

Forh

1. 半値幅 (FWHM) のエネルギー依存性とピーク計数効率

基準線源 : M-07 Active Dia 50 mm φ

基準日時から測定日までの経過時間 : 27.3 日

-27.3 日
A₀ 269.84

Ar

χ
y

S/
6000097

核種	Cd-109	Co-57	Ce-139	Cr-51	Sr-85	Cs-137	Mn-54	Y-88	Co-60	Co-60	Y-88
基準日時の Bq	9.63 ×10 ³	0.410 ×10 ³	0.517 ×10 ³	16.0 ×10 ³	1.52 ×10 ³	1.60 ×10 ³	1.56 ×10 ³	2.43 ×10 ³	2.83 ×10 ³	2.83 ×10 ³	2.43 ×10 ³
半減期	462.6d	271.7d	137.6d	27.70d	64.84d	30.04y	312.1d	106.7d	5.271y	5.271y	106.7d
測定日の Bq	9.24 ×10 ³	0.382 ×10 ³	0.451 ×10 ³	8.08 ×10 ³	1.14 ×10 ³	1.60 ×10 ³	1.47 ×10 ³	2.04 ×10 ³	2.80 ×10 ³	2.80 ×10 ³	2.04 ×10 ³
γ線エネルギー(keV)	88.03	122.06	165.85	320.07	513.99	661.64	834.83	898.02	1173.21	1332.47	1836.04
放出割合 (γ/d)	0.0373	0.856	0.799	0.0983	0.983	0.850	1.00	0.934	0.999	1.00	0.994
光子放出率 (γ/sec)	344.8	327.3	360.0	794.3	1121	1357.7	1468.2	1900.8	2799.5	2802.3	2022.9
ピークチャネル	176.00	244.20	331.80	640.30	1027.8	1323.15	1669.30	1795.60	2345.85	2664.50	3671.90
半値幅 (ch)	1.513	1.700	1.863	2.195	2.50	2.732	3.065	3.142	3.56	3.72	4.16
半値幅 (keV)											
FWHM(ch) ×1.5	2.269	2.550	2.795	3.292	3.75	4.099	4.597	4.714	5.334	5.582	6.247
ROI	173 ~ 179	241 ~ 247	329 ~ 335	637 ~ 644	1024 ~ 1032	1319 ~ 1328	1664 ~ 1674	1790 ~ 1801	2340 ~ 2352	2658 ~ 2671	3665 ~ 3679
ピーク面積	952641	870836	811304	890831	696670	664953	587223	697087	776631	687557	363238
ピーク計数 率(c/sec)	15.9597	14.5139	13.5217	14.8472	11.6	11.0826	9.7871	11.6181	12.9439	11.4593	6.05397
ピーク計数 効率 (c/γ)	4.60 ×10 ⁻²	4.43 ×10 ⁻²	3.76 ×10 ⁻²	1.87 ×10 ⁻²	1.04 ×10 ⁻²	8.16 ×10 ⁻³	6.67 ×10 ⁻³	6.11 ×10 ⁻³	4.62 ×10 ⁻³	4.09 ×10 ⁻³	2.99 ×10 ⁻³

$$\epsilon = \frac{n}{A \cdot t} = \frac{6000097}{269.84}$$

$$\frac{11.6}{1121} =$$

Y 補

10000000

 γ 線基準線源 (No. M-07) γ 線スペクトル

1000000

(counts)

100000

10000

1000

100

10

176

(Ch)

176

244

273

332

640

1028

1323

1628

1669

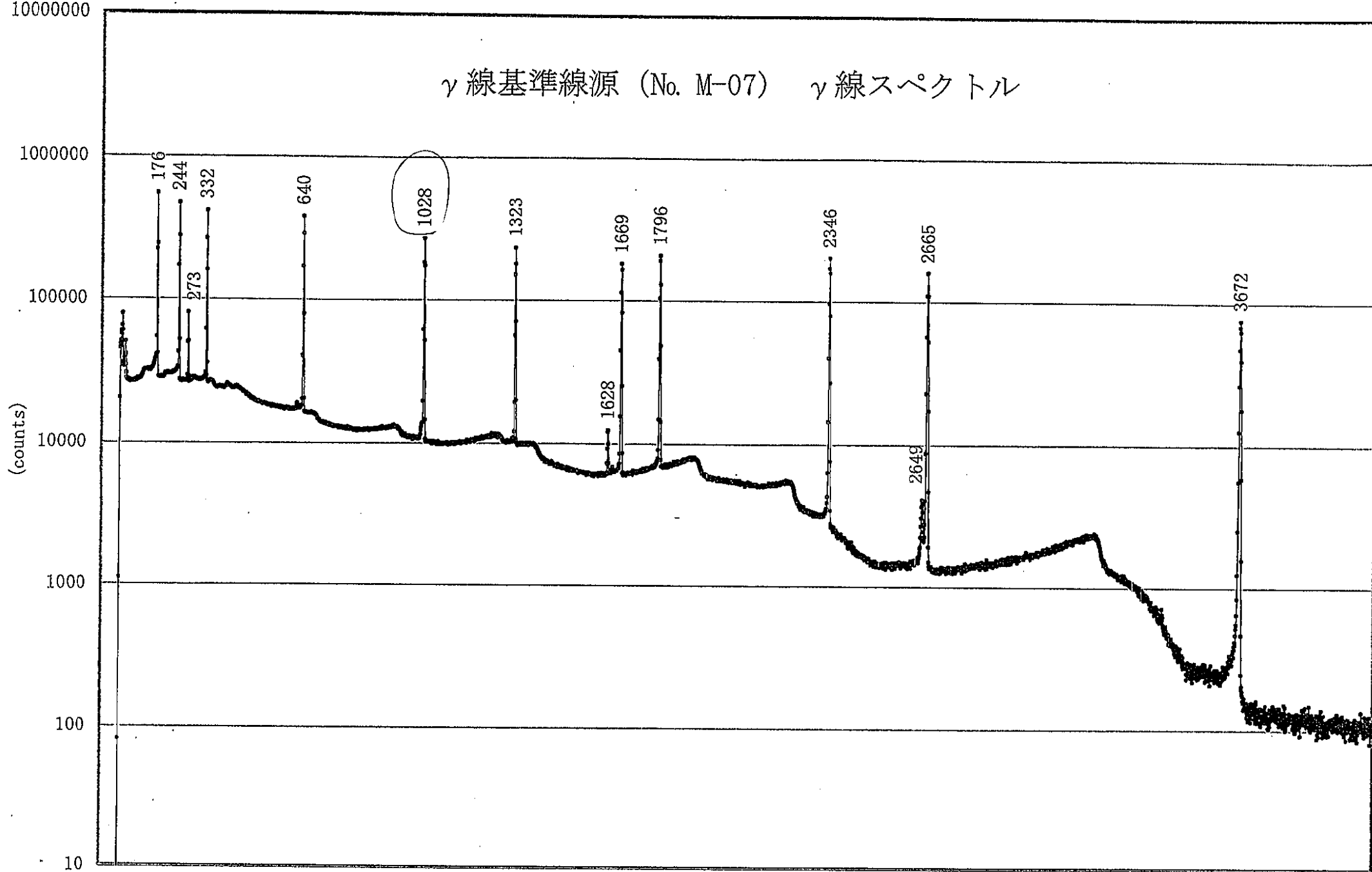
1796

2346

2649

2665

3672



γ ray standard No. M07

dead time $\leq 5\% - 10\%$

LT = 60000 sec

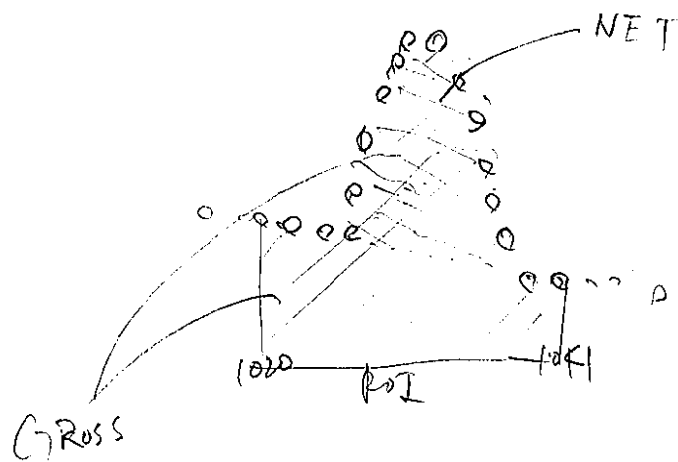
RT = 61300 sec

ROI No 0

1020 : 1041 = 937,580 GROSS


695,670 NET

ch	0	1	2	3	4	5	6	7	8	9
1020	12,696	13,072	13,567	13,623	13,858	19,590	61,735	184,261	272,230	174,168
1030	51,539	14,472	10,648	10,405	10,207	10,138	10,364	10,185	10,214	10,265
1040	10,343	10,200								



$$\text{Corrected} = \text{Gross} - \text{Background} = \text{Net}$$

$T \pm h_0$



Id-1

$$1.52 \times 10^3 \times$$

✓

$$N = N_0 \cdot e^{-\frac{27.3}{64.84} \times 0.693}$$

$$= 1.52 \times 10^3 \times e^{-0.292}$$

$$\lg N$$

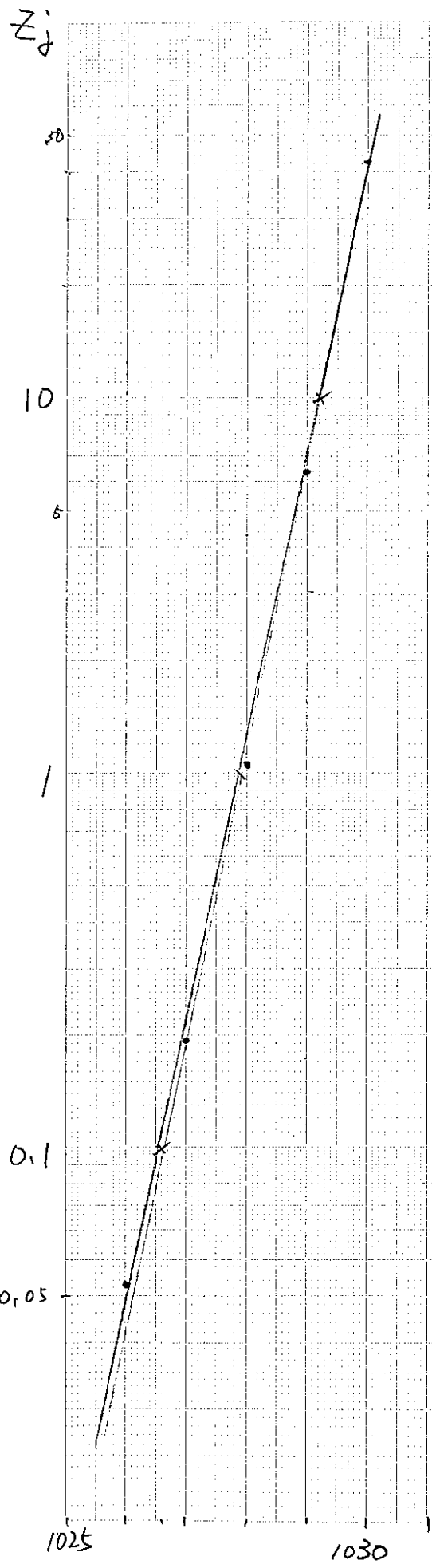
$$= \lg 1.52 + 3 - 0.292$$

$$= 3.126 \dots$$

$$= 3.13$$

$$N = e^{3.13} = 22.87$$

Imp



peak = 1027.8

$$\begin{aligned} FWHM(ch) &= 1.552 \sqrt{1029.2 - 1026.6} \\ &= 1.552 \sqrt{2.6} \\ &= 2.50 \end{aligned}$$

$$\begin{aligned} ROI &= \pm 1.5 ROI \\ &= \pm 3.75 \end{aligned} \quad \left\{ \begin{array}{l} 1029.05 \\ \rightarrow 1029.0 \\ \\ 1031.55 \\ \rightarrow 1031.6 \end{array} \right.$$

羊(5)箱
ch
50

1 箱 (2800-400)

7 7 51 4-18

0

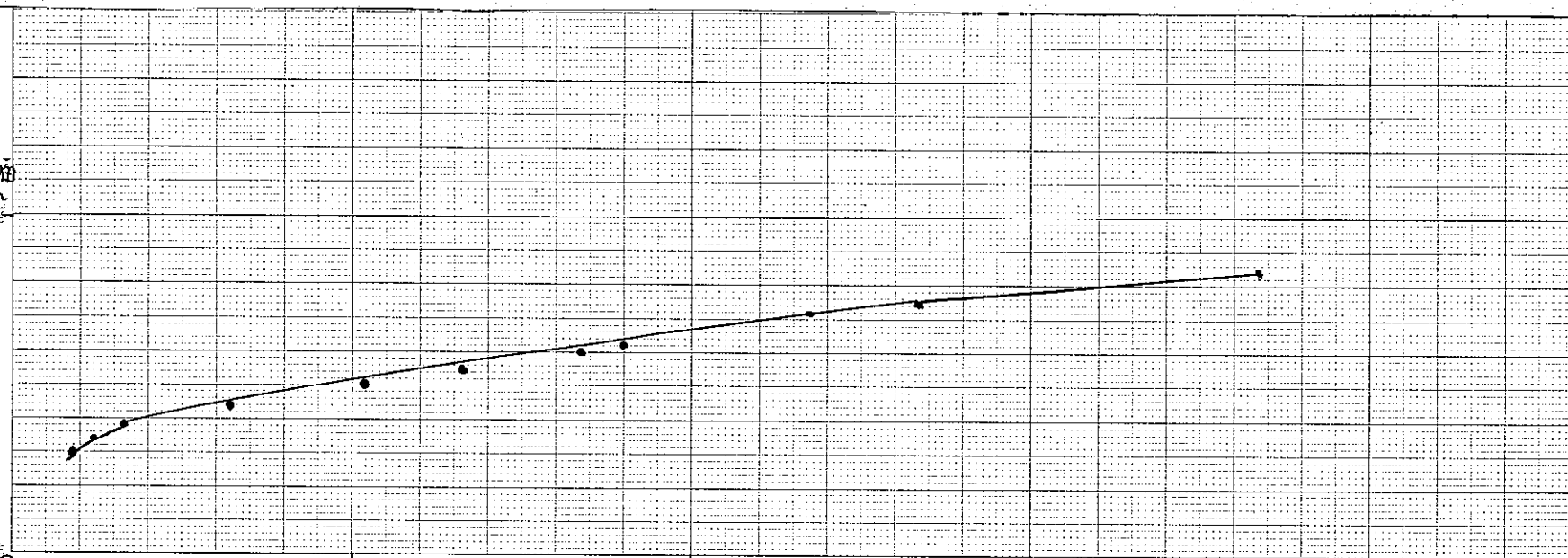
#5.

1000

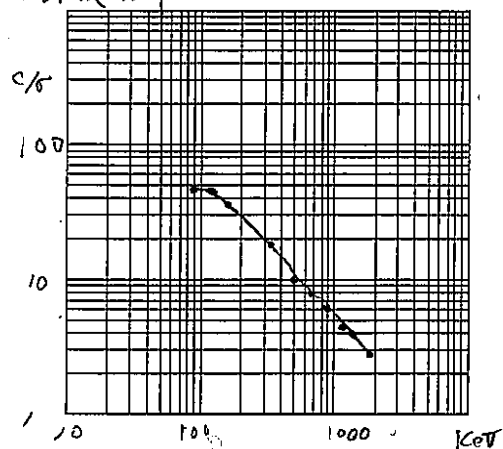
2000

3000

4000 ch
L27F0202/L



ビク計数効率



光子(γ線)エネルギー