Schlumberger

Company: **Noble Energy Inc.**

Well: **RMR Ranch 13−36**
Field: **Schramm**
County: **Yuma** State: **Colorado**

Platform Express
Triple Combo

County: Yuma
Field: Schramm
Location: NWSW, Sec. 36, T2N, R47W
Well: RMR Ranch 13−36
Company: Noble Energy Inc.

LOCATION

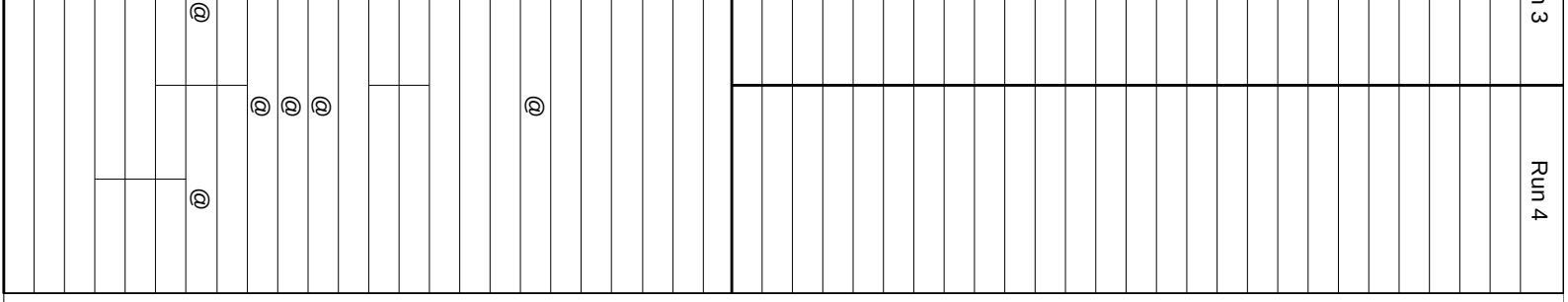
NWSW, Sec. 36, T2N, R47W
SHL: 1620' FSL X 325' FWL
Lat/Long: 40.094 N / −102.585 W

Elev.: K.B. 4002.00 ft
G.L. 3996.00 ft
D.F. 4001.00 ft

Permanent Datum: Ground Level Elev.: 4011.00 ft
Log Measured From: Kelly Bushing 6.00 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section	Township	Range
05−123−11945−0000	36	2N	47W

	Run 1	Run 2	Run 3
Logging Date	19−Dec−2010		
Run Number	1		
Depth Driller	2784 ft		
Schlumberger Depth	2787 ft		
Bottom Log Interval	2779 ft		
Top Log Interval	450 ft		
Casing Driller Size @ Depth	7.000 in @ 450 ft	@	@
Casing Schlumberger	450 ft		
Bit Size	6.250 in		
Type Fluid In Hole	Gel and Chemical		
MUD Density / Viscosity	8.9 lbm/gal / 32 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	Flow Line		
RM @ Measured Temperature	0.257 ohm.m @ 55 degF	@	@
RMF @ Measured Temperature	0.193 ohm.m @ 55 degF	@	@
RMC @ Measured Temperature	0.386 ohm.m @ 55 degF	@	@
Source RMF / RMC	Calculated / Calculated		
RM @ MRT / RMF @ MRT	0.105 @ 145 / 0.078 @ 145	@ / @	@ / @
Maximum Recorded Temperatures	145 degF		
Circulation Stopped / Time	19−Dec−2010 / 1:00		
Logger On Bottom / Time	19−Dec−2010 / 4:00		
Unit Number / Location	3055 / Ft. Morgan, CO		
Recorded By	Todd Johnson		
Witnessed By	Sam Chartier		



DEPTH SUMMARY LISTING

Date Created: 18−DEC−2010 21:13:19

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−39P LXS
Serial Number:	5945	Serial Number:	2858	Serial Number:	3055
Calibration Date:	1−Oct−10	Calibration Date:	18−Sep−201(	Length:	18000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100513		
Calibration Cable Type:	7−46P	Number of Calibration Points:	0	Conveyance Method:	Wireline
Wheel Correction 1:	−4			Rig Type:	LAND
Wheel Correction 2:	−1				

Depth Control Parameters

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

Depth Control Remarks

1. All Schlumberger depth policy procedures applied
2. This is the primary depth reference
3.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: None	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in the hole.	
Toolstring run as per tool sketch.	
Toolstring run without bowspring or standoffs as per client request.	
Matrix: Limestone (2.71 g/cc)	

Matrix: Limestone (2.71 g/cc)

Rig: Excel 2

Crew: Ian Derry

RUN 1		
SERVICE ORDER #:	BFCL−00056	
PROGRAM VERSION:	18C0−147	
FLUID LEVEL:	20 ft	
LOGGED INTERVAL	START	STOP

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

EQUIPMENT DESCRIPTION

RUN 1

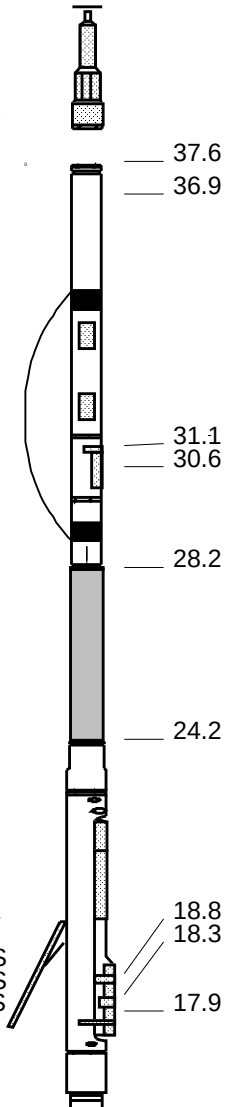
SURFACE EQUIPMENT

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

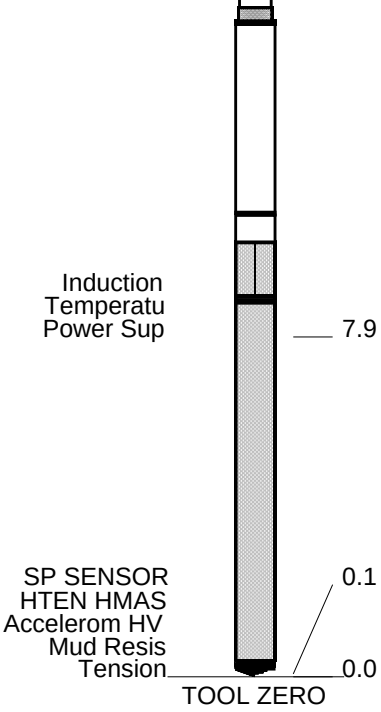
DOWNHOLE EQUIPMENT

LEH−QT
LEH−QT
40.6

HILTB−CTS
HGNSC−B
HMCA
TCC−B
HGNH
NLS−KL
NSR−F 5168
HACCZ 749
HCNT
HGR
HRCC−B
HRMS−B
HRGD−B
GLS−VJ 5363
MCFL Device
HILT Nucl. LS 42767
HILT Nucl. SS 42767
HILT Nucl. BS 42767
AIT−H
AHIS−BA 398
AHRM−A
BOW−SPR
NPV−N
37.6

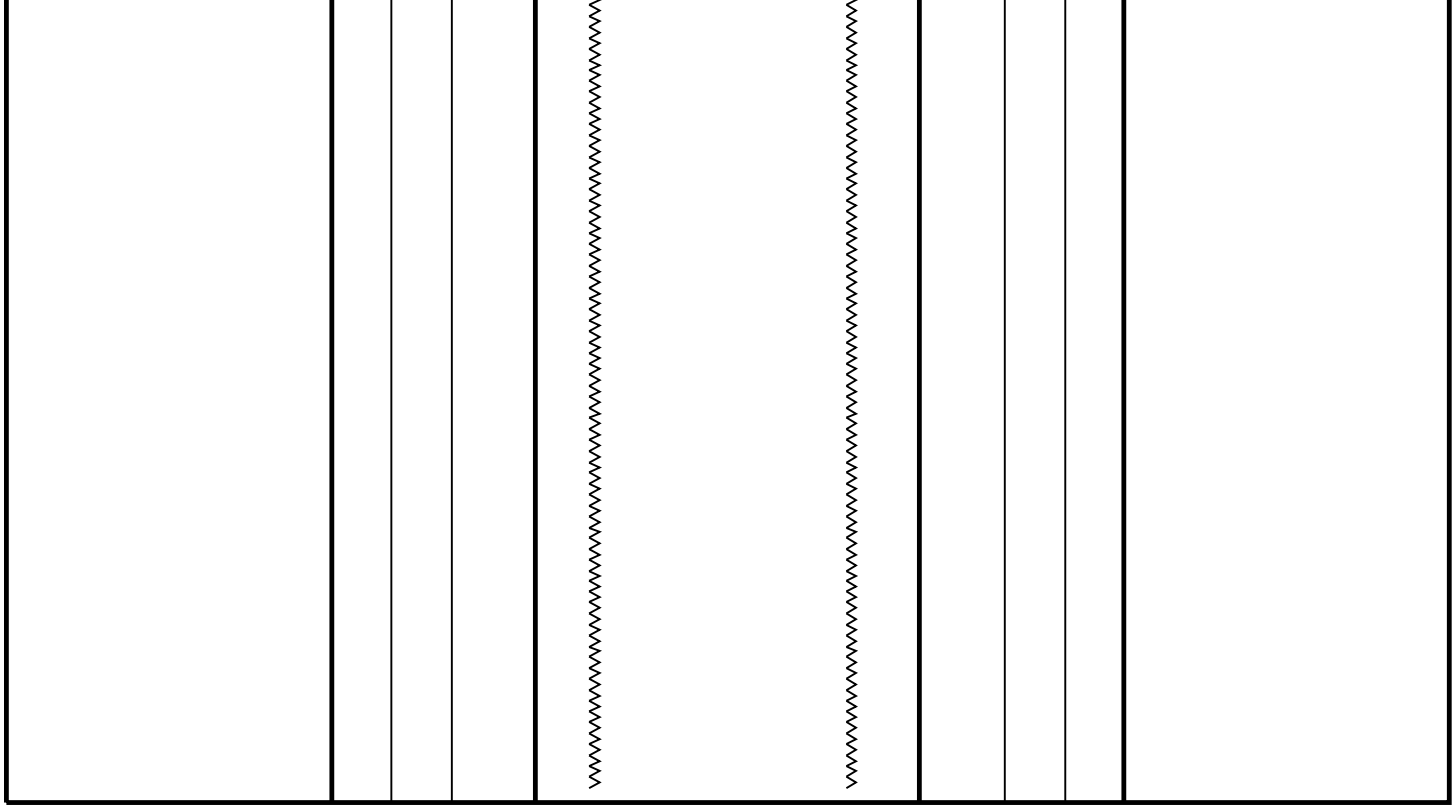


RUN 2



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

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	7.000		Casing String
					450.0	7.000		Casing Shoe
					450.0	6.250		Borehole Segment



Schlumberger

COMBO LOG 2" = 100’

MAXIS Field Log

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	18−Dec−2010 21:16	2796.0 FT	419.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 486.85 F3

Cement Volume = 228.68 F3 (assuming 4.50 IN casing O.D.)

Computed from 2787.0 FT to 450.0 FT using data channel(s) HCAL

OP System Version: 18C0−147

HILTB−CTS	18C0−147

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3

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

SP (SP)
−160 (MV) 40

Gamma Ray (GR)
0 (GAPI) 200

HILT Caliper (HCAL)
4 (IN) 14

GR BACKUP

Stuck Stretch (STIT)
0 (F) 50

AIT−H 90 Inch Investigation (AHT90)
0.2 (OHMM) 20

AIT−H 20 Inch Investigation (AHT20)
0.2 (OHMM) 20

AIT−H 30 Inch Investigation (AHT30)
0.2 (OHMM) 20

AIT−H 60 Inch Investigation (AHT60)
0.2 (OHMM) 20

AIT−H 10 Inch Investigation (AHT10)
0.2 (OHMM) 20

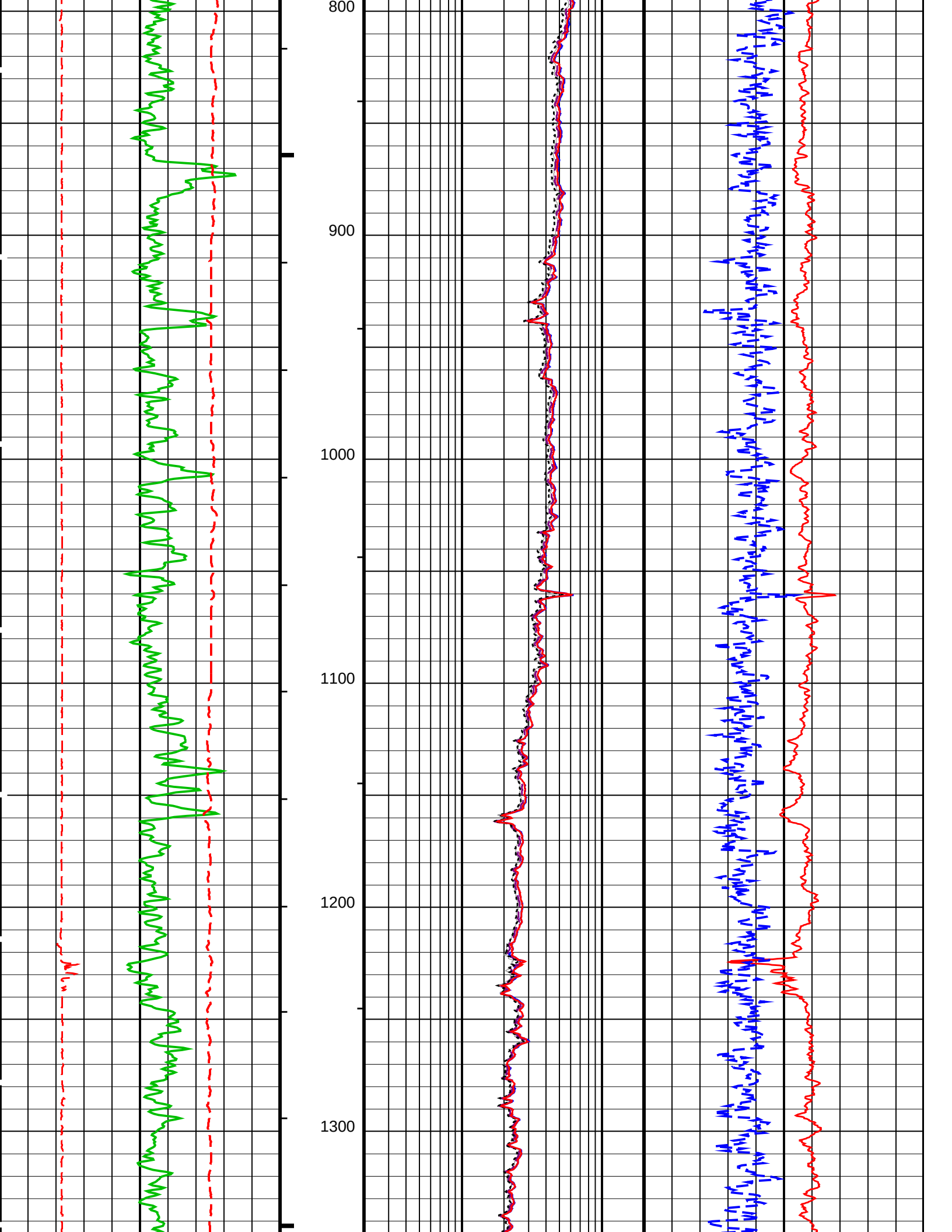
NPOR BACKUP

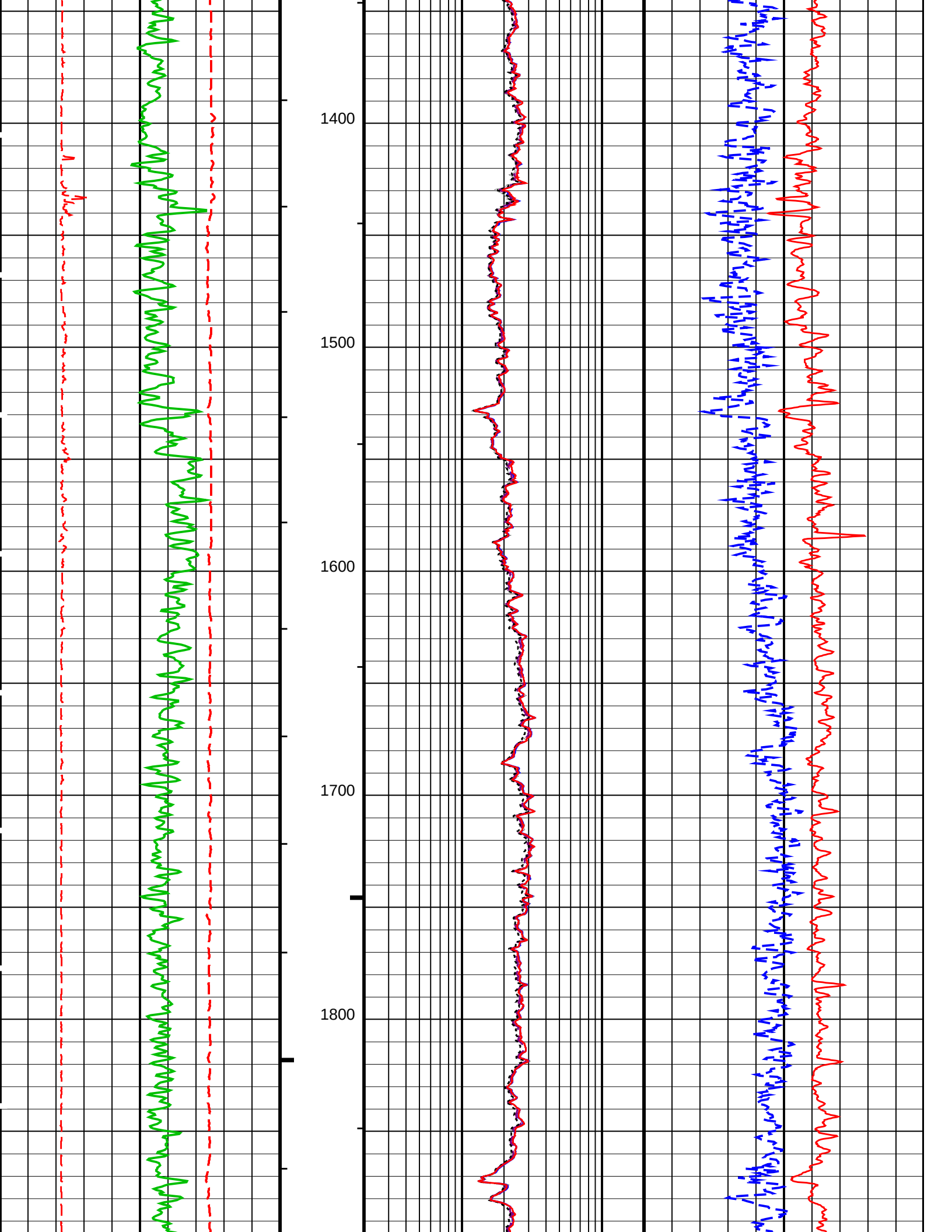
Gas Effect

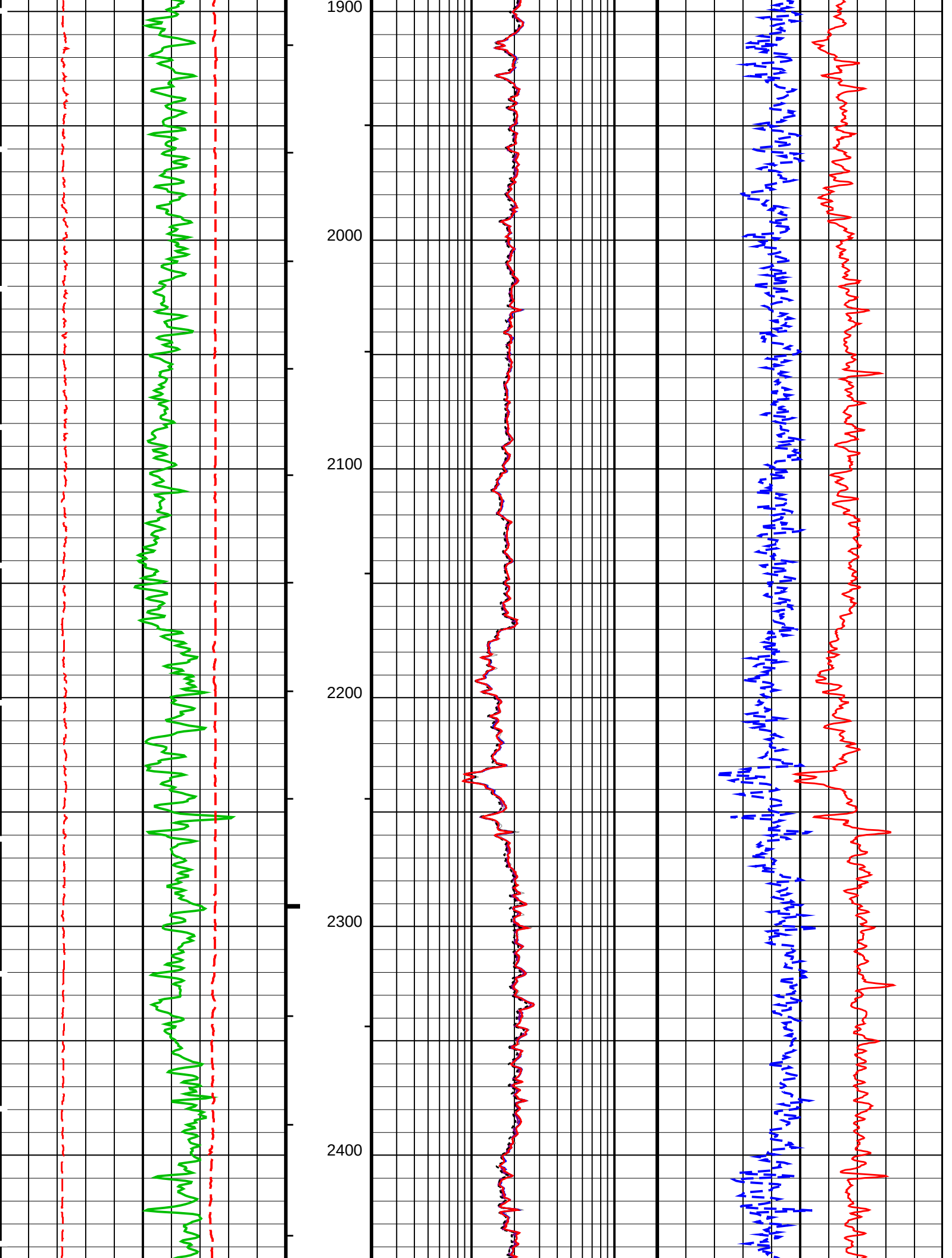
Alpha Processed Neutron Porosity (NPOR)
0.6 (V/V) 0

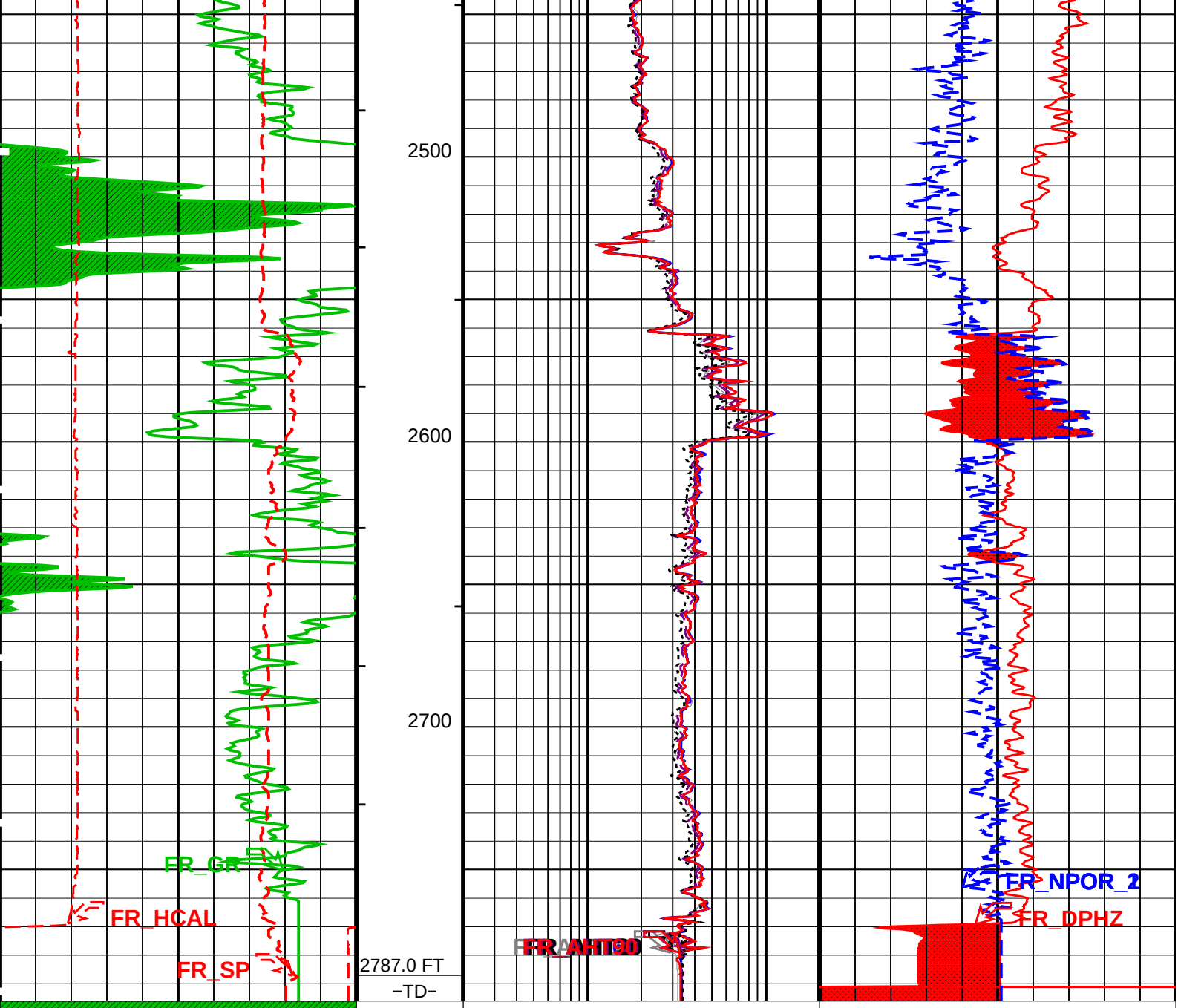
Std. Res. Density Porosity (DPHZ)
0.6 (V/V) 0

450.0 FT
−CSG−
500
600
700


800
900
1000
1100
1200
1300


1400
1500
1600
1700
1800


1900
2000
2100
2200
2300
2400



GR BACKUP

Stuck Stretch (STIT)
0 (F) 50

AIT−H 10 Inch Investigation (AHT10)
0.2 (OHMM) 20

Std. Res. Density Porosity (DPHZ)
0.6 (V/V) 0

HILT Caliper (HCAL)
4 (IN) 14

AIT−H 60 Inch Investigation (AHT60)
0.2 (OHMM) 20

Alpha Processed Neutron Porosity (NPOR)
0.6 (V/V) 0

Gamma Ray (GR)
0 (GAPI) 200

AIT−H 30 Inch Investigation (AHT30)
0.2 (OHMM) 20

Gas Effect

SP (SP)
−160 (MV) 40

AIT−H 20 Inch Investigation (AHT20)
0.2 (OHMM) 20

NPOR BACKUP

AIT−H 90 Inch Investigation (AHT90)
0.2 (OHMM) 20

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		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBHV	Array Induction Borehole Correction Code Version Number	900	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHBLV	Array Induction Basic Logs Code Version Number	223	
AHCDE	Array Induction Casing Detection Enable	Yes	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
AHRFV	Array Induction Radial Profiling Code Version Number	701	
AHRPV	Array Induction Radial Parametrization Code Version Number	232	
AHSTA	Array Induction Tool Standoff	0.125	IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	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	
SPNV	SP Next Value	0	MV
	FEQL: Formation Evaluation Quick Look		
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
	PERT: Preliminary Evaluation − Real Time		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
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	2784.00	FT
TDL	Total Depth − Logger	2787.00	FT
	System and Miscellaneous		

System and Miscellaneous

BS	Bit Size	6.250	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	17.00	LB/F
DFD	Drilling Fluid Density	8.90	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	20.00	FT
MST	Mud Sample Temperature	55.00	DEGF
RMFS	Resistivity of Mud Filtrate Sample	0.1928	OHMM
TD	Total Depth	2787	FT

Format: COMBO_LOG_S2 Vertical Scale: 2" per 100' Graphics File Created: 18−Dec−2010 21:16

OP System Version: 18C0−147

HILTB−CTS 18C0−147

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_007LUP FN:6 PRODUCER 18−Dec−2010 21:16

Schlumberger

COMBO LOG 5" = 100'

MAXIS Field Log

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_007LUP FN:6 PRODUCER 18−Dec−2010 21:16 2796.0 FT 419.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 486.85 F3

Cement Volume = 228.68 F3 (assuming 4.50 IN casing O.D.)

Computed from 2787.0 FT to 450.0 FT using data channel(s) HCAL

OP System Version: 18C0−147

HILTB−CTS 18C0−147

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3

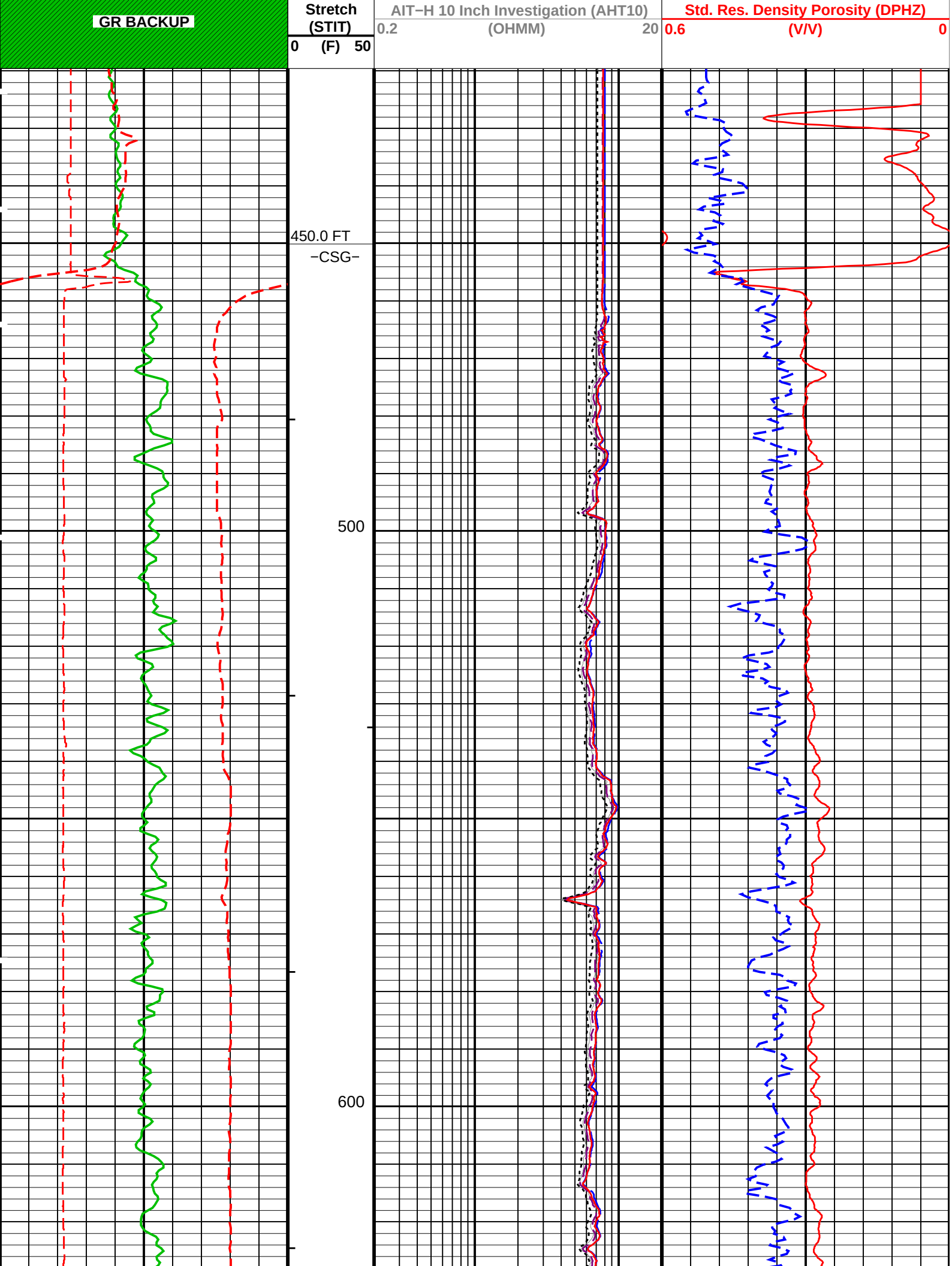
Integrated Hole Volume Major Pip Every 100 F3

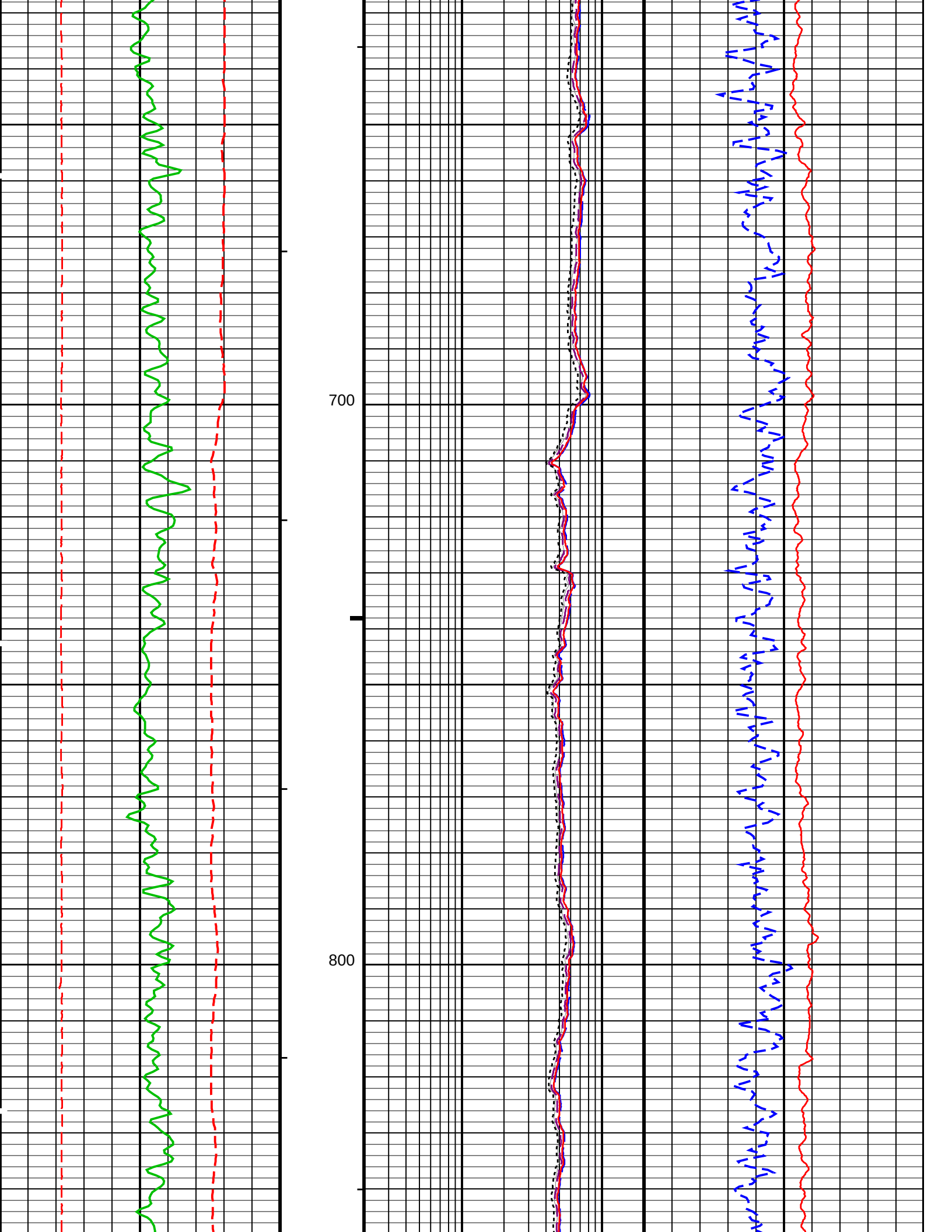
Integrated Cement Volume Minor Pip Every 10 F3

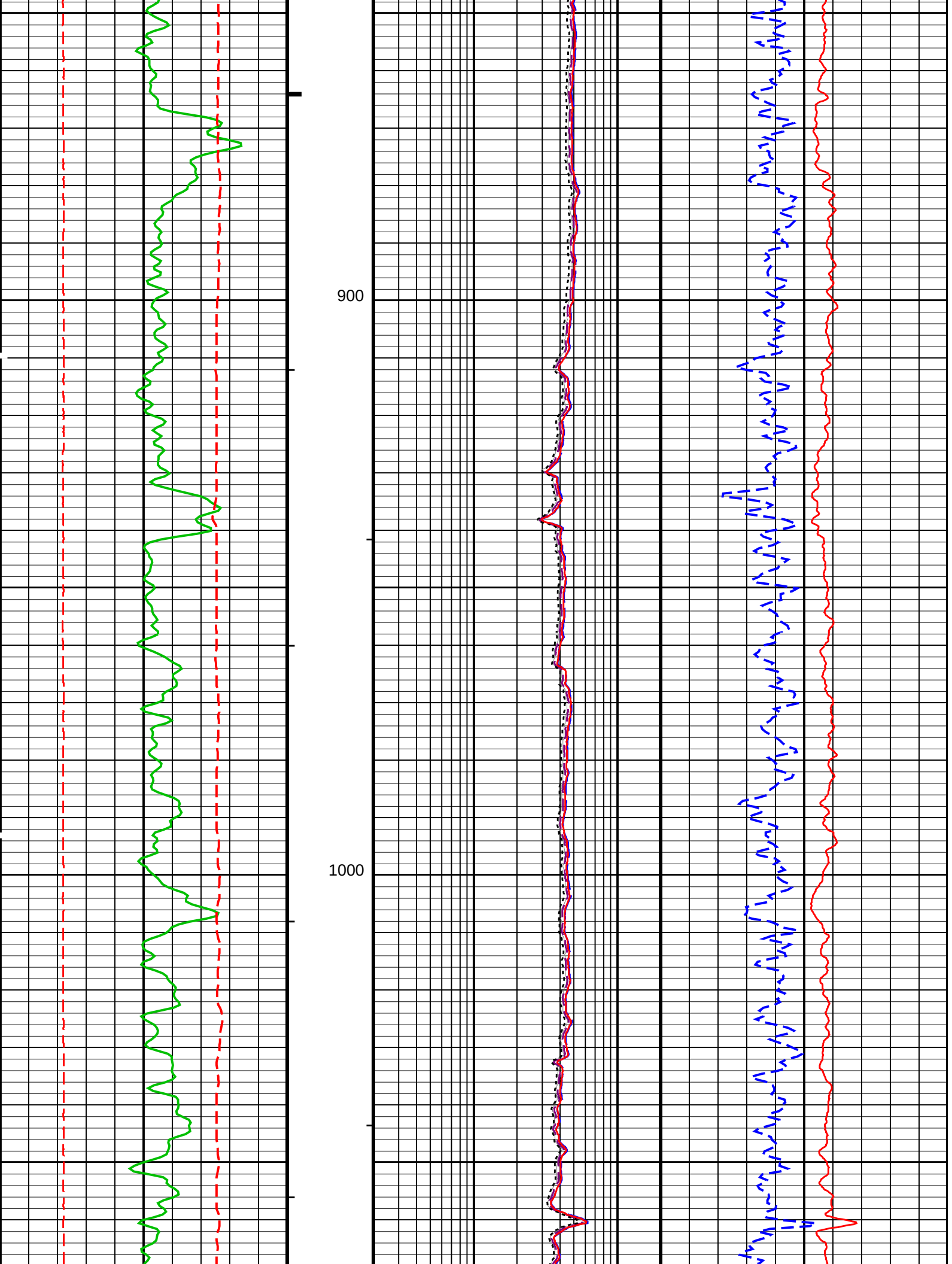
Integrated Cement Volume Major Pip Every 100 F3

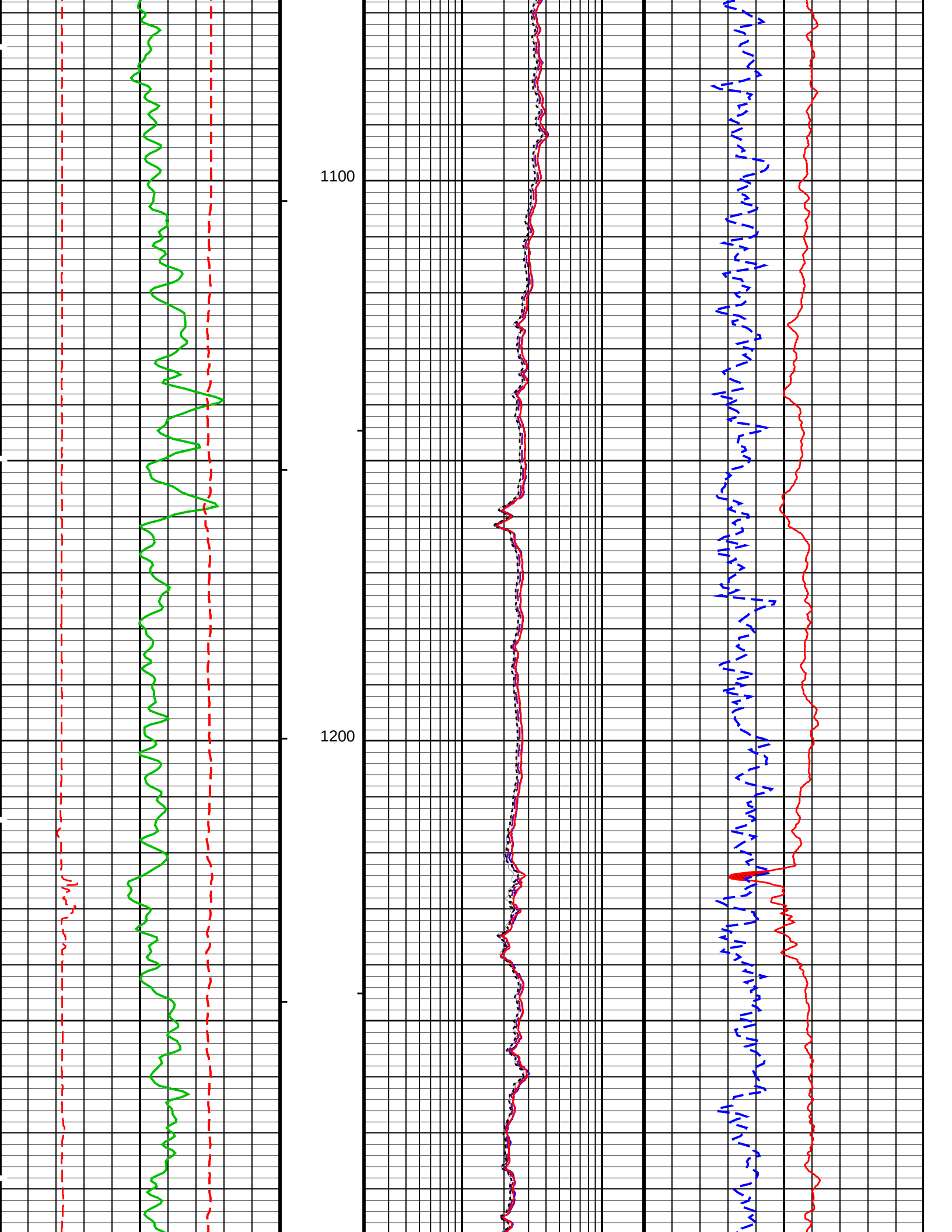
Time Mark Every 60 S

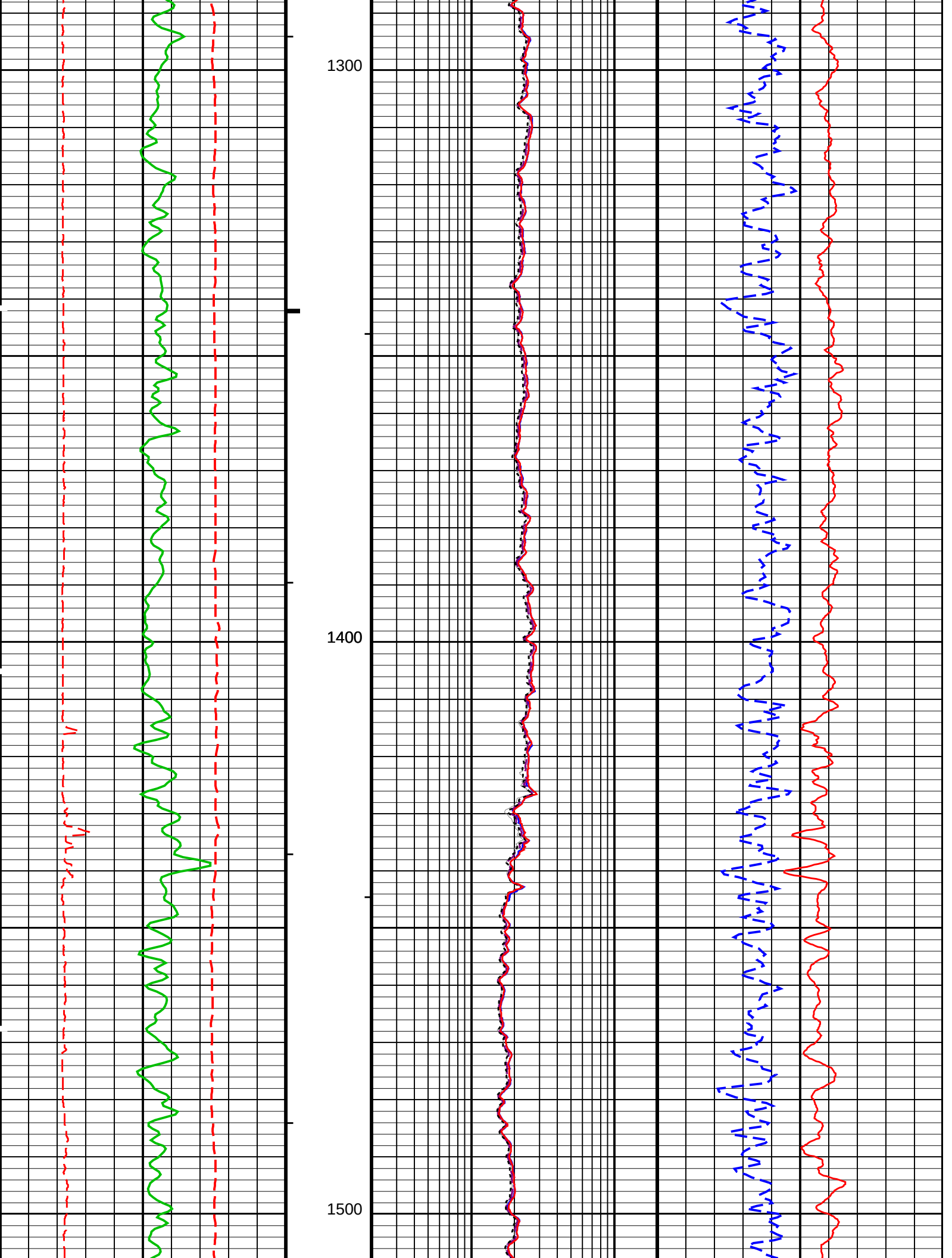
	AIT−H 90 Inch Investigation (AHT90) 0.2 (OHMM) 20	
SP (SP) −160 (MV) 40	AIT−H 20 Inch Investigation (AHT20) 0.2 (OHMM) 20	NPOR BACKUP
Gamma Ray (GR) 0 (GAPI) 200	AIT−H 30 Inch Investigation (AHT30) 0.2 (OHMM) 20	Gas Effect
HILT Caliper (HCAL) 4 (IN) 14	AIT−H 60 Inch Investigation (AHT60) 0.2 (OHMM) 20	Alpha Processed Neutron Porosity (NPOR) 0.6 (V/V) 0
Stuck		

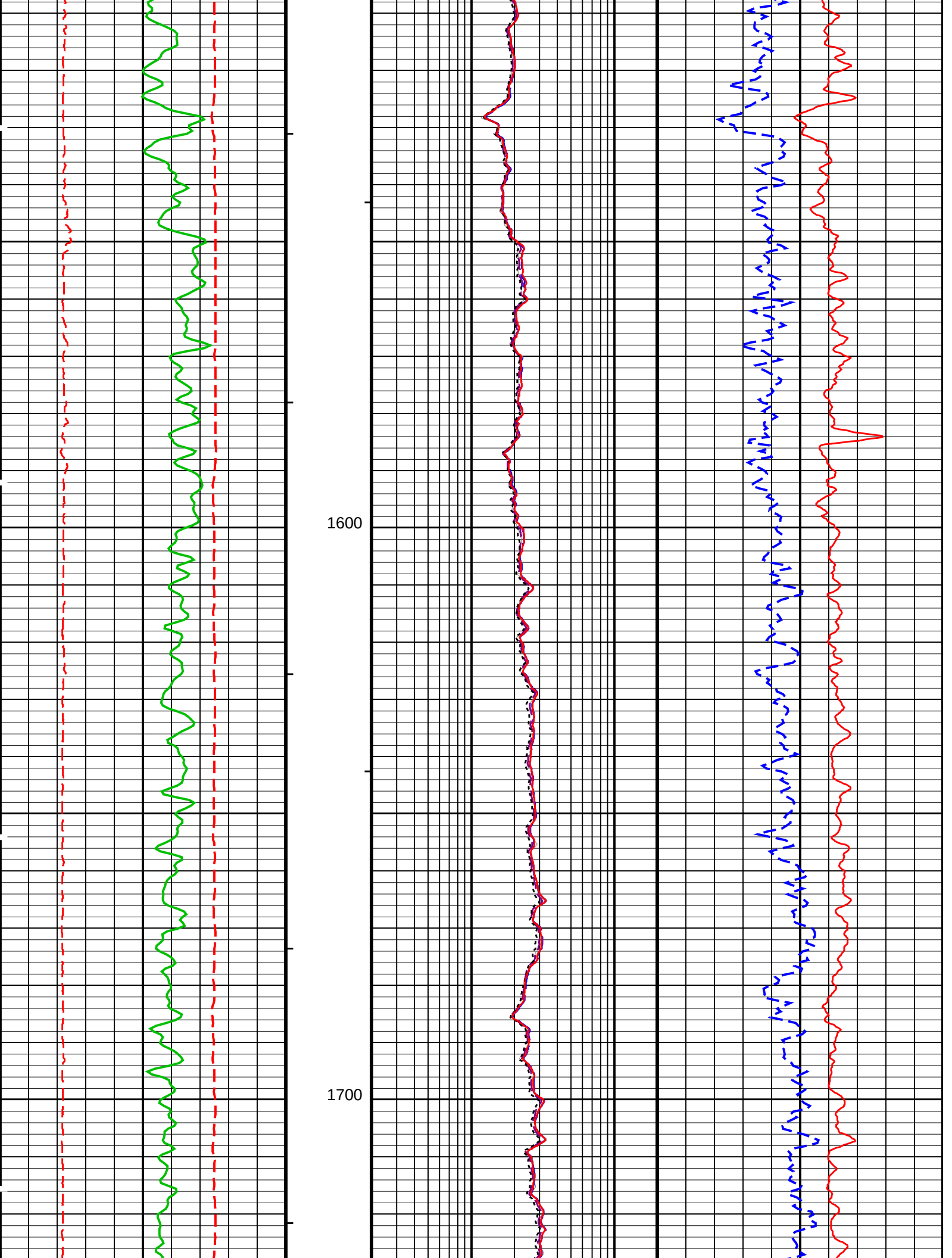

GR BACKUP
Stretch (STIT)
0 (F) 50
AIT−H 10 Inch Investigation (AHT10)
0.2 (OHMM) 20
Std. Res. Density Porosity (DPHZ)
0.6 (V/V) 0
450.0 FT
−CSG−
500
600

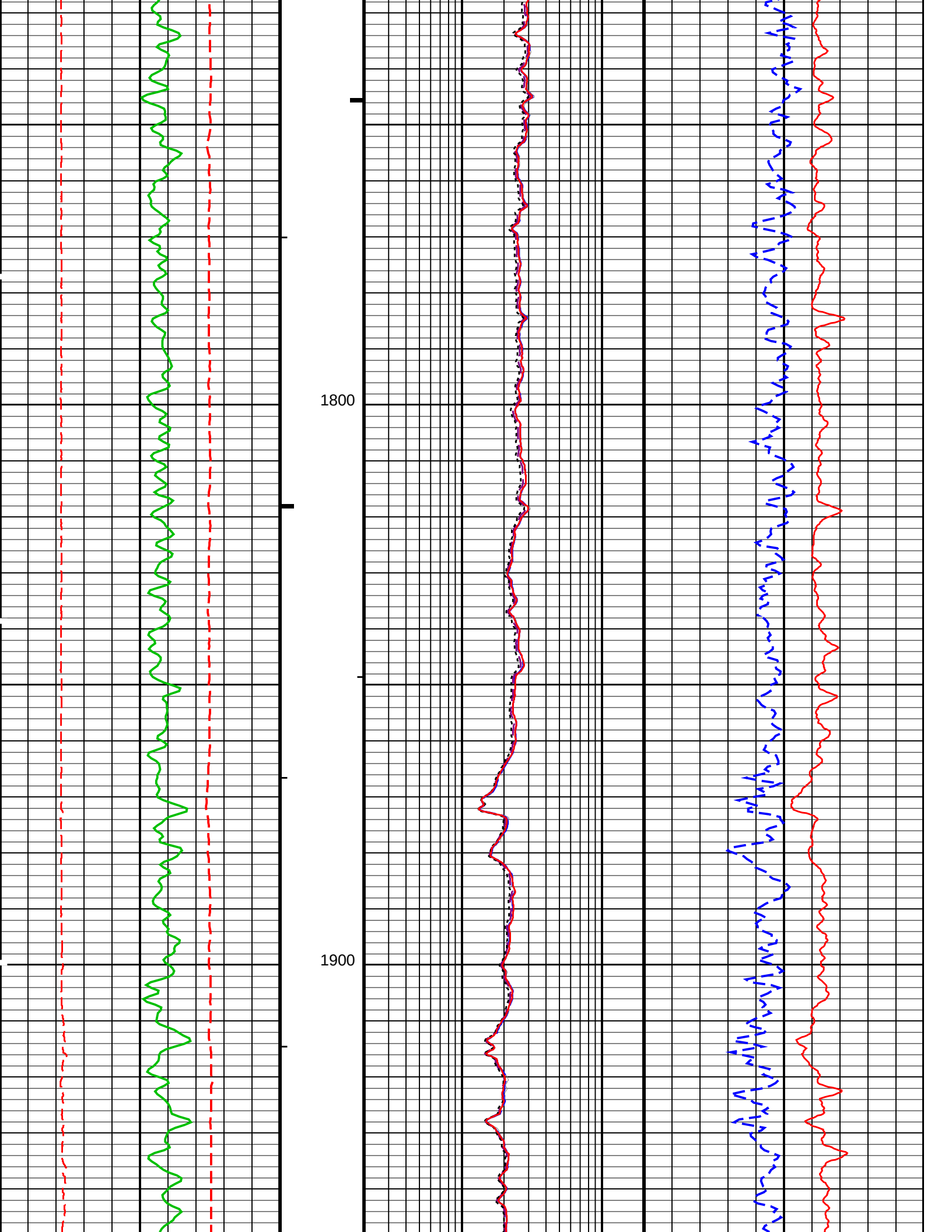

700
800

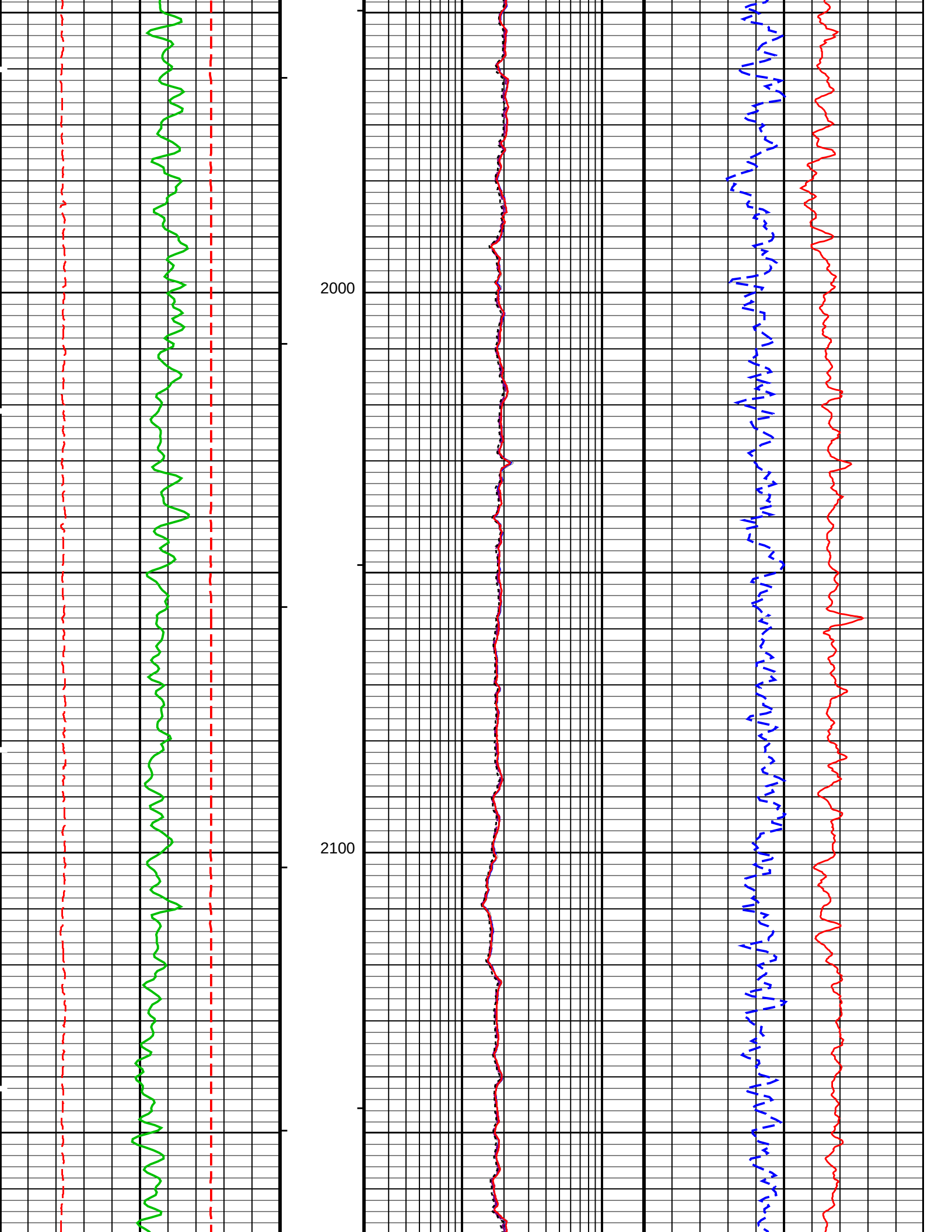

900
1000

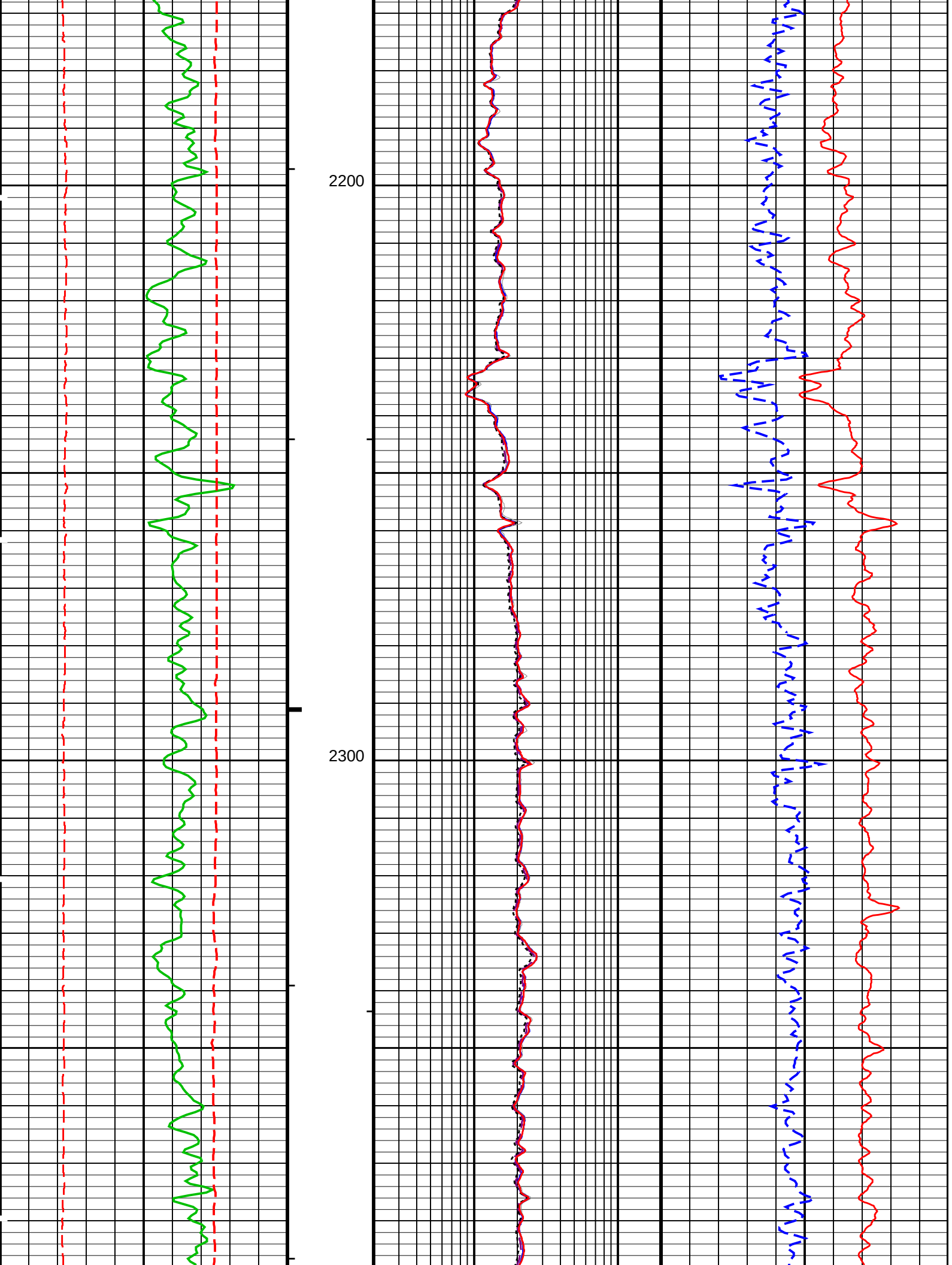

1100
1200

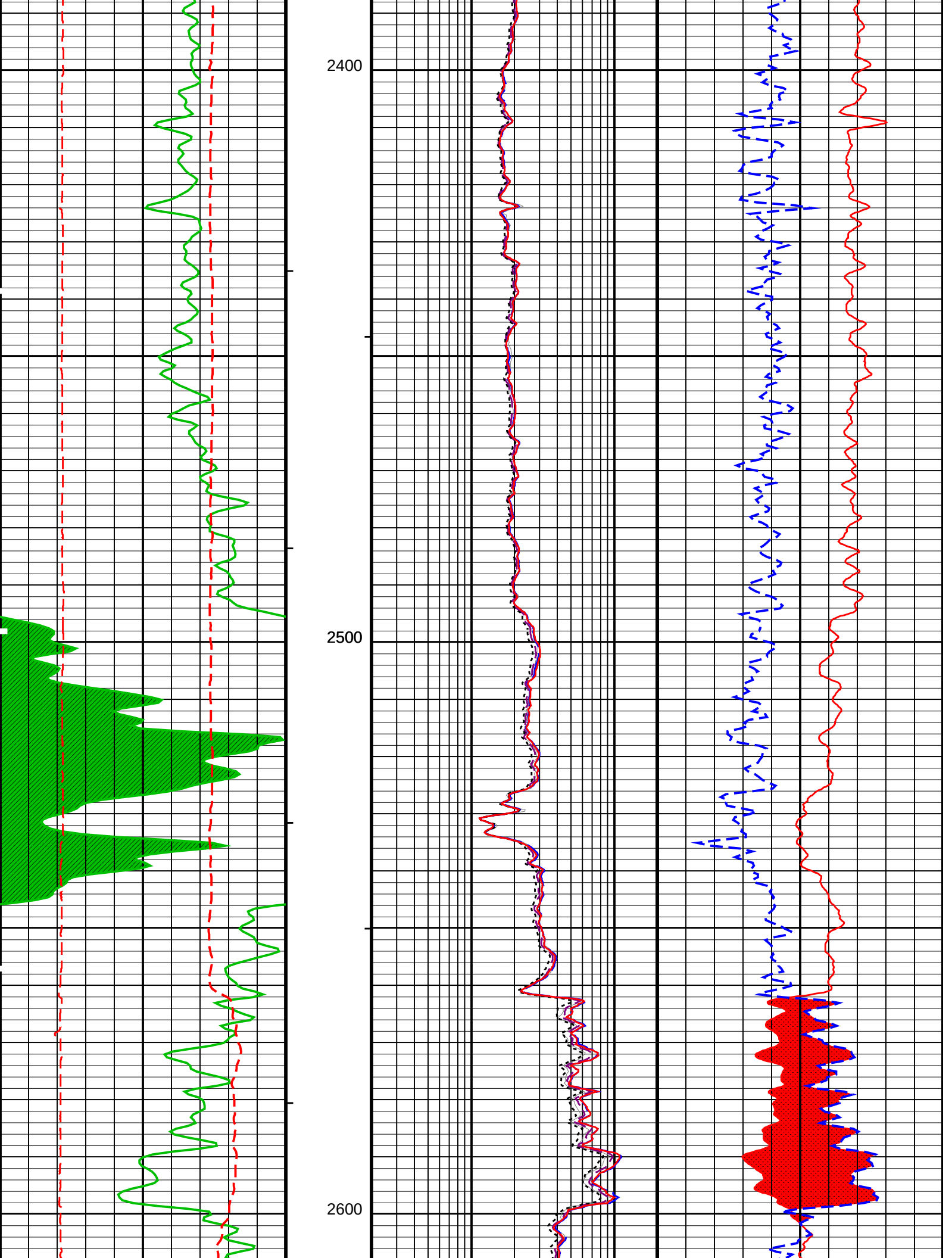

1300
1400
1500

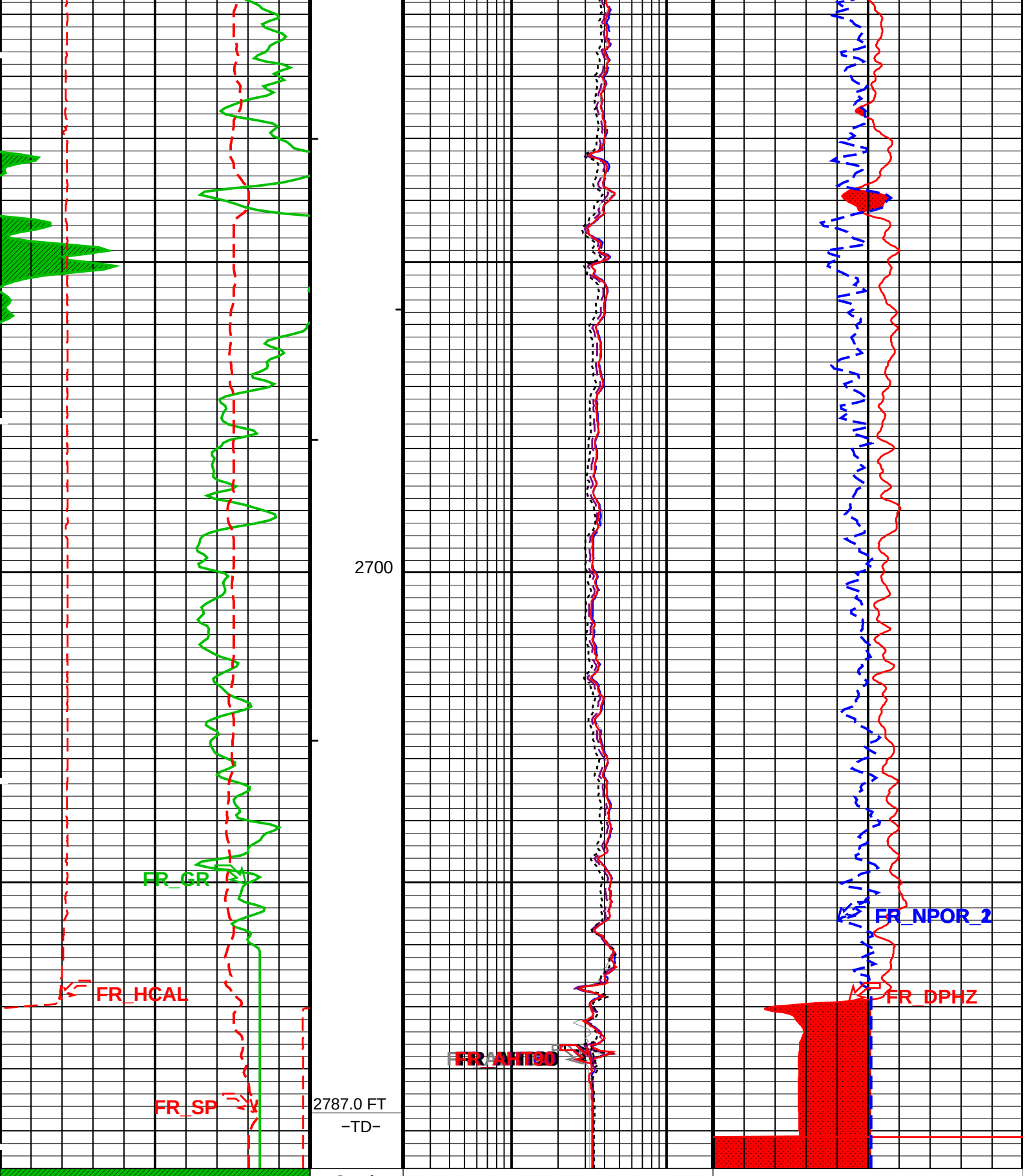

1600
1700

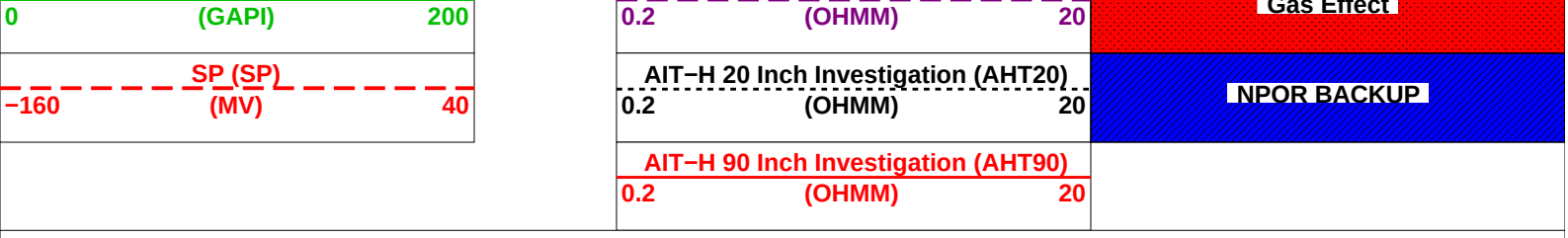

1800
1900


2000
2100


2200
2300


2400
2500
2600


2700
FR_GR
FR_HCAL
FR_SP
FR_AHT30
FR_NPOR_2
FR_DPHZ
2787.0 FT
-TD-
GR BACKUP
Stuck Stretch (STIT)
0 (F) 50
AIT-H 10 Inch Investigation (AHT10)
0.2 (OHMM) 20
Std. Res. Density Porosity (DPHZ)
0.6 (V/V) 0
HILT Caliper (HCAL)
4 (IN) 14
AIT-H 60 Inch Investigation (AHT60)
0.2 (OHMM) 20
Alpha Processed Neutron Porosity (NPOR)
0.6 (V/V) 0
Gamma Ray (GR)
AIT-H 30 Inch Investigation (AHT30)



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		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBHV	Array Induction Borehole Correction Code Version Number	900	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHBLV	Array Induction Basic Logs Code Version Number	223	
AHCDE	Array Induction Casing Detection Enable	Yes	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
AHRFV	Array Induction Radial Profiling Code Version Number	701	
AHRPV	Array Induction Radial Parametrization Code Version Number	232	
AHSTA	Array Induction Tool Standoff	0.125	IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	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	
SPNV	SP Next Value	0	MV
	FEQL: Formation Evaluation Quick Look		
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	

SHT	Surface Hole Temperature	68	DEGF
PERT: Preliminary Evaluation − Real Time			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
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	2784.00	FT
TDL	Total Depth − Logger	2787.00	FT
System and Miscellaneous			
BS	Bit Size	6.250	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	17.00	LB/F
DFD	Drilling Fluid Density	8.90	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	20.00	FT
MST	Mud Sample Temperature	55.00	DEGF
RMFS	Resistivity of Mud Filtrate Sample	0.1928	OHMM
TD	Total Depth	2787	FT

Format: COMBO_LOG Vertical Scale: 5" per 100’ Graphics File Created: 18−Dec−2010 21:16

OP System Version: 18C0−147

HILTB−CTS 18C0−147

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_007LUP FN:6 PRODUCER 18−Dec−2010 21:16

Schlumberger

REPEAT ANALYSIS

MAXIS Field Log

Input DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_004LUP FN:3 PRODUCER 18−Dec−2010 21:02 2796.0 FT 2342.2 FT

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_007LUP FN:6 PRODUCER 18−Dec−2010 21:16

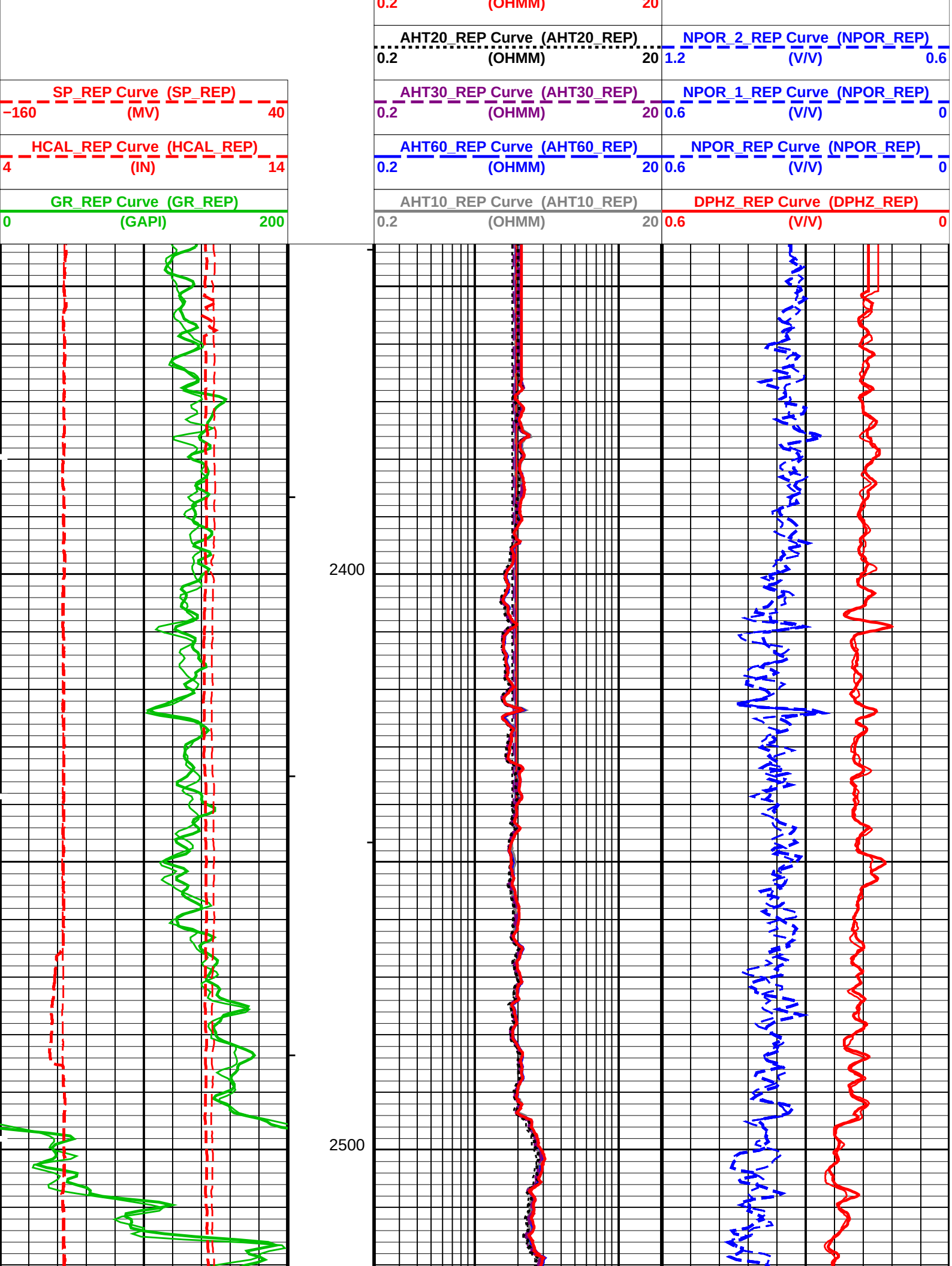
OP System Version: 18C0−147

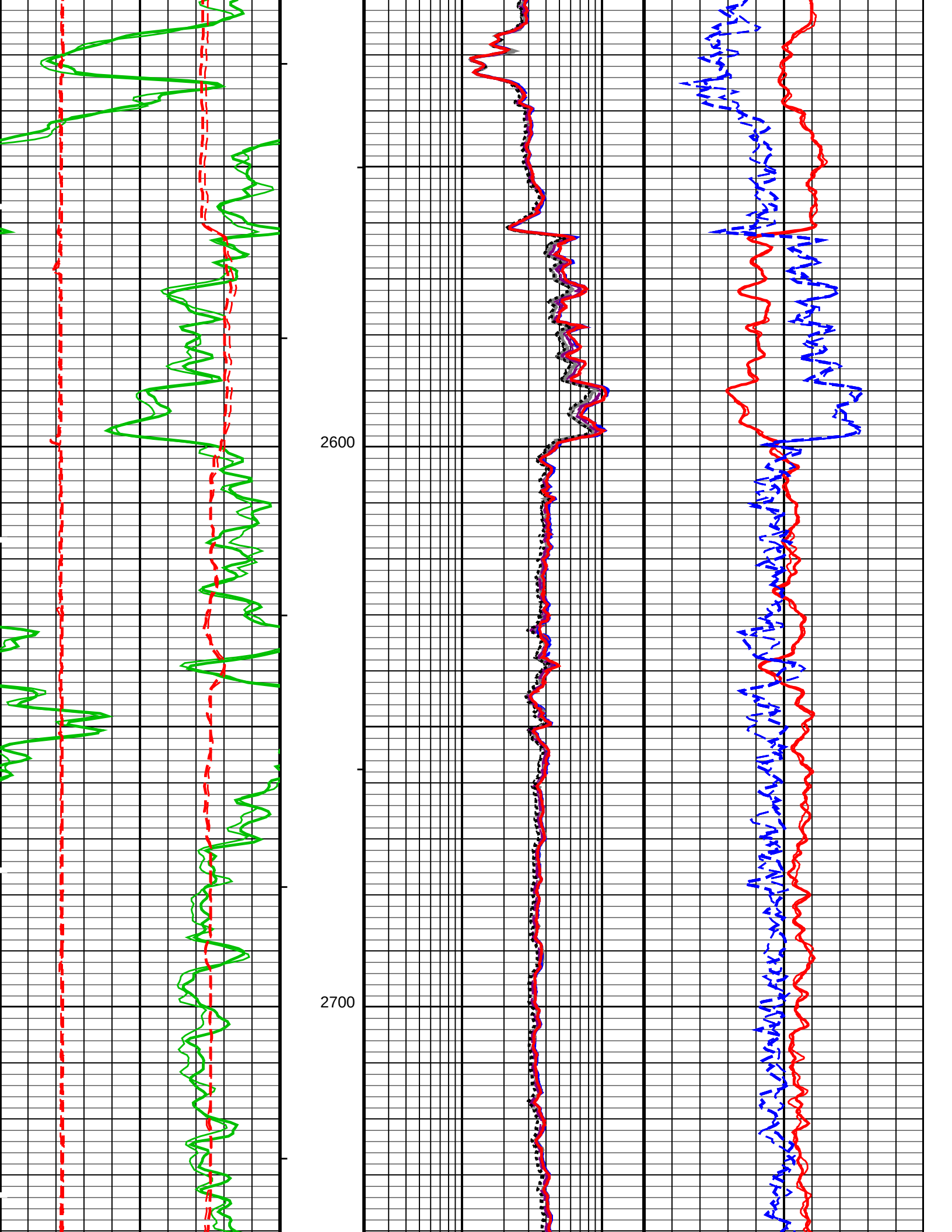
HILTB−CTS 18C0−147

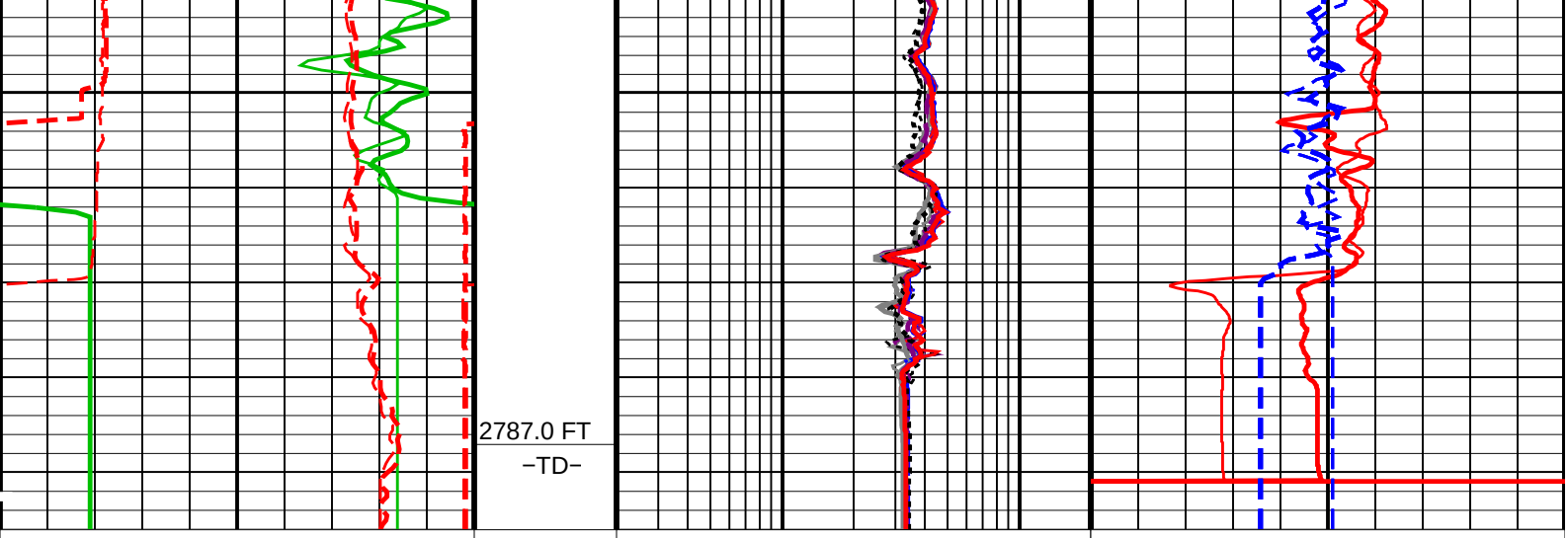
PIP SUMMARY

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

AHT90_REP Curve (AHT90_REP)


0.2 (OHMM) 20
AHT20_REP Curve (AHT20_REP)
0.2 (OHMM) 20
NPOR_2_REP Curve (NPOR_REP)
1.2 (V/V) 0.6
SP_REP Curve (SP_REP)
−160 (MV) 40
AHT30_REP Curve (AHT30_REP)
0.2 (OHMM) 20
NPOR_1_REP Curve (NPOR_REP)
0.6 (V/V) 0
HCAL_REP Curve (HCAL_REP)
4 (IN) 14
AHT60_REP Curve (AHT60_REP)
0.2 (OHMM) 20
NPOR_REP Curve (NPOR_REP)
0.6 (V/V) 0
GR_REP Curve (GR_REP)
0 (GAPI) 200
AHT10_REP Curve (AHT10_REP)
0.2 (OHMM) 20
DPHZ_REP Curve (DPHZ_REP)
0.6 (V/V) 0
2400
2500


2600
2700



GR_REP Curve (GR_REP)		
0	(GAPI)	200

HCAL_REP Curve (HCAL_REP)		
4	(IN)	14

SP_REP Curve (SP_REP)		
−160	(MV)	40

AHT10_REP Curve (AHT10_REP)		
0.2	(OHMM)	20

AHT60_REP Curve (AHT60_REP)		
0.2	(OHMM)	20

AHT30_REP Curve (AHT30_REP)		
0.2	(OHMM)	20

AHT20_REP Curve (AHT20_REP)		
0.2	(OHMM)	20

AHT90_REP Curve (AHT90_REP)		
0.2	(OHMM)	20

DPHZ_REP Curve (DPHZ_REP)		
0.6	(V/V)	0

NPOR_REP Curve (NPOR_REP)		
0.6	(V/V)	0

NPOR_1_REP Curve (NPOR_REP)		
0.6	(V/V)	0

NPOR_2_REP Curve (NPOR_REP)		
1.2	(V/V)	0.6

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		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
AHBHV	Array Induction Borehole Correction Code Version Number	900	
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
AHBLV	Array Induction Basic Logs Code Version Number	223	
AHCDE	Array Induction Casing Detection Enable	Yes	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
AHRFV	Array Induction Radial Profiling Code Version Number	701	
AHRPV	Array Induction Radial Parametrization Code Version Number	232	
AHSTA	Array Induction Tool Standoff	0.125	IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	

GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	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	
SPNV	SP Next Value	0	MV
FEQL: Formation Evaluation Quick Look			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
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
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
PERT: Preliminary Evaluation − Real Time			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	145	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
STI: Stuck Tool Indicator			
TDL	Total Depth − Logger	2787.00	FT
System and Miscellaneous			
BS	Bit Size	6.250	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	17.00	LB/F
DFD	Drilling Fluid Density	8.90	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	20.00	FT
MST	Mud Sample Temperature	55.00	DEGF
RMFS	Resistivity of Mud Filtrate Sample	0.1928	OHMM
TD	Total Depth	2787	FT

Format: COMBO_LOG_REP **Vertical Scale: 5" per 100'** **Graphics File Created: 18−Dec−2010 21:16**

OP System Version: 18C0−147

HILTB−CTS	18C0−147

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_004LUP	FN:3	PRODUCER	18−Dec−2010 21:02	2796.0 FT	2342.2 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007LUP	FN:6	PRODUCER	18−Dec−2010 21:16

Company: **Noble Energy Inc.**

Schlumberger

Well: **RMR Ranch 13−36**

Field: **Schramm**

County: **Yuma**

State:	**Colorado**
	Platform Express Triple Combo