

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
LOG

COMPANY		BIRD DOG OIL, LLC	
WELL		HALL-GATES 2-5	
FIELD/BLOCK		GATES	
COUNTY		STAFFORD	
STATE		KANSAS	
Permanent Datum Log measured from Drilling measured from	GL	Elev. 1896.0 ft	
	KB	9.0 ft above perm. Datum	
	KB	Elev.: K.B. 1896.0 ft	
	KB	D.F. 1905.0 ft	
	KB	G.L. 1905.0 ft	
Date	18-Oct-19		
Run No.	ONE		
Depth - Driller	3850.0 ft		
Depth - Logger	3850.0 ft		
Bottom - Logged Interval	3828.00 ft		
Top - Logged Interval	3200.00 ft		
Casing - Driller	8.625 in @ 432.0 ft	@	
Casing - Logger	432.0 ft		
Bit Size	7.875 in	@	
Type Fluid in Hole	Water Based Mud		
Density	9.00 g/cc	58.00 s/qt	
PH	10.50 pH	10.0 cpm	
Source of Sample	MUDPIT		
Rm @ Meas. Temperature	0.51 ohmm @ 75.00 degF	@	
Rmf @ Meas. Temperature	0.47 ohmm @ 75.00 degF	@	
Rmc @ Meas. Temperature	0.58 ohmm @ 75.00 degF	@	
Source Rmf	MEAS	MEAS	
Rm @ BHT	0.35 ohmm @ 111.0 degF	@	
Time Since Circulation	5.0 hr		
Time on Bottom	18-Oct-19 09:00		
Max. Rec. Temperature	111.00 degF @ 3850.0 ft	@	
Equipment	Location	12156883	EL RENO, OK
Recorded By	JORGE ORLANDO PEREZ		
Witnessed By	JUSTIN CARTER		

API No. 15-185-24062-00-00
Location (SHL) 2310' FNL & 330' FEL
SE SE NE

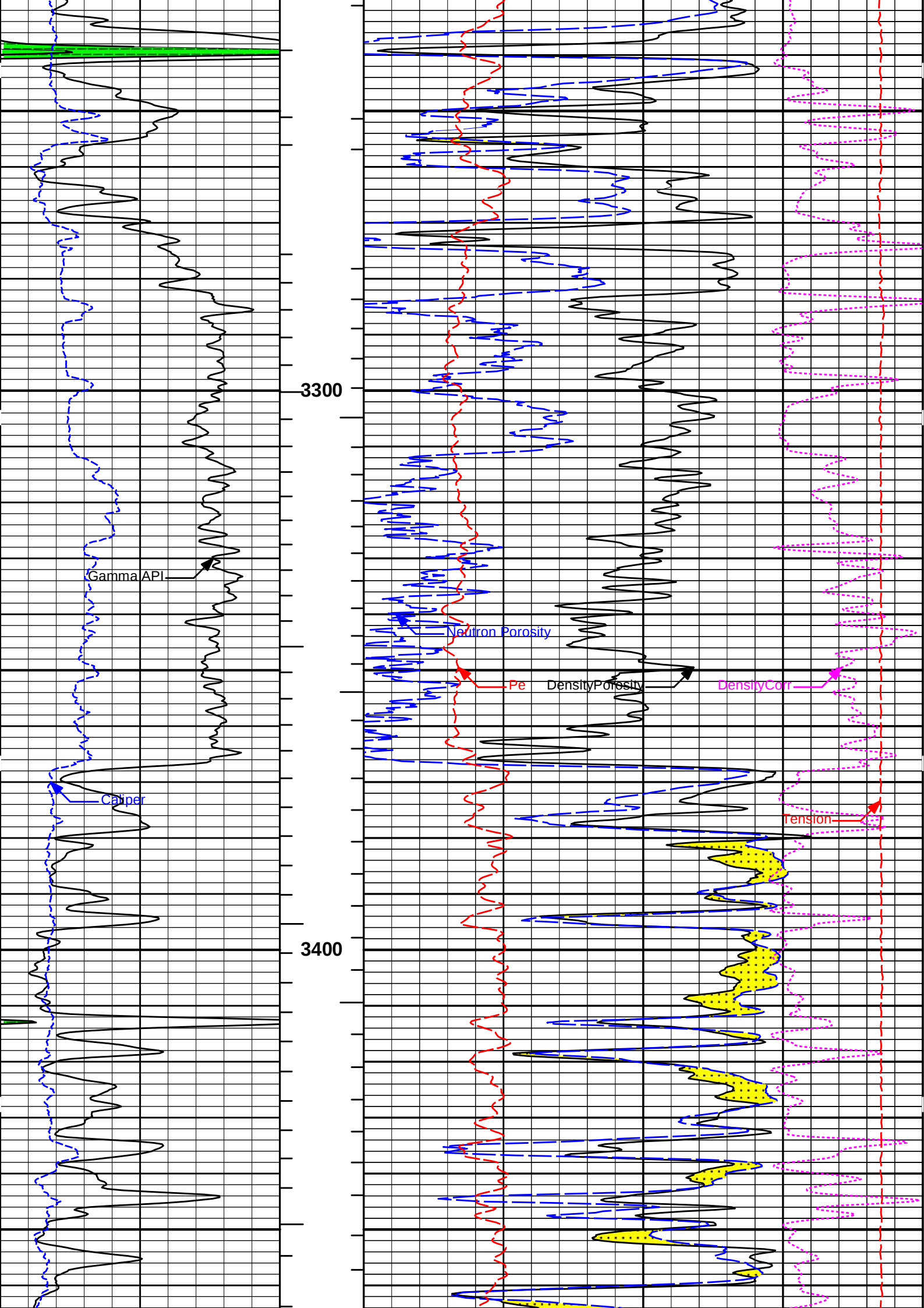
COMPANY BIRD DOG OIL, LLC
WELL HALL-GATES 2-5
FIELD/BLOCK GATES
COUNTY STAFFORD
STATE KANSAS

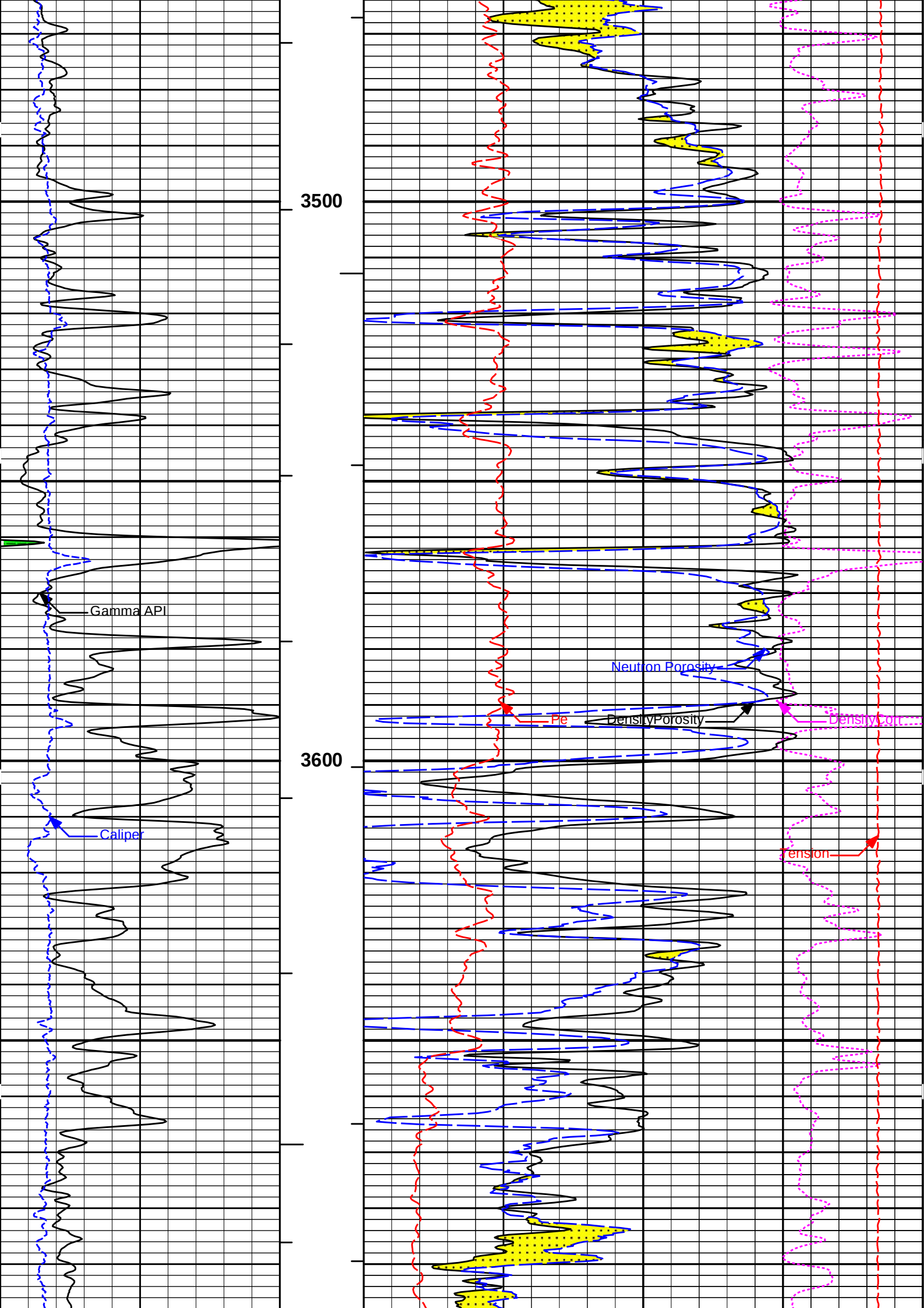
Other Services:
DSNT/SDLT
MICROLOG
ACRT

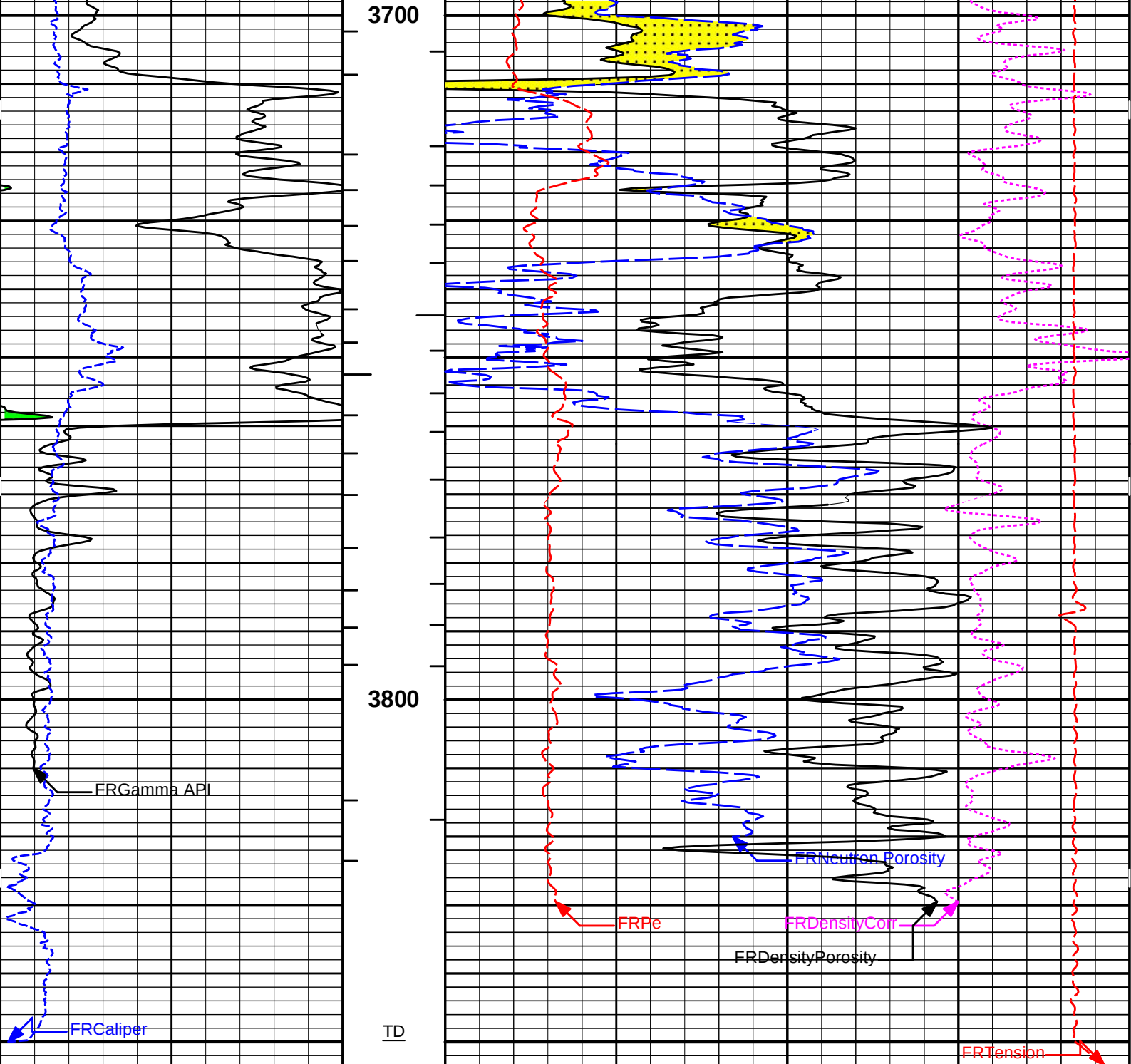
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Service Ticket No.: 906051745						API No.: 15-185-24062-00-00						PGM Version: WL INSITE R6.2.7 (Build 7)							
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE									RESISTIVITY SCALE CHANGES										
Date		Sample No.										Type Log		Depth		Scale 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.			@			@			ONE		ACRT		N/A		1.5" S.O.		N/A		
Rmc @ Meas. Temp.			@			@					I-11830684								
Source Rmf		Rmc										S-11830728							
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.		11013113		Serial No.				Serial No.		10960494		Serial No.		11055304					
Model No.		GTET		Model No.				Model No.		SDLT		Model No.		DSNT					
Diameter		3.625"		No. of Cent.				Diameter		5.5"		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.		5475GW		Serial No.		DSN-436					
Distance to Source		N/A		FWDA [Y/N]				Strength		1.78 Ci		Strength		15.0 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		TD		CSC		REC		0 150		20 10		2.71 gr/cc		20 10		TIME			

ONE	ID	CSG	REC	U	150				50	-10	2.71 g/cc	50	-10	LIME	
DIRECTIONAL INFORMATION															
Maximum Deviation									@	KOP					@
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING															
CHLORIDES REPORTED AT 9000 ppm															
</															







6	Caliper	16	MD	0	Pe	10	-0.25	DensityCorr	0.25
	inches		1 : 240					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				
					CROSSOVER				

HALLIBURTON

Plot Time: 18-Oct-19 11:24:18
 Plot Range: 3195 ft to 3853.42 ft
 Data: HALL-GATES_2-5\Well Based*\
 Plot File: \\POROSITY\Porosity_Q_5_MAIN_LIB

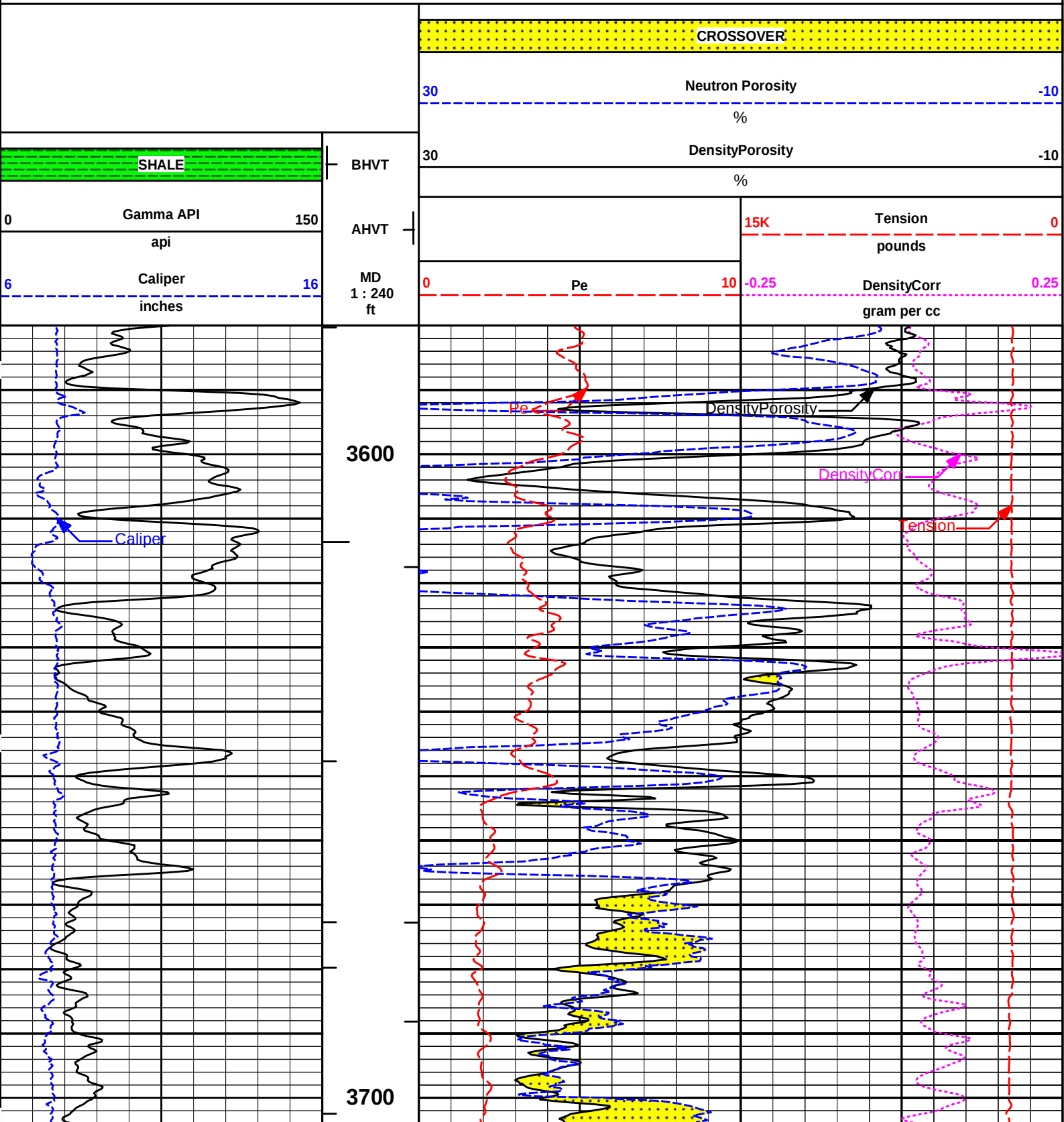
5 INCH MAIN LOG

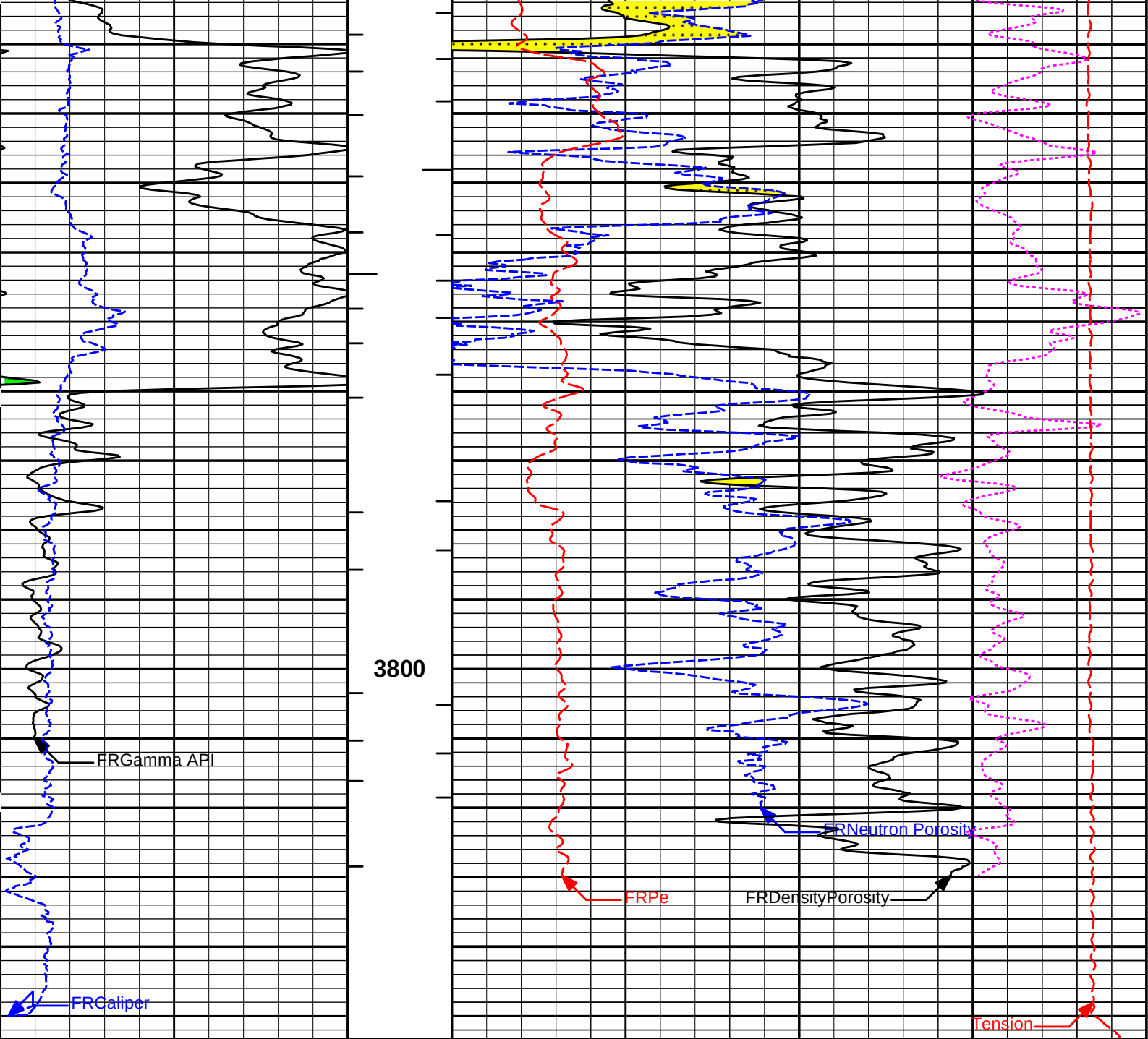
MEASURED DEPTH
MAIN SECTION 5" PER 100'

HALLIBURTON

Plot Time: 18-Oct-19 11:24:18
Plot Range: 3580 ft to 3853.33 ft
Data: HALL-GATES_2-5\Well Based*
Plot File: \\POROSITY\Porosity_IQ_5_REP_LIB

REPEAT SECTION





6	Caliper	16	MD	0	Pe	10	-0.25	DensityCorr	0.25
	inches		1 : 240					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				
					CROSSOVER				

HALLIBURTON

Plot Time: 18-Oct-19 11:24:21
Plot Range: 3580 ft to 3853.33 ft
Data: HALL-GATES_2-5\Well Based*
Plot File: \\POROSITY\Porosity_IQ_5_REP_LIB

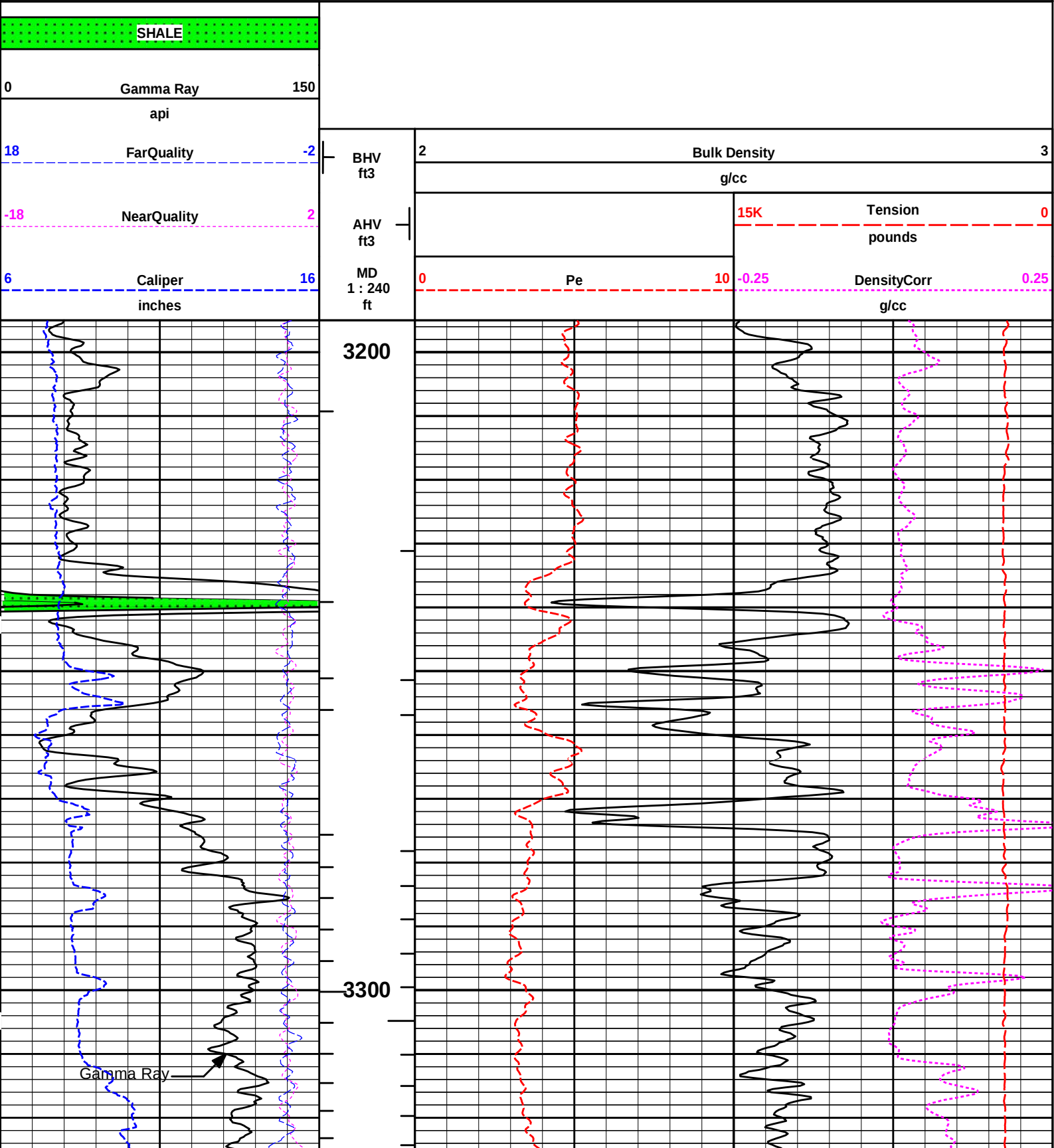
REPEAT SECTION

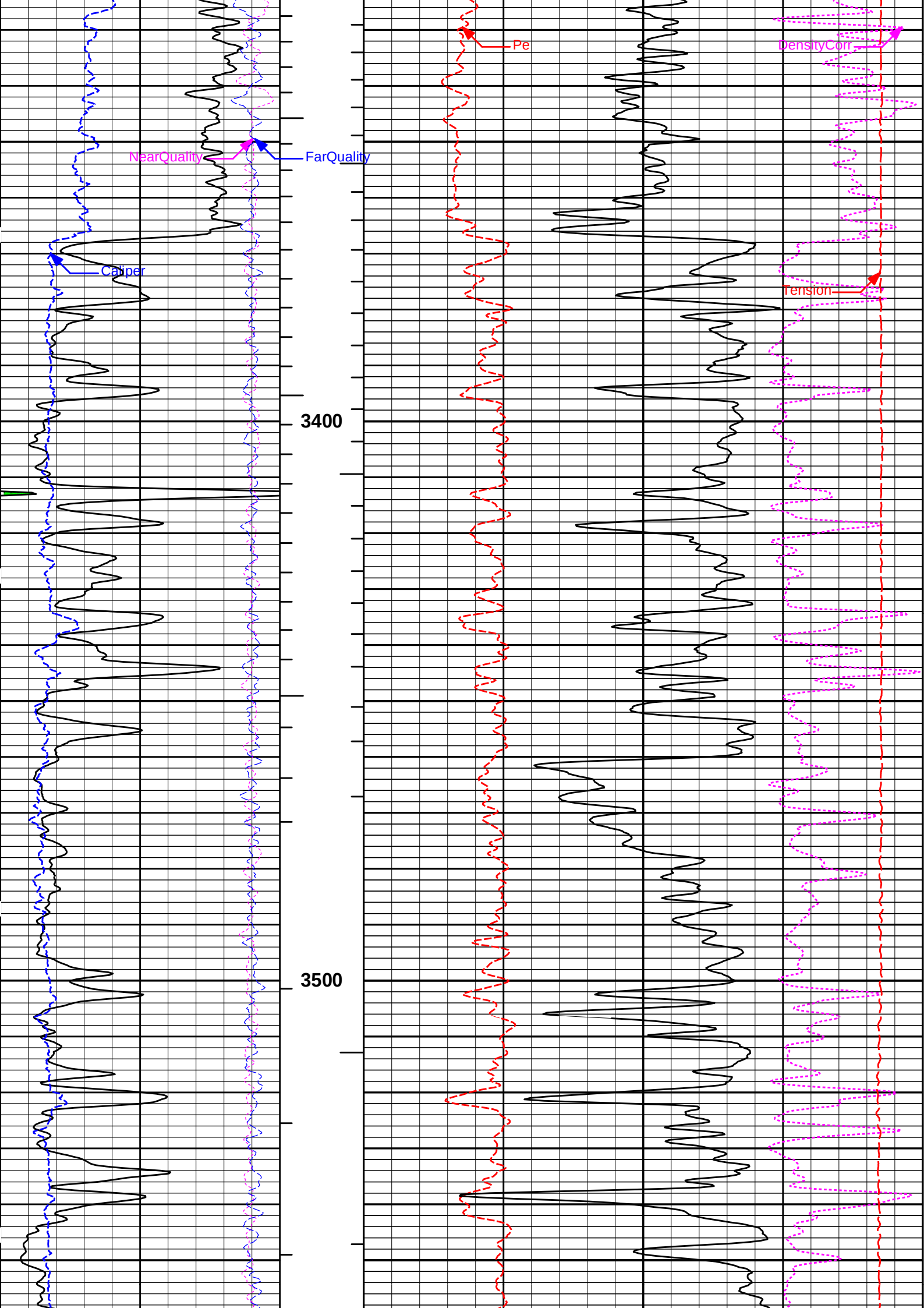
HALLIBURTON

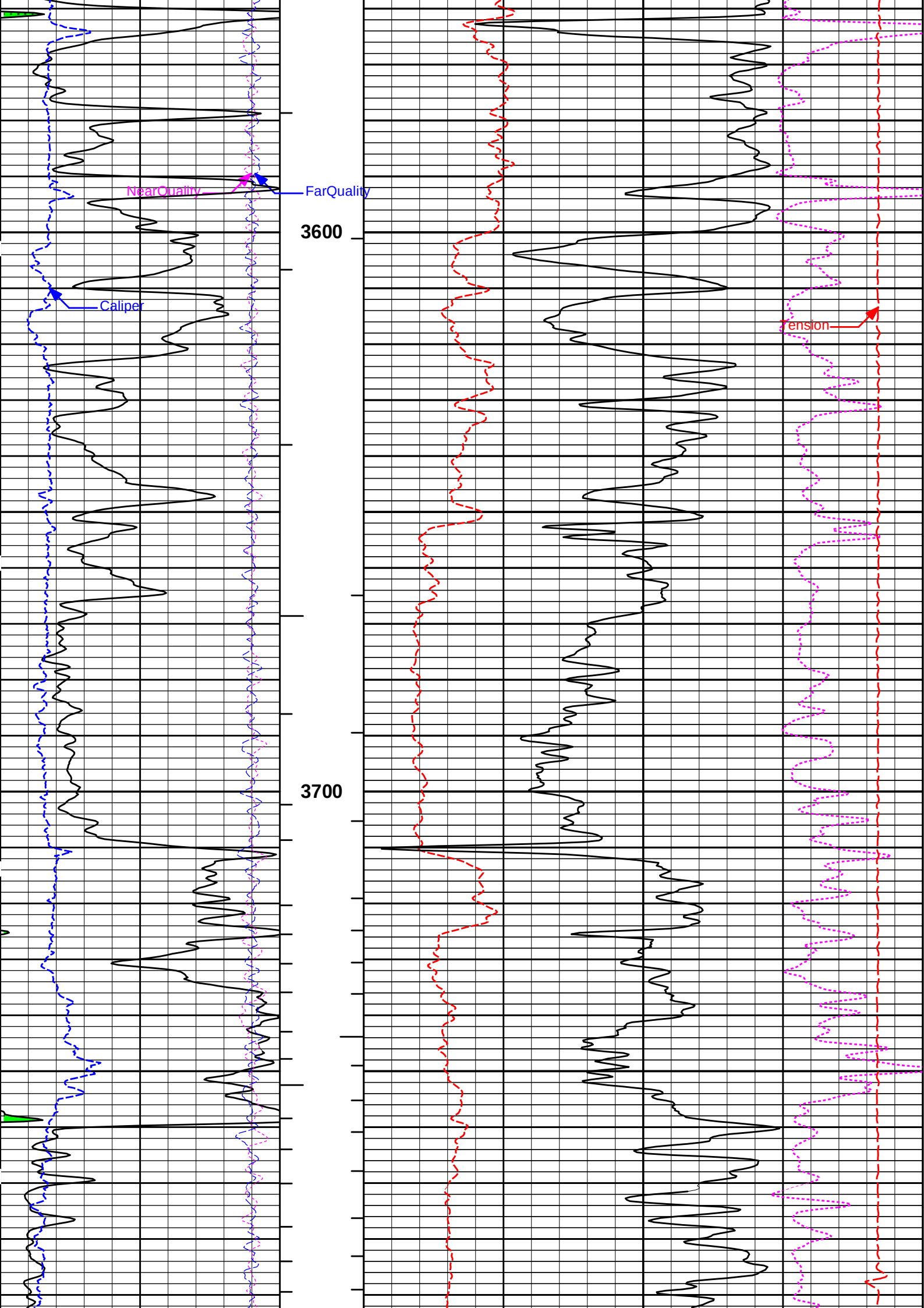
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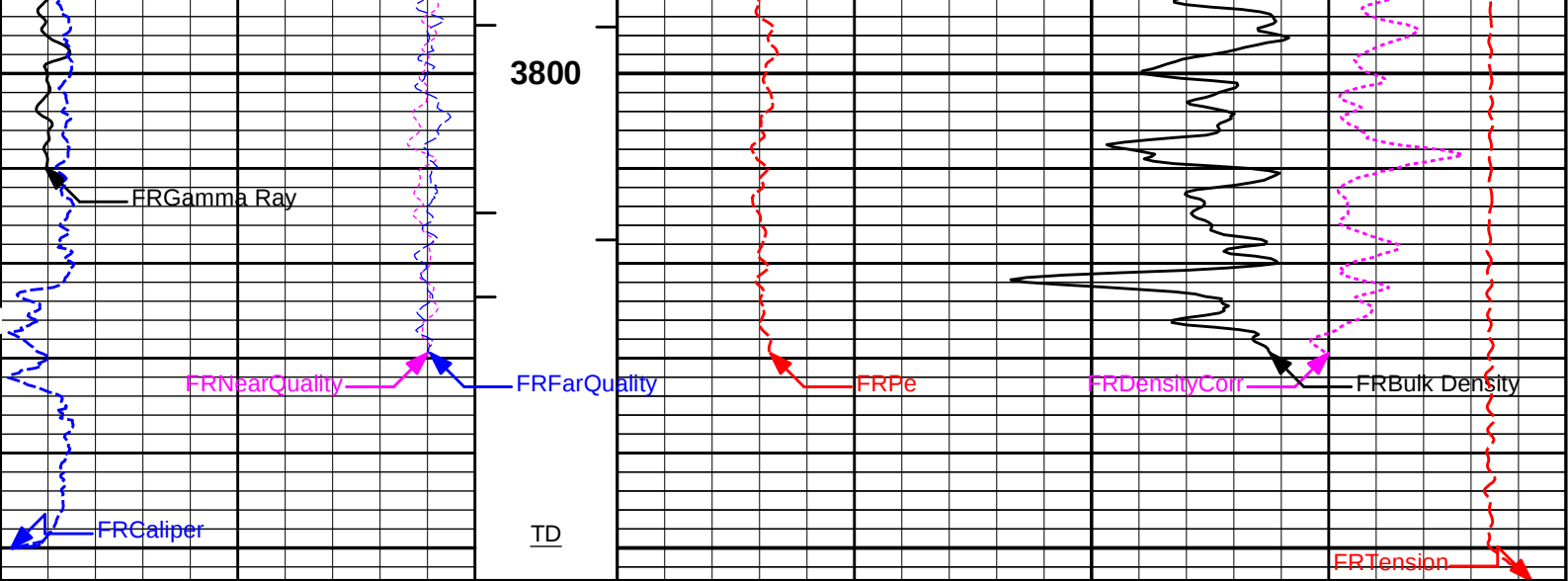
5 INCH MAIN LOG

MEASURED DEPTH
MAIN SECTION 5" PER 100'









6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
	inches								
-18	NearQuality	2	AHV ft3				15K	Tension	0
								pounds	
18	FarQuality	-2	BH ft3	2	Bulk Density				3
					g/cc				
0	Gamma Ray	150							
	api								
SHALE									

HALLIBURTON

Plot Time: 18-Oct-19 11:24:23
Plot Range: 3195 ft to 3853.42 ft
Data: HALL-GATES_2-5Well Basedl*
Plot File: \\-LOCAL-\\HALL-GATES_2-5Well Based\\POROSITY\\BULKD_5_MAIN_LIB

5 INCH MAIN LOG

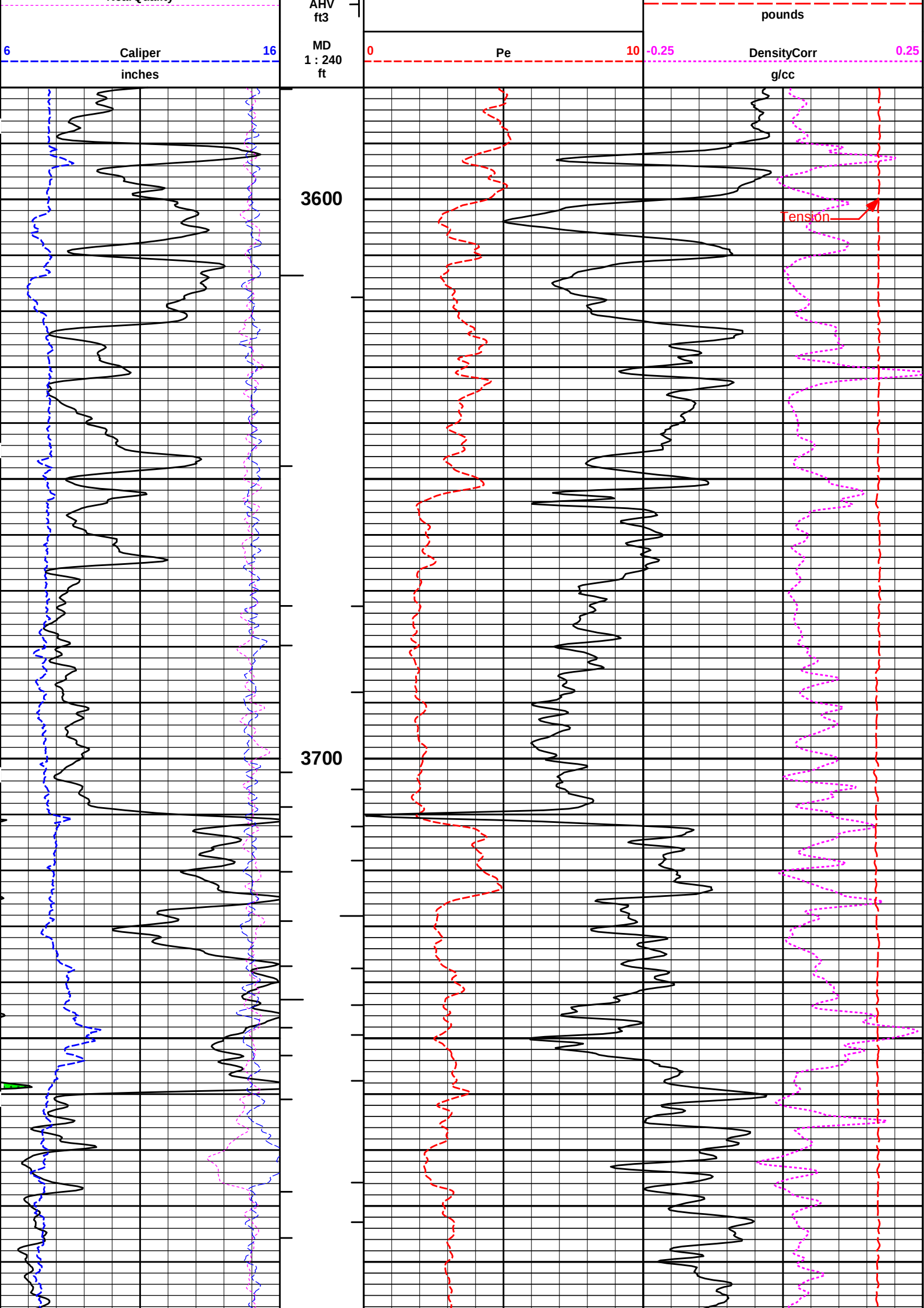
MEASURED DEPTH
MAIN SECTION 5" PER 100'

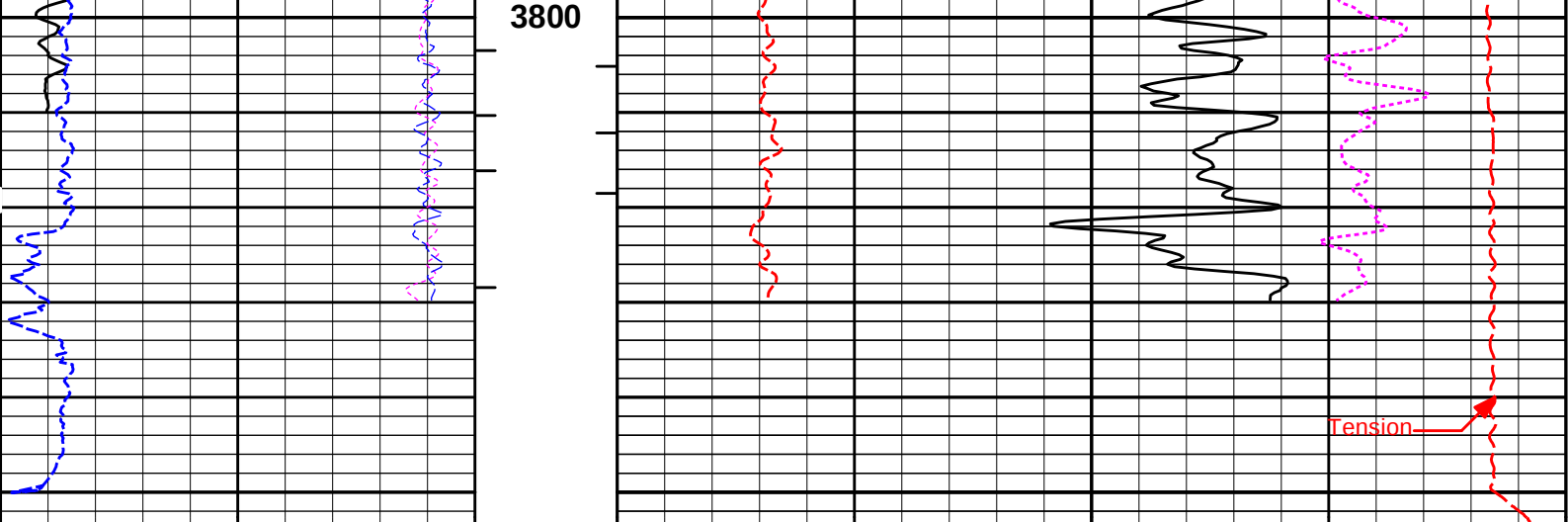
HALLIBURTON

Plot Time: 18-Oct-19 11:24:23
Plot Range: 3580 ft to 3853.33 ft
Data: HALL-GATES_2-5Well Basedl*
Plot File: \\-LOCAL-\\HALL-GATES_2-5Well Based\\POROSITY\\BULKD_5_REP_LIB

REPEAT SECTION

SHALE										
0	Gamma Ray	150								
	api									
18	FarQuality	-2	BHV	ft3	2	Bulk Density			3	
						g/cc				
-18	NearQuality	2				15K	Tension		0	





6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
	inches							g/cc	
-18	NearQuality	2	AHV ft3				15K	Tension	0
								pounds	
18	FarQuality	-2	BHV ft3	2	Bulk Density				3
					g/cc				
0	Gamma Ray	150							
	api								
SHALE									

HALLIBURTON

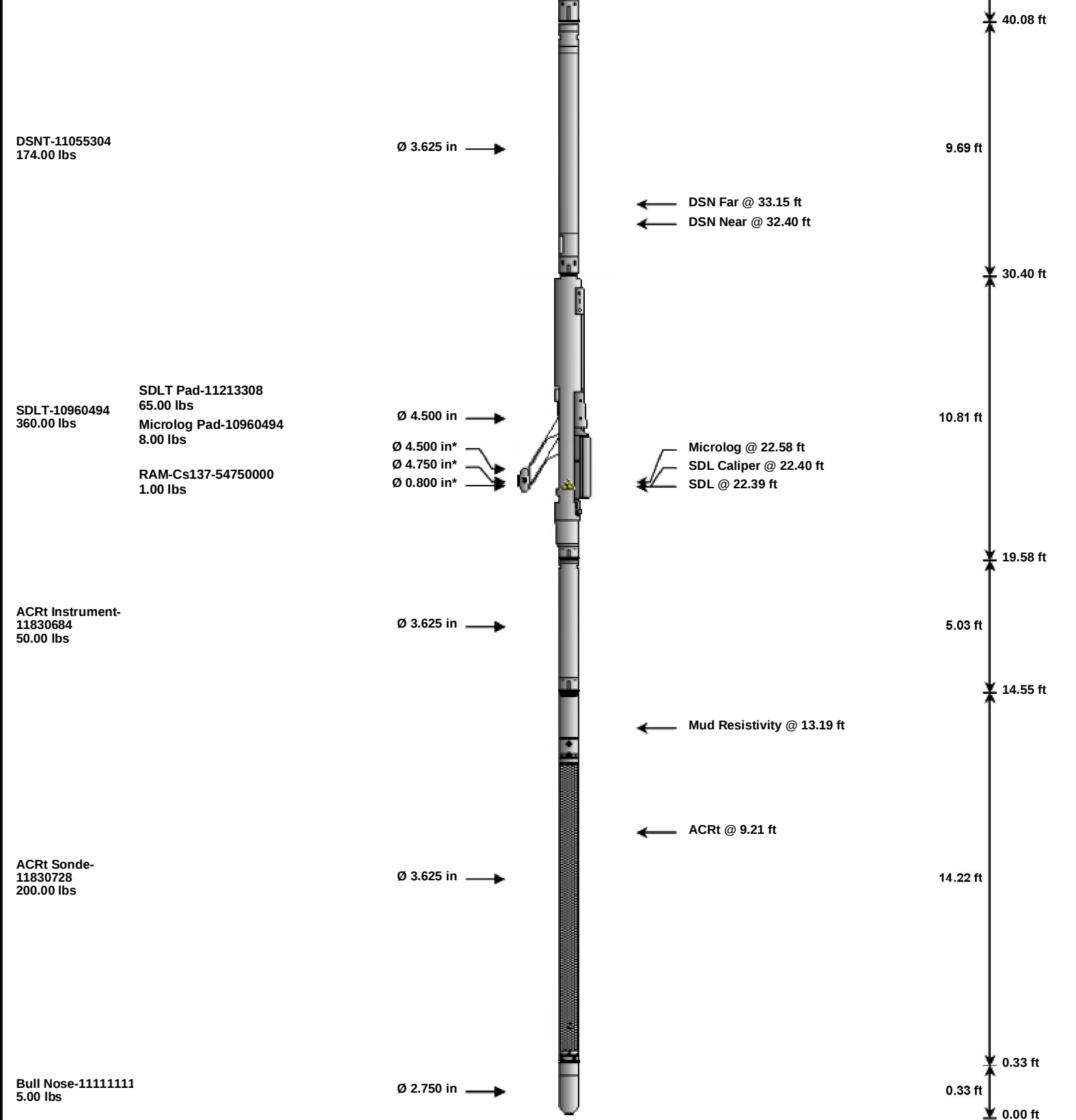
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Plot Range: 3580 ft to 3853.33 ft
Data: HALL-GATES_2-5\Well Based*
Plot File: \\LOCAL\HALL-GATES_2-5\Well Based\POROSITY\BULKD_5_REP_LIB

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-11830866 135.00 lbs	Weak Point Solid- 11111111 0.01 lbs	Ø 2.310 in →		← Fishing Neck @ 57.71 ft		58.59 ft
		Ø 3.625 in →		← Load Cell @ 54.91 ft ← BH Temperature @ 54.34 ft	6.25 ft	
		Ø 0.010 in* →				52.34 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in →		← SP @ 50.56 ft	3.74 ft	
				← Z-Accelerometer @ 48.15 ft		48.60 ft
GTET-11013113 165.00 lbs		Ø 3.625 in →		← GammaRay @ 42.54 ft	8.52 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11830866	135.00	6.25	52.34	300.00
WPSS	Weak Point Solid	11111111	0.01	0.01	* 52.34	300.00
SP	SP Sub	11812437	60.00	3.74	48.60	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52	40.08	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	30.40	60.00
SDLT	Spectral Density Tool	10960494	360.00	10.81	19.58	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	* 21.79	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	54750000	1.00	0.80	* 22.02	300.00
MICP	Microlog Pad	10960494	8.00	1.00	* 22.08	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03	14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22	0.33	120.00
BLNS	Bull Nose	11111111	5.00	0.33	0.00	300.00
Total			1,223.01	58.59		

* Not included in Total Length and Length Accumulation.

PARAMETERS REPORT

Depth (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	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	10000.00	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	CBM Temperature Master Tool	GTET	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	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	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	GTET	BHSM	Borehole Size Source Tool	SDLT	
	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	DNTT	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	

DSNT	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
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
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
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	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	
BOTTOM_____				
Data: HALL-GATES_2-510001 GTET-DSN-SDL-ACRT_DRIVERS\002 18-Oct-19 08:29 Dn @310.0f				Date: 18-Oct-19 08:31:18

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION				
Tool Name:	GTET - 11013113	Reference Calibration Date:	28-Jun-19 15:56:38	
Engineer:	WOLTEMATH	Calibration Date:	06-Sep-19 13:50:19	
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1	

Calibrator Source S/N: TB79				
Calibrator API Reference:222.00 api				
Equivalent Calibrator API Reference:225.9 api				
	Measurement	Measured	Calibrated	Units
	Background	24.7	24.0	api
	Background + Calibrator	257.5	249.9	api
	Calibrator	232.8	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION				
Tool Name:	GTET - 11013113	Reference Calibration Date:	06-Sep-19 13:50:19	
Engineer:	WHITLOCK	Calibration Date:	14-Oct-19 13:05:41	
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1	

Calibrator Source S/N: TB79				
Calibrator API Reference:222.00 api				
Equivalent Calibrator API Reference:225.9 api				
	Field Verification	Shop	Field	Units
	Background	24.0	28.0	api
	Background + Calibrator	249.9	251.5	api
	Calibrator	225.9	223.5	api

	Shop	Field	Difference	Tolerance
	225.9	223.5	2.4	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION				
Tool Name:	DSNT - 11055304		Reference Calibration Date:	22-Aug-19 14:12:28
Engineer:	WOLTEMATH		Calibration Date:	22-Aug-19 14:39:04
Software Version:	WL INSITE R6.2.7 (Build 7)		Calibration Version:	1

Logging Source S/N: DSN-436
Tank Serial Number: 10730320
Reference value assigned to Tank: 56.100
Snow Block S/N: 12156883
Calibration Tank Water Temperature: 80 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS				
Measurement	Prev. Value	New Value	Control Limit On New Value	
Gain:	1.04178	1.04096	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):	0.2360	0.2358	0.0002	+/- 0.0020
Calibrated Ratio:	10.5680	10.5597	0.008	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0796	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 - 11055304		Reference Calibration Date:	22-Aug-19 14:39:04
Engineer:	WHITLOCK		Calibration Date:	14-Oct-19 12:53:29
Software Version:	WL INSITE R6.2.7 (Build 7)		Calibration Version:	1

Logging Source S/N: DSN-436
Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0796	0.0828	0.0031	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION				
Tool Name:	SDLT - 10960494		Reference Calibration Date:	29-Aug-19 11:58:26
Engineer:	JORGE ORLANDO PEREZ		Calibration Date:	29-Aug-19 12:02:40
Software Version:	WL INSITE R6.2.7 (Build 7)		Calibration Version:	1
Host Tool Name:	DSNT - 11055304			

CALIBRATION COEFFICIENTS				
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CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4629.26	-4620.65	-7000.00 - -1000.00
Pad Gain	0.0003912	0.0003918	0.0002000 - 0.0006000
Arm Offset	-2765.11	-2629.08	-5000.00 - 3000.00
Arm Gain	0.0005207	0.0005090	0.000300 - 0.000700
Arm Power	-0.000004618	-0.000003925	-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)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.47	6.50	0.03	+/- 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 - 10960494	Reference Calibration Date:	29-Aug-19 12:02:40
Engineer:	JORGE ORLANDO PEREZ	Calibration Date:	29-Aug-19 12:04:14
Software Version:	WL INSITE R6.2.7 (Build 7)	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	8.21	-0.04	+/- 0.15
PASS/FAIL SUMMARY				
Pad Extension Check:			Passed	
Diameter Check:			Passed	

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT Pad - 11213308	Reference Calibration Date:	23-Aug-19 13:54:16
Engineer:	WOLTEMATH	Calibration Date:	23-Aug-19 14:21:32
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

Logging Source S/N: 5475GW

Aluminum Block S/N: 63067

Density: 2.581g/cc

Pe: 3.170

Magnesium Block S/N: 63358

Density: 1.687g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0035	1.0251	0.90 - 1.10
Near Dens Gain	0.9864	1.0119	0.90 - 1.10
Near Peak Gain	0.9964	1.0219	0.90 - 1.10
Near Lith Gain	0.9980	1.0302	0.90 - 1.10
Far Bar Gain	1.0048	1.0058	0.90 - 1.10
Far Dens Gain	0.9927	0.9950	0.90 - 1.10

Far Dens Gain	0.9899	0.9927	0.90 - 1.10
Far Lith Gain	0.9731	0.9727	0.90 - 1.10
Near Bar Offset	0.1179	-0.0816	NONE
Near Dens Offset	0.2714	0.0443	NONE
Near Peak Offset	0.1602	-0.0546	NONE
Near Lith Offset	0.1146	-0.1575	NONE
Far Bar Offset	0.0293	0.0219	NONE
Far Dens Offset	0.1505	0.1307	NONE
Far Peak Offset	0.1477	0.1245	NONE
Far Lith Offset	0.2309	0.2352	NONE
Near Bar Background	928.16	927.86	700 - 1450
Near Dens Background	309.39	308.18	230 - 480
Near Peak Background	135.94	135.97	100 - 210
Near Lith Background	164.35	163.99	125 - 260
Far Bar Background	470.03	472.28	450 - 900
Far Dens Background	188.64	187.22	175 - 345
Far Peak Background	75.92	76.21	70 - 140
Far Lith Background	76.82	77.51	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.686	1.687	0.001	+/- 0.015
Pe	2.567	2.561	-0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.582	2.580	-0.002	+/- 0.01500
Pe	3.117	3.134	0.017	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0002	+/- 0.0110	-0.0008	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0002	+/- 0.0140
Aluminum Block	-0.0003	+/- 0.0110	0.0010	+/- 0.0140
Resolution	9.31	6.00 - 11.50	9.26	6.00 - 11.50
Internal Verifier(B+D+P+L)	1536	1200 - 2700	813	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 - 11213308	Reference Calibration Date:	23-Aug-19 14:21:32
Engineer:	WHITLOCK	Calibration Date:	15-Oct-19 15:19:19
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

DENSITY FIELD CALIBRATION SUMMARY						
Measurement	Shop	Field	Change	Control Limit +/-		
Near (B+D+P+L) cps	1535.997	1531.138	-4.859	15.780		
Far (B+D+P+L) cps	813.216	811.481	-1.735	15.754		
Near Resolution	9.31	9.24	-0.070	0.50		
Far Resolution	9.26	9.28	0.020	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-11013113						
Gamma Ray Calibrator	225.9	223.5	-----	2.4	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0796	0.0828	-----	-0.0032	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.75	-----	0.00	+/-0.10	in
Ring Diameter	8.25	8.21	-----	0.04	+/-0.15	in
SDLT Pad-11213308						
Near(B+D+P+L)	1535.997	1531.138	-----	4.859	+/-15.780	cps
Far(B+D+P+L)	813.216	811.481	-----	1.735	+/-15.754	cps

Data: HALL-GATES_2-510001 GTET-DSN-SDL-ACRT_DRIVERS\IDLE

Date: 18-Oct-19 07:49:32

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INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Depth Filter Type	Depth Filter Length (ft)	Time Filter Type	Time Filter Length (sec)
Depth Panel						
TENS	Tension	0.00	NO		NO	
Rwa / CrossPlot						
TPUL	Tension Pull	58.59	NO		NO	
BS	Bit Size	58.59	NO		NO	
HDIA	Measured Hole Diameter	0.00	NO		NO	
RWCH						
DHTN	DownholeTension	0.00	BLK	0.000	NO	
SP Sub						
PLTC	Plot Control Mask	50.56	NO		NO	
SP	Spontaneous Potential	50.56	BLK	1.250	NO	
SPR	Raw Spontaneous Potential	50.56	NO		NO	
SPO	Spontaneous Potential Offset	50.56	NO		NO	
GTET						
TPUL	Tension Pull	42.54	NO		NO	
GR	Natural Gamma Ray API	42.54	TRI	1.750	NO	
GRU	Unfiltered Natural Gamma Ray API	42.54	NO		NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.54	W	1.416 , 0.750	NO	
HDIA	Measured Hole Diameter	0.00	NO		NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083	NO	
DEXT	Acceleration	0.00	NO		NO	

DEVI	Inclination	0.00	NO		NO
DSNT					
TPUL	Tension Pull	32.30	NO		NO
RNDS	Near Detector Telemetry Counts	32.40	BLK	1.417	NO
RFDS	Far Detector Telemetry Counts	33.15	TRI	0.583	NO
DNTT	DSN Tool Temperature	32.40	NO		NO
DSNS	DSN Tool Status	32.30	NO		NO
ERND	Near Detector Telemetry Counts EVR	32.40	BLK	0.000	NO
ERFD	Far Detector Telemetry Counts EVR	33.15	BLK	0.000	NO
ENTM	DSN Tool Temperature EVR	32.40	NO		NO
HDIA	Measured Hole Diameter	0.00	NO		NO
SDLT					
TPUL	Tension Pull	22.40	NO		NO
PCAL	Pad Caliper	22.40	TRI	0.250	NO
ACAL	Arm Caliper	22.40	TRI	0.250	NO
ACRt Sonde					
TPUL	Tension Pull	2.73	NO		NO
F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000	NO
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000	NO
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000	NO
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000	NO
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000	NO
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000	NO
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000	NO
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000	NO
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000	NO
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000	NO
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000	NO
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000	NO
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000	NO
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000	NO
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000	NO
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000	NO
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000	NO
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000	NO
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000	NO
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000	NO
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000	NO
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000	NO
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000	NO
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000	NO
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000	NO
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000	NO
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000	NO
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000	NO
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000	NO
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000	NO
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000	NO
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000	NO
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000	NO
F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000	NO
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000	NO
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000	NO
RMUD	Mud Resistivity	12.52	BLK	0.000	NO
F1RT	Transmitter Reference 12 KHz Real Signal	2.73	BLK	0.000	NO
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000	NO
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000	NO

F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000	NO
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000	NO
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000	NO
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000	NO
TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000	NO
ITMP	Instrument Temperature	2.73	BLK	0.000	NO
TCVA	Temperature Correction Values Loop Off	2.73	NO		NO
TIDV	Instrument Temperature Derivative	2.73	NO		NO
TUDV	Upper Temperature Derivative	2.73	NO		NO
TLDV	Lower Temperature Derivative	2.73	NO		NO
TRBD	Receiver Board Temperature	2.73	NO		NO
HDIA	Measured Hole Diameter	0.00	NO		NO
Microlog Pad					
TPUL	Tension Pull	22.58	NO		NO
MINV	Microlog Lateral	22.58	BLK	0.750	NO
MNOR	Microlog Normal	22.58	BLK	0.750	NO
SDLT Pad					
TPUL	Tension Pull	22.39	NO		NO
NAB	Near Above	22.21	BLK	0.920	NO
NHI	Near Cesium High	22.21	BLK	0.920	NO
NLO	Near Cesium Low	22.21	BLK	0.920	NO
NVA	Near Valley	22.21	BLK	0.920	NO
NBA	Near Barite	22.21	BLK	0.920	NO
NDE	Near Density	22.21	BLK	0.920	NO
NPK	Near Peak	22.21	BLK	0.920	NO
NLI	Near Lithology	22.21	BLK	0.920	NO
NBAU	Near Barite Unfiltered	22.21	BLK	0.250	NO
NLIU	Near Lithology Unfiltered	22.21	BLK	0.250	NO
FAB	Far Above	22.56	BLK	0.250	NO
FHI	Far Cesium High	22.56	BLK	0.250	NO
FLO	Far Cesium Low	22.56	BLK	0.250	NO
FVA	Far Valley	22.56	BLK	0.250	NO
FBA	Far Barite	22.56	BLK	0.250	NO
FDE	Far Density	22.56	BLK	0.250	NO
FPK	Far Peak	22.56	BLK	0.250	NO
FLI	Far Lithology	22.56	BLK	0.250	NO
PTMP	Pad Temperature	22.40	BLK	0.920	NO
NHV	Near Detector High Voltage	21.79	NO		NO
FHV	Far Detector High Voltage	21.79	NO		NO
ITMP	Instrument Temperature	21.79	NO		NO
DDHV	Detector High Voltage	21.79	NO		NO
HDIA	Measured Hole Diameter	0.00	NO		NO
Data: HALL-GATES_2-5I0001 GTET-DSN-SDL-ACRT_DRIVERSIDLE					Date: 18-Oct-19 08:13:20

COMPANY	BIRD DOG OIL, LLC		
WELL	HALL-GATES 2-5		
FIELD	GATES		
COUNTY	STAFFORD	STATE	KANSAS
HALLIBURTON		DUAL SPACED NEUTRON SPECTRAL DENSITY LOG	

