

HALLIBURTON

ARRAY COMPENSATED
TRUE RESISTIVITY

COMPANY		CHAMA OIL & MINERALS LLC	
WELL		SORS 1P	
FIELD/BLOCK		WILDACT	
COUNTY		WASHINGTON	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		20-Jan-13	
Run No.		TWO	
Depth - Driller		8280.00 ft	
Depth - Logger		8276.0 ft	
Bottom - Logged Interval		8274 ft	
Top - Logged Interval		CASING	
Casing - Driller		9.625 in @ 6369.0 ft	
Casing - Logger		6380.0 ft	
Bit Size		8.500 in @	
Type Fluid in Hole		WATER BASED MUD	
Density		9.0 ppg 43.00 s/qt	
PH		9.30 pH 6.4 cphm	
Source of Sample		FLOW LINE	
Rm @ Meas. Temperature		0.800 ohmm @ 85.60 degF @	
Rmf @ Meas. Temperature		0.20 ohmm @ 51.30 degF @	
Rmc @ Meas. Temperature		0.100 ohmm @ 61.00 degF @	
Source Rmf		Rmc MEASURED MEASURED	
Rm @ BHT		0.41 ohmm @ 174.0 degF @	
Time Since Circulation		8.0 hr	
Time on Bottom		20-Jan-13 18:38	
Max. Rec. Temperature		174.0 degF @ 8276.0 ft @	
Equipment		Location 11454566 BRIGHTON	
Recorded By		J. PINKETT	
Witnessed By		R. WILSON	

COMPANY		CHAMA OIL & MINERALS LLC	
WELL		SORS 1P	
FIELD/BLOCK		WILDACT	
COUNTY		WASHINGTON	
STATE		CO	
API No.		05121110180000	
Location		SHL: 650' FSL & 650' FWL SWSW	
LAT: 40.279391°		LONG: -103.394496°	
Other Services:		CSNG GEM DSNT SDLT	
Sect. 26		Twp. 4N	
Rge. 54W		Elev. 4412.5 ft	
D.F.		4434.5 ft	
G.L.		4412.5 ft	

Fold here

Service Ticket No.:				API Serial No.: 05121110180000				PGM Version: WL INSITE R3.8.0 (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.		@		@		TWO		ACRT		N/A		1.25" S.O.		N/A	
Rmc @ Meas. Temp.		@		@				11294353							
Source Rmf		Rmc													
Rm @ BHT		@		@											
Rmf @ BHT		@		@											
Rmc @ BHT		@		@											
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		TWO		Run No.				Run No.		TWO		Run No.		TWO	
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		Cs137		Source Type		Am241Be	
Length		8"		LSA [Y/N]				Serial No.		5471GW		Serial No.		DSN434	
Distance to Source		18'		FWDA [Y/N]				Strength		1.5 Ci		Strength		15 Ci	
LOGGING DATA															

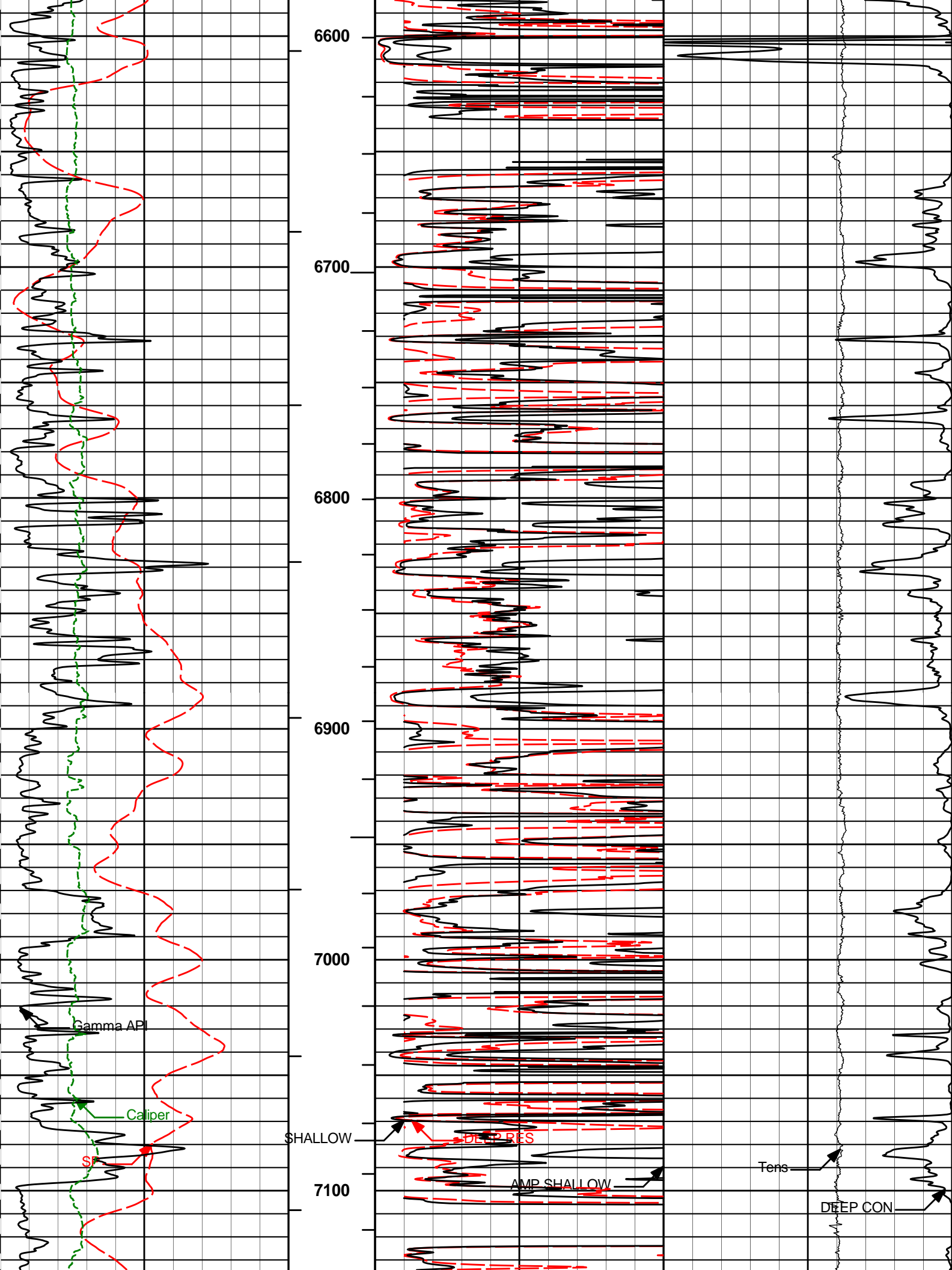
Depth (ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	8.500	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.000	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	19000.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.800	ohmm
	SHARED	TRM	Temperature of Mud	85.6	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	7.000	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	8276.00	ft
	SHARED	BHT	Bottom Hole Temperature	174.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa /	AEAC	Archie A factor	0.6200	

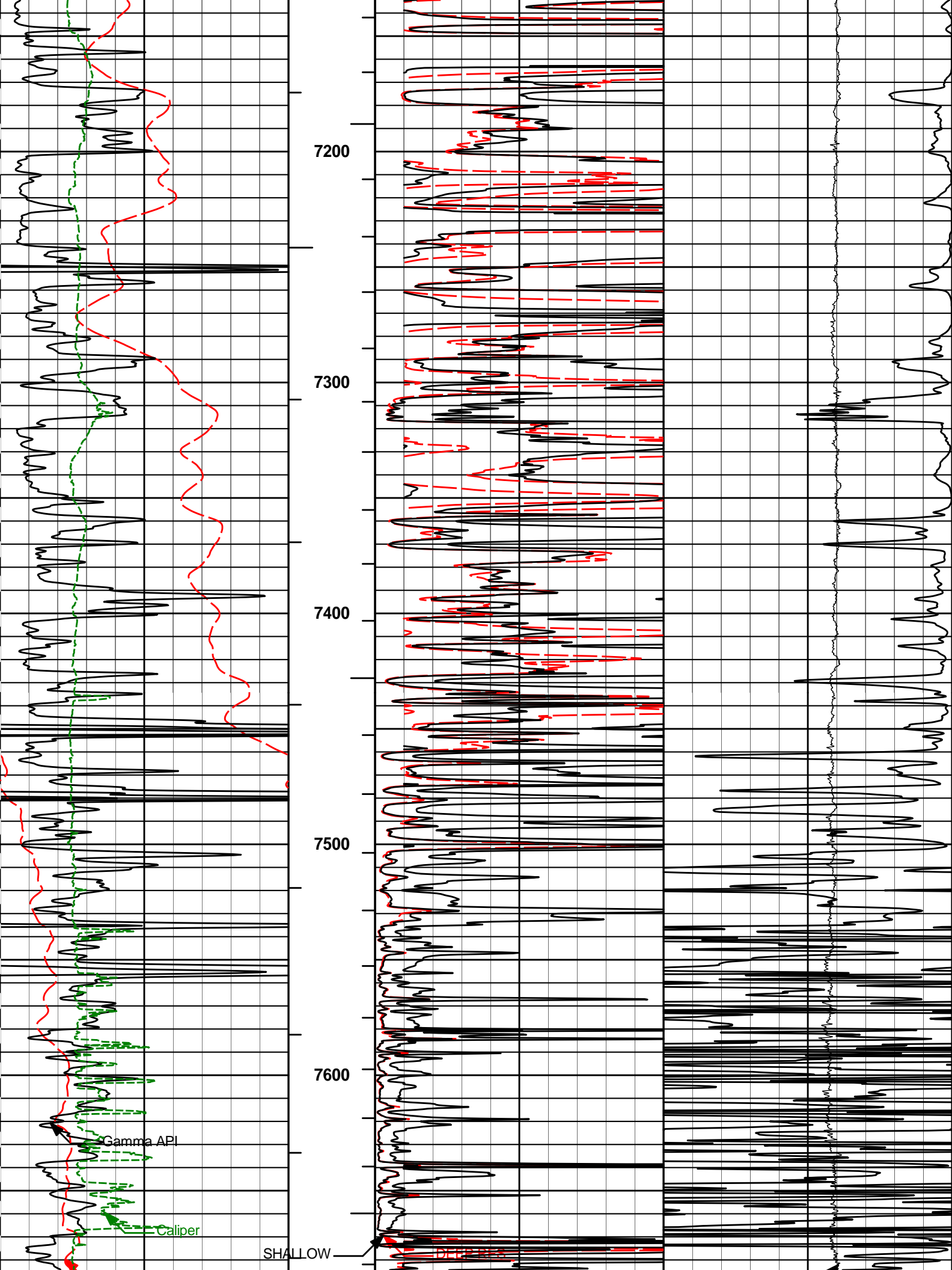
	CrossPlot	AFAC	Archie A factor	0.0200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	SimpleLithology	RMF	Mud Filtrate Resistivity	0.10	ohmm
	SimpleLithology	RMFT	Temperature of Mud Filtrate	175.00	degF
	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	
	GEMT	GMOK	Compute GEMT Results?	Yes	
	GEMT	FTAL	Fit Chemical Element Al	Yes	
	GEMT	FTBA	Fit Chemical Element Ba	No	
	GEMT	FITC	Fit Chemical Element C	Yes	
	GEMT	FTCA	Fit Chemical Element Ca	Yes	
	GEMT	FTCL	Fit Chemical Element Cl	Yes	
	GEMT	FTFE	Fit Chemical Element Fe	Yes	
	GEMT	FTGD	Fit Chemical Element Gd	Yes	
	GEMT	FITH	Fit Chemical Element H	Yes	
	GEMT	FTK	Fit Chemical Element K	Yes	
	GEMT	FTMG	Fit Chemical Element Mg	Yes	
	GEMT	FTMN	Fit Chemical Element Mn	Yes	
	GEMT	FTNA	Fit Chemical Element Na	No	
	GEMT	FITO	Fit Chemical Element O	Yes	
	GEMT	FTS	Fit Chemical Element S	Yes	
	GEMT	FTSI	Fit Chemical Element Si	Yes	
	GEMT	FTTI	Fit Chemical Element Ti	Yes	
	GEMT	KFIT	Potassium constraint flag (No = don't fit,Yes = fit)	Yes	
	GEMT	UFDF	Use Fix Resolution Degradation Factor	No	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	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	

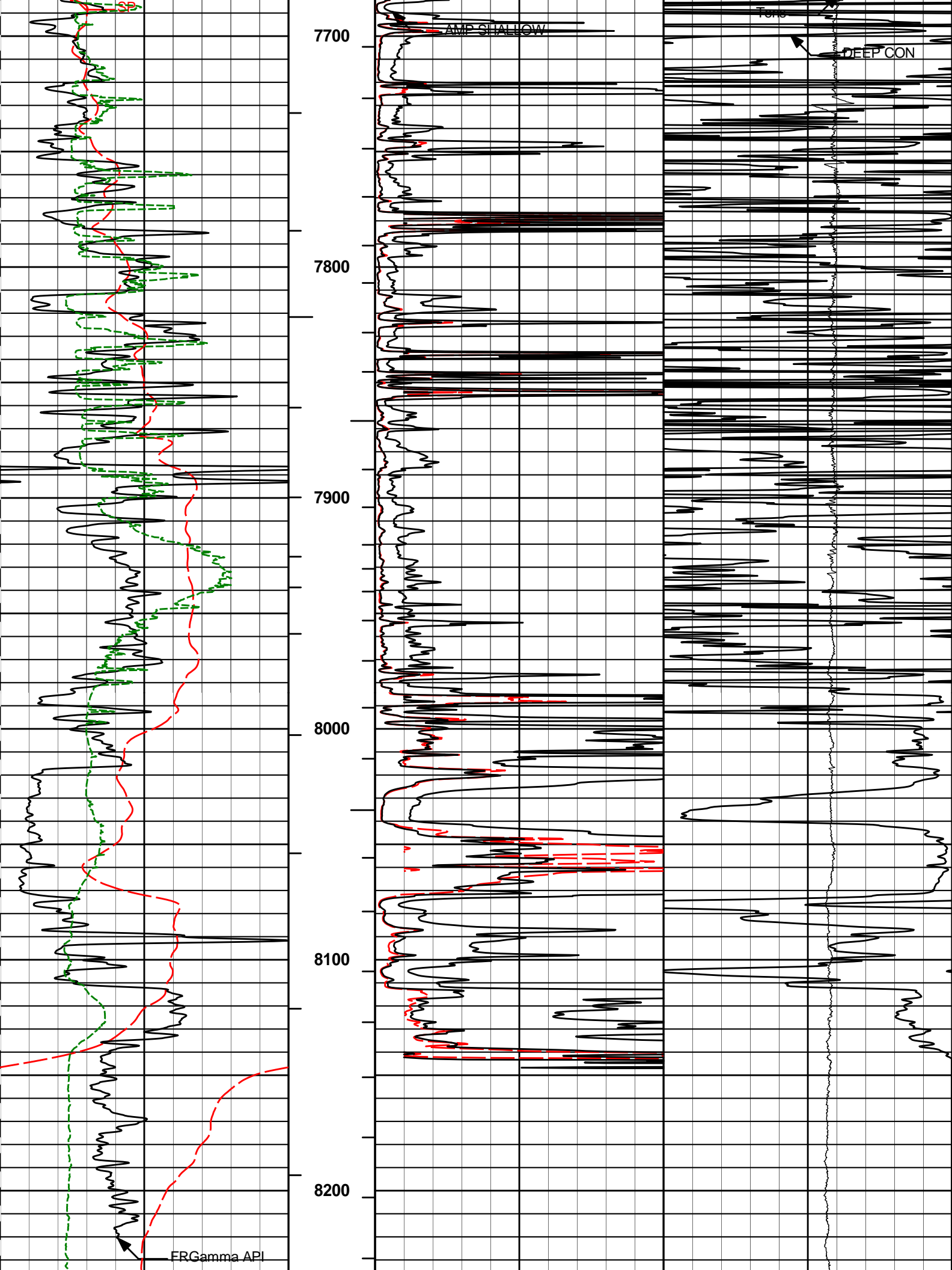
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
	SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
	ACRt Sonde	RTOK	Process ACRt?	Yes	
	ACRt Sonde	MNSO	Minimum Tool Standoff	1.25	in
	ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
	ACRt Sonde	TPOS	Tool Position	Eccentered	
	ACRt Sonde	RMOP	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					

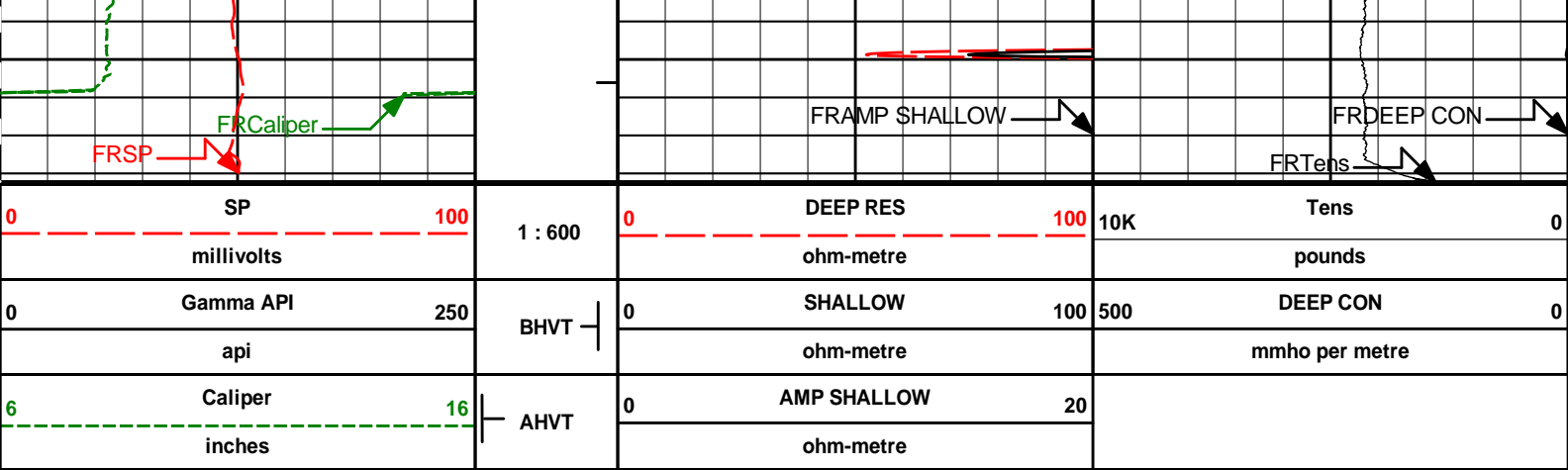
HALLIBURTON

MAIN PASS 2" = 100'









HALLIBURTON

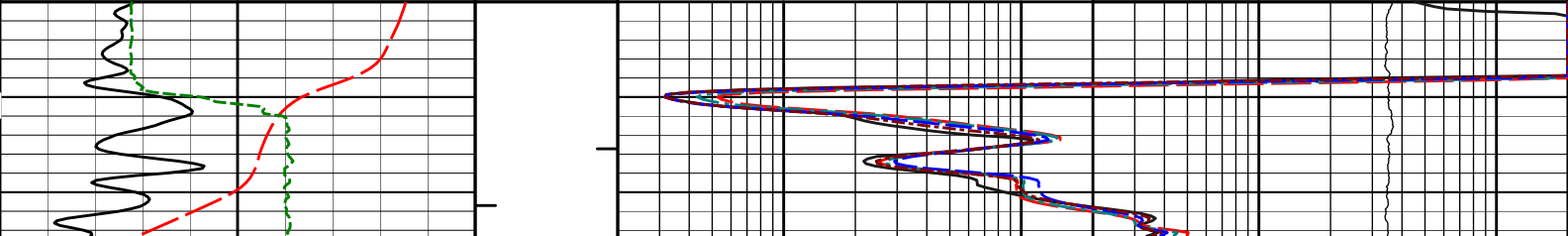
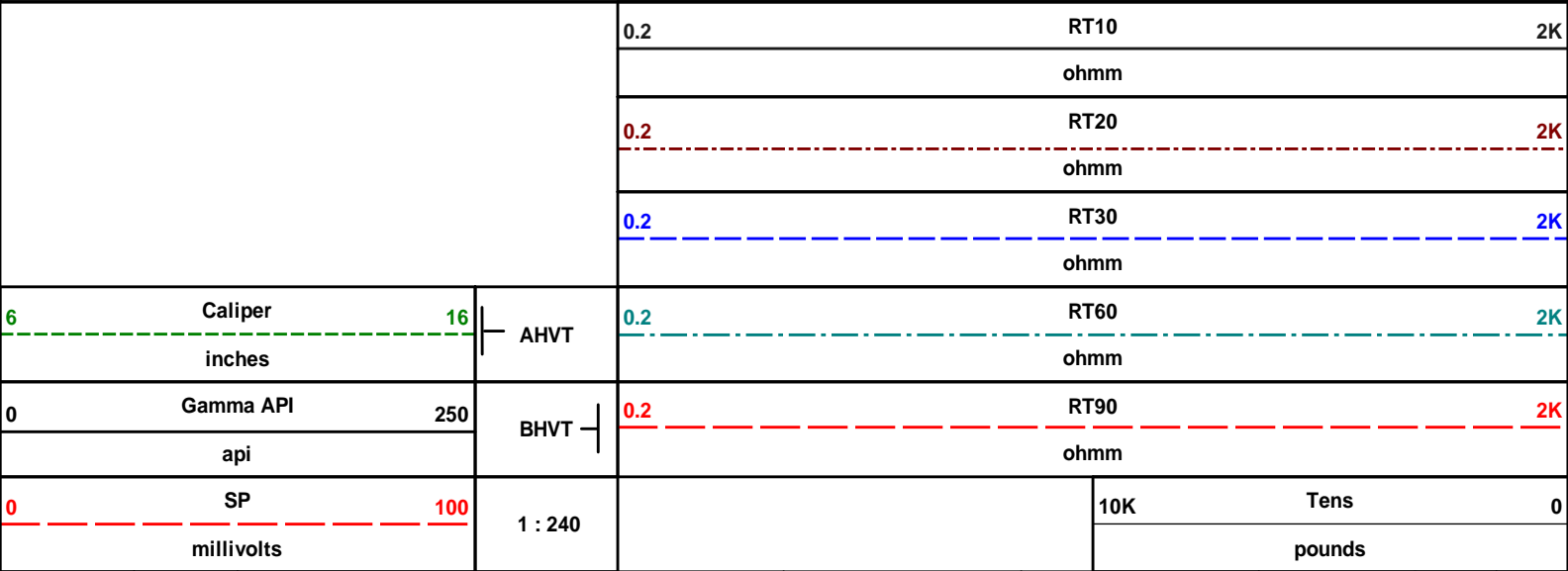
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Plot Range: 6370 ft to 8282.17 ft
Data: SORS_1PIWell Based\MAIN_PASS1\
Plot File: \\ACRT\IQ_ACRt_2IN_RM

MAIN PASS 2" = 100'

HALLIBURTON

Plot Time: 20-Jan-13 21:02:12
Plot Range: 6370 ft to 8282.17 ft
Data: SORS_1PIWell Based\MAIN_PASS1\
Plot File: \\ACRT\IQ_ACRt_5IN_RM

MAIN PASS 5" = 100'





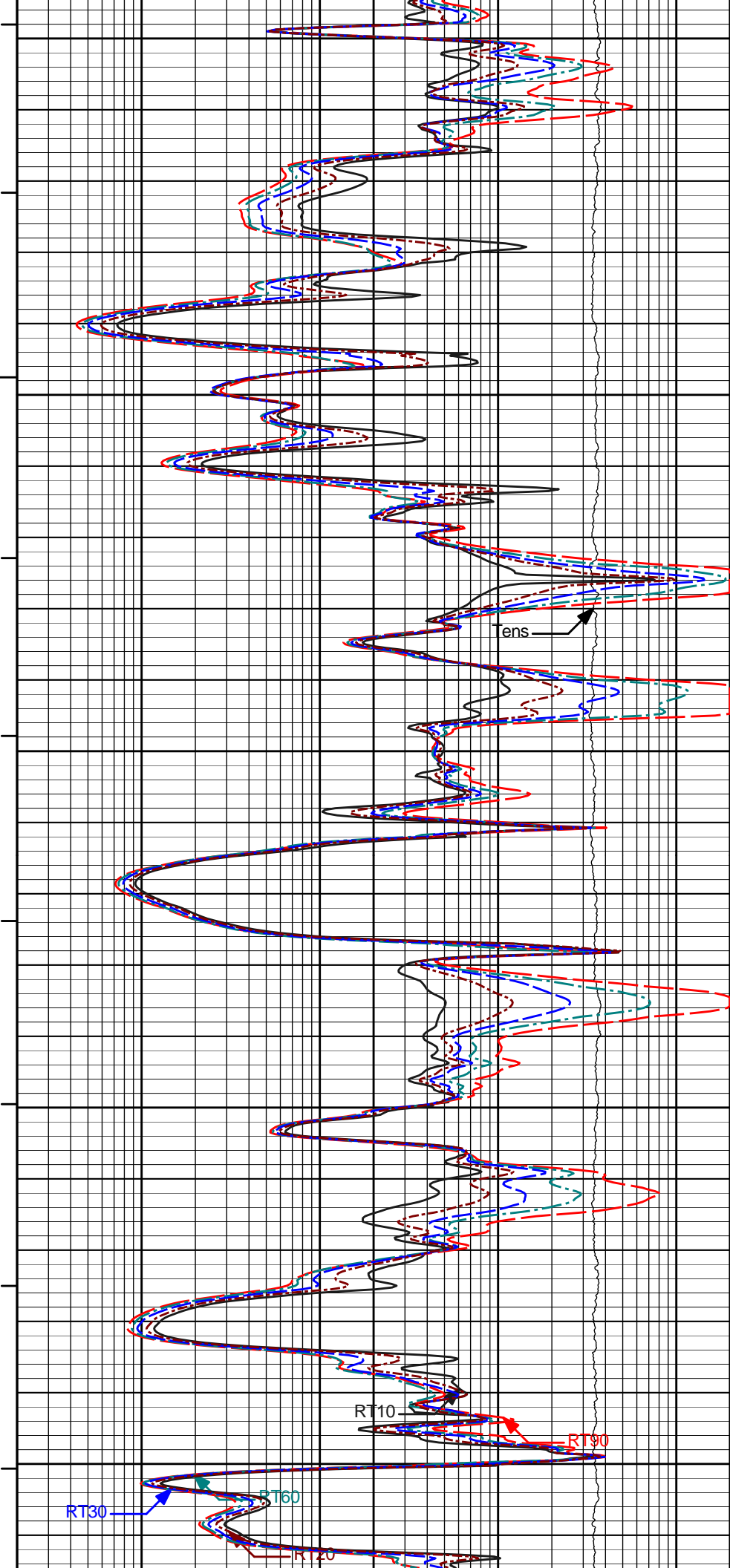
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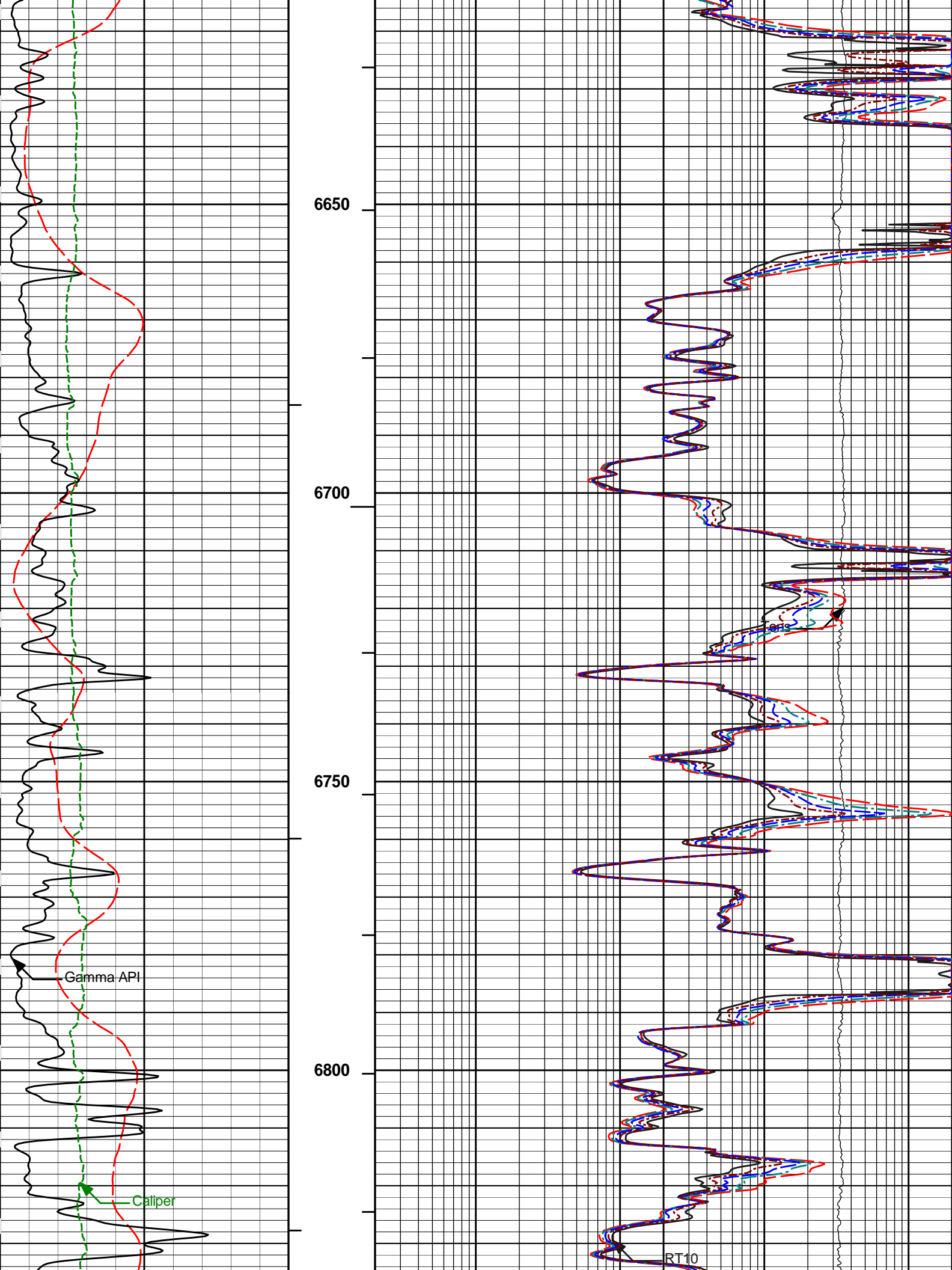
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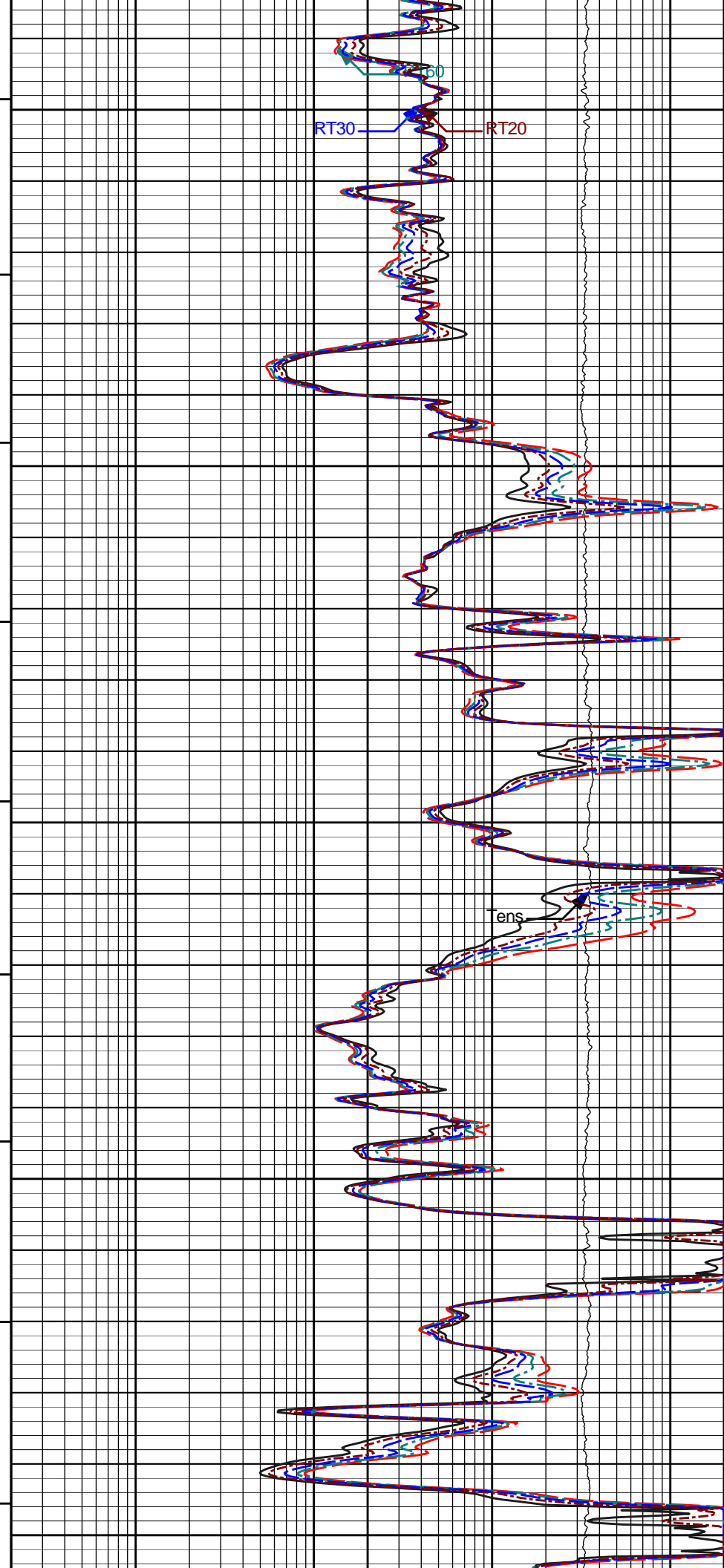
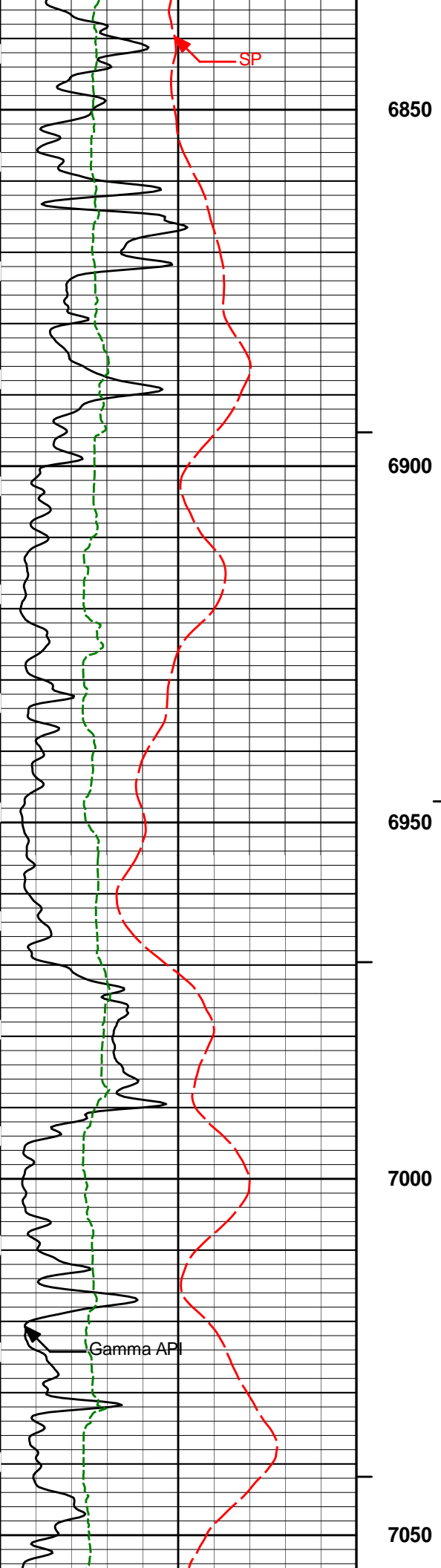
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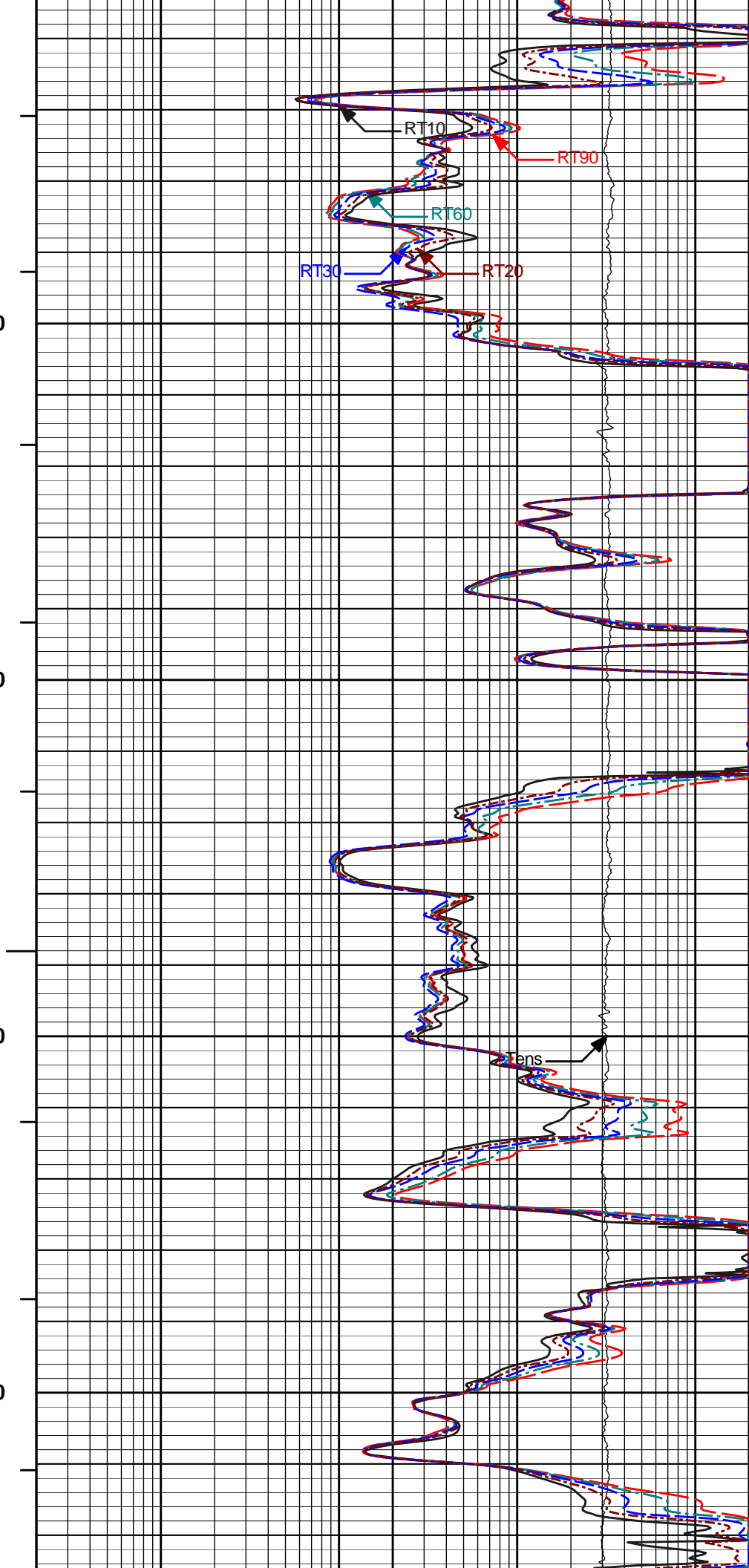
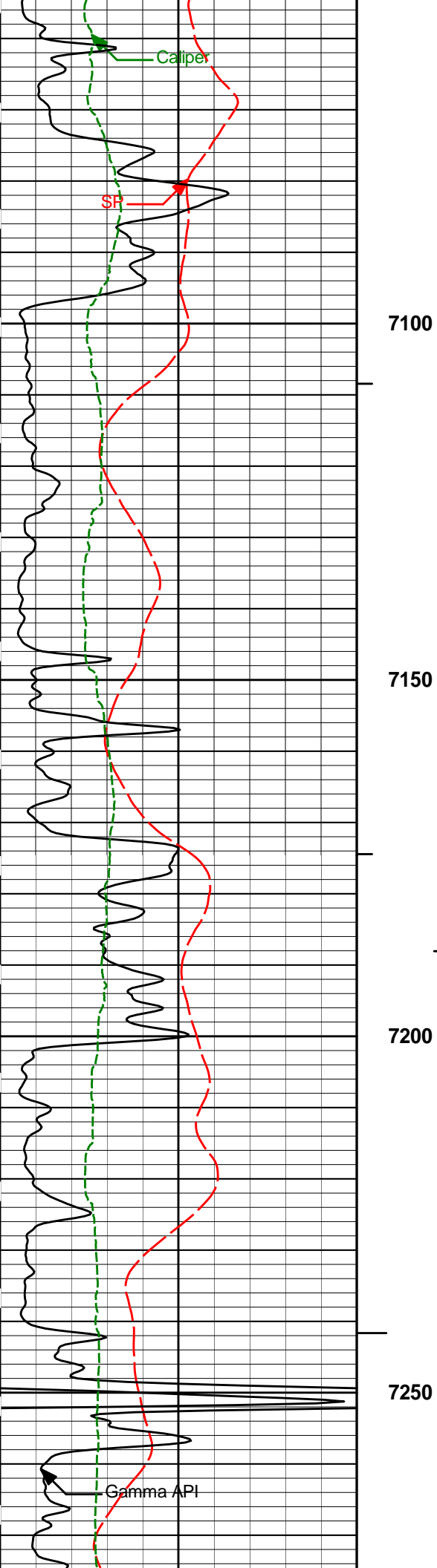
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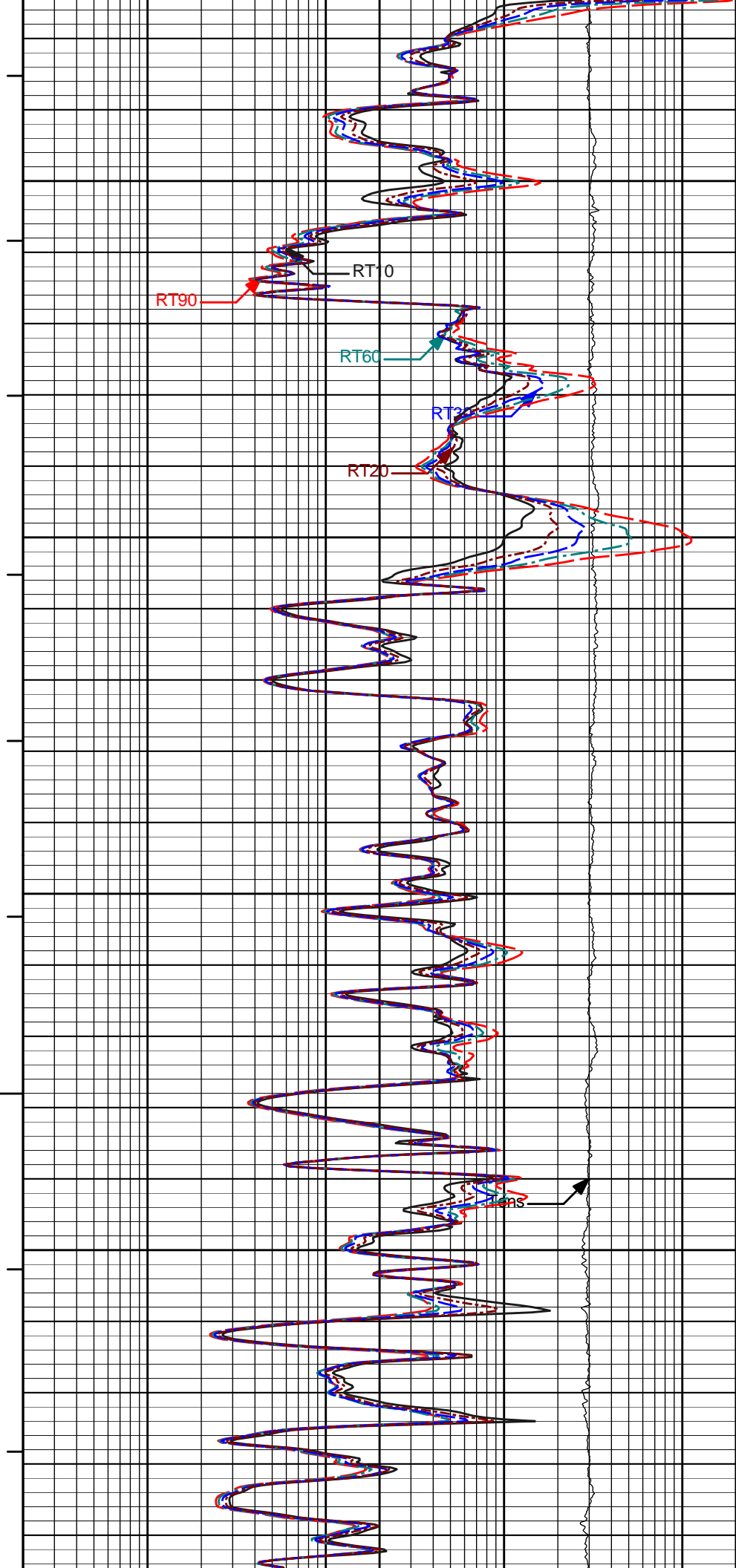


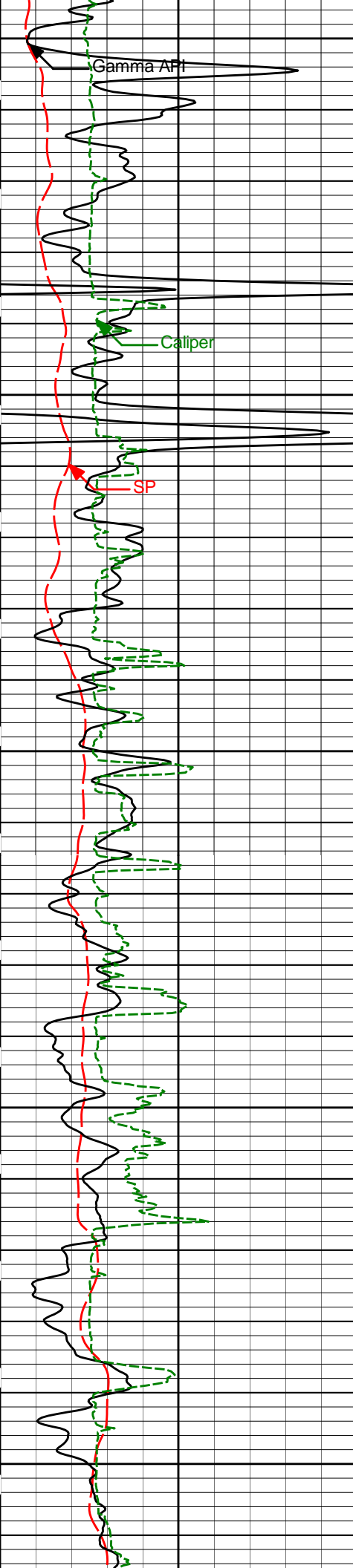
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7600

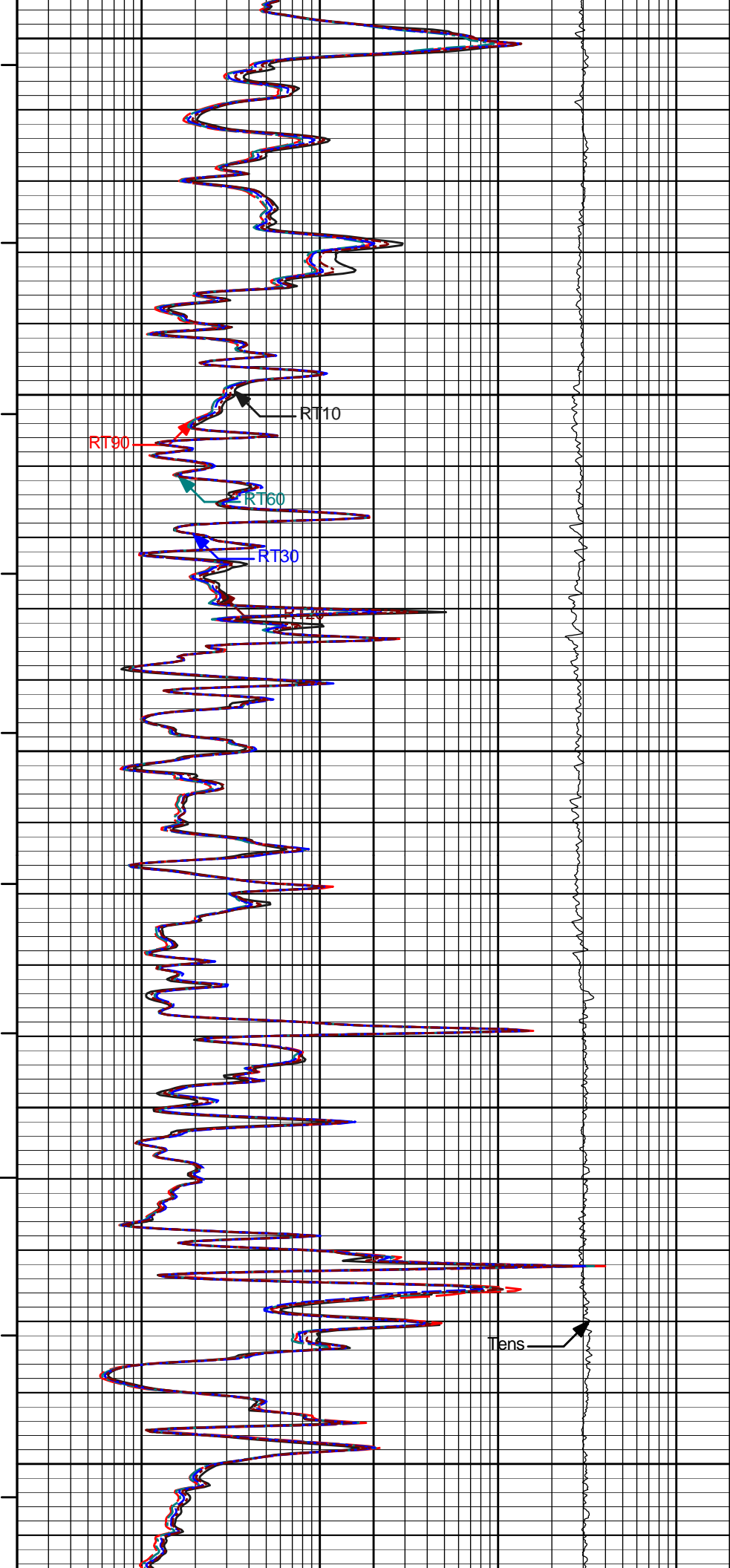
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7700

Gamma API

Caliper

SP



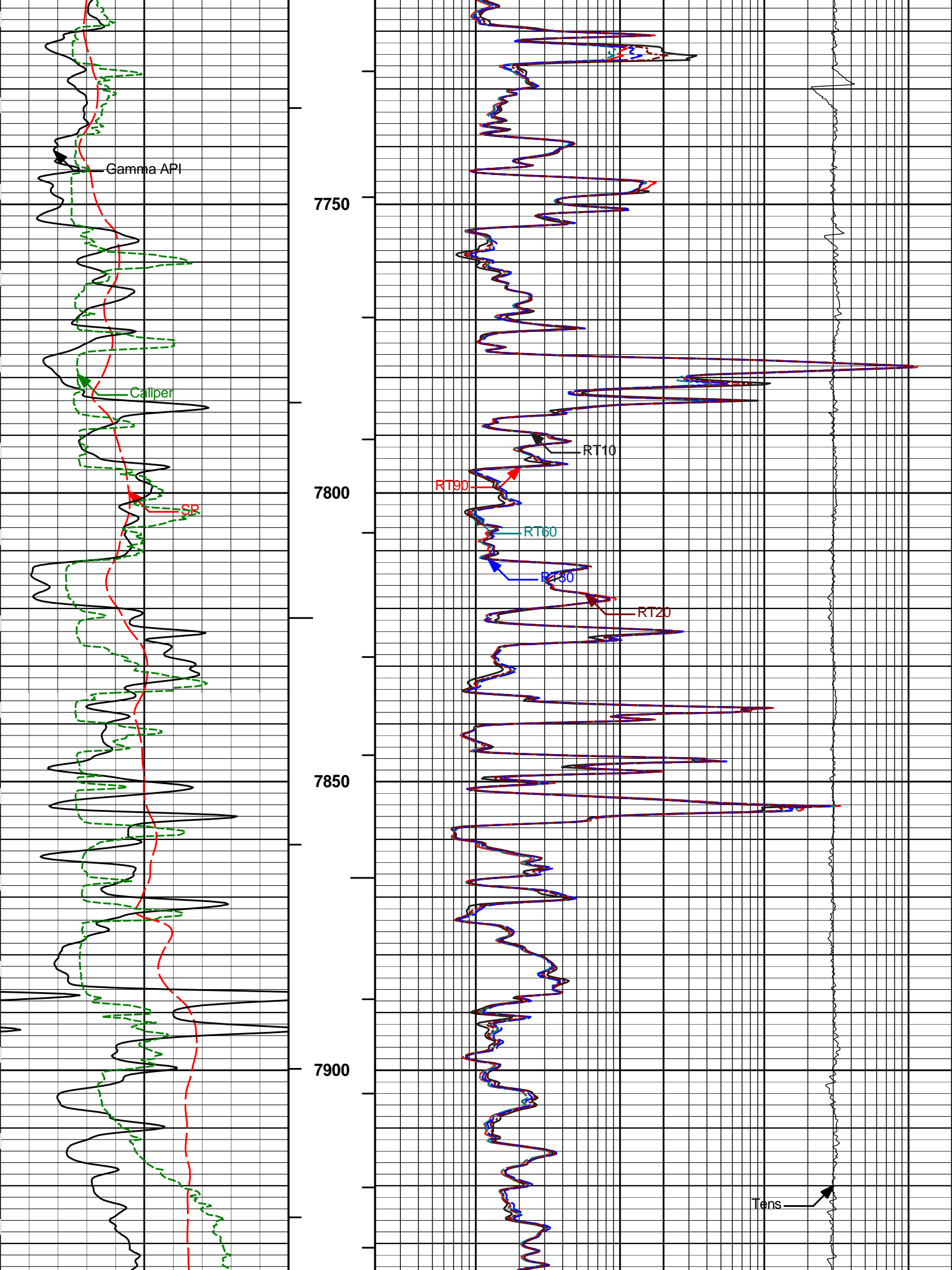
RT10

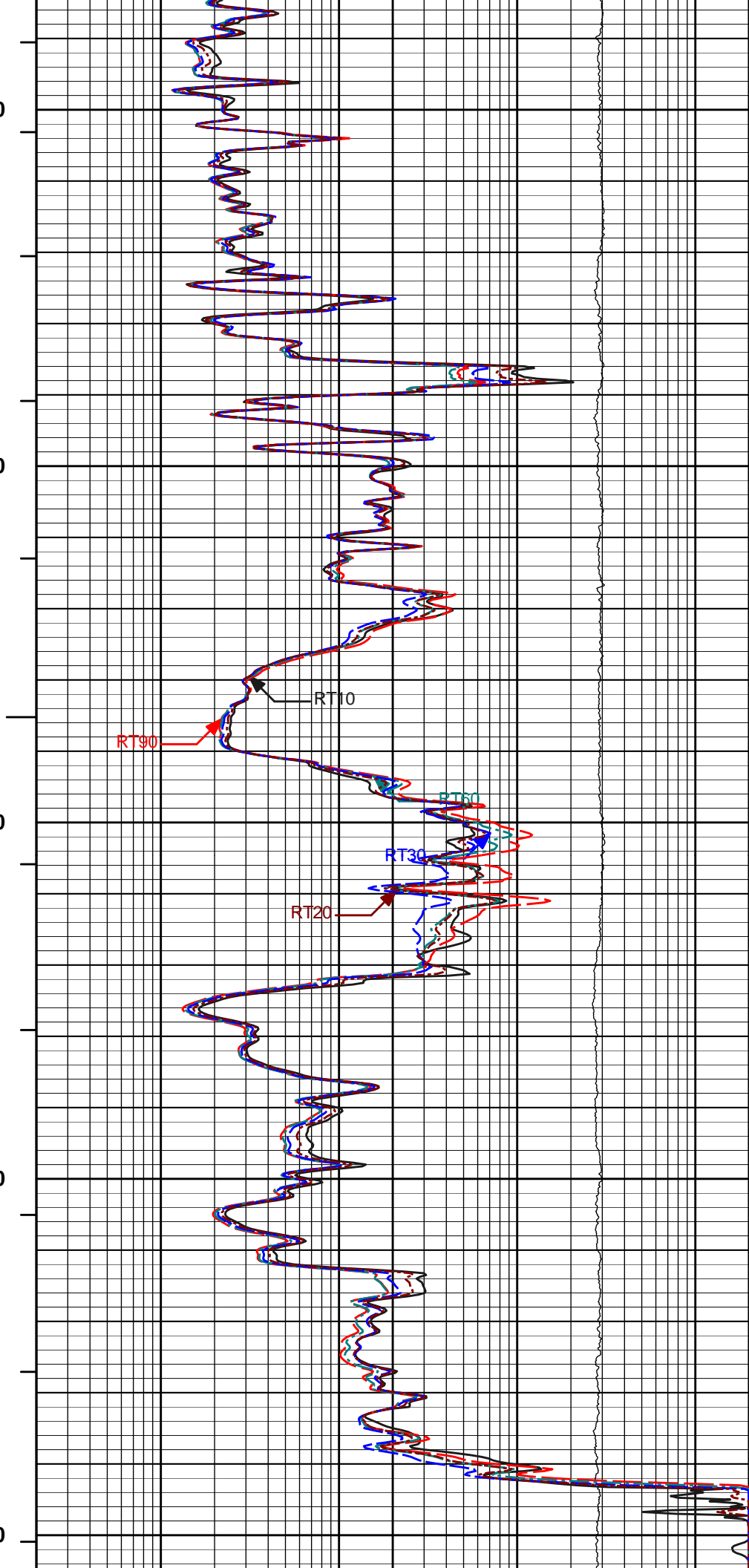
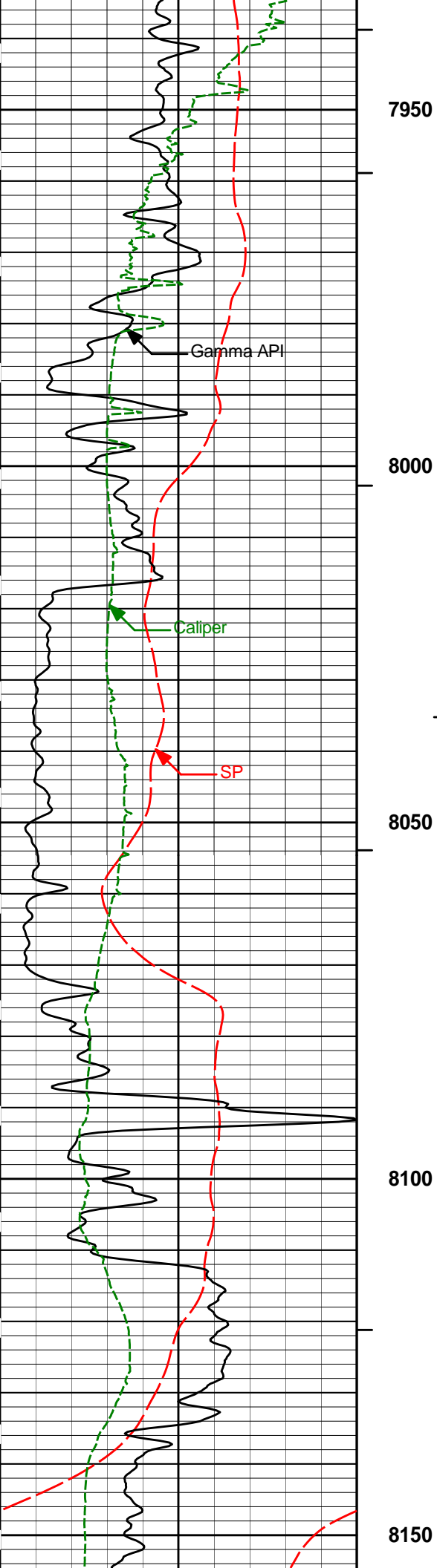
RT90

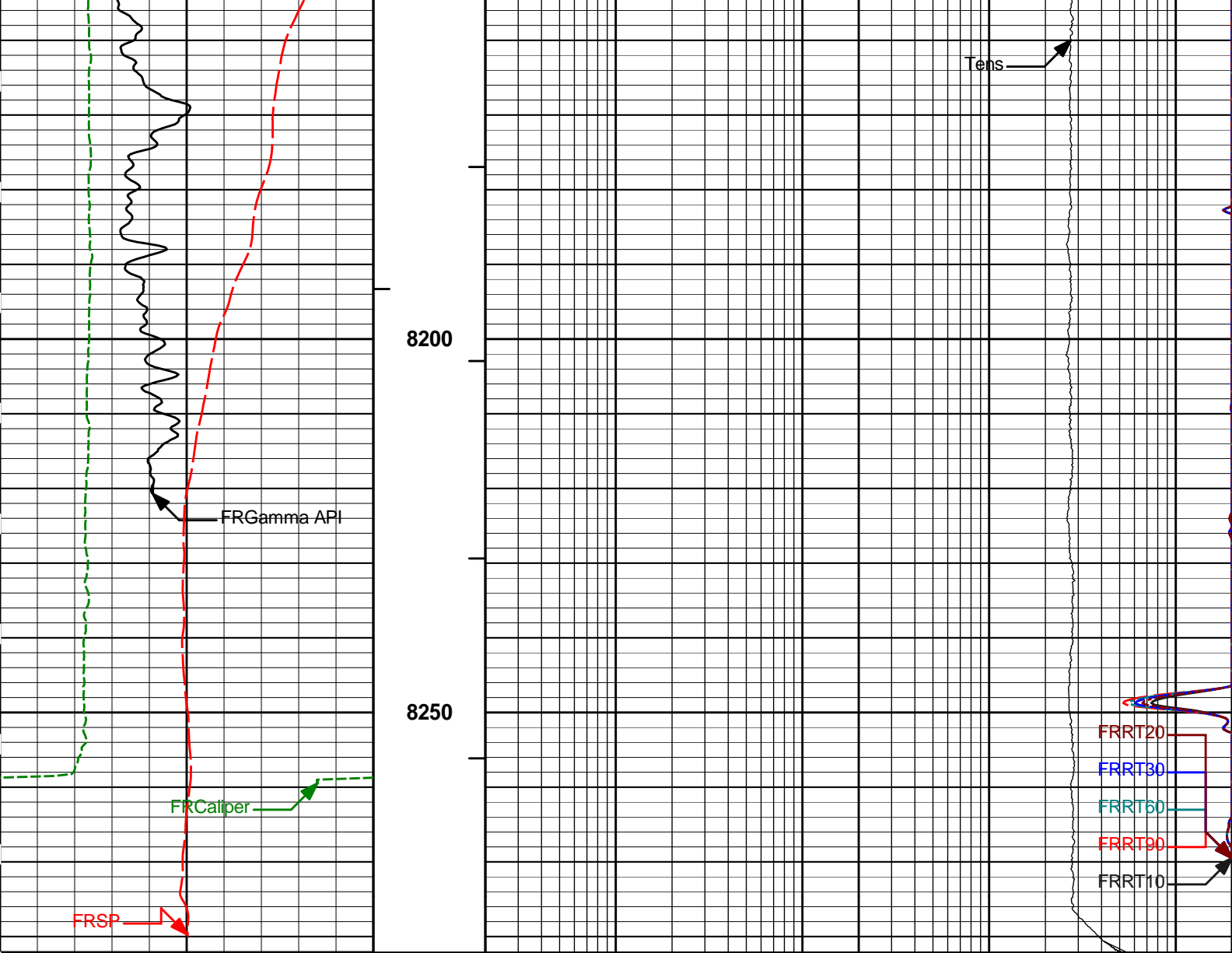
RT60

RT30

Tens







<div>0</div> <div>SP</div> <div>100</div> <div>millivolts</div>	<div>1 : 240</div>		<div>10K</div> <div>Tens</div> <div>0</div> <div>pounds</div>
<div>0</div> <div>Gamma API</div> <div>250</div> <div>api</div>	<div>BHVT</div>	<div>0.2</div> <div>RT90</div> <div>2K</div> <div>ohmm</div>	
<div>6</div> <div>Caliper</div> <div>16</div> <div>inches</div>	<div>AHVT</div>	<div>0.2</div> <div>RT60</div> <div>2K</div> <div>ohmm</div>	
		<div>0.2</div> <div>RT30</div> <div>2K</div> <div>ohmm</div>	
		<div>0.2</div> <div>RT20</div> <div>2K</div> <div>ohmm</div>	
		<div>0.2</div> <div>RT10</div> <div>2K</div> <div>ohmm</div>	

HALLIBURTON

Plot Time: 20-Jan-13 21:02:14
 Plot Range: 6370 ft to 8282.17 ft
 Data: SORS_1PWell Based\MAIN_PASS1\
 Plot File: \\ACRT\IQ_ACRt_5IN_RM

MAIN PASS 5" = 100'

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11812883

Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Reference Calibration Date: 18-Dec-12 10:42:41

Calibration Date: 18-Jan-13 10:21:33

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	68.4	67.4	api
Background + Calibrator	319.3	314.7	api
Calibrator	250.9	247.3	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11812883

Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Reference Calibration Date: 18-Jan-13 10:21:33

Calibration Date: 18-Jan-13 10:29:44

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	67.4	66.7	api
Background + Calibrator	314.7	310.4	api
Calibrator	247.3	243.7	api

Shop	Field	Difference	Tolerance
247.3	243.7	3.6	+/- 9.00

CSNG-FS SHOP CALIBRATION

Tool Name: CSNG - 10846351

Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Source SN: TB-290

Reference Calibration Date: 17-Dec-12 14:29:22

Calibration Date: 18-Jan-13 11:03:24

Calibration Version: 1

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.8	23.8	Channel #
583 KEV Peak Channel #	53.5	53.5	Channel #
2614 KEV Peak Channel #	221.2	221.1	Channel #
Calibrate Temperature	56.1	45.6	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	1797.9	CPS	320.7	316.7	API
Background	315.0	CPS	59.5	55.5	API

Gamma Ray Gain: 0.89
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

CSNG-FS FIELD CALIBRATION

Tool Name:	CSNG - 10846351	Reference Calibration Date:	18-Jan-13 11:03:24
Engineer:	J. PINKETT	Calibration Date:	18-Jan-13 12:14:11
Software Version:	WL INSITE R3.8.0 (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 #	23.8	23.9	Channel #
583 KEV Peak Channel #	53.5	53.9	Channel #
2614 KEV Peak Channel #	221.1	222.2	Channel #
Calibrate Temperature	45.6	57.9	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	1776.7	CPS	316.7	317.1	API
Background	313.1	CPS	55.5	55.9	API

Gamma Ray Gain: 0.90
Expected Gain Range: 0.85 - 1.15
Gamma Gain Check: Passed

GEMT SHOP CALIBRATION

Tool Name:	GEMT - 90268460	Reference Calibration Date:	31-Jul-12 02:55:27
Engineer:	B. PEDERSEN	Calibration Date:	28-Aug-12 16:15:59
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Source SN:	---		

GEM Verification Summary

Location	Measured	Units
Hydrogen Peak Location	58.598	Channel #
Carbon Peak Location	118.950	Channel #
Oxygen Peak Location	163.173	Channel #

Iron Peak Location

204.918

Channel #

Centroids	Expected	Measured	Pass/Fail
Hydrogen Peak Location	56 - 65	58.598	Passed
Carbon Peak Location	116 - 125	118.950	Passed
Oxygen Peak Location	160 - 171	163.173	Passed
Iron Peak Location	202 - 211	204.918	Passed

Energy Resolution	Expected	Measured	Pass/Fail
Hydrogen Peak	0.0 - 8.55	7.060	Passed
Carbon Peak	4.0 - 5.8	4.256	Passed
Oxygen Peak	4.0 - 5.9	4.502	Passed
Iron Peak	2.8 - 5.4	3.928	Passed

Spectrum Energy Calibration

	Measured	Units	Pass/Fail
Gain Factor	0.9968		Passed
Offset	-2.181	Channel #	Passed
Linearity	99.6209	%	Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11812167	Reference Calibration Date:	18-Dec-12 11:37:16
Engineer:	J. PINKETT	Calibration Date:	18-Jan-13 10:41:49
Software Version:	WL INSITE R3.8.0 (Build 2)	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: 45 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.000	1.003	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):	0.2215	0.2223	0.0009	+/- 0.0020
Calibrated Ratio:	10.08	10.11	0.029	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0765	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:	18-Jan-13 10:41:49
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Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Calibration Date: 18-Jan-13 10:43:11

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):	0.0765	0.0761	-0.0004	+/- 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

Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Host Tool Name: DSNT - 11812167

Reference Calibration Date: 18-Jan-13 11:45:13

Calibration Date: 18-Jan-13 11:52:21

Calibration Version: 1

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4097.27	-3484.97	-7000.00 - -1000.00
Pad Gain	0.0004149	0.0003838	0.000200 - 0.000600
Arm Offset	-4358.75	-4517.64	-5000.00 - 3000.00
Arm Gain	0.0006161	0.0005692	0.000300 - 0.000700
Arm Power	-0.000008136	-0.000005493	-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)	1.91	2.00	0.09	+/- 0.20
Medium Ring (in)	3.80	3.75	-0.05	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.49	6.50	0.01	+/- 0.20
Medium Ring (in)	8.32	8.25	-0.07	+/- 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
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SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11795867

Engineer: J. PINKETT

Software Version: WL INSITE R3.8.0 (Build 2)

Reference Calibration Date: 18-Dec-12 12:13:29

Calibration Date: 18-Jan-13 11:22:54

Calibration Version: 1

Logging Source S/N: 5471GW

Aluminum Block S/N: 63066

Density: 2.602g/cc

Pe: 3.100

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0620	1.0586	0.90 - 1.10
Near Dens Gain	1.0305	1.0267	0.90 - 1.10
Near Peak Gain	1.0180	1.0316	0.90 - 1.10
Near Lith Gain	0.9795	0.9892	0.90 - 1.10
Far Bar Gain	1.0107	1.0064	0.90 - 1.10
Far Dens Gain	0.9979	0.9997	0.90 - 1.10
Far Peak Gain	0.9947	0.9957	0.90 - 1.10
Far Lith Gain	0.9805	0.9894	0.90 - 1.10
Near Bar Offset	-0.6417	-0.5982	NONE
Near Dens Offset	-0.3278	-0.2795	NONE
Near Peak Offset	-0.2016	-0.3002	NONE
Near Lith Offset	0.1179	0.0613	NONE
Far Bar Offset	-0.1866	-0.1445	NONE
Far Dens Offset	-0.0588	-0.0687	NONE
Far Peak Offset	-0.0397	-0.0348	NONE
Far Lith Offset	0.0875	0.0369	NONE
Near Bar Background	843.26	839.48	700 - 1450
Near Dens Background	279.28	278.87	230 - 480
Near Peak Background	121.77	122.22	100 - 210
Near Lith Background	148.82	147.43	125 - 260
Far Bar Background	658.87	656.72	450 - 900
Far Dens Background	258.52	257.67	175 - 345
Far Peak Background	101.95	101.18	70 - 140
Far Lith Background	104.91	105.28	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.682	1.690	0.008	+/- 0.015
Pe	2.705	2.592	-0.113	+/- 0.150
ALUMINUM				
Density (g/cc)	2.592	2.602	0.010	+/- 0.01500
Pe	3.130	3.050	-0.080	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0017	+/- 0.0110	-0.0006	+/- 0.0140
Magnesium Block	-0.0008	+/- 0.0110	-0.0004	+/- 0.0140
Aluminum Block	-0.0011	+/- 0.0110	-0.0000	+/- 0.0140
Resolution	8.82	6.00 - 11.50	9.07	6.00 - 11.50
Internal Verifier(B+D+P+L)	1388	1200 - 2700	1121	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:	18-Jan-13 11:22:54
Engineer:	J. PINKETT	Calibration Date:	18-Jan-13 12:23:02
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

Pad Temperature: 54.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1387.990	1392.403	4.413	15.050
Far (B+D+P+L) cps	1120.850	1123.188	2.338	17.626
Near Resolution	8.82	8.74	-0.080	0.50
Far Resolution	9.07	8.96	-0.110	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:	18-Jan-13 11:52:21
Engineer:	J. PINKETT	Calibration Date:	18-Jan-13 11:56:36
Software Version:	WL INSITE R3.8.0 (Build 2)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.74	-0.01	+/- 0.10
Ring Diameter	8.25	8.25	0.00	+/- 0.15

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

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION			
Tool Name:	ACRt Sonde - 11294353	Reference Calibration Date:	23-Oct-12 16:37:36
Engineer:	J SCHMIDT	Calibration Date:	29-Nov-12 15:10:41
Software Version:	WL INSITE R3.4.4 (Build 2)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 11302817		

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	1.06	1.05	0.95	1.06	1.05	0.95	1.06	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	1.03	1.05	0.95	1.03	1.05	0.95	1.03	1.05

A4 (17")	0.95	1.05	1.05	0.95	1.05	1.05	0.95	1.05	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.01	1.05	0.95	1.01	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	-0.56	2	-6	-4.45	-2	-8	-5.07	-2
A2 (50")	-7	-1.23	0	-7	-2.91	0	-7	-4.99	0
A3 (29")	-27	-12.69	-9	-9	-3.43	-3	-7	-3.70	-1
A4 (17")	-180	-91.43	-60	-45	-29.14	-15	-39	-25.11	-13
A5 (10")	N/A	N/A	N/A	-150	-99.10	-50	-80	-47.75	-10
A6 (6")	N/A	N/A	N/A	175	346.17	525	90	174.99	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.89	1.3
36K	1.0	1.84	2.0
72K	1.0	1.14	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.00	1.05

PASS/FAIL SUMMARY

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

TOOL OUT OF TOLERANCE

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11812883						
Gamma Ray Calibrator	247.3	243.7	-----	3.6	+/- 9.00	api
CSNG-10846351						
60 KEV Peak Channel #	48.0	48.0	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.8	23.9	-----	-0.1	-----	Channel #
583 KEV Peak Channel #	53.5	53.9	-----	-0.4	-----	Channel #
2614 KEV Peak Channel #	221.1	222.2	-----	-1.1	-----	Channel #
DSNT-11812167						
Snow-Block Porosity	0.0765	0.0761	-----	0.0004	+/- 0.0150	decp
SDLT-11812177						
Pad Extension	3.75	3.74	-----	0.01	+/-0.10	in
Ring Diameter	8.25	8.25	-----	0.00	+/-0.15	in
SDLT Pad-11795867						
Near(B+D+P+L)	1387.990	1392.403	-----	-4.413	+/-15.050	cps
Far(B+D+P+L)	1120.850	1123.188	-----	-2.338	+/-17.626	cps
ACRt Sonde-11294353						
Mud Cell	1.00	-----	-----	0.00	-----	ohm-m

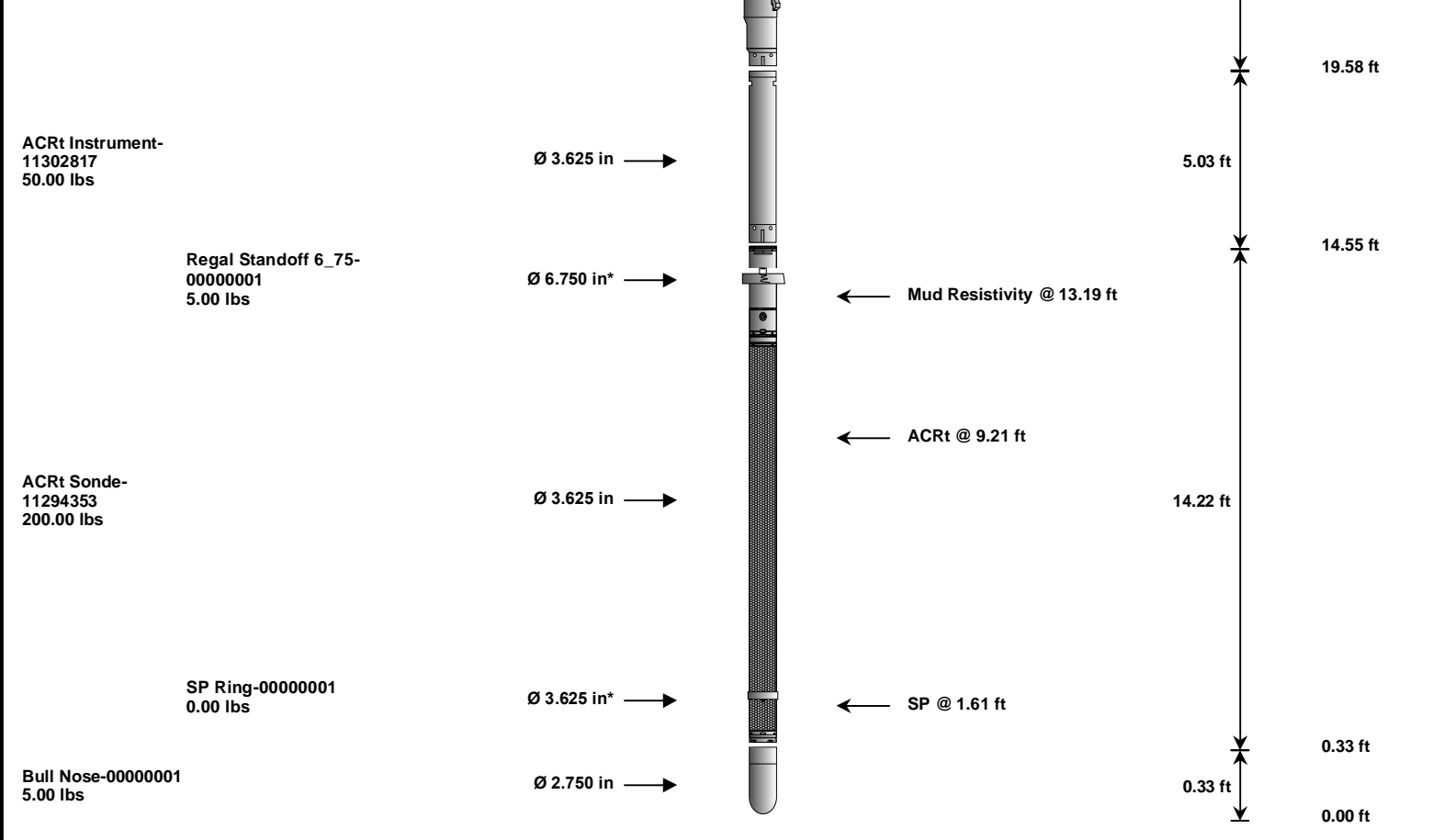
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HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-10409638 135.00 lbs		Ø 3.625 in →		Load Cell @ 68.98 ft BH Temperature @ 68.41 ft	6.25 ft	72.66 ft
GTET-11812883 165.00 lbs		Ø 3.625 in →		GammaRay @ 60.35 ft	8.52 ft	66.41 ft
CSNG-10846351 114.00 lbs		Ø 3.625 in →		CSNG @ 52.26 ft	8.17 ft	57.89 ft
	UnivWearRing3.6-00000001 5.00 lbs	Ø 4.200 in* → Ø 3.625 in →				49.72 ft
GEMT-90268460 300.00 lbs		Ø 5.000 in →		BGO Crystal @ 42.24 ft	9.64 ft	40.08 ft
DSNT-11812167 174.00 lbs	DSN Decentralizer-11812167 6.60 lbs	Ø 5.000 in* → 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		



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	10409638	135.00	6.25	66.41	300.00
GTET	Gamma Telemetry Tool	11812883	165.00	8.52	57.89	60.00
CSNG	Compensated Spectral Natural Gamma	10846351	114.00	8.17	49.72	15.00
UWR3P6	Universal Wear Ring 3 5-8 inch	00000001	5.00	0.35	* 50.22	300.00
GEMT	Gamma, Elements and Minerals Tool	90268460	300.00	9.64	40.08	15.00
DSNT	Dual Spaced Neutron	11812167	174.00	9.69	30.40	60.00
DCNT	DSN Decentralizer	11812167	6.60	5.13	* 33.73	300.00
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	11302817	50.00	5.03	14.55	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11294353	200.00	14.22	0.33	300.00
SP	SP Ring	00000001	0.00	0.25	* 1.61	300.00
RSOF	Regal Standoff 6.75in	00000001	5.00	0.52	* 13.40	300.00
BLNS	Bull Nose	00000001	5.00	0.33	0.00	300.00
Total			1,584.60	72.66		
* Not included in Total Length and Length Accumulation.						Date: 20-Jan-13 17:05:34
Data: SORS_1P\0001 TRIPLE_GEM_CSNG\IDLE						

COMPANY	CHAMA OIL & MINERALS LLC		
WELL	SORS 1P		
FIELD	WILDACT		
COUNTY	WASHINGTON	STATE	CO
HALLIBURTON		ARRAY COMPENSATED TRUE RESISTIVITY	

