

HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY ARRAY COMPENSATED TRUE RESISTIVITY

COMPANY	NOBLE ENERGY INC		
WELL	MOSER H34-27		
FIELD	WATTENBERG		
COUNTY	WELD		
STATE	CO		
COMPANY	NOBLE ENERGY INC	WELL	MOSER H34-27
FIELD	WATTENBERG	COUNTY	WELD
STATE	CO	COUNTY	WELD
API No.	05123299470000	Location	SHL: 175' FNL & 1289' FEL (NENE) LAT: 40.188600 LONG: -104.644770
Other Services:	RWCH CSNG	Location	SHL: 175' FNL & 1289' FEL (NENE) LAT: 40.188600 LONG: -104.644770
Secl.	34	Twp.	3N
Rge.	65W	Elev.	4825.0 ft
Log measured from	KB	Elev.	4838.0 ft
Drilling measured from	KB	Elev.	4838.0 ft

Date	08-Jan-12	Run No.	ONE
Depth - Driller	7795.00 ft	Depth - Logger	7797.0 ft
Bottom - Logged Interval	7795.0 ft	Top - Logged Interval	100.0 ft
Casing - Driller	8.625 in	Casing - Logger	783.0 ft
Bit Size	7.875 in	Type Fluid in Hole	WATER-BASED MUD
Density	9.6 ppg	Viscosity	45.00 s/qt
PH	8.00 pH	Fluid Loss	1.3 cpm
Source of Sample	MUD TANK	Rm @ Meas. Temperature	1.950 ohmm @ 68.00 degF
Rm @ Meas. Temperature	1.57 ohmm @ 75.00 degF	Rmf @ Meas. Temperature	1.514 ohmm @ 75.00 degF
Rmc @ Meas. Temperature	1.514 ohmm @ 75.00 degF	Source Rmf	CALC
Rm @ BHT	0.60 ohmm @ 235.0 degF	Time Since Circulation	9.6 hr
Time on Bottom	08-Jan-12 17:34	Max. Rec. Temperature	235.0 degF @ 7797.0 ft
Equipment	11014853	Location	G.I. CO
Recorded By	J. KRONABLE	Witnessed By	MIKE SITTON

Fold here

Service Ticket No.: 9192584 API Serial No.: 05123299470000 PGM Version: WL INSITE R3.4.4 (Build 2)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE				RESISTIVITY SCALE CHANGES			
Date	Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole
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.
Rmf @ Meas. Temp.	@	@		ONE	ACRt90190515-	N/A	1.5" S.O.
Rmc @ Meas. Temp.	@	@			E9775-		
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.	11005602	Serial No.		Serial No.	10951300	Serial No.	10993887
Model No.	GTET	Model No.		Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"
Detector Model No.	GTET	Spacing		Log Type	GAMMA/GAMMA	Log Type	NEU/NEU
Type	SCINT			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]		Serial No.	5153GW	Serial No.	DSN-338
Distance to Source	17'	FWDA [Y/N]		Strength	1.5 Ci	Strength	15 Ci

LOGGING DATA

GENERAL GAMMA ACOUSTIC DENSITY NEUTRON

Run	GENERAL		Speed ft/min	GAMMA		ACOUSTIC		Matrix	DENSITY		NEUTRON			
	Depth			Scale		Scale			Scale		Matrix			
	No.	From		To	L	R	L		R	L	R	L	R	
ONE	7797	7574	REC	0 API	250 API				20 %	0 %	2.65 g/cc	20 %	0 %	SAND
ONE	7574	7133	REC	0 API	250 API				20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7133	6848	REC	0 API	250 API				20 %	0 %	2.71 g/cc	20 %	0 %	LIME
ONE	6848	783	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

ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH PRODUCTION CASING

CHLORIDES REPORTED AT 1040 PPG

TIGHT BOREHOLE CONDITIONS AND TENSION PULLS MAY EFFECT QUALITY OF LOGS

YOUR CREW TODAY: J. GAY, M. BRANDEL, P. DIMPFL

RIG: CADE 21

THANKYOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, GRAND JUNCTION, CO (970) 523-3600

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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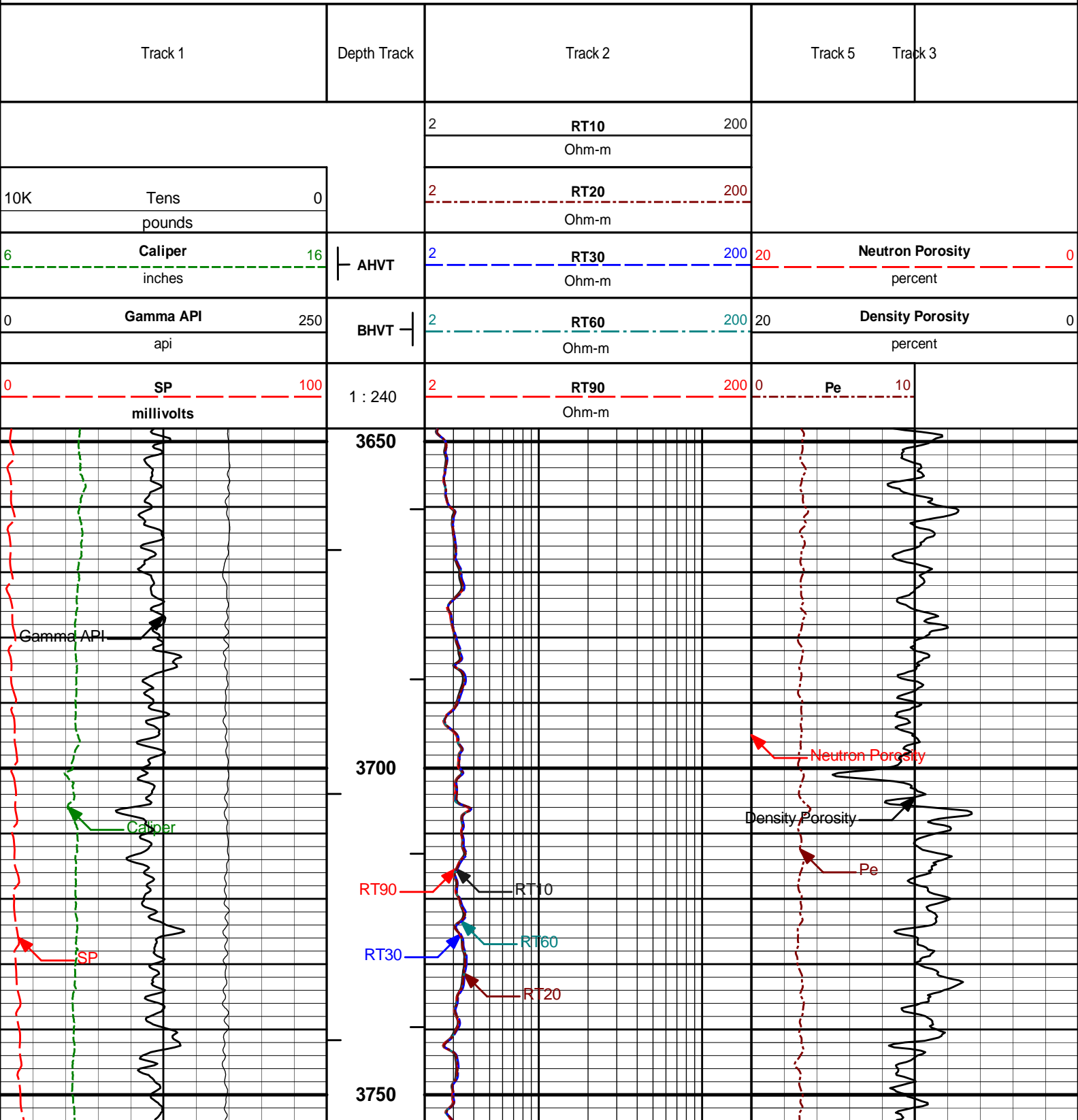
PARAMETERS REPORT

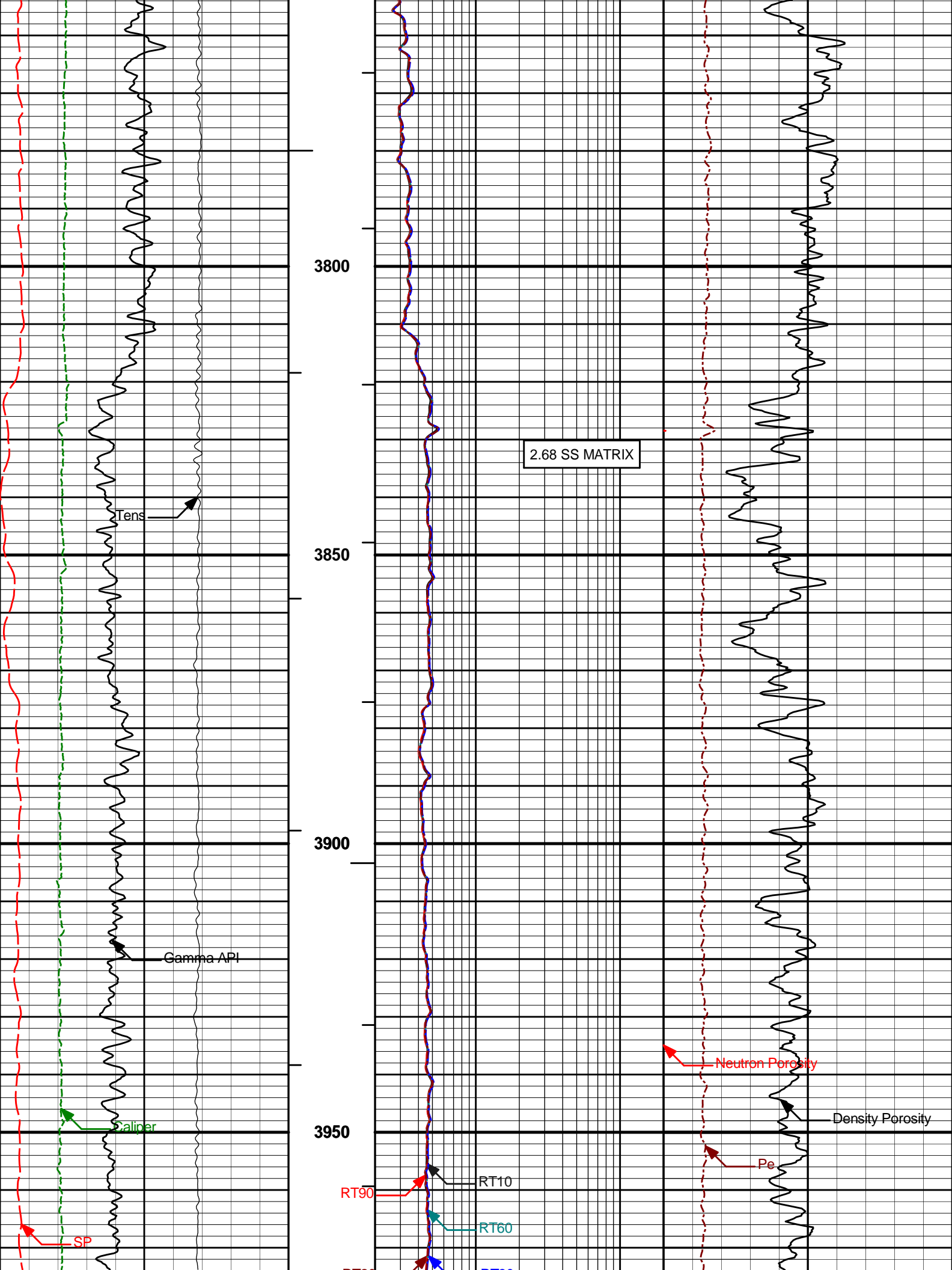
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
6848.00	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
7133.00	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
7574.00	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	9.600	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	1.950	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	7795.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF

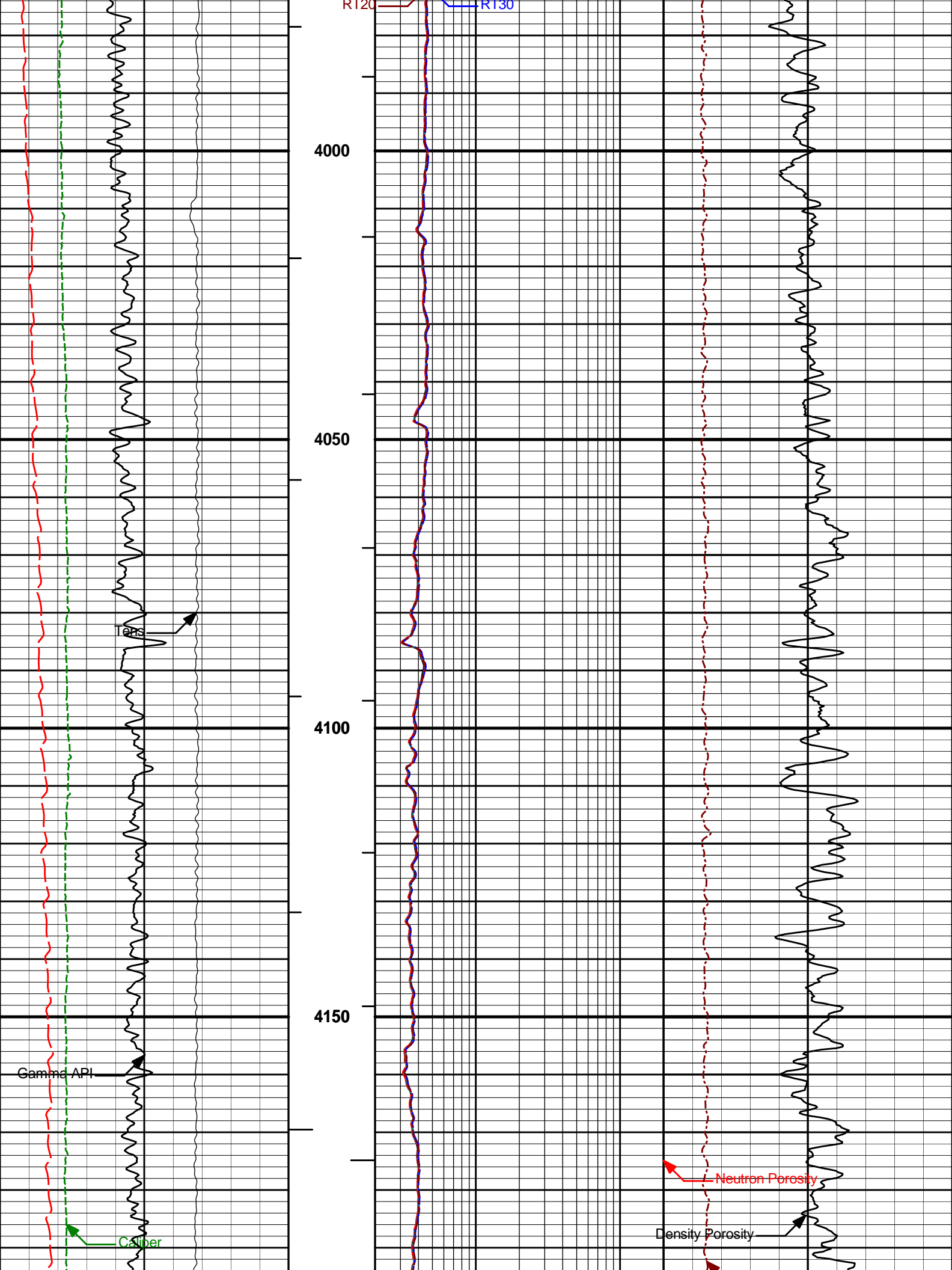
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
Rwa / CrossPlot	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	0.250	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	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
SDLT	CLOK	Process Caliper Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.650	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	

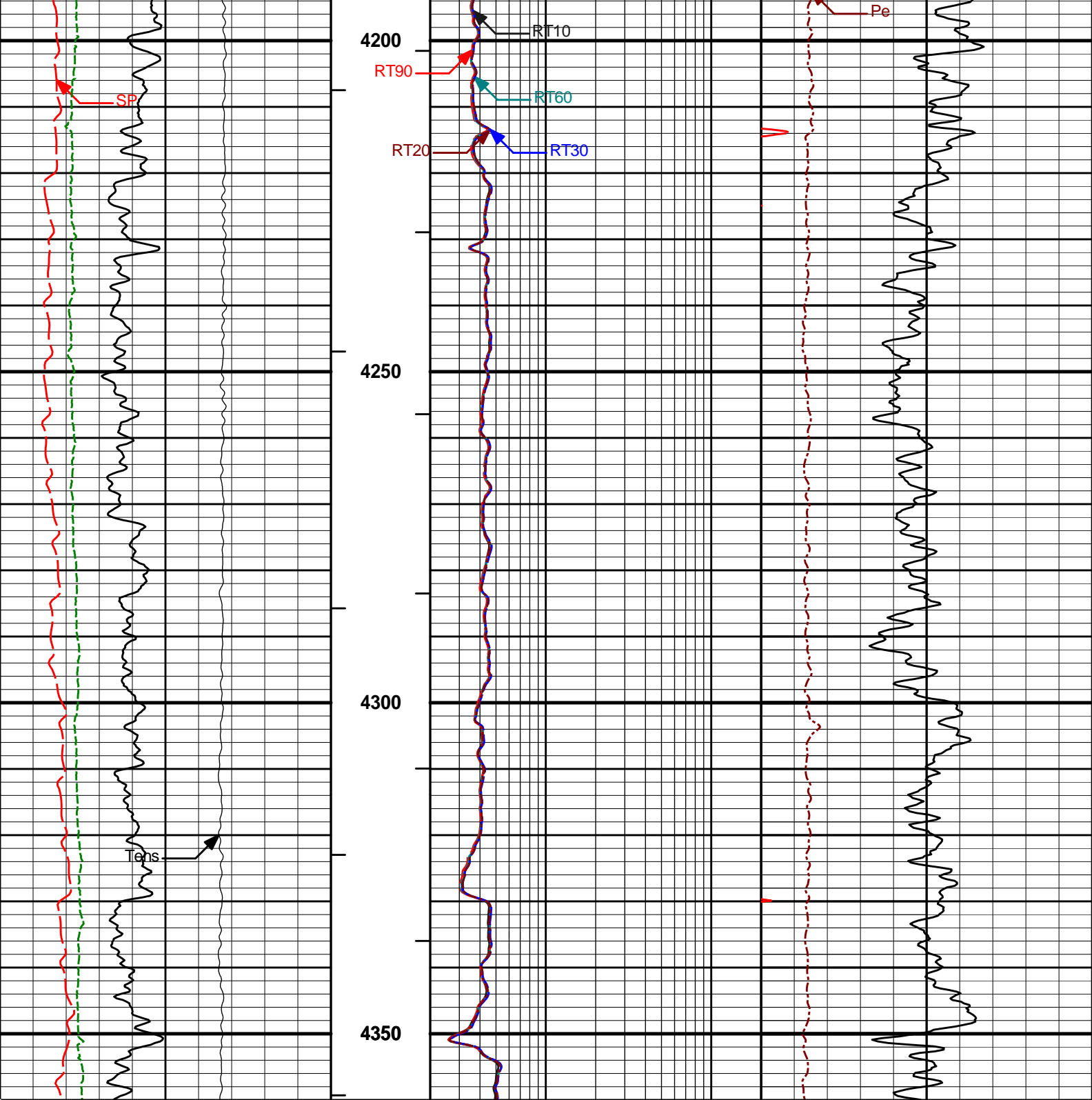
BOTTOM

MAIN PASS 5" = 100'







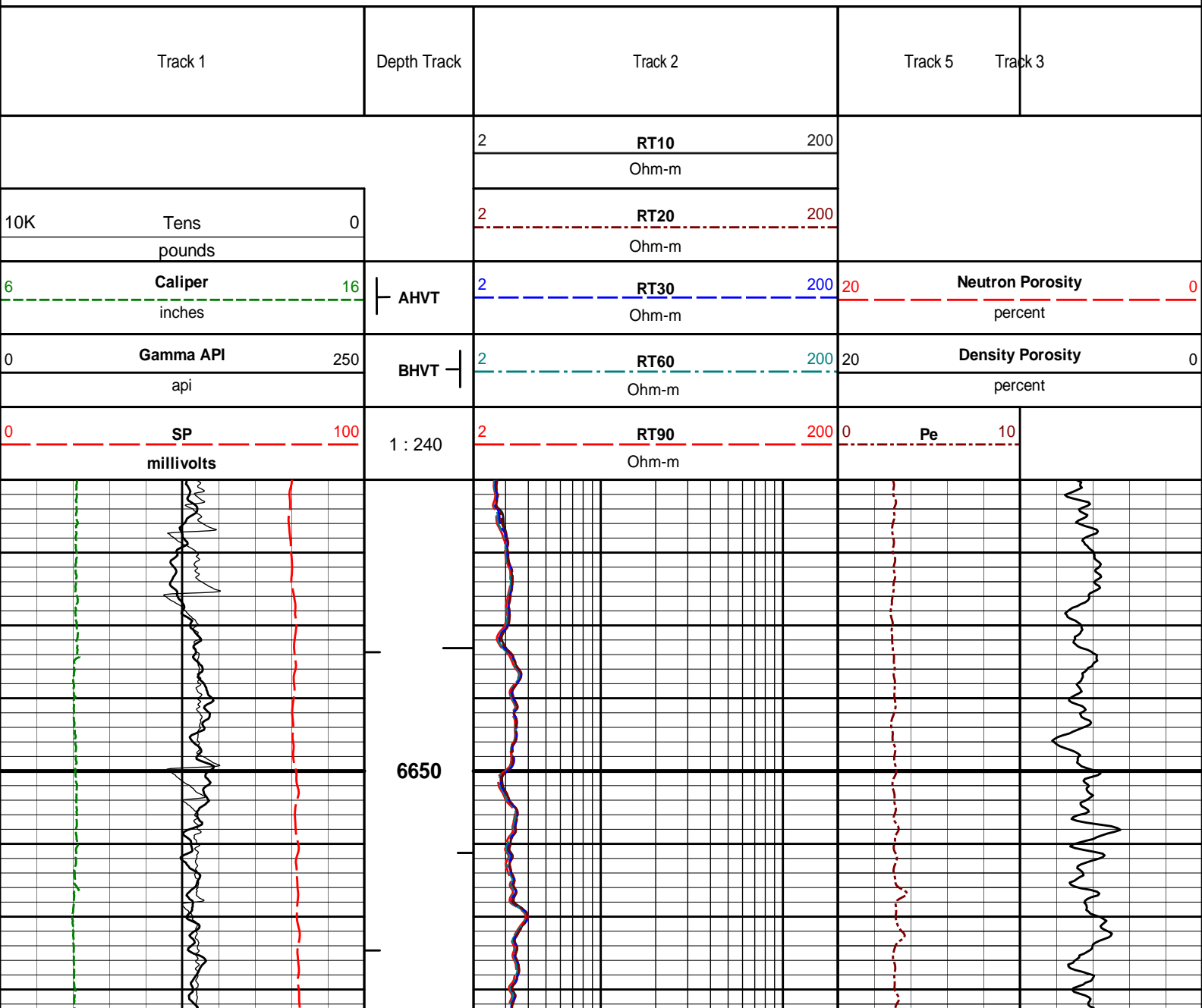


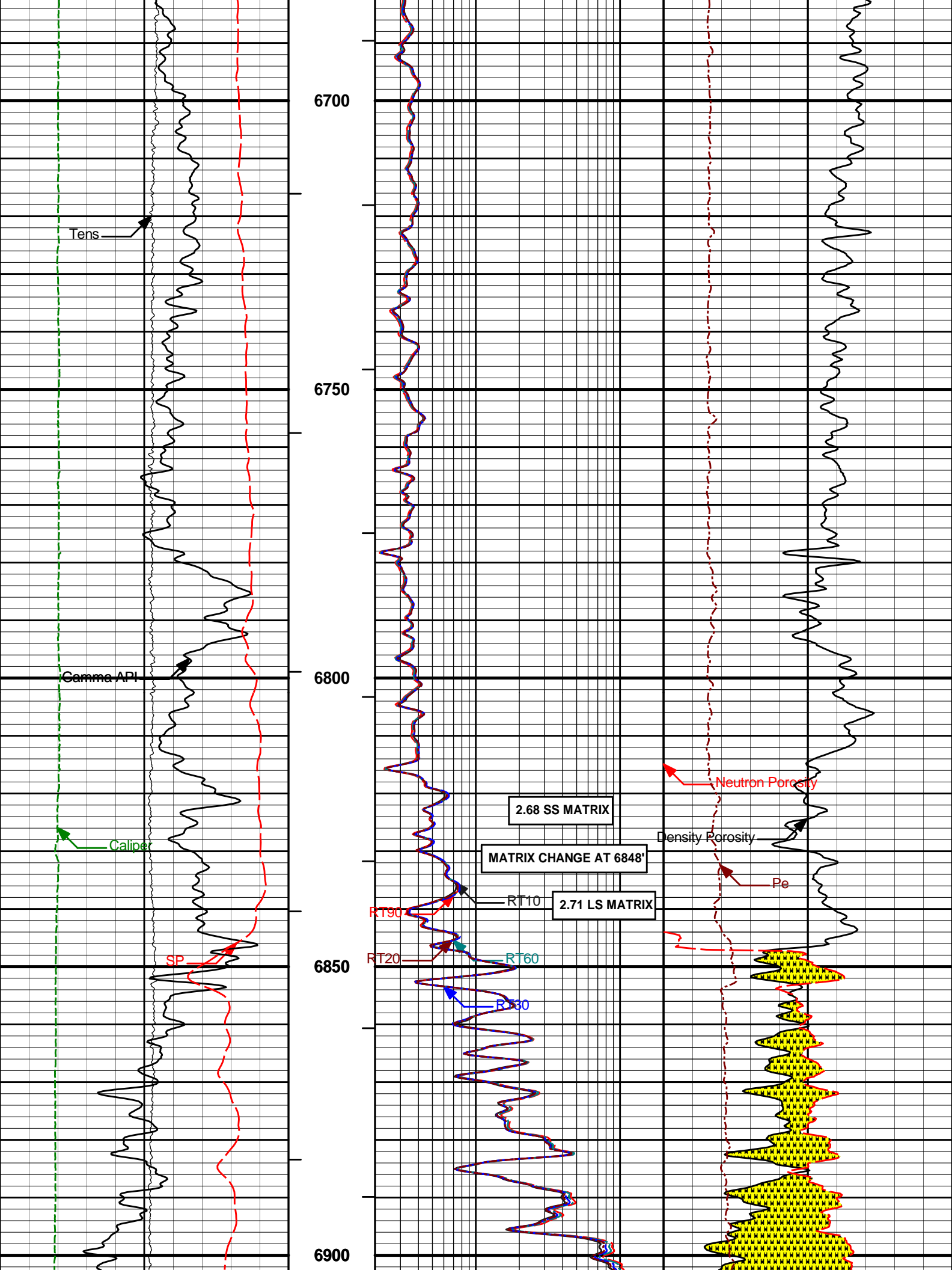
0	SP	100	1 : 240	2	RT90	200	0	Pe	10
	millivolts				Ohm-m				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				Ohm-m			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				Ohm-m			percent	
10K	Tens	0		2	RT20	200			
	pounds				Ohm-m				
				2	RT10	200			
					Ohm-m				

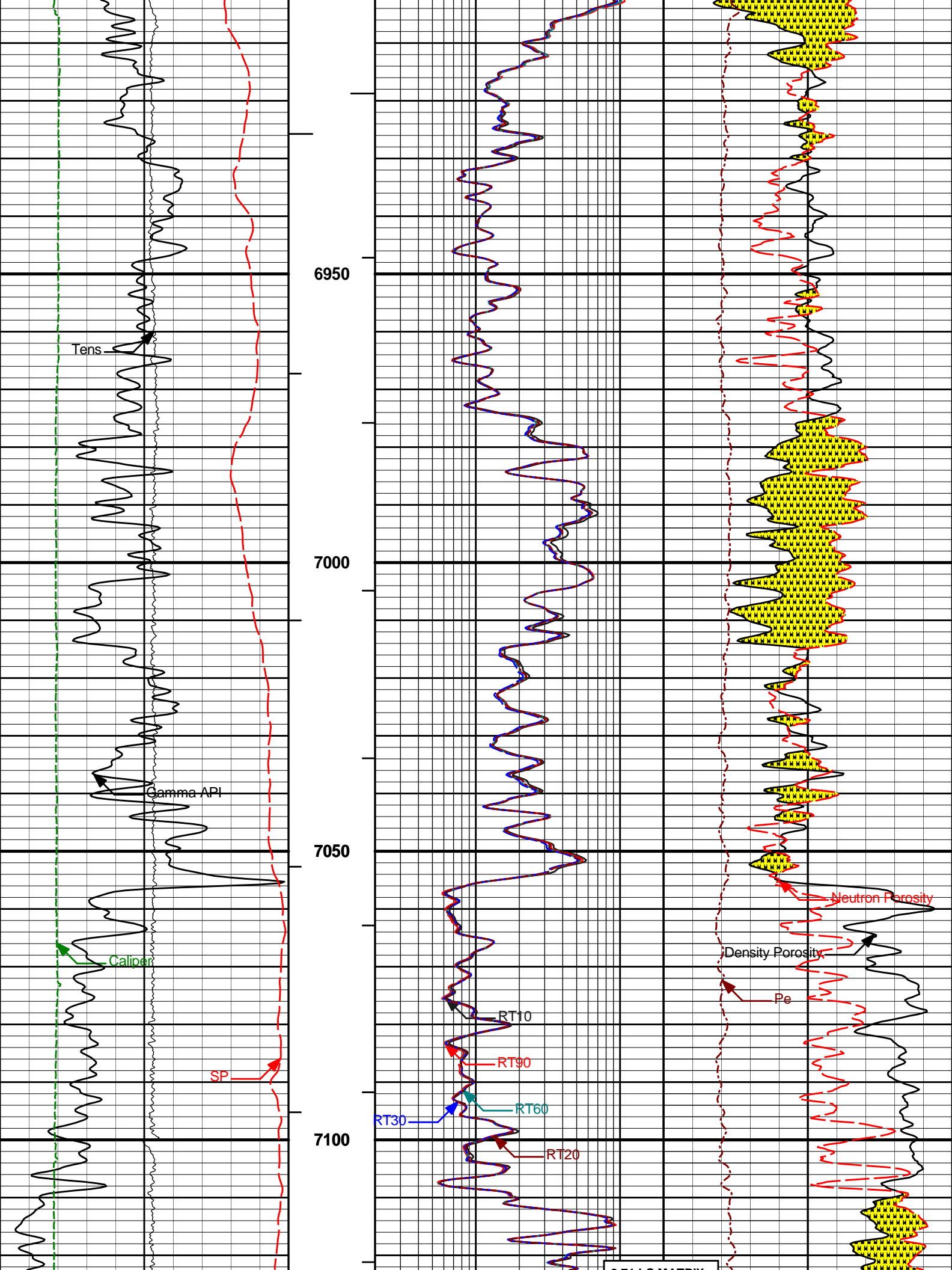
MAIN PASS 5" = 100'

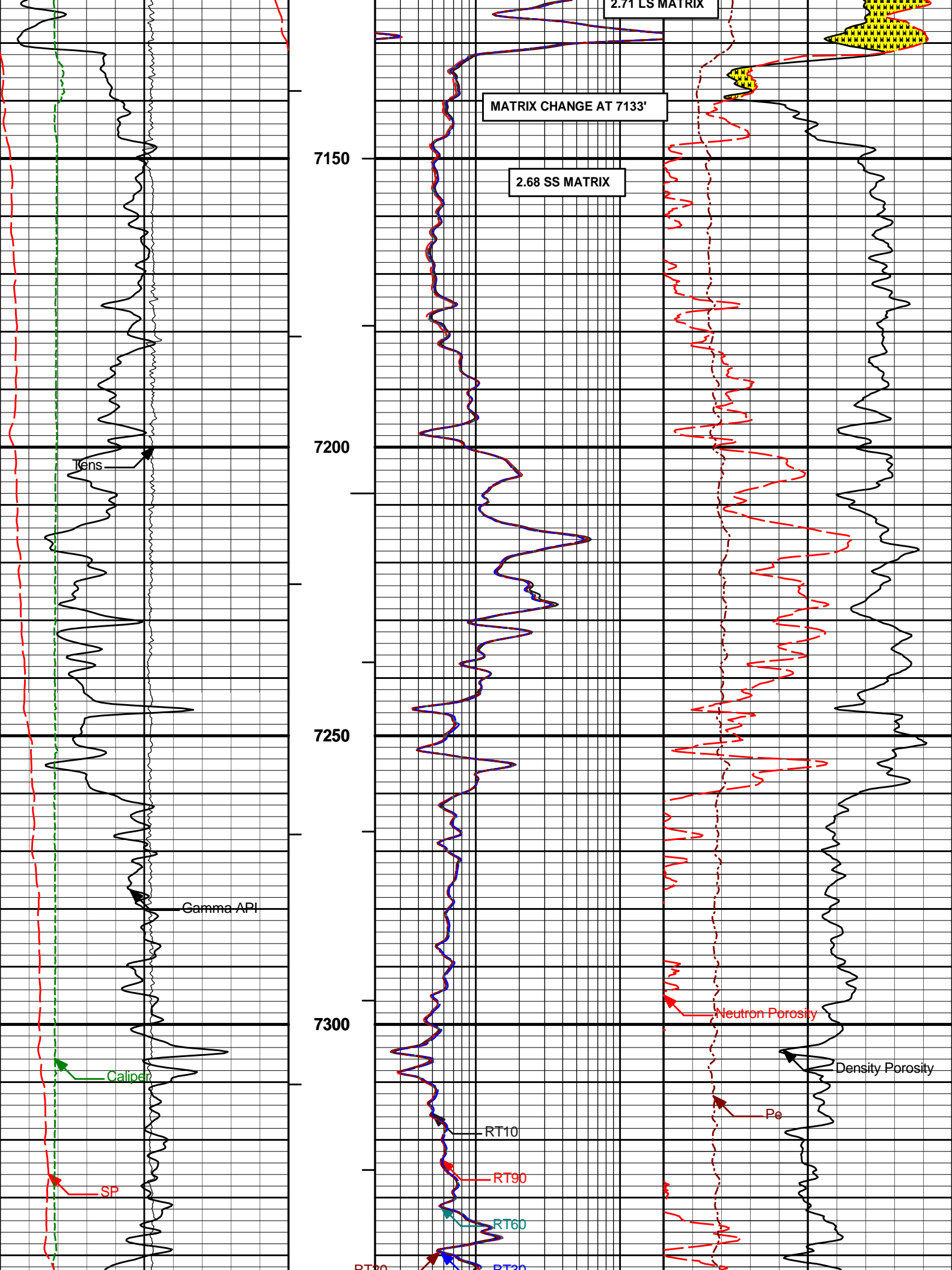
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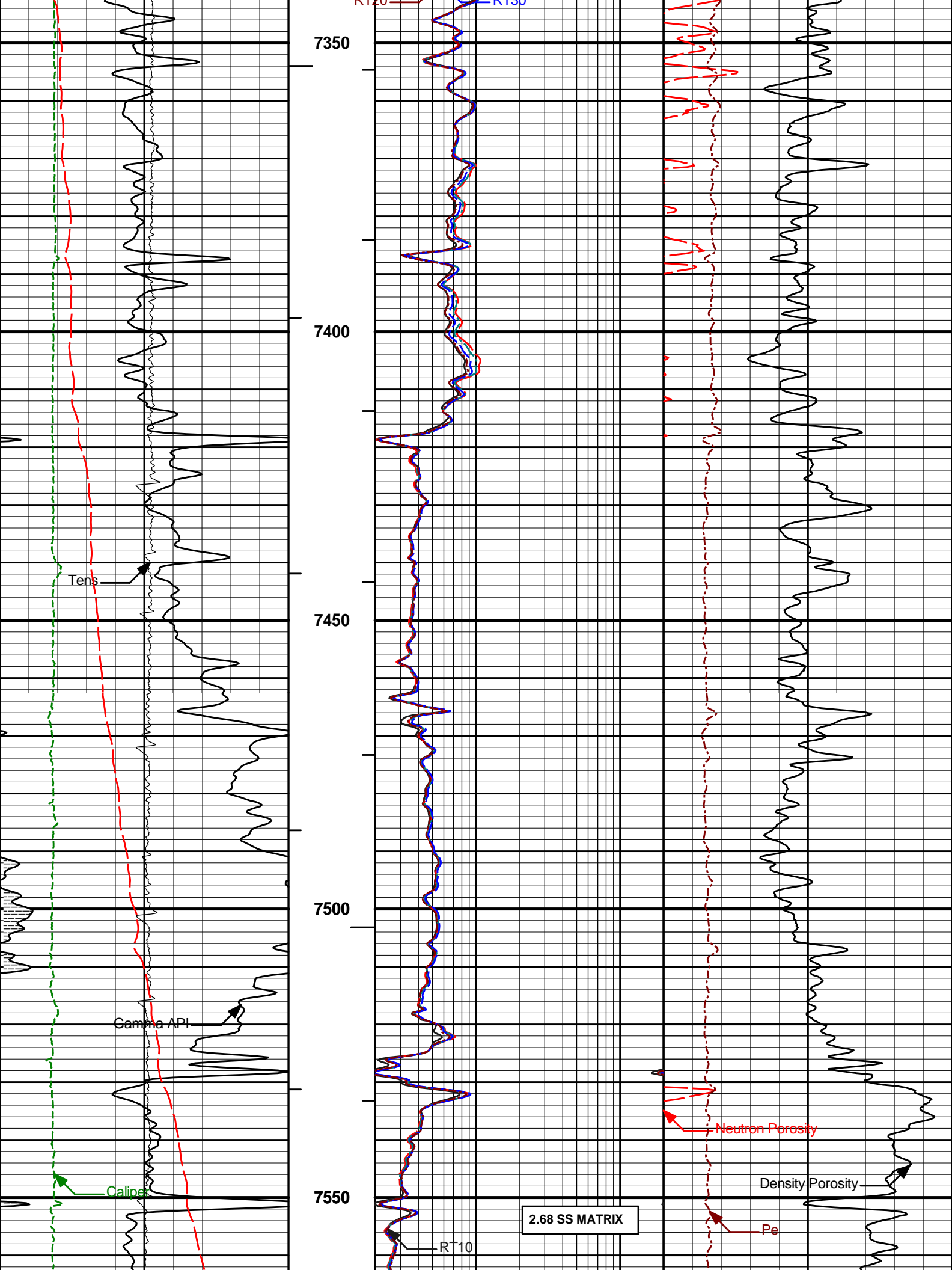
MAIN PASS 5" = 100'

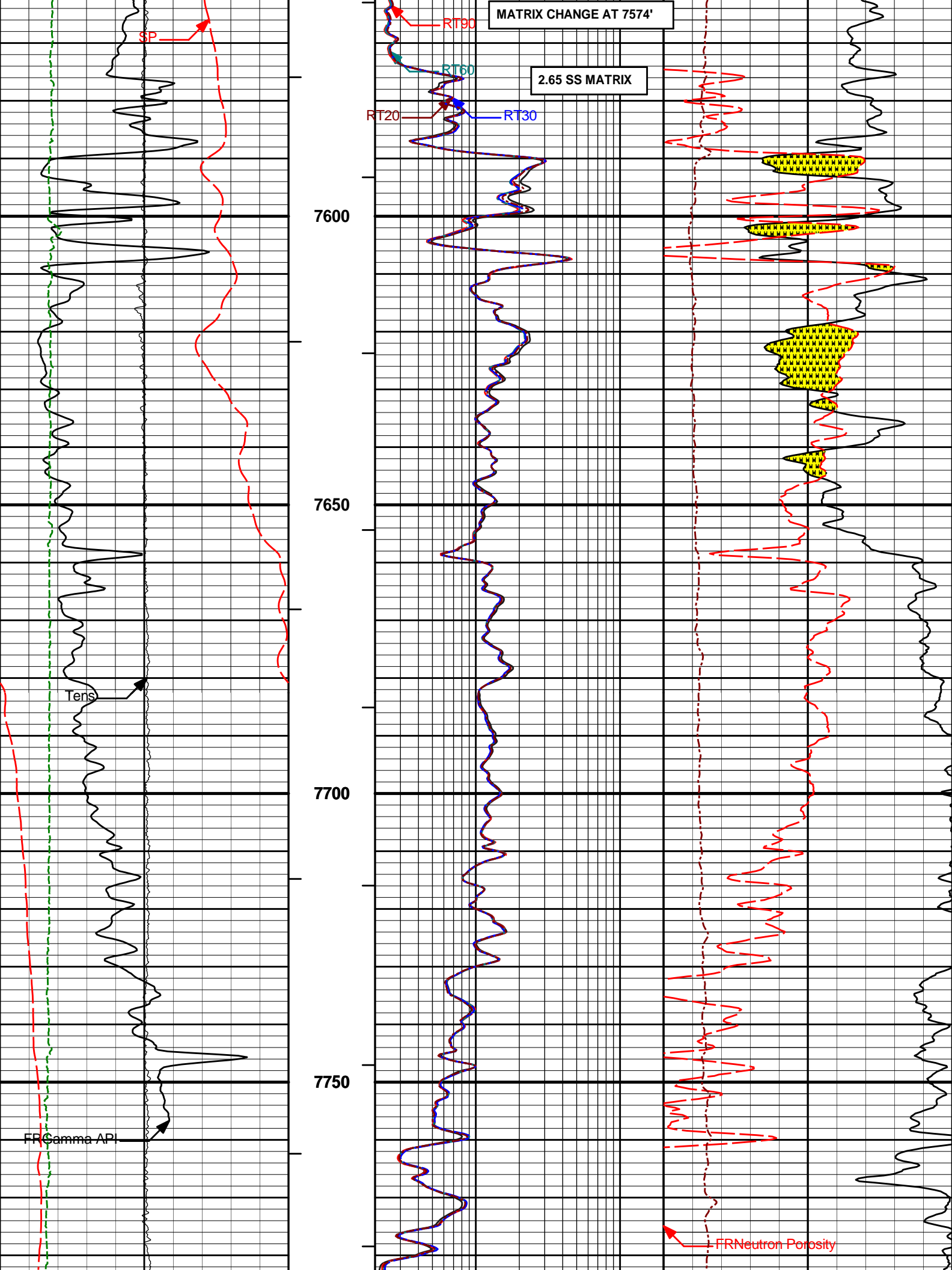


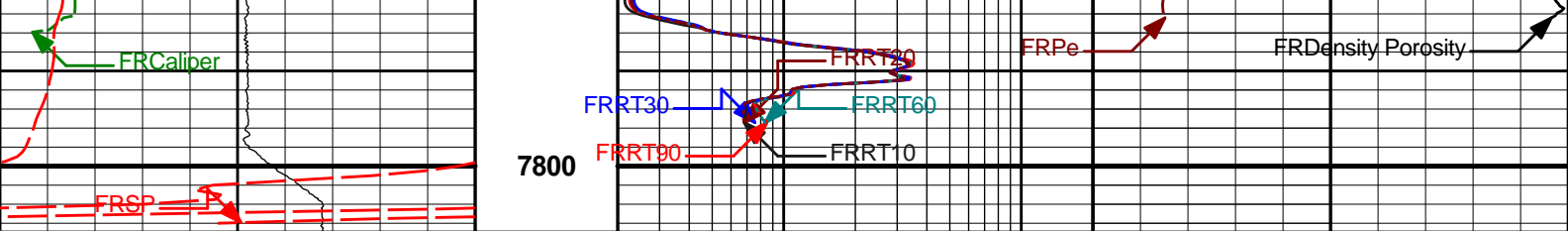












0	SP	100	1 : 240	2	RT90	200	0	Pe	10
	millivolts				Ohm-m				
0	Gamma API	250	BHVT	2	RT60	200	20	Density Porosity	0
	api				Ohm-m			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				Ohm-m			percent	
10K	Tens	0		2	RT20	200			
	pounds				Ohm-m				
				2	RT10	200			
					Ohm-m				

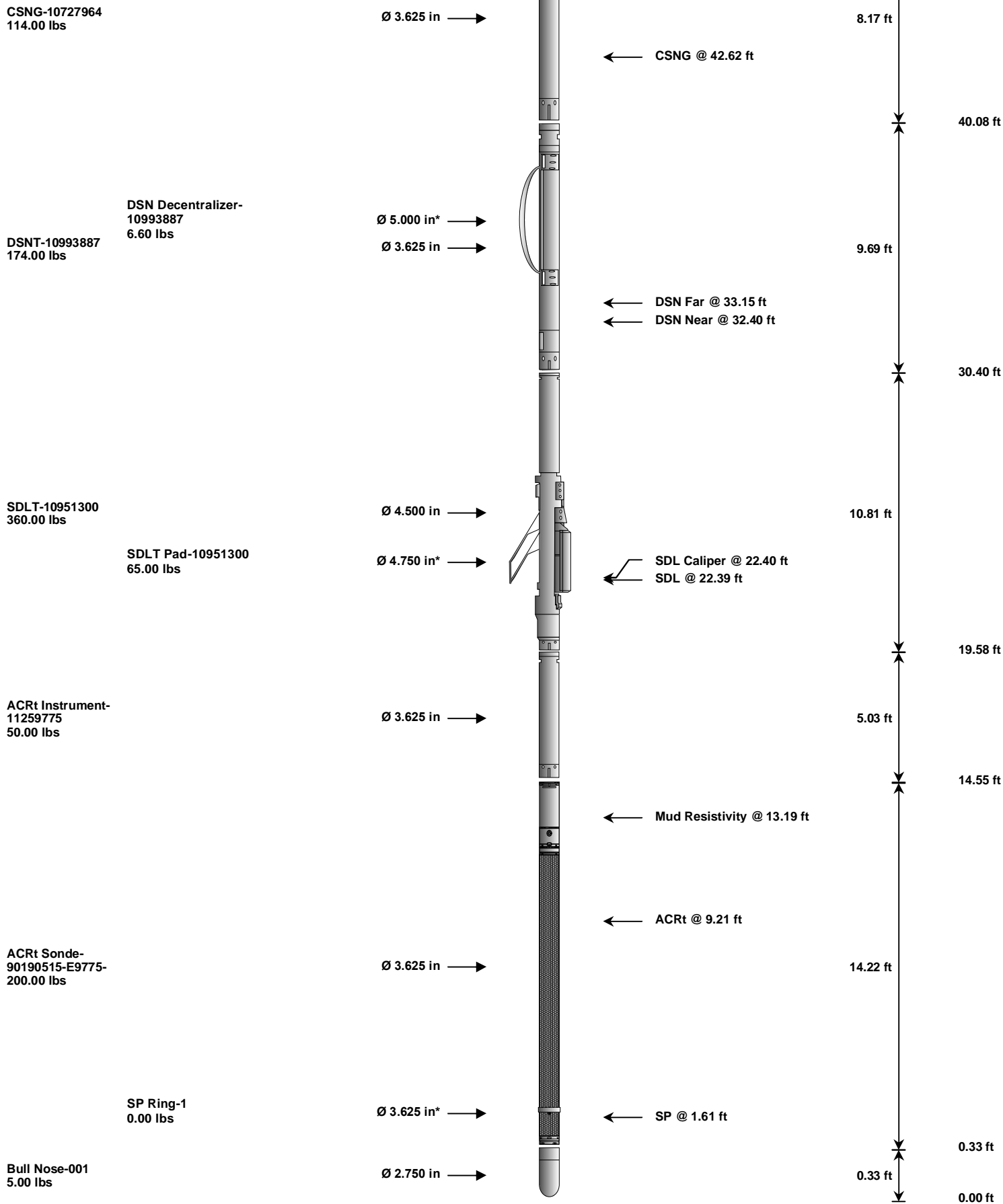
HALLIBURTON Plot Time: 08-Jan-12 21:33:46
 Plot Range: 6610 ft to 7806.93 ft
 Data: NB_MOSER_34-27\Well Based\DAQ MAIN*
 Plot File: \\COMP\TD-NIOBRARA

MAIN PASS 5" = 100'

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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 @ 59.34 ft ← BH Temperature @ 58.77 ft	6.25 ft	63.02 ft
						56.77 ft
GTET-11005602 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.71 ft	8.52 ft	48.25 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	56.77	300.00
GTET	Gamma Telemetry Tool	11005602	165.00	8.52	48.25	60.00
CSNG	Compensated Spectral Natural Gamma	10727964	114.00	8.17	40.08	15.00
DSNT	Dual Spaced Neutron	10993887	174.00	9.69	30.40	60.00

DCNT	DSN Decentralizer	10993887	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	10951300	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	10951300	65.00	2.55	*	21.79	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11259775	50.00	5.03		14.55	300.00
ACRt	Array Compensated True Resistivity	90190515-E9775-	200.00	14.22		0.33	300.00
SP	SP Ring	1	0.00	0.25	*	1.61	300.00
BLNS	Bull Nose	001	5.00	0.33		0.00	300.00

Total			1,274.60	63.02			
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* Not included in Total Length and Length Accumulation.

Data: NB_MOSER_34-27\0001 TRIPLE_CSNG\IDLE Date: 08-Jan-12 16:38:30

COMPANY	NOBLE ENERGY INC		
WELL	MOSER H34-27		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		DUAL SPACED NEUTRON SPECTRAL DENSITY ARRAY COMPENSATED TRUE RESISTIVITY	