

HALLIBURTON

ARRAY COMPENSATED
TRUE RESISTIVITY
SPECTRAL DENSITY
DUAL SPACED NEUTRON

COMPANY		NOBLE ENERGY INC	
WELL		NYGREN USX 019-02D	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum	GL	Location SURFACE LOCATION: 705' FNL & 656' FEL NENE BOTTOM LOCATION: 570' FNL & 1,990' FEL NWNE LATITUDE: 40.304050° LONGITUDE: -104.925370°	Other Services: RWCH CSNG
Log measured from	KB		
Drilling measured from	KB		
Date	30-Sep-11		
Run No.	ONE		
Depth - Driller	7586.00 ft		
Depth - Logger	7575.0 ft		
Bottom - Logged Interval	7571 ft		
Top - Logged Interval	3548 ft		
Casing - Driller	8.625 in @ 529.0 ft		
Casing - Logger	529.0 ft		
Bit Size	7.875 in		
Type Fluid in Hole	WATER BASED MUD		
Density	9.5 ppq	46.00	s/qt
PH	8.00 pH	12.0	cpm
Source of Sample	MUD CELL		
Rm @ Meas. Temperature	1.110 ohmm @ 77.20 degF		@
Rmf @ Meas. Temperature	0.97 ohmm @ 75.00 degF		@
Rmc @ Meas. Temperature	1.019 ohmm @ 75.00 degF		@
Source Rmf	CHART	CHART	
Rm @ BHT	0.44 ohmm @ 207.0 degF		@
Time Since Circulation	5.0 hr		
Time on Bottom	30-Sep-11 02:18		
Max. Rec. Temperature	207.0 degF @ 7575.0 ft		@
Equipment	11454566	BRIGHTON	
Recorded By	R. TWEETEN		
Witnessed By	M. SUTTON		

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Service Ticket No.: 8501895				API Serial No.: 05123343390000				PGM Version: WL INSITE R3.4.2 (Build 2)											
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES													
Date		Sample No.				Type Log	Depth	Scale Up Hole		Scale Down Hole									
Depth-Driller																			
Type Fluid in Hole																			
Density		Viscosity																	
Ph		Fluid Loss																	
Source of Sample						RESISTIVITY EQUIPMENT DATA													
Rm @ Meas. Temp		@		@		Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other									
Rmf @ Meas. Temp.		@		@		ONE	ACRt	N/A	1.5" S.O.	N/A									
Rmc @ Meas. Temp.		@		@			E6758-S4352												
Source Rmf		Rmc																	
Rm @ BHT		@		@															
Rmf @ BHT		@		@															
Rmc @ BHT		@		@															
EQUIPMENT DATA																			
GAMMA				ACOUSTIC				DENSITY				NEUTRON							
Run No.		ONE		Run No.				Run No.		ONE		Run No.		ONE					
Serial No.		11277436		Serial No.				Serial No.		M335_P470		Serial No.		11301132					
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.		GTET		Spacing				Log Type		GAM-GAM		Log Type		NEU-NEU					
Type		SCINT						Source Type		CS-137		Source Type		AM241BE					
Length		8"		LSA [Y/N]				Serial No.		2770GW		Serial No.		DSN434					
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	TD	7388	REC	0	250				20	0	2.68	20	0	SAND		
ONE	7388	7060	REC	0	250				20	0	2.71	20	0	LIME		
ONE	7060	CSG	REC	0	250				20	0	2.68	20	0	SAND		
DIRECTIONAL INFORMATION																
Maximum Deviation									@	KOP						@
Remarks: RWCH-GTET-CSNG-DSNT-SDLT-ACRt RUN IN COMBINATION.																
ANNULAR HOLE VOLUME CALCULATED USING 4.5-INCH PRODUCTION CASING.																
TENSION PULLS, WASHOUTS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE.																
CHLORIDES REPORTED AT 1000 ppm.																
NO REPEAT SECTION PULLED AT CLIENT'S REQUEST.																
YOUR CREW TODAY: A. DUNCAN, B. ELTRICH, S. KEENER, D. WALKER																
RIG: ENSIGN 55																
THANK YOU FOR USING HALLIBURTON LOGGING SERVICES - BRIGHTON, CO - (303) 825-4346																
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.																
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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
7060.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
7388.00					
	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	9.500	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	1.100	ohmm
	SHARED	TRM	Temperature of Mud	77.2	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	55.0	degF
	SHARED	TD	Total Well Depth	7575.00	ft
	SHARED	BHT	Bottom Hole Temperature	207.0	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	2.680	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
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	Eccentered	
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

Data: NYGREN_USX_O19-\\0001 NOBLE\\002.01 30-Sep-11 03:47 Up

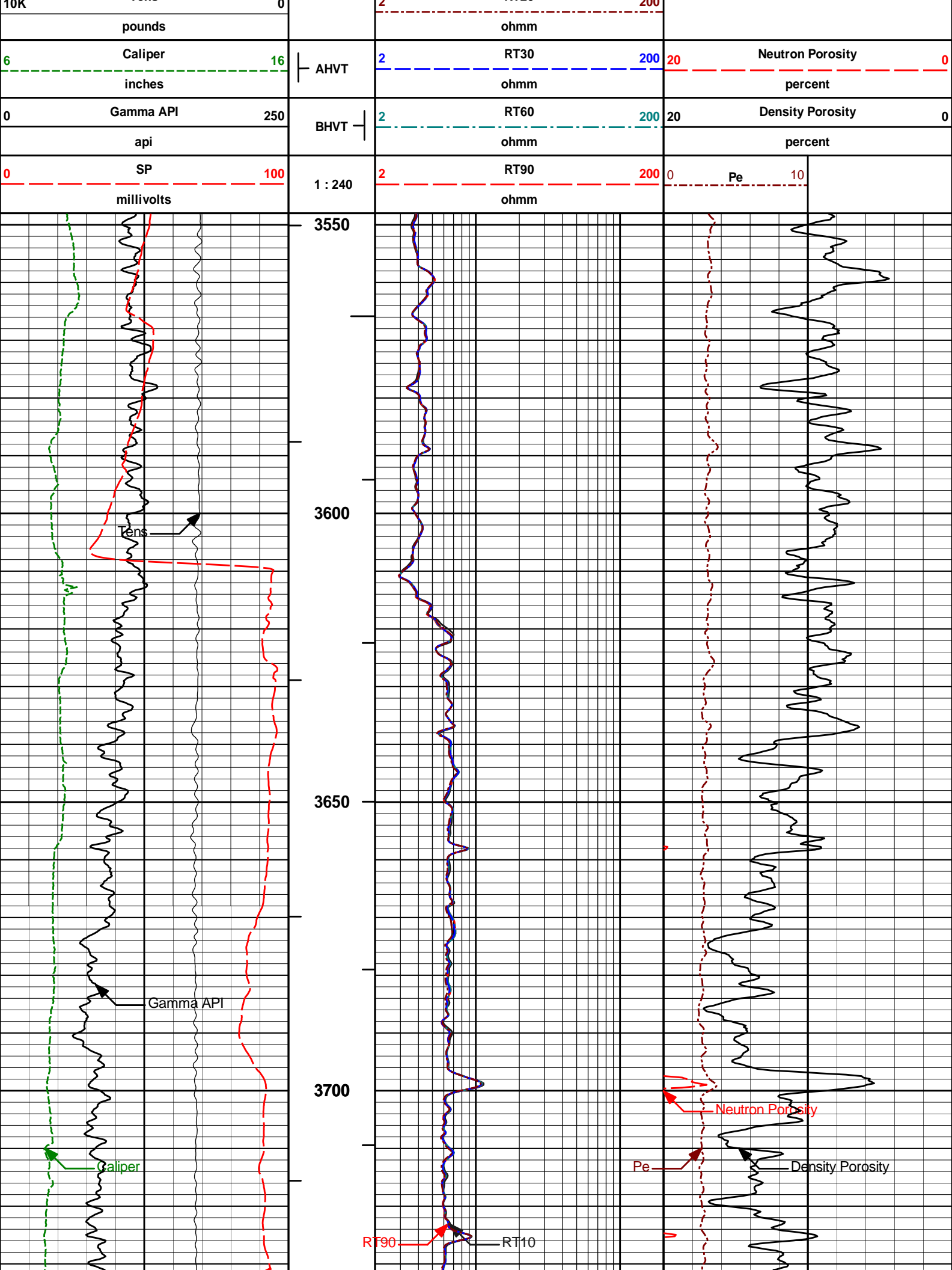
Date: 30-Sep-11 03:55:15

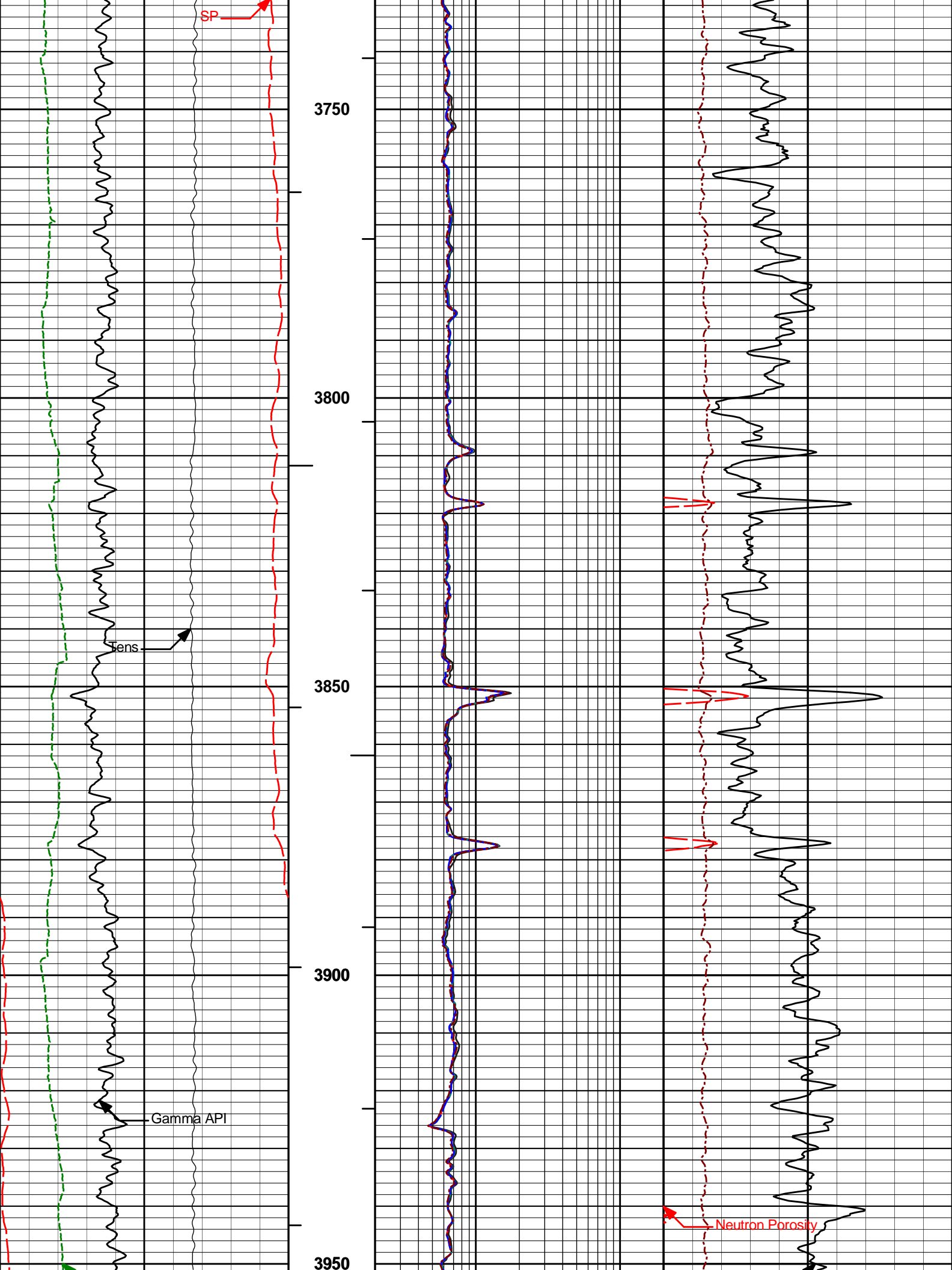
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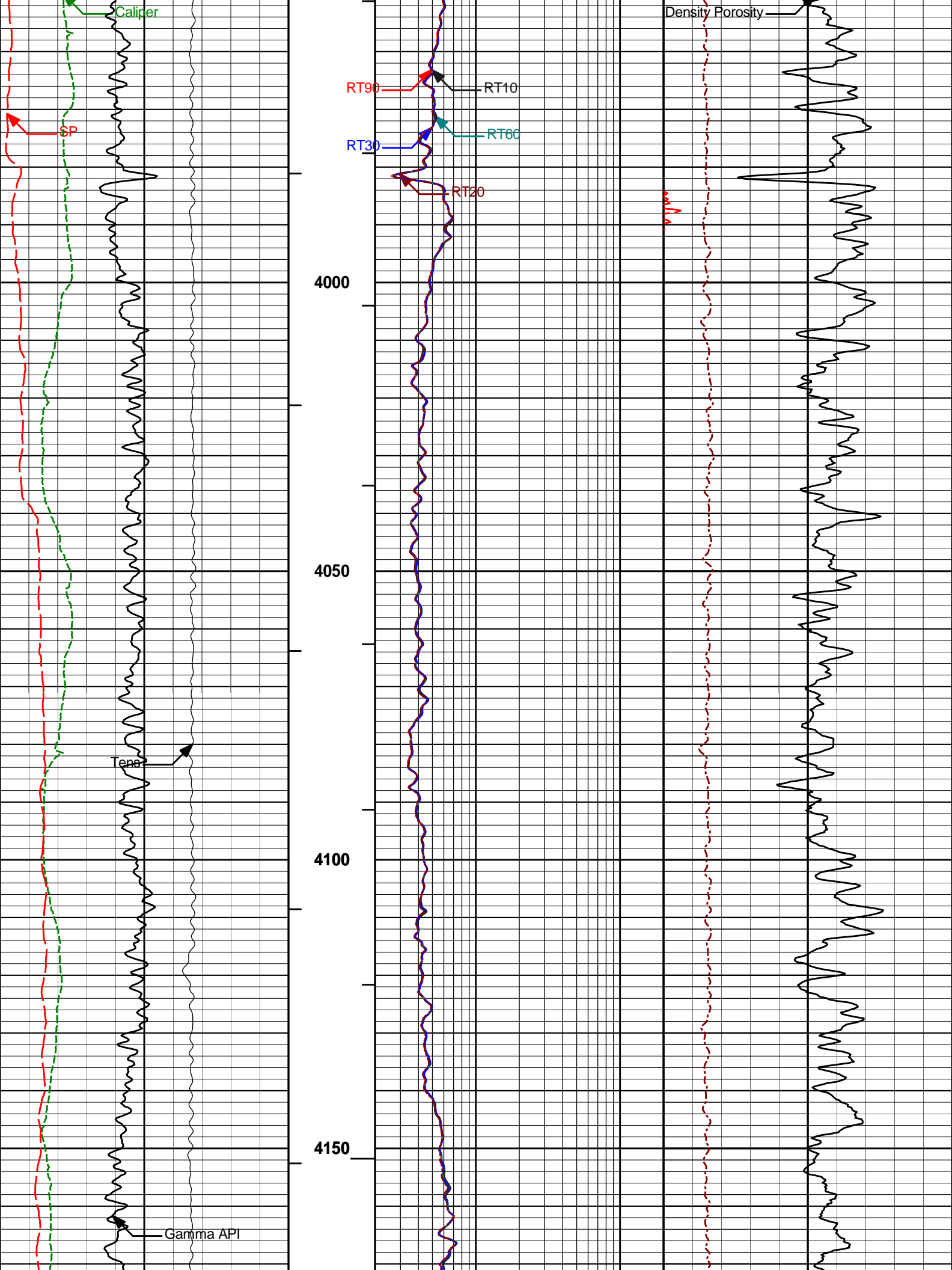
Plot Time: 30-Sep-11 07:00:06
Plot Range: 3548 ft to 4502 ft
Data: NYGREN_USX_O19-\\Well Based\\MAIN*
Plot File: \\COMP\\SUSX-PARK

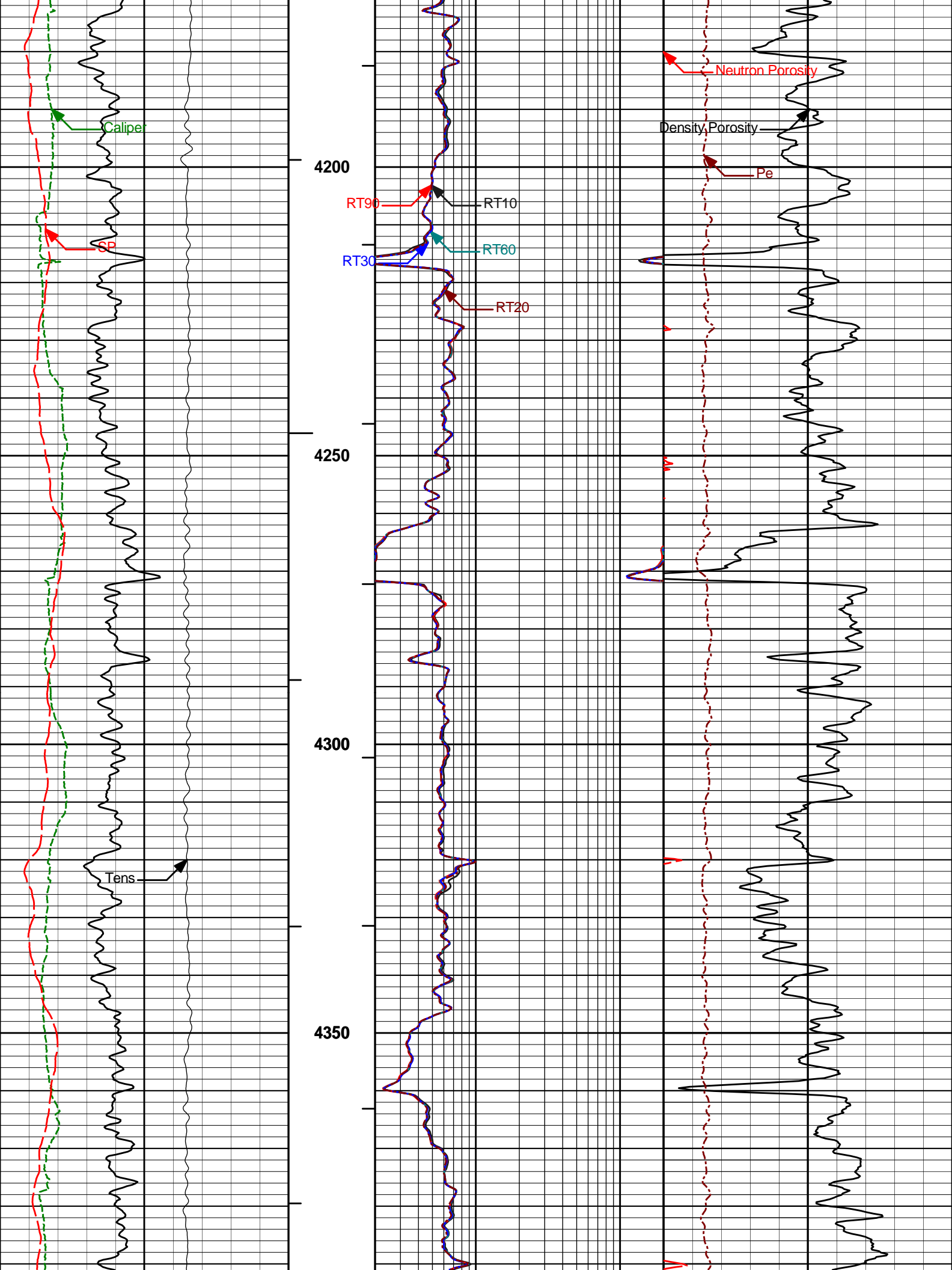
MAIN PASS 5" = 100'

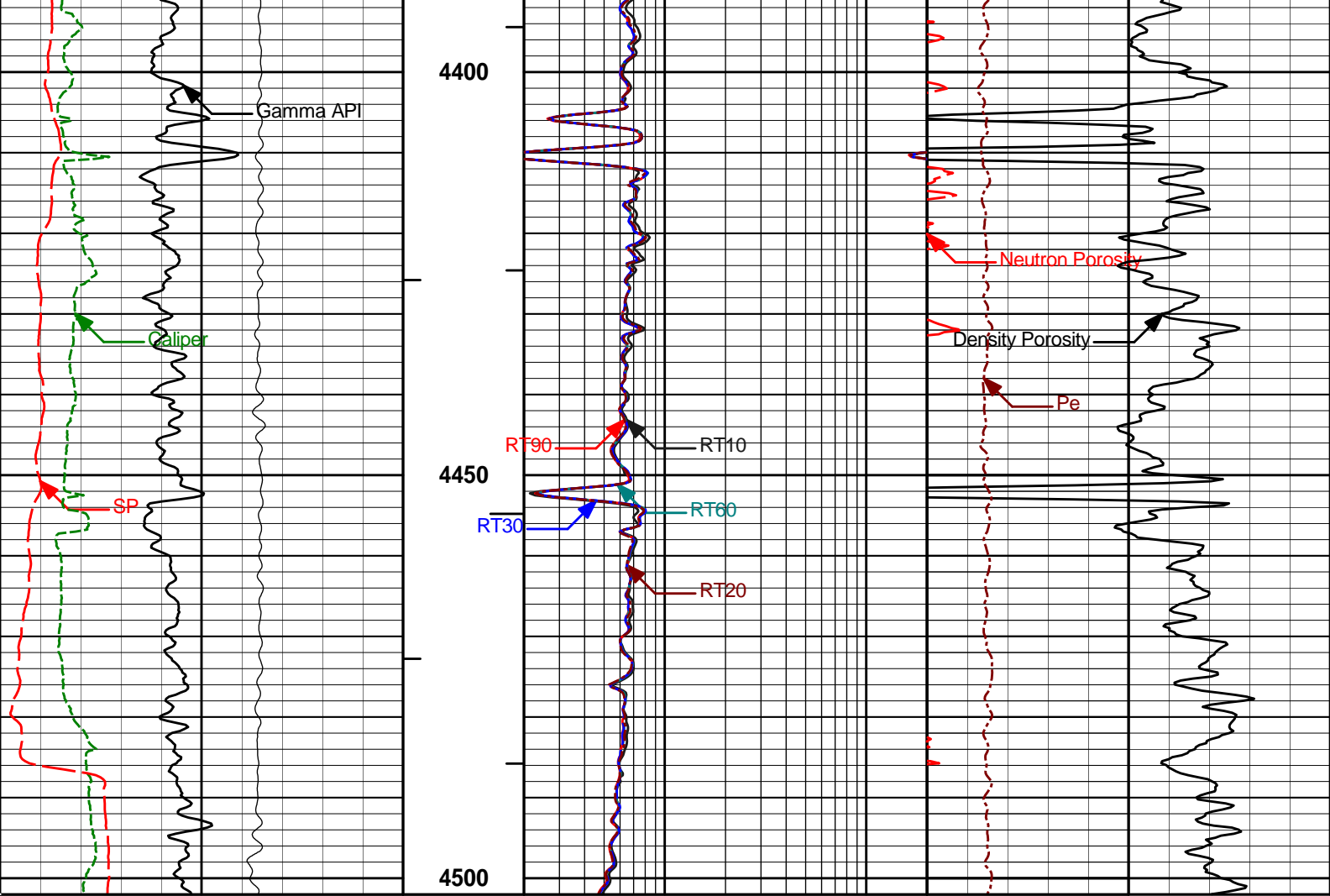
	2	RT10	200	
		ohmm		
		RT20	200	











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

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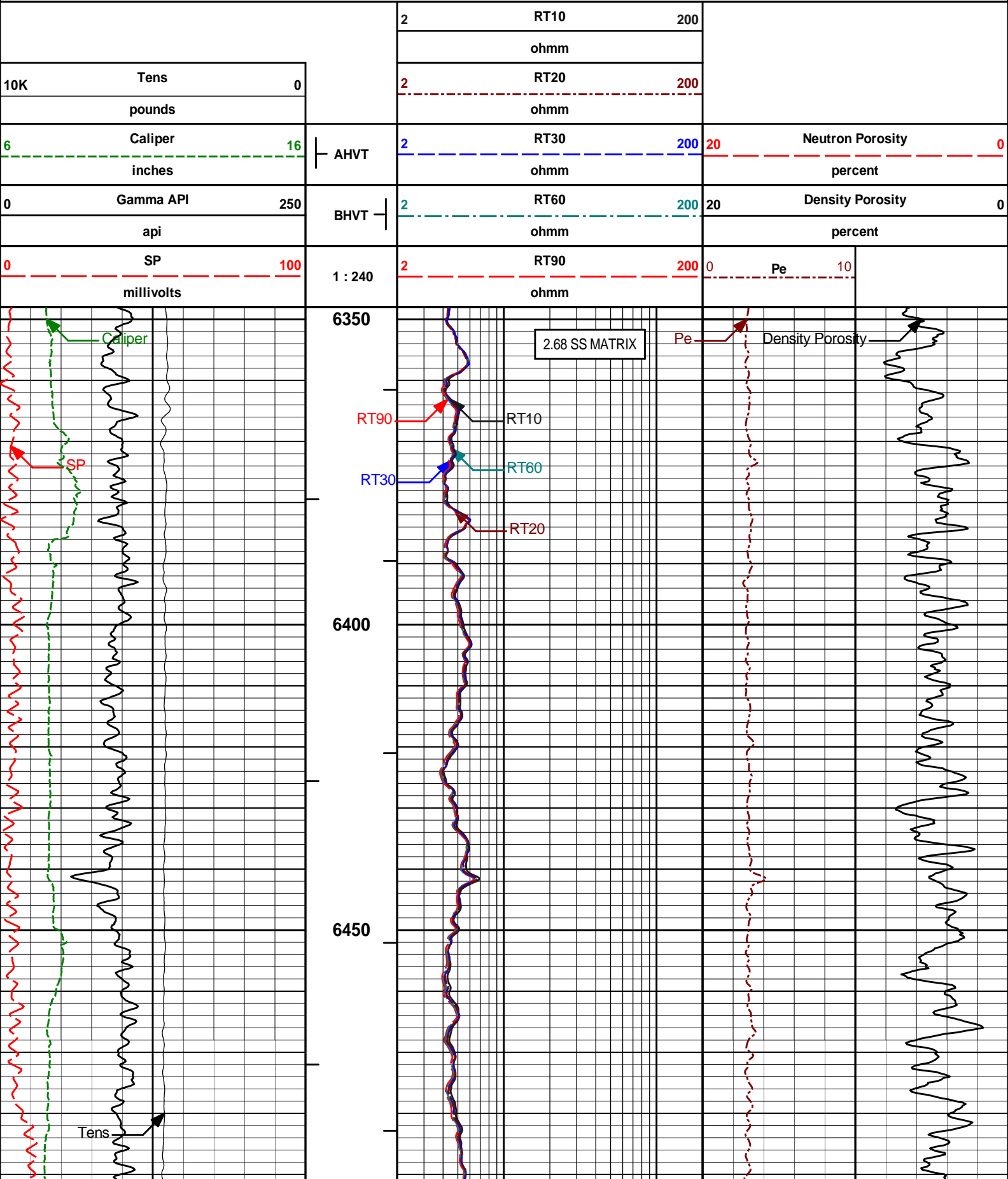
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 Plot Range: 3548 ft to 4502 ft
 Data: NYGREN_USX_O19-IWell BasedMAIN*
 Plot File: \\COMP\SUSX-PARK

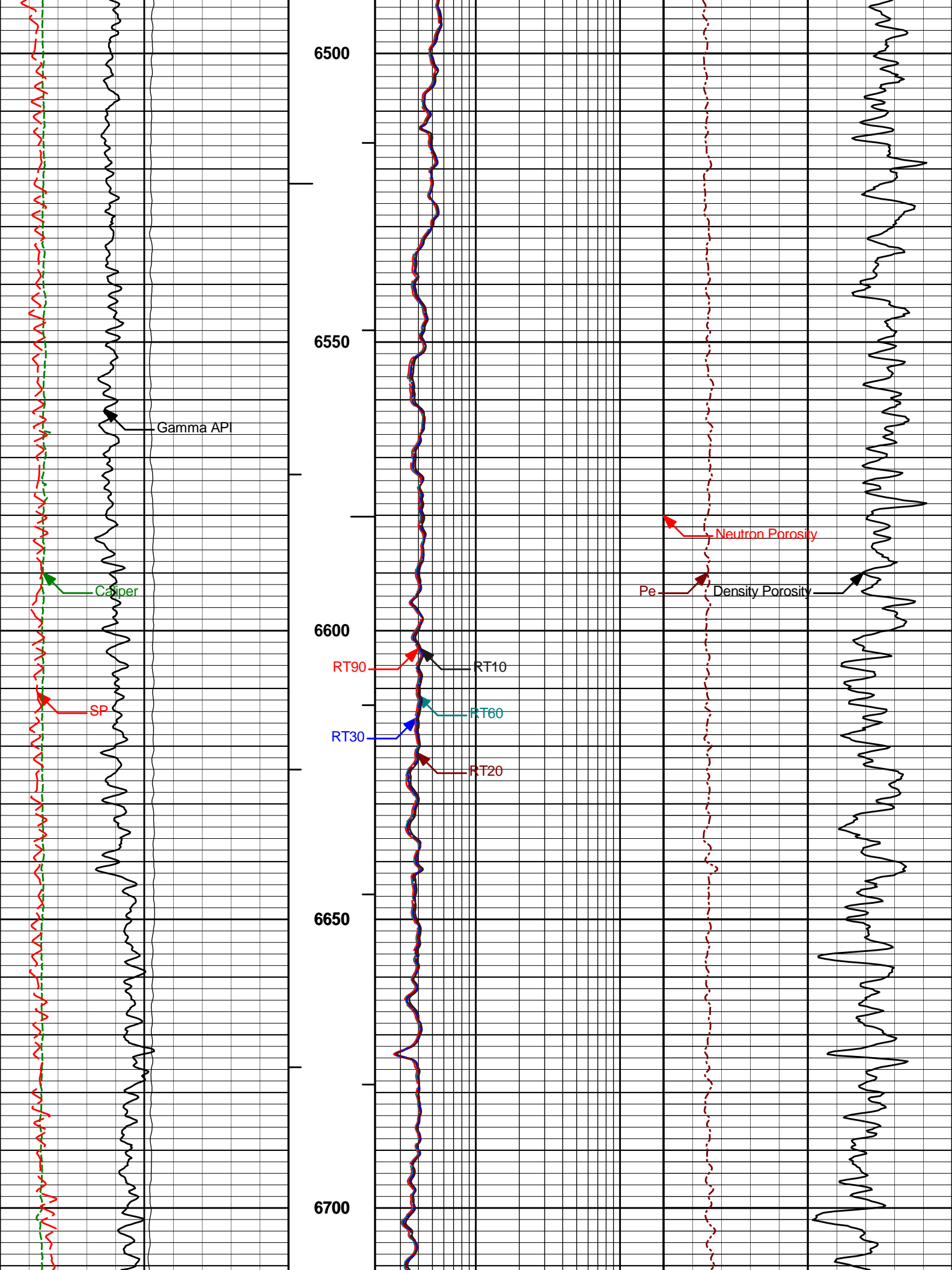
MAIN PASS 5" = 100'

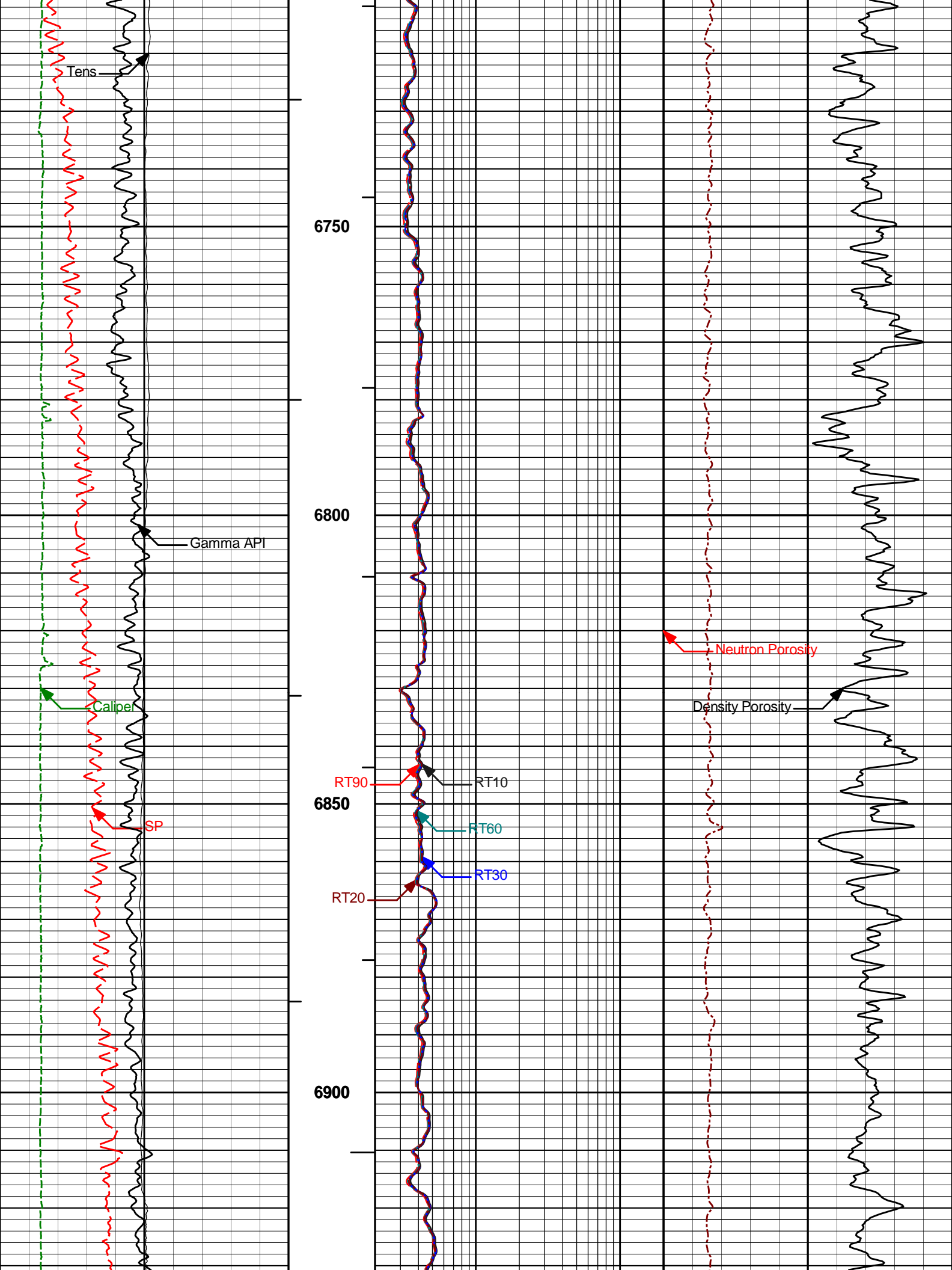
HALLIBURTON

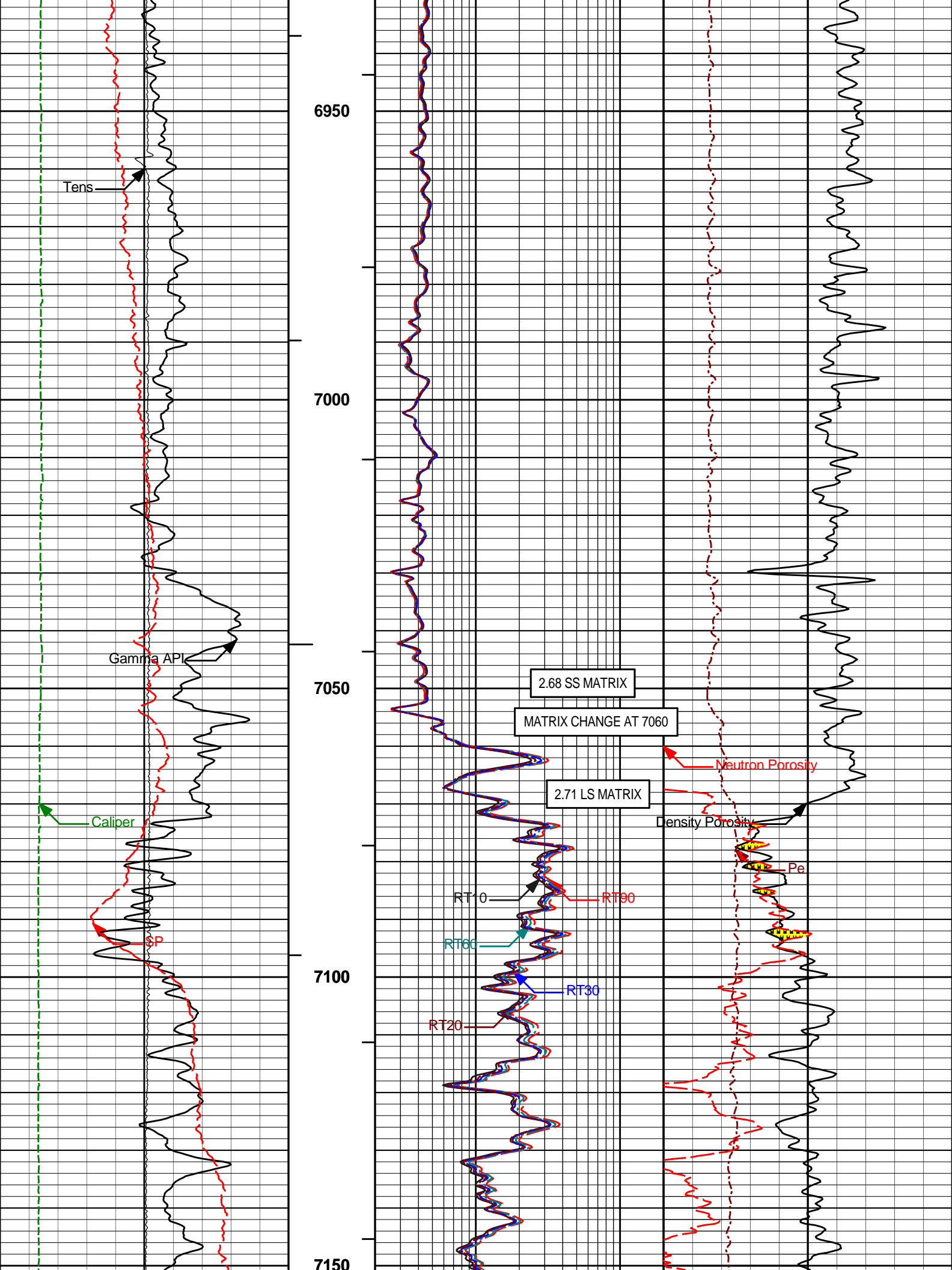
Plot Time: 30-Sep-11 07:00:15
 Plot Range: 6348 ft to 7588.75 ft
 Data: NYGREN_USX_O19-IWell BasedMAIN*
 Plot File: \\COMP\TD-NIO

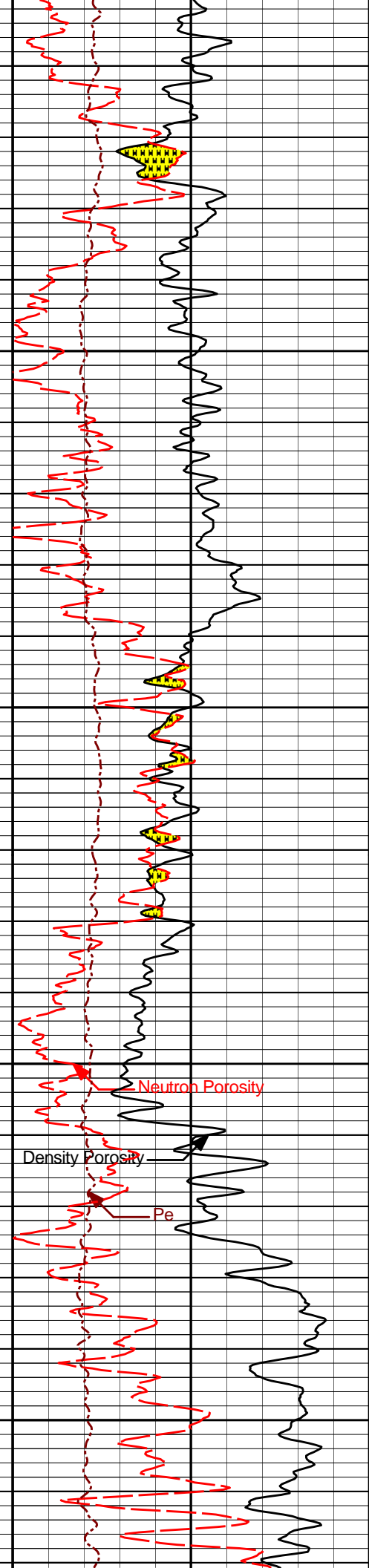
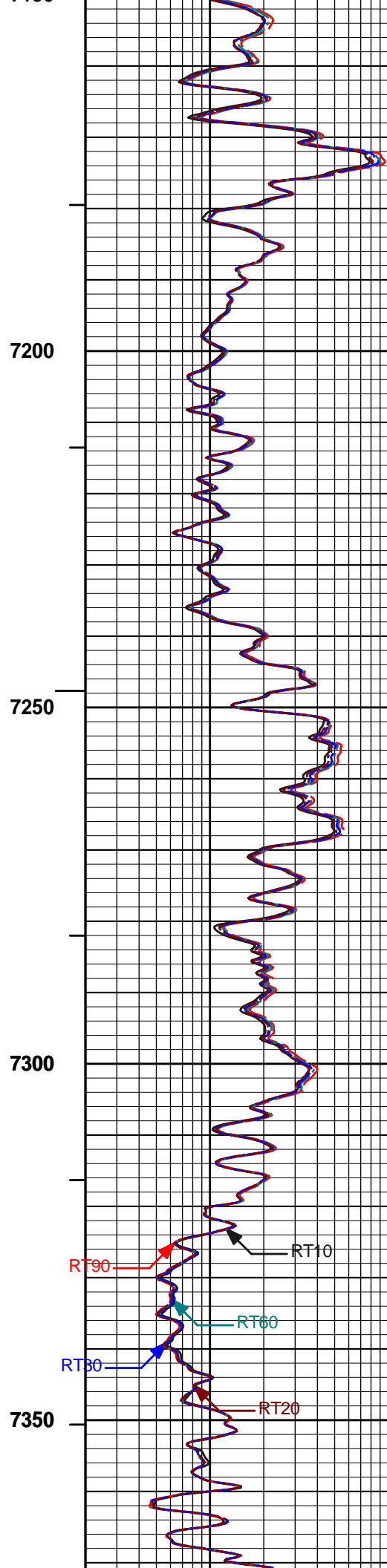
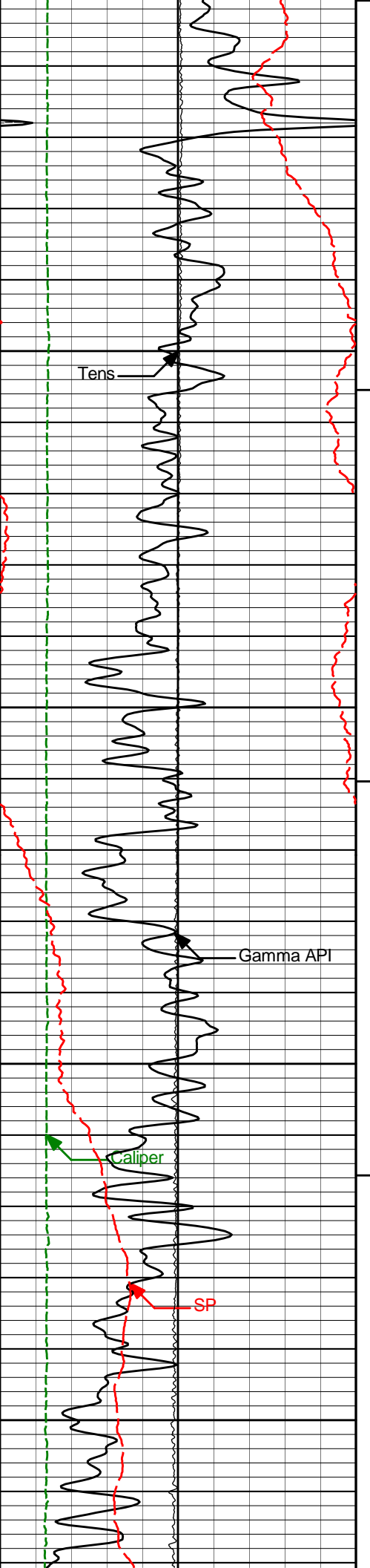
MAIN PASS 5" = 100'

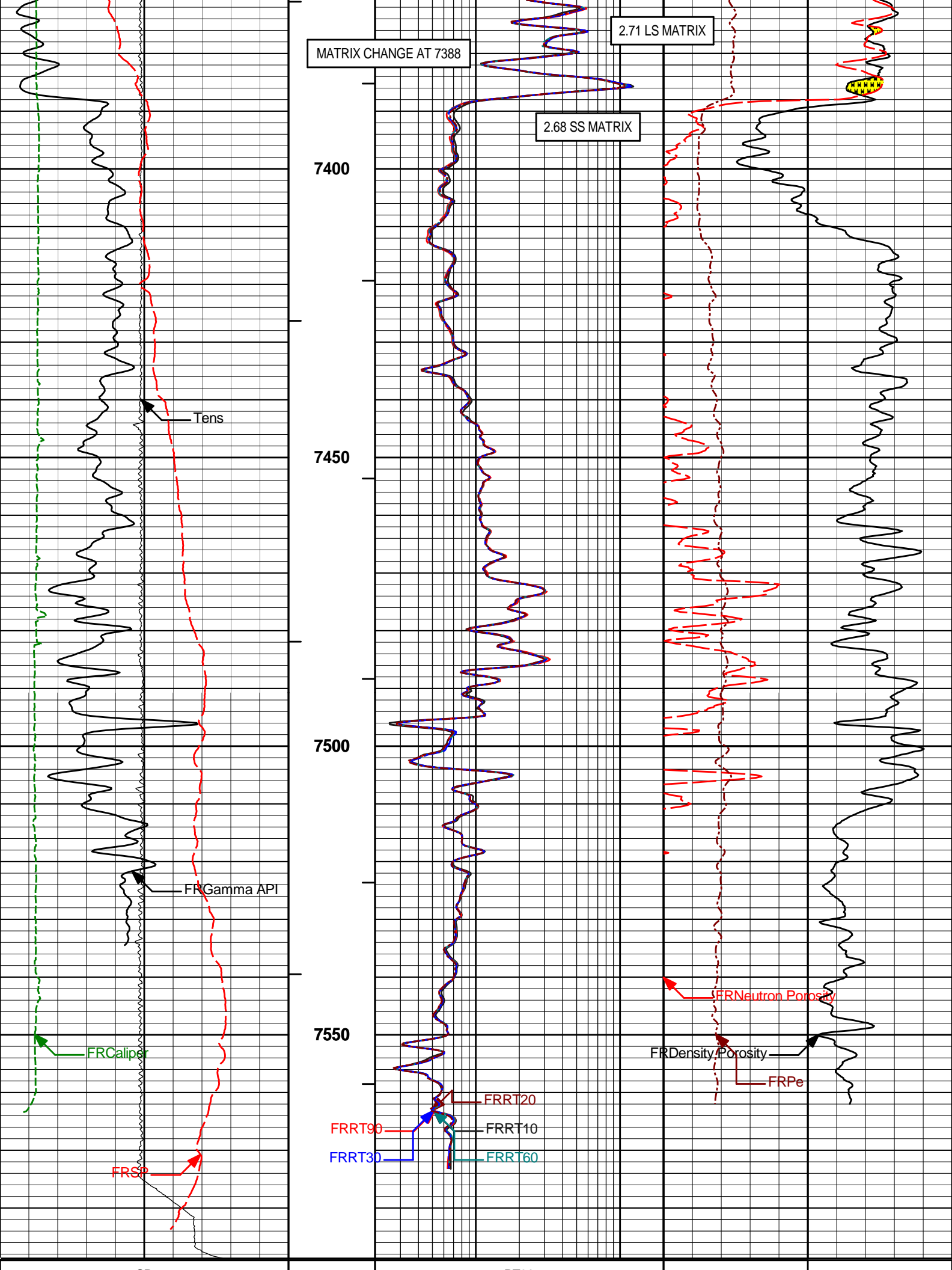












0	SP	100	1 : 240	2	RT90	200	0	Pe	10
	millivolts				ohmm				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				ohmm			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				ohmm			percent	
10K	Tens	0		2	RT20	200			
	pounds				ohmm				
				2	RT10	200			
					ohmm				

<div> <div>HALLIBURTON</div> <div> Plot Time: 30-Sep-11 07:00:19 Plot Range: 6348 ft to 7588.75 ft Data: NYGREN_USX_O19-Well BasedMAIN* Plot File: \\COMP\TD-NIO </div> </div>									
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MAIN PASS 5" = 100'									
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<div> <div>HALLIBURTON</div> <div>CALIBRATION REPORT</div> </div>									
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NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11277436_BLACK	Reference Calibration Date:	24-Aug-11 10:32:33
Engineer:	R. TWEETEN	Calibration Date:	08-Sep-11 08:36:32
Software Version:	WL INSITE R3.4.2 (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	87.1	74.9	api
Background + Calibrator	374.8	322.1	api
Calibrator	287.7	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION				
Tool Name:	GTET - 11277436_BLACK	Reference Calibration Date:	08-Sep-11 08:36:32	
Engineer:	R. TWEETEN	Calibration Date:	29-Sep-11 15:24:31	
Software Version:	WL INSITE R3.4.2 (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		74.9	66.8	api
Background + Calibrator		322.1	315.0	api
Calibrator		247.3	248.2	api
Shop		Field	Difference	Tolerance
247.3		248.2	-0.9	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	CSNG - 11568970	Reference Calibration Date:	24-Aug-11 12:07:29
Engineer:	R. TWEETEN	Calibration Date:	08-Sep-11 08:59:25
Software Version:	WL INSITE R3.4.2 (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 #	23.2	23.6	Channel #
583 KEV Peak Channel #	52.0	52.7	Channel #
2614 KEV Peak Channel #	214.5	218.8	Channel #
Calibrate Temperature	124.9	77.1	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	1851.8	CPS	359.2	344.6	API
Background	368.7	CPS	59.4	68.6	API

Gamma Ray Gain: 0.94

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	CSNG - 11568970	Reference Calibration Date:	08-Sep-11 08:59:25
Engineer:	R. TWEETEN	Calibration Date:	29-Sep-11 15:32:09
Software Version:	WL INSITE R3.4.2 (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	23.4	Channel #
583 KEV Peak Channel #	52.7	52.4	Channel #
2614 KEV Peak Channel #	218.8	216.7	Channel #
Calibrate Temperature	77.1	91.1	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
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	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1768.5	CPS	344.6	333.0	API
Background	302.8	CPS	68.6	57.0	API

Gamma Ray Gain: 0.95
 Expected Gain Range: 0.85 - 1.15
 Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11301132_BLACK	Reference Calibration Date:	21-Sep-11 16:55:42
Engineer:	R. TWEETEN	Calibration Date:	21-Sep-11 17:12:29
Software Version:	WL INSITE R3.4.2 (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:	0.996	0.998	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):	0.2217	0.2224	0.0007	+/- 0.0020
Calibrated Ratio:	10.09	10.11	0.023	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0853	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 - 11301132_BLACK	Reference Calibration Date:	21-Sep-11 17:12:29
Engineer:	R. TWEETEN	Calibration Date:	29-Sep-11 15:43:29
Software Version:	WL INSITE R3.4.2 (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):	0.0853	0.0818	-0.0036	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - M335_P470_BLACK

Reference Calibration Date: 23-Sep-11 21:53:54

Engineer: R. TWEETEN

Calibration Date: 23-Sep-11 22:00:16

Software Version: WL INSITE R3.4.2 (Build 2)

Calibration Version: 1

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1410.10	-1431.86	-7000.00 - -1000.00
Pad Gain	0.0003811	0.0003826	0.000200 - 0.000600
Arm Offset	-3984.08	-3827.92	-5000.00 - 3000.00
Arm Gain	0.0005918	0.0005895	0.000300 - 0.000700
Arm Power	-0.000006490	-0.000006641	-0.000010 - 0.000010

The ring diameter is computed from: $\text{DIAMETER} = \text{PAD EXTENSION} + \text{ARM EXTENSION} + \text{TOOL DIAMETER}$

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)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.43	6.50	0.07	+/- 0.20
Medium Ring (in)	8.19	8.25	0.06	+/- 0.20
Large Ring (in)	15.01	15.00	-0.01	+/- 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 - M335_P470_BLACK

Reference Calibration Date: 23-Sep-11 22:00:16

Engineer: R. TWEETEN

Calibration Date: 29-Sep-11 15:36:50

Software Version: WL INSITE R3.4.2 (Build 2)

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 Sonde - E6758-S4352_BLK

Reference Calibration Date: 30-Mar-11 17:55:22

Engineer: F. LODER

Calibration Date: 25-Aug-11 15:55:48

Software Version: WL INSITE R3.4.2 (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	0.9901	1.05	0.95	0.9958	1.05	0.95	0.9928	1.05
A2 (50")	0.95	0.9949	1.05	0.95	1.0010	1.05	0.95	1.0001	1.05
A3 (29")	0.95	0.9960	1.05	0.95	0.9995	1.05	0.95	0.9971	1.05
A4 (17")	0.95	1.0044	1.05	0.95	1.0055	1.05	0.95	1.0047	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9980	1.05	0.95	0.9966	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9787	1.05	0.95	0.9757	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	-1.494	2	-6	-3.982	-2	-8	-4.283	-2
A2 (50")	-7	-3.247	-1	-6	-3.938	-2	-7	-4.224	-2
A3 (29")	-27	-13.938	-9	-9	-3.943	-3	-7	-2.988	-1
A4 (17")	-180	-98.155	-60	-45	-31.951	-15	-39	-25.455	-13
A5 (10")	N/A	N/A	N/A	-150	-92.229	-50	-80	-45.352	-10
A6 (6")	N/A	N/A	N/A	175	299.783	525	90	150.888	270

TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION			
Signal	Lower	R	Upper		Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.9246	1.3		Mud Cell	0.95	1.009	1.05
36K	1.0	1.8754	2.0					
72K	1.0	1.1579	2.0					

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT Pad - M335_P470_BLACK	Reference Calibration Date:	20-Sep-11 13:44:03
Engineer:	R. TWEETEN	Calibration Date:	20-Sep-11 14:05:14
Software Version:	WL INSITE R3.4.2 (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
Near Bar Gain	1.0856	1.0769	0.90 - 1.10
Near Dens Gain	1.0529	1.0446	0.90 - 1.10
Near Peak Gain	1.0584	1.0277	0.90 - 1.10
Near Lith Gain	0.9919	0.9752	0.90 - 1.10
Far Bar Gain	1.0166	1.0170	0.90 - 1.10
Far Dens Gain	1.0038	1.0037	0.90 - 1.10
Far Peak Gain	0.9961	0.9954	0.90 - 1.10
Far Lith Gain	0.9653	0.9652	0.90 - 1.10
Near Bar Offset	-0.5403	-0.4625	NONE
Near Dens Offset	-0.2010	-0.1319	NONE
Near Peak Offset	-0.2259	0.0240	NONE
Near Lith Offset	0.3012	0.4369	NONE
Far Bar Offset	0.0634	0.0615	NONE
Far Dens Offset	0.1602	0.1601	NONE
Far Peak Offset	0.2125	0.2180	NONE
Far Lith Offset	0.4173	0.4187	NONE

Near Bar Background	1052.39	1052.73	700 - 1450
Near Dens Background	344.67	343.81	230 - 480
Near Peak Background	151.45	151.08	100 - 210
Near Lith Background	183.57	184.07	125 - 260
Far Bar Background	548.23	550.53	450 - 900
Far Dens Background	216.71	213.70	175 - 345
Far Peak Background	83.86	83.98	70 - 140
Far Lith Background	88.89	88.40	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.694	1.690	-0.004	+/- 0.015
Pe	2.585	2.603	0.018	+/- 0.150
ALUMINUM				
Density (g/cc)	2.603	2.602	-0.001	+/- 0.01500
Pe	3.063	3.063	0.000	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0010	+/- 0.0110	-0.0008	+/- 0.0140
Magnesium Block	-0.0003	+/- 0.0110	-0.0015	+/- 0.0140
Aluminum Block	-0.0006	+/- 0.0110	-0.0012	+/- 0.0140
Resolution	9.02	6.00 - 11.50	9.62	6.00 - 11.50
Internal Verifier(B+D+P+L)	1732	1200 - 2700	937	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 - M335_P470_BLACK

Reference Calibration Date: 20-Sep-11 14:05:14

Engineer: R. TWEETEN

Calibration Date: 29-Sep-11 15:26:17

Software Version: WL INSITE R3.4.2 (Build 2)

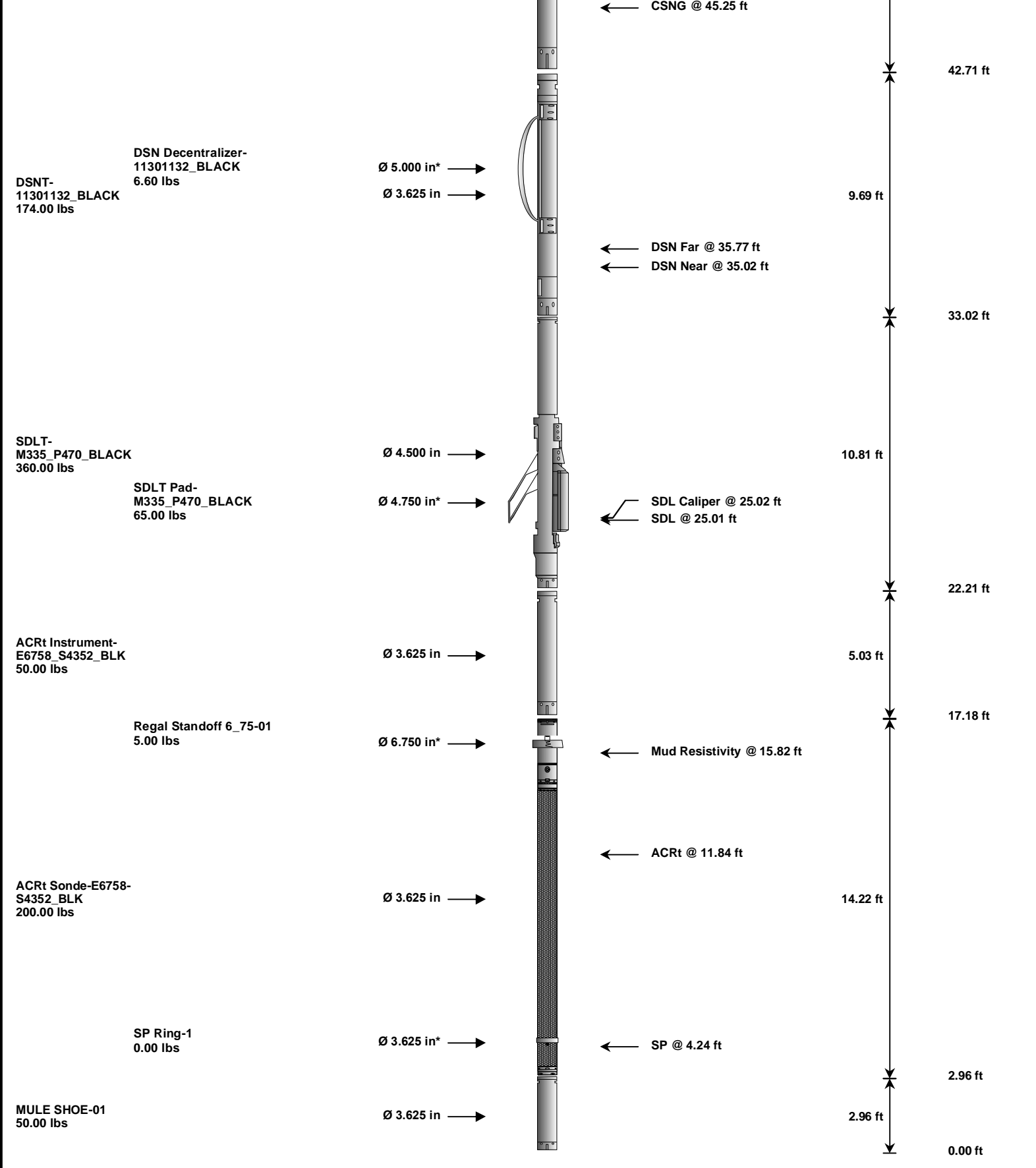
Calibration Version: 1

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1731.691	1742.635	10.944	16.693
Far (B+D+P+L) cps	936.618	940.773	4.155	16.542
Near Resolution	9.02	9.05	0.030	0.50
Far Resolution	9.62	9.69	0.070	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-11277436_BLACK						
Gamma Ray Calibrator	247.3	248.2	-----	-0.9	+/- 9.00	api
CSNG-11568970						
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.6	23.4	-----	0.2	-----	Channel #
583 KEV Peak Channel #	52.7	52.4	-----	0.3	-----	Channel #
2614 KEV Peak Channel #	218.8	216.7	-----	2.1	-----	Channel #
DSNT-11301132_BLACK						
Snow-Block Porosity	0.0853	0.0818	-----	0.0035	+/- 0.0150	decp
SDLT-M335_P470_BLACK						
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in
Ring Diameter	8.25	8.24	-----	0.010	+/-0.15	in
ACRt Sonde-E6758-S4352_BLK						
Mud Cell	1.009	-----	-----	0.000	-----	ohm-m
SDLT Pad-M335_P470_BLACK						
Near(B+D+P+L)	1731.691	1742.635	-----	-10.944	+/-16.693	cps
Far(B+D+P+L)	936.618	940.773	-----	-4.155	+/-16.542	cps
Data: NYGREN_USX_O19-10001 NOBLEIDLE				Date: 30-Sep-11 01:32:20		

HALLIBURTON						
TOOL STRING DIAGRAM REPORT						
Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-A094 135.00 lbs		Ø 3.625 in →		← Load Cell @ 61.96 ft ← BH Temperature @ 61.39 ft	6.25 ft	65.64 ft
GTET-11277436_BLACK 165.00 lbs		Ø 3.625 in →		← GammaRay @ 53.33 ft	8.52 ft	59.39 ft
CSNG-11568970 114.00 lbs		Ø 3.625 in →			8.17 ft	50.87 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	59.39	300.00
GTET	Gamma Telemetry Tool	11277436_BLACK	165.00	8.52	50.87	60.00
CSNG	Compensated Spectral Natural Gamma	11568970	114.00	8.17	42.71	15.00
DSNT	Dual Spaced Neutron	11301132_BLACK	174.00	9.69	33.02	60.00
DCNT	DSN Decentralizer	11301132_BLACK	6.60	5.13	*	36.35
SDLT	Spectral Density Tool	M335_P470_BLACK	360.00	10.81	22.21	60.00
SDLP	Density Insite Pad	M335_P470_BLACK	65.00	2.55	*	24.42
ACRt	Array Compensated True Resistivity Instrument Section	E6758_S4352_BLK	50.00	5.03	17.18	300.00

ACRt	Array Compensated True Resistivity	E6758-S4352_BLK	200.00	14.22	2.96	300.00
SP	SP Ring	1	0.00	0.25	*	4.24 300.00
RSOF	Regal Standoff 6.75in	01	5.00	0.52	*	15.94 300.00
MS	MULE SHOE	01	50.00	2.96	0.00	100.00
Total			1,324.60	65.64		
* Not included in Total Length and Length Accumulation.						
Data: NYGREN_USX_O19-10001 NOBLEIDLE					Date: 30-Sep-11 01:28:40	

COMPANY	NOBLE ENERGY INC		
WELL	NYGREN USX O19-02D		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		ARRAY COMPENSATED TRUE RESISTIVITY SPECTRAL DENSITY DUAL SPACED NEUTRON	