HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
ARRAY COMPENSATED
TRUE RESISTIVITY

COMPANY	NOBLE ENERGY INC
WELL	ADAMS D30-29D
FIELD	WATTENBERG
COUNTY	WELD
STATE	CO

COMPANY NOBLE ENERGY INC

WELL ADAMS D30-29D

FIELD WATTENBERG

COUNTY WELD **STATE** CO

API No. 05123356250000

Location SHL:154' FNL & 2093' FWL NENW
BHL: 75' FNL & 1260' FWL NENW
LAT: 40.202992°
LONG: -104.595248°

Other Services:
RWCH
CSNG

Sect. 30 Twp. 3N Rge. 64W

Permanent Datum	GL	Elev. 4782.0 ft	Elev.: K.B.	4796.0 ft
Log measured from	KB	14.0 ft above perm. Datum	D.F.	4796.0 ft
Drilling measured from	KB		G.L.	4782.0 ft

Date		27-Jul-12		
Run No.		ONE		
Depth - Driller		7299.00 ft		
Depth - Logger		7297.0 ft		
Bottom - Logged Interval		7295 ft		
Top - Logged Interval		CASING		
Casing - Driller		8.625 in @ 758.0 ft	@	@
Casing - Logger		755.0 ft		
Bit Size		7.875 in	@	@
Type Fluid in Hole		WATER BASED MUD		
Density	Viscosity	9.8 ppg / 56.00 s/qt		
PH	Fluid Loss	9.00 pH / 7.6 cptm		
Source of Sample		MUD CELL		
Rm @ Meas. Temperature		1.150 ohmm @ 98.50 degF	@	@
Rmf @ Meas. Temperature		1.29 ohmm @ 75.00 degF	@	@
Rmc @ Meas. Temperature		1.284 ohmm @ 75.00 degF	@	@
Source Rmf	Rmc	CHART / CHART		
Rm @ BHT		0.56 ohmm @ 208.0 degF	@	@
Time Since Circulation		6.0 hr		
Time on Bottom		27-Jul-12 05:52		
Max. Rec. Temperature		208.0 degF @ 7297.0 ft	@	@
Equipment	Location	11454566 / BRIGHTON		
Recorded By		J. PINKETT		
Witnessed By		V. STEWART		

Fold here

Service Ticket No.: N/A API Serial No.: 05123356250000 PGM Version: WL INSITE R3.6.0 (Build 3)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE					
Date	Sample No.				
Depth-Driller					
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		@		@	

RESISTIVITY SCALE CHANGES			
Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA				
Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	ACRT	N/A	1.25" S.O.	N/A
	11800421			

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	11812883	Serial No.		Serial No.	11795867	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.	5471GW	Serial No.	DSN-434
Distance to Source	20'	FWDA [Y/N]		Strength	1.78 Ci	Strength	15 Ci

LOGGING DATA

GENERAL	GAMMA	ACOUSTIC	DENSITY	NEUTRON

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	TD		REC	0	250				20	0	2.68	20	0	SAND
ONE			REC	0	250				20	0	2.71	20	0	LIME
ONE		CSG	REC	0	250				20	0	2.68	20	0	SAND

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

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

TENSION PULLS, WASHOUTS, AND BOREHOLE RUGOSITY CAN AFFECT TOOL RESPONSE

ANNULAR HOLE VOLUME CALUCULATED FOR 4.5-INCH CASING

YOUR CREW: R. PERSHALL, M. BURNETT RIG: SAXON 143

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES - BRIGHTON, CO - (303) 825-4346

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
6800.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
7108.00					
	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	9.750	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	1000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	1.150	ohmm
	SHARED	TRM	Temperature of Mud	98.5	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	7297.00	ft
	SHARED	BHT	Bottom Hole Temperature	208.0	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	2.680	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.25	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
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	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

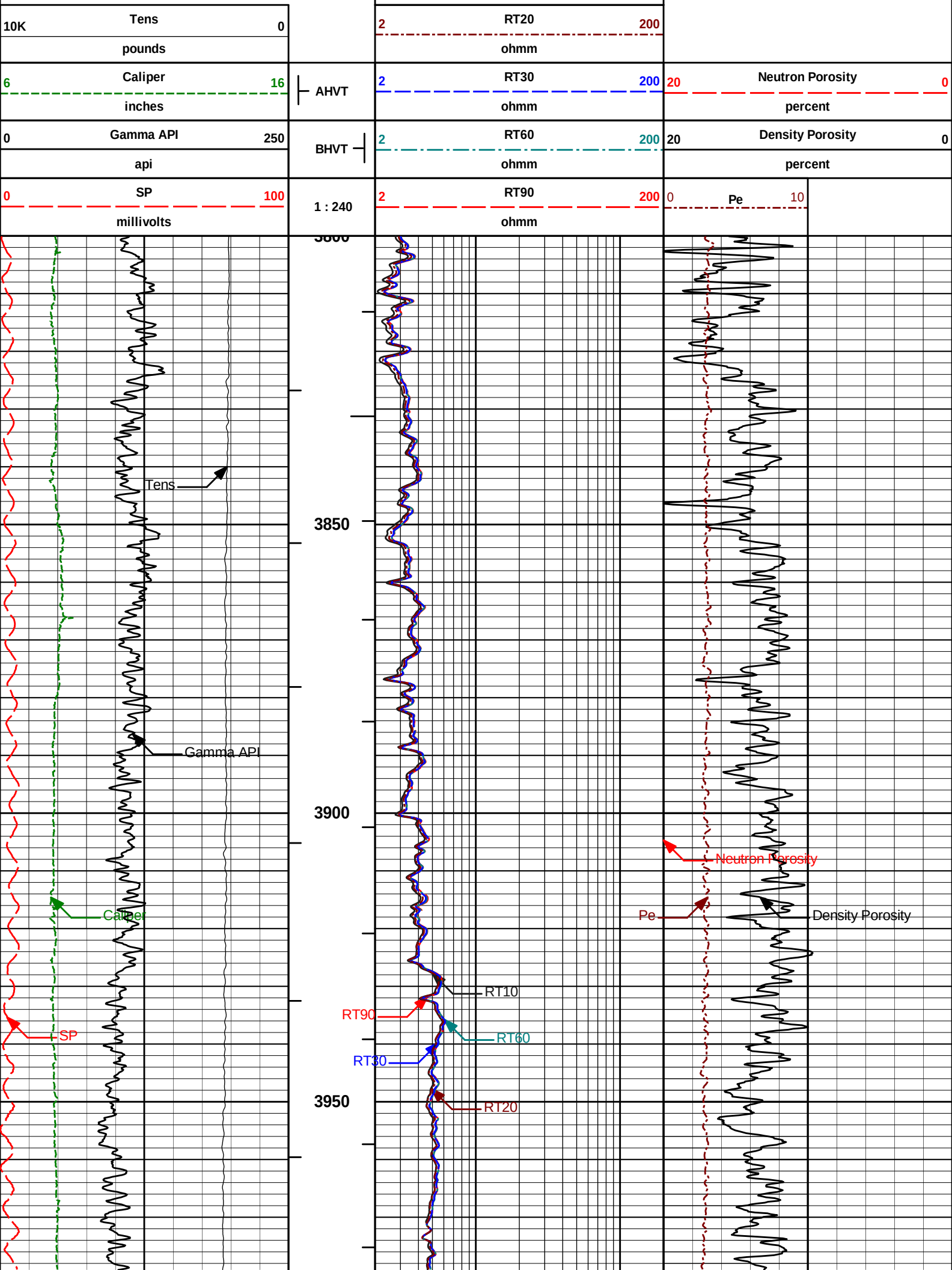
Data: ADAMS_D30-29D\0001 NOBLE\003.01 27-Jul-12 06:51 Up **Date: 27-Jul-12 06:53:59**

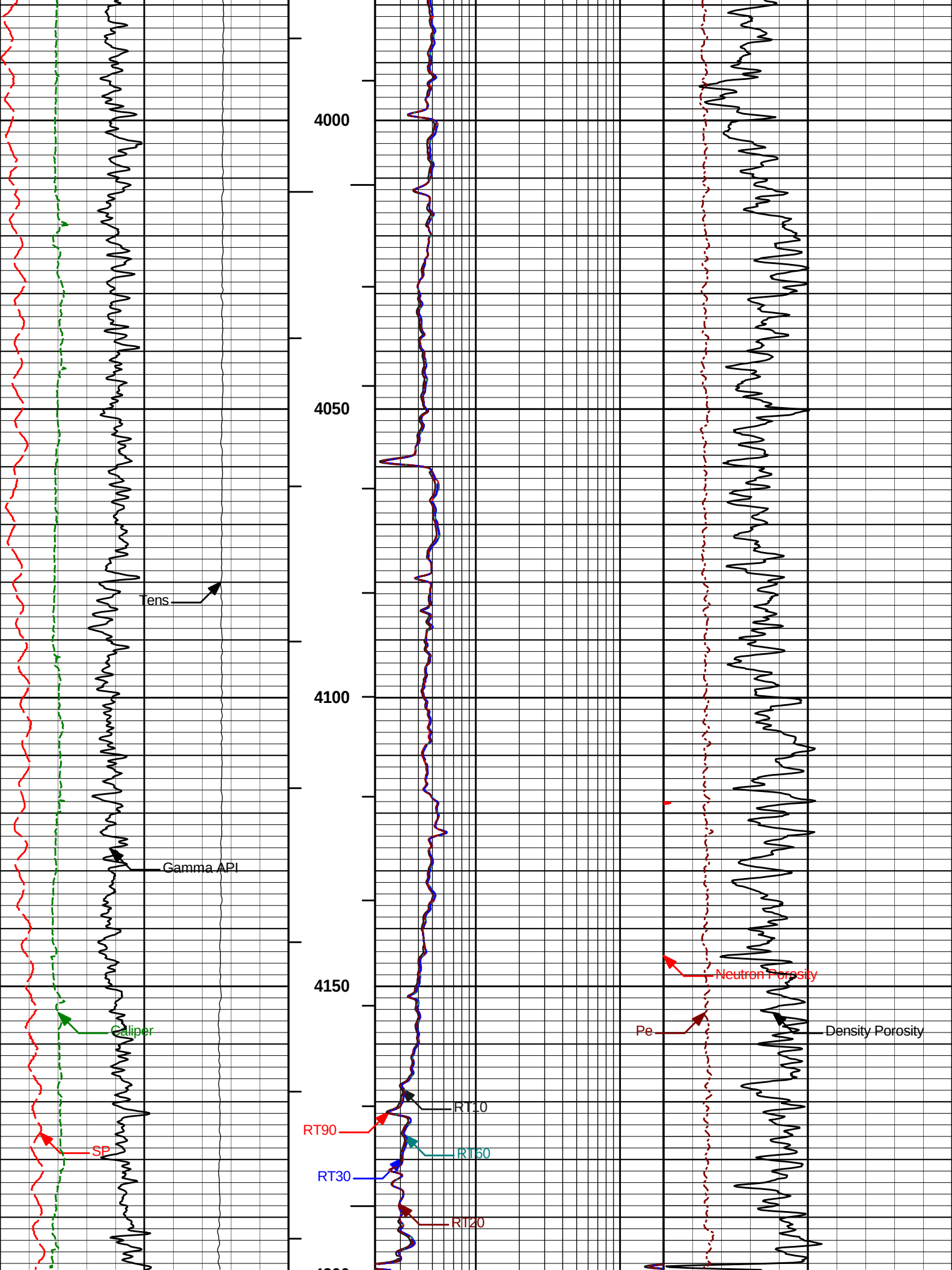
HALLIBURTON

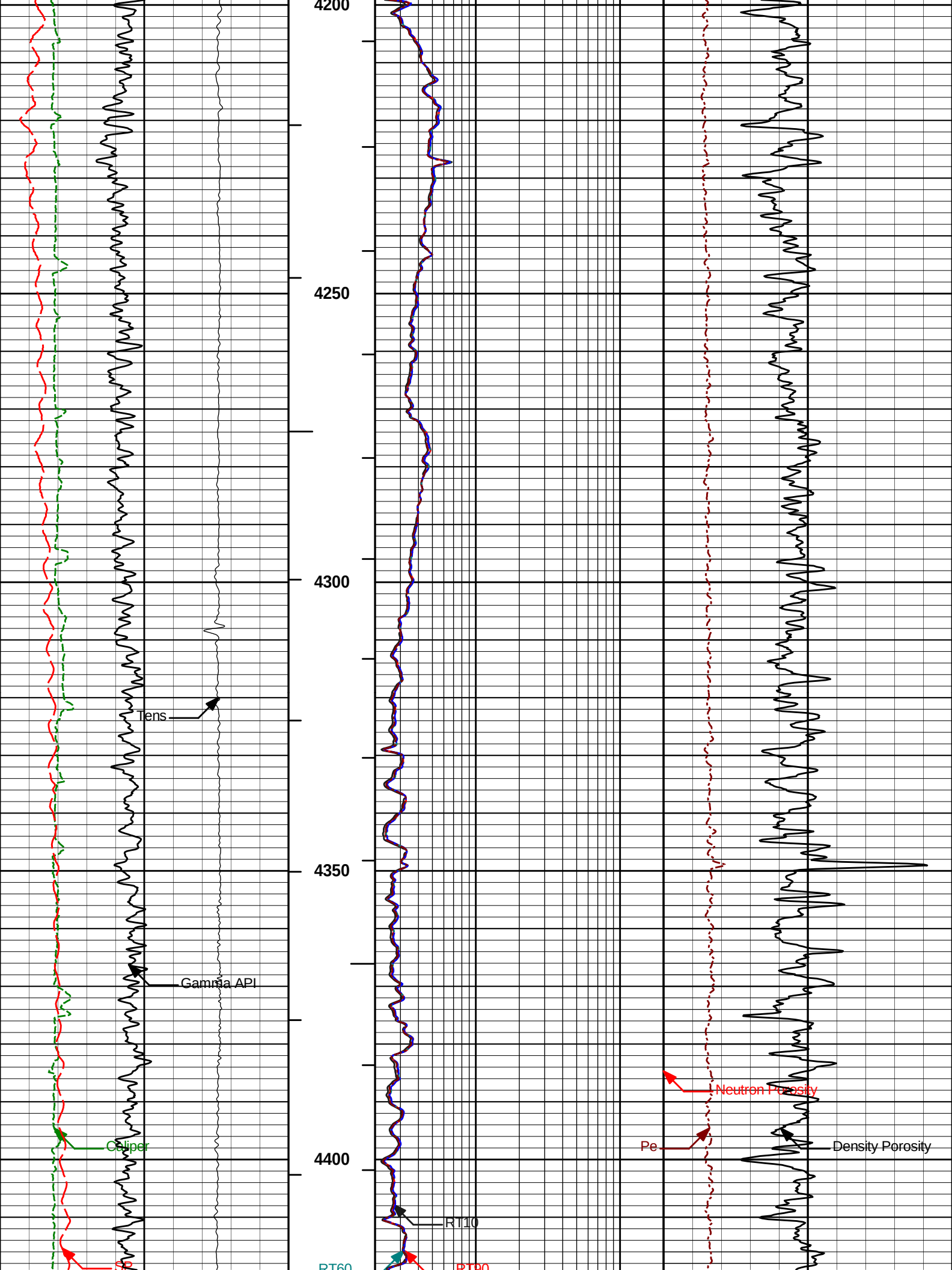
Plot Time: 27-Jul-12 07:43:42
Plot Range: 3800 ft to 4450 ft
Data: ADAMS_D30-29D\Well Based\MAIN*
Plot File: \\COMP\SUSX-PARK

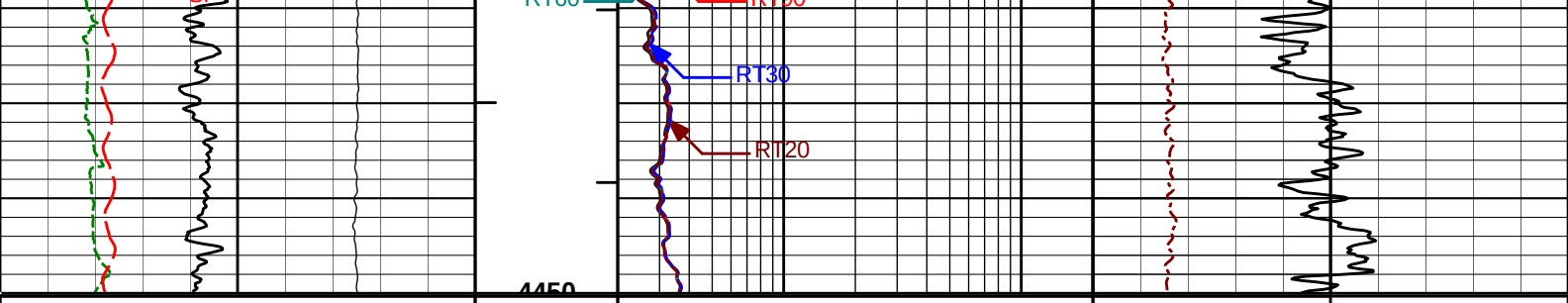
MAIN PASS 5" = 100'

2	RT10	200
	ohmm	


10K
Tens
0
pounds
2
RT20
200
ohmm
6
Caliper
16
inches
AHVT
2
RT30
200
ohmm
20
Neutron Porosity
0
percent
0
Gamma API
250
api
BHVT
2
RT60
200
ohmm
20
Density Porosity
0
percent
0
SP
100
millivolts
1 : 240
2
RT90
200
ohmm
0
Pe
10
3850
3900
3950
Tens
Gamma API
Caliper
SP
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Pe
Density Porosity


4000
4050
4100
4150
Tens
Gamma API
Caliper
SP
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Pe
Density Porosity


4200
4250
4300
4350
4400
Tens
Gamma API
Caliper
RT10
RT60
RT90
Neutron Porosity
Pe
Density Porosity



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: 27-Jul-12 07:43:50
Plot Range: 3800 ft to 4450 ft
Data: ADAMS_D30-29D\Well Based\MAIN*
Plot File: \\COMP\SUSX-PARK

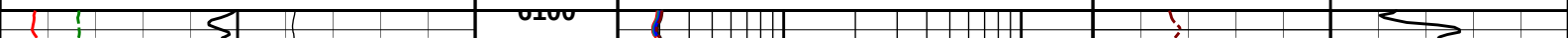
MAIN PASS 5" = 100'

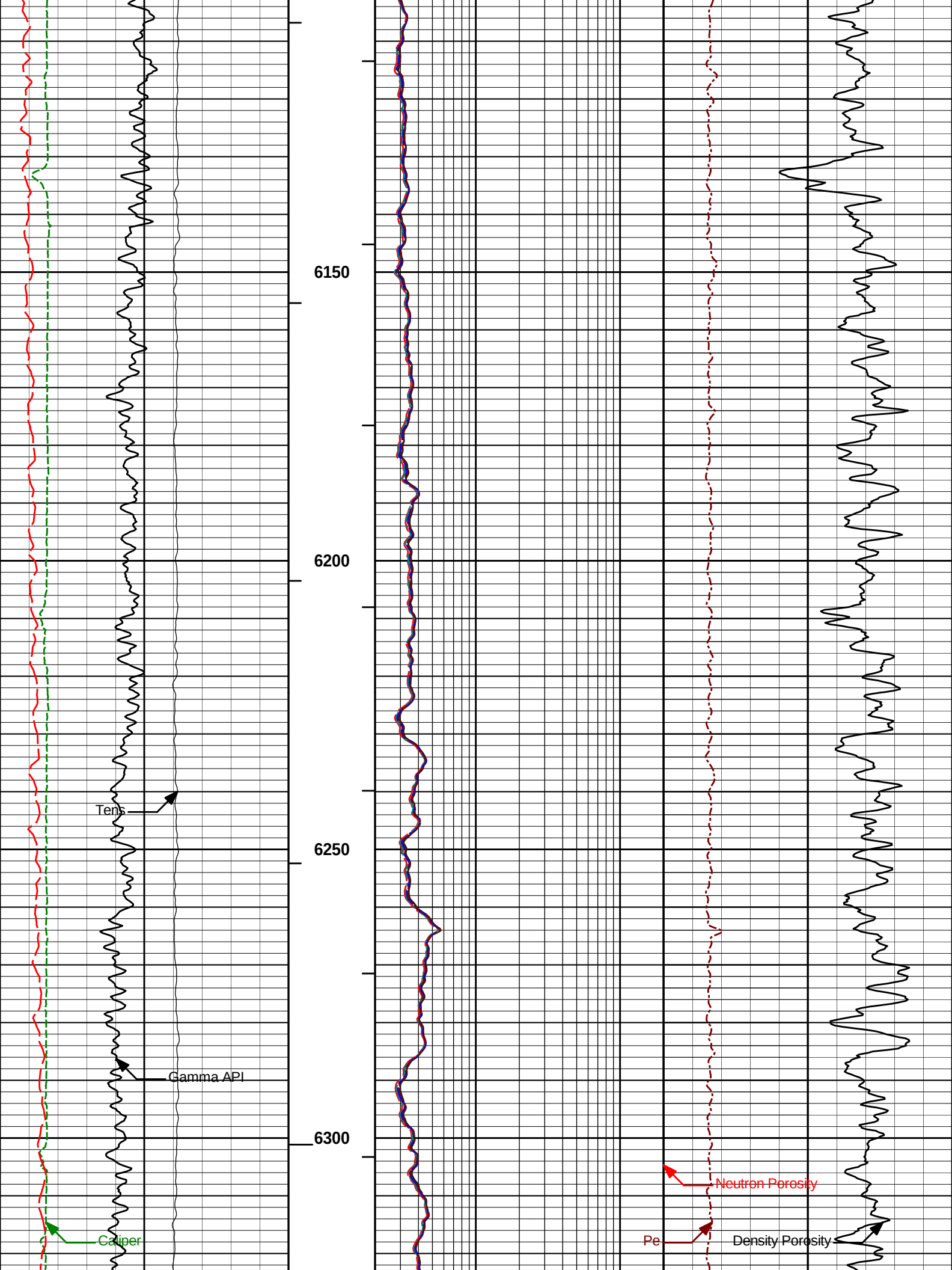
HALLIBURTON

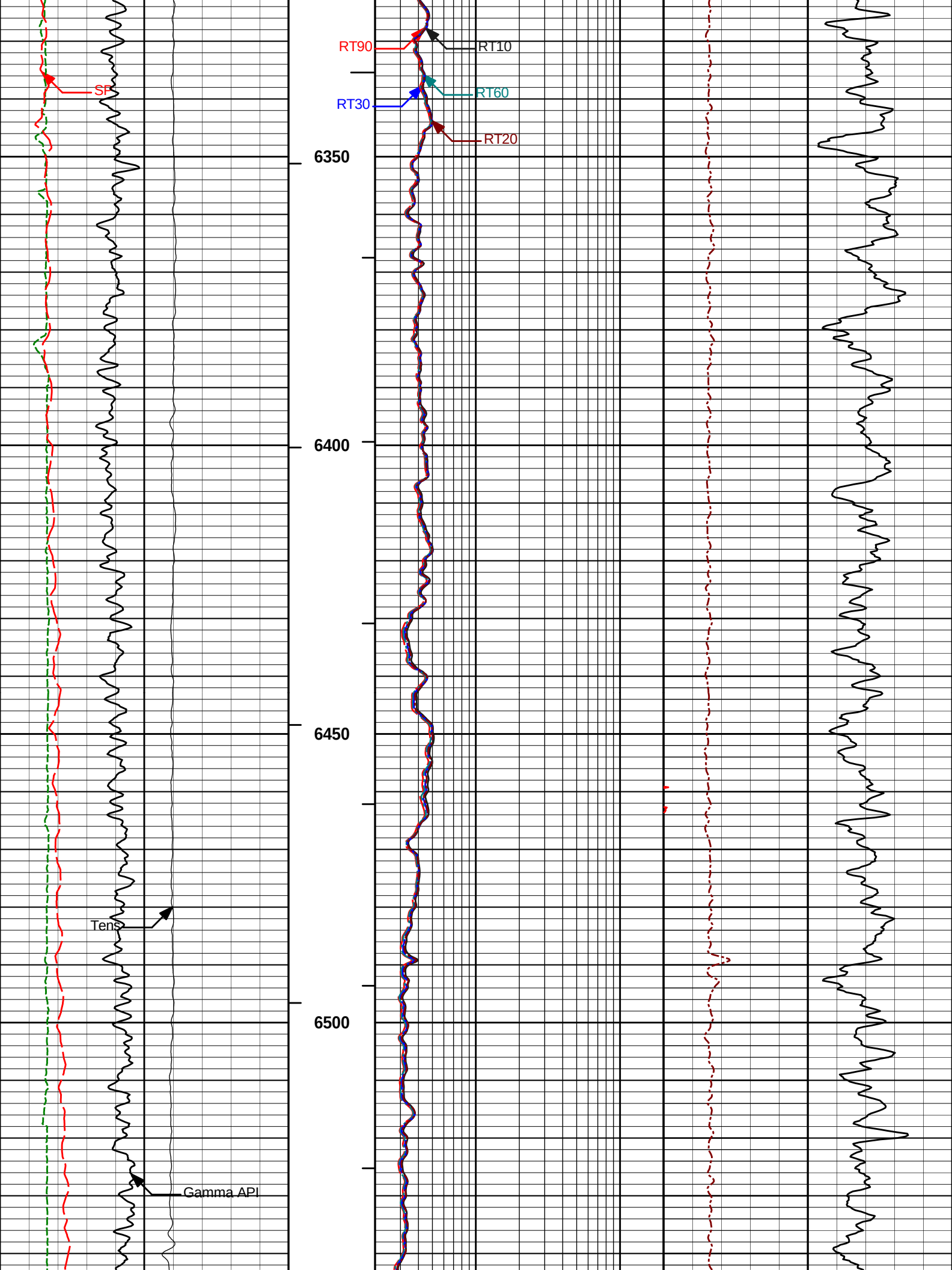
Plot Time: 27-Jul-12 07:43:50
Plot Range: 6100 ft to 7302.67 ft
Data: ADAMS_D30-29D\Well Based\MAIN*
Plot File: \\COMP\TD-NIO

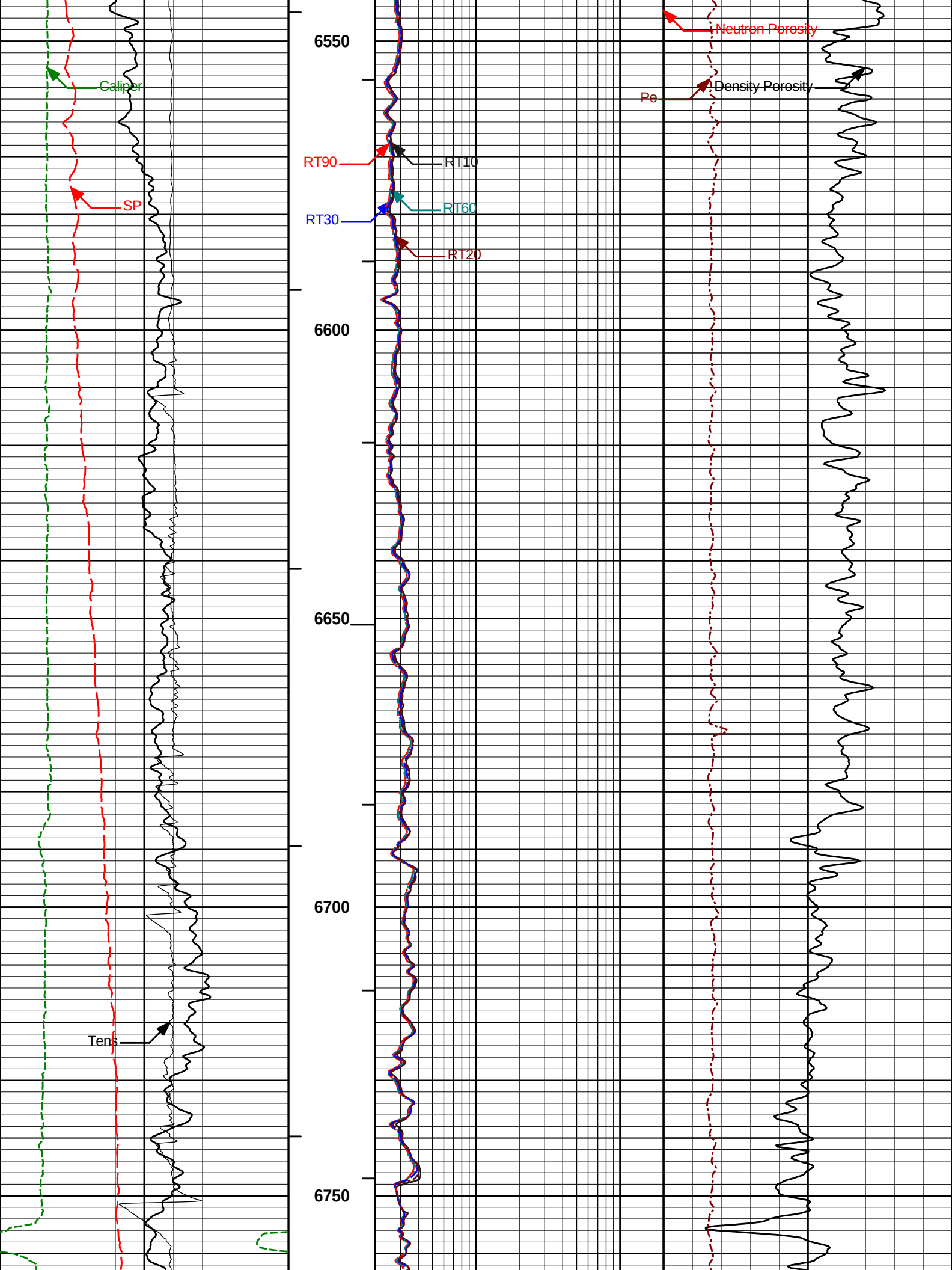
MAIN PASS 5" = 100'

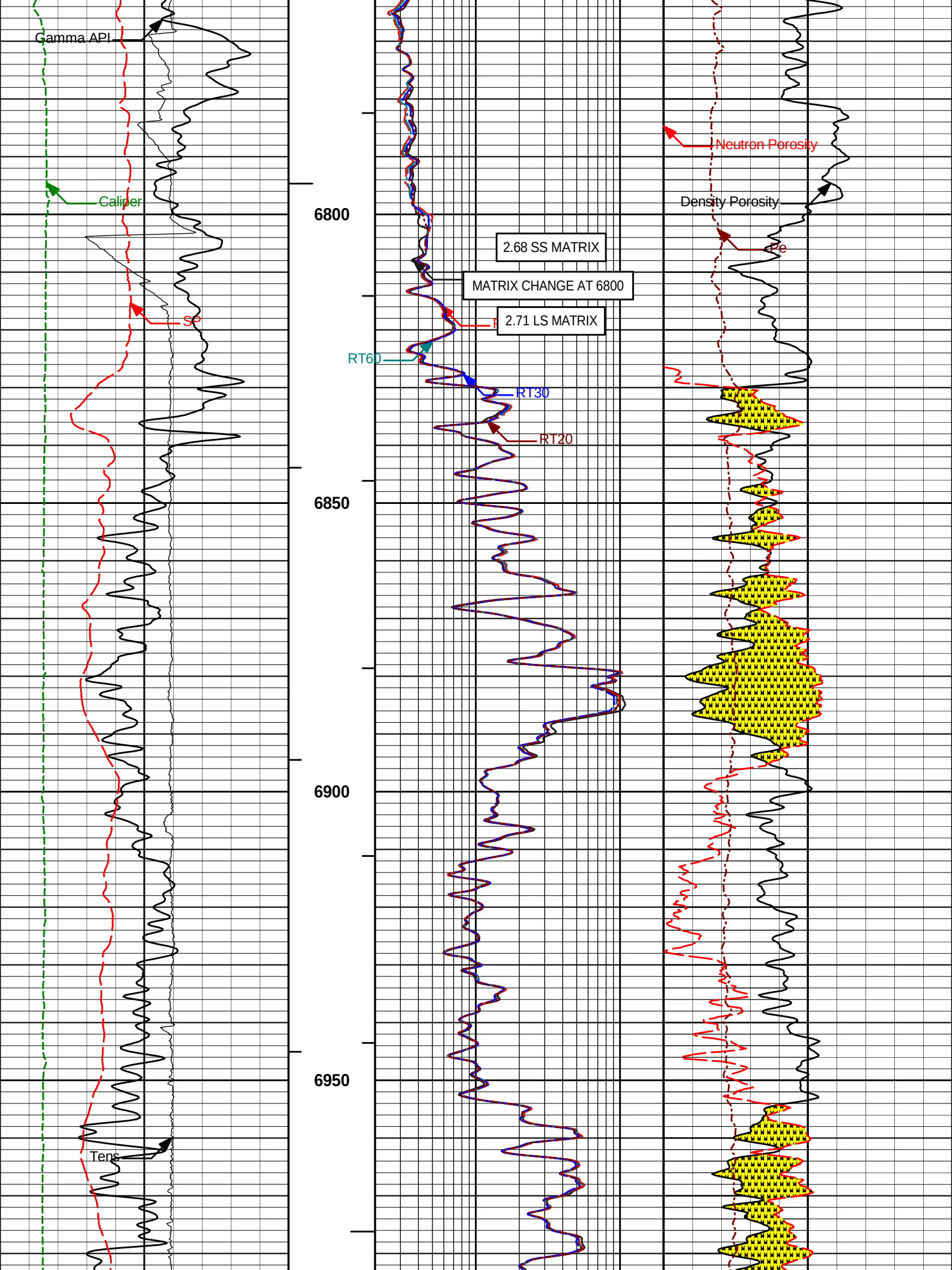
			2 RT10 200		
			ohmm		
10K Tens 0			2 RT20 200		
pounds			ohmm		
6 Caliper 16		AHVT	2 RT30 200	20 Neutron Porosity 0	
inches			ohmm	percent	
0 Gamma API 250		BHVT	2 RT60 200	20 Density Porosity 0	
api			ohmm	percent	
0 SP 100		1 : 240	2 RT90 200	0 Pe 10	
millivolts			ohmm		

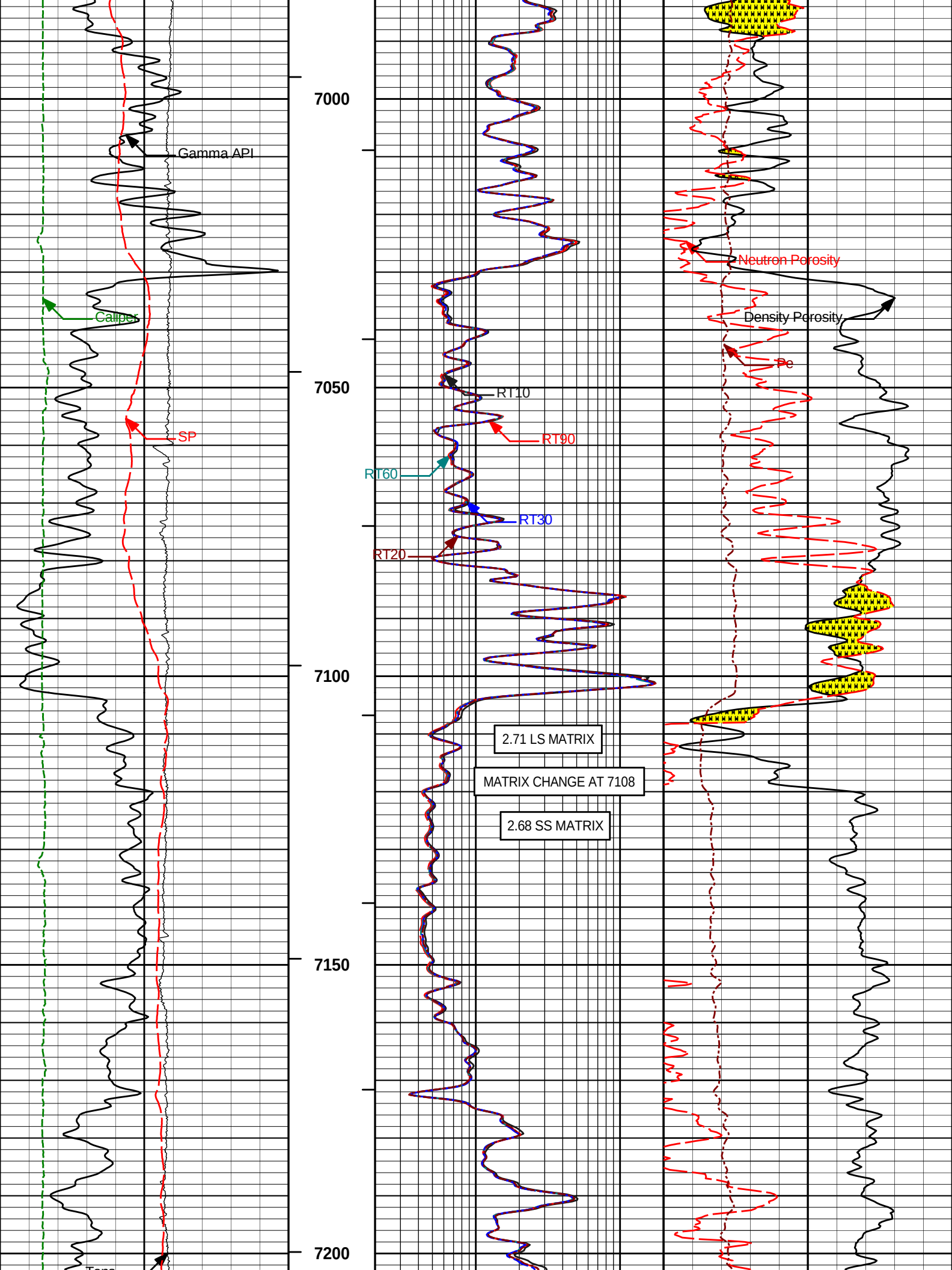


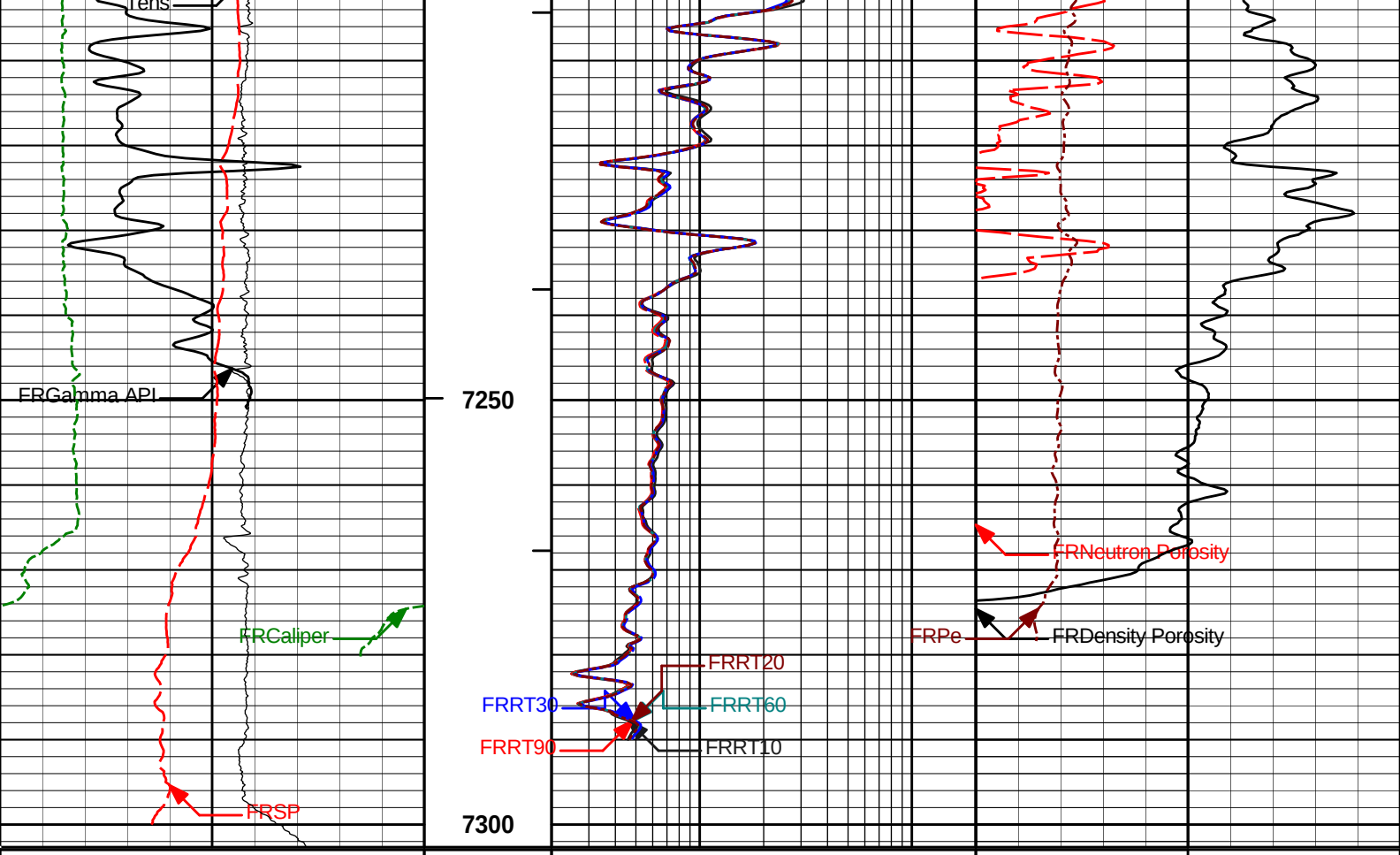

6150
6200
6250
6300
Tens
Gamma API
Caliper
Neutron Porosity
Pe
Density Porosity


SP
RT90
RT10
RT60
RT30
RT20
6350
6400
6450
6500
Tens
Gamma API


Caliper
SP
Tens
6550
6600
6650
6700
6750
RT90
RT10
RT60
RT30
RT20
Neutron Porosity
Pe
Density Porosity


Gamma API
Caliper
SP
Tens
6800
6850
6900
6950
2.68 SS MATRIX
MATRIX CHANGE AT 6800
2.71 LS MATRIX
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe


7000
7050
7100
7150
7200
Gamma API
Caliper
SP
RT10
RT90
RT60
RT30
RT20
Neutron Porosity
Density Porosity
Pe
2.71 LS MATRIX
MATRIX CHANGE AT 7108
2.68 SS MATRIX



0 SP 100	2 RT90 200	0 Pe 10
millivolts	ohmm	
0 Gamma API 250	2 RT60 200	20 Density Porosity 0
api	ohmm	percent
6 Caliper 16	2 RT30 200	20 Neutron Porosity 0
inches	ohmm	percent
10K Tens 0	2 RT20 200	
pounds	ohmm	
	2 RT10 200	
	ohmm	

1 : 240

BHVT

AHVT

HALLIBURTON

Plot Time: 27-Jul-12 07:43:54
Plot Range: 6100 ft to 7302.67 ft
Data: ADAMS_D30-29D\Well Based\MAIN*
Plot File: \\COMP\TD-NIO

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11812883

Reference Calibration Date: 07-Jun-12 22:46:25

Engineer:	**R. TWEETEN**	**Calibration Date:**	**09-Jul-12 08:34:09**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**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	70.9	70.6	api
Background + Calibrator	319.2	317.9	api
Calibrator	248.3	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11812883**	**Reference Calibration Date:**	**09-Jul-12 08:34:09**
Engineer:	**J. PINKETT**	**Calibration Date:**	**26-Jul-12 10:32:24**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**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	70.6	69.6	api
Background + Calibrator	317.9	316.3	api
Calibrator	247.3	246.8	api

Shop	Field	Difference	Tolerance
247.3	246.8	0.5	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11812167**	**Reference Calibration Date:**	**11-Jun-12 12:10:53**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**11-Jul-12 09:46:10**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**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:	0.999	0.998	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	0.0001	+/- 0.0020
Calibrated Ratio:	10.11	10.11	0.002	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0812	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:**	**11-Jul-12 09:46:10**
Engineer:	**J. PINKETT**	**Calibration Date:**	**26-Jul-12 11:07:55**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**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):	0.0812	0.0818	0.0006	+/- 0.0150

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 11812177**	**Reference Calibration Date:**	**11-Jul-12 11:16:07**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**11-Jul-12 11:25:52**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11812167**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3703.93	-3620.66	-7000.00 - -1000.00
Pad Gain	0.0003879	0.0003844	0.000200 - 0.000600
Arm Offset	-4668.53	-4542.13	-5000.00 - 3000.00
Arm Gain	0.0006285	0.0005768	0.000300 - 0.000700
Arm Power	-0.000009084	-0.000005921	-0.000010000 - 0.000010000

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)	1.99	2.00	0.01	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.54	6.50	-0.04	+/- 0.20
Medium Ring (in)	8.39	8.25	-0.14	+/- 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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 11795867**	**Reference Calibration Date:**	**11-Jun-12 13:54:09**
Engineer:	**R. TWEETEN**	**Calibration Date:**	**11-Jul-12 10:37:38**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**

Logging Source S/N: 5471GW

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	1.0636	1.0382	0.90 - 1.10
Near Dens Gain	1.0282	1.0115	0.90 - 1.10
Near Peak Gain	1.0390	0.9910	0.90 - 1.10
Near Lith Gain	0.9833	0.9456	0.90 - 1.10
Far Bar Gain	1.0101	1.0085	0.90 - 1.10
Far Dens Gain	0.9978	0.9954	0.90 - 1.10
Far Peak Gain	0.9914	0.9907	0.90 - 1.10
Far Lith Gain	0.9696	0.9724	0.90 - 1.10
Near Bar Offset	-0.6593	-0.4257	NONE
Near Dens Offset	-0.3147	-0.1656	NONE
Near Peak Offset	-0.3892	0.0185	NONE
Near Lith Offset	0.0707	0.3871	NONE
Far Bar Offset	-0.1829	-0.1724	NONE
Far Dens Offset	-0.0663	-0.0482	NONE
Far Peak Offset	-0.0215	-0.0209	NONE
Far Lith Offset	0.1606	0.1275	NONE
Near Bar Background	852.35	850.59	700 - 1450
Near Dens Background	284.44	282.22	230 - 480
Near Peak Background	123.23	121.79	100 - 210
Near Lith Background	149.68	152.00	125 - 260
Far Bar Background	665.67	664.84	450 - 900
Far Dens Background	261.96	263.55	175 - 345
Far Peak Background	103.92	102.69	70 - 140
Far Lith Background	106.60	106.72	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.692	1.690	-0.002	+/- 0.015
Pe	2.568	2.605	0.037	+/- 0.150
ALUMINUM				
Density (g/cc)	2.599	2.602	0.003	+/- 0.01500
Pe	3.062	3.064	0.002	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0009	+/- 0.0110	0.0002	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0008	+/- 0.0140
Aluminum Block	-0.0002	+/- 0.0110	0.0008	+/- 0.0140

Aluminum Block	-0.0002	+/- 0.0110	0.0008	+/- 0.0140
Resolution	8.62	6.00 - 11.50	8.87	6.00 - 11.50
Internal Verifier(B+D+P+L)	1407	1200 - 2700	1138	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 - 11795867 **Reference Calibration Date:** 11-Jul-12 10:37:38

Engineer: J. PINKETT **Calibration Date:** 26-Jul-12 10:32:16

Software Version: WL INSITE R3.6.0 (Build 3) **Calibration Version:** 1

Pad Temperature: 71.7 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1406.608	1408.459	1.851	15.144
Far (B+D+P+L) cps	1137.801	1134.901	-2.900	17.721
Near Resolution	8.62	8.66	0.040	0.50
Far Resolution	8.87	8.96	0.090	1.00

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

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 11812177 **Reference Calibration Date:** 11-Jul-12 11:25:52

Engineer: J. PINKETT **Calibration Date:** 26-Jul-12 10:35:04

Software Version: WL INSITE R3.6.0 (Build 3) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.77	0.02	+/- 0.10
Ring Diameter	8.25	8.36	0.11	+/- 0.15

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

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 11800421 **Reference Calibration Date:** 27-Nov-11 10:01:14

Engineer: J. PINKETT **Calibration Date:** 02-Jul-12 19:39:47

Software Version: WL INSITE R3.6.0 (Build 3) **Calibration Version:** 1

Host Tool Name: ACRt Instrument - 11830585

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A2 (50")	0.95	1.01	1.05	0.95	1.02	1.05	0.95	1.02	1.05
A3 (29")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A4 (17")	0.95	1.01	1.05	0.95	1.01	1.05	0.95	1.01	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.00	1.05	0.95	1.00	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.99	1.05	0.95	0.99	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	-0.87	2	-6	-4.21	-2	-8	-5.33	-2
A2 (50")	-7	-1.65	0	-7	-3.48	0	-7	-4.91	0
A3 (29")	-27	-14.49	-9	-9	-4.17	-3	-7	-3.51	-1
A4 (17")	-180	-97.56	-60	-45	-31.03	-15	-39	-25.10	-13
A5 (10")	N/A	N/A	N/A	-150	-101.74	-50	-80	-48.24	-10
A6 (6")	N/A	N/A	N/A	175	303.21	525	90	157.33	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.99	1.3
36K	1.0	1.93	2.0
72K	1.0	1.24	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.98	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET RANGE CHK	PASS
Tx CURRENT GAIN	PASS
Rmud VERIFICATION	PASS

TOOL OK TO LOG

CALIBRATION SUMMARY

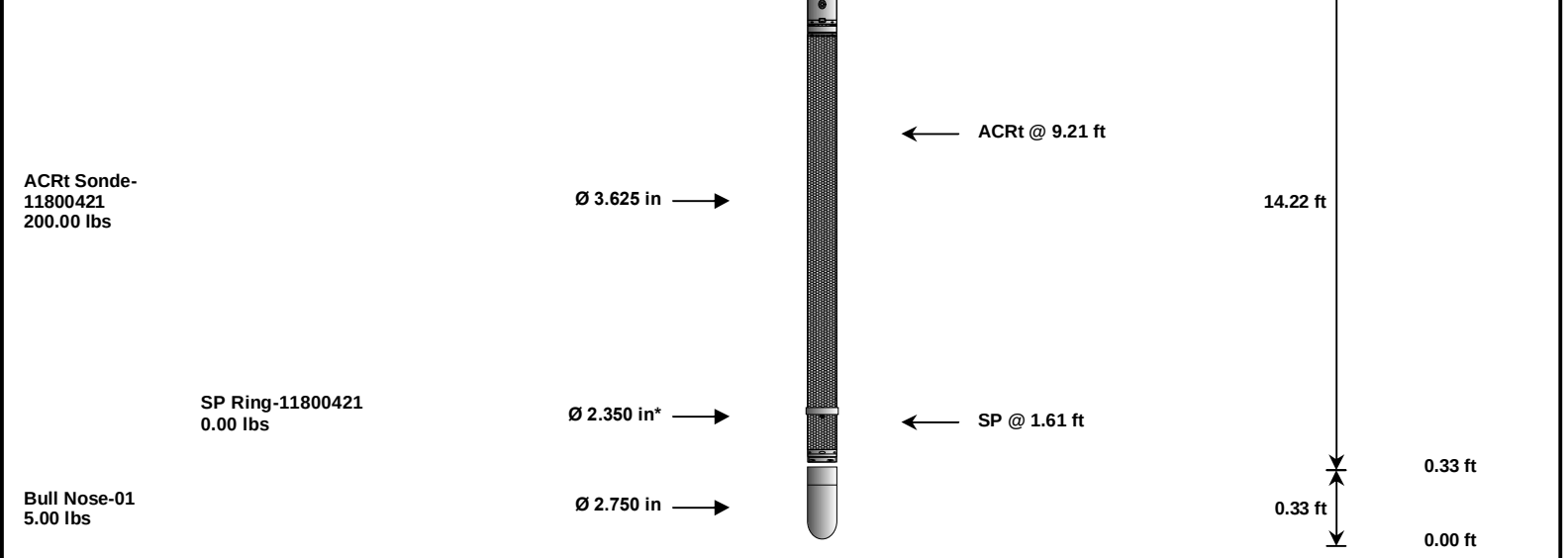
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11812883						
Gamma Ray Calibrator	247.3	246.8	----------	0.5	+/- 9.00	api
DSNT-11812167						
Snow-Block Porosity	0.0812	0.0818	----------	-0.0006	+/- 0.0150	decp
SDLT-11812177						
Pad Extension	3.75	3.77	----------	-0.02	+/-0.10	in
Ring Diameter	8.25	8.36	----------	-0.11	+/-0.15	in
SDLT Pad-11795867						
Near(B+D+P+L)	1406.608	1408.459	----------	-1.851	+/-15.144	cps
Far(B+D+P+L)	1137.801	1134.901	----------	2.900	+/-17.721	cps
ACRt Sonde-11800421						
Mud Cell	0.98	----------	----------	0.00	----------	ohm-m

Data: ADAMS_D30-29D\0001 NOBLE\IDLE **Date: 27-Jul-12 04:39:10**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						63.02 ft
RWCH-11078326 135.00 lbs		Ø 3.625 in		Load Cell @ 59.34 ft BH Temperature @ 58.77 ft	6.25 ft	
						56.77 ft
GTET-11812883 165.00 lbs		Ø 3.625 in		GammaRay @ 50.71 ft	8.52 ft	
						48.25 ft
CSNG-11568969 114.00 lbs		Ø 3.625 in		CSNG @ 42.62 ft	8.17 ft	
						40.08 ft
DSNT-11812167 174.00 lbs		Ø 3.625 in		DSN Far @ 33.15 ft DSN Near @ 32.40 ft	9.69 ft	
						30.40 ft
SDLT-11812177 360.00 lbs		Ø 4.500 in			10.81 ft	
	SDLT Pad-11795867 65.00 lbs	Ø 4.750 in*		SDL Caliper @ 22.40 ft SDL @ 22.39 ft		
						19.58 ft
ACRt Instrument-11830585 50.00 lbs		Ø 3.625 in			5.03 ft	
						14.55 ft
	Regal Standoff 6_75-01 20.00 lbs	Ø 6.750 in*		Mud Resistivity @ 13.19 ft		



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11078326	135.00	6.25		56.77	300.00
GTET	Gamma Telemetry Tool	11812883	165.00	8.52		48.25	60.00
CSNG	Compensated Spectral Natural Gamma	11568969	114.00	8.17		40.08	15.00
DSNT	Dual Spaced Neutron	11812167	174.00	9.69		30.40	60.00
SDLT	Spectral Density Tool	11812177	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	11795867	65.00	2.55	*	21.79	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830585	50.00	5.03		14.55	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11800421	200.00	14.22		0.33	300.00
SP	SP Ring	11800421	0.00	0.25	*	1.61	300.00
RSOF	Regal Standoff 6.75in	01	20.00	0.52	*	13.32	300.00
BLNS	Bull Nose	01	5.00	0.33		0.00	300.00
Total			**1,288.00**	**63.02**			

* Not included in Total Length and Length Accumulation.

Data: ADAMS_D30-29D\0001 NOBLE\IDLE **Date: 27-Jul-12 04:43:58**

COMPANY	**NOBLE ENERGY INC**		
WELL	**ADAMS D30-29D**		
FIELD	**WATTENBERG**		
COUNTY	**WELD**	STATE	**CO**

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
ARRAY COMPENSATED
TRUE RESISTIVITY