

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
LOG

COMPANY		CAERUS OIL & GAS	
WELL		FRANK CERROW 23-42A	
FIELD/BLOCK		JELENIK	
COUNTY		ROOKS	
STATE		KANSAS	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		01-May-13	
Run No.		ONE	
Depth - Driller		3609.00 ft	
Depth - Logger		3610.0 ft	
Bottom - Logged Interval		3588.0 ft	
Top - Logged Interval		2800.0 ft	
Casing - Driller		8.625 in @ 308.0 ft	
Casing - Logger		308.0 ft	
Bit Size		7.875 in	
Type Fluid in Hole		WATER BASED MUD	
Density		9.0 ppg	
Viscosity		47.00 s/qt	
PH		9.50 pH	
Fluid Loss		8.0 cpm	
Source of Sample		FLOWLINE	
Rm @ Meas. Temperature		0.600 ohmm @ 75.00 degF	
Rmf @ Meas. Temperature		0.51 ohmm @ 75.00 degF	
Rmc @ Meas. Temperature		0.690 ohmm @ 75.00 degF	
Source Rmf		MEASURED	
Rmc		MEASURED	
Rm @ BHT		0.48 ohmm @ 95.0 degF	
Time Since Circulation		5.0 hr	
Time on Bottom		01-May-13 00:24	
Max. Rec. Temperature		95.0 degF @ 3610.0 ft	
Equipment		10546696 LIBERAL	
Recorded By		THOMAS HYDE	
Witnessed By		M. BAIR	

COMPANY	CAERUS OIL & GAS
WELL	FRANK CERROW 23-42A
FIELD/BLOCK	JELENIK
COUNTY	ROOKS
STATE	KANSAS
API No.	15-163-24109-00-00
Location	1650' FNL 990' FEL
Sect. 23	Twp. 9S
Rge. 19W	
Other Services:	MICRO ACRT

Fold here

Service Ticket No.: 900395162				API Serial No.: 15-163-24109-00-00				PGM Version: WL INSITE R3.8.4 (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.		Other	
Rmf @ Meas. Temp.		@		@											
Rmc @ Meas. Temp.		@		@											
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.		11048627		Serial No.				Serial No.		10950489		Serial No.		11019643	
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.		T-102		Spacing				Log Type		GAM-GAM		Log Type		NEU-NEU	
Type		SCINT						Source Type		Cs137		Source Type		Am241Be	
Length		8"		LSA [Y/N]				Serial No.		5168 GW		Serial No.		DSN 424	
Distance to Source		10'		FWDA [Y/N]				Strength		1.5 Ci		Strength		15 Ci	
LOGGING DATA															

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	3610	2800	REC	0	150				30	-10	2.71	30	-10	LIME		
DIRECTIONAL INFORMATION																
Maximum Deviation								@	KOP							@
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING																
CHLORIDES REPORTED AT 2000 MG/L																
LCM REPORTED AT 4 PPB																
TODAY'S CREW M. GRAHAM B. TERRELL																
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KANSAS 620-624-8123																
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																



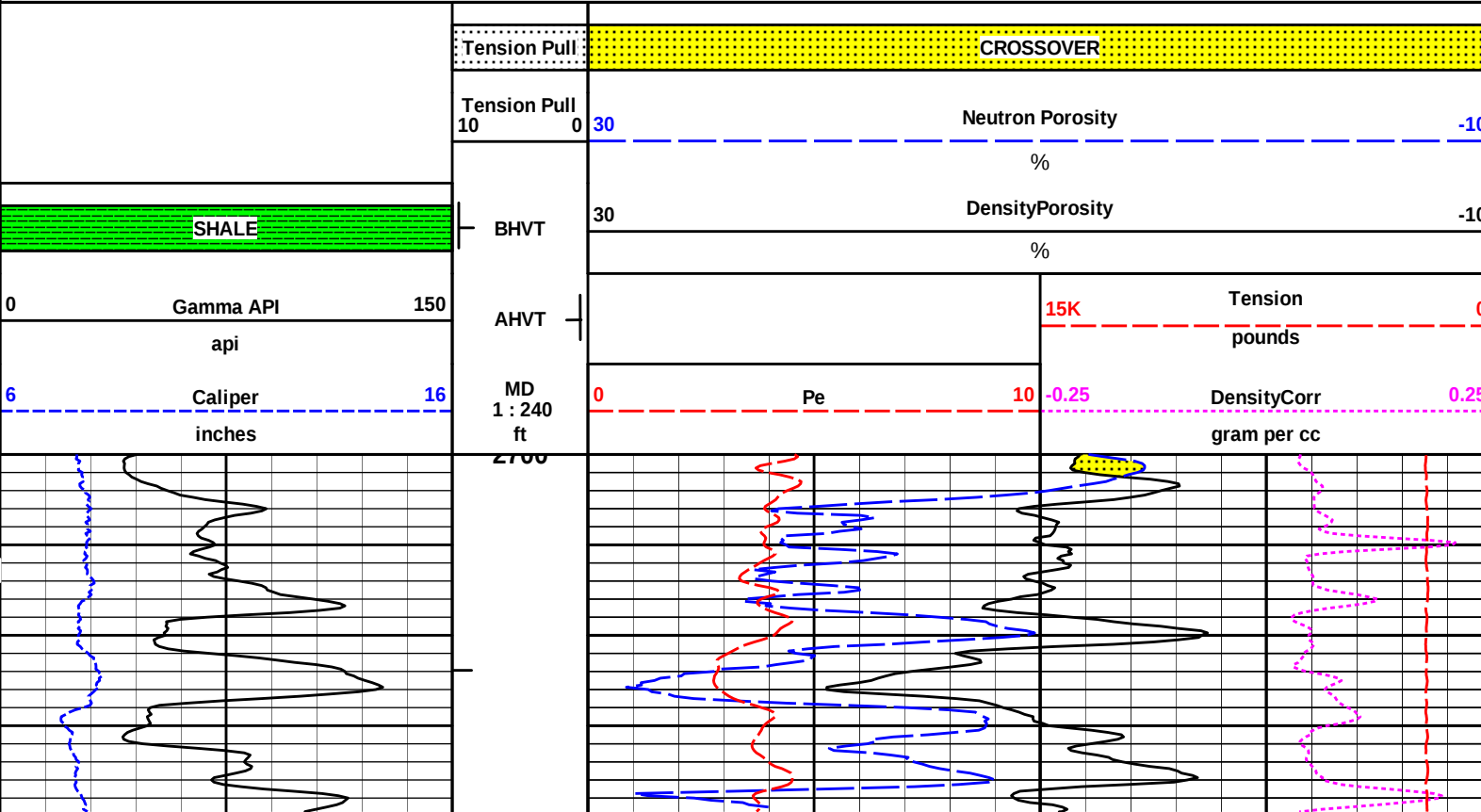
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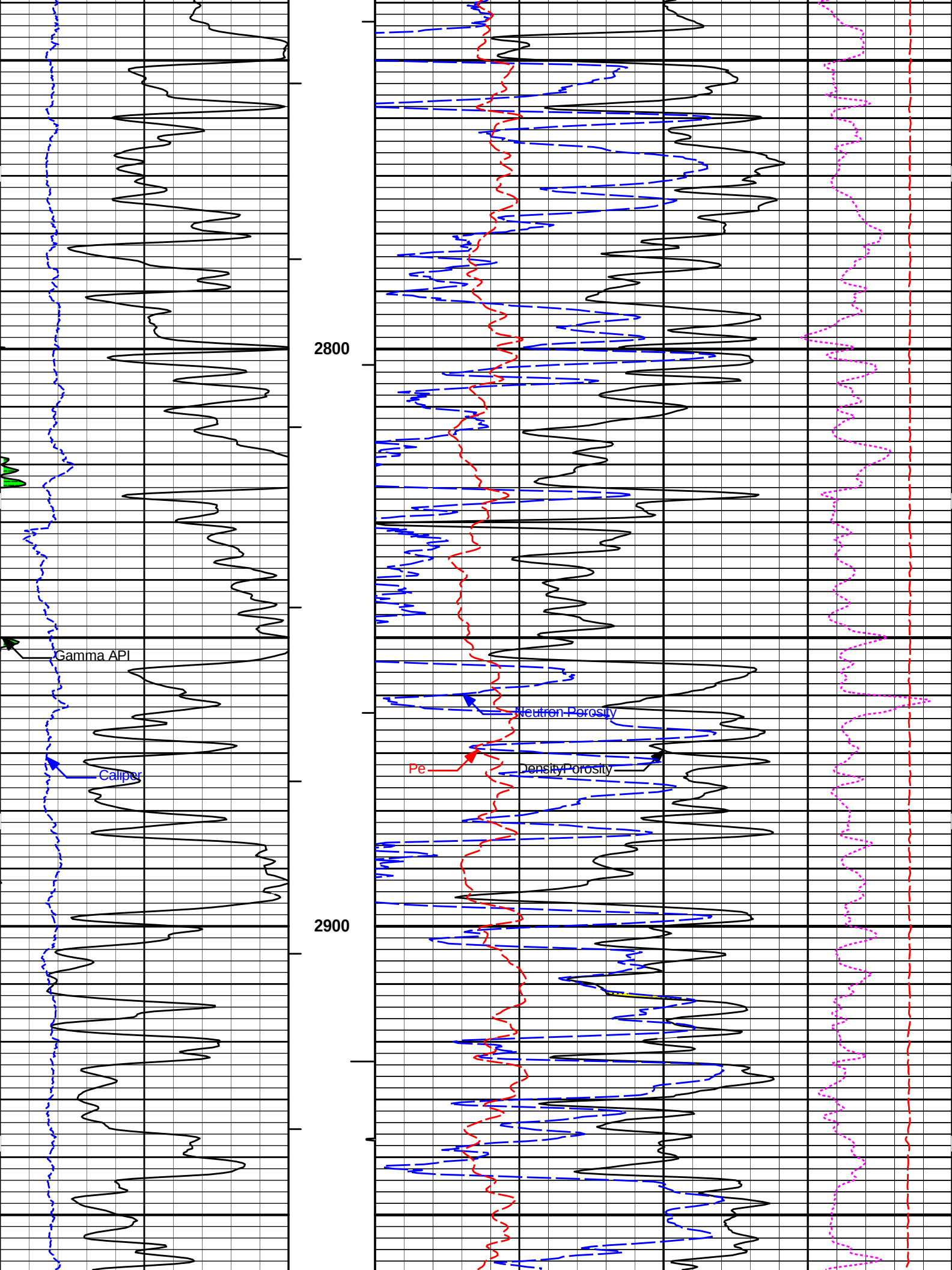
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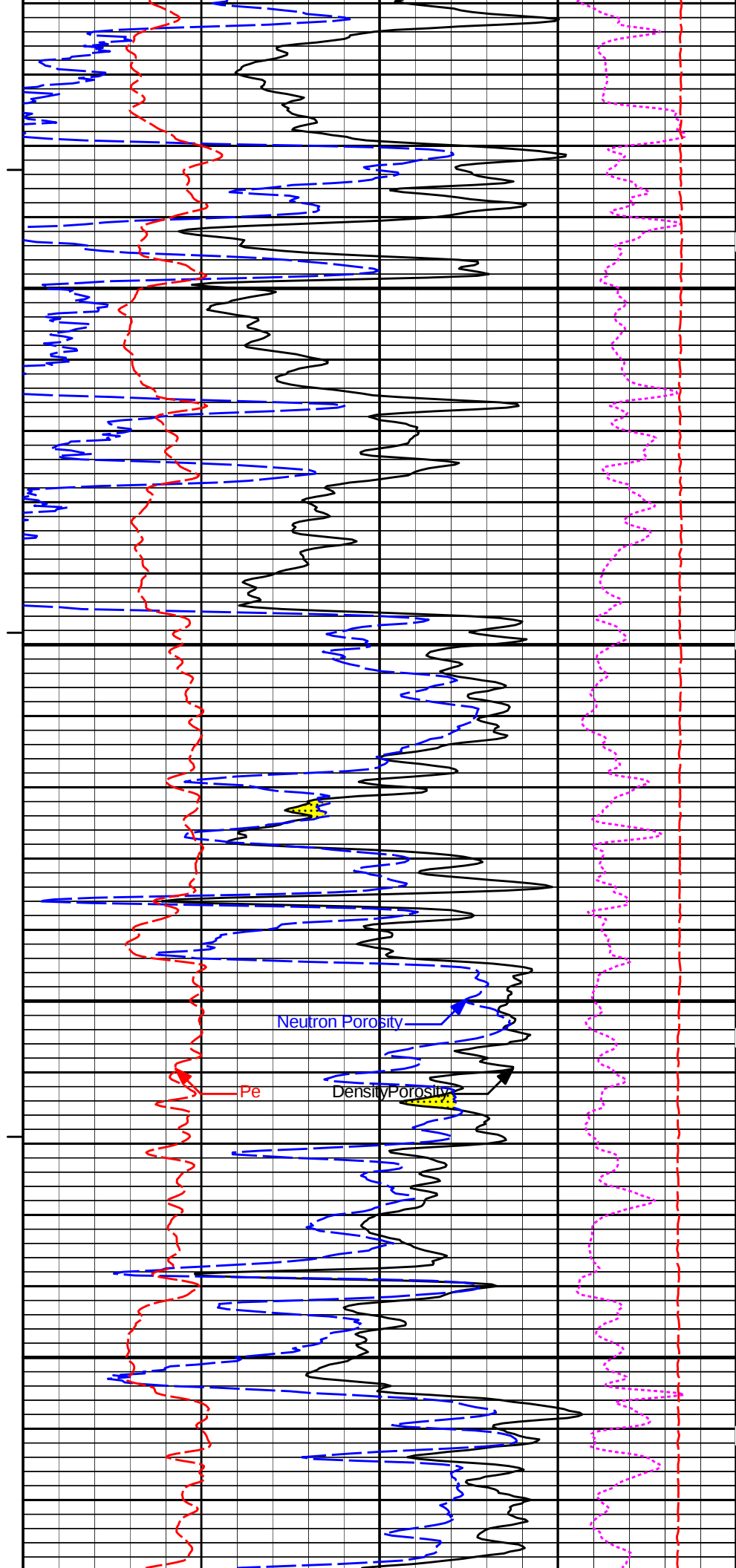
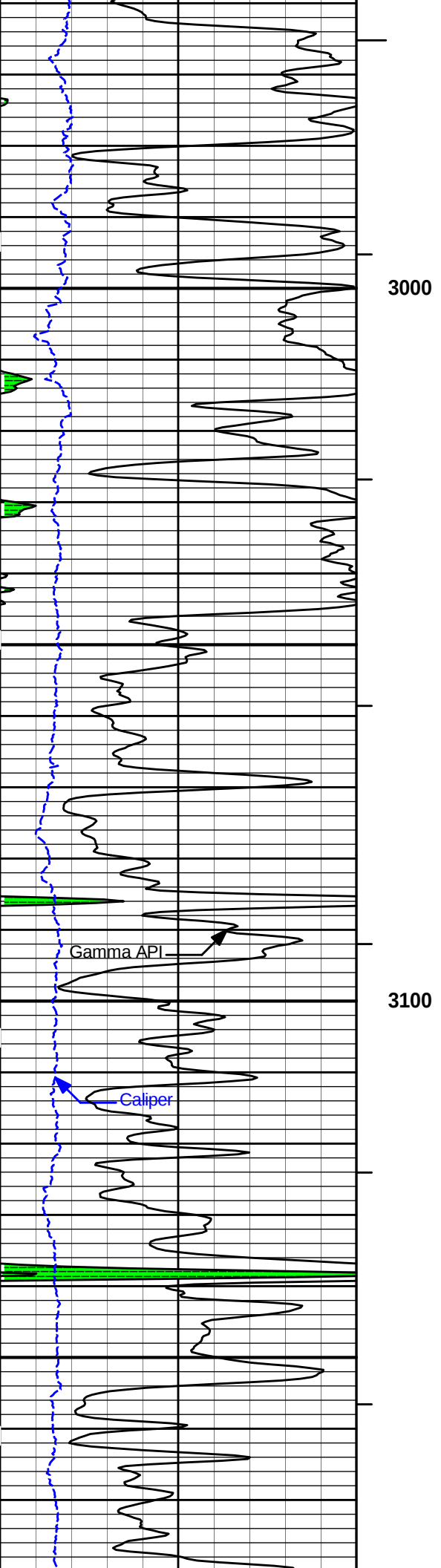
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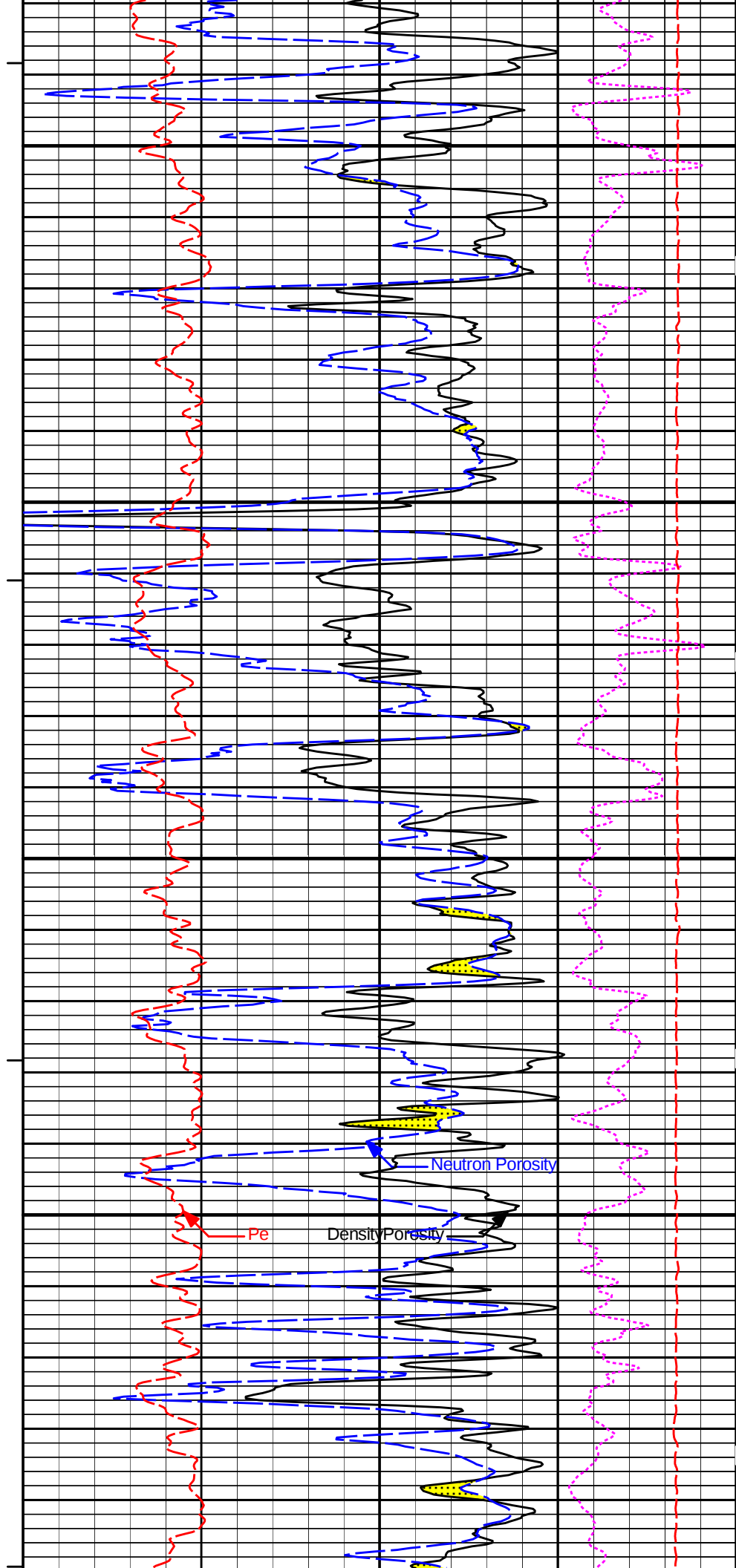
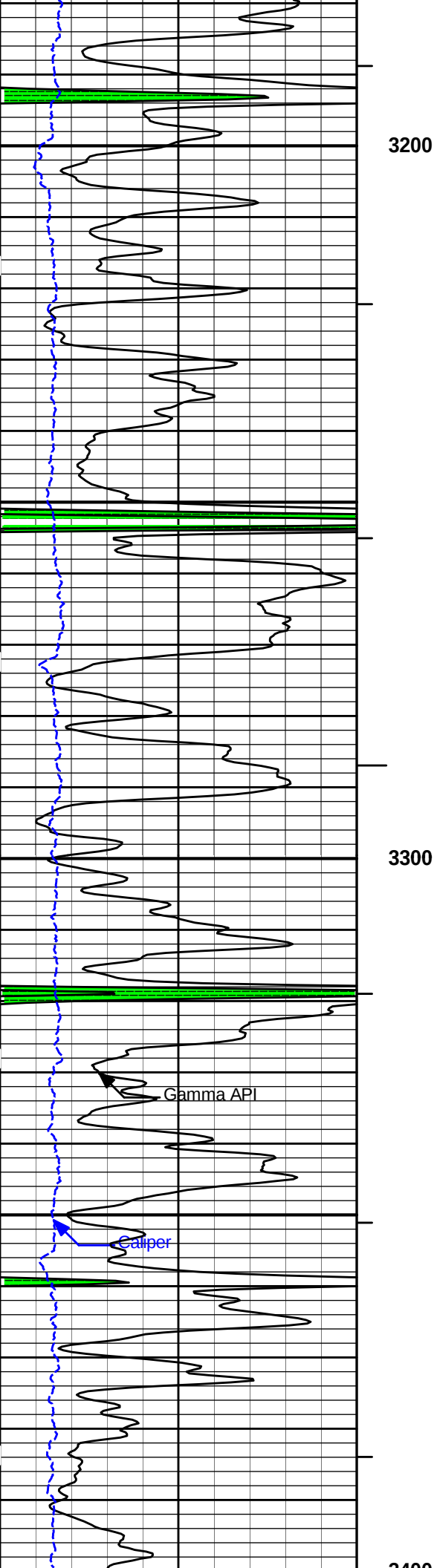
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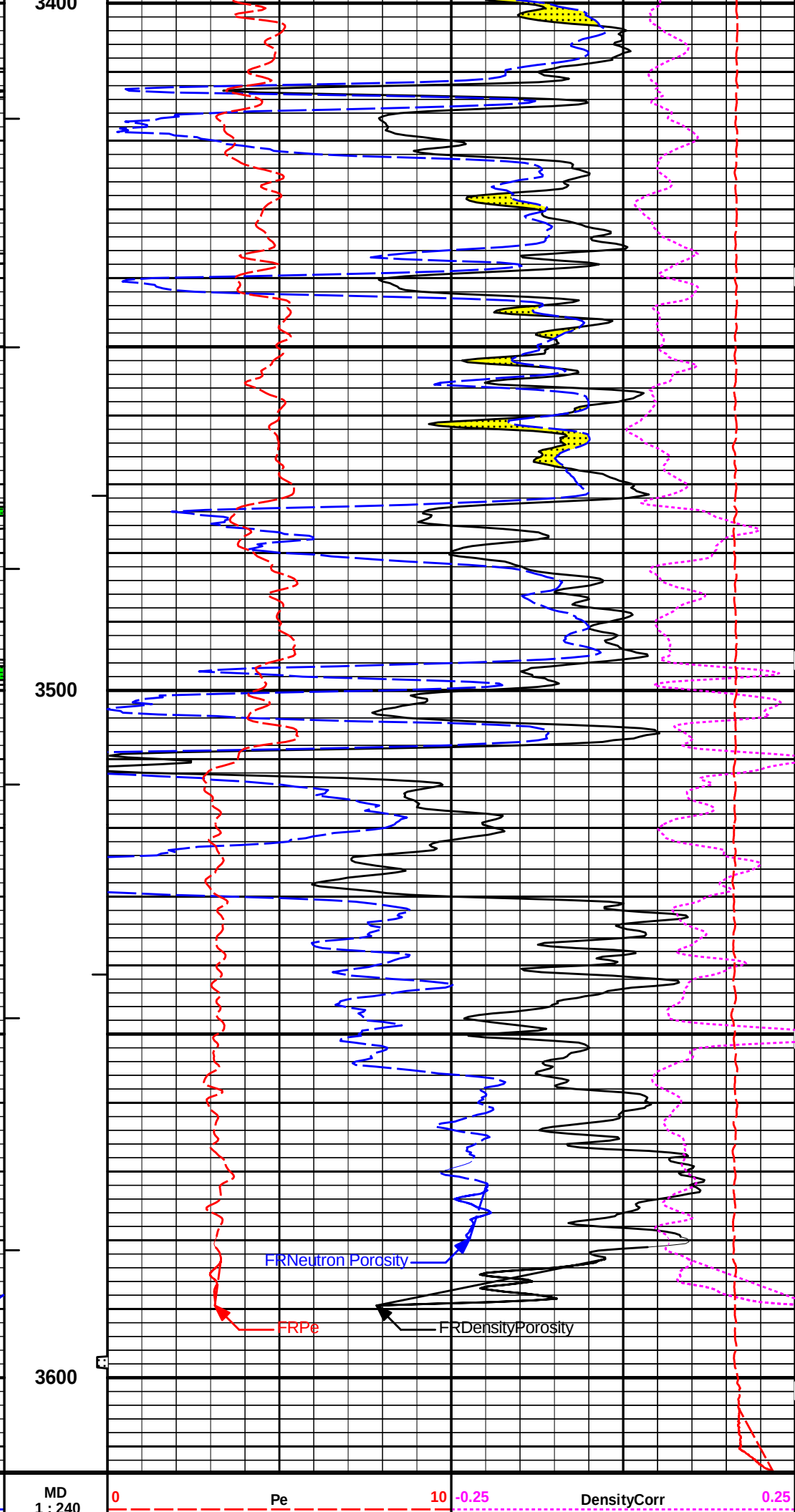
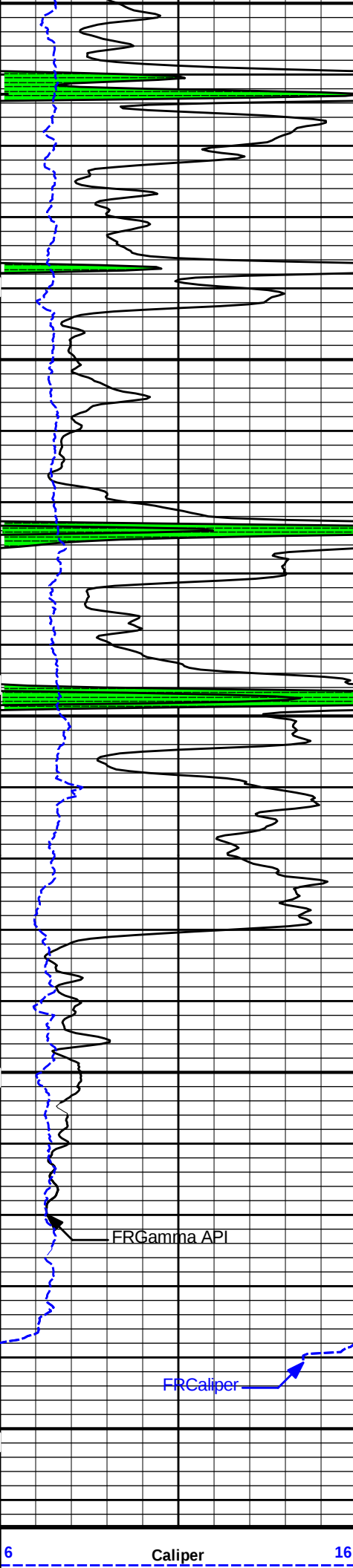
5 INCH MAIN LOG

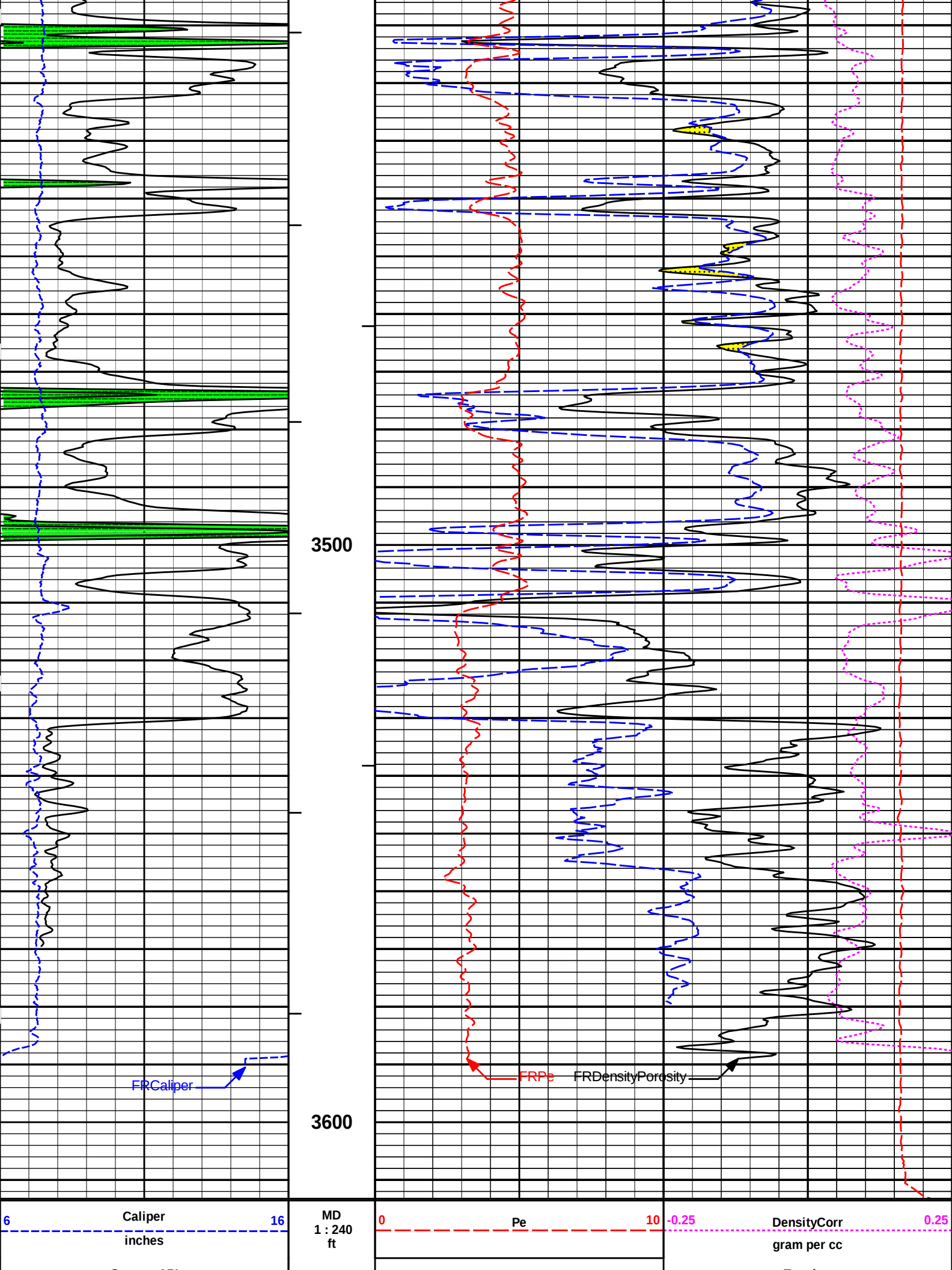












0	Gamma API	150	AHVT		15K	Tension	0
	api					pounds	
	SHALE		BHVT	30	DensityPorosity		-10
					%		
				30	Neutron Porosity		-10
					%		
					CROSSOVER		

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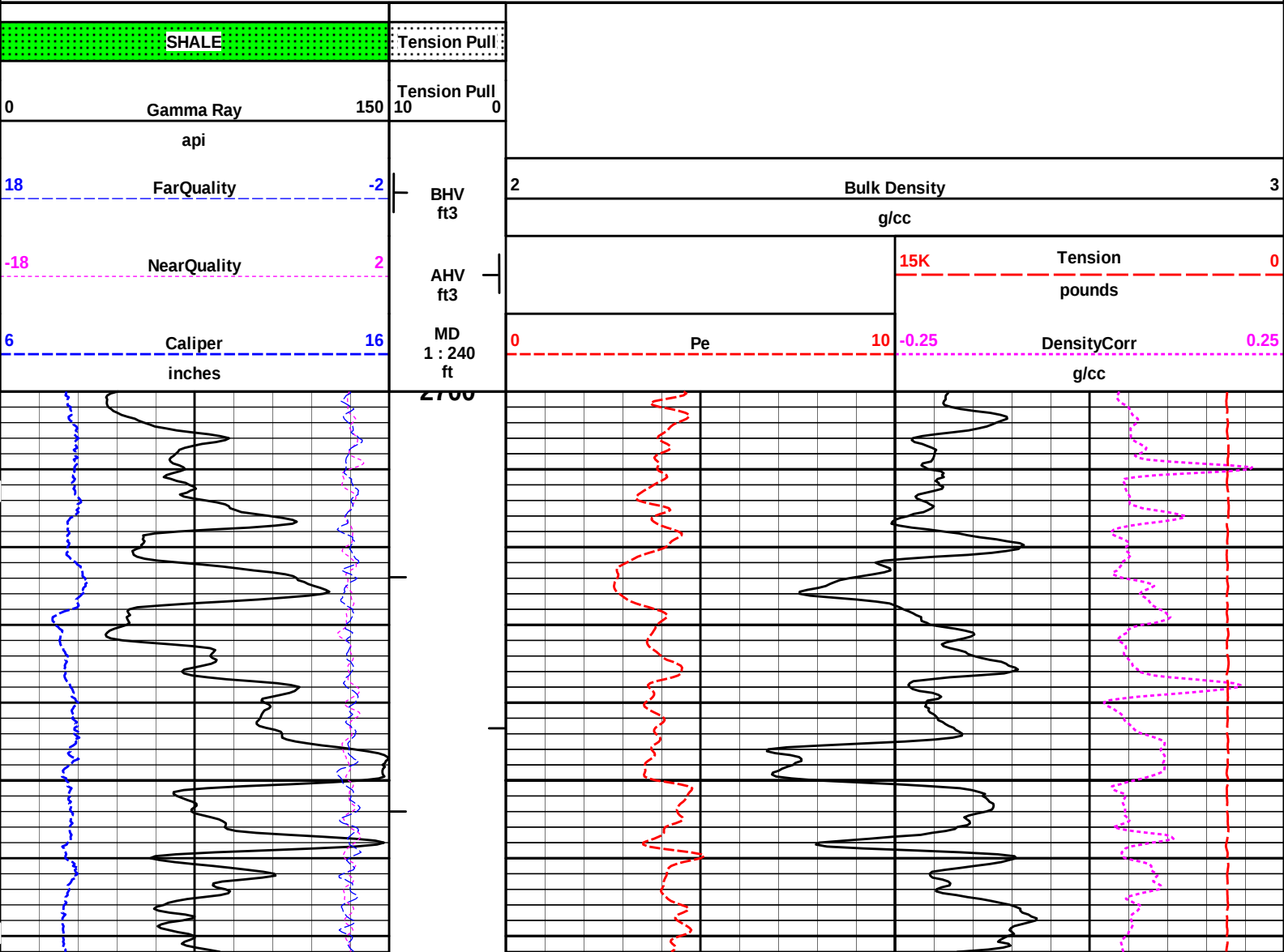
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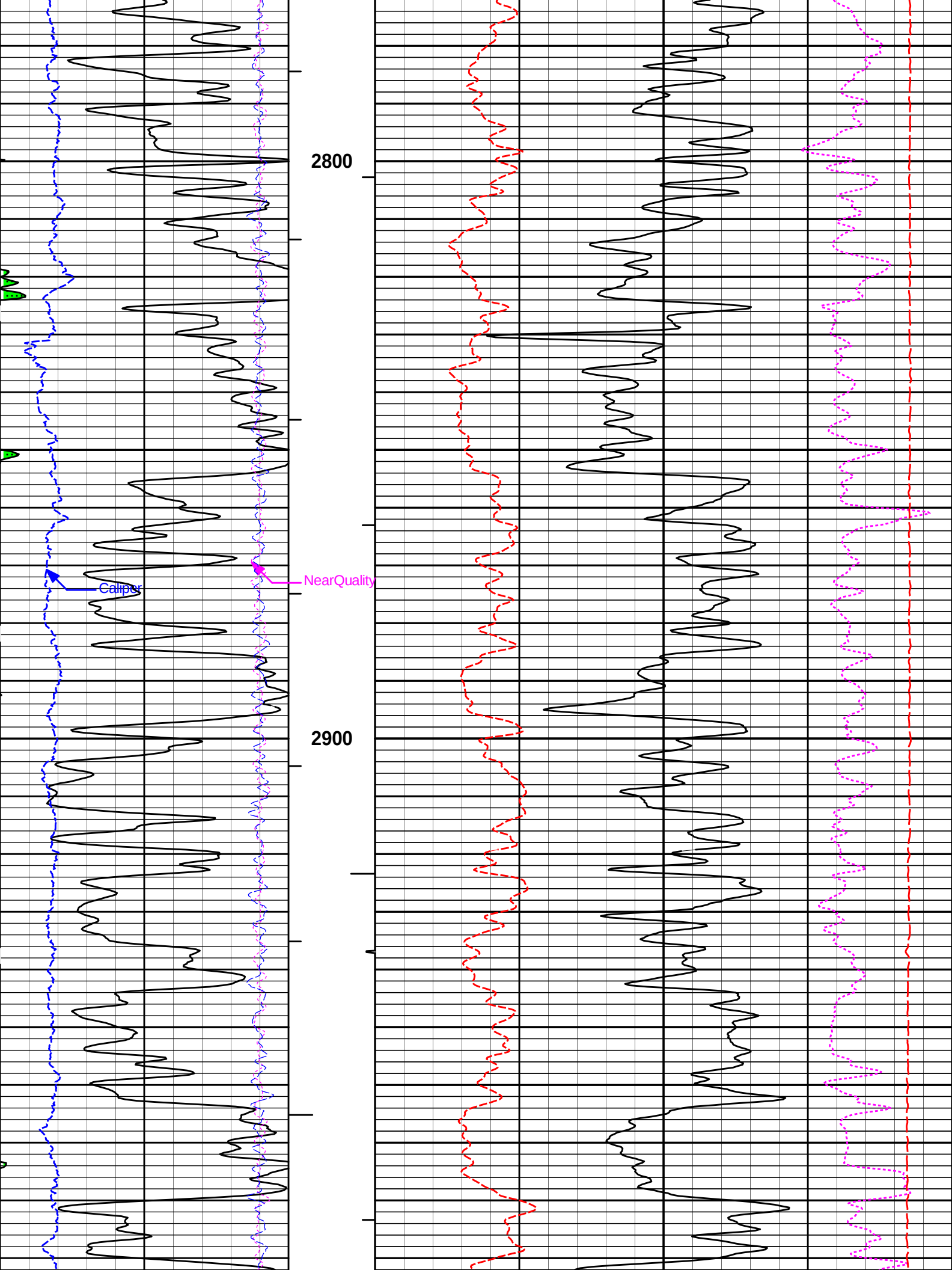
REPEAT SECTION

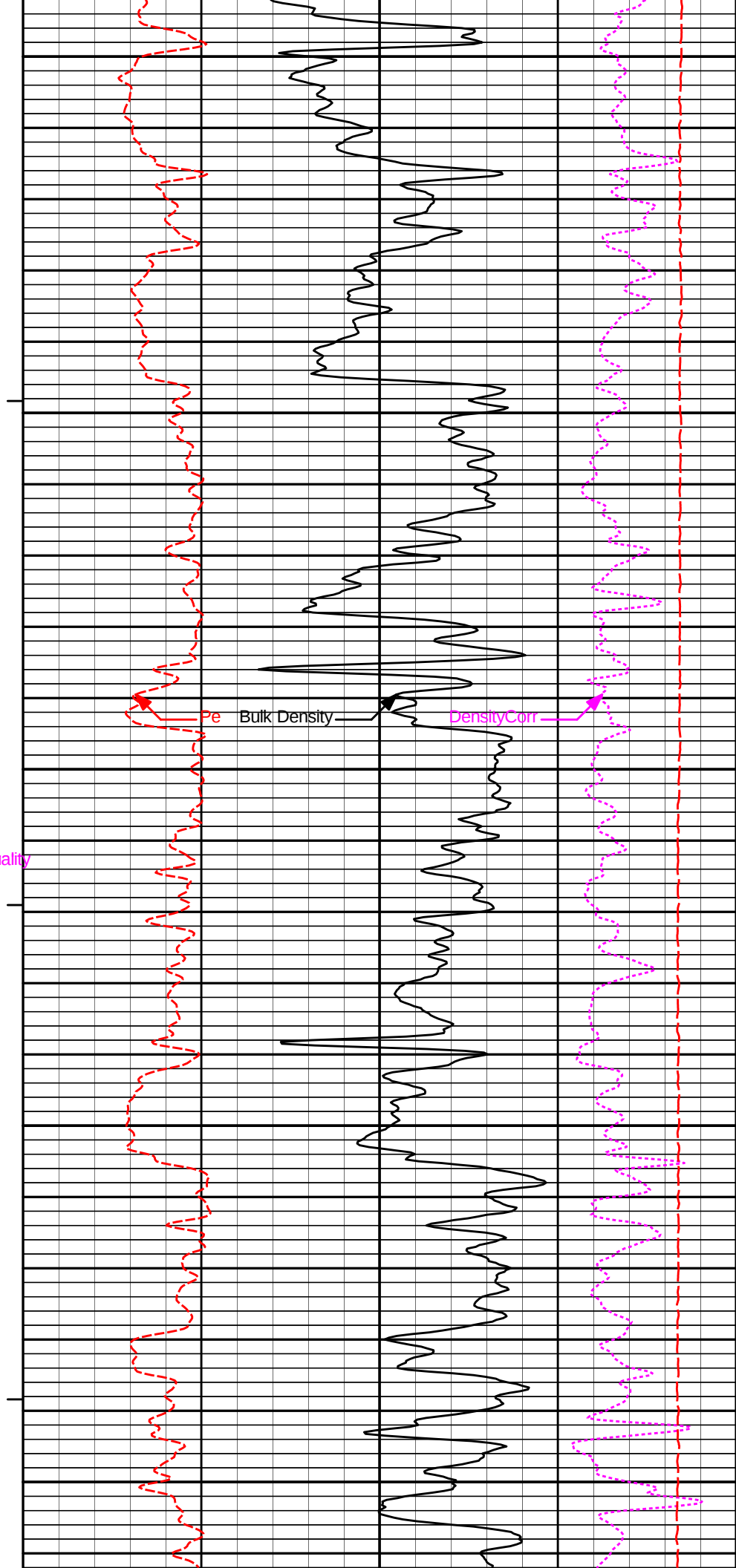
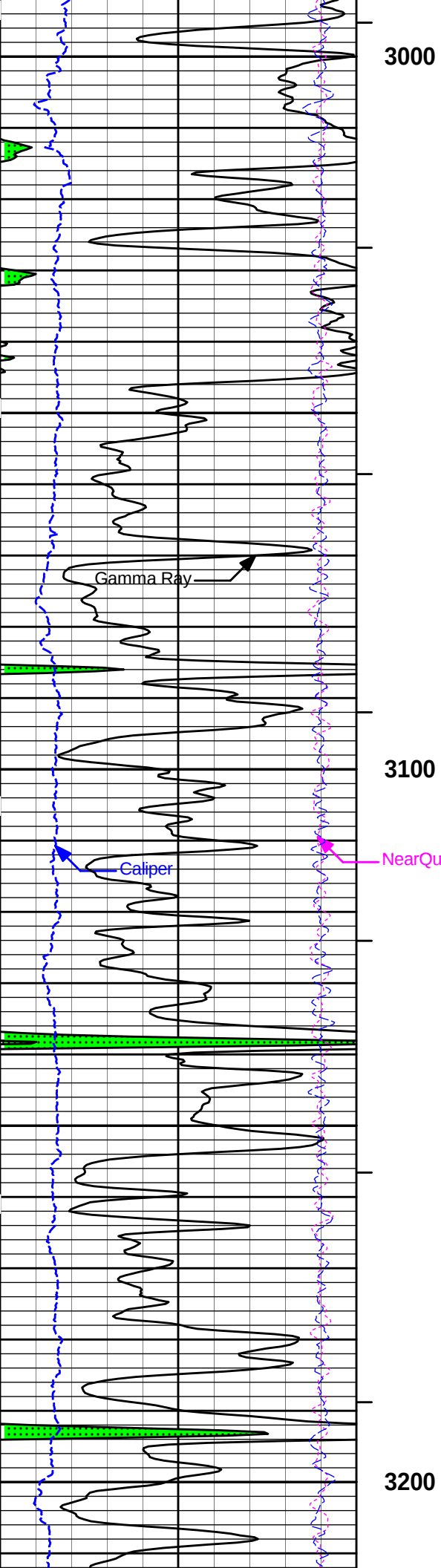
HALLIBURTON

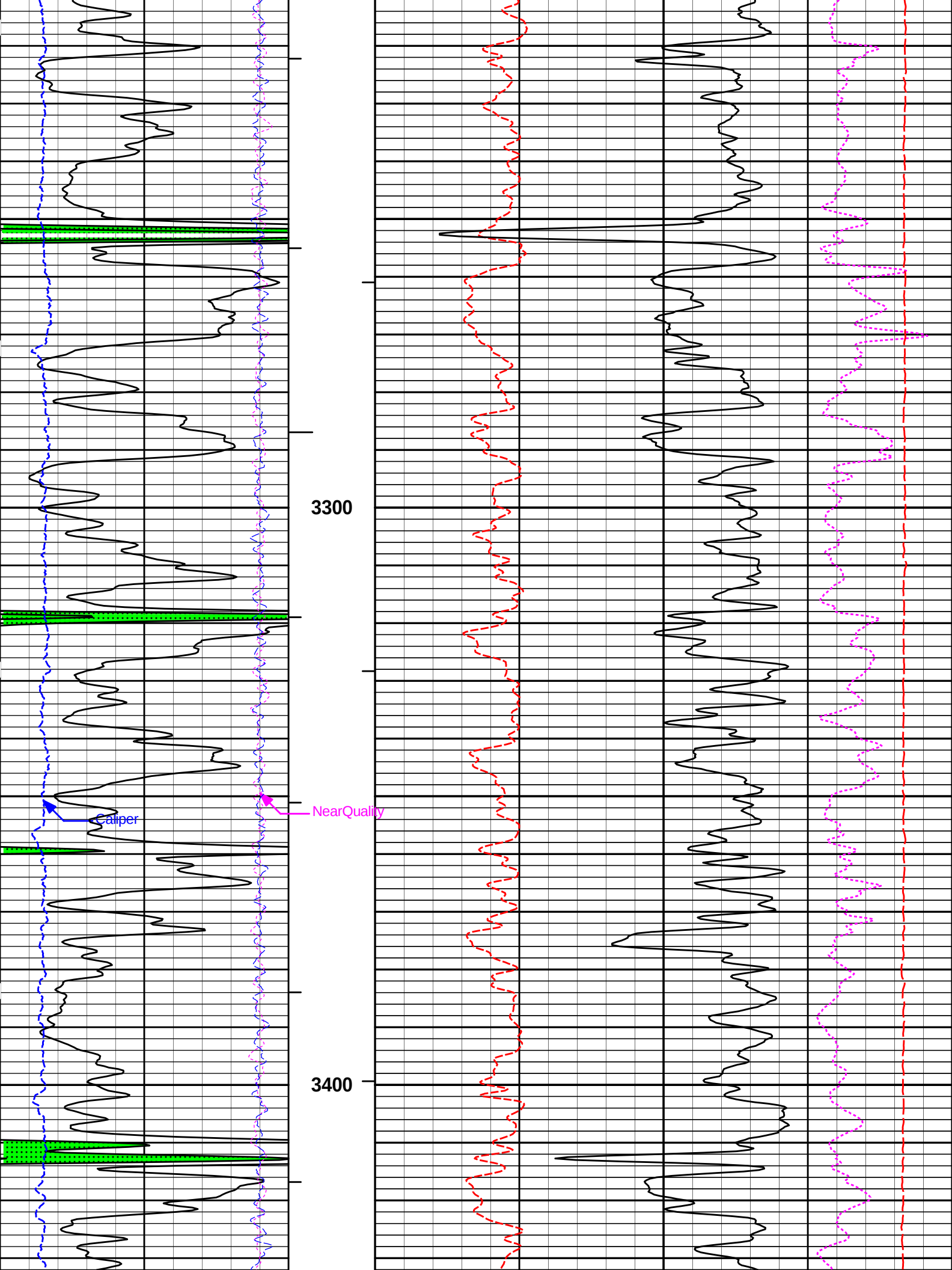
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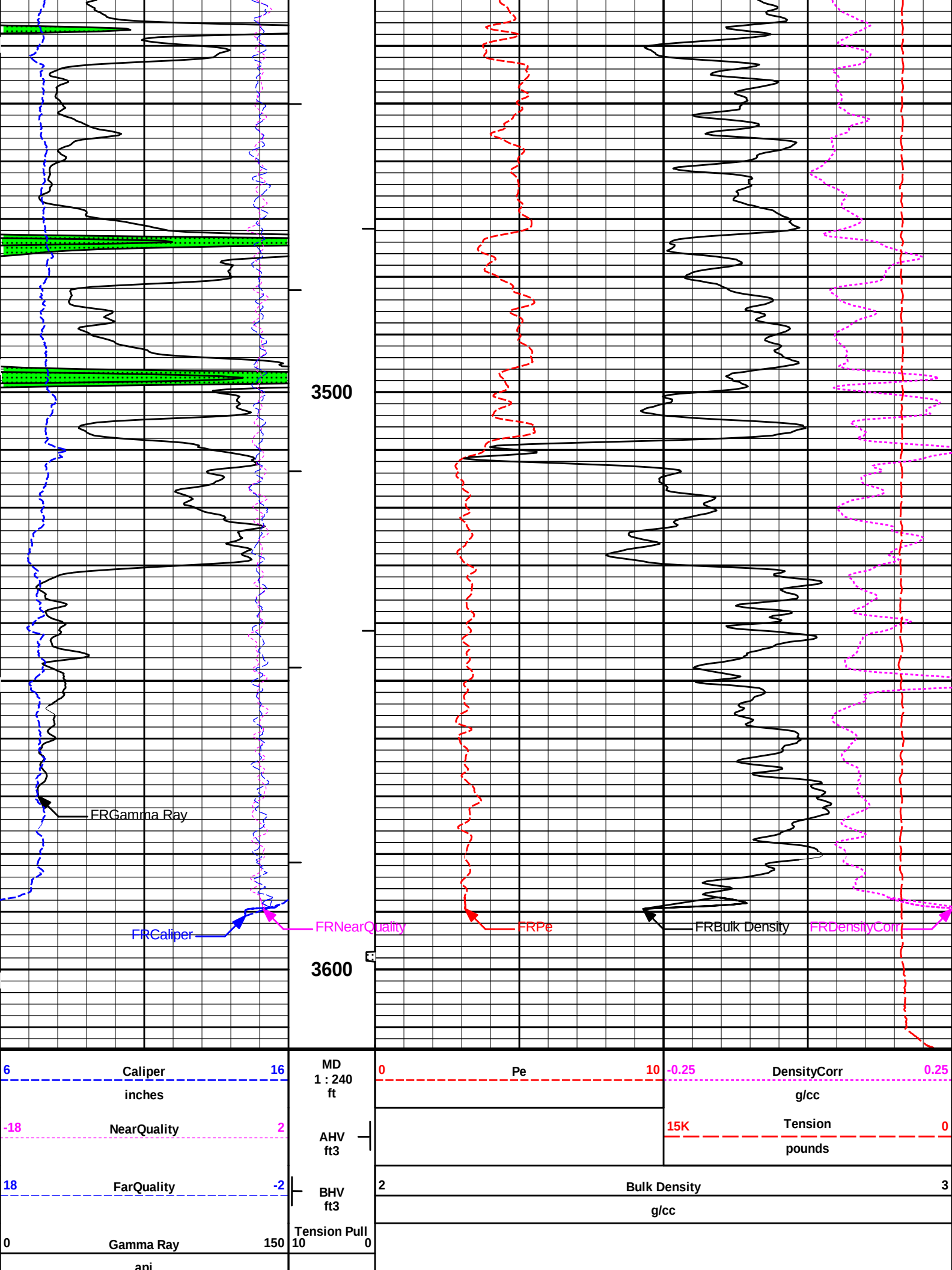
5 INCH MAIN LOG











api	
SHALE	Tension Pull

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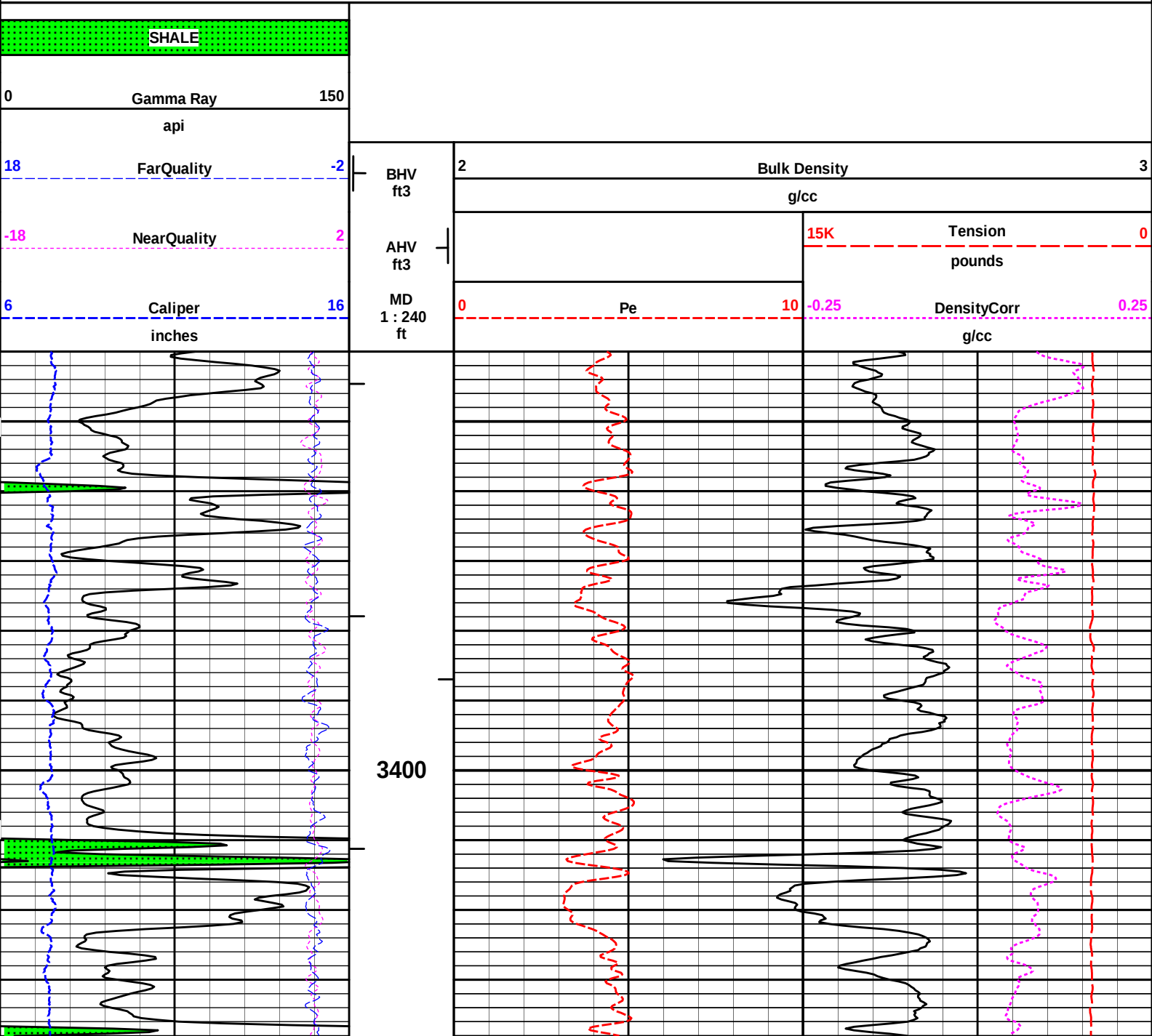
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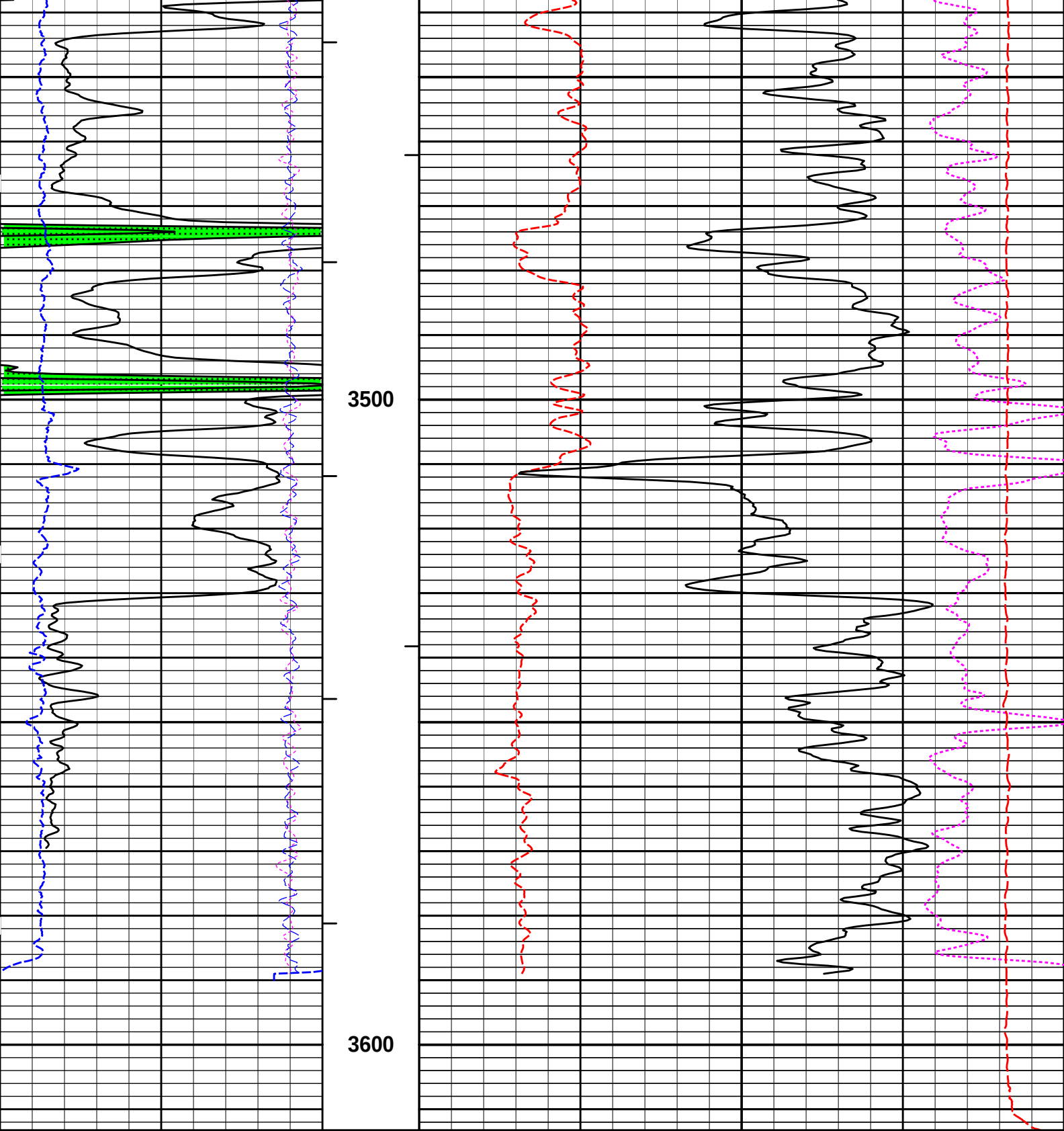
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 01-May-13 14:33:55
Plot Range: 3340 ft to 3613.25 ft
Data: FRANK_CER_23_42\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\\FRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\PORO\BULKD_5_REP_LIB

REPEAT SECTION





6 Caliper inches -18 NearQuality 2 18 FarQuality -2 0 Gamma Ray 150 api	MD 1 : 240 ft AHV ft3 BHV ft3	0 Pe 10		-0.25 DensityCorr g/cc 0.25			
				15K Tension pounds 0			
		2 Bulk Density g/cc 3					

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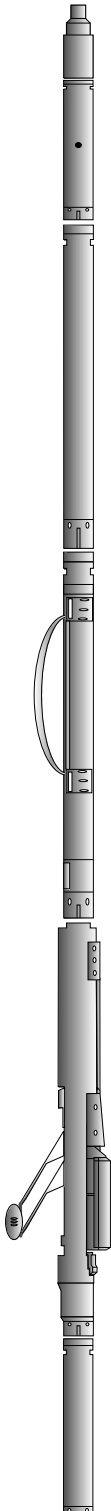
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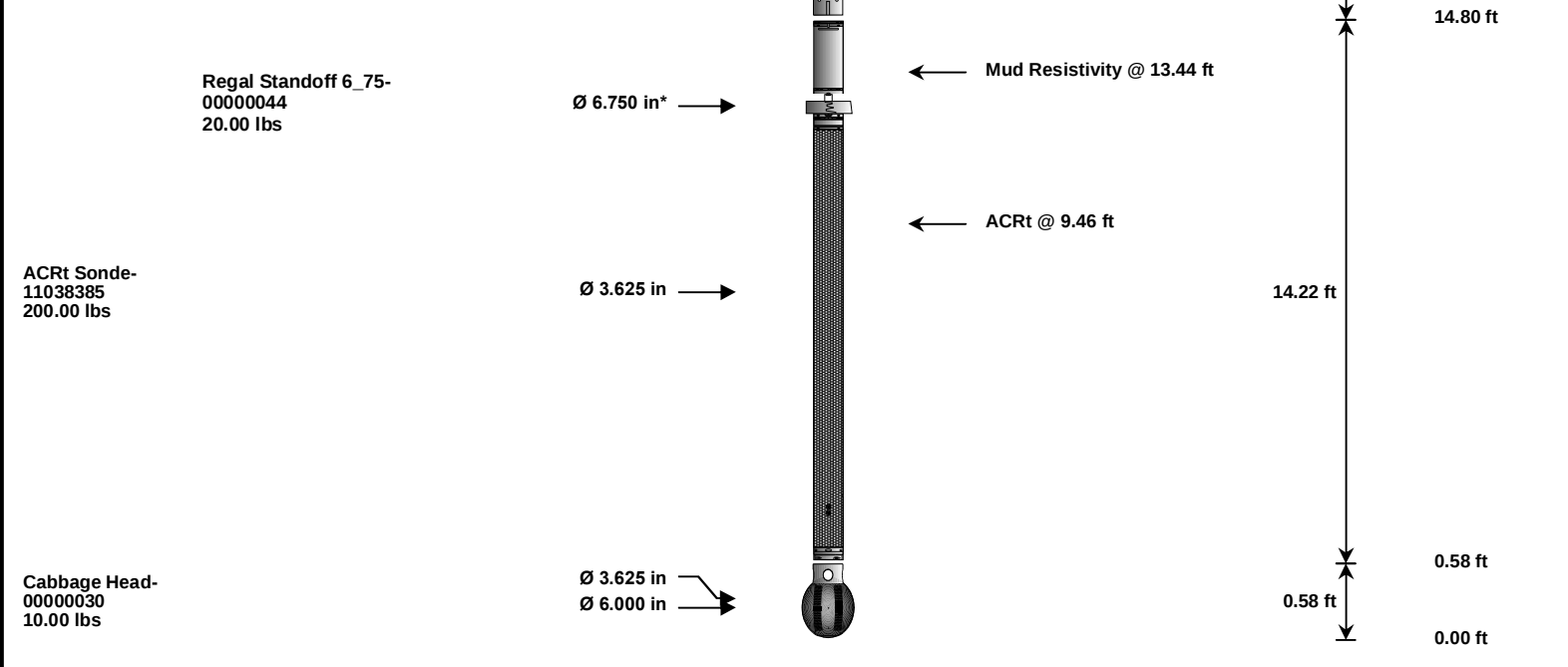
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Plot File: \\-LOCAL-\\FRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\PORO\BULKD_5_REP_LIB

REPEAT SECTION**HALLIBURTON****TOOL STRING DIAGRAM REPORT**

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
Cable Head- 00000021 30.00 lbs		Ø 3.625 in →			1.92 ft	54.51 ft
SP Sub-11441455 60.00 lbs		Ø 3.625 in →		← SP @ 50.81 ft	3.74 ft	52.59 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →			8.52 ft	48.85 ft
				← GammaRay @ 42.79 ft		40.33 ft
DSNT-11019643 174.00 lbs	DSN Decentralizer- 11005605 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →			9.69 ft	30.64 ft
				← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft		
SDLT-10950489 360.00 lbs	SDLT Pad-10844781 65.00 lbs Microlog Pad-10950489 8.00 lbs	Ø 4.500 in → Ø 4.750 in* → Ø 4.750 in* →		Microlog @ 22.83 ft SDL Caliper @ 22.65 ft SDL @ 22.64 ft	10.81 ft	19.83 ft
ACRT Instrument- I5059_S8385 50.00 lbs		Ø 3.625 in →			5.03 ft	



Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
CH	Standard OH Cable Head		00000021	30.00	1.92	52.59	300.00	
SP	SP Sub		11441455	60.00	3.74	48.85	300.00	
GTET	Gamma Telemetry Tool		11048627	165.00	8.52	40.33	60.00	
DSNT	Dual Spaced Neutron		11019643	174.00	9.69	30.64	60.00	
DCNT	DSN Decentralizer		11005605	6.60	5.13	*	33.97	300.00
SDLT	Spectral Density Tool		10950489	360.00	10.81		19.83	60.00
SDLP	Density Insite Pad		10844781	65.00	2.55	*	22.04	60.00
MICP	Microlog Pad		10950489	8.00	1.00	*	22.33	60.00
ACRt	Array Compensated True Resistivity Instrument Section		I5059_S8385	50.00	5.03		14.80	300.00
ACRt	Array Compensated True Resistivity Sonde Section		11038385	200.00	14.22		0.58	300.00
RSOF	Regal Standoff 6.75in		00000044	20.00	0.52	*	12.30	300.00
CBHD	Cabbage Head		00000030	10.00	0.58		0.00	300.00
Total				1,148.60	54.51			
* Not included in Total Length and Length Accumulation.								
Data: FRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\IDLE								
Date: 01-May-13 00:37:03								

HALLIBURTON			
CALIBRATION REPORT			
NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11048627	Reference Calibration Date:	26-Apr-13 09:25:40
Engineer:	THOMAS HYDE	Calibration Date:	26-Apr-13 09:28:26
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1
Calibrator Source S/N: TB146			
Calibrator API Reference:265.00 api			
Equivalent Calibrator API Reference:269.6 api			
Measurement	Measured	Calibrated	Units
Background	55.7	57.0	api
Background + Calibrator	319.4	326.6	api
Calibrator	263.7	269.6	api
NATURAL GAMMA RAY TOOL FIELD CALIBRATION			
Tool Name:	GTET - 11048627	Reference Calibration Date:	26-Apr-13 09:28:26
Engineer:	THOMAS HYDE	Calibration Date:	01-May-13 00:34:36

Engineer:THOMAS HYDE

Software Version:WL INSITE R3.8.4 (Build 5)

Calibration Version:1

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	57.0	56.1	api
Background + Calibrator	326.6	323.5	api
Calibrator	269.6	267.4	api

Shop	Field	Difference	Tolerance
269.6	267.4	2.2	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:DSNT - 11019643

Reference Calibration Date:30-Apr-13 08:24:38

Engineer:J. BOLLLOM

Calibration Date:30-Apr-13 08:38:49

Software Version:WL INSITE R3.8.4 (Build 5)

Calibration Version:1

Logging Source S/N: 696

Tank Serial Number: LIBERAL_NEUTRON

Reference value assigned to Tank: 51.680

Snow Block S/N: 696

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:	0.945	0.948	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):	0.2100	0.2110	0.0009	+/- 0.0020
Calibrated Ratio:	9.70	9.73	0.032	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0603	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 - 11019643

Reference Calibration Date:30-Apr-13 08:38:49

Engineer:THOMAS HYDE

Calibration Date:01-May-13 00:31:57

Software Version:WL INSITE R3.8.4 (Build 5)

Calibration Version:1

Logging Source S/N: 696

Snow Block S/N: 696

NEUTRON FIELD-CHECK SUMMARY			
Shop	Field	Difference	Control Limit On Change

Snow-Block Porosity (decip):	0.0603	0.0606	0.0004	On Change +/- 0.0150
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PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - 10950489	Reference Calibration Date:	30-Apr-13 07:50:07
Engineer:	J. BOLLUM	Calibration Date:	30-Apr-13 07:54:41
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1
Host Tool Name:	DSNT - 11019643		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2159.27	-1904.22	-7000.00 - -1000.00
Pad Gain	0.0004109	0.0003970	0.000200 - 0.000600
Arm Offset	-1263.42	-1780.23	-5000.00 - 3000.00
Arm Gain	0.0005604	0.0005824	0.000300 - 0.000700
Arm Power	-0.000008262	-0.000009343	-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)	1.96	2.00	0.04	+/- 0.20
Medium Ring (in)	3.78	3.75	-0.03	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.62	6.50	-0.12	+/- 0.20
Medium Ring (in)	8.30	8.25	-0.05	+/- 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 - 10950489	Reference Calibration Date:	30-Apr-13 07:54:41
Engineer:	THOMAS HYDE	Calibration Date:	01-May-13 00:35:54
Software Version:	WL INSITE R3.8.4 (Build 5)	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	8.30	0.05	+/- 0.15

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10844781Reference Calibration Date: 26-Apr-13 11:48:16Engineer: THOMAS HYDECalibration Date: 26-Apr-13 12:06:12Software Version: WL INSITE R3.8.4 (Build 5)Calibration Version: 1

Logging Source S/N: 5168GWAluminum Block S/N: LIBERALDensity: 2.598g/ccPe: 3.170Magnesium Block S/N: LIBERALLDensity: 1.684g/ccPe: 2.598

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0397	1.0405	0.90 - 1.10
Near Dens Gain	1.0138	1.0078	0.90 - 1.10
Near Peak Gain	1.0023	1.0058	0.90 - 1.10
Near Lith Gain	0.9740	0.9690	0.90 - 1.10
Far Bar Gain	1.0137	1.0133	0.90 - 1.10
Far Dens Gain	0.9986	0.9991	0.90 - 1.10
Far Peak Gain	0.9921	0.9940	0.90 - 1.10
Far Lith Gain	0.9670	0.9675	0.90 - 1.10
Near Bar Offset	-0.1095	-0.1171	NONE
Near Dens Offset	0.1002	0.1539	NONE
Near Peak Offset	0.1916	0.1610	NONE
Near Lith Offset	0.4131	0.4530	NONE
Far Bar Offset	0.0651	0.0693	NONE
Far Dens Offset	0.1801	0.1735	NONE
Far Peak Offset	0.1972	0.1818	NONE
Far Lith Offset	0.3594	0.3535	NONE
Near Bar Background	802.67	801.25	700 - 1450
Near Dens Background	263.29	263.54	230 - 480
Near Peak Background	115.09	114.82	100 - 210
Near Lith Background	141.52	142.21	125 - 260
Far Bar Background	523.97	522.38	450 - 900
Far Dens Background	204.44	204.85	175 - 345
Far Peak Background	82.32	82.46	70 - 140
Far Lith Background	85.95	84.90	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.684	-0.000	+/- 0.015
Pe	2.543	2.559	0.016	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.598	0.001	+/- 0.01500
Pe	3.119	3.127	0.008	+/- 0.150

TOOL SUMMARY

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

Reference Calibration Date: 26-Apr-13 11:48:16

Calibration Date: 26-Apr-13 12:06:12

Calibration Version: 1

Pe: 3.170

Pe: 2.598

Density Calibration Summary			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0397	1.0405	0.90 - 1.10
Near Dens Gain	1.0138	1.0078	0.90 - 1.10
Near Peak Gain	1.0023	1.0058	0.90 - 1.10
Near Lith Gain	0.9740	0.9690	0.90 - 1.10
Far Bar Gain	1.0137	1.0133	0.90 - 1.10
Far Dens Gain	0.9986	0.9991	0.90 - 1.10
Far Peak Gain	0.9921	0.9940	0.90 - 1.10
Far Lith Gain	0.9670	0.9675	0.90 - 1.10
Near Bar Offset	-0.1095	-0.1171	NONE
Near Dens Offset	0.1002	0.1539	NONE
Near Peak Offset	0.1916	0.1610	NONE
Near Lith Offset	0.4131	0.4530	NONE
Far Bar Offset	0.0651	0.0693	NONE
Far Dens Offset	0.1801	0.1735	NONE
Far Peak Offset	0.1972	0.1818	NONE
Far Lith Offset	0.3594	0.3535	NONE
Near Bar Background	802.67	801.25	700 - 1450
Near Dens Background	263.29	263.54	230 - 480
Near Peak Background	115.09	114.82	100 - 210
Near Lith Background	141.52	142.21	125 - 260
Far Bar Background	523.97	522.38	450 - 900
Far Dens Background	204.44	204.85	175 - 345
Far Peak Background	82.32	82.46	70 - 140
Far Lith Background	85.95	84.90	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.684	-0.000	+/- 0.015
Pe	2.543	2.559	0.016	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.598	0.001	+/- 0.01500
Pe	3.119	3.127	0.008	+/- 0.150

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

Background	0.0005	+/- 0.0110	0.0014	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0020	+/- 0.0140
Aluminum Block	-0.0003	+/- 0.0110	-0.0008	+/- 0.0140
Resolution	9.35	6.00 - 11.50	8.90	6.00 - 11.50
Internal Verifier(B+D+P+L)	1322	1200 - 2700	895	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 - 10844781	Reference Calibration Date:	26-Apr-13 12:06:12
Engineer:	THOMAS HYDE	Calibration Date:	01-May-13 00:30:14
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1321.817	1319.425	-2.392	14.711
Far (B+D+P+L) cps	894.578	892.638	-1.940	16.280
Near Resolution	9.35	9.30	-0.050	0.50
Far Resolution	8.90	8.81	-0.090	1.00

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

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	267.4	-----	2.2	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0603	0.0606	-----	-0.0003	+/- 0.0150	decp
SDLT-10950489						
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in
Ring Diameter	8.25	8.30	-----	-0.05	+/-0.15	in
SDLT Pad-10844781						
Near(B+D+P+L)	1321.817	1319.425	-----	2.392	+/-14.711	cps
Far(B+D+P+L)	894.578	892.638	-----	1.940	+/-16.280	cps

Data: FRANK CFR 23 4210001 SP-GTET-DSN-SDI -ACRT-CHIDI F Date: 01-May-13 11:00:53

HALLIBURTON

PARAMETERS REPORT

Depth	Tool Name	Mnemonic	Description	Value	Units
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(ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	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	9.000	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	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	3609.00	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	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	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	
	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	
	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	
	Microlog Pad	MLOK	Process MicroLog 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	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Up	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
BOTTOM				
Data: FRANK_CER_23_42I0001 SP-GTET-DSN-SDL-ACRT-CHIDLE			Date: 01-May-13 11:01:07	

HALLIBURTON INPUTS, DELAYS AND FILTERS TABLE				
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
SP Sub				
PLTC	Plot Control Mask	50.81	NO	
SP	Spontaneous Potential	50.81	BLK	1.250
SPR	Raw Spontaneous Potential	50.81	NO	
SPO	Spontaneous Potential Offset	50.81	NO	
GTET				
TPUL	Tension Pull	42.79	NO	
GR	Natural Gamma Ray API	42.79	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	42.79	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.79	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	32.54	NO	
RNDS	Near Detector Telemetry Counts	32.64	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.39	TRI	0.583
DNTT	DSN Tool Temperature	32.64	NO	
DSNS	DSN Tool Status	32.54	NO	
ERND	Near Detector Telemetry Counts EVR	32.64	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.39	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.64	NO	
SDLT				
TPUL	Tension Pull	22.65	NO	
PCAL	Pad Caliper	22.65	TRI	0.250
ACAL	Arm Caliper	22.65	TRI	0.250
ACRt Sonde				
TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000

F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	
Microlog Pad				
TPUL	Tension Pull	22.83	NO	
MINV	Microlog Lateral	22.83	BLK	0.750
MNOR	Microlog Normal	22.83	BLK	0.750
SDLT Pad				

TPUL	Tension Pull	22.64	NO	
NAB	Near Above	22.46	BLK	0.920
NHI	Near Cesium High	22.46	BLK	0.920
NLO	Near Cesium Low	22.46	BLK	0.920
NVA	Near Valley	22.46	BLK	0.920
NBA	Near Barite	22.46	BLK	0.920
NDE	Near Density	22.46	BLK	0.920
NPK	Near Peak	22.46	BLK	0.920
NLI	Near Lithology	22.46	BLK	0.920
NBAU	Near Barite Unfiltered	22.46	BLK	0.250
NLIU	Near Lithology Unfiltered	22.46	BLK	0.250
FAB	Far Above	22.81	BLK	0.250
FHI	Far Cesium High	22.81	BLK	0.250
FLO	Far Cesium Low	22.81	BLK	0.250
FVA	Far Valley	22.81	BLK	0.250
FBA	Far Barite	22.81	BLK	0.250
FDE	Far Density	22.81	BLK	0.250
FPK	Far Peak	22.81	BLK	0.250
FLI	Far Lithology	22.81	BLK	0.250
PTMP	Pad Temperature	22.65	BLK	0.920
NHV	Near Detector High Voltage	22.04	NO	
FHV	Far Detector High Voltage	22.04	NO	
ITMP	Instrument Temperature	22.04	NO	
DDHV	Detector High Voltage	22.04	NO	

Data: FRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\IDLE

Date: 01-May-13 11:01:24

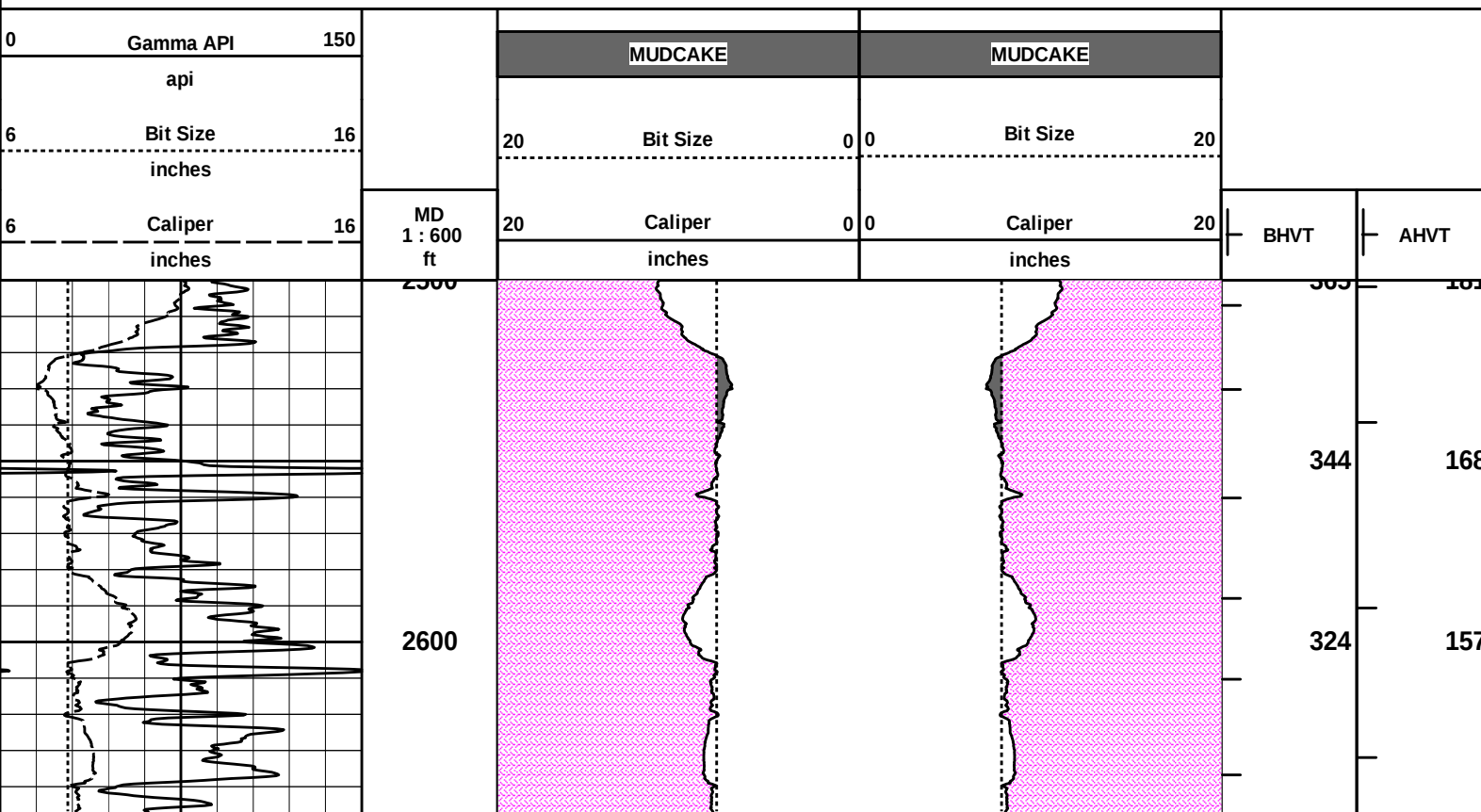
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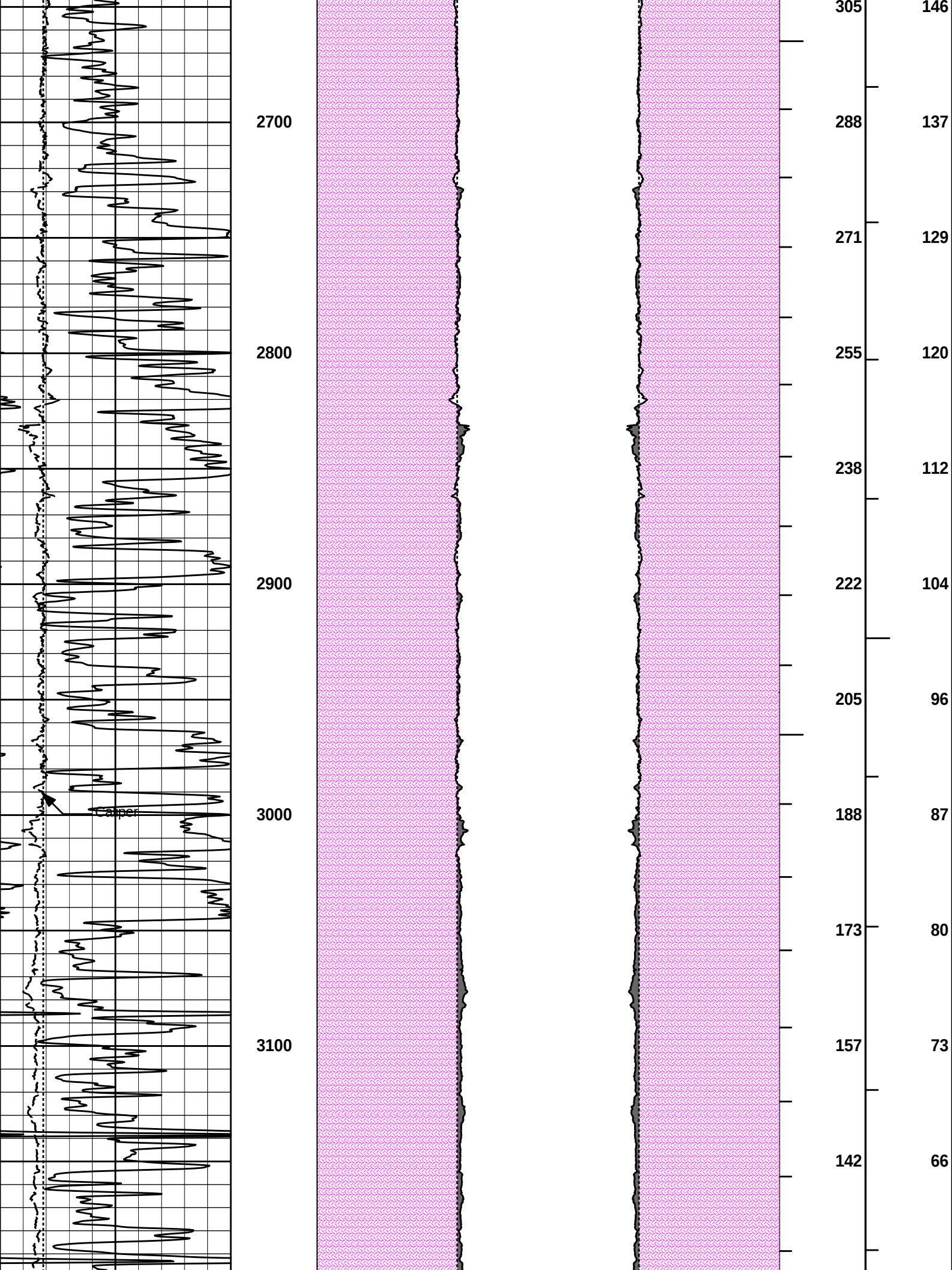
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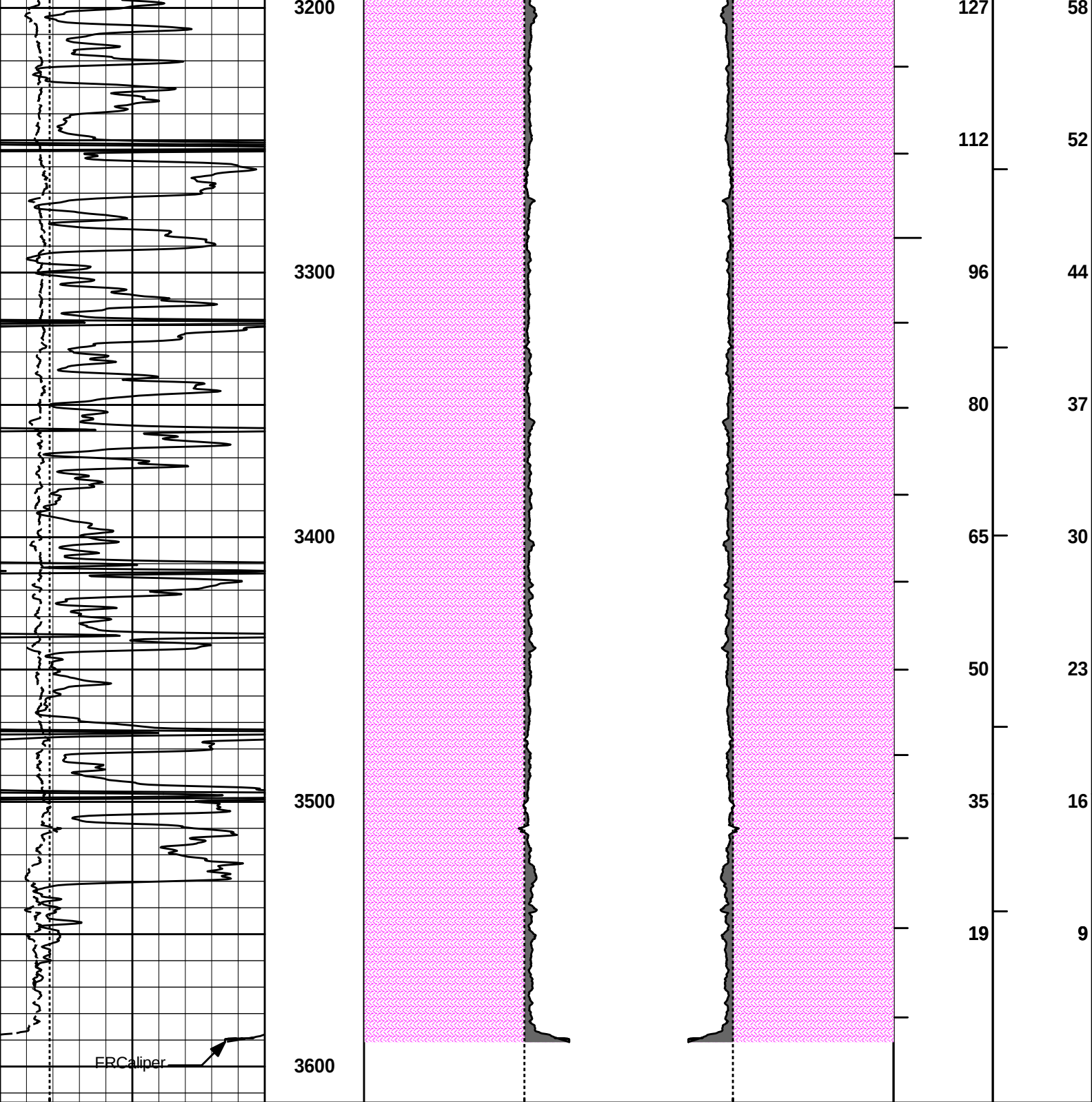
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Plot File: \\LOCAL-1\FRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\PORO\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT







6	Caliper	16	MD 1 : 600 ft	20	Caliper	0 0	20	BHVT	AHVT
	inches				inches				
6	Bit Size	16		20	Bit Size	0 0	20		
	inches								
0	Gamma API	150			MUDCAKE		MUDCAKE		
	api								

HALLIBURTON

Plot Time: 01-May-13 14:33:59
Plot Range: 2500 ft to 3613.67 ft
Data: FRANK_CER_23_42\Well Based\DAQ-0001-003\
Plot File: \\LOCAL-IFRANK_CER_23_42\0001 SP-GTET-DSN-SDL-ACRT-CH\PORO\AHV_2_IQ_LIB

ANNUAL AR HOLE VOLUME PLOT

ANNULAR HOLE VOLUME TEST

COMPANY	CAERUS OIL & GAS		
WELL	FRANK CERROW 23-42A		
FIELD	JELENIK		
COUNTY	ROOKS	STATE	KANSAS
HALLIBURTON		DUAL SPACED NEUTRON SPECTRAL DENSITY LOG	