

COMPANY		NOBLE ENERGY INC	
WELL		REHDER X06-33D	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum	GL	Location SURFACE: 1075' FSL & 759' FWL BOTTOM: 75'FWL & 1320' FSL LAT: 40.163170° LONG: -104.713130°	Other Services: RWCH BSAT CSNG
Log measured from	KB		
Drilling measured from	KB		
Date	18-Jun-12		
Run No.	ONE		
Depth - Driller	8080.00 ft	Sect. 6    Twp. 2N    Rge. 65W	Elev. 4979.0 ft
Depth - Logger	8076.0 ft		
Bottom - Logged Interval	8066 ft		
Top - Logged Interval	1030 ft		
Casing - Driller	8,625 in @ 1030.0 ft		
Casing - Logger	1030.0 ft	13.0 ft above perm. Datum	Elev. K.B. 4992.0 ft D.F. 4992.0 ft G.L. 4979.0 ft
Bit Size	7.875 in		
Type Fluid in Hole	WATER		
Density	9.6 ppq		
PH	8.50 pH		
Source of Sample	MUD CELL	@	@
Rm @ Meas. Temperature	0.810 ohmm @ 85.00 degF		
Rmf @ Meas. Temperature	0.76 ohmm @ 75.00 degF		
Rmc @ Meas. Temperature	0.834 ohmm @ 75.00 degF		
Source Rmf	CHART		
Rm @ BHT	0.33 ohmm @ 218.0 degF	@	@
Time Since Circulation	5.5 hr		
Time on Bottom	18-Jun-12 11:03		
Max. Rec. Temperature	218.0 degF @ 8030.0 ft		
Equipment	11072142 BRIGHTON		
Recorded By	F. LODER		
Witnessed By	M. SUTTON		

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Service Ticket No.: 9600202						API Serial No.: 05-123-35560-0000						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									
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 787-797				N/A				1.5" S.O.				N/A			
Rmc @ Meas. Temp.				@				@																					
Source Rmf		Rmc																											
Rm @ BHT				@				@																					
Rmf @ BHT				@				@																					
Rmc @ BHT				@				@																					
EQUIPMENT DATA																													
GAMMA						ACOUSTIC						DENSITY						NEUTRON											
Run No.		ONE				Run No.		ONE				Run No.		ONE				Run No.		ONE									
Serial No.		11259758				Serial No.		11105780				Serial No.		11817764				Serial No.		11219332									
Model No.		GTET-I				Model No.		BSAT-I				Model No.		SDLT-I				Model No.		DSNT-I									
Diameter		3.625"				No. of Cent.		3.625"				Diameter		4.5"				Diameter		3.625"									
Detector Model No.		2G8-BICORN				Spacing		0.5'				Log Type		GAM-GAM				Log Type		NEU-NEU									
Type		SCINT										Source Type		Cs137				Source Type		Am241Be									
Length		8"				LSA [Y/N]		N				Serial No.		5256GW				Serial No.		DSN430									
Distance to Source		18'				FWDA [Y/N ]		N				Strength		1.5 Ci				Strength		15 Ci									

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	1030'	7866'	REC	0 API	250 API	30 %	-10%	55.5 us/ft	20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7866'	7459	REC	0 API	250 API	30 %	-10%	47.5 us/ft	20 %	0 %	2.71 g/cc	20 %	0 %	LIME
ONE	7459	7215'	REC	0 API	250 API	30 %	-10%	55.5 us/ft	20 %	0 %	2.68 g/cc	20 %	0 %	SAND
ONE	7215'	8076'	REC	0 API	250 API	30 %	-10%	55.5 us/ft	20 %	0 %	2.65 g/cc	20 %	0 %	SAND
DIRECTIONAL INFORMATION														
Maximum Deviation			14.90 deg		@		2057.00 ft		KOP			@		
Remarks: RWCH-GTET-CSNG-DSNT-SDLT-BSAT-ACRT RAN IN COMBINATION														
TENSION PULLS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE														
ANNULAR HOLE VOLUME CALCULATED USING 4.5-INCH PRODUCTION CASING														
CHLORIDES REPORTED AT 1000 PPM														
CREW: M. BURNETT, N. GOULD, L. SMITH														
RIG: ENSIGN 226														
THANK YOU FOR USING HALLIBURTON ENERGY SERVICES -- BRIGHTON, CO -- 303.655.4700														
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.														
HALLIBURTON														



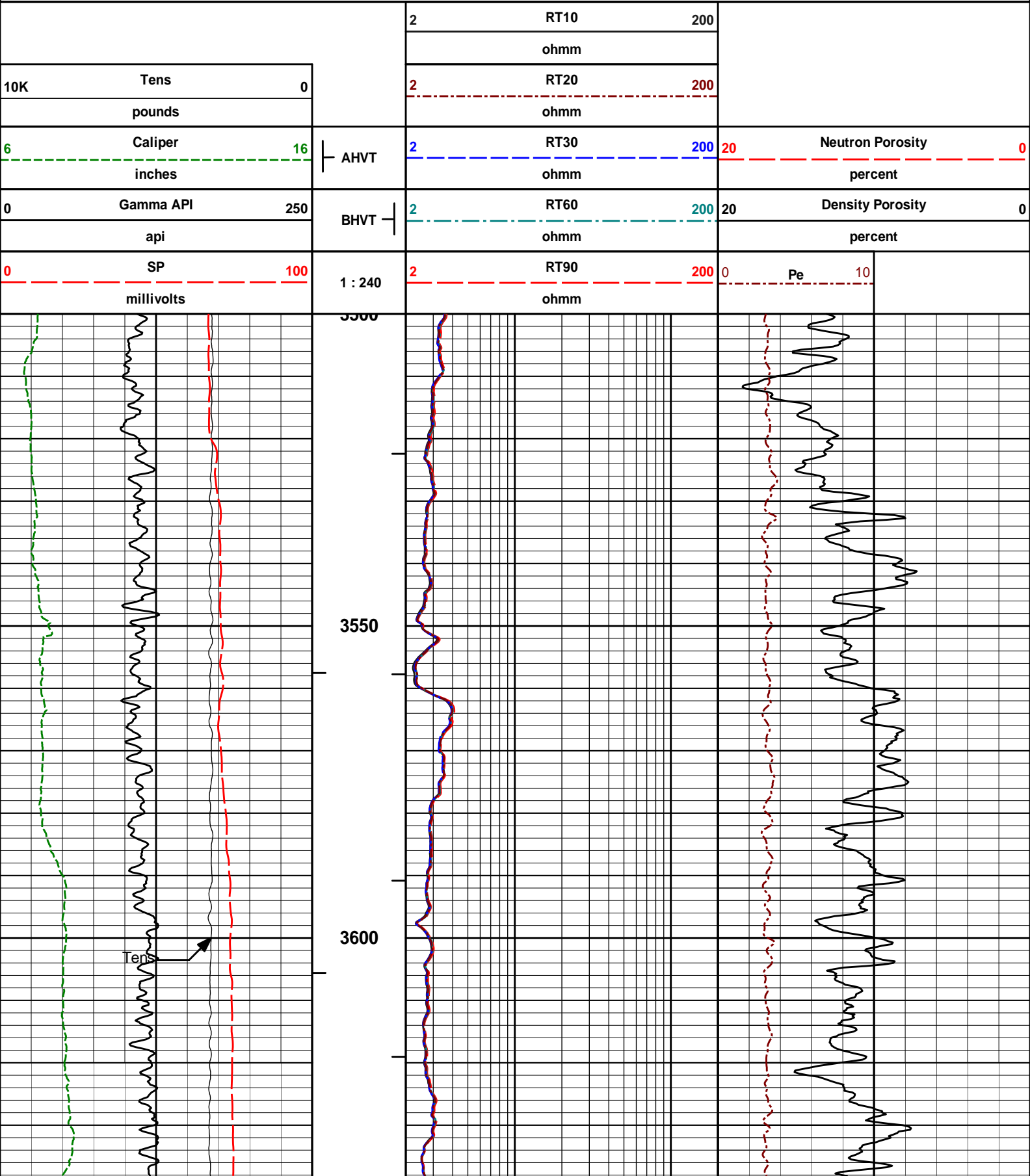
# PARAMETERS REPORT

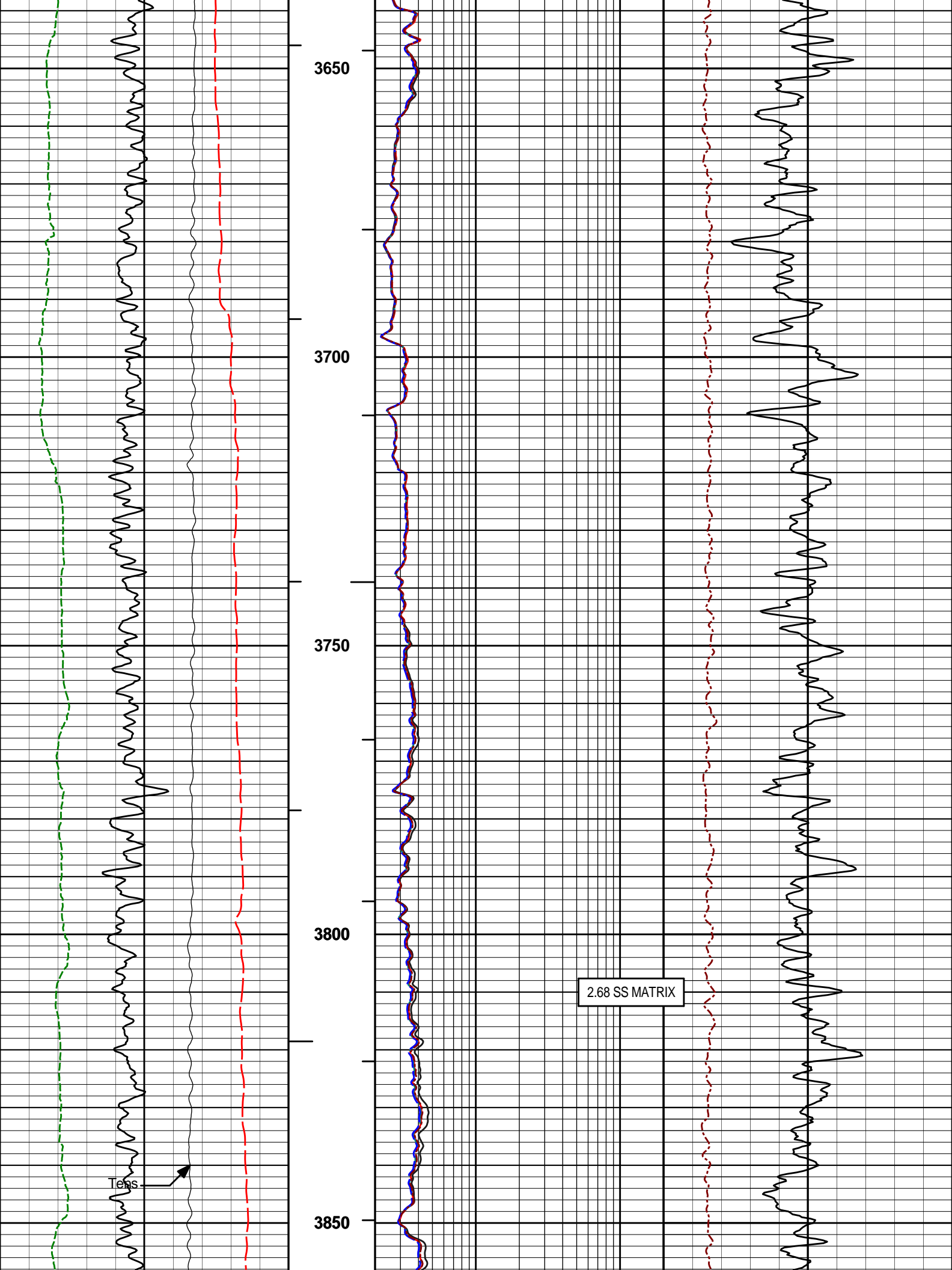
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
	BSAT	DTMT	Delta -T Matrix Type	Sandstone 55.5	
7215.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
	BSAT	DTMT	Delta -T Matrix Type	Limestone 47.5	
7459.00					
	SDLT Pad	DMA	Formation Density Matrix	2.680	g/cc
7866.00					
	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	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	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

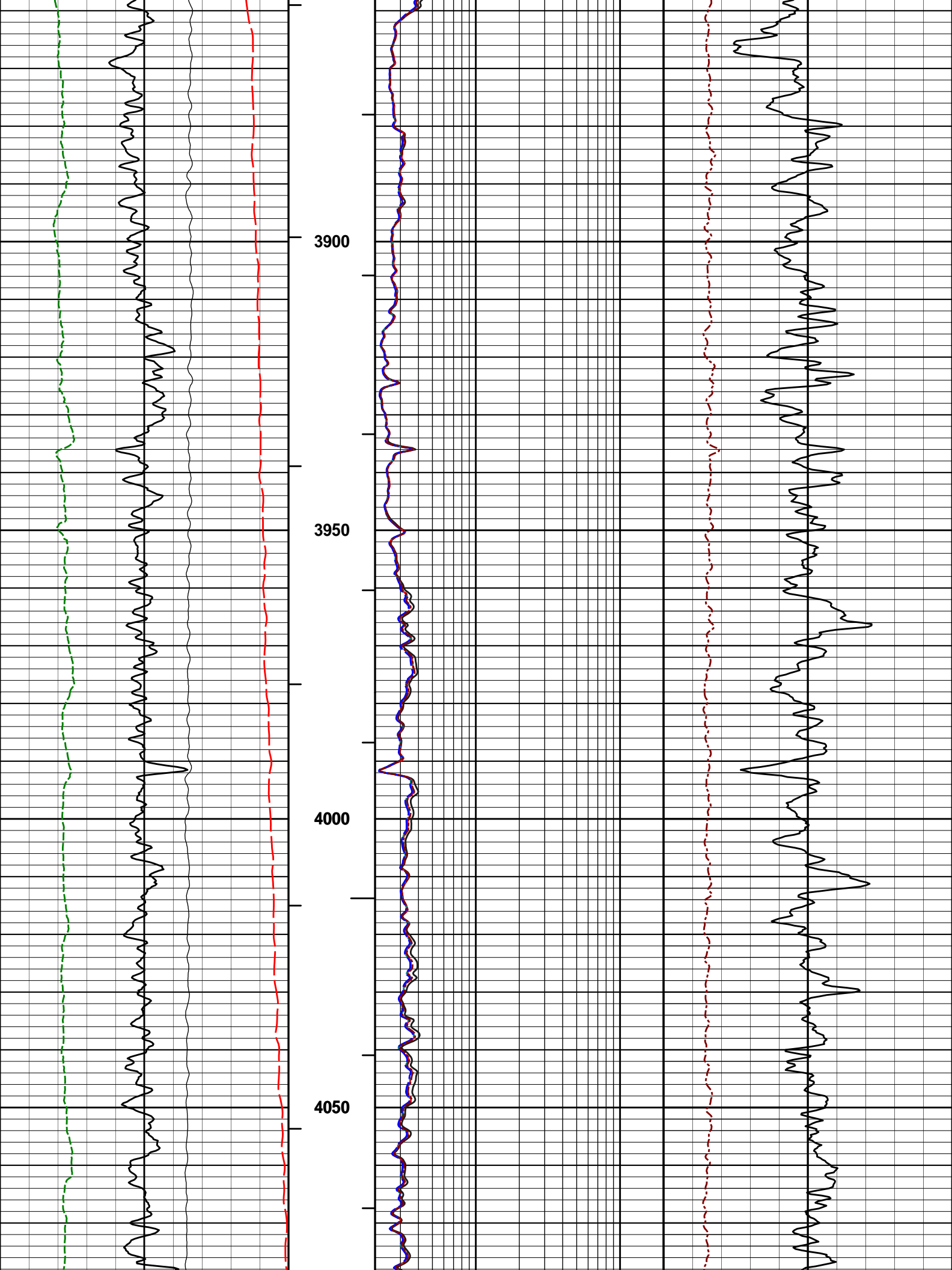
SHARED	ST	Surface Temperature	73.0	degF
SHARED	TD	Total Well Depth	8080.00	ft
SHARED	BHT	Bottom Hole Temperature	218.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master 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	0.250	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
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency 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 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	

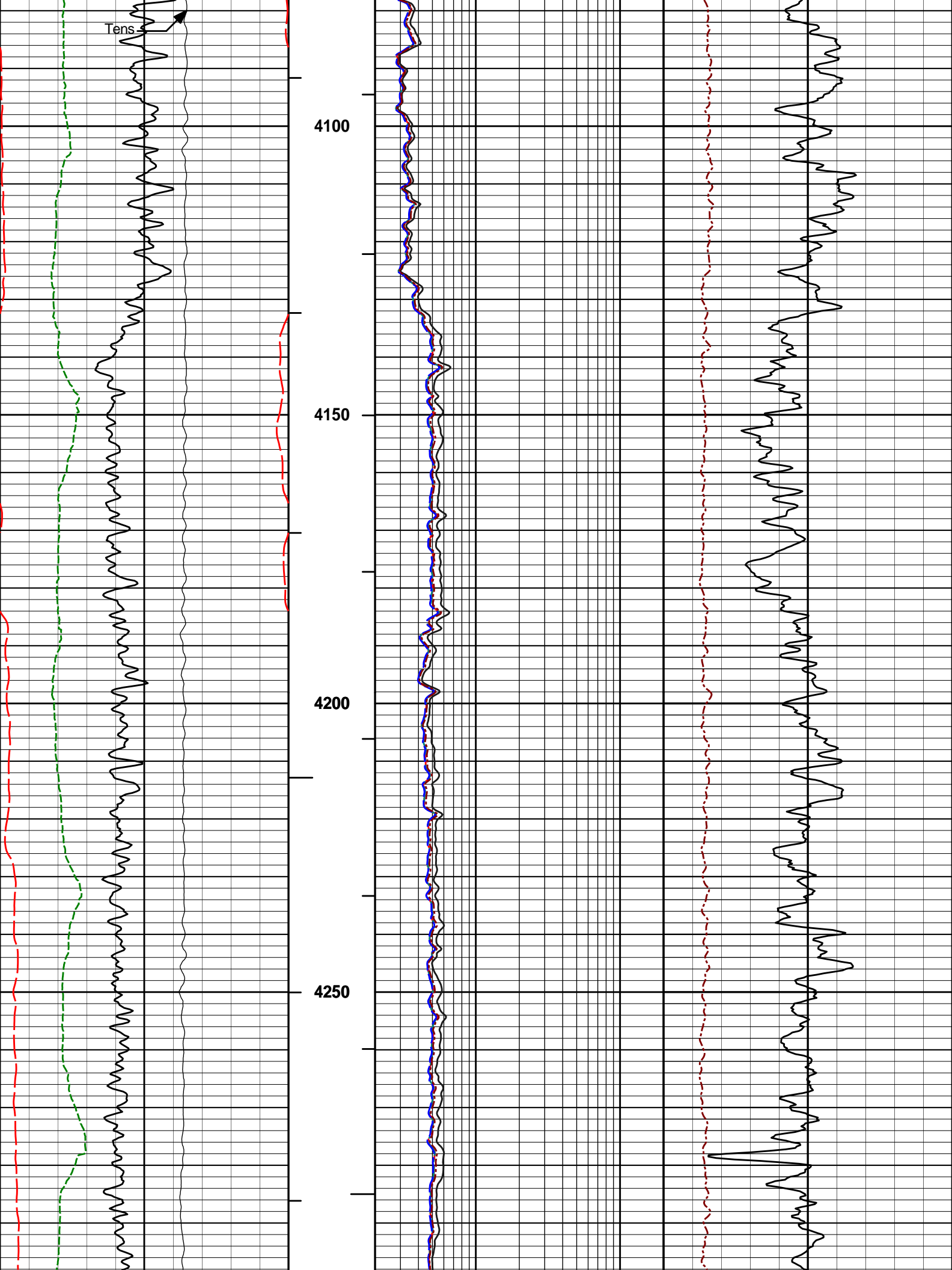
BOTTOM

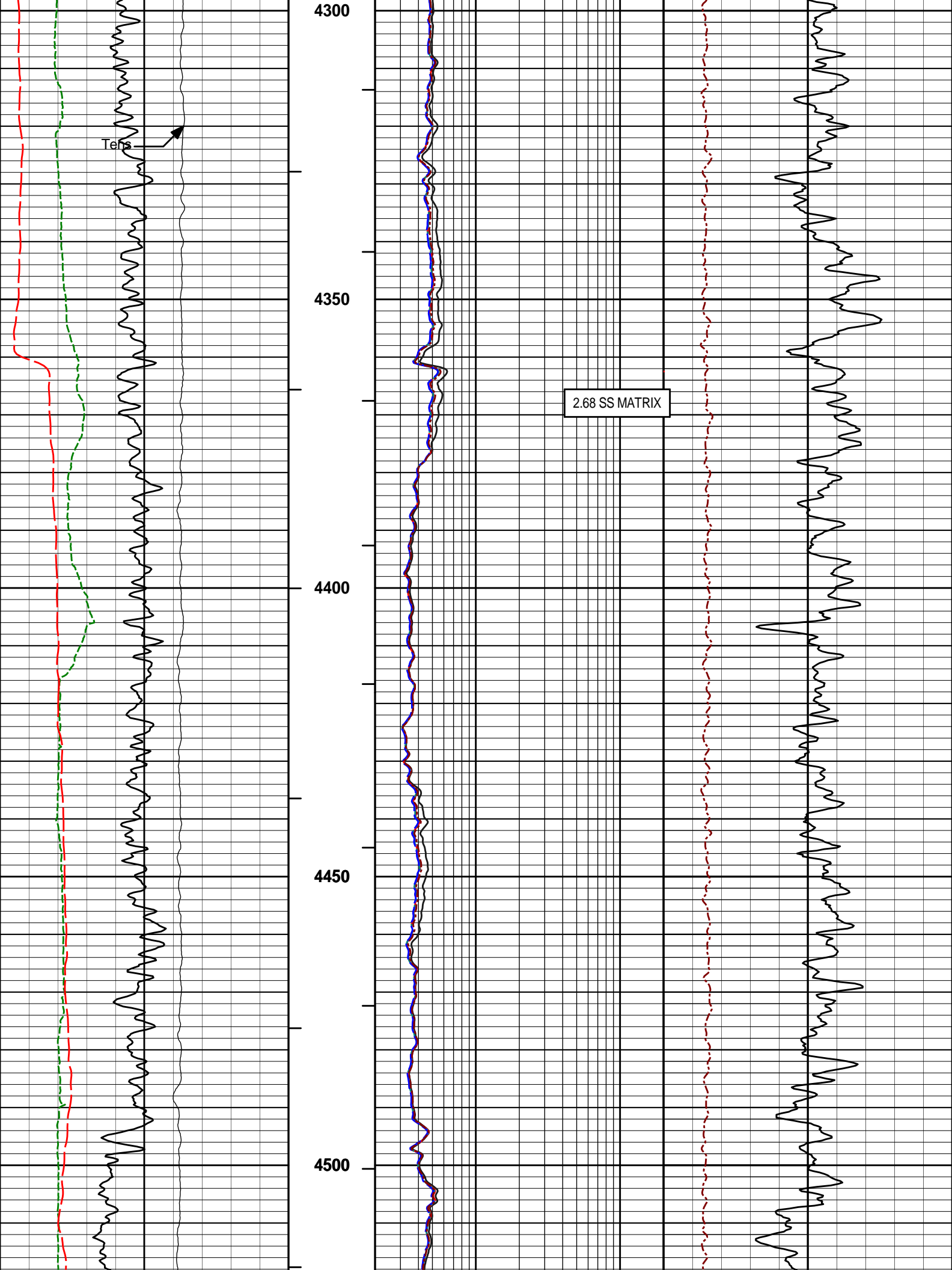
MAIN PASS 5" = 100'

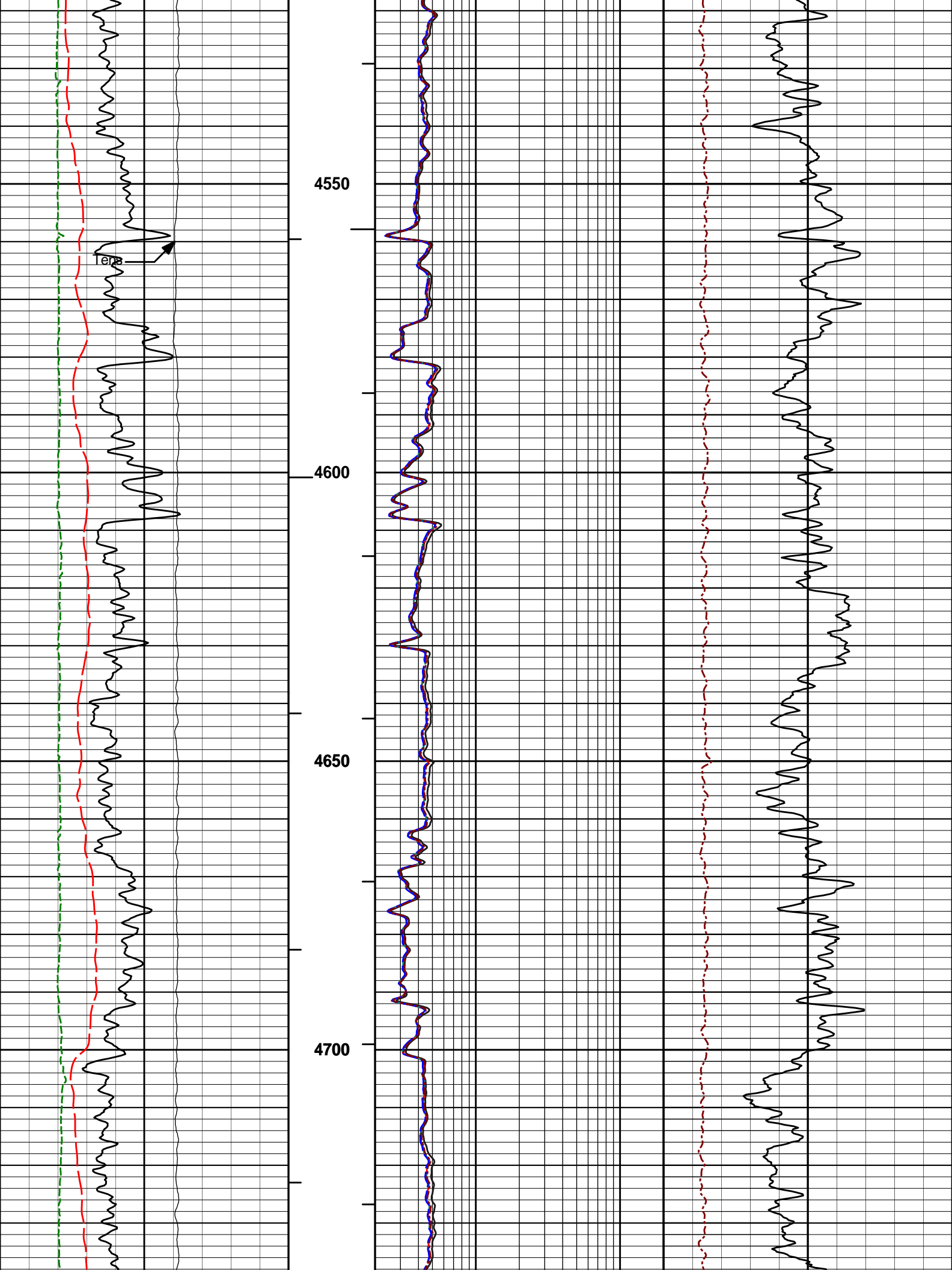


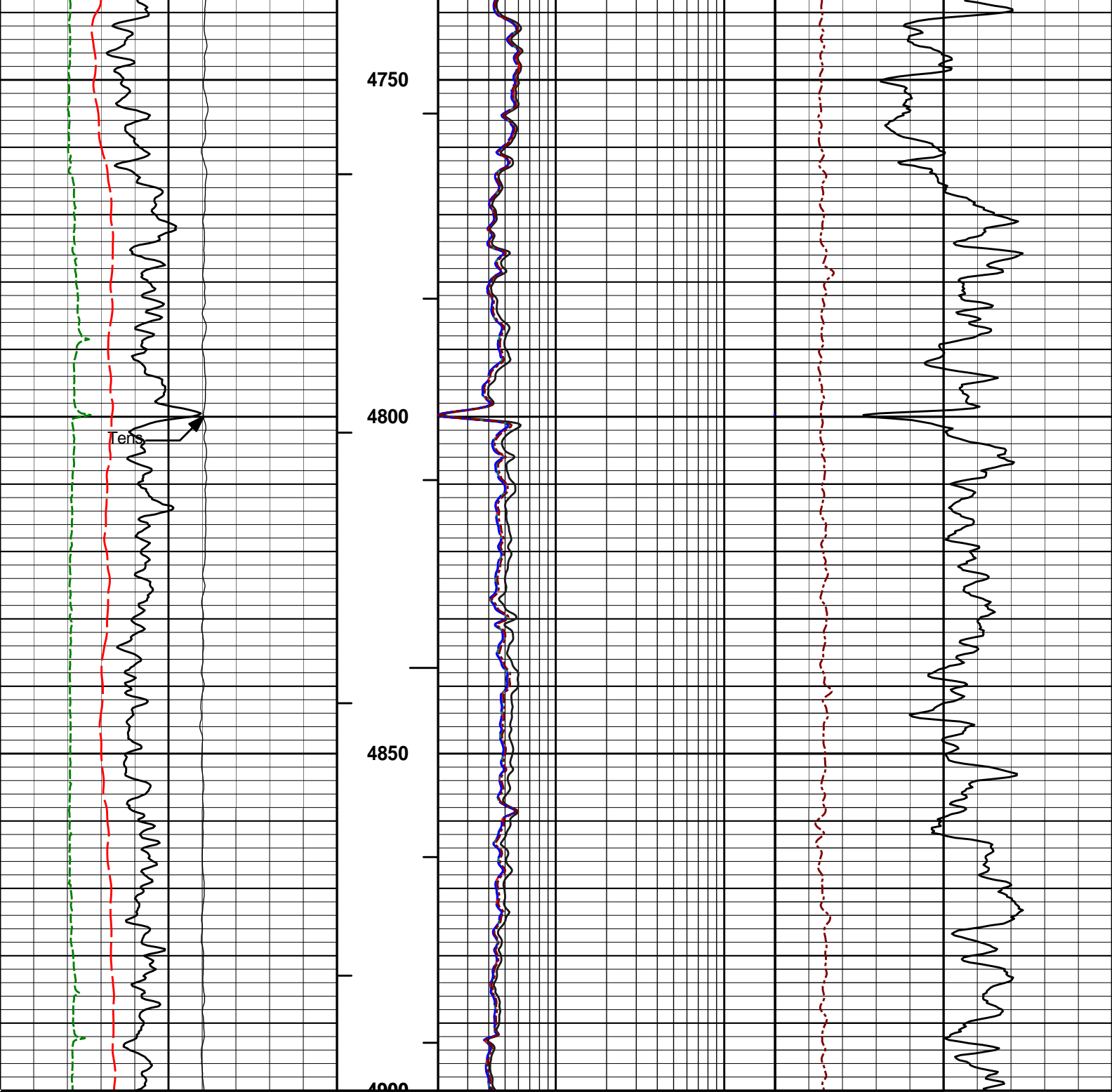












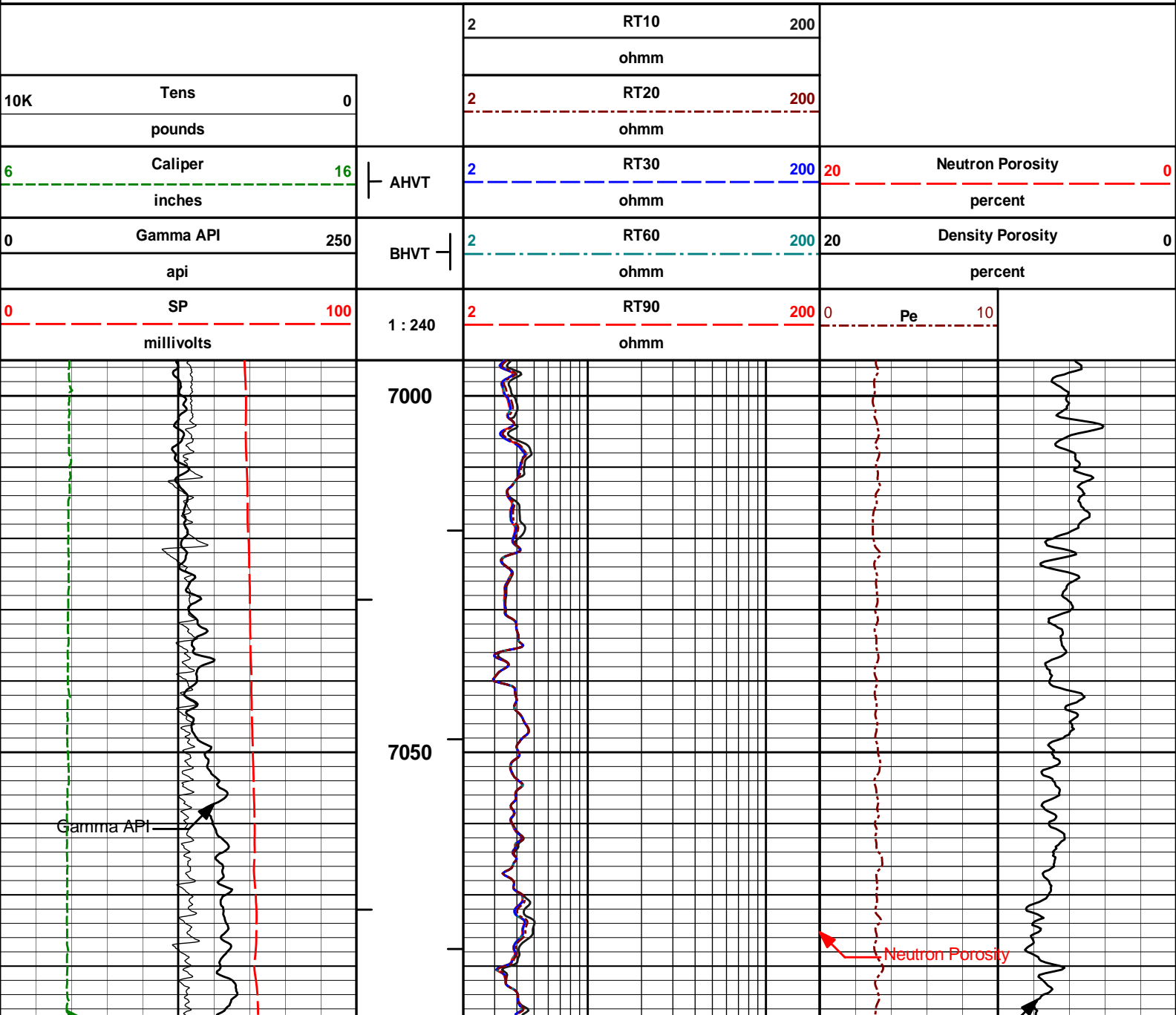
<div>0</div> <div>SP</div> <div>100</div> <div>millivolts</div>	<div>1 : 240</div>	<div>2</div> <div>RT90</div> <div>200</div> <div>ohmm</div>	<div>0</div> <div>Pe</div> <div>10</div>
<div>0</div> <div>Gamma API</div> <div>250</div> <div>api</div>	<div>BHVT</div>	<div>2</div> <div>RT60</div> <div>200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

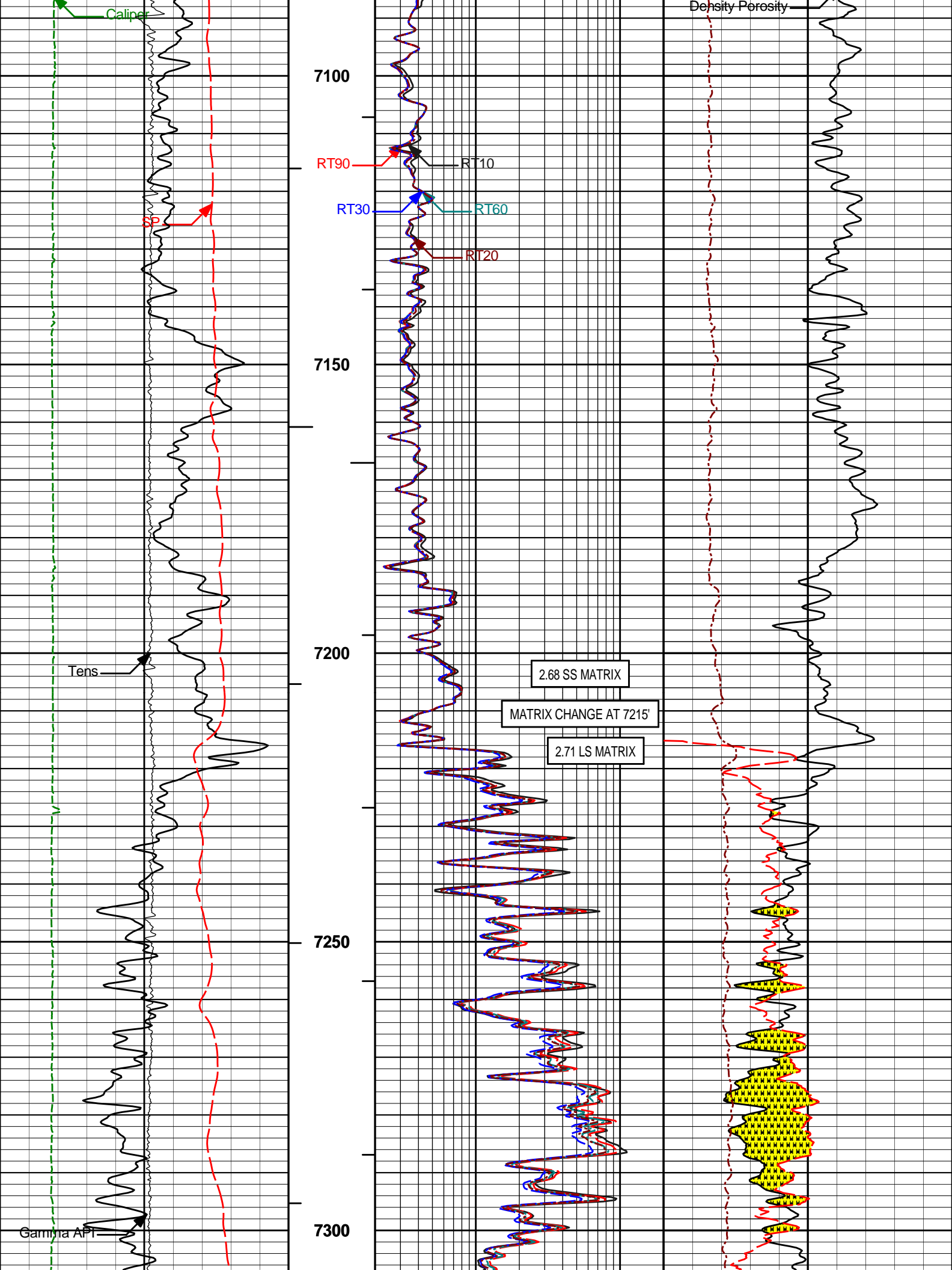
MAIN PASS 5" = 100'

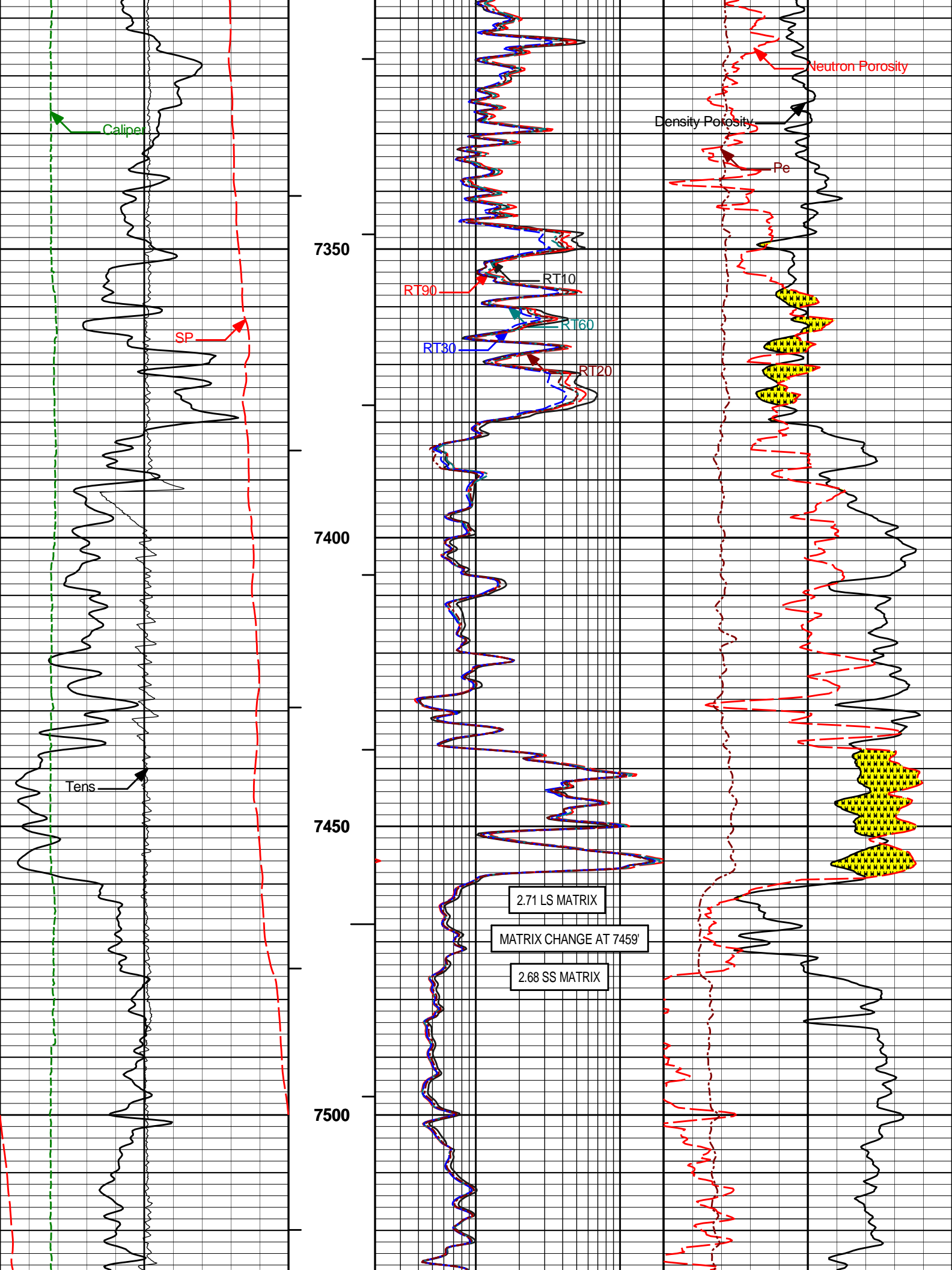
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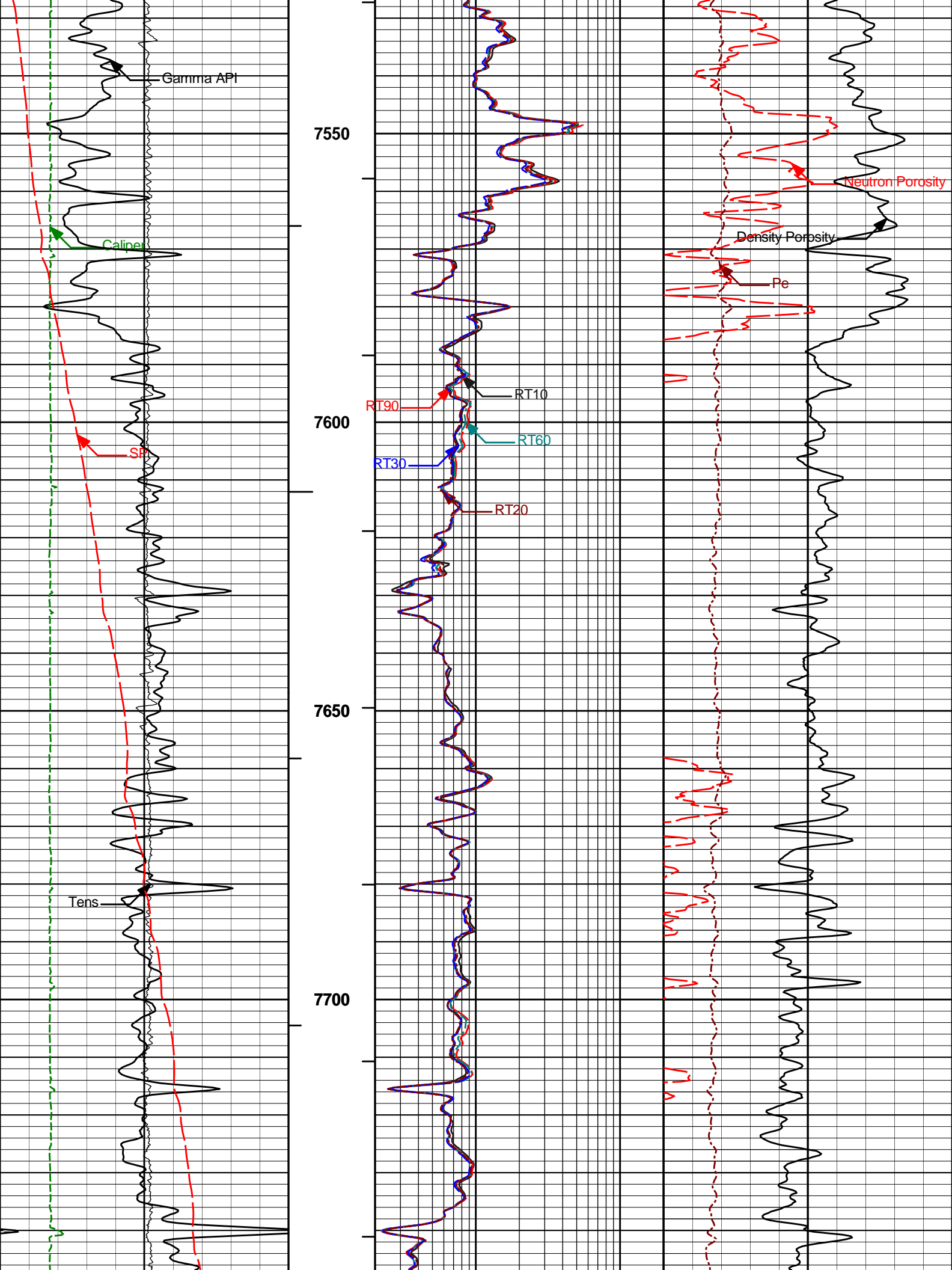
Plot Time: 18-Jun-12 14:31:20  
Plot Range: 6995 ft to 8084.75 ft  
Data: {ActiveWell}\Well Based\MAIN\\*  
Plot File: \\COMP\REPEAT

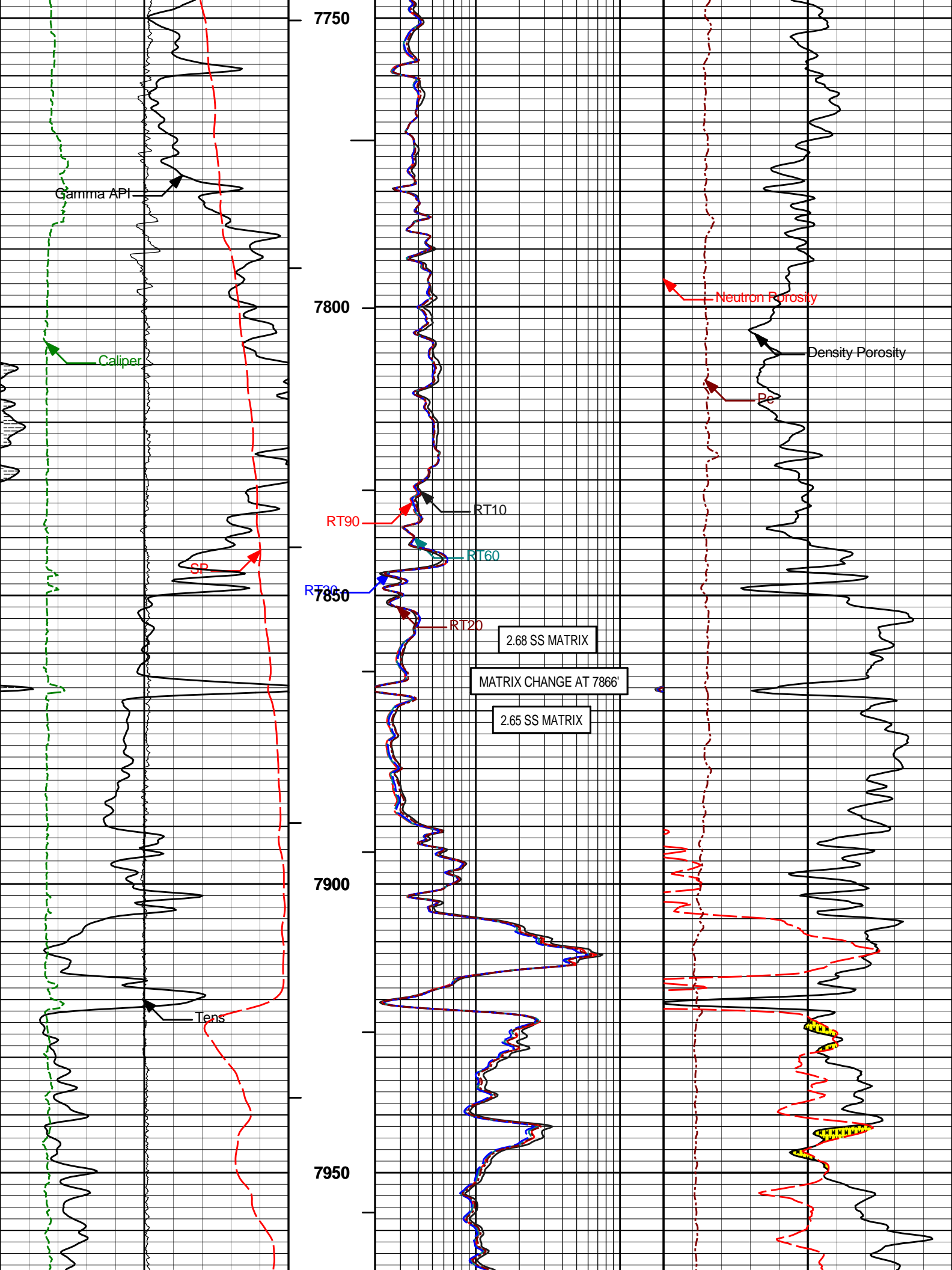
REPEAT SECTION 5" = 100'

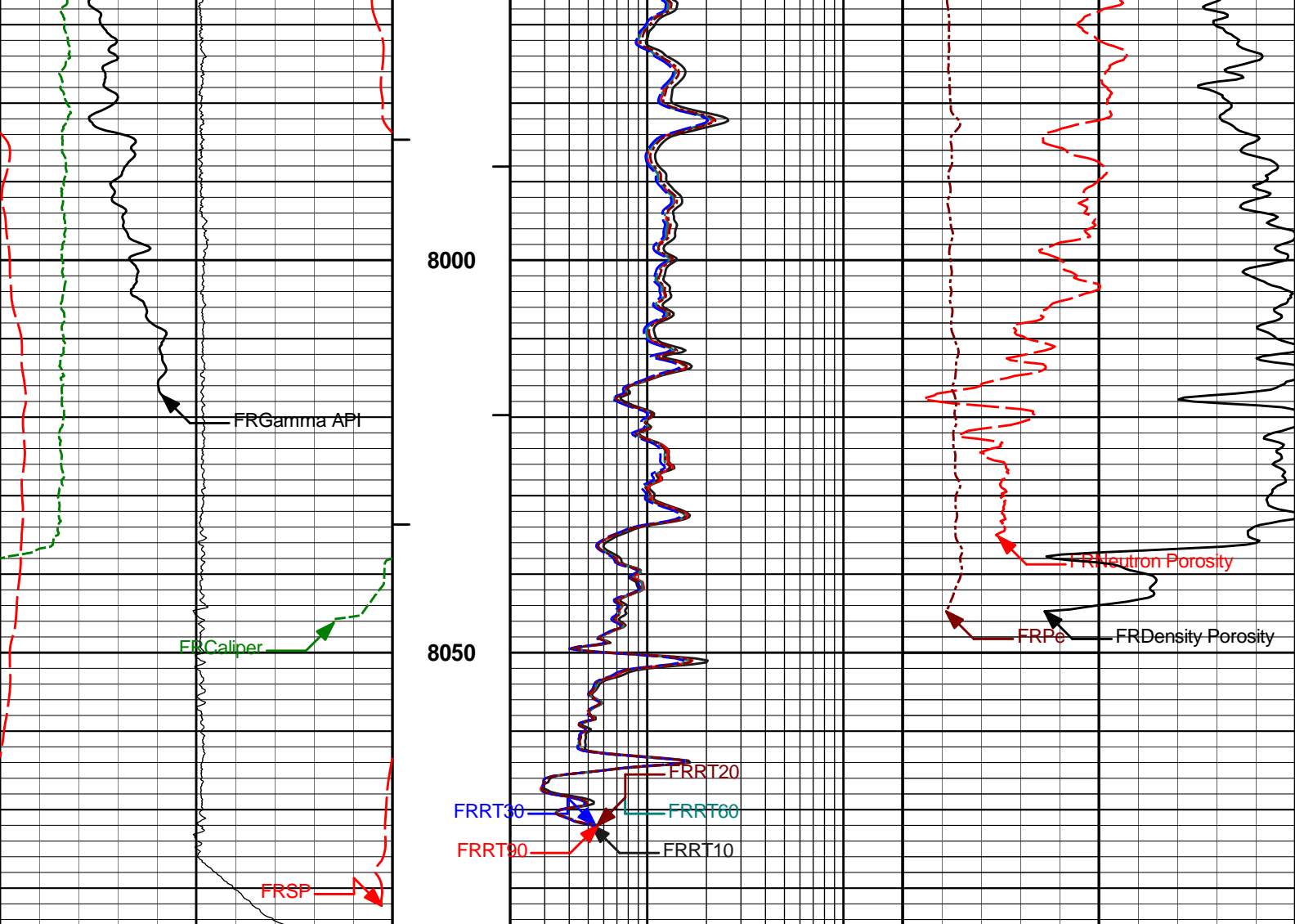












<div>0</div> <div>SP</div> <div>100</div> <div>millivolts</div>	<div>1 : 240</div>	<div>2</div> <div>RT90</div> <div>200</div> <div>ohmm</div>	<div>0</div> <div>Pe</div> <div>10</div>
<div>0</div> <div>Gamma API</div> <div>250</div> <div>api</div>	<div>BHVT</div>	<div>2</div> <div>RT60</div> <div>200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

**HALLIBURTON**

Plot Time: 18-Jun-12 14:31:23  
 Plot Range: 6995 ft to 8084.75 ft  
 Data: {ActiveWell}\Well Based\MAIN\*  
 Plot File: \COMP\REPEAT

REPEAT SECTION 5" = 100'

**HALLIBURTON**

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 11259758Reference Calibration Date:10-Jun-12 17:58:31

Engineer:A. ZWALICalibration Date:18-Jun-12 06:13:19

Software Version:WL INSITE R3.4.4 (Build 2)Calibration Version:1

Calibrator Source S/N: TB-290  
Calibrator API Reference:230.00 api  
Equivalent Calibrator API Reference:234.0 api

Measurement	Measured	Calibrated	Units
Background	68.0	70.8	api
Background + Calibrator	288.9	300.8	api
Calibrator	232.8	230.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:GTET - 11259758Reference Calibration Date:18-Jun-12 06:13:19

Engineer:A. ZWALICalibration Date:18-Jun-12 06:19:18

Software Version:WL INSITE R3.4.4 (Build 2)Calibration Version:1

Calibrator Source S/N: TB-290  
Calibrator API Reference:230.00 api  
Equivalent Calibrator API Reference:234.0 api

Field Verification	Shop	Field	Units
Background	70.8	71.0	api
Background + Calibrator	300.8	300.1	api
Calibrator	230.0	229.2	api

Shop	Field	Difference	Tolerance
230.0	229.2	0.8	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:CSNG - 10846351Reference Calibration Date:09-May-12 13:21:42

Engineer:J. PINKETTCalibration Date:10-Jun-12 19:00:17

Software Version:WL INSITE R3.4.4 (Build 2)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 #	23.5	23.6	Channel #
583 KEV Peak Channel #	52.8	52.9	Channel #
2614 KEV Peak Channel #	217.8	218.2	Channel #
Calibrate Temperature	84.7	115.0	degF

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

Blanket Reference Value: 230.00 API  
Calibrator Value: 261.2 API

Counts	Units	Measured	Calibrated	Units
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Thorium Blanket	1672.3	CPS	322.0	324.9	API
Background	328.0	CPS	60.8	63.7	API
Gamma Ray Gain: 0.98					
Expected Gain Range: 0.85 - 1.15					
Gamma Gain Check: Passed					

CSNG-FS FIELD CALIBRATION			
Tool Name:	CSNG - 10846351	Reference Calibration Date:	10-Jun-12 19:00:17
Engineer:	A. ZWALI	Calibration Date:	18-Jun-12 06:17:08
Software Version:	WL INSITE R3.4.4 (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	23.6	Channel #
583 KEV Peak Channel #	52.9	52.9	Channel #
2614 KEV Peak Channel #	218.2	217.6	Channel #
Calibrate Temperature	115.0	91.7	degF

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

Blanket Reference Value: 230.00 API

Calibrator Value: 261.2 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1671.1	CPS	324.9	319.1	API
Background	303.3	CPS	63.7	57.9	API

Gamma Ray Gain: 0.96

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION					
Tool Name:	DSNT - 11219332		Reference Calibration Date:	10-Jun-12 17:44:02	
Engineer:	J. PINKETT		Calibration Date:	10-Jun-12 17:58:39	
Software Version:	WL INSITE R3.4.4 (Build 2)		Calibration Version:	1	

Logging Source S/N: DSN 430					
Tank Serial Number: 11068236					
Reference value assigned to Tank: 53.720					
Snow Block S/N: BRIGHTON SNOW BLOCK					
Calibration Tank Water Temperature: 70 degF					
Min. Tool Housing Outside Diameter: 3.625 in					

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.976	0.979	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):	0.2216	0.2224	0.0008	+/- 0.0020
Calibrated Ratio:	10.09	10.11	0.026	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0847	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 - 11219332	Reference Calibration Date:	10-Jun-12 17:58:39
Engineer:	A. ZWALI	Calibration Date:	18-Jun-12 06:31:36
Software Version:	WL INSITE R3.4.4 (Build 2)	Calibration Version:	1

Logging Source S/N: DSN 430  
 Snow Block S/N: BRIGHTON SNOW BLOCK

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0847	0.0790	-0.0056	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 11817764	Reference Calibration Date:	10-Jun-12 20:28:11
Engineer:	J. PINKETT	Calibration Date:	10-Jun-12 20:32:31
Software Version:	WL INSITE R3.4.4 (Build 2)	Calibration Version:	1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3166.72	-3165.99	-7000.00 - -1000.00
Pad Gain	0.0003781	0.0003773	0.000200 - 0.000600
Arm Offset	-3673.59	-3712.02	-5000.00 - 3000.00
Arm Gain	0.0005535	0.0005562	0.000300 - 0.000700
Arm Power	-0.000004104	-0.000004250	-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)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.51	6.50	-0.01	+/- 0.20
Medium Ring (in)	9.85	9.85	0.00	+/- 0.20

Medium Ring (in)		8.25	8.25	0.00	+/- 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 - 11817764			Reference Calibration Date:	10-Jun-12 20:32:31
Engineer:	A. ZWALI			Calibration Date:	18-Jun-12 06:14:25
Software Version:	WL INSITE R3.4.4 (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 - E5787-S5797			Reference Calibration Date:	27-Apr-12 19:40:35
Engineer:	J.MAYNE			Calibration Date:	27-Apr-12 19:50:20
Software Version:	WL INSITE R3.4.4 (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	1.0136	1.05	0.95	1.0120	1.05	0.95	1.0092	1.05
A2 (50")	0.95	1.0380	1.05	0.95	1.0398	1.05	0.95	1.0412	1.05
A3 (29")	0.95	1.0512	1.05	0.95	1.0504	1.05	0.95	1.0483	1.05
A4 (17")	0.95	0.9939	1.05	0.95	0.9907	1.05	0.95	0.9919	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9980	1.05	0.95	0.9983	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9910	1.05	0.95	0.9905	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	-3.615	2	-6	-4.308	-2	-8	-5.284	-2
A2 (50")	-7	-0.849	-1	-6	-3.227	-2	-7	-4.772	-2
A3 (29")	-27	-16.798	-9	-9	-4.552	-3	-7	-3.288	-1
A4 (17")	-180	-119.591	-60	-45	-35.628	-15	-39	-27.148	-13
A5 (10")	N/A	N/A	N/A	-150	-95.114	-50	-80	-48.977	-10
A6 (6")	N/A	N/A	N/A	175	307.399	525	90	156.243	270

TRANSMITTER CURRENT GAIN				R-MUD VERIFICATION			
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.8193	1.3	Mud Cell	0.95	1.004	1.05
36K	1.0	1.8271	2.0				

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10808420

Reference Calibration Date: 10-Jun-12 18:31:50

Engineer: J. PINKETT

Calibration Date: 10-Jun-12 18:55:12

Software Version: WL INSITE R3.4.4 (Build 2)

Calibration Version: 1

Logging Source S/N: 5256GW

Aluminum Block S/N: 63066

Magnesium Block S/N: BRIGHTON MAGNESIUM BLOCK

Density: 2.602g/cc

Density: 1.691g/cc

Pe: 3.100

Pe: 2.650

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0279	1.0306	0.90 - 1.10
Near Dens Gain	0.9962	1.0014	0.90 - 1.10
Near Peak Gain	0.9809	0.9893	0.90 - 1.10
Near Lith Gain	0.9766	0.9904	0.90 - 1.10
Far Bar Gain	1.0042	1.0067	0.90 - 1.10
Far Dens Gain	0.9962	0.9951	0.90 - 1.10
Far Peak Gain	0.9915	0.9899	0.90 - 1.10
Far Lith Gain	0.9700	0.9702	0.90 - 1.10
Near Bar Offset	-0.1763	-0.2004	NONE
Near Dens Offset	0.1055	0.0597	NONE
Near Peak Offset	0.2711	0.1997	NONE
Near Lith Offset	0.3471	0.2328	NONE
Far Bar Offset	-0.0455	-0.0656	NONE
Far Dens Offset	0.0052	0.0149	NONE
Far Peak Offset	0.0330	0.0466	NONE
Far Lith Offset	0.1731	0.1697	NONE
Near Bar Background	836.49	834.40	700 - 1450
Near Dens Background	275.87	277.36	230 - 480
Near Peak Background	120.21	121.12	100 - 210
Near Lith Background	150.63	148.65	125 - 260
Far Bar Background	510.28	510.45	450 - 900
Far Dens Background	198.17	199.25	175 - 345
Far Peak Background	79.00	78.71	70 - 140
Far Lith Background	82.53	81.44	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.691	1.691	0.000	+/- 0.015
Pe	2.620	2.608	-0.012	+/- 0.150
ALUMINUM				
Density (g/cc)	2.602	2.602	-0.000	+/- 0.01500
Pe	3.057	3.067	0.010	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				

Background	-0.0004	+/- 0.0110	0.0002	+/- 0.0140
Magnesium Block	-0.0001	+/- 0.0110	0.0001	+/- 0.0140
Aluminum Block	-0.0007	+/- 0.0110	-0.0000	+/- 0.0140
Resolution	8.89	6.00 - 11.50	9.55	6.00 - 11.50
Internal Verifier(B+D+P+L)	1382	1200 - 2700	870	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 - 10808420

Reference Calibration Date: 10-Jun-12 18:55:12

Engineer: A. ZWALI

Calibration Date: 18-Jun-12 06:25:35

Software Version: WL INSITE R3.4.4 (Build 2)

Calibration Version: 1

Pad Temperature: 81.5 degF

#### DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1381.518	1386.020	4.502	15.017
Far (B+D+P+L) cps	869.854	873.017	3.163	16.123
Near Resolution	8.89	8.97	0.080	0.50
Far Resolution	9.55	9.83	0.280	1.00

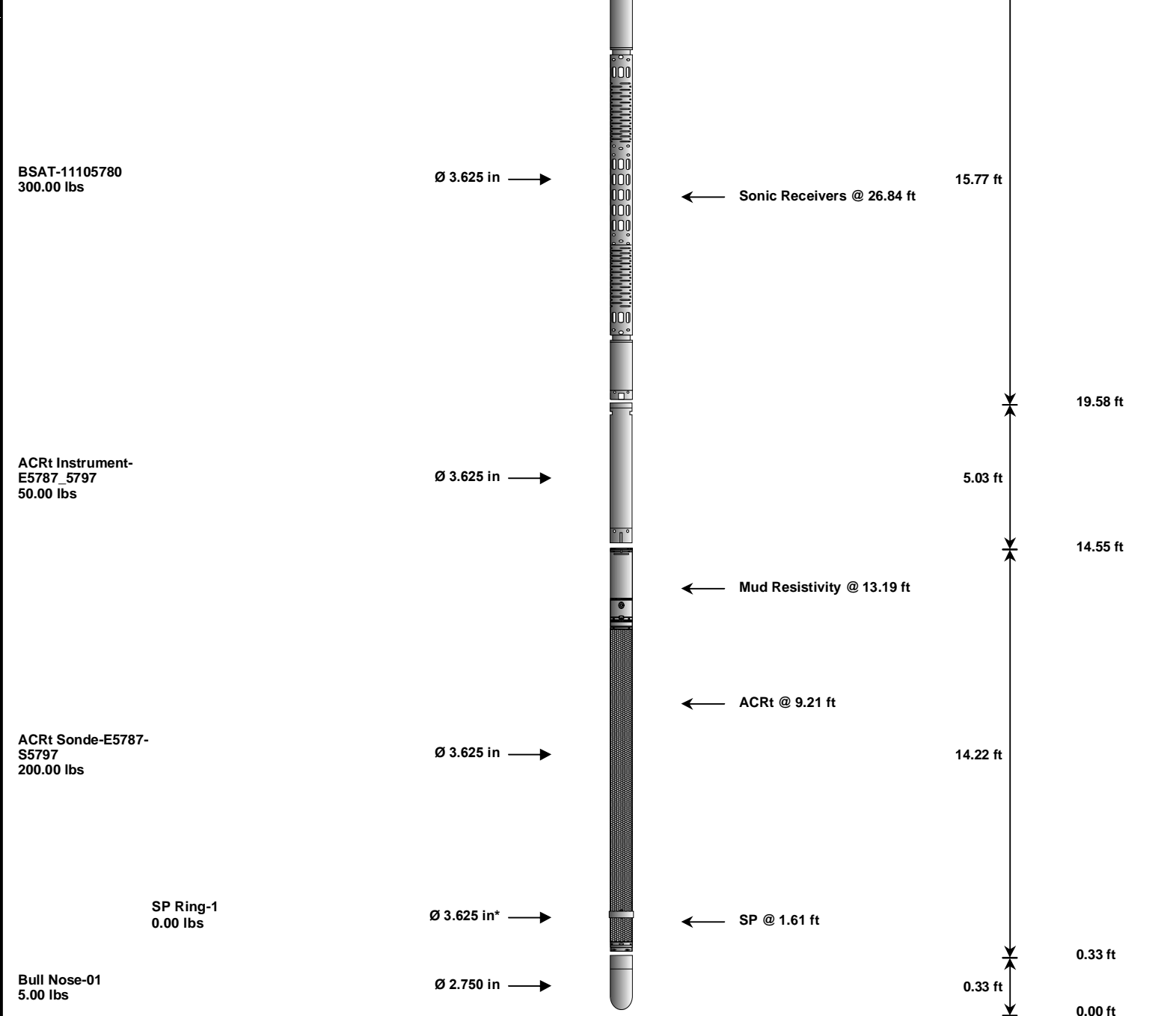
#### PASS/FAIL SUMMARY

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

### CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11259758						
Gamma Ray Calibrator	230.0	229.2	-----	0.8	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.6	23.6	-----	0.0	-----	Channel #
583 KEV Peak Channel #	52.9	52.9	-----	0.0	-----	Channel #
2614 KEV Peak Channel #	218.2	217.6	-----	0.6	-----	Channel #
DSNT-11219332						
Snow-Block Porosity	0.0847	0.0790	-----	0.0057	+/- 0.0150	decg
SDLT-11817764						
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in
Ring Diameter	8.25	8.24	-----	0.010	+/-0.15	in
ACRt Sonde-E5787-S5797						
Mud Cell	1.004	-----	-----	0.000	-----	ohm-m
SDLT Pad-10808420						
Near(B+D+P+L)	1381.518	1386.020	-----	-4.502	+/-15.017	cps
Far(B+D+P+L)	869.854	873.017	-----	3.163	+/-16.123	cps

HALLIBURTON							
TOOL STRING DIAGRAM REPORT							
Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length	
RWCH-11732195 135.00 lbs		Ø 3.625 in →		← Load Cell @ 75.11 ft ← BH Temperature @ 74.54 ft	6.25 ft	78.79 ft	
GTET-11259758 165.00 lbs		Ø 3.625 in →		← GammaRay @ 66.48 ft	8.52 ft	72.54 ft	
CSNG-10846351 114.00 lbs		Ø 3.625 in →		← CSNG @ 58.40 ft	8.17 ft	64.02 ft	
DSNT-11219332 174.00 lbs		Ø 3.625 in →		← DSN Far @ 48.92 ft ← DSN Near @ 48.17 ft	9.69 ft	55.86 ft	
SDLT-11817764 360.00 lbs	SDLT Pad-10808420 65.00 lbs	Ø 4.500 in → Ø 4.750 in* →		← SDL Caliper @ 38.17 ft ← SDL @ 38.16 ft	10.81 ft	46.17 ft	
							35.36 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11732195	135.00	6.25	72.54	300.00
GTET	Gamma Telemetry Tool	11259758	165.00	8.52	64.02	60.00
CSNG	Compensated Spectral Natural Gamma	10846351	114.00	8.17	55.86	15.00
DSNT	Dual Spaced Neutron	11219332	174.00	9.69	46.17	60.00
SDLT	Spectral Density Tool	11817764	360.00	10.81	35.36	60.00
SDLP	Density Insite Pad	10808420	65.00	2.55	* 37.57	60.00
BSAT	Borehole Sonic Array Tool	11105780	300.00	15.77	19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	E5787_5797	50.00	5.03	14.55	300.00
ACRt	Array Compensated True Resistivity	E5787-S5797	200.00	14.22	0.33	300.00
SP	SP Ring	1	0.00	0.25	* 1.61	300.00
BLNS	Bull Nose	01	5.00	0.33	0.00	300.00
<b>Total</b>			<b>1,568.00</b>	<b>78.79</b>		

\* Not included in Total Length and Length Accumulation.

Data: REHDER\_X06\_33D\0001 NOBLE\_BSATIDLE Date: 18-Jun-12 11:45:35

WELL	REHDER X06-33D		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
<b>HALLIBURTON</b>		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY LOG	