HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY
LOG

COMPANY	NOBLE ENERGY INC
WELL	MOSER H26-27D
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO

COMPANY **NOBLE ENERGY INC**
WELL **MOSER H26-27D**
FIELD **WATTENBERG**
COUNTY **WELD** STATE **CO**

API No. 05123348210000

Location SHL: 783' FNL & 543' FEL NENE
BHL: 100' FNL & 1275' FEL NENE
LAT: 40.201370°
LONG: -104.623100°

Sect. 26 Twp. 3N Rge. 65W

Other Services:
RWCH
CSNG
BSAT

Permanent Datum	GL	Elev. 4857.0 ft	Elev.: K.B.	4871.0 ft
Log measured from	KB	, 14.0 ft above perm. Datum	D.F.	4871.0 ft
Drilling measured from	KB		G.L.	1857.0 ft

Date		08-Apr-12					
Run No.		ONE					
Depth - Driller		7930.00 ft					
Depth - Logger		7924.0 ft					
Bottom - Logged Interval		7915 ft					
Top - Logged Interval		846 ft					
Casing - Driller		8.625 in	@ 851.0 ft		@		@
Casing - Logger		846.0 ft					
Bit Size		7.875 in			@		@
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	9.8 ppg	50.00 s/qt				
PH	Fluid Loss	8.00 pH	10.4 cptm				
Source of Sample		MUD CELL					
Rm @ Meas. Temperature		1.230 ohmm	@ 91.00 degF		@		@
Rmf @ Meas. Temperature		1.28 ohmm	@ 75.00 degF		@		@
Rmc @ Meas. Temperature		1.276 ohmm	@ 75.00 degF		@		@
Source Rmf	Rmc	CHART	CHART				
Rm @ BHT		0.60 ohmm	@ 195.0 degF		@		@
Time Since Circulation		9.0 hr					
Time on Bottom		08-Apr-12 21:36					
Max. Rec. Temperature		195.0 degF	@ 7924.0 ft		@		@
Equipment	Location	11454566	BRIGHTON				
Recorded By		F. LODER					
Witnessed By		J. KEY					

Fold here

Service Ticket No.: 9417737 API Serial No.: 05123348210000 PGM Version: WL INSITE R3.4.4 (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	ACRt 758-352	N/A	1.5" S.O.	N/A

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	11812883	Serial No.	11014308	Serial No.	11107335	Serial No.	11812167
Model No.	GTET-I	Model No.	BSAT-I	Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625"	No. of Cent.	3.625"	Diameter	4.5"	Diameter	3.625"
Detector Model No.	2G8BICORN	Spacing	0.5'	Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]	N	Serial No.	2770GW	Serial No.	DSN-434
Distance to Source	18'	FWDA [Y/N]	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	846 ft	7014 ft	REC	0 API	250 API	20 %	0 %	55.5 us/ft	20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7014 ft	7292 ft	REC	0 API	250 API	20 %	0 %	47.5 us/ft	20 %	0 %	2.71 g/cc	20 %	0 %	LIME
ONE	7292 ft	7667ft	REC	0 API	250 API	20 %	0 %	55.5 us/ft	20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7667 ft	7924 ft	REC	0 API	250 API	20 %	0 %	55.5 us/ft	20 %	0 %	2.65 g/cc	20 %	0 %	SAND

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: RWCH-GTET-CSNG-DSNT-SDLT-FLEX-BSAT-ACRT-BN RAN IN COMBINATION

TENSION PULLS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE

ANNULAR HOLE VOLUME CALCULATED USING 4.5-INCH PRODUCTION CASING

CHLORIDES REPORTED AT 800 PPM

YOUR CREW TODAY: M. BURNETT, S. SPEAK RIG: SAXON 145

THANK YOU FOR USING HALLIBURTON ENERGY SERVICES -- BRIGHTON, CO -- 303.825.4346

HALLIBURTON

PARAMETERS REPORT

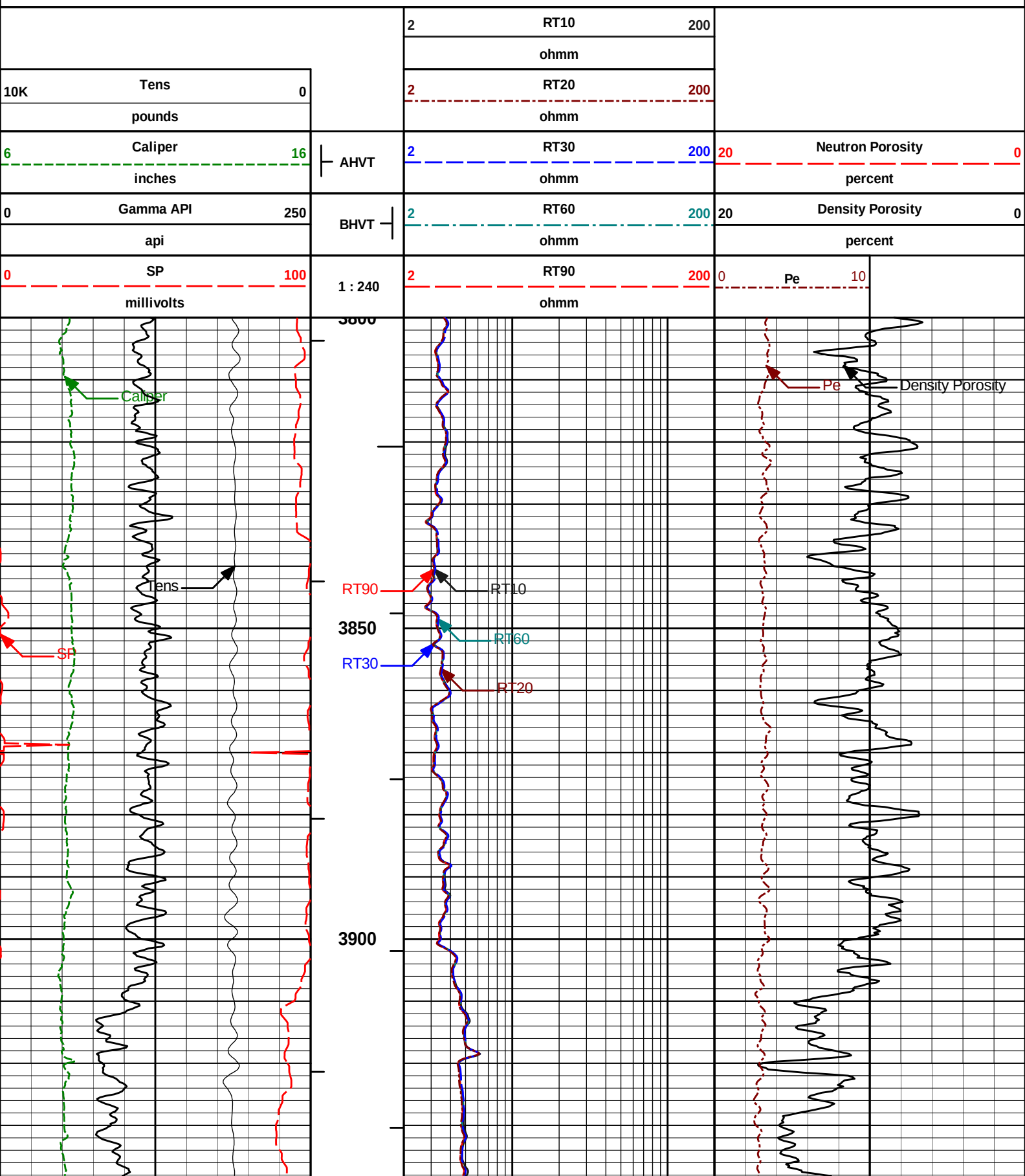
Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
	BSAT	DTMT	Delta -T Matrix Type	Sandstone 55.5	
7014.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
	BSAT	DTMT	Delta -T Matrix Type	Limestone 47.5	
7292.00					
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
7667.00					
	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	9.800	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	1.230	ohmm
	SHARED	TRM	Temperature of Mud	91.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	71.0	degF

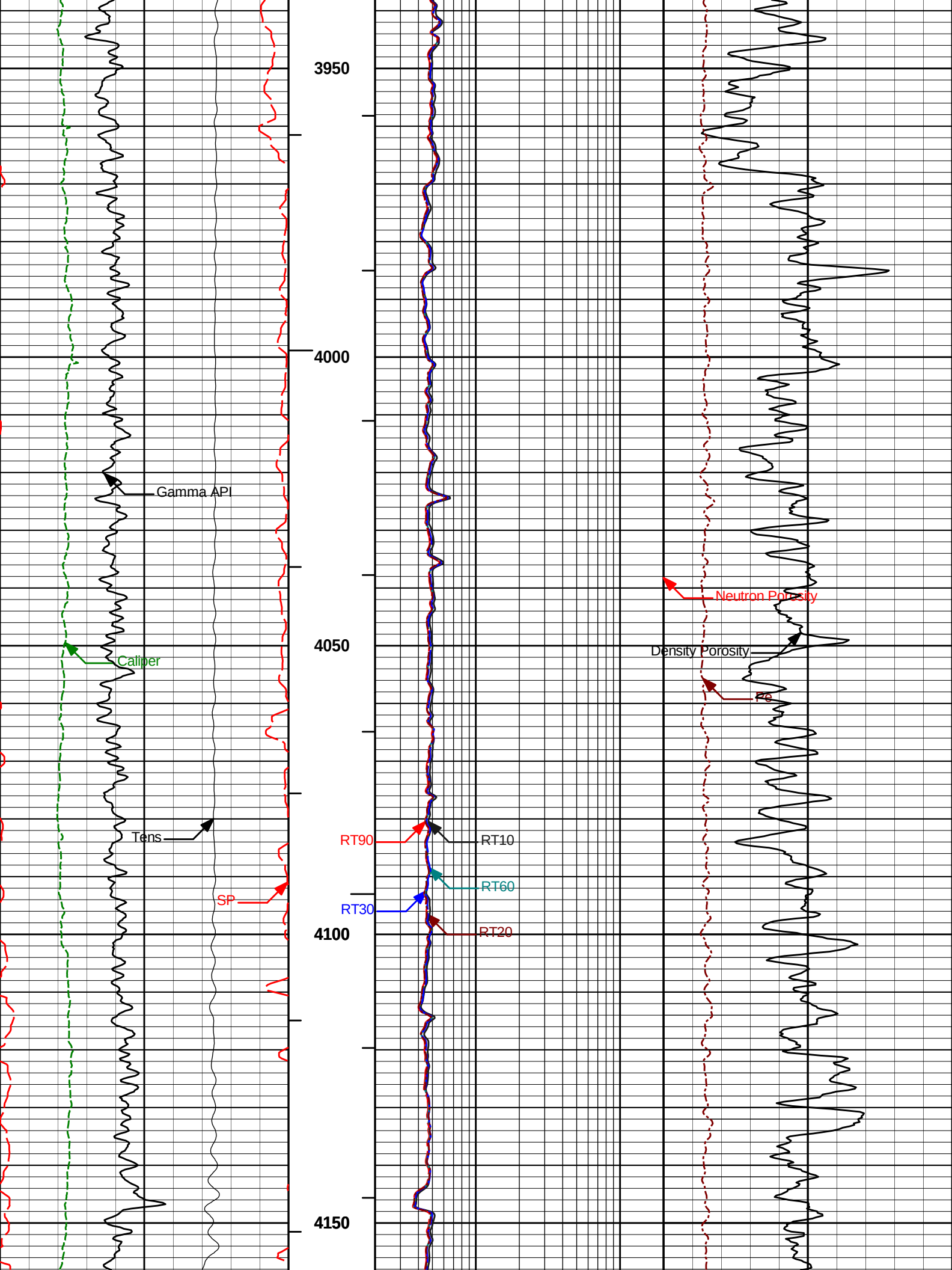
SHARED	TD	Total Well Depth	7930.00	ft
SHARED	BHT	Bottom Hole Temperature	213.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
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	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
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	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	2.650	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Sandstone 55.5	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
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	

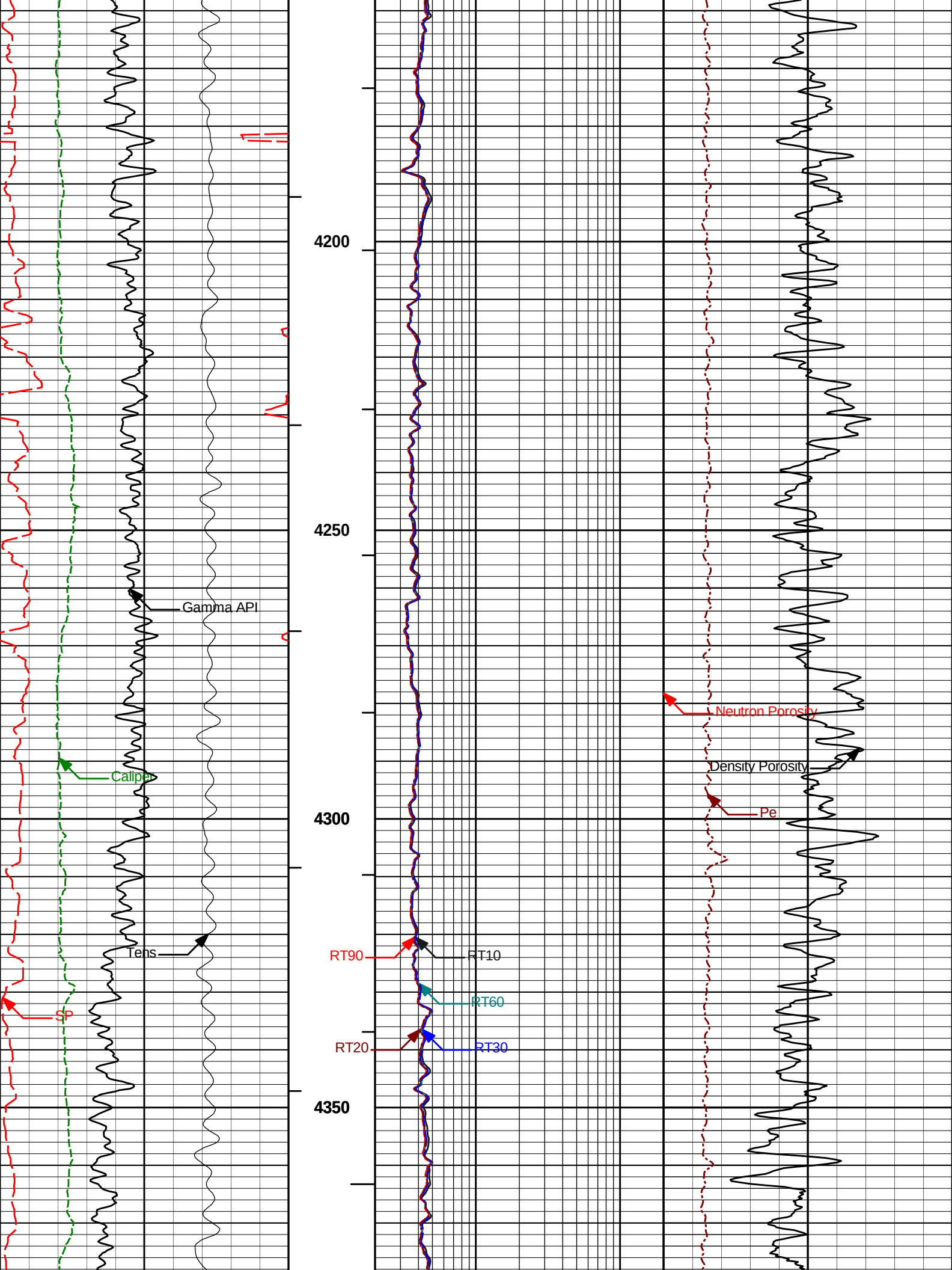
BOTTOM

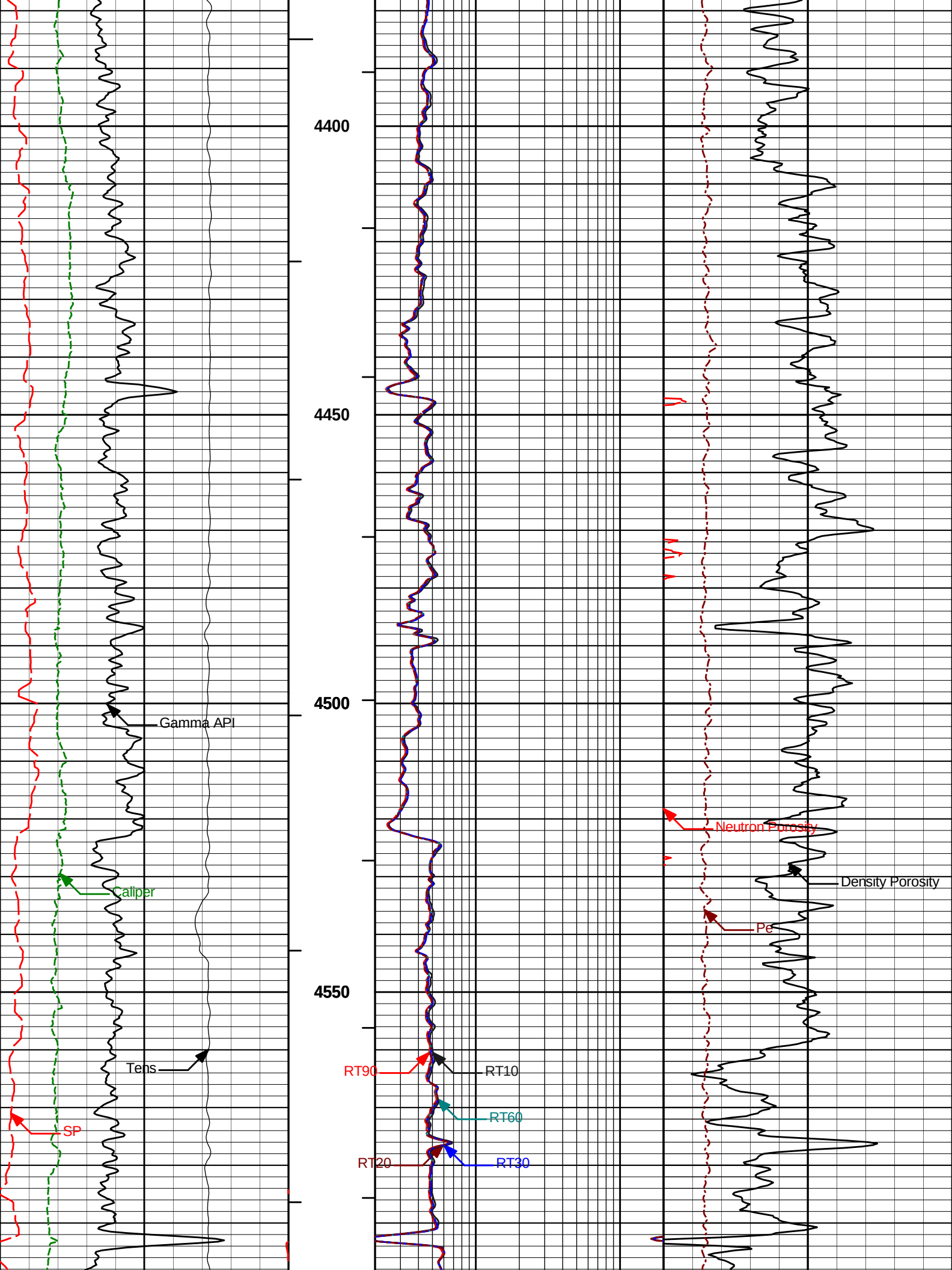
Plot File: \\COMP\SUSX-PARK

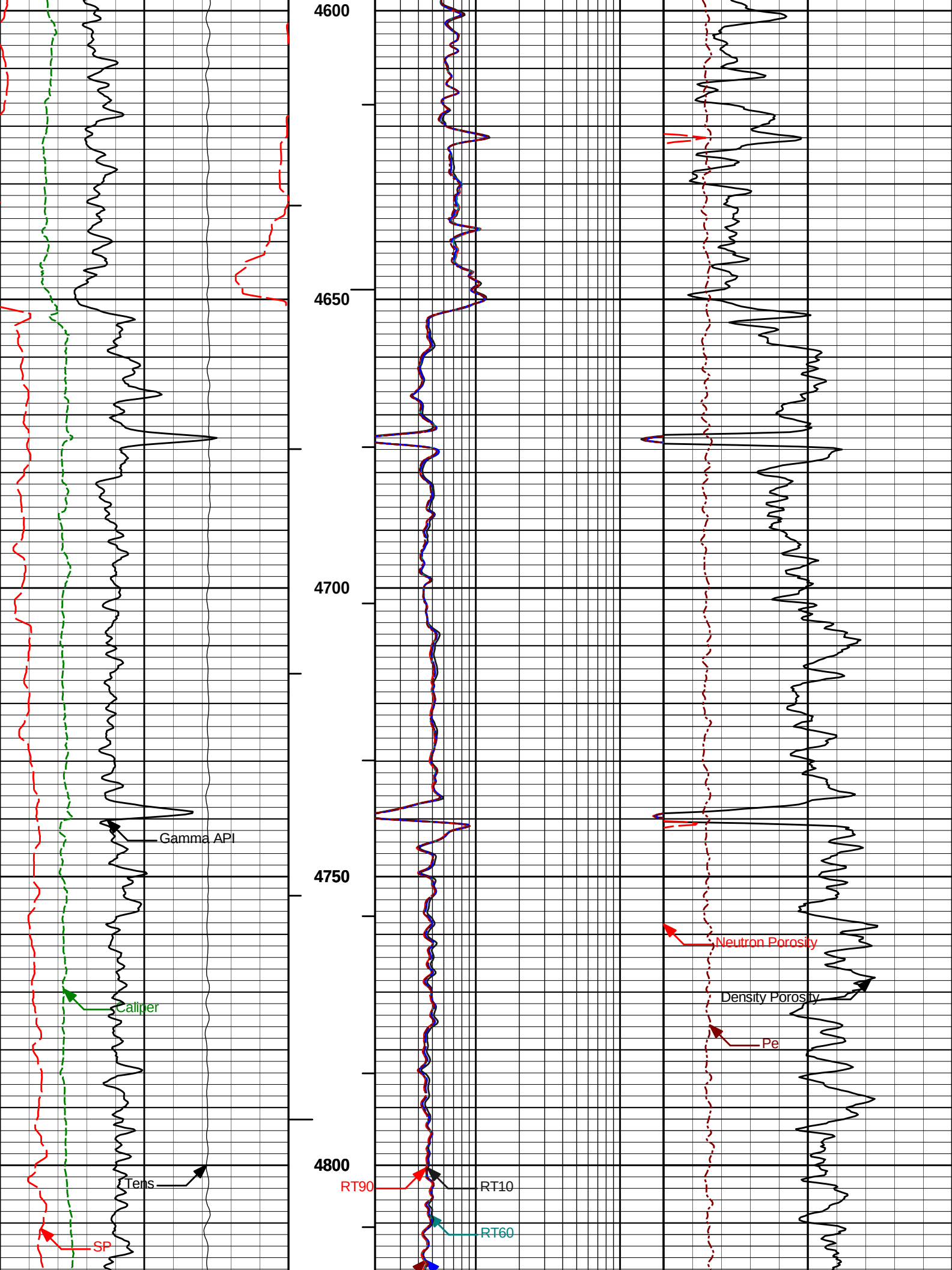
MAIN PASS 5" = 100'

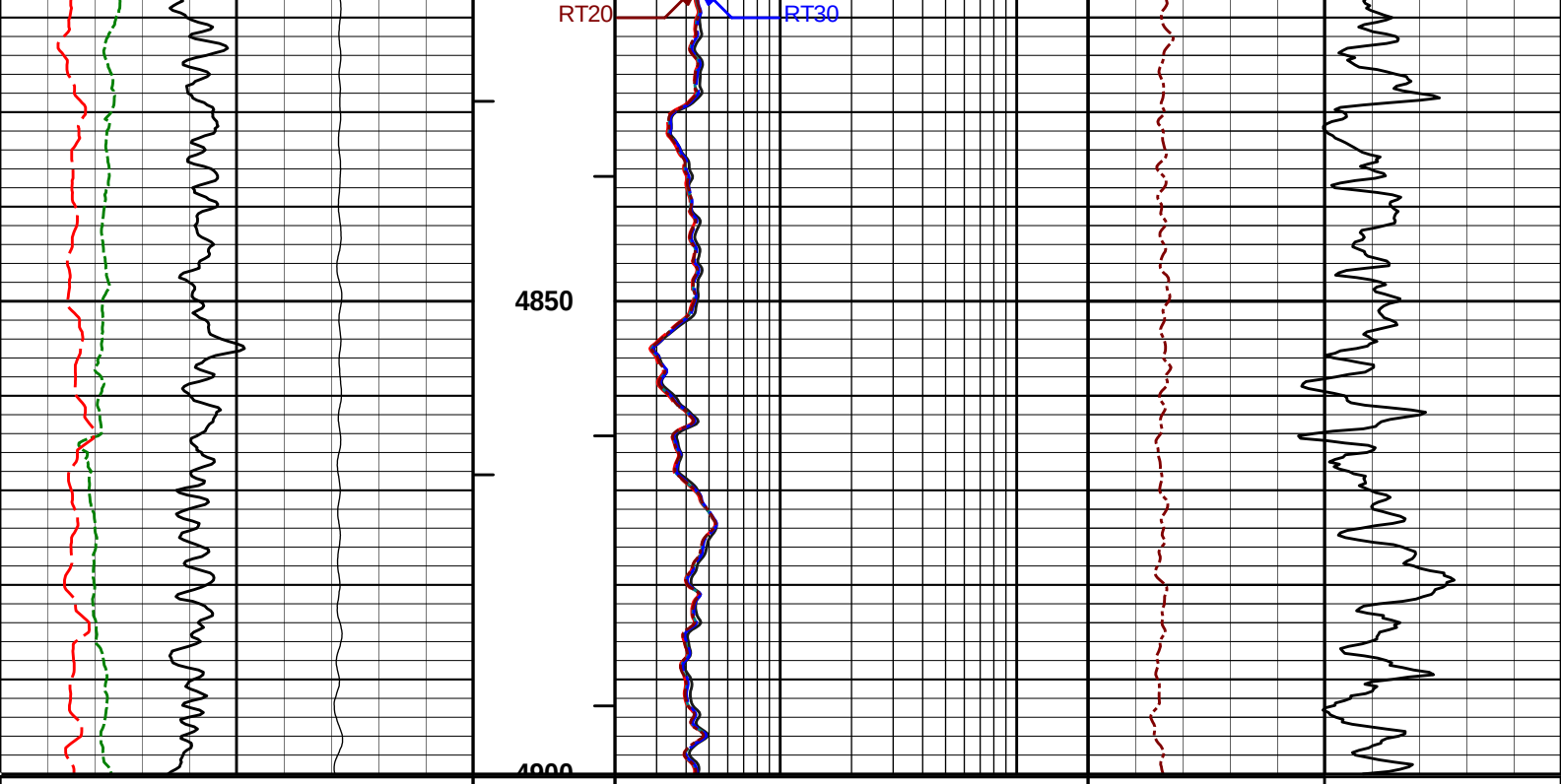



3950
4000
4050
4100
4150
Gamma API
Caliper
Tens
SP
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


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


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


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



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

HALLIBURTON

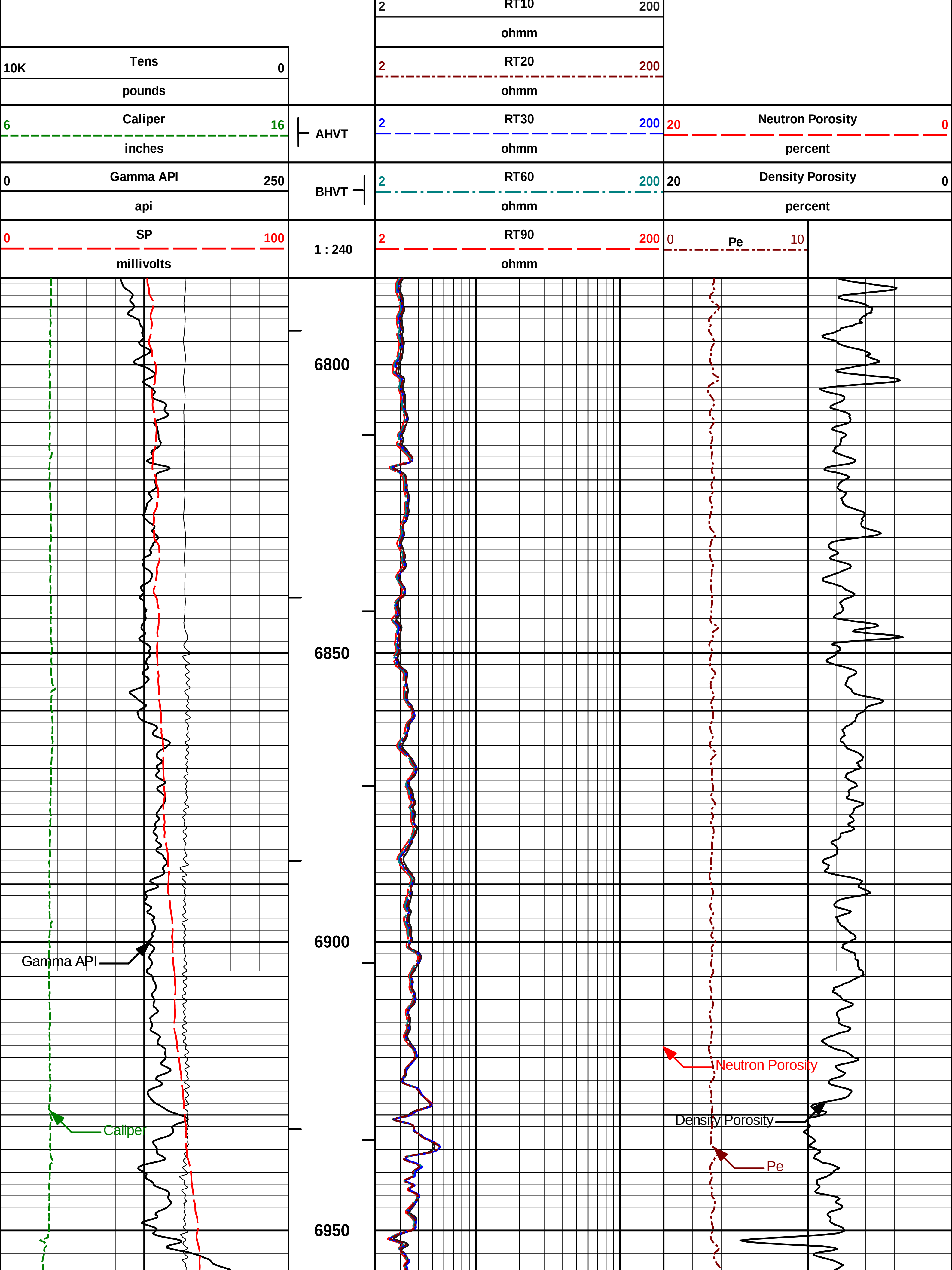
Plot Time: 08-Apr-12 23:26:25
Plot Range: 3800 ft to 4900 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\SUSX-PARK

MAIN PASS 5" = 100'

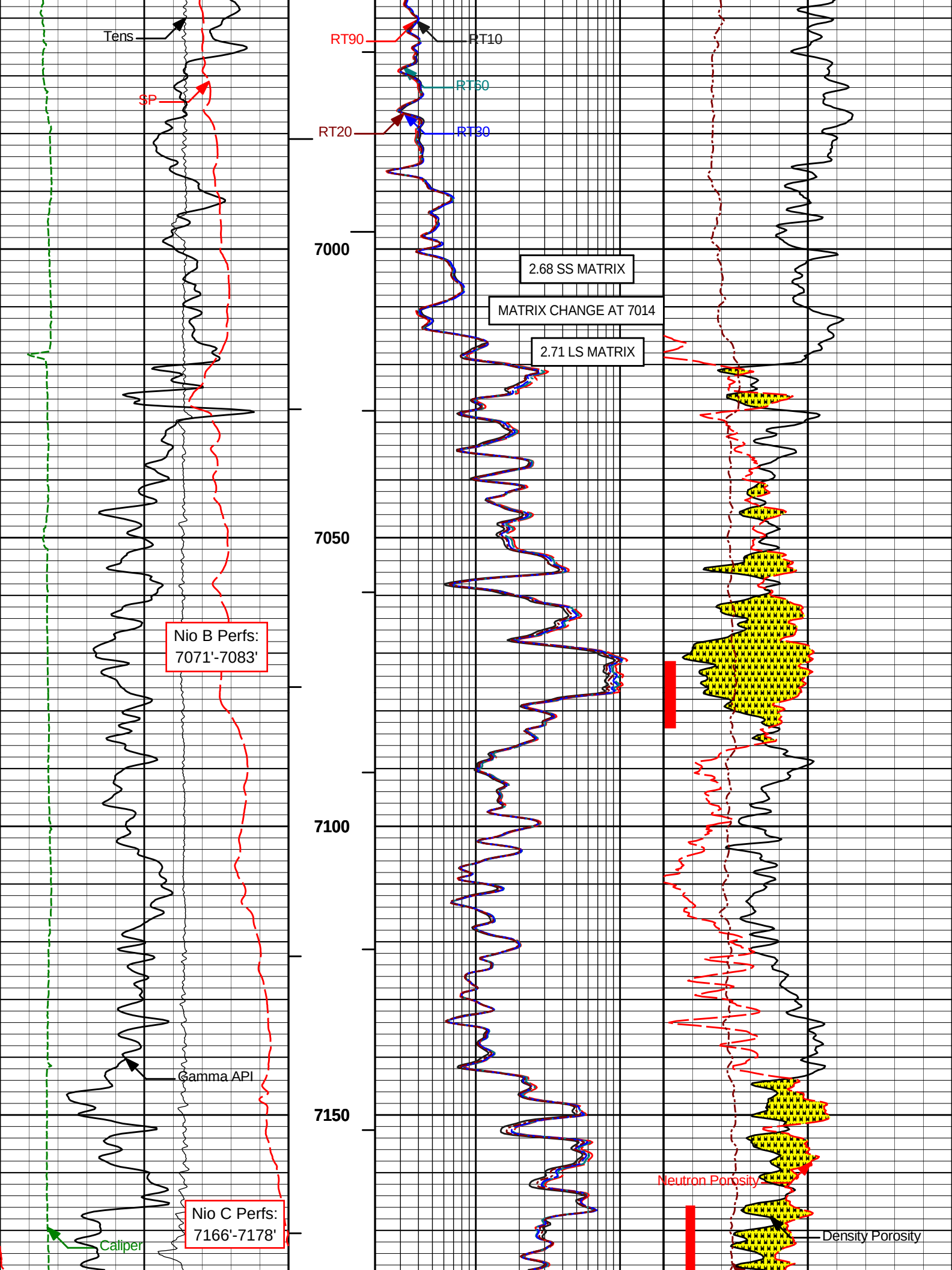
HALLIBURTON

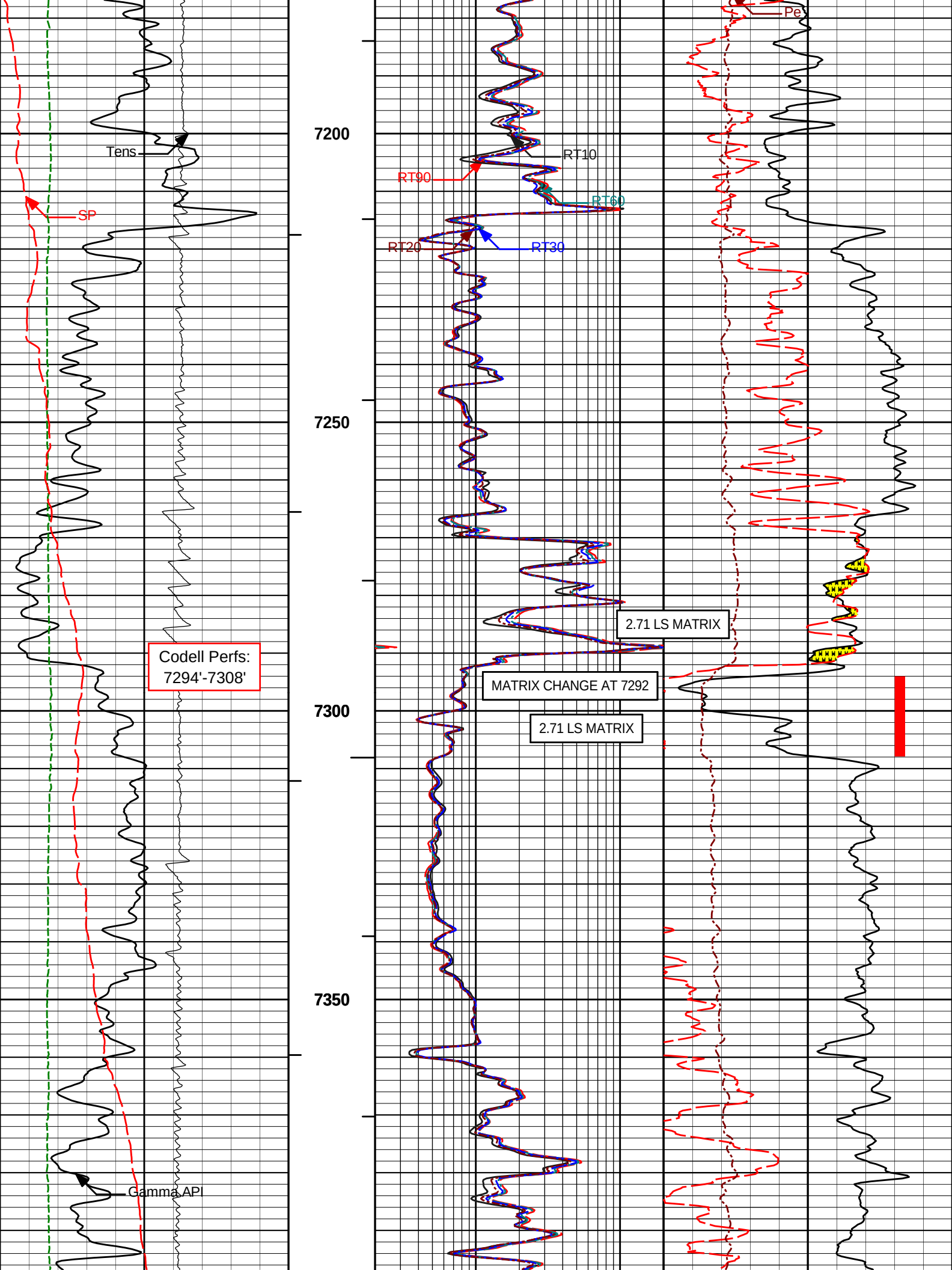
Plot Time: 08-Apr-12 23:26:26
Plot Range: 6785 ft to 7933.67 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\TD-NIO

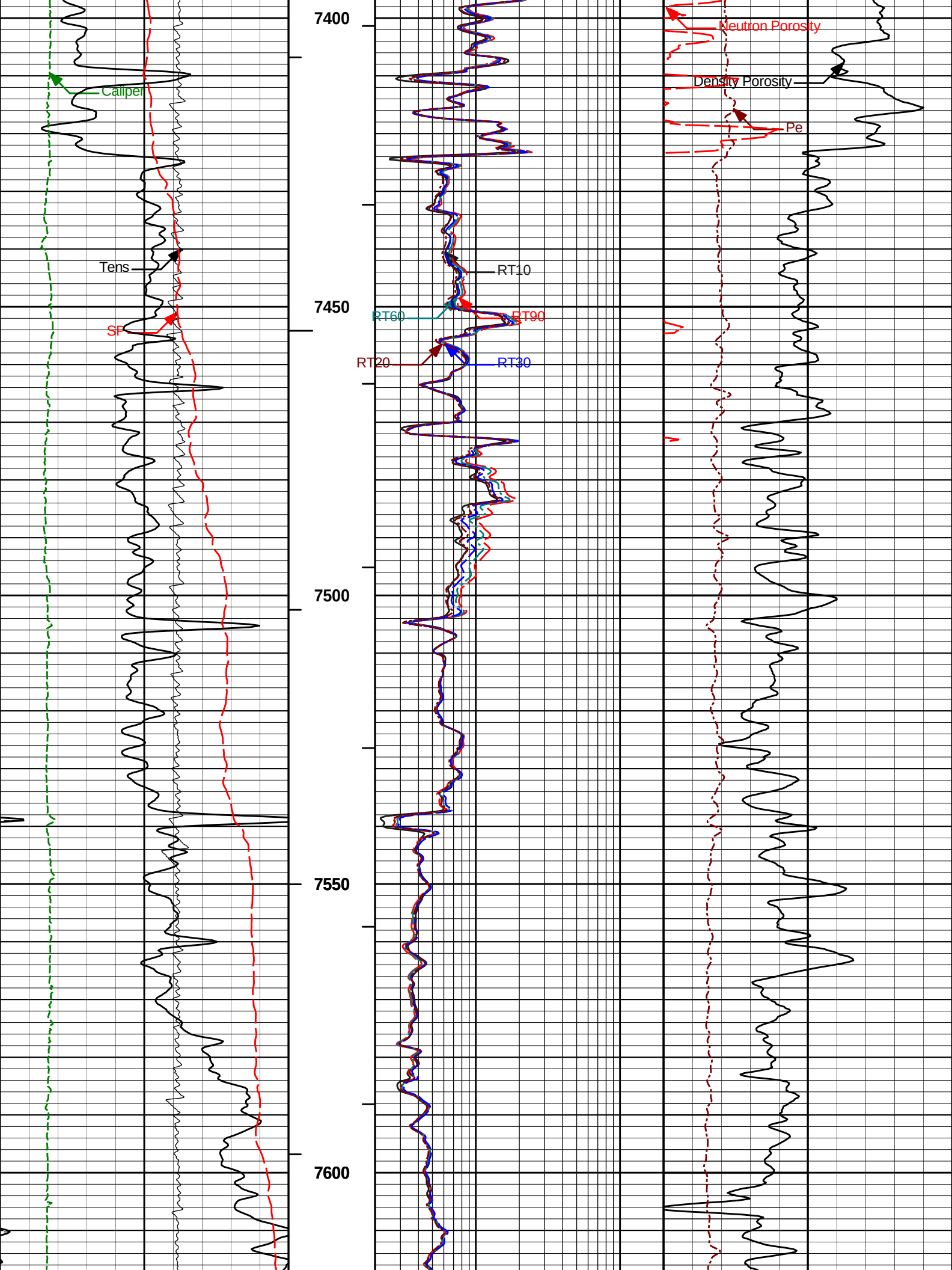
MAIN PASS 5" = 100'

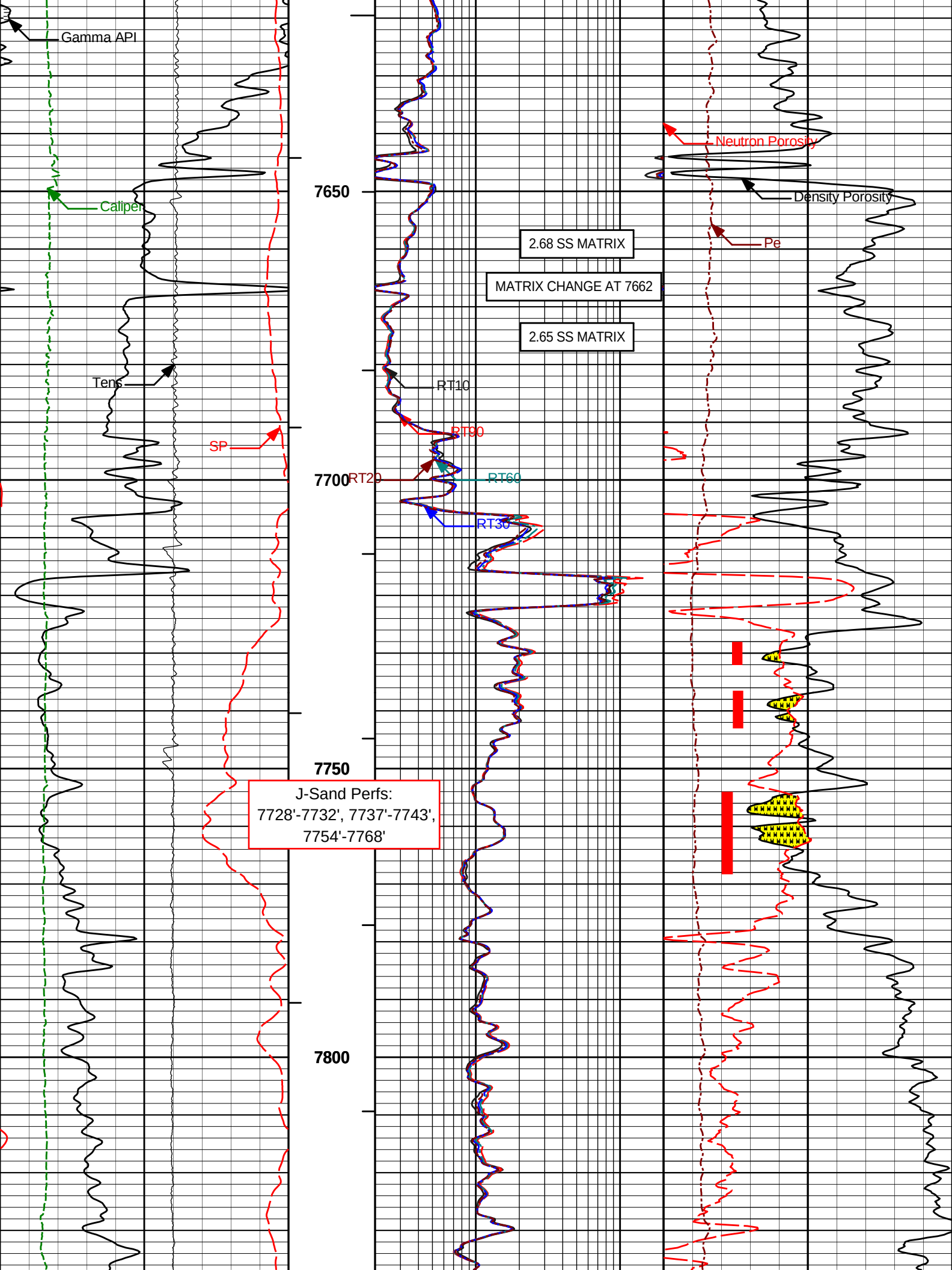


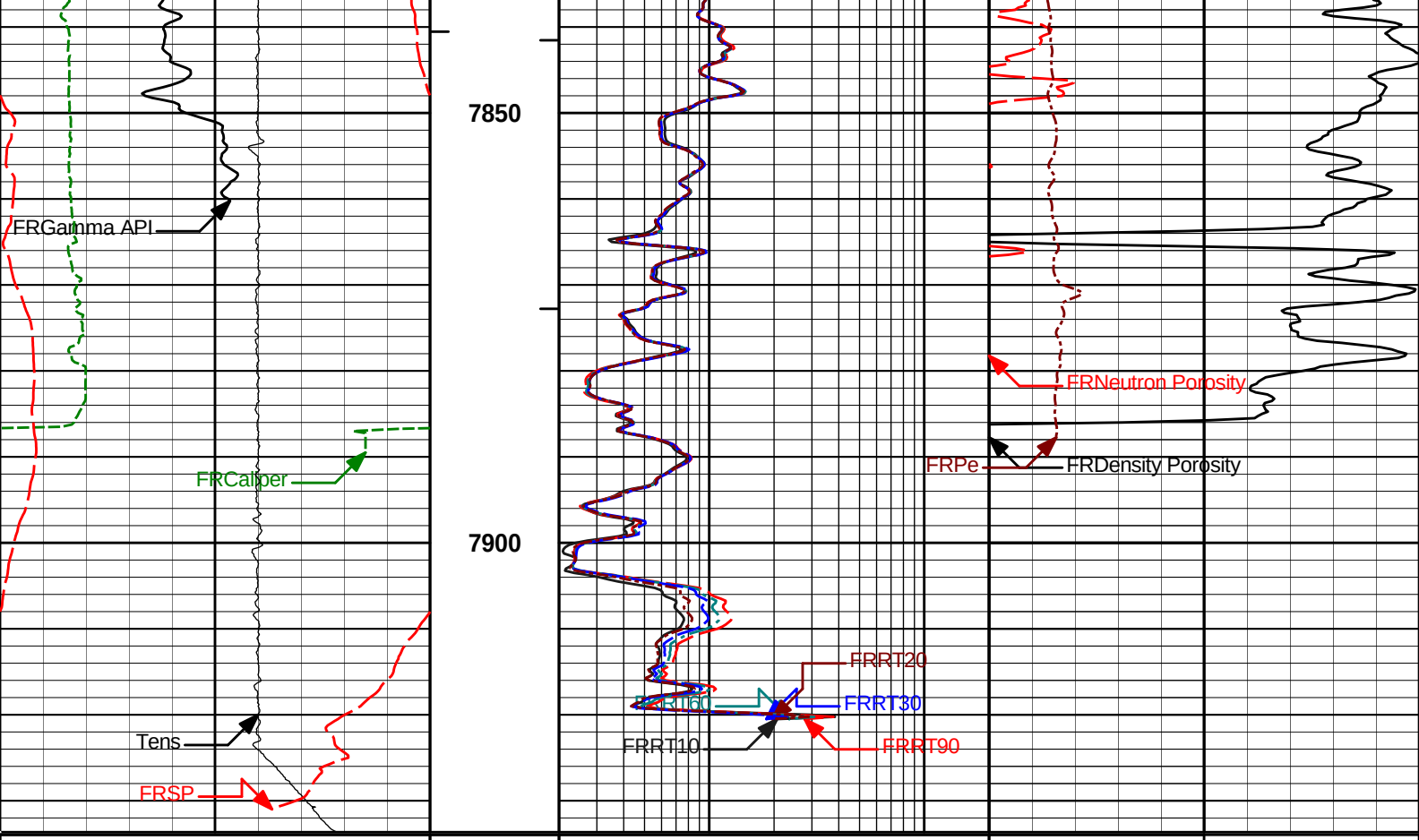
2 RT10 200
ohmm
10K Tens 0
pounds
2 RT20 200
ohmm
6 Caliper 16
inches
AHVT
2 RT30 200
ohmm
20 Neutron Porosity 0
percent
0 Gamma API 250
api
BHVT
2 RT60 200
ohmm
20 Density Porosity 0
percent
0 SP 100
millivolts
1 : 240
2 RT90 200
ohmm
0 Pe 10
6800
6850
6900
6950
Gamma API
Caliper
Neutron Porosity
Density Porosity
Pe


Tens
SP
RT90
RT10
RT60
RT20
RT30
7000
2.68 SS MATRIX
MATRIX CHANGE AT 7014
2.71 LS MATRIX
7050
Nio B Perfs:
7071'-7083'
7100
Gamma API
7150
Neutron Porosity
Nio C Perfs:
7166'-7178'
Caliper
Density Porosity


Tens
SP
Gamma API
7200
7250
7300
7350
RT10
RT90
RT60
RT20
RT30
Pe
2.71 LS MATRIX
MATRIX CHANGE AT 7292
2.71 LS MATRIX
Codell Perfs:
7294'-7308'


7400
7450
7500
7550
7600
Caliper
Tens
SP
RT10
RT60
RT90
RT20
RT30
Neutron Porosity
Density Porosity
Pe


Gamma API
Caliper
Tens
SP
RT10
RT90
RT20
RT60
RT30
Neutron Porosity
Density Porosity
Pe
2.68 SS MATRIX
MATRIX CHANGE AT 7662
2.65 SS MATRIX
7650
7700
7750
7800
J-Sand Perfs:
7728'-7732', 7737'-7743',
7754'-7768'



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

HALLIBURTON

Plot Time: 08-Apr-12 23:26:28
Plot Range: 6785 ft to 7933.67 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\TD-NIO

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	GTET - 11812883	Reference Calibration Date:	23-Mar-12 16:08:15
Engineer:	R. TWEETEN	Calibration Date:	23-Mar-12 16:11:01

Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-289
Calibrator API Reference:243.00 api
Equivalent Calibrator API Reference:247.3 api

Measurement	Measured	Calibrated	Units
Background	69.8	69.2	api
Background + Calibrator	319.2	316.4	api
Calibrator	249.4	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11812883**	**Reference Calibration Date:**	**23-Mar-12 16:11:01**
Engineer:	**F. LODER**	**Calibration Date:**	**08-Apr-12 17:36:58**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-289
Calibrator API Reference:243.00 api
Equivalent Calibrator API Reference:247.3 api

Field Verification	Shop	Field	Units
Background	69.2	68.3	api
Background + Calibrator	316.4	314.6	api
Calibrator	247.3	246.3	api

Shop	Field	Difference	Tolerance
247.3	246.3	1.0	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	**CSNG - 11568969**	**Reference Calibration Date:**	**14-Feb-12 10:53:11**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**19-Mar-12 13:05:46**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**
Source SN:	**TB-289**		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.6	23.6	Channel #
583 KEV Peak Channel #	52.9	52.7	Channel #
2614 KEV Peak Channel #	218.4	217.5	Channel #
Calibrate Temperature	74.2	76.5	degF

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

Blanket Reference Value: 243.00 API
Calibrator Value: 276.0 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1789.0	CPS	335.3	333.9	API
Background	310.4	CPS	59.3	57.9	API

Gamma Ray Gain: 0.94
Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 11568969**	**Reference Calibration Date:**	**19-Mar-12 13:05:46**
Engineer:	**F. LODER**	**Calibration Date:**	**08-Apr-12 17:39:56**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**
Source SN:			

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.6	23.5	Channel #
583 KEV Peak Channel #	52.7	52.5	Channel #
2614 KEV Peak Channel #	217.5	216.8	Channel #
Calibrate Temperature	76.5	74.8	degF

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

Blanket Reference Value: 243.00 API
Calibrator Value: 276.0 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1798.7	CPS	333.9	335.3	API
Background	318.4	CPS	57.9	59.4	API

Gamma Ray Gain: 0.94
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11812167**	**Reference Calibration Date:**	**14-Feb-12 09:14:17**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**19-Mar-12 08:14:24**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: DSN434
Tank Serial Number: 11068236
Reference value assigned to Tank: 53.720
Snow Block S/N: BRIGHTON
Calibration Tank Water Temperature: 68 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	**Prev. Value**	**New Value**	**Control Limit On New Value**
Gain:	0.995	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):	0.2222	0.2224	0.0001	+/- 0.0020
Calibrated Ratio:	10.11	10.11	0.005	+/- 0.050

VERIFIER		
Measurement	**Value**	**Control Limit**
Snow-Block Porosity (decp):	0.0813	0.02000 - 0.09000

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

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	**DSNT - 11812167**	**Reference Calibration Date:**	**19-Mar-12 08:14:24**
Engineer:	**F. LODER**	**Calibration Date:**	**08-Apr-12 17:50:20**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: DSN434

Snow Block S/N: BRIGHTON

NEUTRON FIELD-CHECK SUMMARY				
	Shop	**Field**	**Difference**	**Control Limit On Change**
Snow-Block Porosity (decp):	0.0813	0.0760	-0.0053	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 11107335**	**Reference Calibration Date:**	**28-Mar-12 10:23:37**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**28-Mar-12 10:29:26**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

CALIBRATION COEFFICIENTS			
Measurement	**Previous Value**	**New Value**	**Control Limit On New Value**
Pad Offset	-3162.36	-3170.16	-7000.00 - -1000.00
Pad Gain	0.0003864	0.0003870	0.000200 - 0.000600
Arm Offset	-2353.21	-2346.71	-5000.00 - 3000.00
Arm Gain	0.0005506	0.0005502	0.000300 - 0.000700
Arm Power	-0.000007425	-0.000007472	-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)	15.02	15.00	-0.02	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed

BSAT FIELD CASING CHECK

Tool Name:	**BSAT - 11014308**	**Calibration Date:**	**08-Apr-12 20:55:53**
Engineer:	**F. LODER**		
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
Delta-T Compensated	92.63	57.00	56.37	0.6300	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - E6758-S4352_BLK**	**Reference Calibration Date:**	**24-Jan-12 11:40:30**
Engineer:	**J. KRONABLE**	**Calibration Date:**	**24-Jan-12 11:57:14**
Software Version:	**WL INSITE R3.4.4 (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	1.0029	1.05	0.95	1.0038	1.05	0.95	0.9979	1.05
A2 (50")	0.95	1.0015	1.05	0.95	1.0022	1.05	0.95	0.9991	1.05
A3 (29")	0.95	0.9967	1.05	0.95	0.9980	1.05	0.95	0.9936	1.05
A4 (17")	0.95	1.0038	1.05	0.95	1.0025	1.05	0.95	0.9995	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9936	1.05	0.95	0.9901	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9795	1.05	0.95	0.9748	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	-0.767	2	-6	-4.087	-2	-8	-5.057	-2
A2 (50")	-7	-2.627	-1	-6	-3.859	-2	-7	-4.491	-2
A3 (29")	-27	-13.119	-9	-9	-3.690	-3	-7	-3.216	-1
A4 (17")	-180	-97.003	-60	-45	-31.655	-15	-39	-25.306	-13
A5 (10")	N/A	N/A	N/A	-150	-94.346	-50	-80	-45.505	-10
A6 (6")	N/A	N/A	N/A	175	301.498	525	90	153.429	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.8707	1.3
36K	1.0	1.8867	2.0
72K	1.0	1.1107	2.0

R-MUD VERIFICATION

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 11795867**	**Reference Calibration Date:**	**28-Mar-12 16:30:28**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**28-Mar-12 16:52:37**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: 2770GW

Aluminum Block S/N: 63066	Density: 2.602g/cc	Pe: 3.100
Magnesium Block S/N: 12345	Density: 1.690g/cc	Pe: 2.650

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0418	1.0478	0.90 - 1.10
Near Dens Gain	1.0127	1.0217	0.90 - 1.10
Near Peak Gain	0.9976	1.0028	0.90 - 1.10
Near Lith Gain	0.9474	0.9469	0.90 - 1.10
Far Bar Gain	1.0132	1.0142	0.90 - 1.10
Far Dens Gain	0.9955	0.9949	0.90 - 1.10
Far Peak Gain	0.9874	0.9844	0.90 - 1.10
Far Lith Gain	0.9605	0.9611	0.90 - 1.10
Near Bar Offset	-0.1002	-0.1555	NONE
Near Dens Offset	0.1672	0.0877	NONE
Near Peak Offset	0.2951	0.2532	NONE
Near Lith Offset	0.6781	0.6828	NONE
Far Bar Offset	0.1359	0.1291	NONE
Far Dens Offset	0.2842	0.2898	NONE
Far Peak Offset	0.3322	0.3585	NONE
Far Lith Offset	0.5330	0.5252	NONE
Near Bar Background	856.12	859.43	700 - 1450
Near Dens Background	284.80	284.05	230 - 480
Near Peak Background	123.07	124.02	100 - 210
Near Lith Background	151.88	152.85	125 - 260
Far Bar Background	667.47	667.44	450 - 900
Far Dens Background	262.58	262.31	175 - 345
Far Peak Background	105.22	104.54	70 - 140
Far Lith Background	107.69	107.48	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.691	1.690	-0.001	+/- 0.015
Pe	2.610	2.605	-0.005	+/- 0.150
ALUMINUM				
Density (g/cc)	2.604	2.602	-0.002	+/- 0.01500
Pe	3.075	3.064	-0.011	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0008	+/- 0.0110	0.0016	+/- 0.0140
Magnesium Block	-0.0005	+/- 0.0110	-0.0004	+/- 0.0140
Aluminum Block	-0.0002	+/- 0.0110	-0.0004	+/- 0.0140
Resolution	8.65	6.00 - 11.50	8.90	6.00 - 11.50
Internal Verifier(B+D+P+L)	1420	1200 - 2700	1142	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 Pad - 11795867**	**Reference Calibration Date:**	**28-Mar-12 16:52:37**
Engineer:	**F. LODER**	**Calibration Date:**	**08-Apr-12 17:30:55**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Pad Temperature: 71.7 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1420.341	1411.326	-9.015	15.213
Far (B+D+P+L) cps	1141.777	1146.448	4.671	17.743
Near Resolution	8.65	8.67	0.020	0.50
Far Resolution	8.90	8.98	0.080	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

CALIBRATION SUMMARY

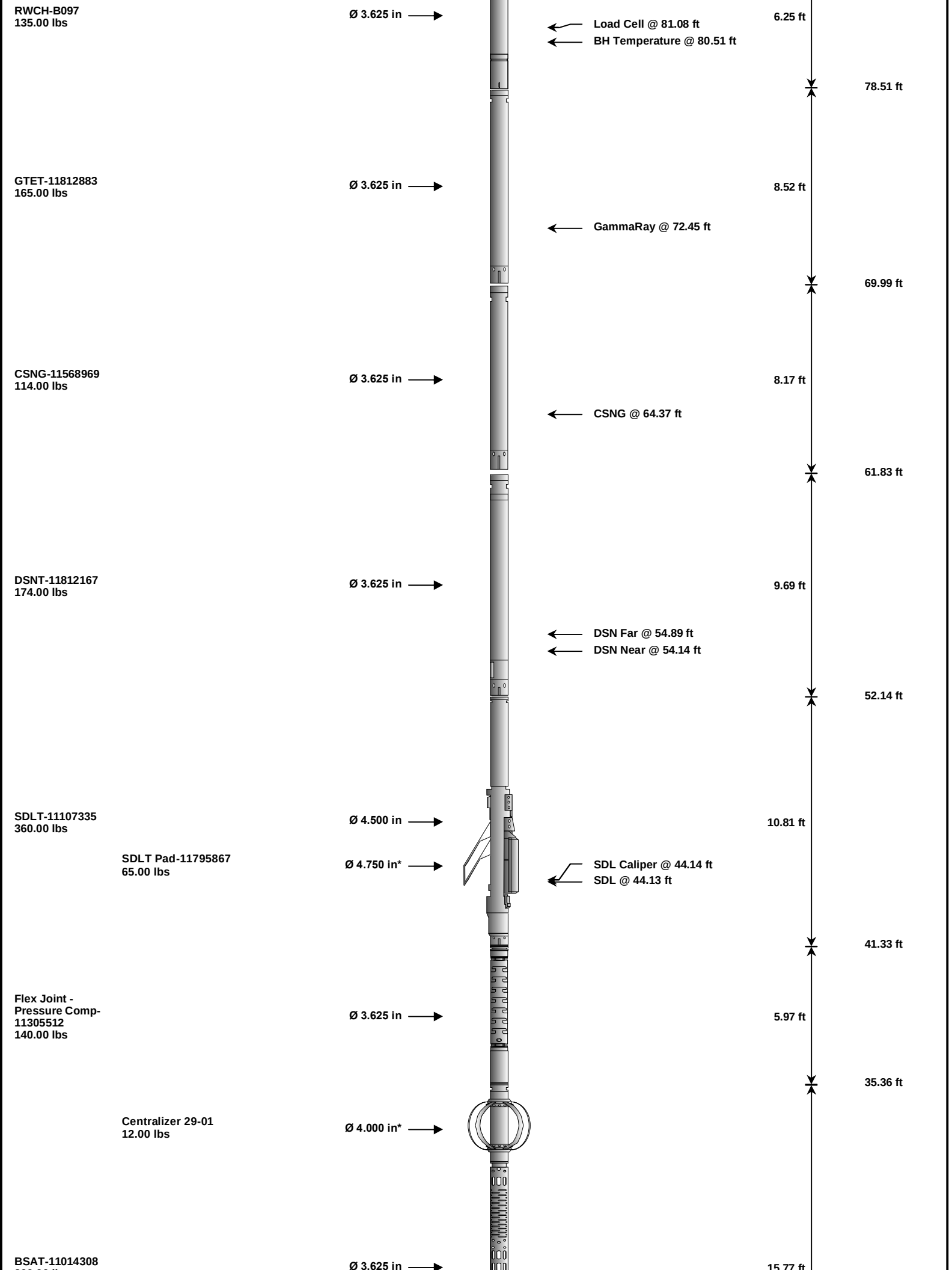
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11812883						
Gamma Ray Calibrator	247.3	246.3	----------	1.0	+/- 9.00	api
CSNG-11568969						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.6	23.5	----------	0.1	----------	Channel #
583 KEV Peak Channel #	52.7	52.5	----------	0.2	----------	Channel #
2614 KEV Peak Channel #	217.5	216.8	----------	0.7	----------	Channel #
DSNT-11812167						
Snow-Block Porosity	0.0813	0.0760	----------	0.0053	+/- 0.0150	decp
SDLT-11107335						
Pad Extension	3.75	----------	----------	0.00	+/-0.20	in
Ring Diameter	8.25	----------	----------	0.00	+/-0.20	in
ACRt Sonde-E6758-S4352_BLK						
Mud Cell	1.009	----------	----------	0.000	----------	ohm-m
SDLT Pad-11795867						
Near(B+D+P+L)	1420.341	1411.326	----------	9.015	+/-15.213	cps
Far(B+D+P+L)	1141.777	1146.448	----------	-4.671	+/-17.743	cps

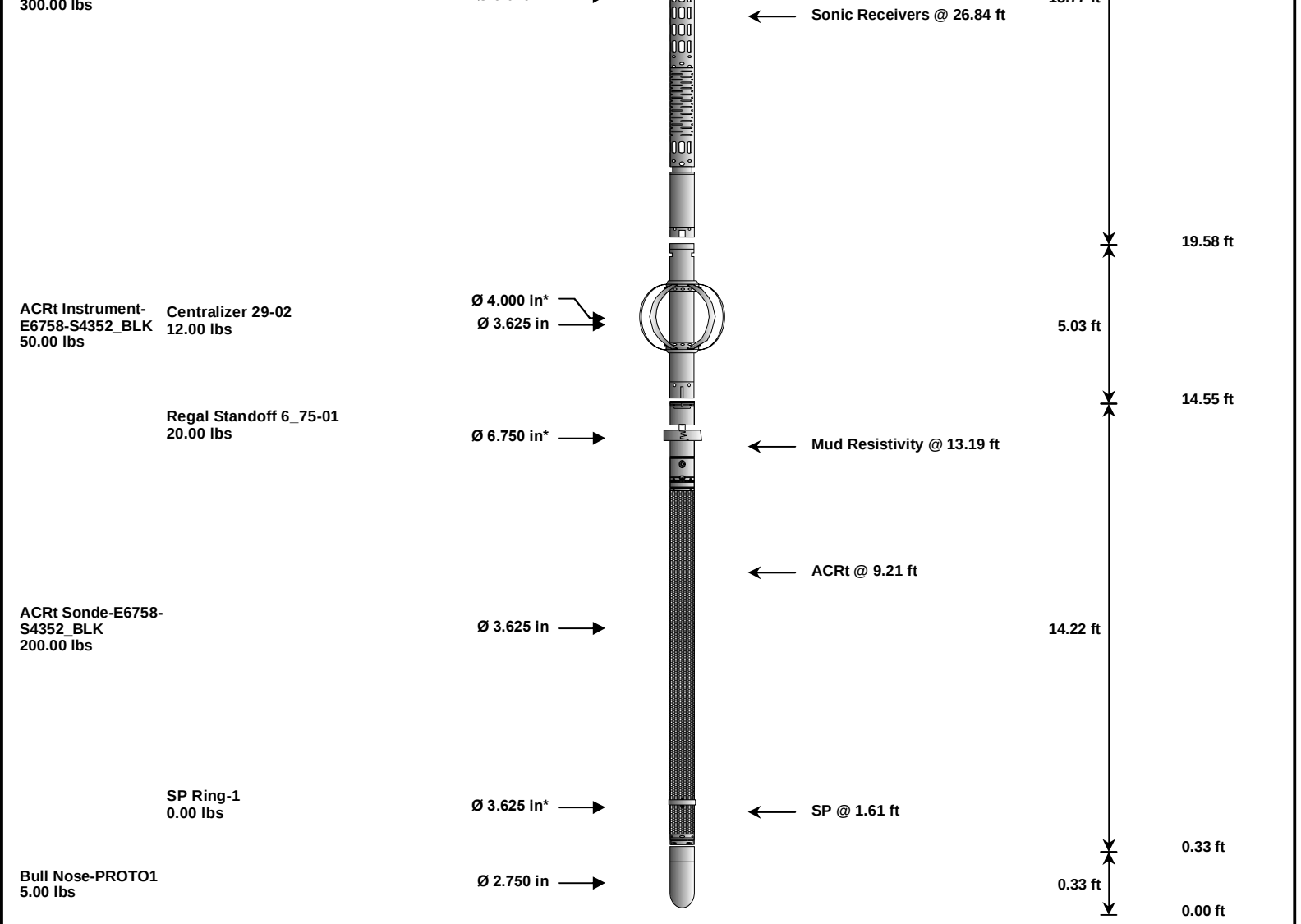
Data: MOSER_H26_27D\0001 NOBLE_QUAD\IDLE **Date: 08-Apr-12 20:57:50**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						84.76 ft


RWCH-B097
135.00 lbs
Ø 3.625 in
Load Cell @ 81.08 ft
BH Temperature @ 80.51 ft
6.25 ft
78.51 ft
GTET-11812883
165.00 lbs
Ø 3.625 in
GammaRay @ 72.45 ft
8.52 ft
69.99 ft
CSNG-11568969
114.00 lbs
Ø 3.625 in
CSNG @ 64.37 ft
8.17 ft
61.83 ft
DSNT-11812167
174.00 lbs
Ø 3.625 in
DSN Far @ 54.89 ft
DSN Near @ 54.14 ft
9.69 ft
52.14 ft
SDLT-11107335
360.00 lbs
Ø 4.500 in
SDLT Pad-11795867
65.00 lbs
Ø 4.750 in*
SDL Caliper @ 44.14 ft
SDL @ 44.13 ft
10.81 ft
41.33 ft
Flex Joint -
Pressure Comp-
11305512
140.00 lbs
Ø 3.625 in
5.97 ft
35.36 ft
Centralizer 29-01
12.00 lbs
Ø 4.000 in*
BSAT-11014308
Ø 3.625 in
15.77 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	B097	135.00	6.25		78.51	300.00
GTET	Gamma Telemetry Tool	11812883	165.00	8.52		69.99	60.00
CSNG	Compensated Spectral Natural Gamma	11568969	114.00	8.17		61.83	15.00
DSNT	Dual Spaced Neutron	11812167	174.00	9.69		52.14	60.00
SDLT	Spectral Density Tool	11107335	360.00	10.81		41.33	60.00
SDLP	Density Insite Pad	11795867	65.00	2.55	*	43.54	60.00
FLEX	Flex Joint - Pressure Compensated	11305512	140.00	5.97		35.36	300.00
BSAT	Borehole Sonic Array Tool	11014308	300.00	15.77		19.58	60.00
OBCEN	Centralizer - 29 in.Overbody	01	12.00	2.42	*	32.25	300.00
ACRt	Array Compensated True Resistivity Instrument Section	E6758-S4352_BLK	50.00	5.03		14.55	300.00
OBCEN	Centralizer - 29 in.Overbody	02	12.00	2.42	*	15.95	300.00
ACRt	Array Compensated True Resistivity	E6758-S4352_BLK	200.00	14.22		0.33	300.00
SP	SP Ring	1	0.00	0.25	*	1.61	300.00
RSOF	Regal Standoff 6.75in	01	20.00	0.52	*	13.24	300.00
BLNS	Bull Nose	PROTO1	5.00	0.33		0.00	300.00
Total			**1,752.00**	**84.76**			

* Not included in Total Length and Length Accumulation.

Data: MOSER_H26_27D\0001 NOBLE_QUAD\IDLE **Date: 08-Apr-12 20:56:27**

COMPANY	**NOBLE ENERGY INC**
WELL	**MOSER H26-27D**
FIELD	**WATTENBERG**

COUNTY	**WELD**	STATE	**CO**

HALLIBURTON	**SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY LOG**