



Weatherford

**CML MESSENGER SHUTTLE
SPECTRAL GAMMA RAY
LOG**

COMPANY				SANDRIDGE ENERGY			
WELL				MAIN 2924 1-30H			
FIELD				UNNAMED			
PROVINCE/COUNTY				FORD			
COUNTRY/STATE				USA \ KANSAS			
LOCATION				N2 N2 NW NW 200'FNL & 660' FWL			
SEC	TWP	RGE	Other Services				
30	29S	24W	MAI				
API Number		15-057-20849		MPD/MDN			
Permit Number							
Permanent Datum GL, Elevation 2600 feet							
Log Measured From KB							
Drilling Measured From KB @ 18' AGL							
Date		28-NOV-2012		Elevations:			
				KB 2618.00			
				DF 2618.00			
				GL 2600.00			
Run Number		ONE					
Depth Driller		9795.00		feet			
Depth Logger		9795.00		feet			
First Reading		9747.00		feet			
Last Reading		5750.00		feet			
Casing Driller		5793.00		feet			
Casing Logger		5793.00		feet			
Bit Size		6.125		inches			
Hole Fluid Type		WBM					
Density / Viscosity		9.60 lb/USg		40.00 CP			
PH / Fluid Loss		10.50		6.80 ml/30Min			
Sample Source		FLOWLINE					
Rm @ Measured Temp		0.21 @ 75.0		ohm-m			
Rmf @ Measured Temp		0.17 @ 75.0		ohm-m			
Rmc @ Measured Temp		0.25 @ 75.0		ohm-m			
Source Rmf / Rmc		CALC		CALC			
Rm @ BHT		0.14 @120.0		ohm-m			
Time Since Circulation		18 HOURS					
Max Recorded Temp		120.00		deg F			
Equipment Name		COMPACT					
Equipment / Base		18006		OKC			
Recorded By		GUTHMUELLER					
Witnessed By		J CLARK		J CHAPMAN			
AFE# DC12522		SO# 3538723					

BOREHOLE RECORD				Last Edited: 28-NOV-2012 22:58
Bit Size inches	Depth From feet		Depth To feet	
8.750	0.00		5793.00	
6.125	5793.00		9795.00	
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTER	7.000	0.00	5793.00	26.00

REMARKS
LOGGED WITH WLS VER 13.03.779 SOFTWARE
TOOLS RAN: SRT-070; MBS-135;MMSE-167; MTI-072; MGS-135; MCL-060; SKJ-041; SHA-033; MISD-310; MDN-388; MPD-435;MISD-609; SHA-454; SKJ-042; MISE-573; MFE-329; MISE575; SGS-170; MISE-577; MAI-389
WELL LOGGED USING MESSENGER METHOD OF DEPLOYMENT, AND MEMORY LOGGING SYSTEM
HARDWARE: MAI:0.5" MISE STANDOFF ABOVE ISA STANDOFF BELOW MFE: 0.5" MISE STANDOFFS ABOVE AND BELOW MPD: 4"PROFILE PLATE, MIS-A SINGLE SPRING DECENTRALIZER BELOW MDN: MISD DOUBLE SPRING DECENTRALIZER RAN ABOVE
2.71 G/CC DENSITY MATRIX USED TOCALCULATE POROSITY ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST
DRILL PIPE DEPTH DURING DEPLOYMENT - 9661 LOGGING TOOL DEPTH AFTER DEPLOYMENT- 9763

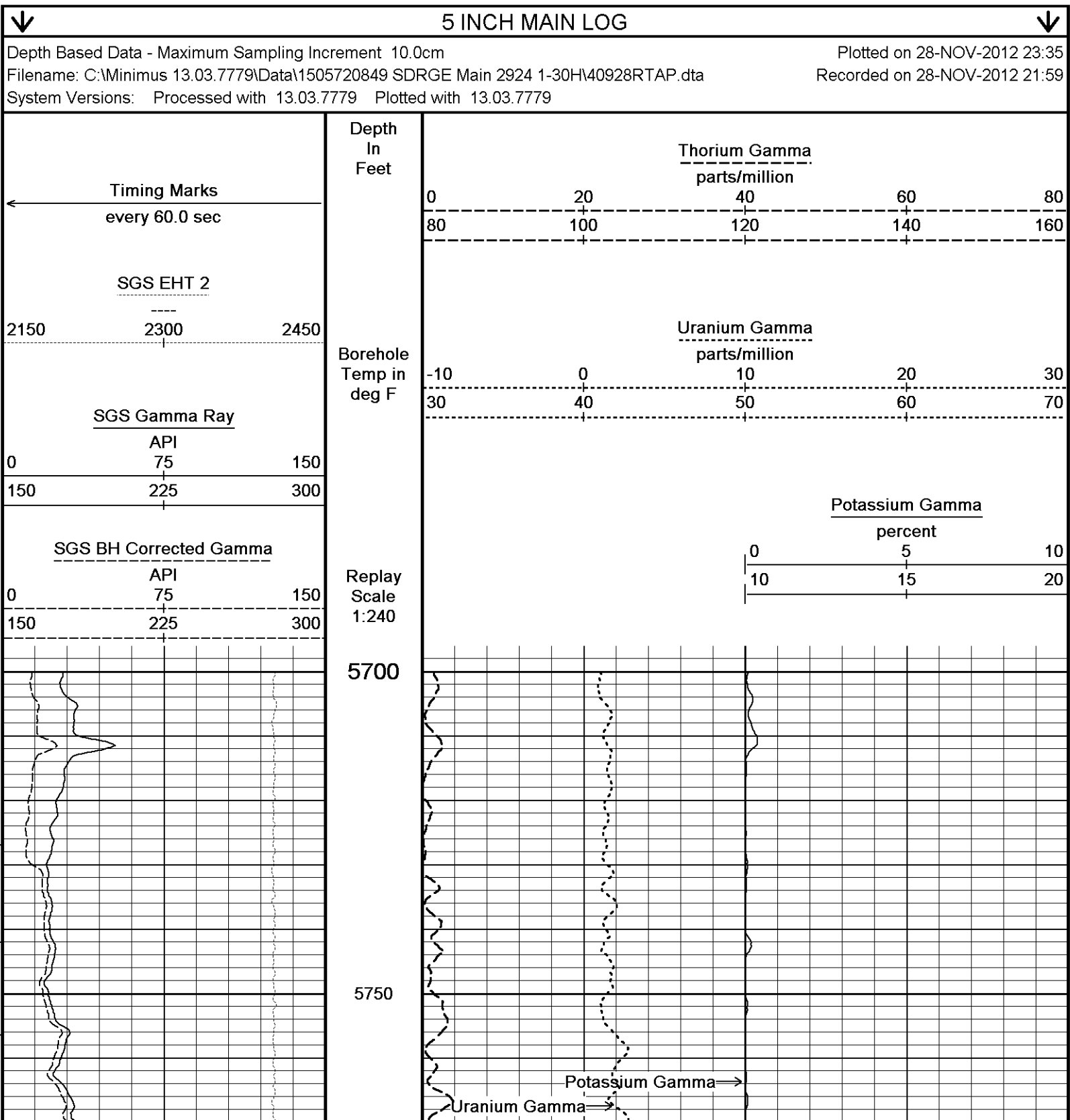
4.5" CASING USED TO CALCULATE AHV

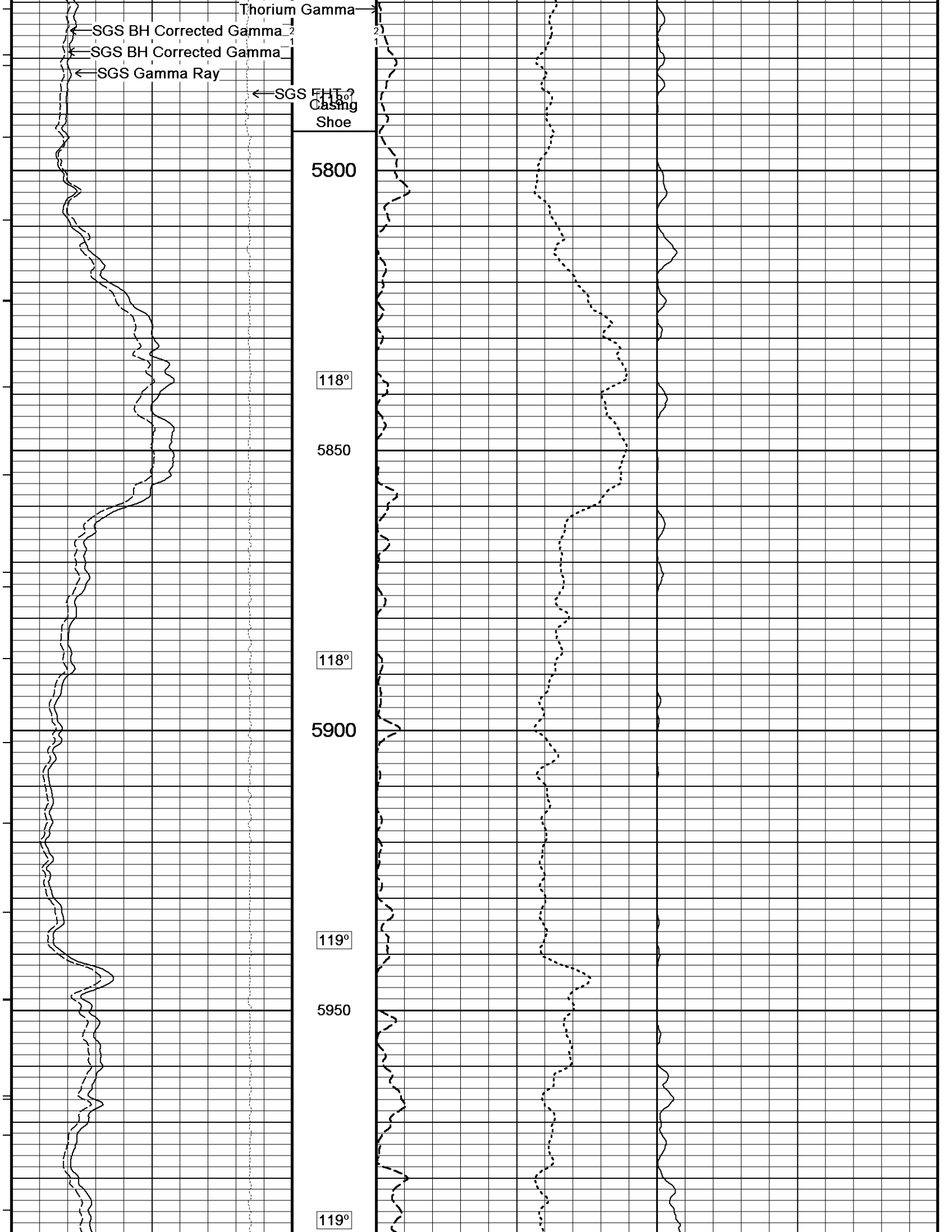
SERVICE ORDER # 3538723

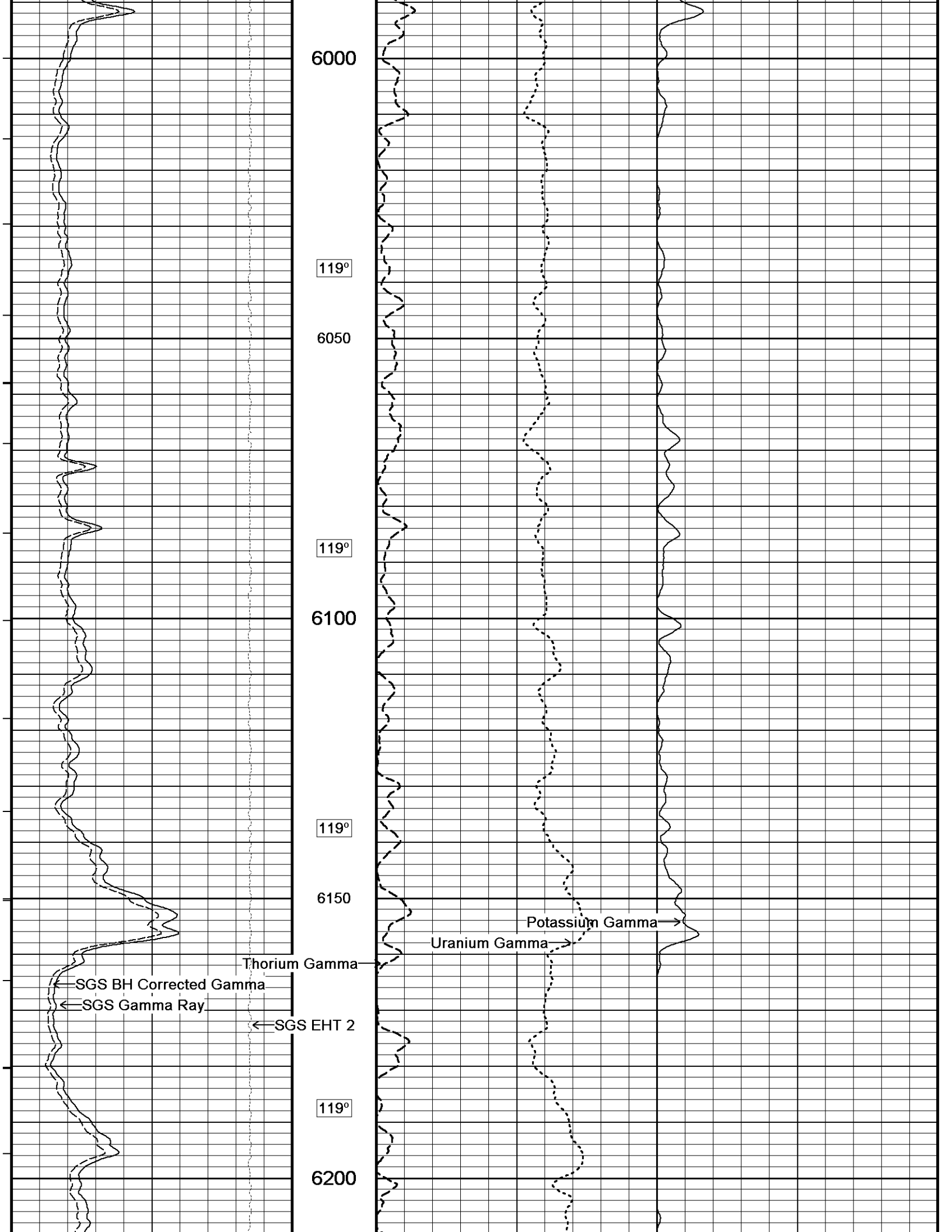
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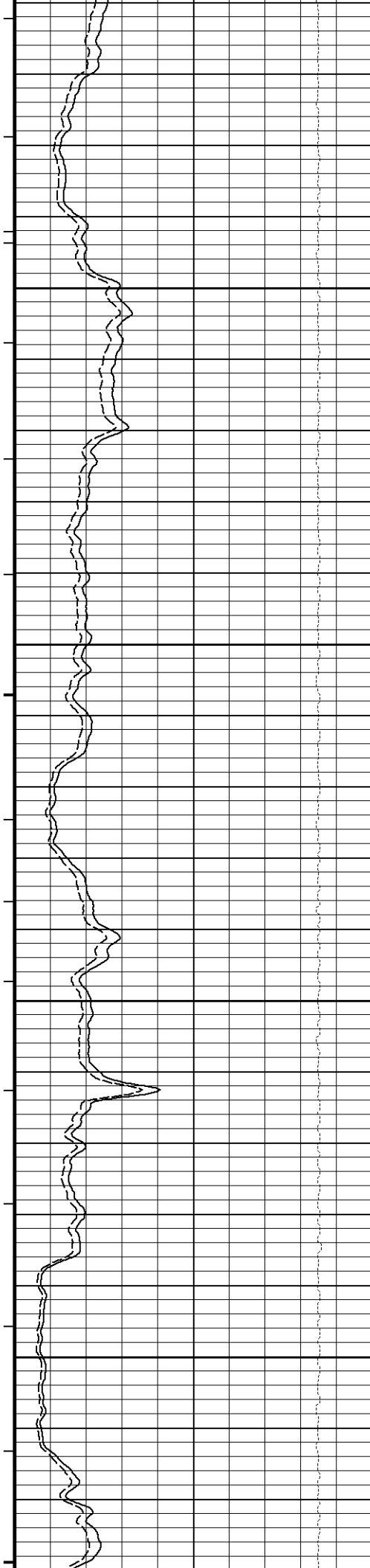
OPERATORS: D TURNER; C HAWKINS

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119°

6250

120°

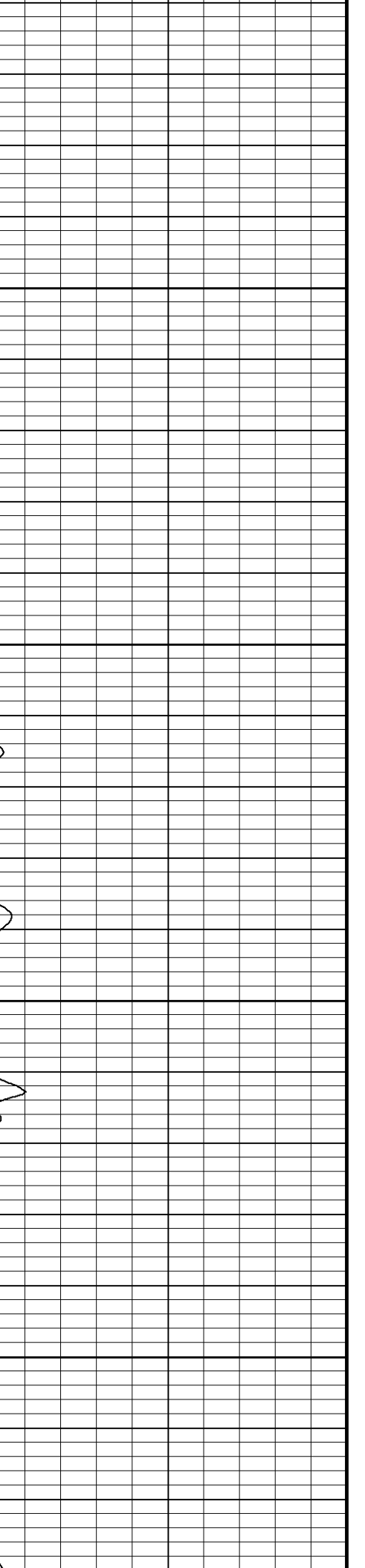
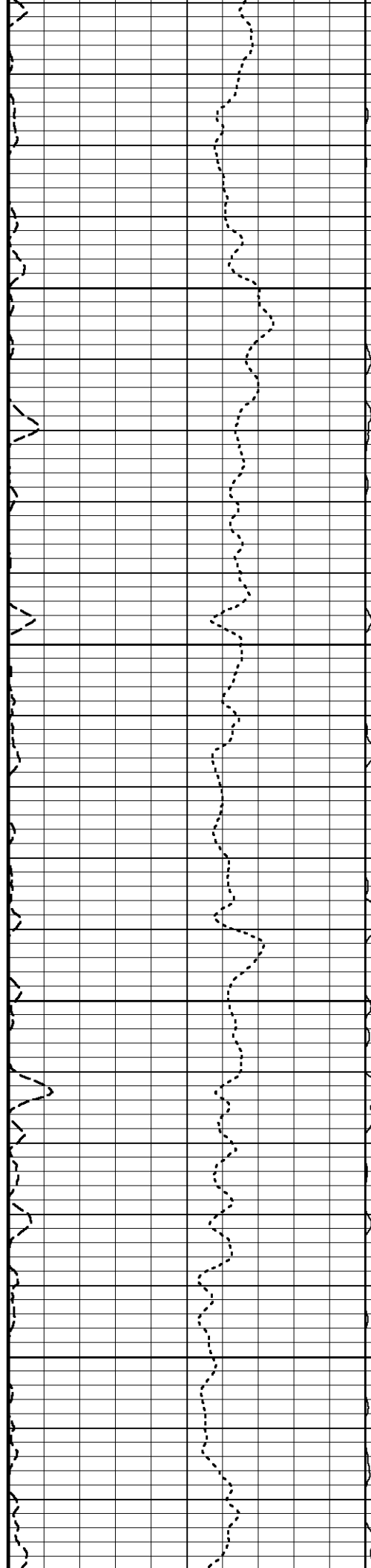
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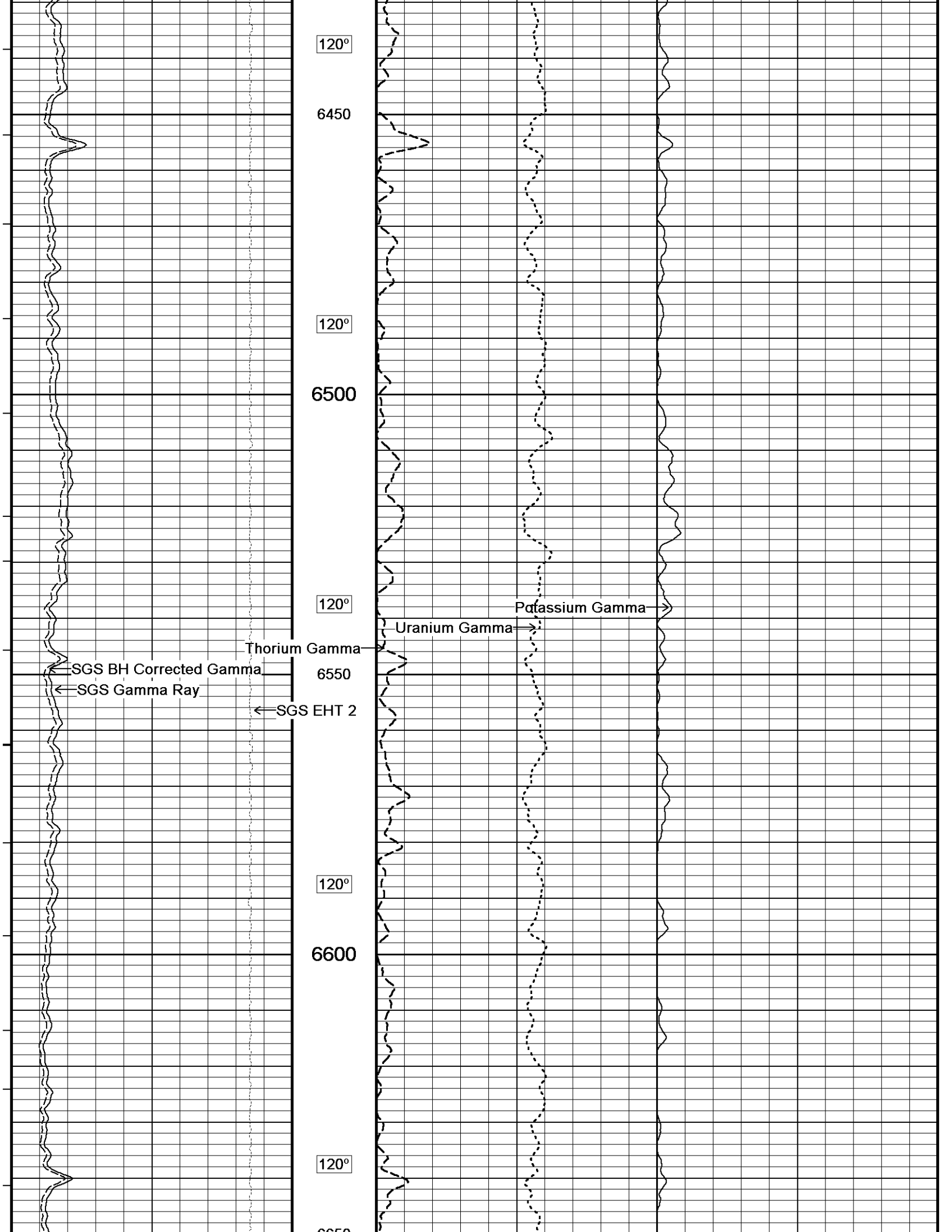
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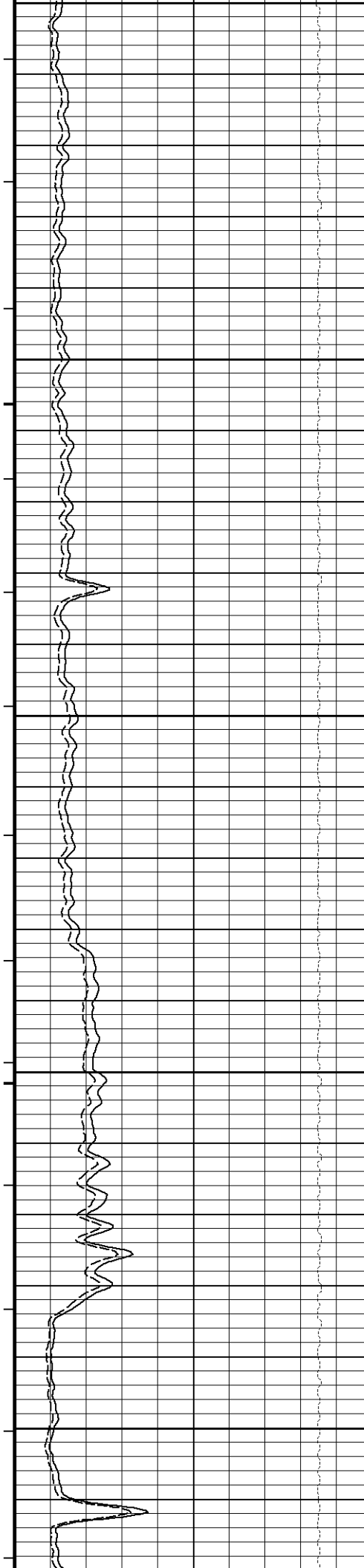
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120°

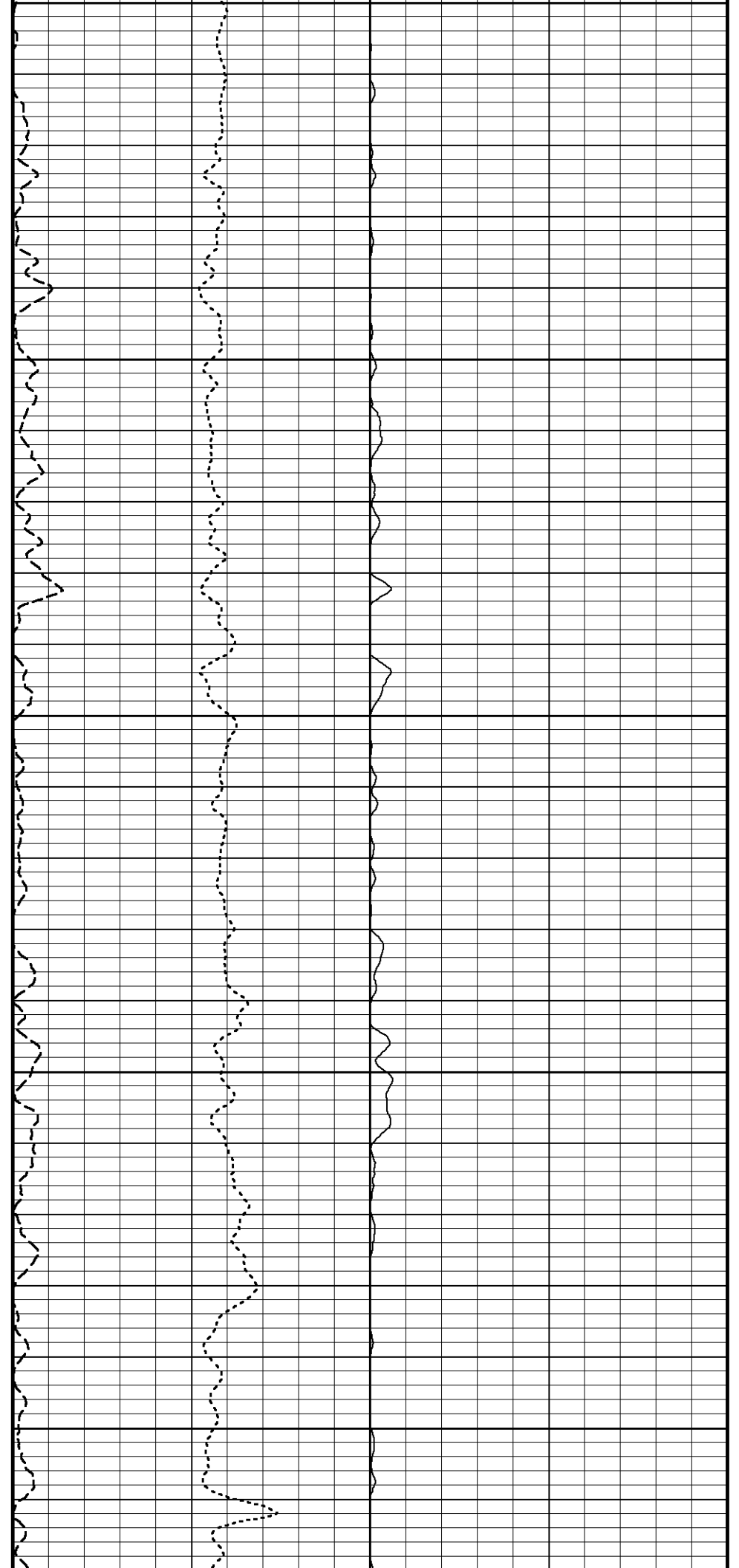
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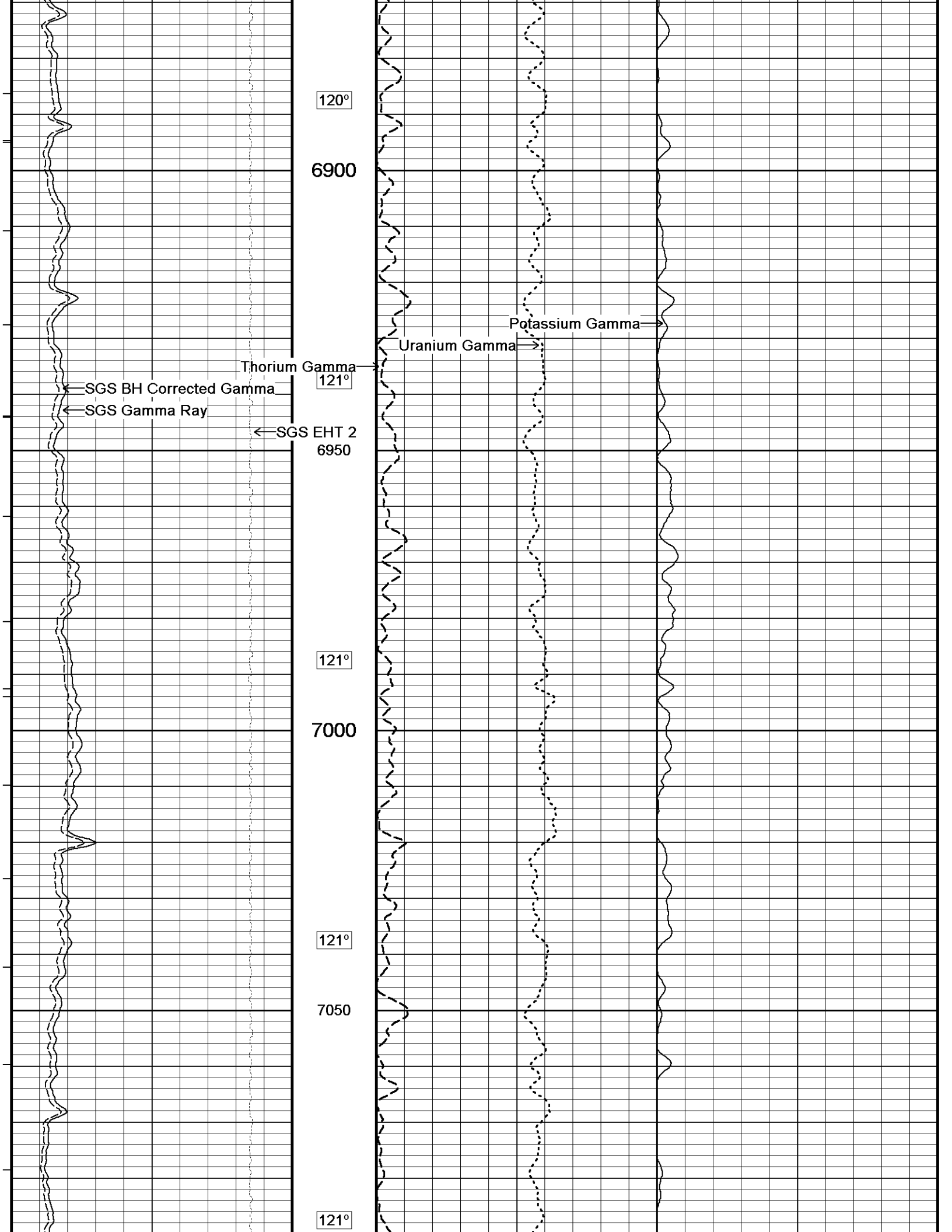


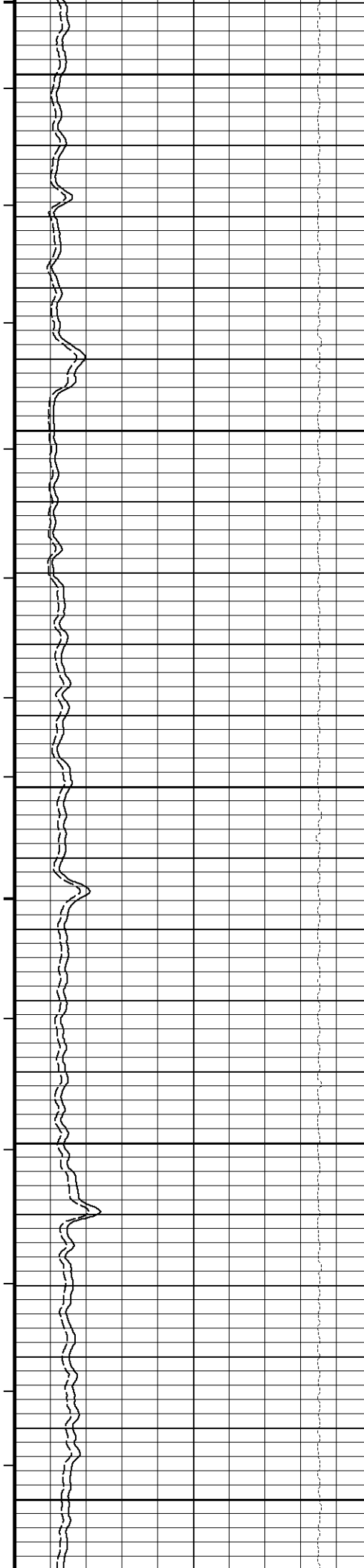




6650
120°
6700
120°
6750
120°
6800
121°
6850







7100

121°

7150

121°

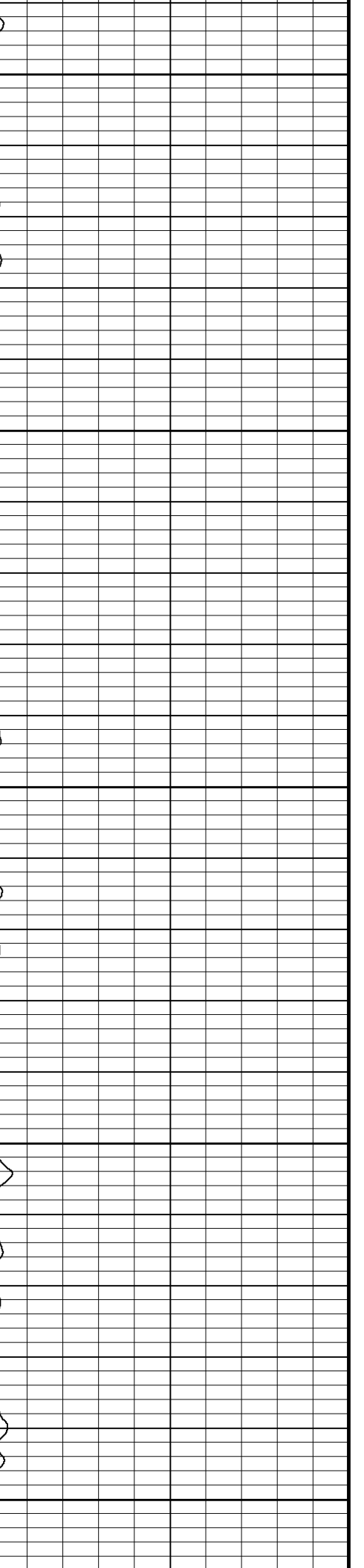
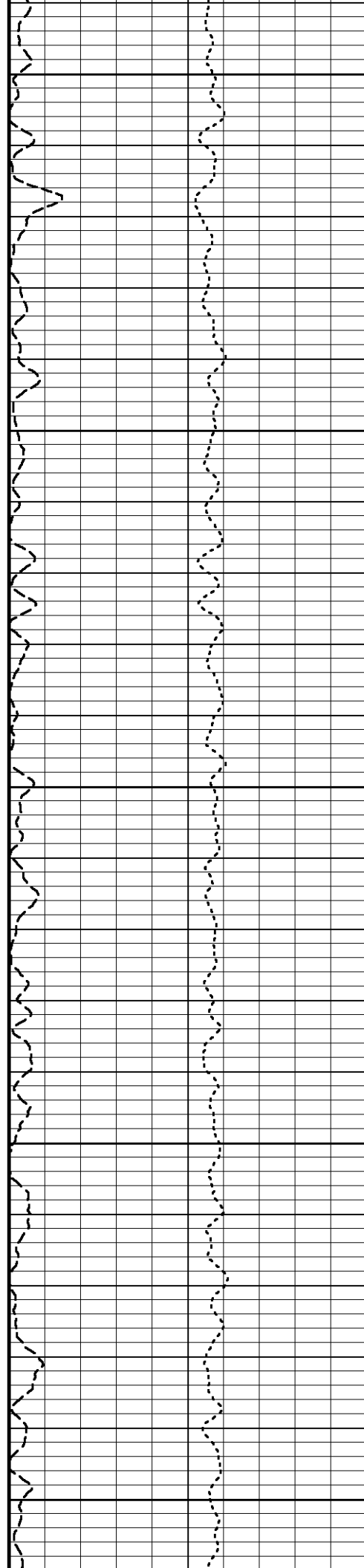
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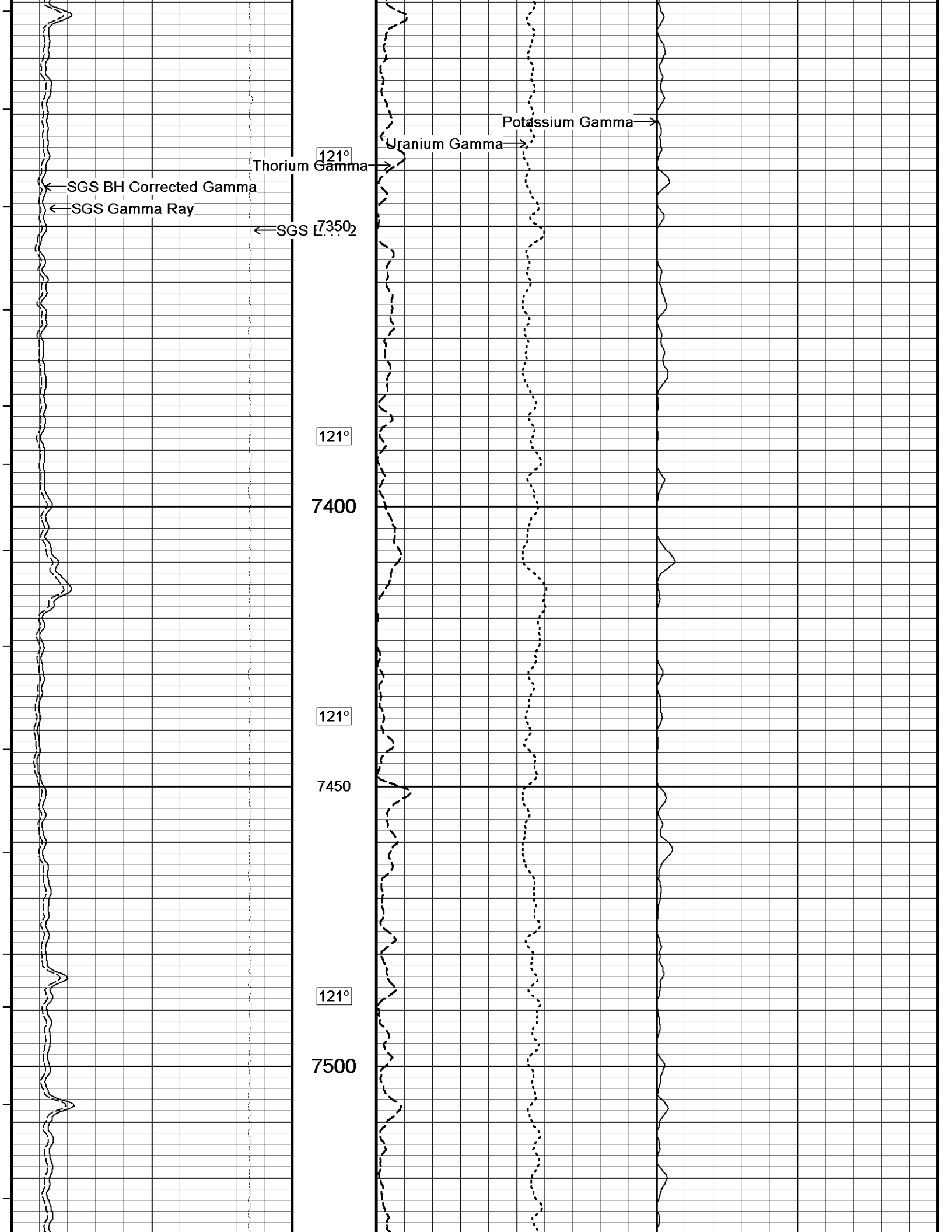
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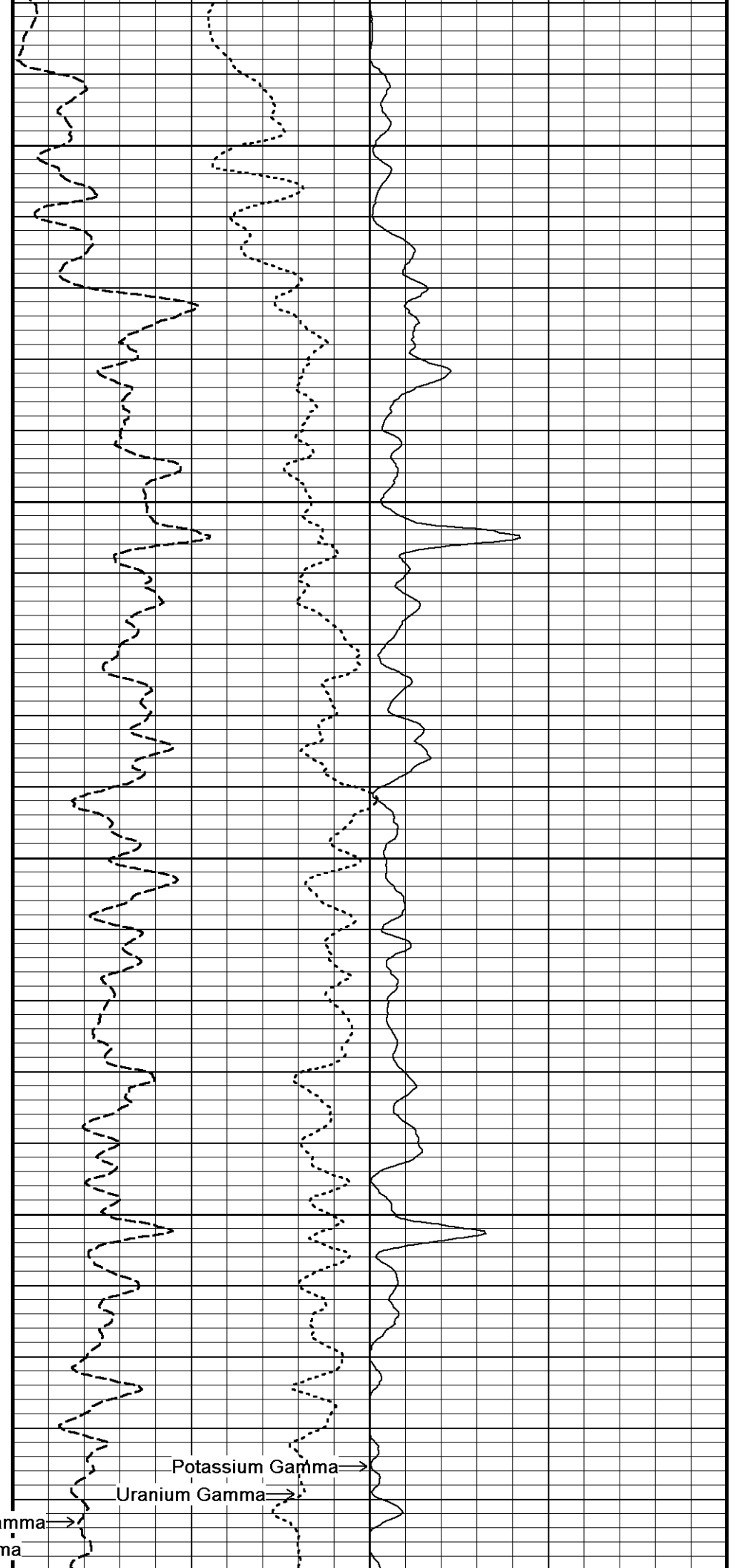
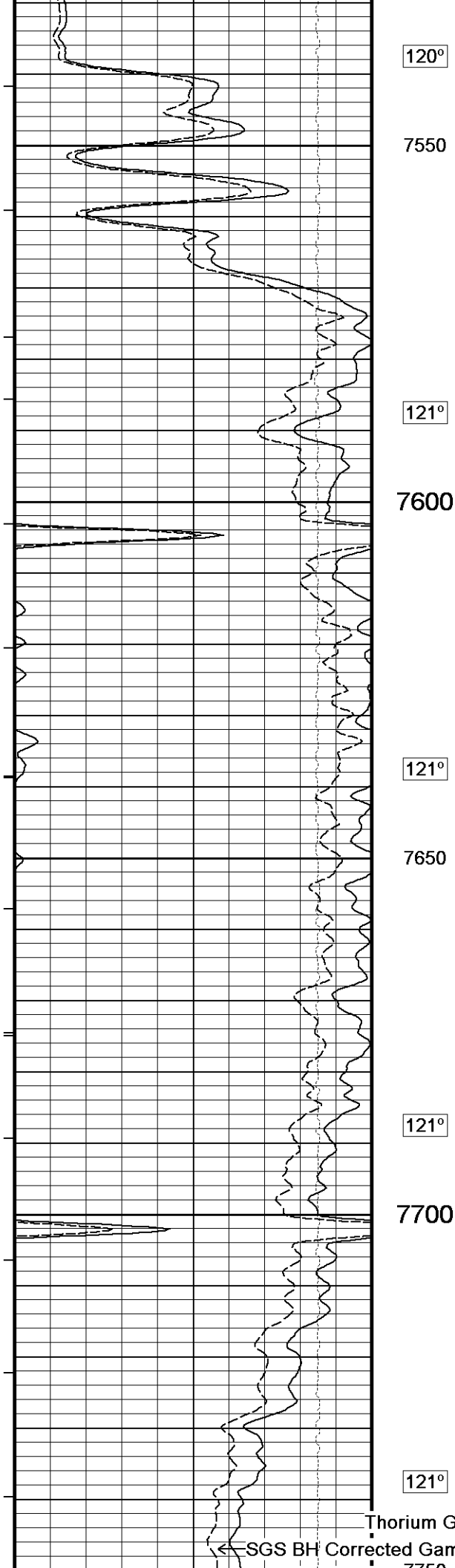
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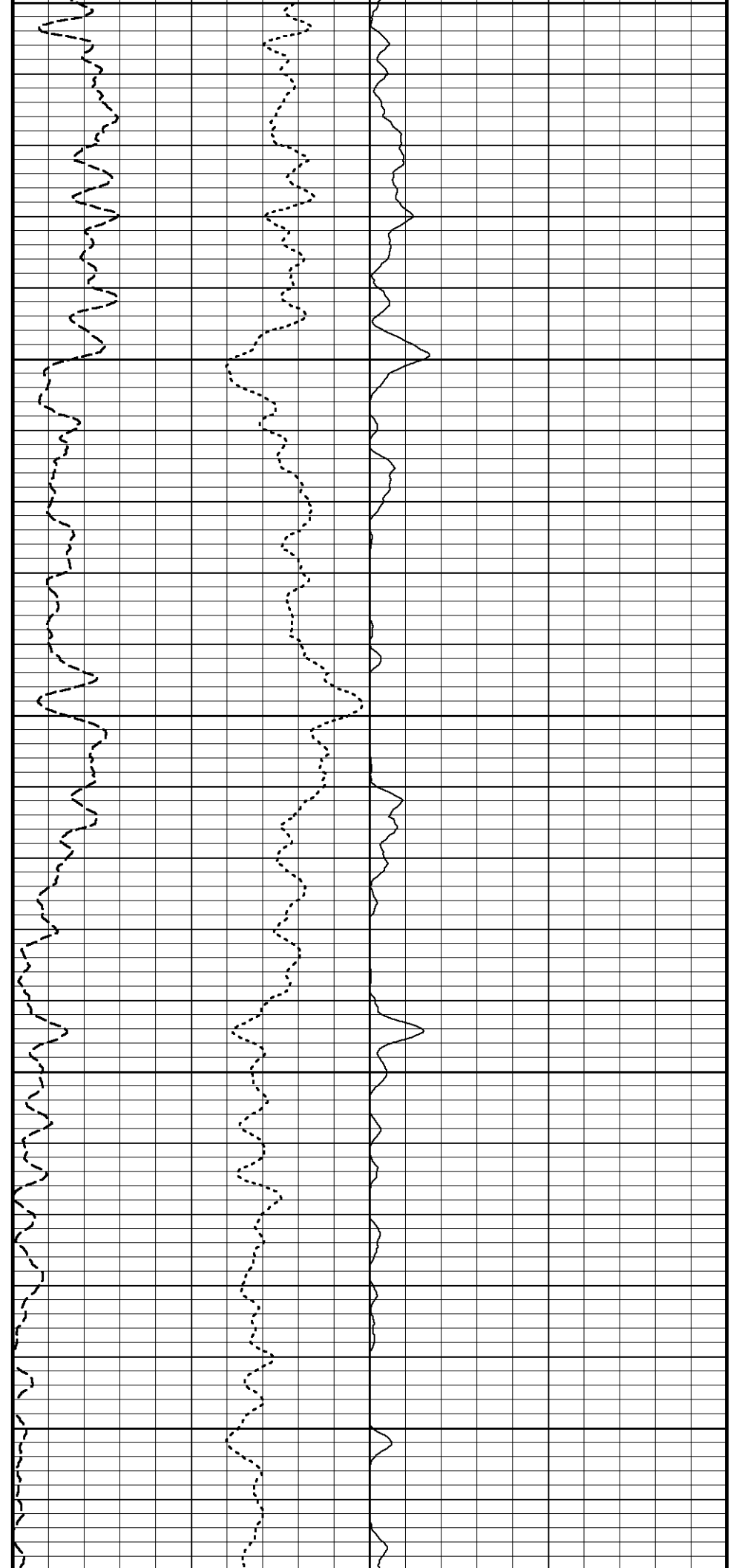
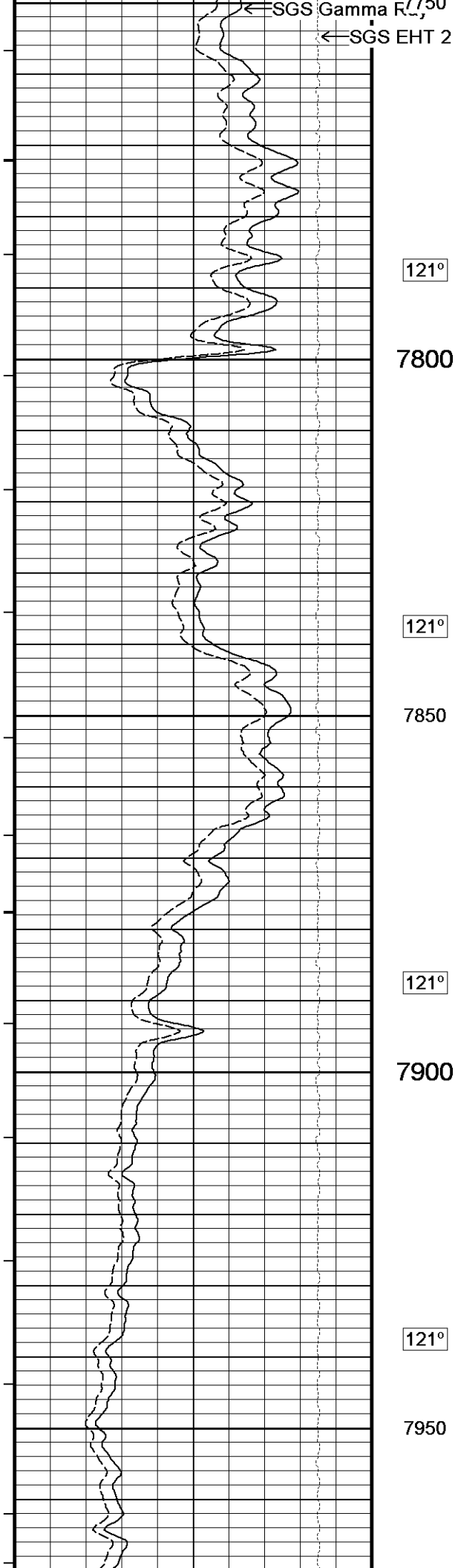
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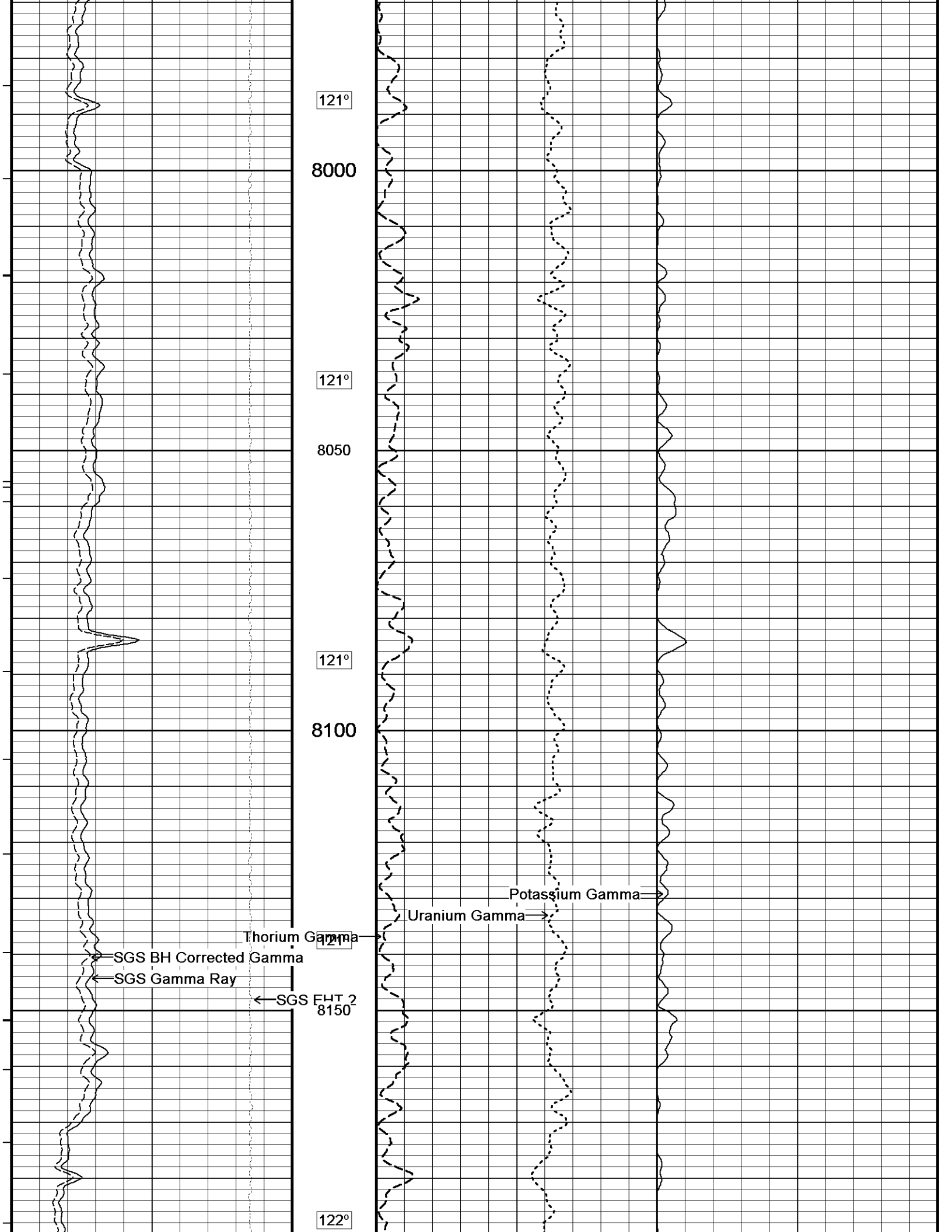
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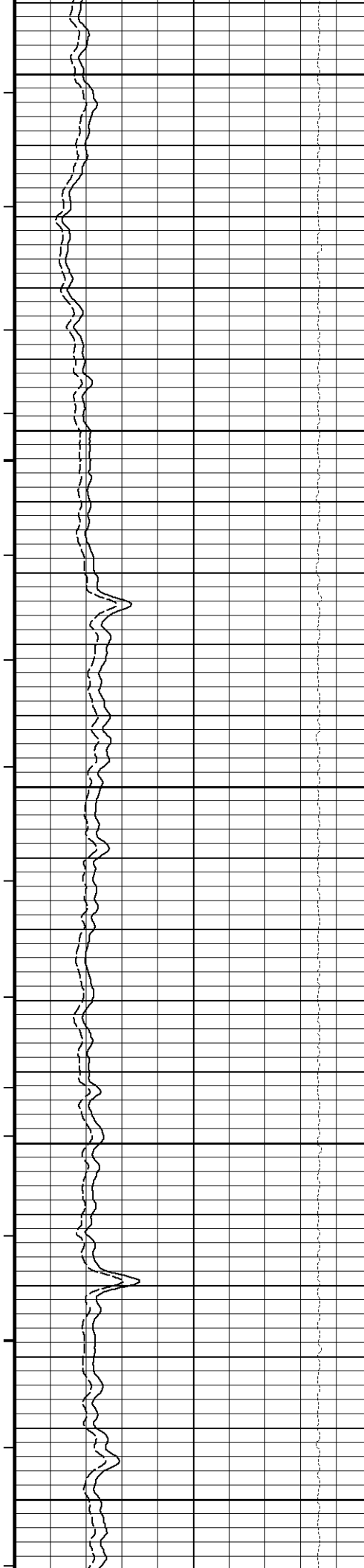












8200

122°

8250

122°

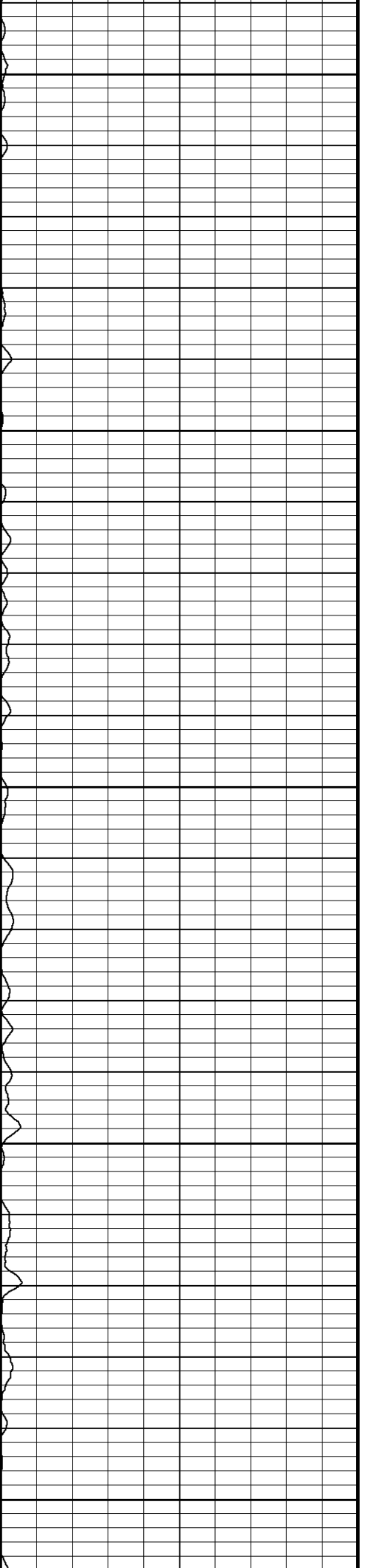
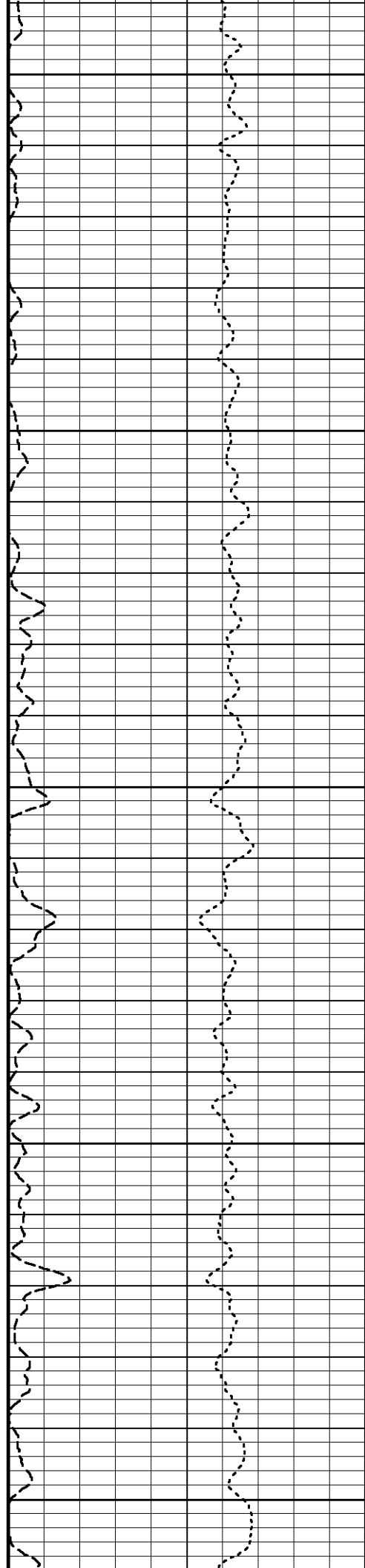
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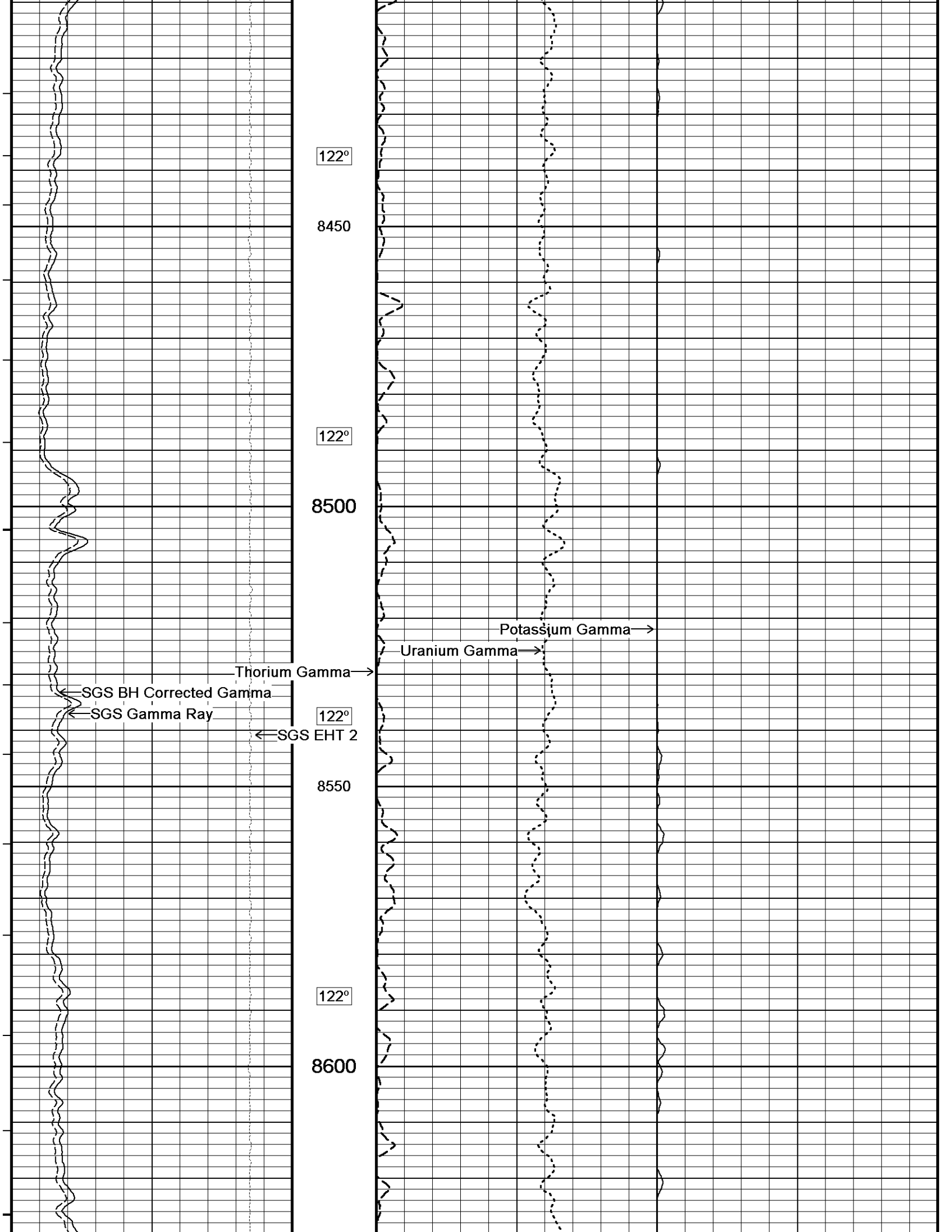
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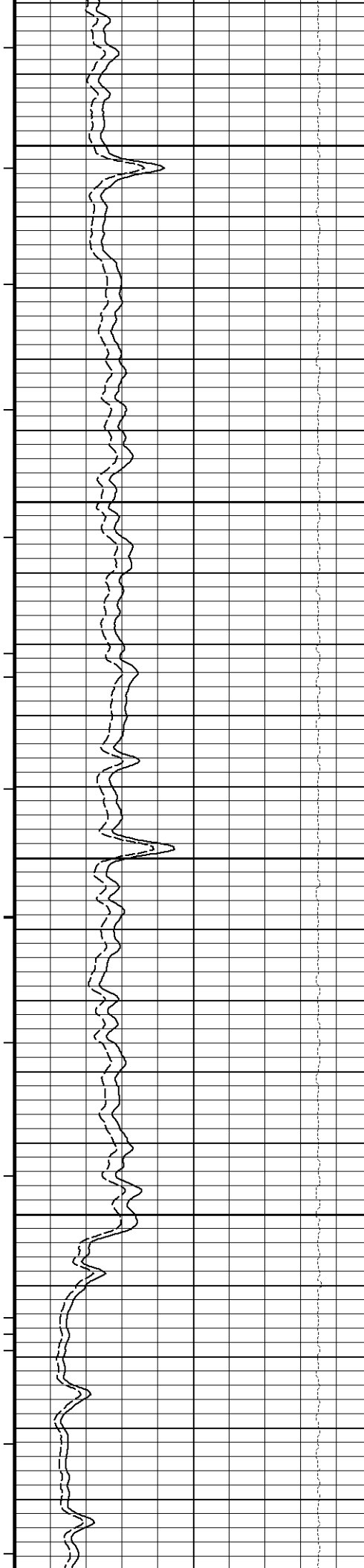
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122°

8400







122°

8650

122°

8700

121°

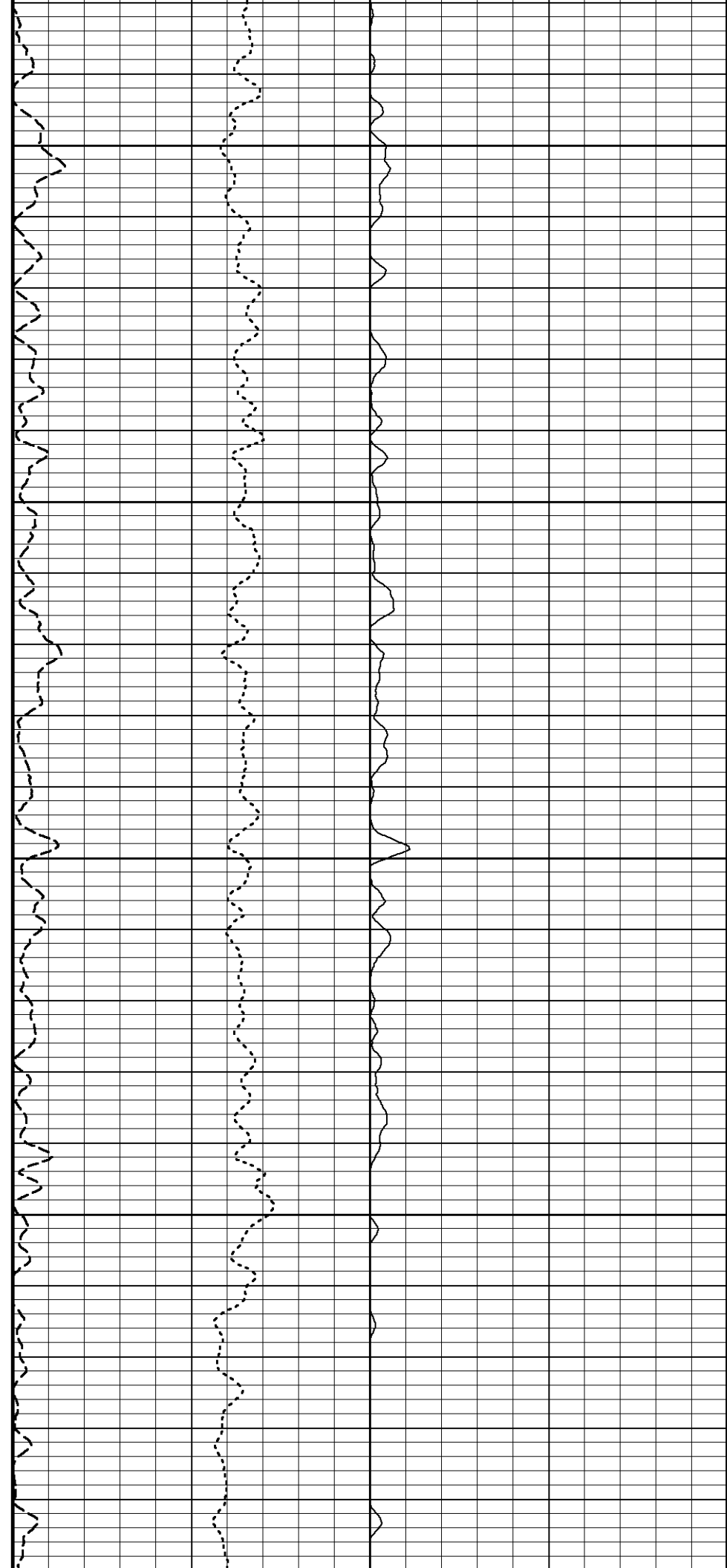
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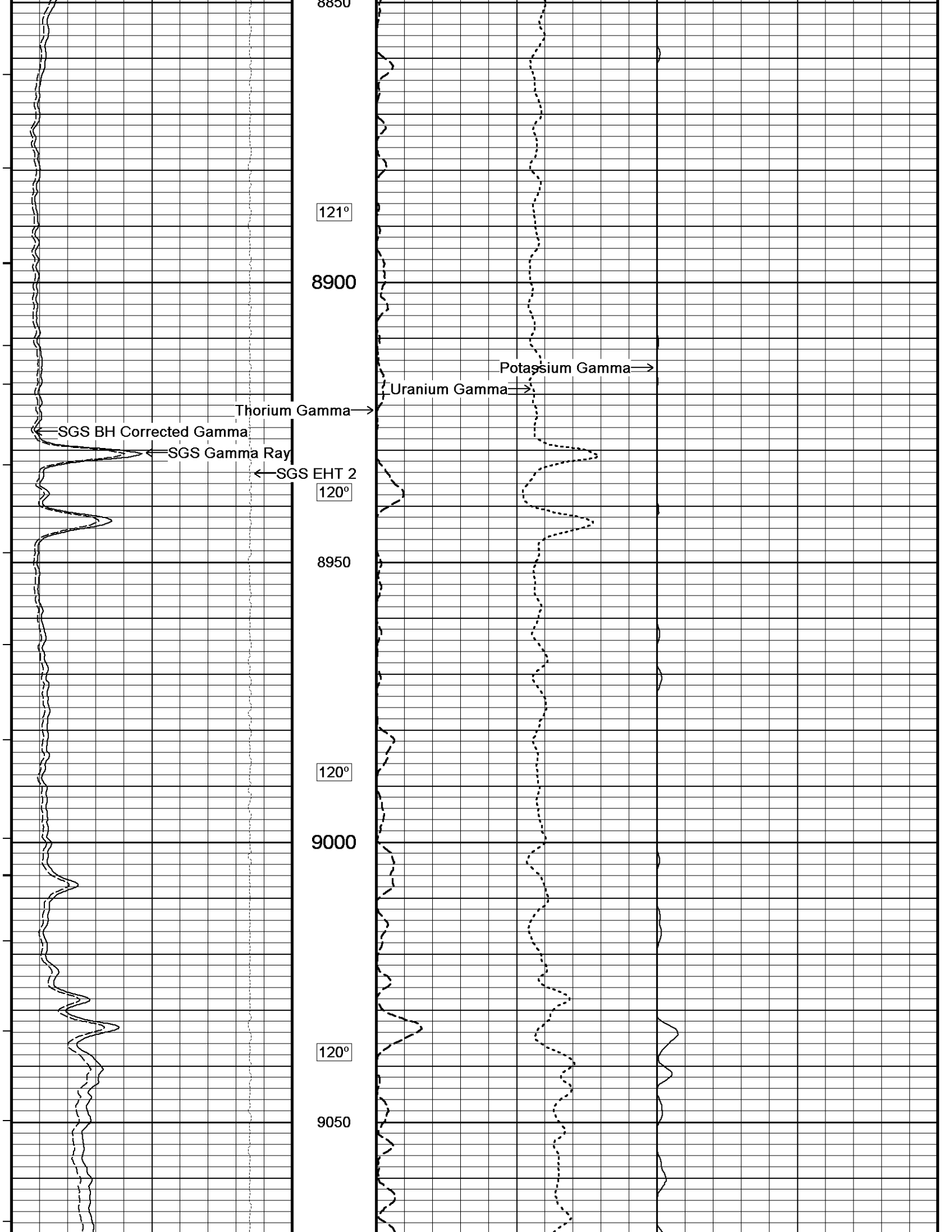
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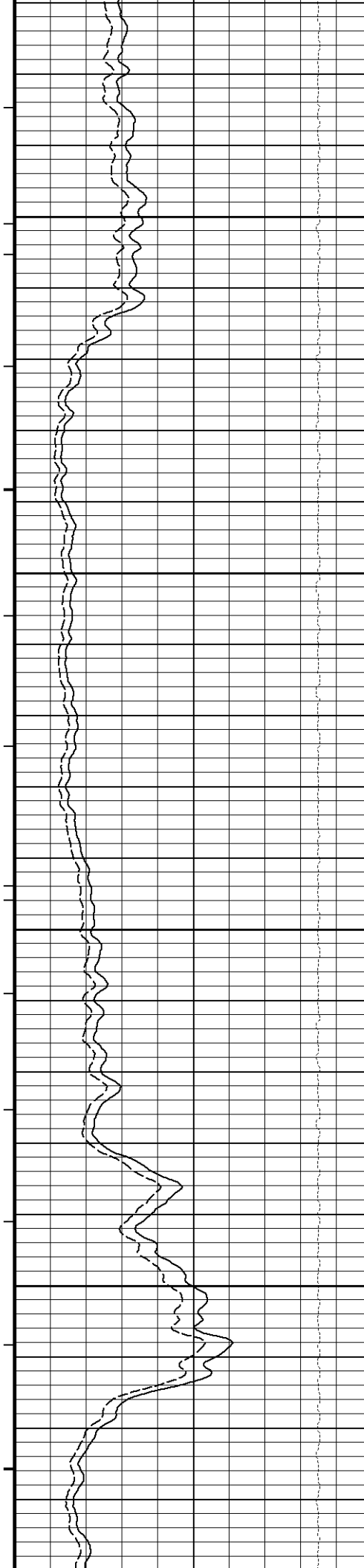
8800

121°

8850







120°

9100

120°

9150

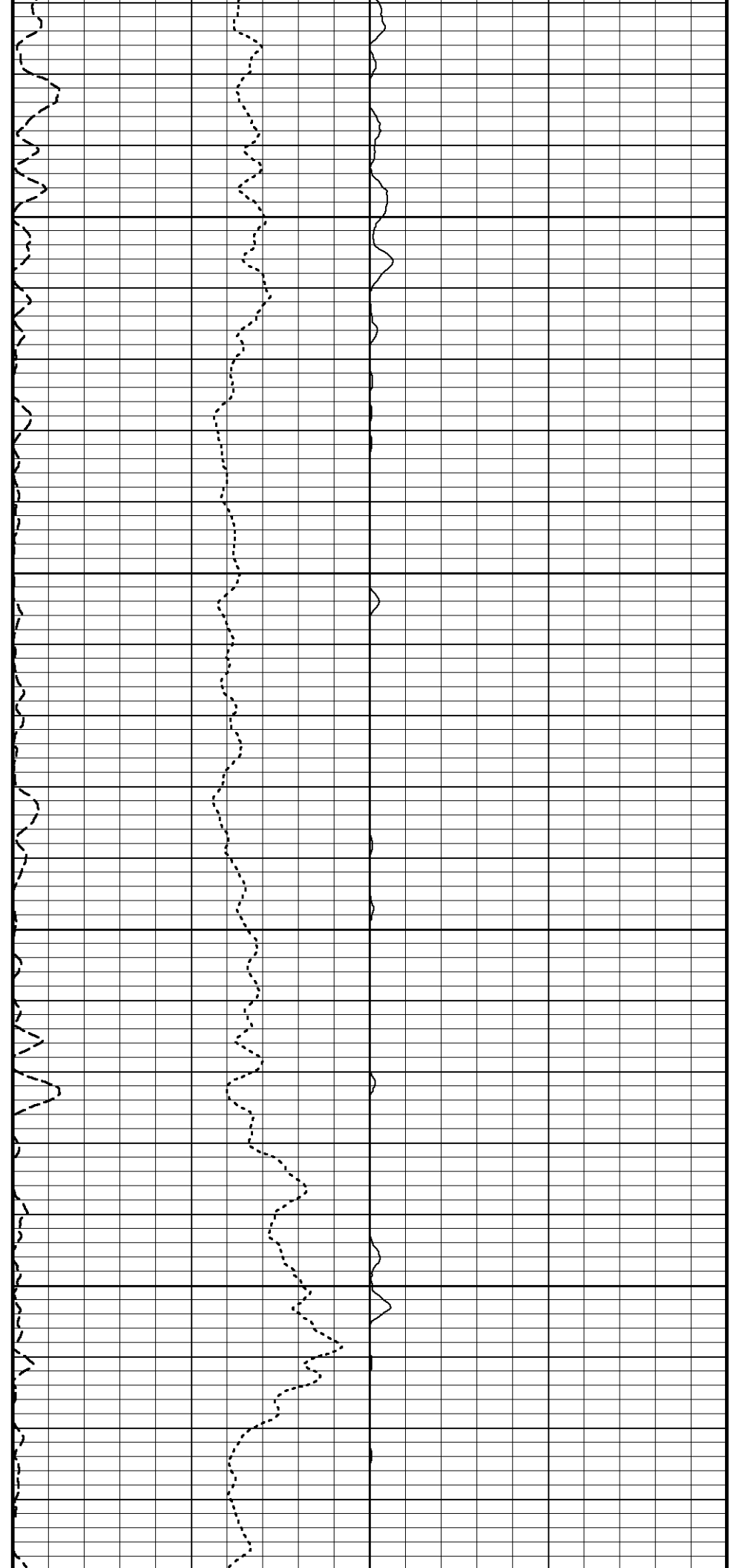
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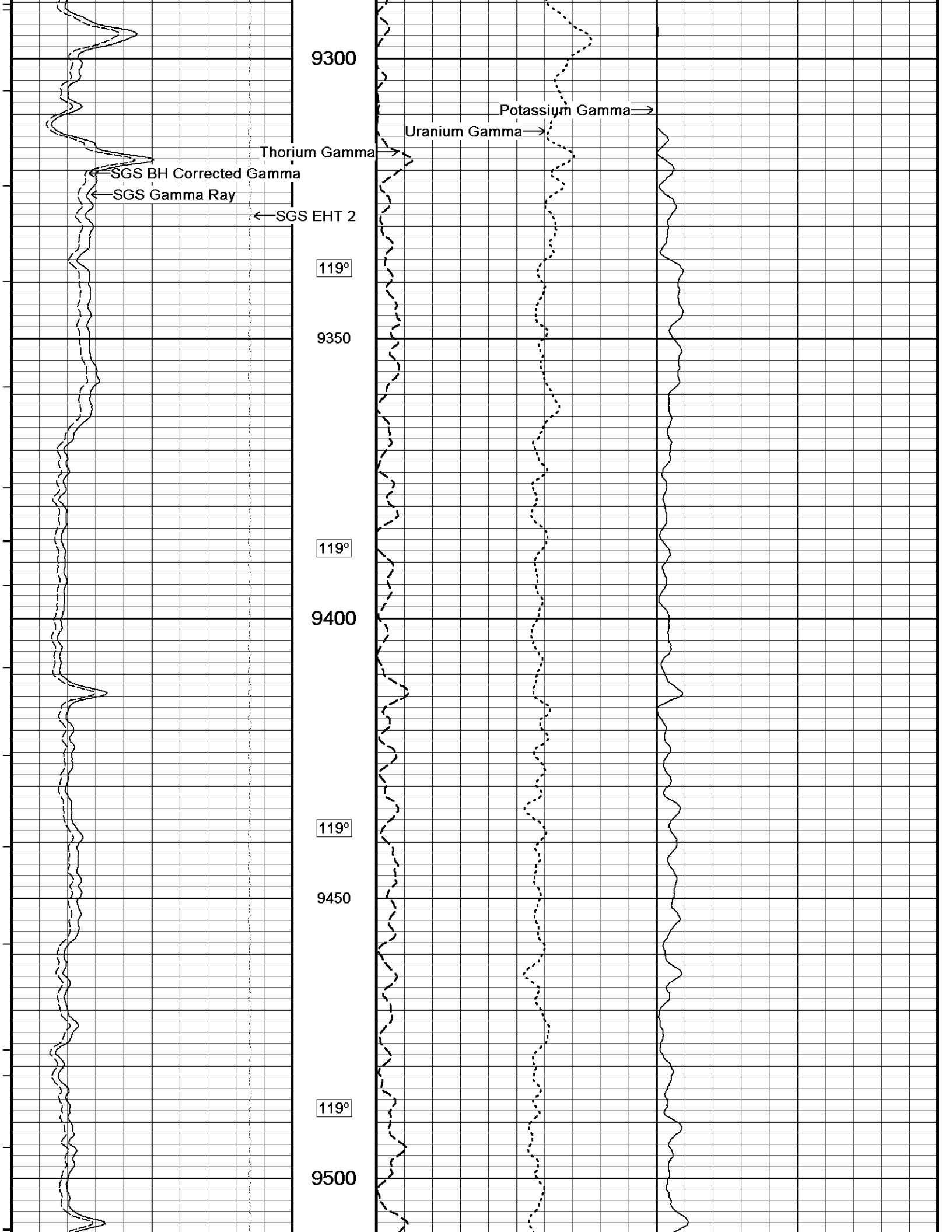
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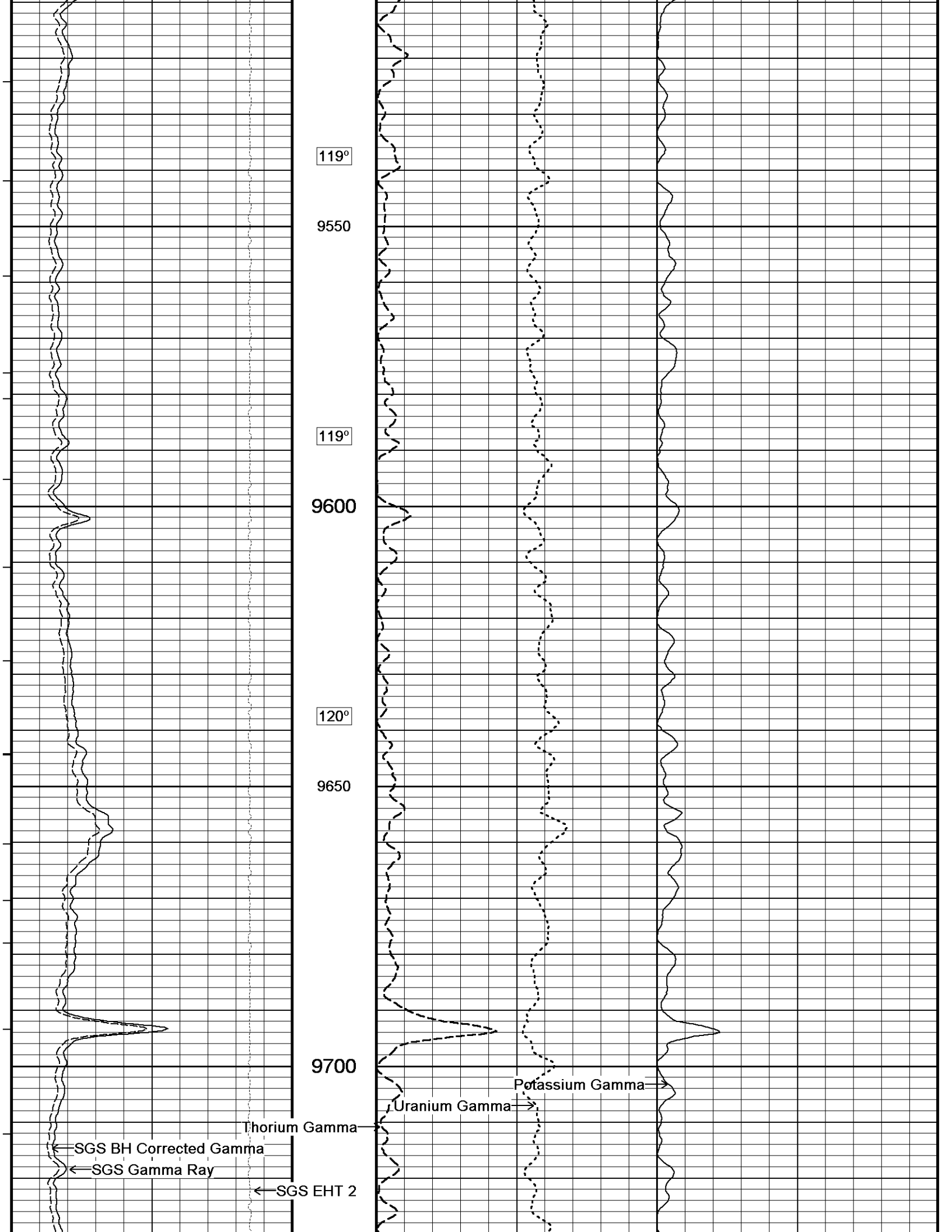
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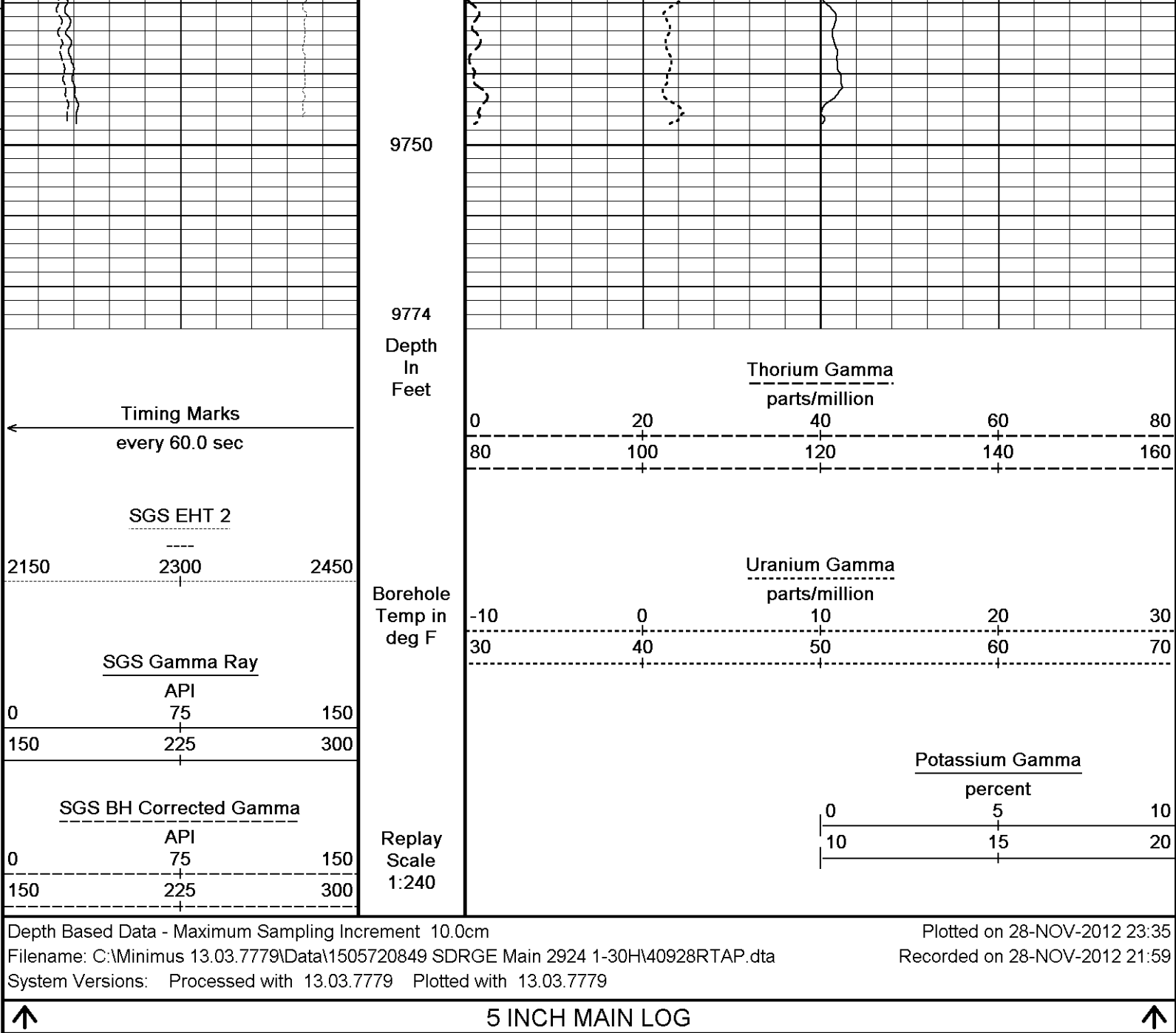
9250

120°









BEFORE SURVEY CALIBRATION			
C:\Minimus 13.03.7779\Data\1505720849 SDRGE Main 2924 1-30H\40928RTAP.dta			
Down-hole Tension Calibration All 000			Field Calibration on 24-FEB-2009 00:00
Reading No	Measured		
1	14953.75	0.00	
2	17846.38	1500.00	
General Constants All 000			Last Edited on 28-NOV-2012,22:39
General Parameters			
Mud Resistivity	0.210	ohm-metres	
Mud Resistivity Temperature	75.000	degrees F	
Water Level	0.000	feet	
Density/Neutron Processing	Wet Hole		
Hole/Annular Volume and Differential Caliper Parameters			
HVOL Method	Single Caliper		
HVOL Caliper 1	Density Caliper		
HVOL Caliper 2	N/A		
Annular Volume Diameter	4.500	inches	

Rwa Parameters

Porosity used	Limestone Density Por.
Resistivity used	Array Ind. One Res Rt
RWA Constant A	0.610
RWA Constant M	2.150

Down-hole Tension Calibration SMS 0

Field Calibration on 05-SEP-2012,13:01

Reading No	Measured	Calibrated (lbs)
1	15152.07	0.00
2	18386.74	2000.00

Strain Gauge Constants MMS-E.B 167

Last Edited on 03-AUG-2012 11:54

Atmospheric Pressure	14.70	psi
Serial Number	0	
Calibration Date	000000000000	
Base Check Date		
Dead Weight Serial Number	0	
Dead Weight Gravitational Correction	1.0	
Temperature	75.0	150.0
Pressure psia	Inc.	Dec.
0.0	0.000	0.000
2000.0	0.000	0.000
4000.0	0.000	0.000
6000.0	0.000	0.000
8000.0	0.000	0.000
10000.0	0.000	0.000

MMS Parameters MMS-E.B 167

Last Edited on 26-NOV-2012 07:21

Logging Parameters

Firmware Version	2v40	
Caliper Open On	MAI	
Caliper Open Delay		minutes
Caliper Closed On	Unknown	
Caliper Closed Delay	N/A	minutes
Sample Rate	1.00	seconds
Use Deep Sleep	No	
Delay Deep Sleep	N/A	
Deep Sleep Wake Time	N/A	minutes
Deep Sleep Wake on Temperature	N/A	
Deep Sleep Wake Temperature	N/A	degrees C
Deep Sleep Wake on Pressure	N/A	
Deep Sleep Wake Pressure	N/A	psi
MMI Pad Pressure	0.0	

Release Parameters

Pulse Duration Base Level	10.0	seconds
Pulse Duration Transition Time	60.0	seconds
Pulse Duration Status Pulse From	20.0	seconds
Pulse Duration Caliper Close From	145.0	seconds
Pulse Duration Caliper Open From	150.0	seconds
Pulse Duration Release Pulse From	215.0	seconds
Pulse Duration Release Pulse To	280.0	seconds
Pulse Release Duration	240.0	seconds
Pulse Discriminator Pressure Band	96.0	seconds
Pulse Pressure Discriminator	213.0	seconds
Use Negative Pulsing	No	
Good Status Reply Open Hole	65535.0	seconds
Good Status Reply Cased Hole	20.0	seconds
Bad Status Reply	60.0	seconds
Status Pulse To	80.0	seconds
Caliper Close To		seconds
Caliper Open To	210.0	seconds

Configuration

MMS MGS MPN MPP MPR MRF MRF MAI

High Resolution Temperature Calibration MGS-C.J 135

Field Calibration on 14-SEP-2012,18:43

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MGS-C.J 135

Last Edited on 14-SEP-2012,18:43

Pre-filter Length	11
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Gamma Calibration MGS-C.J 135

Field Calibration on 24-NOV-2012 02:31

	Measured	Calibrated (API)
Background	100	71
Calibrator (Gross)	1863	1332
Calibrator (Net)	1764	1261

Gamma Constants MGS-C.J 135

Last Edited on 28-NOV-2012,10:16

Gamma Calibrator Number	BLUE	
Mud Density	1.15	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN-B.J 388

Base Calibration on 19-OCT-2012 09:31

Field Check on 24-NOV-2012 02:26

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3044	91	3714	110
Ratio	33.287		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1243	1868
Ratio	0.665	

Field Check

	Calibrated (cps)	
	1251	1884
Ratio		

Neutron Constants MDN-B.J 388

Last Edited on 26-NOV-2012,06:52

Neutron Source Id	p31112b	
Neutron Jig Number	blue	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	20.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 329

Base Calibration on 19-OCT-2012 08:45

Field Check on 25-NOV-2012 06:13

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	973.9	126.8

Base Check	278.9
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Field Check	279.0
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Field Check		275.0	
FE Constants MFE-B.J 329		Last Edited on 26-NOV-2012,06:52	
Running Mode	No Sleeve		
MFE K Factor	0.1268		
Caliper Source for FE correction	Density Caliper		
Caliper Value for FE correction	N/A	inches	
Rm Source for FE correction	Temperature Corr		
Temp. for Rm Corr.	MGS External Temperature		
Stand-off	0.5	inches	

High Resolution Temperature Calibration MAI-B.J 389		Field Calibration on 19-OCT-2011 09:44	
	Measured	Calibrated(Deg F)	
Lower	10.00	50.00	
Upper	100.00	212.00	

High Resolution Temperature Constants MAI-B.J 389		Last Edited on
Pre-filter Length	11	

Induction Calibration MAI-B.J 389				Base Calibration on 01-SEP-2012,07:44	
				Field Check on 24-NOV-2012 02:11	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		16.7	465.5	9.3	966.2
2		6.4	384.0	7.6	821.4
3		3.1	258.9	5.2	566.0
4		1.8	133.7	2.6	279.2
Array Temperature			78.1	Deg F	
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1			12.4	3896.0	
2			28.9	3509.1	
3			29.1	3050.2	
4			19.5	2063.6	
Deep			18.9	2013.5	
Medium			42.3	4005.5	
Shallow			41.4	5152.5	
Array Temperature				51.4	Deg F

Induction Constants MAI-B.J 389		Last Edited on 28-NOV-2012,22:41	
Induction Model		RtAP-WBM	
Caliper for Borehole Corr.		Density Caliper	
Hole Size for Borehole Correction		N/A	inches
Tool Centred		No	
Stand-off Type		Fins	
Stand-off		0.50	inches
Number of Fins on Stand-off		6.0000	
Stand-off Fin Angle		60.00	degrees
Stand-off Fin Width		0.5000	inches
Borehole Corr. Rm Source		Temperature Corr	
Temp. for Rm Corr.		MGS External Temperature	
Squasher Start		0.0020	mhos/metre
Squasher Offset		N/A	mhos/metre
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000
Calibration Site Corrections			
Channel 1	0.00	mmhos/metre	
Channel 2	0.00	mmhos/metre	
Channel 3	0.00	mmhos/metre	

Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre
Apparent Porosity and Water Saturation Constants		
Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-C.J 435

Base Calibration on 19-OCT-2012 13:58

Field Calibration on 24-NOV-2012 02:19

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16544	4.01
2	26096	5.96
3	36130	7.98
4	45920	9.86
5	56672	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.93	5.96

Photo Density Calibration MPD-C.J 435

Base Calibration on 19-OCT-2012 13:49

Field Check on 24-NOV-2012 02:17

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	56740	27516	59869	31110
Reference 2	23545	2589	24557	2522

Field Check at Base

1300.9 1340.8

Field Check

1296.7 1346.2

PE Calibration

Base Calibration	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	235	1162		
Reference 1	22601	56530	0.404	0.369
Reference 2	6364	23395	0.276	0.271

Field Check at Base

235.4 1161.7

Field Check

235.9 1159.8

Density Constants MPD-C.J 435

Last Edited on 28-NOV-2012,10:15

Density Source Id	p21137b	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.15	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	

2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Spectral Gamma Calibration SGS-E.J 170

Base Calibration on 26-MAR-2012 22:31
Field Calibration on 26-MAR-2012 22:03

Base Calibration

Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	205.8	107.5	23.2	0.9	1.4
Calibrator (Net)	125.8	83.7	20.8	-0.1	0.1

	K %	U ppm	Th ppm
Concentrations	5.8	0.0	0.0

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	480.0	163.5	14.5	7.8	4.1
Calibrator (Net)	400.0	139.8	12.1	6.8	2.8

	K %	U ppm	Th ppm
Concentrations	0.0	14.8	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	394.8	138.7	11.4	6.2	14.7
Calibrator (Net)	314.7	115.0	9.1	5.2	13.5

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.3

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	918.4	363.2	44.9	13.6	18.2
Calibrator (Net)	838.4	339.5	42.5	12.6	16.9

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	113	23
Calibrator (Gross)	1362	273
Calibrator (Net)	1250	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	918.4	363.2	44.9	13.6	18.2
Calibrator (Net)	838.4	339.5	42.5	12.6	16.9

Spectral Gamma Constants SGS-E.J 170

Last Edited on 28-NOV-2012,10:16

Background Calibrator Number	0	
Mixture Calibrator Number	147-1	
Potassium Calibrator Number	148-1	
Uranium Calibrator Number	150-1	
Thorium Calibrator Number	149-1	
Mud Density	1.15	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Compact Linker (Shuttle Running Tool 3.5
MLK-A 1 LG: 4.87 ft WT: 30.9 lb OD: 2.52 in

Compact Linker (MBS-D.A 400v Compact Bat
MLK-A 2 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

Compact Linker (MBS-D.A 400v Compact Bat
MLK-A 3 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

MBS-G.A 200v Compact Battery Sub
MBS-G.A 135 LG: 17.06 ft WT: 123.5 lb OD: 2.24 in

Compact Memory Sub E.B
MMS-E.B 167 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.
MTI-B.A 72 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in



Compact Short Gamma
MGS-C.J 135 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

86.35 ft GRGM - MGS Gamma Ray

Compact Collar Locator
MCL-B.J 60 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

84.36 ft GSXT - MGS External Temperature

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 41 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

82.34 ft GCSL - MCL C. Collar Locator

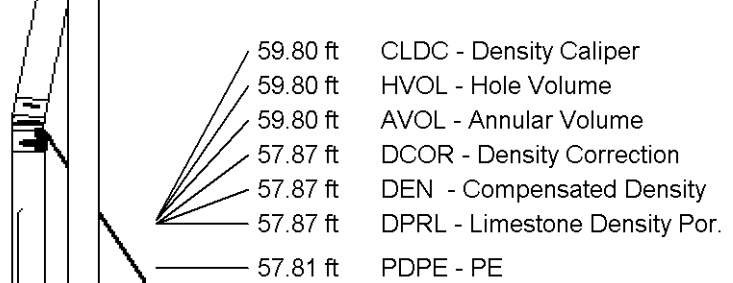
SHA-F Compact Swivel Head Adaptor
SHA-F 33 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 310 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron
MDN-B.J 388 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

67.04 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper
MPD-C.J 435 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in



MIS-D.B Compact Inline Bowspring sub
 MIS-D.B 609 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
 SHA-J.A 454 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
 SKJ-D.A 42 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub
 MIS-E.B 573 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric
 MFE-B.J 329 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

40.01 ft FEFE - Shallow FE

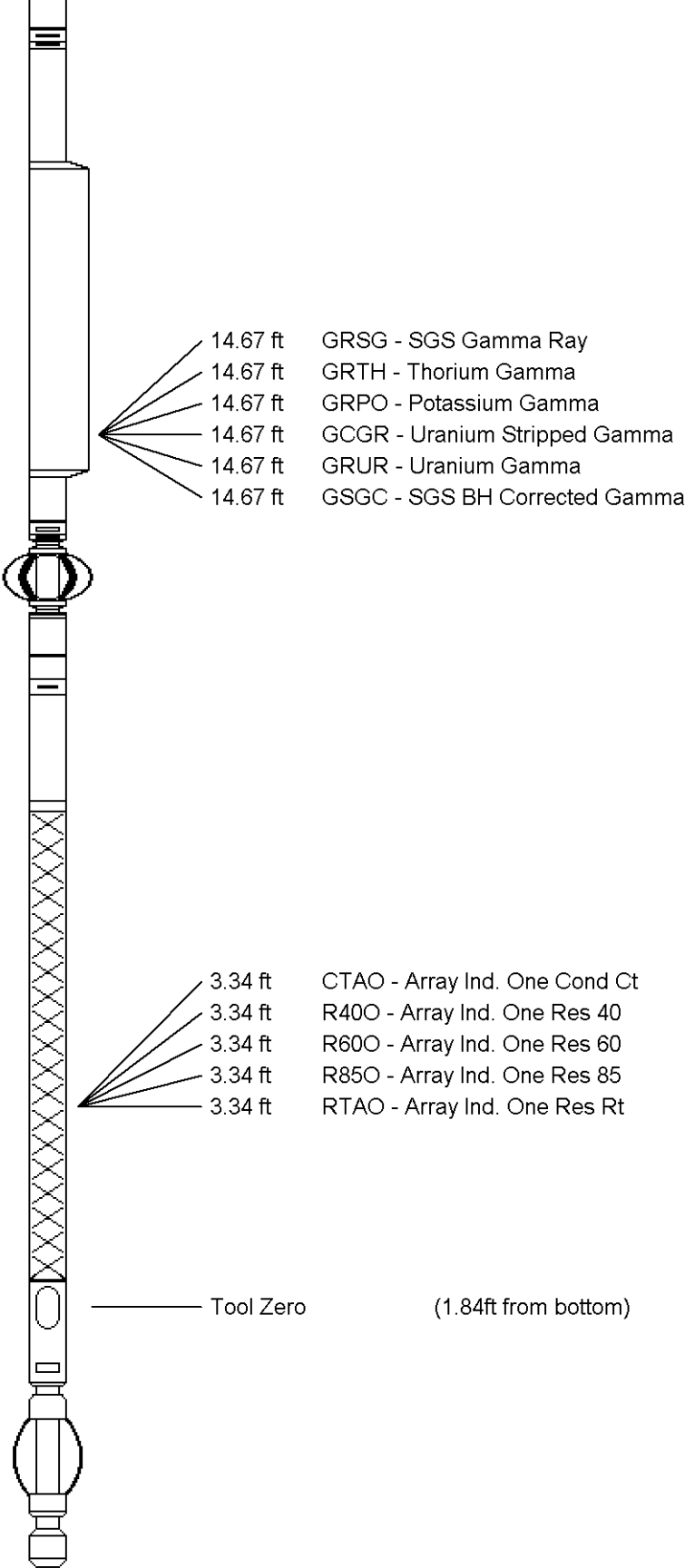
MIS-E.B Compact Inline Standoff sub
 MIS-E.B 575 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

ThruWire Spacer
 MLK-D.A 250 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

Spectral Gamma Ray Sub
SGS-E.J 170 LG: 7.78 ft WT: 105.8 lb OD: 3.54 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 577 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction
MAI-B.J 389 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in



Total Length: 146.12 ft Weight: 901.7 lb

All measurements relative to tool zero.

COMPANY	SANDRIDGE ENERGY
WELL	MAIN 2924 1-30H
FIELD	UNNAMED
PROVINCE/COUNTY	FORD
COUNTRY/STATE	USA \ KANSAS

Elevation Kelly Bushing	2618.00	feet	First Reading	9747.00	feet
Elevation Drill Floor	2618.00	feet	Depth Driller	9795.00	feet
Elevation Ground Level	2600.00	feet	Depth Logger	9795.00	feet
 Weatherford[®] CML MESSENGER SHUTTLE SPECTRAL GAMMA RAY LOG					