

# HALLIBURTON

## ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY		VAL ENERGY INC	
WELL		MYRTLE 3-31	
FIELD		UNKNOWN	
COUNTY		BARBER	
STATE		KANSAS	
Permanent Datum	GL	Sect. 31	Twp. 33S
Log measured from	KB		Rge. 10W
Drilling measured from	KB		Elev. 1468.0 ft
Date	08-Jun-11		Elev.: K.B. 1479.0 ft
Run No.	ONE		D.F. 1478.0 ft
Depth - Driller	4992.00 ft		G.L. 1468.0 ft
Depth - Logger	4984.0 ft		
Bottom - Logged Interval	4974.0 ft		
Top - Logged Interval	223.0 ft		
Casing - Driller	8.625 in @ 227.0 ft		
Casing - Logger	223.0 ft		
Bit Size	7.875 in		
Type Fluid in Hole	WATER BASED MUD		
Density	9.2 ppq	58.00	s/qt
PH	10.50	9.6	cp/m
Source of Sample	FLOW LINE		
Rm @ Meas. Temperature	0.409 ohmm	@	92.00 degF
Rmf @ Meas. Temperature	0.36 ohmm	@	89.00 degF
Rmc @ Meas. Temperature	0.450 ohmm	@	90.00 degF
Source Rmf	MEAS		MEAS
Rm @ BHT	0.32 ohmm	@	120.0 degF
Time Since Circulation	3.0 hr		
Time on Bottom	08-Jun-11 06:52		
Max. Rec. Temperature	120.0 degF	@	4984.0 ft
Equipment	10546896		LIBERAL
Recorded By	C. PARKER		
Witnessed By	Z STEWART		
COMPANY		VAL ENERGY INC	
WELL		MYRTLE 3-31	
FIELD		UNKNOWN	
COUNTY		BARBER	
STATE		KANSAS	
API No.	15-007-23711	Other Services: DSN/SDL MICRO	
Location	495 FNL & 2970 FEL		

Fold here

Service Ticket No.: 8231875		API Serial No.: 15-007-23711		PGM Version: WL INSITE R3.2.0 (Build 7)			
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE				RESISTIVITY SCALE CHANGES			
Date	Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth-Driller							
Type Fluid in Hole							
Density	Viscosity						
Ph	Fluid Loss						
Source of Sample				RESISTIVITY EQUIPMENT DATA			
Rm @ Meas. Temp	@	@		Run No.	Tool Type & No.	Pad Type	Tool Pos.
Rmf @ Meas. Temp.	@	@		ONE	ACRT S909	N/A	1.5" S.O.
Rmc @ Meas. Temp.	@	@					
Source Rmf	Rmc						
Rm @ BHT	@	@					
Rmf @ BHT	@	@					
Rmc @ BHT	@	@					
EQUIPMENT DATA							
GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.		Run No.	
Serial No.	11050378	Serial No.		Serial No.		Serial No.	
Model No.	GTET	Model No.		Model No.		Model No.	
Diameter	3.625	No. of Cent.		Diameter		Diameter	
Detector Model No.	T-102	Spacing		Log Type		Log Type	
Type	SCINT			Source Type		Source Type	
Length	8"	LSA [Y/N]		Serial No.		Serial No.	
Distance to Source	10'	FWDA [Y/N]		Strength		Strength	
LOGGING DATA							

GENERAL			GAMMA		ACOUSTIC		DENSITY		NEUTRON		
Run No.	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix
	From	To	ft/min	L	R	L	R		L	R	
ONE	TD	CSG	REC	0	150						

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING

CHLORIDES 3000 PPM: LCM 3 #/BBL

GPS COORDINATES: 37° 08' N, 98° 27' W

TODAY'S CREW: A. VASQUES, P. COBLE

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS: 620 624 8123

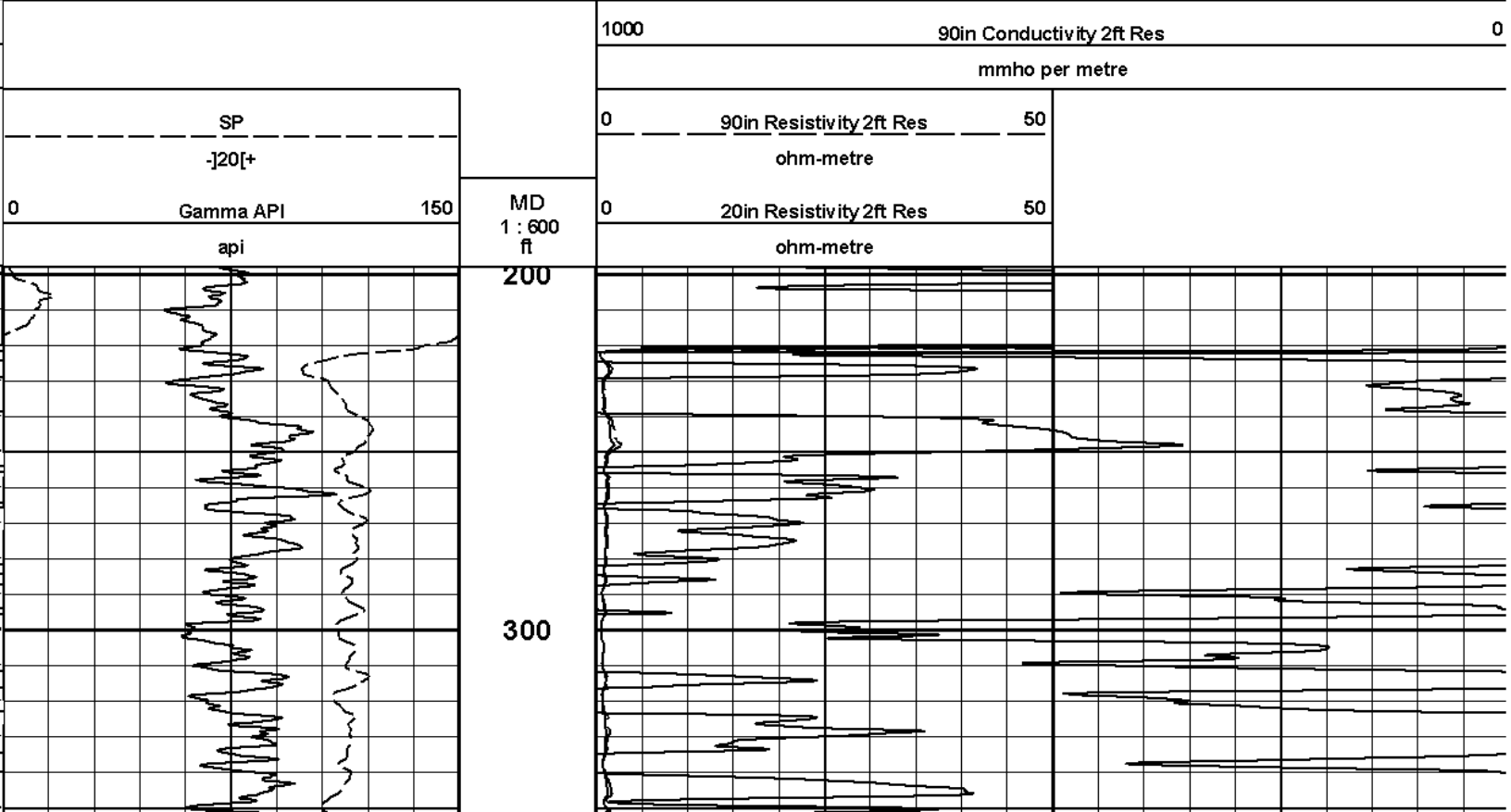
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

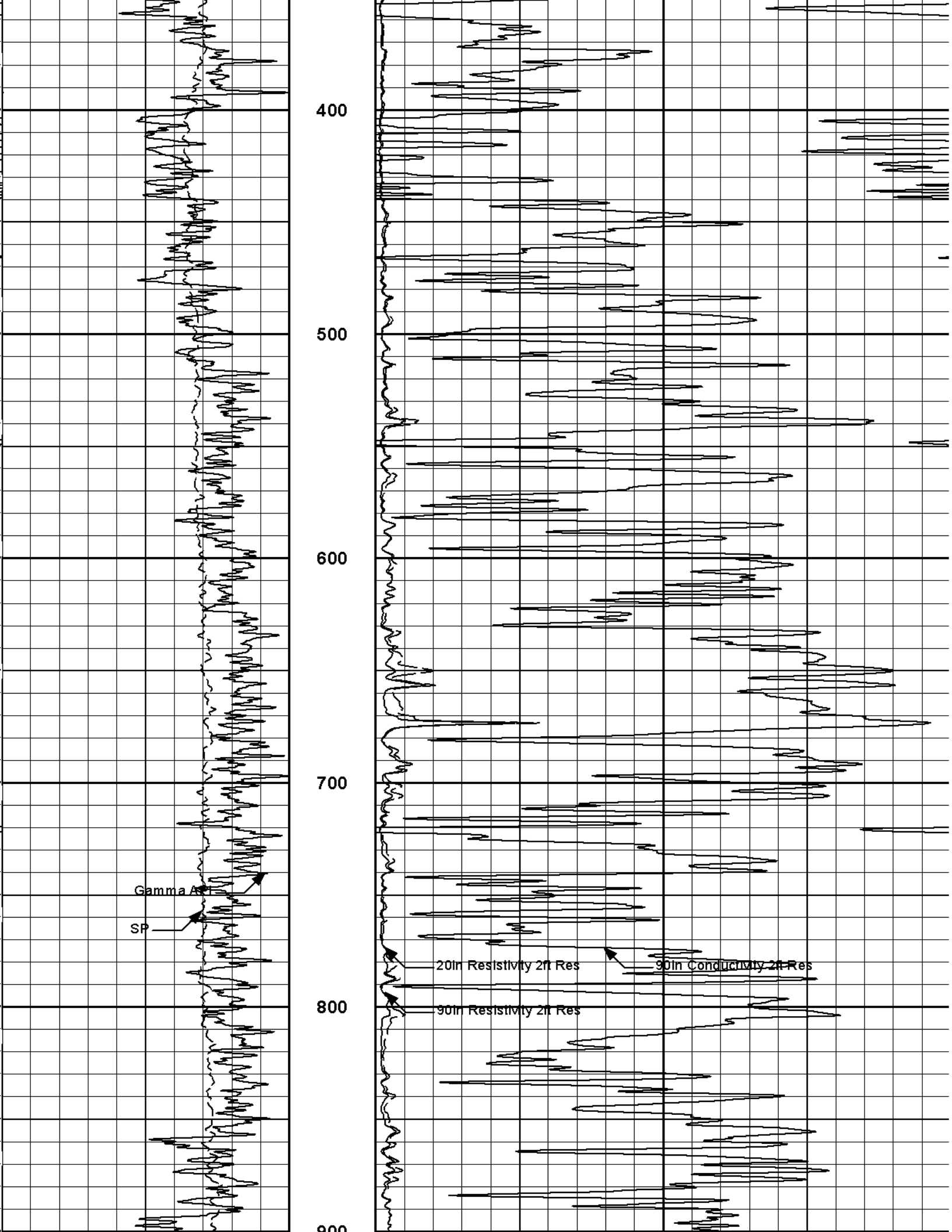
HALLIBURTON

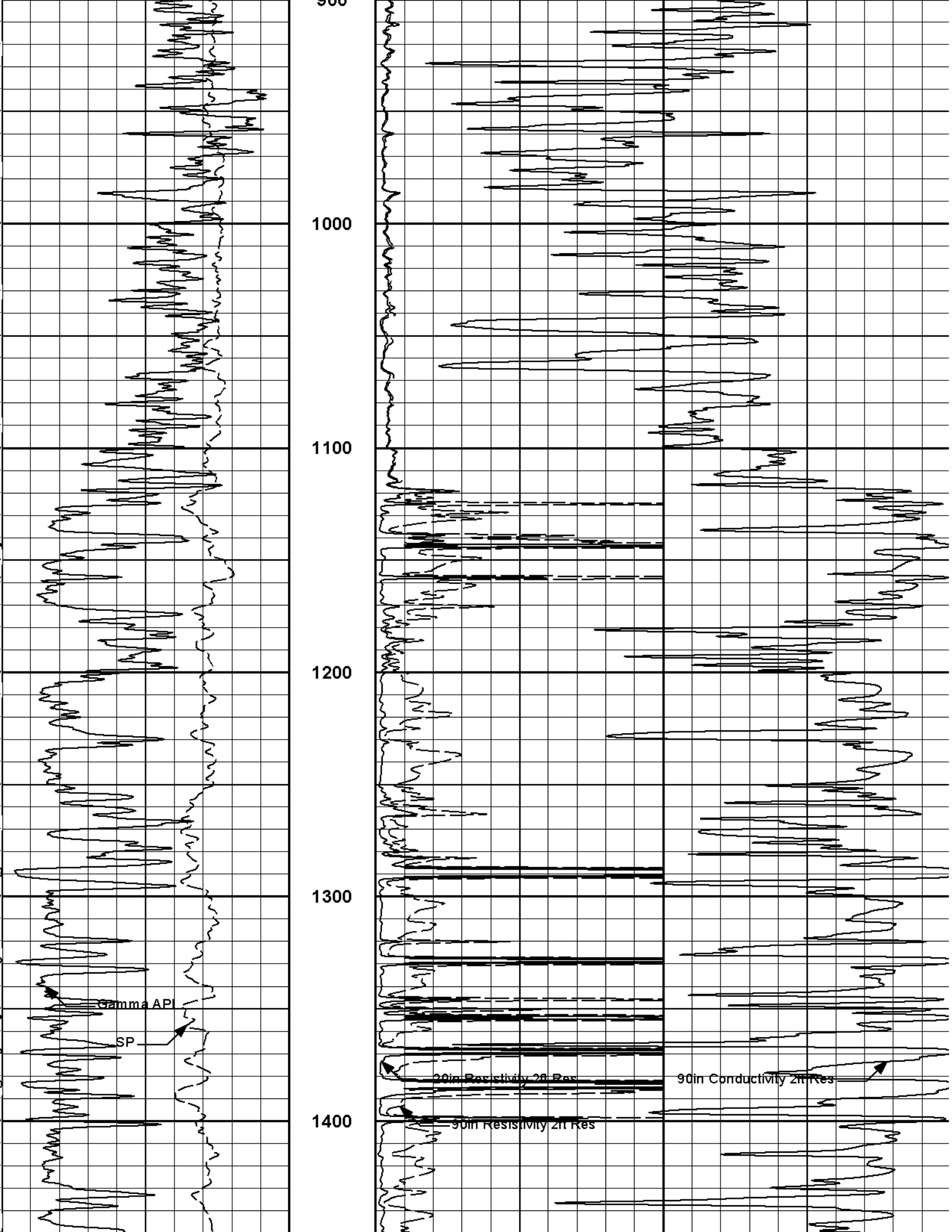
**HALLIBURTON**

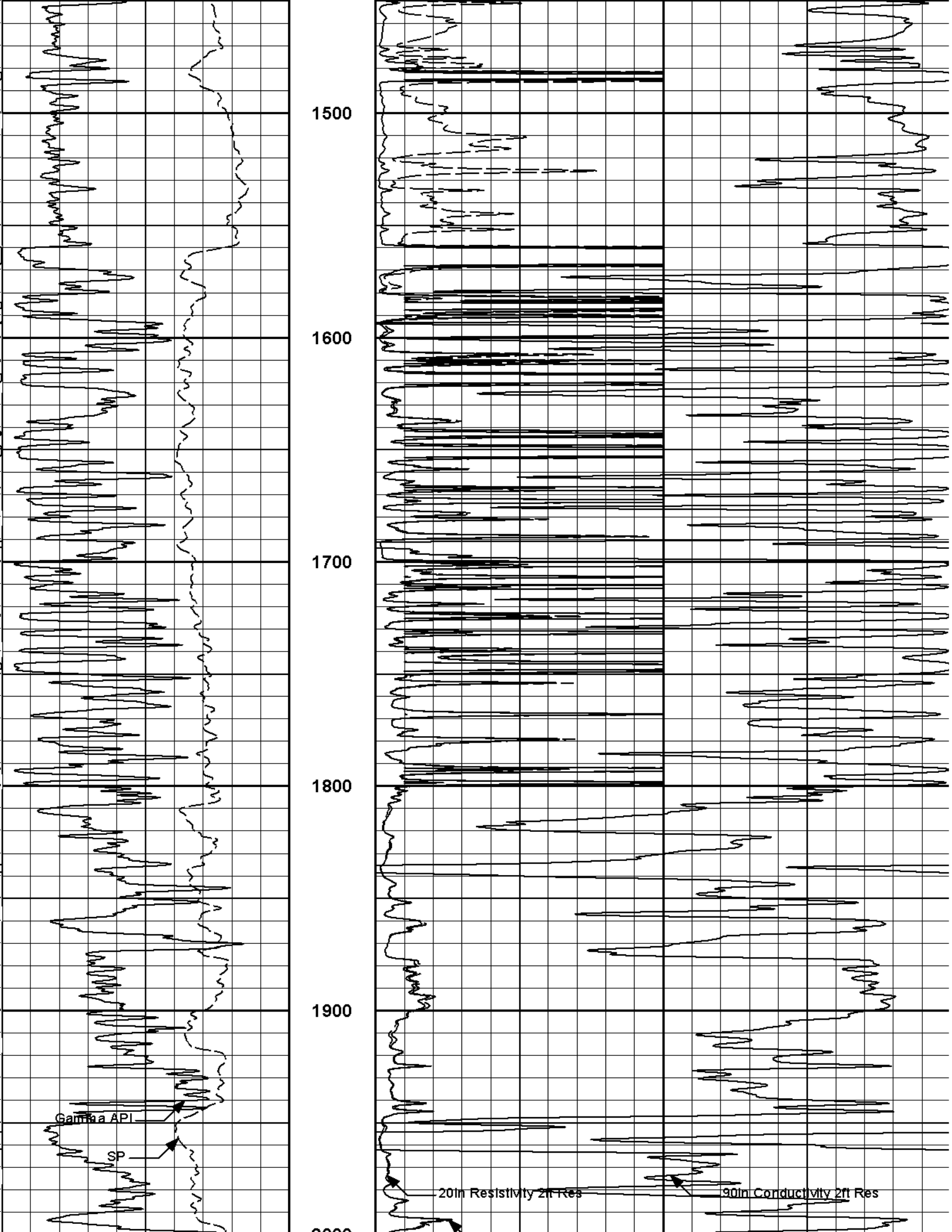
Plot Time: 08-Jun-11 07:43:24  
 Plot Range: 198 ft to 4989.75 ft  
 Data: MYRTLE\_3\_31\Well Based\DAQ-0001-0031  
 Plot File: \\LOCAL\ACRT\ACRT\_2.lib

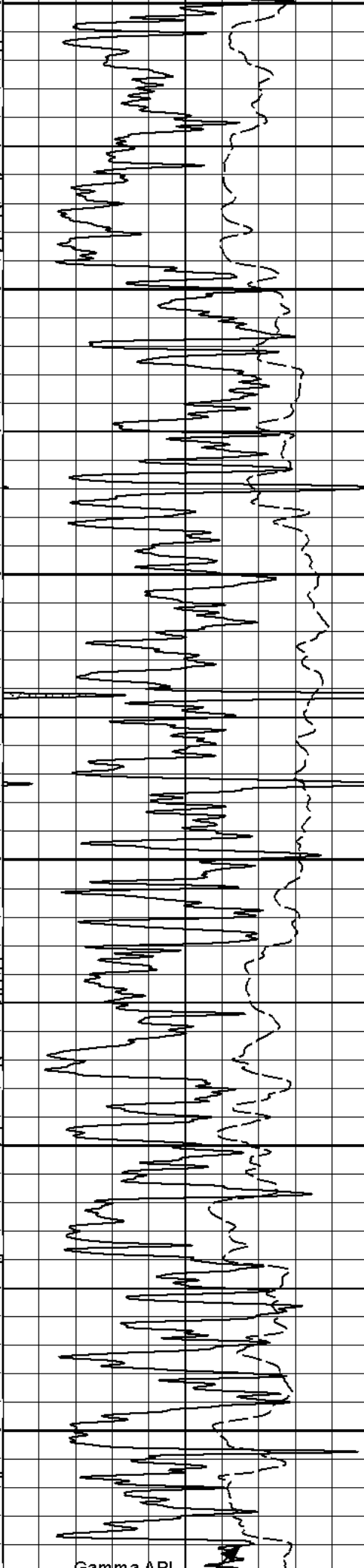
**2 INCH MAIN LOG**



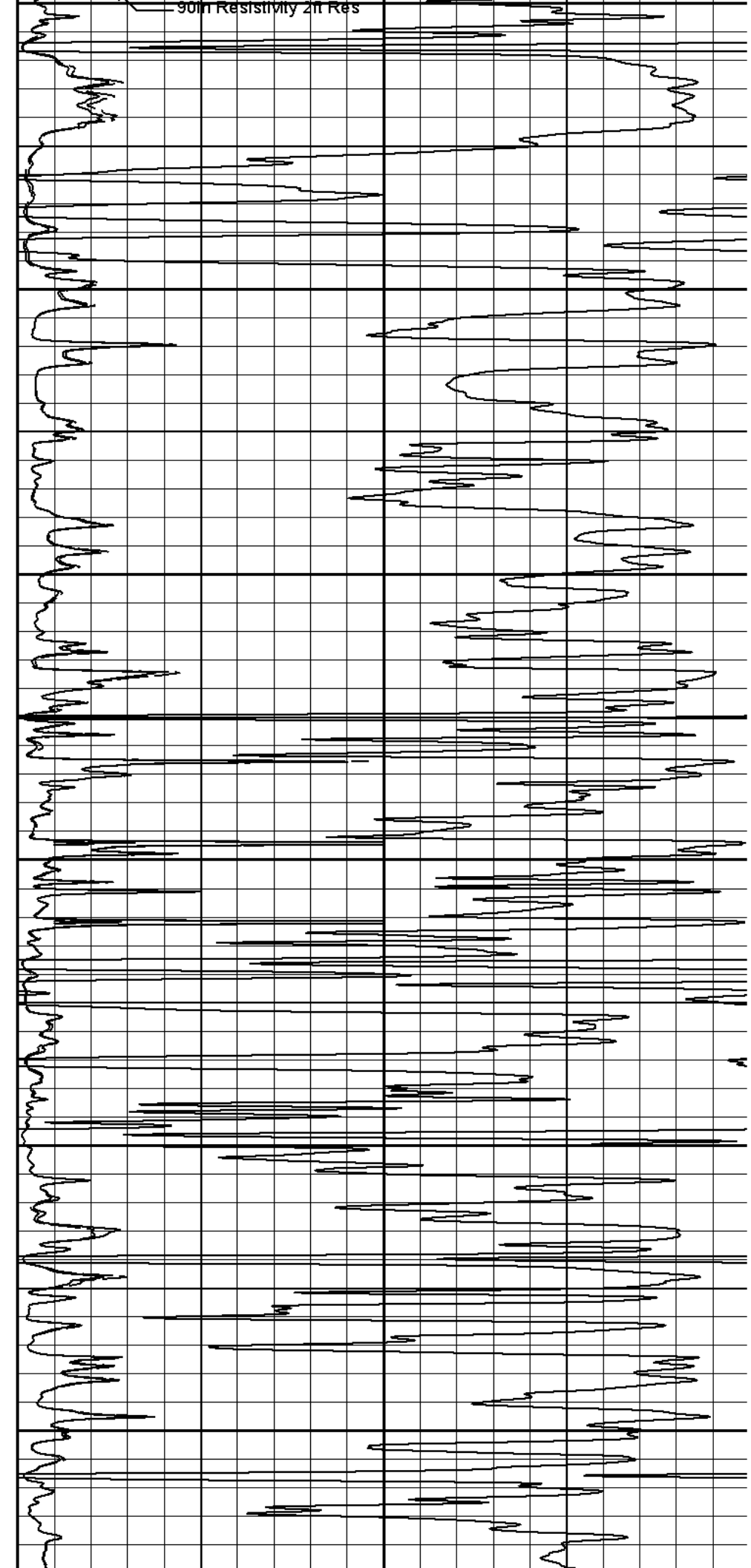






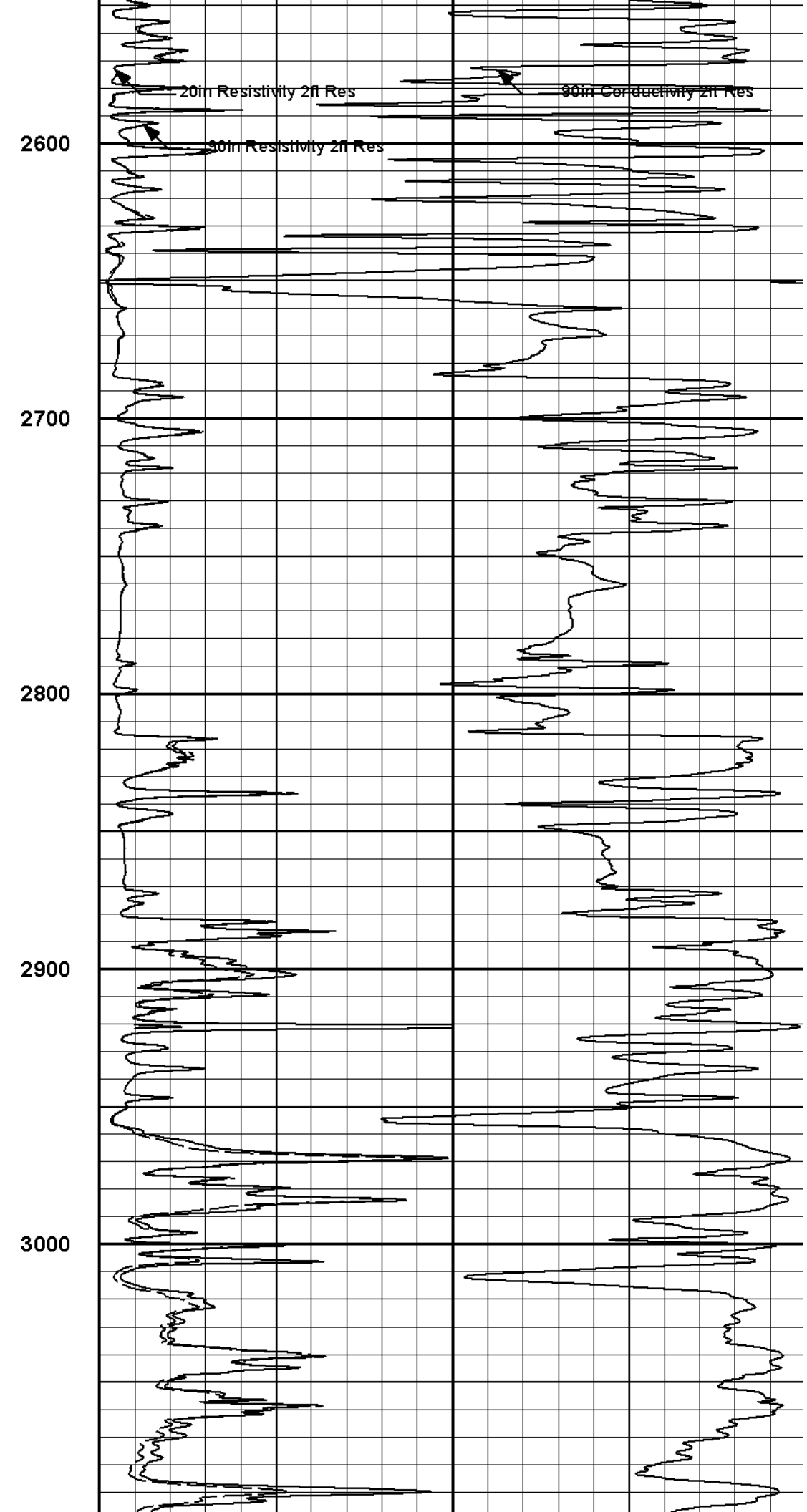
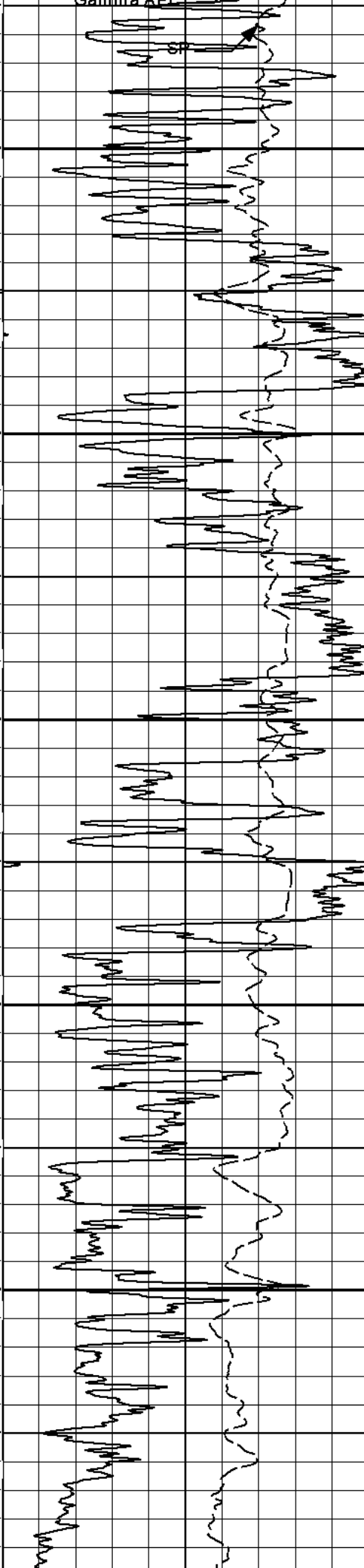


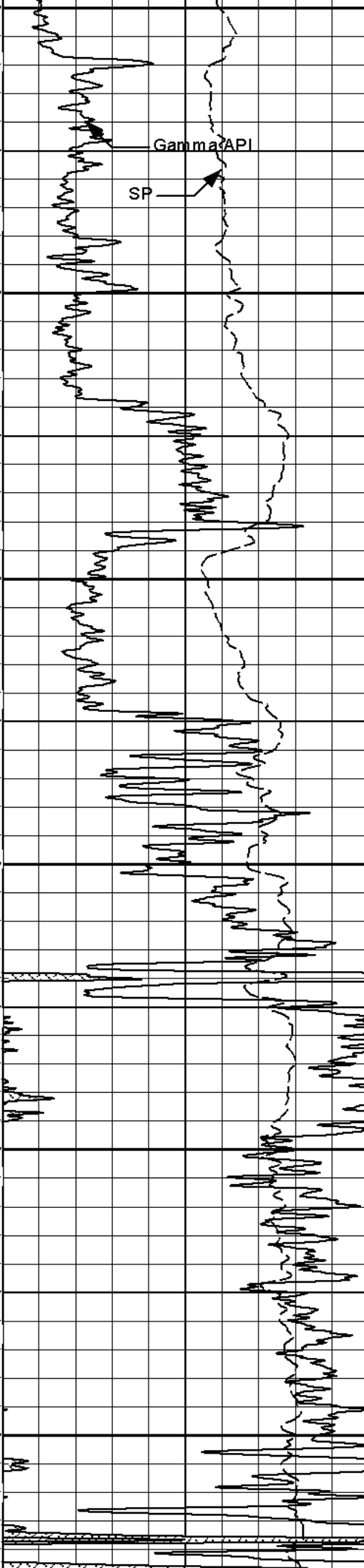
2000  
2100  
2200  
2300  
2400  
2500



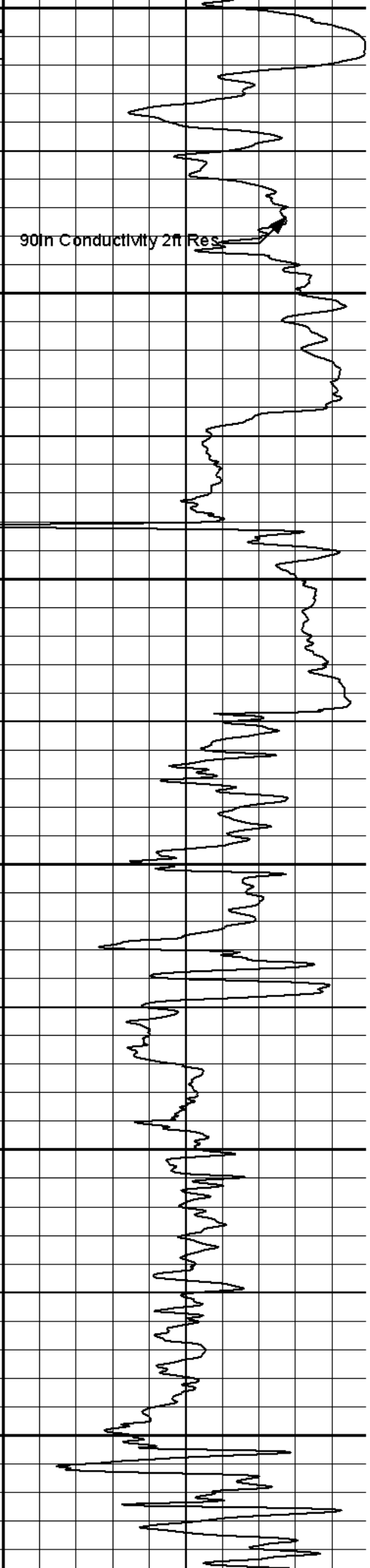
90m Resistivity 2ft Res

Gamma API

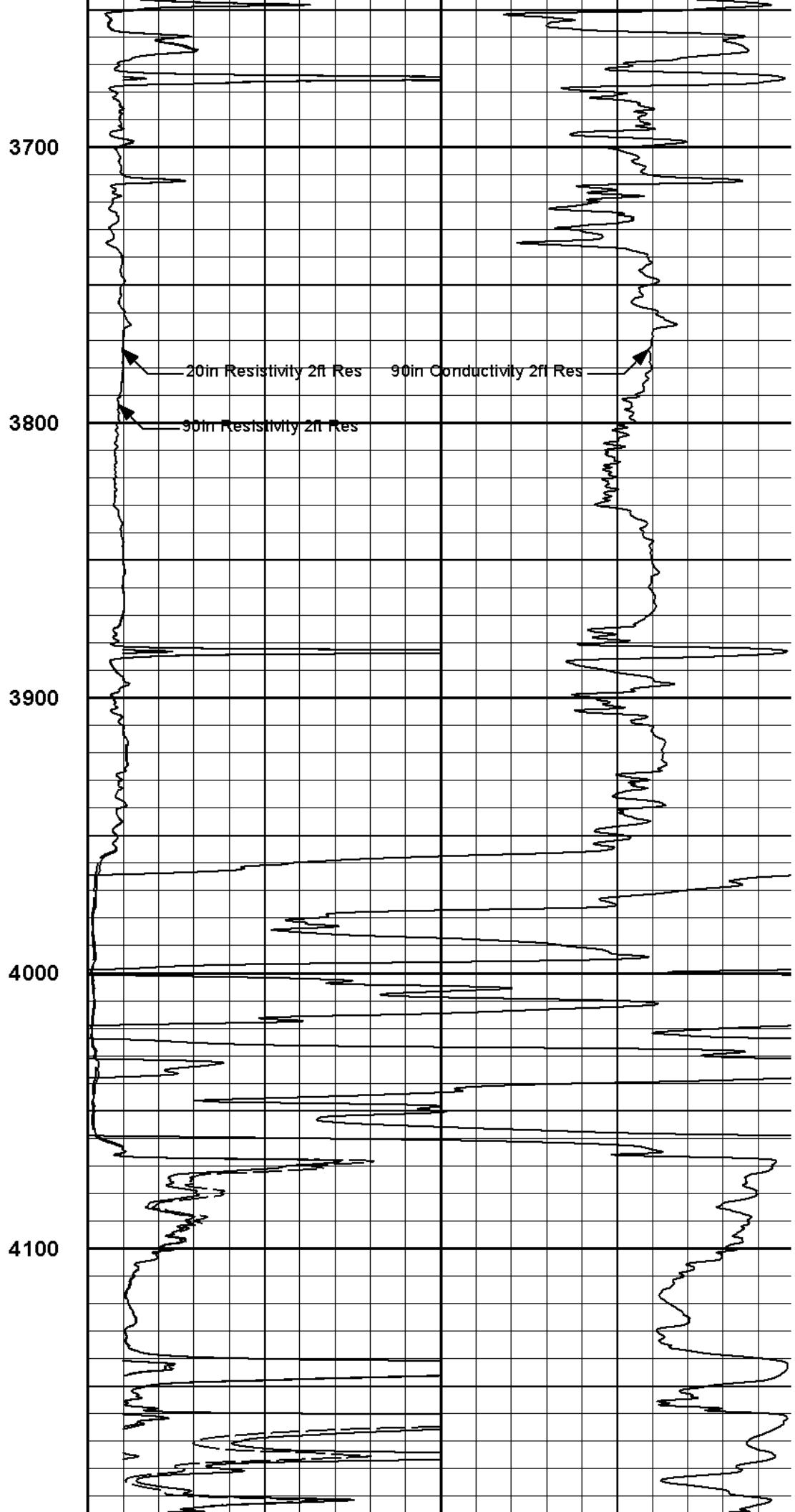
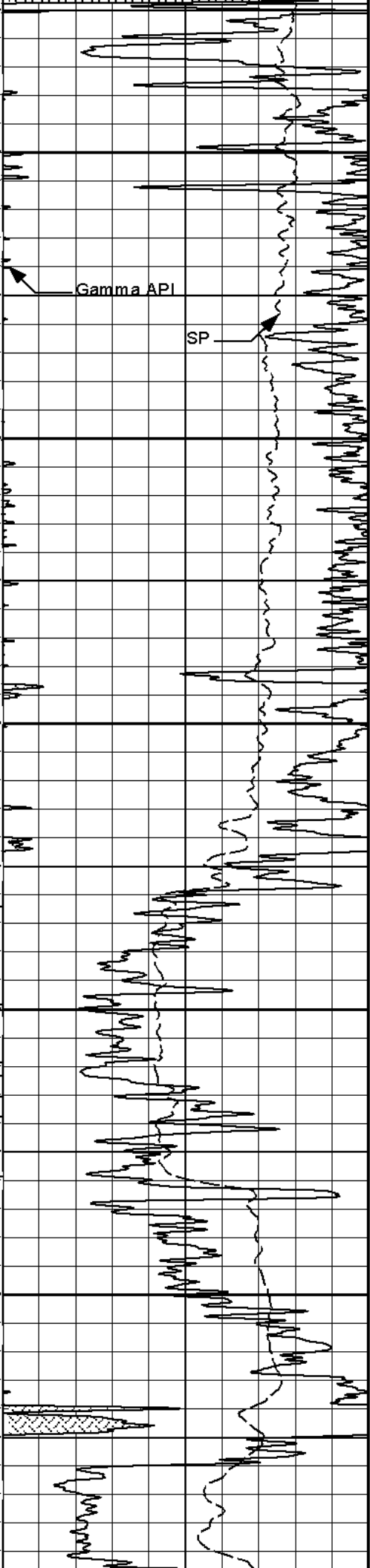


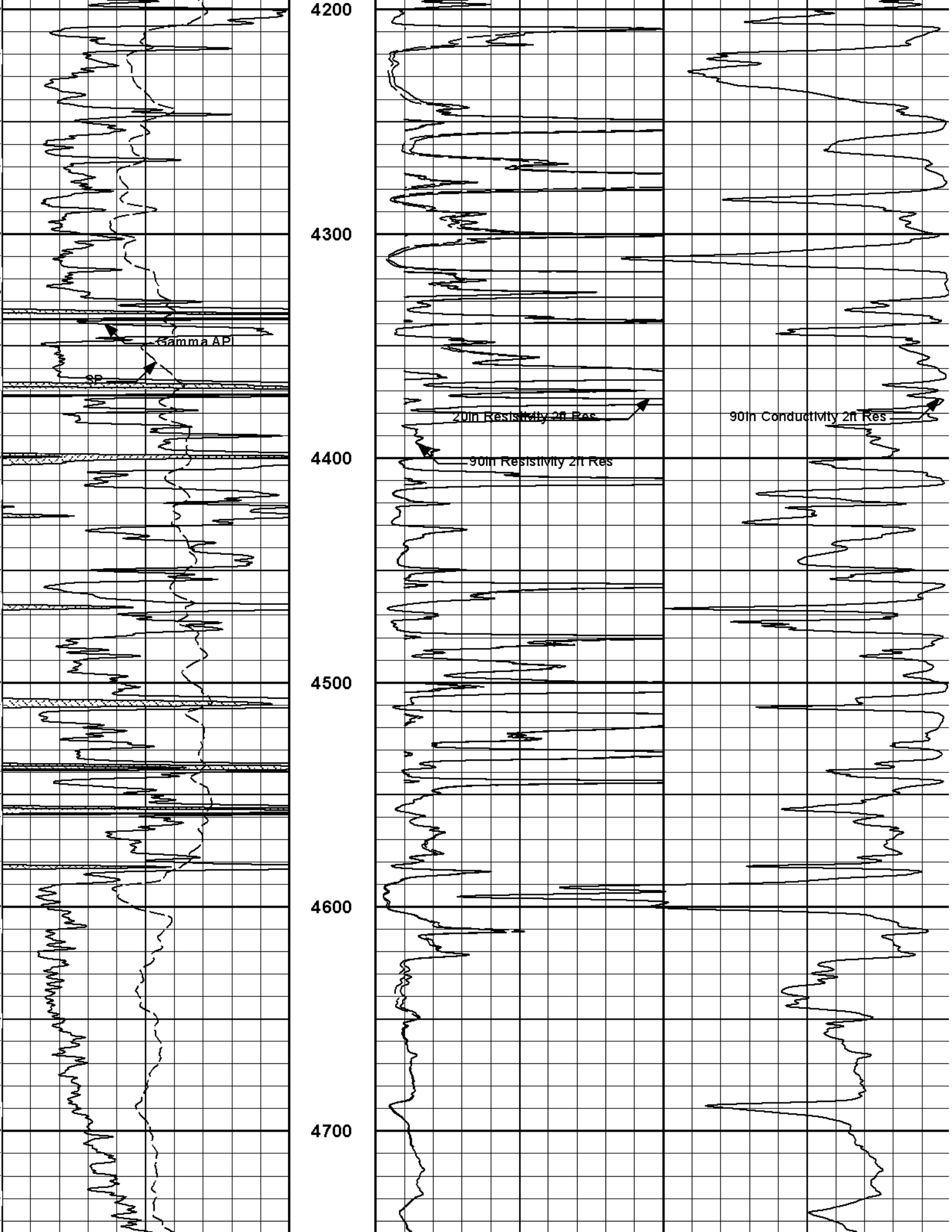


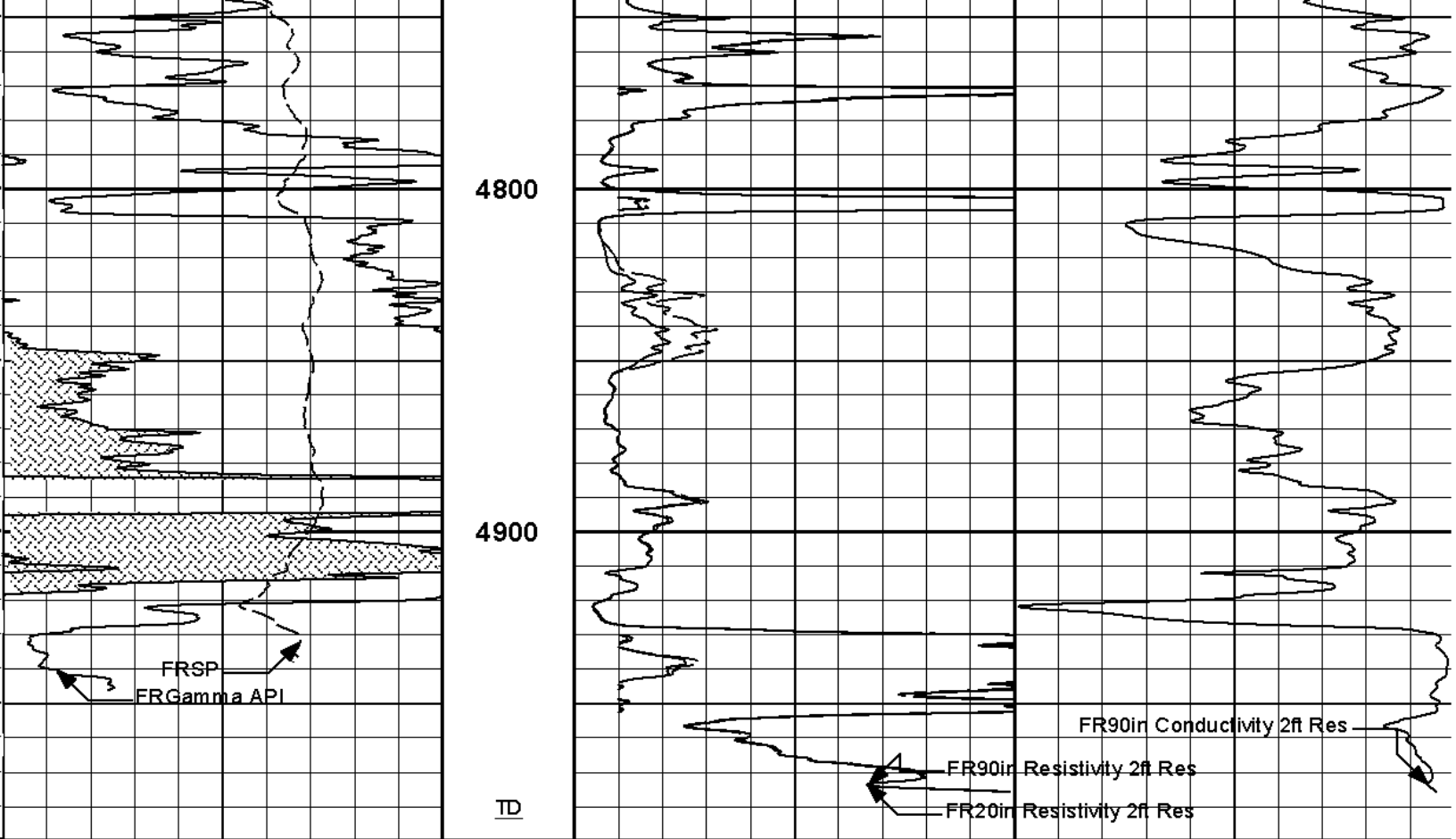
3100  
3200  
3300  
3400  
3500  
3600











0	Gamma API	150	MD	0	20in Resistivity 2ft Res	50
	api		1 : 600		ohm-metre	
	SP		ft	0	90in Resistivity 2ft Res	50
	-]20[+				ohm-metre	
				1000	90in Conductivity 2ft Res	0
					mmho per metre	

**HALLIBURTON**

Plot Time: 08-Jun-11 07:43:40  
 Plot Range: 198 ft to 4989.75 ft  
 Data: MYRTLE\_3\_31\Well Based\DAQ-0001-003\  
 Plot File: \\LOCAL-ACRT\ACRT\_2\_lib

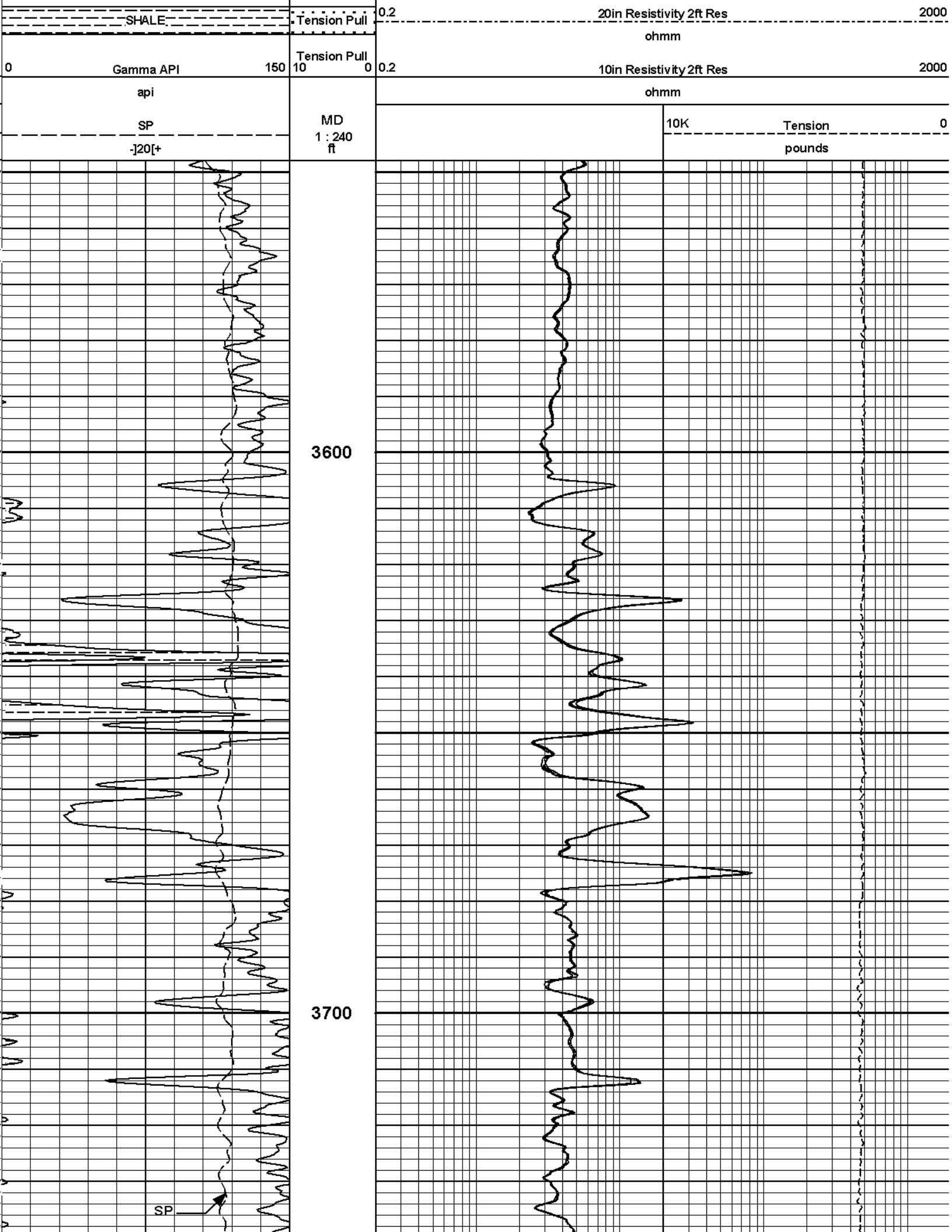
## 2 INCH MAIN LOG

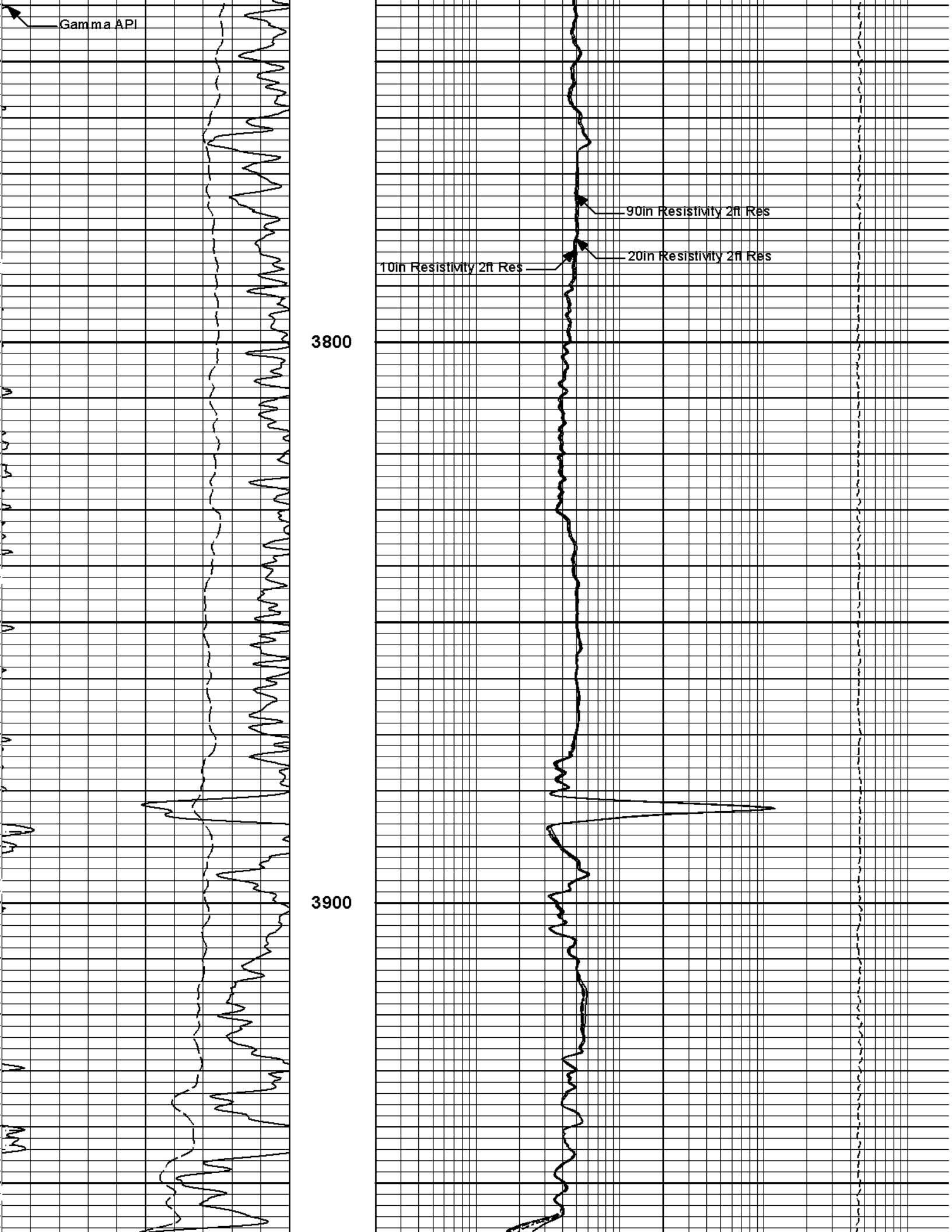
**HALLIBURTON**

Plot Time: 08-Jun-11 07:43:40  
 Plot Range: 3548 ft to 4989.75 ft  
 Data: MYRTLE\_3\_31\Well Based\DAQ-0001-003\  
 Plot File: \\LOCAL-ACRT\ACRT\_5\_main\_lib

## 5 INCH MAIN LOG

0.2	90in Resistivity 2ft Res	2000
	ohmm	
0.2	60in Resistivity 2ft Res	2000
	ohmm	
0.2	30in Resistivity 2ft Res	2000
	ohm-metre	





Gamma API

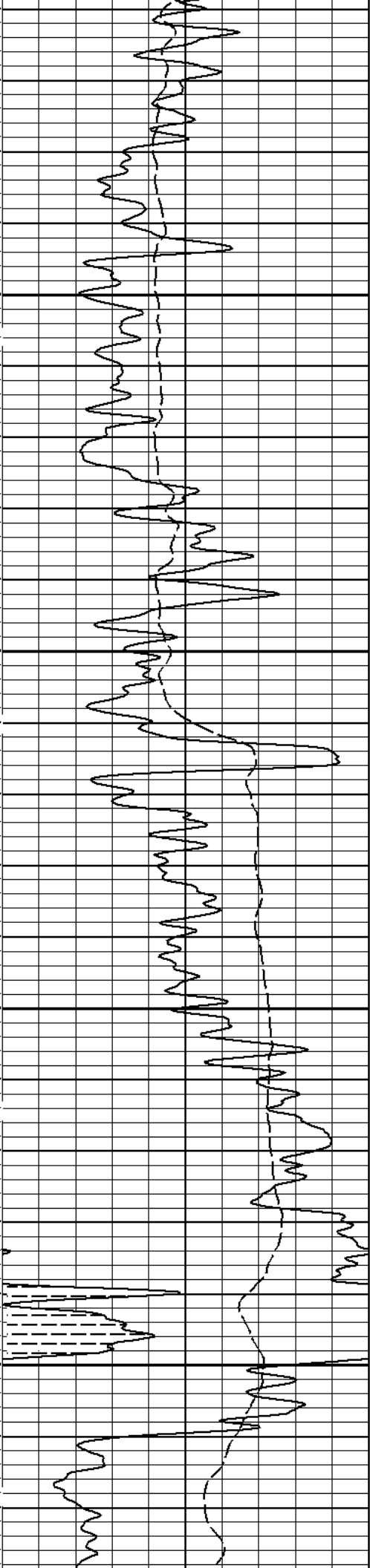
3800

3900

10in Resistivity 2ft Res

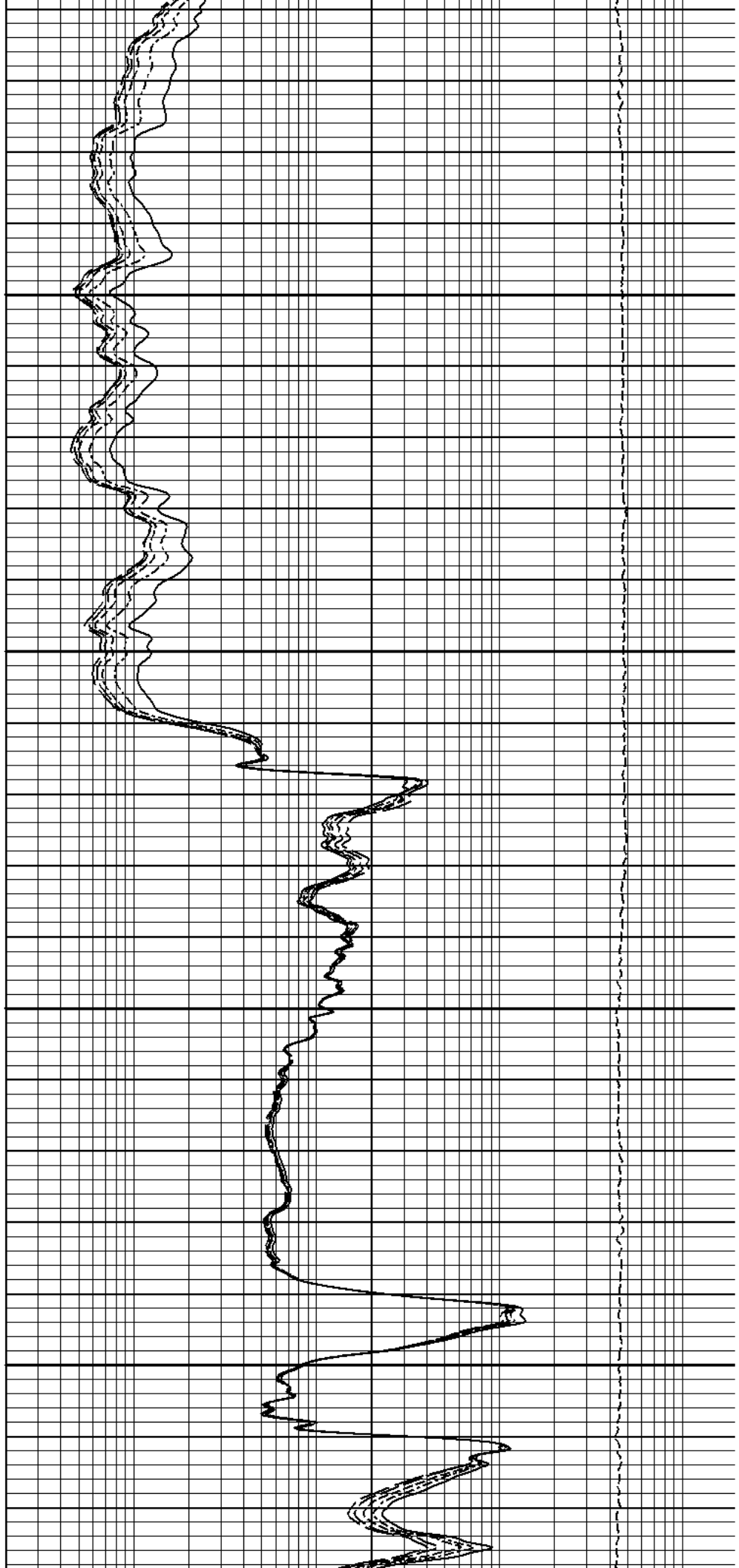
20in Resistivity 2ft Res

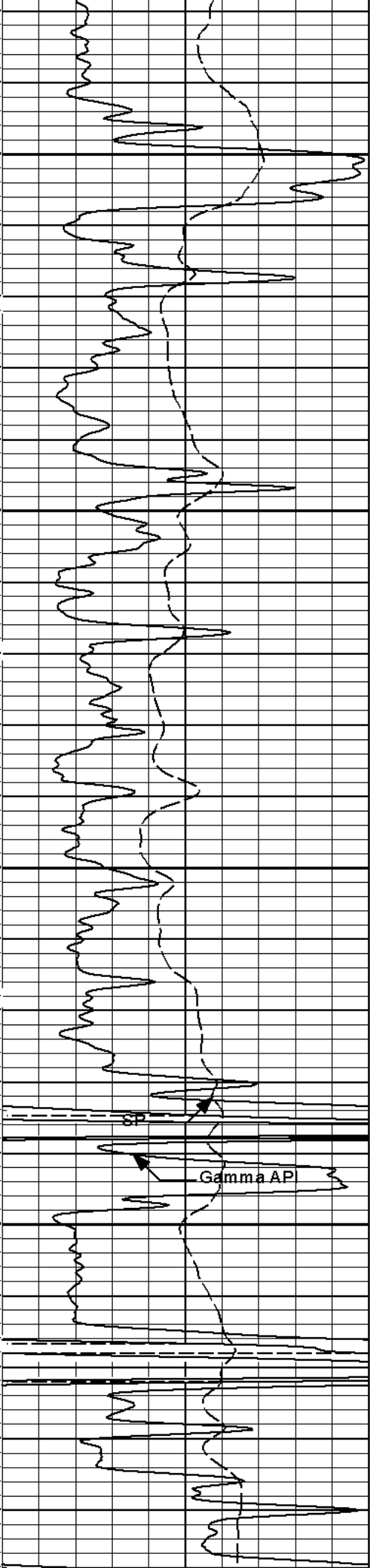
90in Resistivity 2ft Res



4000

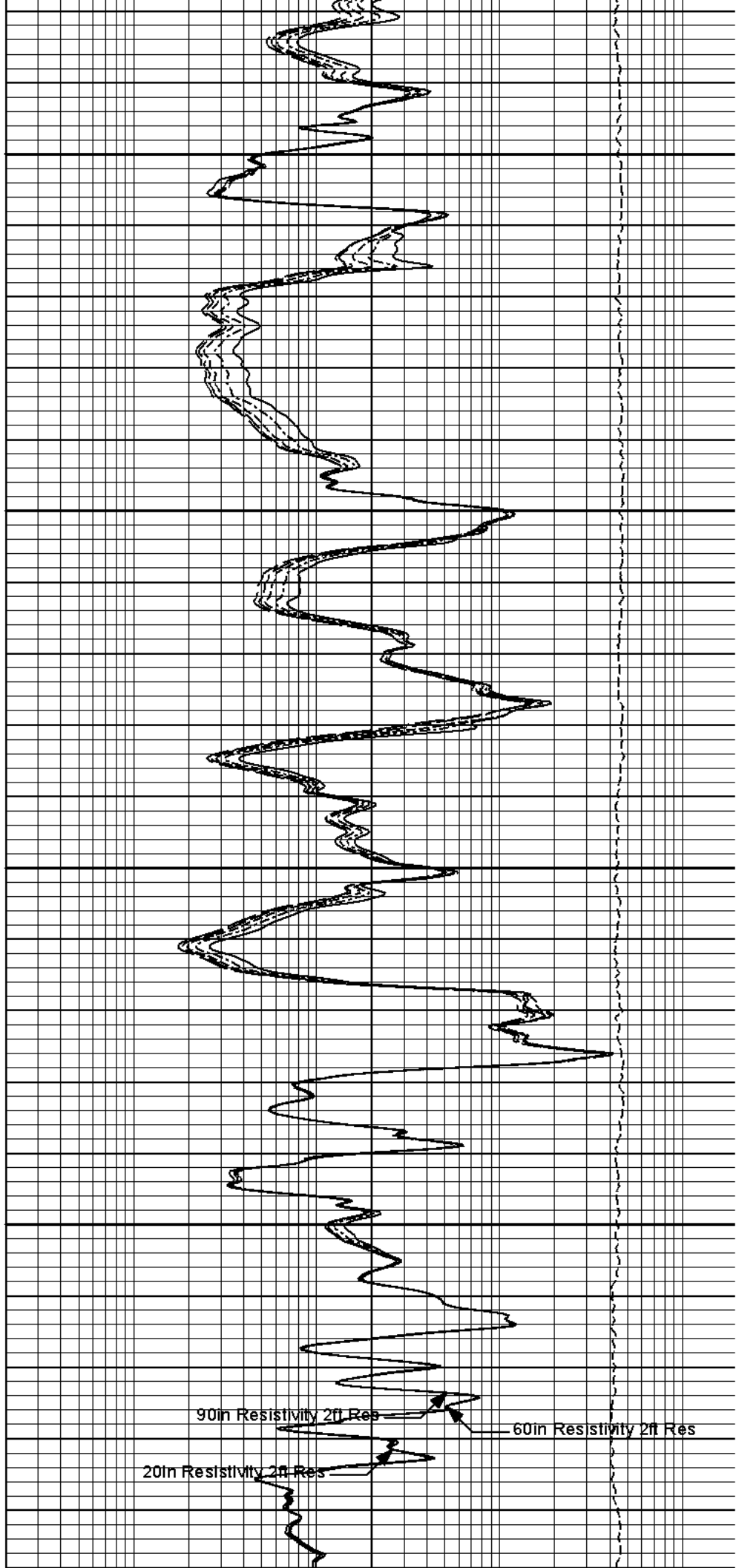
4100





4200

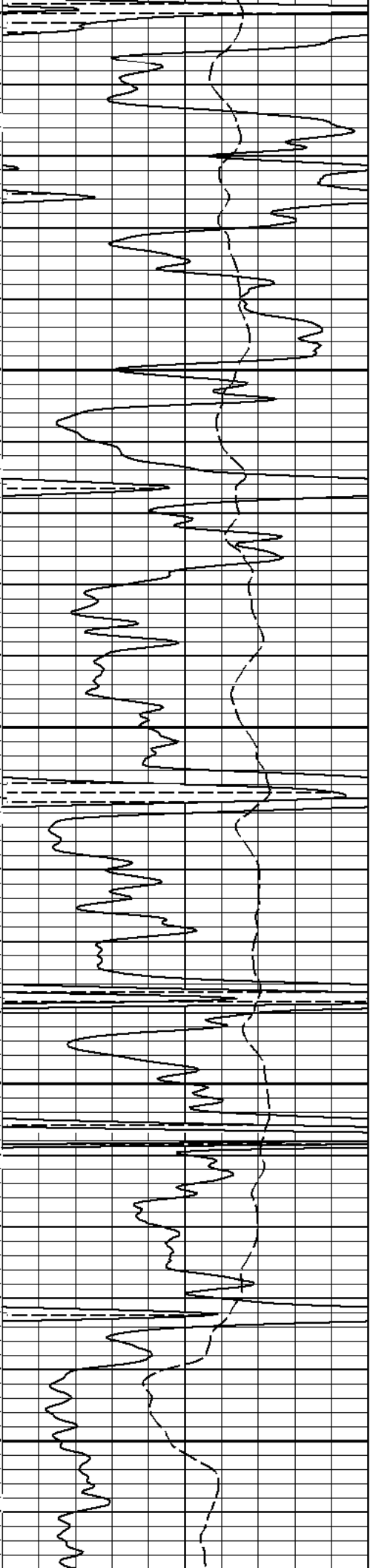
4300



90in Resistivity 2ft Res

60in Resistivity 2ft Res

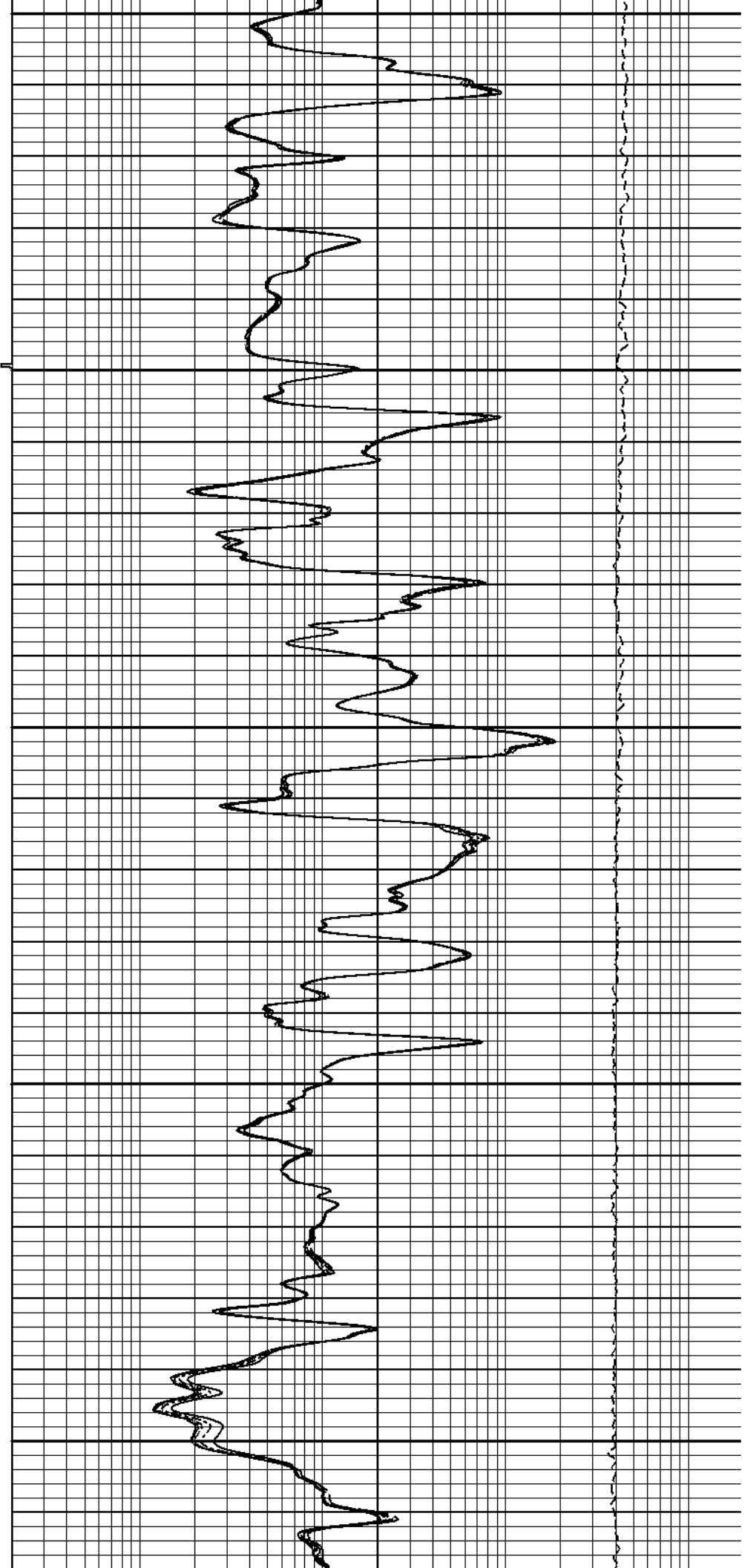
20in Resistivity 2ft Res



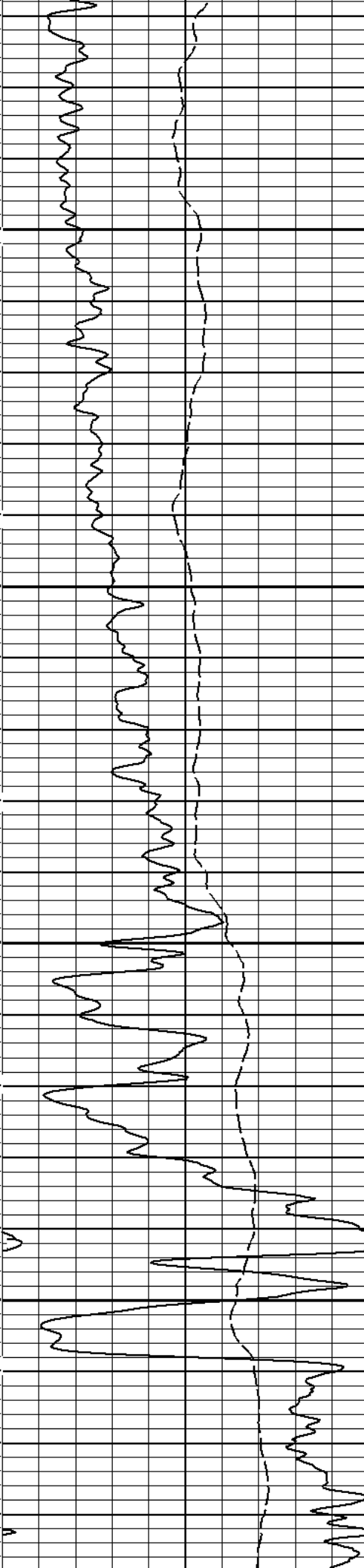
4400

4500

4600

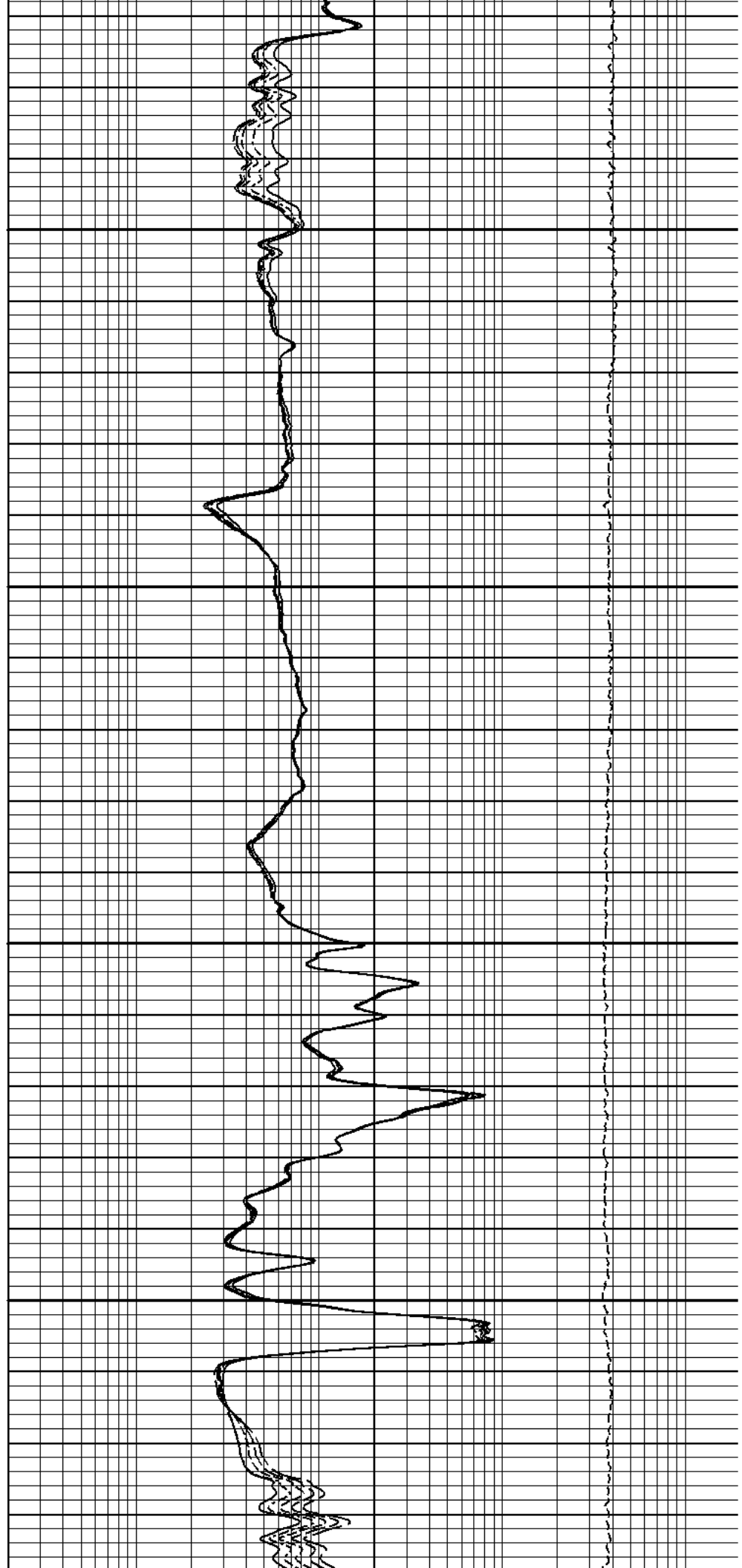


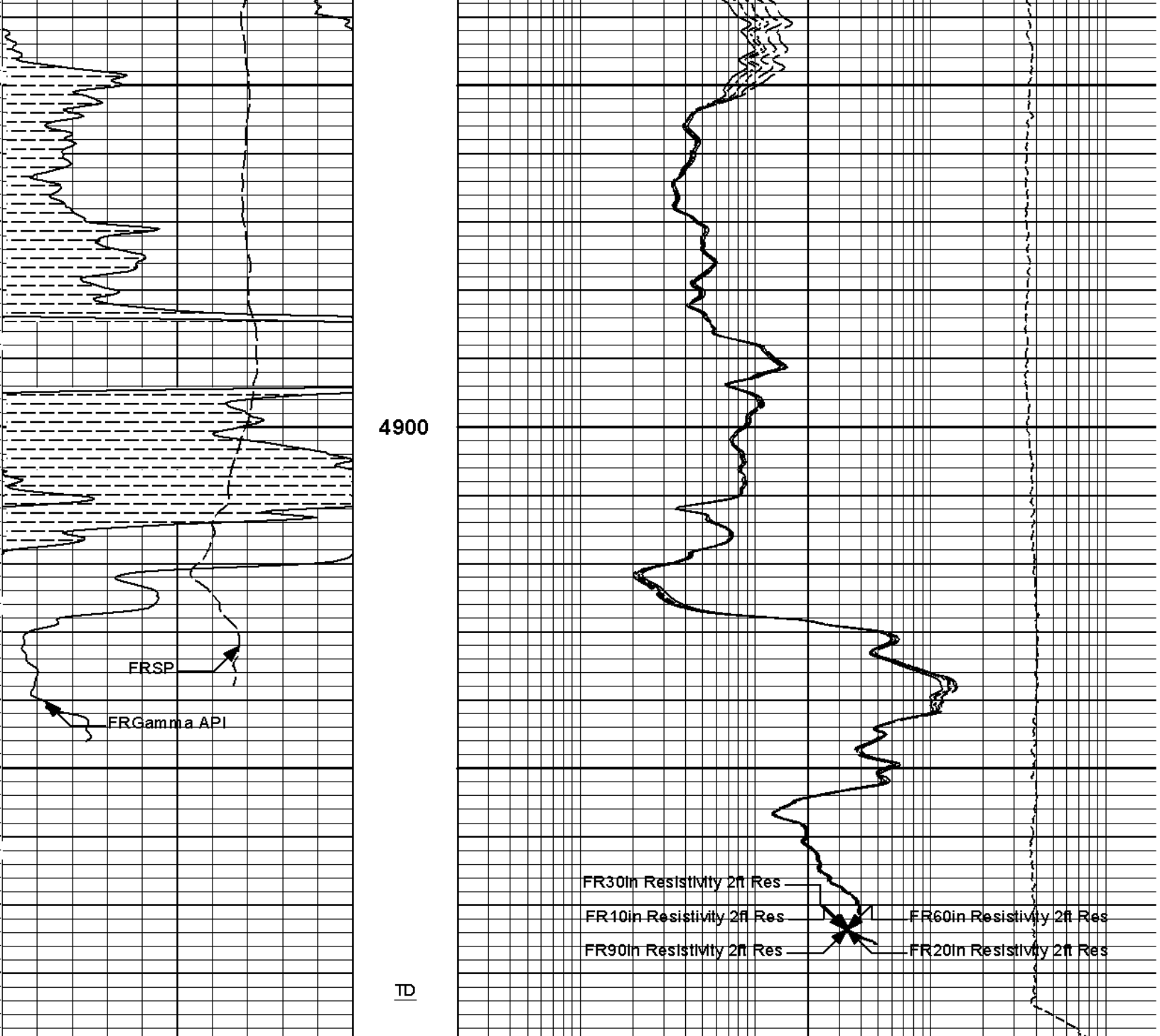




4700

4800





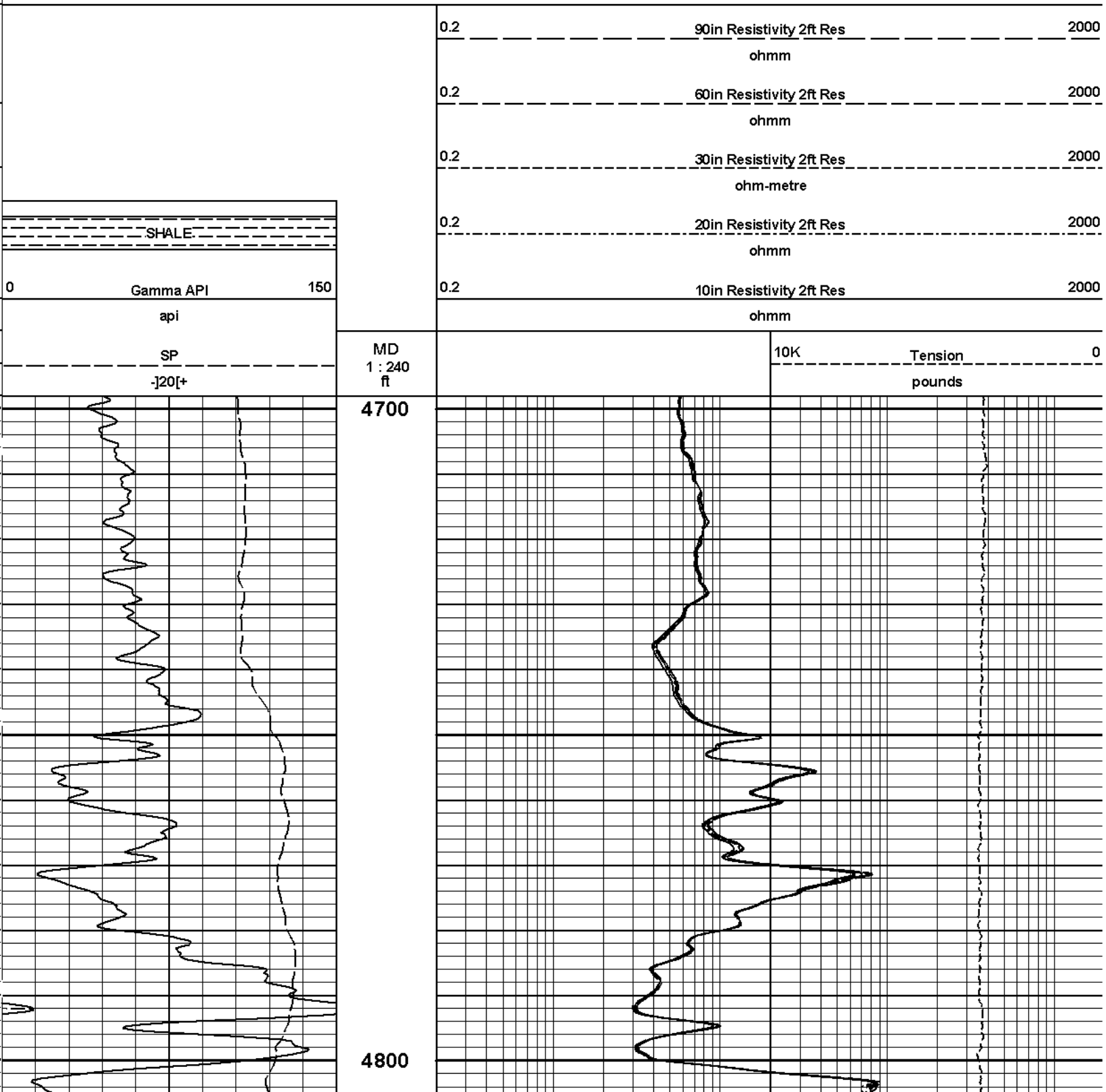
SP	MD	10K	Tension	0
-]20[+	1 : 240 ft		pounds	
Gamma API	Tension Pull	0.2	10in Resistivity 2ft Res	2000
api			ohmm	
SHALE	Tension Pull	0.2	20in Resistivity 2ft Res	2000
			ohmm	
		0.2	30in Resistivity 2ft Res	2000
			ohm-metre	
		0.2	60in Resistivity 2ft Res	2000
			ohmm	
		0.2	90in Resistivity 2ft Res	2000
			ohmm	

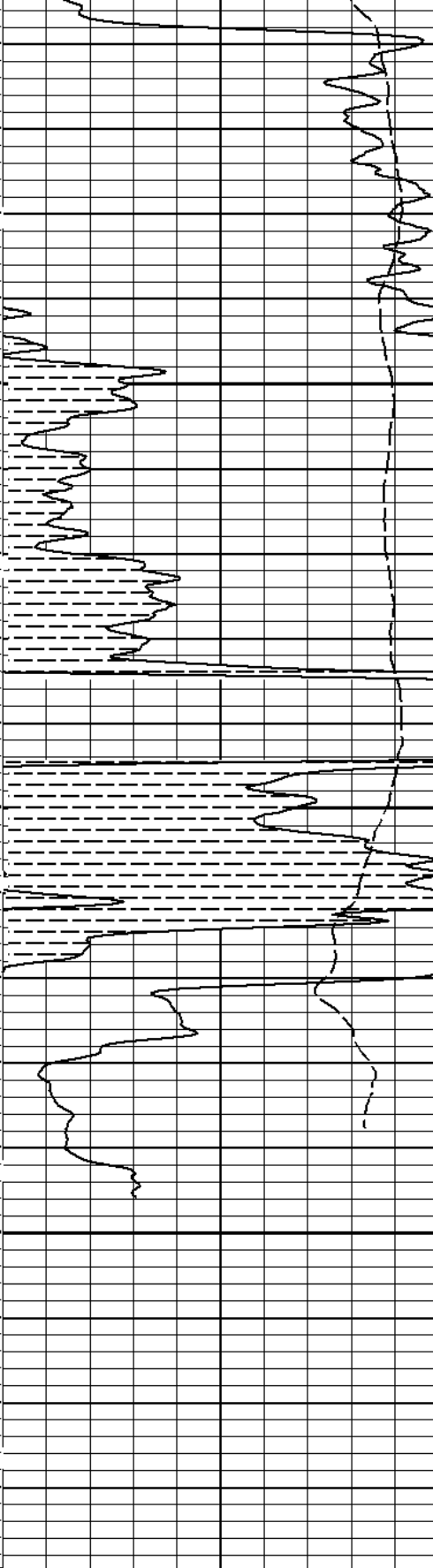
# 5 INCH MAIN LOG

**HALLIBURTON**

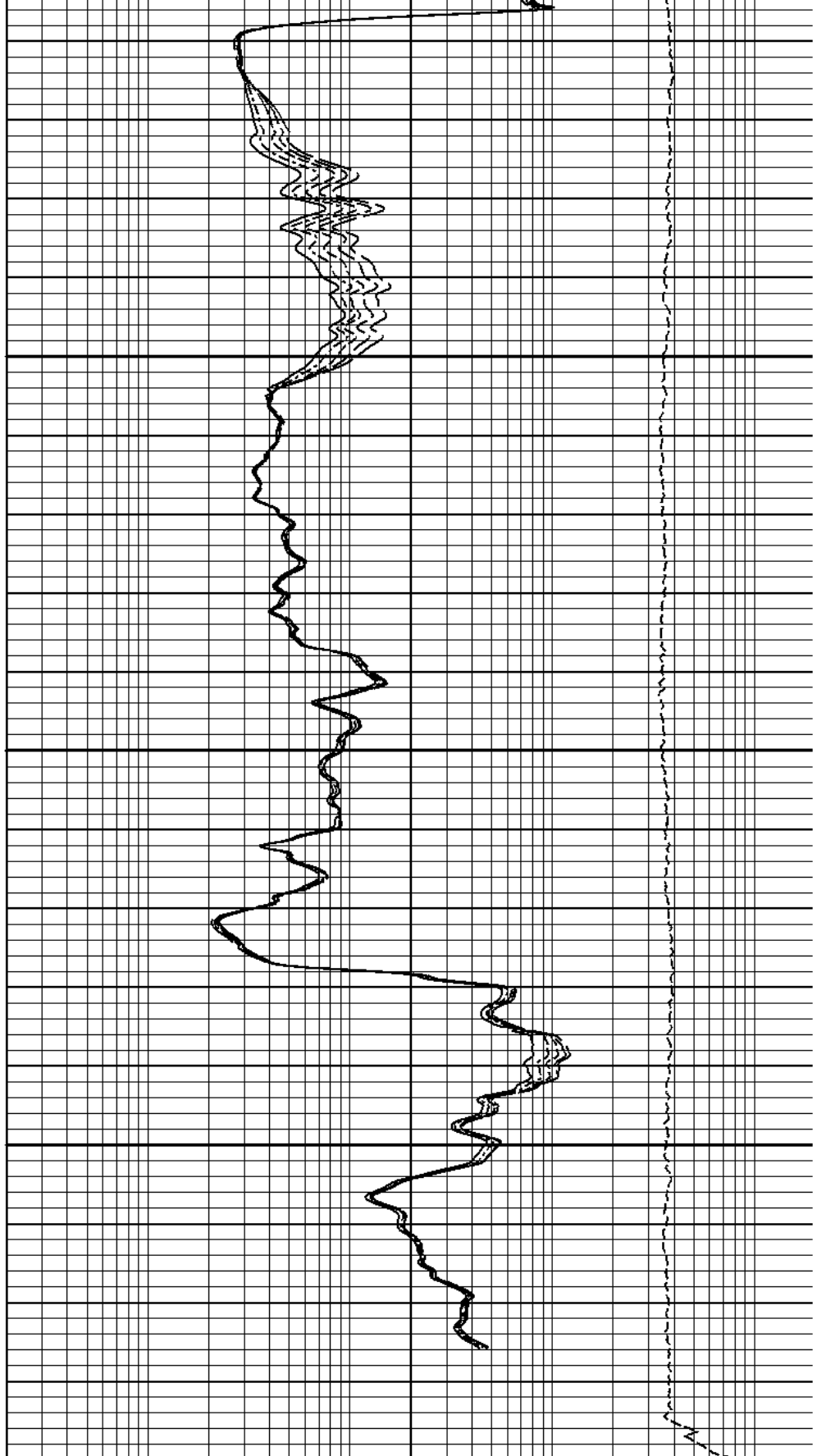
Plot Time: 08-Jun-11 07:43:45  
 Plot Range: 4698 ft to 4989.67 ft  
 Data: MYRTLE\_3\_31\Well Based\DAQ-0001-0021  
 Plot File: \\LOCAL-ACRT\ACRT\_5\_repeat\_lib

## REPEAT SECTION





4900



SP -]20[+	MD 1 : 240 ft	10K Tension pounds 0
0 Gamma API api 150	0.2 10in Resistivity 2ft Res ohmm 2000	0.2 20in Resistivity 2ft Res ohmm 2000
SHALE	0.2 30in Resistivity 2ft Res ohmm 2000	0.2 30in Resistivity 2ft Res ohmm 2000

	ohm-metre	
0.2	60in Resistivity 2ft Res	2000
	ohmm	
0.2	90in Resistivity 2ft Res	2000
	ohmm	

**HALLIBURTON**

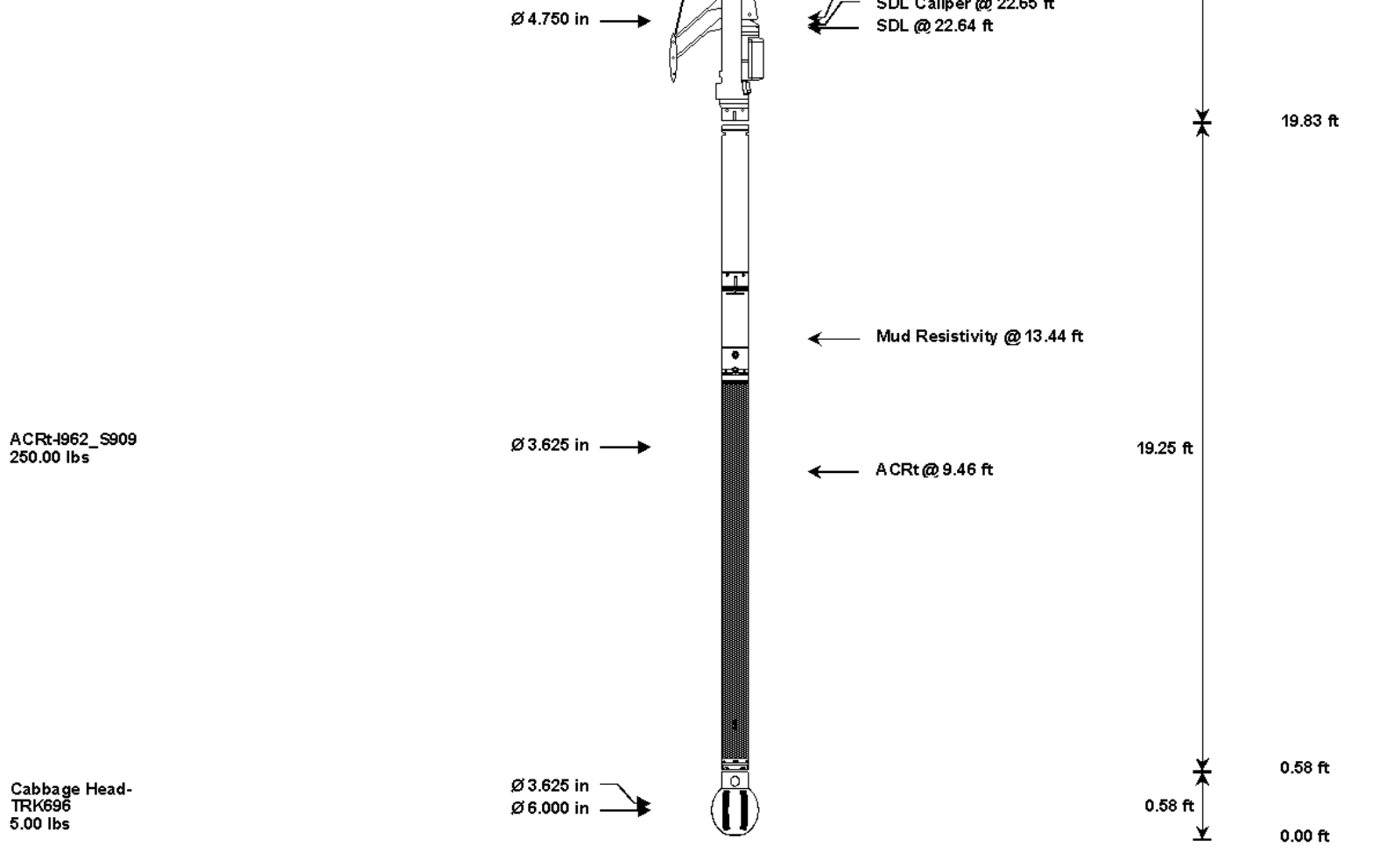
Plot Time: 08-Jun-11 07:43:50  
 Plot Range: 4698 ft to 4989.67 ft  
 Data: MYRTLE\_3\_31Well Based\DAQ-0001-0021  
 Plot File: \\LOCAL-VACRT\ACRT\_5\_repeat.lib

## REPEAT SECTION

**HALLIBURTON**

### TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length	
CH_HOS-CH_696 37.50 lbs		∅ 2.750 in →		← Temperature @ 55.54 ft	3.03 ft	56.57 ft	
XOHD-TRK696 20.00 lbs		∅ 2.750 in → ∅ 3.625 in →		← SP @ 50.81 ft	0.95 ft	53.54 ft	
SP Sub-PROT01 60.00 lbs		∅ 3.625 in →		← GammaRay @ 42.79 ft	3.74 ft	52.59 ft	
GTET-11050378 165.00 lbs		∅ 3.625 in →			8.52 ft	48.85 ft	
DSNT-11055304 174.00 lbs	DSN Decentralizer- 10755066 6.60 lbs	∅ 3.625 in → ∅ 3.625 in →				9.69 ft	40.33 ft
SDLT-I04_P84 360.00 lbs		∅ 4.500 in →		← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft			30.64 ft
				← SDL Microlog @ 22.83 ft		10.81 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max. Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	CH_696	37.50	3.03	53.54	300.00
XOHD	Hostile to Dits Cross Over	TRK696	20.00	0.95	52.59	300.00
SP	SP Sub	PROT01	60.00	3.74	48.85	300.00
GTET	Gamma Telemetry Tool	11050378	165.00	8.52	40.33	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	30.64	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	33.97	300.00
SDLT	Spectral Density Tool	I04_P84	360.00	10.81	19.83	60.00
ACRt	Array Compensated True Resistivity	I962_S909	250.00	19.25	0.58	300.00
CBHD	Cabbage Head	TRK696	5.00	0.58	0.00	300.00
<b>Total</b>			<b>1,078.10</b>	<b>56.57</b>		

\* Not included in Total Length and Length Accumulation.

Data: MYRTLE\_3\_31\0001 SP-GTET-DSN-SDL-ACRT-CHWDL Date: 08-Jun-11 04:48:08

# HALLIBURTON

## CALIBRATION REPORT

**ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION**

**Tool Name:** ACRt - I962\_S909      **Reference Calibration Date:** 11-Mar-11 11:34:39  
**Engineer:** J. BOSH      **Calibration Date:** 03-May-11 14:28:43  
**Software Version:** WL INSITE R3.2.0 (Build 7)      **Calibration Version:** 1

**TYPICAL GAIN RANGE**

Subarray	R12KHz		R36KHz			R72KHz			
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0070	1.05	0.95	1.0135	1.05	0.95	1.0116	1.05
A2 (50")	0.95	1.0112	1.05	0.95	1.0207	1.05	0.95	1.0200	1.05

A2 (50")	0.95	1.0142	1.05	0.95	1.0207	1.05	0.95	1.0200	1.05
A3 (29")	0.95	1.0002	1.05	0.95	1.0054	1.05	0.95	1.0025	1.05
A4 (17")	0.95	1.0154	1.05	0.95	1.0186	1.05	0.95	1.0185	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0014	1.05	0.95	0.9993	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9915	1.05	0.95	0.9892	1.05

**TYPICAL SONDE OFFSET RANGE**

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-0.379	2	-6	-3.567	-2	-8	-4.476	-2
A2 (50")	-7	-1.215	-1	-6	-3.265	-2	-7	-4.141	-2
A3 (29")	-27	-14.722	-9	-9	-4.487	-3	-7	-2.504	-1
A4 (17")	-180	-102.056	-60	-45	-31.086	-15	-39	-25.940	-13
A5 (10")	N/A	N/A	N/A	-150	-98.114	-50	-80	-44.687	-10
A6 (6")	N/A	N/A	N/A	175	285.394	525	90	149.184	270

**TRANSMITTER CURRENT GAIN**

**R-MUD VERIFICATION**

Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.8865	1.3	Mud Cell	0.95	1.002	1.05
36K	1.0	1.3495	2.0				
72K	1.0	1.5711	2.0				

**CALIBRATION SUMMARY**

Sensor	Shop	Field	Post	Difference	Tolerance	Units
<b>ACRT-I962_S909</b>						
Mud Cell	1.002	-----	-----	0.000	-----	ohm-m

Data: MYRTLE\_3\_31\0001 SP-GTET-DSN-SDL-ACRT-CHIDLE

Date: 08-Jun-11 05:27:55

**HALLIBURTON**

**PARAMETERS REPORT**

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP	DSNT	DNOK	Process DSN?	No	
	SDLT	DNOK	Process Density?	No	
	SDLT	MLOK	Process MicroLog Outputs?	No	
3490.00	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.409	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF

SHARED	TD	Total Well Depth	4984.00	ft
SHARED	BHT	Bottom Hole Temperature	120.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position	Centered	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNOS	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
SDLT	DNOK	Process Density?	Yes	
SDLT	DNOK	Process Density EVR?	No	
SDLT	CB	Logging Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	DMA	Formation Density Matrix	2.710	g/cc
SDLT	DFL	Formation Density Fluid	1.000	g/cc
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT	MLOK	Process MicroLog Outputs?	Yes	
ACRt	RTOK	Process ACRt?	Yes	
ACRt	MNSO	Minimum Tool Standoff	1.50	in
ACRt	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt	TPOS	Tool Position	Free Hanging	
ACRt	RMOP	Rmud Source	Mud Cell	
ACRt	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt	THQY	Threshold Quality	0.50	

BOTTOM

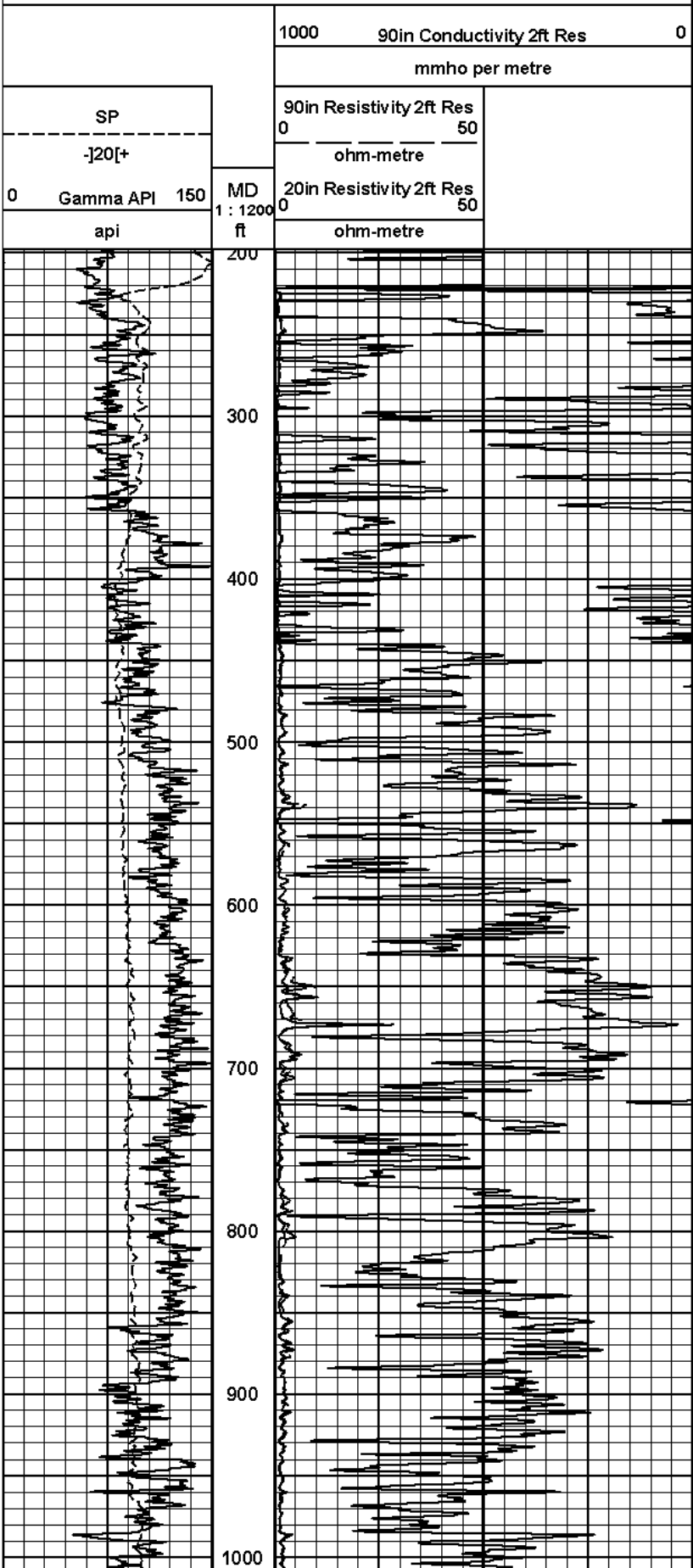
Data: MYRTLE\_3\_310001 SP-GTET-DSN-SDL-ACRT-CHIDLE

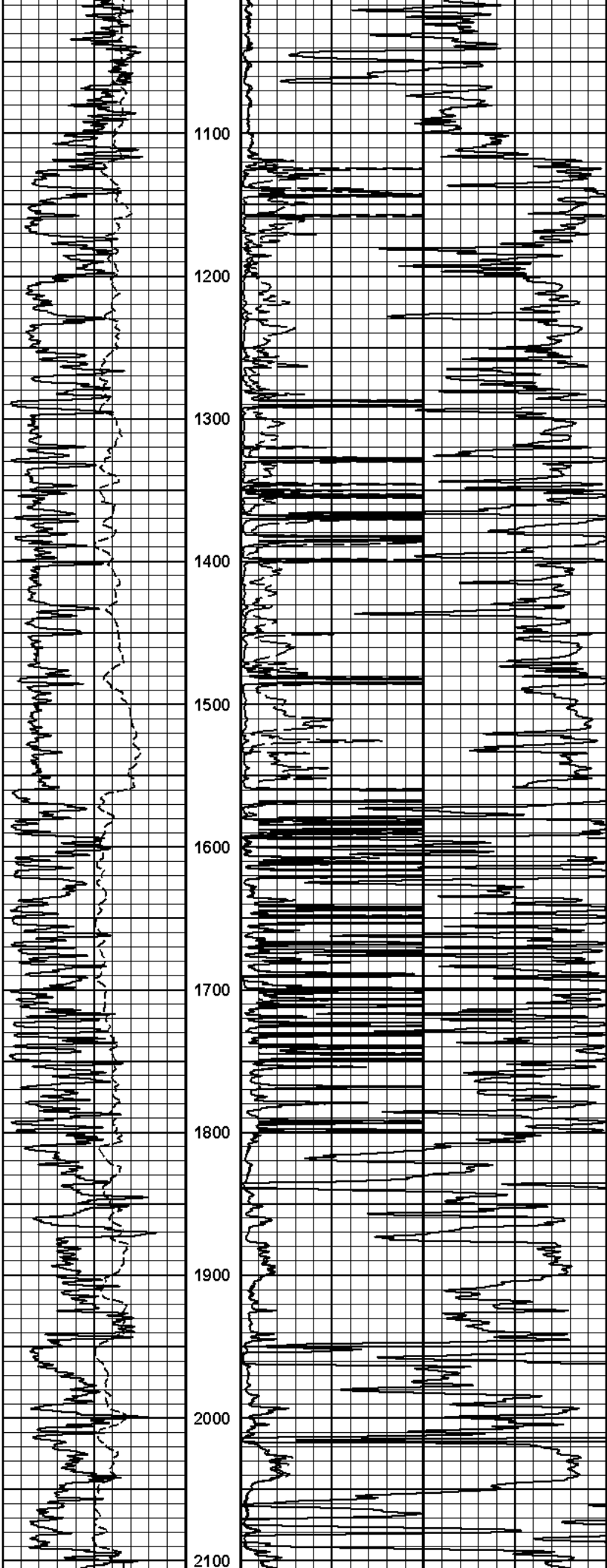
Date: 08-Jun-11 06:39:05

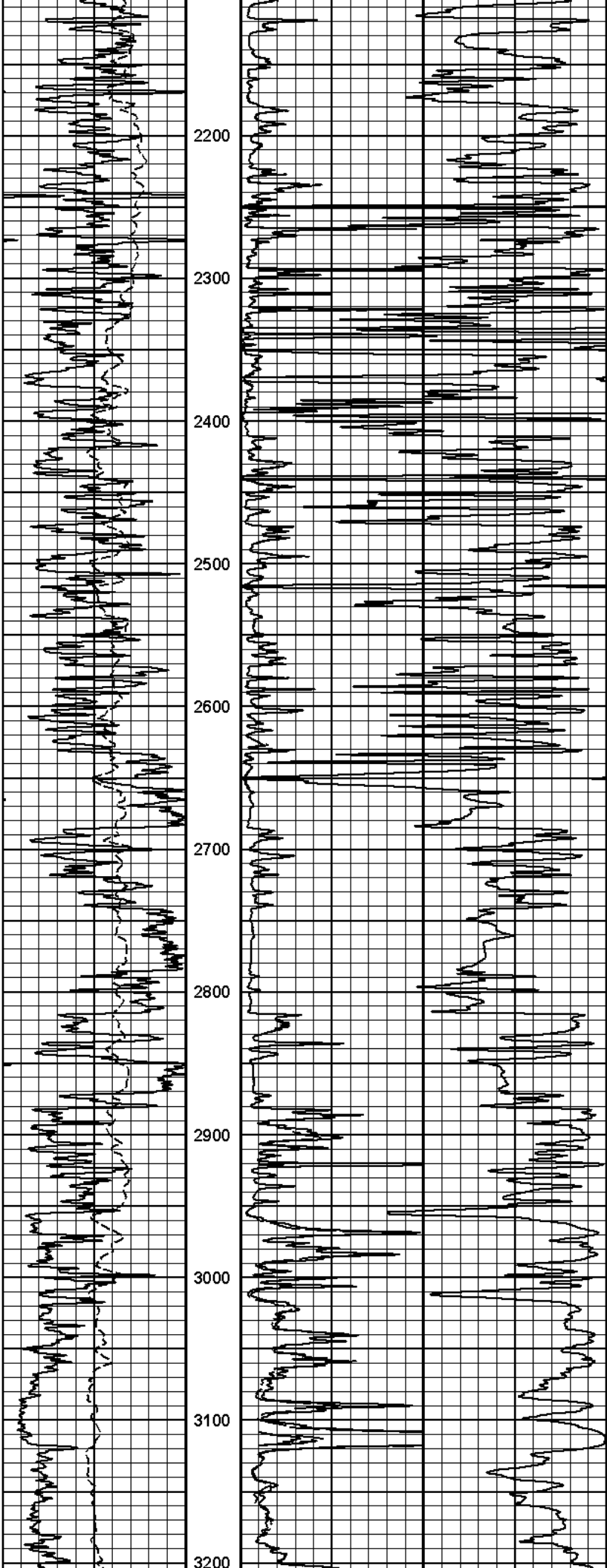
COMPANY	VAL ENERGY INC		
WELL	MYRTLE 3-31		
FIELD	UNKNOWN		
COUNTY	BARBER	STATE	KANSAS
<b>HALLIBURTON</b>		<b>ARRAY COMPENSATED TRUE RESISITIVITY LOG</b>	

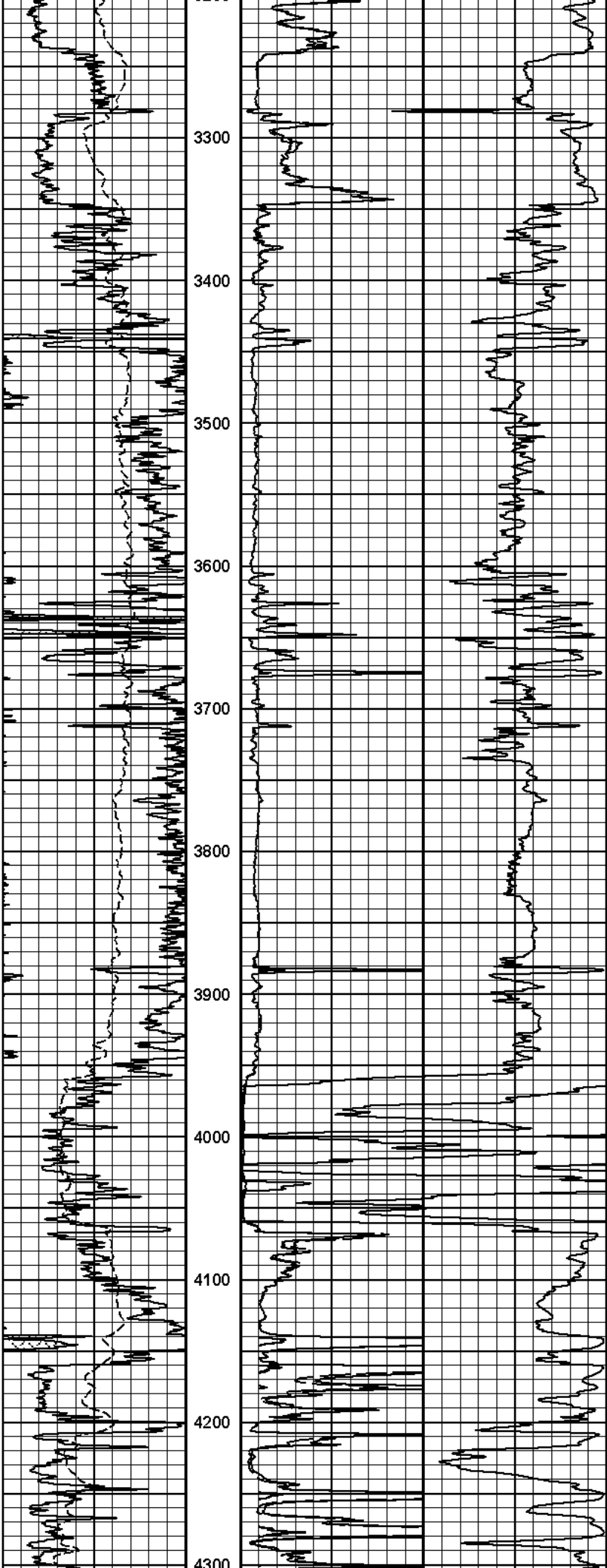


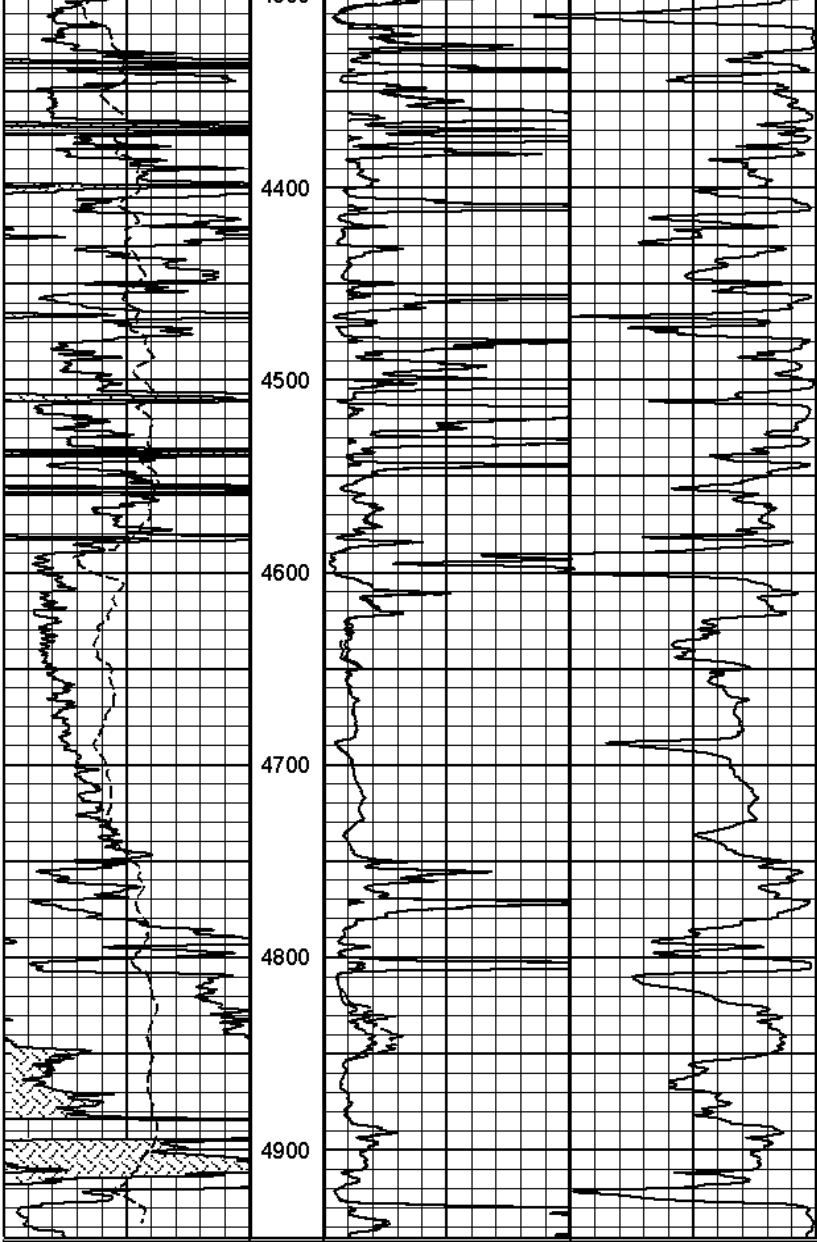
# 1 INCH MAIN LOG











0	Gamma API	150	MD	20in Resistivity 2ft Res	0	50
	api		1 : 1200 ft	ohm-metre		
	SP			90in Resistivity 2ft Res	0	50
	-]20[+			ohm-metre		
				1000	90in Conductivity 2ft Res	0
					mmho per metre	

**HALLIBURTON**

Plot Time: 08-Jun-11 07:43:53  
 Plot Range: 198 ft to 4946 ft  
 Data: MYRTLE\_3\_31\Well Based\DAQ-0001-003\  
 Plot File: \\-LOCAL-ACRT\ACRT\_1\_lib

**1 INCH MAIN LOG**