HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY	VAL ENERGY INC.
WELL	BOLACK V 1-21
FIELD	BOLACK
COUNTY	COWLEY
STATE	KANSAS

COMPANY **VAL ENERGY INC.**
WELL **BOLACK V 1-21**
FIELD **BOLACK**
COUNTY **COWLEY** STATE **KANSAS**

API No. 15-035-24461
Location 2405' FNL & 3380' FEL

Other Services:
DSNT / SDLT
MICRO
MRIL

Sect. 21 Twp. 32S Rge. 6E

Permanent Datum	GROUND LEVEL	Elev. 1331.0 ft	Elev.: K.B.	1341.0 ft
Log measured from	KELLY BUSHING	10.0 ft above perm. Datum	D.F.	1340.0 ft
Drilling measured from	KELLY BUSHING		G.L.	1331.0 ft

Date		08-Apr-12				
Run No.		ONE				
Depth - Driller		3500.00 ft				
Depth - Logger		3506.0 ft				
Bottom - Logged Interval		3484.0 ft				
Top - Logged Interval		309.0 ft				
Casing - Driller		8.625 in @ 308.0 ft		@		@
Casing - Logger		309.0 ft				
Bit Size		7.875 in		@		@
Type Fluid in Hole		WATER BASED MUD				
Density	Viscosity	9.0 ppg	50.00 s/qt			
PH	Fluid Loss	9.50 pH	9.6 cptm			
Source of Sample		FLOWLINE				
Rm @ Meas. Temperature		1.630 ohmm @ 71.00 degF		@		@
Rmf @ Meas. Temperature		1.89 ohmm @ 52.00 degF		@		@
Rmc @ Meas. Temperature		2.360 ohmm @ 52.00 degF		@		@
Source Rmf	Rmc	MEASURED	MEASURED			
Rm @ BHT		1.15 ohmm @ 116.0 degF		@		@
Time Since Circulation		5.3 hr				
Time on Bottom		08-Apr-12 02:18				
Max. Rec. Temperature		116.0 degF @ 3506.0 ft		@		@
Equipment	Location	10782954	LIBERAL			
Recorded By		C. HAVERKAMP				
Witnessed By		S. VANBUSKIRK				

Fold here

Service Ticket No.: 9415301 API Serial No.: 15-035-24461 PGM Version: WL INSITE R3.4.2 (Build 2)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@		@	
Rmf @ Meas. Temp.		@		@	
Rmc @ Meas. Temp.		@		@	
Source Rmf	Rmc				
Rm @ BHT		@		@	
Rmf @ BHT		@		@	
Rmc @ BHT		@		@	

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	I776_S775	N/A	1.5" S.O.	N/A

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.		Run No.	
Serial No.	10811258	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

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	3506'	309'	REC	0	150									

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: SP-GTET-DSNT-SDLT-ACRT RAN IN COMBINATION.

ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING.

CHLORIDES REPORTED AT 1900 MG/L.

LCM REPORTED AT 6 LB/BBL.

TOOL SURVEYS NOT PERFORMED PER CUSTOMER REQUEST.

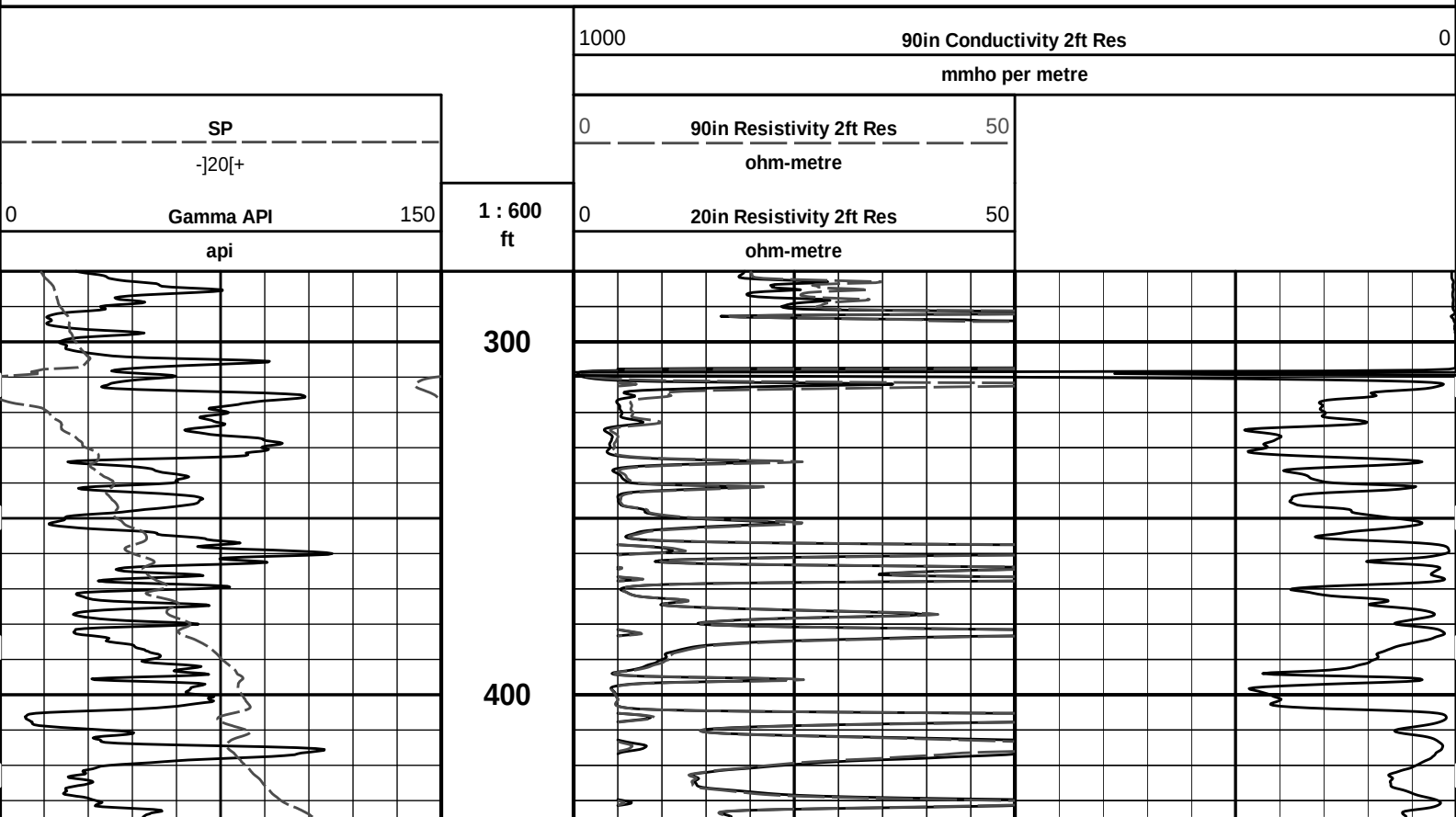
YOUR CREW: F. VILLA, B. TERRELL

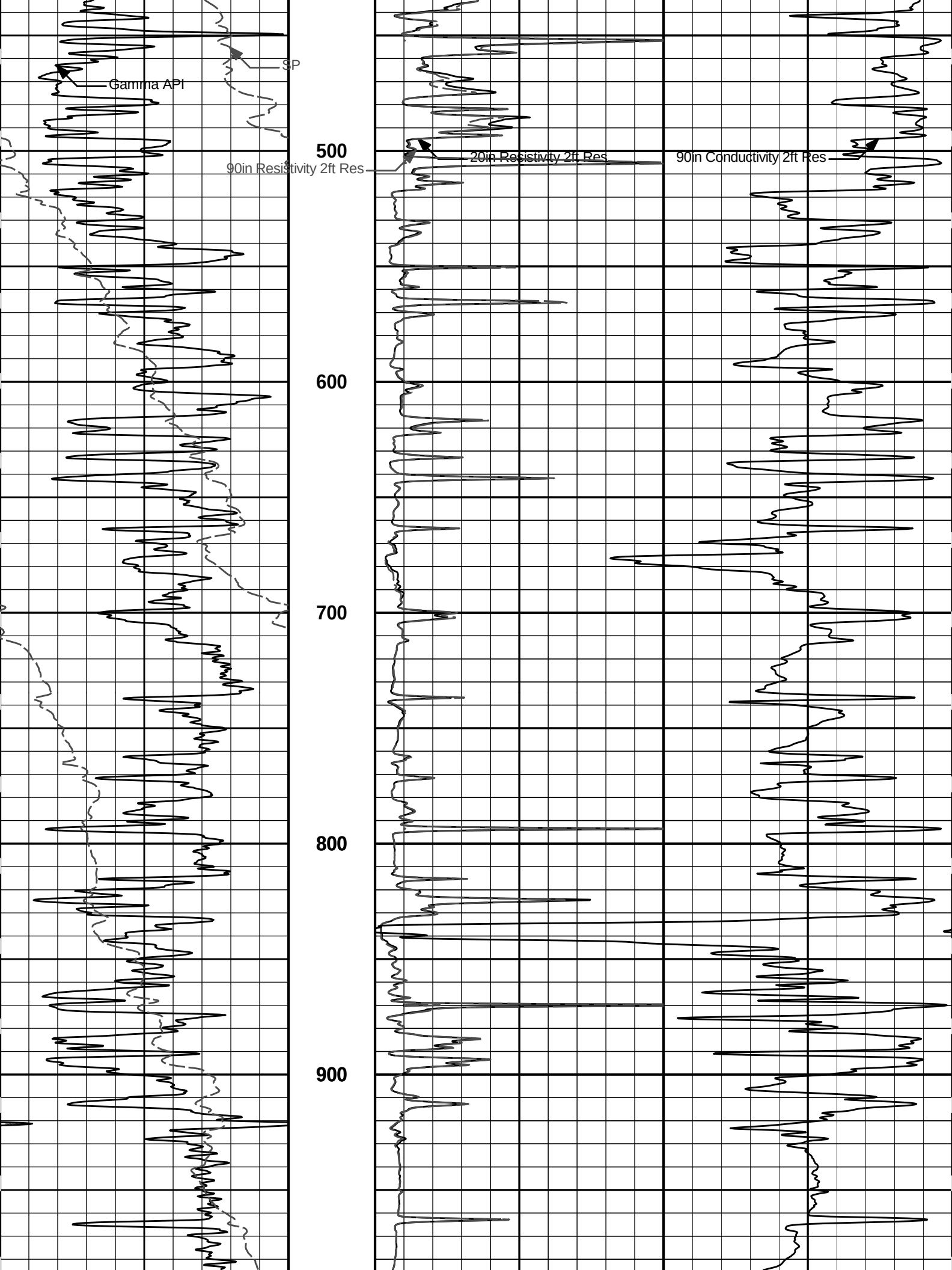
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES. LIBERAL, KS 620-624-8123

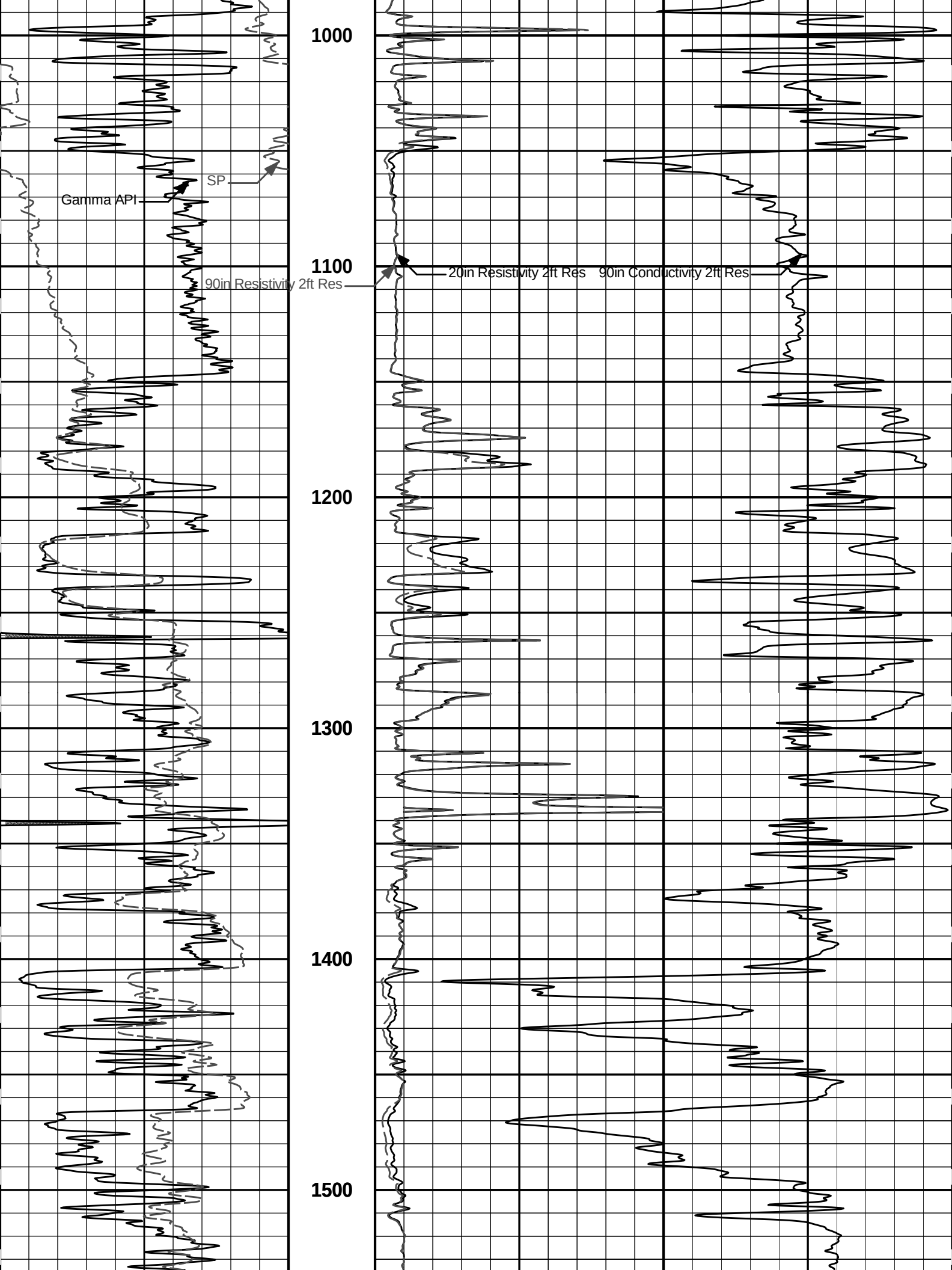
HALLIBURTON

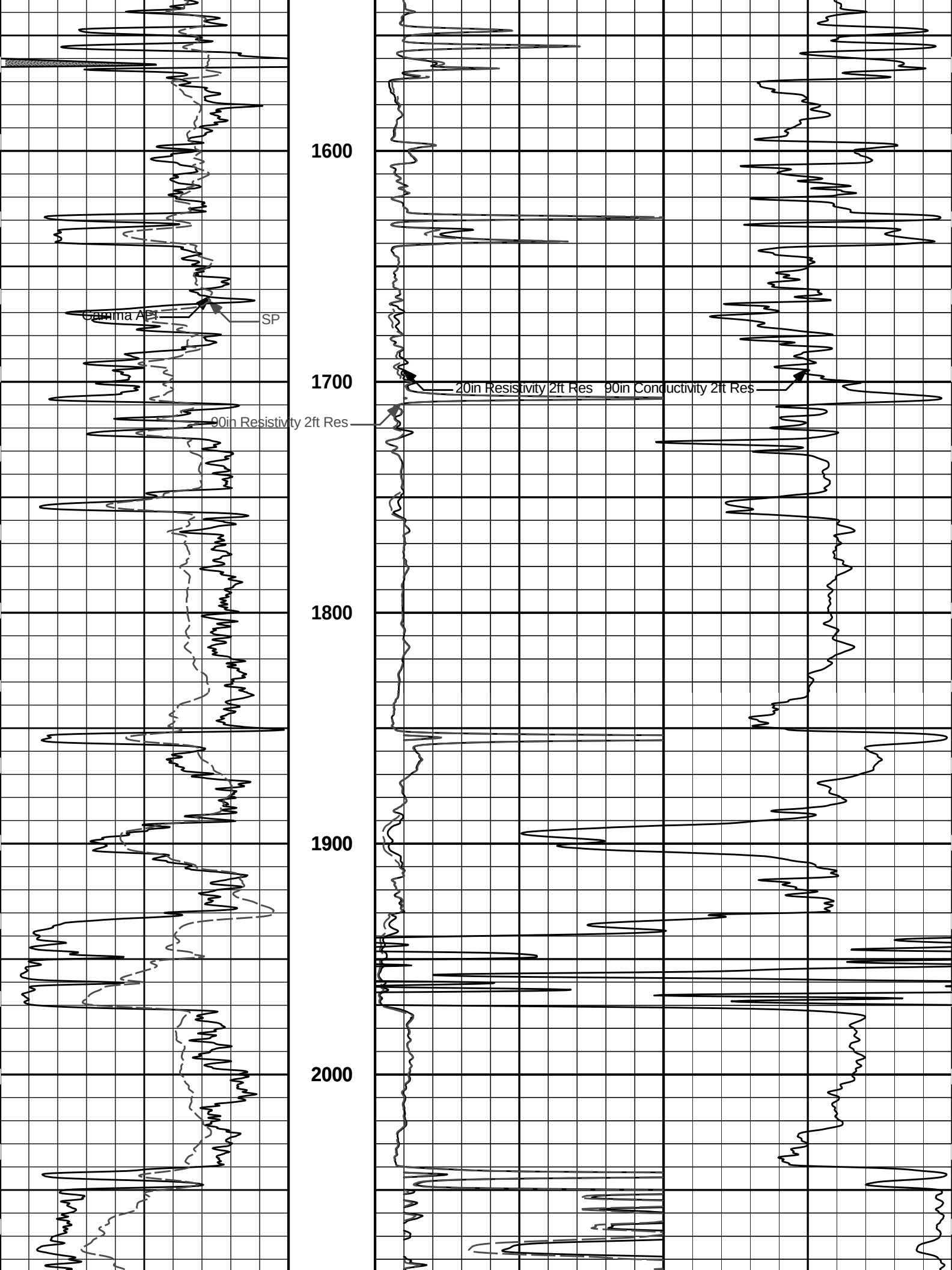
Plot Time: 08-Apr-12 04:59:26
Plot Range: 280 ft to 3507.92 ft
Data: BOLACK_V_1_21\Well Based\R1_CASING
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_2_lib

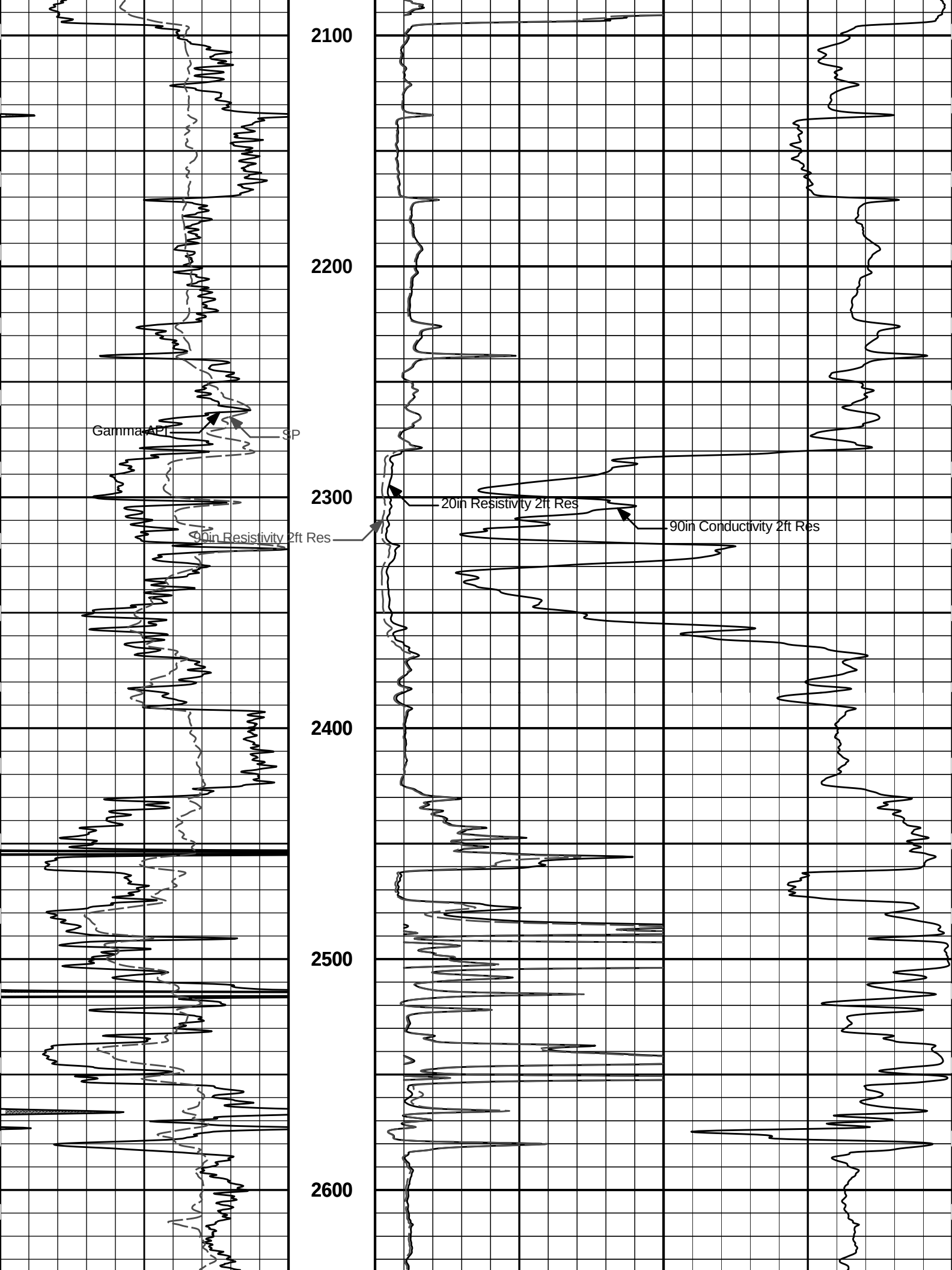
2 INCH MAIN LOG

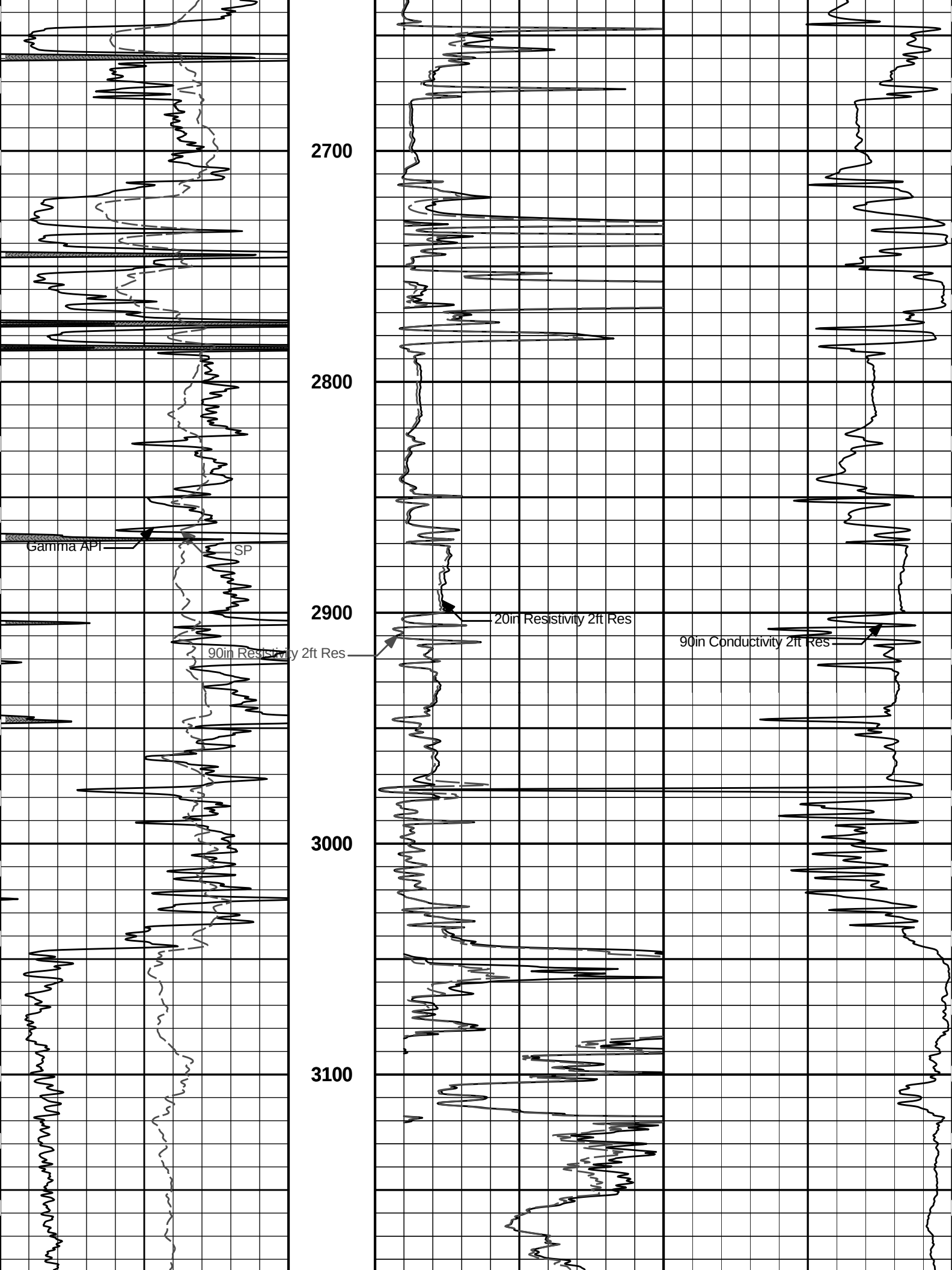


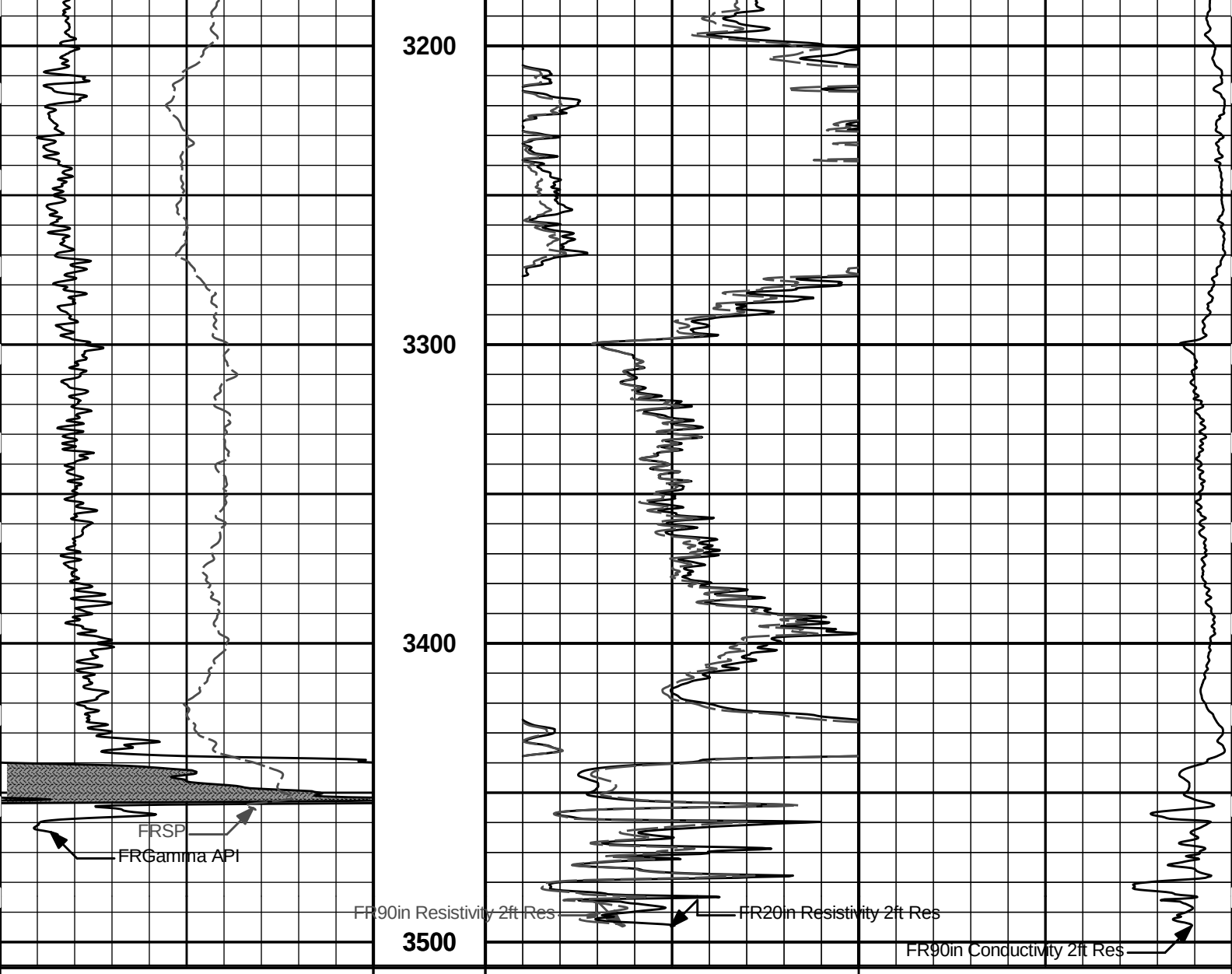

SP
Gamma API
500
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res
600
700
800
900


SP
Gamma API
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res
1000
1100
1200
1300
1400
1500


1600
1700
1800
1900
2000
Gamma API
SP
20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res


2100
2200
2300
2400
2500
2600
Gamma API
SP
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res


2700
2800
2900
3000
3100
Gamma API
SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
90in Conductivity 2ft Res



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

HALLIBURTON

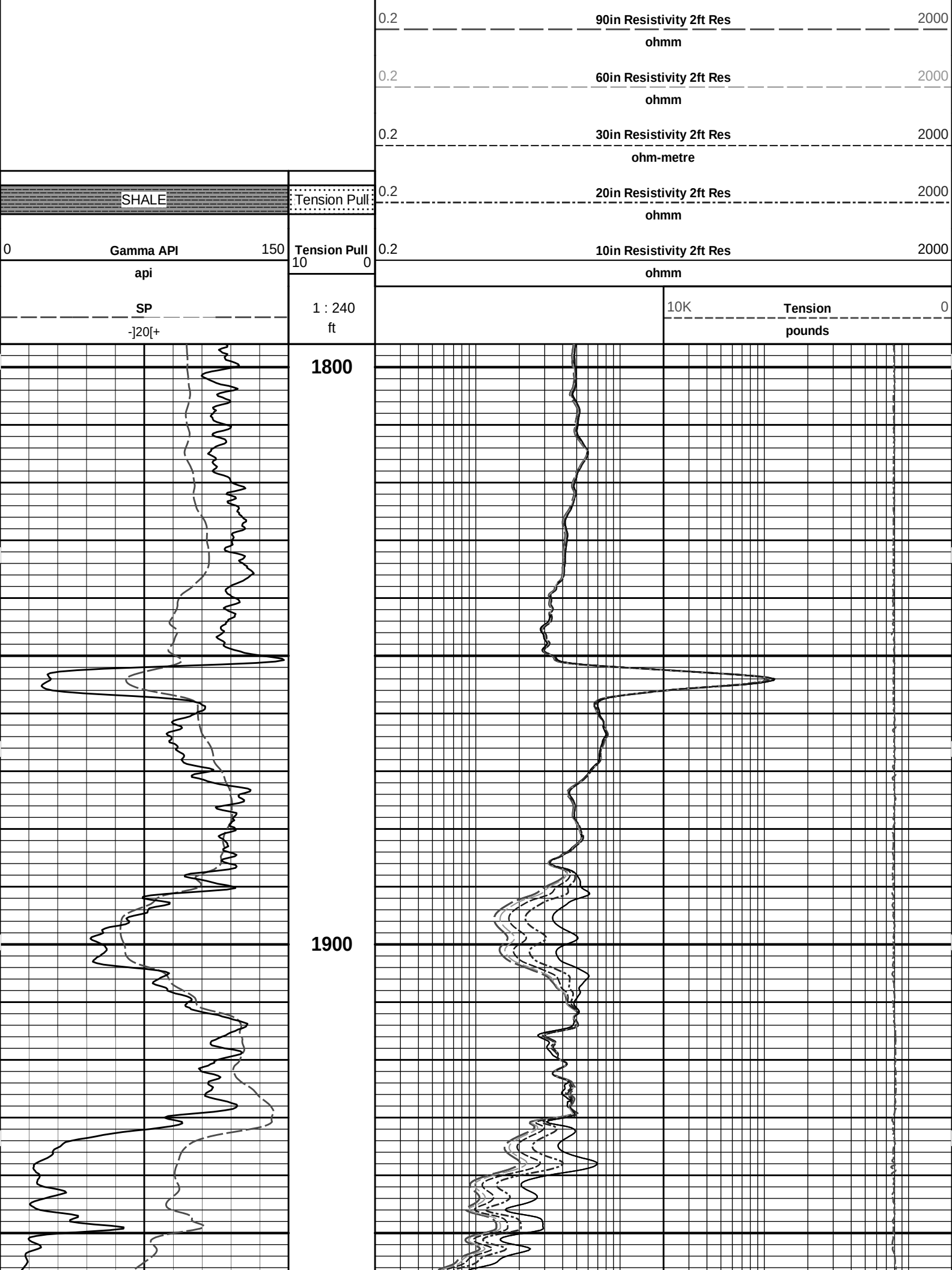
Plot Time: 08-Apr-12 04:59:48
Plot Range: 280 ft to 3507.92 ft
Data: BOLACK_V_1_21\Well Based\R1_CASING\
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_2_lib

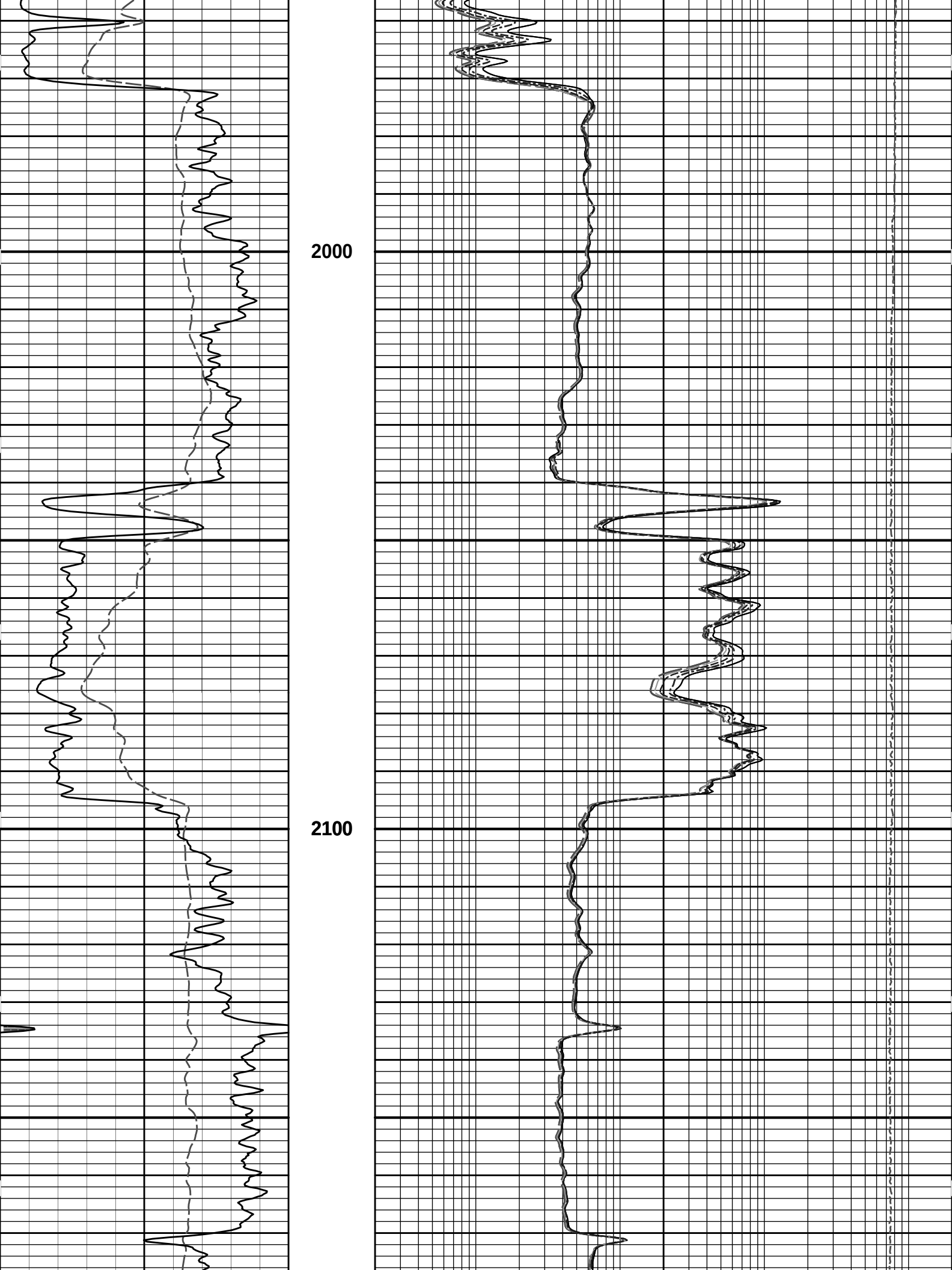
2 INCH MAIN LOG

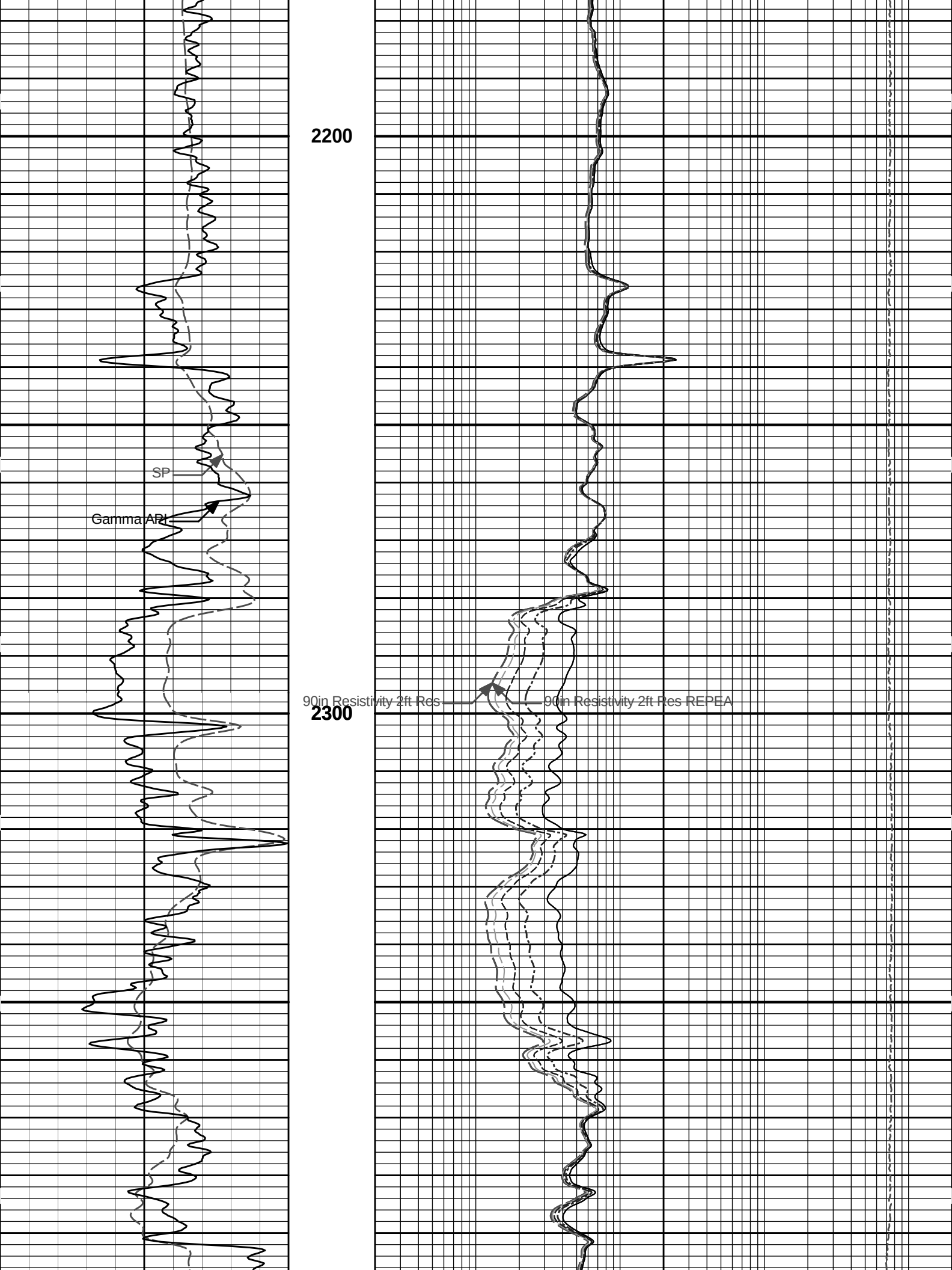
HALLIBURTON

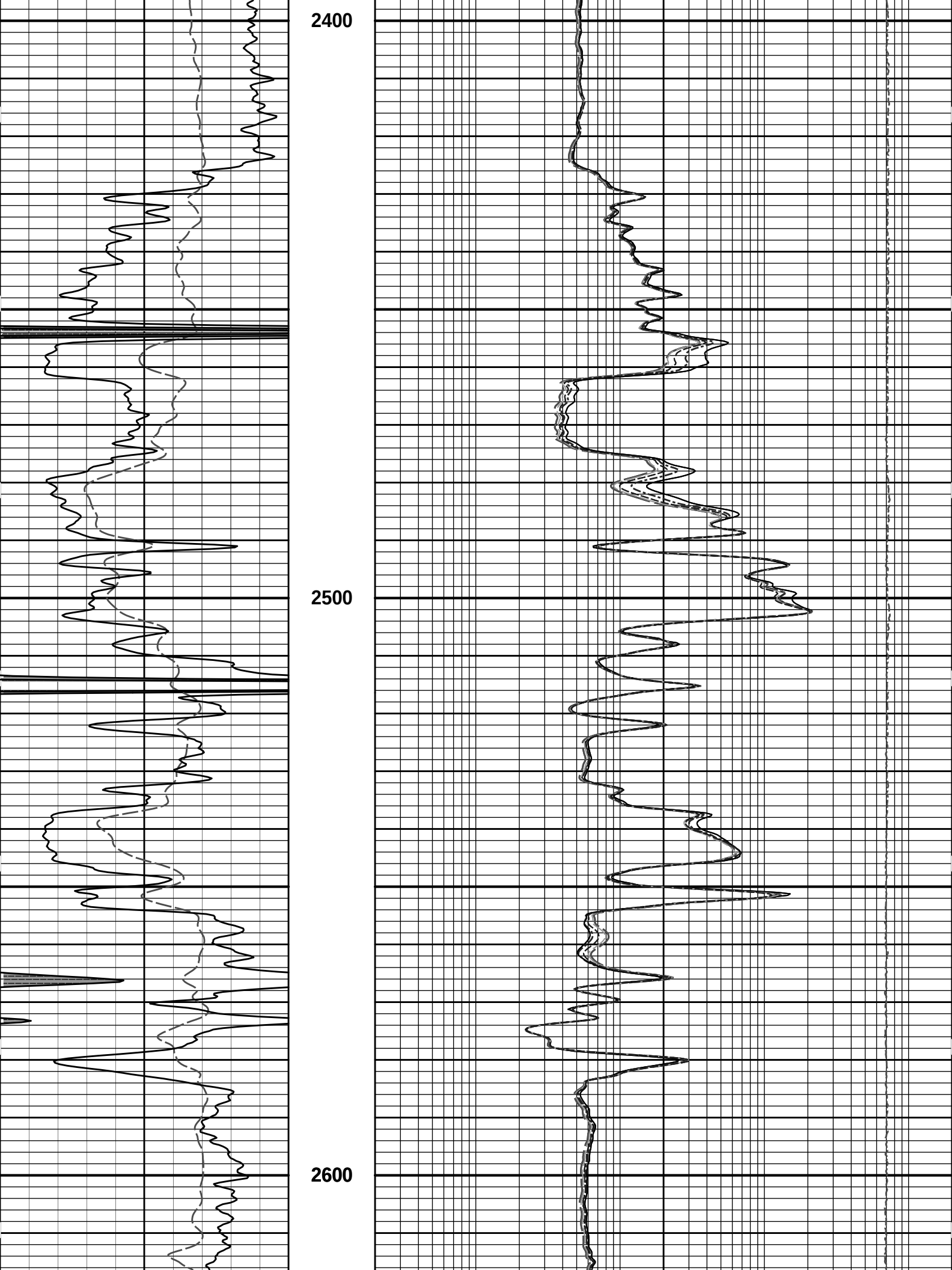
Plot Time: 08-Apr-12 04:59:48
Plot Range: 1796 ft to 3507.92 ft
Data: BOLACK_V_1_21\Well Based\R1_DETAIL\
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_5_main_lib

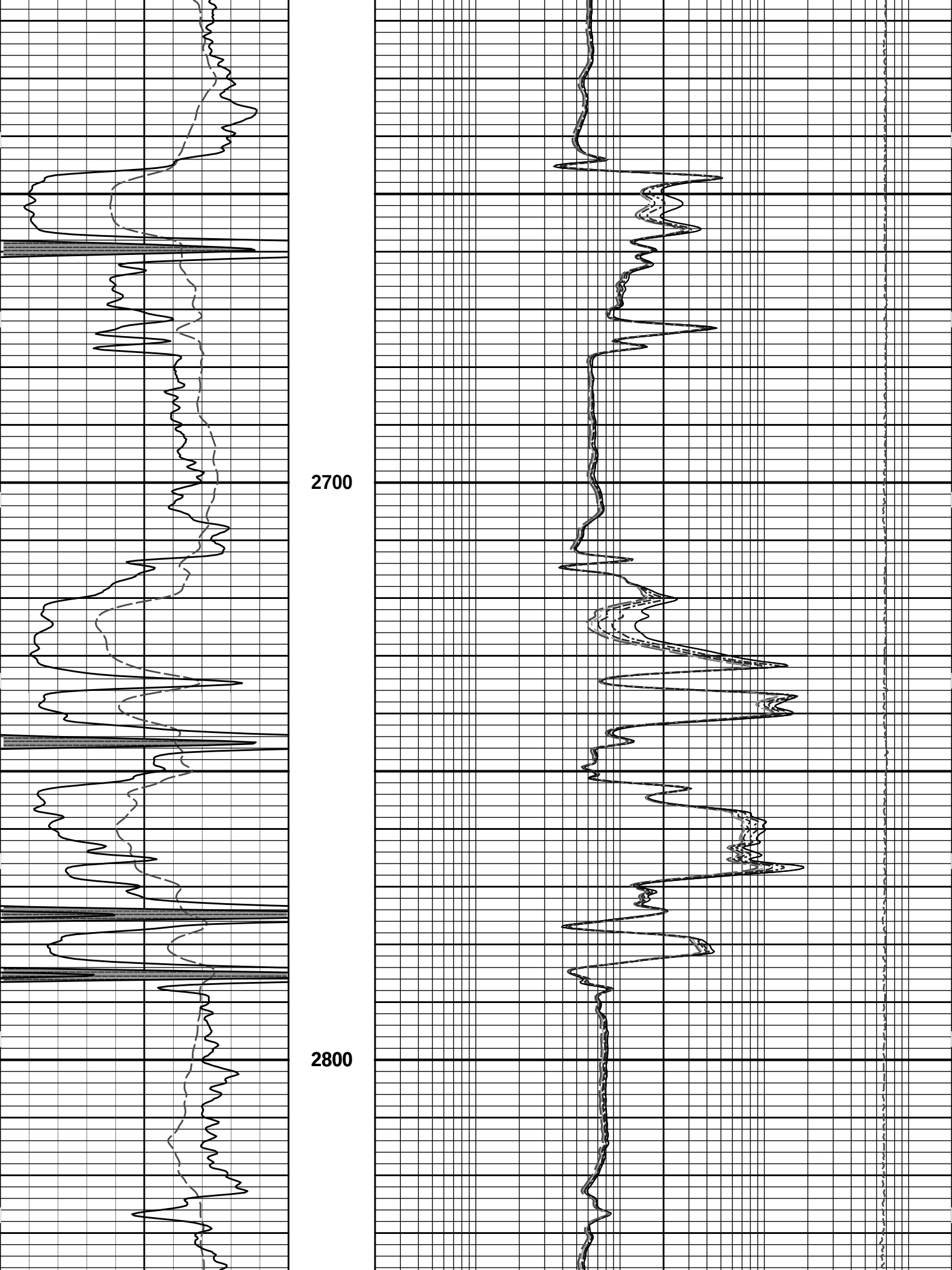
5 INCH MAIN LOG

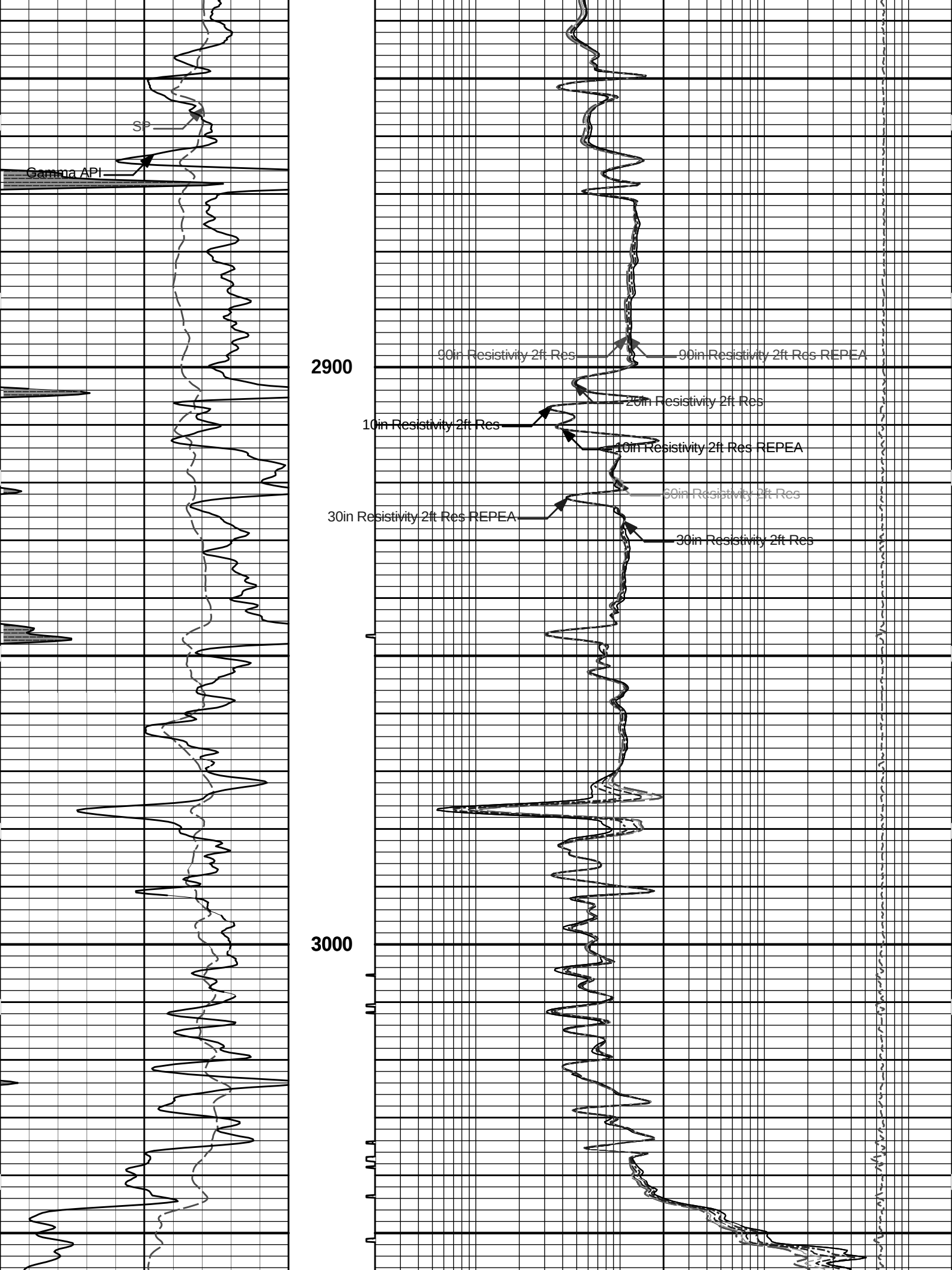

0.2
90in Resistivity 2ft Res
2000
ohmm
0.2
60in Resistivity 2ft Res
2000
ohmm
0.2
30in Resistivity 2ft Res
2000
ohm-metre
0.2
20in Resistivity 2ft Res
2000
ohmm
0.2
10in Resistivity 2ft Res
2000
ohmm
SHALE
Tension Pull
0
Gamma API
150
api
SP
-]20[+
Tension Pull
10
0
1 : 240
ft
10K
Tension
0
pounds
1800
1900

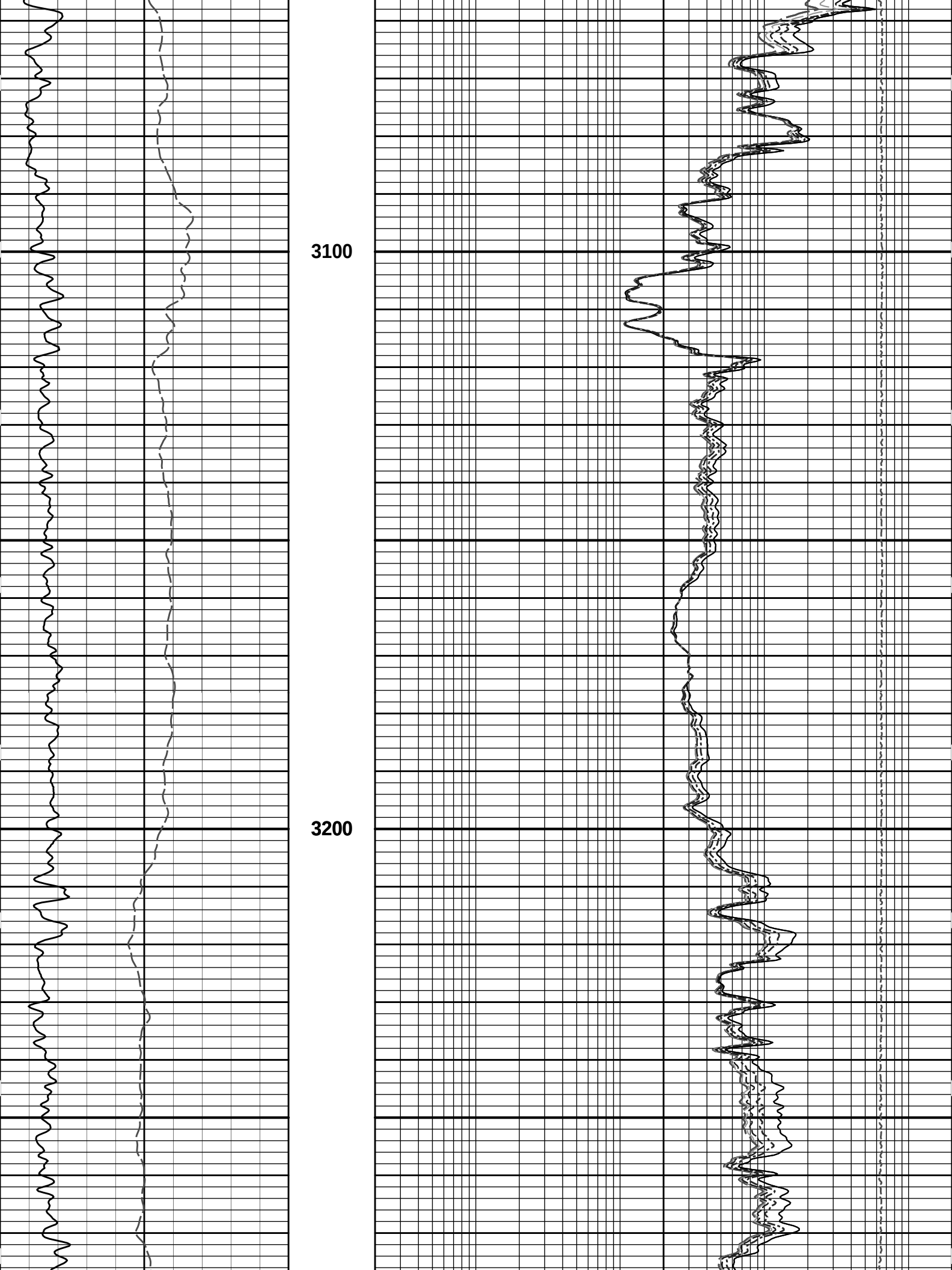

2000
2100

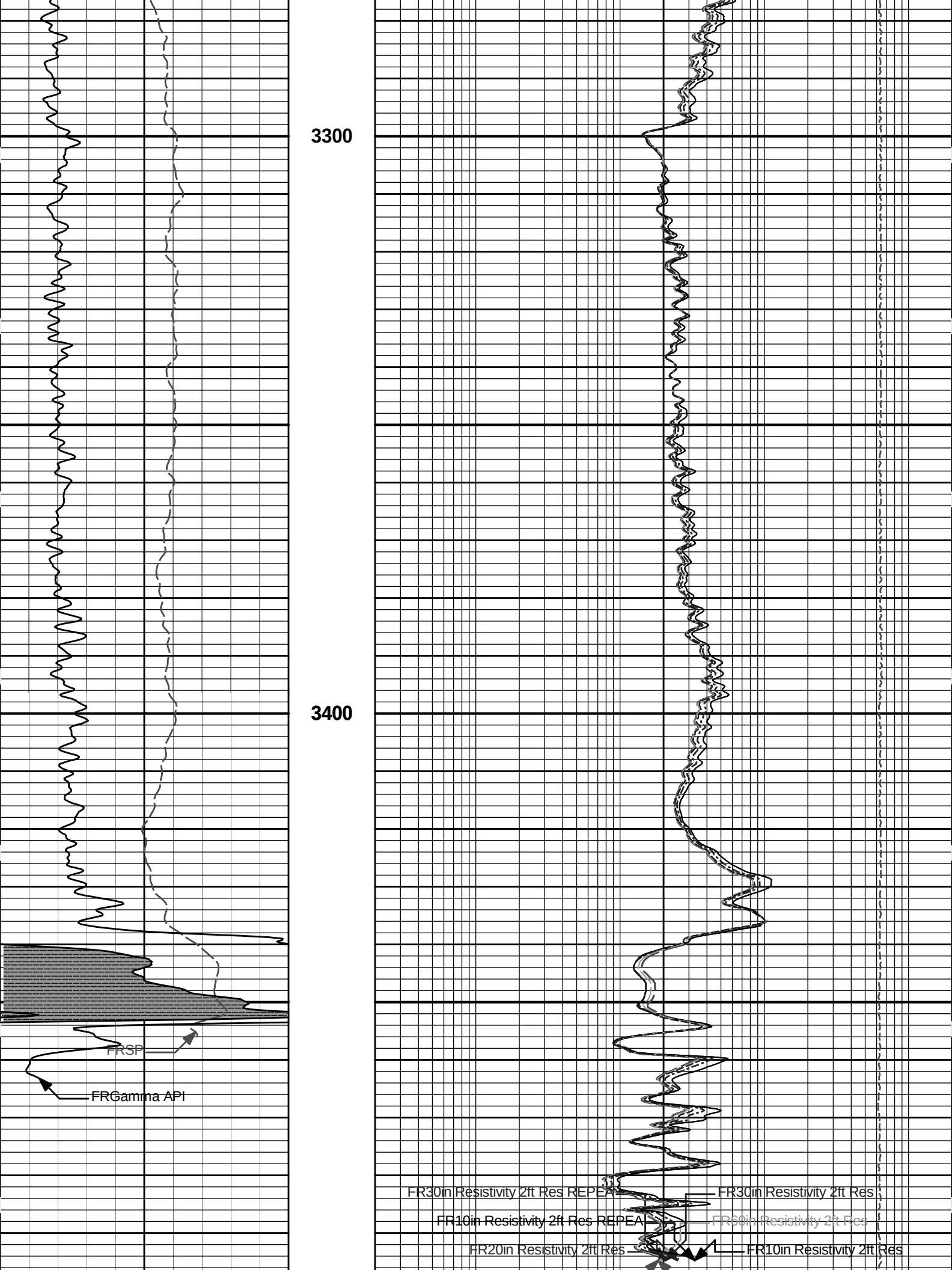

2200
SP
Gamma API
90in Resistivity 2ft Res
90in Resistvity 2ft Res REPEA
2300

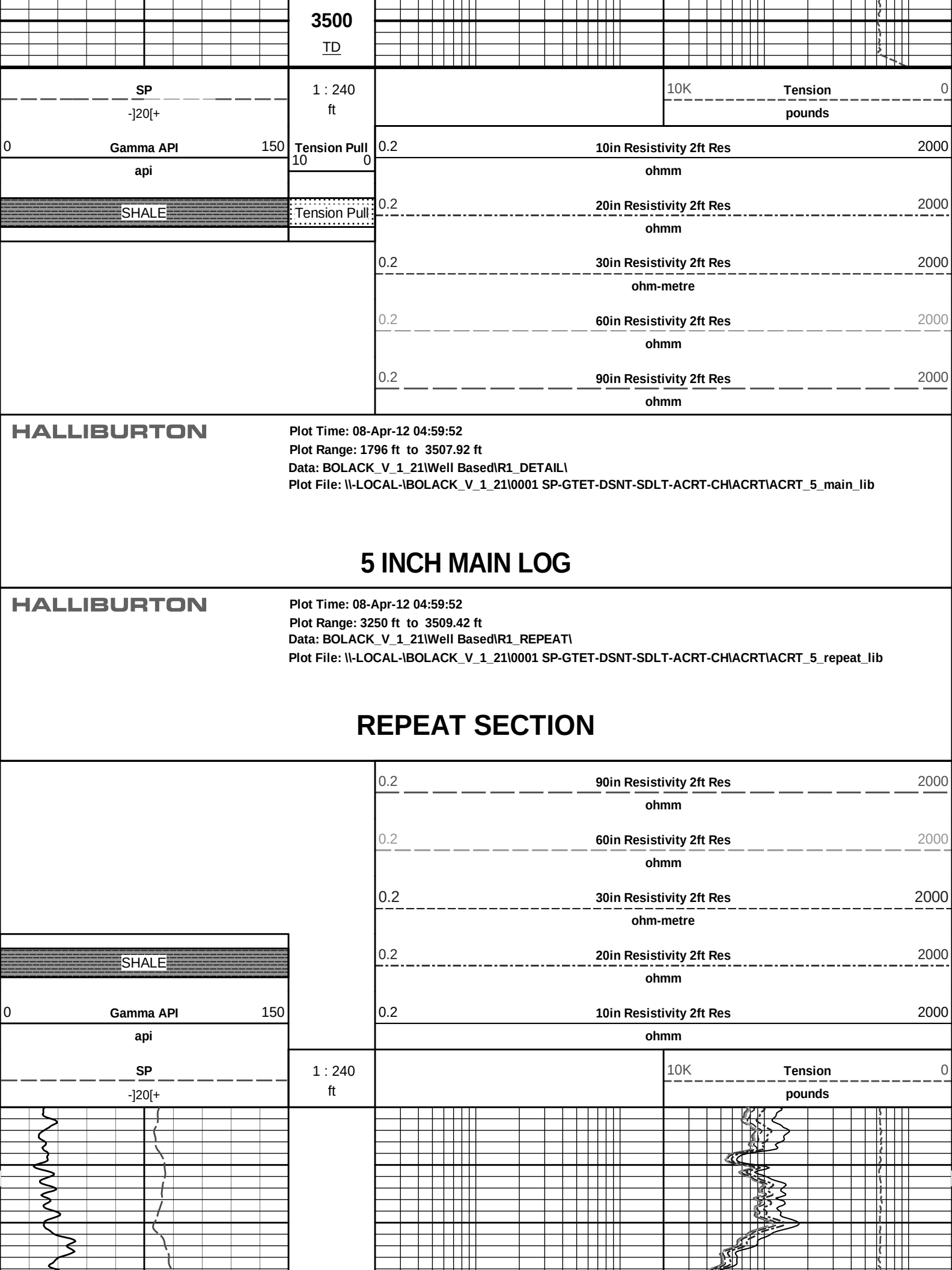

2400
2500
2600


2700
2800


SP
Gamma API
2900
90in Resistivity 2ft Res
90in Resistivity 2ft Res REPEA
20in Resistivity 2ft Res
10in Resistivity 2ft Res
10in Resistivity 2ft Res REPEA
60in Resistivity 2ft Res
30in Resistivity 2ft Res REPEA
30in Resistivity 2ft Res
3000


3100
3200


3300
3400
FRSP
FRGamma API
FR30in Resistivity 2ft Res REPEA
FR10in Resistivity 2ft Res REPEA
FR20in Resistivity 2ft Res
FR30in Resistivity 2ft Res
FR60in Resistivity 2ft Res
FR10in Resistivity 2ft Res



HALLIBURTON

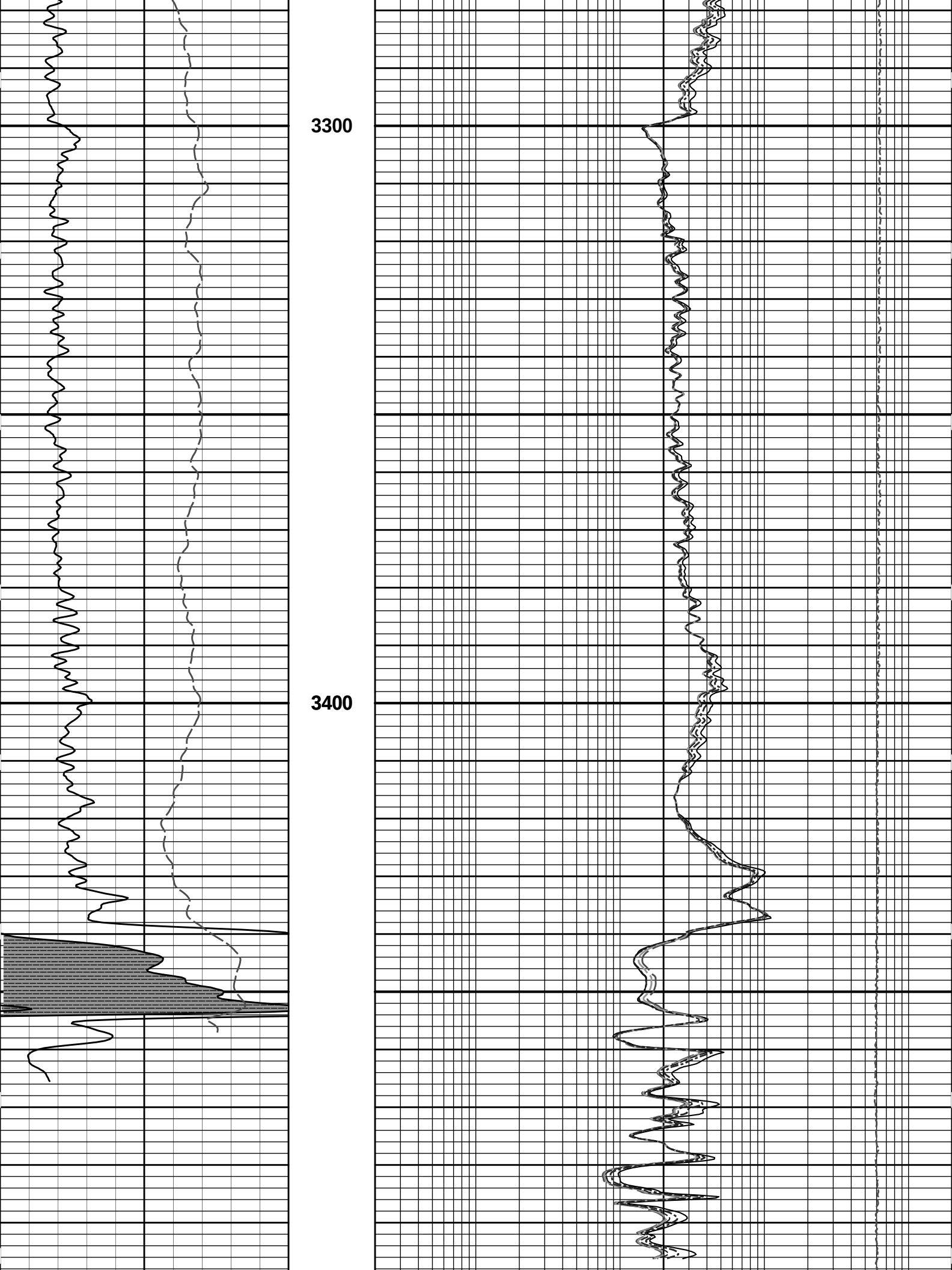
Plot Time: 08-Apr-12 04:59:52
Plot Range: 1796 ft to 3507.92 ft
Data: BOLACK_V_1_21\Well Based\R1_DETAIL
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_5_main_lib

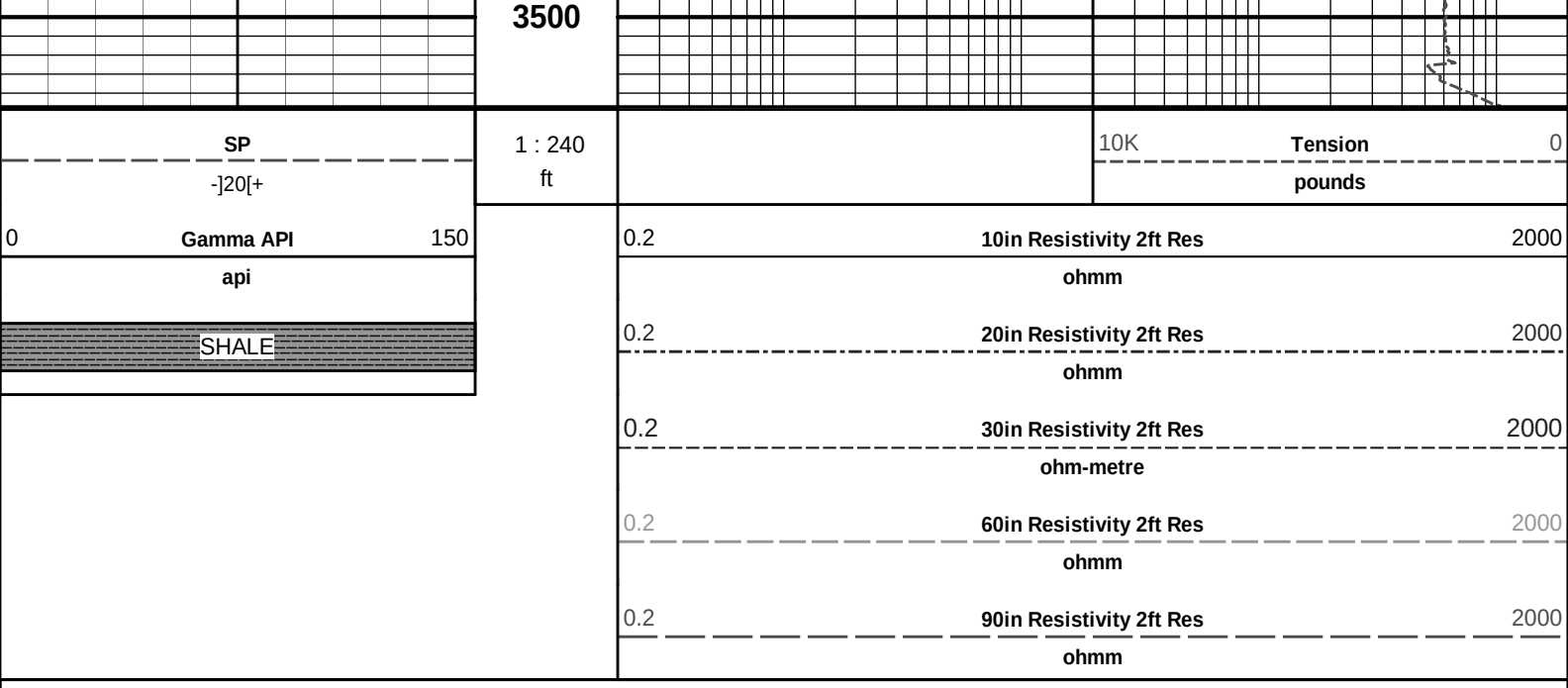
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 08-Apr-12 04:59:52
Plot Range: 3250 ft to 3509.42 ft
Data: BOLACK_V_1_21\Well Based\R1_REPEAT
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_5_repeat_lib

REPEAT SECTION


3300
3400



HALLIBURTON

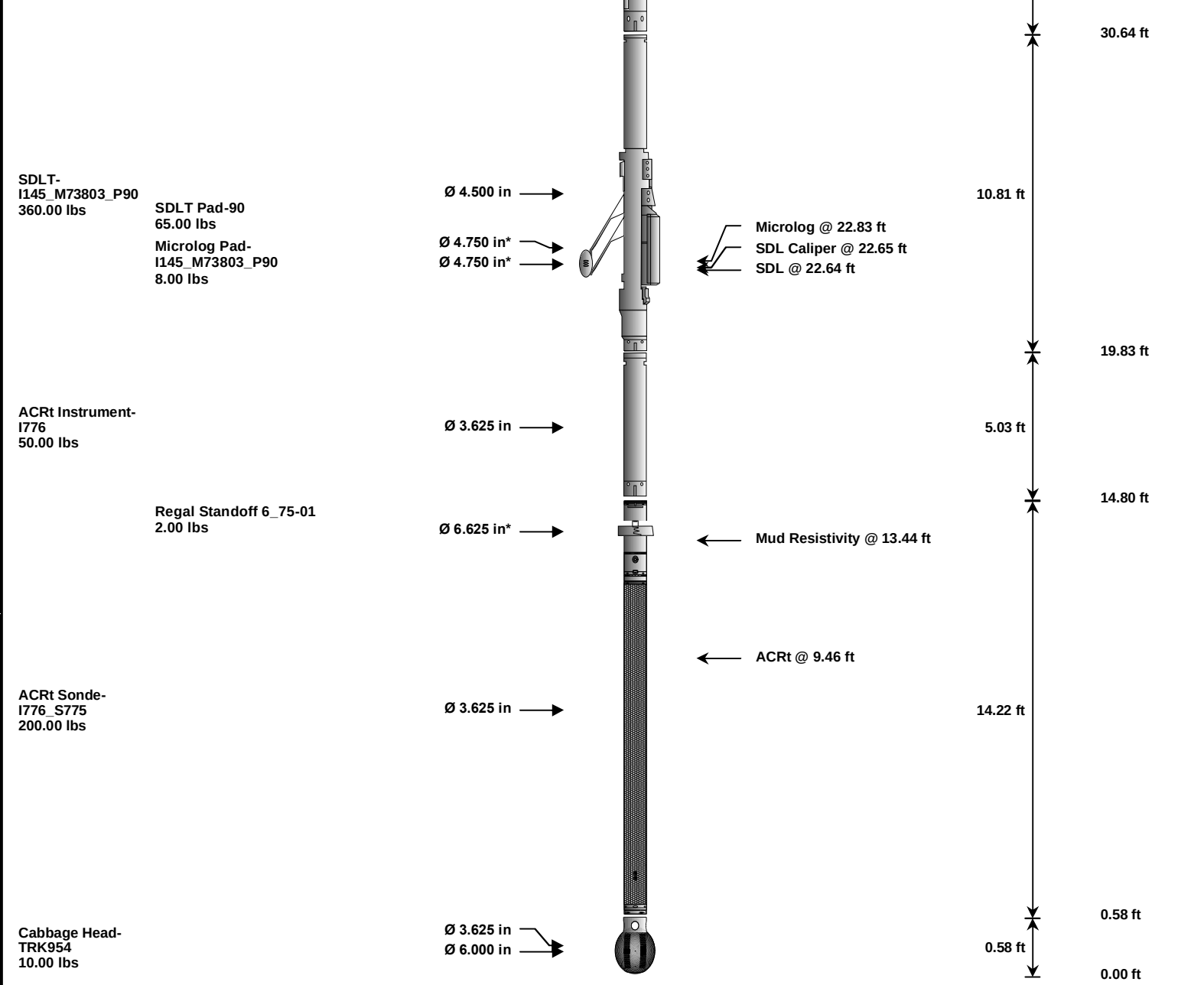
Plot Time: 08-Apr-12 04:59:55
Plot Range: 3250 ft to 3509.42 ft
Data: BOLACK_V_1_21\Well Based\R1_REPEAT
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\ACRT\ACRT_5_repeat_lib

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
Cable Head-PROT01 30.00 lbs		Ø 3.625 in			1.92 ft	54.51 ft
SP Sub-11441709 60.00 lbs		Ø 3.625 in		SP @ 50.81 ft	3.74 ft	52.59 ft
GTET-10811258 165.00 lbs		Ø 3.625 in		GammaRay @ 42.79 ft	8.52 ft	48.85 ft
DSNT-10735145 174.00 lbs		Ø 3.625 in		DSN Far @ 33.39 ft DSN Near @ 32.64 ft	9.69 ft	40.33 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
CH	Standard OH Cable Head	PROT01	30.00	1.92		52.59	300.00
SP	SP Sub	11441709	60.00	3.74		48.85	300.00
GTET	Gamma Telemetry Tool	10811258	165.00	8.52		40.33	60.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69		30.64	60.00
SDLT	Spectral Density Tool	I145_M73803_P90	360.00	10.81		19.83	60.00
MICP	Microlog Pad	I145_M73803_P90	8.00	1.00	*	22.33	60.00
SDLP	Density Insite Pad	90	65.00	2.55	*	22.04	60.00
ACRt	Array Compensated True Resistivity Instrument Section	I776	50.00	5.03		14.80	300.00
ACRt	Array Compensated True Resistivity	I776_S775	200.00	14.22		0.58	300.00
RSOF	Regal Standoff 6.75in	01	2.00	0.52	*	13.53	300.00
CBHD	Cabbage Head	TRK954	10.00	0.58		0.00	300.00
Total			**1,124.00**	**54.51**			

* Not included in Total Length and Length Accumulation.

Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\IDLE **Date: 08-Apr-12 01:32:17**

HALLIBURTON

CALIBRATION REPORT

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - I776_S775**	**Reference Calibration Date:**	**19-Jan-12 15:31:50**
Engineer:	**T. HYDE**	**Calibration Date:**	**13-Mar-12 13:01:10**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**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	1.0182	1.05	0.95	1.0238	1.05	0.95	1.0250	1.05
A2 (50")	0.95	1.0191	1.05	0.95	1.0247	1.05	0.95	1.0239	1.05
A3 (29")	0.95	1.0020	1.05	0.95	1.0070	1.05	0.95	1.0057	1.05
A4 (17")	0.95	1.0042	1.05	0.95	1.0078	1.05	0.95	1.0098	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0196	1.05	0.95	1.0218	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.0299	1.05	0.95	1.0326	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	-1.736	2	-6	-4.151	-2	-8	-4.087	-2
A2 (50")	-7	-3.028	-1	-6	-4.236	-2	-7	-4.272	-2
A3 (29")	-27	-14.459	-9	-9	-4.439	-3	-7	-2.628	-1
A4 (17")	-180	-101.693	-60	-45	-31.226	-15	-39	-24.236	-13
A5 (10")	N/A	N/A	N/A	-150	-119.327	-50	-80	-54.577	-10
A6 (6")	N/A	N/A	N/A	175	286.532	525	90	141.850	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.8630	1.3
36K	1.0	1.1828	2.0
72K	1.0	1.4604	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.991	1.05

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
ACRt Sonde-I776_S775						
Mud Cell	0.991	----------	----------	0.000	----------	ohm-m

Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\IDLE **Date: 08-Apr-12 01:58:12**

HALLIBURTON

PARAMETERS REPORT

Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	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	9.000	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	1900.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm

SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
SHARED	RMUD	Mud Resistivity	1.630	ohmm
SHARED	TRM	Temperature of Mud	71.0	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	3500.00	ft
SHARED	BHT	Bottom Hole Temperature	110.0	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	
Rwa / CrossPlot	XPOK	Process Crossplot?	No	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
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 for Gamma Ray Tools.	Eccentered	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	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	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	

BOTTOM

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
	Depth Panel			
TENS	Tension	0.00	NO	
	SP Sub			
PLTC	Plot Control Mask	50.81	NO	
SP	Spontaneous Potential	50.81	BLK	1.250
SPR	Raw Spontaneous Potential	50.81	NO	
SPO	Spontaneous Potential Offset	50.81	NO	
	GTET			
TPUL	Tension Pull	42.79	NO	
GR	Natural Gamma Ray API	42.79	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	42.79	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.79	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
	DSNT			
TPUL	Tension Pull	32.54	NO	
RNDS	Near Detector Telemetry Counts	32.64	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.39	TRI	0.583
DNTT	DSN Tool Temperature	32.64	NO	
DSNS	DSN Tool Status	32.54	NO	
ERND	Near Detector Telemetry Counts EVR	32.64	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.39	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.64	NO	
	SDLT			
TPUL	Tension Pull	22.65	NO	
PCAL	Pad Caliper	22.65	TRI	0.250
ACAL	Arm Caliper	22.65	TRI	0.250
	ACRt Sonde			
TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000

F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Reference 12 KHz Real Signal	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	
	SDLT Pad			
TPUL	Tension Pull	22.64	NO	
NAB	Near Above	22.46	BLK	0.920
NHI	Near Cesium High	22.46	BLK	0.920
NLO	Near Cesium Low	22.46	BLK	0.920
NVA	Near Valley	22.46	BLK	0.920
NBA	Near Barite	22.46	BLK	0.920
NDE	Near Density	22.46	BLK	0.920
NPK	Near Peak	22.46	BLK	0.920
NLI	Near Lithology	22.46	BLK	0.920
NBAU	Near Barite Unfiltered	22.46	BLK	0.250
NLIU	Near Lithology Unfiltered	22.46	BLK	0.250
FAB	Far Above	22.81	BLK	0.250
FHI	Far Cesium High	22.81	BLK	0.250
FLO	Far Cesium Low	22.81	BLK	0.250
FVA	Far Valley	22.81	BLK	0.250
FBA	Far Barite	22.81	BLK	0.250
FDE	Far Density	22.81	BLK	0.250
FPK	Far Peak	22.81	BLK	0.250
FLI	Far Lithology	22.81	BLK	0.250
PTMP	Pad Temperature	22.65	BLK	0.920
NHV	Near Detector High Voltage	22.04	NO	

FHV	Far Detector High Voltage	22.04	NO	
ITMP	Instrument Temperature	22.04	NO	
DDHV	Detector High Voltage	22.04	NO	
	Microlog Pad			
TPUL	Tension Pull	22.83	NO	
MINV	Microlog Lateral	22.83	BLK	0.750
MNOR	Microlog Normal	22.83	BLK	0.750

Data: BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\IDLE **Date: 08-Apr-12 01:57:39**

COMPANY	**VAL ENERGY INC.**		
WELL	**BOLACK V 1-21**		
FIELD	**BOLACK**		
COUNTY	**COWLEY**	STATE	**KANSAS**

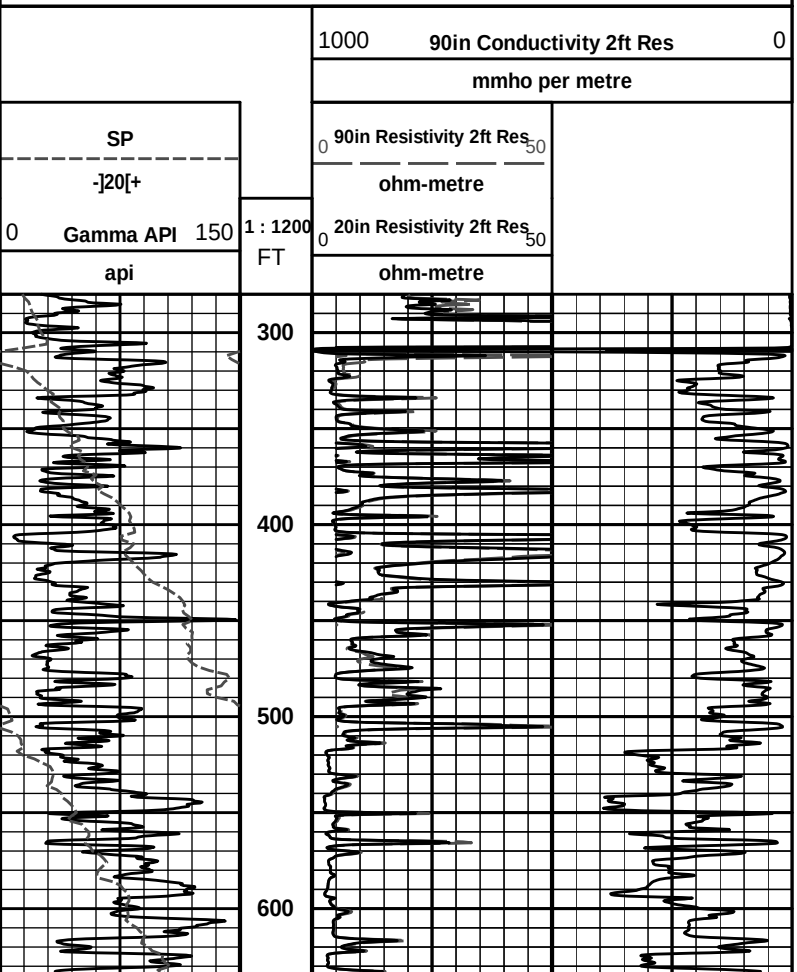
HALLIBURTON

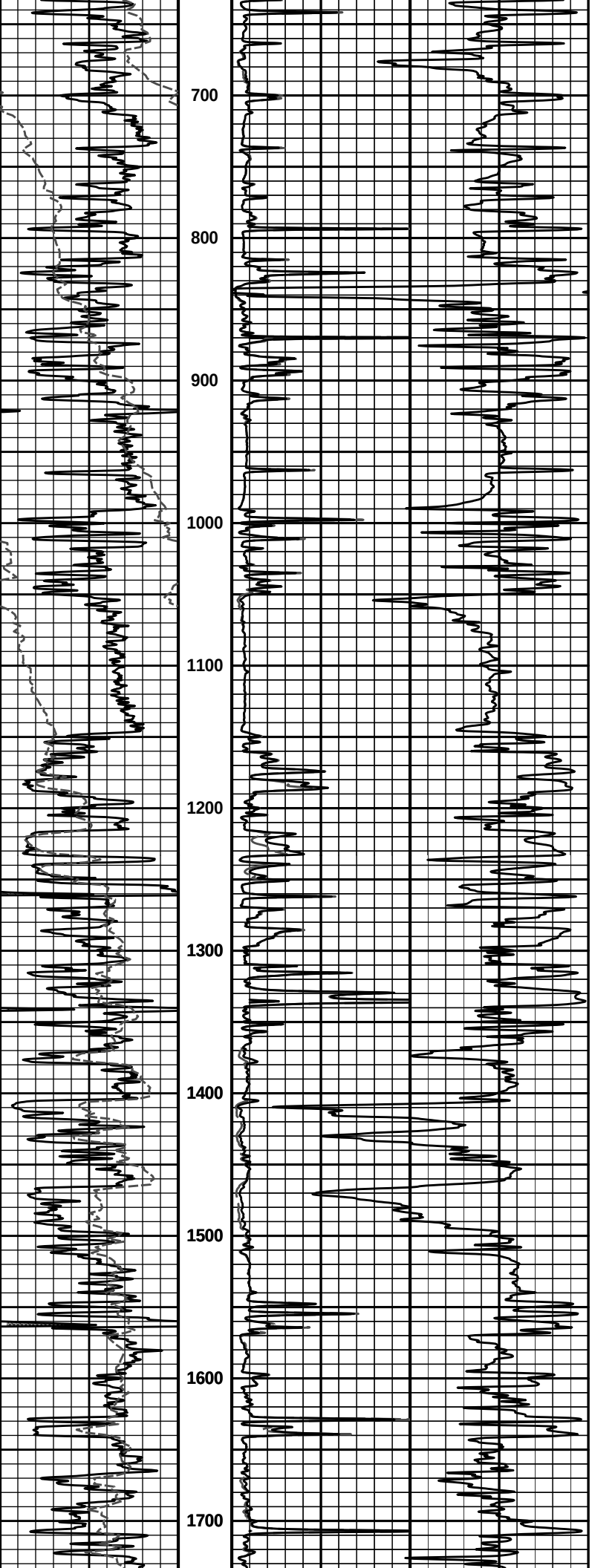
ARRAY COMPENSATED TRUE RESISTIVITY LOG

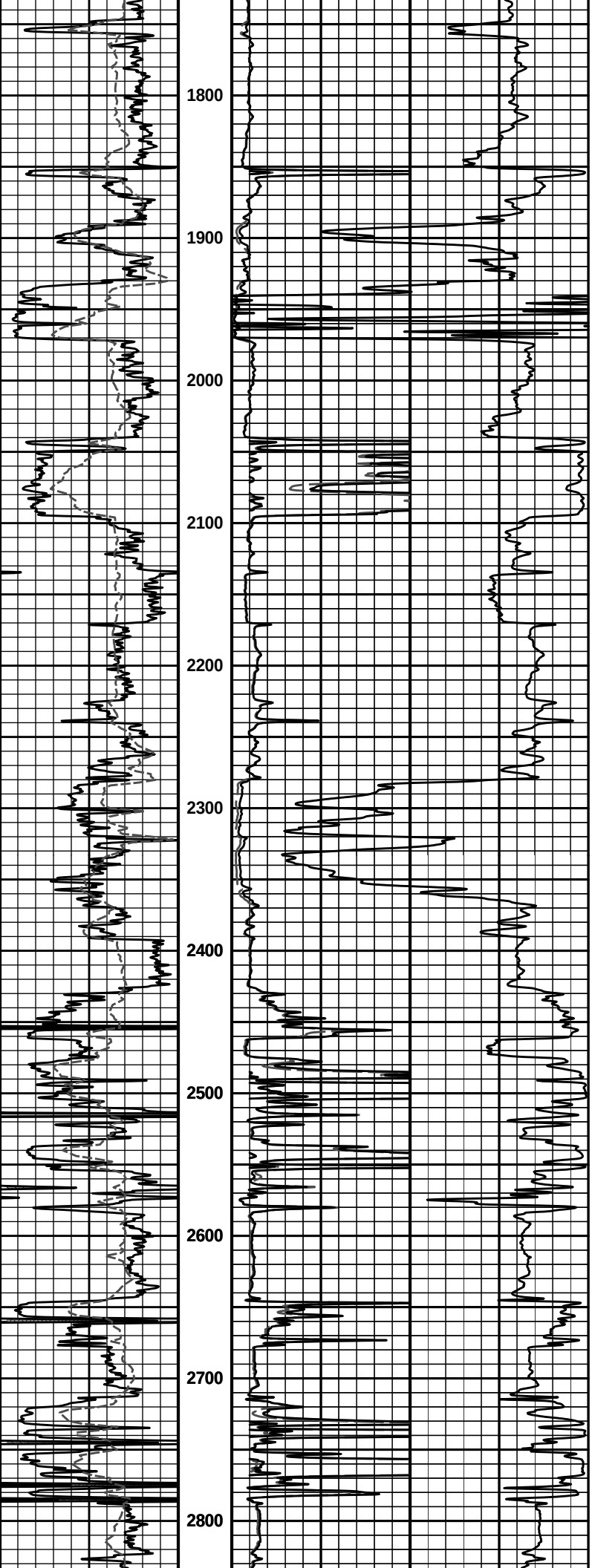
HALLIBURTON

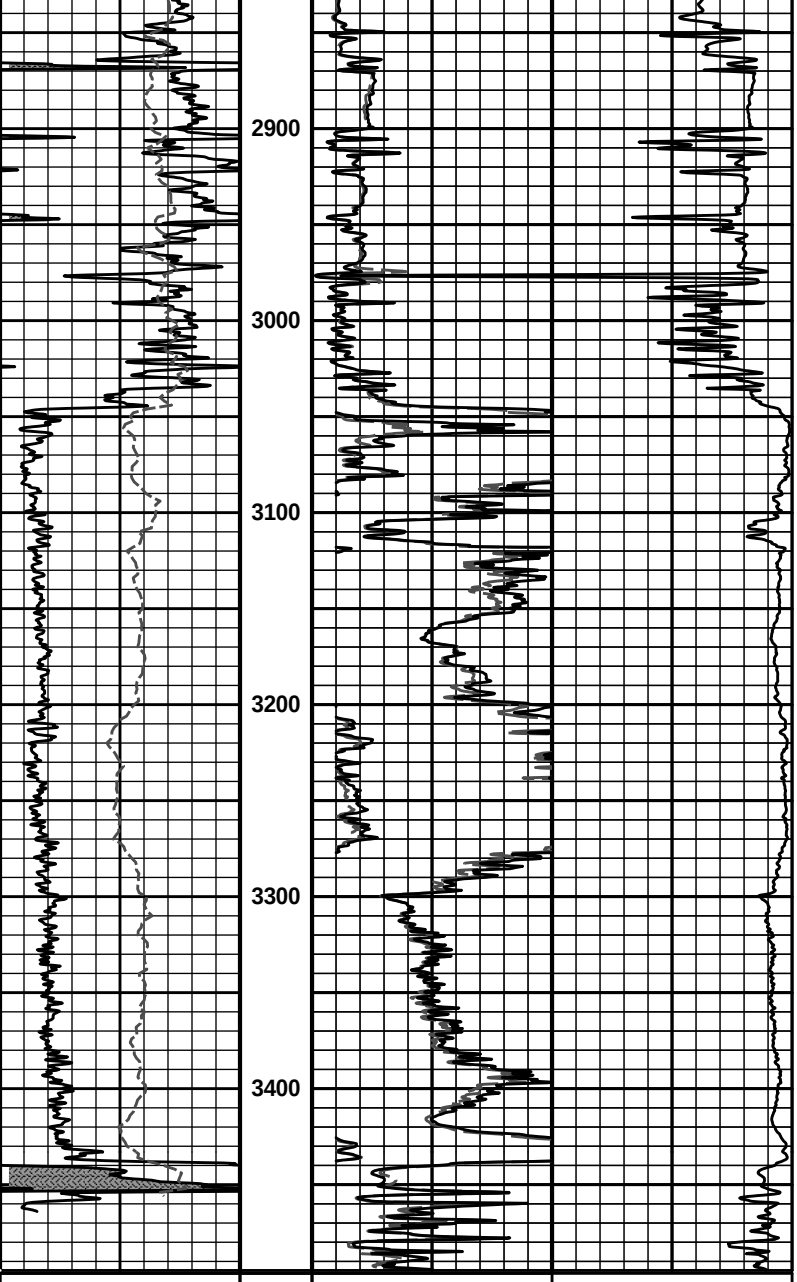
Plot Time: 08-Apr-12 04:59:55
Plot Range: 280 ft to 3494.75 ft
Data: BOLACK_V_1_21\Well Based\R1_CASING
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\...\ACRT_1_lib

1 INCH MAIN LOG




700
800
900
1000
1100
1200
1300
1400
1500
1600
1700


1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800



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

HALLIBURTON

Plot Time: 08-Apr-12 04:59:57
Plot Range: 280 ft to 3494.75 ft
Data: BOLACK_V_1_21\Well Based\R1_CASING
Plot File: \\-LOCAL-\BOLACK_V_1_21\0001 SP-GTET-DSNT-SDLT-ACRT-CH\...\ACRT_1_lib

1 INCH MAIN LOG