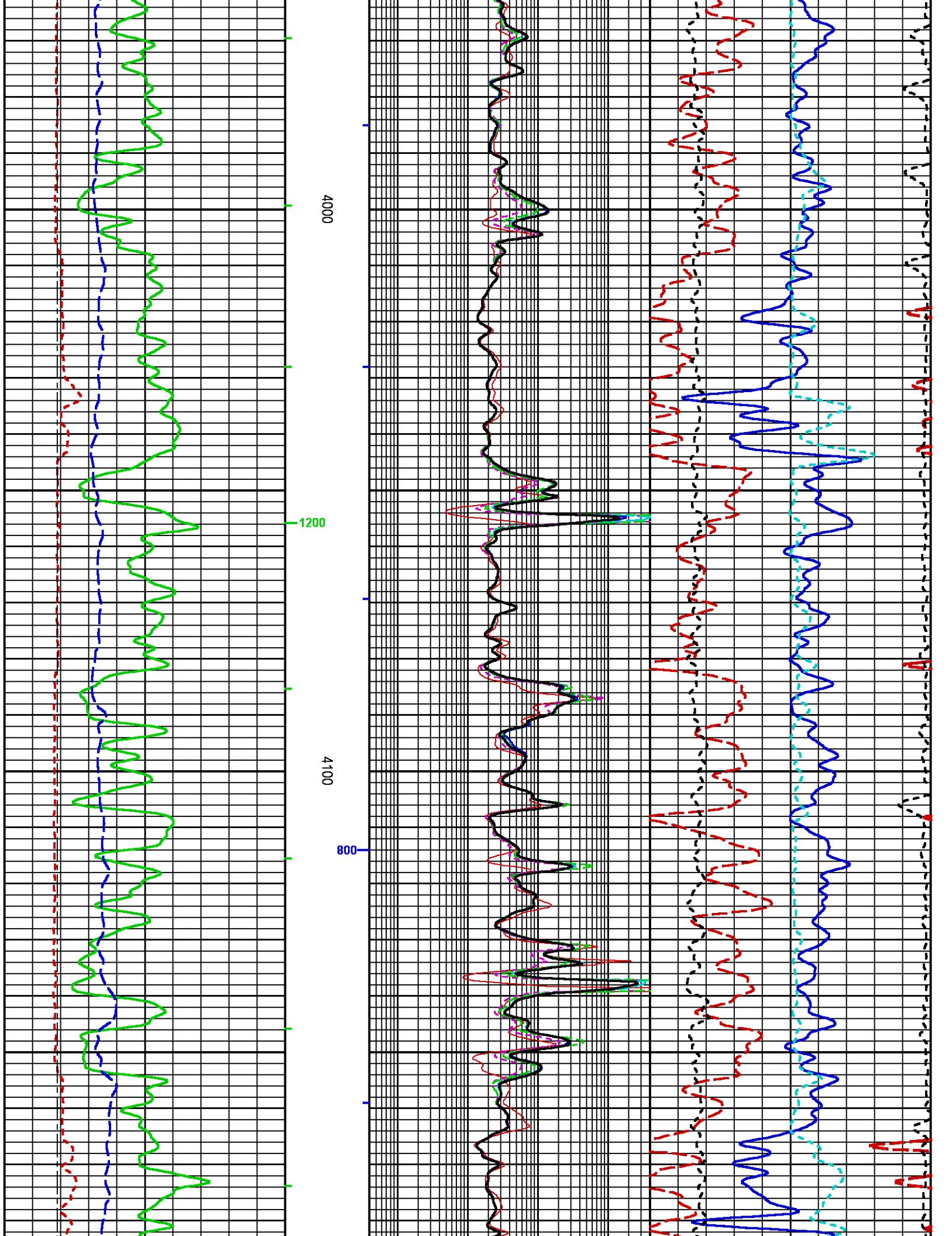


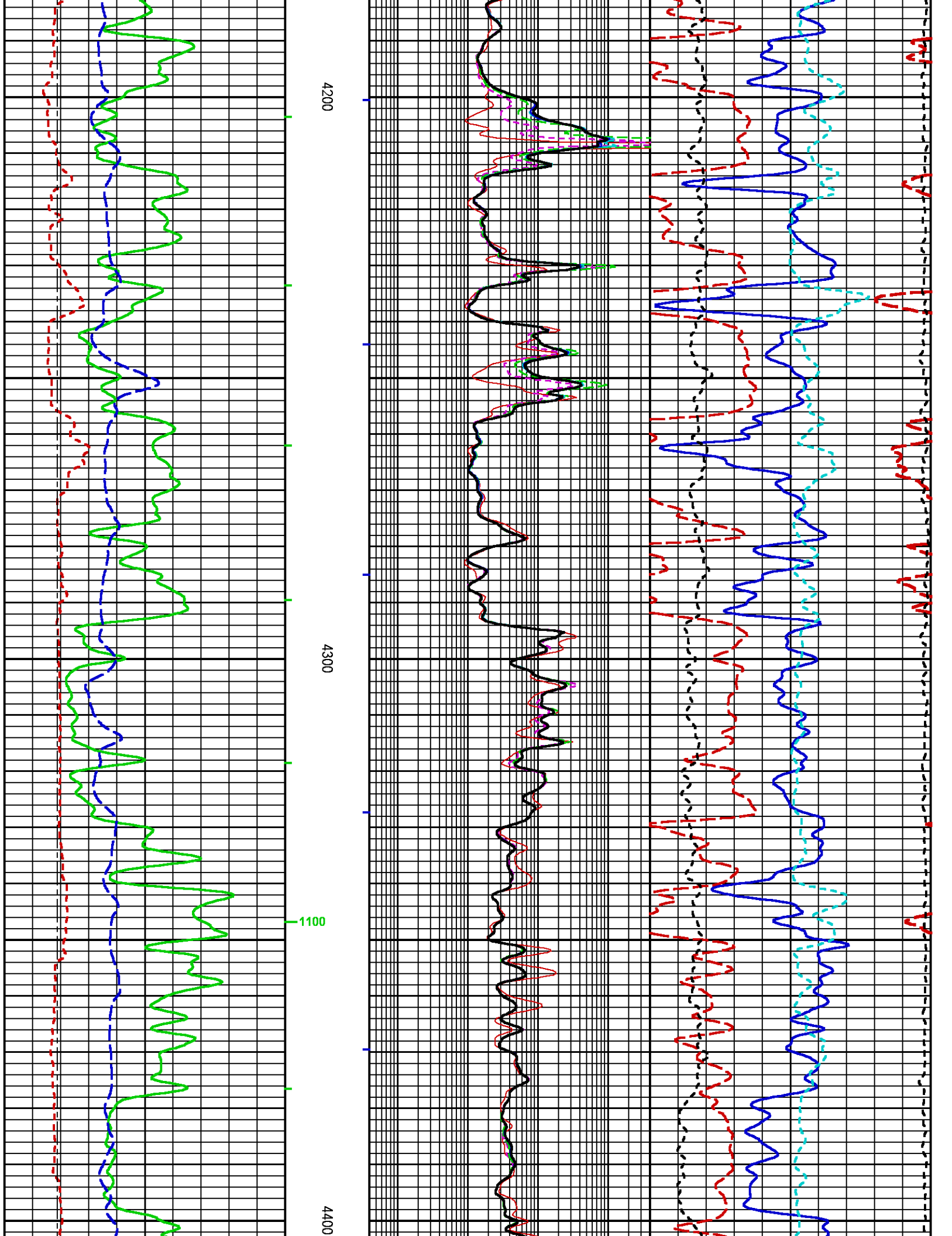


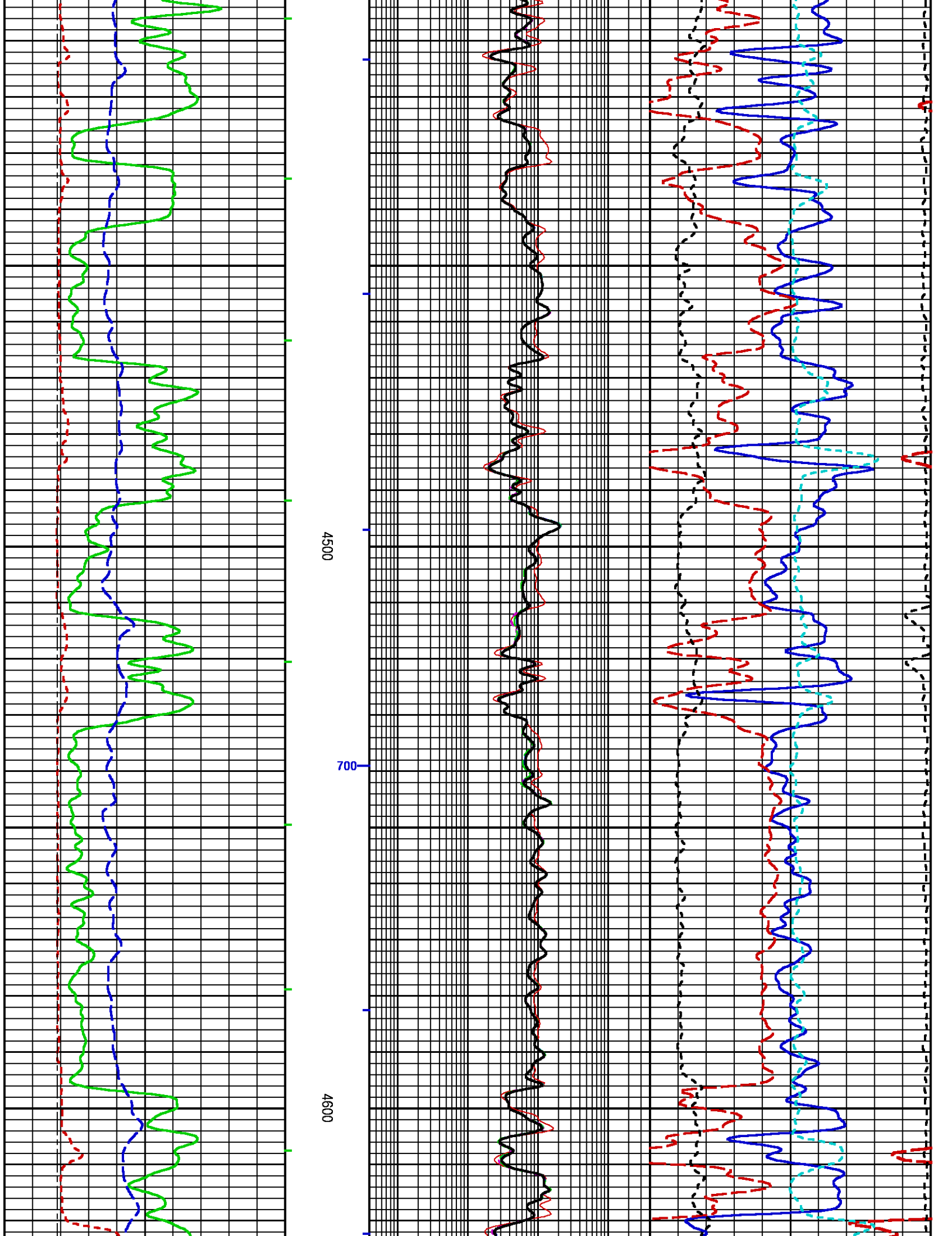


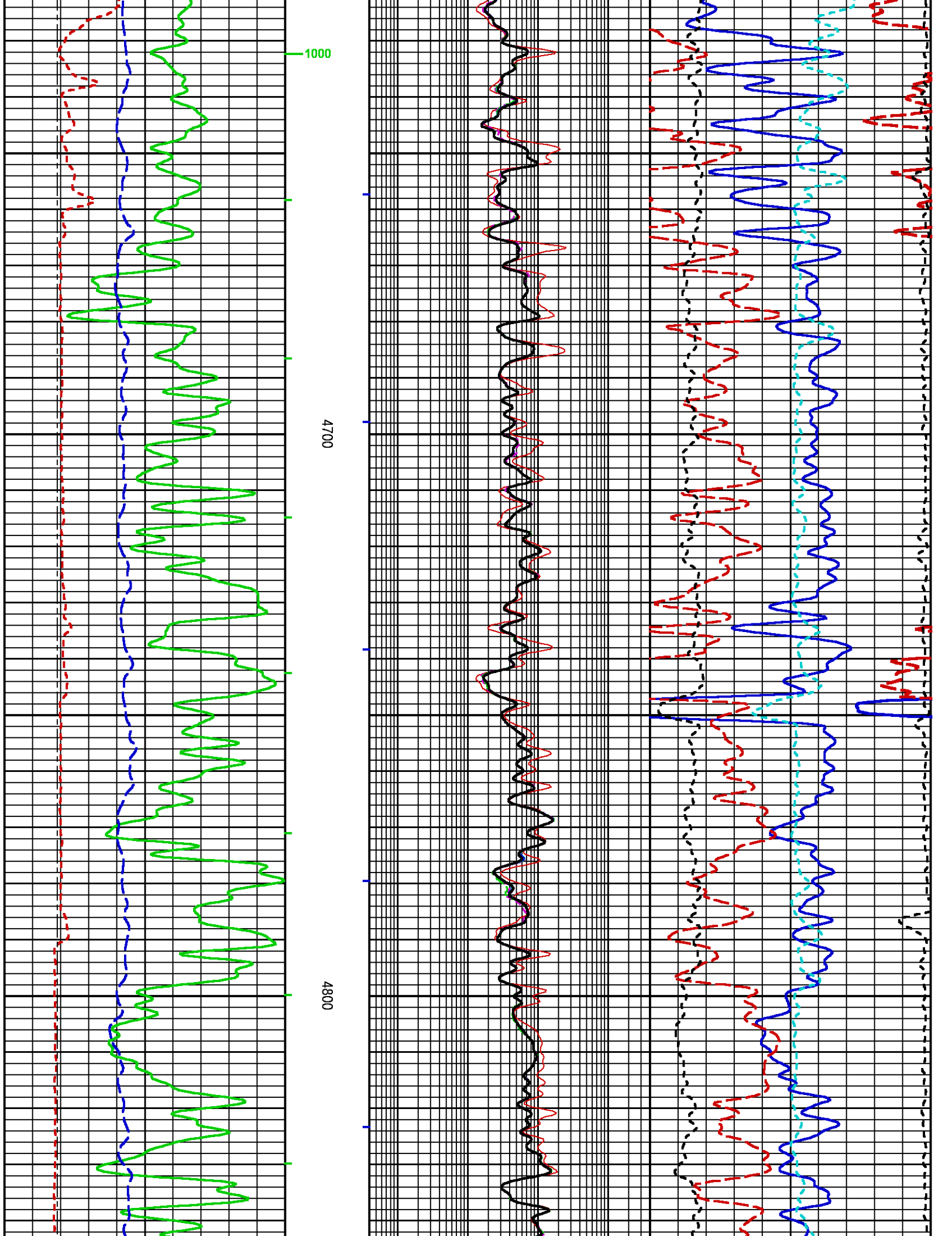


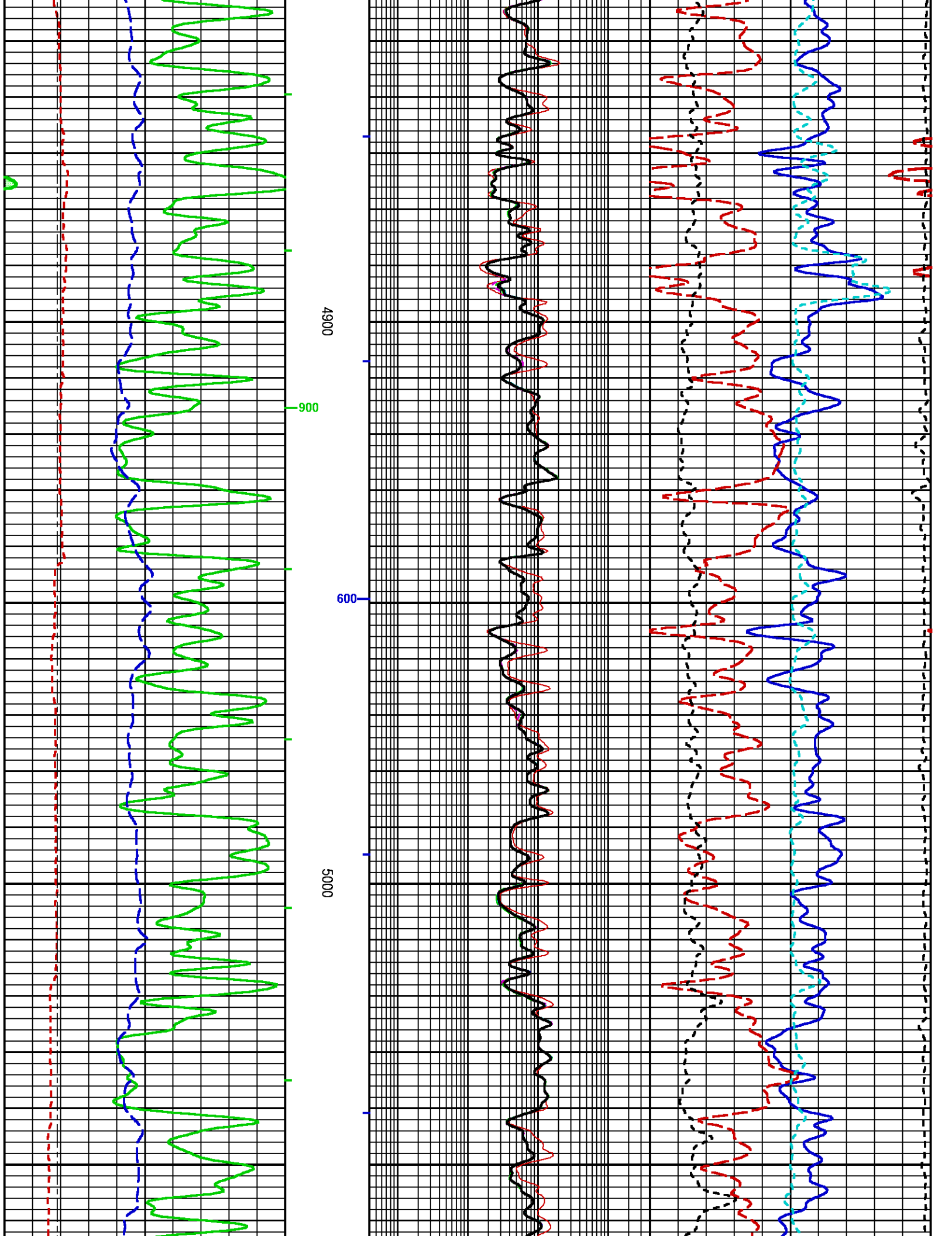


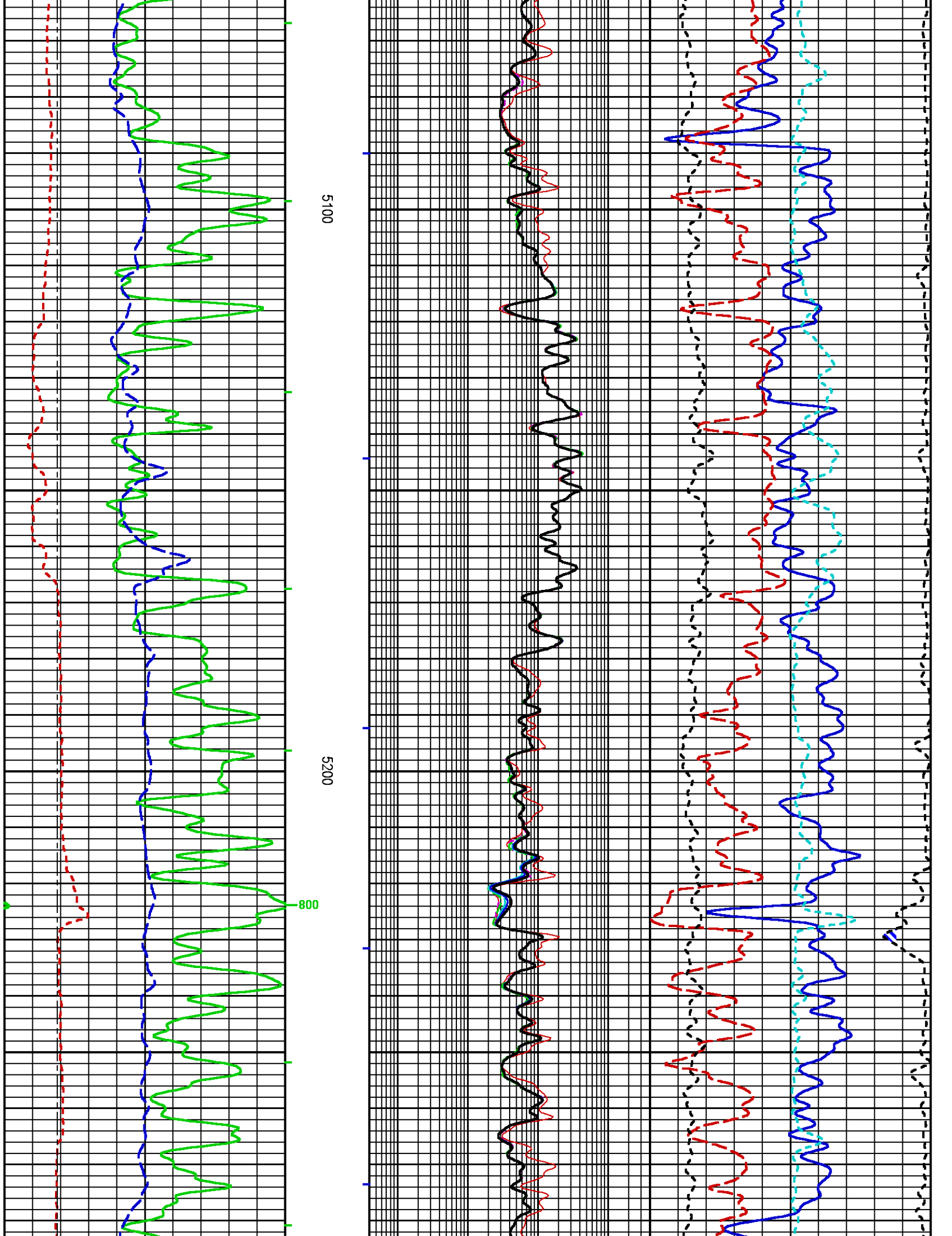


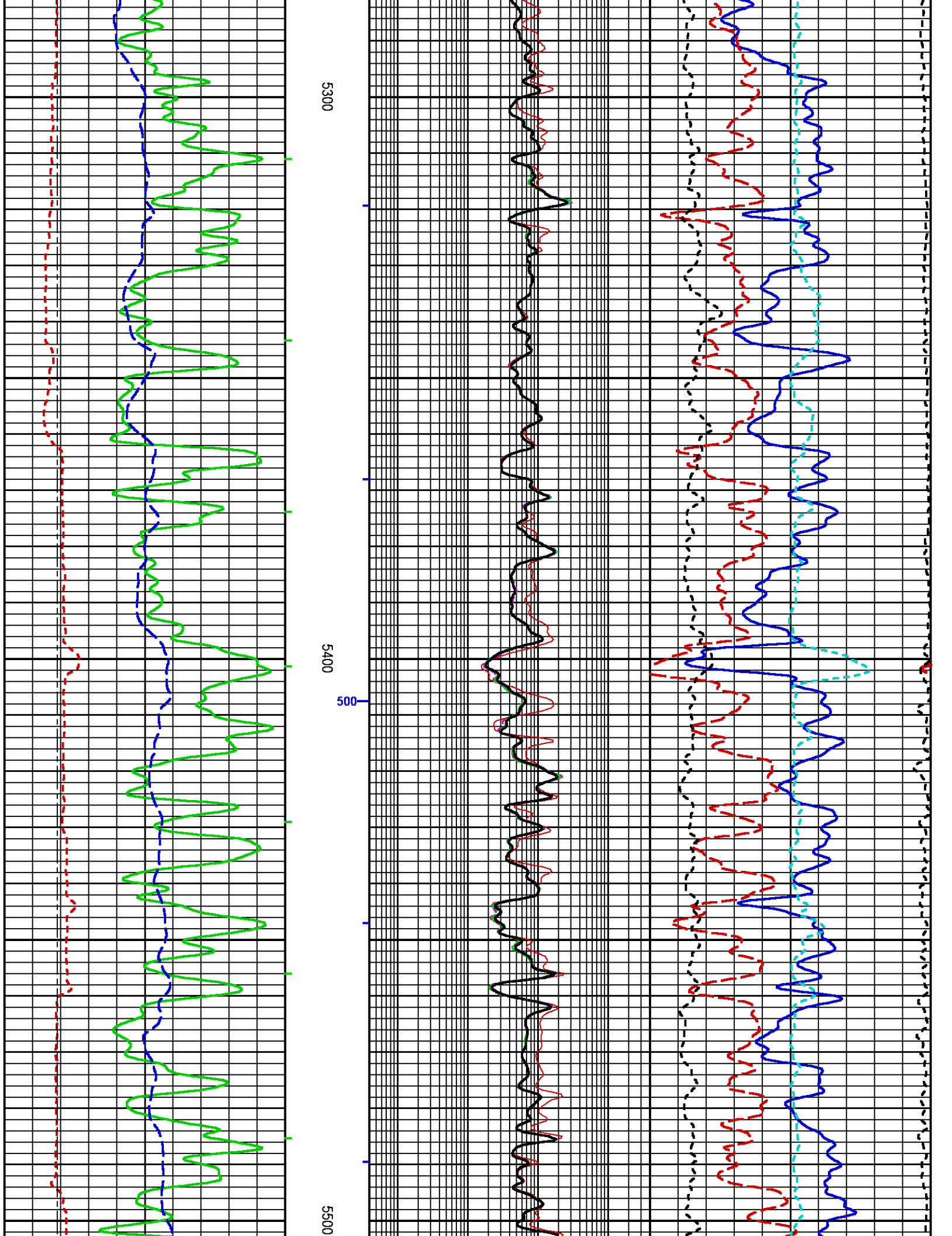


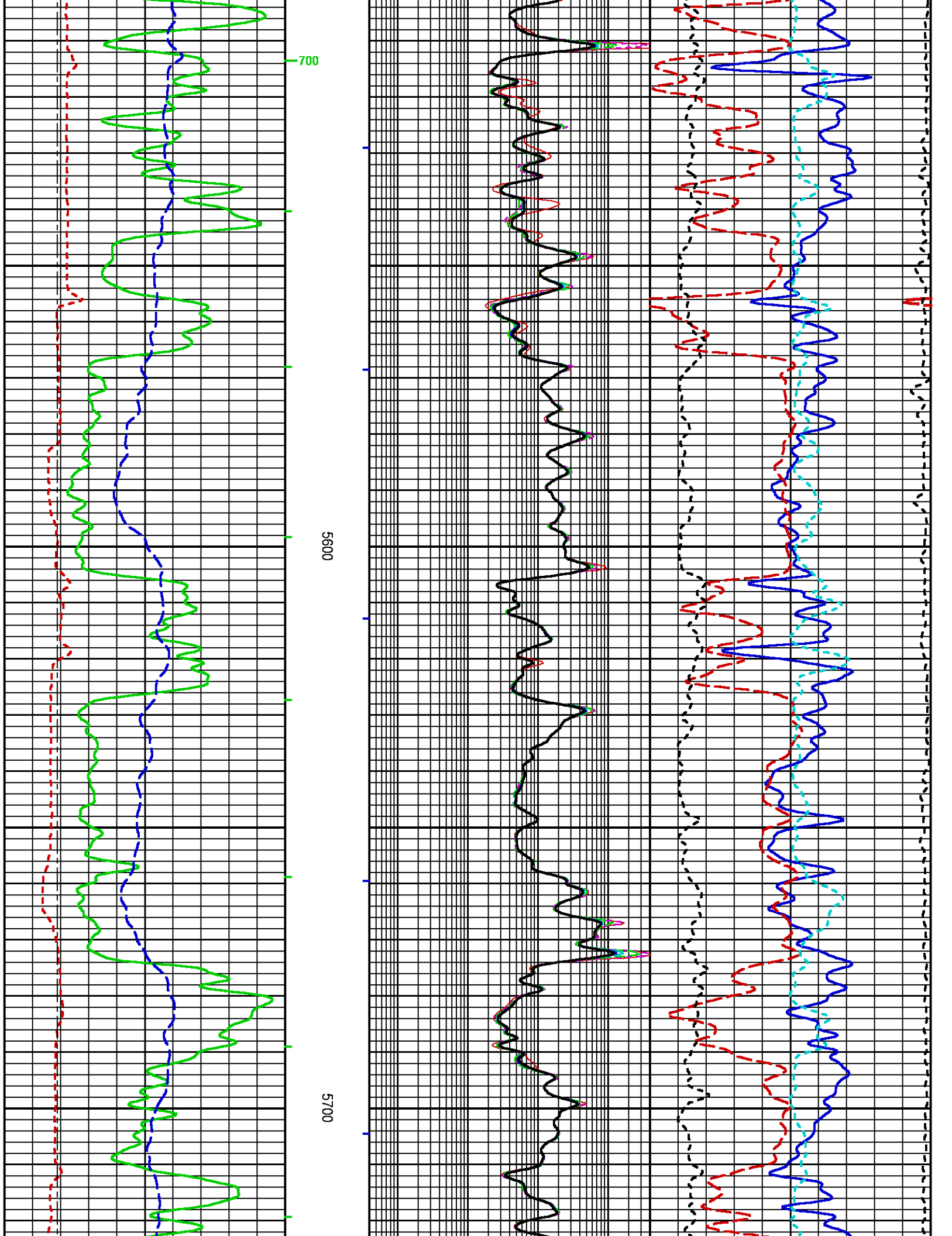


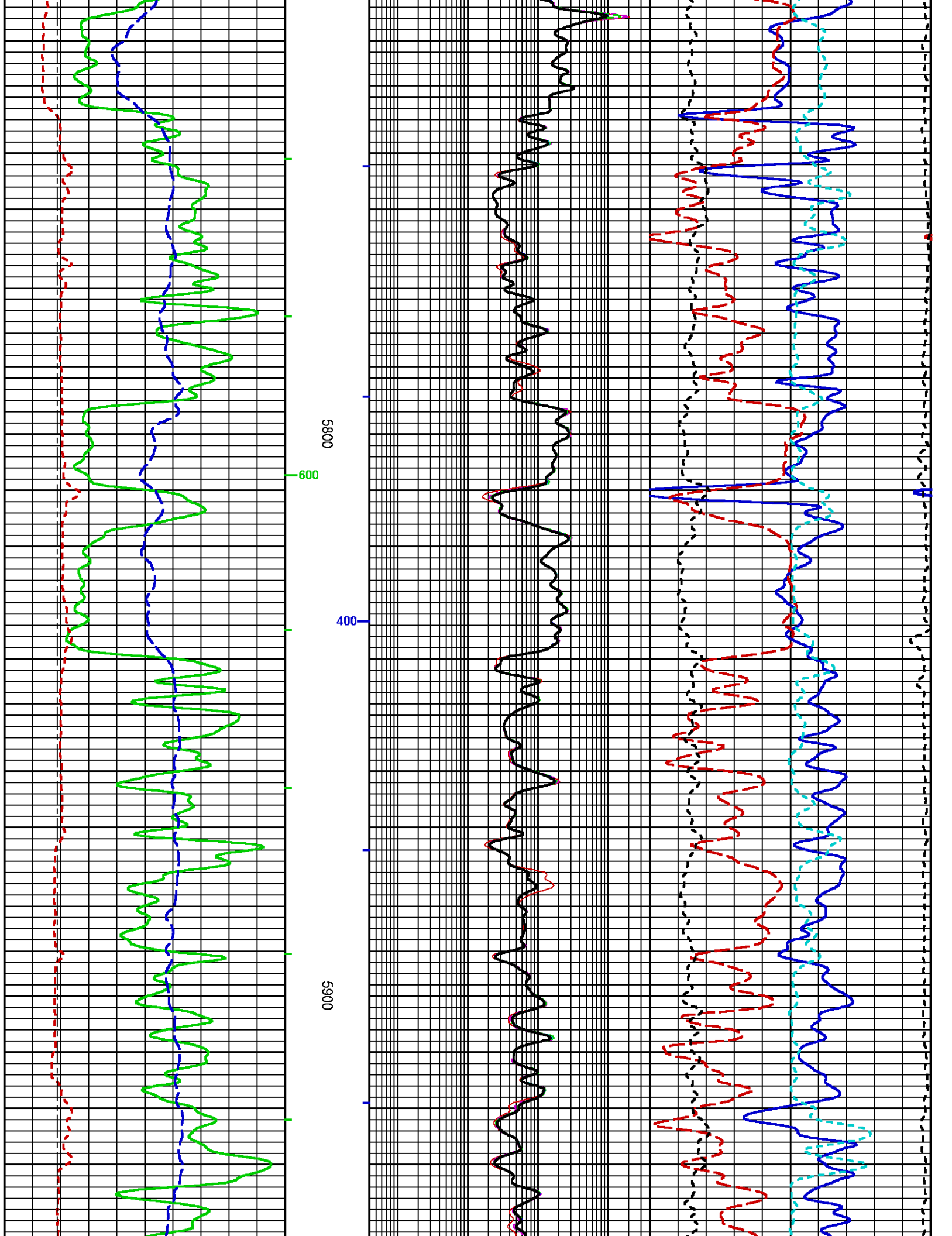


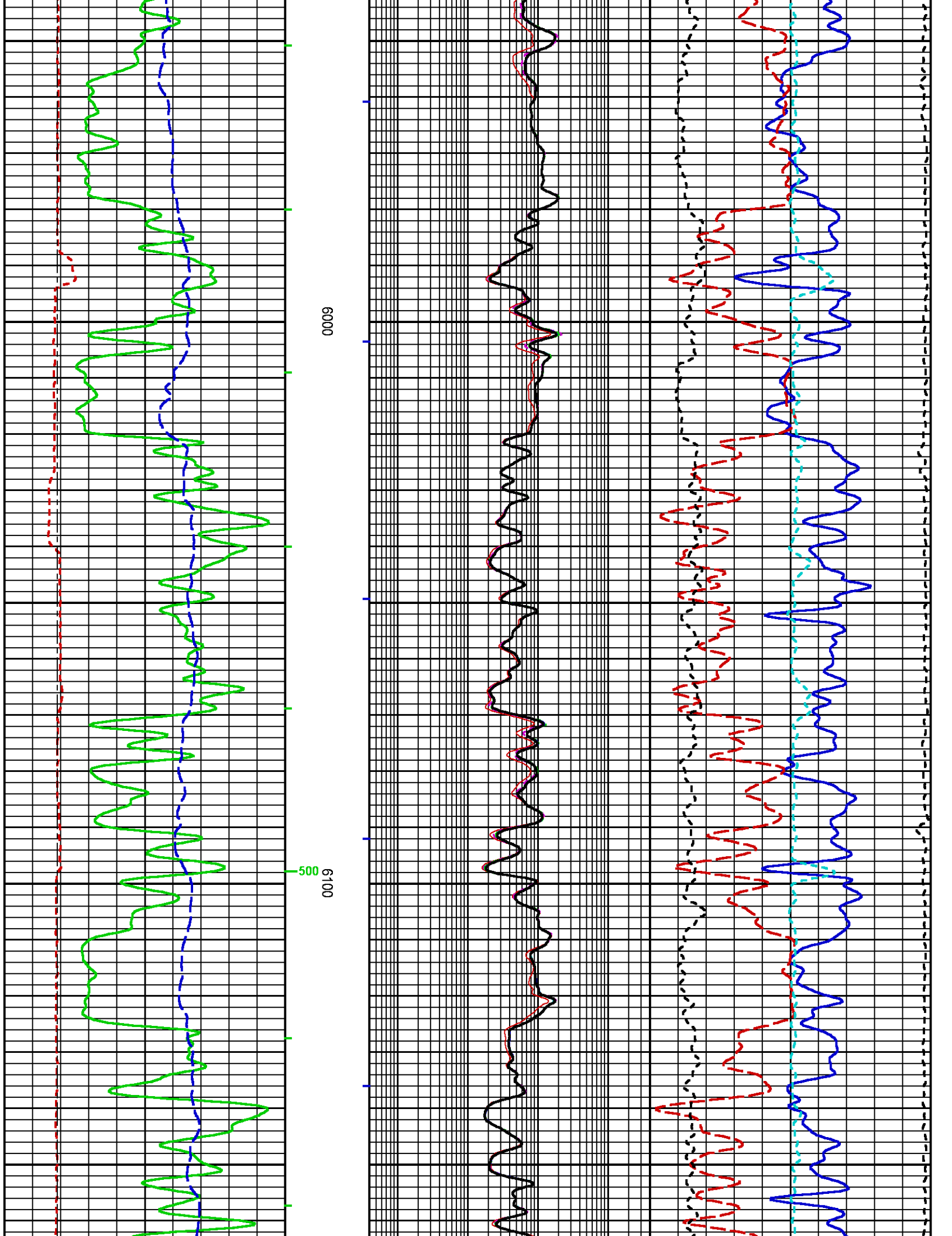


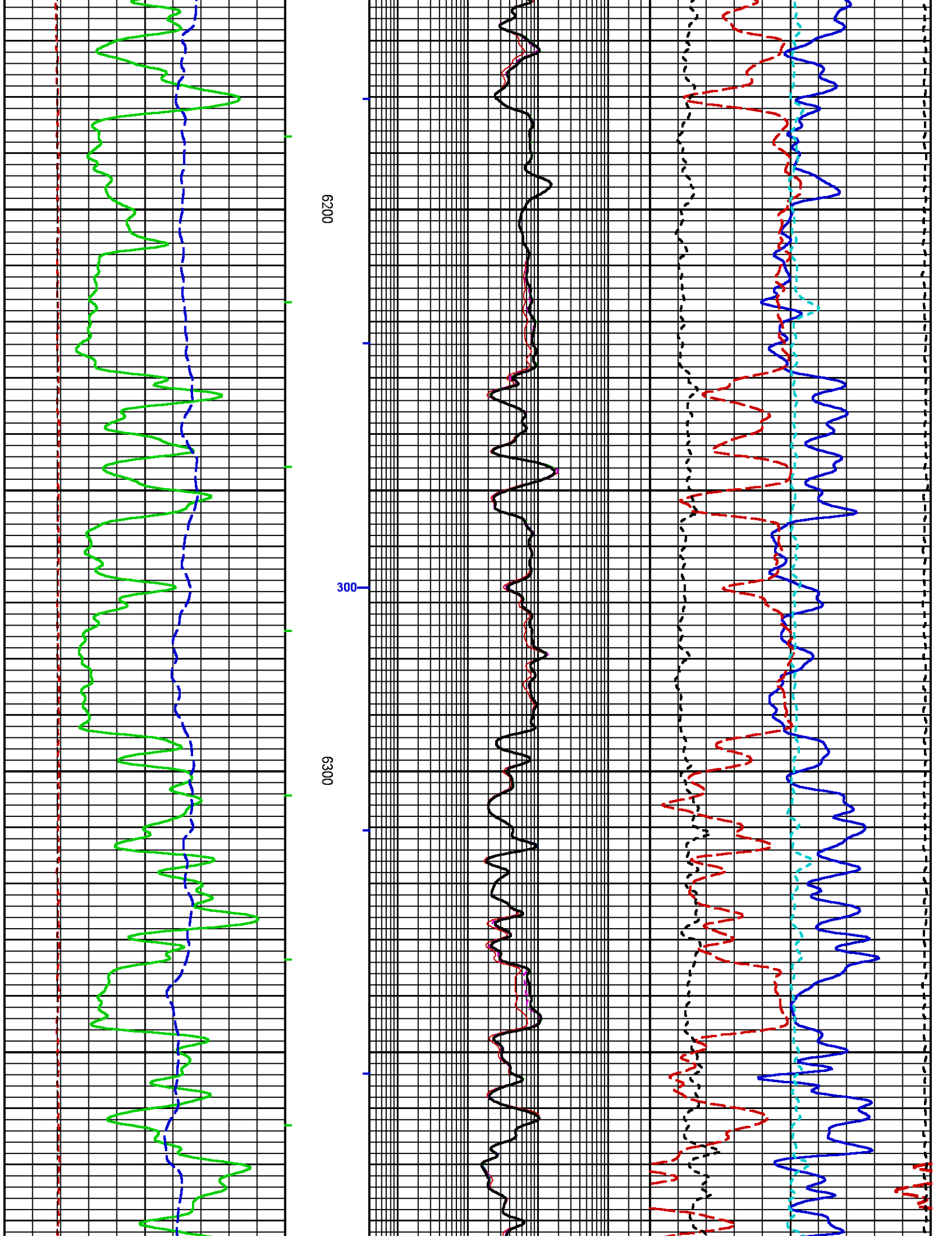


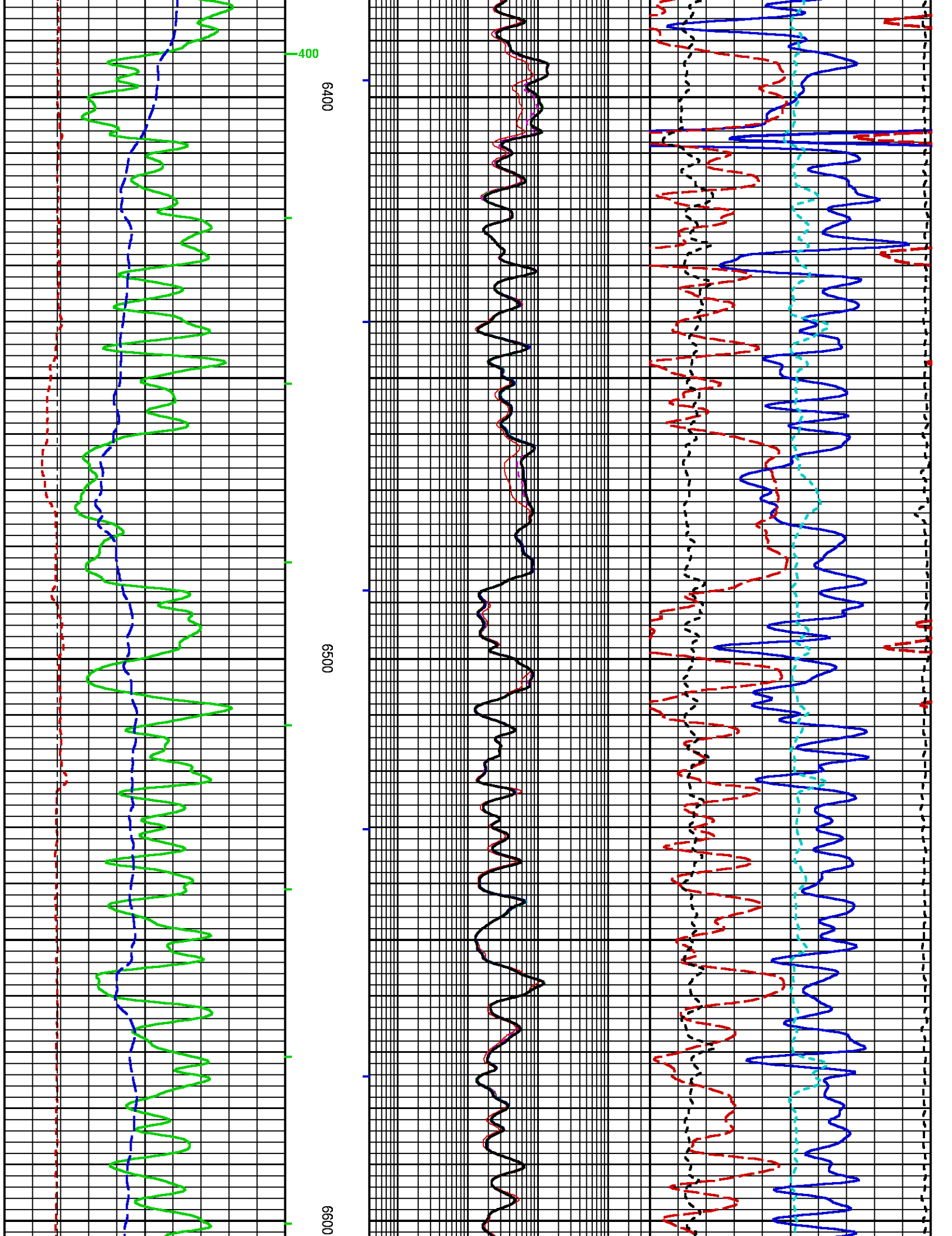


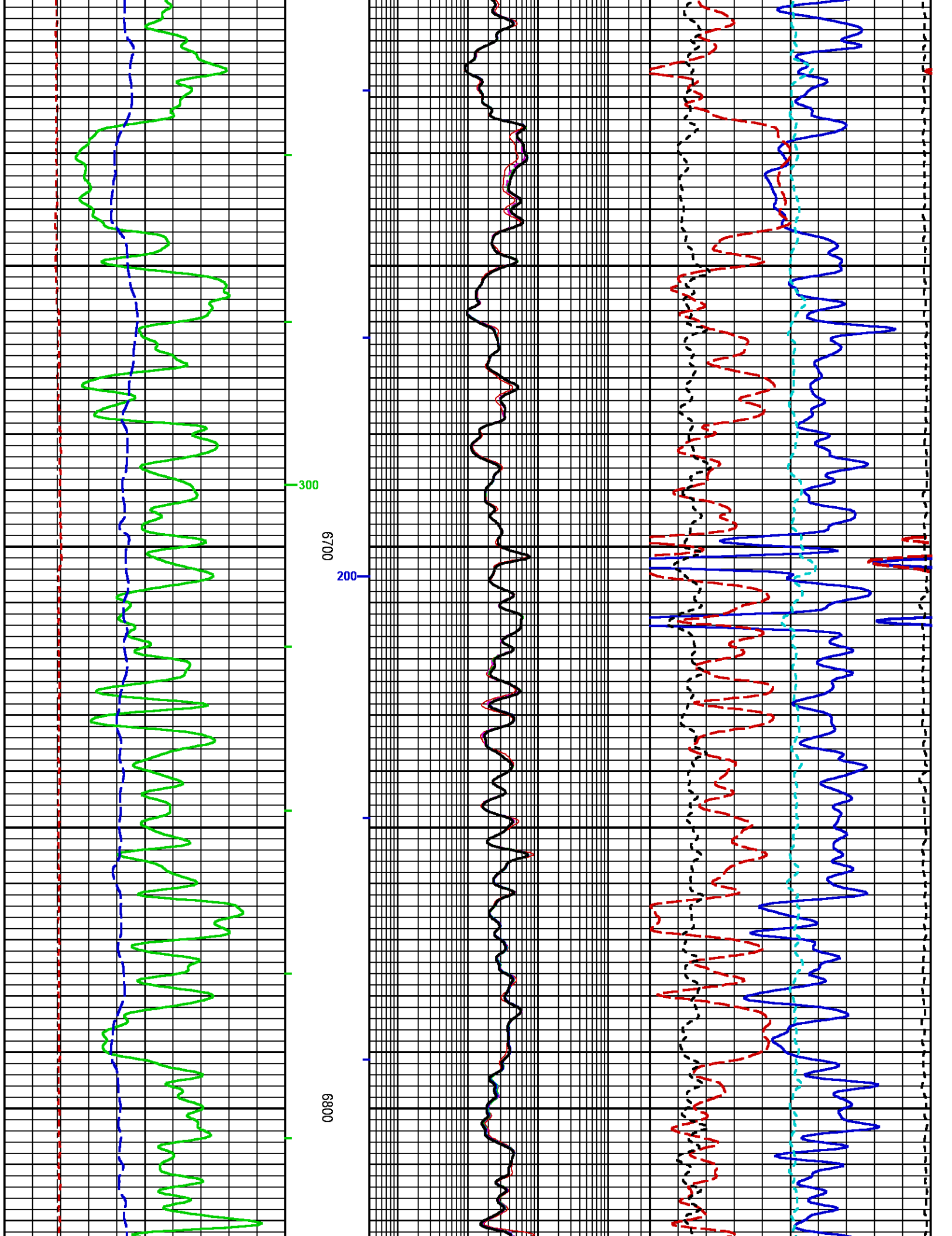


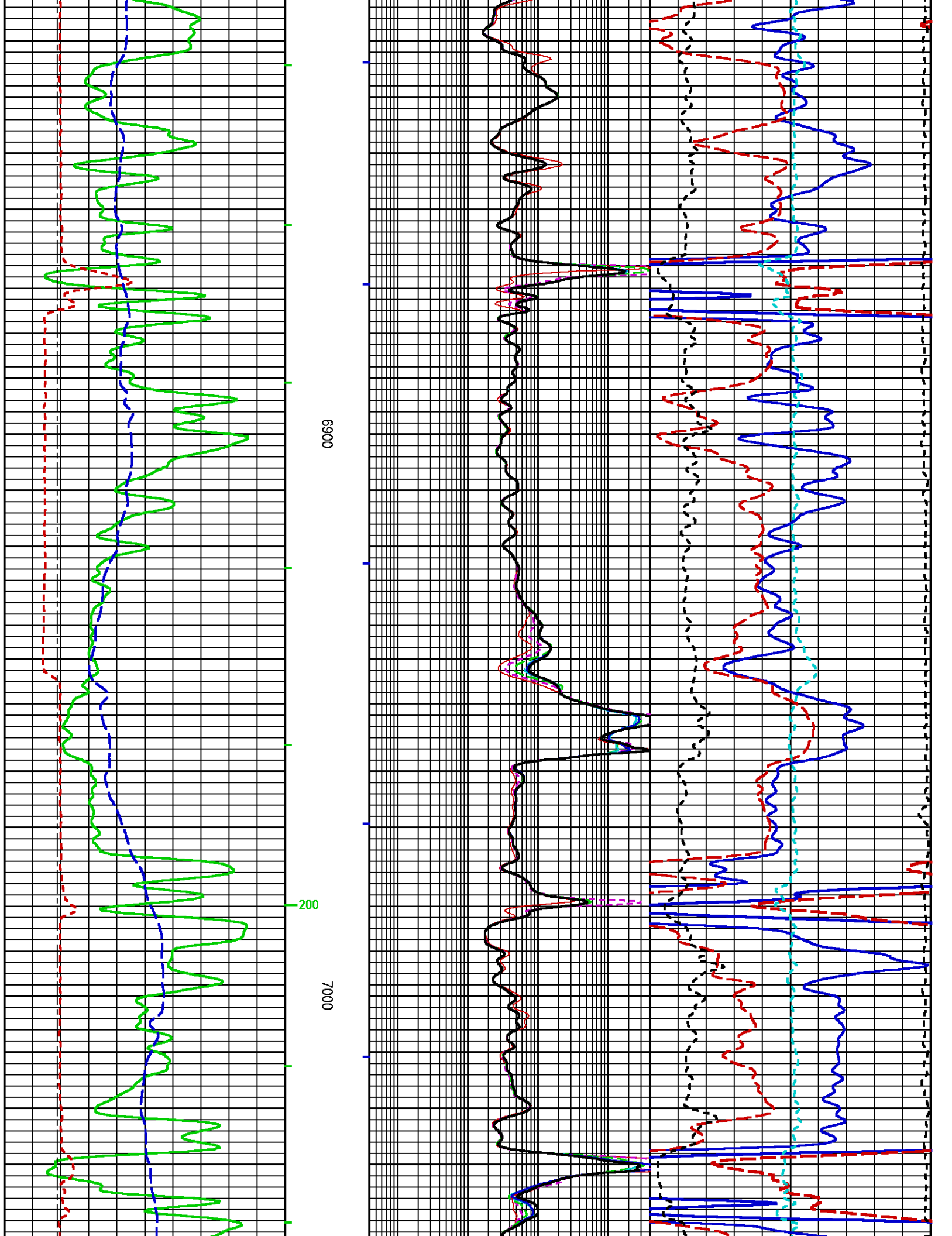


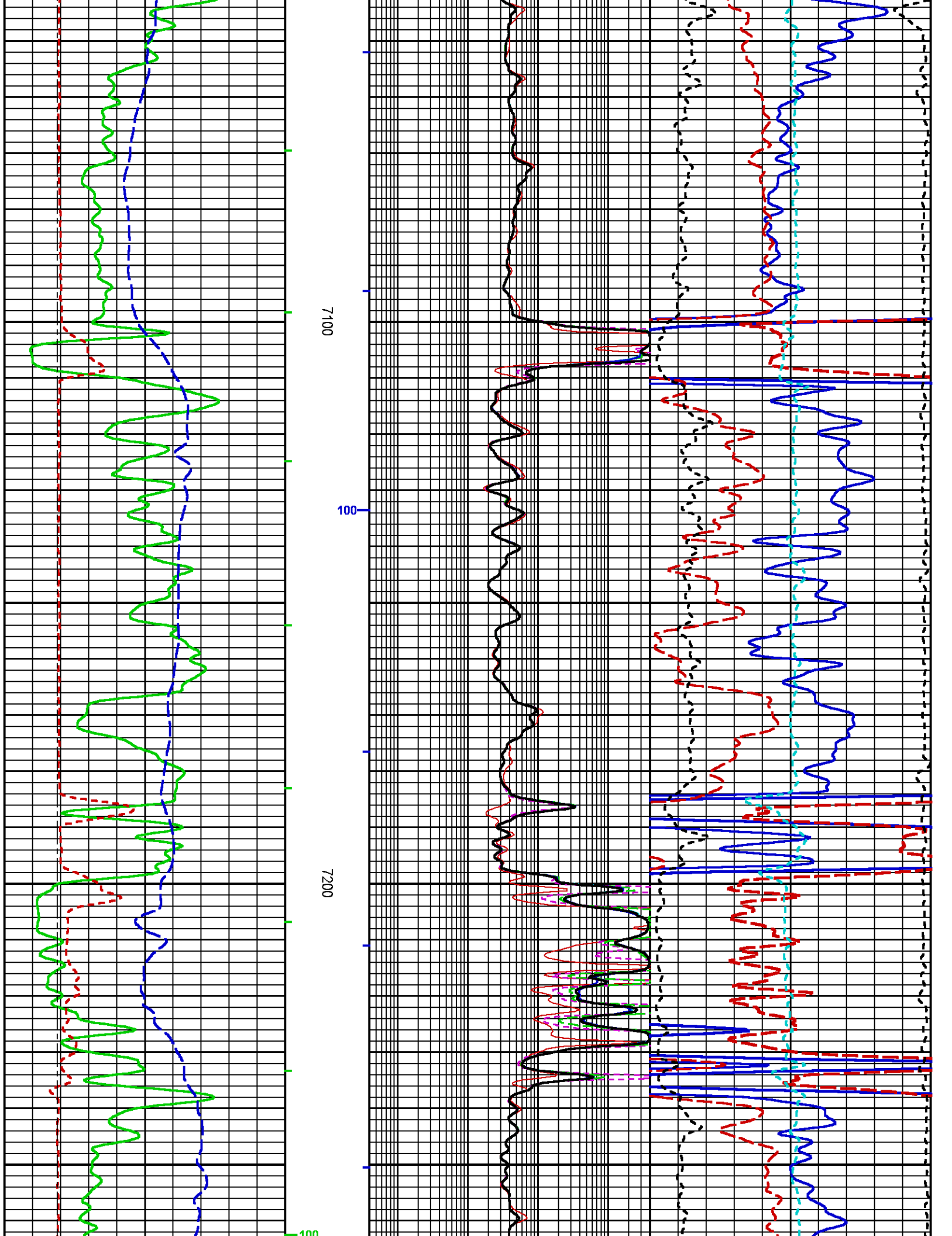


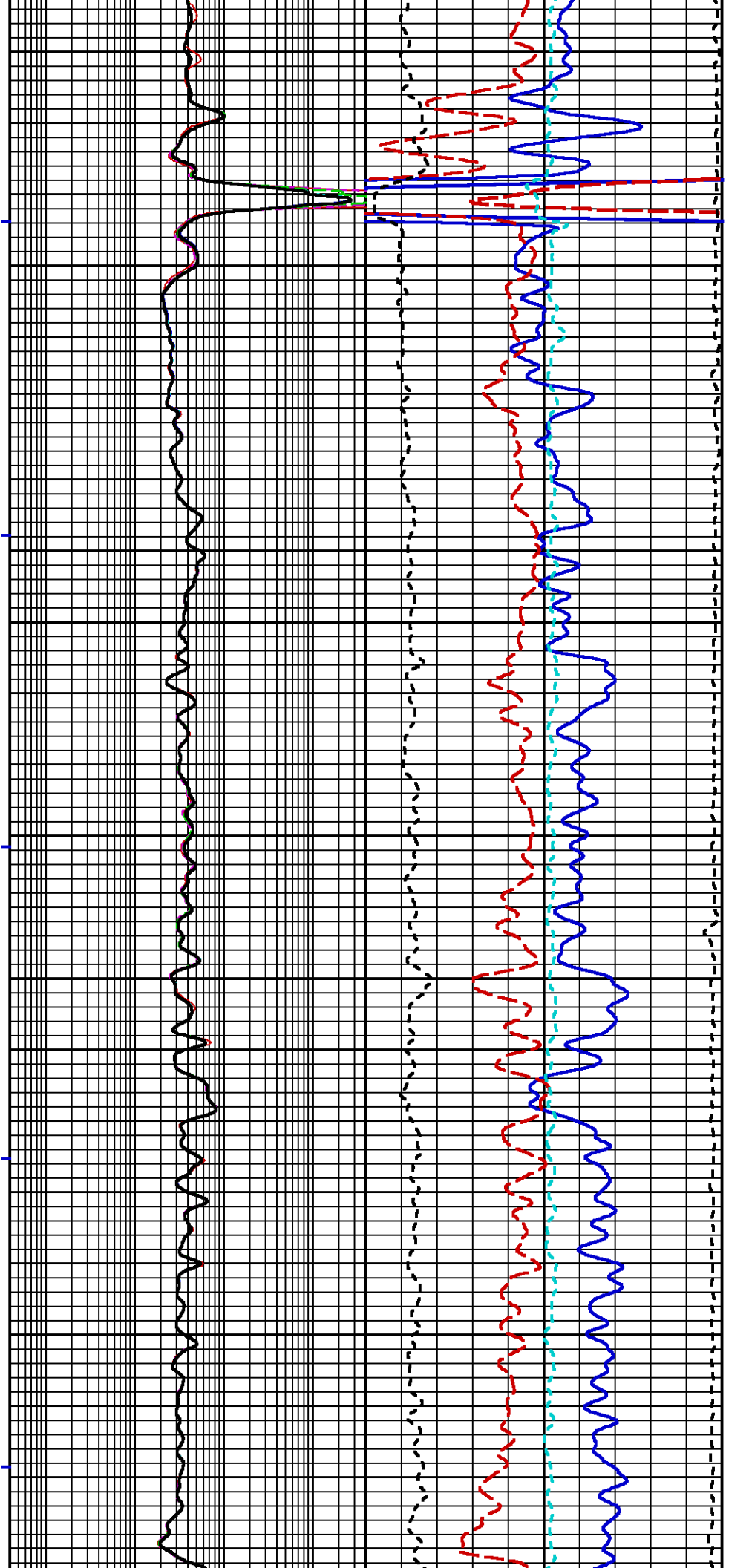






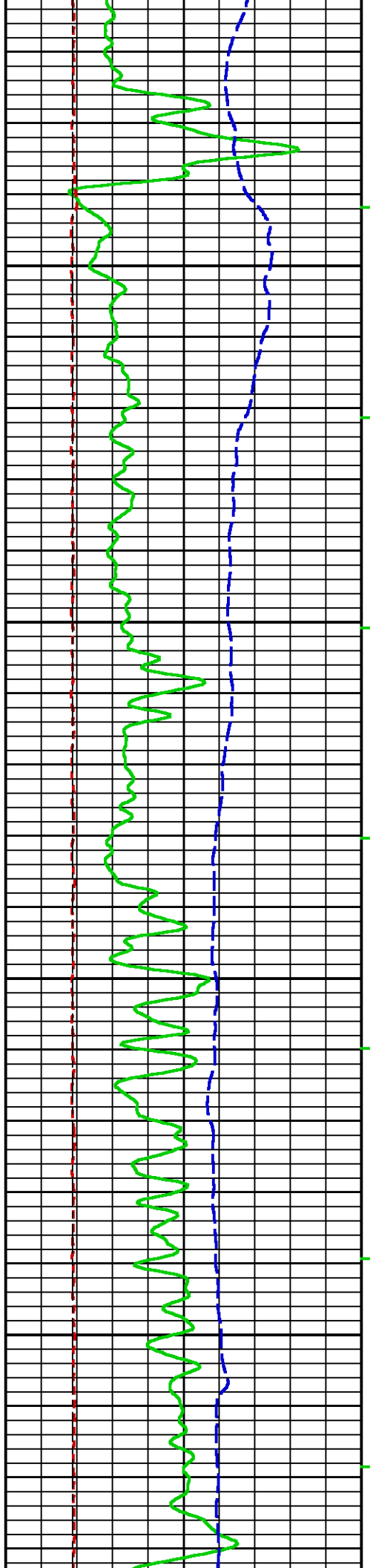


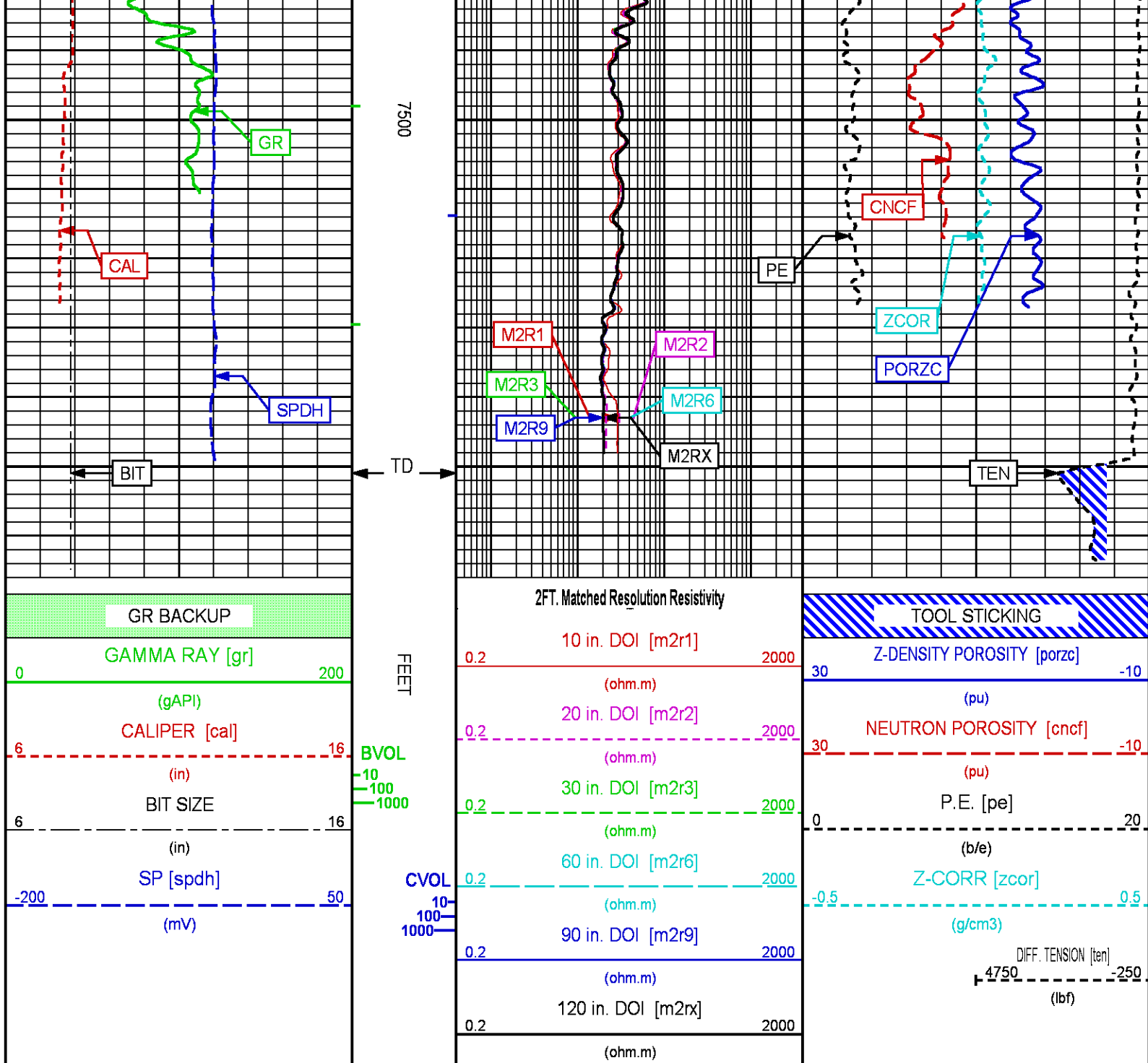




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REPEAT PASS

ECLIPS 7.0w PC-ECLIPS General Release Rel 7.0w Fri Jun 09 11:02:06 Central Daylight Time 2017  
Patches: 2

Plotted: Wed Dec 13 06:41:27 2017

### PARAMETER AND FILTER SUMMARY REPORT

File: C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06\WMSALM02.prm  
LOGGING MODE: DEPTH 7280 750 ft  
DIRECTION: UP  
TOP DEPTH: 7280 750 ft  
BOTTOM DEPTH: 7572 000 ft

SYMMETRIC FILTER					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
TTRM	FILTER ( )	heavy (3)		TOP	BOTTOM
	FILTER (.h)	heavy (3)		"	"
	FILTER (.i)	heavy (3)		"	"
Y AXIS CALIPER	FILTER ( )	medium (1)		"	"
TENSION	FILTER ( )	heavy (3)		"	"
GR	FILTER ( )	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
CN	FILTER ( )	medium (1)		"	"
CALIPER	FILTER ( )	medium (1)		"	"
	FILTER (.h)	medium (1)		"	"
	FILTER (.i)	medium (1)		"	"
ZDL MED RES	FILTER (hrd1*)	medium		"	"
	FILTER (hrd1s*)	medium		"	"
	FILTER (hrd2*)	medium		"	"
	FILTER (hrd2s*)	medium		"	"
	FILTER (soft*)	medium		"	"
SP-SPDH	FILTER ( )	heavy (3)		"	"
	FILTER (.i)	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	7.875	in	"	"
MUD SAMPLE RESISTIVITY	MUD SAMPLE TEMP	77.0	degF	"	"
	MUD SAMPLE RES	1.000	ohm.m	"	"
BOREHOLE TEMP from GRADIENT	Known BH REF TEMP	77.0	degF	"	"
	at BH REF DEPTH	0.0	ft	"	"
	with TEMP GRADIENT	1.200	0.01 deaF/ft	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (mbh*)	USE CALIPER		"	"
	CALIPER/FIXED DIA. (zdbh*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cnbh*)	7.875	in	"	"
	FIXED DIAMETER (mbh*)	7.875	in	"	"
BH MUD RESISTIVITY SOURCE	RMUD SOURCE (HDIL)	TOOL MEASURED		"	"
CN PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
2446 CN MATRIX	2446 MATRIX	SANDSTONE		TOP	BOTTOM
CN SALINITY CORRECTION	SALINITY CORR (2446)	SAL & BH SIZE ON		"	"
	SALINITY	0	ppm	"	"
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)	
MUD DENSITY	MUD DENSITY	9.90	lbm/gal	TOP	BOTTOM
DENSITY POROSITY	RHOMatrix	2.680	g/cm3	"	"
	RHOfluid	1.000	g/cm3	"	"
ZDL	DENX TRACKING	ON		"	"
TRACKING TIME	Logging Spd for Gain	Over 10 ft/min		"	"
HDIL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RXTEMP		TOP	BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	STANDOFF		"	"
	STANDOFF	1.00	in	"	"
	TOOL POSITION	ECCENTERED		"	"
	Rmud MULTIPLIER	1.000		"	"
	VRM Norm	ON		"	"
HDIL High RESISTIVITY Normalization	VRM Norm	ON		"	"

CURVE DESCRIPTION REPORT

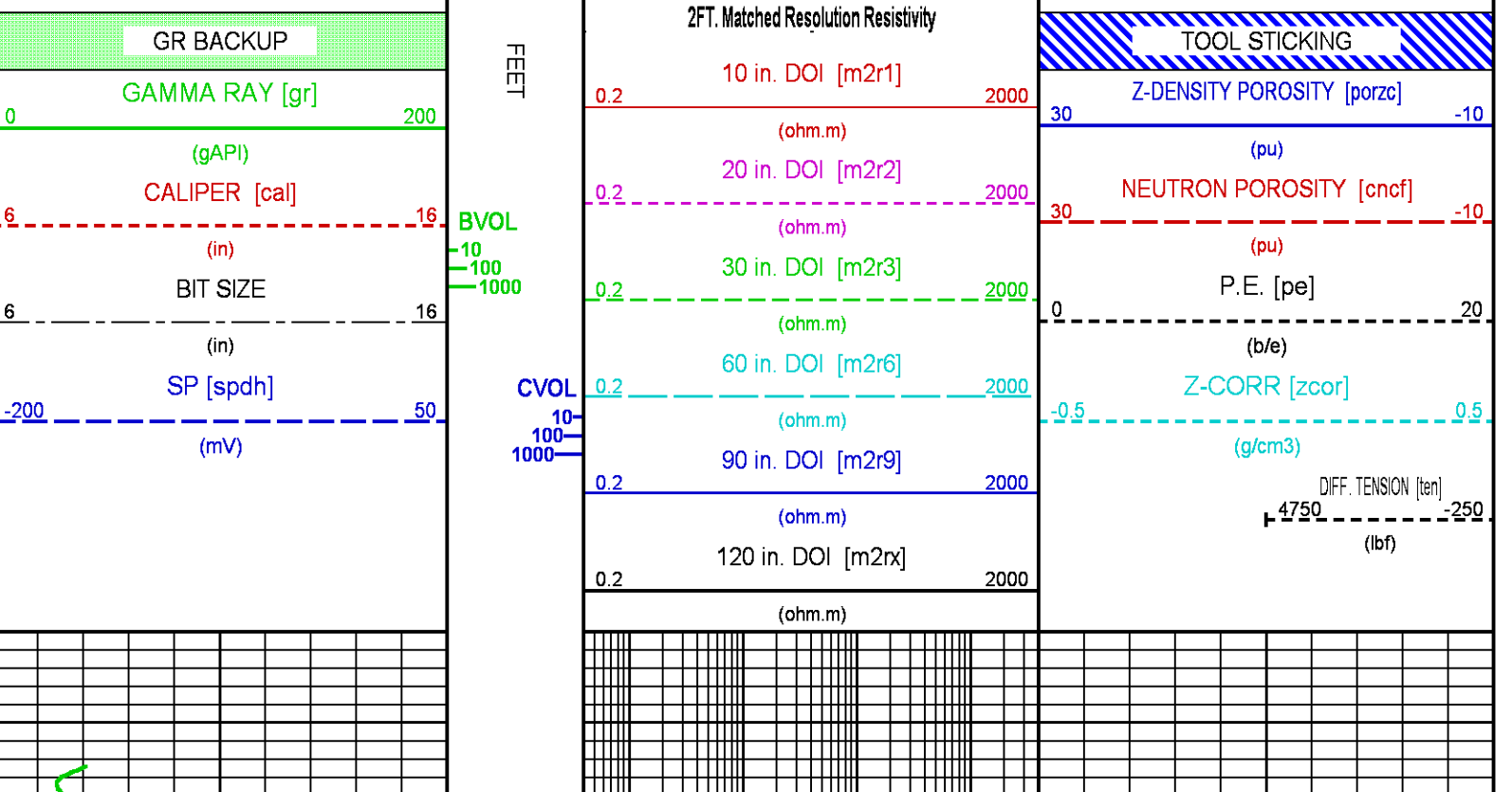
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:BIT	N/A	BIT SIZE
F1:BVOL	N/A	BOREHOLE VOLUME
F1:CAL	N/A	CALIPER
F1:CNCF	N/A	FIELD NORMALIZED COMPENSATED NEUTRON POROSITY
F1:CVOL	N/A	CEMENT VOLUME
F1:GR	N/A	GAMMA RAY
F1:M2R1	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 10-INCH DOI
F1:M2R2	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 20-INCH DOI
F1:M2R3	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 30-INCH DOI
F1:M2R6	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 60-INCH DOI
F1:M2R9	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 90-INCH DOI
F1:M2RX	N/A	VERTICAL 2-FOOT RESOLUTION MATCHED RESISTIVITY, 120-INCH DOI
F1:PE	N/A	PHOTO ELECTRIC CROSS-SECTION
F1:PORZC	N/A	CORRECTED POROSITY
F1:QHDL	N/A	QUALITY FOR DIFFERENTIAL TENSION PULLS FOR HDIL
F1:SPDH	N/A	SPONTANEOUS POTENTIAL PROCESSED IN COMMON REMOTE
F1:TEN	N/A	DIFFERENTIAL TENSION
F1:ZCOR	N/A	DENSITY CORRECTION

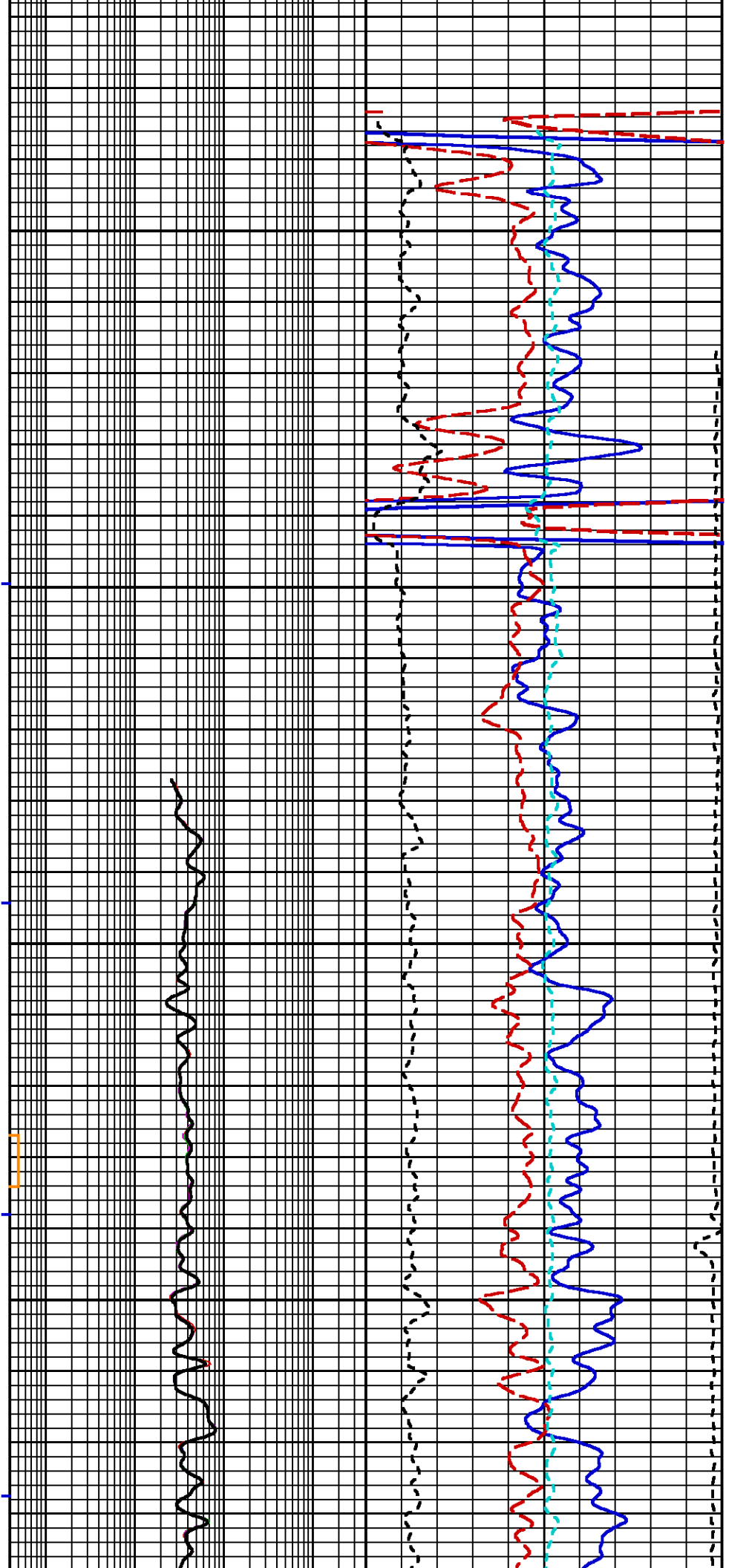
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
BIT	0.00	M2R1	-8.00	M2R9	-8.00	QHDL	-12.00
CAL	-35.00	M2R2	-8.00	M2RX	-8.00	SPDH	-14.00
CNCF	-45.25	M2R3	-8.00	PE	-34.25	TEN	0.00
GR	-52.25	M2R6	-8.00	PORZC	-34.25	ZCOR	-34.25

**Presentation** : BHI78FR4H2:C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06WMSLM\_RPT\_OH-5.fvpdf [5"/100' Scale]  
**Plot Interval** : 7229.75 - 7572 Feet

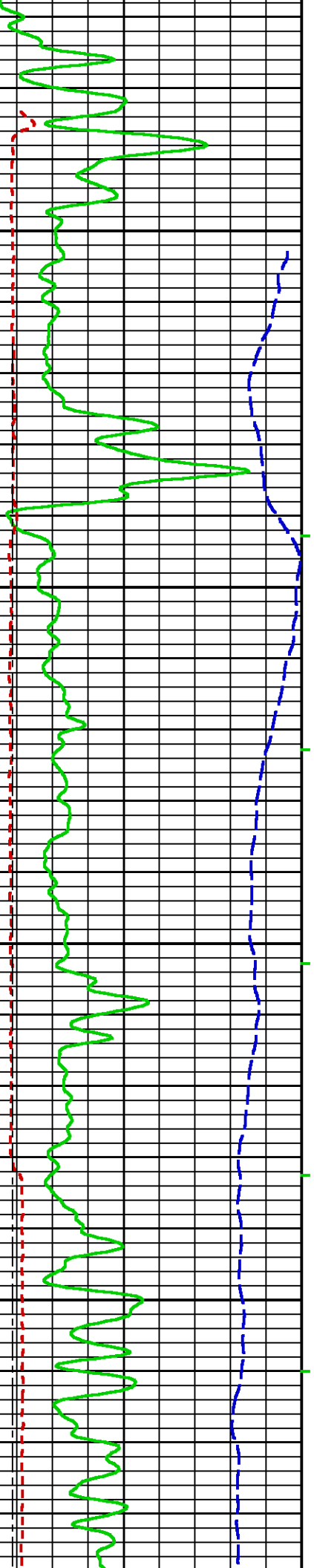
**Data File 1** : F1 : BHI78FR4H2:C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06WREPEAT.xtf  
**Created On** : N/A  
**Company** : LARAMIE ENERGY LLC  
**Well** : Nichols 0994-24-06W  
**Field** : VEGA  
**File Interval** : 7215.25 - 7572 Feet  
**OCT** : MSALM

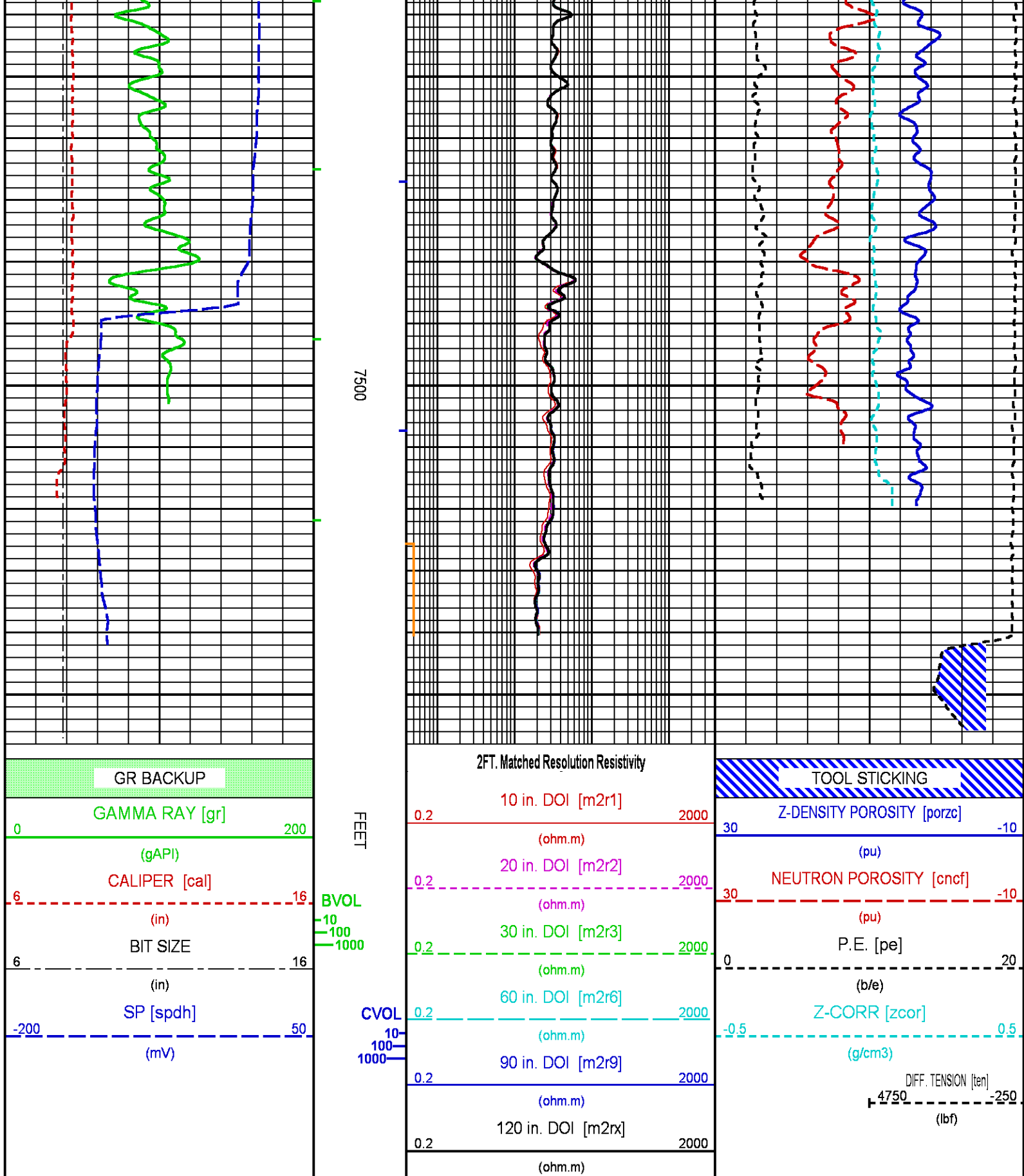




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## CALIBRATION / VERIFICATION SUMMARY

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 179184

DATE/TIME PERFORMED: Tue Nov 14 10:09:58 2017

UNIT #: 3882TD HL6728

CALB JIG #: 4702NK DA\_228

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	153.51	1097.33	943.8 830.0 960.0	0.159	24.40	174.40	150

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 179184

DATE/TIME PERFORMED: Tue Nov 14 10:16:15 2017

UNIT #: 3882TD HL6728

VERI JIG #: 4702NK DA\_228

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	151.36	1095.47	0.159	24.05	174.10	150.05 140.00 160.00

CN PRIMARY CALIBRATION SUMMARY

TOOL #: 2446XA 10378389

DATE/TIME PERFORMED: Tue Nov 14 14:45:15 2017

UNIT #: 3882TD HL6728

CALIBRATOR #: 2437XB 120052

SOURCE #: 4717XS N\_923

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	NOMINAL SSN/LSN	CORRECTION FACTOR	POROSITY (pu)
LSN	605.12	614.04				
SSN	1556.67	1606.69				
RATIO			2.61659	2.75100	1.05137 0.97000 1.07000	
CN						21.358

CN PRIMARY VERIFICATION SUMMARY

TOOL #: 2446XA 10378389

DATE/TIME PERFORMED: Tue Nov 14 14:49:56 2017

UNIT #: 3882TD HL6728

ICE BLOCK #: 4717ND D\_\_043

	MEASURED	DEADTM CORR	DTC	CORRECTION	DTC CORR	POROSITY
	CPS	CPS	SSN/LSN	FACTOR	SSN/LSN	(pu)
LSN	2032.28	2136.52				
SSN	4656.81	5135.18				
RATIO			2.40352	1.05137	2.52805	
CN						18.238

### CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2234XA 10231795

DATE/TIME PERFORMED: Tue Nov 14 16:11:44 2017

UNIT #: 3882TD HL6728

	SMALL RING	LARGE RING	MULT	ADD	SMALL RING	LARGE RING
					(in)	(in)
CALIPER	1230.8	2125.6	0.00796	-1.92546	7.875	15.000

### CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2234XA 10231795

DATE/TIME PERFORMED: Wed Dec 13 05:30:46 2017

DAYS SINCE CAL: 28

UNIT #: HL 6670

	I.D.	MULT	ADD	I.D.
				(in)
CALIPER	1315.2	0.00796	-2.38251	8.090

### CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2234XA 10231795

DATE/TIME PERFORMED: Wed Dec 13 09:48:24 2017

DAYS SINCE CAL: 28

UNIT #: HL 6670

	I.D.	MULT	ADD	I.D.
				(in)
CALIPER	1292.4	0.00796	-2.38251	7.908
				7.590 8.590

### ZDL PRIMARY CALIBRATION SUMMARY

TOOL: 2234XA 10231795

DATE/TIME PERFORMED: Tue Nov 14 17:19:45 2017

CS SRC: 4703NT 11344B

	SS CS PK (Channel)	LS CS PK (Channel)	SS_BKGD (cps)	LS BKGD (cps)		
	225.9 220.0 230.0	225.1 220.0 230.0	1253.4	1434.4		
	SS (cps)	LS (cps)	SHR	DEN (g/cm3)	CORR (g/cm3)	PE (b/e)
MG (LO PE)	19252.8	9976.9	0.594 0.585 0.605	1.700	0.003	2.160
AL	11207.4	1004.8		2.698	-0.010	
AL + SHIM	15555.3	1773.3		2.619	0.158	
MG + SHIM (HI PE)	9164.0	4646.7	0.236 0.210 0.270			8.500
RATIO AL + SHIM/AL	1.39 1.32 1.42	1.76 1.64 1.84				
RATIO MG/AL	1.72 1.65 1.78	9.93 9.40 10.20				

## HDIL PRIMARY CALIBRATION SUMMARY

DATE/TIME PERFORMED: Sat Dec 24 11:25:31 2016

GRCOND ID &amp; DATE: 37 083096

[illegible]

Coil 5 Q	-0.011		-0.004		0.005		0.007		0.002		0.003		-0.005		0.008	
	-2.000	2.000	-0.800	0.800	-0.400	0.400	-0.400	0.400	-0.400	0.400	-0.400	0.400	-0.400	0.400	-0.400	0.400
Coil 6 R	-0.005		-0.007		-0.022		-0.015		-0.005		0.000		0.003		0.032	
	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000
Coil 6 Q	-0.005		-0.004		0.028		-0.005		-0.010		-0.008		0.005		0.008	
	-5.000	5.000	-2.000	2.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000	-1.000	1.000

ELEC. GAINS	10 KHz		30 KHz		50 KHz		70 KHz		90 KHz		110 KHz		130 KHz		150 KHz	
Coil 0 M	123.29		121.77		118.83		114.50		109.07		102.53		95.16		86.88	
	100.00	150.00	100.00	150.00	98.00	150.00	96.00	140.00	92.00	140.00	87.00	130.00	82.00	120.00	76.00	110.00
Coil 0 P	7.982		24.979		41.690		58.325		74.762		91.151		107.308		123.353	
	6.000	9.000	19.000	28.000	32.000	47.000	44.000	66.000	57.000	85.000	70.000	100.000	82.000	120.000	95.000	140.000
Coil 1 M	219.75		217.23		212.20		204.78		195.53		184.11		171.12		156.67	
	180.00	270.00	180.00	270.00	170.00	260.00	170.00	250.00	160.00	250.00	160.00	230.00	150.00	220.00	140.00	200.00
Coil 1 P	7.960		24.998		41.747		58.430		74.979		91.466		107.775		124.027	
	6.000	9.000	19.000	28.000	32.000	48.000	45.000	67.000	57.000	86.000	70.000	110.000	83.000	120.000	96.000	140.000
Coil 2 M	434.97		430.12		420.78		407.34		390.52		370.48		347.82		322.57	
	360.00	540.00	360.00	540.00	350.00	530.00	340.00	510.00	330.00	500.00	310.00	470.00	300.00	440.00	270.00	410.00
Coil 2 P	7.682		24.116		40.269		56.276		72.128		87.930		103.525		119.169	
	6.000	9.000	19.000	29.000	32.000	48.000	45.000	67.000	58.000	87.000	71.000	110.000	84.000	130.000	96.000	140.000
Coil 3 M	704.51		696.04		679.62		655.45		624.89		587.70		545.60		498.31	
	590.00	880.00	580.00	870.00	570.00	850.00	550.00	830.00	530.00	800.00	500.00	760.00	470.00	710.00	440.00	650.00
Coil 3 P	8.174		25.622		42.814		59.896		76.845		93.748		110.443		127.073	
	6.000	10.000	20.000	29.000	33.000	49.000	46.000	69.000	59.000	89.000	72.000	110.000	85.000	130.000	98.000	150.000
Coil 4 M	1140.9		1127.3		1100.7		1061.2		1011.1		951.4		883.3		807.7	
	900.0	1400.0	900.0	1300.0	900.0	1300.0	850.0	1300.0	800.0	1200.0	800.0	1200.0	750.0	1100.0	700.0	1000.0
Coil 4 P	8.259		25.966		43.372		60.665		77.806		94.919		111.782		128.628	
	6.000	10.000	20.000	30.000	33.000	50.000	46.000	70.000	60.000	90.000	73.000	110.000	86.000	130.000	99.000	150.000
Coil 5 M	2288.6		2261.1		2207.9		2128.5		2029.6		1908.4		1771.9		1618.9	
	1900.0	2800.0	1800.0	2800.0	1800.0	2700.0	1800.0	2600.0	1700.0	2500.0	1600.0	2400.0	1500.0	2200.0	1400.0	2100.0
Coil 5 P	8.426		26.429		44.158		61.783		79.264		96.719		113.946		131.148	
	6.000	10.000	20.000	31.000	34.000	51.000	48.000	72.000	62.000	93.000	76.000	110.000	89.000	130.000	100.000	150.000
Coil 6 M	5923.1		5846.3		5698.7		5484.4		5220.2		4907.1		4559.0		4173.3	
	4700.0	7100.0	4700.0	7000.0	4600.0	6900.0	4400.0	6600.0	4200.0	6400.0	4000.0	6000.0	3700.0	5600.0	3400.0	5100.0
Coil 6 P	8.302		26.310		43.948		61.395		78.656		95.807		112.692		129.550	
	7.000	10.000	22.000	32.000	36.000	54.000	51.000	76.000	65.000	98.000	80.000	120.000	94.000	140.000	110.000	160.000

AM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	596	51	-49	-93	-116	-130	-138	-144
	-200 800	-500 200	-600 100	-600 50	-500 20	-500 20	-500 20	-500 20
Coil 0 Q	1401	585	366	247	165	103	52	8
	-3000 6000	-1000 2000	-1000 1200	-500 900	-400 700	-400 600	-400 500	-400 400
Coil 1 R	532	94	30	6	-7	-13	-18	-21
	450 650	20 130	-30 60	-50 40	-55 30	-60 20	-60 10	-60 10
Coil 1 Q	875	378	244	178	138	110	90	73
	0 2500	0 900	0 600	0 450	0 350	0 300	0 250	0 250
Coil 2 R	193.2	30.4	9.6	2.4	-1.2	-3.1	-4.5	-5.4
	140.0 230.0	0.0 51.0	-10.0 25.0	-15.0 15.0	-16.0 10.0	-16.0 7.0	-16.0 5.0	-16.0 3.0
Coil 2 Q	362.0	151.2	98.1	74.1	60.8	52.7	47.1	43.3
	-200.0 1000.0	0.0 350.0	0.0 220.0	0.0 160.0	0.0 130.0	0.0 110.0	0.0 100.0	0.0 90.0
Coil 3 R	44.3	4.8	0.6	-0.6	-1.1	-1.7	-2.2	-2.4
	37.0 62.0	0.0 12.0	-3.0 6.0	-4.0 4.0	-5.0 2.0	-5.0 1.0	-6.0 1.0	-6.0 1.0
Coil 3 Q	86.1	36.9	26.2	22.8	21.8	22.1	22.8	23.3
	-140.0 280.0	-40.0 100.0	-20.0 70.0	-10.0 60.0	-10.0 50.0	-10.0 50.0	-10.0 50.0	-10.0 50.0

Coil 4 R	9.70 2.00 18.00	-0.08 -3.00 6.00	-0.83 -3.50 3.00	-1.14 -3.90 2.00	-1.09 -4.20 2.00	-1.28 -4.50 2.00	-1.42 -4.70 2.00	-1.34 -5.00 2.00
Coil 4 Q	17.77 -100.00 100.00	9.81 -30.00 50.00	9.60 -20.00 40.00	10.93 -10.00 40.00	12.62 -10.00 40.00	14.49 -10.00 45.00	16.45 -10.00 50.00	18.63 -10.00 60.00
Coil 5 R	0.33 -2.00 5.80	-1.29 -3.20 2.40	-1.42 -4.50 3.10	-1.19 -4.70 3.20	-0.87 -4.80 3.20	-1.03 -5.00 3.30	-0.98 -5.20 3.40	-0.99 -5.40 3.50
Coil 5 Q	4.59 -60.00 70.00	4.14 -20.00 30.00	5.82 -20.00 30.00	7.74 -20.00 35.00	9.78 -20.00 45.00	11.79 -20.00 50.00	14.10 -20.00 60.00	16.45 -30.00 70.00
Coil 6 R	-2.79 -4.80 1.00	-1.47 -5.70 3.80	-0.78 -6.50 4.90	-0.73 -6.90 5.40	-0.88 -7.30 5.80	-0.95 -7.50 6.00	-0.88 -7.70 6.10	-0.77 -7.90 6.30
Coil 6 Q	-4.03 -30.00 30.00	0.73 -20.00 25.00	3.58 -20.00 35.00	6.33 -30.00 50.00	8.91 -35.00 60.00	11.33 -40.00 70.00	13.39 -50.00 80.00	15.37 -60.00 100.00

MM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	0.946 0.900 1.100	0.971 0.900 1.100	0.984 0.900 1.100	0.992 0.900 1.100	0.995 0.900 1.100	0.997 0.900 1.100	0.997 0.900 1.100	0.999 0.900 1.100
Coil 0 P	-1.154 -2.000 2.000	-1.822 -2.000 2.000	-1.547 -2.000 2.000	-1.180 -2.000 2.000	-0.975 -2.000 2.000	-0.786 -2.000 2.000	-0.714 -2.000 2.000	-0.656 -2.000 2.000
Coil 1 M	0.925 0.900 1.100	0.952 0.900 1.100	0.966 0.900 1.100	0.974 0.900 1.100	0.977 0.900 1.100	0.978 0.900 1.100	0.979 0.900 1.100	0.981 0.900 1.100
Coil 1 P	-1.160 -2.000 2.000	-1.916 -2.000 2.000	-1.656 -2.000 2.000	-1.309 -2.000 2.000	-1.088 -2.000 2.000	-0.952 -2.000 2.000	-0.850 -2.000 2.000	-0.794 -2.000 2.000
Coil 2 M	1.000 0.900 1.100	0.998 0.900 1.100	0.997 0.900 1.100	0.997 0.900 1.100	0.996 0.900 1.100	0.995 0.900 1.100	0.995 0.900 1.100	0.994 0.900 1.100
Coil 2 P	-0.071 -2.000 2.000	0.028 -2.000 2.000	0.089 -2.000 2.000	0.135 -2.000 2.000	0.156 -2.000 2.000	0.161 -2.000 2.000	0.152 -2.000 2.000	0.174 -2.000 2.000
Coil 3 M	0.997 0.900 1.100	0.996 0.900 1.100	0.996 0.900 1.100	0.995 0.900 1.100	0.994 0.900 1.100	0.993 0.900 1.100	0.994 0.900 1.100	0.995 0.900 1.100
Coil 3 P	0.057 -2.000 2.000	0.065 -2.000 2.000	0.114 -2.000 2.000	0.149 -2.000 2.000	0.144 -2.000 2.000	0.110 -2.000 2.000	0.078 -2.000 2.000	0.145 -2.000 2.000
Coil 4 M	1.017 0.900 1.100	1.016 0.900 1.100	1.016 0.900 1.100	1.015 0.900 1.100	1.015 0.900 1.100	1.015 0.900 1.100	1.014 0.900 1.100	1.014 0.900 1.100
Coil 4 P	0.068 -2.000 2.000	0.094 -2.000 2.000	0.095 -2.000 2.000	0.128 -2.000 2.000	0.112 -2.000 2.000	0.147 -2.000 2.000	0.114 -2.000 2.000	0.110 -2.000 2.000
Coil 5 M	1.017 0.900 1.100	1.016 0.900 1.100	1.016 0.900 1.100	1.015 0.900 1.100	1.015 0.900 1.100	1.015 0.900 1.100	1.014 0.900 1.100	1.015 0.900 1.100
Coil 5 P	0.033 -2.000 2.000	0.008 -2.000 2.000	0.066 -2.000 2.000	0.078 -2.000 2.000	0.044 -2.000 2.000	0.010 -2.000 2.000	0.047 -2.000 2.000	0.048 -2.000 2.000
Coil 6 M	1.020 0.900 1.100	1.021 0.900 1.100	1.018 0.900 1.100	1.017 0.900 1.100	1.018 0.900 1.100	1.024 0.900 1.100	1.025 0.900 1.100	1.025 0.900 1.100
Coil 6 P	0.102 -2.000 2.000	0.197 -2.000 2.000	0.135 -2.000 2.000	0.197 -2.000 2.000	0.068 -2.000 2.000	-0.022 -2.000 2.000	-0.002 -2.000 2.000	-0.133 -2.000 2.000

PARMS

TCID 0

TCID 1

Cal Temp  
(degF)

T Factor

IDs

1.414

0.852

60.1

1.04

## HDIL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1515MA 179553

DATE/TIME PERFORMED: Wed Dec 13 06:16:55 2017

DAYS SINCE CAL: 353

UNIT #: HL 6670

ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	-0.003	0.002	-0.000	-0.003	-0.006	-0.005	-0.005	-0.007
	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 0 Q	0.007	0.012	0.005	0.005	0.005	0.001	-0.001	-0.000
	-1.000 1.000	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 1 R	-0.001	0.005	0.001	-0.001	-0.002	-0.003	-0.002	-0.002
	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 1 Q	-0.007	-0.005	0.002	0.001	0.002	0.000	-0.003	-0.003
	-1.000 1.000	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 2 R	0.011	-0.000	-0.004	-0.004	-0.002	-0.004	-0.001	0.004
	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 2 Q	-0.005	-0.005	0.002	0.002	-0.003	-0.004	-0.004	-0.005
	-1.000 1.000	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 3 R	0.000	-0.004	0.001	0.002	-0.001	-0.002	-0.005	-0.004
	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 3 Q	-0.002	-0.003	-0.002	-0.002	0.003	0.002	0.000	-0.002
	-0.500 0.500	-0.200 0.200	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100	-0.100 0.100
Coil 4 R	-0.014	-0.008	-0.007	-0.010	-0.006	-0.003	-0.003	-0.005
	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200
Coil 4 Q	-0.000	0.007	0.003	0.006	0.000	-0.010	-0.007	-0.002
	-1.000 1.000	-0.400 0.400	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200	-0.200 0.200
Coil 5 R	-0.008	0.009	0.011	-0.001	0.004	0.007	-0.011	-0.005
	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400
Coil 5 Q	-0.006	0.005	-0.001	0.001	0.002	-0.000	0.005	-0.003
	-2.000 2.000	-0.800 0.800	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400	-0.400 0.400
Coil 6 R	0.016	-0.007	-0.000	-0.029	0.008	-0.028	0.009	0.020
	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000
Coil 6 Q	-0.000	-0.003	0.033	0.003	-0.003	-0.021	-0.024	-0.000
	-5.000 5.000	-2.000 2.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000	-1.000 1.000

ELEC. GAINS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	125.47	123.88	120.87	116.33	110.83	104.05	96.48	87.99
	100.00 150.00	100.00 150.00	98.00 150.00	96.00 140.00	92.00 140.00	87.00 130.00	82.00 120.00	76.00 110.00
Coil 0 P	8.112	25.427	42.443	59.363	76.089	92.785	109.177	125.596
	6.000 9.000	19.000 28.000	32.000 47.000	44.000 66.000	57.000 85.000	70.000 100.000	82.000 120.000	95.000 140.000
Coil 1 M	218.62	215.97	211.04	203.49	194.21	182.70	169.87	155.07
	180.00 270.00	180.00 270.00	170.00 260.00	170.00 250.00	160.00 250.00	160.00 230.00	150.00 220.00	140.00 200.00
Coil 1 P	8.054	25.308	42.277	59.174	75.900	92.604	109.119	125.583
	6.000 9.000	19.000 28.000	32.000 48.000	45.000 67.000	57.000 86.000	70.000 110.000	83.000 120.000	96.000 140.000
Coil 2 M	434.86	429.88	420.53	406.76	389.96	369.53	347.00	321.33
	360.00 540.00	360.00 540.00	350.00 530.00	340.00 510.00	330.00 500.00	310.00 470.00	300.00 440.00	270.00 410.00
Coil 2 P	7.784	24.474	40.854	57.109	73.167	89.227	105.033	120.913
	6.000 9.000	19.000 29.000	32.000 48.000	45.000 67.000	58.000 87.000	71.000 110.000	84.000 130.000	96.000 140.000
Coil 3 M	710.80	701.88	685.15	660.03	629.04	590.66	548.20	499.40
	590.00 880.00	580.00 870.00	570.00 850.00	550.00 830.00	530.00 800.00	500.00 760.00	470.00 710.00	440.00 650.00
Coil 3 P	8.322	26.108	43.599	61.002	78.226	95.448	112.386	129.333
	6.000 10.000	20.000 29.000	33.000 49.000	46.000 69.000	59.000 89.000	72.000 110.000	85.000 130.000	98.000 150.000
Coil 4 M	1138.9	1124.6	1097.5	1057.0	1007.3	945.9	878.3	801.2
	900.0 1400.0	900.0 1300.0	900.0 1300.0	850.0 1300.0	800.0 1200.0	800.0 1200.0	750.0 1100.0	700.0 1000.0
Coil 4 P	8.401	26.383	44.063	61.622	79.015	96.386	113.467	130.560
	6.000 10.000	20.000 30.000	33.000 50.000	46.000 70.000	60.000 90.000	73.000 110.000	86.000 130.000	99.000 150.000
Coil 5 M	2300.5	2271.9	2218.1	2136.8	2036.8	1913.3	1776.5	1619.7
	1900.0 2800.0	1800.0 2800.0	1800.0 2700.0	1800.0 2600.0	1700.0 2500.0	1600.0 2400.0	1500.0 2200.0	1400.0 2100.0
Coil 5 P	8.541	26.805	44.774	62.648	80.347	98.045	115.492	132.935
	6.000 16.000	26.000 34.000	34.000 54.000	46.000 70.000	60.000 90.000	73.000 110.000	86.000 130.000	100.000 150.000

	6.000	10.000	20.000	31.000	34.000	51.000	48.000	72.000	62.000	93.000	76.000	110.000	89.000	130.000	100.000	150.000
Coil 6 M	5939.7	5858.8	5710.2	5491.4	5228.5	4907.0	4559.0	4168.6								
	4700.0	7100.0	4700.0	7000.0	4600.0	6900.0	4400.0	6800.0	4200.0	6400.0	4000.0	6000.0	3700.0	5600.0	3400.0	5100.0
Coil 6 P	8.466	26.800	44.733	62.504	80.058	97.552	114.719	131.922								
	7.000	10.000	22.000	32.000	36.000	54.000	51.000	76.000	65.000	98.000	80.000	120.000	94.000	140.000	110.000	160.000

## HDIL AFTER LOG VERIFICATION SUMMARY

TOOL #:	1515MA 179553	DATE/TIME PERFORMED:	Wed Dec 13 09:48:34 2017	DAYS SINCE CAL:	353
		UNIT #:	HL 6670		

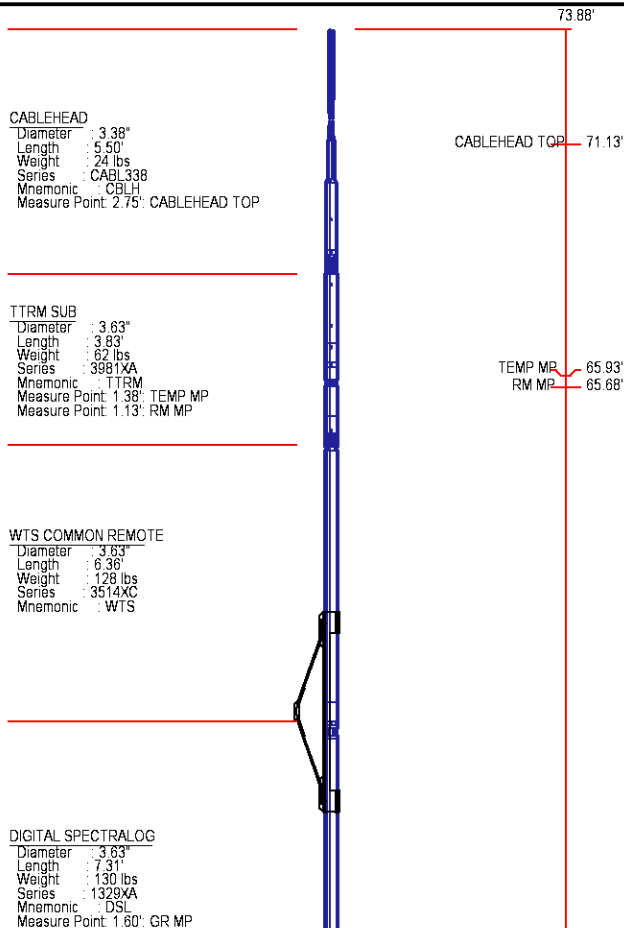
ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	-0.001	0.001	-0.001	-0.002	-0.005	-0.003	-0.004	-0.007
	-0.083	0.077	-0.058	0.062	-0.030	0.030	-0.033	0.027
Coil 0 Q	0.005	0.009	0.003	0.002	0.003	0.001	0.001	0.000
	-0.033	0.047	-0.108	0.132	-0.025	0.035	-0.025	0.035
Coil 1 R	0.004	0.004	0.000	0.000	-0.000	0.001	-0.001	0.001
	-0.081	0.079	-0.045	0.055	-0.029	0.031	-0.031	0.029
Coil 1 Q	-0.002	-0.002	0.000	0.001	-0.000	0.000	-0.003	-0.001
	-0.407	0.393	-0.105	0.095	-0.028	0.032	-0.028	0.029
Coil 2 R	0.006	-0.002	-0.003	-0.003	-0.000	-0.001	0.002	0.004
	-0.059	0.081	-0.030	0.030	-0.034	0.026	-0.034	0.026
Coil 2 Q	-0.009	-0.007	-0.001	0.000	-0.005	-0.004	-0.002	-0.004
	-0.355	0.345	-0.105	0.095	-0.028	0.032	-0.028	0.032
Coil 3 R	-0.001	-0.003	0.003	0.001	-0.001	-0.000	-0.002	-0.002
	-0.040	0.040	-0.044	0.036	-0.039	0.041	-0.038	0.042
Coil 3 Q	-0.002	-0.002	-0.002	-0.002	0.000	0.004	0.003	0.001
	-0.202	0.198	-0.083	0.077	-0.042	0.038	-0.042	0.038
Coil 4 R	-0.011	-0.008	-0.010	-0.007	-0.003	-0.002	0.002	0.002
	-0.074	0.046	-0.068	0.052	-0.067	0.053	-0.070	0.050
Coil 4 Q	-0.005	-0.004	-0.001	0.002	-0.005	-0.009	-0.008	-0.000
	-0.300	0.300	-0.093	0.107	-0.057	0.063	-0.054	0.066
Coil 5 R	0.003	0.003	-0.001	0.006	0.004	0.001	-0.006	-0.002
	-0.128	0.112	-0.111	0.129	-0.109	0.131	-0.121	0.119
Coil 5 Q	0.010	0.005	0.004	0.009	0.002	0.005	-0.001	-0.000
	-0.606	0.594	-0.245	0.255	-0.119	0.121	-0.118	0.122
Coil 6 R	0.010	0.015	0.016	-0.022	-0.003	0.008	0.002	0.015
	-0.284	0.316	-0.307	0.293	-0.300	0.300	-0.329	0.271
Coil 6 Q	-0.010	0.014	-0.004	-0.030	-0.038	-0.027	-0.009	0.008
	-1.500	1.500	-0.603	0.597	-0.267	0.333	-0.297	0.303

ELEC. GAINS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	125.55	123.93	120.73	116.16	110.34	103.52	95.63	86.99
	122.96	127.98	121.40	126.35	118.45	123.28	114.01	118.66
Coil 0 P	8.151	25.502	42.560	59.458	76.261	92.854	109.329	125.477
	5.112	11.112	22.427	28.427	39.443	45.443	56.363	62.363
Coil 1 M	218.60	215.91	210.63	203.05	193.24	181.62	168.18	153.24
	214.24	222.99	211.65	220.29	206.82	215.26	199.42	207.56
Coil 1 P	8.091	25.385	42.399	59.287	76.085	92.706	109.290	125.477
	5.054	11.054	22.308	28.308	39.277	45.277	56.174	62.174
Coil 2 M	433.83	428.83	418.84	404.90	387.05	366.47	342.69	316.49
	426.16	443.55	421.29	438.48	412.12	428.95	398.62	414.89

Coil 2 P	7.816 4.784	24.544 10.784	40.979 27.474	57.212 37.854	73.355 43.854	89.299 54.109	105.202 60.109	120.795 70.167	123.913 78.167	123.913 86.227	123.913 92.227	123.913 102.033	123.913 108.033	123.913 117.913	123.913 123.913
Coil 3 M	709.66 696.58	700.74 725.01	682.98 687.84	657.87 715.92	625.35 671.44	586.90 698.85	542.67 646.83	493.64 673.23	489.41 618.46	509.39 641.62	537.23 578.84	559.16 602.47	489.41 537.23	509.39 559.16	509.39 489.41
Coil 3 P	8.347 5.322	26.148 11.322	43.674 23.108	61.034 29.108	78.329 40.599	95.440 46.599	112.456 58.002	129.141 64.002	126.333 75.226	132.333 81.226	126.333 92.448	132.333 98.448	126.333 109.386	132.333 115.386	132.333 126.333
Coil 4 M	1137.3 1118.1	1123.1 1181.6	1094.2 1102.1	1053.6 1147.1	1001.2 1075.5	939.7 1119.4	869.0 1035.8	791.2 1078.1	785.2 987.1	817.2 1027.4	785.2 927.0	817.2 964.8	785.2 880.8	817.2 895.9	817.2 785.2
Coil 4 P	8.426 5.401	26.432 11.401	44.152 23.383	61.692 29.383	79.150 41.063	96.410 47.063	113.596 58.622	130.419 64.622	127.580 76.015	133.560 82.015	127.580 93.386	133.560 99.386	127.580 110.467	133.560 116.467	133.560 127.580
Coil 5 M	2292.5 2254.5	2263.8 2346.5	2206.5 2226.4	2125.7 2317.3	2020.4 2173.7	1896.2 2262.4	1753.8 2094.0	1595.8 2179.5	1587.3 1996.1	1652.1 2077.6	1587.3 1875.0	1652.1 1951.5	1587.3 1740.9	1652.1 1812.0	1652.1 1587.3
Coil 5 P	8.564 5.541	26.848 11.541	44.847 23.805	62.685 29.805	80.447 41.774	98.040 47.774	115.556 59.648	132.711 65.648	129.935 77.347	135.935 83.347	129.935 95.045	135.935 101.045	129.935 112.492	135.935 118.492	135.935 129.935
Coil 6 M	5940.9 5820.9	5860.5 6058.5	5703.5 5741.6	5483.6 5976.0	5204.1 5596.0	4880.3 5824.4	4519.0 5381.6	4120.4 5601.3	4085.3 5123.9	4252.0 5333.0	4085.3 4808.9	4252.0 5005.2	4085.3 4467.9	4252.0 4650.2	4252.0 4085.3
Coil 6 P	8.482 5.466	26.851 11.466	44.813 23.800	62.559 29.800	80.157 41.733	97.540 47.733	114.810 59.504	131.737 65.504	128.922 77.058	134.922 83.058	128.922 94.552	134.922 100.552	128.922 111.719	134.922 117.719	134.922 128.922

## INSTRUMENT CONFIGURATION

Source File: C:\dat1a\LARAMIE\_Nichols\_0994\_24\_06\WMSLAM\_XC~-tdg.meta



COMPENSATED NEUTRON  
Diameter : 3.63"  
Length : 7.59'  
Weight : 150 lbs  
Series : 2446XA  
Mnemonic : CN  
Measure Point: 2.63': LSN MP  
Measure Point: 2.24': SSN MP

GR MP : 52.48'  
LSN MP : 45.92'  
SSN MP : 45.52'

Z-DENSILOG  
Diameter : 4.88"  
Length : 11.22'  
Weight : 360 lbs  
Series : 2234XA  
Mnemonic : ZDL  
Measure Point: 3.19': CAL MP  
Measure Point: 2.47': LSD MP  
Measure Point: 2.07': SSD MP

CAL MP : 35.26'  
LSD MP : 34.54'  
SSD MP : 34.14'

KNUCKLE JOINT (DOUBLE)  
Diameter : 3.38"  
Length : 4.65'  
Weight : 90 lbs  
Series : 3939XA  
Mnemonic : KNJT

HIGH DEFINITION INDUCTION TOOL  
Diameter : 3.63"  
Length : 27.13'  
Weight : 415 lbs  
Series : 1515XA  
Mnemonic : HDIL  
Measure Point: 13.91': SP MP  
Measure Point: 7.44': XMTR MP

SP MP : 14.19'

XMTR MP : 7.72'

BULL PLUG 3 3/8

TOTAL LENGTH: 73.88'  
TOTAL WEIGHT: 1380 lbs  
MAX DIAMETER: 0'4.88'

0.00'

**BAKER  
HUGHES**  
a GE company



COMPANY  
WELL  
FIELD  
COUNTY

**LARAMIE ENERGY**  
**NICHOLS 0994-24-06W**  
**VEGA**  
**MESA**

STATE **COLORADO**

FILE NO:

API NO:

**05077104150000**

LOCATION:

**LAT: 39.2645944N, LONG: 107.8306361**

ELEVATIONS:

KB **7161 FT**

DF **7160 FT**

GL **7137 FT**

SEC **24** TWP **9S** RGE **94W**

DATE **13-DEC-2017**

