HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY

COMPANY NOBLE ENERGY INC
WELL SEKICH P19-21D
FIELD WATTENBERG
COUNTY WELD STATE CO

COMPANY	NOBLE ENERGY INC
WELL	SEKICH P19-21D
FIELD	WATTENBERG
COUNTY	WELD STATE CO

API No. 05123317340000
Location SURFACE: 2614 FSL & 2191 FEL
LAT: 40.21152° N
LONG: 104.93112° W
Sect. 19 Twp. 3N Rge. 67W

Other Services:
CSNG

Permanent Datum	GL	Elev. 4902.0 ft	Elev.: K.B.	4917.0 ft
Log measured from	KB	15.0 ft above perm. Datum	D.F.	4916.0 ft
Drilling measured from	KB		G.L.	4902.0 ft

Date		17-Jan-11					
Run No.		ONE					
Depth - Driller		7433.00 ft					
Depth - Logger		7419.0 ft					
Bottom - Logged Interval		7410.0 ft					
Top - Logged Interval		CASING					
Casing - Driller		8.625 in	@		@		@
Casing - Logger		914.0 ft					
Bit Size		7.875 in	@		@		@
Type Fluid in Hole		WBM					
Density	Viscosity	9.3 ppg	55.00 s/qt				
PH	Fluid Loss	8.50 pH	16.0 cptm				
Source of Sample		MUD CELL					
Rm @ Meas. Temperature		1.300 ohmm	@ 75.00 degF		@		@
Rmf @ Meas. Temperature		1.15 ohmm	@ 75.00 degF		@		@
Rmc @ Meas. Temperature		1.500 ohmm	@ 75.00 degF		@		@
Source Rmf	Rmc	CHART	CHART				
Rm @ BHT		0.55 ohmm	@ 186.0 degF		@		@
Time Since Circulation		8.0 hr					
Time on Bottom		17-Jan-11 01:11					
Max. Rec. Temperature		186.0 degF	@ 7419.0 ft		@		@
Equipment	Location	10800785	BRIGHTON				
Recorded By		C. GULLETT					
Witnessed By		T. BOWMAN					

Fold here

Service Ticket No.: 7890177 API Serial No.: 05123317340000 PGM Version: WL INSITE R3.0.7 (Build 3)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

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
Date					
Sample No.					
Depth-Driller					
Type Fluid in Hole					
Density / Viscosity					
Ph / Fluid Loss					
Source of Sample					
Rm @ Meas. Temp	@	@	@	@	@
Rmf @ Meas. Temp.	@	ONE	ACRt	N/A	1.5" STANDOFF	N/A
Rmc @ Meas. Temp.	@		E9336-S4042			
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.	11215095	Serial No.		Serial No.	I332M319	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.	102-T	Spacing		Log Type	GAMMA-GAMMA	Log Type	THERMAL
Type	SCINT.			Source Type	Cs137	Source Type	Am241Be
Length	8"	LSA [Y/N]		Serial No.	5256GW	Serial No.	DSN-430
Distance to Source	17'	FWDA [Y/N]		Strength	1.5 Ci	Strength	15 Ci

LOGGING DATA

GAMMA RESISTIVITY 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	T.D.	7249	REC.	0	250				20%	0%	2.68	20%	0%	SAND
ONE	7249	6984	REC.	0	250				20%	0%	2.71	20%	0%	LIME
ONE	6984	CSG.	REC.	0	250				20%	0%	2.68	20%	0%	SAND

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks:

RWCH-GTET-CSNG-DSNT-SDLT-ACRt WERE RAN IN COMBINATION.

A.H.V. CALCULATED FOR 4.5" CASING.

CHLORIDES REPORTED AT 650 ppm.

YOUR CREW TODAY: J. WALKER, M. BURNETT AND N. GOULD. RIG: ENSIGN #128

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

HALLIBURTON

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	CSNG	CGOK	Process CSNG Data?	No	
	DSNT	NLIT	Neutron Lithology	Sandstone	
	SDLT	DMA	Formation Density Matrix	2.680	g/cc
6984.00					
	DSNT	NLIT	Neutron Lithology	Limestone	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
7249.00					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDWT	Borehole Fluid Weight	9.300	ppg
	SHARED	OBM	Oil Based Mud System?	No	
	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	7433.00	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	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?	Barite	
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?	No	
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

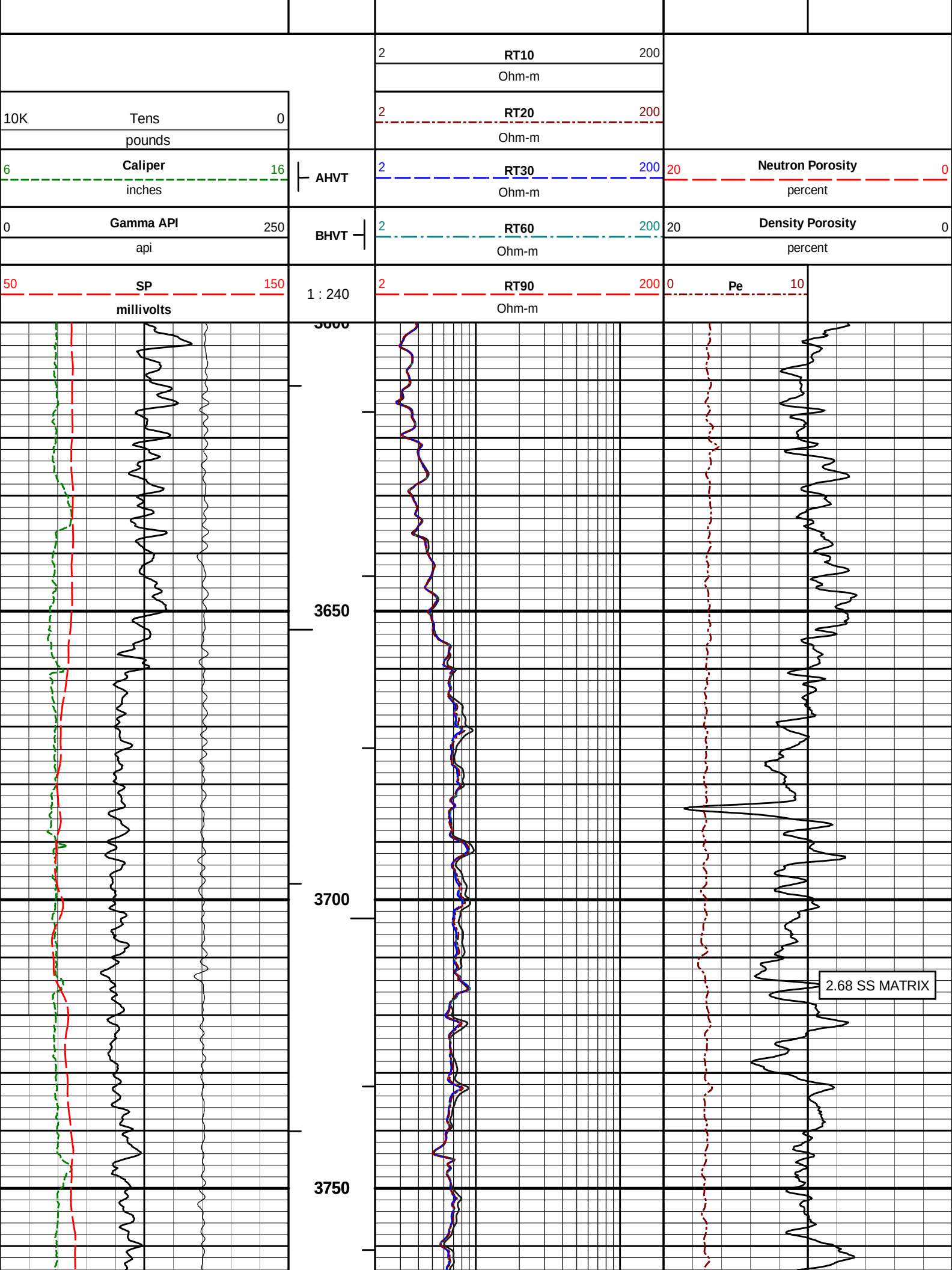
Data: SEKICH_P19_21D\0001 NOBLE\002.01 17-Jan-11 04:48 Up **Date: 17-Jan-11 04:56:50**

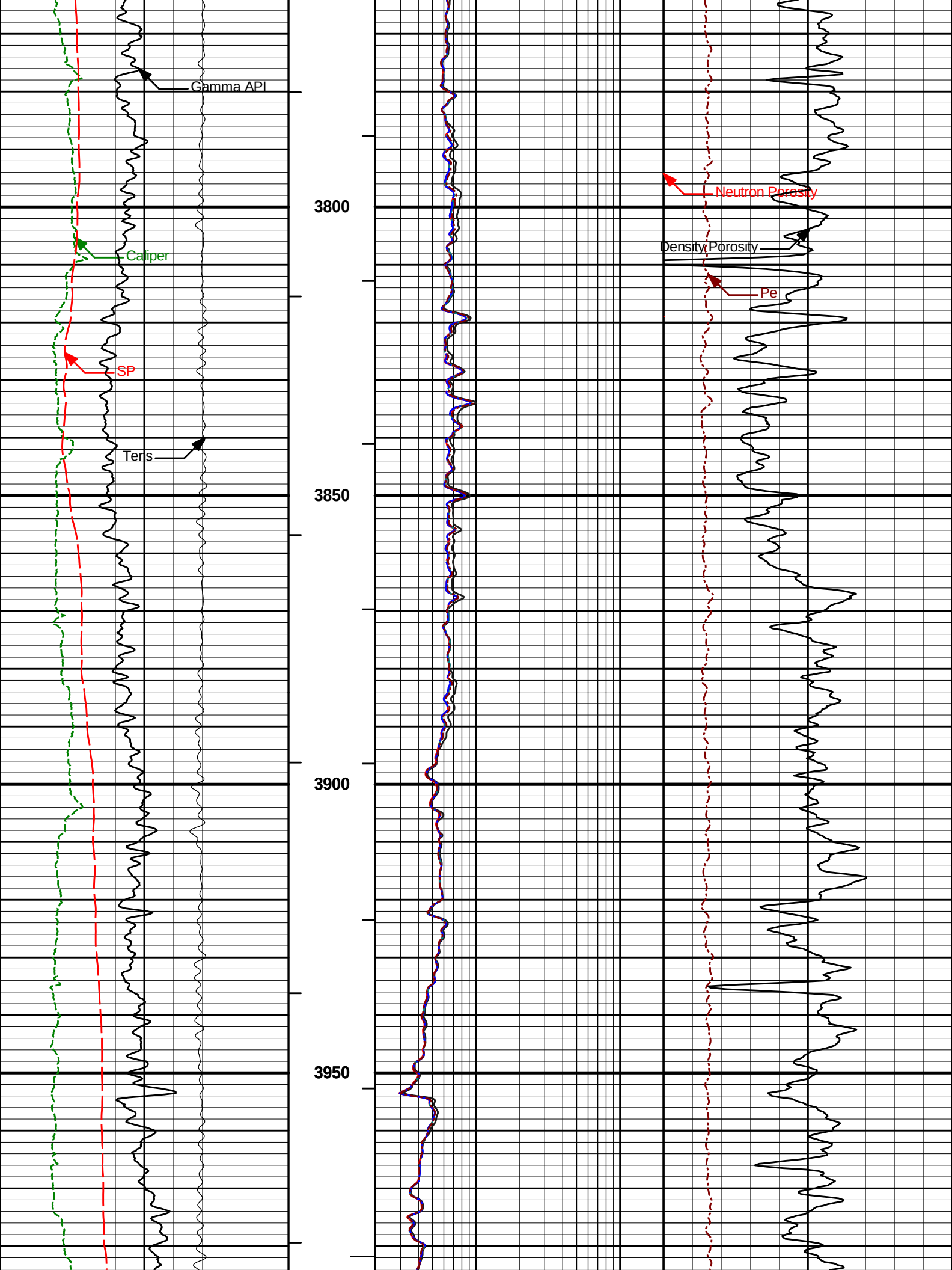
HALLIBURTON

Plot Time: 17-Jan-11 05:02:17
Plot Range: 3600 ft to 4700 ft
Data: {ActiveWell}\Well Based**
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
1 : 240
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
20
Neutron Porosity
0
percent
20
Density Porosity
0
percent
0
Pe
10
3650
3700
3750
2.68 SS MATRIX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Caliper
SP
Tens
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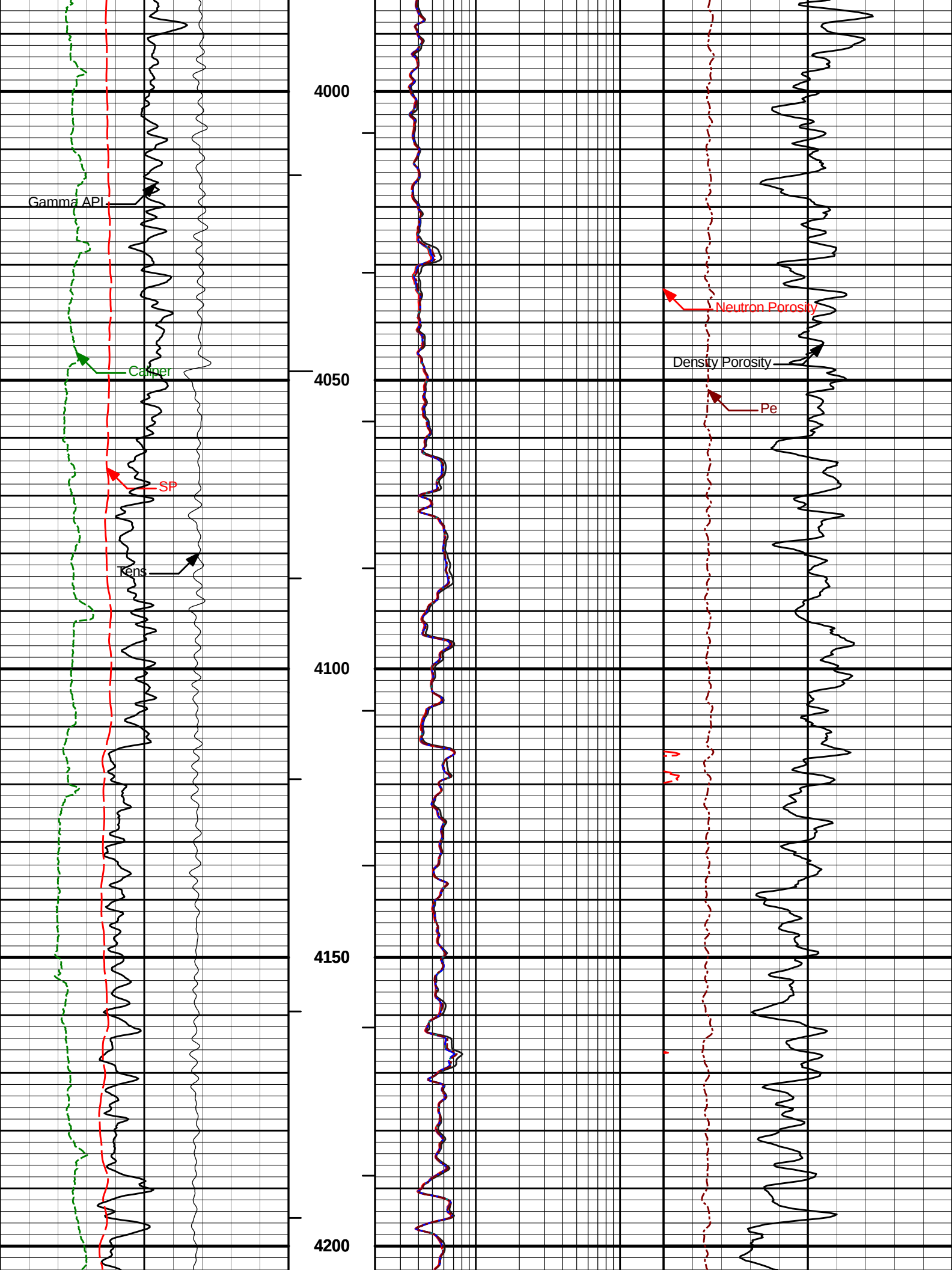
3850
3900
3950
Neutron Porosity
Density Porosity
Pe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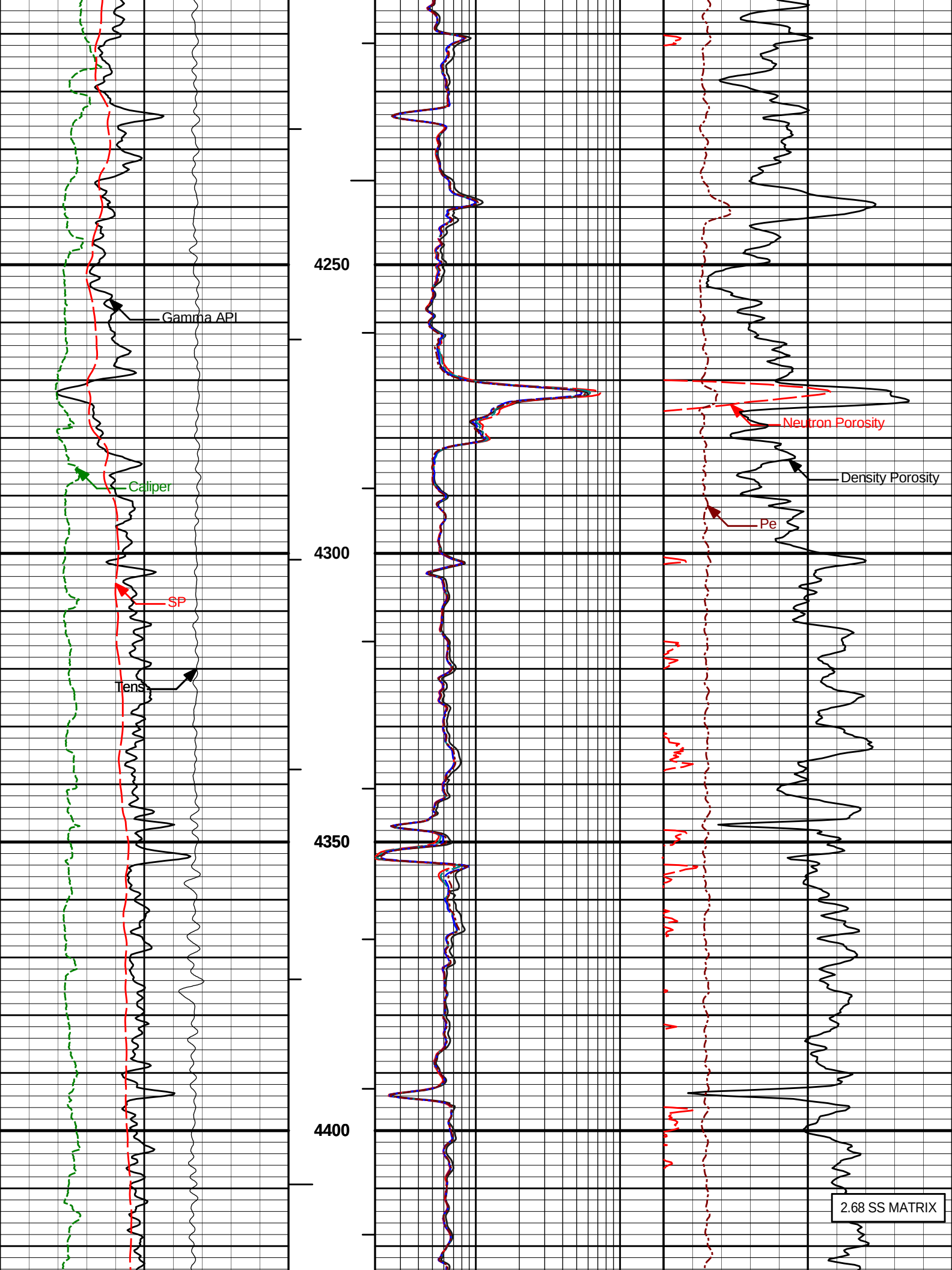
Gamma API
Caliper
SP
Tens
Neutron Porosity
Density Porosity
Pe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4400
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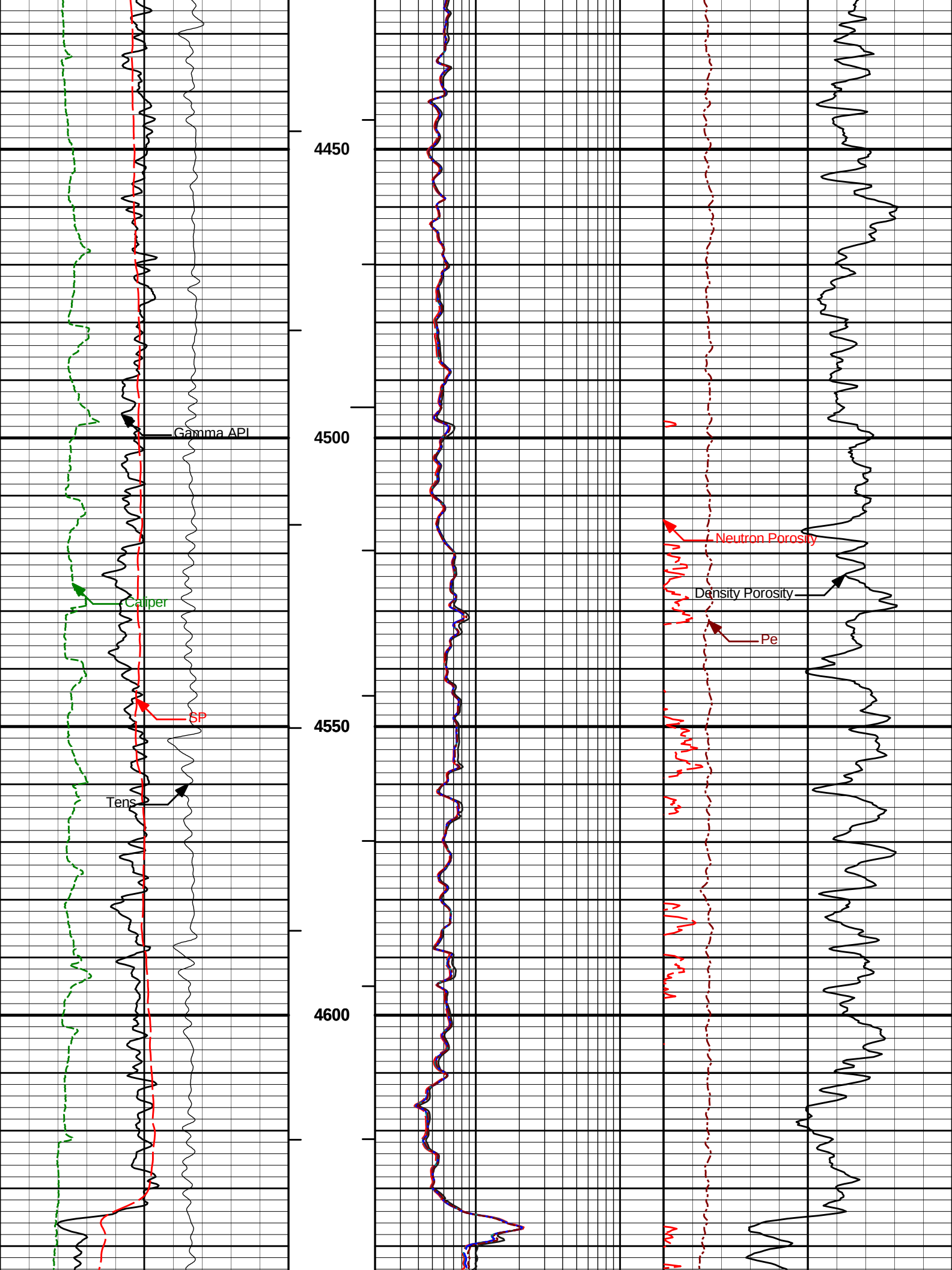
Caliper
SP
Tens
Neutron Porosity
Density Porosity
Pe
2.68 SS MATRIX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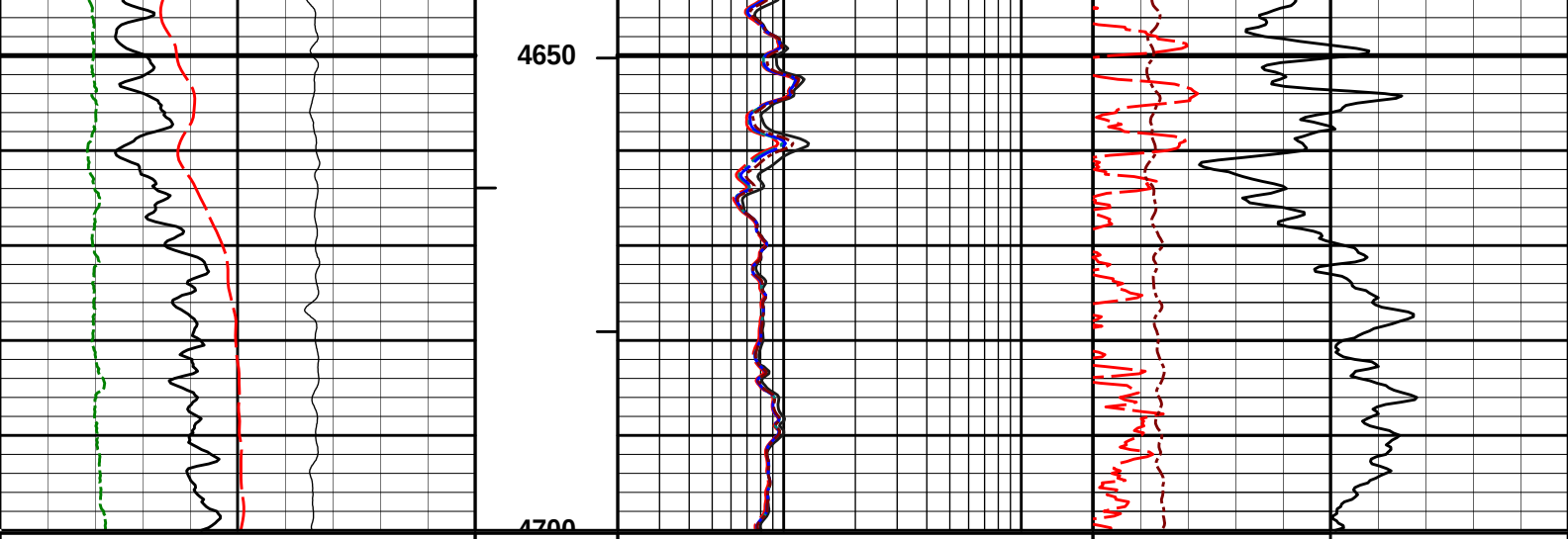
SP
Tens
Neutron Porosity
Density Porosity
Pe



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	

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Plot Time: 17-Jan-11 05:02:21
Plot Range: 3600 ft to 4700 ft
Data: {ActiveWell}\Well Based**
Plot File: \\COMP\PARK_SUS

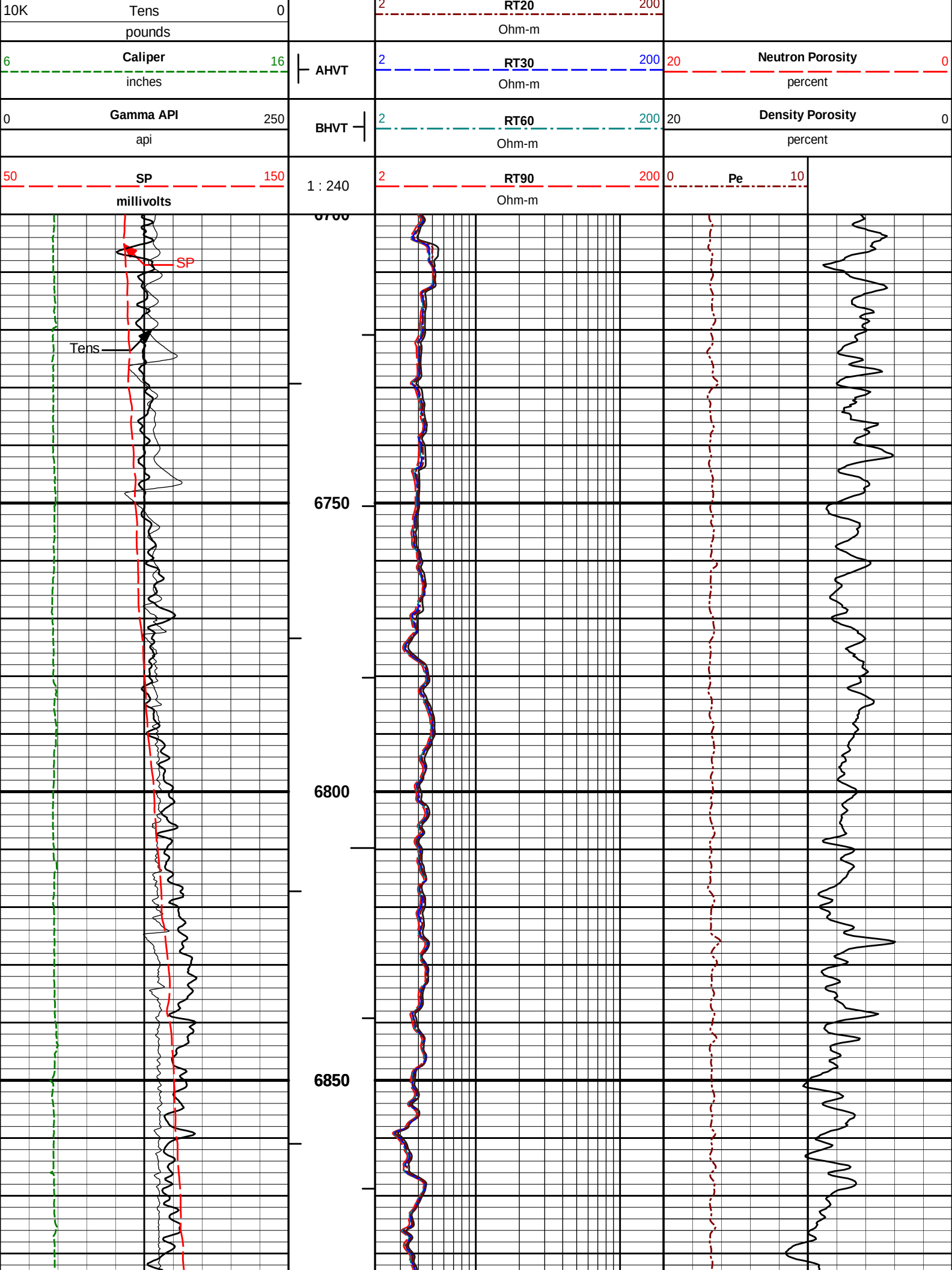
MAIN PASS 5" = 100'

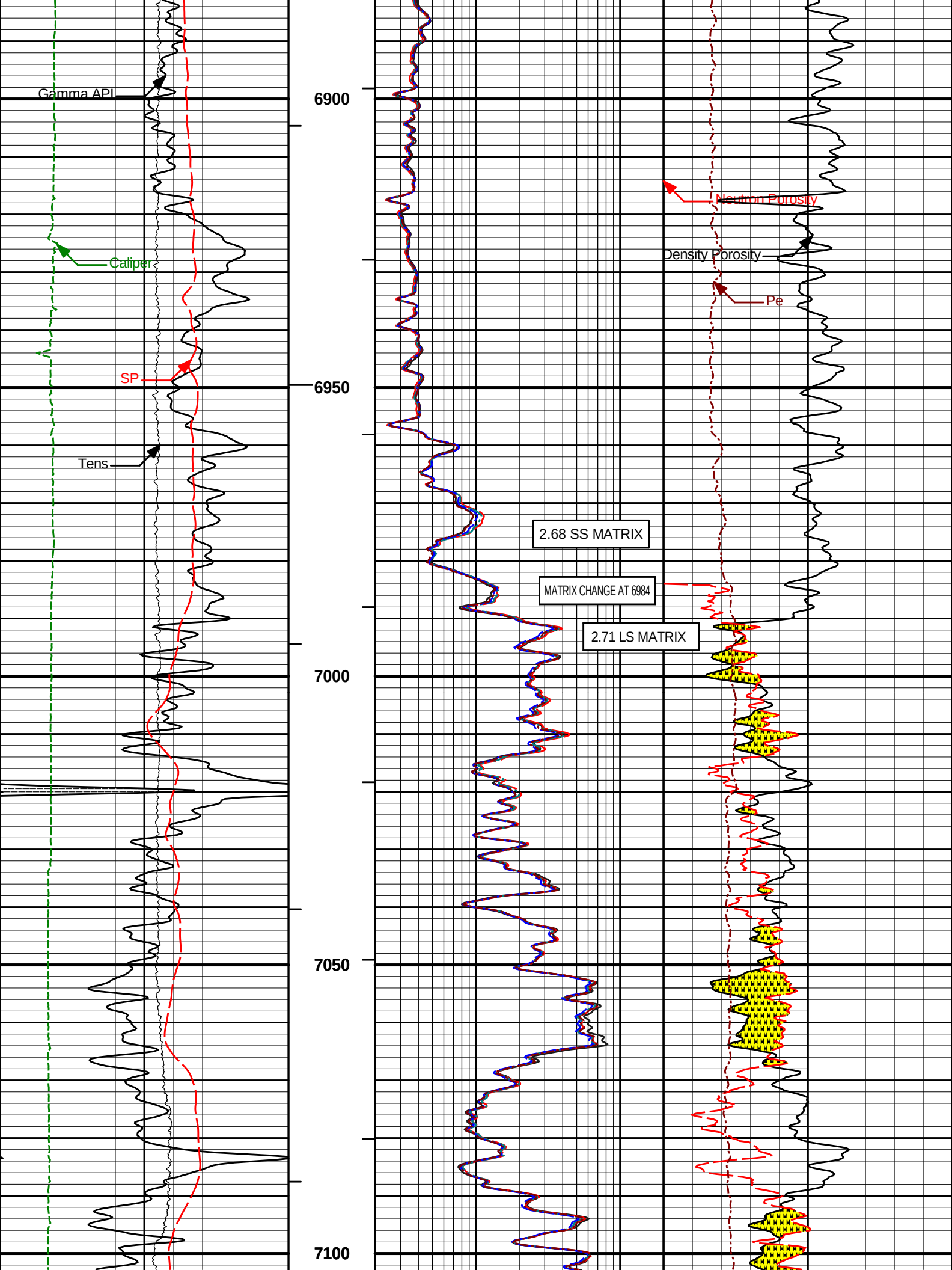
HALLIBURTON

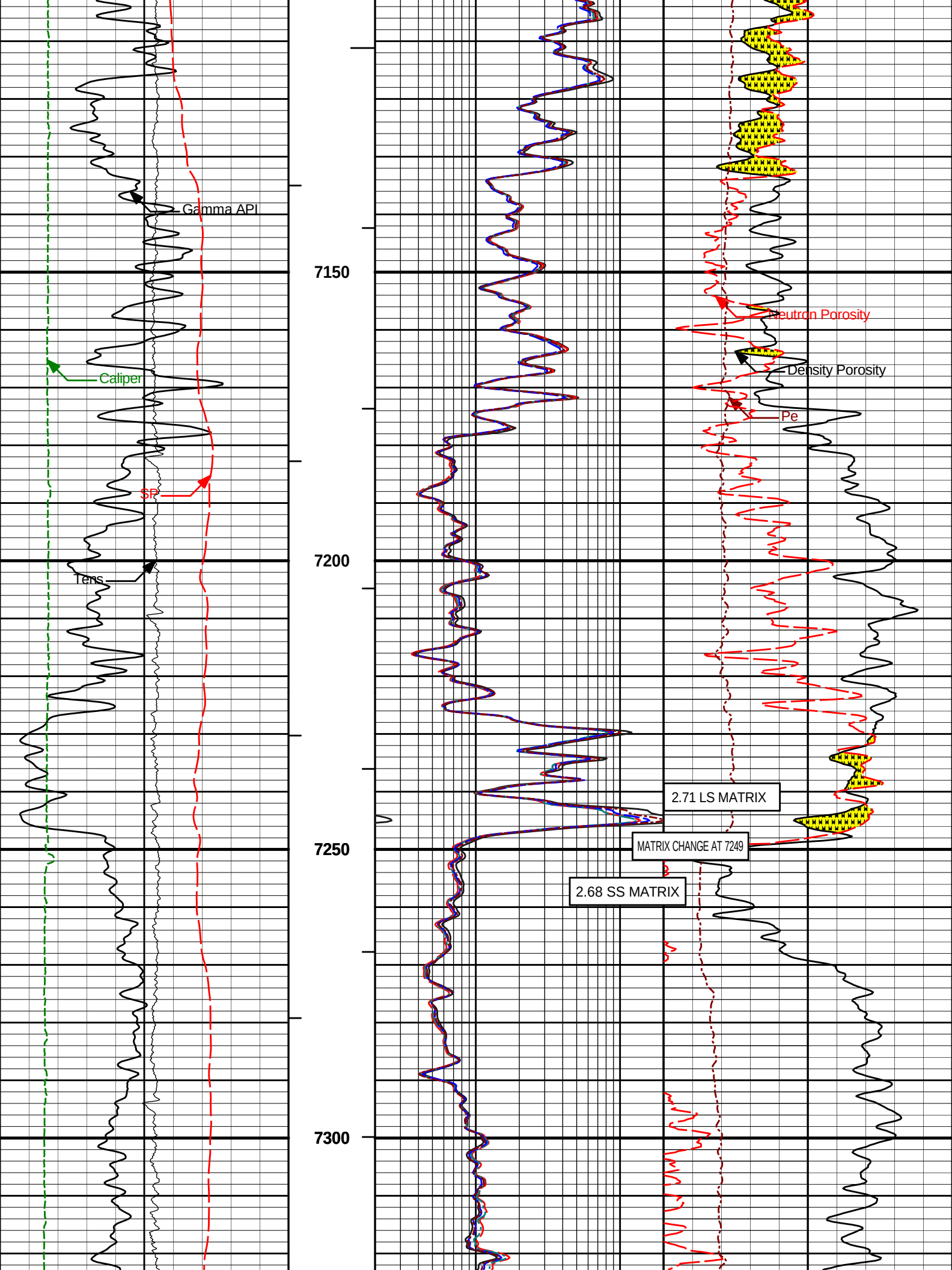
Plot Time: 17-Jan-11 05:02:21
Plot Range: 6700 ft to 7440 ft
Data: {ActiveWell}\Well Based**
Plot File: \\COMP\NIO_COD

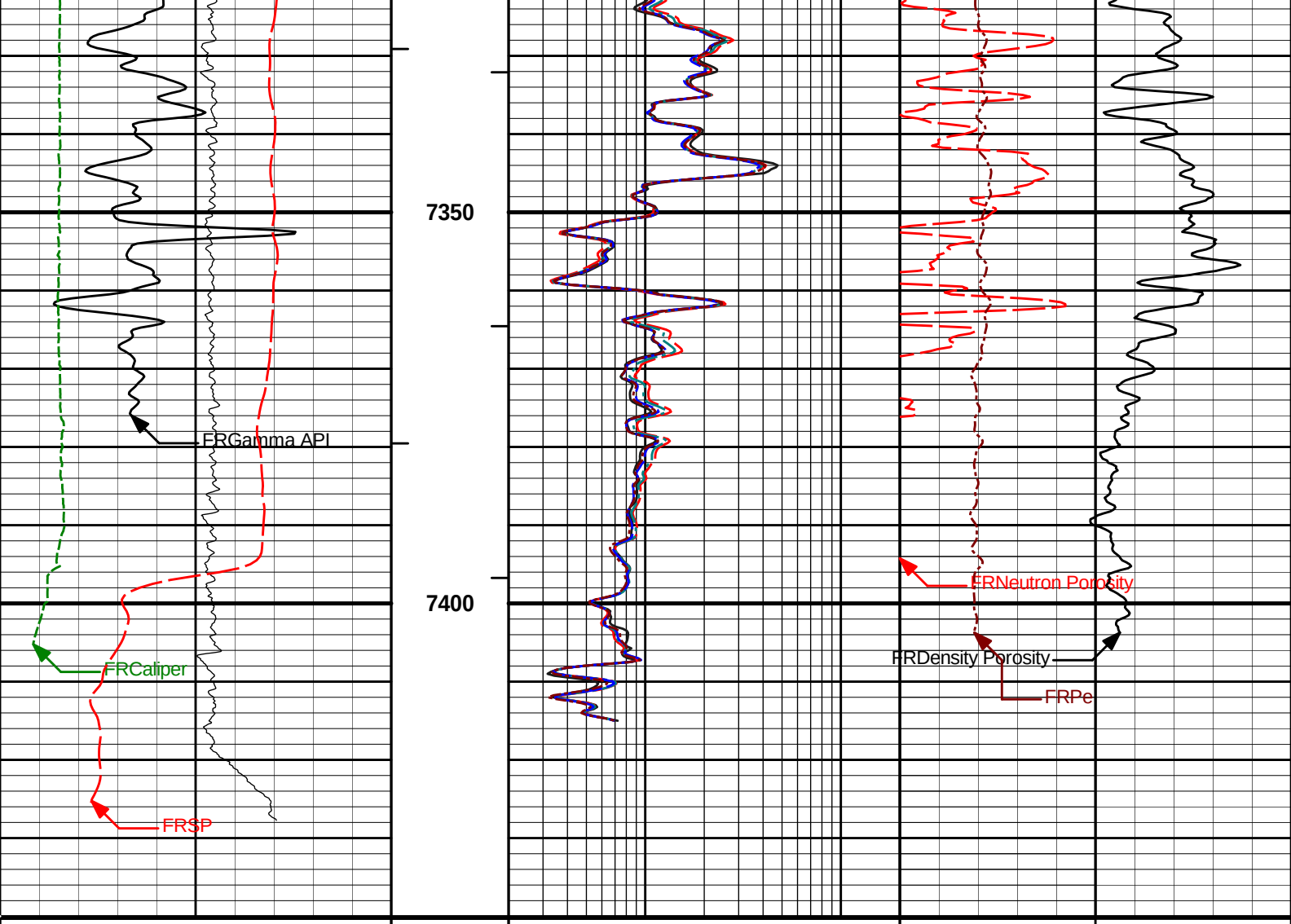
MAIN PASS 5" = 100'

Track 1	Depth Track	Track 2	Track 5	Track 3
		2 **RT10** 200 Ohm-m		


10K
Tens
0
pounds
2
RT20
200
Ohm-m
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
SP
Tens
6750
6800
6850


Gamma API
Caliper
SP
Tens
6900
6950
7000
7050
7100
Neutron Porosity
Density Porosity
Pe
2.68 SS MATRIX
MATRIX CHANGE AT 6984
2.71 LS MATRIX


Gamma API
Caliper
SP
Tens
7150
7200
7250
7300
Neutron Porosity
Density Porosity
Pe
2.71 LS MATRIX
MATRIX CHANGE AT 7249
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: 17-Jan-11 05:02:23
Plot Range: 6700 ft to 7440 ft
Data: {ActiveWell}\Well Based**
Plot File: \\COMP\NIO_COD

MAIN PASS 5" = 100'

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11215095**	**Reference Calibration Date:**	**29-Nov-10 15:50:18**
Engineer:	**C. BLUE**	**Calibration Date:**	**11-Jan-11 17:38:46**
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	74.1	73.9	api
Background + Calibrator	313.8	313.0	api
Calibrator	238.9	239.1	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11215095**	**Reference Calibration Date:**	**11-Jan-11 17:38:46**
Engineer:	**F. LODER**	**Calibration Date:**	**14-Jan-11 20:00:56**
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	73.9	72.5	api
Background + Calibrator	313.0	310.0	api
Calibrator	239.1	237.5	api

Shop	Field	Difference	Tolerance
239.1	237.5	1.6	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name:	**CSNG - 10846351**	**Reference Calibration Date:**	**13-Jan-11 14:09:31**
Engineer:	**C. BLUE**	**Calibration Date:**	**13-Jan-11 14:31:21**
Software Version:	**WL INSITE R3.0.7 (Build 3)**	**Calibration Version:**	**1**
Source SN:	**TB290**		

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.2	23.2	Channel #
583 KEV Peak Channel #	52.1	52.3	Channel #
2614 KEV Peak Channel #	214.4	215.1	Channel #
Calibrate Temperature	42.7	48.5	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	1598.1	CPS	331.3	331.0	API
Background	309.5	CPS	64.4	64.1	API

Gamma Ray Gain: 1.04

Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	**CSNG - 10846351**	**Reference Calibration Date:**	**13-Jan-11 14:31:21**
Engineer:	**F. LODER**	**Calibration Date:**	**14-Jan-11 20:06:30**
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 #	23.2	23.1	Channel #
583 KEV Peak Channel #	52.3	51.8	Channel #
2614 KEV Peak Channel #	215.1	213.3	Channel #
Calibrate Temperature	48.5	88.8	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	1605.7	CPS	331.0	331.9	API
Background	314.3	CPS	64.1	65.0	API

Gamma Ray Gain: 1.04

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11301132**	**Reference Calibration Date:**	**14-Jan-11 19:20:53**
Engineer:	**F. LODER**	**Calibration Date:**	**14-Jan-11 19:37:17**
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: 45 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.019	1.023	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):	0.2283	0.2295	0.0012	+/- 0.0020
Calibrated Ratio:	10.31	10.35	0.042	+/- 0.050

VERIFIER		
Measurement	**Value**	**Control Limit**
Snow-Block Porosity (decp):	0.0858	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 - I332M319 **Reference Calibration Date:** 13-Jan-11 15:09:53

Engineer: C. BLUE **Calibration Date:** 13-Jan-11 15:29:12

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	1.0308	1.0316	0.90 - 1.10
Near Dens Gain	1.0122	1.0134	0.90 - 1.10
Near Peak Gain	0.9880	1.0018	0.90 - 1.10
Near Lith Gain	0.9650	0.9892	0.90 - 1.10
Far Bar Gain	1.0160	1.0141	0.90 - 1.10
Far Dens Gain	1.0067	1.0065	0.90 - 1.10
Far Peak Gain	1.0009	0.9991	0.90 - 1.10
Far Lith Gain	0.9807	0.9796	0.90 - 1.10
Near Bar Offset	-0.2722	-0.2799	NONE
Near Dens Offset	-0.1275	-0.1368	NONE
Near Peak Offset	0.0946	-0.0204	NONE
Near Lith Offset	0.2785	0.0743	NONE
Far Bar Offset	-0.1814	-0.1645	NONE
Far Dens Offset	-0.1151	-0.1140	NONE
Far Peak Offset	-0.0811	-0.0655	NONE
Far Lith Offset	0.0618	0.0715	NONE
Near Bar Background	857.55	860.91	700 - 1450
Near Dens Background	280.92	282.87	230 - 480
Near Peak Background	119.87	119.95	100 - 210
Near Lith Background	149.93	150.34	125 - 260
Far Bar Background	540.57	542.40	450 - 900
Far Dens Background	208.74	209.33	175 - 345
Far Peak Background	81.41	81.41	70 - 140
Far Lith Background	86.25	86.78	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	**Current Reading (Previous Coef)**	**Calibrated (New Coef)**	**Change**	**Control Limit On Change**
MAGNESIUM				
Density (g/cc)	1.678	1.680	0.002	+/- 0.015
Pe	2.617	2.591	0.026	+/- 0.150

Pe	2.617	2.591	-0.026	+/- 0.150
ALUMINUM				
Density (g/cc)	2.600	2.600	-0.000	+/- 0.01500
Pe	3.084	3.097	0.013	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0023	+/- 0.0110	0.0003	+/- 0.0140
Magnesium Block	-0.0005	+/- 0.0110	-0.0014	+/- 0.0140
Aluminum Block	-0.0000	+/- 0.0110	-0.0002	+/- 0.0140
Resolution	9.40	6.00 - 11.50	9.58	6.00 - 11.50
Internal Verifier(B+D+P+L)	1414	1200 - 2700	920	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 - I332M319 **Reference Calibration Date:** 13-Jan-11 15:29:12

Engineer: F. LODER **Calibration Date:** 14-Jan-11 20:00:49

Software Version: WL INSITE R3.0.7 (Build 3) **Calibration Version:** 1

Pad Temperature: 57.6 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1414.070	1412.138	-1.932	15.181
Far (B+D+P+L) cps	919.916	924.602	4.686	16.438
Near Resolution	9.40	9.55	0.150	0.50
Far Resolution	9.58	9.91	0.330	1.00

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - I332M319 **Reference Calibration Date:** 14-Jan-11 19:50:27

Engineer: F. LODER **Calibration Date:** 14-Jan-11 19:55:17

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	-1485.88	-1425.49	-7000.00 - -1000.00
Pad Gain	0.0003869	0.0003839	0.000200 - 0.000600
Arm Offset	2332.80	2376.68	5000.00 - 2000.00

Arm Offset	-3332.80	-3276.68	-5000.00 - 3000.00
Arm Gain	0.0005731	0.0005619	0.000300 - 0.000700
Arm Power	-0.000006170	-0.000005511	-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)	1.99	2.00	0.01	+/- 0.20
Medium Ring (in)	3.76	3.75	-0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.48	6.50	0.02	+/- 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 - I332M319 **Reference Calibration Date:** 14-Jan-11 19:55:17

Engineer: F. LODER **Calibration Date:** 14-Jan-11 19:57:31

Software Version: WL INSITE R3.0.7 (Build 3) **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	8.26	0.01	+/- 0.15

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

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt - E9336-S4042 **Reference Calibration Date:** 29-Nov-10 10:05:24

Engineer: C. BLUE **Calibration Date:** 29-Nov-10 10:24:28

Software Version: WL INSITE R3.0.4 (Build 6) **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	1.0124	1.05	0.95	1.0112	1.05	0.95	1.0087	1.05
A2 (50")	0.95	0.9999	1.05	0.95	0.9994	1.05	0.95	0.9992	1.05
A3 (29")	0.95	1.0027	1.05	0.95	1.0017	1.05	0.95	0.9984	1.05
A4 (17")	0.95	0.9959	1.05	0.95	0.9923	1.05	0.95	0.9933	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9818	1.05	0.95	0.9804	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9703	1.05	0.95	0.9694	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	0.658	2	-6	-3.458	-2	-8	-5.078	-2
A2 (50")	-7	-1.854	-1	-6	-3.756	-2	-7	-4.493	-2
A3 (29")	-27	-13.021	-9	-9	-3.753	-3	-7	-3.013	-1
A4 (17")	-180	-98.689	-60	-45	-31.432	-15	-39	-25.166	-13
A5 (10")	N/A	N/A	N/A	-150	-69.697	-50	-80	-36.680	-10
A6 (6")	N/A	N/A	N/A	175	268.707	525	90	139.940	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.8512	1.3
36K	1.0	1.8893	2.0
72K	1.0	1.0922	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.008	1.05

CALIBRATION SUMMARY

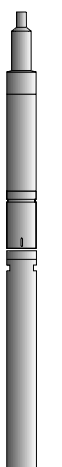
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11215095						
Gamma Ray Calibrator	239.1	237.5	----------	1.6	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	----------	0.0	----------	Channel #
239 KEV Peak Channel #	23.2	23.1	----------	0.1	----------	Channel #
583 KEV Peak Channel #	52.3	51.8	----------	0.5	----------	Channel #
2614 KEV Peak Channel #	215.1	213.3	----------	1.8	----------	Channel #
DSNT-11301132						
Snow-Block Porosity	0.0858	----------	----------	0.0000	+/- -.--	decp
SDLT-I332M319						
Near(B+D+P+L)	1414.070	1412.138	----------	1.932	+/-15.181	cps
Far(B+D+P+L)	919.916	924.602	----------	-4.686	+/-16.438	cps
Pad Extension	3.75	3.75	----------	0.00	+/-0.10	in
Ring Diameter	8.25	8.26	----------	-0.010	+/-0.15	in
ACRt-E9336-S4042						
Mud Cell	1.008	----------	----------	0.000	----------	ohm-m

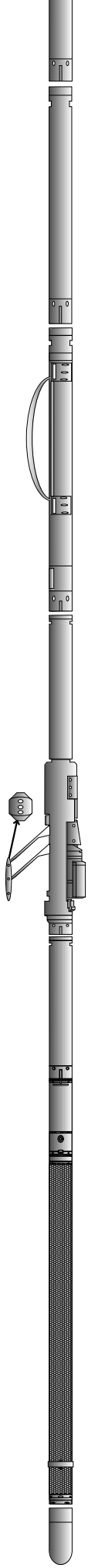
Data: SEKICH_P19_21D\0001 NOBLE\IDLE **Date: 17-Jan-11 03:56:12**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-10895163 135.00 lbs		Ø 3.625 in		Load Cell @ 59.34 ft BH Temperature @ 58.77 ft	6.25 ft	63.02 ft
GTET-11215095 165.00 lbs		Ø 3.625 in			8.52 ft	56.77 ft





GammaRay @ 50.71 ft

48.25 ft

CSNG-10846351
114.00 lbs

Ø 3.625 in

8.17 ft

CSNG @ 42.62 ft

40.08 ft

DSN Decentralizer-10813523
6.60 lbs

Ø 3.625 in*

DSNT-11301132
174.00 lbs

Ø 3.625 in

9.69 ft

DSN Far @ 33.15 ft

DSN Near @ 32.40 ft

30.40 ft

SDLT-I332M319
360.00 lbs

Ø 4.500 in

10.81 ft

SDL Microlog @ 22.58 ft

SDL Caliper @ 22.40 ft

Ø 4.750 in

SDL @ 22.39 ft

19.58 ft

Mud Resistivity @ 13.19 ft

ACRt-E9336-S4042
250.00 lbs

Ø 3.625 in

19.25 ft

ACRt @ 9.21 ft

SP Ring-1
0.00 lbs

Ø 3.625 in*

SP @ 1.61 ft

0.33 ft

Bull Nose-BN
5.00 lbs

Ø 2.750 in

0.33 ft

0.00 ft

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)

		Number	(lbs)	(ft)		(ft)	(fpm)
RWCH	Releasable Wireline Cable Head	10895163	135.00	6.25		56.77	300.00
GTET	Gamma Telemetry Tool	11215095	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	11301132	174.00	9.69		30.40	60.00
DCNT	DSN Decentralizer	10813523	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	I332M319	360.00	10.81		19.58	60.00
ACRt	Array Compensated True Resistivity	E9336-S4042	250.00	19.25		0.33	300.00
SP	SP Ring	1	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: SEKICH_P19_21D\0001 NOBLE\IDLE **Date: 17-Jan-11 01:32:22**

COMPANY	**NOBLE ENERGY INC**		
WELL	**SEKICH P19-21D**		
FIELD	**WATTENBERG**		
COUNTY	**WELD**	STATE	**CO**

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY