



ARRAY INDUCTION LOG

COMPANY		PIONEER NATURAL RESOURCES	
WELL		NORTH FORK RANCH 14 - 1R	
FIELD		MAXWELL	
PROVINCE/COUNTY		LAS ANIMAS	
COUNTRY/STATE		U.S.A./COLORADO	
LOCATION		967' FSL & 698' FWL	
SEC	TWP	RGE	Other Services
1	33S	68W	MPD MDN
API Number		05-067-08870	
Permit Number			
Permanent Datum G. L., Elevation 7931 feet			
Log Measured From K.B. @ 4 FEET above Permanent Datum			
Drilling Measured From K.B.			
Date	25-SEP-2009		
Run Number	ONE		
Depth Driller	2015.00	feet	
Depth Logger	2008.00	feet	
First Reading	2005.00	feet	
Last Reading	702.00	feet	
Casing Driller	699.00	feet	
Casing Logger	702.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	AIR		
Density / Viscosity			
PH / Fluid Loss			
Sample Source	FLOWLINE		
Rm @ Measured Temp			
Rmf @ Measured Temp			
Rmc @ Measured Temp			
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT			
Time Since Circulation			
Max Recorded Temp	94.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	13087	FARM	
Recorded By	L.PLAGGE		
Witnessed By	JACKIE LUTHER		

Elevations:
KB 7935.00
DF 7934.00
GL 7931.00

BOREHOLE RECORD			Last Edited: 25-SEP-2009 12:13
Bit Size inches	Depth From feet	Depth To feet	
7.875	698.00	2015.00	
CASING RECORD			
Type	Size inches	Depth From feet	Shoe Depth feet
SURFACE	8.625	0.00	698.00
			Weight pounds/ft
			24.00

REMARKS
<p>TOOLS RAN: SHA, MCG, MDN, MPD, SKJ, MFE, AND MAI RAN IN COMBINATION.</p> <p>HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED. MDN: DUAL NEUTRON BOWSPRING USED. MPD: 8 INCH PROFILE PLATE USED.</p> <p>WATER LEVEL AT 1650 FEET. FOAM IN HOLE COULD AFFECT NEUTRON READINGS.</p> <p>CALIPER CHECK IN CASING PROVIDED, REFERENCE I.D. = 8.097" (8.625", 24.0 LB/FT CASING)</p> <p>TOTAL HOLE VOLUME FROM TD TO INTERMEDIATE CASING = APPROX. 450 CU. FT.</p> <p>ANNULAR VOLUME WITH 5.5 INCH PRODUCTION CASING = APPROX. 225 CU. FT.</p> <p>PRESSURE CONTROL RAN PER CUSTOMER'S REQUEST.</p> <p>PRESENTATIONS USED PER CUSTOMER'S REQUEST.</p>

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

TIGHT PULLS, BOREHOLE SIZE AND RUGOSITY WILL AFFECT REPEATABILITY AND DATA QUALITY.

NEUTRON PRESENTED ON A SANDSTONE SCALE.

2.65 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

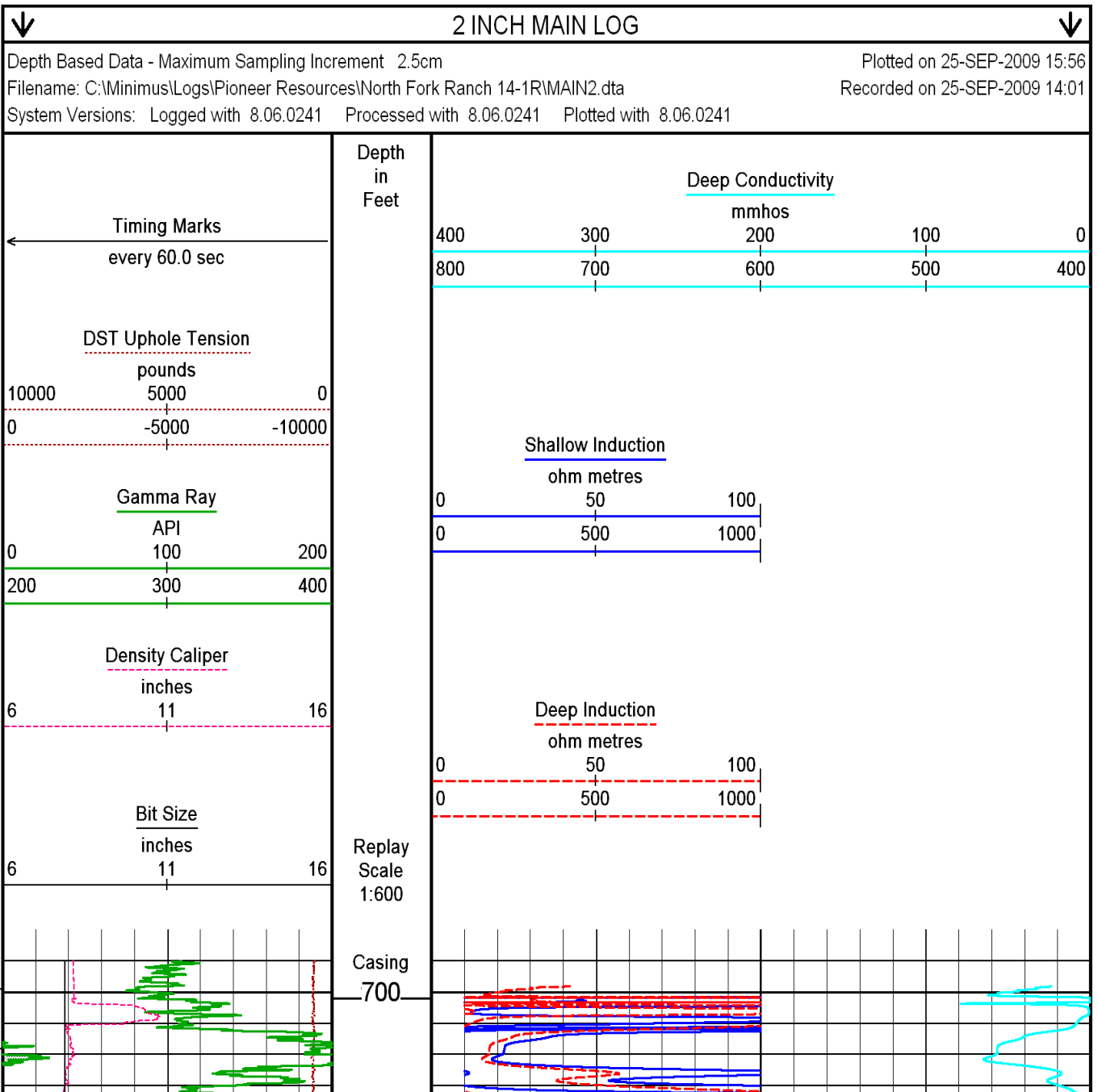
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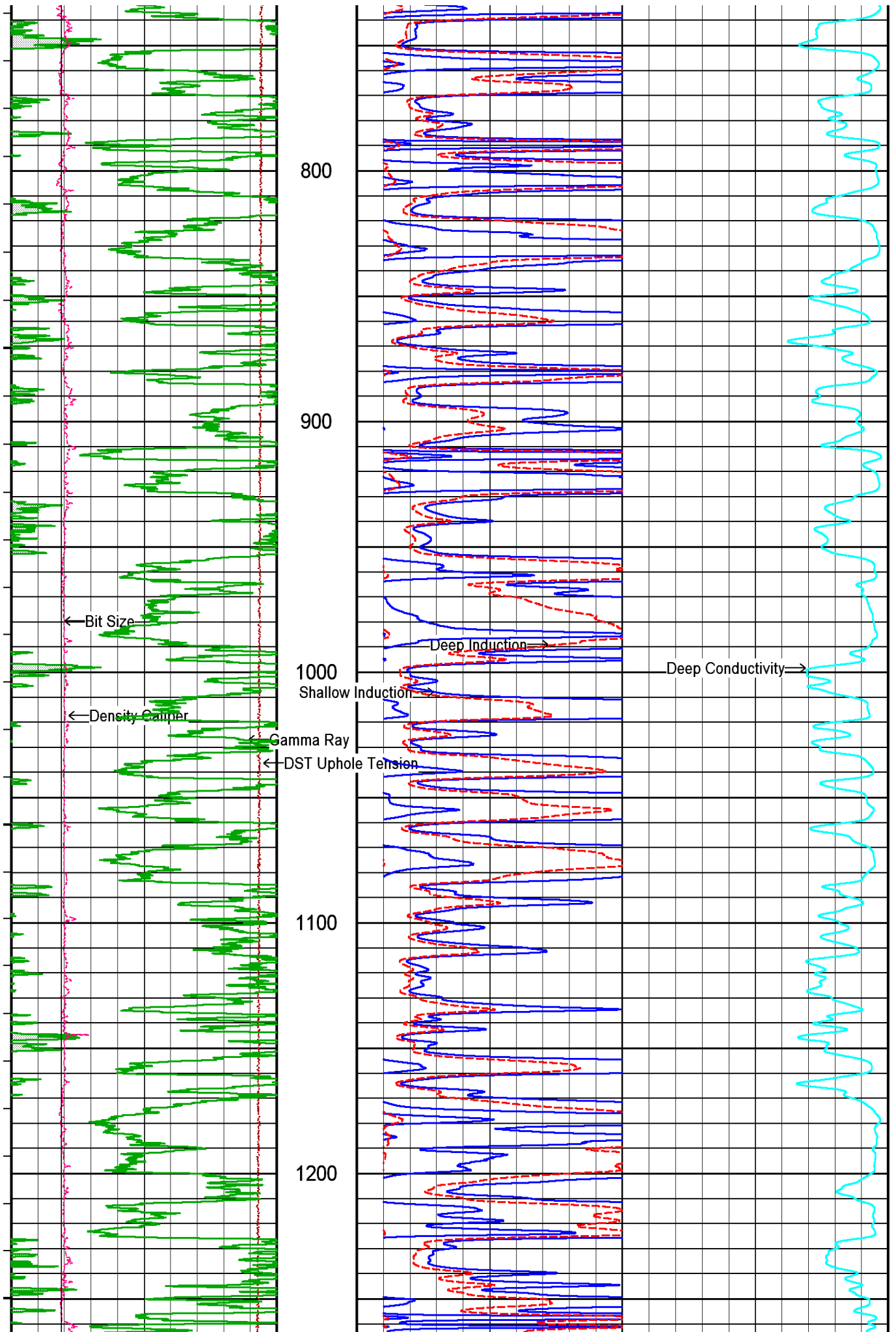
RIG: PIONEER RIG #3

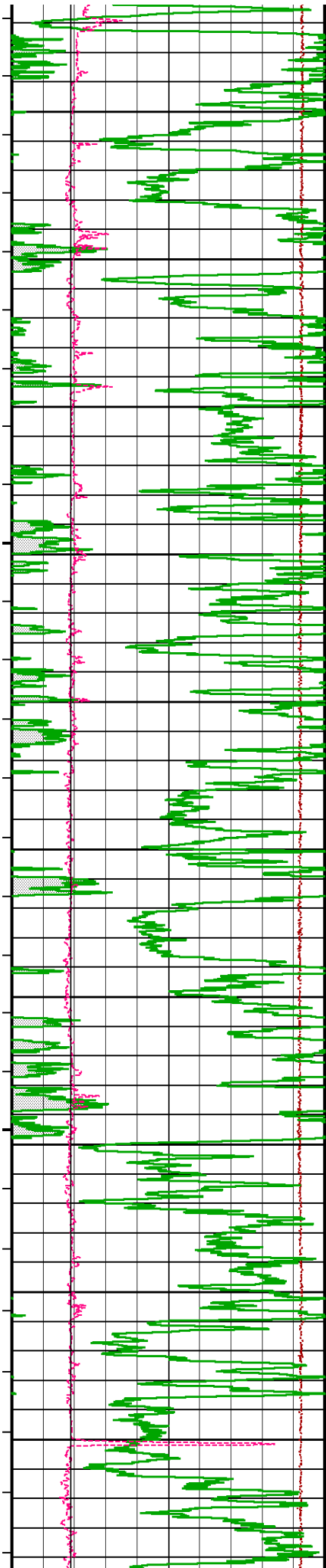
ENGINEER: L. PLAGGE

OPERATOR(S): J. BECKWITH

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 interpretations, and we shall not, except in the case of gross or wilful 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 in our price schedule.







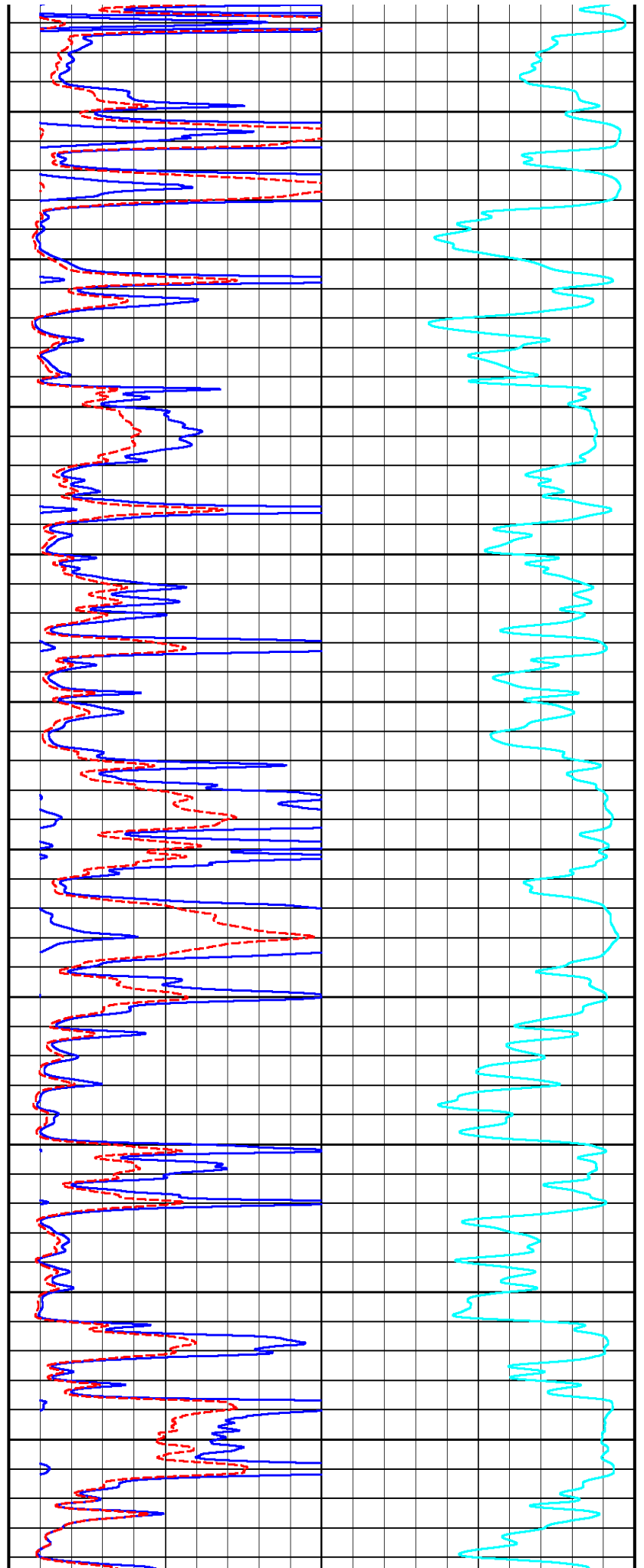
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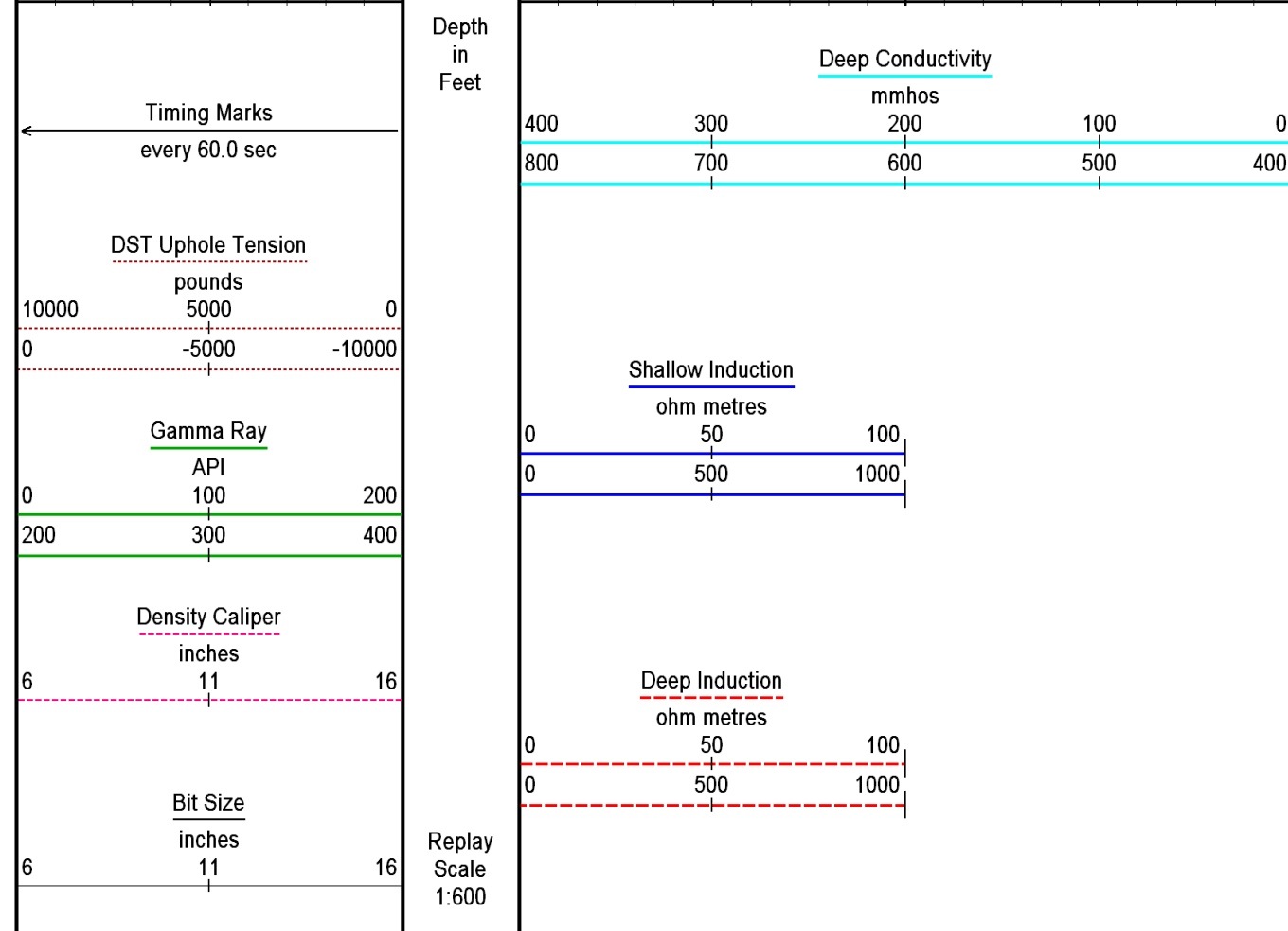
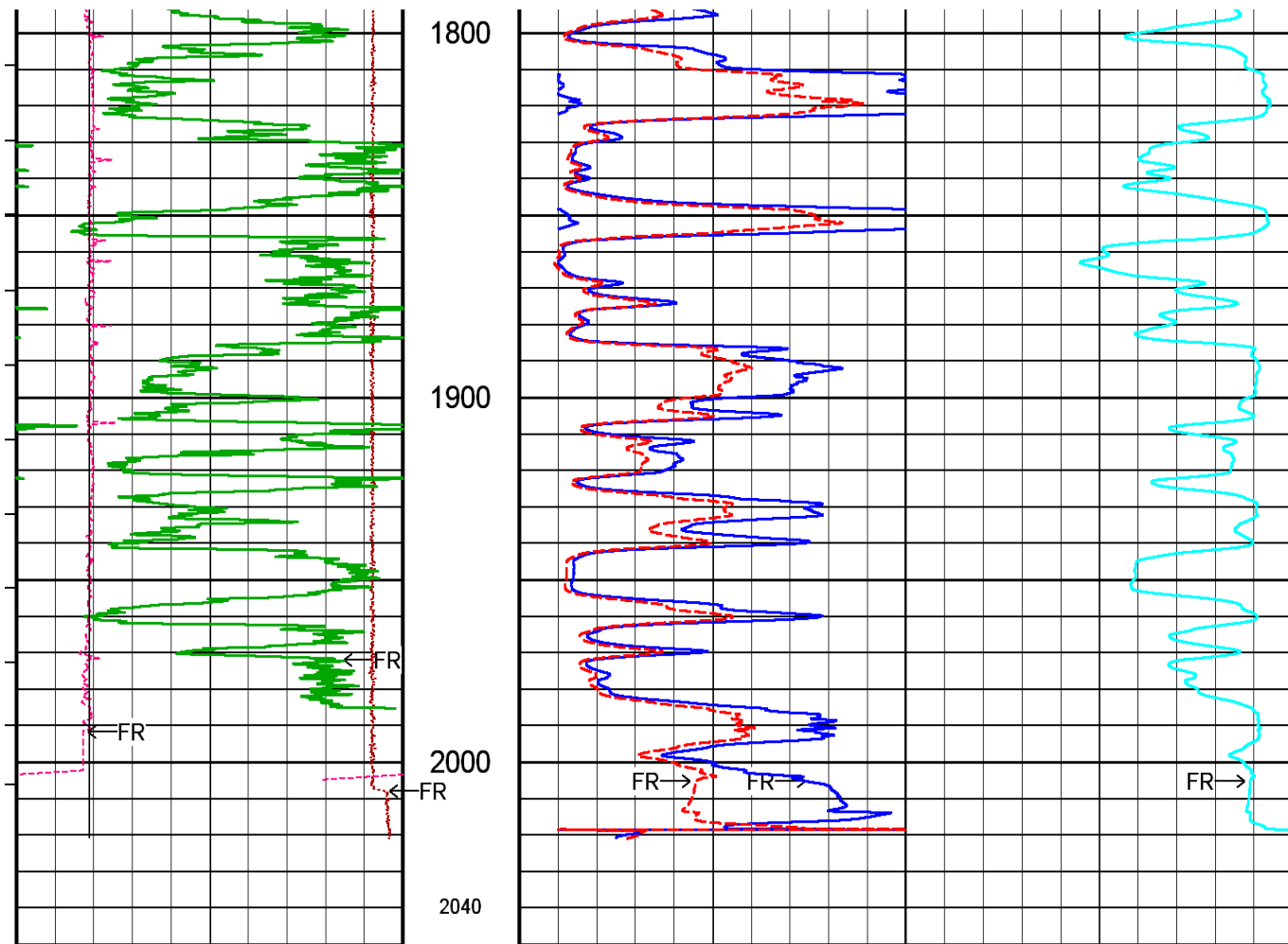
1400

1500

1600

1700

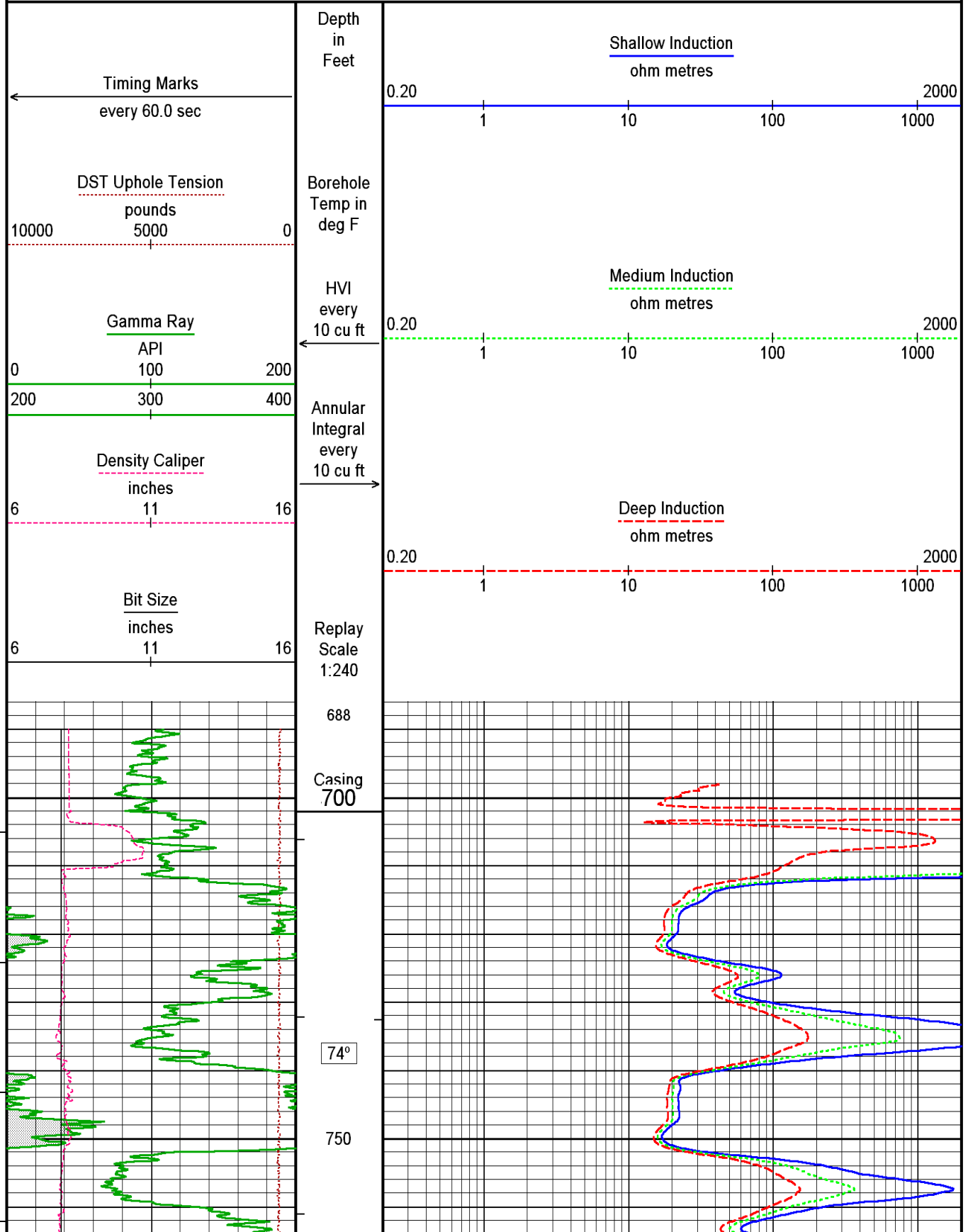


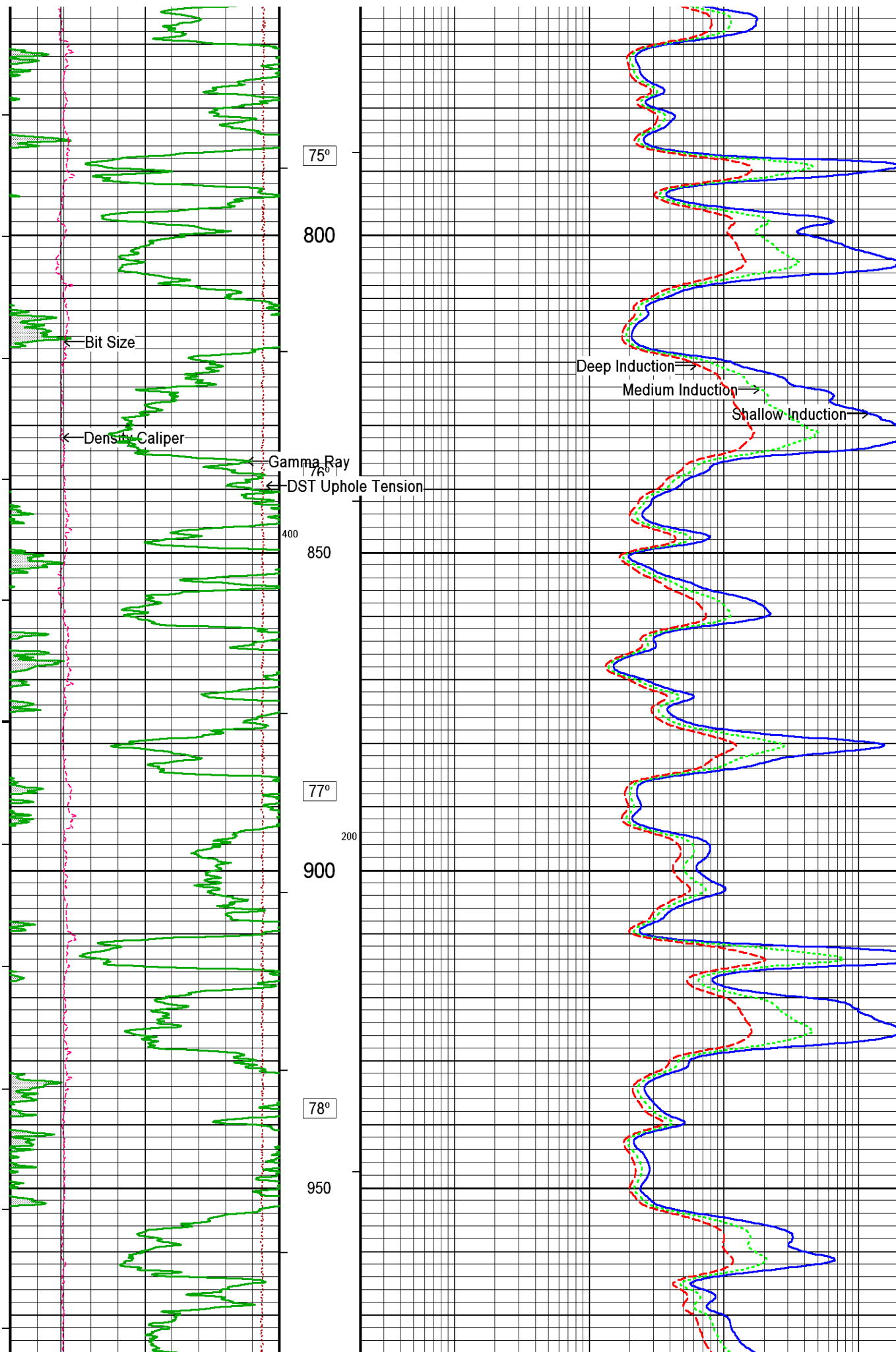


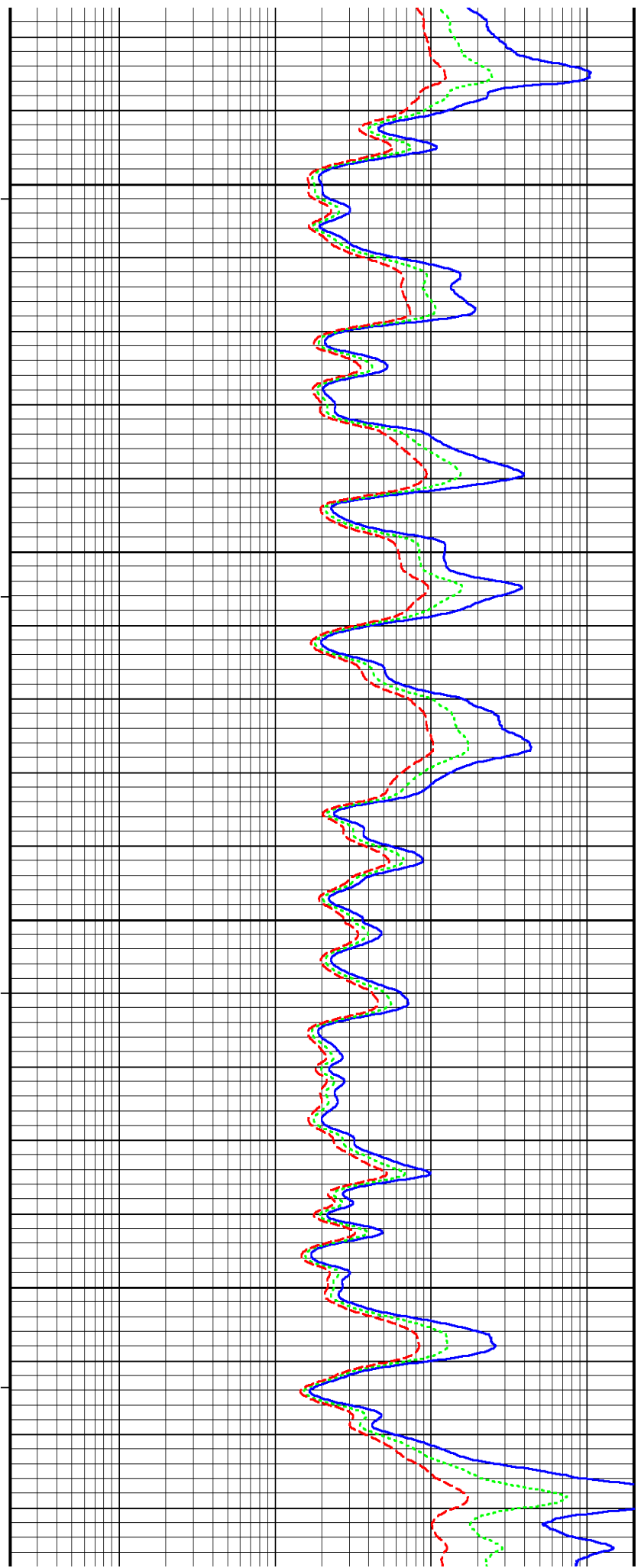
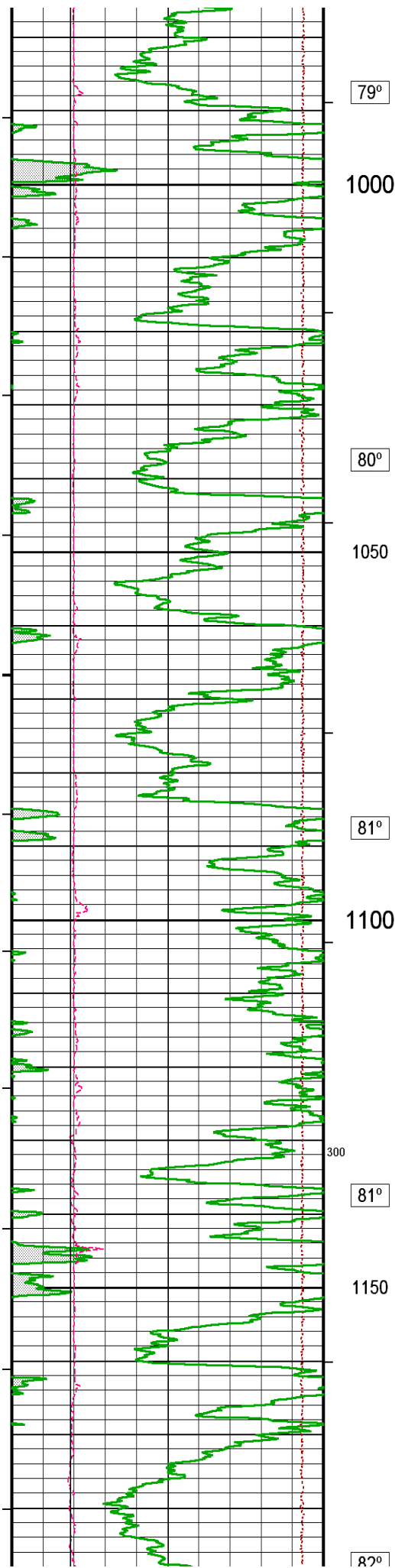
2 INCH MAIN LOG

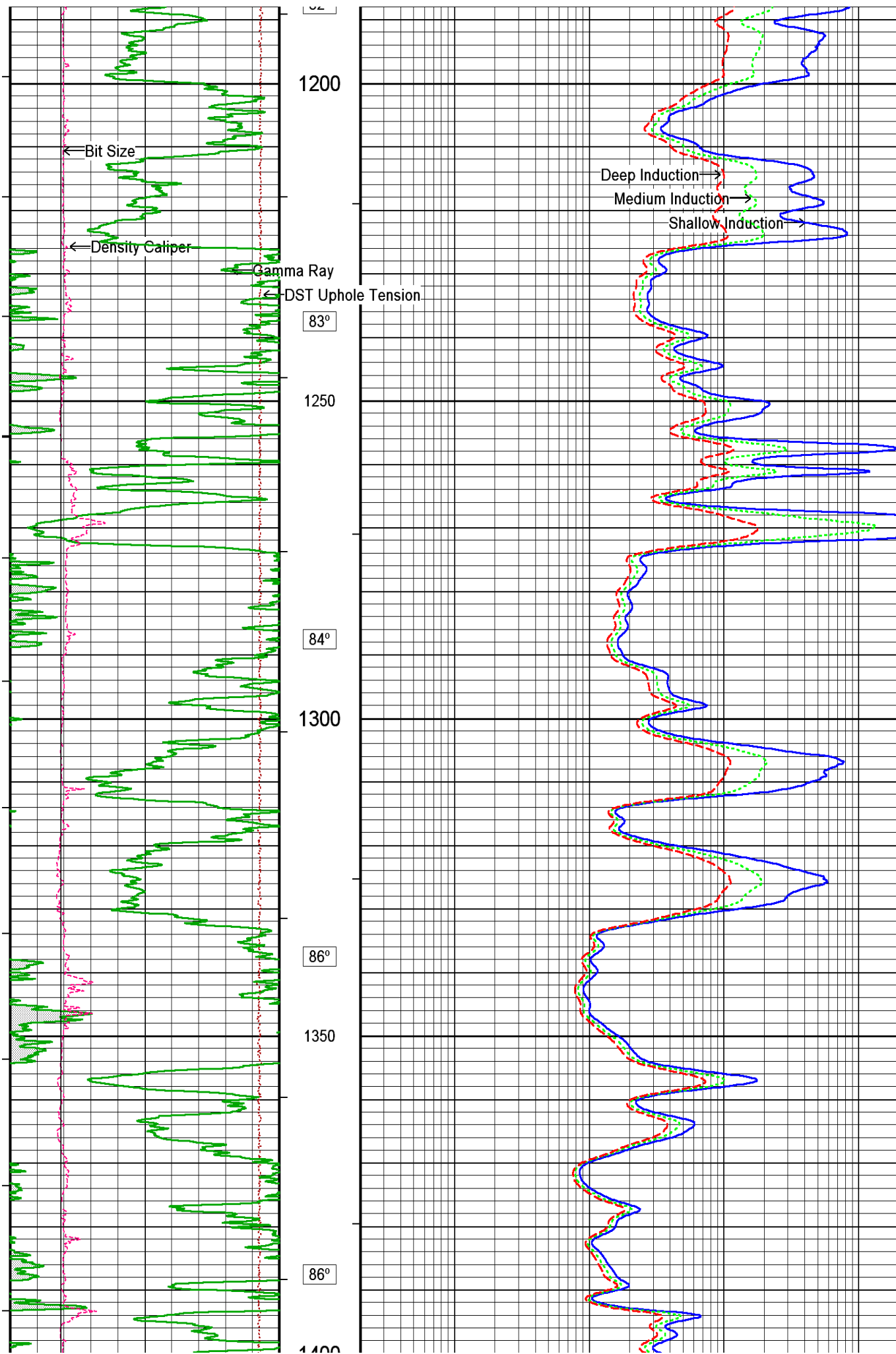
5 INCH MAIN LOG

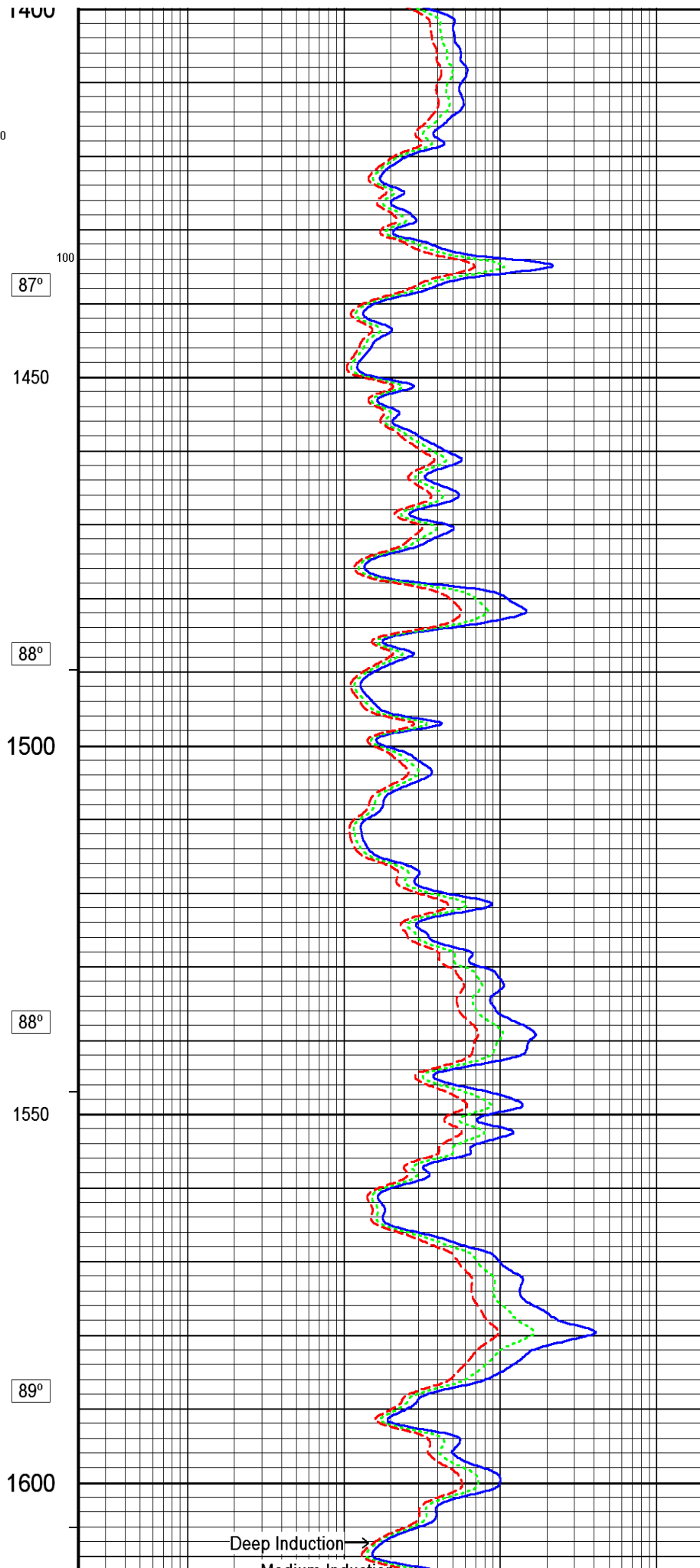
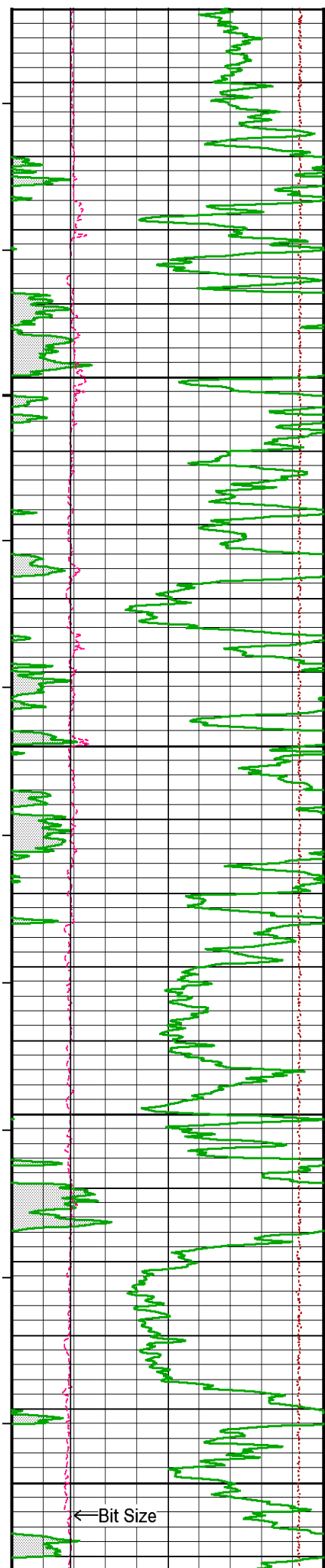
Depth Based Data - Maximum Sampling Increment 2.5cm Plotted on 25-SEP-2009 15:56
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 System Versions: Logged with 8.06.0241 Processed with 8.06.0241 Plotted with 8.06.0241

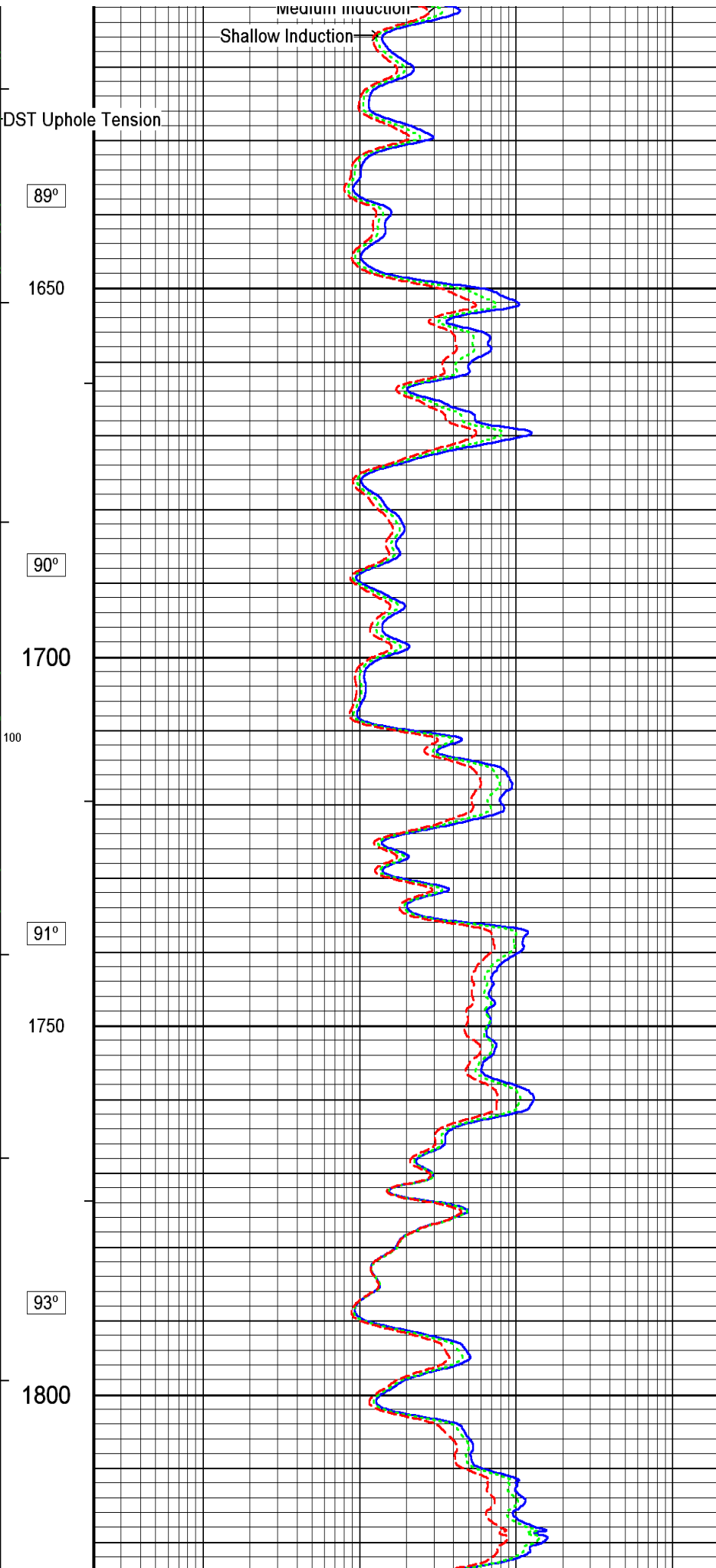
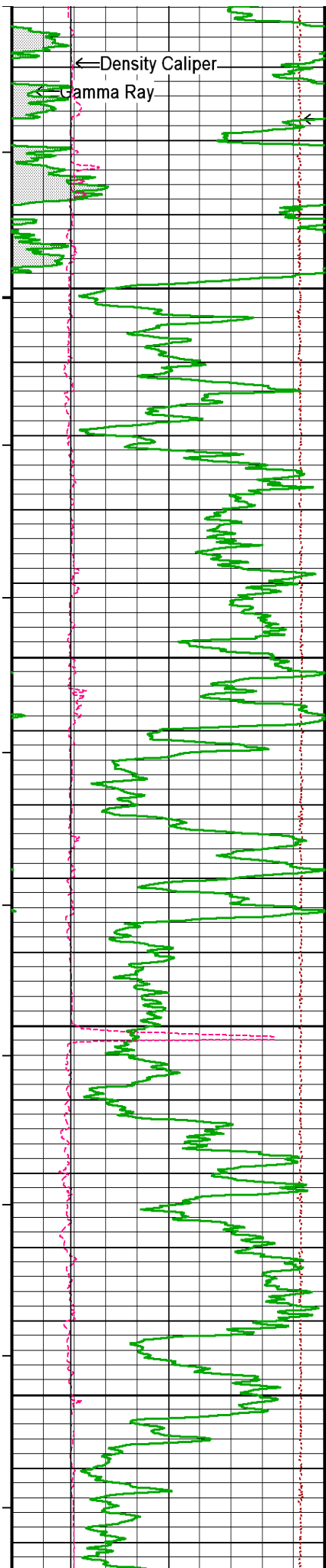


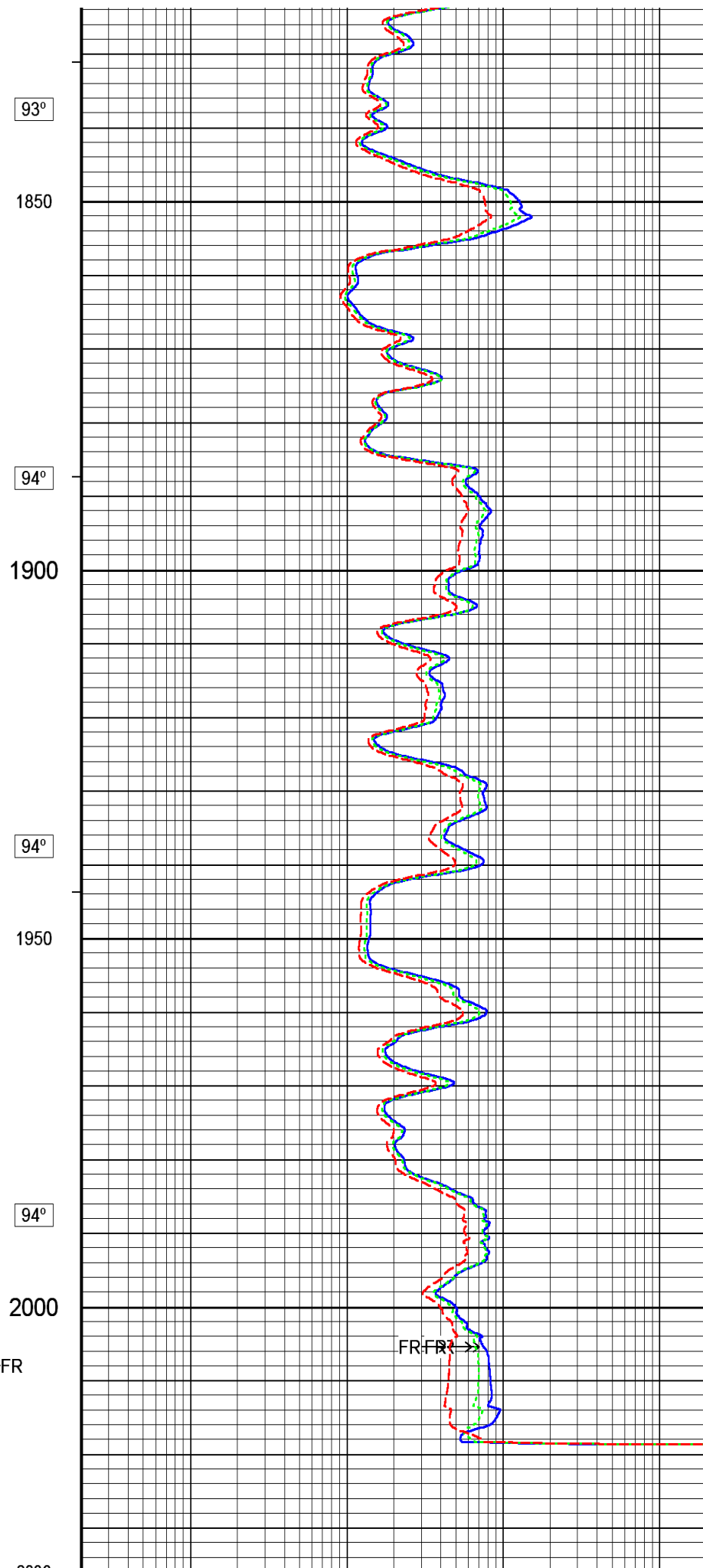
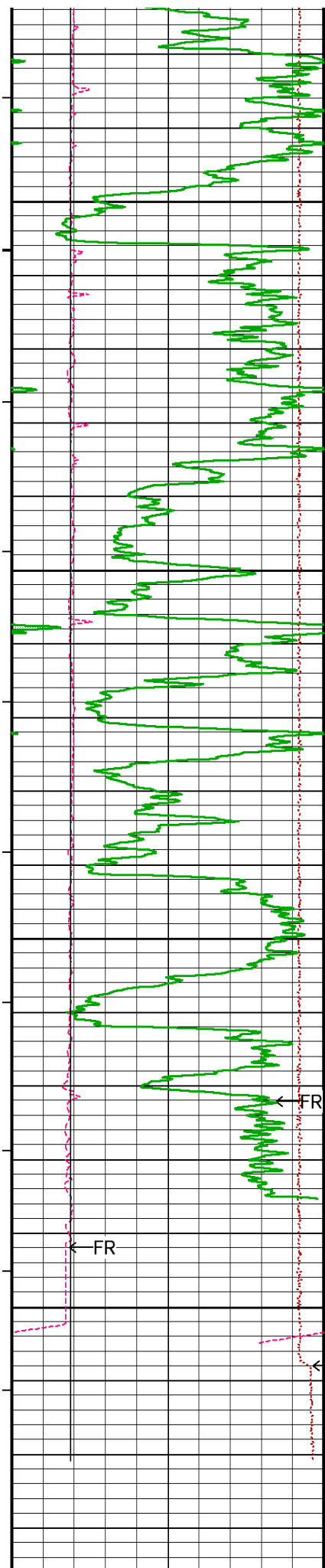


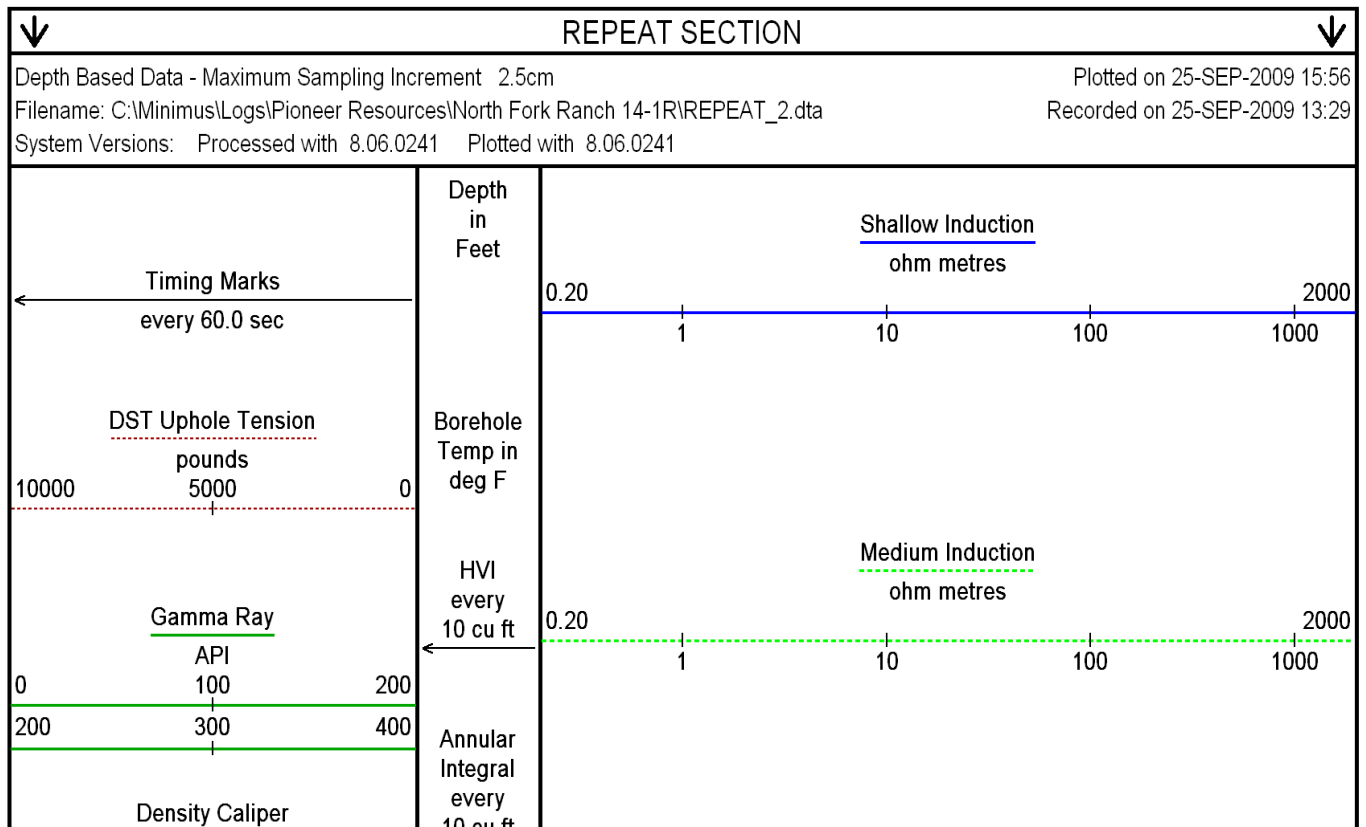
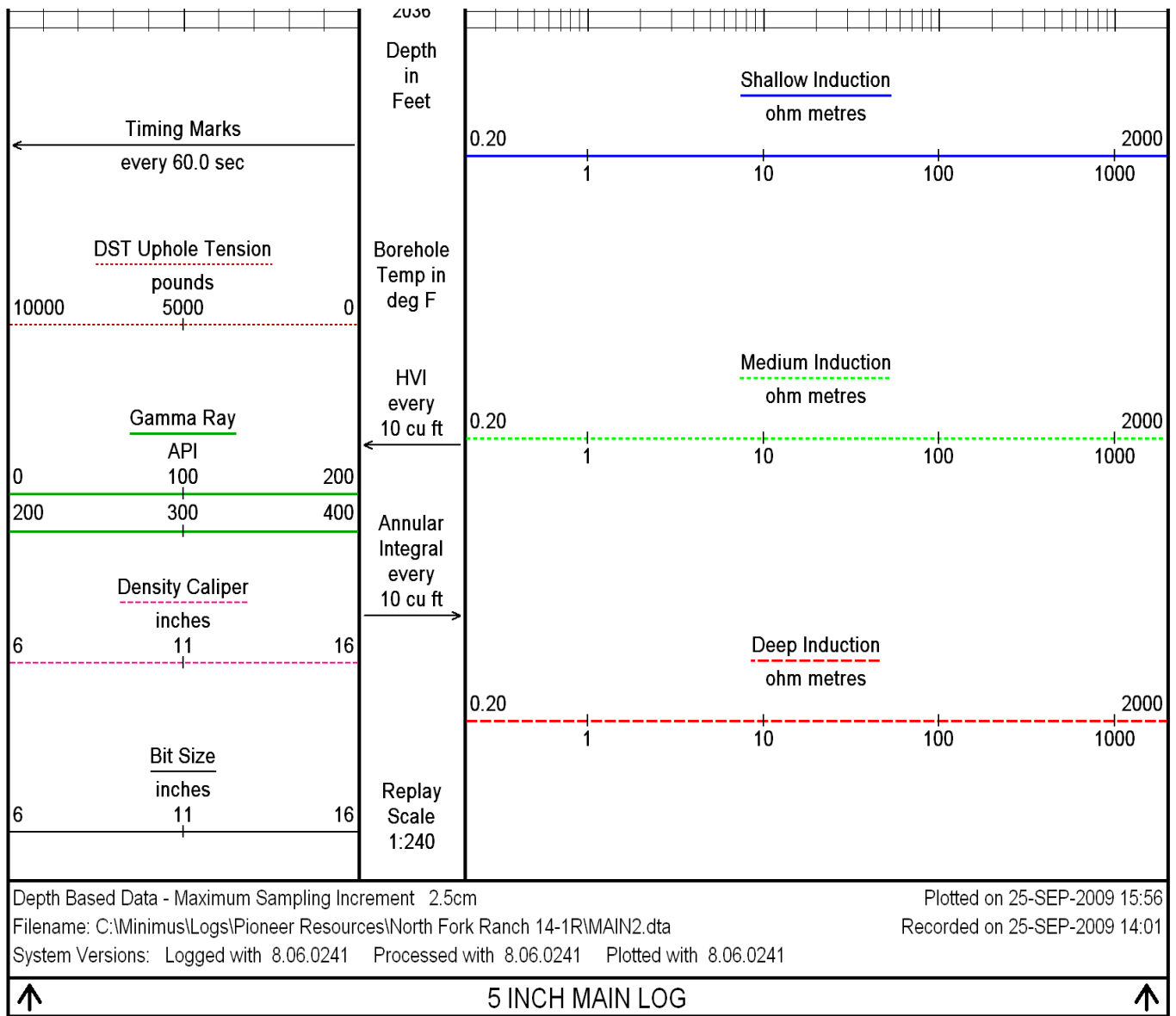


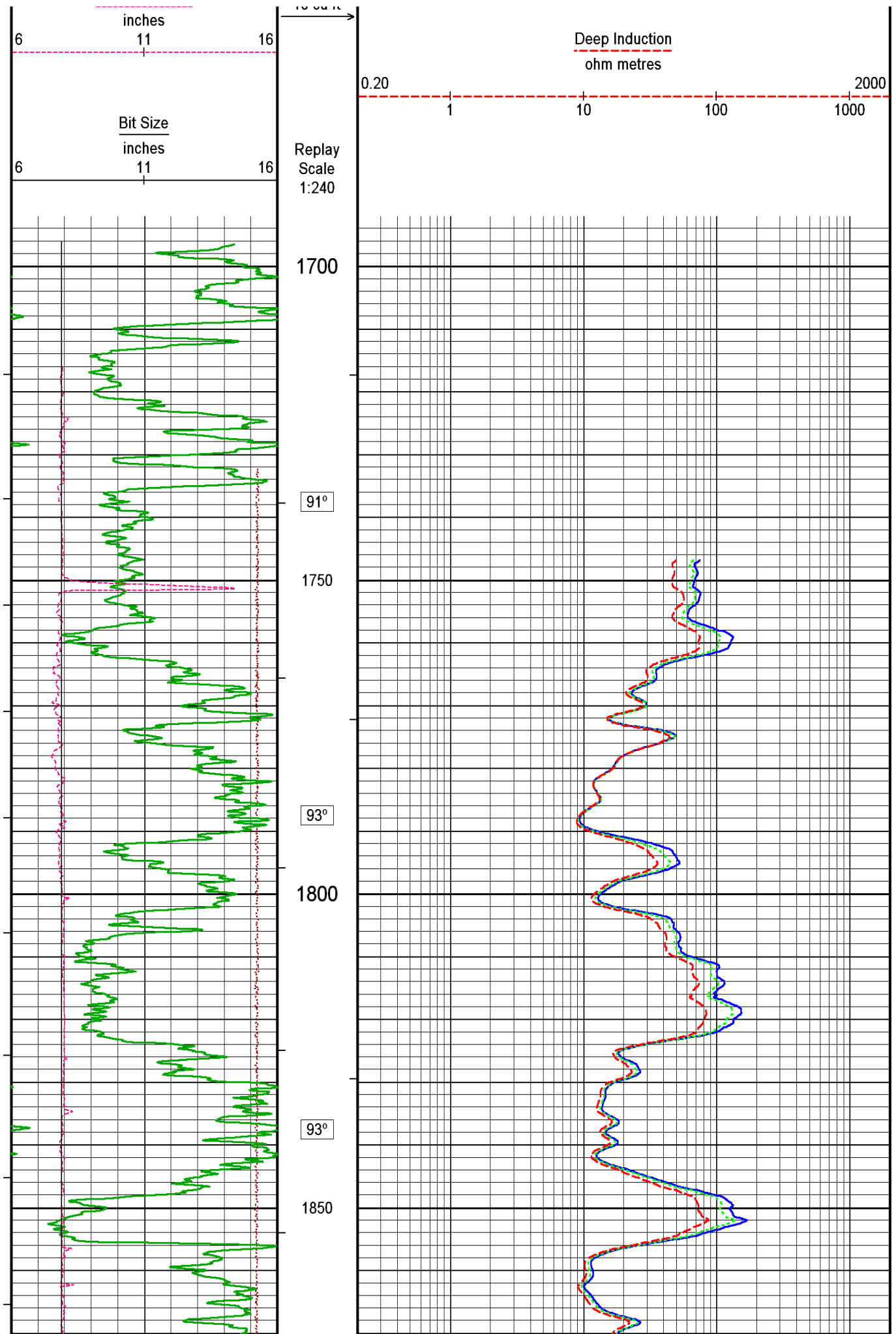


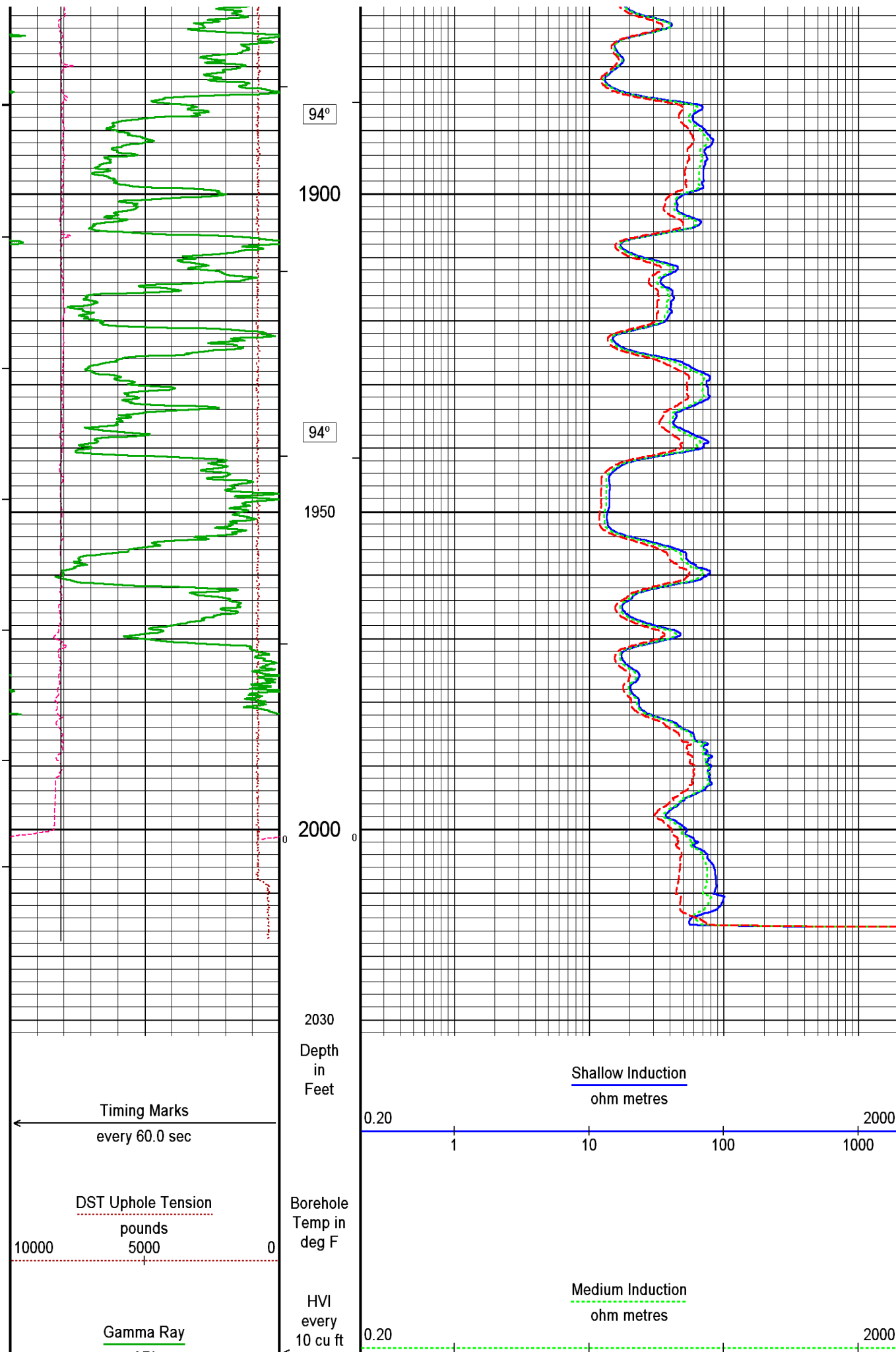


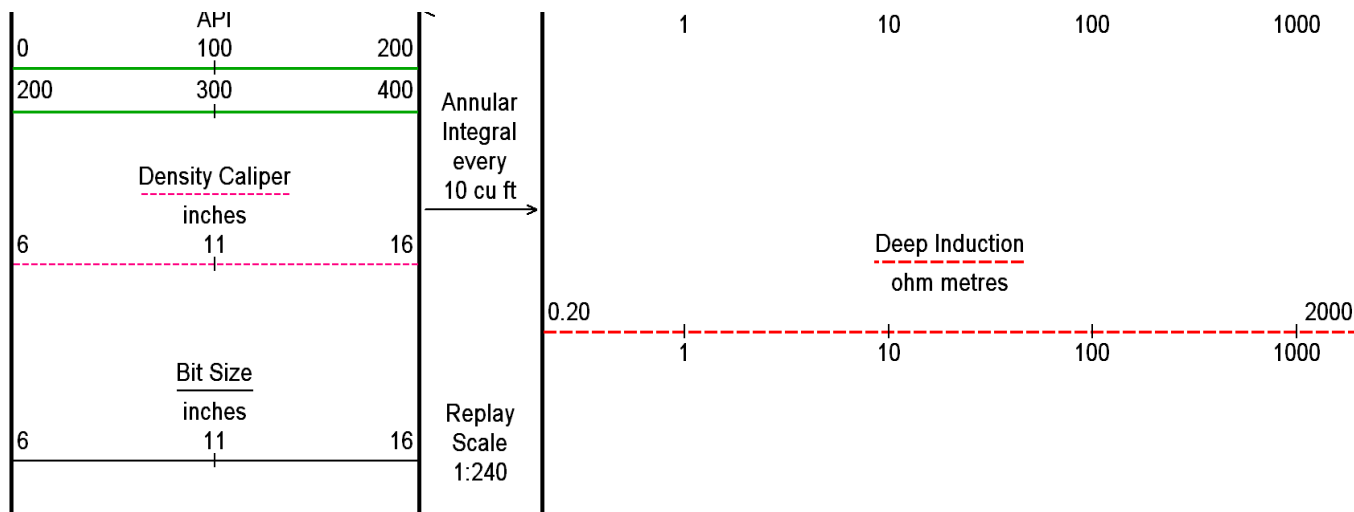












Depth Based Data - Maximum Sampling Increment 2.5cm
 Plotted on 25-SEP-2009 15:57
 Filename: C:\Minimus\Logs\Pioneer Resources\North Fork Ranch 14-1R\REPEAT_2.dta
 Recorded on 25-SEP-2009 13:29
 System Versions: Processed with 8.06.0241 Plotted with 8.06.0241

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION			
C:\Minimus\Logs\Pioneer Resources\North Fork Ranch 14-1R\MAIN.dta			
General Constants All 000		Last Edited on 25-SEP-2009,13:23	
General Parameters			
Mud Resistivity	1000.000	ohm-metres	
Mud Resistivity Temperature	75.000	degrees F	
Water Level	0.000	feet	
Density/Neutron Processing	Air Hole		
Hole/Annular Volume and Differential Caliper Parameters			
HVOL Caliper 1	Density Caliper		
HVOL Caliper 2	None		
Annular Volume Diameter	5.500	inches	
Caliper for Differential Caliper	None		
Rwa Parameters			
Porosity used	Base Density Porosity		
Resistivity used	Deep Induction		
RWA Constant A	0.610		
RWA Constant M	2.150		
Down-hole Tension Calibration SMS 000		Field Calibration on 06-SEP-2009 16:03	
Reading No	Measured	Calibrated (lbs)	
1	14737.51	0.00	
2	15698.25	352.00	
High Resolution Temperature Calibration MCG 247		Field Calibration on 25-SEP-2009,11:25	
	Measured	Calibrated(Deg F)	
Lower	0.00	0.00	
Upper	0.00	0.00	
High Resolution Temperature Constants MCG 247		Last Edited on 6-SEP-2009,12:34	
Pre-filter Length	11		
SP Calibration MCG 247		Field Calibration on 25-SEP-2009,11:24	
	Measured	Calibrated (mV)	
Reference 1	96.1	101.5	
Reference 2	-103.9	-97.7	

Gamma Calibration MCG 247

Field Calibration on 25-SEP-2009 11:29

	Measured	Calibrated (API)
Background	132	88
Calibrator (Gross)	920	613
Calibrator (Net)	787	525

Gamma Constants MCG 247

Last Edited on 25-SEP-2009,13:23

Gamma Calibrator Number	GRC-111	
Mud Density	1.00	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN 216

Base Calibration on 19-AUG-2009 10:59

Field Check on 25-SEP-2009 11:36

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2957	93	3714	110
	31.832		33.764	
Field Calibrator at Base			2334	3367
Ratio			0.693	
Field Check			2394	3390
Ratio			0.706	

Neutron Constants MDN 216

Last Edited on 25-SEP-2009,13:23

Neutron Source Id	P21131B	
Neutron Jig Number	NJ5236	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	7.00	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	None	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

High Resolution Temperature Calibration MAI 213

Field Calibration on 10-SEP-2009,10:36

	Measured	Calibrated(Deg F)
Lower	10.00	50.00
Upper	100.00	212.00

High Resolution Temperature Constants MAI 213

Pre-filter Length	11
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Induction Calibration MAI 213

Base Calibration on 22-JAN-2007,12:35

Field Check on 25-SEP-2009 11:42

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	16.8	462.4	9.3	966.2
2	6.2	381.7	7.6	821.4
3	3.6	254.8	5.2	566.0
4	2.3	132.3	2.6	279.2

Array Temperature 73.6 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	13.6	3937.6	12.7	3934.0
2	30.1	3541.7	29.8	3538.7
3	28.8	3115.6	28.5	3112.8
4	19.0	2097.7	18.9	2095.7
Deep	17.3	2079.1	17.1	2076.9
Medium	42.5	4090.1	42.3	4086.6
Shallow	45.2	5162.2	44.8	5158.2
Array Temperature	62.4		49.9 Deg F	

Induction Constants MAI 213

Last Edited on 25-SEP-2009,13:25

Induction Model	ENHANCED		
Caliper for Borehole Corr.	Density Caliper		
Hole Size for Borehole Correction	N/A	inches	
Tool Centred	No		
Stand-off Type	Fins		
Stand-off	0.50	inches	
Number of Fins on Stand-off	N/A		
Stand-off Fin Angle	60.00	degrees	
Stand-off Fin Width	0.0000	inches	
Borehole Corr. Rm Source	Temperature Corr		
Temp. for Rm Corr.	MCG External Temperature		
Squasher Start	0.0020	mhos/metre	

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00
Cementation Exponent (M)	2.00
Saturation Exponent (N)	2.00
Saturation of Water for Apor	100.00 percent
Resistivity of Water for Apor and Sw	0.05 ohm-m
Resistivity of Mud Filtrate for Sw	0.00 ohm-m

Caliper Calibration MPD 220

Base Calibration on 10-SEP-2009 10:23

Field Calibration on 25-SEP-2009,11:45

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14258	4.01
2	22640	5.97
3	30513	7.96
4	38624	9.86
5	48000	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.99	7.96

Photo Density Calibration MPD 220

Base Calibration on 10-SEP-2009 10:12

Field Check on 25-SEP-2009 11:50

Density Calibration

General Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	50075	18512	53167	19331
Reference 2	23358	2856	25116	2544
Field Check at Base	1297.6	1538.1		
Field Check	1300.2	1539.2		

PE Calibration

Base Calibration	WS	Measured		Calibrated	
		WH	Ratio	Ratio	
Background	235	1152			
Reference 1	18203	49877	0.369		0.320
Reference 2	6810	23193	0.298		0.273
Field Check at Base	235.2	1151.5			
Field Check	233.5	1148.8			

Density Constants MPD 220

Last Edited on 25-SEP-2009,11:50

Density Source Id	P21136B	
Nylon Calibrator Number	535	
Aluminium Calibrator Number	535	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.00	gm/cc
Mud Density Z/A Correction	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Standard	
Matrix Density (gm/cc)	Depth (ft)	
2.65	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

DOWNHOLE EQUIPMENT

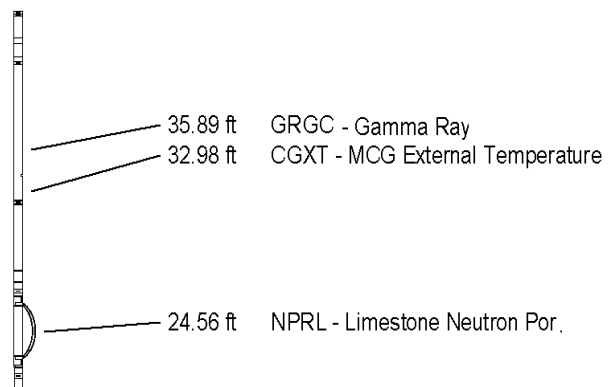
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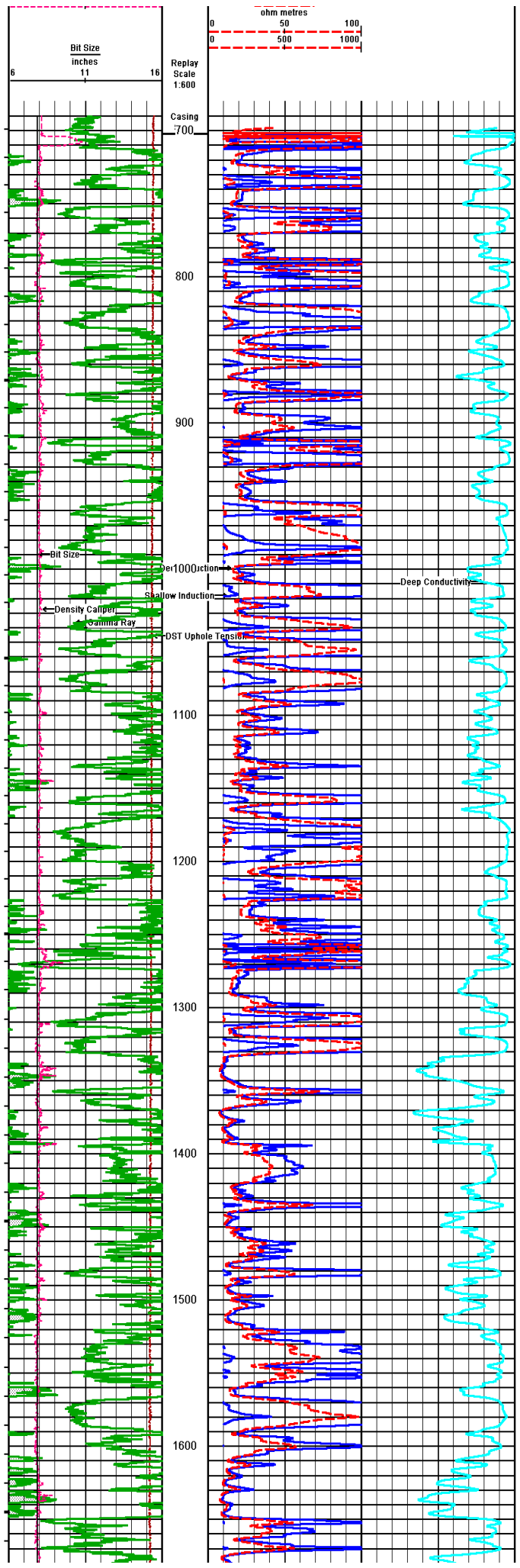
SHA-J.A Compact Swivel Head Adaptor
SHA 214 Length: 2.30 ft Weight: 22.0 lb

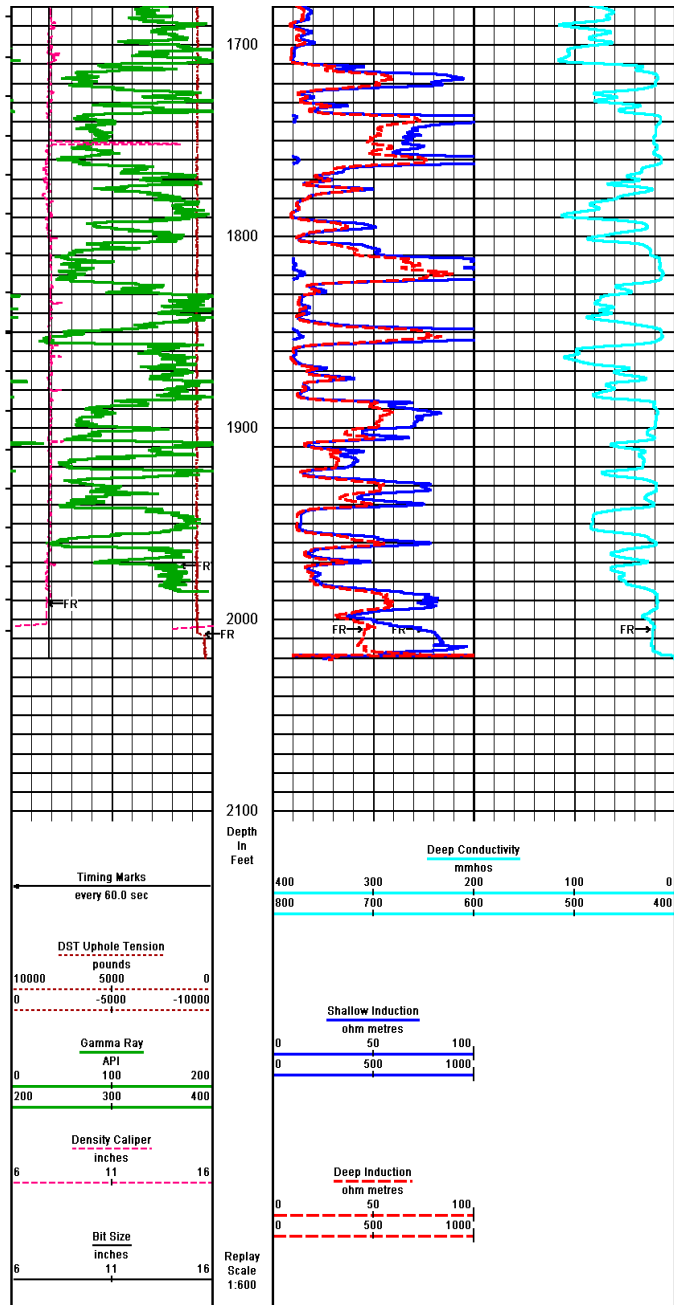
Compact Gamma
MCG 247 Length: 8.70 ft Weight: 63.9 lb

Compact Linker
MLK 5 Length: 4.87 ft Weight: 86.0 lb

Compact Neutron
MDN 216 Length: 5.04 ft Weight: 50.7 lb







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1 INCH MAIN LOG

COMPANY	PIONEER NATURAL RESOURCES				
WELL	NORTH FORK RANCH 14 - 1R				
FIELD	MAXWELL				
PROVINCE/COUNTY	LAS ANIMAS				
COUNTRY/STATE	U.S.A./COLORADO				
Elevation Kelly Bushing	7935.00	feet	First Reading	2005.00	feet
Elevation Drill Floor	7934.00	feet	Depth Driller	2015.00	feet
Elevation Ground Level	7931.00	feet	Depth Logger	2008.00	feet



ARRAY INDUCTION
LOG