

ARRAY COMPENSATED
TRUE RESISTIVITY
SPECTRAL DENSITY
DUAL SPACED NEUTRON

NOBLE ENERGY INC ALTER C09-33D WATTENBERG WELD CO				COMPANY NOBLE ENERGY INC WELL ALTER C09-33D FIELD WATTENBERG COUNTY WELD STATE CO			
COMPANY WELL FIELD COUNTY STATE				SECT. 9 TWP. 4N RGE. 64W		Elev. 4701.0 ft Elev. K.B. 4725.0 ft D.F. 4724.0 ft G.L. 4701.0 ft	
Permanent Datum Log measured from Drilling measured from				GL KB KB		Elev. 4701.0 ft , 24.0 ft above perm. Datum G.L.	
Date				20-Jan-12			
Run No.				ONE			
Depth - Driller				7205.00 ft			
Depth - Logger				7205.0 ft			
Bottom - Logged Interval				7201 ft			
Top - Logged Interval				3648 ft			
Casing - Driller				8.625 in @ 756.0 ft		@	
Casing - Logger				754.0 ft			
Bit Size				7.875 in		@	
Type Fluid in Hole				WATER BASED MUD			
Density		Viscosity	9.8 ppq	45.00 s/qt			
PH		Fluid Loss	9.30 pH	11.5 cpm			
Source of Sample				MUD CELL			
Rm @ Meas. Temperature		0.970 ohmm @ 89.30 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		0.40 ohmm @ 227.0 degF		@		@	
Time Since Circulation				6.0 hr			
Time on Bottom				20-Jan-12 18:00			
Max. Rec. Temperature		227.0 degF @ 7205.0 ft		@		@	
Equipment		11454566		BRIGHTON			
Recorded By				R. TWEETEN			
Witnessed By				C. COLLIVER			

Fold here

Service Ticket No.: 9220738						API Serial No.: 05123347250000						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.	11812167							
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							

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
6754.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
7030.00					
	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	300.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.970	ohmm
	SHARED	TRM	Temperature of Mud	89.3	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	60.0	degF
	SHARED	TD	Total Well Depth	7205.00	ft
	SHARED	BHT	Bottom Hole Temperature	227.0	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 Up	
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: ALTER_C09-33D\0001 NOBLE\002.01 20-Jan-12 18:50 Up

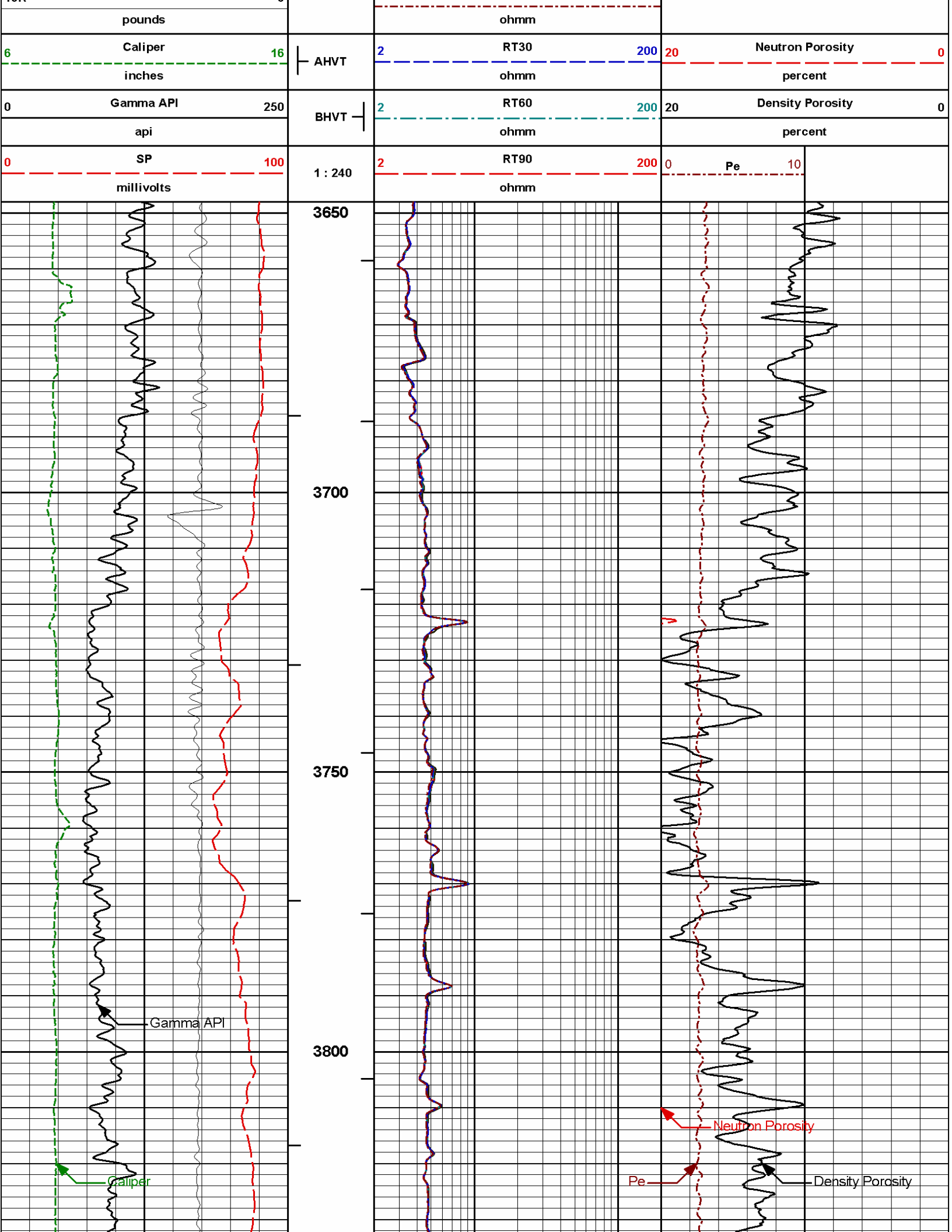
Date: 20-Jan-12 18:55:46

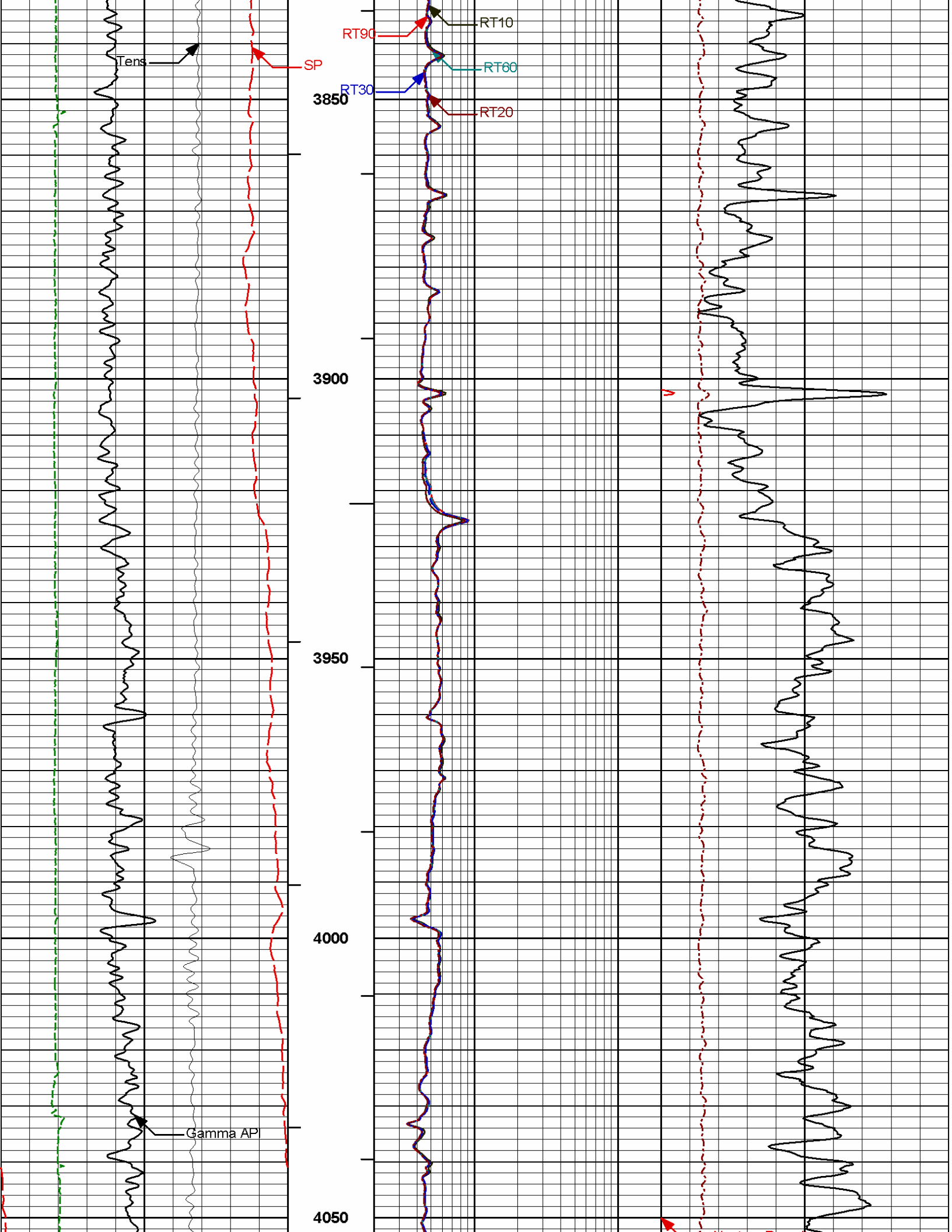
HALLIBURTON

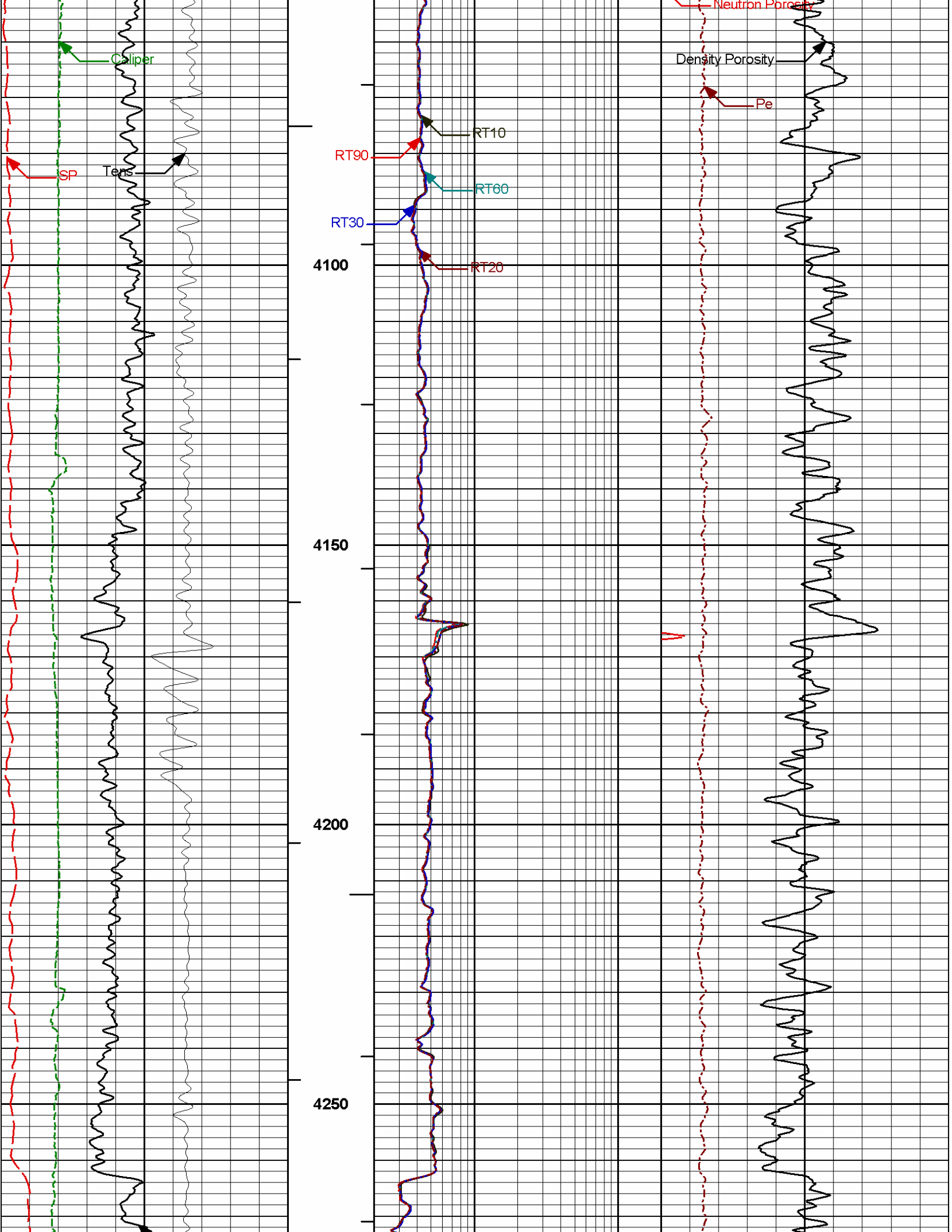
Plot Time: 20-Jan-12 19:23:08
Plot Range: 3648 ft to 4602 ft
Data: ALTER_C09-33D\Well Based\MAIN*
Plot File: \\COMP\SUSX-PARK

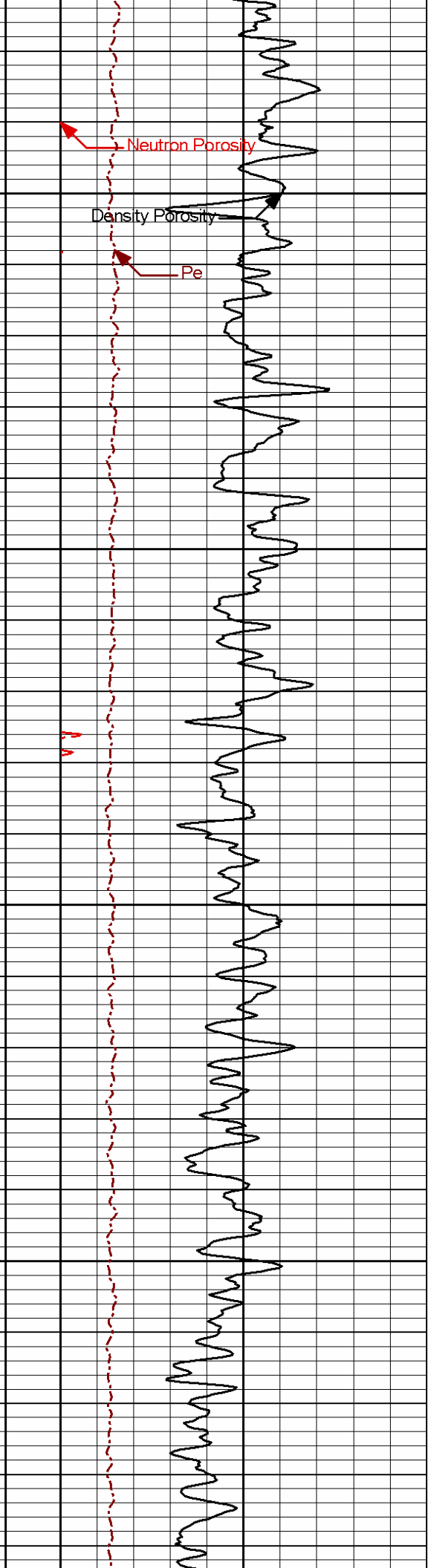
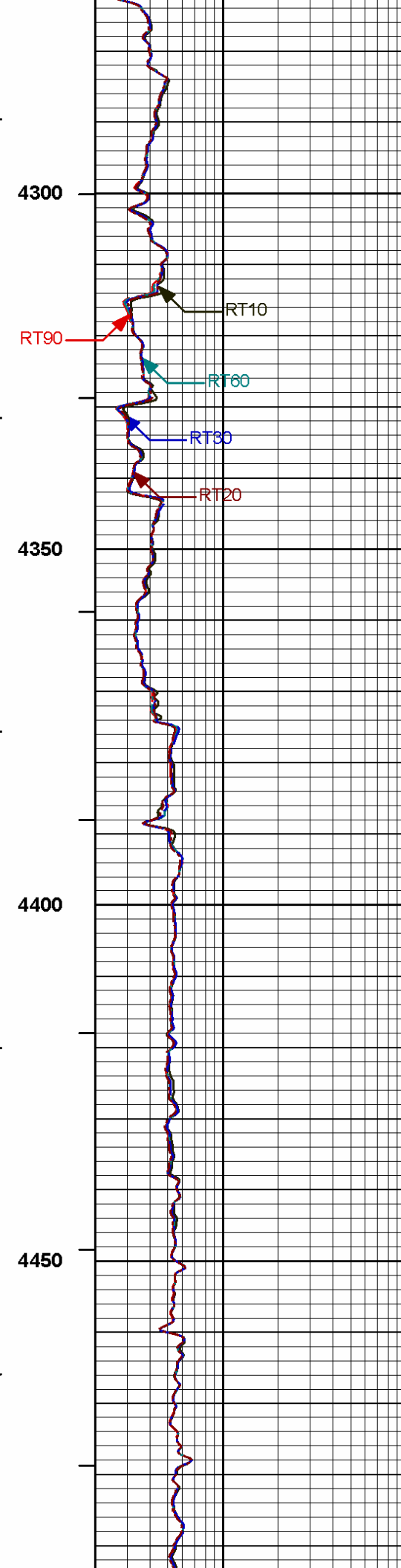
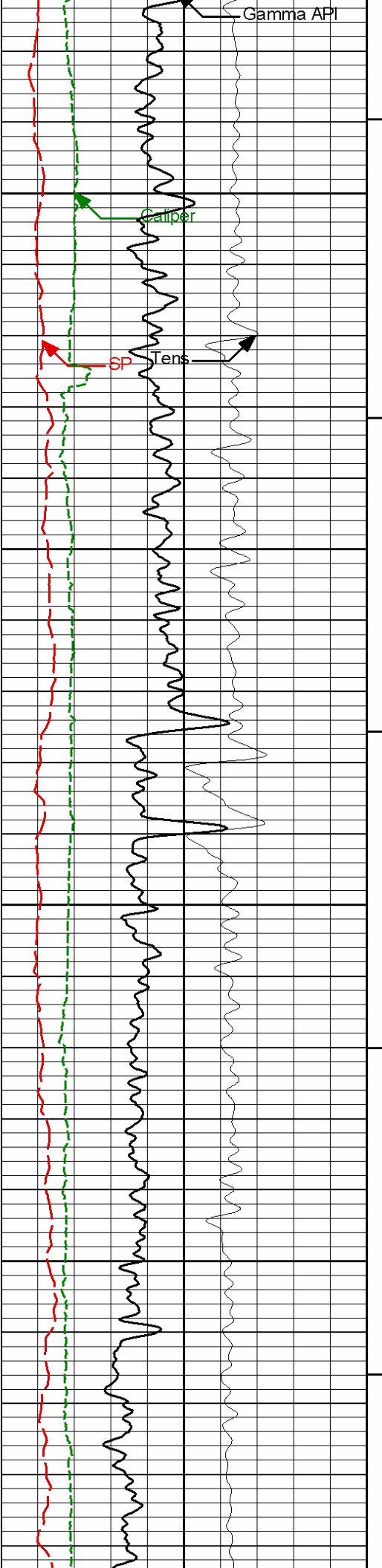
MAIN PASS 5" = 100'

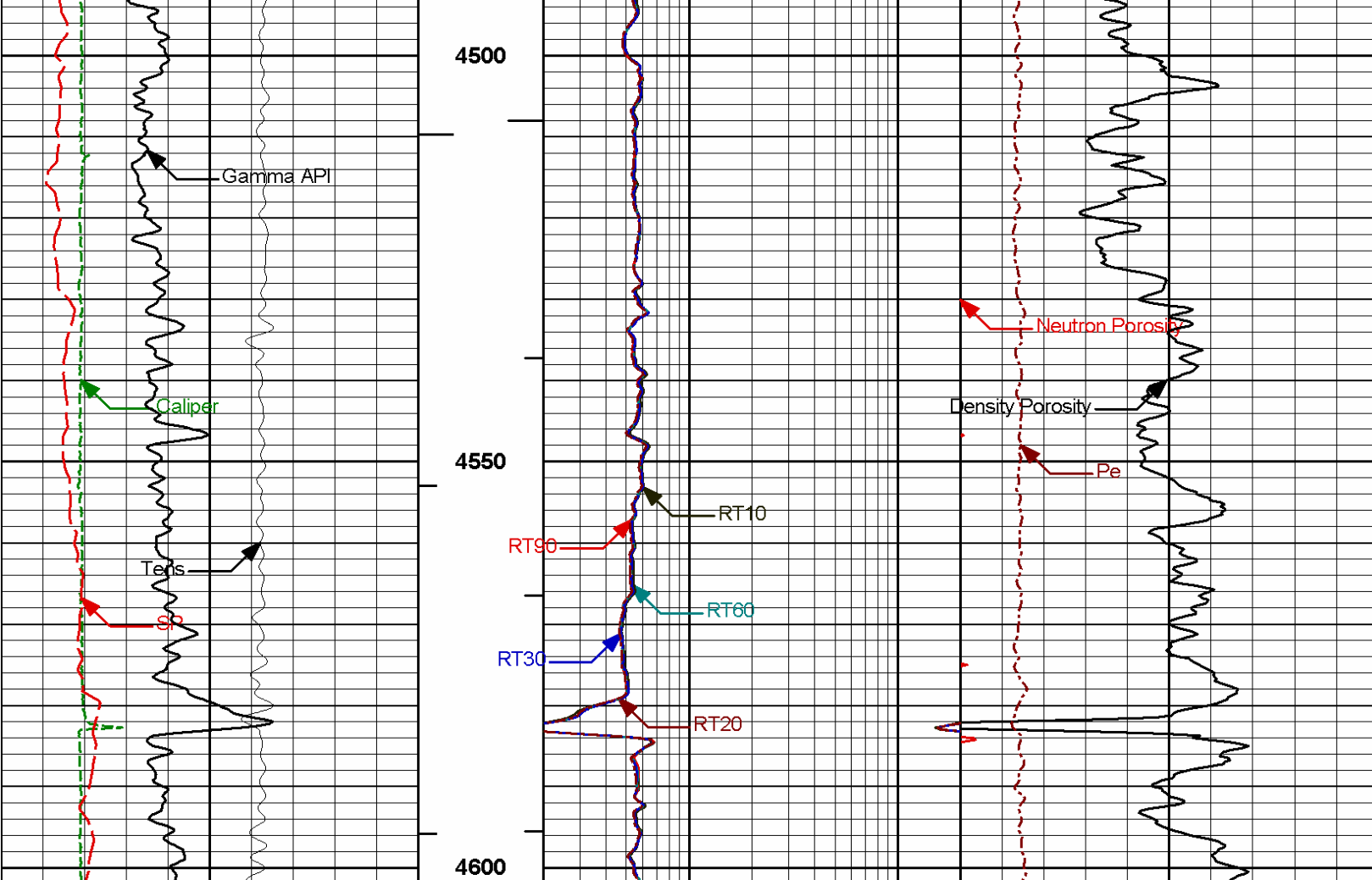
10K	Tens	0	2	RT10	200	
				ohmm		
			2	RT20	200	











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				

HALLIBURTON

Plot Time: 20-Jan-12 19:23:10
 Plot Range: 3648 ft to 4602 ft
 Data: ALTER_C09-33D\Well Based\MAIN\
 Plot File: \\COMP\SUSX-PARK

MAIN PASS 5" = 100'

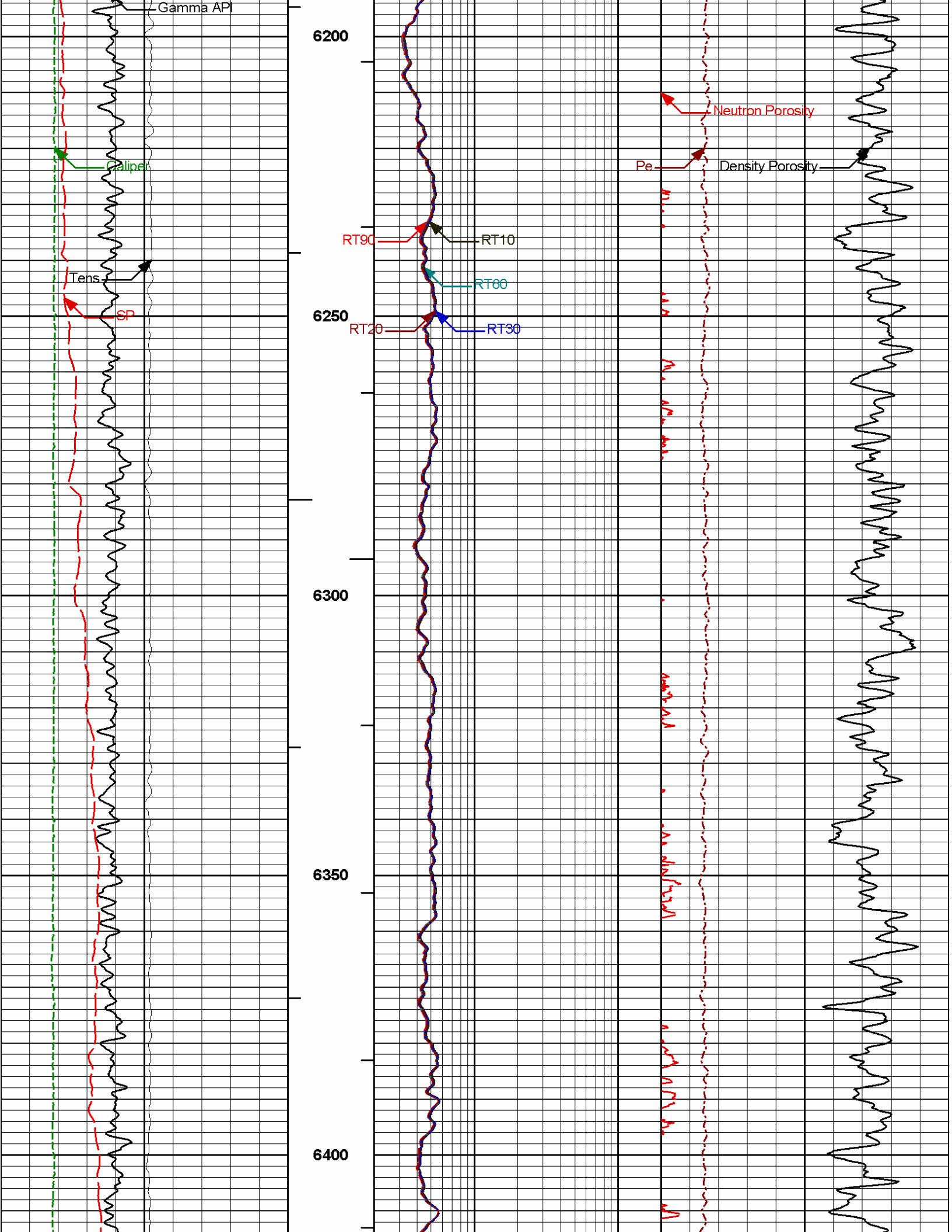
HALLIBURTON

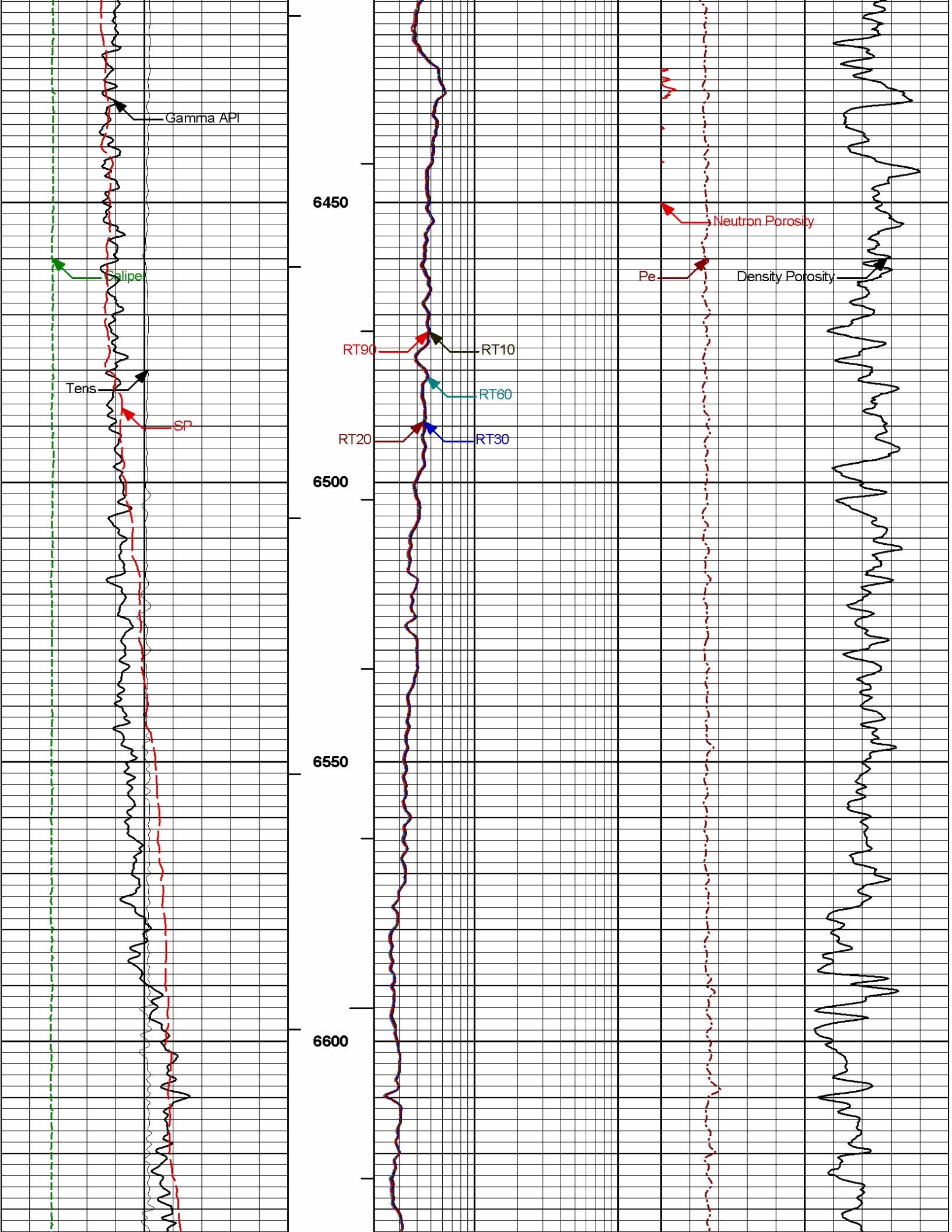
Plot Time: 20-Jan-12 19:23:10
 Plot Range: 6048 ft to 7220.08 ft
 Data: ALTER_C09-33D\Well Based\MAIN\
 Plot File: \\COMP\TD-NIO

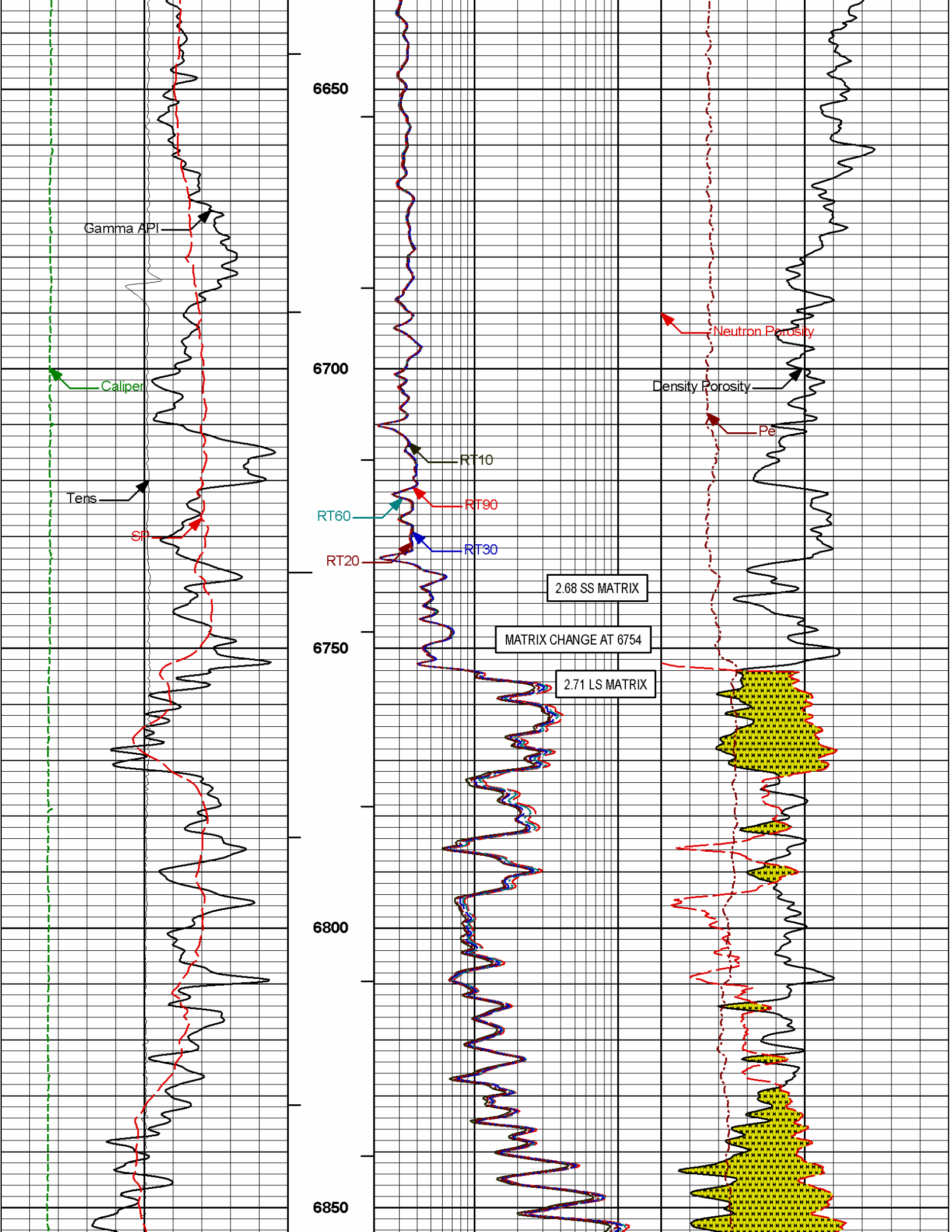
MAIN PASS 5" = 100'

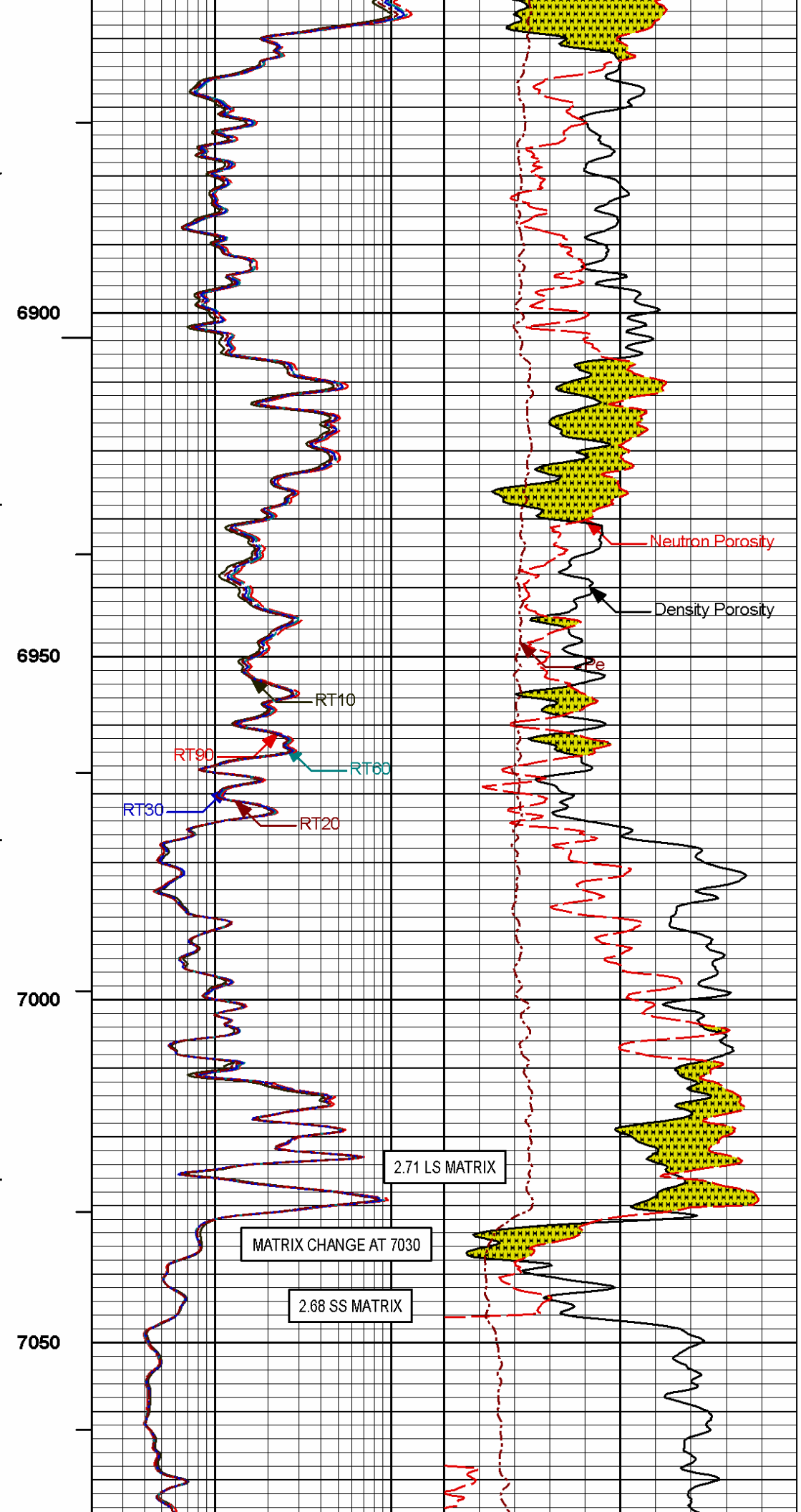
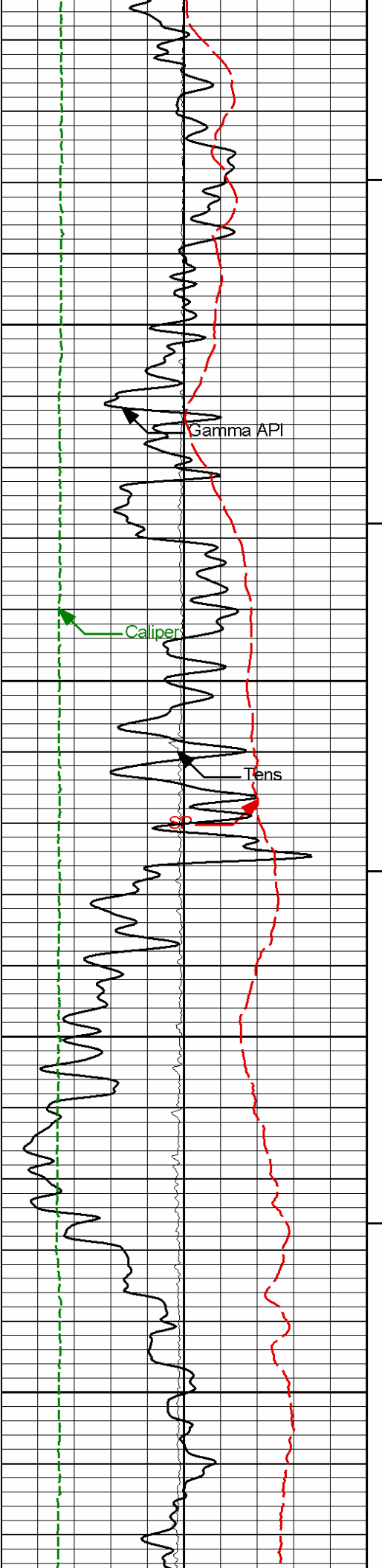
		2		RT10		200	
				ohmm			
10K		Tens		0		2	
		pounds				RT20	
						200	
				ohmm			
6		Caliper		16		2	
		inches				RT30	
						200	
				ohmm			
0		Gamma API		250		20	
		api				Neutron Porosity	
						percent	
0		SP		100		20	
		millivolts				Density Porosity	
						percent	
		1 : 240		2		RT90	
						200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

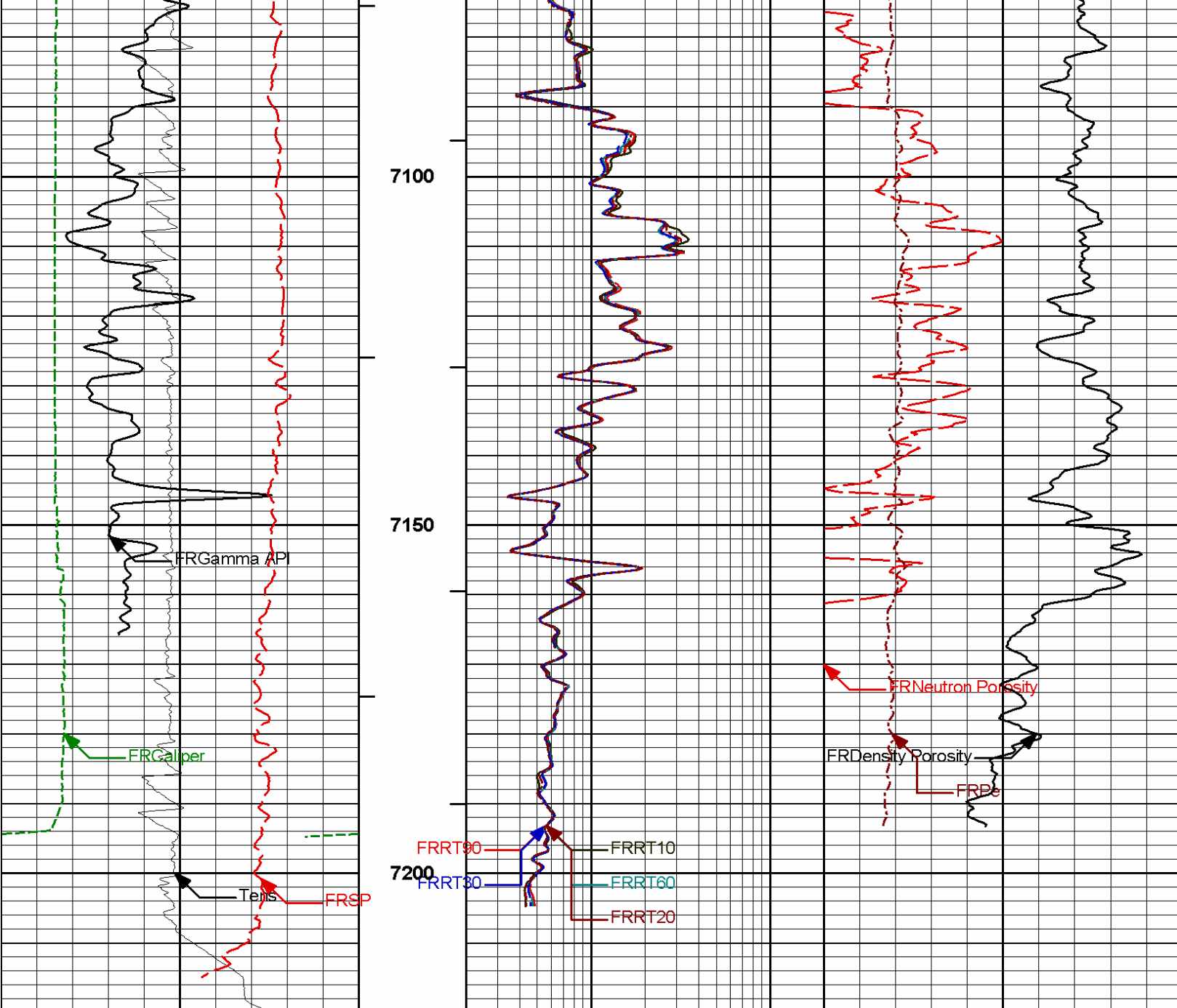
2.68 SS MATRIX











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				

HALLIBURTON

Plot Time: 20-Jan-12 19:23:12
 Plot Range: 6048 ft to 7220.08 ft
 Data: ALTER_C09-33D\Well Based\MAIN\
 Plot File: \\COMP\TD-NIO

MAIN PASS 5" = 100'

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	GTET - 11277436_BLACK	Reference Calibration Date:	10-Dec-11 12:42:41
Engineer:	R. TWEETEN	Calibration Date:	14-Jan-12 14:01:24
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	67.3	66.6	api
Background + Calibrator	317.0	313.9	api
Calibrator	249.7	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	GTET - 11277436_BLACK	Reference Calibration Date:	14-Jan-12 14:01:24
Engineer:	C. BLUE	Calibration Date:	19-Jan-12 17:54:49
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	66.6	69.6	api
Background + Calibrator	313.9	315.2	api
Calibrator	247.3	245.6	api

Shop	Field	Difference	Tolerance
247.3	245.6	1.7	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	CSNG - 11568969	Reference Calibration Date:	13-Dec-11 06:12:11
Engineer:	R. TWEETEN	Calibration Date:	14-Jan-12 14:34:03
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 #	23.5	23.7	Channel #
583 KEV Peak Channel #	52.5	53.4	Channel #
2614 KEV Peak Channel #	216.4	220.1	Channel #
Calibrate Temperature	80.6	55.5	degF

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

Blanket Reference Value: 243.00 API

Calibrator Value: 276.0 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1776.7	CPS	337.0	332.9	API
Background	304.0	CPS	61.0	57.0	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:	14-Jan-12 14:34:03
Engineer:	C. BLUE	Calibration Date:	19-Jan-12 18:01:07
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 #	23.7	23.7	Channel #
583 KEV Peak Channel #	53.4	53.0	Channel #
2614 KEV Peak Channel #	220.1	218.5	Channel #
Calibrate Temperature	55.5	68.9	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	1785.0	CPS	332.9	333.3	API
Background	306.8	CPS	57.0	57.3	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:	11-Dec-11 12:48:31
Engineer:	R. TWEETEN	Calibration Date:	16-Jan-12 11:10:08
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:	0.993	0.993	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):	0.2224	0.2224	0.0000	+/- 0.0020
Calibrated Ratio:	10.11	10.11	0.001	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit

Snow-Block Porosity (decp):	0.0773	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:	16-Jan-12 11:10:08
Engineer:	C. BLUE	Calibration Date:	19-Jan-12 18:07:17
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):	0.0773	0.0759	-0.0014	+/- 0.0150
-----------------------------	--------	--------	---------	------------

PASS/FAIL SUMMARY	
-------------------	--

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - M335_P470_BLACK	Reference Calibration Date:	16-Jan-12 14:41:31
Engineer:	R. TWEETEN	Calibration Date:	16-Jan-12 14:51:09
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	-3325.81	-3350.68	-7000.00 - -1000.00
Pad Gain	0.0003893	0.0003912	0.000200 - 0.000600
Arm Offset	-4131.42	-4072.70	-5000.00 - 3000.00
Arm Gain	0.0005662	0.0005604	0.000300 - 0.000700
Arm Power	-0.000005644	-0.000005277	-0.000010 - 0.000010

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER
Tool Diameter: 4.50 in

CALIBRATION RINGS			
	Current Reading	Calibrated	Control Limit On

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)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.26	8.25	-0.01	+/- 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 - M335_P470_BLACK		Reference Calibration Date:	16-Jan-12 14:51:09
Engineer:	C. BLUE		Calibration Date:	19-Jan-12 17:50:46
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	3.74	-0.01	+/- 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 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:	11-Dec-11 13:28:20
Engineer:	R. TWEETEN	Calibration Date:	16-Jan-12 11:44:34
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	1.0836	1.0824	0.90 - 1.10
Near Dens Gain	1.0367	1.0376	0.90 - 1.10
Near Peak Gain	1.0329	1.0258	0.90 - 1.10
Near Lith Gain	0.9778	0.9874	0.90 - 1.10
Far Bar Gain	1.0141	1.0141	0.90 - 1.10
Far Dens Gain	0.9996	1.0012	0.90 - 1.10
Far Peak Gain	0.9936	0.9904	0.90 - 1.10
Far Lith Gain	0.9677	0.9648	0.90 - 1.10
Near Bar Offset	-0.5096	-0.5015	NONE
Near Dens Offset	-0.0476	-0.0600	NONE
Near Peak Offset	-0.0007	0.0500	NONE
Near Lith Offset	0.4479	0.3477	NONE
Far Bar Offset	0.0923	0.0910	NONE
Far Dens Offset	0.1995	0.1792	NONE
Far Peak Offset	0.2380	0.2501	NONE
Far Lith Offset	0.4085	0.4086	NONE
Near Bar Background	1050.36	1045.54	700 - 1450
Near Dens Background	344.83	343.13	230 - 480
Near Peak Background	150.25	149.37	100 - 210
Near Lith Background	182.31	182.65	125 - 260
Far Bar Background	547.54	545.30	450 - 900
Far Dens Background	213.77	213.27	175 - 345
Far Peak Background	82.59	82.98	70 - 140
Far Lith Background	86.89	88.21	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.690	1.690	0.000	+/- 0.015
Pe	2.489	2.595	0.106	+/- 0.150
ALUMINUM				
Density (g/cc)	2.602	2.602	0.000	+/- 0.01500
Pe	2.033	2.054	0.021	+/- 0.150

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

Calibration Version: 1

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

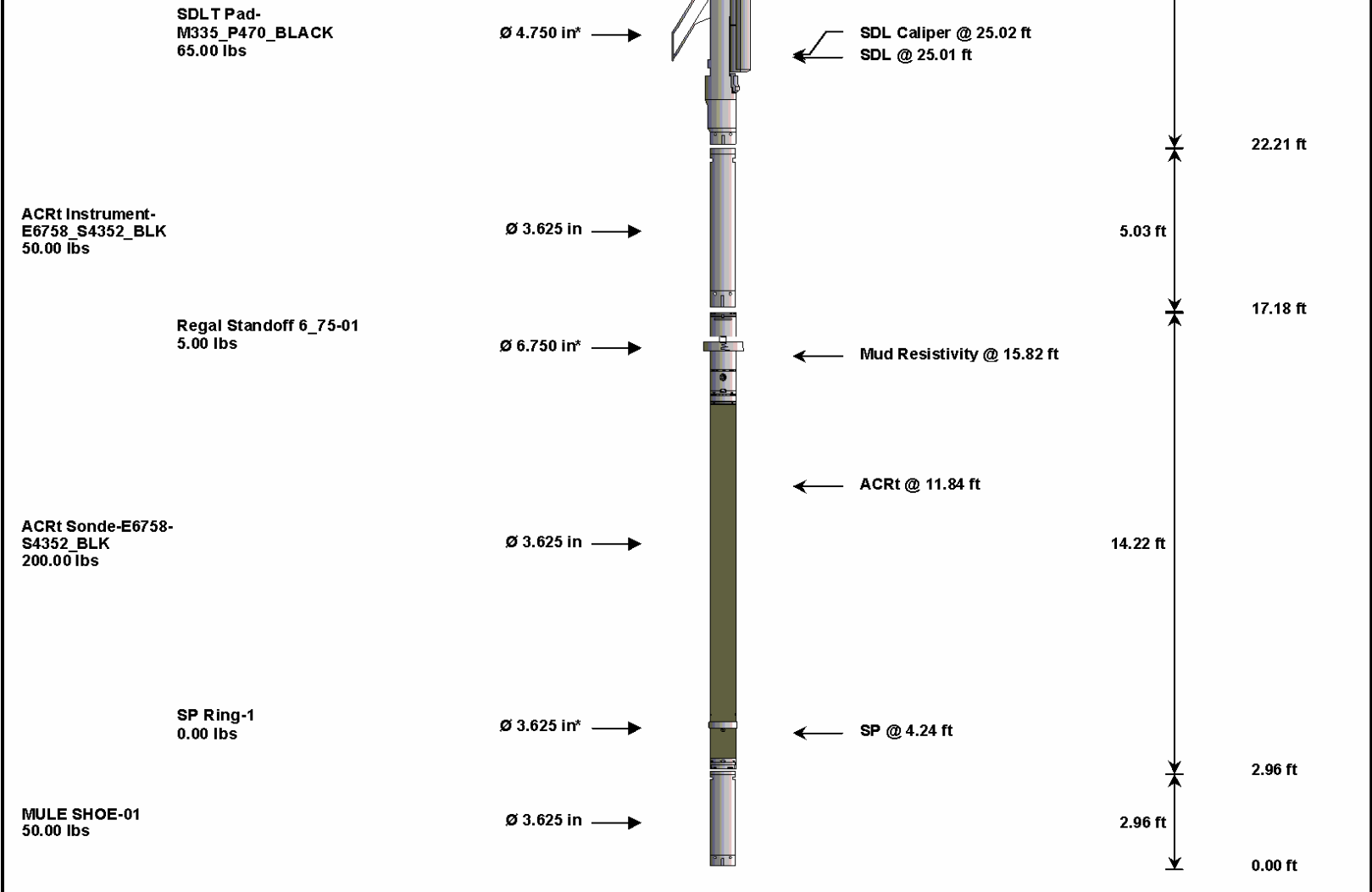
[illegible]

Pad Extension	3.75	3.74	-----	0.01		
Ring Diameter	8.25	8.26	-----	-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)	1720.684	1726.954	-----	-6.270	+/-16.644	cps
Far(B+D+P+L)	929.757	936.119	-----	-6.362	+/-16.499	cps
Data: ALTER_C09-33D\0001 NOBLE\IDLE						
Date: 20-Jan-12 16:44:41						

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-B097 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-11568969 114.00 lbs		Ø 3.625 in →		CSNG @ 45.25 ft	8.17 ft	50.87 ft
DSN Decentralizer-11812167 6.60 lbs		Ø 5.000 in* →		DSN Far @ 35.77 ft DSN Near @ 35.02 ft	9.69 ft	42.71 ft
DSNT-11812167 174.00 lbs		Ø 3.625 in →				33.02 ft
SDLT-M335_P470_BLACK 360.00 lbs		Ø 4.500 in →			10.81 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	59.39	300.00	
GTET	Gamma Telemetry Tool	11277436_BLACK		165.00	8.52	50.87	60.00	
CSNG	Compensated Spectral Natural Gamma	11568969		114.00	8.17	42.71	15.00	
DSNT	Dual Spaced Neutron	11812167		174.00	9.69	33.02	60.00	
DCNT	DSN Decentralizer	11812167		6.60	5.13	*	36.35	300.00
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	60.00
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	*	15.86	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: ALTER_C09-33D\0001 NOBLE\IDLE								
Date: 20-Jan-12 16:44:00								

COMPANY	NOBLE ENERGY INC		
WELL	ALTER C09-33D		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO

HALLIBURTON

ARRAY COMPENSATED
TRUE RESISTIVITY
SPECTRAL DENSITY

	OF ELECTRON DENSITY DUAL SPACED NEUTRON
--	--