

CFM

County: Weld
Field: Wattenberg

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Schlumberger

Company: Kerr-McGee Oil & Gas Onshore, LP

Well: Frank 3-5

Field: Wattenberg

County: Weld

State: Colorado

Platform Express
Compensated Neutron
Density Lithology

Platform Express	
Compensated Neutron	
Density Lithology	
SENW Sec. 5 , T 5N , R 67W	
SHL: 2408' FNL / 2318' FWL SENW	
BHL: 672' FNL / 2114' FWL NENW (est.)	
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
Elev.:	4895.00 ft
	G.L. 4880.00 ft
	D.F. 4894.00 ft
15.00 ft	above Perm. Datum
Elev.: 4880.00 ft	
API Serial No.	Section
05-123-29626-000C	5
Township	Range
5N	67W

Logging Date 27-Feb-2010

Run Number 1

Depth Driller 8177 ft

Schlumberger Depth 8138 ft

Bottom Log Interval 8130 ft

Log Interval 771 ft

Casing Driller Size @ Depth 8.625 in @ 771 ft

Logging Schlumberger 771 ft

Bit Size 7.875 in

Type Fluid In Hole Fresh Water

Density 8.33 lbm/gal

Viscosity 25 s

PH

Flowline

@ Measured Temperature 1.130 ohm.m @ 55 degF

RMF @ Measured Temperature 0.848 ohm.m @ 55 degF

Source RMF @ Measured Temperature 1.695 ohm.m @ 55 degF

Calculated

RMF @ MRT 0.310 @ 220 0.232 @ 220

Maximum Recorded Temperatures 220 degF

Circulation Stopped 27-Feb-2010 19:00

Logger On Bottom 28-Feb-2010 0:20

Unit Number 3055

Location Fort Morgan, CO

Recorded By Jared R. Hoskins

Witnessed By Marvin Hackworth, Tekabe Gedamu

Run 1

Run 2

Run 3

Rig: Xtreme 11

Crew: Tim Ludgate, Dave Marquez

RUN 1		
SERVICE ORDER #: BCEK-00007		
PROGRAM VERSION: 17C0-154		
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

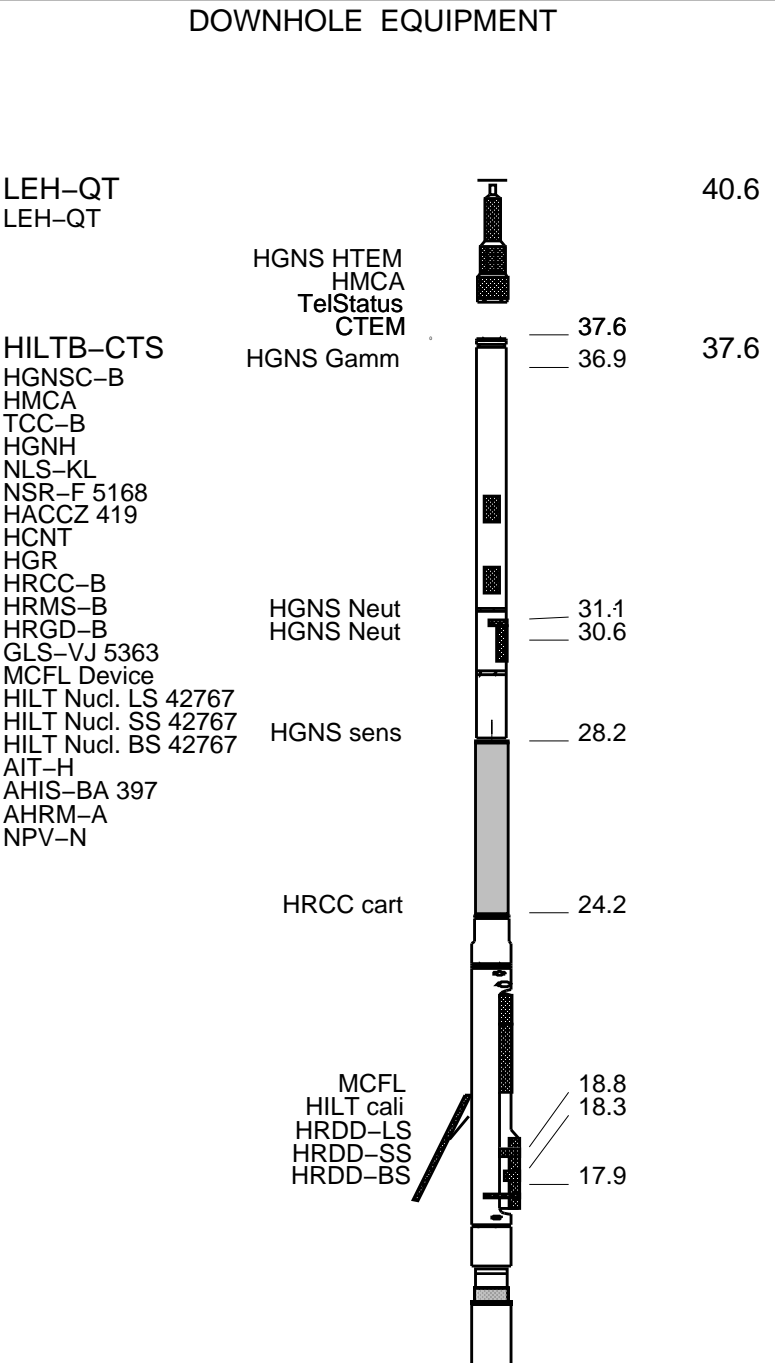
RUN 2		
SERVICE ORDER #:		
PROGRAM VERSION:		
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

SURFACE EQUIPMENT

WITM (CTS)-A NCS-VB
GSR-U/Y
NCT-B
CNB-AB



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

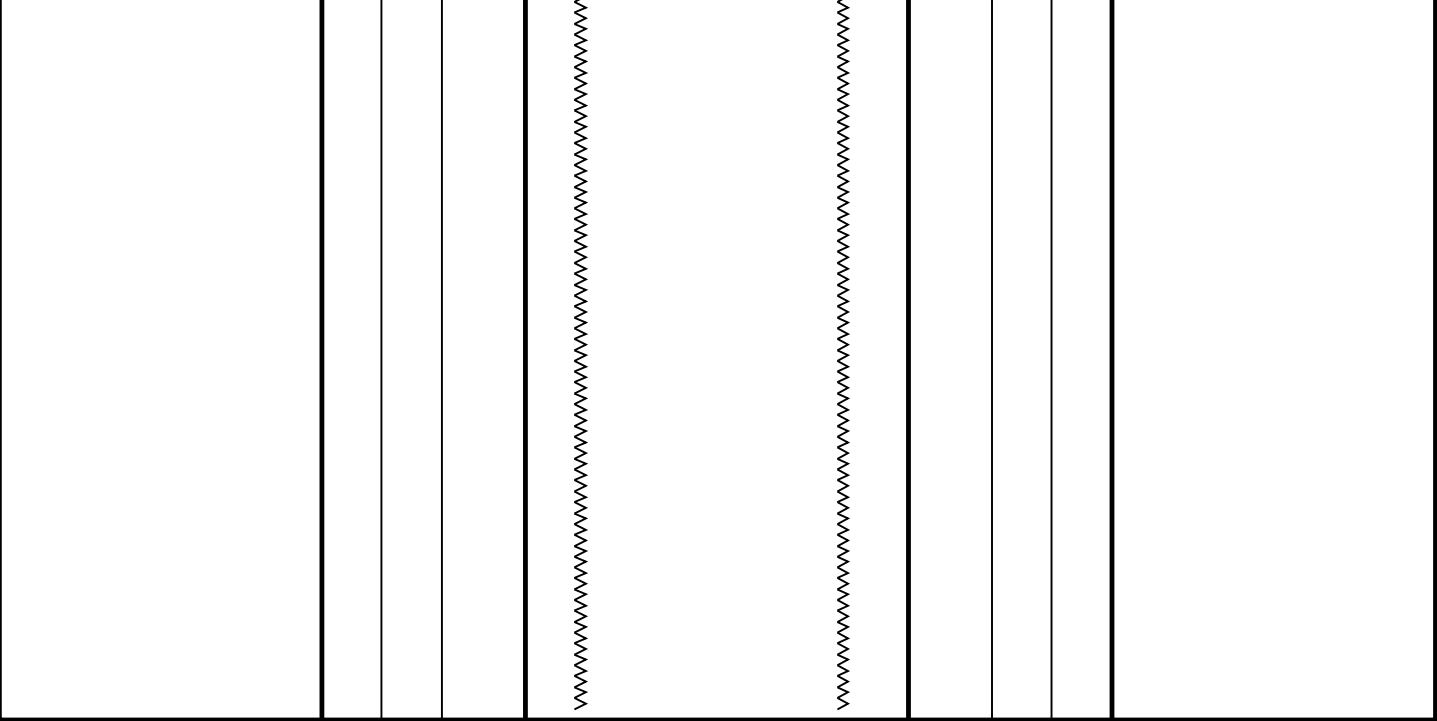
Well Schematic

(ft) (in)
MD OD ID

Casing String

Casing String

Casing Shoe
Borehole Segment



All depths are driller's depths



UPPER POROSITY LOG 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

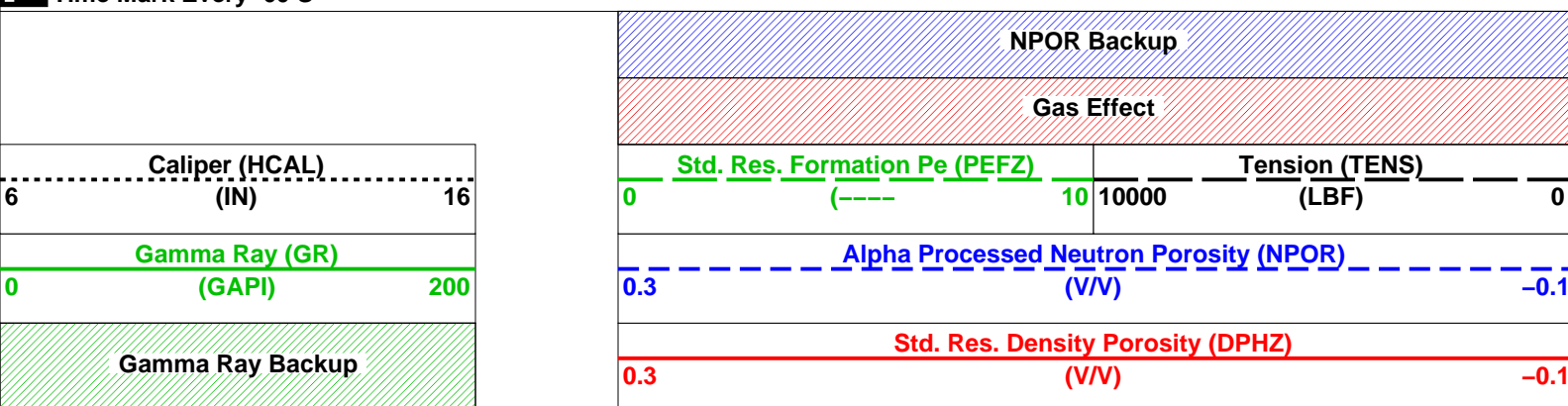
Integrated Hole/Cement Volume Summary

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

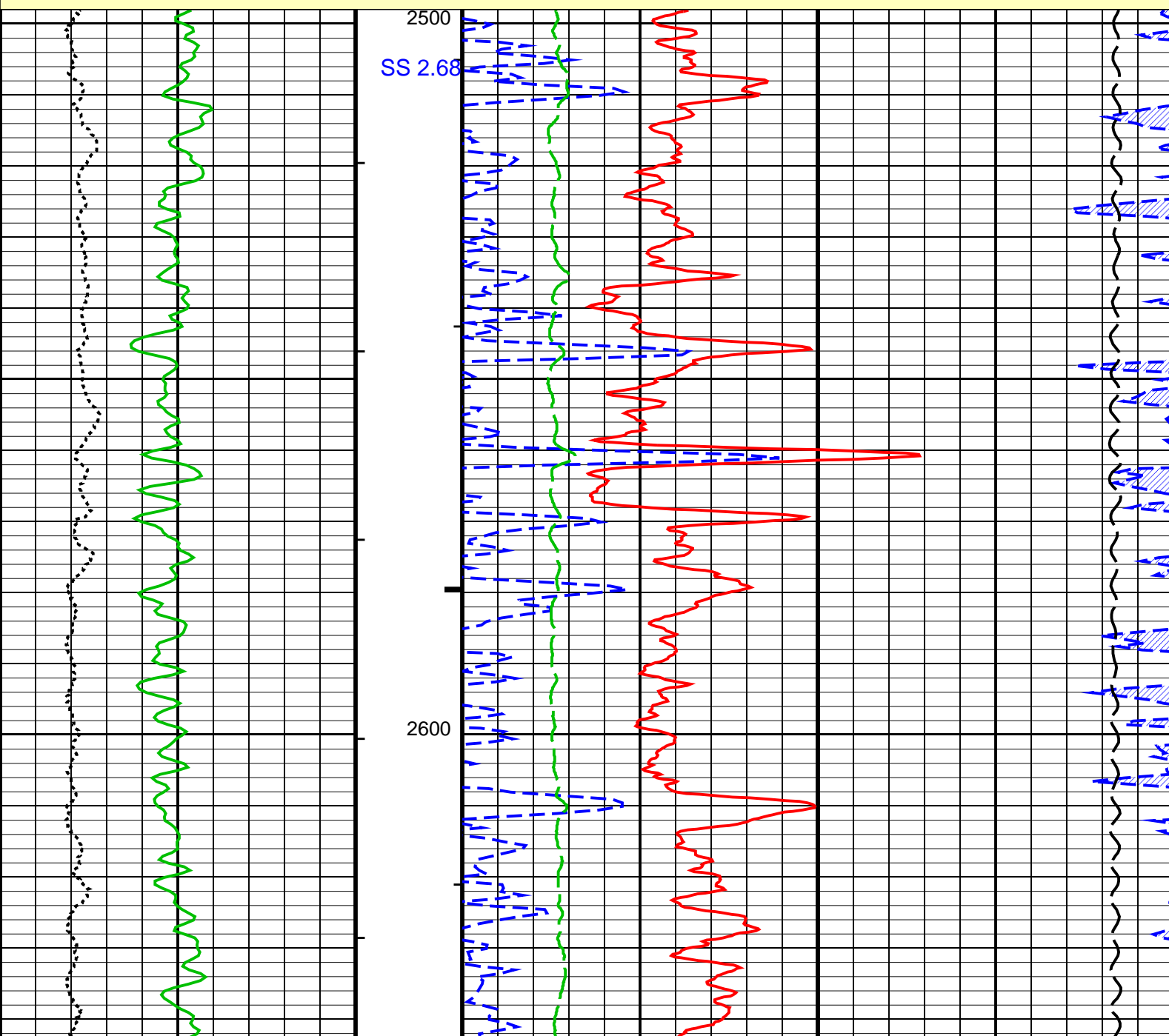
PIP SUMMARY

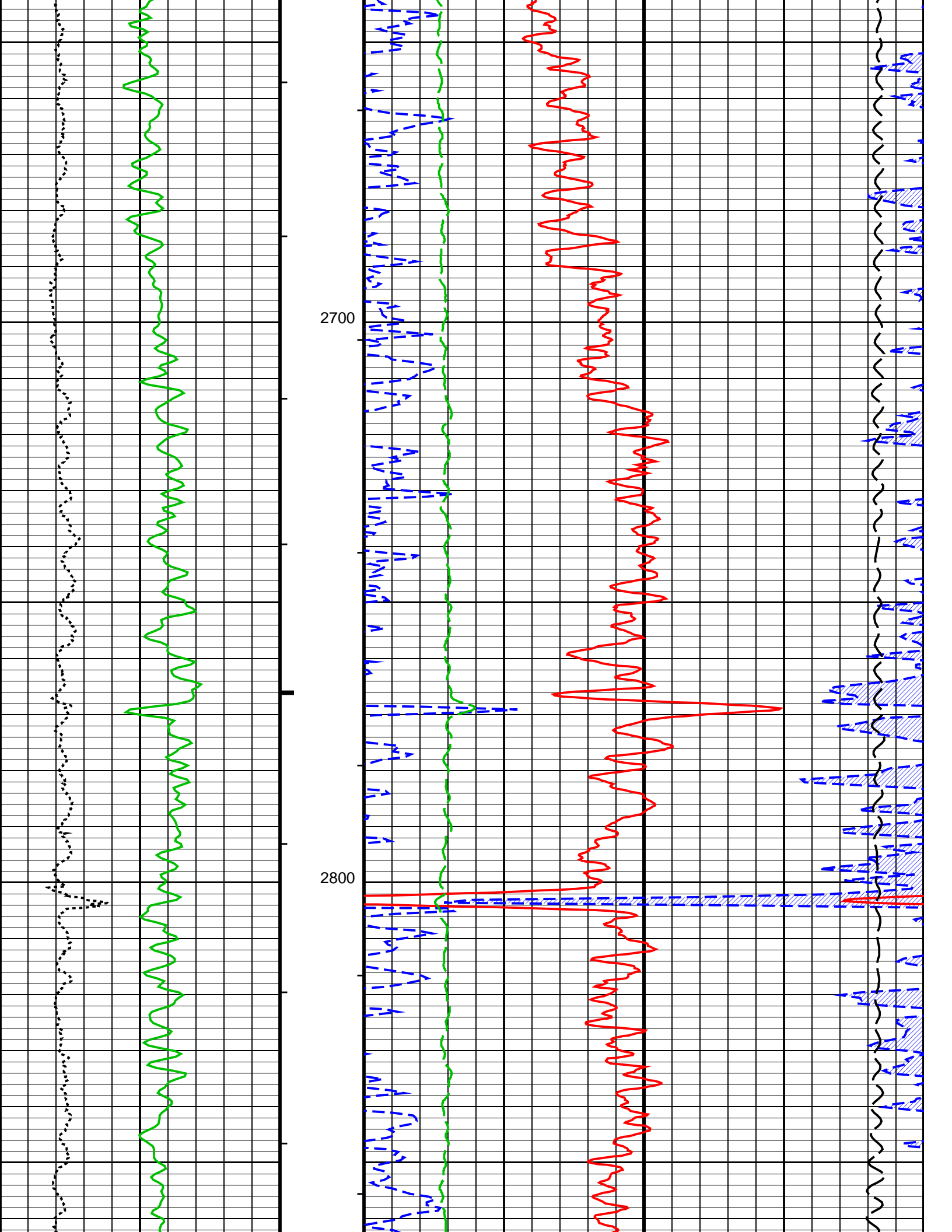
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

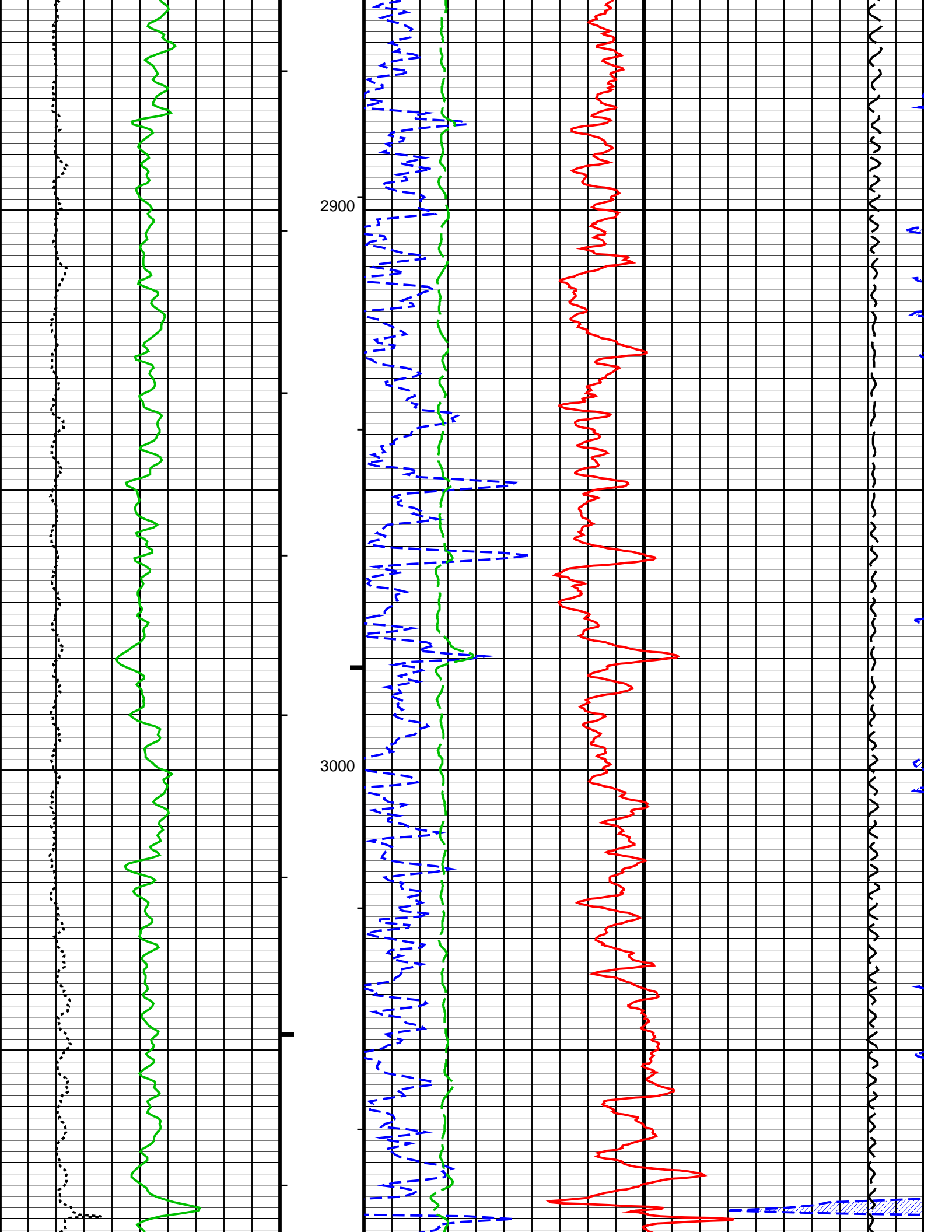
Time Mark Every 60 S

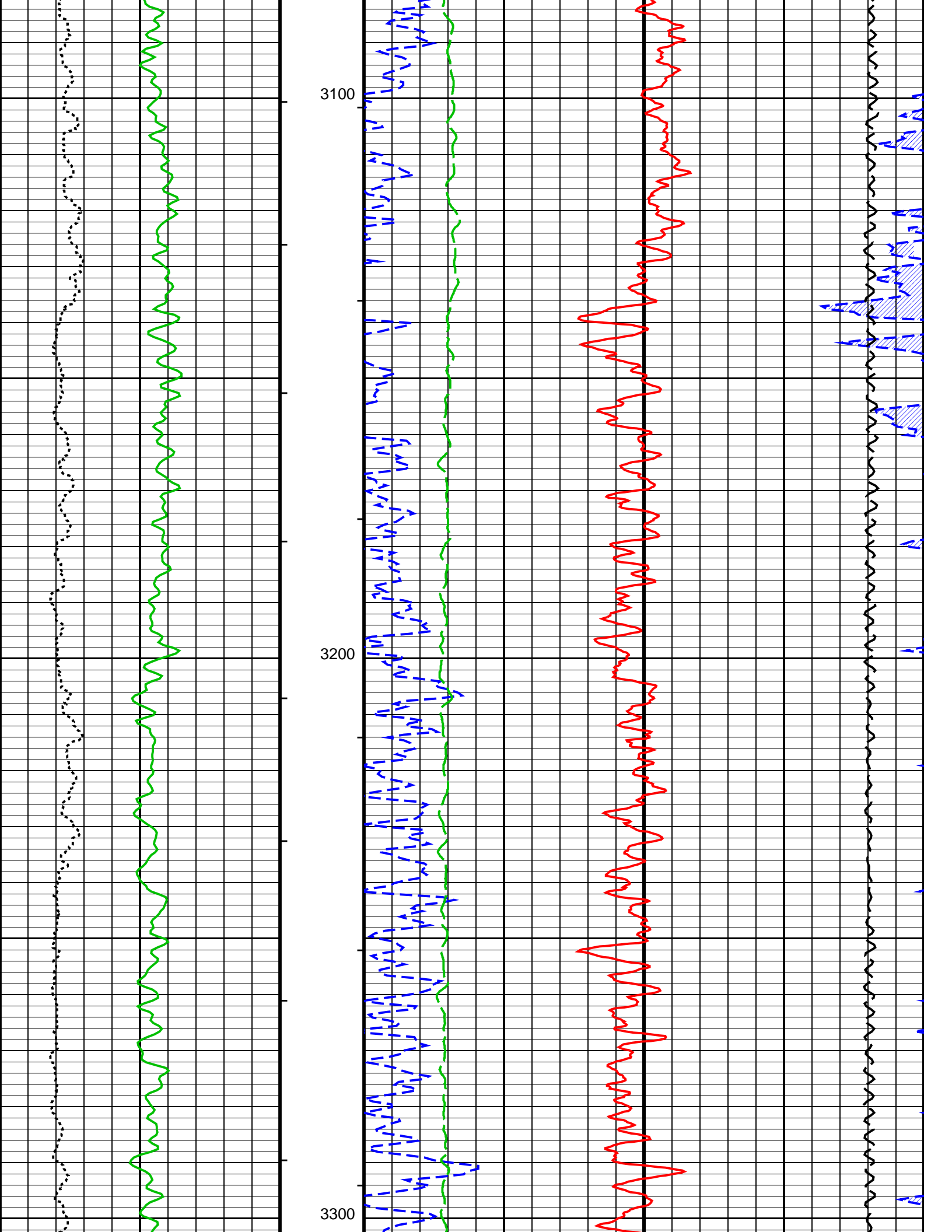


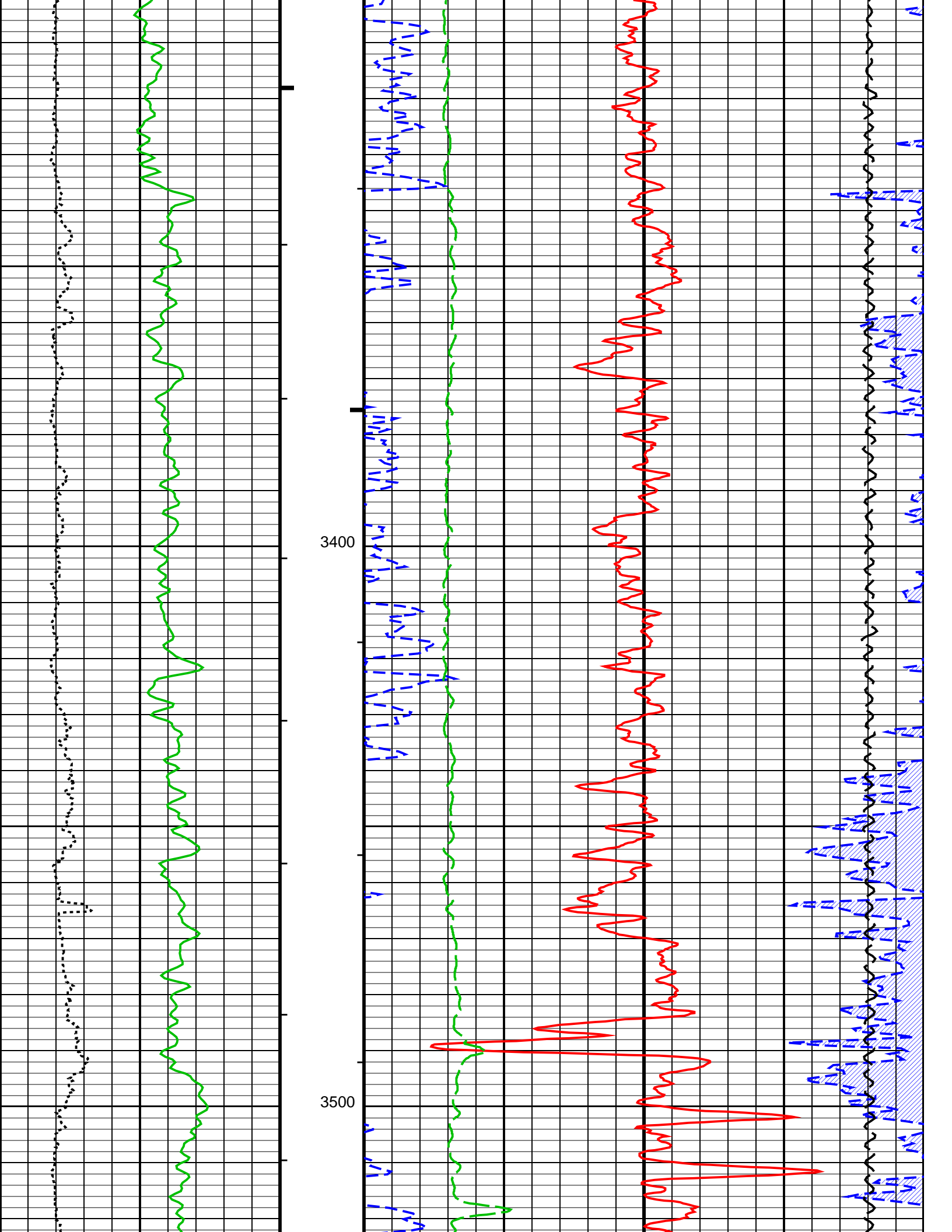
MAIN PASS: * PLATFORM EXPRESS – NUCLEAR POROSITY *****

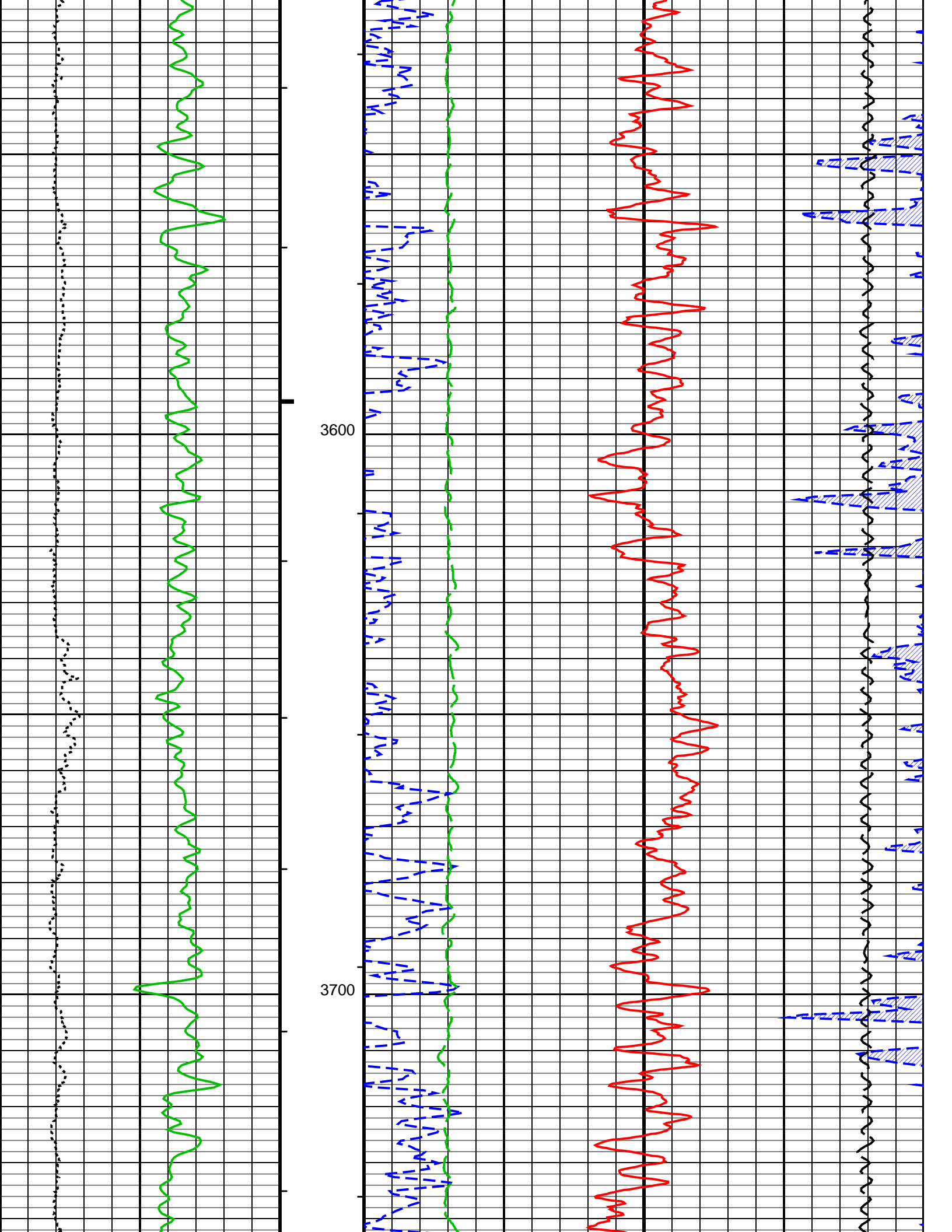


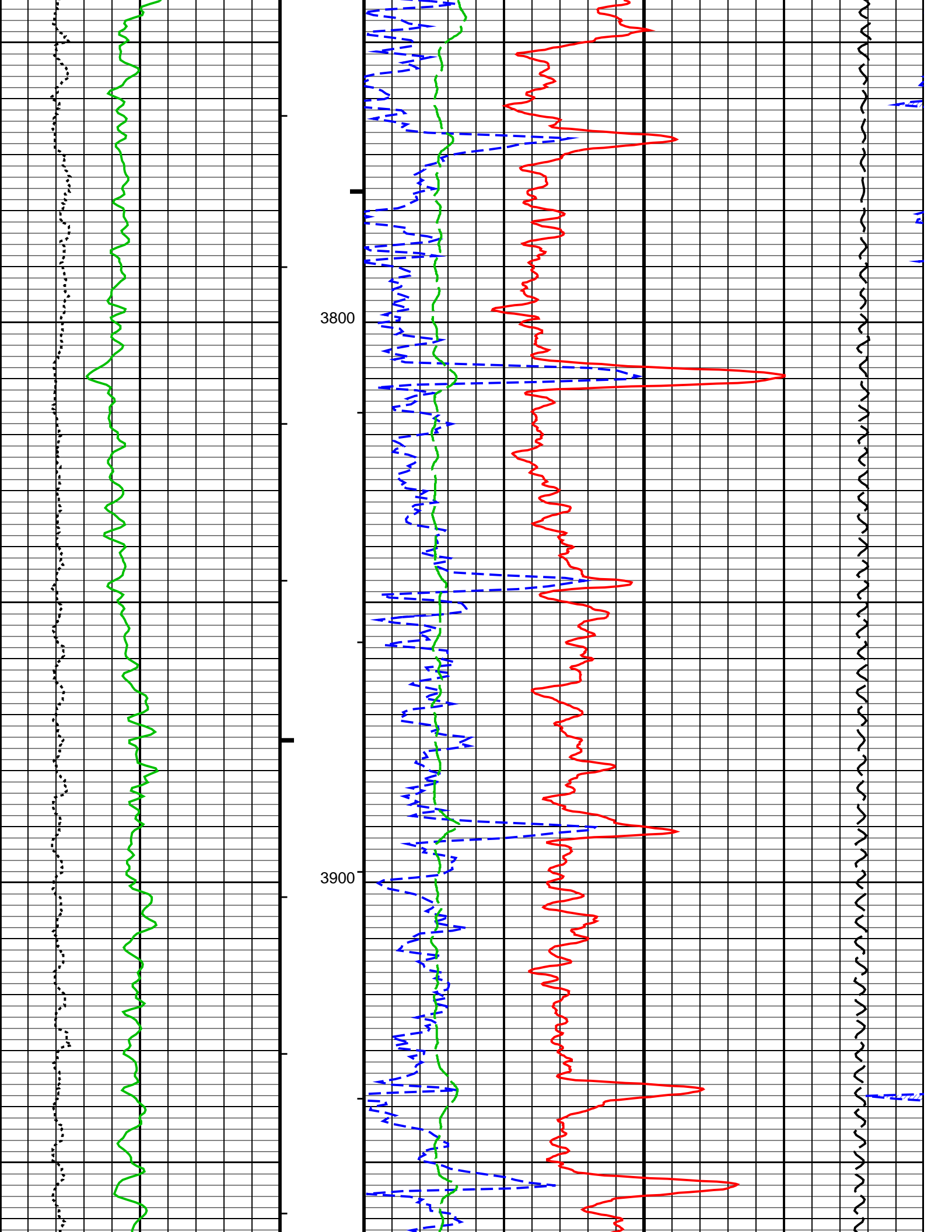


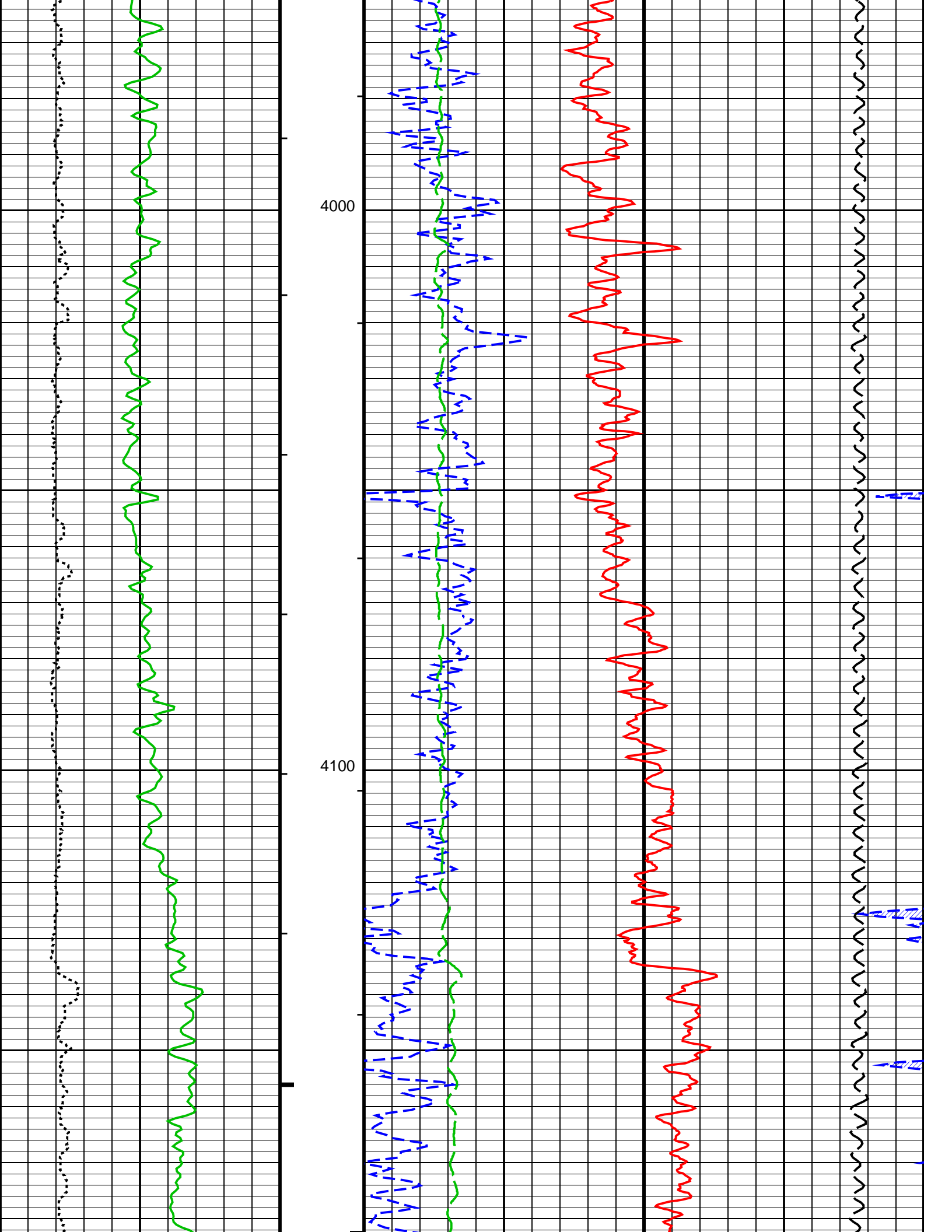


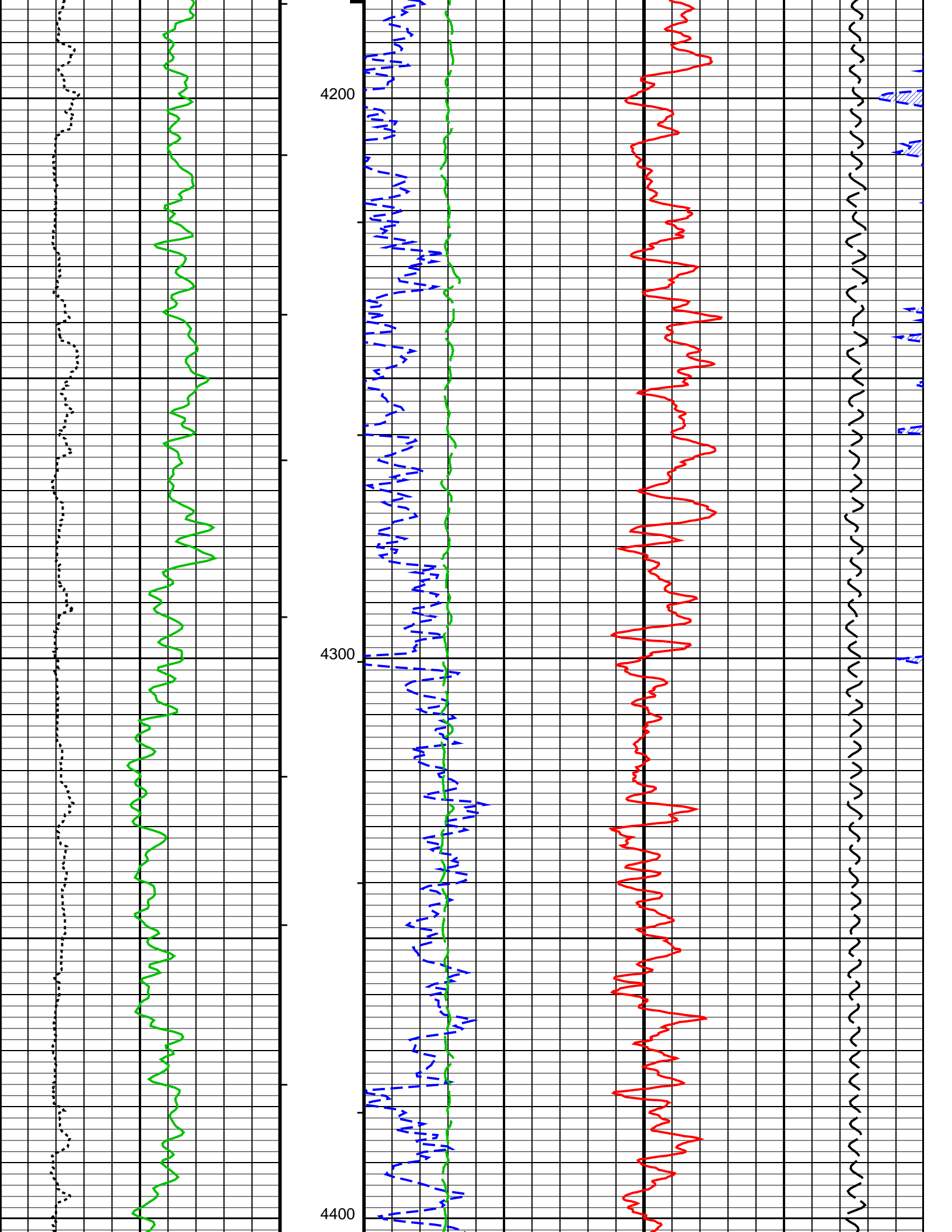


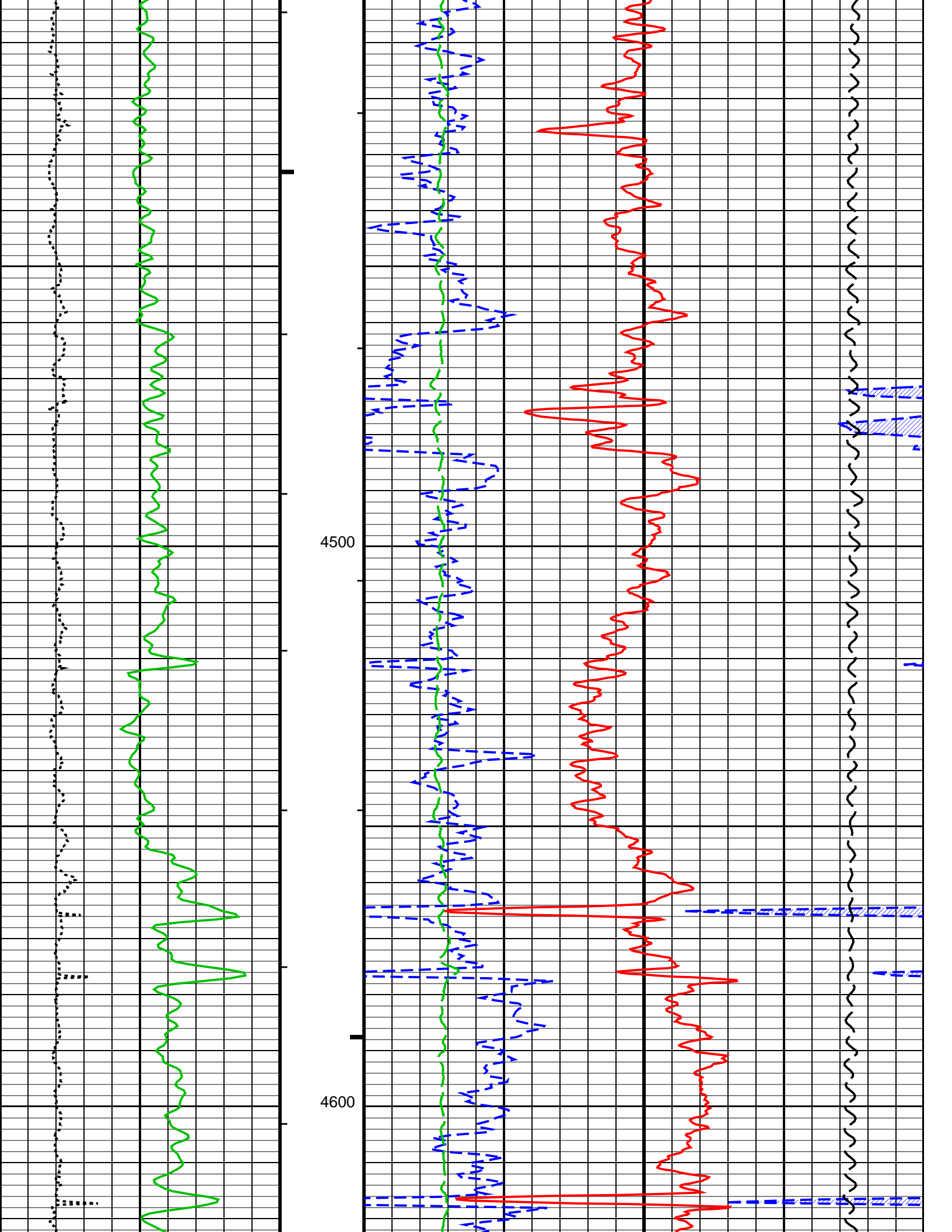


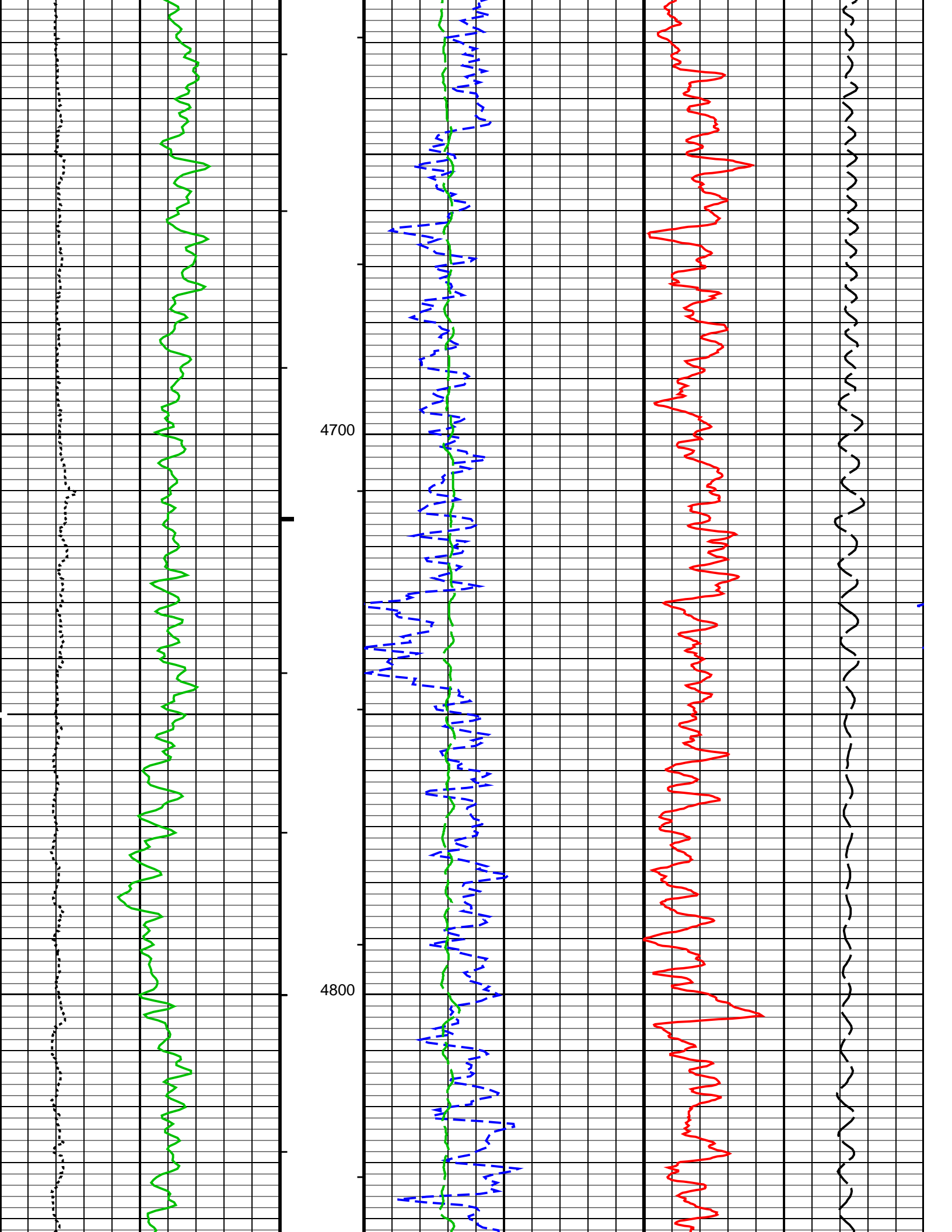


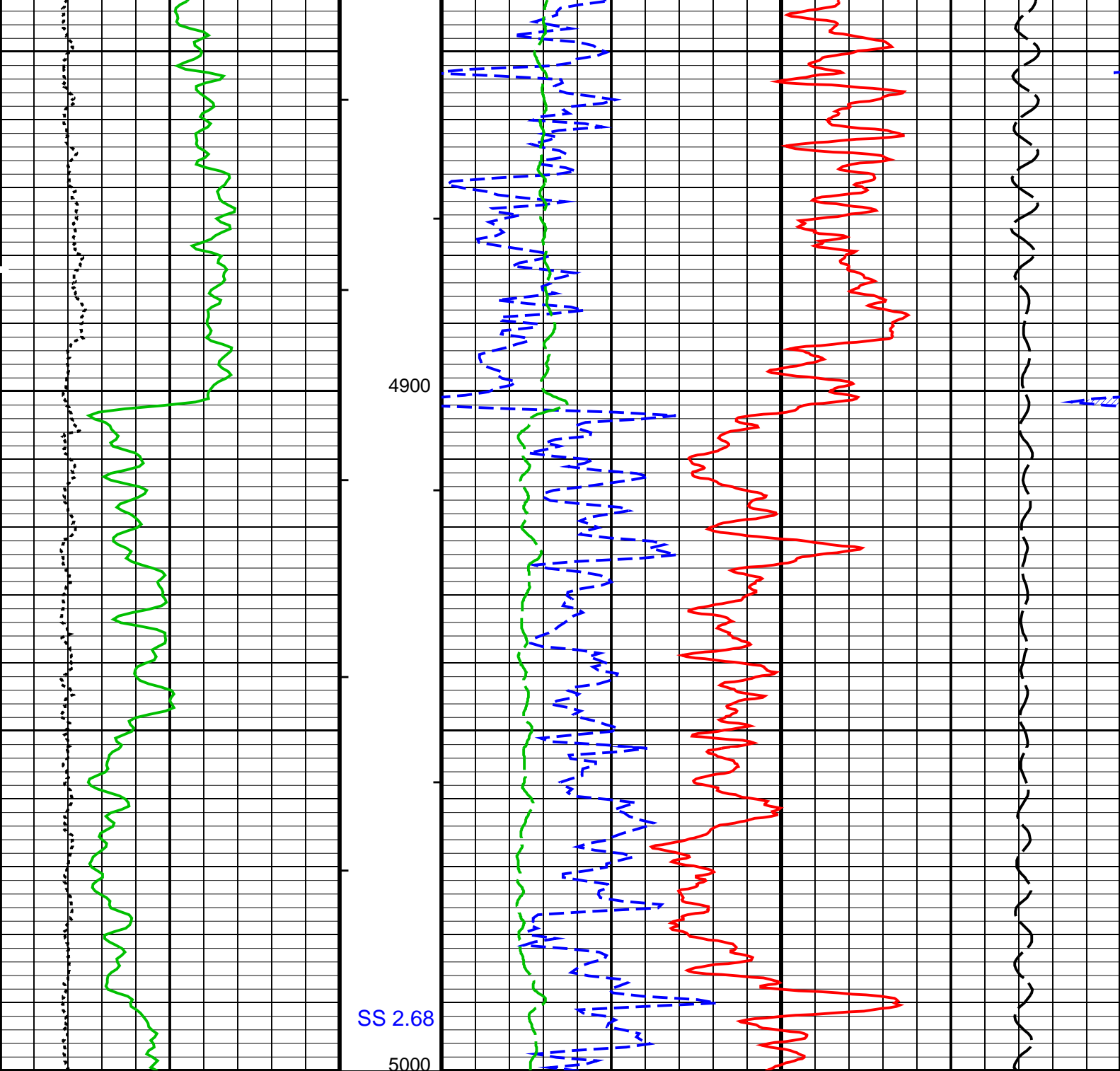




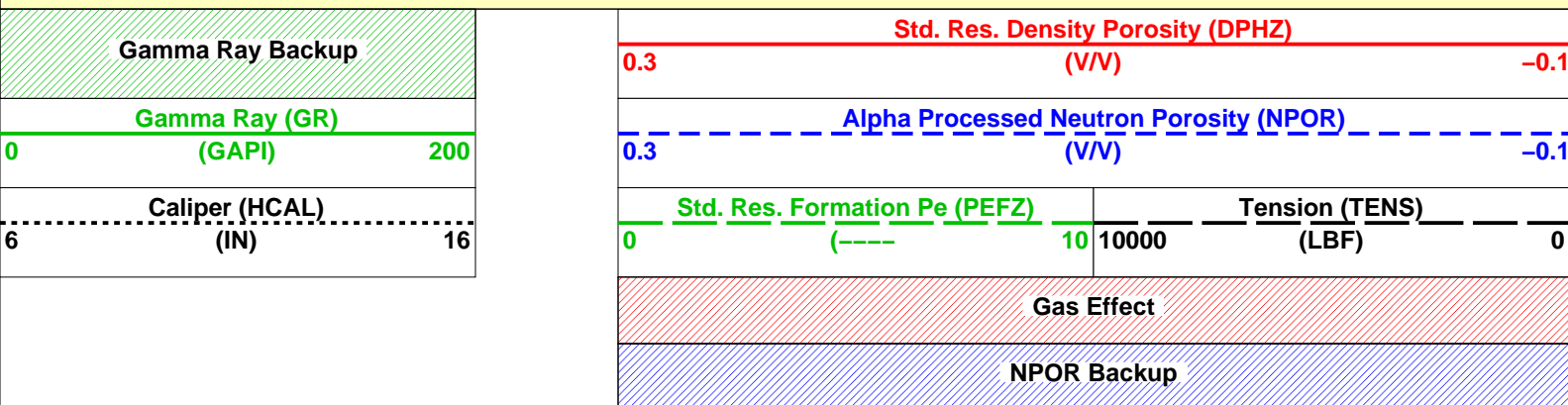








MAIN PASS: *** PLATFORM EXPRESS - NUCLEAR POROSITY ***



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

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	1.000 g/cm3
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	0.000 deg
GGRD	Geothermal Gradient	0.010 degF/ft
HSCO	Hole Size Correction Option	YES
MATR	Rock Matrix for Neutron Porosity Corrections	SAND
MCCO	Mud Cake Correction Option	NO
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2.680 g/cm3
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	1.000 in
PTCO	Pressure/Temperature Correction Option	NO
SDAT	Standoff Data Source	SOCN
SHT	Surface Hole Temperature	68.000 degF
SOCN	Standoff Distance	0.125 in
SOCO	Standoff Correction Option	YES
HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0.000 deg
GGRD	Geothermal Gradient	0.010 degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	SAND
SHT	Surface Hole Temperature	68.000 degF
PERT: Preliminary Evaluation - Real Time		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0.000 deg
GGRD	Geothermal Gradient	0.010 degF/ft
MATR	Rock Matrix for Neutron Porosity Corrections	SAND
SHT	Surface Hole Temperature	68.000 degF
STI: Stuck Tool Indicator		
TDL	Total Depth - Logger	8138.0 ft
System and Miscellaneous		
BS	Bit Size	7.875 in
BSAL	Borehole Salinity	
CSIZ	Current Casing Size	8.625 in
CWEI	Casing Weight	24.000 lbm/ft
DFD	Drilling Fluid Density	8.330 lbm/gal
FSAL	Formation Salinity	

Format: UPPER_PORO Vertical Scale: 5" per 100' Graphics File Created: 28-Feb-2010 02:36

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

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

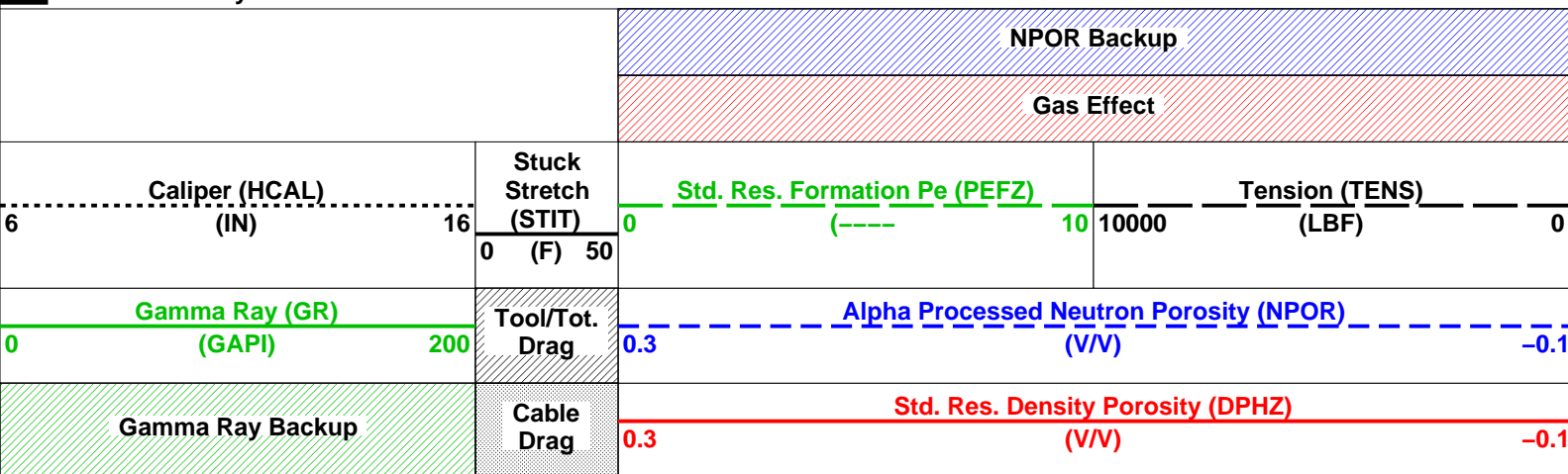
Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8201.0 02:34:13
	SANDSTONE	SANDSTONE	7826.0 02:34:25
	LIMESTONE	SANDSTONE	7550.0 02:34:33
MDEN	2.65 G/C3	2.68 G/C3	8201.0 02:34:13
	2.68 G/C3	2.65 G/C3	7826.0 02:34:25
	2.71 G/C3	2.68 G/C3	7550.0 02:34:33

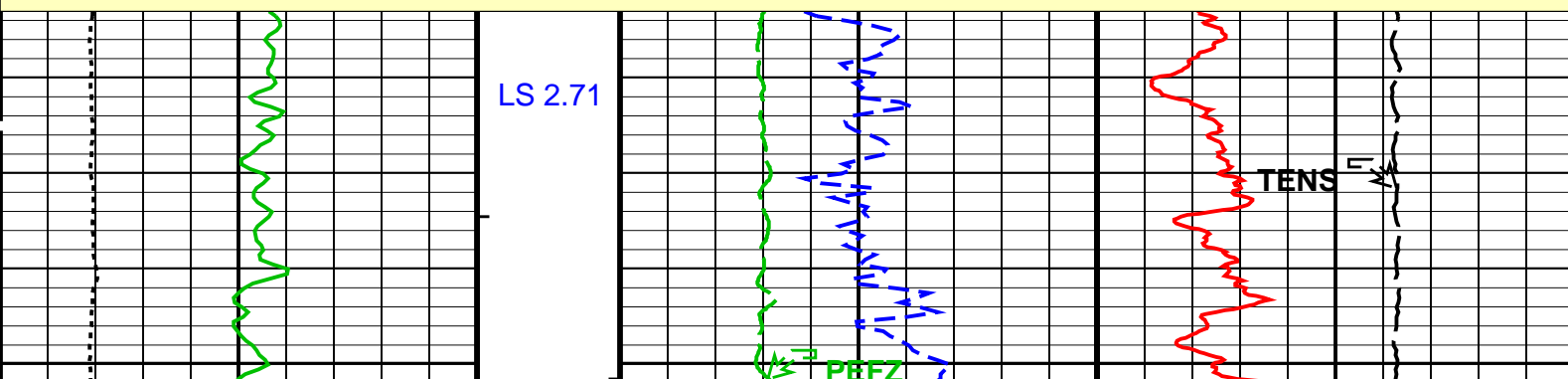
PIP SUMMARY

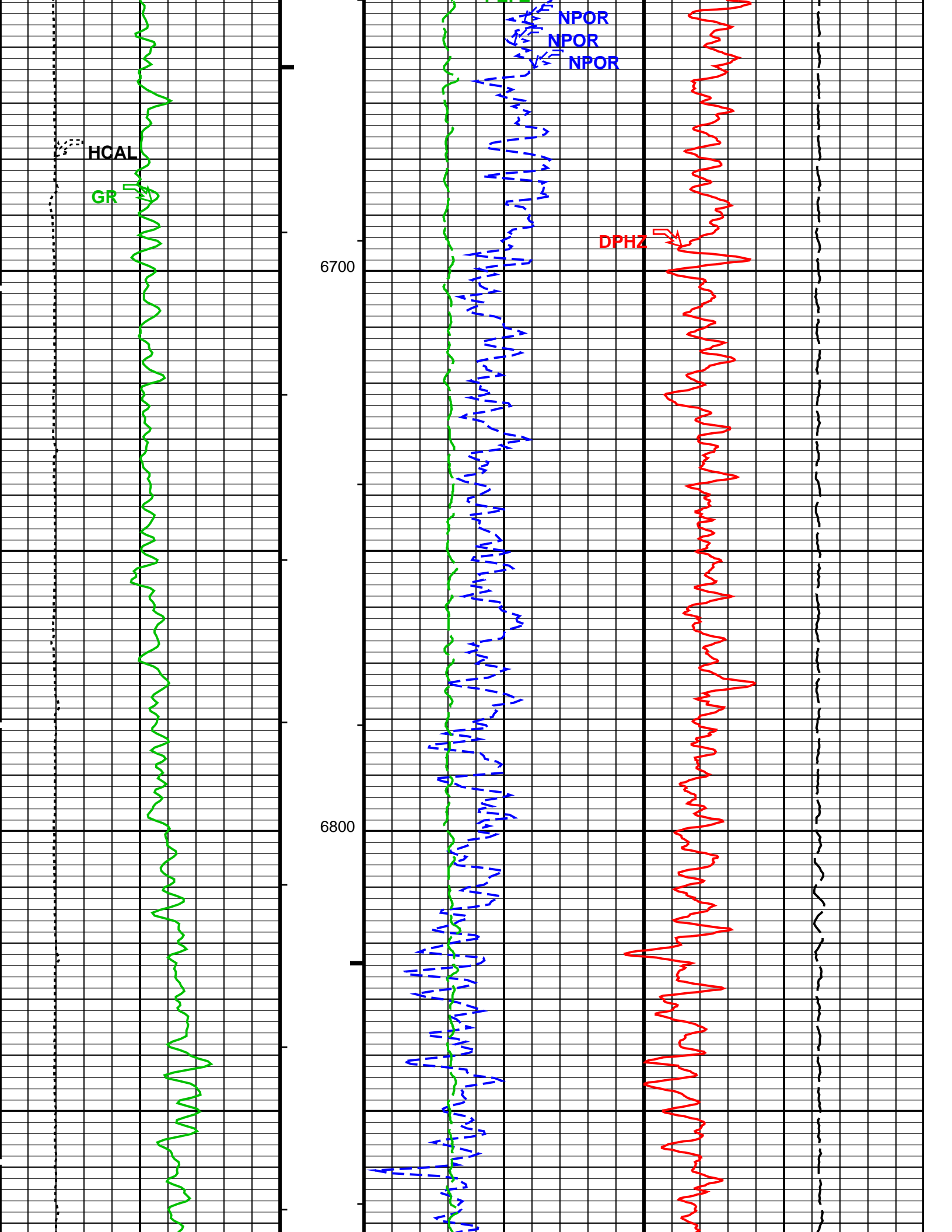
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

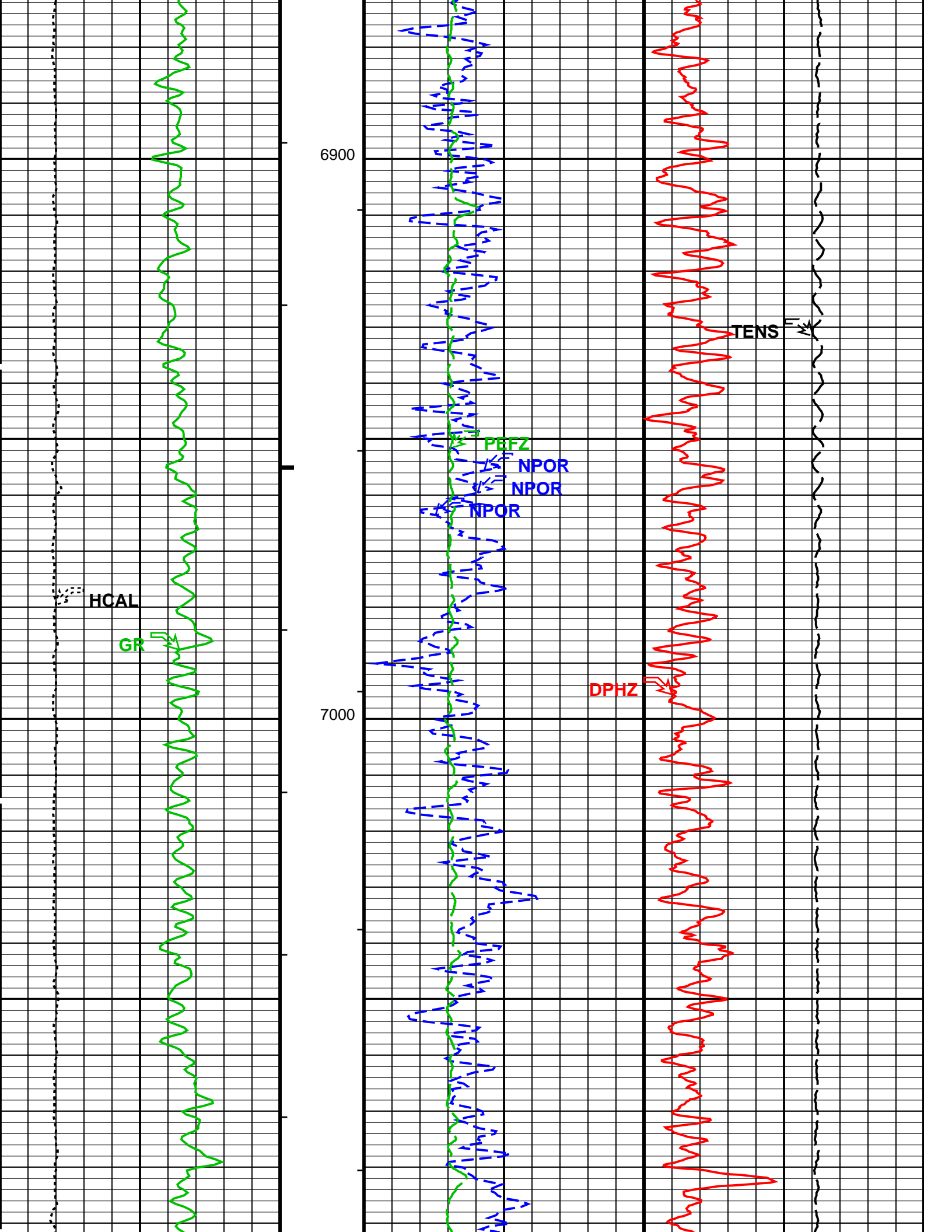
Time Mark Every 60 S

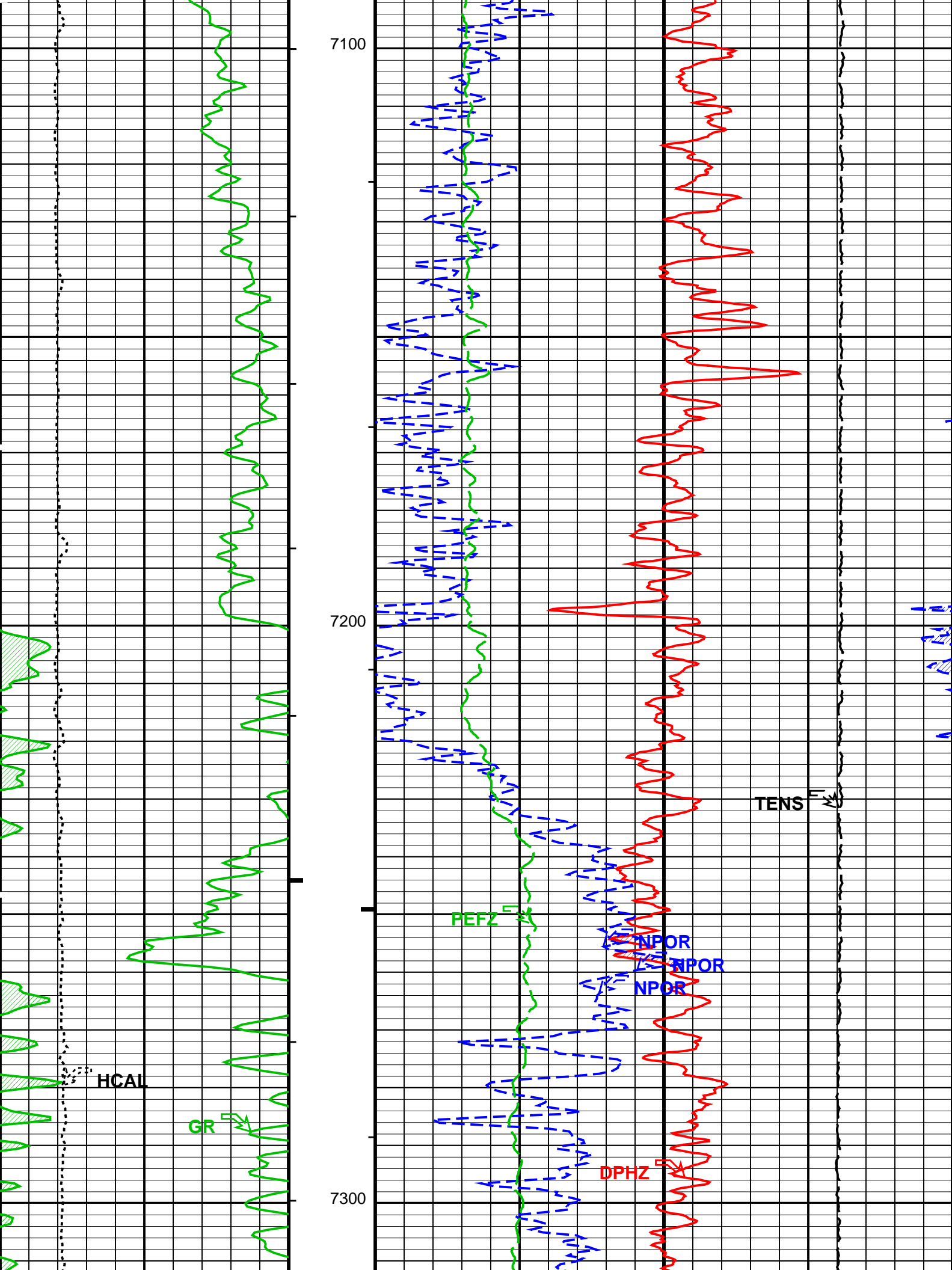


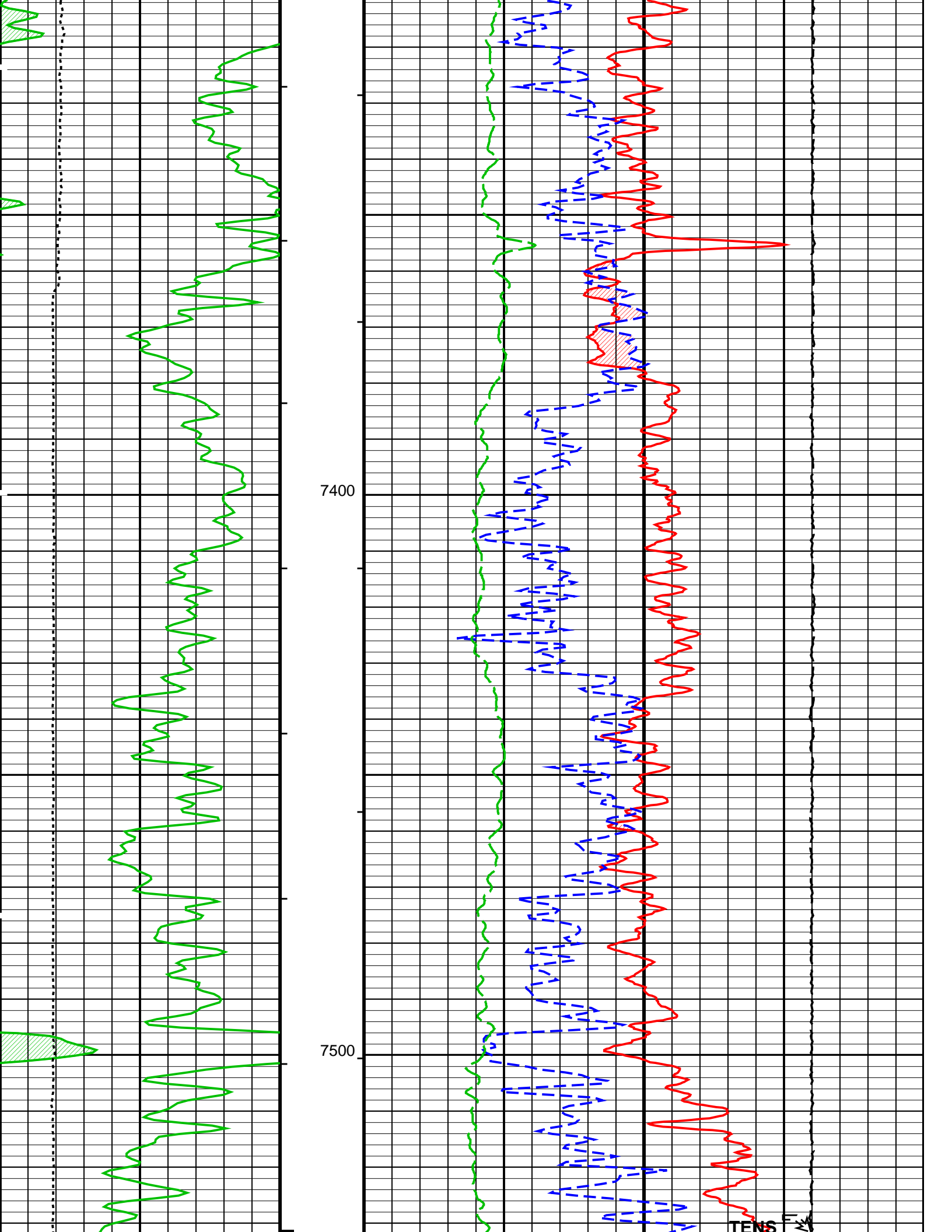
MAIN PASS: *** PLATFORM EXPRESS - NUCLEAR POROSITY ***

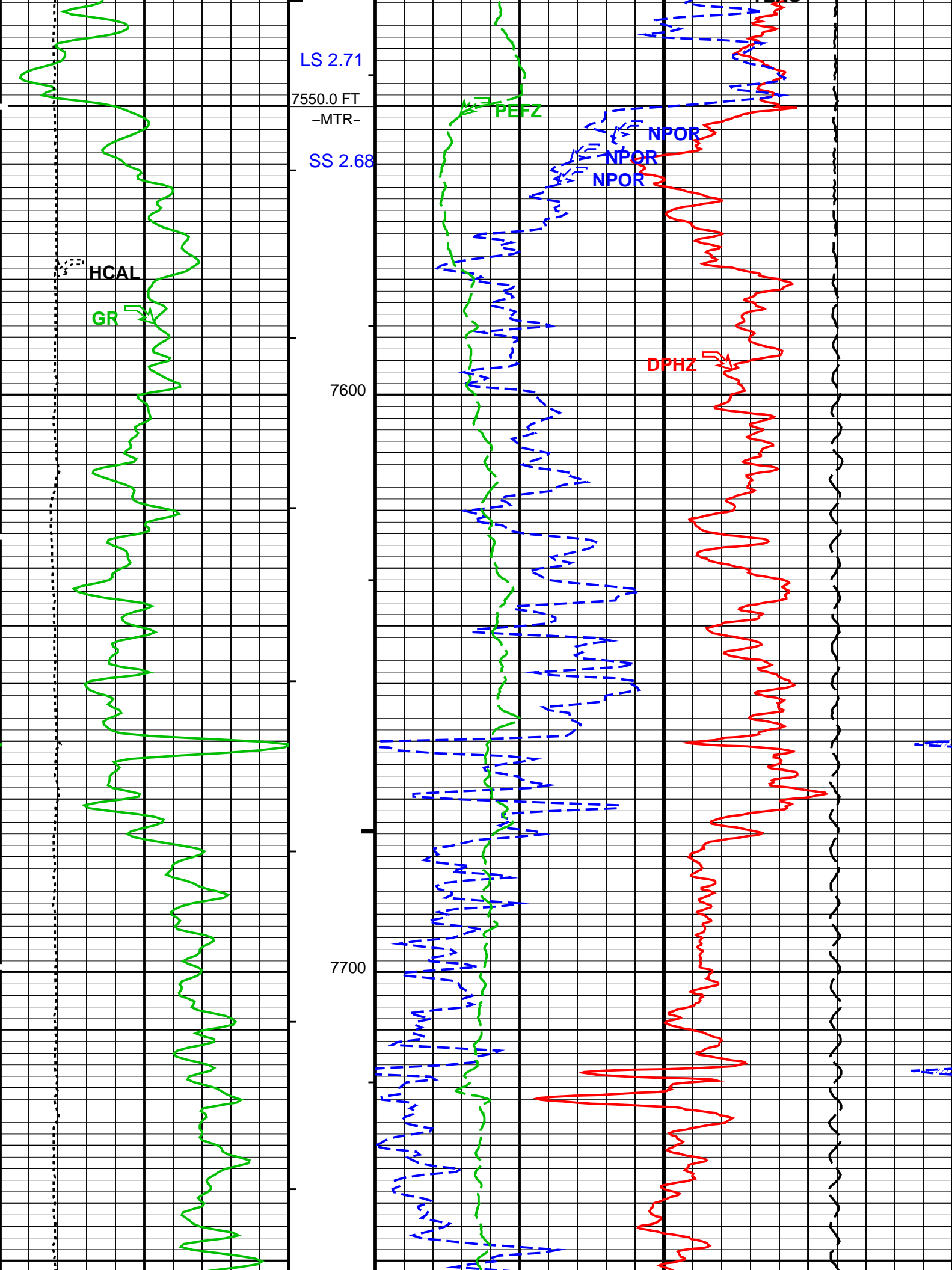


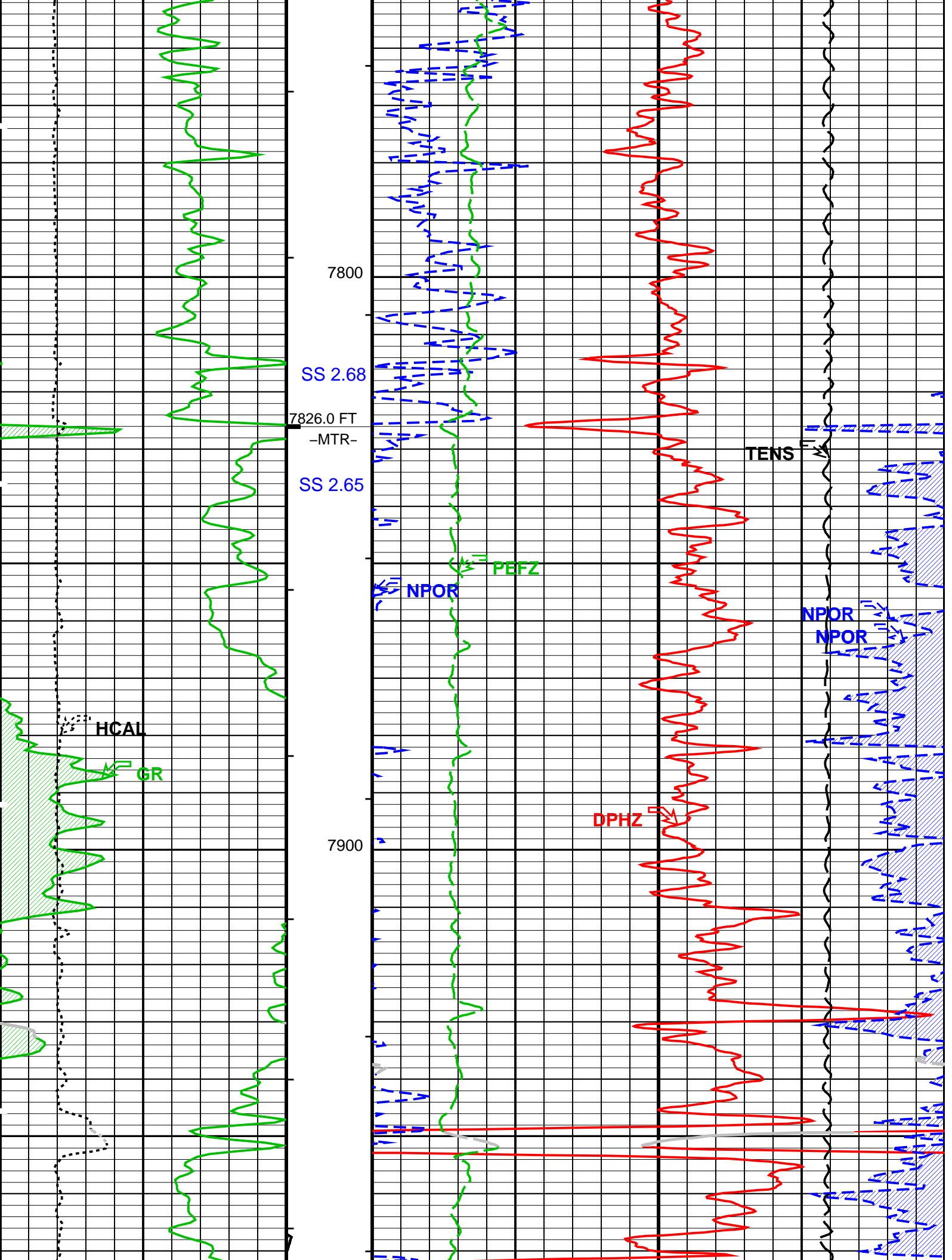


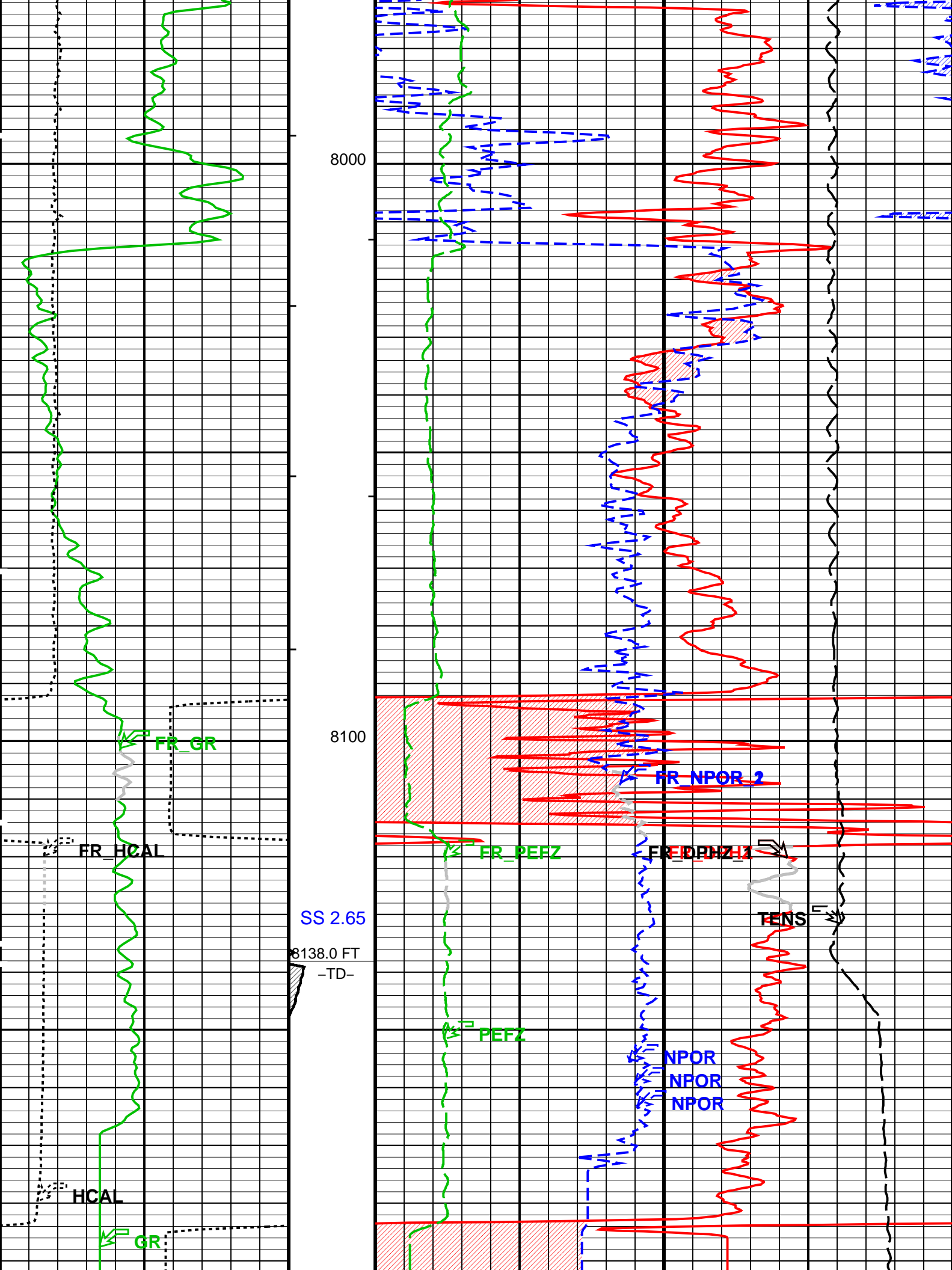


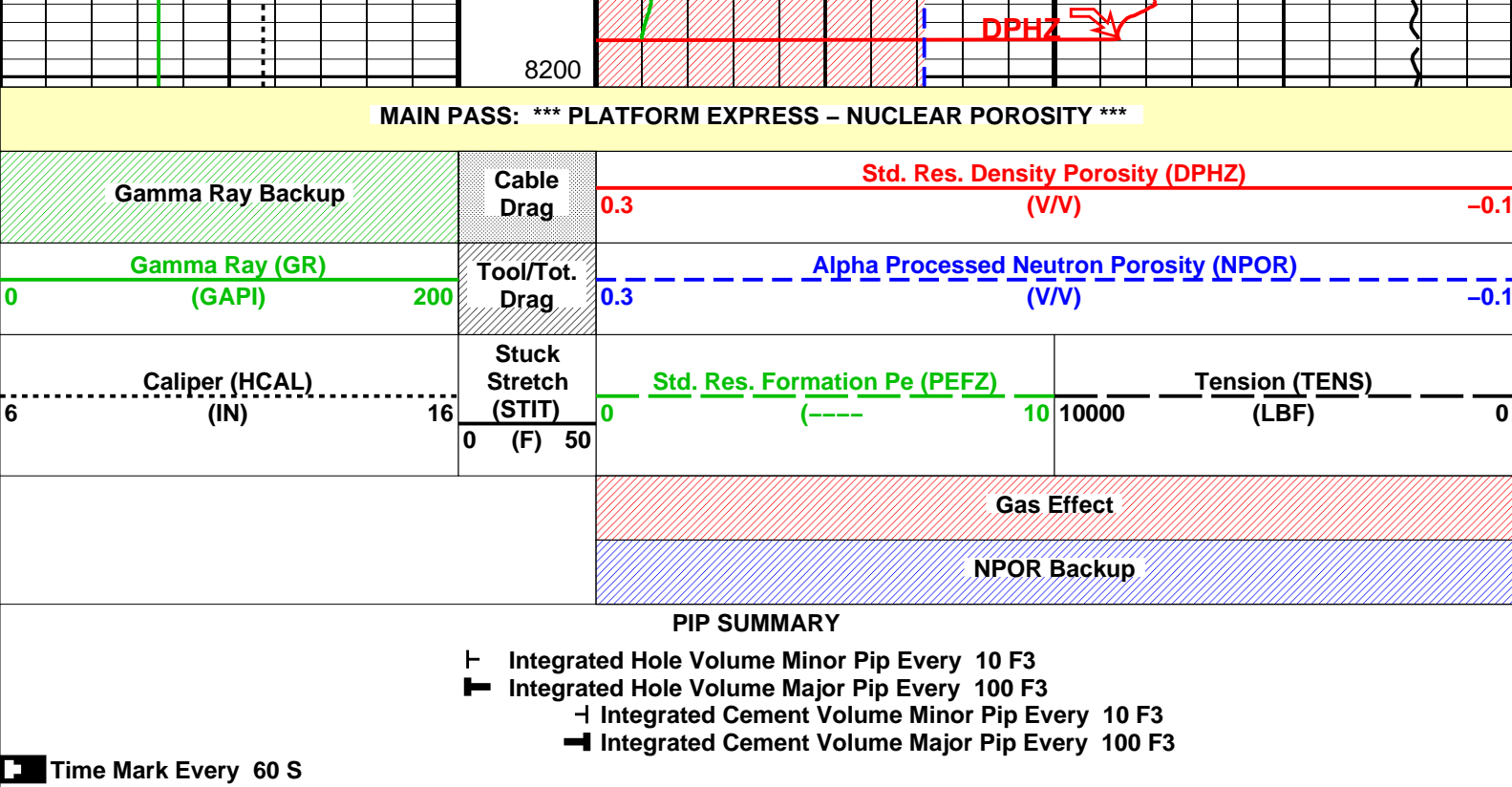












Parameters			
DLIS Name	Description	Value	
HILTB-CTS: High resolution Integrated Logging Tool-CTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density 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	AUTOMATIC	
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	8177.00	FT
TDL	Total Depth – Logger	8138.00	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	8.33	LB/G
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_PORO 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

Schlumberger

REPEAT ANALYSIS

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_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

OP System Version: 17C0-154

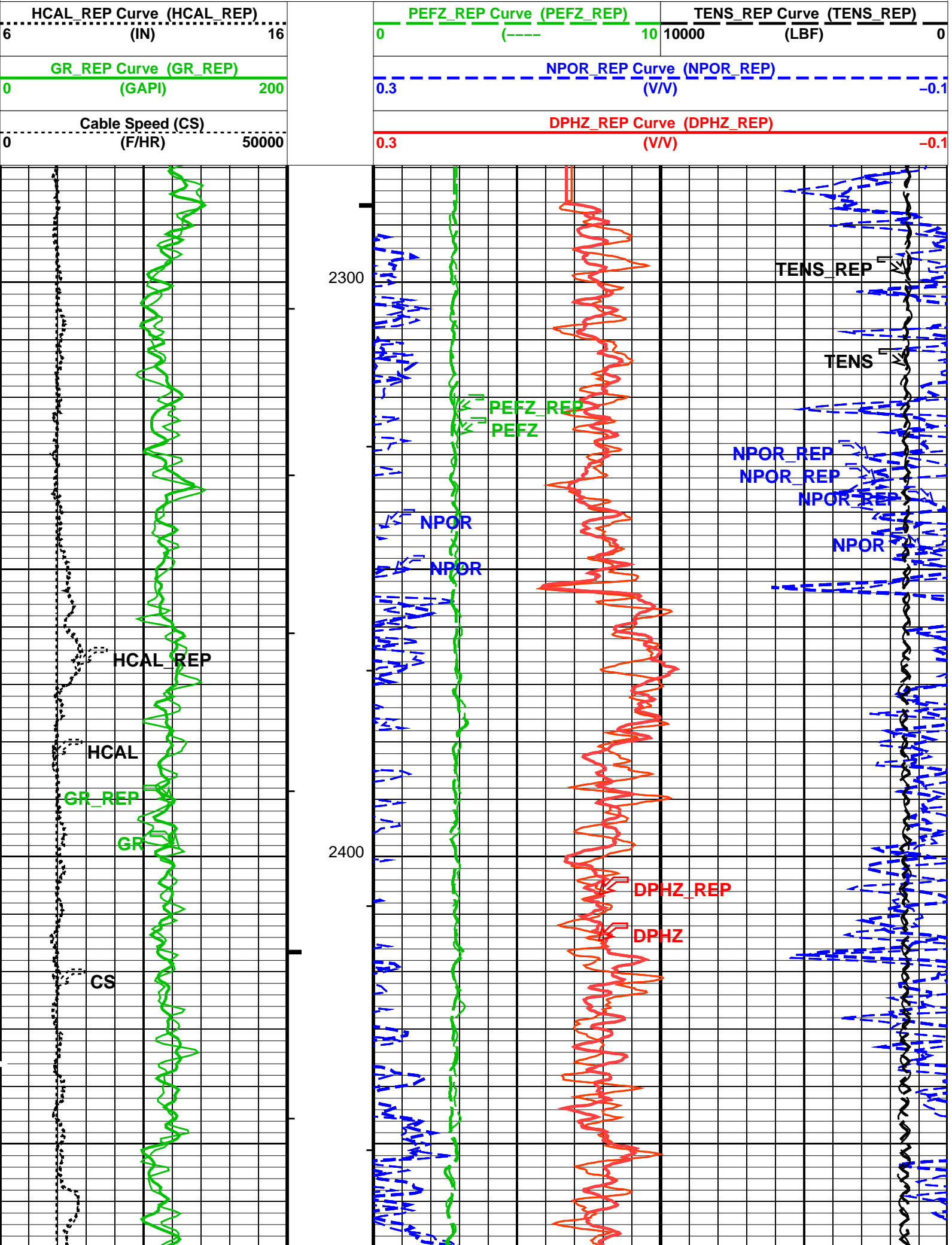
HILTB-CTS 17C0-154

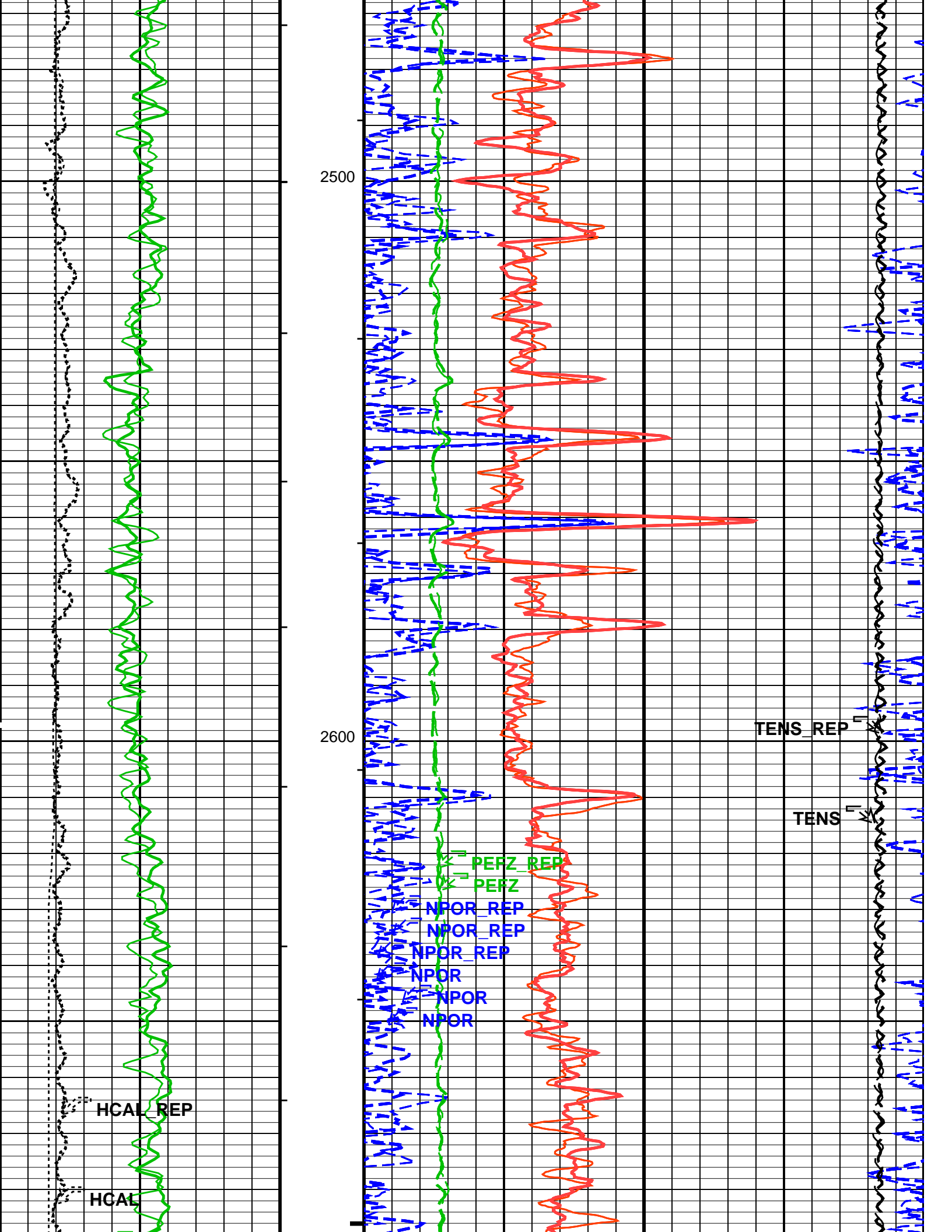
Changed Parameter Summary

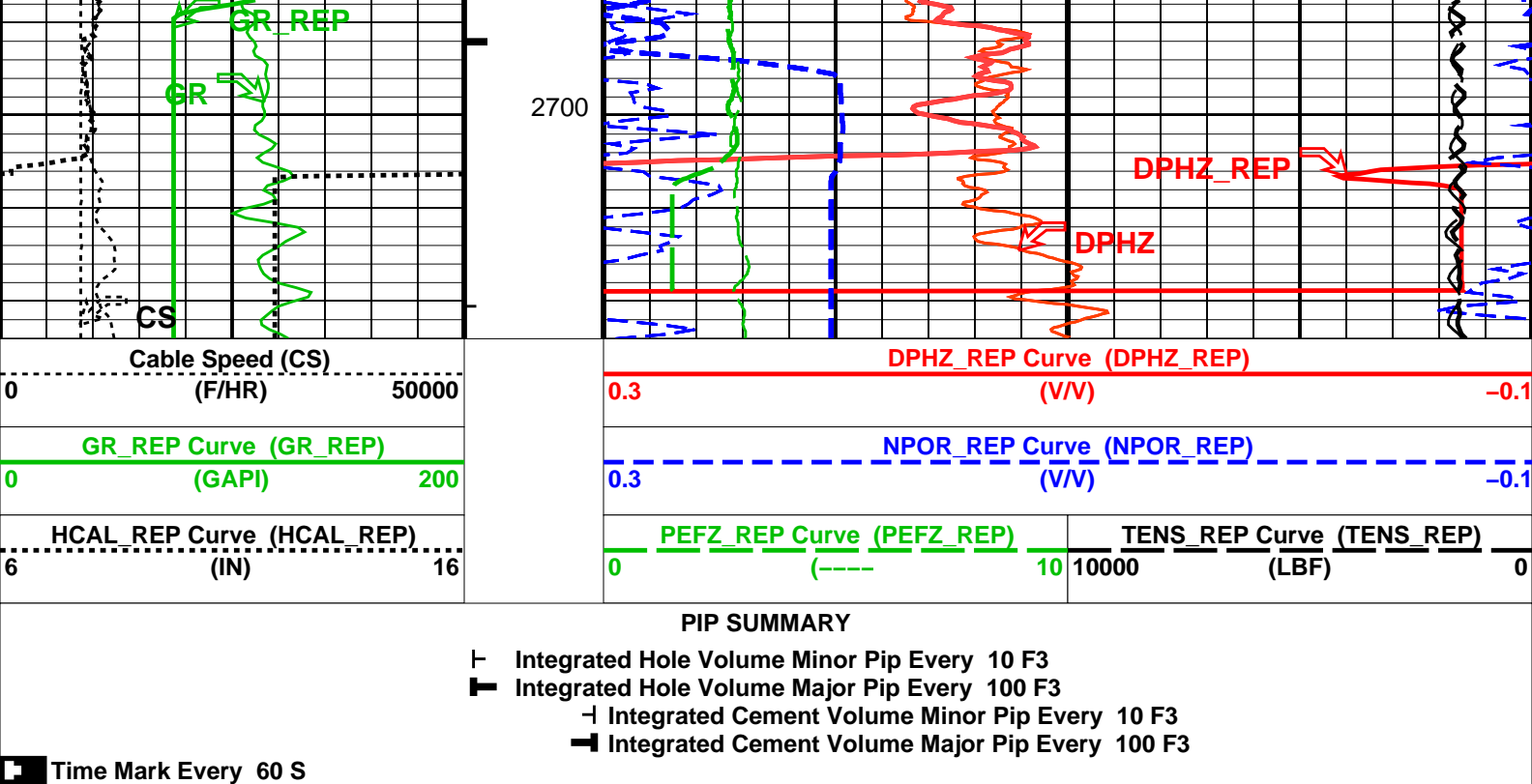
DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8201.0 02:34:13
	SANDSTONE	SANDSTONE	7826.0 02:34:25
	LIMESTONE	SANDSTONE	7550.0 02:34:33
MDEN	2.65 G/C3	2.68 G/C3	8201.0 02:34:13
	2.68 G/C3	2.65 G/C3	7826.0 02:34:25
	2.71 G/C3	2.68 G/C3	7550.0 02:34:33

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







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	AUTOMATIC	
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

IDL	Total Depth - Logger	8138.00	FT
BS	System and Miscellaneous		
BSAL	Bit Size	7.875	IN
CSIZ	Borehole Salinity	-50000.00	PPM
CWEI	Current Casing Size	8.625	IN
DFD	Casing Weight	24.00	LB/F
DO	Drilling Fluid Density	8.33	LB/G
DORL	Depth Offset for Playback	0.0	FT
PP	Depth Offset for Repeat Analysis	0.0	FT
TD	Playback Processing	NORMAL	
	Total Depth	8138	FT

Format: PORO_REP

Vertical Scale: 5" per 100'

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

OP System Version: 17C0-154

HILTB-CTS17C0-154

Input DLIS Files					
	HILTC .020	FN:19		28-Feb-2010 02:16	8201.0 FT750.0 FT
DEFAULT	AIT_TLD_MCFL_CNL_021PUP	FN:21	PRODUCER	28-Feb-2010 02:20	2724.0 FT2279.5 FT
Output DLIS Files					
DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:24	PRODUCER	28-Feb-2010 02:34	

Schlumberger

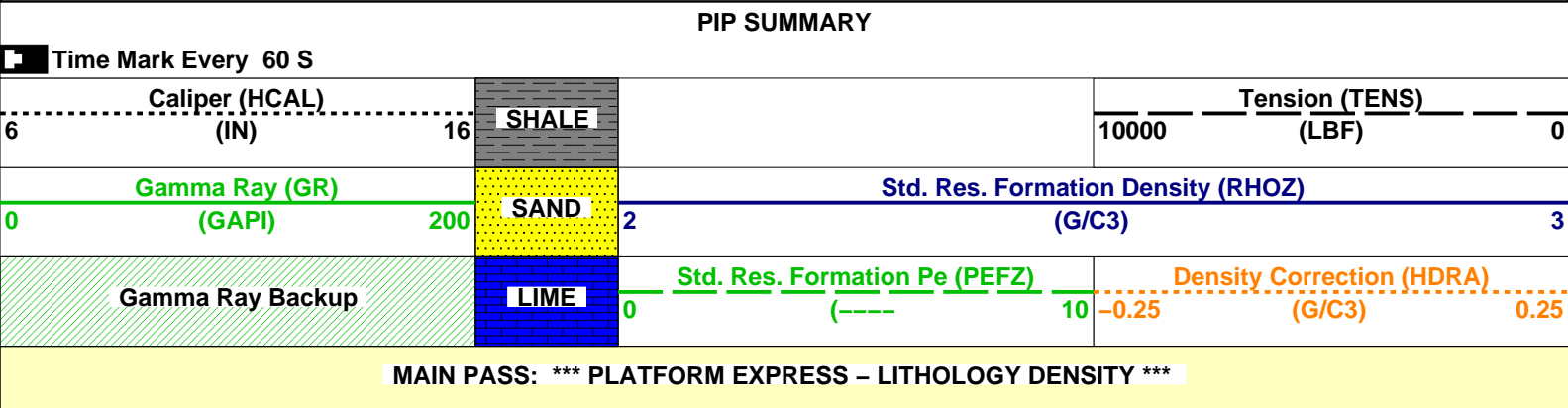
UPPER DENSITY LOG 5" = 100'

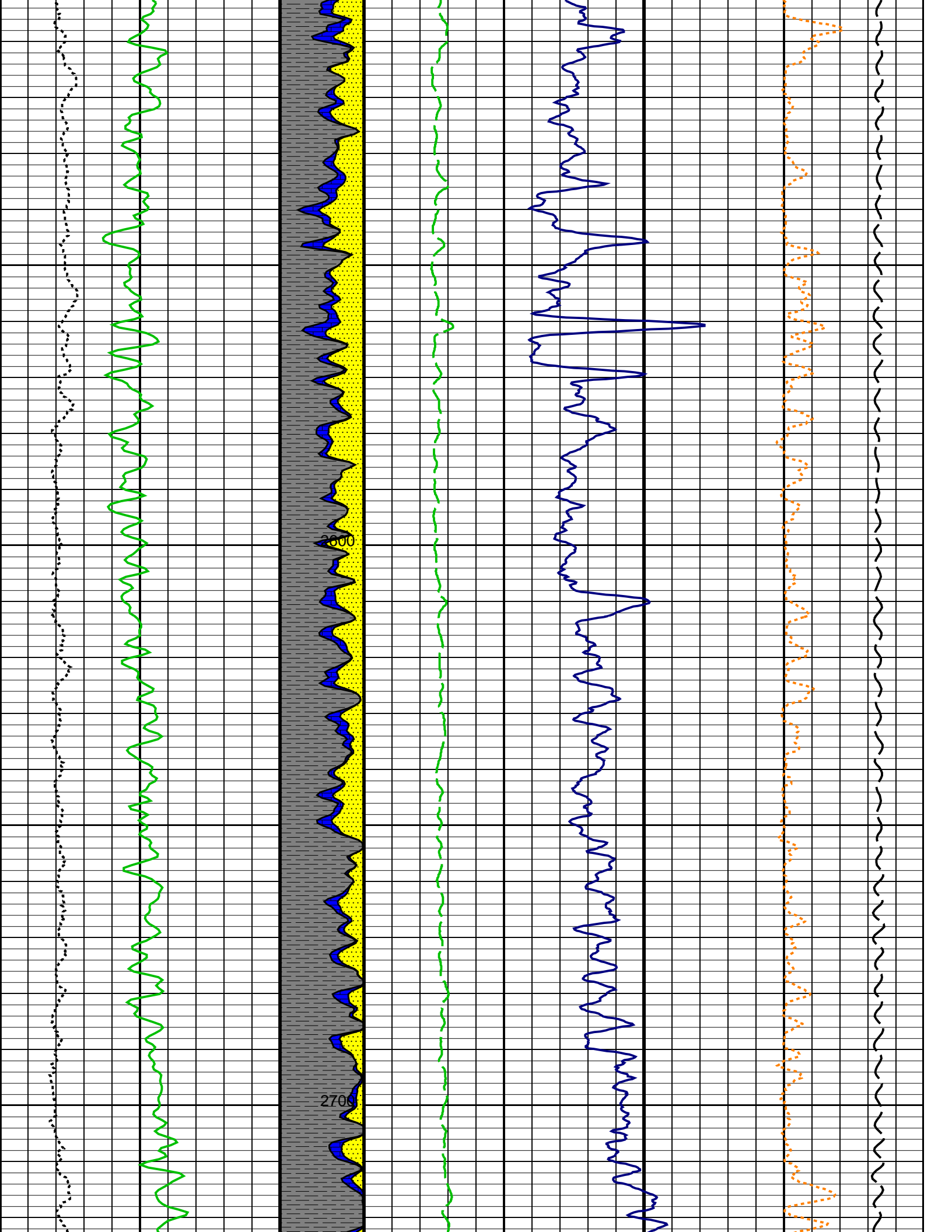
MAXIS Field Log

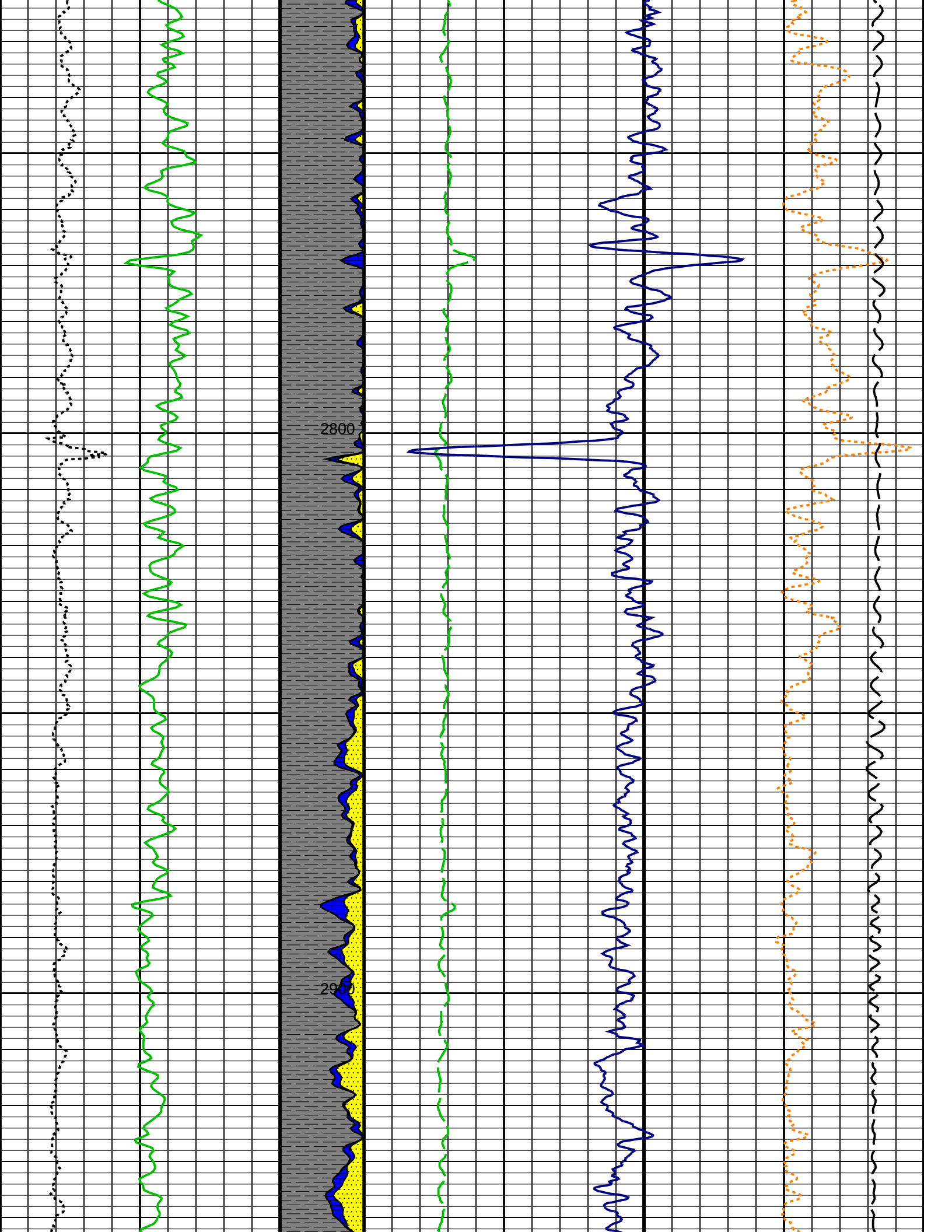
Input DLIS Files					
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DEFAULT	AIT_TLD_MCFL_CNL_018LUP	FN:16	PRODUCER	28-Feb-2010 02:06	2712.0 FT2267.5 FT
Output DLIS Files					
	HILTC .025	FN:25		28-Feb-2010 02:35	5000.0 FT2484.5 FT
	HILTC .025	FN:26		28-Feb-2010 02:35	5000.0 FT2484.5 FT

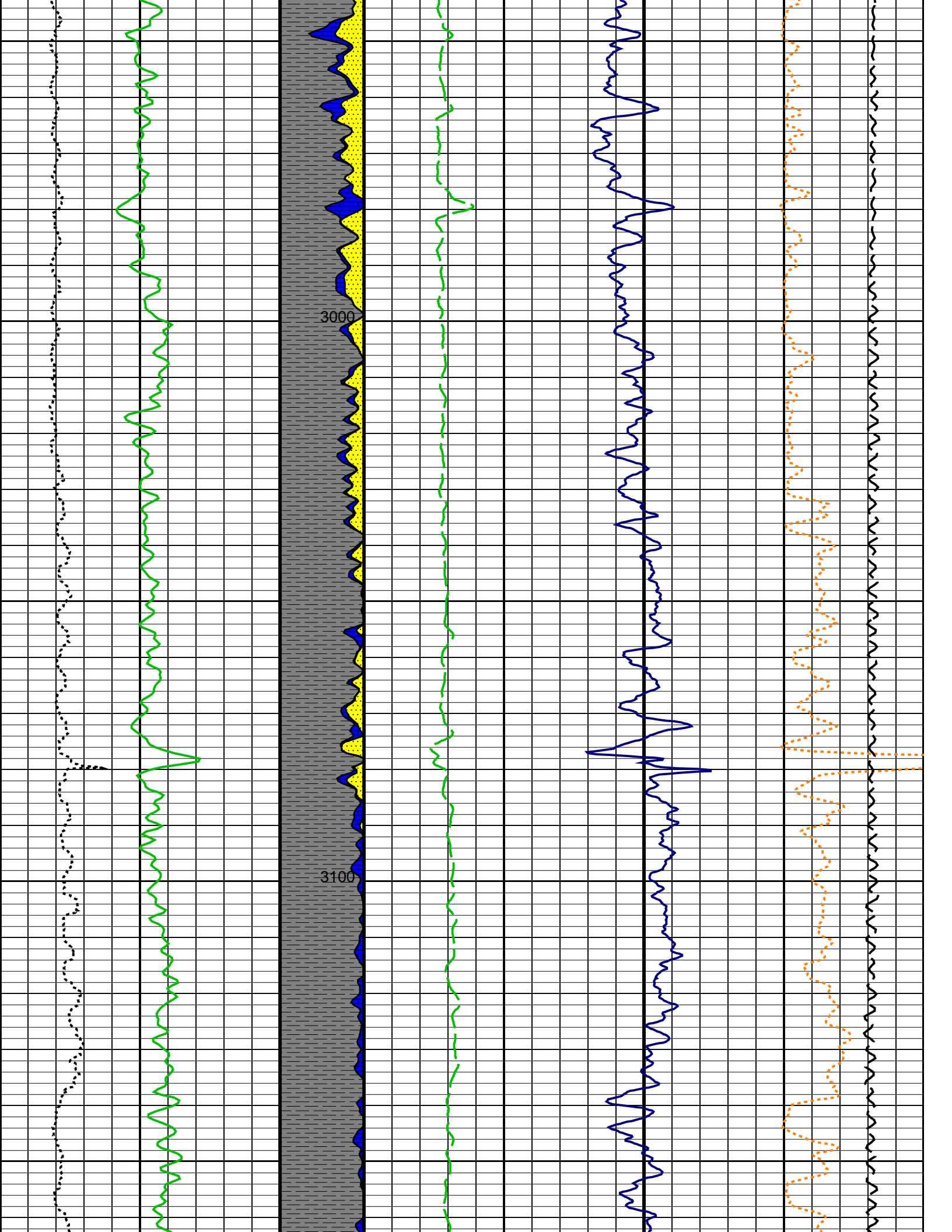
OP System Version: 17C0-154

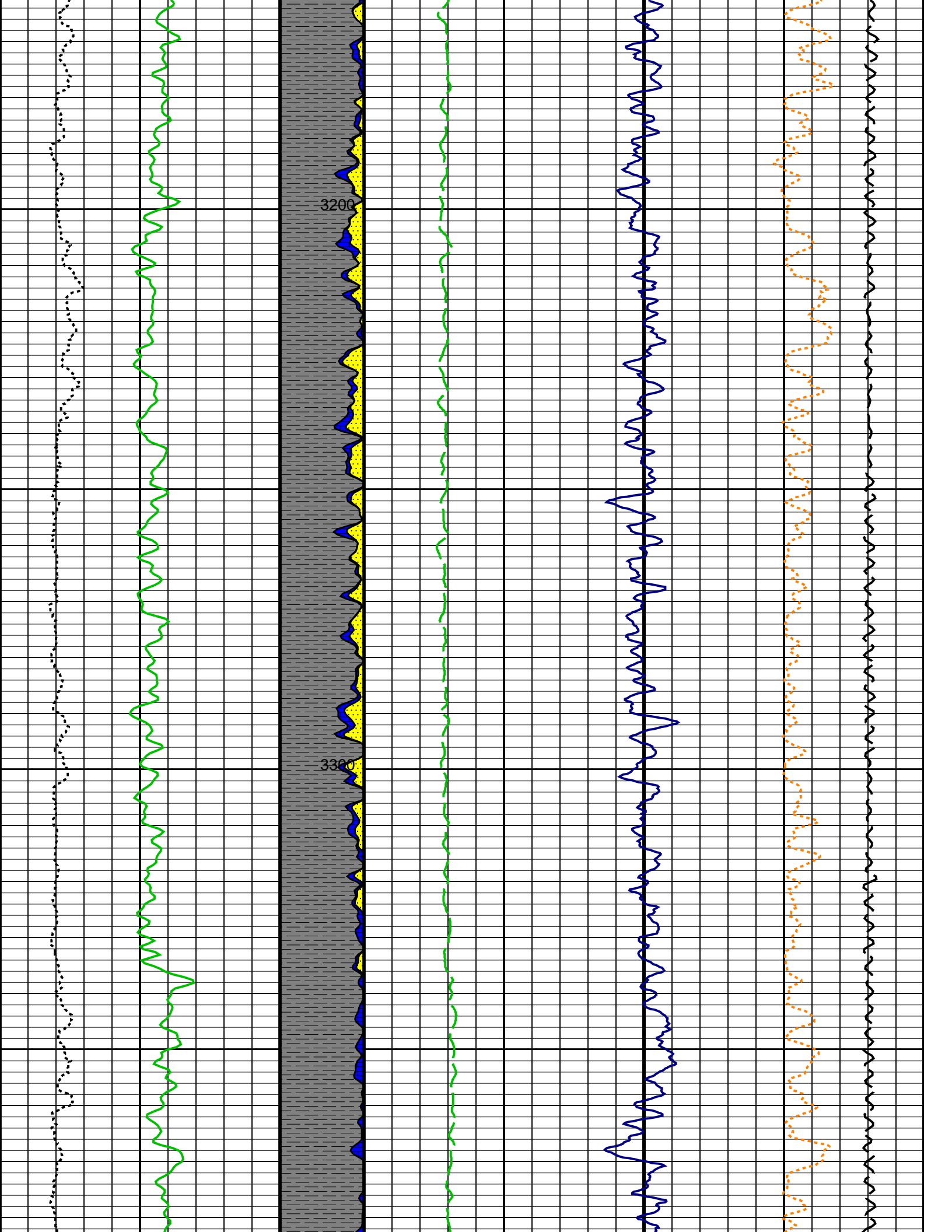
HILTC17C0-154

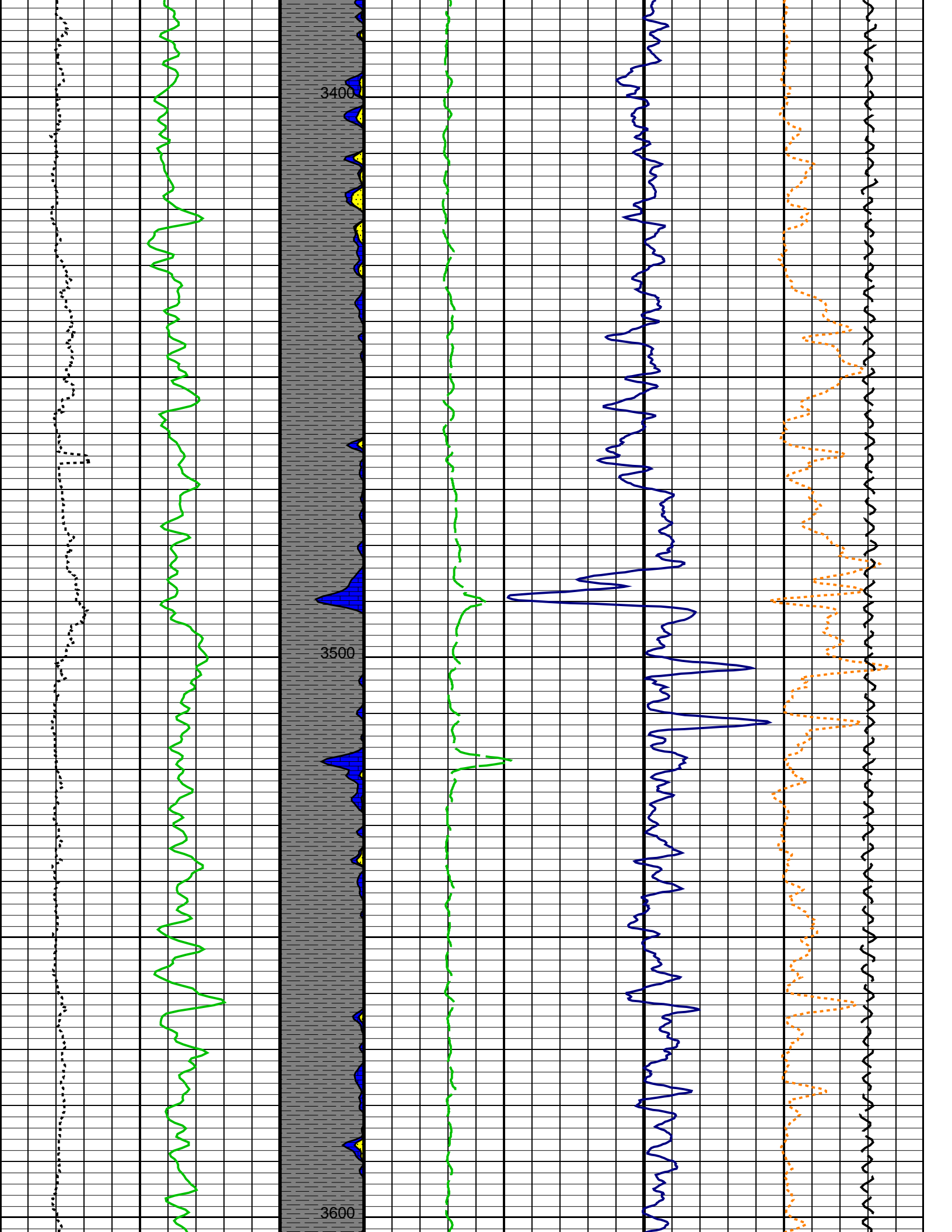


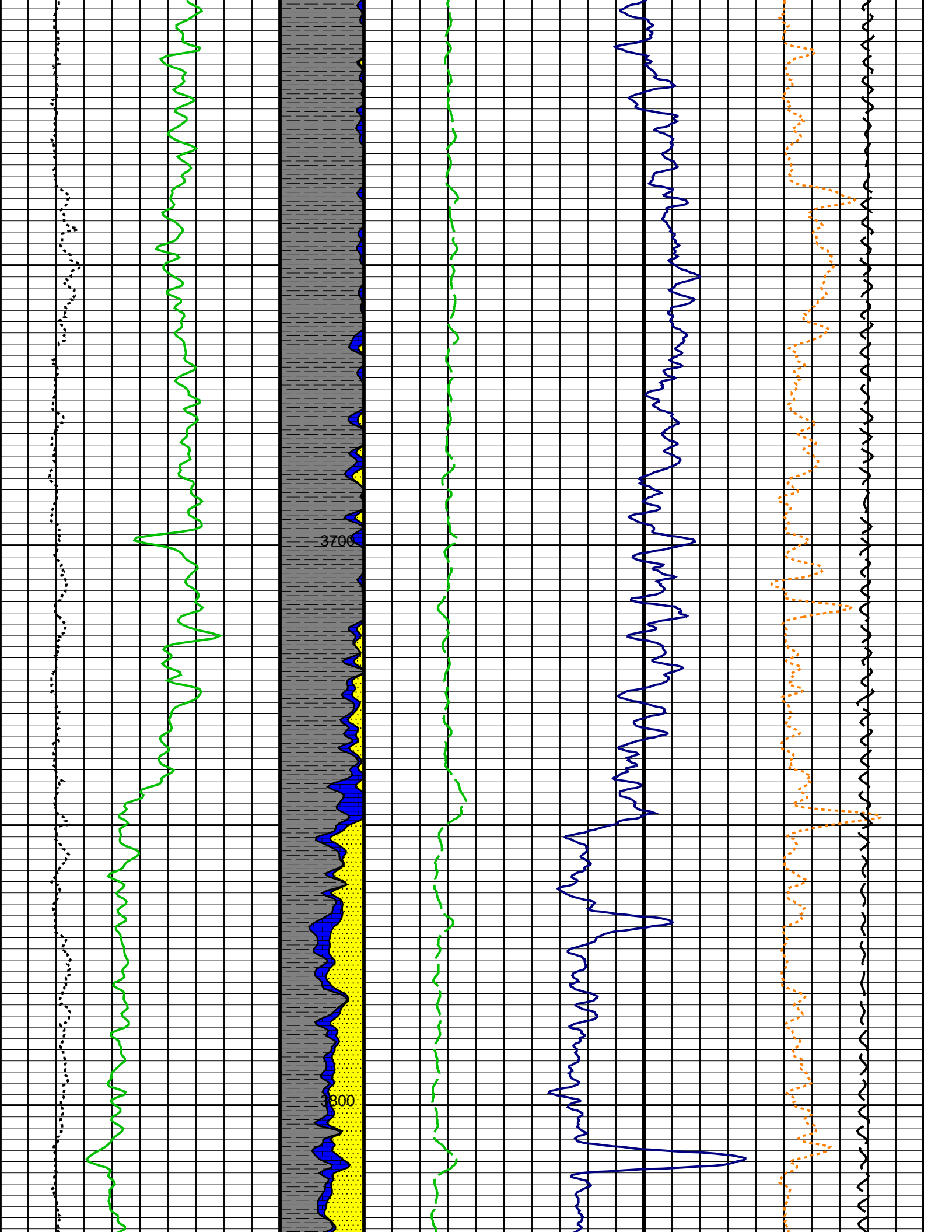


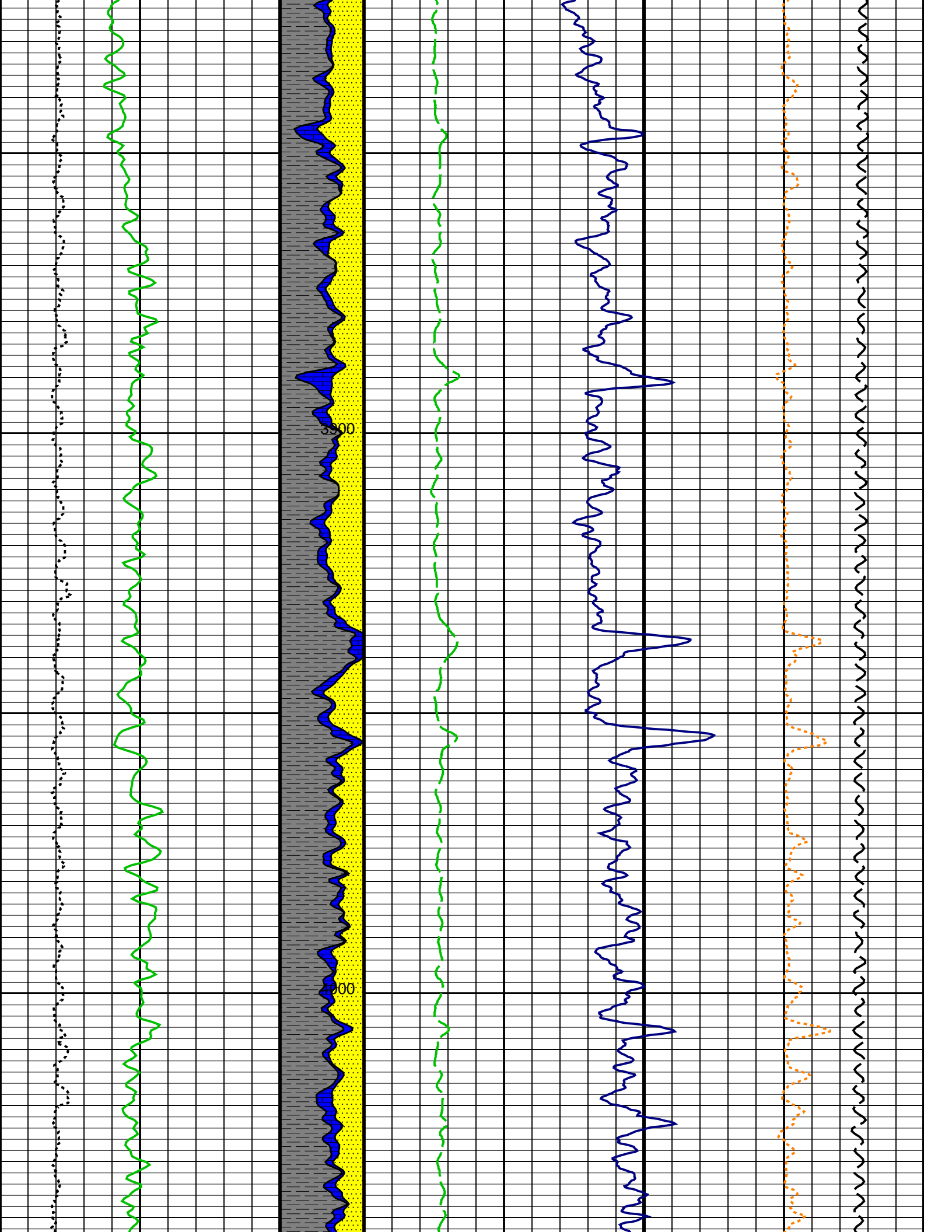


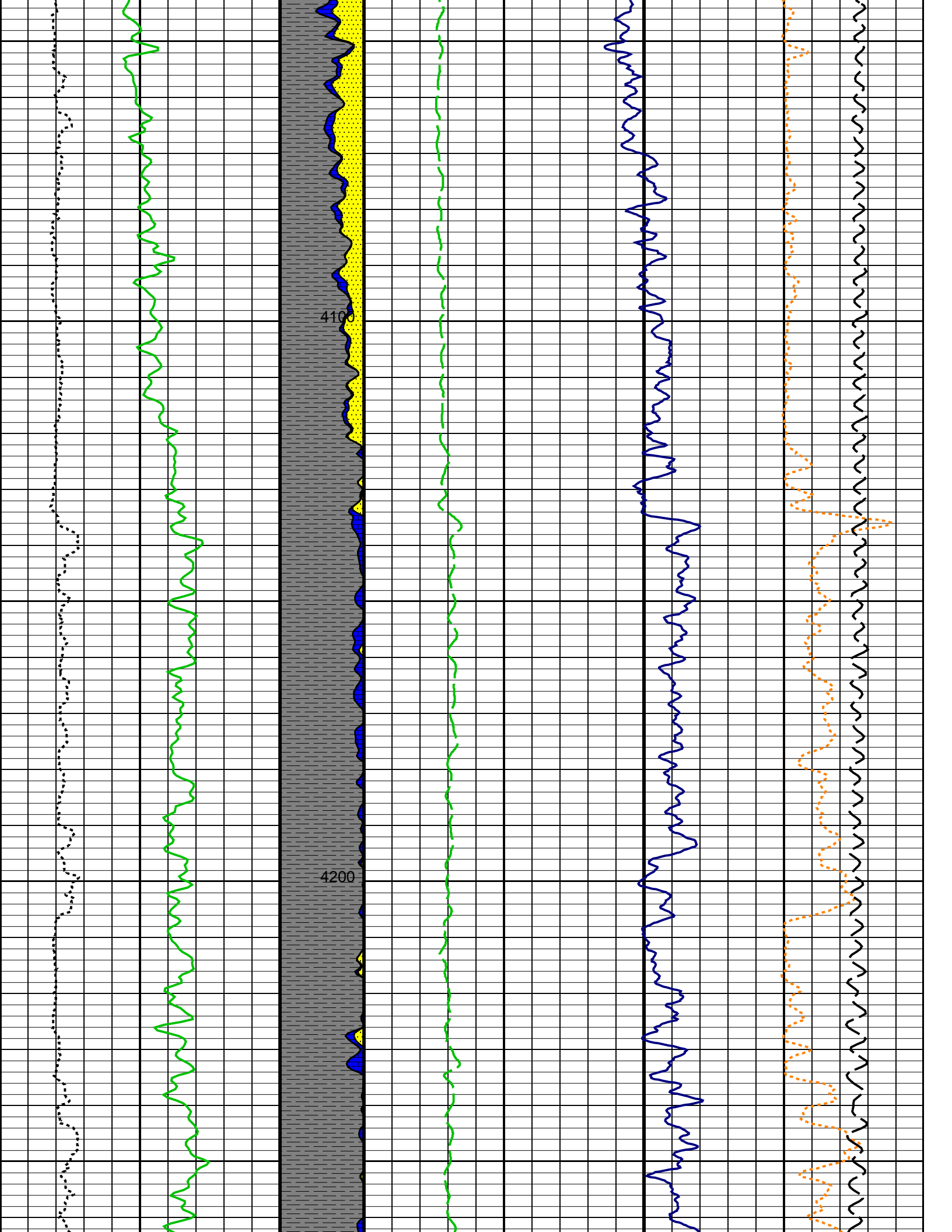


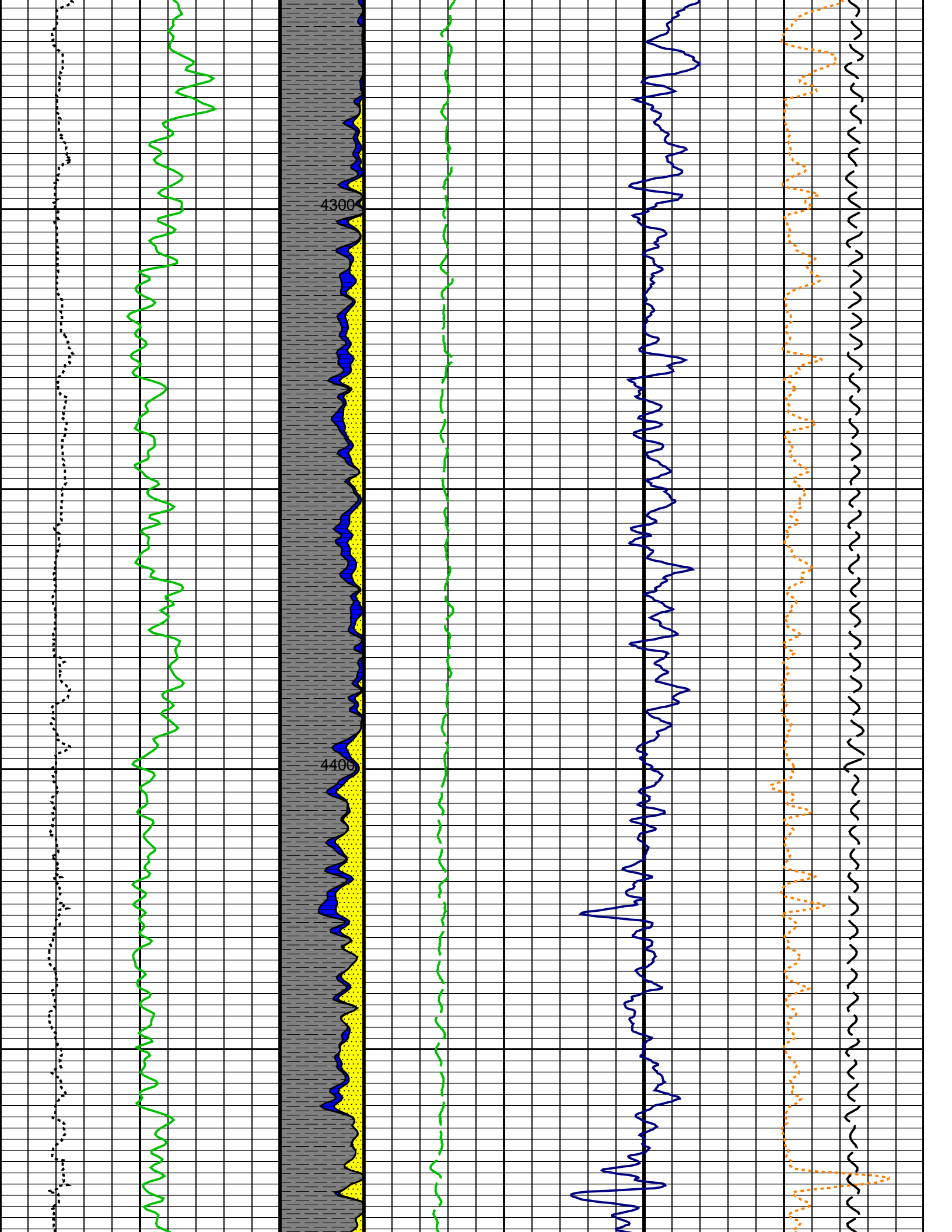


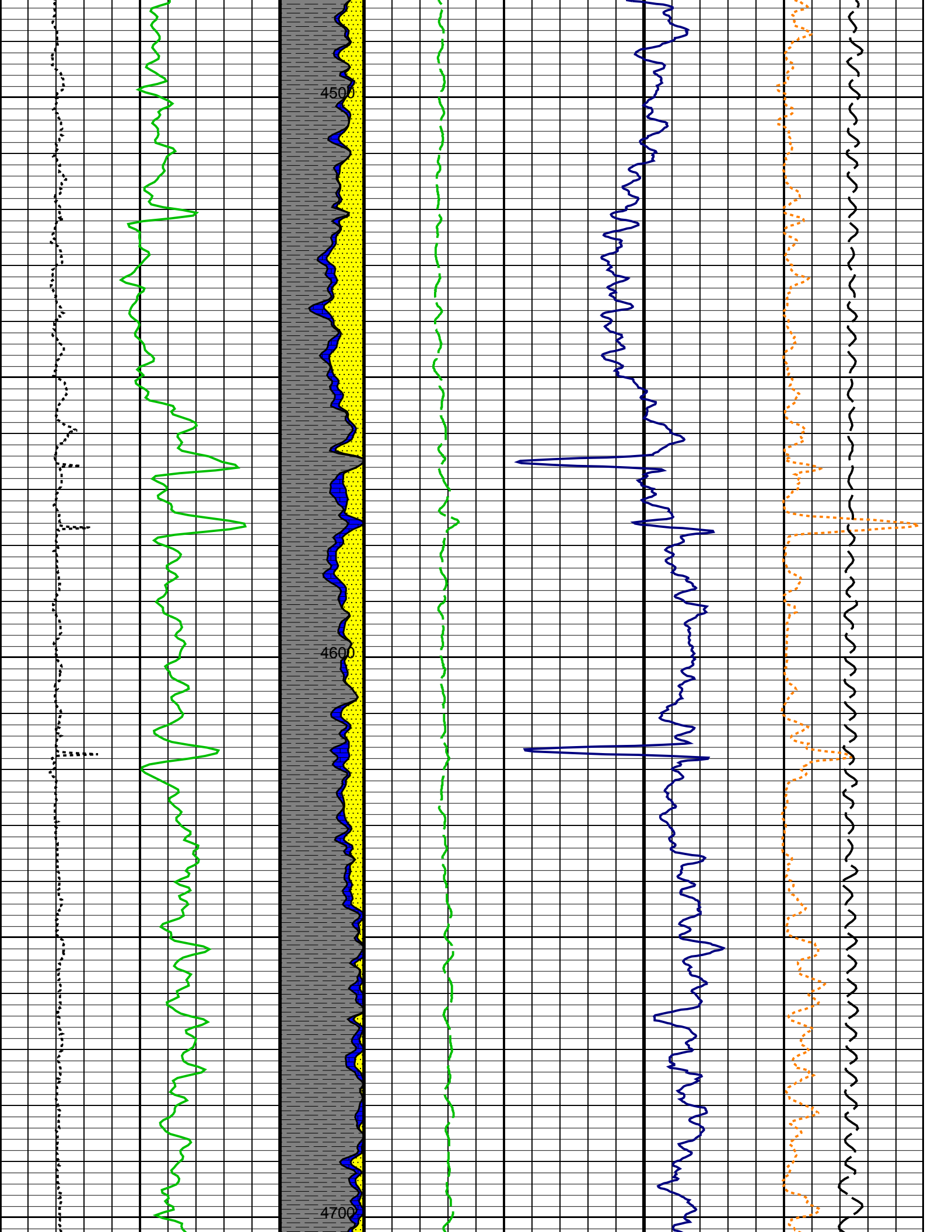


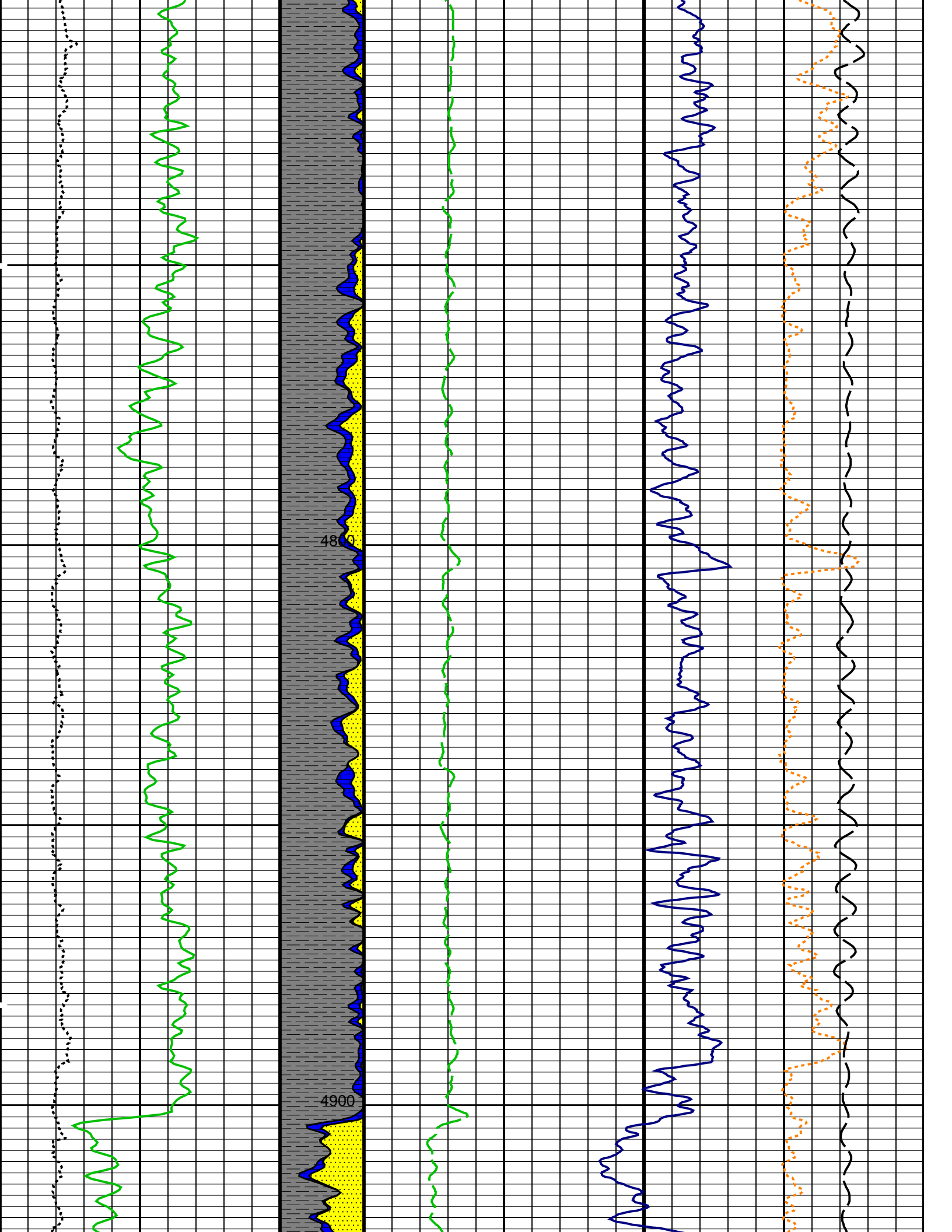


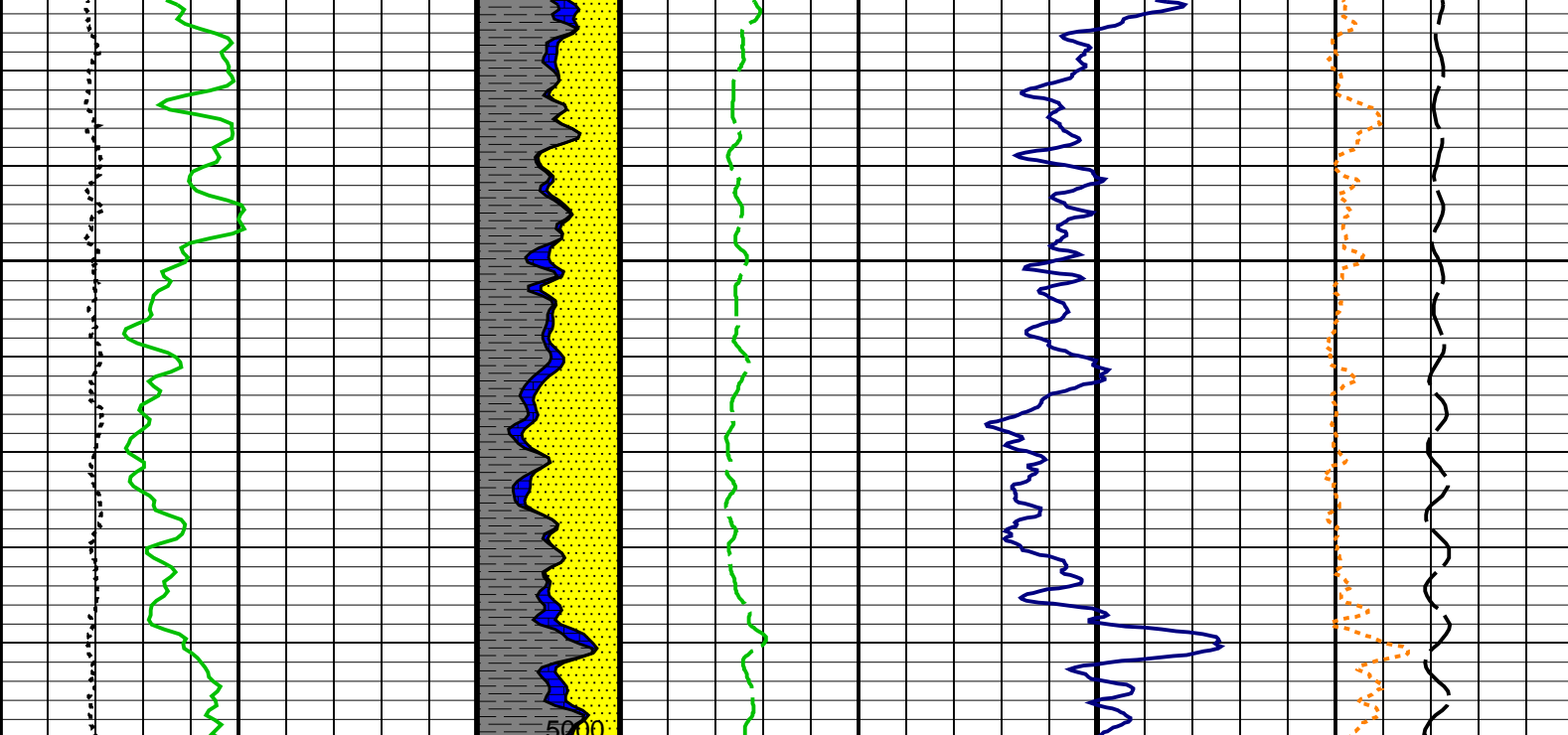












MAIN PASS: *** PLATFORM EXPRESS – LITHOLOGY DENSITY ***

Gamma Ray Backup	LIME	0	Std. Res. Formation Pe (PEFZ)	10	-0.25	Density Correction (HDRA)	0.25
Gamma Ray (GR)	SAND	2	Std. Res. Formation Density (RHOZ)	3			
Caliper (HCAL)	SHALE	16			10000	Tension (TENS)	0
(IN)					(LBF)		

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
DHC	Density Hole Correction	BS
GCLF	Germany Coal-like Formation Option	NO
NAAC	HRDD APS Activation Correction	OFF
NMT	HILT Nuclear Mud Type	NOBARITE
NPRM	HRDD Processing Mode	STDRES
NSAR	HRDD Depth Sampling Rate	1.000 in
System and Miscellaneous		
BS	Bit Size	7.875 in
DFD	Drilling Fluid Density	8.330 lbm/gal

Format: UPPER_DENS Vertical Scale: 5" per 100' Graphics File Created: 28-Feb-2010 02:36

OP System Version: 17C0-154

HILTC 17C0-154

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
HILTC .025	FN:26	28-Feb-2010 02:35

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

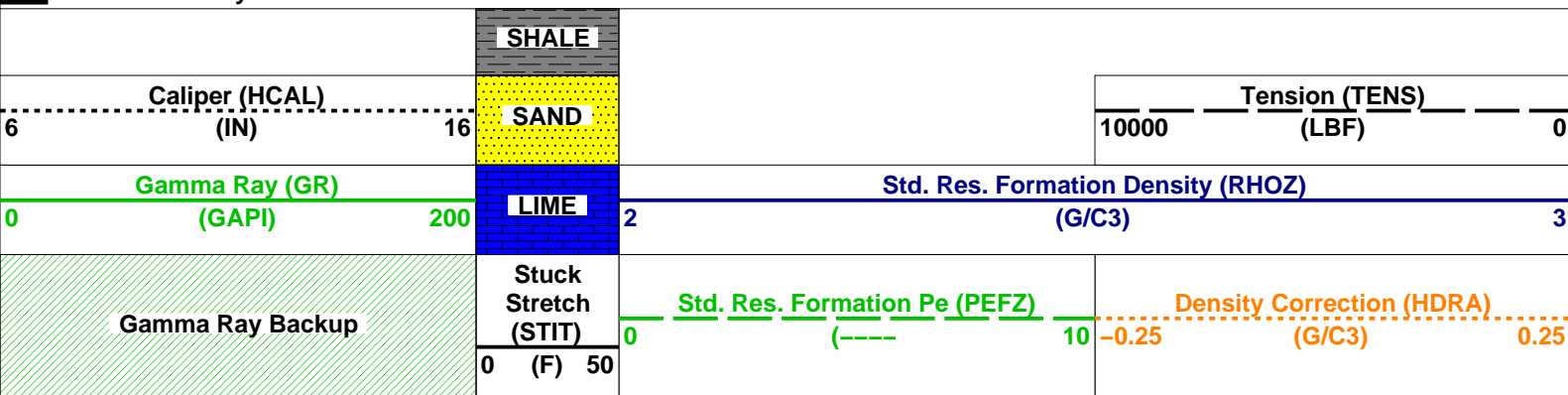
17C0-154

Changed Parameter Summary

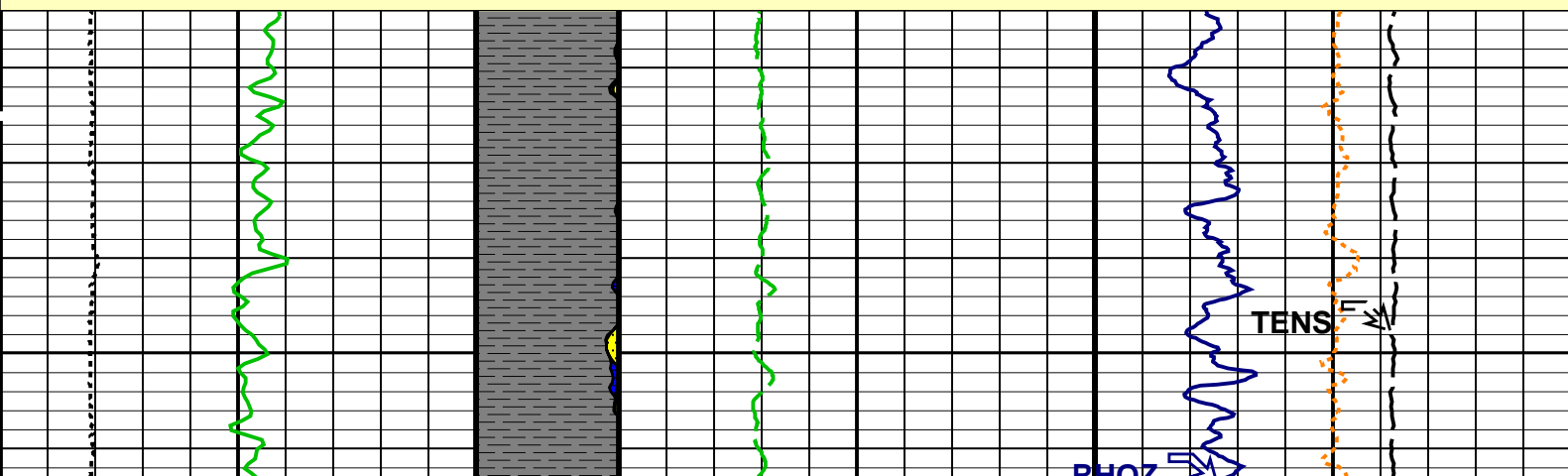
DLIS Name	New Value	Previous Value	Depth & Time
MATR	SANDSTONE	SANDSTONE	8201.0 02:34:13
	SANDSTONE	SANDSTONE	7826.0 02:34:25
	LIMESTONE	SANDSTONE	7550.0 02:34:33
POUT	SANDSTONE	SANDSTONE	8201.0 02:34:13
	SANDSTONE	SANDSTONE	7826.0 02:34:25
	LIMESTONE	SANDSTONE	7550.0 02:34:33

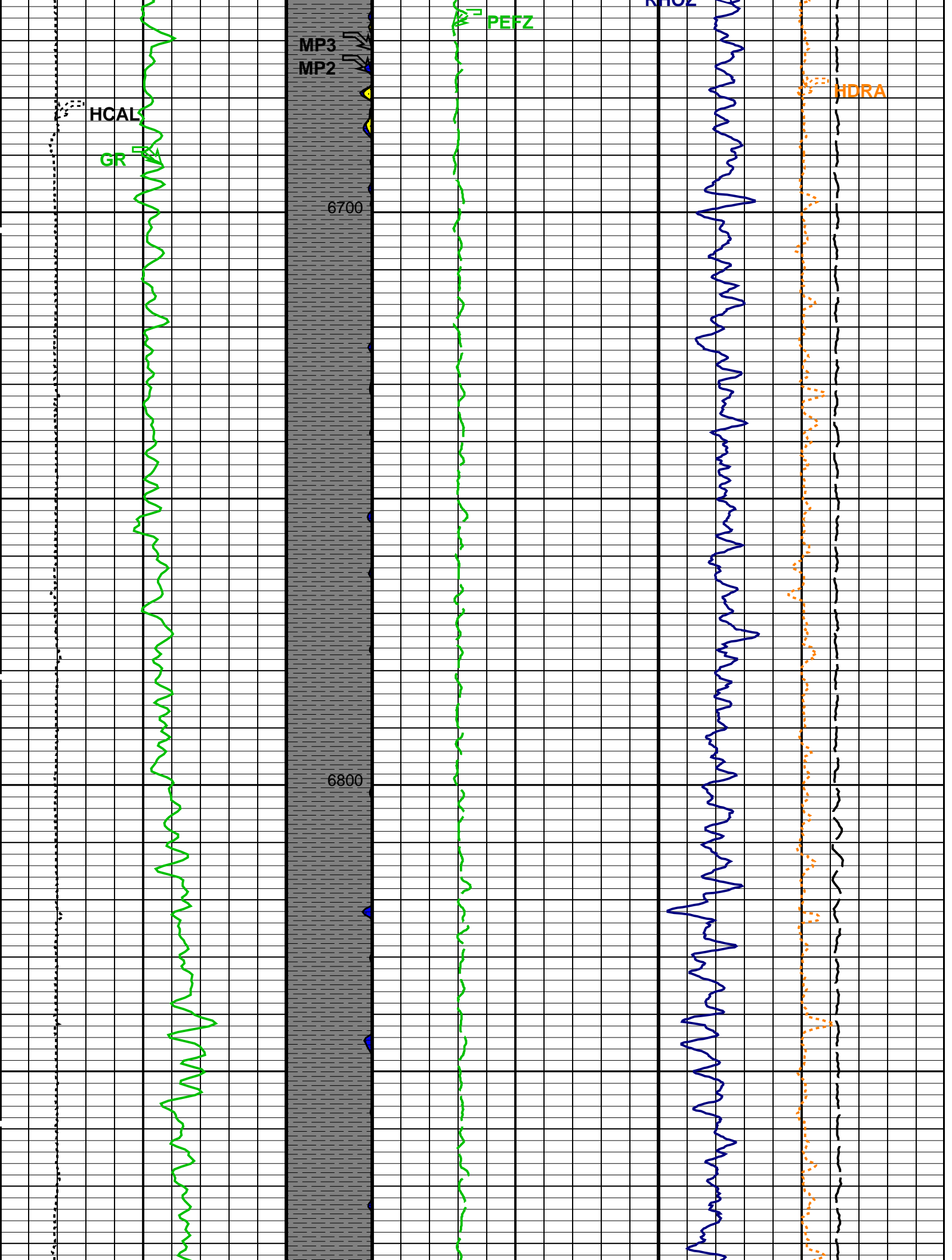
PIP SUMMARY

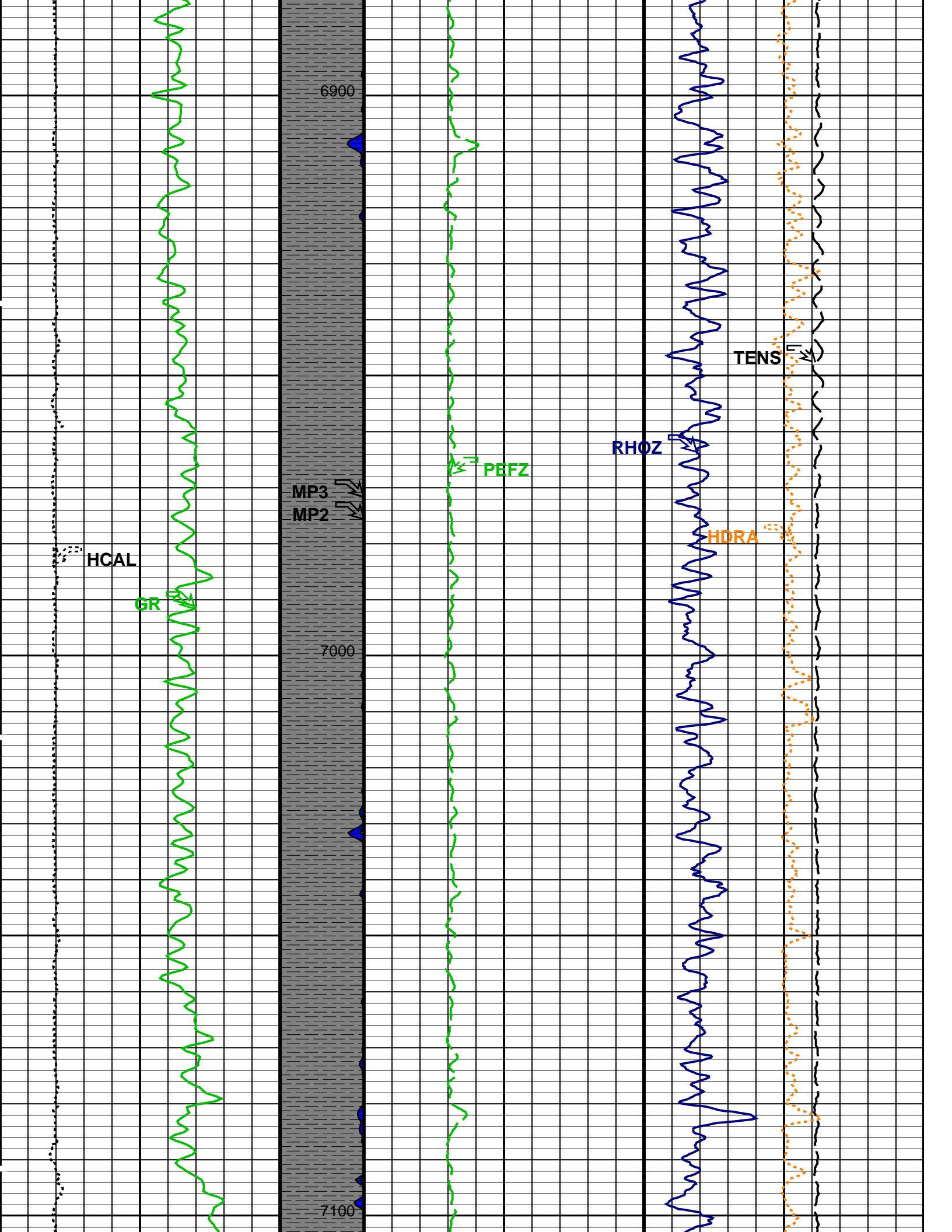
Time Mark Every 60 S

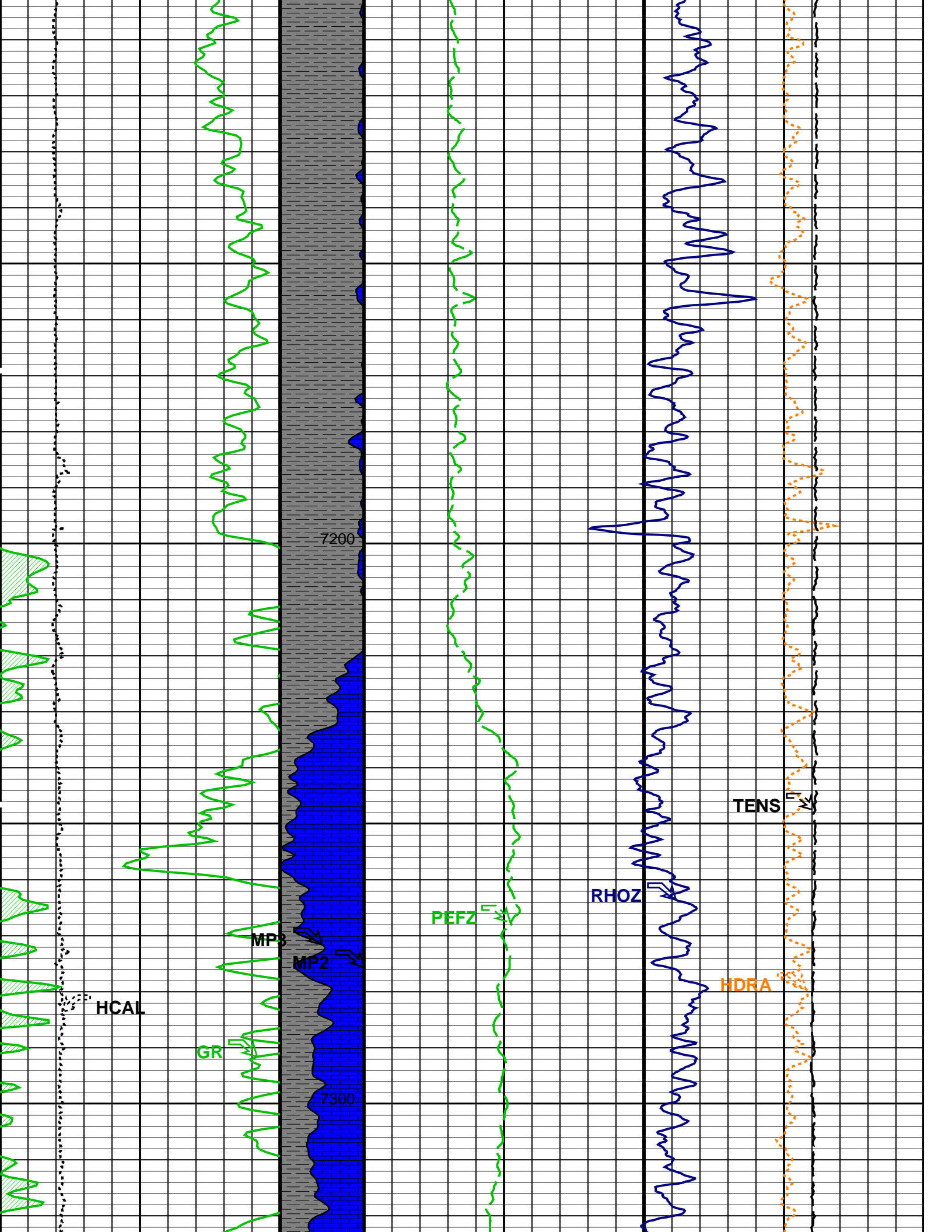


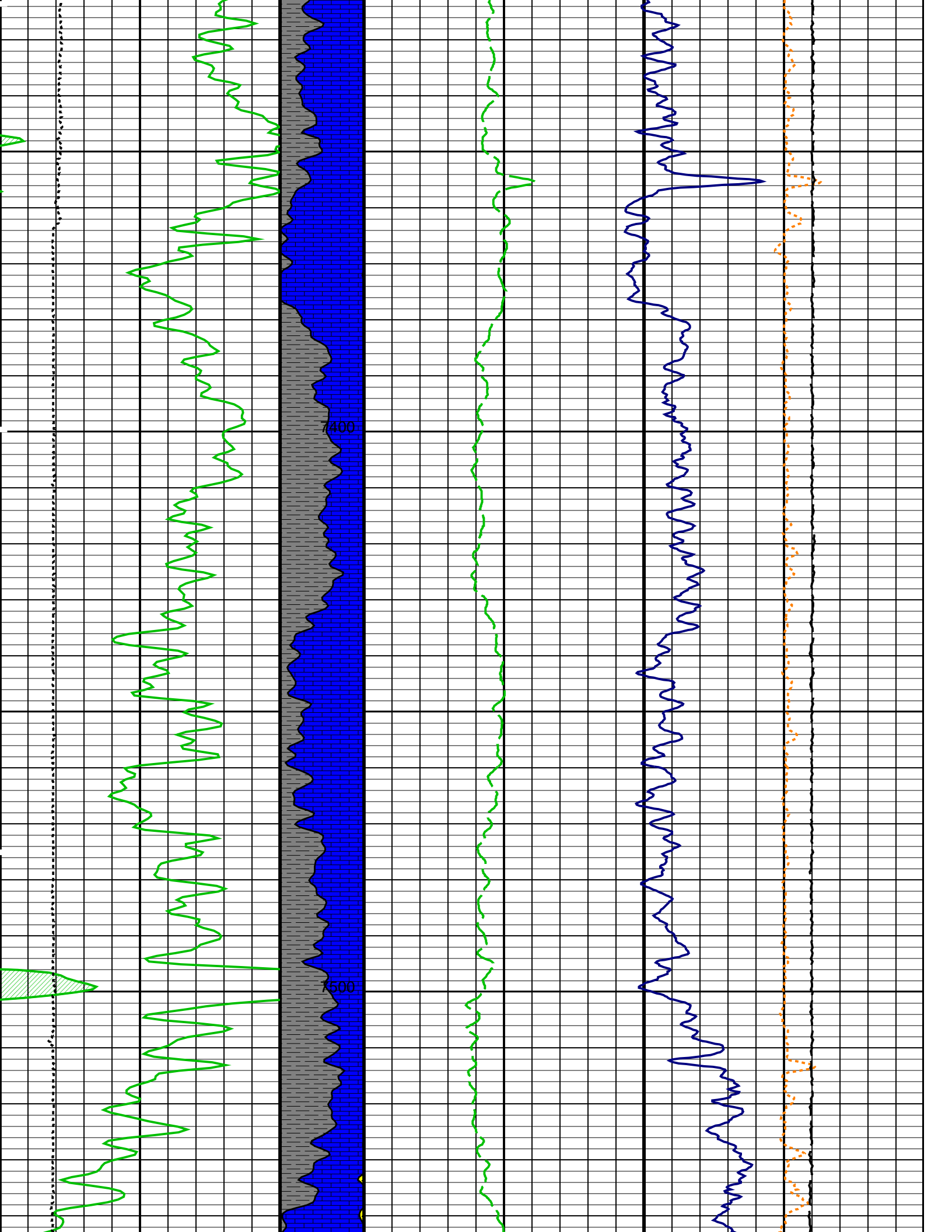
MAIN PASS: *** PLATFORM EXPRESS - LITHOLOGY DENSITY ***

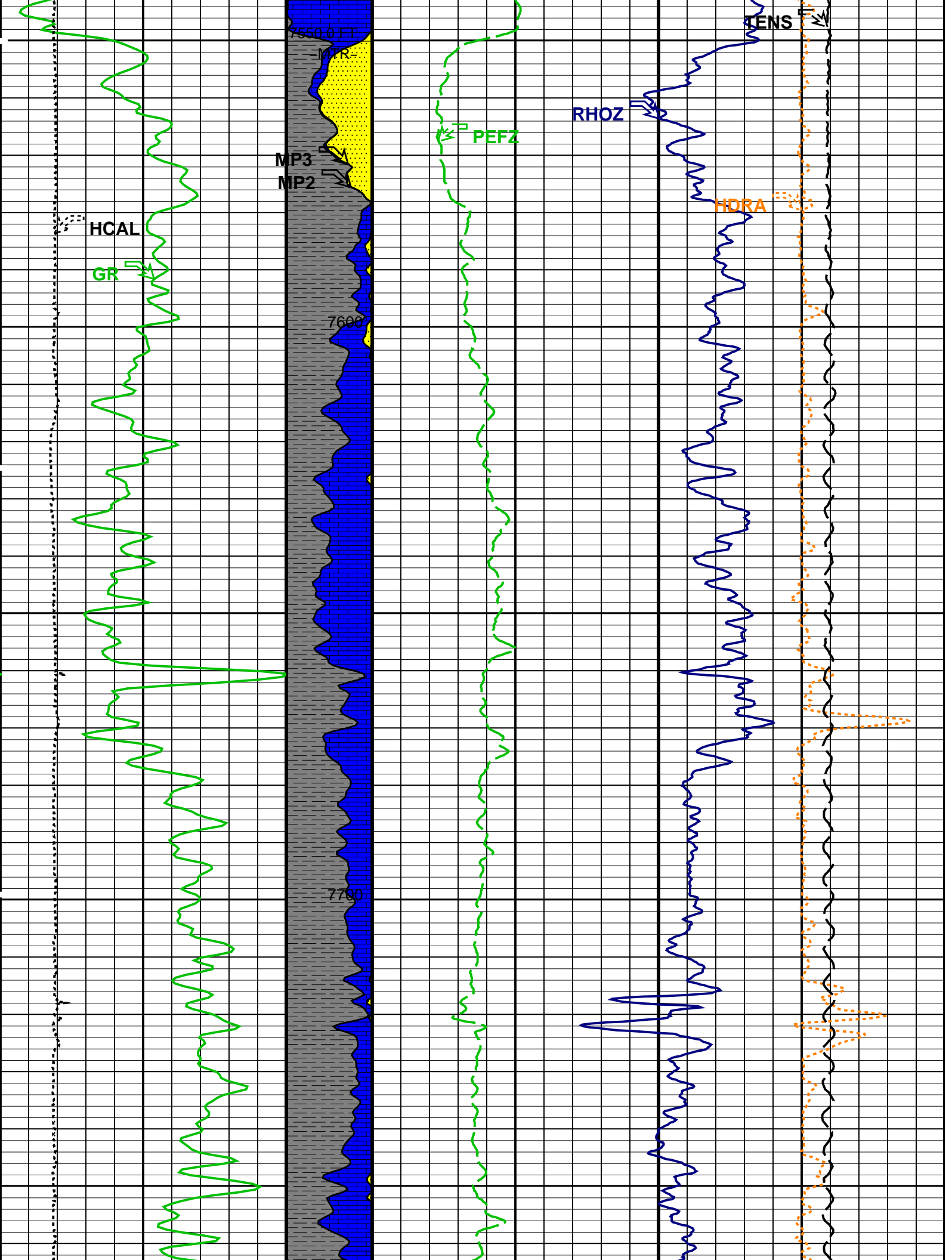


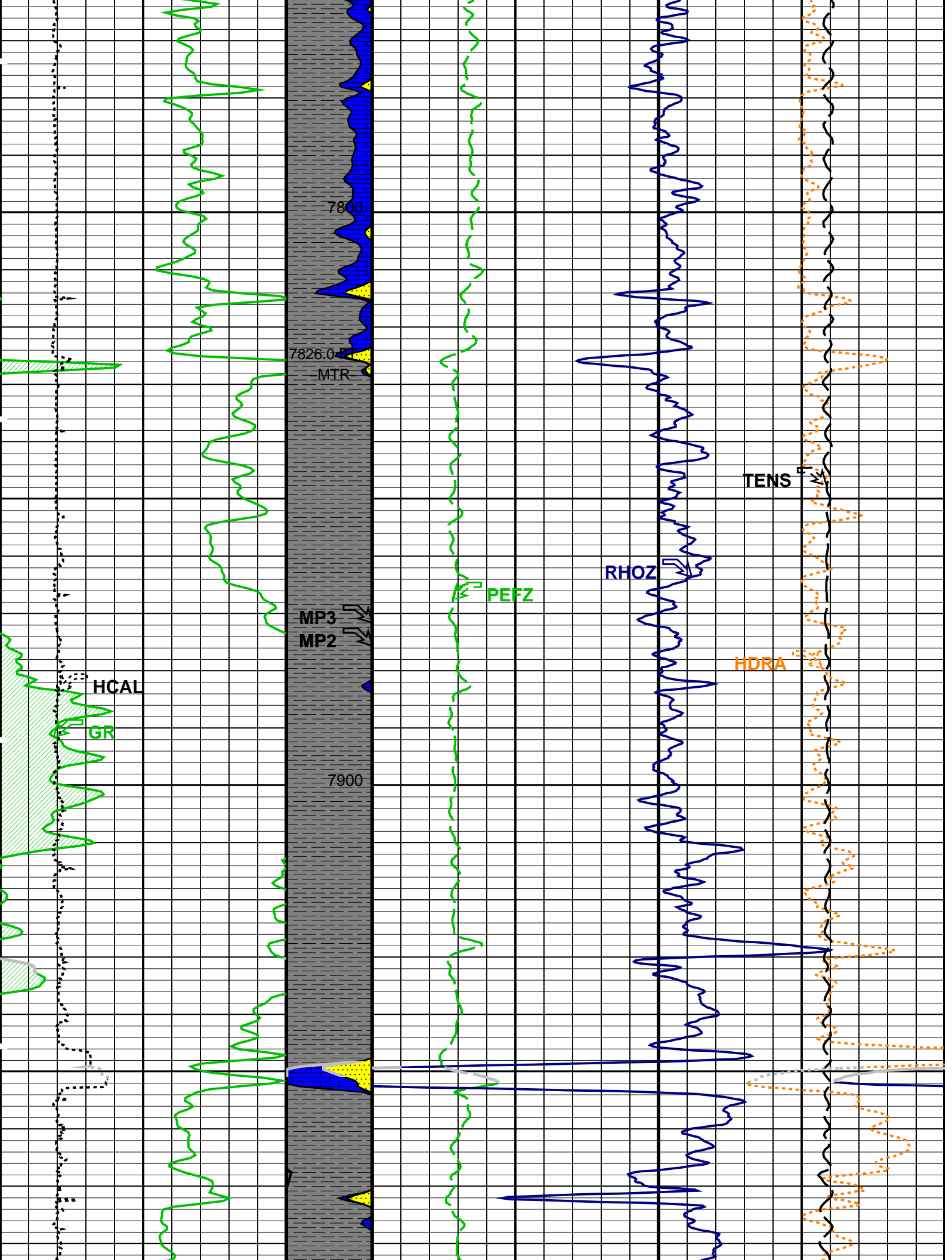


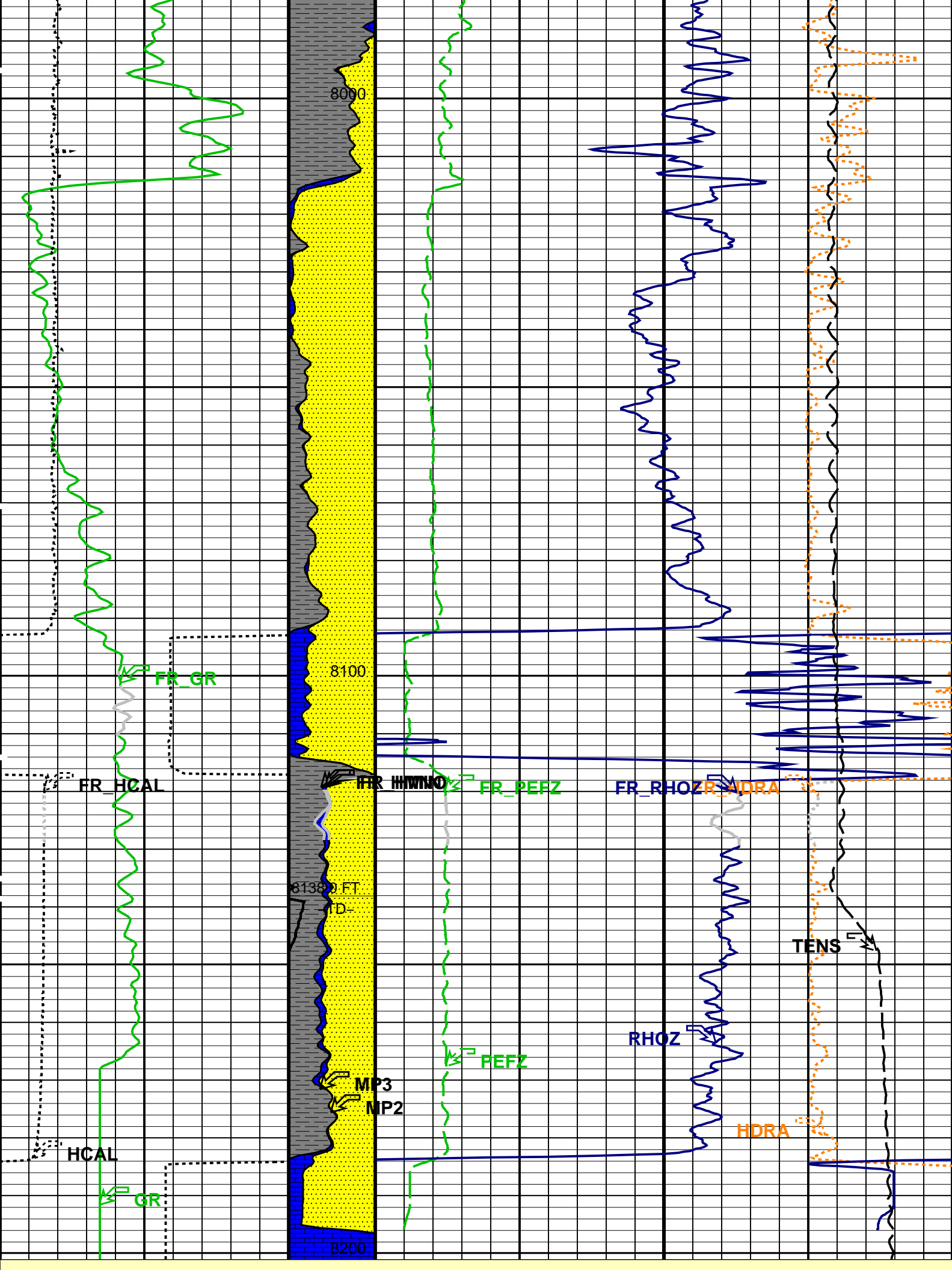












Gamma Ray Backup	Stuck Stretch (STIT)	0	Std. Res. Formation Pe (PEFZ)	10	Density Correction (HDRA)	-0.25	(G/C3)	0.25
	0 (F) 50		(----					
Gamma Ray (GR)			Std. Res. Formation Density (RHOZ)					
0 (GAPI) 200	LIME	2	(G/C3)					
Caliper (HCAL)			Tension (TENS)					
6 (IN) 16	SAND		10000 (LBF) 0					
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

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)	220	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)	220	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)	220	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	

High resolution Integrated Logging Tool–CTS Wellsite Calibration – Test Loop Gain Correction
Master: 30-Nov-2009 14:59

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)	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


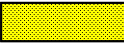














Primary Equipment:			
Array Induction Tool – H	AIT – H		
Rm/SP Bottom Nose	AHRM – A		
Array Induction Sonde	AHIS – BA	397	
HILT high–Resolution Mechanical Sonde	HRMS – B		
HILT Rxo Gamma–ray Device	HRGD – B		
HILT Micro Cylindrically Focused Log Dev	MCFL –		
GR Logging Source	GLS – VJ	5363	
HILT High 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
	Before	1.930			54.55		
7	Master	1.353		1.415	48.00		53.00
	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			
		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)

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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)

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

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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)	
Phase	LS PM High Voltage (Command) V			Value	Phase	LS PM High Voltage (Command) V			Value
Before				1530	Before				1530
	1417 (Minimum)	1517 (Nominal)	1617 (Maximum)			1417 (Minimum)	1517 (Nominal)	1617 (Maximum)	



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



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High resolution Integrated Logging Tool-CTS Wellsite Calibration



High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration								
Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM		
Before				3876	Before			
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)





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High resolution Integrated Logging Tool-CTS Wellsite Calibration								
HILT Caliper Calibration								
Phase	HILT Caliper Zero Measurement IN			Value	Phase	HILT Caliper Plus Measurement IN		
Before				9.888	Before			
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)			9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)

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High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Detector Calibration								
Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkgd) GAPI		
Before				91.33	Before			
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			157.1 (Minimum)	165.0 (Nominal)	206.3 (Maximum)

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High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Zero Measurement								
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS		
Master				26.69	Master			
Before				27.47	Before			
	5.000 (Minimum)	26.69 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	33.46 (Nominal)	40.00 (Maximum)

Master: 10-Jan-2010 18:39

















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High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Ratio Measurement								
Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS		
Master				5102	Master			
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (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 %		140.0 %	Nom: 60.00		Nom: 60.00

		00.00 (Minimum)	%			140.0 (Maximum)				Nom -00.00 (Minimum)	(Nominal)				Nom + 00.00 (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			Value		
Master				0.9194	Master				-0.0002118		
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)			-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)			
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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									

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

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)

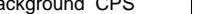

Master: 30-Nov-2009 14:59

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

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High resolution Integrated Logging Tool-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)	
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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
Master				5102	Master				2170
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	
Phase	CNTC/CFTC (Tank)			Value	Phase	CNTC/CFTC (Tank)			Value
Master				2.351	Master				2.351
	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 10-Jan-2010 18:39

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

Schlumberger

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

Platform Express
Compensated Neutron
Density Lithology