HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY

COMPANY	NOBLE ENERGY
WELL	HOFF PC D06-28D
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO

COMPANY NOBLE ENERGY
WELL HOFF PC D06-28D
FIELD WATTENBERG
COUNTY WELD STATE CO

API No. 05123321610000
Location SHL: 200' FNL & 1164 ' FWL SEC. 6
BHL: 2391' FWL & 150' FNL SEC. 6

Other Services: RWCH CSNG BSAT

Sect. 6 Twp. 3 N Rge. 64 W

Permanent Datum	GL	Elev. 4838.0 ft	Elev.: K.B. 4854.0 ft
Log measured from	KB	16.0 ft above perm. Datum	D.F. 4853.0 ft
Drilling measured from	KB		G.L. 4838.0 ft

Date	30-Oct-10		
Run No.	ONE		
Depth - Driller	7386.00 ft		
Depth - Logger	7384.0 ft		
Bottom - Logged Interval	7375.0 ft		
Top - Logged Interval	738.0 ft		
Casing - Driller	8.625 in @ 738.0 ft	@	@
Casing - Logger	738.0 ft		
Bit Size	7.875 in	@	@
Type Fluid in Hole	WBM		
Density / Viscosity	9.2 ppg / 36.00 s/qt		
PH / Fluid Loss	8.00 pH / 20.8 cptm		
Source of Sample	FLOW LINE		
Rm @ Meas. Temperature	1.860 ohmm @ 82.60 degF	@	@
Rmf @ Meas. Temperature	1.81 ohmm @ 75.00 degF	@	@
Rmc @ Meas. Temperature	1.700 ohmm @ 75.00 degF	@	@
Source Rmf / Rmc	CHART / CHART		
Rm @ BHT	0.75 ohmm @ 215.0 degF	@	@
Time Since Circulation	8.0 hr		
Time on Bottom	30-Oct-10 18:47		
Max. Rec. Temperature	215.0 degF @ 7386.0 ft	@	@
Equipment / Location	11072147 / BRIGHTON		
Recorded By	W. MATSON		
Witnessed By	KURT PATTERSON		

Fold here

Service Ticket No.: 7734407 API Serial No.: 05123321610000 PGM Version: WL INSITE R3.0.6 (Build 4)

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-90199477	N/A	1.5" S.O.	N/A
	E2817-S4353			

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	11215095	Serial No.	11105781	Serial No.	I337M319	Serial No.	11919337
Model No.	GTET	Model No.	BSAT	Model No.	SDLT	Model No.	DSNT
Diameter	3.625"	No. of Cent.	TWO	Diameter	4.5"	Diameter	3.625"
Detector Model No.	102A	Spacing	N/A	Log Type	GAMMA/GAMMA	Log Type	THERM/THERM
Type	SCINT			Source Type	Cs-137	Source Type	Am241Be
Length	8"	LSA [Y/N]	YES	Serial No.	5265 GW	Serial No.	DSN-430
Distance to Source	18'	FWDA [Y/N]	NO	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	7384	7240	REC	0	250	20%	0%	55.5 us/ft	20%	0%	2.68 g/cc	20%	0%	SAND
ONE	7240	6800	REC	0	250	20%	0%	47.6 us/ft	20%	0%	2.71 g/cc	20%	0%	LIME
ONE	6800	738	REC	0	250	20%	0%	55.5 us/ft	20%	0%	2.68 g/cc	20%	0%	SAND

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks:

RWCH/GTET/CSNG/DSNT/SDLT/BSAT/ACRT RAN IN COMBINATION

ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH PRODUCTION CASING

TENSION PULLS, WASHOUTS, AND BOREHOLE RUGOSITY AFFECT TOOL RESPONSE

CREW: J. WILKERSON, N. EHLIERS RIG: ENSIGN 55

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES -- BRIGHTON, CO -- (303) 825-4346

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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
	BSAT	DTMT	Delta -T Matrix Type	Sandstone 55.5	
6800.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
	BSAT	DTMT	Delta -T Matrix Type	Limestone 47.5	
7240.00					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDWT	Borehole Fluid Weight	8.900	ppg
	SHARED	OBM	Oil Based Mud System?	No	
	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	75.0	degF
	SHARED	TD	Total Well Depth	7386.00	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	

Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	POTA	Potassium	0.00	%
GTET	MDTP	Mud Type	Natural	
GTET	TPOS	Tool Position	Standoff	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	MUDT	Mud Type?	Natural	
CSNG	KPCT	Percent K in Mud by Weight?	0.00	%
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	AD	Is Hole Air Drilled?	No	
SDLT	CB	Logging Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
SDLT	MDTP	Weighted Mud Correction Type?	None	
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	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Semblance Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Semblance 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	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: N_HOFF_D06_28D\0001 TRIPLE-CSNG-BSAT\002.01 30-Oct-10 19:34 Up **Date: 30-Oct-10 20:07:20**

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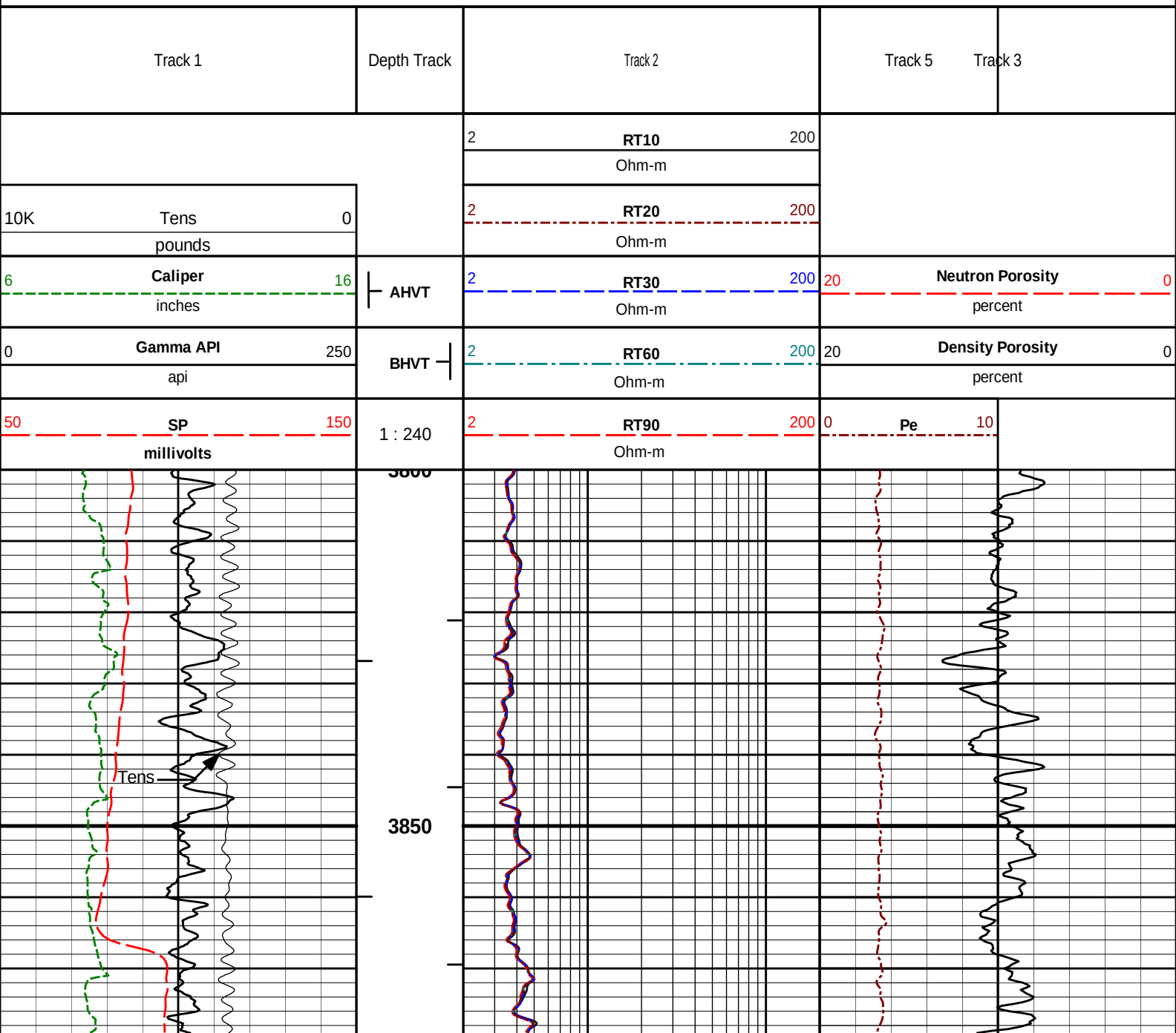
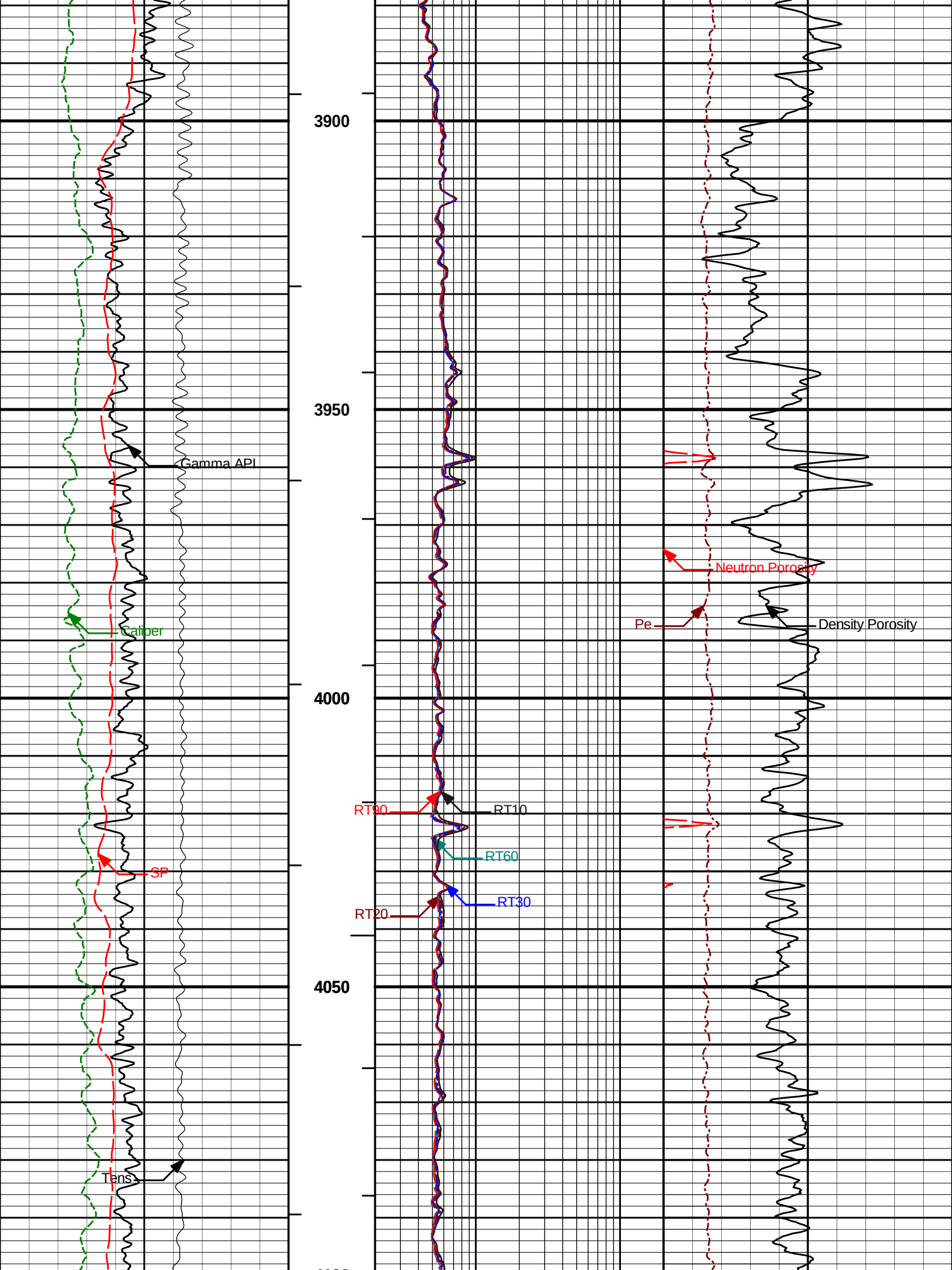
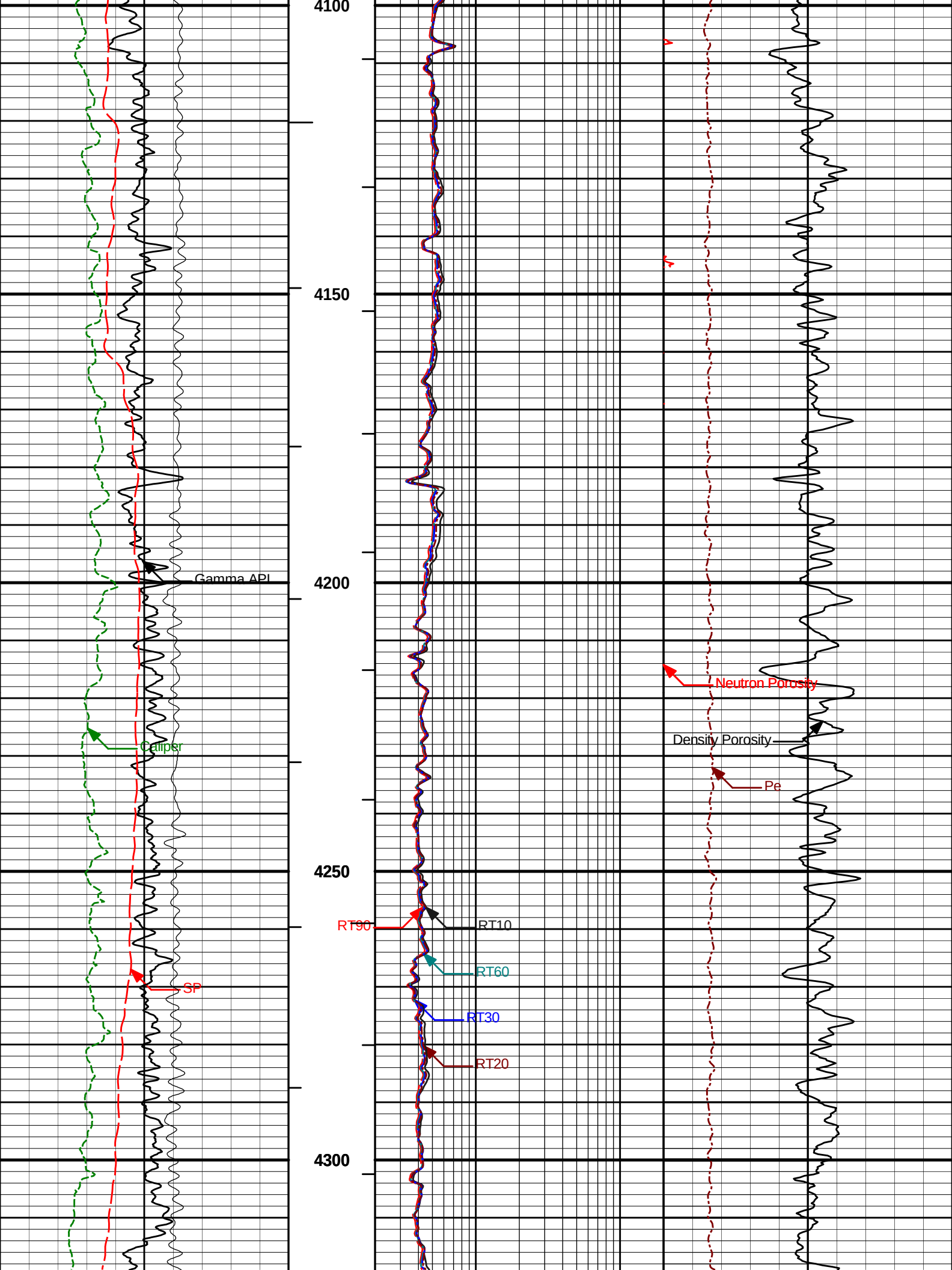
Plot Time: 31-Oct-10 19:57:17
Plot Range: 3800 ft to 4600 ft
Data: N_HOFF_D06_28D\Well Based\MAIN*
Plot File: \\COMP\PARK_SUS

MAIN PASS 5" = 100'




3900
3950
4000
4050
Gamma API
Caliper
SP
Tens
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Pe
Density Porosity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4150
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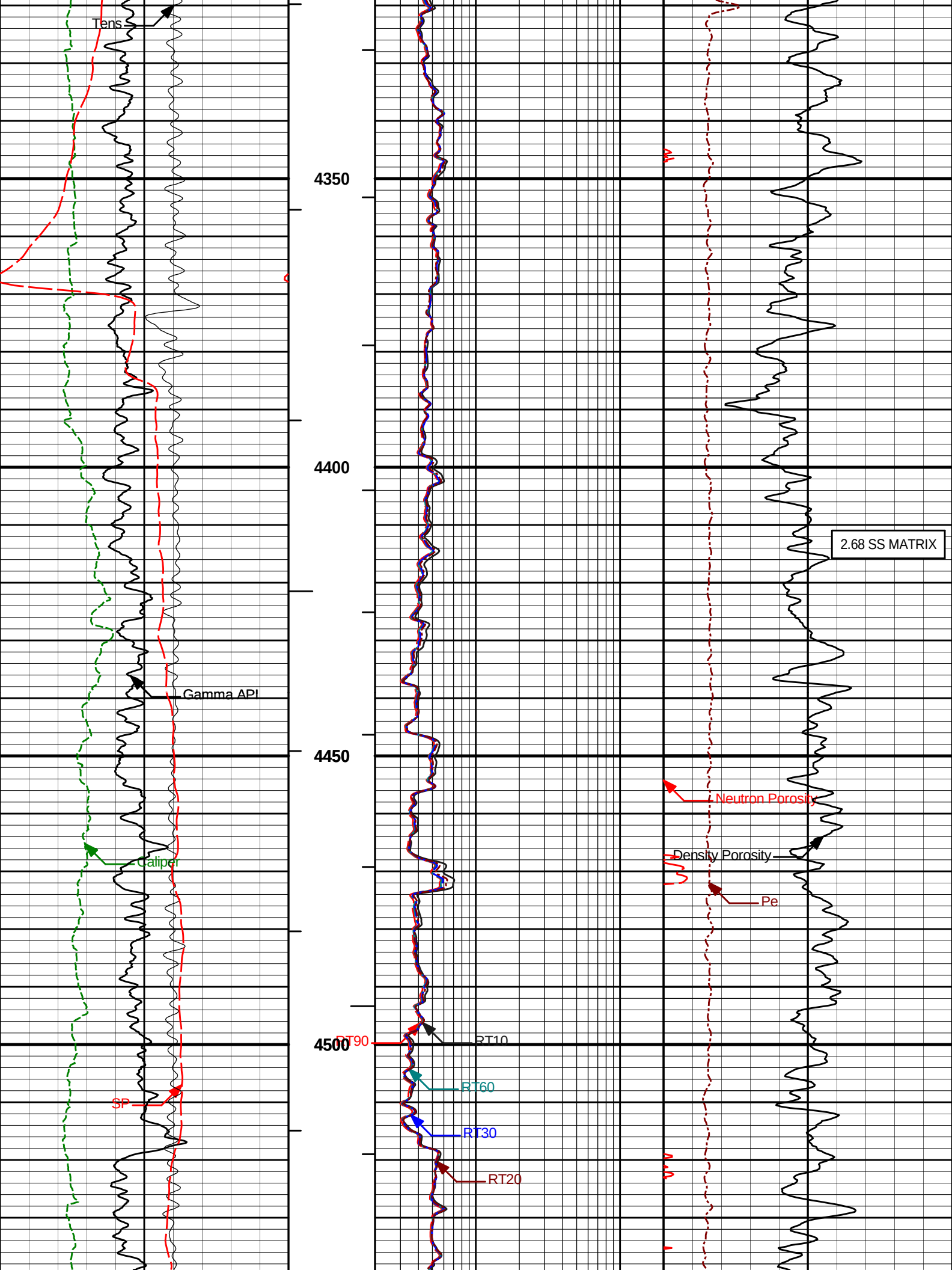
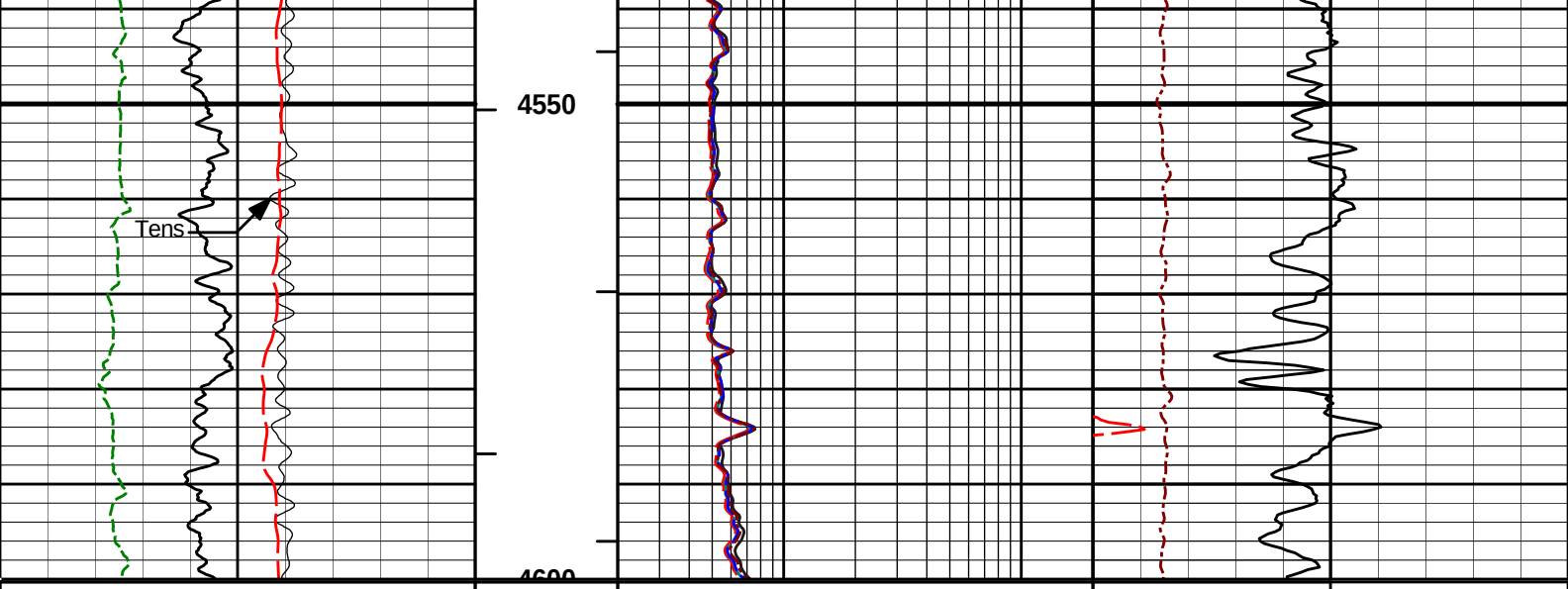
Caliper
SP
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


Tens
4350
4400
2.68 SS MATRIX
Gamma API
4450
Neutron Porosity
Density Porosity
Caliper
Pe
4500
RT90
RT10
RT60
SP
RT30
RT20



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

HALLIBURTON

Plot Time: 31-Oct-10 19:57:28
Plot Range: 3800 ft to 4600 ft
Data: N_HOFF_D06_28D\Well Based\MAIN*
Plot File: \\COMP\PARK_SUS

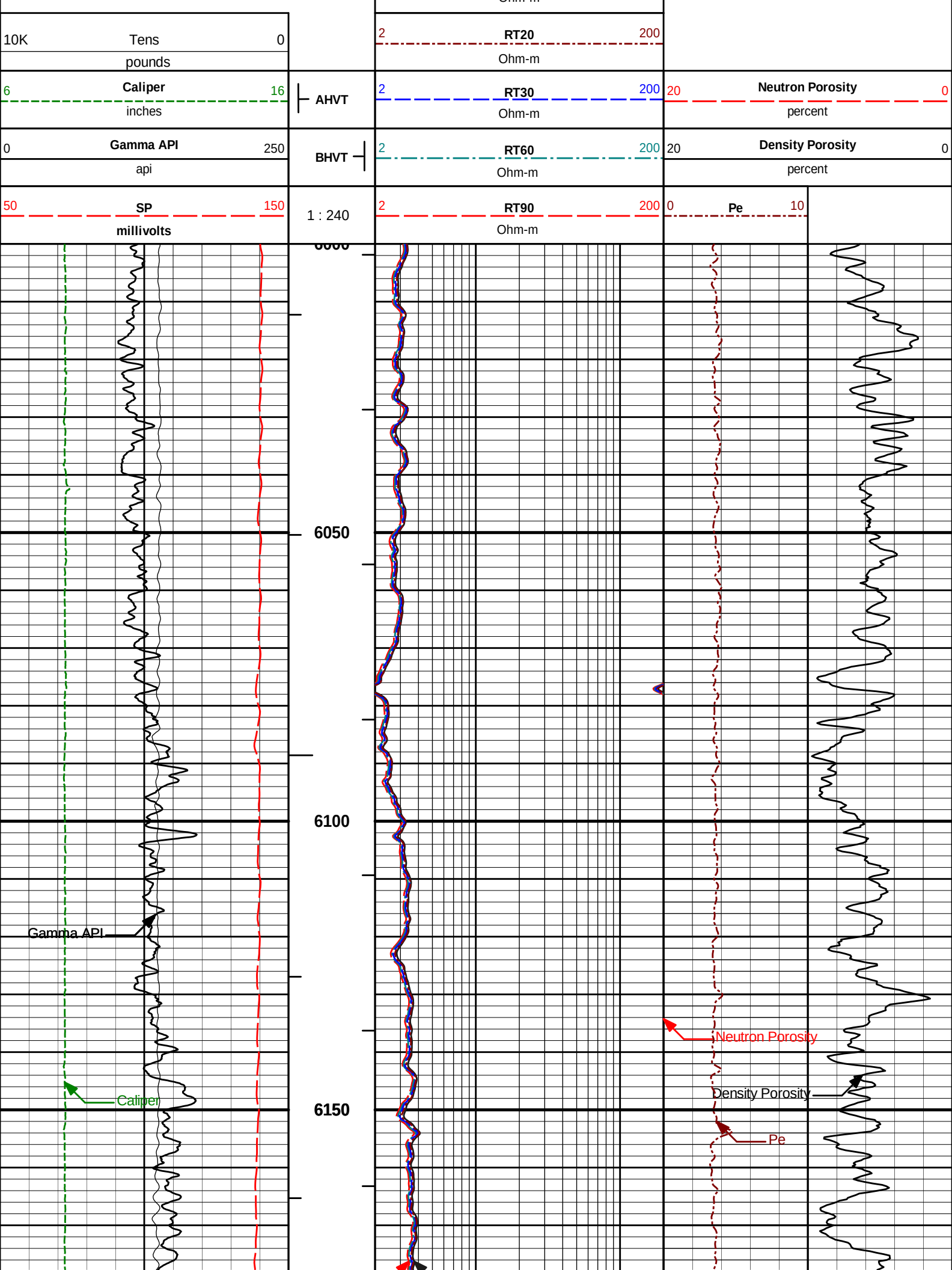
MAIN PASS 5" = 100'

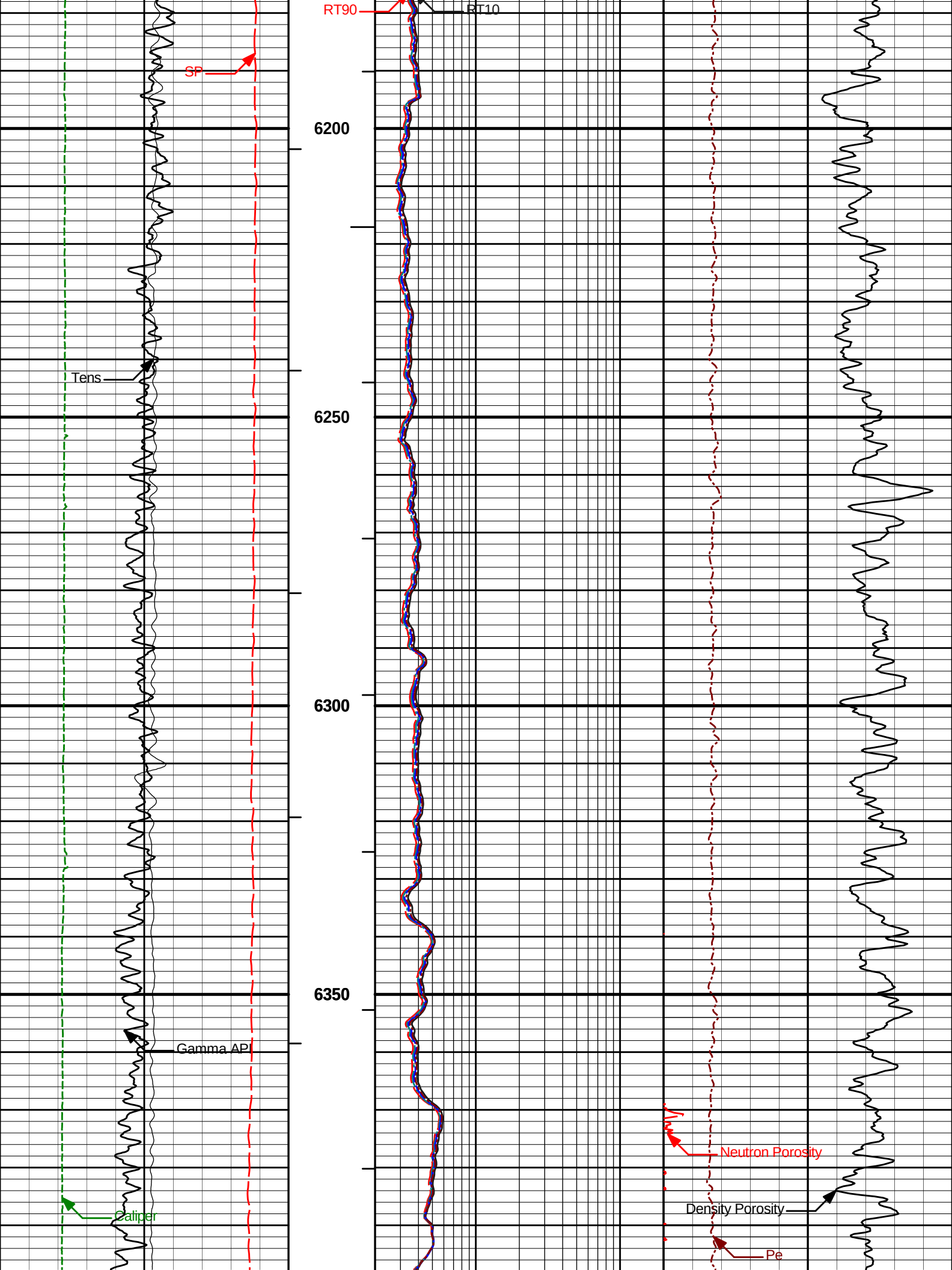
HALLIBURTON

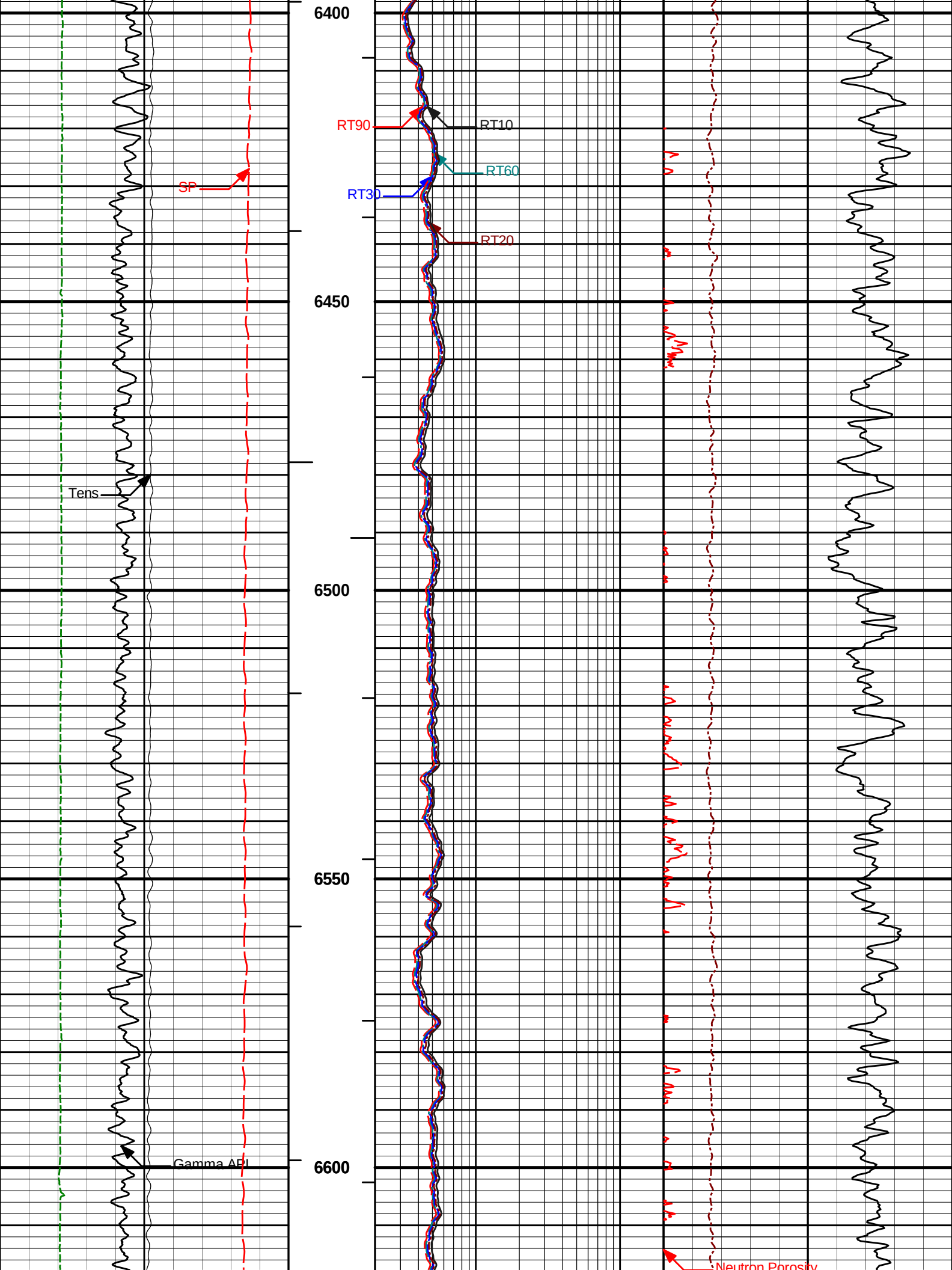
Plot Time: 31-Oct-10 19:57:28
Plot Range: 6000 ft to 7391.42 ft
Data: N_HOFF_D06_28D\Well Based\MAIN*
Plot File: \\COMP\NIO_COD

MAIN PASS 5" = 100'

Track 1	Depth Track	Track 2	Track 5	Track 3
		2 **RT10** 200 Ohm-m		


10K
Tens
0
pounds
6
Caliper
16
inches
0
Gamma API
250
api
50
SP
150
millivolts
1 : 240
AHVT
BHVT
2
RT20
200
Ohm-m
2
RT30
200
Ohm-m
2
RT60
200
Ohm-m
2
RT90
200
Ohm-m
20
Neutron Porosity
0
percent
20
Density Porosity
0
percent
0
Pe
10
6050
6100
6150
Gamma API
Caliper
Neutron Porosity
Density Porosity
Pe


RT90
RT10
SP
6200
Tens
6250
6300
6350
Gamma API
Caliper
Neutron Porosity
Density Porosity
Pe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6500
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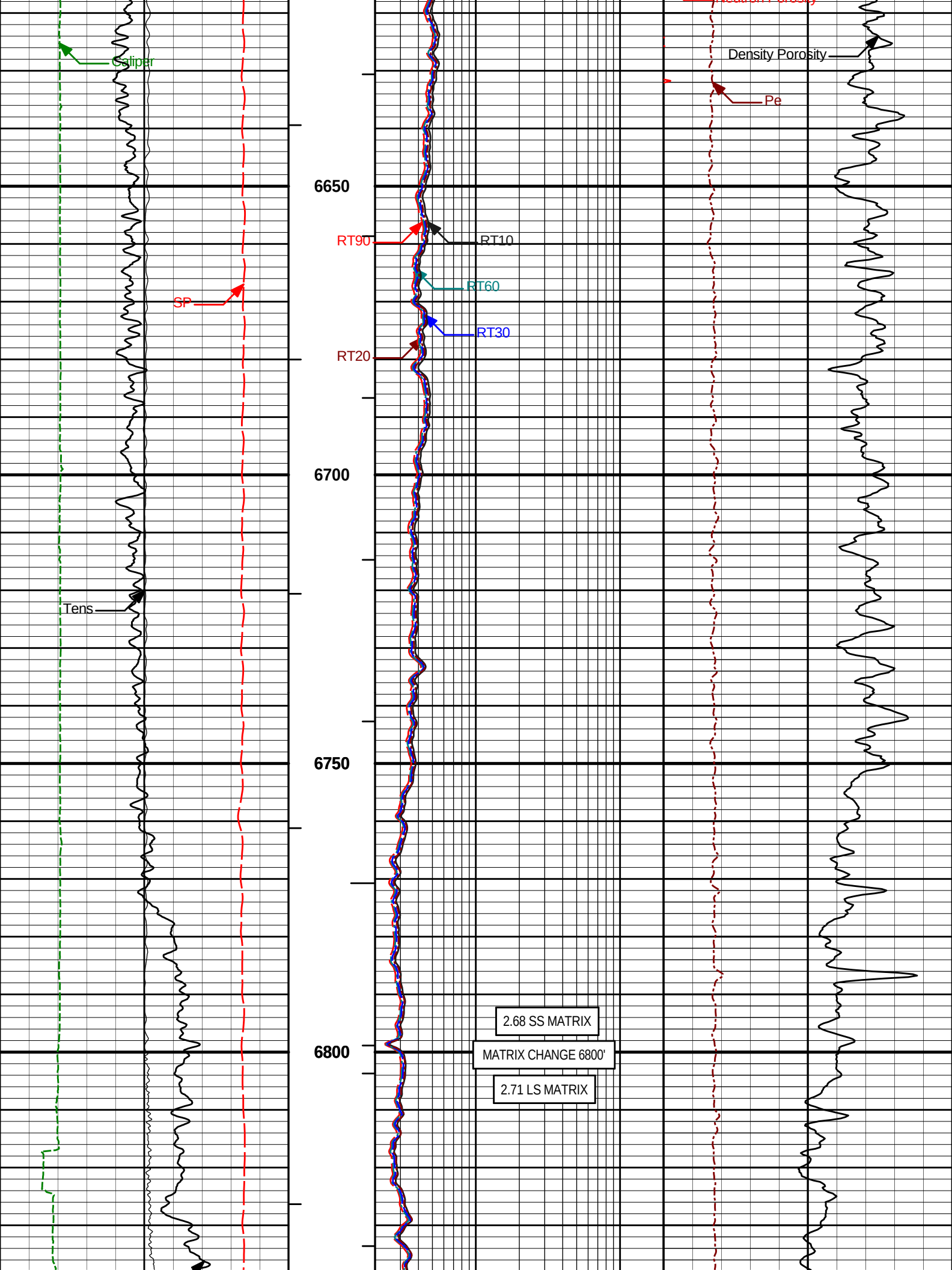
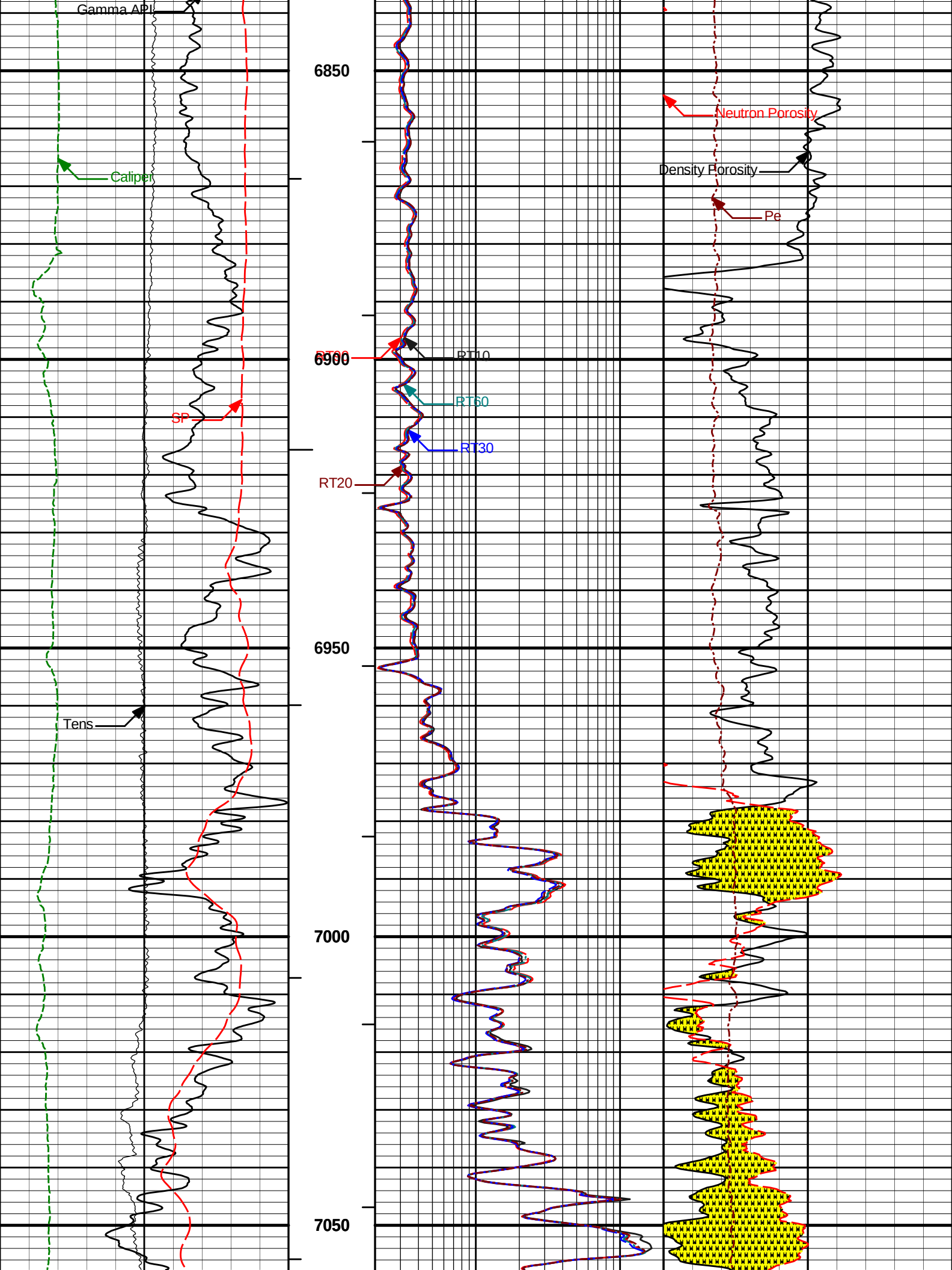
6600
RT90
RT10
RT60
RT30
RT20
SP
Tens
Gamma API
Neutron Porosity


Caliper
SP
Tens
6650
6700
6750
6800
RT90
RT10
RT60
RT30
RT20
Density Porosity
Pe
2.68 SS MATRIX
MATRIX CHANGE 6800'
2.71 LS MATRIX


Gamma API
Caliper
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Tens
6850
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7000
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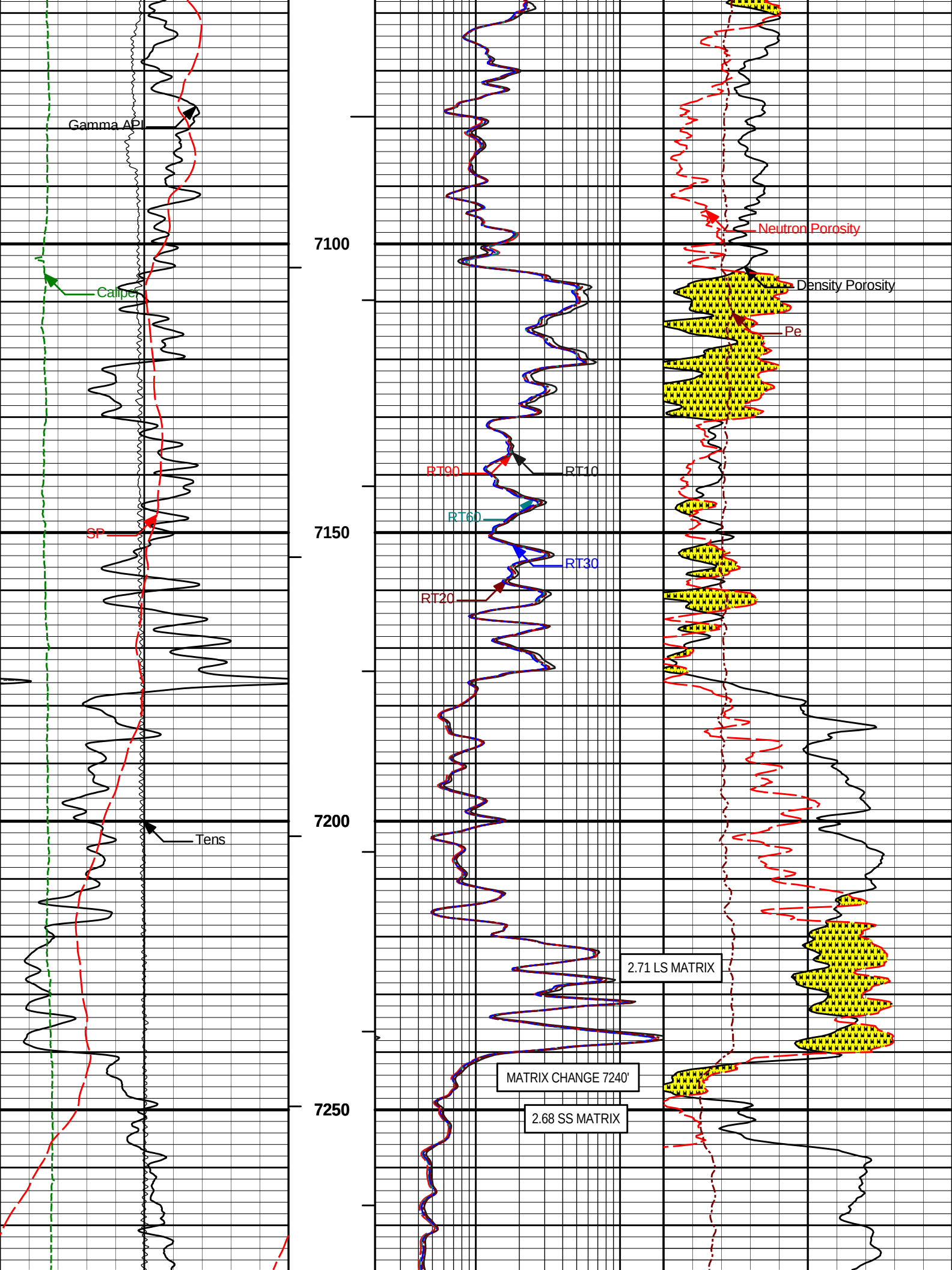
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe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Tens
7100
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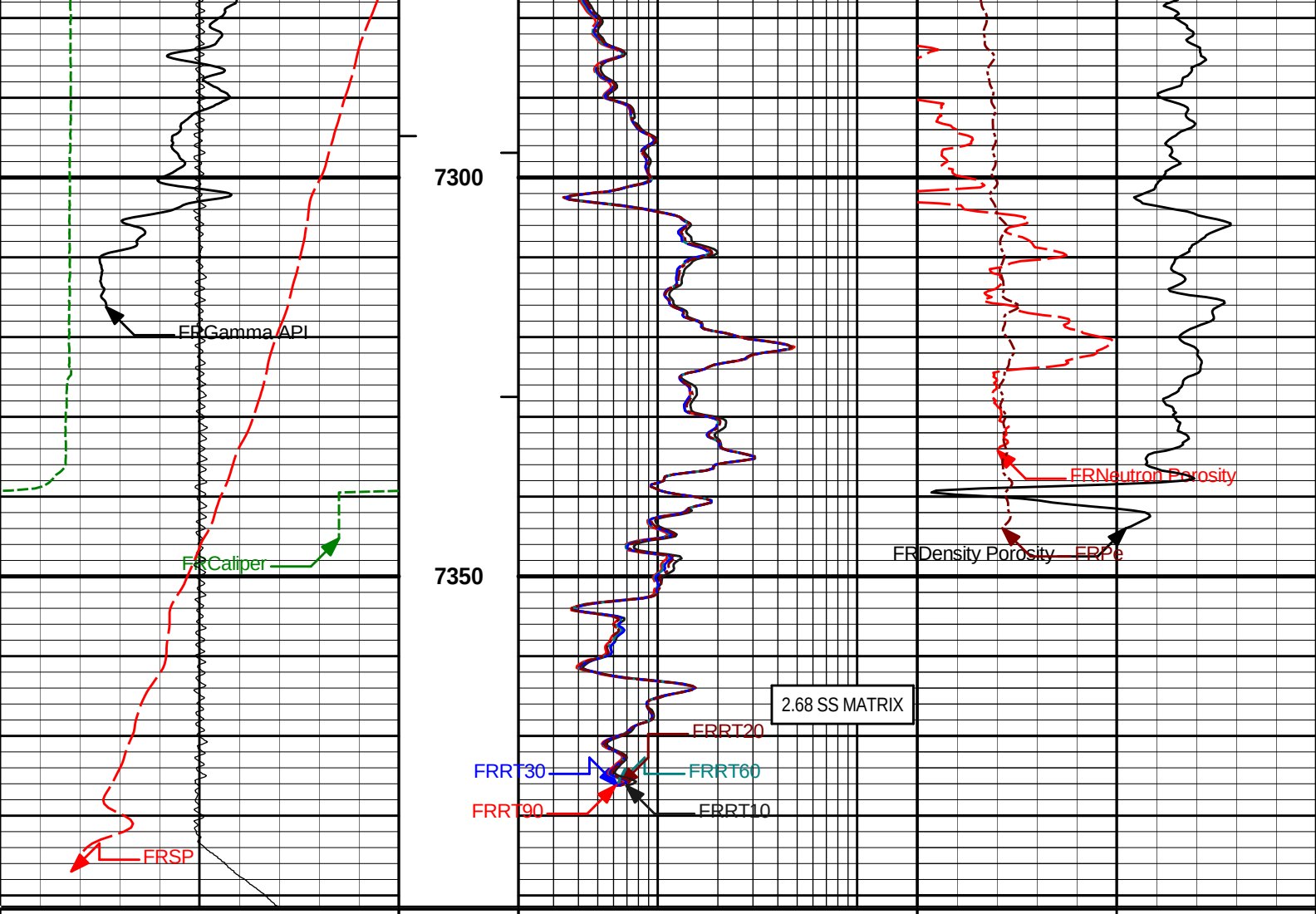
7200
7250
Neutron Porosity
Density Porosity
Pe
RT90
RT10
RT60
RT30
RT20
2.71 LS MATRIX
MATRIX CHANGE 7240'
2.68 SS MATRIX



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

HALLIBURTON

Plot Time: 31-Oct-10 19:57:34
Plot Range: 6000 ft to 7391.42 ft
Data: N_HOFF_D06_28D\Well Based\MAIN*
Plot File: \\COMP\NIO_COD

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11215095 | **Reference Calibration Date:** 18-Oct-10 16:54:41

Engineer: C. BLUE | **Calibration Date:** 22-Oct-10 11:40:28

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	97.5	94.4	api
Background + Calibrator	363.3	351.8	api
Calibrator	254.3	257.4	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11215095 | **Reference Calibration Date:** 22-Oct-10 11:40:28

Engineer: W. MATSON | **Calibration Date:** 30-Oct-10 11:13:33

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	94.4	84.3	api
Background + Calibrator	351.8	342.8	api
Calibrator	257.4	258.5	api

Shop	Field	Difference	Tolerance
257.4	258.5	-1.1	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name: CSNG - 10965402 | **Reference Calibration Date:** 20-Oct-10 09:48:12

Engineer: C. BLUE | **Calibration Date:** 20-Oct-10 10:19:29

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 #	51.3	51.3	Channel #
2614 KEV Peak Channel #	210.9	211.1	Channel #
Calibrate Temperature	98.1	105.1	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	1789.6	CPS	373.4	371.2	API
Background	404.2	CPS	86.1	83.8	API

Gamma Ray Gain: 1.04
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 10965402**	**Reference Calibration Date:**	**20-Oct-10 10:19:29**
Engineer:	**W. MATSON**	**Calibration Date:**	**30-Oct-10 11:30:18**
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	23.0	Channel #
583 KEV Peak Channel #	51.3	51.6	Channel #
2614 KEV Peak Channel #	211.1	211.0	Channel #
Calibrate Temperature	105.1	80.0	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	1734.4	CPS	371.2	362.7	API
Background	360.5	CPS	83.8	75.4	API

Gamma Ray Gain: 1.05
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11919337**	**Reference Calibration Date:**	**13-Oct-10 19:05:46**
Engineer:	**Russell Stone**	**Calibration Date:**	**13-Oct-10 20:19:56**
Software Version:	**WL INSITE R3.2.1 (Build 7)**	**Calibration Version:**	**1**

Logging Source S/N: DSN430
Tank Serial Number: GRAND JUNCTION1
Reference value assigned to Tank: 52.750
Snow Block S/N: 1223
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:	0.970	0.969	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):	0.2173	0.2169	0.0004	+/- 0.0020
Calibrated Ratio:	9.94	9.93	0.013	+/- 0.050

VERIFIER		
Measurement	**Value**	**Control Limit**
Snow-Block Porosity (decp):	0.0622	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 - 11919337**	**Reference Calibration Date:**	**13-Oct-10 20:19:56**
Engineer:	**W. MATSON**	**Calibration Date:**	**30-Oct-10 11:37:41**
Software Version:	**WL INSITE R3.0.6 (Build 4)**	**Calibration Version:**	**1**

Logging Source S/N: DSN430

Snow Block S/N: 1223

NEUTRON FIELD-CHECK SUMMARY				
	Shop	**Field**	**Difference**	**Control Limit On Change**
Snow-Block Porosity (decp):	0.0622	0.0674	0.0051	+/- 0.0150

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 18:27:11**
Engineer:	**C. BLUE**	**Calibration Date:**	**19-Oct-10 18:50:11**
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	1.0342	1.0118	0.90 - 1.10
Near Dens Gain	0.9665	0.9947	0.90 - 1.10
Near Peak Gain	1.0050	0.9723	0.90 - 1.10
Near Lith Gain	0.9543	0.9646	0.90 - 1.10
Far Bar Gain	1.0168	1.0138	0.90 - 1.10
Far Dens Gain	1.0002	1.0042	0.90 - 1.10
Far Peak Gain	1.0022	0.9973	0.90 - 1.10
Far Lith Gain	0.9872	0.9720	0.90 - 1.10
Near Bar Offset	-0.3129	-0.1063	NONE
Near Dens Offset	0.2651	0.0178	NONE
Near Peak Offset	-0.0666	0.2118	NONE
Near Lith Offset	0.3391	0.2561	NONE
Far Bar Offset	-0.1928	-0.1686	NONE
Far Dens Offset	-0.0671	-0.1001	NONE
Far Peak Offset	-0.0973	-0.0600	NONE
Far Lith Offset	0.0050	0.1167	NONE

Near Bar Background	865.20	865.00	700 - 1450
Near Dens Background	283.24	282.93	230 - 480
Near Peak Background	120.64	120.40	100 - 210
Near Lith Background	151.28	151.73	125 - 260
Far Bar Background	545.74	546.22	450 - 900
Far Dens Background	211.32	210.83	175 - 345
Far Peak Background	82.31	82.11	70 - 140
Far Lith Background	86.75	86.80	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.678	1.680	0.002	+/- 0.015
Pe	2.659	2.595	-0.064	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.600	0.003	+/- 0.01500
Pe	3.122	3.100	-0.022	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0009	+/- 0.0110	0.0014	+/- 0.0140
Magnesium Block	0.0016	+/- 0.0110	-0.0013	+/- 0.0140
Aluminum Block	-0.0003	+/- 0.0110	0.0007	+/- 0.0140
Resolution	9.35	6.00 - 11.50	9.78	6.00 - 11.50
Internal Verifier(B+D+P+L)	1420	1200 - 2700	926	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:** 19-Oct-10 18:50:11

Engineer: W. MATSON **Calibration Date:** 30-Oct-10 11:14:42

Software Version: WL INSITE R3.0.6 (Build 4) **Calibration Version:** 1

Pad Temperature: 73.4 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1420.057	1427.200	7.143	15.211
Far (B+D+P+L) cps	925.967	927.954	1.987	16.476
Near Resolution	9.35	9.42	0.070	0.50
Far Resolution	9.78	9.93	0.150	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:** 20-Oct-10 08:54:59

Engineer: C. BLUE **Calibration Date:** 20-Oct-10 08:59:15

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	-5353.42	-5104.59	-7000.00 - -1000.00
Pad Gain	0.0003928	0.0003808	0.000200 - 0.000600
Arm Offset	-3285.26	-3754.96	-5000.00 - 3000.00
Arm Gain	0.0005927	0.0006107	0.000300 - 0.000700
Arm Power	-0.000006320	-0.000007158	-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)	1.97	2.00	0.03	+/- 0.20
Medium Ring (in)	3.77	3.75	-0.02	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.62	6.50	-0.12	+/- 0.20
Medium Ring (in)	8.32	8.25	-0.07	+/- 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:** 20-Oct-10 08:59:15

Engineer: W. MATSON **Calibration Date:** 30-Oct-10 11:21:36

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	3.72	-0.03	+/- 0.10
Ring Diameter	8.25	8.26	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-S4353 **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

Signal	Lower	R	Upper
12K	0.6	0.9189	1.3
36K	1.0	1.8306	2.0
72K	1.0	1.1584	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.996	1.05

CALIBRATION SUMMARY

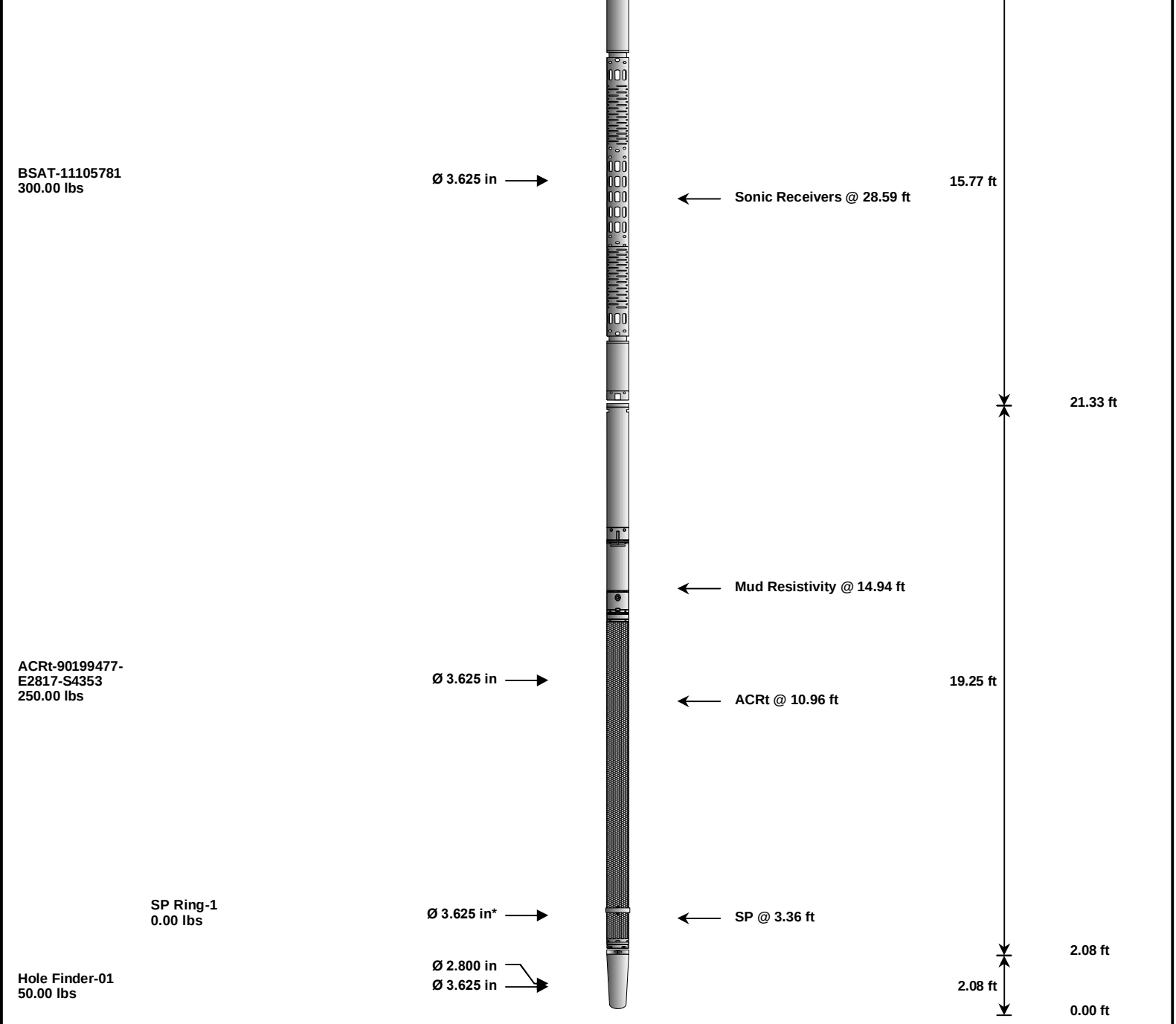
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11215095						
Gamma Ray Calibrator	257.4	258.5	----------	-1.1	+/- 9.00	api
CSNG-10965402						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.0	23.0	----------	0.0	----------	Channel #
583 KEV Peak Channel #	51.3	51.6	----------	-0.3	----------	Channel #
2614 KEV Peak Channel #	211.1	211.0	----------	0.1	----------	Channel #
DSNT-11919337						
Snow-Block Porosity	0.0622	0.0674	----------	-0.0052	+/- 0.0150	decp
SDLT-I337M319						
Near(B+D+P+L)	1420.057	1427.200	----------	-7.143	+/-15.211	cps
Far(B+D+P+L)	925.967	927.954	----------	-1.987	+/-16.476	cps
Pad Extension	3.75	3.72	----------	0.03	+/-0.10	in
Ring Diameter	8.25	8.26	----------	-0.010	+/-0.15	in
ACRt-90199477-E2817-S4353						
Mud Cell	0.996	----------	----------	0.000	----------	ohm-m

Data: N_HOFF_D06_28D\0001 TRIPLE-CSNG-BSAT\IDLE **Date: 30-Oct-10 20:06:58**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						86.51 ft
RWCH-11173131 135.00 lbs		Ø 3.625 in		Load Cell @ 82.83 ft BH Temperature @ 82.26 ft	6.25 ft	
						80.26 ft
GTET-11215095 165.00 lbs		Ø 3.625 in		GammaRay @ 74.20 ft	8.52 ft	
						71.74 ft
CSNG-10965402 114.00 lbs		Ø 3.625 in		CSNG @ 66.12 ft	8.17 ft	
						63.58 ft
DSNT-11919337 174.00 lbs		Ø 3.625 in		DSN Far @ 56.64 ft DSN Near @ 55.89 ft	9.69 ft	
						53.89 ft
SDLT-I337M319 360.00 lbs		Ø 4.500 in Ø 4.750 in		SDL Microlog @ 46.08 ft SDL Caliper @ 45.89 ft SDL @ 45.88 ft	10.81 ft	
						43.08 ft
Flex Joint - Pressure Comp-01 140.00 lbs		Ø 3.625 in			5.97 ft	
						37.11 ft



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		80.26	300.00
GTET	Gamma Telemetry Tool	11215095	165.00	8.52		71.74	60.00
CSNG	Compensated Spectral Natural Gamma	10965402	114.00	8.17		63.58	15.00
DSNT	Dual Spaced Neutron	11919337	174.00	9.69		53.89	60.00
SDLT	Spectral Density Tool	I337M319	360.00	10.81		43.08	60.00
FLEX	Flex Joint - Pressure Compensated	01	140.00	5.97		37.11	300.00
BCAS	Borehole Sonic Array Tool	11105781	300.00	15.77		21.33	60.00
ACRt	Array Compensated True Resistivity	90199477-E2817-S4353	250.00	19.25		2.08	300.00
SP	SP Ring	1	0.00	0.25	*	3.36	300.00
HFND	Hole Finder	01	50.00	2.08		0.00	300.00
Total			**1,688.00**	**86.51**			

* Not included in Total Length and Length Accumulation.

Data: N_HOFF_D06_28D\0001 TRIPLE-CSNG-BSAT\002 30-Oct-10 18:22 Up @7393.0f **Date: 30-Oct-10 18:54:36**

COMPANY **NOBLE ENERGY**

WELL	**HOFF PC D06-28D**		
FIELD	**WATTENBERG**		
COUNTY	**WELD**	STATE	**CO**

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY