

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY

COMPANY		NOBLE ENERGY INC.	
WELL		BASHOR PC AA09-14	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date	23-Feb-11		
Run No.	ONE		
Depth - Driller	6945.00 ft		
Depth - Logger	6932.0 ft		
Bottom - Logged Interval	6923.0 ft		
Top - Logged Interval	CASING		
Casing - Driller	8.625 in @ 564.0 ft		
Casing - Logger	562.0 ft		
Bit Size	7.875 in		
Type Fluid in Hole	WATER BASED MUD		
Density	9.0 ppq	26.00	s/qt
PH	7.00 pH		
Source of Sample	MUD CELL		
Rm @ Meas. Temperature	1.550 ohmm @ 75.00 degF		
Rmf @ Meas. Temperature	1.40 ohmm @ 75.00 degF		
Rmc @ Meas. Temperature	1.700 ohmm @ 75.00 degF		
Source Rmf	CHART	CHART	
Rm @ BHT	0.66 ohmm @ 185.0 degF		
Time Since Circulation	12.0 hr		
Time on Bottom	23-Feb-11 08:54		
Max. Rec. Temperature	185.0 degF @ 6932.0 ft		
Equipment	11454566	BRIGHTON	
Recorded By	C. GULLETT		
Witnessed By	J. TURNER		

COMPANY	NOBLE ENERGY INC.
WELL	BASHOR PC AA09-14
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO
API No.	05123325080000
Location	SURFACE: 660' FSL & 1980' FWL
	LAT: 40.495740° N
	LONG: 104.44431° W
Other Services:	CSNG

Fold here

Service Ticket No.: 7986100										API Serial No.: 05123325080000										PGM Version: WL INSITE R3.2.3 (Build 5)									
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.		Other											
Rmf @ Meas. Temp.		@				@				ONE		ACRt		N/A		1.5" STANDOFF		N/A											
Rmc @ Meas. Temp.		@				@						E6758-S4352																	
Source Rmf		Rmc																											
Rm @ BHT		@				@																							
Rmf @ BHT		@				@																							
Rmc @ BHT		@				@																							
EQUIPMENT DATA																													
GAMMA					ACOUSTIC					DENSITY					NEUTRON														
Run No.		ONE			Run No.					Run No.		ONE			Run No.		ONE												
Serial No.		11294346			Serial No.					Serial No.		M271-P123			Serial No.		10958655												
Model No.		GTET			Model No.					Model No.		SDLT			Model No.		DSNT												
Diameter		3.625"			No. of Cent.					Diameter		4.75"			Diameter		3.625"												
Detector Model No.		102-T			Spacing					Log Type		GAMMA-GAMMA			Log Type		THERMAL												
Type		SCINT.								Source Type		Cs137			Source Type		Am241Be												
Length		8"			LSA [Y/N]					Serial No.		2770GW			Serial No.		DSN-434												
Distance to Source		17'			FWDA [Y/N]					Strength		1.5 Ci			Strength		15 Ci												
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	T.D.	6738	REC	0	250				20%	0%	2.68	20%	0%	SAND		
ONE	6738	6460	REC.	0	250				20%	0%	2.71	20%	0%	LIME		
ONE	6460	CSG.	REC.	0	250				20%	0%	2.68	20%	0%	SAND		
DIRECTIONAL INFORMATION																
Maximum Deviation									@	KOP						@
Remarks:																
RWCH-GTET-CSNG-DSNT-SDLT-ACRt WERE RAN IN COMBINATION.																
A.H.V. CALCULATED FOR 4.5" CASING.																
CHLORIDES REPORTED AT 600 ppm.																
YOUR CREW TODAY: A. LEWIS, G. DAVIS AND R. CHERVENAK.																
RIG: CADE #22																
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES - BRIGHTON, CO - (303)-825-4346.																
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.																
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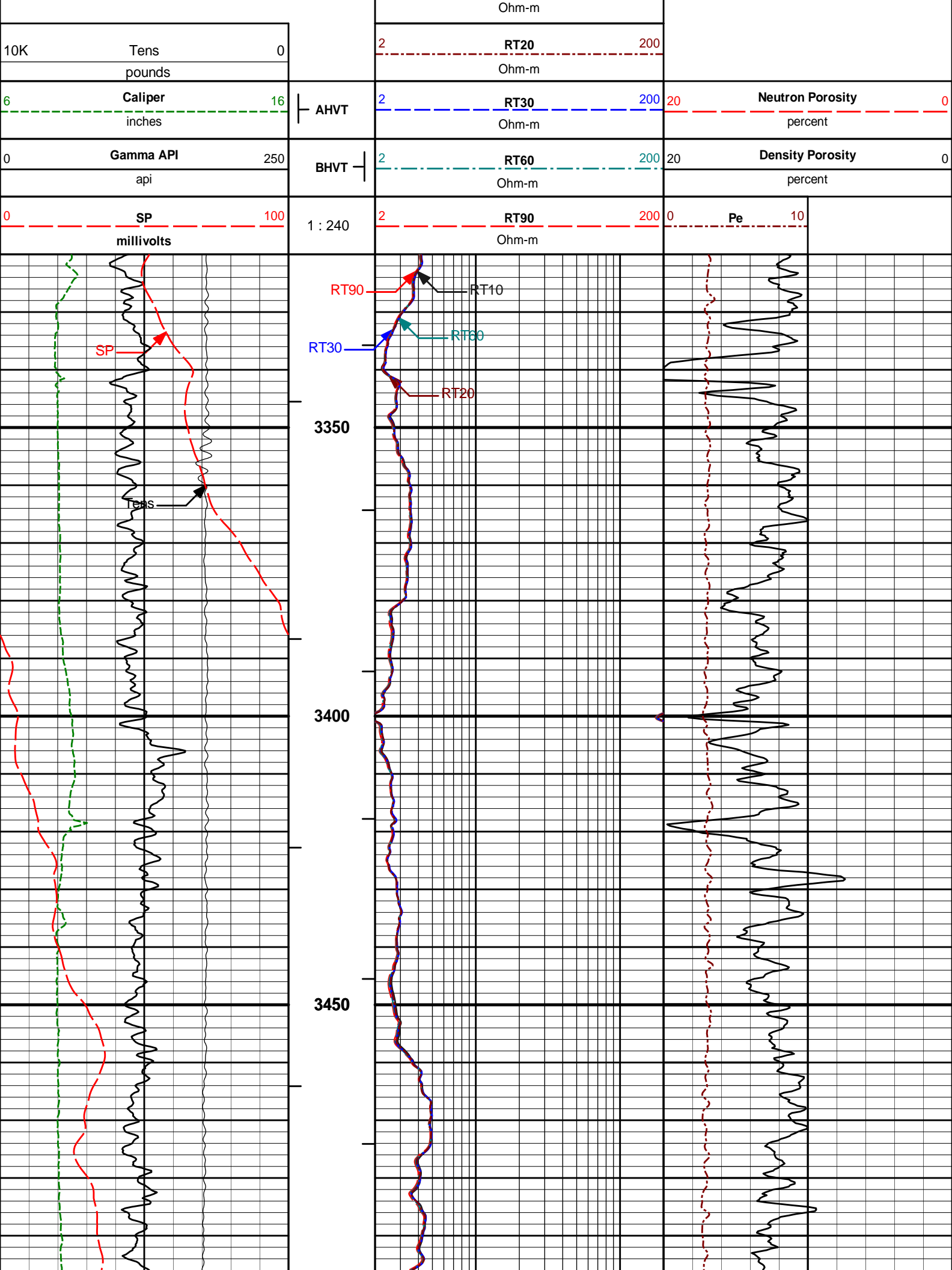
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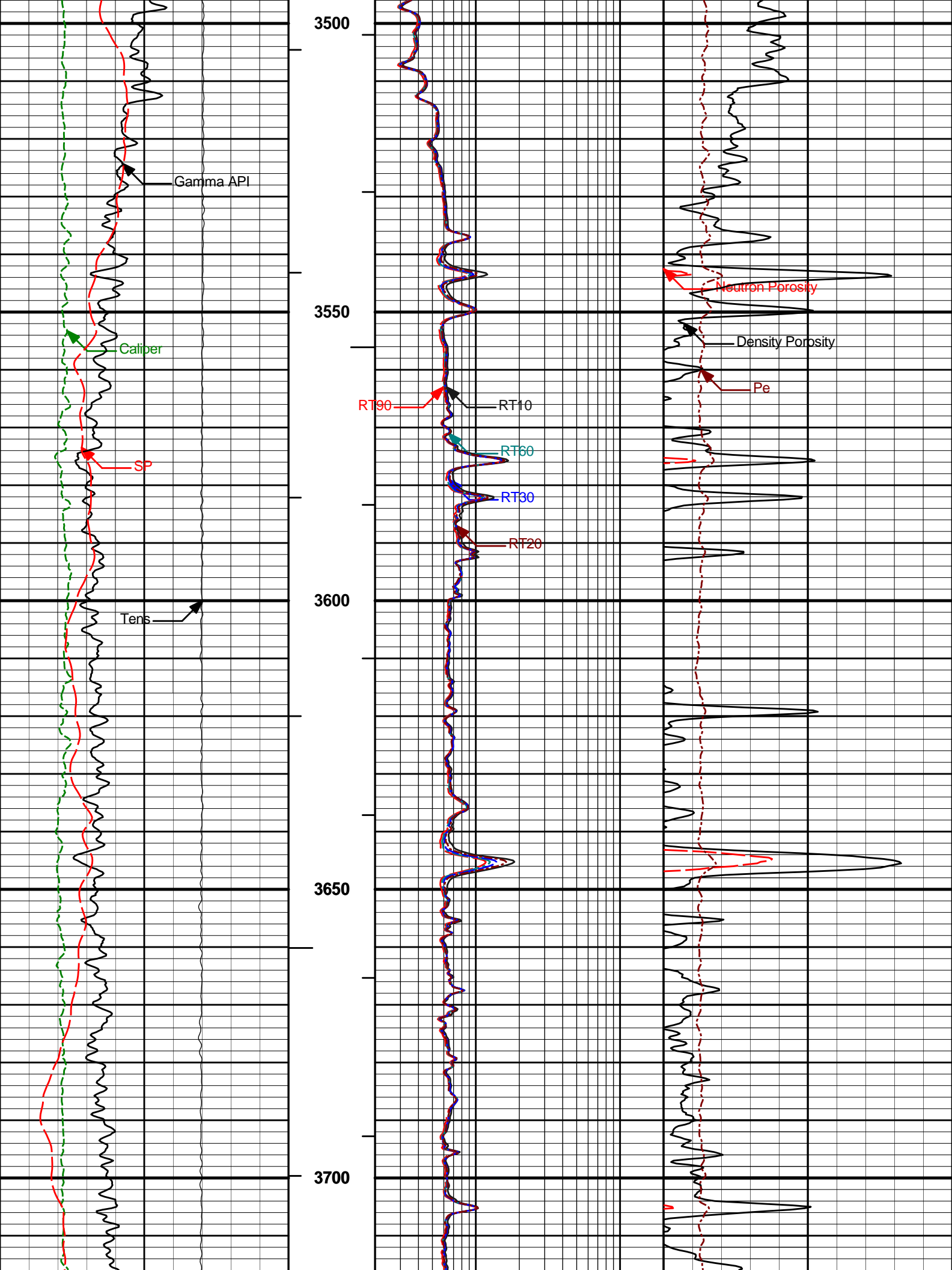
PARAMETERS REPORT

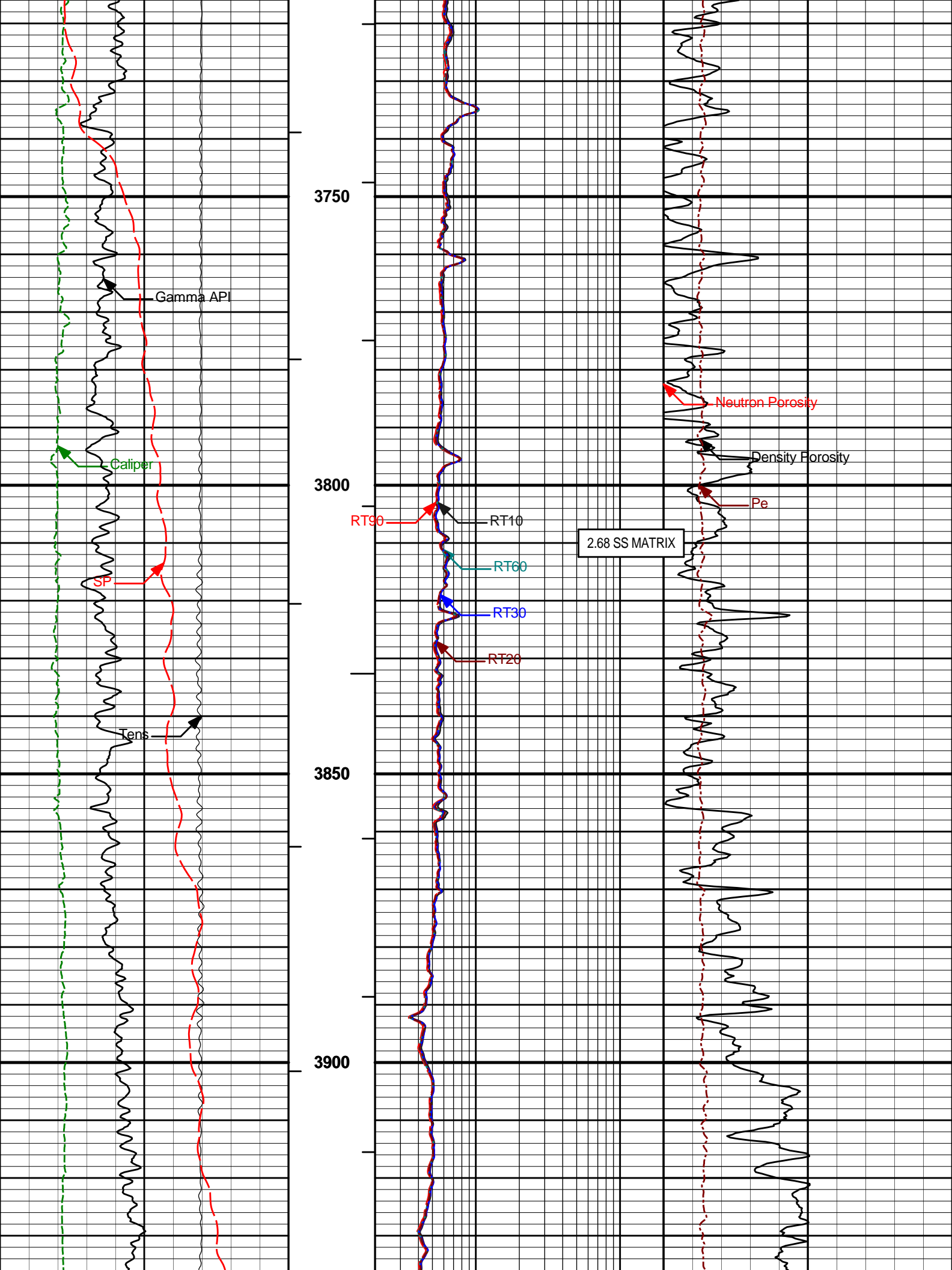
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT	DMA	Formation Density Matrix	2.680	g/cc
6460.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
6738.00					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.000	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	2.000	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	35.0	degF
	SHARED	TD	Total Well Depth	6945.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	

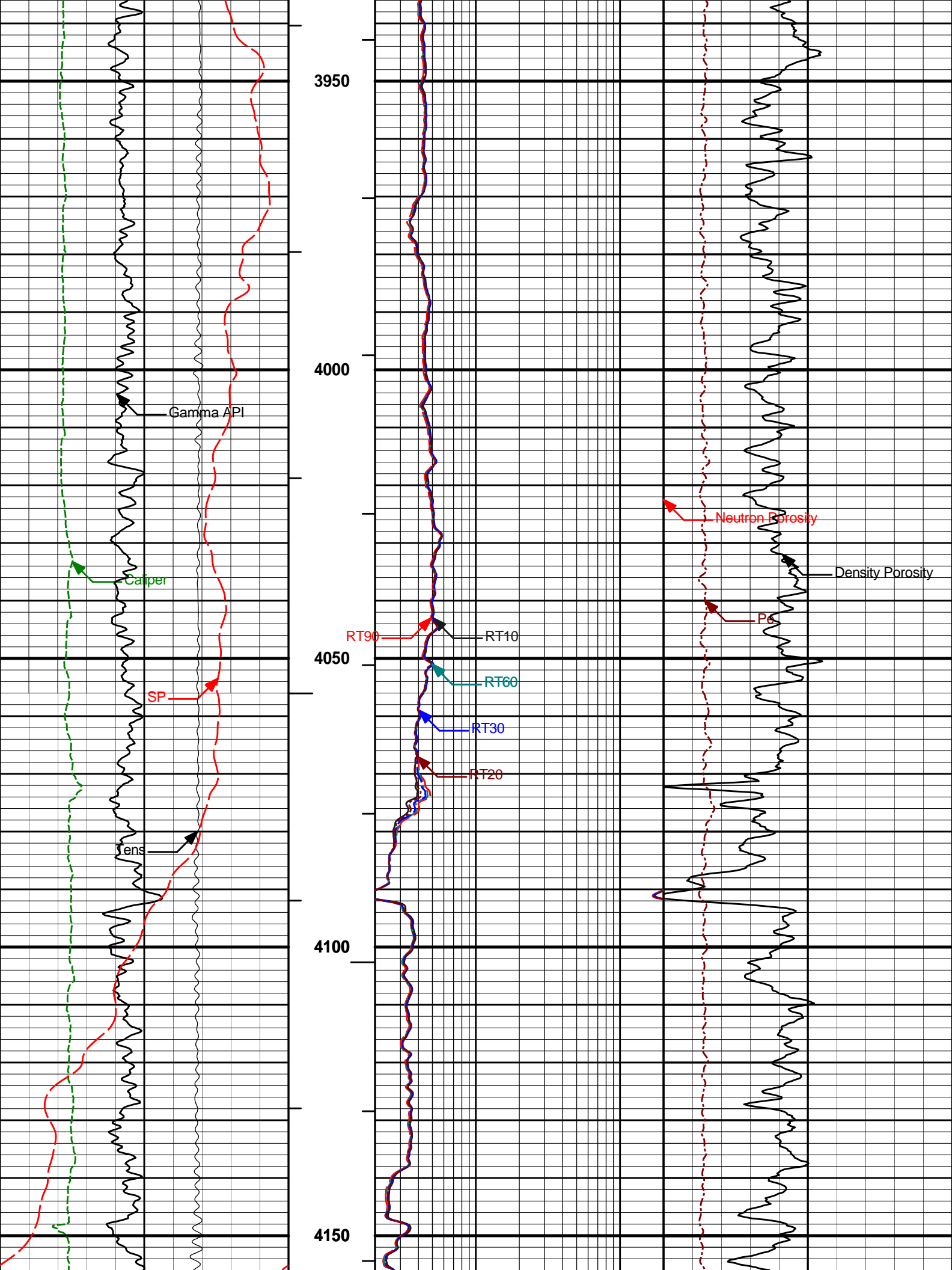
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position	Centered	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Sandstone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.000	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	2.680	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: BASHORPC_AA0914\0001 TRIPLE_CSNG\002.01 23-Feb-11 10:55 Up				Date: 23-Feb-11 11:25:16

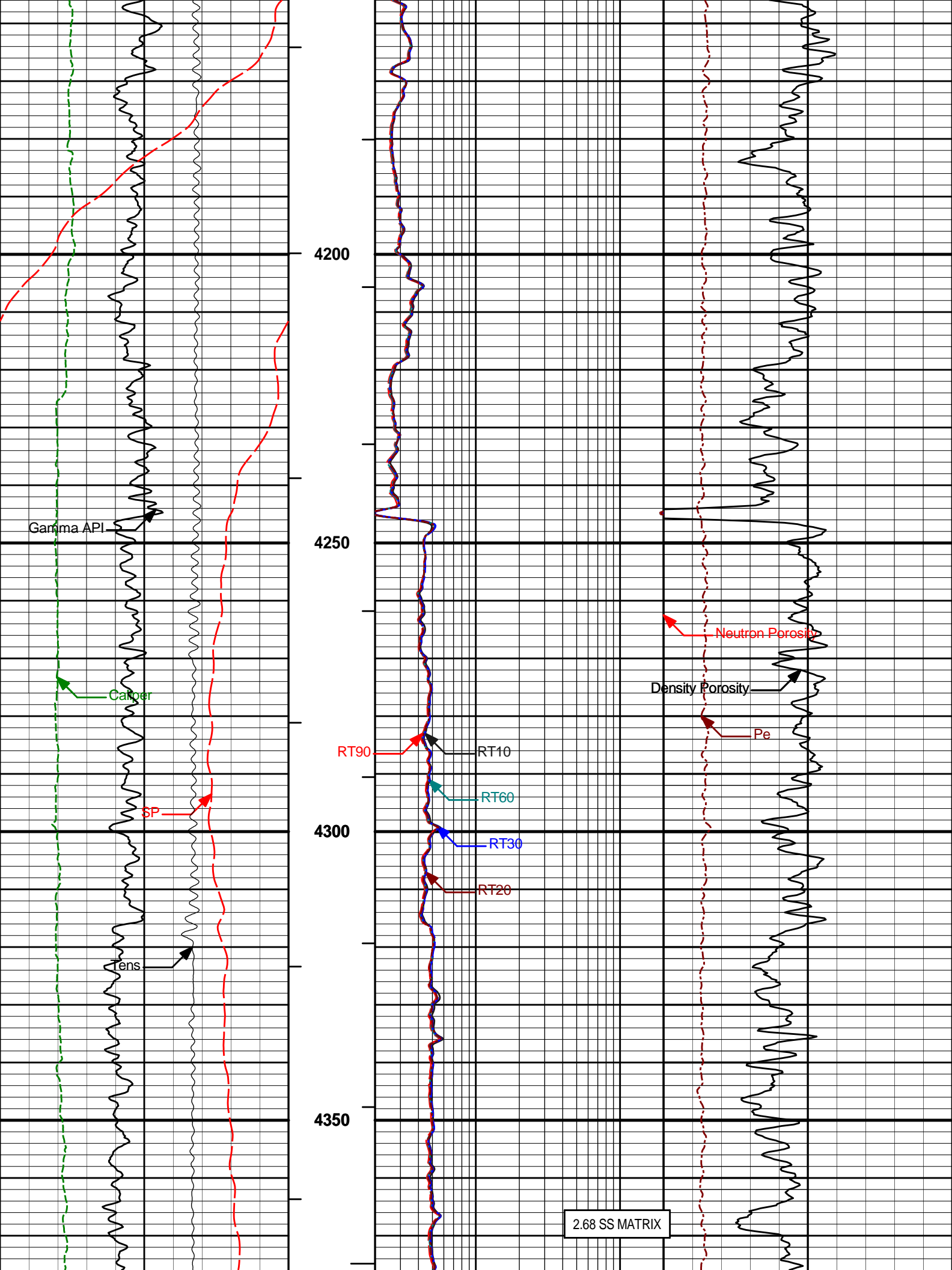
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MAIN PASS 5" = 100'				
Track 1	Depth Track	Track 2	Track 5	Track 3
		2RT10200		

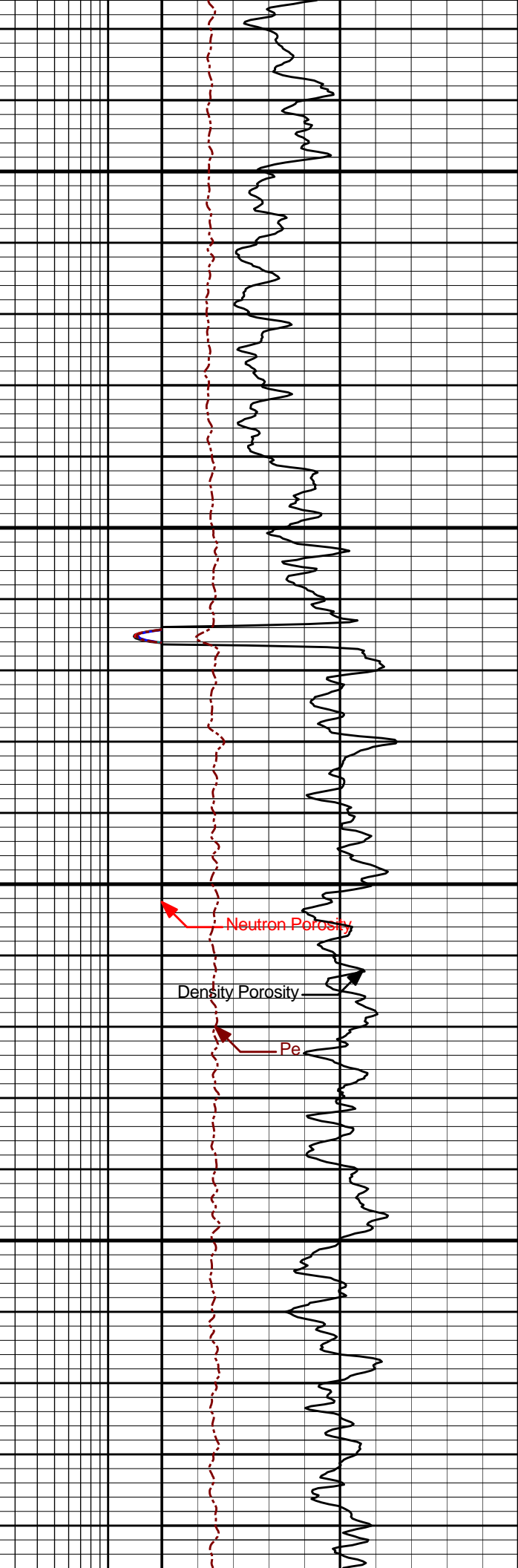
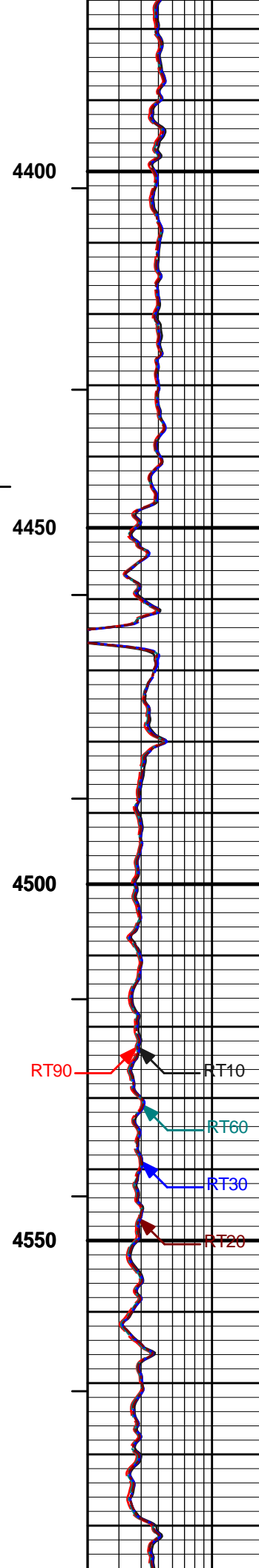
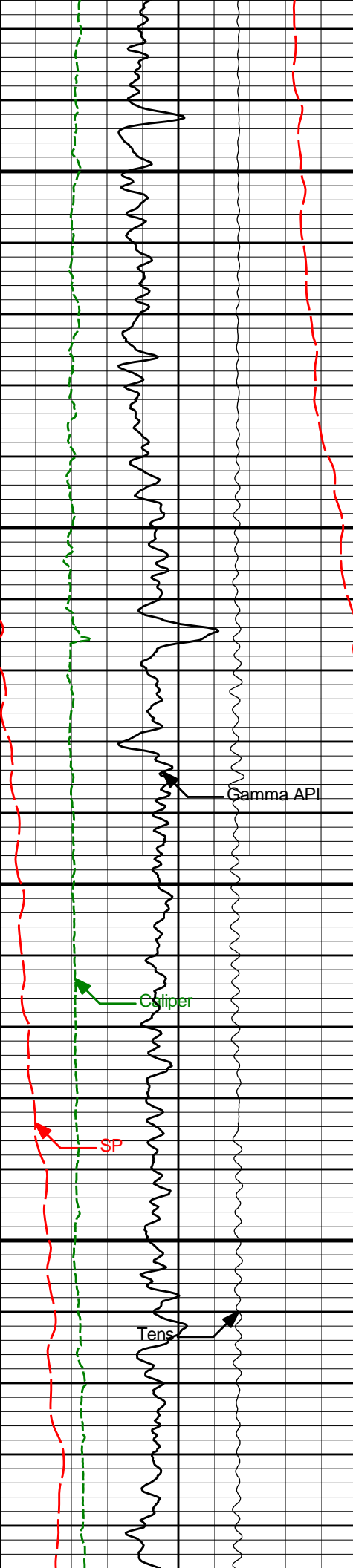


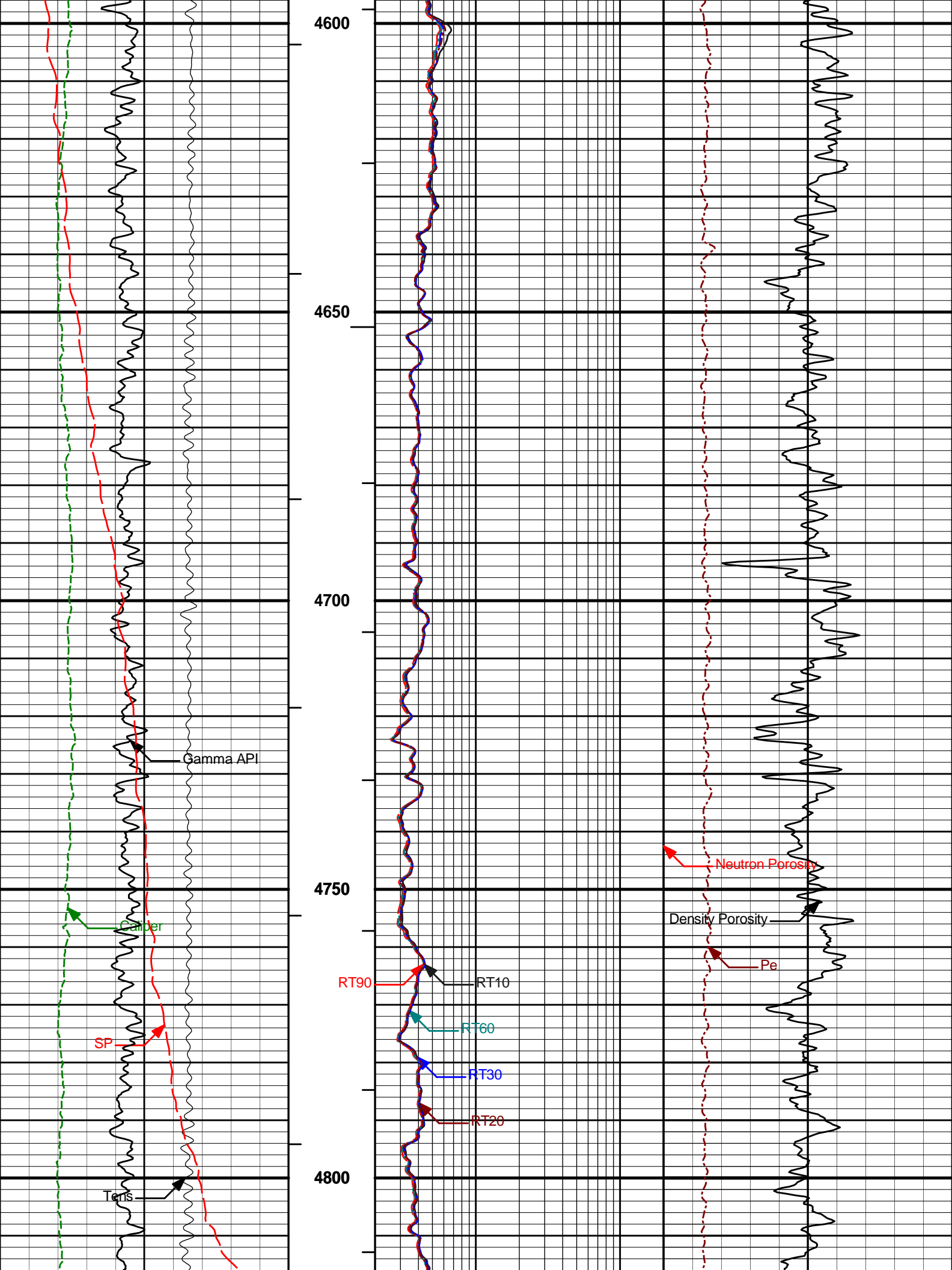


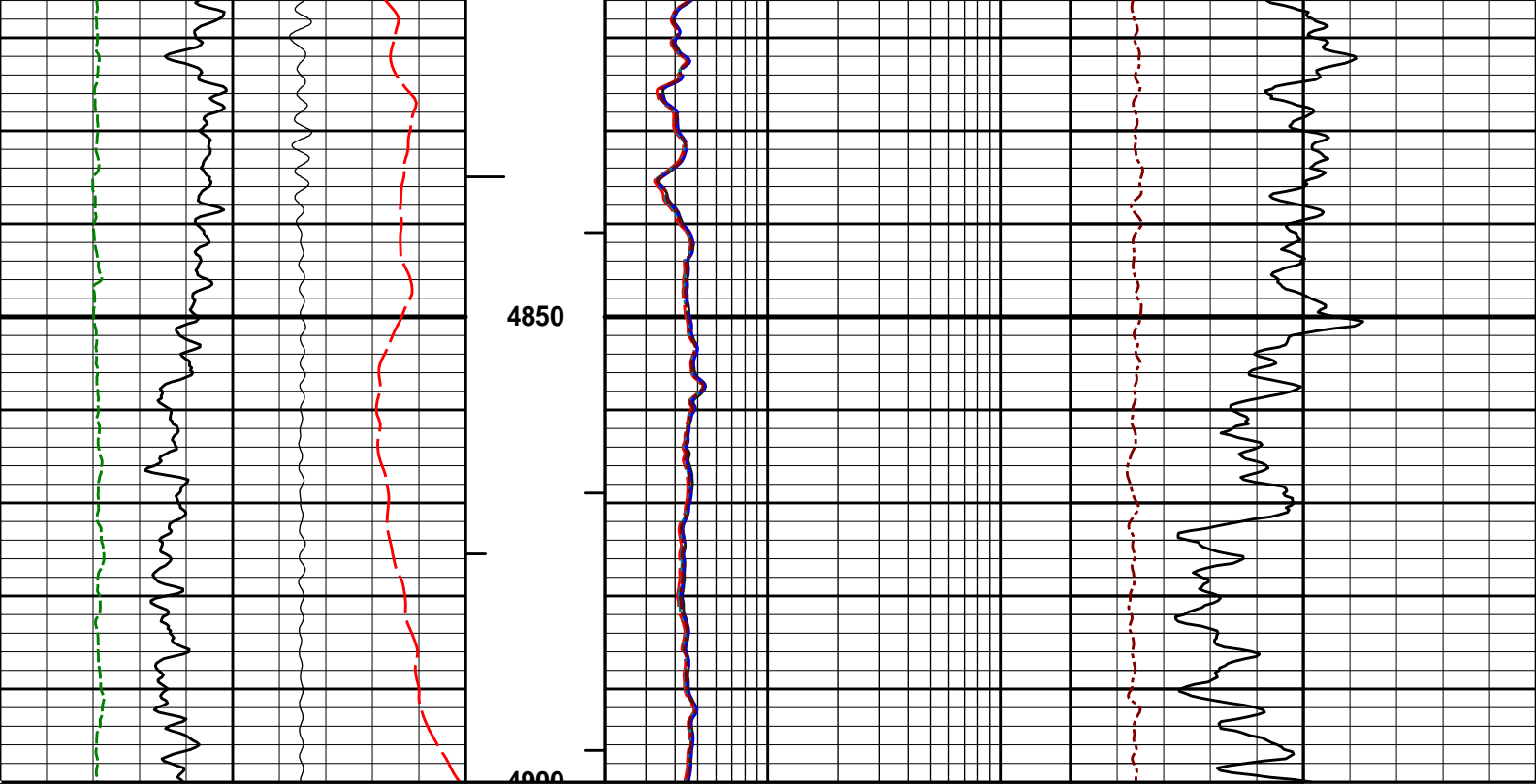












0	SP	100	1 : 240	2	RT90	200	0	Pe	10
	millivolts				Ohm-m				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				Ohm-m			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				Ohm-m			percent	
10K	Tens	0		2	RT20	200			
	pounds				Ohm-m				
				2	RT10	200			
					Ohm-m				

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Plot Time: 23-Feb-11 12:32:15
Plot Range: 3320 ft to 4900 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \COMP\MAIN

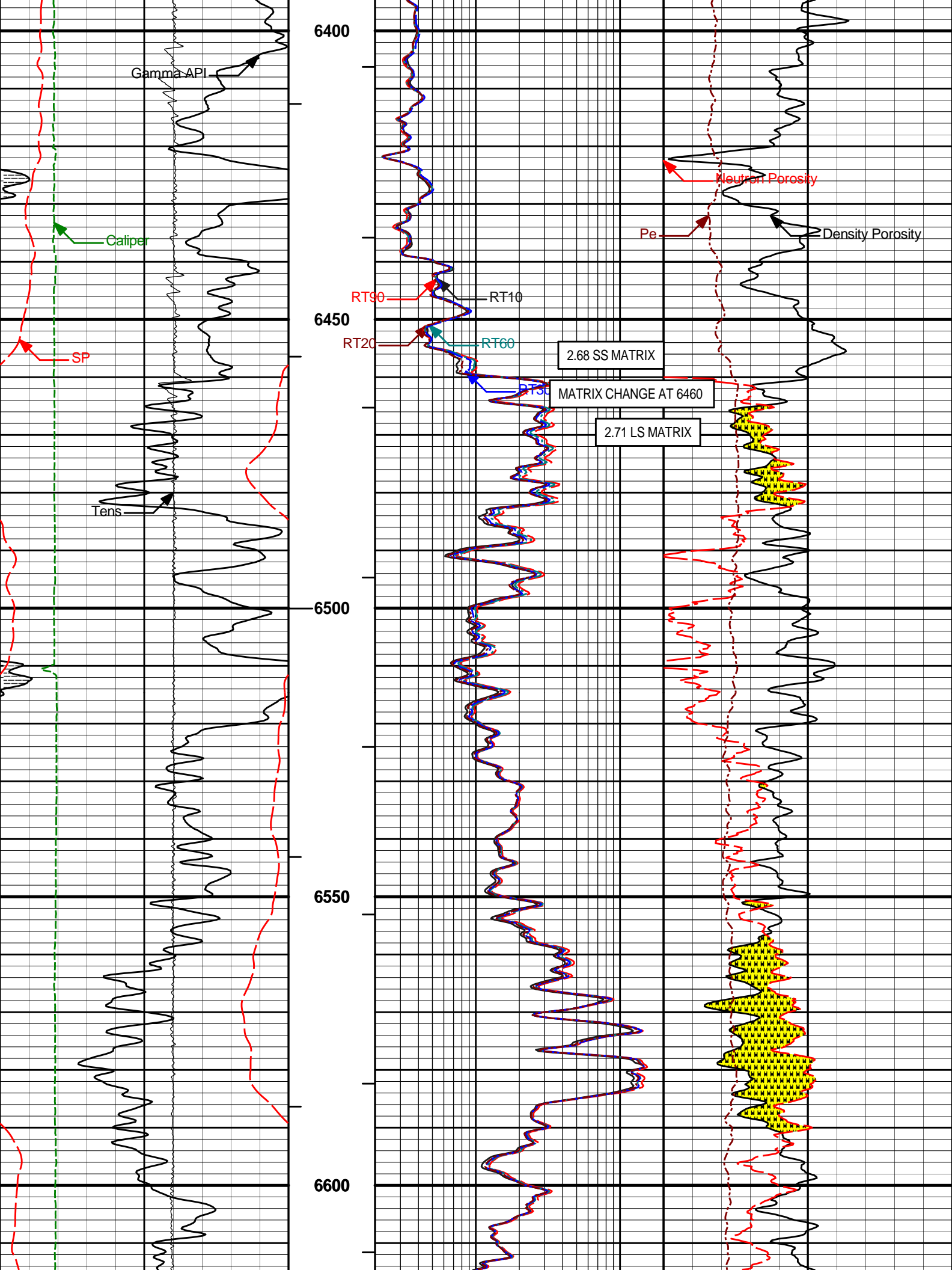
MAIN PASS 5" = 100'

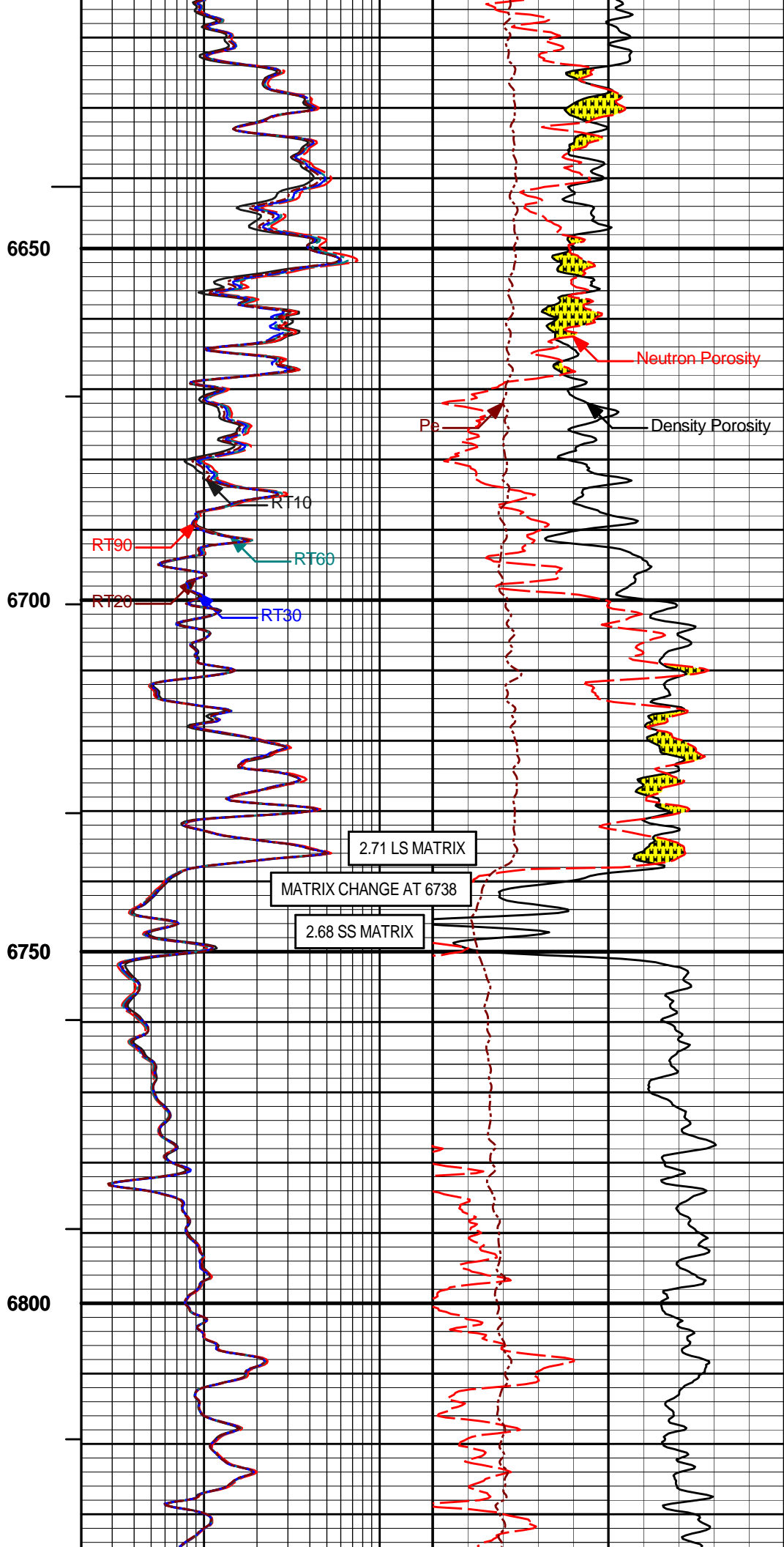
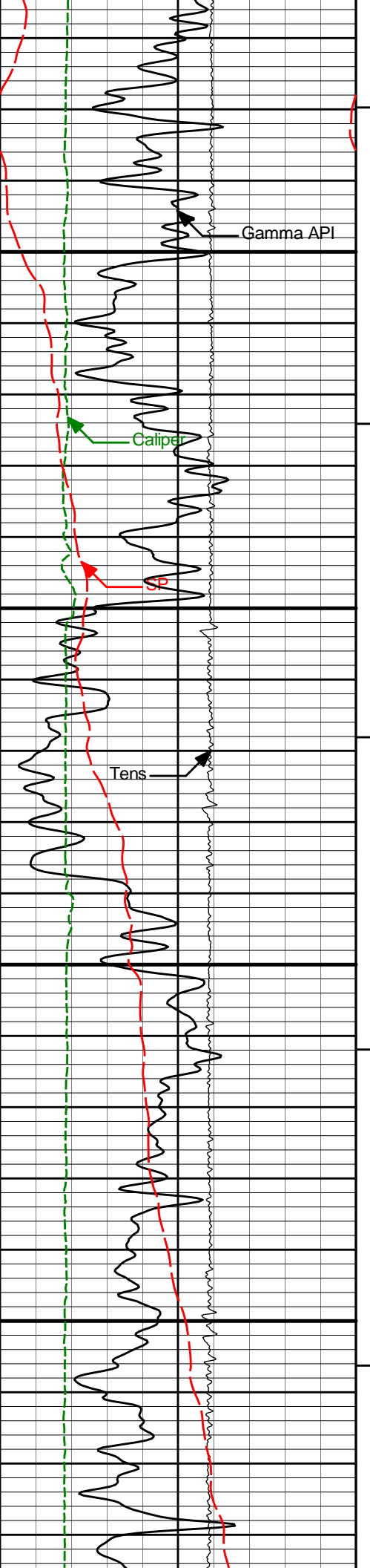
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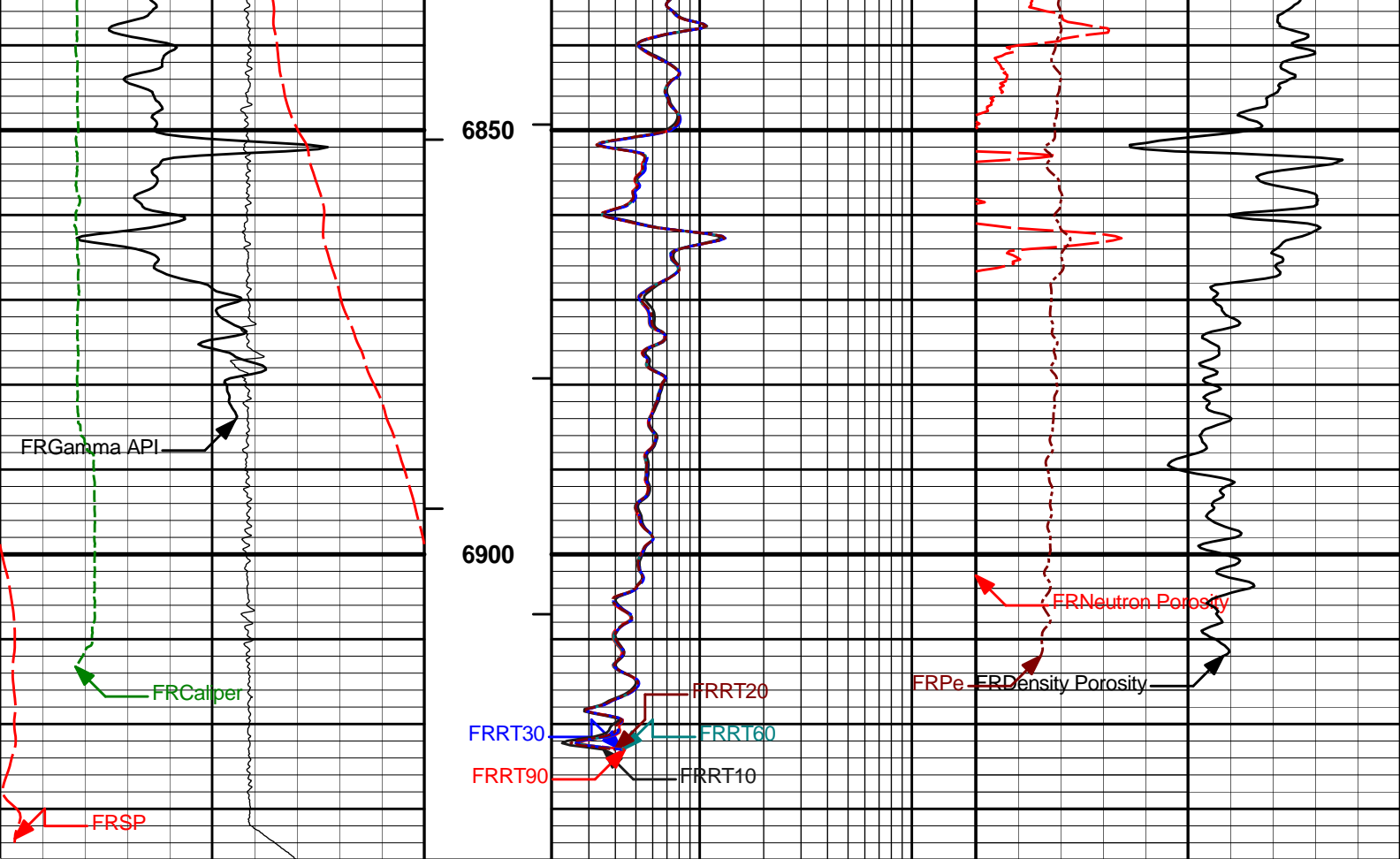
Plot Time: 23-Feb-11 12:32:15
Plot Range: 6240 ft to 6936 ft
Data: BASHORPC_AA0914\Well Based\MAIN*
Plot File: \COMP\REPEAT

REPEAT SECTION 5" = 100'

Track 1			Depth Track	Track 2		Track 5	Track 3	
			2	RT10	200			
				Ohm-m				
10K	Tens	0	2	RT20	200			
	pounds			Ohm-m				
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity
	inches			Ohm-m			percent	0
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity
	api			Ohm-m			percent	0
50	SP	150	1 : 240	2	RT90	200	0	Pe
	millivolts			Ohm-m			10	
			6250					
			6300					
			6350					







50	SP	150	1 : 240	2	RT90	200	0	Pe	10
	millivolts				Ohm-m				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				Ohm-m			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				Ohm-m			percent	
10K	Tens	0		2	RT20	200			
	pounds				Ohm-m				
				2	RT10	200			
					Ohm-m				

HALLIBURTON

Plot Time: 23-Feb-11 12:32:17
Plot Range: 6240 ft to 6936 ft
Data: BASHORPC_AA0914\Well Based\MAIN\
Plot File: \COMP\REPEAT

REPEAT SECTION 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Engineer: C. GULLETT

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Date: 24-Jan-11 09:38:13

Calibration Version: 1

Calibrator Source S/N: KW-290

Calibrator API Reference:230.00 api

Equivalent Calibrator API Reference:234.0 api

Measurement	Measured	Calibrated	Units
Background	73.6	77.2	api
Background + Calibrator	293.0	307.2	api
Calibrator	233.5	230.0	api

CSNG-FS SHOP CALIBRATION

Tool Name: CSNG - 10965402

Engineer: C. BLUE

Software Version: WL INSITE R3.0.7 (Build 3)

Source SN: TB290

Reference Calibration Date: 24-Nov-10 09:04:15

Calibration Date: 22-Jan-11 13:59:18

Calibration Version: 1

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.0	23.0	Channel #
583 KEV Peak Channel #	51.5	51.7	Channel #
2614 KEV Peak Channel #	211.3	211.8	Channel #
Calibrate Temperature	75.4	68.4	degF

Pass/Fail Summary	Centroid
239 KEV Peak	Passed
583 KEV Peak	Passed
2614 KEV Peak	Passed

Blanket Reference Value: 235.00 API

Calibrator Value: 266.9 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1577.7	CPS	324.0	334.8	API
Background	320.1	CPS	62.8	67.9	API

Gamma Ray Gain: 1.07

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 10958655_S434

Engineer: C. GULLETT

Software Version: WL INSITE R3.0.7 (Build 3)

Reference Calibration Date: 01-Jan-70 00:00:00

Calibration Date: 21-Jan-11 11:43:47

Calibration Version: 1

Logging Source S/N: DSN434

Tank Serial Number: BRIGHTON

Reference value assigned to Tank: 55.000

Snow Block S/N: BRIGHTON

Calibration Tank Water Temperature: 50 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Control Limit On New

Measurement	Prev. Value	New Value	Control Limit On New Value	
Gain:	0.996	0.996	0.900 - 1.100	

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2295	0.2295	0.0000	+/- 0.0020
Calibrated Ratio:	10.35	10.35	0.000	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0641	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT - M271_P123_BLUE	Reference Calibration Date:	11-Feb-11 13:38:28
Engineer:	C. GULLETT	Calibration Date:	11-Feb-11 13:58:39
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1

Logging Source S/N: 2770GW

Aluminum Block S/N: BRIGHTON_AL
 Density: 2.600g/cc
 Pe: 3.100

Magnesium Block S/N: BRIGHTON_MG
 Density: 1.680g/cc
 Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0100	1.0305	0.90 - 1.10
Near Dens Gain	1.0027	1.0090	0.90 - 1.10
Near Peak Gain	0.9810	0.9870	0.90 - 1.10
Near Lith Gain	0.9771	0.9758	0.90 - 1.10
Far Bar Gain	1.0151	1.0200	0.90 - 1.10
Far Dens Gain	1.0052	1.0070	0.90 - 1.10
Far Peak Gain	0.9984	0.9992	0.90 - 1.10
Far Lith Gain	0.9708	0.9729	0.90 - 1.10
Near Bar Offset	0.1654	-0.0198	NONE
Near Dens Offset	0.1976	0.1435	NONE
Near Peak Offset	0.3874	0.3380	NONE
Near Lith Offset	0.4022	0.4135	NONE
Far Bar Offset	0.0696	0.0260	NONE
Far Dens Offset	0.1273	0.1134	NONE
Far Peak Offset	0.1657	0.1608	NONE
Far Lith Offset	0.3499	0.3348	NONE
Near Bar Background	856.21	856.57	700 - 1450
Near Dens Background	280.42	280.00	230 - 480
Near Peak Background	118.43	119.88	100 - 210
Near Lith Background	150.08	150.78	125 - 260
Far Bar Background	541.82	541.23	450 - 900
Far Dens Background	208.47	208.85	175 - 345
Far Peak Background	81.11	81.49	70 - 140

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.680	1.680	0.000	+/- 0.015
Pe	2.538	2.551	0.013	+/- 0.150
ALUMINUM				
Density (g/cc)	2.598	2.600	0.002	+/- 0.01500
Pe	3.070	3.059	-0.011	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0007	+/- 0.0110	-0.0014	+/- 0.0140
Magnesium Block	0.0004	+/- 0.0110	-0.0001	+/- 0.0140
Aluminum Block	-0.0012	+/- 0.0110	-0.0010	+/- 0.0140
Resolution	9.43	6.00 - 11.50	9.59	6.00 - 11.50
Internal Verifier(B+D+P+L)	1407	1200 - 2700	917	800 - 1700

PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - M271_P123_BLUE	Reference Calibration Date:	01-Jan-70 00:00:00
Engineer:	C. GULLETT	Calibration Date:	11-Feb-11 14:23:12
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1251.85	-1251.85	-7000.00 - -1000.00
Pad Gain	0.0003732	0.0003732	0.000200 - 0.000600
Arm Offset	-432.07	-432.07	-5000.00 - 3000.00
Arm Gain	0.0005212	0.0005212	0.000300 - 0.000700
Arm Power	-0.000005174	-0.000005174	-0.000010 - 0.000010

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER
Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	2.75	2.75	0.00	+/- 0.20

Medium Ring (in)		3.75	3.75	0.00	+/- 0.20
RING DIAMETER:					
Small Ring (in)		6.50	6.50	0.00	+/- 0.20
Medium Ring (in)		8.25	8.25	0.00	+/- 0.20
Large Ring (in)		15.00	15.00	0.00	+/- 0.20
PASS/FAIL SUMMARY					
Calibration-Coefficients Range Check:				Passed	
Ring-Measurement Check:				Passed	
PASS/FAIL SUMMARY					
Calibration-Coefficients Range Check:				Passed	

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION					
Tool Name:		ACRt - E6758-S4352		Reference Calibration Date: 29-Nov-10 08:14:39	
Engineer:		C. BLUE		Calibration Date: 29-Nov-10 08:30:56	
Software Version:		WL INSITE R3.0.4 (Build 6)		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	0.9955	1.05	0.95	0.9919	1.05	0.95	0.9866	1.05
A2 (50")	0.95	1.0015	1.05	0.95	1.0000	1.05	0.95	0.9966	1.05
A3 (29")	0.95	0.9954	1.05	0.95	0.9935	1.05	0.95	0.9892	1.05
A4 (17")	0.95	1.0112	1.05	0.95	1.0068	1.05	0.95	1.0037	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9947	1.05	0.95	0.9909	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9814	1.05	0.95	0.9769	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	-0.003	2	-6	-3.791	-2	-8	-4.828	-2
A2 (50")	-7	-2.103	-1	-6	-3.786	-2	-7	-4.432	-2
A3 (29")	-27	-13.034	-9	-9	-3.764	-3	-7	-3.071	-1
A4 (17")	-180	-97.742	-60	-45	-31.894	-15	-39	-25.546	-13
A5 (10")	N/A	N/A	N/A	-150	-89.962	-50	-80	-44.028	-10
A6 (6")	N/A	N/A	N/A	175	295.171	525	90	151.612	270

TRANSMITTER CURRENT GAIN				R-MUD VERIFICATION			
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.8294	1.3	Mud Cell	0.95	1.009	1.05
36K	1.0	1.8894	2.0				
72K	1.0	1.0712	2.0				

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11294346						
Gamma Ray Calibrator	230.0	-----	-----	0.0	+/- 9.00	api
CSNG-10965402						
60 KEV Peak Channel #	48.0	-----	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.0	-----	-----	0.0	-----	Channel #
583 KEV Peak Channel #	51.7	-----	-----	0.0	-----	Channel #
2614 KEV Peak Channel #	211.8	-----	-----	0.0	-----	Channel #


DSNT-10958655_S434

Snow-Block Porosity	0.0641	-----	-----	0.0000	+/- -.-	decP
SDLT-M271_P123_BLUE						
Near(B+D+P+L)	1407.220	-----	-----	0.000	+/-13.252	cps
Far(B+D+P+L)	917.379	-----	-----	0.000	+/-14.892	cps
Pad Extension	3.75	-----	-----	0.00	+/-0.20	in
Ring Diameter	8.25	-----	-----	0.00	+/-0.20	in
ACRt-E6758-S4352						
Mud Cell	1.009	-----	-----	0.000	-----	ohm-m

Data: BASHORPC_AA0914\0001 TRIPLE_CSNGVDLE	Date: 23-Feb-11 11:24:50
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HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-A094 135.00 lbs		Ø 3.625 in →		← Load Cell @ 59.34 ft ← BH Temperature @ 58.77 ft	6.25 ft	63.02 ft
GTET-11294346 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.71 ft	8.52 ft	56.77 ft
CSNG-10965402 114.00 lbs		Ø 3.625 in →		← CSNG @ 42.62 ft	8.17 ft	48.25 ft
						40.08 ft
DSNT-10958655_S434 174.00 lbs	DSN Decentralizer-11277440 6.60 lbs	Ø 3.625 in* → Ø 3.625 in →		← DSN Far @ 33.15 ft ← DSN Near @ 32.40 ft	9.69 ft	30.40 ft

SDLT-
M271_P123_BLUE
360.00 lbs

Ø 4.500 in →

Ø 4.750 in →



SDL Microlog @ 22.58 ft

SDL Caliper @ 22.40 ft

SDL @ 22.39 ft

10.81 ft

19.58 ft

← Mud Resistivity @ 13.19 ft

← ACRt @ 9.21 ft

19.25 ft

SP Ring-1
0.00 lbs

Ø 3.625 in* →

← SP @ 1.61 ft

0.33 ft

Bull Nose-BN
5.00 lbs

Ø 2.750 in →

0.33 ft

0.00 ft

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	A094	135.00	6.25	56.77	300.00
GTET	Gamma Telemetry Tool	11294346	165.00	8.52	48.25	60.00
CSNG	Compensated Spectral Natural Gamma	10965402	114.00	8.17	40.08	15.00
DSNT	Dual Spaced Neutron	10958655_S434	174.00	9.69	30.40	60.00
DCNT	DSN Decentralizer	11277440	6.60	5.13	* 33.73	300.00
SDLT	Spectral Density Tool	M271_P123_BLUE	360.00	10.81	19.58	60.00
ACRt	Array Compensated True Resistivity	E6758-S4352	250.00	19.25	0.33	300.00
SP	SP Ring	1	0.00	0.25	* 1.61	300.00
BLNS	Bull Nose	BN	5.00	0.33	0.00	300.00
Total			1,209.60	63.02		
* Not included in Total Length and Length Accumulation.						
Data: BASHORPC_AA0914\0001 TRIPLE_CSNG\IDLE					Date: 23-Feb-11 09:35:20	

COMPANY	NOBLE ENERGY INC.		
WELL	BASHOR PC AA09-14		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY	

