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

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: 40.49574° N
LONG: 104.44431° W

Other Services:
CSNG

Sect. 9 Twp. 6N Rge. 63W

Permanent Datum GL Elev. 4686.0 ft

Log measured from KB 14.0 ft above perm. Datum

Drilling measured from KB

Elev.: K.B. 4700.0 ft
D.F. 4699.0 ft
G.L. 4686.0 ft

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 / Viscosity	9.0 ppg / 26.00 s/qt		
PH / Fluid Loss	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 / Rmc	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 / Location	11454566 / BRIGHTON		
Recorded By	C. GULLETT		
Witnessed By	J. TURNER		

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

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	ACRt	N/A	1.5" STANDOFF	N/A
	E6758-S4352			

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

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 Upr	
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

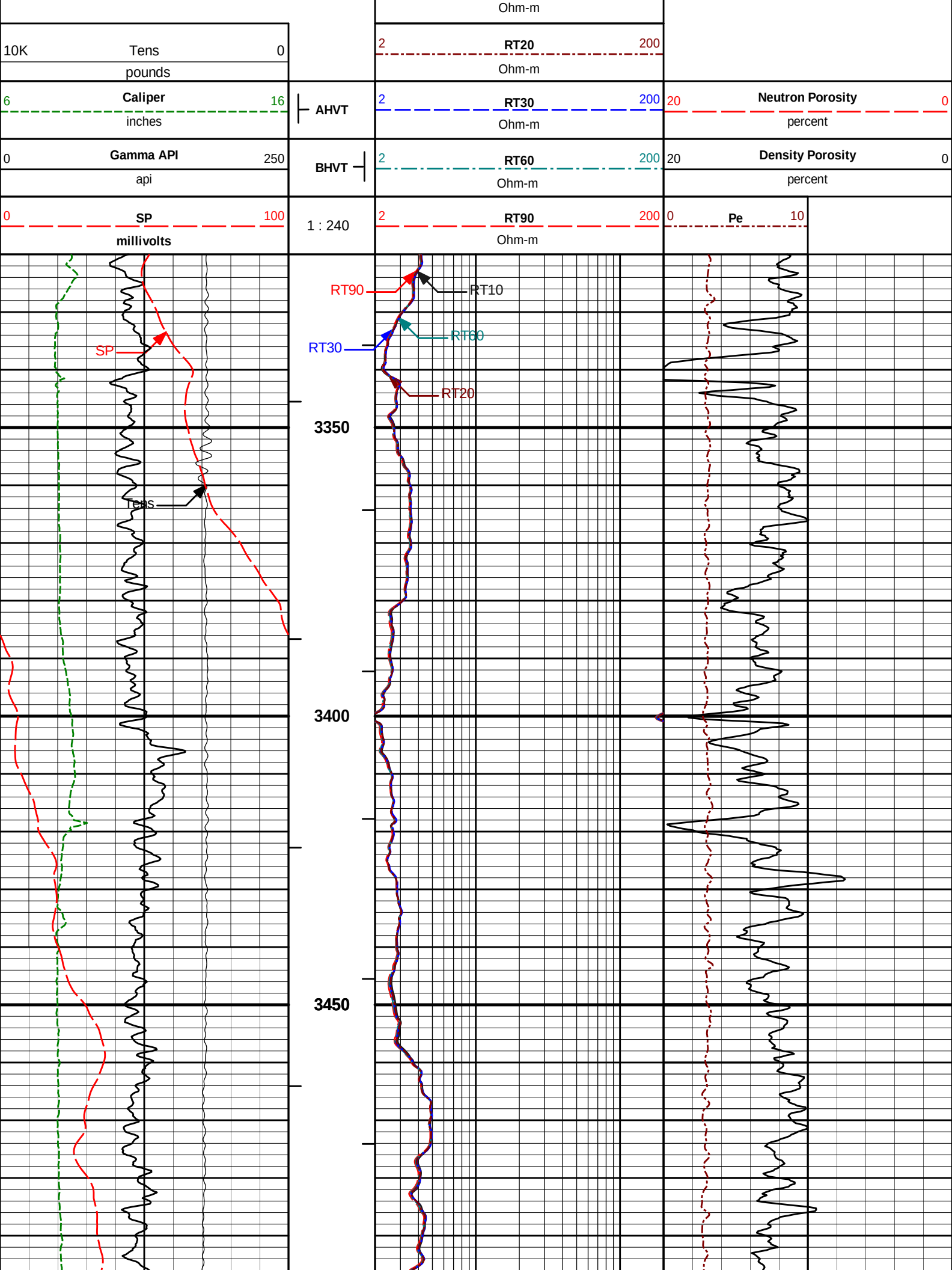
Data: BASHORPC_AA0914\0001 TRIPLE_CSNG\002.01 23-Feb-11 10:55 Up **Date: 23-Feb-11 11:25:16**

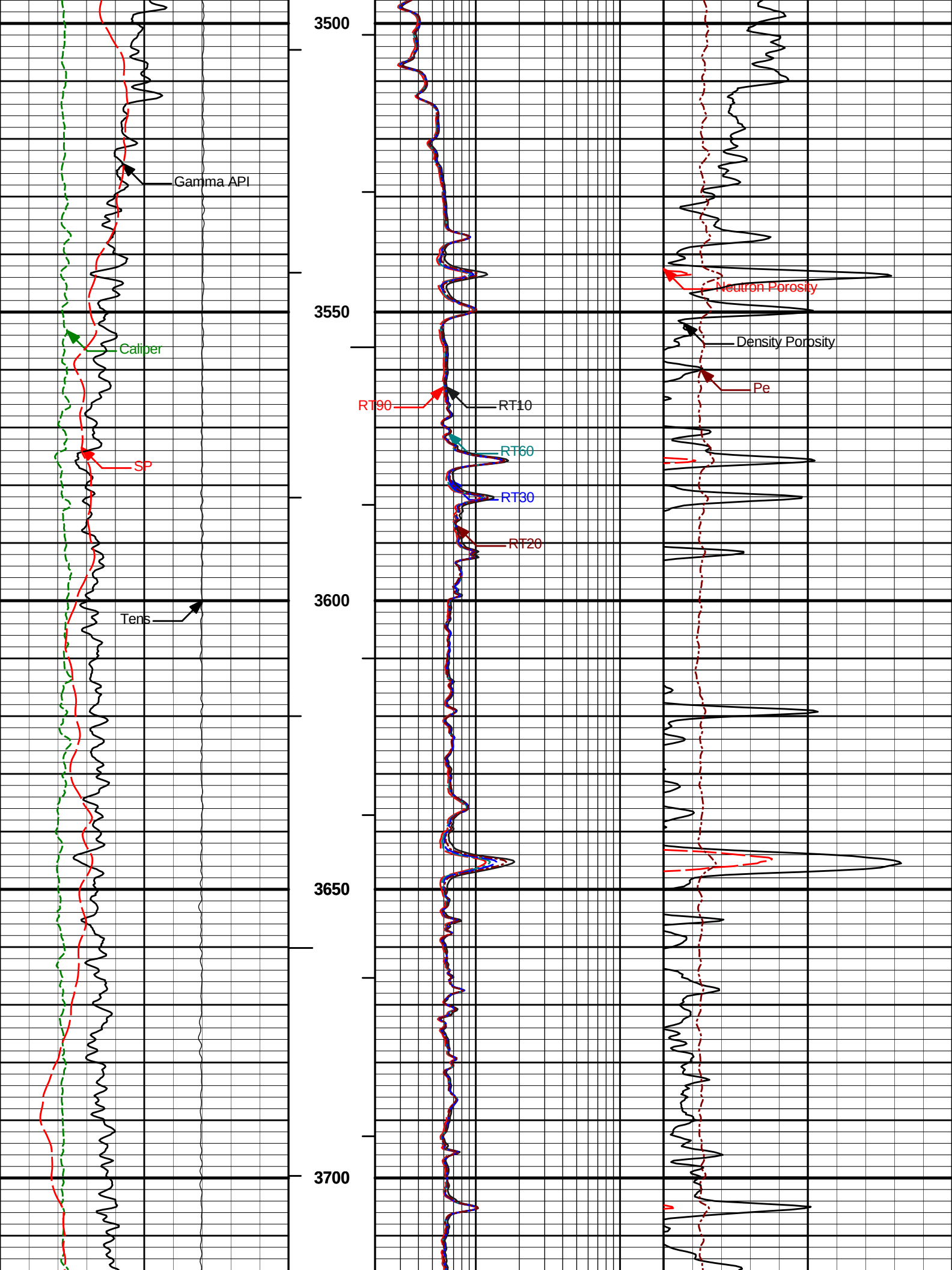
HALLIBURTON

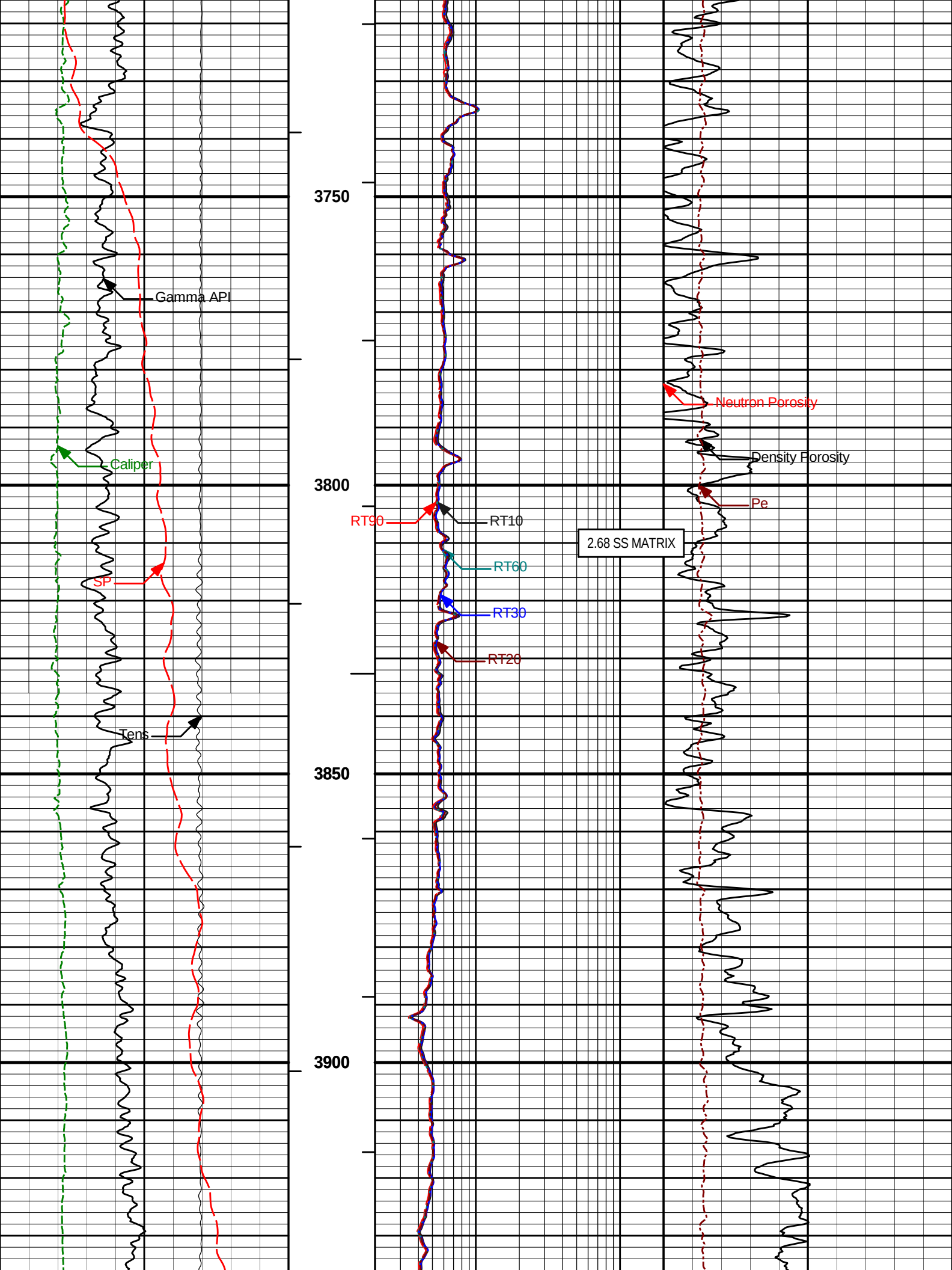
Plot Time: 23-Feb-11 12:32:12
Plot Range: 3320 ft to 4900 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\MAIN

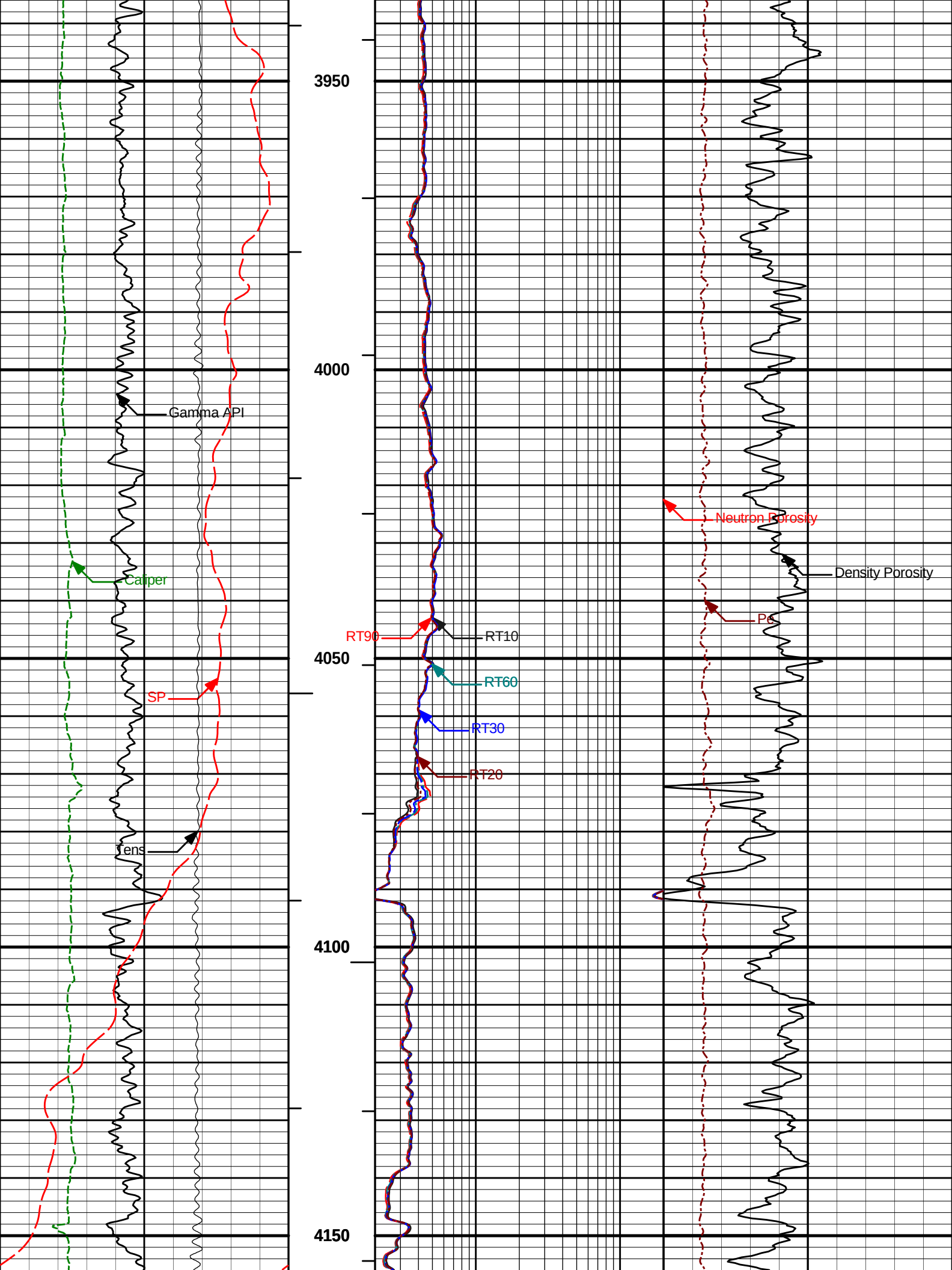
MAIN PASS 5" = 100'

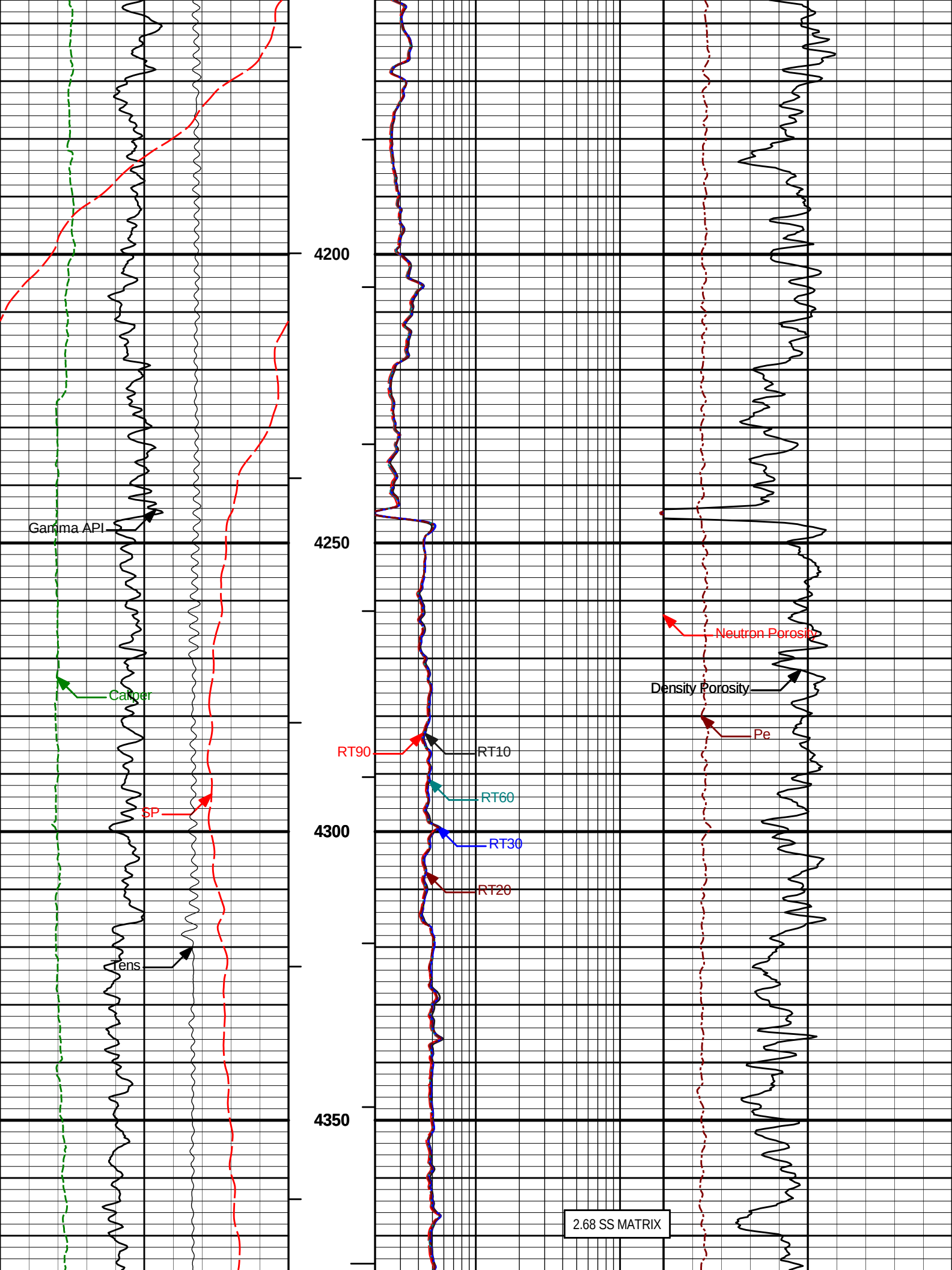
Track 1	Depth Track	Track 2	Track 5	Track 3
		2 **RT10** 200		

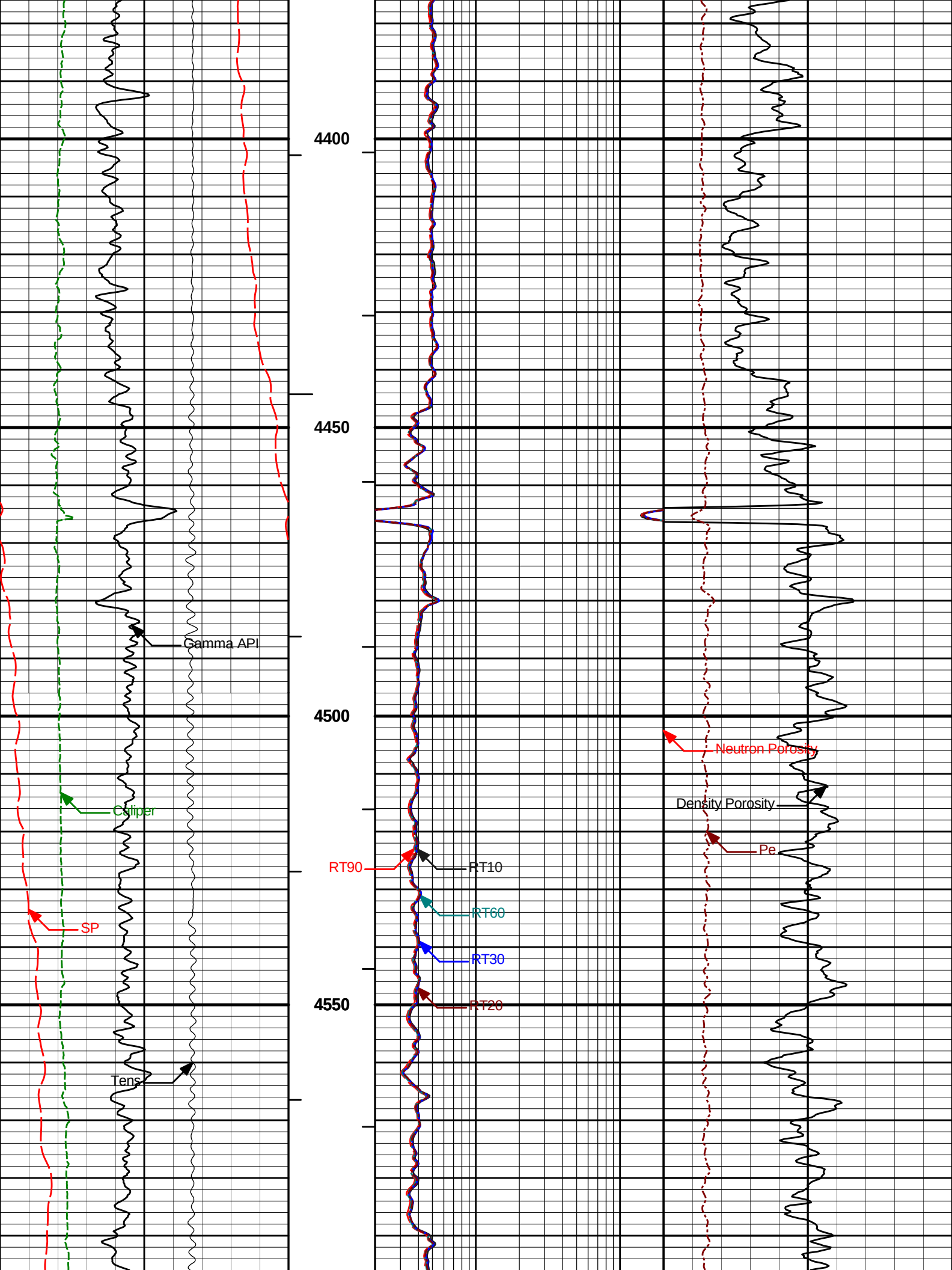

Ohm-m
10K
Tens
0
pounds
2
RT20
200
Ohm-m
6
Caliper
16
inches
AHVT
2
RT30
200
Ohm-m
20
Neutron Porosity
0
percent
0
Gamma API
250
api
BHVT
2
RT60
200
Ohm-m
20
Density Porosity
0
percent
0
SP
100
millivolts
1 : 240
2
RT90
200
Ohm-m
0
Pe
10
RT90
RT10
RT30
RT60
RT20
SP
Tens
3350
3400
3450

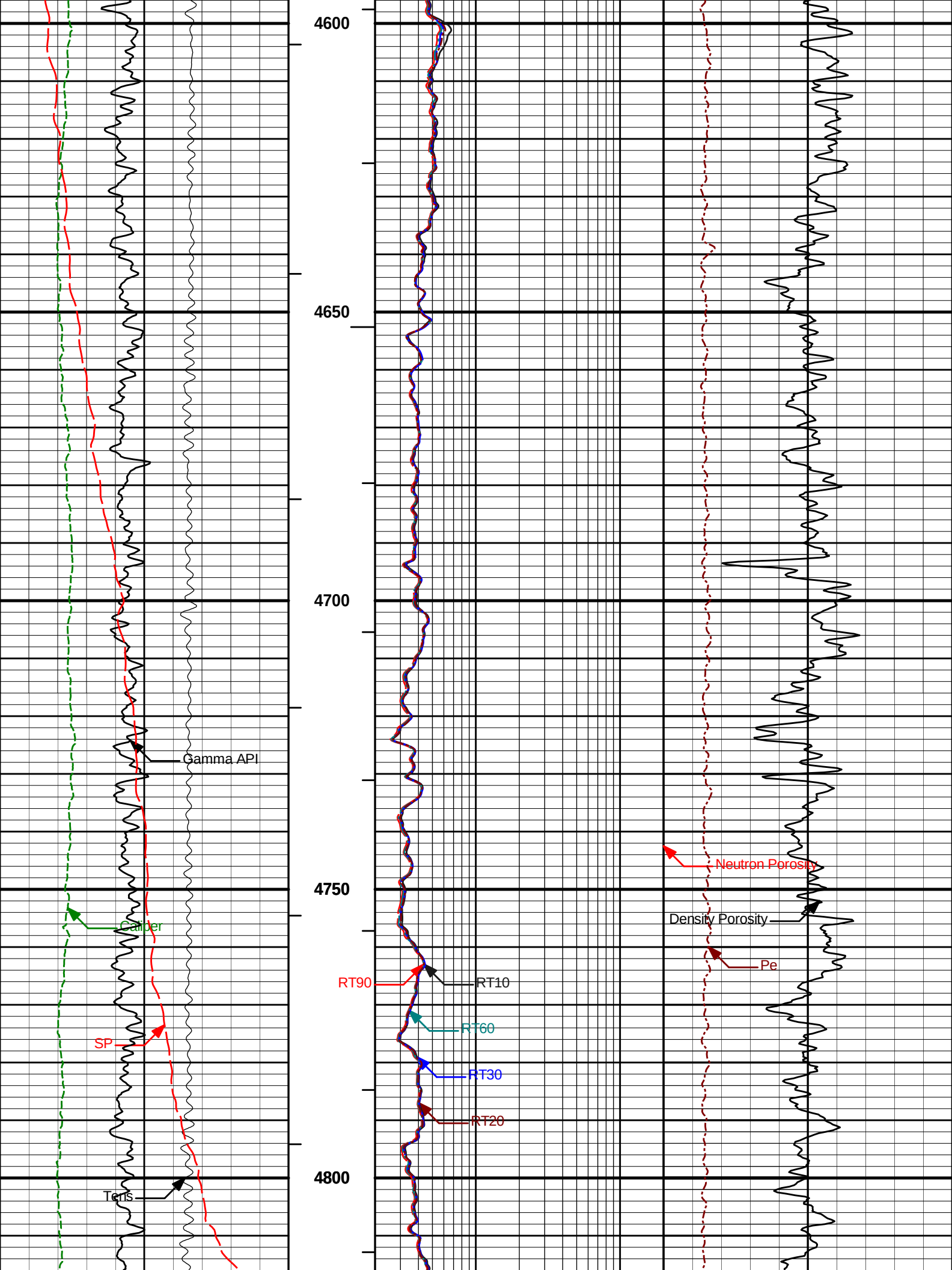

3500
3550
3600
3650
3700
Gamma API
Caliber
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe

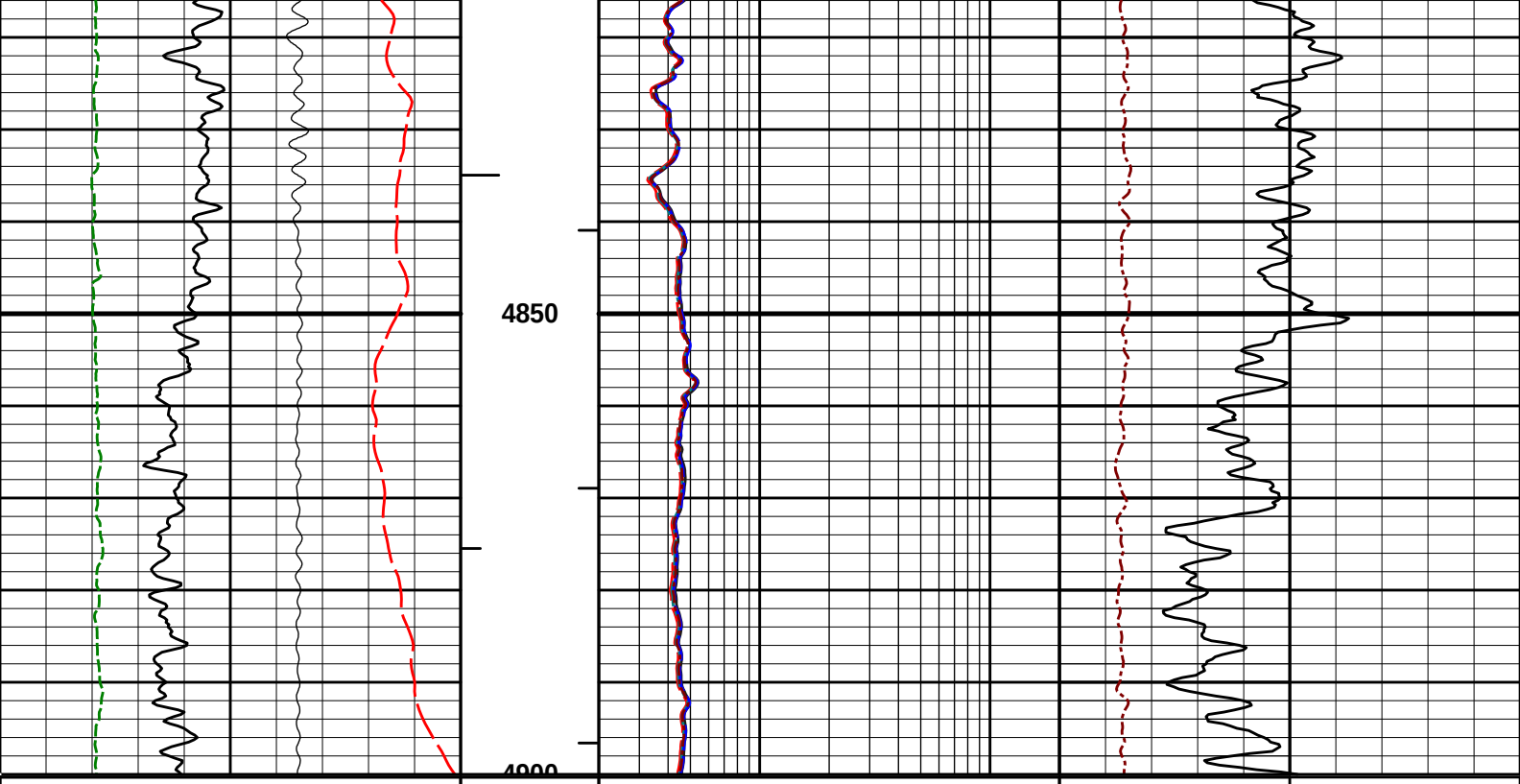

3750
3800
3850
3900
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
2.68 SS MATRIX
Neutron Porosity
Density Porosity
Pe


3950
4000
4050
4100
4150
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


4200
4250
4300
4350
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe
2.68 SS MATRIX


4400
4450
4500
4550
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


4600
4650
4700
4750
4800
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe



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

0 **Pe** 10	
20 **Density Porosity** 0 percent	
20 **Neutron Porosity** 0 percent	

HALLIBURTON

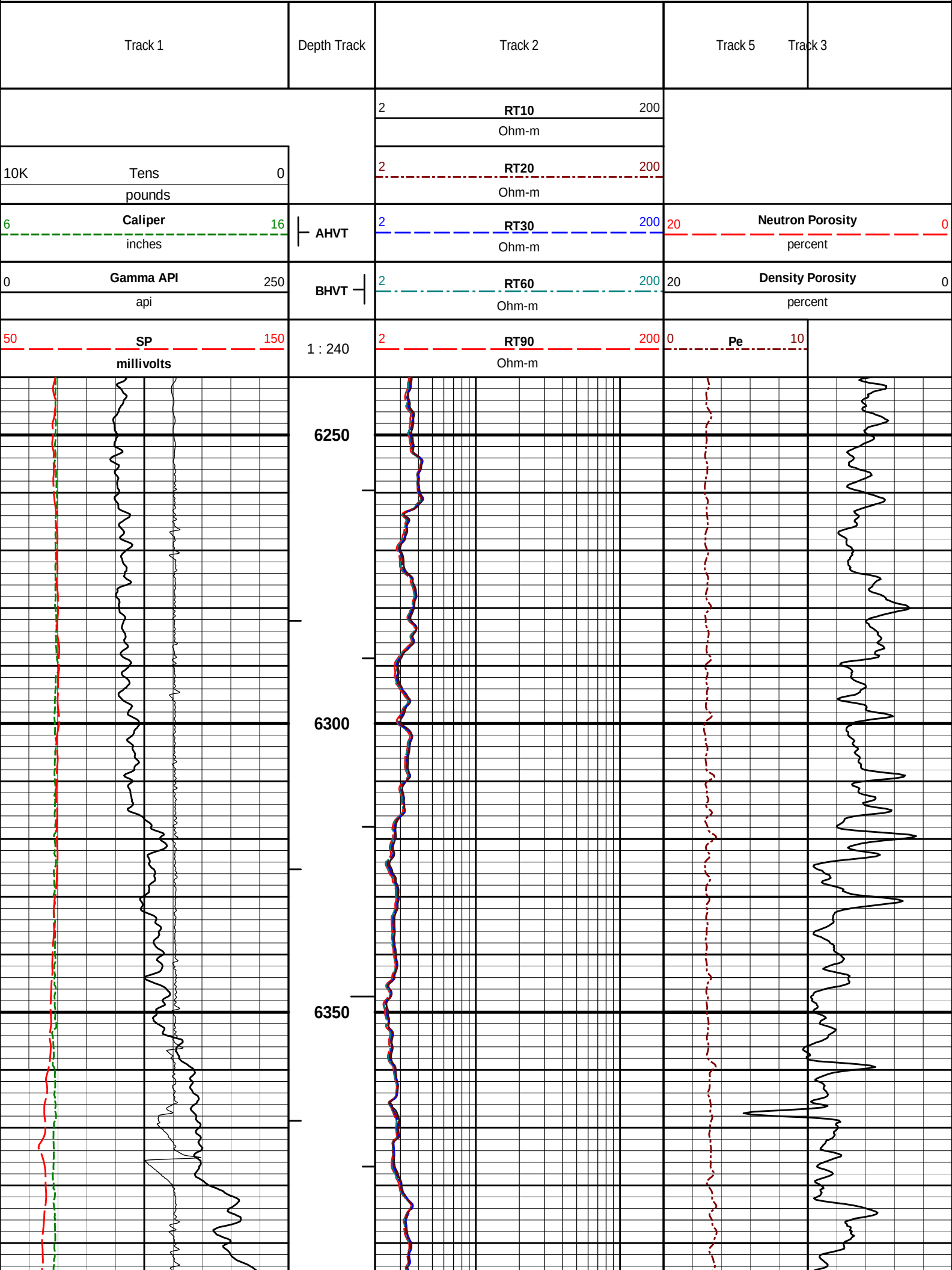
Plot Time: 23-Feb-11 12:32:15
Plot Range: 3320 ft to 4900 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\MAIN

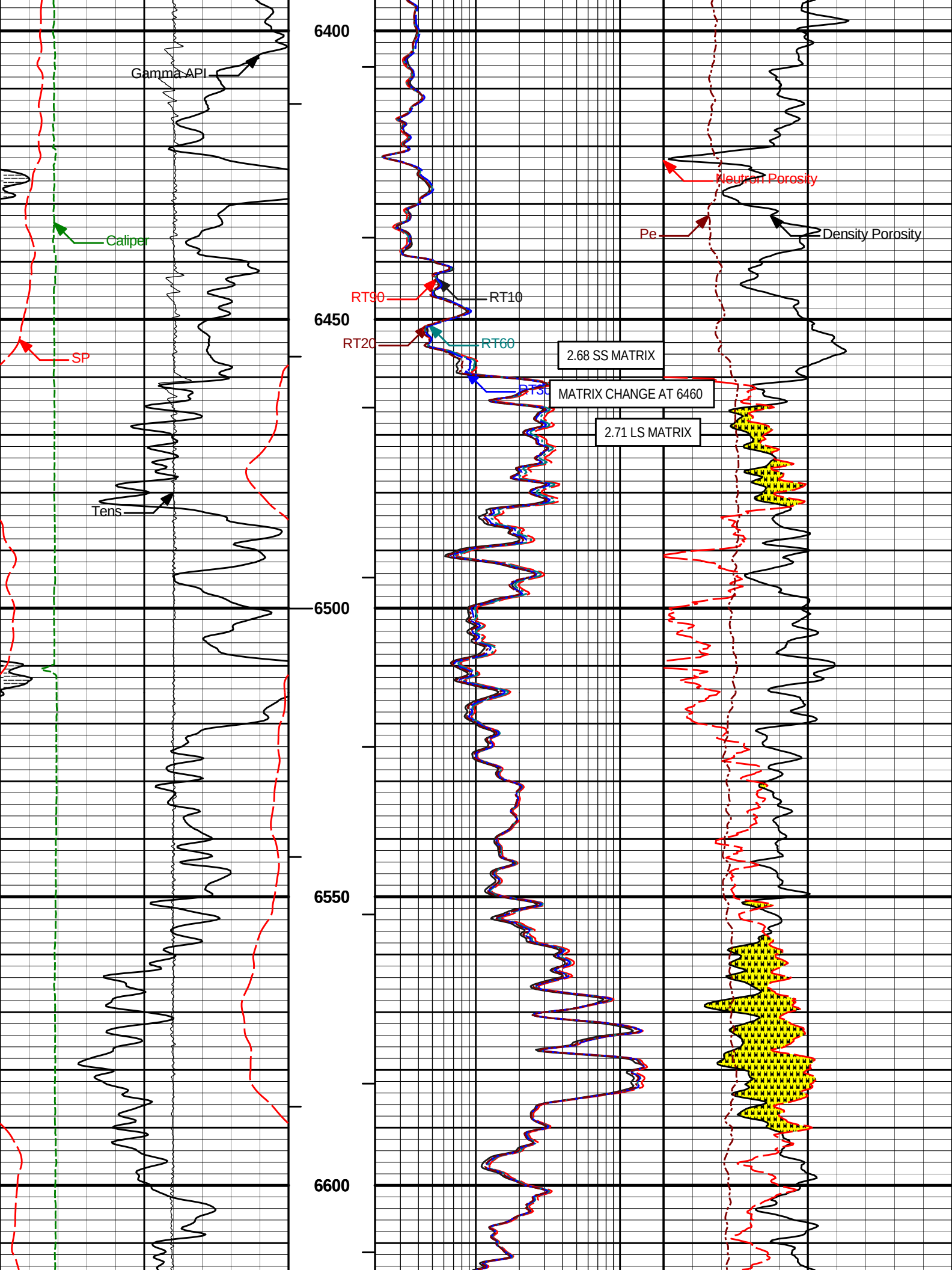
MAIN PASS 5" = 100'

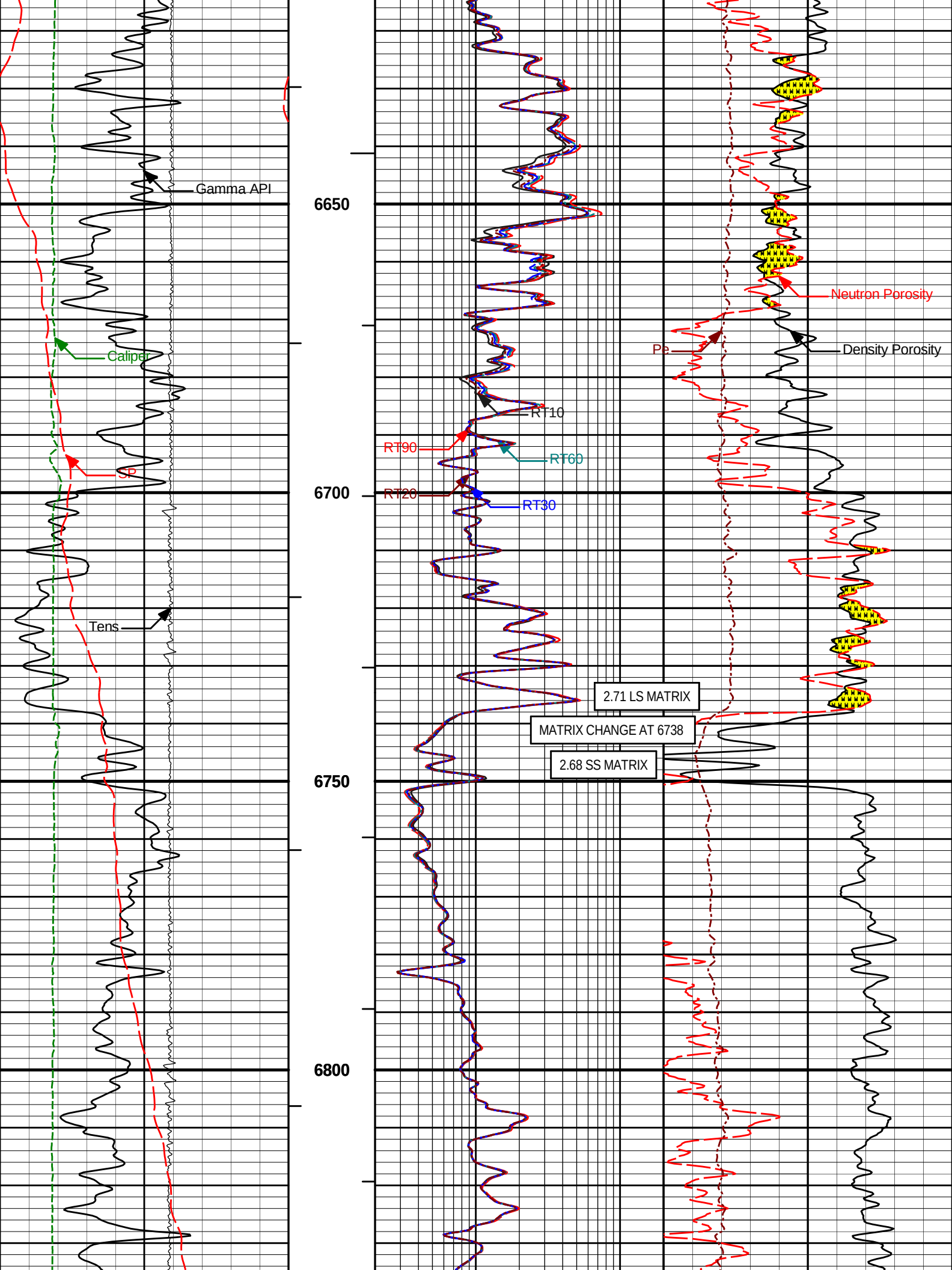
HALLIBURTON

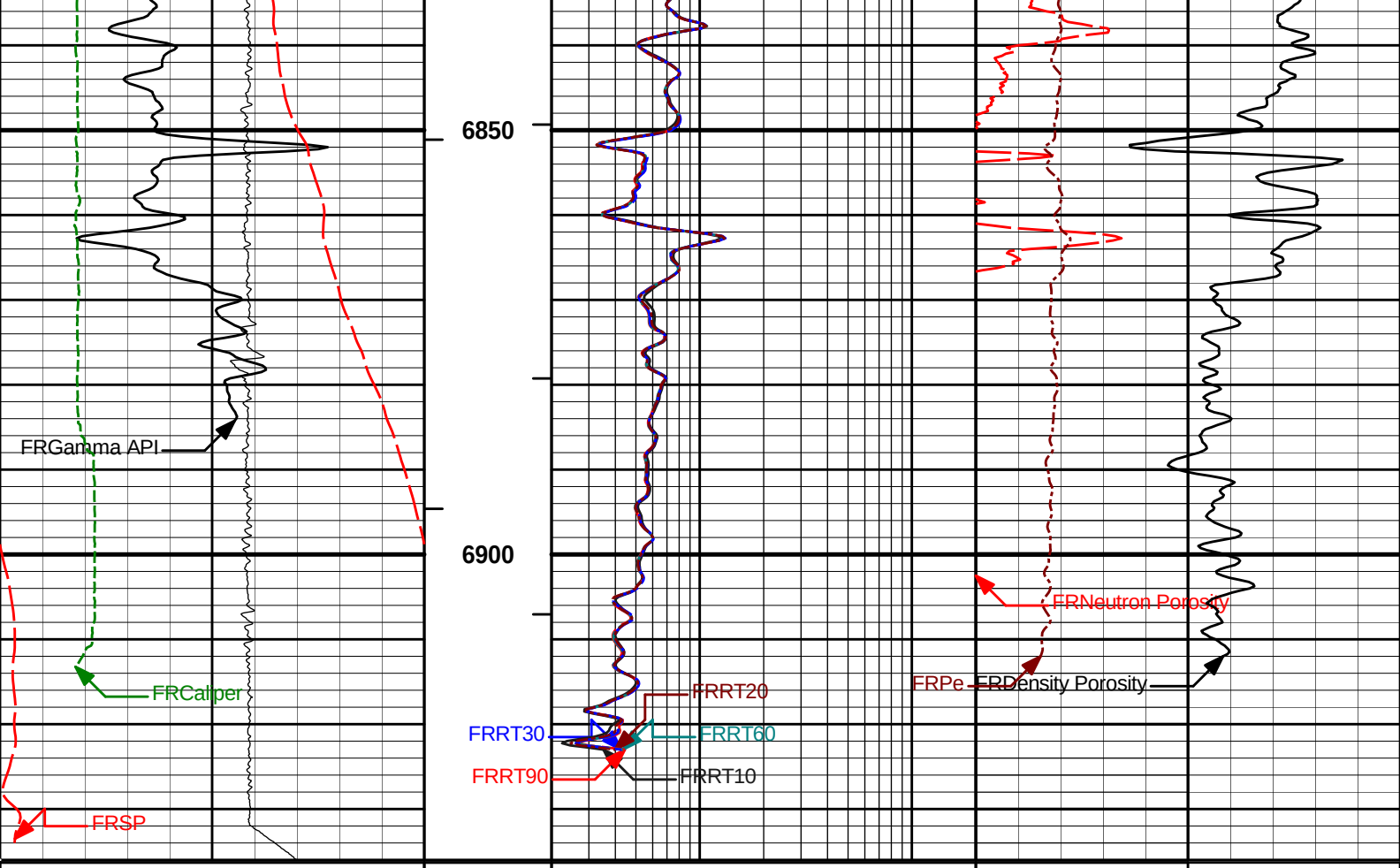
Plot Time: 23-Feb-11 12:32:15
Plot Range: 6240 ft to 6936 ft
Data: BASHORPC_AA0914\Well Based\MAIN*
Plot File: \\COMP\REPEAT

REPEAT SECTION 5" = 100'


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


Gamma API
Caliper
SP
Tens
6400
6450
6500
6550
6600
RT90
RT10
RT20
RT60
RT30
Neutron Porosity
Pe
Density Porosity
2.68 SS MATRIX
MATRIX CHANGE AT 6460
2.71 LS MATRIX


Gamma API
Caliper
SP
Tens
6650
6700
6750
6800
RT10
RT90
RT60
RT20
RT30
Neutron Porosity
Pe
Density Porosity
2.71 LS MATRIX
MATRIX CHANGE AT 6738
2.68 SS MATRIX



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

0 **Pe** 10	
20 **Density Porosity** 0 percent	
20 **Neutron Porosity** 0 percent	

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

Tool Name: GTET - 11294346 **Reference Calibration Date:** 24-Jan-11 09:35:20

Engineer:	**C. GULLETT**	**Calibration Date:**	**24-Jan-11 09:38:13**
Software Version:	**WL INSITE R3.2.3 (Build 5)**	**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**	**Reference Calibration Date:**	**24-Nov-10 09:04:15**
Engineer:	**C. BLUE**	**Calibration Date:**	**22-Jan-11 13:59:18**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**
Source SN:	**TB290**		

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**	**Reference Calibration Date:**	**01-Jan-70 00:00:00**
Engineer:	**C. GULLETT**	**Calibration Date:**	**21-Jan-11 11:43:47**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**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

Far Lith Background	86.40	85.81	75 - 145

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)	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

Signal	Lower	R	Upper
12K	0.6	0.8294	1.3
36K	1.0	1.8894	2.0
72K	1.0	1.0712	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.009	1.05

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 #

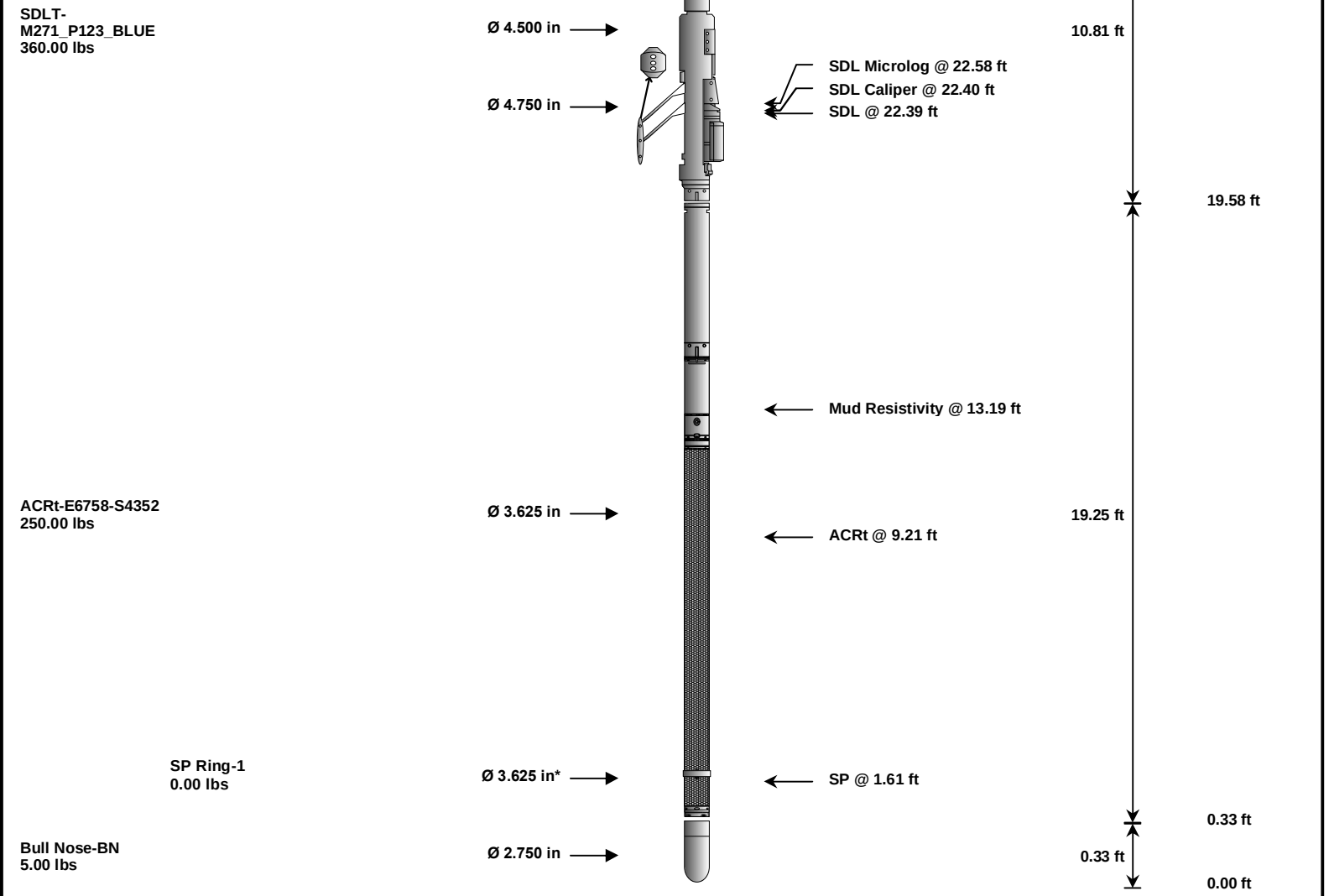
DSNT-10958655_S434						
Snow-Block Porosity	0.0641	----------	----------	0.0000	+/- -.--	decp
SDLT-M271_P123_BLUE						
Near(B+D+P+L)	1407.220	----------	----------	0.000	+/-13.252	cps
Far(B+D+P+L)	917.379	----------	----------	0.000	+/-14.892	cps
Pad Extension	3.75	----------	----------	0.00	+/-0.20	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_CSNG\IDLE **Date: 23-Feb-11 11:24:50**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						63.02 ft
RWCH-A094 135.00 lbs		Ø 3.625 in		Load Cell @ 59.34 ft BH Temperature @ 58.77 ft	6.25 ft	
						56.77 ft
GTET-11294346 165.00 lbs		Ø 3.625 in		GammaRay @ 50.71 ft	8.52 ft	
						48.25 ft
CSNG-10965402 114.00 lbs		Ø 3.625 in		CSNG @ 42.62 ft	8.17 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



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