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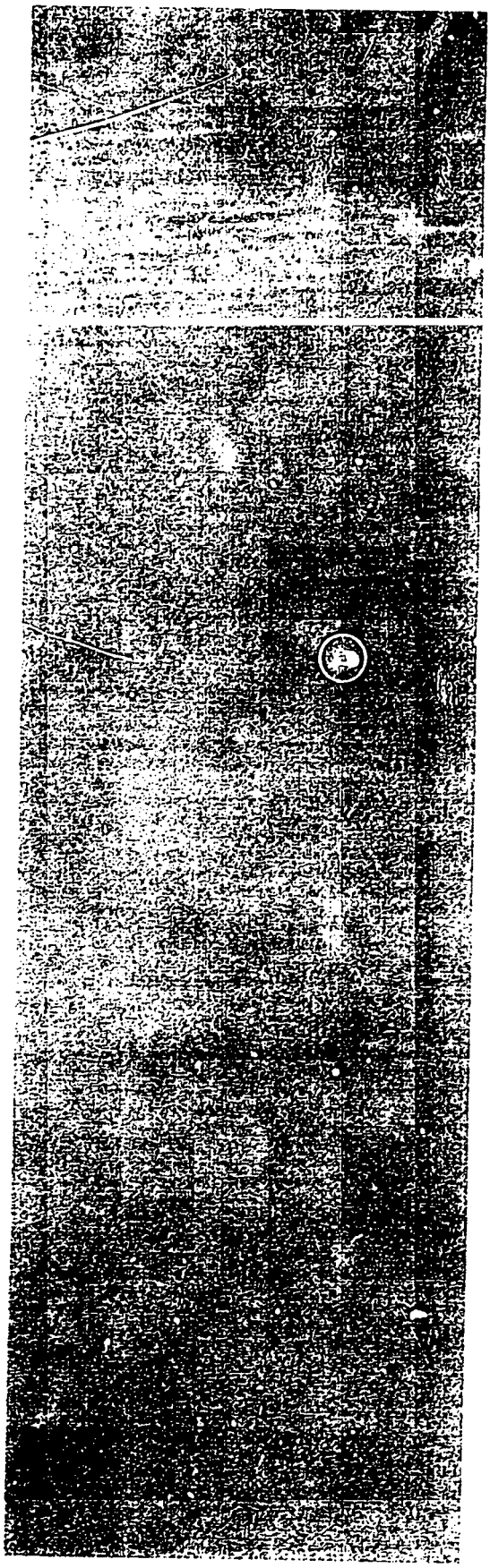

Augmentation of ENDF/B Fission Product Gamma-Ray Spectra by Calculated Spectra

Los Alamos

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AUGMENTATION OF ENDF/B FISSION PRODUCT GAMMA-RAY SPECTRA BY CALCULATED SPECTRA

by

J. Katakura and T. R. England

ABSTRACT

Gamma-ray spectral data of the ENDF/B-V fission product decay data file have been augmented by calculated spectra. The calculations were performed with a model using beta strength functions and cascade gamma-ray transitions. The calculated spectra were applied to individual fission product nuclides. Comparisons with several hundred measured aggregate gamma spectra after fission were performed to confirm the applicability of the calculated spectra. The augmentation was extended to a preliminary ENDF/B-VI file (Appendix A), and to beta spectra (Appendix B). Appendix C provides information on the total decay energies for individual products and some comparisons of measured and aggregate values based on the preliminary ENDF/B-VI files.

I. INTRODUCTION

Aggregate gamma-ray spectrum of fission products (FP) after fission of a fissionable nuclide is a summation of the spectra of individual FP nuclides. In order to understand the behavior of the aggregate gamma-ray spectra, it is necessary to know the spectrum of each individual FP nuclide. However, there are many short-lived FP nuclides whose spectra data have not been measured at all or that have been only partially done. If we apply such spectra to the calculation of the aggregate ones, we will obtain an underestimation of the spectral values.

This situation has been recognized in the work on decay heat after fission[1] that uses average decay energy values. The gamma-ray component of the decay heat calculated by using the average energy values derived from measured spectra data usually underestimates the measured decay heat values. To reduce the underestimation, theoretically calculated average energy values are adopted for nuclides with no measured spectra data and those considered to have partially measured ones. The calculated energy values have reproduced the measured decay heat values well;[2] however, the evaluation work has focussed attention primarily on the average energy values.

Recently an attempt to adopt the theoretical calculation to gamma-ray spectra of FP nuclides was tried.[3] In this attempt the calculations were performed for 32 "typical" FP nuclides characterized by mass (light and heavy), even-oddness of protons and neutrons and four Q_β values (4, 7, 9, and 11 MeV). The "typical" spectra were applied to nuclides with partially measured spectra data, as well as those with none, for calculating the aggregate gamma-ray spectra. The resultant spectra showed fairly good agreement with the measured ones.[3]

The evaluated nuclear data file (ENDF/B-V) has not contained such theoretical spectra data; these are particularly applicable to the prediction of the aggregate gamma-ray spectra at short cooling times after fission[4] because of the absence of measured spectra data of short-lived nuclides. We tried to apply the calculated spectra to augment the ENDF/B-V line spectral data. It was felt that the set of spectra calculated for individual nuclides would provide better applicability of the spectra to the aggregate spectrum calculation than would the "typical" ones. We prepared the calculated spectra of the individual nuclides, taking into account the character of each nuclide, e.g., mass, Q_β values, etc.

The ENDF/B-V file contains the FP data for 877 total nuclides. Of these, 750 nuclides are unstable and decay to another nuclide. All of the nuclides have average decay energy values for decay heat application but only 248 nuclides have gamma-ray spectral data. It is understood, however, that some of them may suffer from a problem of missing gamma rays. Therefore, we calculated the spectra of all β^- decaying nuclides in the ENDF/B-V file. (Electron capturing and/or β^+ decaying nuclides are considered unimportant for the calculation of the aggregate spectra due to their low fission yields.) The calculated spectra amounted to 633; they were used to augment the line spectra contained in the ENDF/B-V file. In the augmentation, the average decay energy values, which give a good prediction of the decay heat, were taken into account so that the augmented spectra reproduce the average when the spectrum integration is performed.

Calculations of the aggregate spectra using the augmented data were completed and compared with the data measured at the Oak Ridge National Laboratory,[5] the University of Tokyo,[6] and Los Alamos National Laboratory[7] to confirm their applicability.

In Sec. II the calculation of the gamma-ray spectra is presented; Section III discusses the augmentation by the calculated spectra, and Sec. IV describes the calculation of the aggregate spectra after fission. The comparisons between measured aggregate gamma spectra and the calculated ones are described in Sec. V, followed by a summary of the entire project in Sec. VI.

In addition, we have augmented a preliminary (September 1989) ENDF/B-VI file, as summarized in Appendix A. Finally, the beta spectrum also has been augmented in ENDF/B-V, as seen in Appendix B, and the preliminary ENDF/B-VI are also augmented in the same way as discussed there. Appendix C provides some comparisons of aggregate calculations and other information on the preliminary ENDF/B-VI file.

This effort was initiated in order to provide essentially complete fission product spectra for ENDF/B-V and -VI. The files will delineate cases in which theoretical data are partially or entirely in use.

II. CALCULATION OF GAMMA-RAY SPECTRA

We used the Gross Theory[8] of beta decay and a cascade gamma transition model[3] for the spectrum calculation. The Gross Theory was employed to calculate the initial level population of a daughter nucleus fed by beta decay. In general, the calculation of the beta strength function of a nuclide needs a detailed knowledge of nuclear structure. Nuclear structure information, however, has not been satisfactory for predicting the strength function of all nuclides because nuclear properties are often experimentally incomplete. The Gross Theory, on the other hand, deals with certain average properties of beta decay and does not require the detailed knowledge of an individual nuclear state. A brief summary of the theory (based on papers by Takahashi, Yamada, and Kondoh[8]) follows.

In the Gross Theory, the summation over final nuclear states appearing in beta decay equations is replaced by an integration, and nuclear matrix elements specifying the transitions are expressed by some simple functional forms whose parameters are evaluated by sum rules and the average properties of beta decay. For example, the total decay constant of the Fermi transition is expressed as follows:

$$\lambda = \left(\frac{1}{2\pi^3}\right) \int_{-Q}^{0} \sum_{\Omega} |g_{\Omega}|^2 \bullet |M_{\Omega}(E_g)|^2 \bullet f(-E_g + 1)\, dE_g , \qquad (1)$$

where the symbol Ω stands for type of beta decay such as Fermi and Gamow-Teller, f is the integrated Fermi function, and g_{Ω} is the coupling constant. In this expression, the summation over the final nuclear states is replaced by the integration with respect to the level energy E_g. The $|M_{\Omega}(E_g)|^2$ is a strength function and is the average of squared matrix elements multiplied by the final level density. The model of theGross Theory expresses the function as

$$|M_{\Omega}(E_g)|^2 = \int_{\varepsilon_{min}}^{\varepsilon_{max}} D_{\Omega}(E_g,\varepsilon) \bullet W(E_g,\varepsilon) \frac{dn}{d\varepsilon}\, d\varepsilon , \qquad (2)$$

where ε is a single nucleon energy of the decaying nucleon in a daughter nucleus, $\frac{dn}{d\varepsilon}$ is a number density of nucleons, and $W(E_g,\varepsilon)$ is a weight function that reflects the degree of vacancy of the final states. The function $D_{\Omega}(E_g,\varepsilon)$ is a single nucleon contribution to $|M_{\Omega}(E_g)|^2$ in the absence of the Pauli principle.

The properties of $D_{\Omega}(E_g,\varepsilon)$ were studied by sum rules and trial forms were examined. Based on the examination,[8] a modified Lorentzian shape is used on our calculation.

For the allowed transitions, Fermi and Gamow-Teller transitions are considered and the strength function of total beta decay summed over them,

$$S_\beta(E) = \sum_\Omega |g_\Omega|^2 \cdot |M_{fi}(E)|^2 \ . \qquad (3)$$

Once the strength function, $S_\beta(E)$, is determined, the level population density by beta feeding, b(E), is given by

$$b(E) = S_\beta(E) \cdot f(Z, Q_\beta - E) \cdot T_{1/2} \ , \qquad (4)$$

where f is the Fermi function and $T_{1/2}$ is a half-life of beta decay.

After determining the level population density, gamma transitions are treated as successive de-excitation from higher levels and the level population density is changed to be a summation of that by beta feeding and by the gamma de-excitation.

$$P(E) = b(E) + \int_E^{E_{max}} P(E')\, G(E' - E)\, \rho(E')\, dE' \qquad (5)$$

where G(E'-E) is a probability of gamma emission and $\rho(E')$ is the level density of the daughter nucleus.

The intensity of the gamma rays, then, becomes

$$I(E_\gamma) = \int_0^{E_{max}} dE' \int_{E'}^{E_{max}} dE''\, \delta(E'' - E' - E_\gamma)\ P(E'')\ G(E'' - E')\, \rho(E') \ . \qquad (6)$$

The probability G(E) depends upon the type of the gamma transition, such as E1, M1, E2, etc. In our calculations, we take the assumed E1 transitions. In this case, G(E) is expressed as

$$G(E) = E^3 \cdot S_\gamma(E) \ , \qquad (7)$$

where $S_\gamma(E)$ is the gamma-ray strength function. We used the strength function proposed by Brink[9] and by Axel[10] and the level density based on Gilbert and Cameron.[11]

In the frame of the Gross Theory, a parameter Q_{00} (introduced to take into account the effect of the selection rules applied to decays to low-lying states) plays an important role in the

calculation of average decay energy values.[12-13] In the calculation of the gamma-ray spectrum based on the present model, however, the introduction of a non-zero value to the parameter produces a discontinuity in the energy of the Q_{00} parameter (see Figs. 1-4). To avoid this discontinuity, we have used a value of zero for the calculation of the spectra.

Using the above procedure, the gamma spectra were calculated for all β^- decaying nuclides in the ENDF/B-V file. The calculated spectra have an energy bin structure of 10 keV, and the energy spectra were normalized to 1.0 (the ENDF/B-V spectra is truncated for some nuclides and may not integrate to 1.0).

Examples of the calculated spectra are shown in Figs. 5-8 for nuclides with high Q_β values. In these figures the "typical" spectra (used in Ref. 3) are also shown. As seen in these figures, the "typical" energy spectra are softer than those currently calculated. It is expected that the enhancement at about 2 MeV (again, in Ref. 3) should be depressed.

The calculations of the aggregate spectra using the present calculated spectra for all β^- decaying nuclides are shown in Figs. 9-12, together with the calculations for the ENDF/B-V spectra data and the measured aggregate spectra of ^{235}U and ^{239}Pu thermal neutron fission.[5] The calculational method of the aggregate spectra will be described in Sec. IV. The measured data were taken from Dickens *et al.*[5] Figures 9 and 10 illustrate ^{235}U fission and Figs. 11 and 12, the ^{239}Pu fission. Figures 9 and 11 cover the full energy range of the measured spectra, while Figs. 10 and 12 show the low-energy part up to 2 MeV. It can be seen from these figures that the calculations with only the ENDF/B-V spectra underestimate the measured values for the full energy range. Alternatively, the calculations using only the present calculated spectra [GT (Gross Theory) spectra only] show overall agreement with the measurements except for the detailed fine structure and the overestimation seen at energies between 2 and 3 MeV.

III. AUGMENTED SPECTRA WITH THE CALCULATED ONES

It is important to decide if the spectrum should be augmented or not in the cases in which a nuclide has a measured spectrum. A definitive means for making this decision does not exist. However, the average decay energy set, which gives a good prediction for the many temporal values of decay heat after fission, can be used as an accurate measurement of the defective spectrum. It is known from decay heat studies that some of the average energy values derived from the measured spectra data show an underestimation of gamma-energy values due to missing gamma rays.[1] This means that the gamma-energy value based on the measured spectral data is smaller than that which is used for the decay heat prediction. In this case, the calculated spectra should be added to the measured ones in order to compensate for the difference between them. That is, if E_a is the average energy value for the decay heat calculation and E_s is from measured spectral data, $\Delta E = E_a - E_s$ is proportional to the defect of the spectrum. The normalized energy spectrum calculated in

Sec. II is multiplied by the ΔE value for the augmentation. Thus, the augmented energy spectrum $A(E_\gamma)$ is expressed by a summation of the experiment one, $E(E_\gamma)$ and the calculated one, $C(E_\gamma)$, as follows:

$$A(E_\gamma) = E(E_\gamma) + \Delta E \cdot C(E_\gamma) \ . \qquad (8)$$

By this expression, the energy value averaged with the above spectrum becomes equal to that for the decay heat calculation.

$$\begin{aligned} \bar{E} &= \int A(E_\gamma)\, dE \\ &= E_s + \Delta E \\ &= E_s + (E_a - E_s) \\ &= E_a \end{aligned}$$

In the present calculation, we used the JNDC V2 library[13] as an average energy set to partially assist us in the determination of when an augmented spectra appeared to be needed.

Examples of the augmented spectra are seen in Figs. 13 and 14, as well as the measured spectra. In these figures the lower part indicates the measured line spectrum and the upper part, the augmented one. Figure 13 shows the ^{98}Sr decay, the Q_β value of which is 5.8 MeV. In the ENDF/B-V file, there are 11 gamma rays emitted through ^{98}Sr decay, and the highest energy of the gamma ray is 600 keV. The average energy from the spectral data is 0.176 MeV; that in the JNDC V2 library, on the other hand, is 1.051 MeV. The difference between the two is augmented by the calculated spectra. The calculated spectrum used for the augmentation is a continuous one and smoothly extends to the Q_β value limit. Another example, shown in Fig. 14, is the case of ^{97m}Y decay. The highest energy of the gamma ray in this case is much lower than the Q_β value. The average energy from the spectral data is 1.82 MeV and that in the JNDC V2 library is 3.34 MeV. The calculated spectra of the nuclide is used to augment the difference between them.

This concludes the brief discussion regarding the method of Gross Theory calculations and the augmentation of selected measured spectra. The reason for the augmentation of each spectra was considered in more detail than we have presented. Many nuclides are known to have an incomplete spectra, and there are other parameters, such as Q_β, which indicate inadequate spectra when compared with average energies derived from spectra. We acknowledge that our reasons for a few of the augmentations could be in error. The new files will contain sufficient information for users to examine the augmentations, and no evaluated measurements will be missing from the files.

IV. CALCULATION OF AGGREGATE SPECTRUM

Aggregate spectrum is a summation of the spectra of FP nuclides produced after nuclear fission.

$$A(E_\gamma,t) = \sum_j \lambda_j \cdot N_j(t) \cdot a_j(E_\gamma) \ , \qquad (9)$$

where $a_j(E_\gamma)$ is the spectra of the j-th FP nuclide, λ_j is the decay constant, and $N_j(t)$ is the nuclide concentration at time t. The nuclide concentrations of FP nuclides at time t were calculated with the CINDER-10 code,[14] which has been developed at Los Alamos National Laboratory. The library for CINDER-10 calculations contains all nuclear data needed for the calculation of the nuclide concentration. However, we used preliminary fission yield data evaluated by England *et al.*[15] for the ENDF/B-VI file. After obtaining the nuclide concentrations at various cooling times, the aggregate spectra were calculated by summing up the spectrum of each nuclide at these cooling times.

In the comparison with measurement, however, the measured data are broadened because of the finite energy resolution of the detector. In order to take into account the effect of broadened spectra in the comparison we used the detector resolution reported with the measured data to broaden each fission-product spectra used in calculations.

Figures 15-18 show the comparisons of the calculated aggregate spectra after the fission event with the same measured data in Figs. 9-12. Three kinds of calculations are illustrated in these figures: the ENDF/B-V line spectra augmented by the present calculated ones (ENDF/B-V + GT spectra); the JNDC line spectra augmented by the present calculated ones [JNDCV2 (line) + GT spectra]; and the JNDC line spectra augmented by the "typical" ones used in Ref. 3 (JNDCV2 only). The first and second ones show nearly the same behavior. the difference between them being due to the line spectra contained in each file. Their agreement with measured data is better than that of the third, which shows the digression at higher energies, especially above 6 MeV, and the overestimation at low energies. This behavior reflects the "softness" of the "typical" spectra used in the calculation. As is evident in these figures, the present spectra seem to be applicable to the calculation of the aggregate spectra after fission of a fissionable nuclide. (Only the spectra change in these comparisons, not, *e.g.*, densities.)

V. COMPARISON WITH MEASURED AGGREGATE SPECTRA

In confirming the applicability of the calculated spectra of individual FP nuclides to the calculation of the aggregate gamma-ray spectra after a fission event, we performed comparisons with aggregate spectra measured at Oak Ridge National Laboratory, the University of Tokyo, and Los

Alamos National Laboratory. In the comparisons, the line spectra of gamma rays were broadened according to the detector resolution reported. The calculated GT spectra, due to their smoothness and continuous nature, were not considered in need of broadening. The energy group structure of the calculated aggregate spectra was also matched to that of each measurement. Additionally, the measurements are made over a counting period, but the calculations are carried out for a specific time that corresponds to the average time *during* the counting period.

All of the measured aggregate gamma spectra are compared with the calculations using the ENDF/B-V spectra data (i.e., calculations using the ENDF/B-V only) and the augmented one (using ENDF/B-V + GT spectra).

In the following comparisons, the unit of the spectrum is expressed as MeV/sec/fission/bin; i.e., the energy release rate per fission divided by the bin width in energy units.

A. Comparison with Oak Ridge National Laboratory Measurements.

The aggregate gamma-ray spectra from ^{235}U, ^{239}Pu, and ^{241}Pu thermal neutron fission were measured by Dickens *et al.* at Oak Ridge.[5] The spectra data are reported up to 8 MeV. The average cooling times after fission cover from 2.7 s to 12 000 s.

The compared results are shown in Figs. 19-61 for ^{235}U, Figs. 62-104 for ^{239}Pu, and Figs. 105-148 for ^{241}Pu. As is evident in these figures, the augmentation by the GT spectra improves the calculation of the aggregate spectra at cooling times shorter than a few hundred seconds. In this cooling-time region, the augmented spectra reproduce the measured ones rather well for these fissionable nuclides, irrespective of their different fission yields. In particular the reproduction is good at energy regions lower than 3 MeV. Above 3 MeV, the calculated spectra cannot make some peaks, but they seem to show the overall agreement.

After a few hundred seconds, the difference between the calculation with the ENDF/B-V spectral data and the augmented ones is not seen. This indicates that the nuclides with measured, augmented spectra data hardly contribute to the aggregate spectra at long cooling times. However, the discrepancies between the calculation and measurement seen at long cooling time regions seem to show that even the nuclides with long half-lives may have insufficient spectral data for application to the calculation of the aggregate spectrum. Further examination of measured spectra data for these nuclides may well be needed.

B. Comparison with University of Tokyo Measurements (YAYOI Facility).

The aggregate gamma-ray spectra from ^{233}U, ^{235}U, ^{238}U, ^{239}Pu, and ^{232}Th fast neutron fission were measured by Akyama *et al.* at the University of Tokyo.[6] Measurements up to 5 MeV were taken, with average cooling times after fission covering from 19 s to 24 000 s.

The compared results are seen in Figs. 149-188 for ^{233}U, in Figs. 189-238 for ^{235}U, in Figs. 239-286 for ^{238}U, in Figs. 287-327 for ^{239}Pu, and in Figs. 328-375 for ^{232}Th. In the cases of ^{238}U and ^{232}Th, the measured data have the contributions from the products by neutron capture reactions. The chains of the products are as follows:

$$^{238}U \rightarrow ^{239}U \rightarrow ^{239}Np \rightarrow ^{239}Pu$$

$$^{232}Th \rightarrow ^{233}Th \rightarrow ^{233}Pa \rightarrow ^{233}U \ .$$

The nuclides in the chains of ^{239}Pu and ^{233}U have a sufficiently long half-life (> 10^4 y) such that their contributions to the measured spectra are negligible for the cooling time region of the measurements. In our comparisons, the contributions from ^{239}U and ^{239}Np for ^{238}U fission and those from ^{233}Th and ^{233}Pa for ^{232}Th fission are taken into consideration.

In the case of ^{238}U neutron capture, the nuclide concentrations of $^{239}U(N^u(t))$ and $^{239}Np(N^n(t))$ are expressed as follows:

$$N^u(t) = R \cdot e^{-\lambda_u t},$$

$$N^n(t) = \left[(\lambda_u R / (\lambda_n - \lambda_u) \right] \cdot \left[e^{-\lambda_u t} - e^{-\lambda_n t} \right], \qquad (10)$$

where R is the reaction rate ratio of neutron capture to fission, λ_u and λ_n are decay constants of ^{239}U and ^{239}Np, respectively. The spectra from the ^{239}U and ^{239}Np decay are added to those of fission products in the figures. The reaction rate ratio R is 5.38 for ^{238}U and 23.0 for ^{232}Th, respectively.[6] The spectral data of these nuclides were taken from the ENDF/B-V file.

The calculated aggregate spectra using the augmented nuclides improve the agreement with measured data at cooling times shorter than a few hundred seconds. Even in the fission of ^{238}U and ^{232}Th, the agreement was achieved by adding contributions from the products by neutron capture.

C. Comparison with Los Alamos National Laboratory Measurements.

The aggregate spectra from ^{233}U, ^{235}U, and ^{239}Pu thermal neutron fission were measured by Jurney *et al.* at Los Alamos National Laboratory,[7] with the energy of range of measurements extending to 7.5 MeV. The compared results are shown in Figs 376-387 for ^{233}U, in Figs. 388-399 for ^{235}U, and in Figs. 400-411 for ^{239}Pu. These comparisons demonstrate no difference between the calculations using the ENDF/B-V spectra data *vs* the augmented ones. The irradiation time of the measurements is 20 000 s, and this is sufficiently long to prohibit the short-lived nuclides, having augmented spectra, from contributing appreciably in such cases. However, the calculated results do show the underestimation at short cooling times for the energy regions above 2

MeV (see Figs. 376, 388, and 400). With the exception of the short cooling times, the comparisons show a good agreement.

VI. SUMMARY

The theoretically calculated gamma spectra of FP nuclides have been used to augment the line spectra in the ENDF/B-V file based on measurements. The augmented spectra have been applied to the calculation of the aggregate gamma spectra after fission. Calculated results show a good agreement with the measured spectra for various fissionable nuclides. The effect of the augmentation is prominent at short cooling times after fission when the nuclides with partially measured or no measured spectra data contribute to the aggregate spectra. At longer cooling times, the augmentation is not effective because it is considered that almost all nuclides contributing at those cooling times have a well-measured spectra.

From our comparisons, it is concluded that the augmented spectra are applicable to the calculation of aggregate ones at shorter cooling times when the nuclides with incomplete or no measured spectra data contribute. If we use the augmented spectra, we can obtain a spectra consistent with the decay heat calculated by the average decay energy.

ACKNOWLEDGMENTS

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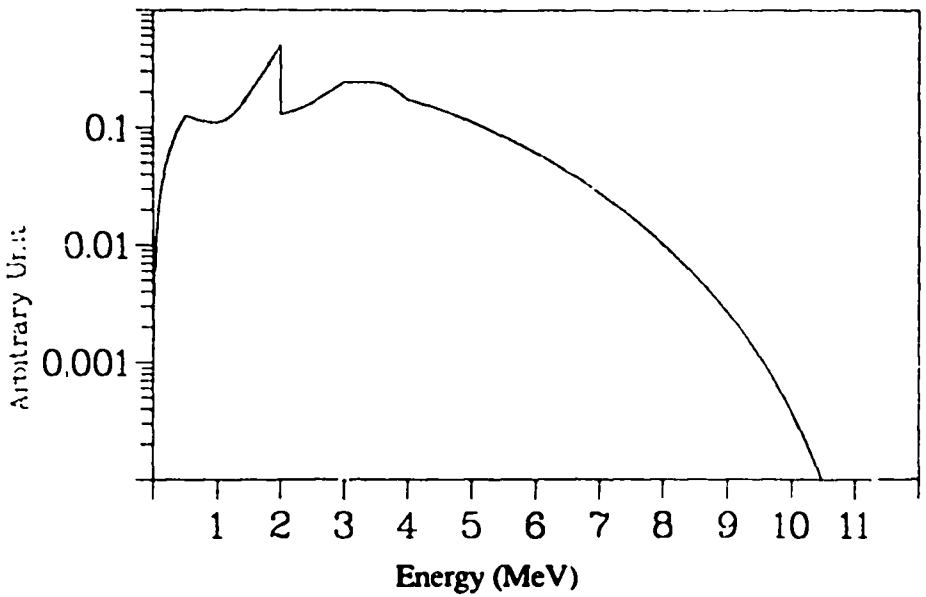

Fig. 1. Calculated energy spectrum of ^{77}Ni decay (Q_{00}=2.0).

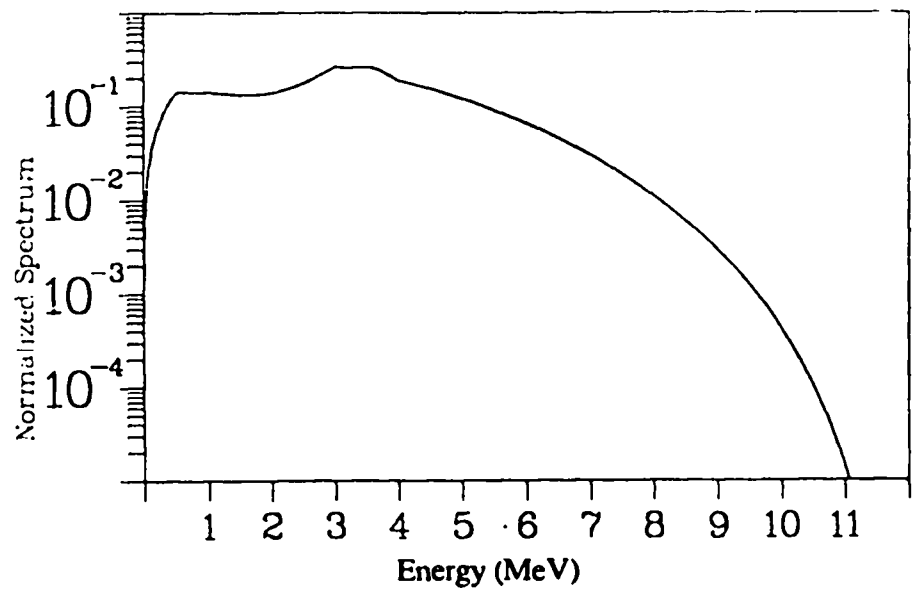

Fig. 2. Calculated energy spectrum of ^{77}Ni decay (Q_{00}=0.0).

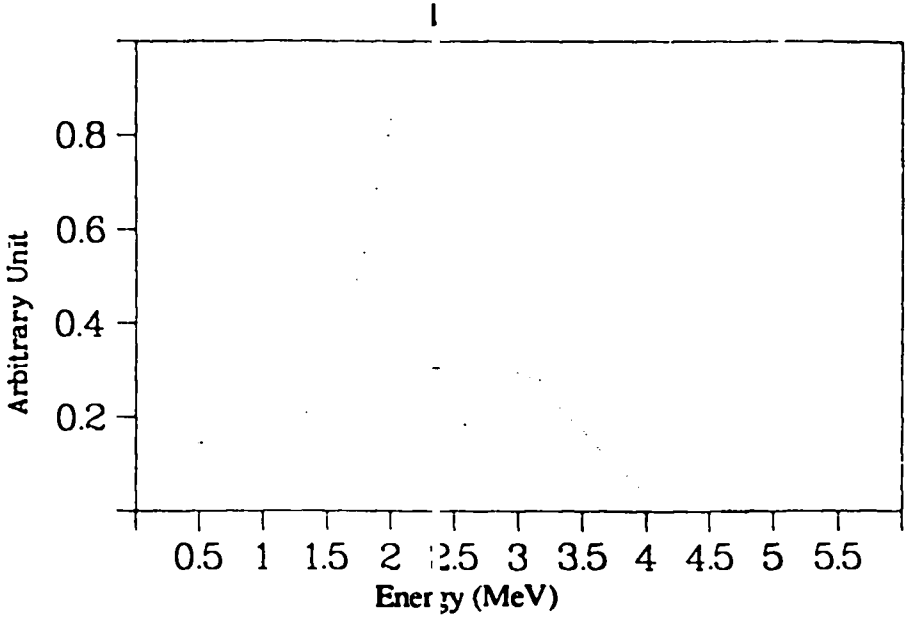

Fig. 3. Calculated energy spectrum of ^{80}As decay (Q_{00}=2.0).

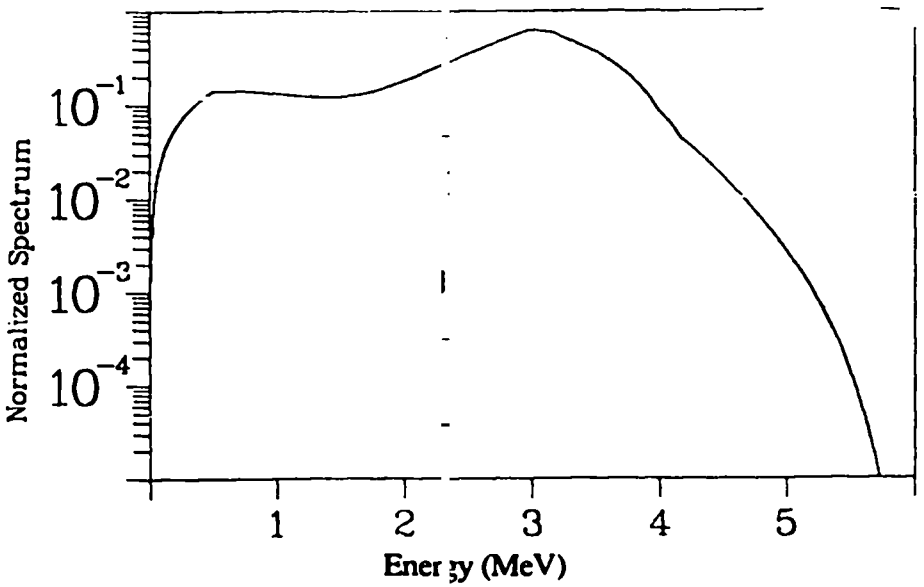

Fig. 4. Calculated energy spectrum of ^{80}As decay (Q_{00}=0.0).

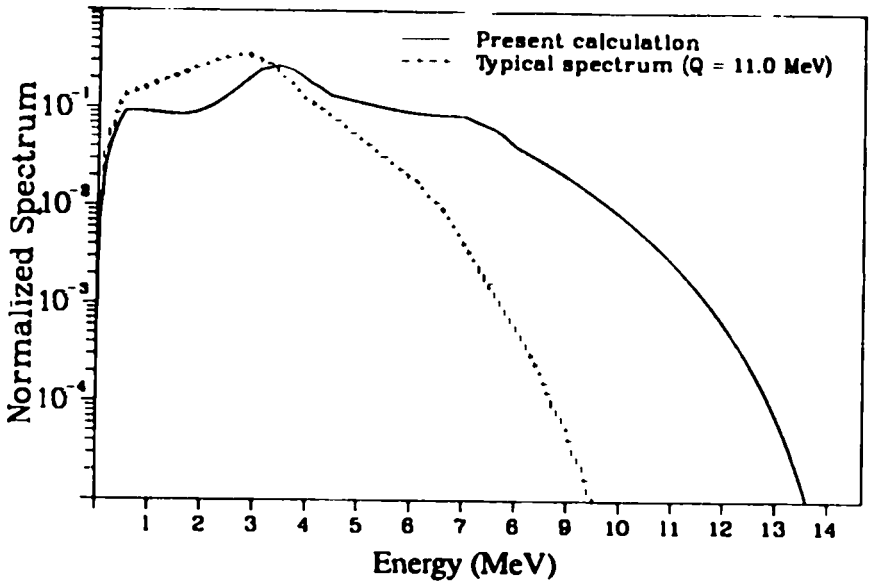

Fig. 5. Calculated energy spectrum of ^{74}Co decay (Q=14.7 MeV).

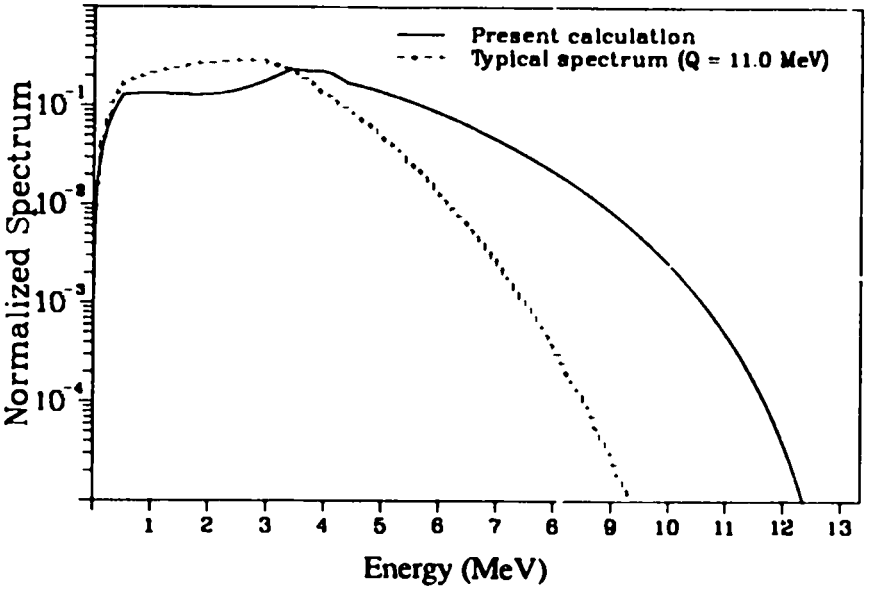

Fig. 6. Calculated energy spectrum of ^{75}Co decay (Q=13.3 MeV).

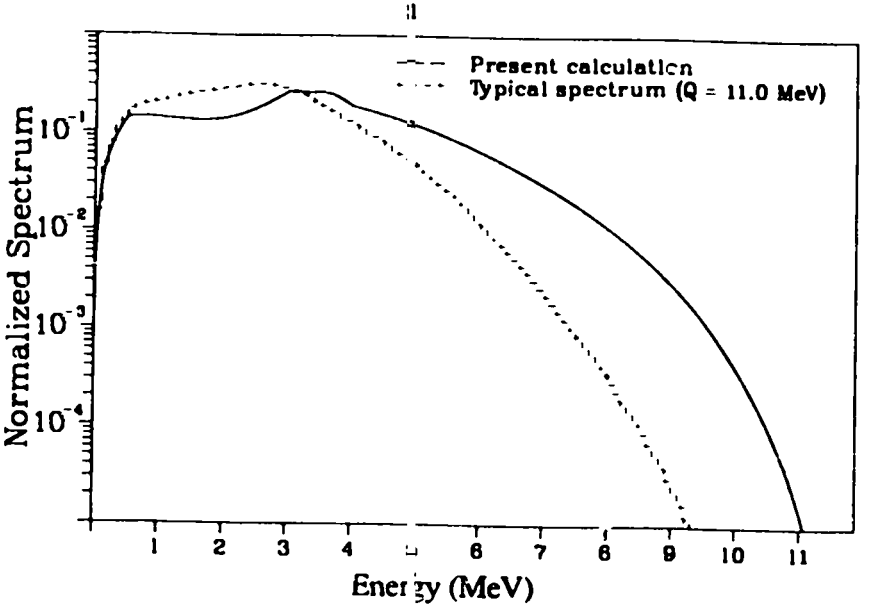

Fig. 7. Calculated energy spectrum of ^{77}Ni decay (Q=11.9 MeV).

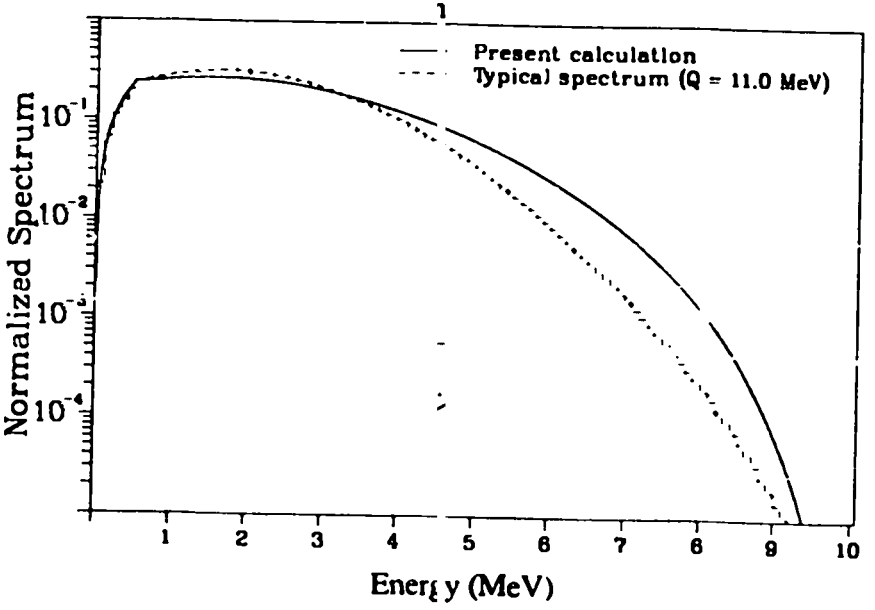

Fig. 8. Calculated energy spectrum of ^{78}Ni decay (Q=10.1 MeV).

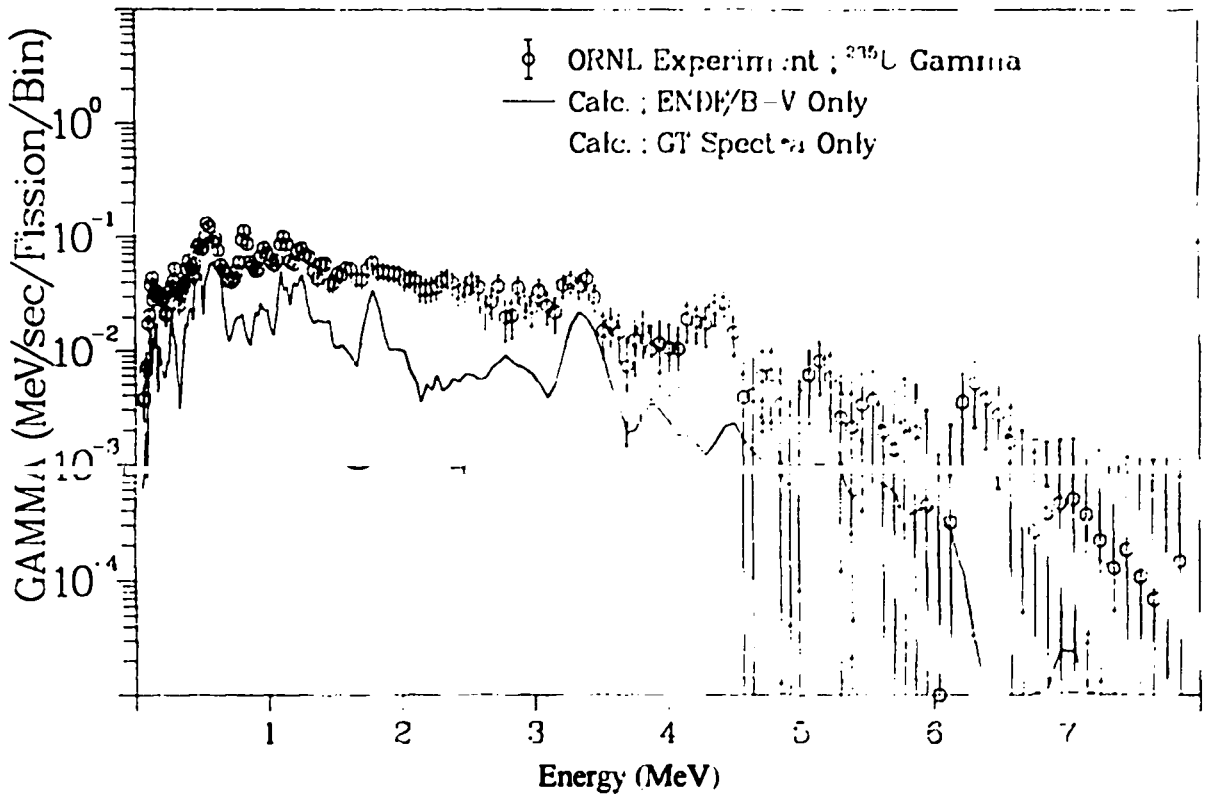

Fig. 9. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV).

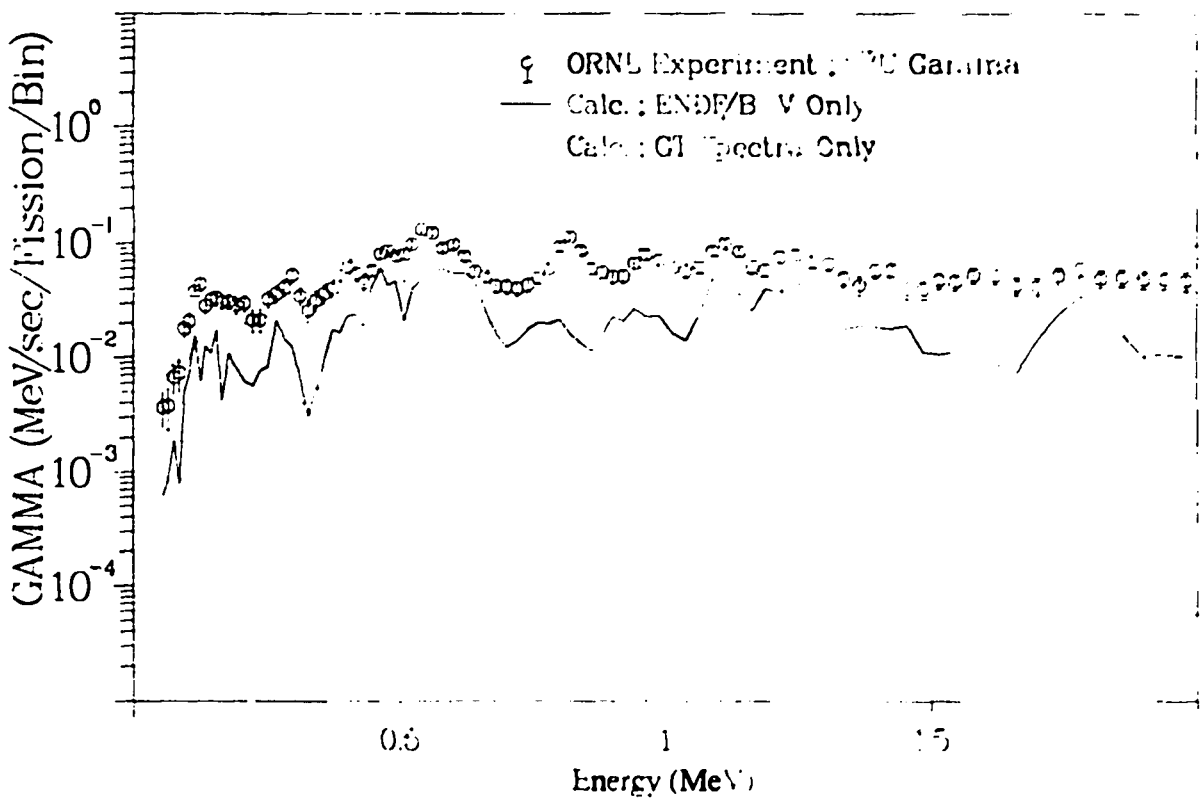

Fig. 10. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 2 MeV).

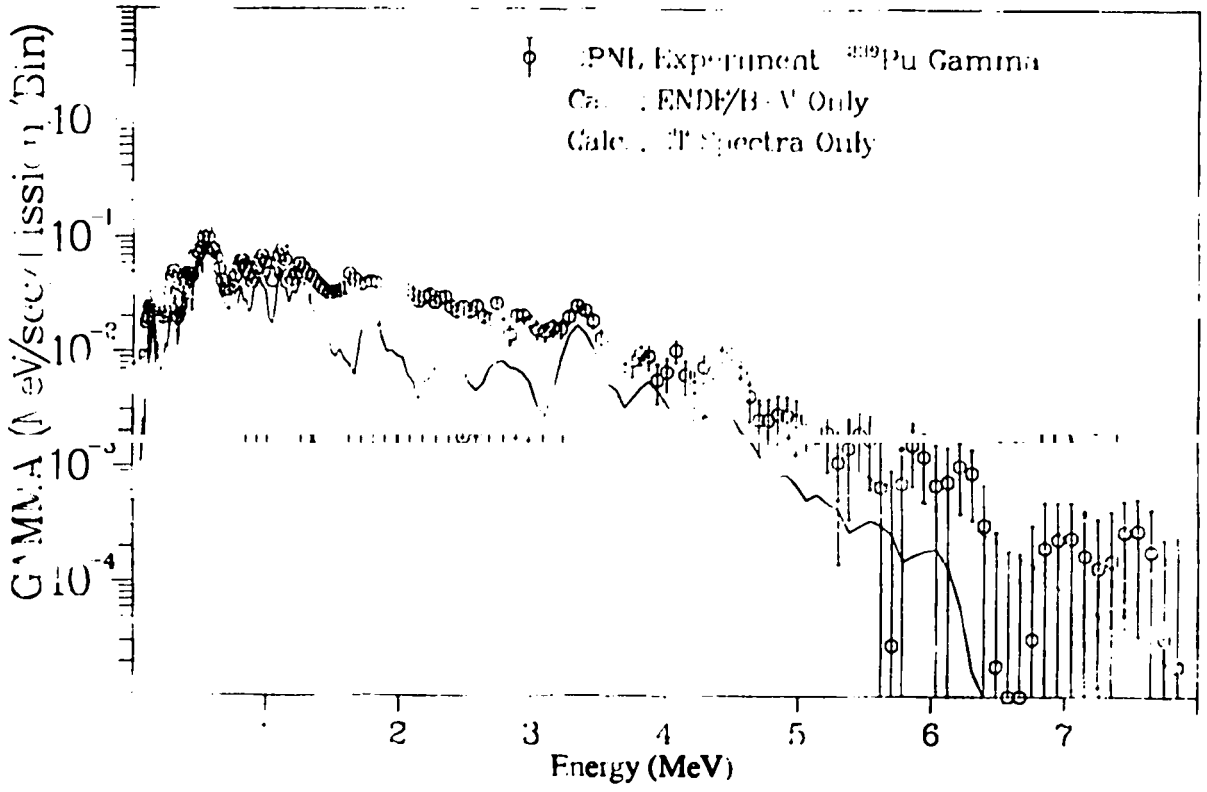

Fig. 11. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad} = 1.0$ sec, $T_{cool.} = 2.2$ sec) (to 8 MeV)

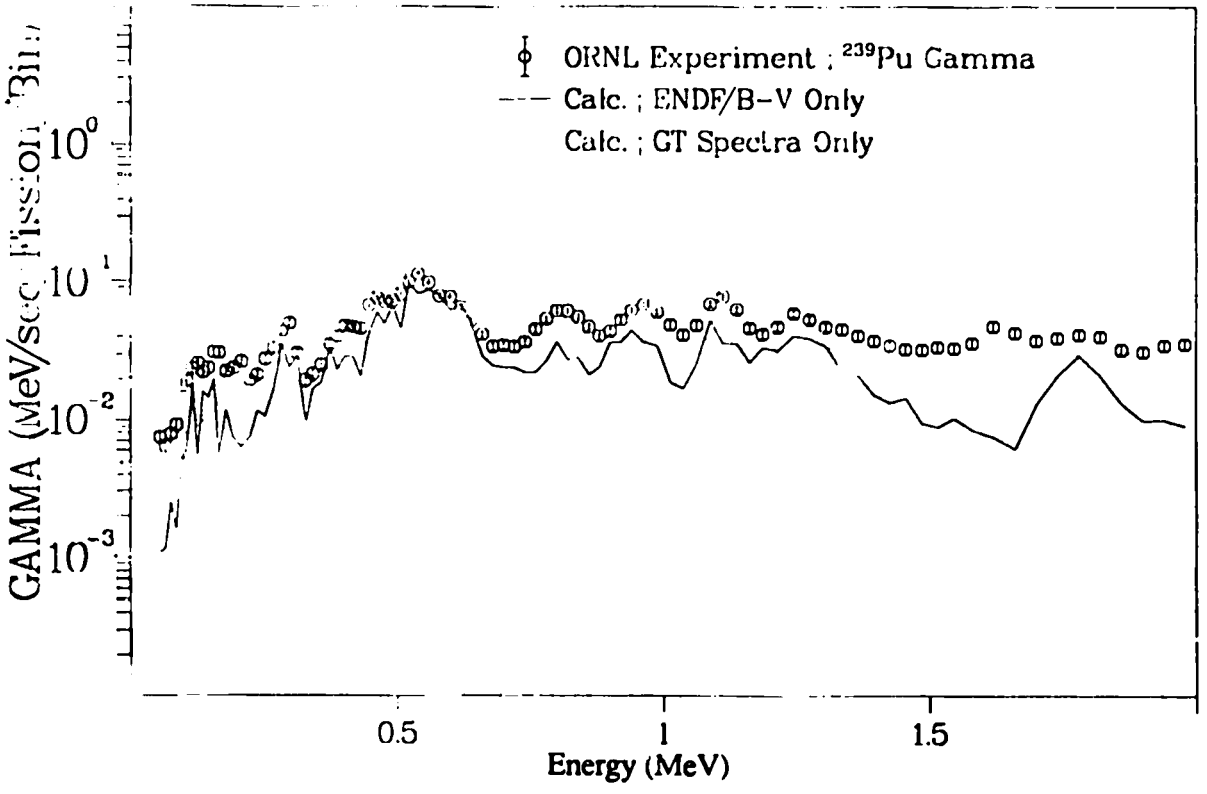

Fig. 12. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.} = 1.0$ sec, $T_{cool.} = 2.2$ sec) (to 2 MeV).

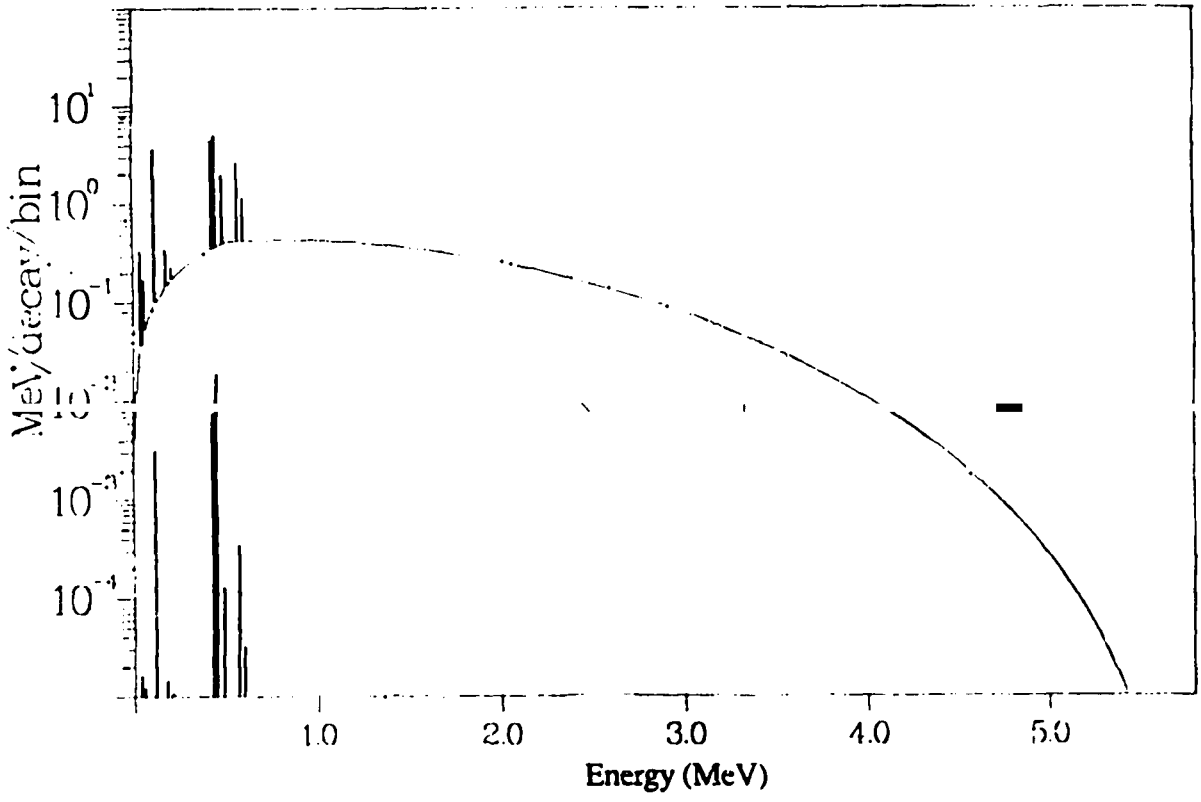

Fig. 13. Measured and modified energy spectra of ^{98}Sr decay (Q_{00}=0.00).

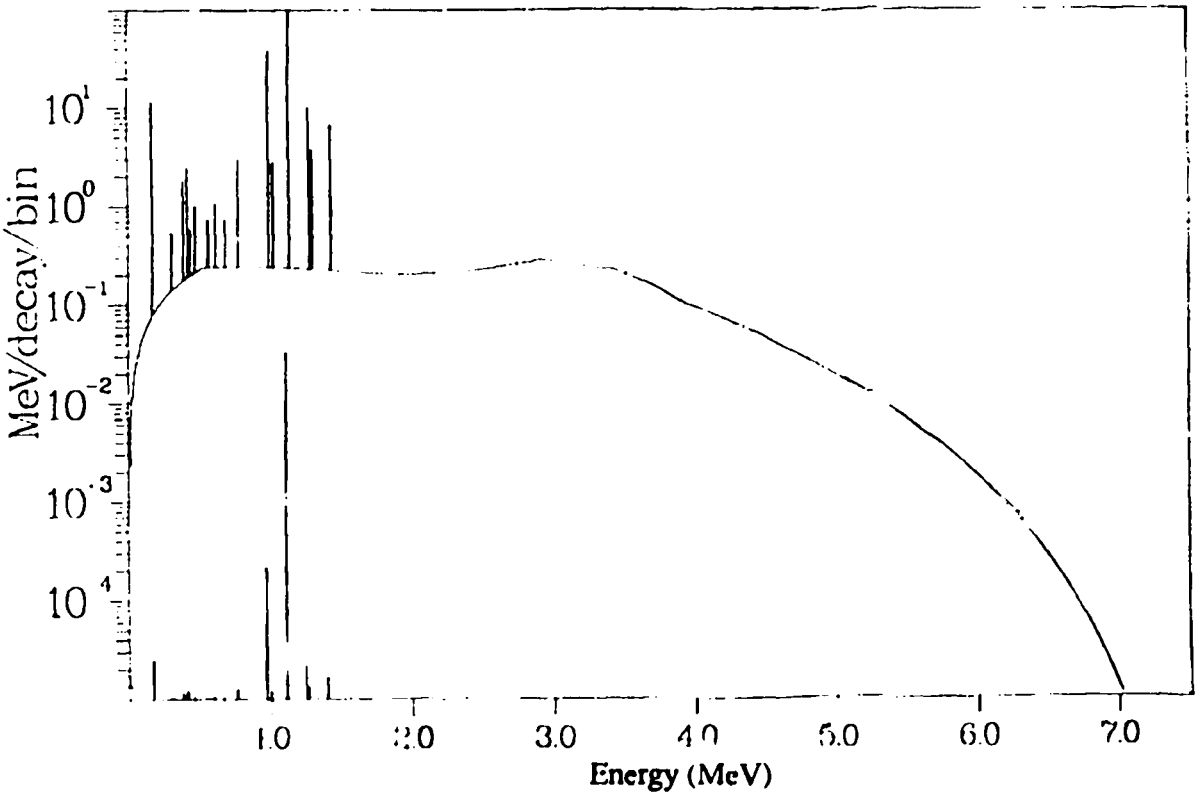

Fig. 14. Measured and modified energy spectra of ^{97m}Y decay (Q_{00}=0.00).

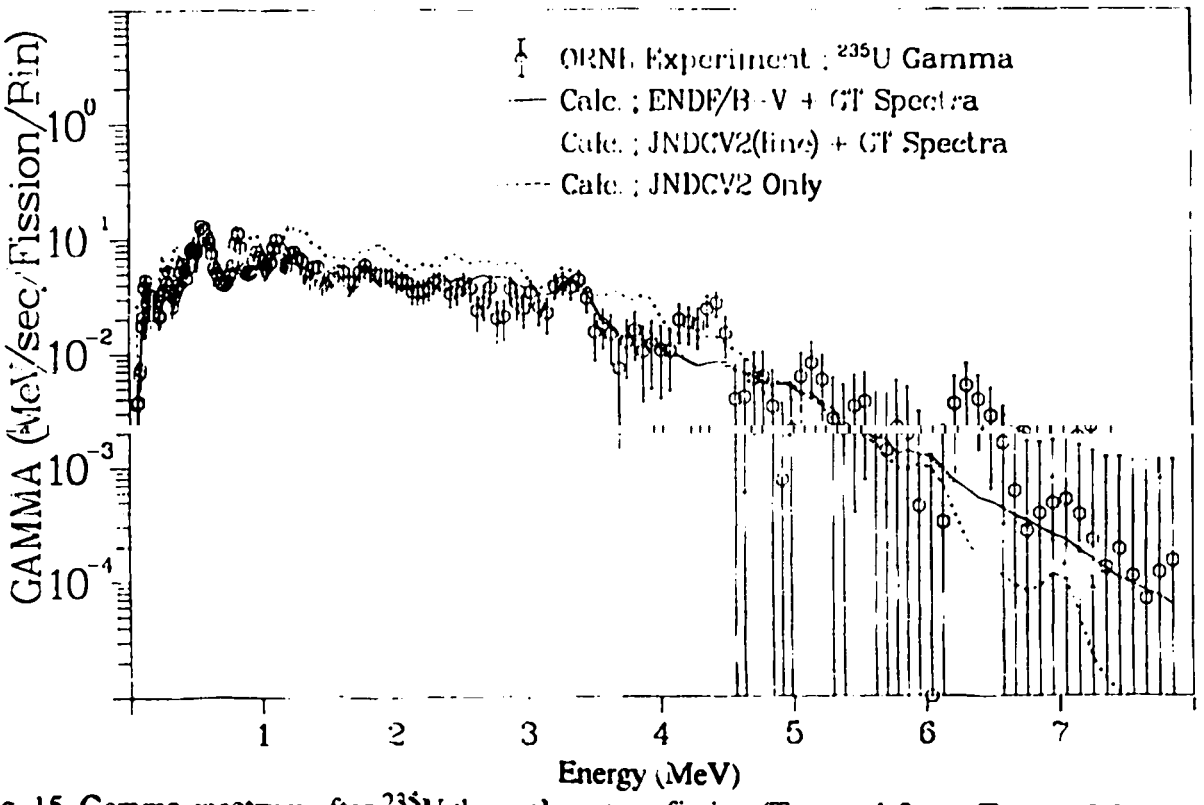

Fig. 15. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (see Fig. 9).

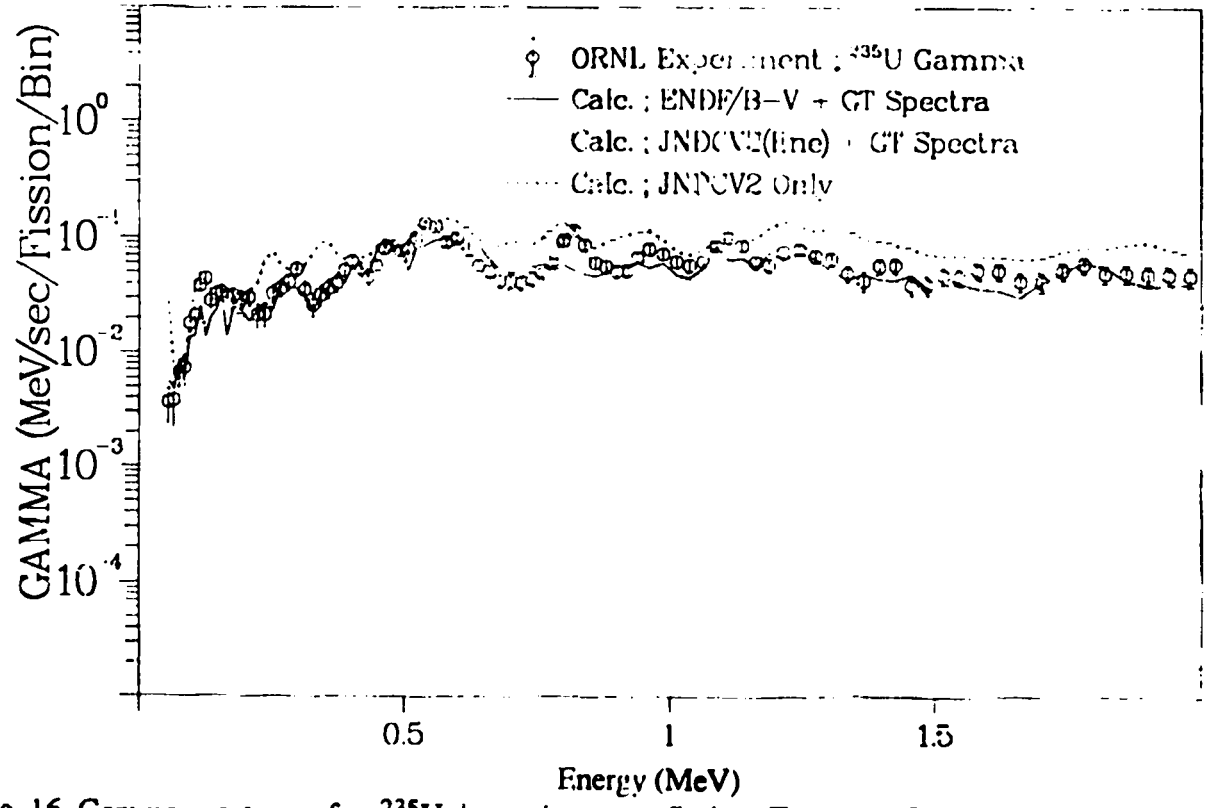

Fig. 16. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 2 MeV).

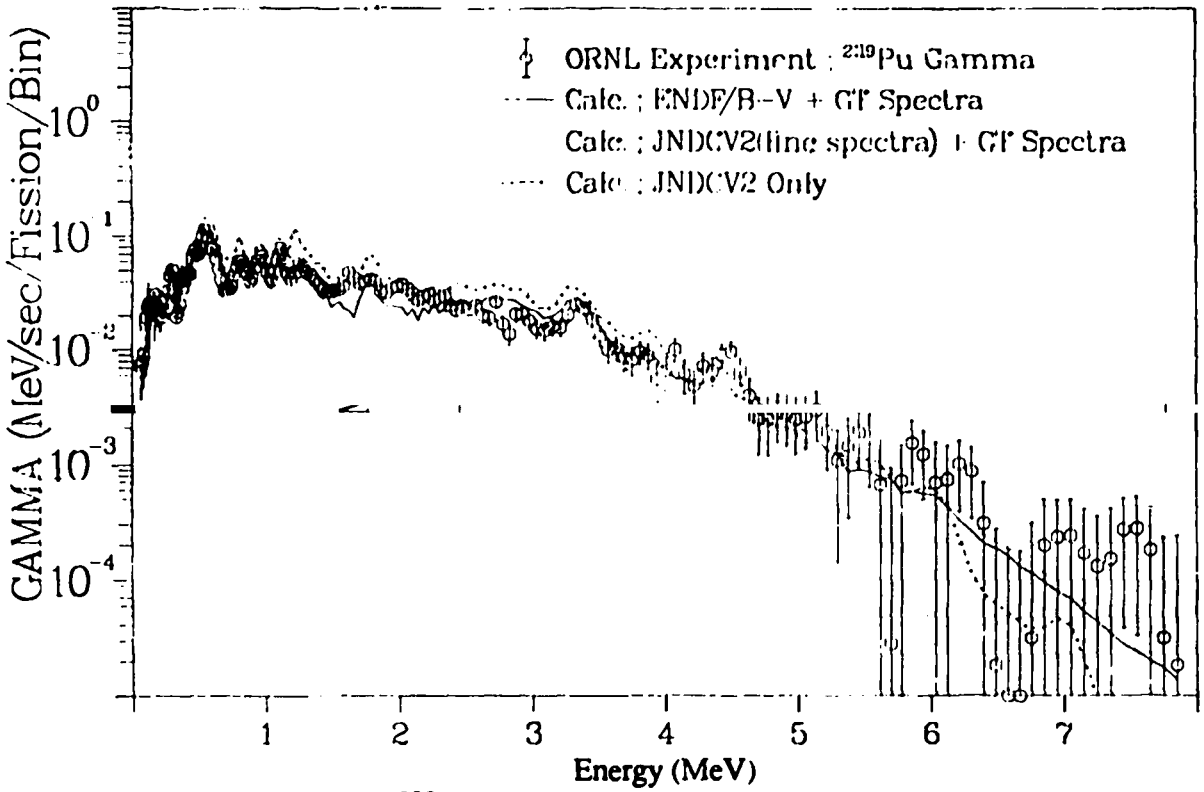

Fig. 17. Gamma spectrum after ^{239}Pu thermal neutron fission (T_{irrad} = 1.0 sec, $T_{cool.}$ = 2.2 sec) (see Fig. 11).

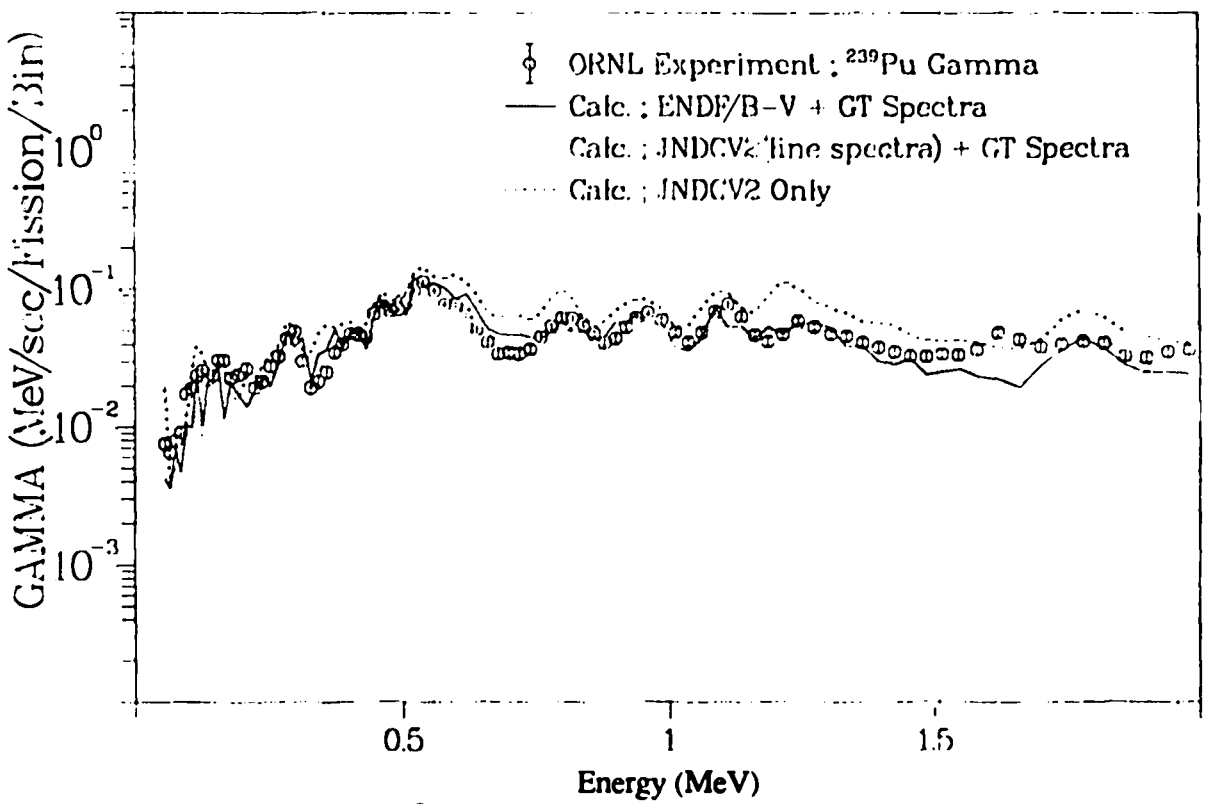

Fig. 18. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 2 MeV).

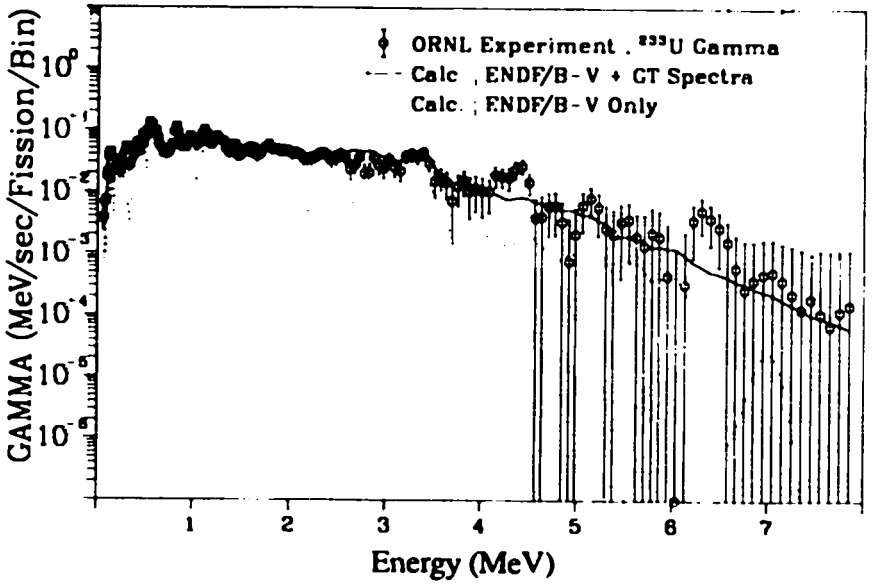

Fig. 19. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV).

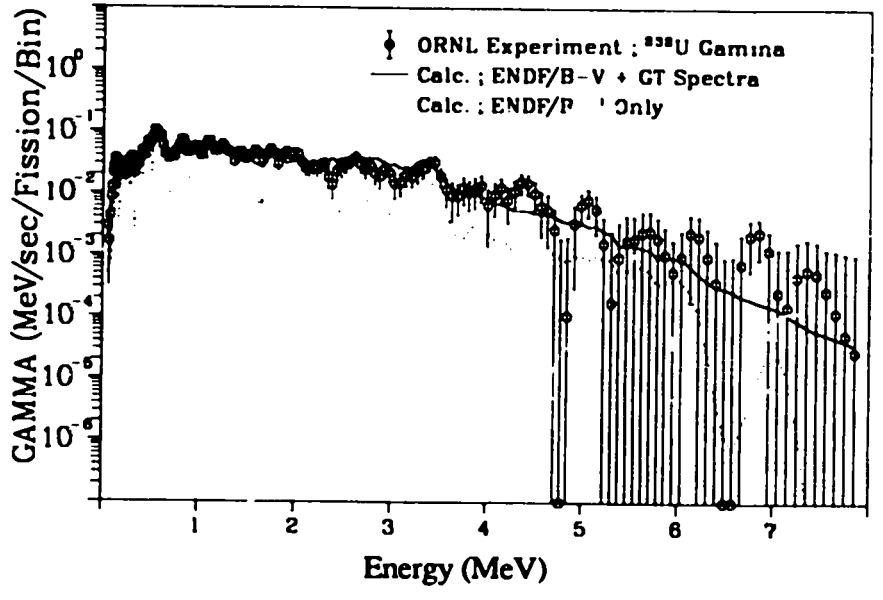

Fig. 20. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 3.2 sec).

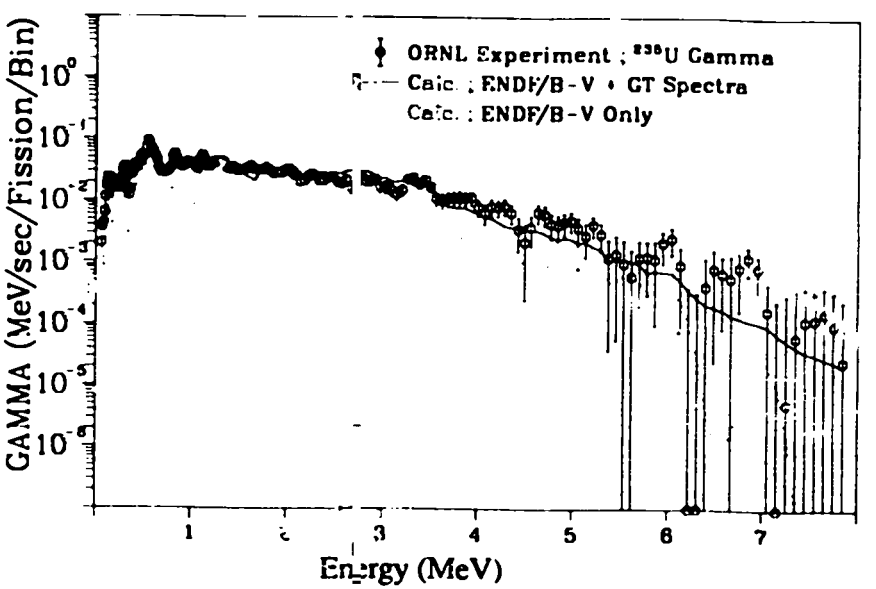

Fig. 21. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 4.2 sec)

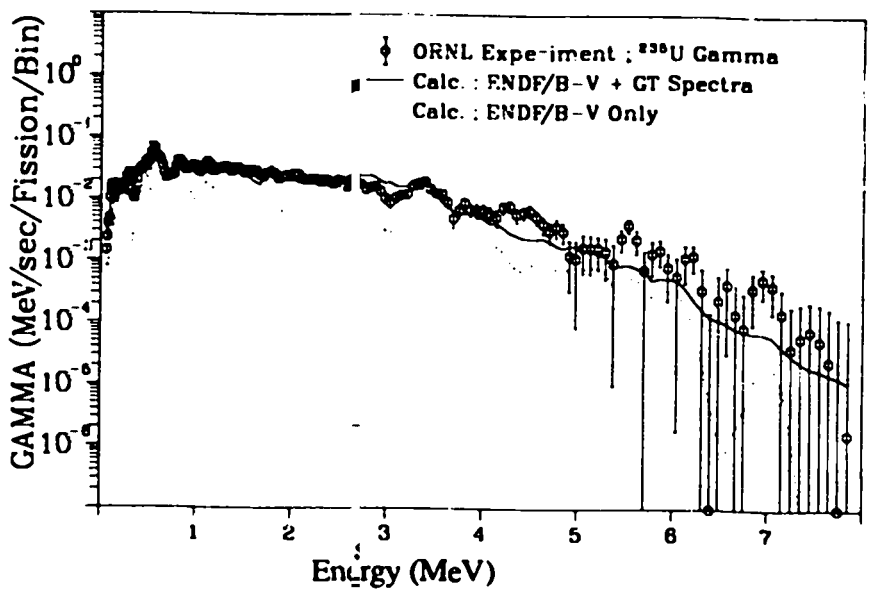

Fig. 22. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 5.7 sec).

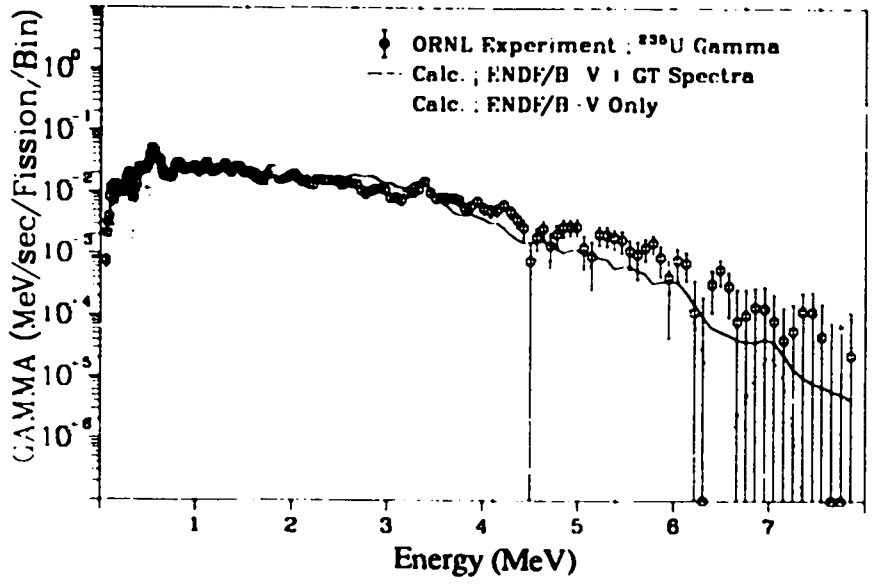

Fig. 23. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 8.2 sec).

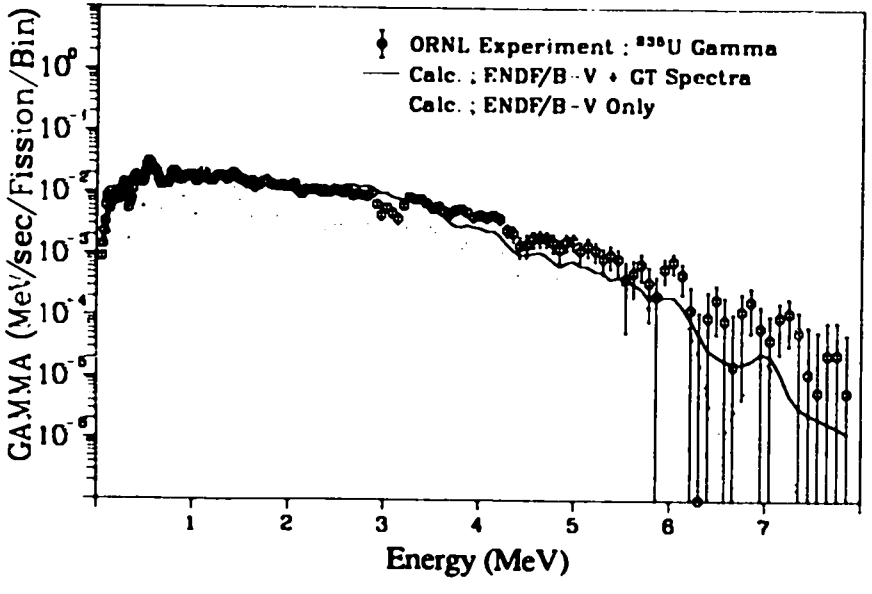

Fig. 24. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 12.2 sec).

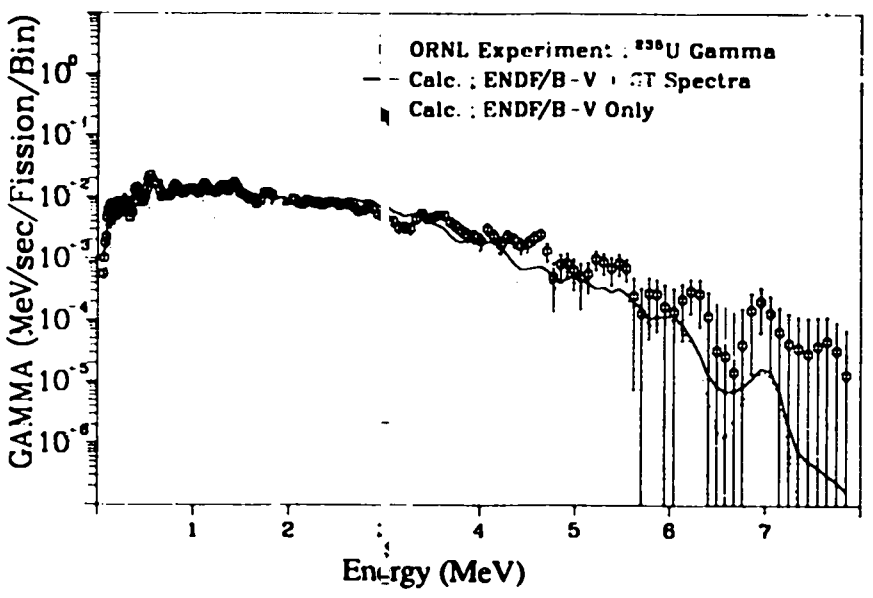

Fig. 25. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 17.2 sec).

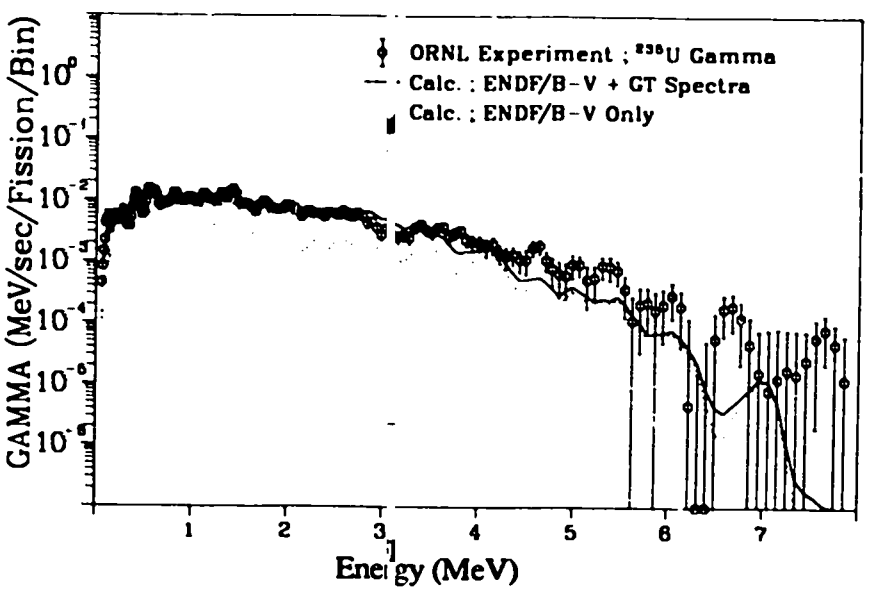

Fig. 26. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 22.2 sec).

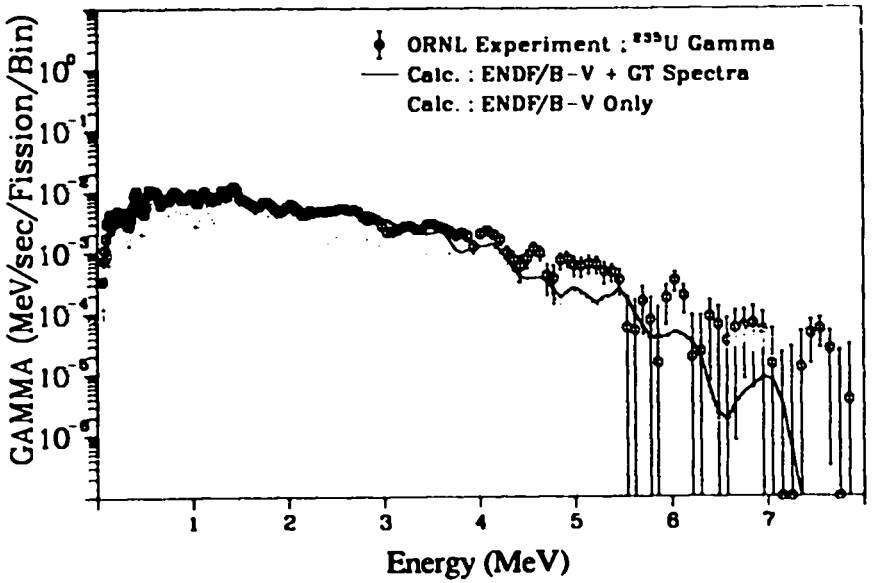

Fig. 27. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 29.7 sec).

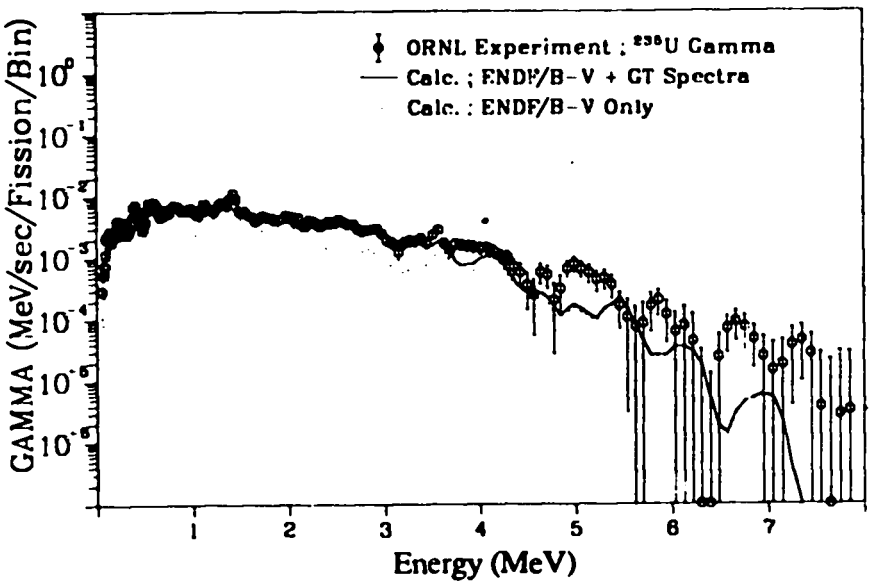

Fig. 28. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 39.7 sec).

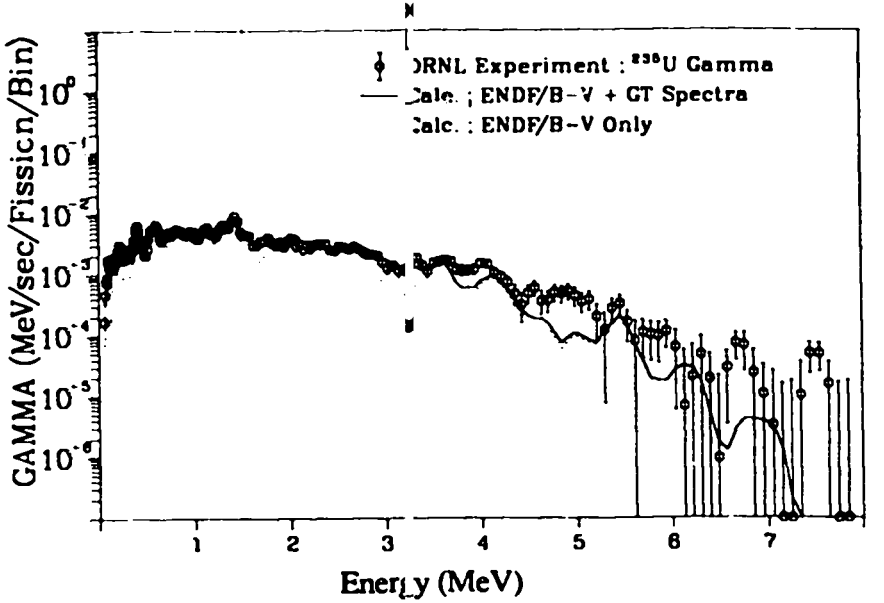

Fig. 29. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 52.2 sec).

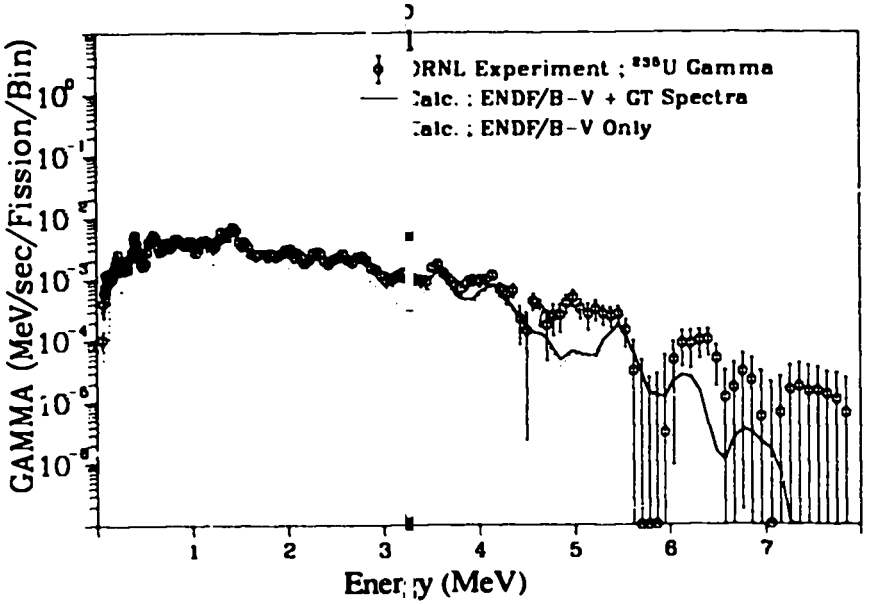

Fig. 30. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 67.2 sec).

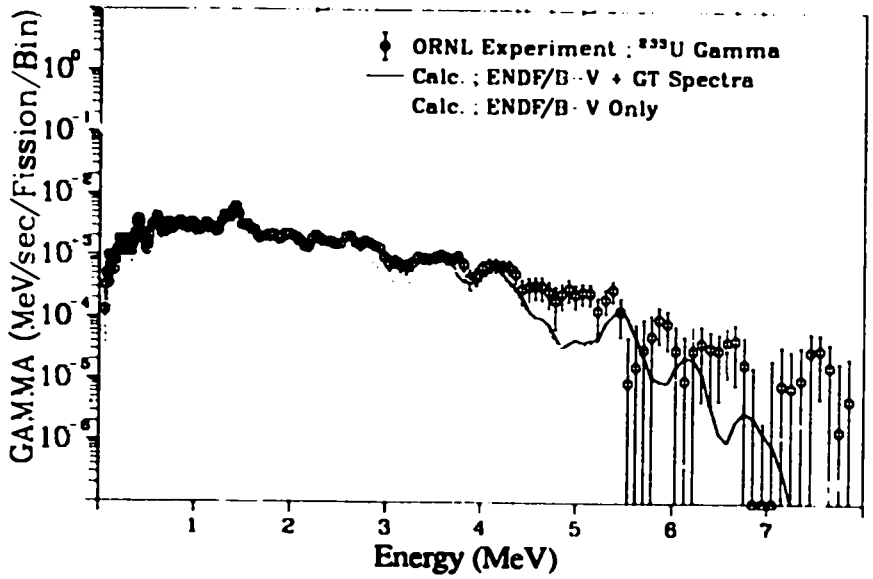

Fig. 31. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 82.2 sec).

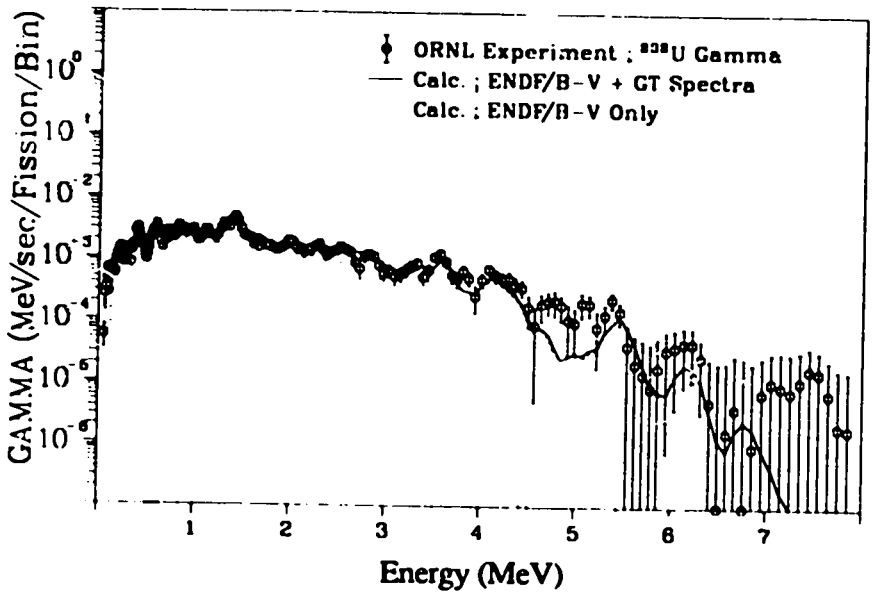

Fig. 32. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 99.7 sec).

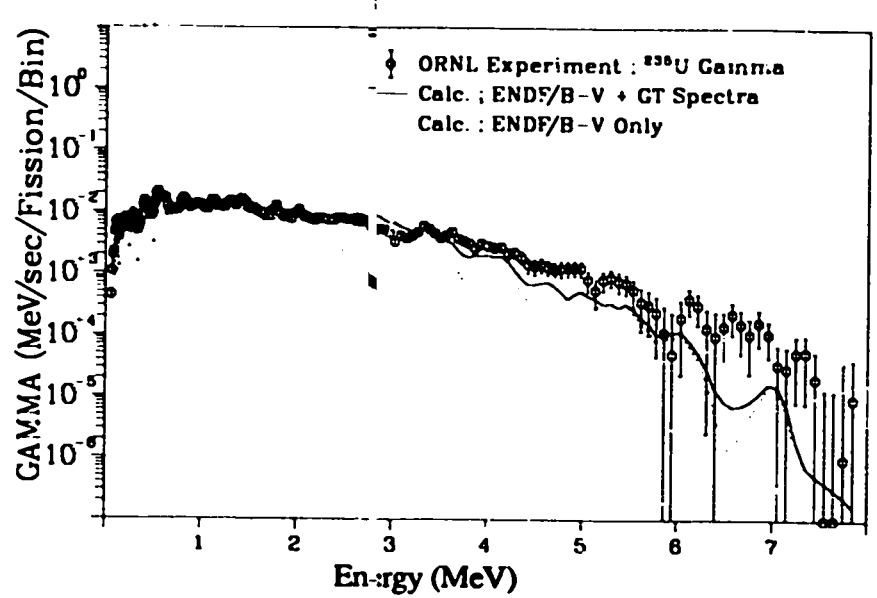

Fig. 33. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 13.7 sec).

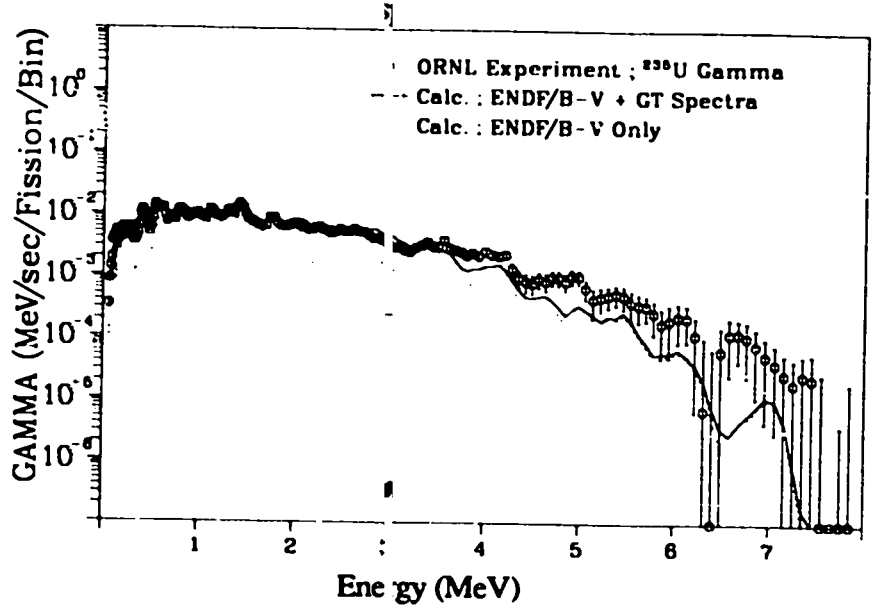

Fig. 34. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 20.7 sec).

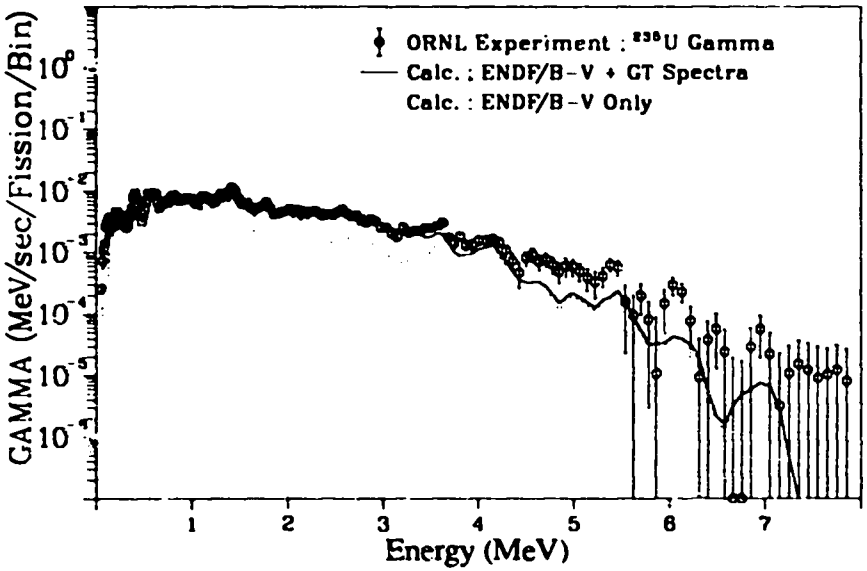

Fig. 35. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 29.7 sec).

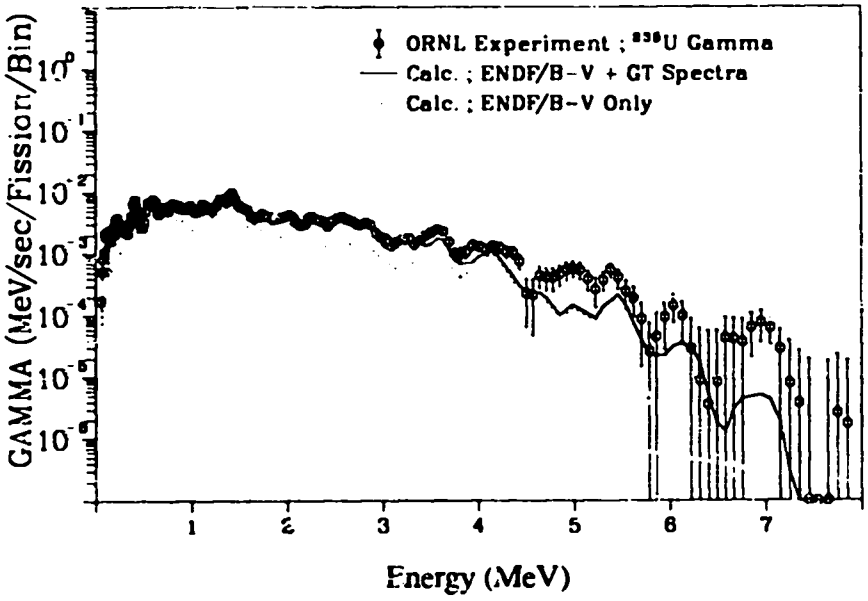

Fig. 36. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 39.7 sec).

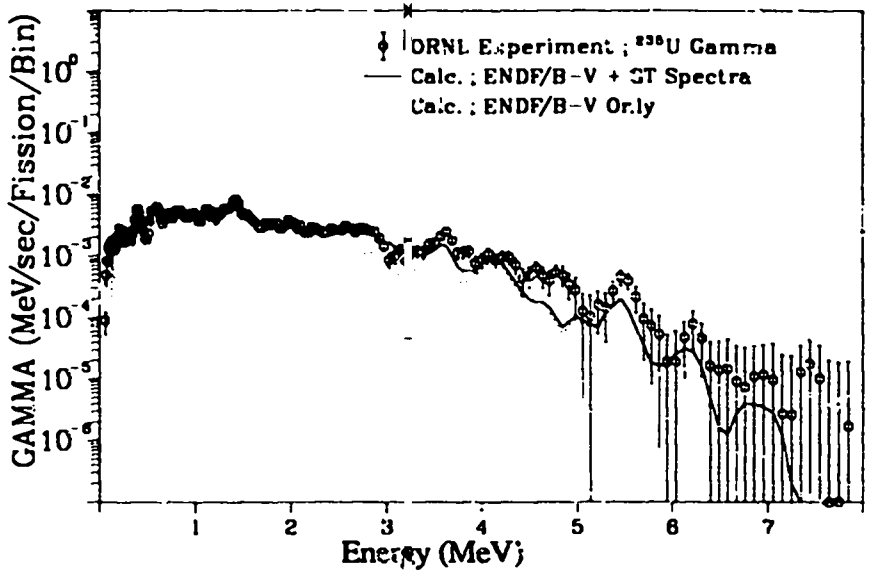

Fig. 37. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 49.7 sec).

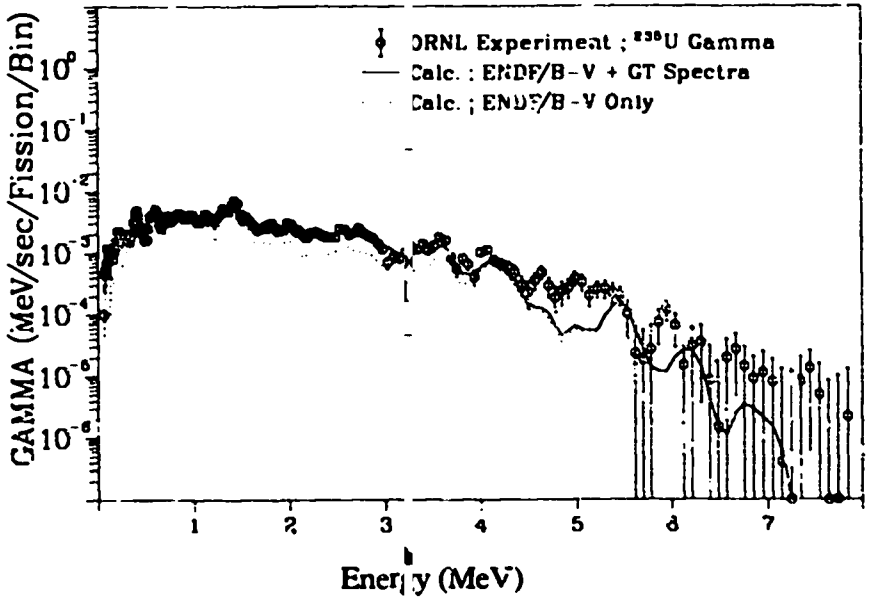

Fig. 38. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 64.7 sec).

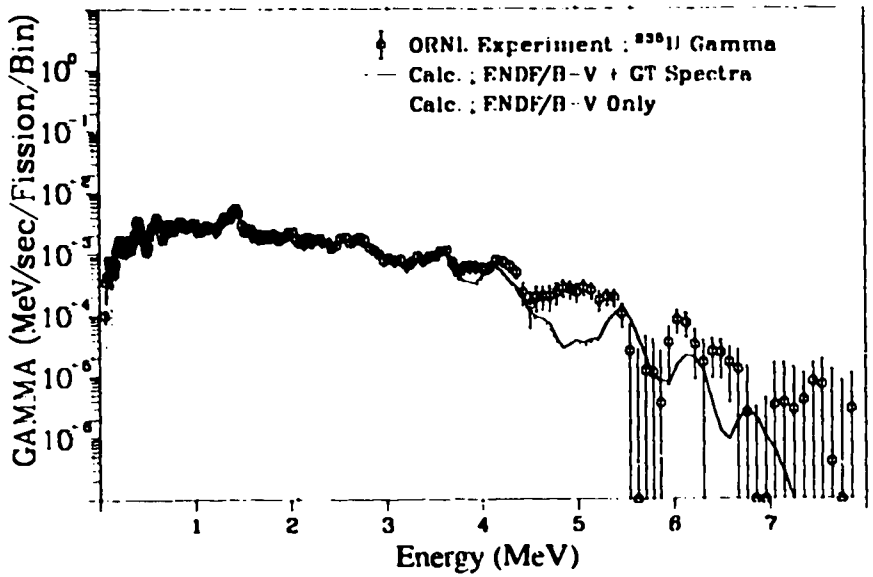

Fig. 39. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 84.7 sec).

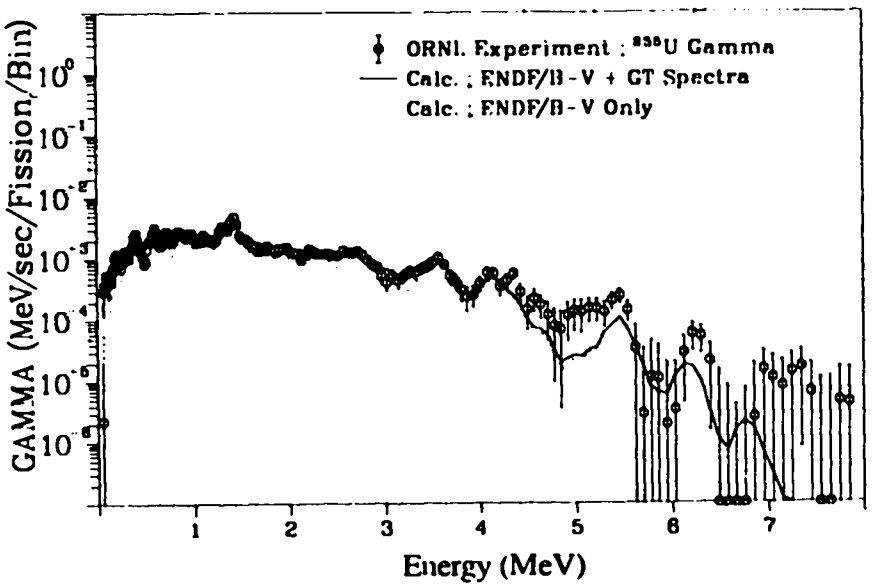

Fig. 40. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 104.7 sec).

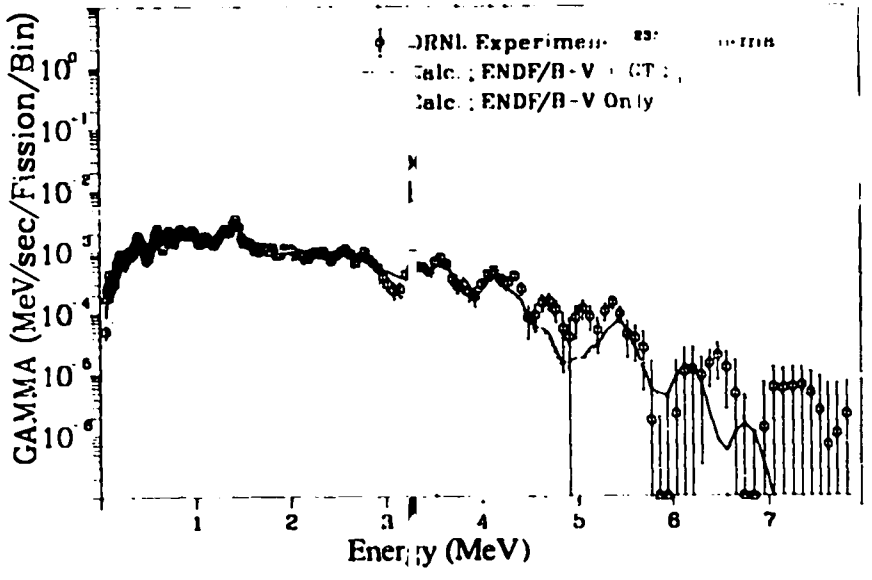

Fig. 41. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 134.7 sec).

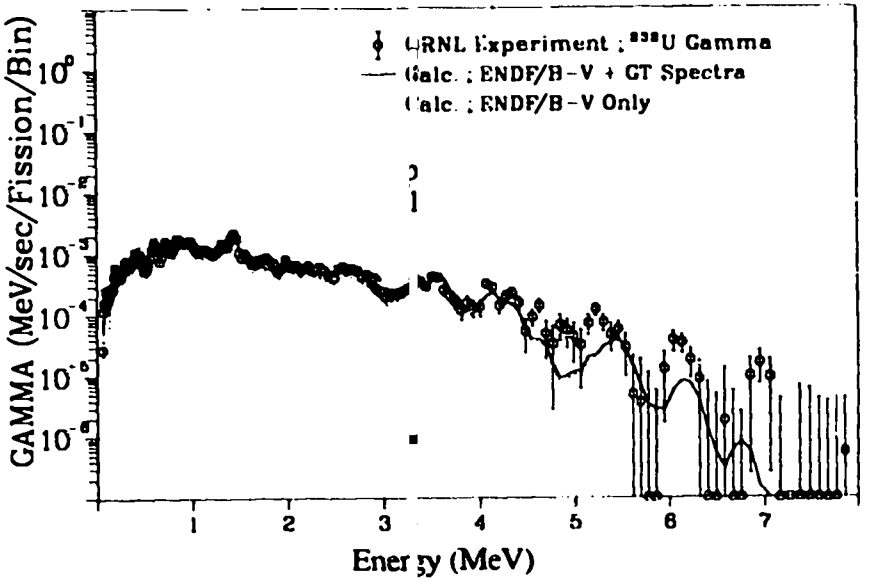

Fig. 42. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 184.7 sec).

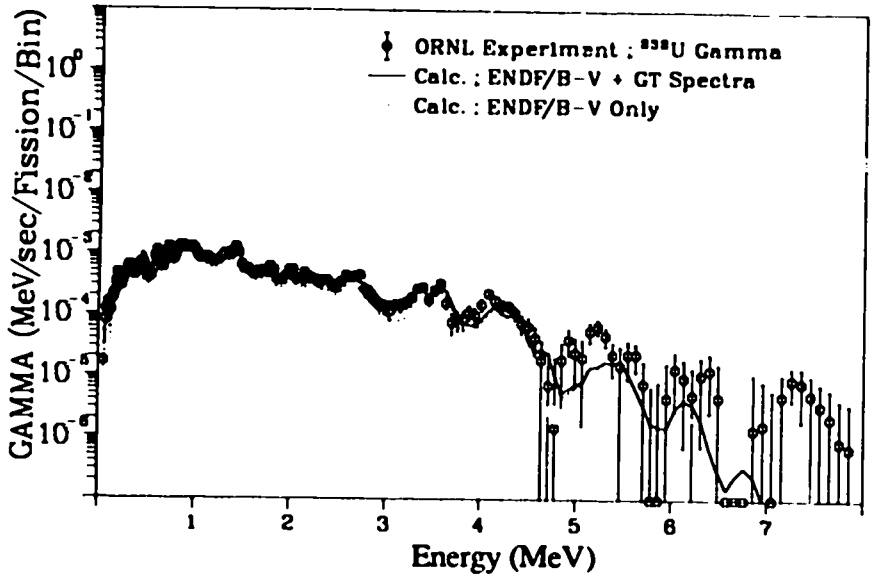

Fig. 43. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 254.7 sec).

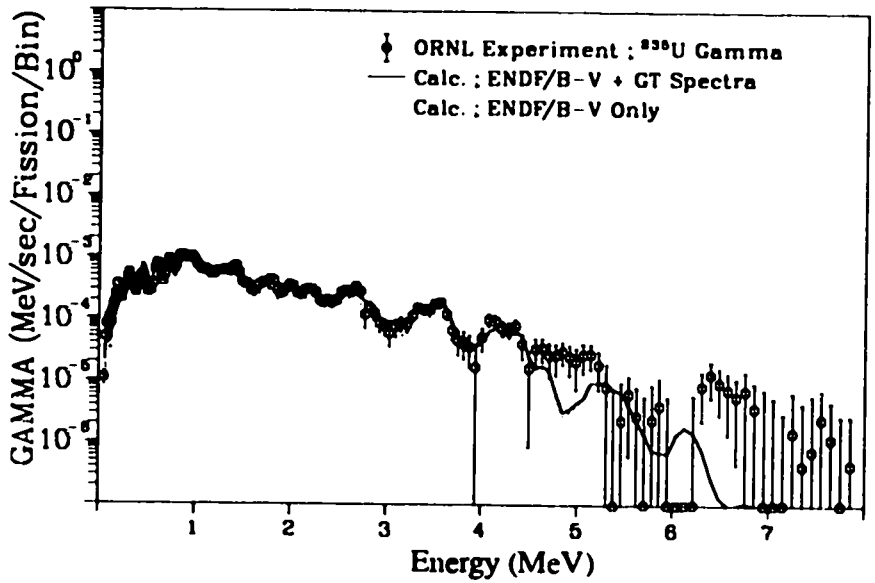

Fig. 44. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 344.7 sec).

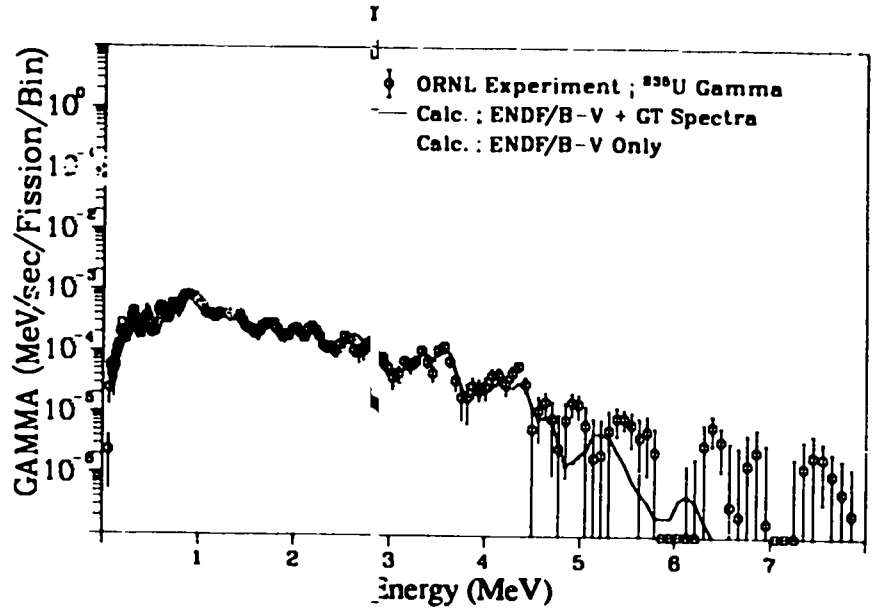

Fig. 45. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 494.7 sec).

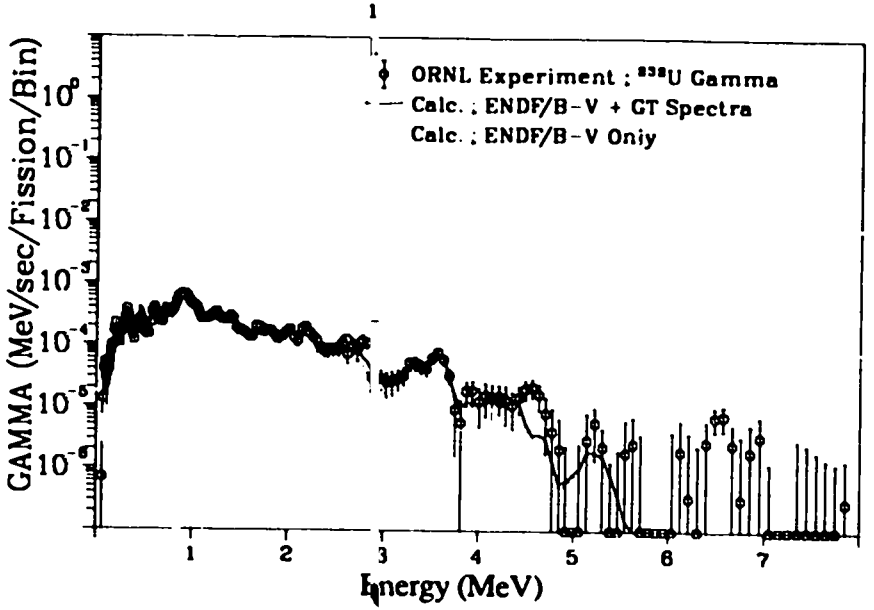

Fig. 46. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 694.7 sec).

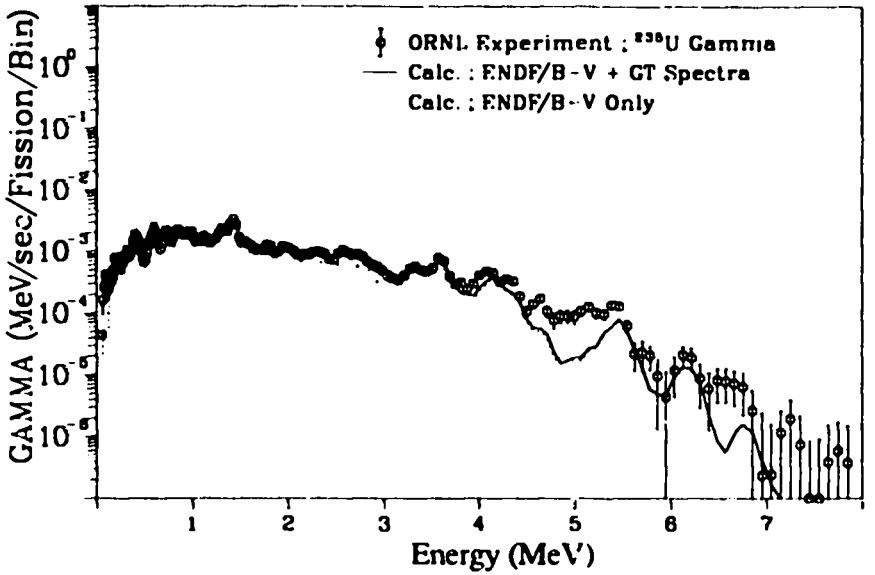

Fig. 47. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 90.0 sec).

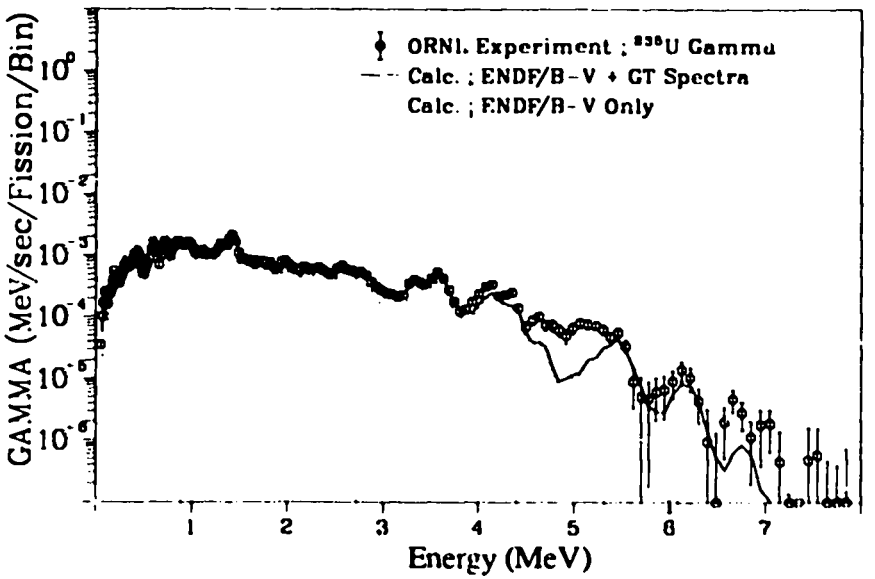

Fig. 48. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 140.0 sec).

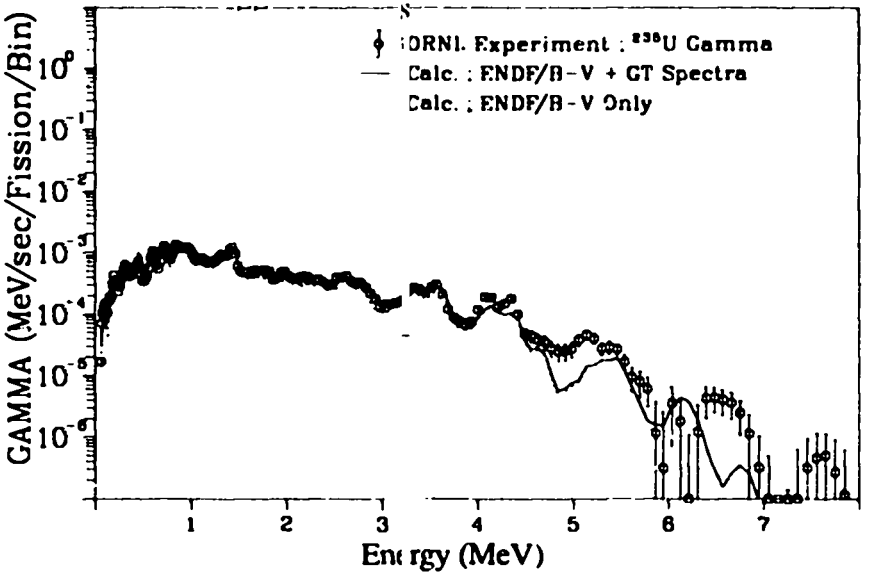

Fig. 49. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 210.0 sec).

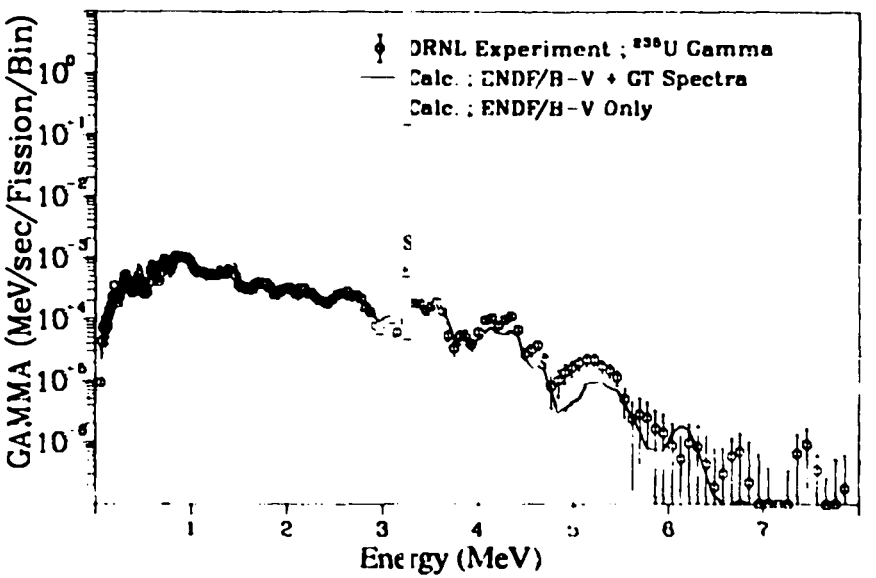

Fig. 50. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 300.0 sec).

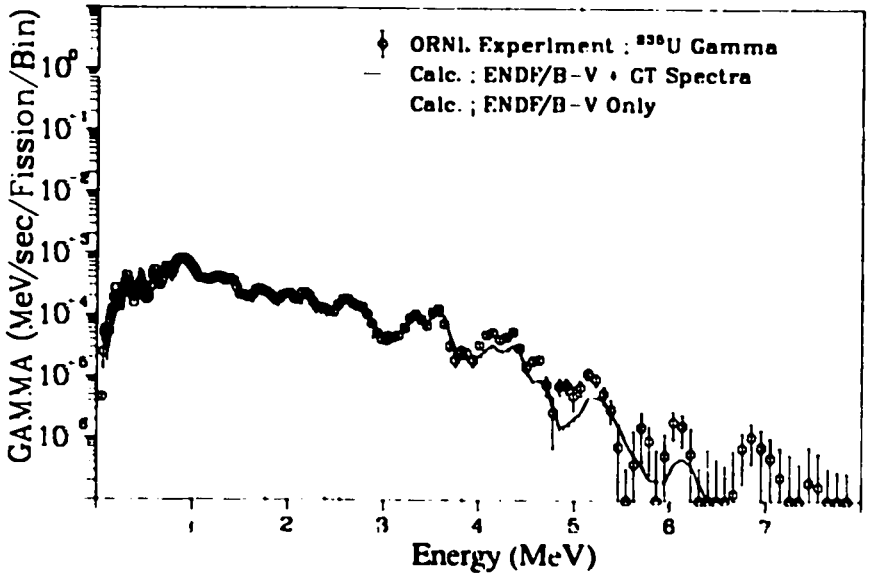

Fig. 51. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 450.0 sec).

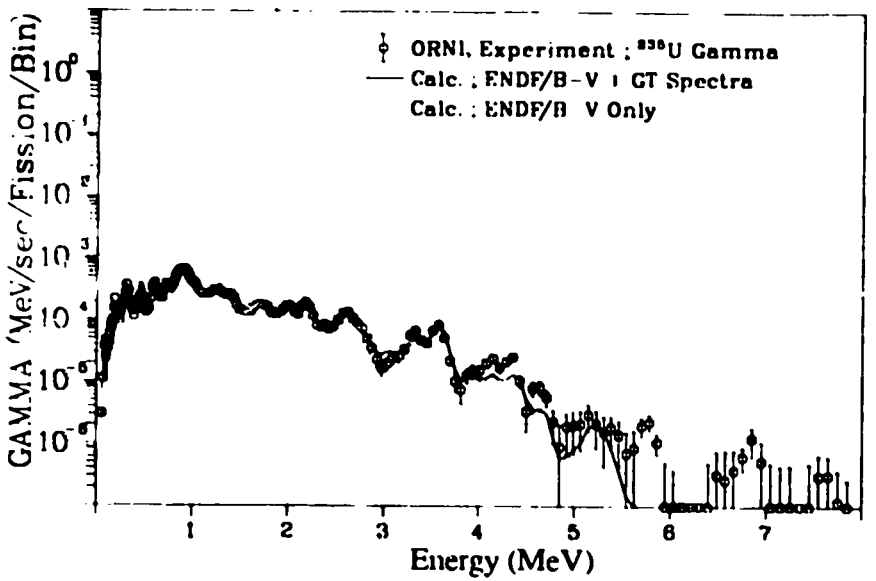

Fig. 52. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 650.0 sec).

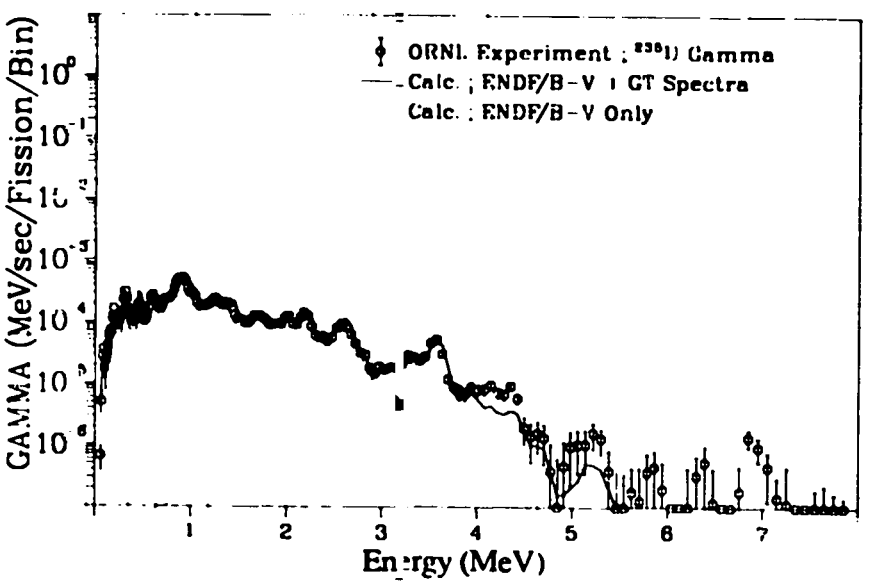

Fig. 53. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 950.0 sec).

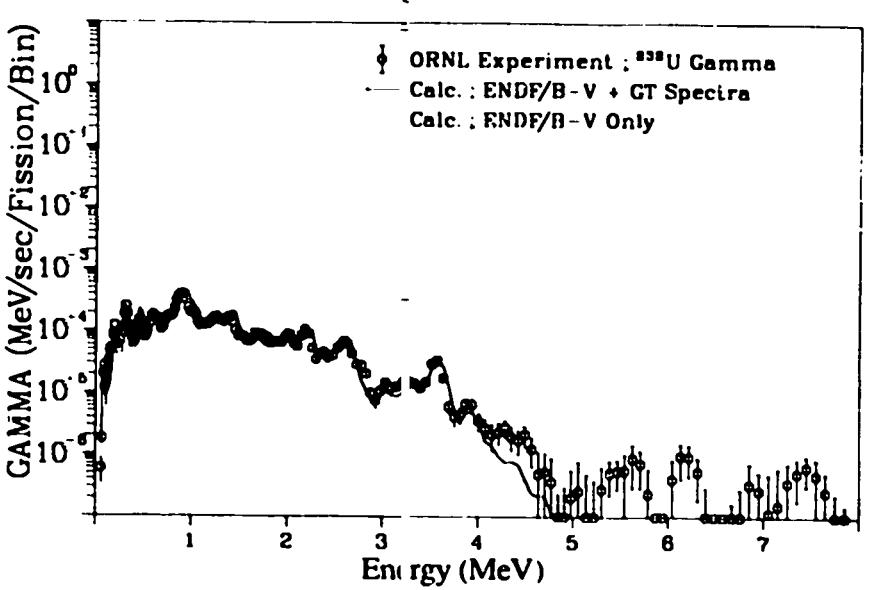

Fig. 54. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1350.0 sec).

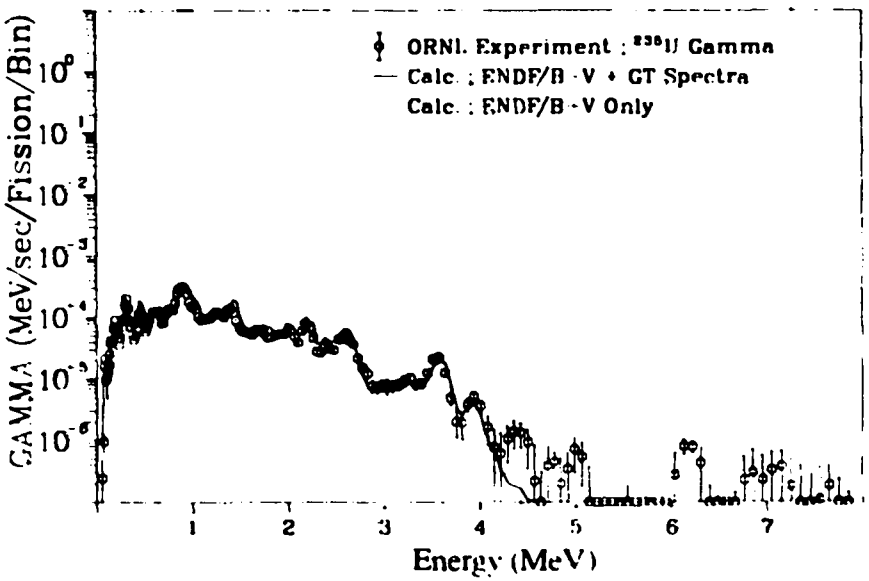

Fig. 55. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1750.0 sec).

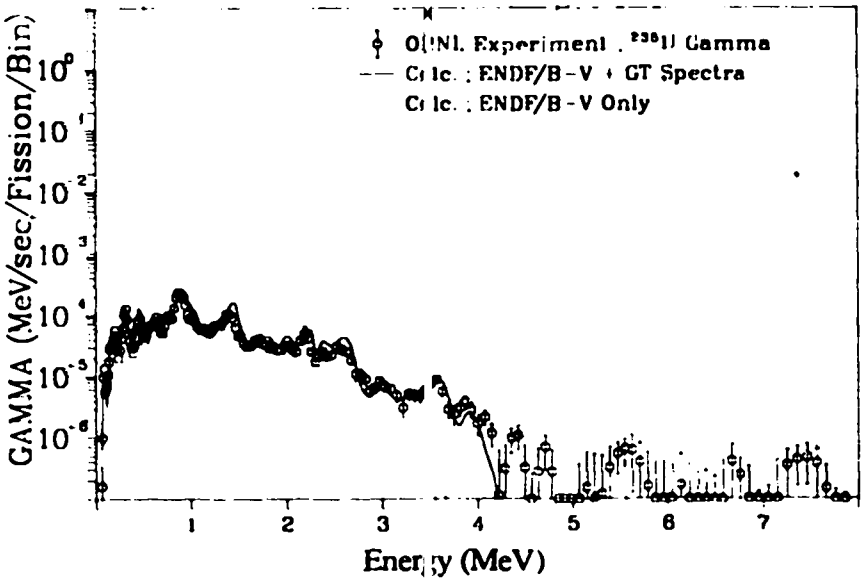

Fig. 57. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2700.0 sec).

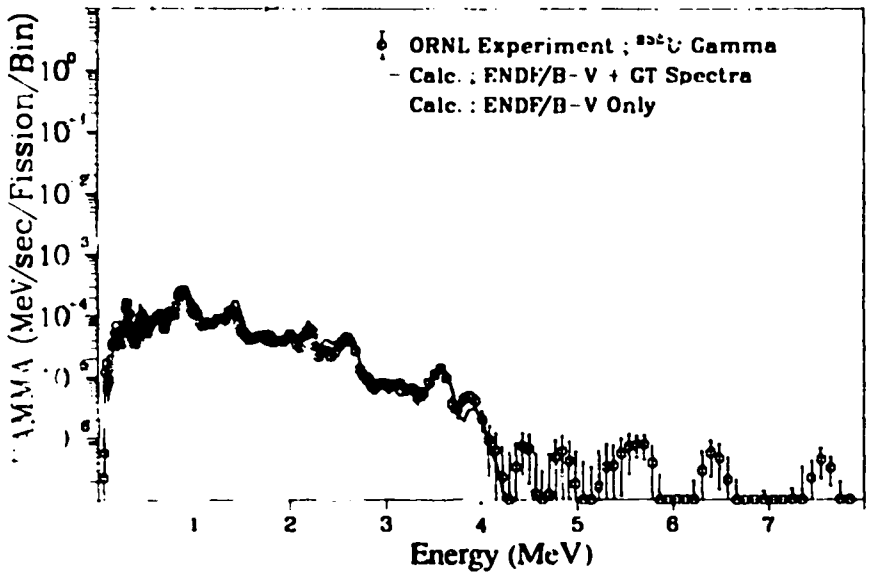

Fig. 56. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2200.0 sec).

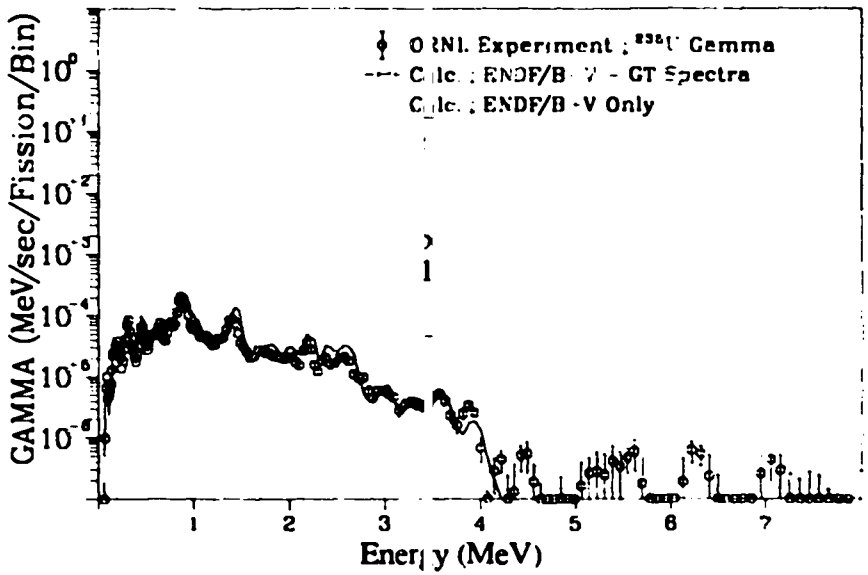

Fig. 58. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3450.0 sec).

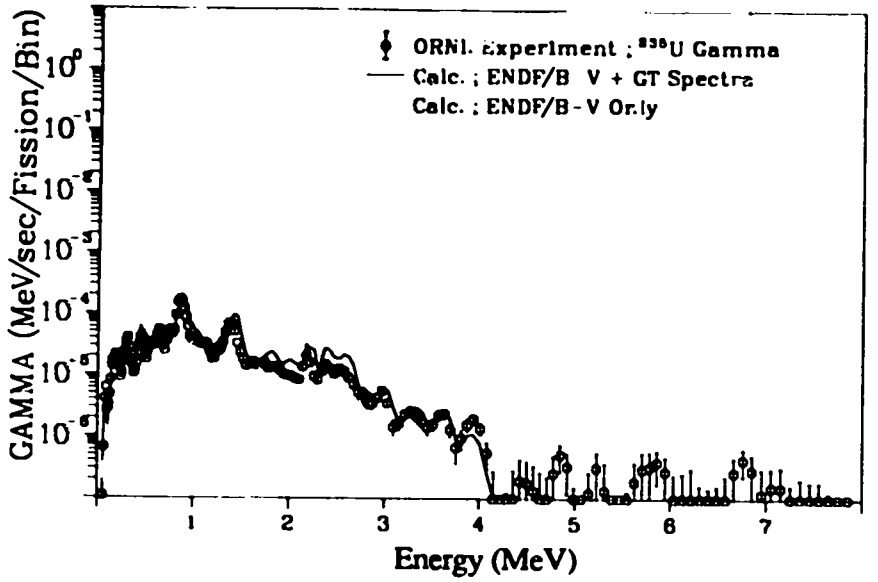

Fig. 59. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4950.0 sec).

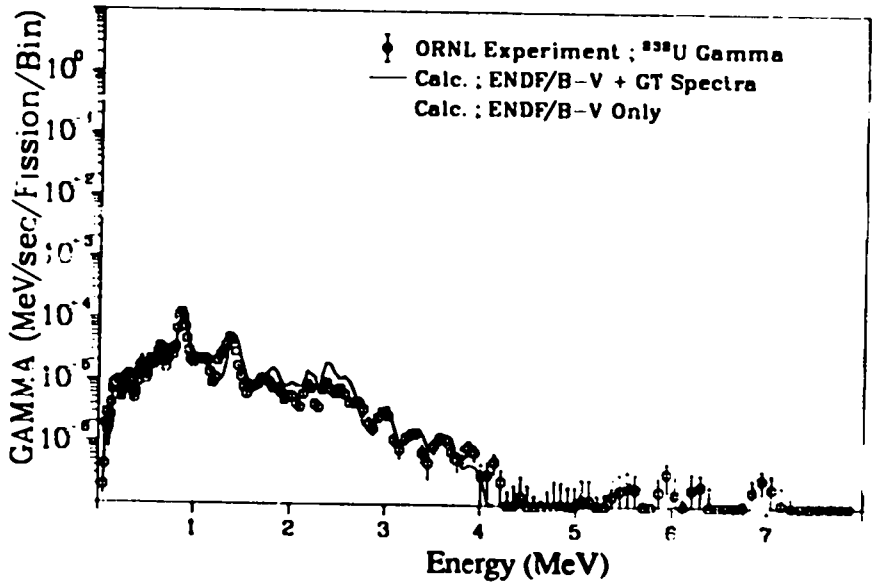

Fig. 60. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7950.0 sec).

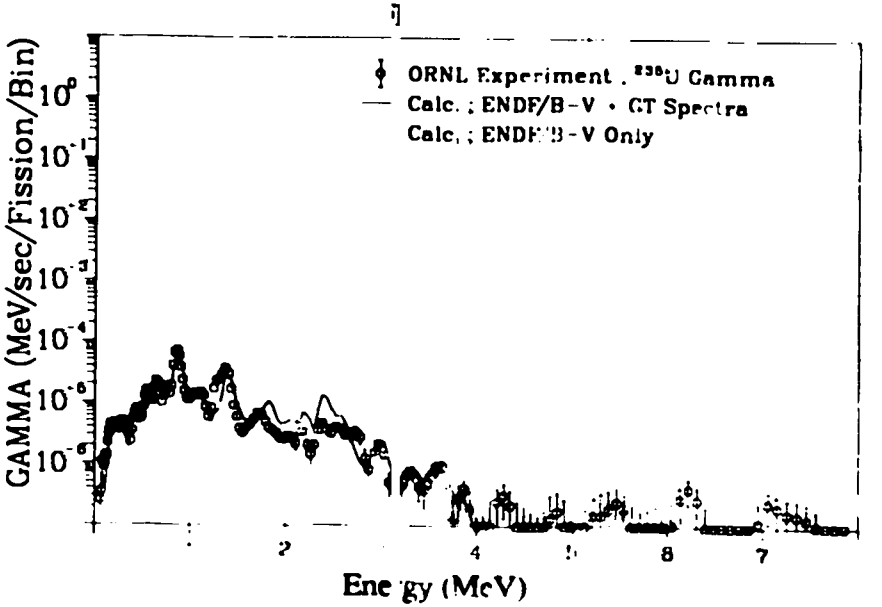

Fig. 61. Gamma spectrum after ^{235}U thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11950.0 sec).

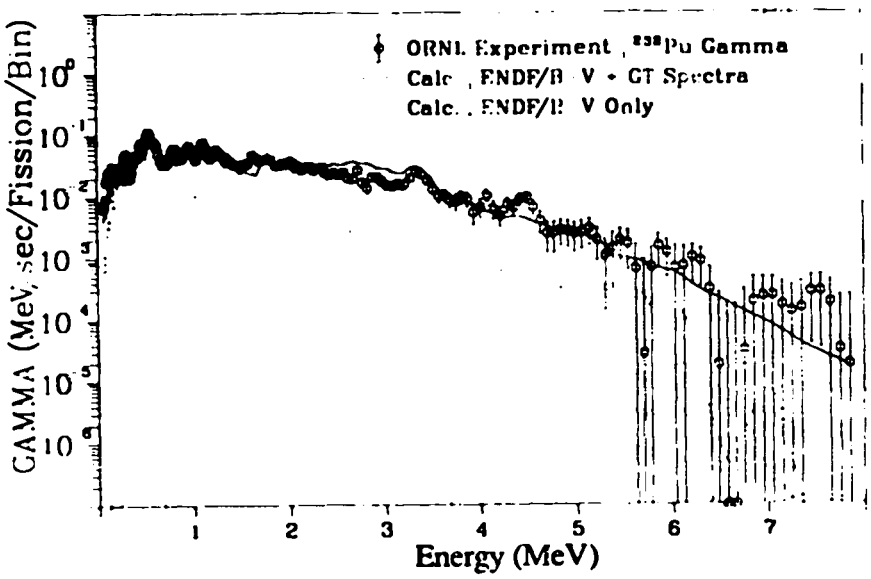

Fig. 62. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec).

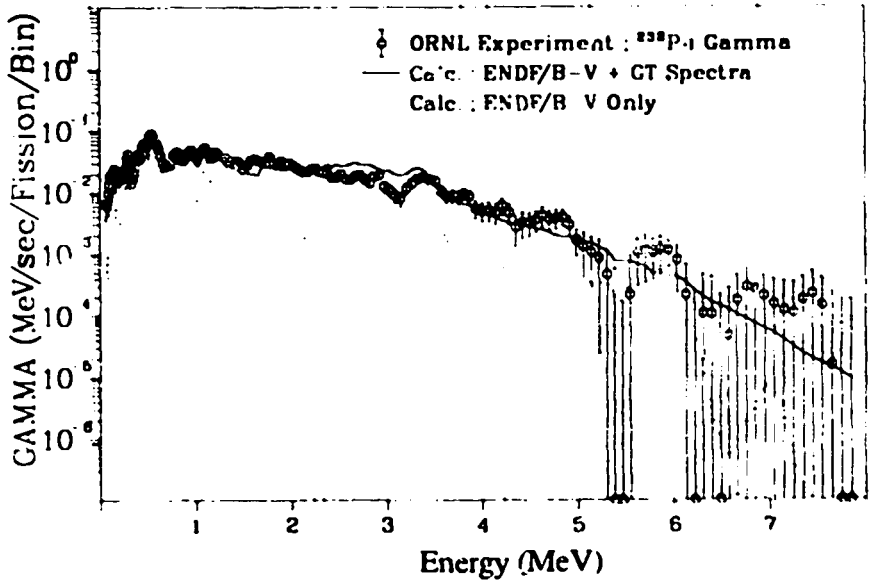

Fig. 63. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 3.2 sec).

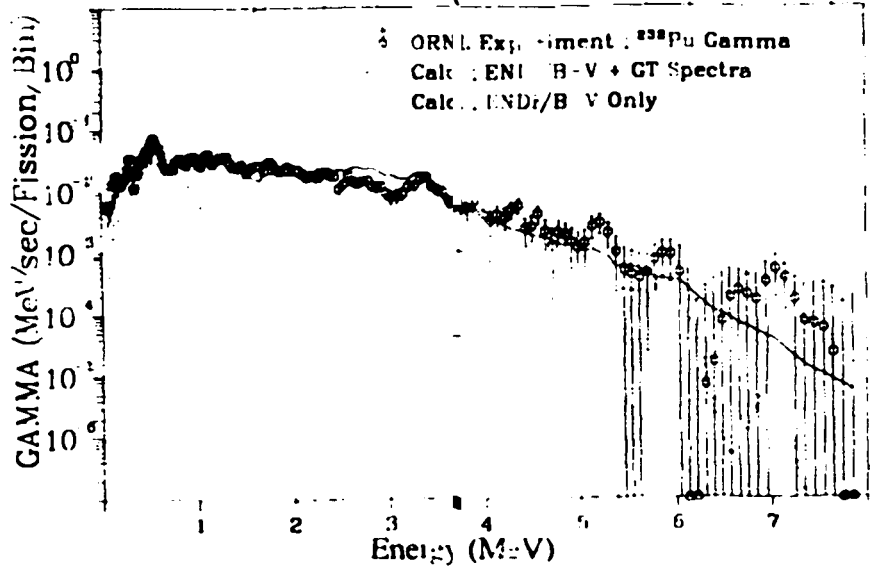

Fig. 64. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 4.2 sec).

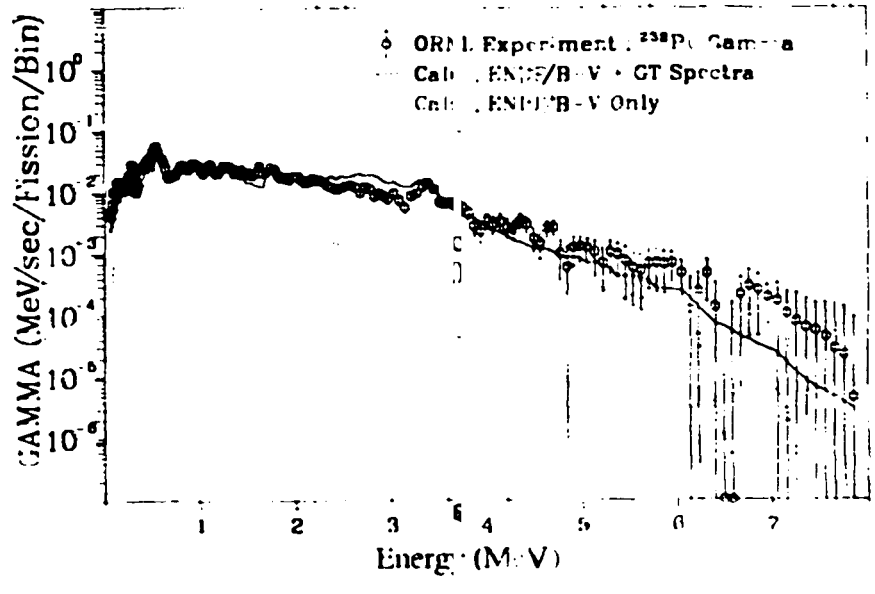

Fig. 65. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 5.7 sec).

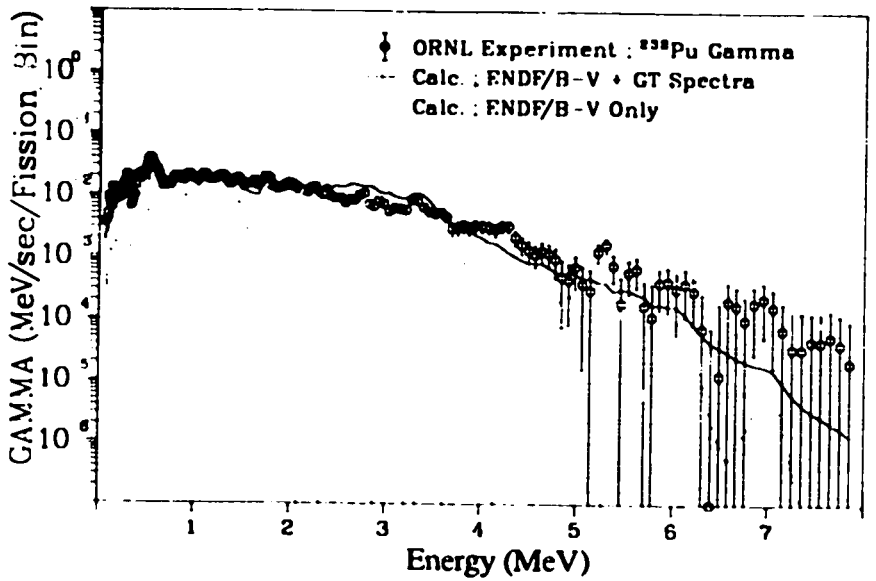

Fig. 66. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 8.2 sec).

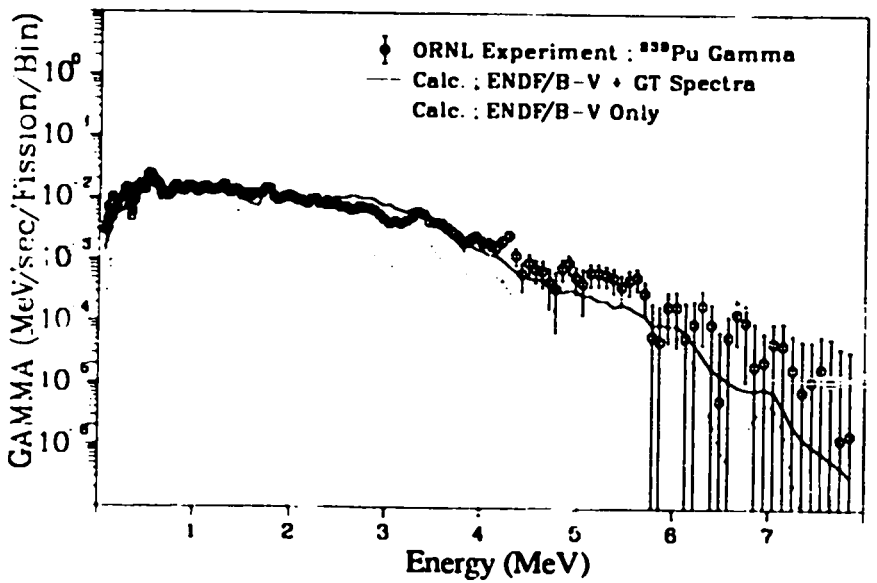

Fig. 67. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 12.2 sec).

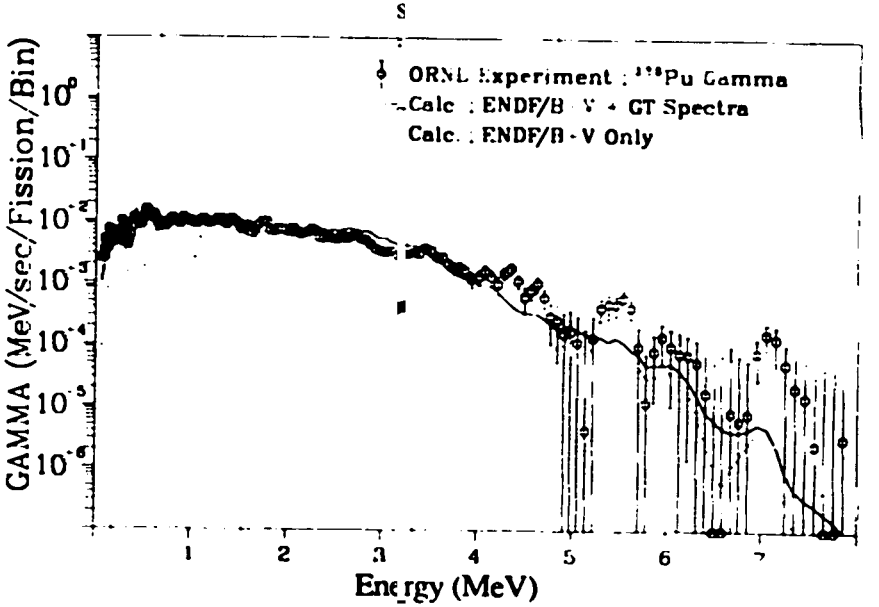

Fig. 68. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 17.2 sec).

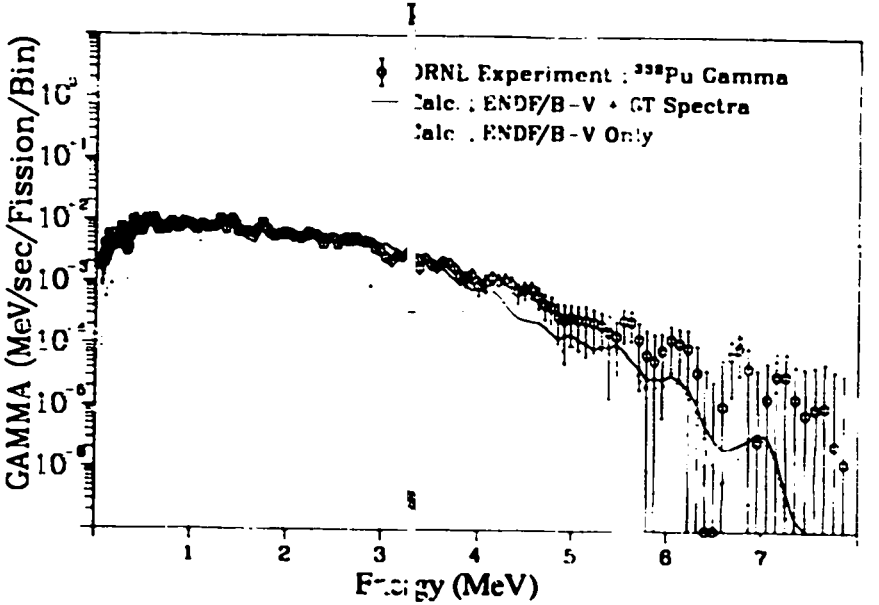

Fig. 69. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 22.2 sec).

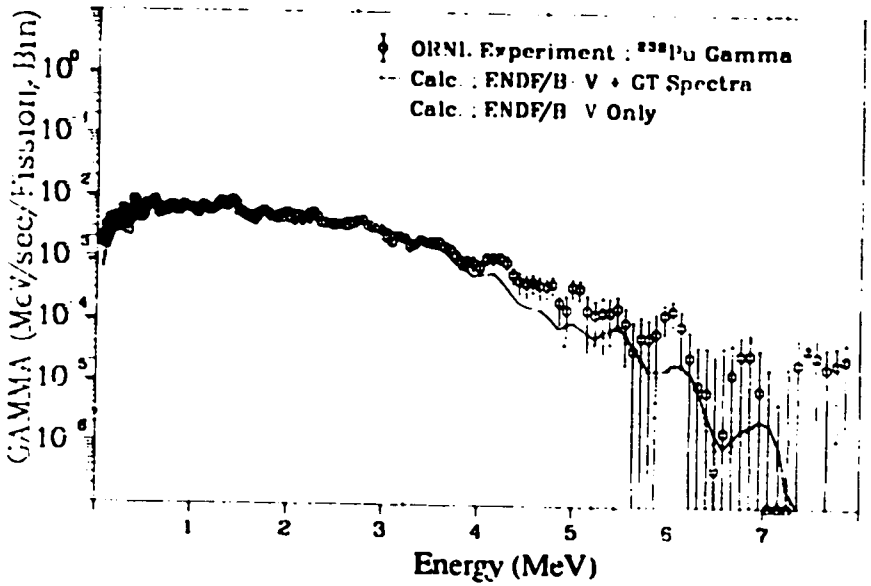

Fig. 70. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 29.7 sec).

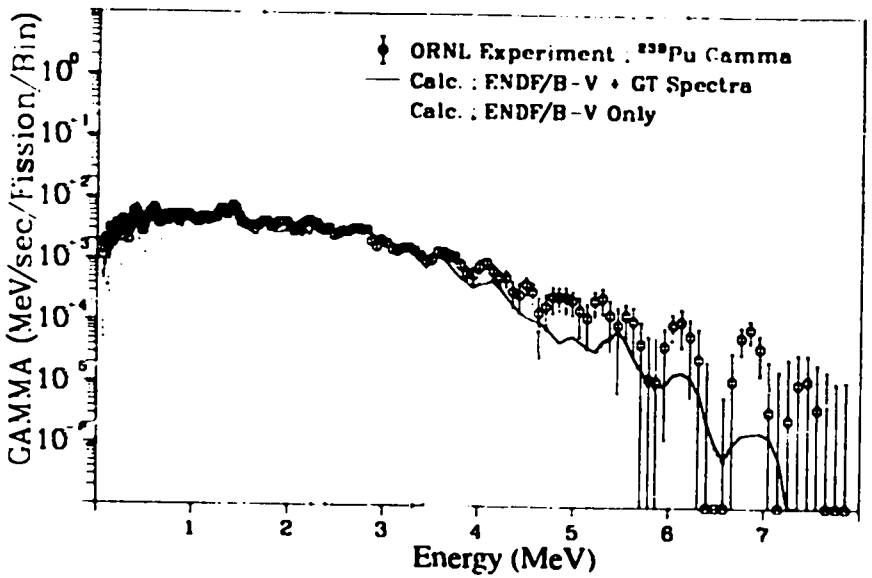

Fig. 71. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 39.7 sec).

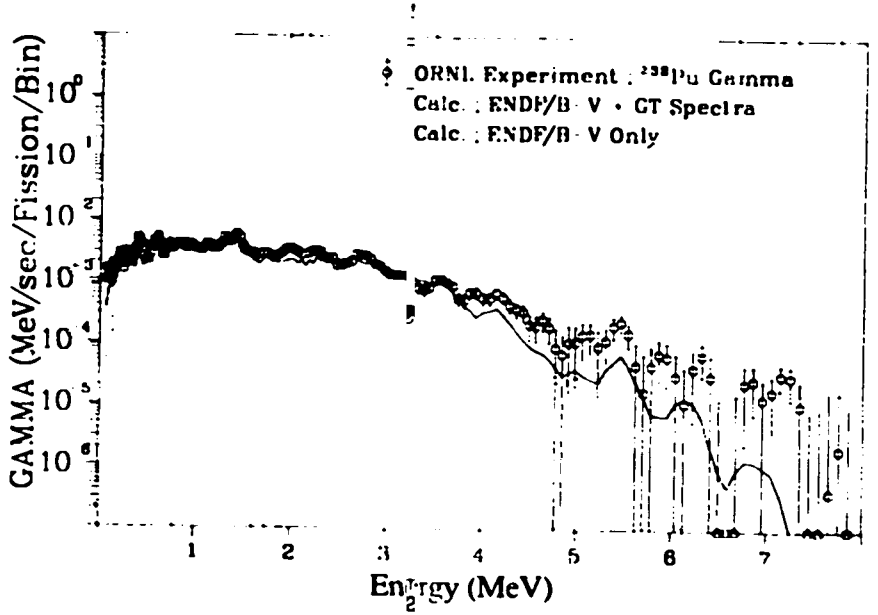

Fig. 72. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 52.2 sec).

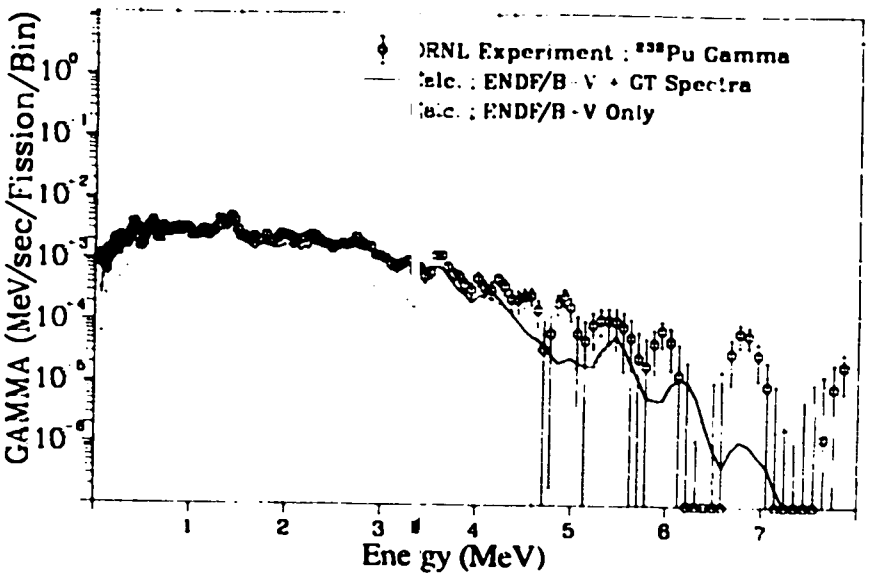

Fig. 73. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 67.2 sec).

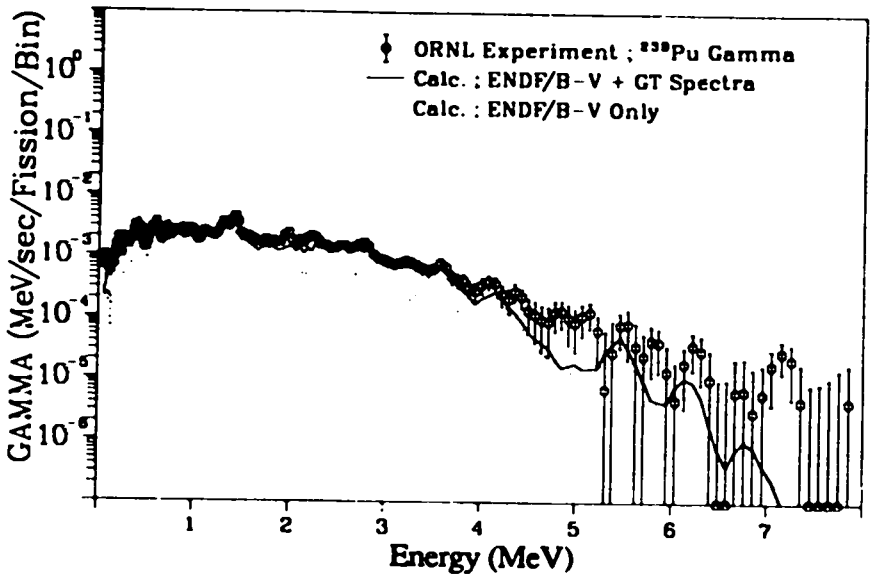

Fig. 74. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 82.2 sec).

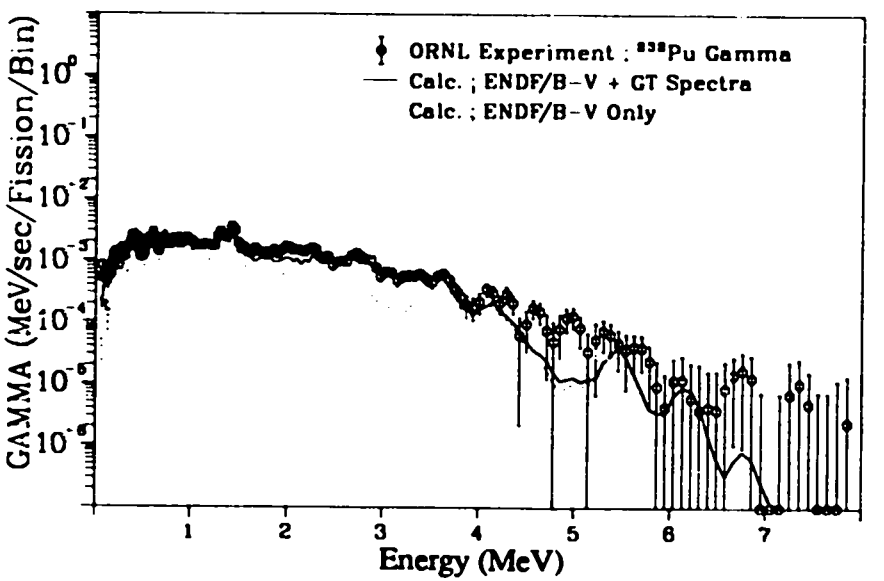

Fig. 75. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 99.7 sec).

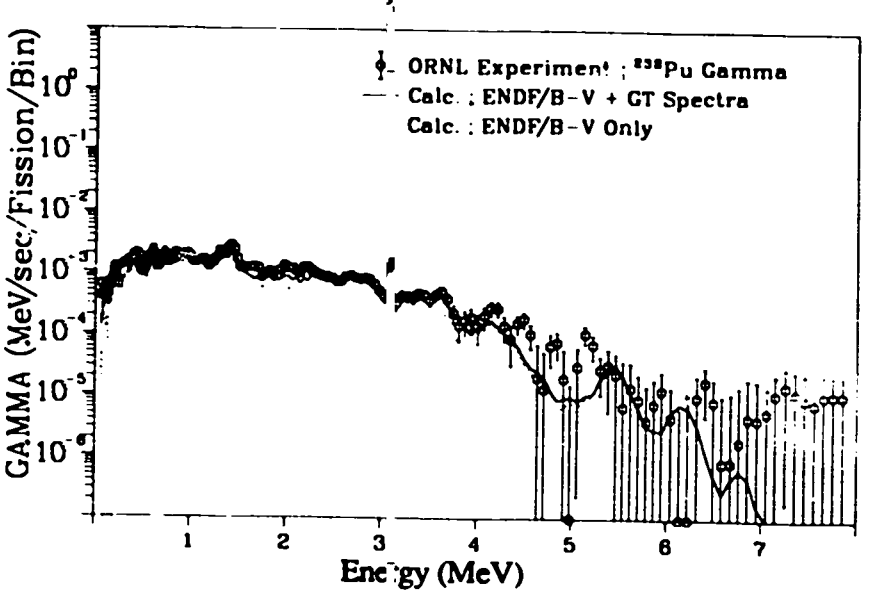

Fig. 76. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 119.7 sec).

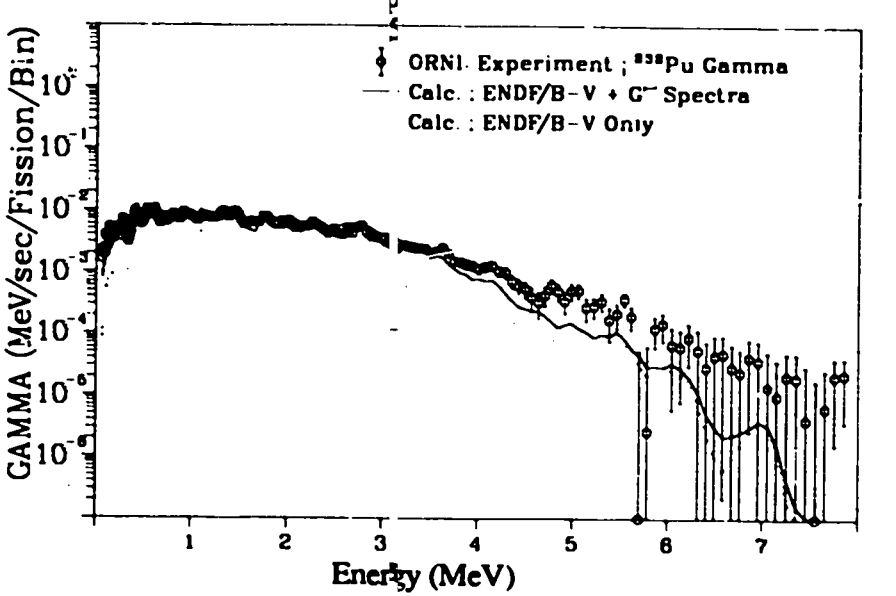

Fig. 77. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 20.2 sec).

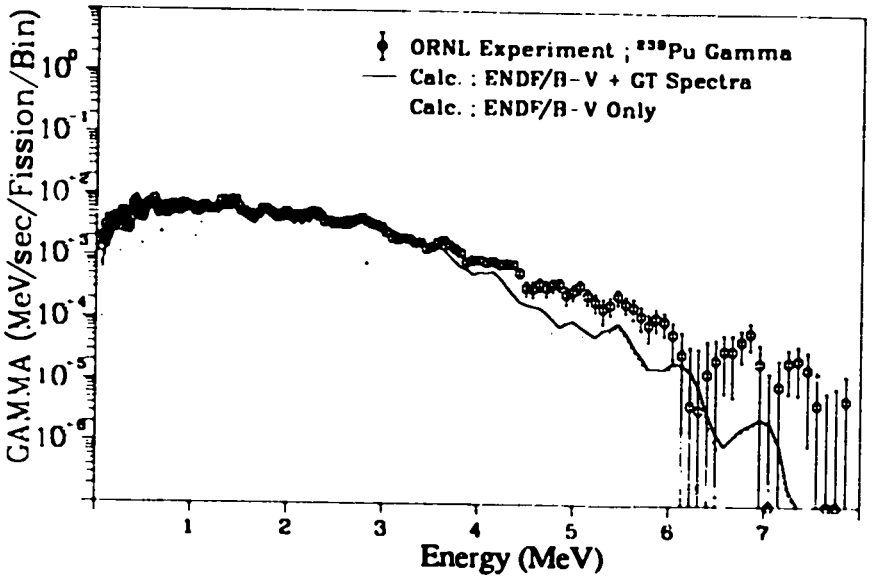

Fig. 78. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 27.7 sec).

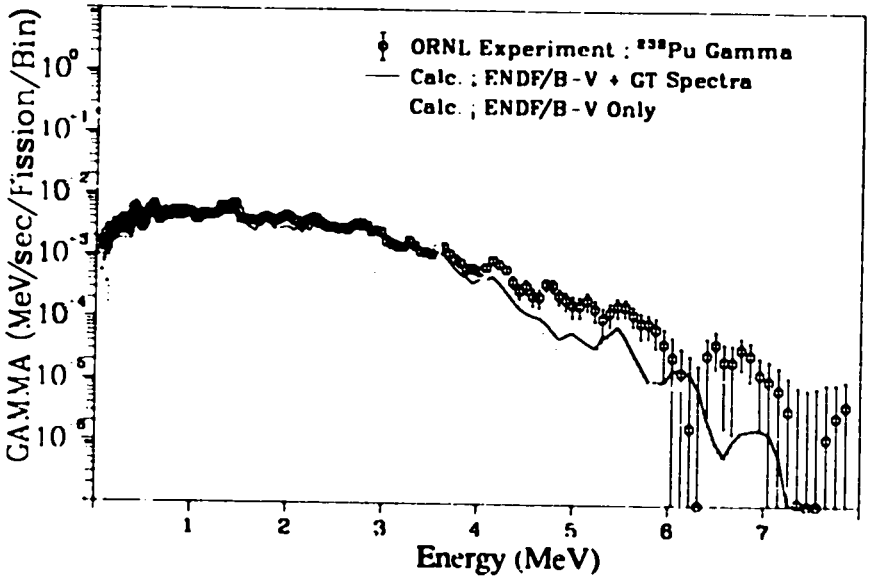

Fig. 79. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 37.7 sec).

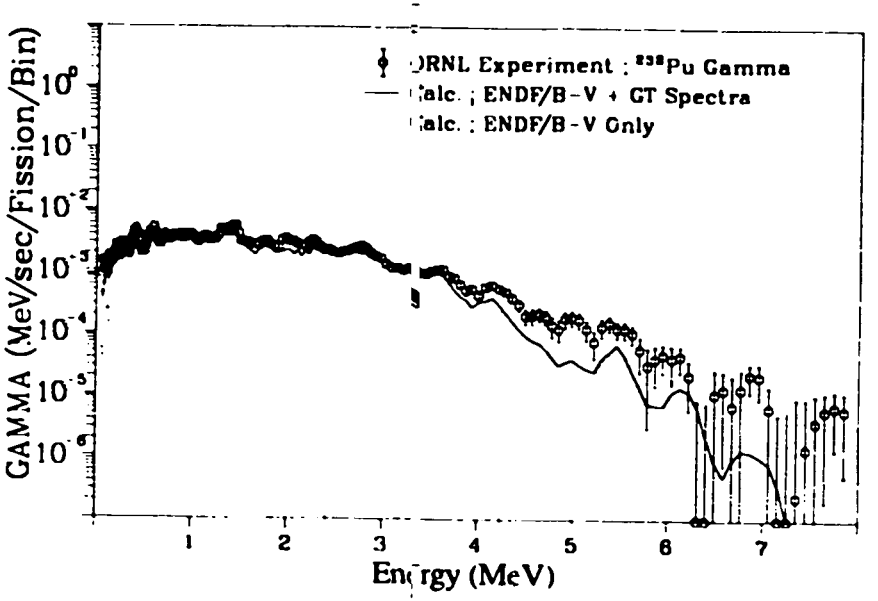

Fig. 80. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 50.2 sec).

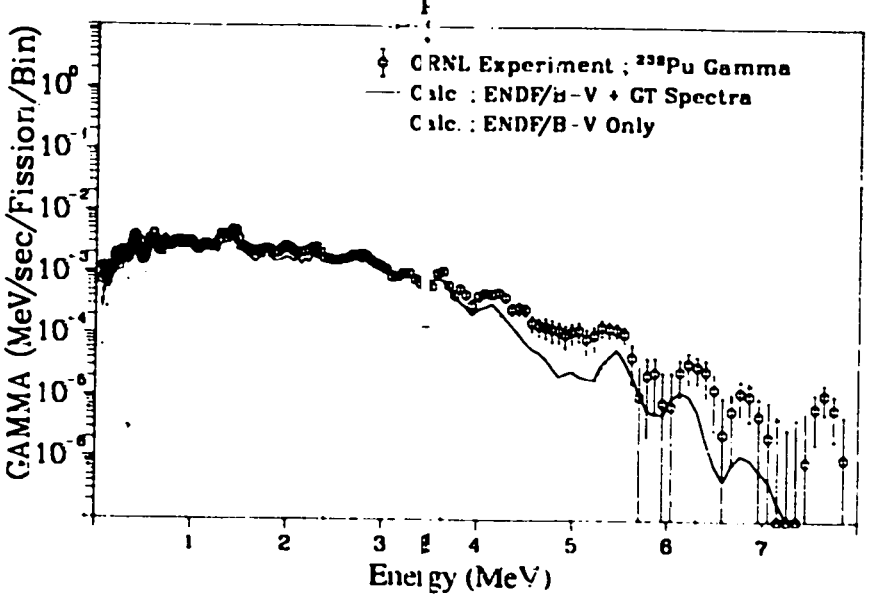

Fig. 81. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 65.2 sec).

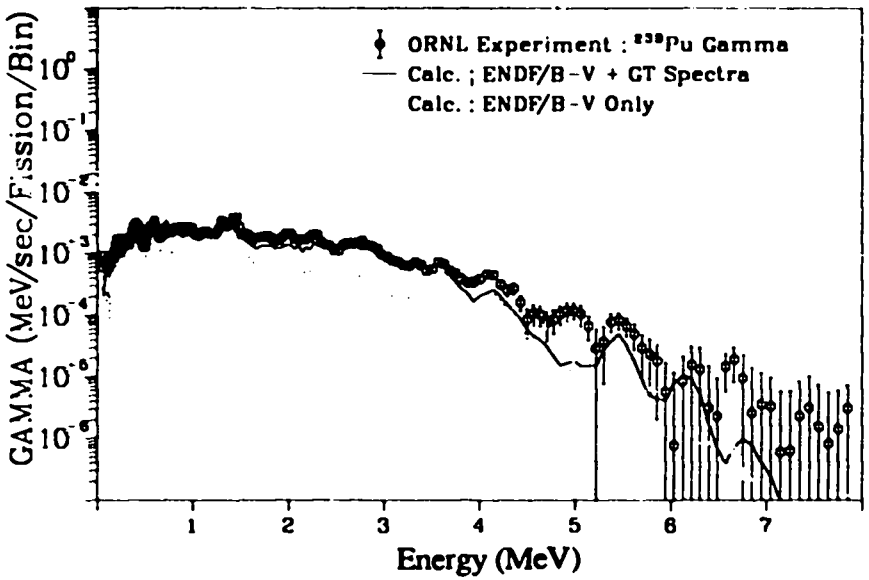

Fig. 82. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 80.2 sec).

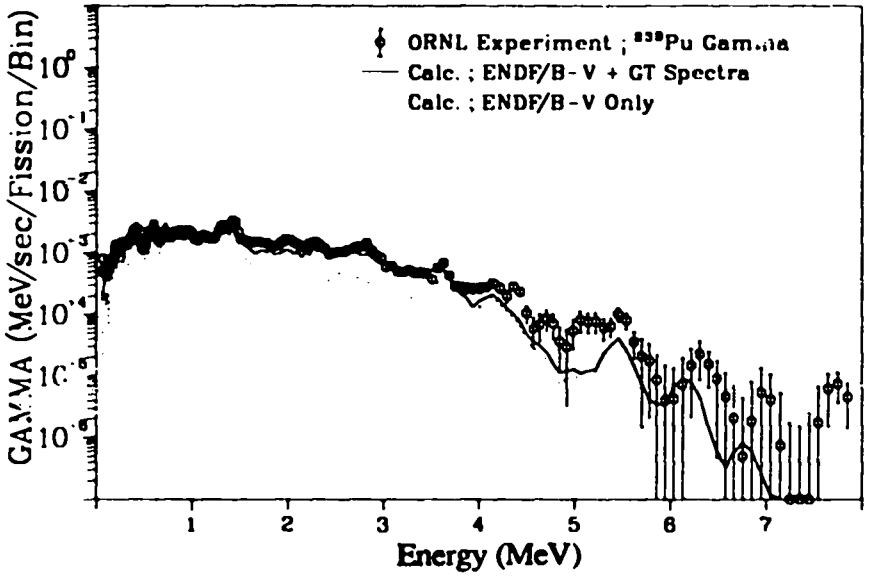

Fig. 83. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 97.7 sec).

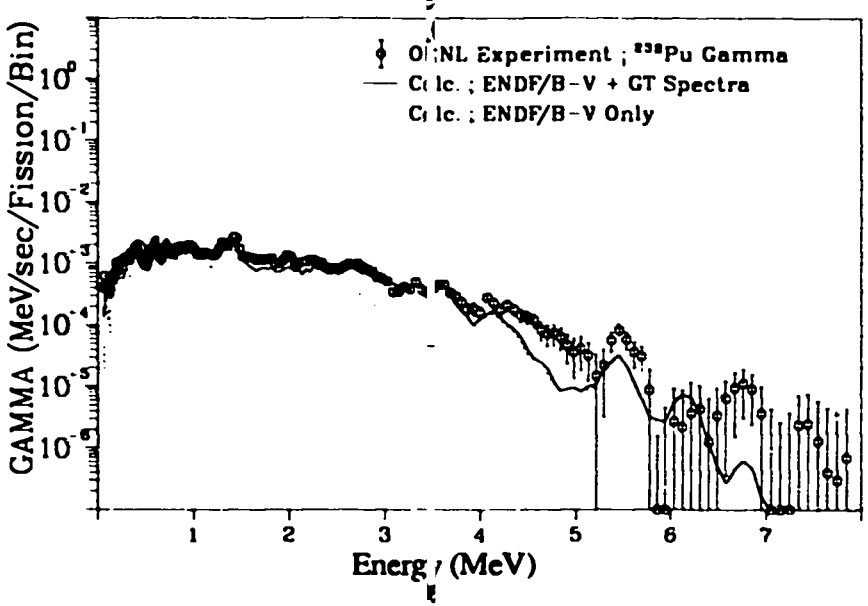

Fig. 84. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 117.7 sec).

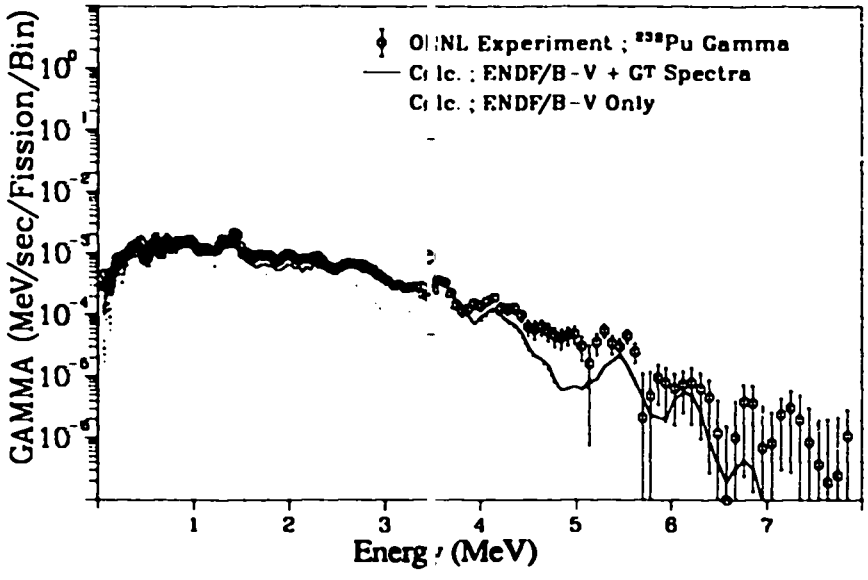

Fig. 85. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 147.7 sec).

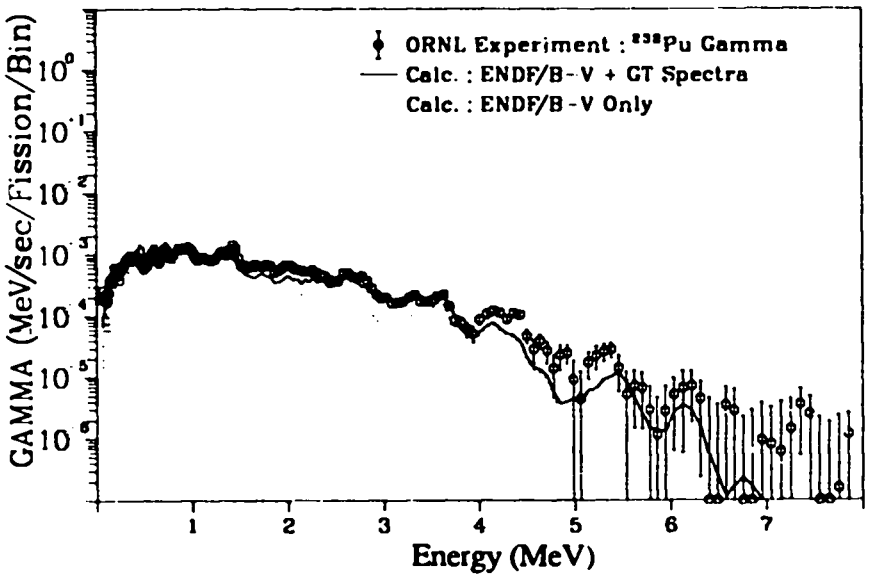

Fig. 86. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 197.7 sec).

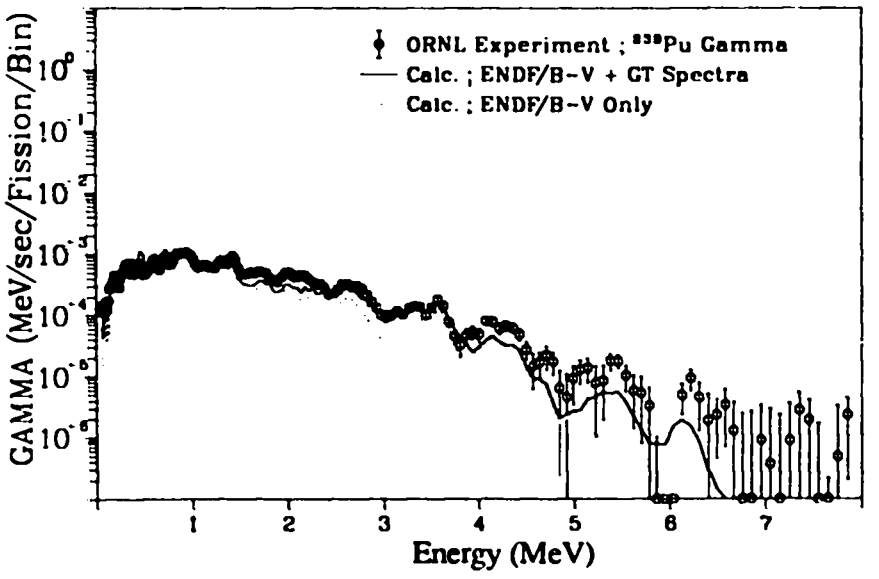

Fig. 87. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 262.7 sec).

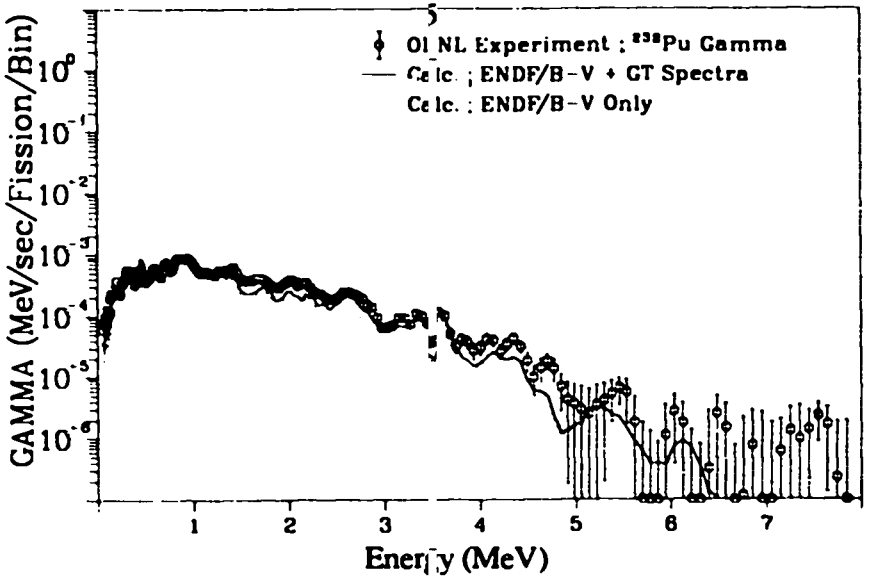

Fig. 88. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 347.7 sec).

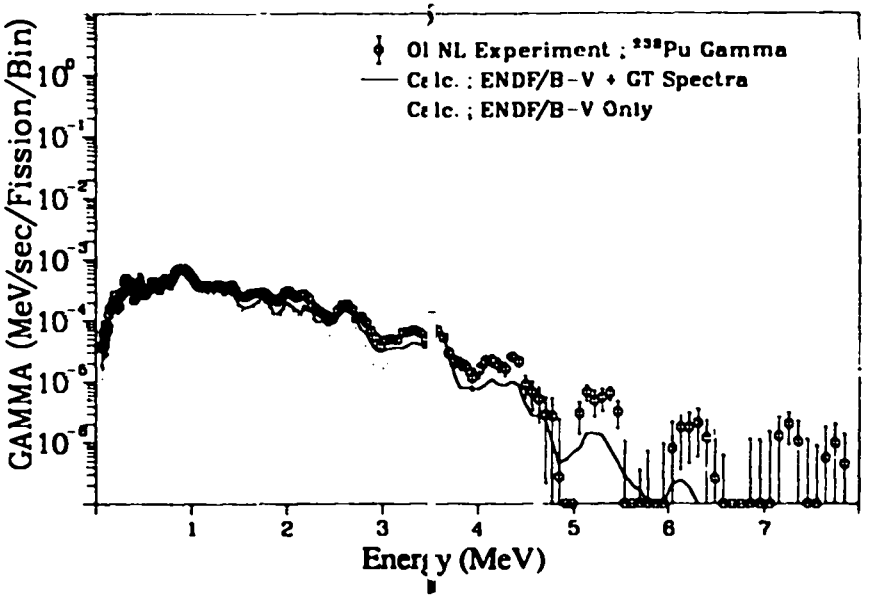

Fig. 89. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 497.7 sec).

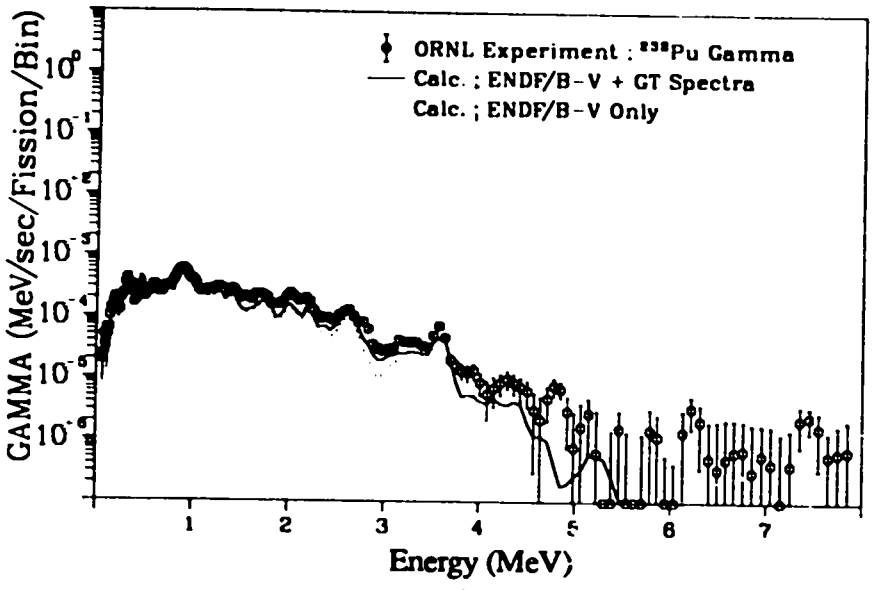

Fig. 90. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 697.7 sec).

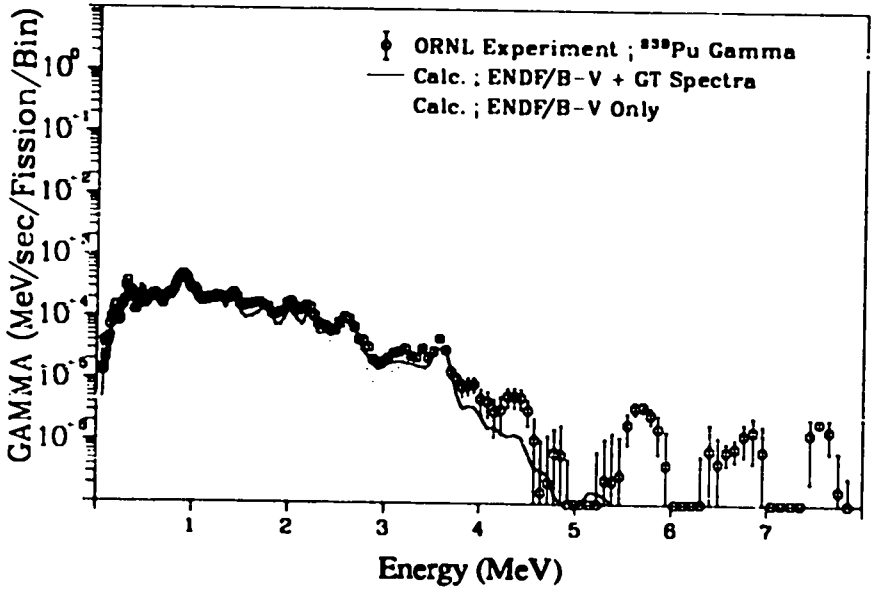

Fig. 91. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 997.7 sec).

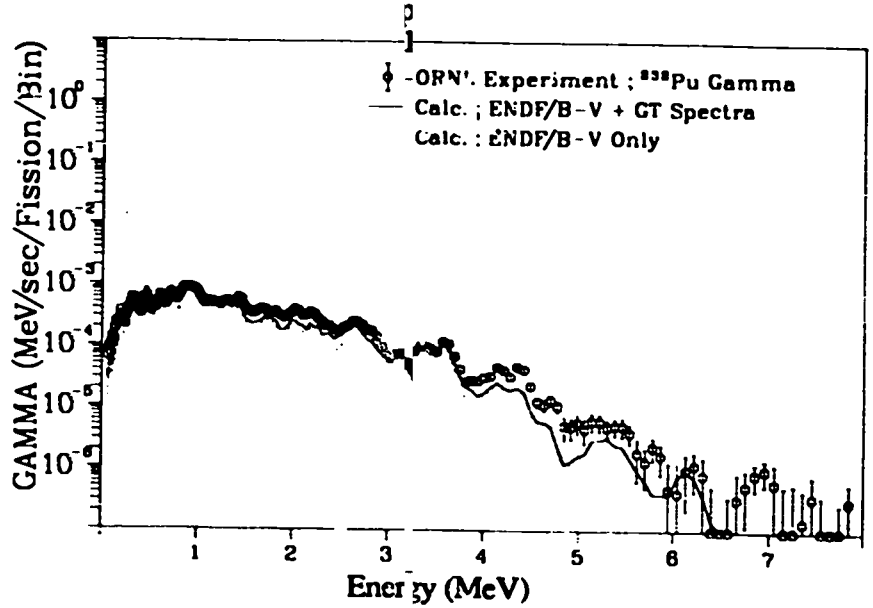

Fig. 92. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 300.0 sec).

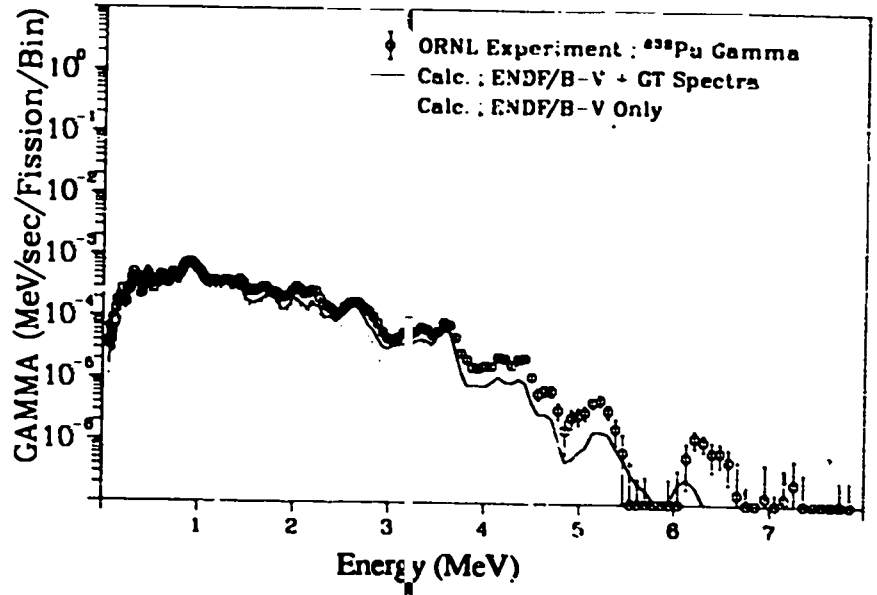

Fig. 93. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 450.0 sec).

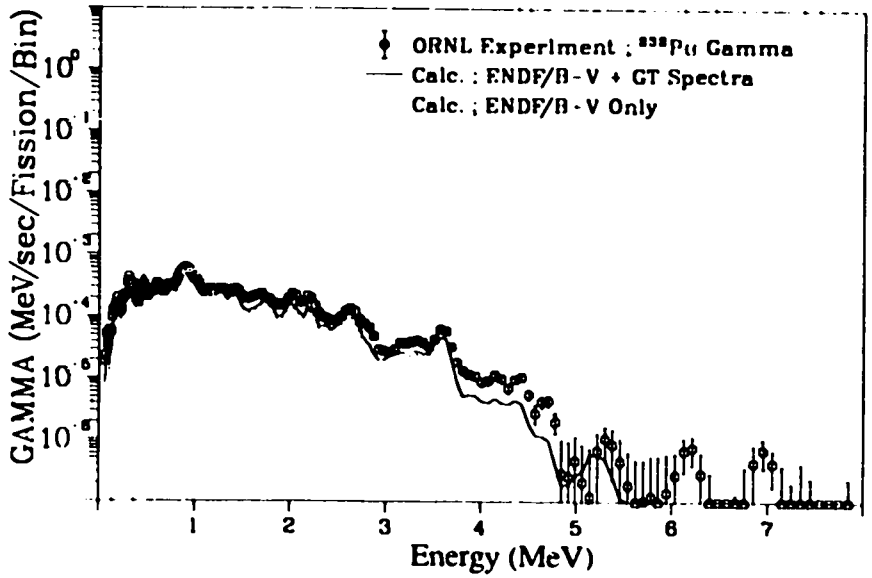

Fig. 94. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 650.0 sec).

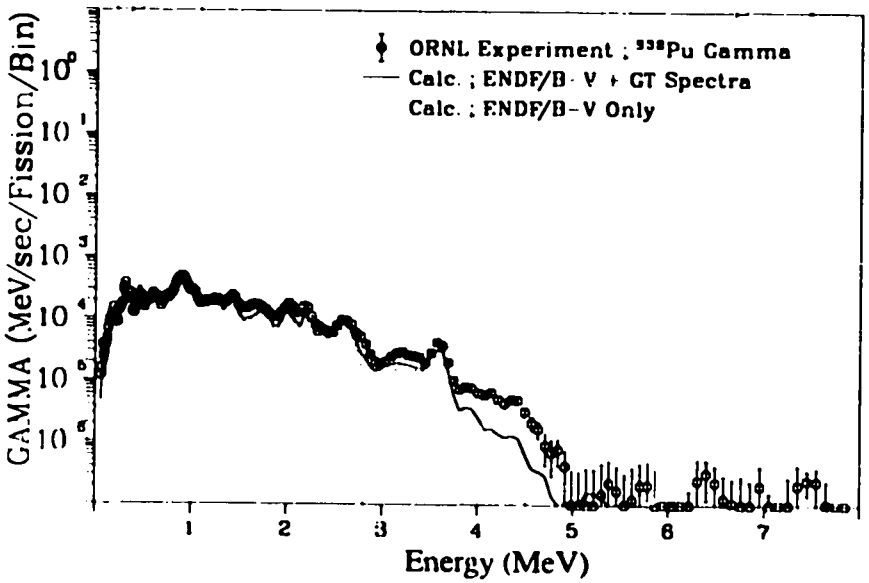

Fig. 95. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 950.0 sec).

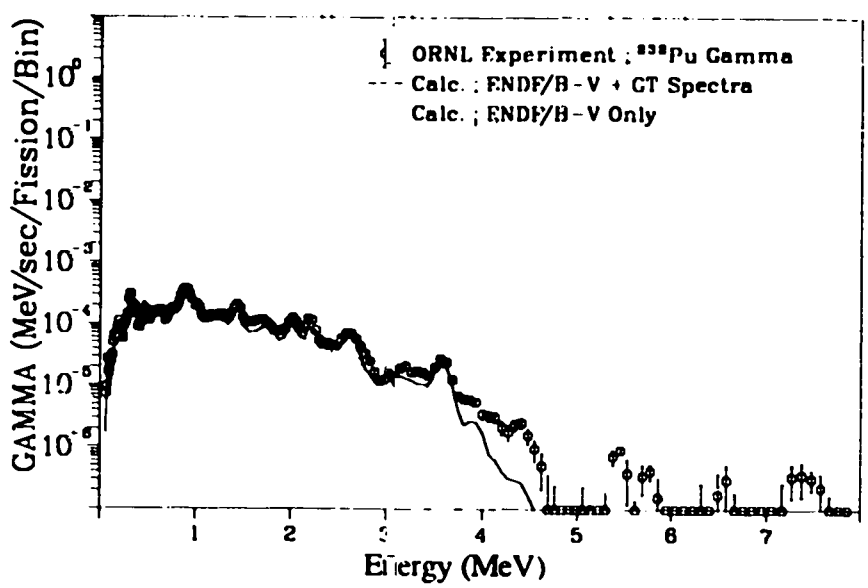

Fig. 96. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec. $T_{cool.}$ = 1350.0 sec).

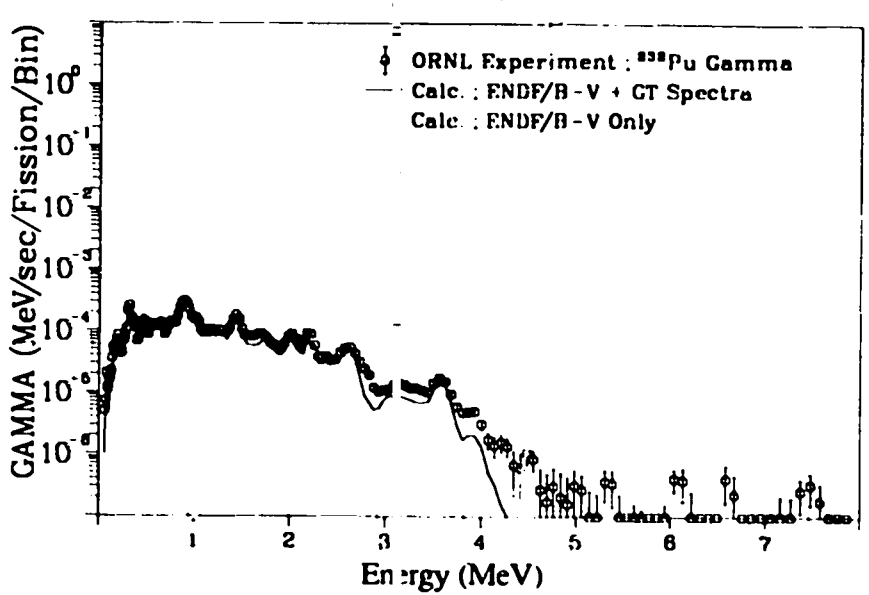

Fig. 97. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1750.0 sec).

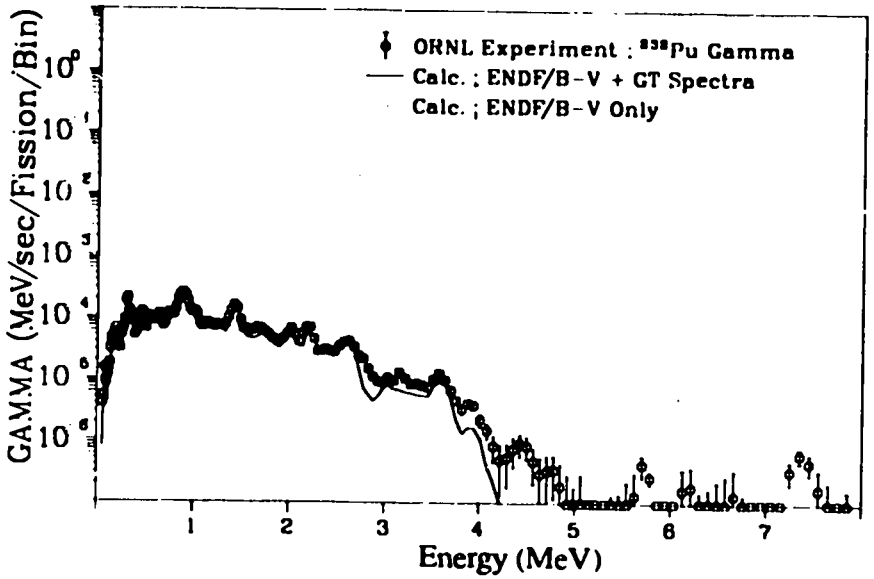

Fig. 98. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2200.0 sec).

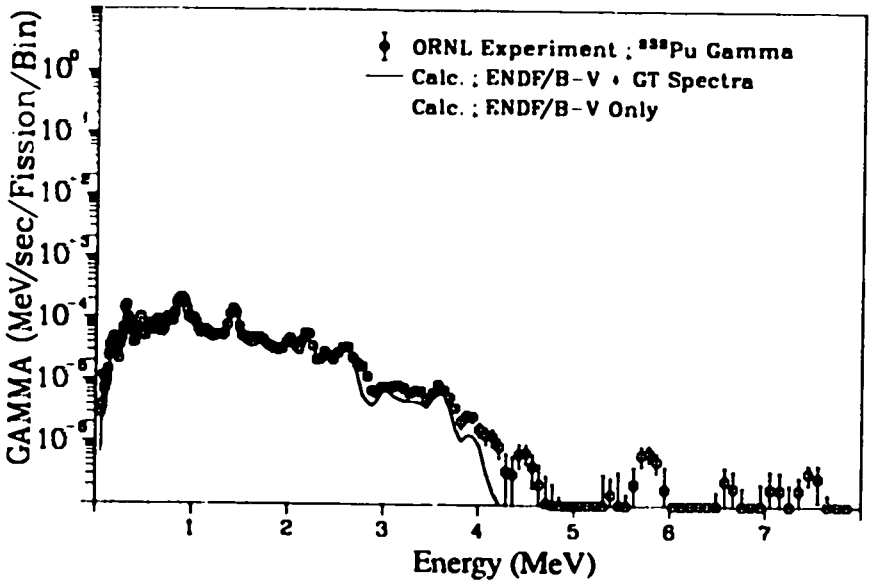

Fig. 99. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2700.0 sec).

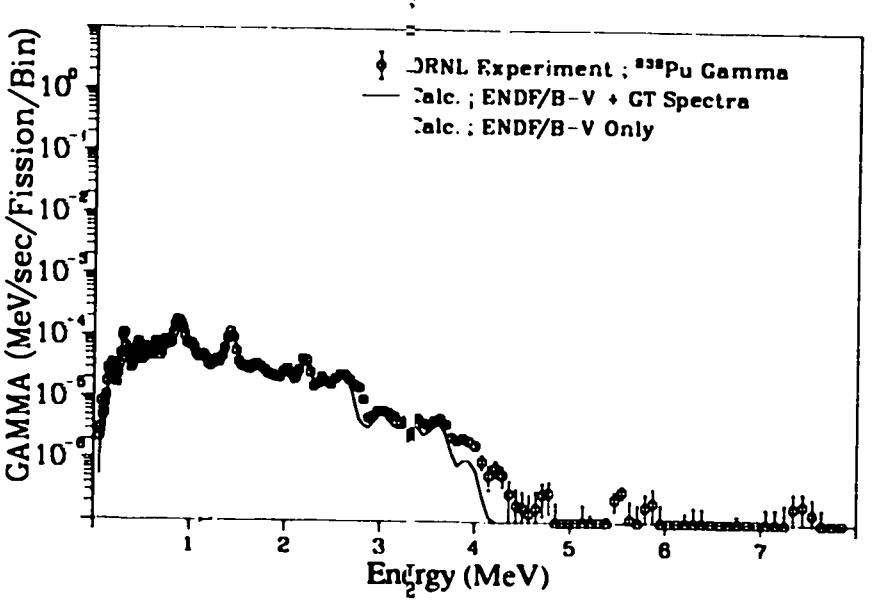

Fig. 100. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3450.0 sec).

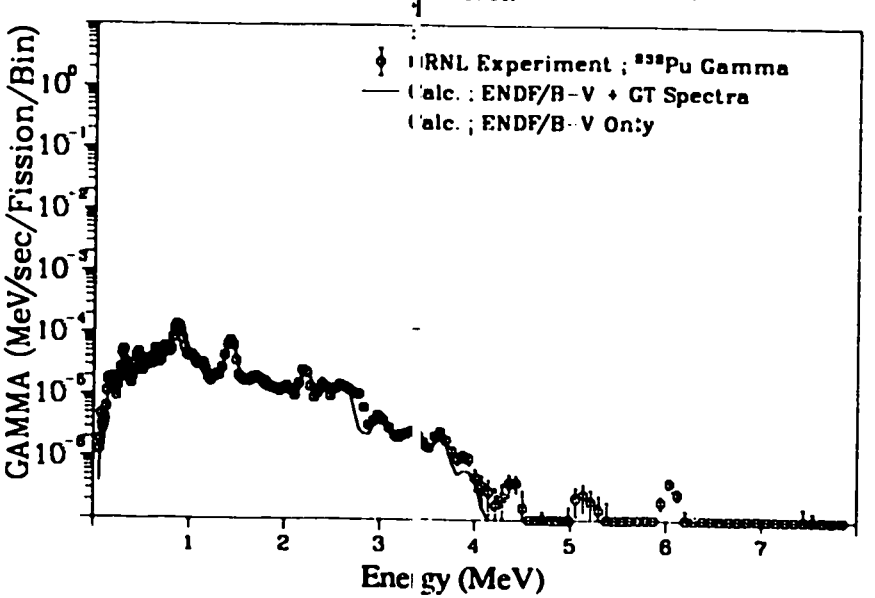

Fig. 101. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4950.0 sec).

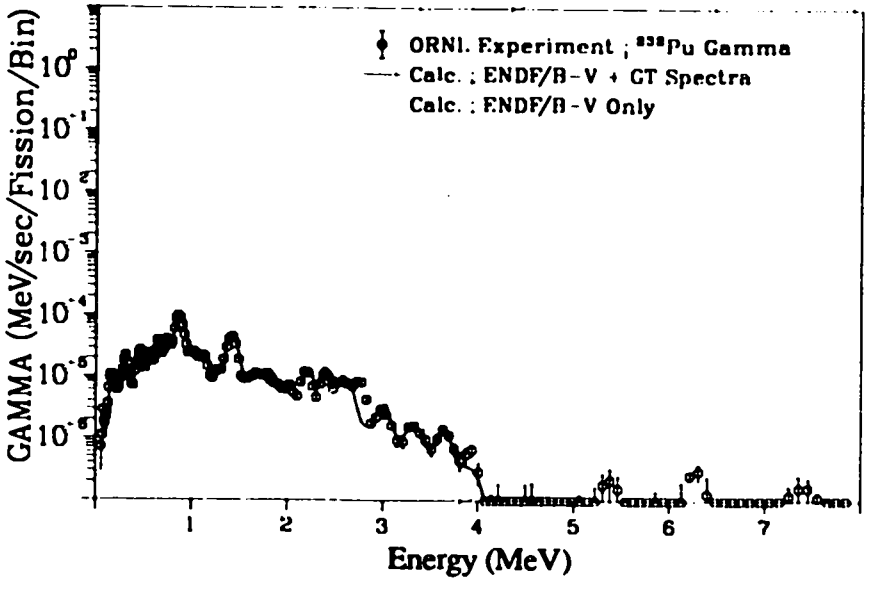

Fig. 102. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6950.0 sec).

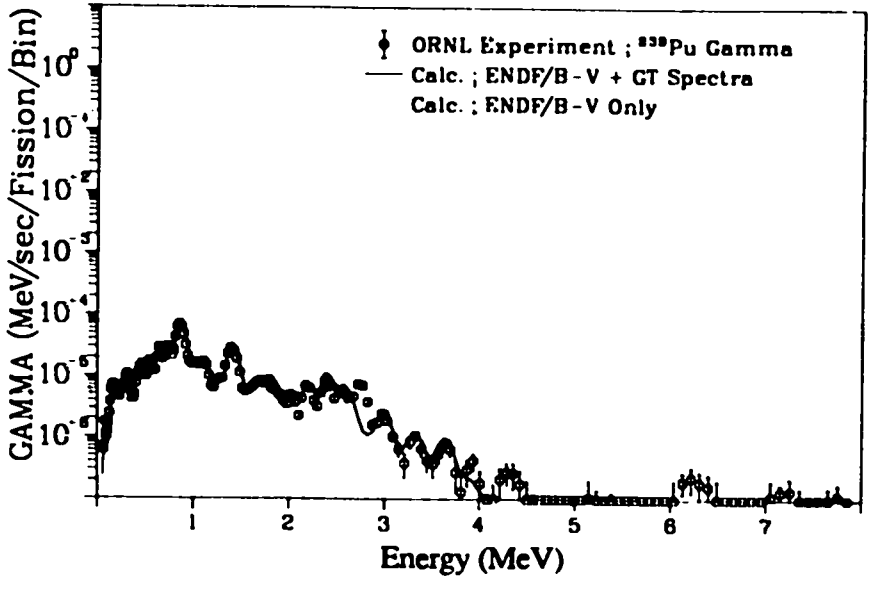

Fig. 103. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 8950.0 sec).

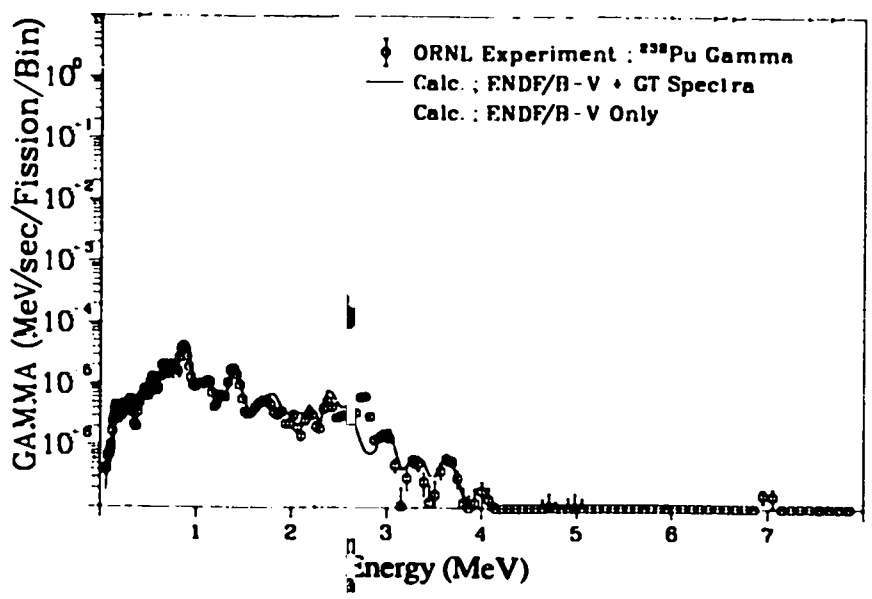

Fig. 104. Gamma spectrum after ^{239}Pu thermal fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11950.0 sec).

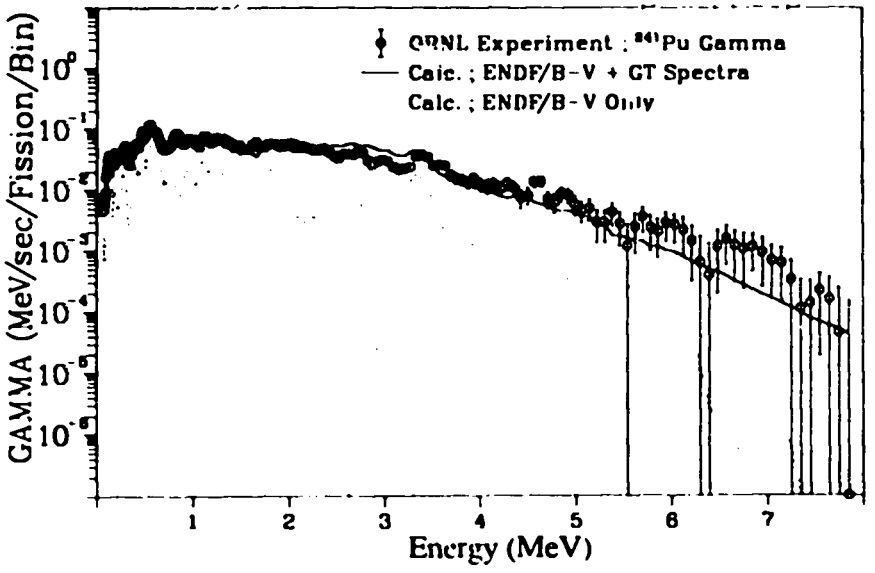

Fig. 105. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec).

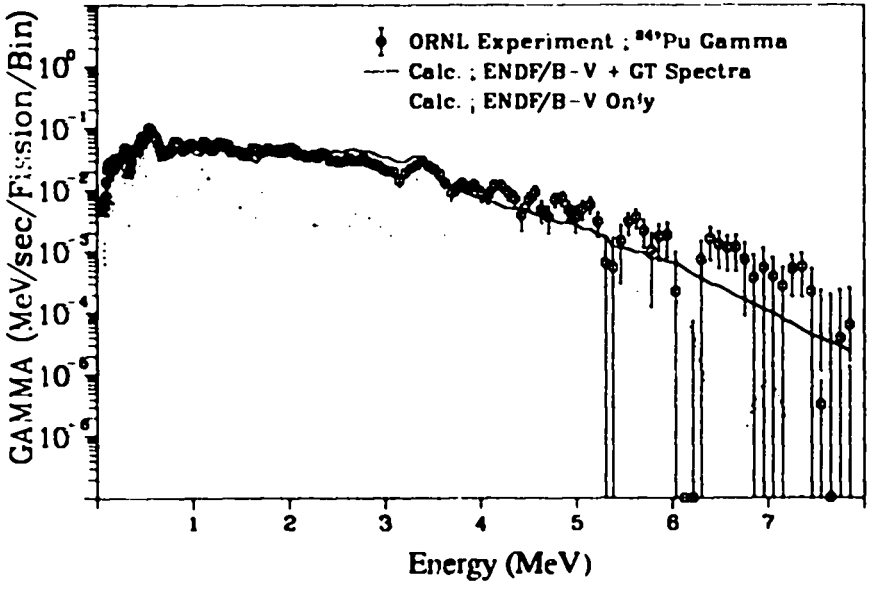

Fig. 106. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 3.2 sec).

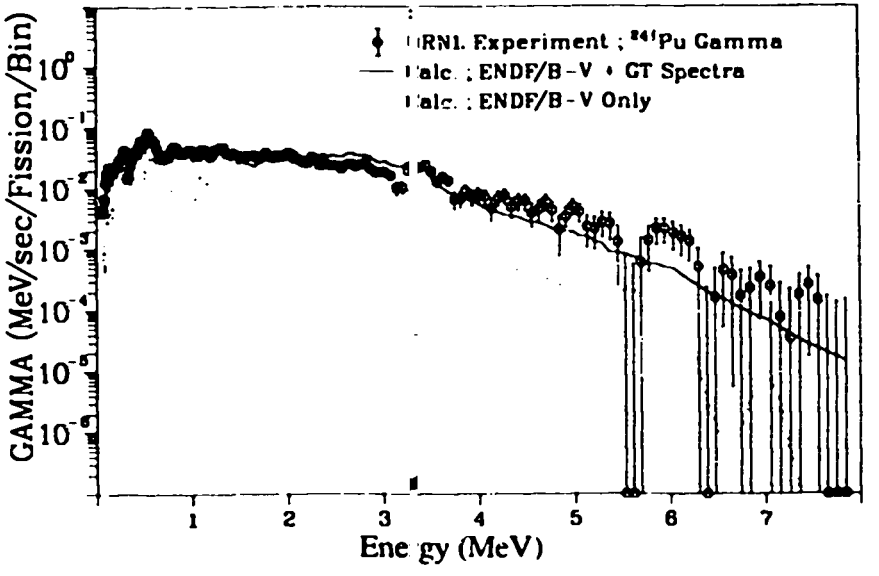

Fig. 107. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 4.2 sec).

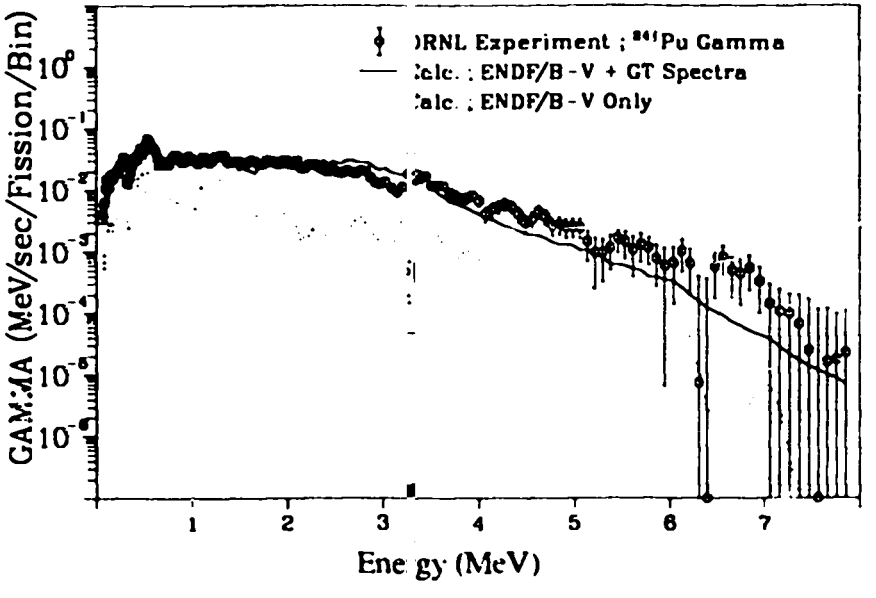

Fig. 108. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 5.7 sec).

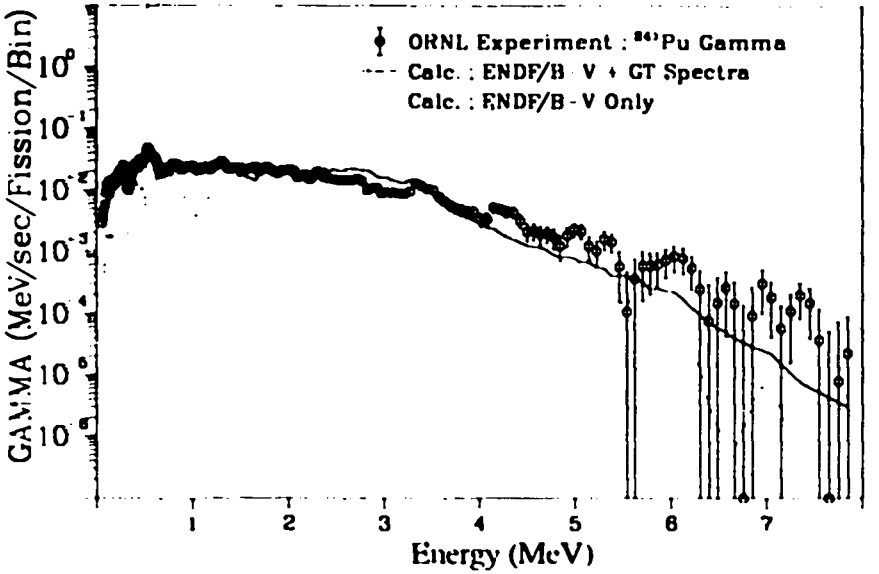

Fig. 109. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 8.2 sec).

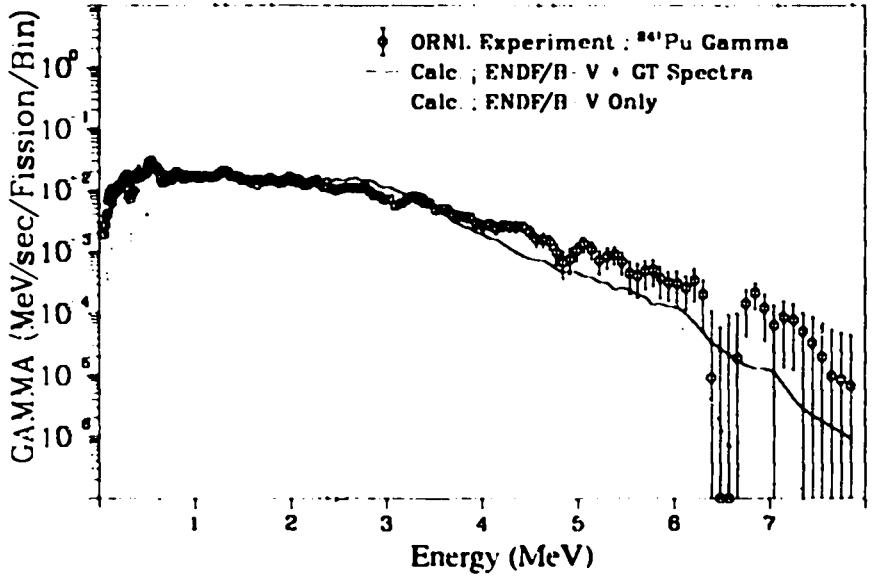

Fig. 110. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 12.2 sec).

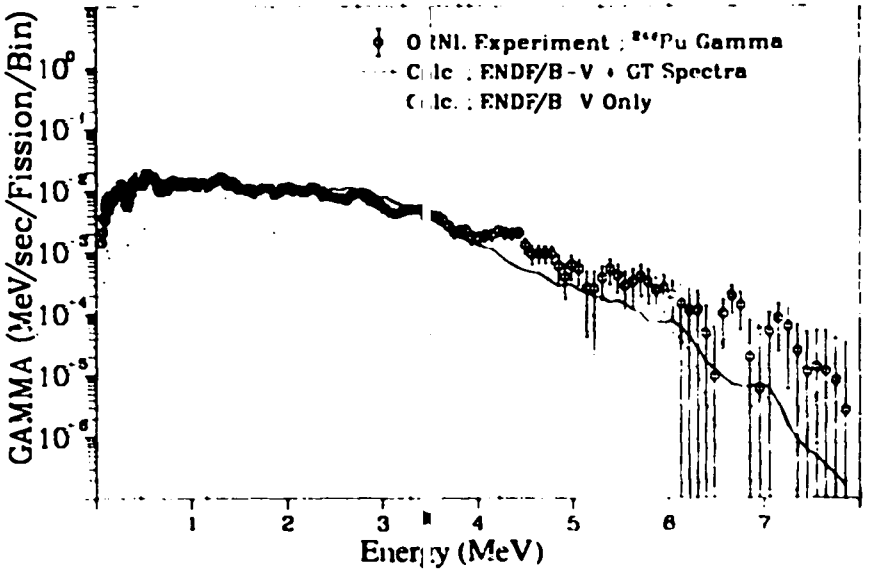

Fig. 111. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 17.2 sec).

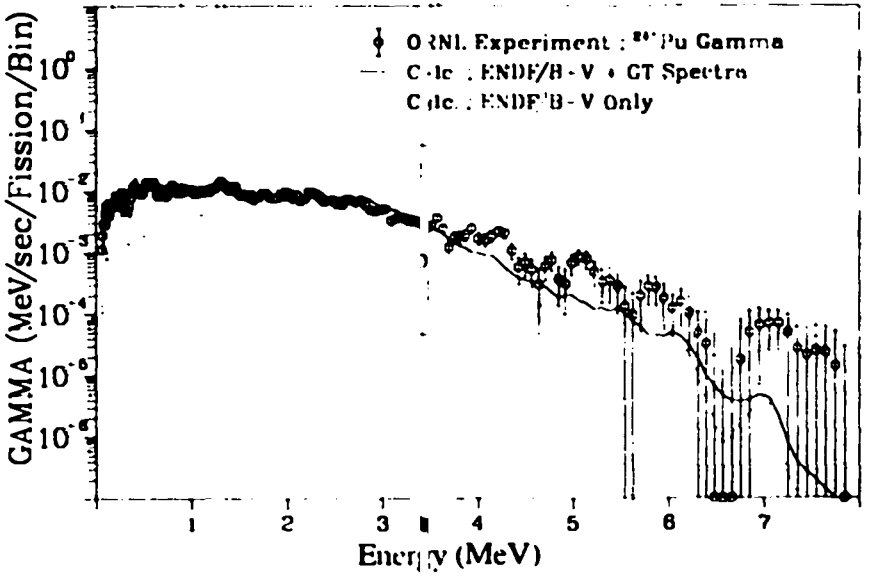

Fig. 112. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 22.2 sec).

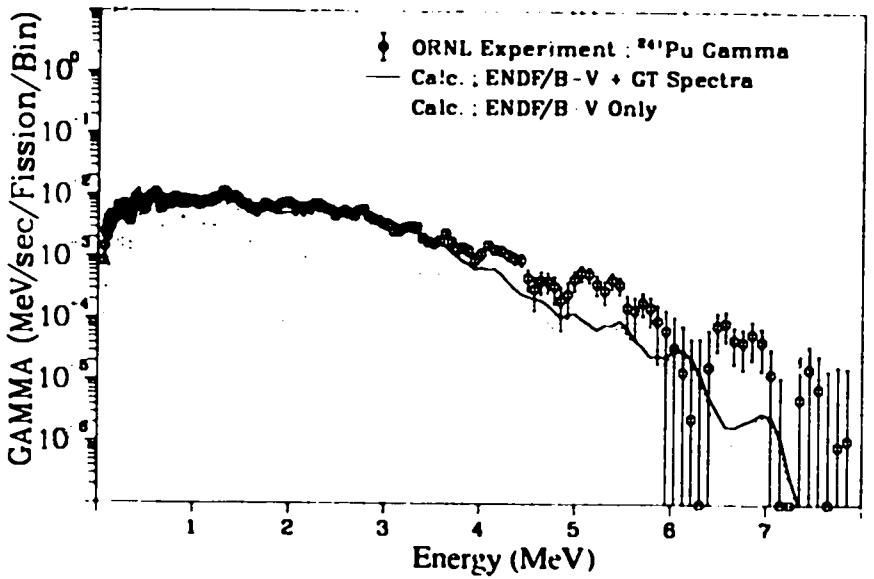

Fig. 113. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ =29.7 sec).

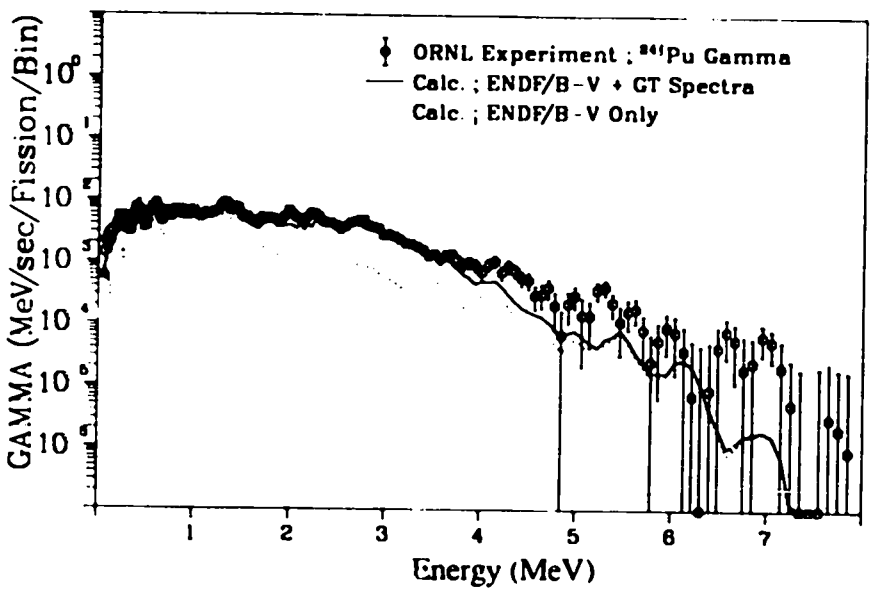

Fig. 114. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 39.7 sec).

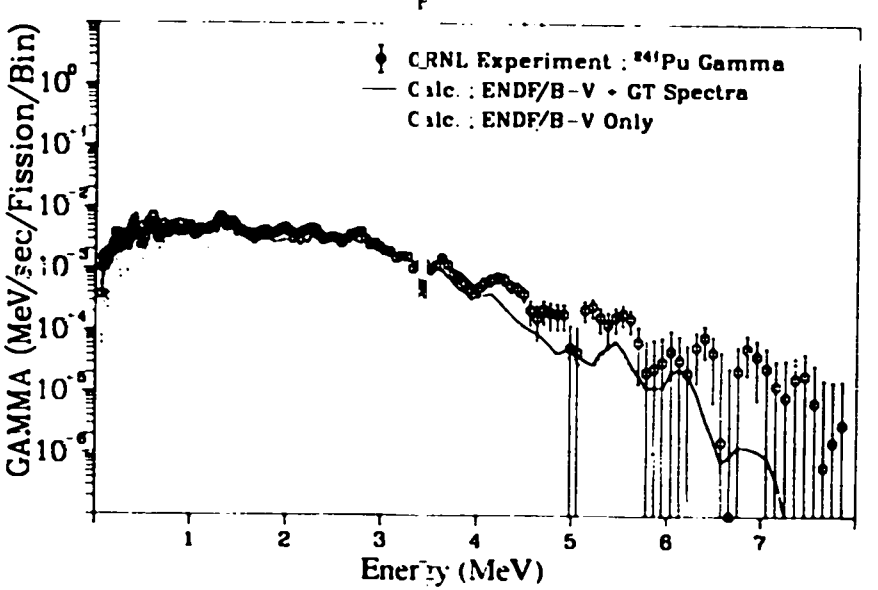

Fig. 115. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 52.2 sec).

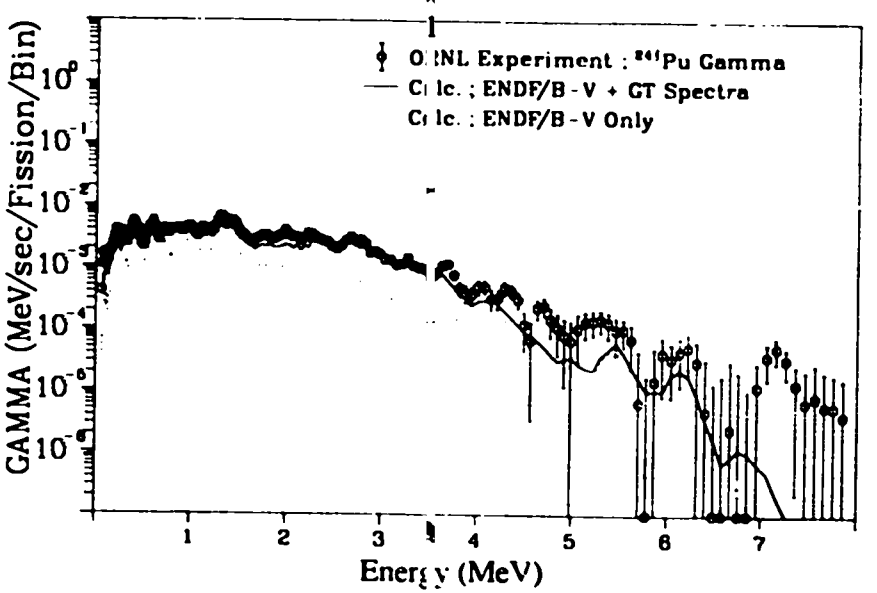

Fig. 116. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 67.2 sec).

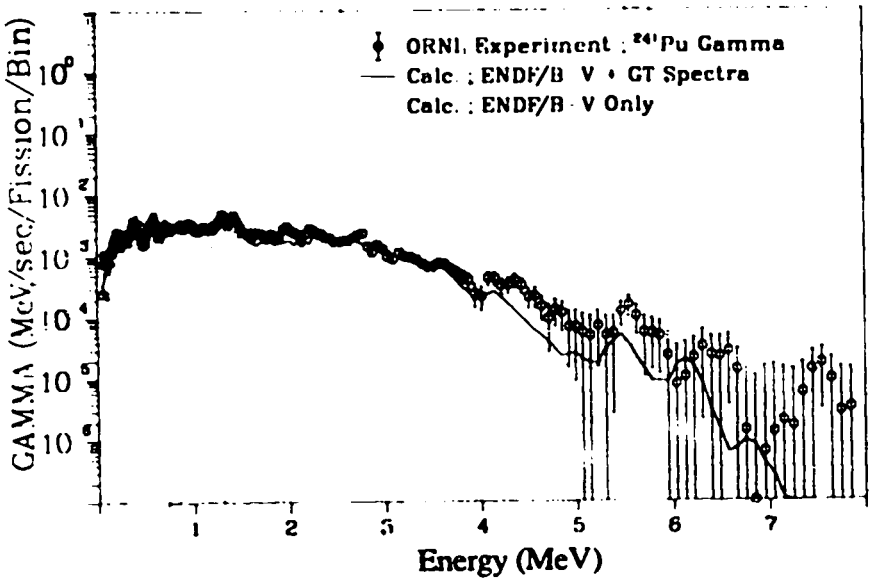

Fig. 117. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 82.2 sec).

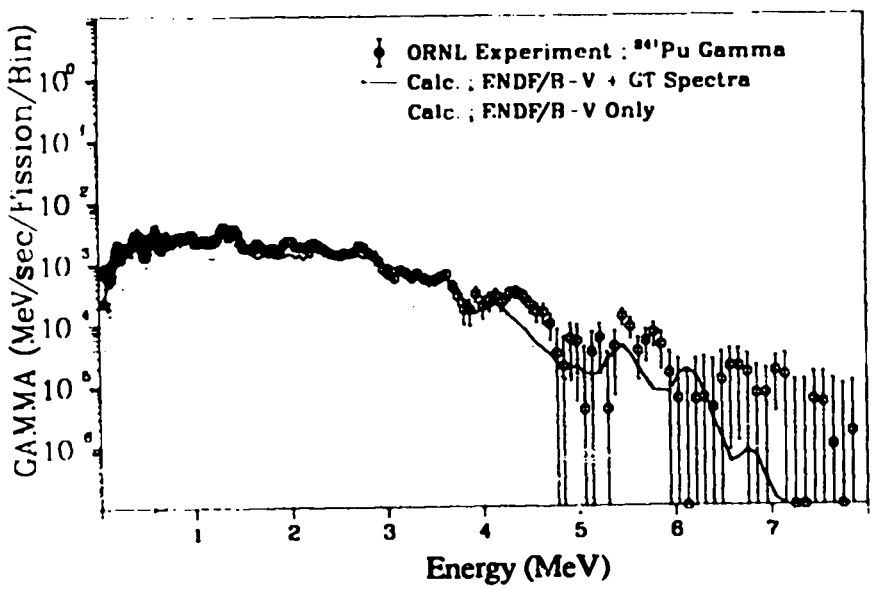

Fig. 118. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 99.7 sec).

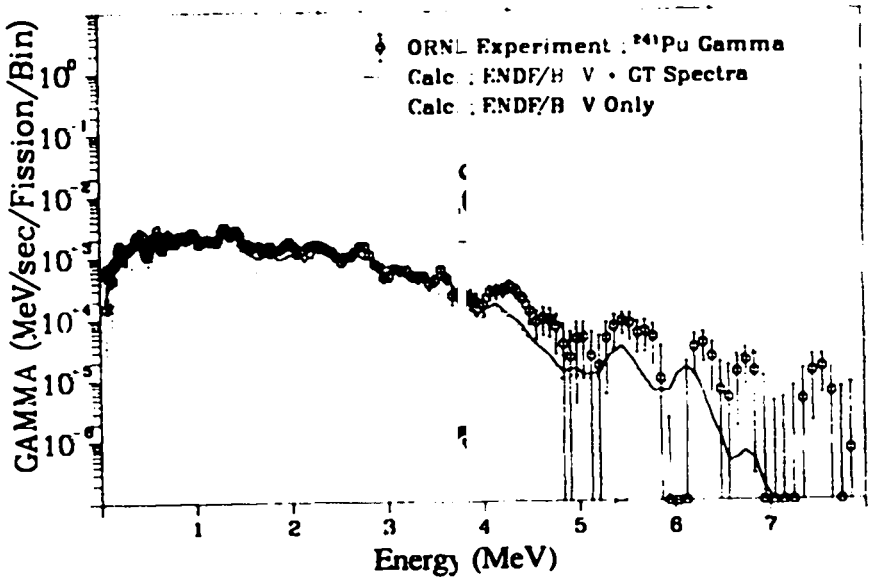

Fig. 119. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 119.7 sec).

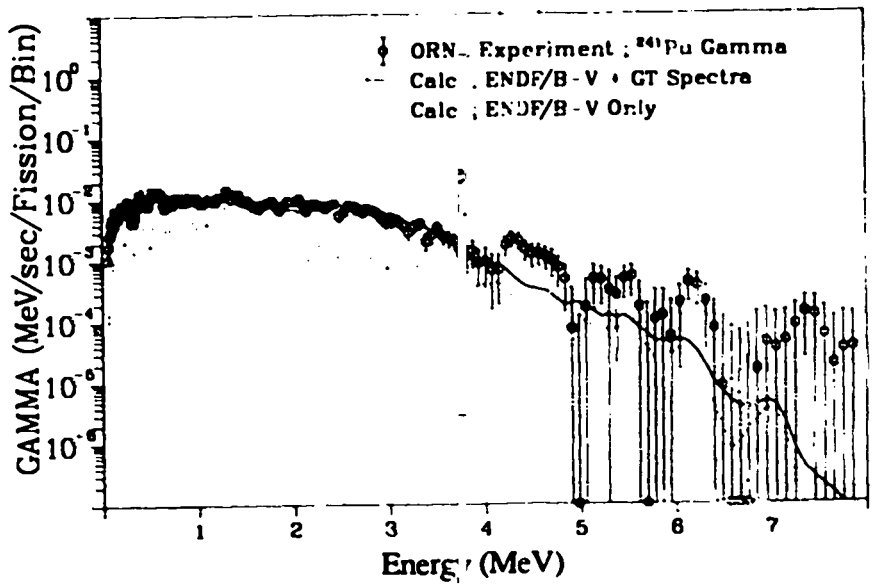

Fig. 120. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 20.2 sec).

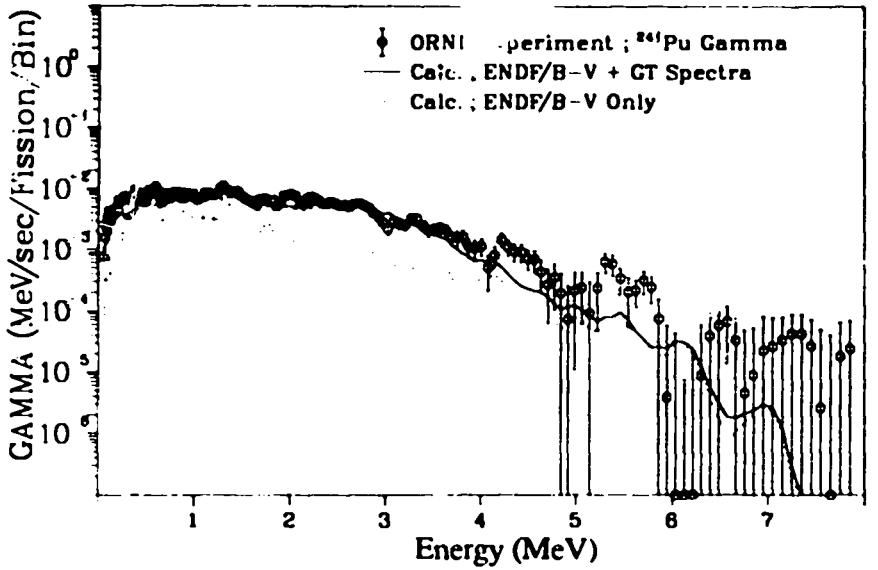

Fig. 121. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 27.7 sec).

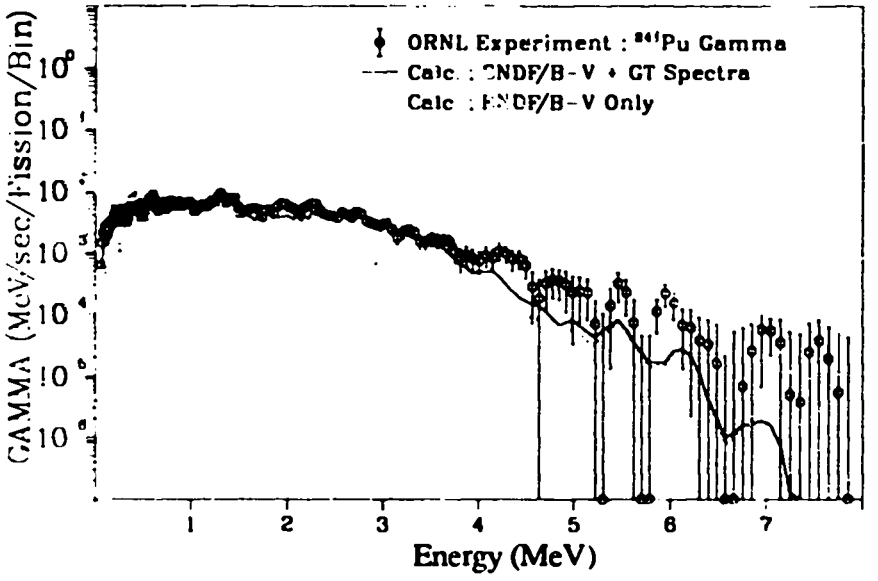

Fig. 122. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 37.7 sec).

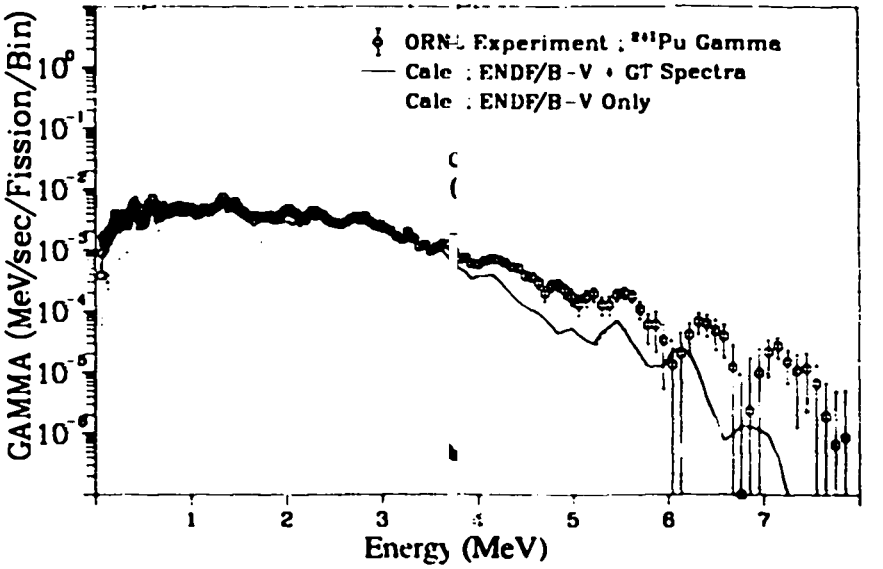

Fig. 123. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 50.2 sec).

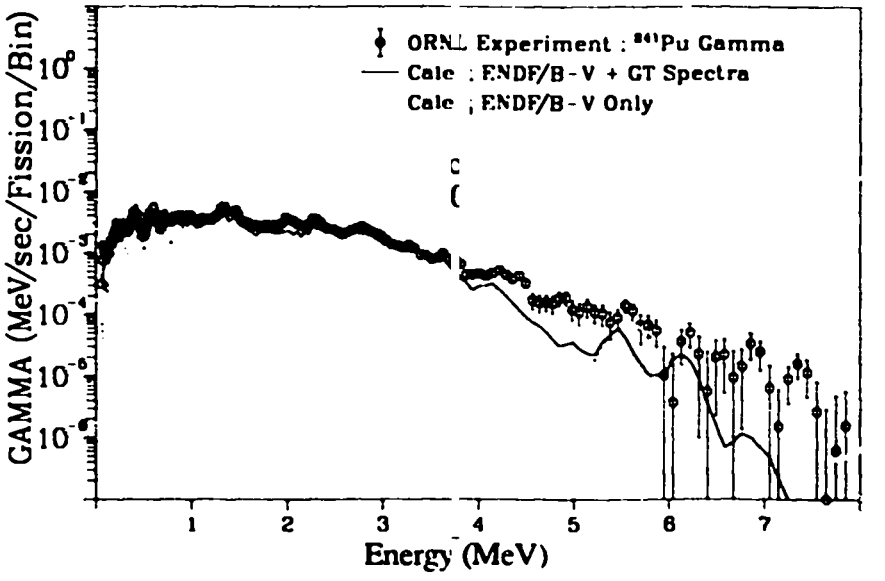

Fig. 124. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 65.2 sec).

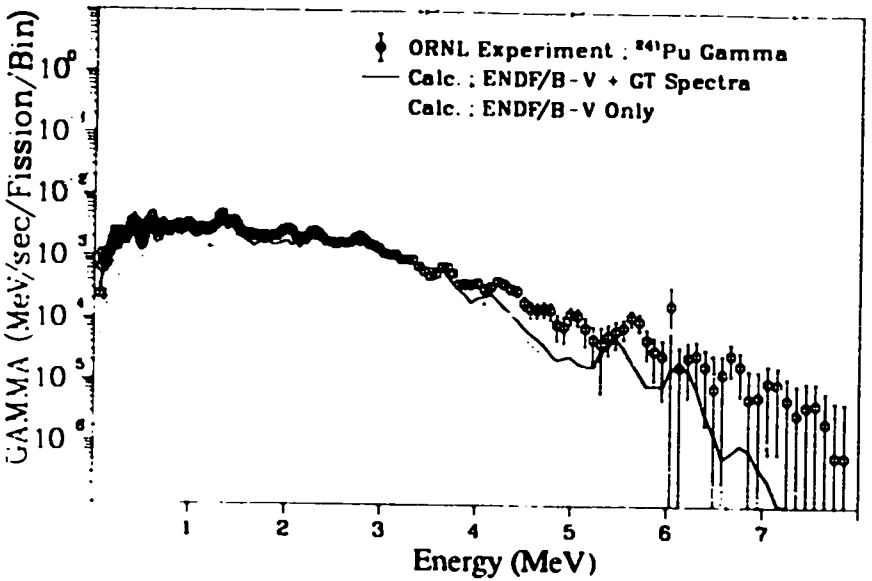

Fig. 125. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 80.2 sec).

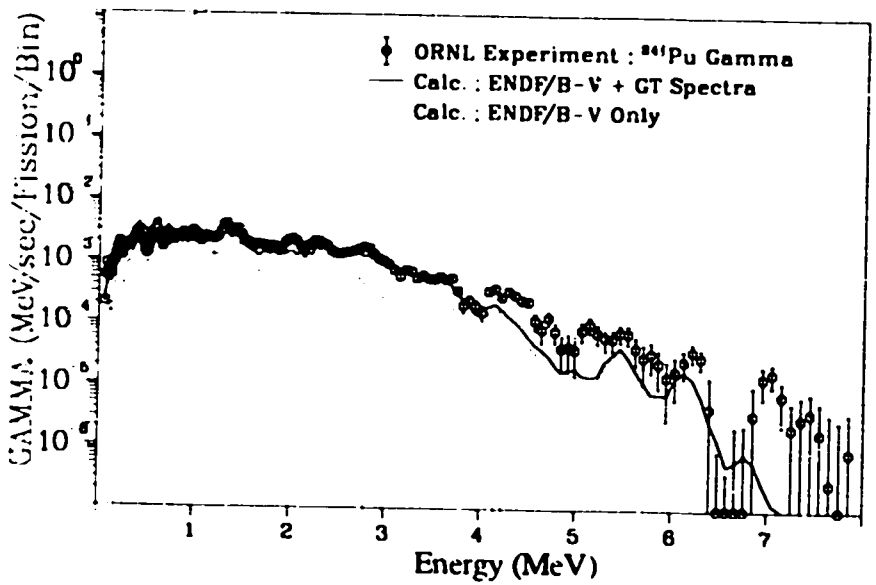

Fig. 126. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 97.7 sec).

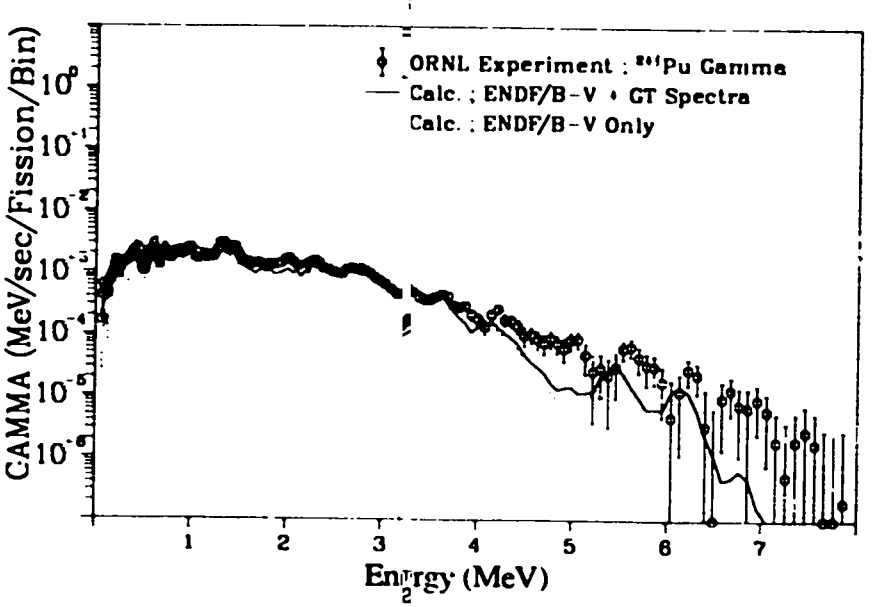

Fig. 127. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 117.7 sec).

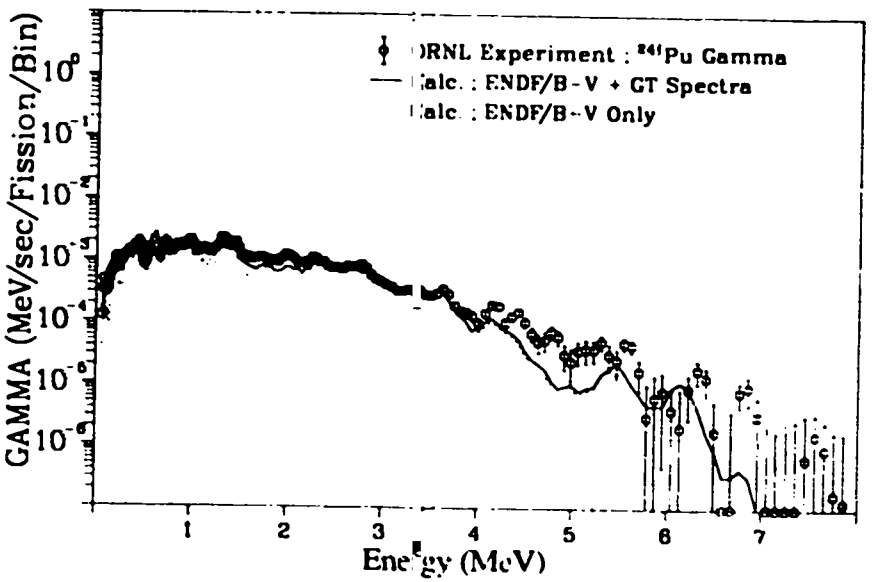

Fig. 128. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 147.7 sec).

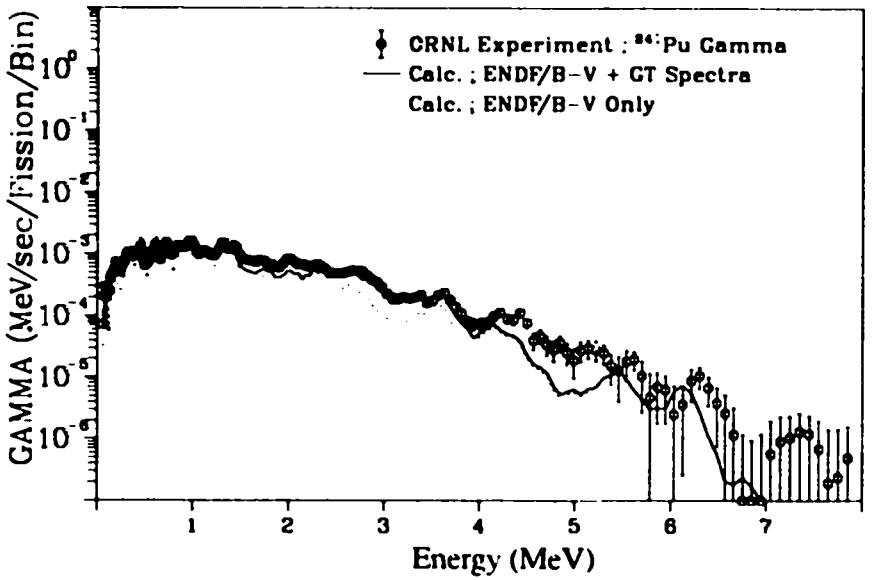

Fig. 129. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 197.7 sec).

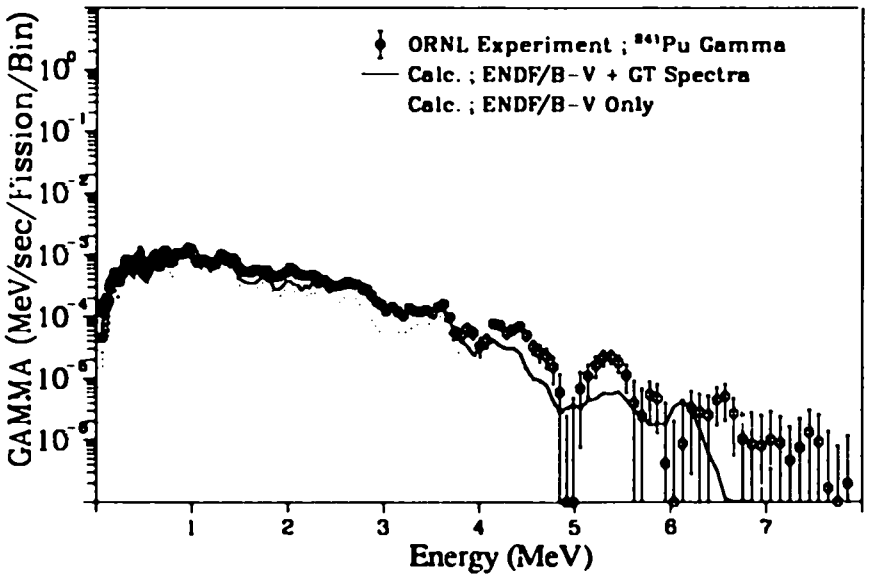

Fig. 130. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 262.7 sec).

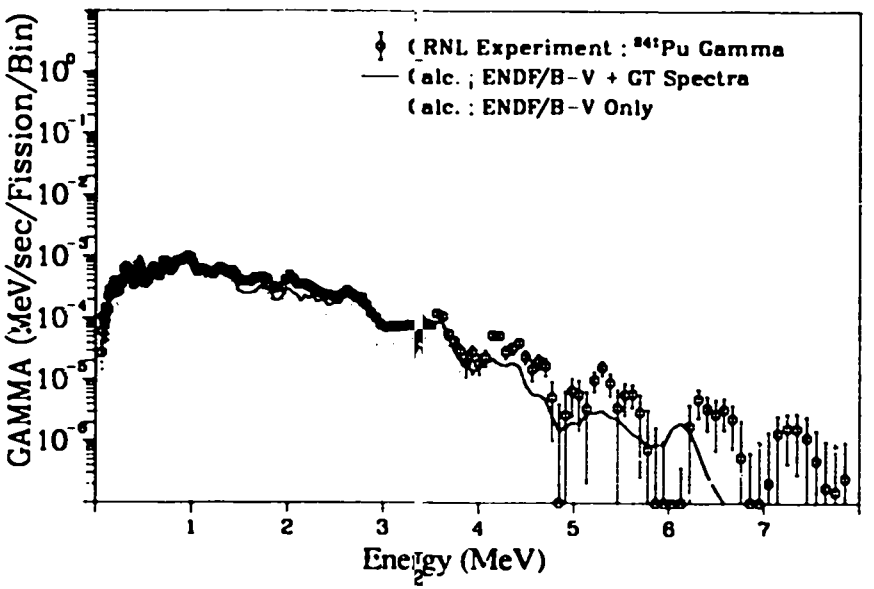

Fig. 131. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 347.7 sec).

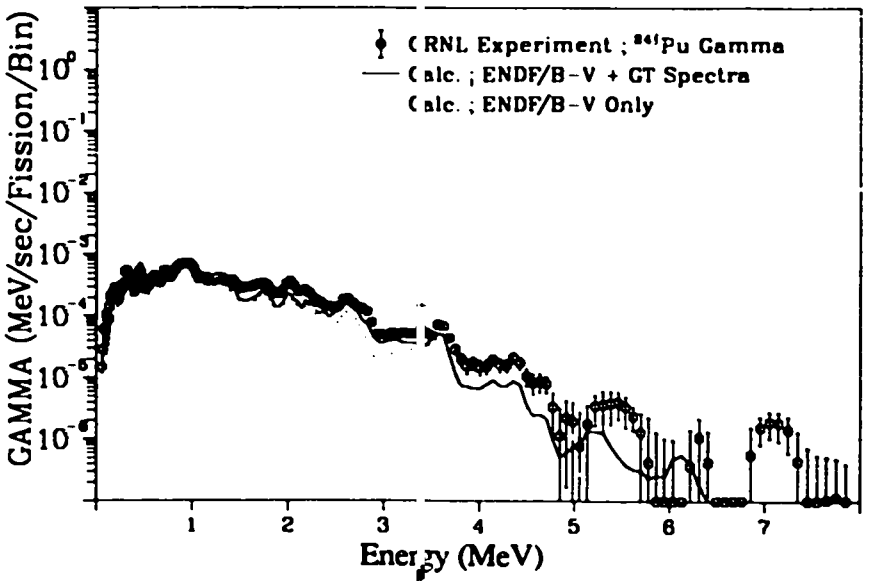

Fig. 132. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 497.7 sec).

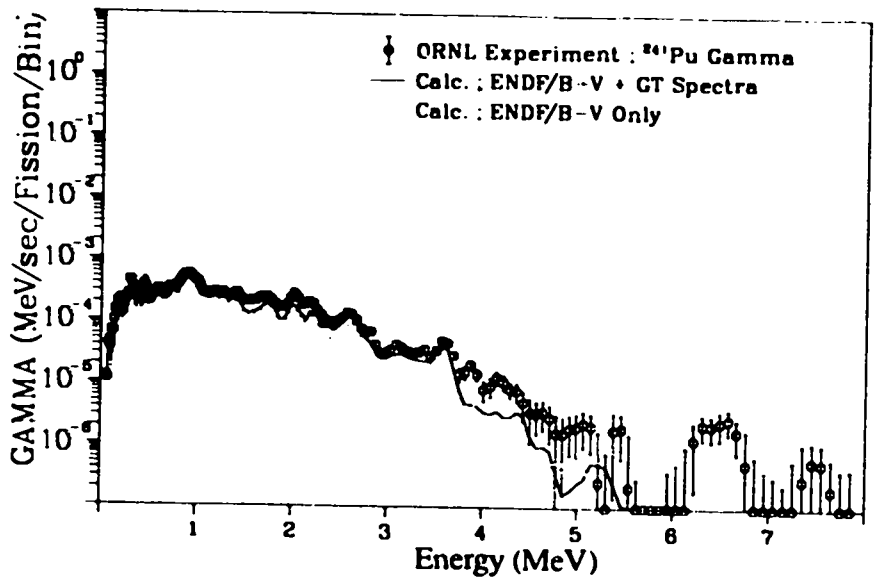

Fig. 133. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 697.7 sec).

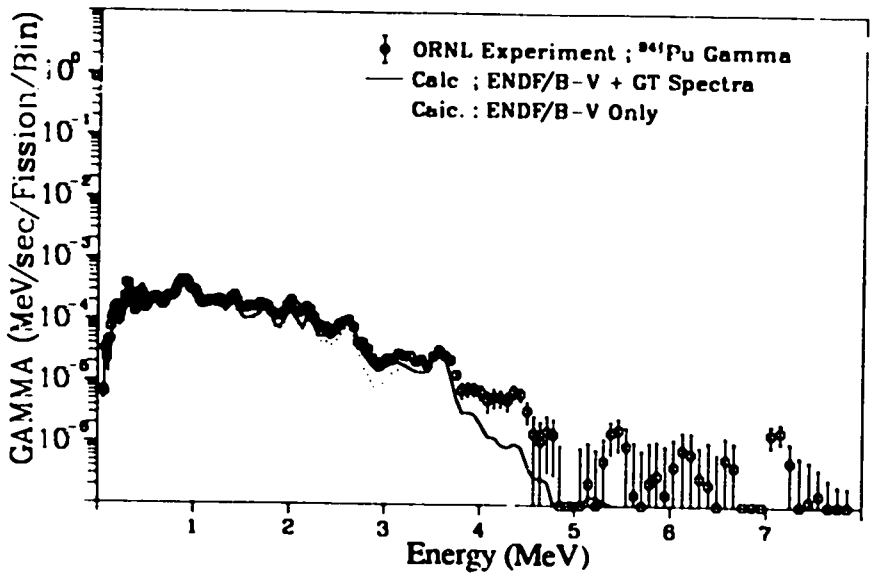

Fig. 134. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 5.0 sec, $T_{cool.}$ = 997.7 sec).

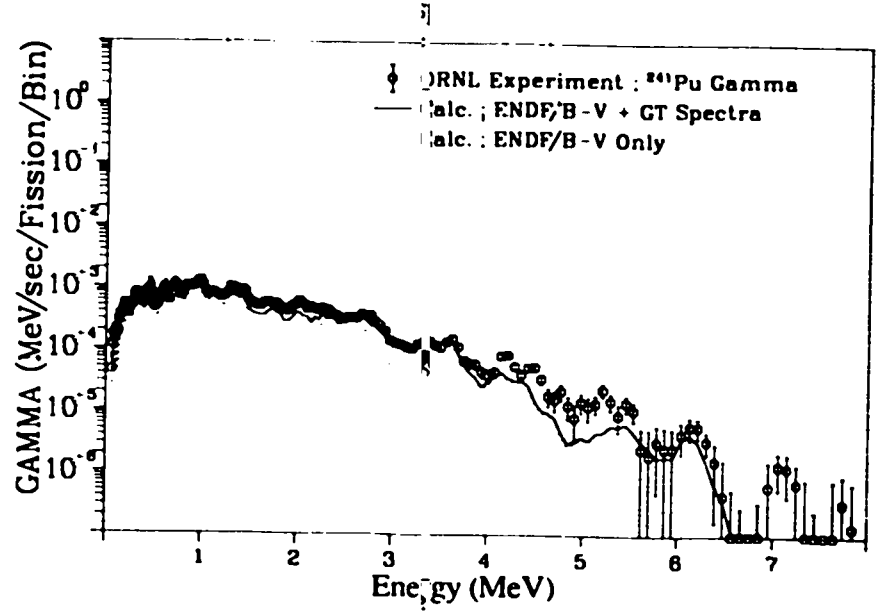

Fig. 135. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 235.0 sec).

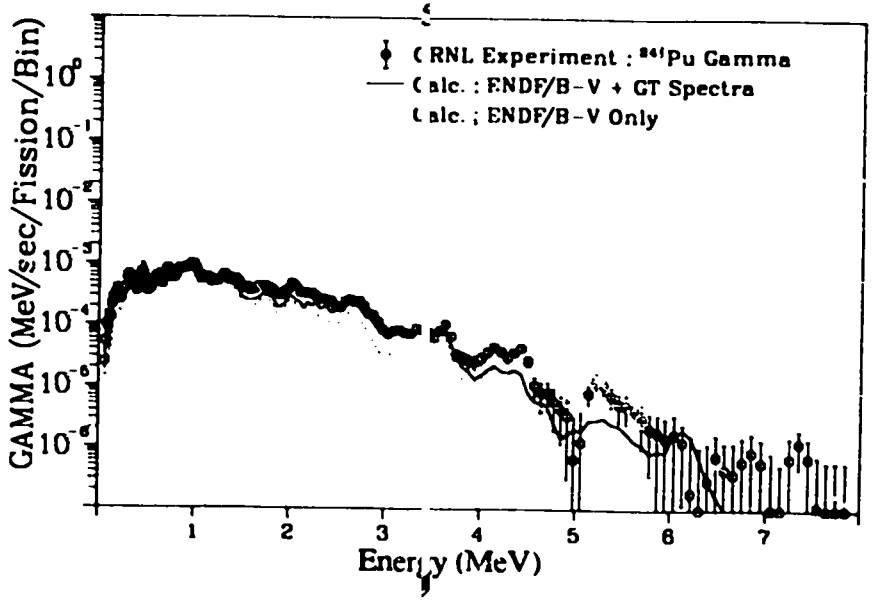

Fig. 136. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 325.0 sec).

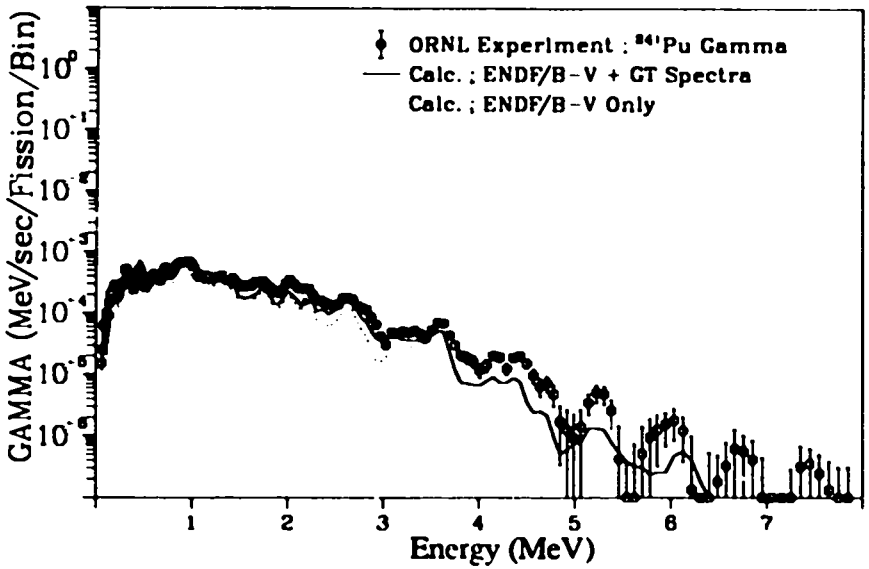

Fig. 137. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 475.0 sec).

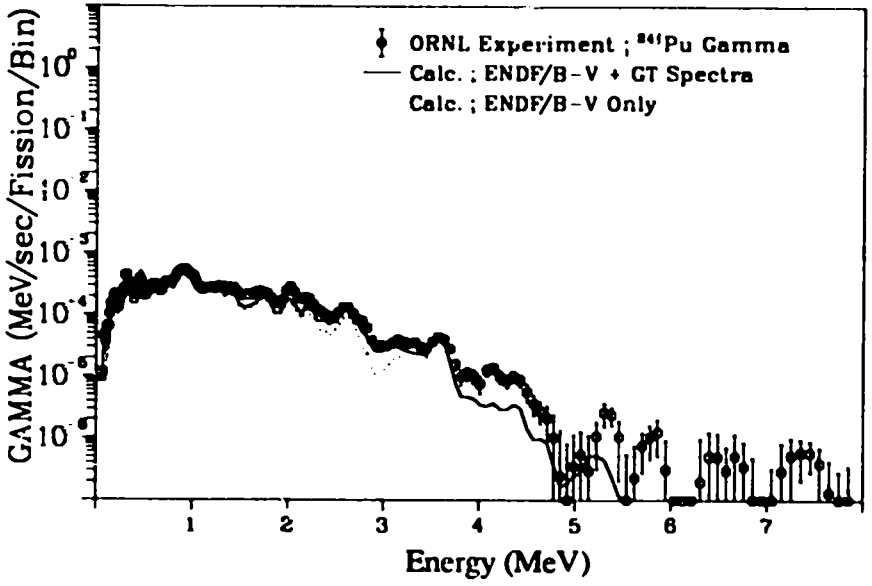

Fig. 138. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 675.0 sec).

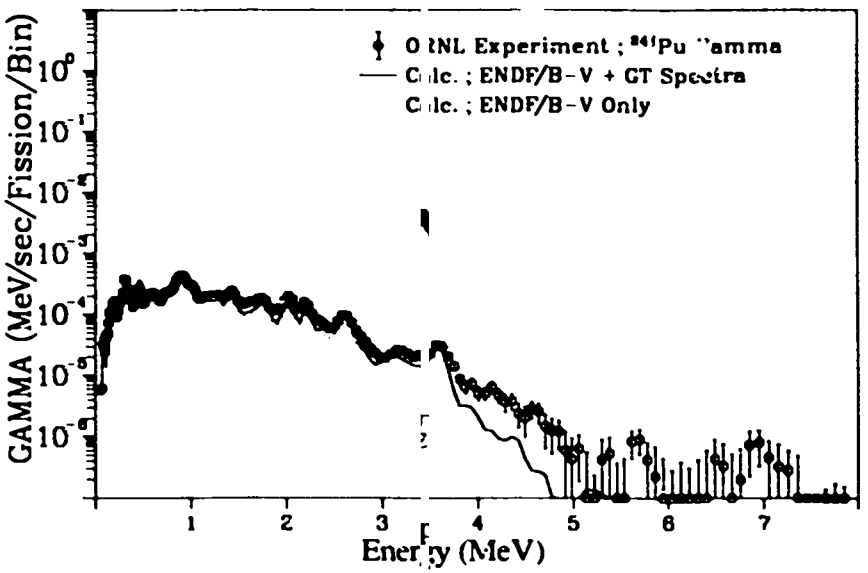

Fig. 139. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 975.0 sec).

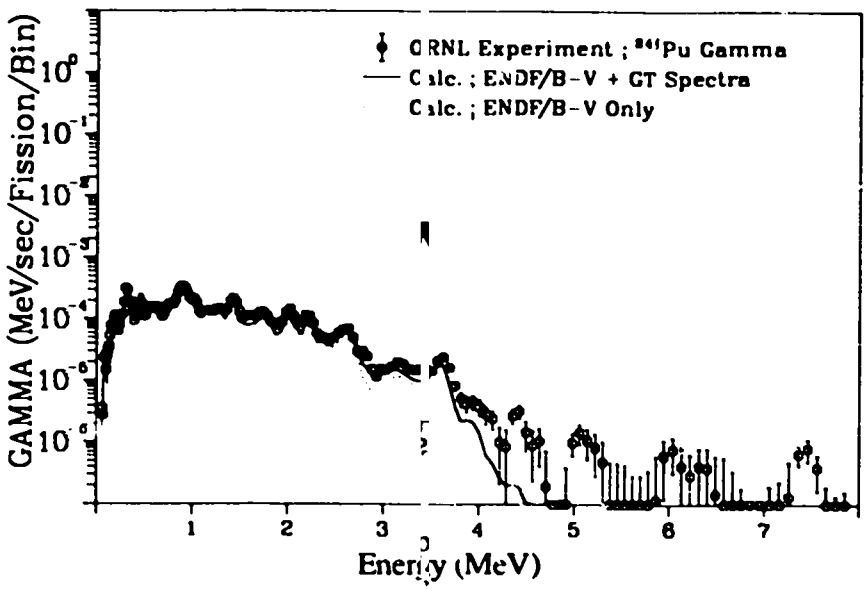

Fig. 140. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 1375.0 sec).

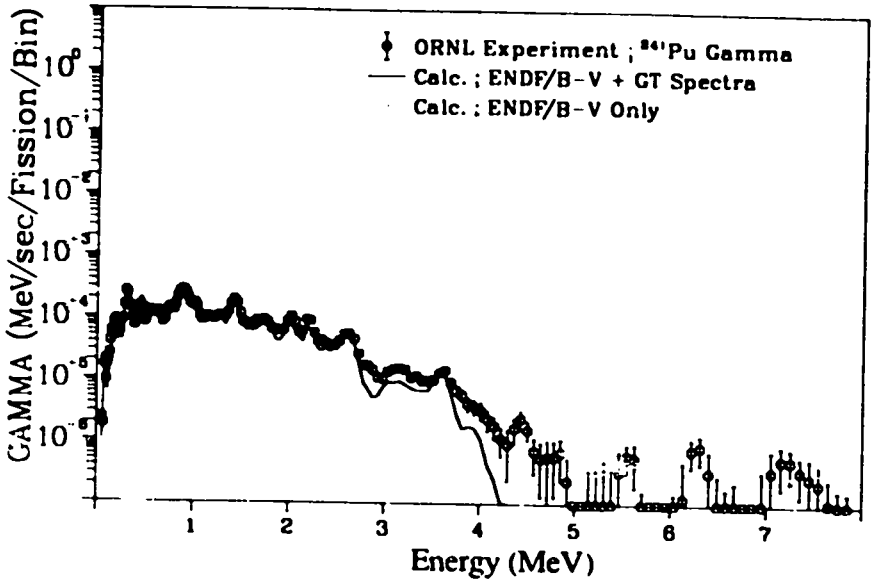

Fig. 141. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 1775.0 sec).

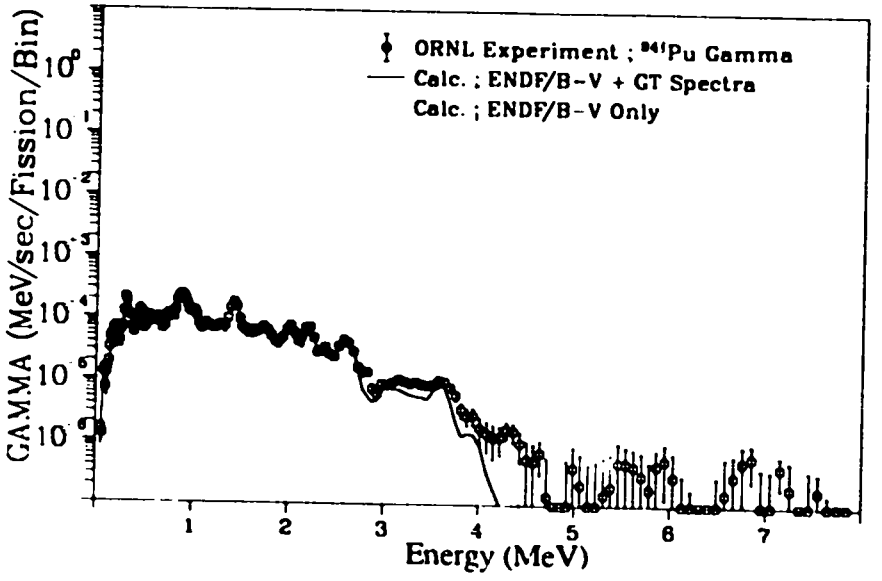

Fig. 142. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 2225.0 sec).

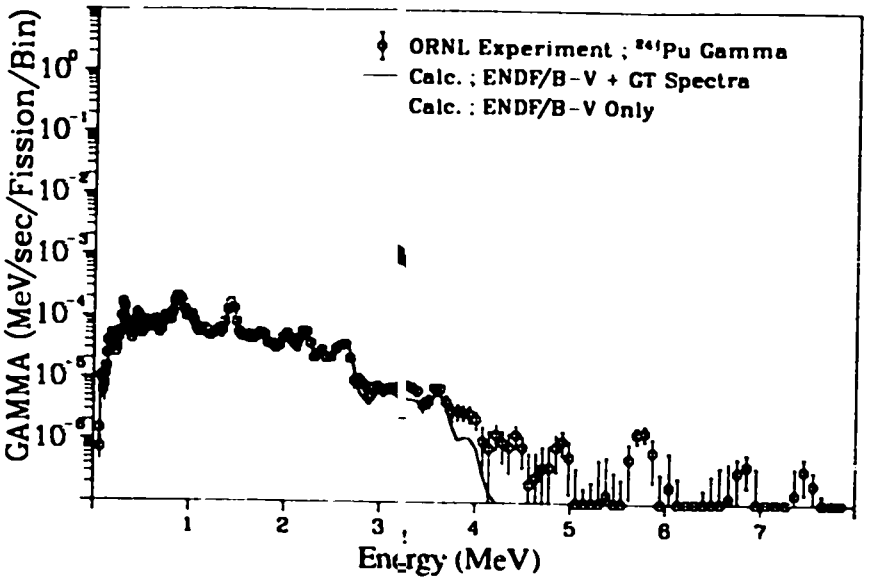

Fig. 143. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 2725.0 sec).

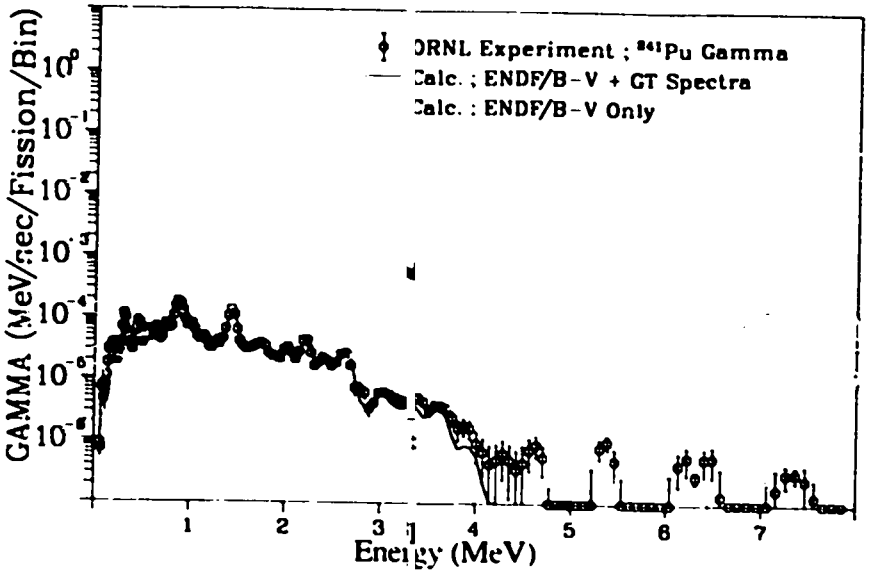

Fig. 144. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 3475.0 sec).

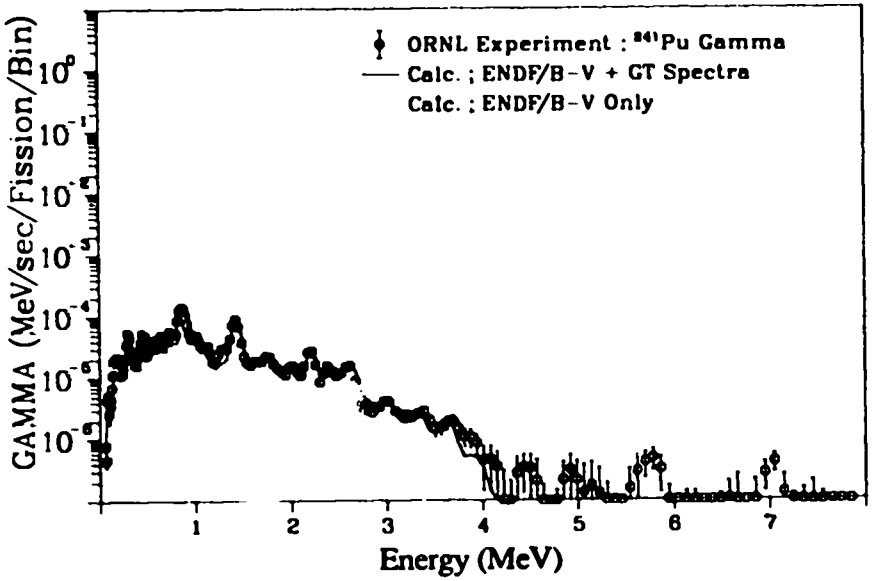

Fig. 145. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 4975.0 sec).

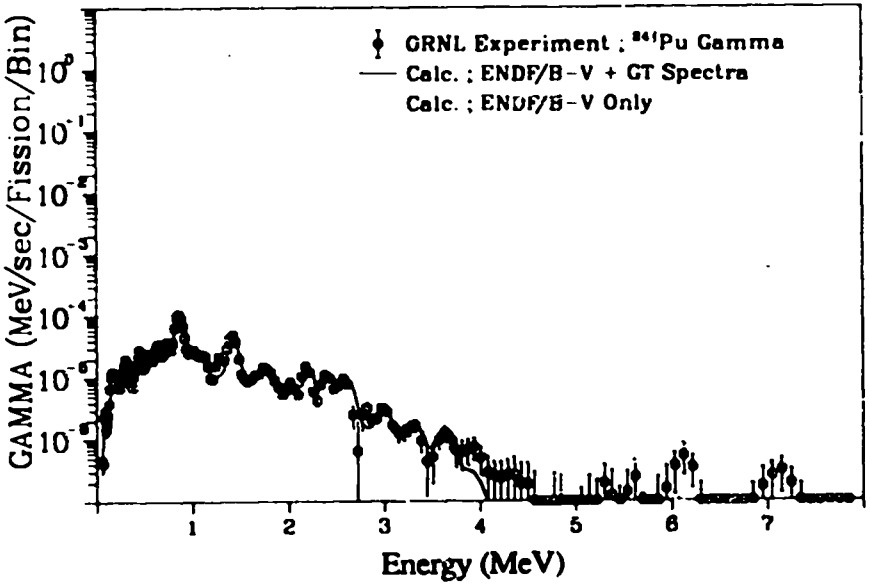

Fig. 146. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 6975.0 sec).

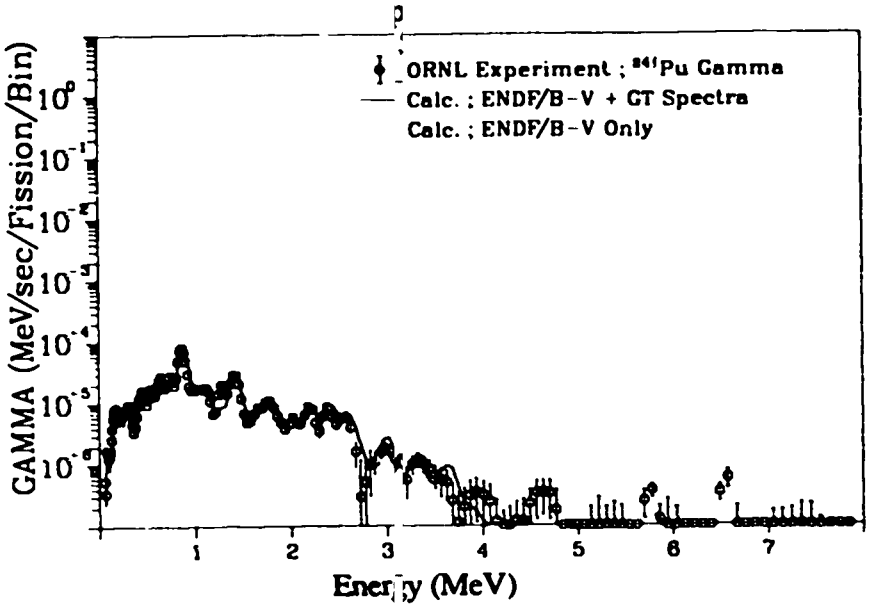

Fig. 147. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 8975.0 sec).

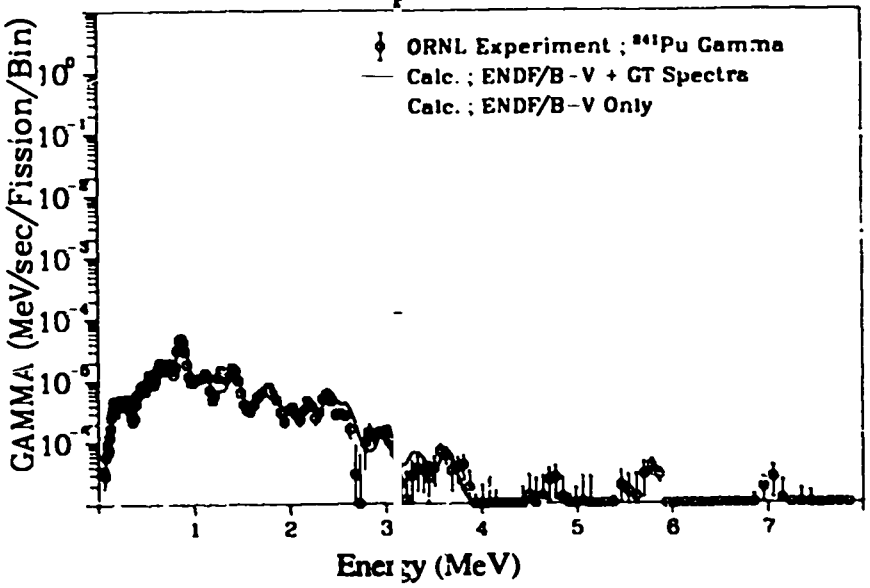

Fig. 148. Gamma spectrum after ^{241}Pu thermal fission ($T_{irrad.}$ = 50.0 sec, $T_{cool.}$ = 11975.0 sec).

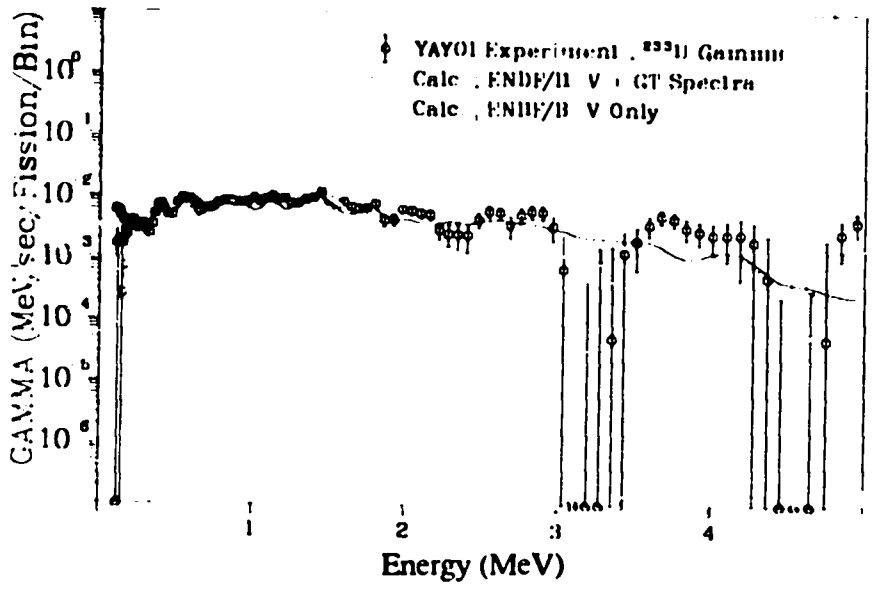

Fig. 149. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 26.0 sec).

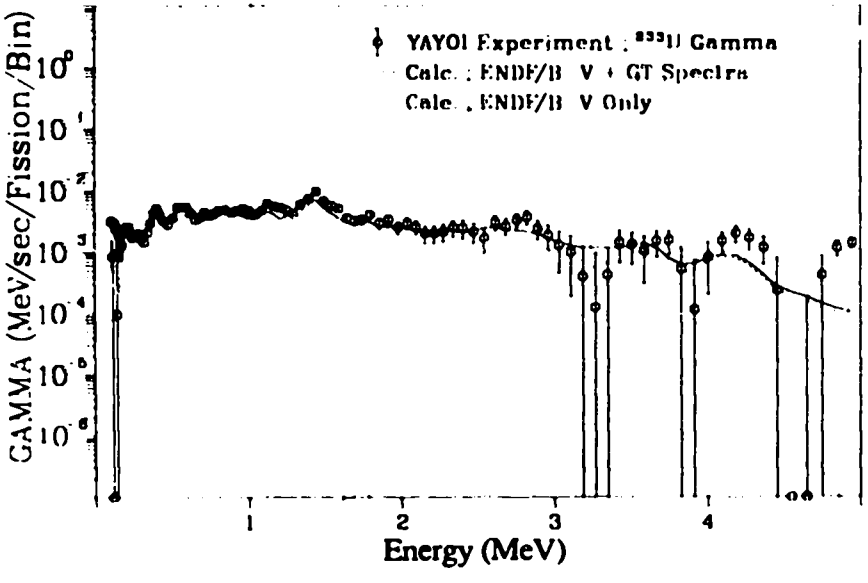

Fig. 150. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 45.0 sec).

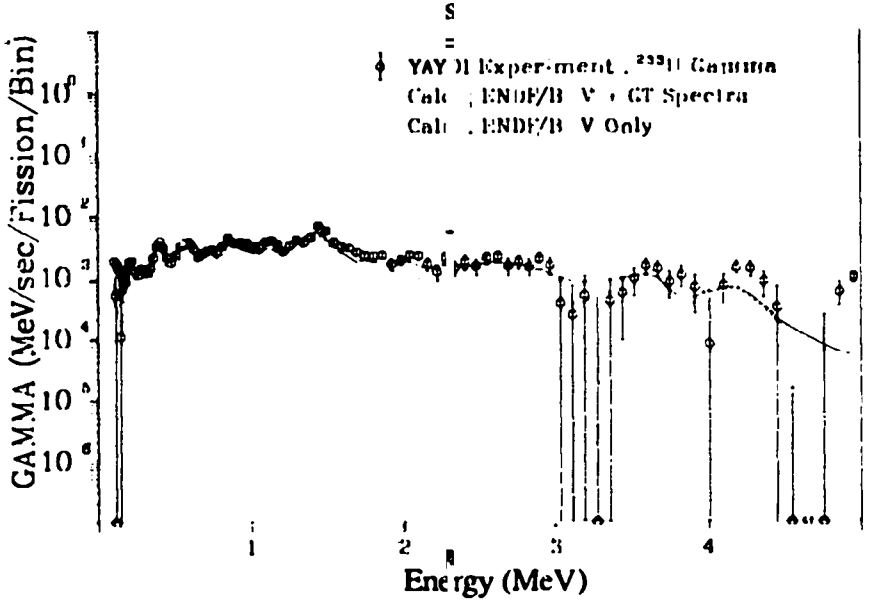

Fig. 151. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 70.0 sec).

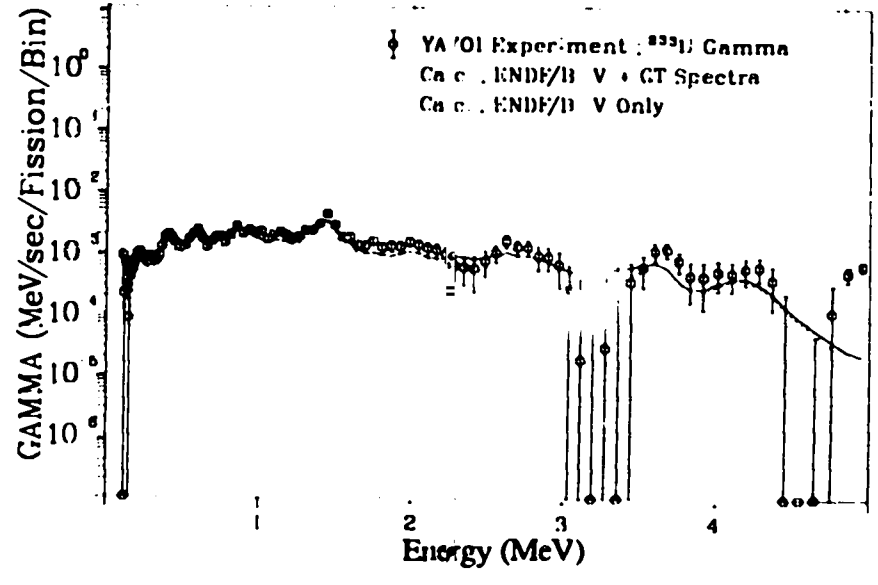

Fig. 152. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 110.0 sec).

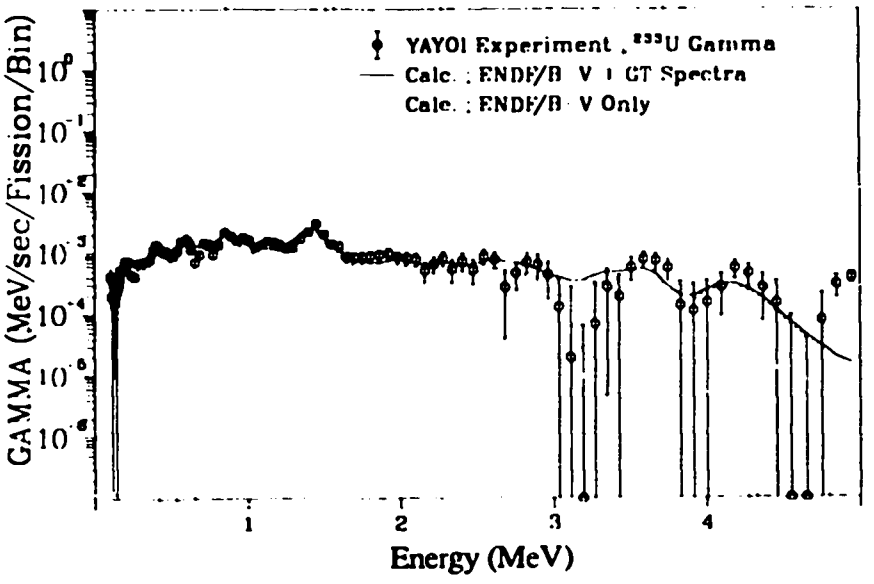

Fig. 153. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 140.0 sec).

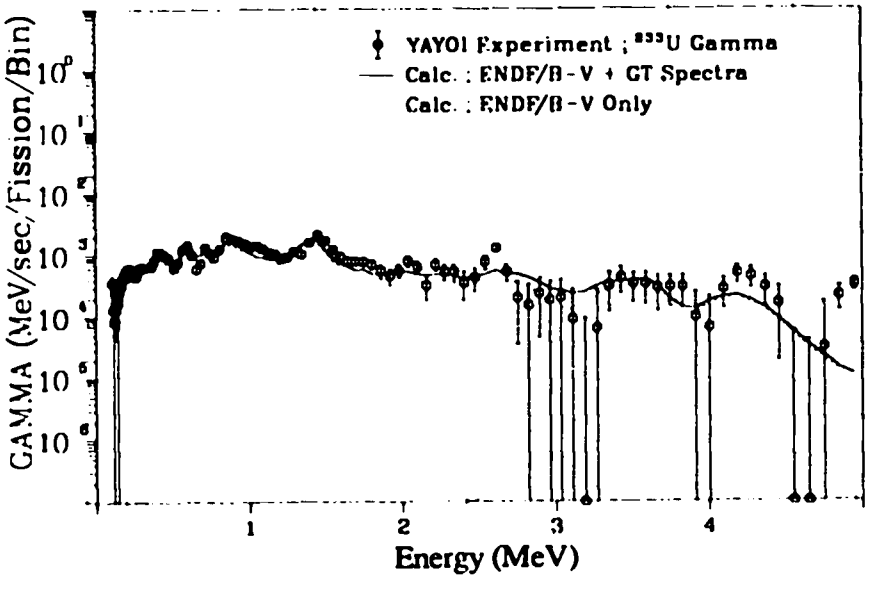

Fig. 154. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 180.0 sec).

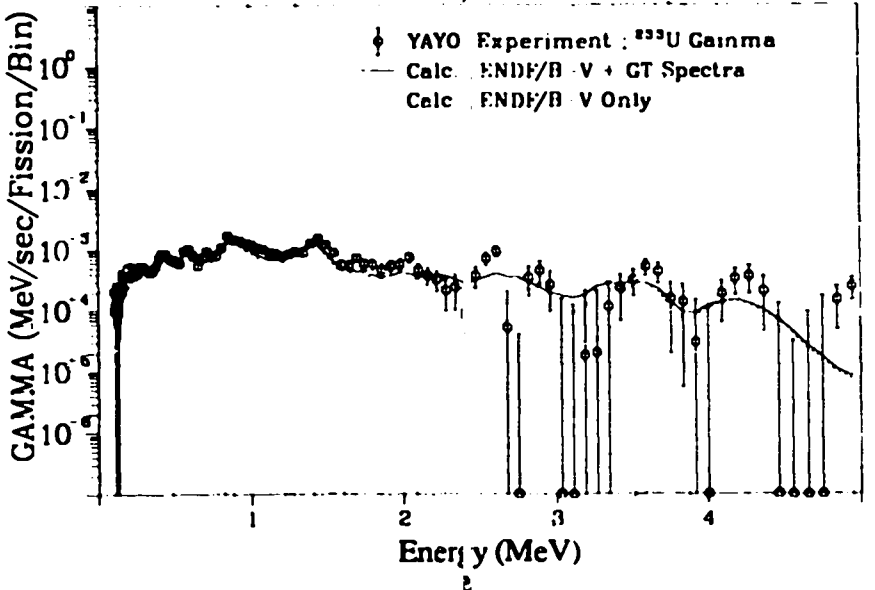

Fig. 155. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 230.0 sec).

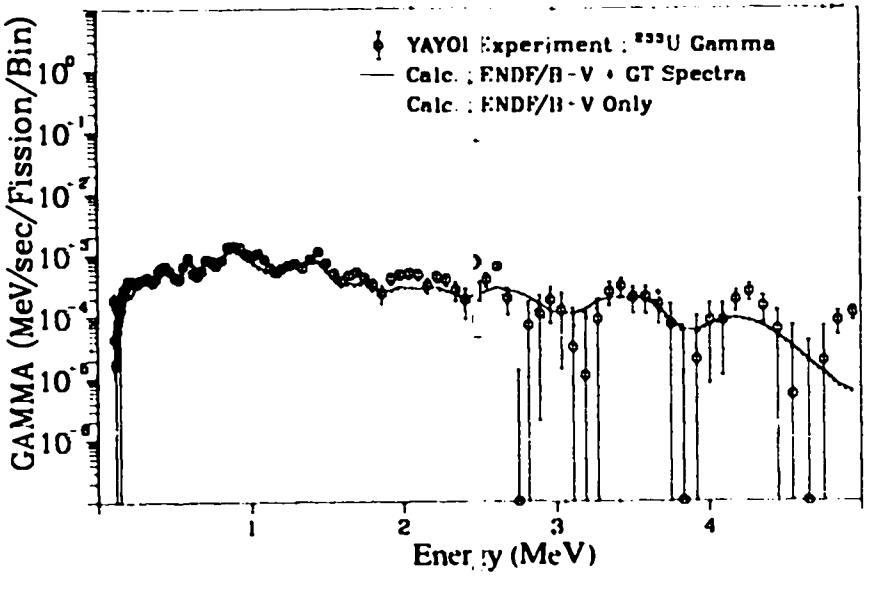

Fig. 156. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 290.0 sec).

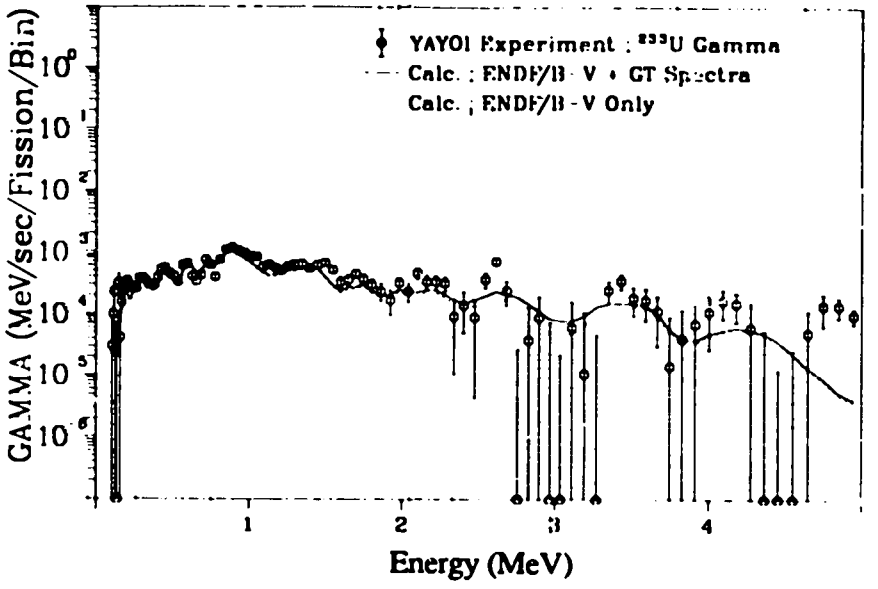

Fig. 157. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 360.0 sec).

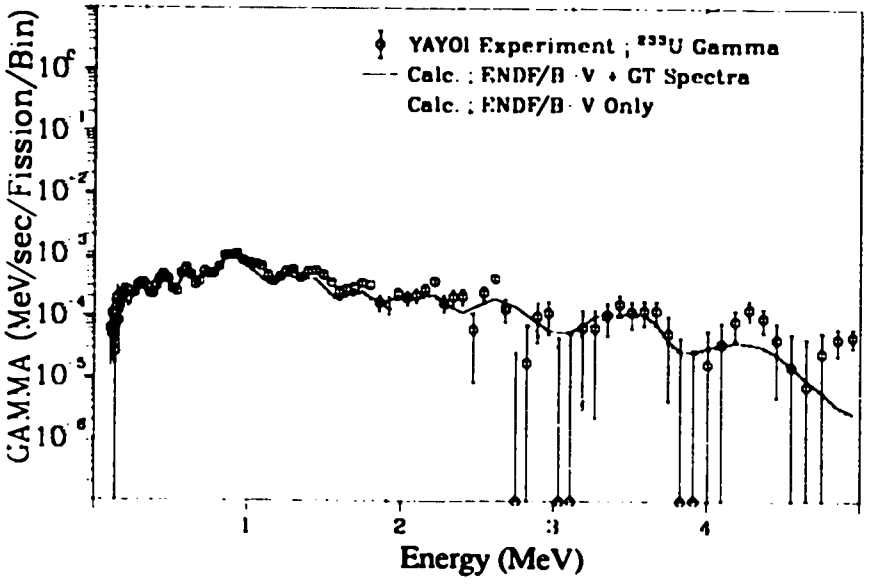

Fig. 158. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 450.0 sec).

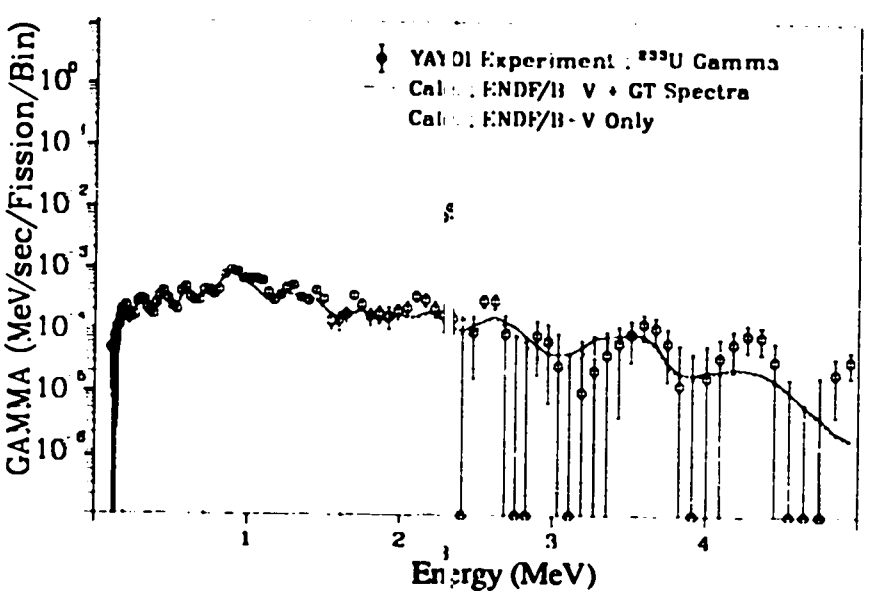

Fig. 159. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 550.0 sec).

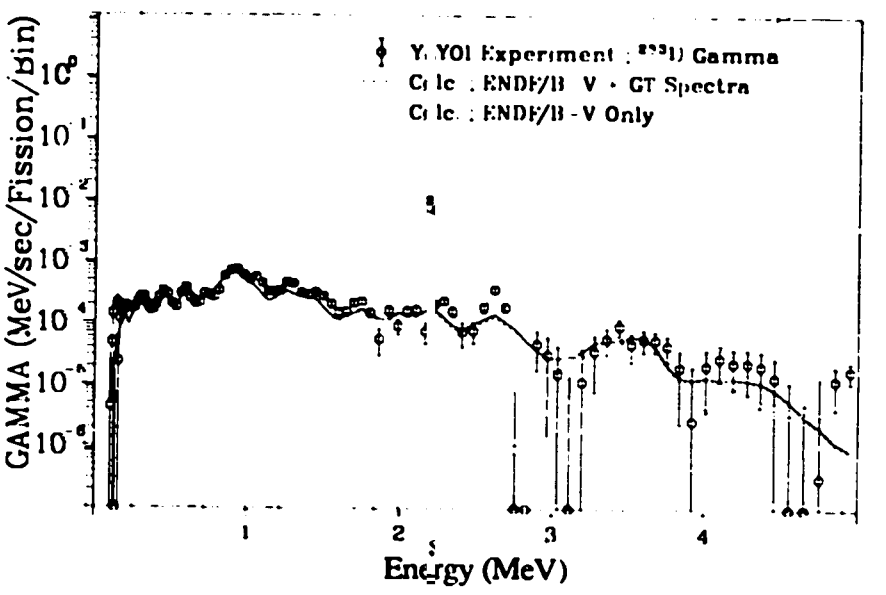

Fig. 160. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 700.0 sec).

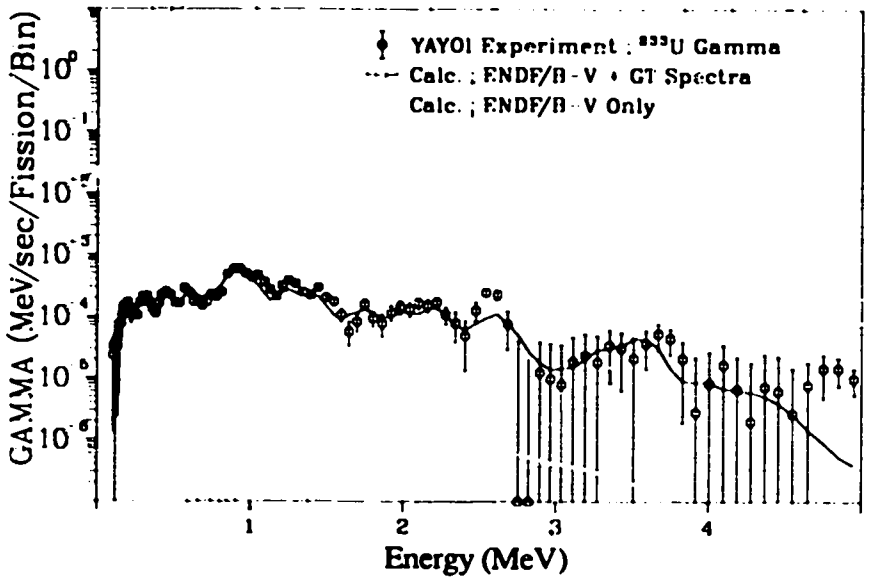

Fig. 161. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 900.0 sec).

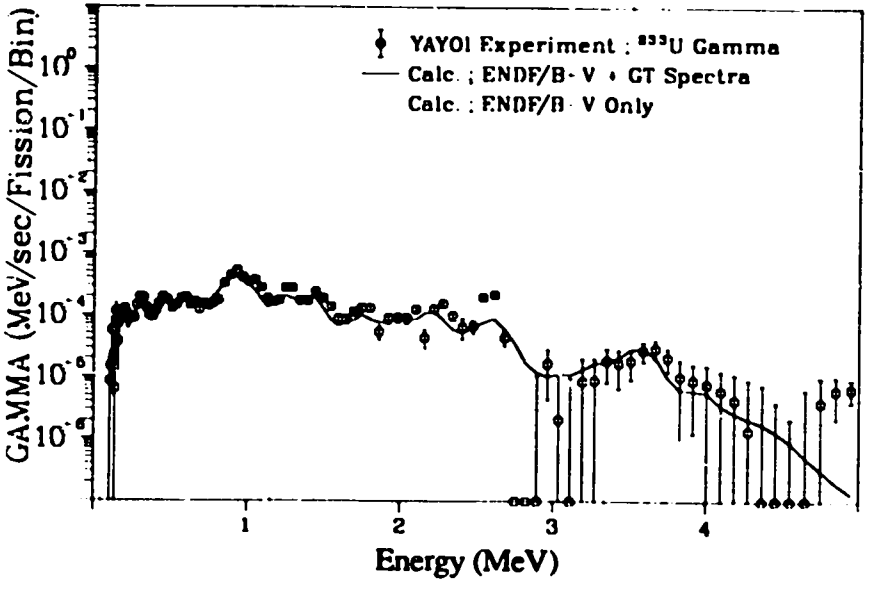

Fig. 162. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1200.0 sec).

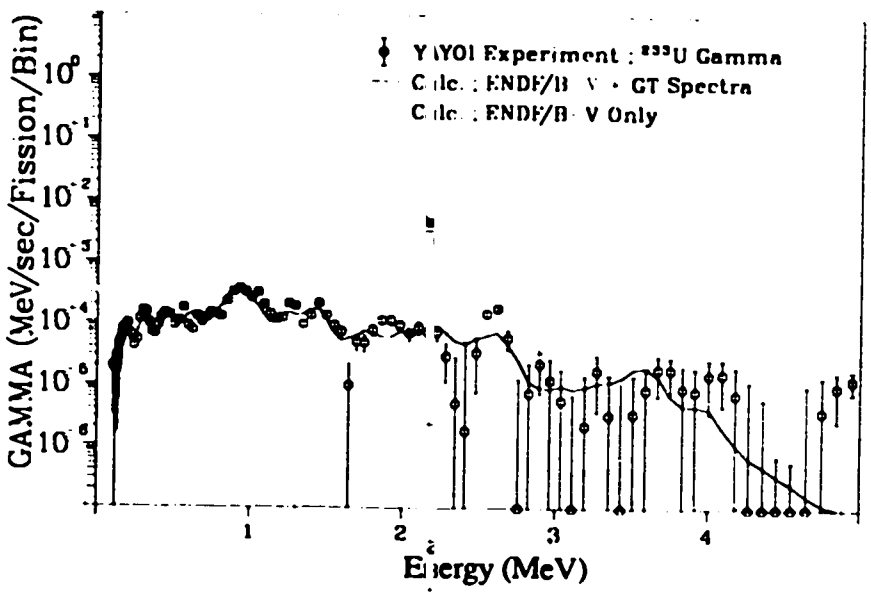

Fig. 163. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1600.0 sec).

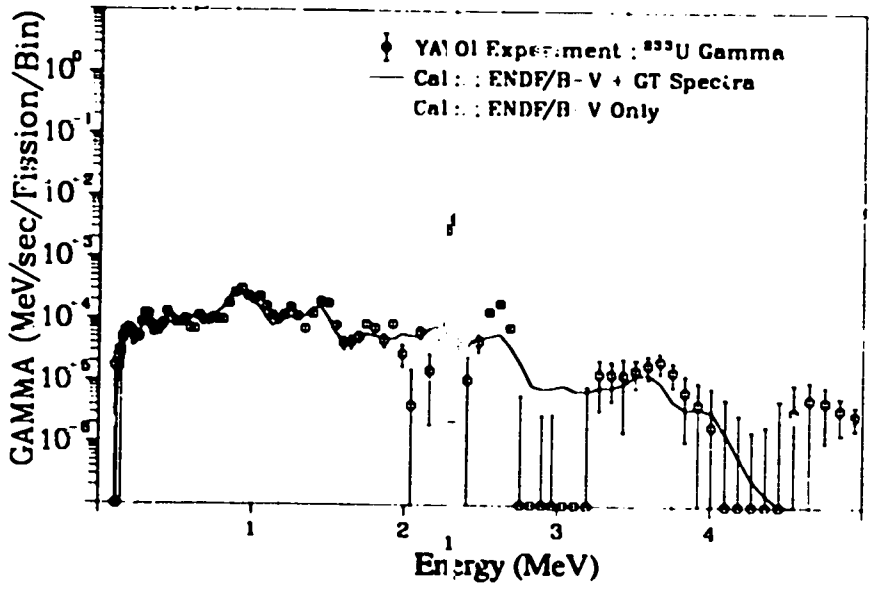

Fig. 164. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2000.0 sec).

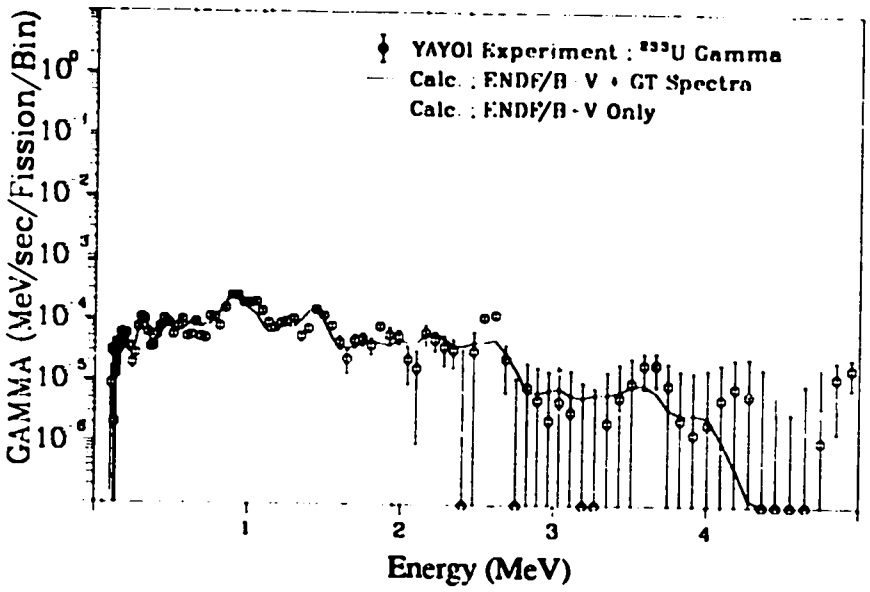

Fig. 165. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2450.0 sec).

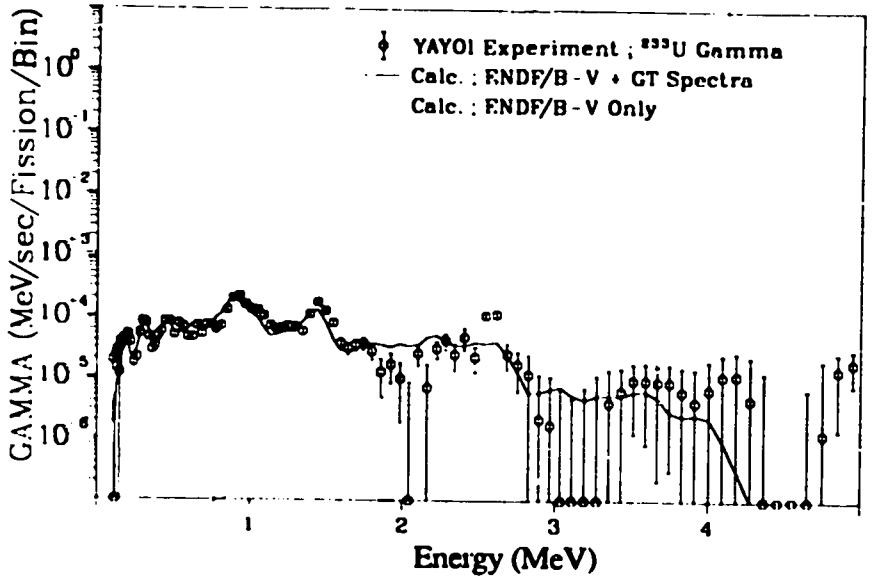

Fig. 166. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2950.0 sec).

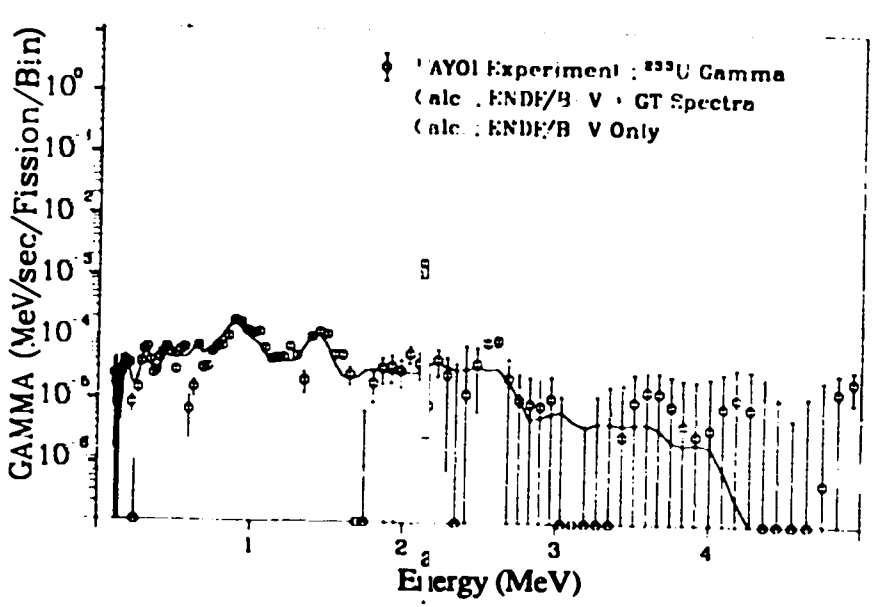

Fig. 167. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 3500.0 sec).

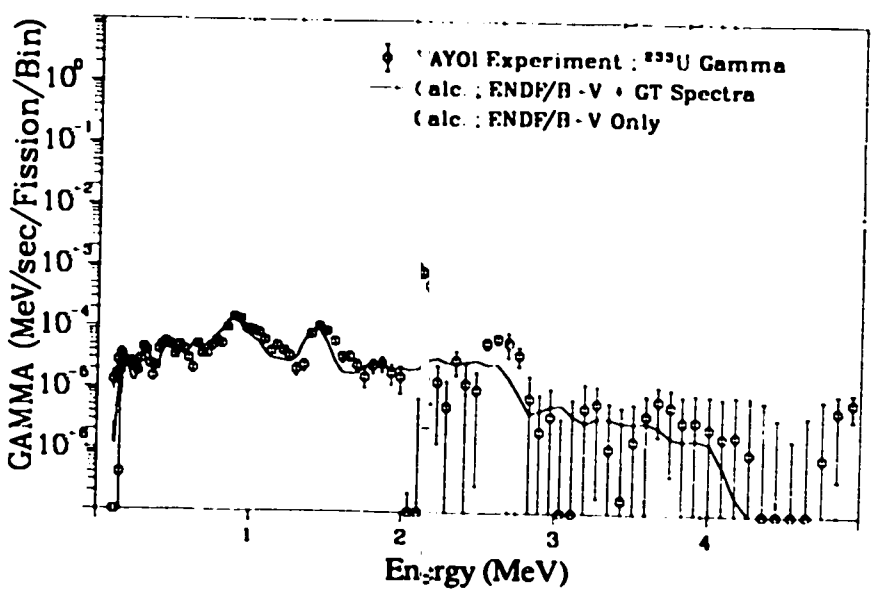

Fig. 168. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 4100.0 sec).

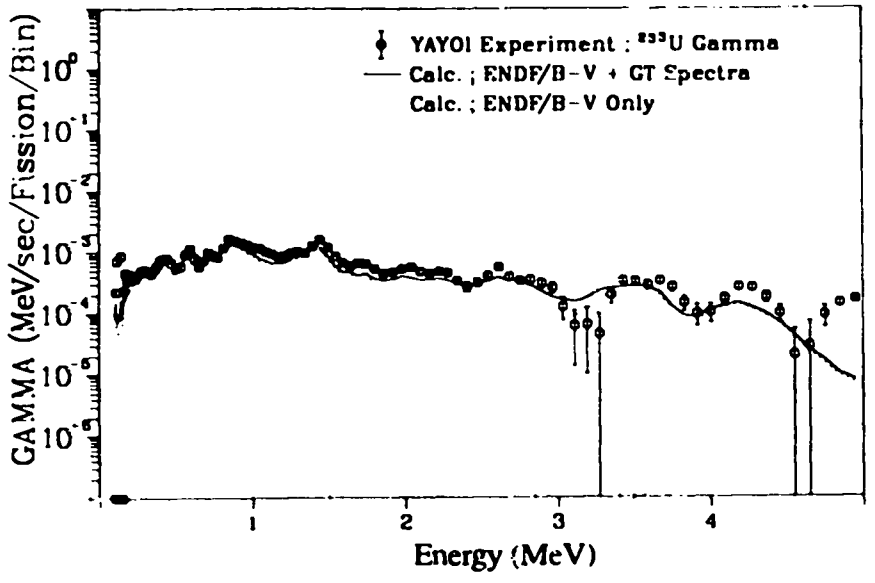

Fig. 169. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 230.0 sec).

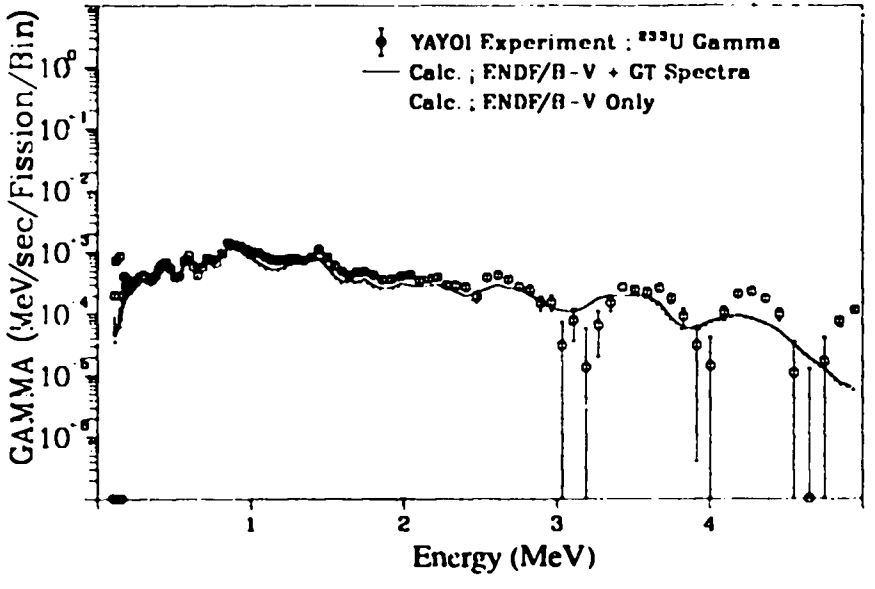

Fig. 170. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 290.0 sec).

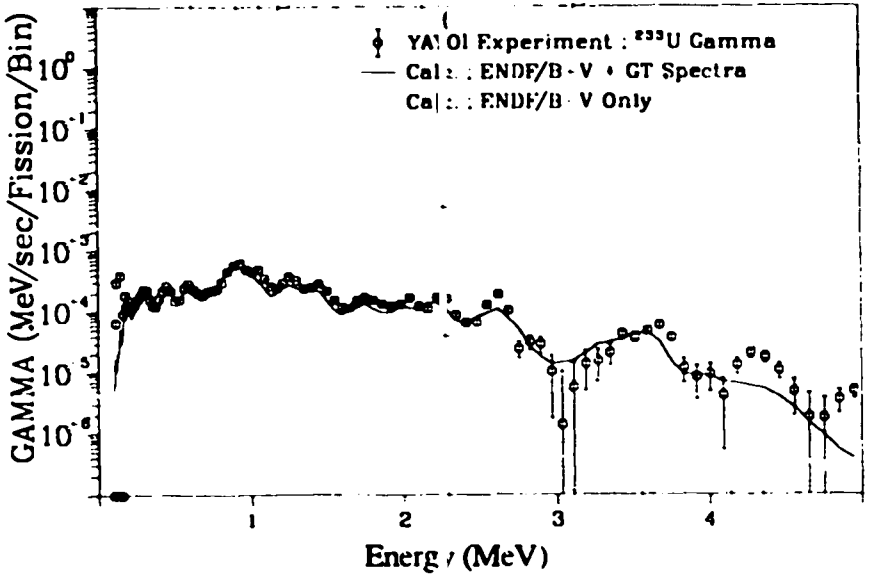

Fig. 171. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 900.0 sec).

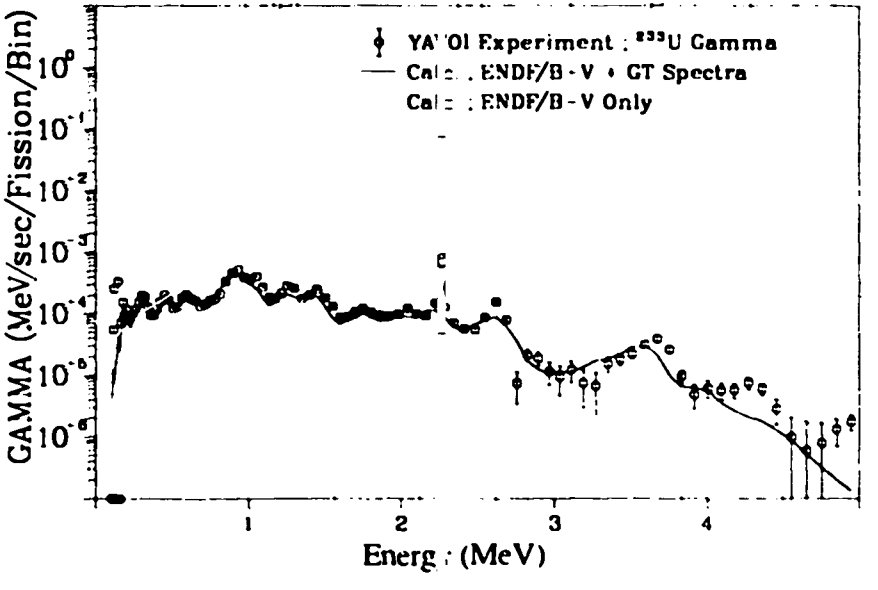

Fig. 172. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1200.0 sec).

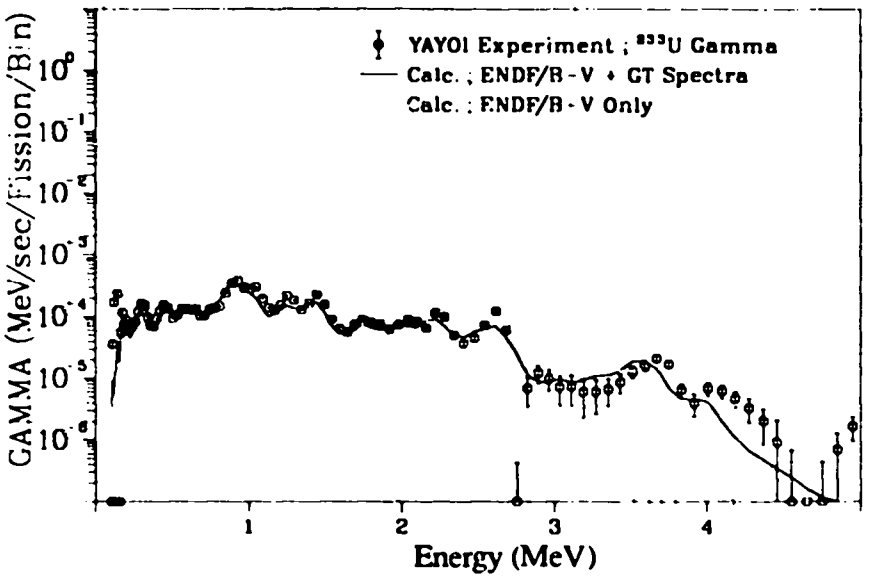

Fig. 173. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1600.0 sec).

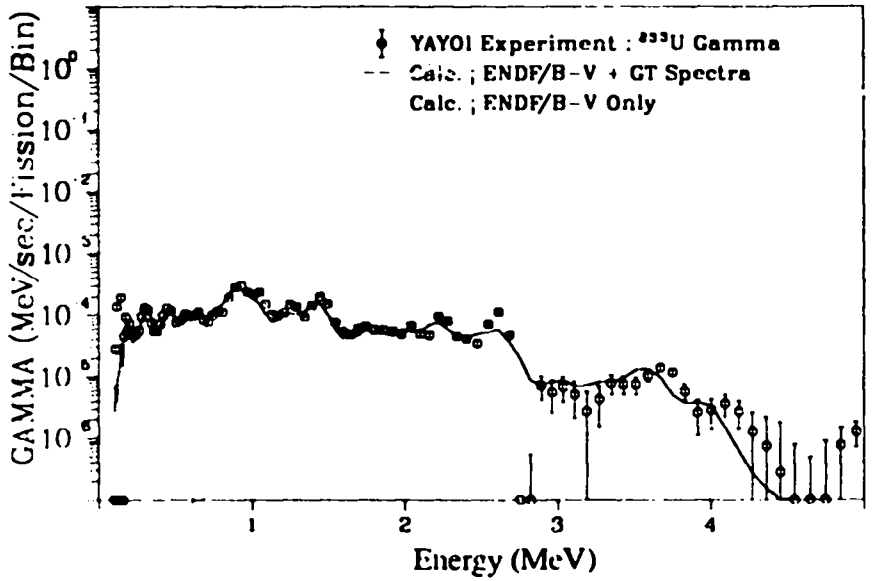

Fig. 174. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2000.0 sec).

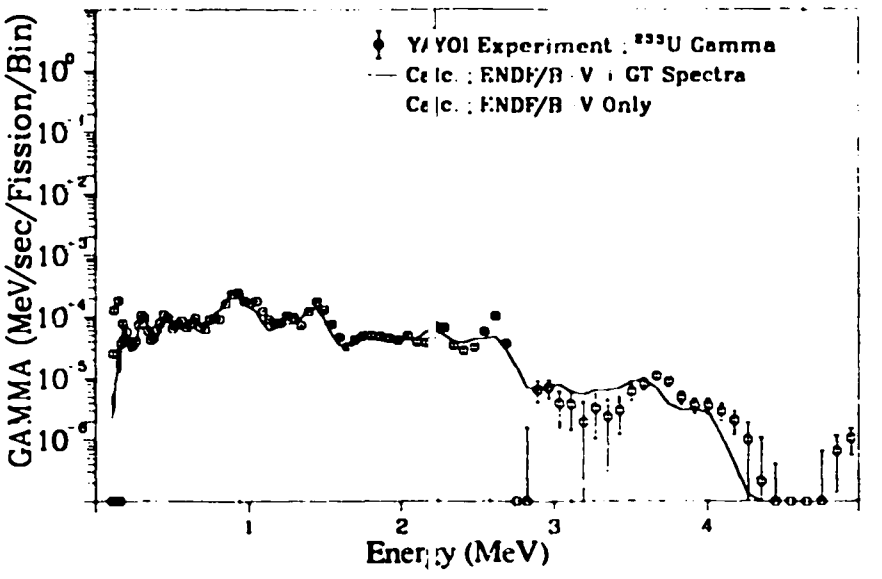

Fig. 175. Gamma spectrum af er ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2450.0 sec).

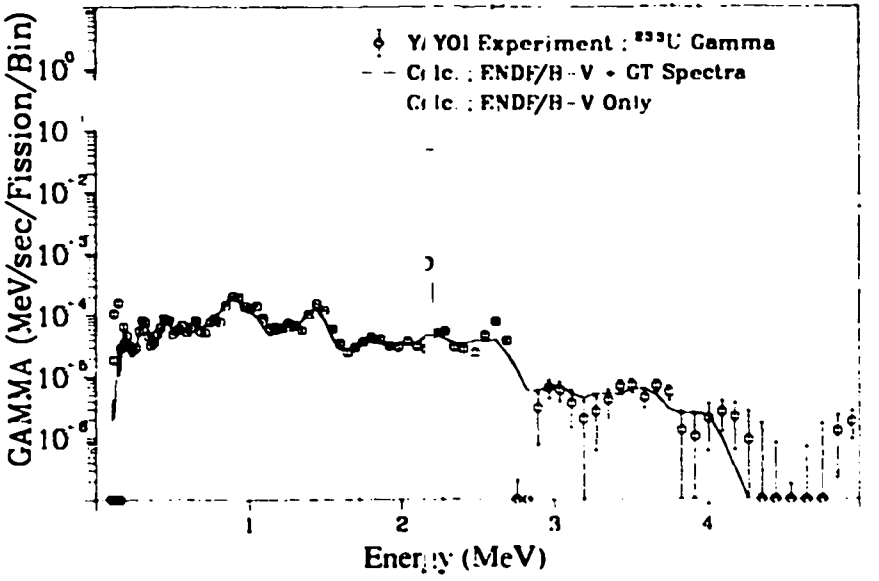

Fig. 176. Gamma spectrum af er ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2950.0 sec).

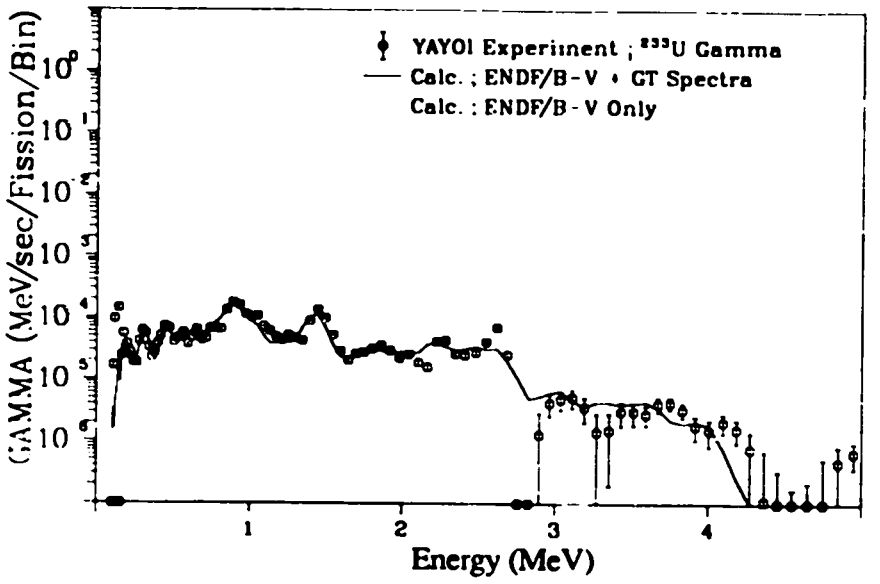

Fig. 177. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3500.0 sec).

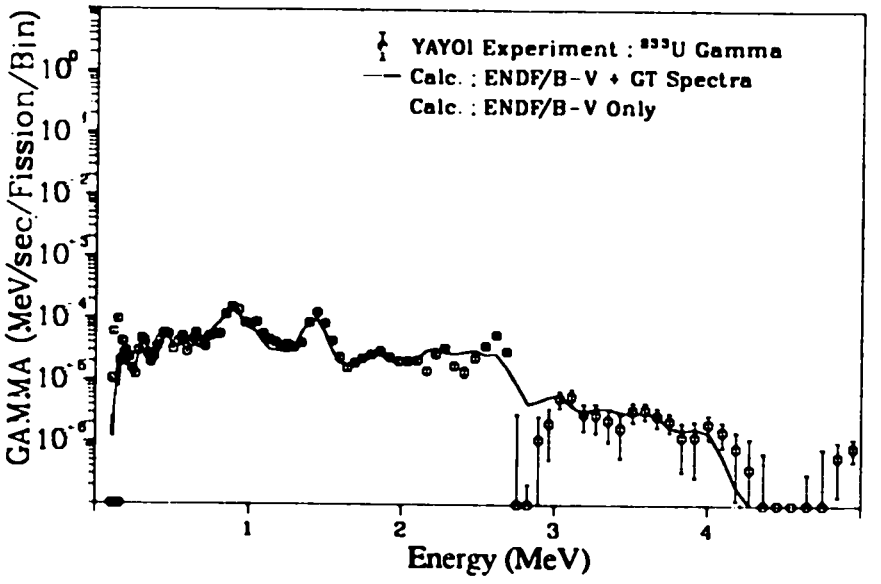

Fig. 178. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4100.0 sec).

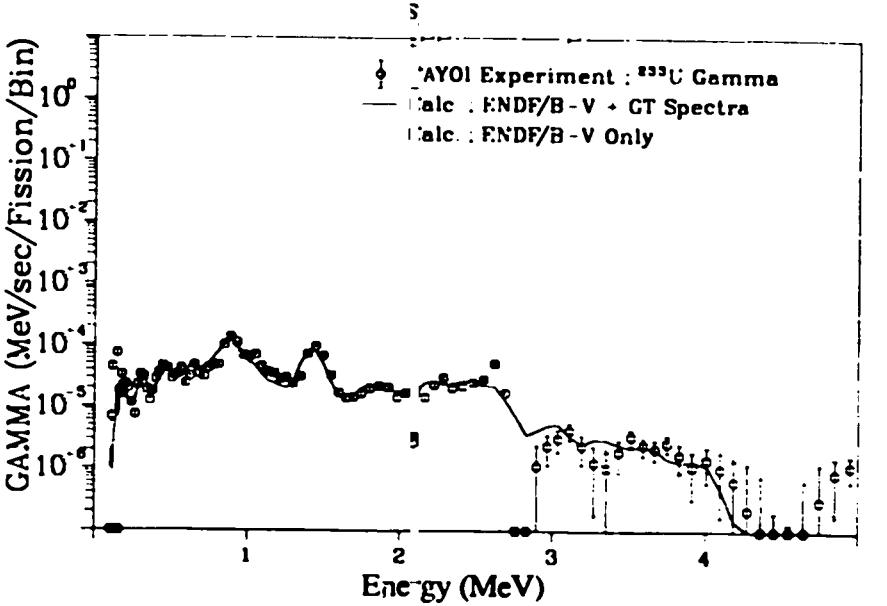

Fig. 179. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4800.0 sec).

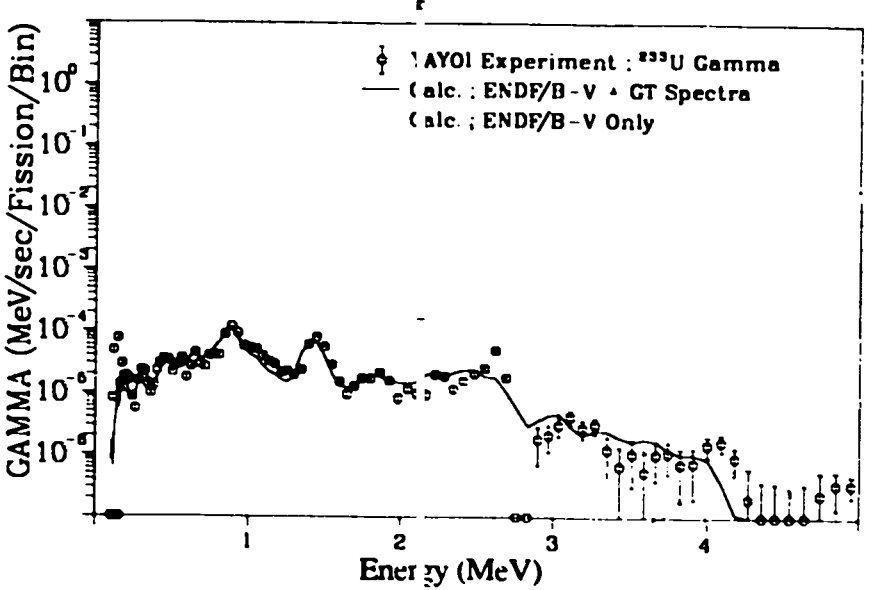

Fig. 180. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 5600.0 sec).

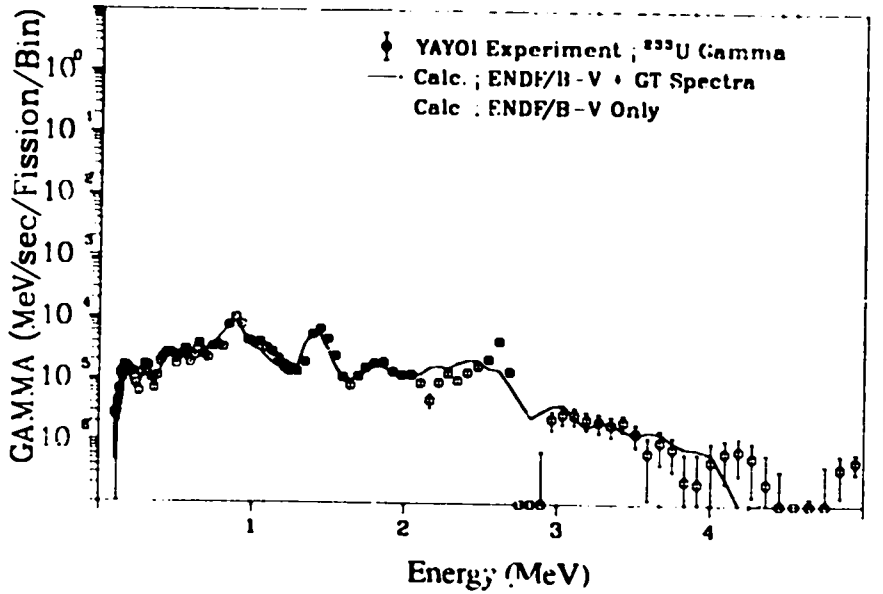

Fig. 181. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6500.0 sec).

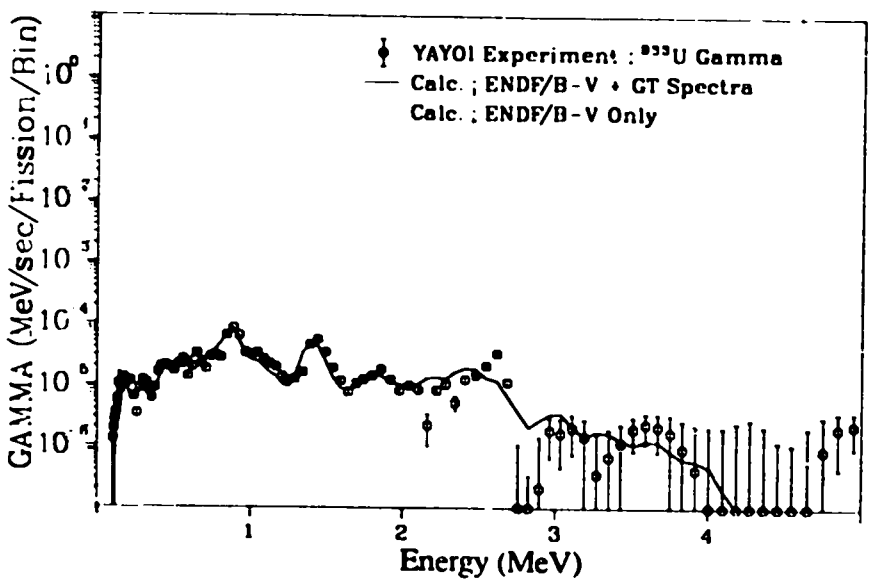

Fig. 182. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7500.0 sec).

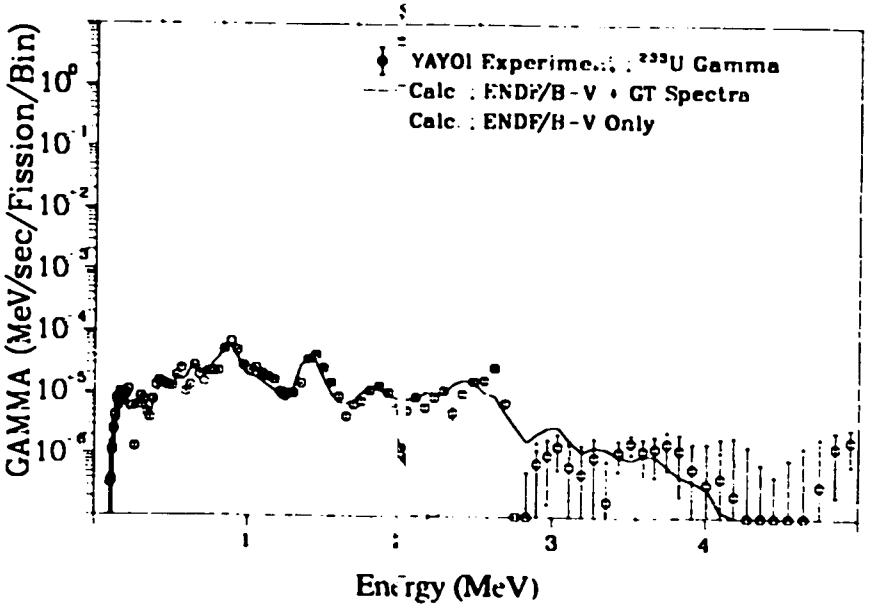

Fig. 183. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 9000.0 sec).

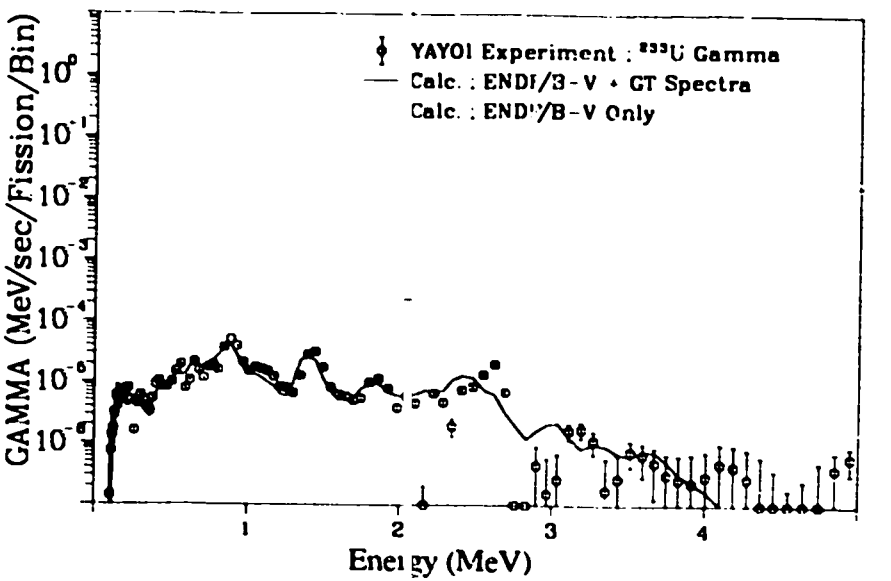

Fig. 184. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11000.0 sec).

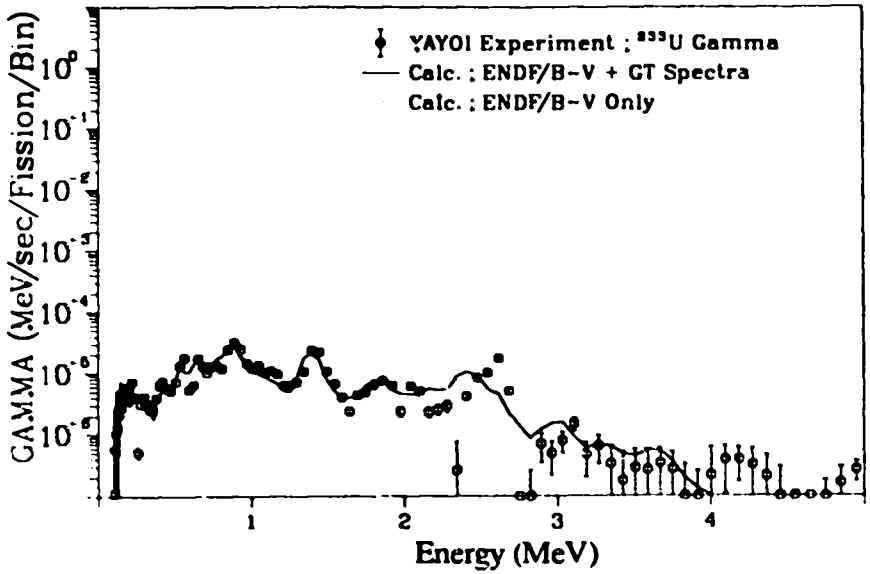

Fig. 185. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 13500.0 sec).

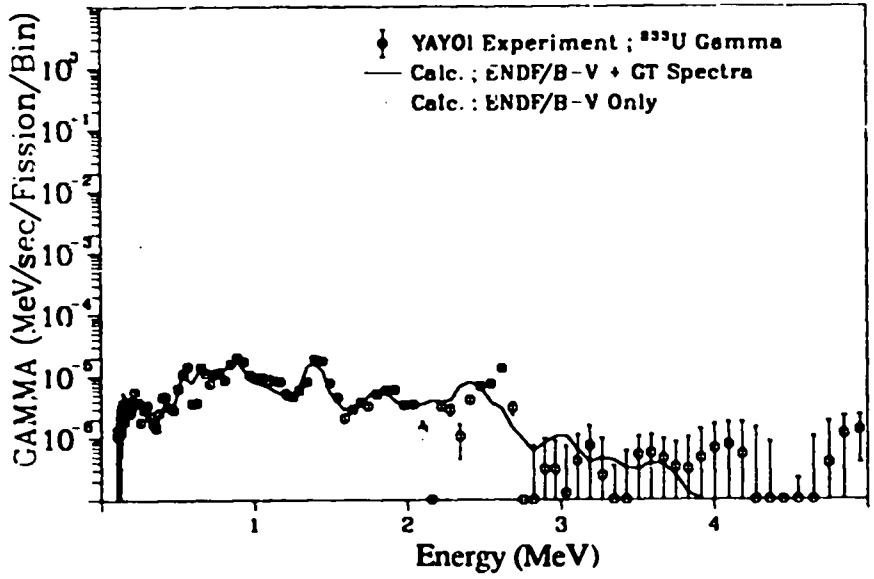

Fig. 186. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 16500.0 sec).

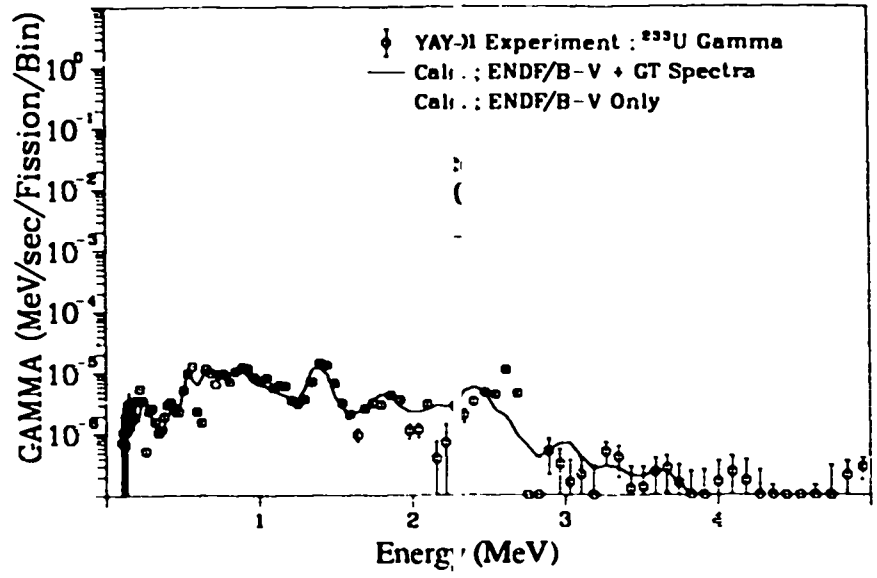

Fig. 187. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 20000.0 sec).

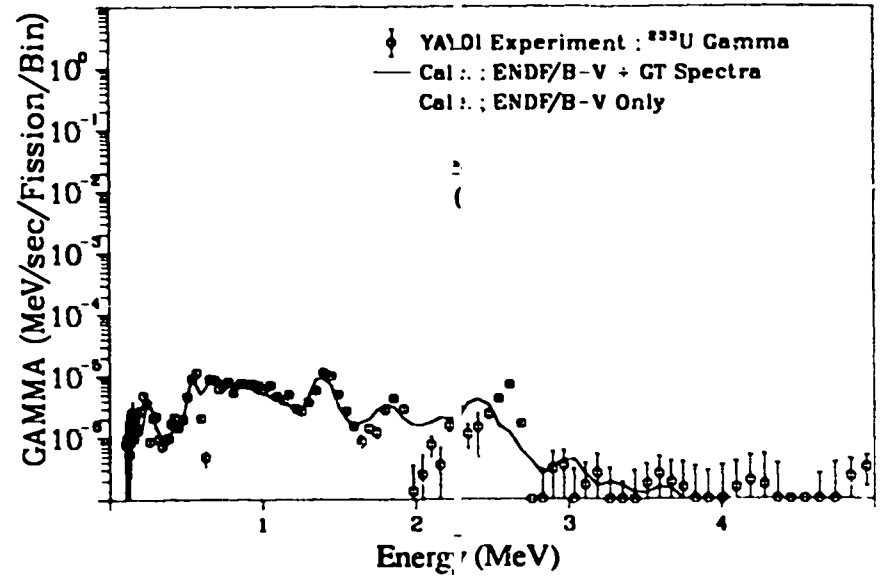

Fig. 188. Gamma spectrum after ^{233}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 24000.0 sec).

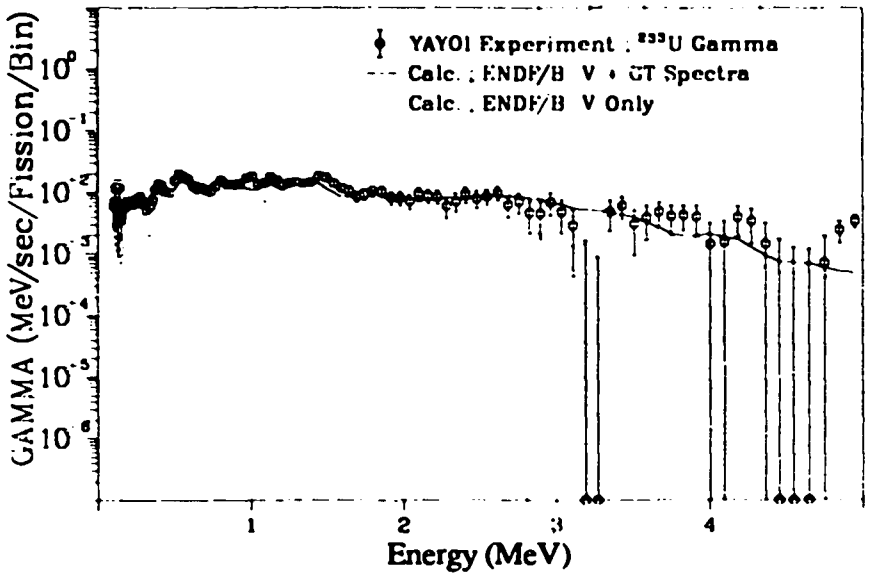

Fig. 189. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 19.0 sec).

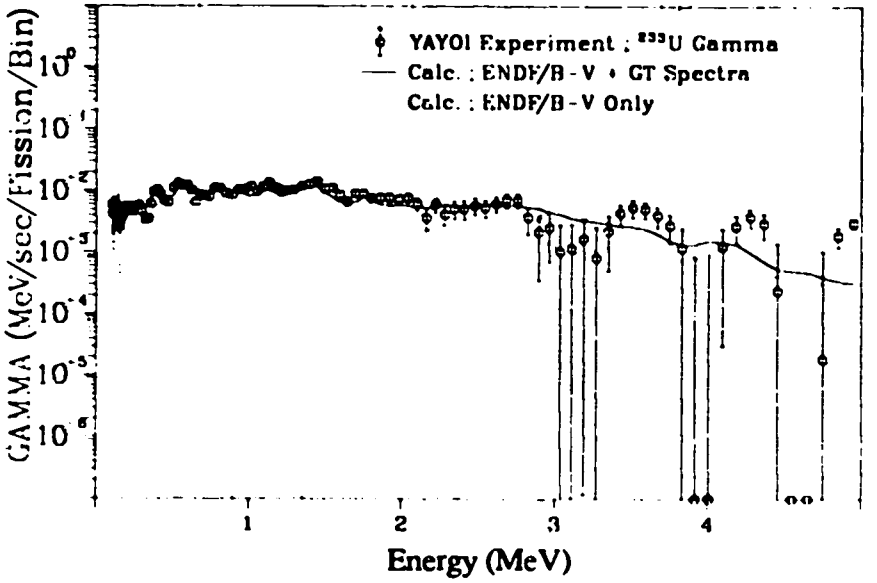

Fig. 190. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 26.0 sec).

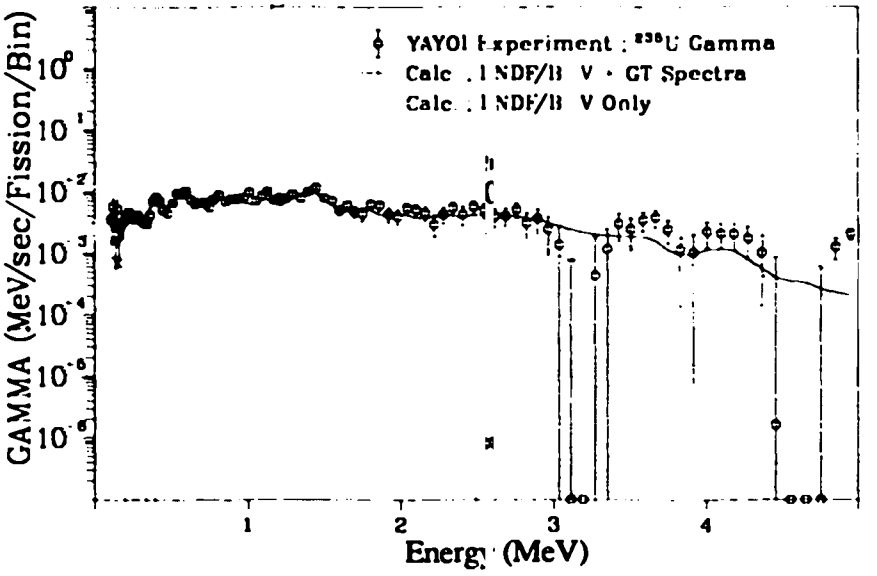

Fig. 191. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 35.0 sec).

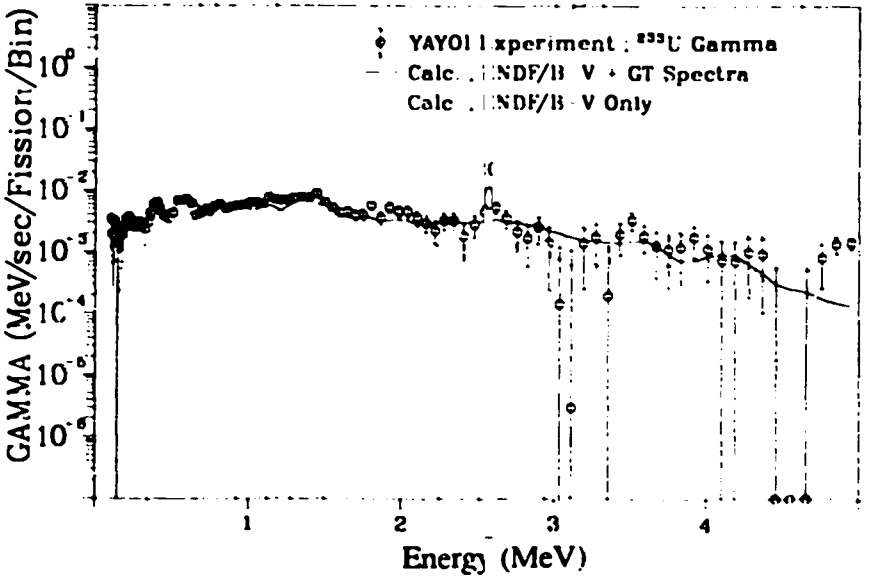

Fig. 192. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 45.0 sec).

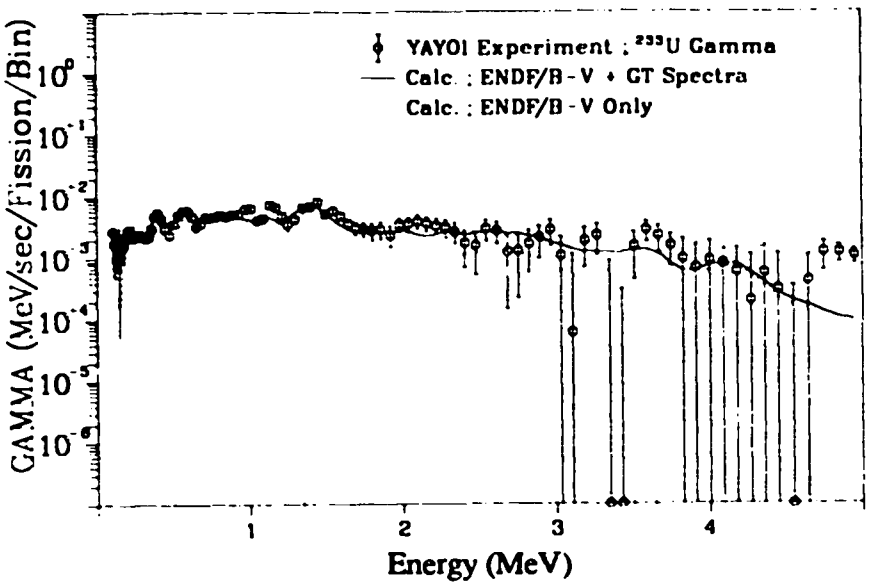

Fig. 193. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 55.0 sec).

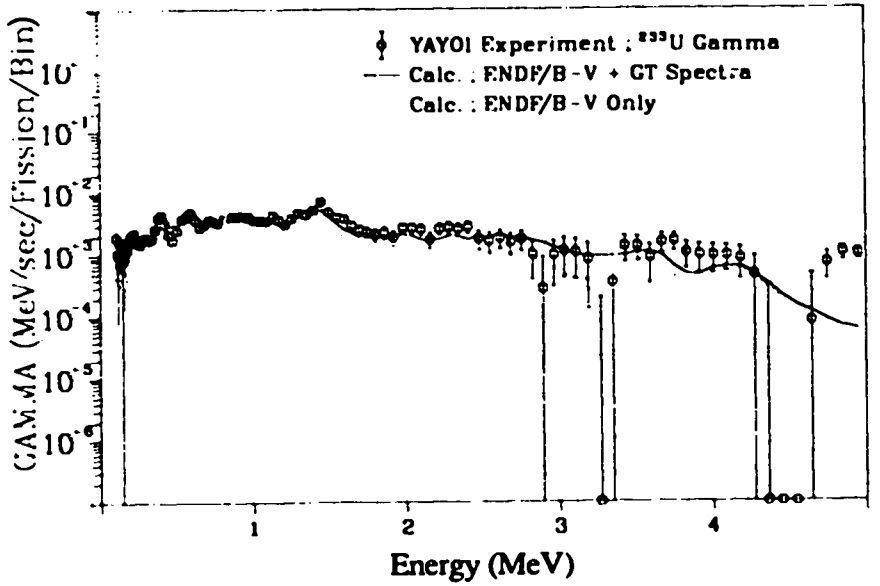

Fig. 194. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 70.0 sec).

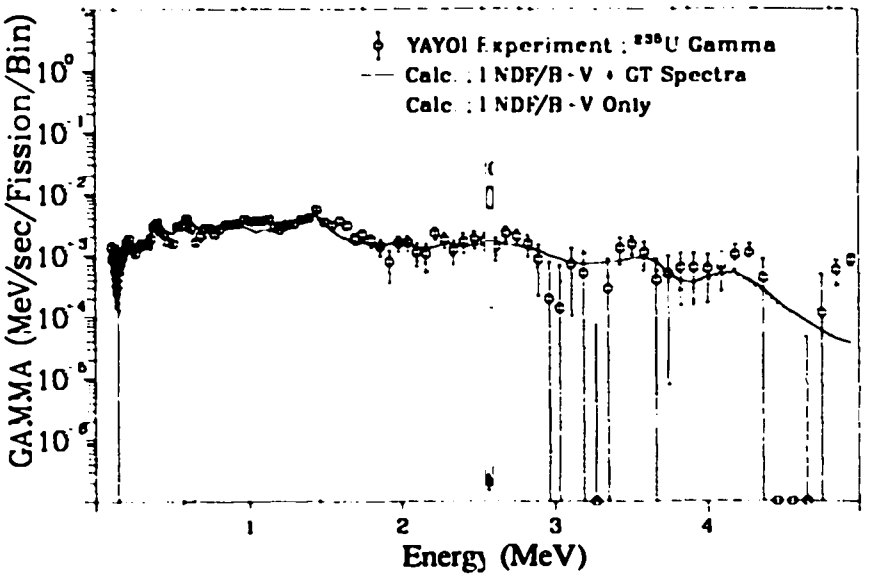

Fig. 195. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 90.0 sec).

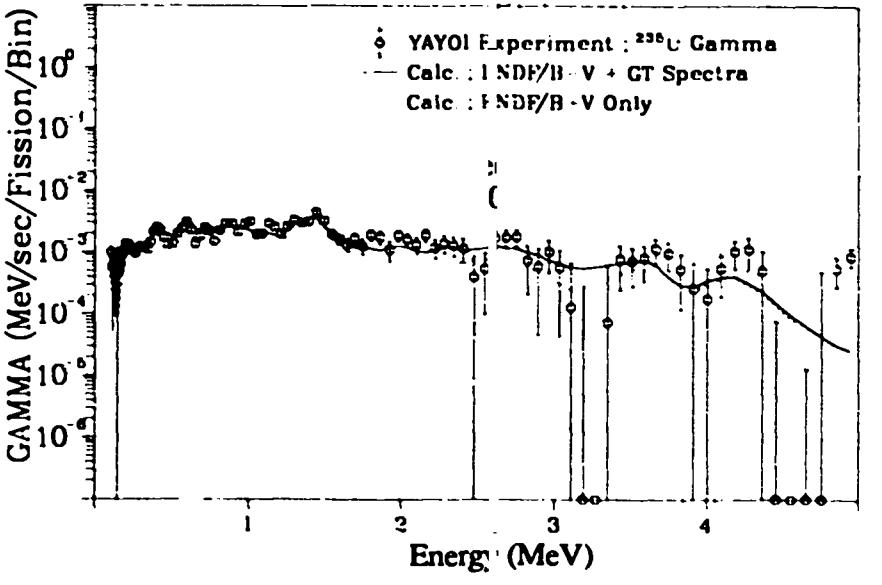

Fig. 196. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 110.0 sec).

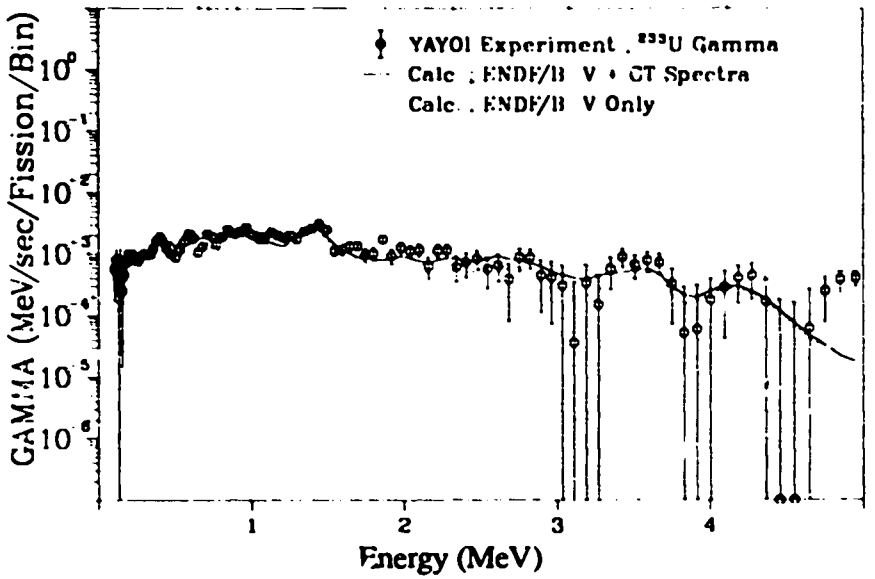

Fig. 197. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 140.0 sec).

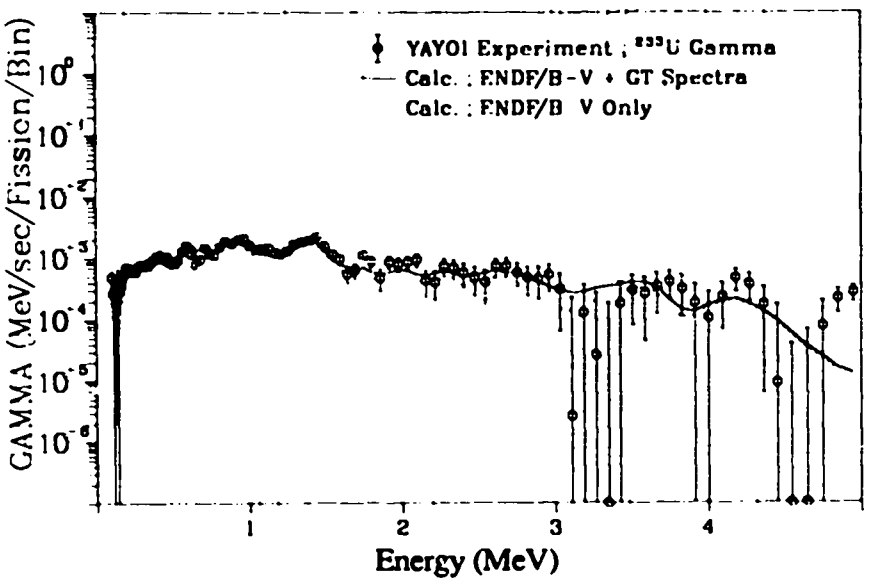

Fig. 198. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 180.0 sec).

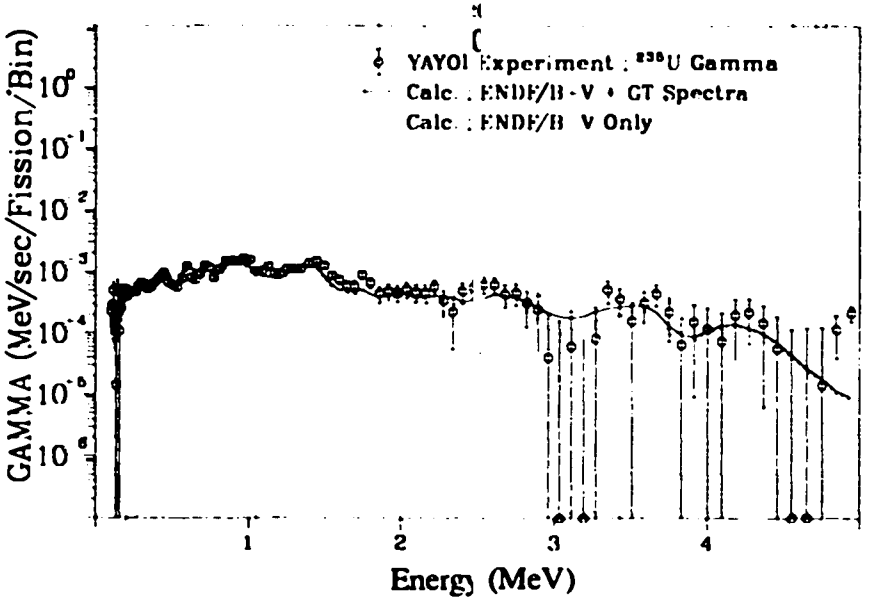

Fig. 199. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 230.0 sec).

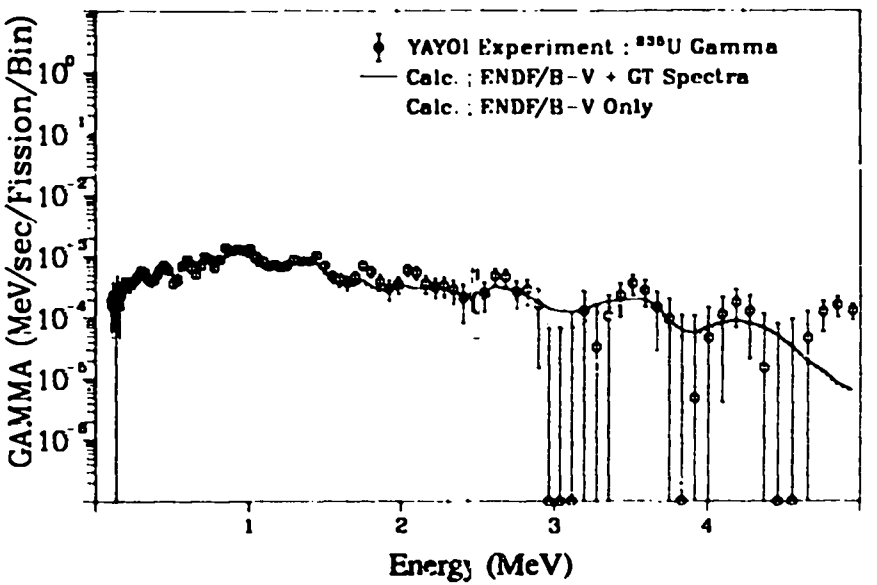

Fig. 200. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 290.0 sec).

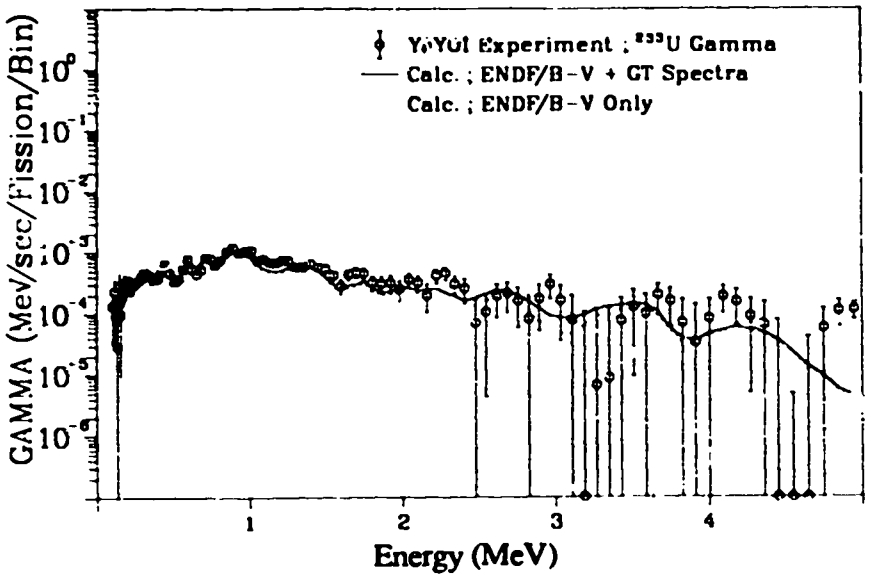

Fig. 201. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 360.0 sec).

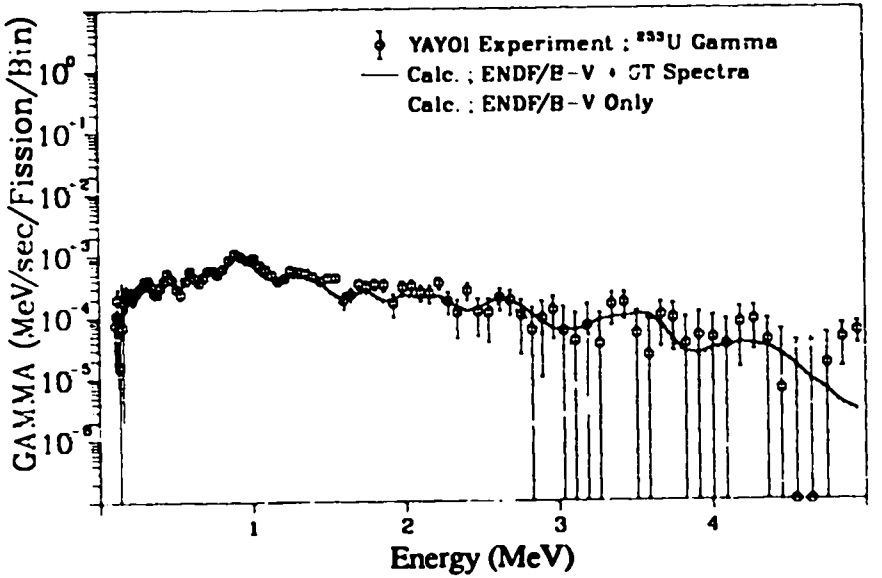

Fig. 202. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 450.0 sec).

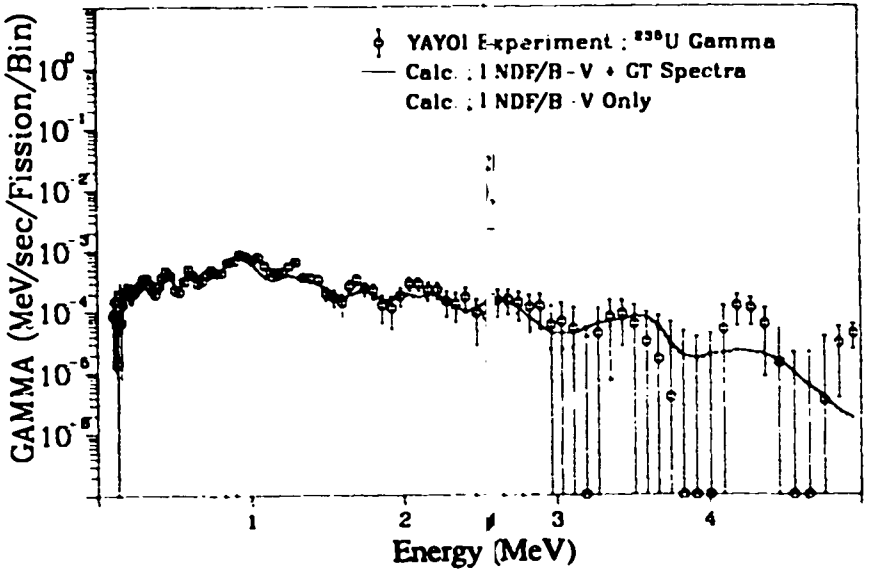

Fig. 203. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 550.0 sec).

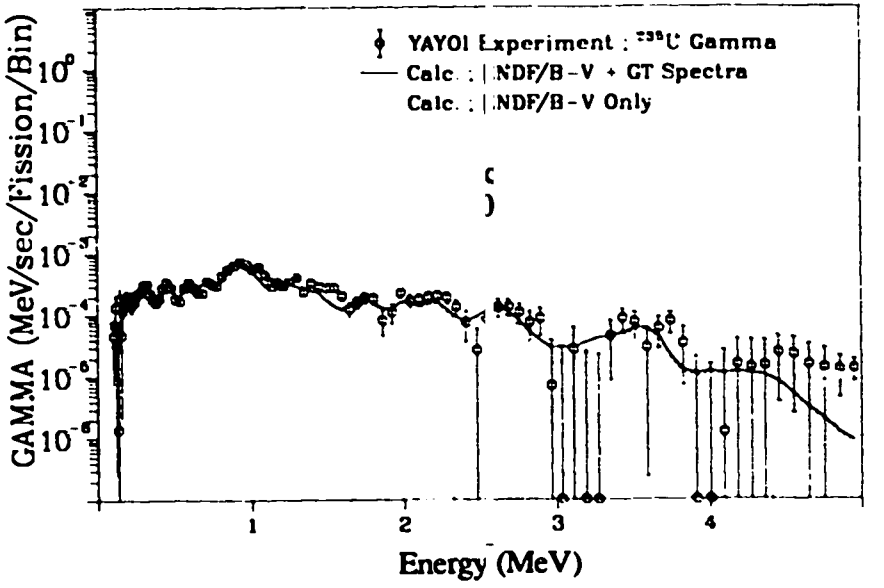

Fig. 204. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 700.0 sec).

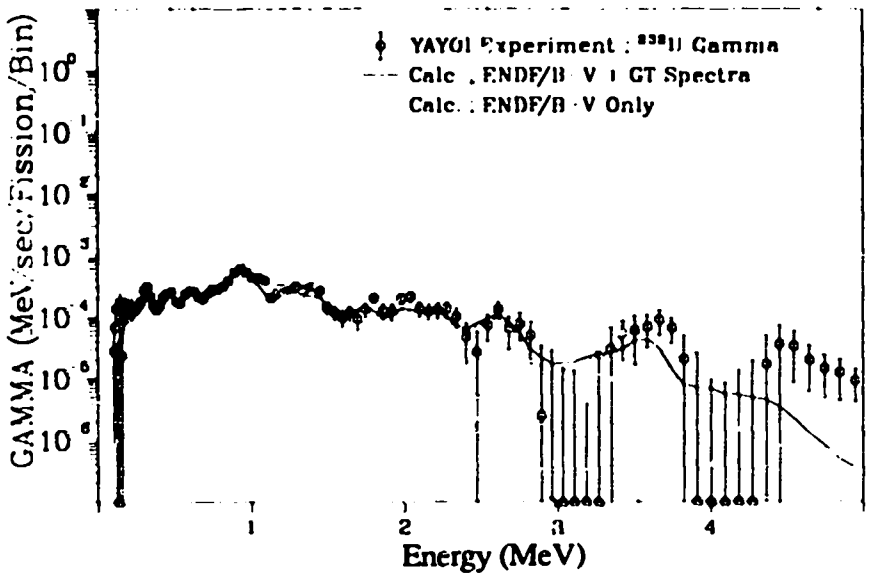

Fig. 205. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 900.0 sec).

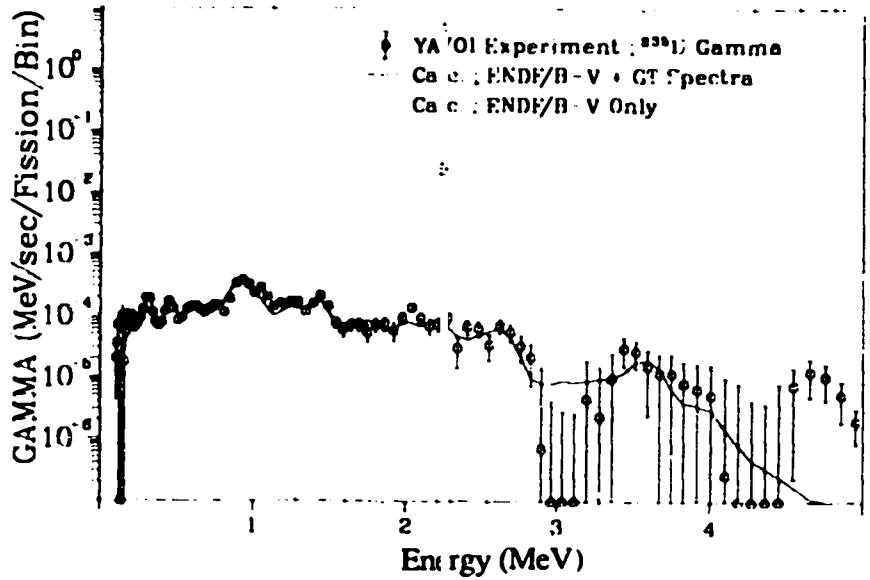

Fig. 207. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1600.0 sec).

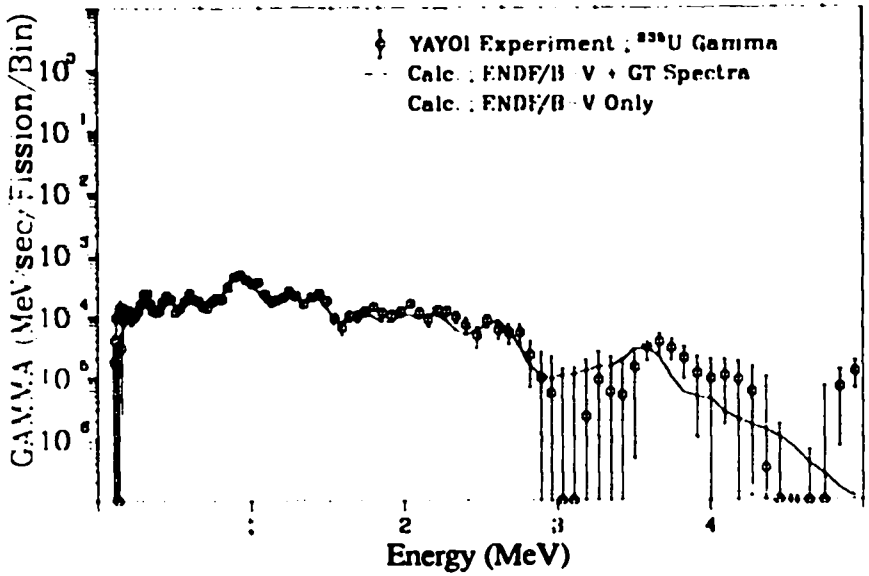

Fig. 206. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1200.0 sec).

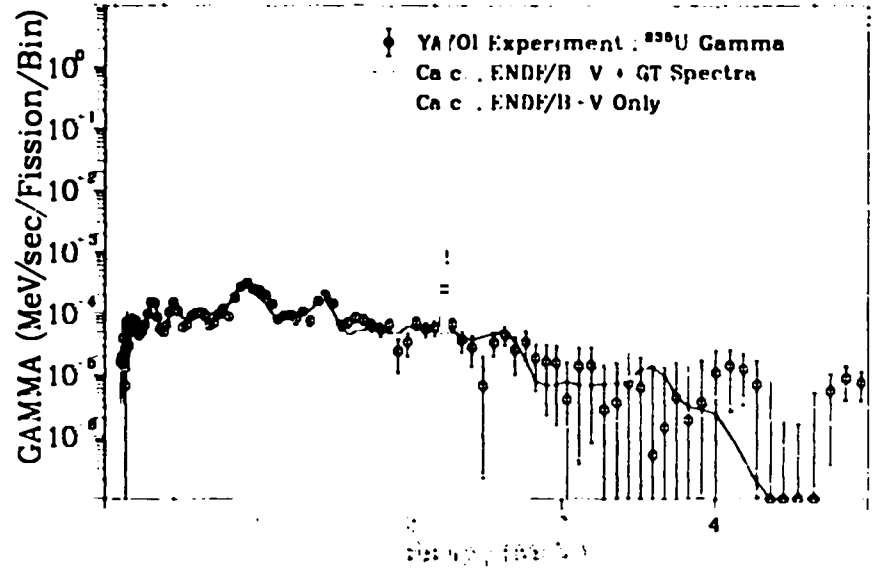

Fig. 208. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2400.0 sec).

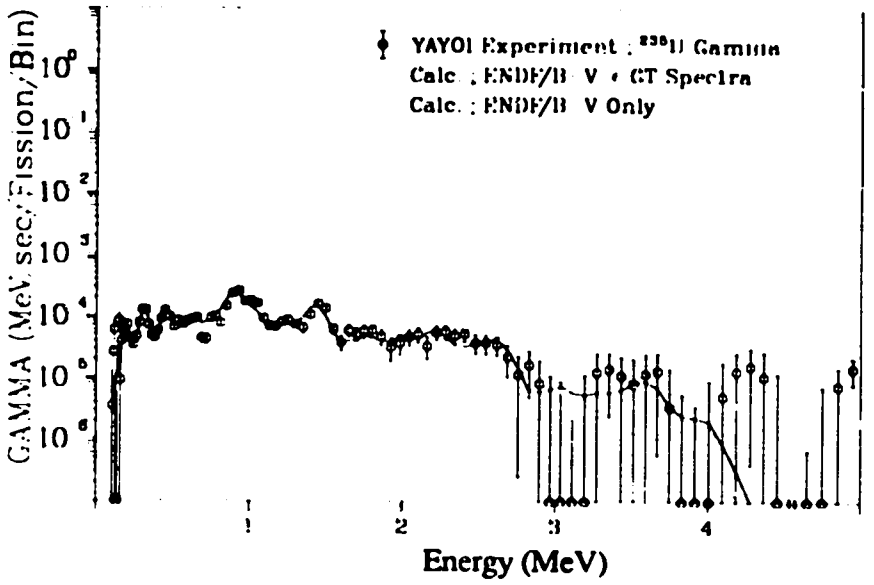

Fig. 209. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2450.0 sec).

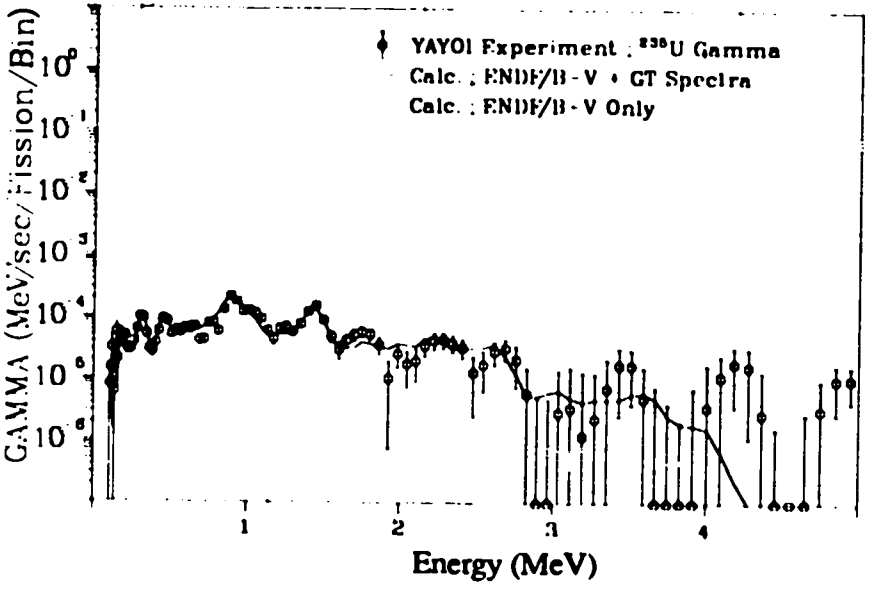

Fig. 210. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2950.0 sec).

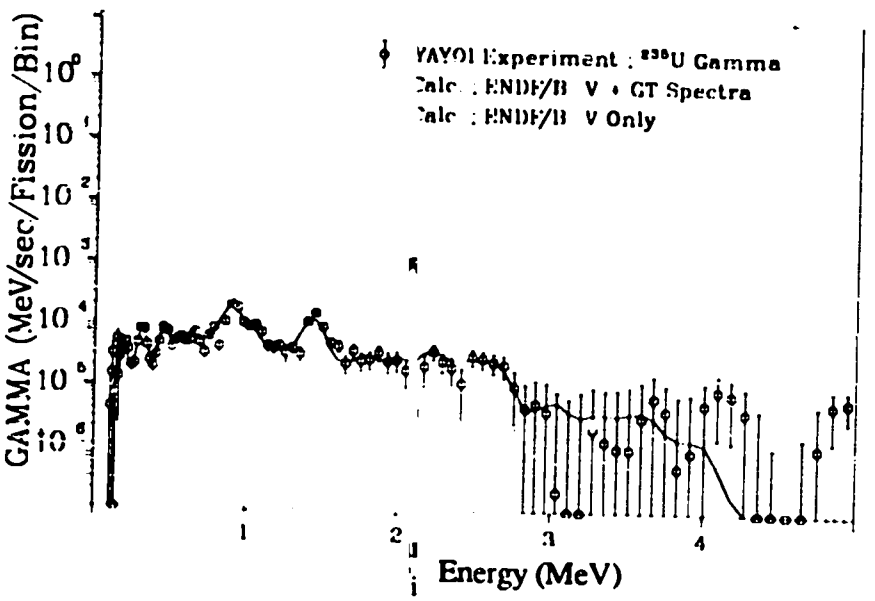

Fig. 211. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 3500.0 sec).

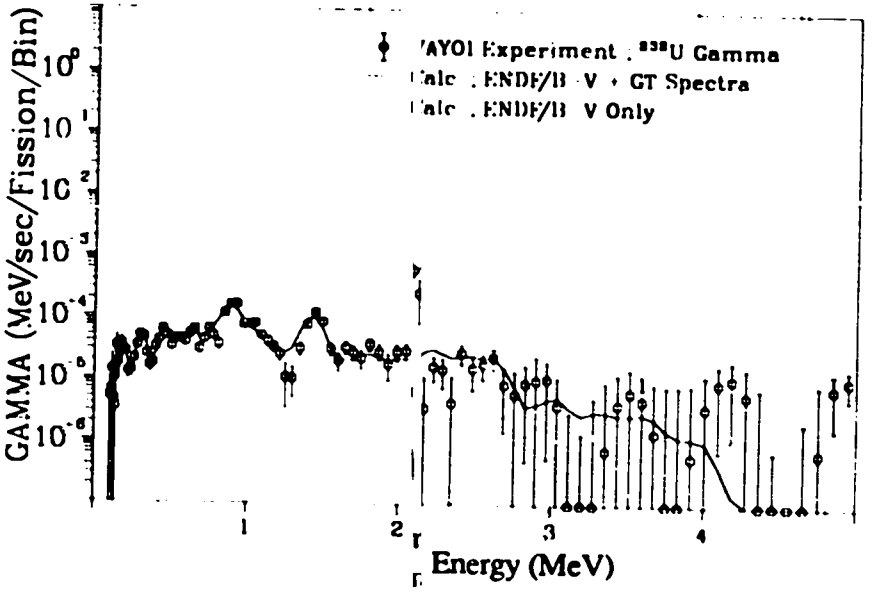

Fig. 212. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 4100.0 sec).

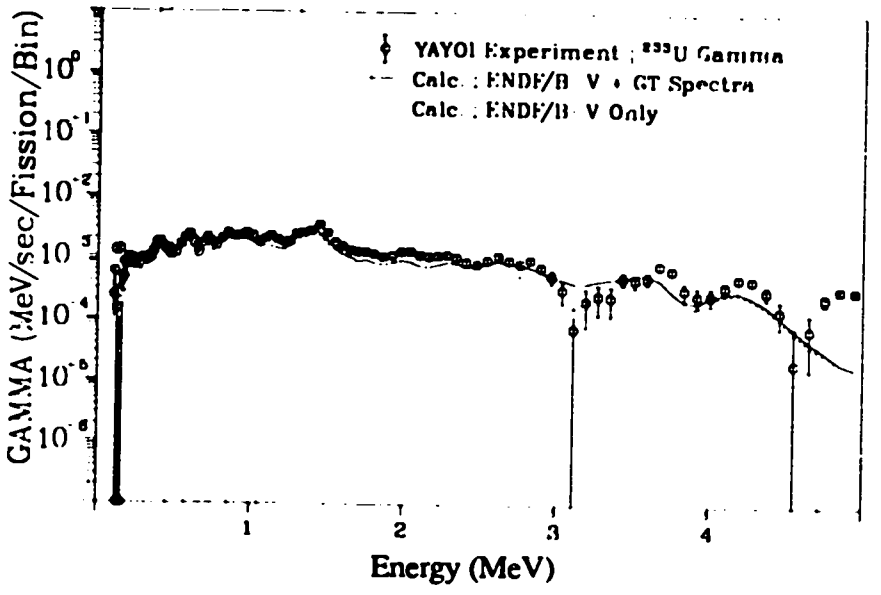

Fig. 213. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 140.0 sec).

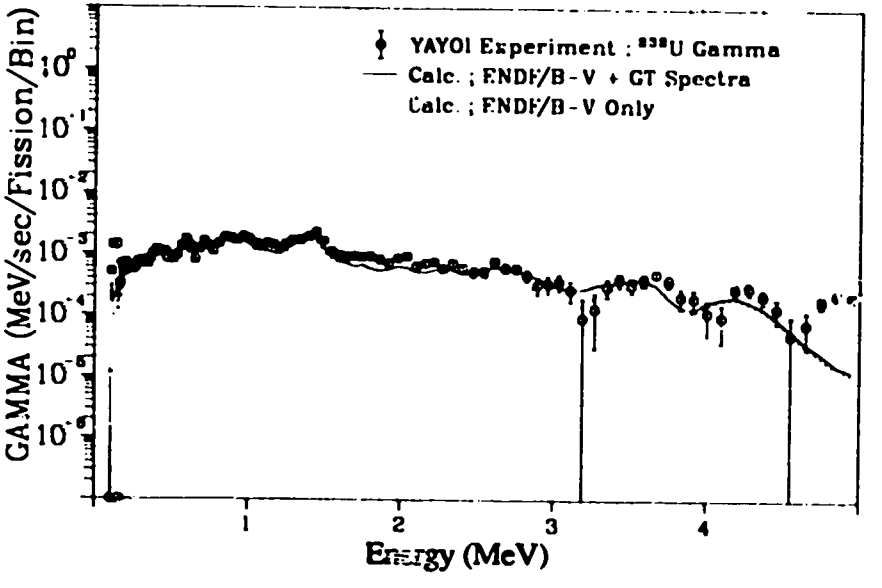

Fig. 214. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 180.0 sec).

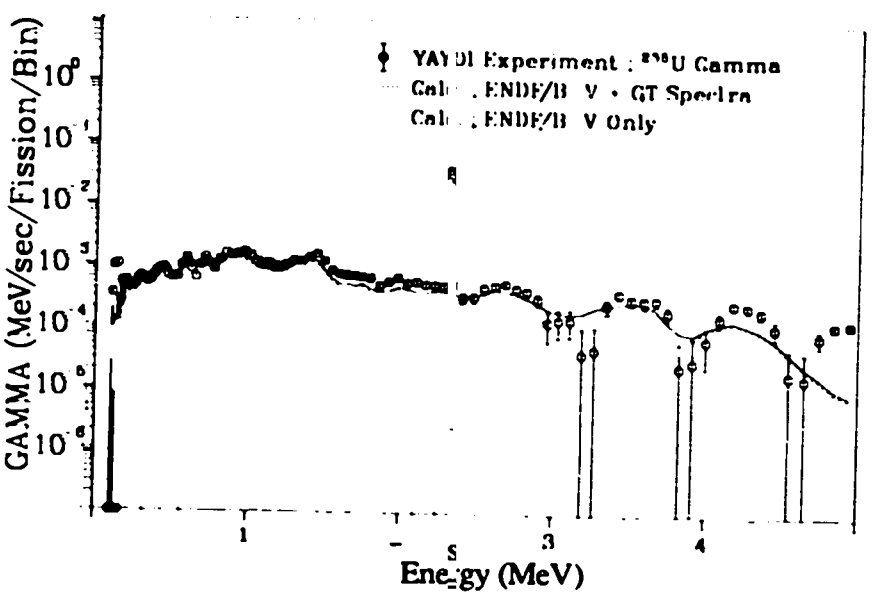

Fig. 215. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 230.0 sec).

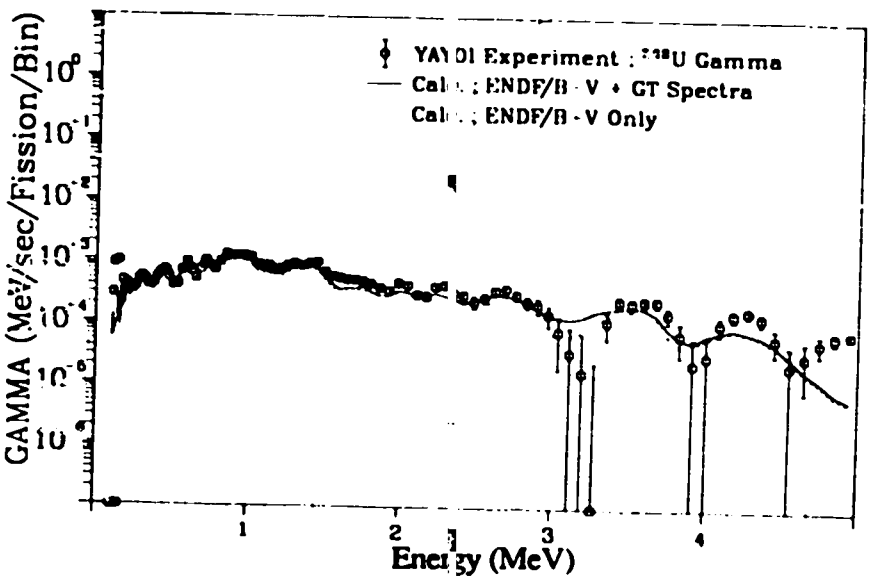

Fig. 216. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec $T_{cool.}$ = 290.0 sec).

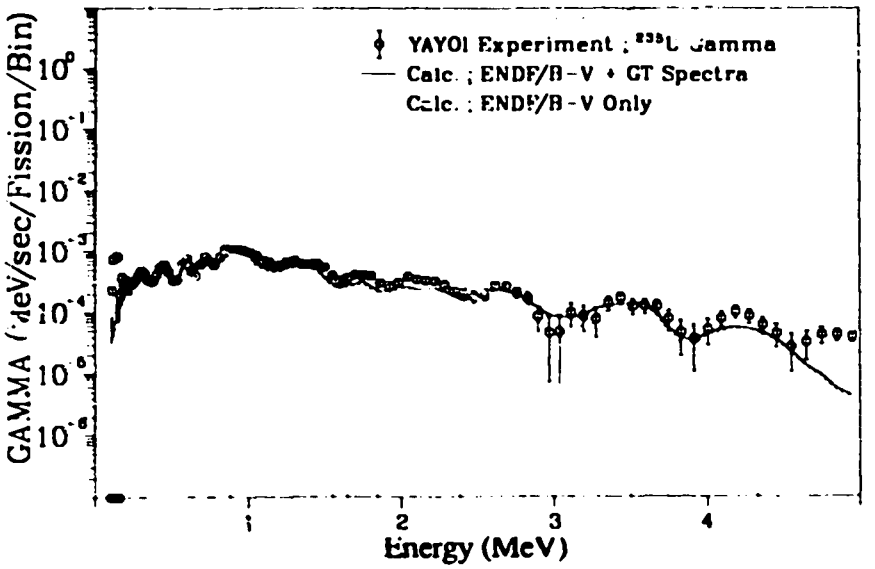

Fig. 217. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 360.0 sec).

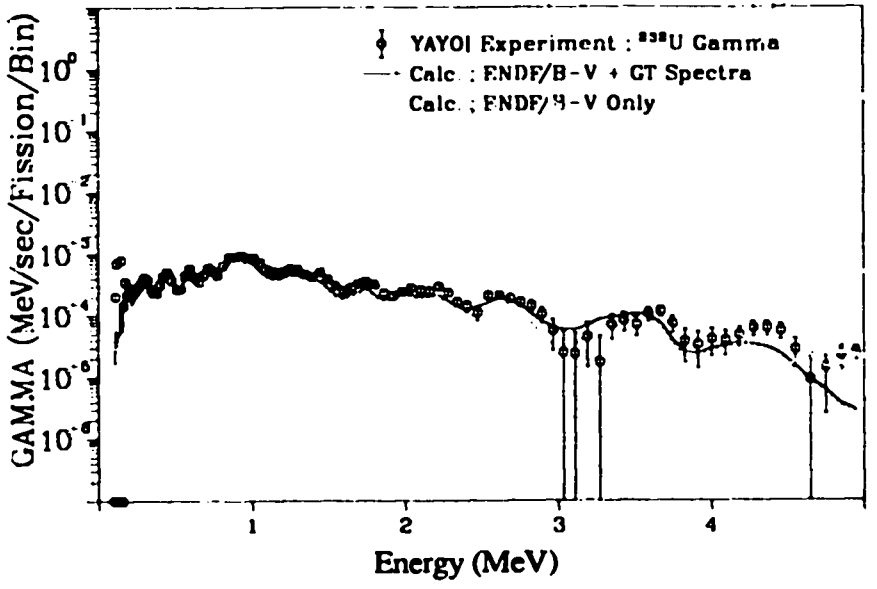

Fig. 218. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 450.0 sec).

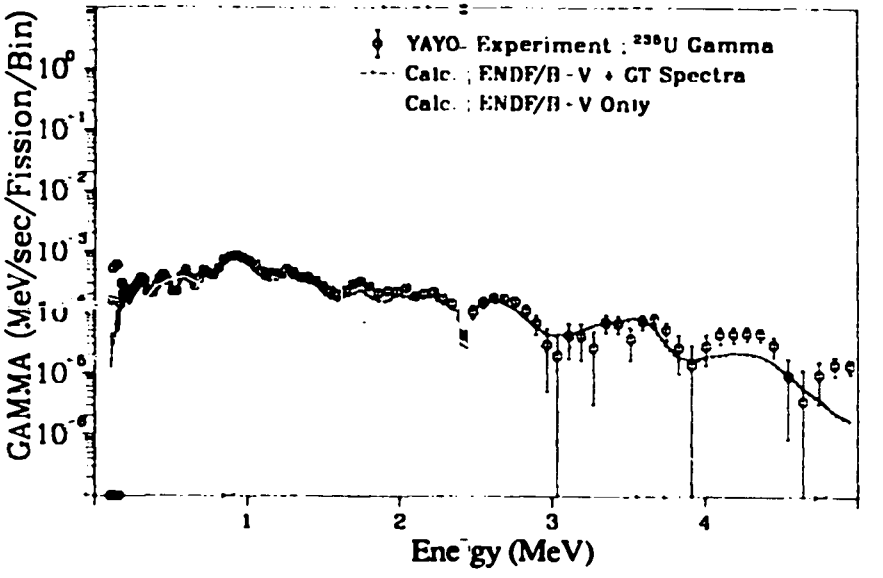

Fig. 219. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, T_{cool} = 550.0 sec).

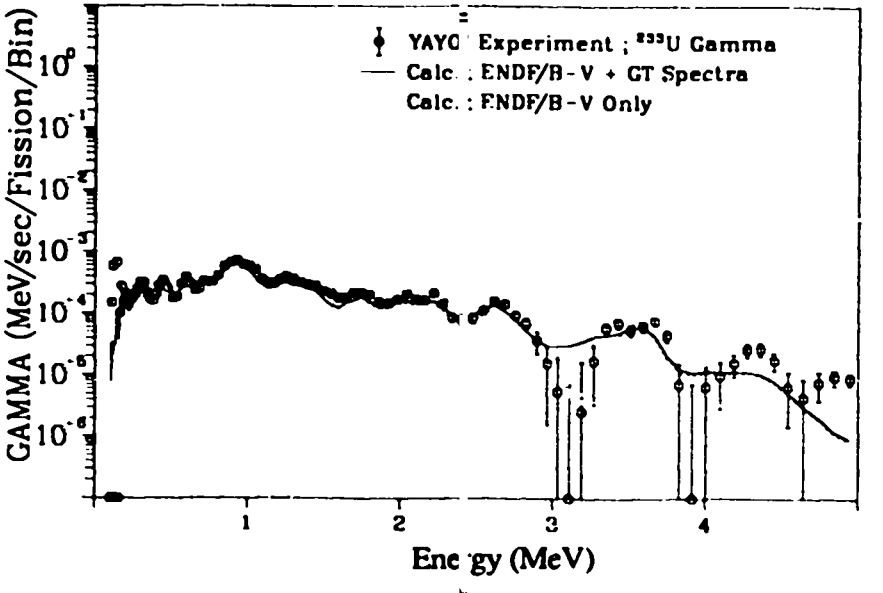

Fig. 220. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 700.0 sec).

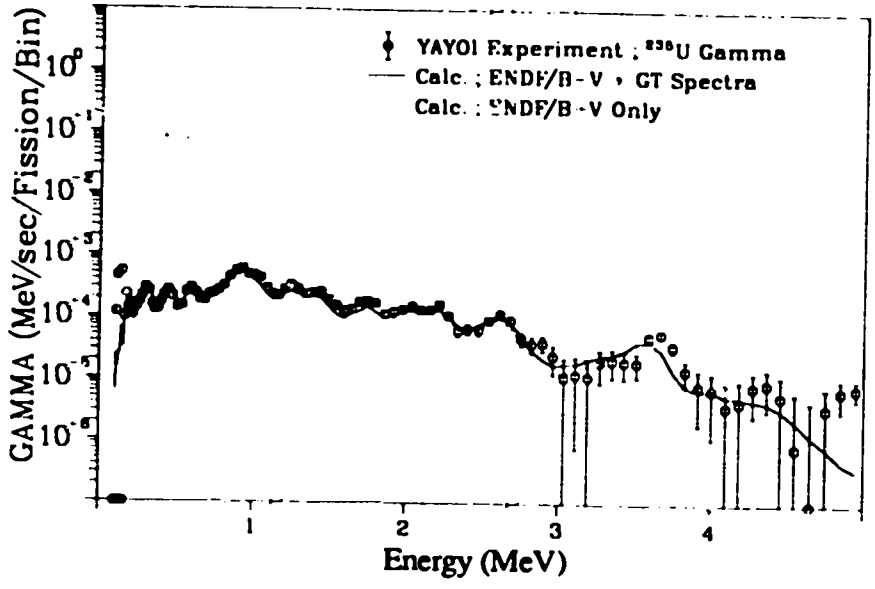

Fig. 221. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 900.0 sec).

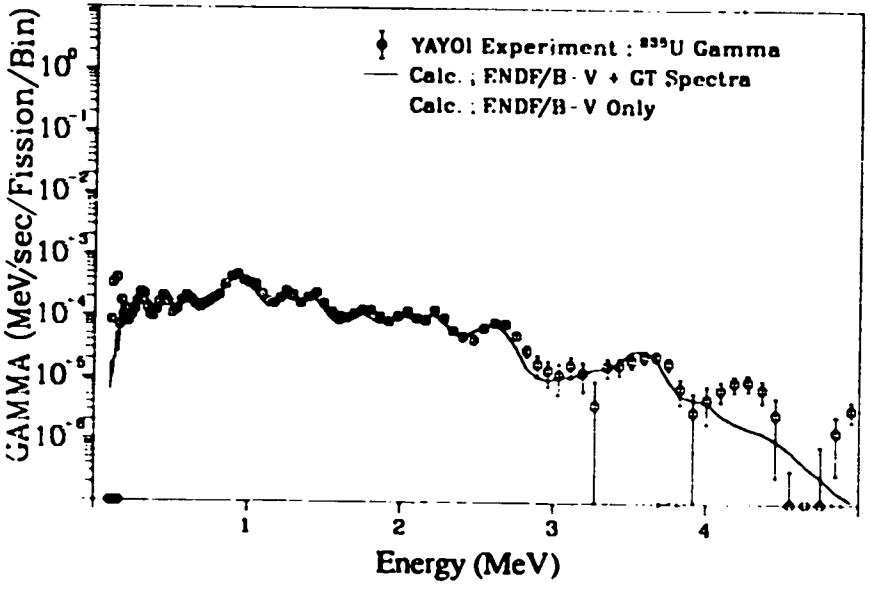

Fig. 222. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1200.0 sec).

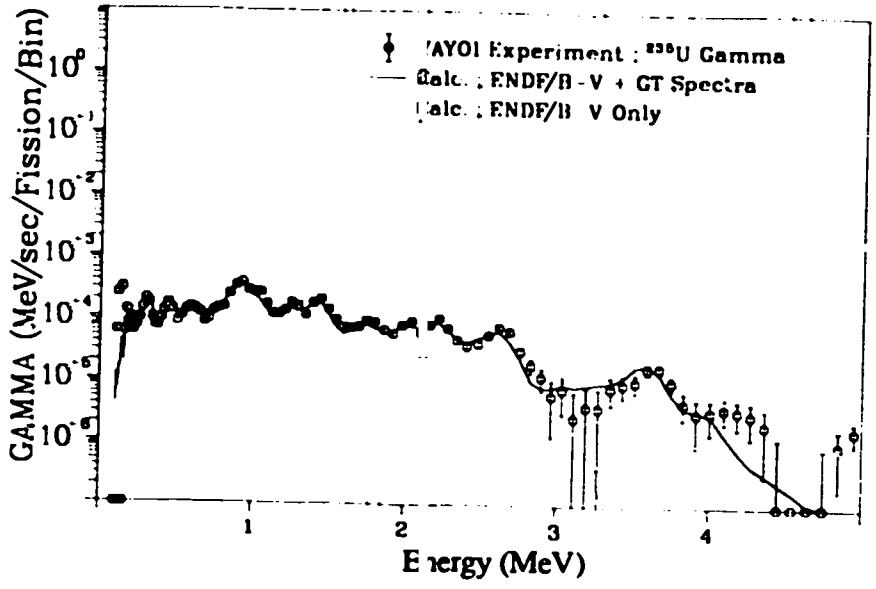

Fig. 223. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1600.0 sec).

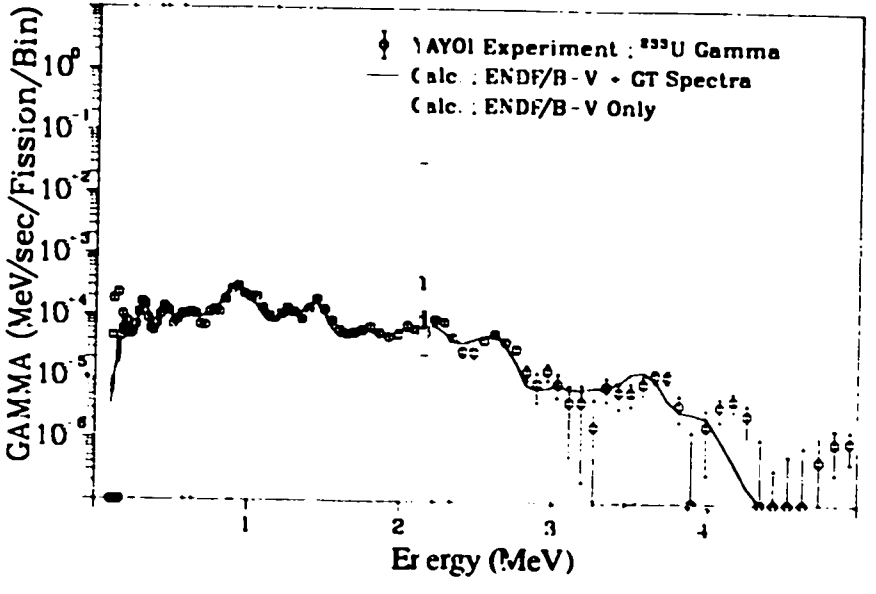

Fig. 224. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2000.0 sec).

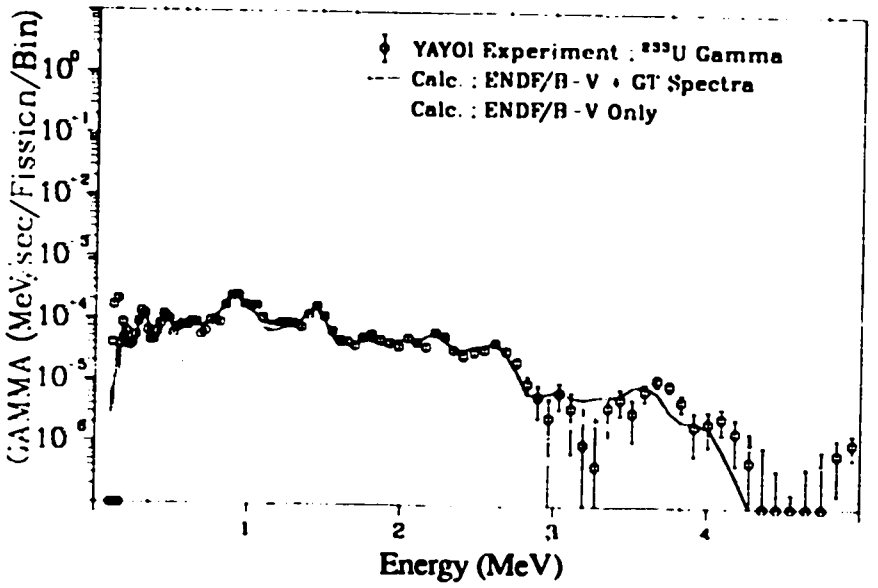

Fig. 225. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2450.0 sec).

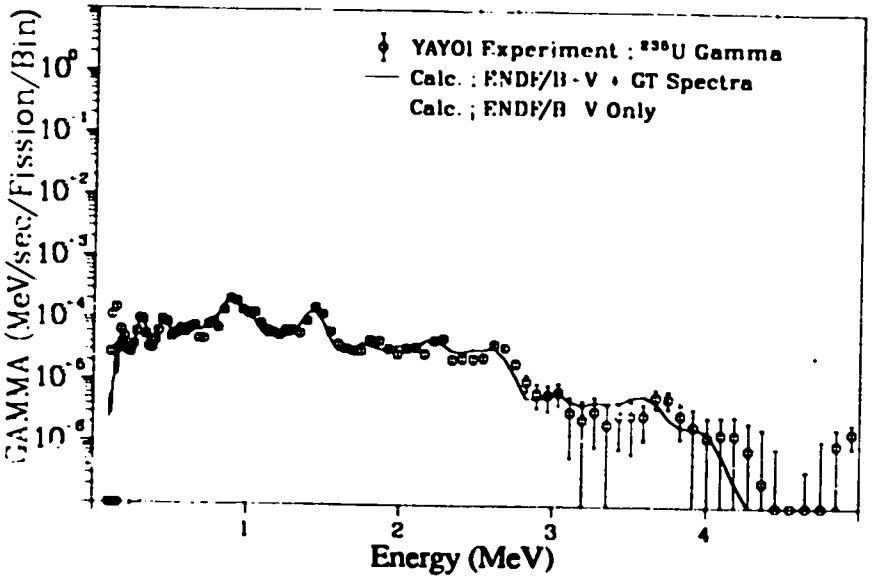

Fig. 226. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2950.0 sec).

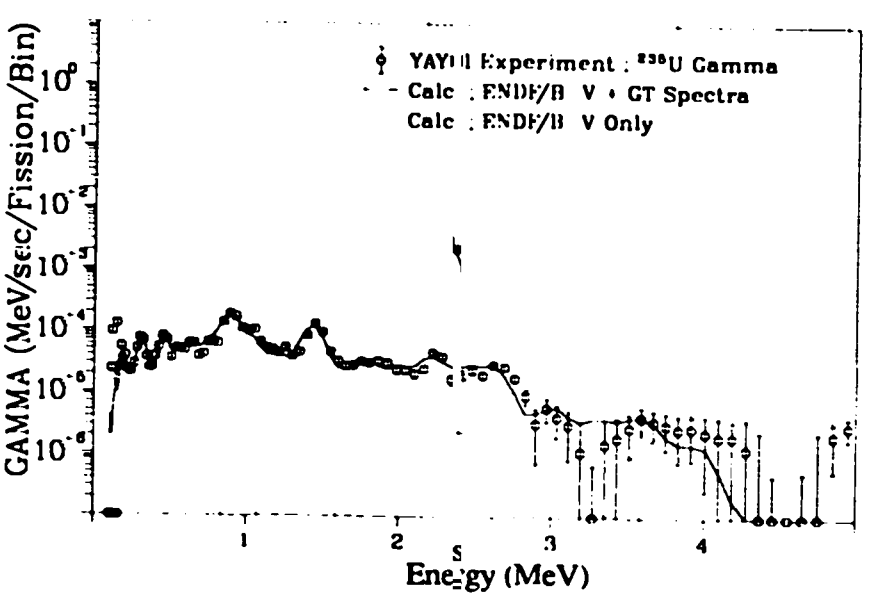

Fig. 227. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3500.0 sec).

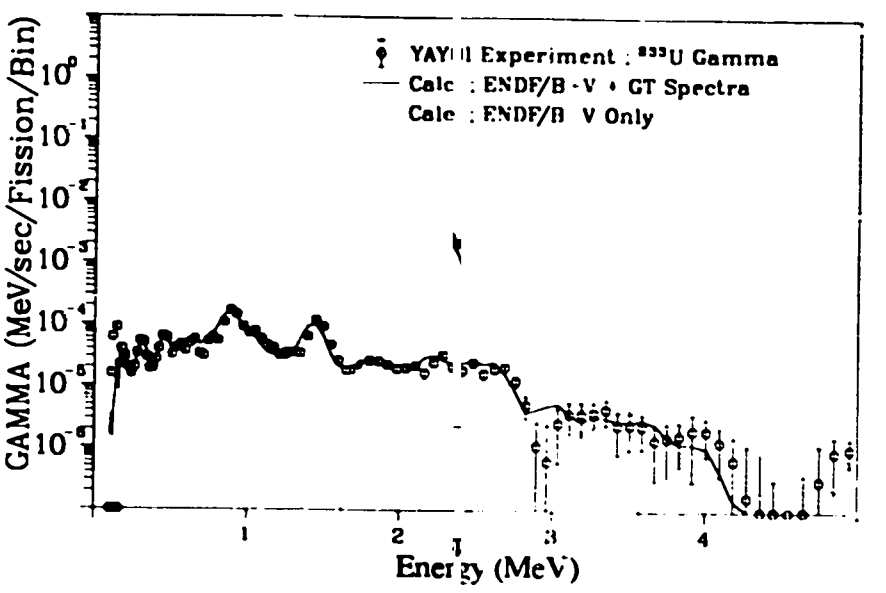

Fig. 228. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4100.0 sec).

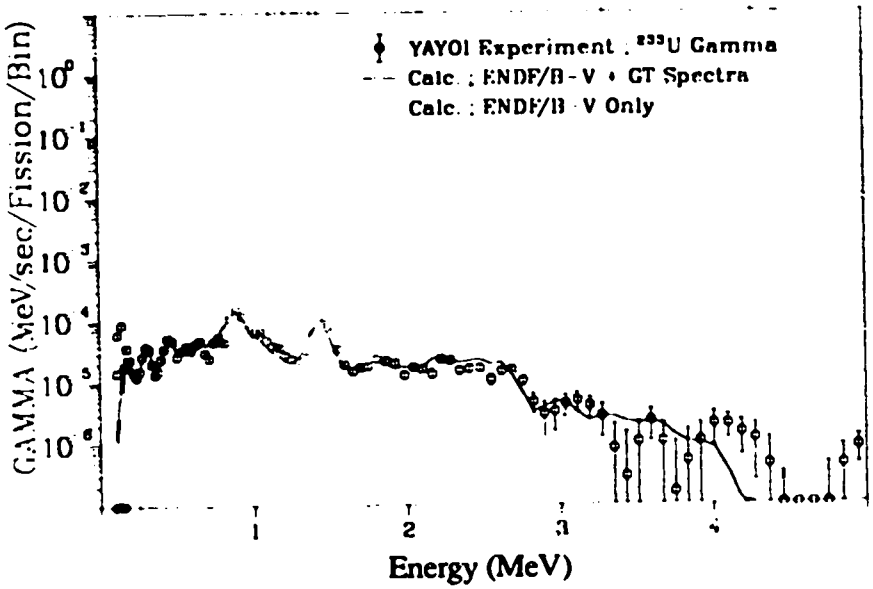

Fig. 229. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4800.0 sec).

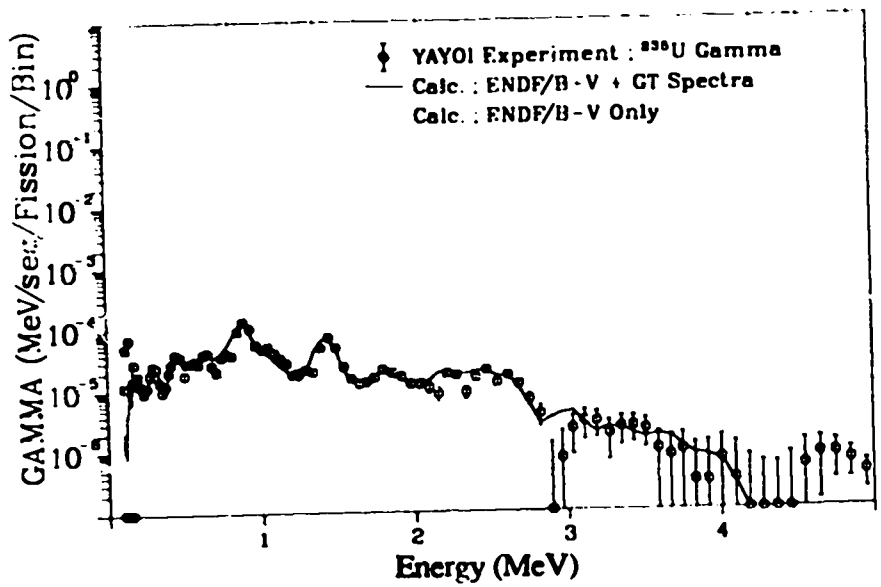

Fig. 230. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 5600.0 sec).

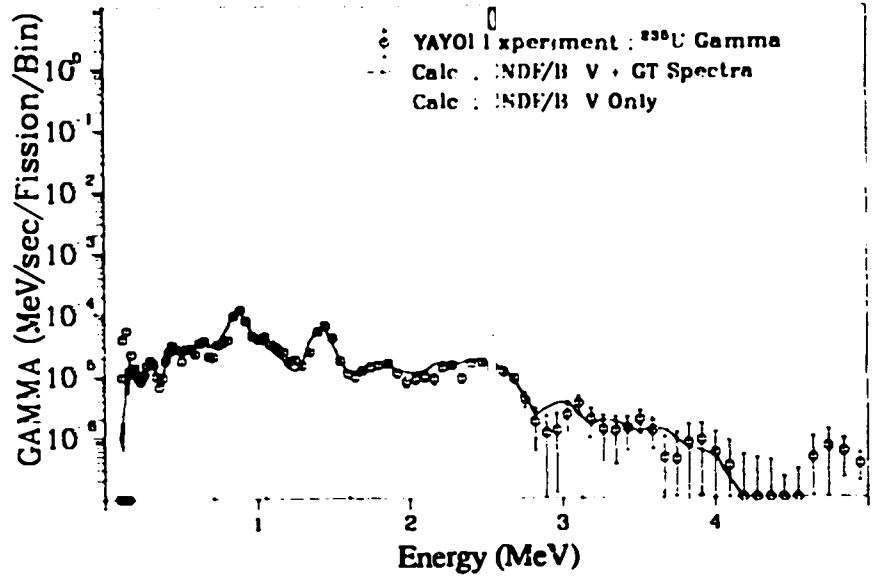

Fig. 231. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6500.0 sec).

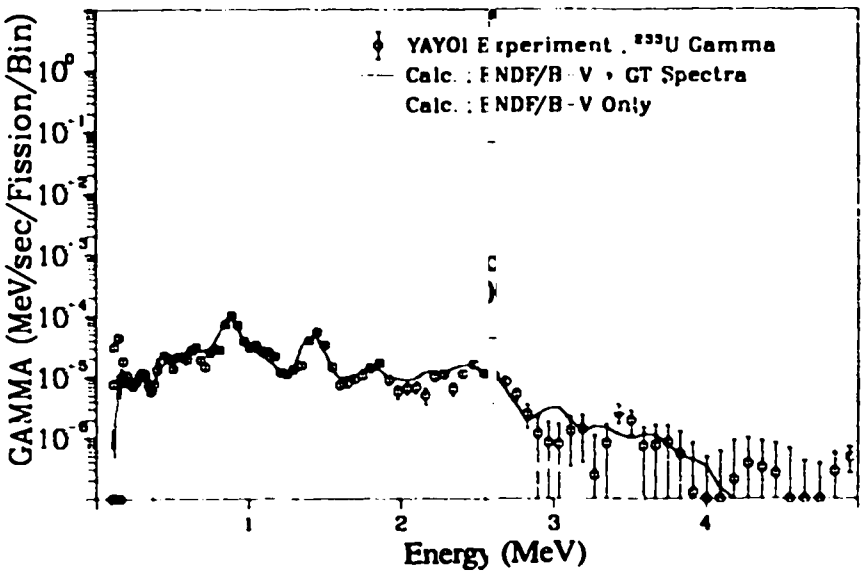

Fig. 232. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7500.0 sec).

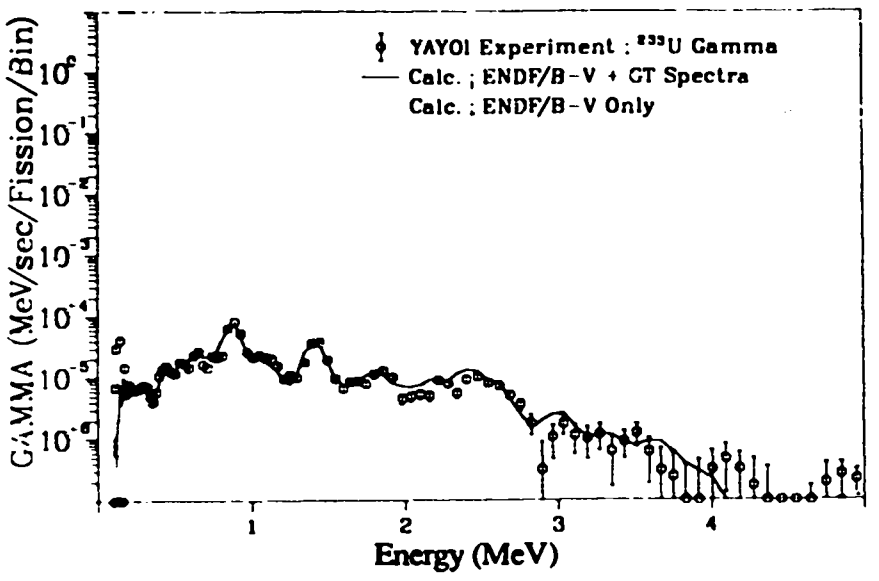

Fig. 233. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 9000.0 sec).

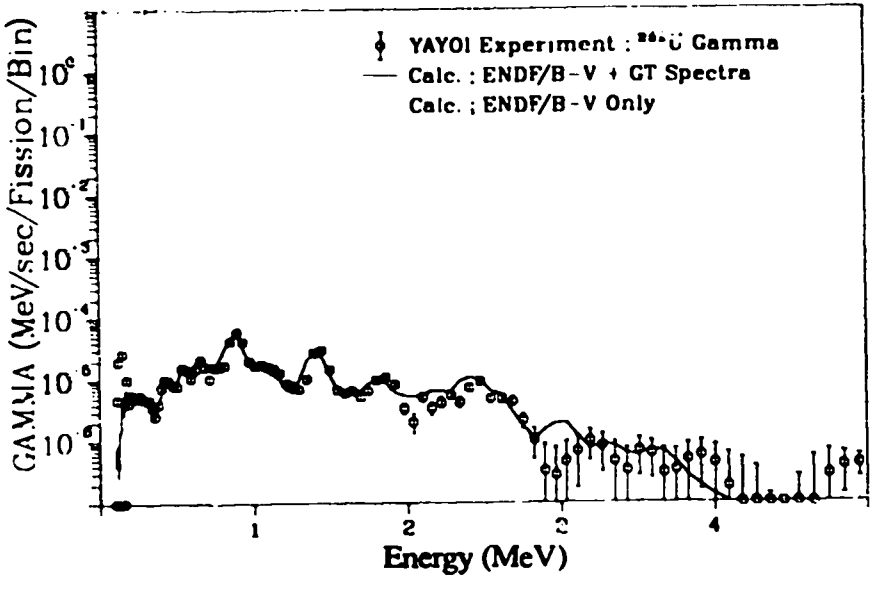

Fig. 234. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11000.0 sec).

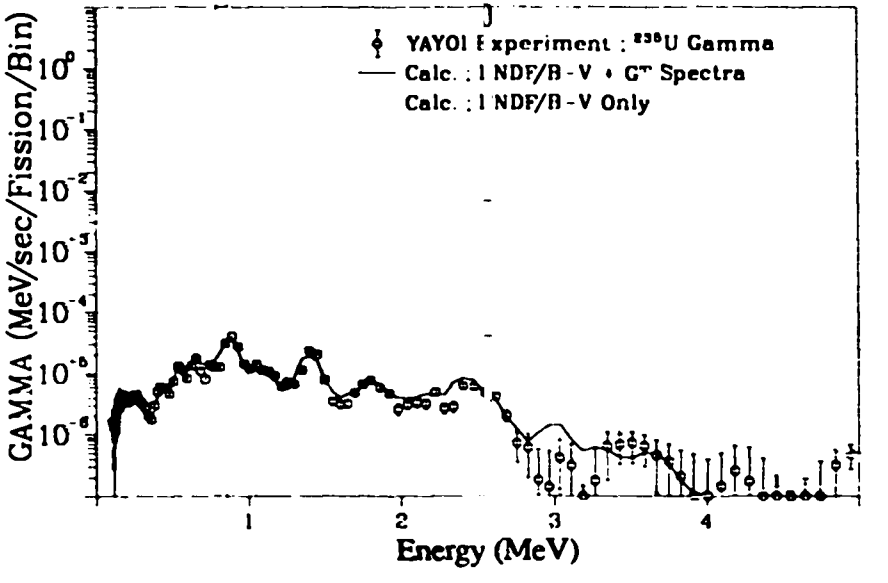

Fig. 235. Gamma spectrum afte · ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 13500.0 sec).

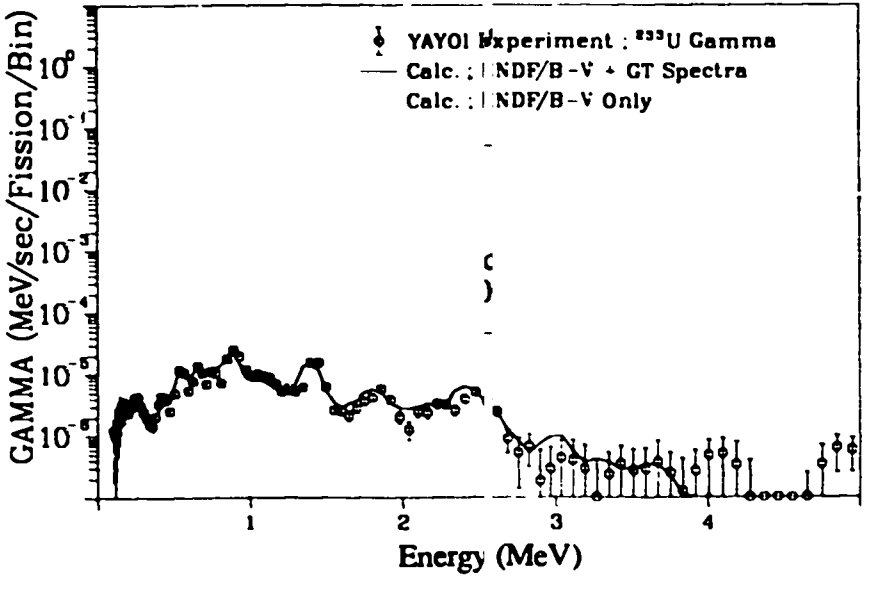

Fig. 236. Gamma spectrum afte · ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 16500.0 sec).

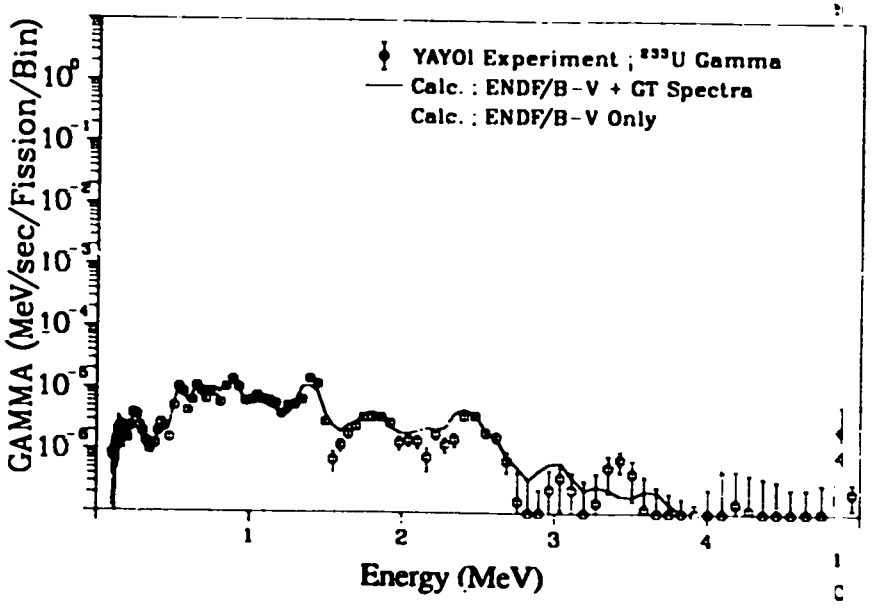

Fig. 237. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 20000.0 sec).

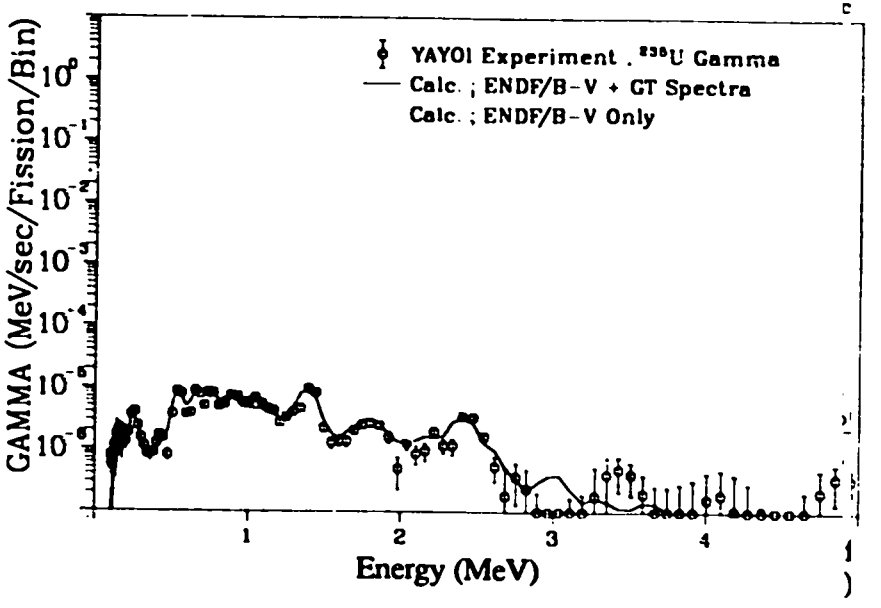

Fig. 238. Gamma spectrum after ^{235}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 24000.0 sec).

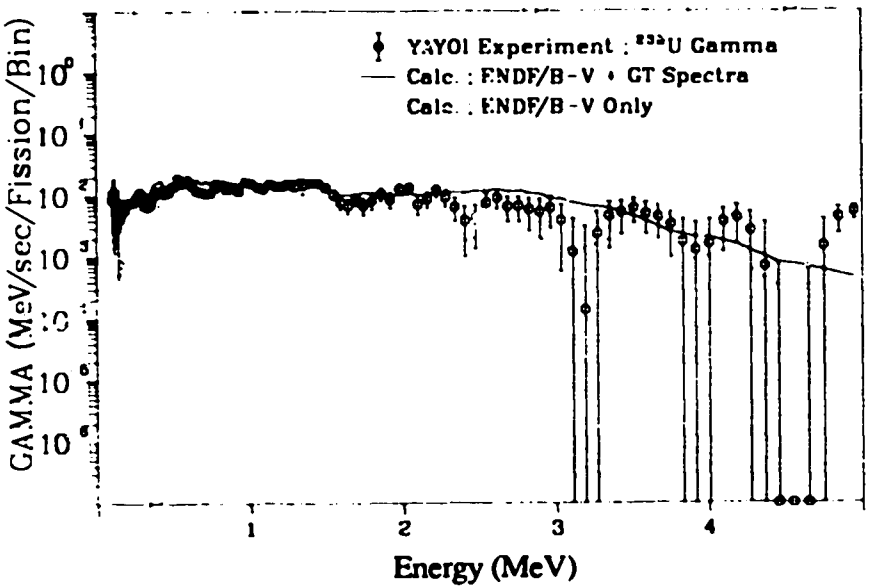

Fig. 239. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 19.0 sec).

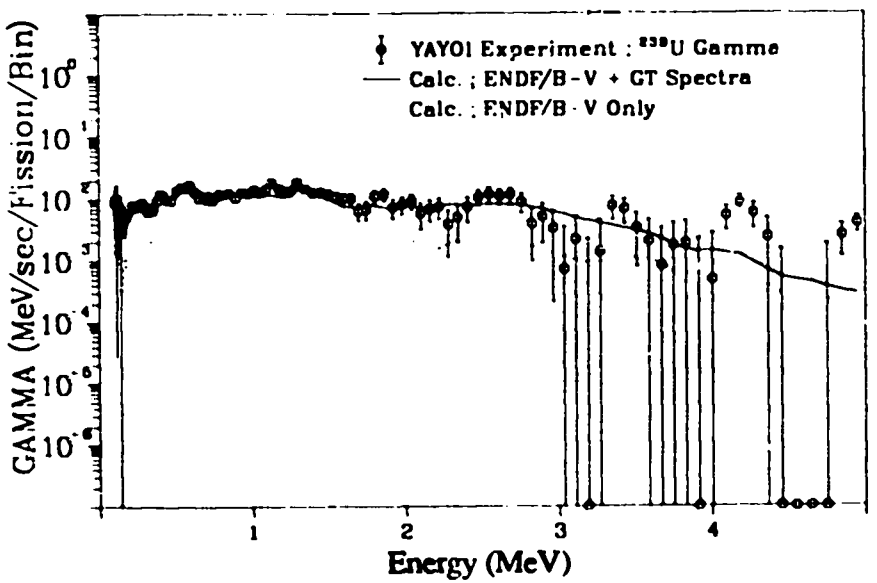

Fig. 240. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 26.0 sec).

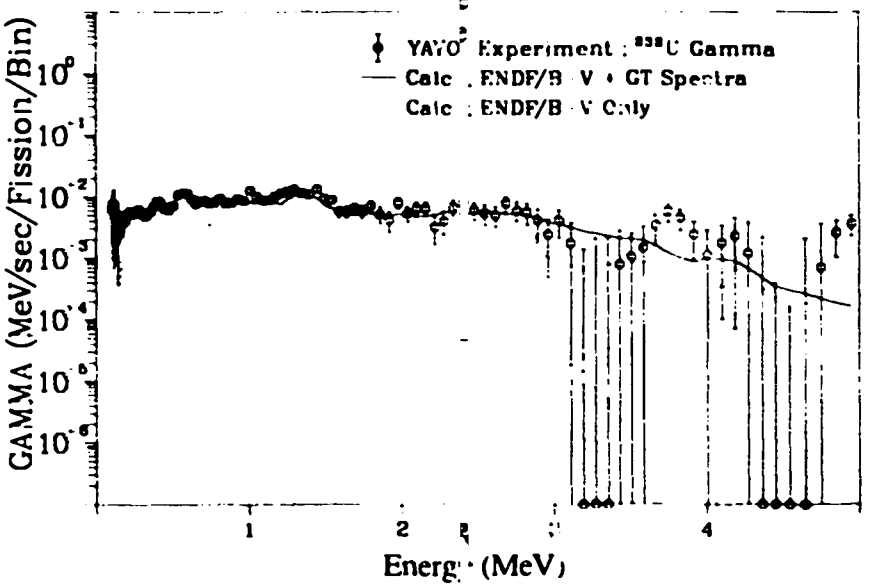

Fig. 241. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 35.0 sec).

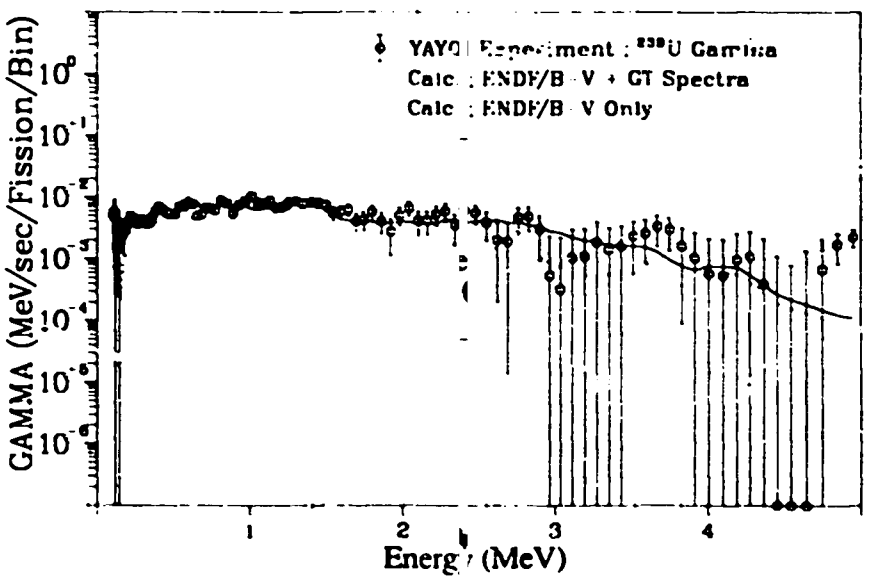

Fig. 242. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 45.0 sec).

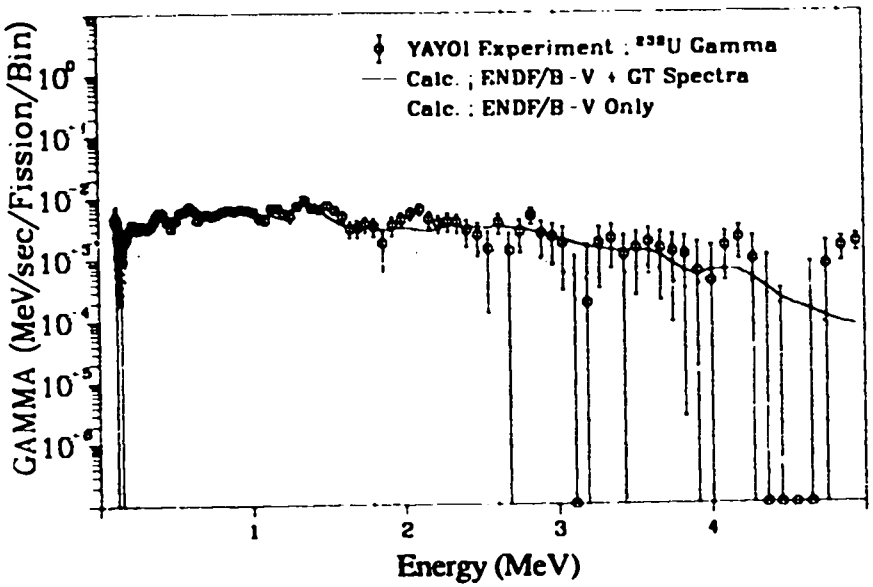

Fig. 243. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 55.0 sec).

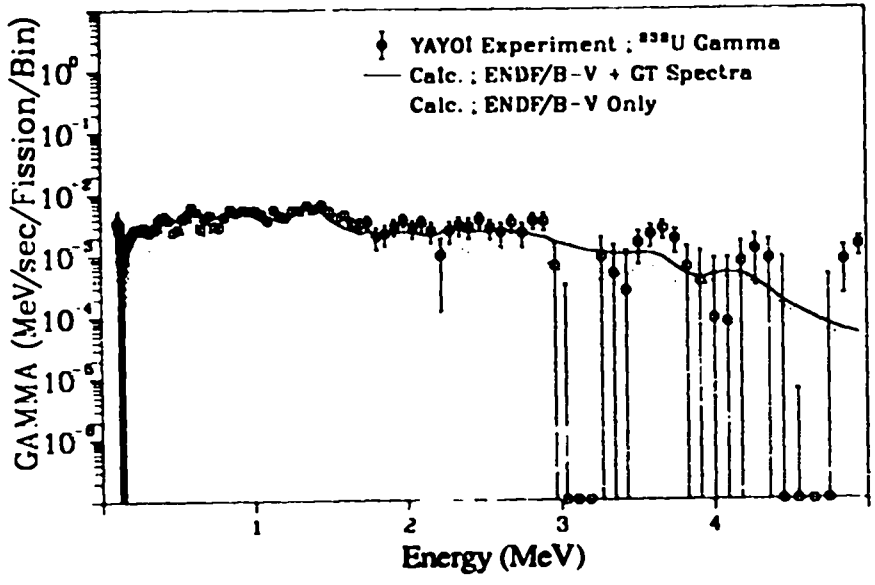

Fig. 244. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 70.0 sec).

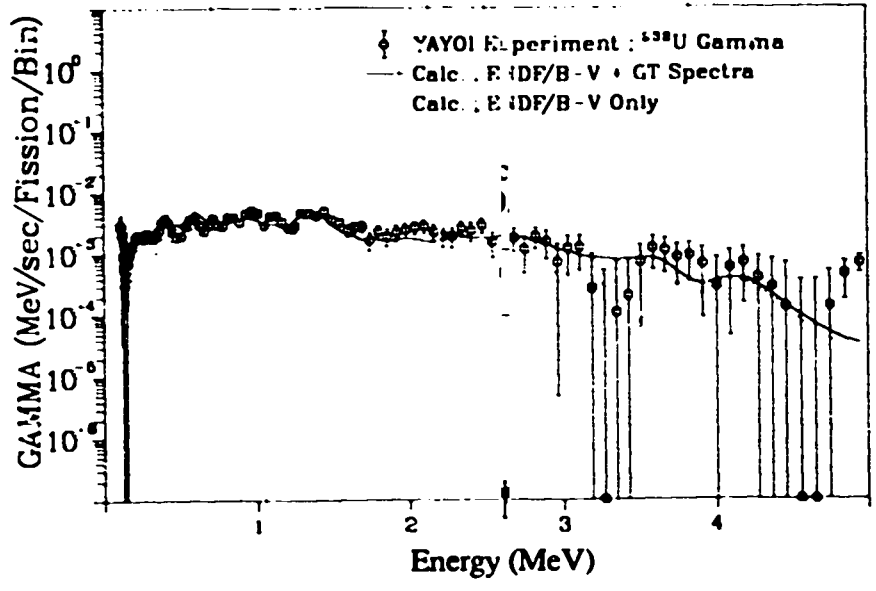

Fig. 245. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 90.0 sec).

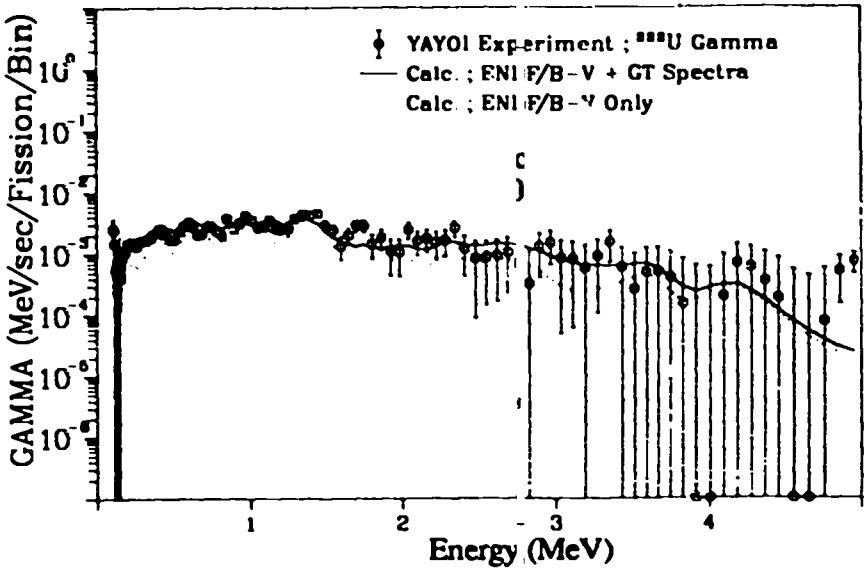

Fig. 246. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 110.0 sec).

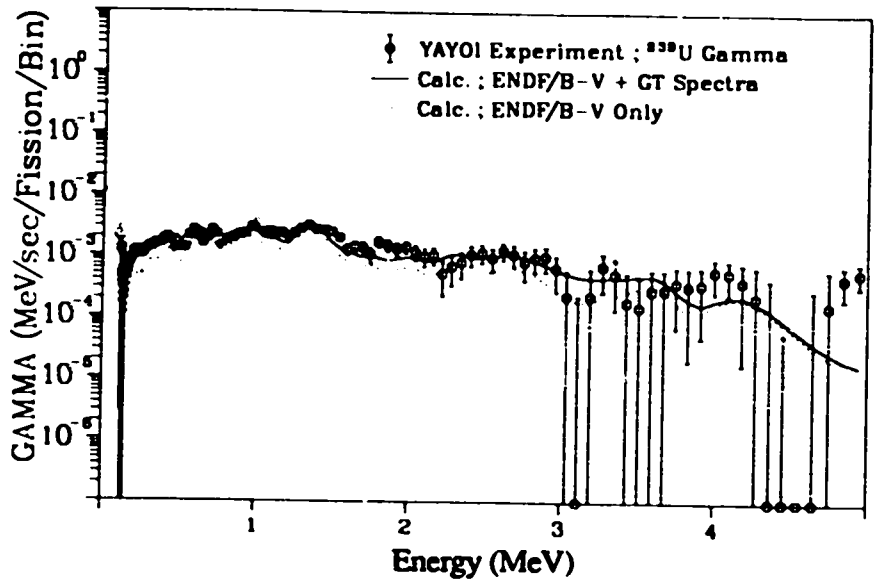

Fig. 247. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 140.0 sec).

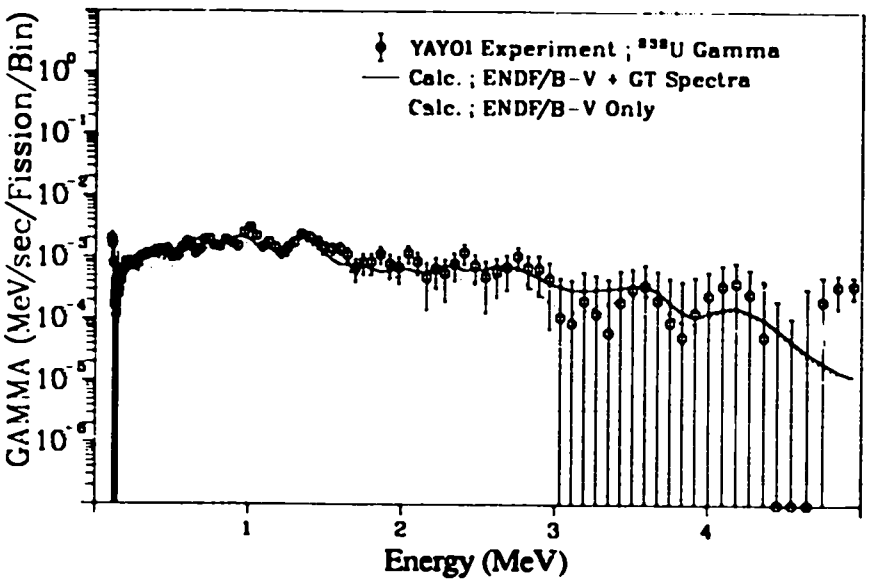

Fig. 248. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 180.0 sec).

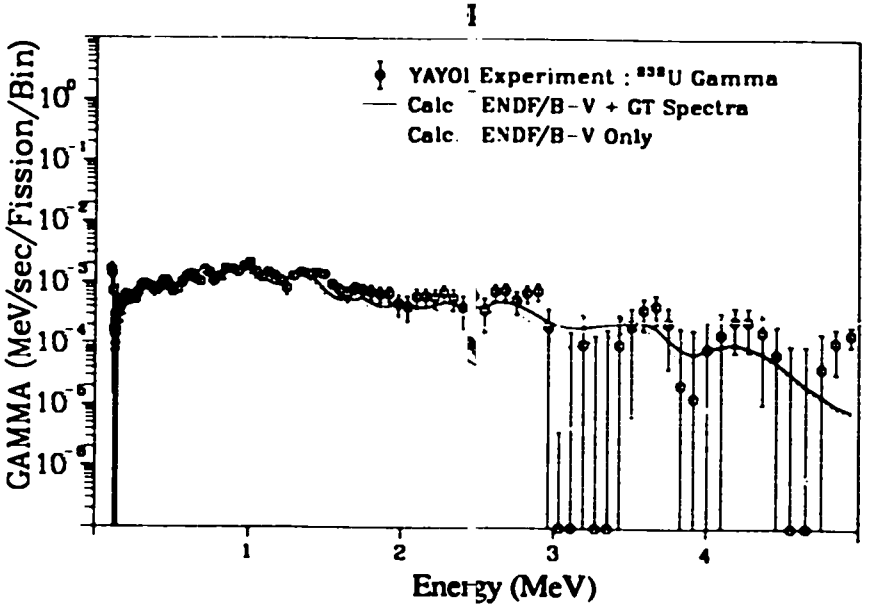

Fig. 249. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 230.0 sec).

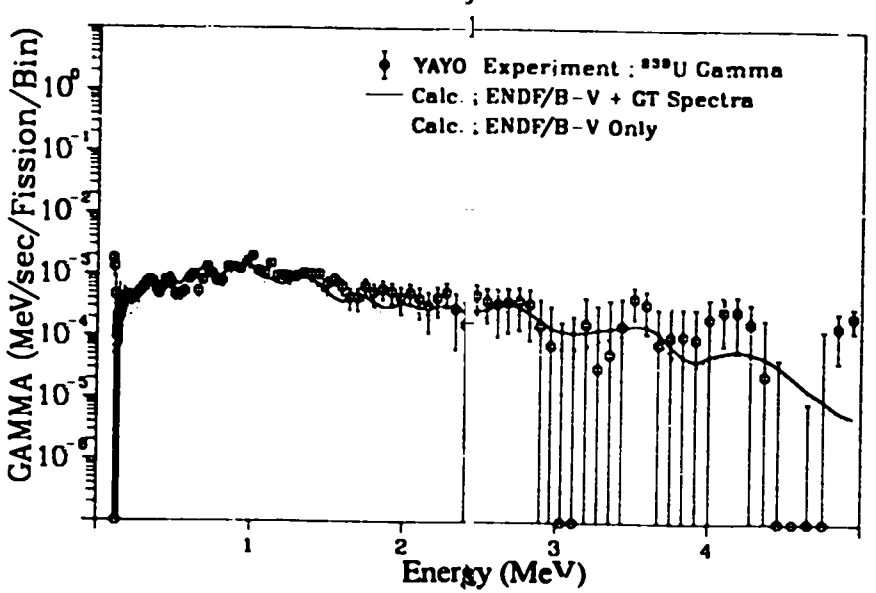

Fig. 250. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 290.0 sec).

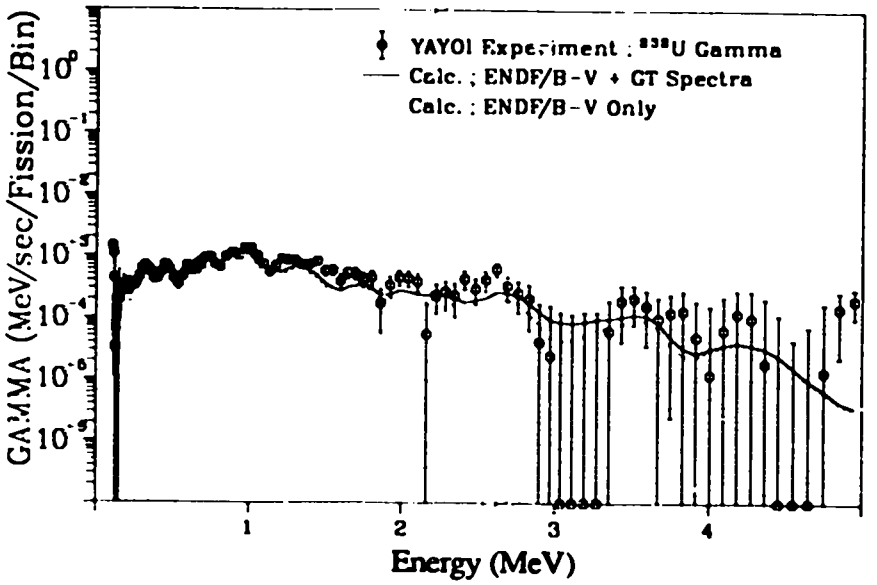

Fig. 251. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 360.0 sec).

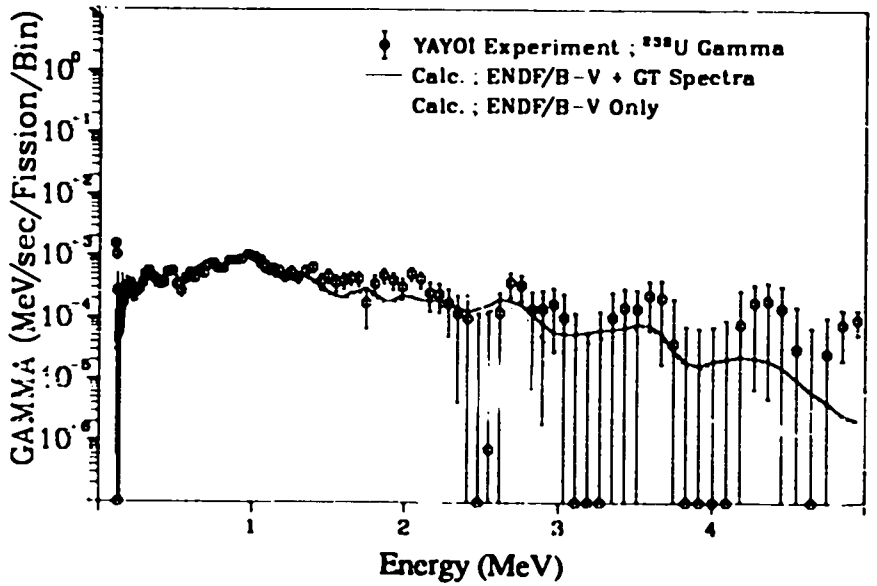

Fig. 252. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 450.0 sec).

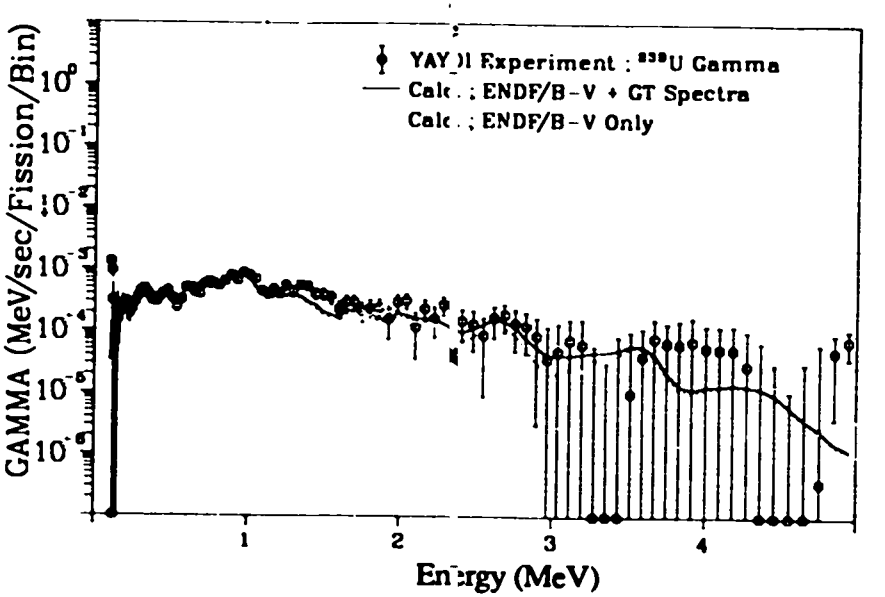

Fig. 253. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 550.0 sec).

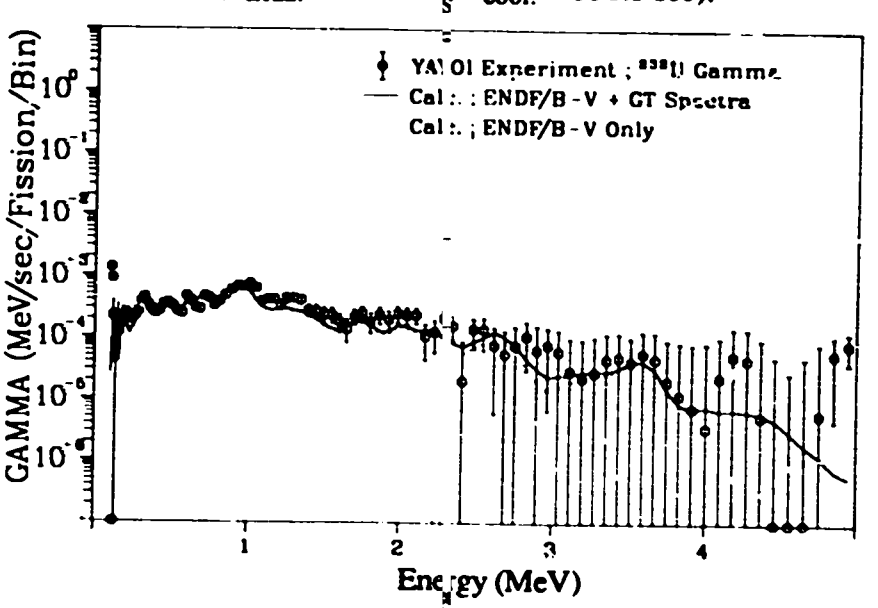

Fig. 254. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 700.0 sec).

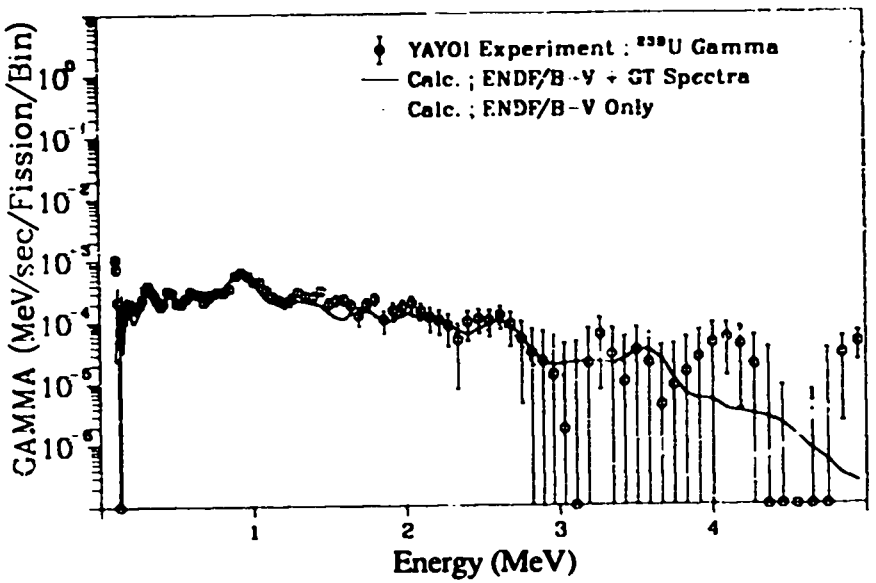

Fig. 255. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 900.0 sec).

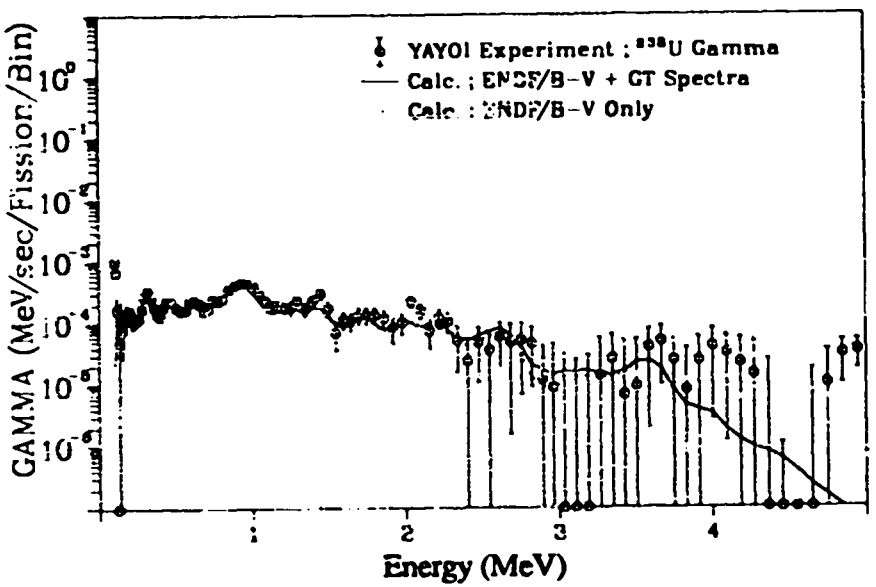

Fig. 256. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1200.0 sec).

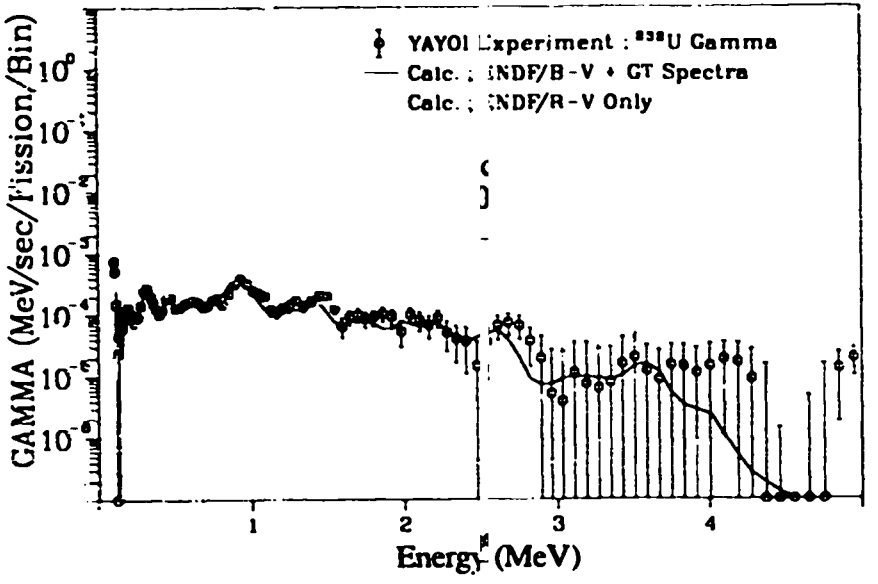

Fig. 257. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1600.0 sec).

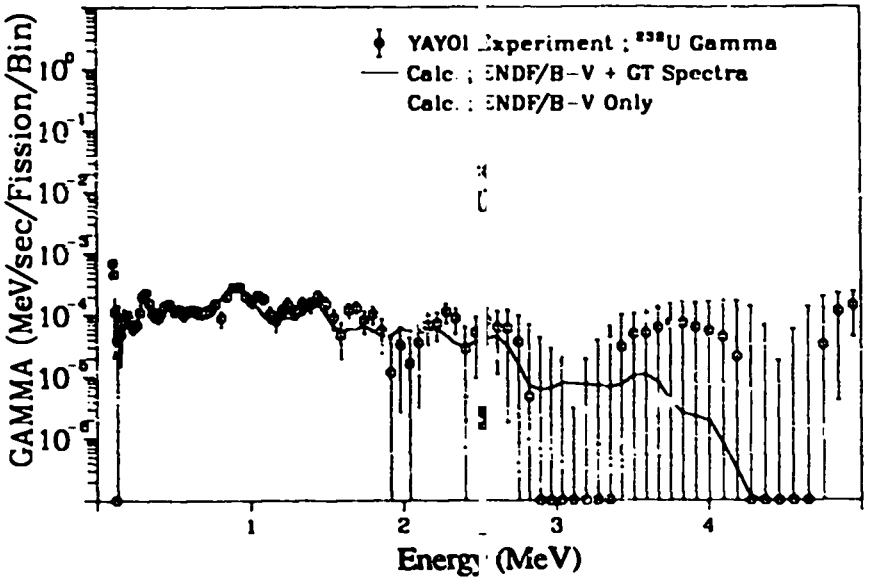

Fig. 258. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2000.0 sec).

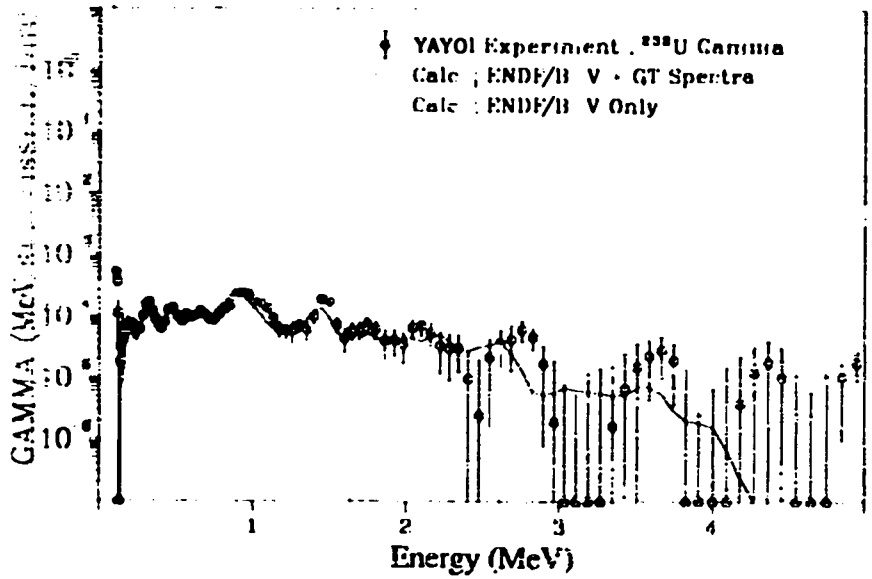

Fig. 259. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2450.0 sec).

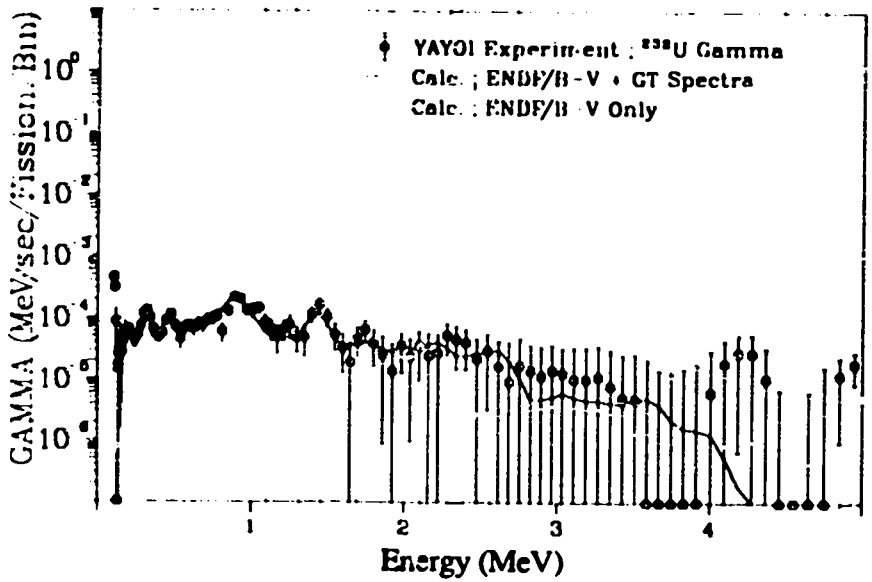

Fig. 260. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2950.0 sec).

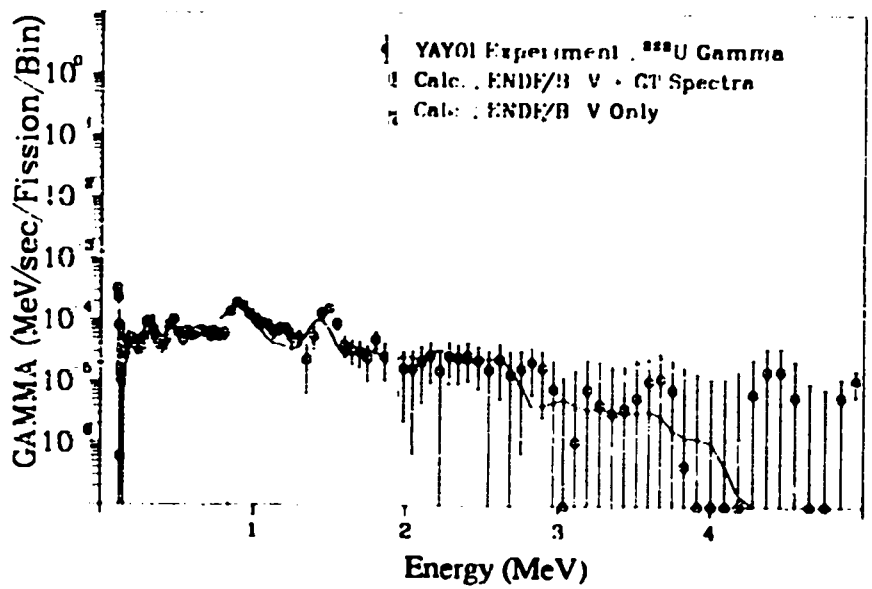

Fig. 261. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 3500.0 sec).

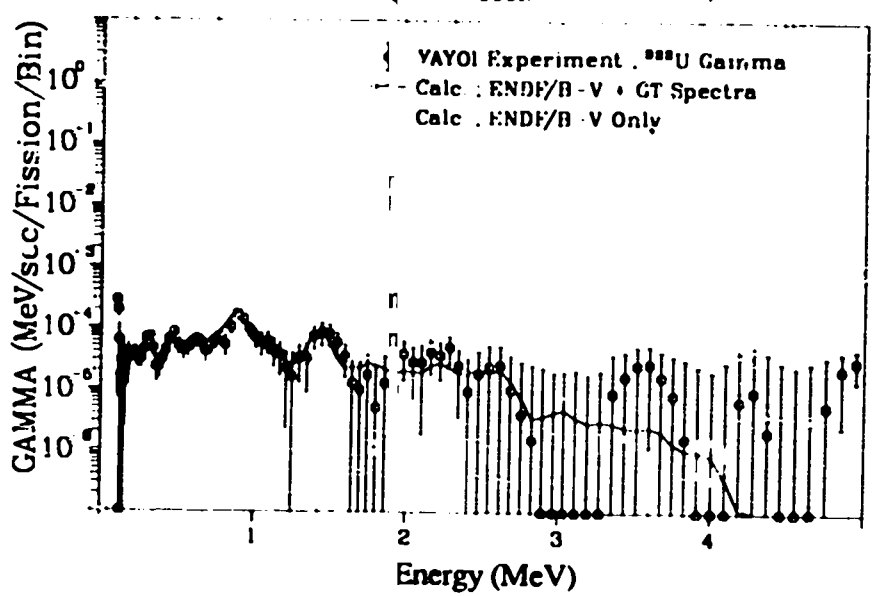

Fig. 262. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 4100.0 sec).

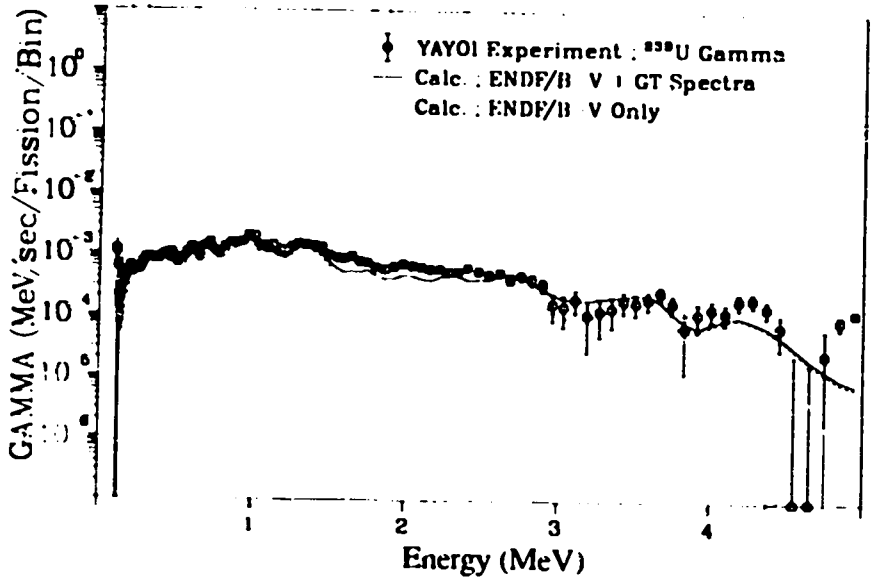

Fig. 263. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, T_{cool} = 230.0 sec).

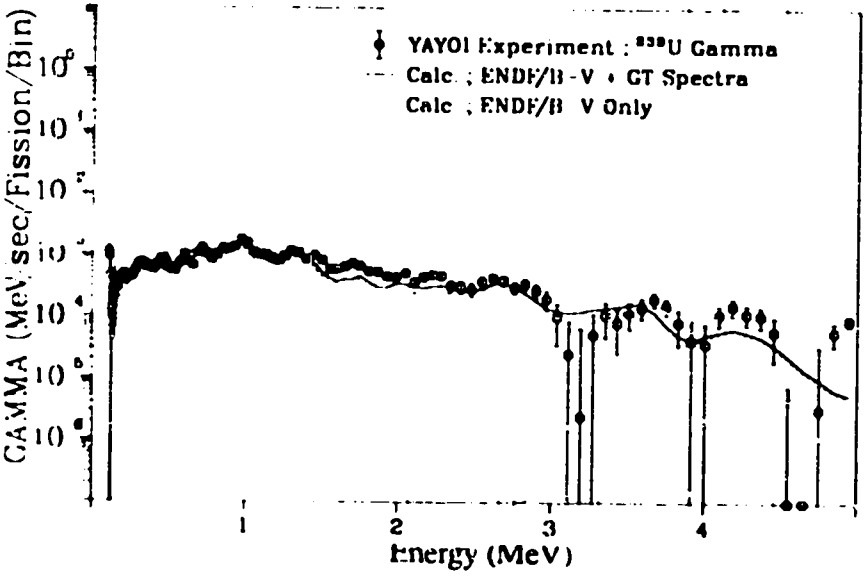

Fig. 264. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, T_{cool} = 290.0 sec).

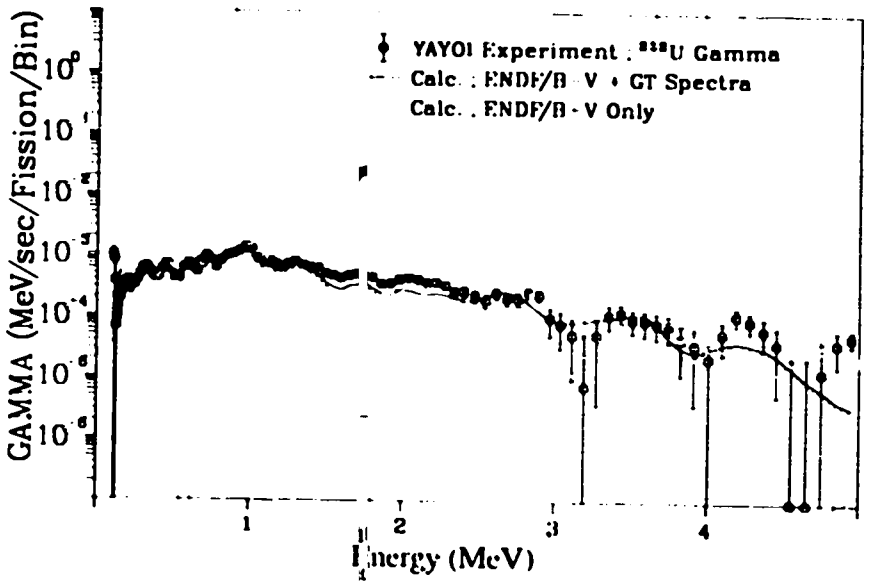

Fig. 265. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 360.0 sec).

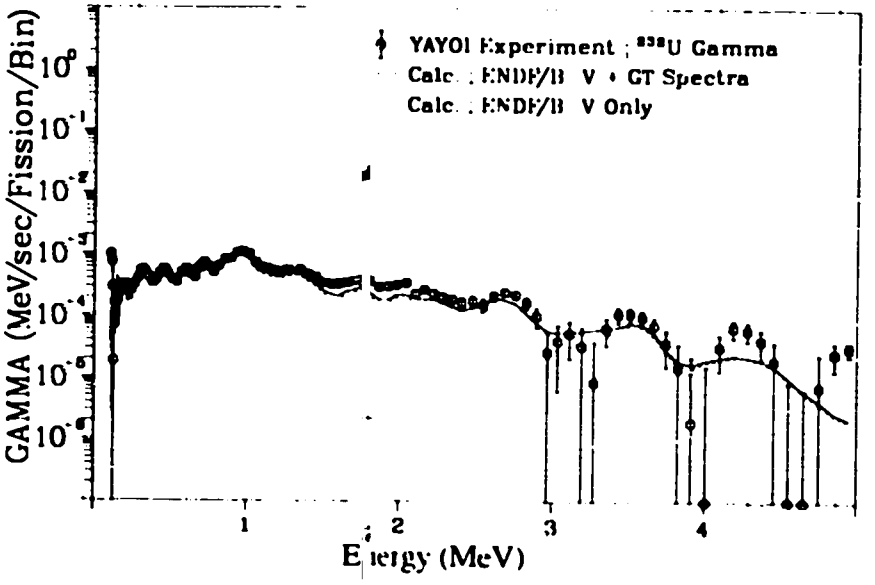

Fig. 266. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 450.0 sec).

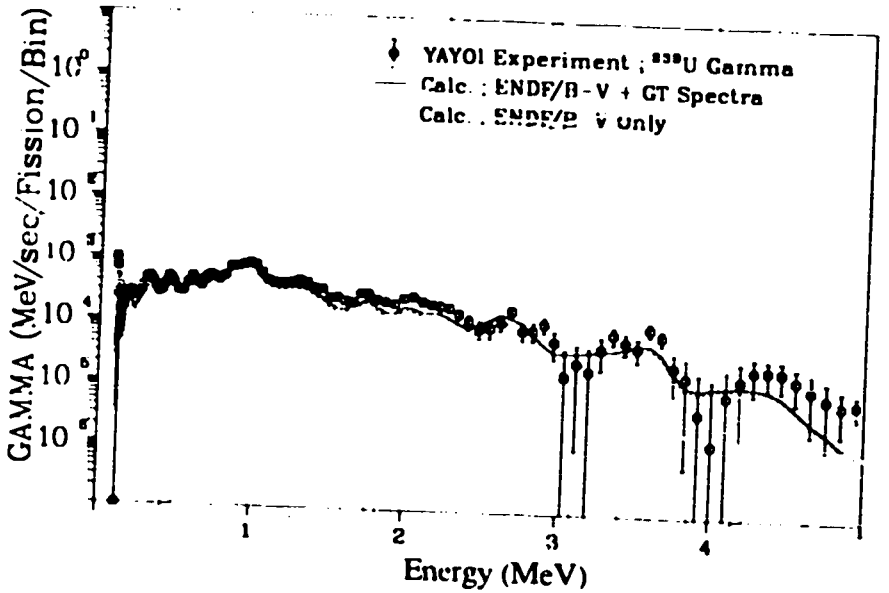

Fig. 267. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 550.0 sec).

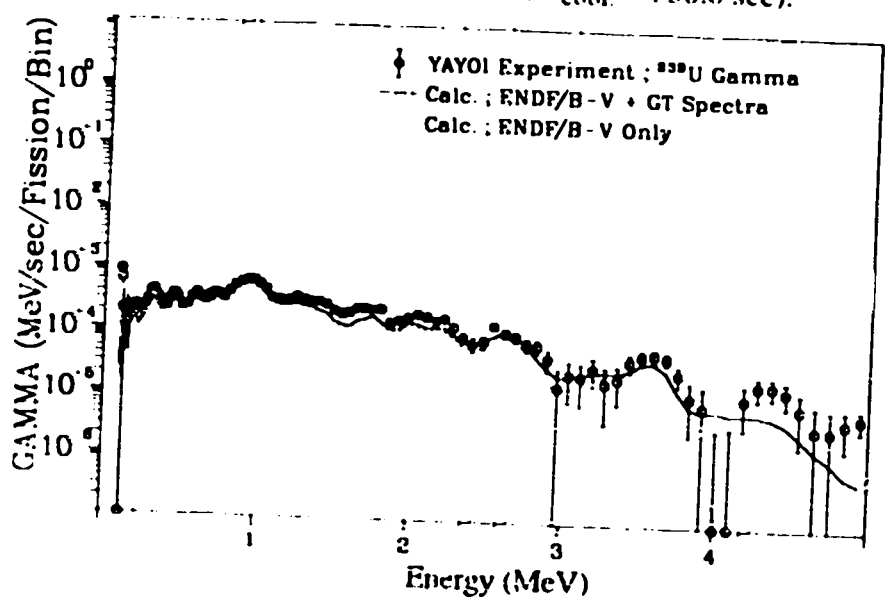

Fig. 268. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 700.0 sec).

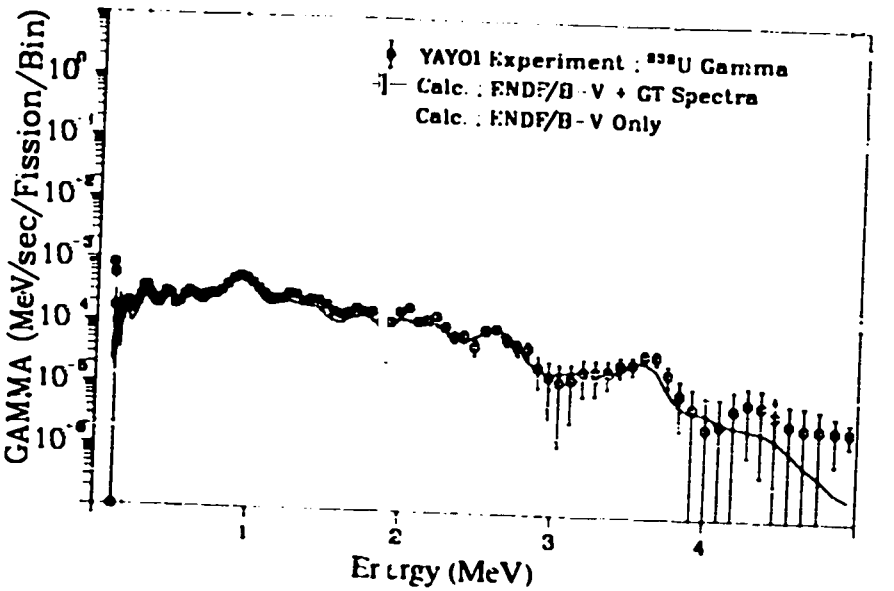

Fig. 269. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 900.0 sec).

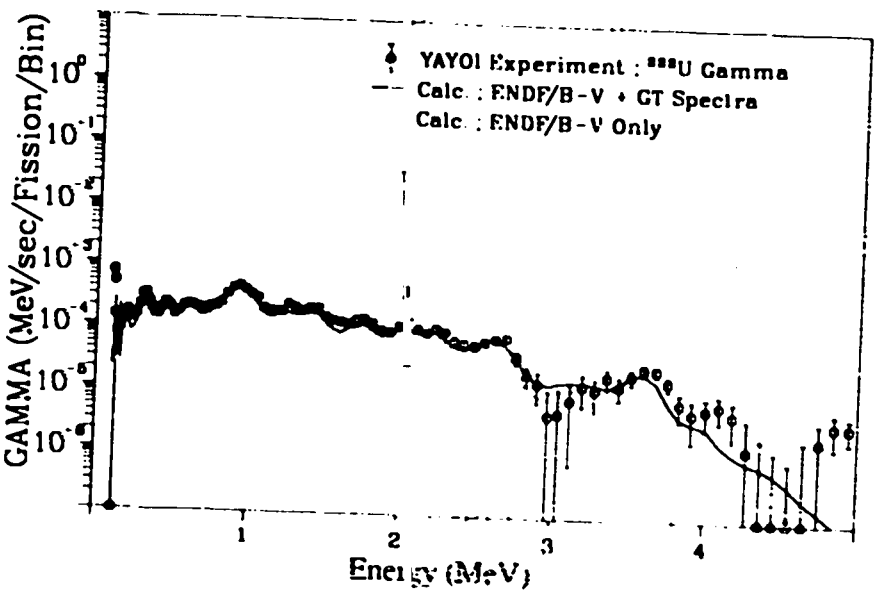

Fig. 270. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1200.0 sec).

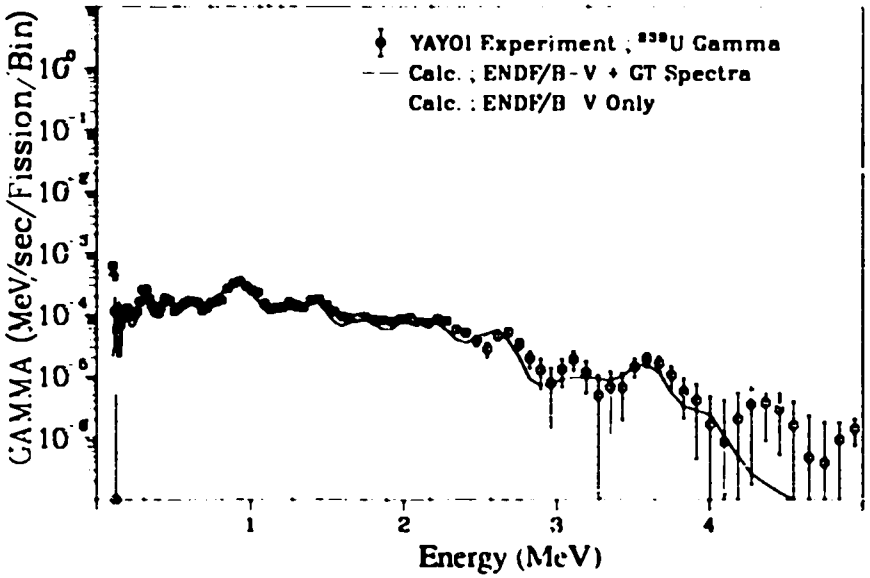

Fig. 271. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1600.0 sec).

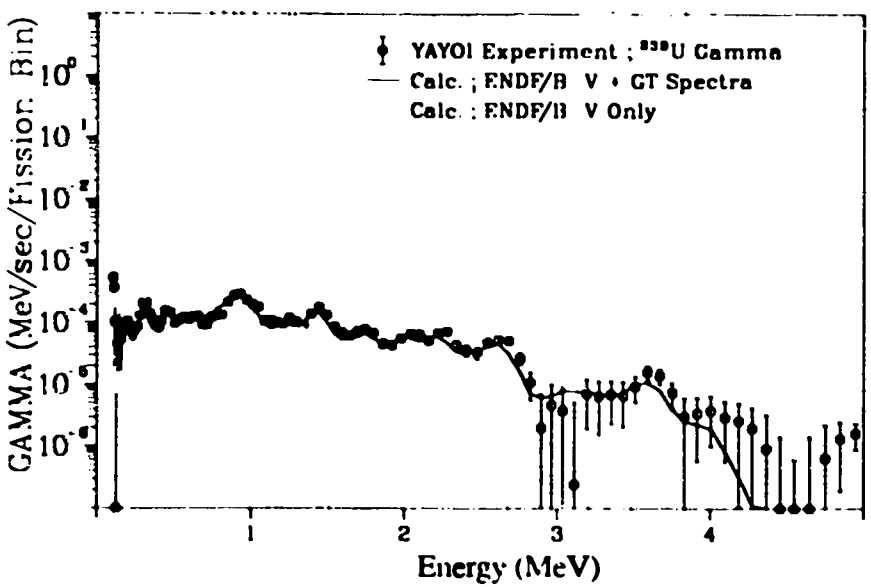

Fig. 272. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2000.0 sec).

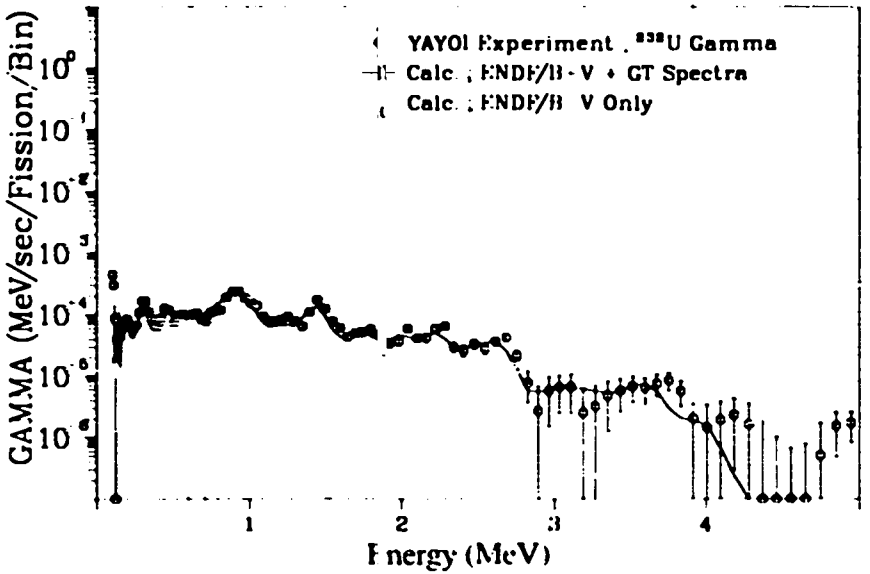

Fig. 273. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2450.0 sec).

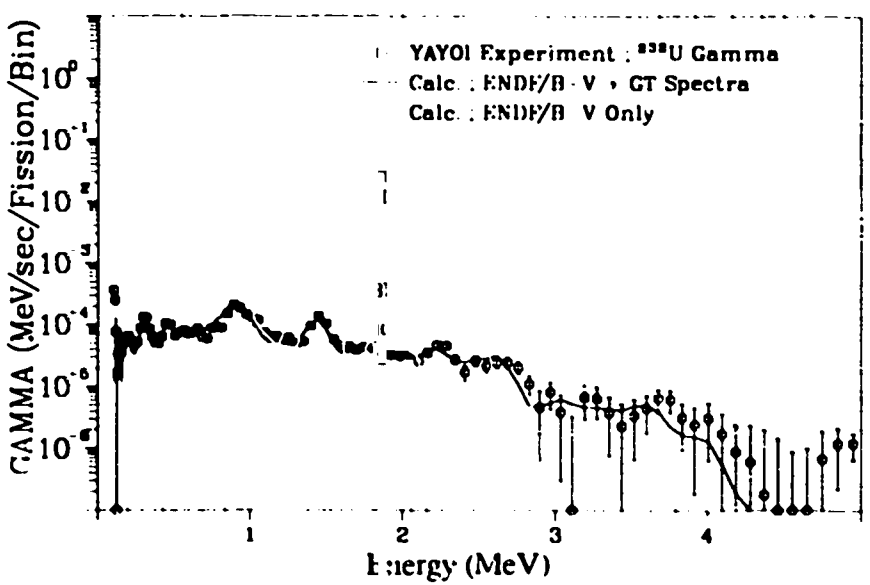

Fig. 274. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2950.0 sec).

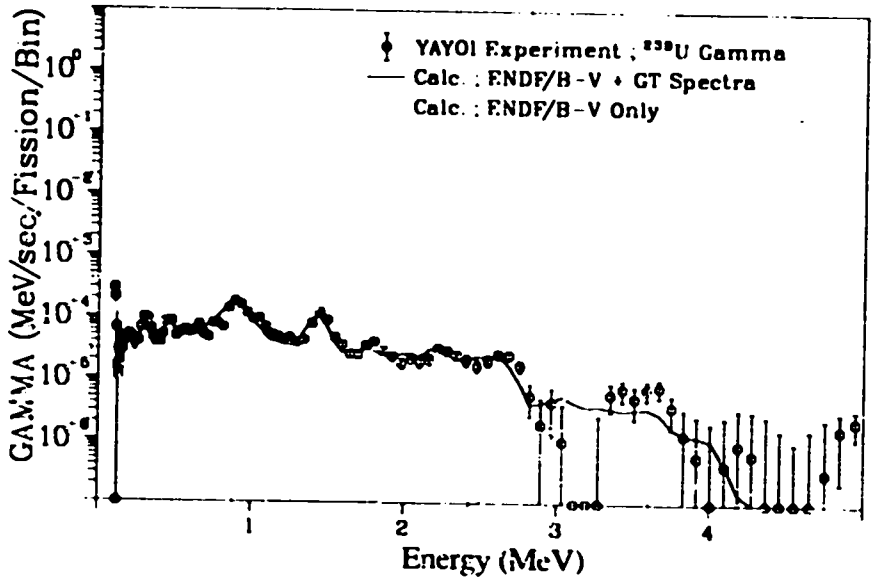

Fig. 275. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3500.0 sec).

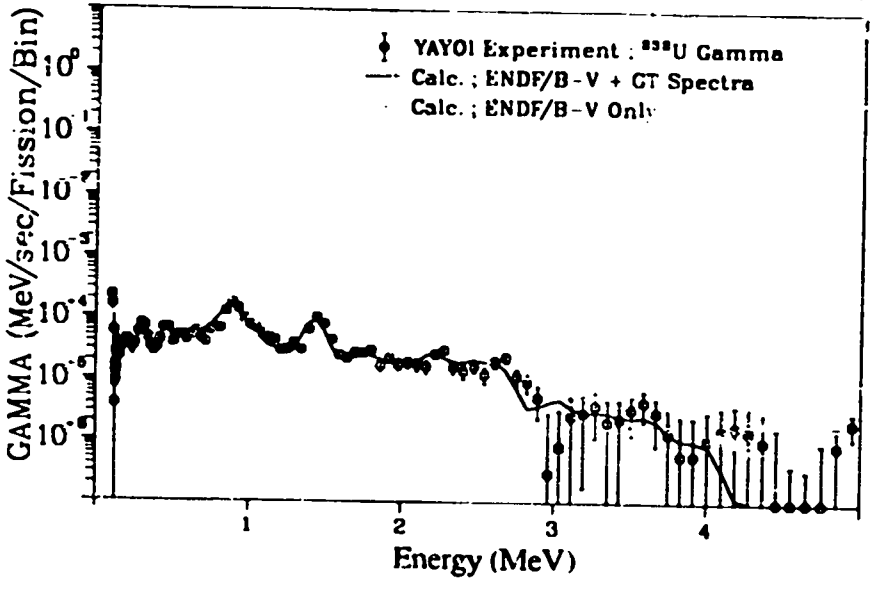

Fig. 276. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4100.0 sec).

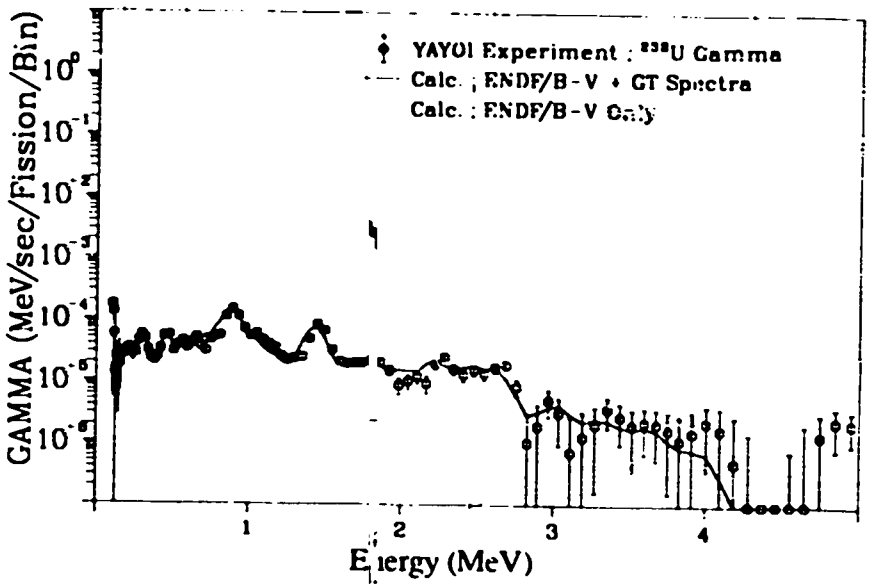

Fig. 277. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4800.0 sec).

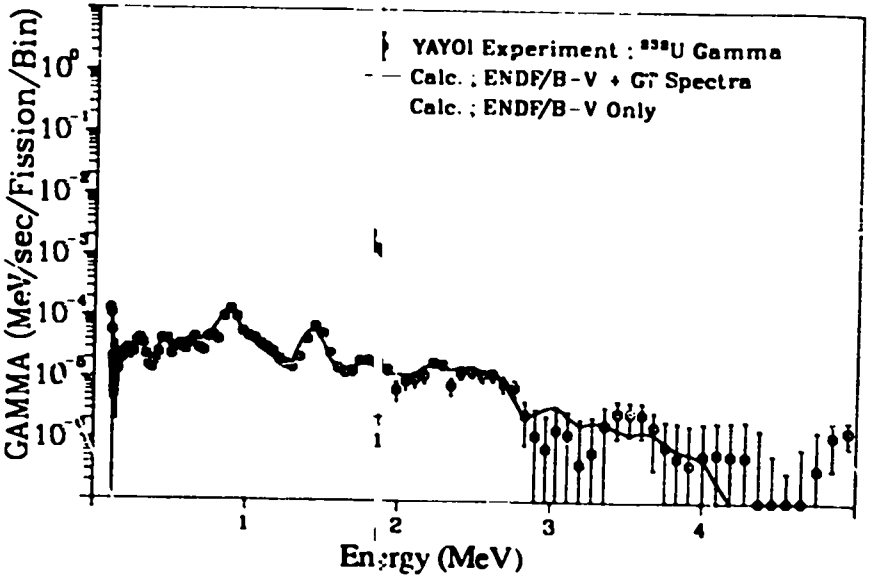

Fig. 278. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 5600.0 sec).

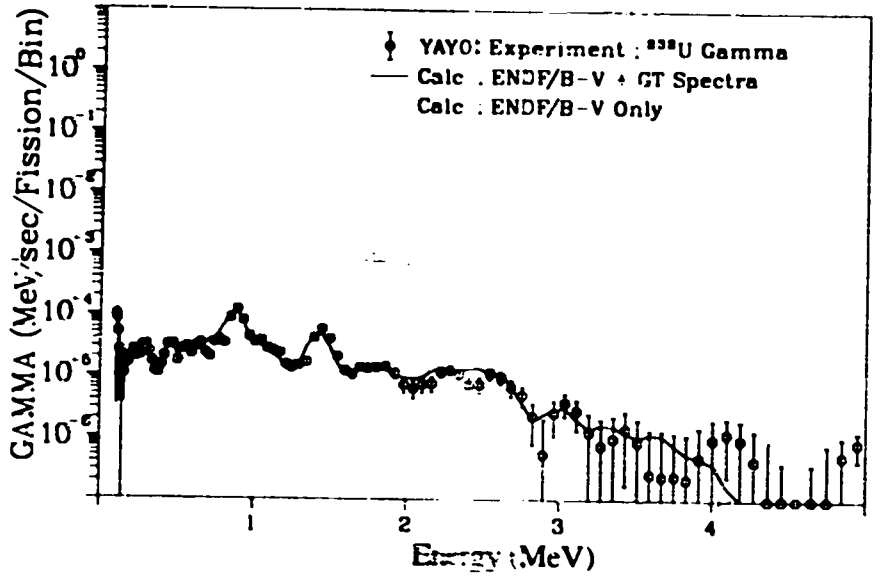

Fig. 279. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6500.0 sec).

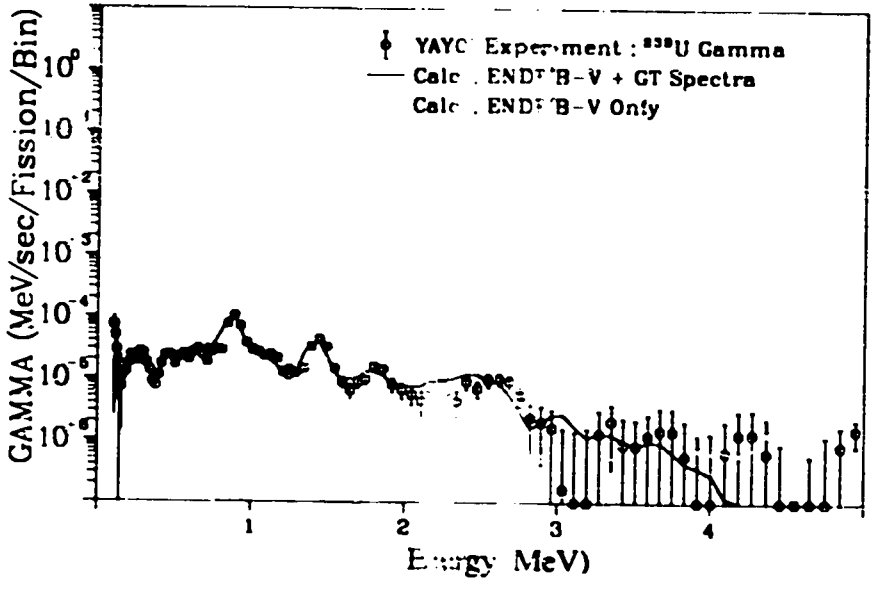

Fig. 280. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7500.0 sec).

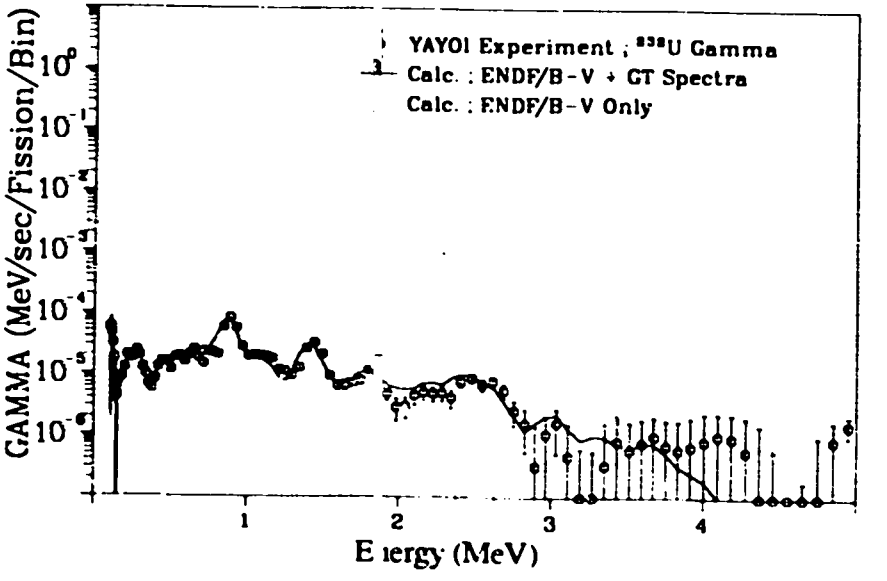

Fig. 281. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 9000.0 sec).

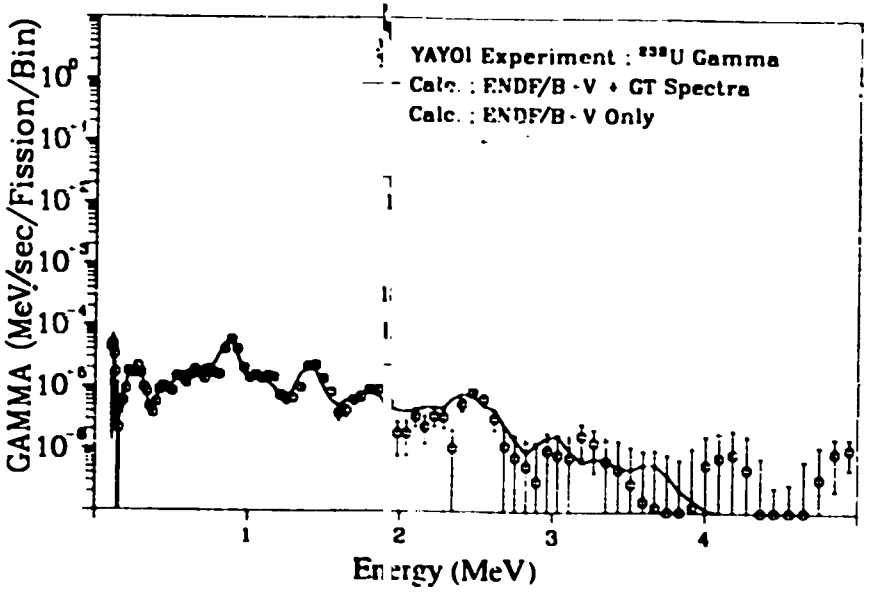

Fig. 282. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11000.0 sec).

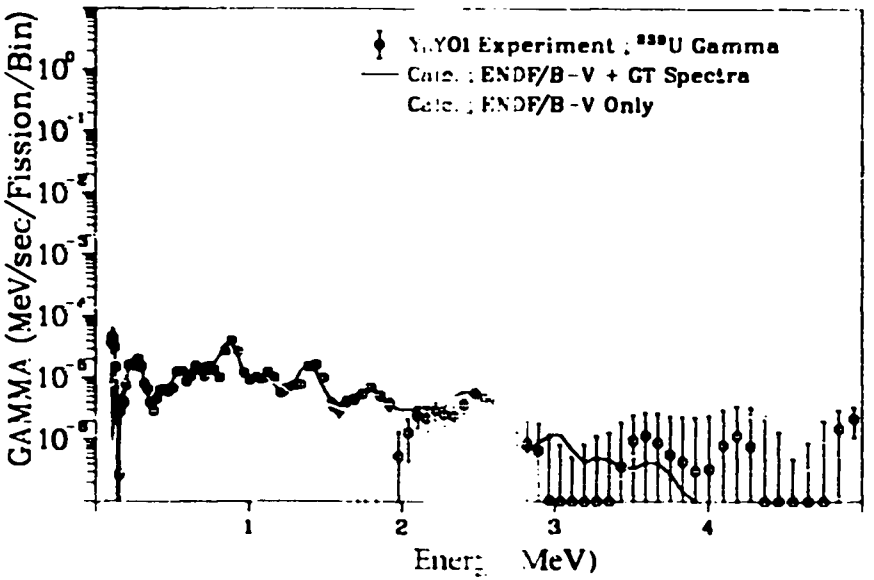

Fig. 283. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 13500.0 sec).

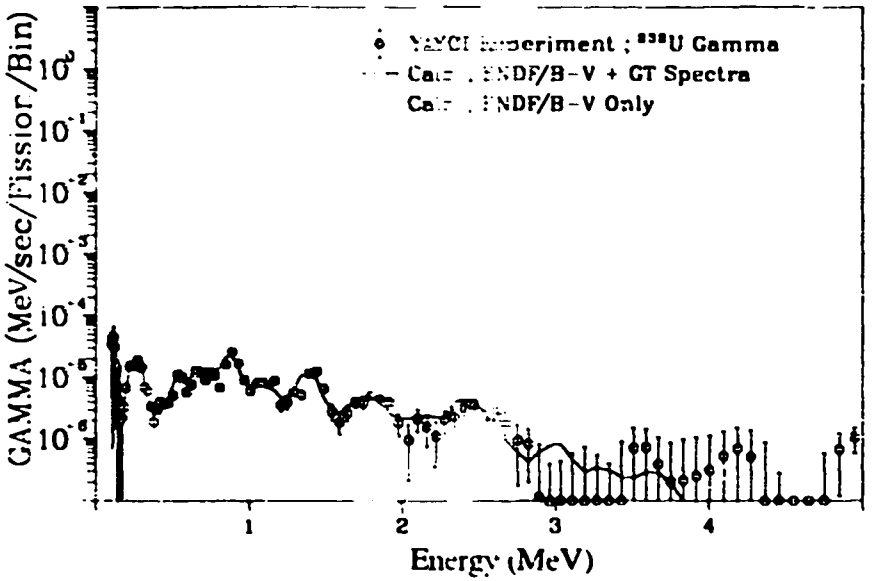

Fig. 284. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 16500.0 sec).

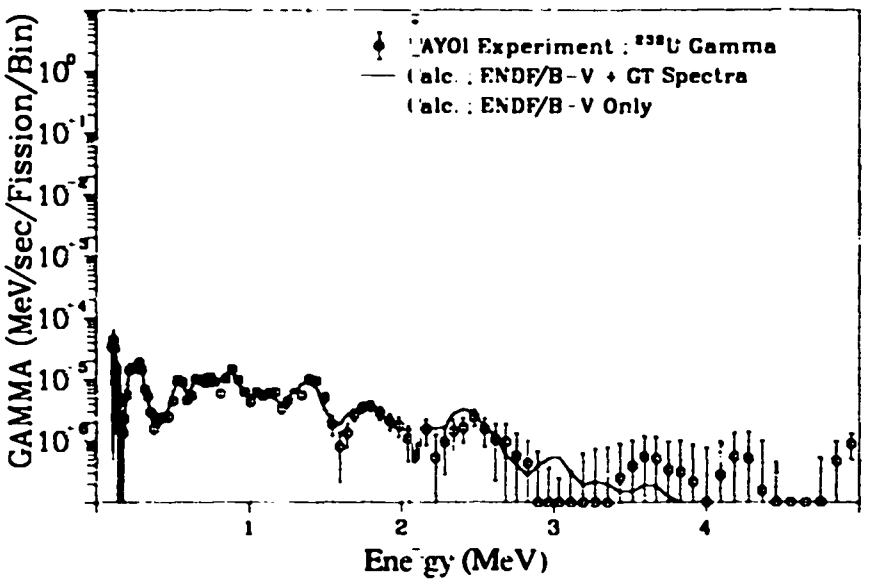

Fig. 285. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 20000.0 sec).

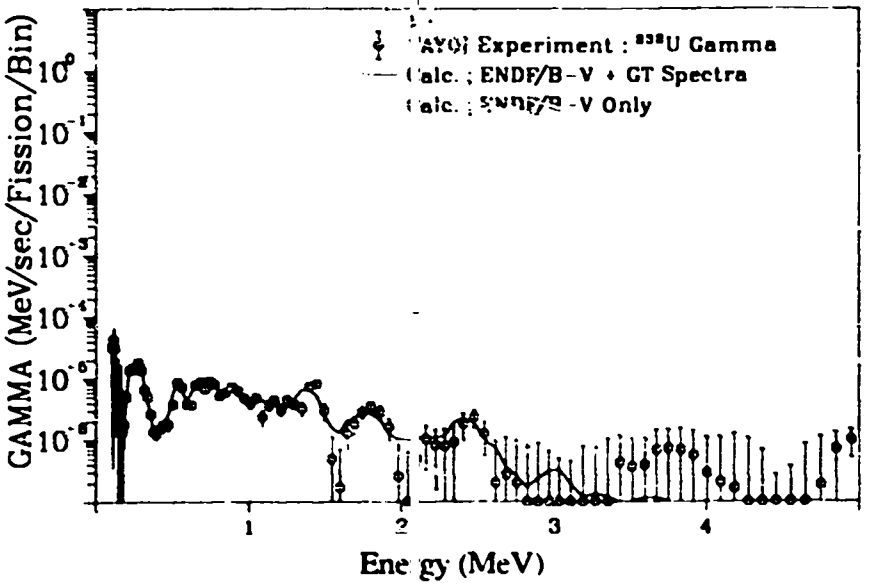

Fig. 286. Gamma spectrum after ^{238}U fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 24000.0 sec).

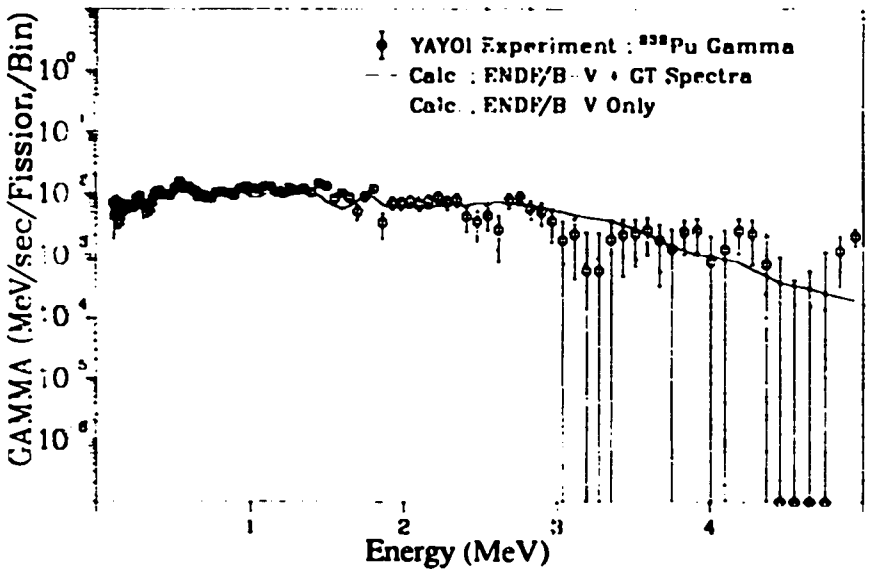

Fig. 287. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 19.0 sec).

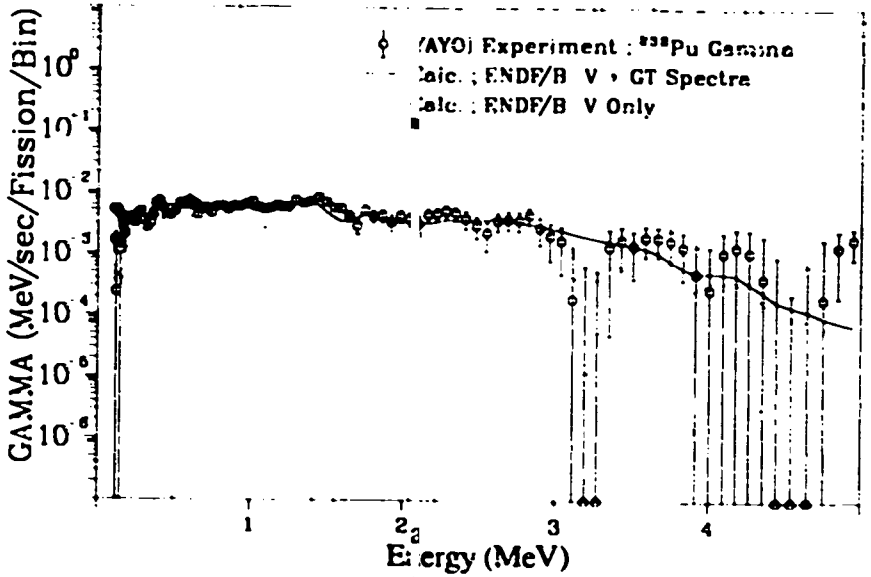

Fig. 289. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 35.0 sec).

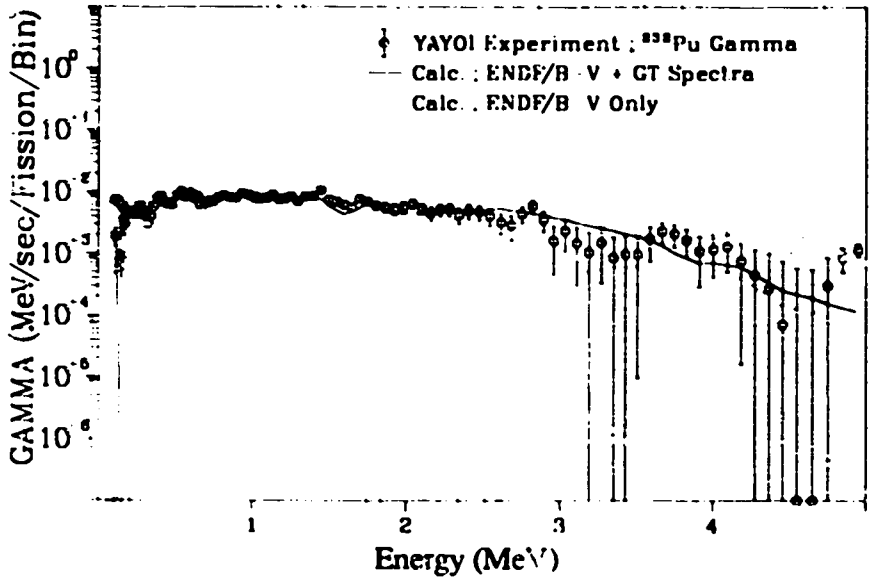

Fig. 288. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 26.0 sec).

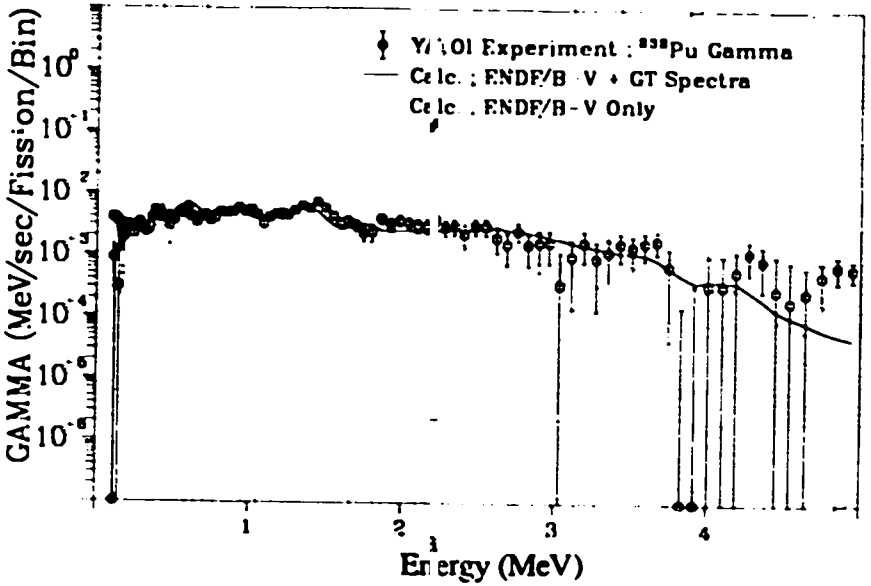

Fig. 290. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 45.0 sec).

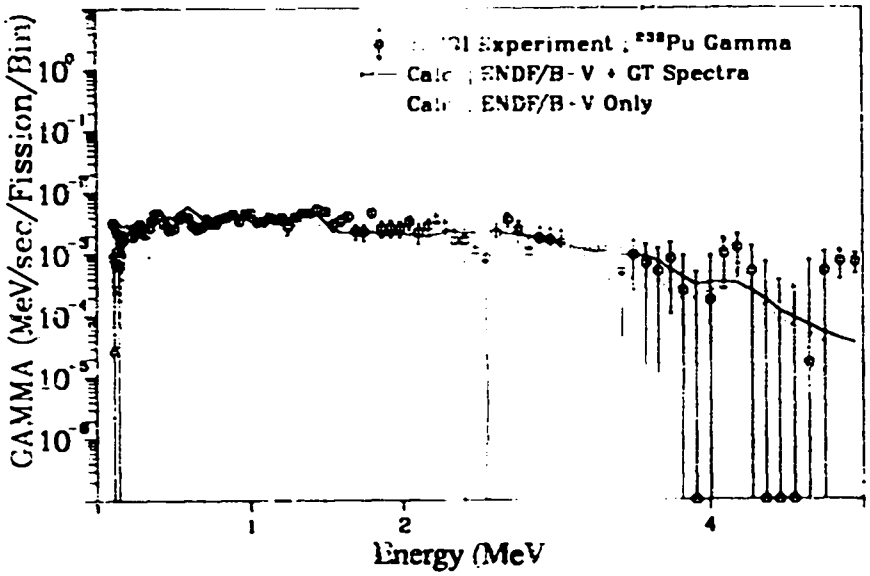

Fig. 291. Gamma spectrum after 23[illegible] neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = [illegible]).

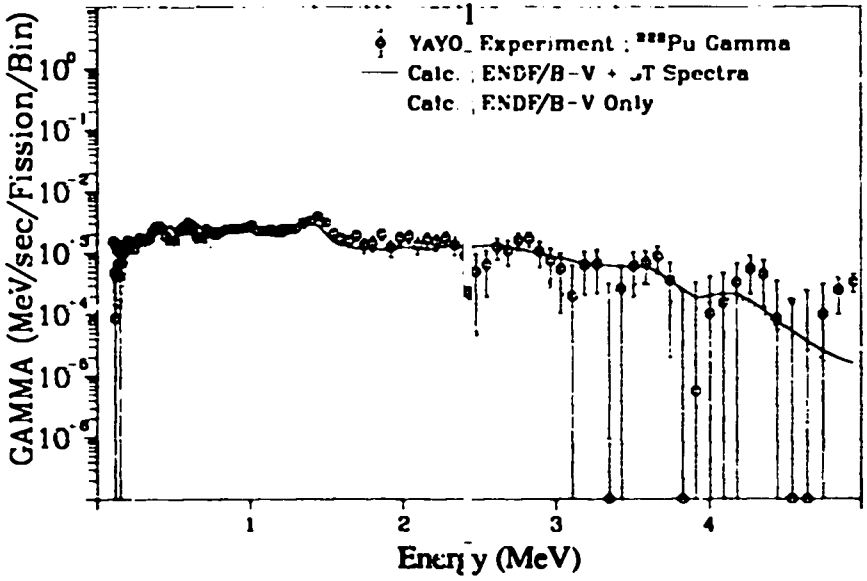

Fig. 293. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 90.0 sec).

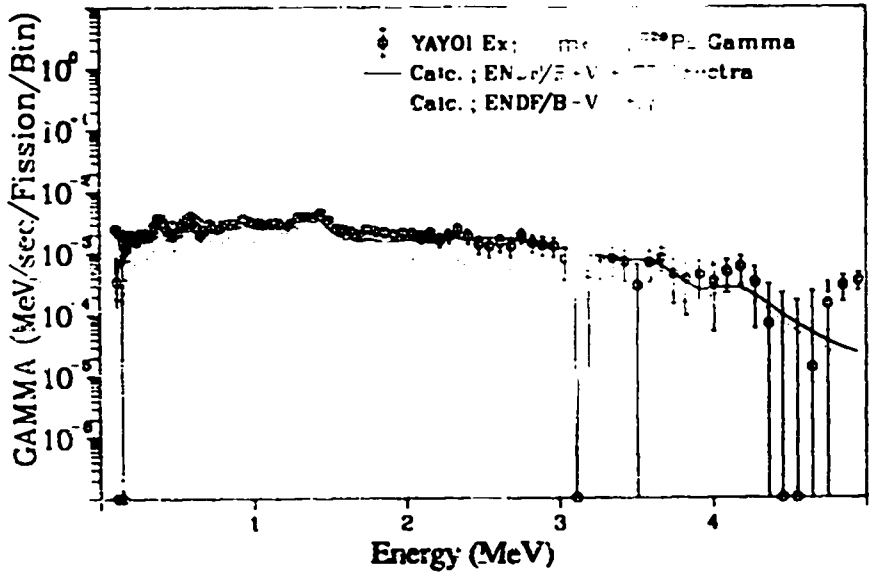

Fig. 292. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 70.0 sec).

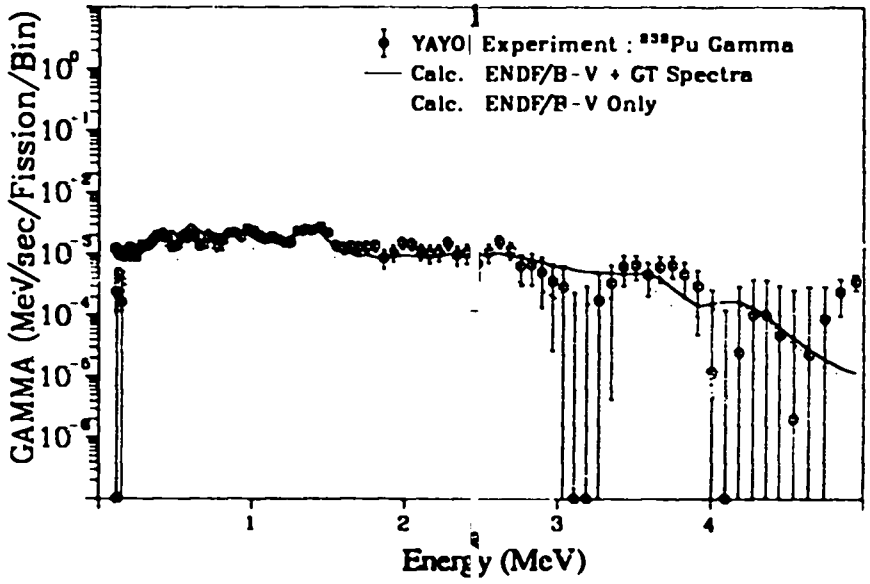

Fig. 294. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 110.0 sec).

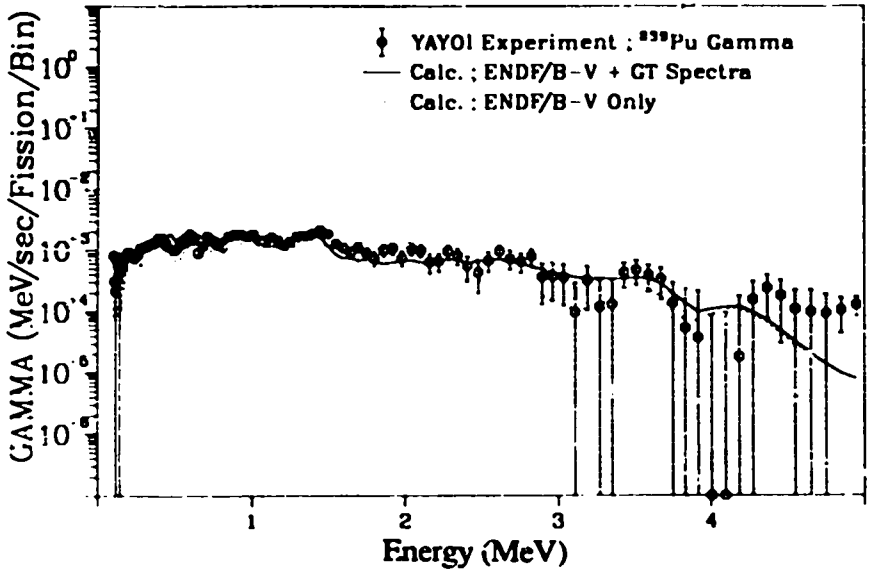

Fig. 295. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, T_{cool} = 140.0 sec).

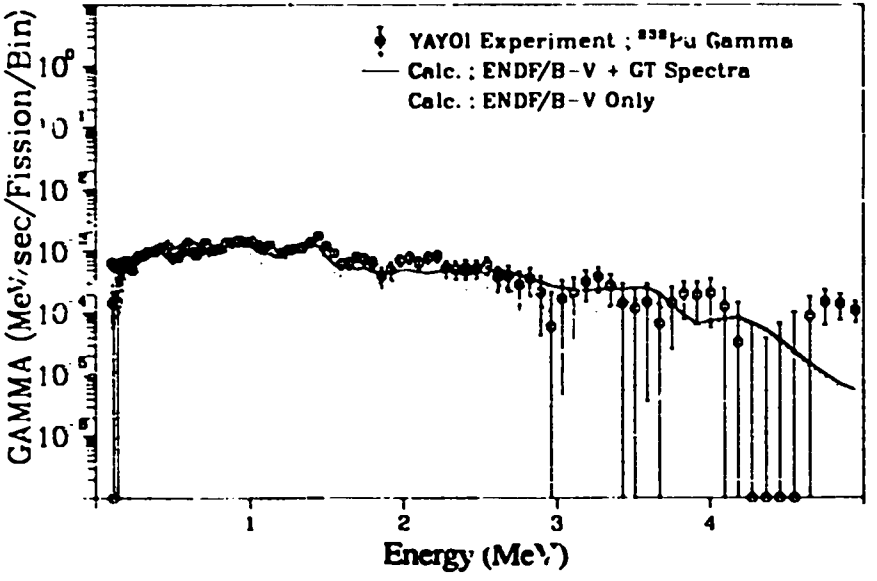

Fig. 296. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 180.0 sec).

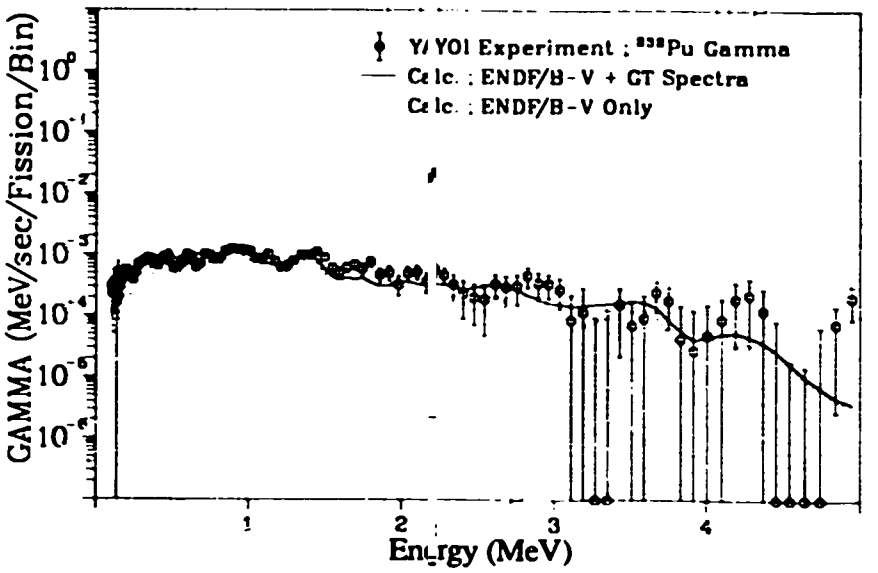

Fig. 297. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec $T_{cool.}$ = 230.0 sec).

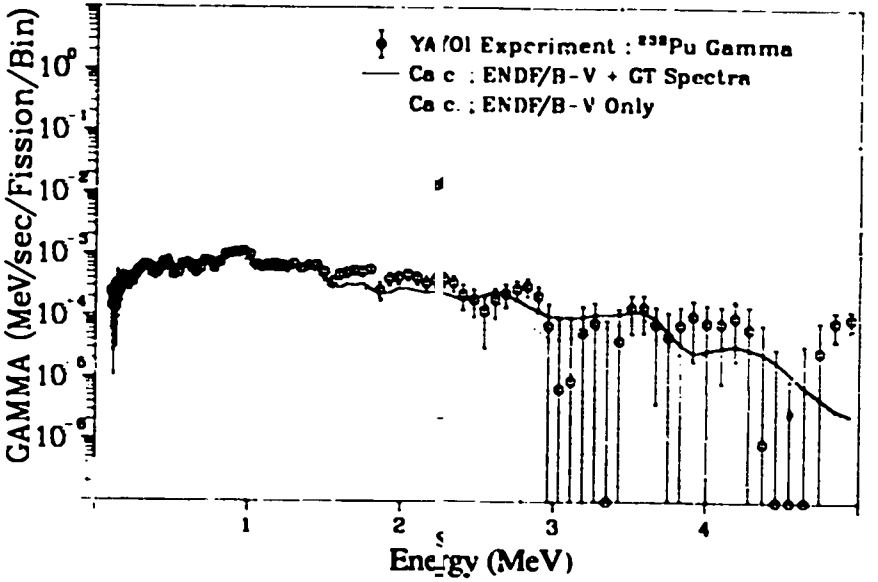

Fig. 298. Gamma spectrum after ^{239}Pu fast neutron fission (T_{irrad} = 10.0 sec, $T_{cool.}$ = 290.0 sec).

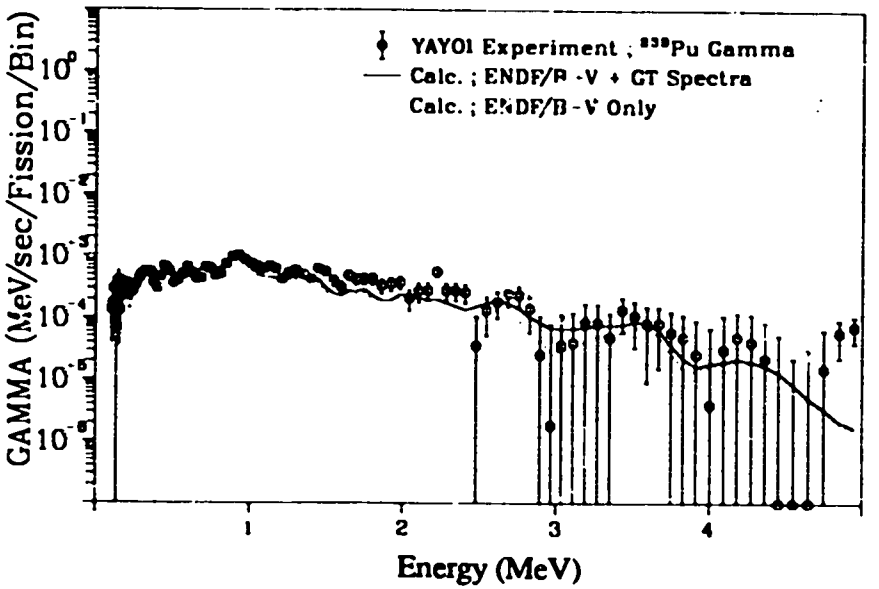

Fig. 299. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 360.0 sec).

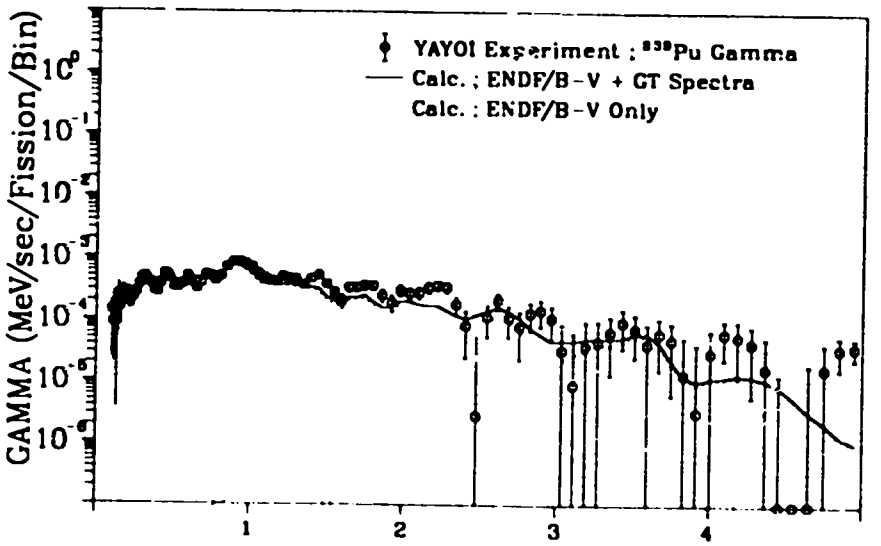

Fig. 300. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 450.0 sec).

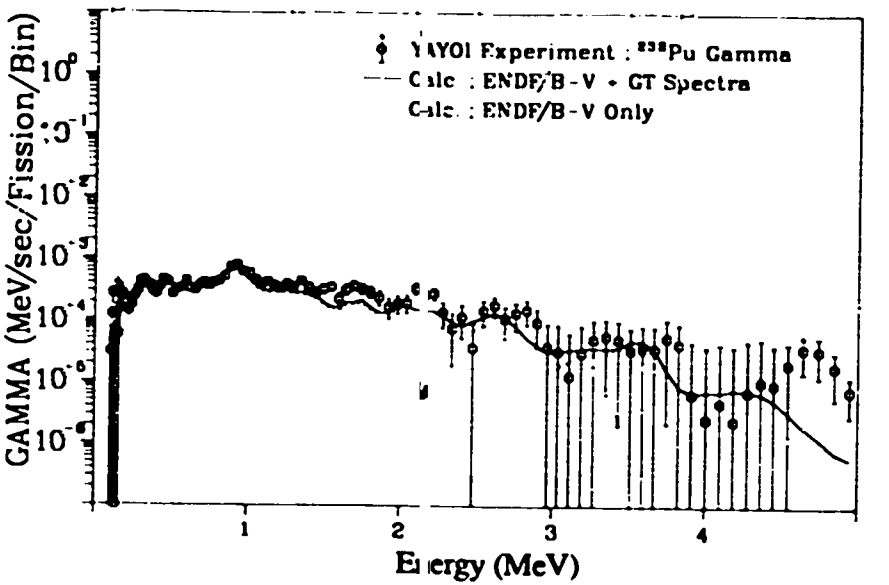

Fig. 301. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 550.0 sec).

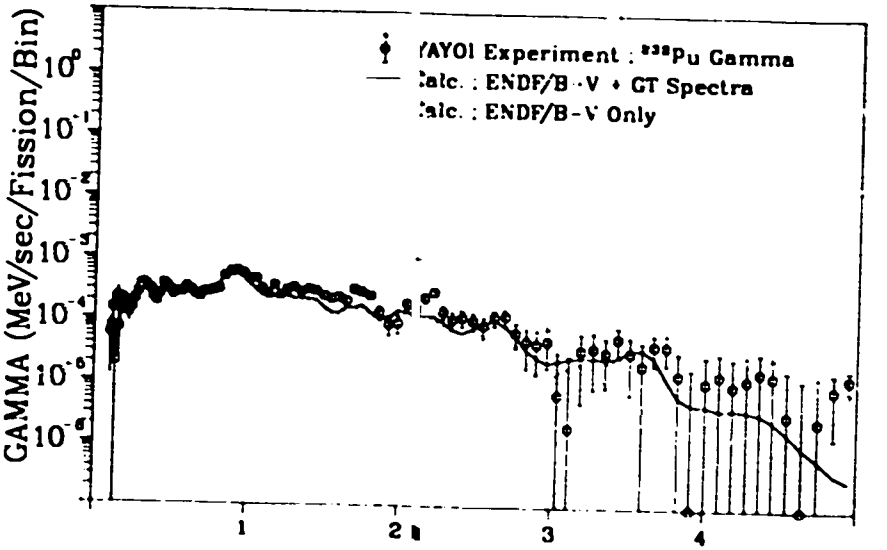

Fig. 302. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 700.0 sec).

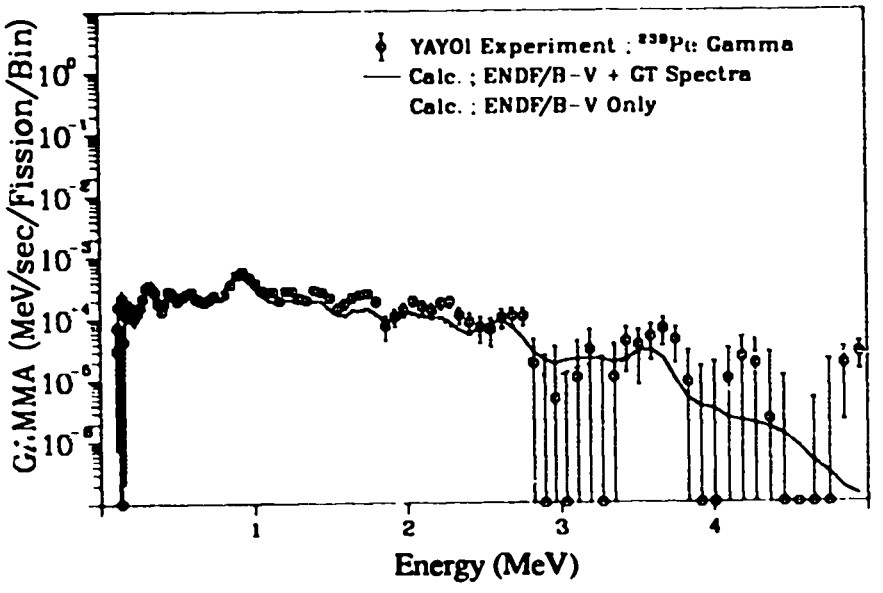

Fig. 303. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 900.0 sec).

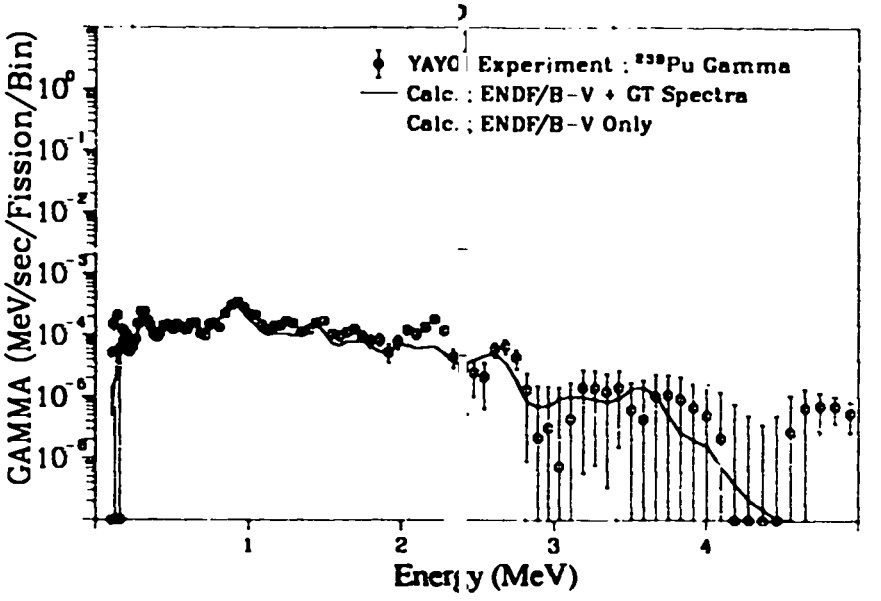

Fig. 305. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1600.0 sec).

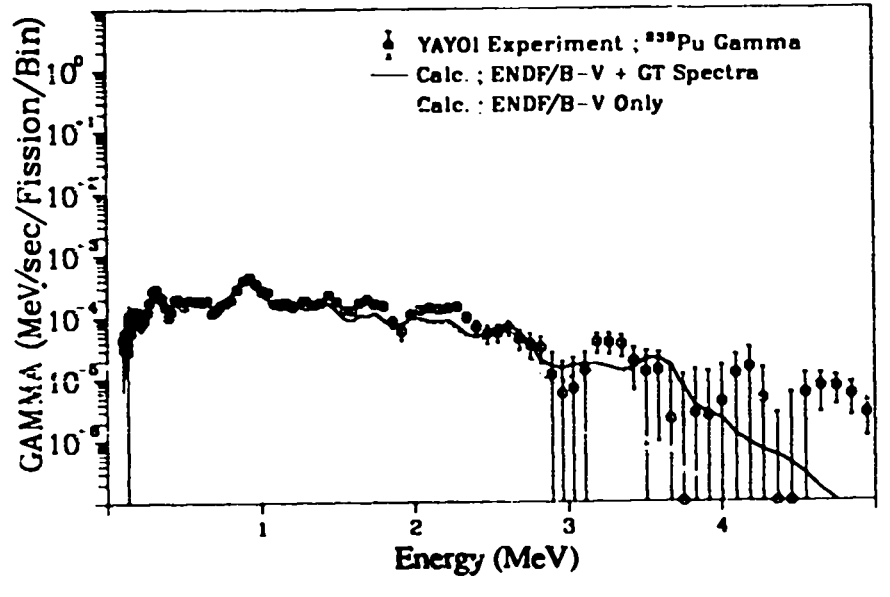

Fig. 304. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1200.0 sec).

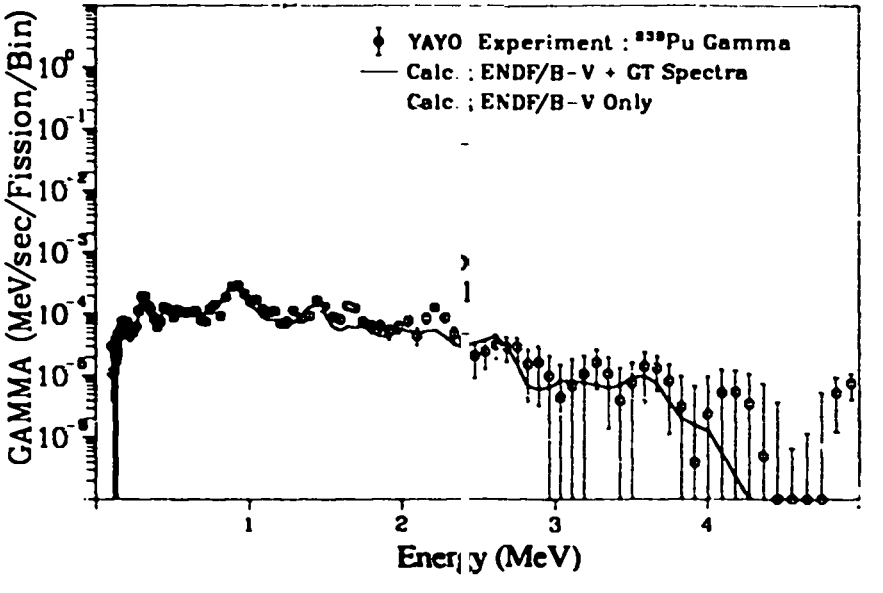

Fig. 306. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2000.0 sec).

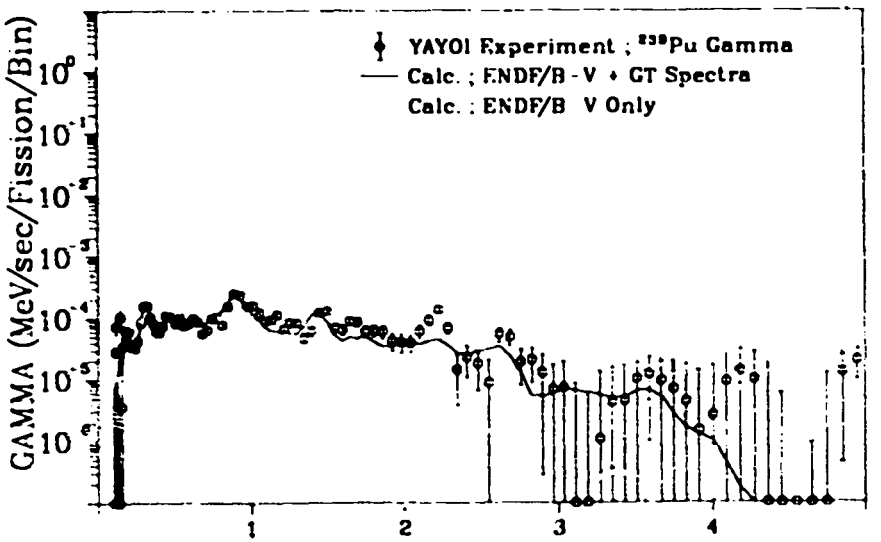

Fig. 307. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2450.0 sec).

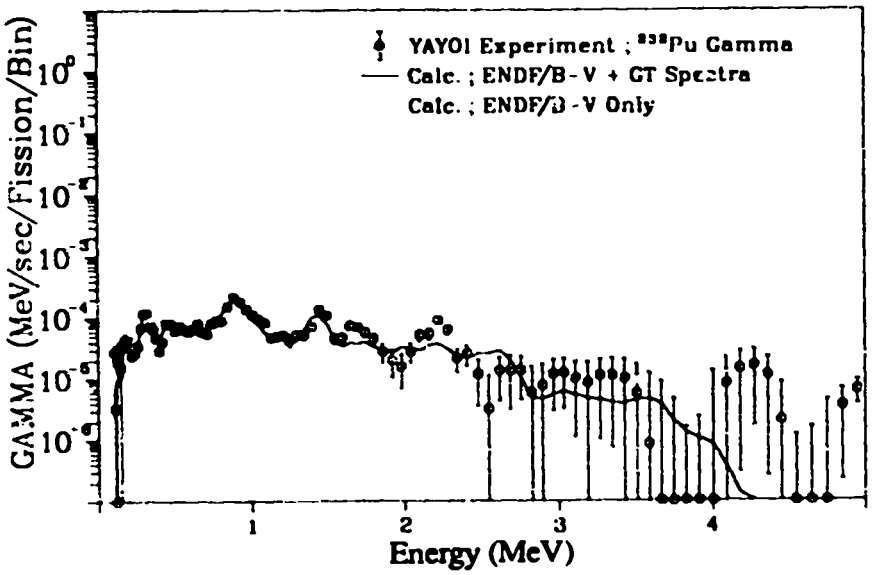

Fig. 308. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2950.0 sec).

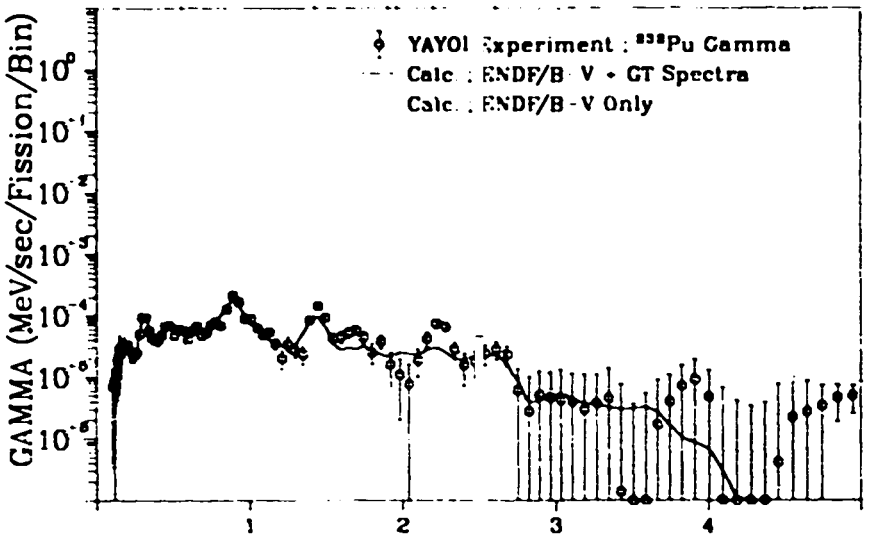

Fig. 309. Gamma spectrum afte · ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 3500.0 sec).

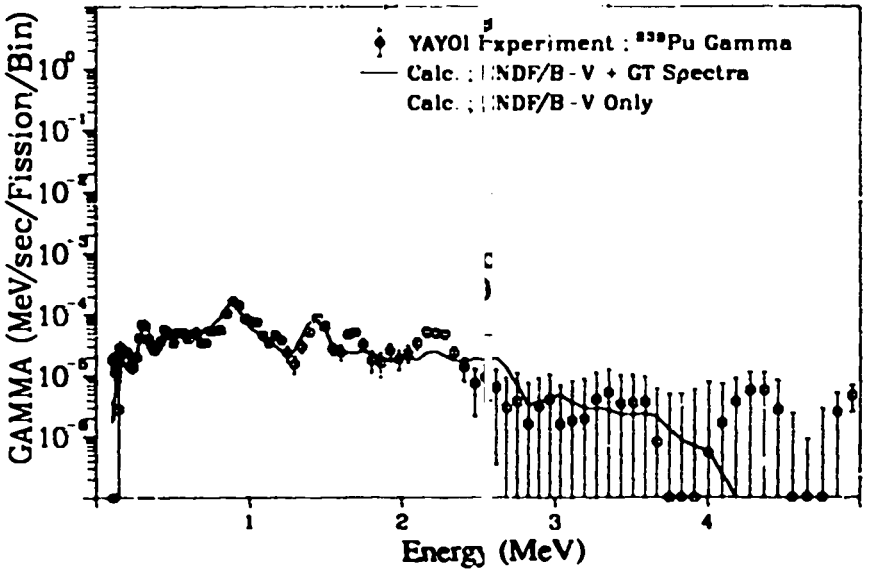

Fig. 310. Gamma spectrum afte r ^{239}Pu fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 4100.0 sec).

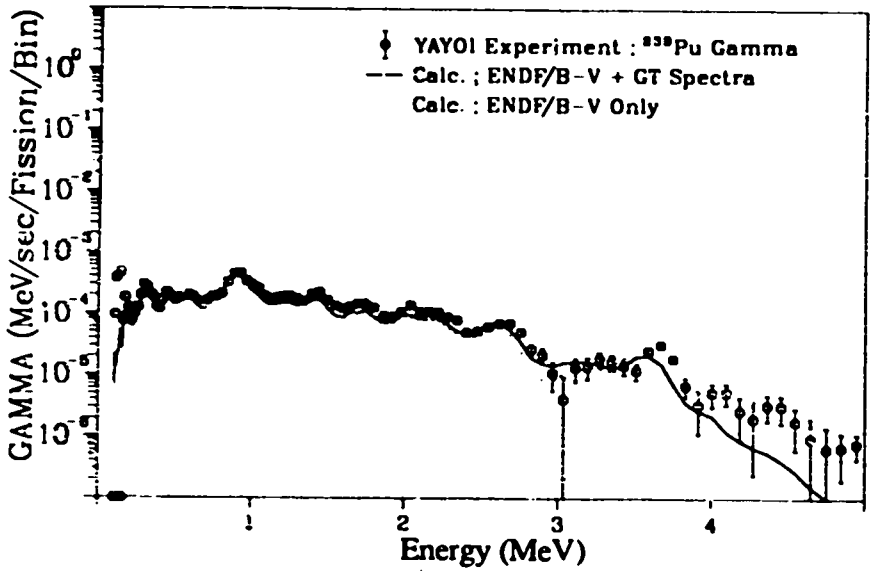

Fig. 311. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1200.0 sec).

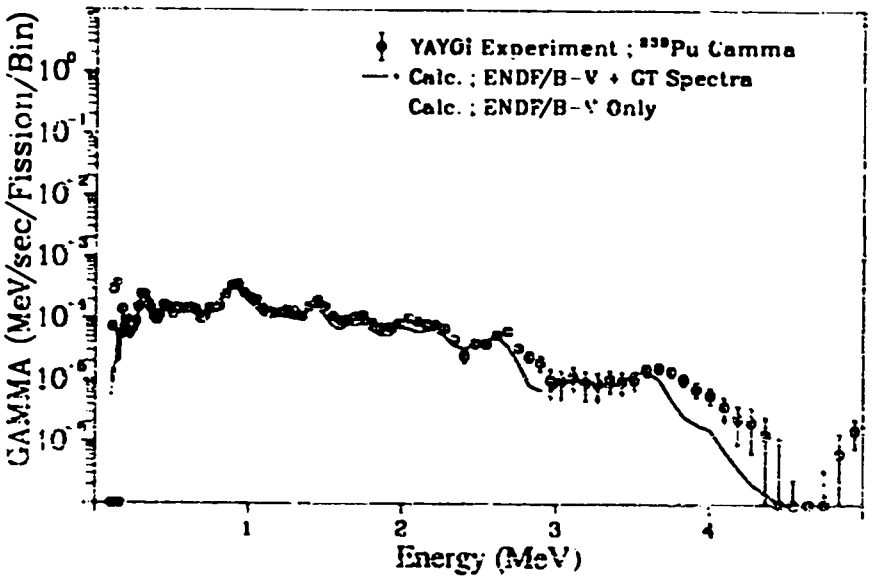

Fig. 312. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1600.0 sec).

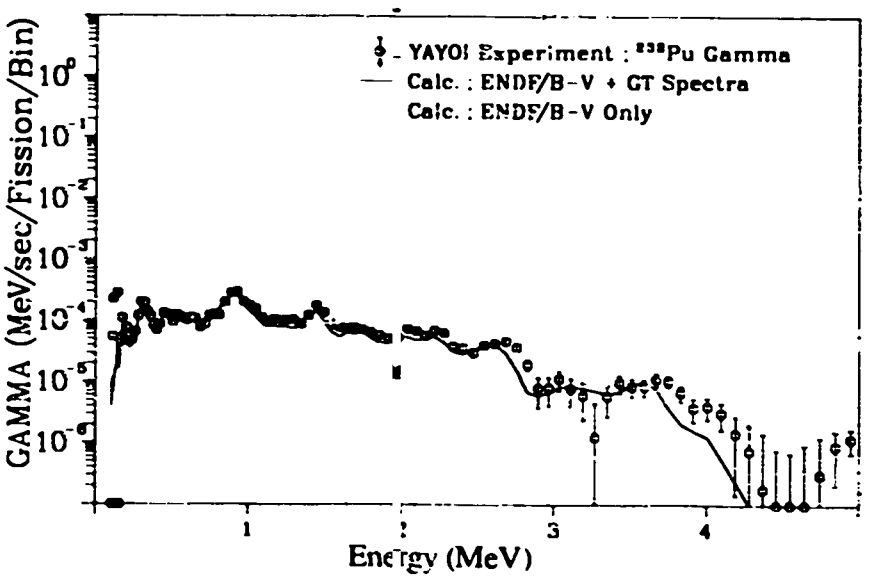

Fig. 313. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2000.0 sec).

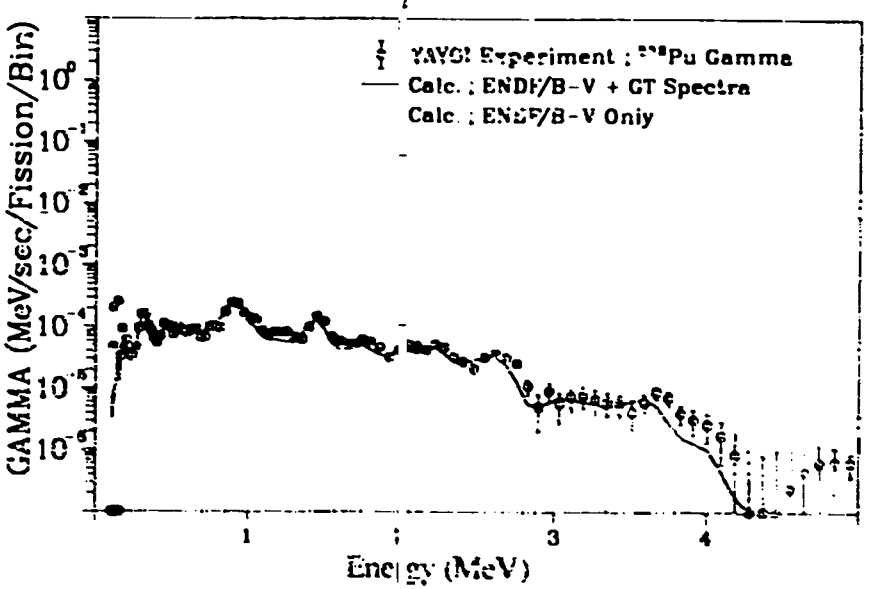

Fig. 314. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2450.0 sec)

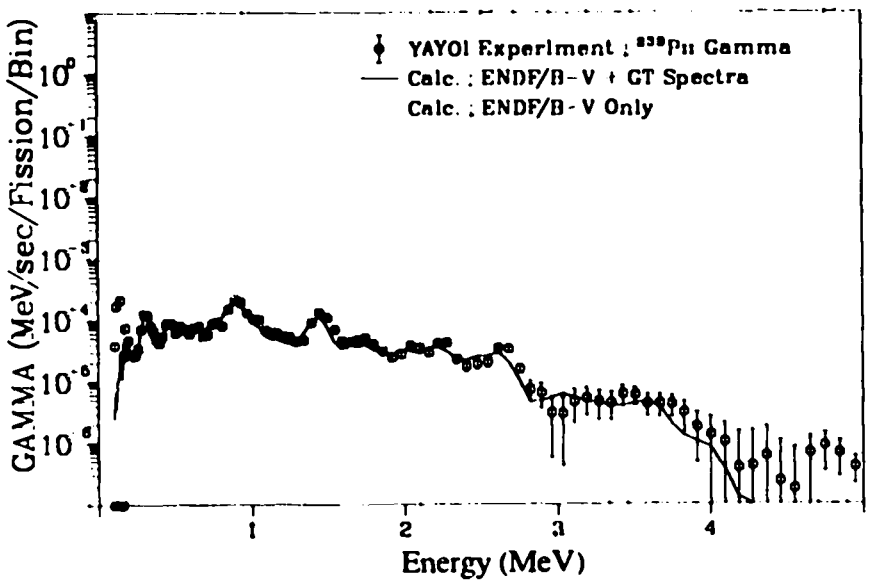

Fig. 315. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2950.0 sec).

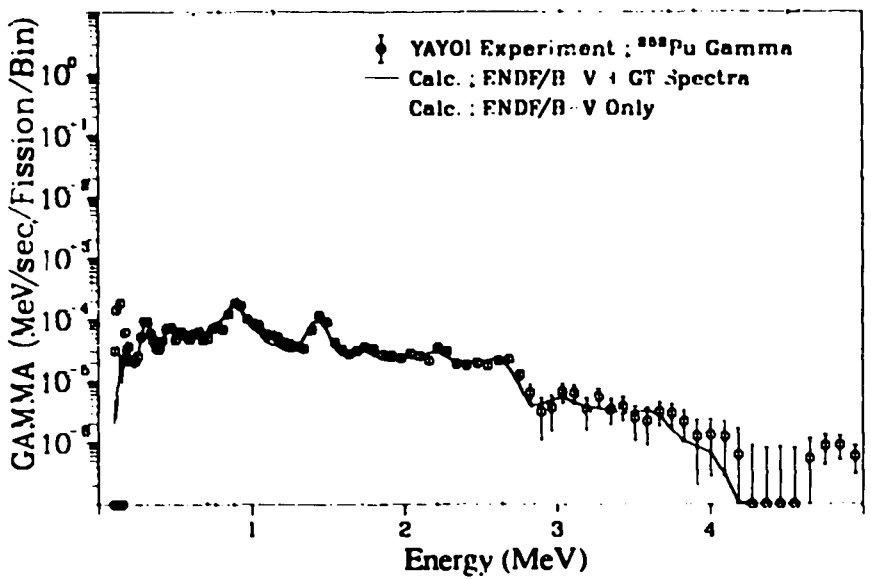

Fig. 316. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3500.0 sec).

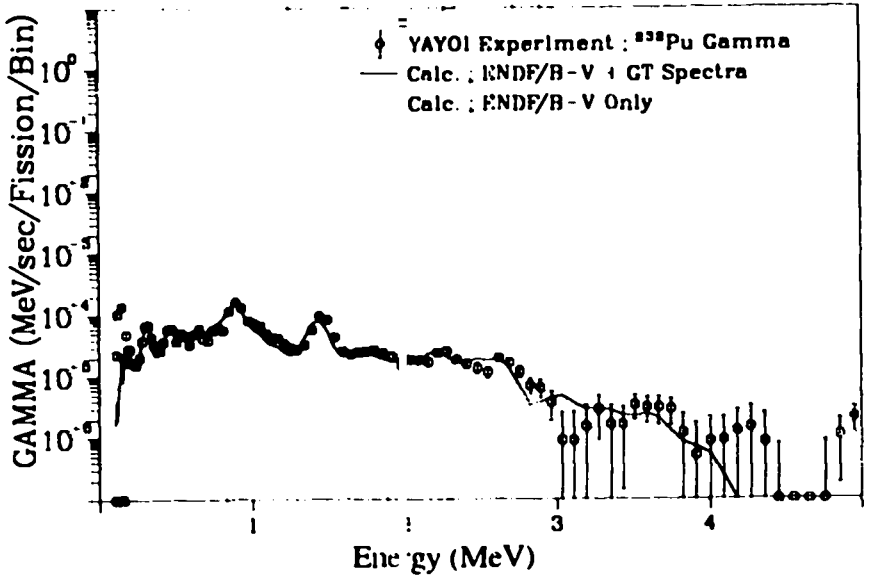

Fig. 317. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4100.0 sec).

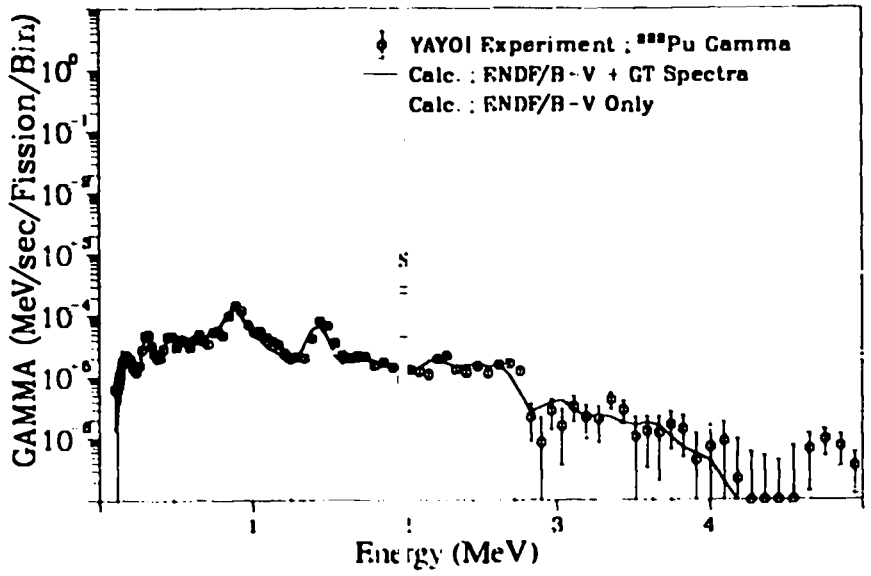

Fig. 318. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4800.0 sec).

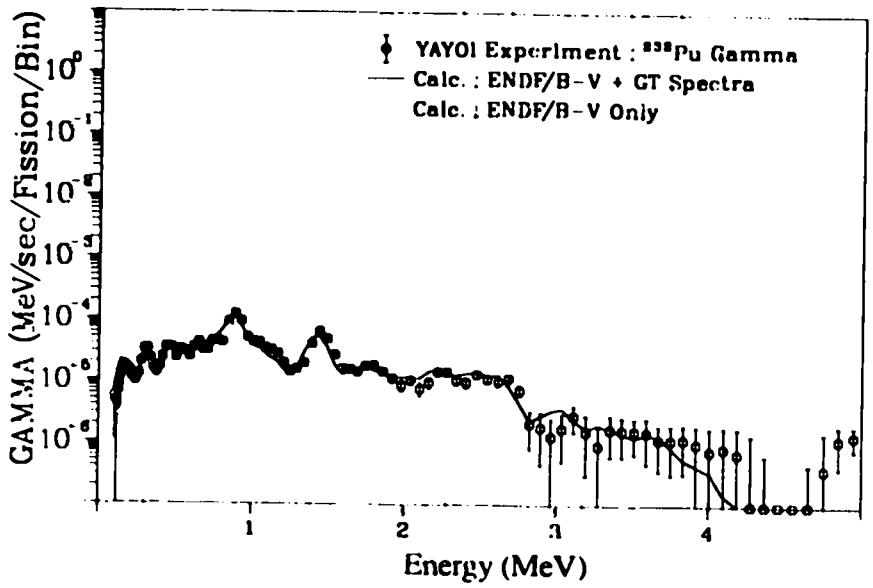

Fig. 319. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 5600.0 sec).

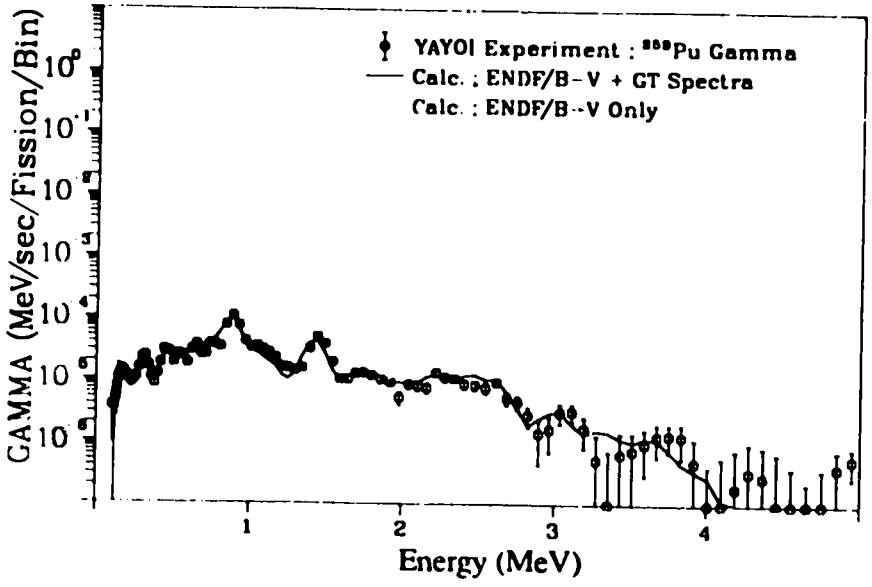

Fig. 320. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6500.0 sec).

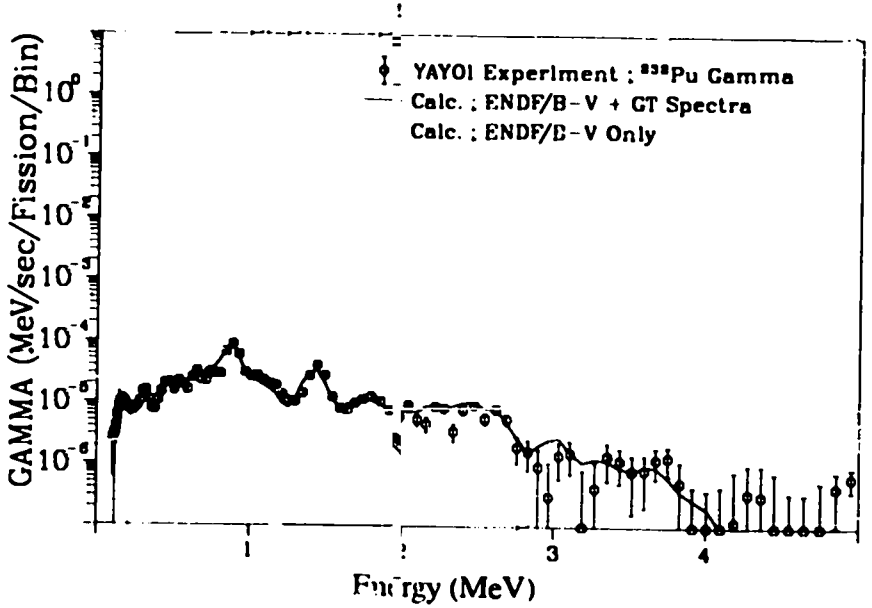

Fig. 321. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7500.0 sec).

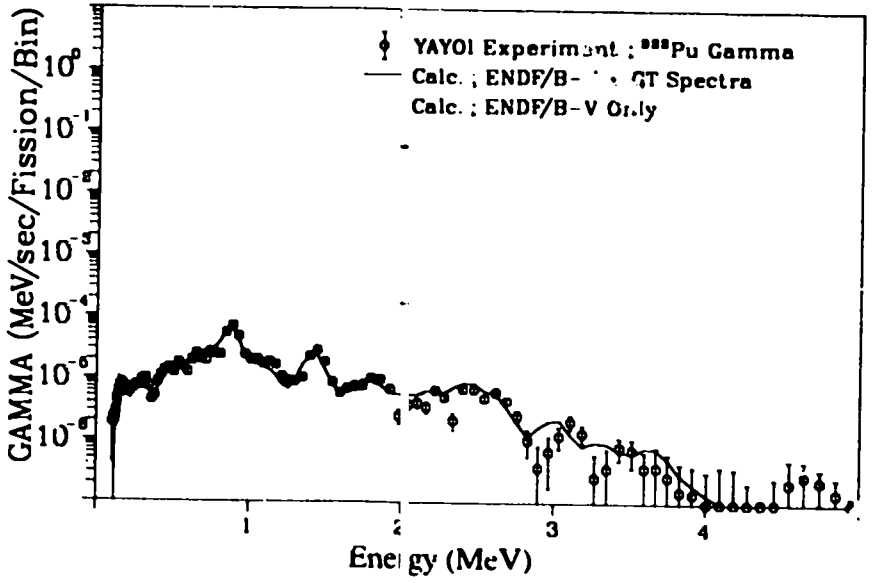

Fig. 322. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 9000.0 sec).

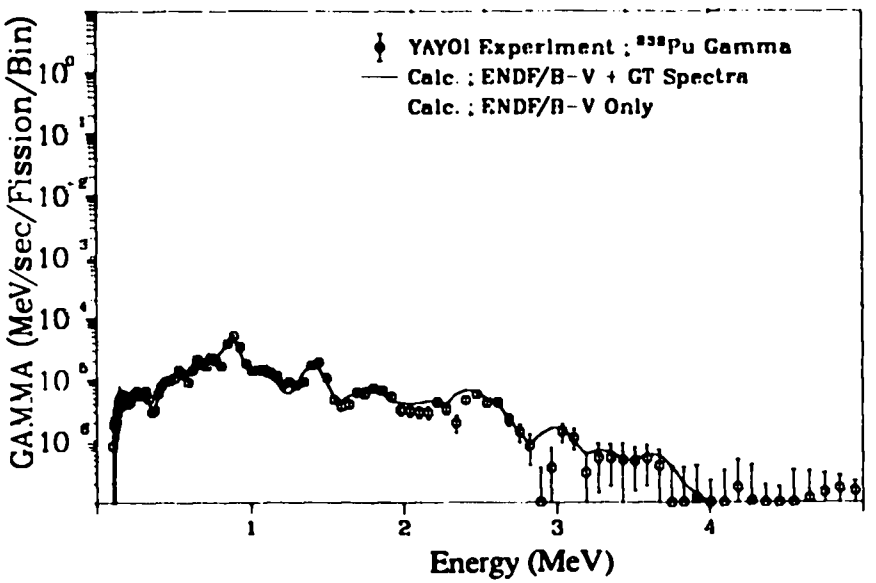

Fig. 323. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11000.0 sec).

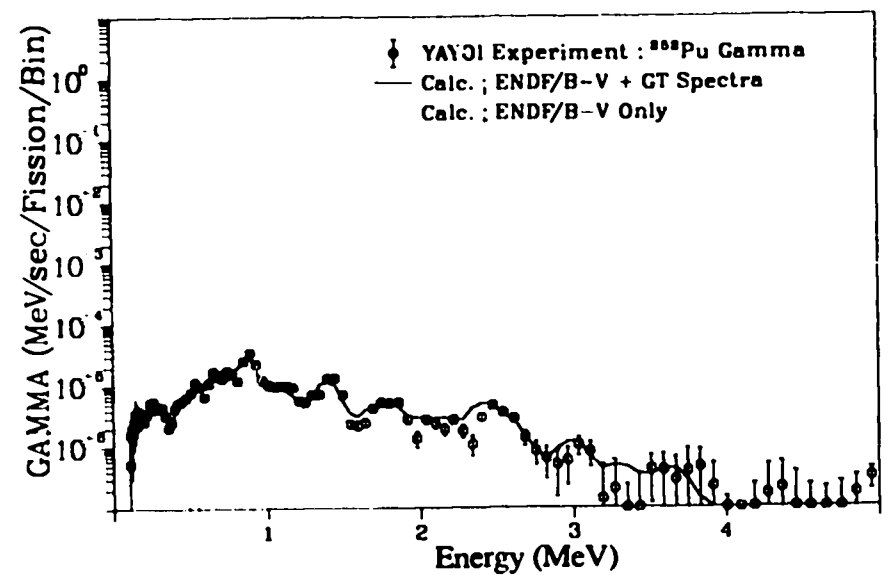

Fig. 324. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 13500.0 sec).

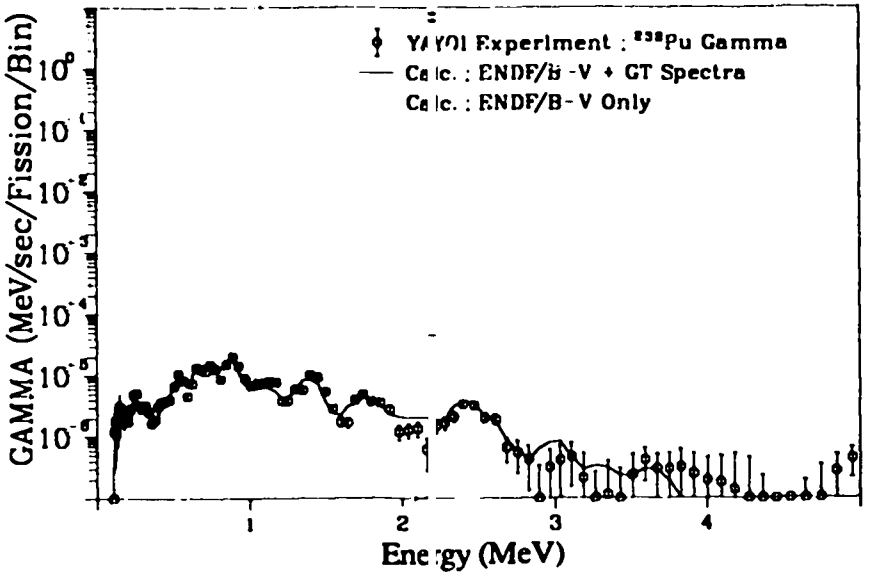

Fig. 325. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 16500.0 sec).

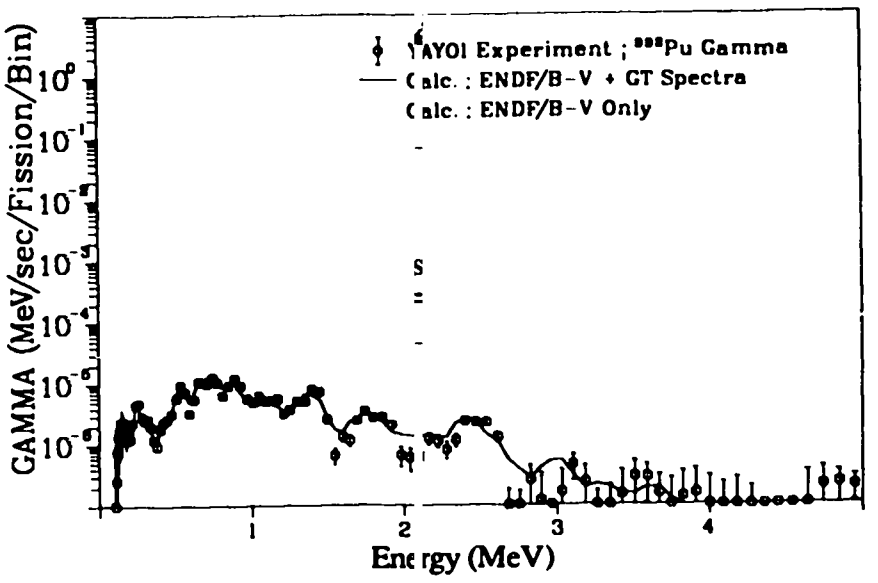

Fig. 326. Gamma spectrum after ^{239}Pu fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 20000.0 sec).

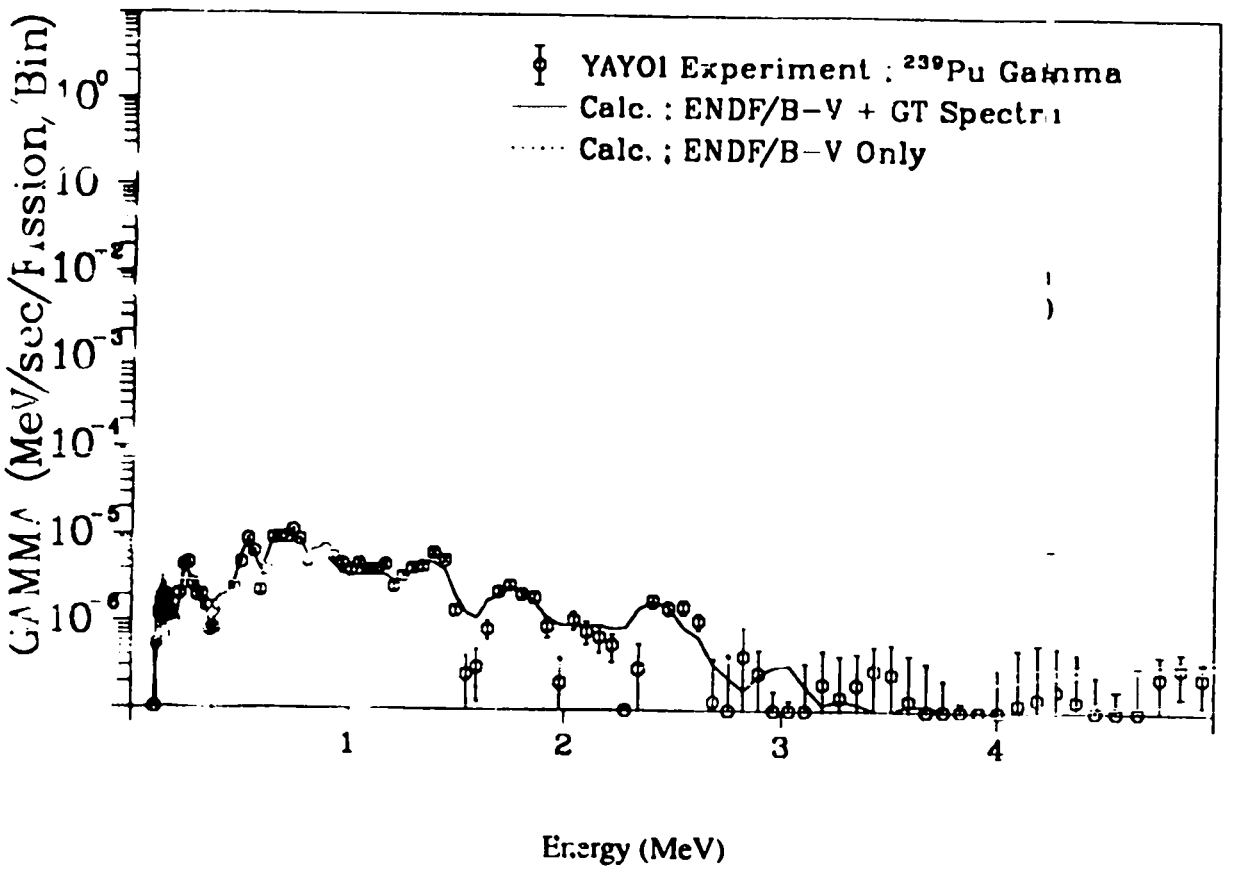

Fig. 327 Gamma spectrum after ^{239}Pu fast neutron fission
($T_{irr.}$ = 100.0 sec, $T_{cool.}$ = 24000.0 sec)

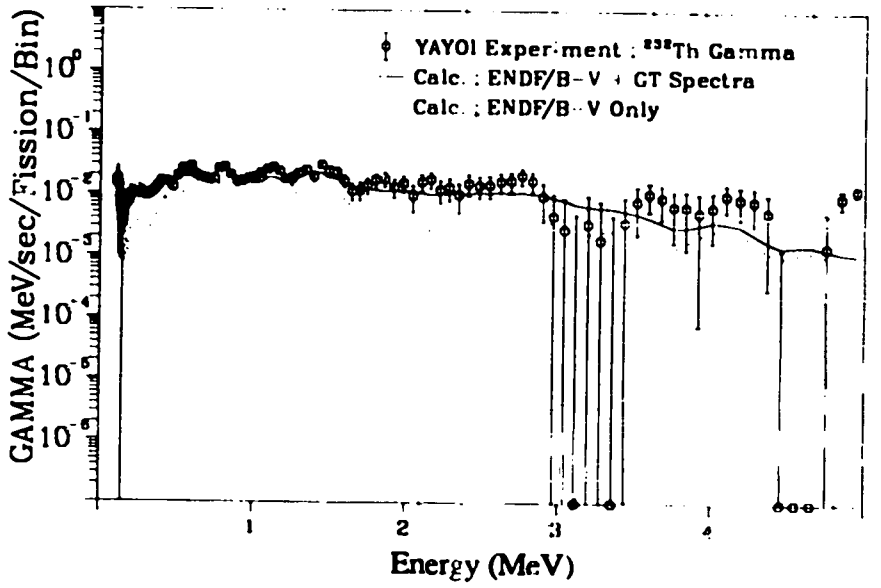

Fig. 328. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 19.0 sec).

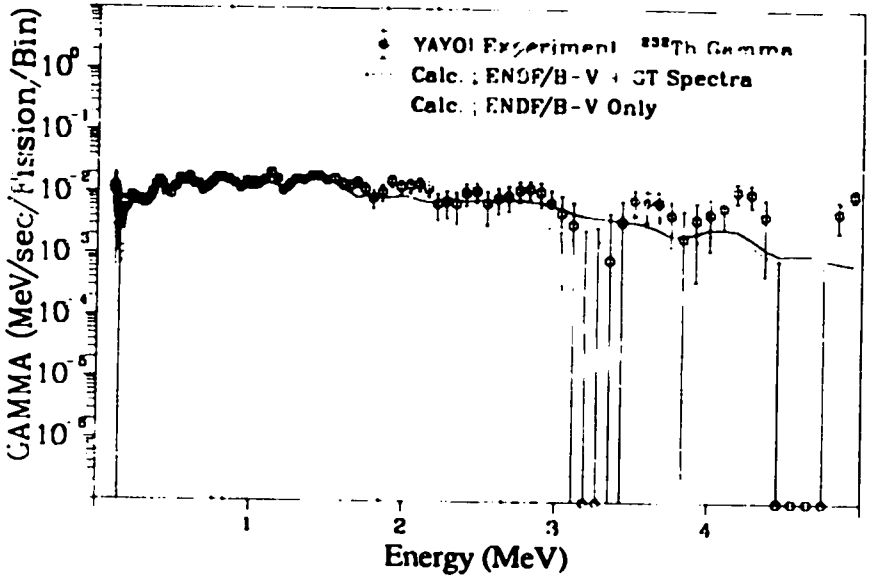

Fig. 329. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 26.0 sec).

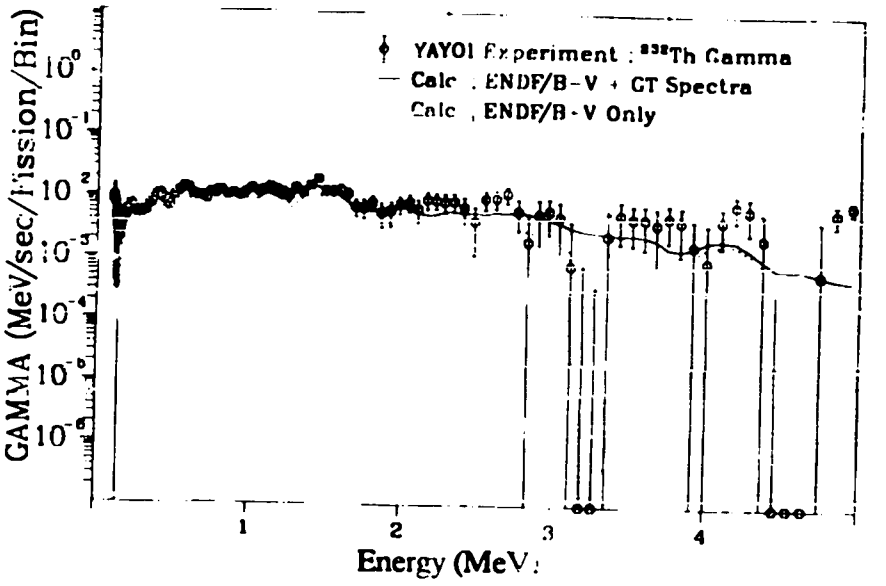

Fig. 330. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 35.0 sec).

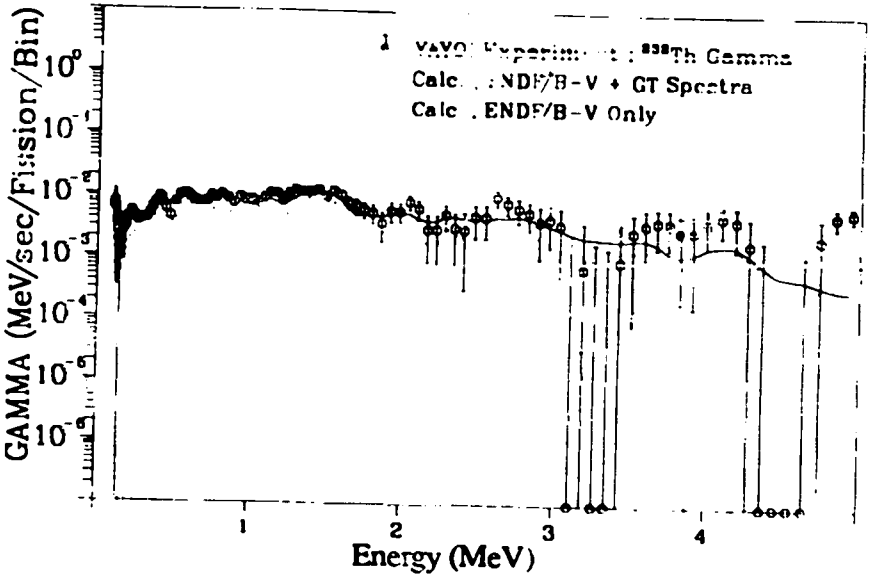

Fig. 331. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 45.0 sec).

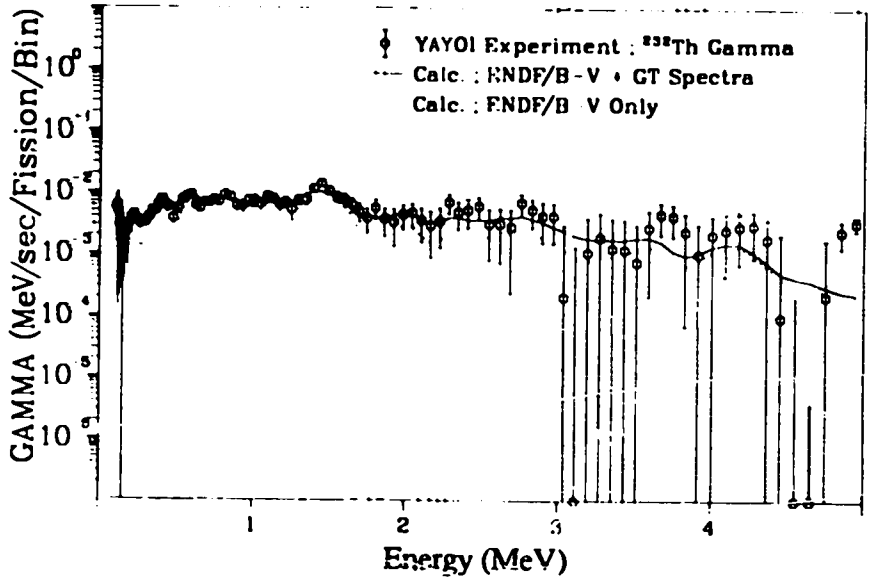

Fig. 332. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 55.0 sec).

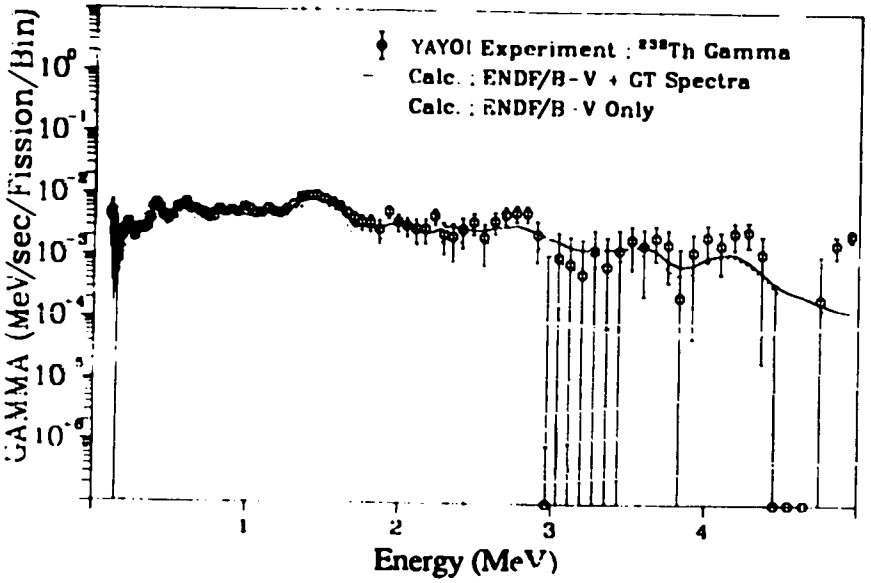

Fig. 333. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 70.0 sec).

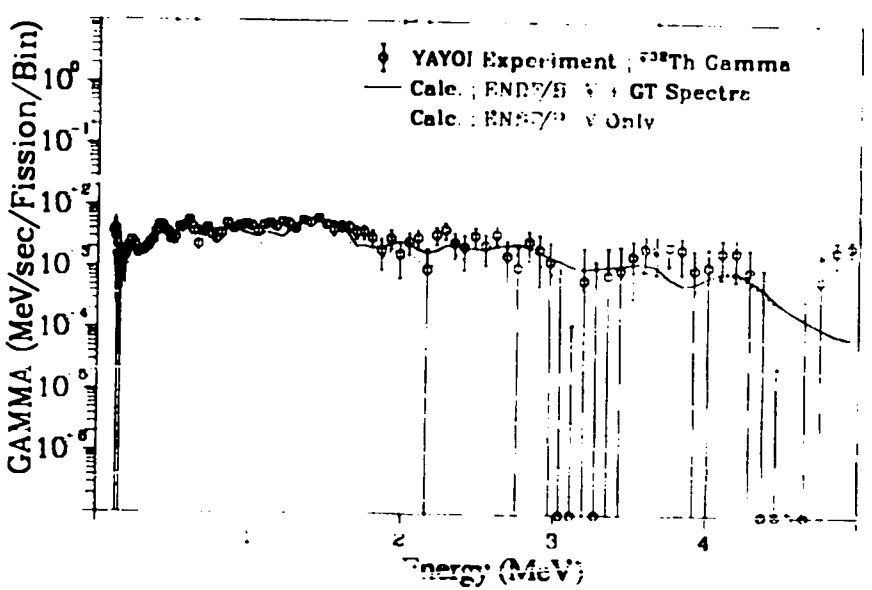

Fig. 334. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 90.0 sec).

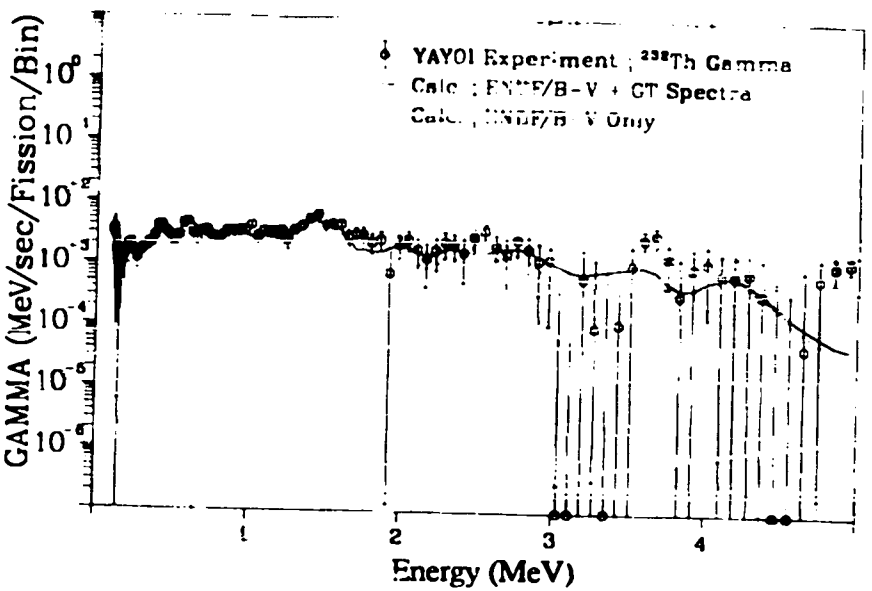

Fig. 335. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 110.0 sec).

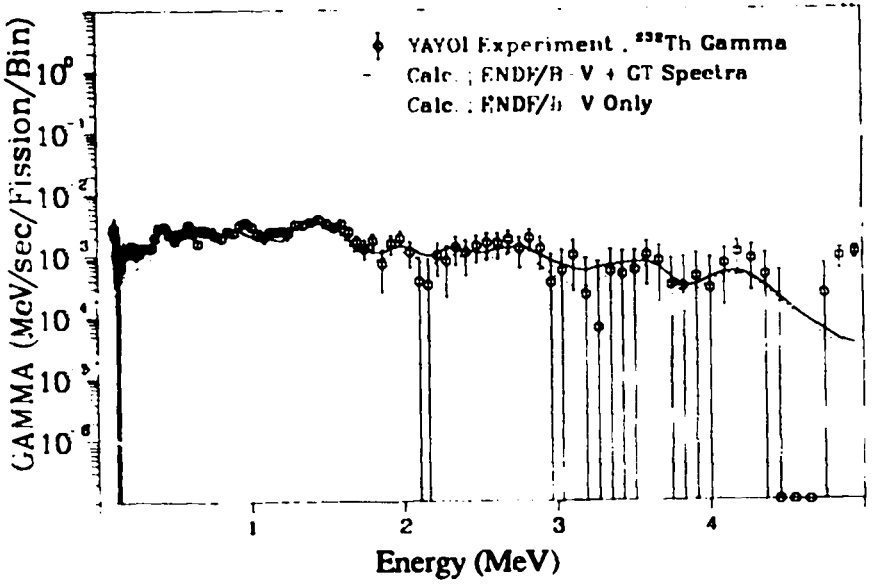

Fig. 336. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 140.0 sec).

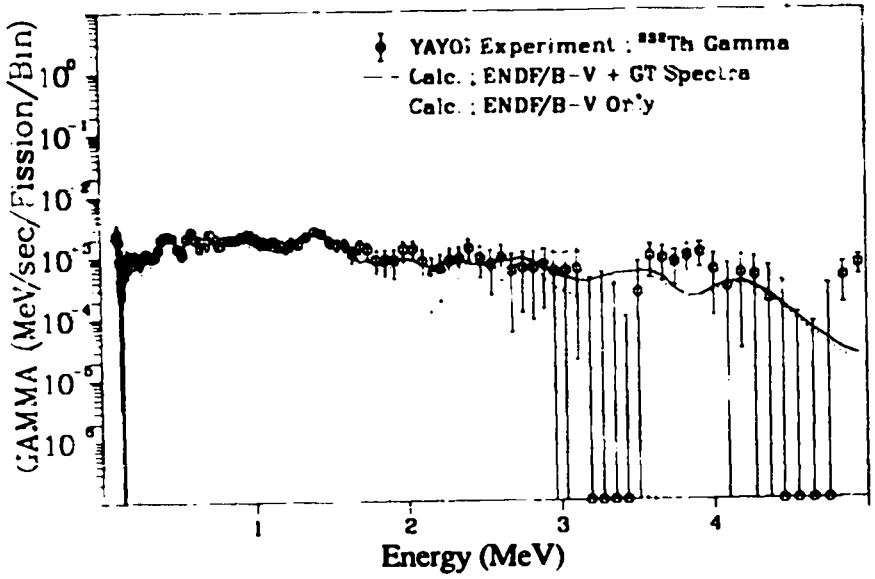

Fig. 337. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 180.0 sec).

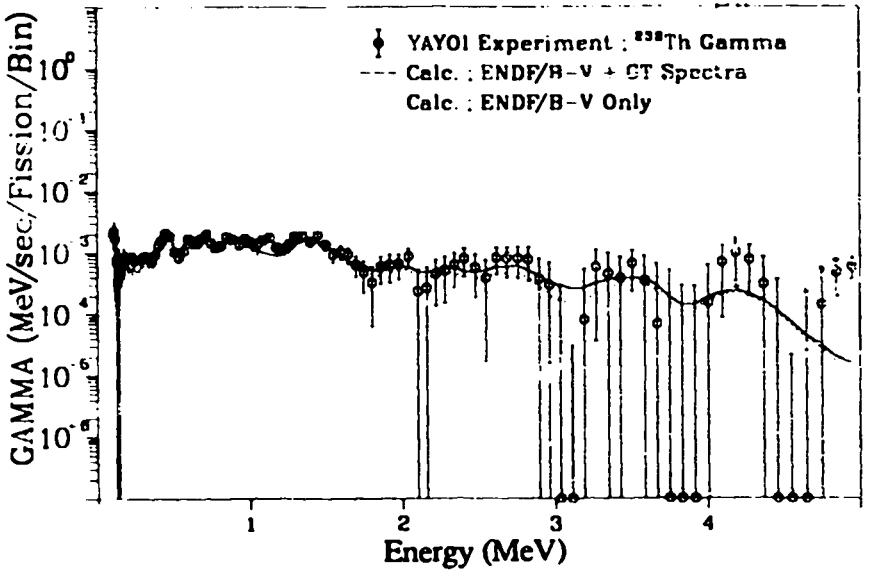

Fig. 338. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 230.0 sec).

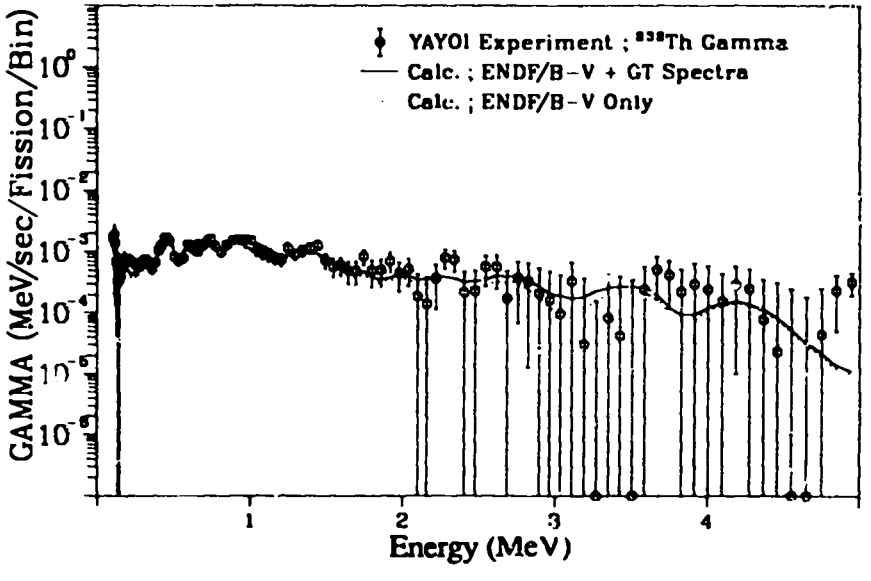

Fig. 339. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 290.0 sec).

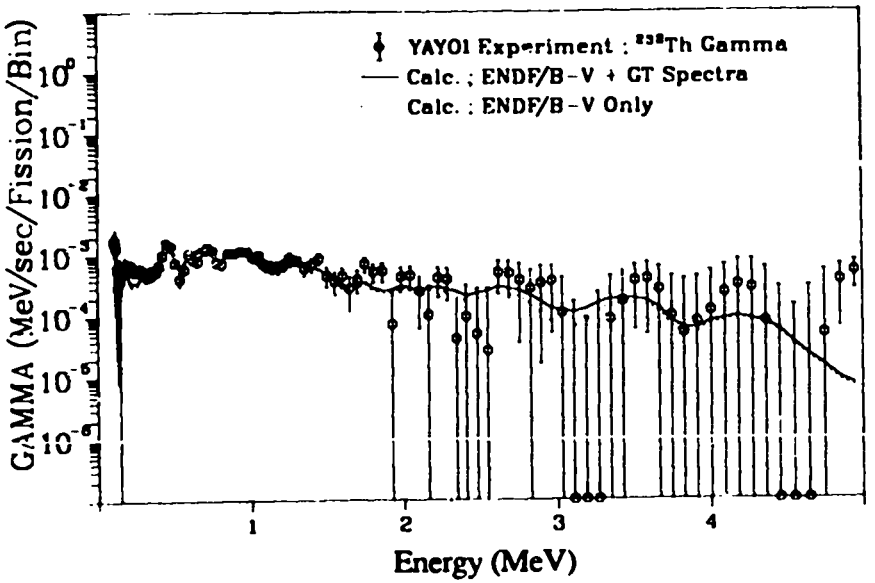

Fig. 340. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 360.0 sec).

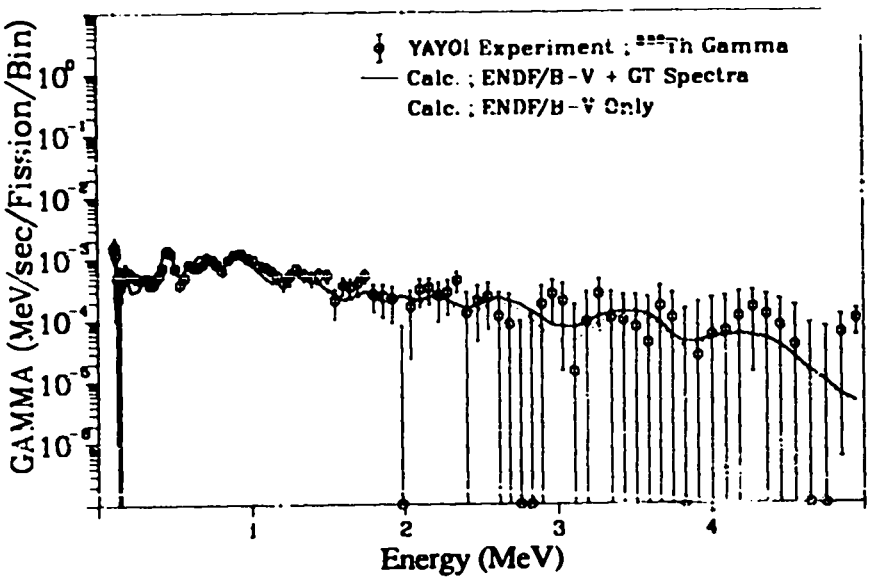

Fig. 341. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 450.0 sec).

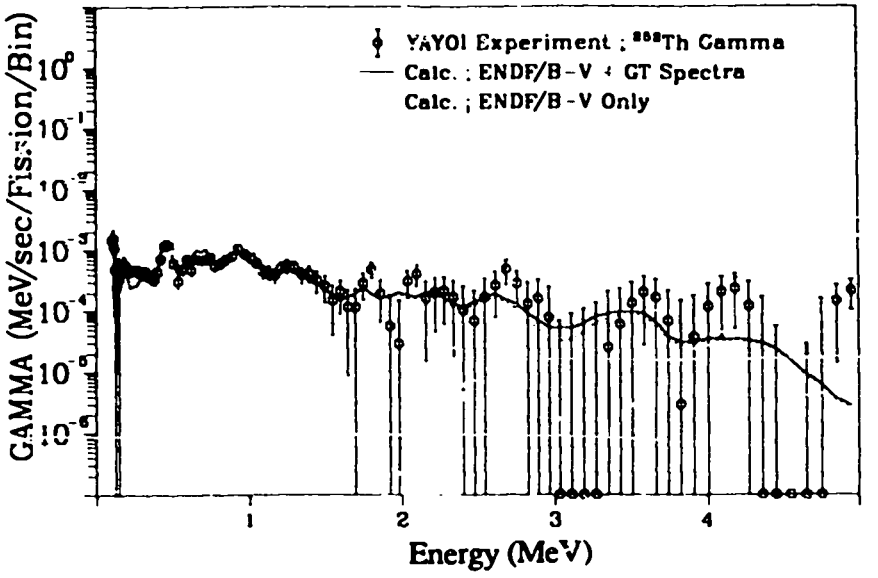

Fig. 342. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 550.0 sec).

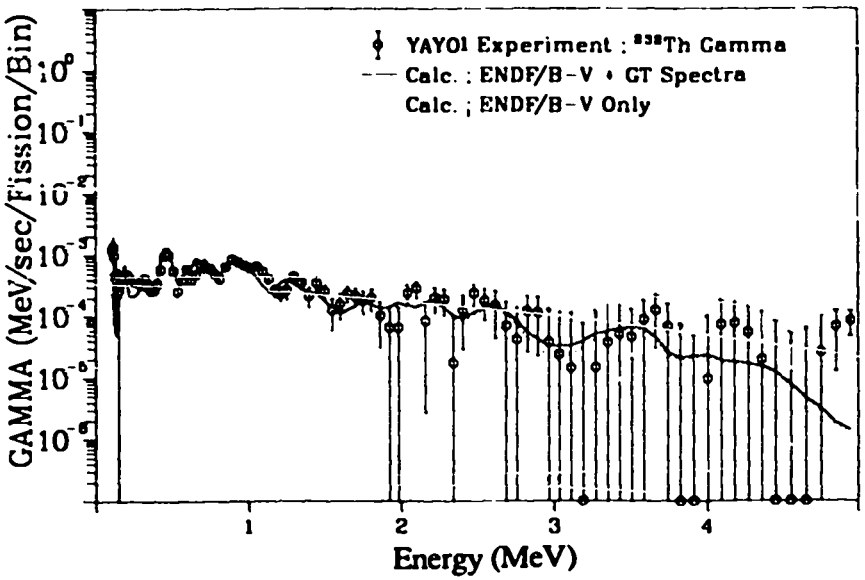

Fig. 343. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 700.0 sec).

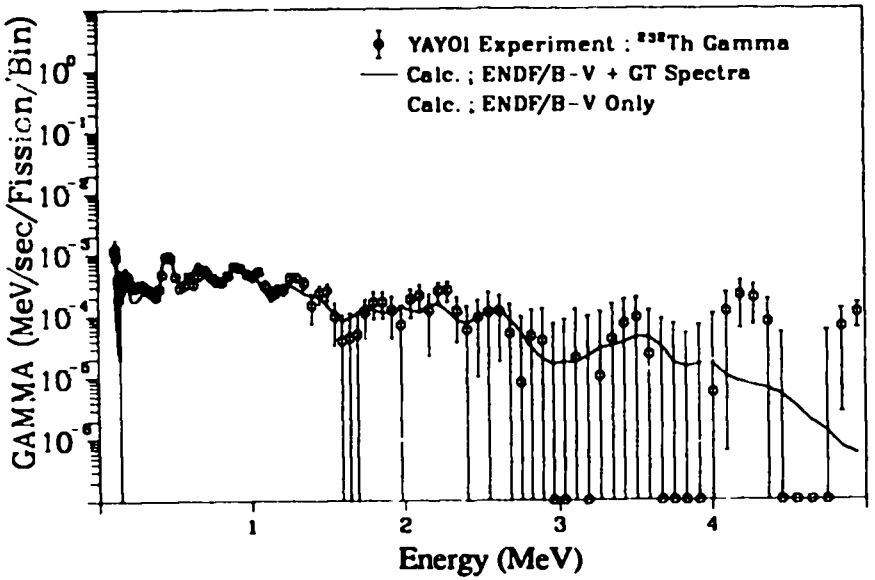

Fig. 344. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 900.0 sec).

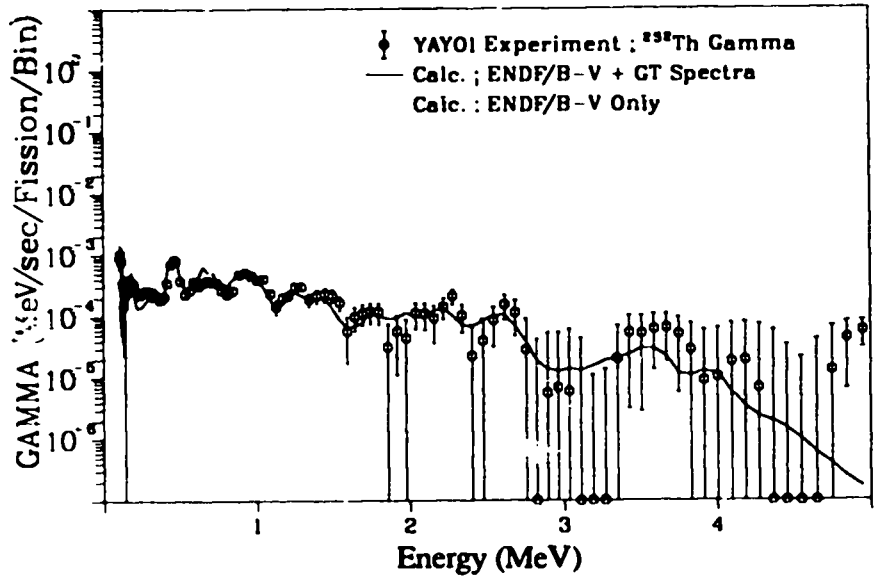

Fig. 345. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1200.0 sec).

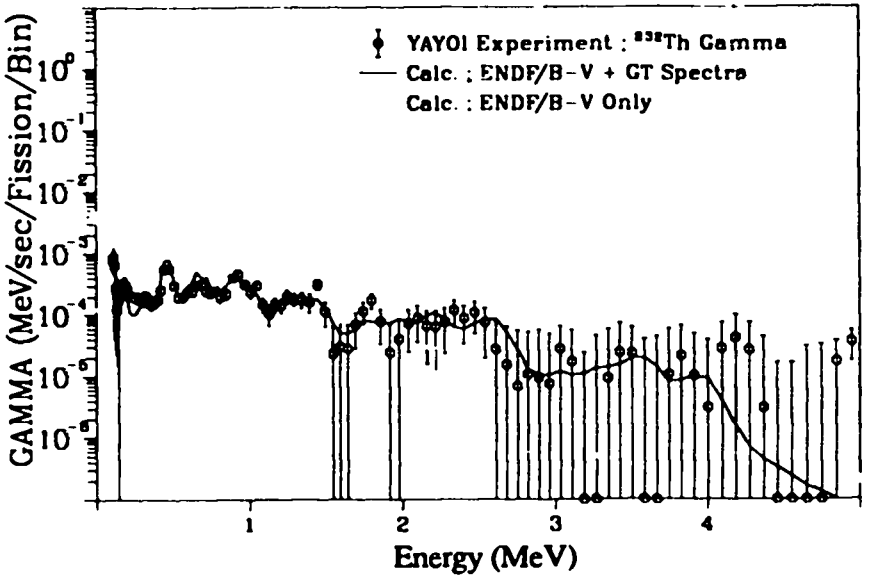

Fig. 346. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 1600.0 sec).

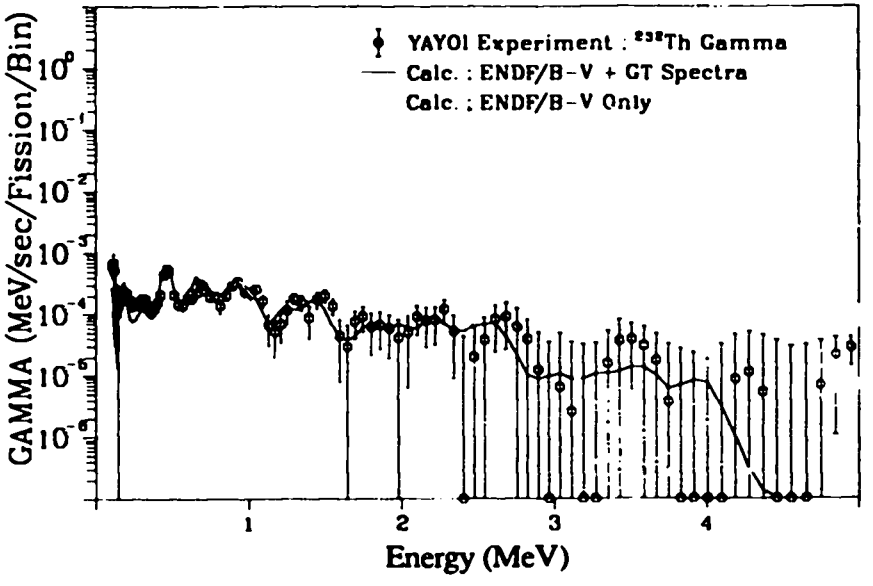

Fig. 347. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2000.0 sec).

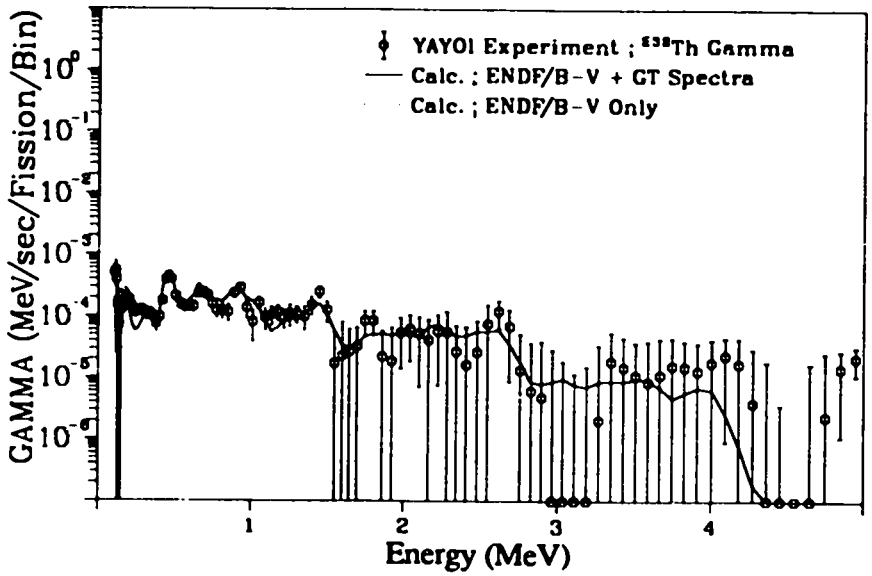

Fig. 348. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2450.0 sec).

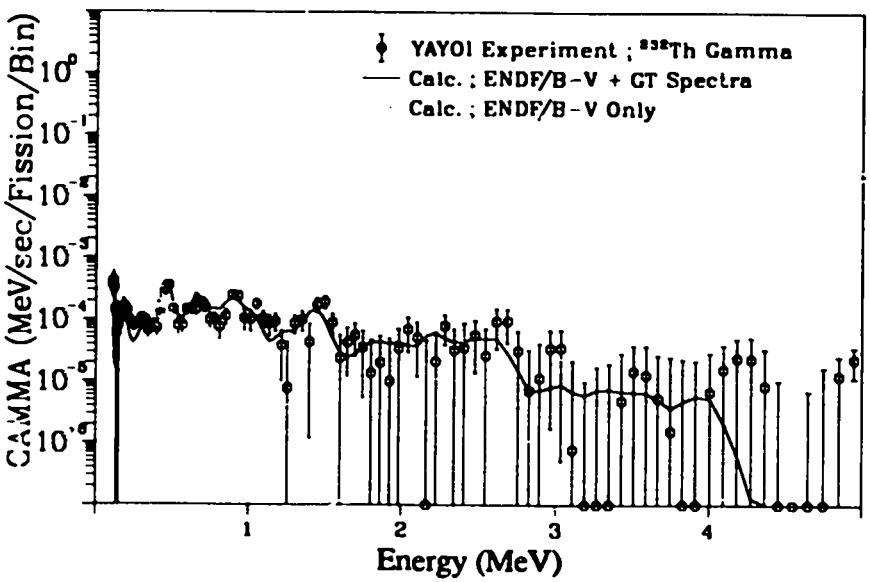

Fig. 349. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 2950.0 sec).

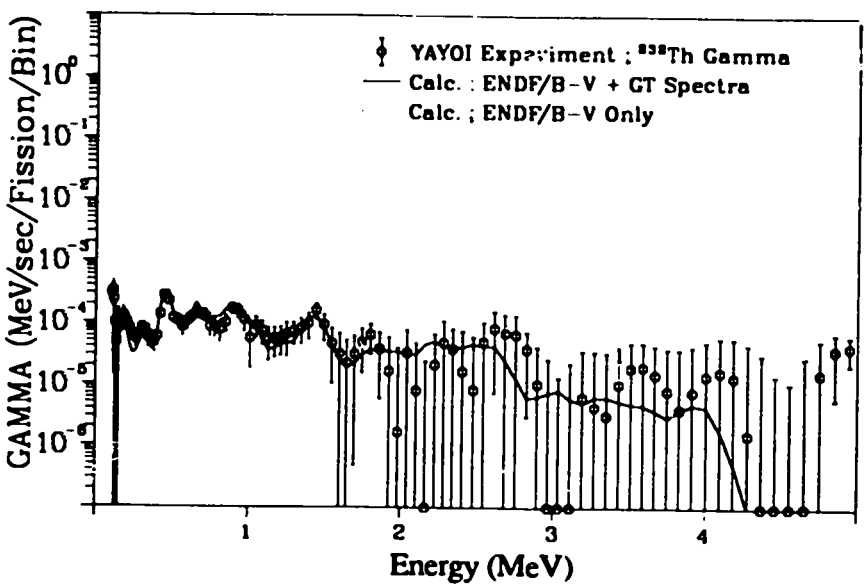

Fig. 350. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 3500.0 sec).

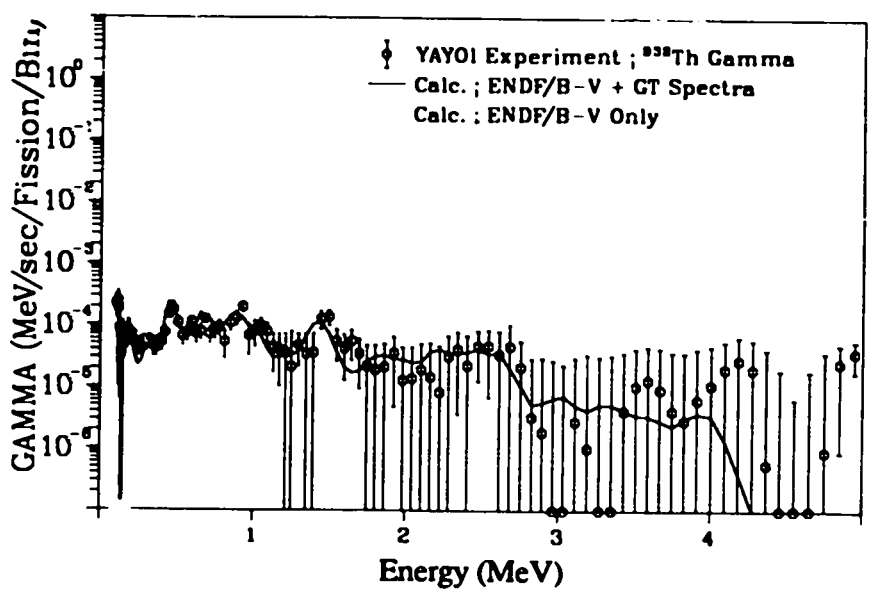

Fig. 351. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 10.0 sec, $T_{cool.}$ = 4100.0 sec).

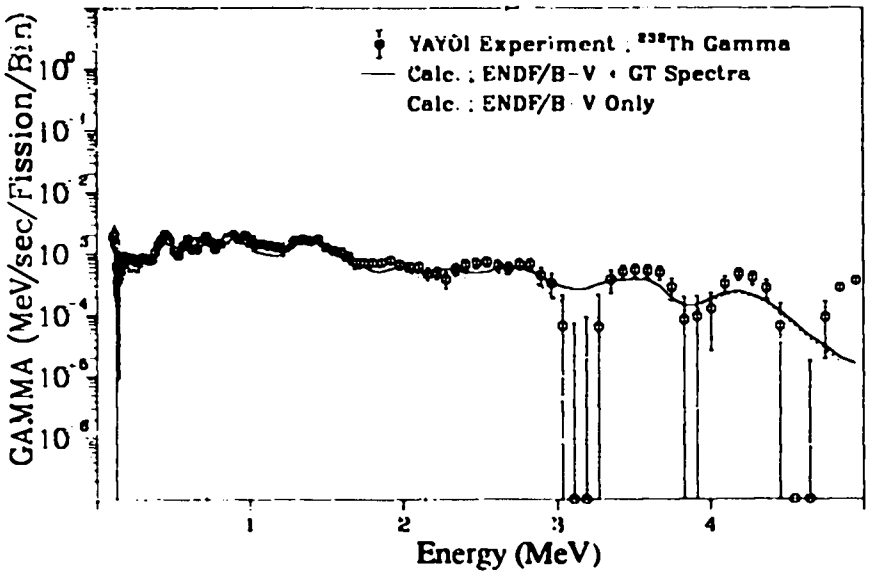

Fig. 352. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 230.0 sec).

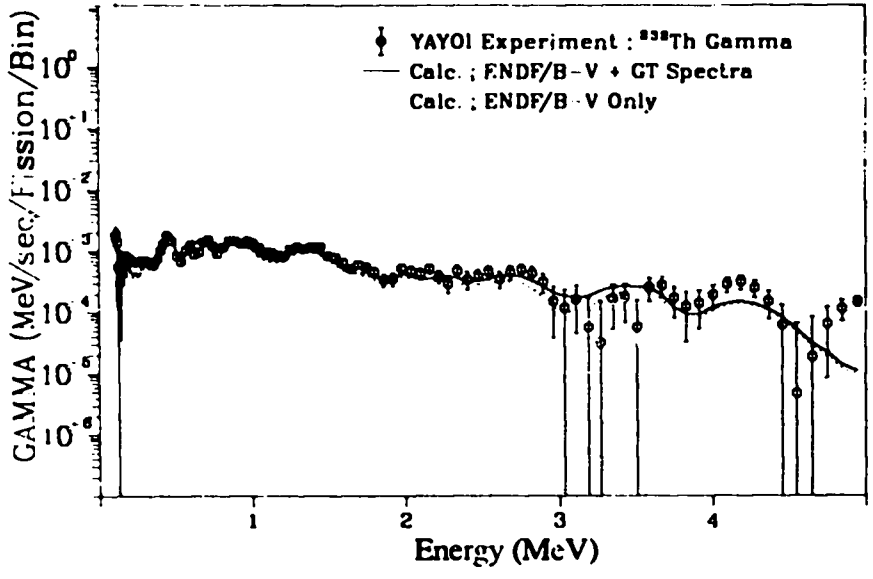

Fig. 353. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 290.0 sec).

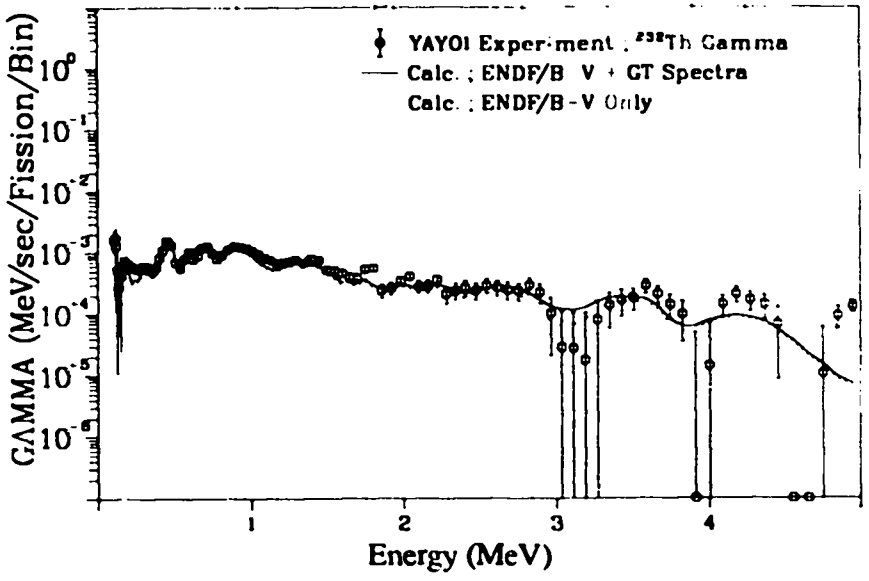

Fig. 354. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 360.0 sec).

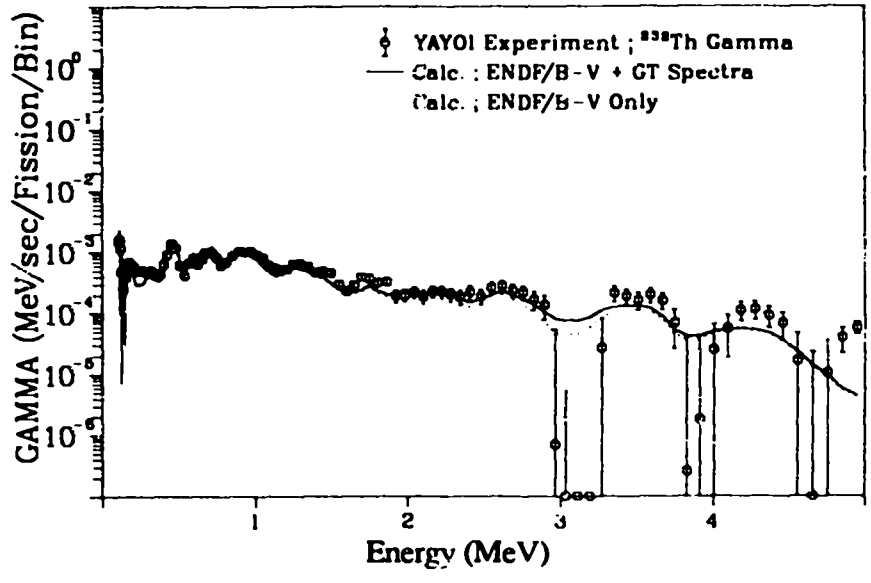

Fig. 355. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 450.0 sec).

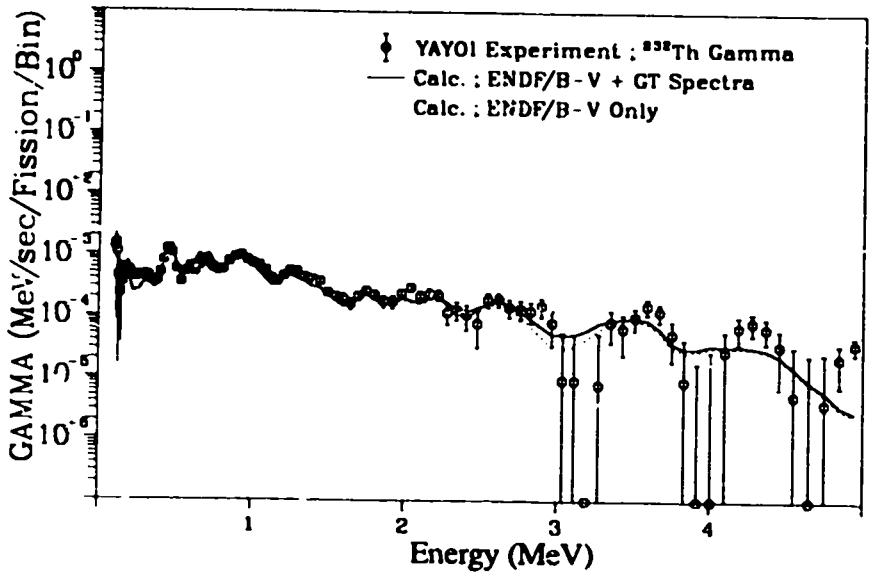

Fig. 356. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 550.0 sec).

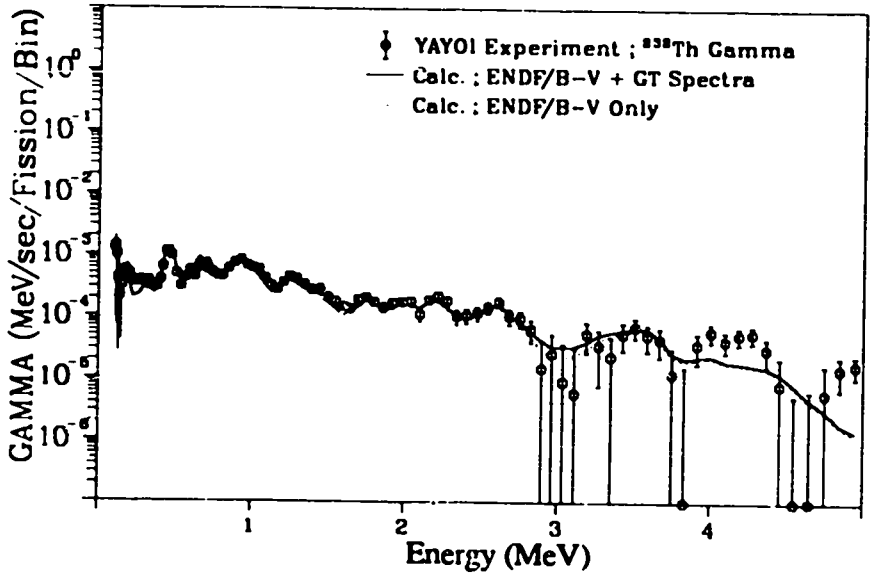

Fig. 357. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 700.0 sec).

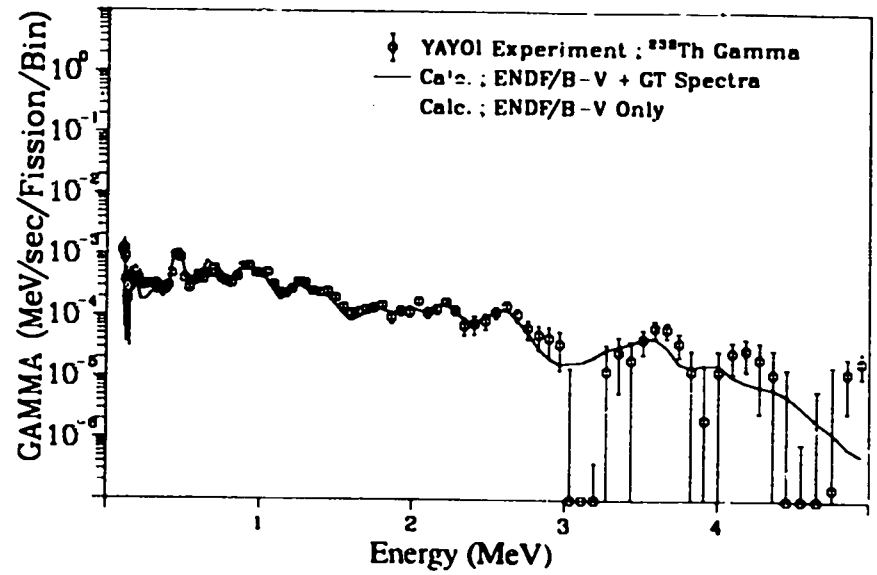

Fig. 358. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 900.0 sec).

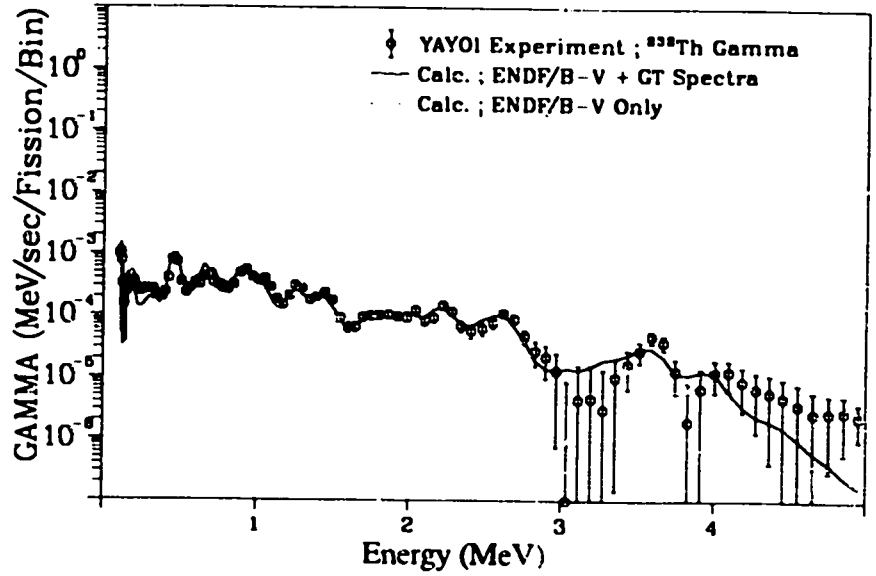

Fig. 359. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1200.0 sec).

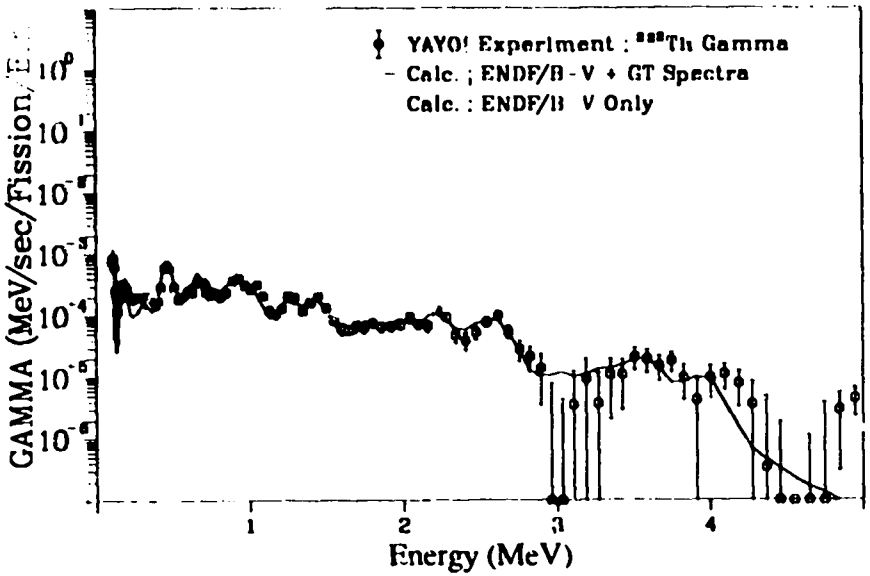

Fig. 360. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 1600.0 sec).

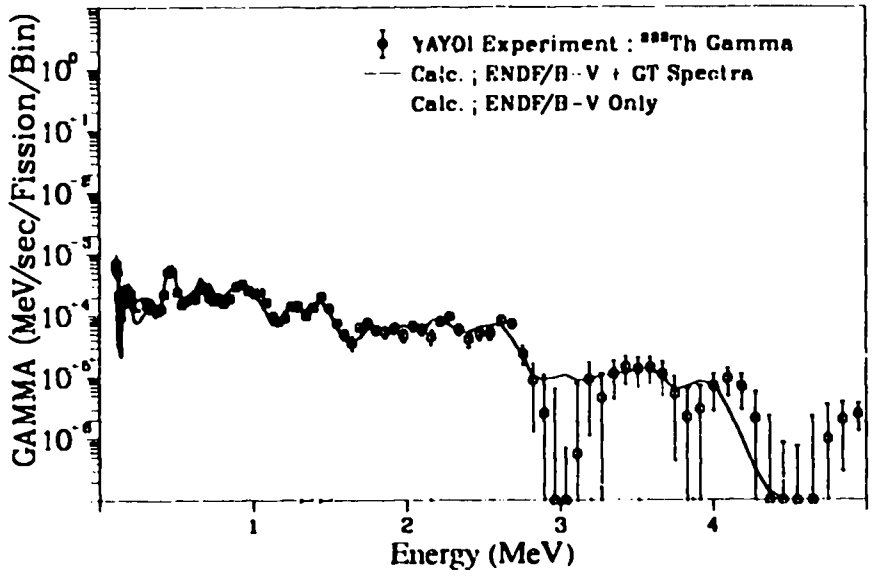

Fig. 361. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2000.0 sec).

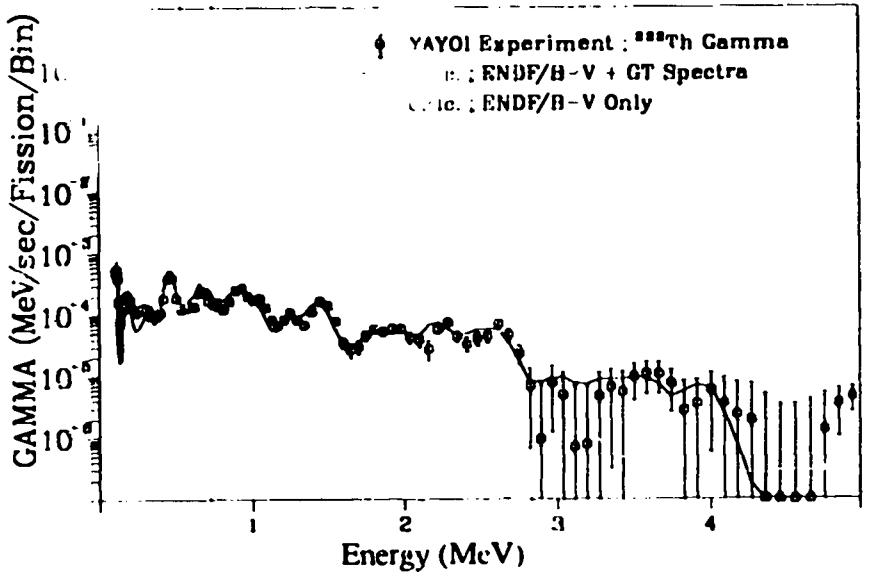

Fig. 362. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2450.0 sec).

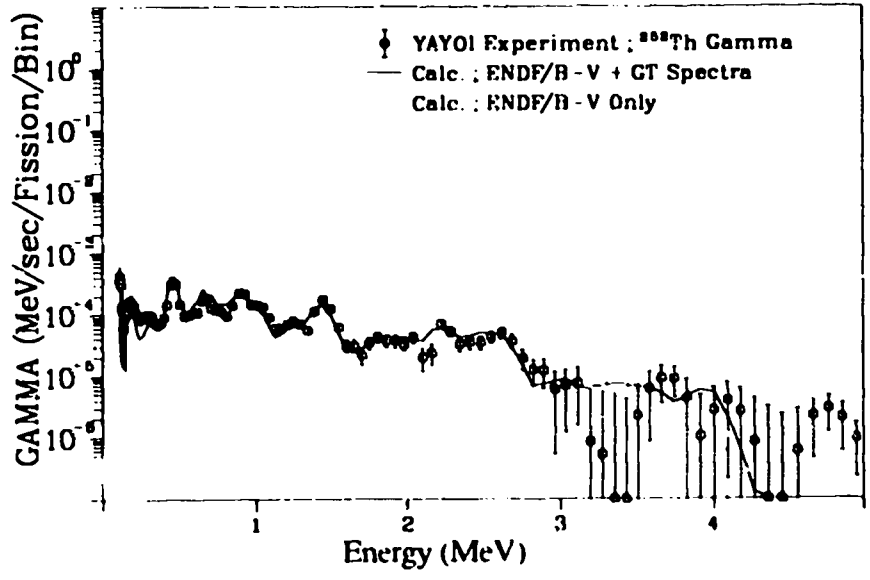

Fig. 363. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 2950.0 sec).

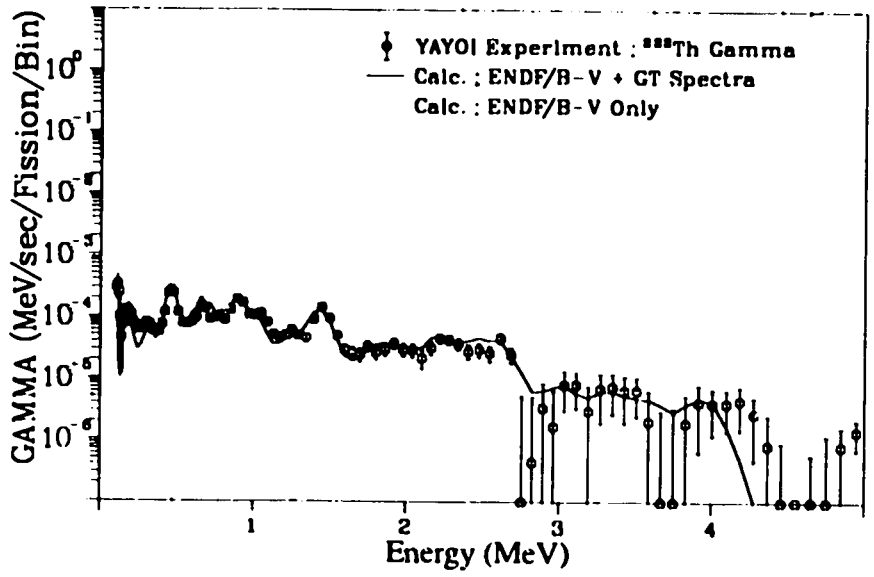

Fig. 364. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 3500.0 sec).

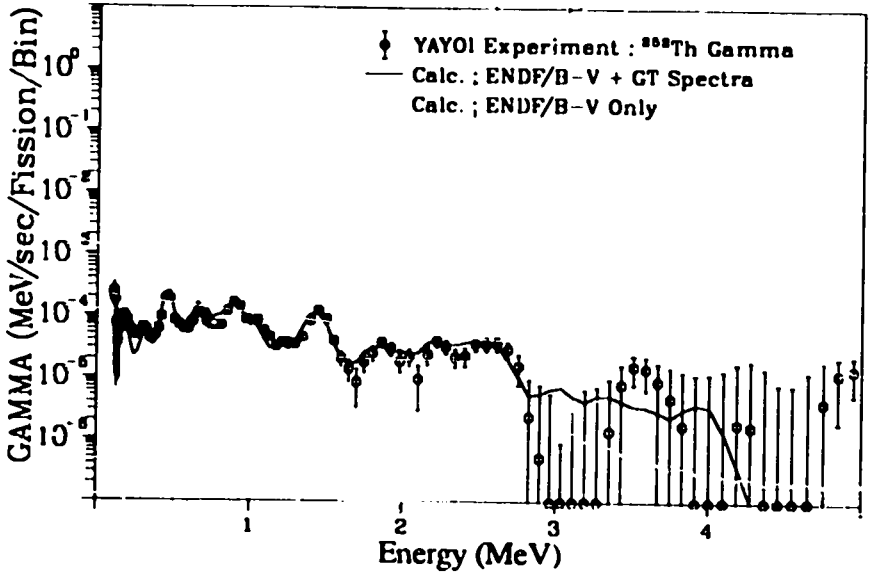

Fig. 365. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4100.0 sec).

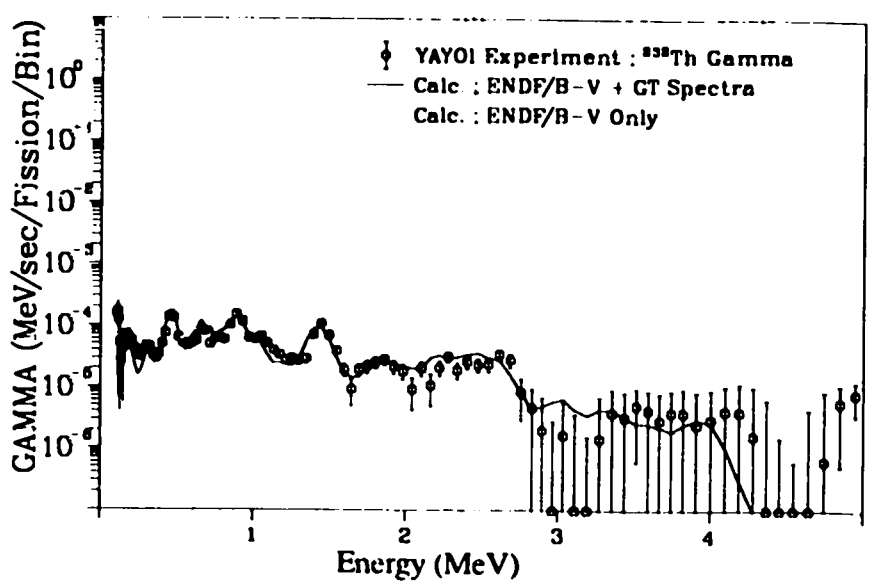

Fig. 366. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 4800.0 sec).

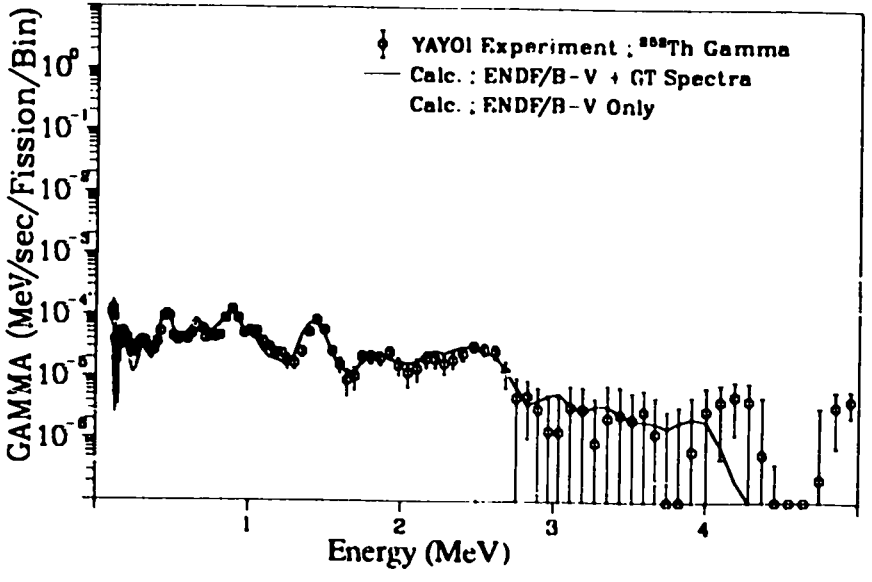

Fig. 367. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 5600.0 sec).

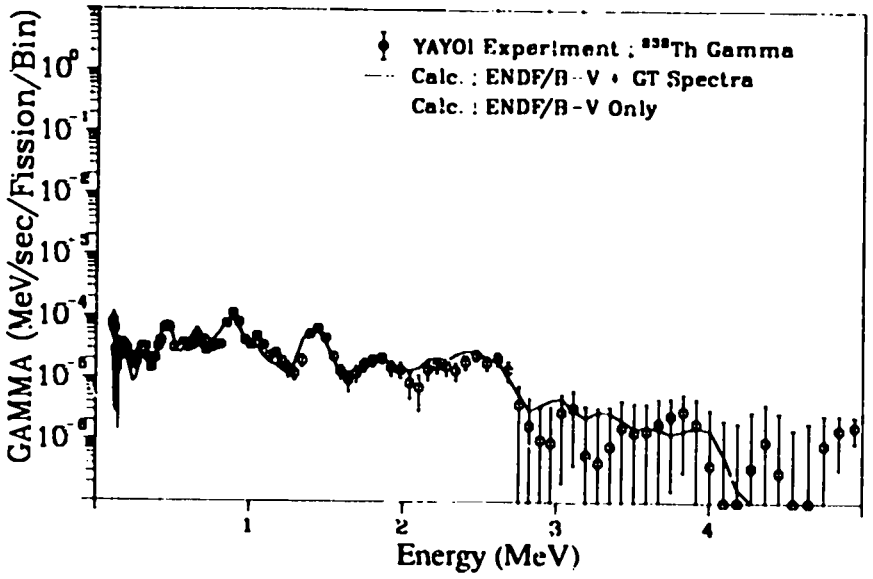

Fig. 368. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 6500.0 sec).

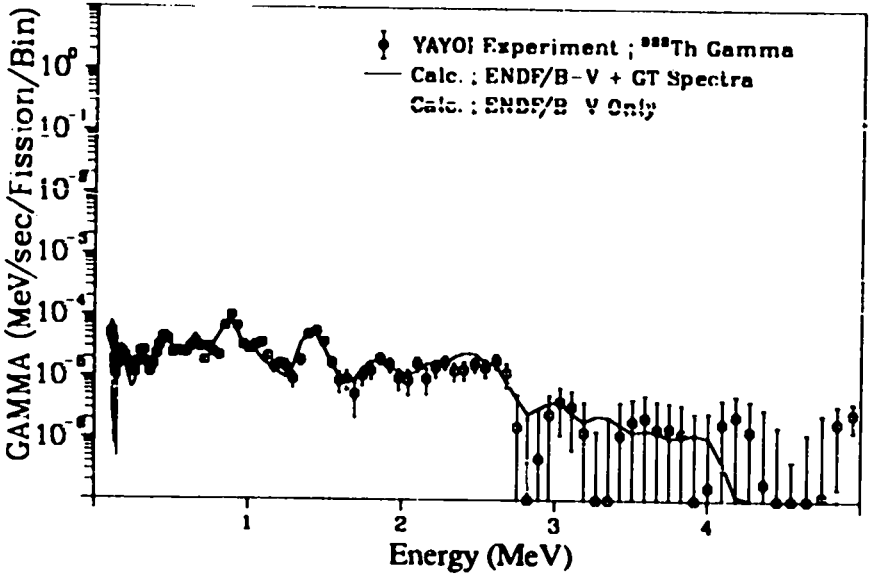

Fig. 369. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 7500.0 sec).

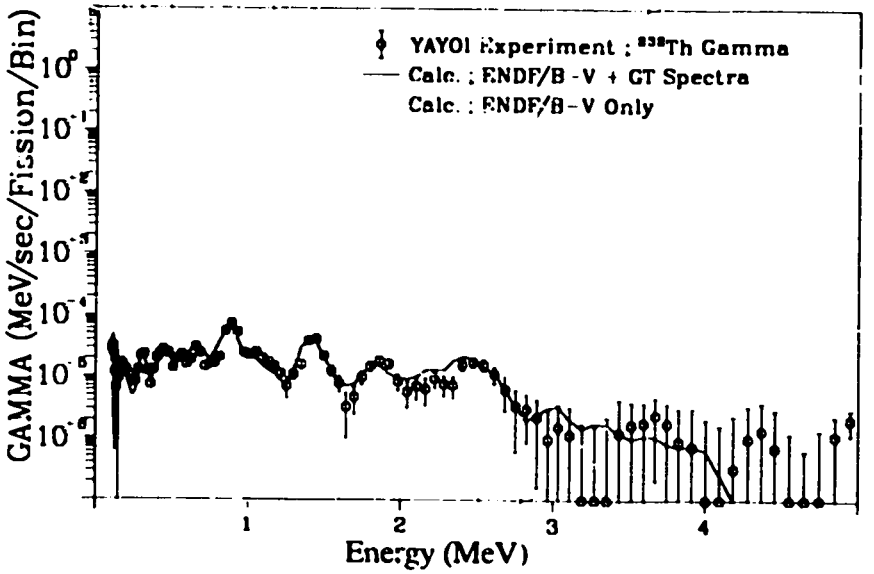

Fig. 370. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 9000.0 sec).

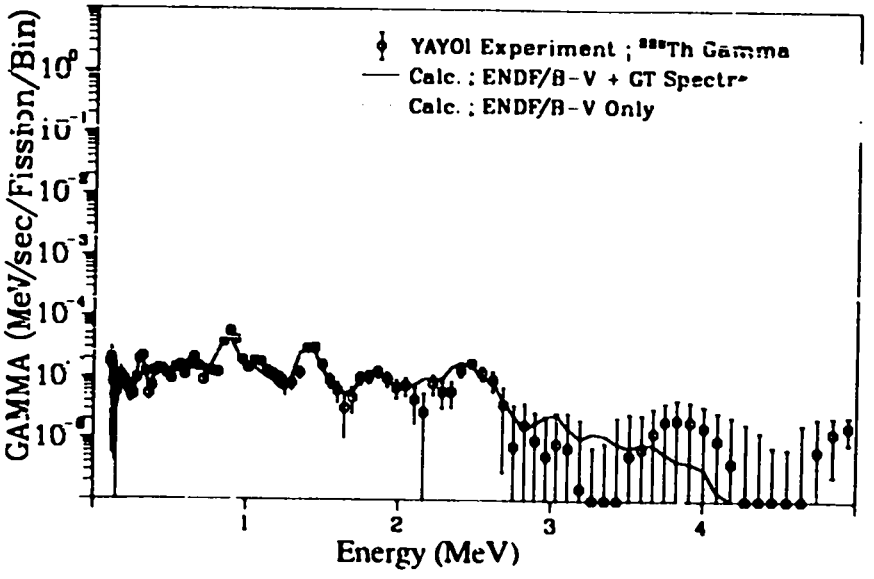

Fig. 371. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 11000.0 sec).

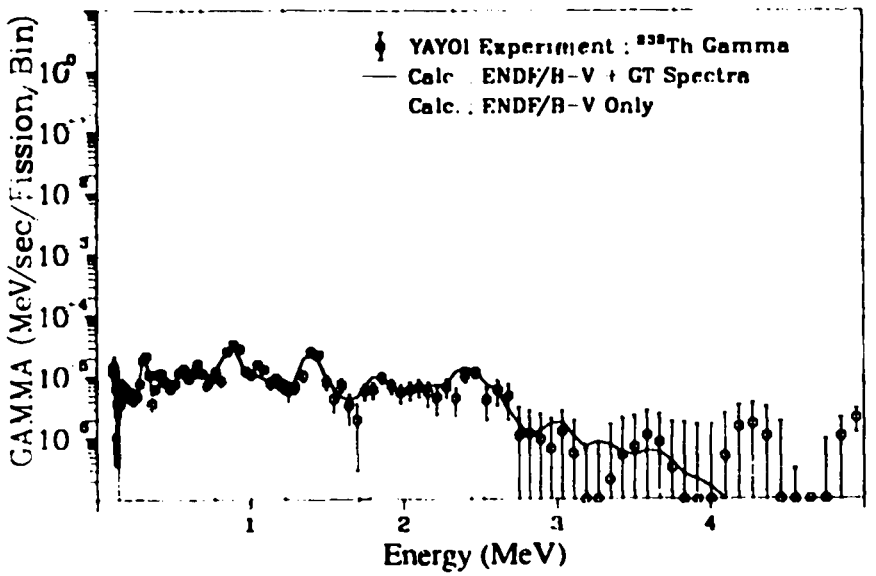

Fig. 372. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 13500.0 sec).

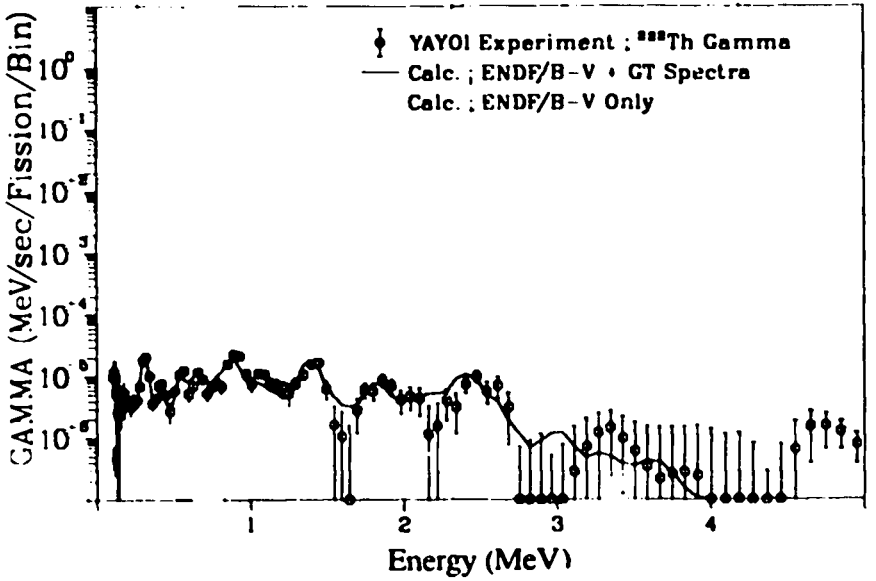

Fig. 373. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 16500.0 sec).

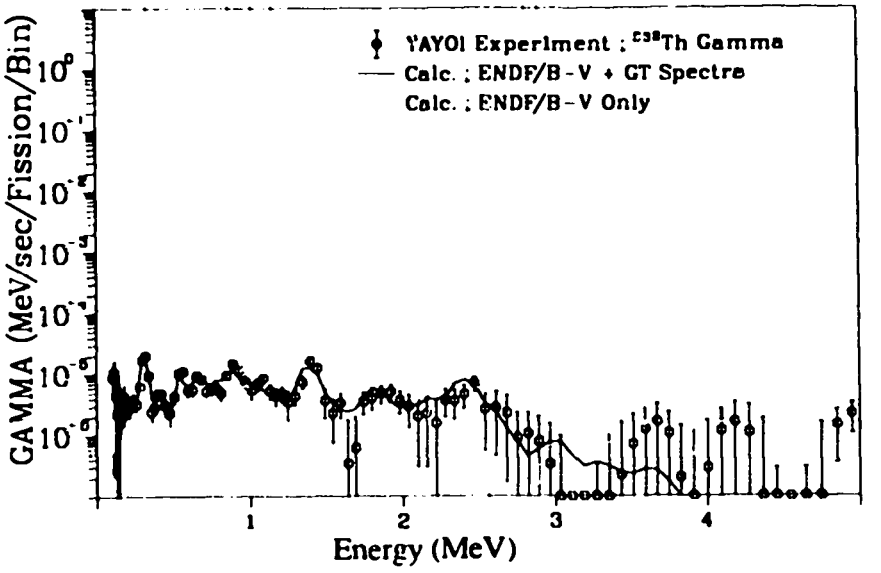

Fig. 374. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 20000.0 sec).

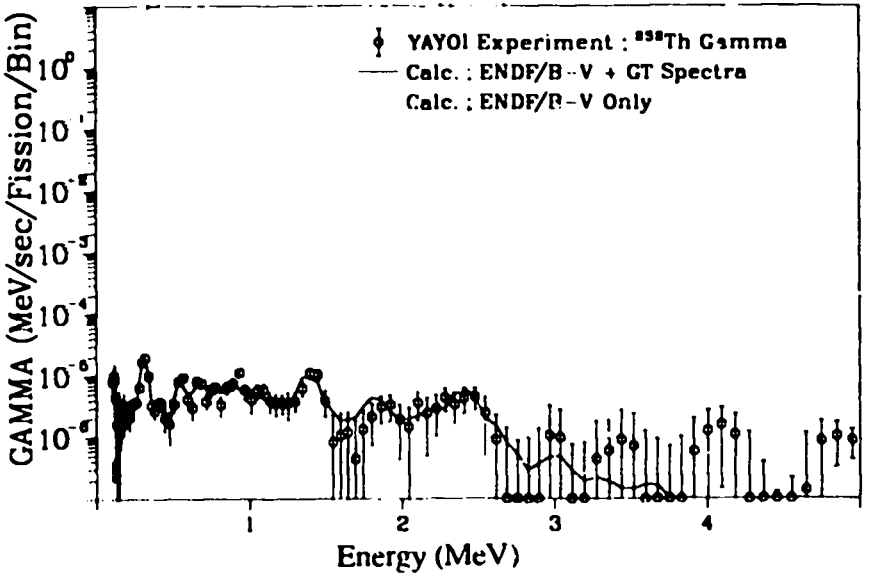

Fig. 375. Gamma spectrum after ^{232}Th fast neutron fission ($T_{irrad.}$ = 100.0 sec, $T_{cool.}$ = 24000.0 sec).

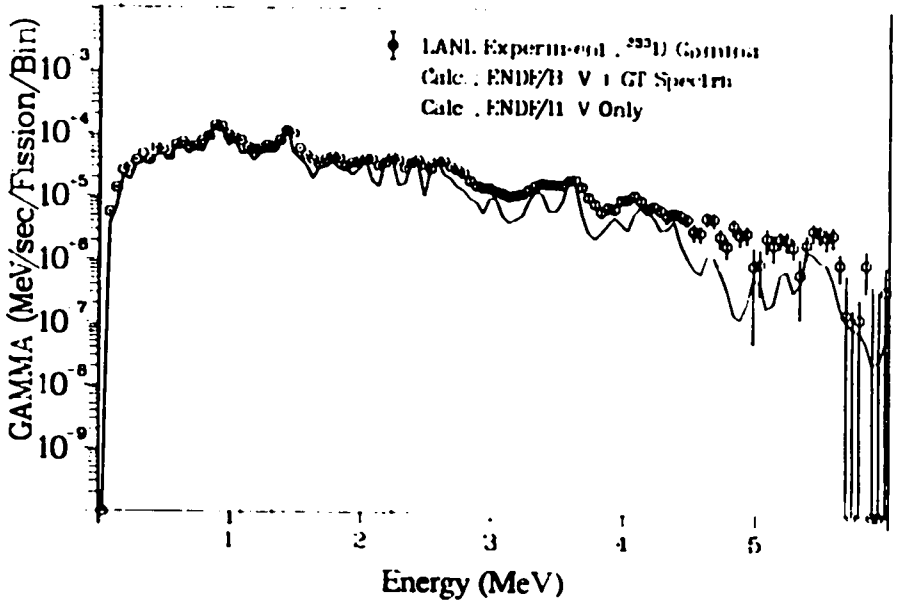

Fig. 376. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 29.0 sec).

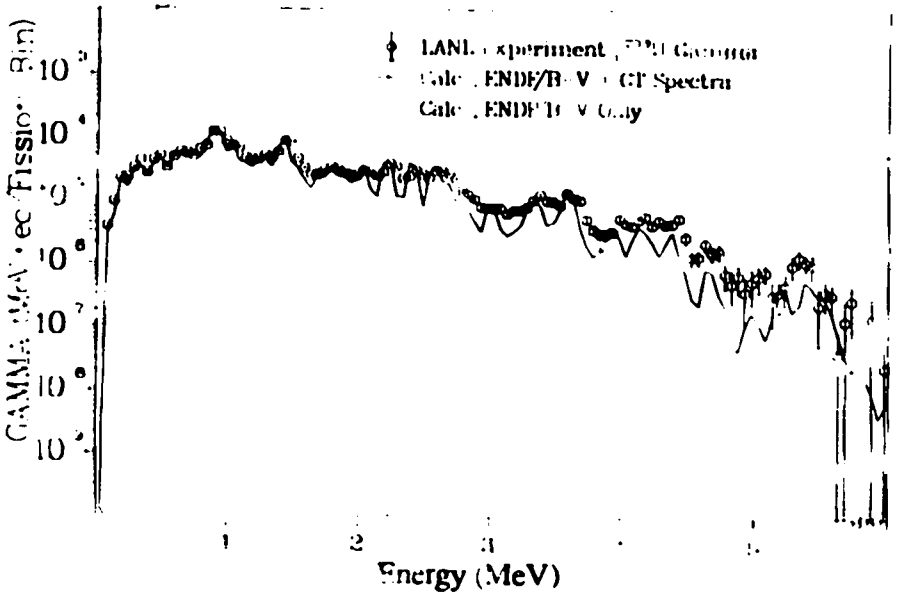

Fig. 377. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 128.0 sec)

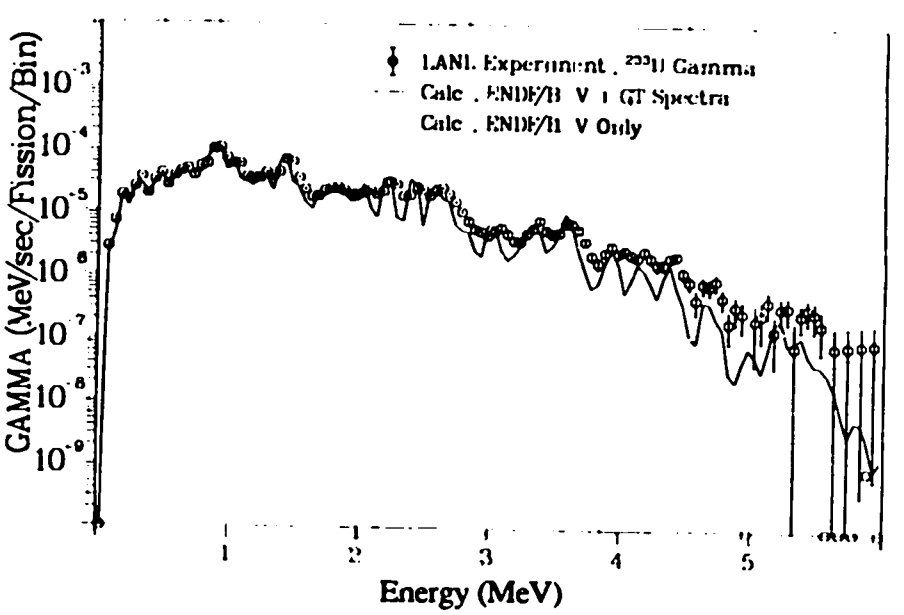

Fig. 378. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 284.0 sec).

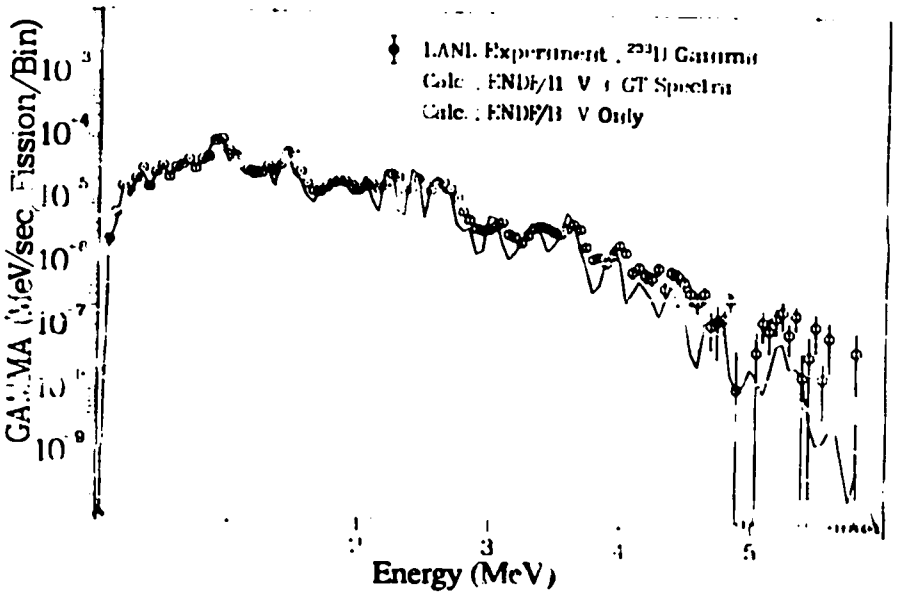

Fig. 379. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 538.0 sec)

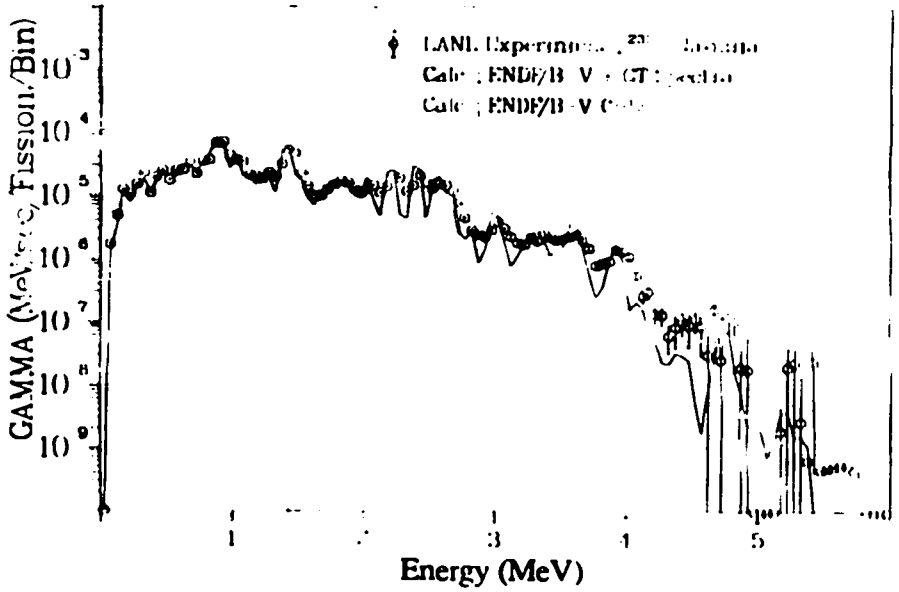

Fig. 380. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 1218.0 sec).

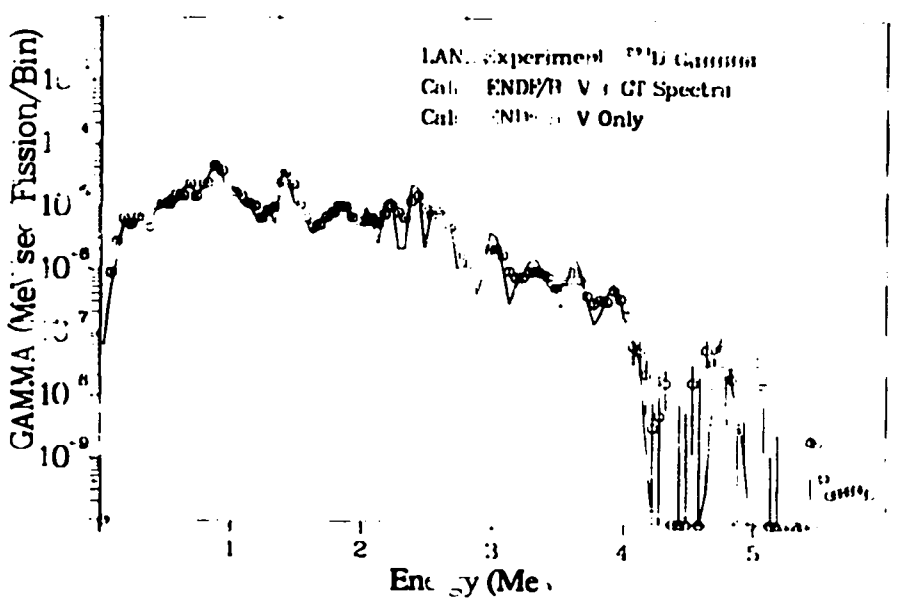

Fig. 382. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 961.0 sec)

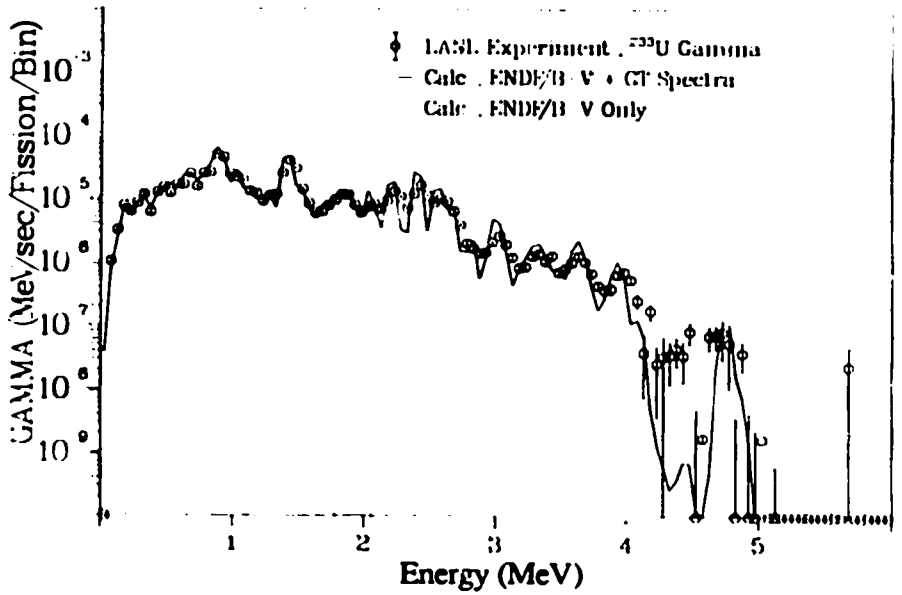

Fig. 381. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 2581.0 sec).

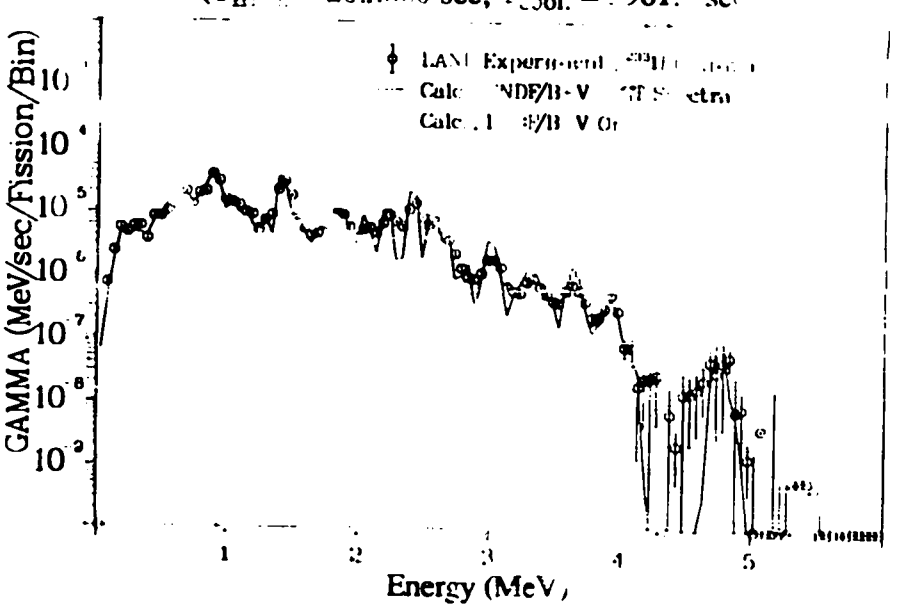

Fig. 383. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 5010.0 sec).

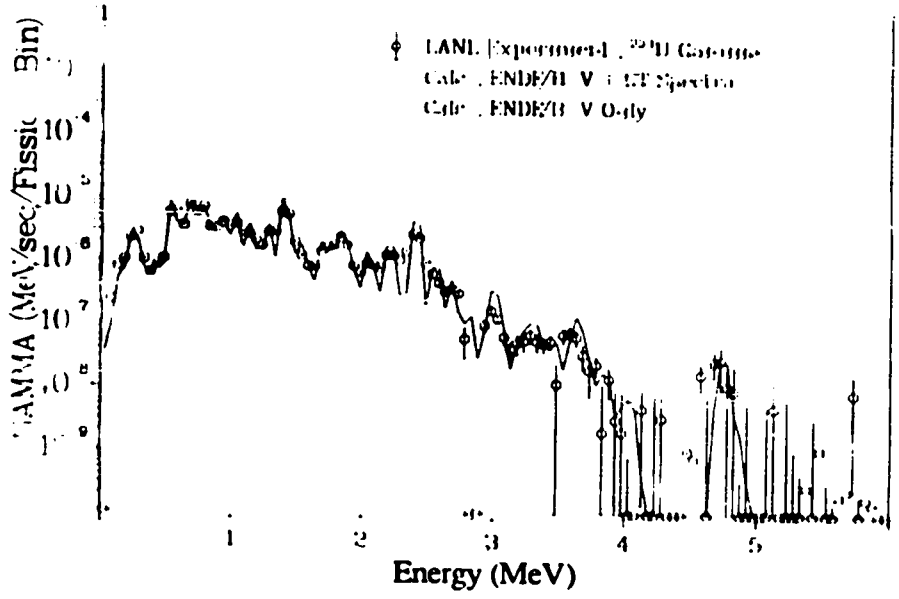

Fig. 384. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 23760.0 sec).

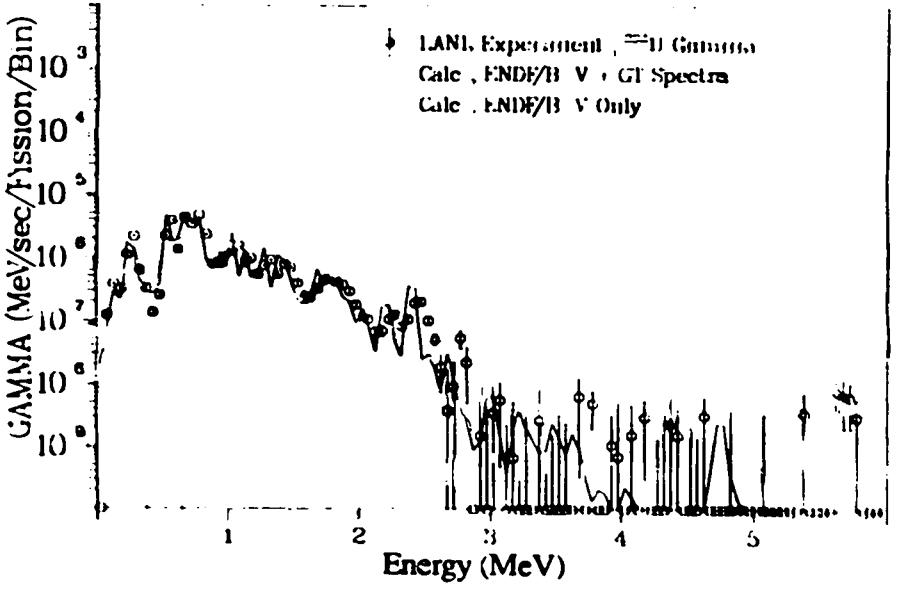

Fig. 385. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 59292.0 sec).

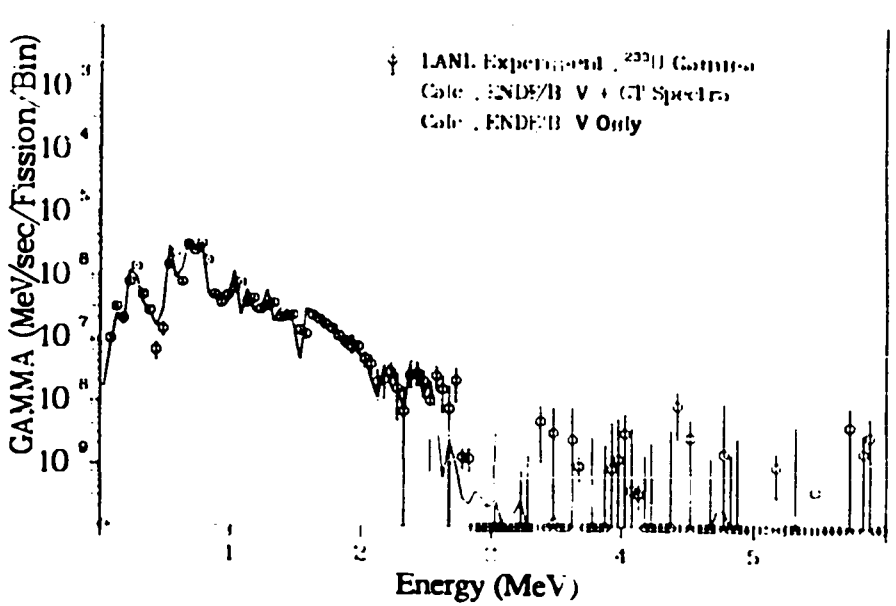

Fig. 386. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 96822.0 sec).

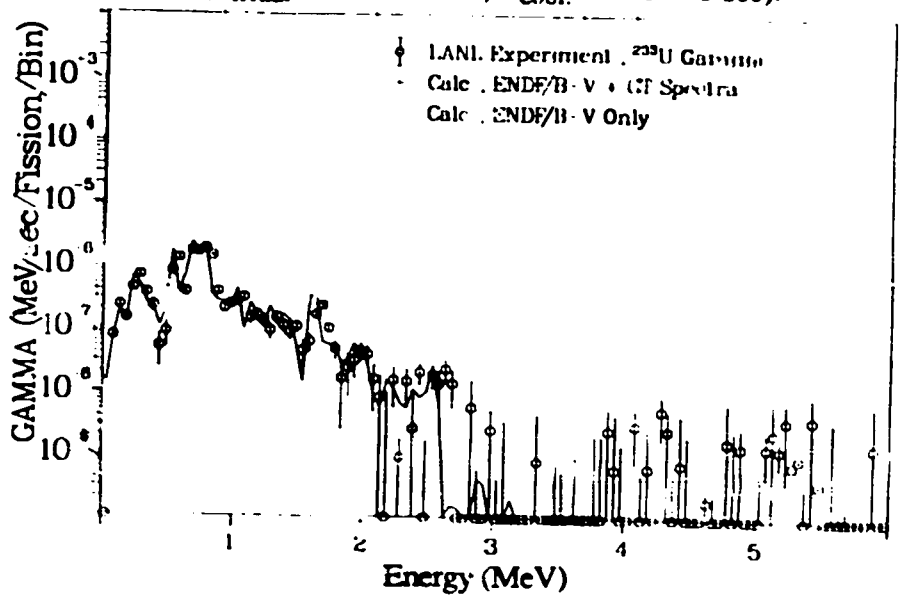

Fig. 387. Gamma spectrum after ^{233}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 146562.2 sec).

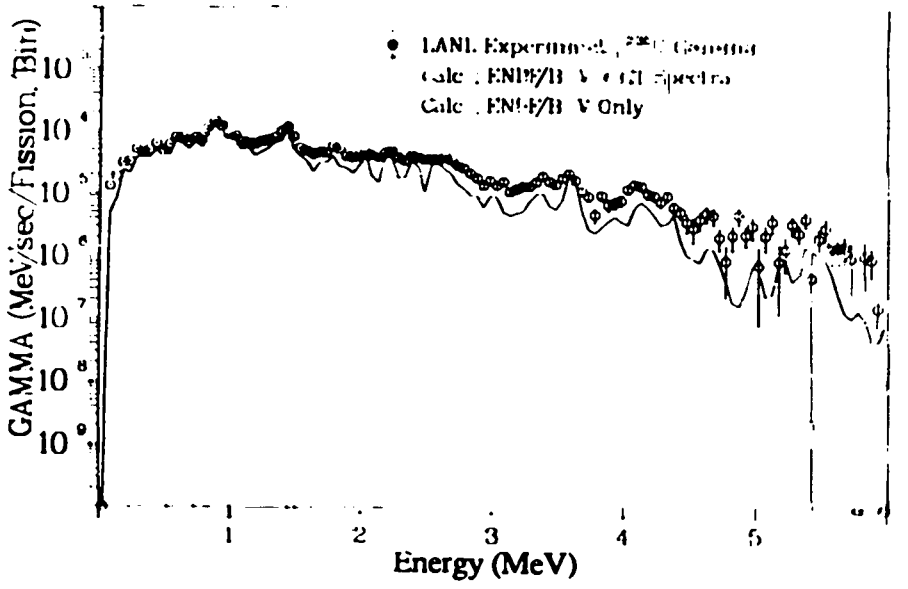

Fig. 388. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 29.0 sec).

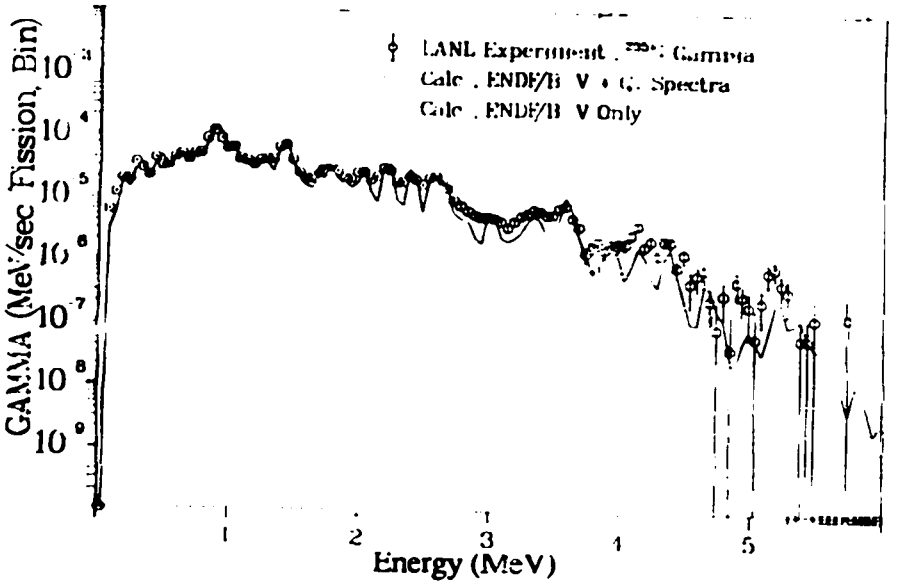

Fig. 390. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 284.0 sec).

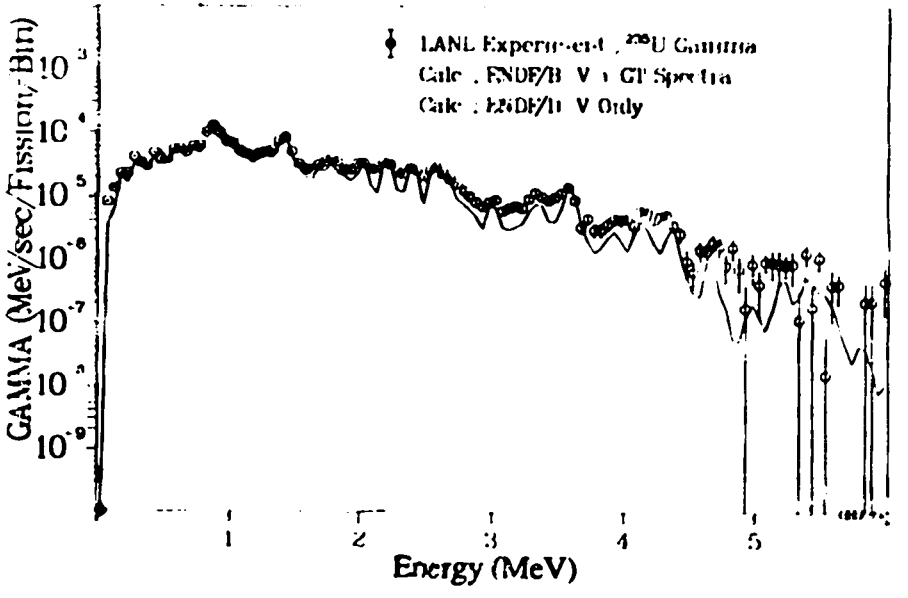

Fig. 389. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 128.0 sec).

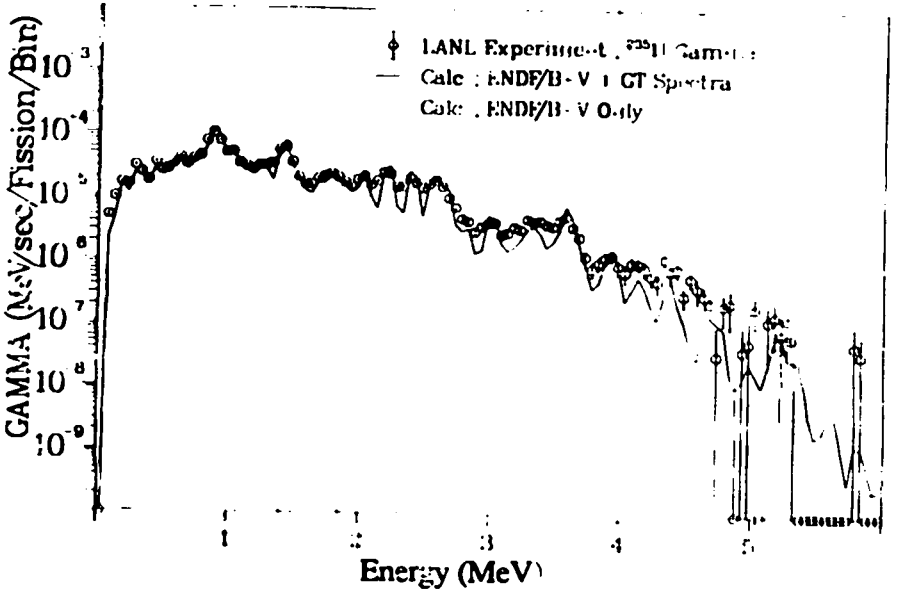

Fig. 391. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 538.0 sec).

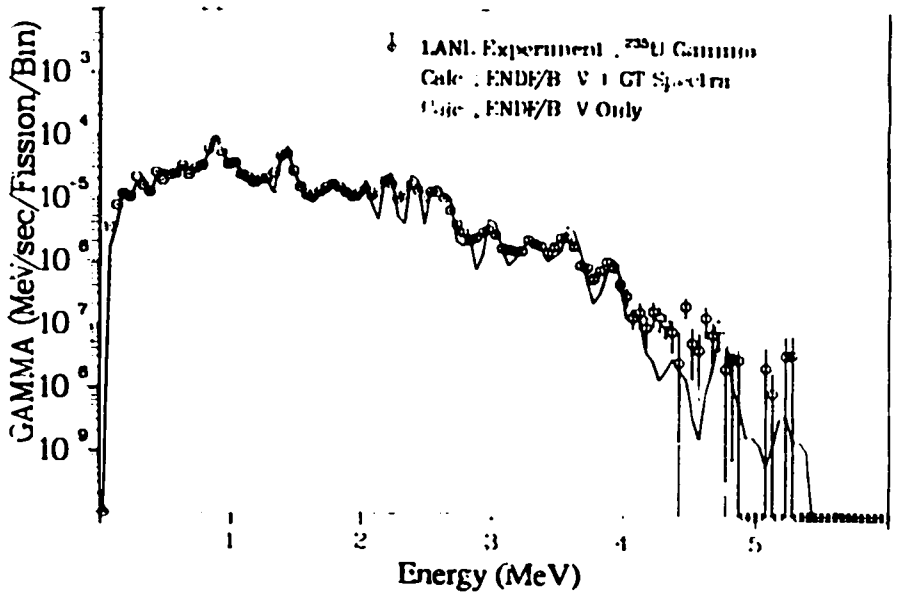

Fig. 392. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 1218.0 sec).

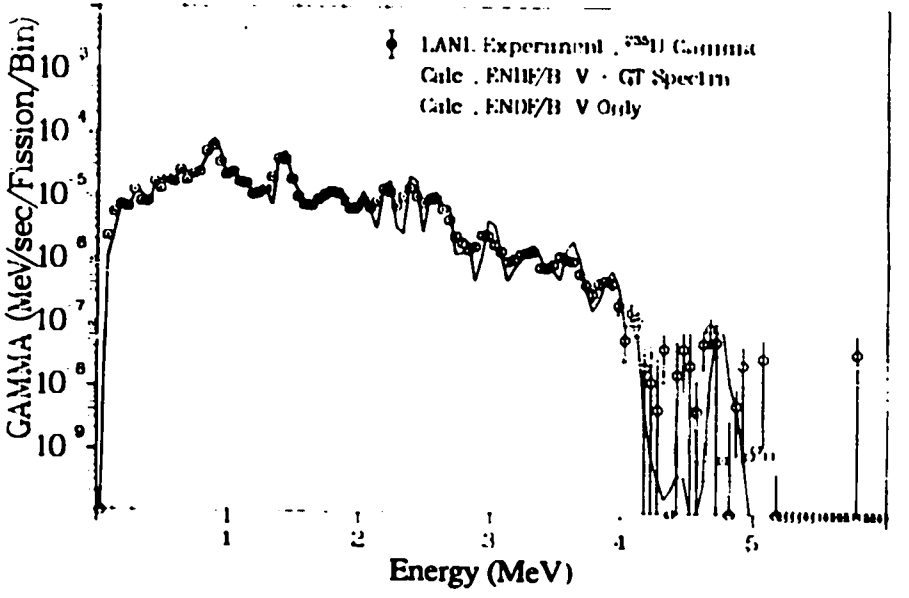

Fig. 393. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 2581.0 sec).

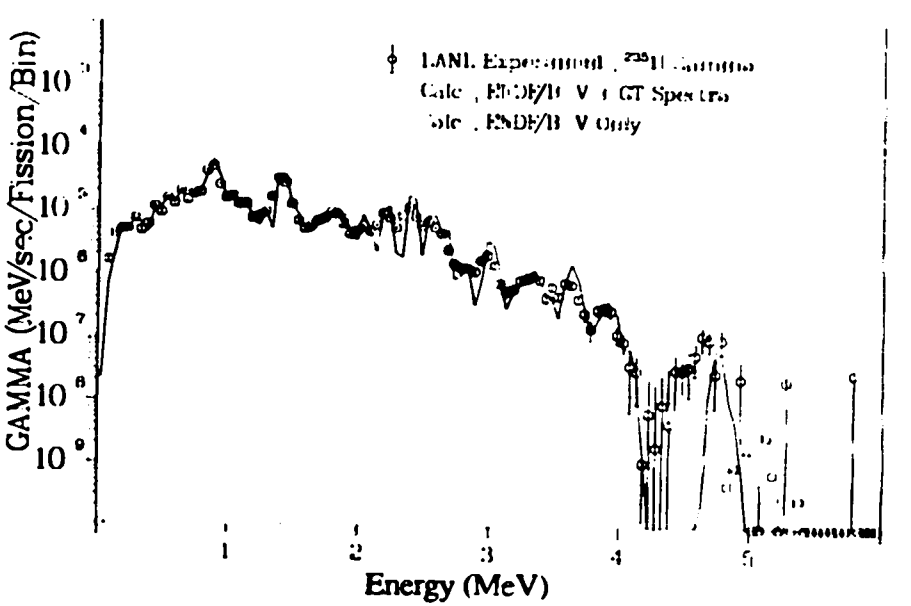

Fig. 394. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 3961.0 sec).

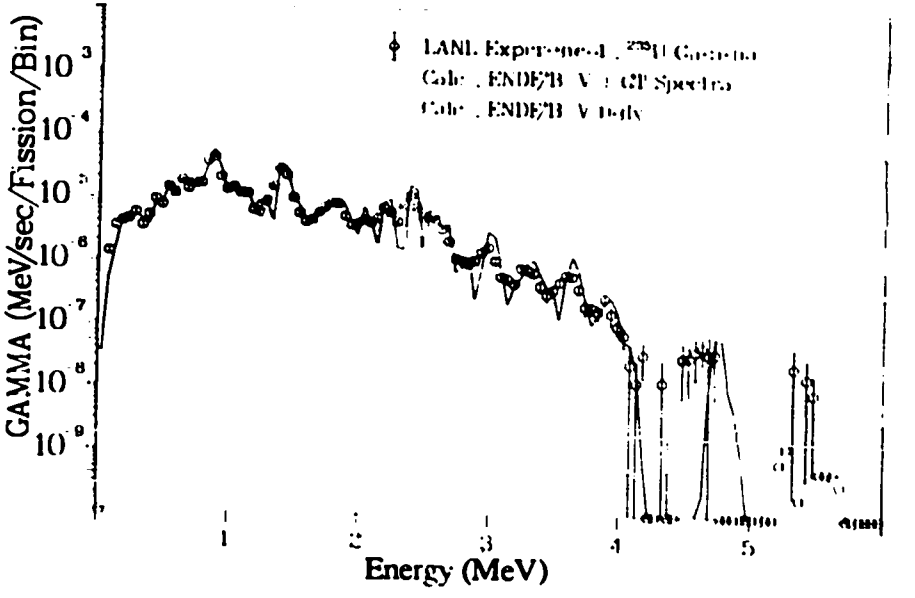

Fig. 395. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 5010.0 sec).

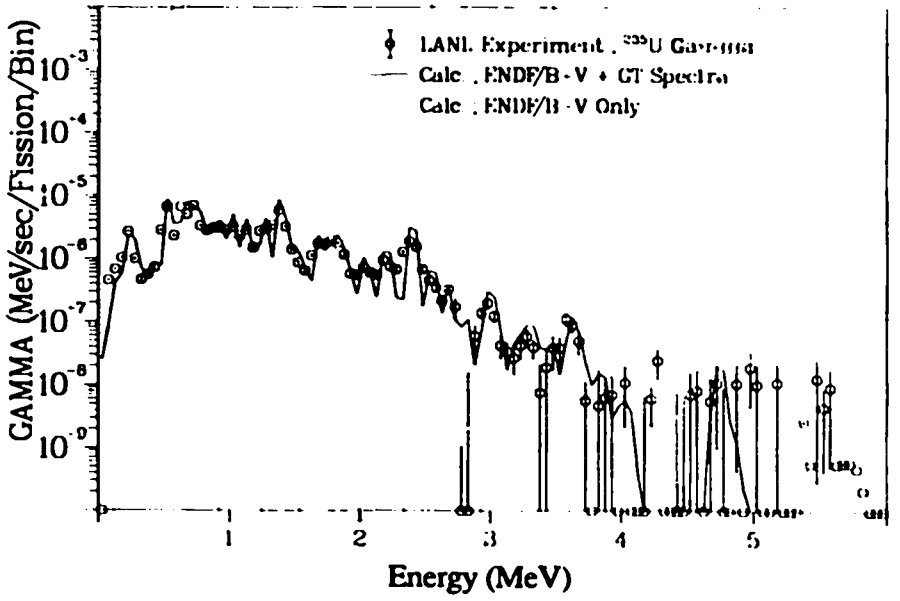

Fig. 396. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 23760.0 sec).

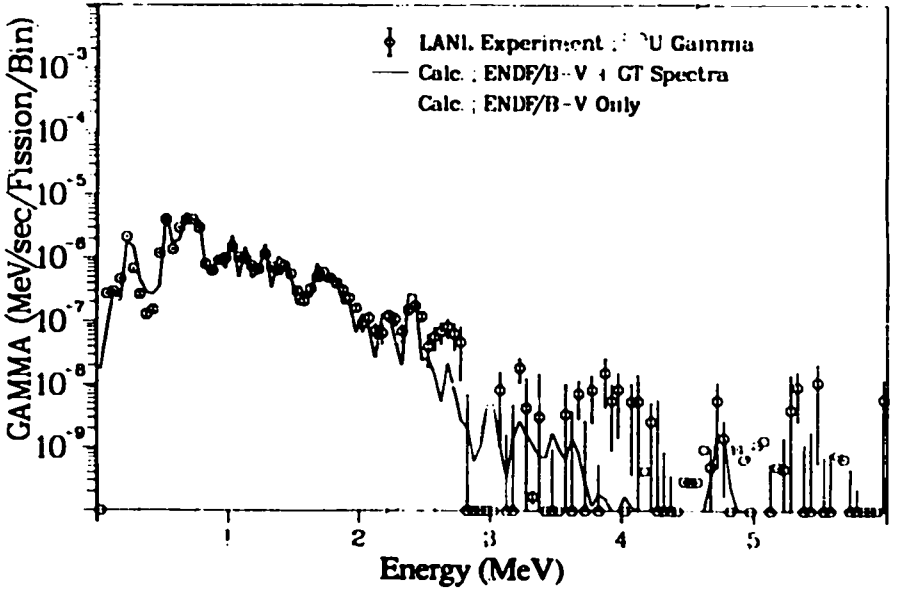

Fig. 397. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 59292.0 sec).

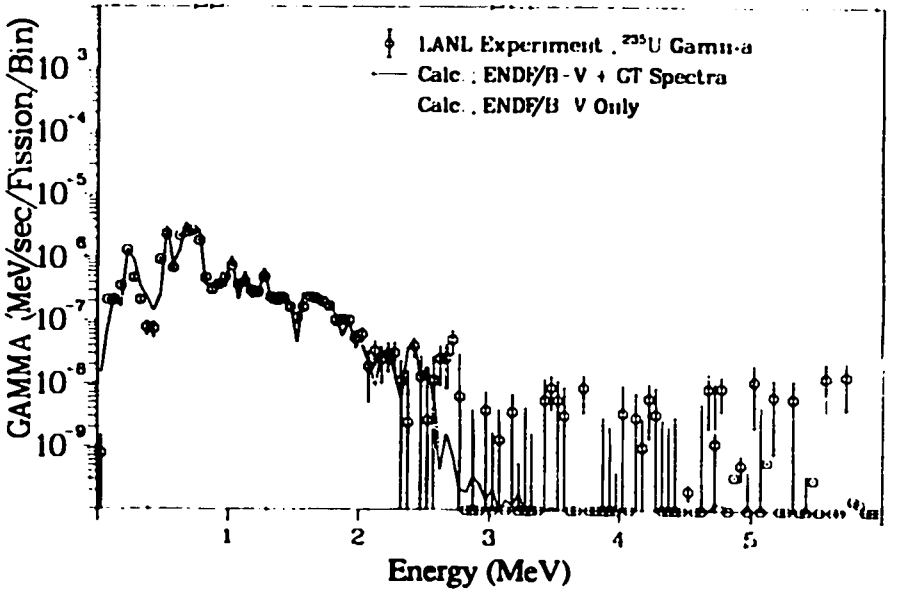

Fig. 398. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 96822.0 sec).

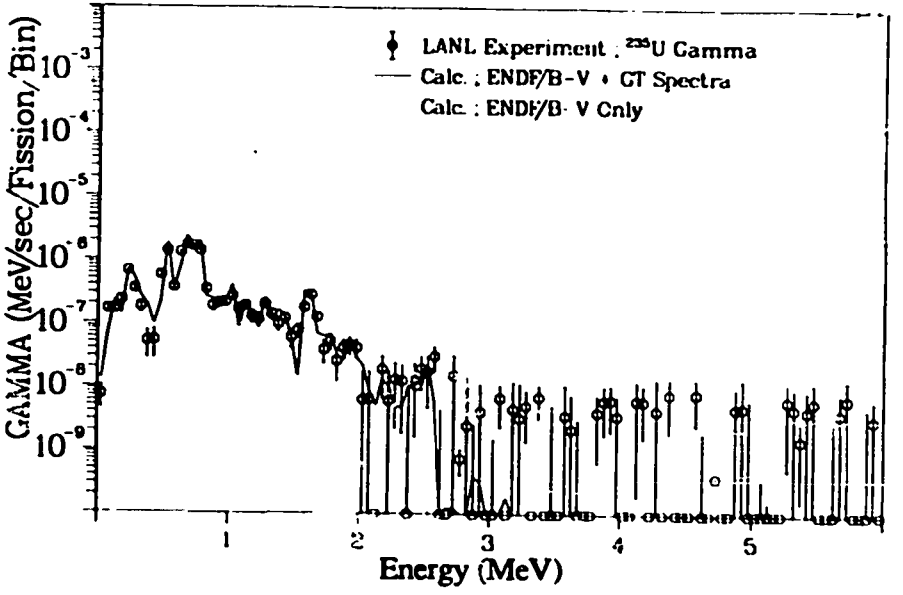

Fig. 399. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 146562.0 sec).

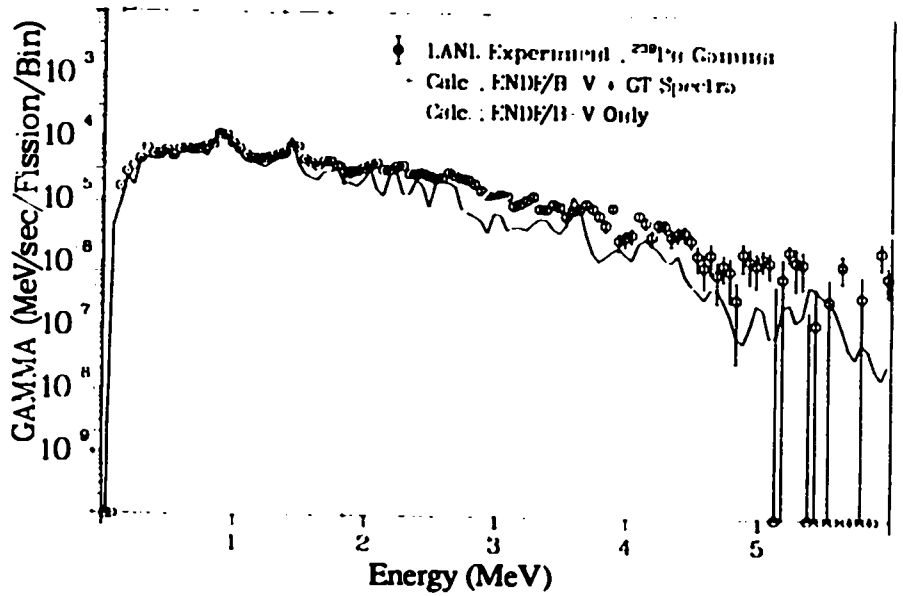

Fig. 400. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 29.0 sec).

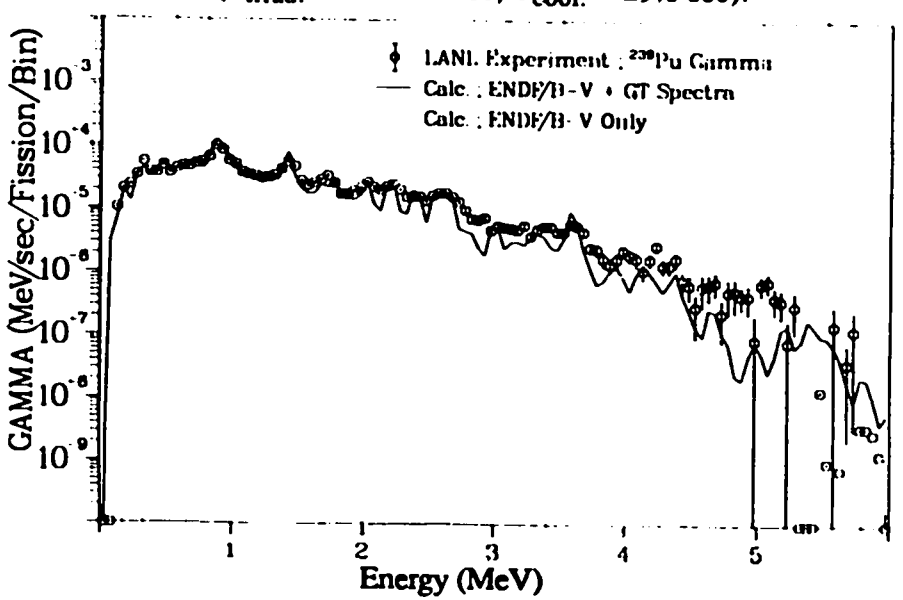

Fig. 401. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 128.0 sec).

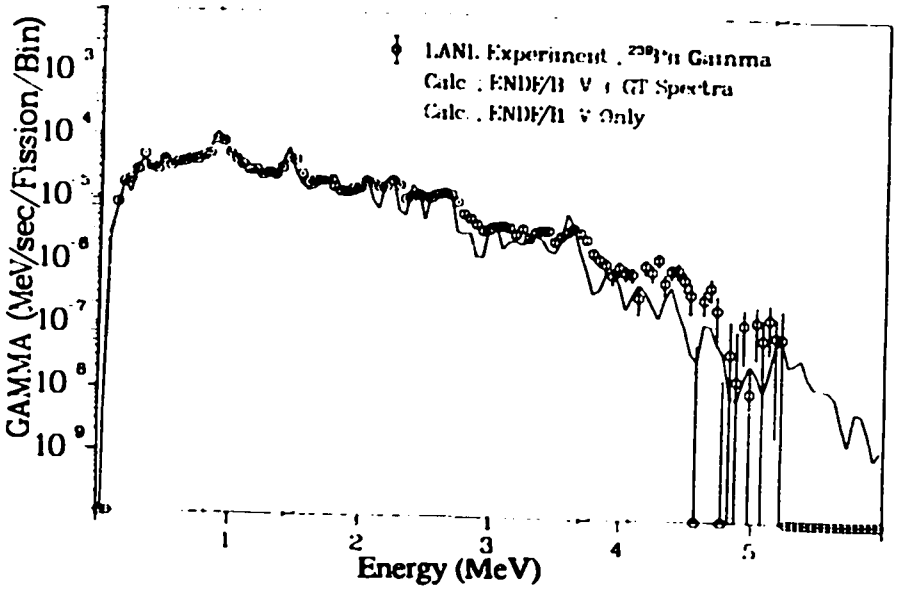

Fig. 402. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 284.0 sec).

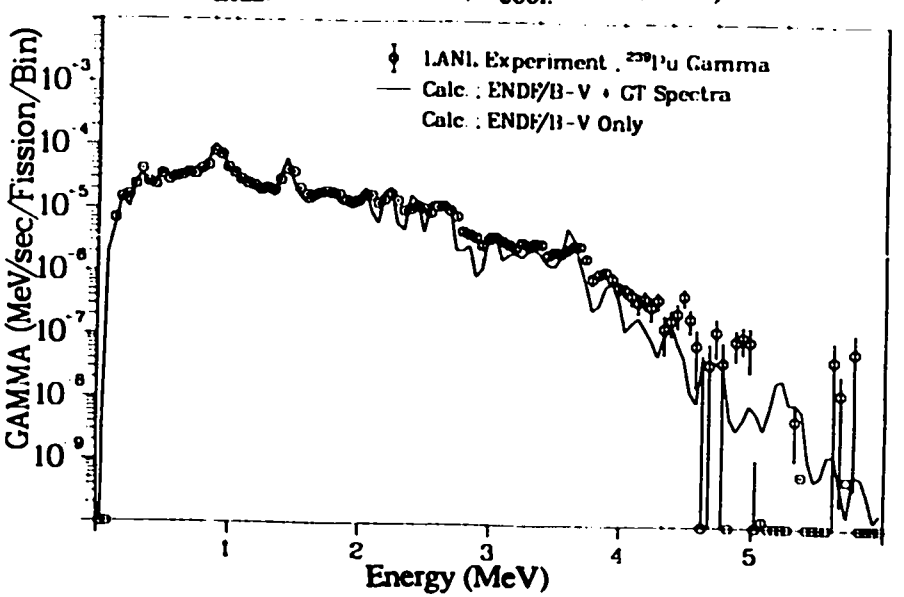

Fig. 403. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 538.0 sec).

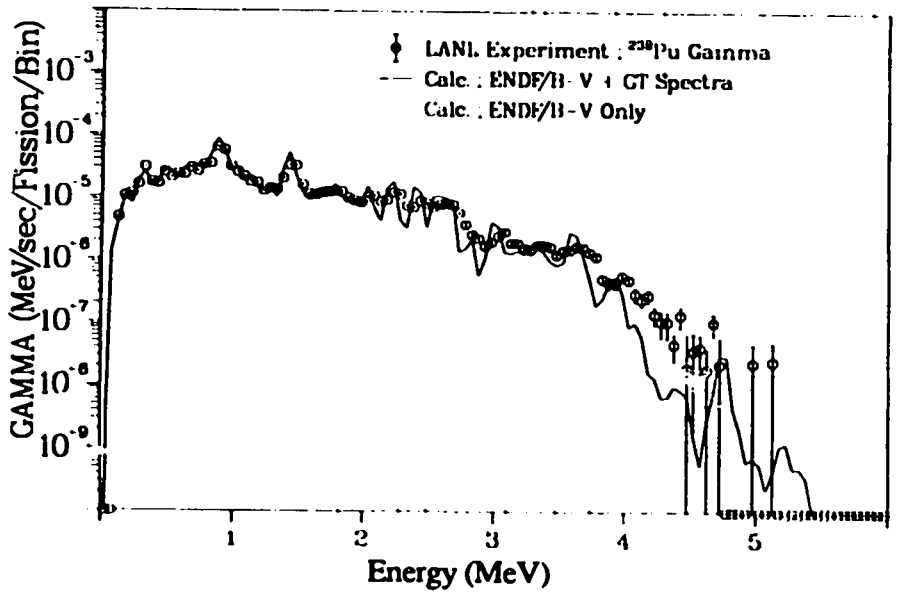

Fig. 404. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 1218.0 sec).

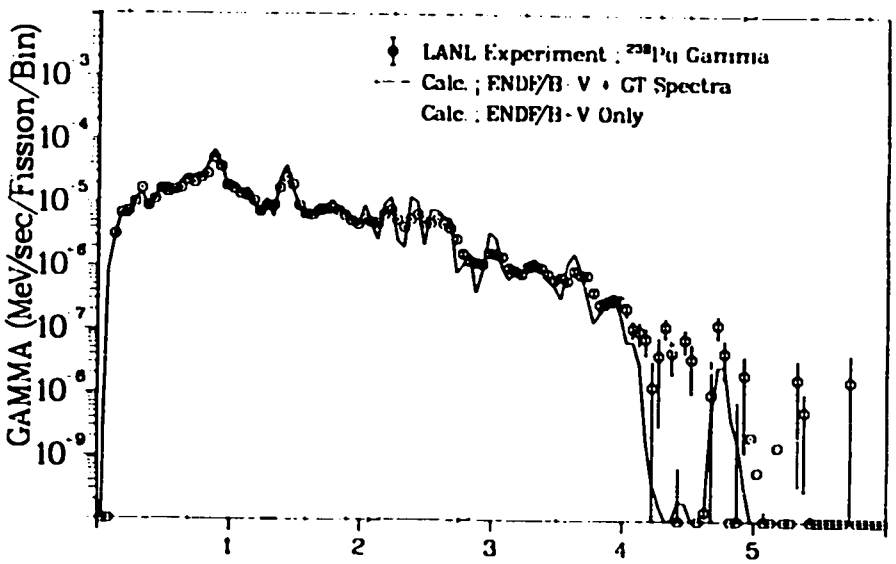

Fig. 405. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 2530.0 sec).

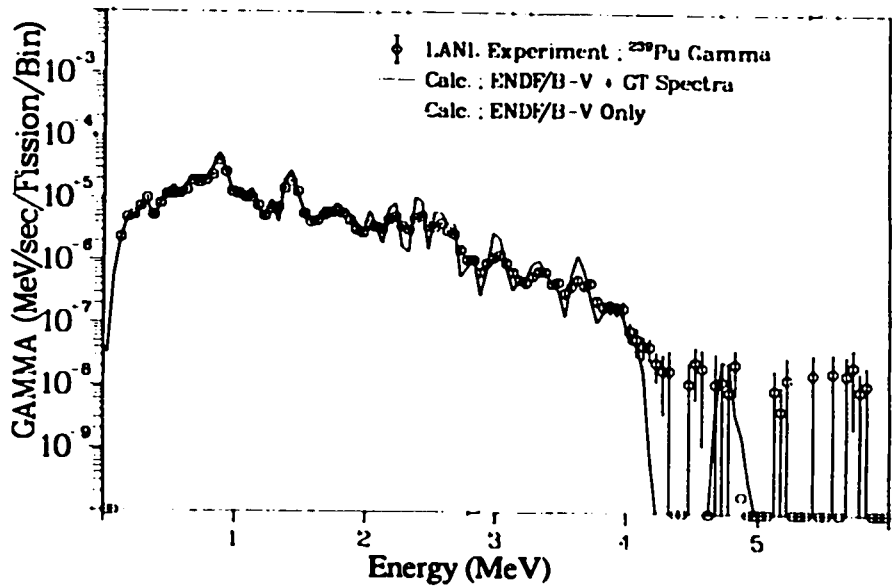

Fig. 406. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 3930.0 sec).

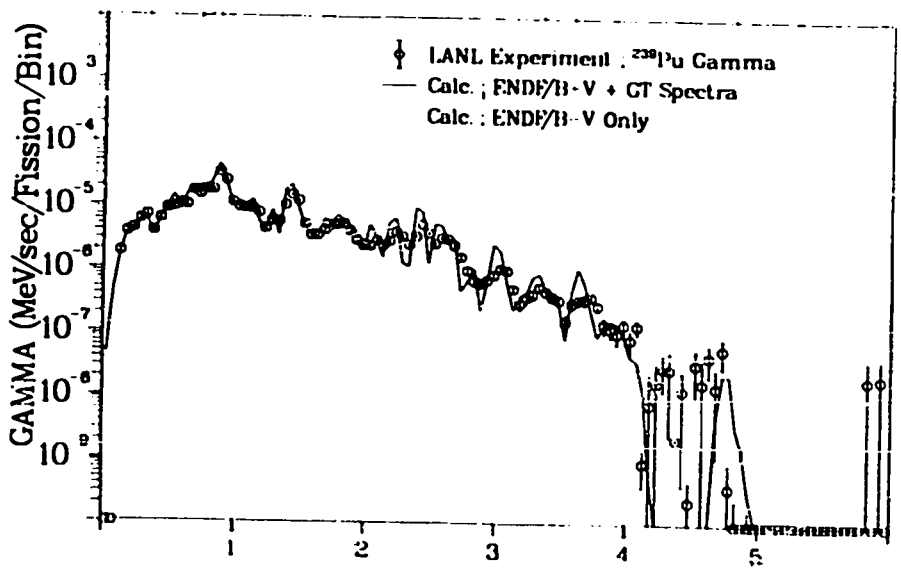

Fig. 407. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 5020.0 sec).

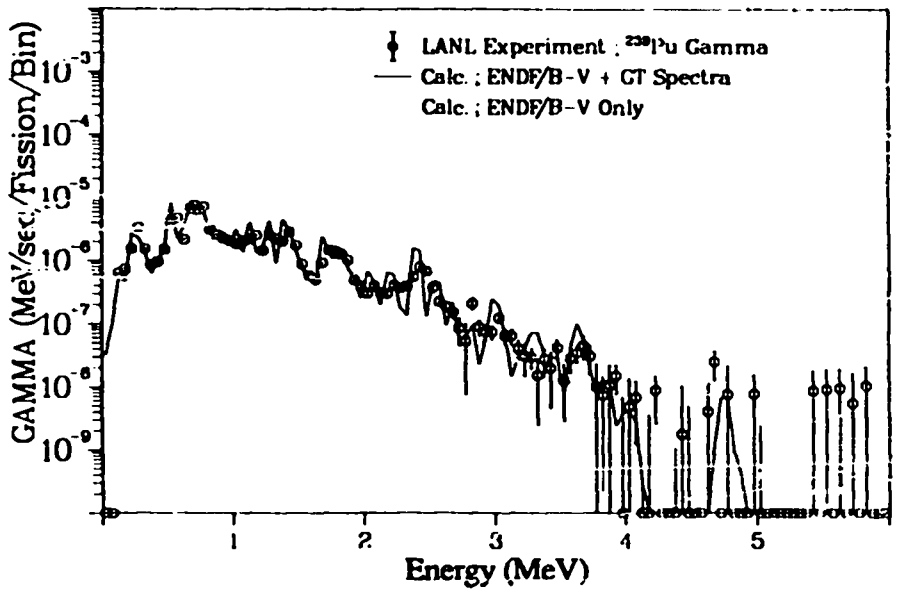

Fig. 408. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 23760.0 sec).

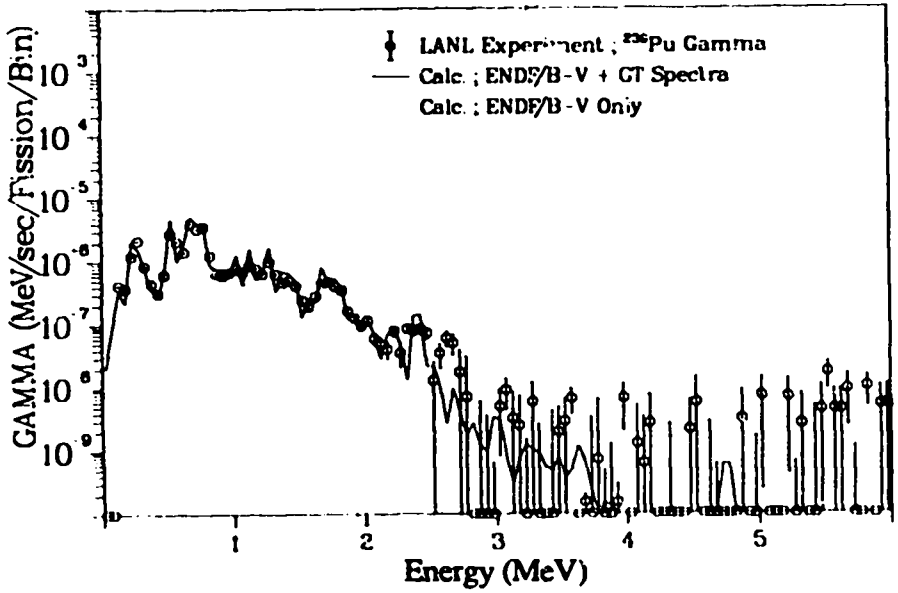

Fig. 409. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 59320.0 sec).

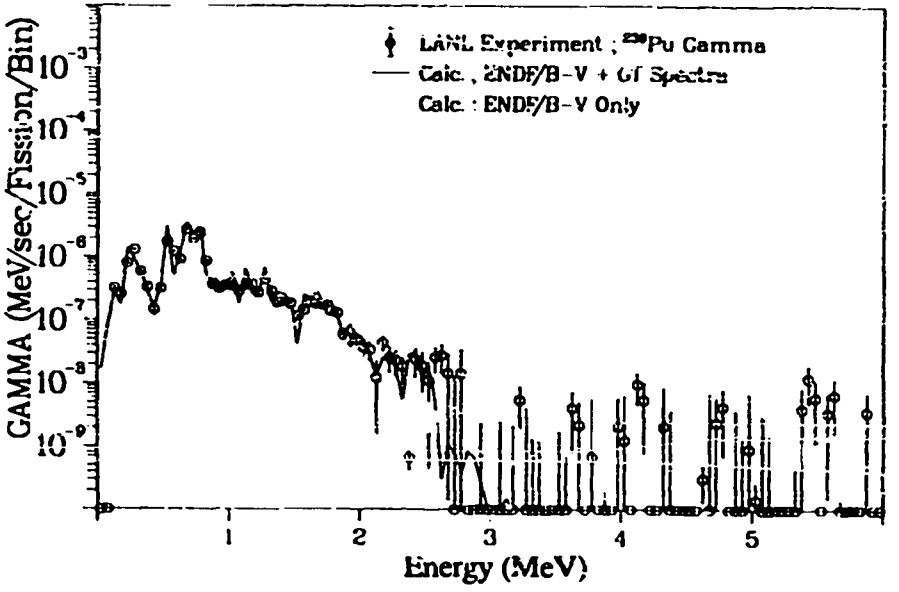

Fig. 410. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ = 96840.0 sec).

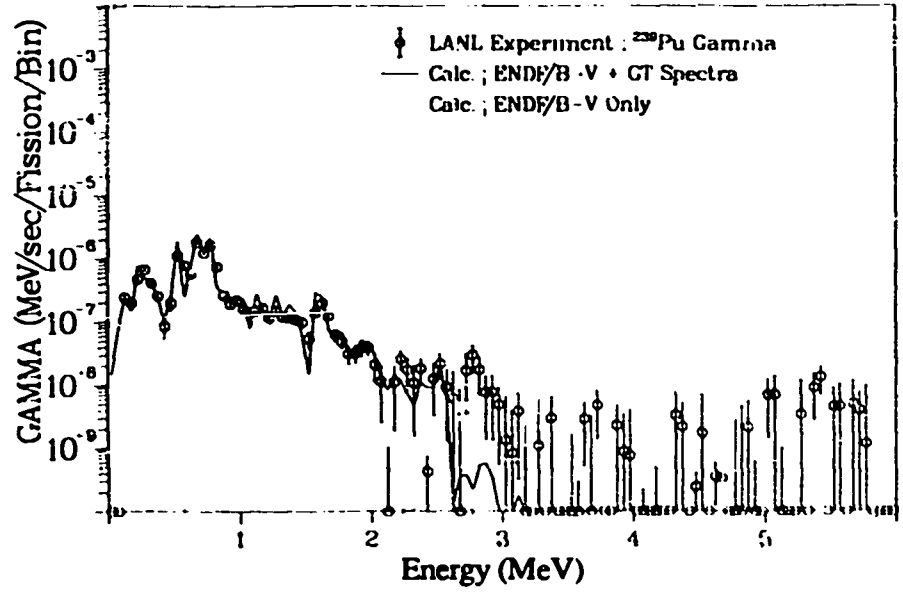

Fig. 411. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 20000.0 sec, $T_{cool.}$ =146520.0 sec).

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APPENDIX A

COMPARISONS USING ENDF/B-VI PRELIMINARY DATA

The calculations using the ENDF/B-VI preliminary data (as of October 1989) were performed due to the fact that the data became available for testing during the time frame of this work effort. The results are shown in Figs. A-1 through A-6 for ^{235}U, ^{239}Pu, and ^{241}Pu fission. Four kinds of calculations are demonstrated in each figure; i.e., the calculations using the ENDF/B-V line spectral data, the augmented ENDF/B-V data, the preliminary ENDF/B-VI line spectral data, and the augmented preliminary ENDF/B-VI data.

As evidenced in these figures, the preliminary ENDF/B-VI spectral data are greatly improved over the ENDF/B-V ones. However, the calculations using only the preliminary ENDF/B-VI spectral data seem to have a problem of missing gamma rays and they underestimate the measured aggregate spectral data. The augmented preliminary ENDF/B-VI data seem to give better agreement among them. These comparisons were done using the preliminary ENDF/B-VI file; some data in the file could be changed when the file is completed, but most of the improvement is expected by using the calculated spectra for the augmentation of the line spectral data.

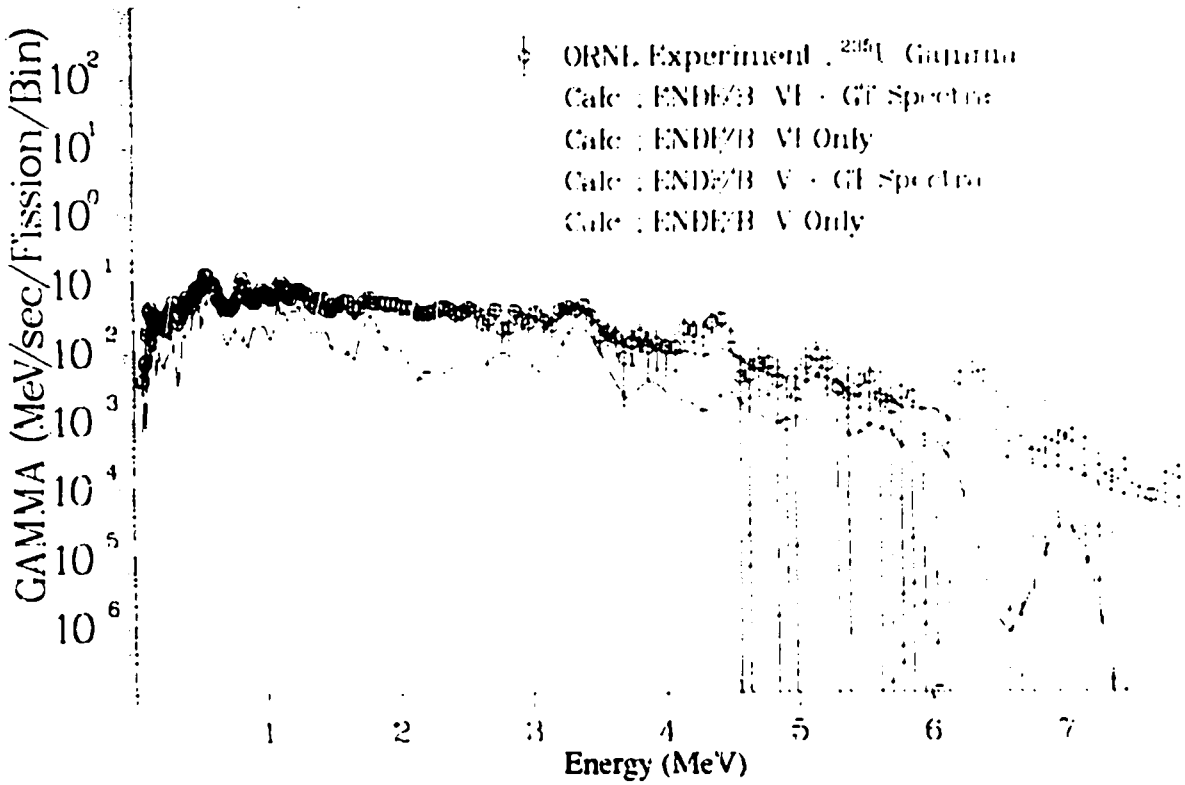

Fig. A-1. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV)

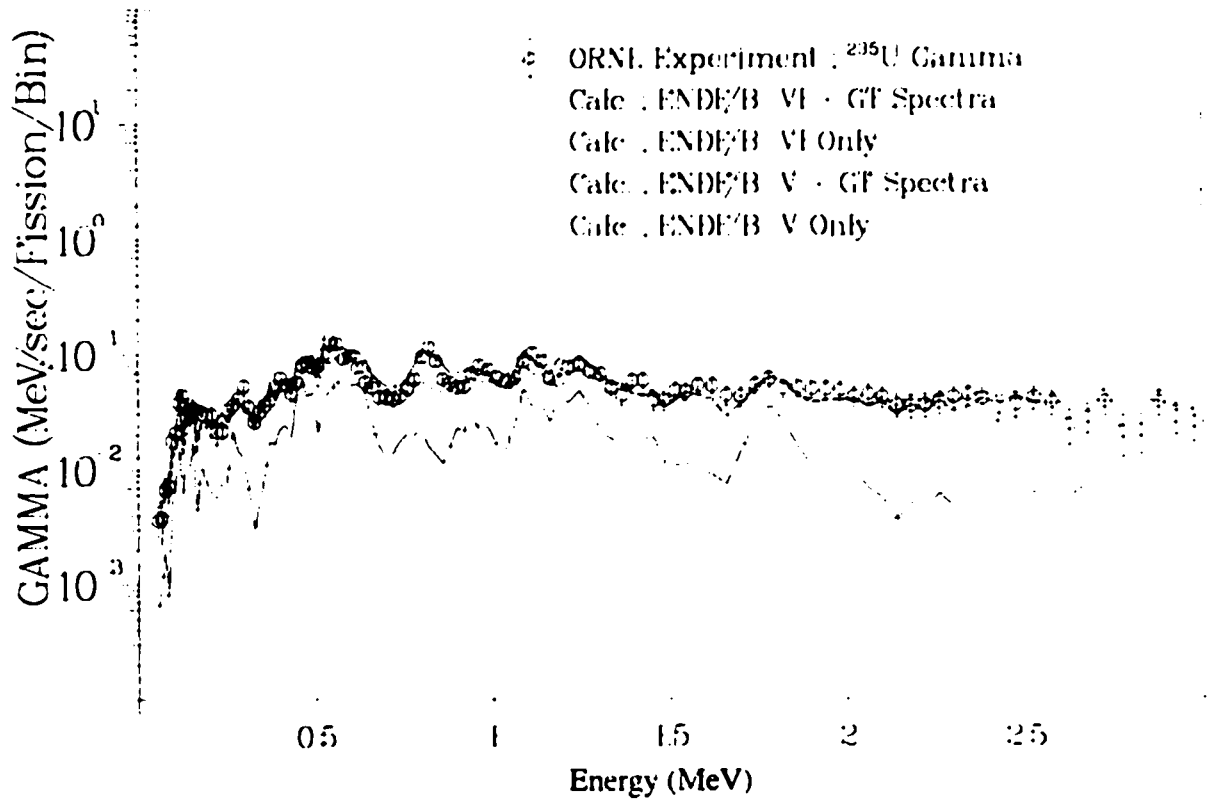

Fig. A-2. Gamma spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 3 MeV).

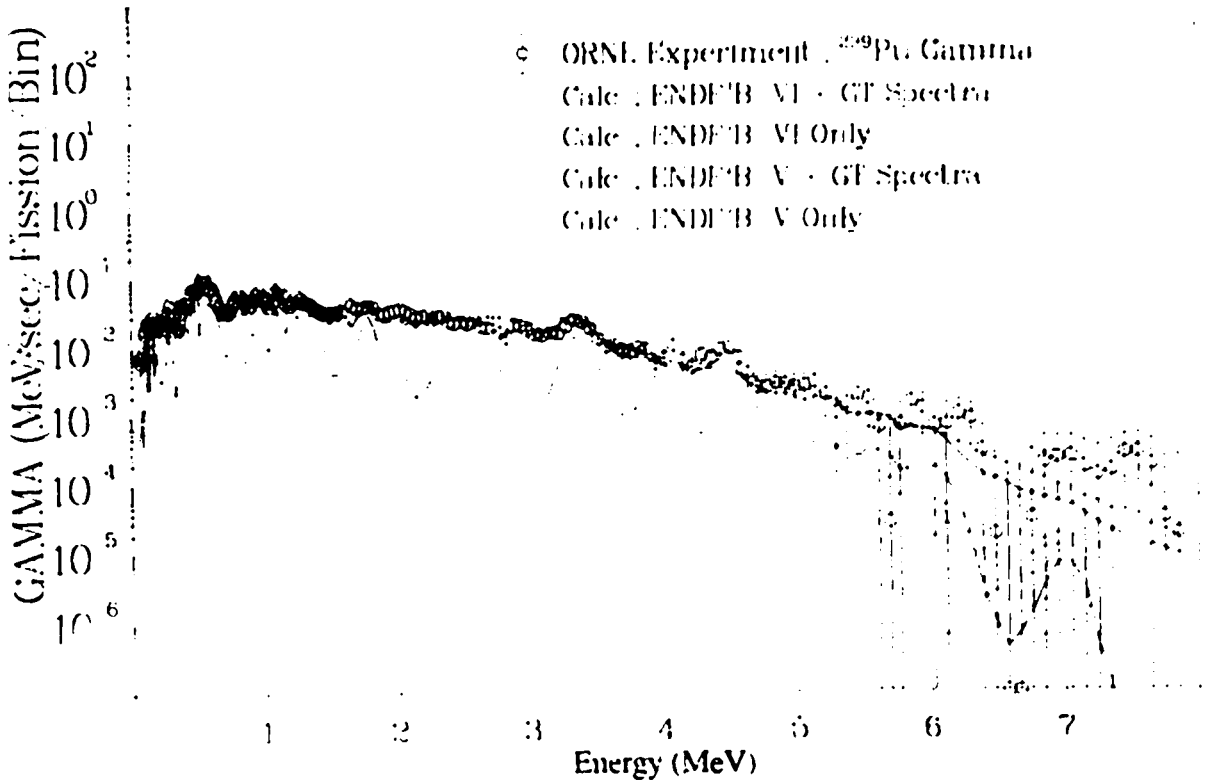

Fig. A-3. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV).

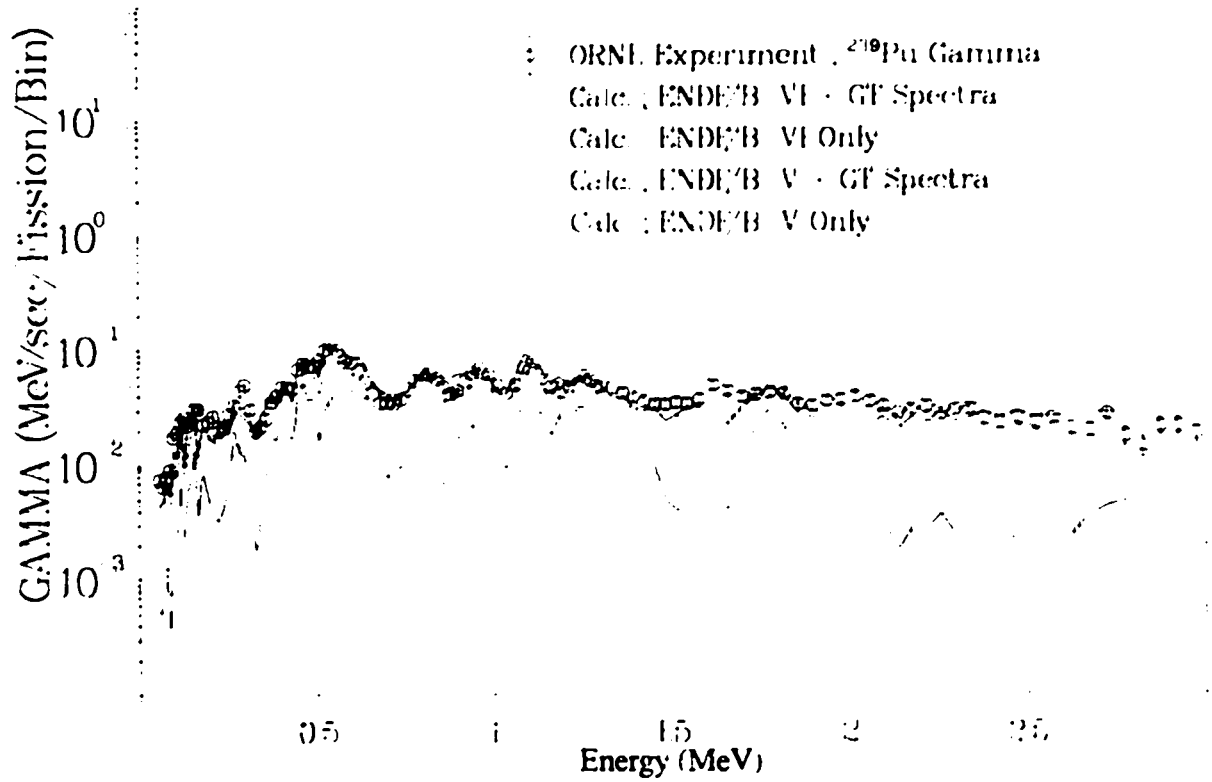

Fig. A-4. Gamma spectrum after ^{239}Pu thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 3 MeV).

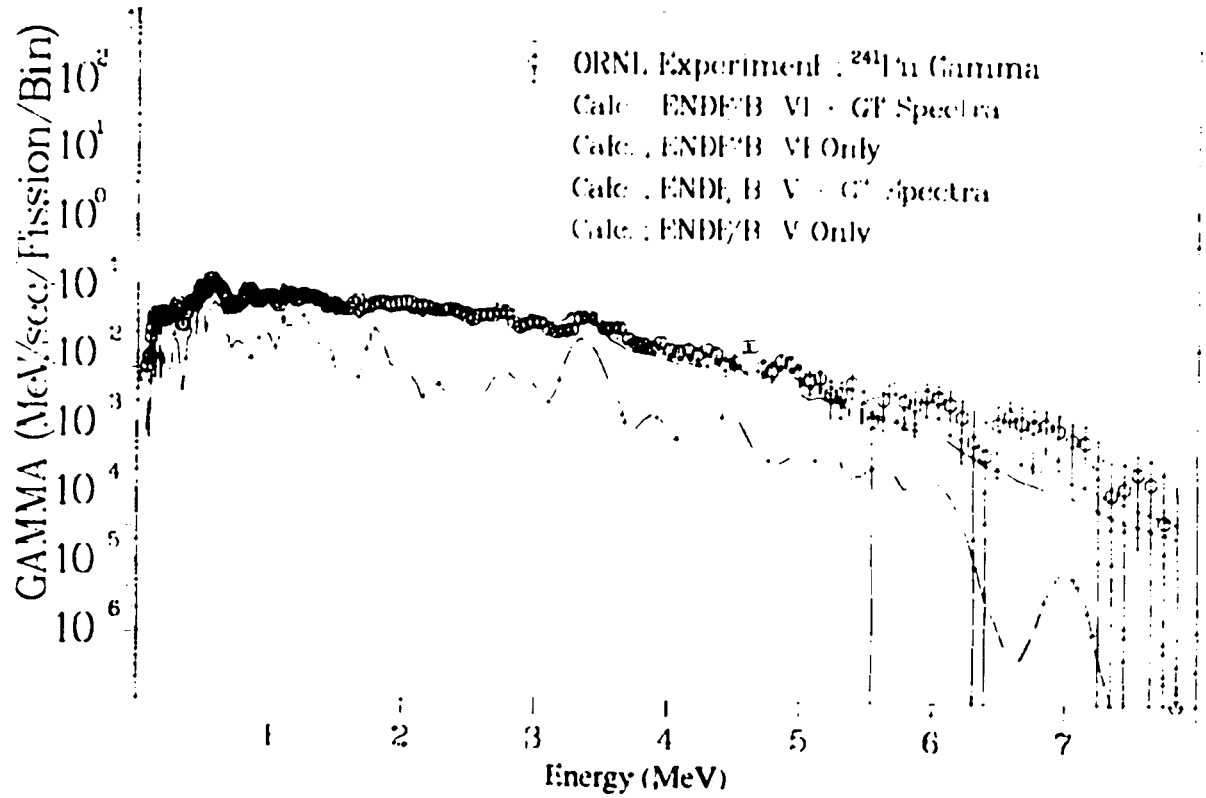

Fig. A-5. Gamma spectrum after ^{241}Pu thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV).

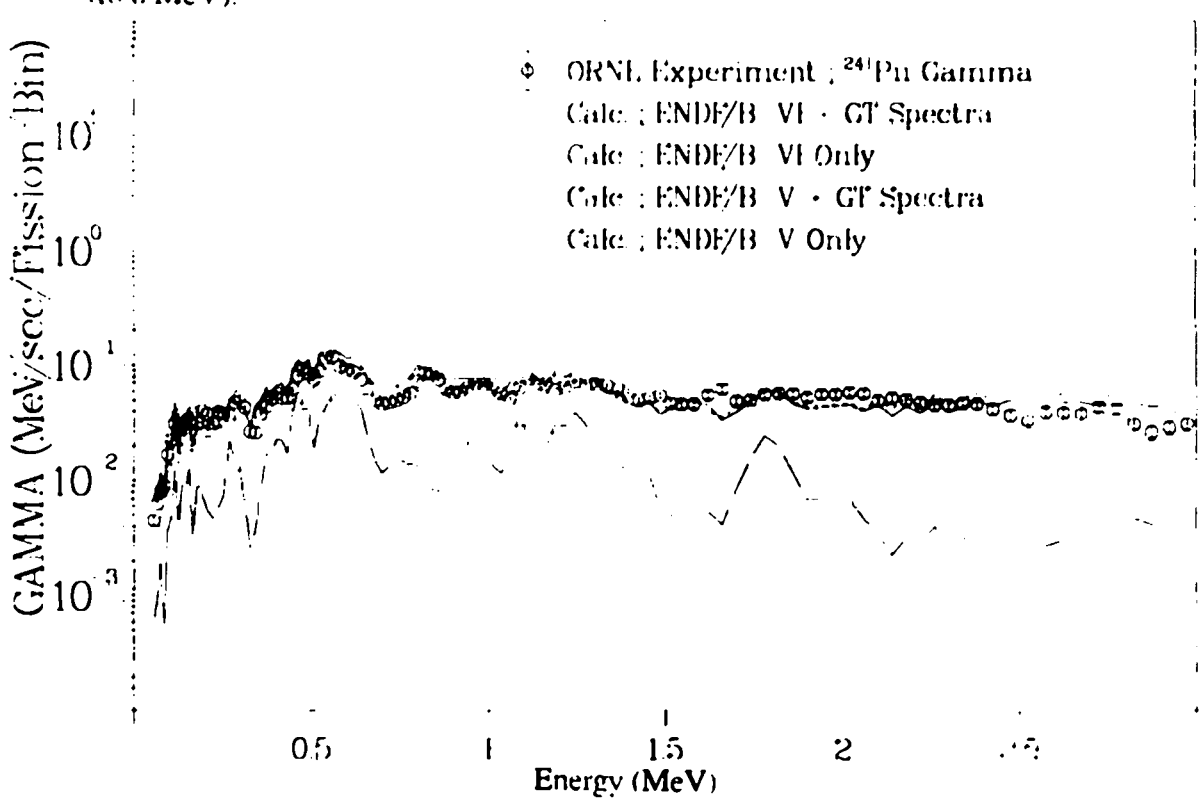

Fig. A-6. Gamma spectrum after ^{241}Pu thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 3 MeV).

APPENDIX B

CALCULATION OF BETA-RAY SPECTRUM

The calculation of gamma-ray spectra is discussed in the main text. The beta-ray spectra calculation also involves a problem for some nuclides in that the measured spectrum enhances the high-energy part, because the beta transitions to higher energy levels of daughter nucleus may not be observed in measurements even if the transitions are to be allowed. The calculation of aggregate beta spectrum using such spectral data also enhances the high energy part and depresses the low-energy part. The situation is seen in the comparisons of the aggregate beta-ray spectra between the calculations and the measurements by Tuckens *et al.* At very short cooling times after fission, when the nuclides with no measured data contribute to the spectra, the calculation falls below the measured values. At longer (though still short) cooling times in which the nuclides with incomplete spectral data are still important, the calculation shows an underestimation for the low-energy part and an overestimation for the high-energy part. In order to improve the situation, we tried to calculate the beta spectra of each fission-product nuclide by the Gross Theory, which is used to complement the measured gamma spectra.

In the case of the beta-ray spectra, some different treatments or modifications from that of the gamma-ray spectra are needed. The average beta energy value that can force agreement with the measured decay heat value is smaller than the average energy from measured decay scheme data. Therefore, it is not suitable to simply add some fraction of the calculated spectrum to the measured one. We used the following procedure.

The calculation of beta rays by the Gross Theory was performed by assuming that there may have been some missing beta transitions to higher levels than the observed ones. Namely, the beta spectrum was calculated with the maximum energy equal to the difference between the Q_β value and the maximum level energy. This calculated spectrum is normalized to be 1.0 when energy integration is carried out over the full energy range.

Let the average energy of the calculated spectrum be E_c and the energy derived from the measured decay scheme be E_m. The average energy that is suitable to calculate the decay heat value is E_r; then E_r is expressed as follows:

$$E_r = \alpha \cdot E_m + \beta \cdot E_c ,$$

whereas $\alpha + \beta = 1.0$, α– and β-values can be calculated

$$\alpha = (E_r - E_c) / (E_m - E_c)$$

$$\beta = (E_m - E_r) / (E_m - E_c) .$$

As $E_c < E_r < E_m$ for most of the nuclides having the problem, α and β values become positive. In the case of $E_r > E_m$, the calculated spectrum is simply added to augment the difference between E_r and E_m; $\alpha = 1$, $\beta = (E_r - E_m) / E_c$ in this case. The spectrum then, becomes

$$S(E\beta) = \alpha \cdot S_m(E\beta) + \beta \cdot S_c(E\beta).$$

By this method, the beta-ray spectra were calculated for nuclides whose average beta energy value has inconsistency between that from the decay scheme and that used for decay heat calculations.

An example of the spectrum is shown in Fig. B-1. This is a case of ^{97}Sr decay. The average energy value derived from the measured decay scheme is 2.646 and its spectrum is illustrated by the dotted line. The calculated spectrum, assuming that beta transitions occur only to higher levels than observed ones, is shown by a dashed line, and its average energy is 1.923 MeV. The modified or augmented spectrum is seen as a solid line. This modified spectrum gives the average energy of 2.282 MeV, which is nearly equal to the value of the energy used for the decay heat calculation in the JNDCV2 library.

The modified spectra of each fission product nuclide were used to calculate the aggregate beta-ray spectra after fission. One result is shown in Fig. B-2 together with the measured spectrum. The calculation using only the ENDF/B-V spectra data shows an underestimation for the low-energy part. The calculation using the modified spectra (ENDF/B-V + GT spectra in the figure) shows rather good agreement with the measurement.

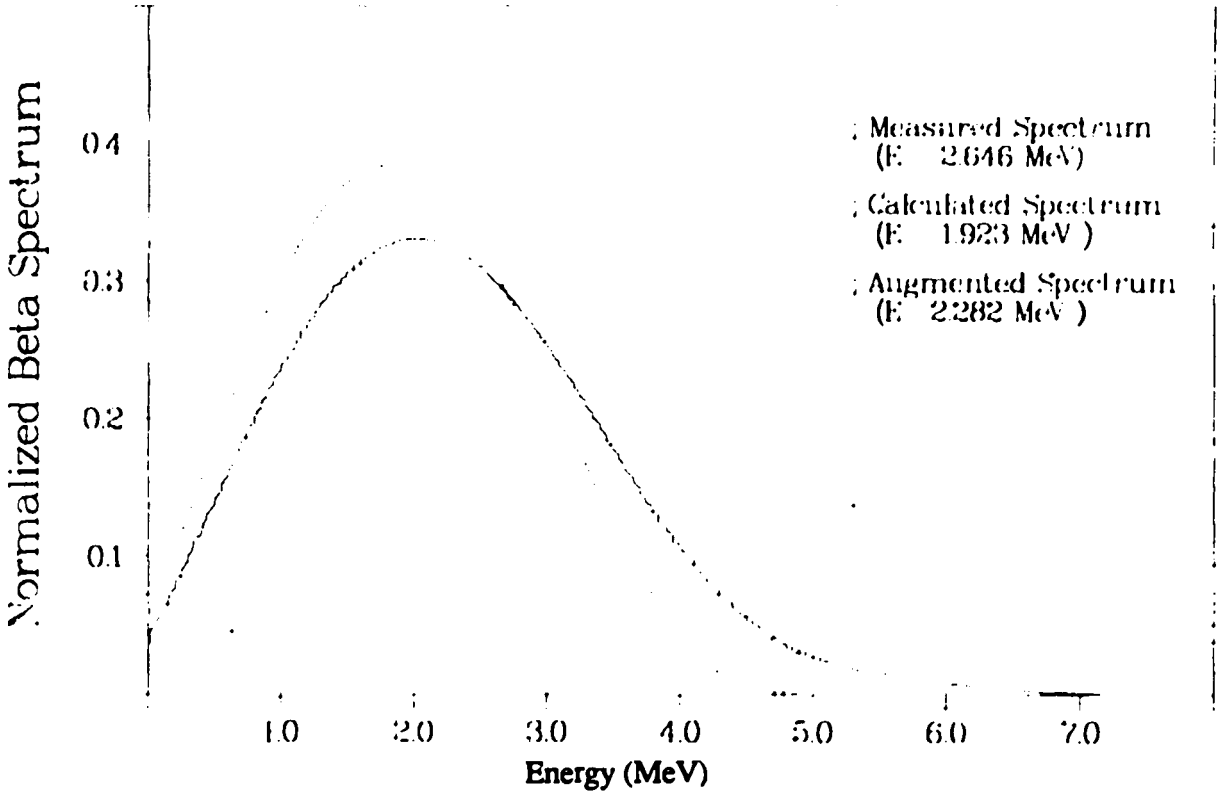

Fig. B-1. Beta-ray spectrum of ^{97}Sr decay (Q = 7.4 MeV).

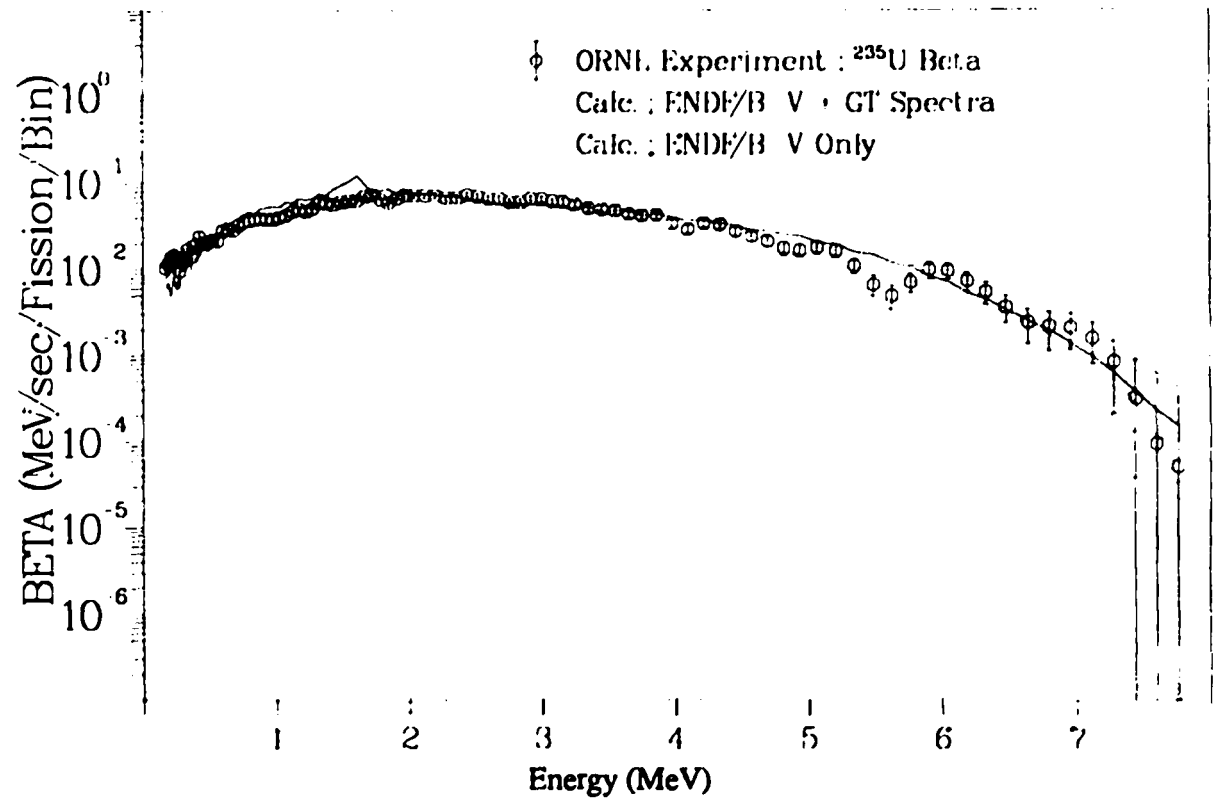

Fig. B-2. Beta-ray spectrum after ^{235}U thermal neutron fission ($T_{irrad.}$ = 1.0 sec, $T_{cool.}$ = 2.2 sec) (to 8 MeV).

APPENDIX C

FISSION PRODUCTS: PRELIMINARY DECAY ENERGIES, HALF-LIVES, AND BRANCHINGS FOR ENDF/B-VI

In Table C-1 we have listed total beta, gamma, and alpha energies from the most recent data file used in this report. Branchings by decay are also listed, as are half-lives. All energies are in eV, half-lives in seconds, and branchings are fractions per decay. Spectral data are too extensive for inclusion in this report. The table identifies 127 products as stable; these are needed in calculations involving a neutron flux. Their cross sections will be found in ENDF/B-VI files. The meaning of the columns in Table C-1 are:

Col. Heading	Quantity
Symbol	chemical symbol preceded by the Z value and followed by the atomic number. Nuclides that are isomeric states have m, n, ... following the atomic number meaning 1st, 2nd, ... isomeric states (the files generally include isomeric states having half-lives ≥ 0.1 s).
ZZAAAS	is a numeric identifier consisting of the quantity Z × 10000 + A × 10 + S, where S is the isomeric state number (0 = ground, 1 = 1st isomeric state, etc.).
Half-life	the total decay half-life in seconds.
E-beta, E-gamma, E-alpha	generally are average beta, gamma, and alpha decay energies, but have more precise definitions. Thus, E-beta is the total electron-related radiation, such as β^-, β^+, conversion electron, Auger, *etc.* E-gamma is the average energy of all "electromagnetic" radiation, such as gamma rays, x rays, and annihilation radiation. E-alpha is the average energy of <u>all</u> heavy charged particles and delayed neutrons. The alpha decay energy includes the recoil energy. The sum of the three average energies is the recoverable energy per decay (neutrino energies are excluded). All values are given in units of eV. (Delayed neutron energy is not tabulated but will be included in the final ENDF/B-VI files and summed into E-alpha.)
RTYP	identifies the initial or primary decay mode for the listed line of data (see below).
RFS	identifies the daughter state following the decay (0. = ground, 1. = 1st isomeric state, etc.).
Q	is the total Q-value for the decay mode.
Branching	is the fraction of decays from type RTYP to state RFS.
NDK	is the number of decay modes.
NSP	is the number of spectral types included in the ENDF/B files.
MAT	is the material identification number assignment in the ENDF/B files.

The decay mode identification, RTYP, has the following definitions.

RTYP	Decay Mode	
1.	β^-	Beta decay
2.	e.c., (β^+)	Electron capture and/or positron emission
3.	IT	Isomeric transition
4.	α	Alpha decay
5.	n	Neutron emission but not delayed neutron decay (see below)
6.	SF	Spontaneous fission
7.	p	Proton emission
10.	—	Unknown

Multiple particle emission is also defined by combining the RTYP indicators as decimal digits in the sequence in which particles are emitted. Thus, a beta decay followed by a delayed neutron is RTYP = 1.5, and a positron followed by alpha decay is RTYP = 2.4, etc. Such compound RTYP values therefore indicate intermediate states having lifetimes that are too short for explicit inclusion in the files. The Q-value for such cases is the energy difference based on masses of the initial and final states.

Spectral files contain a particle indicator, STYP, defined similarly to RTYP, but with the added values of 0. = gamma rays, 8. = discrete electrons, and 9. = x rays. In this report we do not include the average energies for each type of spectra. As can be seen from the NSP column, most nuclides do have spectra in the files.

These data are preliminary because they have not been officially accepted by the Cross Section Evaluation Working Group (CSEWG). We anticipate that the decay energies will be accepted as mod 0. Figures C-1 through C-3 show a comparison of aggregate decay energies (beta, gamma, and total) with Tokyo measurements following a ^{235}U fast fission pulse. The "Pandemonium" problem is no longer evident. Additional comparisons will be included in ENDF/B-VI documentation following a phase-1 review of the decay and yield files.

TABLE C-1

PRELIMINARY LIST OF ENDF/B-VI FISSION-PRODUCT PARAMETERS

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
27-co- 72	0	270720	1.3[illegible]55e-01	4.6080e+06	4.6940e+06	0.0	1.00	0.0	1.3568e+07	8.846Be-01	2	3	2764
							1.50	0.0	7.6390e+00	1.1532e-01			
28-ni- 72	0	280720	1.8306e+00	1.8820e+06	9.1110e+05	0.0	1.00	0.0	4.9211e+06	1.0000e+00	1	2	2867
29-cu- 72	0	290720	6.4891e+00	2.0350e+06	2.9940e+06	0.0	1.00	0.0	8.0524e+06	1.0000e+00	2	3	2952
							1.50	0.0	8.4000e-02	1.0000e-06			
30-zn- 72	0	300720	1.6740e+05	1.0270e+05	1.5250e+05	0.0	1.00	0.0	4.5700e+05	1.0000e+00	1	4	3049
31-ga- 72	0	310720	5.0760e+04	5.0000e+05	2.7060e+06	0.0	1.00	0.0	3.9924e+06	1.0000e+00	1	4	3134
31-ga- 72	1	310721	3.7000e-02	0.0	1.1920e+05	0.0	3.00	0.0	5.0000e+04	1.0000e+00	1	0	3135
32-ge- 72	0	320720	stable								0	0	3231
27-co- 73	0	270730	1.289Be-01	4.7180e+06	2.9800e+06	0.0	1.00	0.0	1.1631e+07	7.4878e-01	2	3	2767
							1.50	0.0	9.0290e+00	2.5122e-01			
28-ni- 73	0	280730	4.9059e-01	3.2810e+06	1.6190e+06	0.0	1.00	0.0	8.3984e+06	9.9995e-01	2	3	2870
							1.50	0.0	4.3900e-01	4.7000e-05			
29-cu- 73	0	290730	5.1136e+00	3.9850e+06	7.7230e+05	0.0	1.00	0.0	5.7024e+06	9.9441e-01	2	3	2955
							1.50	0.0	1.2320e+00	5.5880e-03			
30-zn- 73	0	300730	2.3500e+01	1.5436e+06	1.1709e+06	0.0	1.00	0.0	4.2900e+06	1.0000e+00	1	2	3052
31-ga- 73	0	310730	1.7496e+04	4.4600e+05	3.4100e+05	0.0	1.00	0.0	1.5890e+06	1.3000e-02	2	4	3137
							1.00	1.0	1.5220e+06	9.8700e-01			
32-ge- 73	0	320730	stable								0	0	3234
32-ge- 73	1	320731	4.9900e-01	5.4500e+04	1.1130e+04	0.0	3.00	0.0	6.6716e+04	1.0000e+00	1	3	3235
27-co- 74	0	270740	9.1963e-02	5.1670e+06	5.4200e+06	0.0	1.00	0.0	1.4659e+07	8.2567e-01	2	3	2770
							1.50	0.0	9.6590e+00	1.7433e-01			
28-ni- 74	0	280740	9.0015e-01	2.6830e+06	1.1990e+06	0.0	1.00	0.0	6.4611e+06	9.9544e-01	2	3	2873
							1.50	0.0	1.3890e+00	3.5[illegible]00e-03			
29-cu- 74	0	290740	6.4818e-01	2.5110e+06	3.2060e+06	0.0	1.00	0.0	9.1797e+06	9.9705e-01	2	3	2958
							1.50	0.0	1.5810e+00	2.9490e-03			
30-zn- 74	0	300740	9.6000e+01	5.7770e+05	8.5970e+05	0.0	1.00	0.0	2.3500e+06	2.5000e-01	2	2	3055
							1.00	1.0	2.2900e+06	7.5000e-01			
31-ga- 74	0	310740	4.8720e+02	1.0110e+06	3.0170e+06	0.0	1.00	0.0	5.1700e+06	1.0000e+00	1	4	3140
31-ga- 74	1	310741	9.5000e+00	1.6100e+04	4.3230e+04	0.0	3.00	0.0	5.9800e+04	7.[illegible]000e-01	1	3	3141
32-ge- 74	0	320740	stable								0	0	3237
34-se- 74	0	340740	stable								0	0	3425
27-co- 75	0	270750	8.1657e-02	5.2590e+06	1.7450e+06	0.0	1.00	0.0	1.3339e+07	6.8688e-01	2	3	2773
							1.50	0.0	1.1359e+01	3.1312e-01			
28-ni- 75	0	280750	2.3118e-01	3.8270e+06	2.2160e+06	0.0	1.00	0.0	9.4889e+06	9.8998e-01	2	3	2876
							1.50	0.0	2.5290e+00	1.0022e-02			
29-cu- 75	0	290750	9.2736e-01	2.6880e+06	1.0900e+06	0.0	1.00	0.0	7.2424e+06	9.6530e-01	2	3	2961
							1.50	0.0	3.1890e+00	3.4700e-02			
30-zn- 75	0	300750	1.0200e+01	1.8480e+06	1.9000e+06	0.0	1.00	0.0	6.0600e+06	1.0000e+00	1	2	3058
31-ga- 75	0	310750	1.2600e+02	1.3010e+06	1.5500e+05	0.0	1.00	0.0	3.1920e+06	9.5200e-01	2	2	3141
							1.00	1.0	1.2530e+06	4.8000e-02			
32-ge- 75	0	320750	4.9668e+03	4.2110e+05	1.5000e+04	0.0	1.00	0.0	1.1776e+06	1.0000e+00	1	4	3240
32-ge- 75	1	320751	4.7700e+01	7.9000e+04	5.6900e+05	0.0	1.00	0.0	1.3171e+06	1.0000e-04	2	4	3241
							3.00	0.0	1.3968e+05	9.9970e-01			
33-as- 75	0	330750	stable								0	0	3325
34-se- 75	0	340750	1.0348e+07	1.4500e+04	1.9200e+05	0.0	2.00	0.0	8.6390e+05	1.0000e+00	1	4	3428
28-ni- 76	0	280760	3.0456e-01	3.3790e+06	1.4270e+06	0.	1.00	0.0	8.1689e+06	9.6489e-01	2	3	2879
							1.50	0.0	1.4790e+00	3.5113e-02			
29-cu- 76	0	290760	2.6025e-01	3.1130e+06	3.5040e+06	0.0	1.00	0.0	1.0270e+07	9.7158e-01	2	1	2964
							1.50	0.0	1.8410e+00	2.8418e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
30-zn- 76	0	300760	5.6000e+00	1.3980e+06	7.5410e+05	0.0	1.00	0.0	4.1600e+06	1.0000e+00	1	2	3061
31-ga- 76	0	310760	3.2600e+01	1.9040e+06	2.8000e+06	0.0	1.00	0.0	7.0100e+06	1.0000e+00	1	4	3146
32-ge- 76	0	320760	stable								0	0	3243
33-as- 76	0	330760	9.4752e+04	1.0660e+06	4.1700e+05	0.0	1.00	0.0	2.9635e+06	1.0000e+00	1	4	3328
34-se- 76	0	340760	stable								0	0	3431
28-ni- 77	0	280770	1.0331e-01	4.4810e+06	3.0880e+06	0	0	1.00	0.0 1.1872e+07	9.5289e-01	2	3	2882
								1.50	0.0 4.7090e+00	4.7115e-02			
29-cu- 77	0	290770	3.0522e-01	3.2670e+06	1.5060e+06	0.0	1.00	0.0	8.9502e+06	8.7688e-01	2	3	2967
								1.50	0.0 5.6630e+00	1.2312e-01			
30-zn- 77	0	300770	2.0800e+00	2.4200e+06	1.8000e+06	0.0	1.00	0.0	7.2700e+06	1.0000e+00	1	2	3064
31-ga- 77	0	310770	1.3200e+01	2.0430e+06	7.8930e+05	0.0	1.00	1.0	5.5300e+06	1.0000e+00	1	2	3149
32-ge- 77	0	320770	4.0680e+04	6.6200e+05	1.0220e+06	0.0	1.00	0.0	2.7031e+06	1.0000e+00	1	4	3246
32-ge- 77	1	320771	5.2900e+01	9.4820e+05	6.5000e+04	0.0	1.00	0.0	2.8628e+06	7.9000e-01	2	4	3247
								3.00	0.0 1.5970e+05	2.1000e-01			
33-as- 77	0	330770	1.3979e+05	2.2610e+05	7.5000e+03	0.0	1.00	0.0	6.8310e+05	9.9680e-01	2	4	3331
								1.00	1.0 5.2110e+05	3.2000e-03			
34-se- 77	0	340770	stable								0	0	3434
34-se- 77	1	340771	1.7450e+01	7.1800e+04	8.7400e+04	0.0	3.00	0.0	1.6197e+05	1.0000e+00	1	3	3435
28-ni- 78	0	280780	1.3179e-01	3.9290e+06	1.8770e+06	0.0	1.00	0.0	1.0074e+07	9.0702e-01	2	3	2885
								1.50	0.0 5.4390e+00	9.2984e-02			
29-cu- 78	0	290780	1.1787e-01	3.8300e+06	4.0530e+06	0.0	1.00	0.0	1.2653e+07	9.0091e-01	2	3	2970
								1.50	0.0 6.5540e+00	9.9093e-02			
30-zn- 78	0	300780	1.4700e+00	2.2250e+06	1.5290e+06	0.0	1.00	0.0	6.4400e+06	9.9996e-01	2	3	3067
								1.50	0.0 3.8100e-01	4.1000e-05			
31-ga- 78	0	310780	5.0900e+00	2.5410e+06	2.5400e+06	0.0	1.00	0.0	8.2000e+06	1.0000e+00	1	4	3152
32-ge- 78	0	320780	5.2800e+03	2.2700e+05	2.7800e+05	0.0	1.00	0.0	9.5300e+05	1.0000e+00	1	4	3249
33-as- 78	0	330780	5.4420e+03	1.2390e+06	1.3400e+06	0.0	1.00	0.0	4.2120e+06	1.0000e+00	1	4	3334
34-se- 78	0	340780	stable								0	0	3437
36-kr- 78	0	360780	stable								0	0	3625
29-cu- 79	0	290790	1.3506e-01	3.7090e+06	1.9700e+06	0.0	1.00	0.0	1.0855e+07	7.5794e-01	2	3	2973
								1.50	0.0 7.3710e+00	2.4206e-01			
30-zn- 79	0	300790	1.0000e+00	3.0160e+06	2.9170e+06	0.0	1.00	0.0	8.5500e+06	9.8854e-01	2	3	3070
								1.50	0.0 2.6110e+00	1.1459e-02			
31-ga- 79	0	310790	3.0000e+00	2.1350e+06	2.0810e+06	0.0	1.00	0.0	6.7700e+06	9.4700e-01	3	5	3155
								1.00	1.0 6.5840e+06	5.2000e-02			
								1.50	0.0 1.0300e+06	5.5000e-04			
32-ge- 79	0	320790	1.9100e+01	1.6449e+06	4.0743e+05	0.0	1.00	0.0	4.1300e+06	1.0000e+00	1	4	3252
32-ge- 79	1	320791	1.9000e+01	1.2130e+06	1.7590e+06	0.0	1.00	0.0	4.2960e+06	9.6000e-01	2	4	3253
								3.00	0.0 1.8595e+05	4.0000e-02			
33-as- 79	0	330790	5.4060e+02	8.4761e+05	2.8200e+04	0.0	1.00	0.0	2.2800e+06	1.0600e-02	2	2	3337
								1.00	1.0 2.1840e+06	9.8940e-01			
34-se- 79	0	340790	1.0414e+12	5.2900e+04	0.0	0.0	1.00	0.0	1.5090e+05	1.0000e+00	1	1	3440
34-se- 79	1	340791	2.3460e+02	8.0000e+04	1.3700e+04	0.0	3.00	0.0	9.5730e+04	1.0000e+00	1	3	3441
35-br- 79	0	350790	stable								0	0	3525
35-br- 79	1	350791	4.8600e+00	4.7300e+04	1.5850e+05	0.0	3.00	0.0	2.0710e+05	1.0000e+00	1	3	3526
36-kr- 79	0	360790	1.2614e+05	2.4090e+04	2.5700e+05	0.0	2.00	0.0	1.6280e+06	1.0000e+00	1	4	3628
36-kr- 79	1	360791	5.0000e+01	8.6000e+04	3.9900e+04	0.0	3.00	0.0	1.2977e+05	1.0000e+00	1	3	3629
29-cu- 80	0	290800	8.9877e-02	4.3270e+06	4.5870e+06	0.0	1.00	0.0	1.5269e+07	8.4957e-01	2	3	2976
								1.50	0.0 9.4990e+00	1.5043e-01			
30-zn- 80	0	300800	5.4000e-01	2.7580e+06	1.2420e+06	0.0	1.00	0.0	7.3500e+06	9.8902e-01	2	3	3073
								1.50	0.0 2.2840e+00	1.0983e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
31-ga- 80	0	310800	1.6600e+00	3.1220e+06	3.5480e+06	0.0	1.00	0.0	1.0000e+07	9.9180e-01	2	5	3158
							1.50	0.0	2.0800e+06	8.2000e-03			
32-ge- 80	0	320800	2.9500e+01	9.1000e+05	6.0000e+05	0.0	1.00	0.0	2.7800e+06	1.0000e+00	1	2	3255
33-as- 80	0	330800	1.5200e+01	2.1993e+06	8.2709e+05	0.0	1.00	0.0	5.5970e+06	1.0000e+00	1	4	3340
34-se- 80	0	340800	stable								0	0	3441
35-br- 80	0	350800	1.0608e+03	7.2500e+05	7.6000e+04	0.0	1.00	0.0	2.0010e+06	9.1700e-01	2	5	3528
							2.00	0.0	1.8711e+06	8.3000e-02			
35-br- 80	1	350801	1.5912e+04	6.0600e+04	2.4100e+04	0.0	3.00	0.0	8.5845e+04	1.0000e+00	1	3	3529
36-kr- 80	0	360800	stable								0	0	3631
29-cu- 81	0	290810	7.4209e-02	4.8260e+06	3.4570e+06	0.0	1.00	0.0	1.4294e+07	4.7050e-01	2	3	2979
							1.50	0.0	1.3379e+01	5.2950e-01			
30-zn- 81	0	300810	1.2275e-01	4.0320e+06	2.7130e+06	0.0	1.00	0.0	1.1917e+07	9.4263e-01	2	3	3076
							1.50	0.0	5.5660e+00	5.7372e-02			
31-ga- 81	0	310810	1.2300e+00	2.5150e+06	2.2500e+06	0.0	1.00	0.0	8.3200e+06	4.7000e-01	3	3	3161
							1.00	1.0	7.6410e+06	4.1000e-01			
							1.50	0.0	3.3300e+06	1.1900e-02			
32-ge- 81	0	320810	7.6000e+00	2.4426e+06	8.4067e+05	0.0	1.00	0.0	6.2300e+06	1.0000e+00	1	2	3258
33-as- 81	0	330810	3.3300e+01	1.5780e+06	2.3000e+05	0.0	1.00	0.0	3.8560e+06	9.7000e-01	2	4	3343
							1.00	1.0	3.7530e+06	3.0000e-02			
34-se- 81	0	340810	1.1070e+03	6.1200e+05	6.0000e+03	0.0	1.00	0.0	1.5860e+06	1.0000e+00	1	4	3446
34-se- 81	1	340811	3.4350e+03	8.5000e+04	1.4900e+04	0.0	1.00	0.0	1.6890e+06	4.7000e-04	2	4	3447
							3.00	0.0	1.0297e+05	9.9953e-01			
35-br- 81	0	350810	stable								0	0	3531
36-kr- 81	0	360810	6.7216e+12	4.9400e+03	1.7000e+04	0.0	2.00	0.0	2.8080e+05	1.0000e+00	1	4	3634
36-kr- 81	1	360811	1.3000e+01	5.6800e+04	1.2990e+05	0.0	2.00	0.0	4.7140e+05	6.4000e-05	2	4	3635
							3.00	0.0	1.9057e+05	9.9994e-01			
30-zn- 82	0	300820	1.2676e-01	4.2340e+06	2.1810e+06	0.0	1.00	0.0	1.0941e+07	7.8774e-01	2	3	3079
							1.50	0.0	7.9430e+00	2.1226e-01			
31-ga- 82	0	310820	6.0000e-01	3.7960e+06	4.1310e+06	0.0	1.00	0.0	1.3079e+07	7.9000e-01	2	3	3164
							1.50	0.0	4.1500e+06	2.1000e-01			
32-ge- 82	0	320820	4.6000e+00	1.4490e+06	7.6520e+05	0.0	1.00	0.0	4.1501e+06	1.0000e+00	1	2	3261
33-as- 82	0	330820	1.9100e+01	2.9171e+06	1.0849e+06	0.0	1.00	0.0	7.5190e+06	1.0000e+00	1	4	3346
33-as- 82	1	330821	1.3600e+01	1.8170e+06	2.8000e+06	0.0	1.00	0.0	7.5190e+06	1.0000e+00	1	4	3347
34-se- 82	0	340820	stable								0	0	3449
35-br- 82	0	350820	1.2708e+05	1.4400e+05	2.6390e+06	0.0	1.00	0.0	3.0925e+06	1.0000e+00	1	4	3534
35-br- 82	1	350821	3.6780e+02	7.0000e+04	8.1000e+03	0.0	1.00	0.0	3.1384e+06	2.4000e-02	2	4	3535
							3.00	0.0	4.5949e+04	9.7600e-01			
36-kr- 82	0	360820	stable								0	0	3637
30-zn- 83	0	300830	8.3639e-02	4.1020e+06	3.9530e+06	0.0	1.00	0.0	1.2955e+07	7.7125e-01	2	3	3082
							1.50	0.0	9.5690e+00	2.2875e-01			
31-ga- 83	0	310830	3.1000e-01	3.8810e+06	3.7430e+06	0.0	1.00	0.0	1.2103e+07	4.4000e-01	2	3	3167
							1.50	0.0	8.2000e+06	5.6000e-01			
32-ge- 83	0	320830	1.9000e+00	2.6890e+06	2.4440e+06	0.0	1.00	0.0	8.5641e+06	9.9830e-01	2	3	3264
							1.50	0.0	2.3000e+05	1.7009e-03			
33-as- 83	0	330830	1.3400e+01	1.2556e+06	2.7514e+06	0.0	1.00	0.0	5.4600e+06	3.0000e-01	2	2	3349
							1.00	1.0	5.2320e+06	7.0000e-01			
34-se- 83	0	340830	1.3380e+03	4.5600e+05	2.5940e+06	0.0	1.00	0.0	3.6680e+06	1.0000e+00	1	2	3452
34-se- 83	1	340831	7.0100e+01	1.2730e+06	9.5400e+05	0.0	1.00	0.0	3.8970e+06	1.0000e+00	1	2	3453
35-br- 83	0	350830	8.6400e+03	3.2550e+05	7.0000e+03	0.0	1.00	0.0	9.7300e+05	2.4000e-04	2	4	3537
							1.00	1.0	9.3100e+05	9.9976e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
36-kr- 83	0	360830	stable								0	0	3640
36-kr- 83	1	360831	6.5880e+03	3.5700e+04	2.4200e+03	0.0	3.00	0.0	4.1564e+04	1.0000e+00	1	3	3641
31-ga- 84	0	310840	9.8378e-02	4.2280e+06	4.6330e+06	0.0	1.00	0.0	1.4117e+07	4.1977e-01	2	3	1170
							1.50	0.0	1.0159e+01	2.8023e-01			
32-ge- 84	0	320840	1.2000e+00	2.5460e+06	2.4600e+06	0.0	1.00	0.0	7.5884e+06	9.0000e-01	2	3	3267
							1.50	0.0	3.0600e+06	1.0000e-01			
33-as- 84	0	330840	5.5000e+00	3.8400e+06	1.6000e+06	0.0	1.00	0.0	9.8700e+06	9.9910e-01	2	5	3352
							1.50	0.0	1.1900e+06	9.0000e-04			
33-as- 84	1	330841	6.0000e-01	2.9180e+06	3.4620e+06	0.0	1.00	0.0	1.0070e+07	1.0000e+00	1	2	3353
34-se- 84	0	340840	1.9200e+02	5.4000e+05	4.2000e+05	0.0	1.00	0.0	1.8260e+06	1.0000e+00	1	4	3455
35-br- 84	0	350840	1.9080e+03	1.2480e+06	1.7380e+06	0.0	1.00	0.0	4.6530e+06	1.0000e+00	1	4	3540
35-br- 84	1	350841	3.6000e+02	8.9900e+05	2.7700e+06	0.0	1.00	0.0	4.9730e+06	1.0000e+00	1	4	3541
36-kr- 84	0	360840	stable								0	0	3643
38-sr- 84	0	380840	stable								0	0	3825
31-ga- 85	0	310850	8.6969e-02	4.5090e+06	4.3050e+06	0.0	1.00	0.0	1.3580e+07	5.5035e-01	2	3	3171
							1.50	0.0	1.1359e+01	4.4965e-01			
32-ge- 85	0	320850	2.4996e-01	3.0290e+06	3.1830e+06	0.0	1.00	0.0	9.6024e+06	8.0000e-01	2	3	3270
							1.50	0.0	4.5700e+06	2.0000e-01			
33-as- 85	0	330850	2.0280e+00	2.8360e+06	3.0050e+06	0.0	1.00	0.0	8.9100e+06	2.9000e-01	2	3	3355
							1.50	0.0	4.3700e+06	7.1000e-01			
34-se- 85	0	340850	3.1700e+01	1.7550e+06	2.2150e+06	0.0	1.00	0.0	6.1900e+06	1.0000e+00	1	2	3458
35-br- 85	0	350850	1.7220e+02	1.0410e+06	6.6000e+04	0.0	1.00	0.0	2.8700e+06	1.8000e-03	2	2	3543
							1.00	1.0	2.5650e+06	9.9820e-01			
36-kr- 85	0	360850	3.3829e+08	2.5080e+05	2.2300e+03	0.0	1.00	0.0	6.8740e+05	1.0000e+00	1	4	3646
36-kr- 85	1	360851	1.6128e+04	2.5510e+05	1.5700e+05	0.0	1.00	0.0	9.9230e+05	7.9000e-01	2	4	3647
							3.00	0.0	3.0486e+05	2.1000e-01			
37-rb- 85	0	370850	stable								0	0	3725
38-sr- 85	0	380850	5.6022e+06	8.6600e+03	5.1840e+05	0.0	2.00	0.0	1.0652e+06	1.0000e+00	1	4	1828
38-sr- 85	1	380851	4.0596e+03	1.2700e+04	2.1590e+05	0.0	2.00	0.0	1.3039e+06	1.2700e-01	2	4	1829
							3.00	0.0	2.3868e+05	8.7300e-01			
32-ge- 86	0	320860	2.4676e-01	3.3620e+06	2.6360e+06	0.0	1.00	0.0	9.0654e+06	7.8000e-01	2	3	3273
							1.50	0.0	4.7100e+06	2.2000e-01			
33-as- 86	0	330860	9.0000e-01	3.3170e+06	3.7780e+06	0.0	1.00	0.0	1.2200e+07	8.8000e-01	2	3	3358
							1.50	0.0	6.7000e+06	1.2000e-01			
34-se- 86	0	340860	1.5300e+01	1.2500e+06	2.3000e+06	0.0	1.00	0.0	5.1000e+06	1.9000e+00	1	4	3461
35-br- 86	0	350860	5.5100e+01	1.9200e+06	3.4200e+06	0.0	1.00	0.0	7.6200e+06	1.0000e+00	1	2	3546
36-kr- 86	0	360860	stable								0	0	3649
37-rb- 86	0	370860	1.6097e+06	6.6820e+05	9.3100e+04	0.0	1.00	0.0	1.7743e+06	9.9995e-01	2	5	3728
							2.00	0.0	5.1800e+05	5.2000e-05			
37-rb- 86	1	370861	6.1020e+01	1.0000e+04	5.4600e+05	0.0	3.00	0.0	5.5600e+05	1.0000e+00	1	3	3729
38-sr- 86	0	380860	stable								0	0	3831
32-ge- 87	0	320870	1.3393e-01	3.5330e+06	2.5850e+06	0.0	1.00	0.0	1.0875e+07	8.4867e-01	2	3	3276
							1.50	0.0	7.7490e+00	1.5133e-01			
33-as- 87	0	330870	3.0000e-01	3.4400e+06	3.4730e+06	0.0	1.00	0.0	1.5820e+07	5.6000e-01	2	3	3361
							1.50	0.0	7.7500e+06	4.4000e-01			
34-se- 87	0	340870	5.6000e+00	2.0790e+06	2.6440e+06	0.0	1.00	0.0	7.2693e+06	9.9810e-01	2	3	3464
							1.50	0.0	1.0000e+06	1.9000e-03			
35-br- 87	0	350870	5.5690e+01	1.6090e+06	3.3370e+06	0.0	1.00	0.0	6.8300e+06	9.7490e-01	2	3	3549
							1.50	0.0	1.3100e+06	2.5100e-02			
36-kr- 87	0	360870	4.5786e+03	1.3310e+06	7.9200e+05	0.0	1.00	0.0	3.8870e+06	1.0000e+00	1	4	3652

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	P- BETA	P- GAMMA	P- ALPHA	RTYP	RPS	Q	BRANCHING	NDK	NSP	MAT
37-rb-	87	370870	1.5147e+18	8.1700e+04	0.0	0.0	1.00	0.0	2.8230e+05	1.0000e+00	1	1	3731
38-sr-	87	380870	stable								0	0	3814
38-sr-	87	380871	1.0116e+04	6.4900e+04	3.2100e+05	0.0	2.00	0.0	6.6070e+05	3.0000e-01	2	4	3835
							3.00	0.0	3.8840e+05	9.9700e-01			
32-ge-	88	320880	1.2900e+01	4.0060e+06	1.0010e+06	0.0	1.00	0.0	1.0461e+07	7.8345e-01	2	3	3279
							1.50	0.0	8.3190e+00	2.1655e-01			
33-as-	88	330880	1.4830e+01	3.7520e+06	4.2210e+06	0.0	1.00	0.0	1.2381e+07	8.0091e-01	2	3	3364
							1.50	0.0	8.1990e+00	1.9907e-01			
34-se-	88	340880	1.5000e+00	2.2150e+06	2.0120e+06	0.0	1.00	0.0	6.7123e+06	9.9500e-01	2	3	3467
							1.50	0.0	1.4190e+06	5.0000e-03			
35-br-	88	350880	1.6500e+01	2.5650e+06	3.1000e+06	0.0	1.00	0.0	8.9700e+06	9.3630e-01	2	5	1552
							1.50	0.0	1.9200e+06	6.3700e-02			
36-kr-	88	360880	1.0224e+04	3.6800e+05	1.9540e+06	0.0	1.00	0.0	2.9110e+06	1.0000e+00	1	4	3655
37-rb-	88	370880	1.0660e+01	2.0720e+06	6.1700e+05	0.0	1.00	0.0	5.3160e+06	1.0000e+00	1	4	3734
38-sr-	88	380880	stable								0	0	3837
33-as-	89	330890	1.2125e-01	3.9770e+06	3.9430e+06	0.0	1.00	0.0	1.1969e+07	6.6728e-01	2	3	3367
							1.50	0.0	9.1490e+00	3.3272e-01			
34-se-	89	340890	4.1000e-01	3.1260e+06	1.8940e+06	0.0	1.00	0.0	8.5423e+06	9.5000e-01	2	3	3470
							1.50	0.0	2.7500e+06	5.0000e-02			
35-br-	89	350890	4.3700e+00	2.1900e+06	3.2200e+06	0.0	1.00	0.0	8.1400e+06	8.6200e-01	2	3	3555
							1.50	0.0	1.0300e+06	1.3800e-01			
36-kr-	89	360890	1.9020e+02	1.3660e+06	1.8200e+06	0.0	1.00	0.0	4.9900e+06	1.0000e+00	1	2	3658
37-rb-	89	370890	9.1200e+02	1.0180e+06	2.0700e+06	0.0	1.00	0.0	4.4380e+06	1.0000e+00	1	4	3737
38-sr-	89	380890	4.3675e+06	5.8110e+05	0.0	0.0	1.00	0.0	1.4920e+06	9.9991e-01	2	1	3840
							1.00	1.0	5.8100e+05	9.3000e-05			
39-y-	89	390890	stable								0	0	3925
39-y-	89	390891	1.6060e+01	7.4800e+03	9.0150e+05	0.0	3.00	0.0	9.0920e+05	1.0000e+00	1	3	3926
33-as-	90	330900	9.1116e-02	4.5970e+06	4.1800e+06	0.0	1.00	0.0	1.4640e+07	7.5651e-01	2	3	3370
							1.50	0.0	9.7810e+00	2.4349e-01			
34-se-	90	340900	4.2721e-01	2.9040e+06	2.6130e+06	0.0	1.00	0.0	8.1103e+06	8.9000e-01	2	3	3473
							1.50	0.0	3.4400e+06	1.1000e-01			
35-br-	90	350900	1.9200e+00	2.5000e+06	1.2200e+06	0.0	1.00	0.0	1.0100e+07	7.6800e-01	2	3	3558
							1.50	0.0	1.9900e+06	2.3200e-01			
36-kr-	90	360900	3.2320e+01	1.3410e+06	1.2370e+06	0.0	1.00	0.0	4.1900e+06	8.8000e-01	2	4	3661
							1.00	1.0	4.2810e+06	1.2000e-01			
37-rb-	90	370900	1.5300e+02	1.9916e+06	2.1641e+06	0.0	1.00	0.0	6.5890e+06	1.0000e+00	1	4	3740
37-rb-	90	370901	2.5800e+02	1.4240e+06	3.1270e+06	0.0	1.00	0.0	6.6960e+06	9.7700e-01	2	4	3741
							3.00	0.0	1.0612e+05	2.3000e-02			
38-sr-	90	380900	8.8833e+08	1.9590e+05	0.0	0.0	1.00	0.0	5.4820e+05	1.0000e+00	1	1	3843
39-y-	90	390900	2.1076e+15	9.3400e+05	1.7000e+00	0.0	1.00	0.0	2.2815e+06	1.0000e+00	1	4	3928
39-y-	90	390901	1.1484e+04	4.5900e+04	6.1420e+05	0.0	1.01	0.0	2.9635e+06	2.1000e-05	2	4	3929
							3.00	0.0	6.0234e+05	9.9999e-01			
40-zr-	90	400900	stable								0	0	4025
40-zr-	90	400901	8.0920e+01	1.6202e+04	2.3025e+06	0.0	3.00	0.0	2.3191e+06	1.0000e+00	1	1	4026
34-se-	91	340910	2.7000e+01	3.7850e+06	3.1260e+06	0.0	1.00	0.0	1.0801e+07	7.9000e-01	2	1	3476
							1.50	0.0	4.0100e+06	2.1000e-01			
35-br-	91	350910	6.0000e+01	3.4170e+06	2.1190e+06	0.0	1.00	0.0	9.1151e+06	8.9100e-01	2	3	3561
							1.50	0.0	5.0400e+06	1.0900e-01			
36-kr-	91	360910	8.5700e+00	2.0660e+06	1.7460e+06	0.0	1.00	0.0	6.4200e+06	1.0000e+00	1	4	3664
37-rb-	91	370910	5.8400e+01	1.5610e+06	2.3400e+06	0.0	1.00	0.0	5.8670e+06	1.0000e+00	2	5	3743
							1.50	0.0	6.3000e-02	1.0000e-06			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E BETA	E GAMMA	E ALPHA	RTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
38-sr- 91	0	380910	3.4272e+04	6.4200e+05	7.0500e+05	0.0	1.00	0.0	2.6860e+06	5.2000e-01	2	4	3846
							1.00	1.0	2.1100e+06	5.8000e-01			
39- y- 91	0	390910	5.0553e+06	6.0340e+05	4.6000e+01	0.0	1.00	0.0	1.5456e+06	1.0000e+00	1	4	3931
39- y- 91	1	390911	2.9826e+01	2.7200e+04	5.2000e+05	0.0	1.00	0.0	5.5561e+05	1.0000e+00	1	3	3932
40-zr- 91	0	400910	stable								0	0	4028
34-se- 92	0	340920	1.6819e+01	4.1110e+06	2.2370e+06	0.0	1.00	0.0	1.0068e+07	8.6767e-01	2	3	3479
							1.50	0.0	6.2990e+00	1.3233e-01			
35-br- 92	0	350920	3.6500e+01	4.0060e+06	3.1990e+06	0.0	1.00	0.0	1.2000e+07	7.0000e-01	2	3	1564
							1.50	0.0	5.8000e+06	3.0000e-01			
36-kr- 92	0	360920	1.8500e+00	2.1070e+06	1.4520e+06	0.0	1.00	0.0	6.1600e+06	9.9967e-01	2	3	1667
							1.50	0.0	1.0500e+06	3.3000e-04			
37-rb- 92	0	370920	4.5000e+00	3.5240e+06	5.2000e+05	0.0	1.00	0.0	8.1210e+06	9.9910e-01	2	5	3746
							1.50	0.0	7.5310e+05	1.0500e-04			
38-sr- 92	0	380920	9.7560e+03	1.7600e+05	1.1400e+06	0.0	1.00	0.0	1.8880e+06	1.0000e+00	1	4	1849
39- y- 92	0	390920	1.2744e+04	1.4460e+06	2.5100e+05	0.0	1.00	0.0	3.6120e+06	1.0000e+00	1	4	3934
40-zr- 92	0	400920	stable								0	0	4031
42-mo- 92	0	420920	stable								0	0	4225
34-se- 91	0	340910	9.6767e-02	4.1170e+06	4.1420e+06	0.0	1.00	0.0	1.2286e+07	8.7968e-01	2	3	1482
							1.50	0.0	7.1690e+00	1.2032e-01			
35-br- 93	0	350930	1.7628e-01	3.5540e+06	3.6720e+06	0.0	1.00	0.0	1.1053e+07	5.9000e-01	2	3	3567
							1.50	0.0	7.1400e+06	4.1000e-01			
36-kr- 93	0	360930	1.2900e+00	2.9050e+06	2.2870e+06	0.0	1.00	0.0	8.5300e+06	9.8050e-01	2	5	3670
							1.50	0.0	2.6200e+06	1.9500e-02			
37-rb- 93	0	370930	5.7000e+00	2.7060e+06	1.3600e+06	0.0	1.00	0.0	7.4430e+06	9.8660e-01	2	5	3749
							1.50	0.0	2.2060e+06	1.3400e-02			
38-sr- 93	0	380930	4.4538e+02	8.1600e+05	2.2740e+06	0.0	1.00	0.0	4.1140e+06	6.5400e-01	2	4	3852
							1.00	1.0	1.3550e+06	3.4600e-01			
39- y- 93	0	390930	3.6360e+04	1.1720e+06	8.8000e+04	0.0	1.00	0.0	2.8840e+06	1.0000e+00	1	4	3937
39- y- 93	1	390931	8.2000e-01	7.8110e+04	6.8074e+05	0.0	3.00	0.0	7.5871e+05	1.0000e+00	1	3	3938
40-zr- 93	0	400930	4.8282e+11	1.9000e+04	0.0	0.0	1.00	1.0	6.0100e+04	1.0000e+00	1	1	4034
41-nb- 93	0	410930	stable								0	0	4125
41-nb- 93	1	410931	5.0901e+08	2.7100e+04	1.8800e+03	0.0	3.00	0.0	3.0770e+04	1.0000e+00	1	3	4126
42-mo- 93	0	420930	1.1045e+11	5.0000e+01	1.1000e+04	0.0	2.00	0.0	4.0600e+05	1.8000e-01	2	3	4228
							2.00	1.0	3.7500e+05	8.2000e-01			
42-mo- 93	1	420931	2.5000e+04	1.1582e+05	2.3098e+06	0.0	3.00	0.0	2.4248e+06	1.0000e+00	1	0	4229
35-br- 94	0	350940	1.1080e-01	4.0190e+06	4.6610e+06	0.0	1.00	0.0	1.3271e+07	7.0197e-01	2	3	3570
							1.50	0.0	9.1690e+00	2.9804e-01			
36-kr- 94	0	360940	2.1000e-01	2.9470e+06	1.4800e+06	0.0	1.00	0.0	7.7260e+06	9.4300e-01	2	3	3673
							1.50	0.0	2.4200e+06	5.7000e-02			
37-rb- 94	0	370940	2.7020e+00	2.7600e+06	4.1200e+06	0.0	1.00	0.0	1.0307e+07	8.9950e-01	2	5	3752
							1.50	0.0	3.5210e+06	1.0150e-01			
38-sr- 94	0	380940	7.5200e+01	8.4000e+05	1.4270e+06	0.0	1.00	0.0	1.5120e+06	1.0000e+00	1	4	1855
39- y- 94	0	390940	1.1220e+03	1.8150e+06	7.7200e+05	0.0	1.00	0.0	4.9200e+06	1.0000e+00	1	4	3940
40-zr- 94	0	400940	stable								0	0	4037
41-nb- 94	0	410940	6.4061e+11	1.4500e+05	1.5720e+06	0.0	1.00	0.0	2.0453e+06	1.0000e+00	1	4	4128
41-nb- 94	1	410941	3.7560e+02	3.5000e+04	1.1700e+04	0.0	1.00	0.0	2.0862e+06	5.0000e-03	2	4	4129
							3.00	0.0	4.0951e+04	9.9500e-01			
42-mo- 94	0	420940	stable								0	0	4231
35-br- 95	0	350950	1.0688e-01	3.5930e+06	1.7130e+06	0.0	1.00	0.0	1.2175e+07	7.2920e-01	2	3	3573
							1.50	0.0	8.7190e+00	2.7040e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
36-kr- 95	0	360950	7.8000e 01	1.0550e+06	1.3540e+06	0.0	1.00	0.0	9.9440e+06	9.0500e-01	2	3	3676
							1.50	0.0	3.6500e+06	9.5000e 02			
37-rb- 95	0	370950	1.8400e 01	2.0540e+06	3.3700e+06	0.0	1.00	0.0	9.2800e+06	9.1400e 01	2	5	3755
							1.50	0.0	4.9560e+06	8.5200e 02			
38-sr- 95	0	380950	2.5100e+01	1.8212e+06	2.0010e+06	0.0	1.00	0.0	6.1200e+06	1.0000e+00	1	2	3858
39- y- 95	0	390950	6.1000e+02	1.1470e+06	1.2900e+06	0.0	1.00	0.0	4.4450e+06	1.0000e+00	1	4	3943
40-zr- 95	0	400950	5.5310e+06	1.1040e+05	7.1260e+05	0.0	1.00	0.0	1.1243e+06	9.8890e 01	2	4	4040
							1.00	1.0	8.8860e+05	1.1100e 02			
41-nb- 95	0	410950	3.0214e+06	4.4560e+04	7.6433e+05	0.0	1.00	0.0	9.2560e+05	1.0000e+00	1	4	4111
41-nb- 95	1	410951	3.1190e+05	1.7000e+05	6.8600e+04	0.0	1.00	0.0	1.1611e+06	5.6000e 02	2	4	4112
							3.00	0.0	2.1568e+05	9.4400e 01			
42-mo- 95	0	420950	stable								0	0	4234
35-br- 96	0	350960	8.8815e 02	4.4690e+06	4.8220e+06	0.0	1.00	0.0	1.5239e+07	7.8081e 01	2	1	3576
							1.50	0.0	9.4690e+00	2.1920e 01			
36-kr- 96	0	360960	2.9310e 01	3.0730e+06	1.5660e+06	0.0	1.00	0.0	8.8480e+06	9.2250e 01	2	3	3679
							1.50	0.0	4.5870e+00	7.7470e 02			
37-rb- 96	0	370960	1.9900e-01	2.9100e+06	4.8800e+06	0.0	1.00	0.0	1.1750e+07	8.6600e-01	2	5	3758
							1.50	0.0	5.8900e+06	1.3400e 01			
38-sr- 96	0	380960	1.0600e+00	1.7937e+06	1.3543e+06	0.0	1.00	0.0	5.4160e+06	9.9999e-01	2	5	3861
							1.50	0.0	2.1700e-01	1.1000e 05			
39- y- 96	0	390960	5.9000e+00	3.2290e+06	1.2056e+06	0.0	1.00	0.0	7.1400e+06	1.0000e+00	1	4	3946
39- y- 96	1	390961	9.6000e+00	1.4060e+06	3.9750e+06	0.0	1.00	0.0	7.2400e+06	1.0000e+00	1	4	3947
40-zr- 96	0	400960	stable								0	0	4043
41-nb- 96	0	410960	8.4060e+04	2.5380e+05	2.4620e+06	0.0	1.00	0.0	3.1870e+06	1.0000e+00	1	4	4114
42-mo- 96	0	420960	stable								0	0	4237
44-ru- 96	0	440960	stable								0	0	4425
36-kr- 97	0	360970	1.0000e-01	1.8340e+06	2.9930e+06	0.0	1.00	0.0	1.1912e+07	9.1608e-01	2	3	3682
							1.50	0.0	5.2450e+00	8.3925e-02			
37-rb- 97	0	370970	1.7180e-01	3.5050e+06	4.8000e+06	0.0	1.00	0.0	1.0520e+07	7.3600e-01	2	5	3761
							1.50	0.0	6.5400e+06	2.6400e-01			
38-sr- 97	0	380970	4.2000e-01	2.4500e+06	2.2100e+06	0.0	1.00	0.0	7.4700e+06	8.4995e-01	3	5	3864
							1.00	1.0	6.8020e+06	1.4999e-01			
							1.50	0.0	1.4300e+00	5.4000e-05			
39- y- 97	0	390970	3.5000e+00	2.1520e+06	1.8000e+06	0.0	1.00	0.0	6.6800e+06	9.9942e-01	2	3	3949
							1.50	0.0	1.1000e+06	5.8000e-04			
39- y- 97	1	390971	1.2300e+00	2.0760e+06	2.6795e+06	0.0	1.00	0.0	7.3480e+06	9.9891e-01	2	5	3950
							1.50	0.0	0.0	1.0900e-01			
40-zr- 97	0	400970	6.0840e+04	6.9400e+05	1.9200e+05	0.0	1.00	0.0	2.6583e+06	5.2000e-02	2	4	4046
							1.00	1.0	1.9150e+06	9.4800e-01			
41-nb- 97	0	410970	4.3260e+03	4.6820e+05	6.6570e+05	0.0	1.00	0.0	1.9330e+06	1.0000e+00	1	4	4117
41-nb- 97	1	410971	6.0000e+01	1.4400e+04	7.2790e+05	0.0	3.00	0.0	7.4327e+05	1.0000e+00	1	3	4118
42-mo- 97	0	420970	stable								0	0	4240
43-tc- 97	0	430970	8.2048e+13	4.9878e+03	1.1783e+04	0.0	2.00	0.0	3.2000e+05	1.0000e+00	1	3	4125
43-tc- 97	1	430971	7.8192e+06	8.3000e+04	9.3000e+03	0.0	3.00	0.0	9.6590e+04	1.0000e+00	1	1	4126
44-ru- 97	0	440970	2.5056e+05	1.2300e+04	2.4040e+05	0.0	2.00	0.0	1.1100e+06	9.9962e-01	2	4	4428
							2.00	1.0	1.0110e+06	3.8000e-04			
36-kr- 98	0	360980	1.6021e-01	3.4920e+06	1.8510e+06	0.0	1.00	0.0	9.8946e+06	9.1701e-01	2	3	3685
							1.50	0.0	5.5000e+00	8.2989e-02			
37-rb- 98	0	370980	1.1400e 01	3.7110e+06	2.9210e+06	0.0	1.00	0.0	1.2410e+07	8.4000e-01	2	5	3764
							1.50	0.0	6.6700e+06	1.6000e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
38-sr- 98	0	380980	6.5000e-01	2.1190e+06	1.0510e+06	0.0	1.00	0.0	5.8800e+06	9.9700e-01	2	5	3867
							1.50	0.0	1.7100e+06	3.0000e-03			
39- y- 98	0	390980	6.4000e-01	2.5400e+06	2.6100e+06	0.0	1.00	0.0	8.9100e+06	9.9760e-01	2	5	3952
							1.50	0.0	2.5000e+05	2.4000e-01			
39- y- 98	1	390981	2.0000e+00	2.5670e+06	3.0380e+06	0.0	1.00	0.0	8.9100e+06	9.6590e-01	2	5	1951
							1.50	0.0	0.0	3.4100e-02			
40-zr- 98	0	400980	3.0700e+01	8.1671e+05	1.6467e+05	0.0	1.00	0.0	2.2400e+06	1.0000e+00	1	2	4049
41-nb- 98	0	410980	2.8600e+00	1.4661e+06	1.1902e+06	0.0	1.00	0.0	4.5860e+06	1.0000e+00	1	4	4140
41-nb- 98	1	410981	3.0780e+03	7.5200e+05	2.7100e+06	0.0	1.00	0.0	4.6700e+06	1.0000e+00	1	4	4141
42-mo- 98	0	420980	stable								0	0	4243
44-ru- 98	0	440980	stable								0	0	4411
37-rb- 99	0	370990	5.9000e-02	3.6640e+06	2.6560e+06	0.0	1.00	0.0	1.1310e+07	8.5000e-01	2	3	3767
							1.50	0.0	7.5600e+06	1.5000e-01			
38-sr- 99	0	380990	2.7100e-01	2.7110e+06	2.7000e+06	0.0	1.00	0.0	8.1600e+06	9.9903e-01	2	5	1870
							1.50	0.0	2.5400e+06	9.7000e-04			
39- y- 99	0	390990	1.4700e+00	2.4990e+06	1.3400e+06	0.0	1.00	0.0	7.6100e+06	9.8470e-01	2	5	3955
							1.50	0.0	1.0900e+06	1.5300e-02			
40-zr- 99	0	400990	2.1000e+00	1.4090e+06	1.1841e+06	0.0	1.00	0.0	4.5900e+06	6.4000e-01	2	4	4052
							1.00	1.0	4.2250e+06	3.6000e-01			
41-nb- 99	0	410990	1.5000e+01	1.3000e+06	7.2000e+05	0.0	1.00	0.0	1.6400e+06	1.0000e+00	1	4	4143
41-nb- 99	1	410991	1.5600e+02	1.0400e+06	1.5900e+06	0.0	1.00	0.0	4.0050e+06	1.0000e+00	1	4	4144
42-mo- 99	0	420990	2.3738e+05	4.0398e+05	2.7159e+05	0.0	1.00	0.0	1.3570e+06	1.2000e-01	2	4	4246
							1.00	1.0	1.2143e+06	8.8000e-01			
43-tc- 99	0	430990	6.6617e+12	8.4600e+04	6.2000e-01	0.0	1.00	0.0	2.9360e+05	1.0000e+00	1	4	4331
43-tc- 99	1	430991	2.1616e+04	1.1200e+04	1.2660e+05	0.0	1.00	0.0	4.3630e+05	3.7000e-05	2	4	4332
							3.00	0.0	1.4268e+05	9.9996e-01			
44-ru- 99	0	440990	stable								0	0	4434
37-rb-100	0	371000	9.8000e-02	4.2760e+06	4.6740e+06	0.0	1.00	0.0	1.4504e+07	9.5050e-01	2	3	3770
							1.50	0.0	7.6800e+00	4.9500e-02			
38-sr-100	0	381000	2.0200e-01	2.5310e+06	1.2750e+06	0.0	1.00	0.0	7.0900e+06	9.9250e-01	2	5	3873
							1.50	0.0	2.4300e+06	7.5000e-03			
39- y-100	0	391000	7.3500e-01	3.3000e+06	2.5000e+06	0.0	1.00	0.0	9.3000e+06	9.9150e-01	2	5	3958
							1.50	0.0	2.3500e+06	8.5000e-03			
40-zr-100	0	401000	7.1000e+00	1.1141e+06	6.9823e+05	0.0	1.00	0.0	3.1400e+06	1.0000e+00	1	2	4055
41-nb-100	0	411000	1.5000e+00	2.4890e+06	7.0850e+05	0.0	1.00	0.0	5.2570e+06	1.0000e+00	1	4	4146
41-nb-100	1	411001	2.9800e+00	1.9440e+06	1.9520e+06	0.0	1.00	0.0	6.7450e+06	1.0000e+00	1	4	4147
42-mo-100	0	421000	stable								0	0	4249
43-tc-100	0	431000	1.5800e+01	1.1150e+06	8.3000e+04	0.0	1.00	0.0	3.2025e+06	1.0000e+00	1	4	4134
44-ru-100	0	441000	stable								0	0	4437
37-rb-101	0	371010	9.3851e-02	4.0380e+06	3.1230e+06	0.0	1.00	0.0	1.2509e+07	7.1679e-01	2	3	3773
							1.50	0.0	9.1320e+00	2.8322e-01			
38-sr-101	0	381010	1.9415e-01	3.4660e+06	2.6620e+06	0.0	1.00	0.0	1.0566e+07	9.7530e-01	2	1	3876
							1.50	0.0	3.4210e+00	2.4700e-02			
39- y-101	0	391010	5.0000e-01	2.6910e+06	1.5230e+06	0.0	1.00	0.0	8.7200e+06	9.7910e-01	2	1	3961
							1.50	0.0	4.1600e+06	2.0700e-02			
40-zr-101	0	401010	2.0000e+00	2.1600e+06	1.0910e+06	0.0	1.00	0.0	6.4240e+06	1.0000e+00	1	2	4058
41-nb-101	0	411010	7.1000e+00	1.6860e+06	7.1960e+05	0.0	1.00	0.0	4.6300e+06	1.0000e+00	1	2	4149
42-mo-101	0	421010	8.7600e+02	5.1800e+05	1.5140e+06	0.0	1.00	0.0	2.8120e+06	1.0000e+00	1	4	4252
43-tc-101	0	431010	8.5200e+02	4.7700e+05	3.3600e+05	0.0	1.00	0.0	1.6250e+06	1.0000e+00	1	4	4137
44-ru-101	0	441010	stable								0	0	4440

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
38-sr-102	0	381020	2.8711e 01	1.0170e+06	1.5780e+06	0.0	1.00	0.0	8.5706e+06	9.5240e-01	2	3	1879
							1.50	0.0	3.8250e+00	4.7600e-02			
39- y-102	0	391020	9.0000e 01	1.0960e+06	1.0210e+06	0.0	1.00	0.0	1.1880e+07	9.4060e-01	2	3	3964
							1.50	0.0	3.7150e+00	5.9400e-02			
40-zr-102	0	401020	2.9000e+00	1.4300e+06	7.3730e+05	0.0	1.00	0.0	4.5850e+06	1.0000e+00	1	2	4061
41-nb-102	0	411020	1.3000e+00	2.8320e+06	1.4610e+06	0.0	1.00	0.0	7.2100e+06	1.0000e+00	1	2	4152
41-nb-102	1	411021	4.3000e+00	2.8320e+06	1.4610e+06	0.0	1.00	0.0	7.2100e+06	1.0000e+00	1	2	4153
42-mo-102	0	421020	6.7800e+02	3.5050e+05	4.7304e+04	0.0	1.00	0.0	1.0140e+06	1.0000e+00	1	4	4255
43-tc-102	0	431020	5.2800e+00	1.4201e+06	1.1931e+06	0.0	1.00	0.0	4.5260e+06	1.0000e+00	1	4	4340
43-tc-102	1	431021	2.6100e+02	7.9200e+05	2.5250e+06	0.0	1.00	0.0	4.5460e+06	9.8000e-01	2	4	4141
							3.00	0.0	2.0000e+04	2.0000e-02			
44-ru-102	0	441020	stable								0	0	4441
46-pd-102	0	461020	stable								0	0	4625
38-sr-103	0	381010	1.1960e 01	1.6940e+06	2.9490e+06	0.0	1.00	0.0	9.1423e+07	9.1124e-01	2	3	1882
							1.50	0.0	6.0990e+00	8.8758e-02			
39- y-103	0	391030	2.6041e 01	1.0340e+06	1.9810e+06	0.0	1.00	0.0	9.8848e+06	8.7634e-01	2	3	1967
							1.50	0.0	4.9500e+00	1.2166e-01			
40-zr-103	0	401030	1.3000e+00	2.4570e+06	1.4670e+06	0.0	1.00	0.0	6.9500e+06	9.9976e-01	2	3	4064
							1.50	0.0	6.6100e-01	2.4200e-04			
41-nb-103	0	411030	1.5000e+00	2.1110e+06	9.8200e+05	0.0	1.00	0.0	5.5000e+06	9.9986e-01	2	3	4155
							1.50	0.0	1.8000e-01	1.3700e-04			
42-mo-103	0	421010	6.7500e+01	1.1440e+06	1.1140e+06	0.0	1.00	0.0	1.8450e+06	1.0000e+00	1	2	4254
43-tc-103	0	431010	5.4200e+01	7.0199e+05	5.5265e+05	0.0	1.00	0.0	2.6540e+06	1.0000e+00	1	4	4343
44-ru-103	0	441030	3.3921e+06	6.6600e+04	4.9500e+05	0.0	1.00	0.0	7.6620e+05	2.6800e-03	2	4	4446
							1.00	1.0	7.2640e+05	9.9732e-01			
45-rh-103	0	451030	stable								0	0	4525
45-rh-103	1	451011	3.1672e+03	1.6100e+04	1.6800e+01	0.0	3.00	0.0	3.9756e+04	1.0000e+00	1	3	4526
46 pd-103	0	461010	1.4680e+06	5.0050e+03	1.4519e+04	0.0	2.00	0.0	5.7220e+05	2.5000e-04	2	4	4628
							2.00	1.0	5.1240e+05	9.9975e-01			
38 sr-104	0	381040	1.6292e 01	1.4300e+06	1.8520e+06	0.0	1.00	0.0	9.5206e+06	8.6510e-01	2	3	3985
							1.50	0.0	6.7790e+00	1.1470e-01			
39- y-104	0	391040	1.8825e-01	3.4940e+06	3.7500e+06	0.0	1.00	0.0	1.2737e+07	9.1220e-01	2	3	3970
							1.50	0.0	5.5080e+00	8.7719e-02			
40-zr-104	0	401040	2.5728e+00	1.7420e+06	8.9440e+05	0.0	1.00	0.0	5.4486e+06	9.9890e-01	2	3	4067
							1.50	0.0	1.0400e+06	1.1000e-03			
41-nb-104	0	411040	4.8000e+00	2.5100e+06	3.1760e+06	0.0	1.00	0.0	8.6496e+06	9.9290e-01	2	4	4158
							1.50	0.0	1.5000e+06	7.1000e-03			
41-nb-104	1	411041	1.0000e+00	3.1250e+06	2.1340e+06	0.0	1.00	0.0	8.6496e+06	1.0000e+00	1	2	4159
42-mo-104	0	421040	6.0000e+01	6.2290e+05	5.8470e+05	0.0	1.00	0.0	2.1250e+06	1.0000e+00	1	4	4261
43-tc-104	0	431040	1.8300e+03	1.4500e+06	2.2450e+06	0.0	1.00	0.0	5.1200e+06	1.0000e+00	1	4	4346
44-ru-104	0	441040	stable								0	0	4444
45-rh-104	0	451040	4.2100e+01	9.8700e+05	1.2000e+04	0.0	1.00	0.0	2.4420e+06	9.9500e-01	2	4	4529
							2.00	0.0	1.1440e+06	4.5000e-03			
45-rh-104	1	451041	2.6040e+02	8.1300e+04	4.1500e+04	0.0	1.00	0.0	2.5710e+06	1.0000e-03	2	4	4529
							3.00	0.0	1.2896e+05	9.9870e-01			
46 pd-104	0	461040	stable								0	0	4631
39- y-105	0	391050	1.4688e 01	3.3250e+06	2.1720e+06	0.0	1.00	0.0	1.0835e+07	8.0247e-01	2	3	4073
							1.50	0.0	6.8190e+00	1.9751e-01			
40-zr-105	0	401050	4.9263e 01	2.6620e+06	1.7640e+06	0.0	1.00	0.0	8.1006e+06	9.8600e-01	2	3	4070
							1.50	0.0	2.0700e+06	1.4000e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NIK	NSP	MAT
41-nb-105	0	411050	2.9500e+00	2.4990e+06	1.4040e+06	0.0	1.00	0.0	6.4250e+06	9.7768e-01	2	1	4161
							1.50	0.0	2.2700e+00	2.2322e-02			
42-mo-105	0	421050	3.5600e+01	1.7411e+06	1.4161e+06	0.0	1.00	0.0	4.9850e+06	1.0000e+00	1	2	4264
43-tc-105	0	431050	4.5600e+02	1.2110e+06	7.8200e+05	0.0	1.00	0.0	1.5850e+06	1.0000e+00	1	4	4149
44-ru-105	0	441050	1.5984e+04	4.1200e+05	7.0000e+05	0.0	1.00	0.0	1.9160e+06	7.1600e-01	2	4	4452
							1.00	1.0	1.7860e+06	2.8400e-01			
45-rh-105	0	451050	1.2710e+05	1.5120e+05	7.7000e+04	0.0	1.00	0.0	5.6620e+05	1.0000e+00	1	4	4531
45-rh-105	1	451051	4.5000e+01	9.1000e+04	3.4300e+04	0.0	1.00	0.0	1.2978e+05	1.0000e+00	1	3	4532
46-pd-105	0	461050	stable								0	0	4614
39-y-106	0	391060	8.9428e-02	1.0130e+06	4.1870e+06	0.0	1.00	0.0	1.3684e+07	8.4119e-01	2	3	3976
							1.50	0.0	7.3790e+00	1.5661e-01			
40-zr-106	0	401060	9.0709e-01	2.1380e+06	1.0510e+06	0.0	1.00	0.0	6.1986e+06	9.8476e-01	2	1	4071
							1.50	0.0	2.5630e+00	1.5242e-02			
41-nb-106	0	411060	1.0000e+00	3.3130e+06	2.5490e+06	0.0	1.00	0.0	9.5066e+06	9.4500e-01	2	3	4164
							1.50	0.0	3.0300e+06	5.5000e-02			
42-mo-106	0	421060	8.4000e+00	1.2120e+06	7.4590e+05	0.0	1.00	0.0	3.5200e+06	1.0000e+00	1	2	4267
43-tc-106	0	431060	3.6000e+01	1.6970e+06	2.9110e+06	0.0	1.00	0.0	6.5400e+06	1.0000e+00	1	4	4352
44-ru-106	0	441060	3.2105e+07	1.0030e+04	0.0	0.0	1.00	0.0	1.9400e+04	1.0000e+00	1	1	4455
45-rh-106	0	451060	2.9800e+01	1.4110e+06	2.0600e+05	0.0	1.00	0.0	1.5400e+06	1.0000e+00	1	4	4514
45-rh-106	1	451061	7.8000e+01	3.2130e+05	2.0520e+06	0.0	1.00	0.0	3.6770e+06	1.0000e+00	1	4	4515
46-pd-106	0	461060	stable								0	0	4617
48-cd-106	0	481060	stable								0	0	4825
39-y-107	0	391070	9.2257e-02	1.6670e+06	2.8010e+06	0.0	1.00	0.0	1.2008e+07	7.4056e-01	2	3	3979
							1.50	0.0	8.4390e+00	2.5944e-01			
40-zr-107	0	401070	2.4295e-01	2.9820e+06	2.2010e+06	0.0	1.00	0.0	9.2479e+06	9.6287e-01	2	1	4076
							1.50	0.0	3.9690e+00	3.7127e-02			
41-nb-107	0	411070	7.6605e-01	2.8150e+06	1.8160e+06	0.0	1.00	0.0	7.6046e+06	9.1219e-01	2	3	4167
							1.50	0.0	4.1680e+00	8.7806e-02			
42-mo-107	0	421070	3.5000e+00	2.3170e+06	1.1930e+06	0.0	1.00	0.0	5.7684e+06	1.0000e+00	1	2	4270
43-tc-107	0	431070	2.1200e+01	1.1682e+06	1.4147e+06	0.0	1.00	0.0	4.7500e+06	1.0000e+00	1	4	4355
44-ru-107	0	441070	2.2500e+02	1.0561e+06	5.9619e+05	0.0	1.00	0.0	1.1500e+06	1.0000e+00	1	4	4458
45-rh-107	0	451070	1.3020e+01	4.3700e+05	3.1300e+05	0.0	1.00	0.0	1.5120e+06	1.0000e+00	1	4	4537
46-pd-107	0	461070	2.0512e+14	9.3000e+03	0.0	0.0	1.00	0.0	1.3200e+04	1.0000e+00	1	1	4640
46-pd-107	1	461071	2.1300e+01	6.1100e+04	1.5200e+05	0.0	3.00	0.0	2.1490e+05	1.0000e+00	1	1	4641
47-ag-107	0	471070	stable								0	0	4725
47-ag-107	1	471071	4.4300e+01	7.7000e+04	1.2500e+04	0.0	1.00	0.0	9.3120e+04	1.0000e+00	1	3	4726
48-cd-107	0	481070	2.1400e+04	5.3000e+03	2.0900e+04	0.0	2.00	0.0	1.4170e+06	6.4000e-04	2	4	4828
							2.00	1.0	1.3240e+06	9.9936e-01			
40-zr-108	0	401080	3.7807e-01	2.5670e+06	1.3190e+06	0.0	1.00	0.0	7.5711e+06	9.2970e-01	2	1	4079
							1.50	0.0	4.7490e+00	7.0302e-02			
41-nb-108	0	411080	2.4230e-01	3.5870e+06	1.1080e+06	0.0	1.00	0.0	1.0454e+07	9.3531e-01	2	3	4170
							1.50	0.0	4.4830e+00	6.4669e-02			
42-mo-108	0	421080	1.5000e+00	1.5918e+06	1.1523e+06	0.0	1.00	0.0	3.8664e+06	1.0000e+00	2	3	4273
							1.50	0.0	2.3000e-02	1.0000e-06			
43-tc-108	0	431080	5.1700e+00	2.2490e+06	2.9930e+06	0.0	1.00	0.0	7.7100e+06	1.0000e+00	1	4	4358
44-ru-108	0	441080	2.7300e+02	5.0000e+05	6.1000e+04	0.0	1.00	0.0	1.3900e+06	1.0000e+00	1	4	4461
45-rh-108	0	451080	1.6800e+01	1.1904e+06	1.2493e+06	0.0	1.00	0.0	4.4300e+06	1.0000e+00	1	4	4540
45-rh-108	1	451081	3.6000e+02	6.3450e+05	2.8541e+06	0.0	1.00	0.0	4.4300e+06	1.0000e+00	1	4	4541
46-pd-108	0	461080	stable								0	0	4543
47-ag-108	0	471080	1.4220e+02	6.1000e+05	1.8400e+04	0.0	1.00	0.0	1.6550e+06	9.7150e-01	2	5	4728
							2.00	0.0	1.9160e+06	2.8500e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
47-ag-108	1	471081	4.0077e+09	1.4900e+04	1.6210e+06	0.0	2.00	0.0	2.0250e+06	9.1100e-01	2	4	4729
							3.00	0.0	1.0947e+05	8.7000e-02			
48-cd-108	0	481080	stable								0	0	4831
40-zr-109	0	401090	1.2998e-01	1.1870e+04	2.7030e+06	0.0	1.00	0.0	1.0564e+07	9.2016e-01	2	1	4082
							1.50	0.0	5.4119e+00	7.9940e-02			
41-nb-109	0	411090	3.1537e-01	3.1580e+06	2.2610e+06	0.0	1.00	0.0	8.7771e+06	8.7347e-01	2	1	4173
							1.50	0.0	5.3090e+00	1.2653e-01			
42-mo-109	0	421090	1.4085e+00	2.6750e+06	1.8760e+06	0.0	1.00	0.0	6.7157e+06	9.9470e-01	2	3	4276
							1.50	0.0	6.4000e+05	5.3000e-03			
43-tc-109	0	431090	1.4000e+00	2.1440e+05	1.0490e+06	0.0	1.00	0.0	5.3900e+06	9.8300e-01	2	3	4361
							1.50	0.0	1.1500e+06	1.7000e-02			
44-ru-109	0	441090	3.5000e+01	1.3283e+06	9.7121e+05	0.0	1.00	0.0	3.9310e+06	5.0000e-01	2	2	4464
							1.00	1.0	3.9320e+06	5.0000e-01			
44-ru-109	1	441091	1.3000e+01	1.2121e+06	1.1592e+06	0.0	1.00	0.0	3.9330e+06	1.0000e+00	1	2	4465
45-rh-109	0	451090	8.0000e+01	9.2700e+05	3.1000e+05	0.0	1.00	0.0	2.5900e+06	1.0000e+00	1	4	4543
45-rh-109	1	451091	5.0000e+01	0.0	5.0000e+04	0.0	3.00	0.0	5.0000e+04	1.0000e+00	1	0	4544
46-pd-109	0	461090	4.9120e+04	1.1080e+05	6.4000e+02	0.0	1.00	0.0	1.1159e+06	4.8000e-04	2	4	4646
							1.00	1.0	1.0279e+06	9.9952e-01			
46-pd-109	1	461091	2.8140e+02	7.3900e+04	1.0980e+05	0.0	3.00	0.0	1.8899e+05	1.0000e+00	1	1	4647
47-ag-109	0	471090	stable								0	0	4711
47-ag-109	1	471091	3.9600e+01	7.3700e+04	1.0900e+04	0.0	3.00	0.0	8.8014e+04	1.0000e+00	1	3	4732
48-cd-109	0	481090	3.9969e+07	4.7604e+03	1.4949e+04	0.0	2.00	1.0	9.6100e+04	1.0000e+00	1	1	4834
41-nb-110	0	411100	1.2979e-01	3.9270e+06	3.7450e+06	0.0	1.00	0.0	1.1770e+07	8.9948e-01	2	3	4176
							1.50	0.0	5.7790e+00	1.0051e-01			
42-mo-110	0	421100	2.7721e+00	2.1990e+06	1.1520e+06	0.0	1.00	0.0	5.0391e+06	9.8700e-01	2	3	4279
							1.50	0.0	9.9000e+05	1.3000e-02			
43-tc-110	0	431100	8.3000e-01	3.0320e+06	2.1700e+06	0.0	1.00	0.0	8.2393e+06	9.6900e-01	2	3	4364
							1.50	0.0	1.8600e+06	3.1000e-02			
44-ru-110	0	441100	1.5000e+01	6.5850e+05	5.9690e+05	0.0	1.00	1.0	2.0316e+06	1.0000e+00	1	2	4467
45-rh-110	0	451100	3.1600e+00	1.9101e+06	1.0811e+06	0.0	1.00	0.0	5.4000e+06	1.0000e+00	1	4	4546
45-rh-110	1	451101	2.8500e+01	1.1500e+06	2.5870e+06	0.0	1.00	0.0	5.4000e+06	1.0000e+00	1	4	4547
46-pd-110	0	461100	stable								0	0	4649
47-ag-110	0	471100	2.4600e+01	1.1815e+06	3.0700e+04	0.0	1.00	0.0	2.8927e+06	9.9700e-01	2	5	4734
							2.00	0.0	8.7900e+05	3.0000e-03			
47-ag-110	1	471101	2.1579e+07	7.1900e+04	2.7390e+06	0.0	1.00	0.0	3.0103e+06	9.8640e-01	2	4	4735
							3.00	0.0	1.1759e+05	1.3600e-02			
48-cd-110	0	481100	stable								0	0	4837
41-nb-111	0	411110	1.7183e-01	3.1990e+06	2.5680e+06	0.0	1.00	1.0	9.7703e+06	8.1605e-01	2	3	4179
							1.00	0.0	6.9290e+00	1.8395e-01			
42-mo-111	0	421110	4.6637e-01	3.0980e+06	2.4130e+06	0.0	1.00	0.0	8.0317e+06	9.8970e-01	2	3	4282
							1.50	0.0	2.2290e+00	1.0303e-02			
43-tc-111	0	431110	1.9824e+00	2.4860e+06	1.5010e+06	0.0	1.00	0.0	6.5627e+06	9.4305e-01	2	3	4367
							1.50	0.0	3.5950e+00	5.6954e-02			
44-ru-111	0	441110	1.6000e+00	1.8670e+06	9.6240e+05	0.0	1.00	0.0	4.8803e+06	1.0000e+00	1	2	4470
45-rh-111	0	451110	1.1000e+01	1.0774e+06	8.9819e+05	0.0	1.00	0.0	1.5030e+06	1.0000e+00	1	2	4549
46-pd-111	0	461110	1.4040e+03	8.1100e+05	4.4900e+04	0.0	1.00	0.0	2.2000e+06	7.4000e-03	2	4	4652
							1.00	1.0	2.1400e+06	9.9260e-01			
46-pd-111	1	461111	1.9800e+04	1.8600e+05	3.5900e+05	0.0	1.00	0.0	2.3720e+06	7.4000e-02	3	4	4653
							1.00	1.0	2.3120e+06	1.9600e-01			
							3.00	0.0	1.7220e+05	7.3000e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
47-ag-111	0	471110	[illegible]e+05	3.5460e+05	2.6400e+04	0.0	1.00	0.0	1.0370e+06	1.0000e+00	1	4	4737
47-ag-111	1	471111	[illegible]000e+01	5.3900e+04	7.7000e+03	0.0	1.00	0.0	1.0968e+06	7.0000e-03	2	4	4738
							1.00	0.0	5.9820e+04	9.9300e-01			
48-cd-111	0	481110	stable								0	0	4840
48-cd-111	1	481111	2.9160e+03	1.0300e+05	2.8480e+05	0.0	3.00	0.0	3.9622e+05	1.0000e+00	1	3	4841
41-nb-112	0	411120	8.6719e-02	4.1780e+06	4.1860e+06	0.0	1.00	0.0	1.2835e+07	1.0000e+00	1	2	4182
42-mo-112	0	421120	9.7537e-01	2.5520e+06	1.2540e+06	0.0	1.00	0.0	6.0321e+06	9.7921e-01	2	3	4285
							1.50	0.0	2.7190e+00	2.0788e-02			
43-tc-112	0	431120	4.3116e-01	3.3400e+06	2.7900e+06	0.0	1.00	0.0	9.5551e+06	9.4797e-01	2	3	4370
							1.50	0.0	3.8260e+00	5.2011e-02			
44-ru-112	0	441120	1.6000e+00	1.1140e+06	7.2500e+05	0.0	1.00	0.0	3.2037e+06	1.0000e+00	1	2	4473
45-rh-112	0	451120	1.5000e+00	2.4770e+06	1.1560e+06	0.0	1.00	0.0	6.3521e+06	1.0000e+00	1	2	4552
46-pd-112	0	461120	7.5762e+04	9.1000e+04	4.9000e+03	0.0	1.00	0.0	2.9400e+05	1.0000e+00	1	4	4615
47-ag-112	0	471120	1.1104e+04	1.39[illegible]e+06	6.9100e+05	0.0	1.00	0.0	3.9600e+06	1.0000e+00	1	4	4740
48-cd-112	0	481120	stable								0	0	4843
50-sn-112	0	501120	stable								0	0	5025
42-mo-113	0	421130	2.2866e-01	3.4300e+06	2.8020e+06	0.0	1.00	0.0	9.0972e+06	9.6201e-01	2	3	4288
							1.50	0.0	4.0290e+00	1.7966e-02			
43-tc-113	0	431130	6.5238e-01	2.7320e+06	1.8220e+06	0.0	1.00	0.0	7.5557e+06	9.2814e-01	2	3	4373
							1.50	0.0	4.0990e+00	7.1864e-02			
44-ru-113	0	441130	3.0000e+00	2.2490e+06	1.4160e+06	0.0	1.00	0.0	6.1963e+06	1.0000e+00	2	3	4476
							1.50	0.0	2.0600e-01	5.0003e-06			
45-rh-113	0	451130	9.0000e-01	1.7310e+06	8.1590e+05	0.0	1.00	0.0	4.6757e+06	1.0000e+00	1	2	4555
46-pd-113	0	461130	9.3000e+01	1.0900e+06	6.1020e+05	0.0	1.00	0.0	3.3600e+06	8.1500e-01	2	2	4658
							1.00	1.0	3.3170e+06	1.8500e-01			
47-ag-113	0	471130	1.9332e+04	7.6260e+05	7.1900e+04	0.0	1.00	0.0	2.0100e+06	9.8700e-01	2	4	4743
							1.00	1.0	1.7460e+06	1.7000e-02			
47-ag-113	1	471131	6.8700e+01	1.3980e+05	1.1600e+05	0.0	1.00	0.0	2.0530e+06	2.0000e-01	2	4	4744
							3.00	0.0	4.1200e+04	8.0000e-01			
48-cd-113	0	481130	2.2348e+23	9.1100e+04	0.0	0.0	1.00	0.0	3.1600e+05	1.0000e+00	1	1	4846
49-cd-113	1	481131	4.4435e+08	1.8340e+05	7.0700e+01	0.0	1.00	0.0	5.8000e+05	9.9860e-01	2	4	4847
							3.00	0.0	2.6359e+05	1.4000e-03			
49-in-113	0	491130	stable								0	0	4925
49-in-113	1	491131	5.9688e+03	1.3000e+05	2.5700e+05	0.0	3.00	0.0	1.9169e+05	1.0000e+00	1	1	4926
50-sn-113	0	501130	9.[illegible]38e+06	5.2200e+01	2.2800e+04	0.0	2.00	0.0	1.0390e+06	4.0000e-08	2	4	5028
							2.00	1.0	6.4700e+05	1.0000e+00			
50-sn-113	1	501131	1.2840e+03	5.1500e+04	1.3700e+04	0.0	2.00	0.0	1.1160e+06	8.9000e-02	2	4	5029
							3.00	0.0	7.7398e+04	9.1100e-01			
42-mo-114	0	421140	3.7665e-01	2.9210e+06	1.5780e+06	0.0	1.00	0.0	7.1621e+06	1.0000e+00	1	2	4291
43-tc-114	0	431140	2.0226e-01	3.5780e+06	3.2570e+06	0.0	1.00	0.0	1.0621e+07	9.3464e-01	2	3	4376
							1.50	0.0	4.8090e+00	6.5358e-02			
44-ru-114	0	441140	8.1365e+00	1.4710e+06	8.4370e+05	0.0	1.00	0.0	4.1967e+06	9.9896e-01	2	3	4479
							1.50	0.0	8.8000e-01	1.0390e-01			
45-rh-114	0	451140	1.7000e+00	2.7430e+06	1.7530e+06	0.0	1.00	0.0	7.6683e+06	9.9998e-01	2	3	4558
							1.50	0.0	3.0000e-01	2.0000e-05			
46-pd-114	0	461140	1.4700e+02	4.8249e+05	8.4921e+04	0.0	1.00	0.0	1.4500e+06	1.0000e+00	1	4	4661
47-ag-114	0	471140	4.6000e+00	2.0432e+06	2.1066e+05	0.0	1.00	0.0	5.0300e+06	1.0000e+00	1	4	4746
48-cd-114	0	481140	stable								0	0	4849
49-in-114	0	491140	7.1900e+01	7.7100e+05	2.1000e+03	0.0	1.00	0.0	1.9863e+06	9.9500e-01	2	5	4928
							2.00	0.0	1.4520e+06	5.0000e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E- BETA	E GAMMA	E ALPHA	BTA	BFS	Q	BRANCHING	NIK	NSP	MAT
49-in-114	1	491141	4.2777e+06	1.4200e+05	9.4000e+04	0.0	2.00	0.0	1.6340e+06	4.3000e-02	2	4	4929
							3.00	0.0	1.9034e+05	9.5700e-01			
50-sn-114	0	501140	stable								0	0	5031
42-mo-115	0	421150	1.2591e 01	3.5980e+06	2.1980e+06	0.0	1.00	0.0	1.0148e+07	1.0000e+00	1	2	4294
43-tc-115	0	431150	2.7044e 01	2.9950e+06	2.1420e+06	0.0	1.00	0.0	8.8859e+06	8.5661e 01	2	3	4379
							1.50	0.0	5.9290e+00	1.4137e-01			
44-ru-115	0	441150	8.7844e-01	2.5180e+06	1.8060e+06	0.0	1.00	0.0	7.2618e+06	9.9772e-01	2	3	4482
							1.50	0.0	1.4190e+00	2.2760e-03			
45-rh-115	0	451150	8.1154e+00	2.0210e+06	1.0540e+06	0.0	1.00	0.0	5.6687e+06	9.9225e-01	2	3	4561
							1.50	0.0	1.5120e+00	7.7460e-03			
46-pd-115	0	461150	3.8000e+01	1.3453e+06	1.2512e+06	0.0	1.00	0.0	4.4591e+06	7.3000e-01	2	2	4664
							1.00	1.0	4.4581e+06	2.7000e-01			
47-ag-115	0	471150	1.2000e+03	1.1000e+06	4.8300e+05	0.0	1.00	0.0	3.1400e+06	9.4300e-01	2	4	4749
							1.00	1.0	2.9590e+06	5.7000e-02			
47-ag-115	1	471151	1.8000e+01	9.3299e+05	8.8150e+05	0.0	1.00	0.0	3.1830e+06	1.0000e+00	1	2	4750
48-cd-115	0	481150	1.9246e+05	1.1710e+05	1.9100e+05	0.0	1.00	0.0	1.4418e+06	7.0000e-07	2	4	4852
							1.00	1.0	1.1056e+06	1.0000e+00			
48-cd-115	1	481151	3.8534e+06	6.0100e+05	3.3000e+04	0.0	1.00	0.0	1.6228e+06	9.9989e-01	2	4	4853
							1.00	1.0	1.2866e+06	1.1000e 0			
49-in-115	0	491150	1.3917e+22	1.5300e+05	0.0	0.0	1.00	0.0	4.9700e+05	1.0000e+00	1	1	4931
49-in-115	1	491151	1.6150e+04	1.6900e+05	1.6240e+05	0.0	1.00	0.0	8.1300e+05	5.0000e-02	2	4	4932
							1.00	0.0	1.3624e+05	9.5000e-01			
50-sn-115	0	501150	stable								0	0	5034
43-tc-116	0	431160	1.1549e-01	3.6930e+06	3.4950e+06	0.0	1.00	0.0	1.1872e+07	8.7777e-01	2	3	4382
							1.50	0.0	6.6590e+00	1.2223e-01			
44-ru-116	0	441160	1.7004e+00	1.8410e+06	9.8600e+05	0.0	1.00	0.0	5.5269e+06	9.8919e-01	2	3	4485
							1.50	0.0	2.1590e+00	1.0811e-02			
45-rh-116	0	451160	9.4919e-01	2.9670e+06	2.2200e+06	0.0	1.00	0.0	8.7318e+06	9.9462e-01	2	3	4564
							1.50	0.0	1.8340e+00	5.3790e-03			
46-pd-116	0	461160	1.2720e+01	6.6230e+05	6.0400e+05	0.0	1.00	0.0	2.6200e+06	1.0000e+00	1	4	4667
47-ag-116	0	471160	1.6080e+02	1.6790e+06	2.1100e+06	0.0	1.00	0.0	6.0000e+06	1.0000e+00	1	4	4752
47-ag-116	1	471161	1.0400e+01	1.3458e+06	2.7148e+06	0.0	1.00	0.0	6.0810e+06	9.8000e 01	2	4	4753
							3.00	0.0	8.1000e+04	2.0000e-02			
48-cd-116	0	481160	stable								0	0	4855
49-in-116	0	491160	1.4100e+01	1.3649e+06	1.9600e+04	0.0	1.00	0.0	3.2760e+06	1.0000e+00	1	4	4934
49-in-116	1	491161	3.2490e+01	3.1100e+05	2.4730e+06	0.0	1.00	0.0	3.4010e+06	1.0000e+00	1	4	4935
49-in-116	2	491162	2.1800e+00	9.0800e+04	6.7800e+04	0.0	3.00	1.0	2.8966e+05	1.0000e+00	1	3	4936
50-sn-116	0	501160	stable								0	0	5037
43-tc-117	0	431170	1.5176e 01	3.1730e+06	2.1900e+06	0.0	1.00	0.0	9.9071e+06	7.8750e-01	2	3	4385
							1.50	0.0	7.4790e+00	2.1250e-01			
44-ru-117	0	441170	3.4277e 01	2.6970e+06	2.0260e+06	0.0	1.00	0.0	8.5131e+06	9.7949e-01	2	3	4488
							1.50	0.0	3.1990e+00	2.0509e-02			
45-rh-117	0	451170	1.2174e+00	2.2890e+06	1.3590e+06	0.0	1.00	0.0	6.9989e+06	9.5180e-01	2	3	4567
							1.50	0.0	3.1150e+00	4.8201e-02			
46-pd-117	0	461170	5.0000e+00	1.9150e+06	1.0870e+06	0.0	1.00	0.0	5.5248e+06	5.0000e-01	2	2	4670
							1.00	1.0	5.5238e+06	5.0000e-01			
47-ag-117	0	471170	7.2800e+01	1.2210e+06	1.3000e+06	0.0	1.00	0.0	4.1700e+06	8.6000e-01	2	4	4755
							1.00	1.0	4.0140e+06	1.4000e 01			
47-ag-117	1	471171	5.1400e+00	1.4660e+06	8.1200e+05	0.0	1.00	0.0	4.1700e+06	8.5500e-01	2	4	4756
							1.00	1.0	4.0140e+06	1.4500e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
48-cd-117	0	481170	8.9640e+03	4.3000e+05	1.0800e+06	0.0	1.00	0.0	2.5250e+06	9.0000e-02	2	4	4858
							1.00	1.0	2.2100e+06	9.1000e-01			
48-cd-117	1	481171	1.2096e+04	2.0100e+05	2.0340e+06	0.0	1.00	0.0	2.6610e+06	9.8500e-01	2	2	4859
							1.00	1.0	2.3460e+06	1.5000e-02			
49-in-117	0	491170	2.6280e+01	2.6620e+05	6.8800e+05	0.0	1.00	0.0	1.4540e+06	9.9680e-01	2	4	4937
							1.00	1.0	1.1390e+06	3.2000e-03			
49-in-117	1	491171	6.9900e+03	4.3100e+05	9.1000e+04	0.0	1.00	0.0	1.7690e+06	5.2900e-01	2	4	4938
							3.00	0.0	3.1530e+05	4.7100e-01			
50-sn-117	0	501170	stable								0	0	5040
50-sn-117	1	501171	1.1750e+06	1.5600e+05	1.5750e+05	0.0	3.00	0.0	3.1458e+05	1.0000e+00	1	3	5041
43-tc-118	0	431180	8.1554e-02	3.8770e+06	3.8350e+06	0.0	1.00	0.0	1.2666e+07	1.0000e+00	1	2	4388
44-ru-118	0	441180	6.6235e-01	2.0940e+06	1.1180e+06	0.0	1.00	0.0	6.5481e+06	9.5891e-01	2	3	4491
							1.50	0.0	3.6890e+00	4.1092e-02			
45-rh-118	0	451180	3.1565e-01	3.0940e+06	2.4940e+06	0.0	1.00	0.0	9.9851e+06	9.7081e-01	2	3	4570
							1.50	0.0	3.4190e+00	2.9167e-02			
46-pd-118	0	461180	3.1000e+00	1.0440e+06	7.1540e+05	0.0	1.00	0.0	3.7899e+06	5.0000e-01	2	2	4673
							1.00	1.0	1.6622e+06	5.0000e-01			
47-ag-118	0	471180	3.7600e+00	2.4880e+06	1.6000e+06	0.0	1.00	0.0	7.1300e+06	1.0000e+00	1	4	4758
47-ag-118	1	471181	2.0000e+00	1.2510e+06	1.5000e+06	0.0	1.00	0.0	7.2580e+06	5.9000e-01	2	4	4759
							3.00	0.0	1.2714e+05	4.1000e-01			
48-cd-118	0	481180	3.0180e+03	2.3452e+05	2.9919e+04	0.0	1.00	0.0	7.4000e+05	1.0000e+00	1	2	4861
49-in-118	0	491180	5.0000e+00	1.7700e+06	7.8000e+04	0.0	1.00	0.0	4.2000e+06	1.0000e+00	1	4	4940
49-in-118	1	491181	2.6700e+02	5.6200e+05	2.7200e+06	0.0	1.00	0.0	4.2600e+06	1.0000e+00	1	4	4941
49-in-118	2	491182	8.5000e+00	1.0400e+05	7.5000e+04	0.0	1.00	0.0	4.4000e+06	1.4000e-02	2	4	4942
							3.00	1.0	1.3820e+05	9.8600e-01			
50-sn-118	0	501180	stable								0	0	5043
44-ru-119	0	441190	1.9495e-01	2.9200e+06	2.3110e+06	0.0	1.00	0.0	9.3071e+06	9.5642e-01	2	3	4494
							1.50	0.0	4.4590e+00	4.3580e-02			
45-rh-119	0	451190	4.6542e-01	2.4760e+06	1.5980e+06	0.0	1.00	0.0	8.0201e+06	9.1703e-01	2	3	4573
							1.50	0.0	4.3790e+00	8.2971e-02			
46-pd-119	0	461190	1.7587e+00	2.1110e+06	1.3370e+06	0.0	1.00	0.0	6.7761e+06	1.0000e+00	2	3	4676
							1.50	0.0	1.0000e-01	1.0000e-06			
47-ag-119	0	471190	2.1000e+00	1.5613e+06	1.7351e+06	0.0	1.00	0.0	5.3500e+06	7.8000e-01	3	5	4761
							1.00	1.0	5.2030e+06	2.2000e-01			
							1.50	0.0	7.0000e-02	1.0000e-06			
48-cd-119	0	481190	1.6140e+02	7.8100e+05	1.6890e+06	0.0	1.00	0.0	3.7900e+06	1.0000e-01	2	4	4864
							1.00	1.0	3.4790e+06	9.0000e-01			
48-cd-119	1	481191	1.3200e+02	6.6000e+05	2.1940e+06	0.0	1.00	0.0	3.9360e+06	1.0000e+00	1	2	4865
49-in-119	0	491190	1.4400e+02	6.0100e+05	7.6890e+05	0.0	1.00	0.0	2.3360e+06	9.9070e-01	2	4	4943
							1.00	1.0	3.2460e+06	9.3000e-03			
49-in-119	1	491191	1.0800e+03	9.7774e+05	1.2970e+05	0.0	1.00	0.0	2.6470e+06	9.7500e-01	2	4	4944
							3.00	0.0	3.1139e+05	2.5000e-02			
50-sn-119	0	501190	stable								0	0	5046
50-sn-119	1	501191	2.5315e+07	7.5900e+04	1.1430e+04	0.0	3.00	0.0	8.9530e+04	1.0000e+00	1	3	5047
44-ru-120	0	441200	3.5028e-01	2.1610e+06	1.2660e+06	0.0	1.00	0.0	7.3351e+06	9.2435e-01	2	3	4497
							1.50	0.0	5.0490e+00	7.5652e-02			
45-rh-120	0	451200	1.7246e-01	3.2610e+06	2.8370e+06	0.0	1.00	0.0	1.0779e+07	9.4072e-01	2	3	4576
							1.50	0.0	4.8490e+00	5.9282e-02			
46-pd-120	0	461200	3.9065e+00	1.3430e+06	8.1370e+05	0.0	1.00	0.0	4.8111e+06	9.9993e-01	2	3	4679
							1.50	0.0	4.1800e-01	6.8000e-05			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
47-ag-120	0	471200	1.1700e+00	2.2870e+06	2.8811e+06	0.0	1.00	0.0	8.2000e+06	9.9999e-01	2	3	4764
							1.50	0.0	1.0100e-01	1.5000e-05			
47-ag-120	1	471201	3.2000e-01	1.3708e+06	2.0859e+06	0.0	1.00	0.0	8.4010e+06	6.3000e-01	2	2	4765
							3.00	0.0	2.0100e+05	3.7000e-01			
48-cd-120	0	481200	5.0800e+01	6.0720e+05	1.2748e+05	0.0	1.00	0.0	1.8300e+06	1.0000e+00	1	2	4867
49-in-120	0	491200	3.0800e+00	2.1134e+06	6.4542e+05	0.0	1.00	0.0	5.3000e+06	1.0000e+00	1	4	4946
49-in-120	1	491201	4.6200e+01	1.0820e+06	2.8400e+06	0.0	1.00	0.0	5.3000e+06	1.0000e+00	1	4	4947
49-in-120	2	491202	4.7300e+01	7.6900e+05	3.3120e+06	0.0	1.00	0.0	5.3000e+06	1.0000e+00	1	4	4948
50-sn-120	0	501200	stable								0	0	5049
52-te-120	0	521200	stable								0	0	5225
45-rh-121	0	451210	2.4956e-01	2.6710e+06	1.8520e+06	0.0	1.00	0.0	8.8071e+06	8.6432e-01	2	3	4579
							1.50	0.0	6.0090e+00	1.3568e-01			
46-pd-121	0	461210	6.4367e-01	2.3350e+06	1.6180e+06	0.0	1.00	0.0	7.5701e+06	9.9728e-01	2	1	4682
							1.50	0.0	1.5360e+00	2.7220e-01			
47-ag-121	0	471210	8.0000e-01	1.6673e+06	2.0715e+06	0.0	1.00	0.0	6.4000e+06	9.9924e-01	2	3	4767
							1.50	0.0	1.3500e+06	7.6000e-04			
48-cd-121	0	481210	1.3500e+01	1.2957e+06	1.8837e+06	0.0	1.00	1.0	4.5760e+06	1.0000e+00	1	2	4870
48-cd-121	1	481211	4.8000e+00	1.3151e+06	2.3331e+06	0.0	1.00	0.0	4.8900e+06	1.0000e+00	1	2	4871
49-in-121	0	491210	2.3100e+01	9.8500e+05	9.2700e+05	0.0	1.00	0.0	3.3610e+06	8.8700e-01	2	4	4949
							1.00	1.0	3.3550e+06	1.1300e-01			
49-in-121	1	491211	2.3280e+02	1.5140e+06	6.4000e+04	0.0	1.00	0.0	3.6750e+06	9.8800e-01	2	4	4950
							3.00	0.0	3.1360e+05	1.2000e-02			
50-sn-121	0	501210	9.7416e+04	1.1520e+05	0.0	0.0	1.00	0.0	3.8890e+05	1.0000e+00	1	1	5052
50-sn-121	1	501211	1.7356e+09	3.4000e+04	5.0000e+03	0.0	1.00	0.0	3.9520e+05	2.2400e-01	2	4	5053
							3.00	0.0	6.2900e+03	7.7600e-01			
51-sb-121	0	511210	stable								0	0	5125
52-te-121	0	521210	1.4498e+06	8.6100e+03	5.7700e+05	0.0	2.00	0.0	1.0490e+06	1.0000e+00	1	4	5228
52-te-121	1	521211	1.3306e+07	7.4200e+04	2.1700e+05	0.0	2.00	0.0	1.3430e+06	1.1400e-01	2	4	5229
							3.00	0.0	2.9398e+05	8.8600e-01			
45-rh-122	0	451220	1.0715e-01	3.3700e+06	3.0700e+06	0.0	1.00	0.0	1.1763e+07	9.1699e-01	2	3	4582
							1.50	0.0	6.1190e+00	8.3012e-02			
46-pd-122	0	461220	1.4112e+00	1.6500e+06	9.2090e+05	0.0	1.00	0.0	5.5981e+06	9.9562e-01	2	3	4685
							1.50	0.0	1.5490e+00	4.3770e-03			
47-ag-122	0	471220	4.8000e-01	3.0480e+06	2.5110e+06	0.0	1.00	0.0	9.1100e+06	9.9814e-01	2	5	4770
							1.50	0.0	4.0600e+06	1.8600e-03			
47-ag-122	1	471221	1.5000e+00	2.8649e+06	2.8232e+06	0.0	1.00	0.0	9.1100e+06	1.0000e+00	1	2	4771
48-cd-122	0	481220	5.2400e+00	7.9681e+05	4.5565e+05	0.0	1.00	0.0	3.0000e+06	1.0000e+00	1	2	4873
49-in-122	0	491220	1.5000e+00	2.3630e+06	1.2420e+06	0.0	1.00	0.0	6.3700e+06	1.0000e+00	1	4	4952
49-in-122	1	491221	1.0300e+01	1.5450e+06	2.5200e+06	0.0	1.00	0.0	6.3700e+06	1.0000e+00	1	4	4953
49-in-122	2	491222	1.0800e+01	1.2640e+06	3.4040e+06	0.0	1.00	0.0	6.3700e+06	1.0000e+00	1	4	4954
50-sn-122	0	501220	stable								0	0	5055
51-sb-122	0	511220	2.3328e+05	5.6470e+05	4.3700e+05	0.0	1.00	0.0	1.9830e+06	9.7600e-01	2	5	5128
							2.00	0.0	1.6200e+06	2.4000e-02			
51-sb-122	1	511221	2.5260e+02	9.0000e+04	7.0000e+04	0.0	3.00	0.0	1.6356e+05	1.0000e+00	1	3	5129
52-te-122	0	521220	stable								0	0	5231
45-rh-123	0	451230	1.3429e-01	2.9030e+06	2.1470e+06	0.0	1.00	0.0	1.0069e+07	8.2893e-01	2	3	4585
							1.50	0.0	7.0290e+00	1.7107e-01			
46-pd-123	0	461230	3.0041e-01	2.4950e+06	1.8590e+06	0.0	1.00	0.0	8.5541e+06	9.9310e-01	2	3	4686
							1.50	0.0	2.3190e+00	6.8970e-03			
47-ag-123	0	471230	3.9000e-01	2.6400e+06	1.8590e+06	0.0	1.00	0.0	7.3144e+06	9.5400e-01	2	3	4773
							1.50	0.0	2.1600e+06	4.6000e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
48-cd-123	0	481230	8.9050e+00	1.8660e+06	1.0990e+06	0.0	1.00	0.0	5.4992e+06	7.7000e-01	2	2	4876
							1.00	1.0	5.1902e+06	2.3000e-01			
49-in-123	0	491230	5.9800e+00	1.3630e+06	1.1020e+06	0.0	1.00	0.0	4.4000e+06	3.2000e-02	2	4	4955
							1.00	1.0	4.3750e+06	9.6800e-01			
49-in-123	1	491231	4.7800e+01	2.0100e+06	6.6000e+04	0.0	1.00	1.0	4.6950e+06	1.0000e+00	1	4	4956
50-sn-123	0	501230	1.1163e+07	5.2030e+05	6.9000e+03	0.0	1.00	0.0	1.4027e+06	1.0000e+00	1	4	5058
50-sn-123	1	501231	2.4048e+03	4.7850e+05	1.4100e+05	0.0	1.00	0.0	1.4273e+06	1.0000e+00	1	4	5059
51-sb-123	0	511230	stable								0	0	5131
52-te-123	0	521230	3.9131e+20	3.9629e+03	1.2920e+04	0.0	2.00	0.0	5.1300e+04	1.0000e+00	1	3	5234
52-te-123	1	521231	1.0342e+07	9.8000e+04	1.4800e+05	0.0	3.00	0.0	2.4746e+05	1.0000e+00	1	3	5235
46-pd-124	0	461240	5.1398e-01	1.9810e+06	1.0720e+06	0.0	1.00	0.0	6.8601e+06	9.7301e-01	2	3	4691
							1.50	0.0	3.1390e+00	2.6986e-02			
47-ag-124	0	471240	2.4948e-01	3.0900e+06	2.6220e+06	0.0	1.00	0.0	1.0270e+07	9.7712e-01	2	3	4776
							1.50	0.0	3.3690e+00	2.2881e-02			
48-cd-124	0	481240	9.0000e-01	1.1411e+06	5.6755e+05	0.0	1.00	0.0	3.5272e+06	1.0000e+00	1	2	4879
49-in-124	0	491240	3.1700e+00	1.9690e+06	2.6950e+06	0.0	1.00	0.0	7.1800e+06	1.0000e+00	1	4	4958
49-in-124	1	491241	2.4000e+00	1.7090e+06	1.8000e+06	0.0	1.00	0.0	7.3700e+06	1.0000e+00	1	4	4959
50-sn-124	0	501240	stable								0	0	5061
51-sb-124	0	511240	5.2013e+06	3.9000e+05	1.8460e+06	0.0	1.00	0.0	2.9062e+06	1.0000e+00	1	4	5134
51-sb-124	1	511241	9.3000e+01	1.1400e+05	4.4300e+05	0.0	1.00	0.0	2.9171e+06	2.5000e-01	2	4	5135
							3.00	0.0	1.0863e+04	7.5000e-01			
51-sb-124	2	511242	1.2120e+03	2.4000e+04	2.4400e+02	0.0	3.00	1.0	3.6846e+04	1.0000e+00	1	3	5136
52-te-124	0	521240	stable								0	0	5237
54-xe-124	0	541240	stable								0	0	5425
46-pd-125	0	461250	1.6604e-01	2.6710e+06	2.0920e+06	0.0	1.00	0.0	9.5601e+06	9.7734e-01	2	3	4694
							1.50	0.0	3.6390e+00	2.2664e-02			
47-ag-125	0	471250	3.9351e-01	2.5910e+06	1.8150e+06	0.0	1.00	0.0	8.5764e+06	9.3683e-01	2	3	4779
							1.50	0.0	4.1090e+00	6.3167e-02			
48-cd-125	0	481250	1.3480e+00	2.0610e+06	1.3480e+06	0.0	1.00	0.0	6.4832e+06	7.0000e-01	2	2	4882
							1.00	1.0	6.4822e+06	3.0000e-01			
49-in-125	0	491250	2.3300e+00	1.7970e+06	1.2930e+06	0.0	1.00	0.0	5.4800e+06	1.1200e-01	2	4	4961
							1.00	1.0	5.4520e+06	8.8800e-01			
49-in-125	1	491251	1.2200e+01	2.0970e+06	6.7203e+05	0.0	1.00	1.0	5.6320e+06	1.0000e+00	1	4	4962
50-sn-125	0	501250	8.3290e+05	8.1100e+05	3.1200e+05	0.0	1.00	0.0	2.3600e+06	1.0000e+00	1	4	5064
50-sn-125	1	501251	5.7120e+02	8.0660e+05	3.5500e+05	0.0	1.00	0.0	2.3880e+06	1.0000e+00	1	4	5065
51-sb-125	0	511250	8.6150e+07	9.9300e+04	4.3400e+05	0.0	1.00	0.0	7.6670e+05	7.7000e-01	2	4	5137
							1.00	1.0	6.2190e+05	2.3000e-01			
52-te-125	0	521250	stable								0	0	5240
52-te-125	1	521251	5.0112e+06	1.0640e+05	3.5600e+04	0.0	3.00	0.0	1.4477e+05	1.0000e+00	1	3	5241
53-i-125	0	531250	5.1961e+06	1.6700e+04	4.2100e+04	0.0	2.00	0.0	1.7810e+05	1.0000e+00	1	4	5319
54-xe-125	0	541250	6.0840e+04	3.2400e+04	2.6800e+05	0.0	2.00	0.0	1.6550e+06	1.0000e+00	1	4	5428
54-xe-125	1	541251	5.7000e+01	1.3100e+05	1.1590e+05	0.0	3.00	0.0	2.5260e+05	1.0000e+00	1	3	5429
46-pd-126	0	461260	2.5202e-01	2.3590e+06	1.2760e+06	0.0	1.00	0.0	7.9501e+06	9.4969e-01	2	3	4697
							1.50	0.0	4.3590e+00	5.0310e-02			
47-ag-126	0	471260	1.3984e-01	2.9960e+06	3.4180e+06	0.0	1.00	0.0	1.1276e+07	9.5162e-01	2	3	4782
							1.50	0.0	4.4990e+00	4.6380e-02			
48-cd-126	0	481260	5.0600e-01	1.4905e+06	7.2089e+05	0.0	1.00	1.0	4.4400e+06	1.0000e+00	1	2	4885
49-in-126	0	491260	1.4500e+00	1.8930e+06	4.3100e+06	0.0	1.00	0.0	8.1200e+06	1.0000e+00	1	4	4964
49-in-126	1	491261	1.5000e+00	2.4340e+06	2.8120e+06	0.0	1.00	0.0	8.2700e+06	1.0000e+00	1	4	4965
50-sn-126	0	501260	3.1557e+12	1.3247e+05	1.3055e+05	0.0	1.00	1.0	3.6000e+05	3.3000e-01	2	4	5067
							1.00	2.0	3.3800e+05	6.7000e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	PRVT	RFS	Q	BRANCHING	NDK	NSP	MAT
51-sb-126	0	511260	1.0714e+06	3.6605e+05	2.7530e+06	0.0	1.00	0.0	3.6700e+06	1.0000e+00	1	4	5140
51-sb-126	1	511261	1.1400e+03	6.3200e+05	1.5540e+06	0.0	1.00	0.0	3.6880e+06	8.6000e-01	2	4	5141
							3.00	0.0	1.7700e+04	1.4000e-01			
51-sb-126	2	511262	1.1000e+01	2.1100e+04	2.8400e+02	0.0	3.00	1.0	4.0400e+04	1.0000e+00	1	3	5142
52-te-126	0	521260	stable								0	0	5243
54-xe-126	0	541260	stable								0	0	5431
47-ag-127	0	471270	1.7527e-01	2.8870e+06	2.1810e+06	0.0	1.00	0.0	9.6664e+06	9.0117e-01	2	3	4785
							1.50	0.0	5.2990e+00	9.8629e-02			
48-cd-127	0	481270	5.7187e-01	2.0710e+06	2.0010e+06	0.0	1.00	0.0	7.4892e+06	4.9995e-01	3	3	4886
							1.00	1.0	7.4882e+06	4.9995e-01			
							1.50	0.0	5.4200e-01	1.0100e-04			
49-in-127	0	491270	1.1500e+00	2.1520e+06	1.7660e+06	0.0	1.00	0.0	6.4900e+06	1.5298e-01	3	3	4967
							1.00	1.0	6.4850e+06	8.4042e-01			
							1.50	0.0	9.3900e-01	6.6000e-03			
49-in-127	1	491271	3.7600e+00	2.1910e+06	1.7270e+06	0.0	1.00	1.0	6.6450e+06	9.9350e-01	2	5	4968
							1.50	0.0	1.0900e+06	6.5000e-03			
50-sn-127	0	501270	7.5600e+03	5.1300e+05	1.9000e+06	0.0	1.00	0.0	3.2010e+06	1.0000e+00	1	4	5070
50-sn-127	1	501271	2.4780e+04	8.9031e+05	8.8645e+05	0.0	1.00	0.0	3.2060e+06	1.0000e+00	1	2	5071
51-sb-127	0	511270	3.3264e+05	3.1400e+05	6.6400e+05	0.0	1.00	0.0	1.5810e+06	8.2500e-01	2	4	5143
							1.00	1.0	1.4930e+06	1.7500e-01			
52-te-127	0	521270	3.3660e+04	2.2430e+05	4.9000e+03	0.0	1.00	0.0	6.9700e+05	1.0000e+00	1	4	5246
52-te-127	1	521271	9.4176e+06	7.9200e+04	1.1100e+04	0.0	1.00	0.0	7.8500e+05	2.4000e-02	2	4	5247
							3.00	0.0	8.8260e+04	9.7600e-01			
53-i-127	0	531270	stable								0	0	5325
54-xe-127	0	541270	3.1450e+06	3.0600e+04	2.8000e+05	0.0	2.00	0.0	6.6000e+05	1.0000e+00	1	4	5434
54-xe-127	1	541271	6.9200e+01	1.2500e+05	1.6800e+05	0.0	3.00	0.0	2.9710e+05	1.0000e+00	1	3	5435
47-ag-128	0	471280	9.4279e-02	3.1990e+06	3.6990e+06	0.0	1.00	0.0	1.2058e+07	9.3114e-01	2	3	4788
							1.50	0.0	5.1590e+00	6.8861e-02			
48-cd-128	0	481280	1.0511e+00	1.8310e+06	1.0030e+06	0.0	1.00	0.0	5.8792e+06	9.9890e-01	2	3	4891
							1.50	0.0	1.8000e+05	1.1000e-03			
49-in-128	0	491280	9.0000e-01	2.6300e+06	3.1000e+06	0.0	1.00	0.0	9.3100e+06	9.9957e-01	2	3	4970
							1.50	0.0	1.4300e+06	4.3000e-04			
49-in-128	1	491281	9.0000e-01	2.4849e+06	1.5730e+06	0.0	1.00	0.0	9.3900e+06	1.2000e-01	2	4	4971
							1.00	1.0	7.2980e+06	8.8000e-01			
50-sn-128	0	501280	3.5460e-03	2.5000e+05	6.0300e+05	0.0	1.00	1.0	1.2900e+06	1.0000e+00	1	4	5073
50-sn-128	1	501281	6.5000e+00	7.8700e+04	2.0114e+06	0.0	3.00	0.0	2.0915e+06	1.0000e+00	1	3	5074
51-sb-128	0	511280	3.2436e+04	4.8800e+05	3.0900e+06	0.0	1.00	0.0	4.3900e+06	1.0000e+00	1	4	5146
51-sb-128	1	511281	6.2400e+02	9.5700e+05	1.8970e+06	0.0	1.00	0.0	4.3900e+06	9.6400e-01	2	4	5147
							3.00	0.0	0.0	3.6000e-02			
52-te-128	0	521280	stable								0	0	5249
53-i-128	0	531280	1.4994e+03	7.3900e+05	9.0000e+04	0.0	1.00	0.0	2.1230e+06	9.3100e-01	2	5	5328
							2.00	0.0	1.2550e+06	6.9000e-02			
54-xe-128	0	541280	stable								0	0	5437
48-cd-129	0	481290	2.9872e-01	2.1040e+06	2.2280e+06	0.0	1.00	0.0	8.2712e+06	9.9848e-01	2	3	4894
							1.50	0.0	1.3280e+00	1.5190e-03			
49-in-129	0	491290	5.9000e-01	2.5010e+06	2.1700e+06	0.0	1.00	0.0	7.6000e+06	8.9400e-01	3	5	4973
							1.00	1.0	7.5650e+06	1.0600e-01			
							1.50	0.0	2.2100e+06	1.6000e-03			
49-in-129	1	491291	1.2600e+00	2.1550e+06	2.9470e+06	0.0	1.00	0.0	7.8000e+06	9.7500e-01	2	5	4974
							1.50	0.0	2.4100e+06	2.5000e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	BTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
50-sn-129	0	501290	1.2960e+02	1.2676e+06	1.4457e+06	0.0	1.00	0.0	4.0000e+06	1.0000e+00	1	2	5076
50-sn-129	1	501291	4.0200e+02	8.0818e+05	2.0908e+06	0.0	1.00	0.0	4.0350e+06	1.0000e+00	2	4	5077
							3.00	0.0	3.5200e+04	2.0000e-06			
51-sb-129	0	511290	1.5840e+04	1.9100e+05	1.3560e+06	0.0	1.00	0.0	2.3770e+06	8.2000e-01	2	4	5149
							1.00	1.0	2.2720e+06	1.8000e-01			
52-te-129	0	521290	4.1760e+03	5.3800e+05	6.2000e+04	0.0	1.00	0.0	1.4980e+06	1.0000e+00	1	4	5252
52-te-129	1	521291	2.9030e+06	2.7000e+05	3.7000e+04	0.0	1.00	0.0	1.6040e+06	3.6000e-01	2	4	5253
							1.00	0.0	1.0550e+05	6.4000e-01			
53- i-129	0	531290	4.9544e+14	5.4300e+04	2.4600e+04	0.0	1.00	0.0	1.9200e+05	1.0000e+00	1	4	5331
54-xe-129	0	541290	stable								0	0	5440
54-xe-129	1	541291	7.6810e+05	1.7600e+05	5.0700e+04	0.0	3.00	0.0	2.3614e+05	1.0000e+00	1	3	5441
48-cd-130	0	481300	4.7675e-01	2.2580e+06	1.2250e+06	0.0	1.00	0.0	6.8262e+06	9.9032e-01	2	3	4897
							1.50	0.0	2.2660e+00	9.6760e-03			
49-in-130	0	491300	3.2000e-01	2.8900e+06	1.2000e+06	0.0	1.00	0.0	1.0200e+07	7.0000e-01	3	5	4976
							1.00	1.0	8.2530e+06	2.9000e-01			
							1.50	0.0	2.5700e+06	9.1000e-03			
49-in-130	1	491301	5.5000e-01	2.7700e+06	2.2600e+06	0.0	1.00	1.0	8.3030e+06	9.9140e-01	2	5	4977
							1.50	0.0	2.6200e+06	8.6000e-03			
49-in-130	2	491302	5.5000e-01	3.1000e+06	3.3000e+06	0.0	1.00	0.0	1.0600e+07	8.2000e-01	3	4	4978
							1.00	1.0	8.6530e+06	1.6000e-01			
							1.50	0.0	2.9700e+06	8.6000e-03			
50-sn-130	0	501300	2.2320e+02	4.6900e+05	9.5500e+05	0.0	1.00	1.0	2.1700e+06	1.0000e+00	1	4	5079
50-sn-130	1	501301	1.0200e+02	1.2086e+06	1.0521e+06	0.0	1.00	0.0	4.1170e+06	1.0000e+00	1	4	5080
51-sb-130	0	511300	2.3700e+03	6.9700e+05	3.2720e+06	0.0	1.00	0.0	4.9900e+06	1.0000e+00	1	4	5152
51-sb-130	1	511301	3.7800e+02	9.8000e+05	2.7080e+06	0.0	1.00	0.0	4.9900e+06	1.0000e+00	1	4	5153
52-te-130	0	521300	stable								0	0	5255
53- i-130	0	531300	5.4496e+04	2.9000e+05	2.1380e+06	0.0	1.00	0.0	2.9840e+06	1.0000e+00	1	4	5334
53- i-130	1	531301	5.4000e+02	1.7800e+05	1.1000e+05	0.0	1.00	0.0	3.0240e+06	1.6000e-01	2	4	5335
							3.00	0.0	3.9952e+04	8.4000e-01			
54-xe-130	0	541300	stable								0	0	5443
48-cd-131	0	481310	1.0617e-01	3.5180e+06	3.2670e+06	0.0	1.00	0.0	1.1111e+07	9.5127e-01	2	1	4900
							1.50	0.0	5.4330e+00	4.8728e-02			
49-in-131	0	491310	2.7000e-01	2.7070e+06	2.0170e+06	0.0	1.00	0.0	8.9300e+06	9.3252e-01	3	3	4979
							1.00	1.0	8.6880e+06	4.9080e-02			
							1.50	0.0	3.5700e+00	1.8400e-02			
49-in-131	1	491311	3.5000e-01	3.0126e+06	2.2012e+06	0.0	1.00	0.0	9.2300e+06	9.8290e-01	2	1	4980
							1.50	0.0	1.6000e+06	1.7100e-02			
50-sn-131	0	501310	3.9000e+01	8.8000e+05	2.3600e+06	0.0	1.00	0.0	4.6500e+06	1.0000e+00	1	2	5082
50-sn-131	1	501311	6.1200e+01	1.2459e+06	1.8924e+06	0.0	1.00	0.0	4.8920e+06	1.0000e+00	1	2	5083
51-sb-131	0	511310	1.3800e+03	5.8200e+05	1.7500e+06	0.0	1.00	0.0	1.1900e+06	9.3200e-01	2	2	5155
							1.00	1.0	3.0080e+06	6.8000e-02			
52-te-131	0	521310	1.5000e+03	7.2070e+05	3.2100e+05	0.0	1.00	0.0	2.2490e+06	1.0000e+00	1	4	5258
52-te-131	1	521311	1.0800e+05	1.9100e+05	1.4210e+06	0.0	1.00	0.0	2.4310e+06	7.7800e-01	2	4	5259
							3.00	0.0	1.8225e+05	2.2200e-01			
53- i-131	0	531310	6.9466e+05	1.9150e+05	3.8200e+05	0.0	1.00	0.0	9.7080e+05	9.8914e-01	2	4	5337
							1.00	1.0	8.0690e+05	1.0860e-02			
54-xe-131	0	541310	stable								0	0	5446
54-xe-131	1	541311	1.0282e+06	1.4200e+05	2.0100e+04	0.0	3.00	0.0	1.6393e+05	1.0000e+00	1	3	5447
48-cd-132	0	481320	1.3572e-01	3.4050e+06	1.8970e+06	0.0	1.00	0.0	9.6112e+06	7.9440e-01	2	3	4903
							1.50	0.0	8.9270e+00	2.0560e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
49-In-112	0	491120	1.8600e-01	1.1200e+06	5.0000e+06	0.0	1	0.0 0.0	1.3600e+07	9.5000e-01	2	5	4982
							1	50 0.0	6.2900e+06	5.0000e-02			
50-Sn-112	0	501120	4.0000e+01	7.2900e+05	1.2920e+06	0.0	1	0.0 1.0	3.1200e+06	1.0000e+00	1	4	5085
51-Sb-112	0	511120	2.5200e+02	1.2940e+06	2.5790e+06	0.0	1	0.0 0.0	5.4900e+06	1.0000e+00	1	4	5150
51-Sb-112	1	511121	1.6000e+02	1.2580e+06	2.6020e+06	0.0	1	0.0 0.0	5.4900e+06	1.0000e+00	1	4	5151
52-Te-112	0	521120	2.0152e+05	1.0040e+05	2.1540e+05	0.0	1	0.0 0.0	4.9300e+05	1.0000e+00	1	4	5261
53-I-112	0	531120	8.2224e+03	5.0800e+05	2.2700e+06	0.0	1	0.0 0.0	5.5800e+06	1.0000e+00	1	4	5140
53-I-112	1	531121	5.0160e+01	1.3800e+05	1.1900e+05	0.0	1	0.0 0.0	3.7000e+06	1.0200e-01	2	4	5141
								1.00 0.0	1.2000e+06	8.9800e-01			
54-Xe-112	0	541120	stable								0	0	5449
49-In-113	0	491130	1.1161e-01	1.7660e+06	1.4140e+06	0.0	1	0.0 0.0	1.1252e+07	6.8144e-01	2	1	4985
							1	50 0.0	5.8240e+06	1.1856e-01			
50-Sn-113	0	501130	1.4400e+00	2.3900e+06	2.0630e+06	0.0	1	0.0 0.0	7.8100e+06	9.9740e-01	2	3	5088
							1	50 0.0	1.6200e+06	2.5400e-01			
51-Sb-113	0	511130	1.5000e+02	6.5600e+05	2.0400e+06	0.0	1	0.0 0.0	3.9500e+06	8.0000e-01	2	2	5161
							1	00 1.0	3.6160e+06	1.7000e-01			
52-Te-113	0	521130	7.5000e+02	6.7500e+05	1.2000e+06	0.0	1	0.0 0.0	2.9200e+06	1.0000e+00	1	4	5264
52-Te-113	1	521131	3.1240e+01	1.4700e+05	1.6810e+06	0.0	1	0.0 0.0	3.2540e+06	7.2300e-01	1	4	5265
							1	00 1.0	1.6200e+06	1.0200e-01			
							3	00 0.0	3.3426e+05	1.7000e-01			
53-I-113	0	531130	7.4880e+04	4.0900e+05	6.1200e+05	0.0	1	0.0 0.0	1.7686e+06	9.7120e-01	2	4	5143
							1	00 1.0	1.5270e+06	2.8800e-02			
53-I-113	1	531131	9.0000e+00	5.4300e+04	1.5784e+06	0.0	1	0.0	1.6142e+06	1.0000e+00	1	3	5144
54-Xe-113	0	541130	4.5300e+05	1.3640e+05	4.7100e+04	0.0	1	00 0.0	4.2700e+05	1.0000e+00	1	4	5472
54-Xe-113	1	541131	1.8922e+05	1.8500e+05	4.0400e+04	0.0	3	00 0.0	2.1322e+05	1.0000e+00	1	1	5451
55-Cs-113	0	551130	stable								0	0	5525
49-In-114	0	491140	8.0557e-02	3.9920e+06	4.6990e+06	0.0	1	0.0 0.0	1.2720e+07	6.6244e-01	2	3	4988
							1	50 0.0	1.0899e+01	3.3754e-01			
50-Sn-114	0	501140	1.0400e+00	2.2950e+06	1.2480e+06	0.0	1	0.0 0.0	5.7120e+06	8.3000e-01	2	1	5091
							1	50 0.0	2.1600e+06	1.7000e-01			
51-Sb-114	0	511140	8.5000e-01	2.7810e+06	2.2560e+06	0.0	1	0.0 0.0	8.4100e+06	9.9896e-01	2	3	5164
							1	50 0.0	9.1000e-01	1.0400e-03			
51-Sb-114	1	511141	1.0410e+01	2.7620e+06	2.3800e+06	0.0	1	0.0 0.0	8.4100e+06	9.9812e-01	2	4	5165
							1	50 0.0	9.1000e+05	1.1800e-03			
52-Te-114	0	521140	2.5000e+01	2.3700e+05	8.5800e+05	0.0	1	0.0 0.0	1.5600e+06	1.0000e+00	1	4	5267
53-I-114	0	531140	3.1560e+03	6.1700e+05	2.6100e+06	0.0	1	0.0 0.0	4.1500e+06	1.0000e+00	1	4	5146
53-I-114	1	531141	2.2140e+02	8.4000e+04	2.4100e+05	0.0	1	0.0 1.0	2.5010e+06	2.3000e-02	2	4	5147
							3	00 0.0	1.1630e+05	9.7700e-01			
54-Xe-114	0	541140	stable								0	0	5455
54-Xe-114	1	541141	2.9000e-01	6.7000e+04	1.8980e+06	0.0	3	00 0.0	1.9655e+06	1.0000e+00	1	3	5456
55-Cs-114	0	551140	6.5070e+07	1.6500e+05	1.5550e+06	0.0	1	0.0 0.0	2.0585e+06	3.0000e-00	2	5	5528
							2	00 0.0	1.2120e+06	3.0000e-06			
55-Cs-114	1	551141	1.0476e+04	1.0470e+05	2.6700e+04	0.0	3	00 0.0	1.3875e+05	1.0000e+00	1	3	5529
56-Ba-114	0	561140	stable								0	0	5617
50-Sn-115	0	501150	4.1777e-01	2.5550e+06	2.4820e+06	0.0	1	0.0 0.0	7.2000e+06	9.1400e-01	2	3	5094
							1	50 0.0	3.0100e+06	8.6000e-02			
51-Sb-115	0	511150	1.7100e+00	2.2900e+06	1.6000e+06	0.0	1	0.0 0.0	7.5400e+06	7.9800e-01	2	1	5167
							1	50 0.0	4.0100e+06	2.0200e-01			
52-Te-115	0	521150	1.9000e+01	2.0842e+06	1.4779e+06	0.0	1	0.0 0.0	5.9600e+06	1.0000e+00	1	2	5270
53-I-115	0	531150	2.1652e+04	1.5900e+05	1.5920e+06	0.0	1	0.0 0.0	2.6960e+06	8.4300e-01	2	4	5149
								1.00 1.0	2.1640e+06	1.5700e-01			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDX	NSP	MAT
54 xe 135	0	541350	3.2904e+04	3.1400e+05	2.4880e+05	0.0	1	0.0	1.1600e+06	1.0000e+00	1	4	5458
54 xe 135	1	541351	9.1740e+02	[illegible]	4.2080e+05	0.0	1	0.0	1.6[illegible]e+06	4 [illegible] 05	2	4	5459
							1	0.0	5.2[illegible]e+05	[illegible] 01			
55 cs 135	0	551350	7.2581e+11	5.6400e+04	0.0	0.0	1	0.0	2.0[illegible]e+05	1.0000e+00	1	1	5511
55 cs 135	1	551351	3.1900e+01	[illegible]	[illegible]	1	3	0.0	1.6129e+06	1.0000e+00	1	3	5512
56 ba 135	0	561350	stable								0	0	5640
56 ba 135	1	561351	1.0312e+05	2.0000e+05	5.9400e+04	0.0	3	0.0	2.6822e+05	1.0000e+00	1	3	5641
50 sn 136	0	501360	7.1710e 01	2.6140e+06	1.4270e+06	0.0	1	0.0	5.0920e+06	8.1600e 01	2	3	5097
							1	5.0	5.1[illegible]e+00	1.6[illegible] 01			
51 sb 136	0	511360	8.2000e 01	2.9[illegible]e+06	2.6[illegible]e+06	0.0	1	0.0	8.4110e+06	7.7000e 01	2	3	5170
							1	5.0	4.1[illegible]e+06	2.1000e 01			
52 te 136	0	521360	1.7500e+01	1.2[illegible]e+06	2.0000e+06	0.0	1	0.0	5.[illegible]e+06	9.9[illegible] 01	2	5	5273
							1	5.0	1.1[illegible]e+06	9.0000e 01			
53 I 136	0	531360	8.3400e+01	1.9[illegible]e+06	2.3590e+06	0.0	1	0.0	6.1[illegible]e+06	1.0000e+00	1	4	5152
53 I 136	1	531361	4.6[illegible]e+01	2.2110e+06	2.5900e+06	0.0	1	0.0	7.5700e+06	1.0000e+00	1	4	5154
54 xe 136	0	541360	stable								0	0	5461
55 cs 136	0	551360	1.1370e+01	1.3170e+05	1.9170e+06	0.0	1	0.0	2.5480e+06	8.8000e 01	2	4	5514
							1	0.0	5.1800e+05	1.1200e 01			
55 cs 136	1	551361	1.9000e+01	7.9180e+04	5.5000e+01	0.0	3	0.0	5.0000e+04	1.0000e+00	1	0	5515
56 ba 136	0	561360	stable								0	0	5643
56 ba 136	1	561361	3.0840e 01	1.0280e+05	1.9270e+06	0.0	3	0.0	2.0305e+06	1.0000e+00	1	1	5644
51 sb 137	0	511370	4.7700e 01	2.5730e+06	2.1030e+06	0.0	1	0.0	7.1010e+06	8.0000e 01	2	3	5171
							1	5.0	4.9600e+06	2.0000e 01			
52 te 137	0	521370	3.5000e+00	2.1730e+06	1.6030e+06	0.0	1	0.0	5.7400e+06	9.7000e 01	2	3	5276
							1	5.0	3.4000e+05	2.2000e 02			
53 I 137	0	531370	2.4500e+01	2.0300e+06	1.2300e+06	0.0	1	0.0	5.8800e+06	9.1100e 01	2	3	5155
							1	5.0	1.8600e+06	6.7000e 02			
54 xe 137	0	541370	2.2908e+02	1.6970e+06	1.9100e+05	0.0	1	0.0	4.1770e+06	1.0000e+00	1	4	5464
55 cs 137	0	551370	9.4671e+08	1.1754e+05	0.0	0.0	1	0.0	1.1751e+06	9.4700e 02	2	1	5517
							1	1.0	5.1340e+05	9.4410e 01			
56 ba 137	0	561370	stable								0	0	5646
56 ba 137	1	561371	1.5312e+02	6.3800e+04	5.9900e+05	0.0	3	0.0	6.6166e+05	1.0000e+00	1	1	5647
51 sb 138	0	511380	1.7336e 01	3.0300e+06	3.5780e+06	0.0	1	0.0	9.5310e+06	7.7900e 01	2	3	5176
							1	5.0	7.2390e+00	2.2011e 01			
52 te 138	0	521380	1.4000e+00	1.9460e+06	1.0600e+06	0.0	1	0.0	6.0000e+06	9.1700e 01	2	3	5279
							1	5.0	2.1200e+06	8.3000e 02			
53 I 138	0	531380	6.4900e+00	2.1279e+06	2.5792e+06	0.0	1	0.0	7.8200e+06	9.4640e 01	2	5	5358
							1	5.0	2.0000e+06	5.3600e 02			
54 xe 138	0	541380	8.4400e+02	6.4700e+05	1.1260e+06	0.0	1	0.0	2.7700e+06	1.0000e+00	1	4	5467
55 cs 138	0	551380	1.9120e+01	1.2430e+06	2.1610e+06	0.0	1	0.0	5.3770e+06	1.0000e+00	1	4	5540
55 cs 138	1	551381	1.7430e+02	2.8320e+05	7.0660e+05	0.0	1	0.0	5.4570e+06	1.0000e 01	2	4	5541
							3	0.0	7.9900e+04	8.1000e 01			
56 ba 138	0	561380	stable								0	0	5649
57 la 138	0	571380	1.3100e+11	2.8800e+04	1.2110e+06	0.0	1	0.0	1.0440e+06	1.1800e 01	2	5	5725
							2	0.0	1.7450e+06	8.6400e 01			
51 sb 139	0	511390	2.1781e 01	2.9080e+06	2.6840e+06	0.0	1	0.0	8.4110e+06	5.8307e 01	2	3	5179
							1	5.0	7.9190e+00	4.1693e 01			
52 te 139	0	521390	5.8002e 01	2.3760e+06	2.1510e+06	0.0	1	0.0	6.9000e+06	9.1700e 01	2	1	5282
							1	5.0	2.4000e+06	8.3000e 02			
53 I 139	0	531390	2.3000e+00	2.4300e+06	1.4000e+06	0.0	1	0.0	6.4200e+06	9.0400e 01	2	3	5161
							1	5.0	1.1800e+06	9.6000e 02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
54-xe-139	0	541390	1.9680e+01	1.7720e+06	8.1000e+05	0.0	1.00	0.0	5.0200e+06	1.0000e+00	1	4	5470
55-cs-139	0	551390	5.5620e+02	1.6500e+06	1.6600e+05	0.0	1.00	0.0	4.2160e+06	1.0000e+00	1	2	5543
56-ba-139	0	561390	5.0778e+01	8.9900e+05	4.1500e+04	0.0	1.00	0.0	2.4100e+06	1.0000e+00	1	4	5652
57-la-139	0	571390	stable								0	0	5728
52-te-140	0	521400	8.9300e-01	2.3160e+06	1.2750e+06	0.0	1.00	0.0	5.0000e+06	8.4504e-01	2	3	5285
							1.50	0.0	5.1200e+00	1.5494e-01			
53-i-140	0	531400	8.6000e-01	2.7620e+06	2.1200e+06	0.0	1.00	0.0	8.9600e+06	9.0700e-01	2	3	5364
							1.50	0.0	0.0	9.3000e-02			
54-xe-140	0	541400	1.3600e+01	1.0581e+06	1.4675e+06	0.0	1.00	0.0	4.0600e+06	1.0000e+00	1	4	5473
55-cs-140	0	551400	6.3700e+01	1.7518e+06	2.2161e+06	0.0	1.00	0.0	6.2180e+06	1.0000e+00	1	4	5546
56-ba-140	0	561400	1.1018e+06	3.1100e+05	1.8200e+05	0.0	1.00	0.0	1.0340e+06	1.0000e+00	1	4	5655
57-la-140	0	571400	1.4499e+05	5.3300e+05	2.2090e+06	0.0	1.00	0.0	3.7610e+06	1.0000e+00	1	4	5711
58-ce-140	0	581400	stable								0	0	5837
52-te-141	0	521410	2.7262e-01	2.6580e+06	2.5900e+06	0.0	1.00	0.0	8.0260e+06	8.9528e-01	2	1	5288
							1.50	0.0	5.5590e+00	1.0472e-01			
53-i-141	0	531410	4.6000e-01	2.4250e+06	1.7750e+06	0.0	1.00	0.0	6.9830e+06	6.1000e-01	2	3	5367
							1.50	0.0	3.9400e+06	1.9000e-01			
54-xe-141	0	541410	1.7100e+00	2.0310e+06	1.5700e+06	0.0	1.00	0.0	6.1500e+06	9.9957e-01	2	5	5476
							1.50	0.0	6.4000e+05	4.1000e-04			
55-cs-141	0	551410	2.4940e+01	1.6040e+06	1.1400e+05	0.0	1.00	0.0	5.2560e+06	9.9864e-01	2	5	5549
							1.50	0.0	7.0800e+05	1.6000e-04			
56-ba-141	0	561410	1.0962e+03	9.1400e+05	8.1600e+05	0.0	1.00	0.0	1.2300e+06	1.0000e+00	1	4	5658
57-la-141	0	571410	1.4112e+04	9.5113e+05	4.2467e+04	0.0	1.00	0.0	2.4460e+06	1.0000e+00	1	2	5734
58-ce-141	0	581410	2.8081e+06	1.7030e+05	7.6600e+04	0.0	1.00	0.0	5.8110e+05	1.0000e+00	1	4	5840
59-pr-141	0	591410	stable								0	0	5925
52-te-142	0	521420	5.9007e-01	2.5110e+06	1.1750e+06	0.0	1.00	0.0	6.1000e+06	8.4921e-01	2	3	5291
							1.50	0.0	5.7490e+00	1.5079e-01			
53-i-142	0	531420	2.0000e-01	2.6920e+06	3.2030e+06	0.0	1.00	0.0	9.2010e+06	8.4000e-01	2	1	5370
							1.50	0.0	4.4700e+06	1.6000e-01			
54-xe-142	0	541420	1.2200e+00	1.4041e+06	1.5764e+06	0.0	1.00	0.0	5.0400e+06	9.9590e-01	2	1	5479
							1.50	0.0	8.9000e+05	4.1000e-03			
55-cs-142	0	551420	1.7000e+00	2.4490e+06	1.7870e+06	0.0	1.00	0.0	7.3170e+06	9.9903e-01	2	5	5552
							1.50	0.0	1.1100e+06	9.7000e-04			
56-ba-142	0	561420	6.1600e+02	1.7100e+05	1.0760e+06	0.0	1.00	0.0	2.1200e+06	1.0000e+00	1	4	5661
57-la-142	0	571420	5.4660e+03	8.6600e+05	2.1640e+06	0.0	1.00	0.0	4.5170e+06	1.0000e+00	1	4	5737
58-ce-142	0	581420	1.1113e+18	0.0	0.0	1.4445e+06	4.00	0.0	1.4134e+06	1.0000e+00	1	0	5843
59-pr-142	0	591420	6.8832e+04	8.0960e+05	5.8000e+04	0.0	1.00	0.0	2.1604e+06	9.7004e-01	2	5	5928
							2.00	0.0	7.4270e+05	1.6400e-04			
59-pr-142	1	591421	8.7600e+02	1.5500e+01	1.8415e-07	0.0	3.00	0.0	3.6030e+01	1.0000e+00	1	2	5929
60-nd-142	0	601420	stable								0	0	6025
53-i-143	0	531430	4.0109e-01	2.1750e+06	2.2520e+06	0.0	1.00	0.0	7.2830e+06	8.2000e-01	2	3	5371
							1.50	0.0	4.7200e+06	1.8000e-01			
54-xe-141	0	541410	9.6000e-01	2.0500e+06	2.0800e+06	0.0	1.00	0.0	7.1260e+06	9.8800e-01	2	3	5482
							1.50	0.0	1.0400e+06	1.2000e-02			
54-xe-141	1	541411	1.0000e-01	2.2250e+06	1.7200e+06	0.0	1.00	0.0	7.1260e+06	1.0000e+00	1	2	5483
55-cs-141	0	551410	1.7800e+00	1.9500e+06	1.2400e+06	0.0	1.00	0.0	6.2800e+06	9.8100e-01	2	5	5555
							1.50	0.0	2.0400e+06	1.6100e-02			
56-ba-141	0	561410	1.4500e+01	1.1960e+06	9.8000e+05	0.0	1.00	0.0	4.2500e+06	1.0000e+00	1	4	5664
57-la-141	0	571410	8.4840e+02	1.2500e+06	1.1000e+05	0.0	1.00	0.0	3.2900e+06	1.0000e+00	1	2	5740
58-ce-141	0	581410	1.1000e+05	4.1000e+05	2.7900e+05	0.0	1.00	0.0	1.4616e+06	1.0000e+00	1	4	5846

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
59-pr-143	0	591430	1.1724e+06	3.1530e+05	9.0000e-01	0.0	1.00	0.0	9.1450e+05	1.0000e+00	1	4	5911
60-nd-143	0	601430	stable								0	0	6028
53-i-144	0	531440	1.4597e 01	2.7190e+06	1.2480e+06	0.0	1.00	0.0	9.8560e+06	8.4761e-01	2	3	5376
							1.50	0.0	6.3090e+00	1.5211e 01			
54-xe-144	0	541440	1.1000e+00	1.6060e+06	9.2120e+05	0.0	1.00	0.0	5.2000e+06	9.9270e-01	2	1	5485
							1.50	0.0	9.8000e+05	7.1000e-03			
55-cs-144	0	551440	1.0200e+00	2.3900e+06	2.6600e+06	0.0	1.00	0.0	8.4700e+06	9.6870e-01	2	1	5558
							1.50	0.0	2.6000e+06	3.1300e-02			
56-ba-144	0	561440	1.1400e+01	9.4610e+05	7.0100e+05	0.0	1.00	0.0	2.9700e+06	1.0000e+00	1	4	5667
57-la-144	0	571440	4.0900e+01	1.4280e+06	2.2400e+06	0.0	1.00	0.0	5.6000e+06	1.0000e+00	1	4	5743
58-ce-144	0	581440	2.4615e+07	9.1400e+04	1.5000e+04	0.0	1.00	0.0	1.1860e+05	9.8600e-01	2	4	5840
							1.00	1.0	2.5960e+05	1.4000e-02			
59-pr-144	0	591440	1.0168e+03	1.2089e+06	2.8900e+04	0.0	1.00	0.0	2.9969e+06	1.0000e+00	1	4	5914
59-pr-144	1	591441	4.1200e+02	4.5400e+04	1.2400e+03	0.0	1.00	0.0	3.0559e+06	4.0000e-04	2	4	5915
							3.00	0.0	5.9030e+04	9.9960e-01			
60-nd-144	0	601440	6.6000e+22	0.0	0.0	1.9101e+06	4.00	0.0	1.9101e+06	1.0000e+00	1	0	6031
62-sm-144	0	621440	stable								0	0	6225
53-i-145	0	531450	1.9142e 01	2.4680e+06	2.1420e+06	0.0	1.00	0.0	8.5590e+06	7.5914e-01	2	3	5379
							1.50	0.0	6.9990e+00	2.4086e-01			
54-xe-145	0	541450	9.0000e 01	2.3910e+06	1.8270e+06	0.0	1.00	0.0	7.7730e+06	9.3091e-01	2	3	5488
							1.50	0.0	4.3050e+00	6.1090e-02			
55-cs-145	0	551450	5.9400e-01	1.3750e+06	2.3700e+06	0.0	1.00	0.0	7.7900e+06	8.5400e-01	2	5	5561
							1.50	0.0	3.5600e+06	1.4600e-01			
56-ba-145	0	561450	4.3100e+00	2.2000e+06	9.1400e+05	0.0	1.00	0.0	4.9500e+06	1.0000e+00	1	4	5670
57-la-145	0	571450	2.4800e+01	8.7700e+05	1.4970e+06	0.0	1.00	0.0	4.1200e+06	1.0000e+00	1	4	5746
58-ce-145	0	581450	1.8060e+02	6.7600e+05	8.6000e+05	0.0	1.00	0.0	2.5300e+06	1.0000e+00	1	4	5852
59-pr-145	0	591450	2.1542e+04	6.7700e+05	1.8600e+04	0.0	1.00	0.0	1.8050e+06	1.0000e+00	1	4	5917
60-nd-145	0	601450	stable								0	0	6014
61-pm-145	0	611450	5.5856e+08	1.1700e+04	1.2100e+04	6.5020e-03	2.00	0.0	1.6140e+05	1.0000e+00	2	5	6143
							4.00	0.0	2.1220e+06	2.8000e-09			
62-sm-145	0	621450	2.9376e+07	2.7600e+04	6.5000e+04	0.0	2.00	0.0	6.2600e+05	1.0000e+00	1	4	6228
54-xe-146	0	541460	5.6261e 01	1.9710e+06	1.0860e+06	0.0	1.00	0.0	6.4760e+06	9.3495e-01	2	3	5491
							1.50	0.0	4.1900e+00	6.5048e-02			
55-cs-146	0	551460	1.4300e 01	2.9430e+06	2.1600e+06	0.0	1.00	0.0	9.4100e+06	8.6800e-01	2	5	5564
							1.50	0.0	4.2800e+06	1.3200e-01			
56-ba-146	0	561460	2.2000e+00	1.3700e+06	8.8000e+05	0.0	1.00	0.0	4.2700e+06	9.9990e-01	2	1	5673
							1.50	0.0	5.0000e 01	1.0000e 04			
57-la-146	0	571460	6.2700e+00	1.9320e+06	2.2800e+06	0.0	1.00	0.0	6.3860e+06	9.9997e-01	2	5	5749
							1.50	0.0	5.9000e 02	3.5000e-05			
57-la-146	1	571461	1.0000e+01	2.2020e+06	1.4341e+06	0.0	1.00	0.0	6.6660e+06	1.0000e+00	1	4	5750
58-ce-146	0	581460	8.1120e+02	2.5400e+05	3.1900e+05	0.0	1.00	0.0	1.0200e+06	1.0000e+00	1	4	5855
59-pr-146	0	591460	1.4490e+01	1.3090e+06	1.0190e+06	0.0	1.00	0.0	4.1500e+06	1.0000e+00	1	4	5940
60-nd-146	0	601460	stable								0	0	6037
62-sm-146	0	621460	1.2504e+15	0.0	0.0	2.5410e+06	4.00	0.0	2.5430e+06	1.0000e+00	1	1	6231
54-xe-147	0	541470	1.9909e-01	2.2790e+06	2.3110e+06	0.0	1.00	0.0	8.6810e+06	9.1294e-01	2	3	5494
							1.50	0.0	5.3410e+00	8.7056e-02			
55-cs-147	0	551470	5.4548e-01	2.2190e+06	1.5810e+06	0.0	1.00	0.0	7.0210e+06	7.5000e-01	2	3	5567
							1.50	0.0	3.4200e+06	2.5000e-01			
56-ba-147	0	561470	7.0000e-01	1.8580e+06	1.1010e+06	0.0	1.00	0.0	5.7500e+06	9.9971e-01	2	3	5676
							1.50	0.0	8.0000e+04	2.7000e-04			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
57-la-147	0	571470	4.4000e+00	1.6120e+06	9.3630e+05	0.0	1.00	0.0	4.9450e+06	9.9954e-01	2	3	5752
							1.50	0.0	4.6500e+05	4.6000e-04			
58-ce-147	0	581470	5.6400e+01	8.5910e+05	1.0810e+06	0.0	1.00	0.0	3.3100e+06	1.0000e+00	1	2	5858
59-pr-147	0	591470	8.1600e+02	7.8814e+05	8.1272e+05	0.0	1.00	0.0	2.6860e+06	1.0000e+00	1	4	5943
60-nd-147	0	601470	9.4867e+05	2.1810e+05	1.4660e+05	0.0	1.00	0.0	8.9540e+05	1.0000e+00	1	4	6040
61-pm-147	0	611470	8.2780e+07	6.1930e+04	4.1800e+00	0.0	1.00	0.0	2.2460e+05	1.0000e+00	1	4	6149
62-sm-147	0	621470	1.3450e+18	0.0	0.0	2.1109e+06	4.00	0.0	2.3106e+06	1.0000e+00	1	1	6214
55-cs-148	0	551480	2.0560e-01	2.4540e+06	2.9460e+06	0.0	1.00	0.0	9.2280e+06	7.4900e-01	2	1	5670
							1.50	0.0	6.0110e+06	2.5100e-01			
56-ba-148	0	561480	6.0700e-01	1.3410e+06	8.1530e+05	0.0	1.00	0.0	5.4000e+06	9.9941e-01	2	5	5679
							1.50	0.0	1.9000e+05	5.9000e-04			
57-la-148	0	571480	1.0500e+00	2.0740e+06	1.2510e+06	0.0	1.00	0.0	6.0200e+06	9.9857e-01	2	5	5755
							1.50	0.0	1.8050e-01	1.3100e-03			
58-ce-148	0	581480	5.6000e+01	6.7200e+05	1.1600e+05	0.0	1.00	0.0	2.8500e+06	1.0000e+00	1	4	5861
59-pr-148	0	591480	1.3620e+02	1.5531e+06	1.2359e+06	0.0	1.00	0.0	4.9600e+06	1.0000e+00	1	4	5946
59-pr-148	1	591481	1.2000e+02	1.2907e+06	1.7970e+06	0.0	1.00	0.0	5.0500e+06	1.0000e+00	1	4	5947
60-nd-148	0	601480	stable								0	0	6043
61-pm-148	0	611480	4.6397e+05	7.2900e+05	5.7400e+05	0.0	1.00	0.0	2.4730e+06	1.0000e+00	1	4	6152
61-pm-148	1	611481	3.5675e+06	1.7170e+05	1.1440e+06	0.0	1.00	0.0	2.6100e+06	9.5400e-01	2	4	6153
							1.00	0.0	1.1700e+05	4.6000e-02			
62-sm-148	0	621480	2.5000e+23	0.0	0.0	1.9862e+06	4.00	0.0	1.9862e+06	1.0000e+00	1	0	6237
55-cs-149	0	551490	2.4419e-01	2.5070e+06	2.4040e+06	0.0	1.00	0.0	8.3140e+06	6.7243e-01	2	3	5573
							1.50	0.0	7.2250e+00	3.2757e-01			
56-ba-149	0	561490	6.9518e-01	2.0160e+06	1.5200e+06	0.0	1.00	0.0	6.7420e+06	9.9970e-01	2	1	5682
							1.50	0.0	2.6000e+05	1.0000e-04			
57-la-149	0	571490	2.4079e+00	1.7810e+06	1.0870e+06	0.0	1.00	0.0	5.6370e+06	9.9190e-01	2	3	5758
							1.50	0.0	1.2100e+06	8.1000e-03			
58-ce-149	0	581490	5.2000e+00	1.1752e+06	1.0450e+06	0.0	1.00	0.0	4.1100e+06	1.0000e+00	2	3	5864
							1.50	0.0	5.0000e-01	0.0			
59-pr-149	0	591490	1.3560e+02	9.5260e+05	6.1610e+05	0.0	1.00	0.0	3.0000e+06	1.0000e+00	1	4	5949
60-nd-149	0	601490	6.2100e+01	5.0000e+05	3.7100e+05	0.0	1.00	0.0	1.6880e+06	1.0000e+00	1	4	6046
61-pm-149	0	611490	1.9109e+05	3.6470e+05	1.1900e+04	0.0	1.00	0.0	1.0710e+06	1.0000e+00	1	4	6155
62-sm-149	0	621490	3.1536e+23	0.0	0.0	1.9076e+06	4.00	0.0	1.8949e+06	1.0000e+00	1	0	6240
55-cs-150	0	551500	1.2376e-01	2.7510e+06	3.3310e+06	0.0	1.00	0.0	1.0204e+07	8.4912e-01	2	3	5576
							1.50	0.0	6.4590e+00	1.5088e-01			
56-ba-150	0	561500	9.6219e-01	1.9852e+06	1.0960e+06	0.0	1.00	0.0	5.8280e+06	9.9760e-01	2	3	5685
							1.50	0.0	2.1000e+05	2.4000e-03			
57-la-150	0	571500	6.0808e-01	2.0170e+06	2.5470e+06	0.0	1.00	0.0	7.8440e+06	9.9060e-01	2	3	5761
							1.50	0.0	1.2000e+06	9.4000e-03			
58-ce-150	0	581500	4.0000e+00	6.8918e+05	4.3969e+05	0.0	1.00	0.0	2.6560e+06	1.0000e+00	1	2	5867
59-pr-150	0	591500	6.1900e+00	2.0170e+06	1.0760e+06	0.0	1.00	0.0	5.6900e+06	1.0000e+00	1	2	5952
60-nd-150	0	601500	stable								0	0	6049
61-pm-150	0	611500	9.6480e+03	7.7900e+05	1.4700e+06	0.0	1.00	0.0	3.4540e+06	1.0000e+00	1	4	6158
62-sm-150	0	621500	stable								0	0	6243
56-ba-151	0	561510	3.3274e-01	2.1810e+06	2.2510e+06	0.0	1.00	0.0	7.7180e+06	9.6243e-01	2	1	5688
							1.50	0.0	3.5490e+00	3.7569e-02			
57-la-151	0	571510	7.1939e-01	2.2020e+06	1.6010e+06	0.0	1.00	0.0	6.9100e+06	9.3451e-01	2	3	5764
							1.50	0.0	3.5810e+00	6.5495e-02			
58-ce-151	0	581510	1.0200e+00	1.4400e+06	8.7740e+05	0.0	1.00	0.0	4.9000e+06	1.0000e+00	1	2	5870
59-pr-151	0	591510	1.8900e+01	1.2340e+06	7.0110e+05	0.0	1.00	0.0	1.8000e+06	1.0000e+00	1	4	5955

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E-BETA	E-GAMMA	E-ALPHA	RTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
60-nd-151	0	601510	7.4640e+02	5.3400e+05	9.4700e+05	0.0	1.00	0.0	2.4410e+06	1.0000e+00	1	4	6052
61-pm-151	0	611510	1.0224e+05	2.8700e+05	3.2900e+05	0.0	1.00	0.0	1.1870e+06	1.0000e+00	1	4	6161
62-sm-151	0	621510	2.8401e+09	1.9830e+04	1.4200e+01	0.0	1.00	0.0	7.7100e+04	1.0000e+00	1	4	6246
63-eu-151	0	631510	stable								0	0	6325
56-ba-152	0	561520	4.2049e-01	2.5240e+06	1.3900e+06	0.0	1.00	0.0	6.8990e+06	9.4279e-01	2	3	5691
							1.50	0.0	3.9990e+00	5.7209e-02			
57-la-152	0	571520	2.8495e-01	2.3550e+06	2.8850e+06	0.0	1.00	0.0	8.8200e+06	9.3961e-01	2	3	5767
							1.50	0.0	3.9890e+00	6.0193e-02			
58-ce-152	0	581520	7.6627e+00	1.1660e+06	7.7840e+05	0.0	1.00	0.0	3.9490e+06	1.0000e+00	1	2	5873
59-pr-152	0	591520	6.7761e+00	1.5490e+06	2.1190e+06	0.0	1.00	0.0	6.4870e+06	1.0000e+00	1	2	5958
60-nd-152	0	601520	6.8400e+02	3.3300e+05	1.6100e+05	0.0	1.00	0.0	1.1200e+06	1.0000e+00	1	4	6055
61-pm-152	0	611520	2.4600e+02	1.3950e+06	1.5000e+05	0.0	1.00	0.0	3.5000e+06	1.0000e+00	1	4	6164
61-pm-152	1	611521	4.5120e+02	8.8100e+05	1.5000e+06	0.0	1.00	0.0	3.6200e+06	1.0000e+00	1	4	6165
61-pm-152	2	611522	1.0800e+03	6.6079e+05	1.7332e+06	0.0	1.00	0.0	3.4710e+06	1.0000e+00	1	2	6166
62-sm-152	0	621520	stable								0	0	6249
63-eu-152	0	631520	4.2065e+08	1.2610e+05	1.1619e+06	0.0	1.00	0.0	1.8221e+06	2.7920e-01	2	5	6328
							2.00	0.0	1.8761e+06	7.2080e-01			
63-eu-152	1	631521	3.3552e+04	5.0230e+05	3.0300e+05	0.0	1.00	0.0	1.8677e+06	7.2000e-01	2	5	6329
							2.00	0.0	1.9217e+06	2.8000e-01			
63-eu-152	2	631522	5.7600e+03	6.1200e+04	7.5100e+04	0.0	3.00	0.0	1.4781e+05	1.0000e+00	1	3	6330
64-gd-152	0	641520	3.4080e+21	0.0	0.0	2.2062e+06	4.00	0.0	2.2062e+06	1.0000e+00	1	0	6425
57-la-153	0	571530	3.2584e-01	2.5950e+06	2.0880e+06	0.0	1.00	0.0	8.0010e+06	8.9312e-01	2	3	5770
							1.50	0.0	4.7390e+00	1.0689e-01			
58-ce-153	0	581530	1.4688e+00	1.6800e+06	1.1250e+06	0.0	1.00	0.0	5.8390e+06	9.9378e-01	2	3	5876
							1.50	0.0	1.6360e+00	6.2190e-03			
59-pr-153	0	591530	4.4907e+00	1.7000e+06	1.0270e+06	0.0	1.00	0.0	5.5730e+06	1.0000e+00	1	2	5961
60-nd-153	0	601530	6.7500e+01	1.1110e+06	6.7230e+05	0.0	1.00	0.0	3.1510e+06	1.0000e+00	1	2	6058
61-pm-153	0	611530	3.2400e+02	6.0720e+05	1.7220e+05	0.0	1.00	0.0	1.9000e+06	1.0000e+00	1	2	6167
62-sm-153	0	621530	1.6657e+05	2.6970e+05	6.5100e+04	0.0	1.00	0.0	8.0320e+05	1.0000e+00	1	4	6252
63-eu-153	0	631530	stable								0	0	6333
64-gd-153	0	641530	2.0874e+07	4.0700e+04	1.0760e+05	0.0	2.00	0.0	4.8390e+05	1.0000e+00	1	4	6428
57-la-154	0	571540	1.4926e-01	2.6150e+06	3.1990e+06	0.0	1.00	0.0	1.0063e+07	8.9710e-01	2	3	5773
							1.50	0.0	5.2990e+00	1.0270e-01			
58-ce-154	0	581540	2.0161e+00	1.6940e+06	9.5870e+05	0.0	1.00	0.0	5.0200e+06	9.9363e-01	2	3	5879
							1.50	0.0	1.6590e+00	6.3710e-03			
59-pr-154	0	591540	1.0614e+00	1.8730e+06	2.4140e+06	0.0	1.00	0.0	7.4630e+06	9.9889e-01	2	3	5964
							1.50	0.0	9.0700e-01	1.1100e-01			
60-nd-154	0	601540	4.0000e+01	6.0718e+05	6.0759e+05	0.0	1.00	0.0	2.4370e+06	1.0000e+00	1	2	6061
61-pm-154	0	611540	1.0320e+02	8.9100e+05	1.9000e+06	0.0	1.00	0.0	4.0000e+06	1.0000e+00	1	4	6170
61-pm-154	1	611541	1.6080e+02	8.9920e+05	1.9989e+06	0.0	1.00	0.0	4.0000e+06	1.0000e+00	1	4	6171
62-sm-154	0	621540	stable								0	0	6255
63-eu-154	0	631540	2.7114e+08	2.7800e+05	1.2540e+06	0.0	1.00	0.0	1.9689e+06	9.9980e-01	2	5	6134
							2.00	0.0	7.1700e+05	2.0000e-04			
63-eu-154	1	631541	2.7600e+01	8.2000e+04	7.1000e+04	0.0	3.00	0.0	1.5700e+05	1.0000e+00	1	3	6335
64-gd-154	0	641540	stable								0	0	6431
57-la-155	0	571550	1.5399e-01	2.8170e+06	2.6980e+06	0.0	1.00	0.0	9.5040e+06	8.3241e-01	2	3	5776
							1.50	0.0	6.0890e+00	1.6759e-01			
58-ce-155	0	581550	5.2782e-01	2.0150e+06	1.5710e+06	0.0	1.00	0.0	7.0820e+06	9.8400e-01	2	3	5882
							1.50	0.0	2.5190e+00	1.6004e-02			
59-pr-155	0	591550	1.1224e+00	2.0710e+06	1.4800e+06	0.0	1.00	0.0	6.6440e+06	9.8457e-01	2	3	5967
							1.50	0.0	2.0440e+00	1.5427e-02			

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF LIFE	E BETA	E GAMMA	E ALPHA	RTYP	BFS	Q	BRANCHING	NDK	NSP	MAT
60-nd-155	0	601550	1.8221e+01	1.1660e+06	8.3390e+05	0.0	1.00	0.0	4.3270e+06	1.0000e+00	1	2	6064
61-pm-155	0	611550	4.8000e+01	1.0200e+06	6.1100e+05	0.0	1.00	0.0	1.1000e+06	1.0000e+00	1	2	6173
62-sm-155	0	621550	1.3380e+01	5.6360e+05	1.0300e+05	0.0	1.00	0.0	1.6275e+06	1.0000e+00	1	4	6218
63-eu-155	0	631550	1.4769e+08	6.6400e+04	8.4700e+04	0.0	1.00	0.0	2.4270e+05	1.0000e+00	1	4	6317
64-gd-155	0	641550	stable								0	0	6414
58-ce-156	0	581560	5.9629e+01	2.1180e+06	1.1710e+06	0.0	1.00	0.0	6.5210e+06	9.7008e-01	2	3	5885
							1.50	0.0	3.0190e+00	2.9922e-02			
59-pr-156	0	591560	3.7926e-01	2.1410e+06	2.6880e+06	0.0	1.00	0.0	8.7040e+06	9.7231e-01	2	3	5970
							1.50	0.0	2.8010e+00	2.7170e-02			
60-nd-156	0	601560	1.9622e+01	1.1220e+06	7.6570e+05	0.0	1.00	0.0	3.5050e+06	1.0000e+00	1	2	6067
61-pm-156	0	611560	1.3100e+01	1.3140e+06	1.0140e+06	0.0	1.00	0.0	4.9800e+06	1.0000e+00	1	2	6176
62-sm-156	0	621560	3.1840e+04	2.1650e+05	1.1400e+05	0.0	1.00	0.0	7.1400e+05	1.0000e+00	1	4	6261
63-eu-156	0	631560	1.5124e+06	4.5500e+05	1.2300e+06	0.0	1.00	0.0	2.4510e+06	1.0000e+00	1	4	6140
64-gd-156	0	641560	stable								0	0	6417
58-ce-157	0	581570	2.1442e+01	2.4310e+06	2.0890e+06	0.0	1.00	0.0	8.6780e+06	9.5547e-01	2	3	5888
							1.50	0.0	3.8790e+00	4.4528e-02			
59-pr-157	0	591570	1.8001e+01	2.3870e+06	1.8810e+06	0.0	1.00	0.0	8.1470e+06	9.1613e-01	2	3	5973
							1.50	0.0	3.6090e+00	6.3874e-02			
60-nd-157	0	601570	2.4813e+00	1.6680e+06	1.1400e+06	0.0	1.00	0.0	5.5700e+06	1.0000e+00	1	2	6070
61-pm-157	0	611570	6.1101e+01	1.4510e+06	8.4080e+05	0.0	1.00	0.0	4.1610e+06	1.0000e+00	1	2	6179
62-sm-157	0	621570	4.8420e+02	8.6250e+05	4.0160e+05	0.0	1.00	0.0	2.6000e+06	1.0000e+00	1	2	6264
63-eu-157	0	631570	5.4648e+04	1.9400e+05	2.6600e+05	0.0	1.00	0.0	1.3630e+06	1.0000e+00	1	4	6141
64-gd-157	0	641570	stable								0	0	6440
59-pr-158	0	591580	1.6855e+01	2.5520e+06	1.1550e+06	0.0	1.00	0.0	1.0102e+07	9.3577e-01	2	3	5976
							1.50	0.0	4.1690e+00	6.4210e-02			
60-nd-158	0	601580	2.6949e+00	1.5890e+06	9.2190e+05	0.0	1.00	0.0	5.0110e+06	9.9995e-01	2	3	6073
							1.50	0.0	1.1900e-01	5.3000e-05			
61-pm-158	0	611580	1.7997e+00	1.5690e+06	2.1640e+06	0.0	1.00	0.0	6.2210e+06	1.0000e+00	1	2	6182
62-sm-158	0	621580	1.3060e+02	4.0843e+05	5.5412e+05	0.0	1.00	0.0	2.0500e+06	1.0000e+00	1	2	6267
63-eu-158	0	631580	2.7540e+03	9.4600e+05	1.0800e+06	0.0	1.00	0.0	3.4500e+06	1.0000e+00	1	4	6346
64-gd-158	0	641580	stable								0	0	6441
59-pr-159	0	591590	1.8055e+01	2.7710e+06	2.1380e+06	0.0	1.00	0.0	9.5010e+06	8.7617e-01	2	3	5979
							1.50	0.0	5.0090e+00	1.2163e-01			
60-nd-159	0	601590	6.4159e+01	2.0630e+06	1.6660e+06	0.0	1.00	0.0	7.1660e+06	9.9764e-01	2	3	6076
							1.50	0.0	1.2490e+00	2.3610e-01			
61-pm-159	0	611590	3.0005e+00	1.7820e+06	1.1600e+06	0.0	1.00	0.0	5.6640e+06	9.9982e-01	2	3	6185
							1.50	0.0	4.1900e-01	1.8500e-04			
62-sm-159	0	621590	1.6200e+02	1.0002e+06	9.6497e+05	0.0	1.00	0.0	3.8480e+06	1.0000e+00	1	2	6270
63-eu-159	0	631590	1.0860e+03	8.7290e+05	4.0510e+05	0.0	1.00	0.0	2.5140e+06	1.0000e+00	1	4	6149
64-gd-159	0	641590	6.6911e+04	1.1000e+05	5.2000e+04	0.0	1.00	0.0	9.7000e+05	1.0000e+00	1	4	6446
65-tb-159	0	651590	stable								0	0	6525
60-nd-160	0	601600	7.8856e+01	2.1000e+06	1.2010e+06	0.0	1.00	0.0	6.3650e+06	9.9051e-01	2	3	6079
							1.50	0.0	1.8490e+00	9.4590e-03			
61-pm-160	0	611600	7.2892e+01	1.9610e+06	2.5000e+06	0.0	1.00	0.0	7.8150e+06	9.9712e-01	2	3	6188
							1.50	0.0	1.1490e+00	2.6760e-03			
62-sm-160	0	621600	7.2574e+01	8.4670e+05	6.8980e+05	0.0	1.00	0.0	3.2890e+06	1.0000e+00	1	2	6273
63-eu-160	0	631600	4.4000e+01	1.4640e+06	1.6000e+06	0.0	1.00	0.0	4.5000e+06	1.0000e+00	1	2	6152
64-gd-160	0	641600	stable								0	0	6449
65-tb-160	0	651600	6.2467e+06	2.5700e+05	1.2210e+06	0.0	1.00	0.0	1.8357e+06	1.0000e+00	1	4	6528
66-dy-160	0	661600	stable								0	0	6617

TABLE C-1 (Cont.)

SYMBOL	S	ZZAAAS	HALF-LIFE	E BETA	E GAMMA	E ALPHA	BTYP	RFS	Q	BRANCHING	NDK	NSP	MAT
60-nd-161	0	601610	1.1131e 01	2.1600e+06	1.8790e+06	0.0	1.00	0.0	8.1100e+06	9.8302e 01	2	1	6082
							1.50	0.0	2.5590e+00	1.6982e-02			
61-pm-161	0	611610	7.8991e-01	2.1080e+06	1.6960e+06	0.0	1.00	0.0	7.0180e+06	9.8250e 01	2	3	6191
							1.50	0.0	1.9690e+00	1.7504e-02			
62-sm-161	0	621610	4.7801e+00	1.5070e+06	1.1180e+06	0.0	1.00	0.0	5.4440e+06	1.0000e+00	1	2	6276
63-eu-161	0	631610	4.2050e+01	1.0059e+06	1.0062e+06	0.0	1.00	0.0	4.1150e+06	1.0000e+00	1	2	6355
64-gd-161	0	641610	2.1960e+02	5.8300e+05	1.8400e+05	0.0	1.00	0.0	1.9590e+06	1.0000e+00	1	4	6452
65-tb-161	0	651610	5.9610e+05	1.9200e+05	1.6000e+04	0.0	1.00	0.0	5.9210e+05	1.0000e+00	1	4	6531
66-dy-161	0	661610	stable								0	0	6640
61-pm-162	0	611620	3.2420e 01	2.0790e+06	2.6200e+06	0.0	1.00	0.0	8.7610e+06	9.7855e 01	2	3	6194
							1.50	0.0	2.4890e+00	2.1452e-02			
62-sm-162	0	621620	5.2600e+00	1.1830e+06	8.7780e+05	0.0	1.00	0.0	4.6410e+06	1.0000e+00	1	2	6279
63-eu-162	0	631620	1.6240e+02	1.4010e+06	2.0110e+06	0.0	1.00	0.0	6.2900e+06	1.0000e+00	1	2	6358
64-gd-162	0	641620	5.0400e+02	2.8610e+05	5.1704e+05	0.0	1.00	0.0	1.4000e+06	1.0000e+00	1	4	6455
65-tb-162	0	651620	4.6560e+02	5.1900e+05	1.1070e+06	0.0	1.00	0.0	2.5100e+06	1.0000e+00	1	4	6534
66-dy-162	0	661620	stable								0	0	6641
62-sm-163	0	621630	1.2679e+00	1.6690e+06	1.1140e+06	0.0	1.00	0.0	6.1880e+06	1.0000e+00	1	2	6282
63-eu-163	0	631630	7.6045e+00	1.5410e+06	1.0720e+06	0.0	1.00	0.0	5.4890e+06	1.0000e+00	1	2	6361
64-gd-163	0	641630	9.2770e+01	8.5917e+05	4.6120e+05	0.0	1.00	0.0	3.5550e+06	1.0000e+00	1	2	6458
65-tb-163	0	651630	1.1730e+03	3.2100e+05	7.8400e+05	0.0	1.00	0.0	1.7000e+06	1.0000e+00	1	4	6537
66-dy-163	0	661630	stable								0	0	6646
62-sm-164	0	621640	1.3850e+00	1.8030e+06	1.0490e+06	0.0	1.00	0.0	5.7970e+06	9.9988e-01	2	3	6285
							1.50	0.0	4.3900e-01	1.2400e-04			
63-eu-164	0	631640	1.5327e+00	1.5630e+06	2.1470e+06	0.0	1.00	0.0	7.2140e+06	1.0000e+00	2	3	6364
							1.50	0.0	1.9000e-02	1.0090e-06			
64-gd-164	0	641640	1.3014e+03	7.1810e+05	6.4690e+05	0.0	1.00	0.0	2.7540e+06	1.0000e+00	1	2	6461
65-tb-164	0	651640	1.8000e+02	7.1700e+05	2.3110e+06	0.0	1.00	0.0	1.8600e+06	1.0000e+00	1	4	6540
66-dy-164	0	661640	stable								0	0	6649
62-sm-165	0	621650	4.5356e-01	1.9610e+06	1.6910e+06	0.0	1.00	0.0	7.6770e+06	9.9751e-01	2	1	6288
							1.50	0.0	1.2390e+00	2.4910e-03			
63-eu-165	0	631650	1.3546e+00	1.8300e+06	1.4070e+06	0.0	1.00	0.0	6.6430e+06	9.9809e-01	2	3	6167
							1.50	0.0	8.9900e-01	1.9110e-03			
64-gd-165	0	641650	4.2295e+01	1.2300e+06	8.8110e+05	0.0	1.00	0.0	4.4990e+06	1.0000e+00	1	2	6464
65-tb-165	0	651650	1.2660e+02	8.7400e+05	8.3600e+05	0.0	1.00	0	2.9500e+06	1.4000e-01	2	4	6543
							1.00	1.0	2.8420e+06	8.6000e-01			
66-dy-165	0	661650	8.4024e+01	4.4800e+05	2.6000e+04	0.0	1.00	0.0	1.2867e+06	1.0000e+00	1	4	6552
66-dy-165	1	661651	7.5480e+01	9.8000e+04	1.9900e+04	0.0	1.00	0.0	1.3949e+06	2.2400e-02	2	4	6653
							3.00	0.0	1.0816e+05	9.7760e-01			
67-ho-165	0	671650	stable								0	0	6725
66-dy-166	0	661660	2.9376e+05	1.6260e+05	4.3000e+04	0.0	1.00	0.0	4.8690e+05	1.0000e+00	1	4	6655
67-ho-166	0	671660	9.6480e+04	6.9600e+05	2.9500e+04	0.0	1.00	0.0	1.8519e+06	1.0000e+00	1	4	6728
67-ho-166	1	671661	3.7868e+10	1.4620e+05	1.6280e+06	0.0	1.00	0.0	1.8599e+06	1.0000e+00	1	4	6729
68-er-166	0	681660	stable								0	0	6837
68-er-167	0	681670	stable								0	0	6840
68-er-167	1	681671	2.2800e+00	1.0600e+05	9.7000e+04	0.0	3.00	0.0	2.0780e+05	1.0000e+00	1	3	6841

TABLE C-1 (Cont.)

Data Count	
891 =	total nuclides
127 =	stable nuclides
159 =	nuclides in isomeric states
9 =	nuclides in second isostates
755 =	nuclides having spectra
405 =	nuclides having discrete electron spectra
400 =	nuclides having conversion electron and discrete spectra
400 =	nuclides having conversion electrons
404 =	nuclides having x-ray spectra
379 =	nuclides having discrete beta spectra
443 =	nuclides having discrete gamma spectra
0 =	nuclides having discrete neutron spectra
3 =	nuclides having alpha spectra
40 =	nuclides having positron or electron spectra
384 =	nuclides having continuous gamma spectra (theoretical)
383 =	nuclides having continuous beta spectra (theoretical)
272 =	nuclides having continuous neutron spectra (delayed neutron)
736 =	nuclides having gamma spectra
677 =	nuclides having beta spectra
272 =	nuclides having neutron spectra

ENDF/B-VI Decay File: Summary of Modifications, Supplements, and General Sources.

The fission-product decay data will be combined with the activation and actinide decay files to produce a single decay file of ~ 970 nuclides. Fifty nuclides are common in these files. The fission product and actinide files take precedence over the earlier evaluated activation files. All files are now at Brookhaven National Laboratory [the activation and actinide files having been sent earlier by Fred Mann, HEDL (Hanford Engineering Development Laboratory)].

Differing from previous versions of ENDF/B, in the preliminary Version VI, the fission products were formed as a sequence of libraries, testing each with an extensive range of integral measurements. Unlike the activation and actinide portions of the ENDF/B-VI decay file, many fission products have no spectral measurements and some lack even half-life measurements. Other products have incomplete measurements of spectra.

Recognizing that measured data were extensive but inadequate for calculations of decay heat and spectra, it was decided to:

1. Use measured data where they existed in ~ 1989;
2. Otherwise, use theory.
3. Supplement measurements believed to be incomplete with theoretical values.
4. Complete a library having spectra that would closely match the average beta and gamma energies.
5. Add in the delayed neutron spectra.

In the process of supplementation we did not want to lose any evaluated measurements, and for spectra, that is the case. Average energies for ~ 73 nuclides were known to be in error and they were replaced by theoretical values. Approximately 45 others were *believed* to be in error and were replaced by theory. Many others (~ 244) had no measurements, average energies, or spectra, and were necessarily replaced by theory. None had delayed neutron spectra.

In toto, 420 of 764 nuclides now have theoretical data and/or delayed neutron data. We believe the supplements are essentially correct; however, the user should be aware that some are certainly questionable and the need for some specific supplements were necessarily subjective. A few (~ 116) have since been measured, but they will have to be used in a subsequent "mod." The process of forcing agreement of average energies derived from spectra with file averages complicates the simple additions of new spectral measurements. Perhaps more importantly, this first file has already been compared with essentially all measured aggregate decay heat, beta, and gamma spectra. As was the original motivation for the product data, it is an excellent file that will serve as an essential complete *fiducial* data set. All but 9 of 764 unstable nuclides now have a decay spectra (compared with 264 in ENDF/B-V). All theoretical values are inserted as continuous spectra. Evaluations of measured data have not been changed except in a few cases where the beta normalization was adjusted by changing FD (the discrete spectrum normalization factor for beta decay appearing in the File 8 representation of decay spectra in ENDF/B-VI), to avoid negative spectra.

Most of the evaluated measurements were supplied by Charles Reich of INEL (Idaho National Engineering Lab.), with a close adherence to ENSDF (Evaluated Nuclear Structure Data File) and converted to ENDF/B format at HEDL by F. Mann. All of the supplements to these data and those for unmeasured parameters were made at Los Alamos by the authors. The additions expanded the file from ~ 60 0000 to > 300 000 lines, or approximately 25 000 000 bytes.

Table C-2 provides a list of information that may be of great interest to present and future evaluators. This information, as well as more detailed additional material, can now be recovered from File 1. The meaning of the various numbers is given at the end of the table. The table relates only to beta, gamma, and delayed neutron energies; there are other spectra in the files.

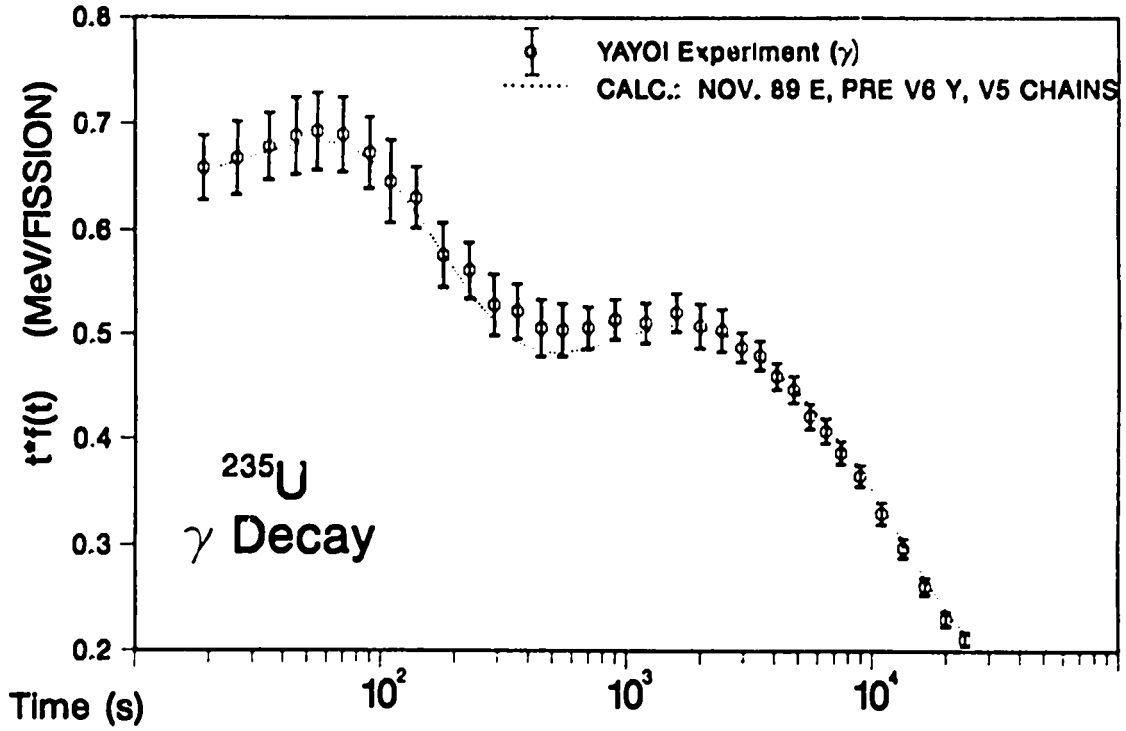

Fig. C-1. Gamma decay energy after ^{235}U fast fission (pulse).

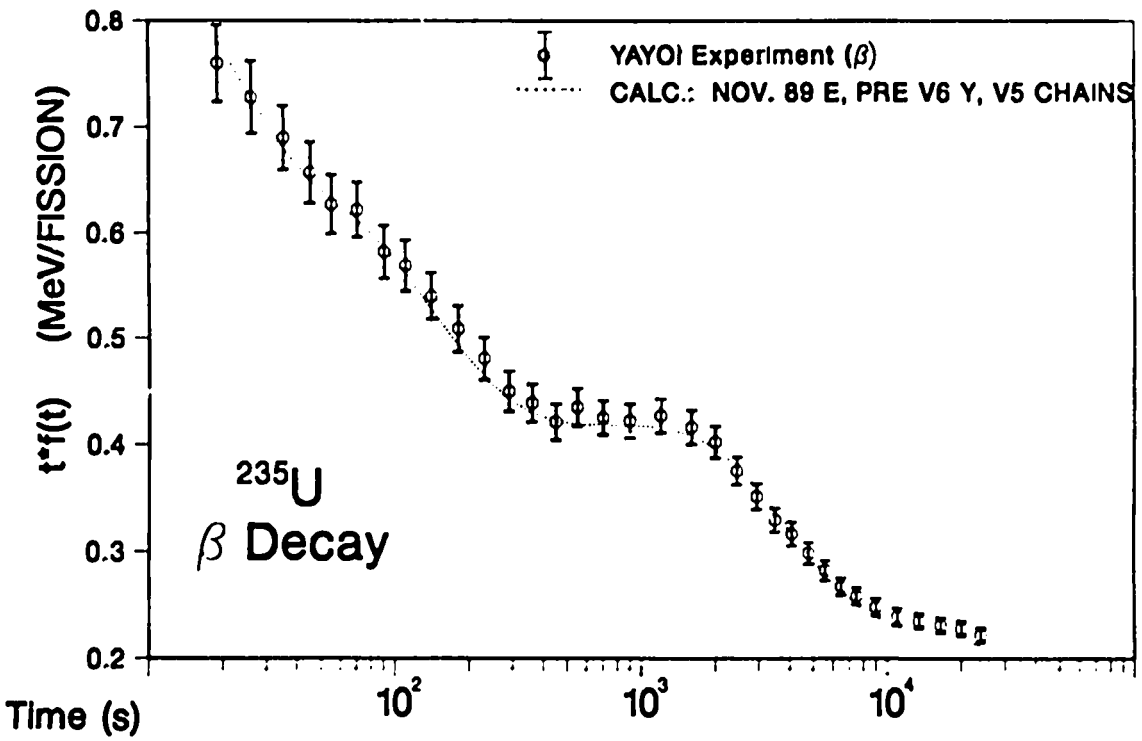

Fig. C-2. Beta decay energy after ^{235}U fast fission (pulse).

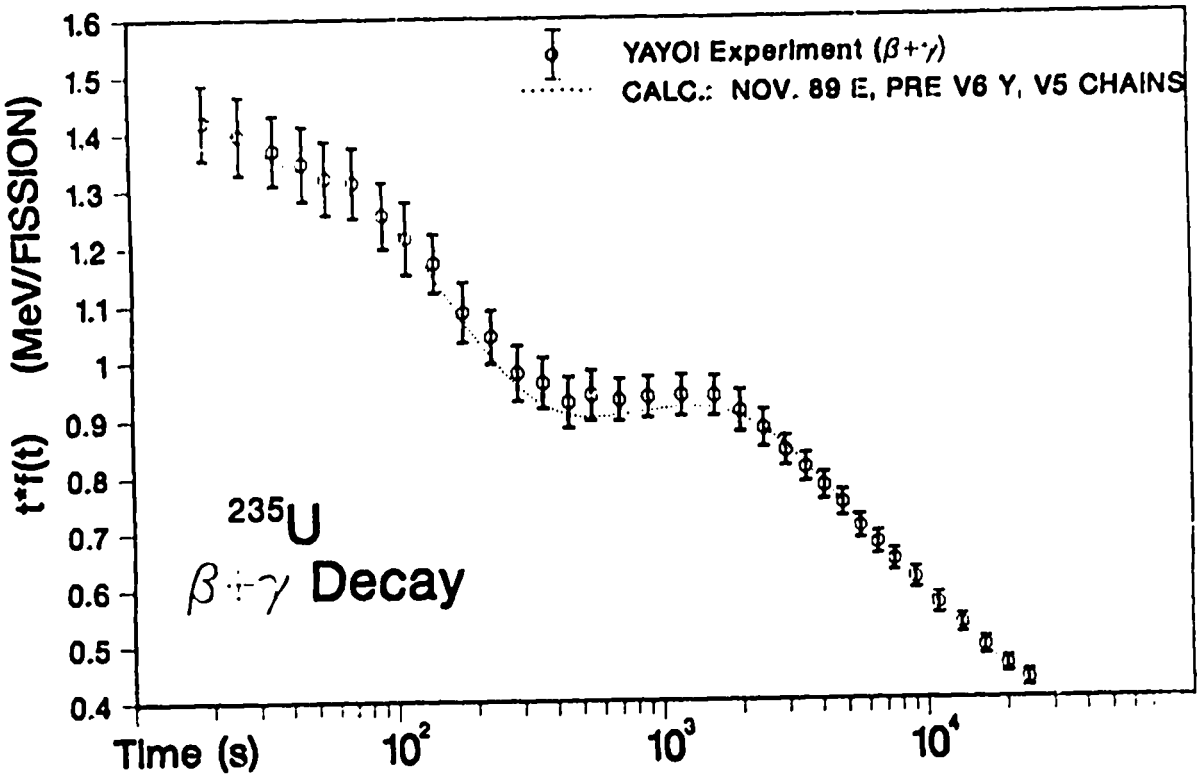

Fig. C-3. Total decay energy after ^{235}U fast fission (pulse).

TABLE C-2

FISSION-PRODUCT DECAY FILE: SUPPLEMENTS, ADDITIONS, AND SOURCES[a]

NUM	ID	MAT	AV P	E G	SP D	TYP G	N	CONT E COMPONENT BETA	GAMMA	DEL. SECT	NEW ID
1	270720	2714	2	2	1	1	1	4.1081+06	4.6940+06	9.2609+04	---
2	270740	2767	2	2	1	1	1	4.7180+06	2.9900+06	2.1642+05	---
3	270760	2770	2	2	1	1	1	5.1669+06	5.4200+06	1.9420+05	---
4	270780	2773	2	2	1	1	1	4.2591+06	3.7449+06	2.9849+05	---
5	280720	2861	2	2	1	1	-1	1.8820+06	9.1313+05	---	---
6	280740	2864	2	2	1	1	1	3.2809+06	1.6189+06	7.2241+00	---
7	280760	2867	2	2	1	1	1	2.6831+06	1.1990+06	1.1609+03	---
8	280770	2870	2	2	1	1	1	3.8269+06	2.2159+06	4.4904+03	---
9	280780	2873	2	2	1	1	1	4.1790+06	1.5270+06	1.8386+04	---
10	280790	2882	2	2	1	1	1	4.4810+06	3.0981+06	2.8536+04	---
11	290730	2885	2	2	1	1	1	3.9289+06	1.8769+06	6.0141+04	---
12	290720	2952	2	2	1	1	1	2.0350+06	2.9940+06	4.7074-02	---
13	290730	2955	2	2	1	1	1	1.9849+06	7.7230+05	1.7105+03	---
14	290740	2958	2	2	1	1	1	2.5109+06	3.2060+06	1.0359+03	---
15	290750	2961	2	2	1	1	1	2.6880+06	1.0900+06	1.7502+04	---
16	290760	2964	2	2	1	1	1	3.1131+06	3.5040+06	1.5625+04	---
17	290770	2967	2	2	1	1	1	3.2671+06	1.5040+06	8.1783+04	---
18	290780	2970	2	2	1	1	1	3.8302+06	4.0531+06	7.0359+04	---
19	290790	2973	2	2	1	1	1	3.7089+06	1.9700+06	1.8111+05	---
20	290800	2976	2	2	1	1	1	4.3269+06	4.5871+06	1.2697+05	---
21	290810	2979	2	2	1	1	1	4.8260+06	3.4570+06	1.2712+05	---
22	300720	3044	0	0	-1	-1	-1	---	---	---	---
23	300730	3052	2	2	2	2	-1	3.8865+05	1.0519+06	---	6.2633-03
24	300740	3055	2	2	2	2	-1	1.8053+05	5.8772+05	---	4.9522-03
25	300750	3058	0	0	-1	-1	-1	---	---	---	---
26	300760	3061	2	2	2	2	-1	1.7295+05	2.0810+05	---	7.7388-03
27	300770	3064	0	0	2	-1	-1	2.8500+05	---	---	---
28	300780	3067	0	0	-1	-1	1	---	---	5.6341+00	---
29	300790	3070	2	2	1	1	1	3.0166+06	2.9170+06	5.0892+03	---
30	300800	3073	2	2	1	1	1	2.7581+06	1.2420+06	4.5256+03	---
31	300810	3076	2	2	1	1	1	4.0320+06	2.7131+06	3.6837+04	---
32	300820	3079	2	2	1	1	1	4.2339+06	2.1810+06	1.6182+05	---
33	300830	3082	2	2	1	1	1	4.1021+06	3.9531+06	1.9025+05	---
34	310720	3134	0	0	-1	-1	-1	---	---	---	---
35	310721	3135	-5	5	-1	-1	-1	---	---	---	---
36	310730	3137	0	0	1	-1	-1	---	---	---	---
37	310740	3140	0	0	1	1	-1	---	---	---	---
38	310741	3141	0	0	1	-1	-1	---	---	---	---
39	310750	3141	0	0	-1	1	-1	---	---	---	---
40	310760	3146	0	0	-1	2	-1	---	---	---	---
41	310770	3149	2	2	1	1	-1	2.0430+06	7.8930+05	---	---
42	310780	3152	0	0	1	-1	-1	---	---	---	---
43	310790	3155	0	0	-1	-1	1	---	---	1.6635+02	---
44	310800	3158	2	2	2	2	1	4.4322+05	7.7800+05	2.7848+03	---
45	310810	3161	0	0	2	-1	1	3.0899+05	---	4.4581+04	---
46	310820	3164	2	2	1	1	1	3.7961+06	4.1311+06	1.3732+05	---
47	310830	3167	2	2	1	1	1	3.8810+06	3.7429+06	4.4794+05	---
48	310840	3170	2	2	1	1	1	4.2280+06	4.6330+06	2.3871+05	-
49	310850	3173	2	2	1	1	1	4.5090+06	4.3050+06	4.0263+05	-
50	320731	3241	0	0	-1	-1	-1	---	---	---	---
51	320750	3245	0	0	-1	-1	-1	---	---	---	---
52	320751	3241	0	0	-1	1	-1	---	---	---	---
53	320770	3246	0	0	-1	-1	-1	---	---	---	---
54	320771	3247	0	0	-1	-1	-1	---	---	---	---
55	320780	3249	0	0	-1	-1	-1	---	---	---	---
56	320790	3252	2	2	-1	2	-1	---	3.9269-04	---	---
57	320791	3253	0	0	-1	-1	-1	---	---	---	---
58	320800	3255	0	0	2	-1	-1	6.4631+04	---	---	8.0511-03
59	320810	3258	2	2	1	1	-1	2.4426+06	8.4067+05	---	---
60	320820	3261	2	2	1	1	-1	1.4490+06	7.6519+05	---	---
61	320830	3264	2	2	1	1	1	2.6891+06	2.4440+06	3.6673+02	---
62	320840	3267	2	2	1	1	1	2.5461+06	2.4600+06	5.6600+04	---
63	320850	3270	2	2	1	1	1	3.0291+06	3.1829+06	1.3881+05	---
64	320860	3273	2	2	1	1	1	3.3620+06	2.6360+06	1.4859+05	---
65	320870	3276	2	2	1	1	1	3.5330+06	3.5850+06	1.1063+05	---
66	320880	3279	2	2	1	1	1	4.0061+06	3.0030+06	1.6309+05	---

Table C-2 (Cont.)

NUM	ID	MAT	AV ID	E VG	SP D	TYP G	S	CONT BETA	E COMPONENT GAMMA	DEL	SECT	NEW ID
67	330760	3328	0	0	1	1	-1					
68	330770	3331	0	0	1	1	-1					
69	330780	3334	0	0	1	1	1					
70	330790	3337	0	0	1	2	-1		8.9001+03			
71	330800	3340	2	2	1	2	1		1.9008+04			
72	330810	3343	0	0	1	1	-1					
73	330820	3346	2	2	2	2	1	4.9313+04	7.5490+03			8.7004-03
74	330821	3347	0	0	-1	1	1					
75	330830	3349	6	6	1	1	1	1.2556+06	2.7514+06			
76	330840	3352	0	0	-1	1	1			2.5400+02		
77	330841	3351	2	2	1	1	1	2.9179+06	1.4620+06			
78	330850	3355	2	2	1	1	1	2.8360+06	1.0050+06	5.0244+03		
79	330860	3358	2	2	1	1	1	3.3170+06	1.7779+06	8.4908+04		
80	330870	3361	2	2	1	1	1	1.4400+06	3.4711+06	3.3704+04		
81	330880	3364	2	2	1	1	1	3.7521+06	4.2211+06	1.4884+05		
82	330890	3367	2	2	1	1	1	3.9768+06	3.9429+06	2.6138+05		
83	330900	3370	2	2	1	1	1	4.5968+06	4.3800+06	1.9670+05		
84	340750	3428	0	0	-1	-1	-1					
85	340771	3435	0	0	-1	1	-1					
86	340790	3440	0	0	1	1	-1					
87	340791	3441	0	0	1	-1	-1					
88	340810	3446	0	0	-1	1	-1					
89	340811	3447	0	0	-1	-1	1					
90	340830	3452	0	0	-1	-1	-1					
91	340831	3453	0	0	-1	-1	-1					
92	340840	3455	0	0	-1	-1	-1					
93	340850	3458	0	0	-1	-1	-1					
94	340860	3461	0	0	-1	-1	-1					
95	340870	3464	2	2	1	1	1	2.0791+06	2.6440+06	4.3577+02		
96	340880	3467	2	2	1	1	1	2.2251+06	2.0320+06	2.4953+03		
97	340890	3470	2	2	1	1	1	3.1261+06	1.8940+06	3.1279+04		
98	340900	3473	2	2	1	1	1	2.9040+06	2.6330+06	7.0072+04		
99	340910	3476	2	2	1	1	1	3.7850+06	3.1260+06	1.5110+05		
100	340920	3479	2	2	1	1	1	4.1130+06	2.2370+06	8.4815+04		
101	340930	3482	2	2	1	1	1	4.1169+06	4.1419+06	8.1828+04		
102	350791	3526	0	0	-1	-1	-1					
103	350800	3528	0	0	-1	-1	-1					
104	350801	3529	0	0	-1	-1	-1					
105	350820	3534	0	0	-1	-1	-1					
106	350821	3535	0	0	-1	-1	-1					
107	350830	3537	0	0	-1	-1	-1					
108	350840	3540	0	0	-1	-1	-1					
109	350841	3541	0	0	-1	-1	-1					
110	350850	3543	0	0	-1	1	-1					
111	350860	3546	1	1	-1	-1	-1					
112	350870	3549	6	6	-1	-1	1			5.4221+03		
113	350880	3552	0	0	-1	-1	1			1.6077+04		
114	350890	3555	1	1	2	2	1	1.7132+06	1.5500+06	7.1476+04		1.8381-03
115	350900	3558	1	1	2	2	1	2.0580+06	1.6800+06	1.5125+05		2.3827-03
116	350910	3561	2	2	1	1	1	3.4171+06	2.1390+06	7.1622+04		
117	350920	3564	2	2	1	1	1	4.0059+06	3.1990+06	4.7618+05		
118	350930	3567	2	2	1	1	1	3.5540+06	1.6719+06	3.0705+05		
119	350940	3570	2	2	1	1	1	4.0190+06	4.6610+06	2.2801+05		
120	350950	3573	2	2	1	1	1	3.5929+06	3.2130+06	2.0095+05		
121	350960	3576	2	2	1	1	1	4.4689+06	4.8219+06	1.6863+05		
122	360790	3628	0	0	-1	-1	-1					
123	360791	3629	0	0	-1	-1	-1					
124	360810	3634	0	0	-1	-1	-1					
125	360811	3635	0	0	-1	-1	-1					
126	360831	3641	0	0	-1	-1	-1					
127	360850	3646	0	0	-1	-1	-1					
128	360851	3647	0	0	-1	-1	-1					
129	360870	3652	0	0	-1	-1	-1					
130	360880	3655	0	0	-1	-1	-1					
131	360890	3658	0	0	-1	-1	-1					
132	360900	3661	0	0	-1	-1	-1					
133	360910	3664	0	0	-1	-1	-1					
134	360920	3667	0	0	-1	-1	1			8.7248+01		

Table C-2 (Cont.)

Table C-2 (Cont.)

Table C-2 (Cont.)

Table C-2 (Cont.)

NUM	ZA	MAT	AV B	AV F	SE B	TYP	N	POINT E COMPONENT BETA	GAMMA	DEL NEUT	NEW E
339	[illegible]	464?			[illegible]	[illegible]	1				
340	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]				
341	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]				
342	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]				
343	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1 [illegible]+06	6 1.51?+0?		
344	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	1	2 [illegible]+04	5 [illegible]+04		[illegible] 0.22 [illegible]
345	[illegible]	4??4	2	2	[illegible]	[illegible]	[illegible]	[illegible]+06	1 2.?2?+06		
346	[illegible]	[illegible]	2	[illegible]	2	2	[illegible]	[illegible]71+05	4 4.96?+0?		4 [illegible] 2 [illegible]
347	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]15?+06	[illegible]+04		
348	[illegible]	[illegible]	2	2	[illegible]	[illegible]	[illegible]	[illegible]440+06	? 1.519+05		
349	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	1	2 1111+06	1 [illegible]+06	4 41?[illegible]	
350	[illegible]	[illegible]	2	2	1	[illegible]	1	[illegible]+06	8 1.167+05	8 [illegible]	
351	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	1	2 [illegible]+06	1 6?8?+06	? 4?[illegible]2	
352	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 6590+06	9 2092+05	? 2?3?+0?	
353	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	[illegible]	2 4951+06	1 8590+06	2 31?+03	
354	46?24?	[illegible]	2	2	[illegible]	[illegible]	1	[illegible] 3810+06	1 0720+06	[illegible]+04	
355	46?2??	[illegible]	2	2	1	[illegible]	[illegible]	2 [illegible]+06	2 0911+06	[illegible] 47?+01	
356	[illegible]	[illegible]	[illegible]	2	1	[illegible]	[illegible]	2 1590+06	1 2760+06	2 292?+04	
357	[illegible]	472?	[illegible]	[illegible]	-1	[illegible]	-1	---	---	---	---
358	[illegible]	472?	2	[illegible]	1	-1	-1	---	---	---	---
359	[illegible]	[illegible]	[illegible]	[illegible]	-1	[illegible]	[illegible]	---	---	---	---
360	4712??	[illegible]	0	[illegible]	-1	-1	-1	---	---	---	---
361	[illegible]	4734	[illegible]	[illegible]	-1	-1	-1	---	---	---	---
362	4711??	4735	0	0	-1	-1	-1	---	---	---	---
363	4711??	4737	0	0	-1	-1	-1	---	---	---	---
364	4711??	473?	0	0	-1	-1	-1	---	---	---	---
365	471120	4740	0	0	-1	-1	-1	---	---	---	---
366	471130	4743	0	0	-1	-1	-1	---	---	---	---
367	471131	4744	0	0	-1	-1	-1	---	---	---	---
368	471140	474?	2	2	2	2	-1	1.03??+05	1.1165+05	---	8.9161-03
369	471150	4741	0	0	-1	-1	-1	---	---	---	---
370	47115?	47??	2	2	1	[illegible]	-1	?.3297+05	8.8148+05	---	---
371	4711??	4742	0	0	-1	-1	-1	---	---	---	---
372	4711??	47??	2	2	2	2	[illegible]	7.?343+05	9.1753+05	---	3.4600-03
373	471170	475?	0	0	2	-1	-1	1.2940+05	---	---	---
374	47117?	475?	0	0	-1	-1	-1	---	---	---	--
375	471180	475?	0	0	-1	-1	-1	---	---	---	---
376	471181	4759	0	0	-1	-1	-1	---	---	---	---
377	471190	4761	2	2	2	2	[illegible]	4.7230+05	4.?270+05	3.3859-02	5.9385-03
378	471200	4764	2	2	[illegible]	1	[illegible]	2.28??+06	2.8810+06	7.0?26-01	---
379	471211	476?	2	2	[illegible]	[illegible]	-1	?.?108+06	2.0860+06	---	---
380	47121?	476?	2	2	[illegible]	[illegible]	[illegible]	?.?677+06	2.0775+06	?.9?34+02	---
381	471220	47?0	2	2	2	2	[illegible]	7.3635+05	1.3879+06	5.2970+02	?.4741-03
382	47122?	47??	2	2	[illegible]	[illegible]	[illegible]	2.864?+06	2.823?+06	---	---
383	47123?	47??	2	2	[illegible]	[illegible]	[illegible]	2.6400+06	1.859?+06	?.55??+04	---
384	47124?	47??	2	2	[illegible]	1	[illegible]	3.0900+06	2.6220+06	9.2377+03	---
385	4712??	47??	2	2	[illegible]	[illegible]	[illegible]	2.59?0+06	1.8149+06	2.8?53+04	---
386	4712?0	47??	2	2	1	1	1	2.9959+06	3.4379+06	2.1467+04	---
387	47127?	4785	2	2	[illegible]	1	1	2.8869+06	2.1819+06	4.9349+04	---
388	4712??	47??	2	2	[illegible]	1	[illegible]	3.1989+06	3.6990+06	3.4513+04	---
389	4811??	482?	0	[illegible]	-1	-1	-1	---	---	---	---
390	4811??	48?4	[illegible]	[illegible]	-1	-1	-1	---	---	---	---
391	481111	484?	[illegible]	0	[illegible]	-1	-1	---	---	---	---
392	48113?	484?	0	[illegible]	-1	-1	[illegible]	---	---	---	---
393	48113?	484?	0	[illegible]	-1	-1	-1	---	---	---	---
394	48115?	4852	0	0	-1	-1	-1	---	---	---	---
395	481151	48?3	0	0	-1	-1	-1	---	---	---	---
396	4811??	4858	0	[illegible]	-1	-1	-1	---	---	---	---
397	4811?1	4859	0	0	-1	-1	-1	---	---	---	---
398	481180	4861	2	2	-1	1	-1	---	2.9919+04	---	---
399	481190	4864	0	0	-1	-1	-1	---	---	---	---
400	481191	4865	0	0	-1	-1	-1	---	---	---	---
401	481200	4867	2	2	2	[illegible]	-1	?.0282+04	1.2748+05	---	8.0073-03
402	481210	4870	6	6	1	[illegible]	1	?.295?+06	1.8837+06	---	---
403	481211	4871	6	6	1	1	-1	1.3151+06	2.3331+06	---	---
404	481220	4873	2	2	1	1	-1	7.9679+05	4.5565+05	---	---
405	481230	4876	2	2	[illegible]	1	-1	1.8661+06	1.0990+06	---	---
406	481240	4879	2	2	1	1	-1	1.1413+06	5.6755+05	---	---

Table C-2 (Cont.)

NUM	ID	MAT	AV B	E G	SR B	TYP G	N	CONST E COMPONENT BETA	GAMMA	DEL NEU	NEW FI
407	481250	4882	2	2	1	1	1	2 [illegible]+06	1 [illegible]+06		
408	481260	4885	2	2	1	1	1	1 4[illegible]+06	2 2080+05		
409	481270	4888	2	2	1	1	1	2 [illegible]+06	2 [illegible]	1 [illegible]	
410	481280	4891	2	2	1	1	1	1 [illegible]+06	1 [illegible]+06	2 [illegible]4+02	--
411	481290	4894	2	2	1	1	1	2 1040+0[illegible]	2 2280+06	3 [illegible]4+02	
412	481[illegible]0	4897	2	2	1	1	1	2 2580+06	1 2250+06	3 12[illegible]	
413	481310	4900	2	2	1	1	1	3 5181+06	2 2671+06	2 4 [illegible]+04	--
414	481320	4901	2	2	1	1	1	3 4049+06	1 8971+06	3 [illegible]+05	
415	491131	4926	0	0	1	1	-1	-			
416	491140	4928	0	0	1	1	-1	---	.	--	--
417	491141	4929	0	0	1	1	1				-
418	491150	4931	0	0	-1	1	-1	--		-	-
419	491151	4932	0	0	-1	-1	-1	---			-
420	491160	4934	0	0	-1	-1	-1		---	-	
421	491161	4935	0	0	1	1	-1	---	-	--	--
422	491162	4936	0	0	-1	-1	-1	-	--	-	--
423	491170	4937	0	0	-1	-1	-1	-	--		-
424	491171	4939	0	0	-1	-1	-1	--	---		
425	491180	4940	0	0	1	1	-1	---	--		
426	491181	4941	0	0	1	1	-1				
427	491182	4942	0	0	1	1	-1	--		-	--
428	491190	4943	0	0	1	1	1	--		--	---
429	491191	4944	2	2	2	2	1	3 9001+04	1 1946+05	---	8 [illegible]-03
430	491200	4946	2	2	-1	2	-1	---	3 1442+05	--	---
431	491201	4947	0	0	-1	1	1	--	---	---	---
432	491202	4948	0	0	1	1	1	---	--	---	---
433	491210	4949	0	0	-1	-1	-1	---	---	---	---
434	491211	4950	0	0	-1	-1	-1	---	---	---	---
435	491220	4952	2	2	2	2	-1	1 8134+05	6 0199+05	---	8 6049-03
436	491221	4953	0	0	2	1	-1	2.2341+05	---	---	---
437	491222	4954	0	0	-1	-1	-1	---	---	---	---
438	491230	4955	0	0	-1	-1	-1	---	-	--	---
439	491231	4956	0	0	-1	-1	-1	---	--	---	---
440	491240	4958	0	0	1	-1	-1	---	.	--	---
441	491241	4959	0	0	-1	-1	-1	---	---	---	---
442	491250	4961	0	0	-1	-1	-1	---	---	---	---
443	491251	4962	2	2	2	2	-1	2 [illegible]575+05	5 0533+05	---	7 5687-03
444	491260	4964	0	0	2	-1	-1	1 3752+06	--	---	2 [illegible]29-03
445	491261	4965	0	0	-1	-1	1	--	-	--	---
446	491270	4967	0	0	1	-1	1	---		1 [illegible]615+01	--
447	491271	4968	2	2	2	2	1	6 161[illegible]+05	1 22[illegible]+06	1 1429+03	[illegible] 7159-03
448	491280	4970	1	1	1	1	1	---	---	1 1085+02	--
449	491281	4971	2	2	-1	2	-1	---	1 7523+06	---	---
450	491290	4973	0	0	-1	-1	1	--	---	8 7615+02	--
451	491291	4974	2	2	2	2	1	1 3252+06	2 5857+06	1.3690+04	2.4555-03
452	491300	4976	0	0	-1	-1	1	---	---	4 867[illegible]+03	-
453	491301	4977	0	0	-1	1	1	-	--	4.5996+03	---
454	491302	4978	0	0	-1	1	-1	---	---	---	---
455	491310	4979	2	2	1	1	1	2 7071+06	2.0170+06	7 4402+03	---
456	491311	4980	2	2	-1	-1	1	---	---	6 9145+01	---
457	491320	4982	0	0	1	-1	1	---	---	2 5952+04	---
458	491330	4985	2	2	1	1	1	3.7661+06	3 4140+06	2 1073+05	---
459	491340	4988	2	2	1	1	1	3 9920+06	4 6191+06	2 3581+05	---
460	501130	5028	0	0	-1	-1	-1	---	--	---	--
461	501131	5029	0	0	-1	-1	-1	---	--	---	---
462	501171	5041	0	0	-1	-1	-1	--	---	---	---
463	501191	5047	0	0	-1	-1	-1	---	---	---	---
464	501210	5052	0	0	-1	-1	-1	---	---	---	---
465	501221	5053	0	0	-1	-1	-1	---	---	---	---
466	501230	5058	0	0	-1	-1	-1	---	---	---	---
467	501231	5059	0	0	-1	-1	-1	---	---	---	---
468	501250	5064	0	0	-1	-1	-1	---	---	---	---
469	501251	5065	0	0	-1	-1	-1	---	---	---	---
470	501260	5067	0	0	2	2	-1	2 6171+04	7 4452+04	---	---
471	501270	5070	0	0	-1	-1	-1	---	---	---	---
472	501271	5071	2	2	2	2	-1	8 9376+04	3.1845+05	---	7 2156-03
473	501280	5073	0	0	-1	-1	-1	---	--	---	---
474	501281	5074	0	0	-1	-1	-1	---	---	---	---

Table C-2 (Cont.)

NUM	ID	MAT	AV P	F ?	SP P	TYP G	N	CONT. E COMPONENT BETA	GAMMA	DEL. NEUT	NEW FD
475	501240	[illegible]	[illegible]	[illegible]	2	2	1	1.4808+05	8.0011+05	---	7.9465-03
476	501241	[illegible]	[illegible]	[illegible]	2	2	1	4.0707+05	4.70[illegible]0+05		1.1296-03
477	501[illegible]	[illegible]			[illegible]	1	1		---		
478	501[illegible]	[illegible]	[illegible]	2	2	2	1	8.1946+04	1.4720+05		1.7115-03
479	501310	5062	1	1	1	1	-1	8.8884+05	2.1000+06	---	
480	501311	5064	2	2	1	1	1	1.2499+06	1.0924+06	-	-
481	501320	[illegible]	0	0	1	1	1		---	--	
482	501330	[illegible]	1	1	2	2	1	7.2485+05	1.7106+06	6.9031+02	5.4934-03
483	501340	[illegible]	2	2	1	1	1	2.2950+06	1.2400+06	9.0706+04	
484	501350	[illegible]14	2	2	1	1	1	2.5550+06	2.4020+06	4.0036+04	
485	501360	[illegible]	2	2	1	1	1	2.6141+06	1.4270+06	8.1410+04	
486	511220	5120	[illegible]	0	1	1	1		---	---	---
487	511221	5121	[illegible]	0	1	1	1		---	---	---
488	511240	5134	[illegible]	[illegible]	1	1	1	---	---	---	---
489	511241	5135	[illegible]	0	1	1	1	---	---	---	---
490	511242	5136	0	0	1	1	1	---	---	---	---
491	511250	5137	0	0	1	1	-1	---	---	---	---
492	511260	5140	0	0	1	1	1	---	---	---	---
493	511261	5141	0	0	-1	1	1	---	---	---	---
494	511262	5142	0	0	1	1	1	---	---	---	---
495	511270	5144	0	0	1	-1	1	---	---	---	---
496	511280	5146	0	0	-1	1	1	---	---	---	
497	511281	5147	0	0	1	-1	1		---	---	
498	511290	5149	0	0	1	-1	-1	---	---	---	---
499	511300	5152	0	0	-1	-1	-1	---	---	---	---
500	511301	5153	0	0	-1	-1	-1	---	---	---	---
501	511310	5155	0	0	-1	-1	-1	---	---	---	---
502	511320	5158	0	0	-1	-1	-1	---	---	---	---
503	511321	5159	0	0	-1	-1	-1	---	---	---	---
504	511330	5161	0	0	-1	-1	-1	---	---	---	---
505	511340	5164	2	2	1	1	1	2.7810+06	2.2560+06	2.0637+02	---
506	511341	5165	1	1	-1	2	1	---	3.4390+05	---	---
507	511350	5167	1	1	1	1	1	2.2900+06	1.6000+06	1.6475+05	---
508	511360	5170	2	2	1	1	1	2.9529+06	2.6051+06	1.0769+05	---
509	511370	5173	2	2	1	1	1	2.5730+06	2.3891+06	1.0036+05	---
510	511380	5176	2	2	1	1	1	3.0300+06	3.5780+06	1.2349+05	---
511	511390	5179	2	2	1	1	1	3.9080+06	2.6840+06	2.4376+05	---
512	521210	5228	0	0	-1	-1	-1	---	---	---	---
513	521211	5229	0	0	-1	-1	1	---	---	---	---
514	521230	5234	5	5	-1	-1	-1	---	---	---	---
515	521231	5235	0	0	-1	-1	-1	---	---	---	---
516	521250	5241	0	0	-1	-1	-1	---	---	---	---
517	521270	5246	0	0	-1	-1	-1	---	---	---	---
518	521271	5247	0	0	-1	2	-1	---	4.0001+01	---	---
519	521290	5252	0	0	-1	-1	-1	---	---	---	---
520	521291	5253	0	0	-1	-1	1	---	---	---	---
521	521310	5258	0	0	-1	1	-1	---	---	---	---
522	521311	5259	0	0	-1	1	-1	---	---	---	---
523	521320	5261	[illegible]	0	-1	-1	-1	---	---	---	---
524	521330	5264	[illegible]	0	-1	1	-1	---	---	---	---
525	521331	5265	0	0	-1	-1	-1	---	---	---	---
526	521340	5267	0	0	1	-1	-1	---	---	---	---
527	521350	5270	2	2	2	2	-1	3.7034+05	9.6790+05	---	7.1800-03
528	521360	5273	0	0	-1	-1	1	---	---	2.6734+03	---
529	521370	5276	2	2	1	1	1	2.1730+06	1.6090+06	6.4241+03	---
530	521380	5279	2	2	1	1	1	1.9460+06	1.0680+06	2.0845+04	---
531	521390	5282	2	2	1	1	1	2.3760+06	2.3510+06	2.8410+04	---
532	521400	5285	2	2	1	1	1	2.3360+06	1.2750+06	7.2588+04	---
533	521410	5288	2	2	1	1	1	2.6581+06	2.5980+06	5.0932+04	---
534	521420	5291	2	2	1	1	1	2.5130+06	1.7750+06	7.4319+04	---
535	531250	5319	0	0	-1	-1	-1	---	---	---	---
536	531280	5328	0	0	-1	-1	-1	---	---	---	---
537	531290	5331	0	0	-1	-1	-1	---	---	---	---
538	531300	5334	0	0	-1	-1	-1	---	---	---	---
539	531301	5335	0	0	-1	-1	-1	---	---	---	---
540	531310	5337	0	0	-1	-1	-1	---	---	---	---
541	531320	5340	0	0	-1	-1	-1	---	---	---	---
542	531321	5341	0	0	2	-1	-1	7.0197+03	---	---	9.8884-03

Table C-2 (Cont.)

NUM	ID	VAL	AZ	EL	SP	TYP	CONT. E COMPONENT						NEW FD
							BETA		GAMMA	DEL	NEUT		
548	541410	5448	0	0	1	1	-1						
549	541420	5449	0	0	1	1	1						
550	541430	5450	0	0	1	1	-1						
551	541441	5451	0	0	1	1	-1						
552	541450	5452	0	0	1	1	-1						
553	541460	5453	0	0	1	1	1						
554	541470	5454	1	1	2	2	1	1	4454+04	4	8650+03		8 2505-03
555	541480	5455	1	1	1	1	1					4 2194+04	
556	541490	5456	2	2	2	2	1	6	4210+05	1	1191+06	2 0143+04	5 3909-03
557	541500	5457	1	1	1	1	1	2	4299+06	1	4000+06	3 9890+04	
558	541510	5458	2	2	1	1	1	2	7621+06	2	2110+06	4 6214+04	
559	541520	5459	2	2	1	1	1	2	4261+06	1	7790+06	1 3514+05	
560	541530	5460	2	2	1	1	1	2	6920+06	3	2030+06	8.2623+04	
561	541540	5461	2	2	1	1	1	2	3751+06	2	2320+06	9 8111+04	
562	541550	5462	2	2	1	1	1	2	7189+06	3	2401+06	7.8432+04	
563	541560	5463	2	2	1	1	1	2	4681+06	2	3421+06	1.2962+05	
564	541570	5464	0	0	1	1	1						
565	541581	5465	0	0	1	1	1						
566	541590	5466	0	0	1	1	1						
567	541600	5467	0	0	-1	-1	-1						
568	541610	5468	0	0	1	-1	1						
569	541620	5469	0	0	1	1	1						
570	541630	5470	0	0	-1	-1	-1						
571	541640	5471	0	0	-1	1	-1						
572	541650	5472	0	0	1	-1	-1						
573	541660	5473	2	2	-1	2	-1			3	6970+05		
574	541670	5474	1	1	2	2	1	3	3528+04	1	02e7+06	6 8564+01	7.1622-03
575	541680	5475	2	2	1	1	1	1	4043+06	1	5764+06	7 8455+02	
576	541690	5476	2	2	1	1	1	2	0507+06	2	0880+06	4.4114+03	
577	541700	5477	2	2	1	1	-1	2	2251+06	1	7280+06		
578	541710	5478	2	2	1	1	1	1	6060+06	9	2320+05	2.8032+03	
579	541720	5479	2	2	1	1	1	2	2910+06	1	8270+06	2.5784+04	
580	541730	5480	2	2	1	1	1	1	9711+06	1	0860+06	2.7629+04	
581	541740	5481	2	2	1	1	1	2	2789+06	2	3131+06	4.0647+04	
582	541750	5482	0	0	1	-1	-1						
583	541760	5483	0	0	1	1	-1						
584	541770	5484	0	0	1	1	1						
585	541780	5485	0	0	1	1	-1						
586	541790	5486	0	0	1	1	1						
587	541801	5487	1	1	1	1	1						
588	541810	5488	0	0	1	1	1						
589	541820	5489	0	0	1	1	1						
590	541830	5490	2	2	2	2	-1	3	5700+04	2	9029+05		
591	541840	5491	0	0	-1	-1	-1						
592	541850	5492	1	1	2	2	-1	8	1312+01	4	4901+05		8 5538-03
593	541860	5493	1	1	2	2	1	1	5176+04	3	6100+05	7 9177+01	7.8085-03
594	541870	5494	2	2	1	2	1	2	4490+06	7	6682+05	2 4996+02	
595	541880	5495	1	1	2	2	1	5	0195+05	8	5358+05	4 1149+03	5.6760-03
596	541890	5496	1	1	1	1	1	2	3900+06	2	6601+06	9.8195+03	
597	541900	5561	1	1	2	2	1	1	0891+06	1	7101+06	6.2998+04	8.2671-04
598	541910	5564	1	1	2	2	1	5	3204+05	1	3427+06	8.1035+04	6.8707-03
599	541920	5567	2	2	1	1	1	2	2190+06	1	5810+06	1.4630+05	
600	541930	5570	2	2	1	1	1	2	4540+06	2	9690+06	1.2391+05	
601	541940	5573	2	2	1	1	1	2	5069+06	2	4041+06	1.7669+05	
602	541950	5576	2	2	1	1	1	2	7510+06	3	3311+06	7.6691+04	
603	541960	5579	0	0	-1	-1	-1						
604	541970	5581	0	0	-1	-1	-1						
605	541980	5647	0	0	-1	-1	-1						
606	561390	5652	0	0	-1	-1	-1						
607	561400	5655	0	0	1	-1	-1						
608	561410	5658	0	0	2	-1	-1	4	6161+03				8.9573-03
609	561420	5661	0	0	1	-1	-1						
610	561430	5664	0	0	-1	-1	-1						

Table C-2 (Cont.)

NUM	ID	MAT	AV H	E G	SP B	TYP G	N	CONT BETA	E COMPONENT GAMMA	SEC	NEUT	NEW ID
611	561440	5667	2	2	1	2	1	9.4625+05	1.0134+06			
612	561450	5670	1	1	2	2	1	1.0070+06	9.4700+05			
613	561460	5673	1	1	1	-1	1	1.4700+06		1	1.0[illegible]+01	
614	561470	5676	2	2	1	2	1	1.0006+06	1.9010+06	6	1.0[illegible]+01	
615	561480	5679	2	2	2	2	1	2.1[illegible]+06	6.2[illegible]+05	6	7.7[illegible]+01	7.[illegible]+01
616	561490	5682	2	2	1	1	1	2.0160+06	1.5240+06	9	4.4217+01	---
617	561500	5685	2	2	1	1	1	1.9050+06	1.0160+06	9	8.4701+02	---
618	561510	5688	2	2	1	1	2	1.1681+06	2.2581+06	1	4.5080+04	---
619	561520	5691	2	2	1	1	2	1.2210+06	1.1900+06	2	2.2710+04	---
620	571400	5727	0	0	1	1	1					
621	571400	5731	0	0	1	1	-1					
622	571410	5734	6	6	-1	2	1		1.5667+04			
623	571420	5737	0	0	-1	1	1					
624	571430	5740	1	1	-1	-1	-1					
625	571440	5743	1	1	2	-1	-1	1.3460+04				8.[illegible]+01
626	571450	5746	1	1	2	2	1	6.1160+05	8.4008+05			1.6[illegible]+01
627	571460	5749	1	1	2	2	2	4.4179+05	1.0546+06	6	9.2[illegible]+01	7.[illegible]+01
628	571461	5750	0	0	-1	-1	-1					
629	571470	5752	2	2	1	2	1	1.0320+06	7.5630+05	7	6.2482+01	
630	571480	5755	0	0	-1	-1	1			8	9.9599+01	---
631	571490	5758	2	2	1	1	1	1.7830+06	1.0870+06	1	7.[illegible]+01	---
632	571500	5761	2	2	1	1	2	2.0170+06	2.5470+06	2	5.[illegible]+03	
633	571510	5764	2	2	1	1	2	2.2020+06	1.6010+06	2	4.7[illegible]+04	
634	571520	5767	2	2	1	1	2	2.3550+06	2.8849+06	2	2.3963+04	---
635	571530	5770	2	2	1	1	2	2.5950+06	2.0880+06	4	1.6080+04	---
636	571540	5773	2	2	1	1	2	2.6149+06	3.1989+06	4	1.6964+04	---
637	571550	5776	2	2	1	1	2	2.8169+06	2.6980+06	8	1.1364+04	---
638	581410	5840	0	0	-1	-1	-1	---	---		---	---
639	581420	5843	-5	-5	-1	-1	-1	---	---		---	---
640	581430	5846	0	0	-1	-1	-1	---	---		---	---
641	581440	5849	0	0	-1	-1	-1	---	---		---	---
642	581450	5852	0	0	-1	-1	1	---	---		---	---
643	581460	5855	0	0	-1	-1	-1	---	---		---	---
644	581470	5858	2	2	1	2	1	8.5908+05	9.8303+05		---	---
645	581480	5861	0	0	-1	-1	-1	---	---		---	---
646	581490	5864	2	2	1	1	1	1.1752+06	1.0450+06		---	---
647	581500	5867	2	2	1	1	-1	6.8918+05	4.3969+05		---	---
648	581510	5870	2	2	1	1	-1	1.4400+06	8.7740+05		---	---
649	581520	5873	2	2	1	1	-1	1.1660+06	7.7842+05		---	---
650	581530	5876	2	2	1	1	1	1.6800+06	1.1250+06	1	5.5734+03	---
651	581540	5879	2	2	1	1	1	1.6940+06	9.5867+05	1	6.1886+03	---
652	581550	5882	2	2	1	1	1	2.0150+06	1.5711+06	4	9.9970+03	---
653	581560	5885	2	2	1	1	1	2.1180+06	1.1710+06	1	0.0196+04	---
654	581570	5888	2	2	1	1	2	2.4309+06	2.0889+06	1	1.7144+04	---
655	591420	5920	0	0	-1	-1	1	---	---		---	---
656	591421	5921	0	0	-1	-1	-1	---	---		---	---
657	591430	5931	0	0	1	-1	-1	---	---		-	---
658	591440	5934	0	0	-1	-1	-1	---	---	---	---	---
659	591441	5935	0	0	-1	-1	-1	---	---	---	---	---
660	591450	5937	0	0	-1	-1	-1	---	---	---	---	---
661	591460	5940	0	0	-1	-1	-1	---	---	---	-	
662	591470	5943	6	6	2	2	-1	5.7966+03	4.2463+05		---	8.2690-03
663	591480	5946	2	2	2	2	-1	2.9362+04	3.6397+05		---	8.5750-03
664	591481	5947	2	2	2	2	-1	6.0288+04	8.5834+05		-	7.0741-03
665	591490	5949	2	2	2	2	-1	5.3163+04	2.4660+05		-	8.1329-03
666	591500	5952	2	2	1	1	-1	2.0170+06	1.0760+06		- -	---
667	591510	5955	2	2	2	2	-1	1.9456+05	2.4890+05		- -	7.4517-03
668	591520	5958	2	2	1	1	-1	1.5490+06	2.1190+06		---	---
669	591530	5961	2	2	1	1	-1	1.7000+06	1.0270+06		---	---
670	591540	5964	2	2	1	1	1	1.8730+06	2.4140+06	2	0.0622+02	---
671	591550	5967	2	2	1	1	1	2.0710+06	1.4800+06	4	3.3380+03	---
672	591560	5970	2	2	1	1	1	2.1490+06	2.6879+06	8	9.9302+03	---
673	591570	5973	2	2	1	1	1	2.3870+06	1.8809+06	2	3.3721+04	---
674	591580	5976	2	2	1	1	1	2.5519+06	3.1550+06	2	5.5556+04	---
675	591590	5979	2	2	1	1	1	2.7730+06	2.3380+06	5	3.3750+04	---
676	601440	6011	-5	-5	-1	-1	-1	---	---		---	---
677	601470	6040	0	0	-1	-1	-1	---	---		---	---
678	601490	6046	0	0	-1	-1	-1	---	---		---	---

Tab[illegible], C-2 (Con[illegible])

NOM	IP	MAT	AV P	E G	SP P	TYP I	N	CONT DELTA	E COMPONENT GAMMA	DEL	NEW	NEW PO
679	601[illegible]	6052	[illegible]	0	1	1	1	[illegible]	[illegible]		[illegible]	
680	601[illegible]	[illegible]	[illegible]	0	1	1	1	[illegible]	[illegible]		[illegible]	
681	601[illegible]	[illegible]	2	2	1	1	1	1.1110+06	6.7220+05		---	
682	601[illegible]	[illegible]	2	2	1	1	-1	6.0718+05	6.0760+05		---	---
683	601[illegible]	[illegible]	2	2	1	1	1	1.3660+06	8.3390+05		---	---
684	601[illegible]	[illegible]	2	2	1	1	1	1.1220+06	7.6967+05		---	---
685	601570	6079	2	2	1	1	1	1.6680+06	1.1400+06		---	---
686	601580	6082	2	2	1	1	1	1.5890+06	9.2387+05	1.1021+00	---	---
687	601590	6076	2	2	1	1	2	1.0629+06	1.6660+06	1.5090+02	---	---
688	601600	[illegible]	2	2	1	1	2	1.0999+06	1.2060+06	2.4922+01	---	---
689	601610	6084	2	2	1	1	2	1.1600+06	1.0790+06	5.2440+03	---	---
690	611[illegible]	6143	0	0	-1	-1	-1	---	---	---	---	---
691	611[illegible]	6149	0	0	-1	-1	1	---	---	---	---	---
692	611[illegible]	6152	0	0	-1	-1	-1	---	---	---	---	---
693	611[illegible]	6155	0	0	-1	-1	-1	---	---	---	---	---
694	611[illegible]	6158	0	0	-1	-1	1	---	---	---	---	---
695	611[illegible]	6158	0	0	1	-1	-1	---	---	---	---	---
696	611510	6161	0	0	-1	1	-1	---	---	---	---	---
697	611520	6164	0	0	-1	1	1	---	---	---	---	---
698	611521	6165	0	0	1	1	-1	---	---	---	---	---
699	611522	6166	2	2	1	1	-1	6.6879+05	1.7332+06		---	---
700	611530	6167	2	2	1	1	1	6.0721+05	1.7220+05		---	---
701	611540	6170	0	0	1	1	-1	---	---		---	---
702	611541	6171	6	6	2	2	-1	3.4463+04	6.8460+05		---	7.4952-03
703	611550	6173	2	2	1	1	-1	1.0200+06	6.3301+05		---	---
704	611560	6176	2	2	1	1	-1	1.3140+06	1.8940+06		---	---
705	611570	6179	2	2	1	1	-1	1.4510+06	8.4079+05		---	---
706	611580	6182	2	2	1	1	-1	1.5690+06	2.1640+06		---	---
707	611590	6185	2	2	1	1	1	1.7819+06	1.1599+06	2.1557+01	---	---
708	611600	6188	2	2	1	1	1	1.9690+06	2.4999+06	5.5300+02	---	---
709	611610	6191	2	2	1	1	2	1.1081+06	1.6961+06	4.7400+03	---	---
710	611620	6194	2	2	1	1	2	2.0790+06	2.6200+06	6.5128+03	---	---
711	621[illegible]	6228	0	0	-1	-1	-1	---	---	---	---	---
712	621460	6231	-5	-5	-1	-1	-1	---	---	---	---	---
713	621470	6234	-5	-5	-1	-1	-1	---	---	---	---	---
714	621480	6237	-5	-5	-1	-1	-1	---	---	---	---	---
715	621490	6240	-5	-5	-1	-1	-1	---	---	---	---	---
716	621510	6246	0	0	-1	1	-1	---	---	---	---	---
717	621530	6252	0	0	-1	-1	-1	---	---	---	---	---
718	621550	6258	0	0	-1	-1	-1	---	---	---	---	---
719	621560	6261	0	0	1	1	1	---	---	---	---	---
720	621570	6264	2	2	1	1	-1	8.6261+05	4.0160+05		---	---
721	621580	6267	2	2	1	2	-1	4.0843+05	2.1592+05		---	---
722	621[illegible]	6270	2	2	1	1	-1	1.0002+06	9.6499+05		---	---
723	621600	6273	2	2	1	1	-1	8.4669+05	6.8978+05		---	---
724	621610	6276	2	2	1	1	-1	1.5070+06	1.1980+06		---	---
725	621620	6279	2	2	1	1	1	1.3830+06	8.7783+05		---	---
726	621630	6282	2	2	1	1	-1	1.6690+06	1.3340+06		---	---
727	621640	6285	2	2	1	1	1	1.8029+06	1.0490+06	1.4716+01	---	---
728	621650	6288	2	2	1	1	1	1.9630+06	1.6910+06	5.2722+02	---	---
729	631520	6328	0	0	-1	-1	-1	---	---	---	---	---
730	631521	6329	0	0	-1	-1	-1	---	---	---	---	---
731	631522	6330	0	0	-1	-1	-1	---	---	---	---	---
732	631540	6334	0	0	-1	-1	-1	---	---	---	---	---
733	631541	6335	0	0	-1	-1	-1	---	---	---	---	---
734	631550	6337	0	0	-1	-1	-1	---	---	---	---	---
735	631560	6340	0	0	-1	-1	-1	---	---	---	---	---
736	631570	6343	0	0	-1	-1	-1	---	---	---	---	---
737	631580	6346	0	0	-1	-1	-1	---	---	---	---	---
738	631590	6349	2	2	1	2	-1	8.7290+05	2.2555+05		---	---
739	631600	6352	0	0	-1	-1	-1	---	---	---	---	---
740	631610	6355	2	2	1	1	-1	1.0059+06	1.0062+06		---	---
741	631620	6358	2	2	1	1	-1	1.4030+06	2.0180+06		---	---
742	631630	6361	2	2	1	1	-1	1.5410+06	1.0720+06		---	---
743	631640	6364	2	2	1	1	1	1.5629+06	2.1469+06	5.0000-03	---	---
744	631650	6367	2	2	1	1	1	1.8301+06	1.4070+06	3.4214+02	---	---
745	641520	6425	-5	-5	-1	-1	-1	---	---	---	---	---
746	641530	6428	0	0	-1	-1	-1	---	---	---	---	---

Table C-2 (Cont.)

			AV. E		SP TYP			CONT. E COMPONENT				
NUM	ID	MAT	B	G	B	G	N	BETA	GAMMA	DEL.	NEUT.	NEW FD
747	641500	6446	0	0	-1	1	1	---	---			--
748	641610	6452	0	0	1	1	-1	---	---		---	-
749	641620	6453	2	2	2	2	-1	3.7416+04	1.1273+05		---	7.3435-01
750	641630	6454	2	2	1	1	-1	8.5918+05	9.6129+05		---	---
751	641640	6455	2	2	1	1	1	7.4005+05	6.4691+05		---	---
752	641650	6456	2	2	1	1	1	1.2300+06	8.8110+05		---	---
753	651600	6520	0	0	-1	-1	1	---	---		---	---
754	651610	6521	0	0	-1	-1	1	---	---		---	--
755	651620	6522	0	0	-1	1	1	---	---		---	---
756	651630	6523	0	0	1	1	-1	---	---		---	---
757	651640	6524	0	0	1	1	-1	---	---		---	---
758	651650	6525	0	0	-1	1	-1	---	---		---	---
759	661650	6652	0	0	-1	-1	-1	---	---		---	---
760	661651	6653	0	0	-1	-1	-1	---	---		---	---
761	661660	6655	0	0	1	-1	-1	---	---		---	---
762	671660	6729	0	0	-1	-1	-1	---	---		---	---
763	671661	6730	0	0	-1	-1	-1	---	---		---	---
764	681671	6841	0	0	-1	-1	-1	---	---		---	---

[a]"NUM" corresponds to the order in the fission-product decay file before combining all decay data into a single ENDF/B-VI file.

"ID" = Z*10000+A*10+S is a numerical identification for the nuclide.

"MAT" = ENDF MAT number

Under "AV. E," the B (beta) and G (gamma) numbers mean:

0	no change in INEL spectroscopic data (Fall 1989)
1	direct measurement by G. Rudstam from INEL data
2	theory, LANL (using slightly modified Gross Theory code of T. Toshida)
5	same as ENDF/B-V
-5	no average energy as in ENDF/B-V
6-7	JNDC 1989; probably based on evaluated measurement for gamma and/or beta

Note: these two columns are primarily used to indicate with "2" where Gross Theory has been used as the source of average energy. Many such values will probably agree with JENDL2.

Under "SP TYP" for B, G, and N, the numbers mean:

-1	no change in spectroscopic spectra made
1	corresponding spectra entirely free from Gross Theory, except delayed neutrons are based on LANL evaluation of measured and theory (referenced in File 1).
2	Gross Theory spectra supplements spectroscopic

Under "CONT.E COMPONENT" are the beta, gamma, and delayed neutron energies derived from the continuous energy files.

Under "NEW FD," the discrete normalization factor for beta is listed if it has changed from the spectroscopic value (usually 1.0e-02).