

HALLIBURTON

ARRAY COMPENSATED
TRUE RESISTIVITY
SPECTRAL DENSITY
DUAL SPACED NEUTRON

COMPANY		NOBLE ENERGY INC.	
WELL		MARLEY C01-28D	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		25-Apr-11	
Run No.		ONE	
Depth - Driller		7038.00 ft	
Depth - Logger		7038.0 ft	
Bottom - Logged Interval		7034 ft	
Top - Logged Interval		578 ft	
Casing - Driller		8.625 in @ 577.0 ft	
Casing - Logger		578.0 ft	
Bit Size		7.875 in	
Type Fluid in Hole		WATER BASED MUD	
Density		9.2 ppq	
Viscosity		50.00 s/qt	
PH		8.00 pH	
Fluid Loss		15.2 cpm	
Source of Sample		MUD CELL	
Rm @ Meas. Temperature		1.250 ohmm @ 75.00 degF	
Rmf @ Meas. Temperature		1.08 ohmm @ 75.00 degF	
Rmc @ Meas. Temperature		1.105 ohmm @ 75.00 degF	
Source Rmf		CHART	
Rmc		CHART	
Rm @ BHT		0.48 ohmm @ 205.0 degF	
Time Since Circulation		1.5 hr	
Time on Bottom		25-Apr-11 10:32	
Max. Rec. Temperature		205.0 degF @ 7038.0 ft	
Equipment		11454566	
Location		BRIGHTON	
Recorded By		F. LODER	
Witnessed By		B. HANSEN	

COMPANY	NOBLE ENERGY INC.
WELL	MARLEY C01-28D
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO
API No.	05123315080000
Location	HOLE LOCATION: 613' FNL & 2021' FWL NENW/ BOTTOM LOCATION: 150' FSL & 2515' FWL SESW LATITUDE: 40.346980° LONGITUDE: -104.500900°
Other Services:	CSNG
Sect. 1	Twp. 4N
Rge.	64W
Elev. 4605.0 ft	Elev.: K.B. 4620.0 ft
D.F. 4619.0 ft	D.F. 4619.0 ft
G.L. 4605.0 ft	G.L. 4605.0 ft

Fold here

Service Ticket No.: N/A				API Serial No.: 05123315080000				PGM Version: WL INSITE R3.2.3 (Build 5)							
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.	
Rmf @ Meas. Temp.		@		@				ONE		ACRt		N/A		1.5 S.O.	
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.		DSN-434	
Distance to Source		17		FWDA [Y/N]				Strength		1.5 CI		Strength		15 CI	
LOGGING DATA															
GENERAL				GAMMA				ACOUSTIC				DENSITY			

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	7038	6814	REC	0	250				20	0	2.68	20	0	SAND
ONE	6814	6638	REC	0	250				20	0	2.71	20	0	LIME
ONE	6638	578	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 AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE.														
CHLORIDES REPORTED AT 700 ppm.														
SPLICE AT 4221' DUE TO TOOL DATA ERROR.														
YOUR CREW TODAY: G. DAVIS, A. DUNCAN RIG: ENSIGN 128														
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.														
HALLIBURTON														

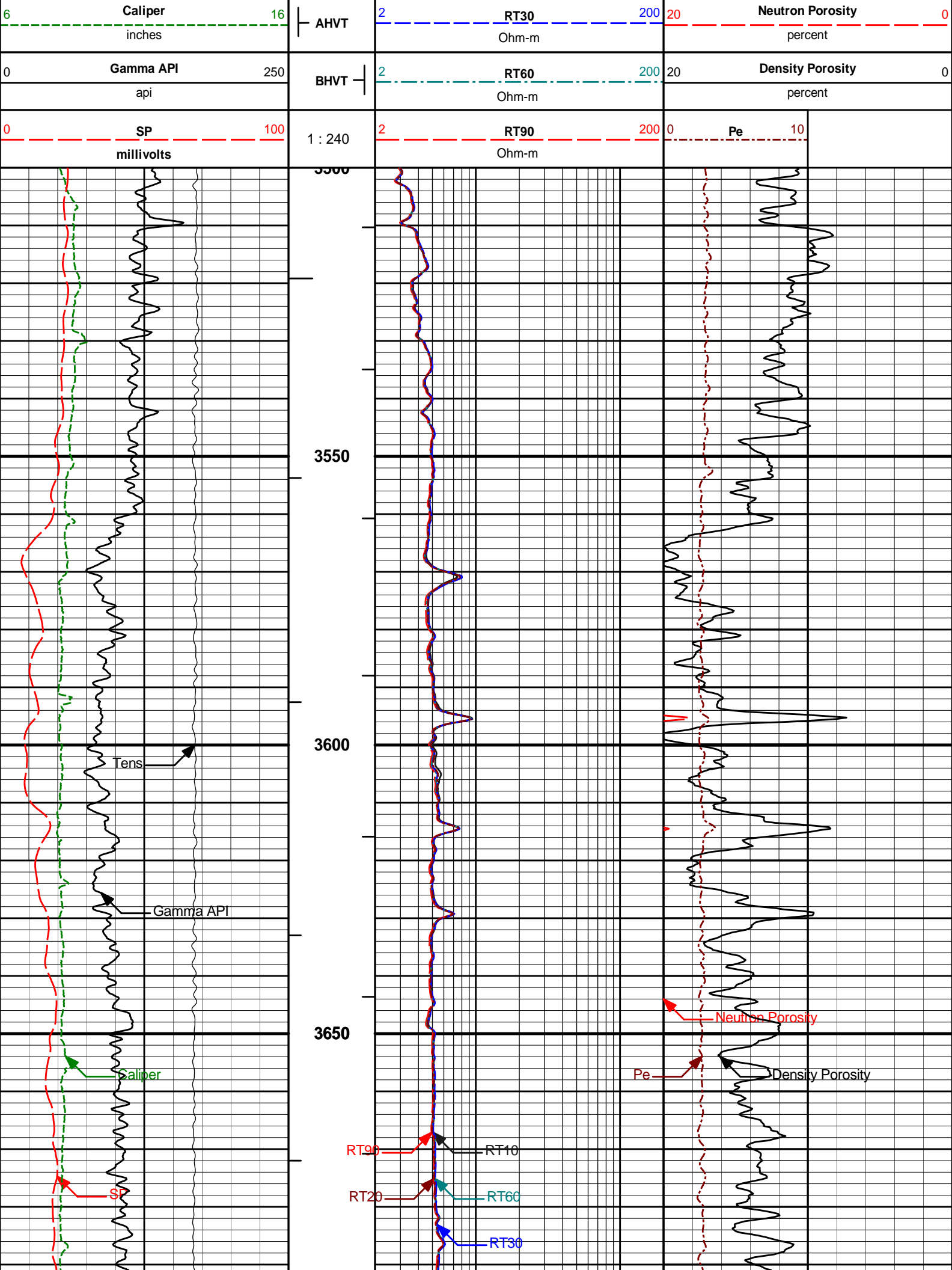
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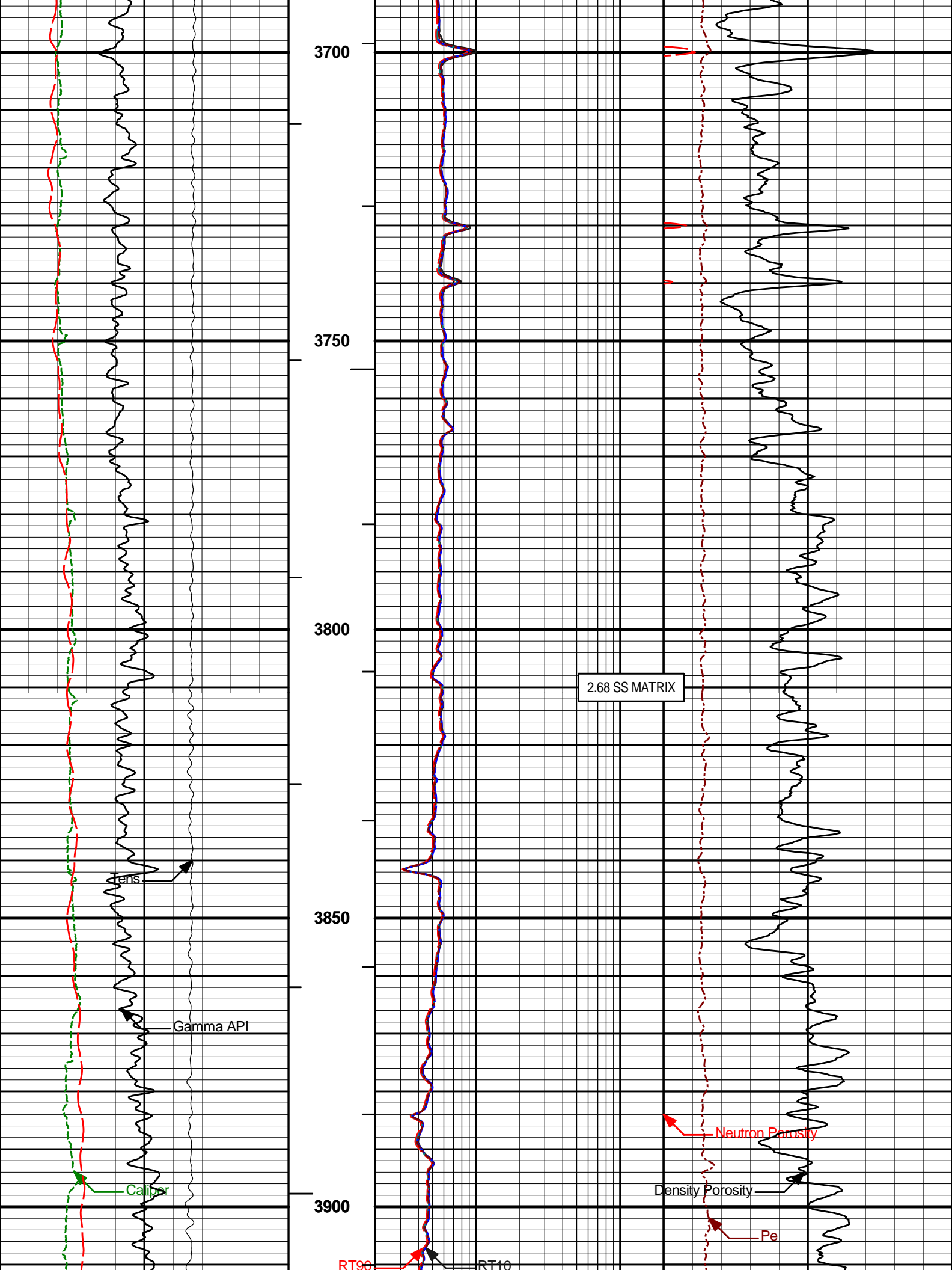
PARAMETERS REPORT

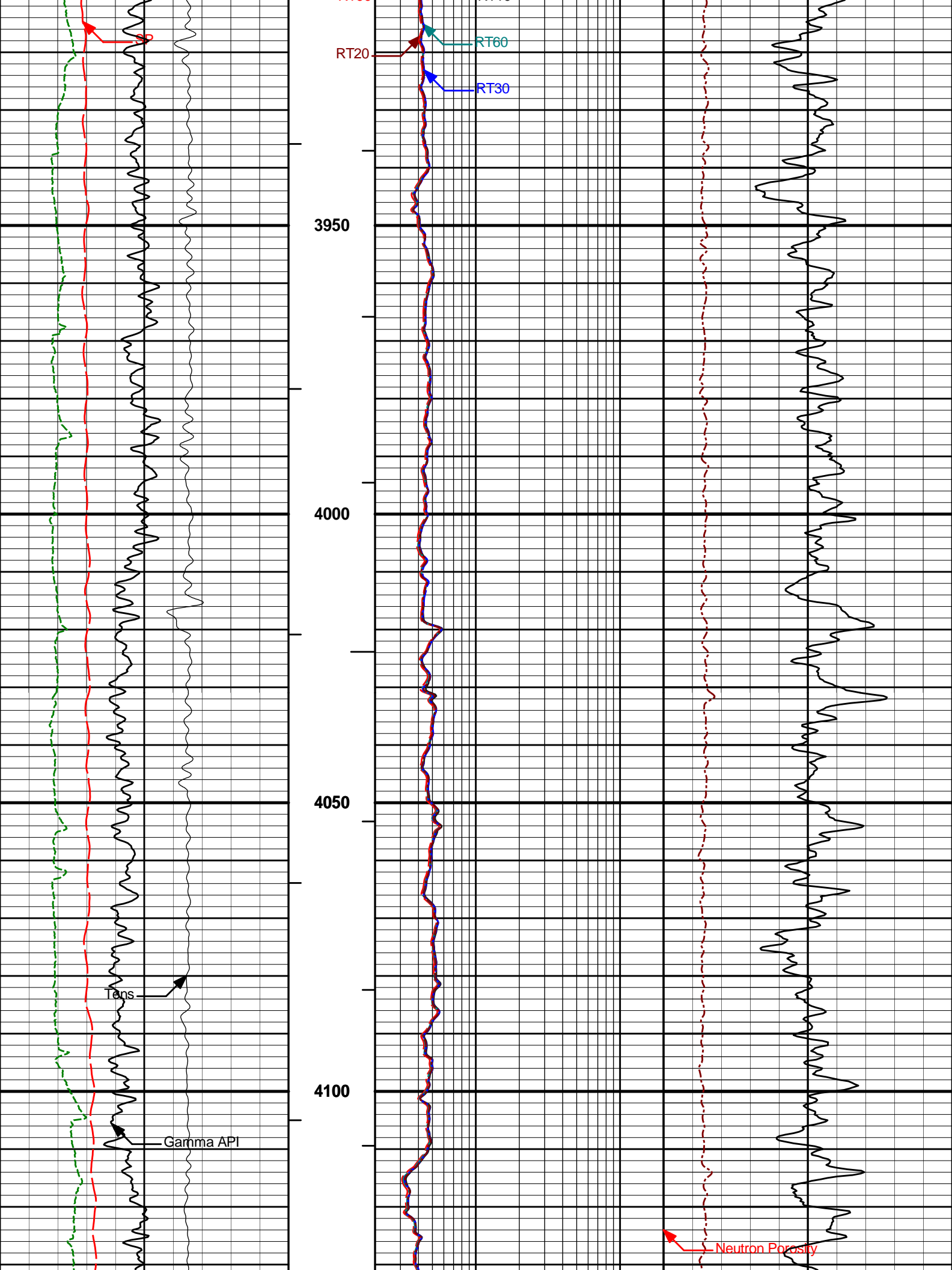
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT	DMA	Formation Density Matrix	2.680	g/cc
6638.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
6814.00					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	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	TD	Total Well Depth	7038.00	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	

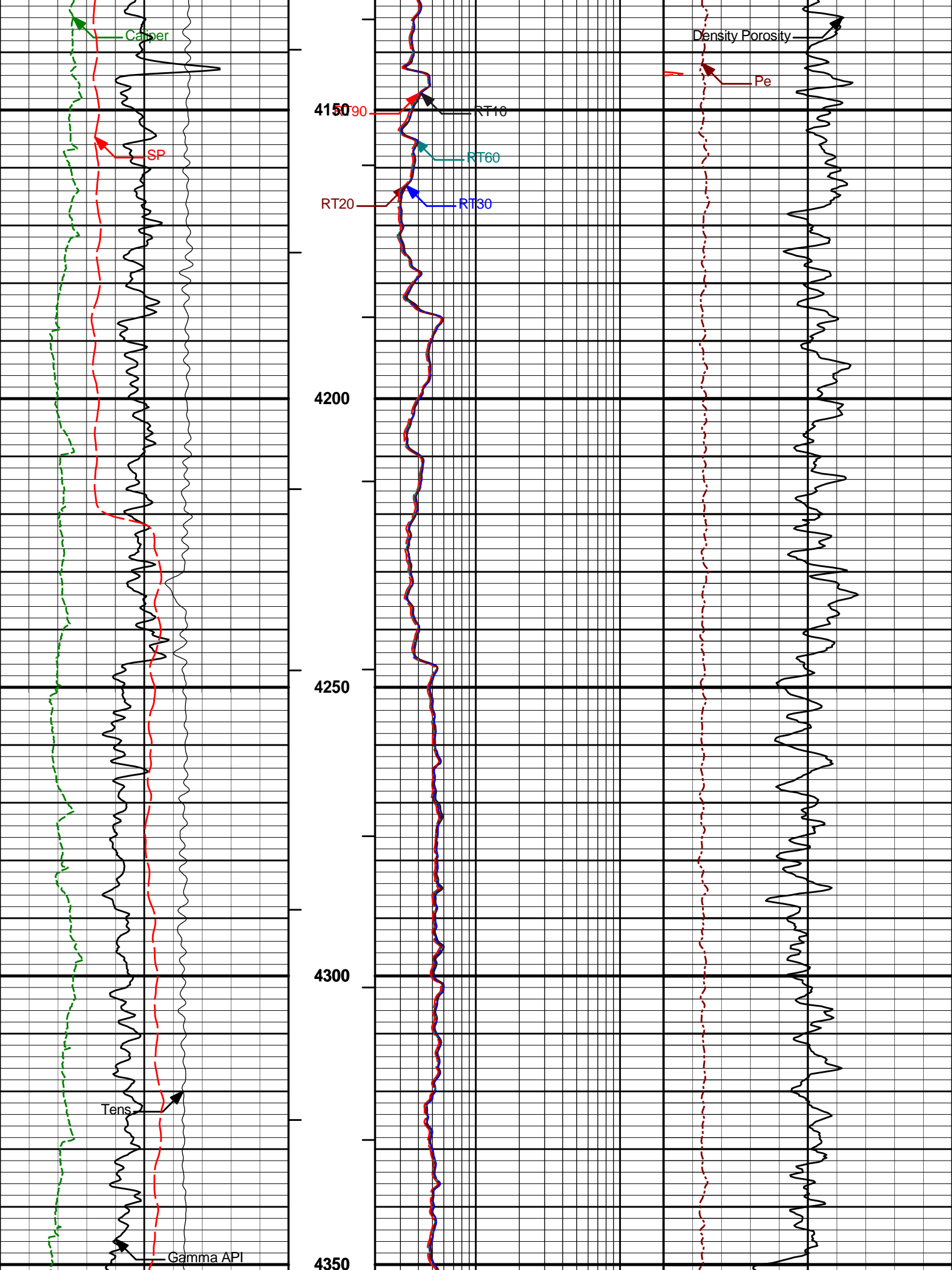
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position	Eccentered	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
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	CB	Logging Calibration Blocks?	No	
SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT	DTWN	Disable temperature warning	No	
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 Up	
ACRt	TPOS	Tool Position	Eccentered	
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: MARLEY_C01_28D\0001 TRIPLE-CSNG\004.01 25-Apr-11 11:26 Up				Date: 25-Apr-11 11:40:20

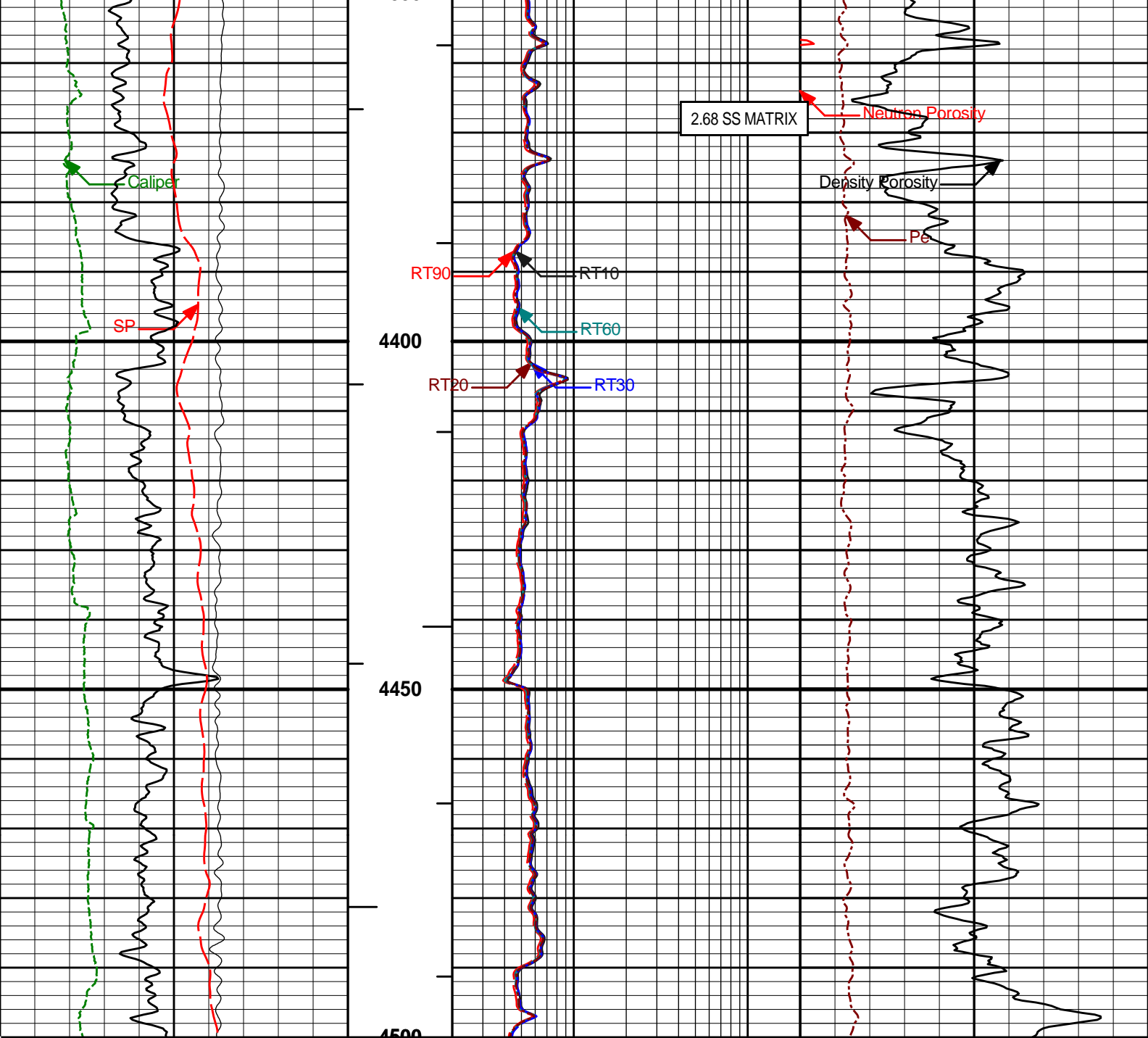
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MAIN PASS 5" = 100'				
<div> <div>10K</div> <div>Tens</div> <div>0</div> <div>pounds</div> </div>		<div> <div>2</div> <div>RT10</div> <div>200</div> <div>Ohm-m</div> </div>		
<div> <div>2</div> <div>RT20</div> <div>200</div> <div>Ohm-m</div> </div>				











<div>0SP100</div> <div>millivolts</div>			1 : 240	<div>2RT90200</div> <div>Ohm-m</div>		<div>0Pe10</div>		
<div>0Gamma API250</div> <div>api</div>			BHVT	<div>2RT60200</div> <div>Ohm-m</div>		<div>20Density Porosity0</div> <div>percent</div>		
<div>6Caliper16</div> <div>inches</div>			AHVT	<div>2RT30200</div> <div>Ohm-m</div>		<div>20Neutron Porosity0</div> <div>percent</div>		
<div>10KTens0</div> <div>pounds</div>				<div>2RT20200</div> <div>Ohm-m</div>				
				<div>2RT10200</div> <div>Ohm-m</div>				

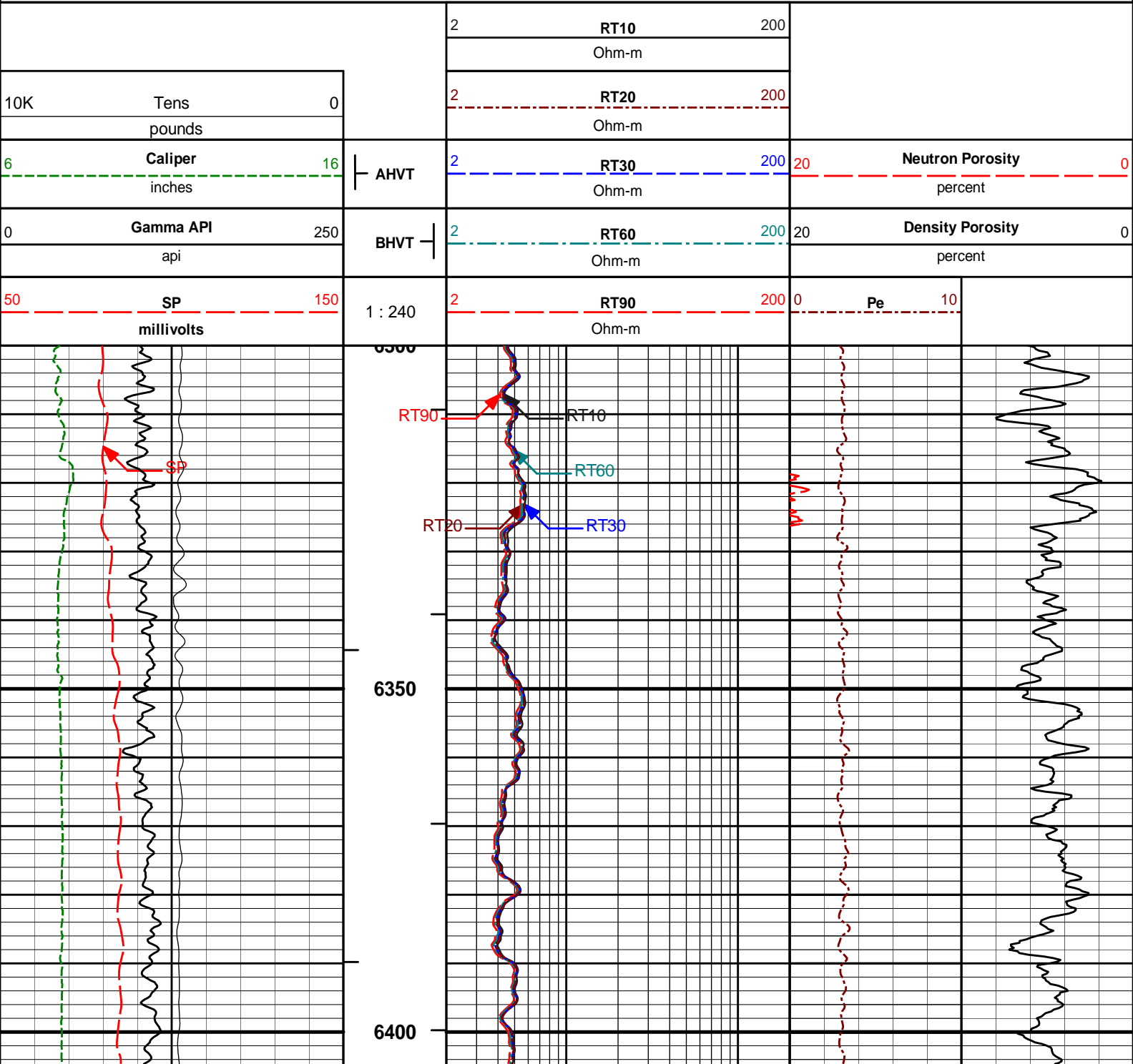
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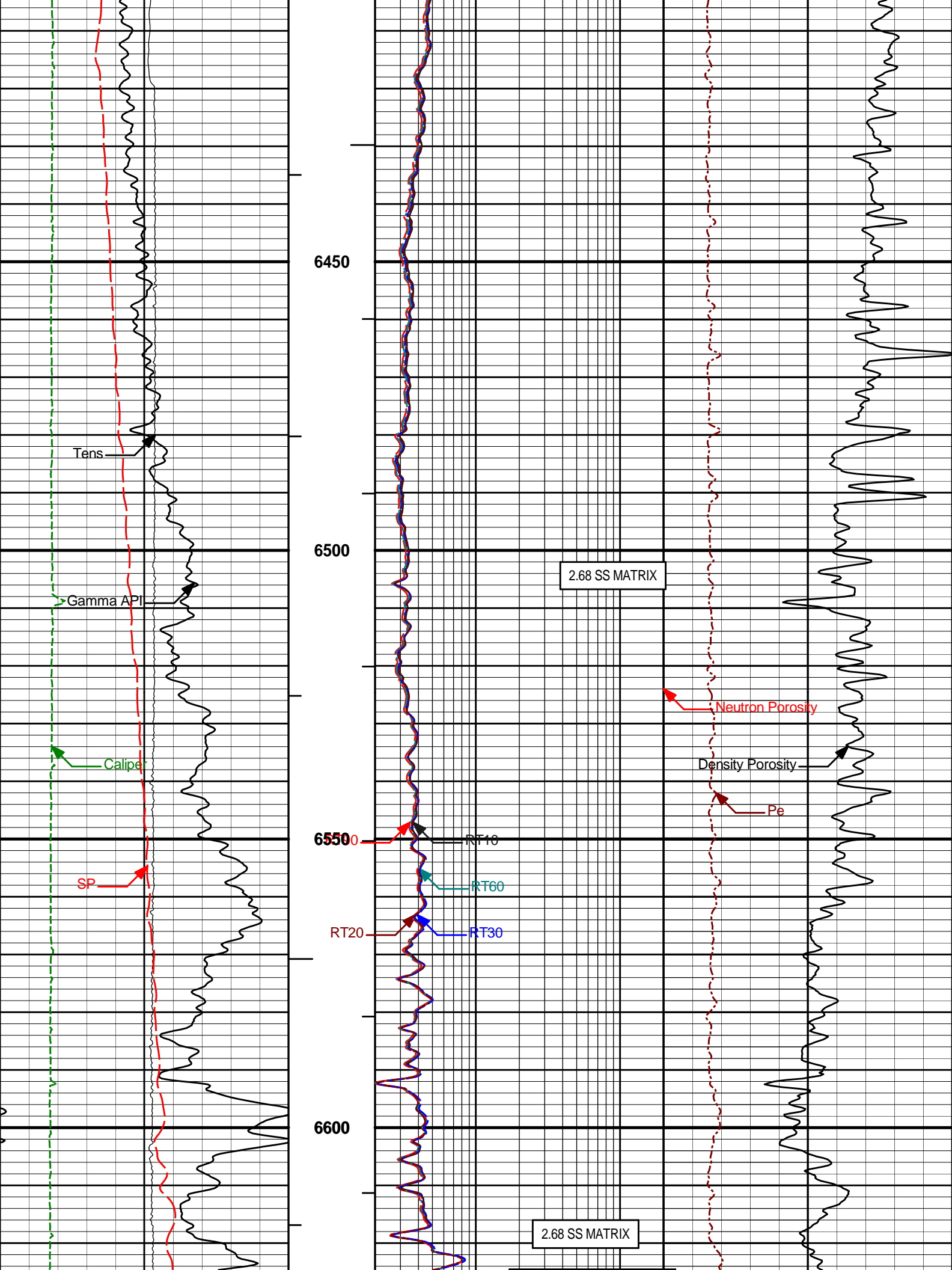
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Data: MARLEY_C01_28D\Well Based\MAIN*
Plot File: \COMP\MAIN

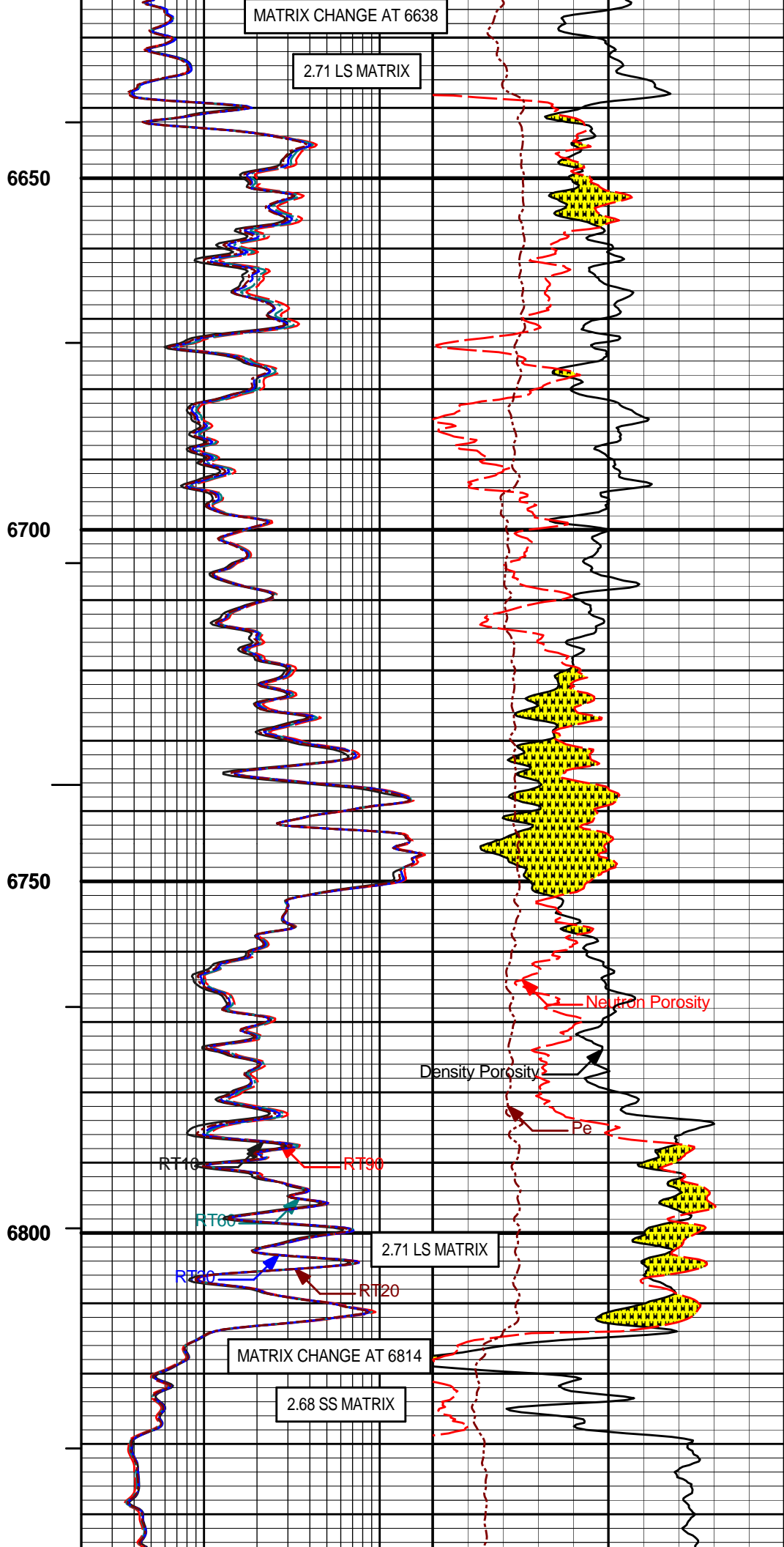
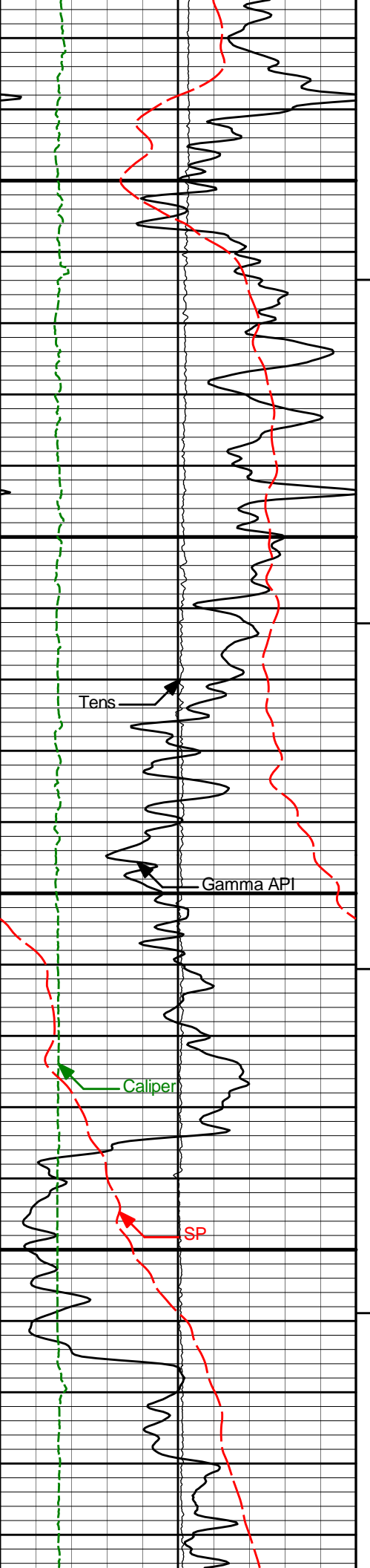
HALLIBURTON

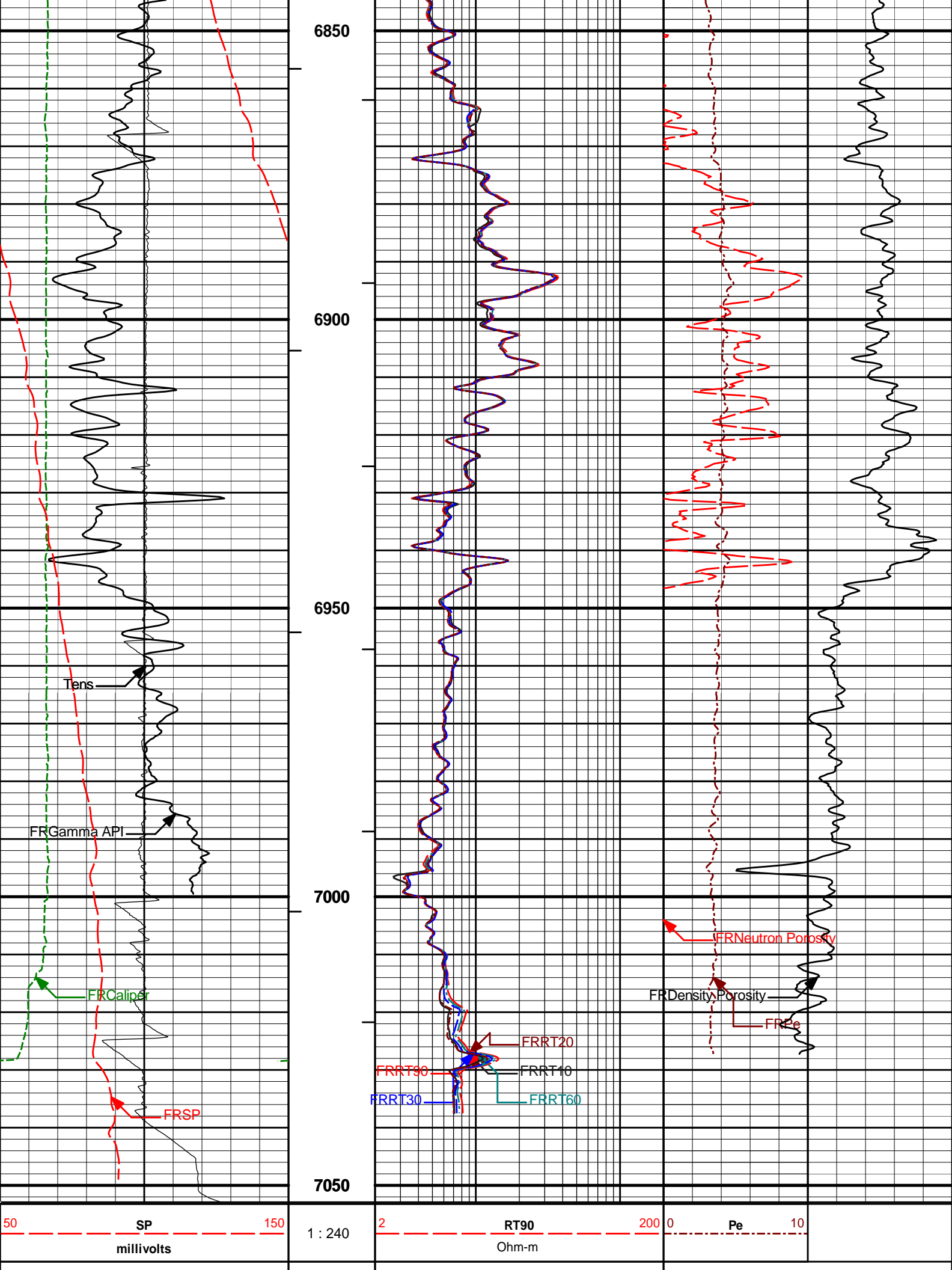
Plot Time: 25-Apr-11 12:21:35
Plot Range: 6300 ft to 7052.92 ft
Data: MARLEY_C01_28D\Well Based\MAIN*
Plot File: \COMP\REPEAT

REPEAT SECTION 5" = 100'









0	Gamma API	250	BHV	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: 25-Apr-11 12:21:38
Plot Range: 6300 ft to 7052.92 ft
Data: MARLEY_C01_28D\Well Based\MAIN*
Plot File: \\COMP\REPEAT

REPEAT SECTION 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 11277436_BLACKReference Calibration Date:24-Apr-11 12:39:17

Engineer:F. LODERCalibration Date:24-Apr-11 12:43:25

Software Version:WL INSITE R3.2.3 (Build 5)Calibration Version:1

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

Measurement	Measured	Calibrated	Units
Background	74.0	78.8	api
Background + Calibrator	289.9	308.8	api
Calibrator	234.8	230.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:GTET - 11277436_BLACKReference Calibration Date:24-Apr-11 12:43:25

Engineer:R. TWEETENCalibration Date:25-Apr-11 05:38:00

Software Version:WL INSITE R3.2.3 (Build 5)Calibration Version:1

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

Field Verification	Shop	Field	Units
Background	78.8	76.5	api
Background + Calibrator	308.8	307.3	api
Calibrator	230.0	230.8	api

Shop	Field	Difference	Tolerance
230.0	230.8	-0.8	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:CSNG - 10846251Reference Calibration Date:24-Apr-11 09:51:37

Tool Name:	CSNG - 10846351	Reference Calibration Date:	24-Jan-11 09:31:37
Engineer:	R. TWEETEN	Calibration Date:	25-Apr-11 06:35:50
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1
Source SN:	KW-290		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	22.9	23.1	Channel #
583 KEV Peak Channel #	51.3	51.9	Channel #
2614 KEV Peak Channel #	211.5	213.6	Channel #
Calibrate Temperature	84.1	59.6	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	1595.4	CPS	326.2	324.8	API
Background	312.4	CPS	65.0	63.6	API

Gamma Ray Gain: 1.02
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION			
Tool Name:	CSNG - 10846351	Reference Calibration Date:	25-Apr-11 06:35:50
Engineer:	R. TWEETEN	Calibration Date:	25-Apr-11 06:47:37
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1
Source SN:			

TITANIUM CASE	Shop	Field	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.1	23.1	Channel #
583 KEV Peak Channel #	51.9	52.0	Channel #
2614 KEV Peak Channel #	213.6	213.6	Channel #
Calibrate Temperature	59.6	62.0	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
Thorium Blanket	1602.2	CPS	324.8	326.0	API
Background	318.2	CPS	63.6	64.7	API

Gamma Ray Gain: 1.02
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11301132_BLACK

Reference Calibration Date: 10-Mar-11 14:54:53

Engineer: C. GULLETT

Calibration Date: 11-Apr-11 13:37:18

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

Logging Source S/N: DSN-434
Tank Serial Number: 11068236
Reference value assigned to Tank: 53.720
Snow Block S/N: BRIGHTON
Calibration Tank Water Temperature: 60 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.996	1.001	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):	0.2209	0.2223	0.0015	+/- 0.0020
Calibrated Ratio:	10.06	10.11	0.050	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0710	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: 11-Apr-11 13:37:18

Engineer: R. TWEETEN

Calibration Date: 25-Apr-11 06:54:51

Software Version: WL INSITE R3.2.3 (Build 5)

Calibration Version: 1

Logging Source S/N: DSN-434
Snow Block S/N: BRIGHTON

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0710	0.0669	-0.0041	+/- 0.0150

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

SPECTRAL DENSITY SHOP CALIBRATION

Logging Source S/N: 2770GW

Aluminum Block S/N: BRIGHTON_AL

Magnesium Block S/N: BRIGHTON_MG

Density: 2.600g/cc

Density: 1.680g/cc

Pe: 3.100

Pe: 2.594

Density Calibration Summary			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0481	1.0482	0.90 - 1.10
Near Dens Gain	1.0134	1.0296	0.90 - 1.10
Near Peak Gain	0.9948	1.0113	0.90 - 1.10
Near Lith Gain	0.9678	0.9992	0.90 - 1.10
Far Bar Gain	1.0174	1.0178	0.90 - 1.10
Far Dens Gain	1.0052	1.0058	0.90 - 1.10
Far Peak Gain	0.9979	0.9995	0.90 - 1.10
Far Lith Gain	0.9703	0.9796	0.90 - 1.10
Near Bar Offset	-0.1891	-0.1921	NONE
Near Dens Offset	0.1509	0.0104	NONE
Near Peak Offset	0.3039	0.1676	NONE
Near Lith Offset	0.4970	0.2442	NONE
Far Bar Offset	0.0528	0.0405	NONE
Far Dens Offset	0.1427	0.1298	NONE
Far Peak Offset	0.1848	0.1688	NONE
Far Lith Offset	0.3640	0.2915	NONE
Near Bar Background	1070.52	1064.75	700 - 1450
Near Dens Background	351.54	350.16	230 - 480
Near Peak Background	152.32	152.22	100 - 210
Near Lith Background	186.41	184.66	125 - 260
Far Bar Background	557.45	555.30	450 - 900
Far Dens Background	218.63	218.57	175 - 345
Far Peak Background	85.74	84.65	70 - 140
Far Lith Background	88.98	89.54	75 - 145

Calibration Block Summary				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.675	1.680	0.005	+/- 0.015
Pe	2.620	2.551	-0.069	+/- 0.150
ALUMINUM				
Density (g/cc)	2.596	2.600	0.004	+/- 0.01500
Pe	3.083	3.059	-0.024	+/- 0.150

Tool Summary				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0013	+/- 0.0110	0.0004	+/- 0.0140
Magnesium Block	-0.0004	+/- 0.0110	-0.0008	+/- 0.0140
Aluminum Block	-0.0002	+/- 0.0110	-0.0004	+/- 0.0140

Aluminum Block	-0.0009	+/- 0.0110	-0.0004	+/- 0.0140
Resolution	9.12	6.00 - 11.50	9.55	6.00 - 11.50
Internal Verifier(B+D+P+L)	1752	1200 - 2700	948	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 - M335_P470_BLACK	Reference Calibration Date:	07-Apr-11 09:56:54
Engineer:	R. TWEETEN	Calibration Date:	25-Apr-11 05:35:26
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1

Pad Temperature: 61.3 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1751.787	1753.158	1.371	16.784
Far (B+D+P+L) cps	948.060	956.341	8.281	16.612
Near Resolution	9.12	9.14	0.020	0.50
Far Resolution	9.55	9.81	0.260	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - M335_P470_BLACK	Reference Calibration Date:	10-Mar-11 11:10:13
Engineer:	C. GULLETT	Calibration Date:	07-Apr-11 13:19:01
Software Version:	WL INSITE R3.2.3 (Build 5)	Calibration Version:	1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1681.11	-2043.18	-7000.00 - -1000.00
Pad Gain	0.0003847	0.0004037	0.000200 - 0.000600
Arm Offset	-2950.39	-2756.65	-5000.00 - 3000.00
Arm Gain	0.0005769	0.0005924	0.000300 - 0.000700
Arm Power	-0.000006589	-0.000007443	-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)	2.05	2.00	-0.05	+/- 0.20
Medium Ring (in)	3.71	3.75	0.04	+/- 0.20
RING DIAMETER:				

Small Ring (in)		6.49	6.50	0.01	+/- 0.20
Medium Ring (in)		8.21	8.25	0.04	+/- 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: 07-Apr-11 13:19:01	
Engineer:		R. TWEETEN		Calibration Date: 25-Apr-11 05:41:00	
Software Version:		WL INSITE R3.2.3 (Build 5)		Calibration Version: 1	

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.70	-0.05	+/- 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 - E6758-S4352_BLK		Reference Calibration Date: 29-Nov-10 08:30:56	
Engineer:		F. LODER		Calibration Date: 30-Mar-11 17:55:22	
Software Version:		WL INSITE R3.2.3 (Build 5)		Calibration Version: 1	

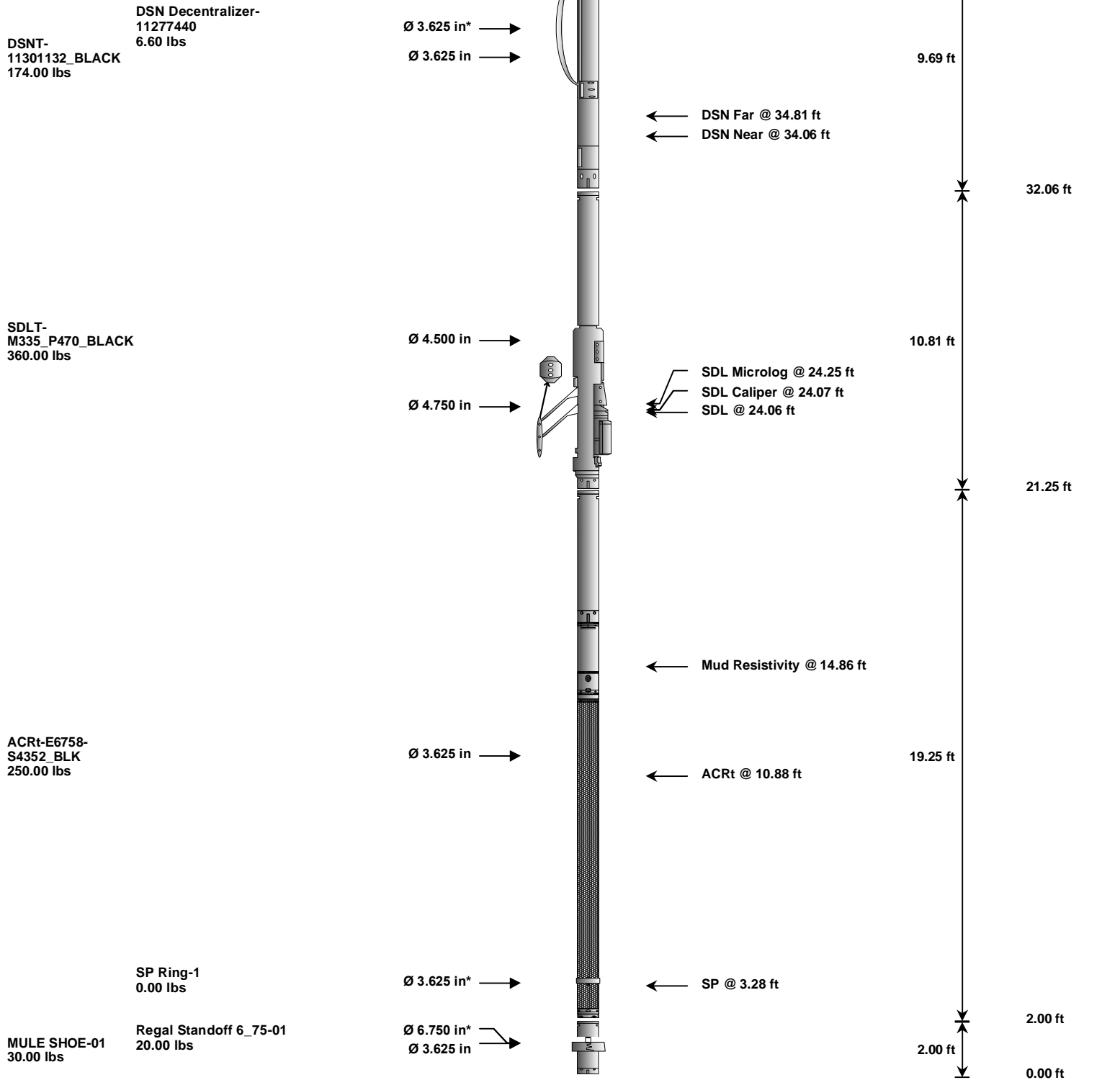
TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0100	1.05	0.95	1.0124	1.05	0.95	1.0082	1.05
A2 (50")	0.95	0.9971	1.05	0.95	0.9987	1.05	0.95	0.9965	1.05
A3 (29")	0.95	0.9930	1.05	0.95	0.9948	1.05	0.95	0.9911	1.05
A4 (17")	0.95	0.9960	1.05	0.95	0.9952	1.05	0.95	0.9927	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9974	1.05	0.95	0.9942	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9775	1.05	0.95	0.9733	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	-1.099	2	-6	-4.185	-2	-8	-5.453	-2
A2 (50")	-7	-3.435	-1	-6	-4.045	-2	-7	-4.436	-2
A3 (29")	-27	-13.536	-9	-9	-3.915	-3	-7	-3.041	-1
A4 (17")	-180	-98.128	-60	-45	-32.328	-15	-39	-26.066	-13
A5 (10")	N/A	N/A	N/A	-150	-91.221	-50	-80	-44.206	-10
A6 (6")	N/A	N/A	N/A	175	298.350	525	90	154.010	270

TRANSMITTER CURRENT GAIN				R-MUD VERIFICATION			
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.8643	1.3	Mud Cell	0.95	1.009	1.05

36K	1.0	1.8870	2.0			
72K	1.0	1.1049	2.0			
CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11277436_BLACK						
Gamma Ray Calibrator	230.0	230.8	-----	-0.8	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.1	23.1	-----	0.0	-----	Channel #
583 KEV Peak Channel #	51.9	52.0	-----	-0.1	-----	Channel #
2614 KEV Peak Channel #	213.6	213.6	-----	0.0	-----	Channel #
DSNT-11301132_BLACK						
Snow-Block Porosity	0.0710	0.0669	-----	0.0041	+/- 0.0150	decp
SDLT-M335_P470_BLACK						
Near(B+D+P+L)	1751.787	1753.158	-----	-1.371	+/-16.784	cps
Far(B+D+P+L)	948.060	956.341	-----	-8.281	+/-16.612	cps
Pad Extension	3.75	3.70	-----	0.05	+/-0.10	in
Ring Diameter	8.25	8.26	-----	-0.010	+/-0.15	in
ACRt-E6758-S4352_BLK						
Mud Cell	1.009	-----	-----	0.000	-----	ohm-m
Data: MARLEY_C01_28D\0001 TRIPLE-CSNG\IDLE					Date: 25-Apr-11 11:39:52	

<div> <div>HALLIBURTON</div> <div>TOOL STRING DIAGRAM REPORT</div> </div>						
Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-B097 135.00 lbs		Ø 3.625 in →		← Load Cell @ 61.00 ft ← BH Temperature @ 60.44 ft	6.25 ft	64.69 ft
				← GammaRay @ 52.37 ft	8.52 ft	58.44 ft
GTET-11277436_BLACK 165.00 lbs		Ø 3.625 in →				49.92 ft
CSNG-10846351 114.00 lbs		Ø 3.625 in →		← CSNG @ 44.29 ft	8.17 ft	41.75 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	58.44	300.00
GTET	Gamma Telemetry Tool	11277436_BLACK	165.00	8.52	49.92	60.00
CSNG	Compensated Spectral Natural Gamma	10846351	114.00	8.17	41.75	15.00
DSNT	Dual Spaced Neutron	11301132_BLACK	174.00	9.69	32.06	60.00
DCNT	DSN Decentralizer	11277440	6.60	5.13	35.39	300.00
SDLT	Spectral Density Tool	M335_P470_BLACK	360.00	10.81	21.25	60.00
ACRt	Array Compensated True Resistivity	E6758-S4352_BLK	250.00	19.25	2.00	300.00
SP	SP Ring	1	0.00	0.25	3.28	300.00
M S	MULE SHOE	01	30.00	2.00	0.00	100.00
RSOF	Regal Standoff 6.75in	01	20.00	0.52	0.88	300.00
Total			1,254.60	64.69		

* Not included in Total Length and Length Accumulation.

COMPANY	NOBLE ENERGY INC.		
WELL	MARLEY C01-28D		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		ARRAY COMPENSATED TRUE RESISTIVITY SPECTRAL DENSITY DUAL SPACED NEUTRON	