

County: Weld  
Field: Wattenburg

Log	Run	Dep	Sch	Bot	Top	Cas	Cas	Bit s	Type	De	Flu	Sol	RM	RM	RM	RM	Sou	RM	Max	Circ	Log	Unit	Rec	Witr
MUD													RM	RM	RM	RM	Sou	RM	Max	Circ	Log	Unit	Rec	Witr

**Orr Energy LLC**  
**South 6-21D**  
**Wattenburg**  
**Weld**

[illegible][illegible]

Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth		@	
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
Density	Viscosity		
Fluid Loss	PH		
Source Of Sample			
RM @ Measured Temperature		@	
RMF @ Measured Temperature		@	
RMC @ Measured Temperature		@	
Source RMF	RMC		
RM @ MRT	RMF @ MRT	@	@
Maximum Recorded Temperatures			
Circulation Stopped	Time		
Logger On Bottom	Time		
Unit Number	Location		
Recorded By			
Witnessed By			



Rig: Ensign 7	
Crew: Matt Baldwin, Ian Derry, & David Marquez	
<div>RUN 1</div> <div> <div>SERVICE ORDER #:</div> <div>PROGRAM VERSION:</div> <div>FLUID LEVEL:</div> </div> <div> <div>11989844</div> <div>15C0-309</div> <div>5 ft</div> </div>	<div>RUN 2</div> <div> <div>SERVICE ORDER #:</div> <div>PROGRAM VERSION:</div> <div>FLUID LEVEL:</div> </div>
<div>LOGGED INTERVAL</div> <div>START</div> <div>STOP</div>	<div>LOGGED INTERVAL</div> <div>START</div> <div>STOP</div>

EQUIPMENT DESCRIPTION

RUN 1

RUN 2

SURFACE EQUIPMENT

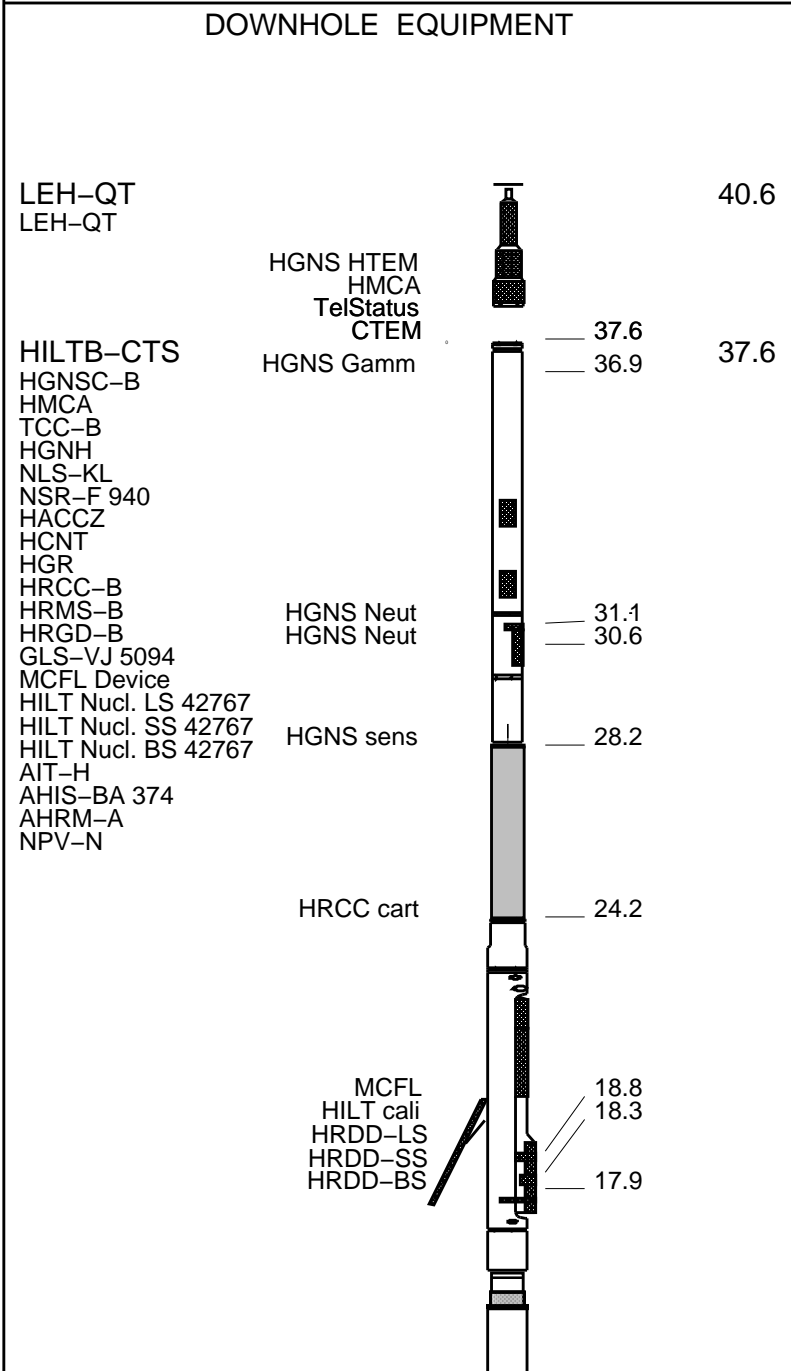
WITM (CTS)-A

GSR-U/Y

NCT-B

CNB-AB

NCS-VB



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, 24.0 lbm/ft

Casing Shoe

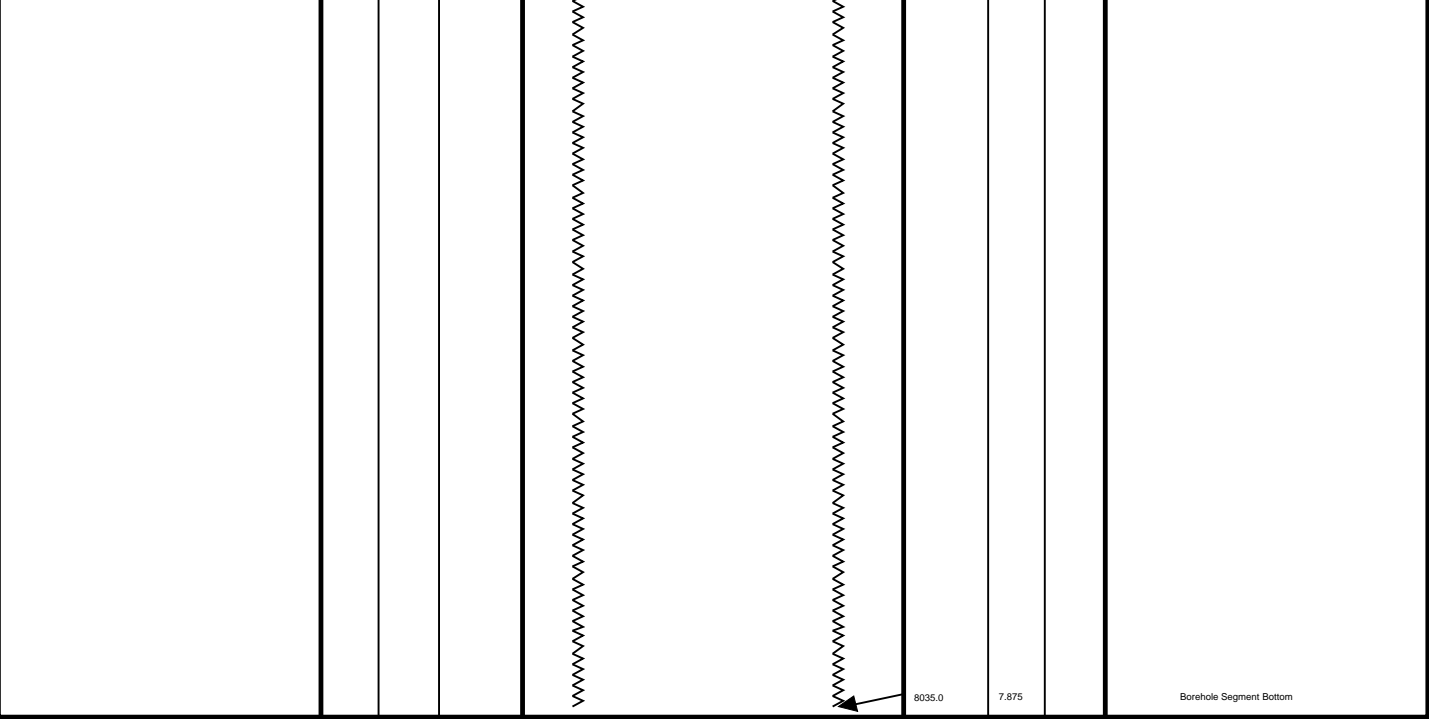
Borehole Segment

847.0

8.625

847.0

7.875



ALL DEPTHS AS PER DRILLER



UPPER POROSITY LOG 5" = 100'

MAXIS Field Log

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13-Dec-2007 19:00	8070.0 FT	818.0 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_018PUP	FN:17	PRODUCER	13-Dec-2007 20:42	5200.0 FT	2203.5 FT
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Integrated Hole/Cement Volume Summary

Hole Volume = 1170.04 F3  
Cement Volume = 839.10 F3 (assuming 4.50 IN casing O.D.)  
Computed from 5200.0 FT to 2204.0 FT using data channel(s) HCAL

OP System Version: 15C0-309  
MCM

# Changed Parameter Summary

DLIS Name

New Value

Previous Value Depth & Time

MATR  
MDEN

SANDSTONE  
2.68 G/C3

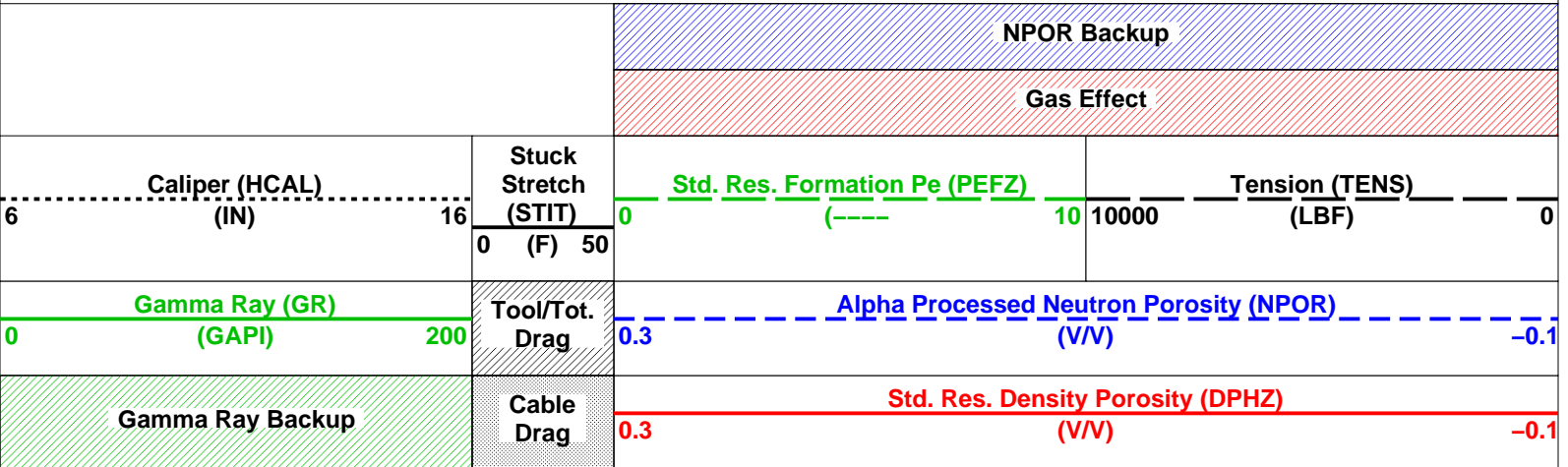
SANDSTONE  
2.68 G/C3

5200.0 20:42:30  
5200.0 20:42:30

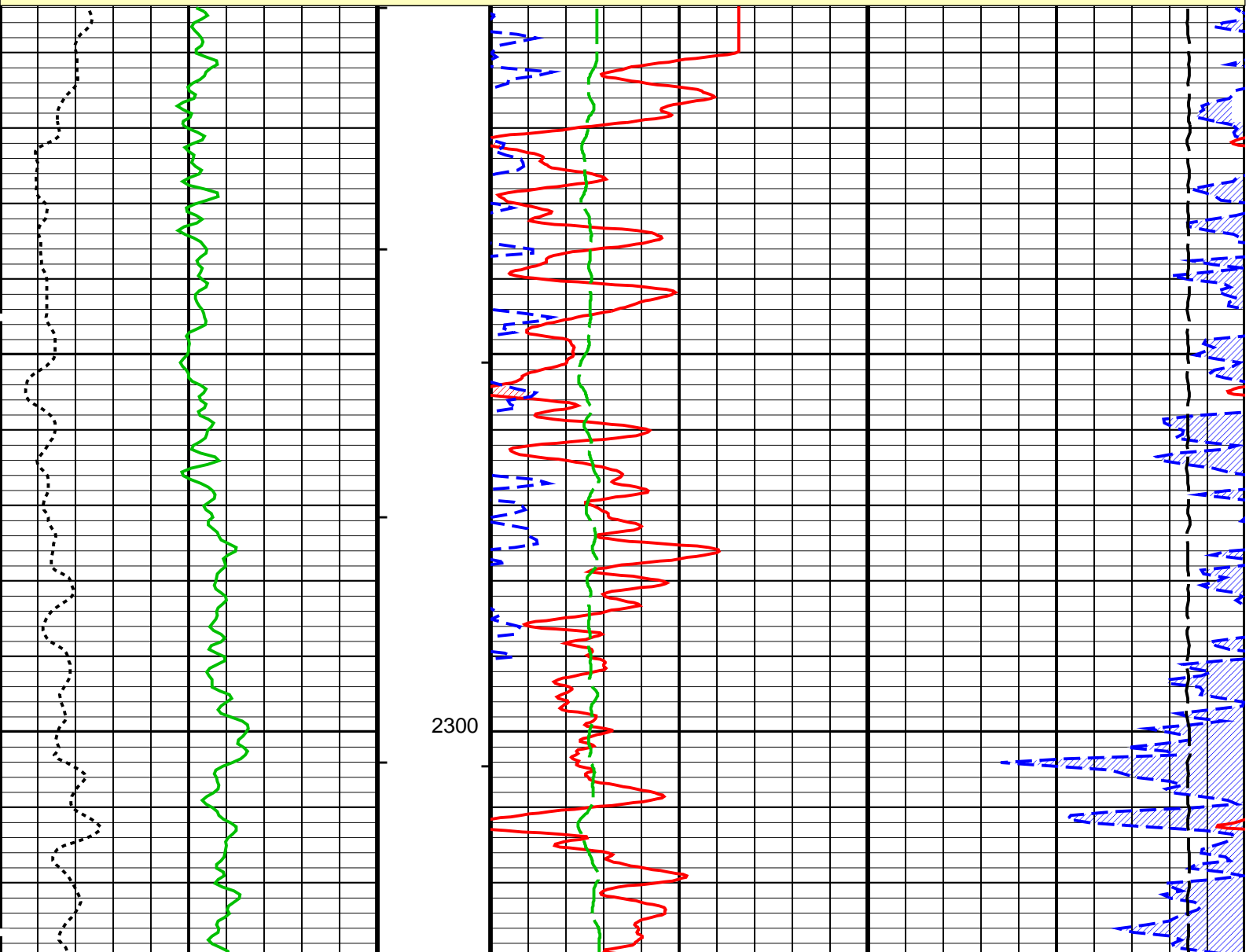
## PIP SUMMARY

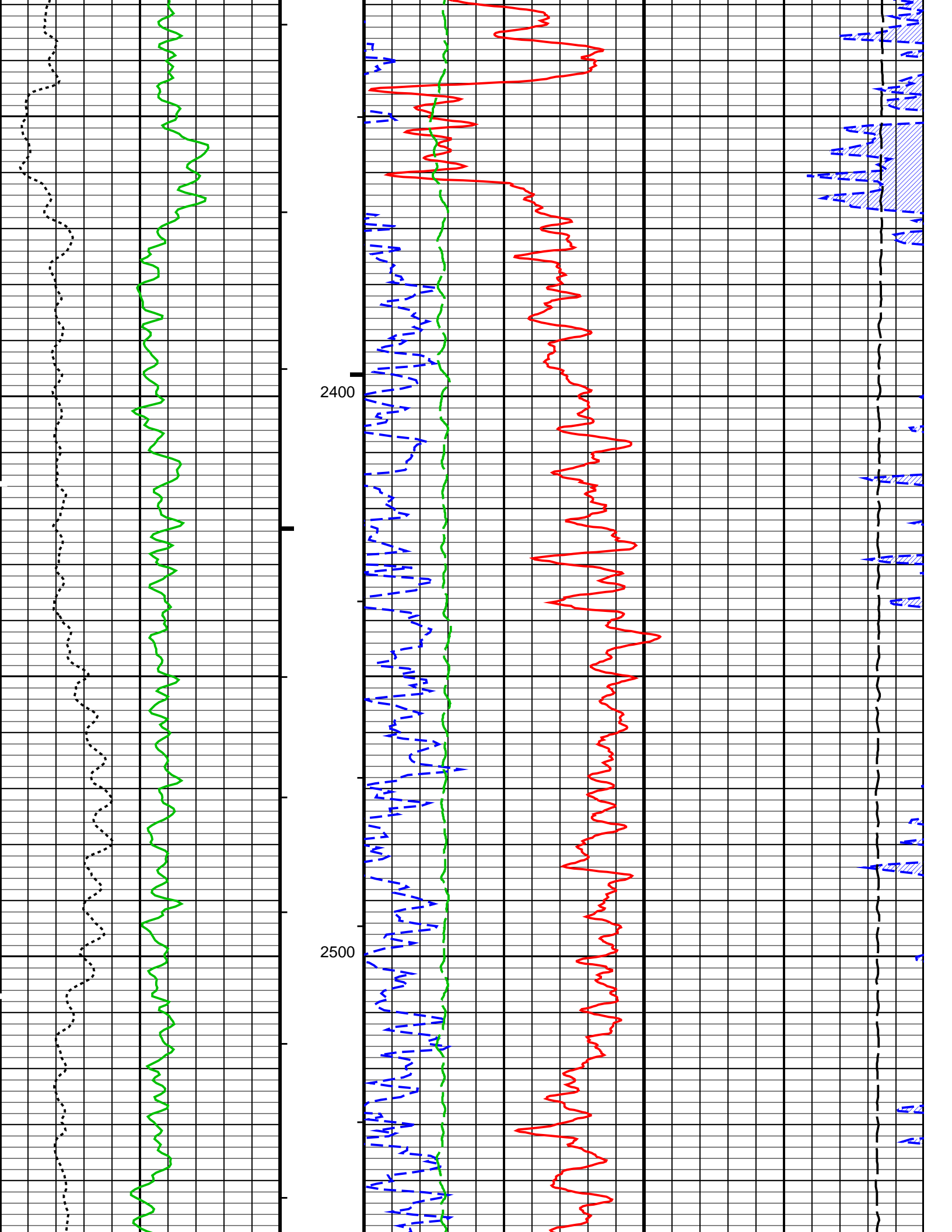
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
  - └ Integrated Cement Volume Minor Pip Every 10 F3
  - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

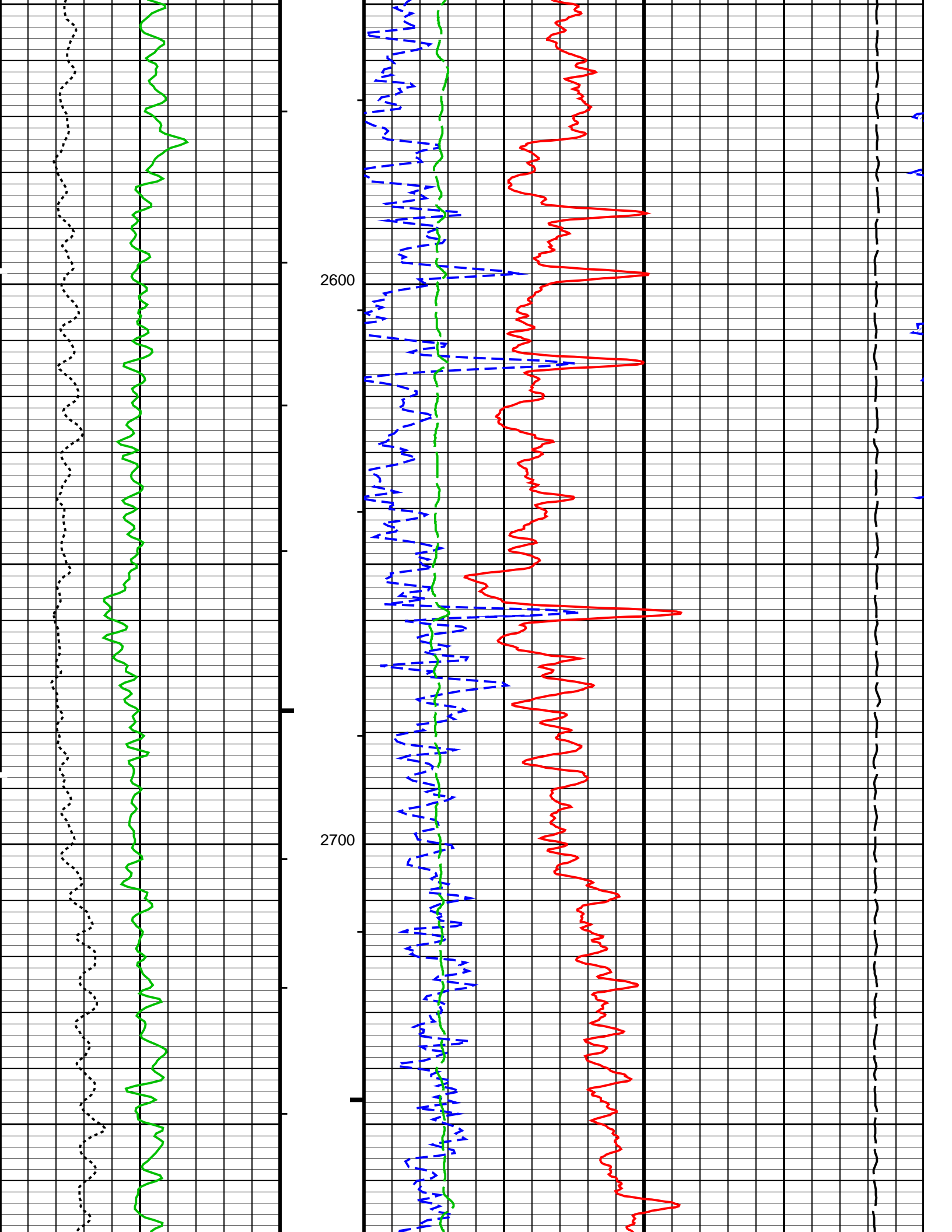


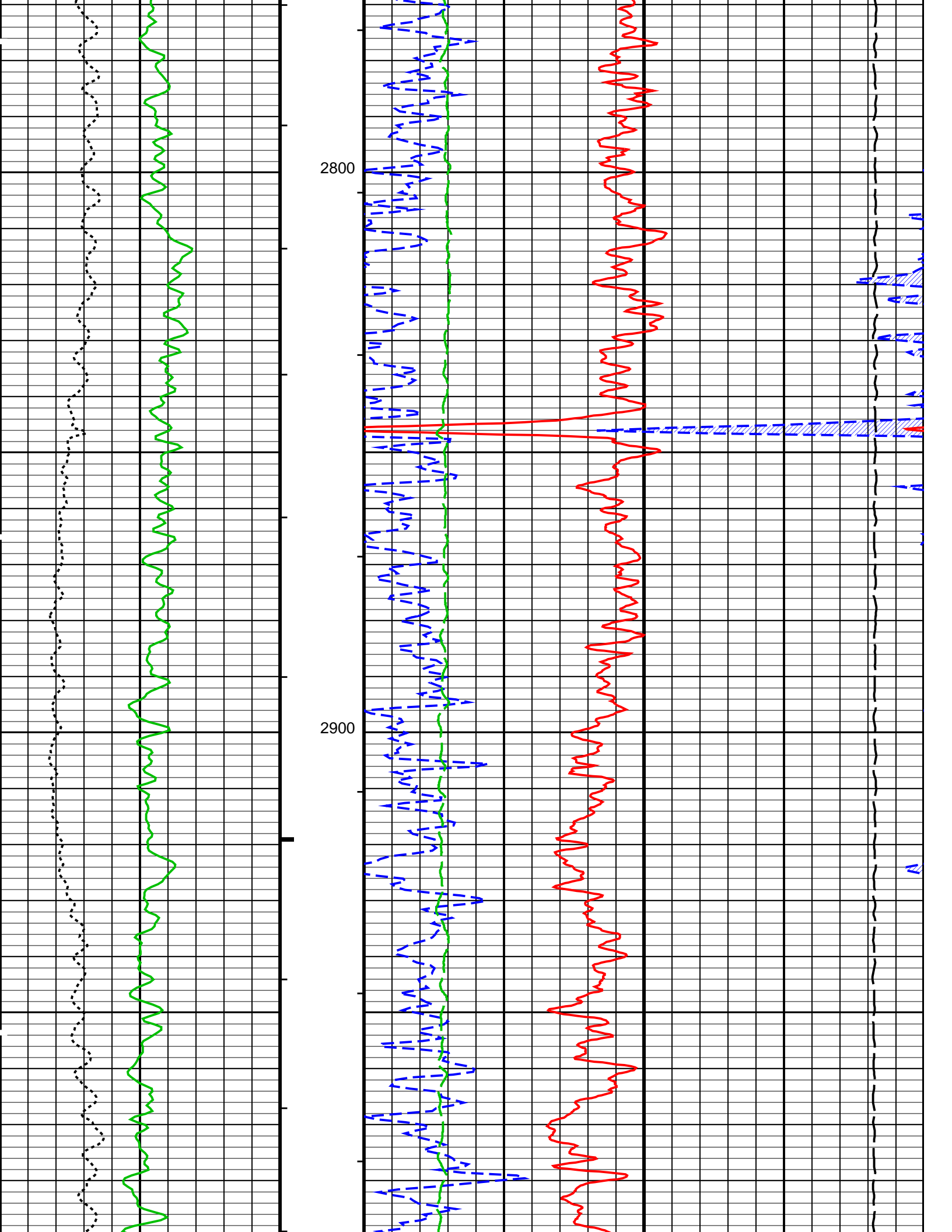
MAIN PASS: \*\*\* PLATFORM EXPRESS - NUCLEAR POROSITY \*\*\*

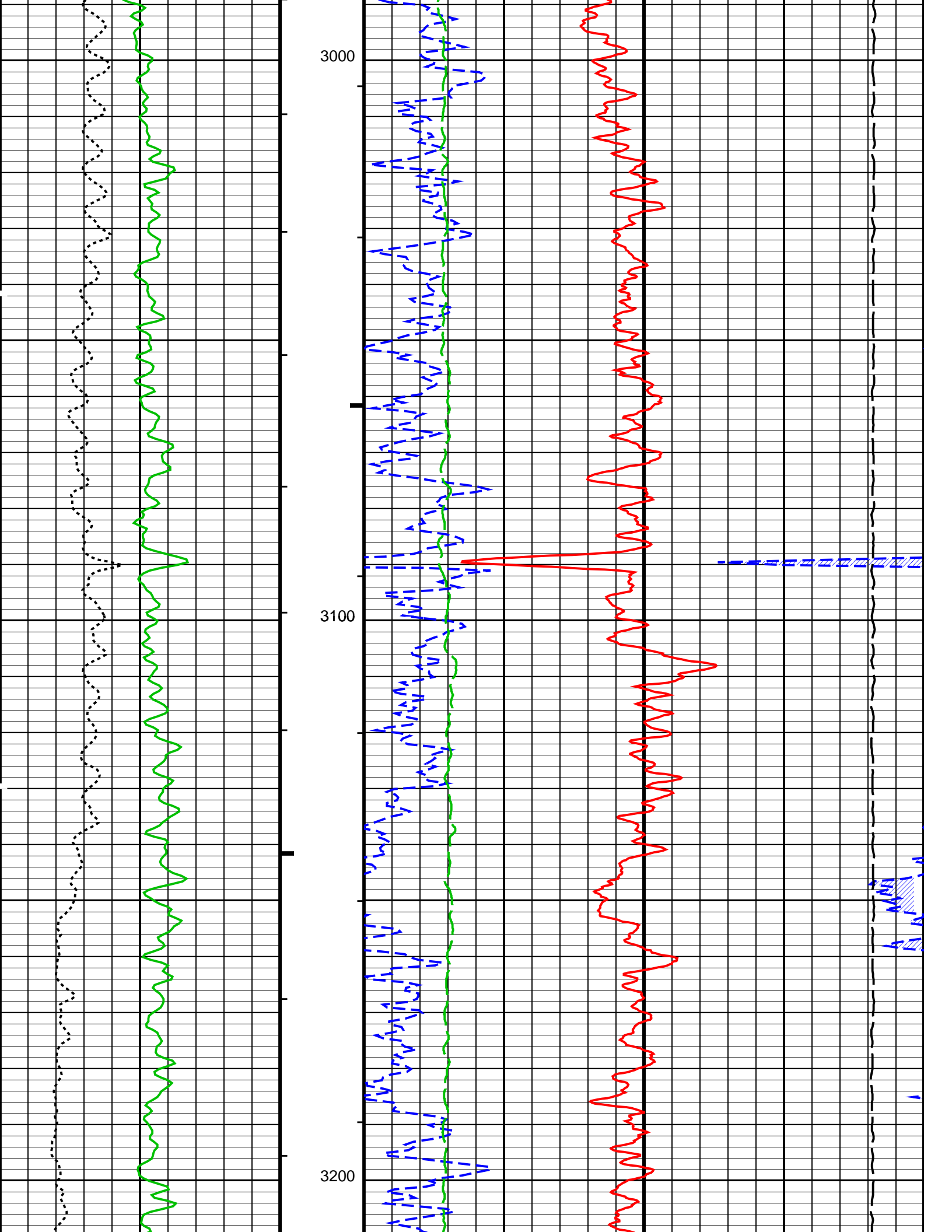


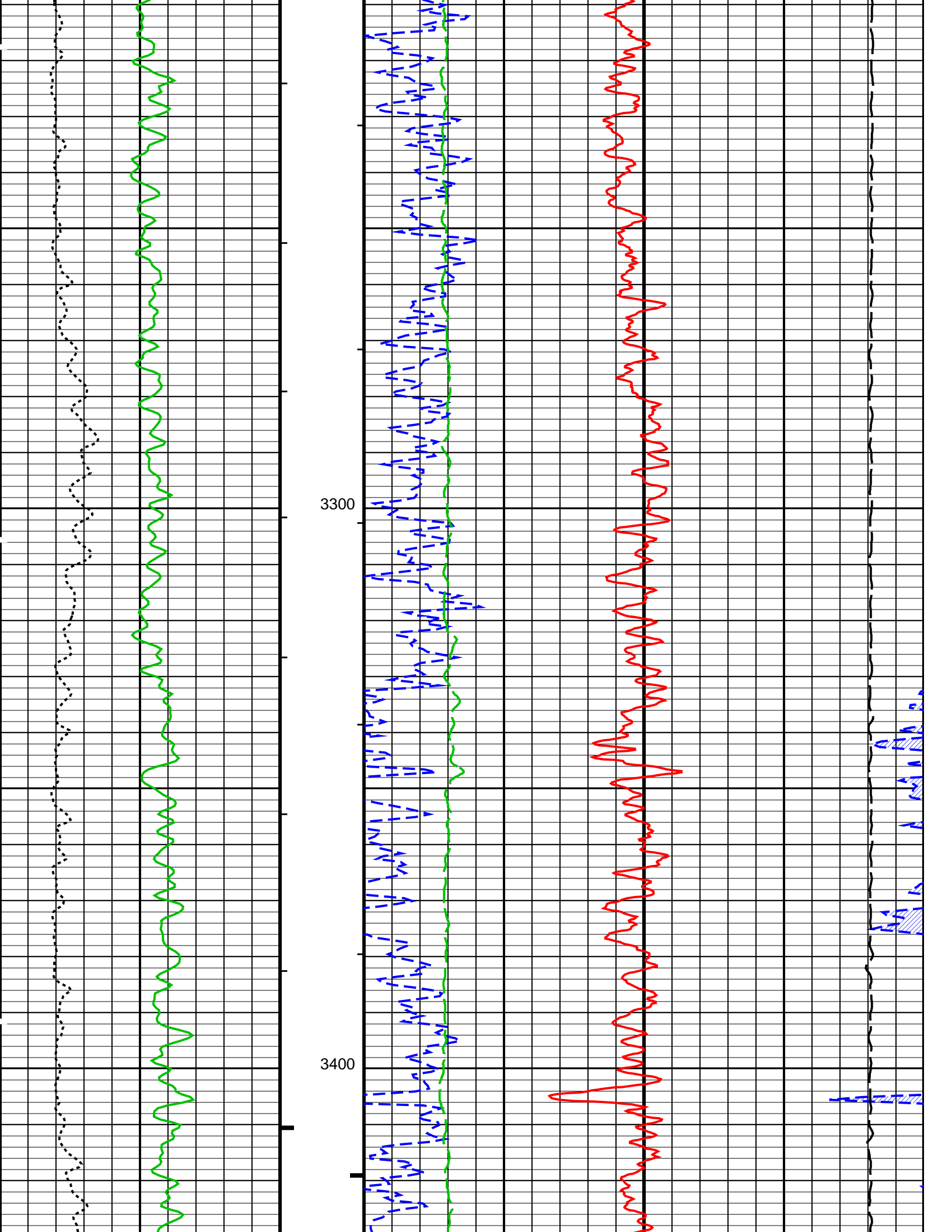


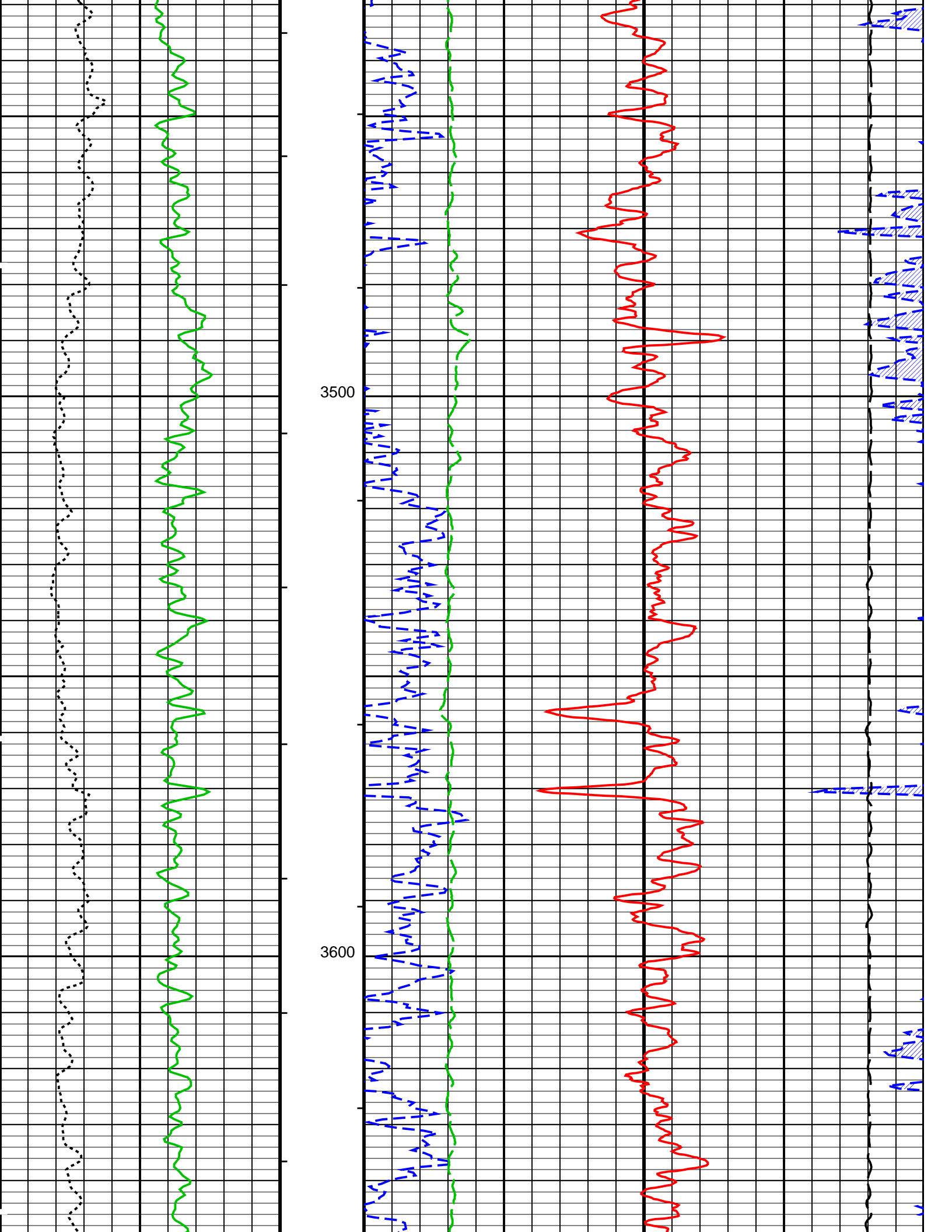


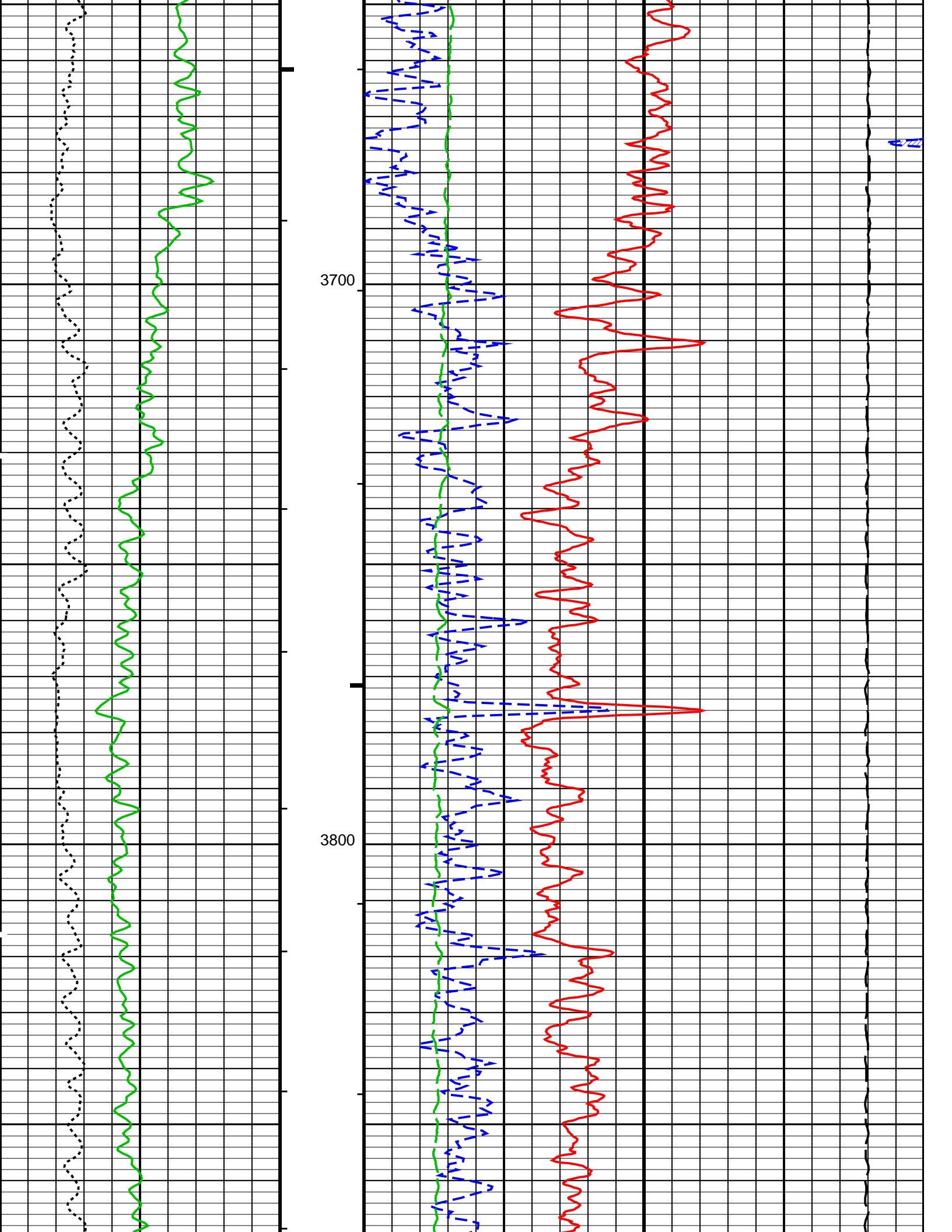


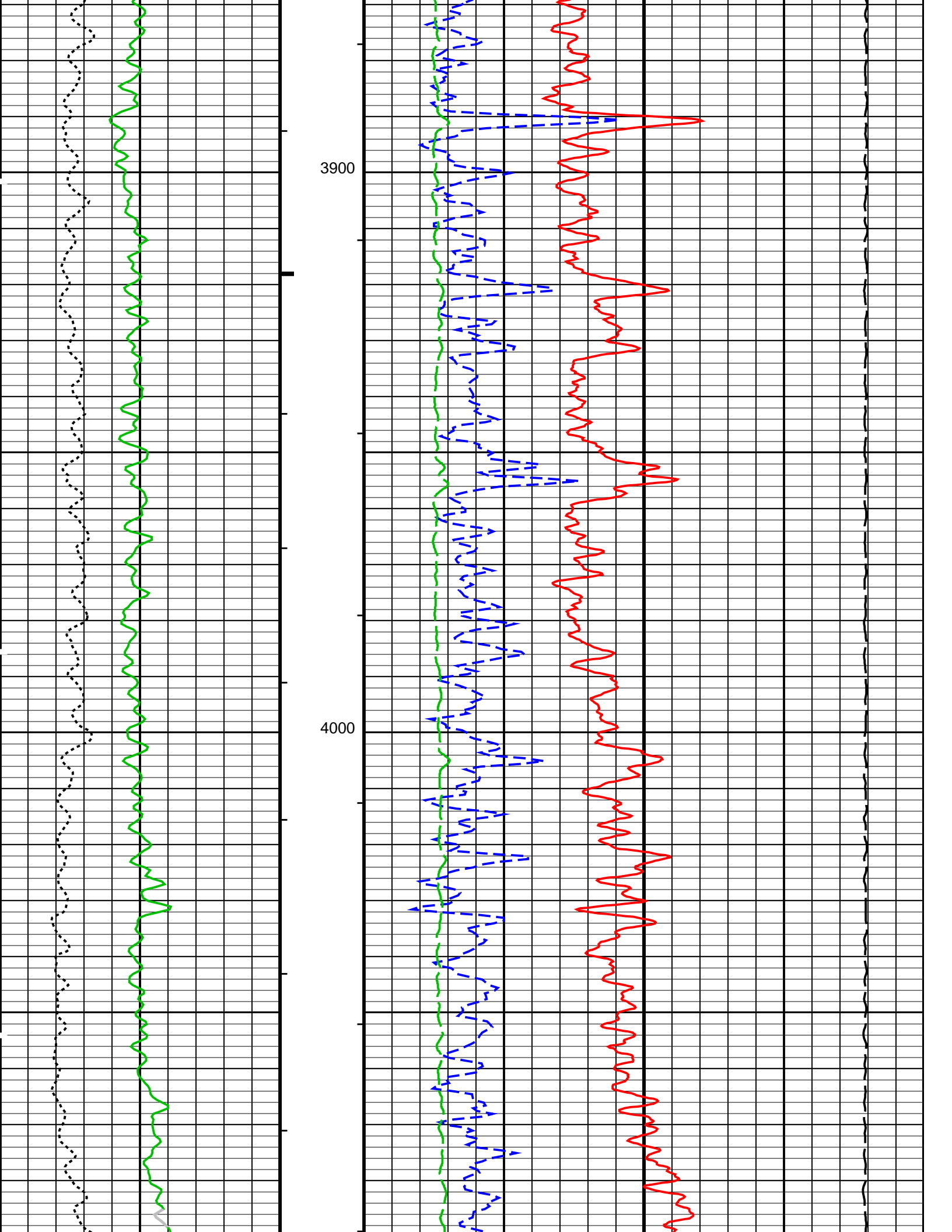


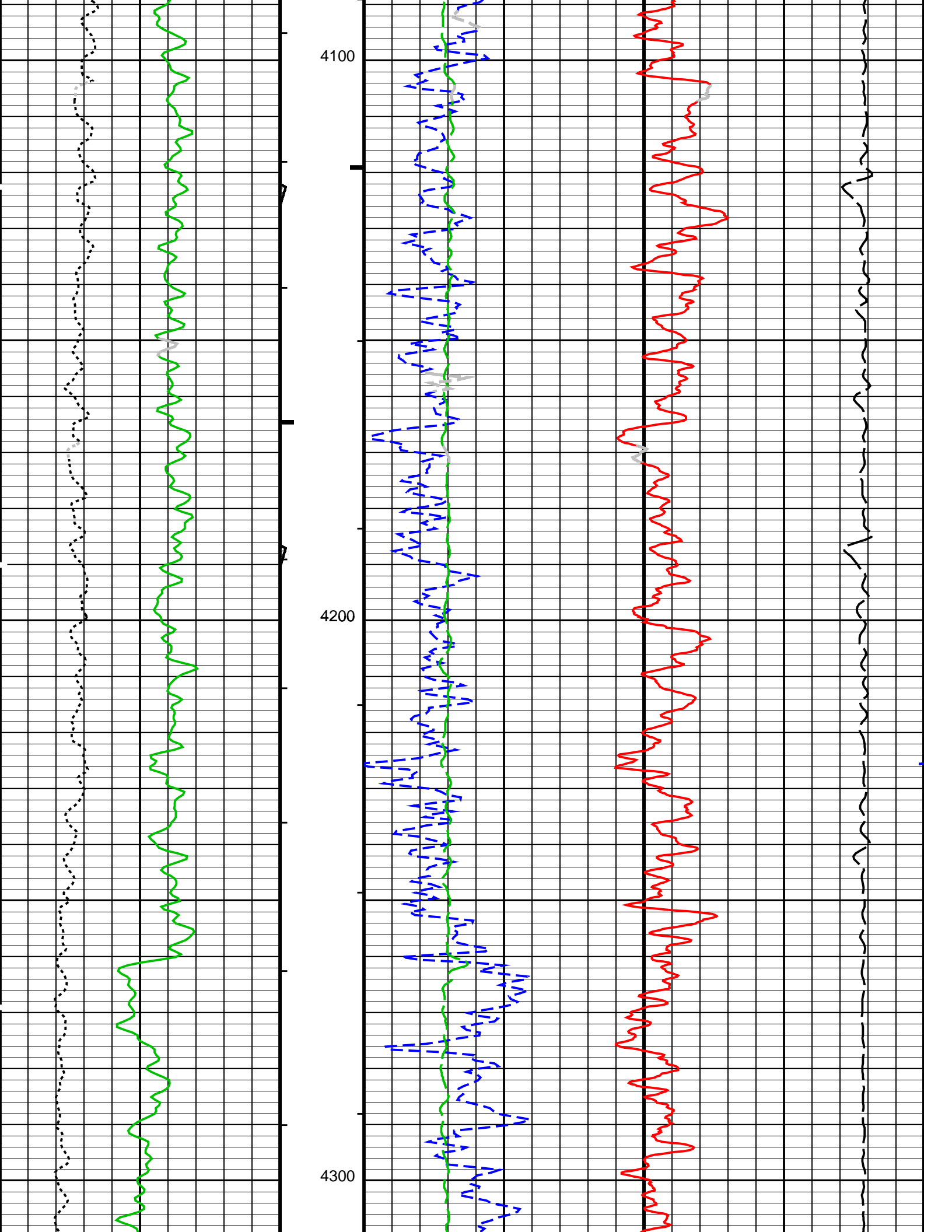




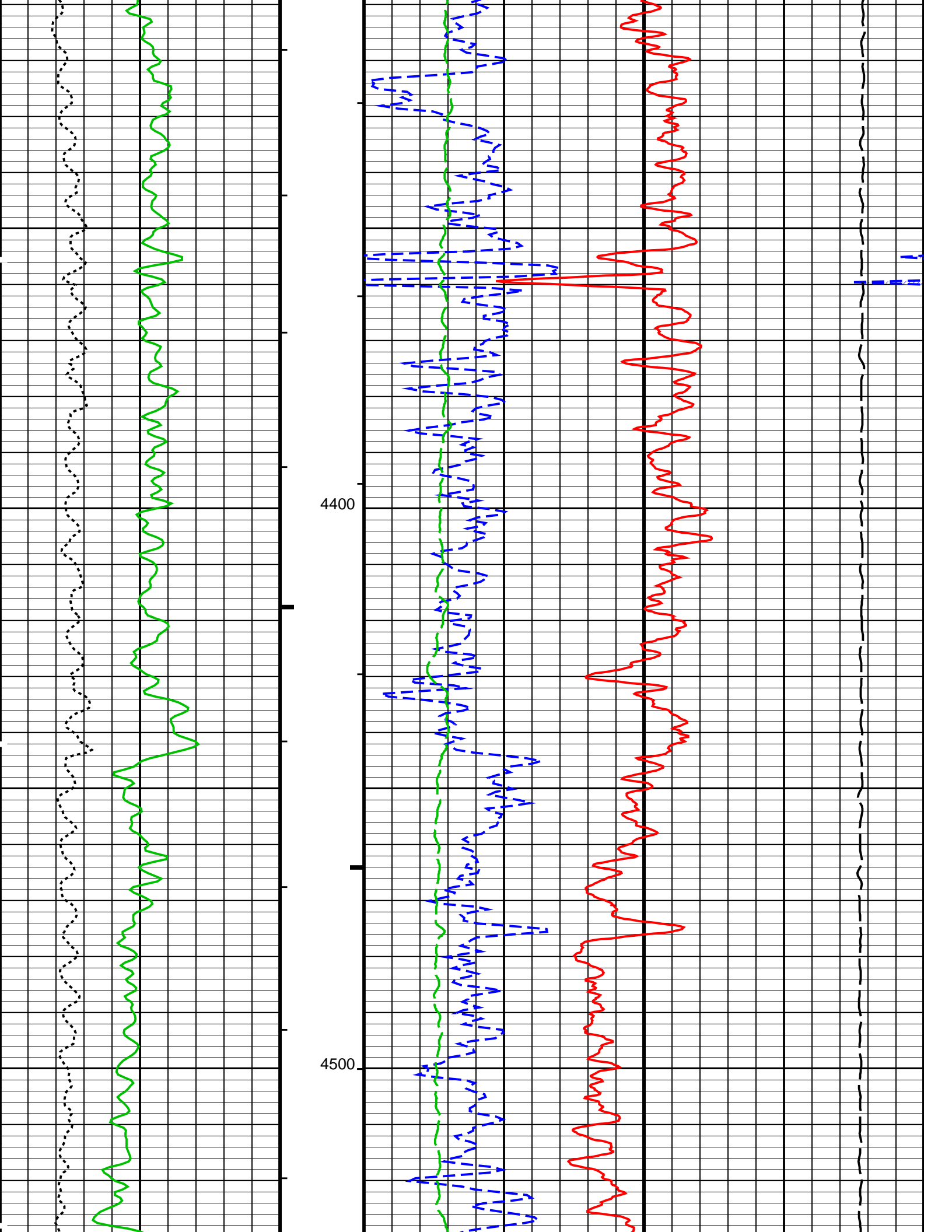


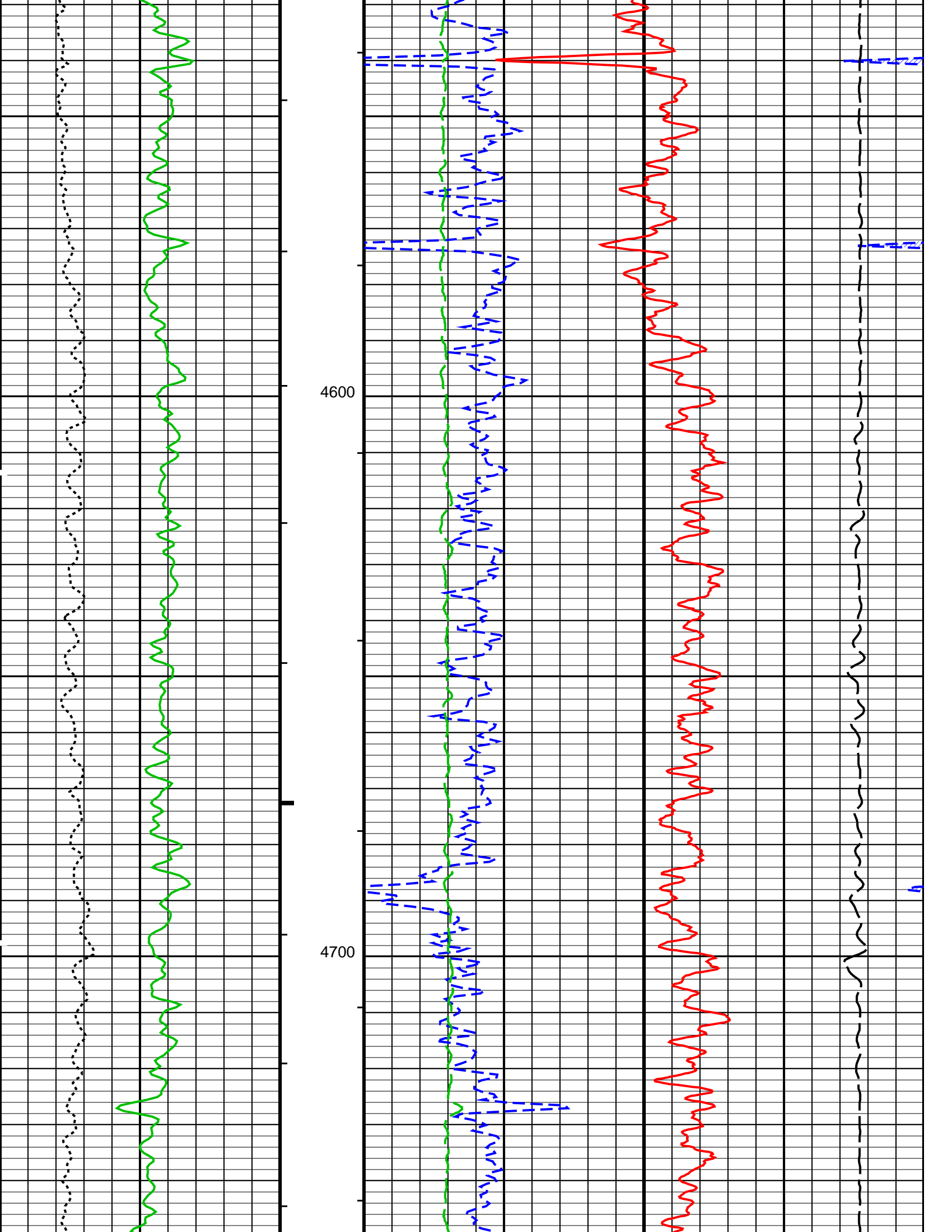


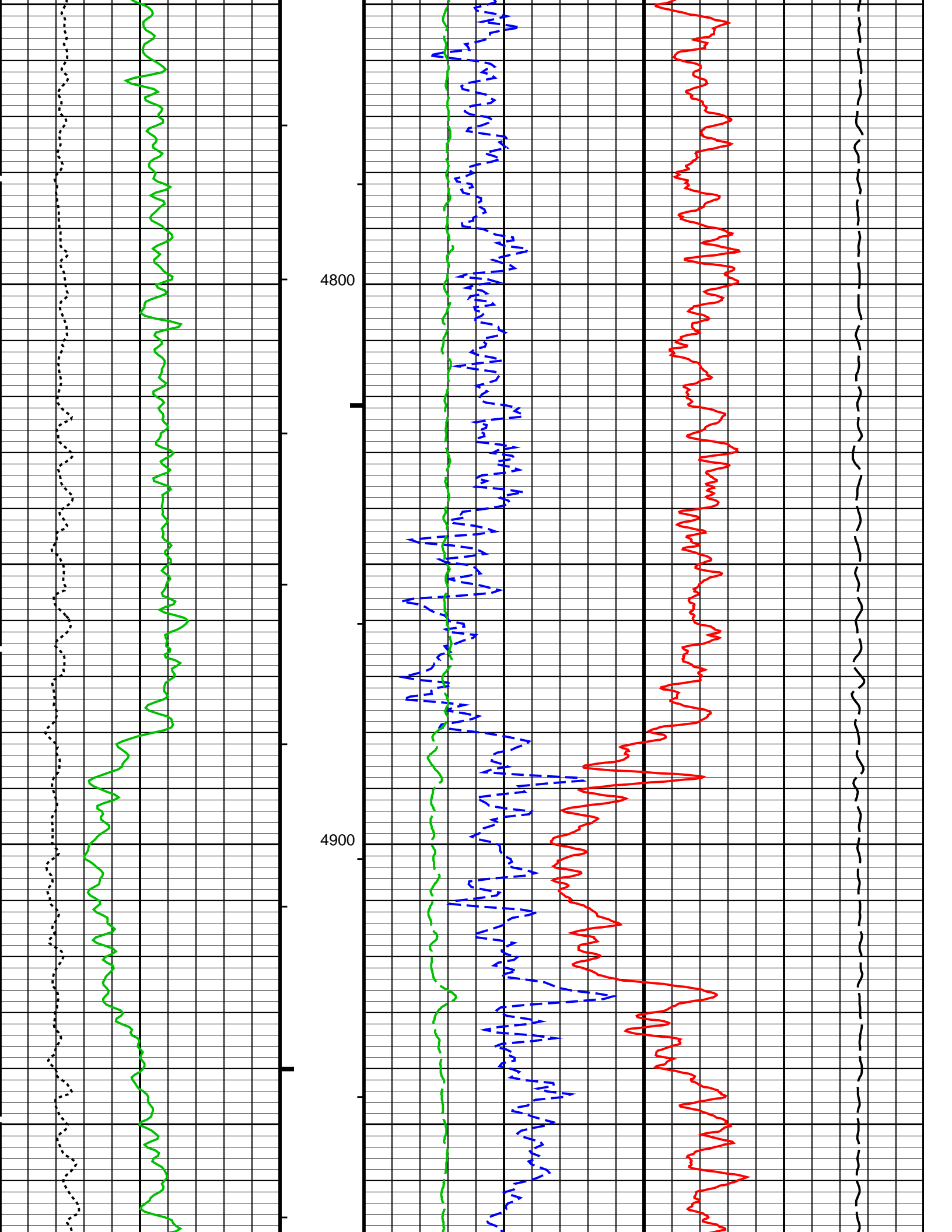


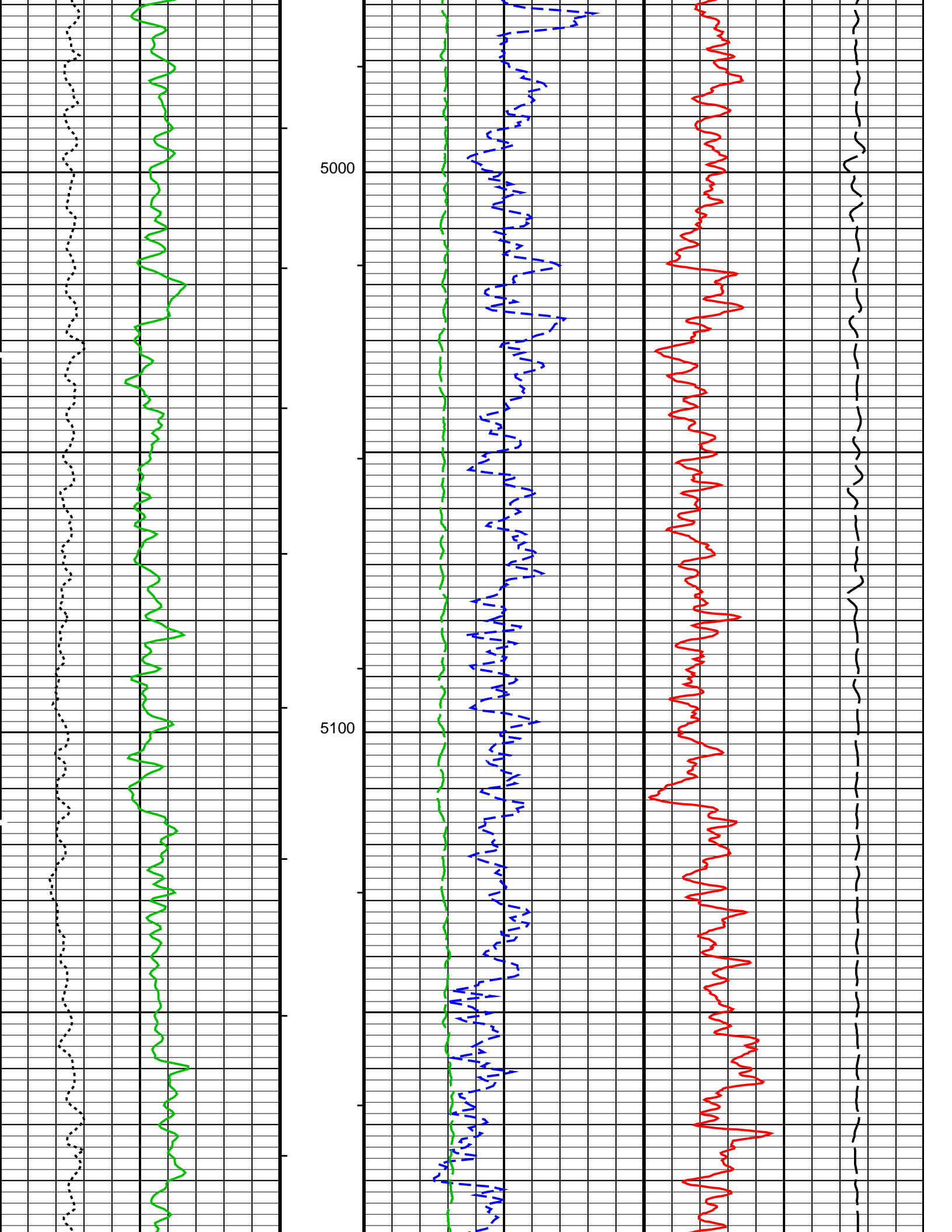


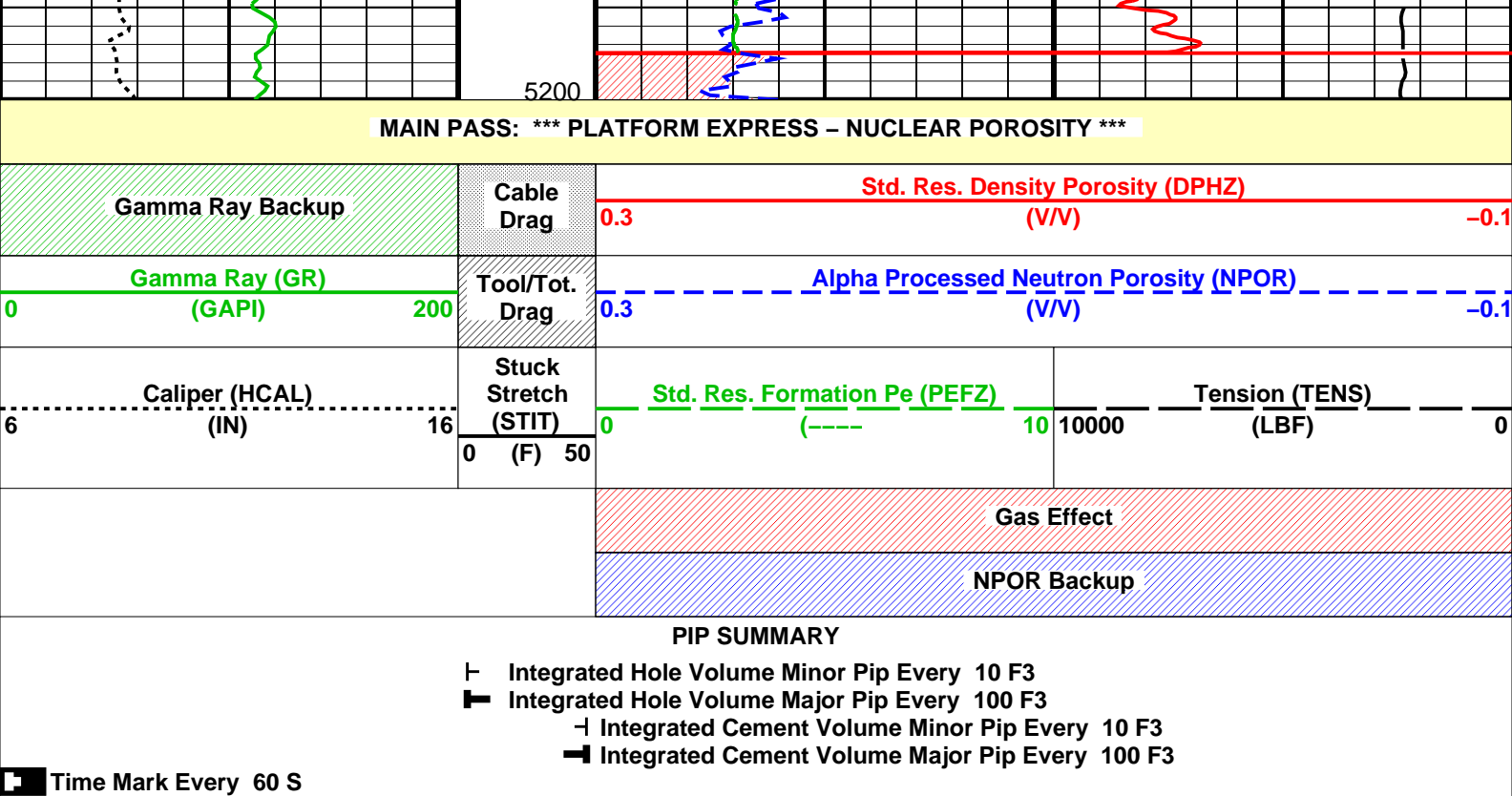












## Parameters

DLIS Name	Description	Value
HILTB-CTS: High resolution Integrated Logging Tool-CTS		
BHFL	Borehole Fluid Type	WATER
BHFL_TLD	HILT Nuclear Mud Base	WATER
BHS	Borehole Status	OPEN
BSCO	Borehole Salinity Correction Option	NO
CCCO	Casing & Cement Thickness Correction Option	NO
DHC	Density Hole Correction	BS
FD	Fluid Density	1 G/C3
FSAL	Formation Salinity	-50000 PPM
FSCO	Formation Salinity Correction Option	NO
GCLF	Germany Coal-like Formation Option	NO
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
HSCO	Hole Size Correction Option	YES
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
MCCO	Mud Cake Correction Option	NO
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2.68 G/C3
MWCO	Mud Weight Correction Option	NO
NAAC	HRDD APS Activation Correction	OFF
NMT	HILT Nuclear Mud Type	NOBARITE
NPRM	HRDD Processing Mode	StdRes
NSAR	HRDD Depth Sampling Rate	1 IN
PTCO	Pressure/Temperature Correction Option	NO
SDAT	Standoff Data Source	SOCN
SHT	Surface Hole Temperature	68 DEGF
SOCN	Standoff Distance	0.125 IN
SOCO	Standoff Correction Option	YES
HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	4.5 IN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
HVCS	Integrated Hole Volume Caliper Selection	HCAL
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
SHT	Surface Hole Temperature	68 DEGF
PERT: Preliminary Evaluation - Real Time		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
SHT	Surface Hole Temperature	68 DEGF

LBFR	STI: Stuck Tool Indicator	Trigger for MAXIS First Reading Label	TDL	
STKT		STI Stuck Threshold	2.5	FT
TDD		Total Depth – Driller	8035.00	FT
TDL		Total Depth – Logger	8048.00	FT
System and Miscellaneous				
BS		Bit Size	7.875	IN
BSAL		Borehole Salinity	–50000.00	PPM
CSIZ		Current Casing Size	8.625	IN
CWEI		Casing Weight	24.00	LB/F
DFD		Drilling Fluid Density	9.30	LB/G
DO		Depth Offset for Playback	0.5	FT
MST		Mud Sample Temperature	115.00	DEGF
PP		Playback Processing	NORMAL	
RMFS		Resistivity of Mud Filtrate Sample	1.0400	OHMM
TD		Total Depth	8048	FT


Format: PORO

Vertical Scale: 5" per 100'

Graphics File Created: 13–Dec–2007 20:42

<div>OP System Version: 15C0–309</div> <div>MCM</div>				
HILTB–CTS	SRPC–3497–NOV_2007			

Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13–Dec–2007 19:00	8070.0 FT	818.0 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_018PUP	FN:17	PRODUCER	13–Dec–2007 20:42		



MAIN POROSITY LOG 5" = 100'

MAXIS Field Log

Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13–Dec–2007 19:00	8070.0 FT	818.0 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:15	PRODUCER	13–Dec–2007 20:39	8070.5 FT	6853.5 FT

Integrated Hole/Cement Volume Summary	
Hole Volume = 397.81 F3	
Cement Volume = 265.89 F3 (assuming 4.50 IN casing O.D.)	
Computed from 8048.0 FT to 6854.0 FT using data channel(s) HCAL	

<div>OP System Version: 15C0–309</div> <div>MCM</div>	
HILTB–CTS	SRPC–3497–NOV_2007

Changed Parameter Summary			
DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8070.5 20:39:41
	SANDSTONE	SANDSTONE	7709.0 20:39:53
	LIMESTONE	SANDSTONE	7425.0 20:40:02
MDEN	2.65 G/C3	2.68 G/C3	8070.5 20:39:41

2.68 G/C3  
2.71 G/C3

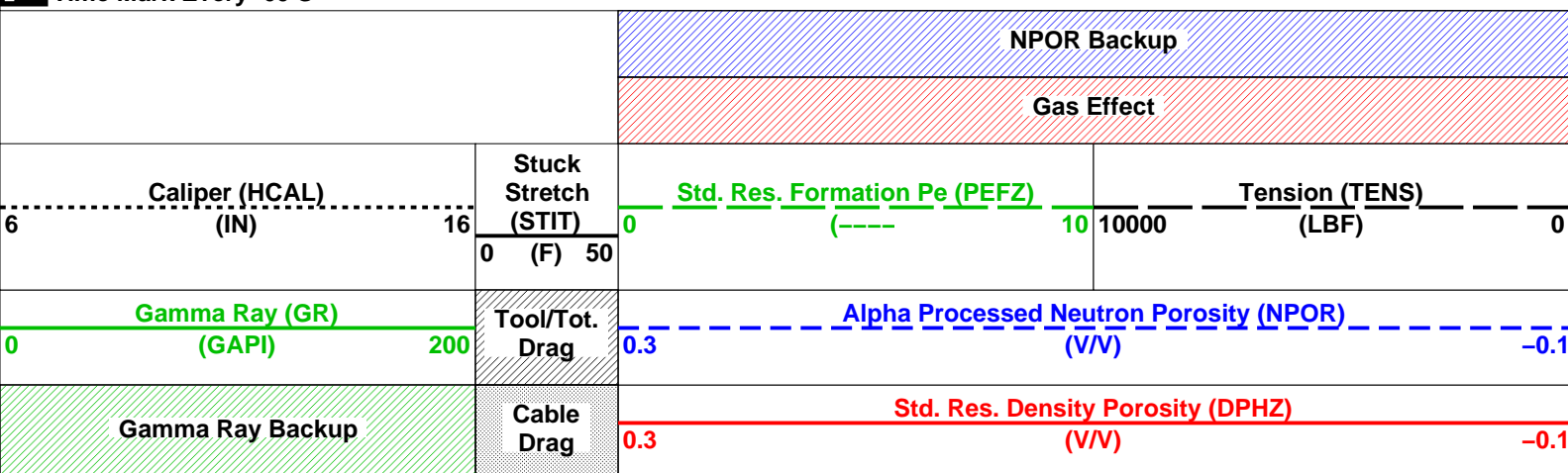
2.65 G/C3  
2.68 G/C3

7709.0 20:39:53  
7425.0 20:40:02

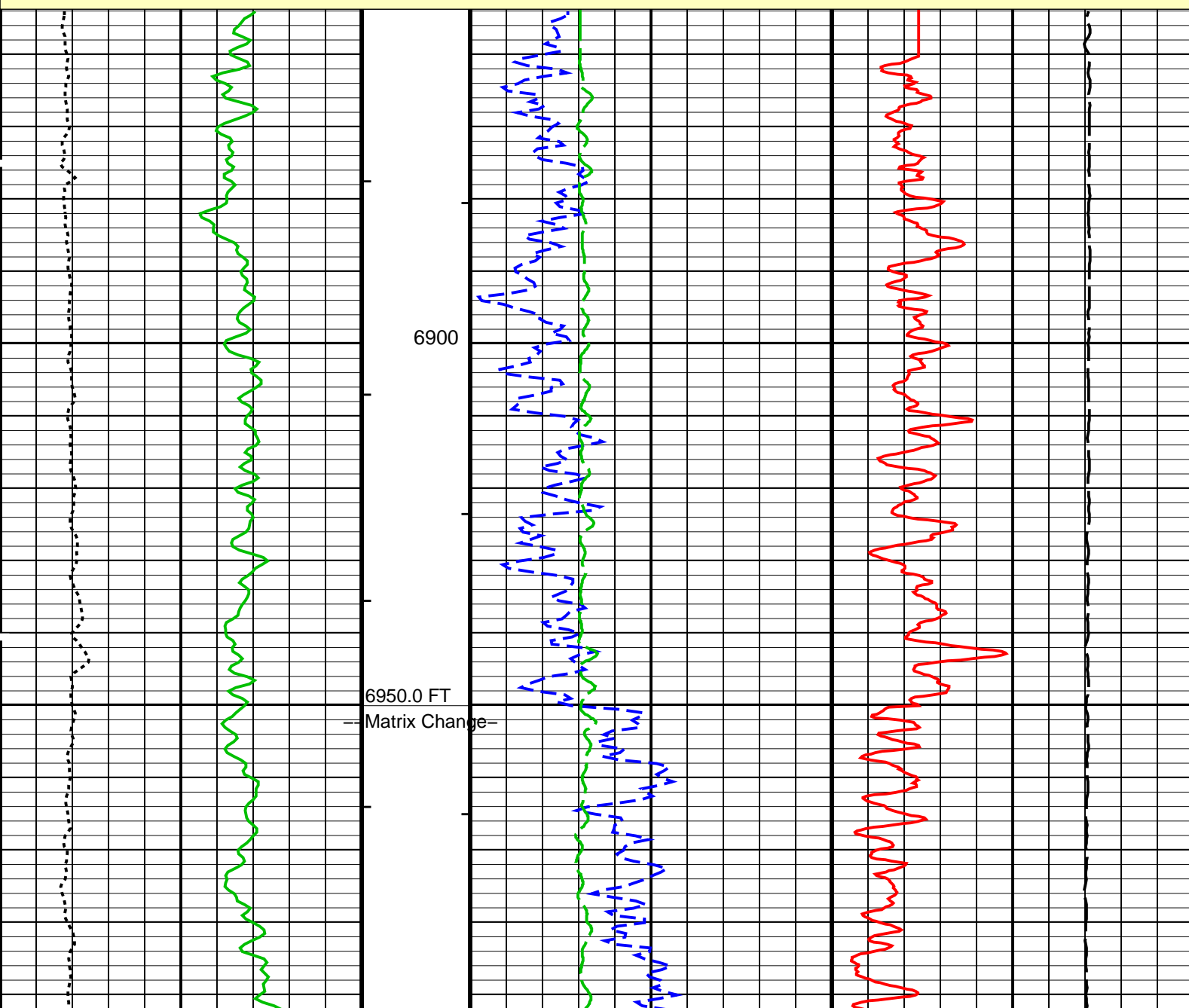
# PIP SUMMARY

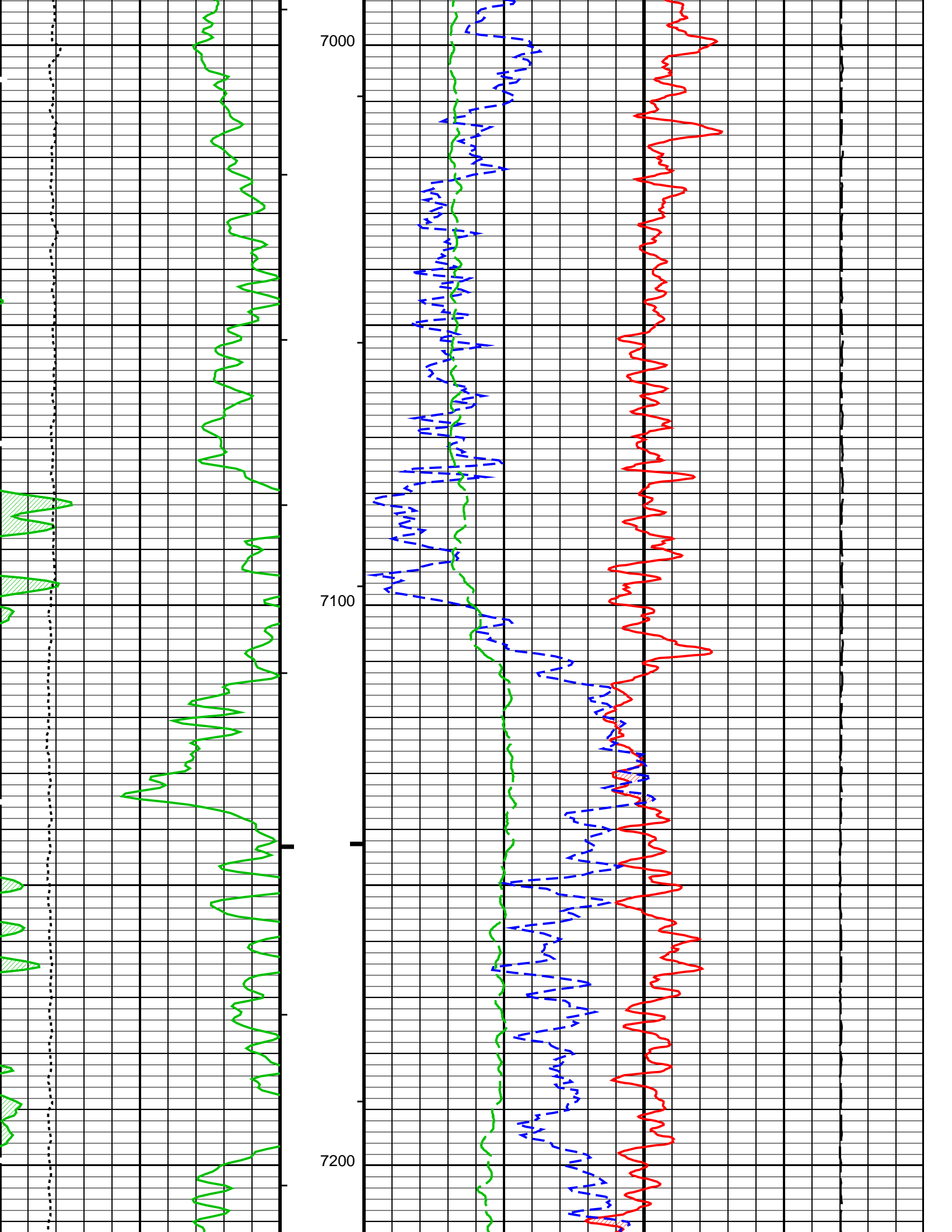
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
- └ Integrated Cement Volume Minor Pip Every 10 F3
- └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

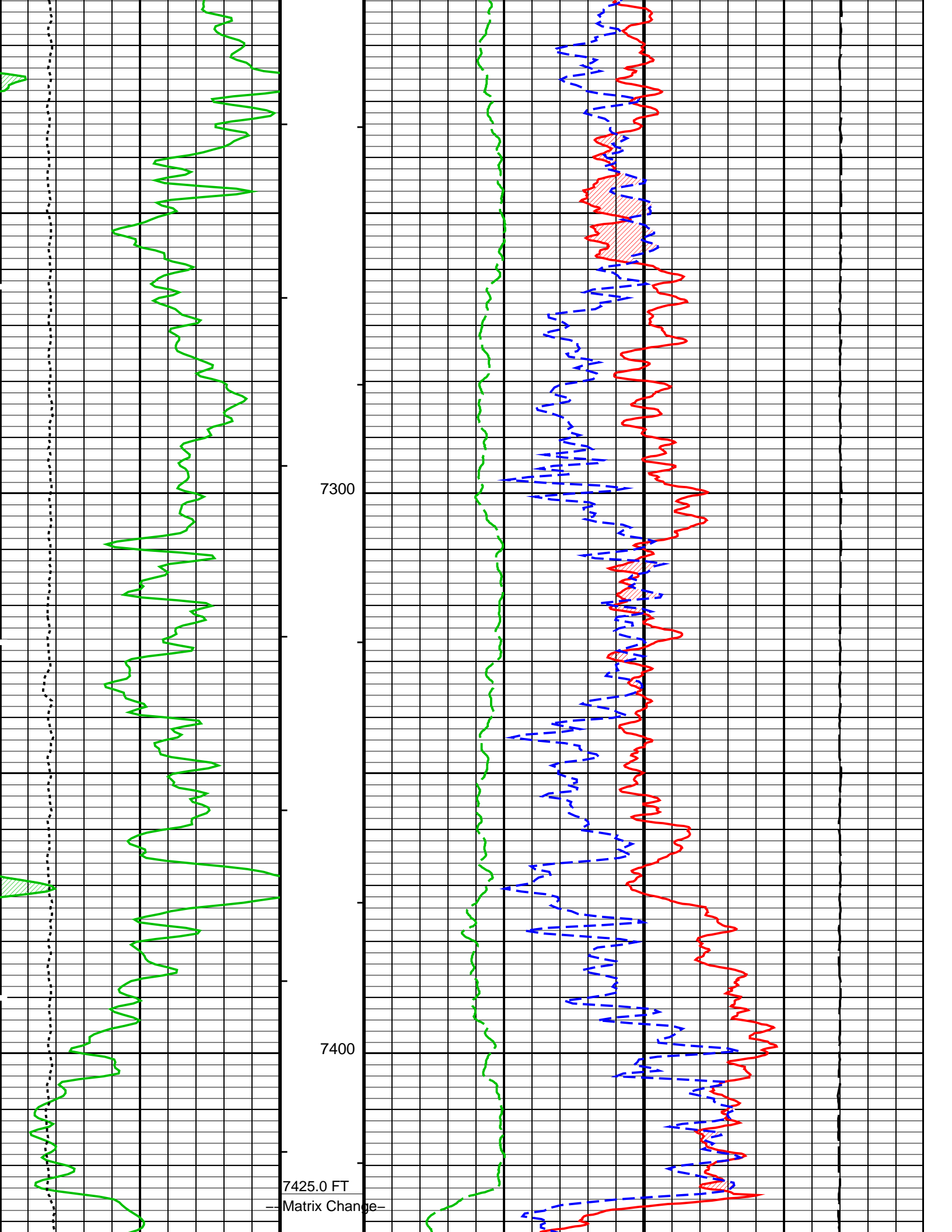


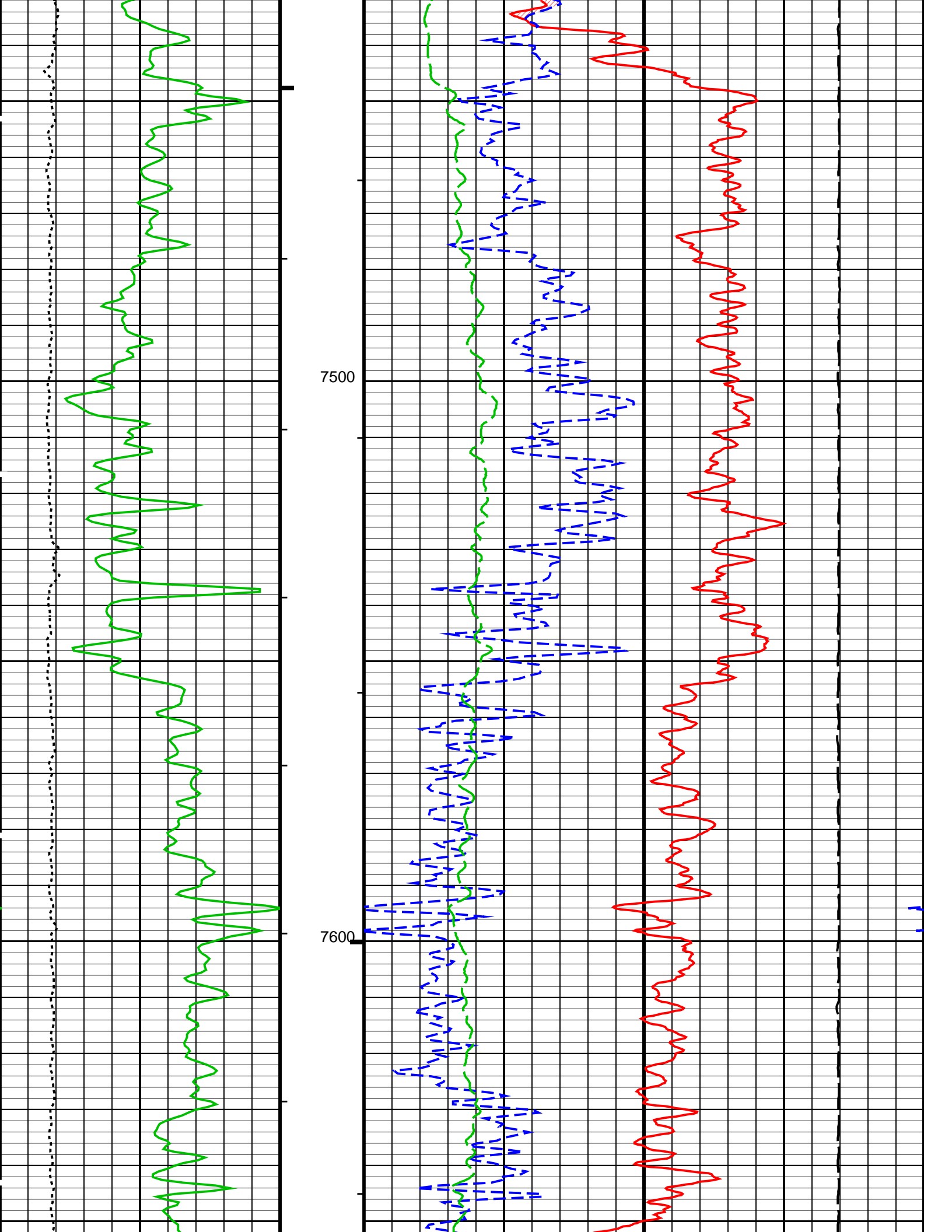
MAIN PASS: \*\*\* PLATFORM EXPRESS – NUCLEAR POROSITY \*\*\*

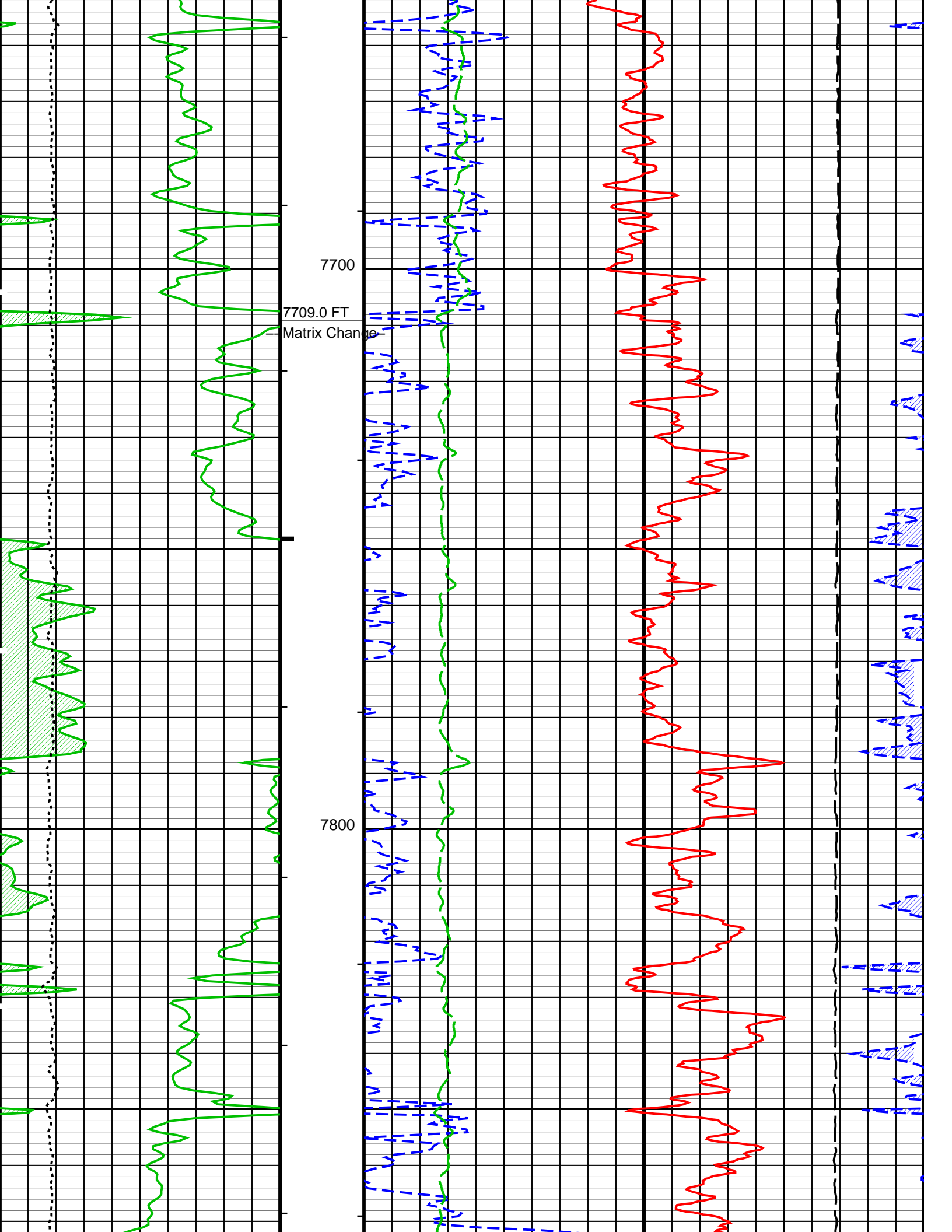














0	(GAPI)	200	Drag	0.3	(V/V)	-0.1
Caliper (HCAL)			Stuck Stretch (STIT)	Std. Res. Formation Pe (PEFZ)		Tension (TENS)
6	(IN)	16	0 (F) 50	0	10	10000 (LBF)
			Gas Effect			
			NPOR Backup			

PIP SUMMARY						
<div> <div> <div></div> <div>Integrated Hole Volume Minor Pip Every 10 F3</div> </div> <div> <div></div> <div>Integrated Hole Volume Major Pip Every 100 F3</div> </div> <div> <div></div> <div>Integrated Cement Volume Minor Pip Every 10 F3</div> </div> <div> <div></div> <div>Integrated Cement Volume Major Pip Every 100 F3</div> </div> </div>						
<div> <div></div> <div>Time Mark Every 60 S</div> </div>						

Parameters						
DLIS Name	Description	Value				
HILTB-CTS: High resolution Integrated Logging Tool-CTS						
BHFL	Borehole Fluid Type	WATER				
BHFL_TLD	HILT Nuclear Mud Base	WATER				
BHS	Borehole Status	OPEN				
BSCO	Borehole Salinity Correction Option	NO				
CCCO	Casing & Cement Thickness Correction Option	NO				
DHC	Density Hole Correction	BS				
FD	Fluid Density	1	G/C3			
FSAL	Formation Salinity	-50000	PPM			
FSCO	Formation Salinity Correction Option	NO				
GCLF	Germany Coal-like Formation Option	NO				
GCSE	Generalized Caliper Selection	HCAL				
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG			
GGRD	Geothermal Gradient	0.01	DF/F			
HSCO	Hole Size Correction Option	YES				
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE				
MCCO	Mud Cake Correction Option	NO				
MCOR	Mud Correction	NATU				
MDEN	Matrix Density	2.68	G/C3			
MWCO	Mud Weight Correction Option	NO				
NAAC	HRDD APS Activation Correction	OFF				
NMT	HILT Nuclear Mud Type	NOBARITE				
NPRM	HRDD Processing Mode	StdRes				
NSAR	HRDD Depth Sampling Rate	1	IN			
PTCO	Pressure/Temperature Correction Option	NO				
SDAT	Standoff Data Source	SOCN				
SHT	Surface Hole Temperature	68	DEGF			
SOCN	Standoff Distance	0.125	IN			
SOCO	Standoff Correction Option	YES				
HOLEV: Integrated Hole/Cement Volume						
BHS	Borehole Status	OPEN				
FCD	Future Casing (Outer) Diameter	4.5	IN			
GCSE	Generalized Caliper Selection	HCAL				
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG			
GGRD	Geothermal Gradient	0.01	DF/F			
HVCS	Integrated Hole Volume Caliper Selection	HCAL				
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE				
SHT	Surface Hole Temperature	68	DEGF			
PERT: Preliminary Evaluation - Real Time						
BHS	Borehole Status	OPEN				
GCSE	Generalized Caliper Selection	HCAL				
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG			
GGRD	Geothermal Gradient	0.01	DF/F			
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE				
SHT	Surface Hole Temperature	68	DEGF			
STI: Stuck Tool Indicator						
LBFR	Trigger for MAXIS First Reading Label	TDL				
STKT	STI Stuck Threshold	2.5	FT			
TDD	Total Depth - Driller	8035.00	FT			
TDL	Total Depth - Logger	8048.00	FT			
System and Miscellaneous						
BS	Bit Size	7.875	IN			
BSAL	Borehole Salinity	-50000.00	PPM			
CSIZ	Current Casing Size	8.625	IN			
CWEI	Casing Weight	24.00	LB/F			
DFD	Drilling Fluid Density	9.30	LB/G			
DO	Depth Offset for Playback	0.5	FT			
DORI	Denth Offset for Repeat Analysis	0.0	FT			

MST	Repeat Analysis	115.00	DEGF
PP	Mud Sample Temperature	NORMAL	
RMFS	Playback Processing	1.0400	OHMM
TD	Resistivity of Mud Filtrate Sample	8048	FT
	Total Depth		

Format: LOWER\_PORO      Vertical Scale: 5" per 100'      Graphics File Created: 13-Dec-2007 20:39

## OP System Version: 15C0-309

MCM

HILTB-CTS      SRPC-3497-NOV\_2007

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13-Dec-2007 19:00	8070.0 FT	818.0 FT
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### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:15	PRODUCER	13-Dec-2007 20:39
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**Schlumberger**

**REPEAT ANALYSIS**

MAXIS Field Log

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_006PUP	FN:5	PRODUCER	13-Dec-2007 19:03	8073.0 FT	7190.5 FT
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13-Dec-2007 19:00	8070.0 FT	818.0 FT

### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:15	PRODUCER	13-Dec-2007 20:39	8070.5 FT	6853.5 FT
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## Integrated Hole/Cement Volume Summary

Hole Volume = 397.81 F3

Cement Volume = 265.89 F3 (assuming 4.50 IN casing O.D.)

Computed from 8048.0 FT to 6854.0 FT using data channel(s) HCAL

## OP System Version: 15C0-309

MCM

HILTB-CTS      SRPC-3497-NOV\_2007

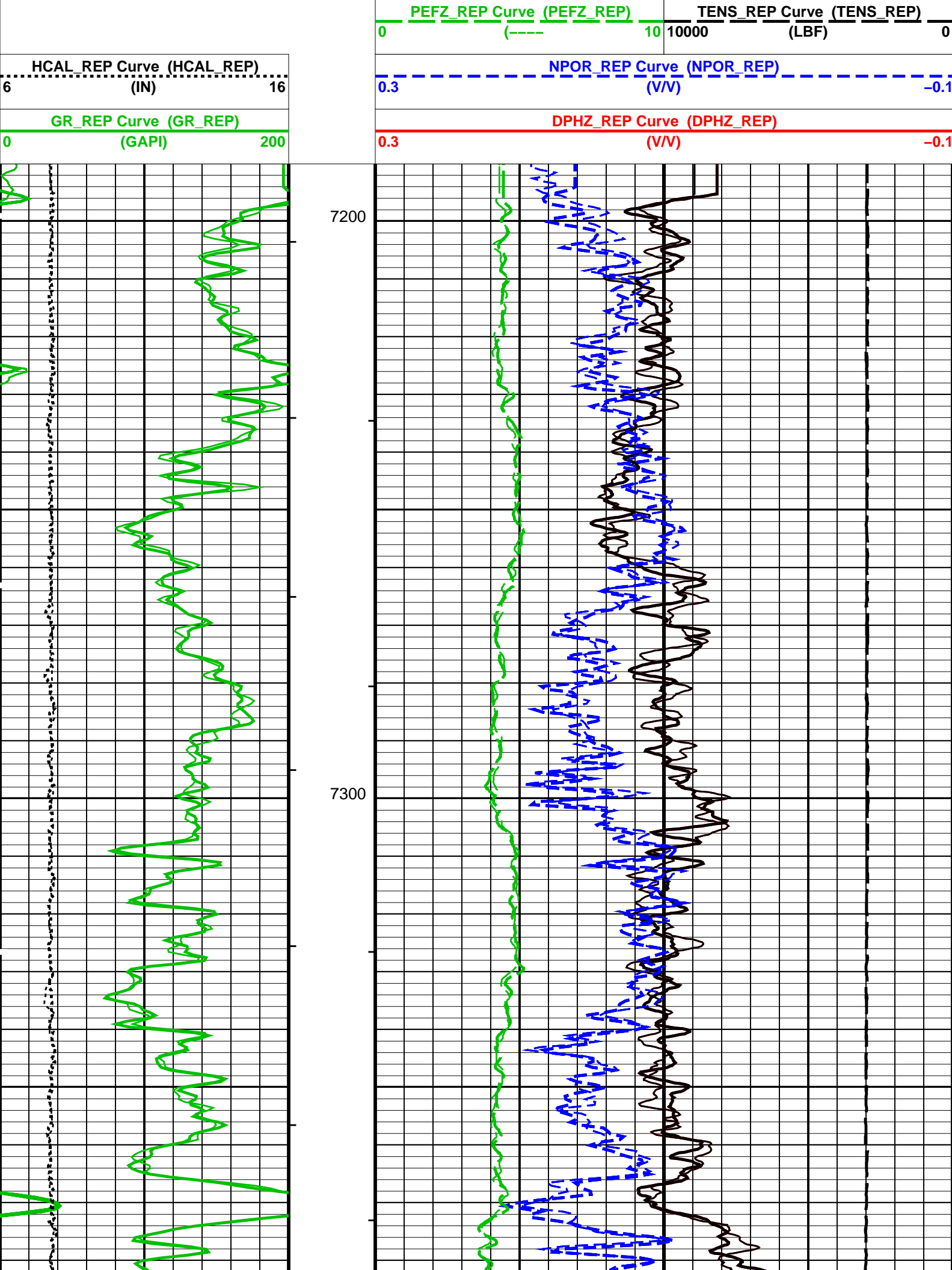
## Changed Parameter Summary

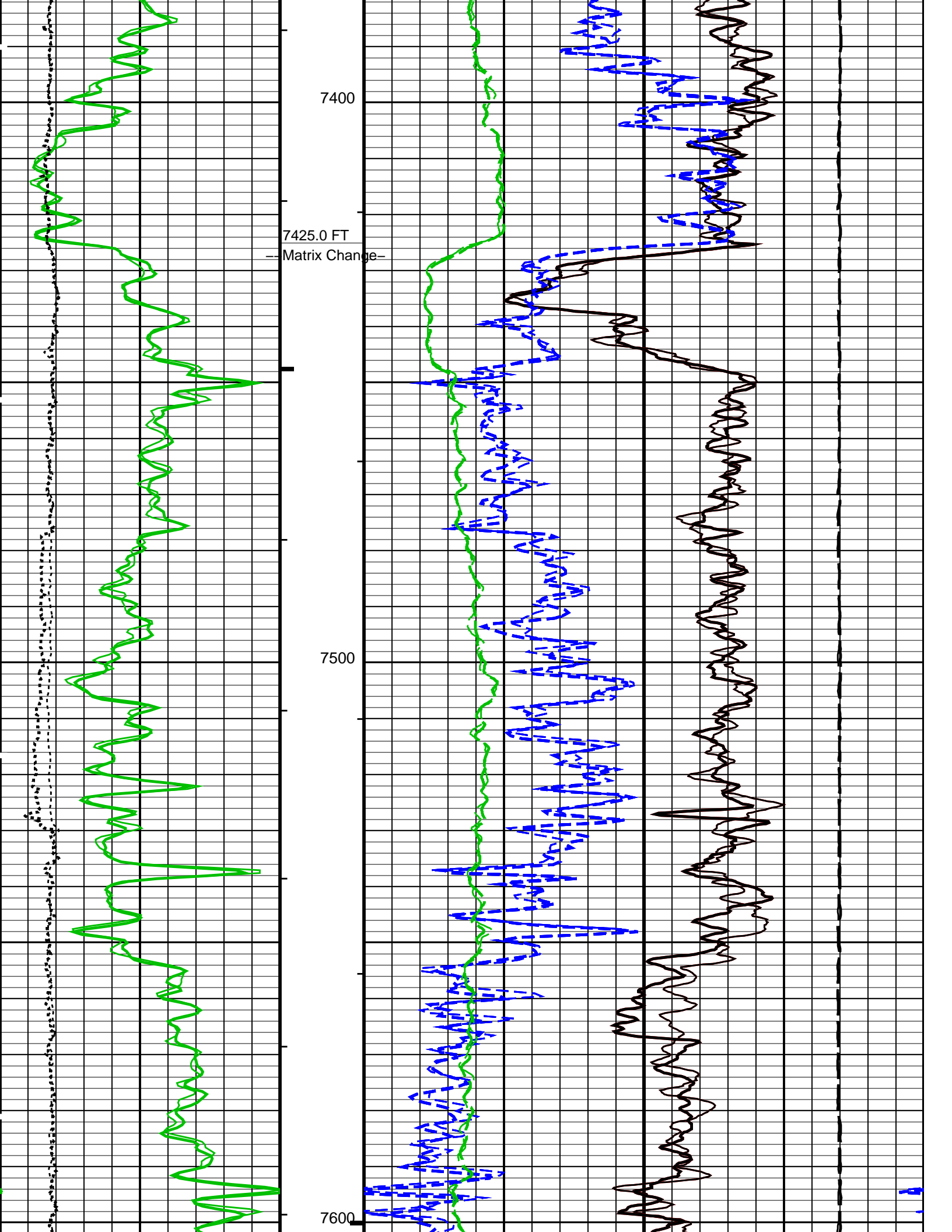
DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8070.5 20:39:41
	SANDSTONE	SANDSTONE	7709.0 20:39:53
	LIMESTONE	SANDSTONE	7425.0 20:40:02
MDEN	2.65 G/C3	2.68 G/C3	8070.5 20:39:41
	2.68 G/C3	2.65 G/C3	7709.0 20:39:53
	2.71 G/C3	2.68 G/C3	7425.0 20:40:02

### PIP SUMMARY

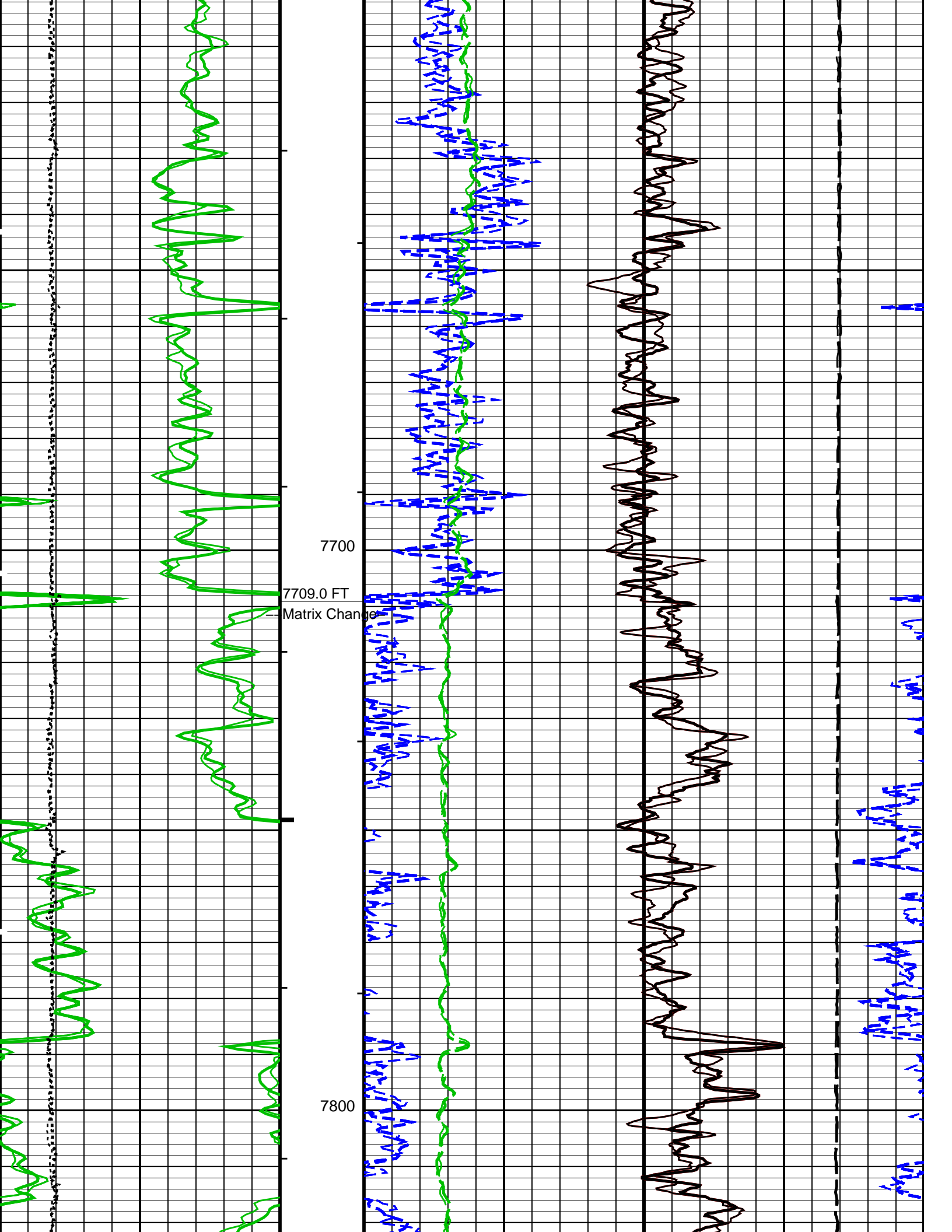
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
- └ Integrated Cement Volume Minor Pip Every 10 F3
- └ Integrated Cement Volume Major Pip Every 100 F3

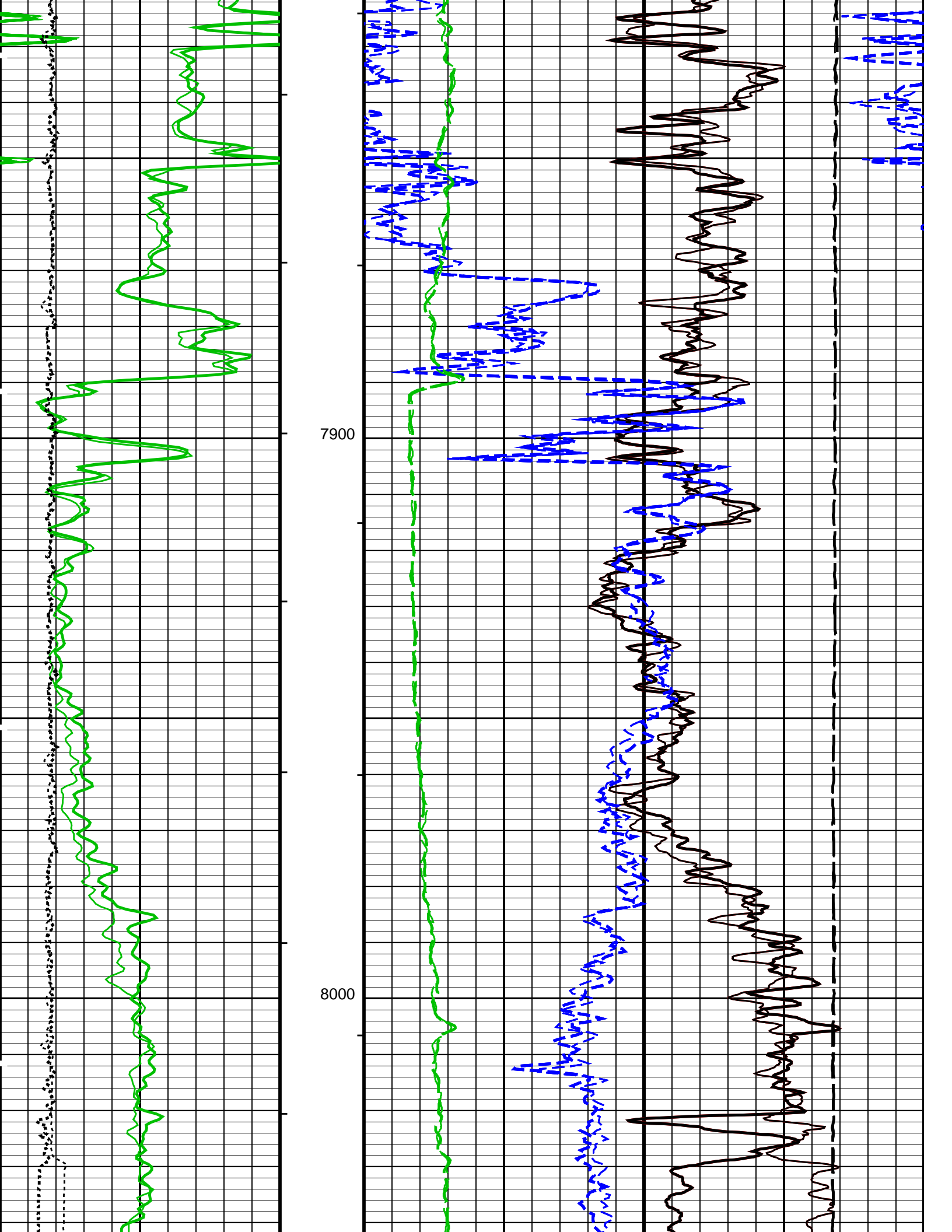
Time Mark Every 60 S

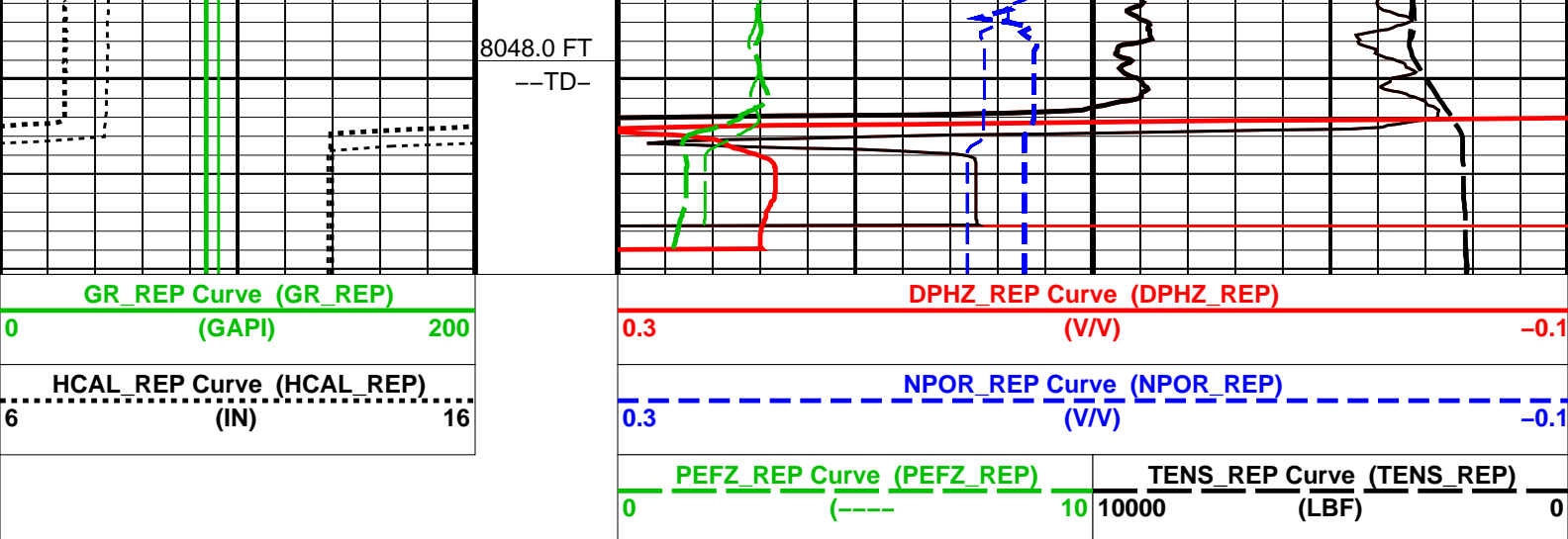












### PIP SUMMARY

- └ 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

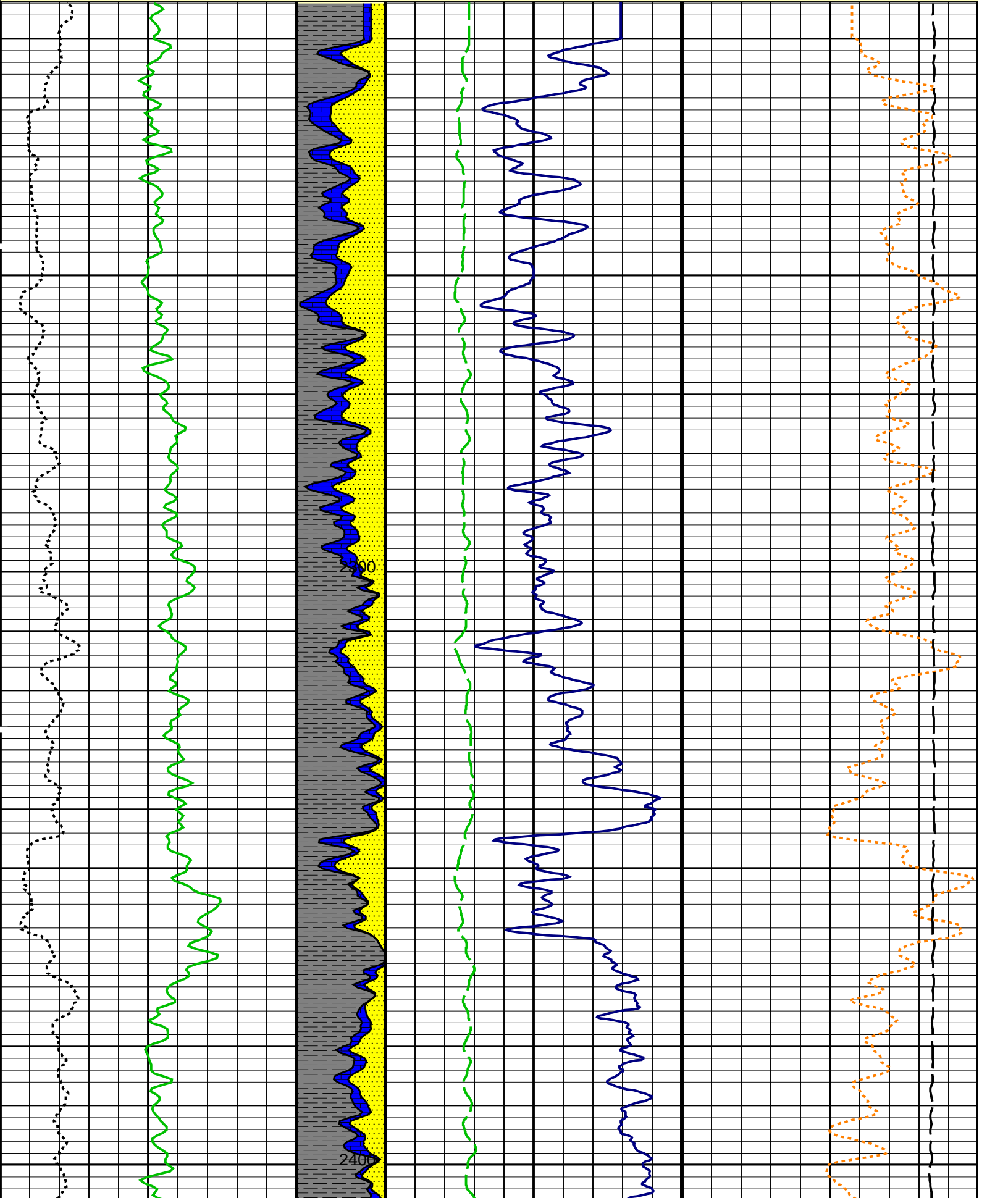
Time Mark Every 60 S

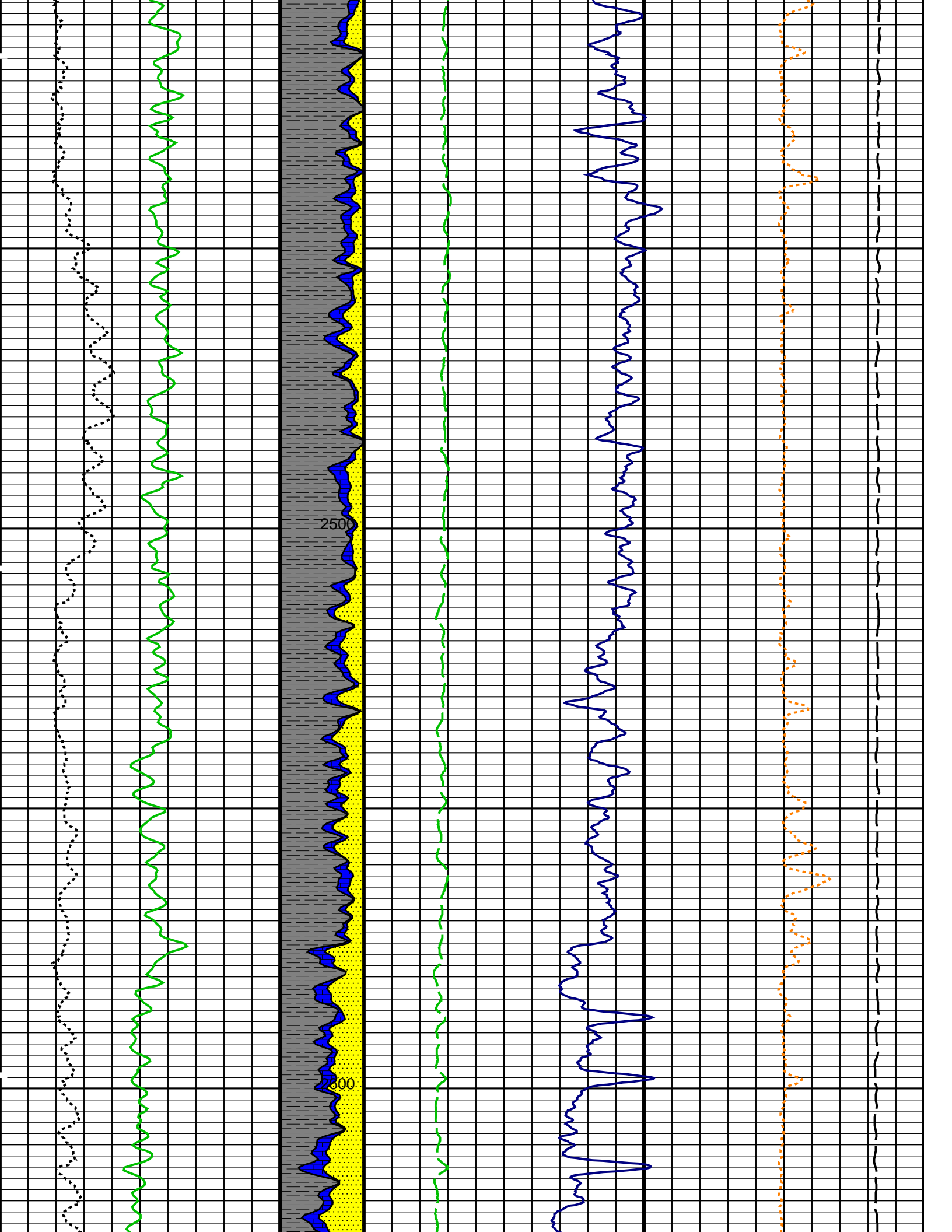
## Parameters

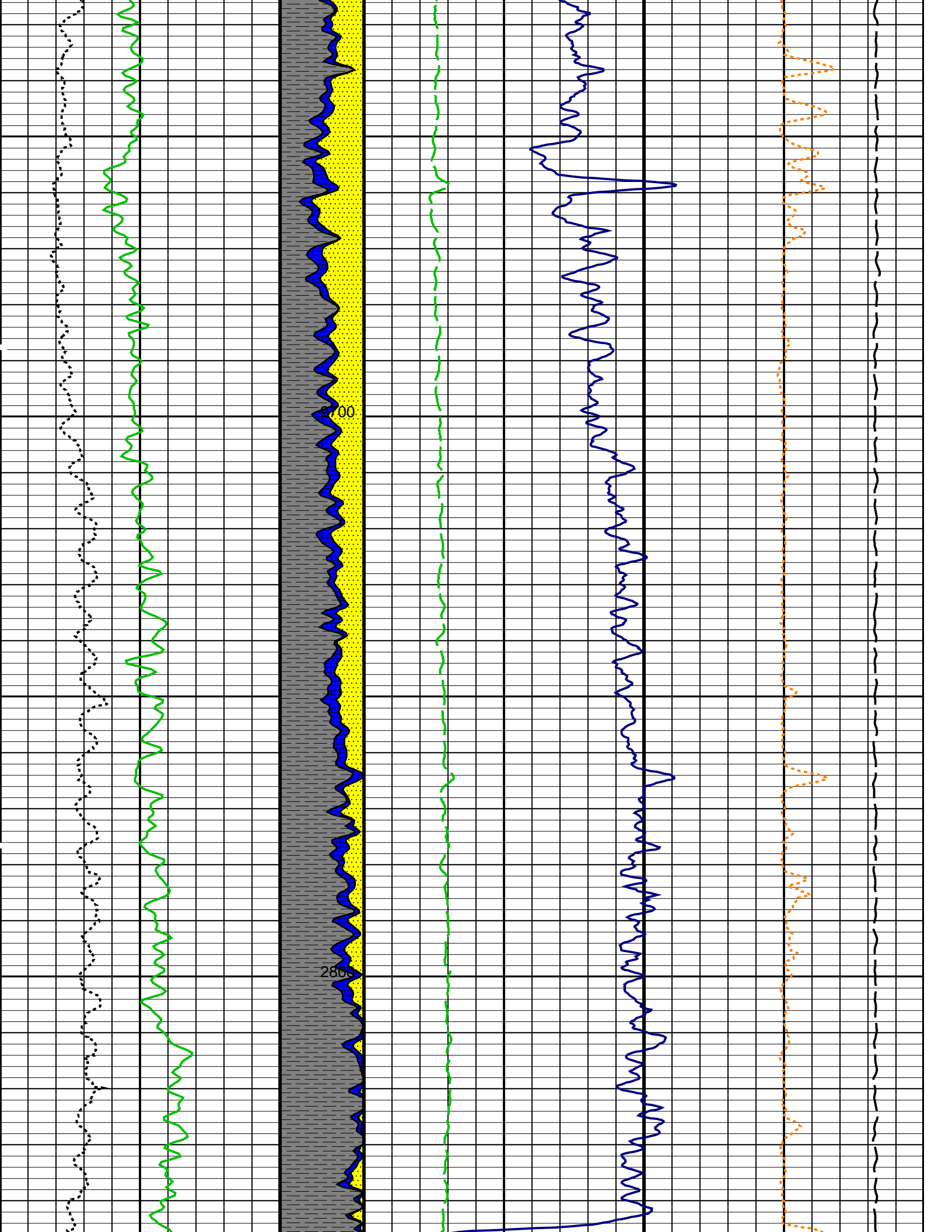
DLIS Name	Description	Value
HILTB-CTS: High resolution Integrated Logging Tool-CTS		
BHFL	Borehole Fluid Type	WATER
BHFL_TLD	HILT Nuclear Mud Base	WATER
BHS	Borehole Status	OPEN
BSCO	Borehole Salinity Correction Option	NO
CCCO	Casing & Cement Thickness Correction Option	NO
DHC	Density Hole Correction	BS
FD	Fluid Density	1 G/C3
FSAL	Formation Salinity	-50000 PPM
FSCO	Formation Salinity Correction Option	NO
GCLF	Germany Coal-like Formation Option	NO
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
HSCO	Hole Size Correction Option	YES
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
MCCO	Mud Cake Correction Option	NO
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2.68 G/C3
MWCO	Mud Weight Correction Option	NO
NAAC	HRDD APS Activation Correction	OFF
NMT	HILT Nuclear Mud Type	NOBARITE
NPRM	HRDD Processing Mode	StdRes
NSAR	HRDD Depth Sampling Rate	1 IN
PTCO	Pressure/Temperature Correction Option	NO
SDAT	Standoff Data Source	SOCN
SHT	Surface Hole Temperature	68 DEGF
SOCN	Standoff Distance	0.125 IN
SOCO	Standoff Correction Option	YES
HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	4.5 IN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
HVCS	Integrated Hole Volume Caliper Selection	HCAL
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
SHT	Surface Hole Temperature	68 DEGF
PERT: Preliminary Evaluation - Real Time		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
SHT	Surface Hole Temperature	68 DEGF
STI: Stuck Tool Indicator		
TDL	Total Depth - Logger	8048.00 FT
System and Miscellaneous		
BS	Bit Size	7.875 IN

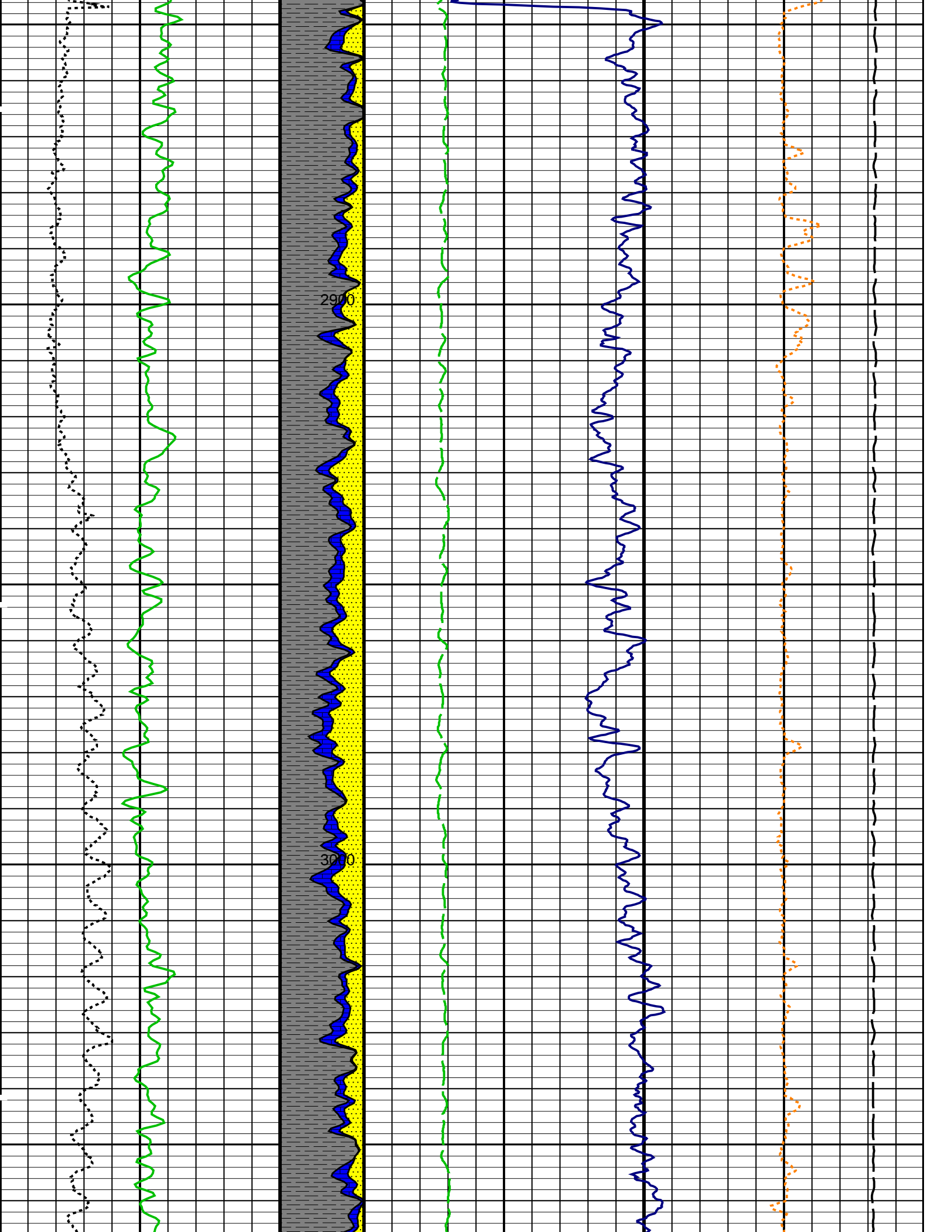
	Stuck		
--	-------	--	--

MAIN PASS: \*\*\* PLATFORM EXPRESS – LITHOLOGY DENSITY \*\*\*

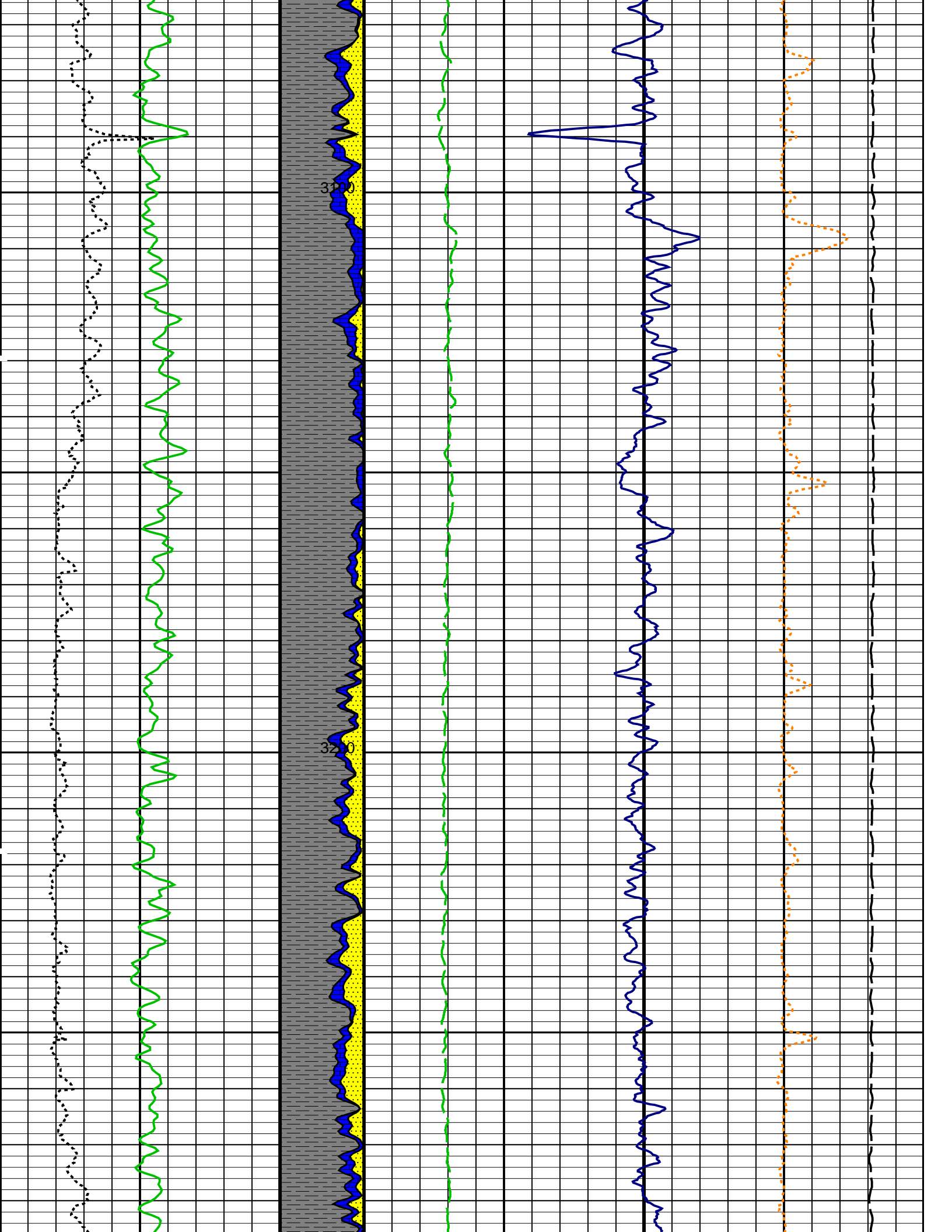


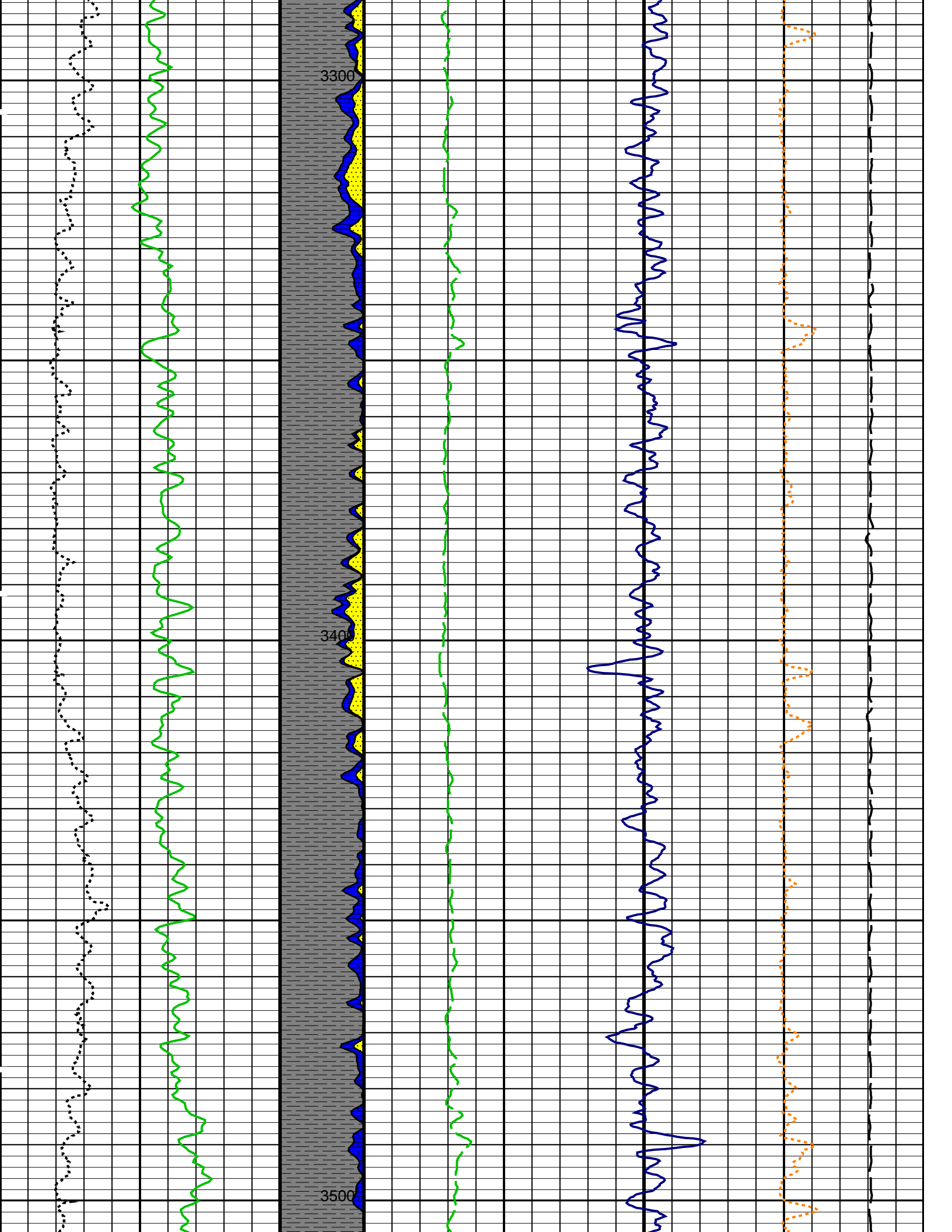


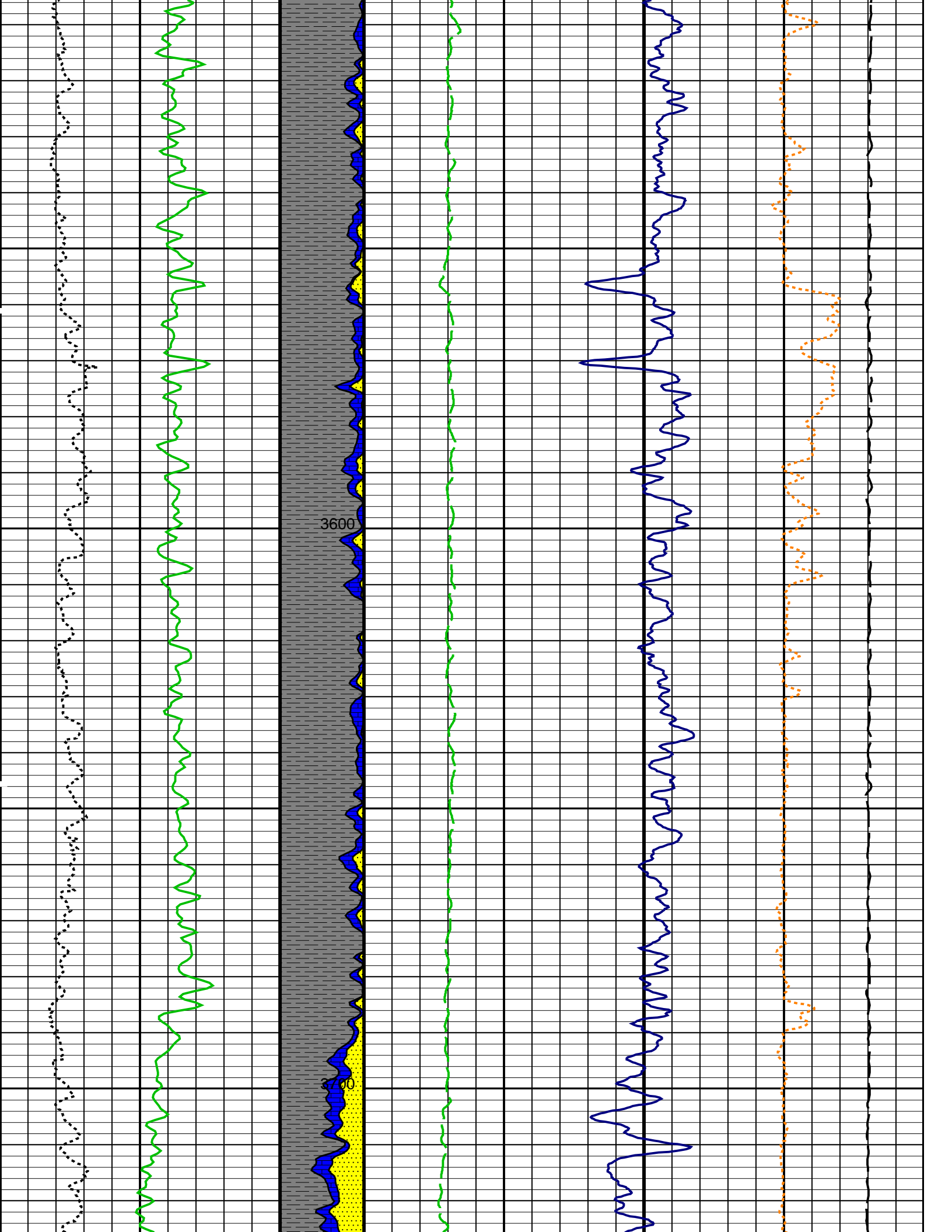


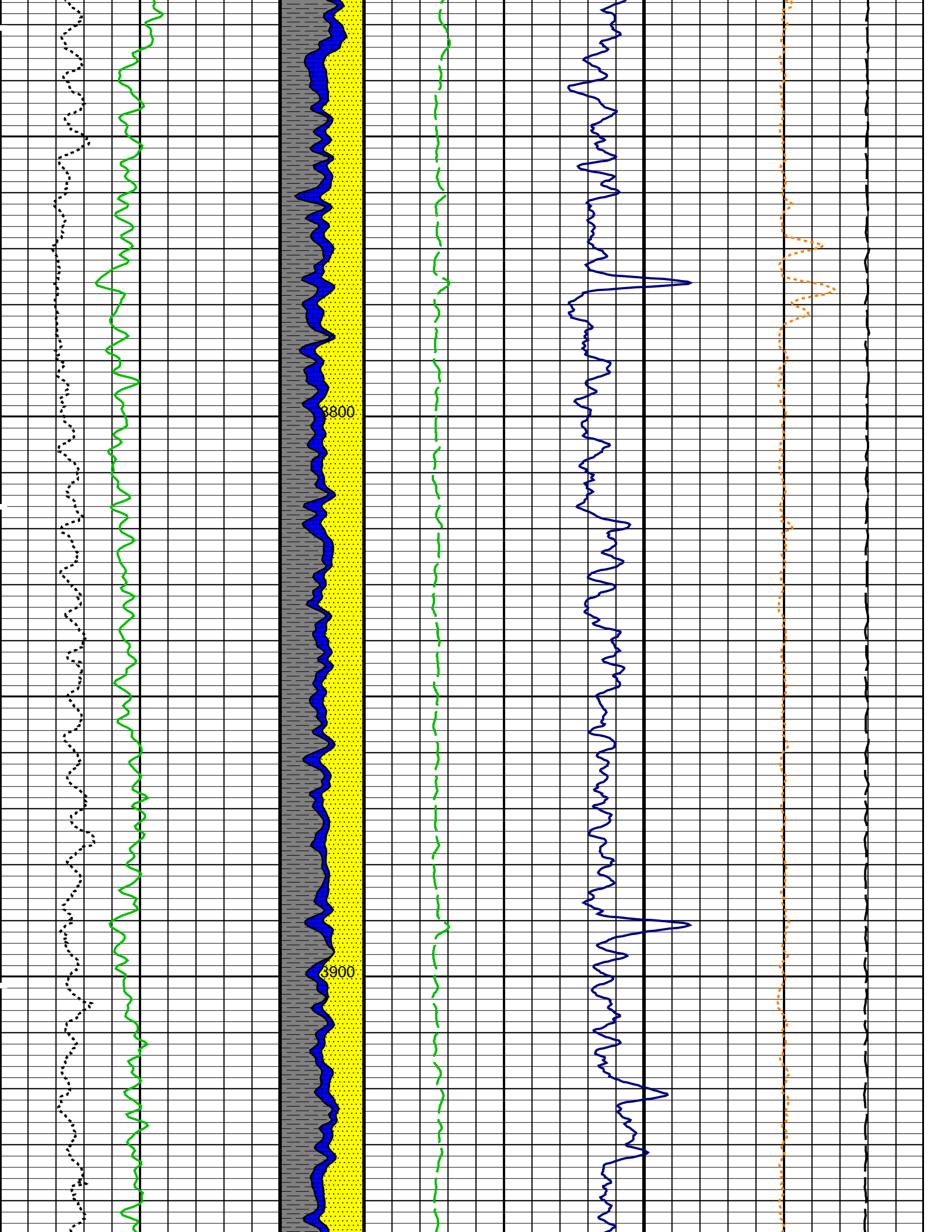


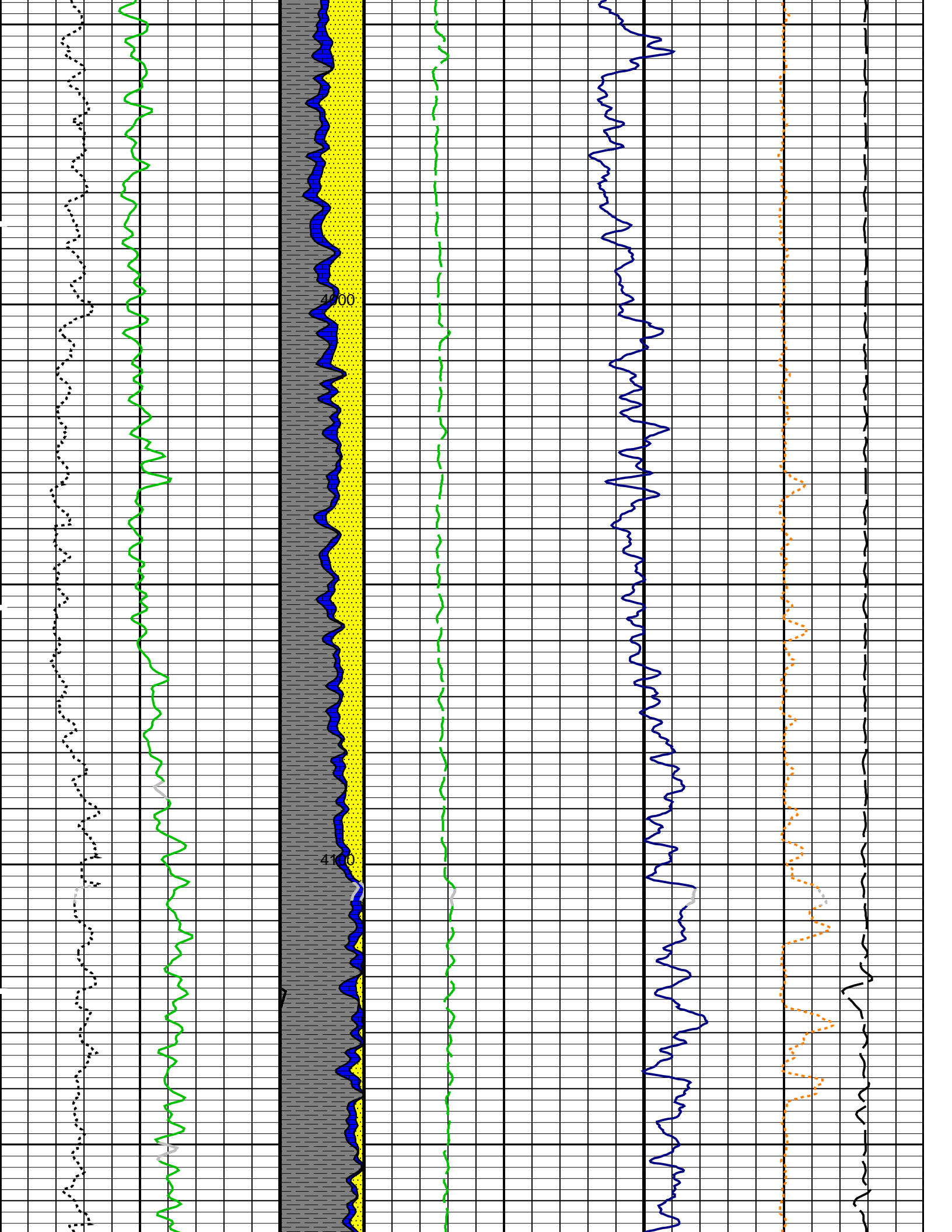


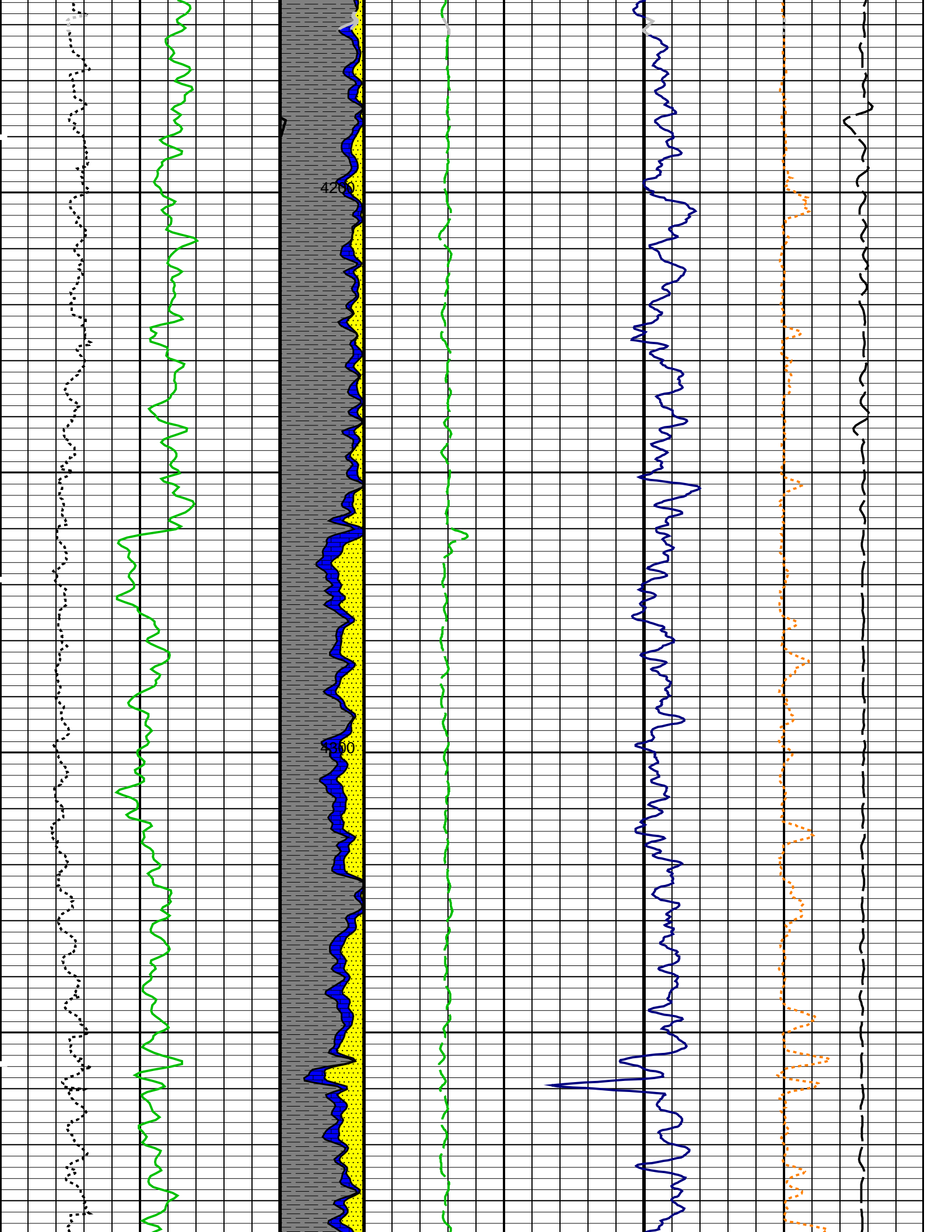


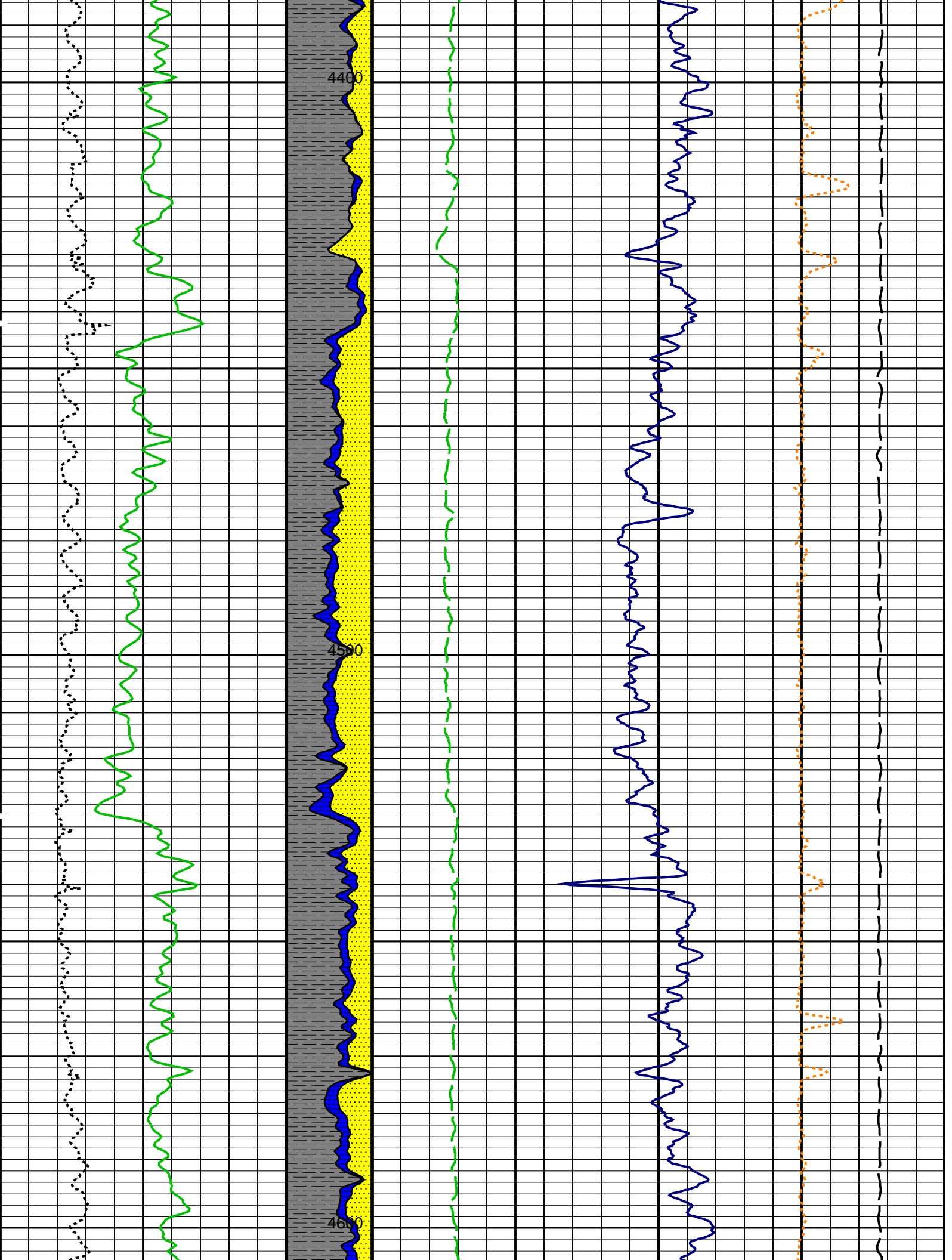


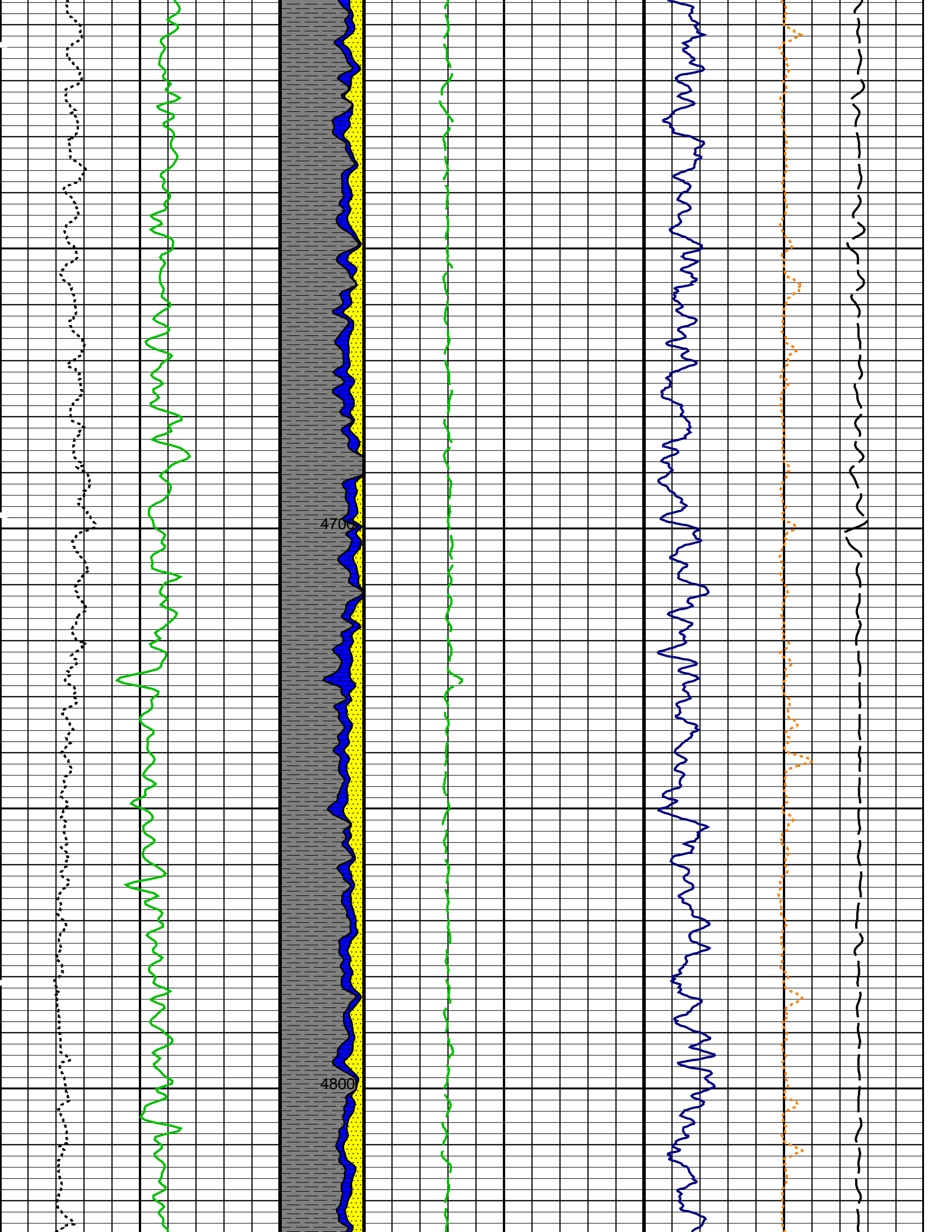




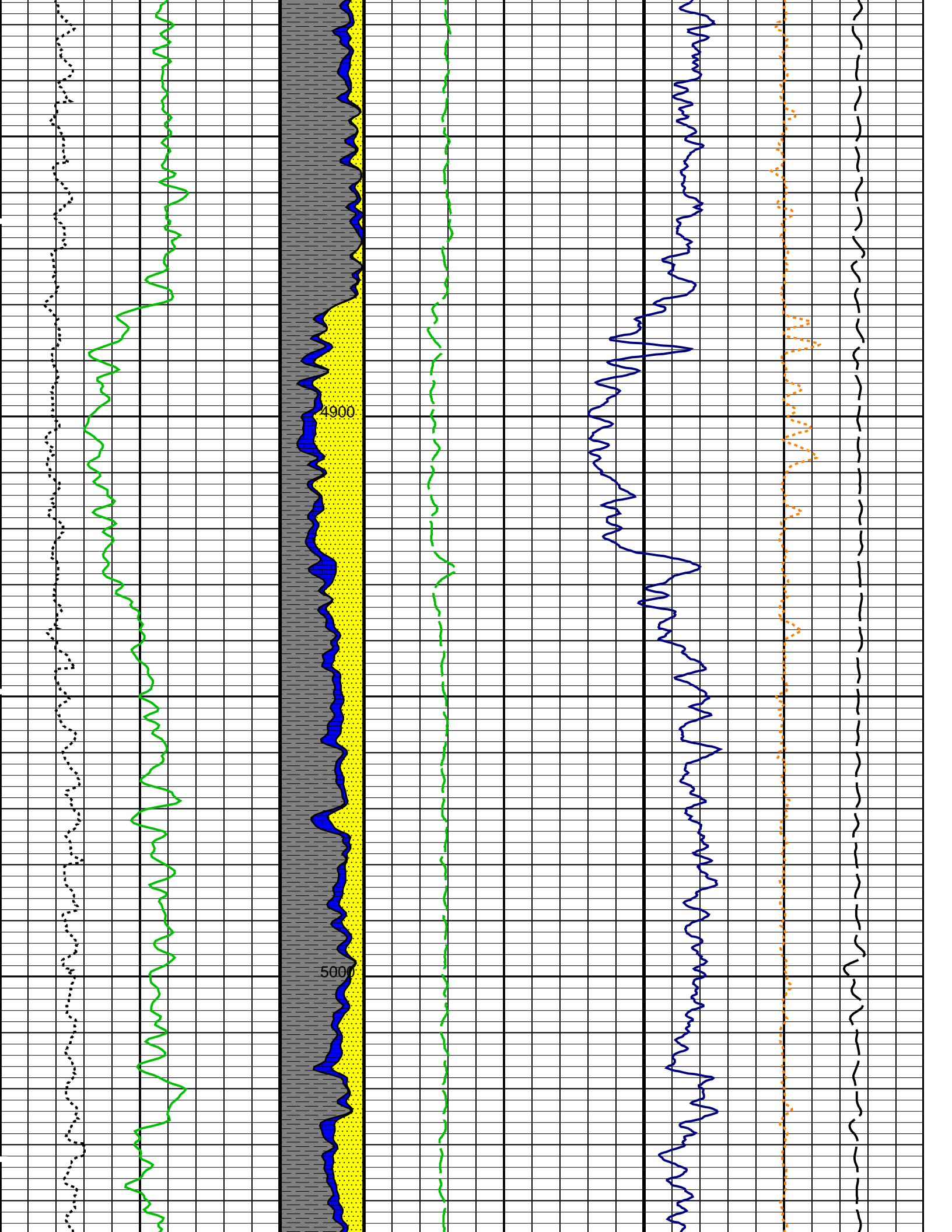


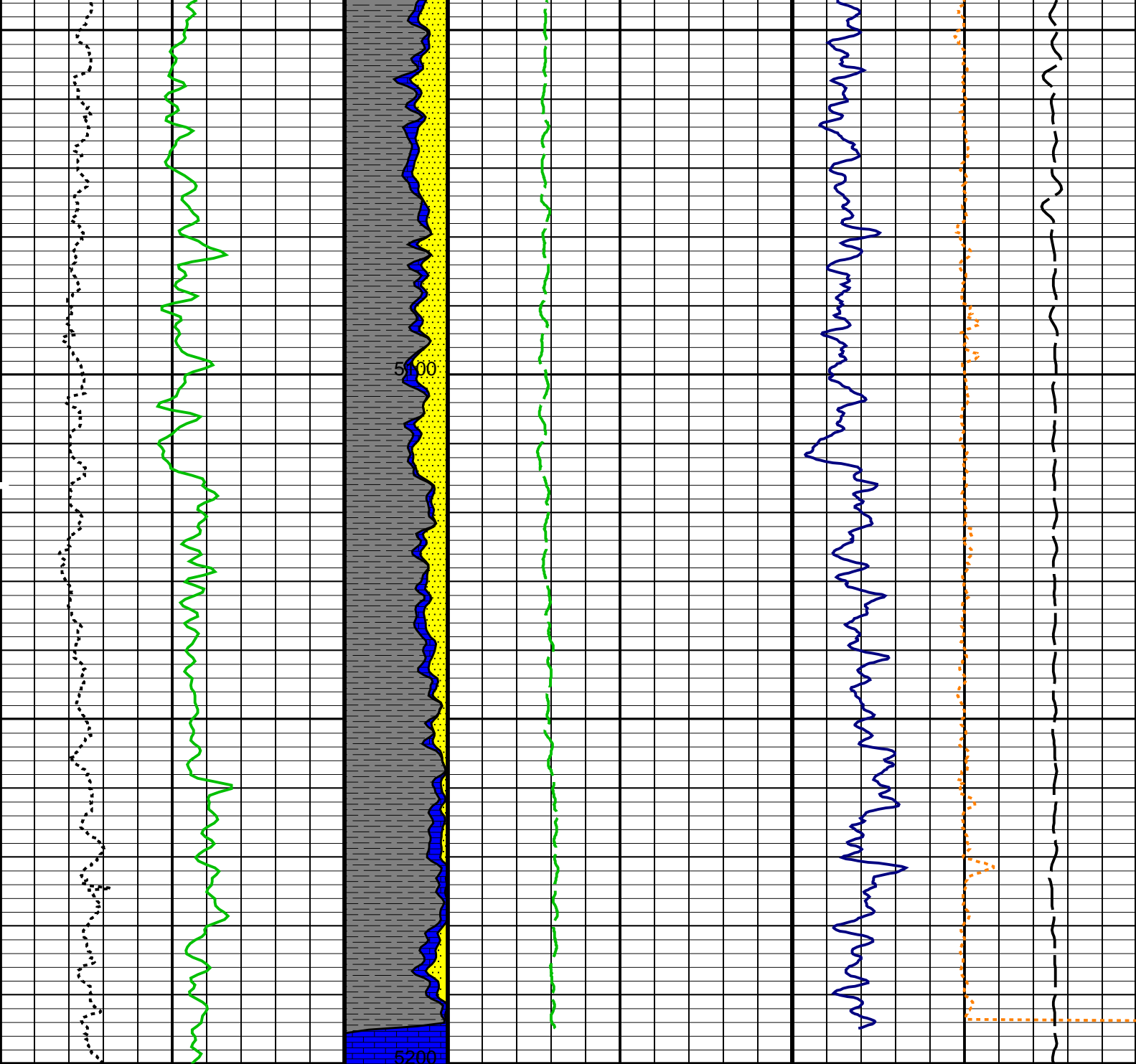












MAIN PASS: \*\*\* PLATFORM EXPRESS – LITHOLOGY DENSITY \*\*\*

Gamma Ray Backup	Stuck Stretch (STIT)	Std. Res. Formation Pe (PEFZ)		Density Correction (HDRA)	
	0 (F) 50	0	(-----) 10	-0.25	(G/C3) 0.25
Gamma Ray (GR)	LIME	Std. Res. Formation Density (RHOZ)			
0 (GAPI) 200		2	(G/C3)		3
Caliper (HCAL)	SAND	Tension (TENS)			
6 (IN) 16	SHALE	10000	(LBF)		0

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HILTB-CTS: High resolution Integrated Logging Tool-CTS			
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCLF	Germany Coal-like Formation Option	NO	
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
SHT	Surface Hole Temperature	68	DEGF
FEQL: Formation Evaluation Quick Look			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	68	DEGF
PERT: Preliminary Evaluation - Real Time			
BDPS	Bulk Density Processing Selector	Standard	
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
CLIM	Caliper Limit for Bad Hole	999	IN
CNPS	Corrected Neutron Porosity Selector	NPHI	
DRUL	DRHO Upper Limit	999	G/C3
FCAL	Caliper Presence Flag	PRESENT	
FCGR	CGR Presence Flag	PRESENT	
FEXP	Form Factor Exponent	2	
FLDT	Bulk Density Presence Flag	PRESENT	
FNUM	Form Factor Numerator	1	
FSON	Sonic Presence Flag	ABSENT	
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
PMAX	PHI Maximum	0.5	CFCF
POUT	Porosity Output Lithology	SANDSTONE	
RG21	RHO Grain (2-Mineral Model, Min-1)	2.71	G/C3
RG22	RHO Grain (2-Mineral Model, Min-2)	2.644	G/C3
RG23	RHO Grain (2-Mineral Model, Min-3)	2.877	G/C3
RG31	RHO Grain (3-Mineral Model, Min-1)	2.71	G/C3
RG32	RHO Grain (3-Mineral Model, Min-2)	2.644	G/C3
RG33	RHO Grain (3-Mineral Model, Min-3)	2.877	G/C3
RTLF	RT Limit Flag	NO_LIMIT	
RWF	Resistivity of Free Water	0.02	OHMM
SHT	Surface Hole Temperature	68	DEGF
UF	U Fluid	0.398	
UM21	U Matrix (2-Mineral Model, Min-1)	13.77	
UM22	U Matrix (2-Mineral Model, Min-2)	4.779	
UM23	U Matrix (2-Mineral Model, Min-3)	8.997	
UM31	U Matrix (3-Mineral Model, Min-1)	13.77	
UM32	U Matrix (3-Mineral Model, Min-2)	4.779	
UM33	U Matrix (3-Mineral Model, Min-3)	8.997	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	8035.00	FT
TDL	Total Depth - Logger	8048.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	9.30	LB/G
DO	Depth Offset for Playback	0.5	FT
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	1.0400	OHMM
TD	Total Depth	8048	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: DENS    Vertical Scale: 5" per 100'    Graphics File Created: 13-Dec-2007 20:42

OP System Version: 15C0-309  
MCM

HILTB-CTS    SRPC-3497-NOV\_2007

## Input DLIS Files

DEFAULT    AIT\_TLD\_MCEL\_CNL\_0001.LIB    EN:8    PRODUCER    13-Dec-2007 19:00    8070.0 FT    818.0 FT

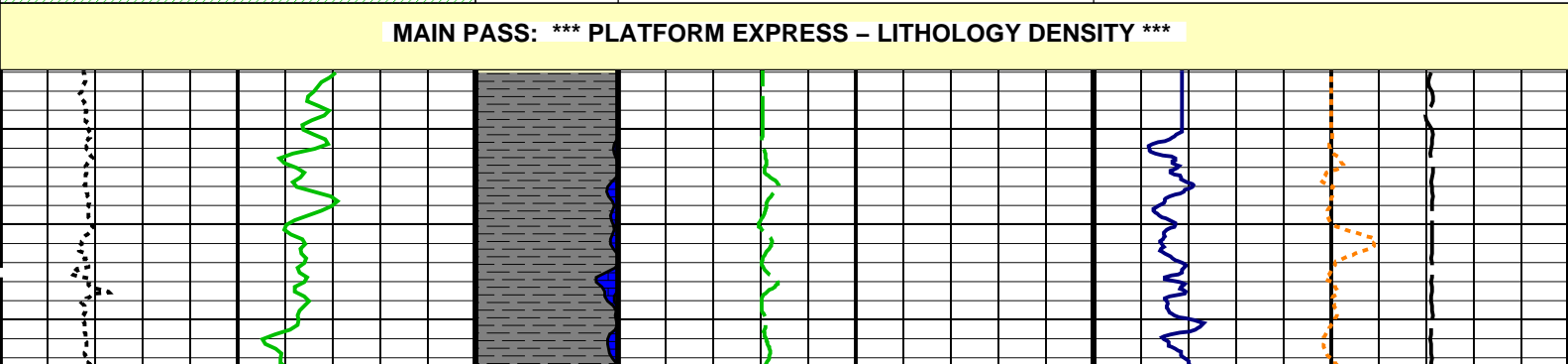
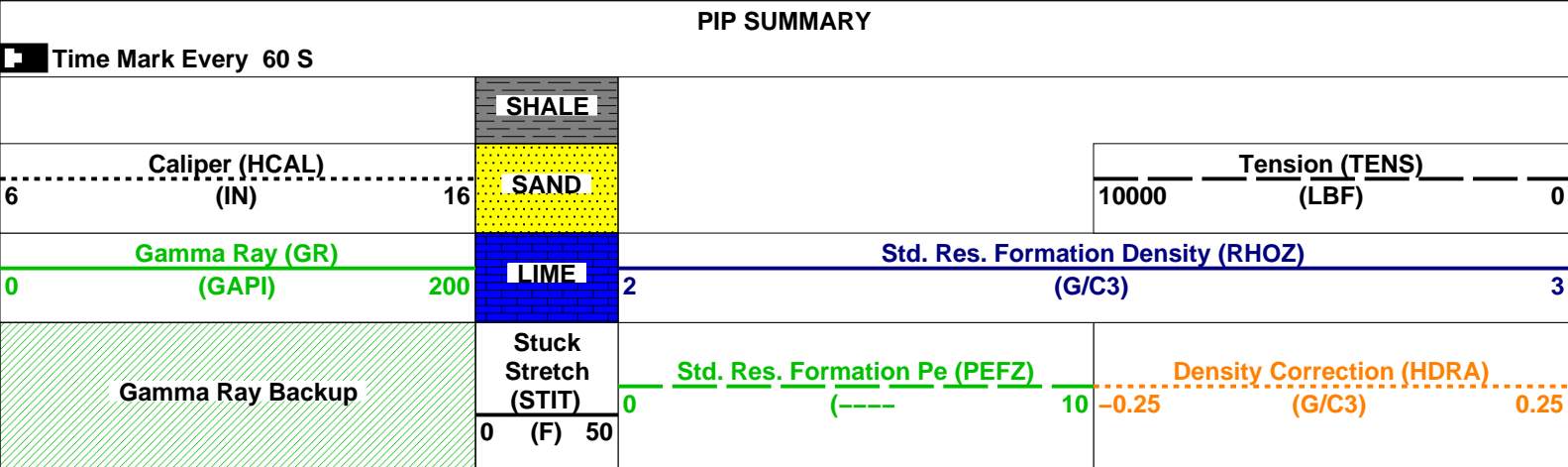
Schlumberger

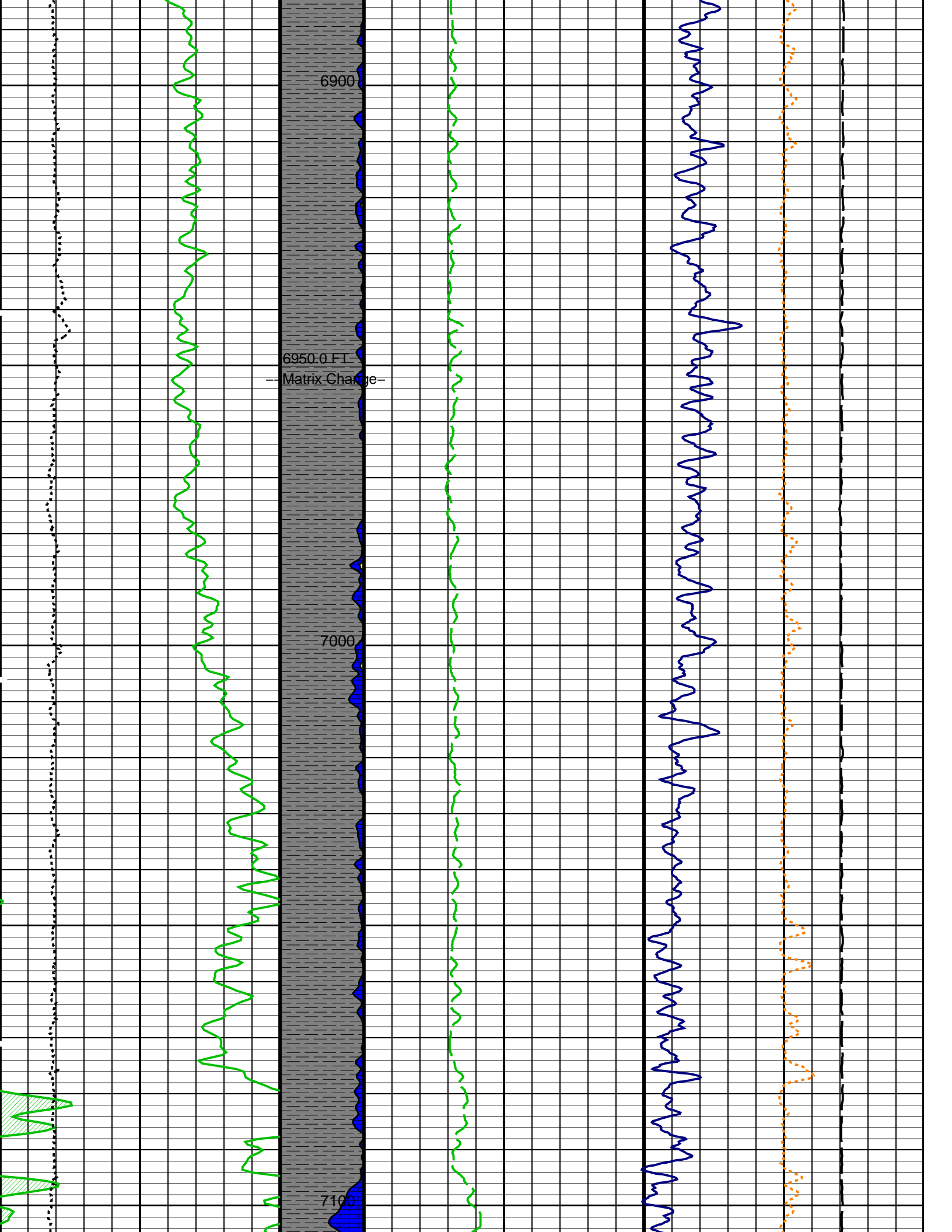
MAIN DENSITY LOG 5" = 100'

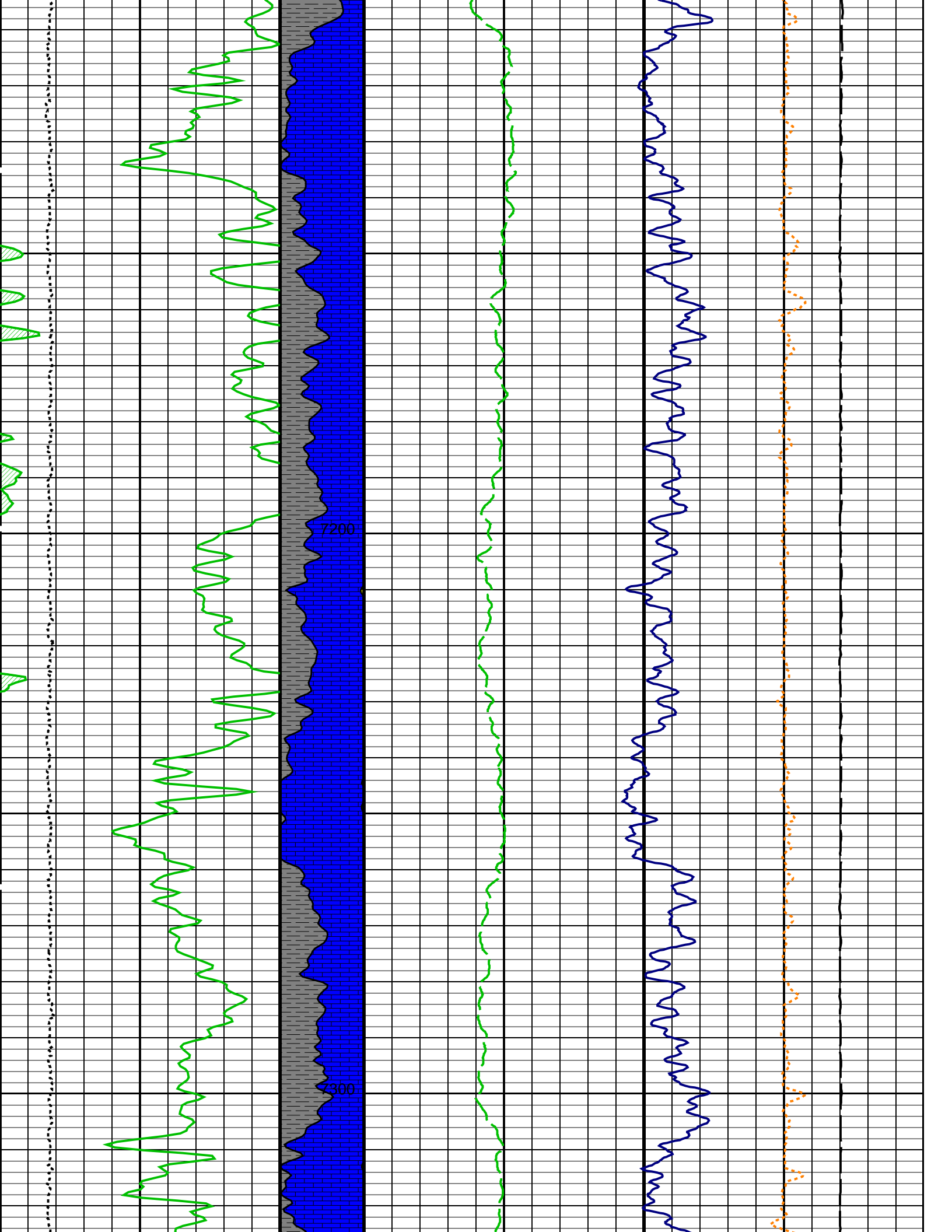
MAXIS Field Log

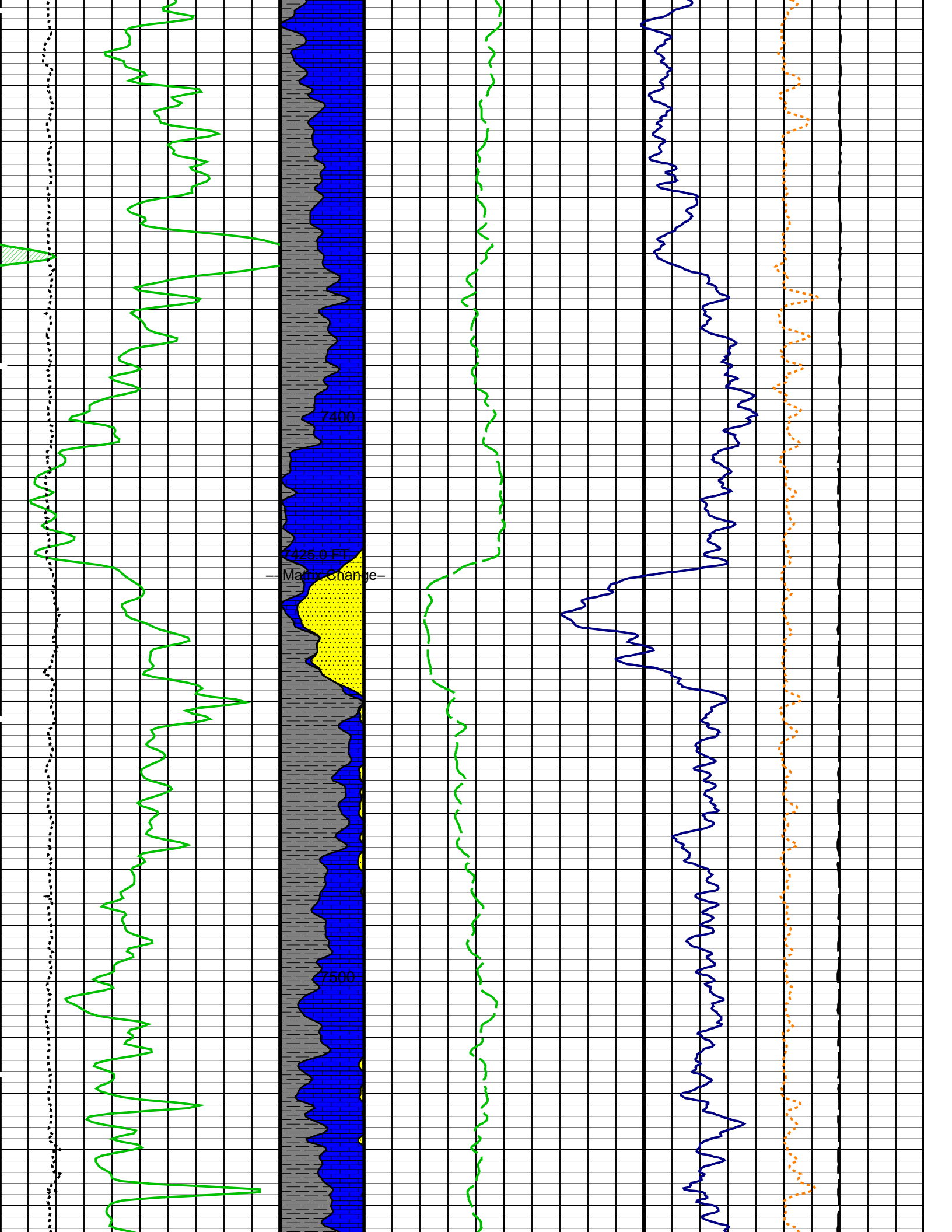
Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_009LUP	FN:8	PRODUCER	13-Dec-2007 19:00	8070.0 FT	818.0 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_016PUP	FN:15	PRODUCER	13-Dec-2007 20:39	8070.5 FT	6853.5 FT
OP System Version: 15C0-309						
MCM						
HILTB-CTS	SRPC-3497-NOV_2007					

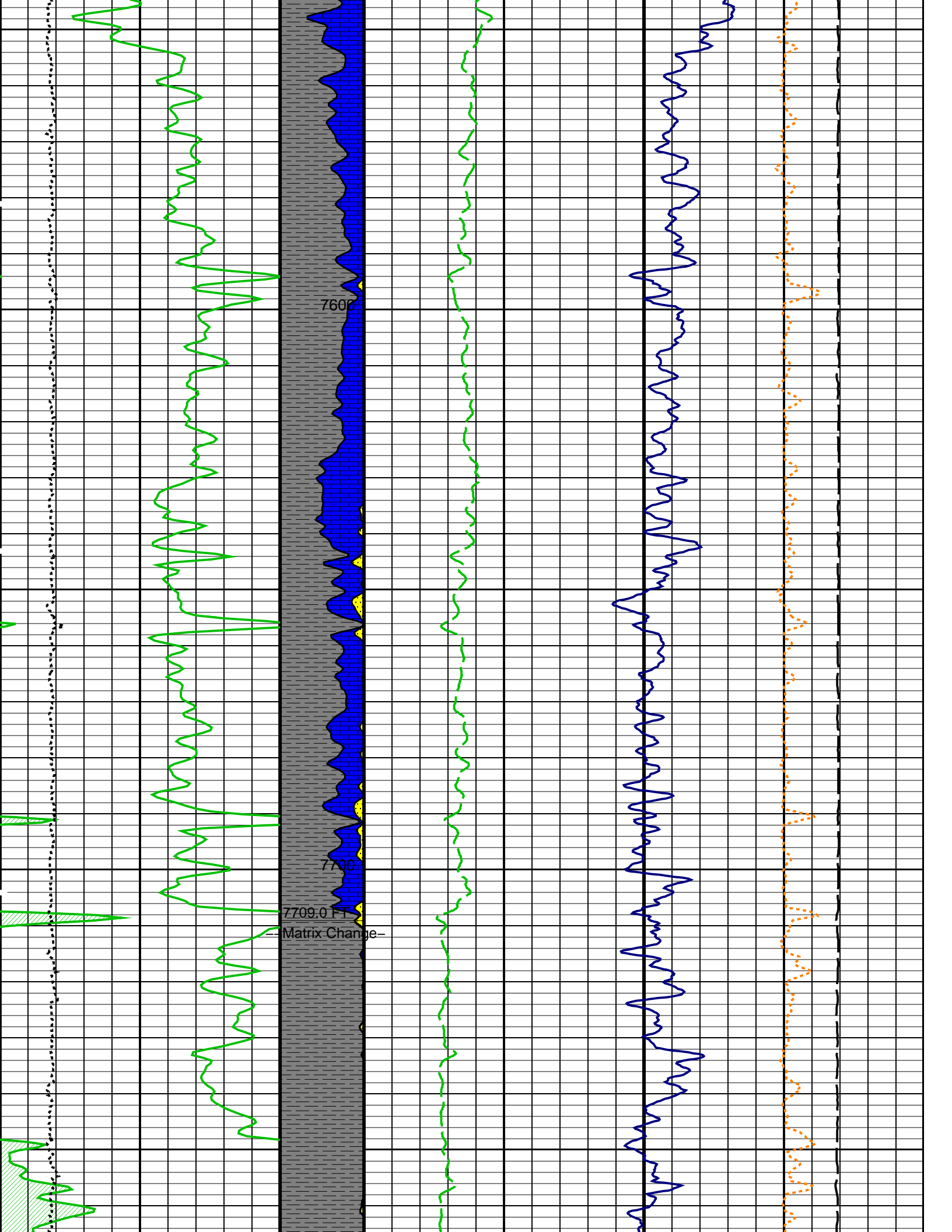
Changed Parameter Summary			
DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8070.5 20:39:41
	SANDSTONE	SANDSTONE	7709.0 20:39:53
	LIMESTONE	SANDSTONE	7425.0 20:40:02
POUT	SANDSTONE	SANDSTONE	8070.5 20:39:41
	SANDSTONE	SANDSTONE	7709.0 20:39:53
	LIMESTONE	SANDSTONE	7425.0 20:40:02



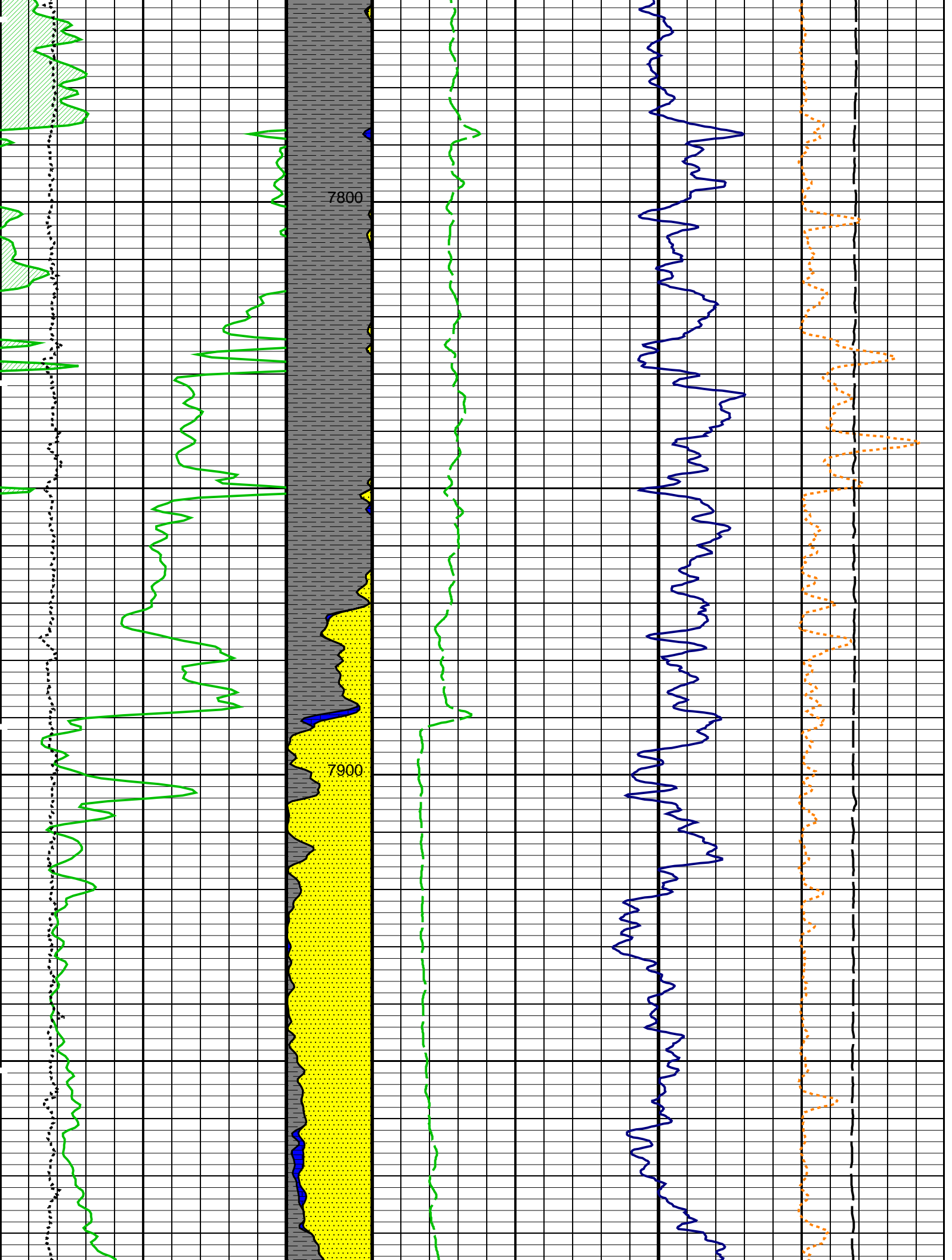


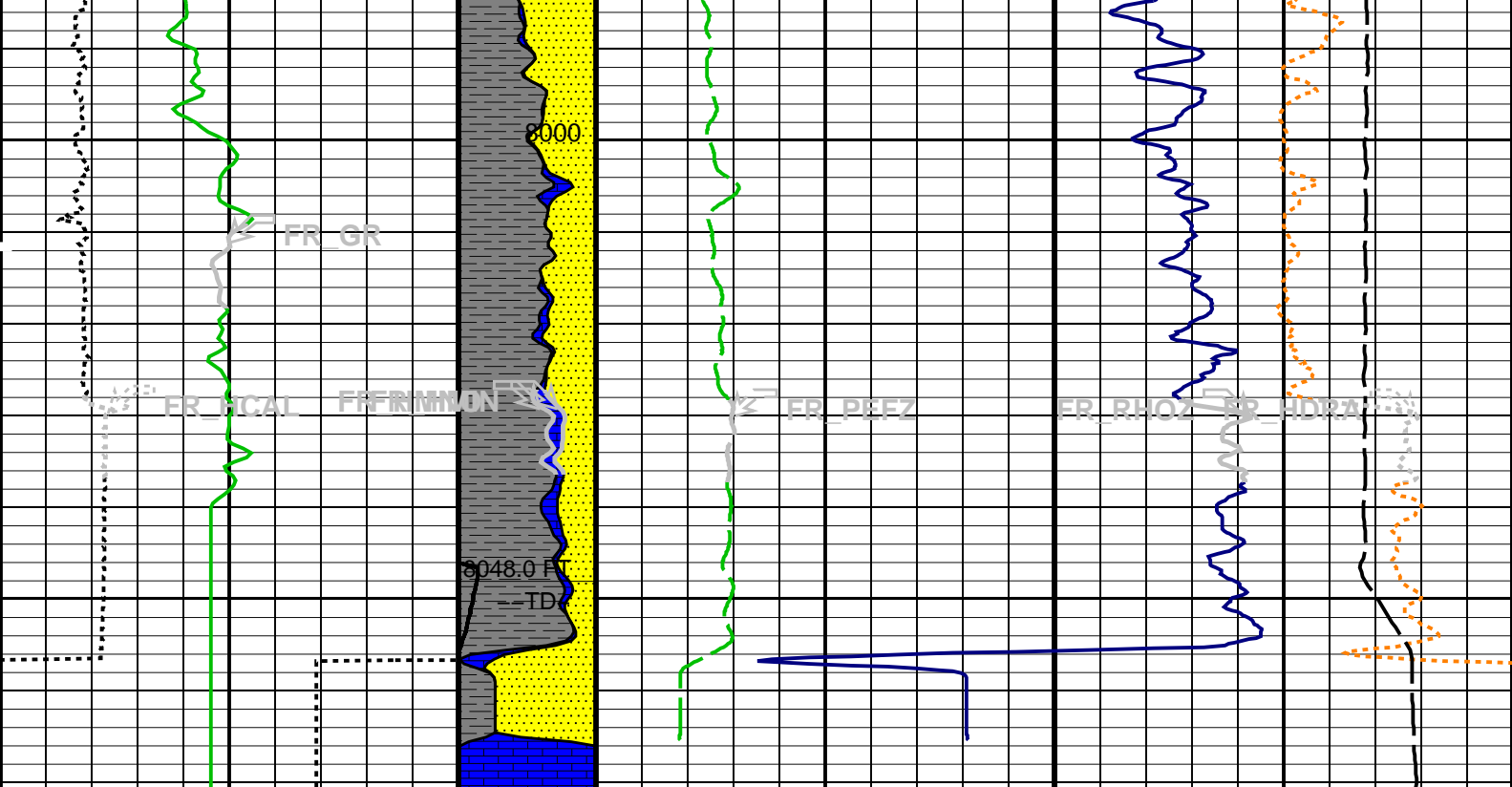












MAIN PASS: \*\*\* PLATFORM EXPRESS – LITHOLOGY DENSITY \*\*\*

Gamma Ray Backup	Stuck Stretch (STIT)	0	Std. Res. Formation Pe (PEFZ)	10	Density Correction (HDRA)	-0.25	0.25
	(F)	50	(-----)		(G/C3)		
Gamma Ray (GR)	LIME	2	Std. Res. Formation Density (RHOZ)	3			
(GAPI)			(G/C3)				
0							
200	SAND						
Caliper (HCAL)	SHALE				Tension (TENS)		
(IN)					(LBF)		
6					10000		0
16							

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HILTB-CTS: High resolution Integrated Logging Tool-CTS			
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCLF	Germany Coal-like Formation Option	NO	
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
SHT	Surface Hole Temperature	68	DEGF
FEQL: Formation Evaluation Quick Look			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	

SHI	Surface Hole Temperature	68	DEGF
PERT: Preliminary Evaluation – Real Time			
BDPS	Bulk Density Processing Selector	Standard	
BHT	Bottom Hole Temperature (used in calculations)	225	DEGF
CLIM	Caliper Limit for Bad Hole	999	IN
CNPS	Corrected Neutron Porosity Selector	NPHI	
DRUL	DRHO Upper Limit	999	G/C3
FCAL	Caliper Presence Flag	PRESENT	
FCGR	CGR Presence Flag	PRESENT	
FEXP	Form Factor Exponent	2	
FLDT	Bulk Density Presence Flag	PRESENT	
FNUM	Form Factor Numerator	1	
FSON	Sonic Presence Flag	ABSENT	
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
PMAX	PHI Maximum	0.5	CFCF
POUT	Porosity Output Lithology	SANDSTONE	
RG21	RHO Grain (2–Mineral Model, Min–1)	2.71	G/C3
RG22	RHO Grain (2–Mineral Model, Min–2)	2.644	G/C3
RG23	RHO Grain (2–Mineral Model, Min–3)	2.877	G/C3
RG31	RHO Grain (3–Mineral Model, Min–1)	2.71	G/C3
RG32	RHO Grain (3–Mineral Model, Min–2)	2.644	G/C3
RG33	RHO Grain (3–Mineral Model, Min–3)	2.877	G/C3
RTLF	RT Limit Flag	NO_LIMIT	
RWF	Resistivity of Free Water	0.02	OHMM
SHT	Surface Hole Temperature	68	DEGF
UF	U Fluid	0.398	
UM21	U Matrix (2–Mineral Model, Min–1)	13.77	
UM22	U Matrix (2–Mineral Model, Min–2)	4.779	
UM23	U Matrix (2–Mineral Model, Min–3)	8.997	
UM31	U Matrix (3–Mineral Model, Min–1)	13.77	
UM32	U Matrix (3–Mineral Model, Min–2)	4.779	
UM33	U Matrix (3–Mineral Model, Min–3)	8.997	
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth – Driller	8035.00	FT
TDL	Total Depth – Logger	8048.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	9.30	LB/G
DO	Depth Offset for Playback	0.5	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	1.0400	OHMM
TD	Total Depth	8048	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: LOWER\_DENS    Vertical Scale: 5" per 100'    Graphics File Created: 13–Dec–2007 20:39

## OP System Version: 15C0–309

MCM

HILTB–CTS    SRPC–3497–NOV\_2007

### Input DLIS Files

DEFAULT    AIT\_TLD\_MCFL\_CNL\_009LUP    FN:8    PRODUCER    13–Dec–2007 19:00    8070.0 FT    818.0 FT

### Output DLIS Files

DEFAULT    AIT\_TLD\_MCFL\_CNL\_016PUP    FN:15    PRODUCER    13–Dec–2007 20:39

**Schlumberger**

**BEFORE CALIBRATIONS**

# 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: 27–Sep–2007 11:01 Before: 11–Dec–2007 1:30

Thru Cal Magnitude – 0	0	0.6092	0.6098	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.249	1.250	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6210	0.6216	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7034	0.7042	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.311	1.313	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.894	1.896	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.898	1.900	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.335	1.338	N/A	N/A	N/A	V
Phase – 0	0	49.73	49.80	N/A	N/A	N/A	DEG
Phase – 1	0	48.71	48.79	N/A	N/A	N/A	DEG
Phase – 2	0	44.61	44.69	N/A	N/A	N/A	DEG
Phase – 3	0	43.74	43.82	N/A	N/A	N/A	DEG
Phase – 4	0	36.98	37.08	N/A	N/A	N/A	DEG
Phase – 5	0	34.80	34.93	N/A	N/A	N/A	DEG
Phase – 6	0	34.77	34.90	N/A	N/A	N/A	DEG
Phase – 7	0	28.85	29.12	N/A	N/A	N/A	DEG

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

Master: 27–Sep–2007 11:01 Before: 11–Dec–2007 1:30

Array Induction SPA Plus	990.5	990.0	989.7	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.1585	0.1567	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9167	0.9165	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0001591	0.0001640	N/A	N/A	N/A	V

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

Master: 27–Sep–2007 11:01

Test Loop Gain Magnitude – 0	0	1.019	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.020	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.024	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.021	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	1.004	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	0.9951	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	1.005	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.012	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.5429	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.5581	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	–0.03639	N/A	N/A	N/A	N/A	DEG
Phase – 3	0	–0.005282	N/A	N/A	N/A	N/A	DEG
Phase – 4	0	–0.03332	N/A	N/A	N/A	N/A	DEG
Phase – 5	0	–0.08879	N/A	N/A	N/A	N/A	DEG
Phase – 6	0	0.1686	N/A	N/A	N/A	N/A	DEG
Phase – 7	0	–0.4128	N/A	N/A	N/A	N/A	DEG

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

Master: 27–Sep–2007 11:01

R Sonde Error Correction – 0	0	–110.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	161.5	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	116.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	59.72	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	23.64	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	12.92	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	9.047	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	–0.7151	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	–219.3	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	–205.6	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	–40.24	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	34.19	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	20.51	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	11.70	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	5.787	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	0.9127	N/A	N/A	N/A	N/A	MM/M

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

Master: 27–Sep–2007 11:01

Coarse – Mag, Real, Imag – 0	0	0.8865	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 1	0	0.8865	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 2	0	0.8865	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 0	0	0.8929	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 1	0	0.8929	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 2	0	0.8929	N/A	N/A	N/A	N/A	

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

Before: 11–Dec–2007 1:33

BS Window Ratio	0.7104	N/A	0.7122	N/A	N/A	N/A	
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BS Window Ratio	0.7104	N/A	0.7122	N/A	N/A	N/A	CPS
BS Window Sum	8992	N/A	8974	N/A	N/A	N/A	
SS Window Ratio	0.4968	N/A	0.4965	N/A	N/A	N/A	
SS Window Sum	10290	N/A	10260	N/A	N/A	N/A	CPS
LS Window Ratio	0.2932	N/A	0.2946	N/A	N/A	N/A	
LS Window Sum	1080	N/A	1068	N/A	N/A	N/A	CPS

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

Before: 11–Dec–2007 1:33

BS PM High Voltage (Command)	1446	N/A	1446	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1580	N/A	1582	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1411	N/A	1426	N/A	N/A	N/A	V

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

Before: 11–Dec–2007 1:33

BS Crystal Resolution	10.31	N/A	10.33	N/A	N/A	N/A	%
SS Crystal Resolution	9.688	N/A	9.680	N/A	N/A	N/A	%
LS Crystal Resolution	8.772	N/A	8.700	N/A	N/A	N/A	%

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

Before: 11–Dec–2007 1:33

Raw B0 Resistivity	3875	N/A	3852	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3793	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3792	N/A	N/A	N/A	OHMM

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

Before: 11–Dec–2007 1:30

HILT Caliper Zero Measurement	8.000	N/A	8.311	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.47	N/A	N/A	N/A	IN

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

Before: 11–Dec–2007 1:43

Gamma Ray Background	30.00	N/A	81.58	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkg)	174.1	N/A	174.1	N/A	N/A	15.83	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

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

Master: 14–Sep–2007 17:57 Before: 11–Dec–2007 1:31

CNTC Background	27.59	27.59	27.71	N/A	N/A	4.139	CPS
CFTC Background	29.13	29.13	27.95	N/A	N/A	4.370	CPS

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

Master: 14–Sep–2007 17:57

Thermal Near Corr. (Tank)	5800	5348	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2176	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.458	N/A	N/A	N/A	N/A	

#### High resolution Integrated Logging Tool–CTS Wellsite Calibration – Accelerometer Calibration

Before: 13–Dec–2007 18:06

Z–Axis Acceleration	32.19	N/A	32.21	N/A	N/A	N/A	F/S2
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#### High resolution Integrated Logging Tool–CTS Master Calibration – Inversion results

Master: 25–Nov–2007 15:21

Rho Aluminum	2.596	2.600	---	---	---	---	G/C3
Rho Magnesium	1.686	1.687	---	---	---	---	G/C3
Pe Aluminum	2.570	2.555	---	---	---	---	
Pe Magnesium	2.650	2.631	---	---	---	---	

#### High resolution Integrated Logging Tool–CTS Master Calibration – Deviation Summary

Master: 25–Nov–2007 15:21

BS Average Deviation	0	0.3446	---	---	---	---	%
BS Max Deviation	0	1.006	---	---	---	---	%
SS Average Deviation	0	0.2535	---	---	---	---	%
SS Max Deviation	0	0.8238	---	---	---	---	%
LS Average Deviation	0	0.4908	---	---	---	---	%
LS Max Deviation	0	0.9686	---	---	---	---	%

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 3.363 IN.  
NSR–F serial number 940

# High resolution Integrated Logging Tool–CTS / Equipment Identification

## Primary Equipment:

Array Induction Tool – H  
Rm/SP Bottom Nose  
Array Induction Sonde  
HILT high–Resolution Mechanical Sonde  
HILT Rxo Gamma–ray Device  
HILT Micro Cylindrically Focused Log Dev  
GR Logging Source  
HILT High Res. Control Cartridge

AIT – H

AHRM – A

AHIS – BA

HRMS – B

HRGD – B

MCFL –

GLS – VJ

HRCC – B





374

5094

## 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	0.6092		0.6050	49.73		71.00
	Before	0.6098			49.80		
1	Master	1.249		1.270	48.71		70.00
	Before	1.250			48.79		
2	Master	0.6210		0.6230	44.61		66.00
	Before	0.6216			44.69		
3	Master	0.7034		0.7040	43.74		65.00
	Before	0.7042			43.82		
4	Master	1.311		1.337	36.98		59.00
	Before	1.313			37.08		
5	Master	1.894		1.955	34.80		57.00
	Before	1.896			34.93		
6	Master	1.898		1.955	34.77		57.00
	Before	1.900			34.90		
7	Master	1.335		1.415	28.85		53.00
	Before	1.338			29.12		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 27–Sep–2007 11:01				Before: 11–Dec–2007 1:30			

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			990.0	Master			0.1585
Before			989.7	Before			0.1567
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			0.9167	Master			0.0001591
Before			0.9165	Before			0.0001640
0.8700 (Minimum)		0.9150 (Nominal)	0.9600 (Maximum)	-0.05000 (Minimum)		0 (Nominal)	0.05000 (Maximum)
Master: 27–Sep–2007 11:01				Before: 11–Dec–2007 1:30			

High resolution Integrated Logging Tool—CTS Wellsite Calibration						
Test Loop Gain Correction						
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG
0	1.019				0.5429	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal) 3.000 (Maximum)
1	1.020				0.5581	







		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.024					-0.03639		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.021					-0.005282		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.004					-0.03332		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9951					-0.08879		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.005					0.1686		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.012					-0.4128		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 27-Sep-2007 11:01

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	-110.7				-219.3			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	161.5				-205.6			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	116.0				-40.24			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	59.72				34.19			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.64				20.51			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.92				11.70			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.047				5.787			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.7151				0.9127			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)







Master: 27-Sep-2007 11:01

Master: 27-Sep-2007 11:01




High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 27-Sep-2007 11:01								

Master: 27-Sep-2007 11:01




### Stab Measurement Summary

Phase	BS Window Ratio		Value	Phase	SS Window Ratio		Value	Phase	LS Window Ratio		Value
Before			0.7122	Before			0.4965	Before			0.2946
	0.6749 (Minimum)	0.7104 (Nominal)	0.7459 (Maximum)		0.4719 (Minimum)	0.4968 (Nominal)	0.5216 (Maximum)		0.2786 (Minimum)	0.2932 (Nominal)	0.3079 (Maximum)
Phase	BS Window Sum CPS		Value	Phase	SS Window Sum CPS		Value	Phase	LS Window Sum CPS		Value
Before			8974	Before			10260	Before			1068
	8542 (Minimum)	8992 (Nominal)	9442 (Maximum)		9773 (Minimum)	10290 (Nominal)	10800 (Maximum)		1026 (Minimum)	1080 (Nominal)	1134 (Maximum)




Before: 11-Dec-2007 1:33

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	Phase	LS PM High Voltage (Command) V		Value
Before			1446	Before			1582	Before			1426
	1346 (Minimum)	1446 (Nominal)	1546 (Maximum)		1480 (Minimum)	1580 (Nominal)	1680 (Maximum)		1311 (Minimum)	1411 (Nominal)	1511 (Maximum)



Before: 11-Dec-2007 1:33

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			10.33	Before			9.680	Before			8.700
	9.315 (Minimum)	10.31 (Nominal)	11.31 (Maximum)		8.688 (Minimum)	9.688 (Nominal)	10.69 (Maximum)		7.772 (Minimum)	8.772 (Nominal)	9.772 (Maximum)




Before: 11-Dec-2007 1:33

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			3852	Before			3793	Before			3792
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)





Before: 11-Dec-2007 1:33

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			8.311	Before			12.47				
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)		9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)				

Before: 11-Dec-2007 1:30



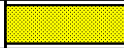
High resolution Integrated Logging Tool-CTS Wellsite Calibration											
Detector Calibration											
Phase	Gamma Ray Background GAPI		Value	Phase	Gamma Ray (Jig - Bkg) GAPI		Value	Phase	Gamma Ray (Calibrated) GAPI		Value
Before			81.58	Before			174.1	Before			165.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		158.3 (Minimum)	174.1 (Nominal)	189.9 (Maximum)		150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: 11-Dec-2007 1:43

High resolution Integrated Logging Tool-CTS Wellsite Calibration											
Zero Measurement											
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value				
Master			27.59	Master			29.13				
Before			27.71	Before			27.95				
	5.000 (Minimum)	27.59 (Nominal)	40.00 (Maximum)		5.000 (Minimum)	29.13 (Nominal)	40.00 (Maximum)				

Master: 14-Sep-2007 17:57


Before: 11-Dec-2007 1:31

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			5348	Master			2176	Master			2.458



















4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)
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Master: 14-Sep-2007 17:57

High resolution Integrated Logging Tool-CTS Wellsite Calibration			
Accelerometer Calibration			
Phase	Z-Axis Acceleration F/S2	Value	
Before		32.21	
	31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 13-Dec-2007 18:06















Before: 13-Dec-2007 18:06

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	0.6092		0.6050	49.73		71.00
1	Master	1.249		1.270	48.71		70.00
2	Master	0.6210		0.6230	44.61		66.00
3	Master	0.7034		0.7040	43.74		65.00
4	Master	1.311		1.337	36.98		59.00
5	Master	1.894		1.955	34.80		57.00
6	Master	1.898		1.955	34.77		57.00
7	Master	1.335		1.415	28.85		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 27-Sep-2007 11:01

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			990.0	Master			0.1585
	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			0.9167	Master			0.0001591
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)

Master: 27-Sep-2007 11:01

High resolution Integrated Logging Tool-CTS Master Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.019				0.5429		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.020				0.5581		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.024				-0.03639		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.021				-0.005282		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.004				-0.03332		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9951				-0.08879		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.005				0.1686		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.012					-0.4128		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 27-Sep-2007 11:01

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	-110.7				-219.3			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	161.5				-205.6			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	116.0				-40.24			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	59.72				34.19			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.64				20.51			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.92				11.70			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.047				5.787			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.7151				0.9127			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 27-Sep-2007 11:01

High resolution Integrated Logging Tool-CTS Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
0	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.8865				0.8929			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 27-Sep-2007 11:01

High resolution Integrated Logging Tool-CTS Master Calibration								
Inversion results								
Phase	Rho Aluminum G/C3			Value	Phase	Rho Magnesium G/C3		
Master				2.600	Master			1.687
	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				2.555	Master			2.631
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)			2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)

Master: 25-Nov-2007 15:21

High resolution Integrated Logging Tool-CTS Master Calibration								
Deviation Summary								
Phase	BS Average Deviation %			Value	Phase	SS Average Deviation %		
Master				0.3446	Master			0.2535
Phase	LS Average Deviation %			Value	Phase	LS Average Deviation %		
Master				0.4908	Master			0.4908

<div><div>-0.6000</div><div>0</div><div>0.6000</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>			<div><div>-1.000</div><div>0</div><div>1.000</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>			<div><div>-1.500</div><div>0</div><div>1.500</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>					
Phase	BS Max Deviation %		Value	Phase	SS Max Deviation %		Value	Phase	LS Max Deviation %		Value
Master	<div><div></div></div>		1.006	Master	<div><div></div></div>		0.8238	Master	<div><div></div></div>		0.9686
<div><div>-1.600</div><div>0</div><div>1.600</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>			<div><div>-2.500</div><div>0</div><div>2.500</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>			<div><div>-3.500</div><div>0</div><div>3.500</div></div> <div><div>(Minimum)</div><div>(Nominal)</div><div>(Maximum)</div></div>					
Master: 25-Nov-2007 15:21											

Master: 25-Nov-2007 15:21

High resolution Integrated Logging Tool-CTS Master Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master	<div><div></div></div>			27.59	Master	<div><div></div></div>			29.13
	5.000	27.59	40.00		5.000	29.13	40.00		
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)		
Master: 14-Sep-2007 17:57									

Master: 14-Sep-2007 17:57

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	<div><div></div></div>			5348	Master	<div><div></div></div>			2176	Master	<div><div></div></div>			2.458
	4700	5800	6900		1900	2400	2900			2.120	2.159	2.540		
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)		
Master: 14-Sep-2007 17:57														

Master: 14-Sep-2007 17:57

Company: **Orr Energy LLC**

**Schlumberger**

Well: **South 6-21D**

Field: **Wattenburg**

County: **Weld**

State: **Colorado**

Platform Express  
Compensated Neutron  
Litho-Density