

V	F	J	L	C	M	F	S	F	E	F		MUD	T	E	C	C	T	E	S	C	F	J		County:	Weld	
---	---	---	---	---	---	---	---	---	---	---	--	-----	---	---	---	---	---	---	---	---	---	---	--	---------	------	--

Rig: Xtreme 11					
Crew: Tim Ludgate, Dave Marquez					
RUN 1			RUN 2		
SERVICE ORDER #:		BCEK-00007	SERVICE ORDER #:		
PROGRAM VERSION:		17C0-154	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
SURFACE EQUIPMENT					
WITM (CTS)-A		NCS-VB			
GSR-U/Y					
NCT-B					
CNB-AB					
DOWNHOLE EQUIPMENT					
LEH-QT			40.6		
LEH-QT					
HGNS HTEM					
HMCA					
TelStatus					
CTEM			37.6		
HILTB-CTS			37.6		
HGNS Gamm			36.9		
HGNSC-B					
HMCA					
TCC-B					
HGNH					
NLS-KL					
NSR-F 5168					
HACCZ 419					
HCNT					
HGR					
HRCC-B					
HRMS-B			HGNS Neut		
HRGD-B			HGNS Neut		
GLS-VJ 5363			31.1		
MCFL Device			30.6		
HILT Nucl. LS 42767					
HILT Nucl. SS 42767			HGNS sens		
HILT Nucl. BS 42767			28.2		
AIT-H					
AHIS-BA 397					
AHRM-A					
NPV-N					
HRCC cart			24.2		
</					

Induction
Temperatu
Power Sup

7.9

SP SENSOR
HTEN HMAS
Accelerom HV
Mud Resis
Tension

0.1

0.0

TOOL ZERO

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

Production String

(in)

(ft)

OD

ID

MD

Well Schematic

(ft)

(in)

MD

OD

ID

Casing String

Casing String

Casing Shoe
Borehole Segment

0.0

8.625

8.097

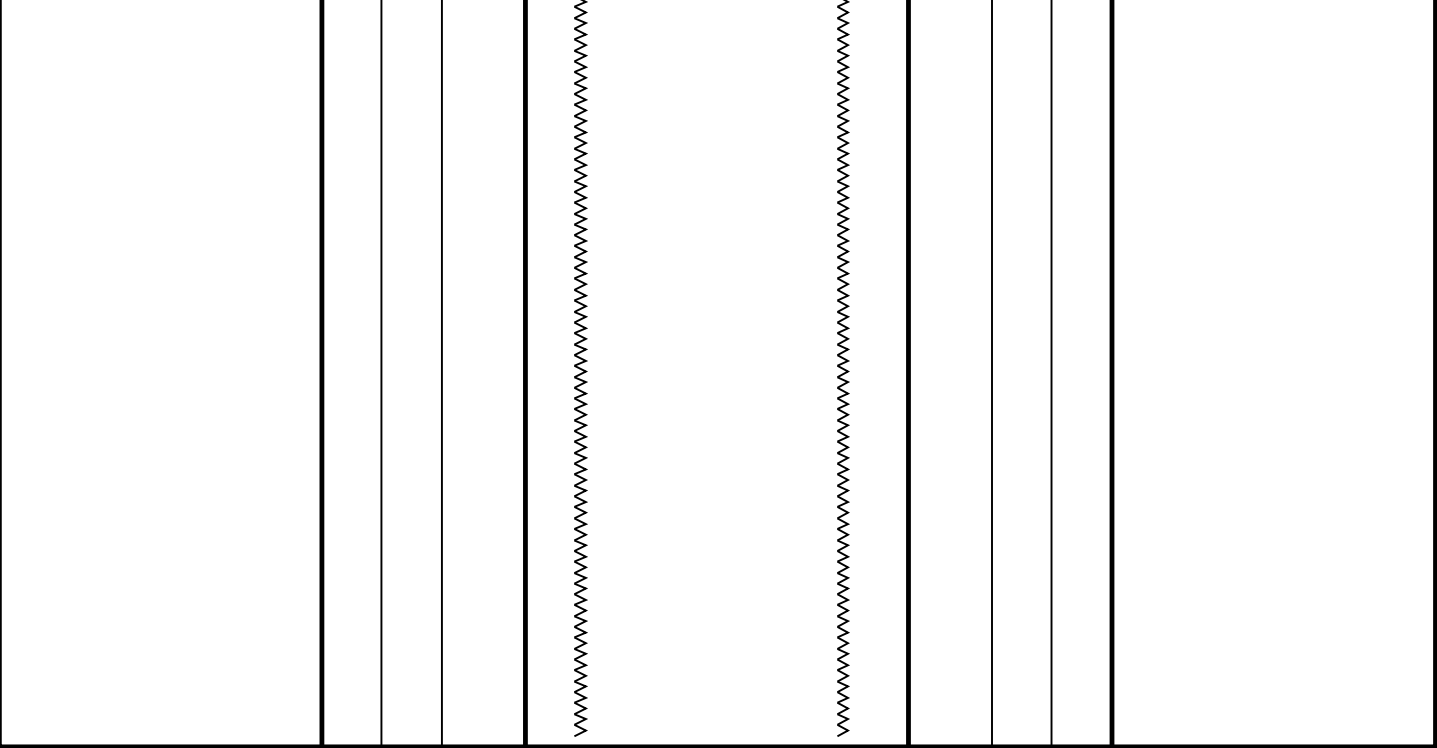
771.0

8.625

8.097

771.0

7.875



All depths are driller's depths



UPPER MICROLOG 5" = 100'

MAXIS Field Log

Input DLIS Files						
DEFAULT	HILTC .020	FN:19		28-Feb-2010 02:16	8201.0 FT	750.0 FT
	AIT_TLD_MCFL_CNL_018LUP	FN:16	PRODUCER	28-Feb-2010 02:06	2712.0 FT	2267.5 FT
Output DLIS Files						
	HILTC .025	FN:25		28-Feb-2010 02:35	5000.0 FT	2484.5 FT
	HILTC .025	FN:26		28-Feb-2010 02:35	5000.0 FT	2484.5 FT

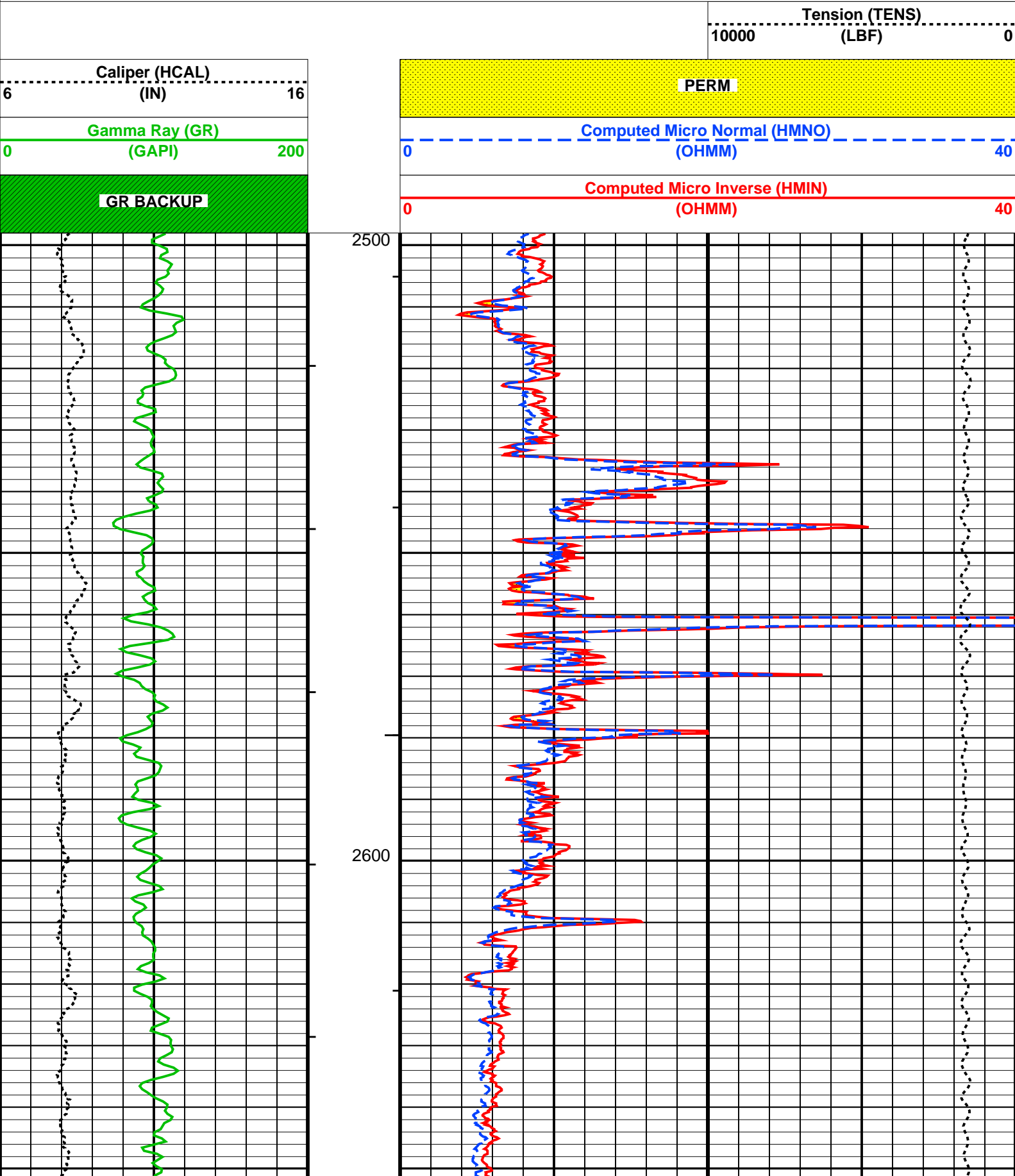
Integrated Hole/Cement Volume Summary

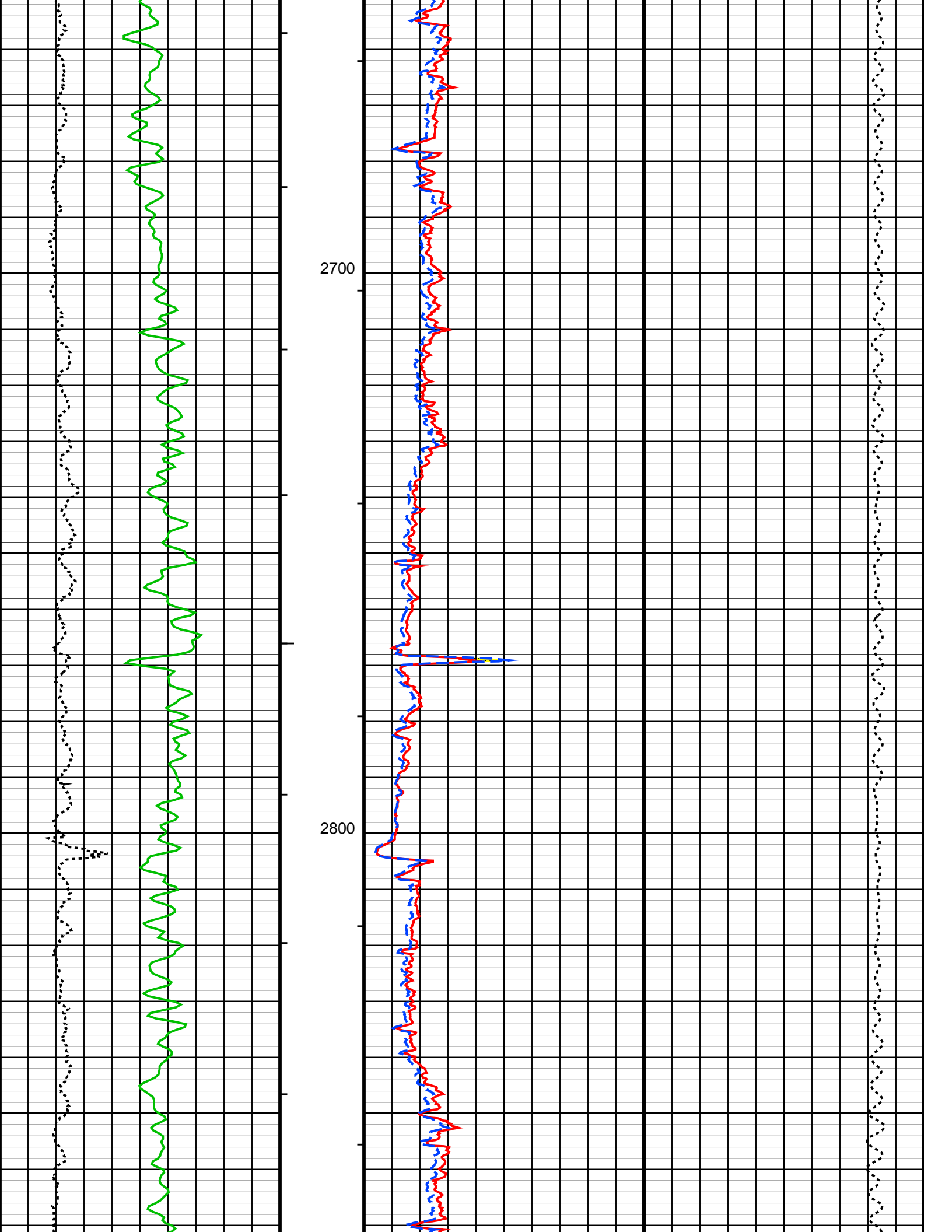
Hole Volume = 899.68 ft3
Cement Volume = 622.84 ft3 (assuming 4.50 in casing O.D.)
Computed from 4999.5 ft to 2493.5 ft

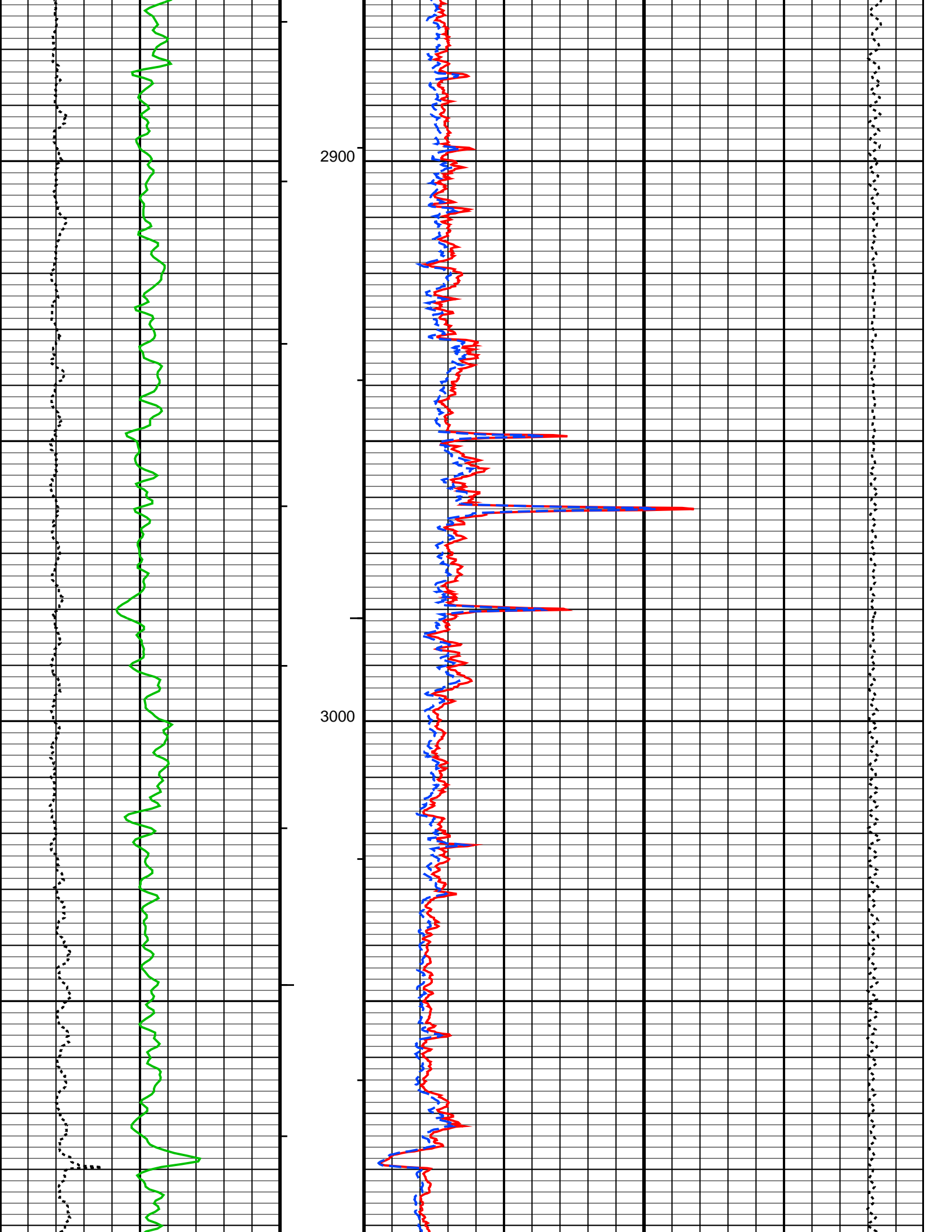
PIP SUMMARY

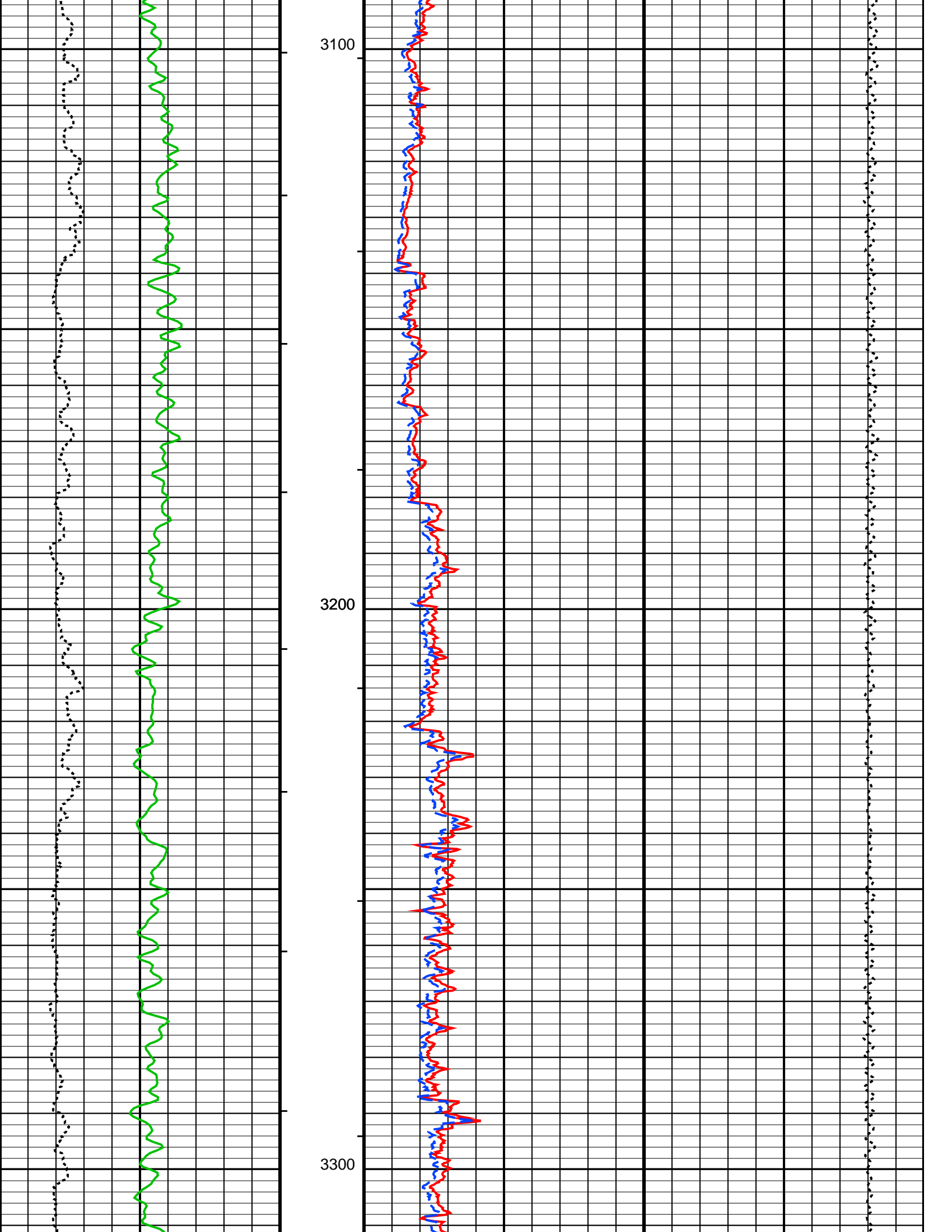
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

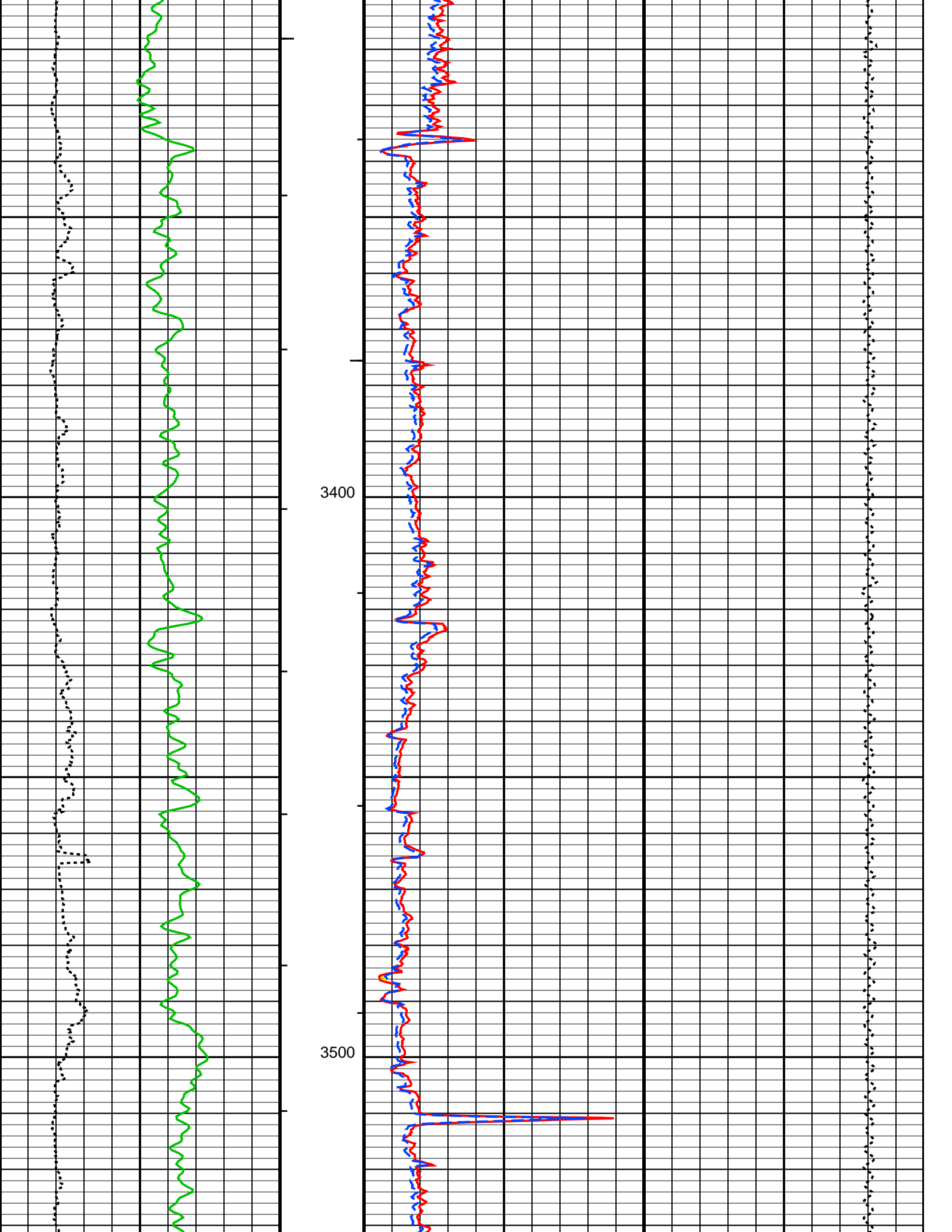
Time Mark Every 60 S

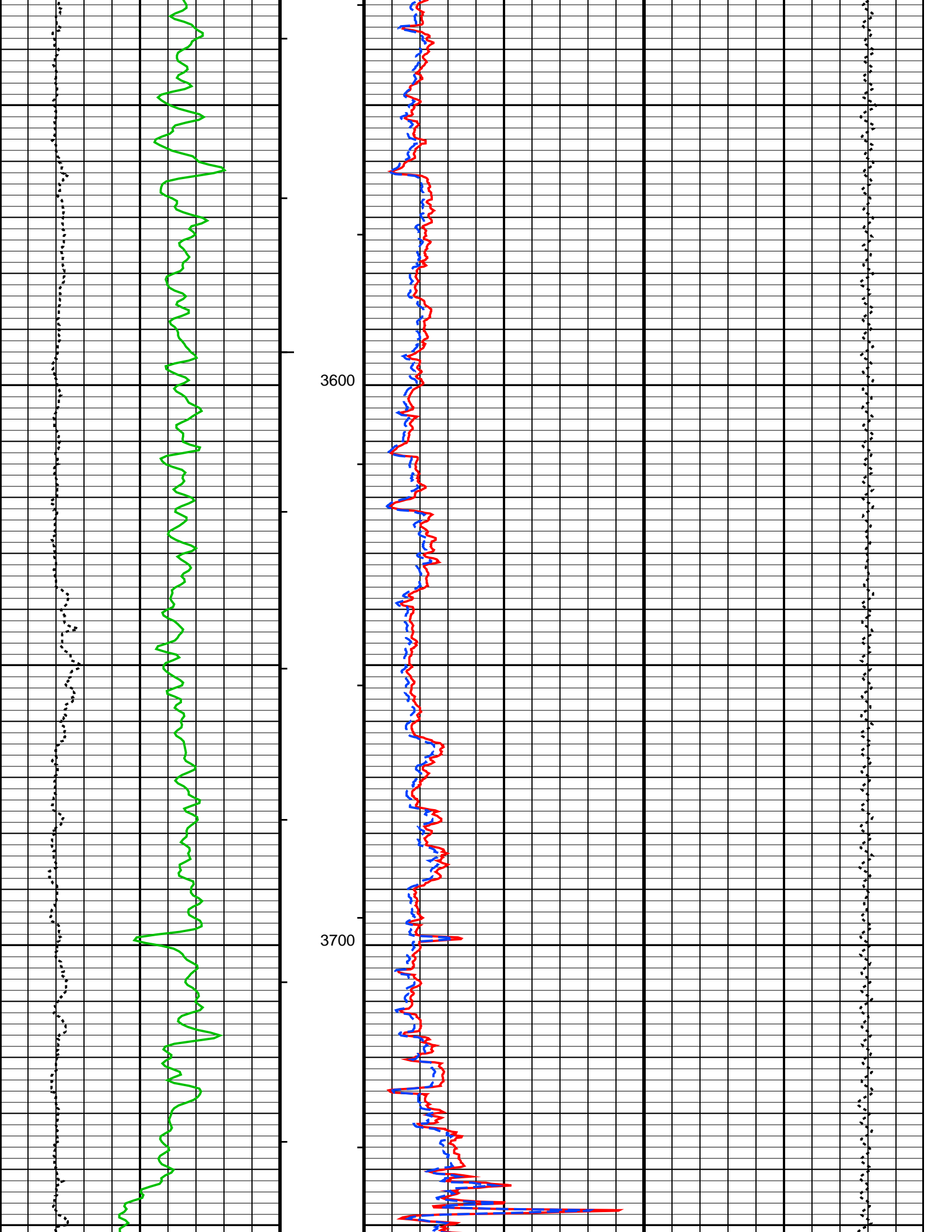


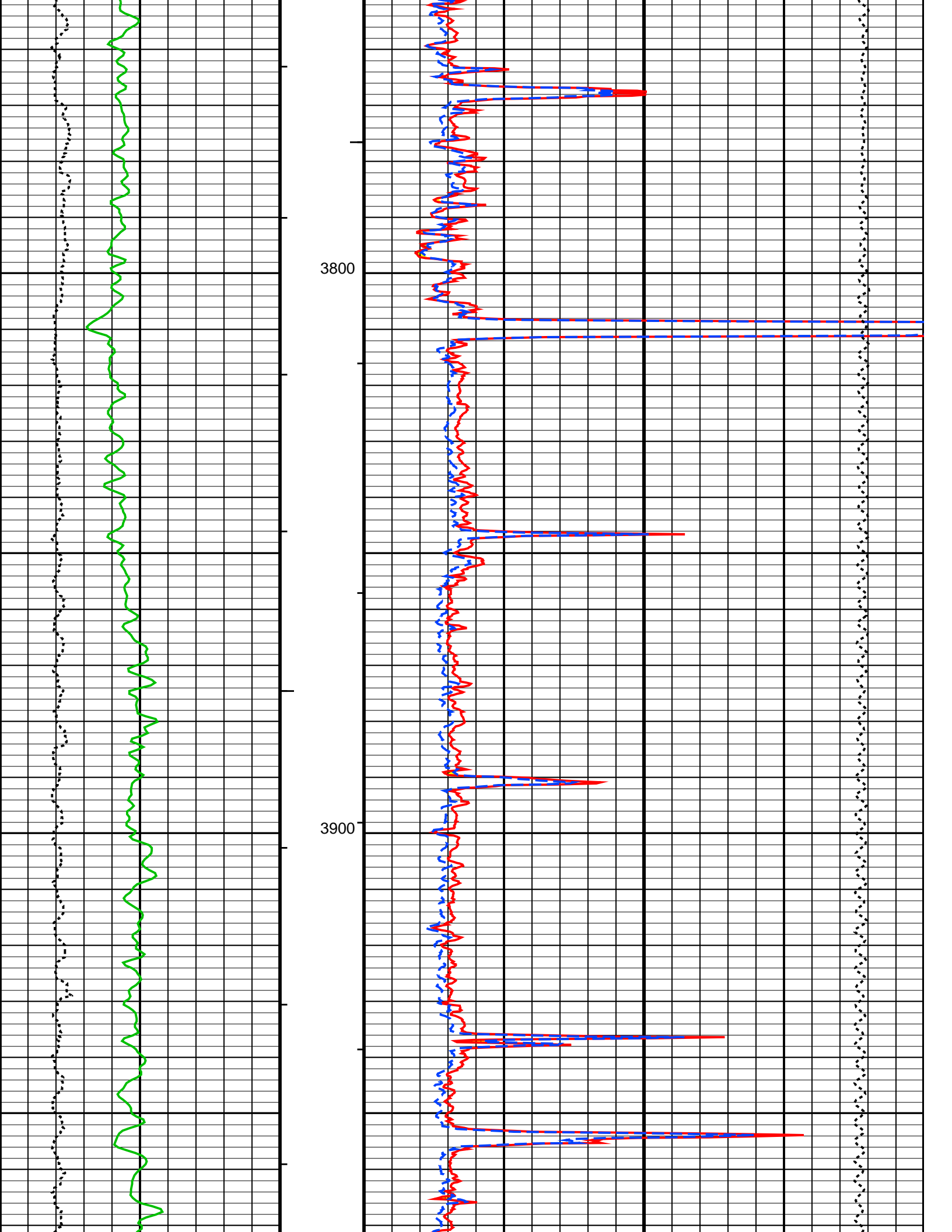


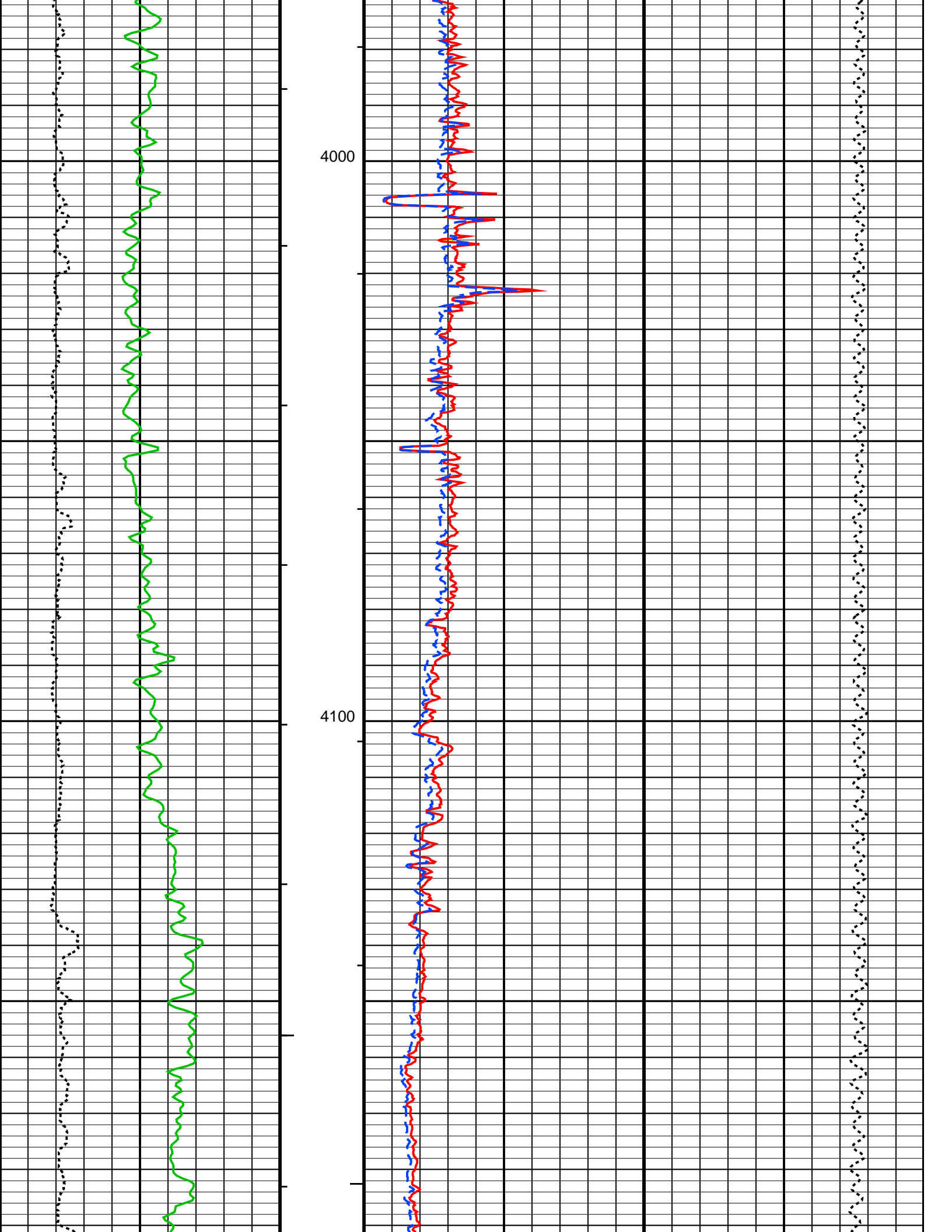


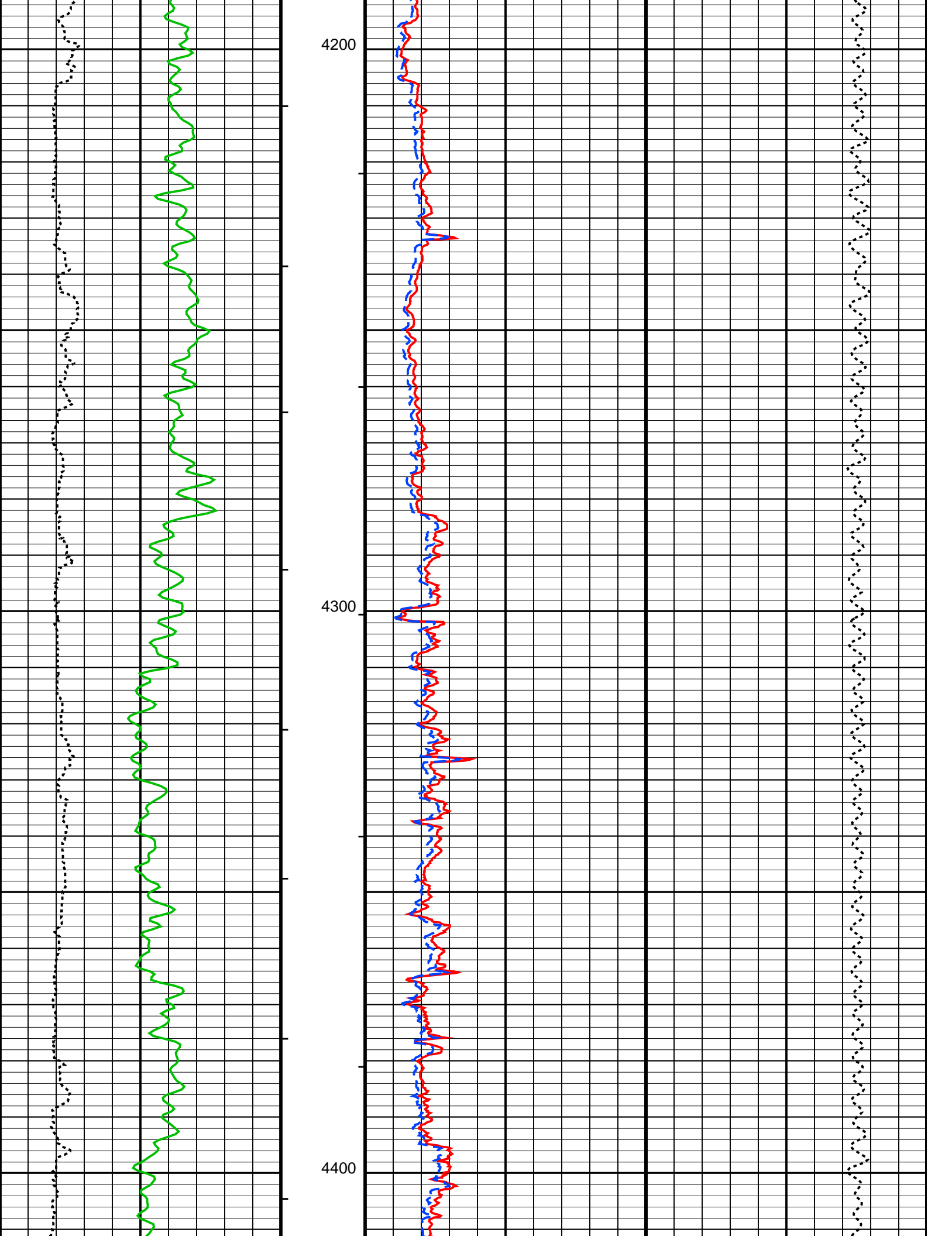


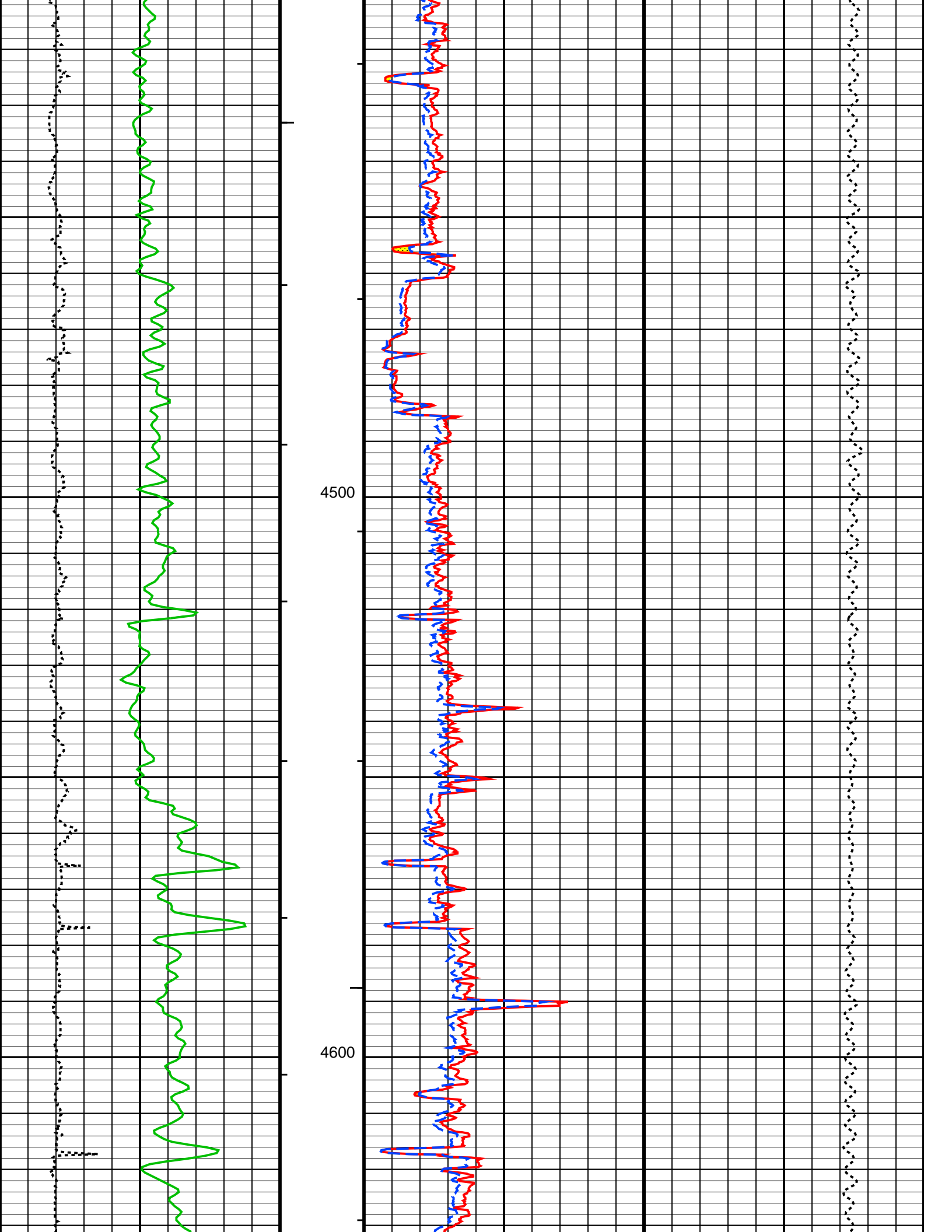


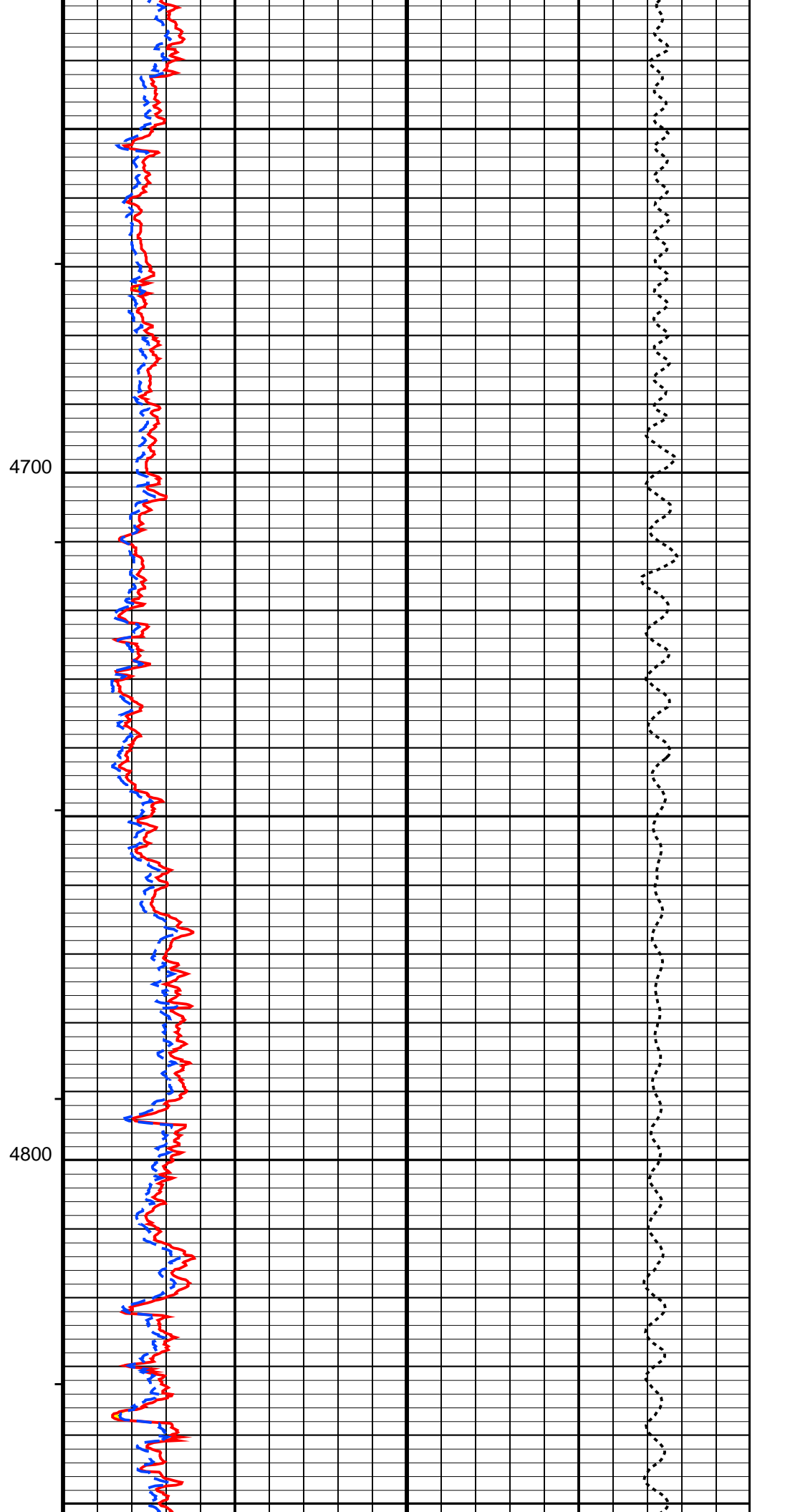
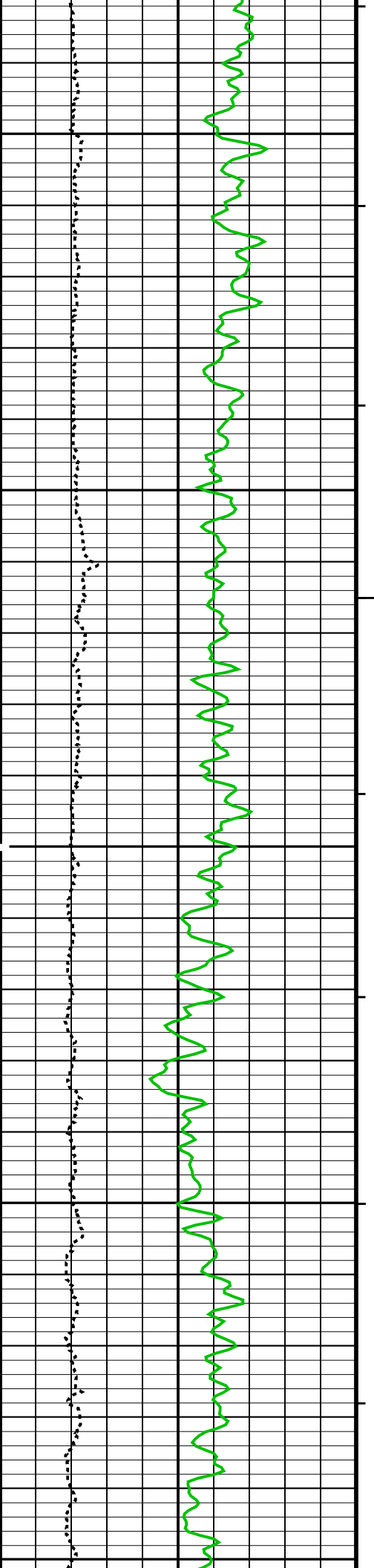


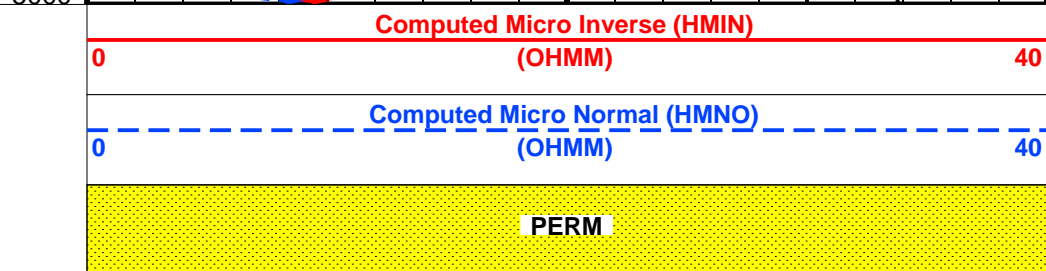
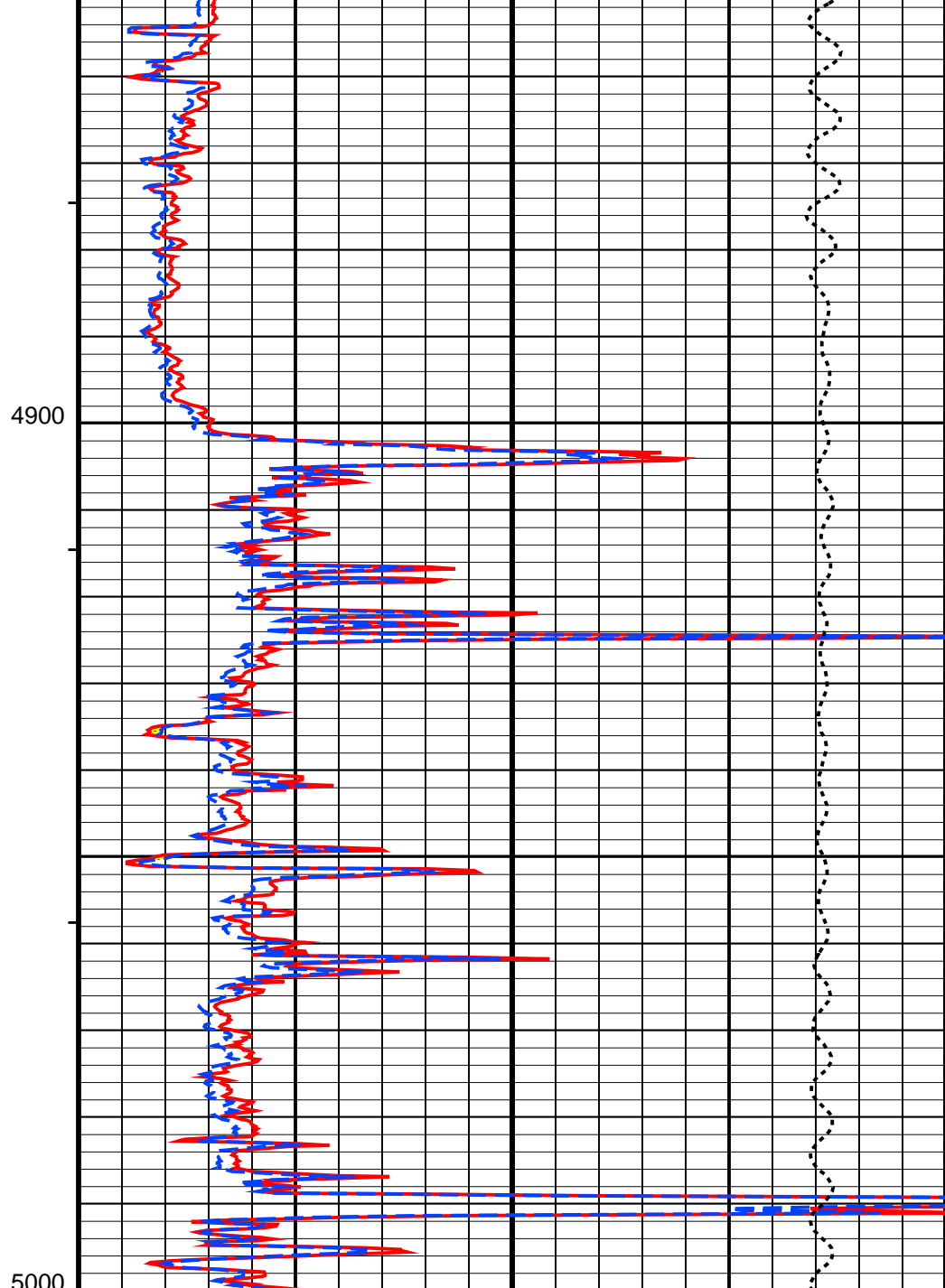
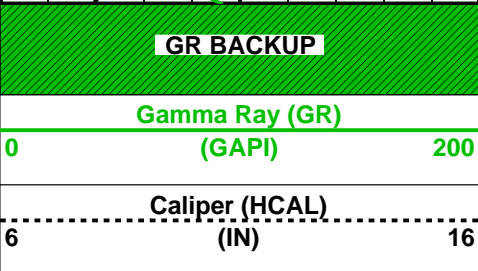
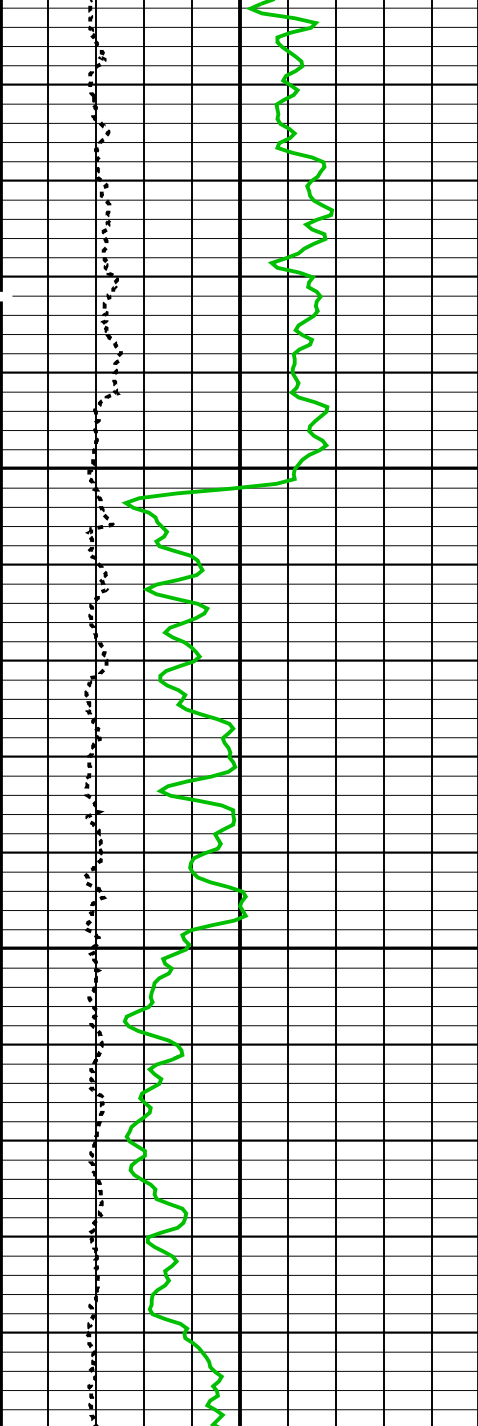












PIP SUMMARY

- └ 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
-----------	-------------	-------

OP System Version: 17C0-154

HILTC

17C0-154

Input DLIS Files						
	HILTC .020	FN:19		28-Feb-2010 02:16	8201.0 FT	750.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_018LUP	FN:16	PRODUCER	28-Feb-2010 02:06	2712.0 FT	2267.5 FT
Output DLIS Files						
	HILTC .025	FN:25		28-Feb-2010 02:35		
	HILTC .025	FN:26		28-Feb-2010 02:35		

Schlumberger

MAIN MICROLOG 5" = 100'

MAXIS Field Log

Input DLIS Files						
	HILTC .020	FN:19		28-Feb-2010 02:16	8201.0 FT	750.0 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:24	PRODUCER	28-Feb-2010 02:34		

OP System Version: 17C0-154

HILTB-CTS

17C0-154

PIP SUMMARY

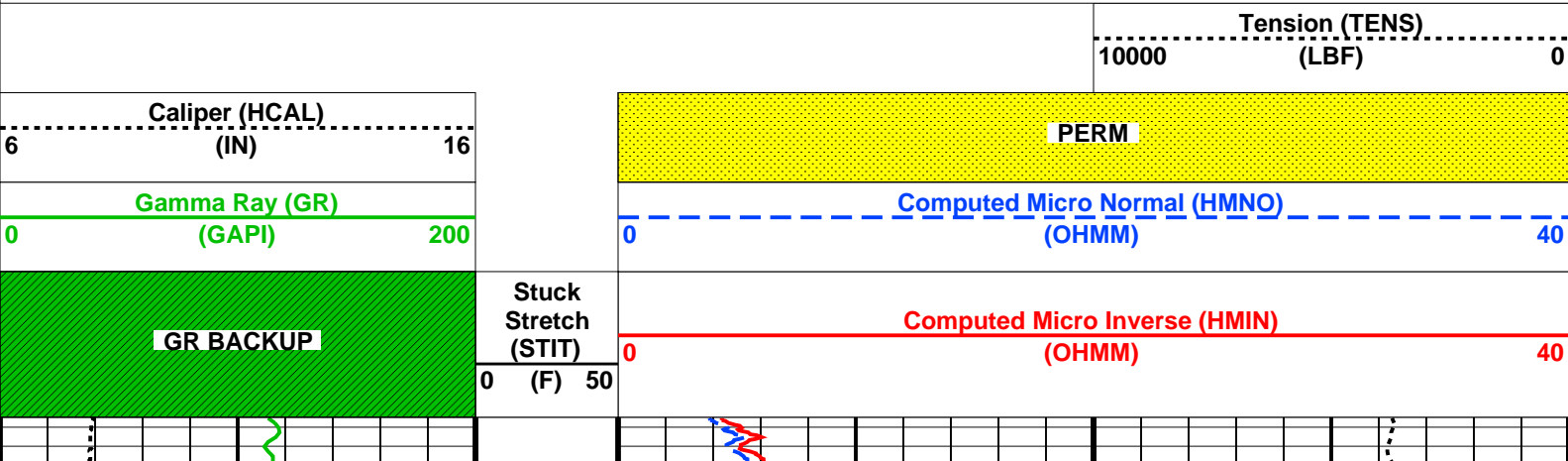
└ Integrated Hole Volume Minor Pip Every 10 F3

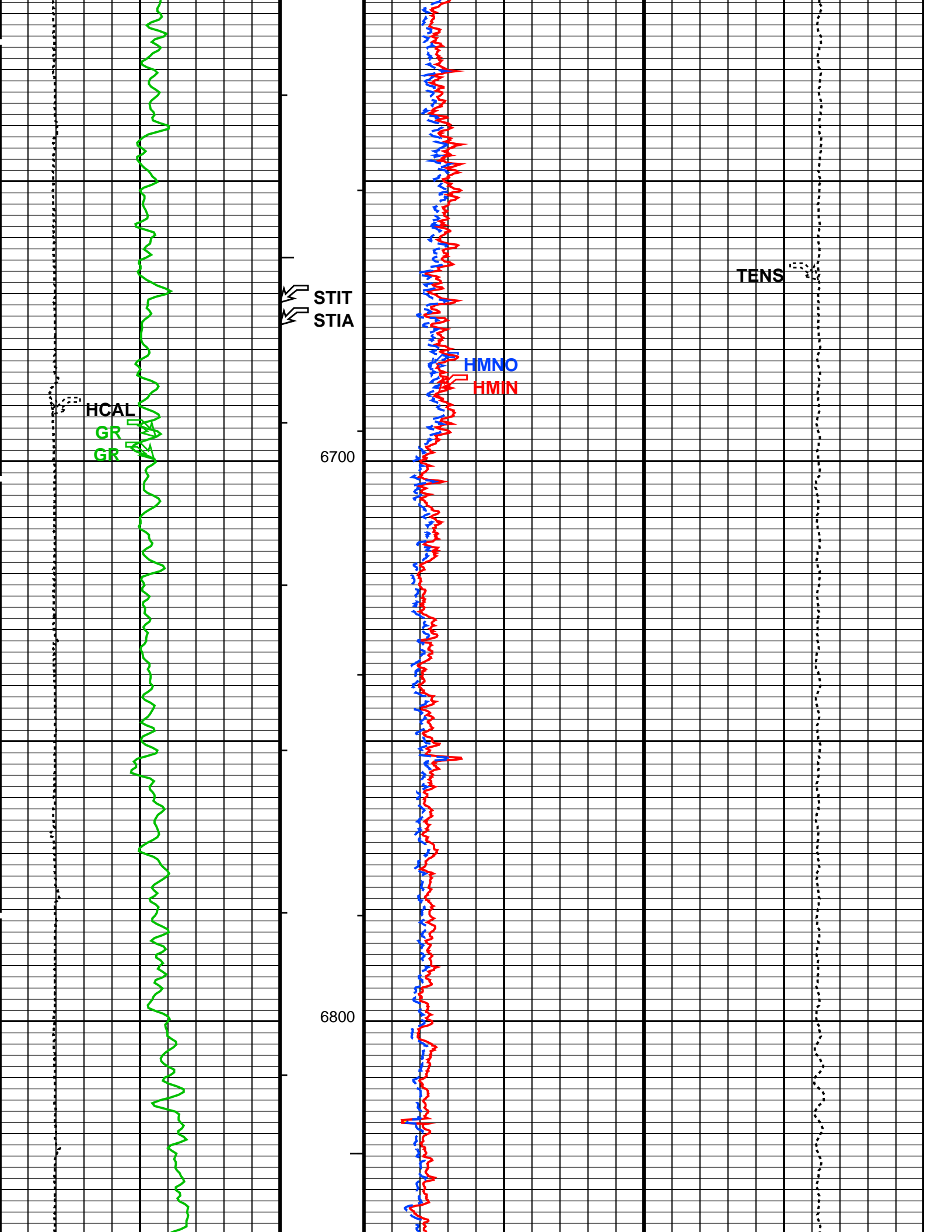
└ Integrated Hole Volume Major Pip Every 100 F3

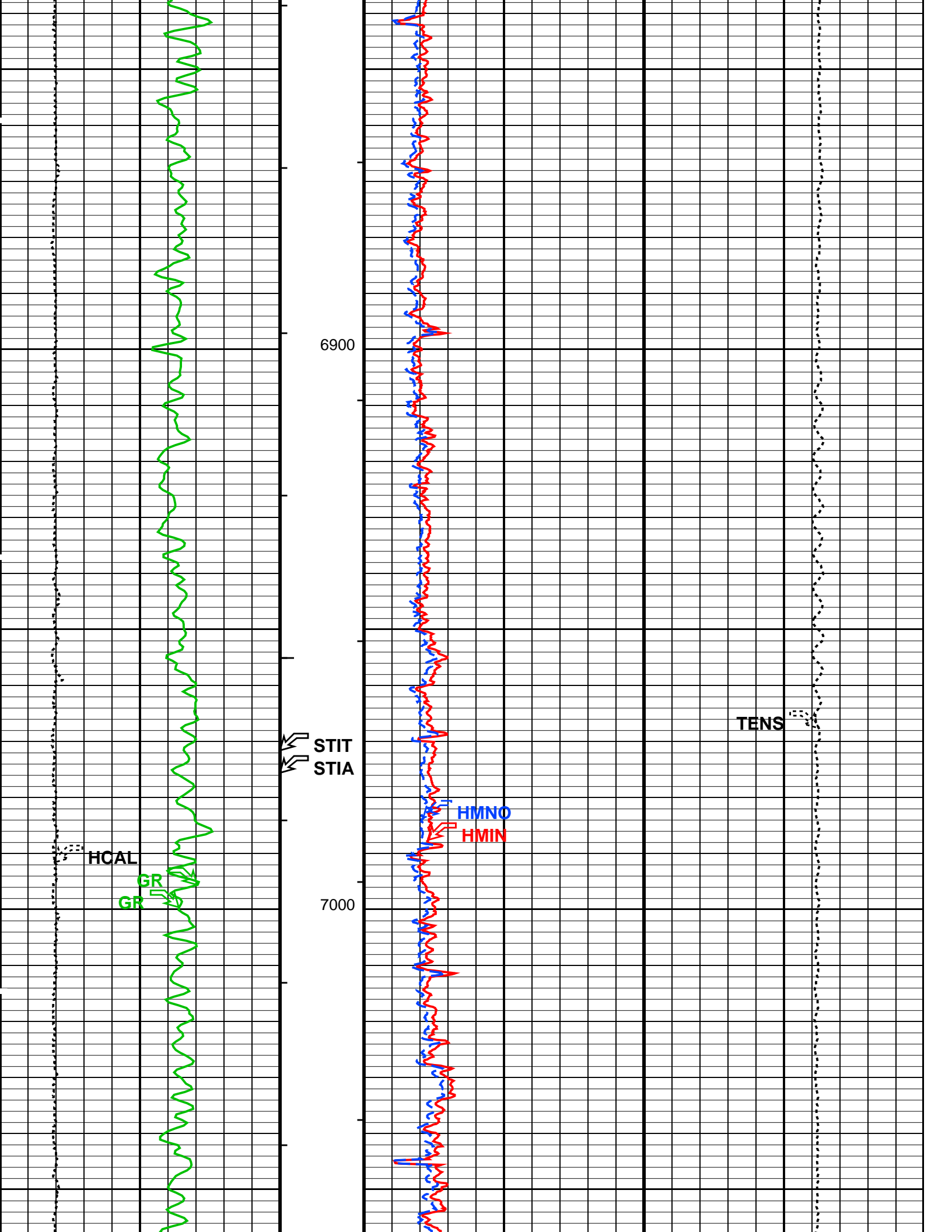
└ Integrated Cement Volume Minor Pip Every 10 F3

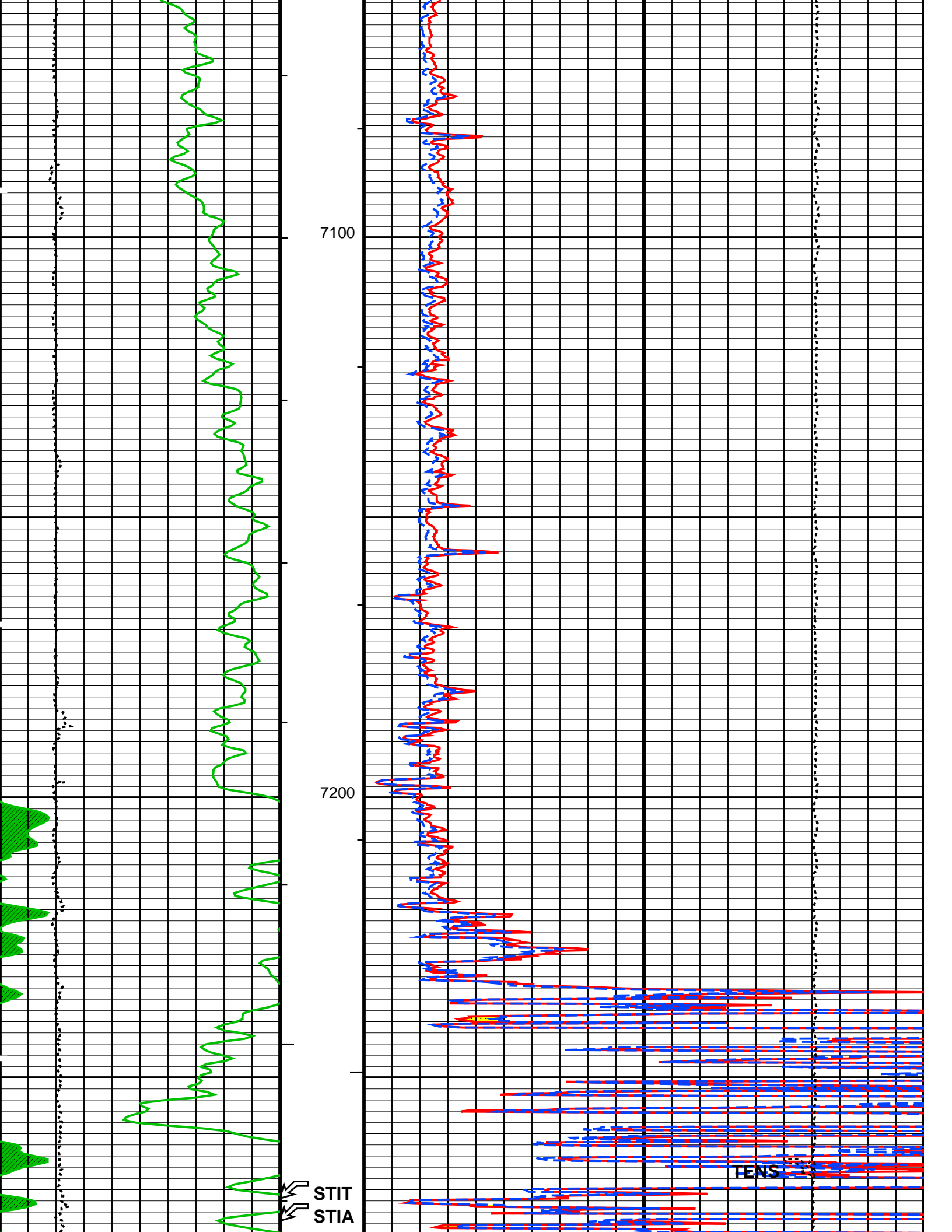
└ Integrated Cement Volume Major Pip Every 100 F3

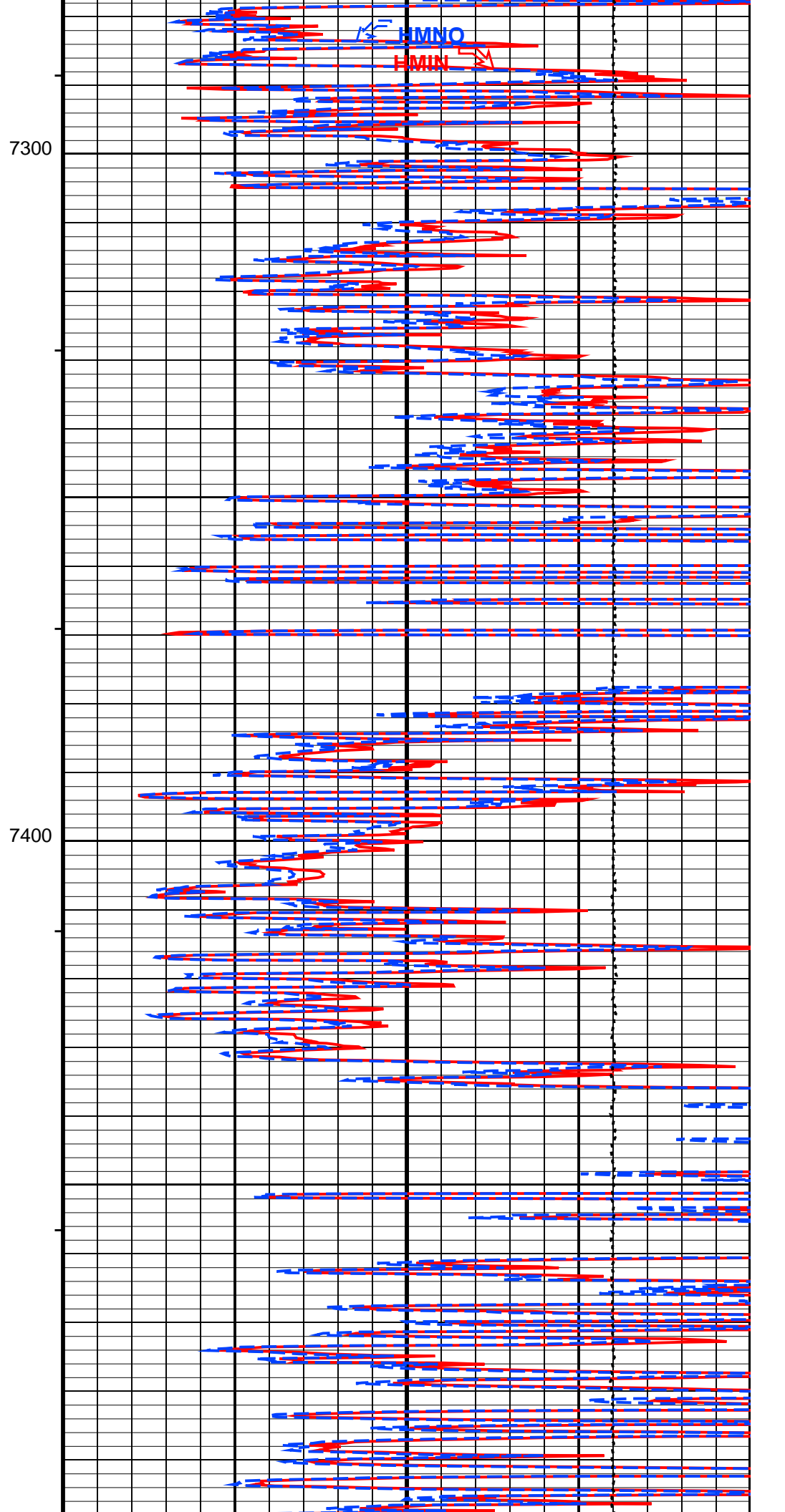
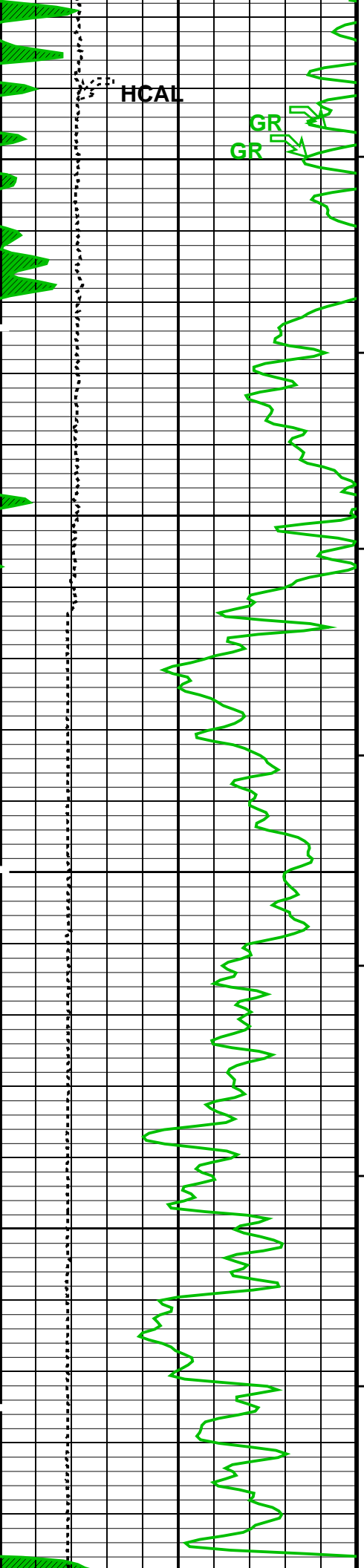
Time Mark Every 60 S

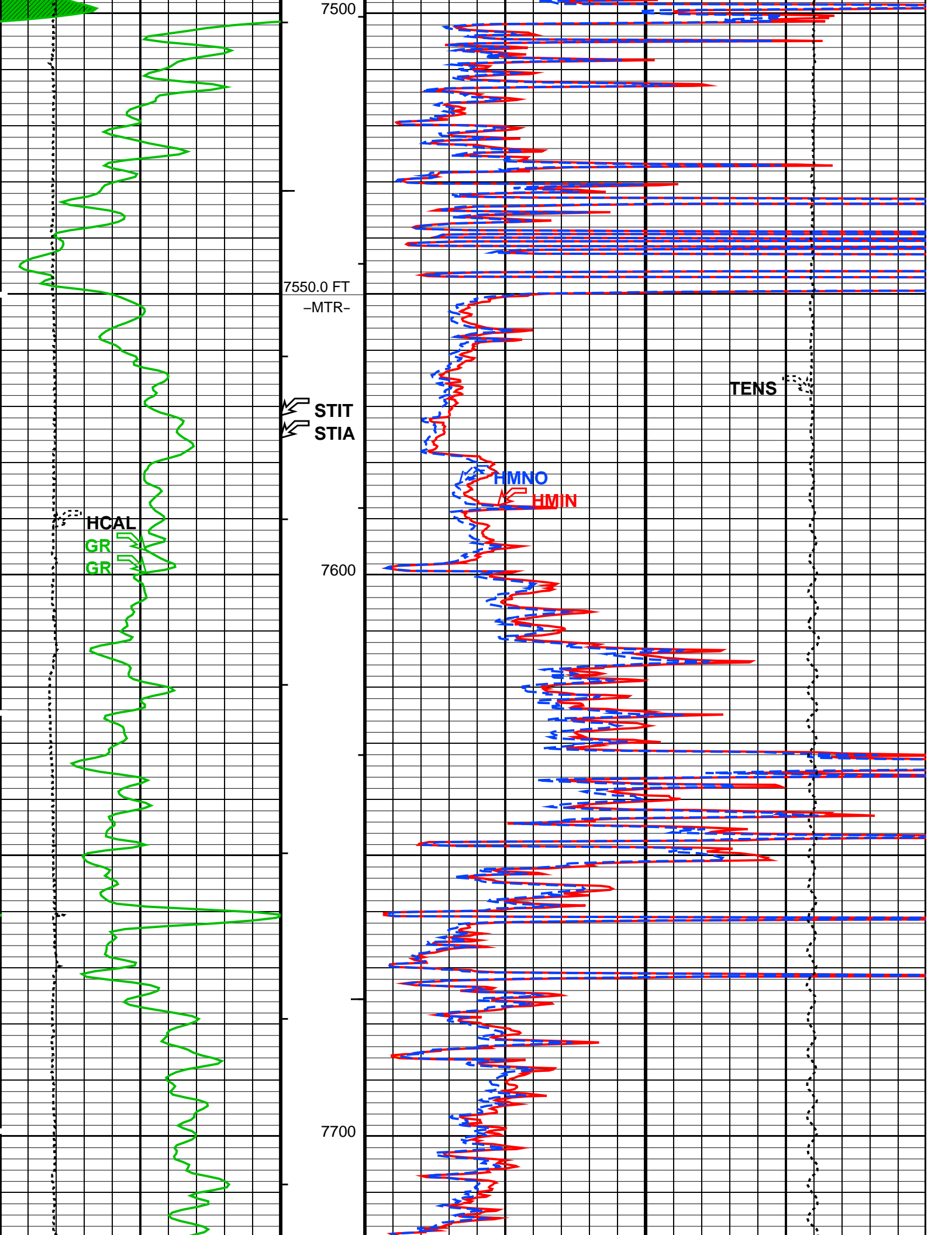


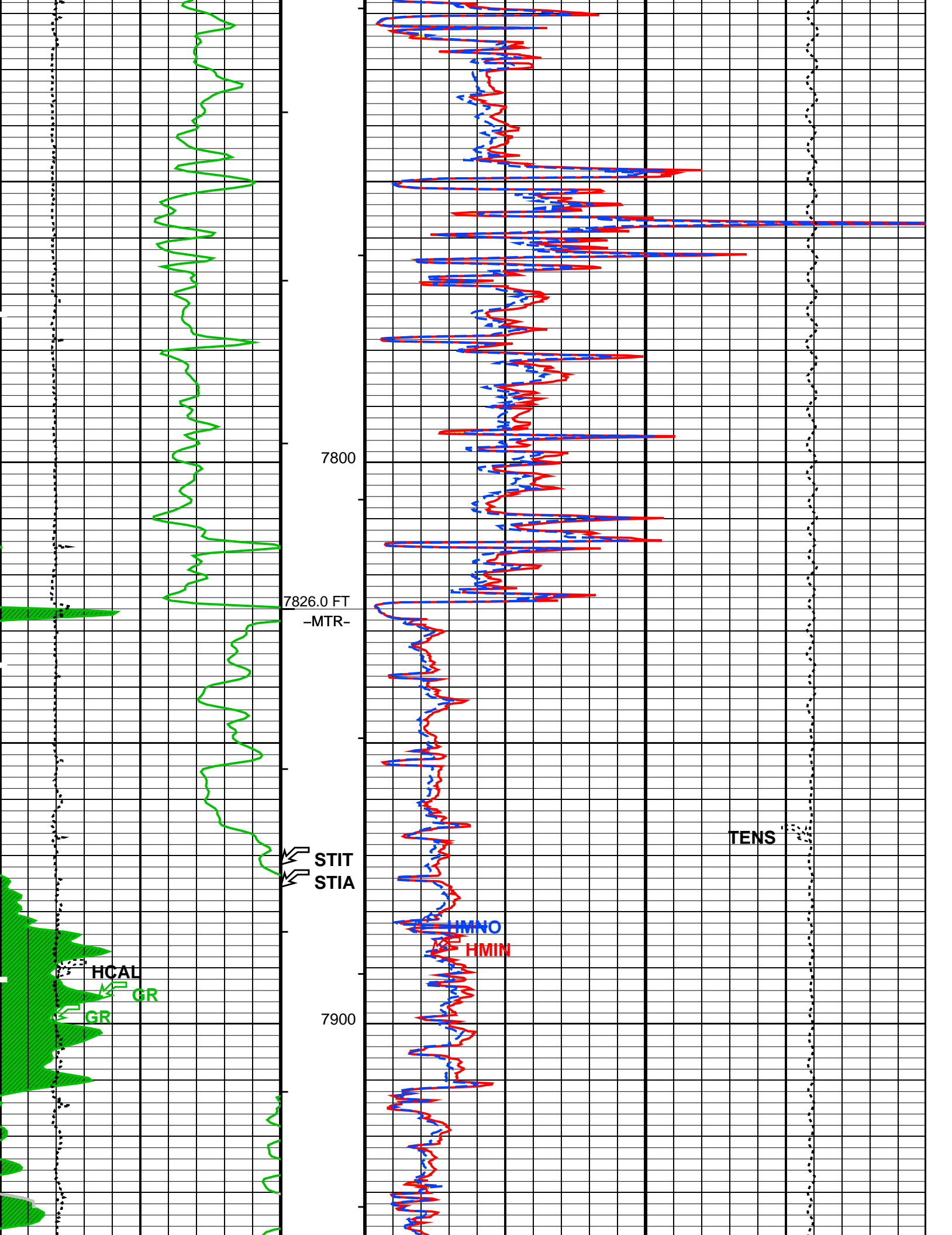


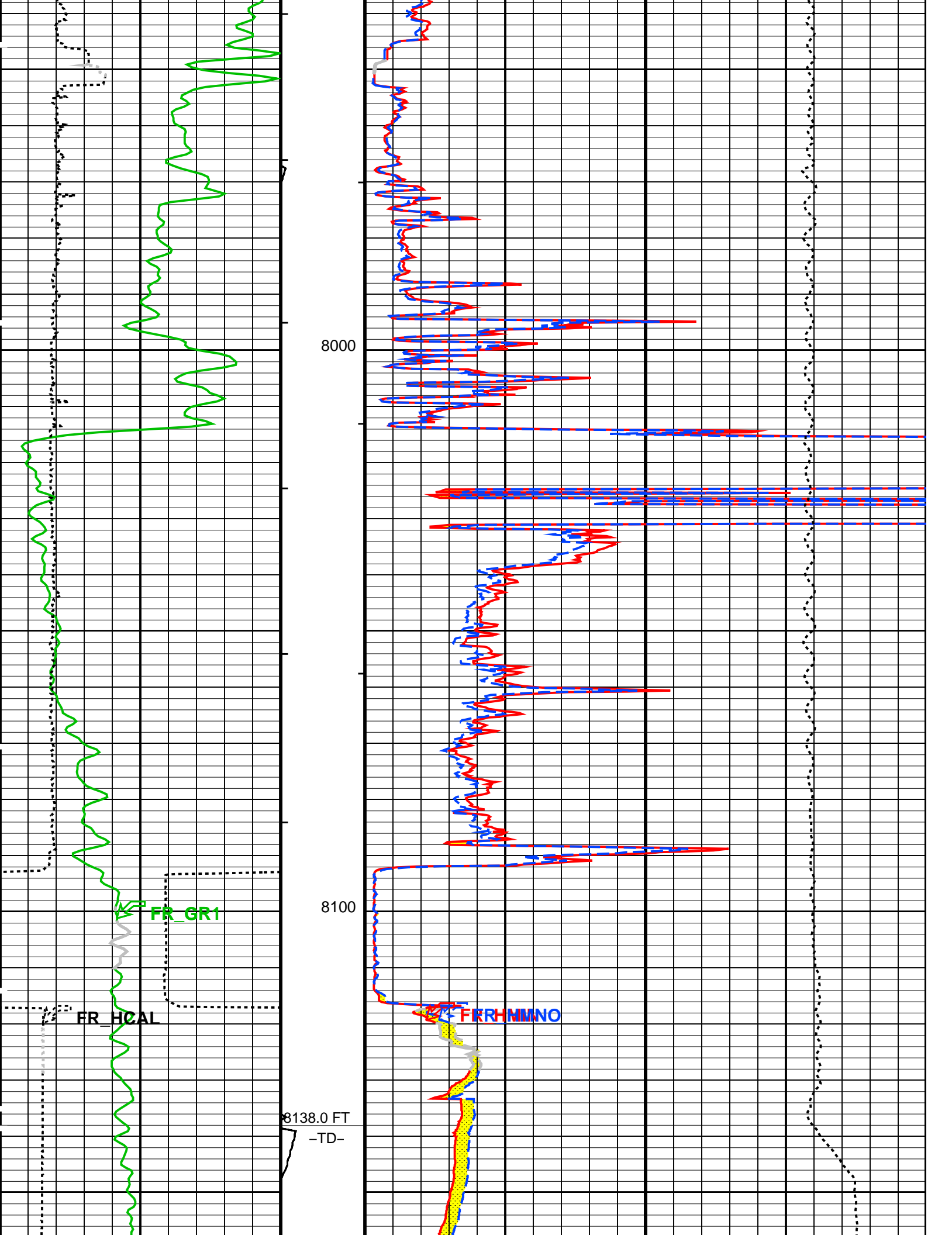


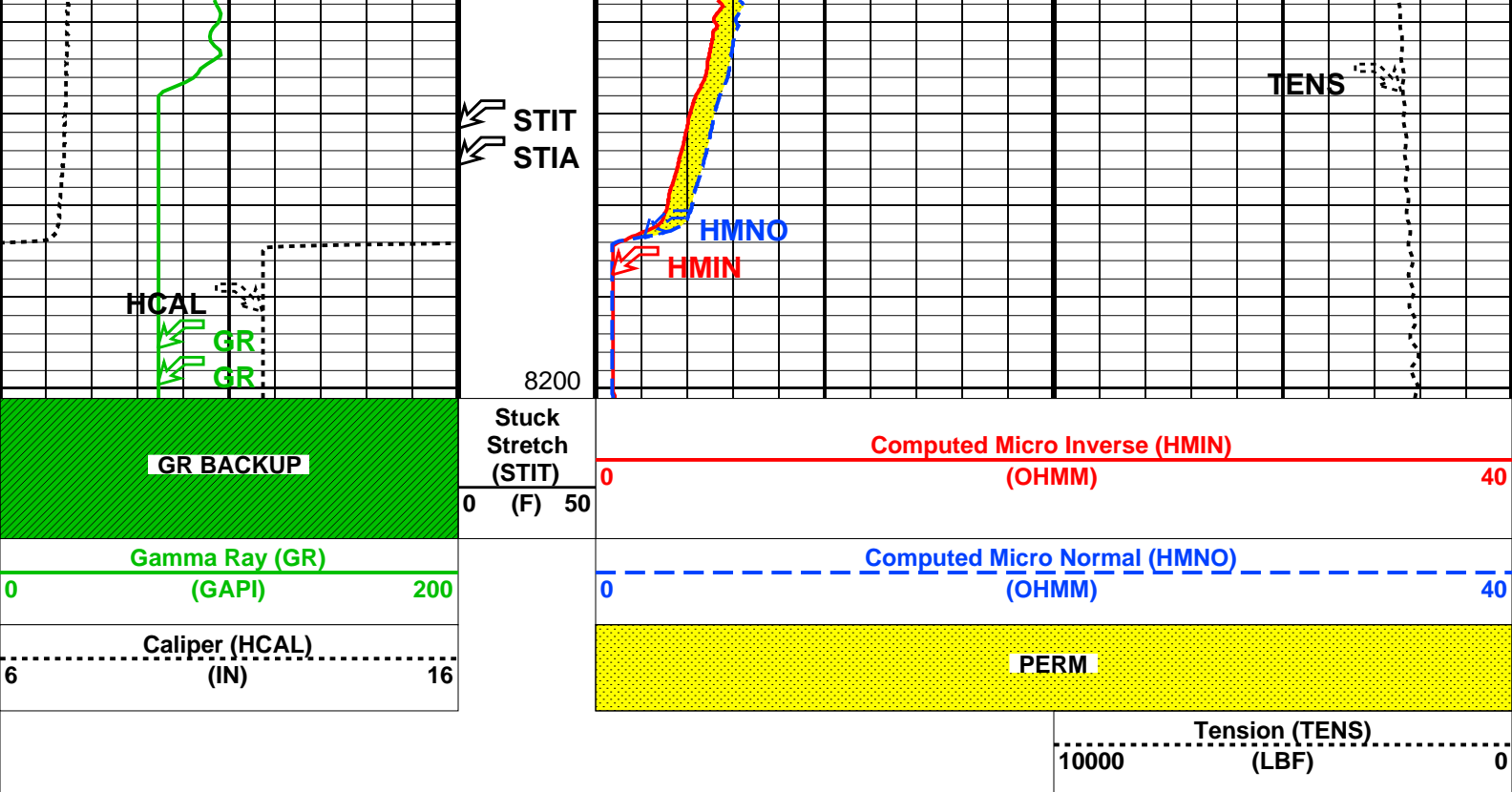












PIP SUMMARY

- └ 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-CTS: High resolution Integrated Logging Tool-CTS	ON
	MCFL Processing Operation Mode	
FCD	HOLEV: Integrated Hole/Cement Volume	4.5 IN
HVCS	Future Casing (Outer) Diameter	
	Integrated Hole Volume Caliper Selection	AUTOMATIC
STI	STI: Stuck Tool Indicator	
LBFR	Trigger for MAXIS First Reading Label	TDL
STKT	STI Stuck Threshold	2.5 FT
TDD	Total Depth - Driller	8177.00 FT
TDL	Total Depth - Logger	8138.00 FT
	System and Miscellaneous	
BS	Bit Size	7.875 IN
DO	Depth Offset for Playback	0.0 FT
DORL	Depth Offset for Repeat Analysis	0.0 FT
PP	Playback Processing	NORMAL
TD	Total Depth	8138 FT

Format: LOWER_MLT Vertical Scale: 5" per 100'

Graphics File Created: 28-Feb-2010 02:34

OP System Version: 17C0-154

HILTB-CTS 17C0-154

Input DLIS Files

HILTC .020 FN:19 28-Feb-2010 02:16 8201.0 FT 750.0 FT

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_024PUP FN:24 PRODUCER 28-Feb-2010 02:34

MAXIS Field Log

Input DLIS Files

	HILTC .020	FN:19		28-Feb-2010 02:16	8201.0 FT	750.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_021PUP	FN:21	PRODUCER	28-Feb-2010 02:20	2724.0 FT	2279.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:24	PRODUCER	28-Feb-2010 02:34
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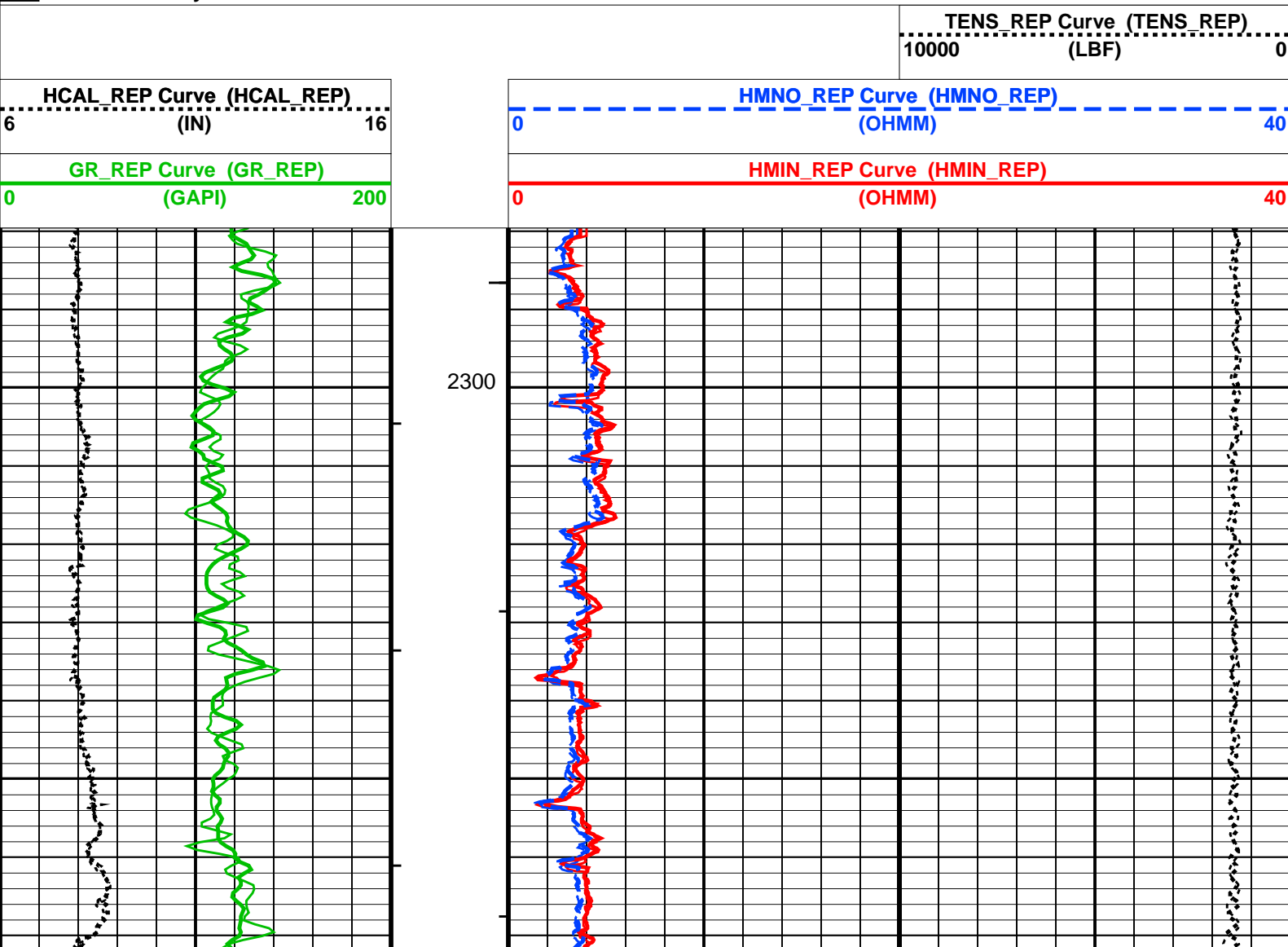
OP System Version: 17C0-154

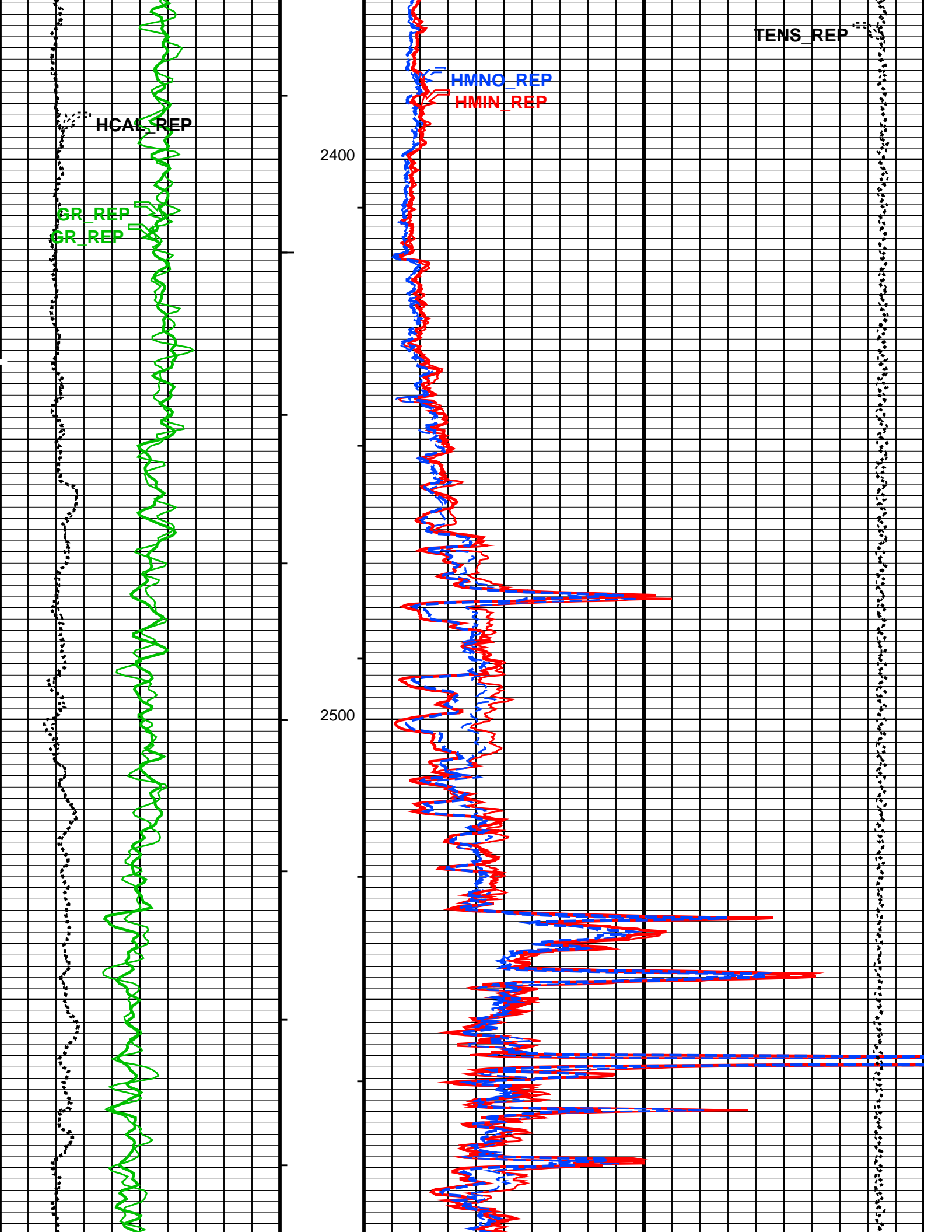
HILTB-CTS 17C0-154

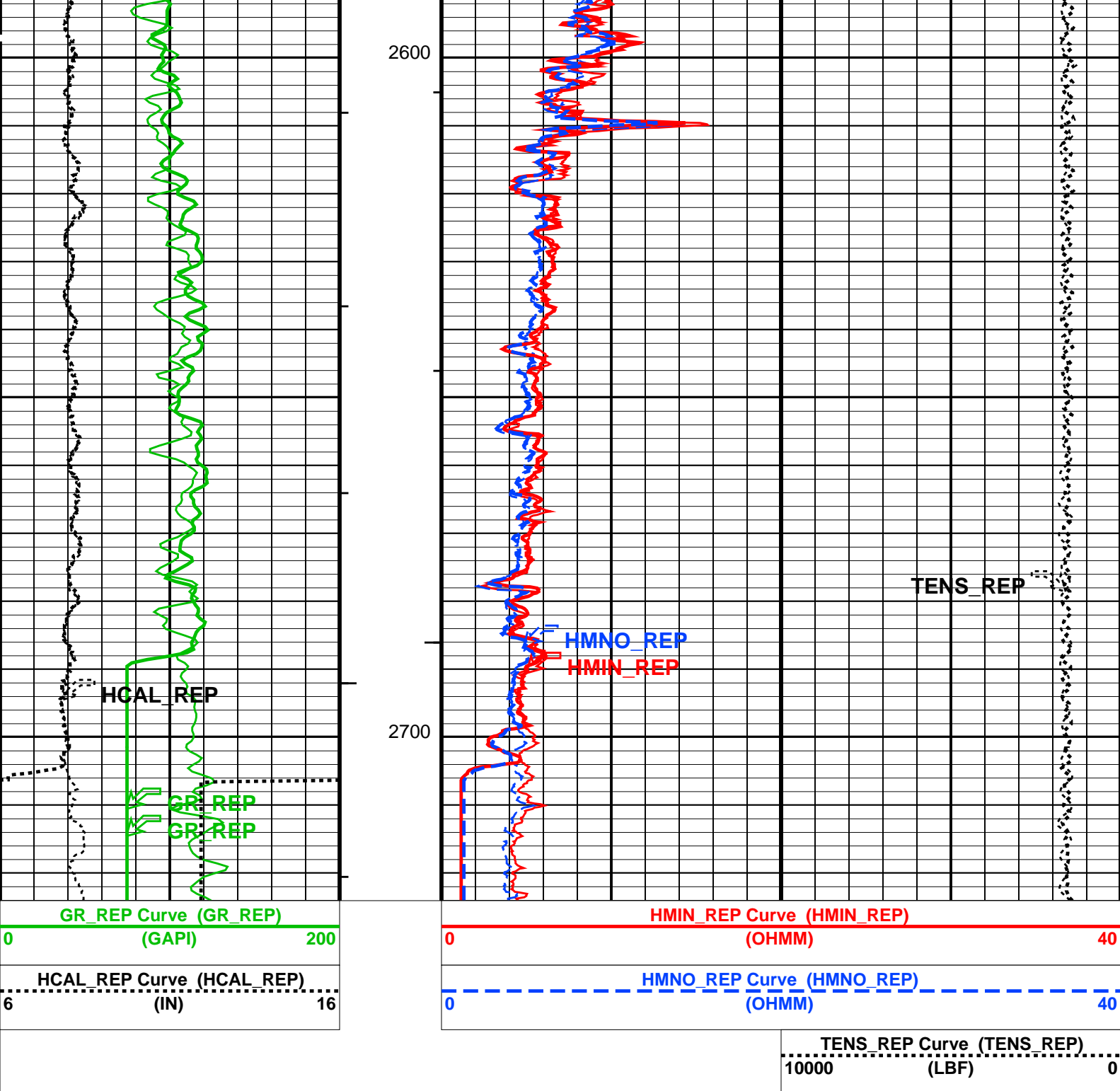
PIP SUMMARY

- └ 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-CTS: High resolution Integrated Logging Tool-CTS	ON
	MCFL Processing Operation Mode	
FCD	HOLEV: Integrated Hole/Cement Volume	4.5 IN
HVCS	Future Casing (Outer) Diameter	
	Integrated Hole Volume Caliper Selection	AUTOMATIC
System and Miscellaneous		
BS	Bit Size	7.875 IN
DO	Depth Offset for Playback	0.0 FT
DORL	Depth Offset for Repeat Analysis	0.0 FT
PS	Pressure Sensor	NORMAL

PP TD	Playback Processing Total Depth	NORMAL 8138 FT
Format: MLT_REP	Vertical Scale: 5" per 100'	Graphics File Created: 28-Feb-2010 02:34
OP System Version: 17C0-154		
HILTB-CTS	17C0-154	
Input DLIS Files		
	HILTC .020	FN:19 28-Feb-2010 02:16 8201.0 FT 750.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_021PUP	FN:21 PRODUCER 28-Feb-2010 02:20 2724.0 FT 2279.5 FT
Output DLIS Files		
DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:24 PRODUCER 28-Feb-2010 02:34

Schlumberger

BEFORE CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
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High resolution Integrated Logging Tool-CTS Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase

Master: 30-Nov-2009 14:59 Before: 27-Feb-2010 17:50

Thru Cal Magnitude – 0	0	0.6193	0.6199	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.271	1.273	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6293	0.6297	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7116	0.7125	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.330	1.332	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.924	1.927	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.927	1.930	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.353	1.357	N/A	N/A	N/A	V
Phase – 0	0	68.36	69.31	N/A	N/A	N/A	DEG
Phase – 1	0	67.36	68.32	N/A	N/A	N/A	DEG
Phase – 2	0	63.29	64.28	N/A	N/A	N/A	DEG
Phase – 3	0	62.43	63.42	N/A	N/A	N/A	DEG
Phase – 4	0	55.68	56.70	N/A	N/A	N/A	DEG
Phase – 5	0	53.53	54.58	N/A	N/A	N/A	DEG
Phase – 6	0	53.50	54.55	N/A	N/A	N/A	DEG
Phase – 7	0	48.00	49.30	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration – Electronics Calibration Check – Auxilliary

Master: 30-Nov-2009 14:59 Before: 27-Feb-2010 17:50

Array Induction SPA Plus	990.5	992.6	991.9	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.2184	-0.2093	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9194	0.9187	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0002118	-0.0002148	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration – Test Loop Gain Correction

Master: 30-Nov-2009 14:59

Test Loop Gain Magnitude – 0	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	0.9923	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	0.9870	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	0.9920	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.003	N/A	N/A	N/A	N/A	V
Phase – 0	0	-2.469	N/A	N/A	N/A	N/A	DEG

Phase – 1	0	-0.1516	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	0.9347	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	0.1802	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	0.1003	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	-0.09392	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.2377	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	-0.1620	N/A	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool–CTS Wellsite Calibration – Sonde Error Correction

Master: 30–Nov–2009 14:59

R Sonde Error Correction – 0	0	-76.56	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	170.5	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	110.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	61.12	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	24.14	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	14.16	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	9.674	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-1.714	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	-228.6	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	141.0	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	-31.72	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-44.12	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	2.293	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	17.99	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	-4.867	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	-0.3559	N/A	N/A	N/A	N/A	MM/M

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

Master: 30–Nov–2009 14:59

Coarse – Mag, Real, Imag – 0	0	1.073	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 1	0	1.073	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 2	0	1.073	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 0	0	1.072	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 1	0	1.072	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 2	0	1.072	N/A	N/A	N/A	N/A

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

Before: 27–Feb–2010 17:47

BS Window Ratio	0.7600	N/A	0.7621	N/A	N/A	N/A	
BS Window Sum	10410	N/A	10390	N/A	N/A	N/A	CPS
SS Window Ratio	0.4998	N/A	0.4968	N/A	N/A	N/A	
SS Window Sum	9832	N/A	9815	N/A	N/A	N/A	CPS
LS Window Ratio	0.2927	N/A	0.2917	N/A	N/A	N/A	
LS Window Sum	1029	N/A	1025	N/A	N/A	N/A	CPS

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

Before: 27–Feb–2010 17:47

BS PM High Voltage (Command)	1363	N/A	1385	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1401	N/A	1419	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1517	N/A	1530	N/A	N/A	N/A	V

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

Before: 27–Feb–2010 17:47

BS Crystal Resolution	10.64	N/A	10.70	N/A	N/A	N/A	%
SS Crystal Resolution	9.215	N/A	9.428	N/A	N/A	N/A	%
LS Crystal Resolution	10.18	N/A	9.821	N/A	N/A	N/A	%

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

Before: 27–Feb–2010 17:48

Raw B0 Resistivity	3875	N/A	3876	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3827	N/A	N/A	N/A	OHMM

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

Before: 27–Feb–2010 17:42

HILT Caliper Zero Measurement	8.000	N/A	9.888	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	13.98	N/A	N/A	N/A	IN

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

Before: 27–Feb–2010 17:42

Gamma Ray Background	30.00	N/A	91.33	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkgd)	165.0	N/A	167.2	N/A	N/A	15.00	GAPI

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

Master: 10–Jan–2010 18:39 Before: 27–Feb–2010 17:43

CNTC Background	26.69	26.69	27.47	N/A	N/A	4.004	CPS
CFTC Background	33.46	33.46	29.03	N/A	N/A	5.019	CPS



























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

Master: 10–Jan–2010 18:39

Thermal Near Corr. (Tank)	5800	5102	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2122	2172	N/A	N/A	N/A	N/A	CPS

Thermal Far Corr. (Tank)	2400	2170	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.351	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–CTS Wellsite Calibration – Accelerometer Calibration							
Before: 27–Feb–2010 23:58							
Z–Axis Acceleration	32.19	N/A	31.68	N/A	N/A	N/A	F/S2
High resolution Integrated Logging Tool–CTS Master Calibration – Inversion results							
Master: 16–Feb–2010 14:22							
Rho Aluminum	2.596	2.600	--	--	--	--	G/C3
Rho Magnesium	1.686	1.686	--	--	--	--	G/C3
Pe Aluminum	2.570	2.554	--	--	--	--	
Pe Magnesium	2.650	2.639	--	--	--	--	
High resolution Integrated Logging Tool–CTS Master Calibration – Deviation Summary							
Master: 16–Feb–2010 14:22							
BS Average Deviation	0	0.3068	--	--	--	--	%
BS Max Deviation	0	0.7997	--	--	--	--	%
SS Average Deviation	0	0.2497	--	--	--	--	%
SS Max Deviation	0	1.017	--	--	--	--	%
LS Average Deviation	0	0.5285	--	--	--	--	%
LS Max Deviation	0	1.602	--	--	--	--	%
The GLS–VJ source activity is acceptable.							
The HGNS Neutron Master Calibration was done with the following parameters :							
NCT–B Water Temperature	57.6	DEGF.					
Thermal Housing Size	3.357	IN.					
NSR–F serial number	5168						

High resolution Integrated Logging Tool–CTS / Equipment Identification							
Primary Equipment:							
Array Induction Tool – H				AIT – H			
Rm/SP Bottom Nose				AHRM – A			
Array Induction Sonde				AHIS – BA	397		
HILT high–Resolution Mechanical Sonde				HRMS – B			
HILT Rxo Gamma–ray Device				HRGD – B			
HILT Micro Cylindrically Focused Log Dev				MCFL –			
GR Logging Source				GLS – VJ	5363		
HILT High Res. Control Cartridge				HRCC – B			
Auxiliary Equipment:							







High resolution Integrated Logging Tool–CTS Wellsite Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6193		0.6050	68.36		71.00
	Before	0.6199			69.31		
1	Master	1.271		1.270	67.36		70.00
	Before	1.273			68.32		
2	Master	0.6293		0.6230	63.29		66.00
	Before	0.6297			64.28		
3	Master	0.7116		0.7040	62.43		65.00
	Before	0.7125			63.42		
4	Master	1.330		1.337	55.68		59.00
	Before	1.332			56.70		
5	Master	1.924		1.955	53.53		57.00
	Before	1.927			54.58		
6	Master	1.927		1.955	53.50		57.00







7	Before	1.930		1.415	54.55		53.00
	Master	1.353			48.00		
	Before	1.357			49.30		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 30-Nov-2009 14:59				Before: 27-Feb-2010 17:50			

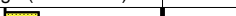

High resolution Integrated Logging Tool-CTS Wellsite Calibration									
Electronics Calibration Check – Auxilliary									
Phase	Array Induction SPA Plus MV			Value	Phase	Array Induction SPA Zero MV			Value
Master				992.6	Master				-0.2184
Before				991.9	Before				-0.2093
941.0 (Minimum) 990.5 (Nominal) 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				0.9194	Master				-0.0002118
Before				0.9187	Before				-0.0002148
0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)					-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)				
Master: 30-Nov-2009 14:59					Before: 27-Feb-2010 17:50				




High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Test Loop Gain Correction								
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.013				-2.469			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.015				-0.1516			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.016				0.9347			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.012				0.1802			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9923				0.1003			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9870				-0.09392			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9920				0.2377			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.003				-0.1620			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
Master: 30-Nov-2009 14:59								




High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Sonde Error Correction								
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-76.56				-228.6			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	170.5				141.0			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.7				-31.72			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	61.12				-44.12			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)

High resolution Integrated Logging Tool—CTS Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 30–Nov–2009 14:59								

High resolution Integrated Logging Tool—CTS Wellsite Calibration														
Stab Measurement Summary														
Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				0.7621	Before				0.4968	Before				0.2917
	0.7220 (Minimum)	0.7600 (Nominal)	0.7980 (Maximum)		0.4748 (Minimum)	0.4998 (Nominal)	0.5248 (Maximum)			0.2780 (Minimum)	0.2927 (Nominal)	0.3073 (Maximum)		
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
Before				10390	Before				9815	Before				1025
	9887 (Minimum)	10410 (Nominal)	10930 (Maximum)		9341 (Minimum)	9832 (Nominal)	10320 (Maximum)			977.6 (Minimum)	1029 (Nominal)	1081 (Maximum)		
Before: 27-Feb-2010 17:47														



High resolution Integrated Logging Tool—CTS Wellsite Calibration									
Photo-multiplier High Voltages Calibrations									
Phase	BS PM High Voltage (Command) V			Value	Phase	SS PM High Voltage (Command) V			Value
Before				1385	Before				1419
	1263 (Minimum)	1363 (Nominal)	1463 (Maximum)			1301 (Minimum)	1401 (Nominal)	1501 (Maximum)	
Before: 27-Feb-2010 17:47									

High resolution Integrated Logging Tool—CTS Wellsite Calibration											
Crystal Quality Resolutions Calibration											
Phase	BS Crystal Resolution %		Value	Phase	SS Crystal Resolution %		Value	Phase	LS Crystal Resolution %		Value
Before			10.70	Before			9.428	Before			9.821
	9.637 (Minimum)	10.64 (Nominal)	11.64 (Maximum)		8.215 (Minimum)	9.215 (Nominal)	10.21 (Maximum)		9.176 (Minimum)	10.18 (Nominal)	11.18 (Maximum)
Before: 27-Feb-2010 17:47											

High resolution Integrated Logging Tool—CTS Wellsite Calibration											
MCFL Calibration											
Phase	Raw B0 Resistivity OHMM		Value	Phase	Raw B1 Resistivity OHMM		Value	Phase	Raw B2 Resistivity OHMM		Value
Before			3876	Before			3823	Before			3827
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)
Before: 27-Feb-2010 17:48											

High resolution Integrated Logging Tool–CTS Wellsite Calibration



HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		9.888	Before		13.98
6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)

Before: 27–Feb–2010 17:42

High resolution Integrated Logging Tool–CTS Wellsite Calibration





Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig – Bkgd) GAPI	Value
Before		91.33	Before		167.2
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	157.1 (Minimum)	165.0 (Nominal)	206.3 (Maximum)

Before: 27–Feb–2010 17:42

High resolution Integrated Logging Tool–CTS Wellsite Calibration




Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		26.69	Master		33.46
Before		27.47	Before		29.03
5.000 (Minimum)	26.69 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	33.46 (Nominal)	40.00 (Maximum)

Master: 10–Jan–2010 18:39 Before: 27–Feb–2010 17:43

High resolution Integrated Logging Tool–CTS Wellsite Calibration

Ratio Measurement


Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5102	Master		2170	Master		2.351
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 10–Jan–2010 18:39

High resolution Integrated Logging Tool–CTS

Wellsite Calibration

















Accelerometer Calibration

Phase	Z–Axis Acceleration F/S2	Value
Before		31.68
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 27–Feb–2010 23:58

High resolution Integrated Logging Tool–CTS Master Calibration



Electronics Calibration Check – Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6193		0.6050	68.36		71.00
1	Master	1.271		1.270	67.36		70.00
2	Master	0.6293		0.6230	63.29		66.00
3	Master	0.7116		0.7040	62.43		65.00
4	Master	1.330		1.337	55.68		59.00
5	Master	1.924		1.955	53.53		57.00
6	Master	1.927		1.955	53.50		57.00
7	Master	1.353		1.415	48.00		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom –60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 30–Nov–2009 14:59


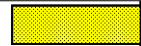














High resolution Integrated Logging Tool–CTS Master Calibration

Electronics Calibration Check – Auxilliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		992.6	Master		–0.2184

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		
Master			0.9194	Master		
0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)

Master: 30-Nov-2009 14:59

High resolution Integrated Logging Tool-CTS Master Calibration						
Test Loop Gain Correction						
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG
0	1.013				-2.469	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
1	1.015				-0.1516	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
2	1.016				0.9347	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
3	1.012				0.1802	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
4	0.9923				0.1003	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
5	0.9870				-0.09392	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
6	0.9920				0.2377	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
7	1.003				-0.1620	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
Master: 30-Nov-2009 14:59						

Master: 30-Nov-2009 14:59

High resolution Integrated Logging Tool-CTS Master Calibration							
Sonde Error Correction							
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M	
0	-76.56				-228.6		
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal) 2250 (Maximum)
1	170.5				141.0		
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal) 625.0 (Maximum)
2	110.7				-31.72		
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal) 350.0 (Maximum)
3	61.12				-44.12		
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal) 250.0 (Maximum)
4	24.14				2.293		
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal) 63.00 (Maximum)
5	14.16				17.99		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal) 50.00 (Maximum)
6	9.674				-4.867		
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal) 30.00 (Maximum)
7	-1.714				-0.3559		
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal) 30.00 (Maximum)
Master: 30-Nov-2009 14:59							

Master: 30-Nov-2009 14:59

High resolution Integrated Logging Tool–CTS Master Calibration

Mud Gain Correction

Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.073				1.072			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 30–Nov–2009 14:59

High resolution Integrated Logging Tool–CTS Master Calibration

Inversion results

Phase	Rho Aluminum G/C3			Value	Phase	Rho Magnesium G/C3			Value
Master				2.600	Master				1.686
	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			Value
Master				2.554	Master				2.639
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)			2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)	

Master: 16–Feb–2010 14:22

High resolution Integrated Logging Tool–CTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %			Value	Phase	SS Average Deviation %			Value	Phase	LS Average Deviation %			Value
Master				0.3068	Master				0.2497	Master				0.5285
	-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)			-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)			-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)	
Phase	BS Max Deviation %			Value	Phase	SS Max Deviation %			Value	Phase	LS Max Deviation %			Value
Master				0.7997	Master				1.017	Master				1.602
	-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)			-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)			-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)	

Master: 16–Feb–2010 14:22

High resolution Integrated Logging Tool–CTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				26.69	Master				33.46
	5.000 (Minimum)	26.69 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	33.46 (Nominal)	40.00 (Maximum)	

Master: 10–Jan–2010 18:39

High resolution Integrated Logging Tool–CTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value	Phase	CNTC/CFTC (Tank)			Value
Master				5102	Master				2170	Master				2.351
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 10–Jan–2010 18:39

Well: **Frank 3-5**
Field: **Wattenberg**
County: **Weld**
State: **Colorado**

Platform Express
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