

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY

NOBLE ENERGY										COMPANY		NOBLE ENERGY	
GULLEY 17-13										WELL		GULLEY 17-13	
WATTENBERG										FIELD		WATTENBERG	
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GULLEY 17-13													

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Service Ticket No.: 7809939						API Serial No.: 05123294370000						PGM Version: WL INSITE R3.0.6 (Build 4)																	
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 817-352				N/A				0.5" S.O.				N/A			
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.		ONE				Run No.		ONE									
Serial No.		11215095				Serial No.						Serial No.		I337M319				Serial No.		11919337									
Model No.		GTET				Model No.						Model No.		SDLT				Model No.		DSNT									
Diameter		3.625"				No. of Cent.						Diameter		4.5"				Diameter		3.625"									
Detector Model No.		102A				Spacing						Log Type		GAM/GAM				Log Type		NEU/NEU									
Type		SCINT										Source Type		Cs137				Source Type		Am241Be									
Length		8"				LSA [Y/N]						Serial No.		5256 GW				Serial No.		DSN 430									
Distance to Source		17'				FWDA [Y/N]						Strength		1.5 Ci				Strength		15 Ci									

LOGGING DATA

GENERAL			GAMMA			ACOUSTIC			DENSITY			NEUTRON		
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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	7186	7010	REC	0	250				20%	0%	2.68 g/cc	20%	0%	SAND
ONE	7010	6684	REC	0	250				20%	0%	2.71 g/cc	20%	0%	LIME
ONE	6684	786	REC	0	250				20%	0%	2.68 g/cc	20%	0%	SAND
DIRECTIONAL INFORMATION														
Maximum Deviation @									KOP @					
Remarks:														
RWCH/GTET/CSNG/DSNT/SDLT/ACRT RAN IN COMBINATION														
ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH PRODUCTION CASING														
TENSION PULLS, WASHOUTS, BOREHOLE RUGOSITY AFFECT TOOL RESPONSE														
CREW: A. LEWIS, J. WALKER, G. DAVIS, J. BARRAS, R. TWEETEN RIG: CADE 21														
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.														
HALLIBURTON														



PARAMETERS REPORT

Depth (ft)	Tool Name	Description	Value	Units
TOP				
	DSNT	Neutron Lithology	Sandstone	
	SDLT	Formation Density Matrix	2.680	g/cc
6684.00				
	DSNT	Neutron Lithology	Limestone	
	SDLT	Formation Density Matrix	2.710	g/cc
7010.00				
	SHARED	Bit Size	7.875	in
	SHARED	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	Borehole Fluid Weight	8.900	ppg
	SHARED	Oil Based Mud System?	No	
	SHARED	Mud Resistivity	0.790	ohmm
	SHARED	Temperature of Mud	88.0	degF
	SHARED	Logging Interval is Cased?	No	
	SHARED	AHV Casing OD	4.500	in
	SHARED	Surface Temperature	65.0	degF
	SHARED	Total Well Depth	7186.00	ft
	SHARED	Bottom Hole Temperature	223.0	degF
	SHARED	Navigation and Survey Master Tool	NONE	
	SHARED	High Res Z Accelerometer Master Tool	GTET	
	SHARED	Temperature Master Tool	NONE	
	SHARED	Borehole Size Master Tool	NONE	
	GTET	Process Gamma Ray?	Yes	
	GTET	Gamma Tool Standoff	0.000	in

GTET	Process Gamma Ray EVR?	No	
GTET	Potassium	0.00	%
GTET	Mud Type	Natural	
GTET	Tool Position	Standoff	
CSNG	Process CSNG Data?	Yes	
CSNG	Is Tool Centralized?	No	
CSNG	Mud Type?	Natural	
CSNG	Percent K in Mud by Weight?	0.00	%
CSNG	Gamma Enviromental Corrections?	Yes	
CSNG	Barite Correction Factor	1.00	
DSNT	Process DSN?	Yes	
DSNT	Process DSN EVR?	No	
DSNT	Neutron Lithology	Sandstone	
DSNT	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.000	in
DSNT	Temperature Correction Type	None	
DSNT	DSN Pressure Correction Type	None	
DSNT	View More Correction Options	No	
DSNT	Use TVD for Gradient Corrections?	No	
DSNT	Logging Horizontal Water Tank?	No	
SDLT	Process Density?	Yes	
SDLT	Process Density EVR?	No	
SDLT	Is Hole Air Drilled?	No	
SDLT	Logging Calibration Blocks?	No	
SDLT	SDLT Pad Temperature Valid?	Yes	
SDLT	Disable temperature warning	No	
SDLT	Weighted Mud Correction Type?	None	
SDLT	Formation Density Matrix	2.680	g/cc
SDLT	Formation Density Fluid	1.000	g/cc
SDLT	Process Caliper Outputs?	Yes	
SDLT	Process MicroLog Outputs?	Yes	
ACRt	Process ACRt?	Yes	
ACRt	Minimum Tool Standoff	0.50	in
ACRt	Temperature Correction Source	FP Lwr & FP Up	
ACRt	Tool Position	Free Hanging	
ACRt	Rmud Source	Mud Cell	
ACRt	Minimum Resistivity for MAP	0.20	ohmm
ACRt	Maximum Resistivity for MAP	200.00	ohmm
ACRt	Threshold Quality	0.50	
BOTTOM			
Data: GULLEY_17_13\0001 NOBLE\003.02 02-Dec-10 13:07 Up			Date: 02-Dec-10 13:09:06

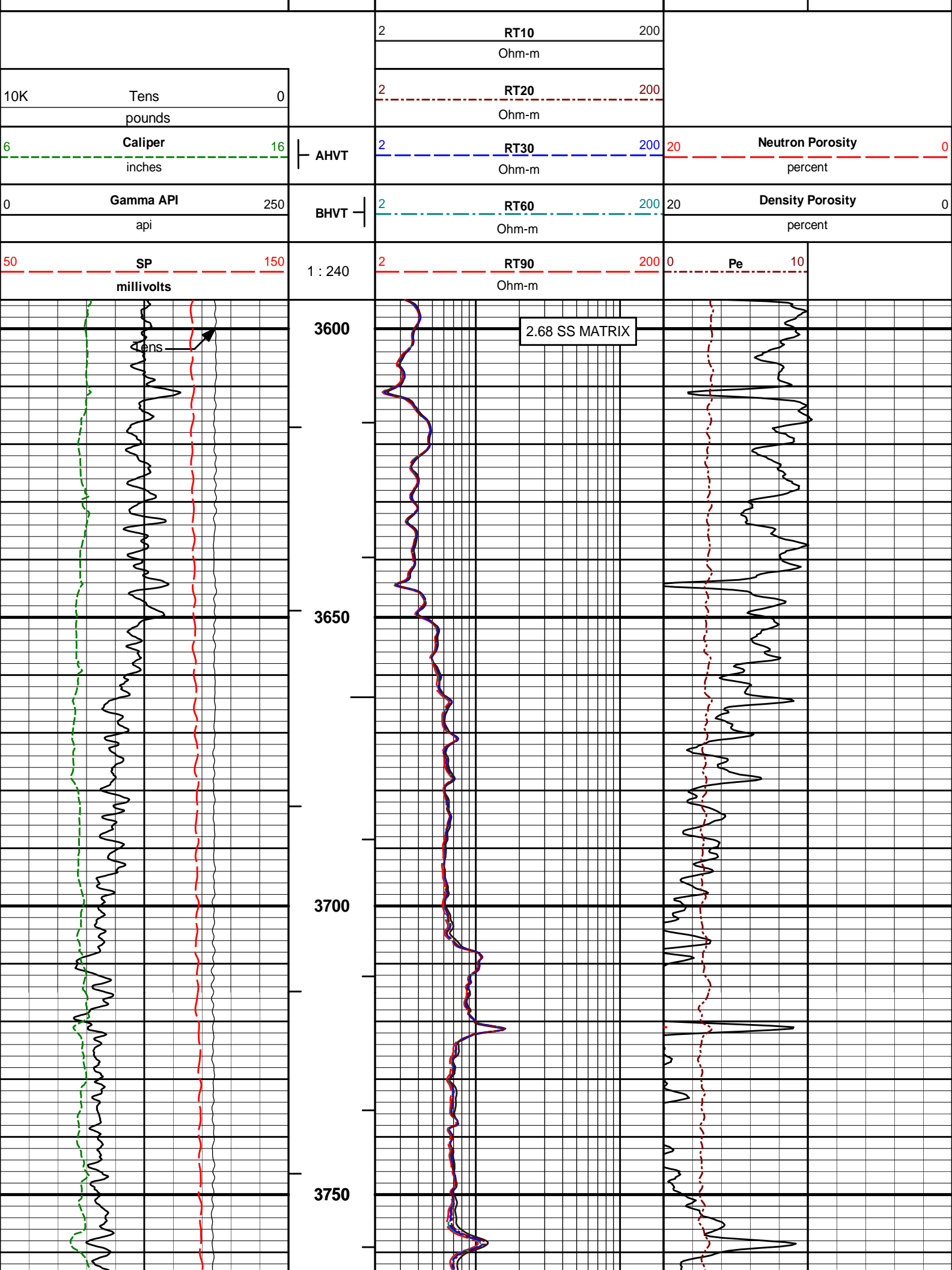


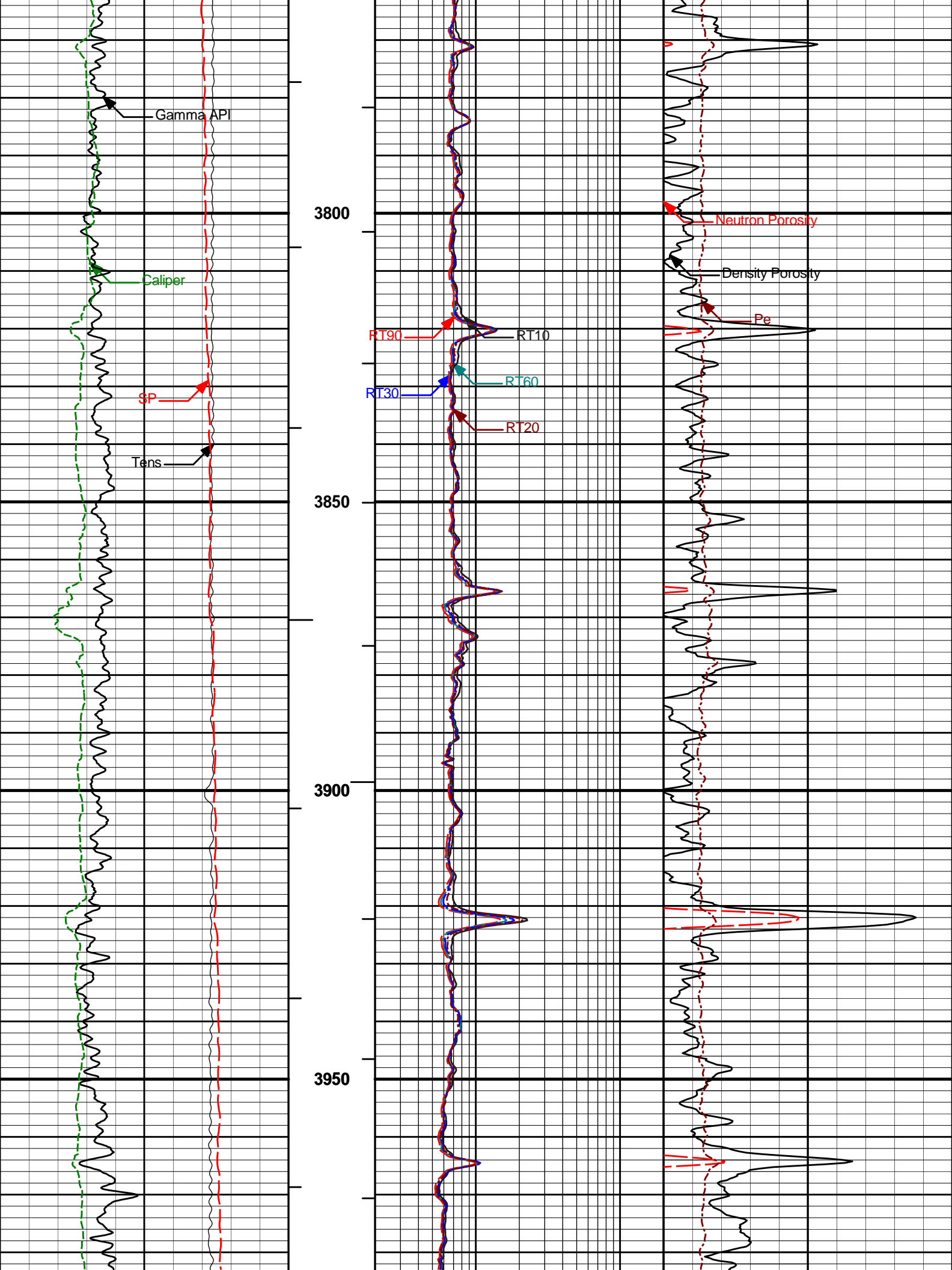
Plot Time: 02-Dec-10 13:57:23
 Plot Range: 3595 ft to 5205 ft
 Data: GULLEY_17_13\Well Based\MAIN*
 Plot File: \COMP\PARK_SUS

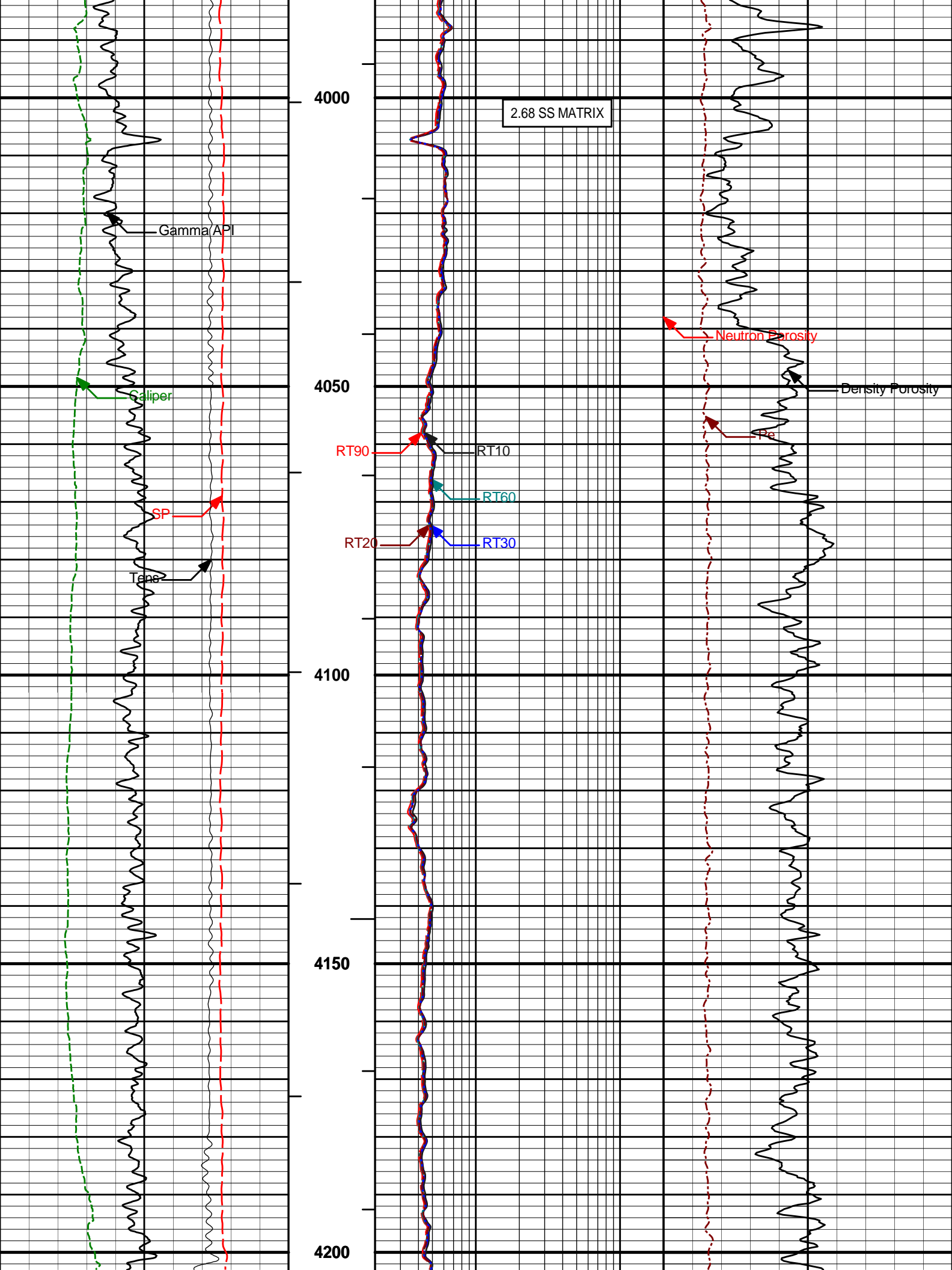
MAIN PASS

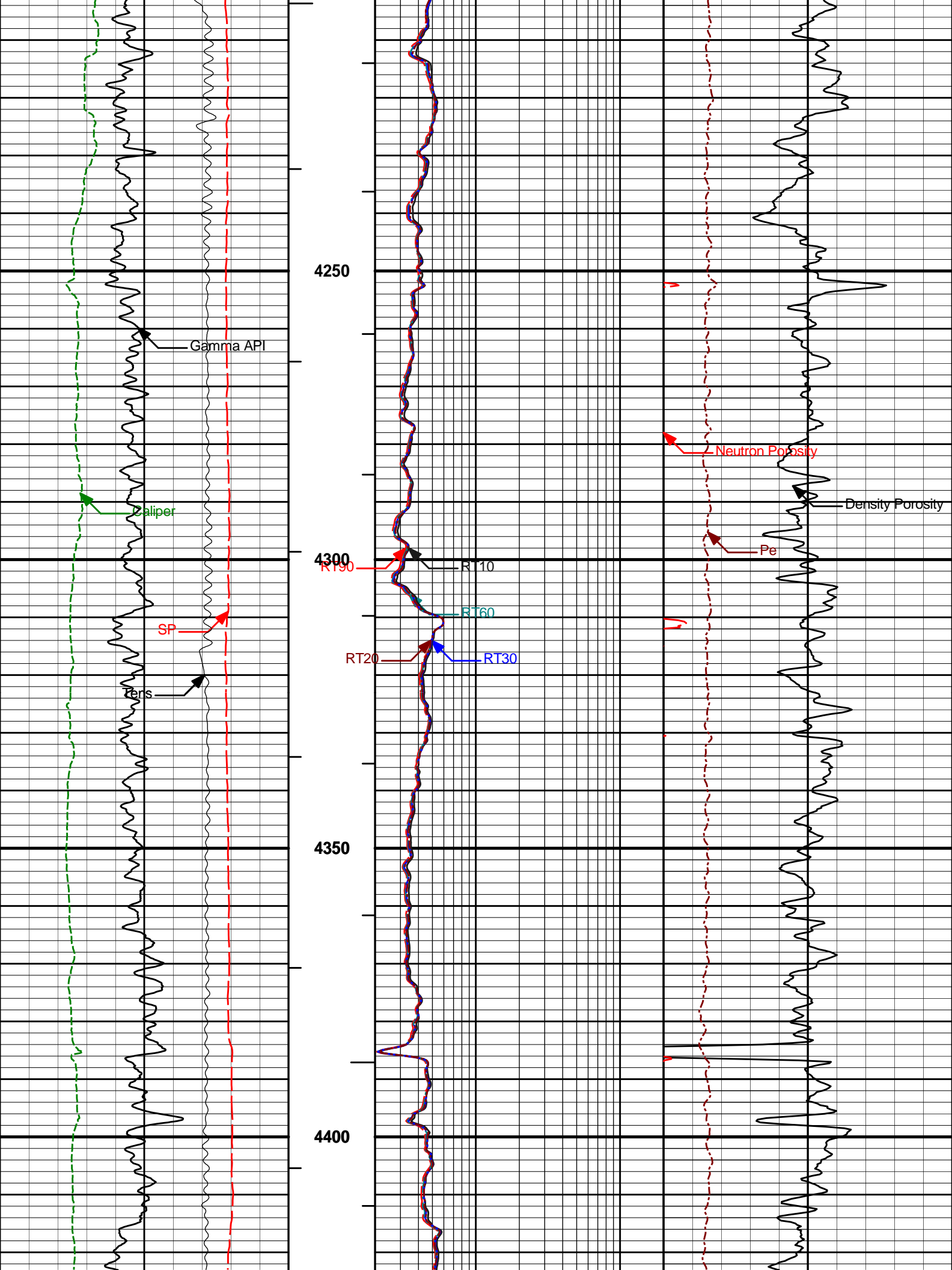
5" = 100'

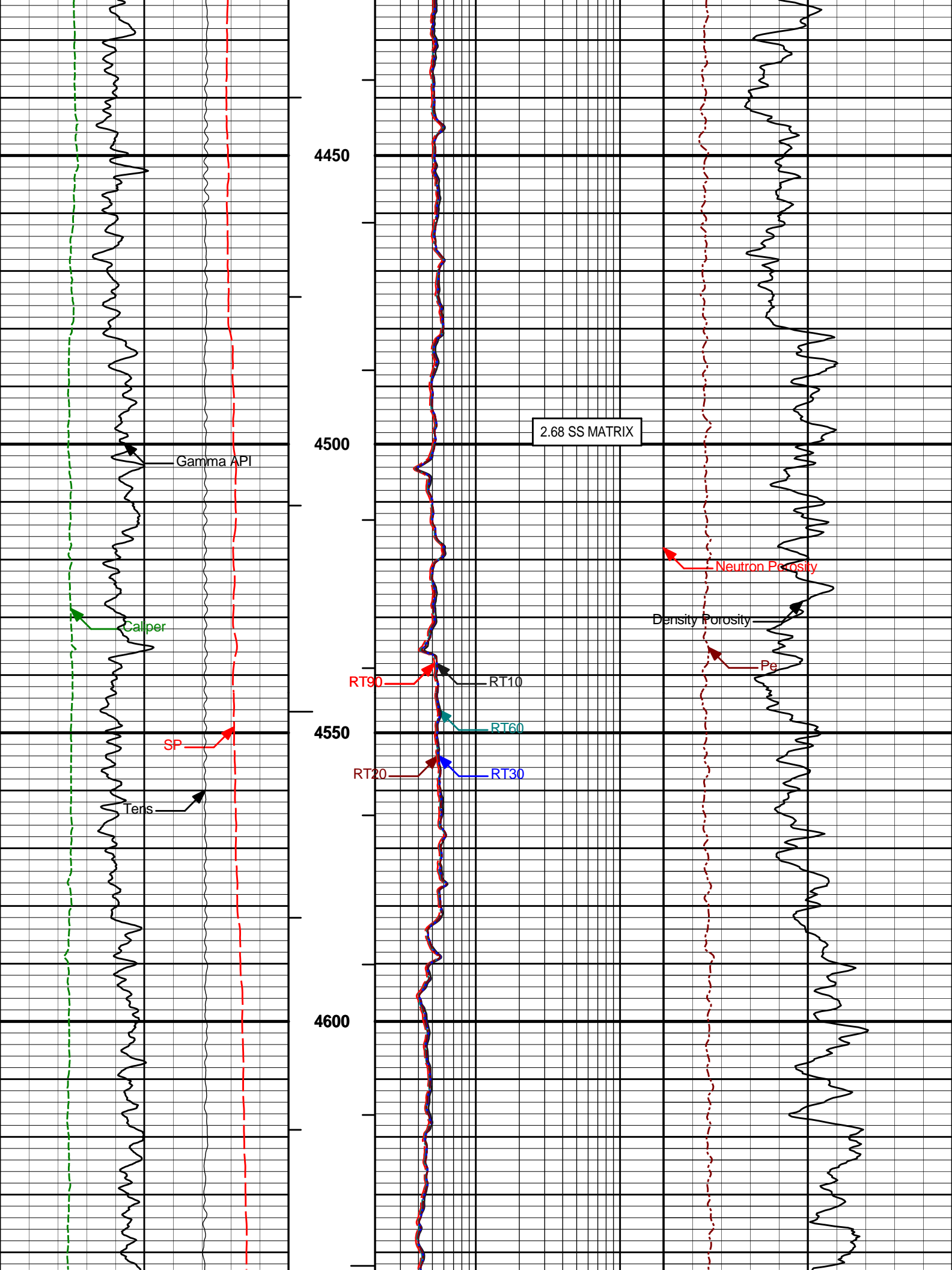
Track 1	Depth Track	Track 2	Track 5	Track 3
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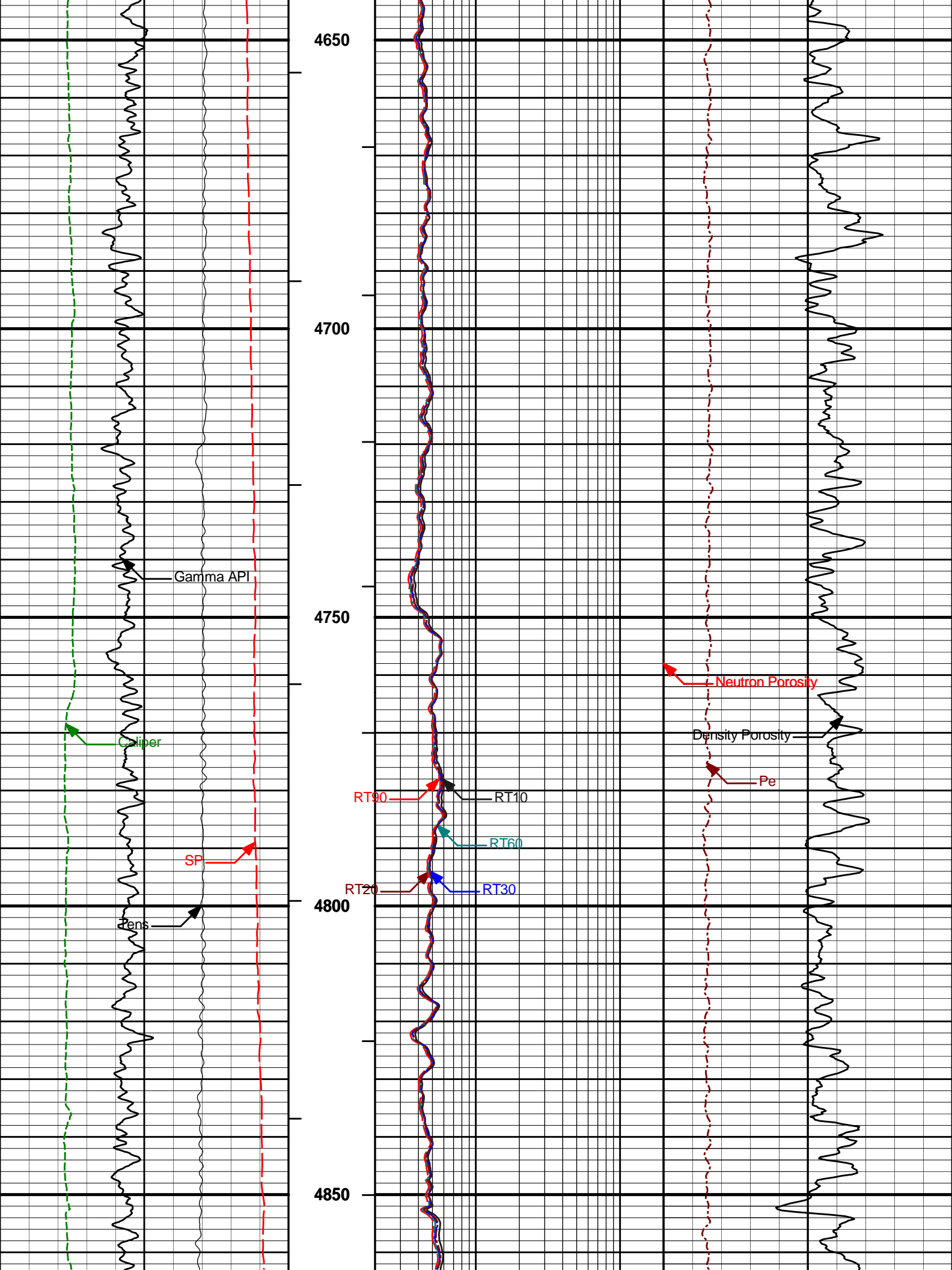


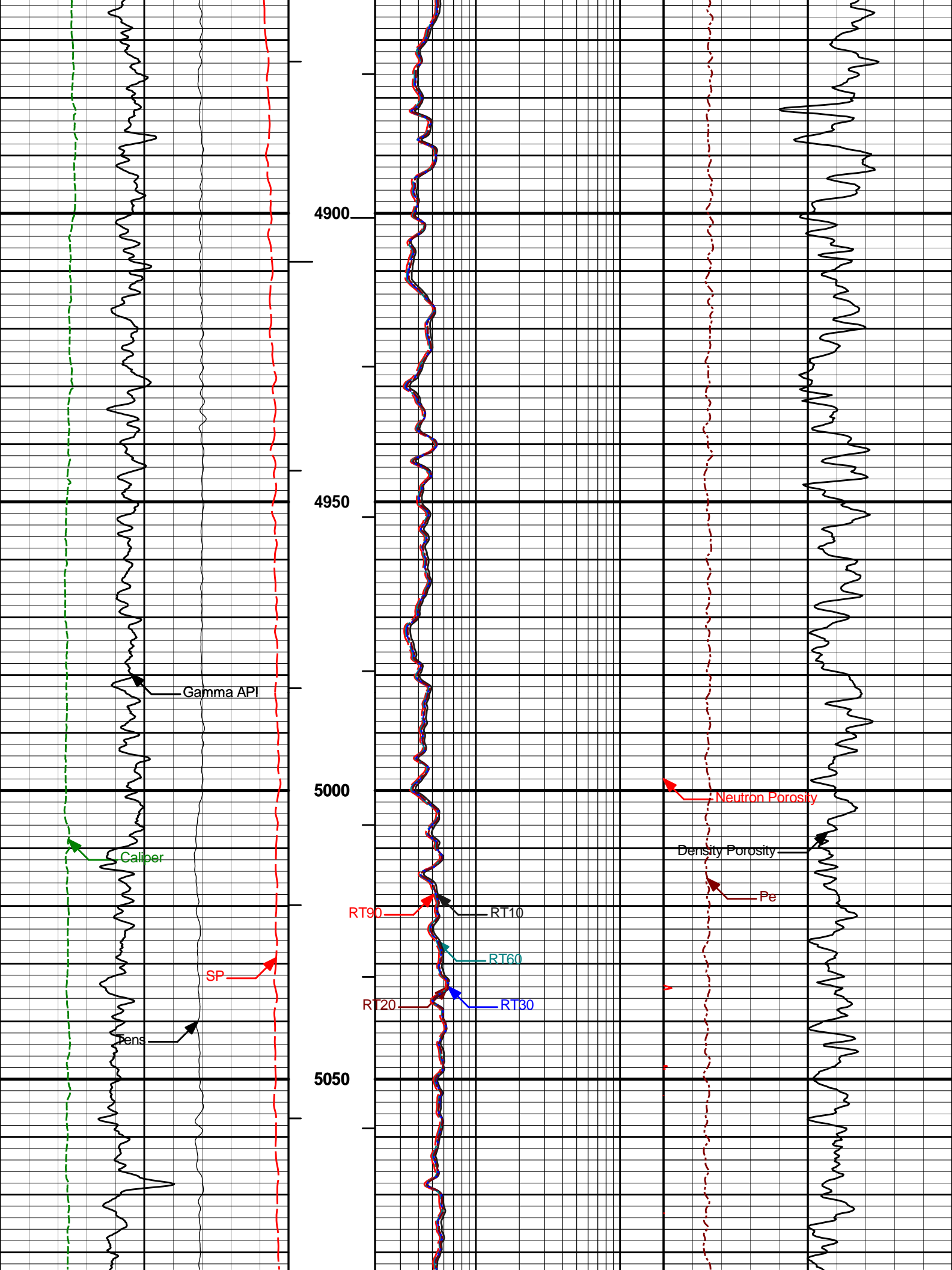


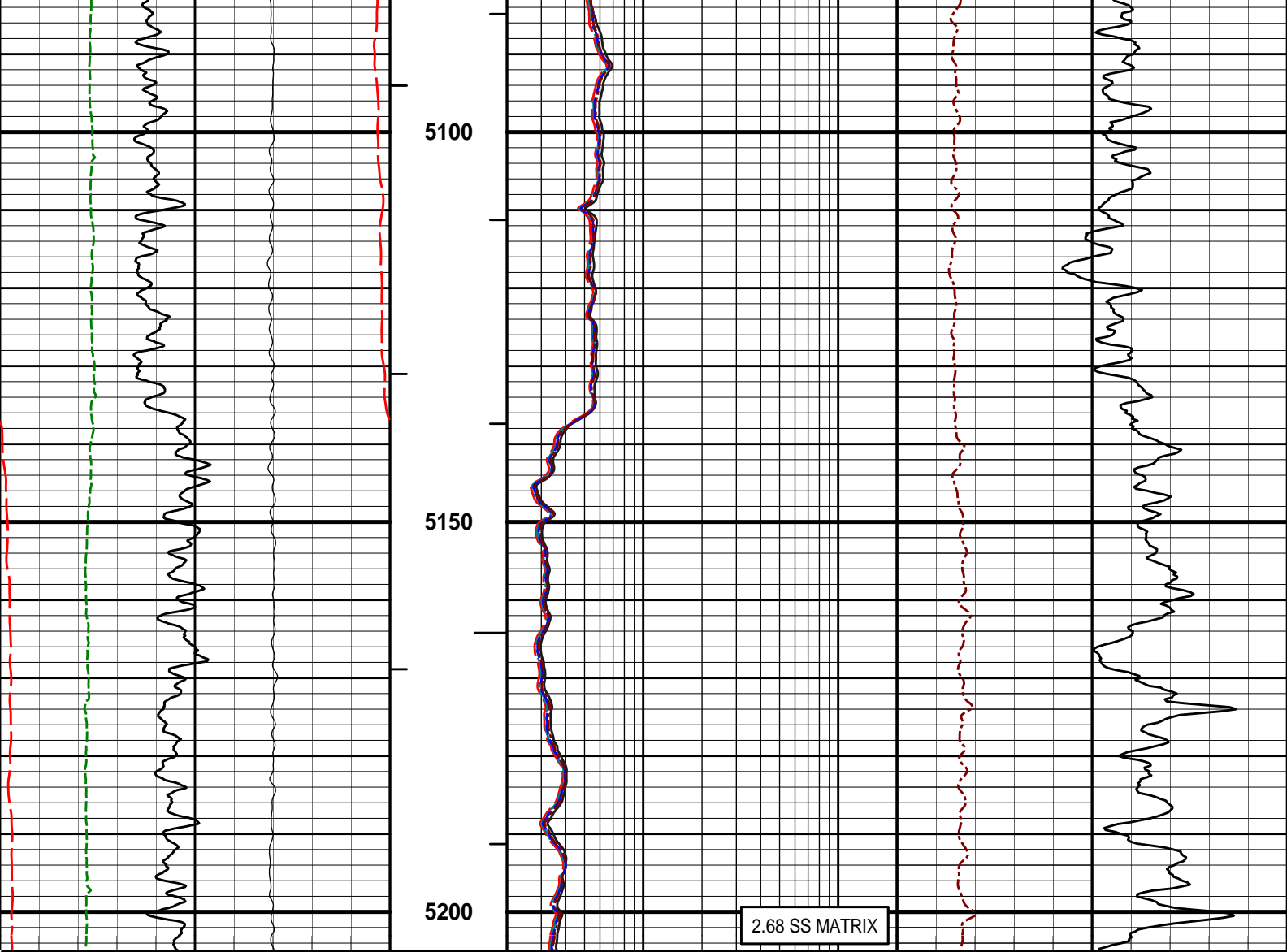












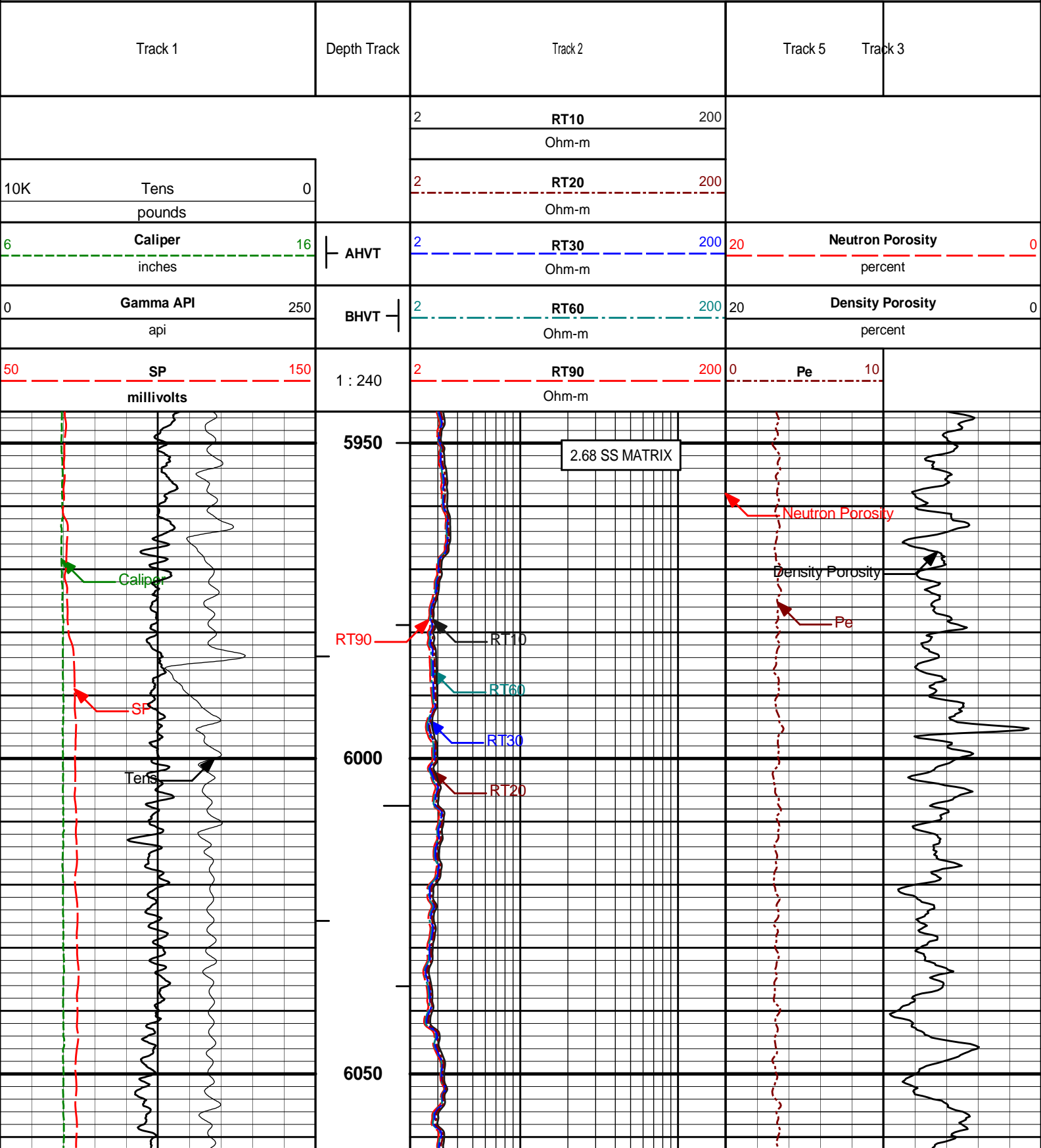
<div>50<div>SP</div>150</div> <div>millivolts</div>			1 : 240	<div>2<div>RT90</div>200</div> <div>Ohm-m</div>		<div>0<div>Pe</div>10</div>		
<div>0<div>Gamma API</div>250</div> <div>api</div>			BHVT	<div>2<div>RT60</div>200</div> <div>Ohm-m</div>		<div>20<div>Density Porosity</div>0</div> <div>percent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

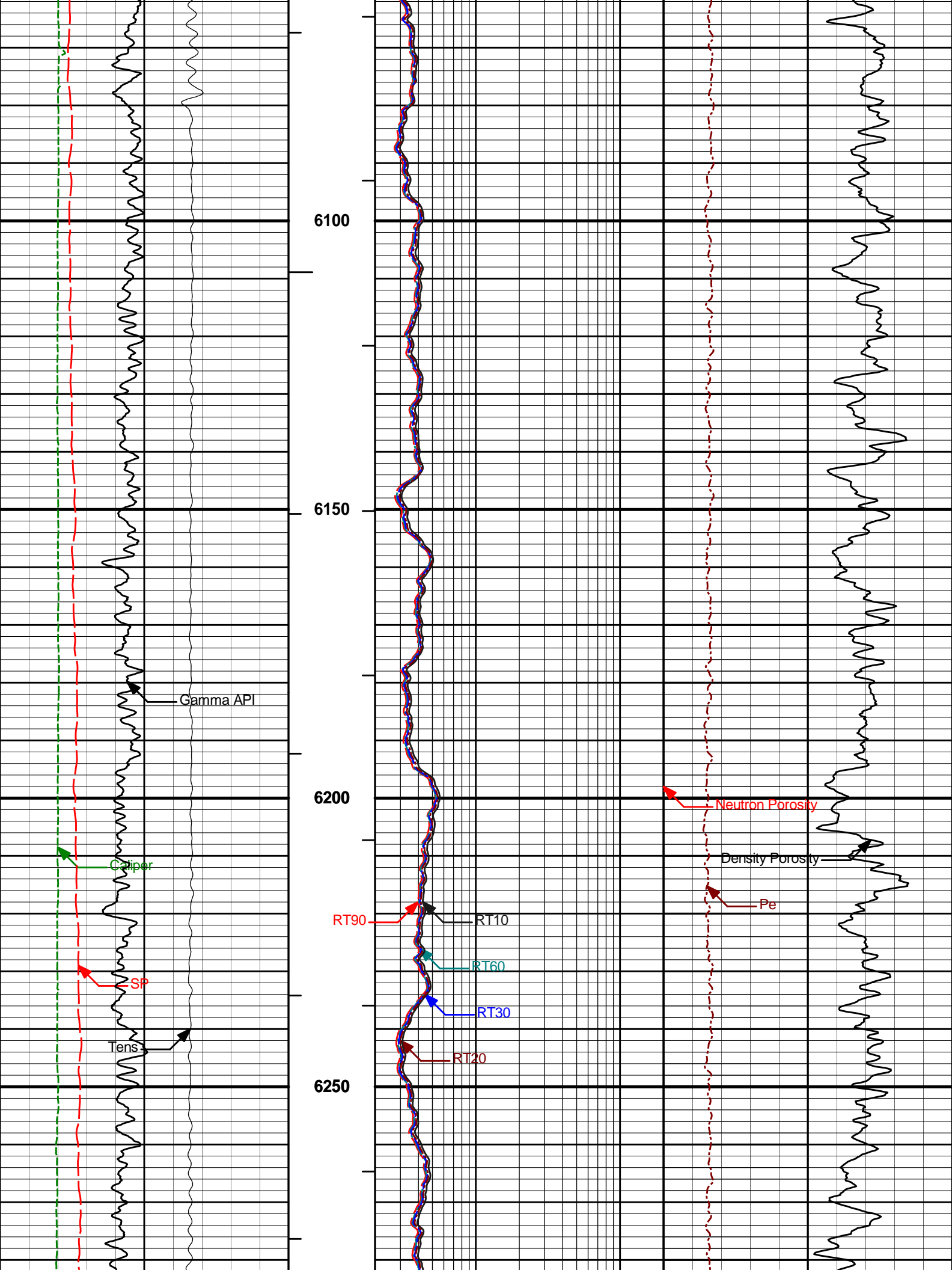
HALLIBURTON

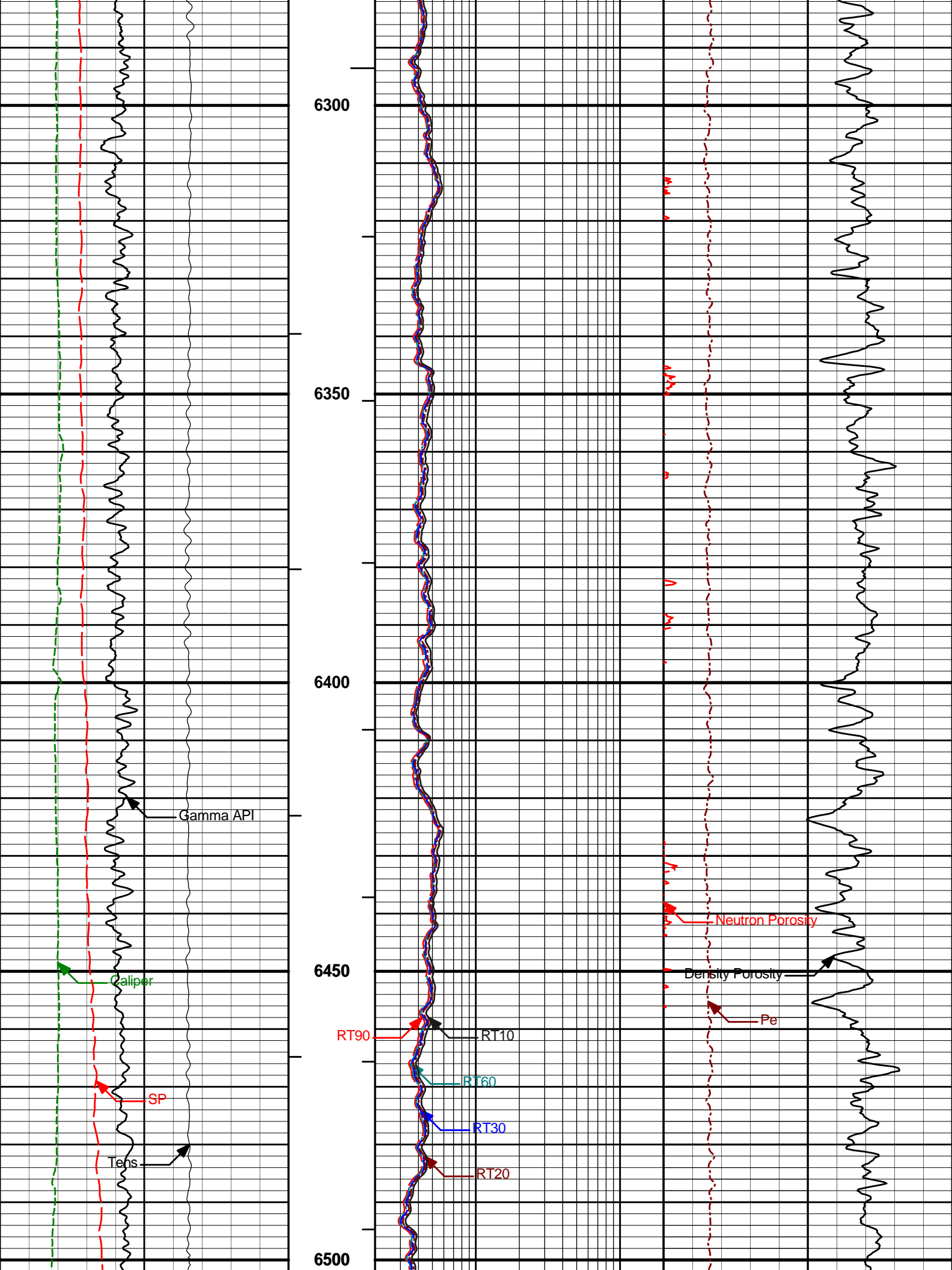
Plot Time: 02-Dec-10 13:57:26
Plot Range: 3595 ft to 5205 ft
Data: GULLEY_17_13\Well Based\MAIN*
Plot File: \\COMP\PARK_SUS

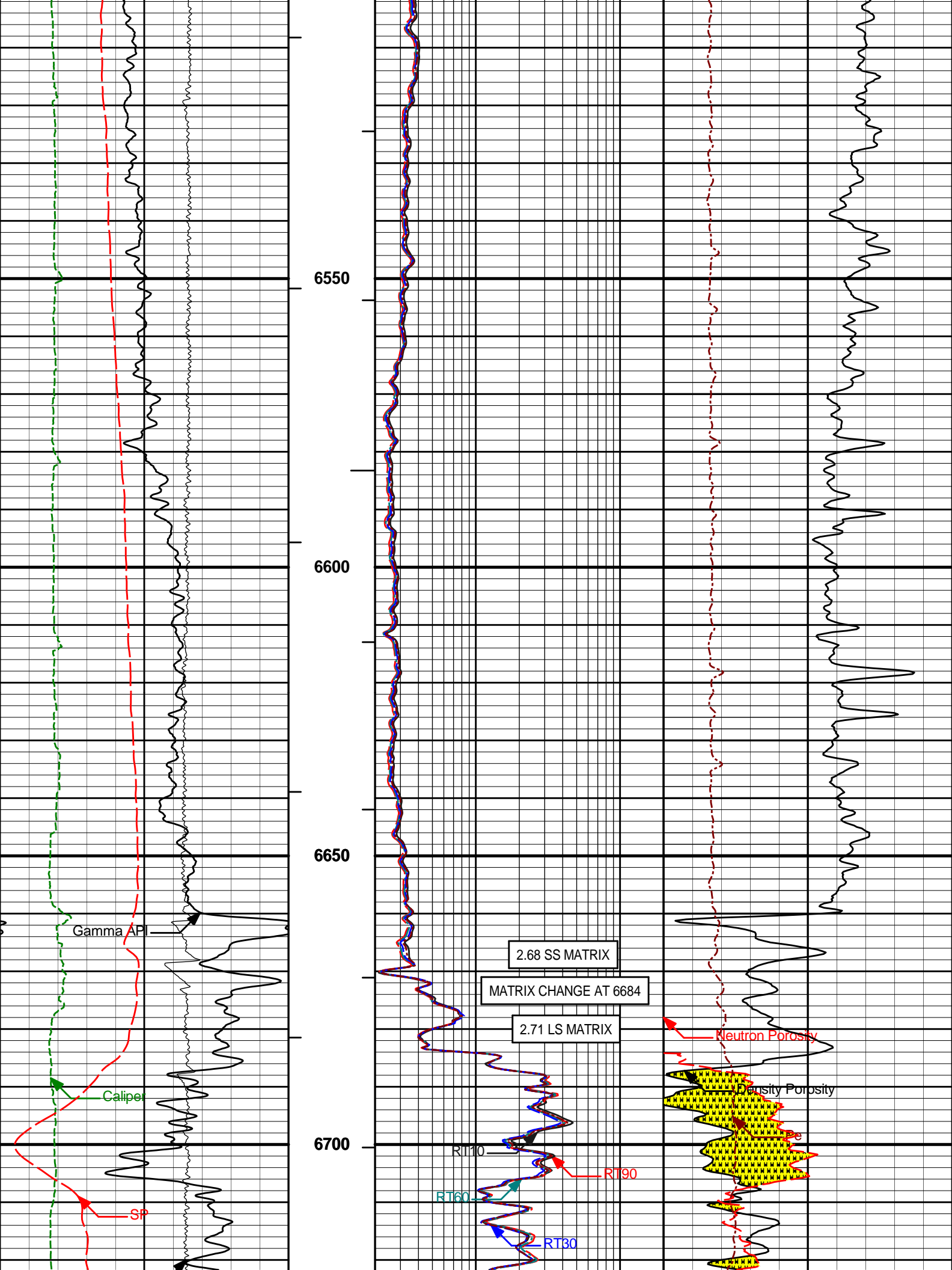
MAIN PASS 5" = 100'

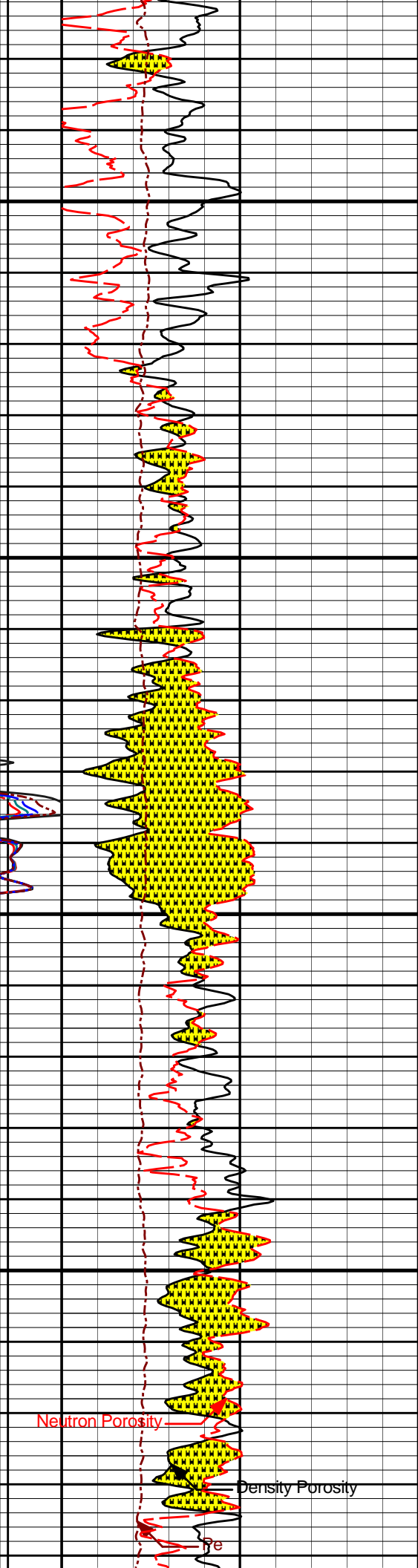
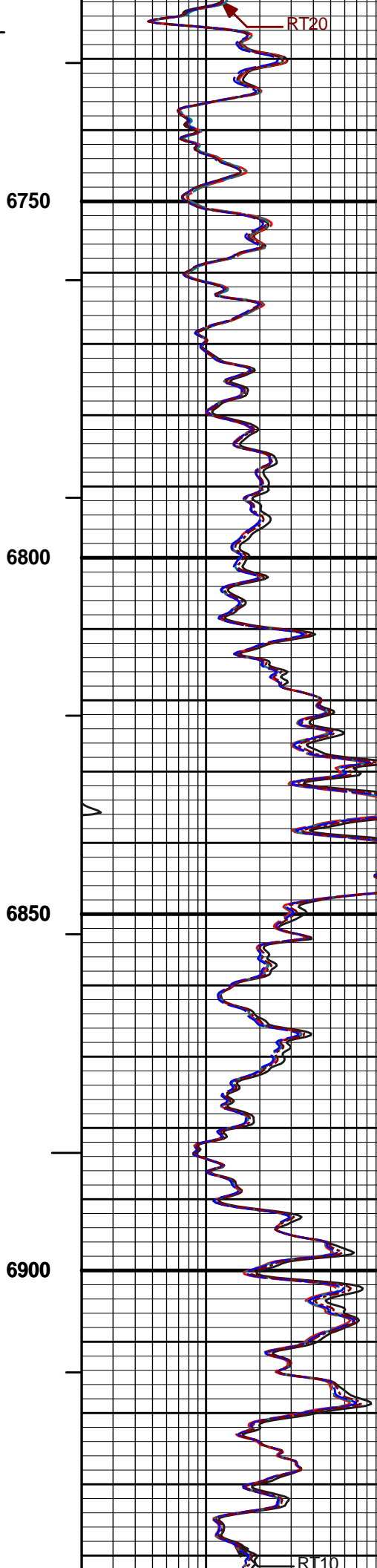
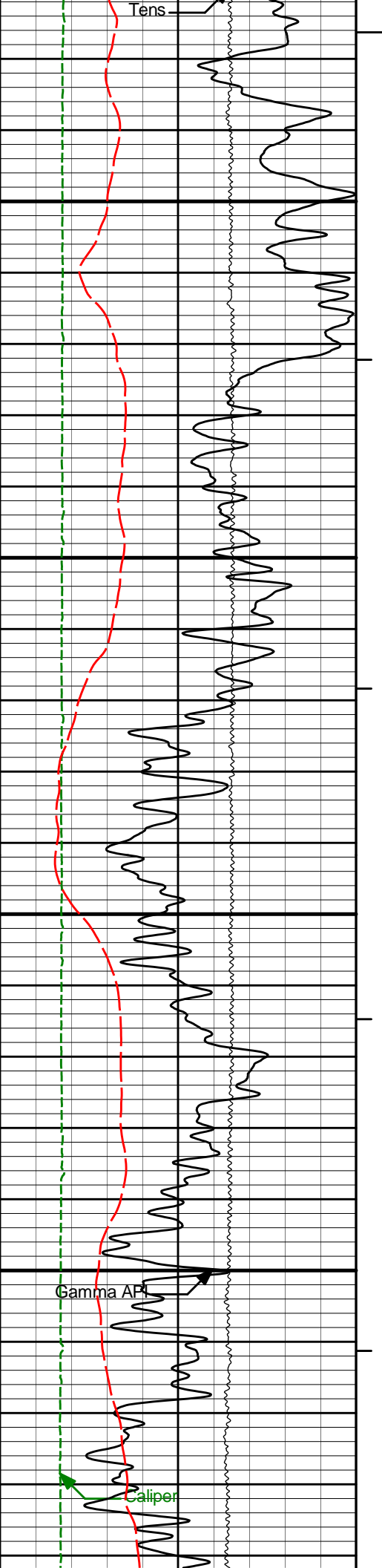
MAIN PASS 5" = 100'

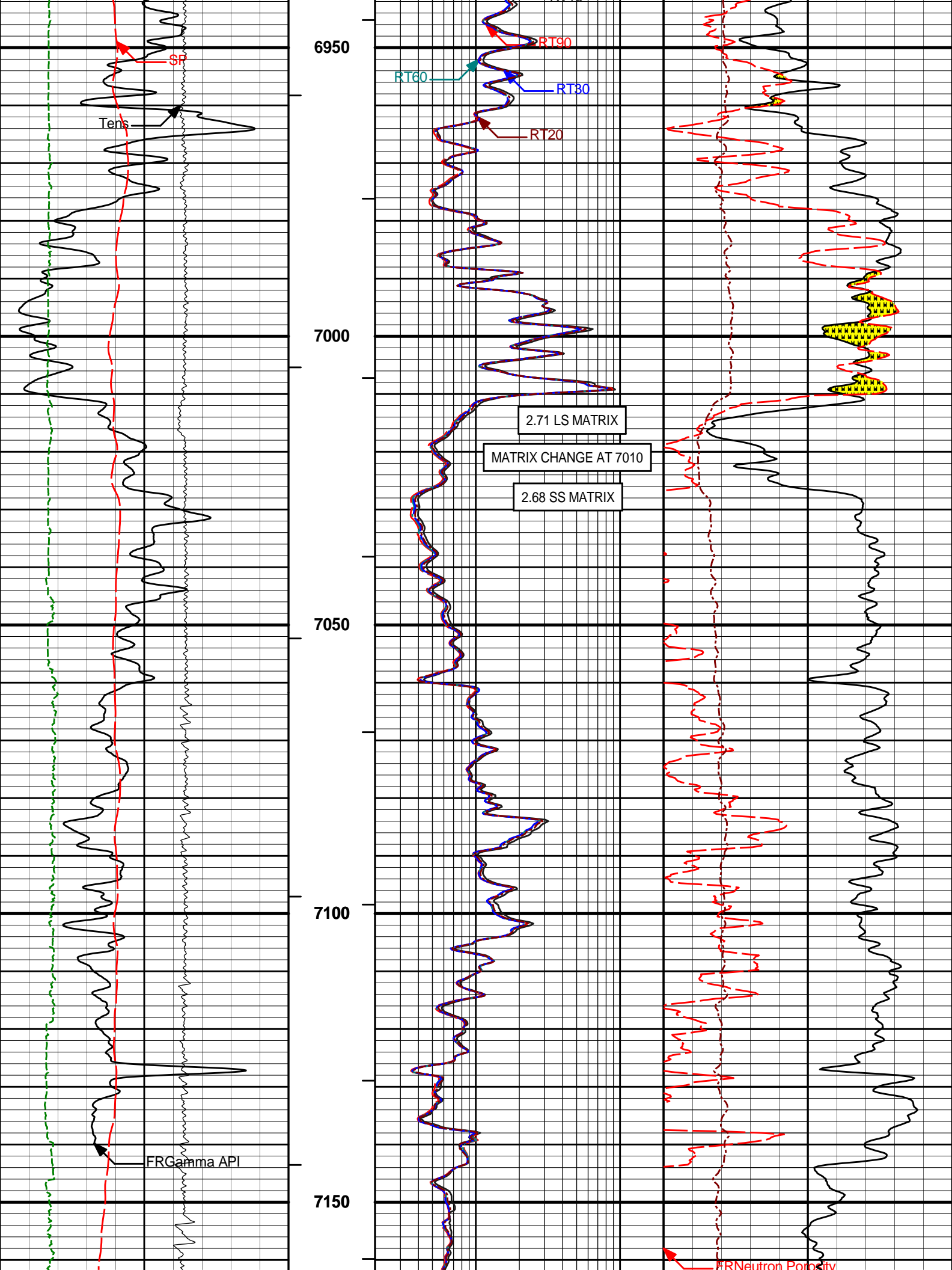


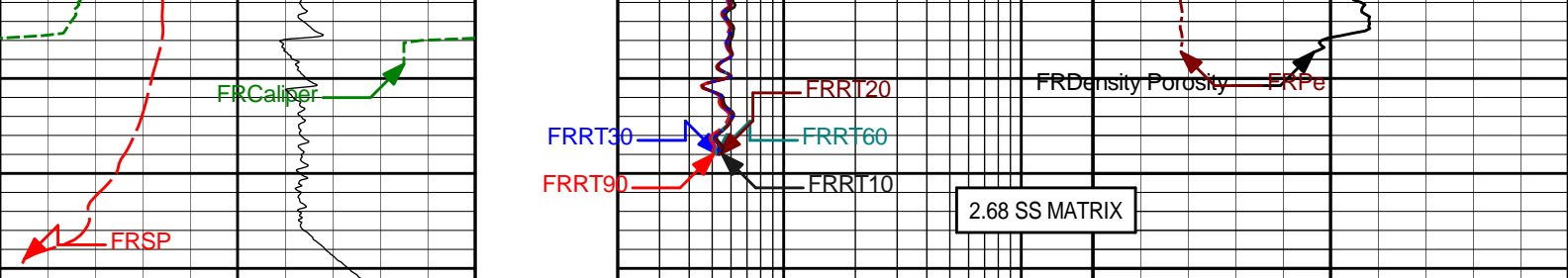












50	SP	150	1 : 240	2	RT90	200	0	Pe	10
	millivolts				Ohm-m				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				Ohm-m			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				Ohm-m			percent	
10K	Tens	0		2	RT20	200			
	pounds				Ohm-m				
				2	RT10	200			
					Ohm-m				

HALLIBURTON	Plot Time: 02-Dec-10 13:57:37 Plot Range: 5945 ft to 7191.5 ft Data: GULLEY_17_13\Well Based\MAIN* Plot File: \COMP\NIO_COD
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MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11215095	Reference Calibration Date:	02-Dec-10 05:59:45
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 06:02:47
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

Calibrator Source S/N: TB-255			
Calibrator API Reference:253.00 api			
Measurement	Measured	Calibrated	Units
Background	78.6	78.8	api
Background + Calibrator	335.1	336.3	api
Calibrator	257.7	257.4	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION			
Tool Name:	GTET - 11215095	Reference Calibration Date:	02-Dec-10 06:02:47
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 06:07:03
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

Calibrator Source S/N: TB-255			
Calibrator API Reference:253.00 api			
Field Verification	Shop	Field	Units

Background	78.8	78.2	api
Background + Calibrator	336.3	334.0	api
Calibrator	257.4	255.8	api
Shop	Field	Difference	Tolerance
257.4	255.8	1.6	+/- 9.00

CSNG-FS SHOP CALIBRATION			
Tool Name:	CSNG - 11212563	Reference Calibration Date:	10-Nov-10 12:13:41
Engineer:	C. BLUE	Calibration Date:	10-Nov-10 12:34:55
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1
Source SN:	TB-255		

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 #	51.1	51.4	Channel #
2614 KEV Peak Channel #	210.1	210.3	Channel #
Calibrate Temperature	66.0	71.9	degF

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

Blanket Reference Value: 253.00 API

Calibrator Value: 287.3 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1696.5	CPS	353.4	355.8	API
Background	326.4	CPS	66.1	68.4	API

Gamma Ray Gain: 1.06

Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION			
Tool Name:	CSNG - 11212563	Reference Calibration Date:	10-Nov-10 12:34:55
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 06:14:32
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1
Source SN:			

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.0	23.1	Channel #
583 KEV Peak Channel #	51.4	51.6	Channel #
2614 KEV Peak Channel #	210.3	211.3	Channel #
Calibrate Temperature	71.9	60.2	degF
Pass/Fail Summary	Centroid		
239 KEV Peak	Passed		
583 KEV Peak	Passed		
2614 KEV Peak	Passed		

Blanket Reference Value: 253.00 API
Calibrator Value: 287.3 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1670.7	CPS	355.8	349.7	API
Background	297.8	CPS	68.4	62.3	API

Gamma Ray Gain: 1.05
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11919337	Reference Calibration Date:	18-Nov-10 18:54:18
Engineer:	C. BLUE	Calibration Date:	18-Nov-10 19:09:00
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

Logging Source S/N: DSN 430
Tank Serial Number: 11068236
Reference value assigned to Tank: 53.720
Snow Block S/N: 1223
Calibration Tank Water Temperature: 65 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value

Gain:	0.982	0.978	0.900 - 1.100
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WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2235	0.2224	0.0011	+/- 0.0020
Calibrated Ratio:	10.15	10.11	0.039	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit

Snow-Block Porosity (decp):	0.0705	0.02000 - 0.09000
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PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	DSNT - 11919337	Reference Calibration Date:	18-Nov-10 19:09:00
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 06:27:20
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

Logging Source S/N: DSN 430
Snow Block S/N: 1223

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change

Snow-Block Porosity (decp):	0.0705	0.0761	0.0056	+/- 0.0150
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PASS/FAIL SUMMARY

Block Change Check: Passed

Snow Block Stat Check: Passed

Temperature Check: Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT - I337M319

Reference Calibration Date: 19-Oct-10 18:50:11

Engineer: C. BLUE

Calibration Date: 18-Nov-10 17:38:15

Software Version: WL INSITE R3.0.6 (Build 4)

Calibration Version: 1

Logging Source S/N: 5256GW

Aluminum Block S/N: BRIGHTON

Density: 2.600g/cc

Pe: 3.100

Magnesium Block S/N: BRIGHTON

Density: 1.680g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0118	1.0158	0.90 - 1.10
Near Dens Gain	0.9947	1.0015	0.90 - 1.10
Near Peak Gain	0.9723	0.9897	0.90 - 1.10
Near Lith Gain	0.9646	0.9646	0.90 - 1.10
Far Bar Gain	1.0138	1.0077	0.90 - 1.10
Far Dens Gain	1.0042	1.0003	0.90 - 1.10
Far Peak Gain	0.9973	0.9968	0.90 - 1.10
Far Lith Gain	0.9720	0.9785	0.90 - 1.10
Near Bar Offset	-0.1063	-0.1401	NONE
Near Dens Offset	0.0178	-0.0360	NONE
Near Peak Offset	0.2118	0.0760	NONE
Near Lith Offset	0.2561	0.2779	NONE
Far Bar Offset	-0.1686	-0.1204	NONE
Far Dens Offset	-0.1001	-0.0681	NONE
Far Peak Offset	-0.0600	-0.0560	NONE
Far Lith Offset	0.1167	0.0710	NONE
Near Bar Background	865.00	864.95	700 - 1450
Near Dens Background	282.93	283.26	230 - 480
Near Peak Background	120.40	120.82	100 - 210
Near Lith Background	151.73	151.79	125 - 260
Far Bar Background	546.22	543.50	450 - 900
Far Dens Background	210.83	211.16	175 - 345
Far Peak Background	82.11	82.29	70 - 140
Far Lith Background	86.80	86.20	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.669	1.681	0.012	+/- 0.015
Pe	2.717	2.586	-0.131	+/- 0.150
ALUMINUM				
Density (g/cc)	2.593	2.600	0.007	+/- 0.01500
Pe	3.228	3.091	-0.137	+/- 0.150

TOOL SUMMARY

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0008	+/- 0.0110	-0.0008	+/- 0.0140
Magnesium Block	-0.0007	+/- 0.0110	-0.0005	+/- 0.0140
Aluminum Block	0.0001	+/- 0.0110	-0.0004	+/- 0.0140
Resolution	9.37	6.00 - 11.50	9.68	6.00 - 11.50
Internal Verifier(B+D+P+L)	1421	1200 - 2700	923	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

SPECTRAL DENSITY FIELD CHECK

Tool Name:	SDLT - I337M319	Reference Calibration Date:	18-Nov-10 17:38:15
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 05:59:19
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

Pad Temperature: 61.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1420.821	1421.144	0.323	15.215
Far (B+D+P+L) cps	923.143	927.044	3.901	16.458
Near Resolution	9.37	9.42	0.050	0.50
Far Resolution	9.68	9.70	0.020	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - I337M319	Reference Calibration Date:	02-Dec-10 06:15:08
Engineer:	C. BLUE	Calibration Date:	02-Dec-10 06:19:35
Software Version:	WL INSITE R3.0.6 (Build 4)	Calibration Version:	1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4650.65	-4611.96	-7000.00 - -1000.00
Pad Gain	0.0003823	0.0003814	0.000200 - 0.000600
Arm Offset	-3721.66	-3732.03	-5000.00 - 3000.00
Arm Gain	0.0005639	0.0005618	0.000300 - 0.000700
Arm Power	-0.000004805	-0.000004698	-0.000010 - 0.000010

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS			
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CALIBRATION RINGS					
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value	
PAD EXTENSION:					
Small Ring (in)	1.99	2.00	0.01	+/- 0.20	
Medium Ring (in)	3.74	3.75	0.01	+/- 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		

SDLT CALIPER FIELD CALIBRATION					
Tool Name:	SDLT - I337M319		Reference Calibration Date:	02-Dec-10 06:19:35	
Engineer:	C. BLUE		Calibration Date:	02-Dec-10 06:21:03	
Software Version:	WL INSITE R3.0.6 (Build 4)		Calibration Version:	1	

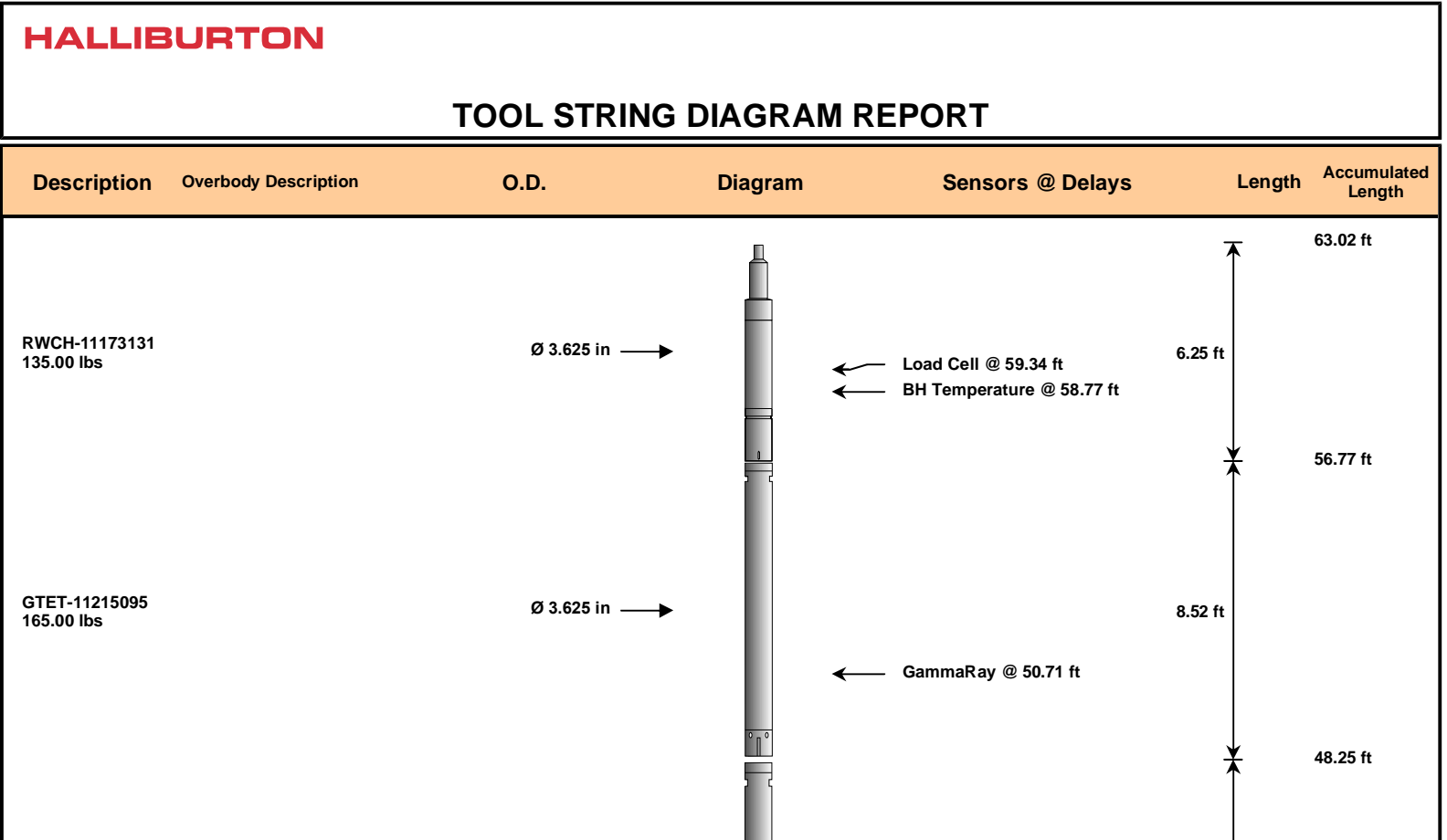
MEASURED CALIPER VALUES					
Measurement	Shop	Field	Change	Control Limit On New Value	
Pad Extension	3.75	3.75	0.00	+/- 0.10	
Ring Diameter	8.25	8.24	-0.01	+/- 0.15	
PASS/FAIL SUMMARY					
Pad Extension Check:			Passed		
Diameter Check:			Passed		

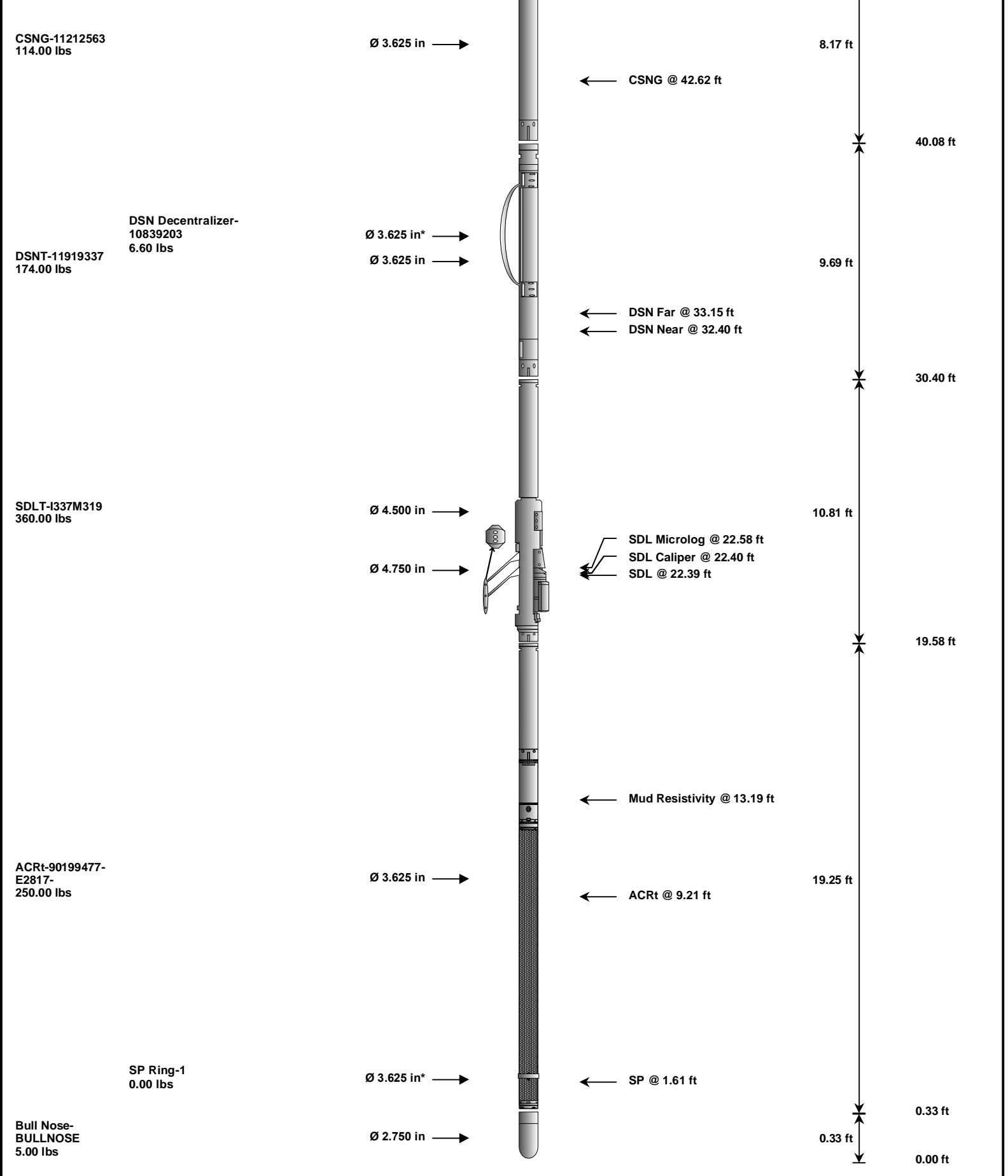
ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION					
Tool Name:	ACRt - 90199477-E2817-		Reference Calibration Date:	04-Jun-10 17:05:07	
Engineer:	C. BLUE		Calibration Date:	13-Aug-10 20:06:47	
Software Version:	WL INSITE R3.0.4 (Build 6)		Calibration Version:	1	

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0167	1.05	0.95	1.0163	1.05	0.95	1.0146	1.05
A2 (50")	0.95	1.0118	1.05	0.95	1.0132	1.05	0.95	1.0128	1.05
A3 (29")	0.95	1.0069	1.05	0.95	1.0085	1.05	0.95	1.0057	1.05
A4 (17")	0.95	1.0150	1.05	0.95	1.0133	1.05	0.95	1.0143	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0000	1.05	0.95	0.9992	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9881	1.05	0.95	0.9862	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	-0.995	2	-6	-4.514	-2	-8	-4.963	-2
A2 (50")	-7	-1.354	-1	-6	-2.867	-2	-7	-4.762	-2
A3 (29")	-27	-13.303	-9	-9	-3.580	-3	-7	-3.628	-1
A4 (17")	-180	-90.373	-60	-45	-29.209	-15	-39	-25.034	-13

A5 (10")	N/A	N/A	N/A	-150	-90.980	-50	-80	-43.898	-10
A6 (6")	N/A	N/A	N/A	175	329.261	525	90	166.175	270
TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION				
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)	
12K	0.6	0.9189	1.3		Mud Cell	0.95	0.996	1.05	
36K	1.0	1.8306	2.0						
72K	1.0	1.1584	2.0						
CALIBRATION SUMMARY									
Sensor	Shop	Field	Post	Difference	Tolerance	Units			
GTET-11215095									
Gamma Ray Calibrator	257.4	255.8	-----	1.6	+/- 9.00	api			
CSNG-11212563									
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #			
239 KEV Peak Channel #	23.0	23.1	-----	-0.1	-----	Channel #			
583 KEV Peak Channel #	51.4	51.6	-----	-0.2	-----	Channel #			
2614 KEV Peak Channel #	210.3	211.3	-----	-1.0	-----	Channel #			
DSNT-11919337									
Snow-Block Porosity	0.0705	0.0761	-----	-0.0056	+/- 0.0150	decp			
SDLT-I337M319									
Near(B+D+P+L)	1420.821	1421.144	-----	-0.323	+/-15.215	cps			
Far(B+D+P+L)	923.143	927.044	-----	-3.901	+/-16.458	cps			
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in			
Ring Diameter	8.25	8.24	-----	0.010	+/-0.15	in			
ACRt-90199477-E2817-									
Mud Cell	0.996	-----	-----	0.000	-----	ohm-m			
Data: GULLEY_17_13\0001 NOBLE\LDLE								Date: 02-Dec-10 12:08:12	





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11173131	135.00	6.25	56.77	300.00
GTET	Gamma Telemetry Tool	11215095	165.00	8.52	48.25	60.00
CSNG	Compensated Spectral Natural Gamma	11212563	114.00	8.17	40.08	15.00
DSNT	Dual Spaced Neutron	11919337	174.00	9.69	30.40	60.00
DCNT	DSN Decentralizer	10839203	6.60	5.13	* 33.73	300.00
SDLT	Spectral Density Tool	I337M319	360.00	10.81	19.58	60.00

ACRt	Array Compensated True Resistivity	90199477-E2817-	250.00	19.25	0.33	300.00
SP	SP Ring	1	0.00	0.25	*	1.61 300.00
BLNS	Bull Nose	BULLNOSE	5.00	0.33	0.00	300.00
Total			1,209.60	63.02		
* Not included in Total Length and Length Accumulation.						
Data: GULLEY_17_13\0001 NOBLE\003 02-Dec-10 12:15 Up @7191.8f						
Date: 02-Dec-10 13:19:46						

COMPANY	NOBLE ENERGY		
WELL	GULLEY 17-13		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY	