HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY LOG

COMPANY **NOBLE ENERGY INC**

WELL **SCHMIDT K23-24D**

FIELD **WATTENBERG**

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

COMPANY	NOBLE ENERGY INC
WELL	SCHMIDT K23-24D
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO

API No. 05123316700000

Location SURFACE LOCATION: 2326' FSL & 2551' FWL NESW
BOTTOM LOCATION: 1220' FSL & 2584' FWL SESW
LATITUDE: 40.296550°
LONGITUDE: -104.744830°

Sect. 23 Twp. 4N Rge. 66W

Other Services:
RWCH
CSNG

Permanent Datum	GL	Elev. 4726.0 ft	Elev.: K.B.	4739.0 ft
Log measured from	KB	13.0 ft above perm. Datum	D.F.	4739.0 ft
Drilling measured from	KB		G.L.	4726.0 ft

Date		07-Apr-11					
Run No.		ONE					
Depth - Driller		7522.00 ft					
Depth - Logger		7522.0 ft					
Bottom - Logged Interval		7511 ft					
Top - Logged Interval		606 ft					
Casing - Driller		8.625 in @ 609.0 ft		@		@	
Casing - Logger		606.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		WBM					
Density	Viscosity	9.6 ppg	48.00 s/qt				
PH	Fluid Loss	8.00 pH	11.2 cptm				
Source of Sample		MUD CELL					
Rm @ Meas. Temperature		1.650 ohmm @ 75.00 degF		@		@	
Rmf @ Meas. Temperature		1.45 ohmm @ 75.00 degF		@		@	
Rmc @ Meas. Temperature		1.413 ohmm @ 75.00 degF		@		@	
Source Rmf	Rmc	CHART	CHART				
Rm @ BHT		0.59 ohmm @ 220.0 degF		@		@	
Time Since Circulation		8.0 hr					
Time on Bottom		07-Apr-11 05:50					
Max. Rec. Temperature		220.0 degF @ 7522.0 ft		@		@	
Equipment	Location	10800785	BRIGHTON				
Recorded By		F. LODER					
Witnessed By		T. HARRIS					

Fold here

Service Ticket No.: 8086885 API Serial No.: 05123316700000 PGM Version: WL INSITE R3.0.7 (Build 3)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

RESISTIVITY EQUIPMENT DATA

	Type Log	Depth	Scale Up Hole	Scale Down Hole	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Date					@				
Sample No.									
Depth-Driller					ONE	ACRt 587-585	N/A	1.5" S.O.	N/A
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					@				

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	11259758	Serial No.		Serial No.	I690M488	Serial No.	10935690
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.	2G8BICORN	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]		Serial No.	5256 GW	Serial No.	DSN430
Distance to Source	15'	FWDA [Y/N]		Strength	1.5 Ci	Strength	15 Ci

LOGGING DATA

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	7522'	7325'	REC	0 API	250 API				20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7325'	7023'	REC	0 API	250 API				20 %	0 %	2.71 g/cc	20 %	0 %	LIME
ONE	7025'	606'	REC	0 API	250 API				20 %	0 %	2.68 g/cc	20 %	0 %	SAND

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

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

BOREHOLE VOLUME PLOT CALCULATED USING 4.5 INCH CASING

TENSION PULLS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE

CHLORIDES REPORTED AT 1100 PPM

CREW: J. WALKER, N. GOULD RIG: ENSIGN 126

THANK YOU FOR USING 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
7023.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
7326.00					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDWT	Borehole Fluid Weight	9.600	ppg
	SHARED	OBM	Oil Based Mud System?	No	
	SHARED	RMUD	Mud Resistivity	1.600	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	60.0	degF
	SHARED	TD	Total Well Depth	7522.00	ft
	SHARED	BHT	Bottom Hole Temperature	220.0	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	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	
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

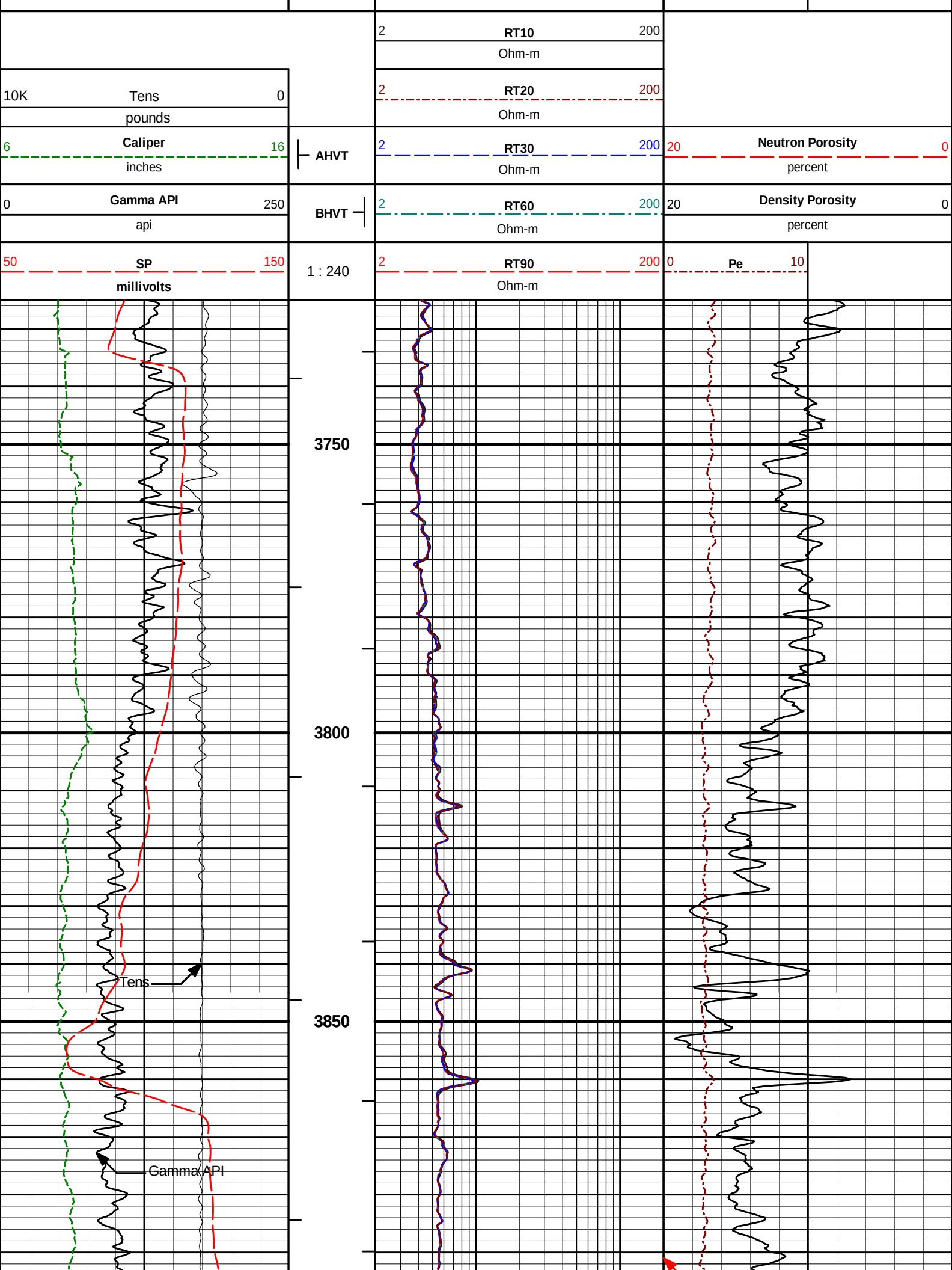
Data: SCHMIDT_K23_24D\0001 NOBLE_WHITE\002.01 07-Apr-11 07:09 Up **Date: 07-Apr-11 07:22:49**

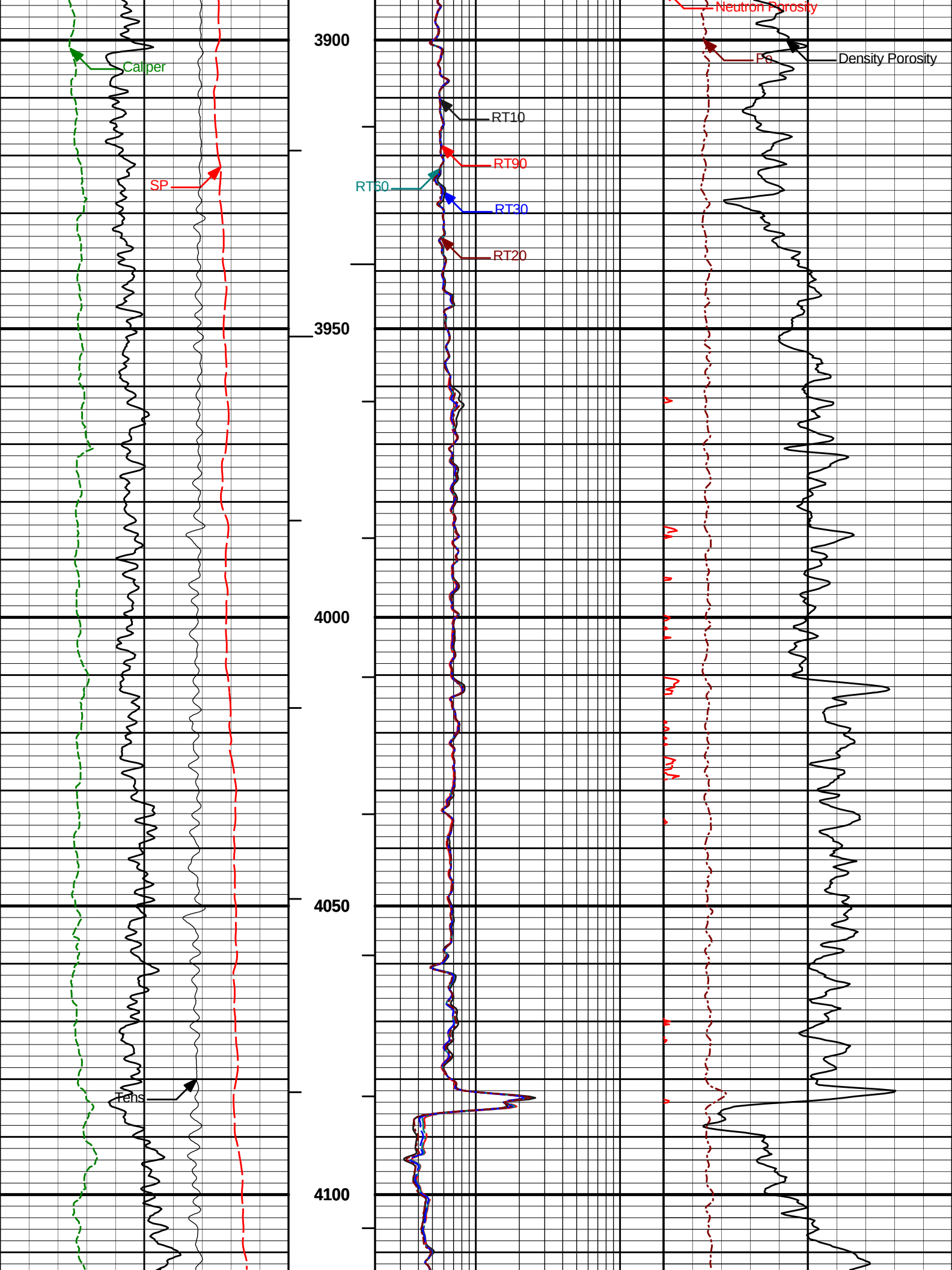
HALLIBURTON

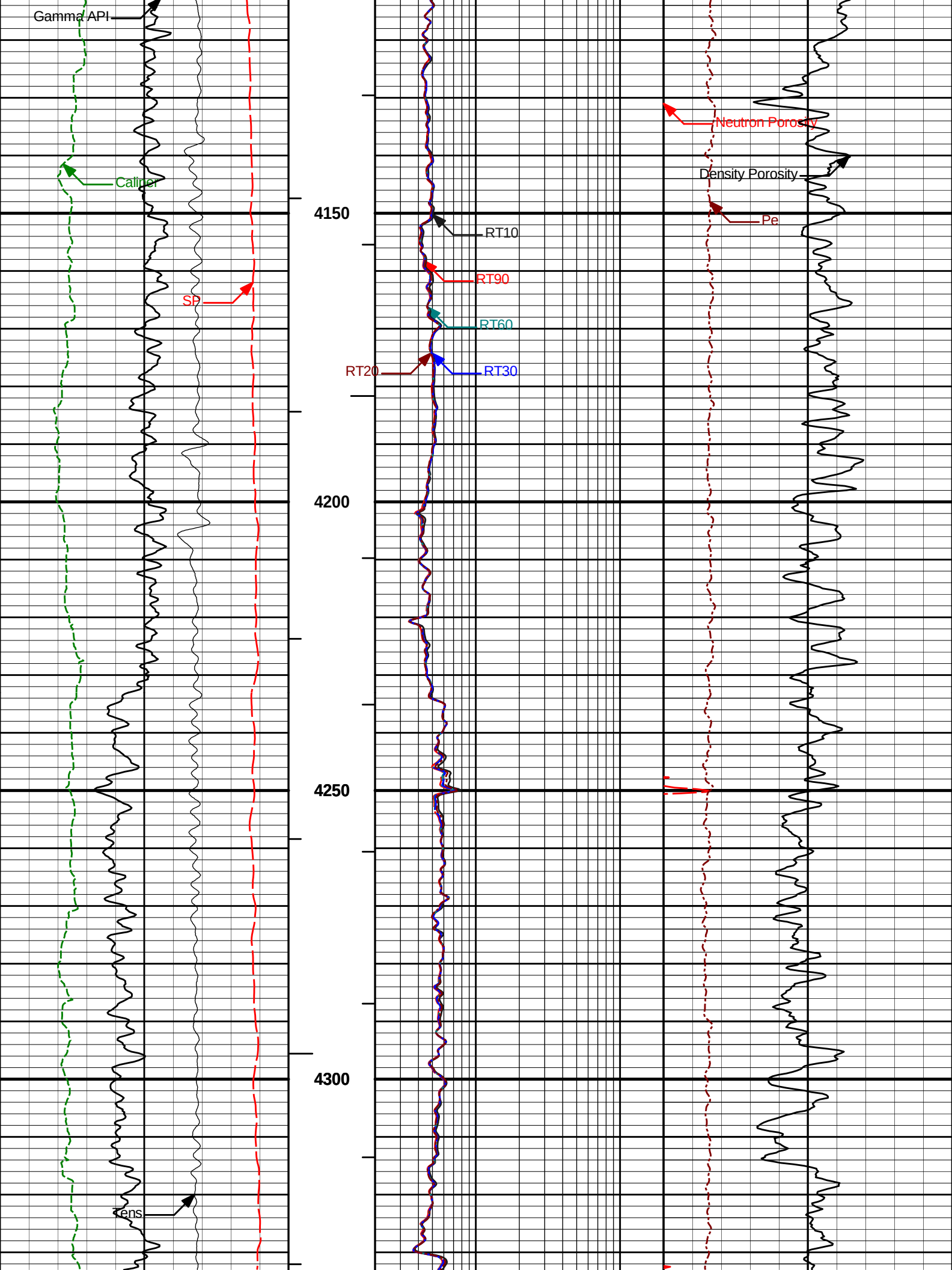
Plot Time: 07-Apr-11 07:42:20
Plot Range: 3725 ft to 4650 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\PARK_SUS

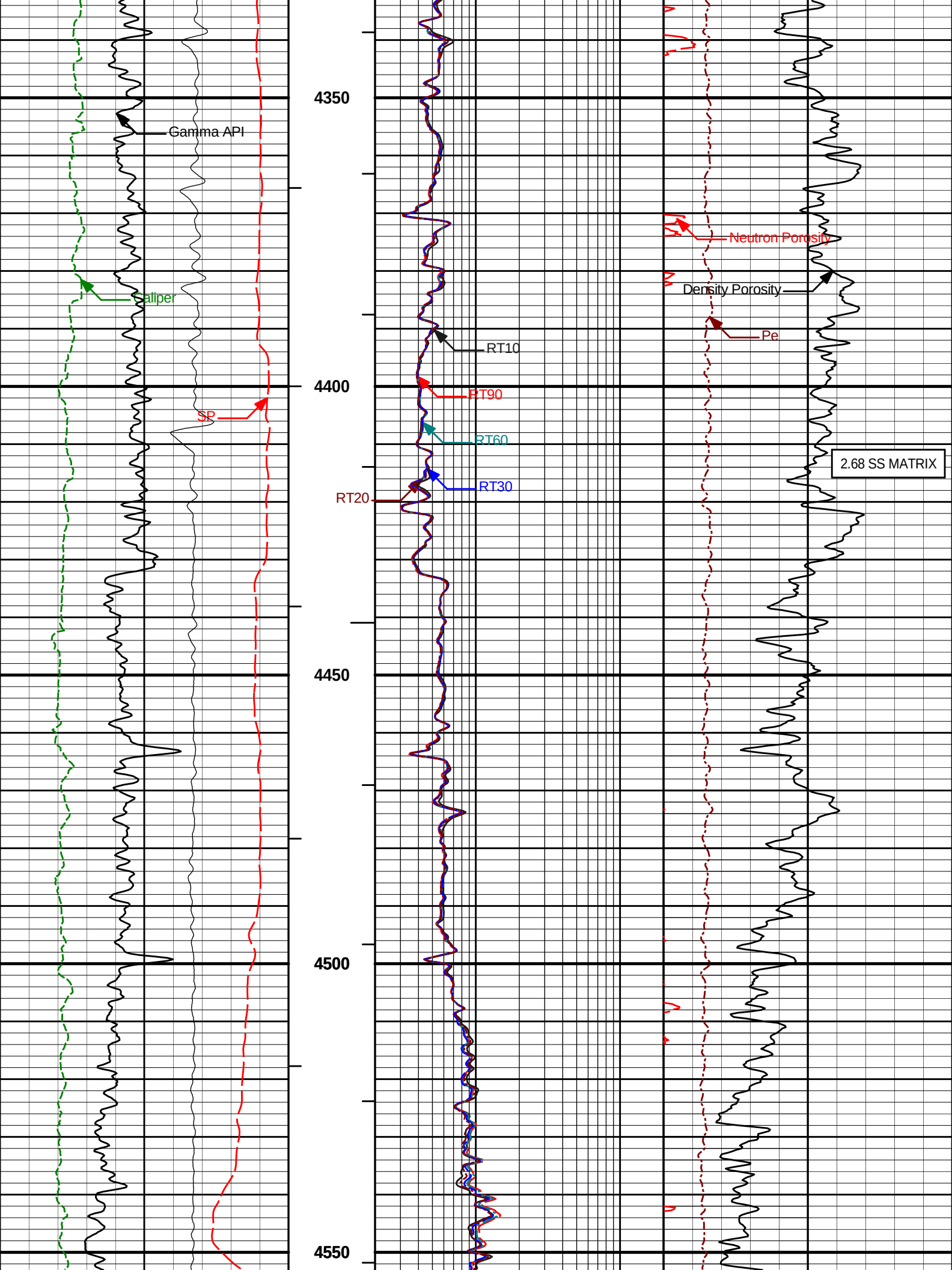
MAIN PASS 5" = 100'

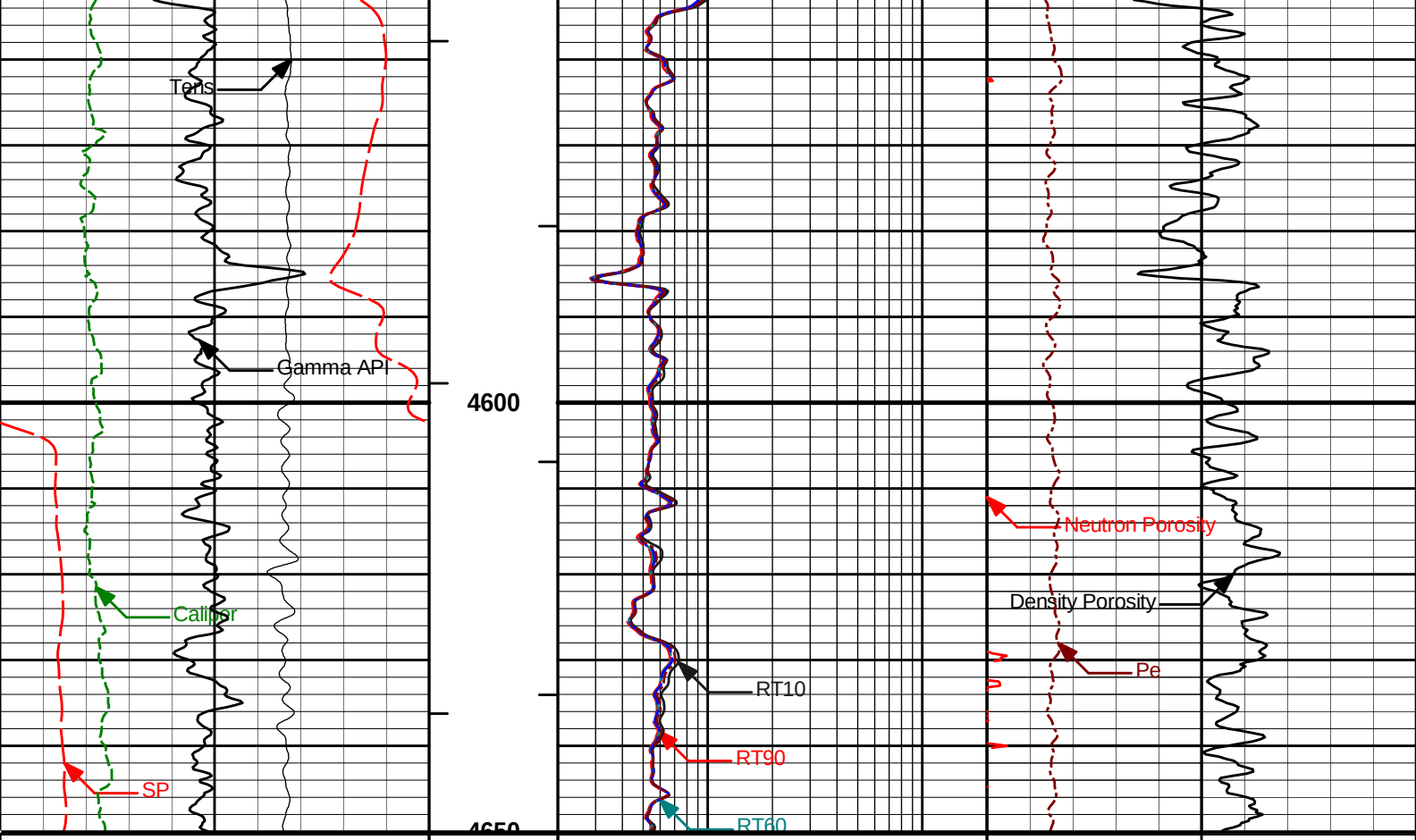
Track 1	Depth Track	Track 2	Track 5	Track 3


10K
Tens
0
pounds
6
Caliper
16
inches
0
Gamma API
250
api
50
SP
150
millivolts
2
RT10
200
Ohm-m
2
RT20
200
Ohm-m
2
RT30
200
Ohm-m
2
RT60
200
Ohm-m
2
RT90
200
Ohm-m
AHVT
BHVT
1 : 240
20
Neutron Porosity
0
percent
20
Density Porosity
0
percent
0
Pe
10
3750
3800
3850
Tens
Gamma API


Neutron Porosity
Fo
Density Porosity
Caliper
SP
Tens
RT10
RT90
RT60
RT30
RT20
3900
3950
4000
4050
4100


Gamma API
Caliper
SP
Tens
4150
4200
4250
4300
RT10
RT90
RT60
RT20
RT30
Neutron Porosity
Density Porosity
Pe


4350
4400
4450
4500
4550
Gamma API
Caliper
SP
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe
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

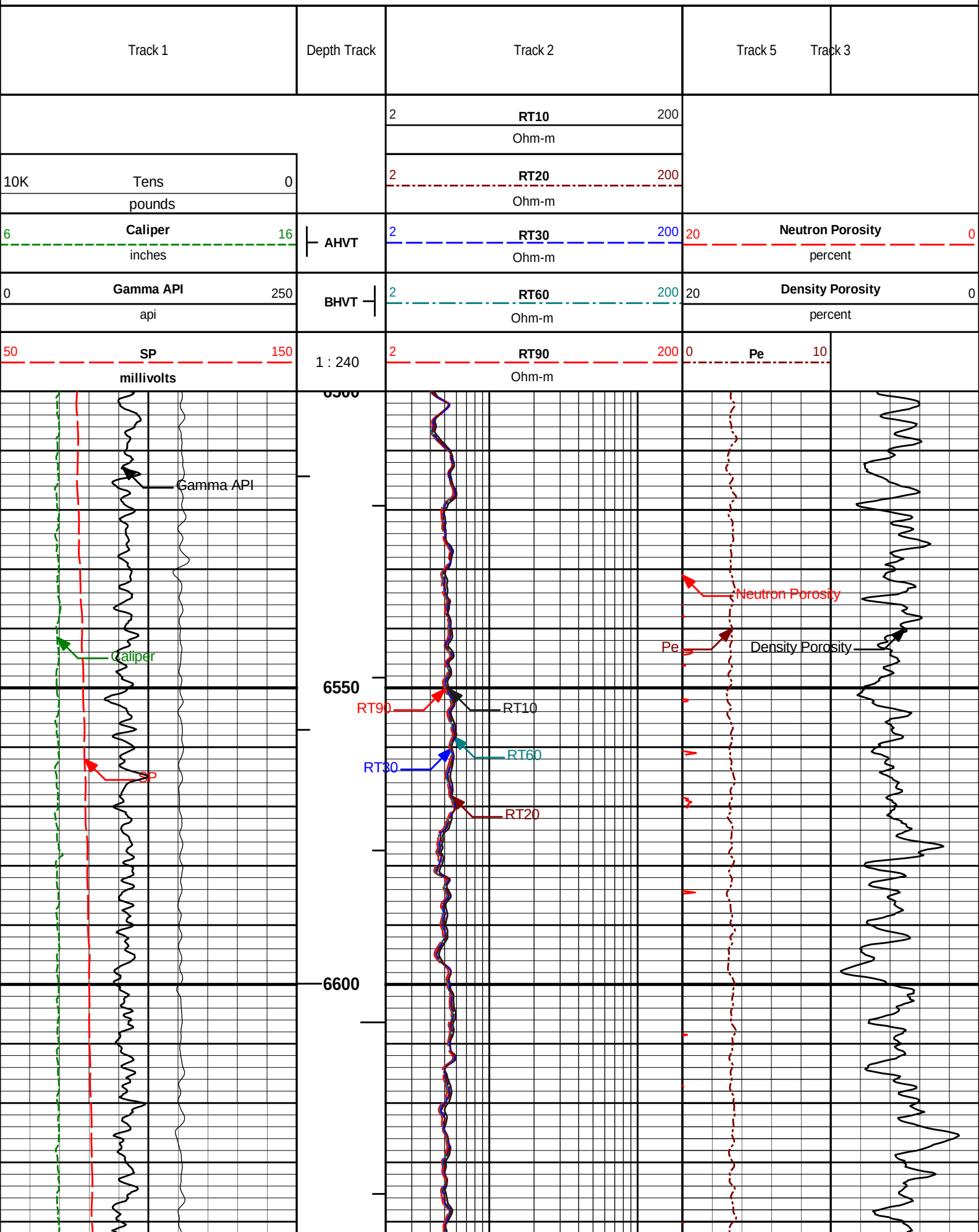
Plot Time: 07-Apr-11 07:42:25
Plot Range: 3725 ft to 4650 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\PARK_SUS

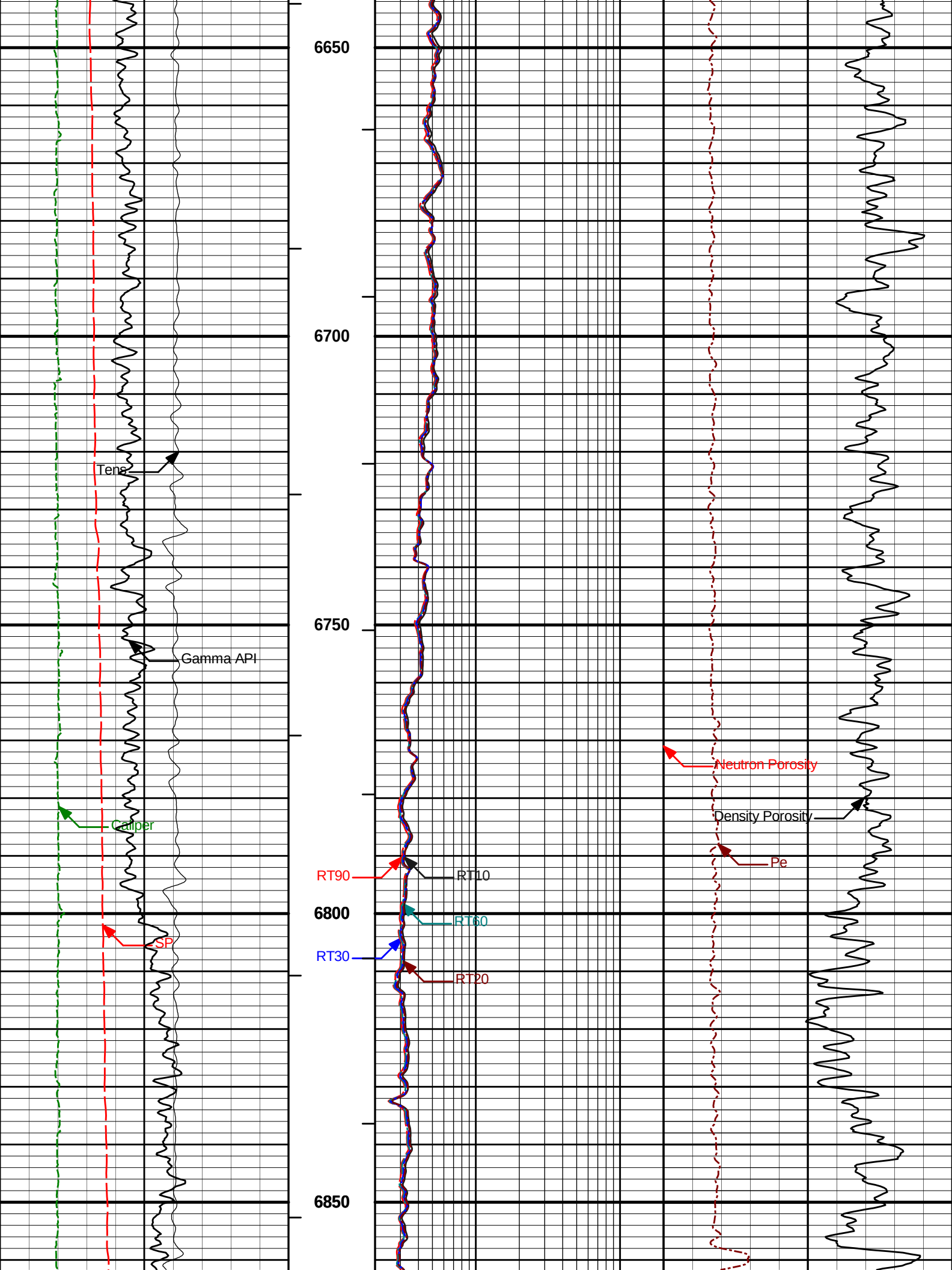
MAIN PASS 5" = 100'

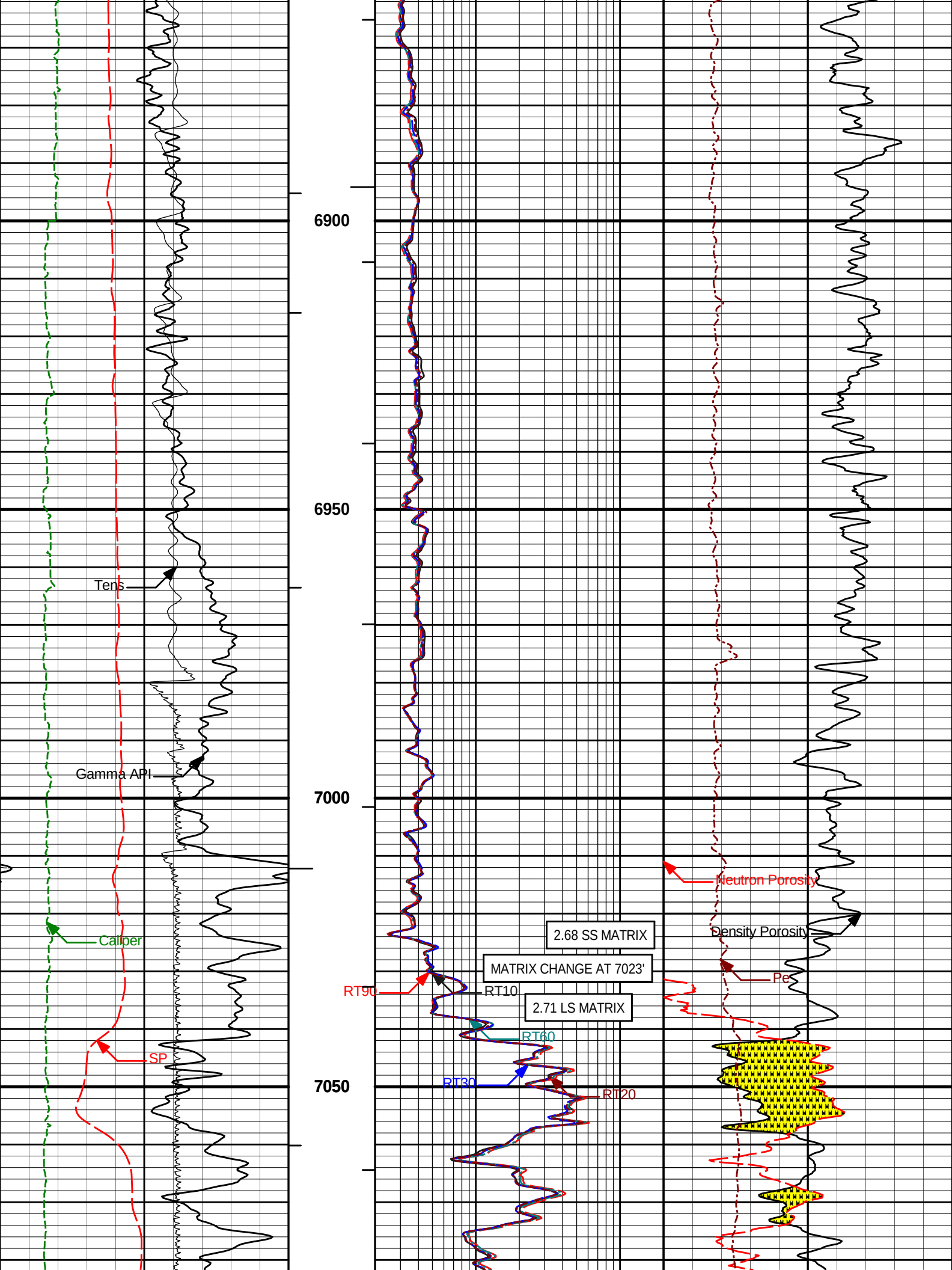
HALLIBURTON

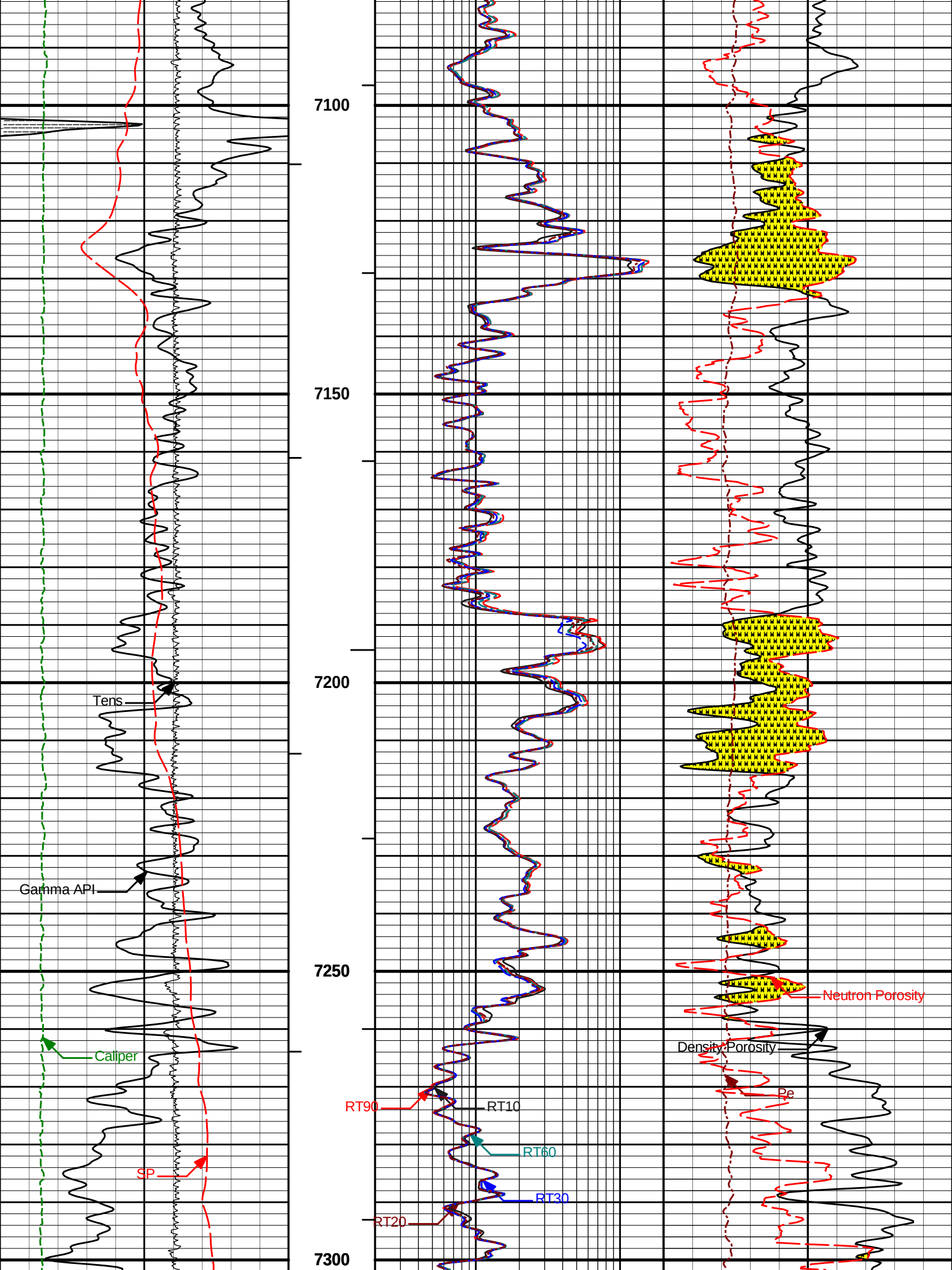
Plot Time: 07-Apr-11 07:42:26
Plot Range: 6500 ft to 7524.5 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\NIO_COD

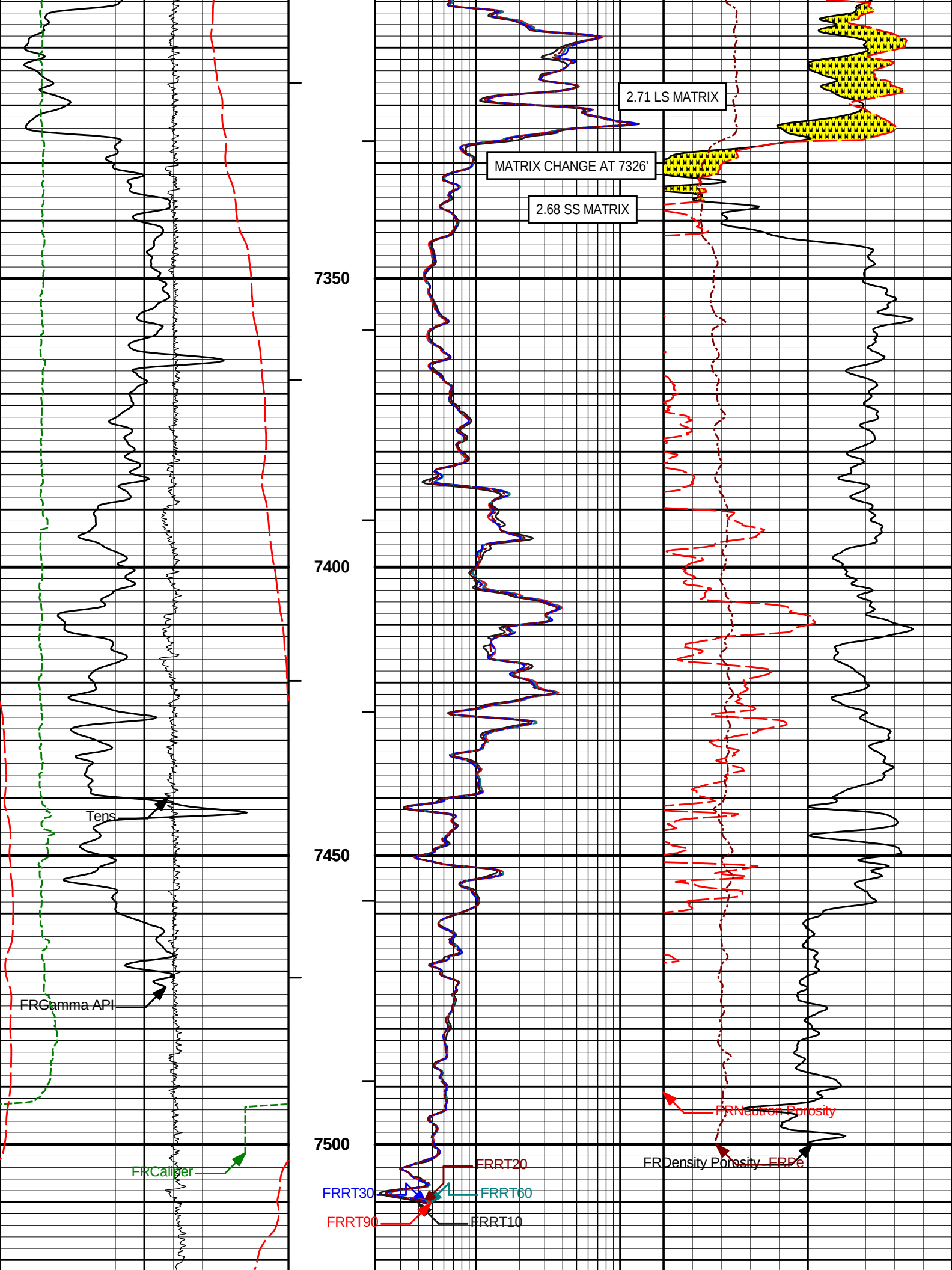
MAIN PASS 5" = 100'

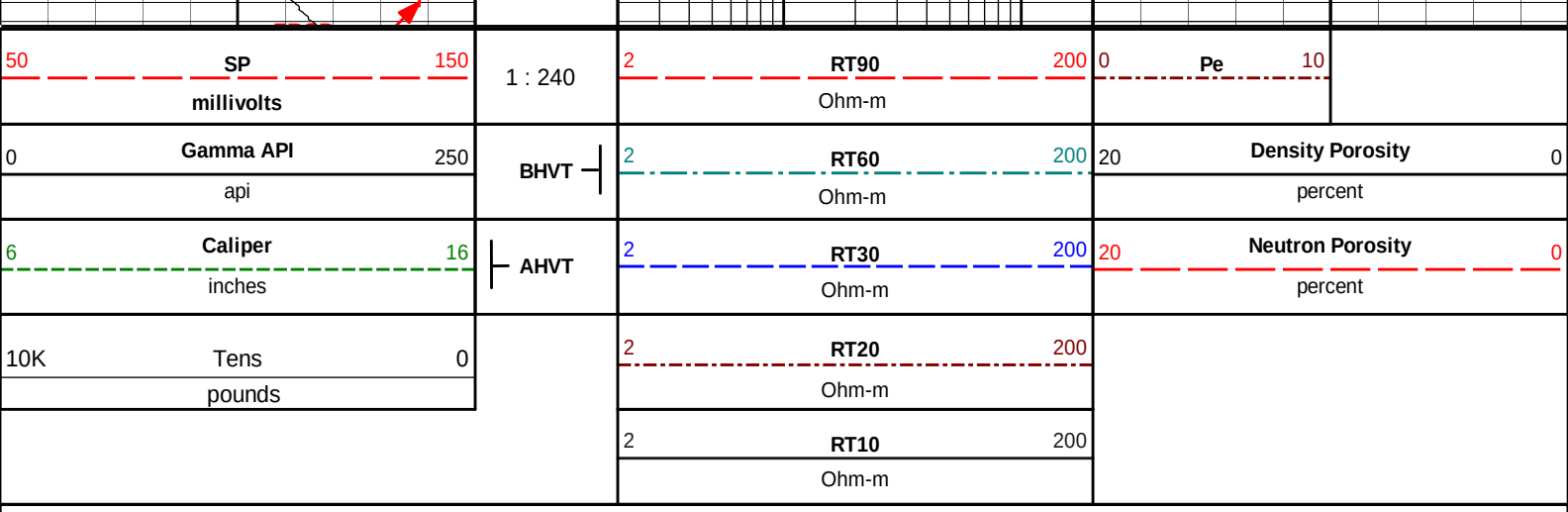

Track 1
Depth Track
Track 2
Track 5
Track 3
2
RT10
200
Ohm-m
2
RT20
200
Ohm-m
10K
Tens
0
pounds
6
Caliper
16
inches
AHVT
2
RT30
200
Ohm-m
20
Neutron Porosity
0
percent
0
Gamma API
250
api
BHVT
2
RT60
200
Ohm-m
20
Density Porosity
0
percent
50
SP
150
millivolts
1 : 240
2
RT90
200
Ohm-m
0
Pe
10
6550
6600
Gamma API
Caliper
SP
RT90
RT10
RT30
RT60
RT20
Neutron Porosity
Pe
Density Porosity


6650
6700
6750
6800
6850
Tens
Gamma API
Caliper
SP
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


6900
6950
7000
7050
Tens
Gamma API
Caliper
SP
RT90
RT10
RT60
RT30
RT20
2.68 SS MATRIX
MATRIX CHANGE AT 7023'
2.71 LS MATRIX
Neutron Porosity
Density Porosity
Pe


7100
7150
7200
7250
7300
Tens
Gamma API
Caliper
SP
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


2.71 LS MATRIX
MATRIX CHANGE AT 7326'
2.68 SS MATRIX
7350
7400
7450
7500
Tens
FRGamma API
FRCaliper
FRRT20
FRRT30
FRRT60
FRRT90
FRRT10
FRNeutron Porosity
FRDensity Porosity_FRPe



HALLIBURTON

Plot Time: 07-Apr-11 07:42:28
Plot Range: 6500 ft to 7524.5 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \\COMP\NIO_COD

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11259758**	**Reference Calibration Date:**	**24-Mar-11 09:53:48**
Engineer:	**C. BLUE**	**Calibration Date:**	**24-Mar-11 09:56:27**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB290
Calibrator API Reference:235.00 api

Measurement	Measured	Calibrated	Units
Background	79.4	80.3	api
Background + Calibrator	315.8	319.4	api
Calibrator	240.0	239.1	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11259758**	**Reference Calibration Date:**	**24-Mar-11 09:56:27**
Engineer:	**C. BLUE**	**Calibration Date:**	**07-Apr-11 00:40:48**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB290
Calibrator API Reference:235.00 api

Field Verification	Shop	Field	Units
Background	80.3	78.1	api
Background + Calibrator	319.4	314.1	api
Calibrator	239.1	236.0	api

Shop	Field	Difference	Tolerance
239.1	236.0	3.1	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	**CSNG - 10846351**	**Reference Calibration Date:**	**13-Jan-11 14:31:21**
Engineer:	**C. BLUE**	**Calibration Date:**	**15-Mar-11 01:51:01**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**
Source SN:	**TB 290**		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.2	23.0	Channel #
583 KEV Peak Channel #	52.3	51.6	Channel #
2614 KEV Peak Channel #	215.1	211.4	Channel #
Calibrate Temperature	48.5	79.4	degF

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

Blanket Reference Value: 235.00 API
Calibrator Value: 266.9 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1581.8	CPS	331.0	333.2	API
Background	314.8	CPS	64.1	66.3	API

Gamma Ray Gain: 1.06
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 10846351**	**Reference Calibration Date:**	**15-Mar-11 01:51:01**
Engineer:	**C. BLUE**	**Calibration Date:**	**07-Apr-11 00:48:09**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**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	23.1	Channel #
583 KEV Peak Channel #	51.6	51.8	Channel #
2614 KEV Peak Channel #	211.4	212.6	Channel #
Calibrate Temperature	79.4	55.0	degF

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

Blanket Reference Value: 235.00 API
Calibrator Value: 266.9 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1600.0	CPS	333.2	334.3	API

Background	322.7	CPS	66.3	67.4	API

Gamma Ray Gain: 1.05
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 10935690**	**Reference Calibration Date:**	**05-Apr-11 15:20:42**
Engineer:	**C. BLUE**	**Calibration Date:**	**05-Apr-11 15:34:13**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

Logging Source S/N: DSN430
Tank Serial Number: BRIGHTON
Reference value assigned to Tank: 55.000
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:	1.056	1.054	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):	0.2303	0.2295	0.0007	+/- 0.0020
Calibrated Ratio:	10.38	10.35	0.024	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0861	0.02000 - 0.09000

PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT - I690M488**	**Reference Calibration Date:**	**05-Apr-11 11:46:21**
Engineer:	**C. BLUE**	**Calibration Date:**	**05-Apr-11 12:04:27**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**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	1.0786	1.0887	0.90 - 1.10
Near Dens Gain	1.0336	1.0591	0.90 - 1.10
Near Peak Gain	1.0299	1.0690	0.90 - 1.10
Near Lith Gain	0.9913	1.0589	0.90 - 1.10
Far Bar Gain	1.0162	1.0180	0.90 - 1.10
Far Dens Gain	1.0038	1.0053	0.90 - 1.10
Far Peak Gain	0.9996	1.0012	0.90 - 1.10

Far Lith Gain	0.9856	0.9828	0.90 - 1.10
Near Bar Offset	-0.6844	-0.7773	NONE
Near Dens Offset	-0.2289	-0.4533	NONE
Near Peak Offset	-0.1784	-0.5037	NONE
Near Lith Offset	0.1156	-0.4516	NONE
Far Bar Offset	-0.2148	-0.2309	NONE
Far Dens Offset	-0.0767	-0.0928	NONE
Far Peak Offset	-0.0275	-0.0464	NONE
Far Lith Offset	0.0587	0.0761	NONE
Near Bar Background	990.81	992.94	700 - 1450
Near Dens Background	325.90	324.42	230 - 480
Near Peak Background	140.18	142.22	100 - 210
Near Lith Background	173.29	171.57	125 - 260
Far Bar Background	609.10	608.30	450 - 900
Far Dens Background	242.52	243.75	175 - 345
Far Peak Background	93.26	93.92	70 - 140
Far Lith Background	99.49	99.61	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.674	1.680	0.006	+/- 0.015
Pe	2.652	2.591	-0.061	+/- 0.150
ALUMINUM				
Density (g/cc)	2.596	2.600	0.004	+/- 0.01500
Pe	3.064	3.097	0.033	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0007	+/- 0.0110	-0.0007	+/- 0.0140
Magnesium Block	-0.0000	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	0.0002	+/- 0.0110	-0.0005	+/- 0.0140
Resolution	9.34	6.00 - 11.50	10.00	6.00 - 11.50
Internal Verifier(B+D+P+L)	1631	1200 - 2700	1046	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 - I690M488 **Reference Calibration Date:** 05-Apr-11 12:04:27

Engineer:	**C. BLUE**	**Calibration Date:**	**07-Apr-11 00:39:36**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

Pad Temperature: 64.7 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1631.146	1630.959	-0.187	16.231
Far (B+D+P+L) cps	1045.581	1046.490	0.909	17.194
Near Resolution	9.34	9.45	0.110	0.50
Far Resolution	10.00	10.19	0.190	1.00

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - I690M488**	**Reference Calibration Date:**	**05-Apr-11 14:50:26**
Engineer:	**C. BLUE**	**Calibration Date:**	**05-Apr-11 14:54:45**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1331.17	-1220.98	-7000.00 - -1000.00
Pad Gain	0.0003813	0.0003778	0.000200 - 0.000600
Arm Offset	-2874.94	-2852.38	-5000.00 - 3000.00
Arm Gain	0.0005893	0.0005525	0.000300 - 0.000700
Arm Power	-0.000006524	-0.000003910	-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)	1.98	2.00	0.02	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.55	6.50	-0.05	+/- 0.20
Medium Ring (in)	8.37	8.25	-0.12	+/- 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 - I690M488**	**Reference Calibration Date:**	**05-Apr-11 14:54:45**
Engineer:	**C. BLUE**	**Calibration Date:**	**07-Apr-11 00:42:14**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**

MEASURED CALIPER VALUES

Measurement				Control Limit On

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.67	-0.08	+/- 0.10
Ring Diameter	8.25	8.27	0.02	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt - E2584-S2585 **Reference Calibration Date:** 03-Nov-10 10:44:15

Engineer: jay **Calibration Date:** 03-Nov-10 10:51:44

Software Version: WL INSITE R3.0.3 (Build 5) **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	0.9953	1.05	0.95	0.9974	1.05	0.95	0.9996	1.05
A2 (50")	0.95	0.9982	1.05	0.95	1.0023	1.05	0.95	1.0079	1.05
A3 (29")	0.95	0.9941	1.05	0.95	0.9981	1.05	0.95	1.0007	1.05
A4 (17")	0.95	1.0012	1.05	0.95	1.0026	1.05	0.95	1.0079	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0041	1.05	0.95	1.0078	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9767	1.05	0.95	0.9805	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	-0.905	2	-6	-3.851	-2	-8	-4.963	-2
A2 (50")	-7	-2.085	-1	-6	-3.663	-2	-7	-4.346	-2
A3 (29")	-27	-13.099	-9	-9	-3.782	-3	-7	-3.099	-1
A4 (17")	-180	-93.981	-60	-45	-30.503	-15	-39	-25.130	-13
A5 (10")	N/A	N/A	N/A	-150	-80.427	-50	-80	-41.649	-10
A6 (6")	N/A	N/A	N/A	175	295.215	525	90	149.633	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.9826	1.3
36K	1.0	1.9222	2.0
72K	1.0	1.2230	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.997	1.05

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11259758						
Gamma Ray Calibrator	239.1	236.0	----------	3.1	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.0	23.1	----------	-0.1	----------	Channel #
583 KEV Peak Channel #	51.6	51.8	----------	-0.2	----------	Channel #
2614 KEV Peak Channel #	211.4	212.6	----------	-1.2	----------	Channel #
DSNT-10935690						
Snow-Block Porosity	0.0861	----------	----------	0.0000	+/- -.--	decp
SDLT-I690M488						
Near(B+D+P+L)	1631.146	1630.959	----------	0.187	+/-16.231	cps

Far(B+D+P+L)	1045.581	1046.490	----------	-0.909	+/-17.194	cps
Pad Extension	3.75	3.67	----------	0.08	+/-0.10	in
Ring Diameter	8.25	8.27	----------	-0.020	+/-0.15	in
ACRt-E2584-S2585						
Mud Cell	0.997	----------	----------	0.000	----------	ohm-m

Data: SCHMIDT_K23_24D\0001 NOBLE_WHITE\002.01 07-Apr-11 07:09 Up **Date: 07-Apr-11 07:23:20**

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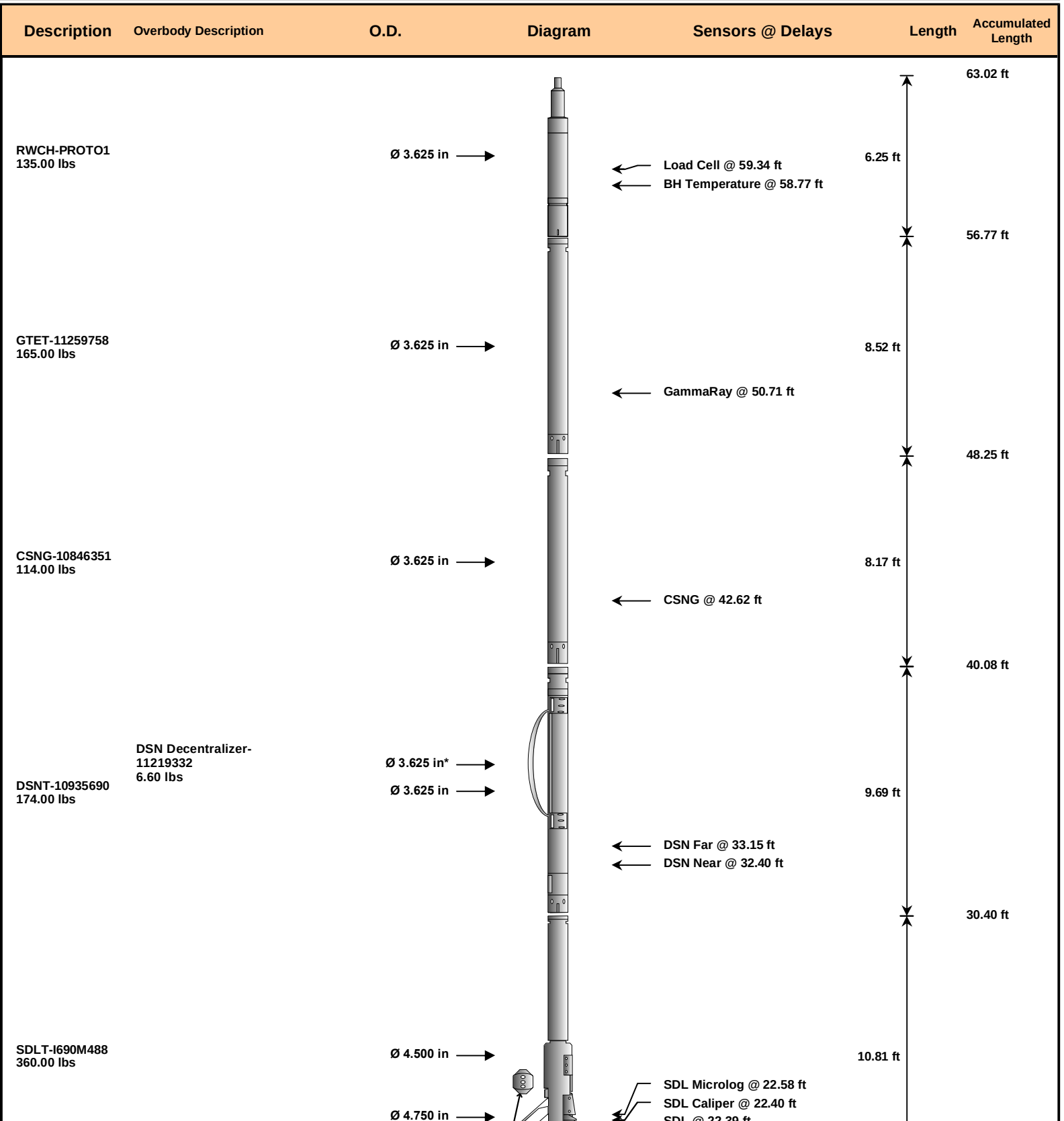
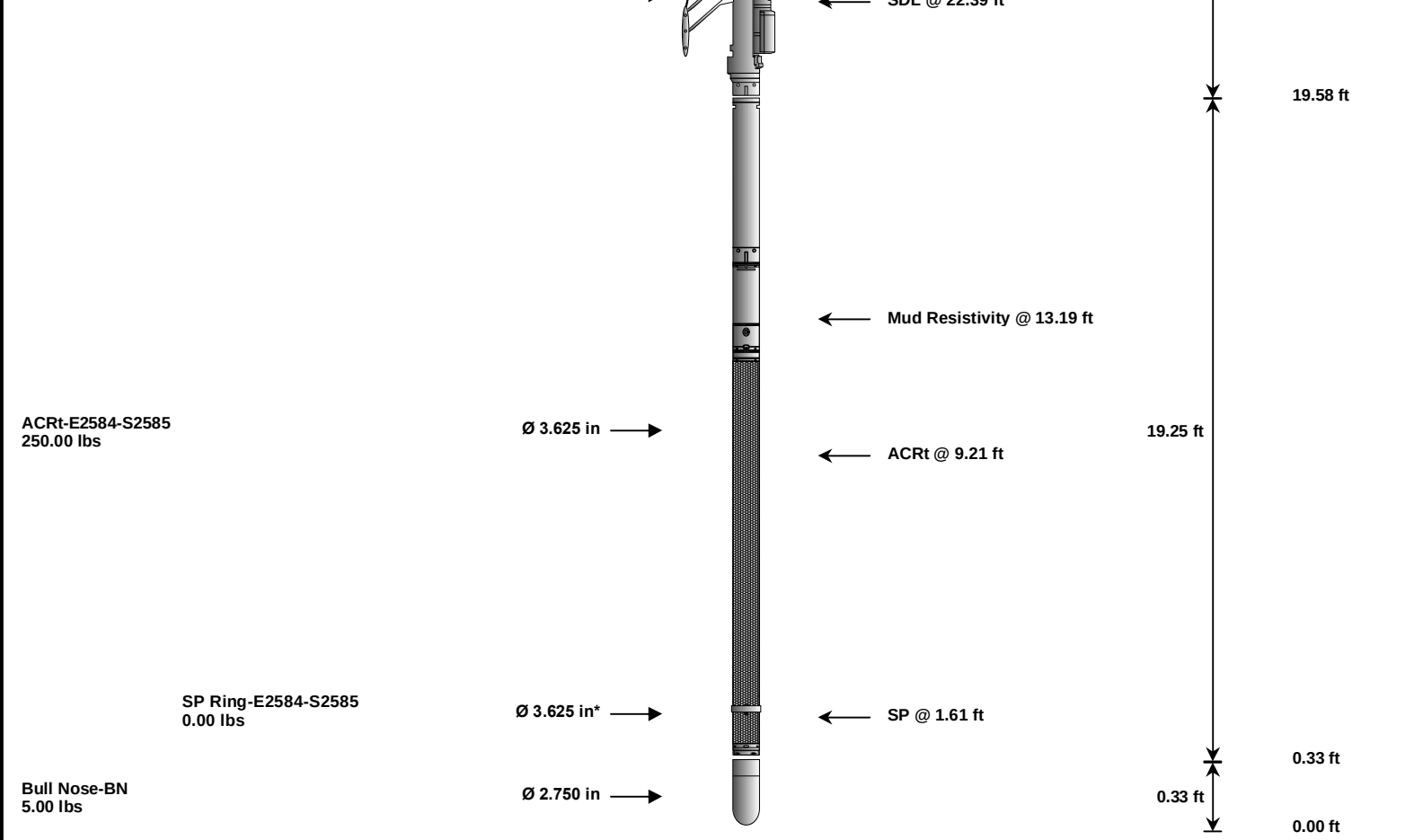
TOOL STRING DIAGRAM REPORT





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	PROTO1	135.00	6.25		56.77	300.00
GTET	Gamma Telemetry Tool	11259758	165.00	8.52		48.25	60.00
CSNG	Compensated Spectral Natural Gamma	10846351	114.00	8.17		40.08	15.00
DSNT	Dual Spaced Neutron	10935690	174.00	9.69		30.40	60.00
DCNT	DSN Decentralizer	11219332	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	I690M488	360.00	10.81		19.58	60.00
ACRt	Array Compensated True Resistivity	E2584-S2585	250.00	19.25		0.33	300.00
SP	SP Ring	E2584-S2585	0.00	0.25	*	1.61	300.00
BLNS	Bull Nose	BN	5.00	0.33		0.00	300.00
Total			**1,209.60**	**63.02**			

* Not included in Total Length and Length Accumulation.

Data: SCHMIDT_K23_24D\0001 NOBLE_WHITE\IDLE **Date: 07-Apr-11 05:20:33**

COMPANY	**NOBLE ENERGY INC**		
WELL	**SCHMIDT K23-24D**		
FIELD	**WATTENBERG**		
COUNTY	**WELD**	STATE	**CO**

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SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY
LOG