

V	F	D	L	C	N	F	S	F	F	F		MUD		E	C	C		E	S	L	F	L		County:	Weld	
---	---	---	---	---	---	---	---	---	---	---	--	-----	--	---	---	---	--	---	---	---	---	---	--	---------	------	--

Run 4

Date Created: 11-SEP-2006 15:22:05

Depth Measuring Device

Tension Device

Logging Cable

Type:	7-39P-LXS
Serial Number:	3095
Length:	12700.00 FT
Conveyance Method:	Wireline
Rig Type:	LAND

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	14.00 FT
Tool Zero Check At Surface:	-50000.00 FT

1. All Schlumberger Depth Control Policies Followed
2. IDW used as primary depth reference, Z-chart used as secondary
- 3.
- 4.
- 5.
- 6.














THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES2

OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 2

DOWNLOADED, CALIBER AND OR DATA MISSING

DOWN LOG USED: CALIPER AND SP DATA MISSING					
DATA INVALID IN TIGHT PULLS AND WASHOUTS					
Your Crew today: Mark Hoffman, Brent Westhoff					
THANK YOU FOR CHOOSING SCHLUMBERGER					
<div>RUN 1</div> <div>SERVICE ORDER #: 11352326</div> <div>PROGRAM VERSION: 13C0-300</div> <div>FLUID LEVEL:</div>			<div>RUN 2</div> <div>SERVICE ORDER #:</div> <div>PROGRAM VERSION:</div> <div>FLUID LEVEL:</div>		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
<div>SURFACE EQUIPMENT</div> <div>GSR-U/Y</div> <div>NCT-B</div> <div>CNB-AB</div> <div>NCS-VB</div> <div>WITM (DTS)-A</div>					
DOWNHOLE EQUIPMENT					
LEH-QT					
LEH-QT 2429			51.6		
DTC-H	CTEM		47.7	48.6	
ECH-KC	TelStatus				
DTCH0-A	ToolStatu		45.6		
DTCH1-A					
AH-NM			45.6		
AH-NM					
GPIT-C			41.6		
GPIC-C					
GPIH-B					
HILTB-FTB	HGNS HTEM		37.6	37.6	
HGNSD-B	HMCA		36.9		
HMCA	Gamma-Ray				
HGNH 940					
NLS-KL					
NSR-F 5068			31.1		
HACCZ	Neutron F				
HCNT	Neutron N		30.6		
HGR					
HRCC-B 1866					
HRMS-B 1929					
HRGD-B 1921					
GLS-VJ 1827	HGNS sens		28.2		
MCFL Device					
HILT Nucl. LS					
HILT Nucl. SS					
HILT Nucl. BS					
AIT-H 397	HRCC cart		24.2		
AHIS-BA 397					
AHRM-A					
NPV-N					
	MCFL		18.8		
	HILT cali		18.3		
	HRDD-LS				

HRDD-SS
HRDD-BS

17.9

Induction
Temperatu
Power Sup

7.9

SP SENSOR
GPIT HV DF
HTEN HMAS
Accelerom
Mud Resis
Tension

0.1

0.0

TOOL ZERO

MAXIMUM STRING DIAMETER 4.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Client: Kerr-Mcgee
Well: Barney 35-14
Field:
State: CO
Country: USA

Drawing Date9/9/2006
API #05-123-24141

Rig Name: Patterson 184
Reference Datum: Kelly Bushing
Elevation: 4930.0 ft

Production String	(in)		(ft)	Well Schematic	(ft)	(in)		Casing String
	OD	ID	MD		MD	OD	ID	
					0.0	8.625		Casing String, 24.0 lbm/ft
					630.0	8.625		Casing Shoe
					630.0	7.875		Borehole Segment

All Depths are
Drillers Depths

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7470.0

7.875

Borehole Segment Bottom

Schlumberger

UPPER MICROLOG 5" = 100'

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_030PUP	FN:28	PRODUCER	10-Sep-2006 07:01	6000.0 FT	3503.5 FT
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Output DLIS Files

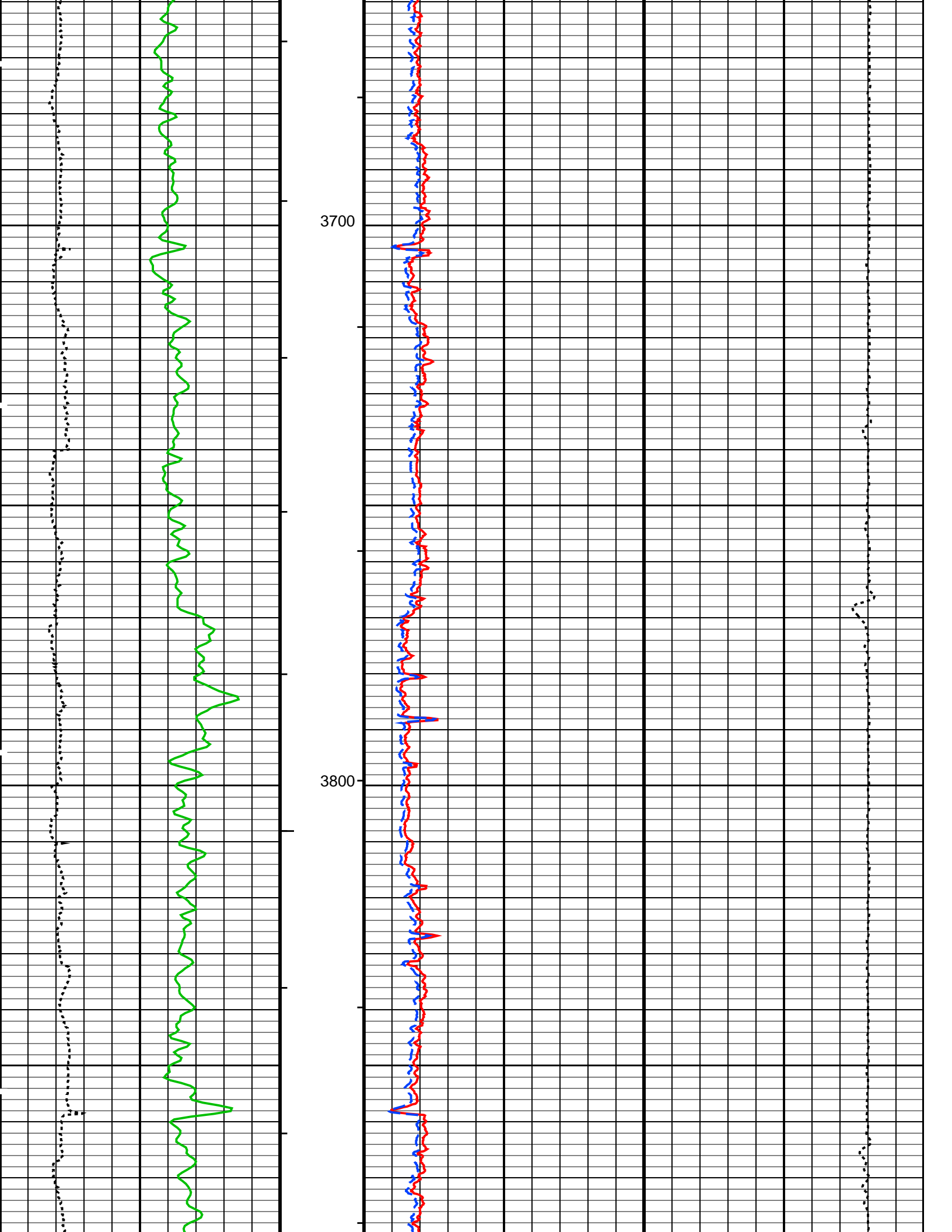
DEFAULT	AIT_TLD_MCFL_CNL_033PUP	FN:31	PRODUCER	10-Sep-2006 07:18	6000.0 FT	3507.5 FT
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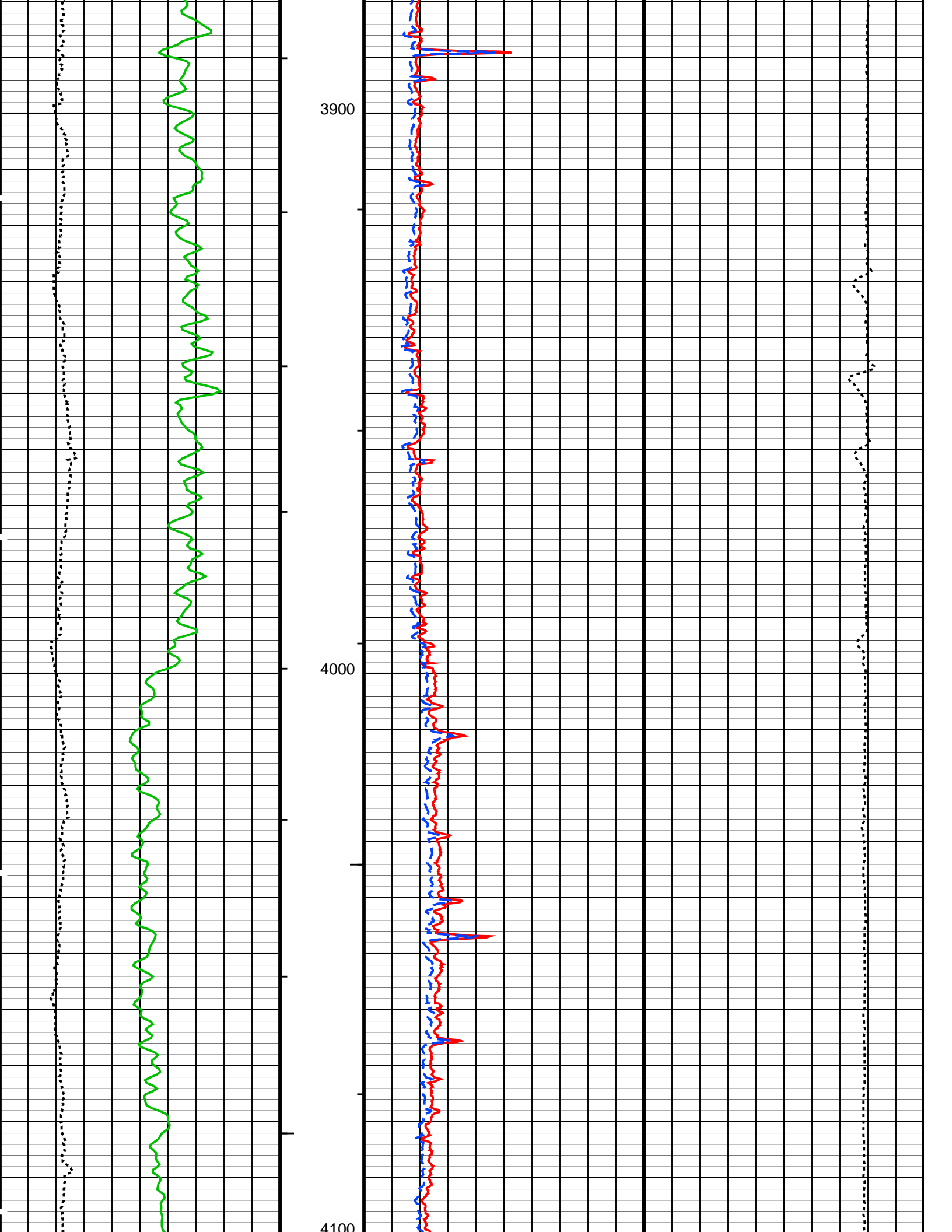
Integrated Hole/Cement Volume Summary

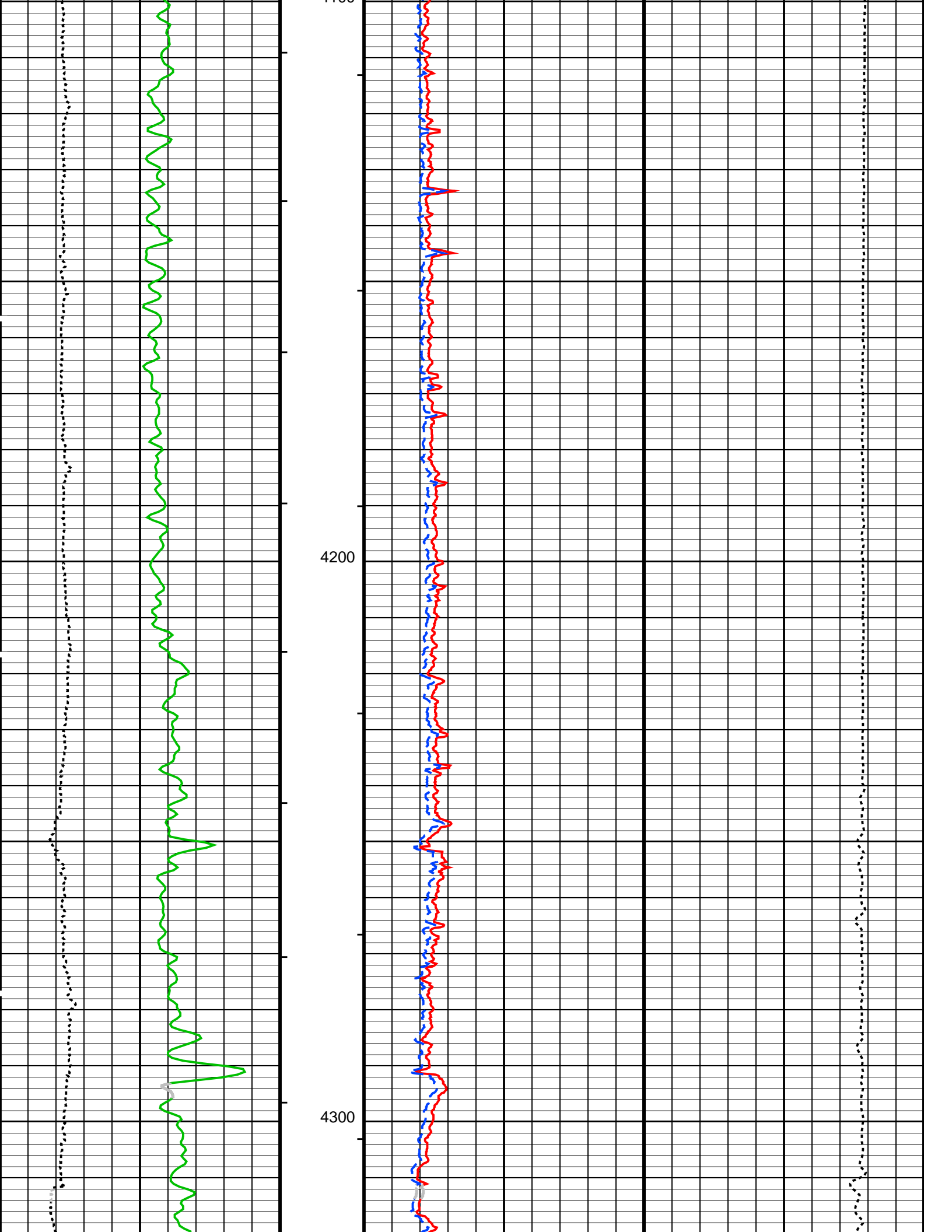
Hole Volume = 907.53 F3
Cement Volume = 632.26 F3 (assuming 4.50 IN casing O.D.)
Computed from 6000.0 FT to 3508.0 FT using data channel(s) HCAL

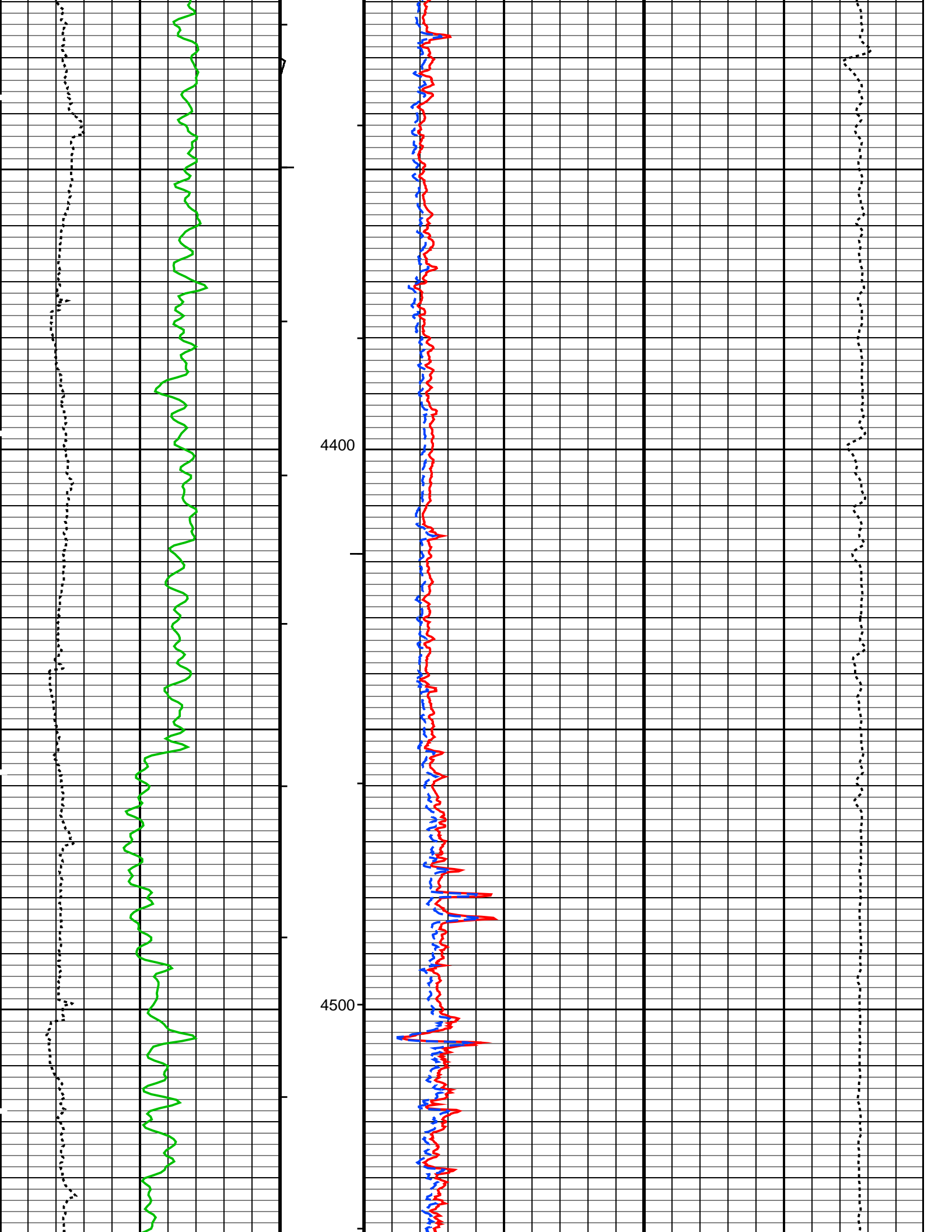
OP System Version: 13C0-300
MCM

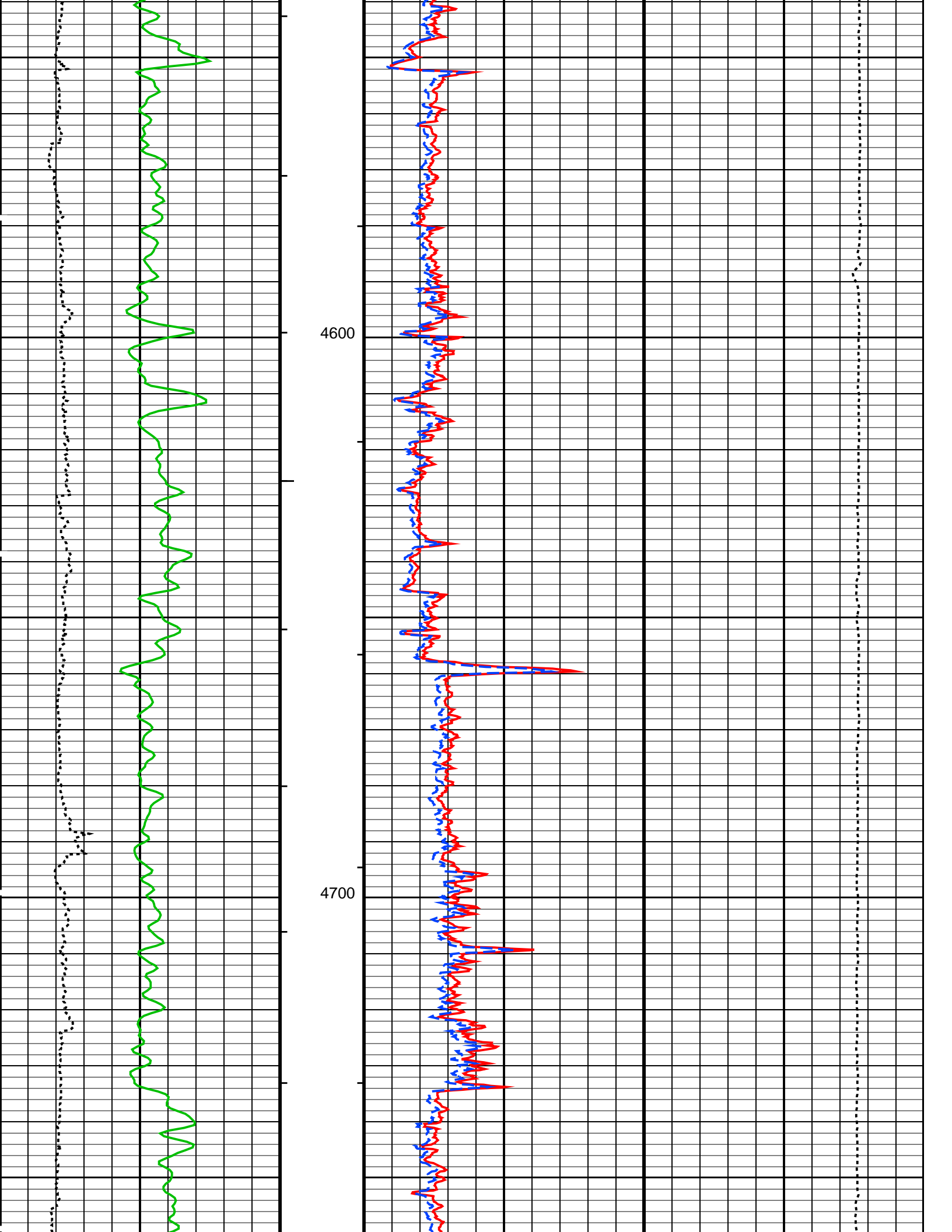
HILTB-FTB	SRPC-2788-HILT	GPIT-C	13C0-300
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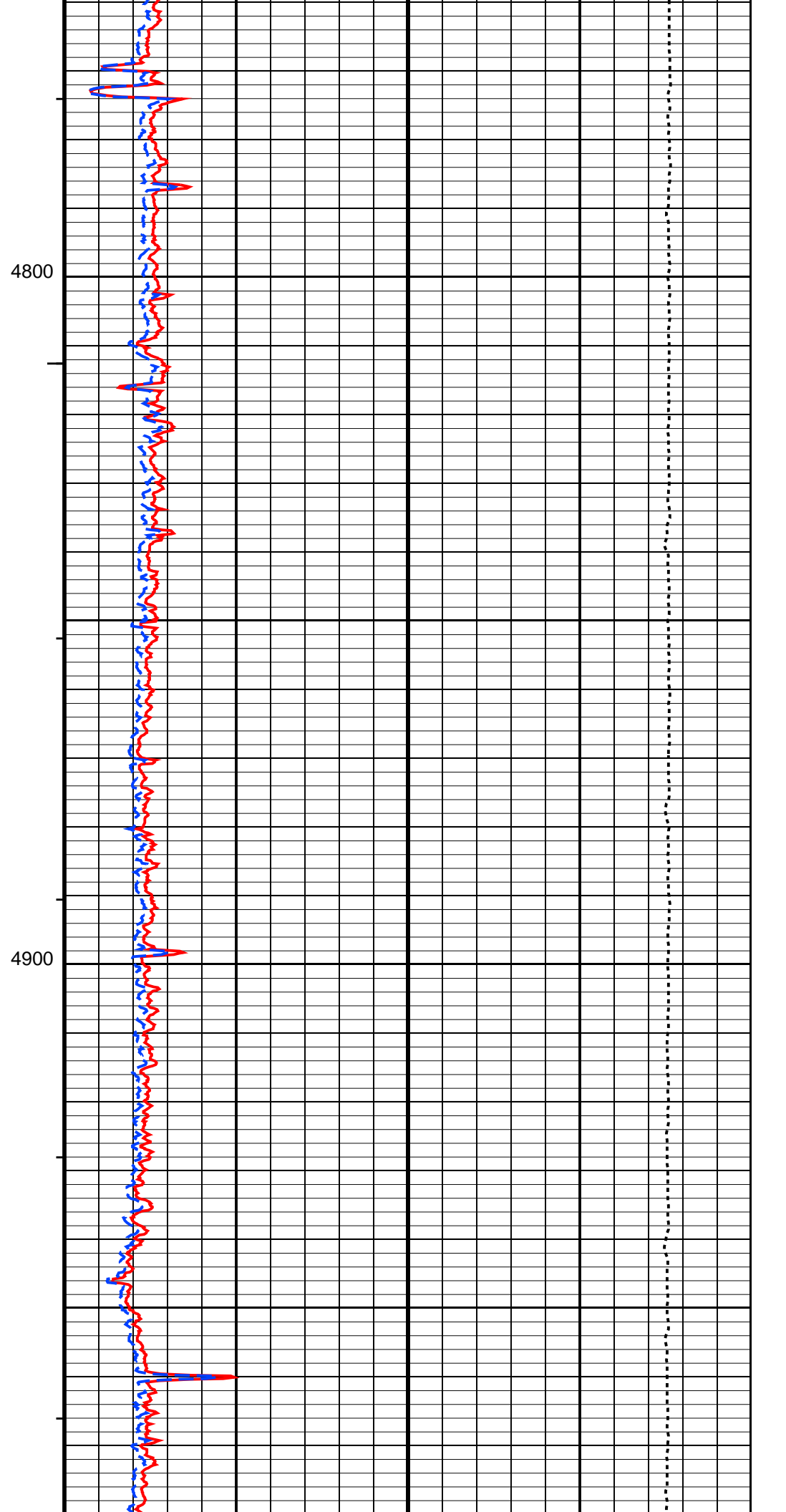
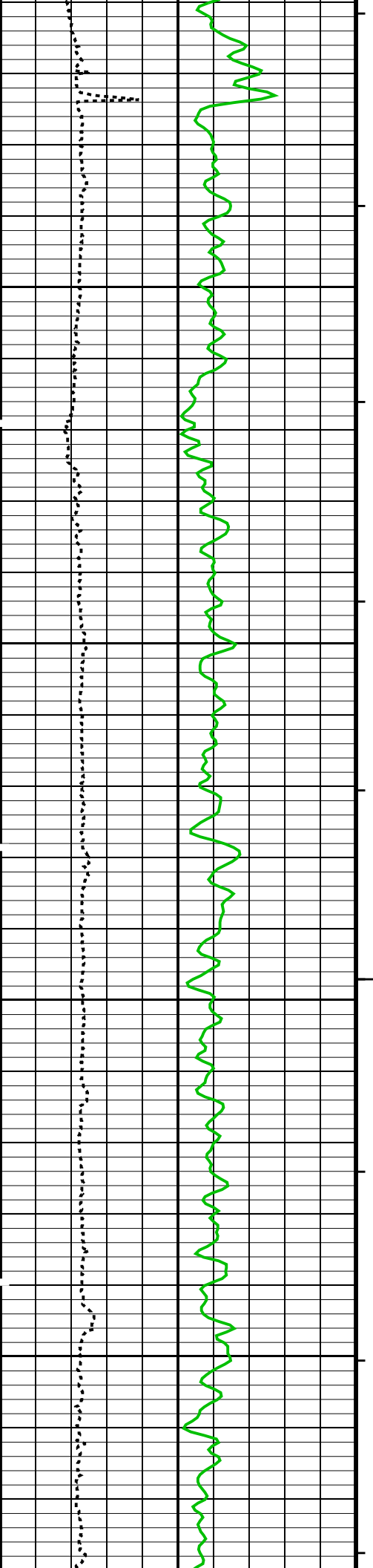


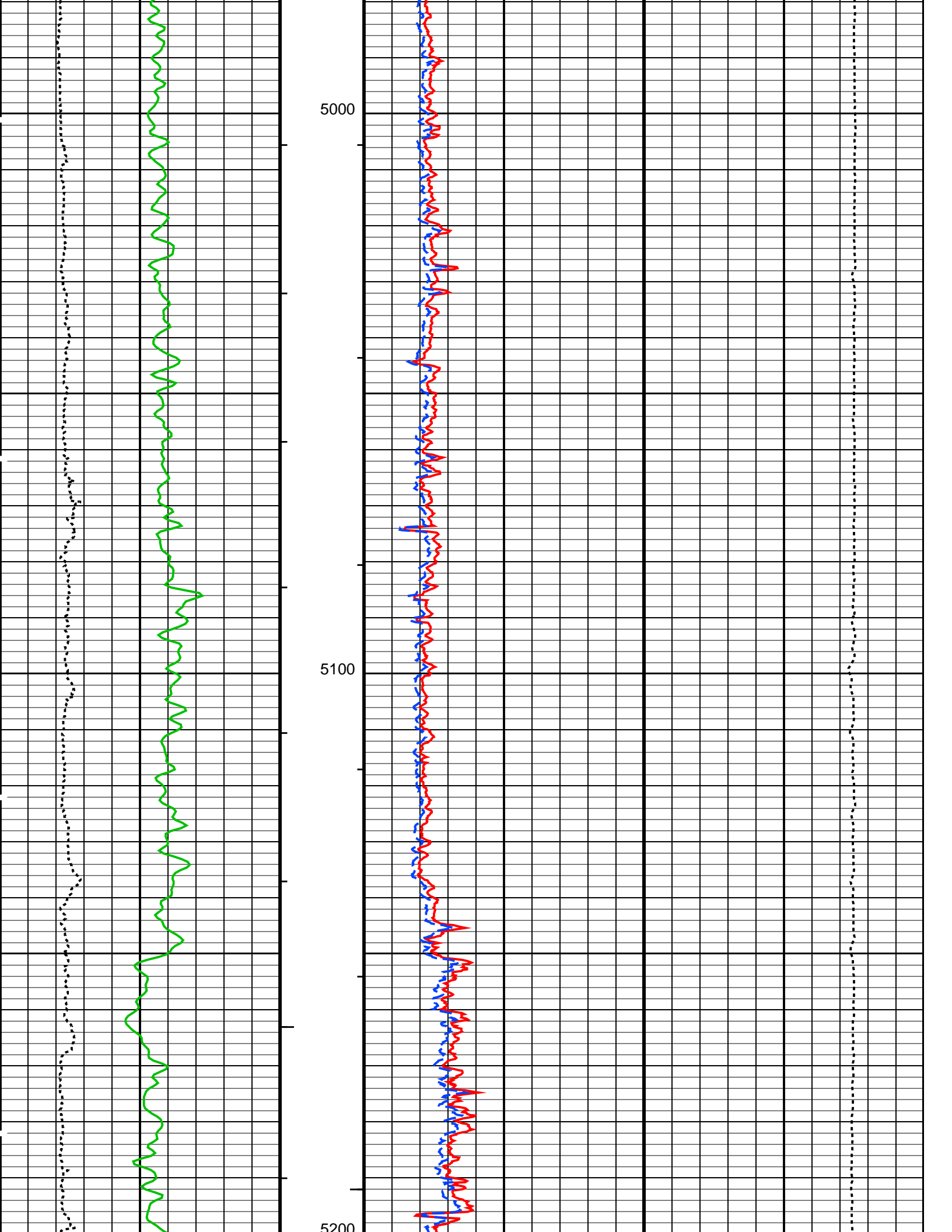


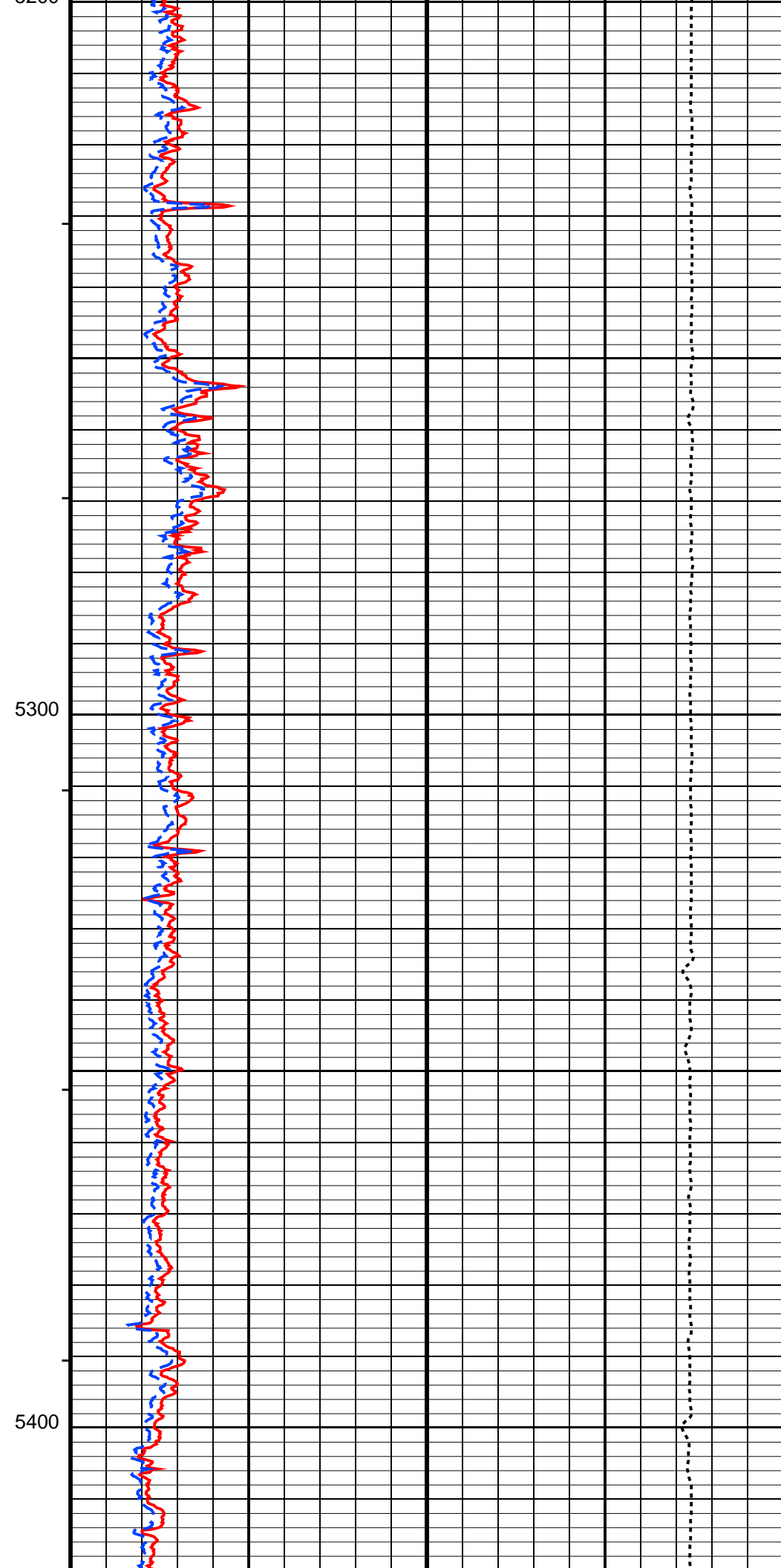
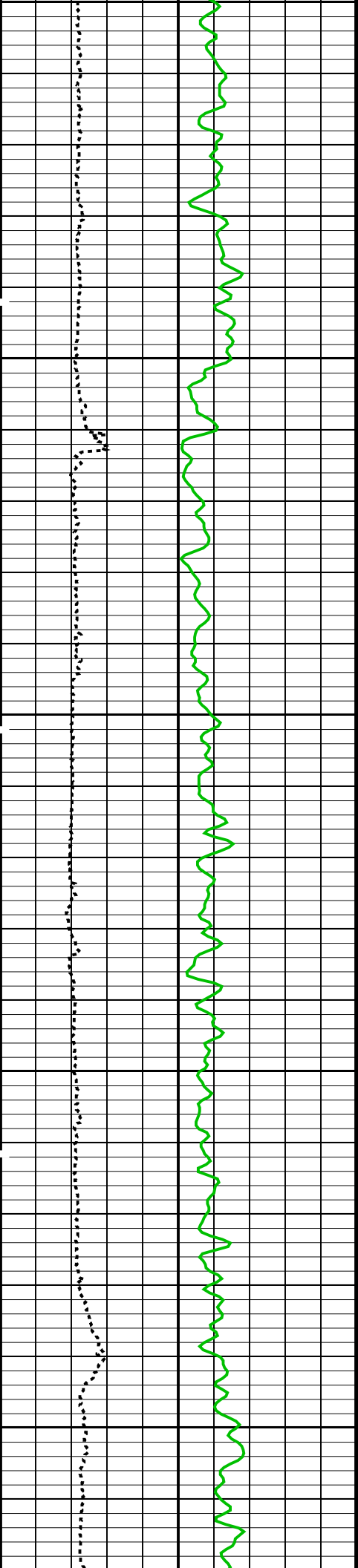


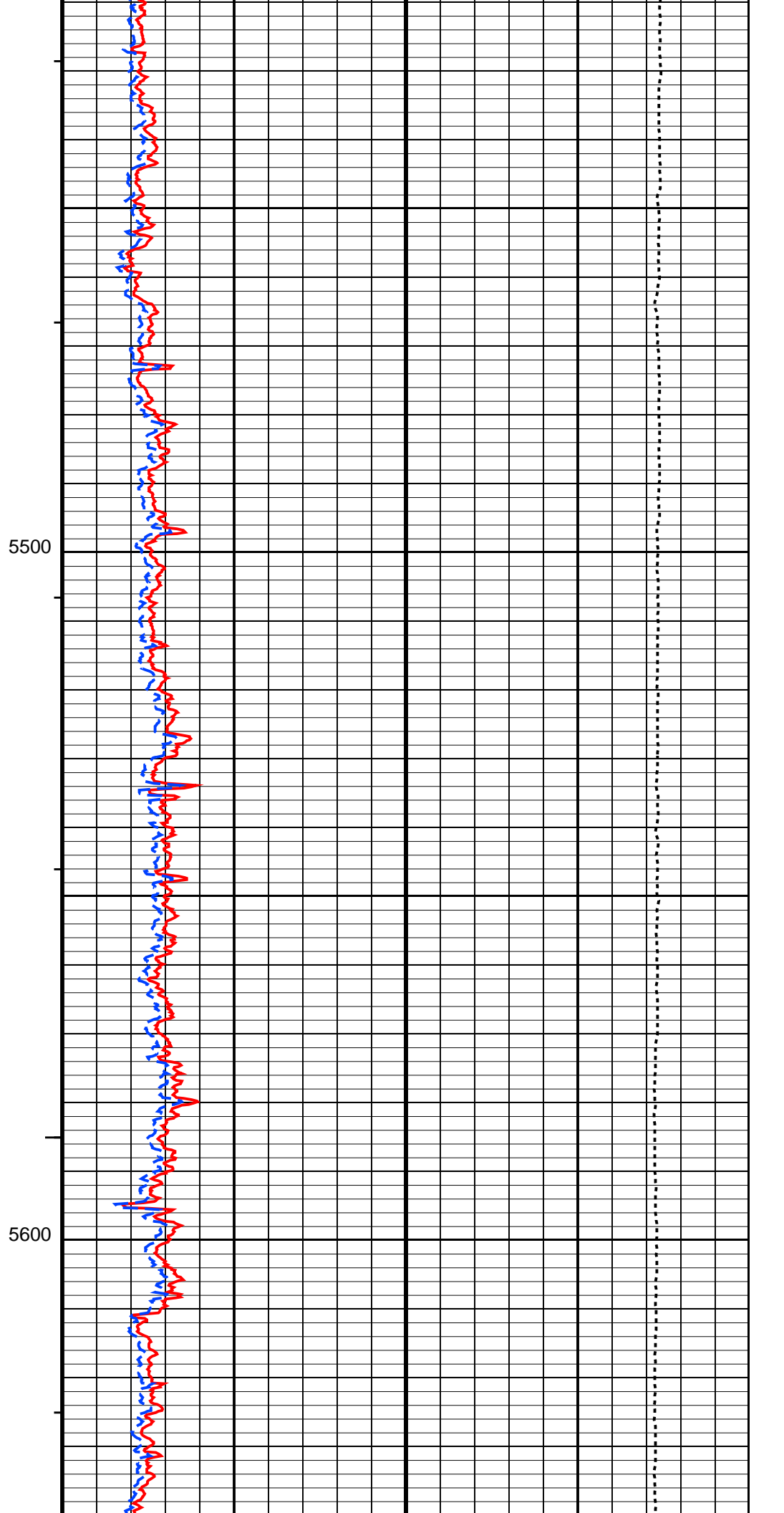
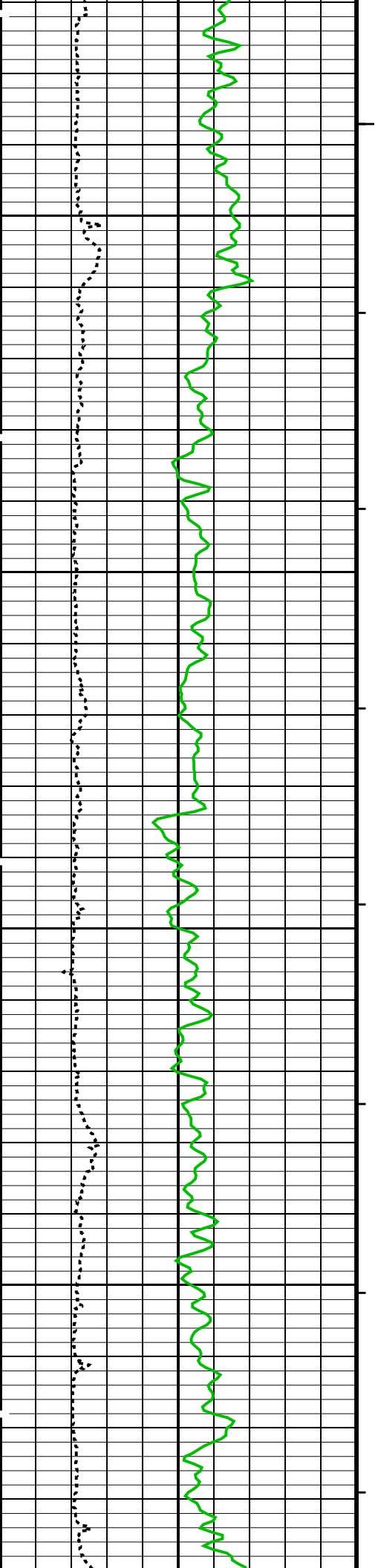


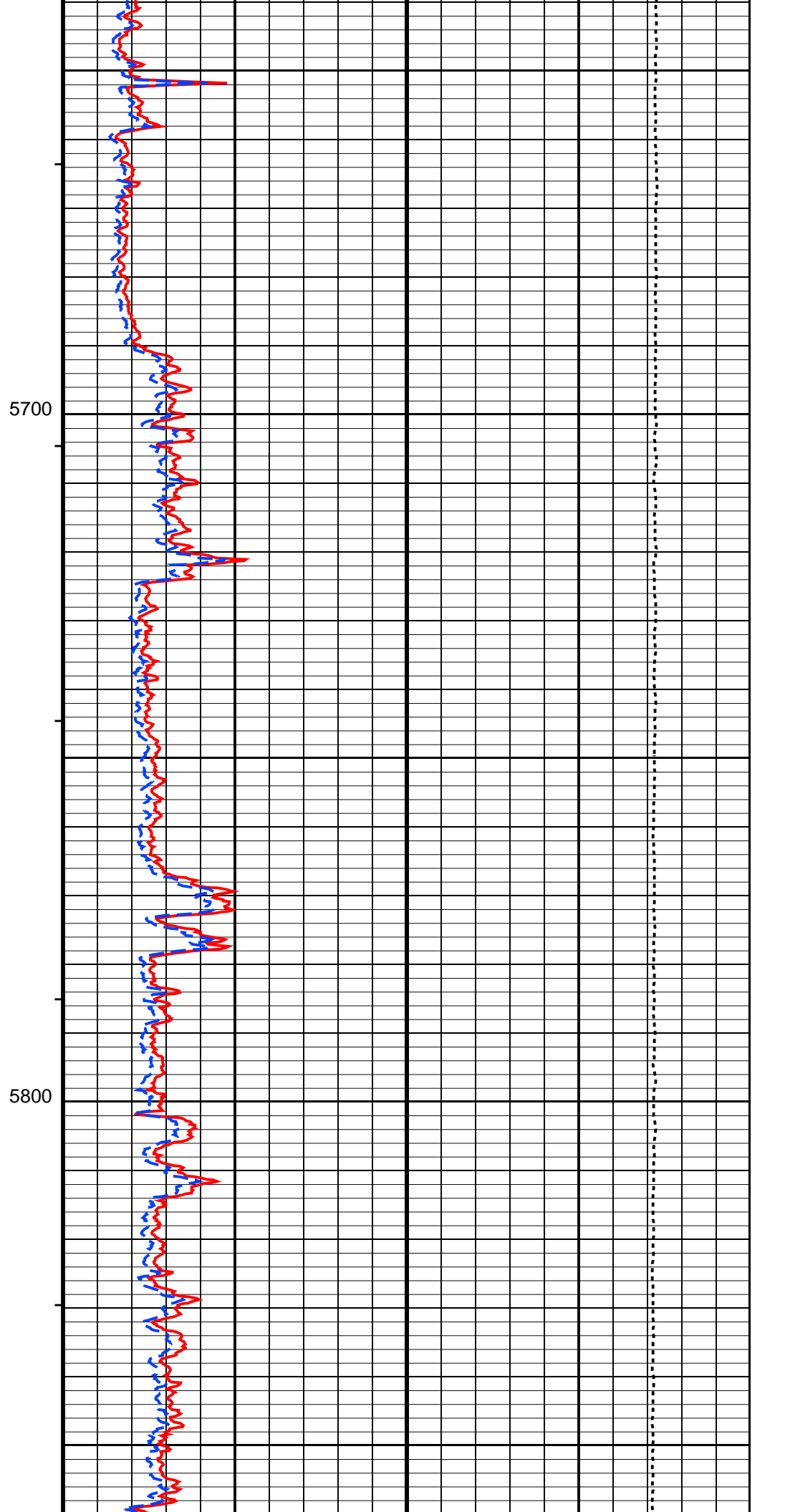
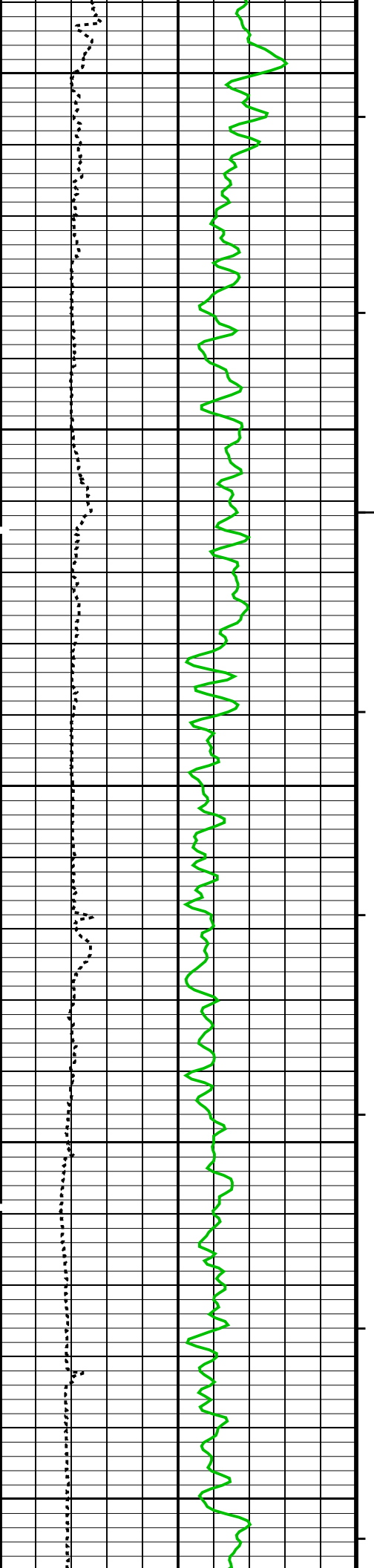


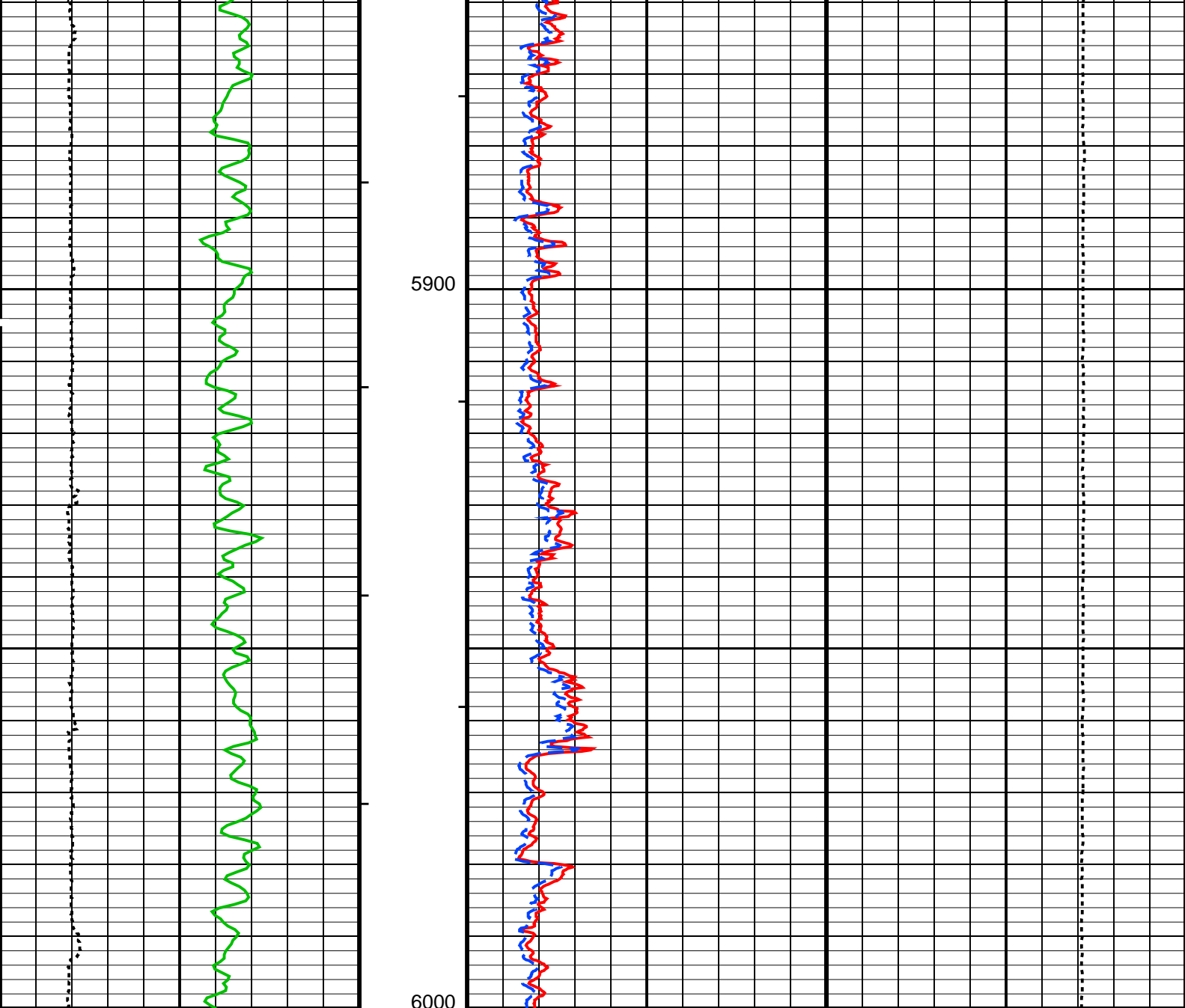












GR BACKUP

Gamma Ray (GR)
(GAPI)

Caliper (HCAL)
(IN)

0

200

6

16

Stuck
Stretch
(STIT)

(F) 50

Computed Micro Inverse (HMIN)
(OHMM)

Computed Micro Normal (HMNO)
(OHMM)

PERM

0

40

40

Tension (TENS)
(LBF)

10000 0

PIP SUMMARY

└ Integrated Hole Volume Minor Pip Every 10 F3

└ Integrated Hole Volume Major Pip Every 100 F3

└ Integrated Cement Volume Minor Pip Every 10 F3


└ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters		
DLIS Name	Description	Value
HLL TB, FTR: High resolution Integrated Logging Tool, DTS		

MPOF	HILTB-FTB: High resolution Integrated Logging Tool-DTS	MCFL Processing Operation Mode	ON	
	DIR: Directional Survey Computation			
SPVD		TVD of Starting Point	0	FT
TIMD		Along-hole depth of Tie-in Point	0	FT
TIVD		TVD of Tie-in Point	0	FT
	HOLEV: Integrated Hole/Cement Volume			
FCD		Future Casing (Outer) Diameter	4.5	IN
HVCS		Integrated Hole Volume Caliper Selection	HCAL	
	STI: Stuck Tool Indicator			
LBFR		Trigger for MAXIS First Reading Label	TDL	
STKT		STI Stuck Threshold	2.5	FT
TDD		Total Depth – Driller	7670.00	FT
TDL		Total Depth – Logger	7676.00	FT
	System and Miscellaneous			
BS		Bit Size	7.875	IN
DO		Depth Offset for Playback	0.0	FT
PP		Playback Processing	NORMAL	
TD		Total Depth	7676	FT
Format: MLT		Vertical Scale: 5" per 100'		Graphics File Created: 10-Sep-2006 07:18

OP System Version: 13C0-300						
MCM						
HILTB-FTB DTC-H	SRPC-2788-HILT 13C0-300	GPIT-C		13C0-300		
Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_030PUP	FN:28	PRODUCER	10-Sep-2006 07:01	6000.0 FT	3503.5 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_033PUP	FN:31	PRODUCER	10-Sep-2006 07:18		

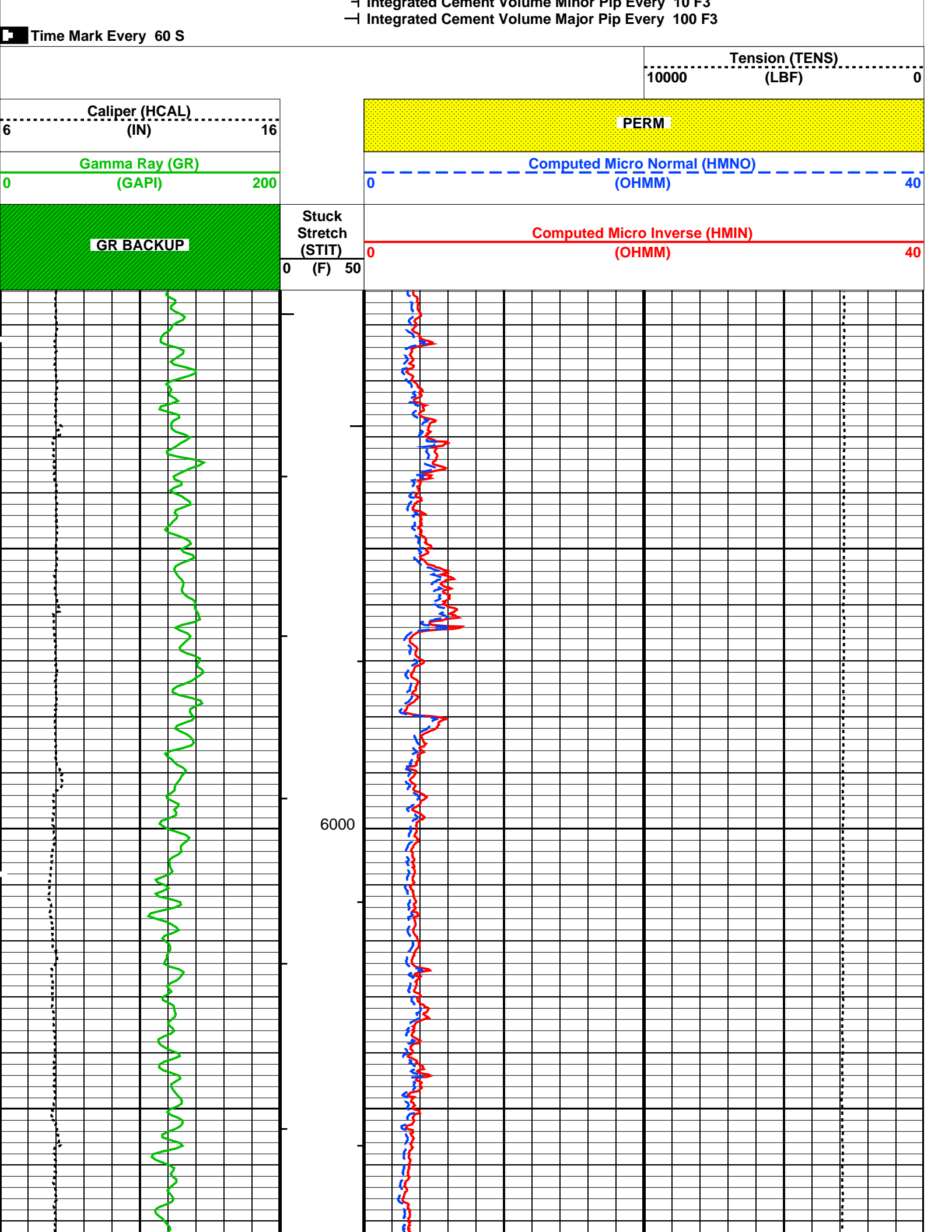


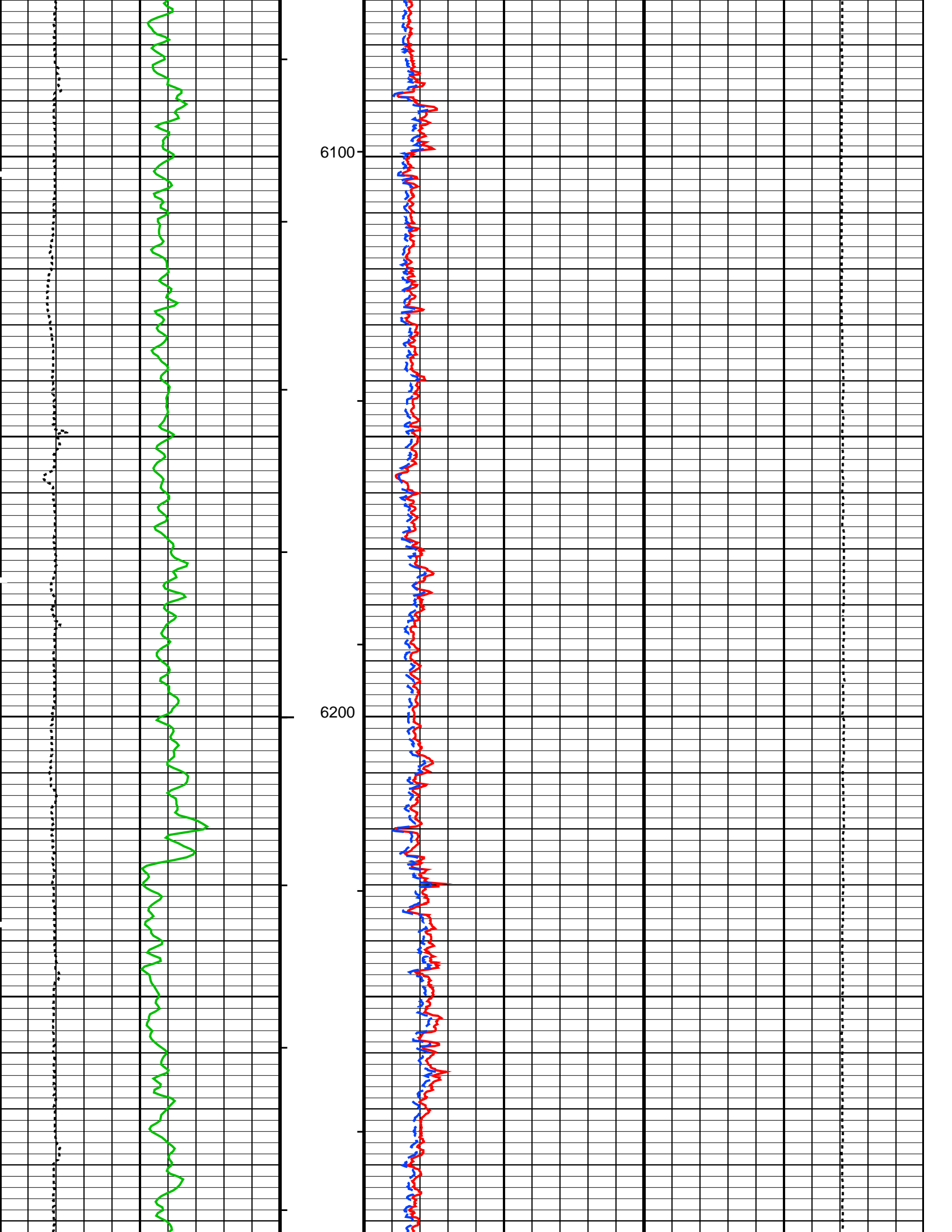
MAIN MICROLOG 5" = 100'

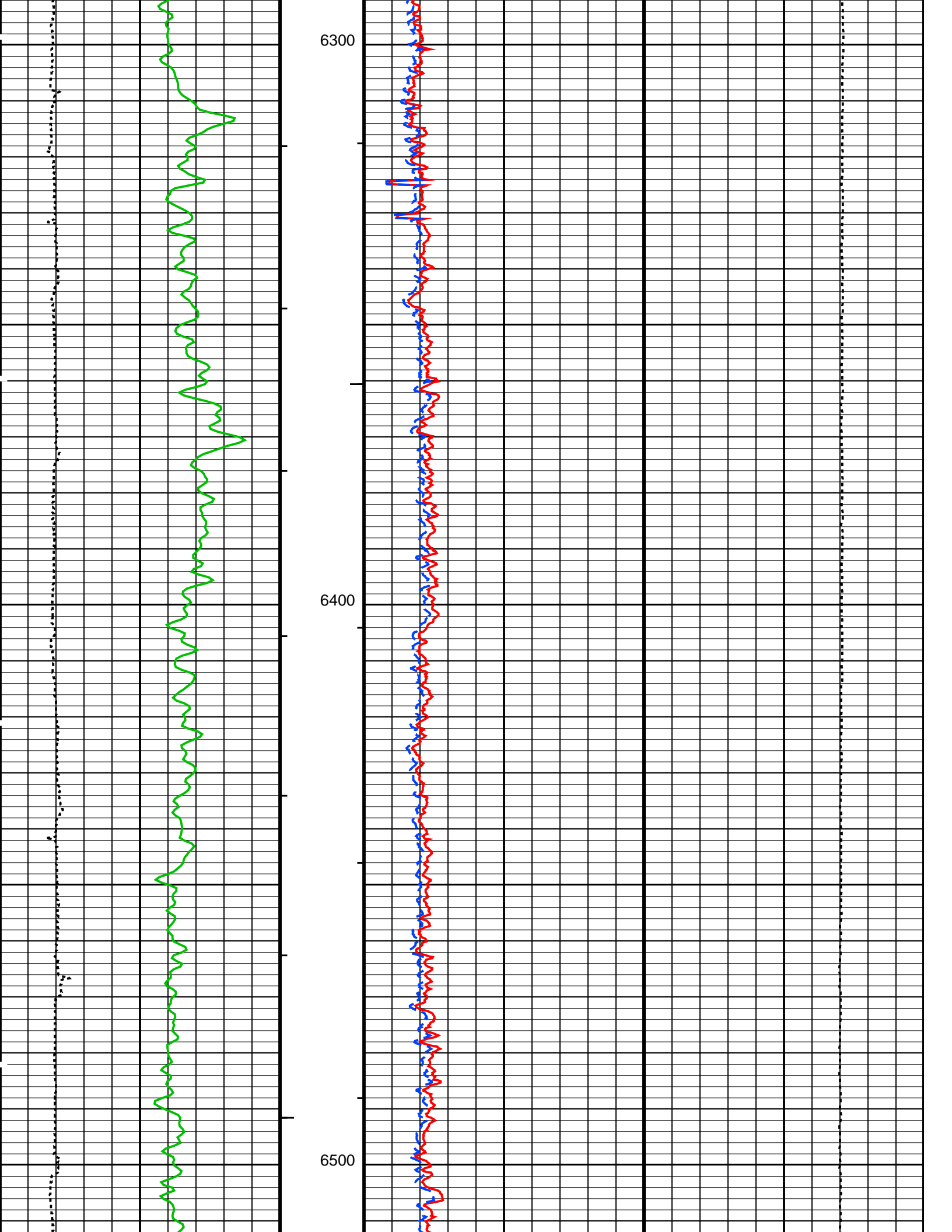
MAXIS Field Log

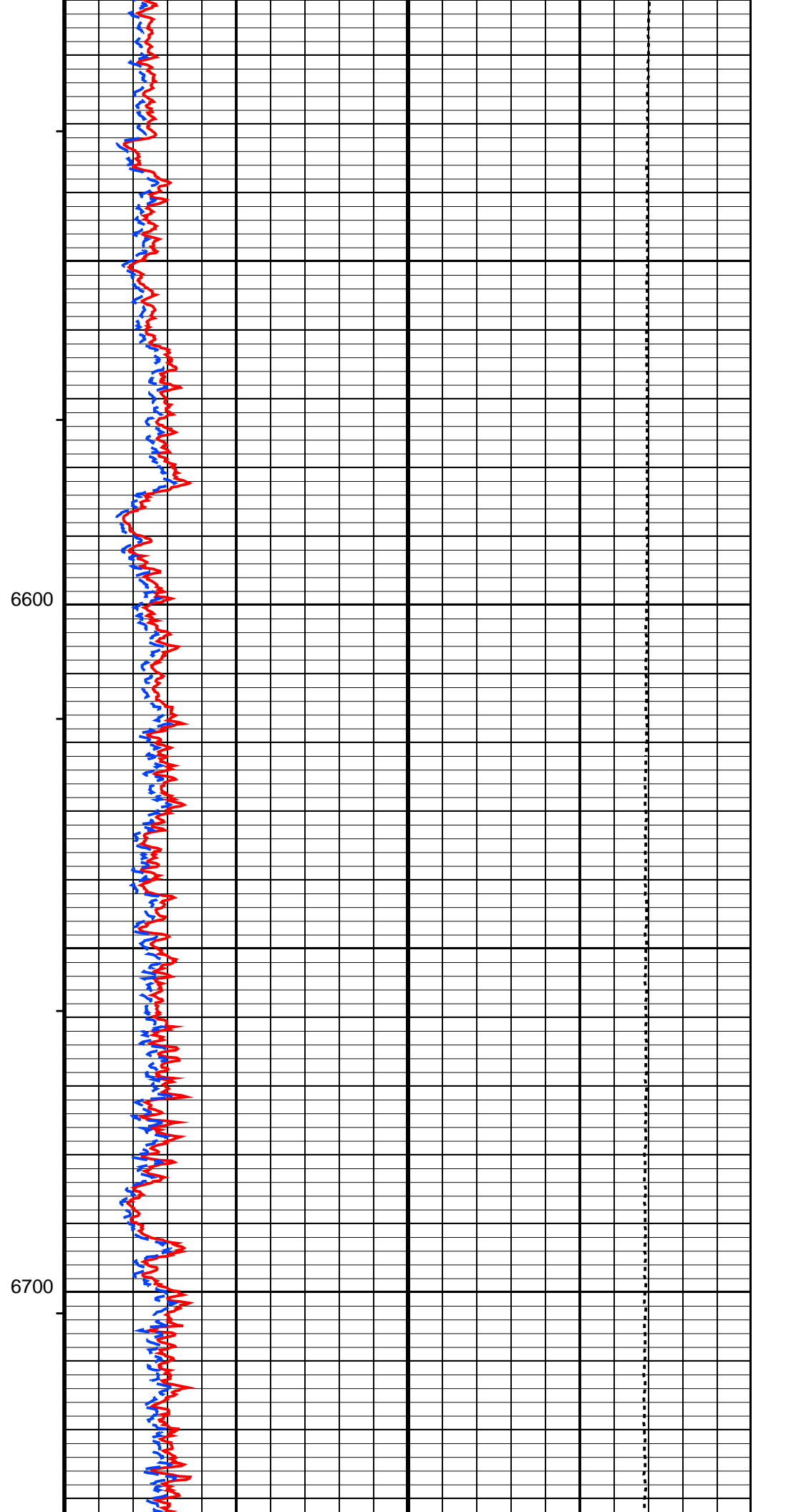
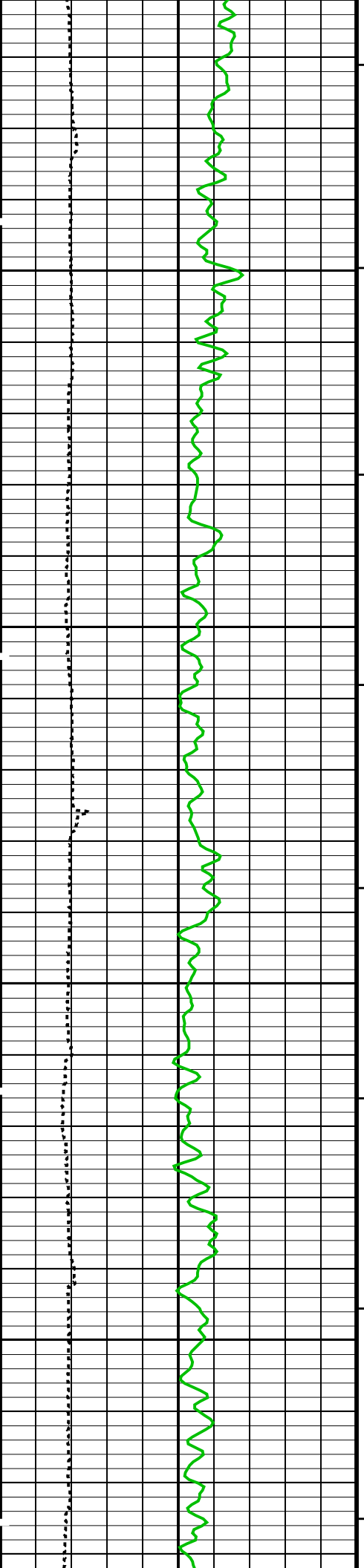
Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_015LUP	FN:14	PRODUCER	10-Sep-2006 04:31	7692.0 FT	3248.5 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_029PUP	FN:27	PRODUCER	10-Sep-2006 06:47	7694.0 FT	5903.5 FT
Integrated Hole/Cement Volume Summary						
Hole Volume = 601.42 F3						
Cement Volume = 405.67 F3 (assuming 4.50 IN casing O.D.)						
Computed from 7676.0 FT to 5904.0 FT using data channel(s) HCAL						
OP System Version: 13C0-300						
MCM						
HILTB-FTB	SRPC-2788-HILT		GPIT-C	13C0-300		
DTC-H	13C0-300					

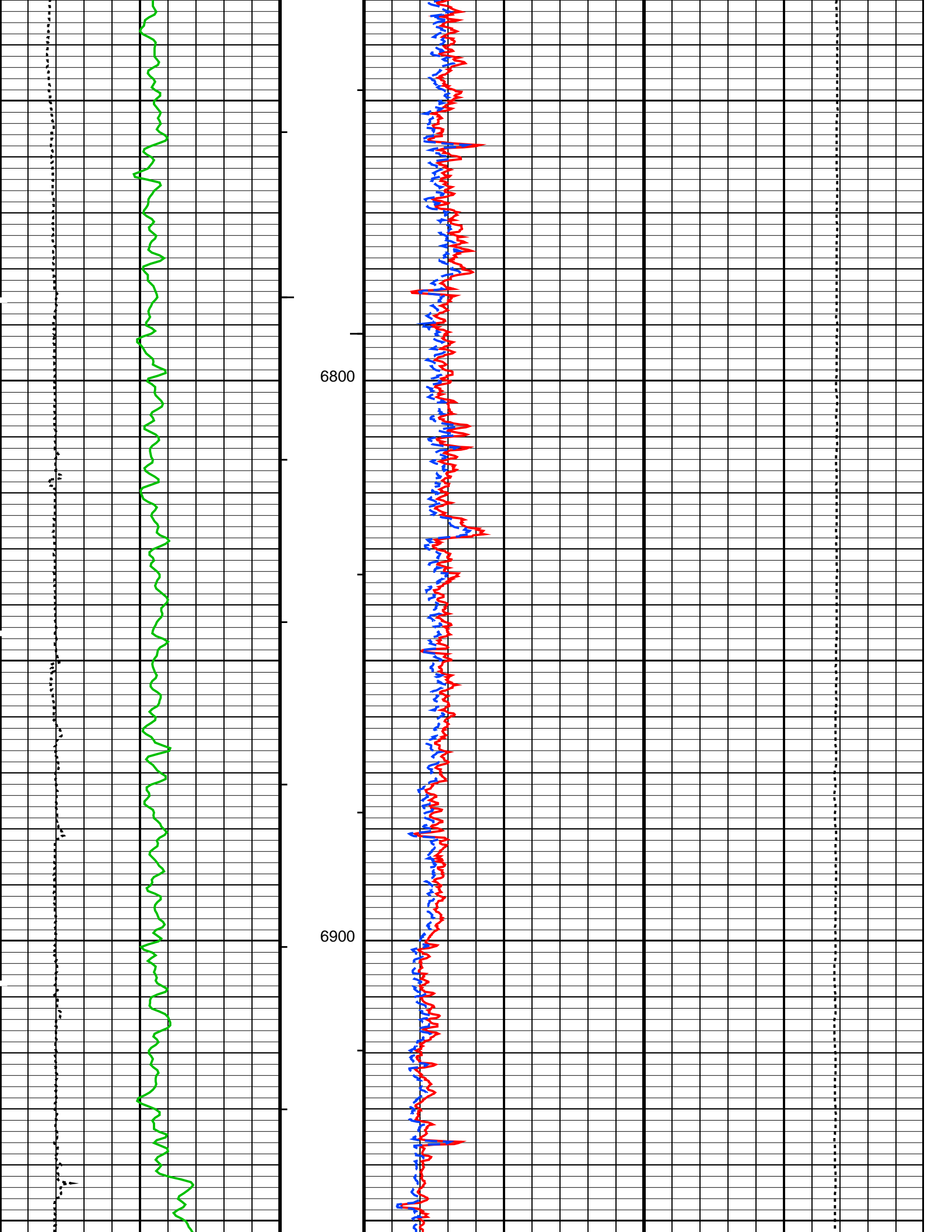
PIP SUMMARY					
└ Integrated Hole Volume Minor Pip Every 10 F3					
└ Integrated Hole Volume Major Pip Every 100 F3					
└ Integrated Cement Volume Minor Pip Every 10 F3					

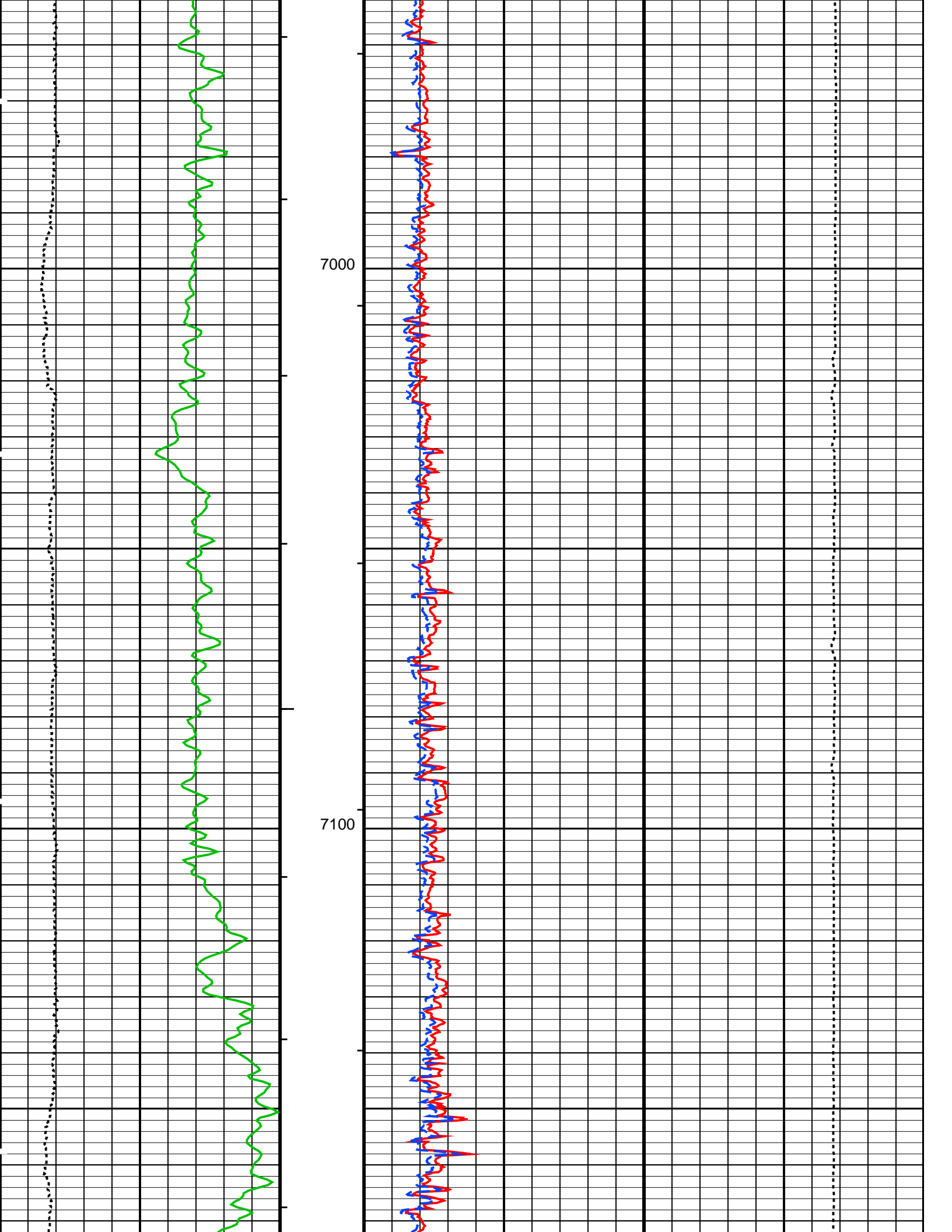


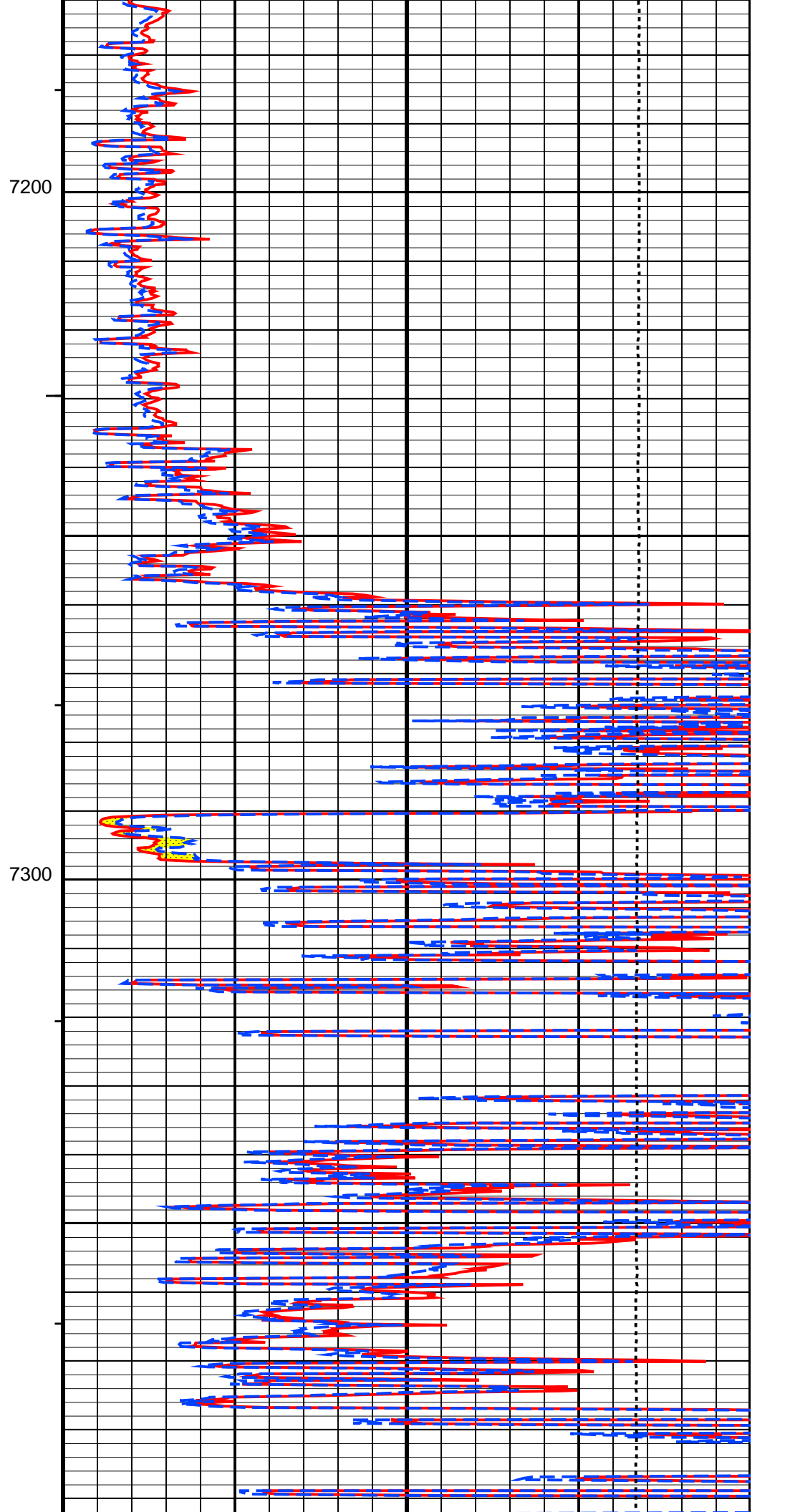
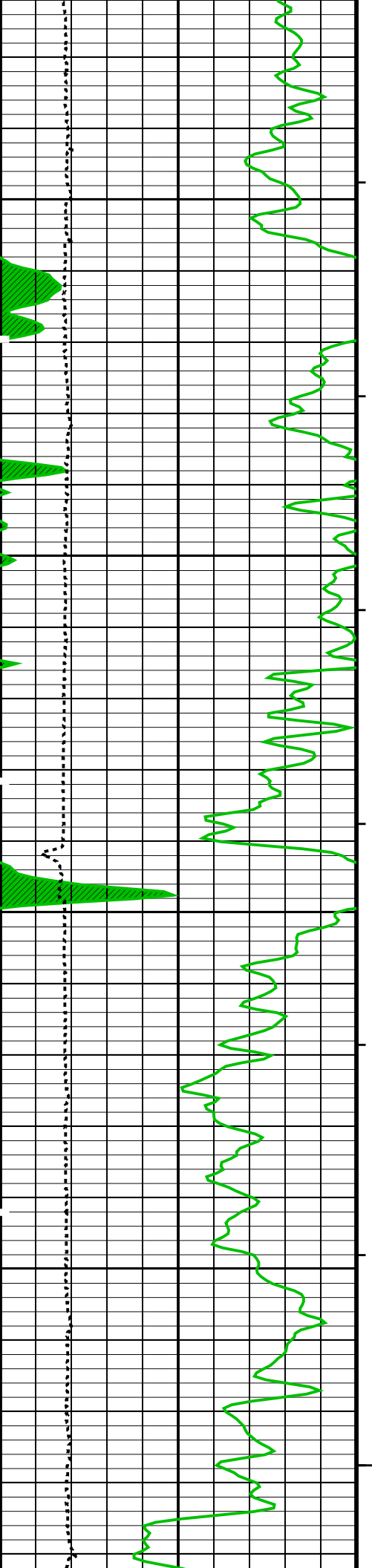


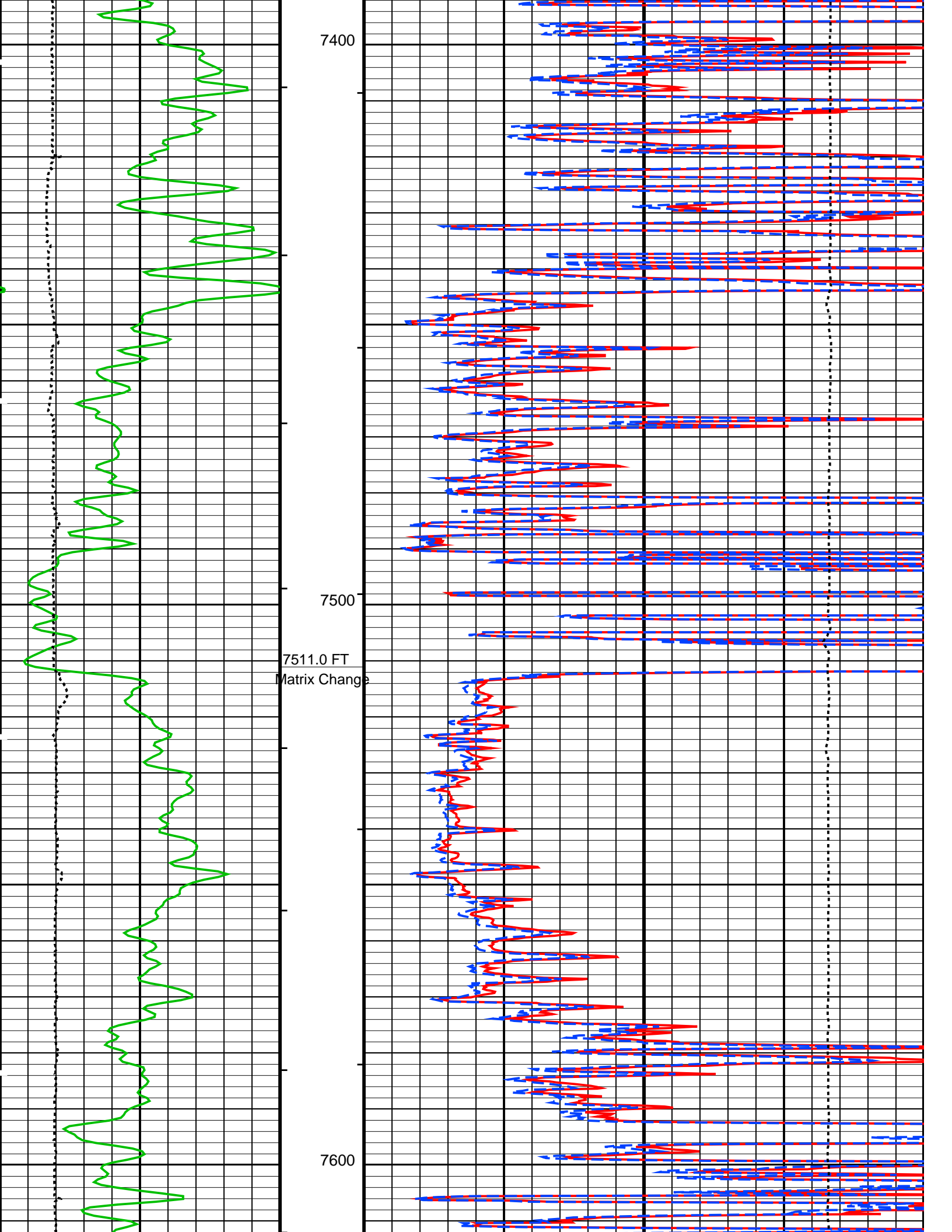


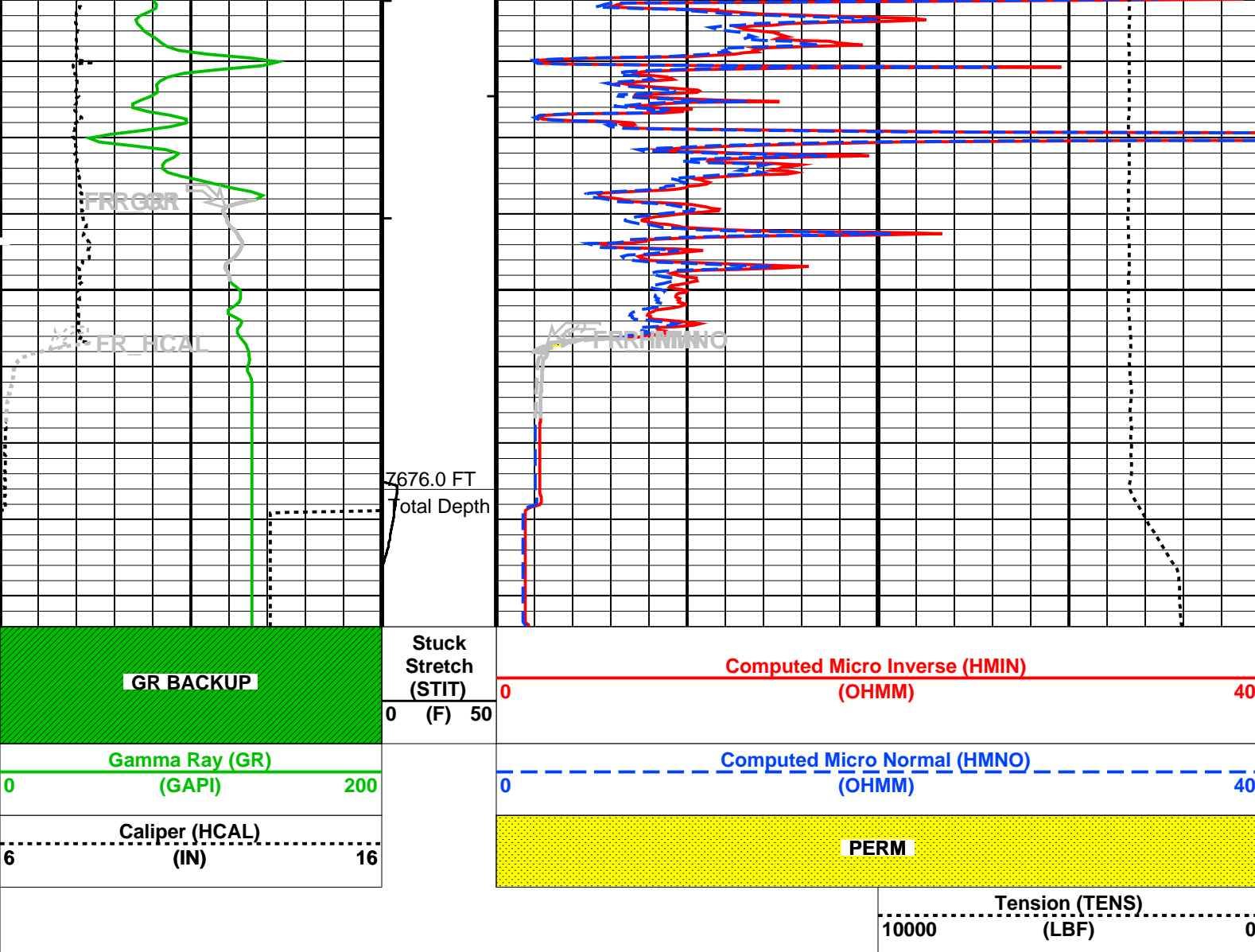












PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
MPOF	HILTB-FTB: High resolution Integrated Logging Tool-DTS MCFL Processing Operation Mode	ON	
DIR	Directional Survey Computation		
SPVD	TVD of Starting Point	0	FT
TIMD	Along-hole depth of Tie-in Point	0	FT
TIVD	TVD of Tie-in Point	0	FT
HOLEV	Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	4.5	IN
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
STI	Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	7670.00	FT
TDL	Total Depth - Logger	7676.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
DO	Depth Offset for Playback	2.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	7676	FT

OP System Version: 13C0-300

MCM

HILTB-FTB
DTC-H

SRPC-2788-HILT
13C0-300

GPIT-C

13C0-300

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_015LUP	FN:14	PRODUCER	10-Sep-2006 04:31	7692.0 FT	3248.5 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_029PUP	FN:27	PRODUCER	10-Sep-2006 06:47
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Schlumberger

REPEAT ANALYSIS

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_015LUP	FN:14	PRODUCER	10-Sep-2006 04:31	7692.0 FT	3248.5 FT
DEFAULT	AIT_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	10-Sep-2006 04:30	7700.0 FT	7145.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_029PUP	FN:27	PRODUCER	10-Sep-2006 06:47
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OP System Version: 13C0-300

MCM

HILTB-FTB
DTC-H

SRPC-2788-HILT
13C0-300

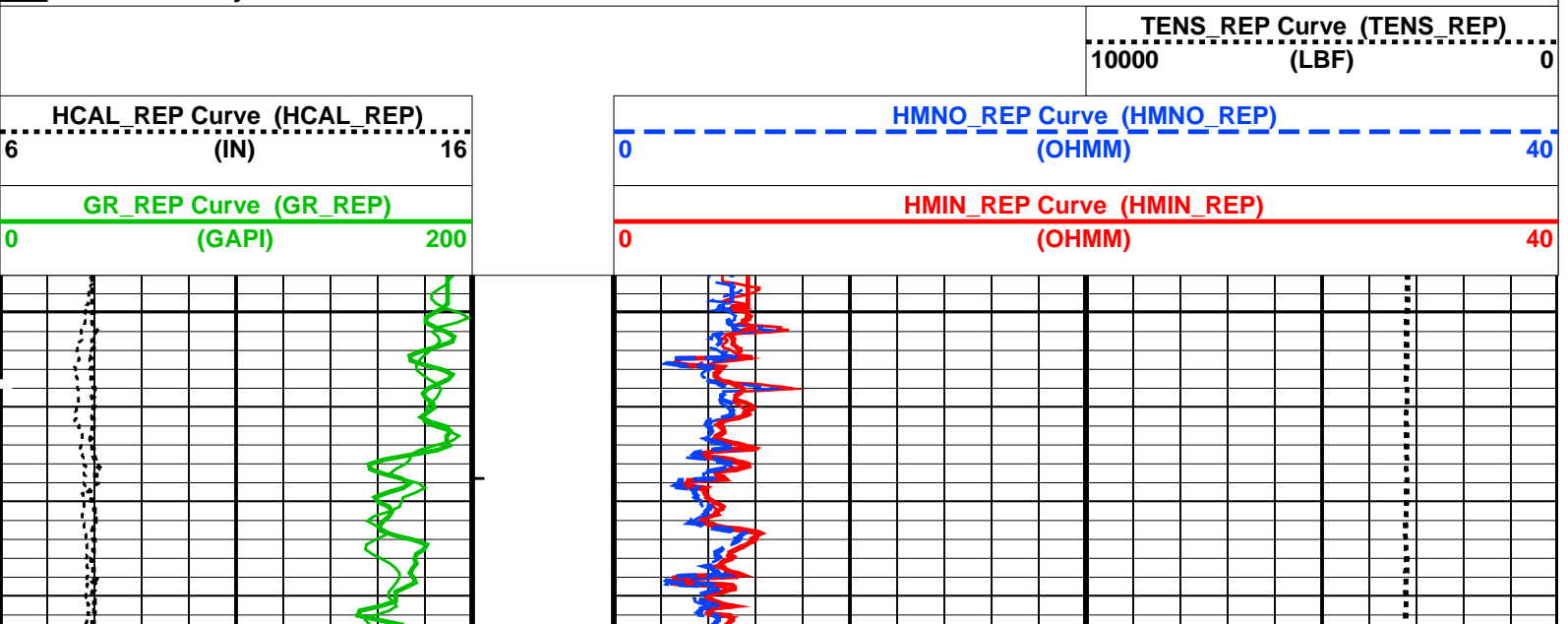
GPIT-C

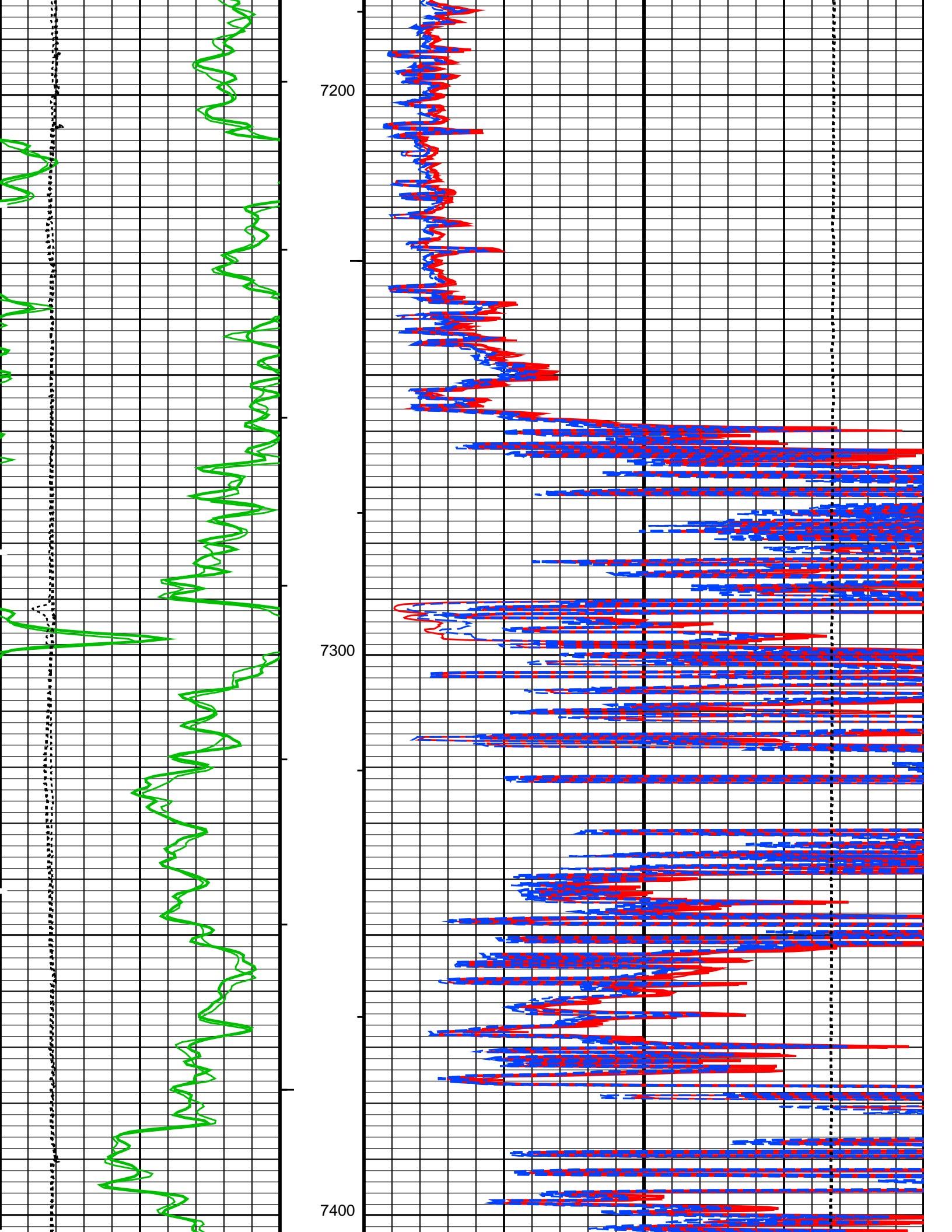
13C0-300

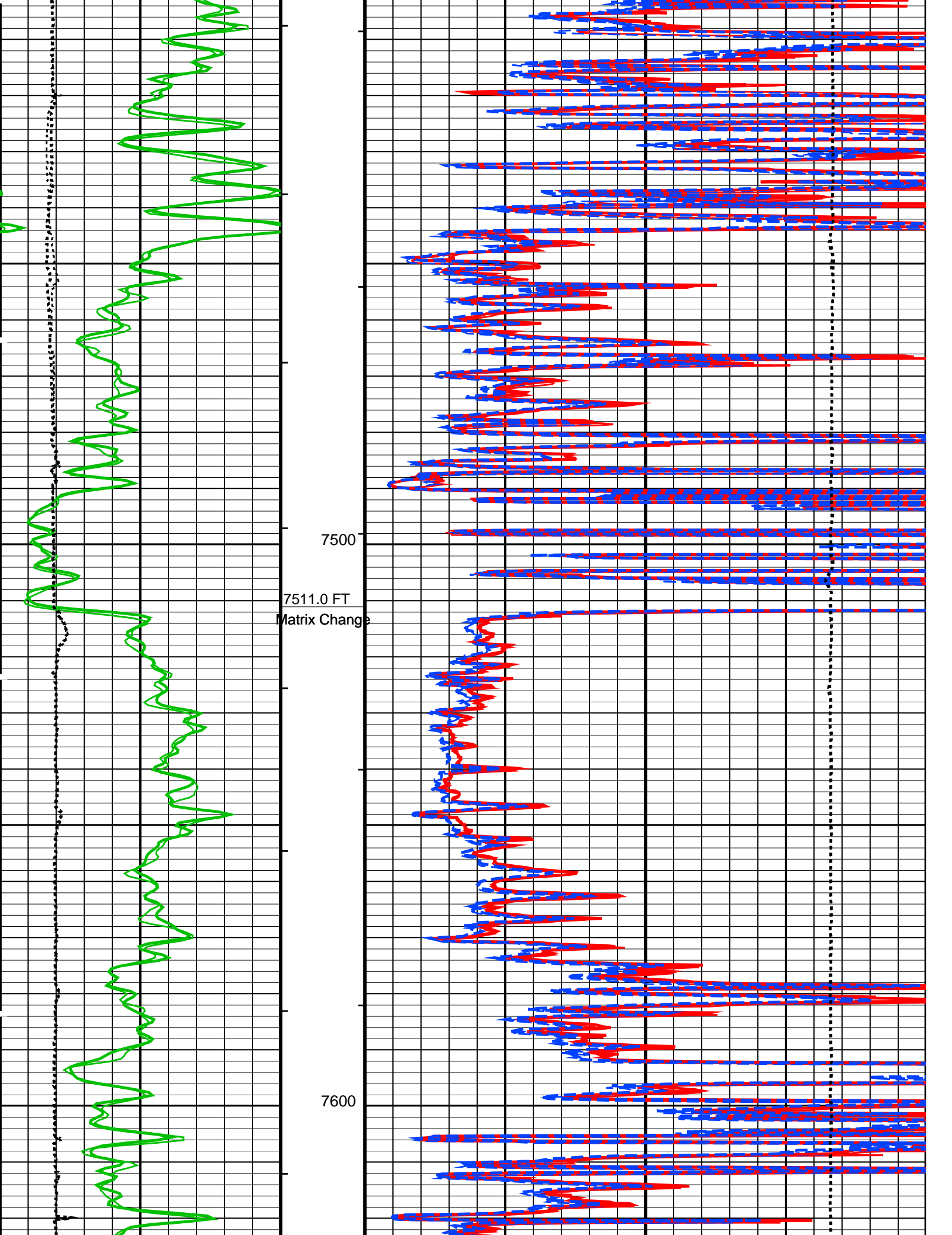
PIP SUMMARY

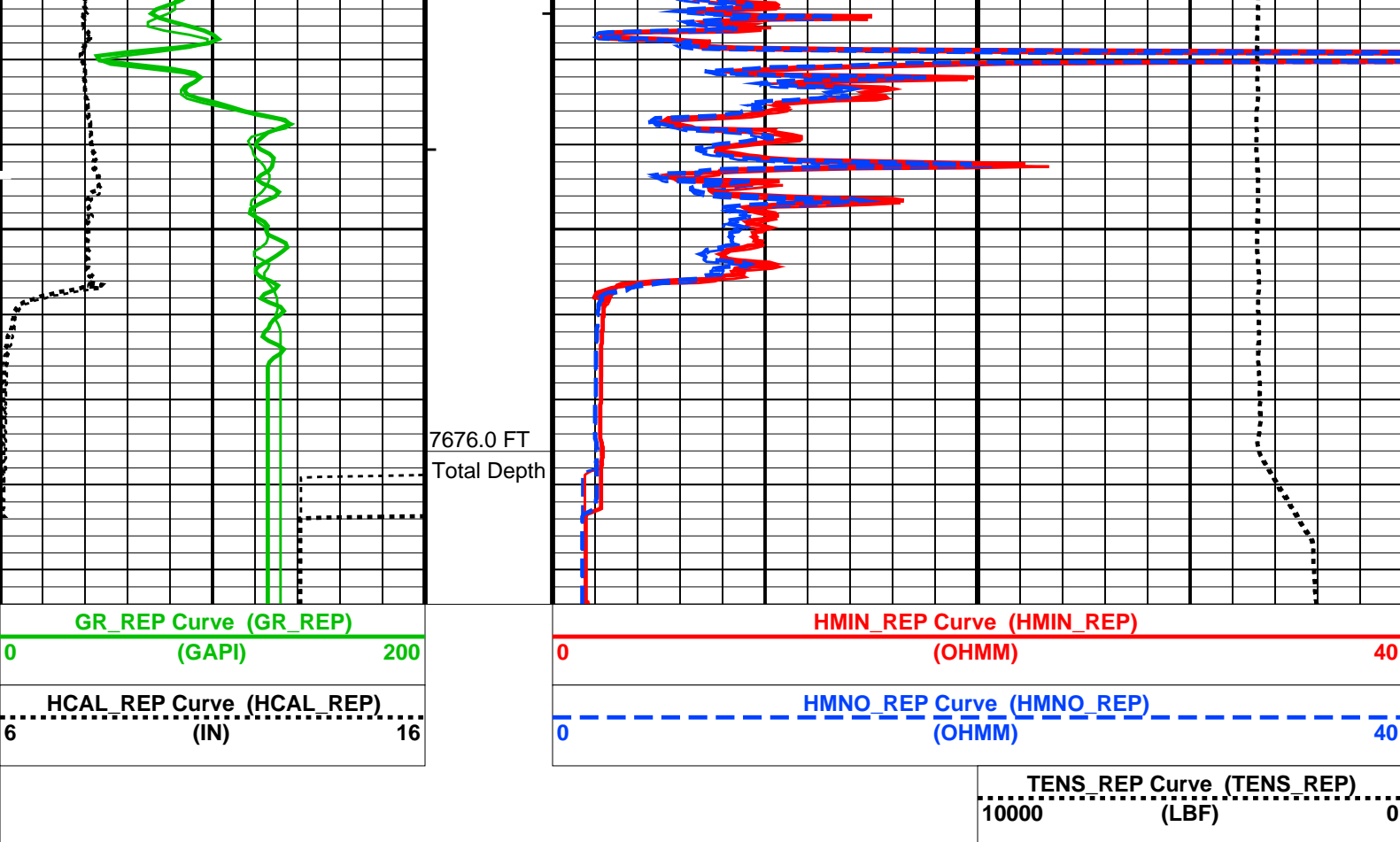
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S









PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
MPOF	HILTB-FTB: High resolution Integrated Logging Tool-DTS MCFL Processing Operation Mode	ON	
DIR	Directional Survey Computation		
SPVD	TVD of Starting Point	0	FT
TIMD	Along-hole depth of Tie-in Point	0	FT
TIVD	TVD of Tie-in Point	0	FT
HOLEV	Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	4.5	IN
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
	System and Miscellaneous		
BS	Bit Size	7.875	IN
DO	Depth Offset for Playback	2.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	NORMAL	
TD	Total Depth	7676	FT

Format: MLT_REP Vertical Scale: 5" per 100'

Graphics File Created: 10-Sep-2006 06:47

OP System Version: 13C0-300 MCM

HILTB-FTB SRPC-2788-HILT GPIT-C 13C0-300
DTC-H 13C0-300

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_015LUP	FN:14	PRODUCER	10-Sep-2006 04:31	7692.0 FT	3248.5 FT
DEFAULT	AIT_TLD_MCFL_CNL_014PUP	FN:13	PRODUCER	10-Sep-2006 04:30	7700.0 FT	7145.5 FT

Output DLIS Files



BEFORE CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary							
Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase							
Master: 4-Aug-2006 15:08 Before: 9-Sep-2006 19:49							
Thru Cal Magnitude – 0	0	0.6339	0.6354	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.301	1.304	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6445	0.6456	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7284	0.7303	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.361	1.365	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.969	1.975	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.972	1.978	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.380	1.390	N/A	N/A	N/A	V
Phase – 0	0	68.81	69.84	N/A	N/A	N/A	DEG
Phase – 1	0	67.81	68.85	N/A	N/A	N/A	DEG
Phase – 2	0	63.70	64.79	N/A	N/A	N/A	DEG
Phase – 3	0	62.83	63.93	N/A	N/A	N/A	DEG
Phase – 4	0	56.03	57.20	N/A	N/A	N/A	DEG
Phase – 5	0	53.82	55.08	N/A	N/A	N/A	DEG
Phase – 6	0	53.79	55.05	N/A	N/A	N/A	DEG
Phase – 7	0	47.88	49.68	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Electronics Calibration Check – Auxilliary							
Master: 4-Aug-2006 15:08 Before: 9-Sep-2006 19:49							
Array Induction SPA Plus	990.5		991.9	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.2051	-0.2051	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9196	0.9187	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0002045	-0.0002051	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Test Loop Gain Correction							
Master: 4-Aug-2006 15:08							
Test Loop Gain Magnitude – 0	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.018	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	1.001	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	0.9926	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	1.004	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.008	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.5333	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.5303	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	-0.1135	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	0.09604	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	-0.08085	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	-0.2575	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.1060	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	-0.1925	N/A	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Sonde Error Correction							
Master: 4-Aug-2006 15:08							
R Sonde Error Correction – 0	0	-49.94	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	160.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	112.4	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	61.29	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	25.17	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	10.94	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	12.99	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-1.652	N/A	N/A	N/A	N/A	MM/M

X Sonde Error Correction – 0	0	–38.52	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	52.55	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	–78.82	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	–75.45	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	–23.77	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	14.54	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	7.196	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	9.048	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Mud Gain Correction

Master: 4–Aug–2006 15:08

Coarse – Mag, Real, Imag – 0	0	1.175	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 1	0	1.176	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 2	0	1.176	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 0	0	1.175	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 1	0	1.175	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 2	0	1.175	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Stab Measurement Summary

Before: 9–Sep–2006 20:01

BS Window Ratio	0.7399	N/A	0.7415	N/A	N/A	N/A	
BS Window Sum	11900	N/A	11890	N/A	N/A	N/A	CPS
SS Window Ratio	0.4823	N/A	0.4839	N/A	N/A	N/A	
SS Window Sum	11820	N/A	11780	N/A	N/A	N/A	CPS
LS Window Ratio	0.2955	N/A	0.2947	N/A	N/A	N/A	
LS Window Sum	1263	N/A	1264	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Photo–multiplier High Voltages Calibrations

Before: 9–Sep–2006 20:01

BS PM High Voltage (Command)	1503	N/A	1531	N/A	N/A	N/A	V
SS PM High Voltage (Command)	2020	N/A	2024	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1999	N/A	1995	N/A	N/A	N/A	V

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Crystal Quality Resolutions Calibration

Before: 9–Sep–2006 20:01

BS Crystal Resolution	11.75	N/A	11.89	N/A	N/A	N/A	%
SS Crystal Resolution	9.721	N/A	9.820	N/A	N/A	N/A	%
LS Crystal Resolution	9.595	N/A	9.490	N/A	N/A	N/A	%

High resolution Integrated Logging Tool–DTS Wellsite Calibration – MCFL Calibration

Before: 9–Sep–2006 19:49

Raw B0 Resistivity	3875	N/A	3873	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3813	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3810	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool–DTS Wellsite Calibration – HILT Caliper Calibration

Before: 9–Sep–2006 19:46

HILT Caliper Zero Measurement	8.000	N/A	8.104	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.28	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration

Before: 9–Sep–2006 20:05

Gamma Ray Background	30.00	N/A	90.60	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkg)	169.6	N/A	169.6	N/A	N/A	15.42	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement

Master: 30–Aug–2006 15:26 Before: 9–Sep–2006 19:49

CNTC Background	28.03	28.03	27.61	N/A	N/A	4.205	CPS
CFTC Background	28.12	28.12	29.43	N/A	N/A	4.218	CPS

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement

Master: 30–Aug–2006 15:26

Thermal Near Corr. (Tank)	6031	5387	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2793	2272	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.372	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration

Before: 10–Sep–2006 2:50

Z–Axis Acceleration	32.19	N/A	32.20	N/A	N/A	N/A	F/S2
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High resolution Integrated Logging Tool–DTS Master Calibration – Inversion results

Master: 2–Sep–2006 0:43

Rho Aluminum	2.596	2.596	--	--	--	--	G/C3
Rho Magnesium	1.686	1.687	--	--	--	--	G/C3
Pe Aluminum	2.570	2.562	--	--	--	--	
Pe Magnesium	2.650	2.642	--	--	--	--	

High resolution Integrated Logging Tool–DTS Master Calibration – Deviation Summary

Master: 2–Sep–2006 0:43

BS Average Deviation	0	0.5212	--	--	--	--	%
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BS Max Deviation	0	1.060	--	--	--	--	%
SS Average Deviation	0	0.2784	--	--	--	--	%
SS Max Deviation	0	0.8036	--	--	--	--	%
LS Average Deviation	0	0.6005	--	--	--	--	%
LS Max Deviation	0	2.069	--	--	--	--	%

General Purpose Inclinomater Wellsite Calibration – CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY

Before: 10-Sep-2006 2:50

TEMPERATURE REFERENCE :	N/A	N/A	68	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	3	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	10	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	897	N/A	N/A	N/A	

General Purpose Inclinomater Wellsite Calibration – CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY

Before: 10-Sep-2006 2:50

TEMPERATURE REFERENCE :	N/A	N/A	73	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	98	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	2	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	375	N/A	N/A	N/A	

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	71.0	DEGF.
Thermal Housing Size	3.354	IN.
NSR-F serial number	5068	

High resolution Integrated Logging Tool-DTS / Equipment Identification









Primary Equipment:

Array Induction Tool – H	AIT – H	397
Rm/SP Bottom Nose	AHRM – A	
Array Induction Sonde	AHIS – BA	397
HILT high-Resolution Mechanical Sonde	HRMS – B	1929
HILT Rxo Gamma-ray Device	HRGD – B	1921
HILT Micro Cylindrically Focused Log Dev	MCFL –	
GR Logging Source	GLS – VJ	1827
HILT High Res. Control Cartridge	HRCC – B	1866

Auxiliary Equipment:

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6339	<div><div></div></div>	0.6050	68.81	<div><div></div></div>	71.00
	Before	0.6354	<div><div></div></div>		69.84	<div><div></div></div>	
1	Master	1.301	<div><div></div></div>	1.270	67.81	<div><div></div></div>	70.00
	Before	1.304	<div><div></div></div>		68.85	<div><div></div></div>	
2	Master	0.6445	<div><div></div></div>	0.6230	63.70	<div><div></div></div>	66.00
	Before	0.6456	<div><div></div></div>		64.79	<div><div></div></div>	
3	Master	0.7284	<div><div></div></div>	0.7040	62.83	<div><div></div></div>	65.00
	Before	0.7303	<div><div></div></div>		63.93	<div><div></div></div>	
4	Master	1.361	<div><div></div></div>	1.337	56.03	<div><div></div></div>	59.00
	Before	1.365	<div><div></div></div>		57.20	<div><div></div></div>	
5	Master	1.969	<div><div></div></div>	1.955	53.82	<div><div></div></div>	57.00
	Before	1.975	<div><div></div></div>		55.08	<div><div></div></div>	
6	Master	1.972	<div><div></div></div>	1.955	53.79	<div><div></div></div>	57.00
	Before	1.978	<div><div></div></div>		55.05	<div><div></div></div>	
	Master	1.380	<div><div></div></div>		47.88	<div><div></div></div>	

7	Before	1.390		1.415		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	Nom + 60.00 (Maximum)
Master: 4-Aug-2006 15:08			Before: 9-Sep-2006 19:49			

High resolution Integrated Logging Tool-DTS Wellsite Calibration									
Electronics Calibration Check – Auxilliary									
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value		
Master			992.9	Master			-0.2051		
Before			991.9	Before			-0.2051		
941.0 (Minimum)			990.5 (Nominal)	1040 (Maximum)	-50.00 (Minimum)			0 (Nominal)	50.00 (Maximum)
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value		
Master			0.9196	Master			-0.0002045		
Before			0.9187	Before			-0.0002051		
0.8700 (Minimum)			0.9150 (Nominal)	0.9600 (Maximum)	-0.05000 (Minimum)			0 (Nominal)	0.05000 (Maximum)
Master: 4-Aug-2006 15:08				Before: 9-Sep-2006 19:49					

High resolution Integrated Logging Tool–DTS Wellsite Calibration						
Test Loop Gain Correction						
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG
0	1.014				0.5333	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
1	1.018				0.5303	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
2	1.014				-0.1135	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
3	1.017				0.09604	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
4	1.001				-0.08085	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
5	0.9926				-0.2575	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
6	1.004				0.1060	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
7	1.008				-0.1925	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
Master: 4–Aug–2006 15:08						

High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Sonde Error Correction							
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M	
0	-49.94				-38.52		
	-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	160.6				52.55		
	114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	112.4				-78.82		
	66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	61.29				-75.45		
	39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17				-23.77		

Master: 4-Aug-2006 15:08



Master: 4-Aug-2006 15:08

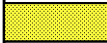


Before: 9-Sep-2006 20:01





Before: 9-Sep-2006 20:01

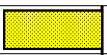
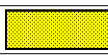

Before: 9-Sep-2006 20:01


Before: 9-Sep-2006 19:49

















Phase	HIL1 Caliper Zero Measurement IN	Value	Phase	HIL1 Caliper Plus Measurement IN	Value	
Before		8.104	Before		12.28	
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)
Before: 9-Sep-2006 19:46						



High resolution Integrated Logging Tool-DTS Wellsite Calibration											
Detector Calibration											
Phase	Gamma Ray Background GAPI		Value	Phase	Gamma Ray (Jig – Bkg) GAPI		Value	Phase	Gamma Ray (Calibrated) GAPI		Value
Before			90.60	Before			169.6	Before			165.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		154.2 (Minimum)	169.6 (Nominal)	185.0 (Maximum)		150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)
Before: 9–Sep–2006 20:05											

High resolution Integrated Logging Tool-DTS Wellsite Calibration													
Zero Measurement													
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value				
Master				28.03	Master				28.12				
Before				27.61	Before				29.43				
5.000 (Minimum)				28.03 (Nominal)	40.00 (Maximum)				5.000 (Minimum)		28.12 (Nominal)	40.00 (Maximum)	
Master: 30-Aug-2006 15:26						Before: 9-Sep-2006 19:49							

High resolution Integrated Logging Tool-DTS Wellsite Calibration											
Ratio Measurement											
Phase	Thermal Near Corr. (Tank) CPS		Value	Phase	Thermal Far Corr. (Tank) CPS		Value	Phase	CNTC/CFTC (Tank)		Value
Master			5387	Master			2272	Master			2.372
	5000 (Minimum)	6031 (Nominal)	7200 (Maximum)		2075 (Minimum)	2793 (Nominal)	3125 (Maximum)		2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)
Master: 30-Aug-2006 15:26											

High resolution Integrated Logging Tool-DTS Wellsite Calibration			
Accelerometer Calibration			
Phase	Z-Axis Acceleration F/S2		Value
Before			32.20
	31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)
Before: 10-Sep-2006 2:50			

High resolution Integrated Logging Tool-DTS Master Calibration							
Electronics Calibration Check - Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6339		0.6050	68.81		71.00
1	Master	1.301		1.270	67.81		70.00
2	Master	0.6445		0.6230	63.70		66.00
3	Master	0.7284		0.7040	62.83		65.00
4	Master	1.361		1.337	56.03		59.00
5	Master	1.969		1.955	53.82		57.00
6	Master	1.972		1.955	53.79		57.00
7	Master	1.380		1.415	47.88		53.00
		60.00 % (Minimum)	140.0 % (Maximum)		Nom -60.00 (Minimum)	Nom + 60.00 (Maximum)	
Master: 4-Aug-2006 15:08							

High resolution Integrated Logging Tool—DTS Master Calibration							
Electronics Calibration Check – Auxilliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			992.9	Master			-0.2051
	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase Array Induction Temperature Plus V		Value		Phase Array Induction Temperature Zero V		Value	

Phase	Min	Max	Value	Phase	Min	Max	Value
Master			0.9196	Master			-0.0002045
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 4-Aug-2006 15:08							



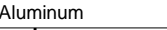
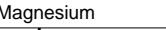
High resolution Integrated Logging Tool-DTS Master Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.014				0.5333		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.018				0.5303		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.014				-0.1135		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.017				0.09604		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.001				-0.08085		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9926				-0.2575		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.004				0.1060		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.008				-0.1925		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
Master: 4-Aug-2006 15:08							

High resolution Integrated Logging Tool-DTS Master Calibration								
Sonde Error Correction								
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-49.94				-38.52			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	160.6				52.55			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	112.4				-78.82			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	61.29				-75.45			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.17				-23.77			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	10.94				14.54			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	12.99				7.196			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-1.652				9.048			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
Master: 4-Aug-2006 15:08								

High resolution Integrated Logging Tool-DTS Master Calibration					
Mud Gain Correction					
Idx	Value	Mud Gain Correction			Filter Mud Gain



dx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.175				1.175			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.176				1.175			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.176				1.175			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 4–Aug–2006 15:08

High resolution Integrated Logging Tool–DTS Master Calibration								
Inversion results								
Phase	Rho Aluminum G/C3			Phase	Rho Magnesium G/C3			
Master				2.596	Master			
	2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)	1.676 (Minimum)		1.686 (Nominal)	1.696 (Maximum)	
Phase	Pe Aluminum			Value	Phase	Pe Magnesium		
Master				2.562	Master			
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)		2.650 (Nominal)	2.750 (Maximum)	
Master: 2–Sep–2006 0:43								

High resolution Integrated Logging Tool–DTS Master Calibration									
Deviation Summary									
Phase	BS Average Deviation %			Value	Phase	SS Average Deviation %			Value
Master				0.5212	Master				0.2784
	–0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)			–1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	
Phase	BS Max Deviation %			Value	Phase	SS Max Deviation %			Value
Master				1.060	Master				0.8036
	–1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)			–2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	
Phase	LS Average Deviation %			Value	Phase	LS Max Deviation %			Value
Master				0.6005	Master				2.069
	–1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)			–3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)	

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High resolution Integrated Logging Tool–DTS Master Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				28.03	Master				28.12
	5.000 (Minimum)	28.03 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	28.12 (Nominal)	40.00 (Maximum)	
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High resolution Integrated Logging Tool–DTS Master Calibration									
Tank Measurement									
Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value
Master				5387	Master				2272
	5000 (Minimum)	6031 (Nominal)	7200 (Maximum)			2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	
Phase	CNTC/CFTC (Tank)			Value	Phase	CNTC/CFTC (Tank)			Value
Master				2.372	Master				2.372
	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

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General Purpose Inclinator / Equipment Identification	
Primary Equipment: GPIT Cartridge – C	GPIC – C
Auxiliary Equipment: GPIT Housing	GPIH – B

Company: **Kerr–McGee Oil & Gas Onshore LP**



Well: **Barney 35–14**
Field: **Wattenberg**
County: **Weld**
State: **Colorado**

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