

HALLIBURTON

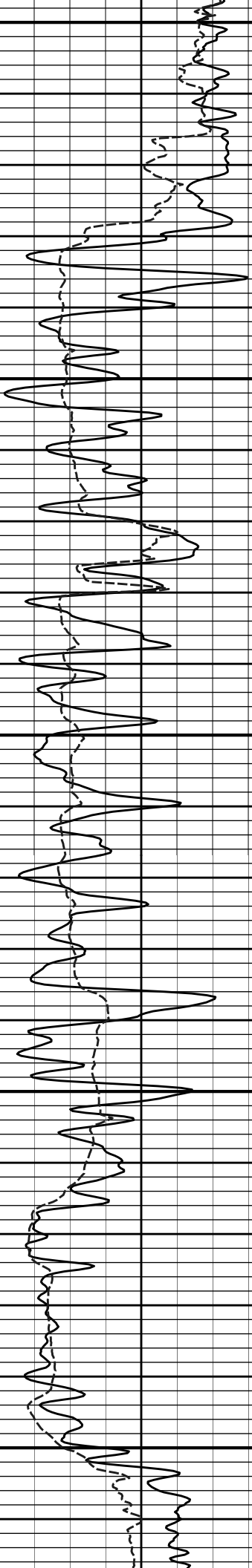
MICROLOG

COMPANY		TGT PETROLEUM CORPORATION	
WELL		END WRENCH #5	
FIELD		EINSEL	
COUNTY		KIOWA	
STATE		KANSAS	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		27-Nov-12	
Run No.		ONE	
Depth - Driller		4940.00 ft	
Depth - Logger		4930.0 ft	
Bottom - Logged Interval		4860	
Top - Logged Interval		3300	
Casing - Driller		8.625 in @ 477.0 ft	
Casing - Logger		479.0 ft	
Bit Size		7.875 in	
Type Fluid in Hole		WATER BASED MUD	
Density		9.5 ppq	
Viscosity		75.00 s/qt	
PH		10.50 pH	
Fluid Loss		12.8 cpm	
Source of Sample		MUD PIT	
Rm @ Meas. Temperature		0.400 ohmm @ 82.00 degF	
Rmf @ Meas. Temperature		0.34 ohmm @ 82.00 degF	
Rmc @ Meas. Temperature		0.460 ohmm @ 82.00 degF	
Source Rmf		CALCULATED	
Rm @ BHT		0.28 ohmm @ 120.0 degF	
Time Since Circulation		5.5 hr	
Time on Bottom		27-Nov-12 17:52	
Max. Rec. Temperature		120.0 degF @ 4930.0 ft	
Equipment		10800785 LIBERAL	
Recorded By		S. INGERSOLL	
Witnessed By		J. CHRISTIAN	

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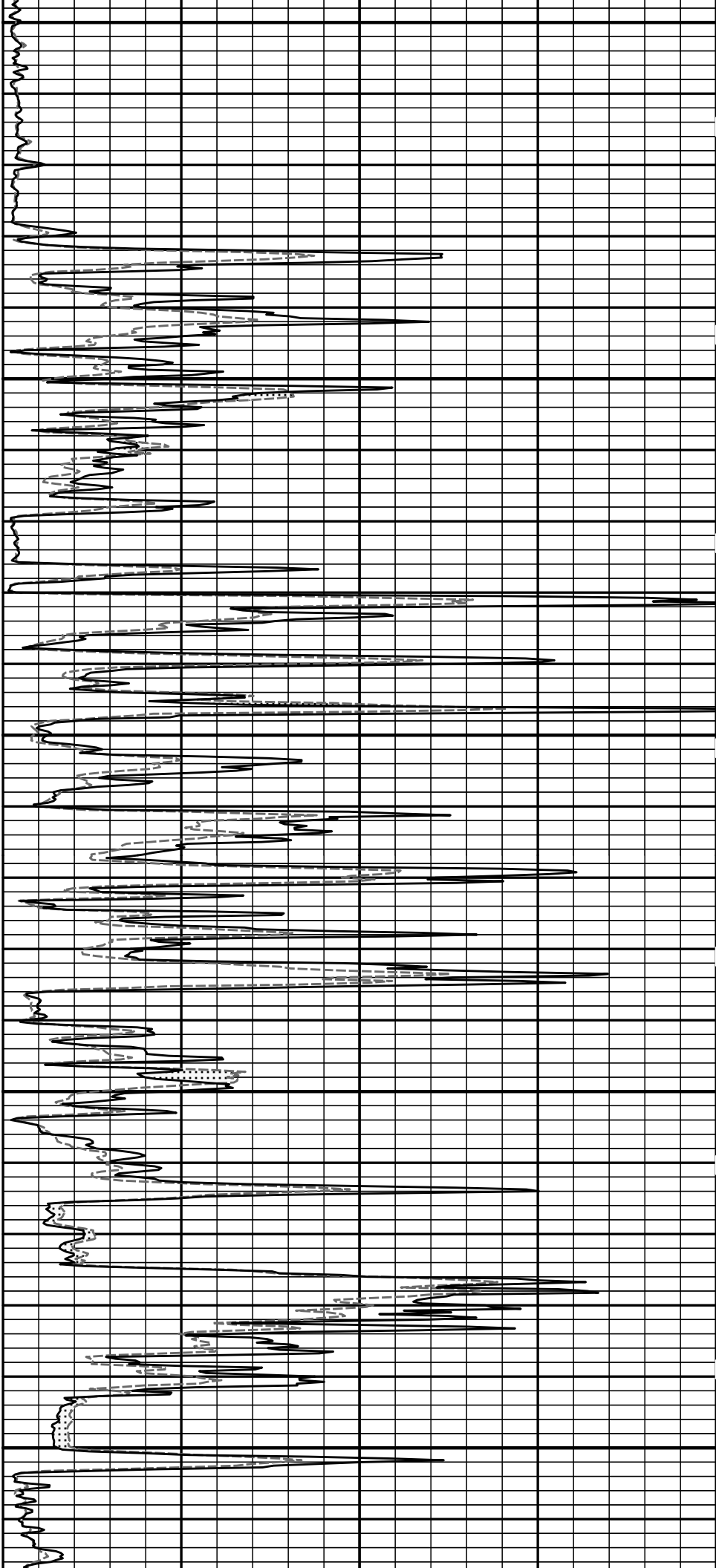
Service Ticket No.: 900033352				API Serial No.: 15-097-21737				PGM Version: WL INSITE R3.6.0 (Build 3)											
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES													
Date		Sample No.				Type Log		Depth		Scale Up Hole		Scale Down Hole							
Depth-Driller																			
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		CENT.							
Rmc @ Meas. Temp.		@		@				10929775											
Source Rmf		Rmc																	
Rm @ BHT		@		@															
Rmf @ BHT		@		@															
Rmc @ BHT		@		@															
EQUIPMENT DATA																			
GAMMA				ACOUSTIC				DENSITY				NEUTRON							
Run No.		ONE		Run No.		ONE		Run No.		ONE		Run No.		ONE					
Serial No.		10811258		Serial No.		10747683		Serial No.		10950489		Serial No.		10755066					
Model No.		GTET		Model No.		BSAT		Model No.		SDLT		Model No.		DSNT					
Diameter		3.625"		No. of Cent.		2		Diameter		4.5"		Diameter		3.625"					
Detector Model No.		GTET		Spacing		.5'		Log Type		GAM-GAM		Log Type		NEU-NEU					
Type		SCINT						Source Type		CS-137		Source Type		AM-241BE					
Length		8"		LSA [Y/N]				Serial No.				Serial No.							
Distance to Source				FWDA [Y/N]				Strength		1.5 CI		Strength		15 CI					
LOGGING DATA																			
GENERAL				GAMMA				ACOUSTIC				DENSITY				NEUTRON			

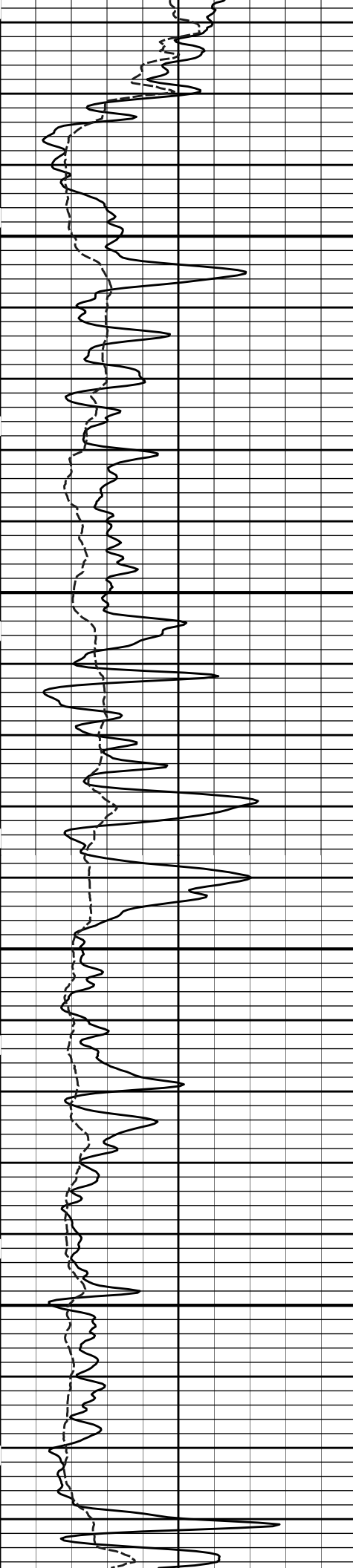
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3400

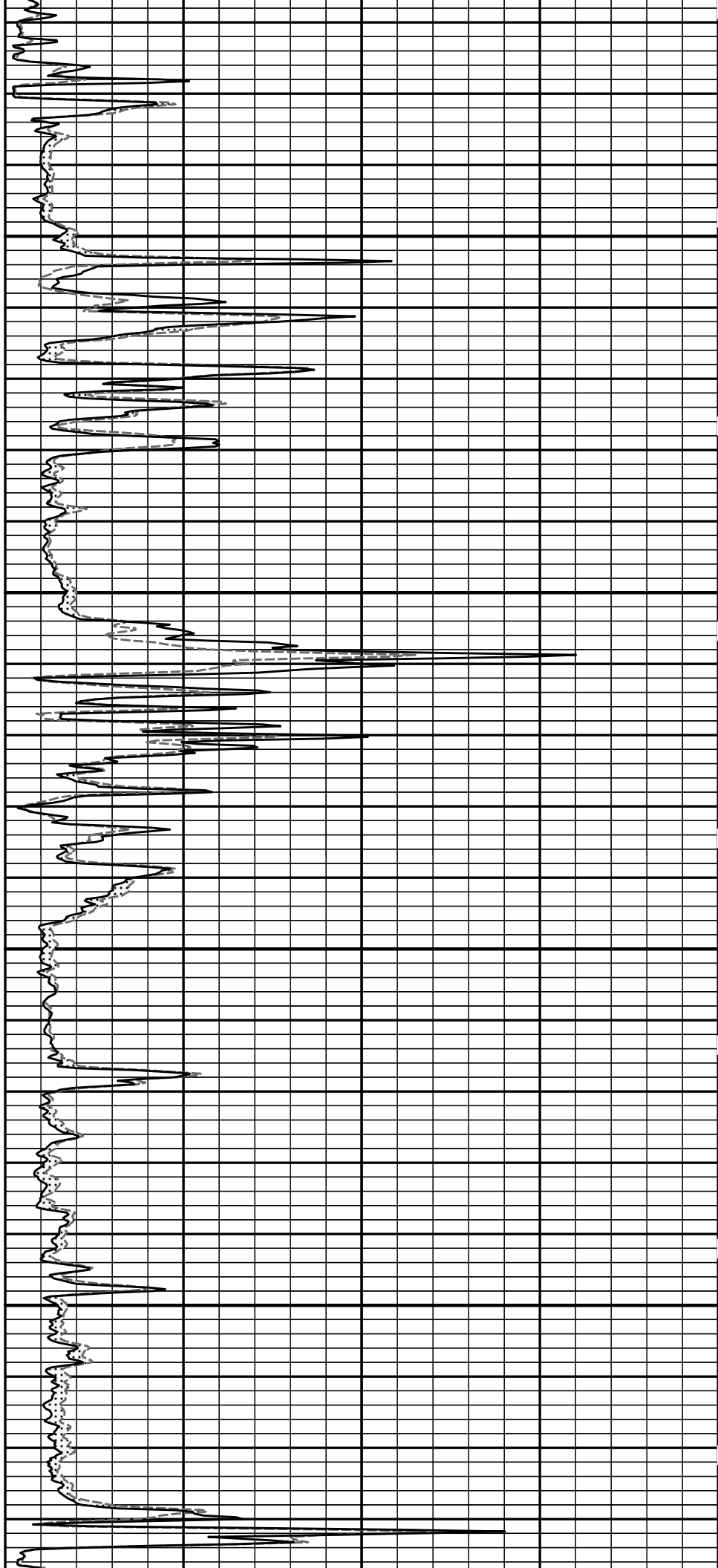
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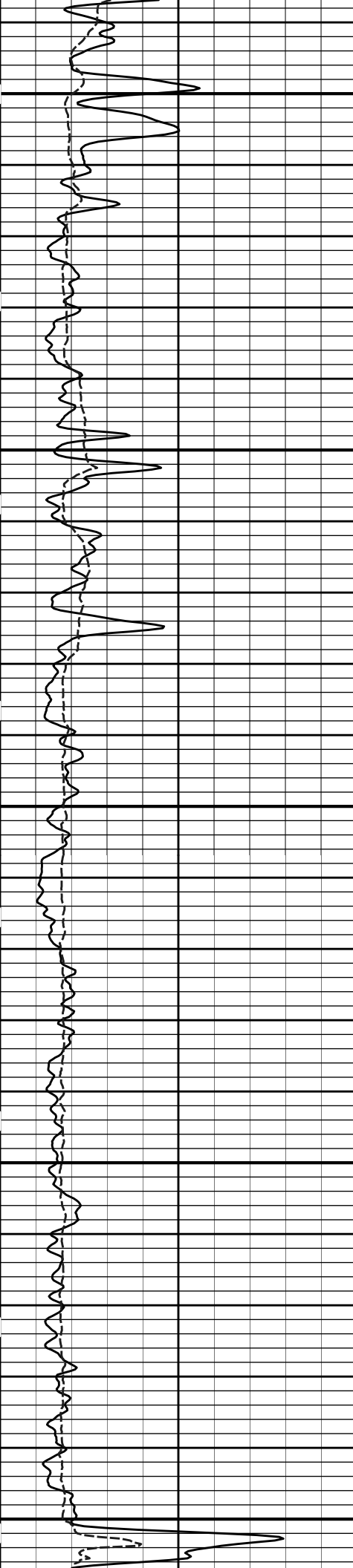




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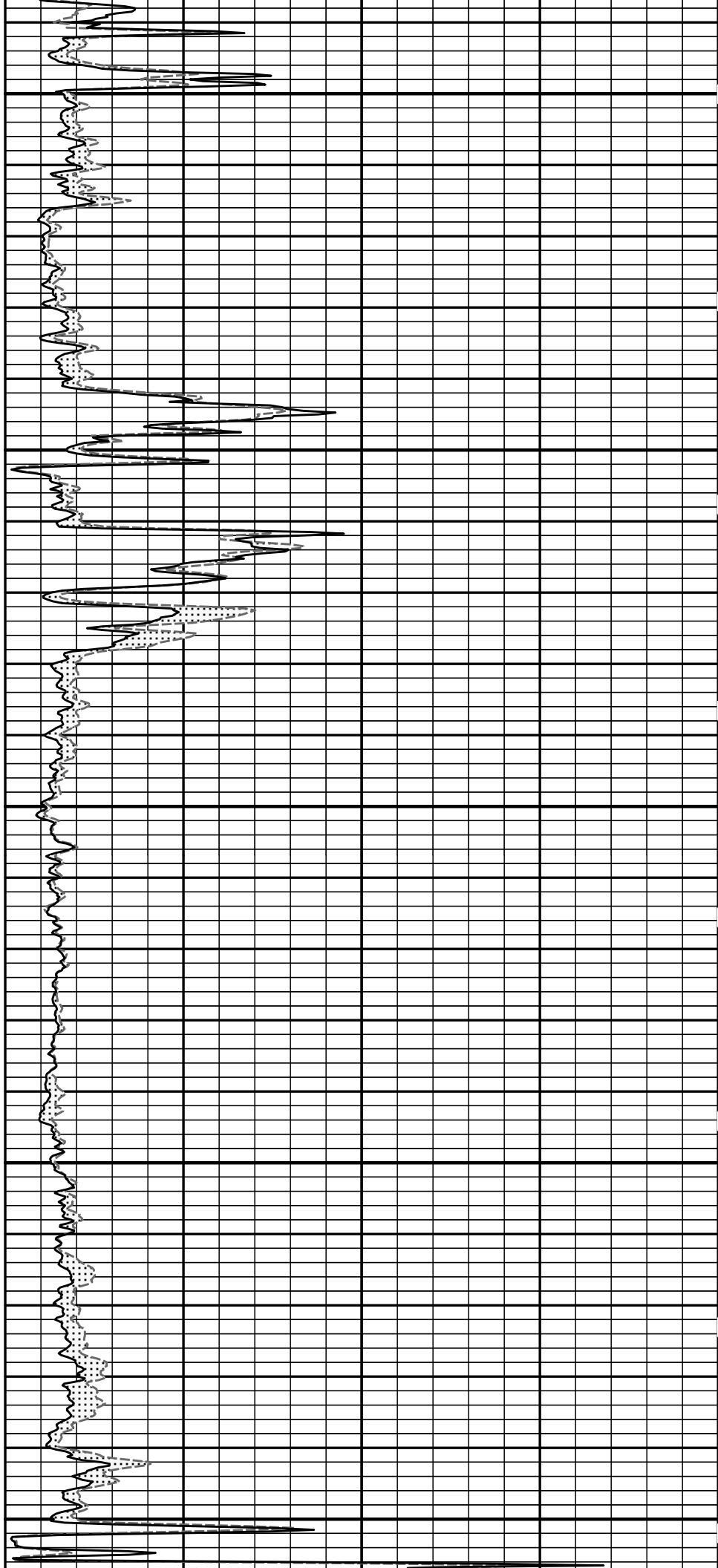


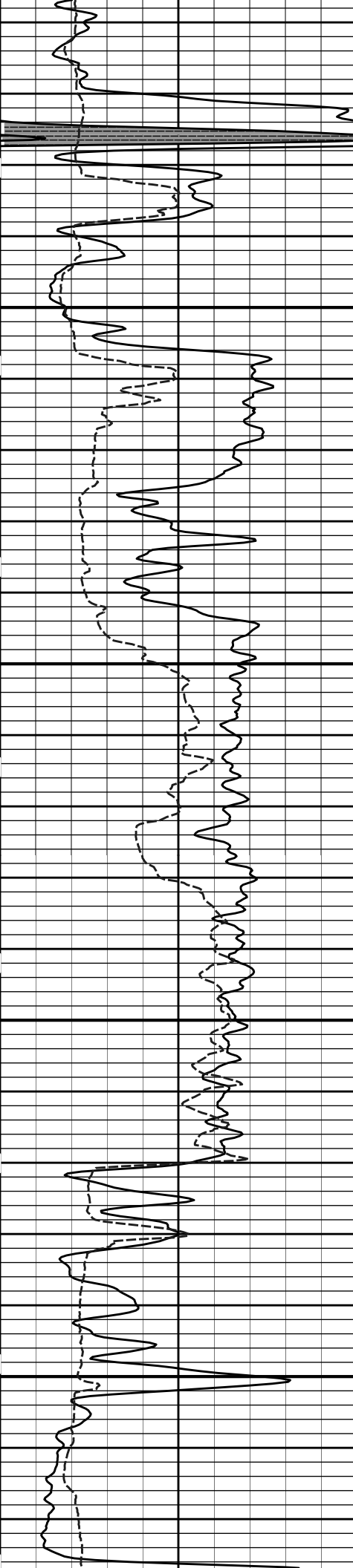


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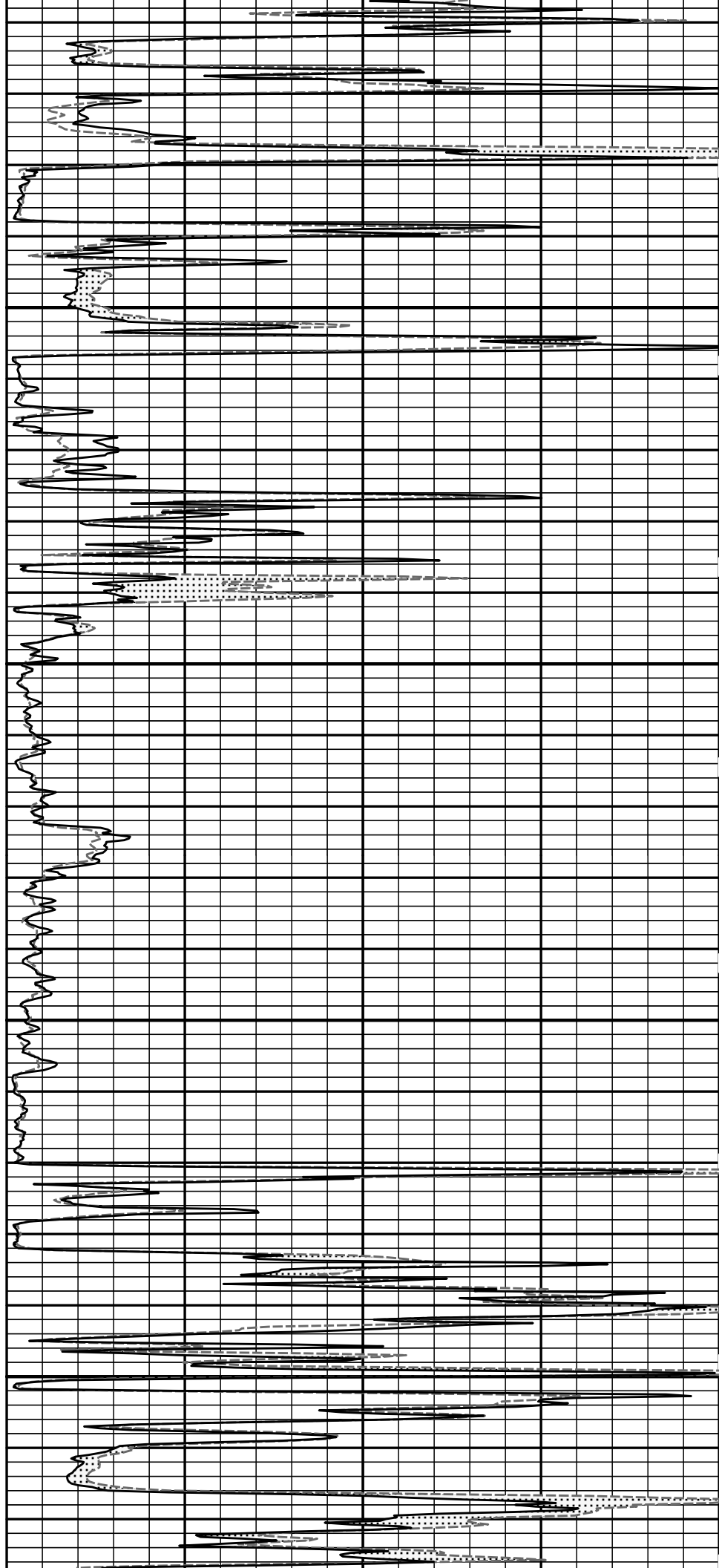
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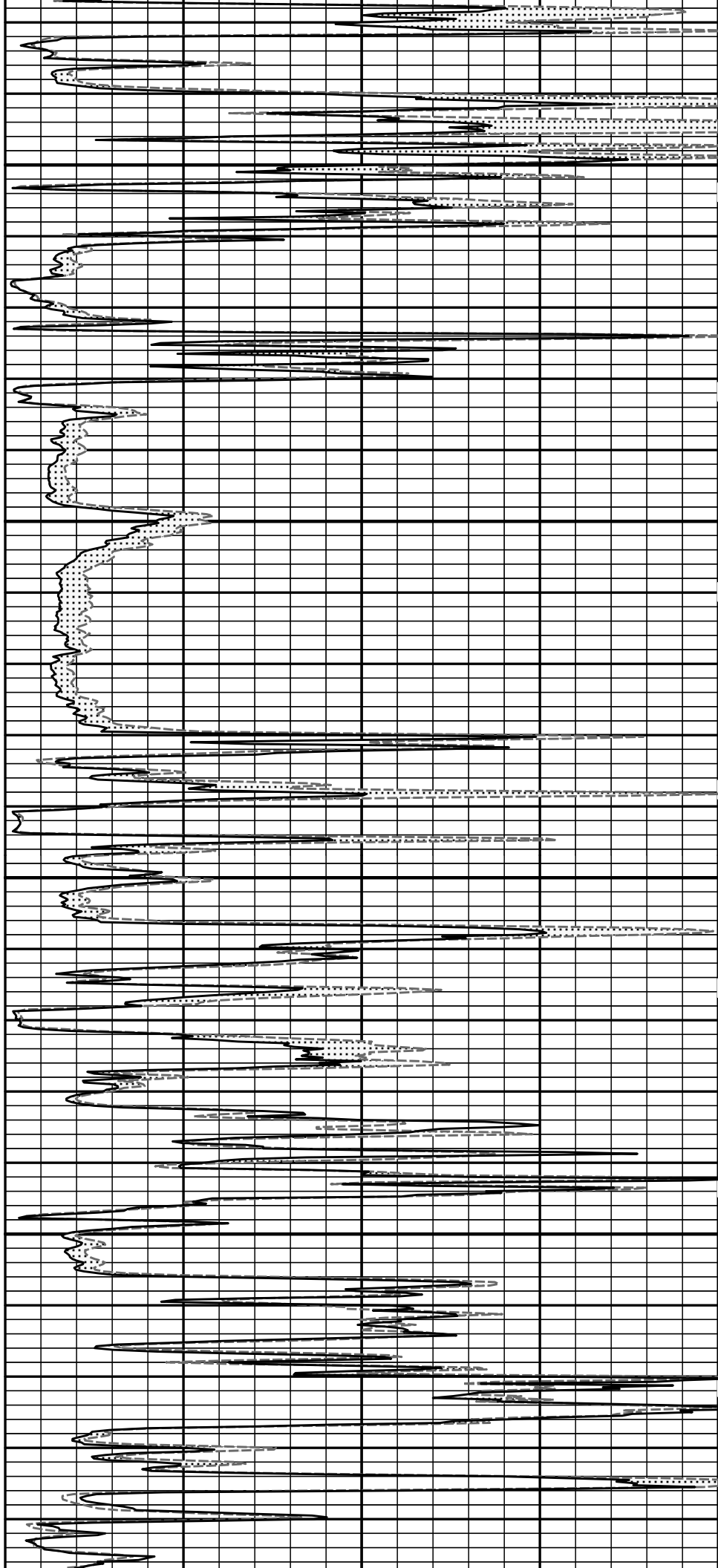
4100

4200

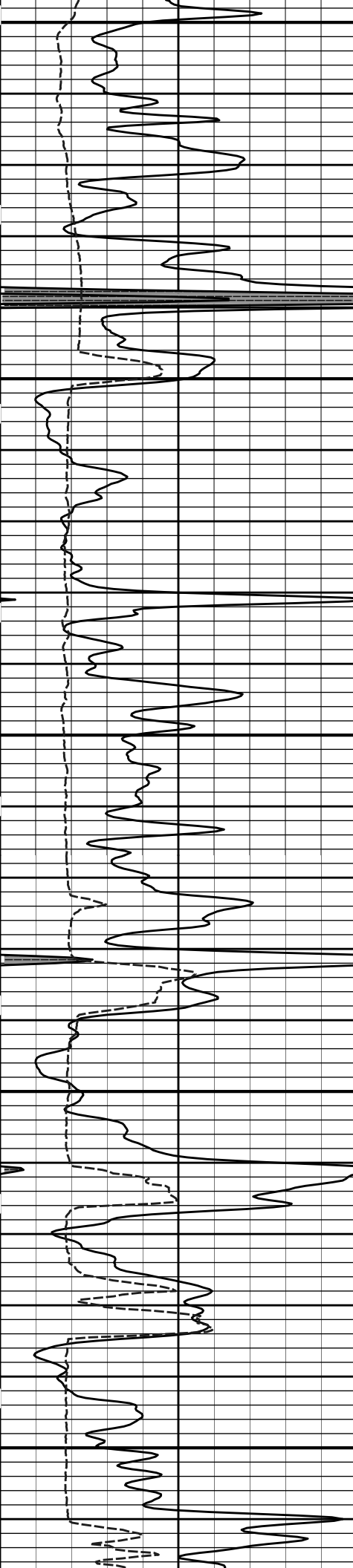




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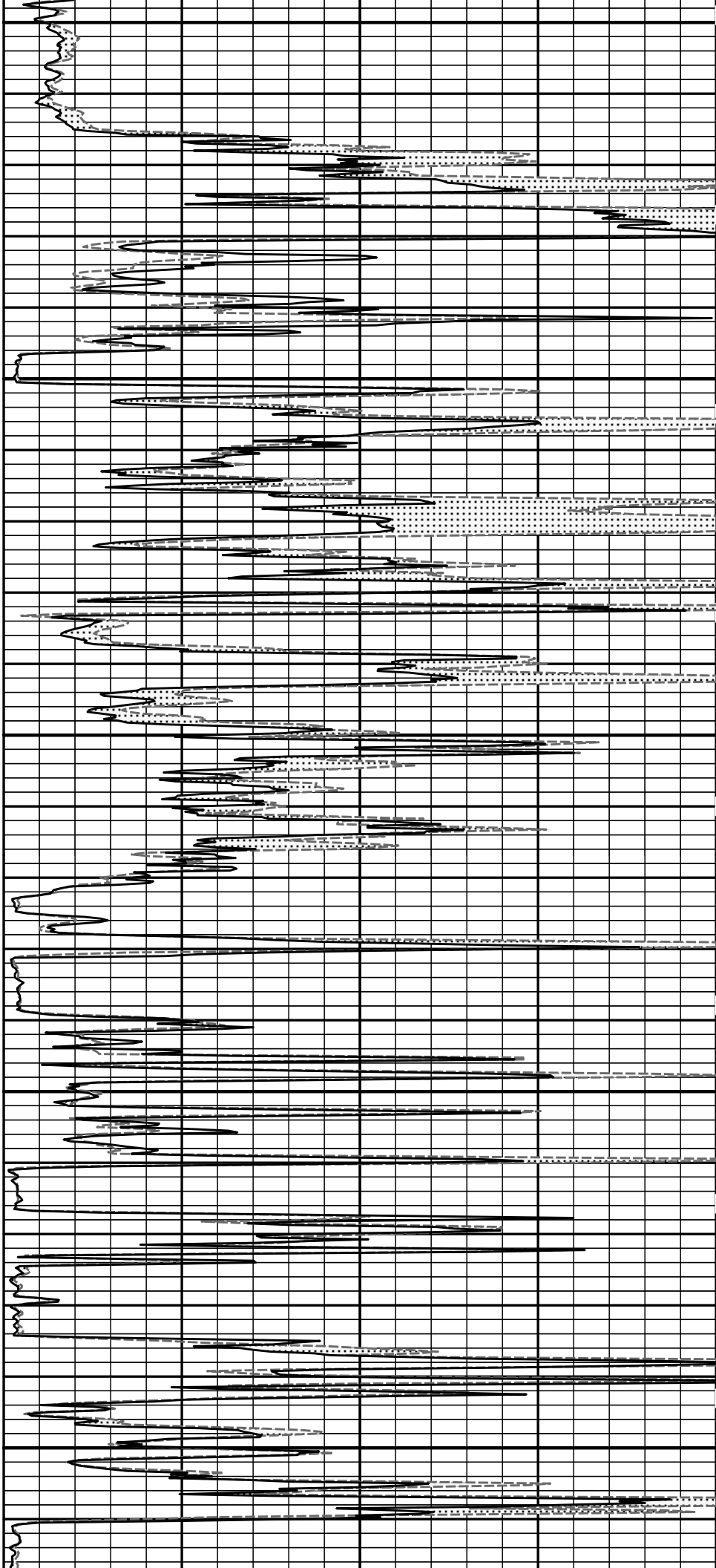


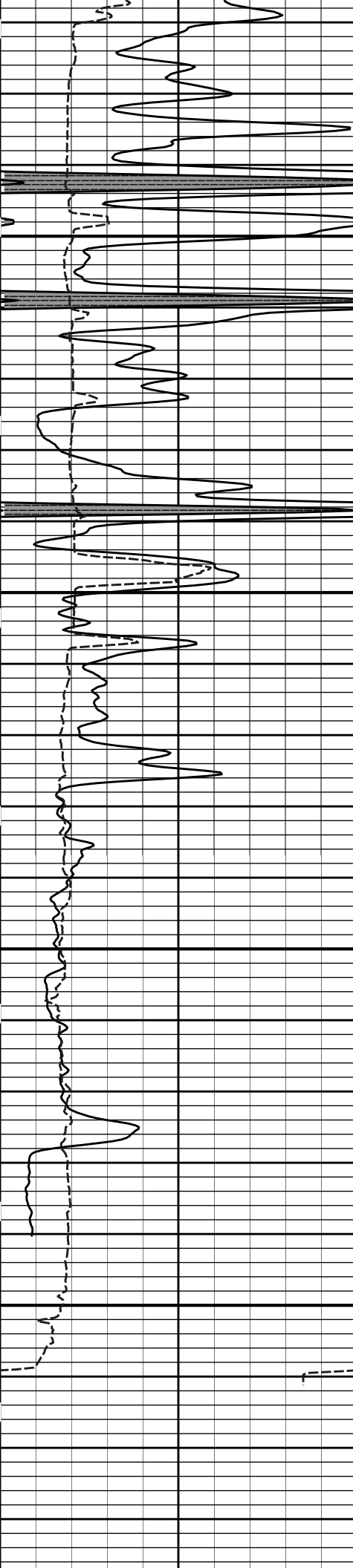
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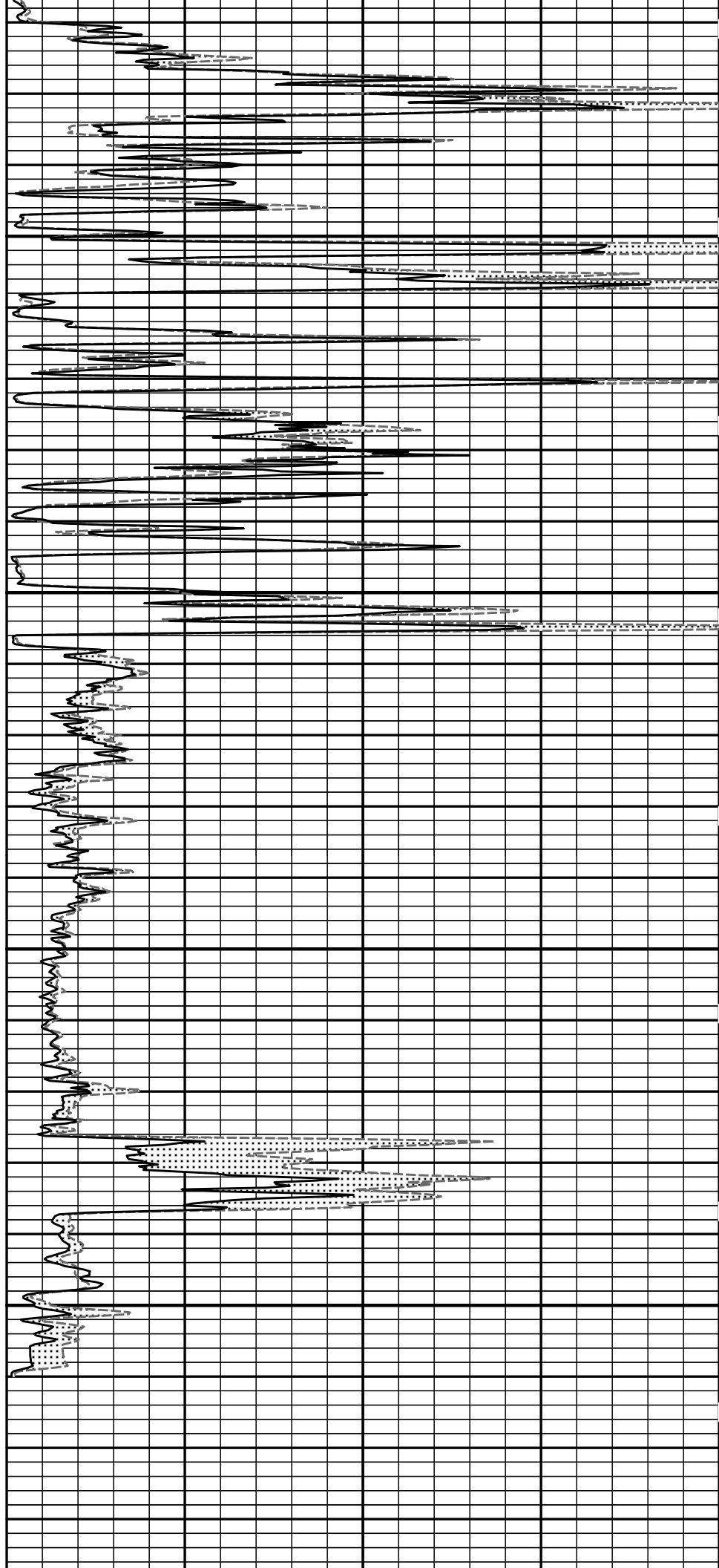
4600

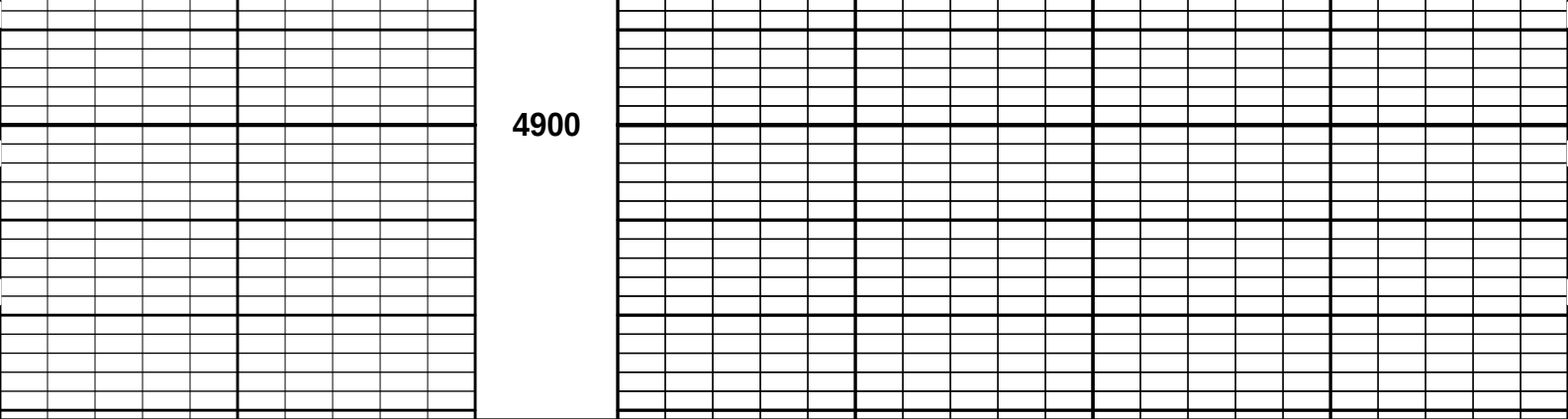




4700

4800





4900

6	Caliper	16	1 : 240		
	inches		ft		
0	Gamma API	150		0	MicrologLateral
	api				ohm-metre
	SHALE			0	MicrologNormal
					ohm-metre
					PERMEABLE

HALLIBURTON

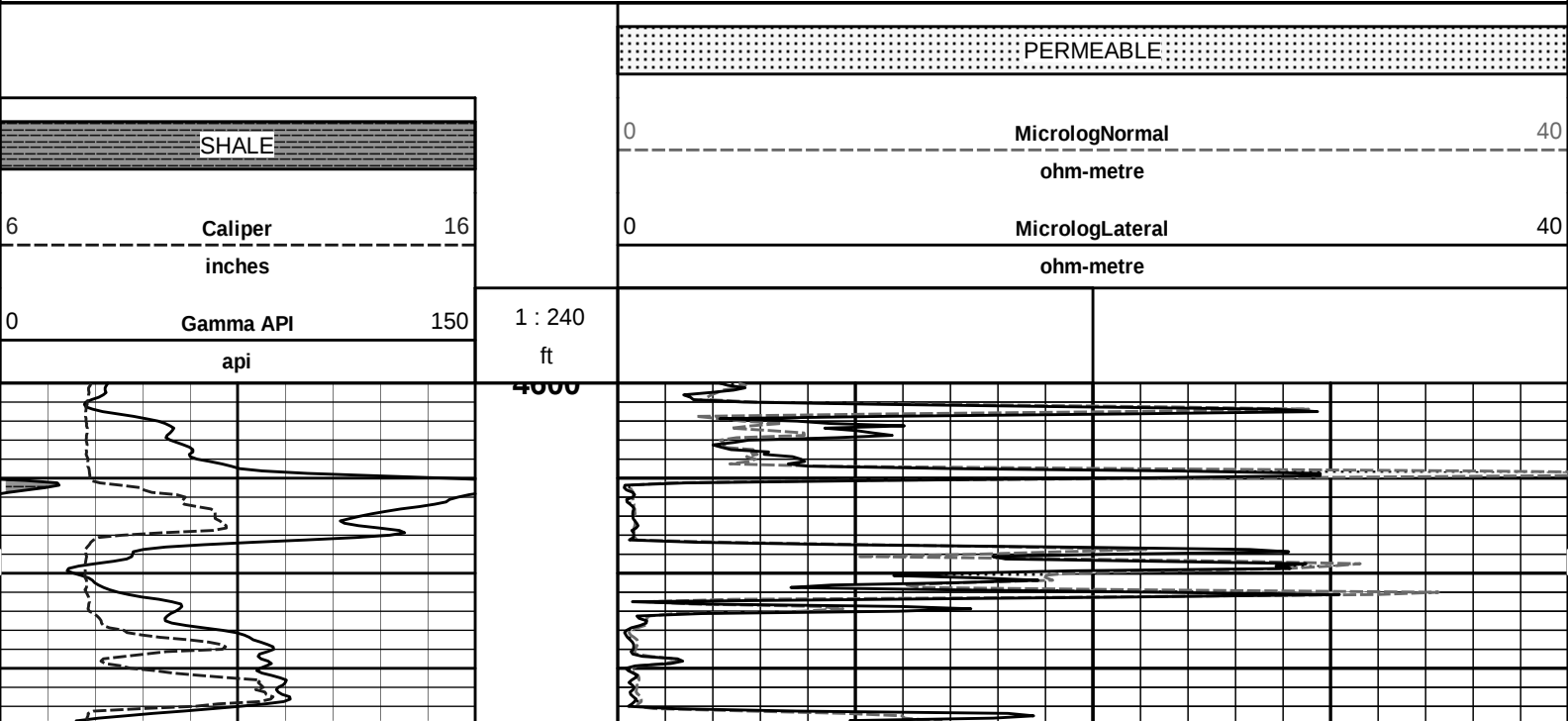
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Plot Range: 3295 ft to 4931 ft
Data: END_WRENCH#5\Well Based\POROSITY\
Plot File: \\-LOCAL-\\END_WRENCH#5\Well Based\MICROLOG\Microlog_IQ_5_main_lib

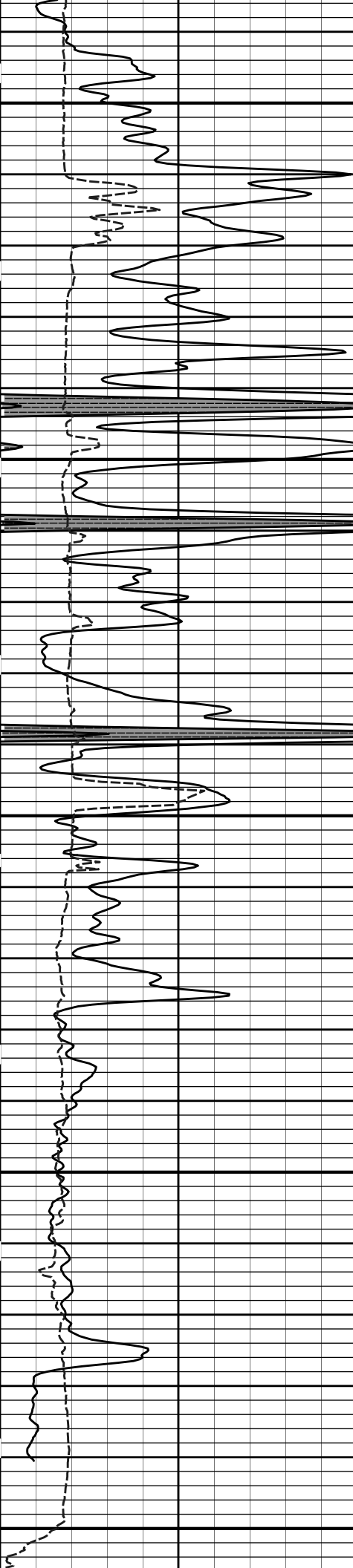
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 27-Nov-12 21:34:45
Plot Range: 4600 ft to 4929.5 ft
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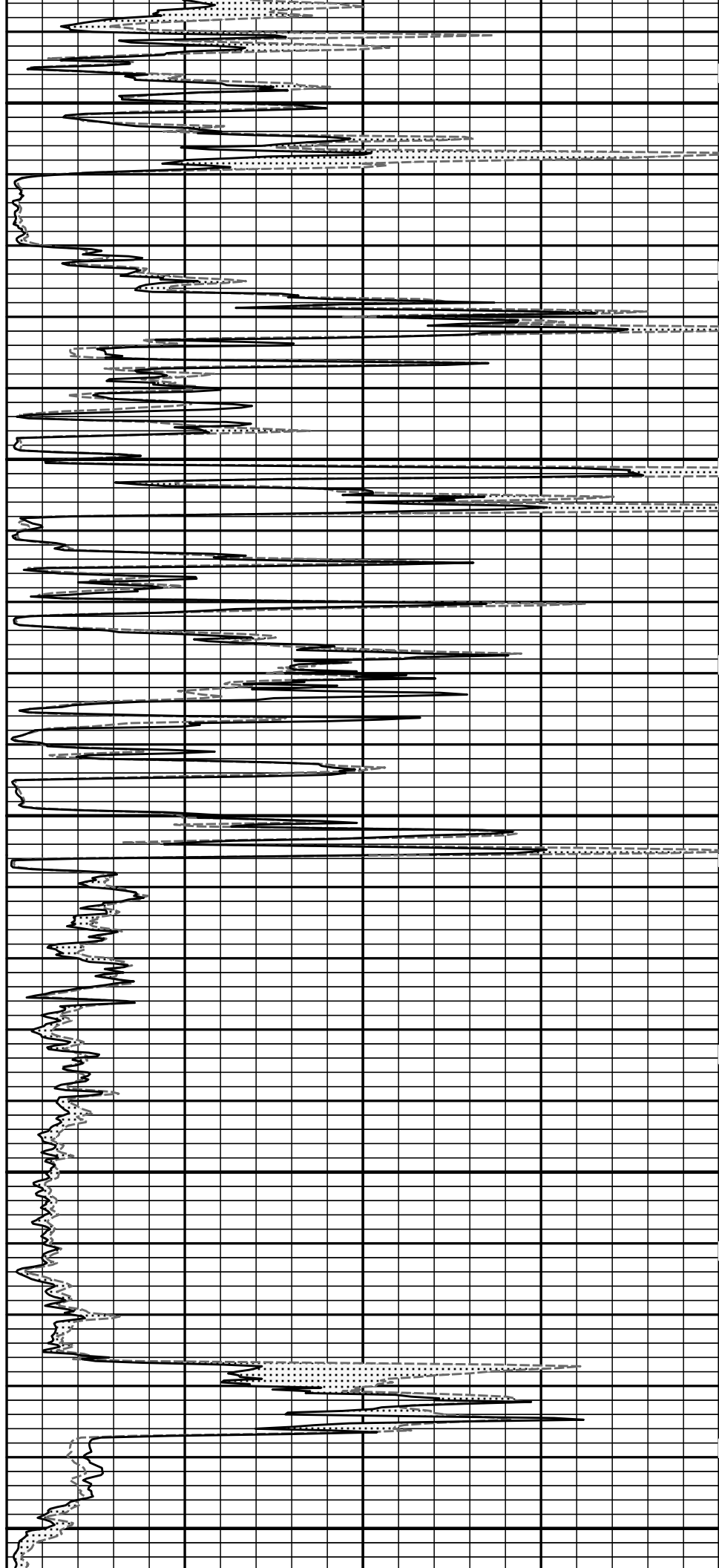
REPEAT SECTION

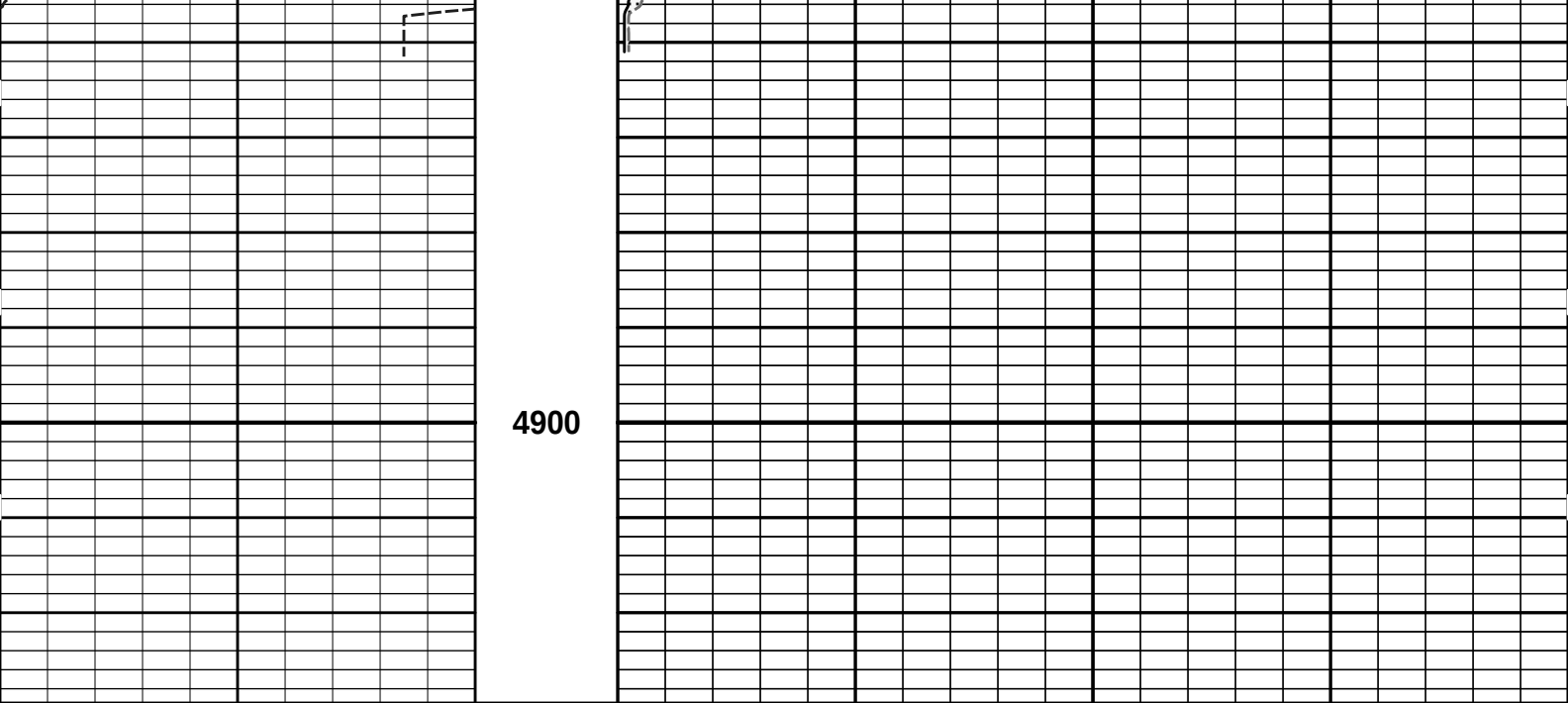




4700

4800





4900

0	Gamma API	150	1 : 240 ft		
	api				
6	Caliper	16		0	MicrologLateral
	inches				ohm-metre
	SHALE			0	MicrologNormal
					ohm-metre
					PERMEABLE

HALLIBURTON

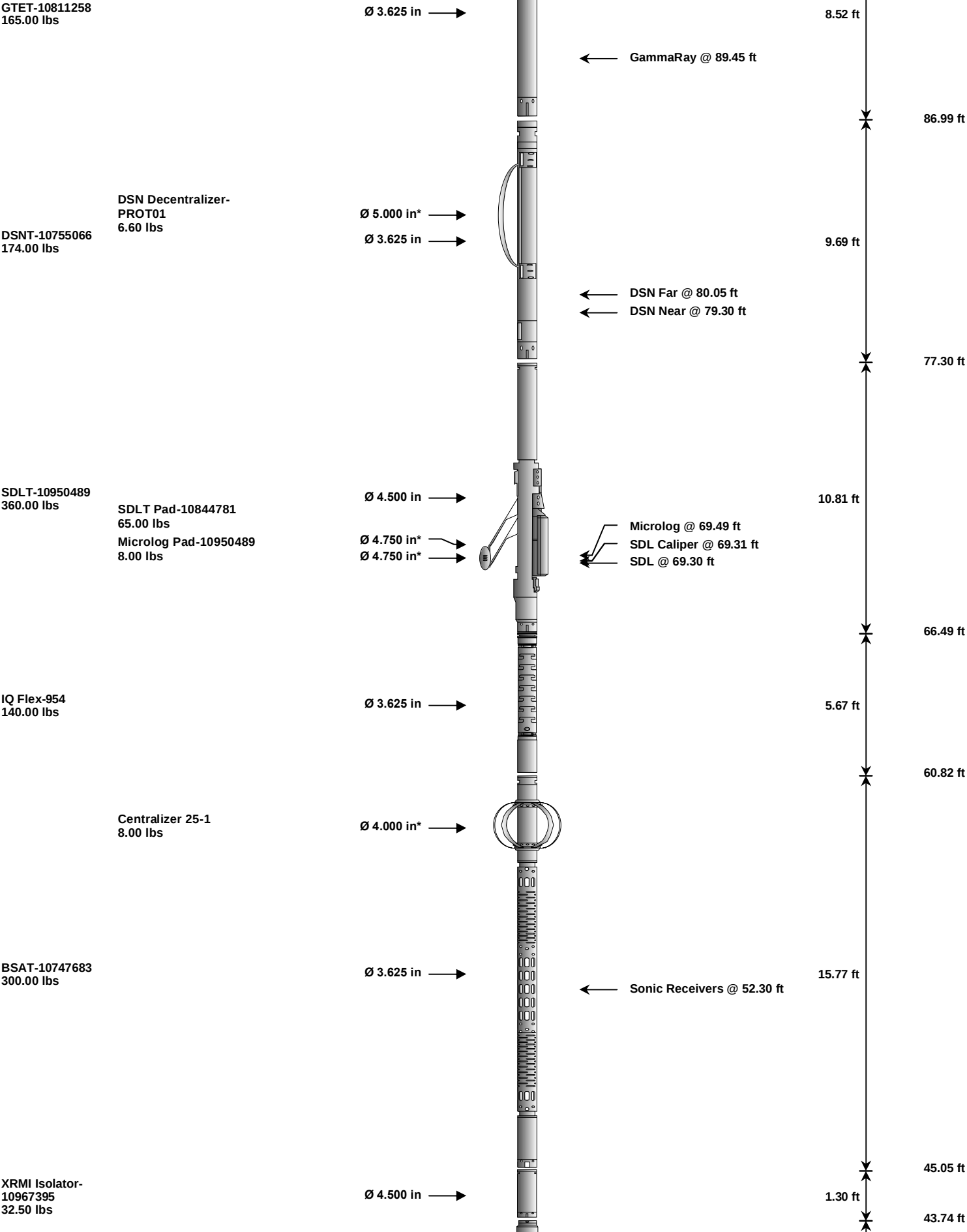
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Data: END_WRENCH#5\Well Based\REPEAT\
Plot File: \\-LOCAL-\\END_WRENCH#5\Well Based\MICROLOG\Microlog_IQ_5_rep_lib

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-B097 135.00 lbs		Ø 3.625 in →		← Load Cell @ 101.82 ft ← BH Temperature @ 101.25 ft	6.25 ft	105.50 ft
SP Sub-PROT01 60.00 lbs		Ø 3.625 in →		← SP @ 97.47 ft	3.74 ft	99.25 ft
						95.51 ft



XRMI-I Instrument-
11682412
290.00 lbs

Ø 4.500 in →

13.00 ft

30.74 ft

XRMI-I Mandrel-
11682413
206.00 lbs

Ø 5.000 in →

Ø 4.500 in →

11.16 ft

Pads 2, 4, 6 @ 22.35 ft

Pads 1, 3, 5 @ 22.12 ft

19.58 ft

ACRt Instrument-
I776
50.00 lbs

Centralizer 25-2
8.00 lbs

Ø 3.625 in →

Ø 4.000 in* →

5.03 ft

14.55 ft

← Mud Resistivity @ 13.19 ft

← ACRt @ 9.21 ft

ACRt Sonde-
10929775
200.00 lbs

Ø 3.625 in →

14.22 ft

0.33 ft

Bull Nose-PROT01
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)
RWCH	Releasable Wireline Cable Head		B097	135.00	6.25	99.25	300.00
SP	SP Sub		PROT01	60.00	3.74	95.51	300.00
GTET	Gamma Telemetry Tool		10811258	165.00	8.52	86.99	60.00
DSNT	Dual Spaced Neutron		10755066	174.00	9.69	77.30	60.00
DCNT	DSN Decentralizer		PROT01	6.60	5.13	* 80.63	300.00
SDLT	Spectral Density Tool		10950489	360.00	10.81	66.49	60.00
MICP	Microlog Pad		10950489	8.00	1.00	* 68.99	60.00
SDLP	Density Insite Pad		10844781	65.00	2.55	* 68.70	60.00
IQF	IQ Flex tool		954	140.00	5.67	60.82	300.00
BSAT	Borehole Sonic Array Tool		10747683	300.00	15.77	45.05	60.00
OBCEN	Centralizer - 25 in. Overbody		1	8.00	2.08	* 57.73	300.00
	Isolator for the XRMI tool		10967395	32.50	1.30	43.74	300.00
XRMI	XRMI Navigation - Insite		11682412	290.00	13.00	30.74	30.00
XRMI-I	XRMI Imager - Insite		11682413	206.00	11.16	19.58	30.00

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.952	0.950	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):	0.2115	0.2107	0.0009	+/- 0.0020
Calibrated Ratio:	9.75	9.72	0.029	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0658	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 - 10755066	Reference Calibration Date:	21-Nov-12 10:09:07
Engineer:	S. INGERSOLL	Calibration Date:	27-Nov-12 15:07:29
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN-436
Snow Block S/N: TRK_954

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0658	0.0582	-0.0076	+/- 0.0150

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:	21-Nov-12 15:43:37
Engineer:	T. HYDE	Calibration Date:	21-Nov-12 15:49:09
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 10755066		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2121.95	-2217.79	-7000.00 - -1000.00
Pad Gain	0.0004026	0.0004063	0.000200 - 0.000600
Arm Offset	-329.10	265.37	-5000.00 - 3000.00
Arm Gain	0.0004901	0.0004564	0.000300 - 0.000700
Arm Power	-0.000003223	-0.000001154	-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	Calibrated	Change	Control Limit On

Measurement	(Previous Coeff.)	(New Coeff.)	Change	New Value
PAD EXTENSION:				
Small Ring (in)	2.02	2.00	-0.02	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.40	6.50	0.10	+/- 0.20
Medium Ring (in)	8.22	8.25	0.03	+/- 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

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT Pad - 10844781	Reference Calibration Date:	21-Nov-12 14:51:25
Engineer:	T. HYDE	Calibration Date:	21-Nov-12 15:35:41
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Logging Source S/N: 5073GW		
Aluminum Block S/N: 63061	Density: 2.591g/cc	Pe: 3.170
Magnesium Block S/N: 63393	Density: 1.690g/cc	Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	0.9959	0.9366	0.90 - 1.10
Near Dens Gain	0.9848	0.9479	0.90 - 1.10
Near Peak Gain	1.0078	0.9320	0.90 - 1.10
Near Lith Gain	0.9875	0.9365	0.90 - 1.10
Far Bar Gain	0.9864	0.9851	0.90 - 1.10
Far Dens Gain	0.9786	0.9760	0.90 - 1.10
Far Peak Gain	0.9725	0.9713	0.90 - 1.10
Far Lith Gain	0.9546	0.9493	0.90 - 1.10
Near Bar Offset	0.2346	0.7806	NONE
Near Dens Offset	0.3150	0.6431	NONE
Near Peak Offset	0.1108	0.7434	NONE
Near Lith Offset	0.2701	0.6938	NONE
Far Bar Offset	0.2556	0.2732	NONE
Far Dens Offset	0.3121	0.3422	NONE
Far Peak Offset	0.3261	0.3411	NONE
Far Lith Offset	0.4330	0.4801	NONE
Near Bar Background	810.37	809.82	700 - 1450
Near Dens Background	265.01	264.61	230 - 480
Near Peak Background	115.45	116.31	100 - 210
Near Lith Background	143.35	143.17	125 - 260
Far Bar Background	531.89	528.34	450 - 900
Far Dens Background	205.07	206.14	175 - 345
Far Peak Background	82.91	82.49	70 - 140
Far Lith Background	85.39	86.19	75 - 145

CALIBRATION BLOCK SUMMARY			
Current	Calibrated		Control Limit

Measurement	Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.697	1.690	-0.007	+/- 0.015
Pe	2.526	2.553	0.027	+/- 0.150
ALUMINUM				
Density (g/cc)	2.584	2.591	0.007	+/- 0.01500
Pe	3.098	3.127	0.029	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0001	+/- 0.0110	-0.0007	+/- 0.0140
Magnesium Block	-0.0002	+/- 0.0110	-0.0001	+/- 0.0140
Aluminum Block	-0.0007	+/- 0.0110	-0.0009	+/- 0.0140
Resolution	9.45	6.00 - 11.50	9.07	6.00 - 11.50
Internal Verifier(B+D+P+L)	1334	1200 - 2700	903	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:	21-Nov-12 15:35:41
Engineer:	S. INGERSOLL	Calibration Date:	27-Nov-12 15:11:59
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1

Pad Temperature: 58.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1333.904	1337.414	3.510	14.774
Far (B+D+P+L) cps	903.153	904.768	1.615	16.334
Near Resolution	9.45	9.49	0.040	0.50
Far Resolution	9.07	9.07	0.000	1.00

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

MICRO LOG SHOP CALIBRATION

Tool Name:	Microlog Pad - 10950489	Reference Calibration Date:	21-Nov-12 14:26:41
Engineer:	T. HYDE	Calibration Date:	21-Nov-12 14:27:45
Software Version:	WL INSITE R3.6.0 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 10755066		

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.05	-0.06	-0.02	-0.01	ohmm
Calibration Point #1	0.01	0.00	-0.01	0.00	ohmm
Calibration Point #2	20.01	20.00	20.01	20.00	ohmm
Internal Reference	19.93	19.92	20.00	19.99	ohmm

Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
Tool Zero	0.01		0.06		V
Calibration Point #1	17.03		3.47		V
Calibration Point #2	5302.42		6877.29		V
Internal Reference	5281.52		6874.41		V

MICRO LOG FIELD CHECK					
Tool Name:	Microlog Pad - 10950489			Reference Calibration Date:	21-Nov-12 14:27:45
Engineer:	S. INGERSOLL			Calibration Date:	27-Nov-12 15:13:05
Software Version:	WL INSITE R3.6.0 (Build 3)			Calibration Version:	1

	Measurement	Micro Log Normal		Micro Log Lateral		Units
		Shop	Field	Shop	Field	
	Tool Zero	-0.06	-0.06	-0.01	-0.01	ohmm
	Internal Reference	19.92	19.88	19.99	19.95	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.92	19.88	0.04	+/- 0.80
Microlog Lateral	19.99	19.95	0.04	+/- 0.80

CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-10811258						
Gamma Ray Calibrator	232.0	228.4	-----	3.6	+/- 9.00	api
DSNT-10755066						
Snow-Block Porosity	0.0658	0.0582	-----	0.0076	+/- 0.0150	decp
SDLT-10950489						
Pad Extension	3.75	-----	-----	0.00	+/-0.20	in
Ring Diameter	8.25	-----	-----	0.00	+/-0.20	in
SDLT Pad-10844781						
Near(B+D+P+L)	1333.904	1337.414	-----	-3.510	+/-14.774	cps
Far(B+D+P+L)	903.153	904.768	-----	-1.615	+/-16.334	cps
Microlog Pad-10950489						
MicroLog Normal	19.92	19.88	-----	0.04	+/-0.80	ohmm
MicroLog Lateral	19.99	19.95	-----	0.04	+/-0.80	ohmm

Data: END_WRENCH#5\0001 SP-GTET-DSN-SDL-BSAT-XRMI-ACRT-BN\005 27-Nov-12 17:52 Up @4930.5f	Date: 27-Nov-12 18:47:16
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HALLIBURTON					
PARAMETERS REPORT					

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
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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	9.500	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	1.000	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	4940.00	ft
	SHARED	BHT	Bottom Hole Temperature	130.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	XRMI-I Instrument	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	XRMI-I Instrument	
	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	
	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
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
	BSAT	MBOK	Compute BCAS Results?	Yes	
	BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz

BSAT	FLLO	Frequency Filter Low Pass Value?	3000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	User define	
BSAT	DTMA	Delta -T Matrix	47.60	uspf
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
XRMI-I Instrument	WRTI	Survey Writing Interval	30	ft
XRMI-I Instrument	SOPT	Smoothing Option	None	
XRMI-I Mandrel	DIMG	Process XRMI?	Yes	
XRMI-I Mandrel	ROTI	Rotate Image (N-E-S-W-N)?	Yes	
XRMI-I Mandrel	AGN	Use Button Auto Gain?	Yes	
XRMI-I Mandrel	BCLR	Button Auto Gain Color	127	
XRMI-I Mandrel	BFIL	Button Auto Gain Filter	0.020	
XRMI-I Mandrel	BGAN	Button Gain Value	0.001	
XRMI-I Mandrel	BOFF	Button Offset	0	
XRMI-I Mandrel	DIPE	Process Dipmeter Calculations?	Yes	
XRMI-I Mandrel	BHCS	Process Borehole Corrections?	Yes	
XRMI-I Mandrel	CLOK	Process Caliper Outputs?	Yes	
XRMI-I Mandrel	CMAX	Caliper Maximum Limit	100.0	in
XRMI-I Mandrel	CMIN	Caliper Mimimum Limit	3.5	in
XRMI-I Mandrel	NAVS	Navigation Source Tool	XRMI-I Instrument	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
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

HALLIBURTON

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	97.47	NO	
SP	Spontaneous Potential	97.47	BLK	1.250
SPR	Raw Spontaneous Potential	97.47	NO	
SPO	Spontaneous Potential Offset	97.47	NO	
GTET				
TPUL	Tension Pull	89.45	NO	

GR	Natural Gamma Ray API	89.45	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	89.45	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	89.45	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	79.20	NO	
RNDS	Near Detector Telemetry Counts	79.30	BLK	1.417
RFDS	Far Detector Telemetry Counts	80.05	TRI	0.583
DNTT	DSN Tool Temperature	79.30	NO	
DSNS	DSN Tool Status	79.20	NO	
ERND	Near Detector Telemetry Counts EVR	79.30	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	80.05	BLK	0.000
ENTM	DSN Tool Temperature EVR	79.30	NO	
SDLT				
TPUL	Tension Pull	69.31	NO	
PCAL	Pad Caliper	69.31	TRI	0.250
ACAL	Arm Caliper	69.31	TRI	0.250
BSAT				
TPUL	Tension Pull	52.30	NO	
STAT	Status	52.30	NO	
DLYT	Delay Time	52.30	NO	
SI	Sample Interval	52.30	NO	
TXRX	Raw Telemetry 10 Receivers	52.30	NO	
FRMC	Tool Frame Count	52.30	NO	
GMOD	Gain processing mode	45.05	NO	
XRMI-I Mandrel				
TPUL	Tension Pull	22.35	NO	
PAD1	XRMI Pad 1 values	22.12	NO	
PAD2	XRMI Pad 2 values	22.12	NO	
PAD3	XRMI Pad 3 values	22.12	NO	
PAD4	XRMI Pad 4 values	22.12	NO	
PAD5	XRMI Pad 5 values	22.12	NO	
PAD6	XRMI Pad 6 values	22.12	NO	
OD1	EMI Odd Button Values Pad 1	22.12	NO	
OD2	EMI Odd Button Values Pad 2	22.35	NO	
OD3	EMI Odd Button Values Pad 3	22.12	NO	
OD4	EMI Odd Button Values Pad 4	22.35	NO	
OD5	EMI Odd Button Values Pad 5	22.12	NO	
OD6	EMI Odd Button Values Pad 6	22.35	NO	
EV1	EMI Even Button Values Pad 1	22.14	NO	
EV2	EMI Even Button Values Pad 2	22.32	NO	
EV3	EMI Even Button Values Pad 3	22.14	NO	
EV4	EMI Even Button Values Pad 4	22.32	NO	
EV5	EMI Even Button Values Pad 5	22.14	NO	
EV6	EMI Even Button Values Pad 6	22.32	NO	
ITMP	Instrument Temperature	19.58	NO	
EMIM	Tool Mode	19.58	NO	
HAZI	Hole Azimuth	21.87	NO	
HAZI	Hole Azimuth - Down Delay	22.37	NO	
ZACC	Accelerometer Z	22.12	NO	
TPUL	Tension Pull	22.35	NO	

FIR1	Current Button R - Pad 1	22.12	NO	
FIR2	Current Button R - Pad 2	22.35	NO	
FIR3	Current Button R - Pad 3	22.12	NO	
FIR4	Current Button R - Pad 4	22.35	NO	
FIR5	Current Button R - Pad 5	22.12	NO	
FIR6	Current Button R - Pad 6	22.35	NO	
FIX1	Current Button X - Pad 1	22.12	NO	
FIX2	Current Button X - Pad 2	22.35	NO	
FIX3	Current Button X - Pad 3	22.12	NO	
FIX4	Current Button X - Pad 4	22.35	NO	
FIX5	Current Button X - Pad 5	22.12	NO	
FIX6	Current Button X - Pad 6	22.35	NO	
SIR1	Current Slow Button R - Pad 1	22.12	BLK	3.000
SIR2	Current Slow Button R - Pad 2	22.35	BLK	3.000
SIR3	Current Slow Button R - Pad 3	22.12	BLK	3.000
SIR4	Current Slow Button R - Pad 4	22.35	BLK	3.000
SIR5	Current Slow Button R - Pad 5	22.12	BLK	3.000
SIR6	Current Slow Button R - Pad 6	22.35	BLK	3.000
SIX1	Current Slow Button X - Pad 1	22.12	BLK	3.000
SIX2	Current Slow Button X - Pad 2	22.35	BLK	3.000
SIX3	Current Slow Button X - Pad 3	22.12	BLK	3.000
SIX4	Current Slow Button X - Pad 4	22.35	BLK	3.000
SIX5	Current Slow Button X - Pad 5	22.12	BLK	3.000
SIX6	Current Slow Button X - Pad 6	22.35	BLK	3.000
EMMR	Phasor Voltage - Real Part	22.12	NO	
EMMX	Phasor Voltage - Imaginary Part	22.12	NO	
PADV	Pad Voltage	19.58	BLK	0.250
ITMP	Instrument Temperature	19.58	BLK	0.000
CON1	Conductivity Pad 1	22.12	BLK	3.000
CON2	Conductivity Pad 2	22.35	BLK	3.000
CON3	Conductivity Pad 3	22.12	BLK	3.000
CON4	Conductivity Pad 4	22.35	BLK	3.000
CON5	Conductivity Pad 5	22.12	BLK	3.000
CON6	Conductivity Pad 6	22.35	BLK	3.000
UIR2	Current Button R No Delay - Pad 2	22.12	NO	
UIR4	Current Button R No Delay - Pad 4	22.12	NO	
UIR6	Current Button R No Delay - Pad 6	22.12	NO	
UIX2	Current Button X No Delay - Pad 2	22.12	NO	
UIX4	Current Button X No Delay - Pad 4	22.12	NO	
UIX6	Current Button X No Delay - Pad 6	22.12	NO	
TPUL	Tension Pull	22.35	NO	
ARM1	Caliper 1 measurement	22.12	BLK	0.000
ARM2	Caliper 2 measurement	22.12	BLK	0.000
ARM3	Caliper 3 measurement	22.12	BLK	0.000
ARM4	Caliper 4 measurement	22.12	BLK	0.000
ARM5	Caliper 5 measurement	22.12	BLK	0.000
ARM6	Caliper 6 measurement	22.12	BLK	0.000
MOTV	Motor Voltage Monitor 1	22.12	BLK	0.000
PRES	Caliper percentage of total compression of the spring	19.58	BLK	0.000
HAZI	Hole Azimuth	22.12	NO	
RB	Relative Bearing	22.12	NO	
AZI1	PAD1 Azimuth	22.12	NO	
DEVI	Inclination	22.12	NO	
ACRt Sonde				
TPUL	Tension Pull	2.73	NO	

F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000
RMUD	Mud Resistivity	12.52	BLK	0.000
F1RT	Transmitter Reference 12 KHz Real Signal	2.73	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000
ITMP	Instrument Temperature	2.73	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.73	NO	
TIDV	Instrument Temperature Derivative	2.73	NO	
TUDV	Upper Temperature Derivative	2.73	NO	
TLDV	Lower Temperature Derivative	2.73	NO	
TRBD	Receiver Board Temperature	2.73	NO	
SDLT Pad				
TPUL	Tension Pull	69.30	NO	
NAB	Near Above	69.12	BLK	0.920
NHL	Near Cesium High	69.12	BLK	0.920

NHI	Near Cesium High	69.12	BLK	0.920
NLO	Near Cesium Low	69.12	BLK	0.920
NVA	Near Valley	69.12	BLK	0.920
NBA	Near Barite	69.12	BLK	0.920
NDE	Near Density	69.12	BLK	0.920
NPK	Near Peak	69.12	BLK	0.920
NLI	Near Lithology	69.12	BLK	0.920
NBAU	Near Barite Unfiltered	69.12	BLK	0.250
NLIU	Near Lithology Unfiltered	69.12	BLK	0.250
FAB	Far Above	69.47	BLK	0.250
FHI	Far Cesium High	69.47	BLK	0.250
FLO	Far Cesium Low	69.47	BLK	0.250
FVA	Far Valley	69.47	BLK	0.250
FBA	Far Barite	69.47	BLK	0.250
FDE	Far Density	69.47	BLK	0.250
FPK	Far Peak	69.47	BLK	0.250
FLI	Far Lithology	69.47	BLK	0.250
PTMP	Pad Temperature	69.31	BLK	0.920
NHV	Near Detector High Voltage	68.70	NO	
FHV	Far Detector High Voltage	68.70	NO	
ITMP	Instrument Temperature	68.70	NO	
DDHV	Detector High Voltage	68.70	NO	

Microlog Pad				
TPUL	Tension Pull	69.49	NO	
MINV	Microlog Lateral	69.49	BLK	0.750
MNOR	Microlog Normal	69.49	BLK	0.750
Data: END_WRENCH#5\0001 SP-GTET-DSN-SDL-BSAT-XRMI-ACRT-BN\005 27-Nov-12 17:52 Up @4930.5f				Date: 27-Nov-12 20:03:52

COMPANY	TGT PETROLEUM CORPORATION		
WELL	END WRENCH #5		
FIELD	EINSEL		
COUNTY	KIOWA	STATE	KANSAS
HALLIBURTON		MICROLOG	