



Induction Array Log

Company CRECO Operating, LLC
Well Holy Cow #1
Field Enterprise N.E
County Cowley State Kansas

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Field Enterprise N.E
County Cowley
State Kansas

Location: 990' FNL & 330' FEL
SE NE NE
SEC 35 TWP 33 S. RGE 3 E
Permanent Datum G.L. Elevation 1168 ft.
Log Measured From K.B. , 10 ft. above perm. datum
Drilling Measured From K.B. G.L. Elevation 1178 ft.
D.F. 1177 ft.
G.L. 1168 ft.

Date	9/15/2011		
Run Number	One		
Depth Driller	3915 ft		
Depth Logger	3908 ft		
Bottom Logged Interval	3899 ft		
Top Log Interval	338 ft		
Casing Driller	10.75 in @ 338 ft	@	@
Casing Logger	338 ft		
Bit Size	9.5 in	@	@
Type Fluid in Hole	WBM		
Density / Viscosity	8.7 / 70		
pH / Fluid Loss	10.5 / 5		
Source of Sample	Flowline		
Rm @ Meas. Temp	1.0 @ 65 degF	@	@
Rmt @ Meas. Temp	0.8 @ 65 degF	@	@
Rmc @ Meas. Temp	1.3 @ 65 degF	@	@
Source of Rmt / Rmc	Measured		
Rm @ BHT	.63 @ 107 degF	@	@
Time Circulation Stopped	1430		
Time Logger on Bottom	1915		
Maximum Recorded Temperature	107 degF		
Equipment Number	10001		
Location	OKC		
Recorded By	M.Gardner	W.Miller	
Witnessed By	D.Carmen		

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Equipment and Log Data

Date: 9/15/2011 Service Order: 10214

Gamma		Density		Neutron		Sonic		IAT	
Run No.	One	Run No.	One	Run No.	One	Run No.	One	Run No.	One
Serial No.	10047	Serial No.	10110	Serial No.	10071	Serial No.		Serial No.	10106
O.D.	3.375 in.	Source No.	129B	Source No.	05	Centralizers		Standoffs	2 @ 1.5
		O.D.	4.5 in.	O.D.	3.375 in.	O.D.	3.375 in.	O.D.	3.875 in.

Logging Pass Data

General		Gamma		Density		Neutron		Sonic		IAT	
		Scales		Scales		Scales		Scales		Scales	
Run	Depths	Left	Right	Left	Right	Matrix	Left	Right	Matrix	Left	Right
One	3908 338	0	150	30%	-10%	2.71	30%	-10%	LIME	0.2	2000

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

GR, MEL, CNL, LDT, and IAT all ran in combination.
Chlorides reported at 1800 mg/L.
LCM reported at 4%.
Neutron decentralized with bowspring.
Annular borehole volume calculated for 7" casing.

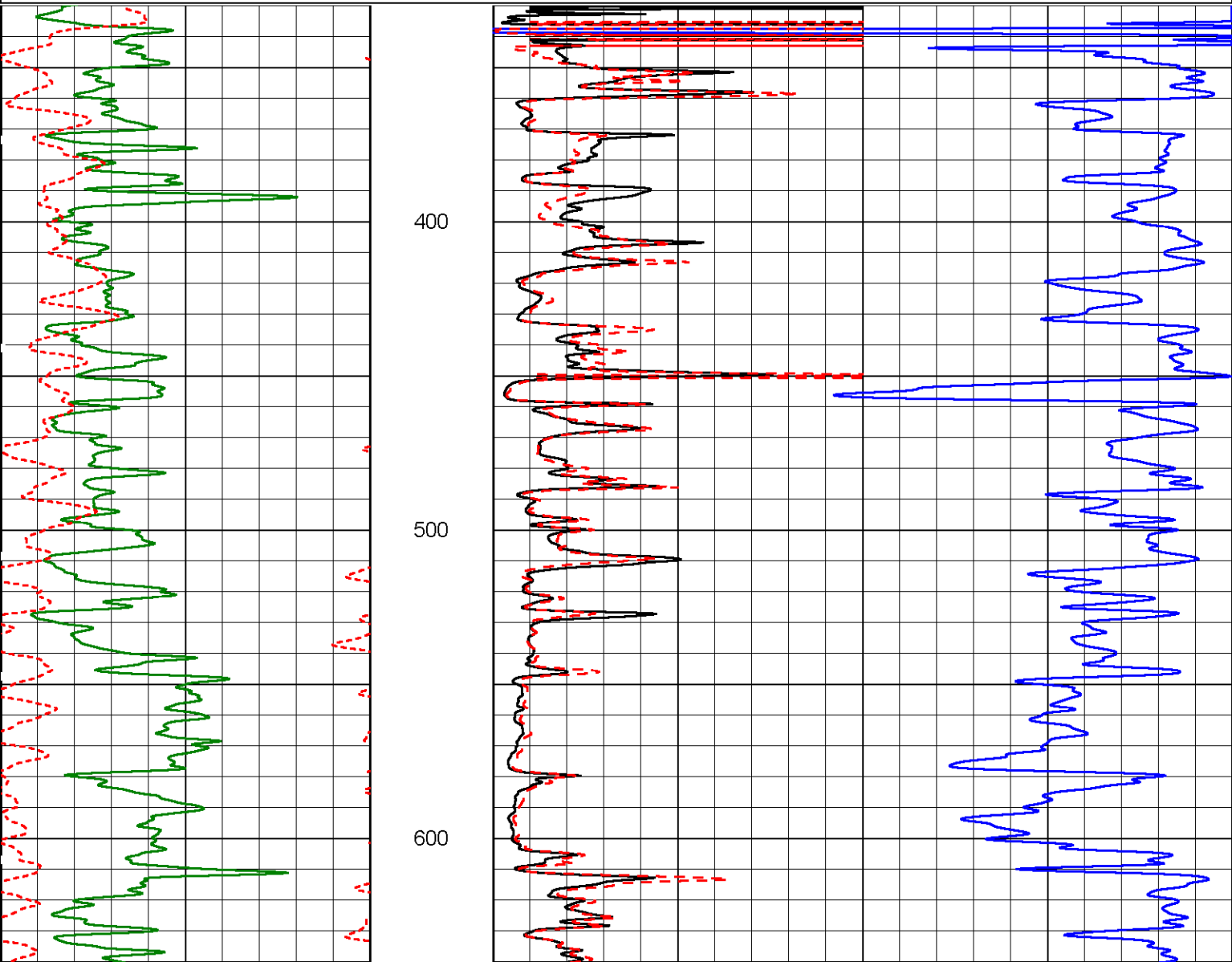
YOUR CREW TODAY: P.Murphy, K.Patton
THANK YOU FOR CHOOSING ALLIED WIRELINE. OKLAHOMA CITY, OK. (405) 445-7135.

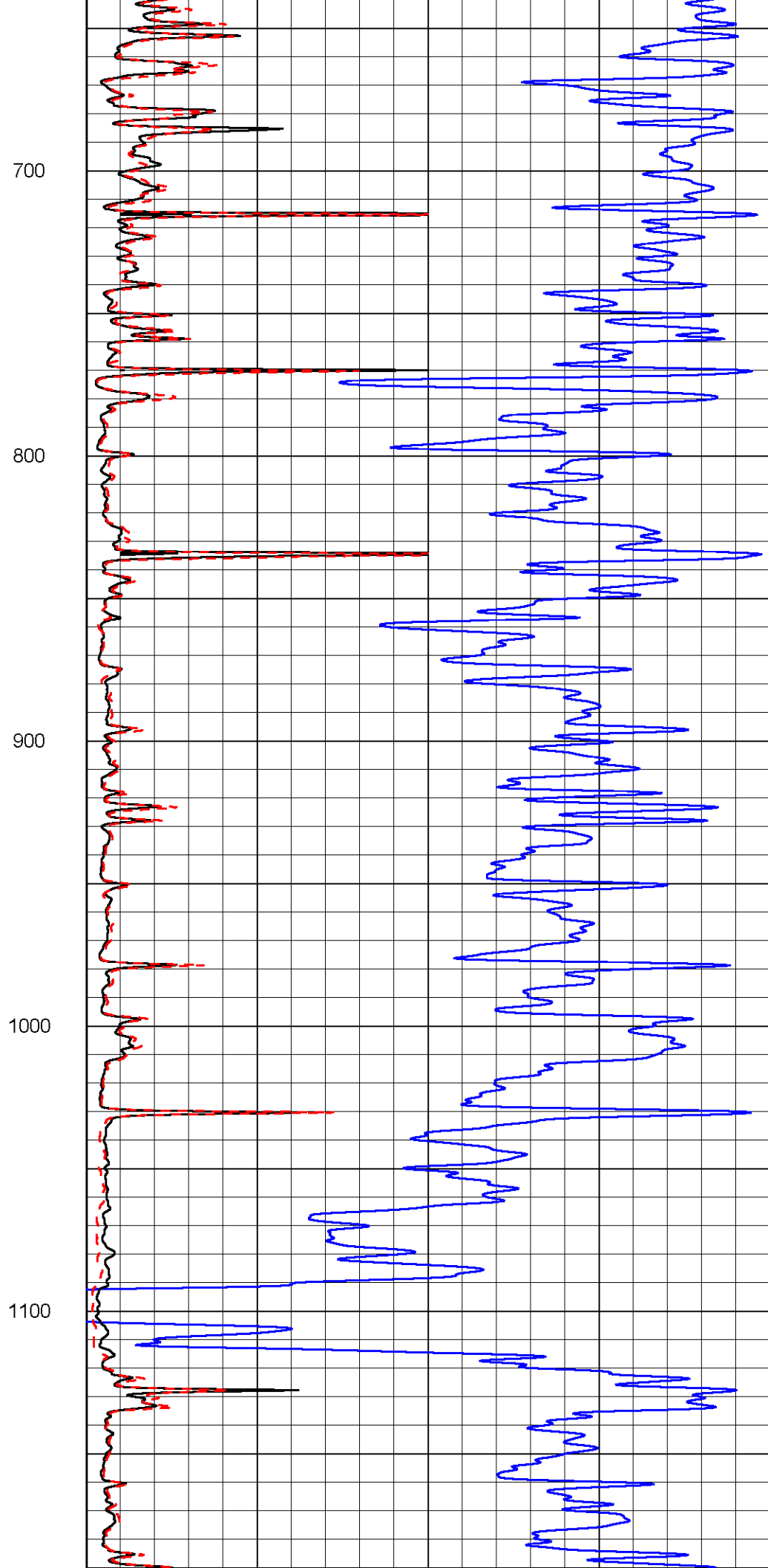
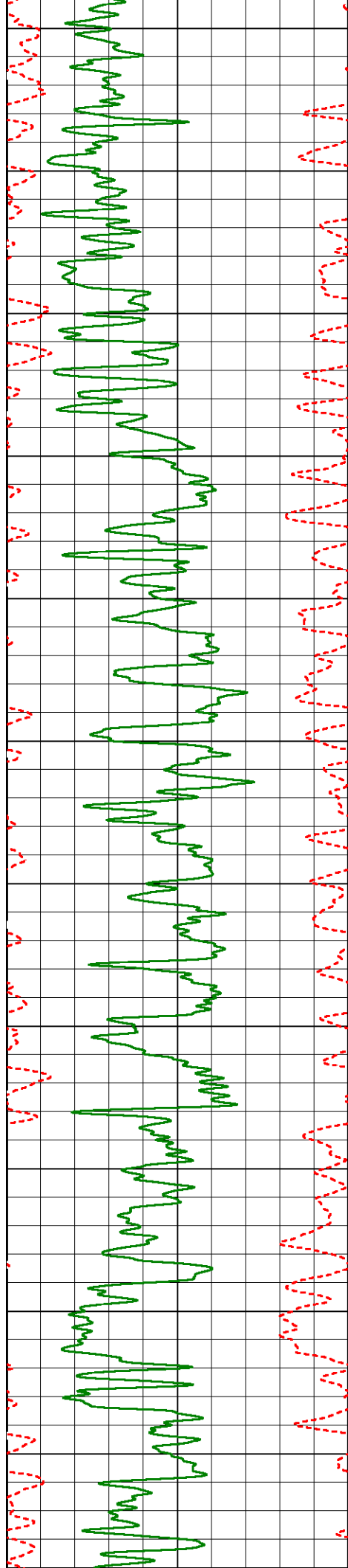


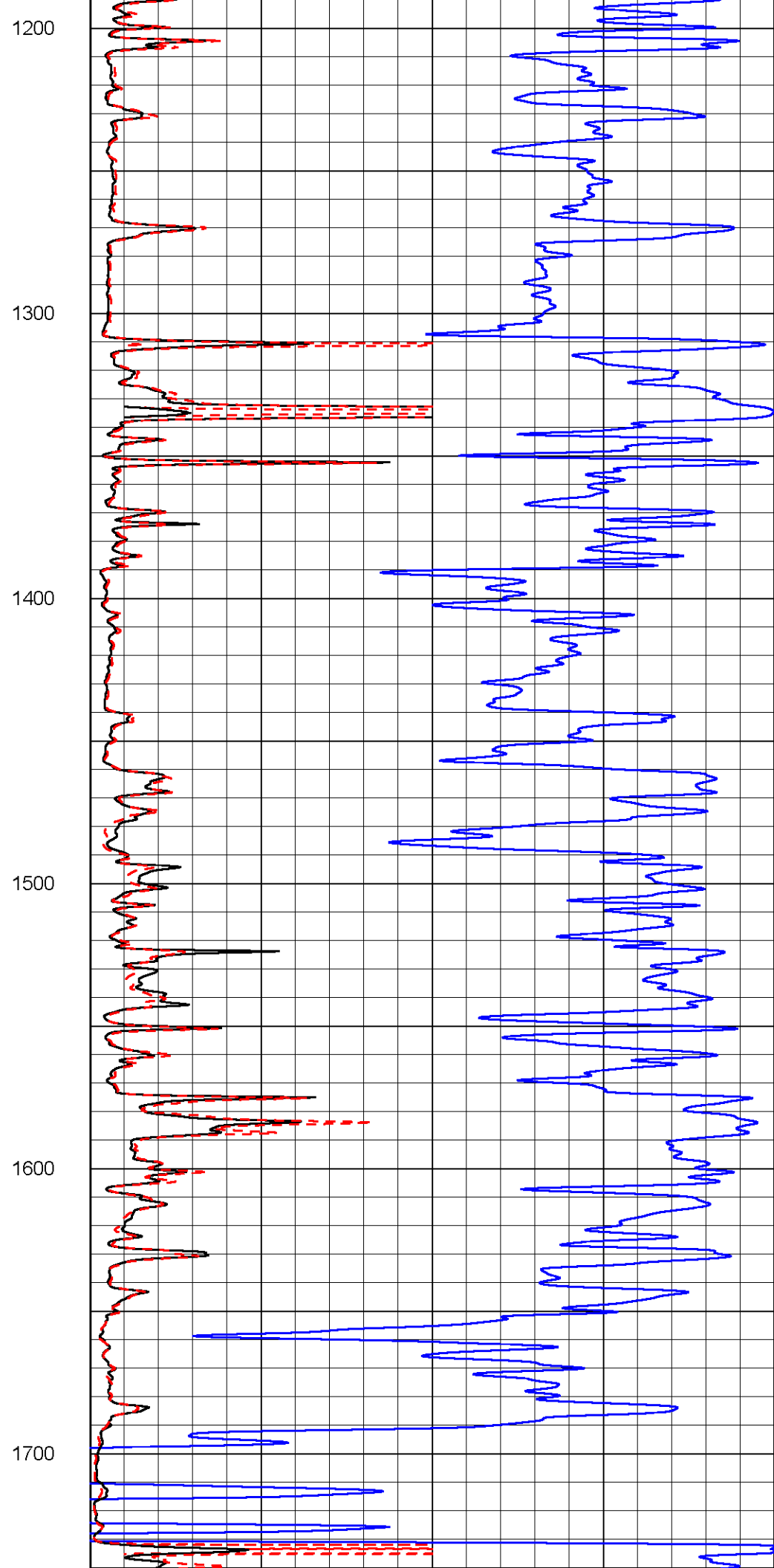
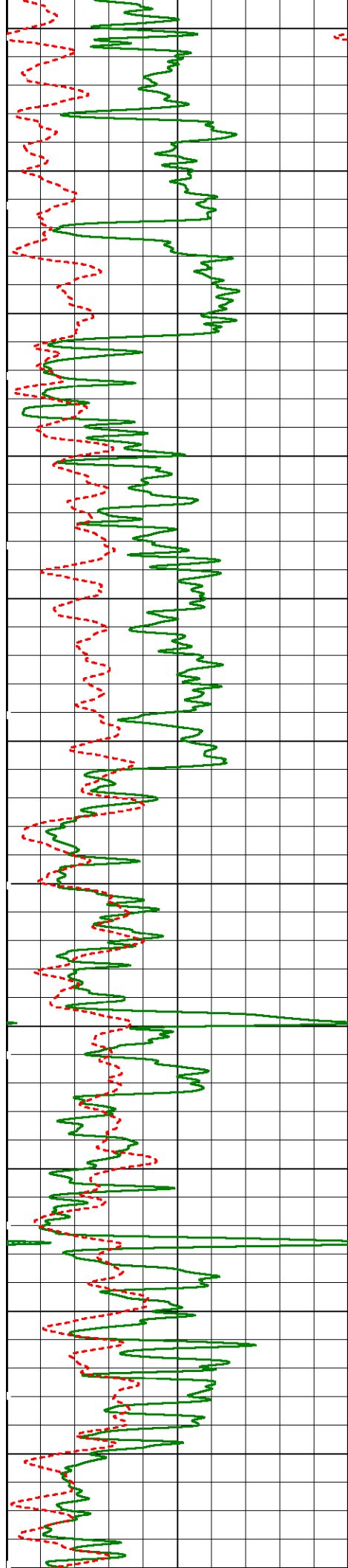
Main Pass

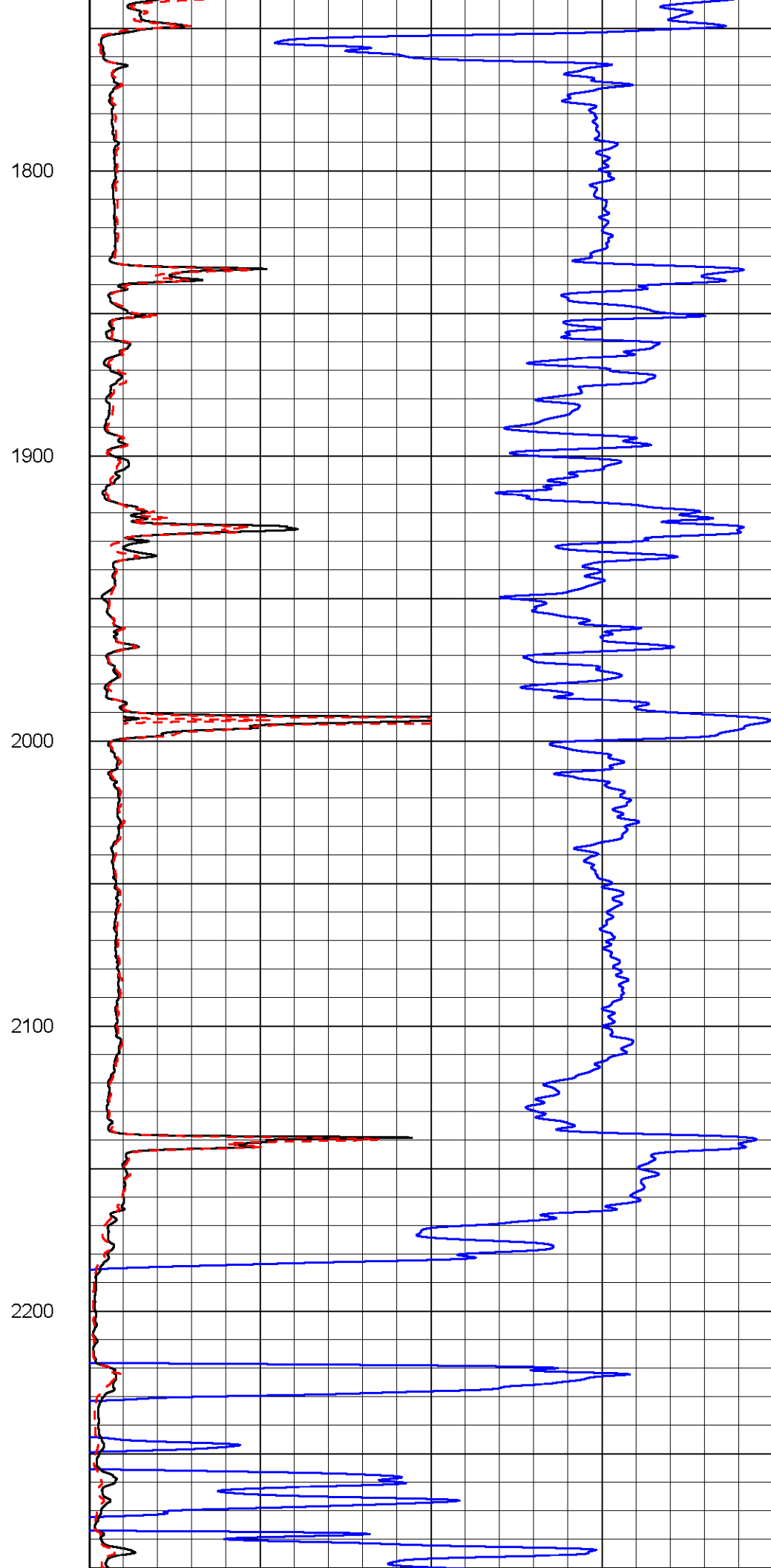
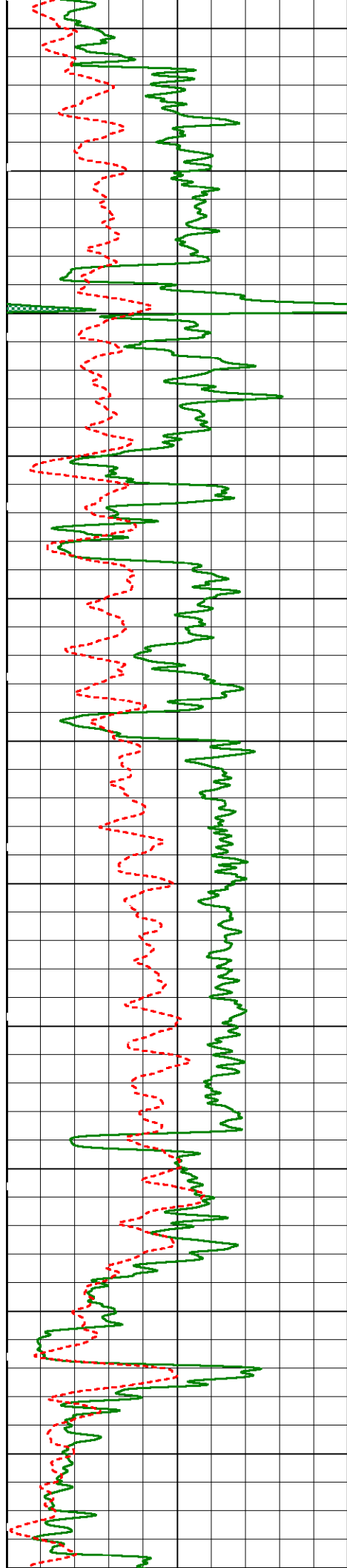
Database File:	holy_cow_1.db
Dataset Pathname:	Main
Presentation Format:	acond2
Dataset Creation:	Thu Sep 15 21:00:44 2011 by Calc Sondex V7.03
Charted by:	Depth in Feet scaled 1:600

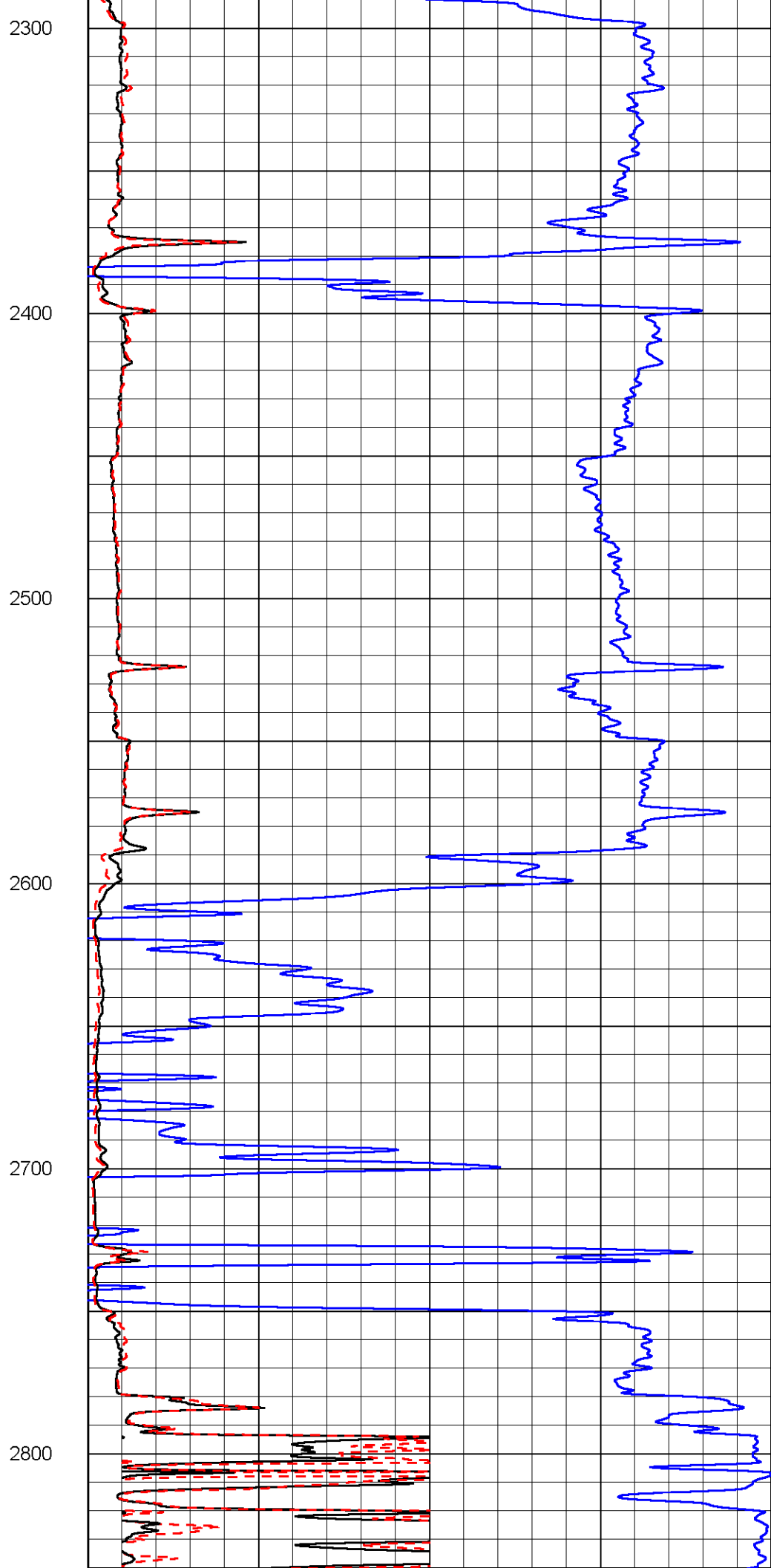
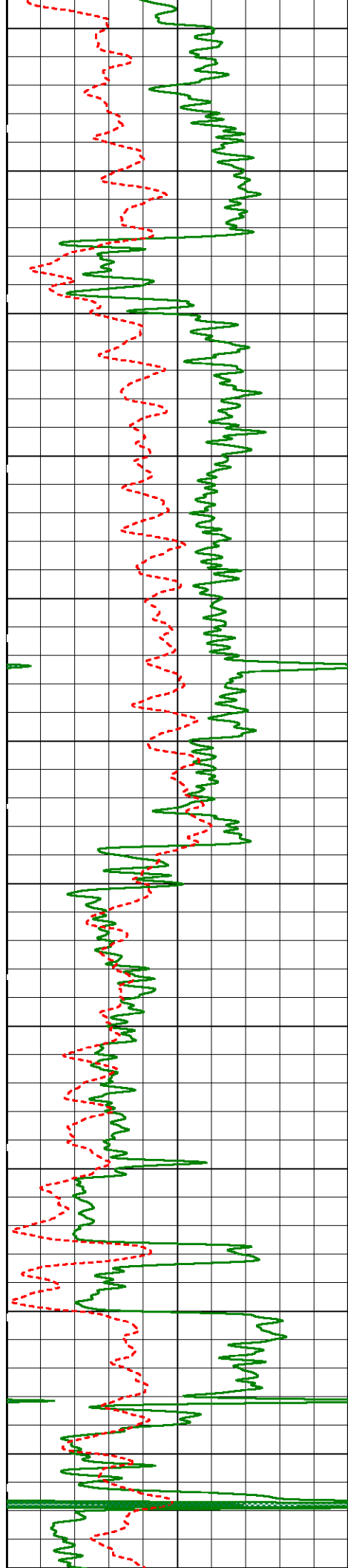
0	Gamma Ray (GAPI)	150	1000	90" Conductivity (mmho/m)	0
40	SP [-20mV+] (mV)	240	0	Shallow Resistivity (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50

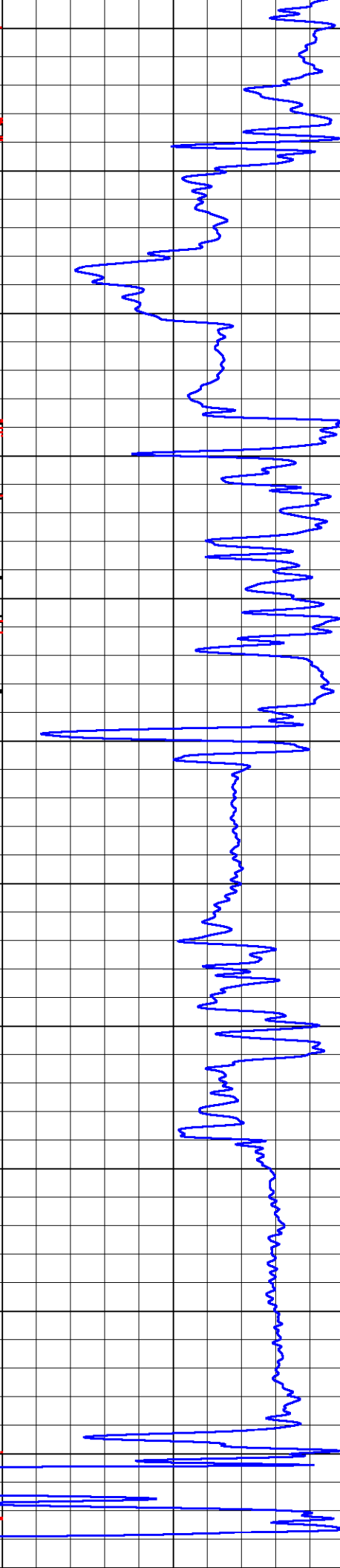
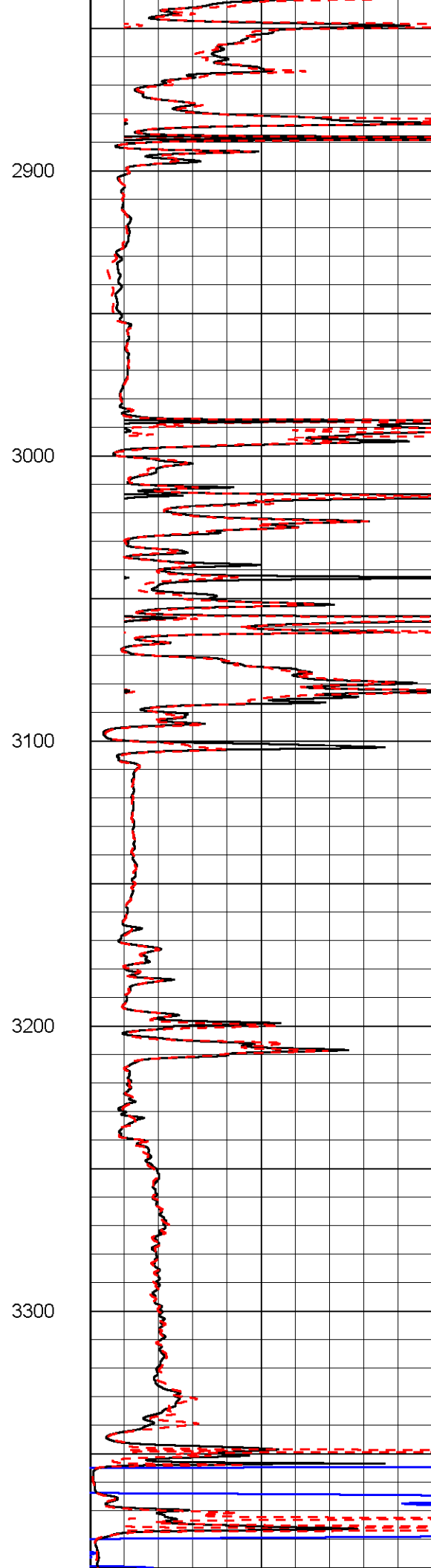
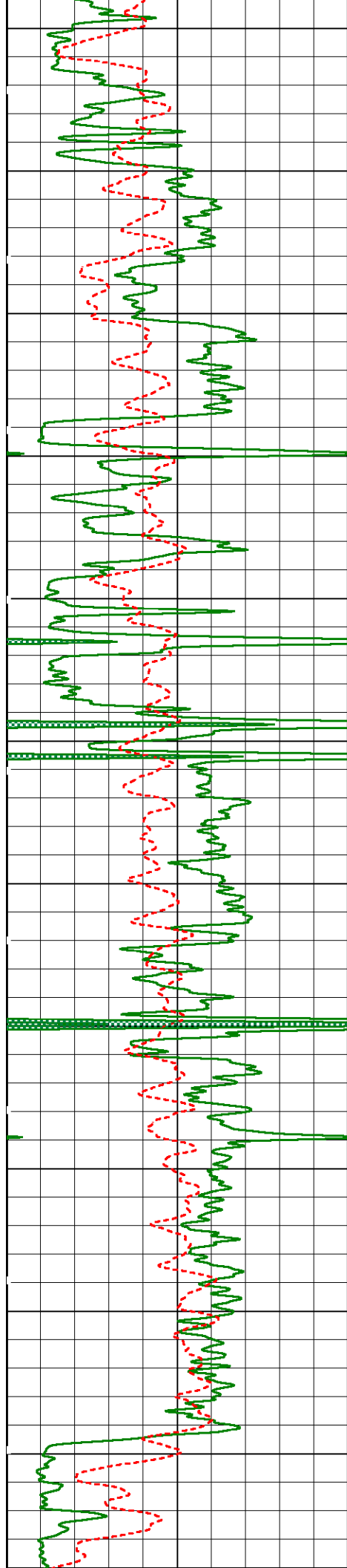


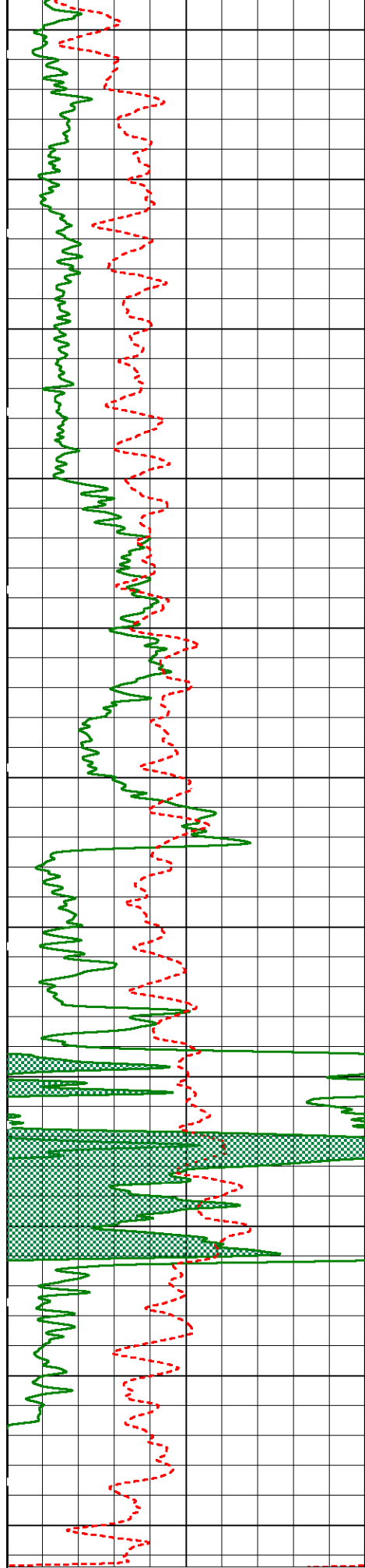




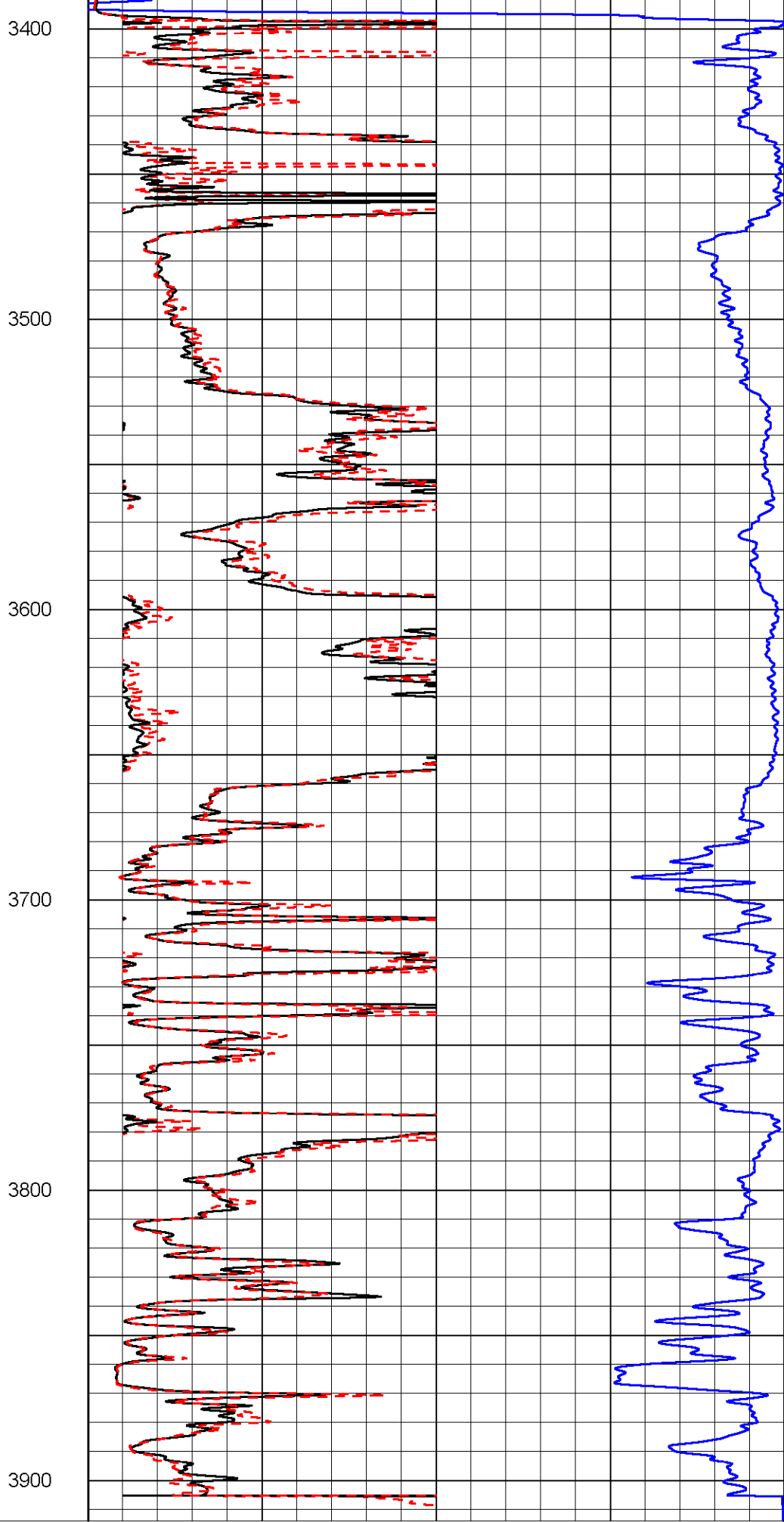








0	Gamma Ray (GAPI)	150
40	SP [-20mV+] (mV)	240



1000	90" Conductivity (mmho/m)	0
0	Shallow Resistivity (Ohm-m)	50



Main Pass

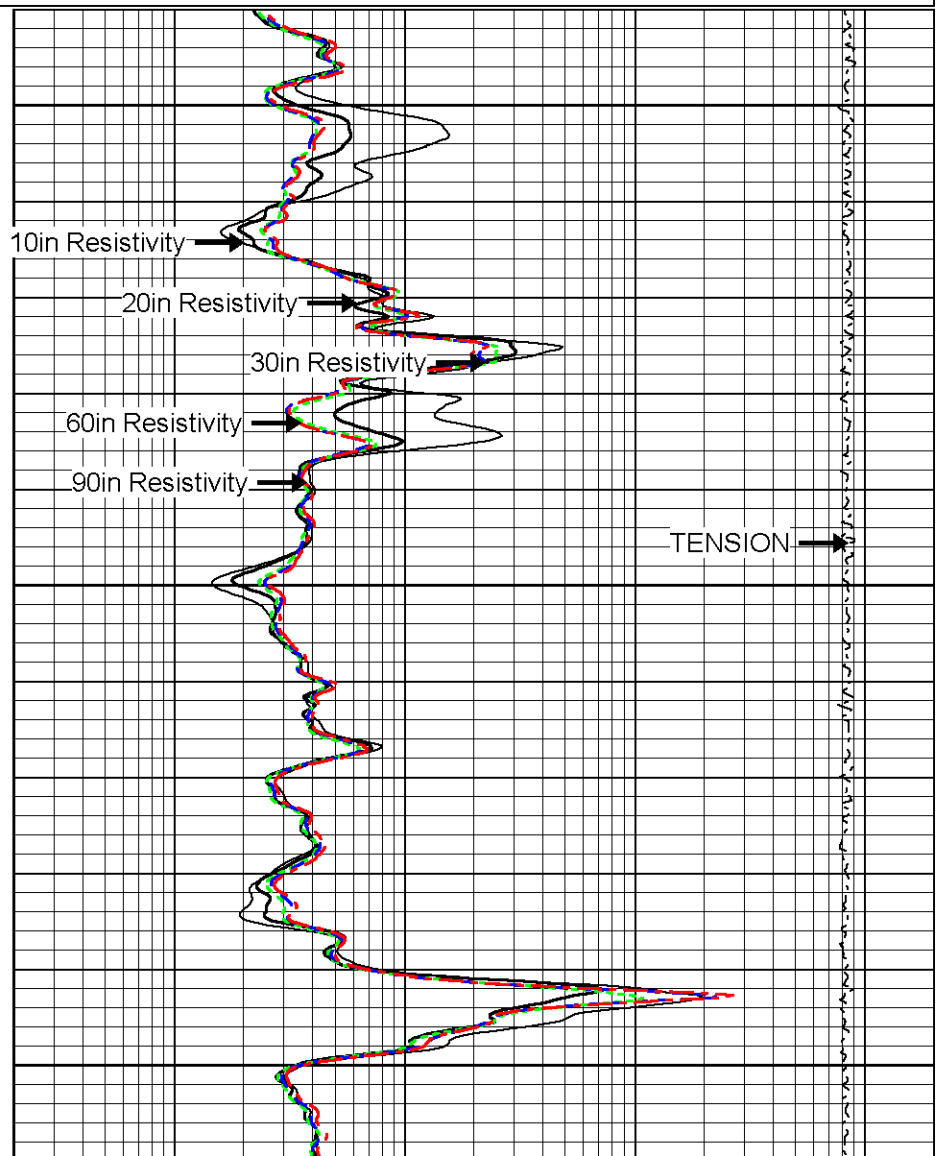
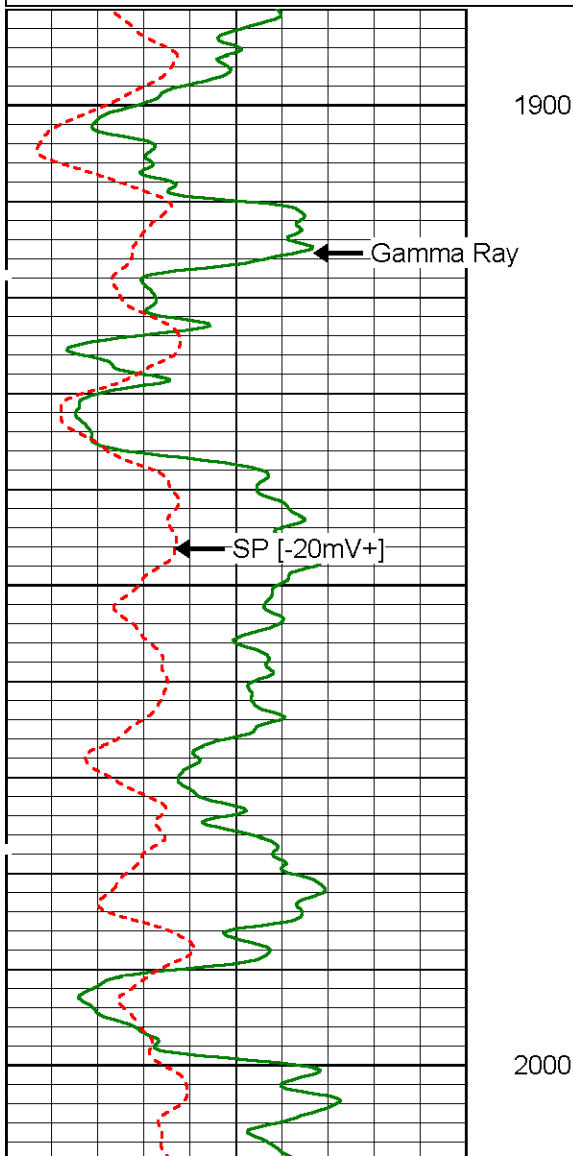


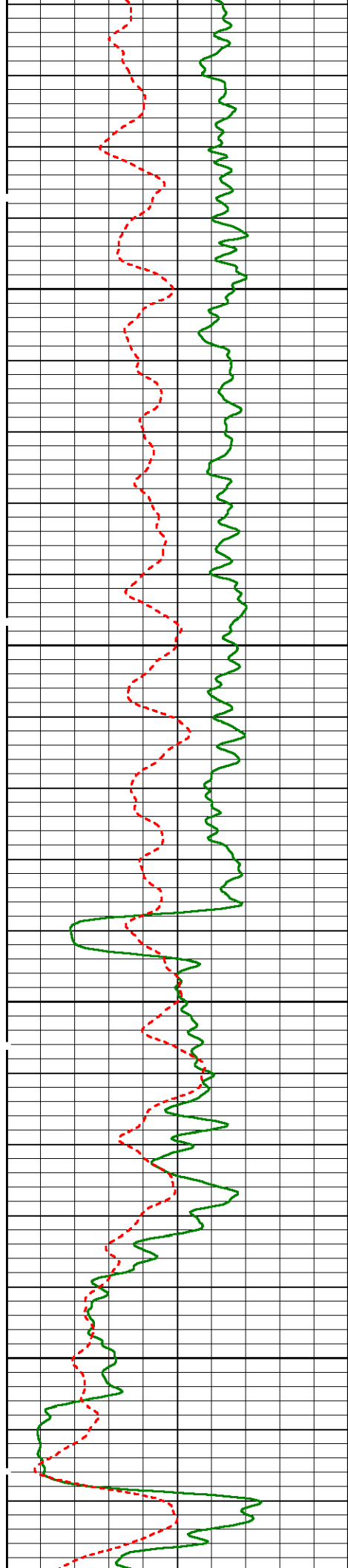
Main Pass

Database File: holy_cow_1.db
 Dataset Pathname: Main
 Presentation Format: aind2r10
 Dataset Creation: Thu Sep 15 21:00:44 2011 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

0 Gamma Ray (GAPI) 150
 SP [-20mV+]

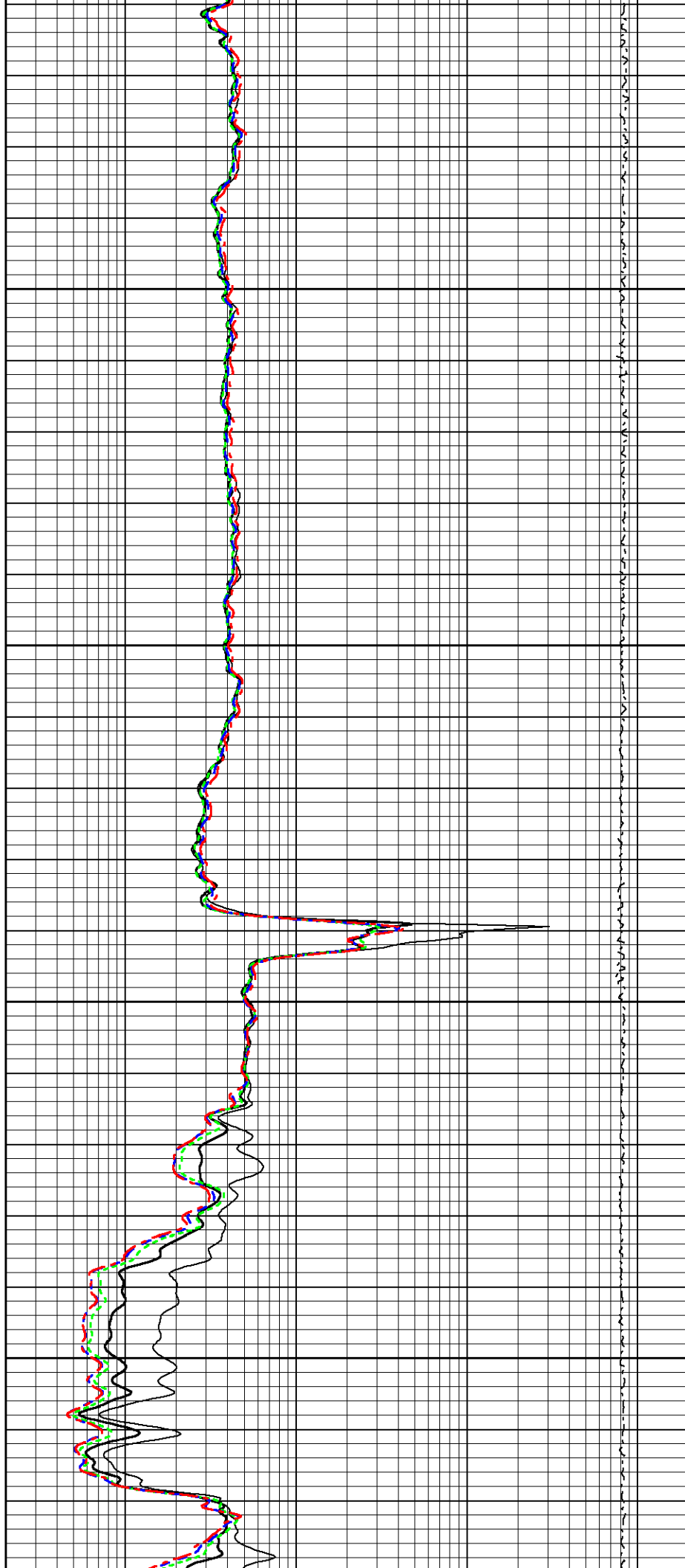
0.2 10in Resistivity (Ohm-m) 2000
 0.2 20in Resistivity (Ohm-m) 2000
 0.2 30in Resistivity (Ohm-m) 2000
 0.2 60in Resistivity (Ohm-m) 2000
 0.2 90in Resistivity (Ohm-m) 2000
 10000 TENSION (lb) 0

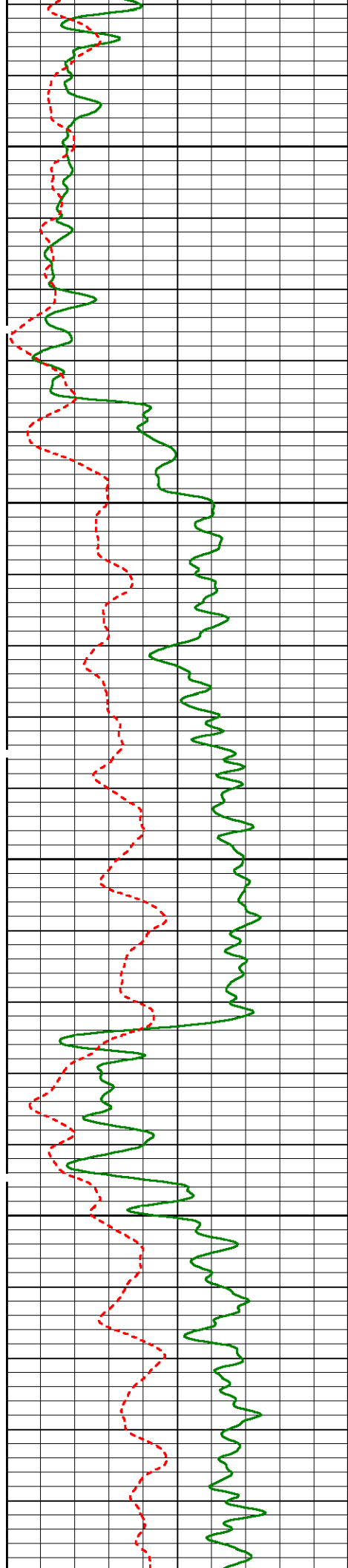




2100

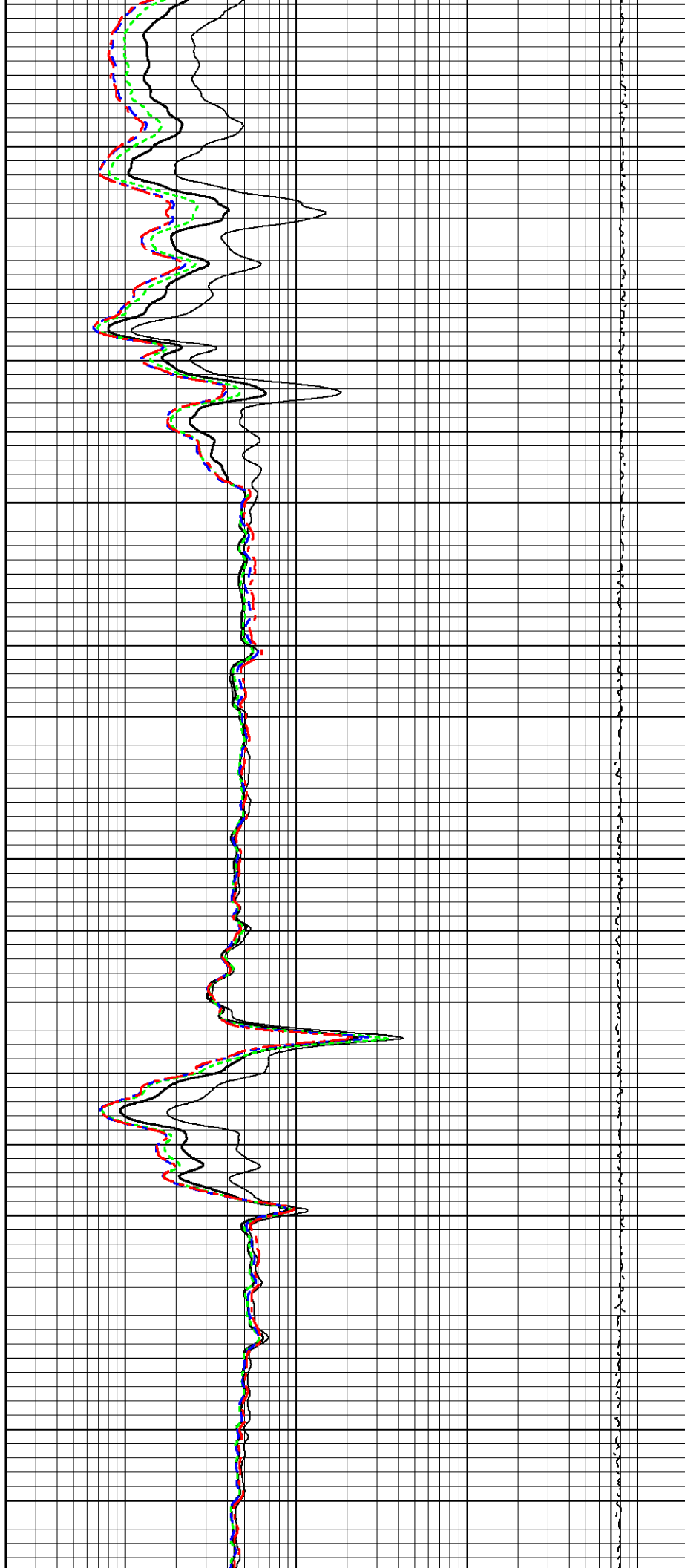
2200

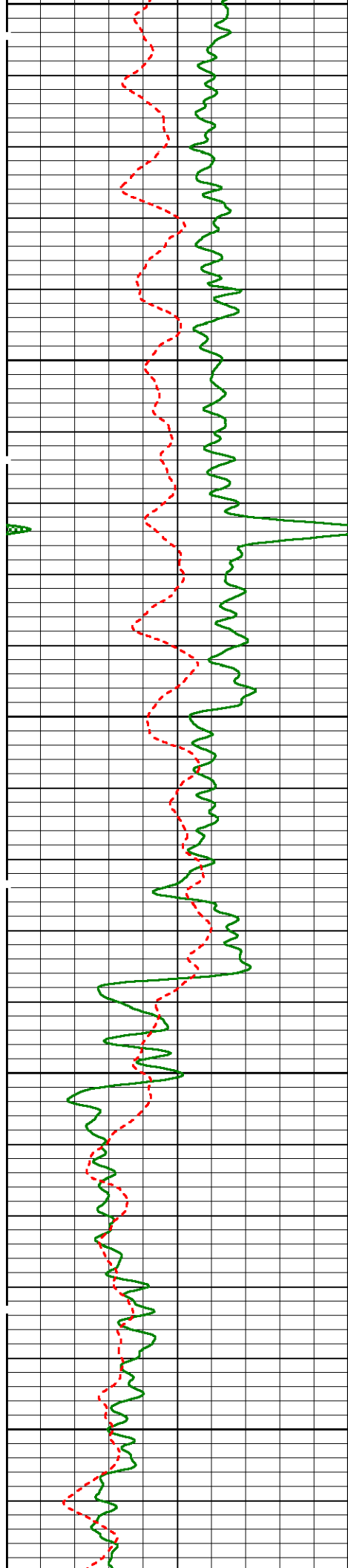




2300

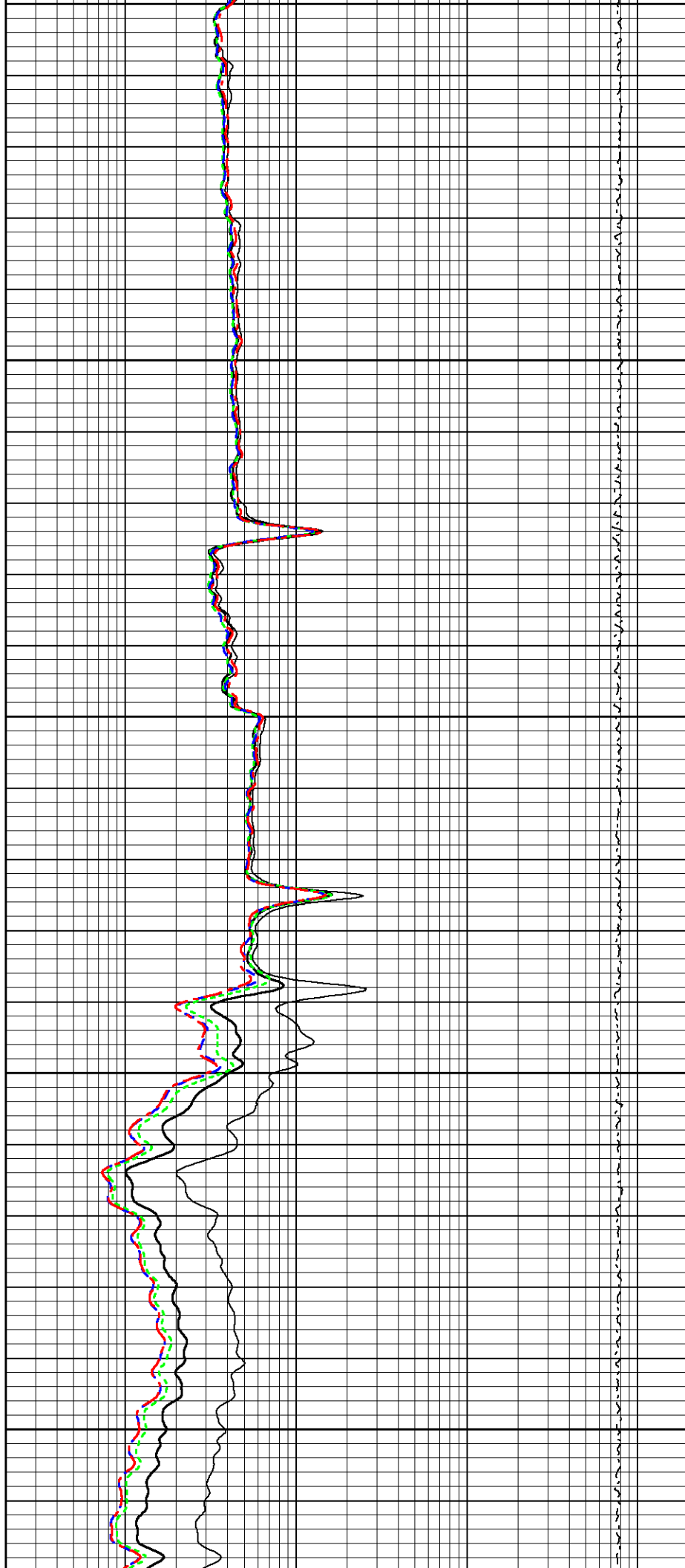
2400

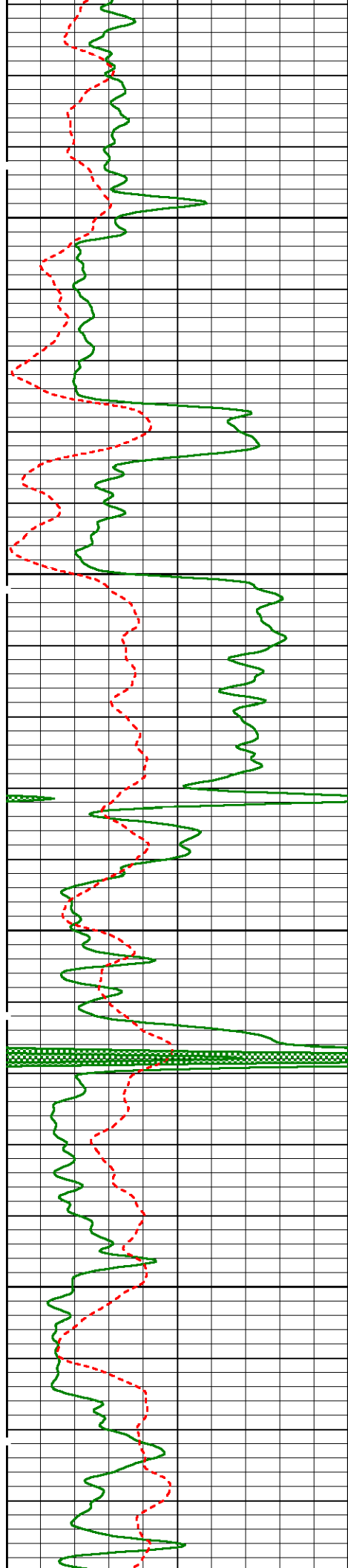




2500

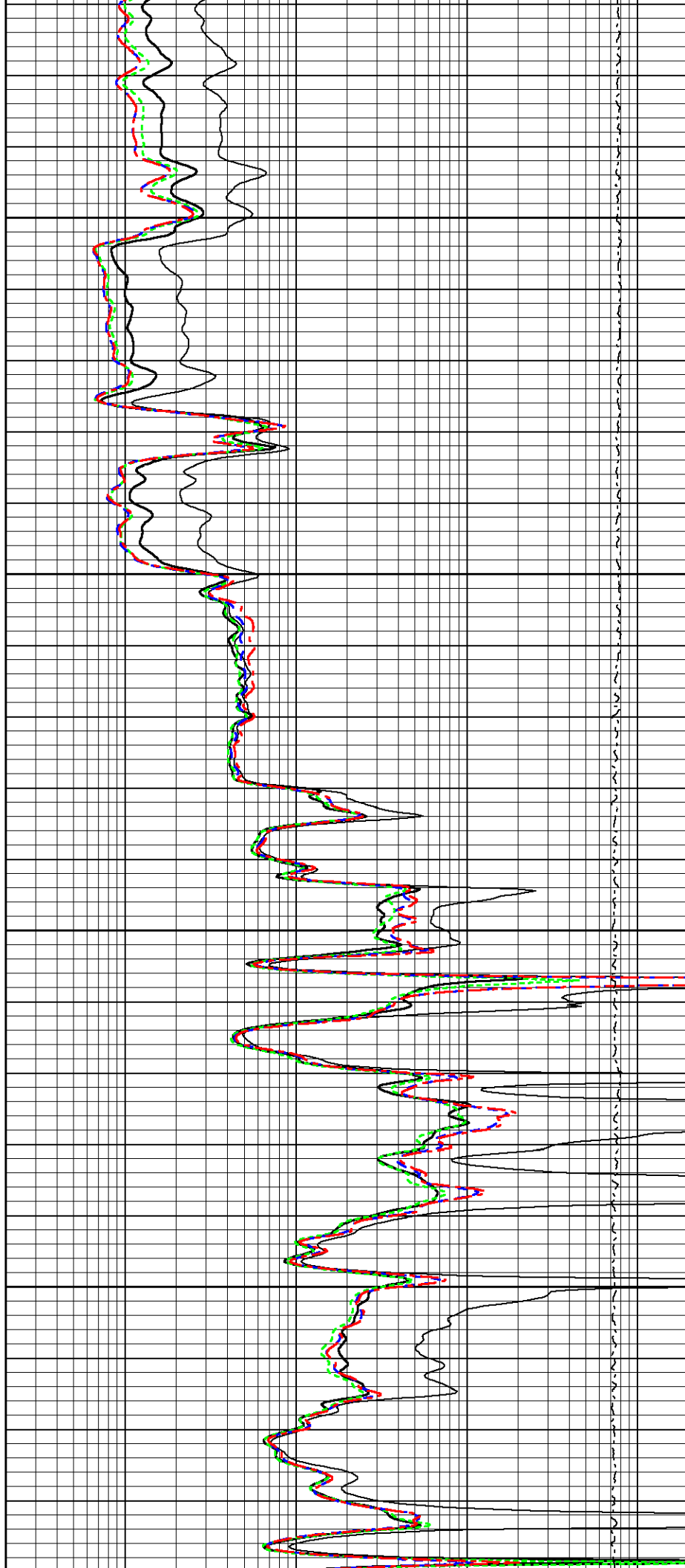
2600

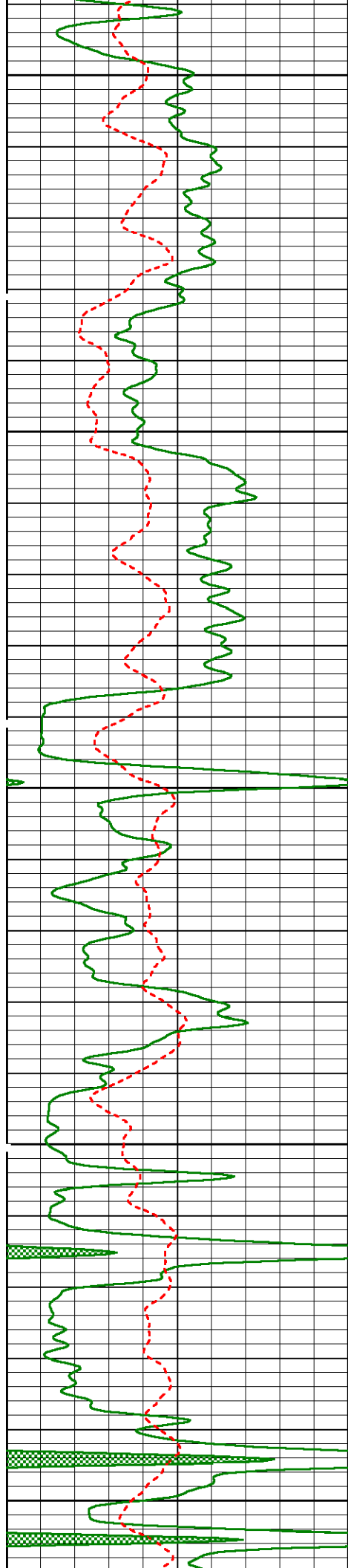




2700

2800

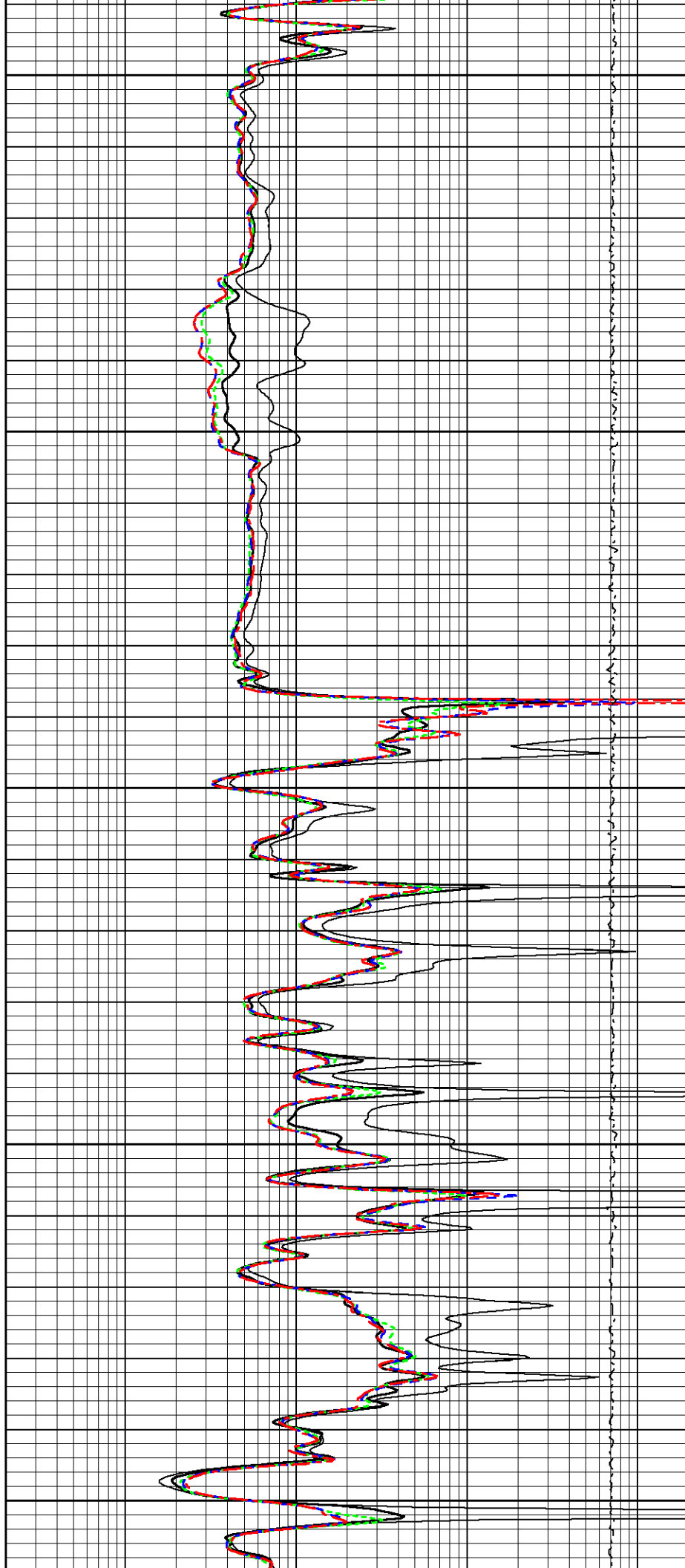


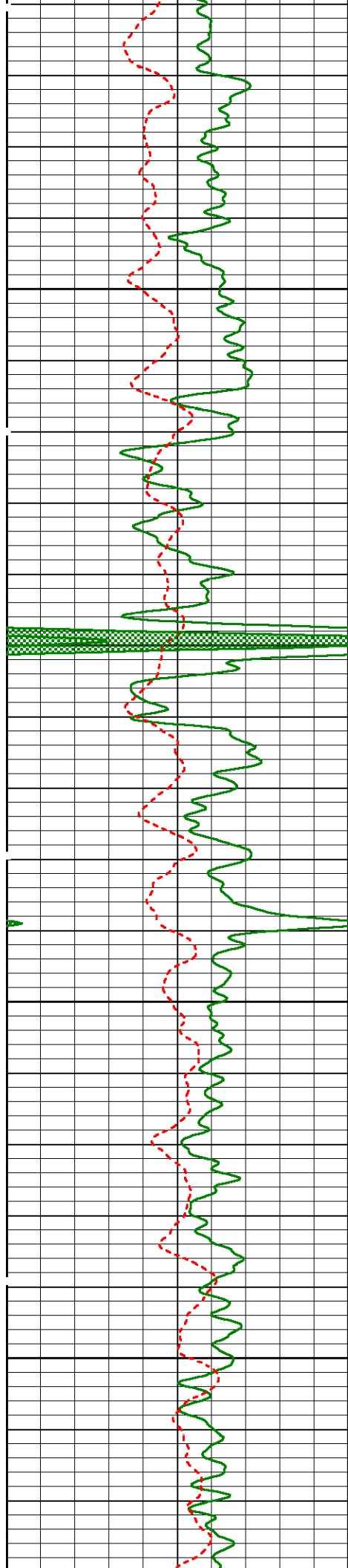


2900

3000

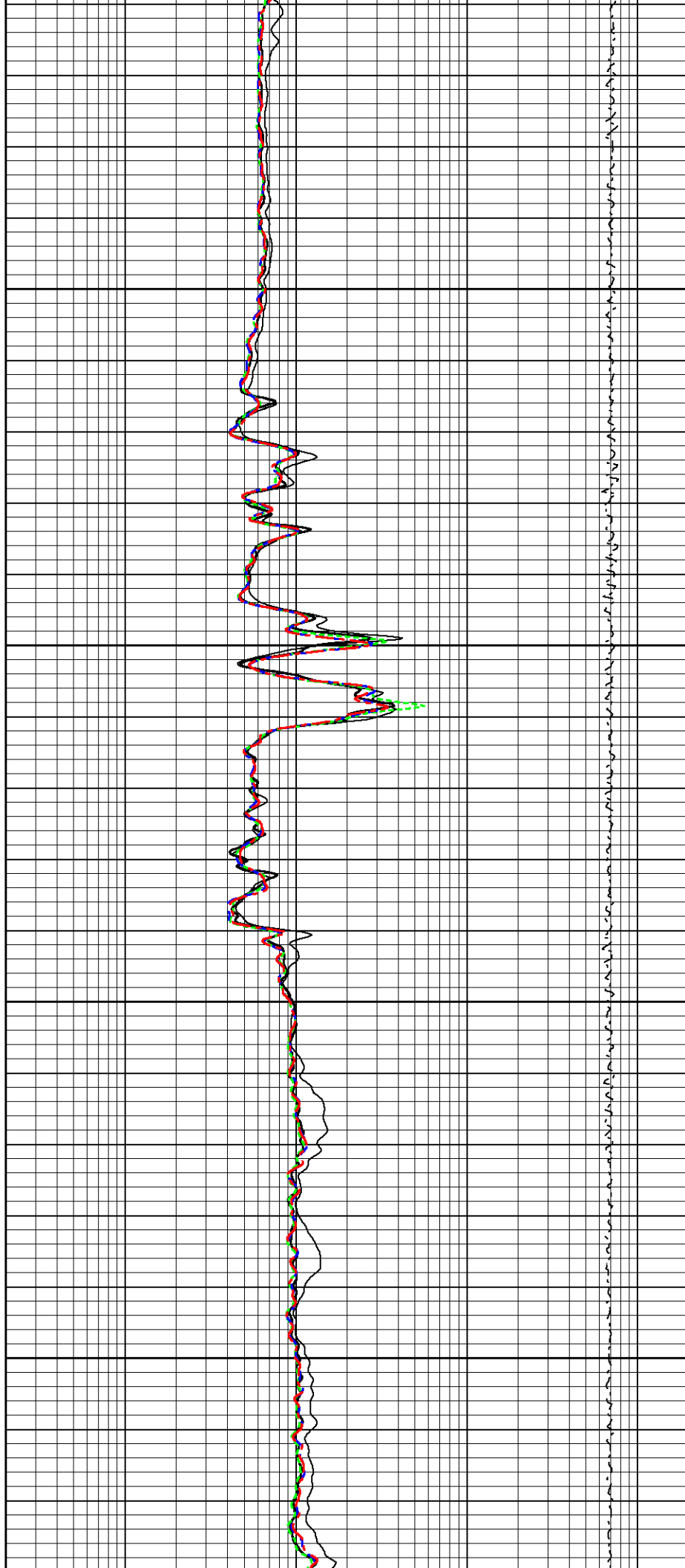
3100

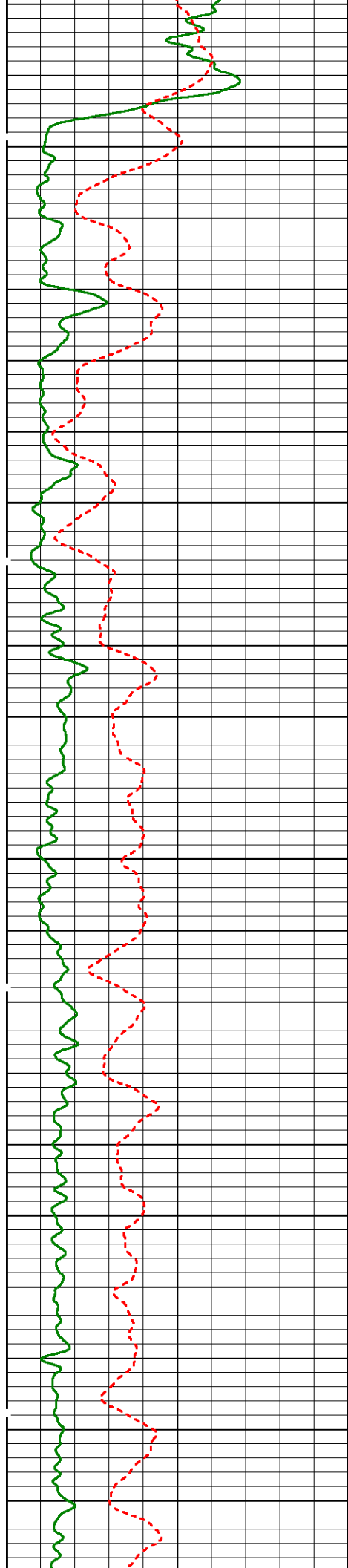




3200

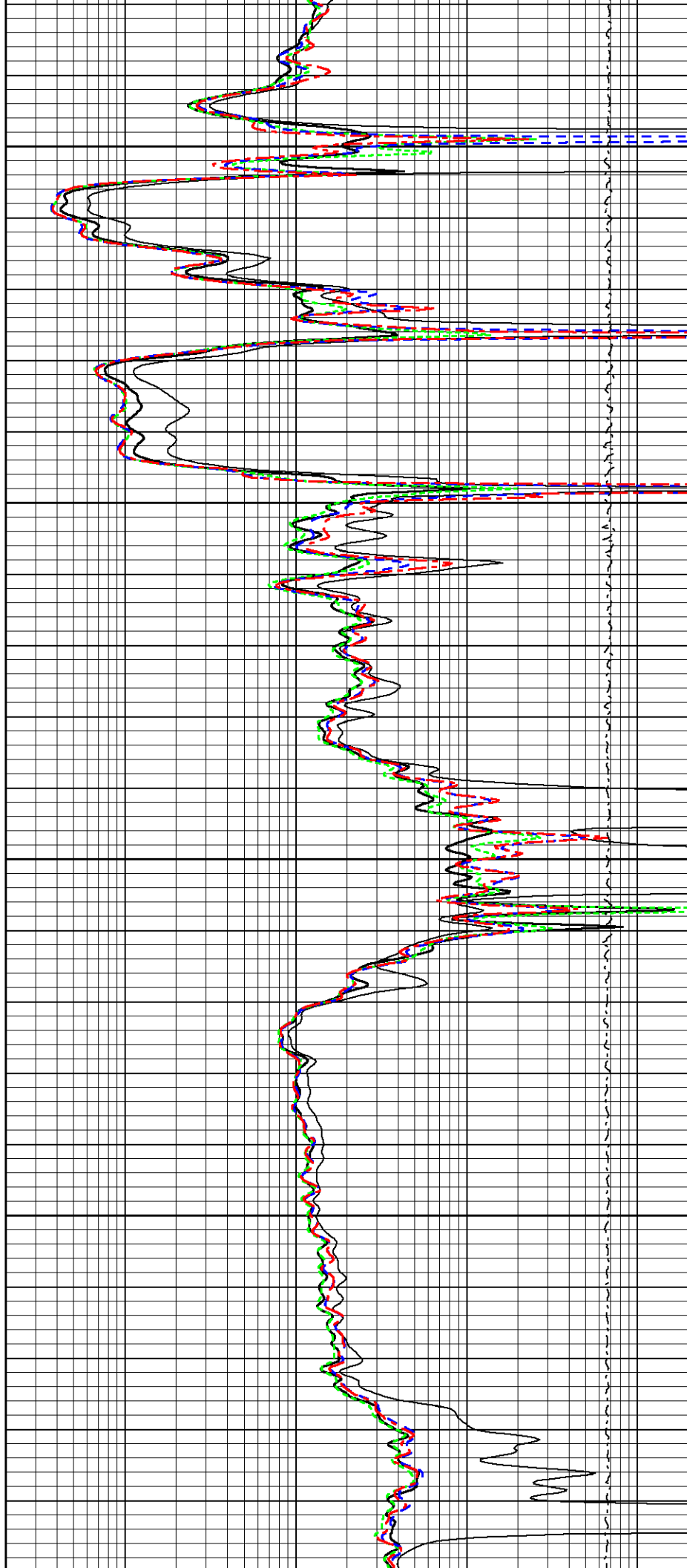
3300

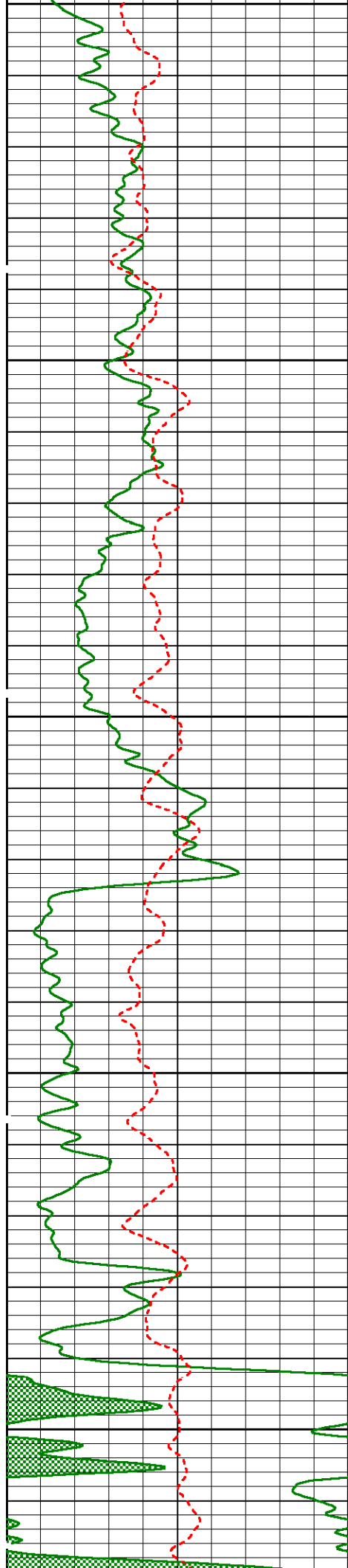




3400

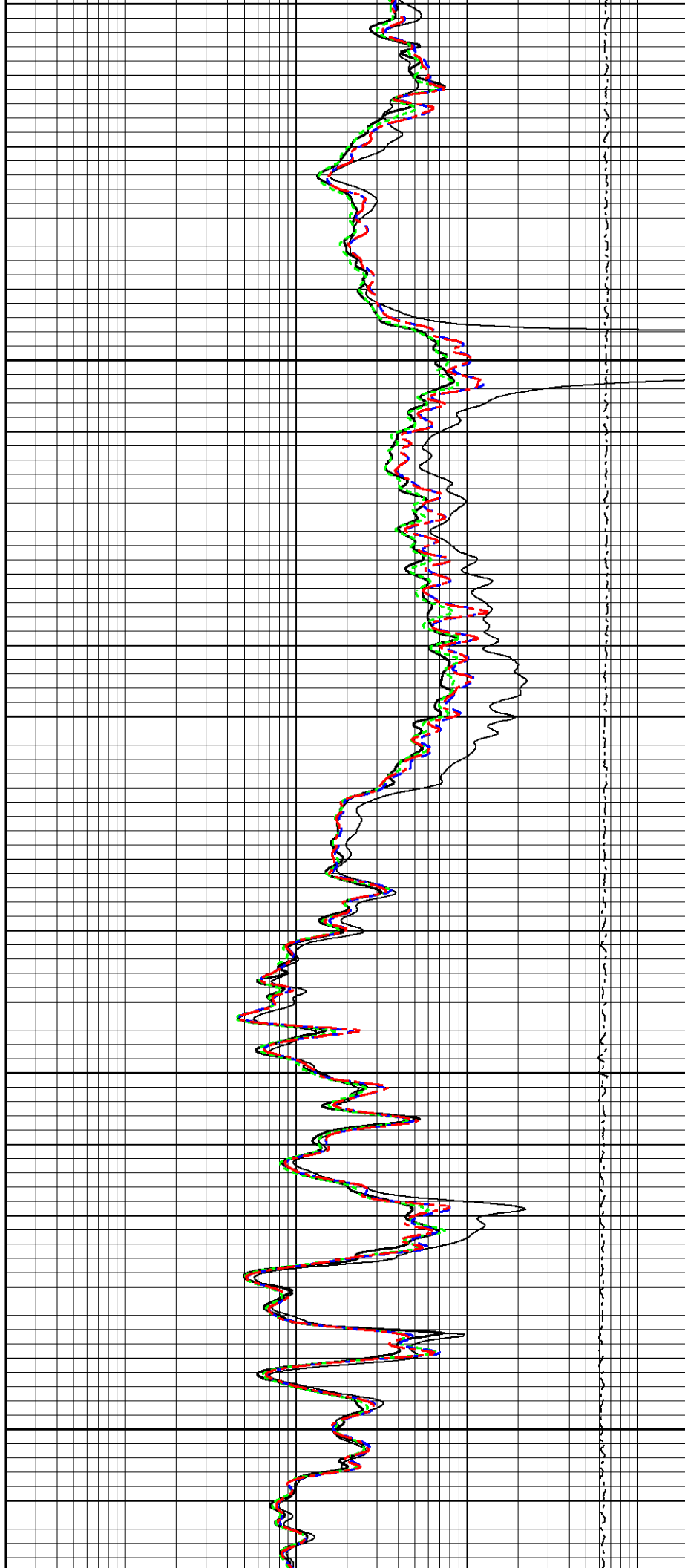
3500

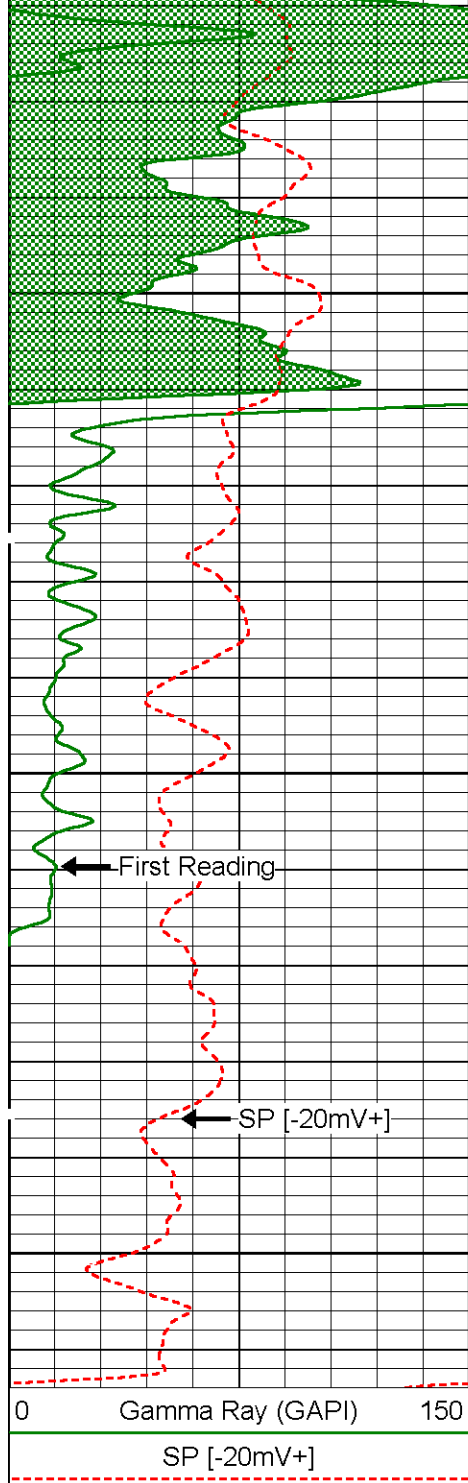




3600

3700

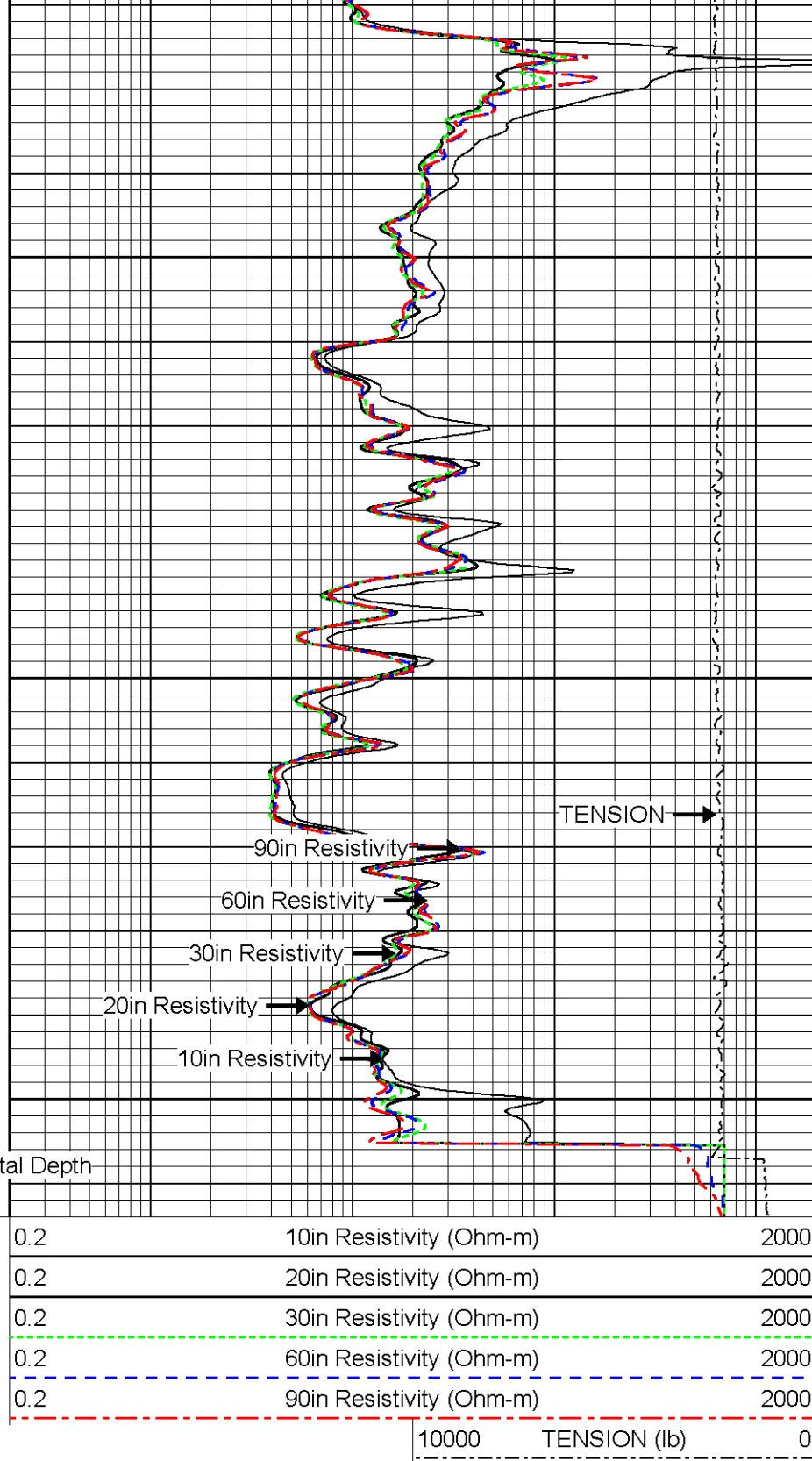




3800

3900

Total Depth



ALLIED
WIRELINE

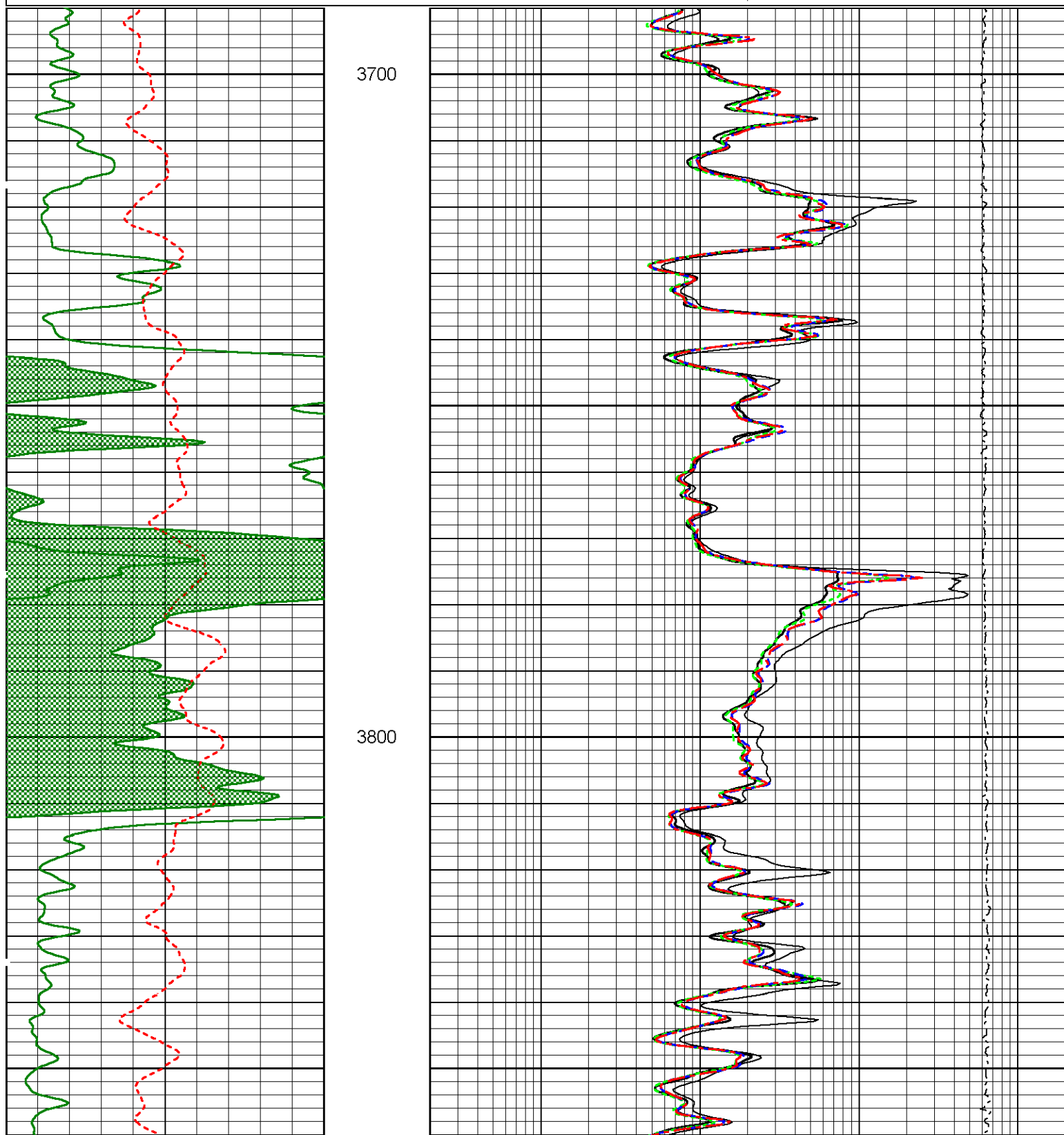
Main Pass

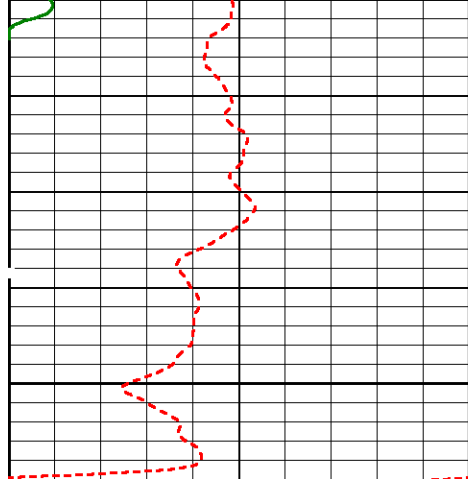
ALLIED
WIRELINE

Repeat Pass

Database File: holy_cow_1.db
 Dataset Pathname: repeat2
 Presentation Format: aind2r10
 Dataset Creation: Thu Sep 15 20:50:11 2011 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

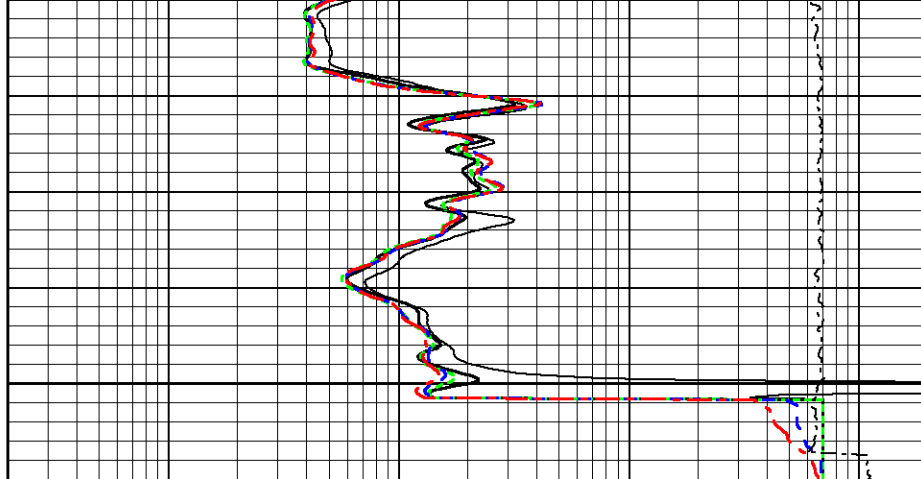
0	Gamma Ray (GAPI)	150	0.2	10in Resistivity (Ohm-m)	2000
	SP [-20mV+]		0.2	20in Resistivity (Ohm-m)	2000
			0.2	30in Resistivity (Ohm-m)	2000
			0.2	60in Resistivity (Ohm-m)	2000
			0.2	90in Resistivity (Ohm-m)	2000
				10000 TENSION (lb)	0





0 Gamma Ray (GAPI) 150
SP [-20mV+]

3900



0.2 10in Resistivity (Ohm-m) 2000
0.2 20in Resistivity (Ohm-m) 2000
0.2 30in Resistivity (Ohm-m) 2000
0.2 60in Resistivity (Ohm-m) 2000
0.2 90in Resistivity (Ohm-m) 2000
10000 TENSION (lb) 0



Repeat Pass

Log Variables

Database: C:\Warrior\Data\holy_cow_1.db
Dataset: field/well/run1/Main

Top - Bottom

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.25	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 11.5
AIR_HOLE? No	MudWgt lb/gal 8.7	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV 0	CASEOD in 7	PERFS 0	TDEPTH ft 3915
BOTTEMP degF 107	BOREID in 9.5						

Calibration Report

Database File: holy_cow_1.db
Dataset Pathname: Main
Dataset Creation: Thu Sep 15 21:00:44 2011 by Calc Sondex V7.03

Induction Array Tool Calibration Report

Serial Number: B10106
Tool Model: 002

Master Calibration Performed: Fri May 07 06:45:53 2010
Temperature: 56.1 degF

Sonde Error:
Array

1 2 3 4 5 6 7

Real	187.7	-10.3	-38.9	-15.6	-1.0	1.1	5.4	mmho/m
Imaginary	-89.4	-24.3	-9.6	-15.1	-15.1	-21.1	1.4	mmho/m
Loop Gain:								
Array	1	2	3	4	5	6	7	
Loop (real)	537.7	678.5	1295.3	1394.1	1144.8	712.8	404.8	mmho/m
Loop (imaginary)	73.3	92.5	389.8	419.5	344.5	214.5	121.8	mmho/m
Real	744.1	712.7	1267.6	1384.0	1172.3	744.6	427.9	mmho/m
Imaginary	-22.2	63.4	371.4	398.1	331.9	199.8	127.9	mmho/m
Gain (real)	0.966	0.938	0.991	0.996	0.976	0.959	0.958	
Gain (imaginary)	1.090	1.055	1.023	1.015	0.993	0.971	0.963	

Before Survey Verification Performed:				Thu Sep 15 18:12:45 2011				
Sonde 1 Temperature:				78.8 degF				
Sonde 2 Temperature:				79.9 degF				
Array 1 Temperature:				83.4 degF				
Array	1	2	3	4	5	6	7	
TxlR	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	
TxlX	0.0	0.0	0.2	0.2	0.2	0.2	0.2	
Tx Magnitude	0.0	0.0	0.2	0.2	0.2	0.2	0.2	
Gain	111.1	147.4	143.2	148.6	150.8	166.6	181.0	
RxCR	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	
RxCX	0.1	0.0	0.0	0.1	0.1	0.1	0.2	
RxC Magnitude	0.7	2.7	2.3	2.8	3.0	5.4	8.7	

Tool Module Parameters								
Software Version:				1.8.7.0				
Borehole Size Source:				CALI				
Mud Resistivity Source:				Hilchie				
Mud Resistivity At Surface:				1.0000Ohm-m				
Mud Resistivity Surface Temperature:				65.0000degF				
Borehole Corrections:				Automatic				
Minimum Standoff:				1.4in				

Litho Density Tool Calibration Report

Serial Number:	B10110S50129B
Tool Model:	002

Caliper Calibration Performed:				Wed Sep 14 13:58:59 2011				
	Diameter			Reading				
Small Ring:	6.000	in		1369.400	cps			
Large Ring:	13.000	in		2055.500	cps			
Gain:	0.0102							
Offset:	-7.9714							

Master Calibration Performed:				Tue Sep 13 11:13:22 2011				
Source Number:				50129B				
Medium:				Water				
Al Block Density:				2.5992 g/cc				
	Background		Al Block	Al Block + Fe				
SS1	842.6		5688.1	4624.1	cps			
SS2	2328.8		35081.8	29273.8	cps			
SSTOTAL	5492.7		56815.5	46945.6	cps			
LITH	109.4		639.6	365.9	cps			
LL	221.3		996.7	851.0	cps			
LU	628.9		1283.2	1169.7	cps			
LS	850.2		2280.0	2020.7	cps			
LSTOTAL	1595.8		5657.6	4484.3	cps			

	SSHV	1540.6	1544.1	1544.7	V
	LSHV	1493.6	1493.9	1494.3	V
	SSFF	0.01	0.01	0.01	
	LSFF	-0.01	0.01	0.01	
Before Survey Verification Performed: After Survey Verification Performed: Wed Sep 14 13:52:31 2011					
		Master Background	Before Survey Background	After Survey Background	
	SS1	842.6	836.2		cps
	SS2	2328.8	2325.8		cps
	SSTOTAL	5492.7	5488.2		cps
	LITH	109.4	114.6		cps
	LL	221.3	215.2		cps
	LU	628.9	627.1		cps
	LS	850.2	842.3		cps
	LSTOTAL	1595.8	1588.8		cps
	SSHV	1540.6	1537.7		V
	LSHV	1493.6	1491.1		V
	SSFF	0.01	0.01		
	LSFF	-0.01	-0.02		
Tool Module Parameters					
	Software Version:		2.4.3.0		
	Borehole Size Source:		CALI		
	Pad Type:		2		
Compensated Neutron Tool Calibration Report					
	Serial Number:		C10071		
	Tool Model:		009		
	Master Calibration Performed:		Tue Sep 13 09:17:15 2011		
	Source Number:		66005		
	Short Spacing Counts:		5341.60	cps	
	Long Spacing Counts:		200.79	cps	
	High Voltage:		1364.02	V	
	Target Ratio:		27.2000		
	Ratio:		26.6031		
	K-Factor:		1.0224		
	Before Survey Verification Performed:		Wed Sep 14 13:49:54 2011		
	After Survey Verification Performed:				
	Verifier Number:		6489		
	Verifier Values	Master Cal	Before Survey	After Survey	
	Short Spacing Counts:	251.43	249.72		cps
	Long Spacing Counts:	274.54	278.92		cps
	High Voltage:	1364.00	1364.02		V
	Ratio:	0.9158	0.8953		
Tool Module Parameters					
	Software Version:		1.4.1.0		
	Borehole Size Source:		CALI		
	Clip Crossplot Porosity:		YES		
Micro Electric Log Calibration Report					

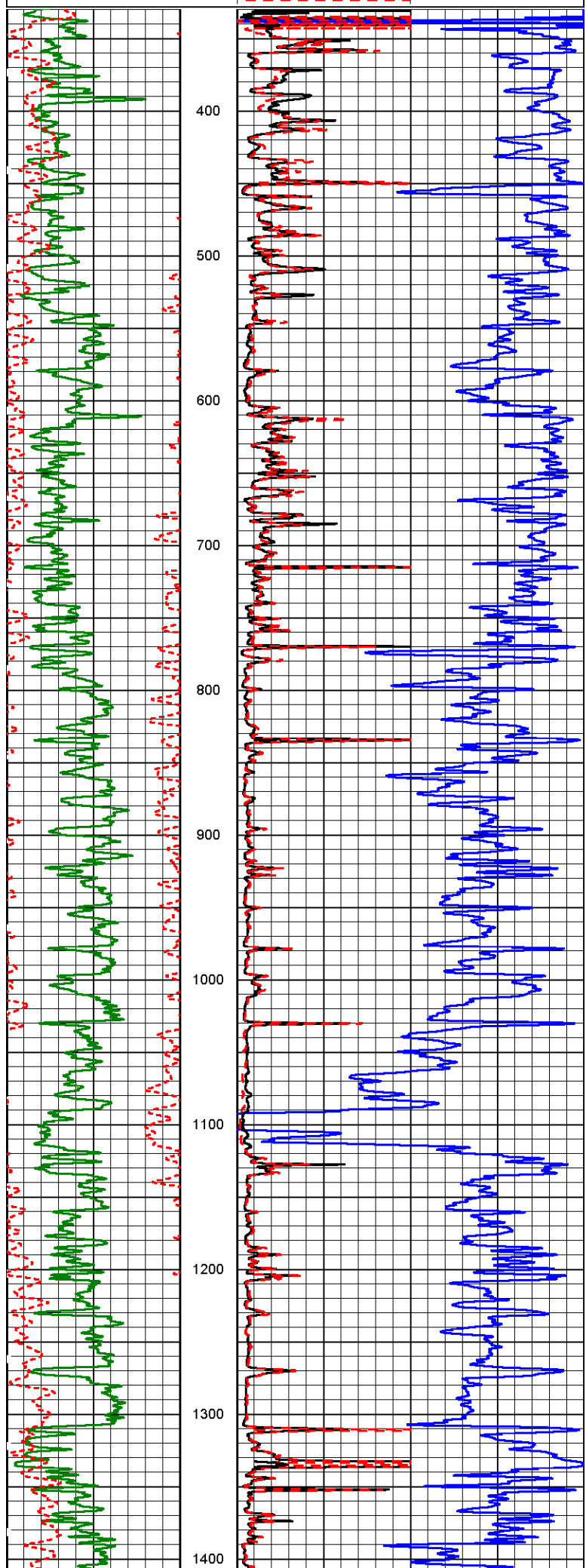
Serial Number: 000001			
Tool Model: 001			
Caliper Calibration Performed: Sun Mar 13 21:55:53 2011			
	Diameter	Reading 1	Reading 2
Small Ring:	1.850 in	1308.900	1305.700
Large Ring:	4.450 in	1342.100	1391.700
Gain:		0.0783	0.0302
Offset:		-100.6540	-37.6247
Pad Calibration			
		Inverse	Normal
Gain:		1.0000	1.0000
Offset:		0.0000	0.0000
Borehole Fluid Resistivity Calibration Report			
Serial Number: P004			
Tool Model: 002			
Master Calibration Performed: Tue Sep 13 17:43:23 2011			
Resistivity Polynomial Equation:			
0.0244x^3 - 0.0654x^2 + 0.5797x - 0.0237			
Temperature Calibration:			
	Reference	Reading	
	71.60 degF	559.80	bits
	167.00 degF	659.50	bits
Tool Module Parameters			
Software Version:		1.2.2.0	
Gamma Ray Calibration Report			
Serial Number: C10047			
Tool Model: 001			
Performed: Thu Sep 15 18:45:38 2011			
Calibrator Value:		147.0	GAPI
Background Reading:		28.8	cps
Calibrator Reading:		519.6	cps
Sensitivity:		0.2995	GAPI/cps

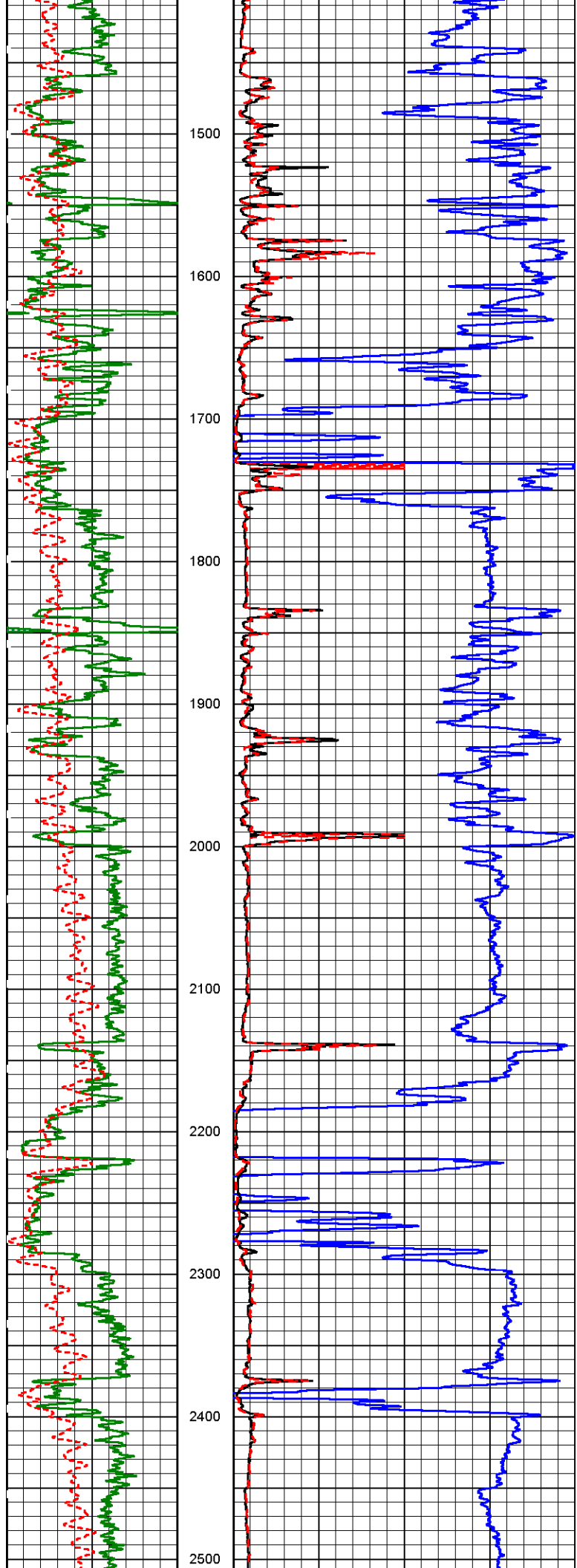
Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	47.81		CHD-001 (000004) Cable Head	2.19	3.38	35.00
			XTU-008 (C10067) Crossover Ultrawire Toolbus to Ultralink	2.08	3.38	47.00
			GRT-001 (C10047) Gamma Ray Tool	3.22	3.38	69.00
PER	42.07		PER-002 (P004)	4.39	3.38	94.00

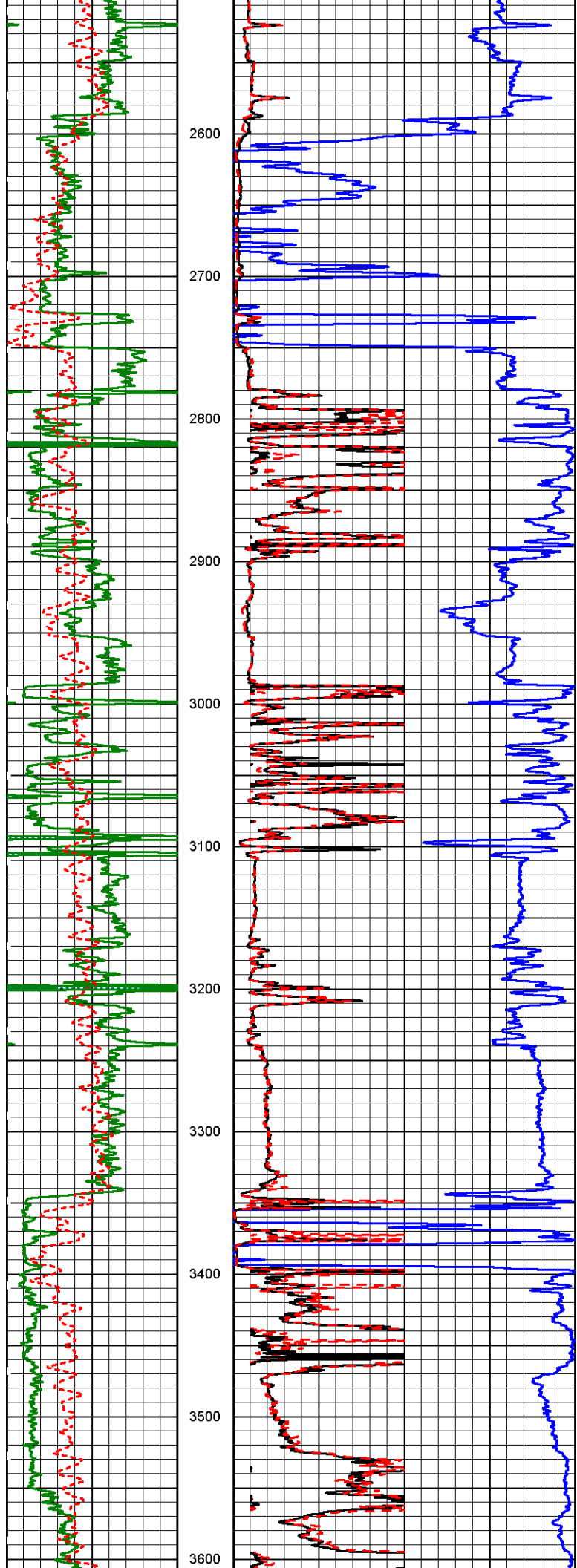
BPR	42.97			BPR-002 (P004)	4.39	3.38	94.00
MEL	33.43			MEL-001 (000001) Micro Electric Log	9.17	3.38	190.00
CNLSC	25.75			KJT-001 (000001) Knuckle Joint	2.86	3.38	72.00
CNSSC	25.25			CNL-009 (C10071) Compensated Neutron Logging Tool	5.27	3.38	125.00
LDT	15.59			LDT-002 (B10110S50129B) Litho Density Tool	9.75	4.50	310.00
IAT	8.40			IAT-002 (B10106) Induction Array Tool	13.42	3.88	200.00
SP	0.59			BOTTOM Bottom Nose Standoff	0.33	3.38	3.00
Dataset: holy_cow_1.db: field/well/run1/Main Total Length: 52.69 ft Total Weight: 1145.00 lb O.D. 4.50 in							

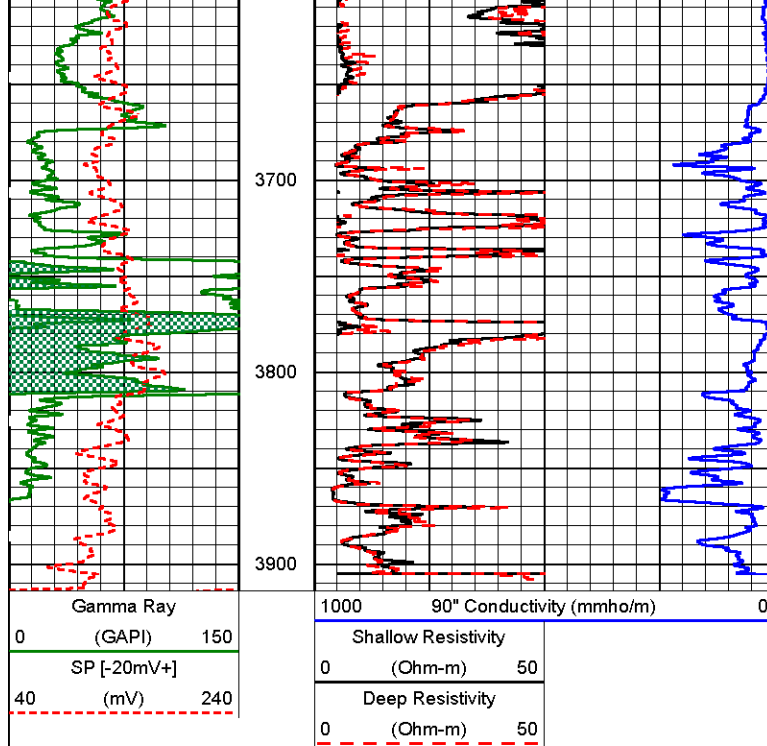
ALLIED WIRELINE		Main Pass	
Database File: holy_cow_1.db Dataset Pathname: Main Presentation Format: acond2 Dataset Creation: Thu Sep 15 21:00:44 2011 by Calc Sondex V7.03 Charted by: Depth in Feet scaled 1:1200			
Gamma Ray		1000	90° Conductivity (mmho/m)
0 (GAPI) 150		Shallow Resistivity	0
SP [-20mV+] 40 (mV) 240		0 (Ohm-m) 50	Deep Resistivity

0 (Ohm-m) 50









Main Pass