HALLIBURTON | Sperry Drilling

Natural Gamma Ray
Rate Of Penetration

1 : 240

County	: Reno Co
Field	: Wildcat
Location	: Lat: 38° 0' 0.63" North Long: 98° 16' 22.40" West
Well	: Young Trust 2309 35-1H
Company	: Shell Exploration & Production
Rig	: Nabors 102

Company : **Shell Exploration & Production**
Rig : **Nabors 102**
Well : **Young Trust 2309 35-1H**
Field : **Wildcat**
County : **Reno Co**
API Number : **15155216130100**

LOCATION
Latitude : **38° 0' 0.63" North**
Longitude : **98° 16' 22.40" West**
UTM Easting = **2,065,442.620 ft**
UTM Northing = **485,630.240 ft**

Other Services
Directional

Permanent Datum : **Ground Level** Elevation : **1698.00 ft**
Log Measured From : **Drill Floor** **31.70 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **1729.70 ft**
GL **1698.00 ft**
WD **N/A**

Depth Logged : **90.00 ft** To **8,130.00 ft**
Date Logged : **18-Feb-13** To **11-Mar-13**
Total Depth MD : **8,130.00 ft** TVD : **3,806.92 ft**
Spud Date : **19-Feb-13**

Unit No. : **PP #46** Job No. : **OK-XX-0900034106**
Plot Type : **Final**
Plot Date : **12-Mar-13**

Run No.	Borehole Record (MD) Size	From	To
100	12.250 in	90.00 ft	350.00 ft
200	8.750 in	350.00 ft	4,270.00 ft
300	6.125 in	4,270.00 ft	7,627.00 ft
400	6.125 in	7,627.00 ft	8,130.00 ft

Run No.	Borehole Record (MD) Size	From	To

Casing Record (MD)

Size	Weight	From	To
9.625 in	36.00 lbpf	44.63 ft	342.00 ft
7.000 in	26.00 lbpf	342.00 ft	4,260.00 ft

WELL INFORMATION

MWD Run Number	100	200	300	400
Date run completed	20-Feb-13	07-Mar-13	11-Mar-13	11-Mar-13
Rig Bit Number	100	200	300	400
Bit Size (in)	12.250	8.750	6.125	6.125
Tool Nominal OD (in)	6.750	6.750	4.750	4.750
Log Start Depth (MD, ft)	90.00	350.00	4,270.00	7,627.00
Log End Depth (MD, ft)	350.00	4,270.00	7,627.00	8,130.00
Drill or Wipe	Drill	Drill	Drill	Drill
Drill/Wipe Start Date and Time	20-Feb-13 02:30	05-Mar-13 13:00	09-Mar-13 03:10	11-Mar-13 08:05
Drill/Wipe End Date and Time	20-Feb-13 08:55	07-Mar-13 15:35	10-Mar-13 22:10	11-Mar-13 13:45
Min Inc (deg) @ Depth (MD, ft)	.14 @ 141.00	.95 @ 3,225.00	88.25 @ 5,261.00	89.63 @ 7,616.00
Max Inc (deg) @ Depth (MD, ft)	.71 @ 286.00	87.91 @ 4,207.00	92.22 @ 6,570.00	92.24 @ 7,806.00
Bit TFA(in2) / Bit Type	.65 / PDC	.38 / PDC	.29 / PDC	.29 / PDC
Flow Rate (gpm)	500.00	595.00	300.00	300.00
Max AV (fpm) / CV (fpm) @ MWD	315.0 / 472.0	351.0 / 485.0	437.0 / 655.0	537.0 / 805.0
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel
Density (ppg) / Viscosity (spqt)	8.40 / 26.00	8.85 / 31.00	8.45 / 29.00	8.50 / 31.00
Filtrate CL (ppm)	3,000.00	52,000.00	800.00	550.00
pH / Fluid Loss (mptm)	8.60 / 7	9.30 / 5	9.80 / 8	8.00 / 7
PV (cP) / YP (lhf2)	1 / 1.00	3 / 6.00	2 / 3.00	4 / 6.00
% Solids / % Sand	0.01 / 0.01	1.5 / .25	1.3 / .50	1.5 / 0.75
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A

Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Max Tool Temp (degF) / Source	57.30 / PCM	144.54 / PCM	145.00 / PCM	116.00 / PCM	
Rm @ Max Tool Temp (degF)	N/A @ 57.30	N/A @ 144.54	N/A @ 145.00	N/A @ 116.00	
Lead MWD Engineer	Aaron Ashu	Aaron Ashu	Aaron Ashu	Aaron Ashu	
Customer Representative	Clayton Carmack	Clayton Carmack	Clayton Carmack	Clayton Carmack	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.28	5.28	5.28	5.28	
Sub Serial Number	11341316	11341316	11232127	11232127	
Insert Serial Number	11619991	11619991	11680900	11680900	
Date and Time Initialized	18-Feb-13 19:07	04-Mar-13 14:44	07-Mar-13 23:02	07-Mar-13 23:02	
Date and Time Read	20-Feb-13 10:43	07-Mar-13 18:50	11-Mar-13 20:01	11-Mar-13 20:08	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	60.63	51.99	49.97	50.92	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	11341316	11341316	11232127	11232127	
Sonde Serial Number	11478088	11833032	11833032	11833032	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	329.77	162.42	130.70	274.85	

Gamma Ray Sensor Information

Tool Type	N/A	PCG	PCG	PCG	
Distance From Bit (ft)	N/A	46.93	44.89	45.84	
Recorded Sample Period (sec)	N/A	10	10	10	
Software Version	N/A	8.15	8.15	8.15	
Sub Serial Number	N/A	11341316	11232127	11232127	
Insert/Sonde Serial Number	N/A	11681039	11681039	11681039	

REMARKS

1. **All depths are calibrated to the driller's pipe tally and are measured from the rotary table.**

2. **No depth corrections have been made for pipe stretch or compression.**

3. **All data presented is recorded (memory data) unless otherwise stated.**

4. **Run 100 was directional only, no gamma available for this run.**

5. **The following smoothing parameters have been applied to the data:**

   ROP: 1.0 ft interval, 3.0 ft coercion distance.

   GAMMA: 0.5 ft interval, 0.6 ft coercion distance.

WARRANTY

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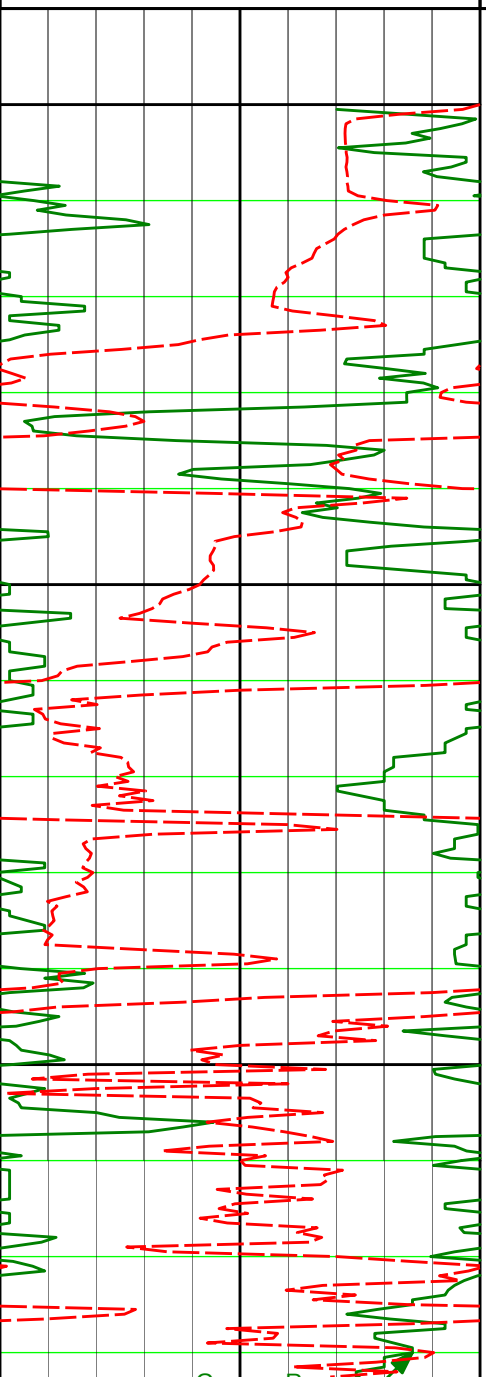
PCG Gamma Ray
api
0 150

Rate of Penetration
feet per hr
250 0



MD
ft
1 : 240

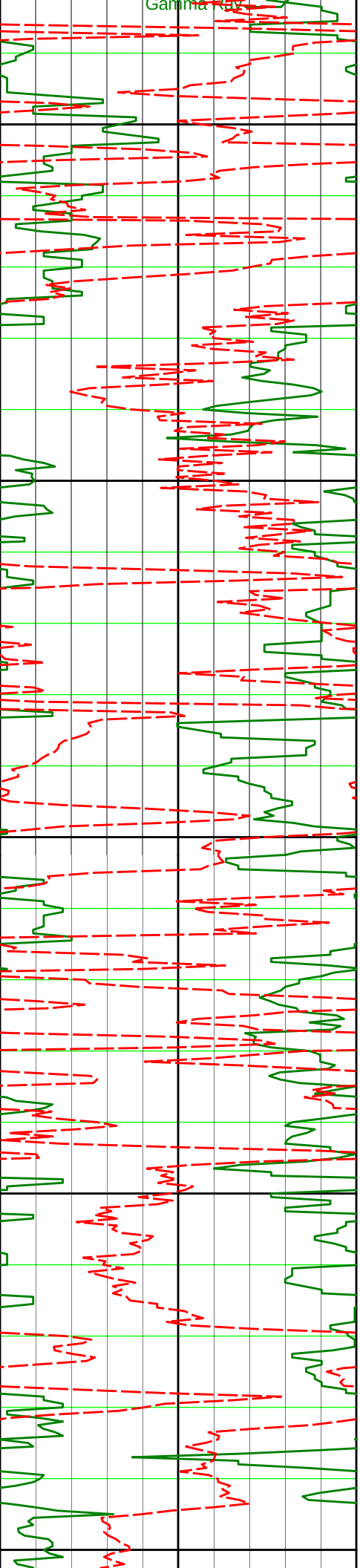
Run 200

350

400

450

Surveys			Surveys		
Depth	Inclination	Azimuth	TVD	Vertical Sec	Dogleg Sev
368	1.66	133.76	367.98	-1.21	1.21
432	3.90	119.74	431.90	-2.73	3.63



500

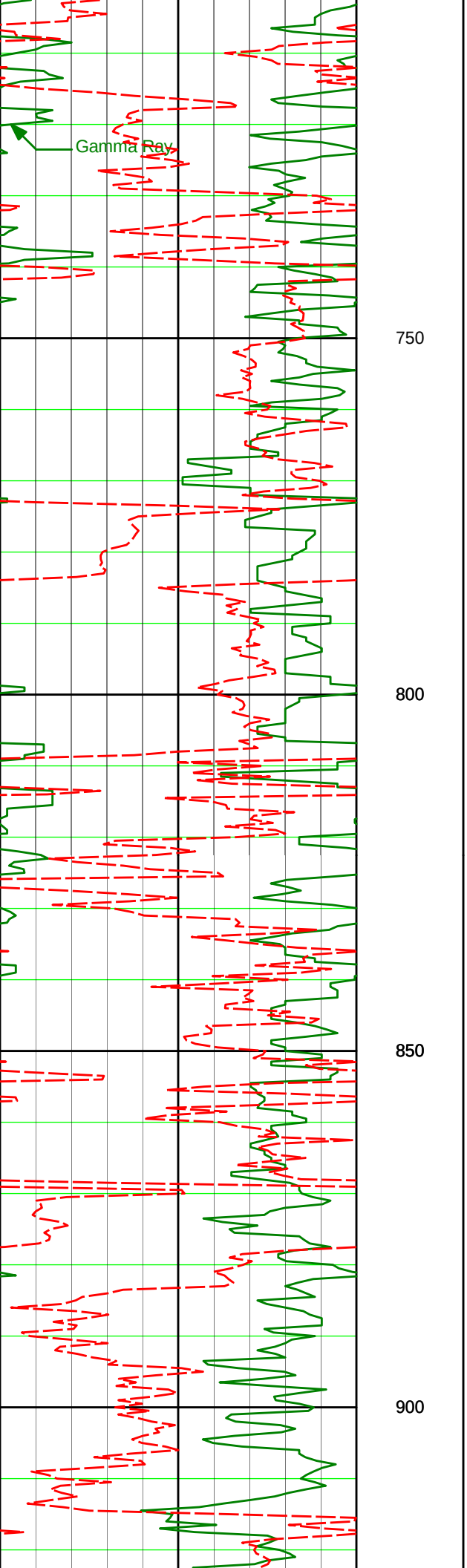
550

600

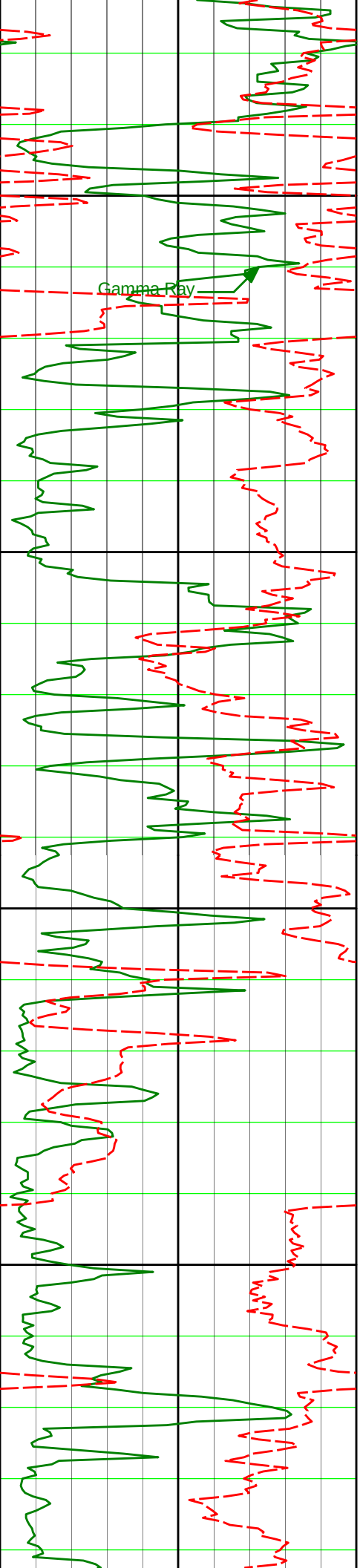
650

700

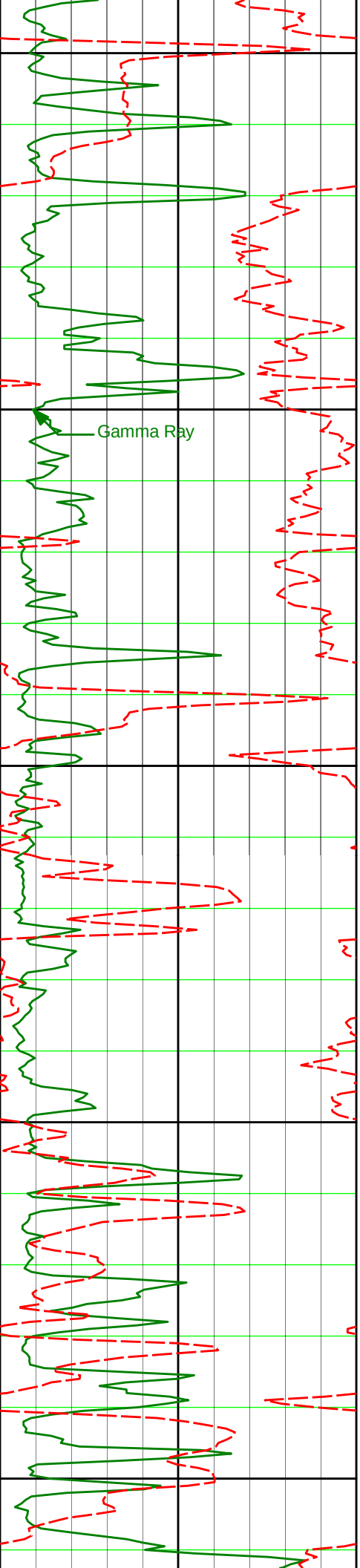
527	7.12	98.90	526.45	-4.57	3.94
622	9.63	93.09	620.43	-4.85	2.78



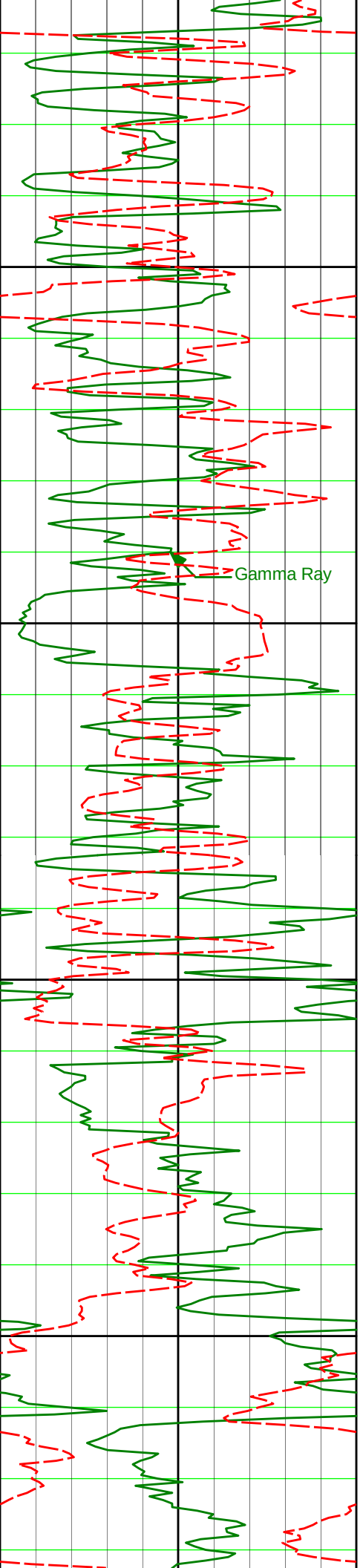
717	9.36	91.64	714.13	-4.29	0.38
812	8.81	91.67	807.94	-3.56	0.58
907	8.48	92.30	901.86	-2.96	0.36



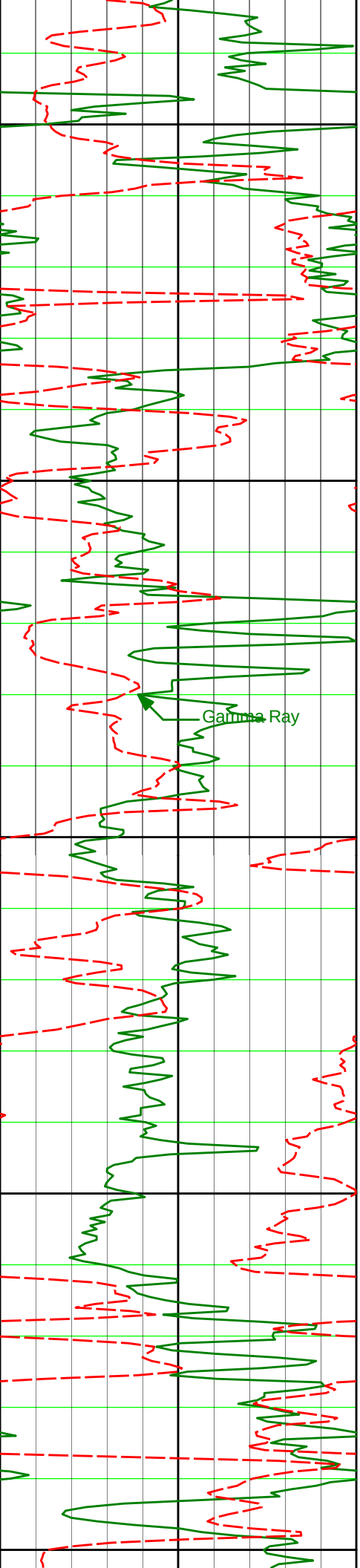
950						
1000	1002	8.80	93.41	995.78	-2.57	0.37
1050						
	1093	7.98	89.13	1085.81	-1.86	1.12
1100						



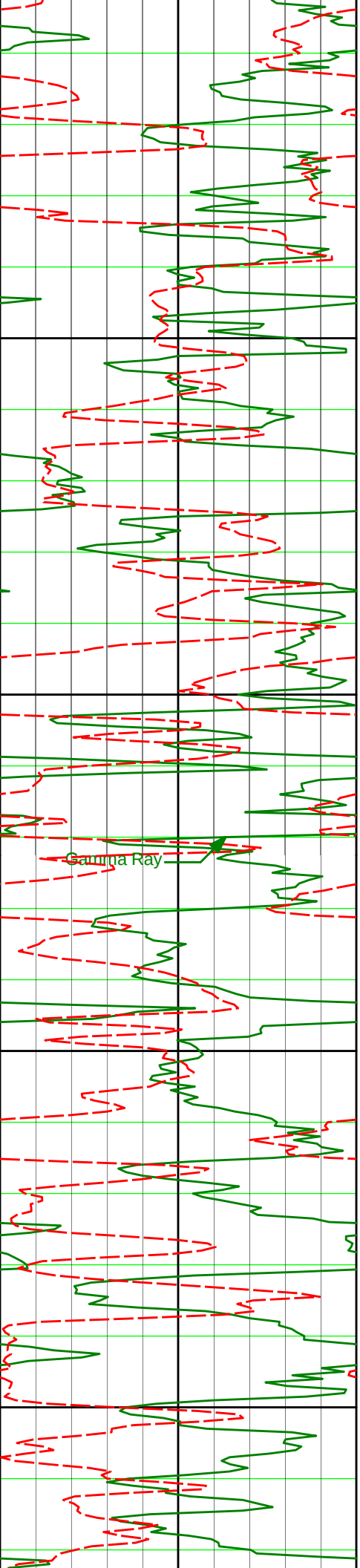
1150						
	1184	7.83	90.15	1175.94	-0.82	0.23
1200						
1250						
	1275	8.44	91.18	1266.03	0.02	0.68
1300						
1350						



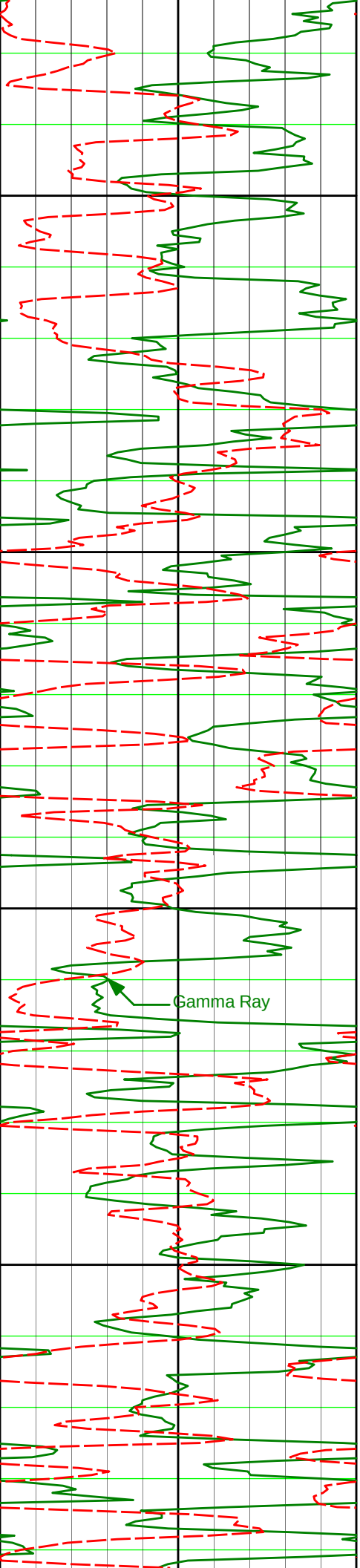
	1366	8.90	90.85	1355.99	0.83	0.52
1400						
1450	1457	8.28	80.61	1445.97	2.84	1.81
1500						
1550	1548	8.08	82.10	1536.05	5.76	0.32



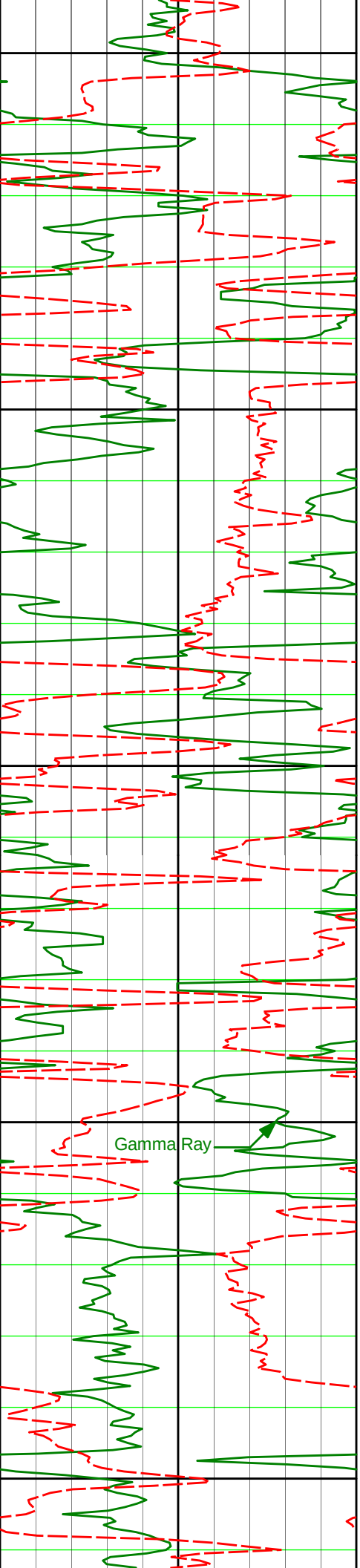
1600						
	1640	8.35	81.55	1627.10	8.63	0.31
1650						
1700						
	1733	8.59	80.48	1719.09	11.81	0.31
1750						
1800						



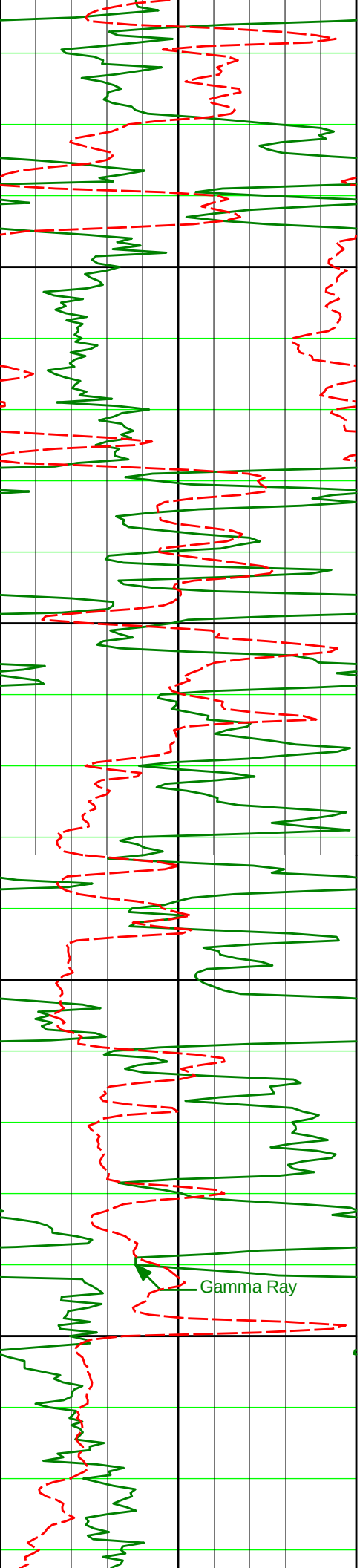
1833	8.04	88.11	1818.04	14.38	1.23
1927	8.10	89.64	1911.11	15.65	0.24
2022	8.23	88.57	2005.14	16.91	0.21



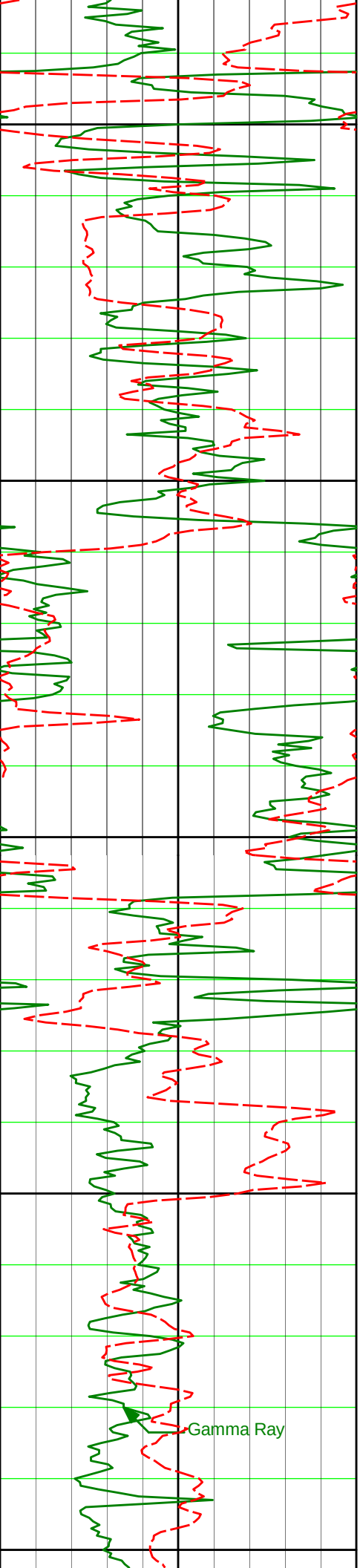
2050						
2100						
	2117	7.80	91.38	2099.22	17.94	0.61
2150						
2200						
	2212	7.87	92.96	2193.33	18.45	0.24



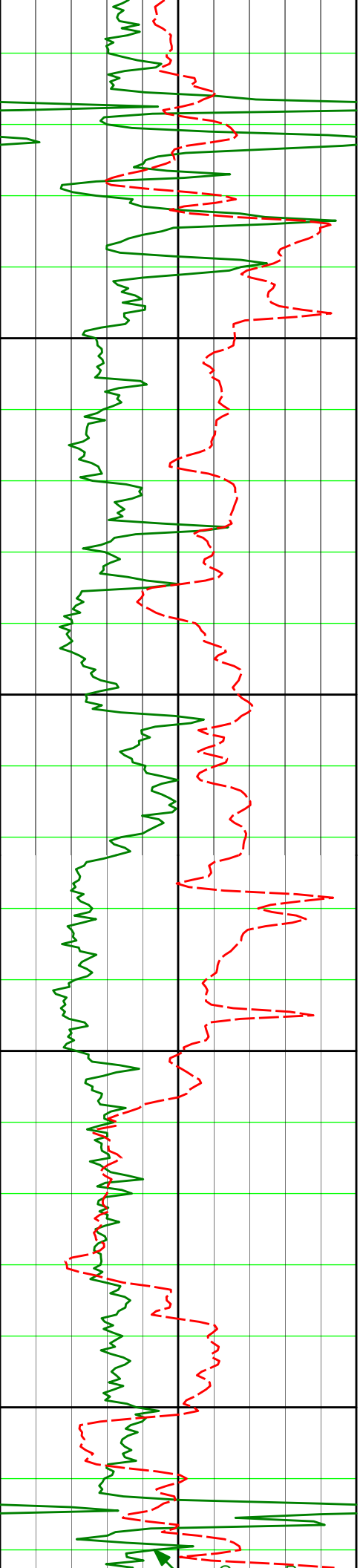
2307	6.87	91.64	2287.54	18.89	1.07
2402	6.40	90.75	2381.90	19.50	0.50



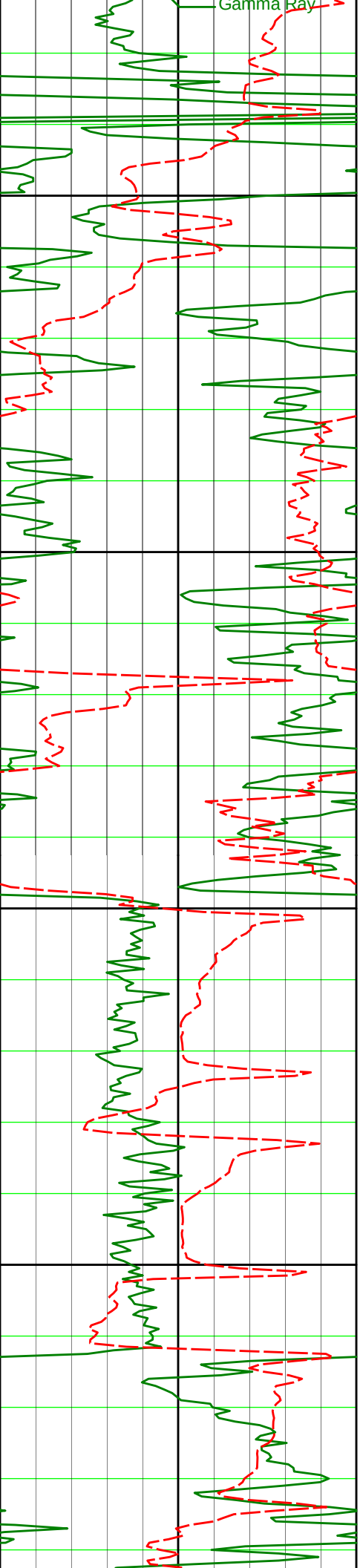
2497	6.43	80.32	2476.31	21.14	1.23
2592	7.74	80.94	2570.59	23.93	1.38



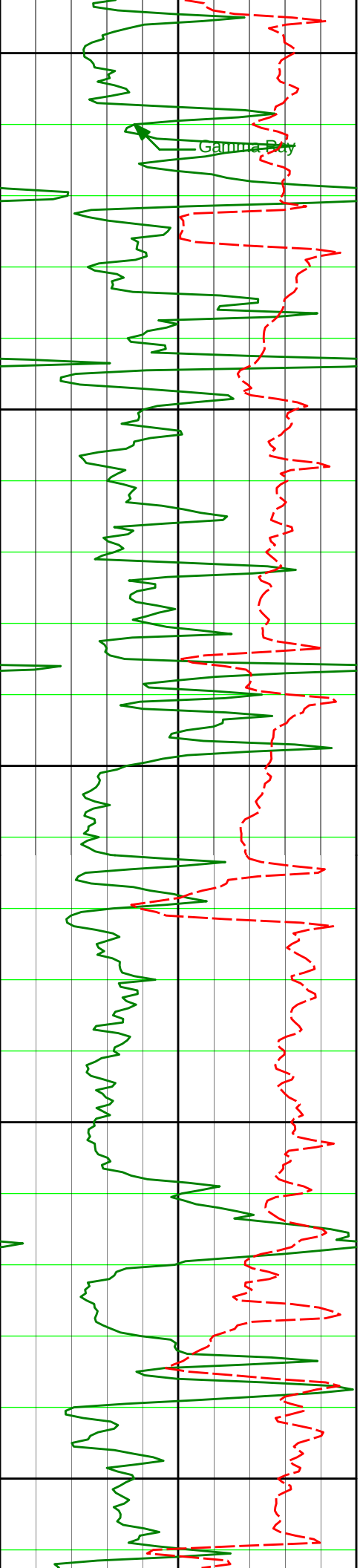
2687	7.63	81.26	2664.73	26.85	0.12
2782	7.83	81.73	2758.87	29.71	0.22
2877	6.93	88.93	2853.08	31.68	1.36



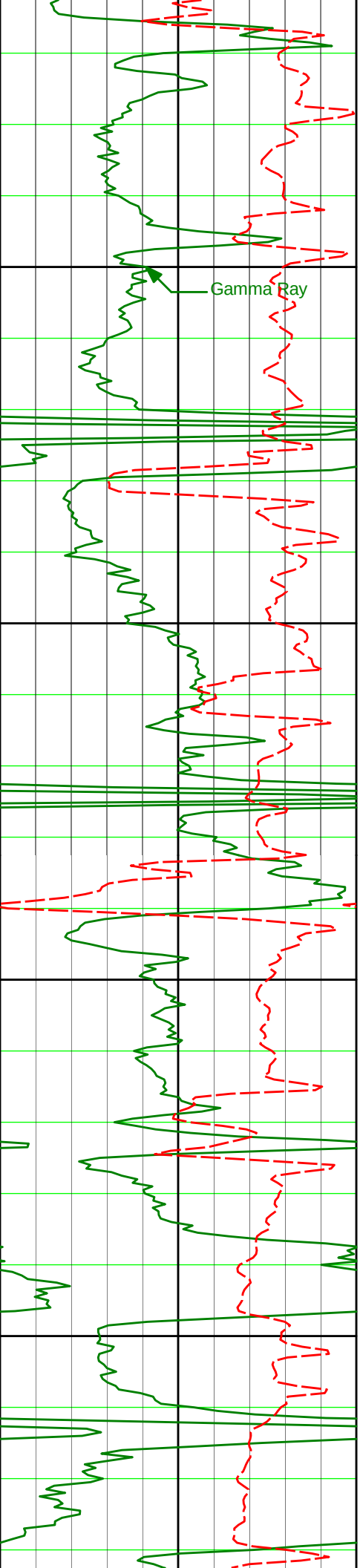
2972	5.22	100.37	2947.55	31.78	2.20
3067	3.20	107.14	3042.29	30.75	2.18



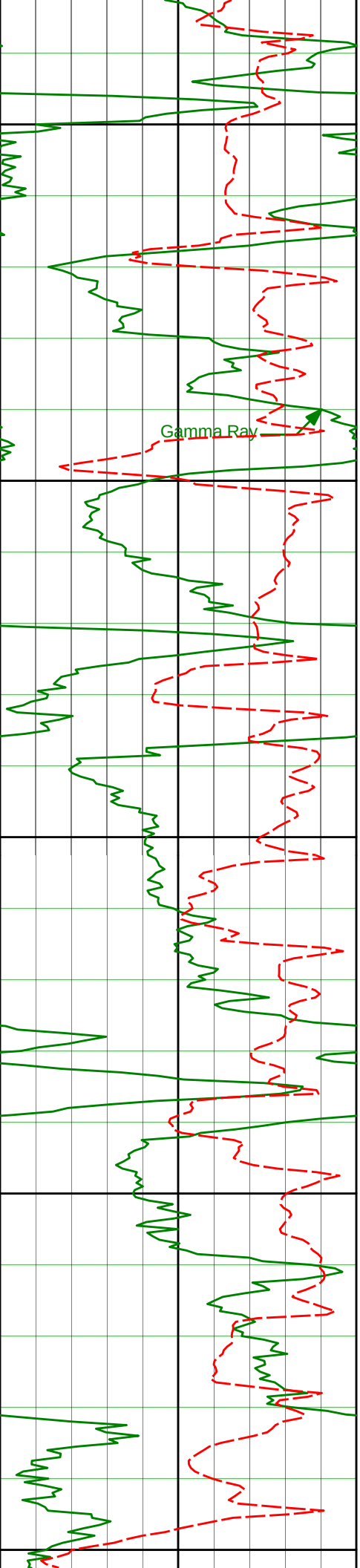
3162	1.02	107.98	3137.22	29.97	2.30
3193	1.01	84.83	3168.21	29.95	1.32
3225	0.95	78.61	3200.21	30.07	0.39
3257	2.01	31.06	3232.20	30.64	4.79
3289	3.87	13.24	3264.15	32.21	6.41
3320	5.90	2.33	3295.04	34.83	7.17



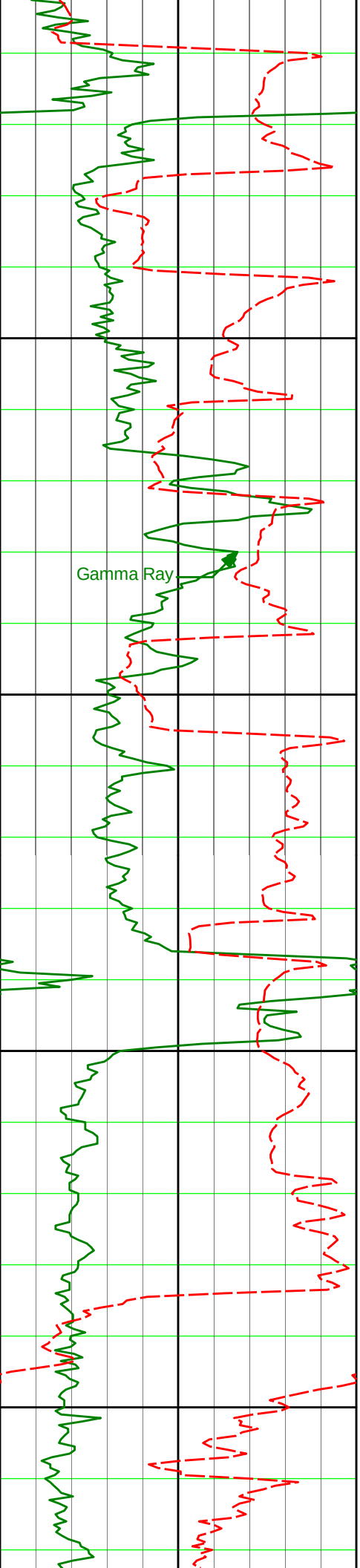
3352	8.35	0.13	3326.79	38.79	7.72
3384	11.91	358.67	3358.29	44.40	11.16
3415	15.32	357.30	3388.41	51.65	11.05
3447	18.63	356.33	3419.01	60.91	10.35
3479	22.32	355.37	3448.99	71.97	11.59
3510	25.87	353.84	3477.28	84.44	11.63
3542	28.57	353.43	3505.74	98.81	8.46



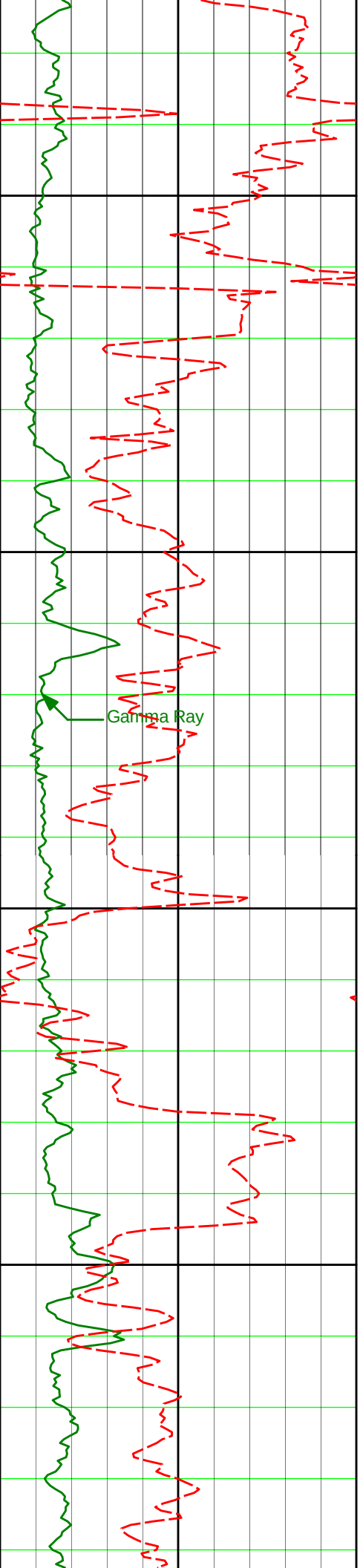
	3574	31.73	353.68	3533.40	114.59	9.87
3600						
	3605	35.16	355.08	3559.27	131.42	11.36
	3637	38.61	357.38	3584.86	150.42	11.60
3650						
	3669	41.44	358.65	3609.36	170.87	9.20
3700	3700	44.22	359.53	3632.09	191.85	9.18
	3732	47.15	0.40	3654.45	214.68	9.36
3750						
	3764	50.85	0.93	3675.44	238.77	11.62



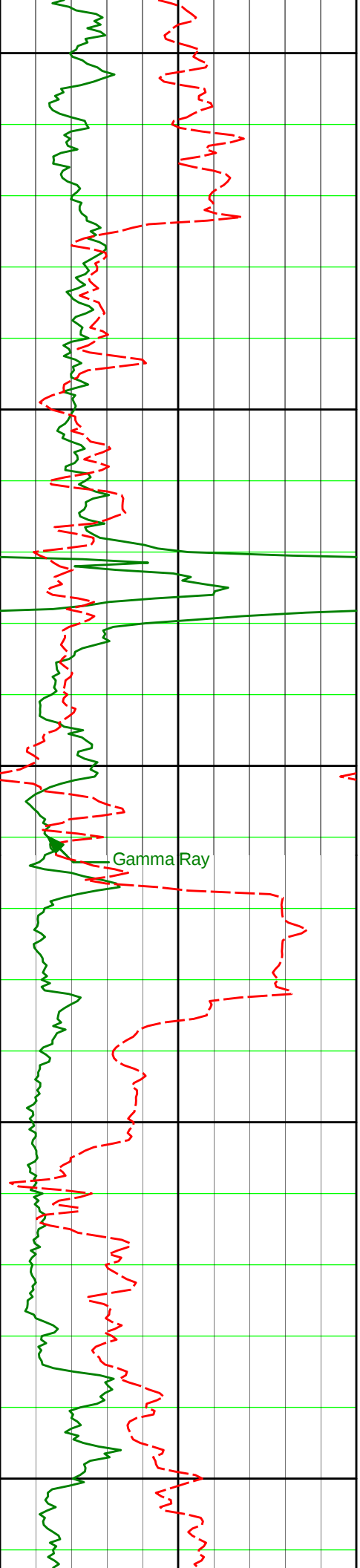
3795	53.77	0.09	3694.39	263.24	9.65
3827	57.13	359.57	3712.54	289.51	10.60
3859	60.26	359.02	3729.16	316.74	9.89
3891	63.37	358.79	3744.27	344.81	9.75
3922	66.41	358.94	3757.43	372.74	9.80
3954	69.26	359.46	3769.50	402.25	9.03
3986	71.69	359.49	3780.19	432.30	7.60



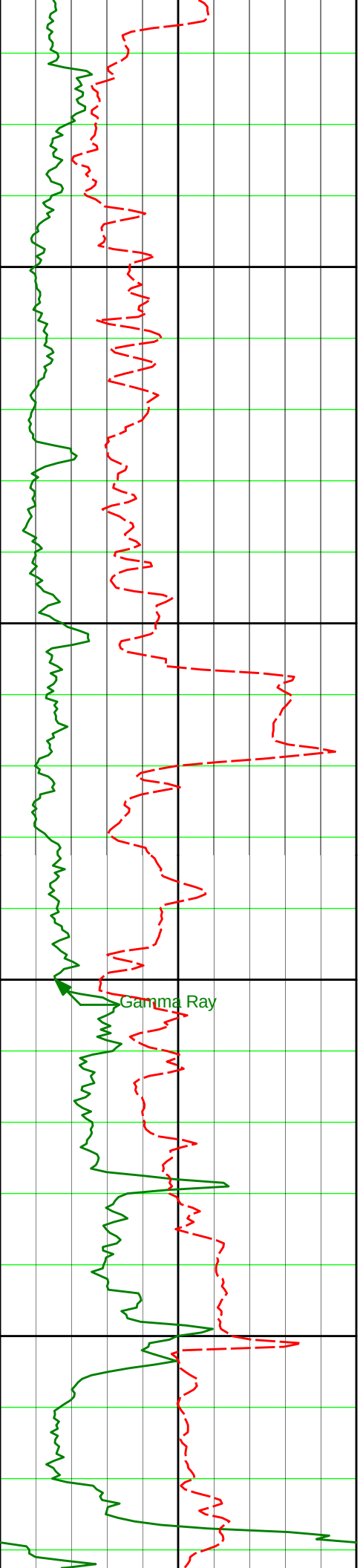
	4017	74.05	359.72	3789.32	461.82	7.64
4050	4049	75.20	0.79	3797.81	492.59	4.83
	4081	77.06	1.25	3805.48	523.60	5.97
4100						
	4112	80.59	1.13	3811.48	553.96	11.40
4150						
4200						
	4207	87.91	0.25	3821.00	648.22	7.75



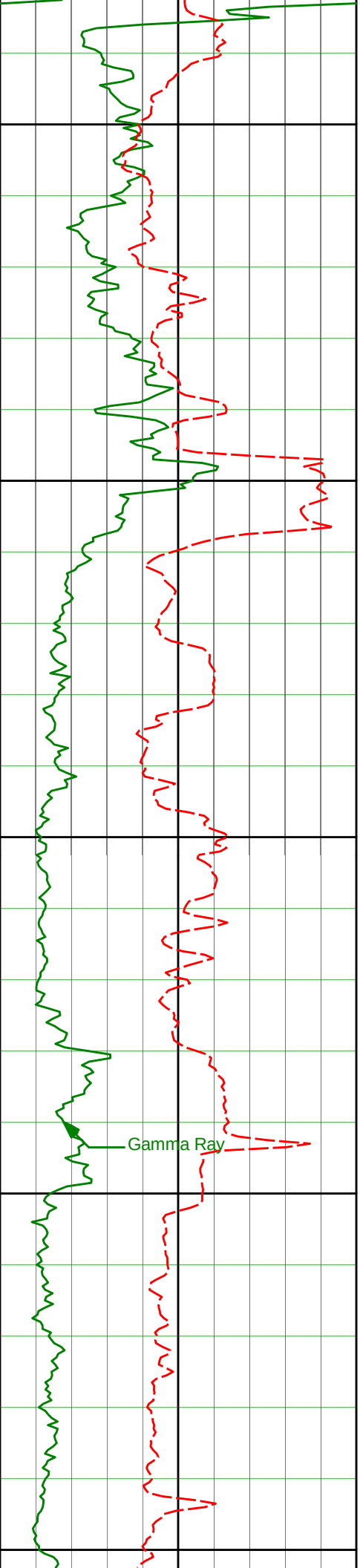
4293	89.17	359.69	3823.19	733.93	1.61
4325	89.08	359.38	3823.68	765.81	0.99
4420	91.08	0.25	3823.55	860.49	2.29



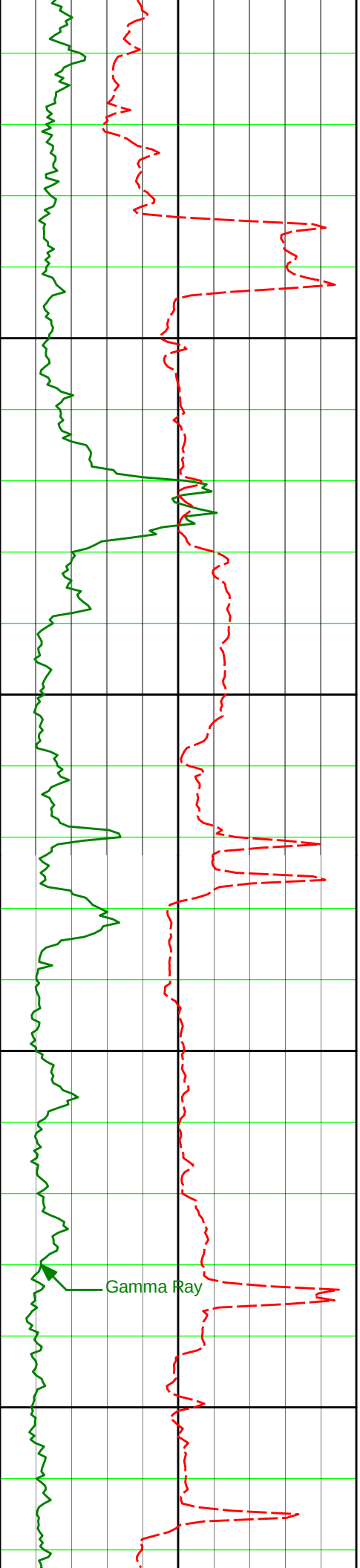
4450						
4500						
	4515	91.79	0.98	3821.18	955.25	1.08
4550						
4600						
	4609	90.15	1.27	3819.58	1049.08	1.77
4650						



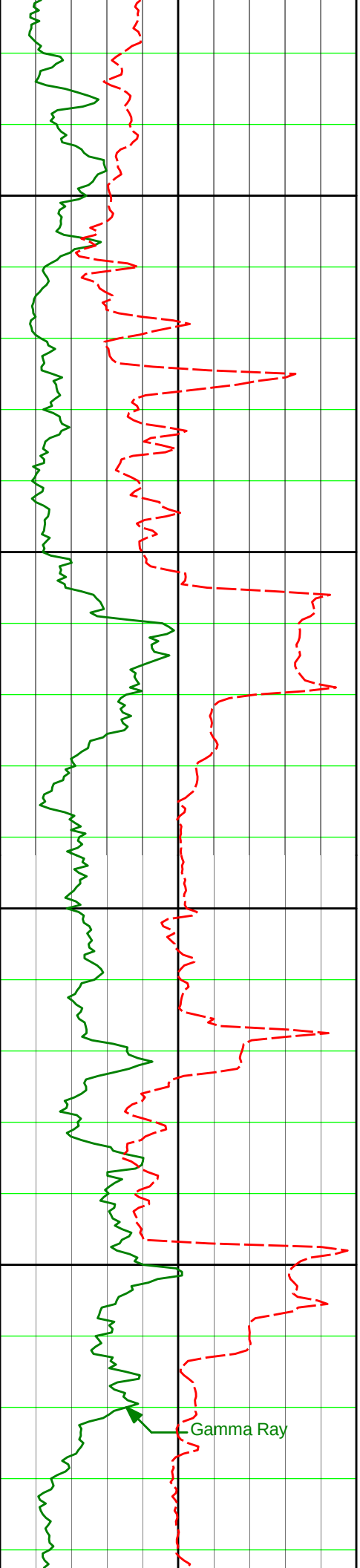
4700						
	4704	90.40	1.00	3819.13	1143.92	0.38
4750						
4800	4798	89.20	0.40	3819.46	1237.72	1.43
4850						



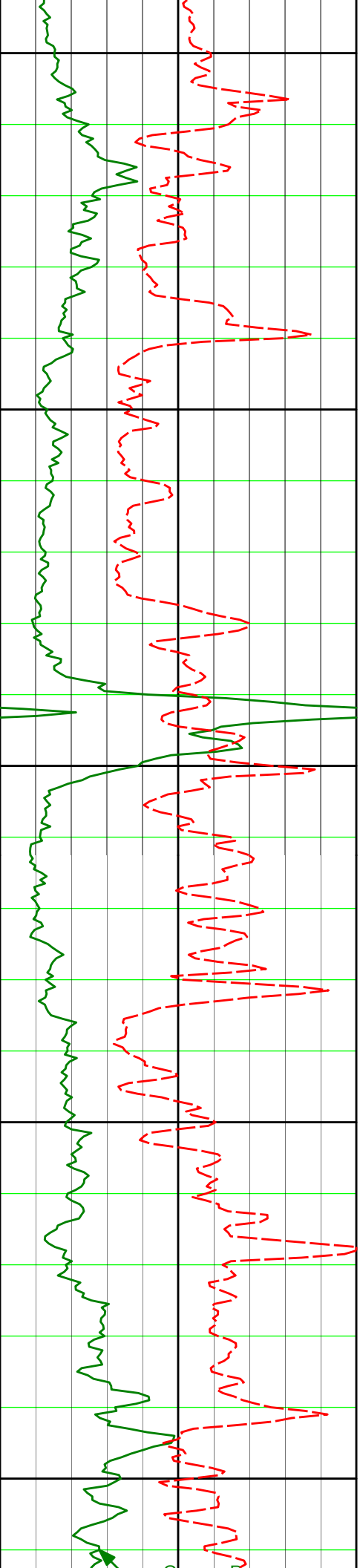
4893	88.46	0.33	3821.40	1332.46	0.78
4988	89.63	0.22	3822.98	1427.20	1.24
5079	90.06	359.56	3823.22	1517.92	0.86



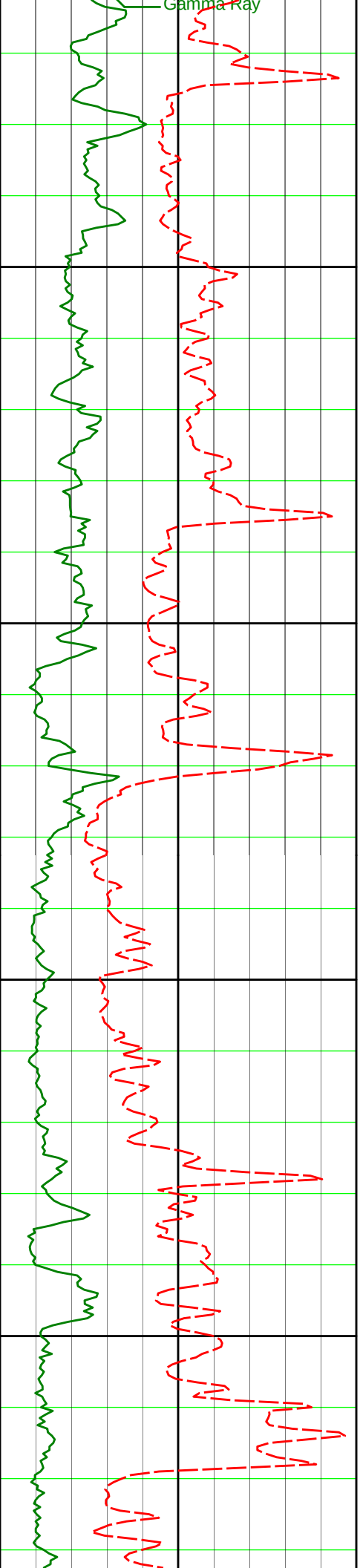
5150						
	5170	88.37	358.84	3824.47	1608.53	2.02
5200						
5250						
	5261	88.25	358.22	3827.16	1699.01	0.70
5300						



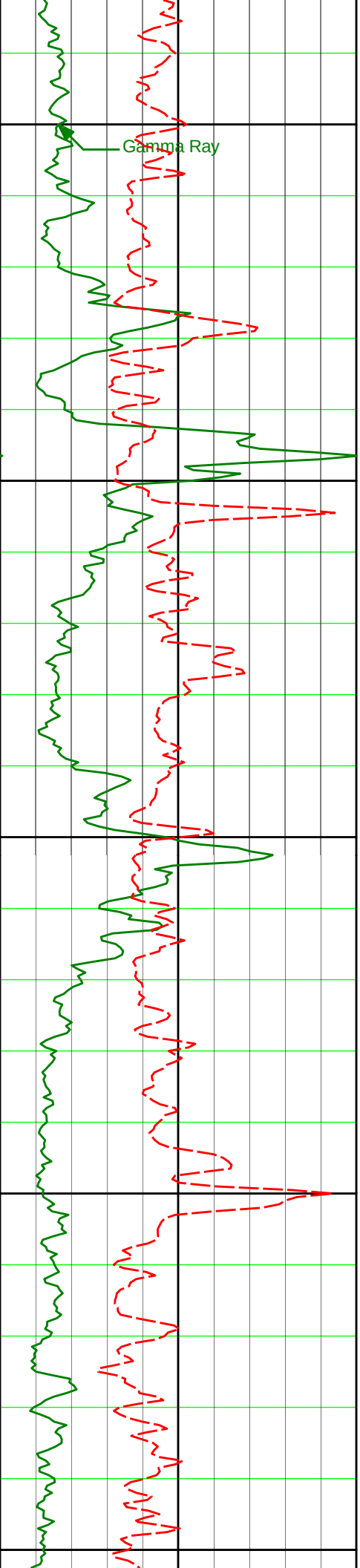
5352	88.58	358.92	3829.67	1789.50	0.86
5442	89.26	0.21	3831.37	1879.16	1.62
5533	90.55	1.19	3831.52	1969.96	1.78



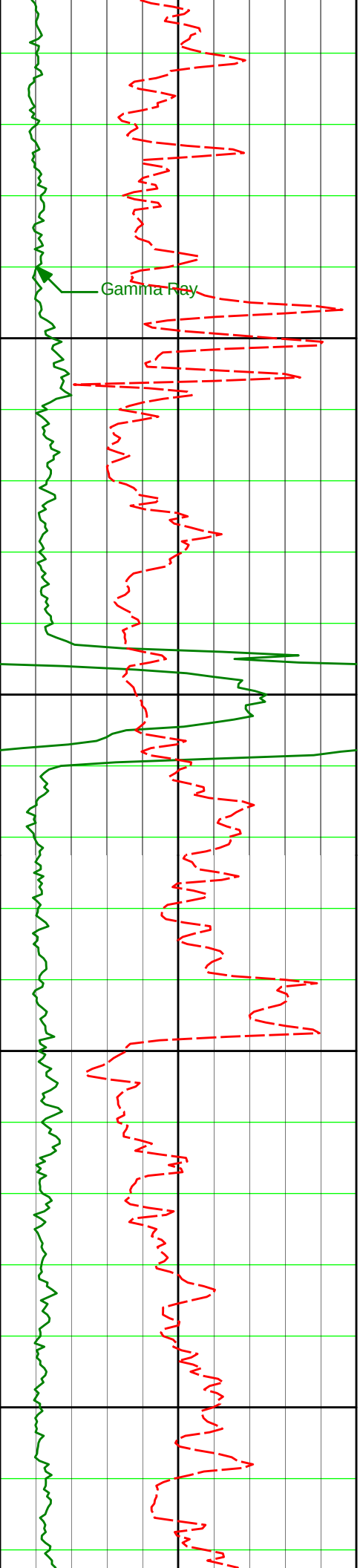
5625	90.18	0.36	3830.92	2061.77	0.99
5717	90.46	0.46	3830.41	2153.54	0.32



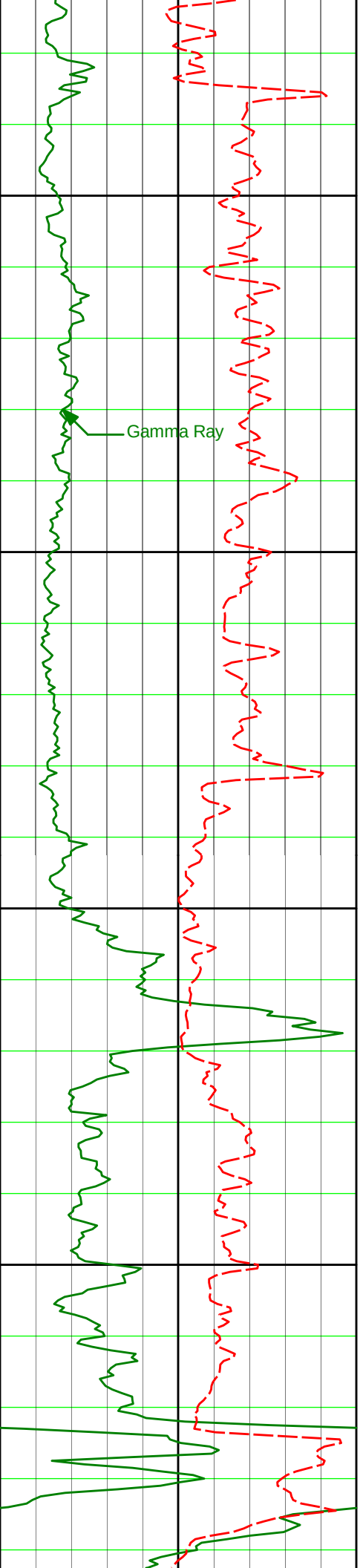
5811	90.98	359.67	3829.22	2247.26	1.01
5905	90.99	359.55	3827.60	2340.92	0.13



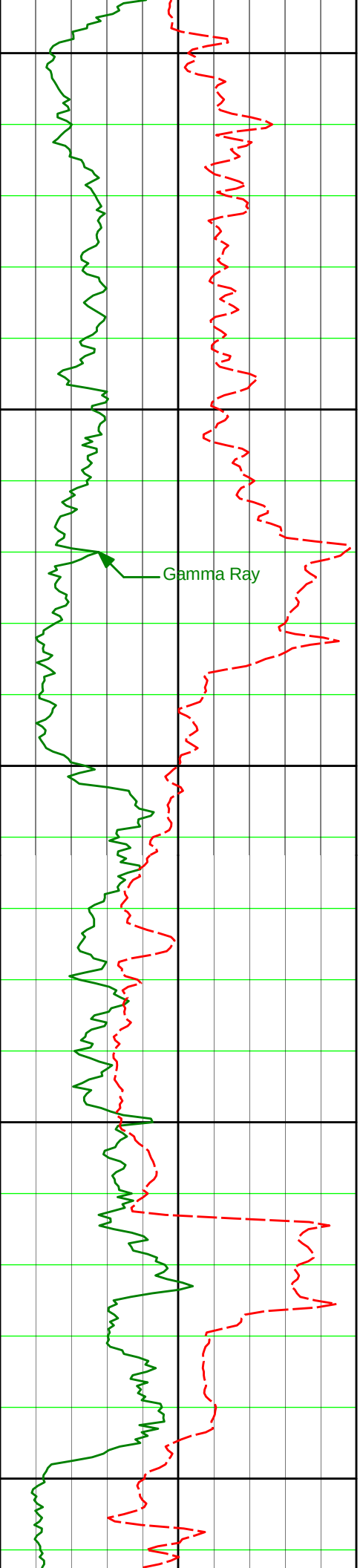
6000	6000	90.09	0.36	3826.71	2435.63	1.28
6050						
	6095	89.60	0.53	3826.97	2530.40	0.55
6100						
6150						
	6190	89.85	0.10	3827.43	2625.15	0.52
6200						



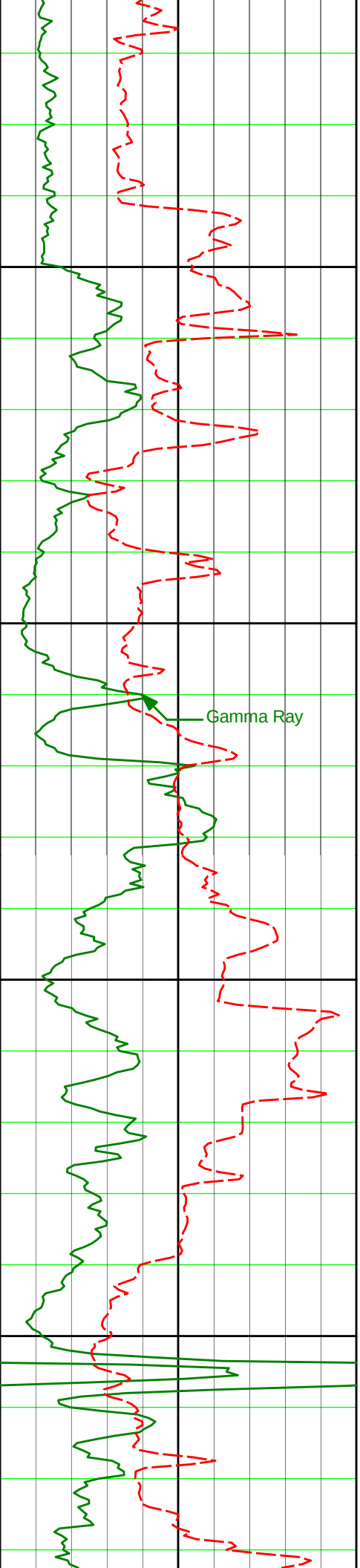
6285	89.94	359.92	3827.60	2719.87	0.22
6380	91.51	359.96	3826.40	2814.57	1.65



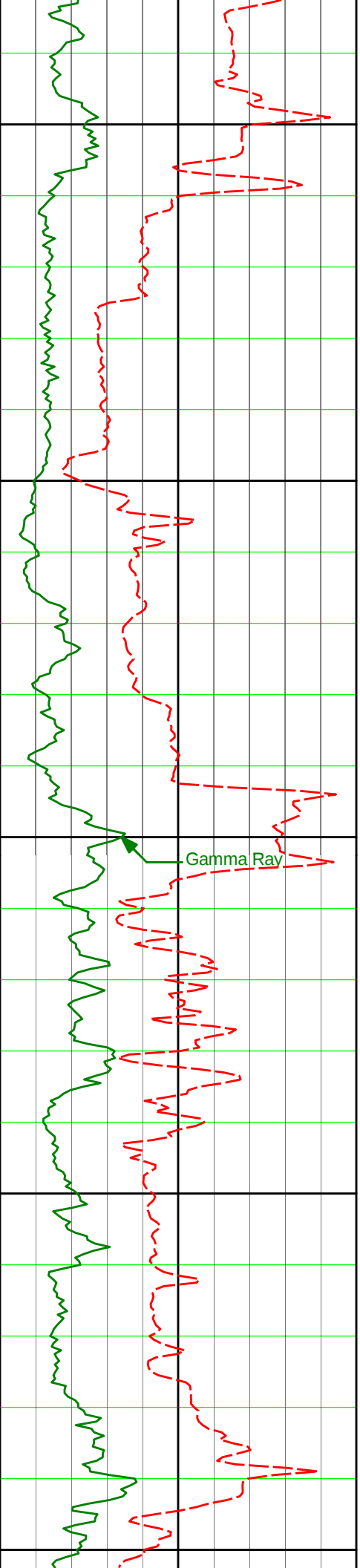
6450						
6475	91.45	359.71	3823.95	2909.23	0.27	
6500						
6550						
6570	92.22	359.25	3820.91	3003.83	0.94	
6600						



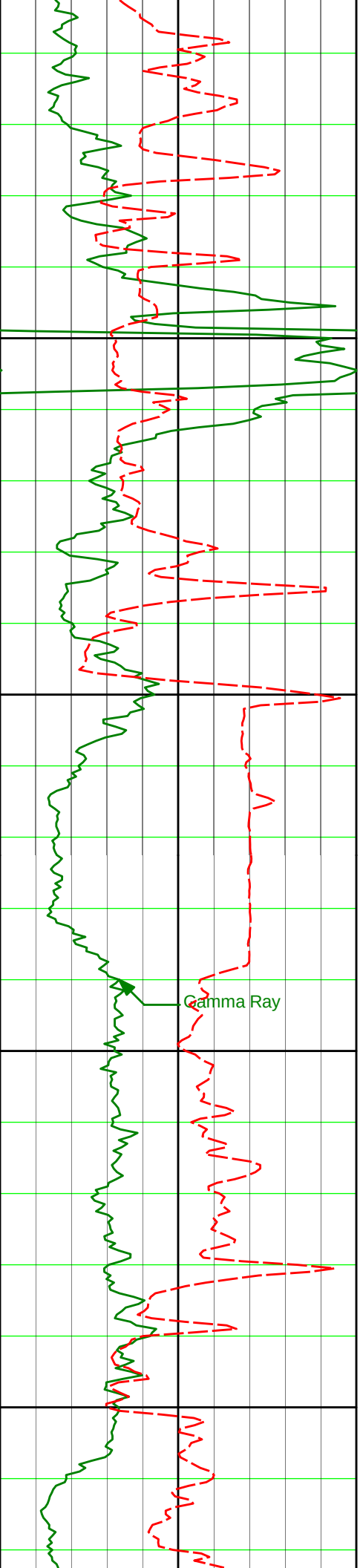
6650					
6665	91.91	359.37	3817.49	3098.39	0.35
6700					
6750					
6760	91.17	359.35	3814.94	3192.99	0.78
6800					
6850					
6855	89.97	0.11	3813.99	3287.66	1.50



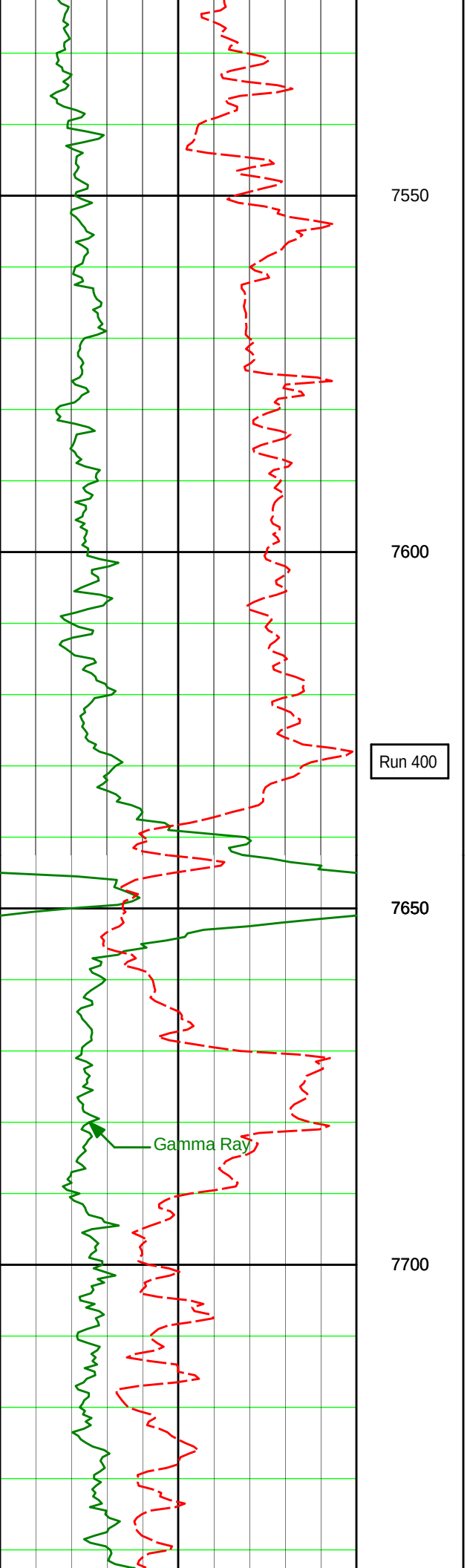
6900						
6950	6950	90.68	359.96	3813.46	3382.38	0.76
7000						
	7045	90.03	0.94	3812.87	3477.15	1.23
7050						



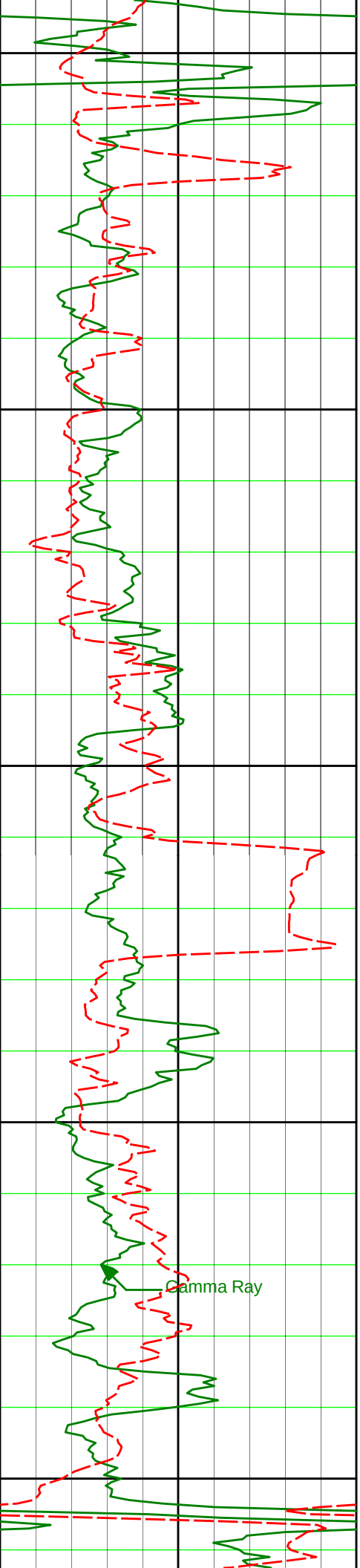
7100						
	7140	89.29	0.18	3813.43	3571.93	1.12
7150						
7200						
	7236	89.75	0.48	3814.23	3667.68	0.57
7250						
7300						



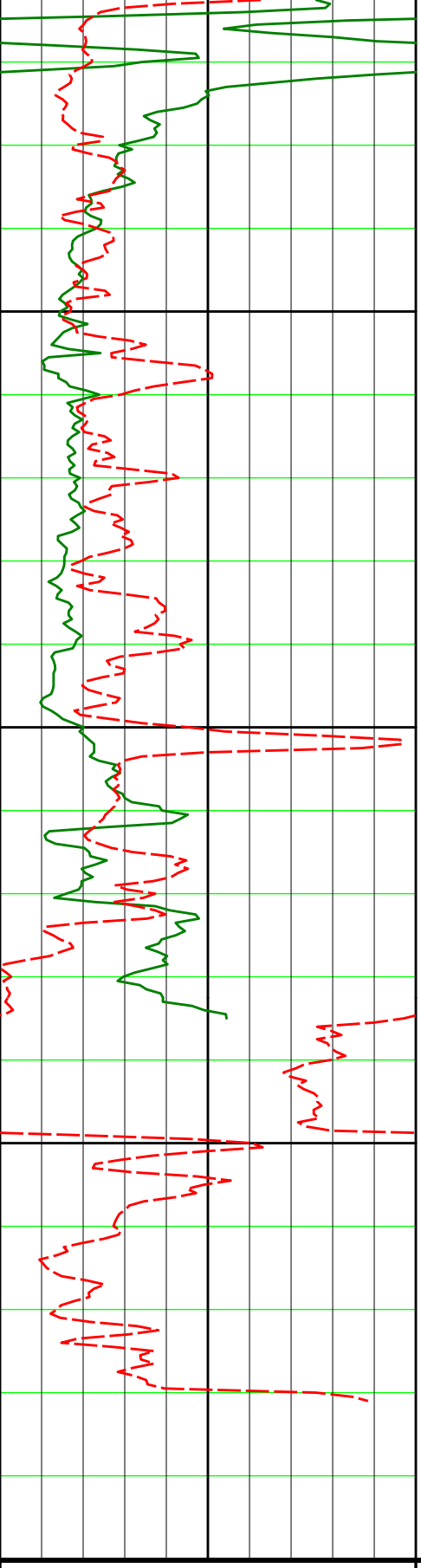
7350	7331	90.06	0.14	3814.38	3762.44	0.48
7400	7426	89.85	0.49	3814.46	3857.19	0.43
7450						
7500	7521	90.37	0.04	3814.28	3951.94	0.72



7616	89.63	359.87	3814.28	4046.66	0.80
7711	91.14	359.31	3813.64	4141.31	1.70



7750						
7800	7806	92.24	359.84	3810.84	4235.93	1.29
7850						
7900	7901	90.61	0.13	3808.47	4330.61	1.74
7950						



Depth	Inclination	Azimuth	TVD	Vertical Sec	Dogleg Sev
7996	90.18	359.62	3807.81	4425.31	0.70
8076	90.46	359.22	3807.36	4505.01	0.62
8130	90.46	359.22	3806.92	4558.78	0.01

Final Survey @ 8130'MD
is a projection to the bit.

TD

Rate of Penetration
feet per hr
250 0

PCG Gamma Ray
api
0 150

MD
ft
1 : 240

Surveys

Surveys

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Shell Exploration Production
Young Trust 2309 35-1H
Wildcat
Reno Co Kansas
USA
OK-XX-0900034106
Surveys from 141' MD to 8130' MD provided by Halliburton Sperry Drilling Services.
Final Survey @ 8130' MD is a projection to the bit.

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
141.00	0.14	121.22	141.00	0.09 S	0.15 E	-0.08	0.10
171.00	0.28	79.43	171.00	0.09 S	0.25 E	-0.07	0.68
232.00	0.69	100.38	232.00	0.13 S	0.76 E	-0.07	0.71
286.00	0.71	119.06	285.99	0.35 S	1.37 E	-0.25	0.42
368.00	1.66	133.76	367.98	1.42 S	2.67 E	-1.21	1.21
432.00	3.90	119.74	431.90	3.14 S	5.23 E	-2.73	3.63
527.00	7.12	98.90	526.45	5.66 S	13.86 E	-4.57	3.94
622.00	9.63	93.09	620.43	6.99 S	27.61 E	-4.85	2.78
717.00	9.36	91.64	714.13	7.64 S	43.26 E	-4.29	0.38
812.00	8.81	91.67	807.94	8.08 S	58.25 E	-3.56	0.58
907.00	8.48	92.30	901.86	8.57 S	72.53 E	-2.96	0.36
1002.00	8.80	93.41	995.78	9.29 S	86.78 E	-2.57	0.37
1093.00	7.98	89.13	1085.81	9.60 S	100.05 E	-1.86	1.12
1184.00	7.83	90.15	1175.94	9.52 S	112.57 E	-0.82	0.23
1275.00	8.44	91.18	1266.03	9.68 S	125.44 E	0.02	0.68
1366.00	8.90	90.85	1355.99	9.92 S	139.16 E	0.83	0.52
1457.00	8.28	80.61	1445.97	8.96 S	152.66 E	2.84	1.81
1548.00	8.08	82.10	1536.05	7.01 S	165.45 E	5.76	0.32
1640.00	8.35	81.55	1627.10	5.14 S	178.47 E	8.63	0.31
1733.00	8.59	80.48	1719.09	2.99 S	192.01 E	11.81	0.31
1833.00	8.04	88.11	1818.04	1.53 S	206.37 E	14.38	1.23
1927.00	8.10	89.64	1911.11	1.27 S	219.56 E	15.65	0.24
2022.00	8.23	88.57	2005.14	1.06 S	233.05 E	16.91	0.21
2117.00	7.80	91.38	2099.22	1.04 S	246.30 E	17.94	0.61
2212.00	7.87	92.96	2193.33	1.53 S	259.25 E	18.45	0.24
2307.00	6.87	91.64	2287.54	2.03 S	271.43 E	18.89	1.07
2402.00	6.40	90.75	2381.90	2.27 S	282.40 E	19.50	0.50
2497.00	6.43	80.32	2476.31	1.44 S	292.94 E	21.14	1.23
2592.00	7.74	80.94	2570.59	0.46 N	304.50 E	23.93	1.38
2687.00	7.63	81.26	2664.73	2.43 N	317.05 E	26.85	0.12
2782.00	7.83	81.73	2758.87	4.32 N	329.70 E	29.71	0.22
2877.00	6.93	88.93	2853.08	5.35 N	341.83 E	31.68	1.36
2972.00	5.22	100.37	2947.55	4.68 N	351.82 E	31.78	2.20
3067.00	3.20	107.14	3042.29	3.12 N	358.61 E	30.75	2.18
3162.00	1.02	107.98	3137.22	2.08 N	361.95 E	29.97	2.30
3193.00	1.01	84.83	3168.21	2.02 N	362.49 E	29.95	1.32
3225.00	0.95	78.61	3200.21	2.10 N	363.03 E	30.07	0.39
3257.00	2.01	31.06	3232.20	2.63 N	363.58 E	30.64	4.79
3289.00	3.87	13.24	3264.15	4.16 N	364.12 E	32.21	6.41
3320.00	5.90	2.33	3295.04	6.77 N	364.42 E	34.83	7.17
3352.00	8.35	0.13	3326.79	10.73 N	364.49 E	38.79	7.72
3384.00	11.91	358.67	3358.29	16.36 N	364.42 E	44.40	11.16
3415.00	15.32	357.30	3388.41	23.65 N	364.16 E	51.65	11.05
3447.00	18.63	356.33	3419.01	32.98 N	363.63 E	60.91	10.35
3479.00	22.32	355.37	3448.99	44.14 N	362.81 E	71.97	11.59
3510.00	25.87	353.84	3477.28	56.74 N	361.61 E	84.44	11.63
3542.00	28.57	353.43	3505.74	71.28 N	359.98 E	98.81	8.46
3574.00	31.73	353.68	3533.40	87.25 N	358.18 E	114.59	9.87
3605.00	35.16	355.08	3559.27	104.25 N	356.52 E	131.42	11.36

3637.00	38.61	357.38	3584.86	123.41 N	355.27 E	150.42	11.60
3669.00	41.44	358.65	3609.36	143.98 N	354.56 E	170.87	9.20
3700.00	44.22	359.53	3632.09	165.04 N	354.23 E	191.85	9.18
3732.00	47.15	0.40	3654.45	187.94 N	354.23 E	214.68	9.36
3764.00	50.85	0.93	3675.44	212.08 N	354.51 E	238.77	11.62
3795.00	53.77	0.09	3694.39	236.61 N	354.73 E	263.24	9.65
3827.00	57.13	359.57	3712.54	262.96 N	354.64 E	289.51	10.60
3859.00	60.26	359.02	3729.16	290.29 N	354.31 E	316.74	9.89
3891.00	63.37	358.79	3744.27	318.49 N	353.77 E	344.81	9.75
3922.00	66.41	358.94	3757.43	346.55 N	353.21 E	372.74	9.80
3954.00	69.26	359.46	3769.50	376.18 N	352.80 E	402.25	9.03
3986.00	71.69	359.49	3780.19	406.34 N	352.52 E	432.30	7.60
4017.00	74.05	359.72	3789.32	435.96 N	352.32 E	461.82	7.64
4049.00	75.20	0.79	3797.81	466.81 N	352.46 E	492.59	4.83
4081.00	77.06	1.25	3805.48	497.87 N	353.01 E	523.60	5.97
4112.00	80.59	1.13	3811.48	528.28 N	353.65 E	553.96	11.40
4207.00	87.91	0.25	3821.00	622.73 N	354.78 E	648.22	7.75
4293.00	89.17	359.69	3823.19	708.70 N	354.74 E	733.93	1.61
4325.00	89.08	359.38	3823.68	740.69 N	354.48 E	765.81	0.99
4420.00	91.08	0.25	3823.55	835.68 N	354.17 E	860.49	2.29
4515.00	91.79	0.98	3821.18	930.65 N	355.19 E	955.25	1.08
4609.00	90.15	1.27	3819.58	1024.61 N	357.03 E	1049.08	1.77
4704.00	90.40	1.00	3819.13	1119.59 N	358.90 E	1143.92	0.38
4798.00	89.20	0.40	3819.46	1213.58 N	360.04 E	1237.72	1.43
4893.00	88.46	0.33	3821.40	1308.56 N	360.65 E	1332.46	0.78
4988.00	89.63	0.22	3822.98	1403.55 N	361.10 E	1427.20	1.24
5079.00	90.06	359.56	3823.22	1494.54 N	360.93 E	1517.92	0.86
5170.00	88.37	358.84	3824.47	1585.52 N	359.66 E	1608.53	2.02
5261.00	88.25	358.22	3827.16	1676.45 N	357.33 E	1699.01	0.70
5352.00	88.58	358.92	3829.67	1767.39 N	355.06 E	1789.50	0.86
5442.00	89.26	0.21	3831.37	1857.37 N	354.38 E	1879.16	1.62
5533.00	90.55	1.19	3831.52	1948.36 N	355.50 E	1969.96	1.78
5625.00	90.18	0.36	3830.92	2040.35 N	356.74 E	2061.77	0.99
5717.00	90.46	0.46	3830.41	2132.34 N	357.40 E	2153.54	0.32
5811.00	90.98	359.67	3829.22	2226.33 N	357.50 E	2247.26	1.01
5905.00	90.99	359.55	3827.60	2320.32 N	356.86 E	2340.92	0.13
6000.00	90.09	0.36	3826.71	2415.31 N	356.78 E	2435.63	1.28
6095.00	89.60	0.53	3826.97	2510.31 N	357.52 E	2530.40	0.55
6190.00	89.85	0.10	3827.43	2605.31 N	358.05 E	2625.15	0.52
6285.00	89.94	359.92	3827.60	2700.31 N	358.06 E	2719.87	0.22
6380.00	91.51	359.96	3826.40	2795.30 N	357.96 E	2814.57	1.65
6475.00	91.45	359.71	3823.95	2890.26 N	357.69 E	2909.23	0.27
6570.00	92.22	359.25	3820.91	2985.21 N	356.83 E	3003.83	0.94
6665.00	91.91	359.37	3817.49	3080.14 N	355.68 E	3098.39	0.35
6760.00	91.17	359.35	3814.94	3175.10 N	354.62 E	3192.99	0.78
6855.00	89.97	0.11	3813.99	3270.09 N	354.18 E	3287.66	1.50
6950.00	90.68	359.96	3813.46	3365.09 N	354.24 E	3382.38	0.76
7045.00	90.03	0.94	3812.87	3460.08 N	354.99 E	3477.15	1.23
7140.00	89.29	0.18	3813.43	3555.08 N	355.91 E	3571.93	1.12
7236.00	89.75	0.48	3814.23	3651.07 N	356.46 E	3667.68	0.57
7331.00	90.06	0.14	3814.38	3746.07 N	356.97 E	3762.44	0.48
7426.00	89.85	0.49	3814.46	3841.07 N	357.49 E	3857.19	0.43
7521.00	90.37	0.04	3814.28	3936.07 N	357.94 E	3951.94	0.72
7616.00	89.63	359.87	3814.28	4031.06 N	357.87 E	4046.66	0.80
7711.00	91.14	359.31	3813.64	4126.06 N	357.19 E	4141.31	1.70
7806.00	92.24	359.84	3810.84	4221.01 N	356.49 E	4235.93	1.29
7901.00	90.61	0.13	3808.47	4315.98 N	356.46 E	4330.61	1.74
7996.00	90.18	359.62	3807.81	4410.98 N	356.26 E	4425.31	0.70
8076.00	90.46	359.22	3807.36	4490.97 N	355.45 E	4505.01	0.62
8130.00	90.46	359.22	3806.92	4544.96 N	354.71 E	4558.78	0.01

CALCULATION BASED ON MINIMUM CURVATURE METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 4.42 DEGREES (GRID)
A TOTAL CORRECTION OF 4.62 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 8130.00 FEET
IS 4558.78 FEET ALONG 4.46 DEGREES (GRID)