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A Nuclear Cross Section Data Handbook

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PREFACE

When work on this handbook commenced nearly three years ago there were two fundamental goals that had to be addressed. First was providing the users of MCNP and its family of codes a current, portable, complete(all of the recommended data comprising the MCNP library should be included), "qualitative," yet concise reference document containing isotopic information, evaluation information, the origin of the data, and its representation in both a tabular and graphical form. Secondly, and perhaps just as important, was the production of this document in a manner such that (a) the update of a single nuclide or several nuclides could be performed in a matter of minutes, and (b) the entire document could be updated and a new edition produced in a matter of weeks (depending of course upon the amount of upheaval in the MCNP data library). With the inclusion of the tabular data, pie-charts and cross-secton curves for the 129 evaluations which are the source of the default cross sections for MCNP, plus the accompanying explanatory information pertinent to each evaluation, we hope that the first objective has been achieved. Discerning a methodology which would facilitate the accomplishment of the second objective was extremely difficult. Ideally, one wants a program which can be started and left unattended, while the desired data is automatically generated, formatted, and assimilated. Such an idea may seem a little far-fetched at first glance; however, when viewed in greater detail, one finds that the major preventatives from having such a program are systemic. Ever cognizant of the above factors, a Fortran Command Language (FCL) program (.FLOGIN) was written to accomplish the task previously alluded to. Although the program cannot functionally perform all of the tasks required to make the generation of the handbook completely automatic, it comes as close as presently possible, considering the system constraints and the disparity of the data. To circumvent many of the constraints imposed by the system(s) a small C-Shell program (MKHBK) was written to provide a direct communicative link between the CTSS and UNIX computing environments. In actuality, both .FLOGIN and MKHBK are controllers; the former allows one to automate repetitious processes, whereas the latter removes the task of manually transporting, assimilating and processing large numbers of files and/or data from system-to-system. These controllers are very general in scope and simple in their application, and it is precisely this generality and simplicity which make them so powerful and instrumental in the accomplishment of the second objective mentioned above.

ACKNOWLEDGMENTS

The successful completion of any project of this magnitude requires the assistance and cooperation of many people. Although it is practically impossible to individually thank all the contributors from throughout the Laboratory for their helpful contributions, there are a few individuals whose assistance merits special attention. In particular, I would like to thank Robert Hotchkiss for the many hours of discussions and heated arguments that we had on formatting the data; for introducing me to FCL and holding my hand while I became familiar with it, and for his special effervescence which made a somewhat intractable task a great deal of fun. I also owe a special debt of thanks to my colleagues Robert Little and Robert (Big Bob) Seamon. The former for his many reviews of the document, constructive comments, corrections and

criticisms; the latter for his modification of the FICHE code which facilitated the formatting of the text, for gathering and assimilating the necessary heading information and for his special brand of fastidiousness and attention to detail which assured that the quality and completeness of the document would be maintained. Lastly, I thank Mrs. Helen Byers for the many hours we spent discussing TEX in general and its use and application to the *Handbook* in particular.

A NUCLEAR CROSS SECTION DATA HANDBOOK

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ABSTRACT

Isotopic information, reaction data, data availability, heating numbers, and evaluation information are given for 129 neutron cross-section evaluations, which are the source of the default cross sections for the Monte Carlo code MCNP. Additionally, pie diagrams for each nuclide displaying the percent contribution of a given reaction to the the total cross section are given at 14 MeV, 1 MeV, and thermal energy. Other information about the evaluations and their availability in continuous-energy, discrete-reaction, and multigroup forms is provided. The evaluations come from ENDF/B-V, ENDL85, and the Los Alamos Applied Nuclear Science Group T-2. Graphs of all neutron and photon production cross-section reactions for these nuclides have been categorized and plotted.

I. INTRODUCTION

Cross-section data are the essential and absolutely necessary component of the input to all radiation transport codes; indeed, cross sections must exist for every element and isotope which appear in a transport problem in order to effect a solution of that problem. It is the cross sections which contain information about what happens to the neutrons and photons when they collide with atoms of the material through which they pass. Furthermore, the physics information distinguishing one element from another is also contained in the cross sections.

Neutral-particle transport codes such as the Monte Carlo code MCNP[1] need neutron interaction, neutron-induced photon production, and photon interaction cross sections to perform the many and varied evaluations and calculations to which the ascribe. This *Handbook* provides information about the neutron interaction and photon production cross sections for the evaluations on which default cross sections for MCNP are based. These "neutron" cross sections are *complete* in the sense that cross sections, angular distributions, and secondary energy distributions for each reaction are available; cross sections for producing photons along with the energy

and angular distributions of the induced photons are also carried on these files; however, not all neutron cross-section sets include photon production data.

Each neutron cross-section set is generated from an evaluated data set. An evaluated set of cross sections is produced by analyzing experimentally measured cross sections and combining the data with the predictions of nuclear model calculations in an attempt to extract the most accurate cross-section information. In an evaluated data set no ambiguity is allowed; this simply means that a decision has been reached on what the cross section for each reaction should be and what the secondary energy and angular distributions should be. The majority of the data presented in this *Handbook* comes from Version V of the American national ENDF/B (Evaluated Nuclear Data File/B) system.[2,3] These cross sections are supplemented by evaluations from two other sources: the Lawrence Livermore National Laboratory's Evaluated Nuclear Data Library (ENDL)[4] and evaluations from the Los Alamos Applied Nuclear Science Group T-2. Older evaluations accessible from other sources have now essentially been phased out.

From any one evaluated data set, several sets of cross sections can be generated. For the Monte Carlo code MCNP the evaluated data are processed into ACE format (ACE is an acronym for A Compact ENDF) described in Ref. 1. Cross sections in ACE format are given and used as continuous-energy functions. For use with discrete ordinates transport codes like ONEDANT[5] and TWODANT[6], multigroup scattering matrices must be calculated from the evaluated data. The format of the multigroup data is described in Ref. 7. These multigroup scattering matrices for the S_N method are used as the source from which multigroup data as described in Ref. 8 are generated for input to MCNP when it is run with the multigroup option. At Los Alamos we have cross sections in both pointwise and multigroup form available from the same evaluated data source; this makes possible meaningful comparisons between the continuous-energy Monte Carlo, multigroup Monte Carlo, and S_N methods.

In ACE format the cross sections for all reactions are provided on a single energy grid. The grid is sufficiently dense that linear-linear interpolation between points reproduces the evaluated cross sections within a specified tolerance that is generally one percent or less. All cross-section tabulations given in the evaluated data with semi-log or log-log interpolation schemes are linearized. Depending on the linearization tolerance, but primarily on the number of unresolved resonances and the resonance reconstruction tolerance (generally 0.5% or better), the resulting energy grid may contain as few as 250 points (e. g., H-1) or as many as 22,500 points (e. g., Au-197). The "original" ACE-format libraries - those most closely representing the intentions of the evaluators - can be very long files. "Thinned" files were prepared for the same evaluations in such a way as to preserve the flat-weighted integral of the total cross section to within 0.5%. There are also discrete-reaction cross-section files in which the pointwise reaction cross sections have been averaged over 262 energy groups using a flat weight function. Thus, for Monte Carlo cross sections it is possible to generate many different sets dependent on the linearization, resonance-reconstruction, and thinning tolerances, to say nothing of the range of temperatures to which the cross sections can be broadened. With multigroup cross

sections the problem is compounded because of the various energy group structures and weight functions which can be used in the cross-section collapse.

The continuous-energy ACE cross sections and multigroup cross sections were processed from ENDF/B-V and Group T-2 evaluations using modules of the NJOY[9] nuclear data processing system. The cross sections from ENDL-85 were processed[10] using the MCPOINT code which is available in the OMEGA[11] code package.

This *Handbook* contains plots of reactions from the "original" continuous-energy cross-section set which most faithfully reproduces the intentions of the evaluator. An index to all other representations of that evaluation available in continuous-energy or multigroup format, along with a detailed description of the reactions in each evaluation is also provided.

Only one evaluation is plotted for each isotope or element; as can be seen from Appendix G of Ref. 1, there are many cases where more than one evaluation is available; the evaluation chosen is the one we believe to be the best and most current. These evaluations correspond to the default cross sections which are obtained when MCNP is run in a default cross-section mode, and they correspond to the evaluations from which the aforementioned multigroup cross sections were generated.

The production of this *Handbook* is in direct response to the expressed desire of MCNP users to have readily available a concise package of information with which to characterize the physical properties of the materials used in their calculations. The cross-section plots are presented exactly as one would find that information on the data libraries maintained by the Nuclear Data Team in Group X-6; no attempt has been made to remove any of the imperfections inherent therein.

II. HANDBOOK CONTENTS

This document contains 129 sets of tabular data, pie-charts and plots of the neutron interaction, and photon-production cross sections for the elements listed in Table I. The chemical symbol identifying a certain element or isotope is listed first, followed by the nuclide identifier name or ZAID.

The tabular data lists the **source** of each evaluation; the appropriate **reference** for that source, the **available data** for the evaluation, **isotopic information, evaluation information,** and **reaction information.** The **source** refers to the tape or file from which the evaluated data was taken - that file which was input to the NJOY code or to MCPOINT. The **reference** is that document in which the evaluation is best described and which can be referenced in the literature. Two documents are frequently referenced incompletely. The complete bibliographic citation for "ENDF-201" is Ref. 2; that for "ENDF-201 Supplement I" is Ref. 3. All of the cross-section sets derived from a single evaluation are listed under **data availability.** These sets are divided among three classes - continuous, discrete-reaction, and multigroup cross sections. NES, the number of energies at which the total cross section is tabulated, and the temperature to which the cross sections were doppler broadened are given for each of the three classes of cross-section sets. Comparison of the NES values gives one an idea of how much detail is provided in the various cross-section sets. Under **isotopic information** the natural abundance for the isotope and the density

value used in calculating the mean free path quoted for each pie-chart are listed; the sources of these data are discussed in Appendix A. The **evaluation information** denotes whether or not the evaluation has photon-production data and/or heating numbers and furthermore, whether these heating numbers are for local or total heating. This matter is discussed in more detail in section IV. The energy range of the calculation is also listed under **evaluation information.** The lower energy bound is 10^{-5} eV for ENDF/B-V evaluations and evaluations from Group T-2. The lower energy bound for ENDL-85 evaluations is 10^{-4} eV. Generally, the upper energy bound is 20 MeV; exceptions are duly noted. Under **reaction information** all of the reactions and their respective ENDF/B MT numbers are listed, along with the respective kinematic and reaction Q values (described in Appendix A).

There are a few isotopes for which reactions given as discrete inelastic scattering ($51 \leq MT \leq 90$) may not be that. In order to accurately represent energy-angle correlation of neutron emission spectra from light-element reactions, the cross section is divided among several inelastic levels. It is this method, sometimes referred to as the "pseudo-level" technique, in which distinction between kinematic Q_K and reaction Q_R becomes very important. There are notes in Appendix B to describe these special cases and to explain the repetition of the same reaction label in the first column under **reaction information.**

Pie-charts for each evaluation are given at 14 MeV, 1 MeV, and thermal energy. At these energies the percent contribution of each reaction to the total cross section is shown graphically and listed numerically, the total cross section in barns and the mean free path in centimeters are listed; the formula for the mean free path is

$$mfp(cm) = \frac{A}{\rho N_A \sigma_T} \times \left(10^{24} b/cm^2\right) \quad , \tag{1}$$

where ρ is the density (g/cm^3), A is the atomic weight (g/mole), N_A is Avogardo's number (=6.023x10^{23} atm/mole), and σ_T is the total cross section in barns. The TOTAL INELASTIC cross section, σ_{in}, referred to in the pie charts is the sum of the cross sections for inelastic-level scattering and the cross section for scattering to the continuum; viz,

$$\sigma_{in} = \sum_{i=51}^{90} \sigma_{n,n'}^{MT=i} + \sigma_{n,n'}^{MT=91} \tag{2}$$

The graph or plot data of the cross sections for the various reactions consist of a series of individual curves which characterize the reactions or ENDF/B MT's for a given nuclide or isotope. They are grouped into the following eight broad categories- 1. Summary Reactions: The total, elastic, absorption, and total fission reactions; these reactions are always defined over the entire energy range. 2. Heating Number: The local or total heating number in MeV/collision. 3. Gamma Production: The total photon-production cross section. 4. Fission Reactions: In cases where the total fission reaction is given as the sum of reactions (n,F)= (n,f) + (n,n'f) + (n,2nf) + (n,3nf), the component reactions are given in this plot. 5. Nubar Data: The prompt and total $\overline{\nu}$, the average number of neutrons per fission, are plotted here. Total $\overline{\nu}$ is labeled MT=452; prompt $\overline{\nu}$ is MT=456. In cases where the $\overline{\nu}$ could

be either prompt or total, it is identified by MT=453. 6. Threshold Reactions: These reactions include total inelastic scattering and all other negative-Q reactions for which there are outgoing neutrons; for example, (n,2n), (n,2nα), (n,n'p), and (n,4n) reactions. 7. Absorption Reactions: These are the components of the total absorption reaction, those reactions for which no neutrons are emitted. One can find here cross sections for the (n,p), (n,d), (n,^{3}He), (n,α), (n,2α), (n,2p), (n, pα), and (n,t2α) reactions. Readers should note that the (n,γ) reaction - a principal component of the total absorption cross section reaction - is not included in the foregoing list and is never individually plotted. This was done in order that the high-threshold absorption reactions could be clearly seen on this plot. 8. Charge-Particle-Production-Reactions: These reactions are redundant, were not given in the original evaluation, and are not given in the list of component reactions for the evaluation. They are generated specially to represent the total cross section for producing protons, deuterons, tritons, ^{3}He, and α particles.

It is important to note that the TOTAL INELASTIC cross section MT=4 plotted with the threshold reactions includes the partial cross sections for reactions being represented using the pseudo-level technique.

The nuclide identifier name or ZAID is a floating point number used to identify the evaluation. Each evaluated cross section set has a unique ZAID. The ZAID is of the form ZA.nnX. The portion of the ZAID to the left of the decimal point is ZA, where, ZA=1000*Z+A and Z is the charge number (atomic number) for the element or isotope and A is the mass number. If the evaluation is for a mixture of isotopes, A is set to 0.0. For example, ZA for the element silicon is ZA=14000. In the ZAID, *nn* is the data set identifier and X indicates one of several classes of data. Hence, the ZAID for the Group T-2 evaluation for deuterium is 1002.55, where Z=1, A=2, and nn=55. For those cross-section sets of concern in this *Handbook*, it is only necessary to distinguish between Class C, Class D, and Class M (X=C,D, and M) data sets. Class C data sets are continuous-energy cross sections in ACE format, the "original" and "thinned" cross sections. The Class D data sets are discrete-reaction cross sections in ACE format. The Class M data sets are multigroup cross sections. For the ENDF/B-V evaluations, *nn* is 50 for the "original" and 51 for the "thinned" cross sections. The evaluations from Group T-2 have *nn* 55 or greater; the evaluations from ENDL-85 have *nn*=35.

As a convenience to the user, the elements are listed alphabetically according to name in Table II, and in Table III the elements are listed according to atomic number. Please note that the *Handbook* does not contain cross-section evaluations for every element in the periodic system (Table II).

III. ARRANGEMENT OF THE DATA

The data in this volume can be considered in terms of 3 modules; a tabular data module, a pie-chart data module, and a graph or plot data module. Each of the modules contains 129 sets of data which have been automatically formatted to produce two pages of output. The first page contains the tabular and pie-chart data and the second page contains the graphs or plots.

A. Tabular Data

There are 129 sets of tabular data contained in this volume, one for each of the elements or isotopes on the MCNP library. The tabular data module contains relevant explanatory information which was detailed in the previous section. The tabular data or text has encoded TEXcommands to facilitate the formatting of the pie charts and text on a single page.

B. Graphics Data

The *Handbook* contains two graphics data modules, the pie-chart data module, and the graph or plot data module. The pie-chart module consists of individual pie charts which have been generated at three different energies. The individual pie charts are then ordered and formatted so as to be contained in a single file and subsequently combined with the tabular data.

The graph or plot data module consists of a series of curves which characterize the reactions or ENDF/B MT's. These curves are grouped into various categories which form a single graph. For each graph the cross section in barns on the ordinate is plotted versus the energy in MeV along the abscissa. On the upper right hand side of each graph the date the plot was generated is given, followed by the ZAID, the chemical symbol for the element or isotope, the library upon which the evaluation is listed, and the MT's being plotted. The graphs of curves are subsequently formatted so that all categories of curves are contained on a single page. It is understood that not all categories of plots appear for every evaluation. In fact, each page may contain as few as two or as many as six graphs of plots or curves.

IV. Heating Numbers

Included among the plots for each each nuclide (page two of each evaluation) is a plot labeled "Heating Numbers" in units of MeV/collision. On the first page under **evaluation information** these numbers are detailed as either local or total heating numbers. Generally, the heating numbers are one of the least understood items of data available to the user; as such, they merit special attention.

By heating or heating numbers one is actually referring to the local energy deposition resulting from the production of charged particle motion by neutrons and gammas. The heating number is simply a means of quantizing or calculating this effect. The heating number H(E) is a function of incident neutron energy E, and is a measure of the energy deposited per collision. In local heating the energy of the secondary neutrons and photons is assumed to be carried away from the site of the reaction. Local neutron heating is therefore due to the kinetic energy of the recoil nucleus, of the emitted charged particles, and of the charged particles produced by radioactive decay of the residual nucleus. Total neutron heating is the sum of the energy carried away by the photons and the energy deposited in the collision. Other processes such as internal conversion also contribute to local

neutron heating. For a detailed explanation of this phenomenon, please see Ref. 12 (page 5) and 13 (page 91).

In his description[14] of the HEATR module in NJOY, McFarlane pointed out that the heating number could be calculated in a "forward" way using KERMA[15] factors (Kinetic Energy Released in Material). In the energy density terms used by NJOY of eV/cm^3, the heating rate in a material is,

$$\sum_{\substack{i \\ \text{interactions}}} \sum_{\substack{j \\ \text{reactions}}} n_i k_{ij}(E)\phi(E) \tag{3}$$

where E is the incident energy, n_i is the atomic density of material i, $\phi(E)$ is the scalar flux of either neutrons or gammas, and k is the Kerma factor and is in eV-barns. The kerma factor is obtained by multiplying each interaction cross-section by the locally deposited energy produced, thus:

$$k_{ij}(E) = \sum_{\ell} \hat{E}_{ij\ell}(E)\sigma_{ij}(E) \tag{4}$$

where the sum is over the ℓ species of charged particles produced, including recoil, in the interaction j, on the material i, at the incident neutron energy E, producing the mean energy per collision, $\hat{E}_{ij\ell}$. MCNP needs

$$H_i(E) = \frac{\sum_j k_{ij}(E)}{\sum_j \sigma_{ij}(E)} = \frac{\sum_j k_{ij}(E)}{\sigma_i^{tot}(E)} \tag{5}$$

as the heating number. Unfortunately, ENDF/B evaluations do not include the detailed spectral information needed to calculate $\hat{E}_{ijl}$.

The alternative approach which is used in NJOY to calculate the heating numbers is the "energy balance method." The energy carried away by the neutrons and photons is subtracted from the total energy available; the remainder is assumed to be the charged-particle and recoil energy, all of which is locally deposited. Hence the kerma factor is:

$$k_{ij}(E) = (E + Q_{ij} - \hat{E}_{ijn}(E) - \hat{E}_{ij\gamma}(E))\sigma_{ij}(E) \tag{6}$$

and the heating number is effectively k_{ij}/σ_{ij} where Q_{ij} is the Q-Value (mass difference) for reaction i on the target j, $\hat{E}_{ijn}$ is the mean outgoing neutron energy, and $\hat{E}_{ij\gamma}$ is the mean outgoing gamma energy. Thus,

$$H_i(E) = \frac{\sum_j k_{ij}(E)}{\sum_j \sigma_{ij}(E)} \tag{7}$$

Equation (7) while theoretically correct is of little practical value, since photon-production information is not available on a reaction-by-reaction basis. Instead the kermas are redefined viz:

$$k_{ij}^{n}(E) = (E + Q_{ij} - \hat{E}_{ijn}(E))\sigma_{ij}(E)$$

$$k_{ij}^{\gamma}(E) = -\hat{E}_{ij\gamma}(E)\sigma_{ij}^{\gamma}(E)$$

$$H_i^{total}(E) = \frac{\sum_j k_{ij}^{n}(E)}{\sum_j \sigma_{ij}(E)} = \frac{\sum_j k_{ij}^{n}(E)}{\sigma_i^{tot}(E)} \tag{8}$$

$$H_i^{local}(E) = \frac{\sum_j k_{ij}^{n}(E) + \sum_{j'} k_{ij'}^{\gamma}(E)}{\sum_j \sigma_{ij}(E)}$$

The "total" heating number includes the energies of all photons produced; the "local" heating number has the photon energies removed. The distinction between j and j′ is significant. The cross sections for the j′ photon production reactions are independent of the j neutron reactions. In calculating $H_i^{local}(E)$ one takes the difference between two large numbers. Extreme care must be taken in the calculation of $k_{ij}^{n}(E)$ and $k_{ij'}^{\gamma}(E)$ but - more importantly - extreme care is needed in the preparation of the evaluated data to insure that proper energy balance is maintained. When energy balance is considered appropriately, the local heating numbers $H_i^{local}(E)$ will be positive.

An alternative and somewhat simpler depiction of the heating number is the difference calculation employed by Carter and Cashwell (Ref. 13). In this case

$$H = E + \overline{Q} - E' - \Gamma' \tag{9}$$

where E is the incident neutron energy, $\overline{Q}$ is the average Q-Value, E′ is the average energy of the secondary neutrons, and Γ′ is the average energy of the outgoing photons.

The difference $(E+\overline{Q})-(E'+\Gamma')$ is the charged particle heating assumed to be deposited within a negligible distance from the reaction (hence the term local neutron heating). The assumption is that neutrons and photons escape the immediate volume and deposit their energy elsewhere.

Equation (9) again reinforces the fact that the incorrect calculation of Γ′ will result in negative heating numbers. In the past this problem has been particularly troublesome as illustrated in the work of Soran and Seamon (Ref. 12) where 26 of the 68 evaluations on the RMCCS library at that time had negative local heating numbers. Compare that with the present MCNP library which has 28 of the 129 evaluations with at least one negative local heating number; those evaluations are listed in Table V. Two factors essential in the improvement of the heating number calculation are a) better energy balance considerations and b) significantly improved evaluations and evaluational methods. Incidentally, the Monte Carlo code

MCNP does not use negative heating numbers but sets them to 0.0 when they are encountered.

V. DISCUSSION

This publication of the Cross Section Data Handbook is particularly significant both for its contents and the methodology used to generate, order, and assimilate the contents. This marks the first time that the tabular and graphic data for all nuclides on the MCNP Default Cross Section Library have been contained in the same volume. The tabular data includes the origin of the continuous energy evaluation, i.e., (the evaluator(s) and the reference in which that evaluation was published), a list of all currently available data for a given nuclide, Isotopic Information, Evaluation Information (photon-production, heating, etc.), and Reaction Information (MT numbers, energy range, and Q-Values).

The first step in determining a method to the ordering and assimilation of this tremendous amount of material was to decide upon the evaluations to be included and their format. It was decided almost immediately that each material or nuclide would not have more than two pages of tabular data and/or plots or curves (to do otherwise would make the publication too voluminous, thus defeating its purpose).

The second step was to enumerate and automate each task which had to be performed to effect the generation, and assimilation of the heading, graphic, and tabular data for each nuclide. In its final form the forward page of data for each nuclide includes all of the information alluded to above plus cross-section information in the form of pie-charts at 14 MeV, 1 MeV, and 2.53E-08 MeV. The back page includes cross-section plots or curves exclusively. These plots have been grouped or categorized and are commonly referred to as the Summary Reactions (MT's 1, 2, 101, 18); Heating Data (MT=301); Gamma Production Data (MT=302); Threshold Reactions (MT's 4, 16, 17, 22, 24, 25, 28, 37); Fission Reactions (MT's 19, 20, 21, 38); Absorption Reactions (MT's 103, 104, 105, 106, 107, 108, 111, 112, 113); and Total Proton Production, Total Deuterium Production, Total Tritium Production, Total ^{3}He Production, and Total ^{4}He Production (MTs 203, 204, 205 206, 207, and 208). Please see Table IV for a complete list of the Reaction Types or MT numbers and their significance.

The accomplishment of the second step was a very long, time-consuming, and exacting process which required numerous changes both to the generation code XDATAP[16] which generated the Graphic Data (pie-charts and cross section curves), and to the Fortran Command Language (FCL[17]) program which was the machinery used to automate all of the processes. Furthermore, a way had to be devised to automatically couple the output of the FCL program on the CTSS system to the TEX formatting program on the UNIX system which translated and formatted the FCL output, the heading and tabular data, and produced the pages which are contained in this volume. To accomplish the latter task, a small CSHELL program called MKHBK was written which extracted all of the required information from the CTSS system, automatically ran it through the text formatting program, and produced two hard copies for each evaluation. Underneath the activity of the two major programs mentioned above, a myriad of tasks had to be performed to make

the future generation of this document as automatic as the prevailing computer systems would allow. Included among these tasks (all of which fall under the FCL umbrella) is a routine called GNRATE which automatically generates and stores the pie-charts and cross-section curves for any evaluation on the MCNP library from an input file; the MAKE routine, which automatically fetches the data produced by the GNRATE routine for an evaluation, enumerates the number of plots, formats the heading data or text, the pie-charts, and the cross-section curves, and stores all of this data in the appropriate directories where it is retrieved by the CSHELL program.

The point to emphasize here is that although the generation of this document took a great deal of time, it is a task that will only have to be performed once; that is to say that the task of producing this or similar volumes has been almost completely automated; consequently, the update of a single nuclide, several nuclides, or the entire volume can be readily accomplished.

REFERENCES

1. J. F. Briesmeister, editor, "MCNP-A General Monte Carlo Code for Neutron and Photon Transport, Version 3A," Los Alamos National Laboratory manual LA-7396-M, Rev. 2 (September 1986).

2. R. Kinsey, compiler, "ENDF/B Summary Documentation," Brookhaven National Laboratory report BNL-NCS-17541 (ENDF-201) 3rd edition (ENDF/B-V) (July 1979).

3. B. A. Magurno and P. G. Young, editors, "ENDF-201 Supplement I ENDF/B V.2 Summary Documentation," Brookhaven National Laboratory report BNL-NCS-17541 (ENDF-201) 3rd Edition (ENDF/B-V) Supplement I (January 1985).

4. R. J. Howerton and M. H. MacGregor, "The LLL Evaluated Nuclear Data Library (ENDL): Description of Individual Evaluations for Z=0-98," Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1 (May 17, 1978).

5. R. D. O'Dell and F. W. Brinkley, Jr., and D. R. Marr "User's Manual for ONEDANT: A Code Package for One-Dimensional, Diffusion-Accelerated, Neutral-Particle Transport," Los Alamos National Laboratory manual LA-9184-M (February 1982).

6. R. E. Alcouffe, F. W. Brinkley, Jr., D. R. Marr, and R. D. O'Dell, "User's Guide for TWODANT: A Code Package for Two-Dimensional, Diffusion-Accelerated, Neutral-Particle Transport," Los Alamos National Laboratory manual LA-10049-M, Rev. (October 1984).

7. R. C. Little, R. E. Seamon, and P. D. Soran, "Reading the CRAY File MENDF-5," Los Alamos National Laboratory internal memorandum to F. W. Brinkley (March 15, 1983).

8. R. C. Little, "Multigroup Cross-Section Tables for MCNP3B (Revised)," Los Alamos National Laboratory internal memorandum X-6:RCL-87-161 to Distribution (March 11, 1987).

9. R. E. MacFarlane, D. W. Muir, and R. M. Boicourt, "The NJOY Nuclear Data Processing System, Vol. I: User's Manual," Los Alamos National Laboratory manual LA-9303-M, Vol. I (ENDF-324) (May 1982).

10. H. M. Fisher, "Preparation of the ENDL-85 Cross Section Library in ACE Format," Los Alamos National Laboratory internal memorandum X-6:HMF-86-261 to R. C. Little and R. E. Seamon (June 23, 1986).

11. R. J. Howerton, R. E. Dye,P. C. Giles, J. R. Kimlinger, S. T. Perkins, and E. F. Plechaty, "OMEGA: A CRAY 1 Executive Code for LLNL Nuclear Data Libraries," Lawrence Livermore National Laboratory report UCRL-50400 Vol. 25 (August 1983).

12. P. D. Soran and R. E. Seamon, "Graphs of the Cross Sections in the Recommended Monte Carlo Cross-Section Library at the Los Alamos Scientific Laboratory," LA Report 8374-MS (May 1980).

13. L. L. Carter, and E. D. Cashwell, "Particle-Transport Simulation with the Monte Carlo Method," ERDA Critical Review Series TID-26607 (1975).

14. R. E. MacFarlane, D. W. Muir, and R. M. Boicourt, "The NJOY Nuclear Data Processing System, Volume II: The NJOY, RECONR, BROADR, HEATR, and THERMR Modules," Los Alamos National Laboratory manual LA-9303-M, Vol. II (ENDF-324) (May 1982).

15. M. A. Abdou, C. W. Maynard, and R. Q. Wright, "MACK: A Computer Program to Calculate Neutron Energy Release Parameters (Fluence-to-Kerma Factors) and Multigroup Reaction Cross Sections from Nuclear Data in ENDF Format," Oak Ridge National Laboratory report ORNL-TM-3994 (July 1973).

16. H. M. Fisher, "XDATAP, " LA-11155-MS, (October 1987).

17. "FCL," Los Alamos National Laboratory Computer and Communications Division CIC#1114 (August 1987).

18. R. C. Weast, CRC Handbook of Chemistry and Physics 69TH Edition, CRC Press Inc., 1988-1989.

19. J. J. Devaney, "Densities of Transuranic Isotopes," Los Alamos National Laboratory internal memorandum X-6:JJD-88-132 to H. M. Fisher (March 17, 1988).

20. J. J. Devaney, "Neptunium Densities," Los Alamos National Laboratory internal memorandum to H. M. Fisher (June 16, 1988).

21. F. W. Walker, D. G. Miller, and F. Feiner, editors, "Chart of the Nuclides," 13th edition General Electric Company (1984).

TABLE I. List of Elements and Isotopes Contained In This Volume

Material	ZAID	Material	ZAID	Material	ZAID
H	1001.50C	Kr-83	36083.50C	Re-187	75187.50C
D	1002.55C	Kr-84	36084.50C	Pt	78000.35C
T	1003.50C	Kr-86	36086.50C	Au-197	79197.56C
He-3	2003.50C	Y-88	39088.35C	Pb	82000.50C
He-4	2004.50C	Y-89	39089.50C	Bi-209	83209.50C
Li-6	3006.50C	Zr	40000.50C	Th-231	90231.35C
Li-7	3007.55C	Nb-93	41093.50C	Th-232	90232.50C
Be-7	4007.35C	Mo	42000.50C	Th-233	90233.35C
Be-9	4009.50C	Rh-103	45103.50C	Pa-233	91233.50C
B-10	5010.50C	FP-U235	45117.90C	U-233	92233.50C
B-11	5011.56C	FP-Pu239	46119.90C	U-234	92234.50C
C	6000.50C	Ag	47000.55C	U-235	92235.50C
C-12	6012.50C	Ag-107	47107.50C	U-236	92236.50C
C-13	6013.35C	Ag-109	47109.50C	U-237	92237.50C
N-14	7014.50C	Cd	48000.50C	U-238	92238.50C
N-15	7015.55C	Sn	50000.35C	U-239	92239.35C
O-16	8016.50C	FP-AVG	50120.35C	U-240	92240.35C
F-19	9019.50C	Xe	54000.35C	Np-235	93235.35C
Na-23	11023.50C	Xe-134	54134.35C	Np-236	93236.35C
Mg	12000.50C	Ba-138	56138.50C	Np-237	93237.55C
Al-27	13027.50C	Sm-149	62149.50C	Np-238	93238.35C
Si	14000.50C	Eu	63000.35C	Pu-237	94237.35C
P-31	15031.50C	Eu-151	63151.55C	Pu-238	94238.50C
S-32	16032.50C	Eu-152	63152.50C	Pu-239	94239.55C
Cl	17000.50C	Eu-153	63153.55C	Pu-240	94240.50C
Ar	18000.35C	Eu-154	63154.50C	Pu-241	94241.50C
K	19000.50C	Gd	64000.35C	Pu-242	94242.50C
Ca	20000.50C	Gd-152	64152.50C	Pu-243	94243.35C
Ti	22000.50C	Gd-154	64154.50C	Am-241	95241.50C
V	23000.50C	Gd-155	64155.50C	Am-242	95242.50C
Cr	24000.50C	Gd-156	64156.50C	Am-243	95243.50C
Mn-55	25055.50C	Gd-157	64157.50C	Cm-242	96242.50C
Fe	26000.55C	Gd-158	64158.50C	Cm-243	96243.35C
Co-59	27059.50C	Gd-160	64160.50C	Cm-244	96244.50C
Ni	28000.50C	Ho-165	67165.55C	Cm-245	96245.35C
Ni-58	28058.35C	Hf	72000.50C	Cm-246	96246.35C
Cu	29000.50C	Ta-181	73181.50C	Cm-247	96247.35C
Ga	31000.50C	W	74000.55C	Cm-248	96248.35C
As-74	33074.35C	W-182	74182.55C	Bk-249	97249.35C
As-75	33075.35C	W-183	74183.55C	Cf-249	98249.35C
Kr-78	36078.50C	W-184	74184.55C	Cf-250	98250.35C
Kr-80	36080.50C	W-186	74186.55C	Cf-251	98251.35C
Kr-82	36082.50C	Re-185	75185.50C	Cf-252	98252.35C

TABLE II.

List of Elements Alphabetically According to Name

Actinium	Ac	89	Hafnium	Hf	72	Potassium	K	19
Aluminum	Al	13	Hahnium	Ha	105	Praesodymium	Pr	59
Americium	Am	95	Helium	He	2	Promethium	Pm	61
Antimony	Sb	51	Holmium	Ho	67	Protactinium	Pa	91
Argon	Ar	18	Hydrogen	H	1	Radium	Ra	88
Arsenic	As	33	Iodine	I	53	Radon	Rn	86
Astatine	At	85	Indium	In	49	Rhenium	Re	75
Barium	Ba	56	Iridium	Ir	77	Rhodium	Rh	45
Berkelium	Bk	97	Iron	Fe	26	Rubidium	Rb	37
Beryllium	Be	4	Krypton	Kr	36	Ruthenium	Ru	44
Bismuth	Bi	83	Kurchatovium	Ku	104	Samarium	Sm	62
Boron	B	5	Lanthanum	La	57	Scandium	Sc	21
Bromine	Br	35	Lawrencium	Lw	103	Selenium	Se	34
Cadmium	Cd	48	Lead	Pb	82	Silicon	Si	14
Calcium	Ca	20	Lithium	Li	3	Silver	Ag	47
Californium	Cf	98	Lutetium	Lu	71	Sodium	Na	11
Carbon	C	6	Magnesium	Mg	12	Strontium	Sr	38
Cerium	Ce	58	Manganese	Mn	25	Sulfur	S	16
Cesium	Cs	55	Mendelevium	Md	101	Tantalum	Ta	73
Chlorine	Cl	17	Mercury	Hg	80	Technetium	Tc	43
Chromium	Cr	24	Molybdenum	Mo	42	Tellurium	Te	52
Cobalt	Co	27	Neodymium	Nd	60	Terbium	Tb	65
Copper	Cu	29	Neon	Ne	10	Thallium	Tl	81
Curium	Cm	96	Neptunium	Np	93	Thorium	Th	90
Dysprosium	Dy	66	Nickel	Ni	28	Thulium	Tm	69
Einsteinium	Es	99	Niobium	Nb	41	Tin	Sn	50
Erbium	Er	68	Nitrogen	N	7	Titanium	Ti	22
Europium	Eu	63	Nobelium	No	102	Tungsten	W	74
Fermium	Fm	100	Osmium	Os	76	Uranium	U	92
Fluorine	F	9	Oxygen	O	8	Vanadium	V	23
Francium	Fr	87	Palladium	Pd	46	Xenon	Xe	54
Gadolinium	Gd	64	Phosphorus	P	15	Ytterbium	Yb	70
Gallium	Ga	31	Platinum	Pt	78	Yttrium	Y	39
Germanium	Ge	32	Plutonium	Pu	94	Zinc	Zn	30
Gold	Au	79	Polonium	Po	84	Zirconium	Zr	40

TABLE III.

List of Elements According to Atomic Number

Symbol		Name	Symbol		Name	Symbol		Name
1	H	Hydrogen	36	Kr	Krypton	71	Lu	Lutetium
2	He	Helium	37	Rb	Rubidium	72	Hf	Hafnium
3	Li	Lithium	38	Sr	Strontium	73	Ta	Tantalum
4	Be	Beryllium	39	Y	Yttrium	74	W	Tungsten
5	B	Boron	40	Zr	Zirconium	75	Re	Rhenium
6	C	Carbon	41	Nb	Niobium	76	Os	Osmium
7	N	Nitrogen	42	Mo	Molybdenum	77	Ir	Iridium
8	O	Oxygen	43	Tc	Technetium	78	Pt	Platium
9	F	Fluorine	44	Ru	Ruthenium	79	Au	Gold
10	Ne	Neon	45	Rh	Rhodium	80	Hg	Mercury
11	Na	Sodium	46	Pd	Palladium	81	Tl	Thallium
12	Mg	Magnesium	47	Ag	Silver	82	Pb	Lead
13	Al	Aluminum	48	Cd	Cadmium	83	Bi	Bismuth
14	Si	Silicon	49	In	Indium	84	Po	Polonium
15	P	Phosphorus	50	Sn	Tin	85	At	Astatine
16	S	Sulfur	51	Sb	Antimony	86	Rn	Radon
17	Cl	Chlorine	52	Te	Tellurium	87	Fr	Francium
18	Ar	Argon	53	I	Iodine	88	Ra	Radium
19	K	Potassium	54	Xe	Xenon	89	Ac	Actinium
20	Ca	Calcium	55	Cs	Cesium	90	Th	Thorium
21	Sc	Scandium	56	Ba	Barium	91	Pa	Protactinium
22	Ti	Titanium	57	La	Lanthanum	92	U	Uranium
23	V	Vanadium	58	Ce	Cerium	93	Np	Neptunium
24	Cr	Chromium	59	Pr	Praseodymium	94	Pu	Plutonium
25	Mn	Manganese	60	Nd	Neodymium	95	Am	Americium
26	Fe	Iron	61	Pm	Promethium	96	Cm	Curium
27	Co	Cobalt	62	Sm	Samarium	97	Bk	Berkelium
28	Ni	Nickel	63	Eu	Europium	98	Cf	Californium
29	Cu	Copper	64	Gd	Gadolinium	99	Es	Einsteinium
30	Zn	Zinc	65	Tb	Terbium	100	Fm	Fermium
31	Ga	Gallium	66	Dy	Dysprosium	101	Md	Mendelevium
32	Ge	Germanium	67	Ho	Holmium	102	No	Nobelium
33	As	Arsenic	68	Er	Erbium	103	Lr	Lawrencium
34	Se	Selenium	69	Tm	Thulium	104	Ku	Kurchatovium
35	Br	Bromine	70	Yb	Ytterbium	105	Ha	Hahnium

TABLE IV.

List of Reaction Types or MT's

MT	Microscopic Cross-Section Reaction
1	Total
2	Elastic scattering
4	Total inelastic scattering
16	(n,2n)
17	(n,3n)
18	Total fission
19	(n,f) (first chance fission)
20	(n,n'f) (second chance fission)
21	(n,2nf) (third chance fission)
22	(n,n'α)
24	(n,2nα)
25	(n,3nα)
28	(n,n'p)
37	(n,4n)
38	(n,3nf) (fourth chance fission)
51	(n,n') to first excited state
52	(n,n') to second excited state
.	.
.	.
.	.
90	(n,n') to 40^{th}excited state
91	(n,n') to continuum
101	Absorption
102	(n,γ) radiative capture
103	(n,p)
104	(n,d)
105	(n,t)
106	(n,^{3}He)
107	(n,α)
108	(n,2α)
111	(n,2p)
112	(n,pα)
203	Total proton production
204	Total deuterium production
205	Total tritium production
206	Total ^{3}He production
207	Total ^{4}He production
301	Heating data
302	Gamma production
452	Total nubar
456	Prompt nubar

TABLE V. Evaluations With Negative Heating Numbers

Material	ZAID	Element Name	Library
F-19	9019.50C	Fluorine	ENDF5P3
Mg	12000.50C	Magnesium	ENDF5U3
Al-27	13027.50C	Aluminum	RMCCS
Si	14000.50C	Silicon	ENDF5P3
P-31	15031.50C	Phosporus	ENDF5U3
Ti	22000.50C	Titanium	ENDF5U2
V	23000.50C	Vanadium	ENDF5U2
Cr	24000.50C	Chromium	RMCCS
Mn-55	25055.50C	Manganese	ENDF5U3
Co-59	27059.50C	Cobalt	ENDF5U3
Ni	28000.50C	Nickel	RMCCS
Ni-58	28058.35C	Nickel	ENDL853
Cu	29000.50C	Copper	RMCCS
Nb-93	41093.50C	Niobium	ENDF5P3
Mo	42000.50C	Molybdenum	ENDF5U2
FP-AVG	50120.35C	Average Fission Product	ENDL853
Ba-138	56138.50C	Barium	RMCCS
Eu-151	63151.55C	Europium	NEWXS3
Gd	64000.35C	Gadolinium	RMCCSA
Ho-165	67165.55C	Holmium	NEWXS3
Ta-181	73181.50C	Tantalum	ENDF5U2
Pt	78000.35C	Platinum	RMCCSA
W-183	74183.55C	Tungsten	RMCCSA
W-184	74184.55C	Tungsten	RMCCSA
Au-197	79197.56C	Gold	NEWXS3
Pb	82000.50C	Lead	RMCCS
Bi-209	83209.50C	Bismuth	ENDF5U2
Th-232	90232.50C	Thorium	ENDF5U3

Hydrogen-1

ZAID=1001.50C
SOURCE: ENDF/B-V (MAT=1301, Tape 511)
REFERENCE: "Summary Documentation for ^{1}H,"
by L. Stewart, R. J. LaBauve, and P. G. Young
contained in ENDF-201

Data Availability

Continuous Energy

ZAID=1001.50C	NES=244	T=300°K
ZAID=1001.51C	NES=244	T=300°K
ZAID=1001.53C	NES=394	T=600°K

Discrete Reaction

ZAID=1001.50D	NES=263	T=300°K

Multigroup

ZAID=1001.50M	30-Group	T=300°K

Isotope Information

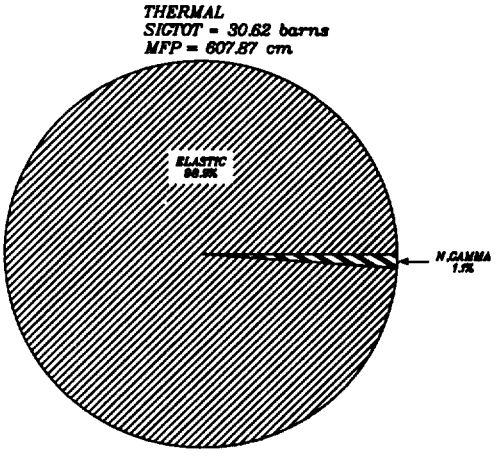
Abundance=99.985%
Density=8.99E-05 gm/cm^3

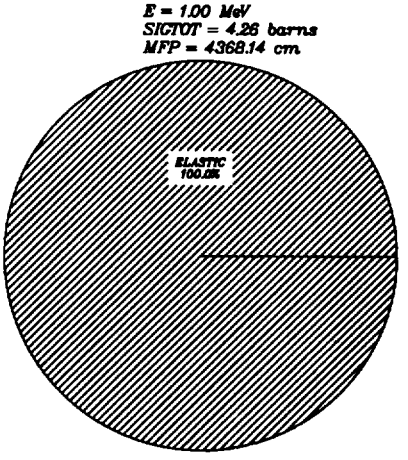
Evaluation Information

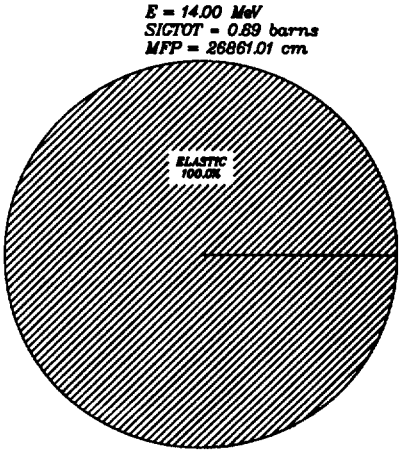
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

Reaction Information

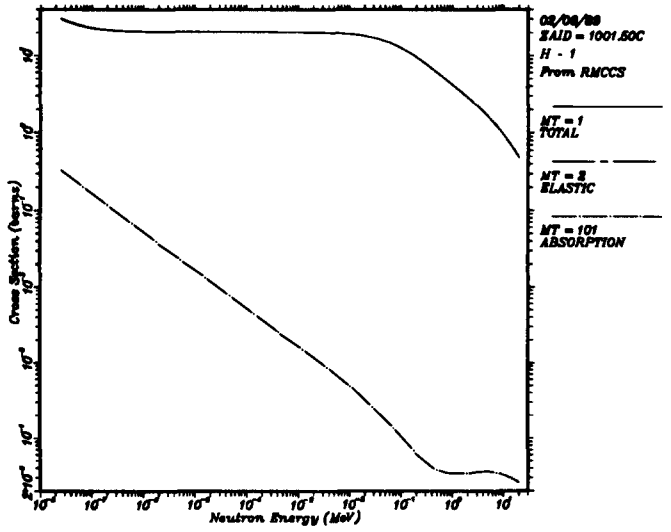
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,γ)	102	1.0000-11	2.0000+01	2.2246+00	2.2246+00

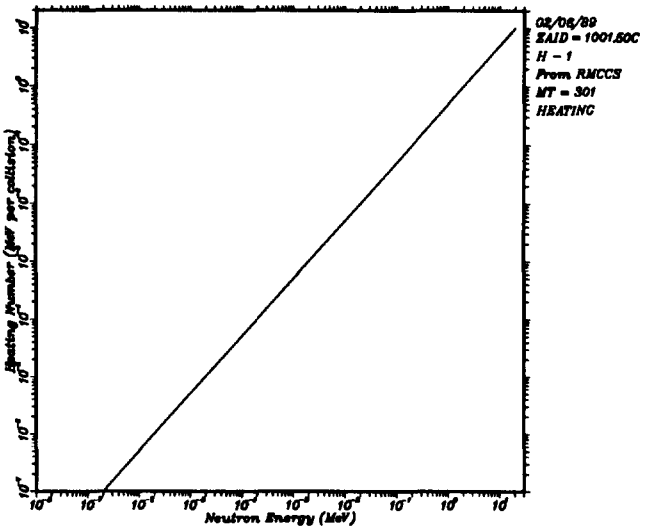






1001.50C


02/06/89
ZAID = 1001.50C
H - 1
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)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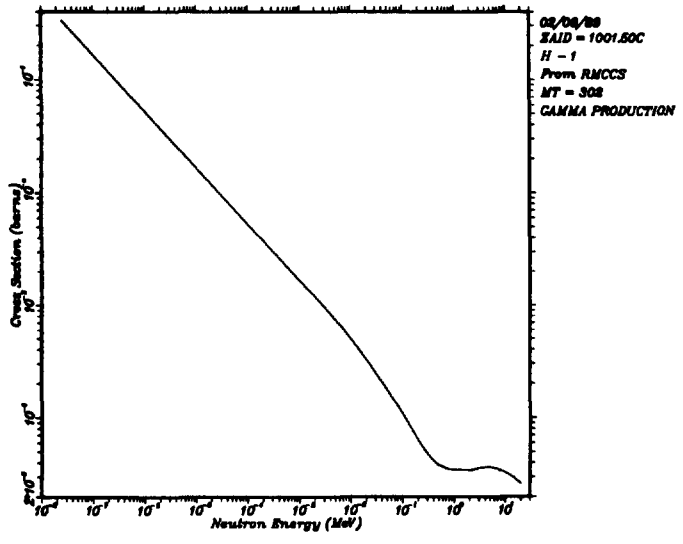
H - 1
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)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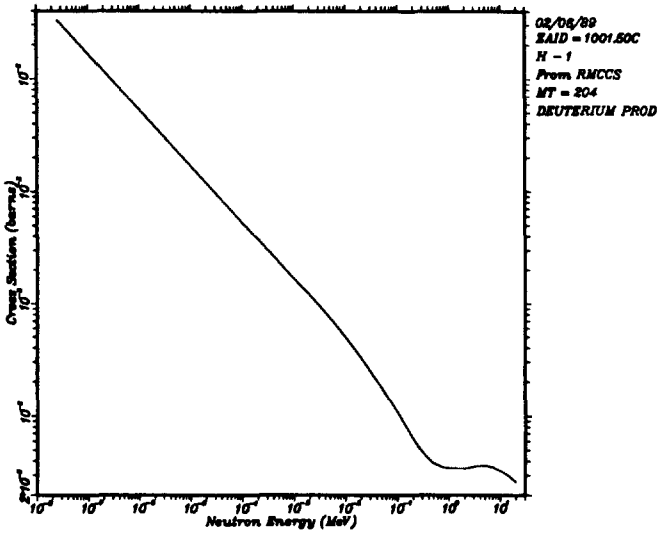
ZAID = 1001.50C
H - 1
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)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ZAID = 1001.50C
H - 1
From RMCCS
MT = 204
DEUTERIUM PROD
Cross Section (barns)
Neutron Energy (MeV)

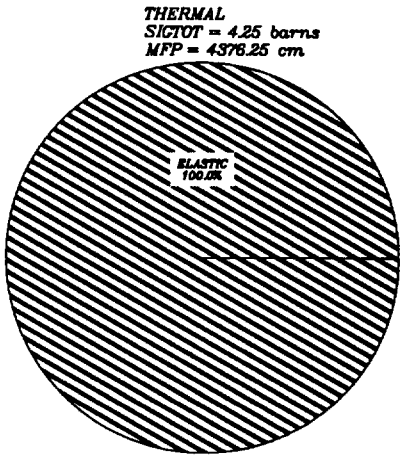
Deuterium – 2

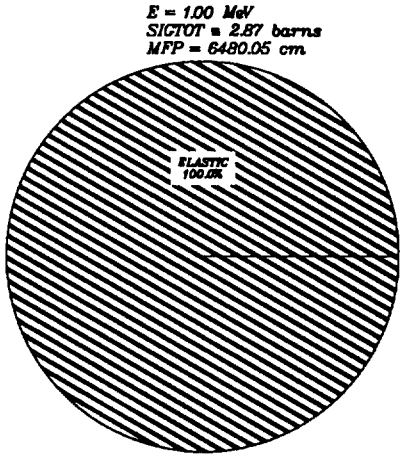
ZAID=1002.55C

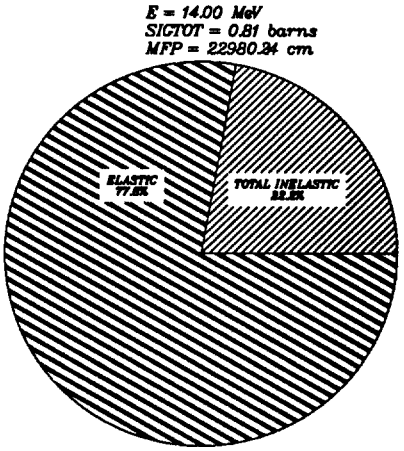
SOURCE: Group T-2 (MAT=120, File /T2/PGY/H2/LANLH2)

REFERENCE: "Energy-Angle Correlated Emission Spectra from the D(n,2n)P Reaction," by P. G. Young

page 4 in Los Alamos National Laboratory progress report LA-9468-PR (August 1982)







Data Availability

Continuous Energy		
ZAID=1002.55C	NES=285	T=300°K
Discrete Reaction		
ZAID=1002.55D	NES=263	T=300°K
Multigroup		
ZAID=1002.55M	30-Group	T=300°K
ZAID=1002.00M	187-Group	T=300°K

Isotope Information

Abundance=0.015%

Density=1.7965E-04 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

Heating Numbers – Local

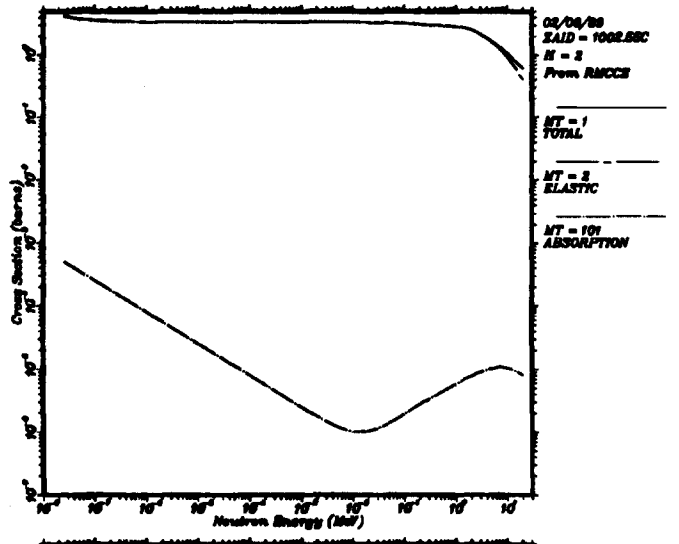
Energy Range – 10^{-11} to 20 MeV

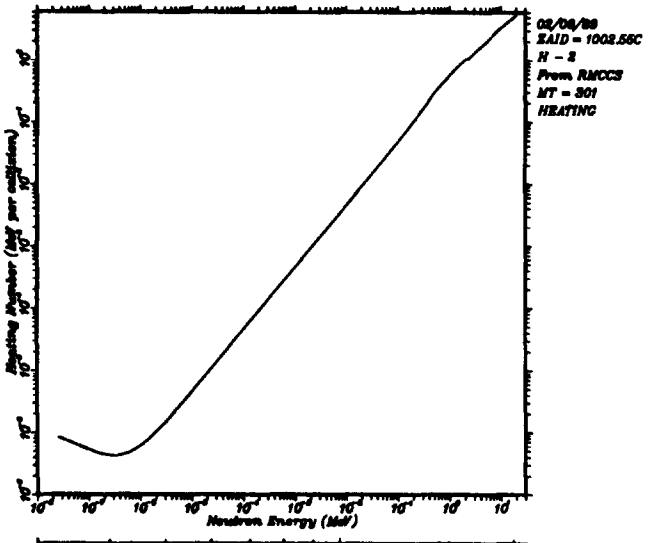
Reaction Information

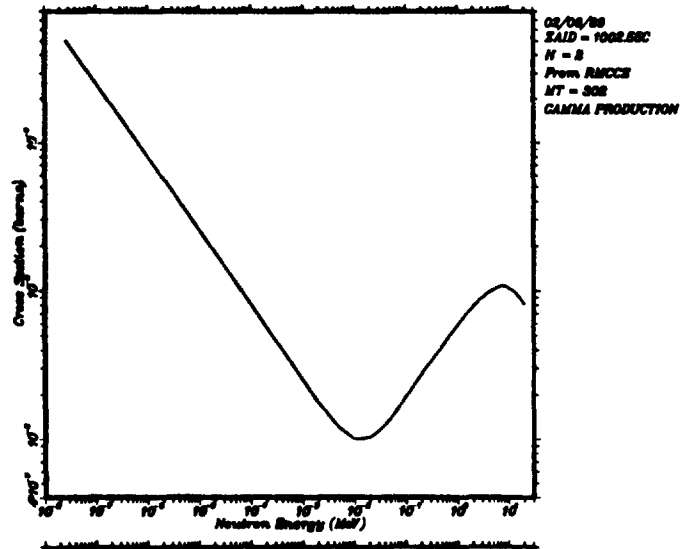
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	51	3.5644+00	2.0000+01	-2.3750+00	-2.2250+00
(n,2n)	52	4.0146+00	2.0000+01	-2.6750+00	-2.2250+00
(n,2n)	53	4.4649+00	2.0000+01	-2.9750+00	-2.2250+00
(n,2n)	54	4.9151+00	2.0000+01	-3.2750+00	-2.2250+00
(n,2n)	55	5.3654+00	2.0000+01	-3.5750+00	-2.2250+00
(n,2n)	56	5.8156+00	2.0000+01	-3.8750+00	-2.2250+00
(n,2n)	57	6.2658+00	2.0000+01	-4.1750+00	-2.2250+00
(n,2n)	58	6.7161+00	2.0000+01	-4.4750+00	-2.2250+00
(n,2n)	59	7.1663+00	2.0000+01	-4.7750+00	-2.2250+00
(n,2n)	60	7.6166+00	2.0000+01	-5.0750+00	-2.2250+00
(n,2n)	61	8.0668+00	2.0000+01	-5.3750+00	-2.2250+00
(n,2n)	62	8.5170+00	2.0000+01	-5.6750+00	-2.2250+00
(n,2n)	63	8.9673+00	2.0000+01	-5.9750+00	-2.2250+00
(n,2n)	64	9.4175+00	2.0000+01	-6.2750+00	-2.2250+00
(n,2n)	65	9.8678+00	2.0000+01	-6.5750+00	-2.2250+00
(n,2n)	66	1.0318+01	2.0000+01	-6.8750+00	-2.2250+00
(n,2n)	67	1.0768+01	2.0000+01	-7.1750+00	-2.2250+00
(n,2n)	68	1.1218+01	2.0000+01	-7.4750+00	-2.2250+00
(n,2n)	69	1.1669+01	2.0000+01	-7.7750+00	-2.2250+00
(n,2n)	70	1.2119+01	2.0000+01	-8.0750+00	-2.2250+00
(n,2n)	71	1.2569+01	2.0000+01	-8.3750+00	-2.2250+00
(n,2n)	72	1.3019+01	2.0000+01	-8.6750+00	-2.2250+00
(n,2n)	73	1.3470+01	2.0000+01	-8.9750+00	-2.2250+00
(n,2n)	74	1.3920+01	2.0000+01	-9.2750+00	-2.2250+00
(n,2n)	75	1.4370+01	2.0000+01	-9.5750+00	-2.2250+00
(n,2n)	76	1.4820+01	2.0000+01	-9.8750+00	-2.2250+00
(n,2n)	77	1.5271+01	2.0000+01	-1.0175+01	-2.2250+00
(n,2n)	78	1.5721+01	2.0000+01	-1.0475+01	-2.2250+00
(n,2n)	79	1.6171+01	2.0000+01	-1.0775+01	-2.2250+00
(n,2n)	80	1.6621+01	2.0000+01	-1.1075+01	-2.2250+00
(n,2n)	81	1.7072+01	2.0000+01	-1.1375+01	-2.2250+00
(n,2n)	82	1.7522+01	2.0000+01	-1.1675+01	-2.2250+00
(n,2n)	83	1.7972+01	2.0000+01	-1.1975+01	-2.2250+00
(n,2n)	84	1.8422+01	2.0000+01	-1.2275+01	-2.2250+00
(n,2n)	85	1.8873+01	2.0000+01	-1.2575+01	-2.2250+00
(n,2n)	86	1.9323+01	2.0000+01	-1.2875+01	-2.2250+00
(n,2n)	87	1.9773+01	2.0000+01	-1.3175+01	-2.2250+00
(n,γ)	102	1.0000-11	2.0000+01	6.2574+00	6.2574+00

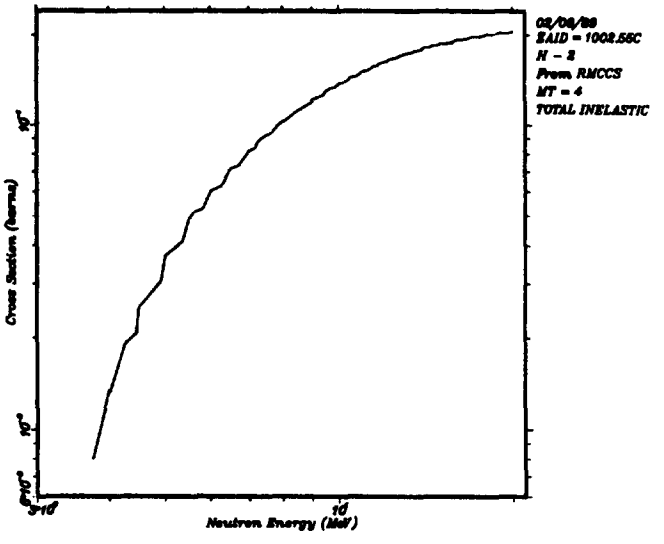
NOTE:(PLEASE SEE APPENDIX B)

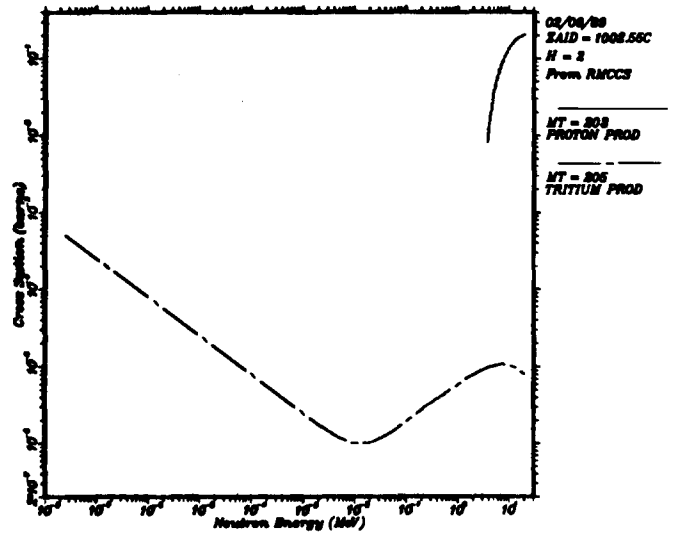
1002.55C


02/06/99
ZAID = 1002.55C
H - 2
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 1002.55C
H - 2
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 1002.55C
H - 2
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 1002.55C
H - 2
From RMCCS
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 1002.55C
H - 2
From RMCCS
MT = 203
PROTON PROD
MT = 205
TRITIUM PROD
Cross Section (barns)
Neutron Energy (MeV)

Tritium – 3

ZAID=1003.50C
SOURCE: ENDF/B–V (MAT=1169, Tape 501)
REFERENCE: "Summary Documentation for ^{3}H,"
by L. Stewart, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=1003.50C	NES=184	T=300°K
ZAID=1003.51C	NES=184	T=300°K

Discrete Reaction

ZAID=1003.50D	NES=263	T=300°K

Multigroup

ZAID=1003.50M	30–Group	T=300°K

Isotope Information

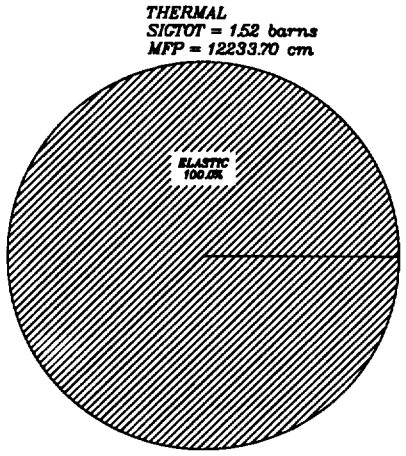
Abundance=0.00%
Density=2.6904e-04 gm/cm^3

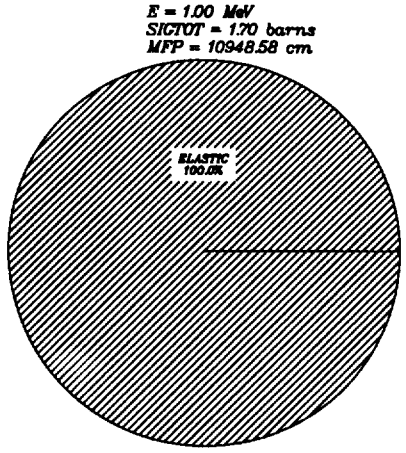
Evaluation Information

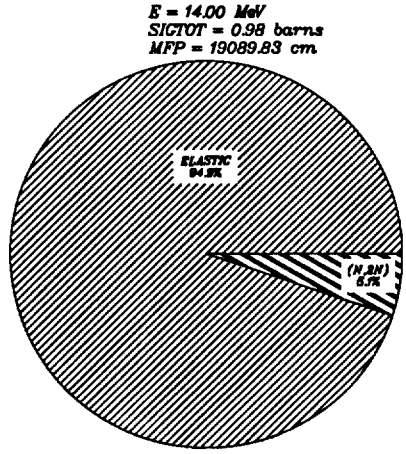
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

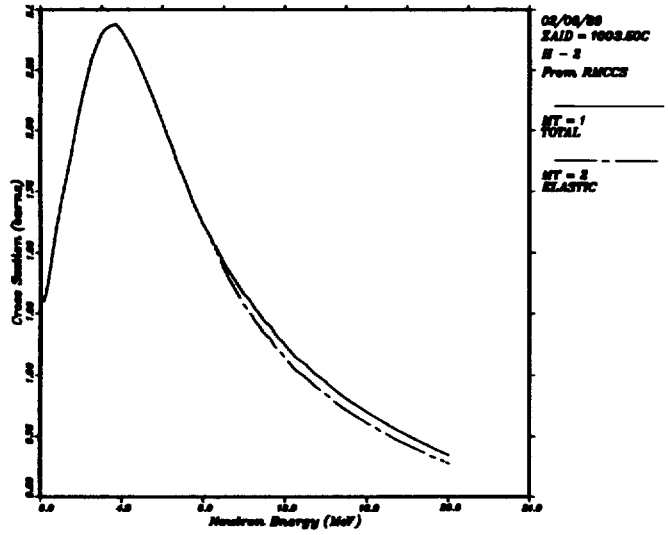
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.3503+00	2.0000+01	-6.2576+00	-6.2576+00

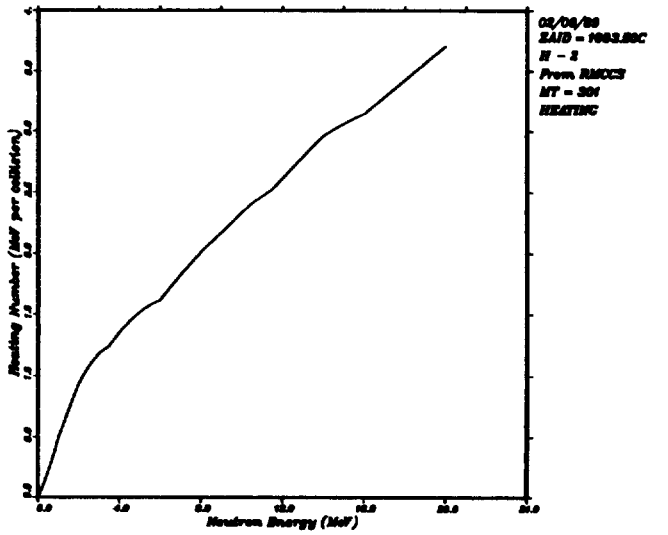


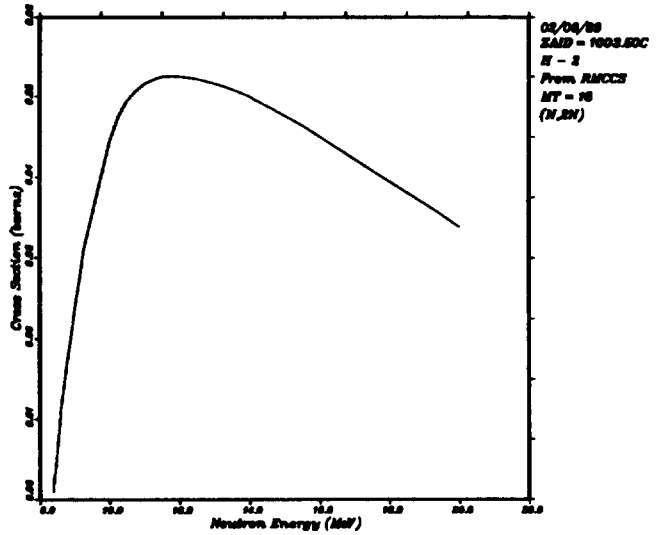


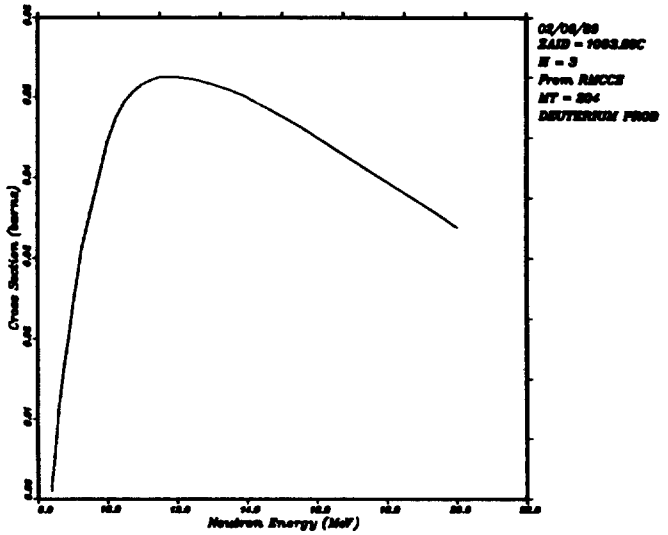


1003.50C


02/06/99
ZAID = 1003.50C
H - 2
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 1003.50C
H - 2
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 1003.50C
H - 2
From RMCCS
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 1003.50C
H - 3
From RMCCS
MT = 204
DEUTERIUM PROD
Cross Section (barns)
Neutron Energy (MeV)

Helium – 3

ZAID=2003.50C
SOURCE: ENDF/B–V (MAT=1146, Tape 511)
REFERENCE: "Summary Documentation for ^{3}He,"
by L. Stewart, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=2003.50C	NES=229	T=300°K
ZAID=2003.51C	NES=229	T=300°K

Discrete Reaction

ZAID=2003.50D	NES=263	T=300°K

Multigroup

ZAID=2003.50M	30–Group	T=300°K

Isotope Information

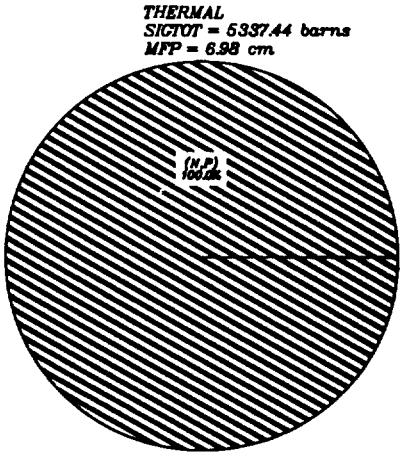
Abundance=0.00014%
Density=1.345E-04 gm/cm^3

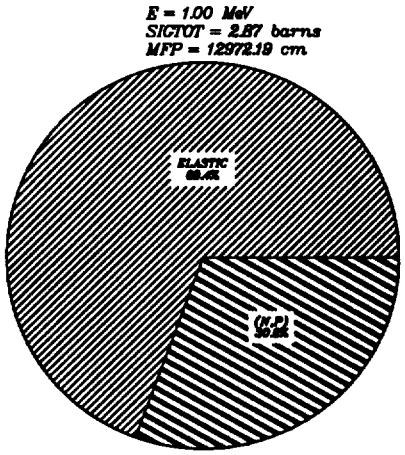
Evaluation Information

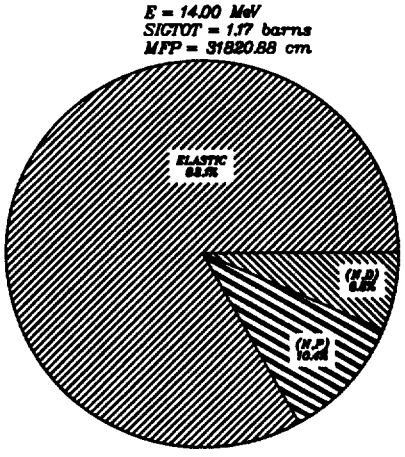
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

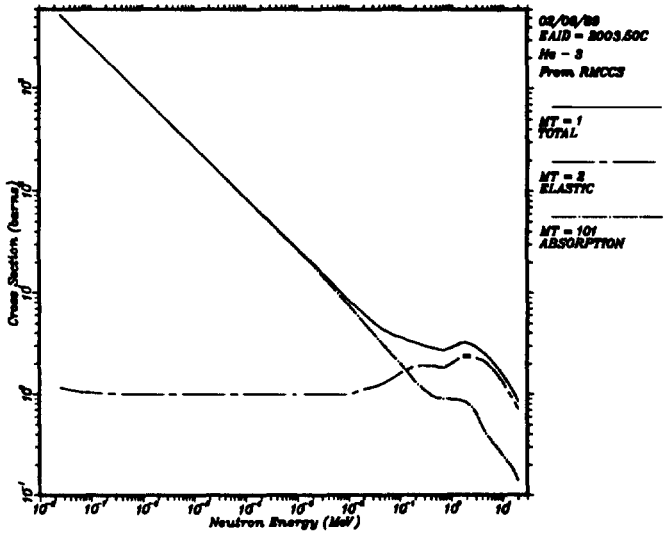
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,p)	103	1.0000-11	2.0000+01	7.6449-01	7.6449-01
(n,d)	104	4.3615+00	2.0000+01	-3.2684+00	-3.2684+00

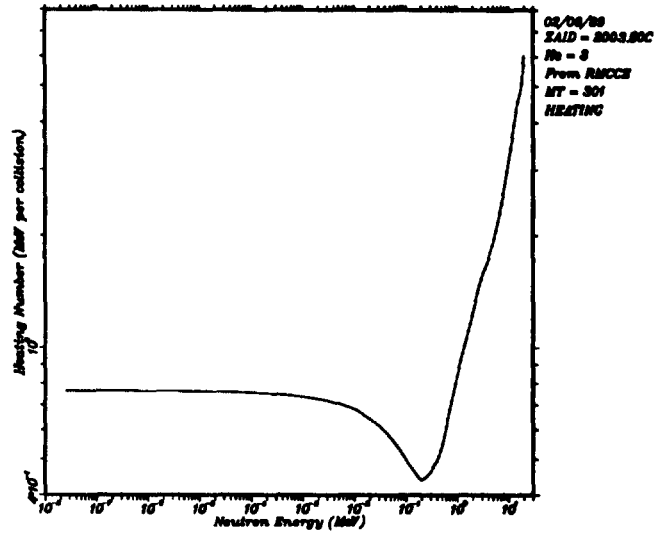


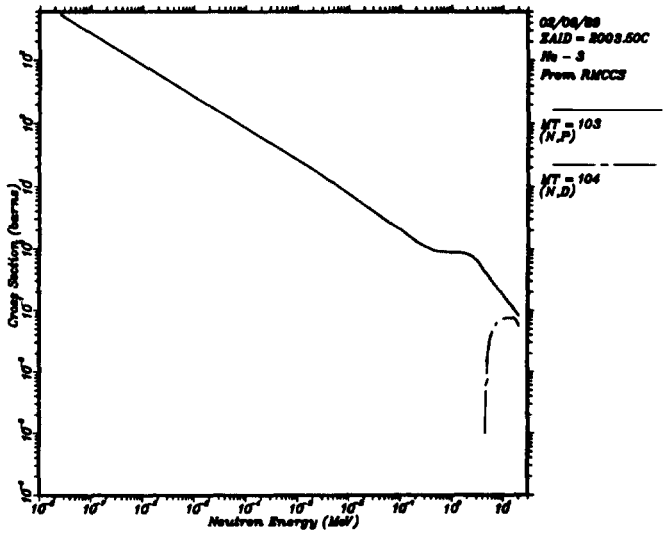


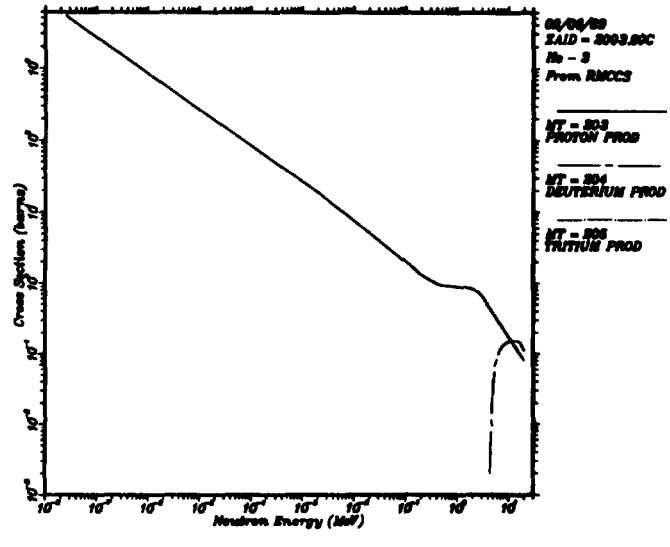


2003.50C


02/04/99
ZAID = 2003.50C
Mo = 3
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/04/99
ZAID = 2003.50C
Mo = 3
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/04/99
ZAID = 2003.50C
Mo = 3
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
Cross Section (barns)
Neutron Energy (MeV)


02/04/99
ZAID = 2003.50C
Mo = 3
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
Cross Section (barns)
Neutron Energy (MeV)

Helium – 4

ZAID=2004.50C
SOURCE: ENDF/B–V (MAT=1270, Tape 501)
REFERENCE: "Summary Documentation for ^{4}He,"
by G. M. Hale, R. A. Nisley, and P. G. Young
contained in ENDF–201

Data Availability

Continuous Energy

ZAID=2004.50C	NES=345	T=300°K
ZAID=2004.51C	NES=345	T=300°K

Discrete Reaction

ZAID=2004.50D	NES=263	T=300°K

Multigroup

ZAID=2004.50M	30–Group	T=300°K

Isotope Information

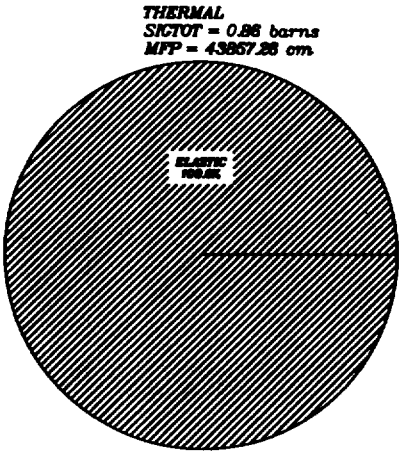
Abundance=99.99986%
Density=1.785E-04 gm/cm^3

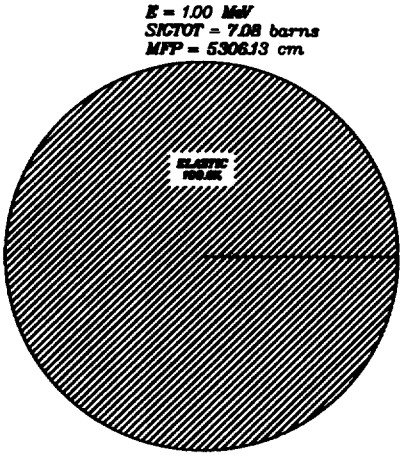
Evaluation Information

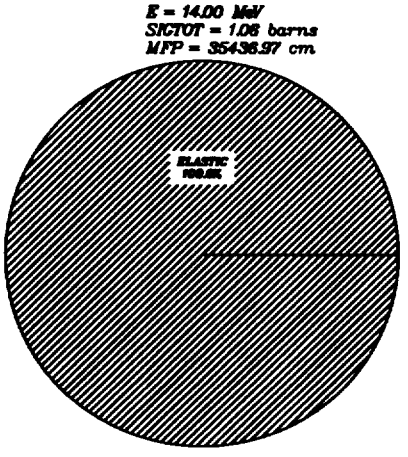
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

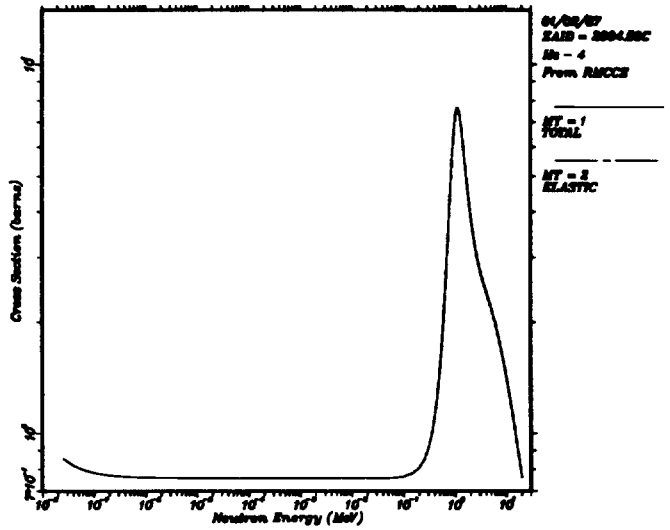
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		

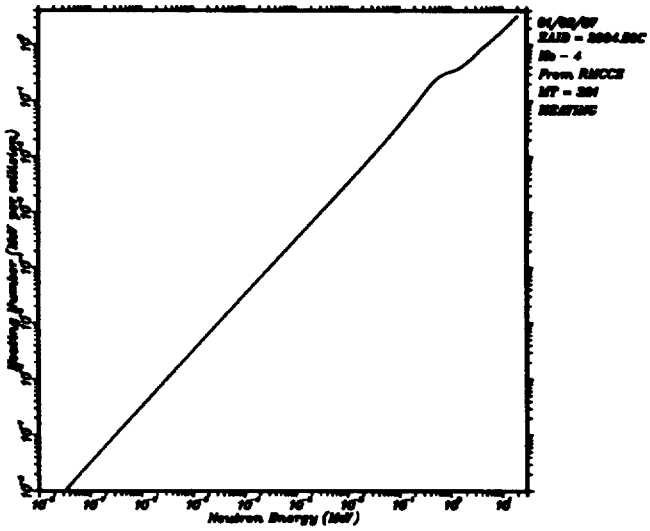






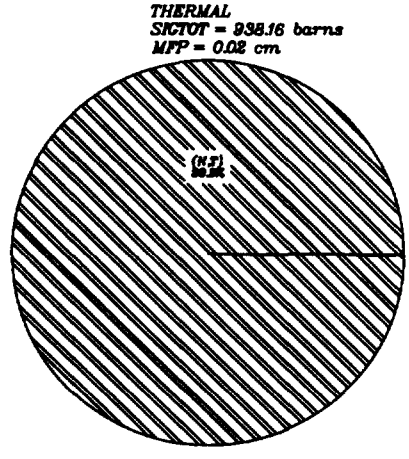
2004.50C


Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC


Neutron Energy (MeV)

Lithium – 6

ZAID=3006.50C
SOURCE: ENDF/B–V (MAT=1303, Tape 511)
REFERENCE: "Summary Documentation for ^{6}Li,"
by G. M. Hale, L. Stewart, and P. G. Young
contained in ENDF–201

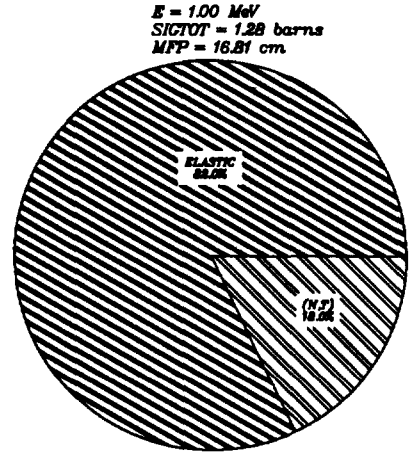


Data Availability

Continuous Energy		
ZAID=3006.50C	NES=373	T=300°K
ZAID=3006.51C	NES=353	T=300°K
Discrete Reaction		
ZAID=3006.50D	NES=263	T=300°K
Multigroup		
ZAID=3006.50M	30–Group	T=300°K

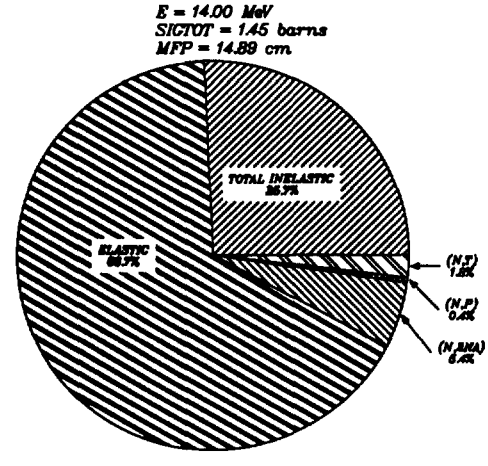
Isotope Information
Abundance=7.50%
Density=4.62775E-01 gm/cm^3

Evaluation Information
Photon-Production Data – Yes
Heating Numbers - Local
Energy Range – 10^{-11} to 20 MeV



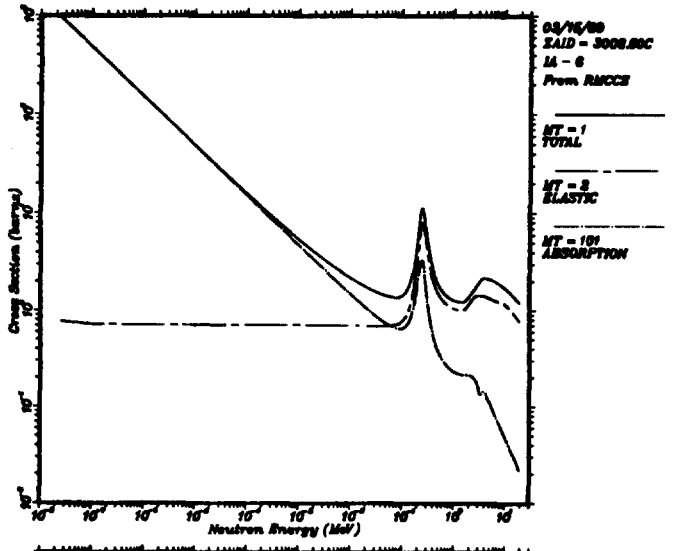
Reaction Information

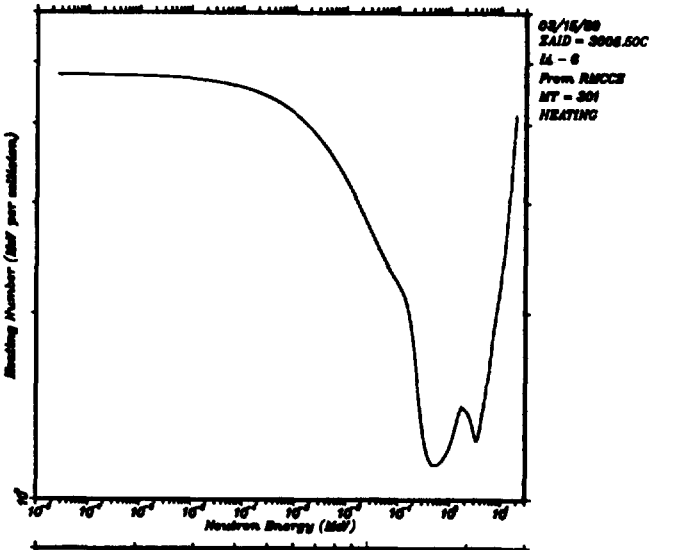
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)α	24	4.3181+00	2.0000+01	-3.6980+00	-3.6980+00
(n,n'c)d,α	51	1.7515+00	2.0000+01	-1.5000+00	-1.4737+00
(n,n'c)d,α	52	2.3354+00	2.0000+01	-2.0000+00	-1.4737+00
(n,n'1)d,α	53	2.5514+00	2.0000+01	-2.1850+00	-1.4737+00
(n,n'c)d,α	54	2.9192+00	2.0000+01	-2.5000+00	-1.4737+00
(n,n'c)d,α	55	3.5031+00	2.0000+01	-3.0000+00	-1.4737+00
(n,n'c)d,α	56	4.0869+00	2.0000+01	-3.5000+00	-1.4737+00
(n,n'2)γ	57	4.1593+00	2.0000+01	-3.5620+00	0.0000+00
(n,n'c)d,α	58	4.6708+00	2.0000+01	-4.0000+00	-1.4737+00
(n,n'c)d,α	59	5.2546+00	2.0000+01	-4.5000+00	-1.4737+00
(n,n'c)d,α	60	5.8384+00	2.0000+01	-5.0000+00	-1.4737+00
(n,n'c)d,α	61	6.4223+00	2.0000+01	-5.5000+00	-1.4737+00
(n,n'c)d,α	62	7.0061+00	2.0000+01	-6.0000+00	-1.4737+00
(n,n'c)d,α	63	7.5900+00	2.0000+01	-6.5000+00	-1.4737+00
(n,n'c)d,α	64	8.1738+00	2.0000+01	-7.0000+00	-1.4737+00
(n,n'c)d,α	65	8.7577+00	2.0000+01	-7.5000+00	-1.4737+00
(n,n'c)d,α	66	9.3415+00	2.0000+01	-8.0000+00	-1.4737+00
(n,n'c)d,α	67	9.9254+00	2.0000+01	-8.5000+00	-1.4737+00
(n,n'c)d,α	68	1.0509+01	2.0000+01	-9.0000+00	-1.4737+00
(n,n'c)d,α	69	1.1093+01	2.0000+01	-9.5000+00	-1.4737+00
(n,n'c)d,α	70	1.1677+01	2.0000+01	-1.0000+01	-1.4737+00
(n,n'c)d,α	71	1.2261+01	2.0000+01	-1.0500+01	-1.4737+00
(n,n'c)d,α	72	1.2845+01	2.0000+01	-1.1000+01	-1.4737+00
(n,n'c)d,α	73	1.3428+01	2.0000+01	-1.1500+01	-1.4737+00
(n,n'c)d,α	74	1.4012+01	2.0000+01	-1.2000+01	-1.4737+00
(n,n'c)d,α	75	1.4596+01	2.0000+01	-1.2500+01	-1.4737+00
(n,n'c)d,α	76	1.5180+01	2.0000+01	-1.3000+01	-1.4737+00
(n,n'c)d,α	77	1.5764+01	2.0000+01	-1.3500+01	-1.4737+00
(n,n'c)d,α	78	1.6348+01	2.0000+01	-1.4000+01	-1.4737+00
(n,n'c)d,α	79	1.6931+01	2.0000+01	-1.4500+01	-1.4737+00
(n,n'c)d,α	80	1.7515+01	2.0000+01	-1.5000+01	-1.4737+00
(n,n'c)d,α	81	1.8099+01	2.0000+01	-1.5500+01	-1.4737+00
(n,γ)	102	1.0000-11	2.0000+01	7.2506+00	7.2506+00
(n,p)	103	3.1846+00	2.0000+01	-2.7273+00	-2.7273+00
(n,t)	105	1.0000-11	2.0000+01	4.7838+00	4.7838+00

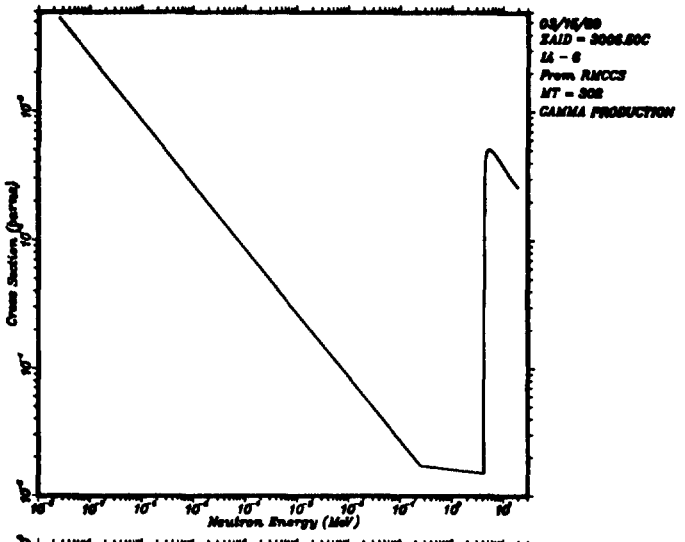


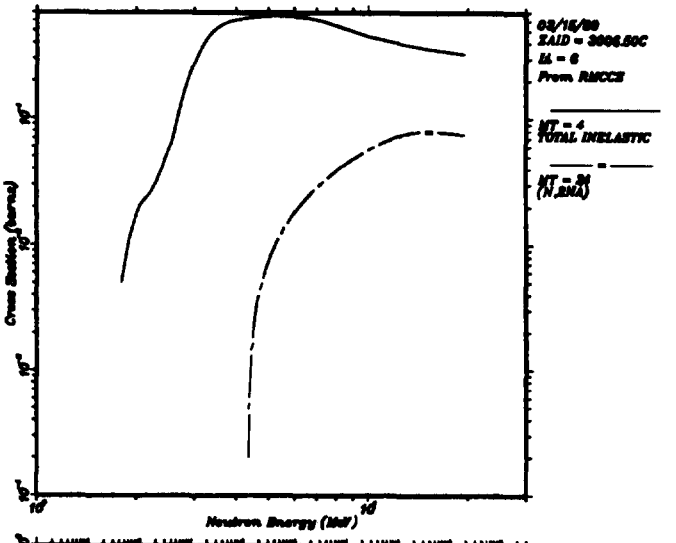
NOTE:(PLEASE SEE APPENDIX B)

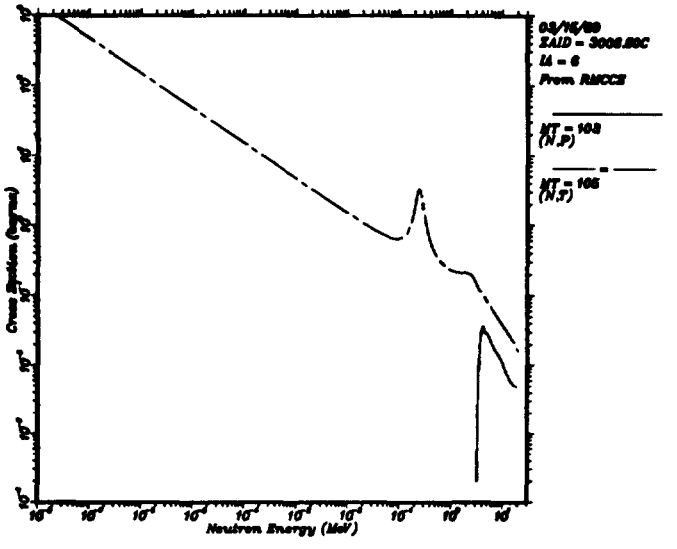
3006.50C

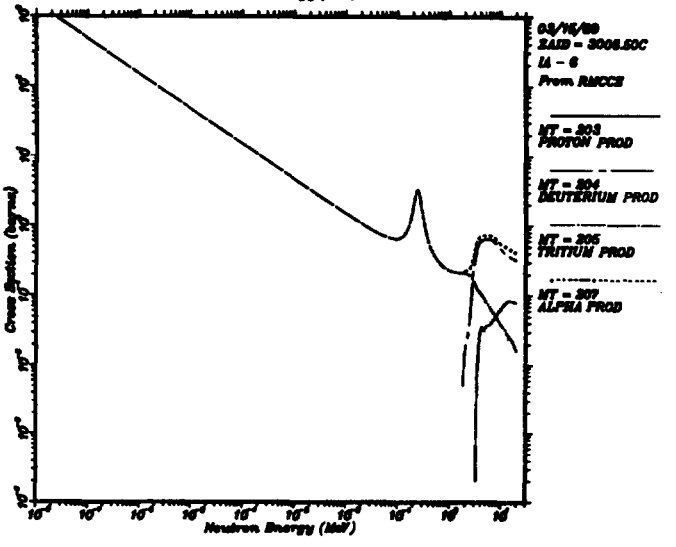

Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION


Heating Number (MeV per collision)
Neutron Energy (MeV)
MT = 301
HEATING


Cross Section (barns)
Neutron Energy (MeV)
MT = 302
GAMMA PRODUCTION

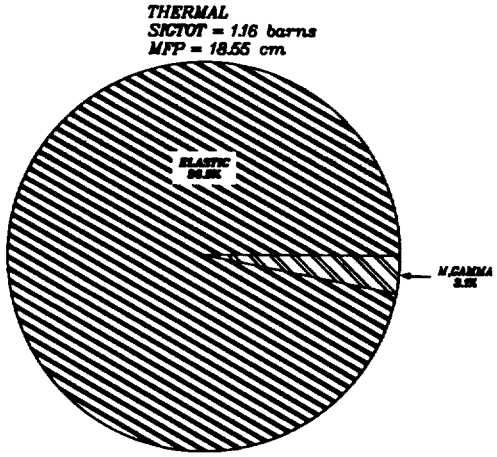

Cross Section (barns)
Neutron Energy (MeV)
MT = 4
TOTAL INELASTIC

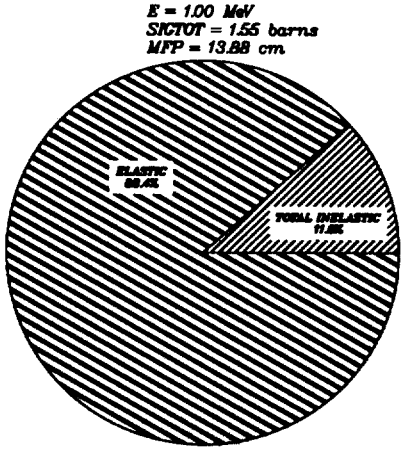

Cross Section (barns)
Neutron Energy (MeV)
MT = 103
(N,P)
MT = 105
(N,T)

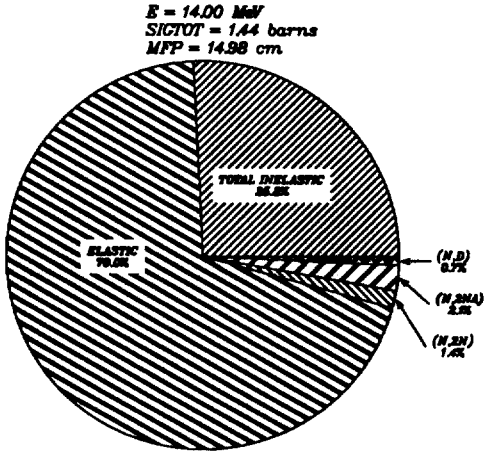

Cross Section (barns)
Neutron Energy (MeV)
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD

Lithium – 7

ZAID=3007.55C
SOURCE: Group T-2 (MAT=3007, File /T2/PGY/LI7B/LI7LA8)
REFERENCE: "New ENDF/B-V Evaluation of n + ^{7}Li Reactions,"
by P. G. Young
page 6 of Los Alamos National Laboratory progress report LA-9468-PR (August 1982)







Data Availability

	Continuous Energy	
ZAID=3007.55C	NES=328	T=300°K
	Discrete Reaction	
ZAID=3007.55D	NES=263	T=300°K
	Multigroup	
ZAID=3007.55M	30-Group	T=300°K
ZAID=3007.00M	187-Group	T=300°K

Isotope Information
Abundance=92.50%
Density=0.53978 gm/cm^3

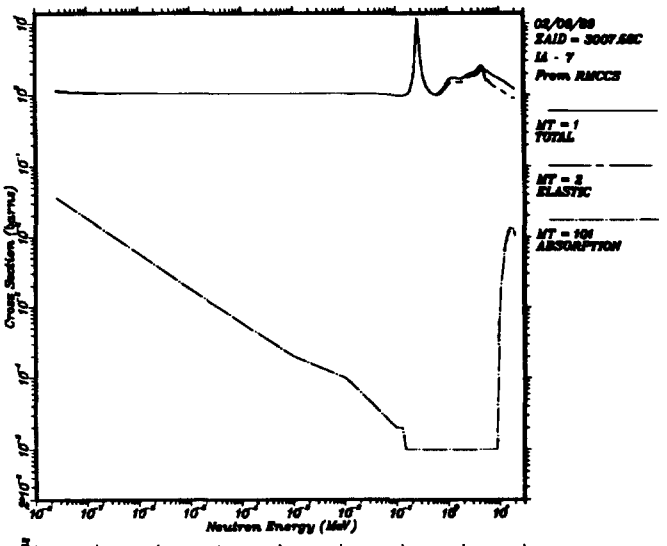
Evaluation Information
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

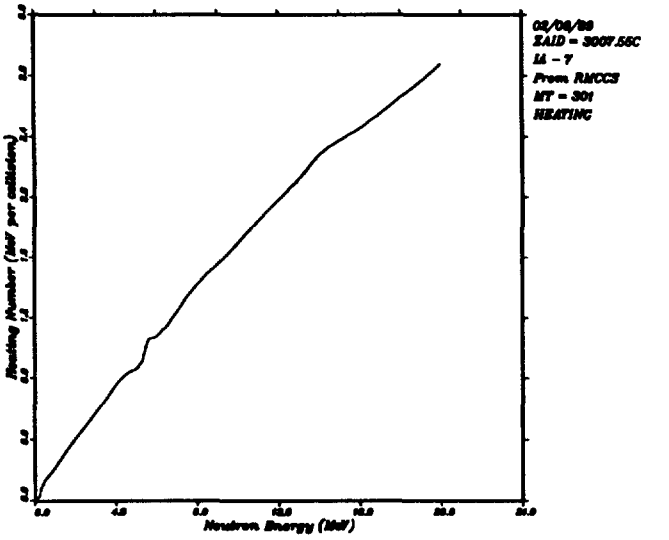
Reaction Information

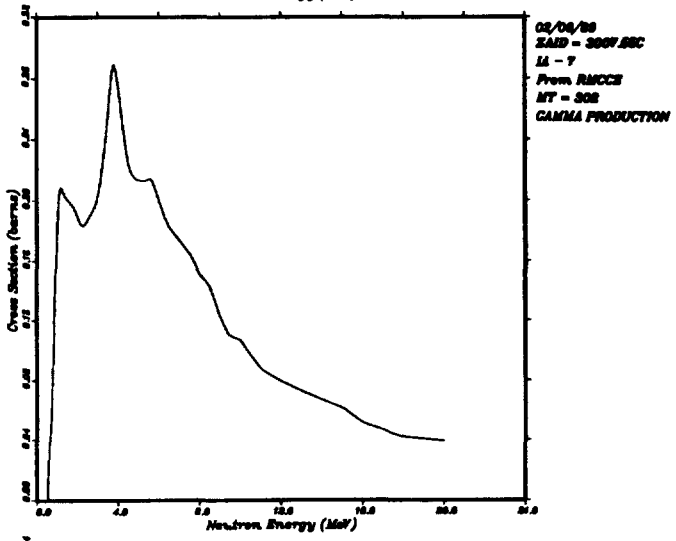
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.2929+00	2.0000+01	-7.2505+00	-7.2505+00
(n,2n)α	24	9.9782+00	2.0000+01	-8.7240+00	-8.7240+00
(n,3n)α	25	1.2523+01	2.0000+01	-1.0949+01	-1.0949+01
(n,n'1)	51	5.4627-01	2.0000+01	-4.7761-01	0.0000+00
(n,n')t,α	52	3.1454+00	2.0000+01	-2.7500+00	-2.4667+00
(n,n')t,α	53	3.7172+00	2.0000+01	-3.2500+00	-2.4667+00
(n,n')t,α	54	4.2891+00	2.0000+01	-3.7500+00	-2.4667+00
(n,n')t,α	55	4.8610+00	2.0000+01	-4.2500+00	-2.4667+00
(n,n')t,α	56	5.2956+00	2.0000+01	-4.6300+00	-2.4667+00
(n,n')t,α	57	5.4329+00	2.0000+01	-4.7500+00	-2.4667+00
(n,n')t,α	58	6.0048+00	2.0000+01	-5.2500+00	-2.4667+00
(n,n')t,α	59	6.5767+00	2.0000+01	-5.7500+00	-2.4667+00
(n,n')t,α	60	7.1485+00	2.0000+01	-6.2500+00	-2.4667+00
(n,n')t,α	61	7.7204+00	2.0000+01	-6.7500+00	-2.4667+00
(n,n')t,α	62	8.2923+00	2.0000+01	-7.2500+00	-2.4667+00
(n,n')t,α	63	8.8642+00	2.0000+01	-7.7500+00	-2.4667+00
(n,n')t,α	64	9.4361+00	2.0000+01	-8.2500+00	-2.4667+00
(n,n')t,α	65	1.0008+01	2.0000+01	-8.7500+00	-2.4667+00
(n,n')t,α	66	1.0580+01	2.0000+01	-9.2500+00	-2.4667+00
(n,n')t,α	67	1.1152+01	2.0000+01	-9.7500+00	-2.4667+00
(n,n')t,α	68	1.1724+01	2.0000+01	-1.0250+01	-2.4667+00
(n,n')t,α	69	1.2295+01	2.0000+01	-1.0750+01	-2.4667+00
(n,n')t,α	70	1.2867+01	2.0000+01	-1.1250+01	-2.4667+00
(n,n')t,α	71	1.3439+01	2.0000+01	-1.1750+01	-2.4667+00
(n,n')t,α	72	1.4011+01	2.0000+01	-1.2250+01	-2.4667+00
(n,n')t,α	73	1.4583+01	2.0000+01	-1.2750+01	-2.4667+00
(n,n')t,α	74	1.5155+01	2.0000+01	-1.3250+01	-2.4667+00
(n,n')t,α	75	1.5727+01	2.0000+01	-1.3750+01	-2.4667+00
(n,n')t,α	76	1.6299+01	2.0000+01	-1.4250+01	-2.4667+00
(n,n')t,α	77	1.6871+01	2.0000+01	-1.4750+01	-2.4667+00
(n,n')t,α	78	1.7442+01	2.0000+01	-1.5250+01	-2.4667+00
(n,n')t,α	79	1.8014+01	2.0000+01	-1.5750+01	-2.4667+00
(n,n')t,α	80	1.8586+01	2.0000+01	-1.6250+01	-2.4667+00
(n,n')t,α	81	1.9158+01	2.0000+01	-1.6750+01	-2.4667+00
(n,n')t,α	82	1.9730+01	2.0000+01	-1.7250+01	-2.4667+00
(n,γ)	102	1.0000-11	2.0000+01	2.0327+00	2.0327+00
(n,d)	104	8.8679+00	2.0000+01	-7.7532+00	-7.7532+00

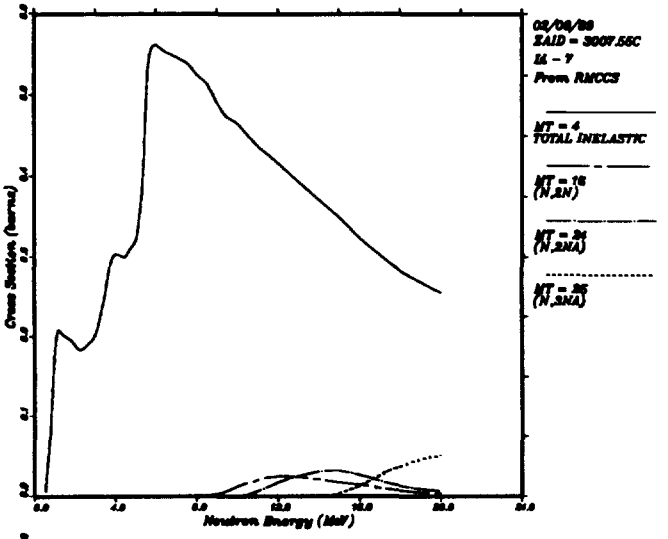
NOTE:(PLEASE SEE APPENDIX B)

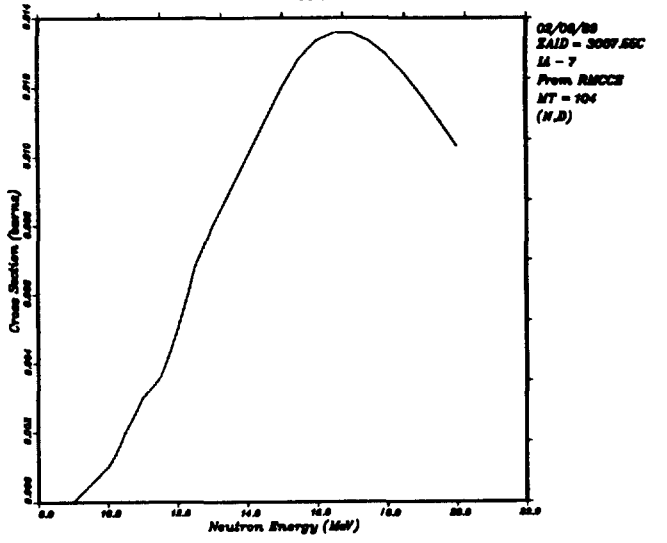
3007.55C

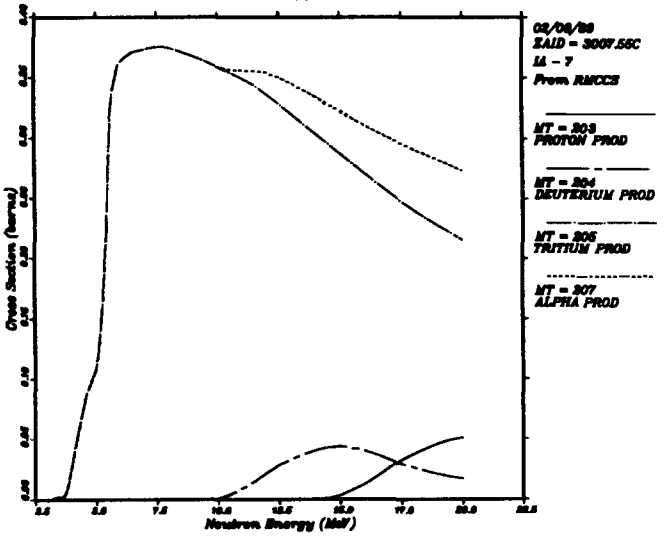

02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 24
(N,2NA)
MT = 25
(N,3NA)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 104
(N,D)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 3007.55C
LA - 7
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Beryllium – 7

ZAID=4007.35C

SOURCE: ENDL–85 (ZA=4007 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=4007.35C NES=180 T=0°K

Multigroup

ZAID=4007.35M 30–Group T=0°K

Isotope Information

Abundance=0.00%

Density=1.44042 gm/cm^3

Evaluation Information

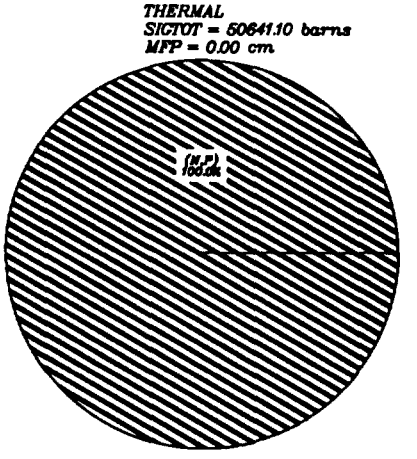
Photon-Production Data – No

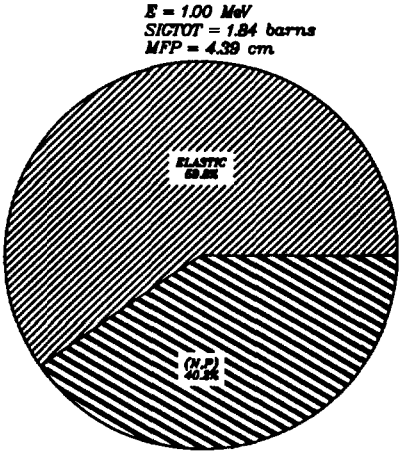
Heating Numbers – Local

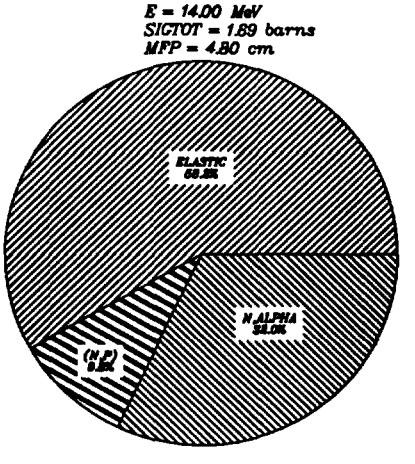
Energy Range – 10^{-10} to 20 MeV

Reaction Information

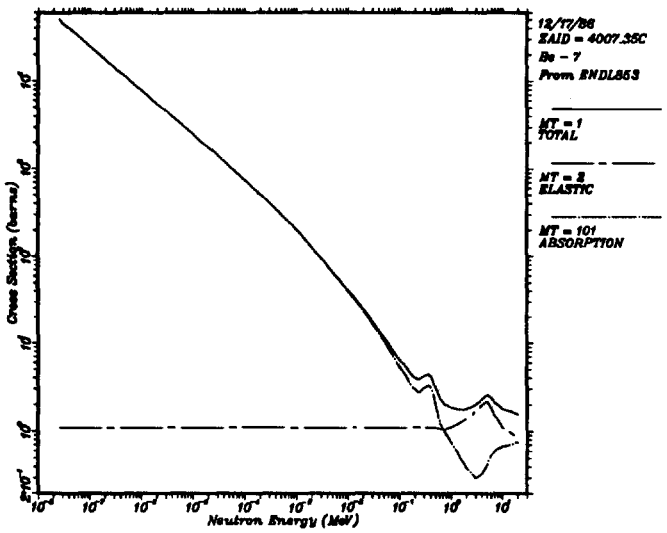
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,p)	103	1.0000-10	2.0000+01	1.6500+00	1.6500+00
(n,α)	107	1.0000-10	2.0000+01	1.8992+01	1.8992+01

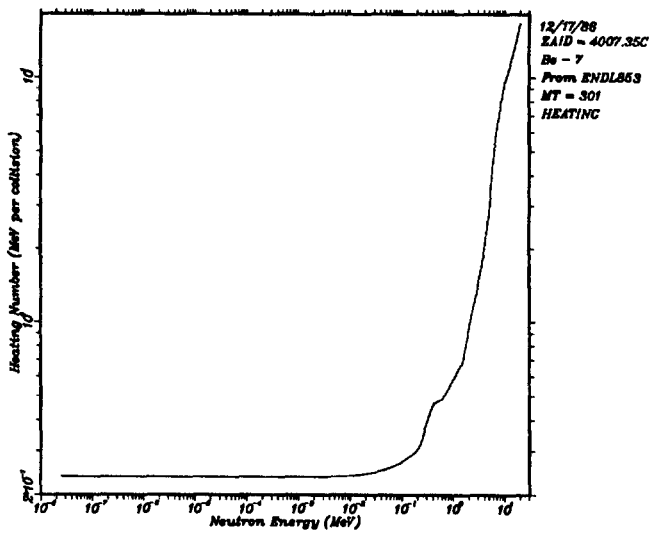


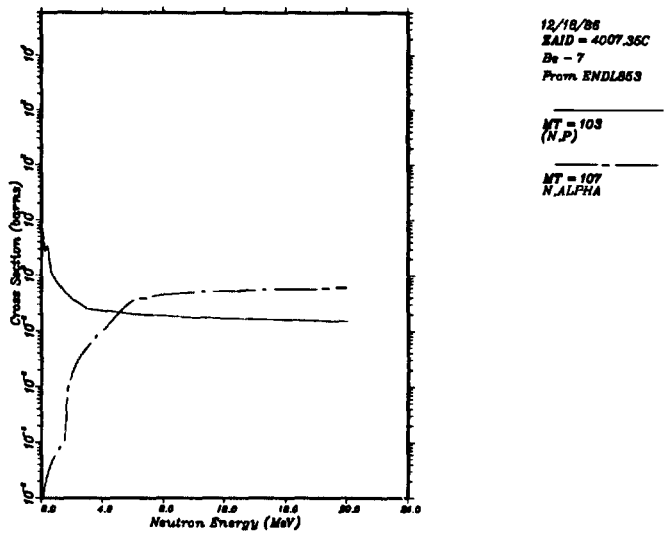




4007.35C


12/17/86
ZAID = 4007.35C
Be - 7
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


12/17/86
ZAID = 4007.35C
Be - 7
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


12/18/86
ZAID = 4007.35C
Be - 7
From ENDL863
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

Beryllium – 9

ZAID=4009.50C
SOURCE: ENDF/B–V (MAT=1304, Tape 505)
REFERENCE: "Beryllium – 9,"
by R. J. Howerton, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=4009.50C	NES=329	T=300°K
ZAID=4009.51C	NES=329	T=300°K

Discrete Reaction

ZAID=4009.50D	NES=263	T=300°K

Multigroup

ZAID=4009.50M	30-Group	T=300°K

Isotope Information

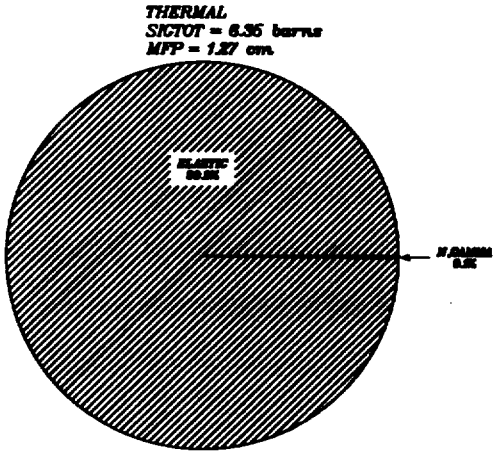
Abundance=100.0%
Density=1.85 gm/cm^3

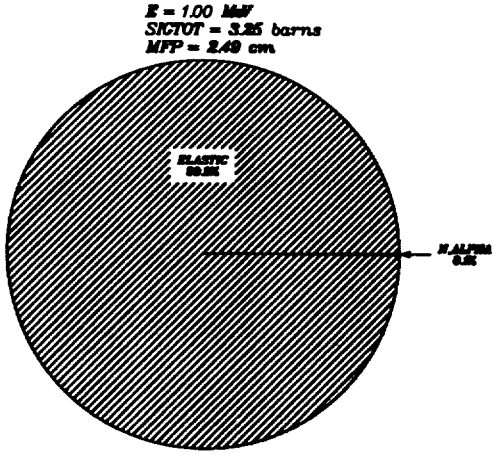
Evaluation Information

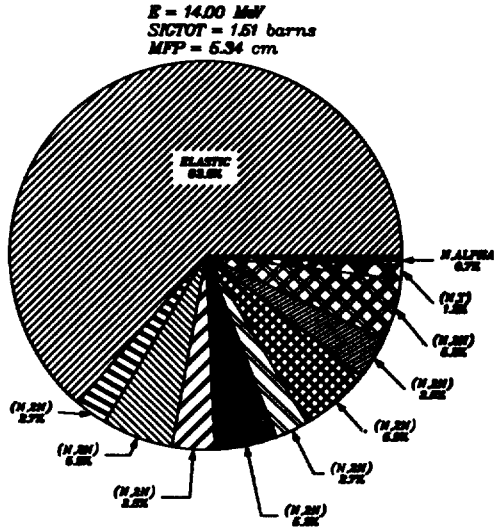
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

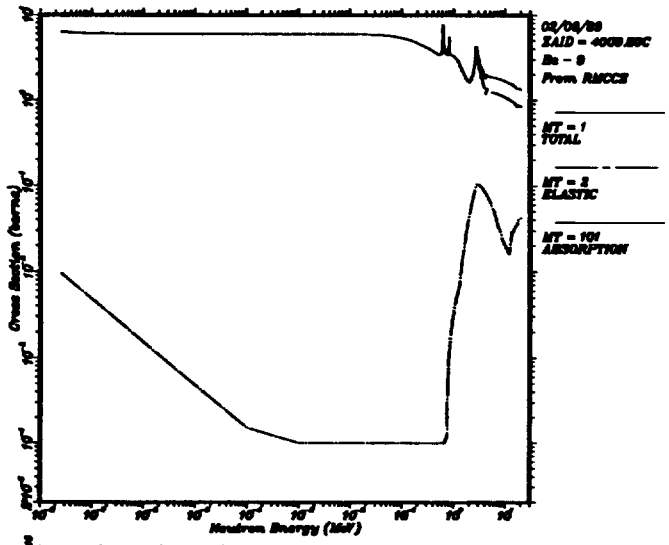
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,1/2n'1)	6	1.8680+00	2.0000+01	-1.6800+00	-1.6800+00
(n,1/2n'2)	7	2.7020+00	2.0000+01	-2.4300+00	-2.4300+00
(n,1/2n'3)	8	7.5166+00	2.0000+01	-6.7600+00	-6.7600+00
(n,1/2n'4)	9	1.2543+01	2.0000+01	-1.1280+01	-1.1280+01
(n,2/2n'1)	46	1.8680+00	2.0000+01	-1.6800+00	-1.6800+00
(n,2/2n'2)	47	2.7020+00	2.0000+01	-2.4300+00	-2.4300+00
(n,2/2n'3)	48	7.5166+00	2.0000+01	-6.7600+00	-6.7600+00
(n,2/2n'4)	49	1.2543+01	2.0000+01	-1.1280+01	-1.1280+01
(n,γ)	102	1.0000-11	2.0000+01	6.8200+00	6.8200+00
(n,p)	103	1.4266+01	2.0000+01	-1.2830+01	-1.2830+01
(n,d)	104	1.6301+01	2.0000+01	-1.4660+01	-1.4660+01
(n,t)	105	1.1609+01	2.0000+01	-1.0440+01	-1.0440+01
(n,α)	107	6.6715-01	2.0000+01	-6.0000-01	-6.0000-01

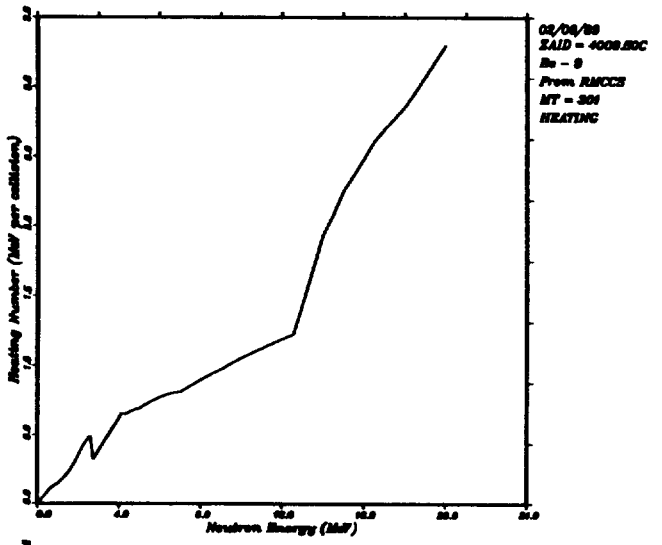


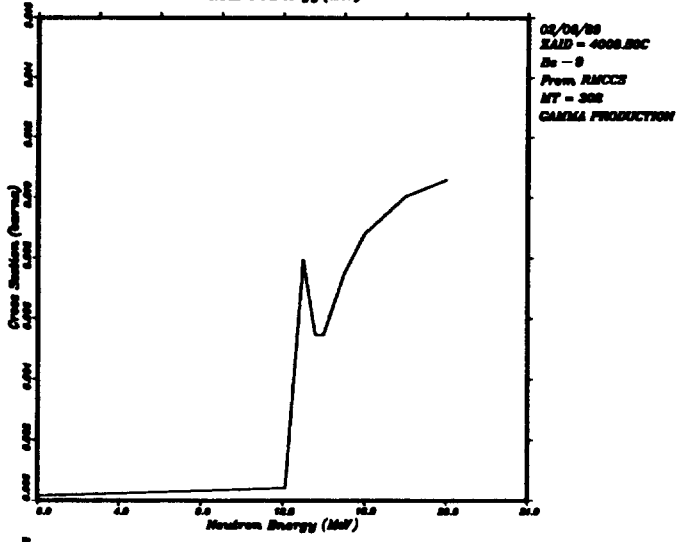


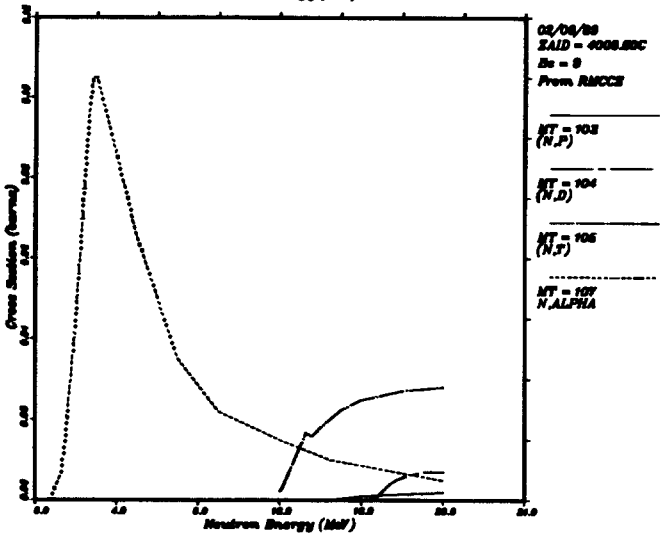


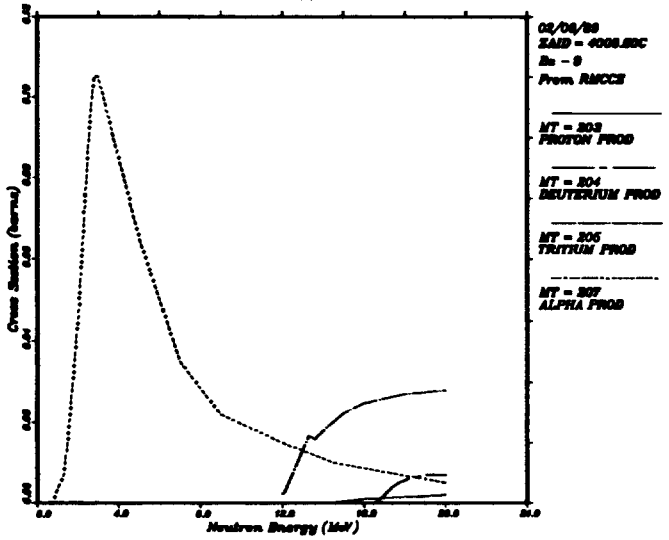
4009.50C


02/06/98
ZAID = 4009.50C
Bn = 0
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/98
ZAID = 4009.50C
Bn = 0
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

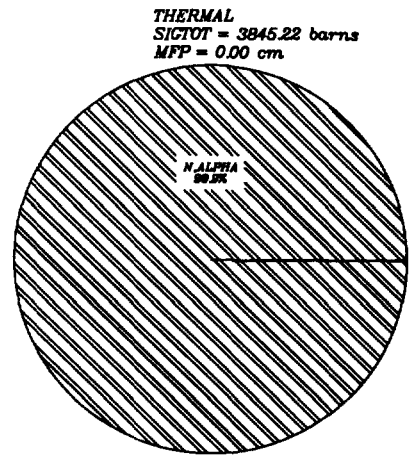

02/06/98
ZAID = 4009.50C
Bn = 0
From RMCCS
MT = 308
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/98
ZAID = 4009.50C
Bn = 0
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/98
ZAID = 4009.50C
Bn = 0
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Boron – 10

ZAID=5010.50C
SOURCE: ENDF/B–V (MAT=1305, Tape 511)
REFERENCE: "Summary Documentation for ^{10}B,"
by G. M. Hale, L. Stewart, and P. G. Young
contained in ENDF–201

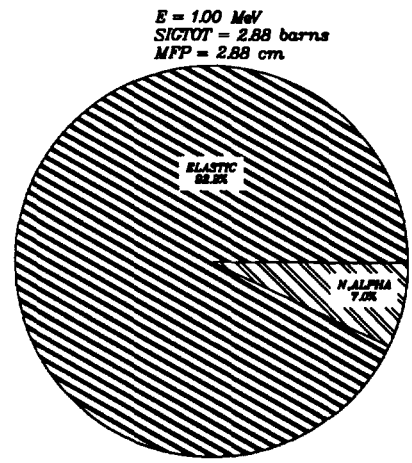


Data Availability

Continuous Energy		
ZAID=5010.50C	NES=514	T=300°K
ZAID=5010.51C	NES=512	T=300°K
ZAID=5010.53C	NES=700	T=600°K
Discrete Reaction		
ZAID=5010.50D	NES=263	T=300°K
Multigroup		
ZAID=5010.50M	30–Group	T=300°K

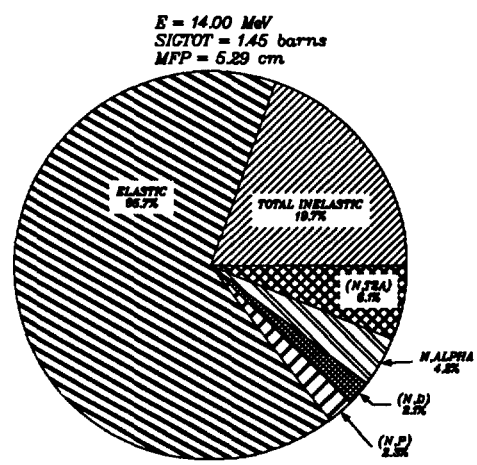
Isotope Information
Abundance=19.800%
Density=2.16746 gm/cm^3

Evaluation Information
Photon-Production Data - Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV



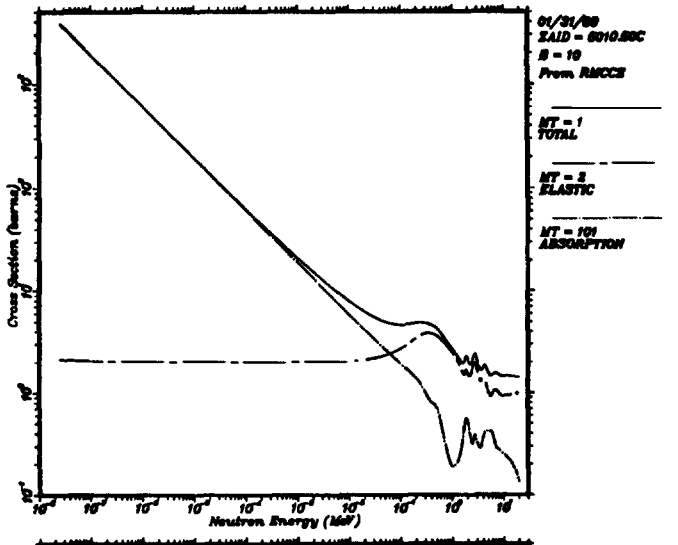
Reaction Information

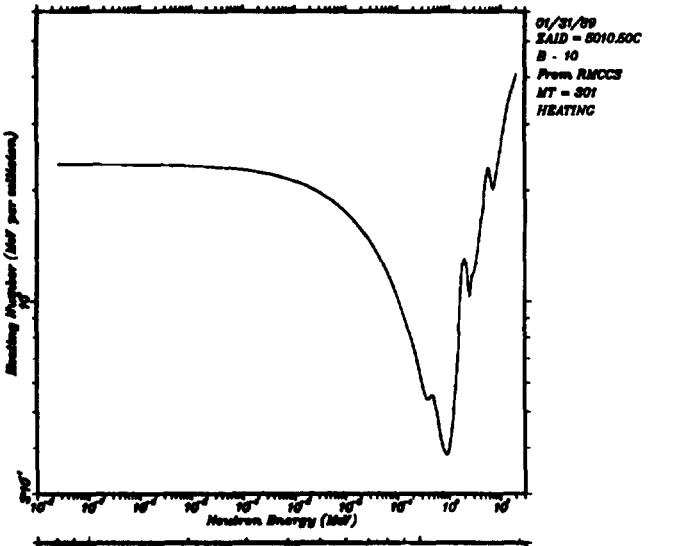
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,n'1)γ	51	7.8923-01	2.0000+01	-7.1700-01	0.0000+00
(n,n'2)γ	52	1.9153+00	2.0000+01	-1.7400+00	0.0000+00
(n,n'3)γ	53	2.3710+00	2.0000+01	-2.1540+00	0.0000+00
(n,n'4)γ	54	3.9461+00	2.0000+01	-3.5850+00	0.0000+00
(n,n')α	55	5.2549+00	2.0000+01	-4.7740+00	-4.4600+00
(n,n')α	56	5.6292+00	2.0000+01	-5.1140+00	-4.4600+00
(n,n'7)γ	57	5.6864+00	2.0000+01	-5.1660+00	0.0000+00
(n,n')α	58	5.7051+00	2.0000+01	-5.1830+00	-4.4600+00
(n,n')α	59	6.5197+00	2.0000+01	-5.9230+00	-4.4600+00
(n,n')α	60	6.6363+00	2.0000+01	-6.0290+00	-4.4600+00
(n,n')α	61	6.7508+00	2.0000+01	-6.1330+00	-4.4600+00
(n,n')d,2α	62	7.1548+00	2.0000+01	-6.5000+00	-5.9340+00
(n,n')α	63	7.7052+00	2.0000+01	-7.0000+00	-4.4600+00
(n,n')d,2α	64	8.2555+00	2.0000+01	-7.5000+00	-5.9340+00
(n,n')p	65	8.8059+00	2.0000+01	-8.0000+00	-6.5850+00
(n,n')α	66	9.3563+00	2.0000+01	-8.5000+00	-4.4600+00
(n,n')α	67	9.9066+00	2.0000+01	-9.0000+00	-4.4600+00
(n,n')d,2α	68	1.0457+01	2.0000+01	-9.5000+00	-5.9340+00
(n,n')α	69	1.1007+01	2.0000+01	-1.0000+01	-4.4600+00
(n,n')d,2α	70	1.1558+01	2.0000+01	-1.0500+01	-5.9340+00
(n,n')d,2α	71	1.2108+01	2.0000+01	-1.1000+01	-5.9340+00
(n,n')α	72	1.2659+01	2.0000+01	-1.1500+01	-4.4600+00
(n,n')d,2α	73	1.3209+01	2.0000+01	-1.2000+01	-5.9340+00
(n,n')d,2α	74	1.3759+01	2.0000+01	-1.2500+01	-5.9340+00
(n,n')α	75	1.4310+01	2.0000+01	-1.3000+01	-4.4600+00
(n,n')d,2α	76	1.4860+01	2.0000+01	-1.3500+01	-5.9340+00
(n,n')d,2α	77	1.5410+01	2.0000+01	-1.4000+01	-5.9340+00
(n,n')p	78	1.5961+01	2.0000+01	-1.4500+01	-6.5850+00
(n,n')d,2α	79	1.6511+01	2.0000+01	-1.5000+01	-5.9340+00
(n,n')d,2α	80	1.7061+01	2.0000+01	-1.5500+01	-5.9340+00
(n,n')d,2α	81	1.7612+01	2.0000+01	-1.6000+01	-5.9340+00
(n,n')α	82	1.8162+01	2.0000+01	-1.6500+01	-4.4600+00
(n,n')d,2α	83	1.8713+01	2.0000+01	-1.7000+01	-5.9340+00
(n,n')d,2α	84	1.9263+01	2.0000+01	-1.7500+01	-5.9340+00
(n,n')α	85	1.9813+01	2.0000+01	-1.8000+01	-4.4600+00
(n,γ)	102	1.0000-11	2.0000+01	1.1456+01	1.1456+01
(n,p)	103	1.0000-11	2.0000+01	2.2670-01	2.2670-01
(n,d)	104	4.8003+00	2.0000+01	-4.3610+00	-4.3610+00
(n,α)	107	1.0000-11	2.0000+01	2.7900+00	2.7900+00
(n,t2α)	113	1.0000-11	2.0000+01	3.2400-01	3.2400-01

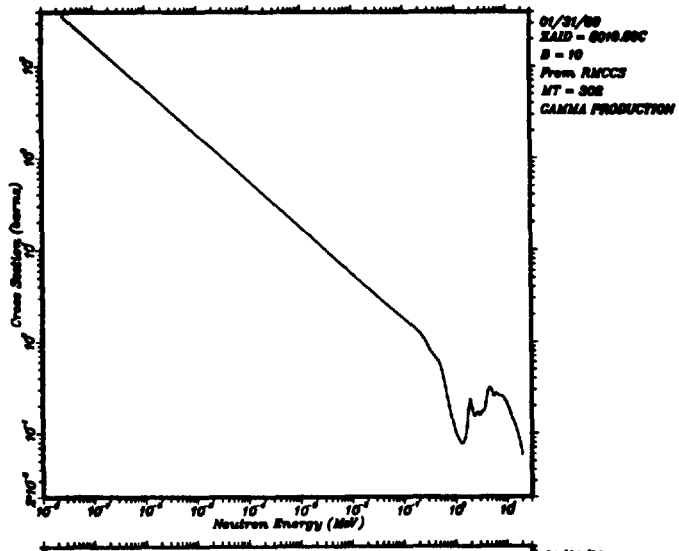


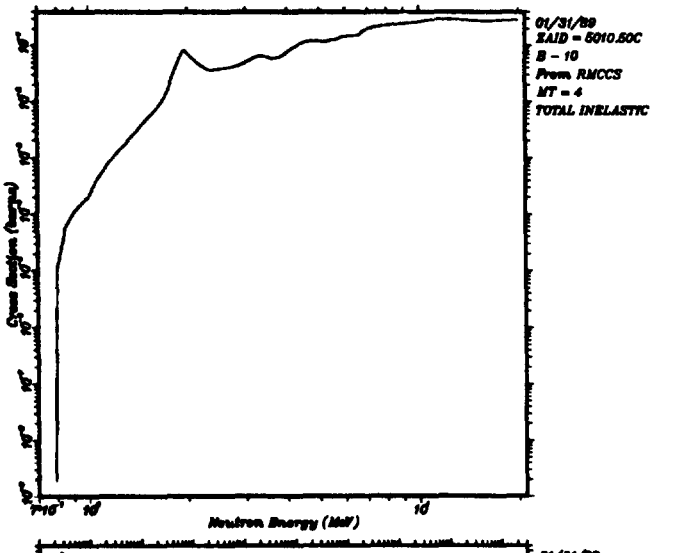
NOTE:(PLEASE SEE APPENDIX B)

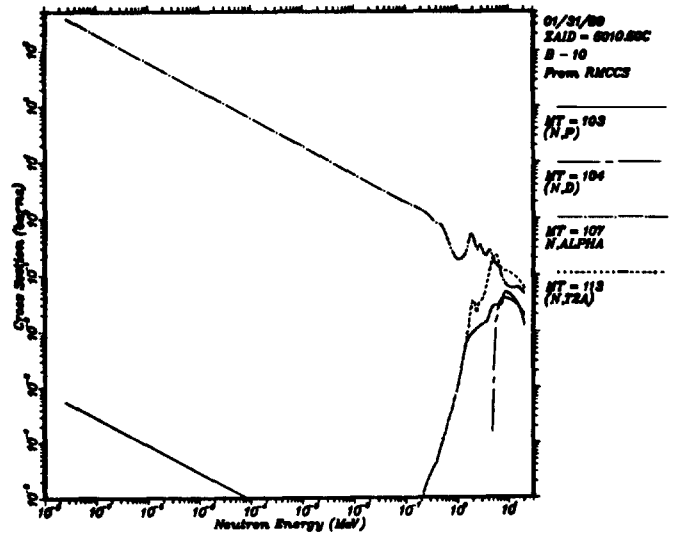
5010.50C

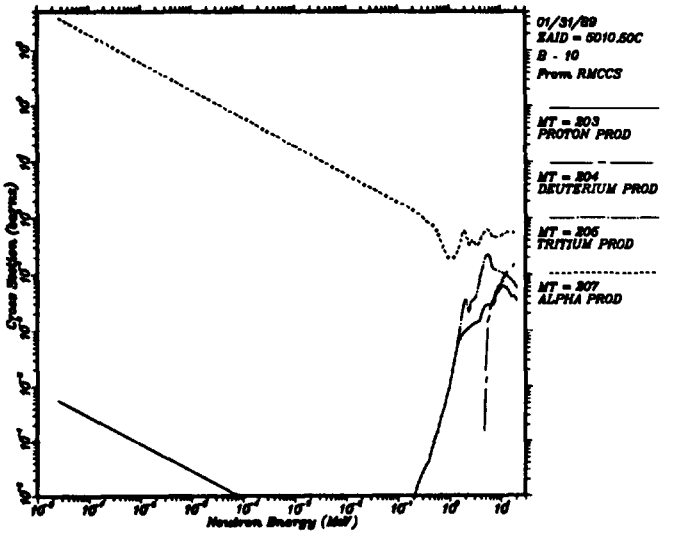

01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 301
HEATING
Neutron Energy (MeV)


01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)


01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
MT = 113
(N,TZA)
Cross Section (barns)
Neutron Energy (MeV)


01/31/89
ZAID = 5010.50C
B - 10
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Boron – 11

ZAID=5011.56C

SOURCE: Group T-2 (MAT=5011, File /T2/PGY/EVAL/LAS/B11LA2)

REFERENCE: "ENDF/B-VI Data Evaluations at Los Alamos National Laboratory for Fusion Applications," by P. G. Young and D. A. Rutherford

Los Alamos National Laboratory report LA-UR-87-1588 (May 1987)

Data Availability

Continuous Energy

ZAID=5011.56C	NES=1762	T=300°K

Discrete Reaction

ZAID=5011.56D	NES=263	T=300°K

Multigroup

ZAID=5011.56M	30-Group	T=300°K

Isotope Information

Abundance=80.20%

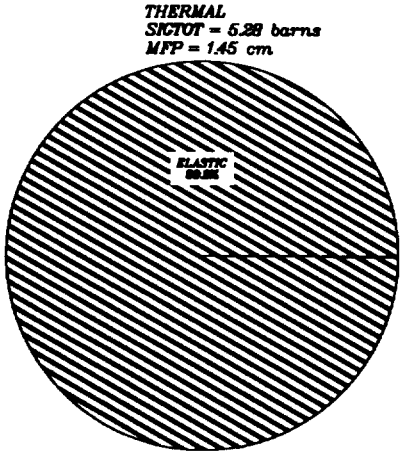
Density=2.38314 gm/cm^3

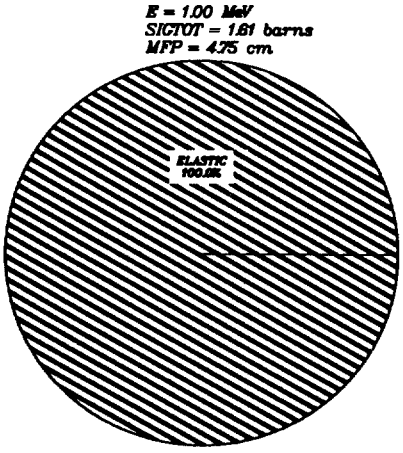
Evaluation Information

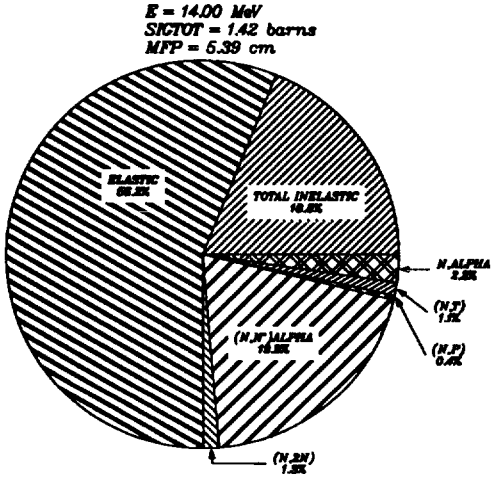
Photon-Production Data - Yes

Heating Numbers - Local

Energy Range - 10^{-11} to 20 MeV



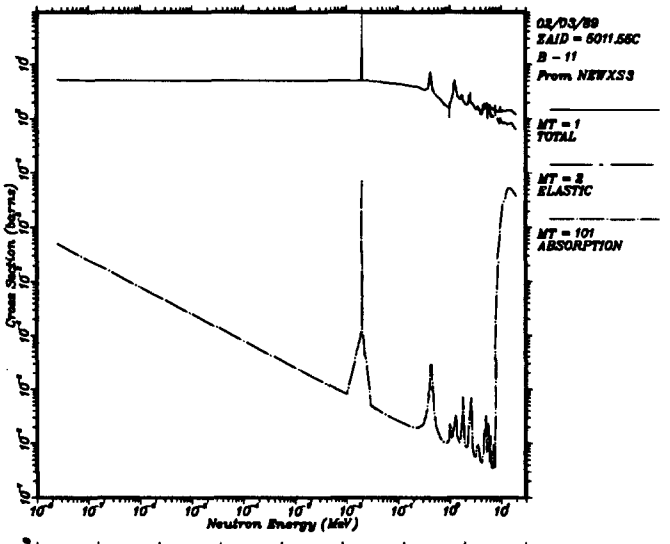


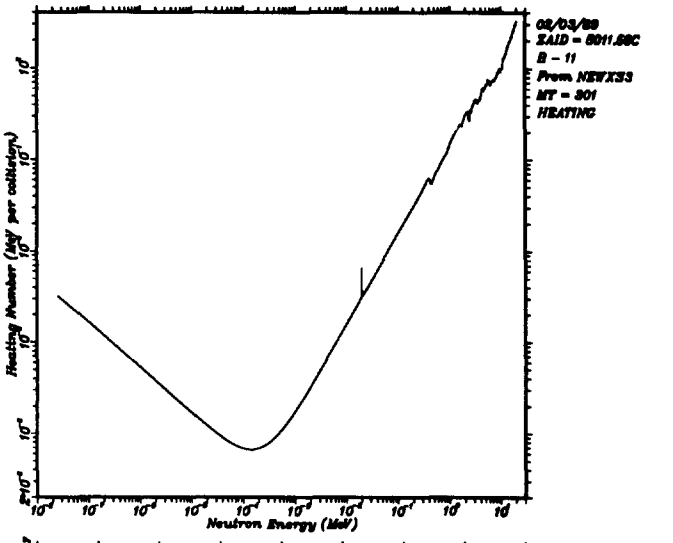


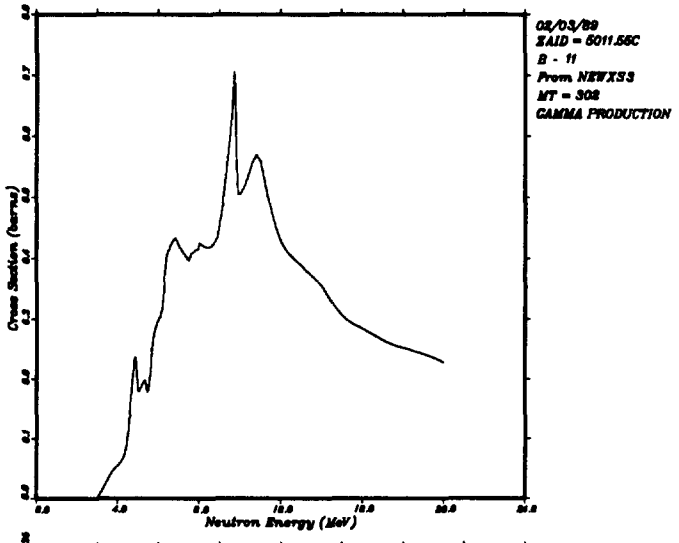
Reaction Information

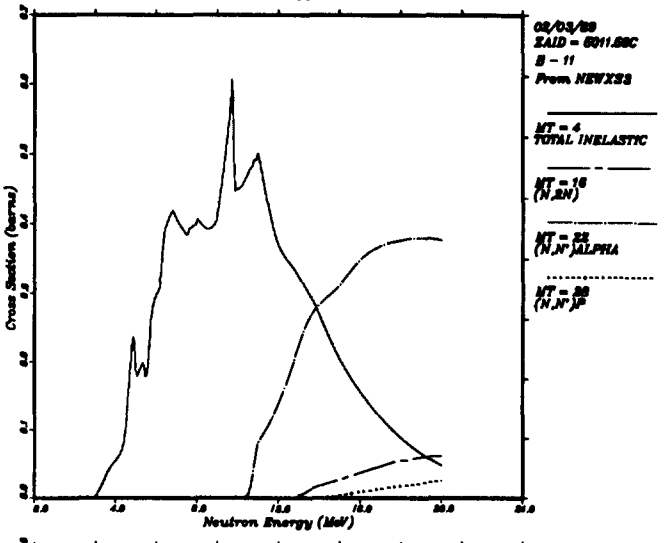
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.2504+01	2.0000+01	-1.1454+01	-1.1454+01
(n,n')α	22	9.4575+00	2.0000+01	-8.6637+00	-8.6637+00
(n,n')p	28	1.2257+01	2.0000+01	-1.1228+01	-1.1228+01
(n,n'1)	51	2.3194+00	2.0000+01	-2.1247+00	0.0000+00
(n,n'2)	52	4.8521+00	2.0000+01	-4.4449+00	0.0000+00
(n,n'3)	53	5.4803+00	2.0000+01	-5.0203+00	0.0000+00
(n,n'4)	54	7.3607+00	2.0000+01	-6.7429+00	0.0000+00
(n,n'5)	55	7.4141+00	2.0000+01	-6.7918+00	0.0000+00
(n,n'6)	56	7.9530+00	2.0000+01	-7.2855+00	0.0000+00
(n,n'7)	57	8.7088+00	2.0000+01	-7.9778+00	0.0000+00
(n,n'8)	58	9.3446+00	2.0000+01	-8.5603+00	0.0000+00
(n,n'9)	59	9.7375+00	2.0000+01	-8.9202+00	0.0000+00
(n,n'10)	60	1.0027+01	2.0000+01	-9.1850+00	0.0000+00
(n,γ)	102	1.0000-11	2.0000+01	3.3699+00	3.3699+00
(n,p)	103	1.1713+01	2.0000+01	-1.0724+01	-1.0724+01
(n,t)	105	1.0434+01	2.0000+01	-9.5582+00	-9.5582+00
(n,α)	107	7.2385+00	2.0000+01	-6.6309+00	-6.6309+00

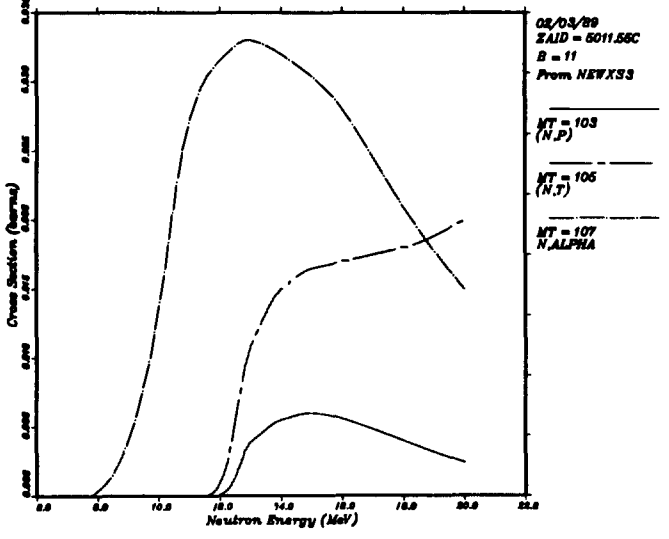
5011.56C

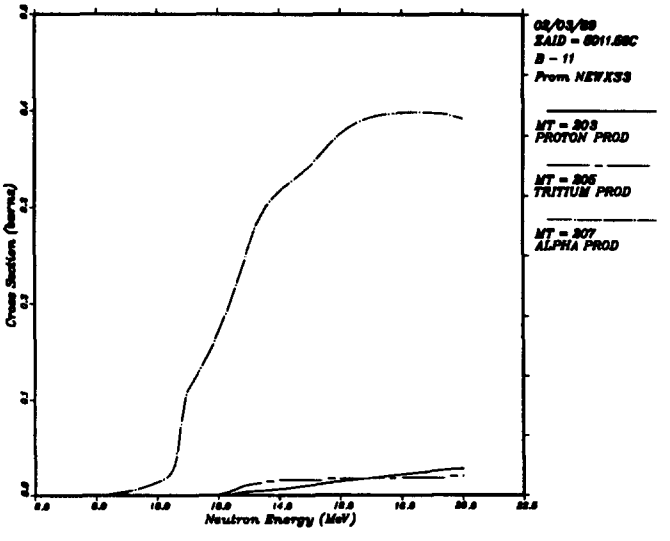

02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

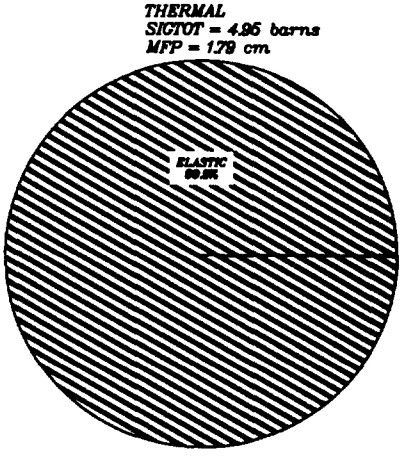

02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)

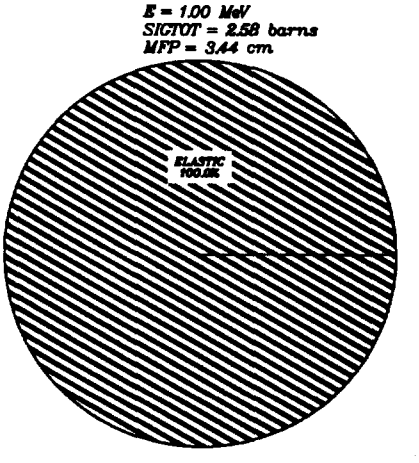

02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 103
(N,P)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

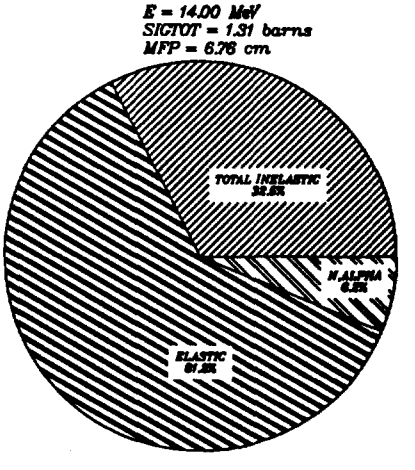

02/03/89
ZAID = 5011.56C
B - 11
From NEWXS3
MT = 203
PROTON PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Carbon

ZAID=6000.50C
SOURCE: ENDF/B–V (MAT=1306, Tape 511)
REFERENCE: "Summary Documentation Carbon Evaluation ENDF/B–V MAT 1306,"
by C. Y. Fu and F. G. Perey
contained in ENDF–201







Data Availability

	Continuous Energy	
ZAID=6000.50C	NES=875	T=300°K
ZAID=6000.51C	NES=876	T=300°K
	Discrete Reaction	
ZAID=6000.50D	NES=263	T=300°K
	Multigroup	
ZAID=6000.50M	30–Group	T=300°K

Isotope Information

Abundance=Natural
Density=2.25 gm/cm^3

Evaluation Information

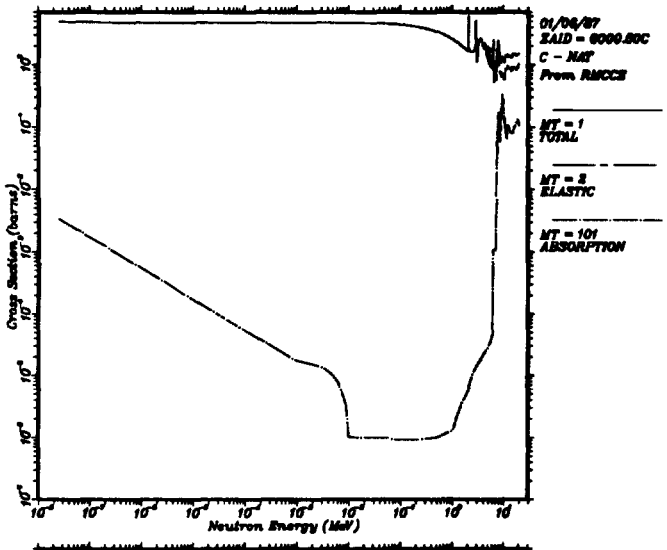
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

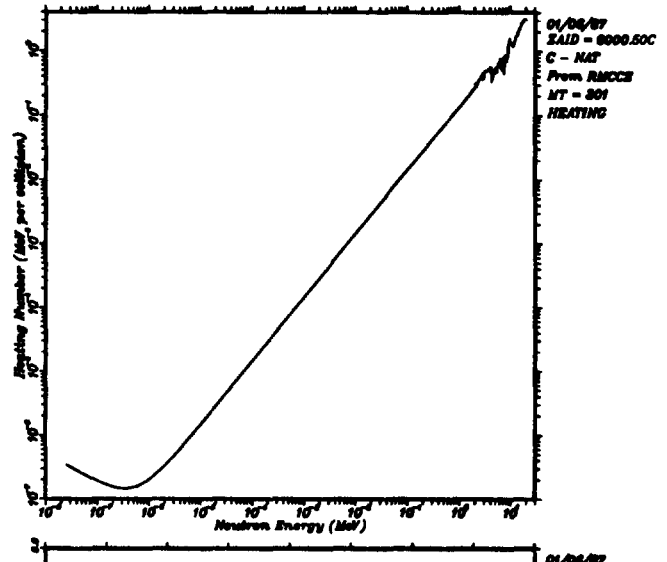
Reaction Information

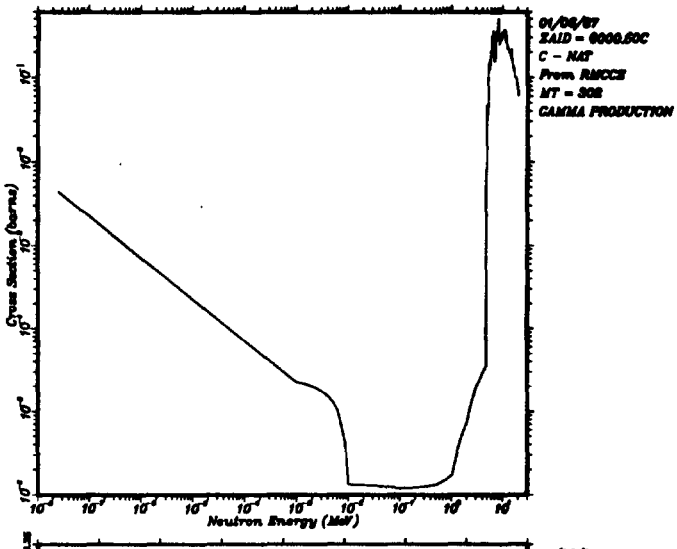
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,n'1)	51	4.8121+00	2.0000+01	-4.4390+00	0.0000+00
(n,n')3α	52	8.2963+00	2.0000+01	-7.6530+00	-7.2750+00
(n,n')3α	53	1.0448+01	2.0000+01	-9.6380+00	-7.2750+00
(n,n')3α	54	1.1166+01	2.0000+01	-1.0300+01	-7.2750+00
(n,n')3α	55	1.1751+01	2.0000+01	-1.0840+01	-7.2750+00
(n,n')3α	56	1.2196+01	2.0000+01	-1.1250+01	-7.2750+00
(n,n')3α	57	1.2738+01	2.0000+01	-1.1750+01	-7.2750+00
(n,n')3α	58	1.3280+01	2.0000+01	-1.2250+01	-7.2750+00
(n,n')3α	59	1.3822+01	2.0000+01	-1.2750+01	-7.2750+00
(n,n')3α	60	1.4364+01	2.0000+01	-1.3250+01	-7.2750+00
(n,n')3α	61	1.4906+01	2.0000+01	-1.3750+01	-7.2750+00
(n,n')3α	62	1.5448+01	2.0000+01	-1.4250+01	-7.2750+00
(n,n')3α	63	1.5990+01	2.0000+01	-1.4750+01	-7.2750+00
(n,n')3α	64	1.6532+01	2.0000+01	-1.5250+01	-7.2750+00
(n,n')3α	65	1.7074+01	2.0000+01	-1.5750+01	-7.2750+00
(n,n')3α	66	1.7616+01	2.0000+01	-1.6250+01	-7.2750+00
(n,n')3α	67	1.8158+01	2.0000+01	-1.6750+01	-7.2750+00
(n,n')3α	68	1.8700+01	2.0000+01	-1.7250+01	-7.2750+00
(n,n')3α	91	7.8865+00	2.0000+01	-7.2750+00	-7.2750+00
(n,γ)	102	1.0000-11	2.0000+01	4.9470+00	4.9470+00
(n,p)	103	1.4500+01	2.0000+01	-1.2588+01	-1.2588+01
(n,d)	104	1.5250+01	2.0000+01	-1.3733+01	-1.3733+01
(n,α)	107	6.1737+00	2.0000+01	-5.6950+00	-5.6950+00

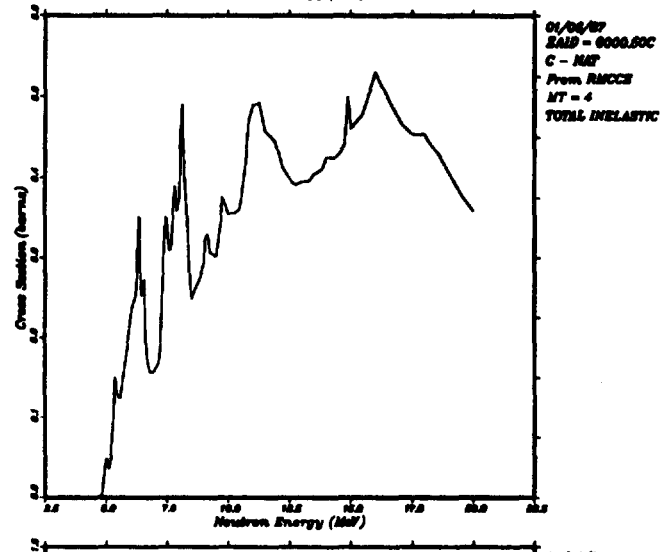
NOTE:(PLEASE SEE APPENDIX B)

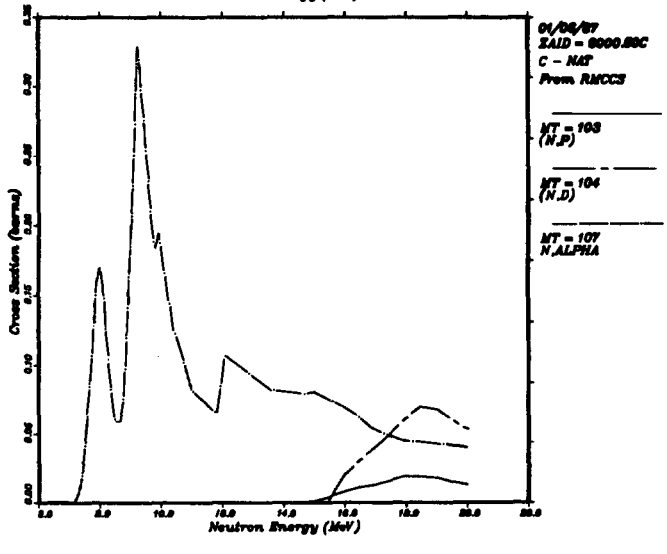
6000.50C

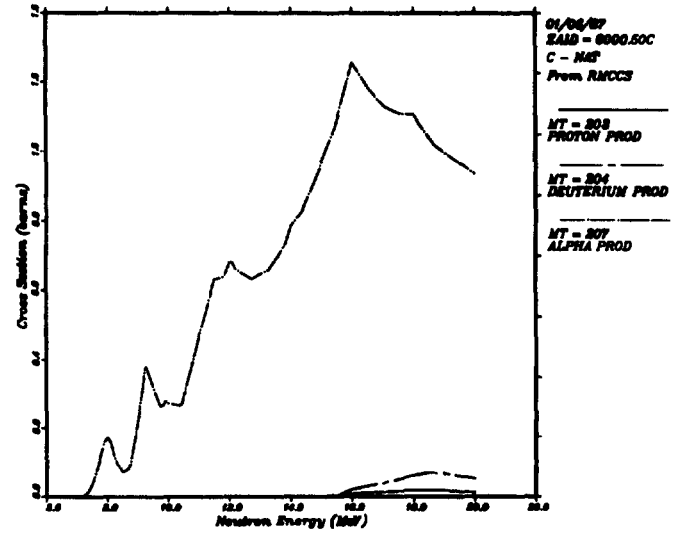

01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 301
HEATING
Neutron Energy (MeV)


01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)


01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


01/06/97
ZAID = 6000.50C
C - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Carbon – 12

ZAID=6012.50C
SOURCE: ENDF/B-V (MAT=1306, Tape 511)
REFERENCE: Same as for natural carbon
COMMENT: The data for ^{12}C are identical to the data for natural carbon.

Data Availability

Continuous Energy		
ZAID=6012.50C	NES=875	T=300°K
Discrete Reaction		
ZAID=6012.50D	NES=263	T=300°K
Multigroup		
ZAID=6012.50M	30-Group	T=300°K

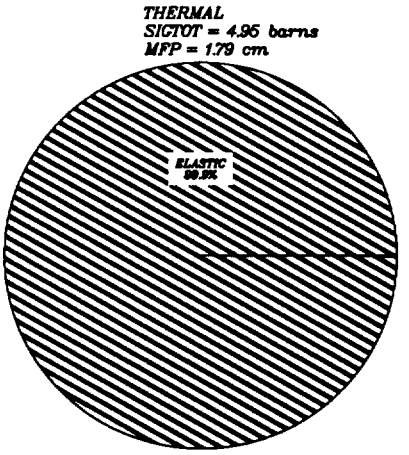
Isotope Information
Abundance=98.90%
Density=2.24794 gm/cm^3

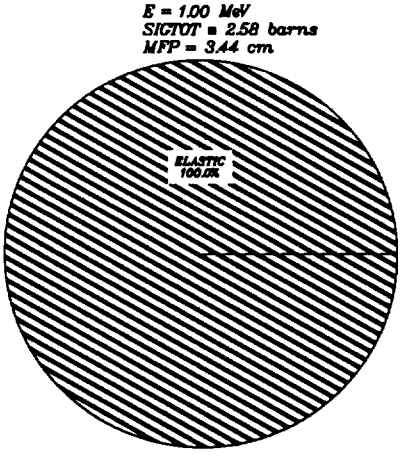
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

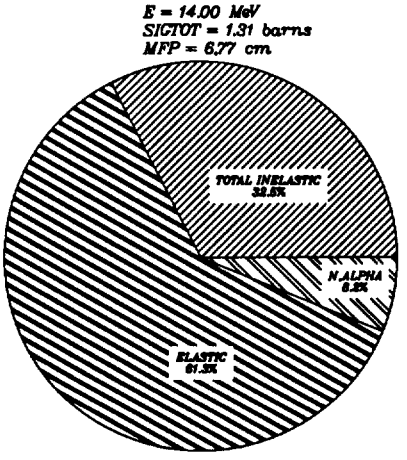
Reaction Information

Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,n'1)	51	4.8121+00	2.0000+01	-4.4390+00	0.0000+00
(n,n')3α	52	8.2963+00	2.0000+01	-7.6530+00	-7.2750+00
(n,n')3α	53	1.0448+01	2.0000+01	-9.6380+00	-7.2750+00
(n,n')3α	54	1.1166+01	2.0000+01	-1.0300+01	-7.2750+00
(n,n')3α	55	1.1751+01	2.0000+01	-1.0840+01	-7.2750+00
(n,n')3α	56	1.2196+01	2.0000+01	-1.1250+01	-7.2750+00
(n,n')3α	57	1.2738+01	2.0000+01	-1.1750+01	-7.2750+00
(n,n')3α	58	1.3280+01	2.0000+01	-1.2250+01	-7.2750+00
(n,n')3α	59	1.3822+01	2.0000+01	-1.2750+01	-7.2750+00
(n,n')3α	60	1.4364+01	2.0000+01	-1.3250+01	-7.2750+00
(n,n')3α	61	1.4906+01	2.0000+01	-1.3750+01	-7.2750+00
(n,n')3α	62	1.5448+01	2.0000+01	-1.4250+01	-7.2750+00
(n,n')3α	63	1.5990+01	2.0000+01	-1.4750+01	-7.2750+00
(n,n')3α	64	1.6532+01	2.0000+01	-1.5250+01	-7.2750+00
(n,n')3α	65	1.7074+01	2.0000+01	-1.5750+01	-7.2750+00
(n,n')3α	66	1.7616+01	2.0000+01	-1.6250+01	-7.2750+00
(n,n')3α	67	1.8158+01	2.0000+01	-1.6750+01	-7.2750+00
(n,n')3α	68	1.8700+01	2.0000+01	-1.7250+01	-7.2750+00
(n,n')3α	91	7.8865+00	2.0000+01	-7.2750+00	-7.2750+00
(n,γ)	102	1.0000-11	2.0000+01	4.9470+00	4.9470+00
(n,p)	103	1.4500+01	2.0000+01	-1.2588+01	-1.2588+01
(n,d)	104	1.5250+01	2.0000+01	-1.3733+01	-1.3733+01
(n,α)	107	6.1737+00	2.0000+01	-5.6950+00	-5.6950+00

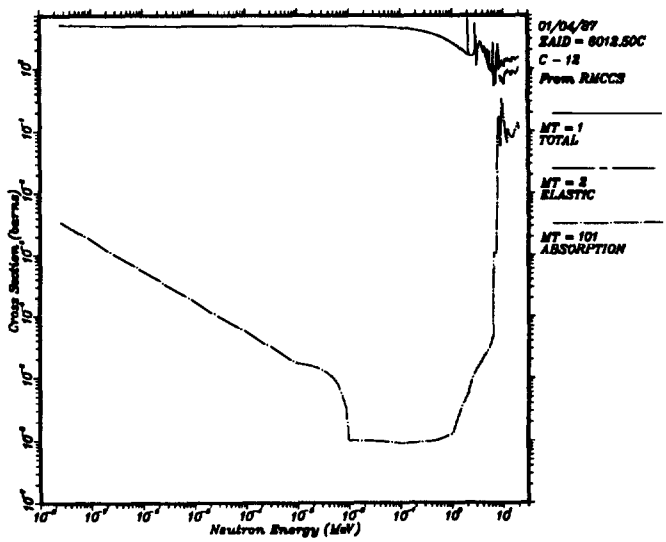
NOTE:(PLEASE SEE APPENDIX B)

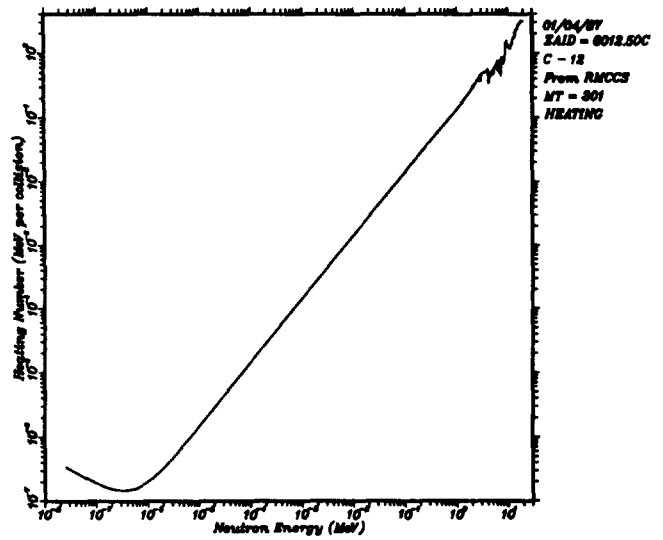


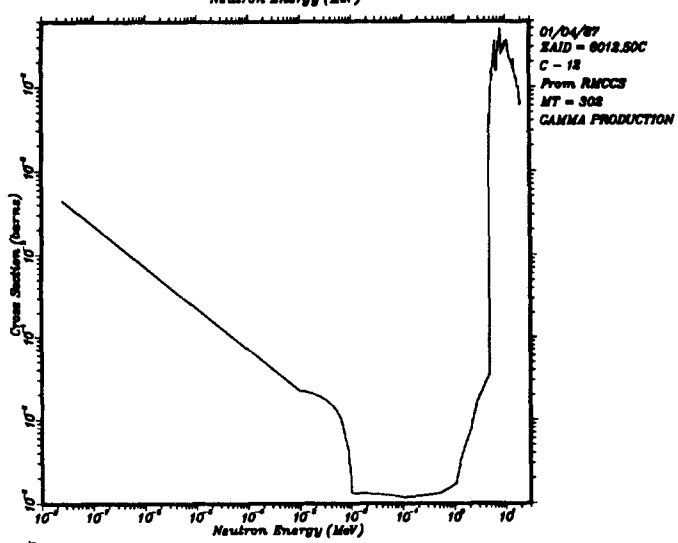


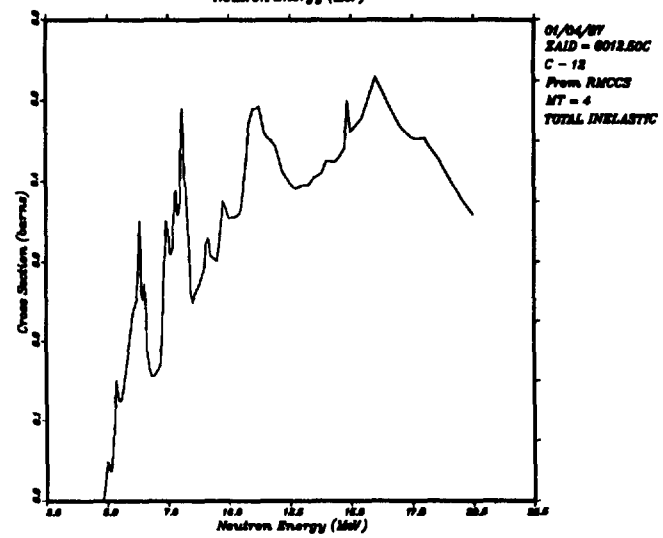


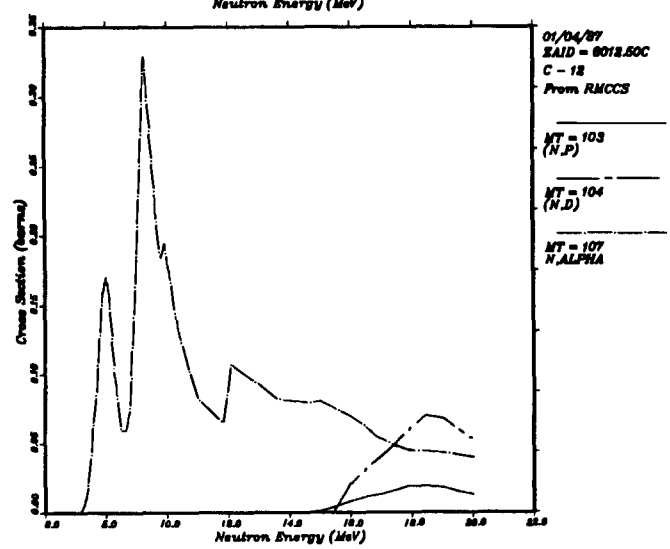
6012.50C

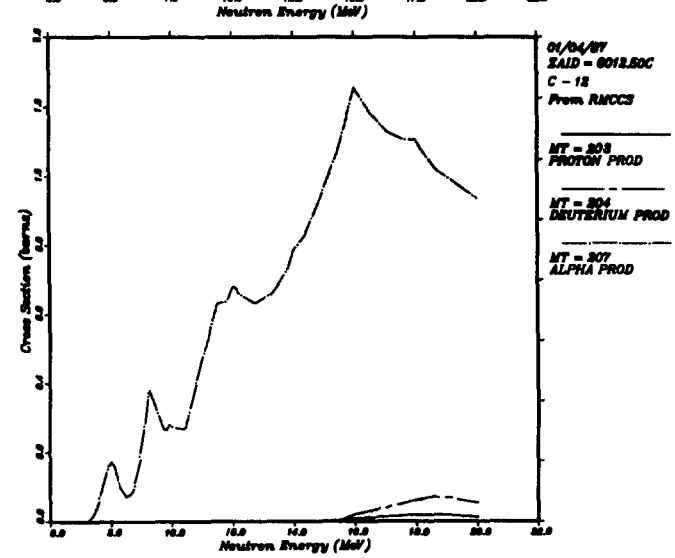

01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)


01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


01/04/97
ZAID = 6012.50C
C - 12
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Carbon – 13

ZAID=6013.35C

SOURCE: ENDL–85 (ZA=6013 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=6013.35C NES=395 T=0°K

Isotope Information

Abundance=1.10%

Density=2.4359 gm/cm^3

Evaluation Information

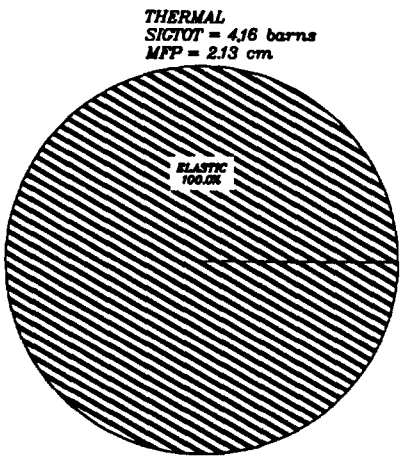
Photon-Production Data – Yes

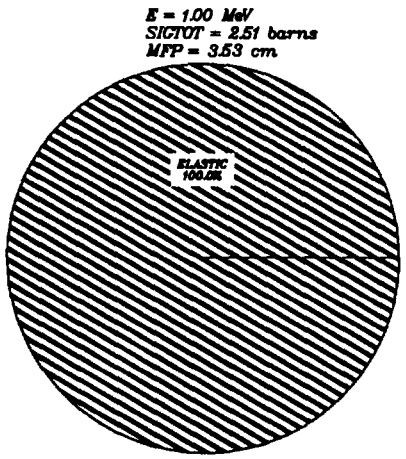
Heating Numbers – Local

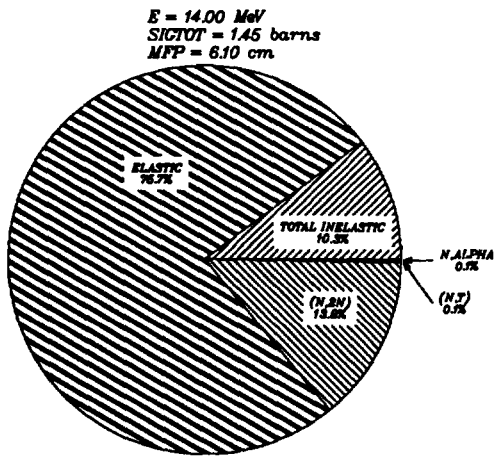
Energy Range – 10^{-10} to 20 MeV

Reaction Information

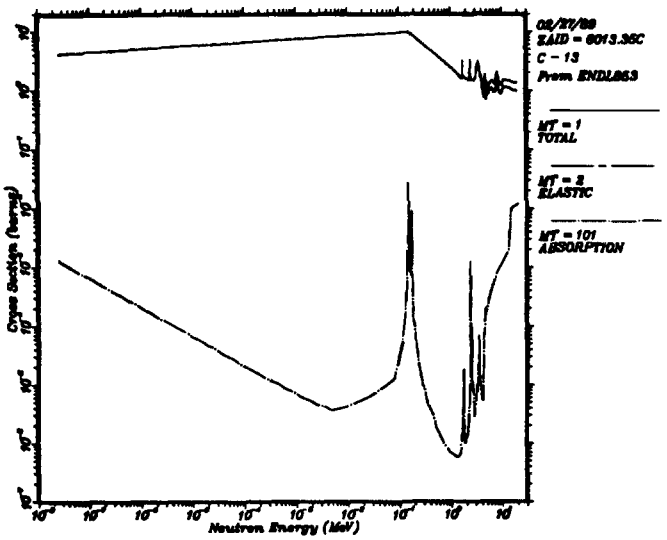
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	**2**	1.0000-10	2.0000+01		
(n,n'1)	51	3.3275+00	2.0000+01	-3.0880+00	0.0000+00
(n,n'2)	52	3.9698+00	2.0000+01	-3.6840+00	0.0000+00
(n,n'3)	53	4.1530+00	2.0000+01	-3.8540+00	0.0000+00
(n,t)	105	1.3386+01	2.0000+01	-1.2423+01	-1.2423+01
(n,α)	107	4.1335+01	2.0000+01	-3.8359+00	-3.8359+00
(n,2n)	16	5.3297+00	2.0000+01	-4.9460+00	-4.9460+00
(n,γ)	102	1.0000-10	2.0000+01	8.1770+00	8.1770+00







6013.35C


02/22/89
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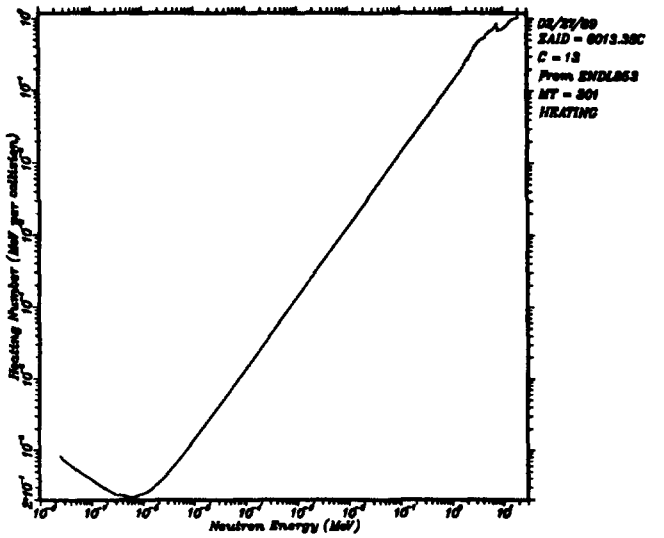
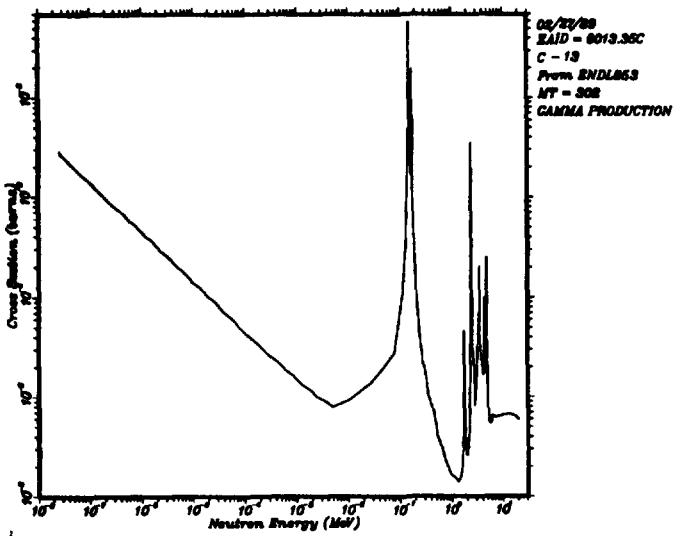
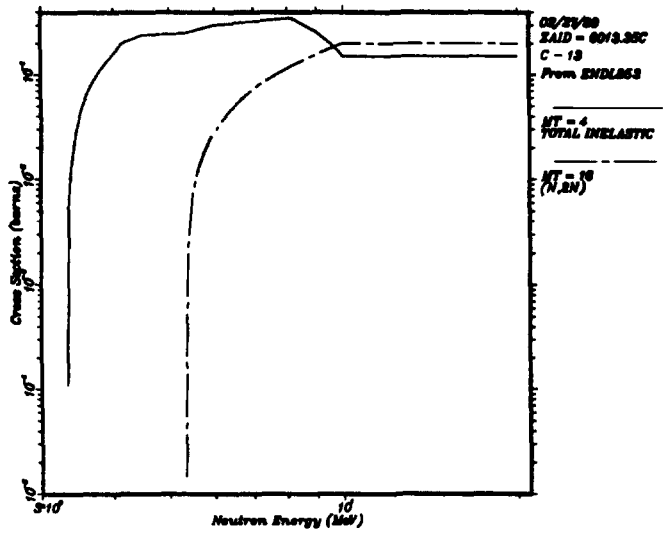
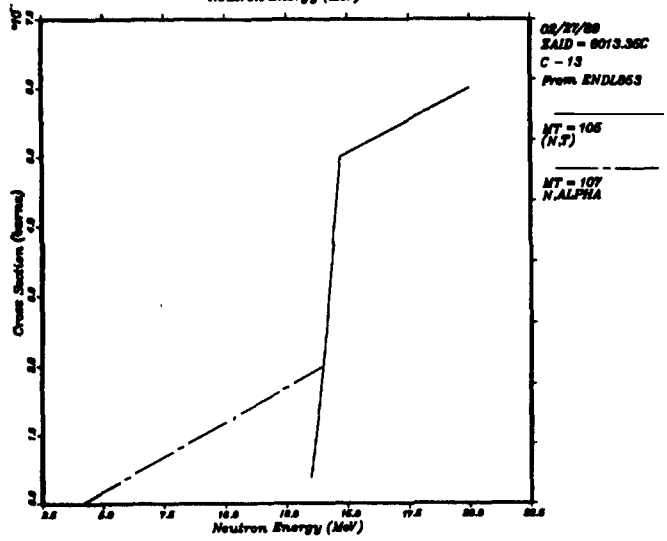
C - 13
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/22/89
ZAID = 6013.35C
C - 13
From ENDL85S
MT = 301
HEATING
Neutron Energy (MeV)


02/22/89
ZAID = 6013.35C
C - 13
From ENDL85S
MT = 102
CAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/22/89
ZAID = 6013.35C
C - 13
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/22/89
ZAID = 6013.35C
C - 13
From ENDL85S
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

Nitrogen – 14

ZAID=7014.50C
SOURCE: ENDF/B–V (MAT=1275, Tape 505)
REFERENCE: "Summary Documentation for ^{14}N,"
by P. G. Young and D. G. Foster, Jr.
contained in ENDF–201

Data Availability

Continuous Energy		
ZAID=7014.50C	NES=1196	T=300°K
ZAID=7014.51C	NES=1195	T=300°K
Discrete Reaction		
ZAID=7014.50D	NES=263	T=300°K
Multigroup		
ZAID=7014.50M	30–Group	T=300°K
ZAID=7014.00M	187–Group	T=300°K

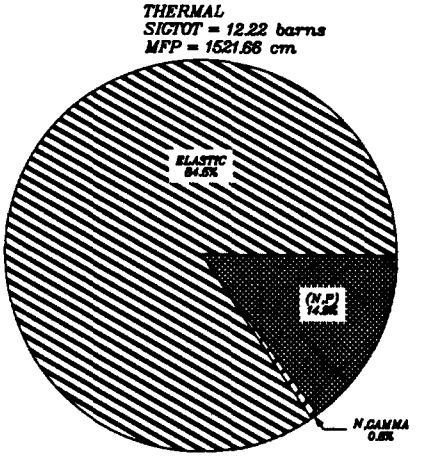
Isotope Information
Abundance=99.63%
Density=1.25028E-03 $gm/cm3$

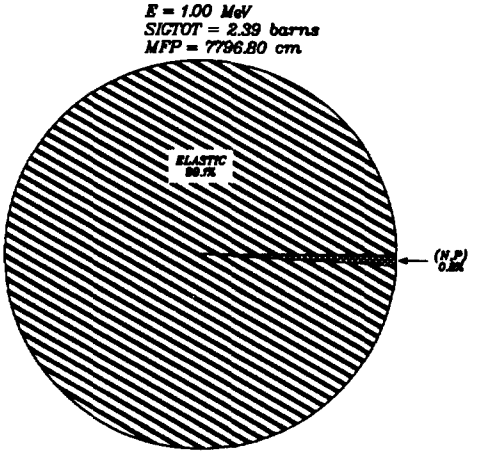
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

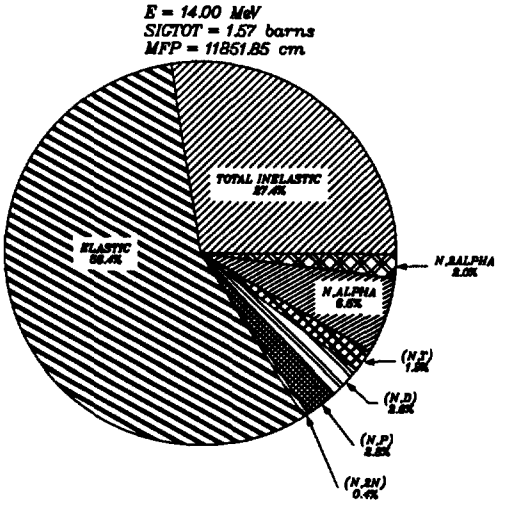
Reaction Information

Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1313+01	2.0000+01	-1.0553+01	-1.0553+01
(n,n'1)	51	2.4796+00	2.0000+01	-2.3130+00	0.0000+00
(n,n'2)	52	4.2400+00	2.0000+01	-3.9551+00	0.0000+00
(n,n'3)	53	5.2670+00	2.0000+01	-4.9130+00	0.0000+00
(n,n'4)	54	5.4740+00	2.0000+01	-5.1060+00	0.0000+00
(n,n'5)	55	6.1010+00	2.0000+01	-5.6910+00	0.0000+00
(n,n'6)	56	6.2600+00	2.0000+01	-5.8340+00	0.0000+00
(n,n'7)	57	6.6444+00	2.0000+01	-6.1980+00	0.0000+00
(n,n'8)	58	6.9082+00	2.0000+01	-6.4440+00	0.0000+00
(n,n'9)	59	7.5342+00	2.0000+01	-7.0280+00	0.0000+00
(n,n')p	60	8.5400+00	2.0000+01	-7.9660+00	-7.5500+00
(n,n')p	61	8.6420+00	2.0000+01	-8.0610+00	-7.5500+00
(n,n'12)	62	9.1005+00	2.0000+01	-8.4890+00	0.0000+00
(n,n')p	63	9.3803+00	2.0000+01	-8.7500+00	-7.5500+00
(n,n')p	64	9.9163+00	2.0000+01	-9.2500+00	-7.5500+00
(n,n')p	65	1.0452+01	2.0000+01	-9.7500+00	-7.5500+00
(n,n')p	66	1.0988+01	2.0000+01	-1.0250+01	-7.5500+00
(n,n')p	67	1.1524+01	2.0000+01	-1.0750+01	-7.5500+00
(n,n')p	68	1.2060+01	2.0000+01	-1.1250+01	-7.5500+00
(n,n')p	69	1.2596+01	2.0000+01	-1.1750+01	-7.5500+00
(n,n')p	70	1.3132+01	2.0000+01	-1.2250+01	-7.5500+00
(n,n')p	71	1.3668+01	2.0000+01	-1.2750+01	-7.5500+00
(n,n')p	72	1.4205+01	2.0000+01	-1.3250+01	-7.5500+00
(n,n')p	73	1.4741+01	2.0000+01	-1.3750+01	-7.5500+00
(n,n')p	74	1.5277+01	2.0000+01	-1.4250+01	-7.5500+00
(n,n')α	75	1.5812+01	2.0000+01	-1.4750+01	-1.1613+01
(n,n')p	76	1.6349+01	2.0000+01	-1.5250+01	-7.5500+00
(n,n')p	77	1.6885+01	2.0000+01	-1.5750+01	-7.5500+00
(n,n')p	78	1.7421+01	2.0000+01	-1.6250+01	-7.5500+00
(n,n')p	79	1.7957+01	2.0000+01	-1.6750+01	-7.5500+00
(n,n')α	80	1.8493+01	2.0000+01	-1.7250+01	-1.1613+01
(n,n')p	81	1.9029+01	2.0000+01	-1.7750+01	-7.5500+00
(n,n')p	82	1.9565+01	2.0000+01	-1.8250+01	-7.5500+00
(n,γ)	102	1.0000-11	2.0000+01	1.0835+01	1.0835+01
(n,p)	103	1.0000-11	2.0000+01	6.2640-01	6.2640-01
(n,d)	104	5.7090+00	2.0000+01	-5.3250+00	-5.3250+00
(n,t)	105	4.3042+00	2.0000+01	-4.0150+00	-4.0150+00
(n,α)	107	1.6863-01	2.0000+01	-1.5730-01	-1.5730-01
(n,2α)	108	9.4575+00	2.0000+01	-8.8220+00	-8.8220+00

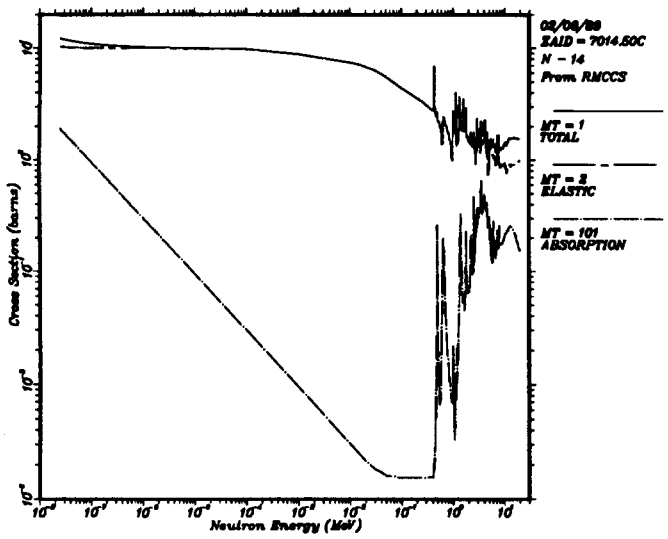
NOTE:(PLEASE SEE APPENDIX B)

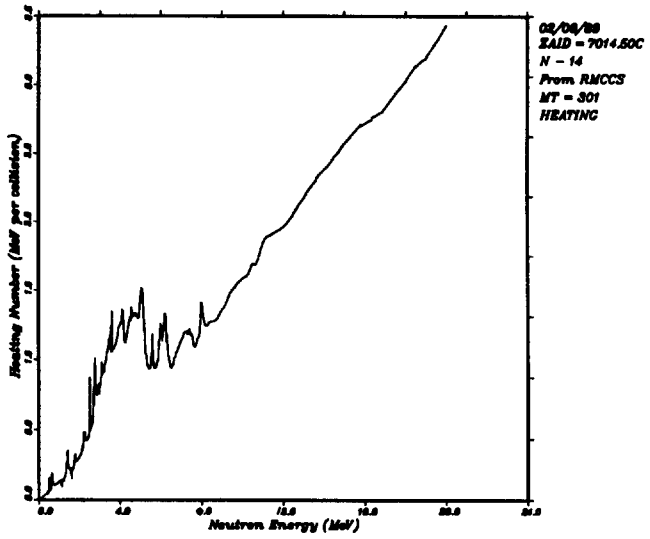


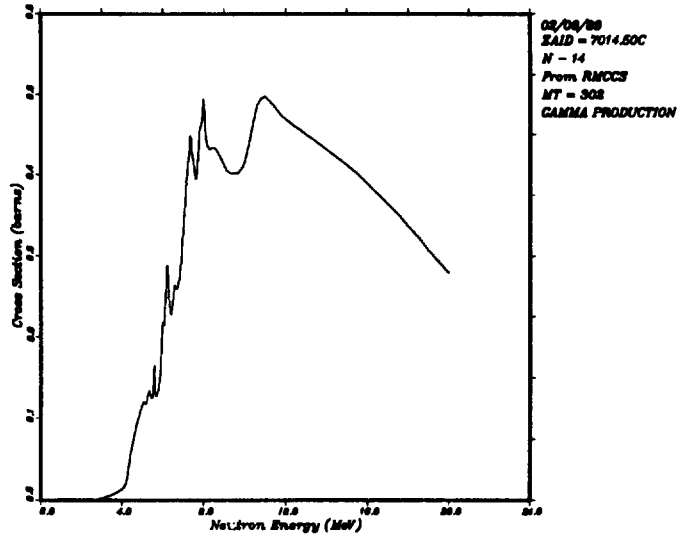


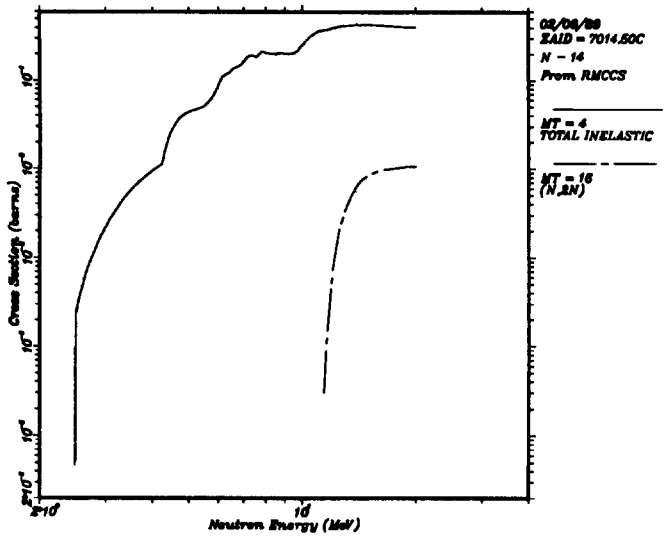


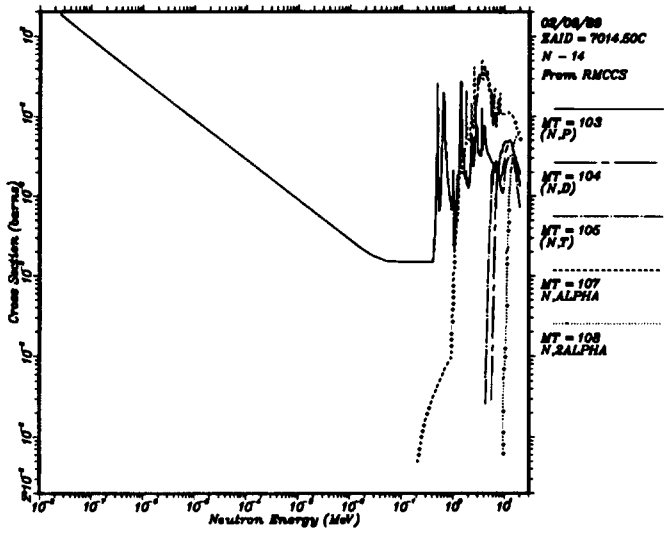
7014.50C

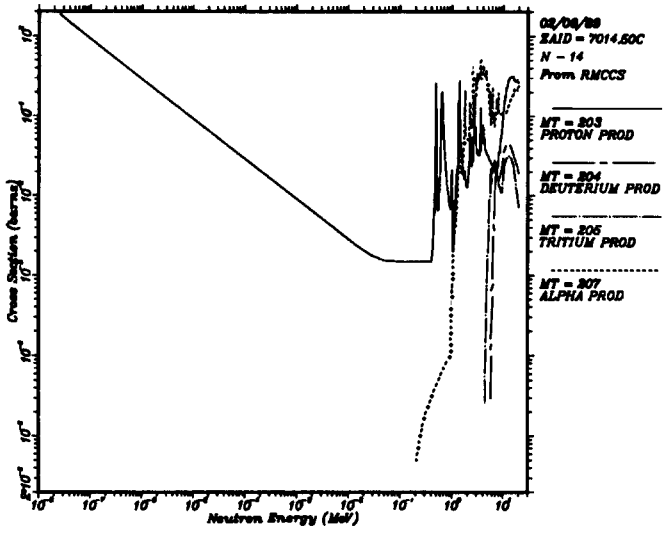

02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
MT = 108
N,2ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 7014.50C
N - 14
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Nitrogen – 15

ZAID=7015.55C
SOURCE: Group T-2 (MAT=9993, File /T2/PGYC/EVAL/LAS/N15V5R1)
REFERENCE: "^{15}N + n Evaluation,"
by P. G. Young
Los Alamos National Laboratory internal memorandum T-2-M-1427 (November 3, 1983)

Data Availability

Continuous Energy

ZAID=7015.55C	NES=744	T=300°K

Discrete Reaction

ZAID=7015.55D	NES=263	T=300°K

Multigroup

ZAID=7015.55M	30-Group	T=300°K

Isotope Information

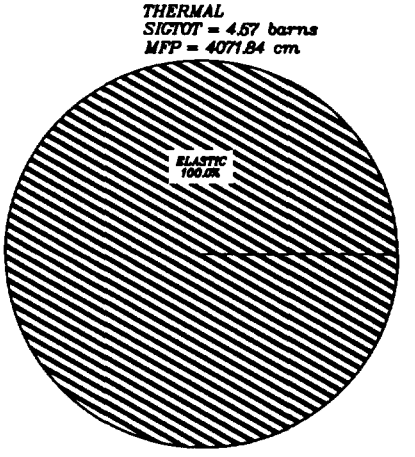
Abundance=0.37%
Density=1.3393E-03 gm/cm^3

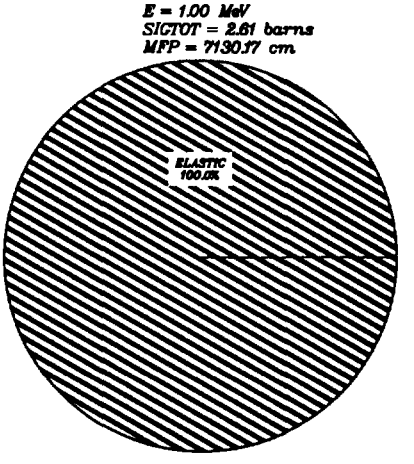
Evaluation Information

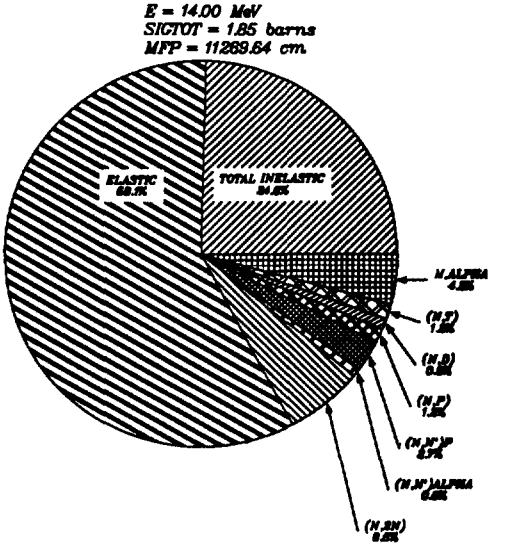
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

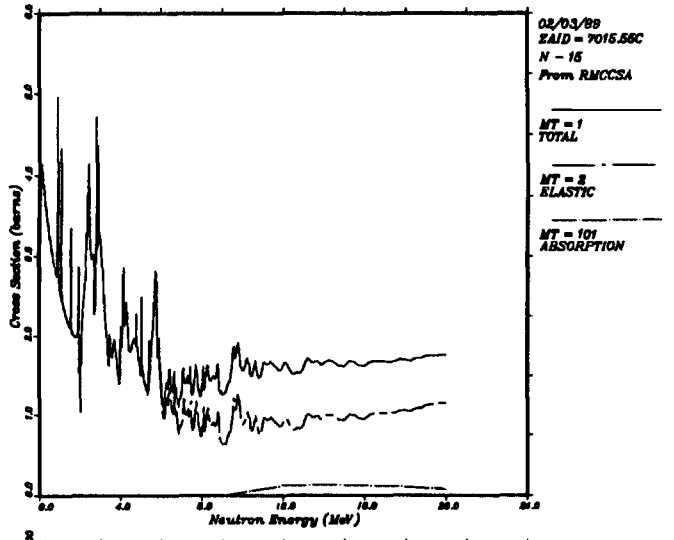
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1561+01	2.0000+01	-1.0833+01	-1.0833+01
(n,n')α	22	1.1730+01	2.0000+01	-1.0991+01	-1.0991+01
(n,n')p	28	1.0893+01	2.0000+01	-1.0207+01	-1.0207+01
(n,n'1)	51	5.6245+00	2.0000+01	-5.2701+00	0.0000+00
(n,n'2)	52	5.6551+00	2.0000+01	-5.2988+00	0.0000+00
(n,n'3)	53	6.7492+00	2.0000+01	-6.3239+00	0.0000+00
(n,n'4)	54	7.6362+00	2.0000+01	-7.1551+00	0.0000+00
(n,n'5)	55	7.7921+00	2.0000+01	-7.3011+00	0.0000+00
(n,n'6)	56	8.0759+00	2.0000+01	-7.5671+00	0.0000+00
(n,n'7)	57	8.8718+00	2.0000+01	-8.3128+00	0.0000+00
(n,n'c)	91	8.8718+00	2.0000+01	-8.3128+00	-8.3128+00
(n,γ)	102	1.0000-11	2.0000+01	2.4900+00	2.4900+00
(n,p)	103	9.5938+00	2.0000+01	-8.9893+00	-8.9893+00
(n,d)	104	8.5196+00	2.0000+01	-7.9828+00	-7.9828+00
(n,t)	105	1.0568+01	2.0000+01	-9.9020+00	-9.9020+00
(n,α)	107	8.1340+00	2.0000+01	-7.6215+00	-7.6215+00

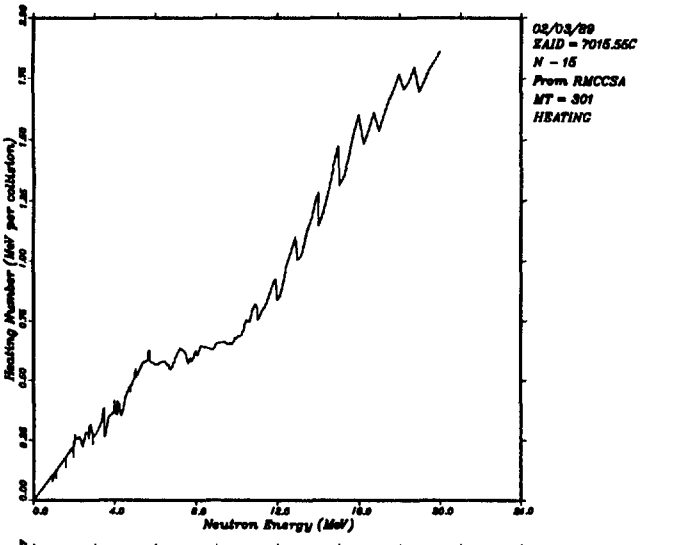


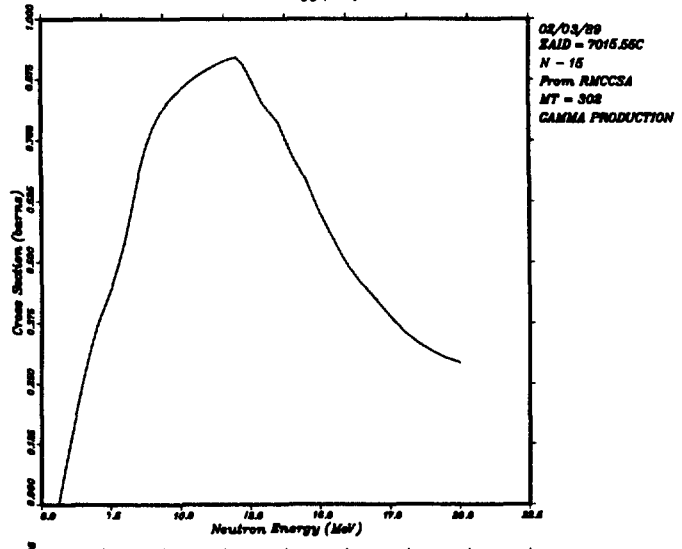


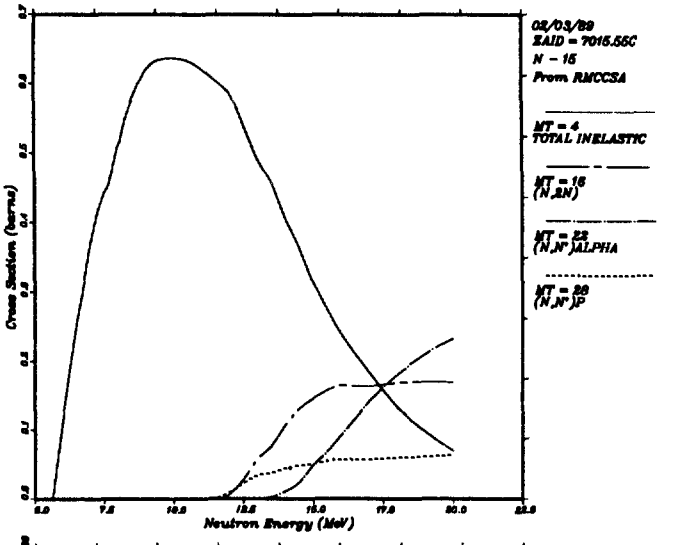


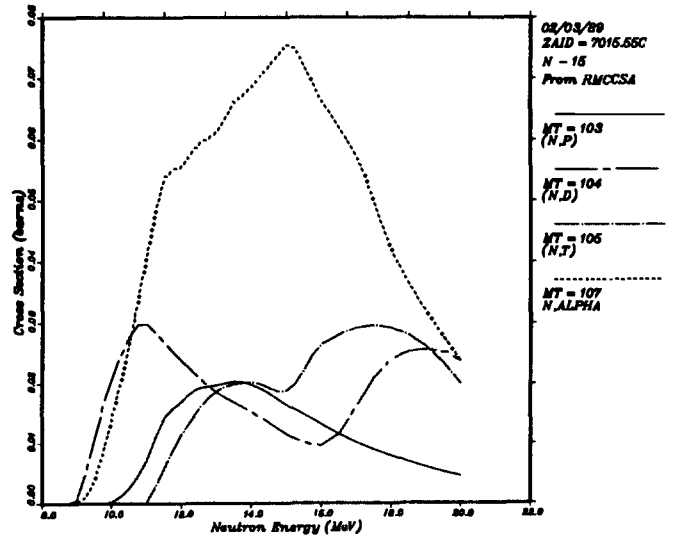
7015.55C

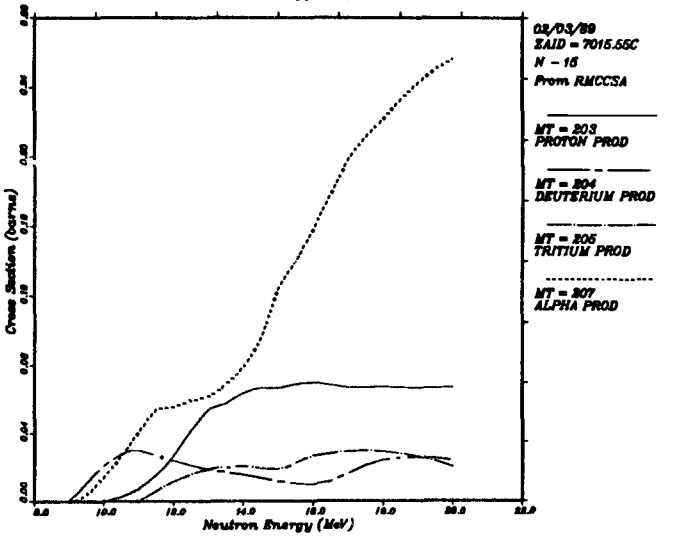

02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 7015.55C
N - 15
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Oxygen – 16

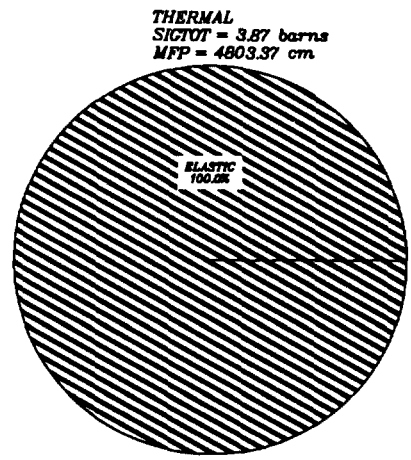
ZAID=8016.50C
SOURCE: ENDF/B-V (MAT=1276, Tape 505)
REFERENCE: "Summary Documentation for ^{16}O,"
by P. G. Young, D. G. Foster, Jr., and G. M. Hale
contained in ENDF-201

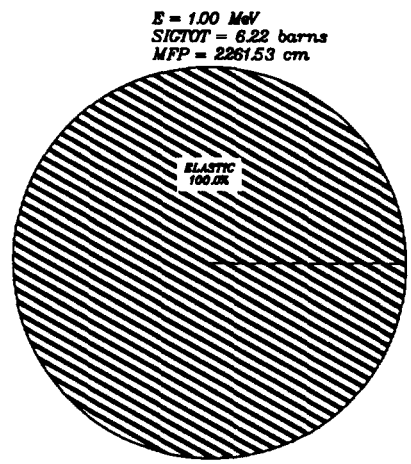
Data Availability

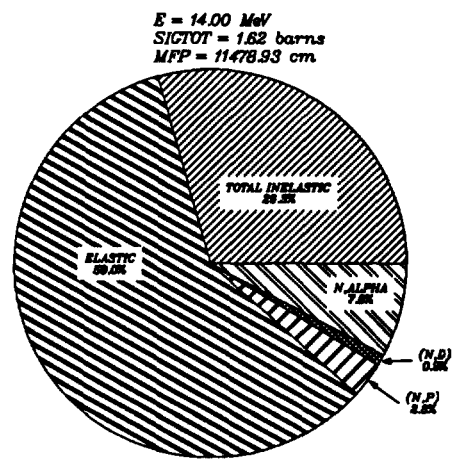
Continuous Energy		
ZAID=8016.50C	NES=1391	T=300°K
ZAID=8016.51C	NES=1390	T=300°K
ZAID=8016.53C	NES=1398	T=600°K
ZAID=8016.54C	NES=1402	T=900°K
Discrete Reaction		
ZAID=8016.50D	NES=263	T=300°K
Multigroup		
ZAID=8016.50M	30-Group	T=300°K

Isotope Information
Abundance=99.762%
Density=1.429E-03 gm/cm^3

Evaluation Information
Photon-Production Data = Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV





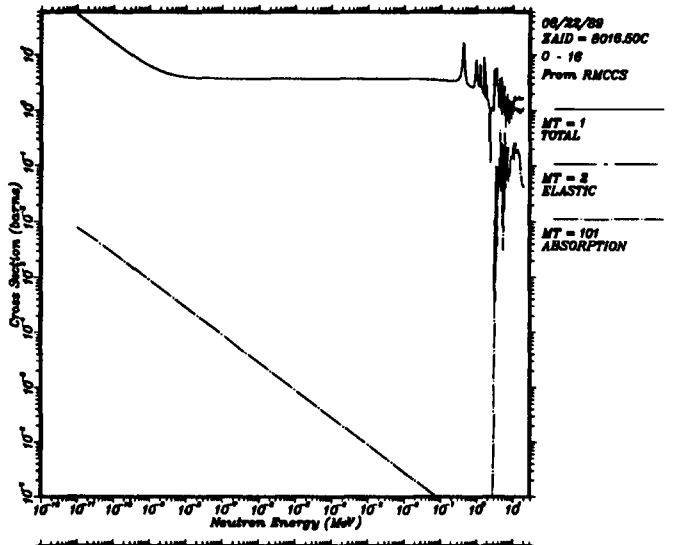


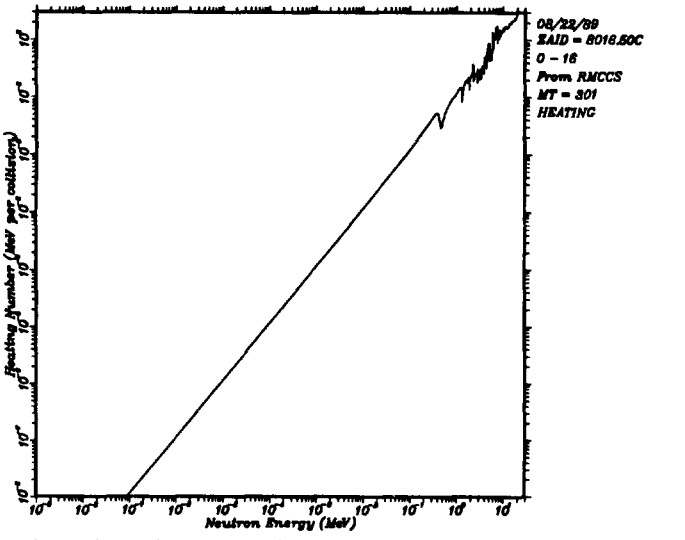
Reaction Information

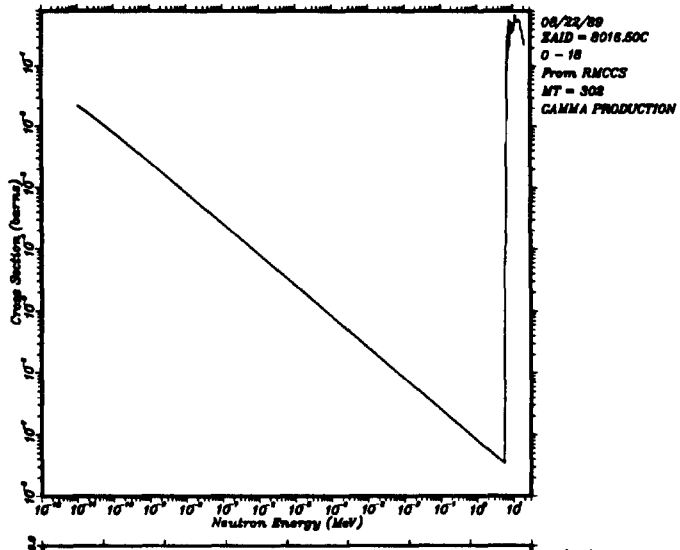
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,n'1)	51	6.4340+00	2.0000+01	-6.0520+00	0.0000+00
(n,n'2)	52	6.5180+00	2.0000+01	-6.1310+00	0.0000+00
(n,n'3)	53	7.3532+00	2.0000+01	-6.9170+00	0.0000+00
(n,n'4)	54	7.5680+00	2.0000+01	-7.1190+00	0.0000+00
(n,n'5)	55	9.4315+00	2.0000+01	-8.8720+00	0.0000+00
(n,n')α	56	1.0202+01	2.0000+01	-9.5970+00	-7.1610+00
(n,n')α	57	1.0468+01	2.0000+01	-9.8470+00	-7.1610+00
(n,n')α	58	1.1007+01	2.0000+01	-1.0354+01	-7.1610+00
(n,n'9)	59	1.1643+01	2.0000+01	-1.0952+01	0.0000+00
(n,n'10)	60	1.1779+01	2.0000+01	-1.1080+01	0.0000+00
(n,n')α	61	1.1796+01	2.0000+01	-1.1096+01	-7.1610+00
(n,n')α	62	1.1970+01	2.0000+01	-1.1260+01	-7.1610+00
(n,n')α	63	1.2161+01	2.0000+01	-1.1440+01	-7.1610+00
(n,n')α	64	1.2248+01	2.0000+01	-1.1521+01	-7.1610+00
(n,n')α	65	1.2363+01	2.0000+01	-1.1630+01	-7.1610+00
(n,n')α	66	1.2813+01	2.0000+01	-1.2053+01	-7.1610+00
(n,n')p	67	1.3227+01	2.0000+01	-1.2442+01	-1.2126+01
(n,n')α	68	1.3318+01	2.0000+01	-1.2528+01	-7.1610+00
(n,n')α	69	1.3602+01	2.0000+01	-1.2795+01	-7.1610+00
(n,n')α	70	1.3785+01	2.0000+01	-1.2967+01	-7.1610+00
(n,n')p	71	1.3979+01	2.0000+01	-1.3150+01	-1.2126+01
(n,n')α	72	1.4298+01	2.0000+01	-1.3450+01	-7.1610+00
(n,n')α	73	1.4617+01	2.0000+01	-1.3750+01	-7.1610+00
(n,n')p	74	1.4936+01	2.0000+01	-1.4050+01	-1.2126+01
(n,n')α	75	1.5255+01	2.0000+01	-1.4350+01	-7.1610+00
(n,n')p	76	1.5574+01	2.0000+01	-1.4650+01	-1.2126+01
(n,n')α	77	1.5893+01	2.0000+01	-1.4950+01	-7.1610+00
(n,n')α	78	1.6212+01	2.0000+01	-1.5250+01	-7.1610+00
(n,n')p	79	1.6531+01	2.0000+01	-1.5550+01	-1.2126+01
(n,n')α	80	1.6850+01	2.0000+01	-1.5850+01	-7.1610+00
(n,n')p	81	1.7168+01	2.0000+01	-1.6150+01	-1.2126+01
(n,n')α	82	1.7487+01	2.0000+01	-1.6450+01	-7.1610+00
(n,n')α	83	1.7806+01	2.0000+01	-1.6750+01	-7.1610+00
(n,n')p	84	1.8125+01	2.0000+01	-1.7050+01	-1.2126+01
(n,n')α	85	1.8444+01	2.0000+01	-1.7350+01	-7.1610+00
(n,n')p	86	1.8763+01	2.0000+01	-1.7650+01	-1.2126+01
(n,n')α	87	1.9082+01	2.0000+01	-1.7950+01	-7.1610+00
(n,n')p	88	1.9401+01	2.0000+01	-1.8250+01	-1.2126+01
(n,n')α	89	1.9720+01	2.0000+01	-1.8550+01	-7.1610+00
(n,γ)	102	1.0000-11	2.0000+01	4.1430+00	4.1430+00
(n,p)	103	1.0247+01	2.0000+01	-9.6390+00	-9.6390+00
(n,d)	104	1.0526+01	2.0000+01	-9.9010+00	-9.9010+00
(n,α)	107	2.3535+00	2.0000+01	-2.2139+00	-2.2139+00

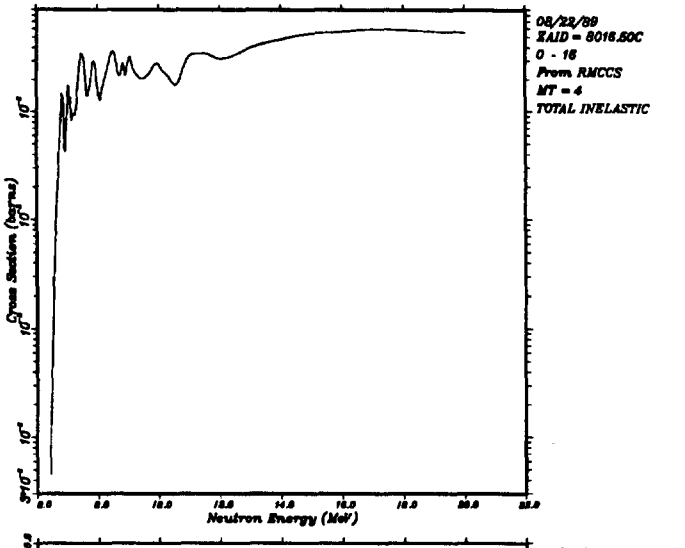
NOTE:(PLEASE SEE APPENDIX B)

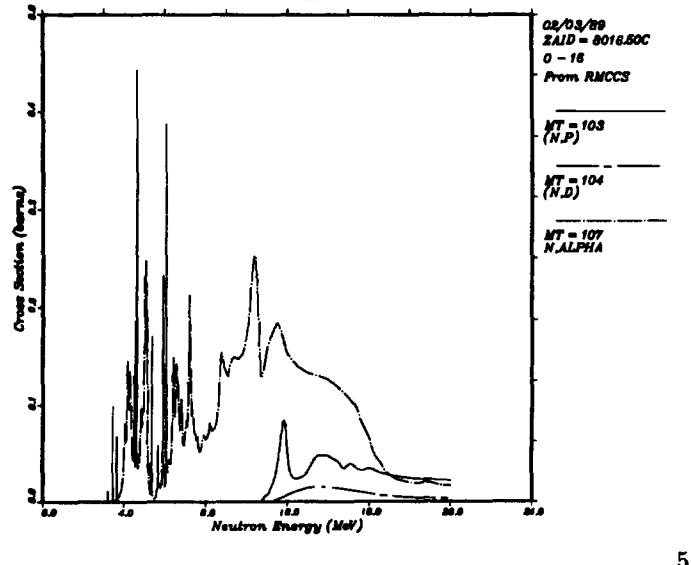
8016.50C

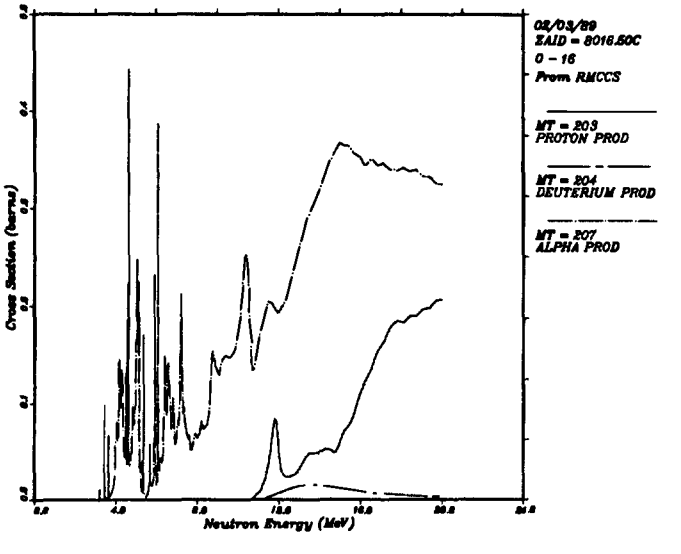

06/22/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


06/22/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


06/22/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


06/22/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

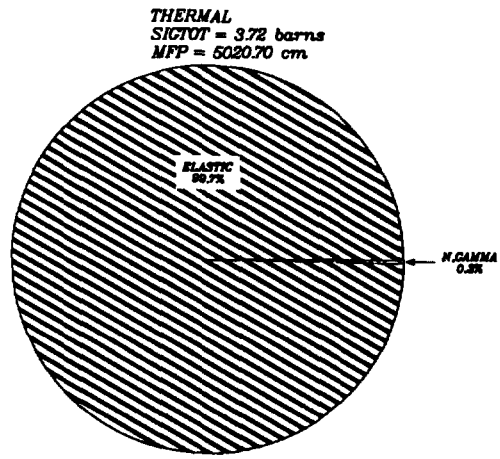

02/03/89
ZAID = 8016.50C
O - 16
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

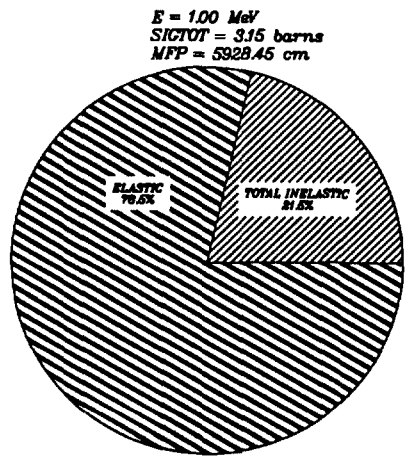
Fluorine – 19

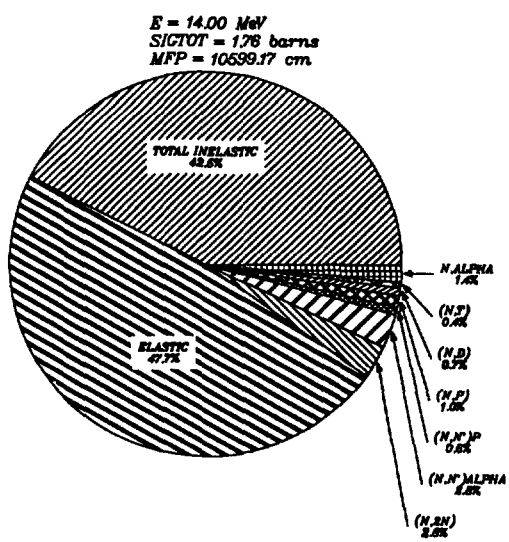
ZAID=9019.50C

SOURCE: ENDF/B-V (MAT=1309, Neutron Data from Tape 503; Photon Production Data from Tape 552)

REFERENCE: "Summary Documentation Fluorine Evaluation ENDF/B-V MAT 1309,"
by D. C. Larson and C. Y. Fu
contained in ENDF-201







Data Availability

Continuous Energy		
ZAID=9019.50C	NES=1569	T=300°K
ZAID=9019.51C	NES=1541	T=300°K
Discrete Reaction		
ZAID=9019.50D	NES=263	T=300°K
ZAID=9019.51D	NES=263	T=300°K
Multigroup		
ZAID=9019.50M	30-Group	T=300°K

Isotope Information

Abundance=100.00%

Density=1.690E-03 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

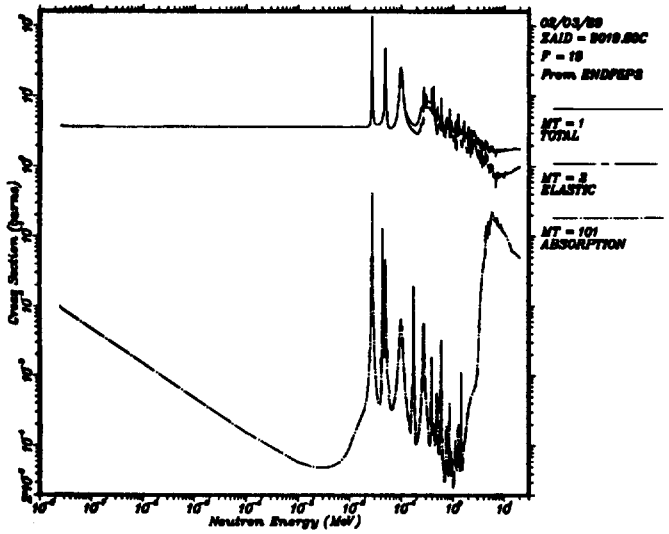
Heating Numbers – Local

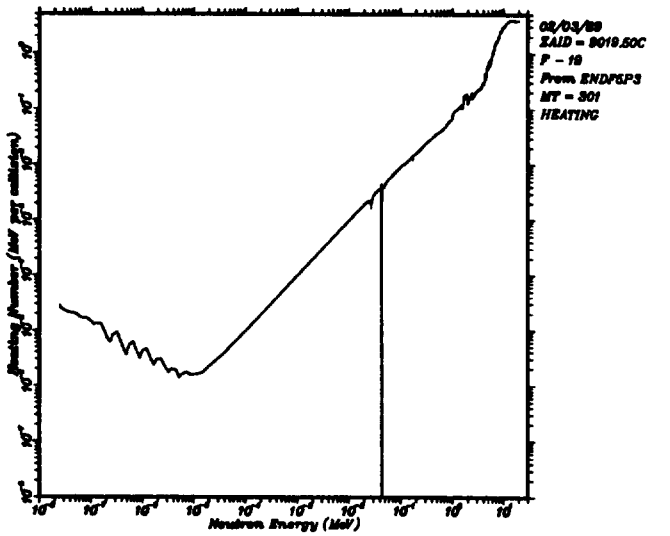
Energy Range – 10^{-11} to 20 MeV

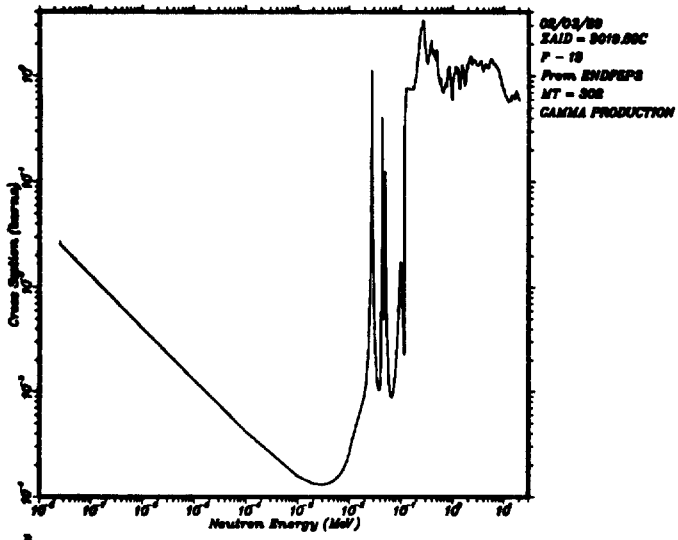
Reaction Information

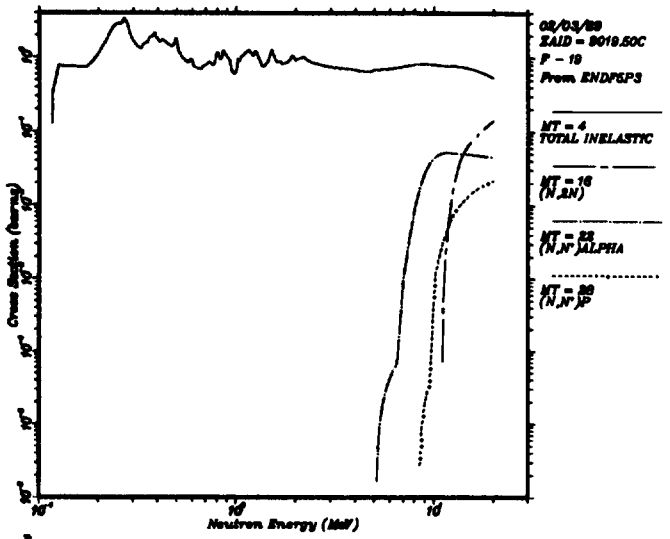
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0985+01	2.0000+01	-1.0431+01	-1.0431+01
(n,n')α	22	5.1370+00	2.0000+01	-4.0129+00	-4.0129+00
(n,n')p	28	8.4174+00	2.0000+01	-7.9930+00	-7.9930+00
(n,n'1)	51	1.1584-01	2.0000+01	-1.1000-01	0.0000+00
(n,n'2)	52	2.0746-01	2.0000+01	-1.9700-01	0.0000+00
(n,n'3)	53	1.4922+00	2.0000+01	-1.3460+00	0.0000+00
(n,n'4)	54	1.5354+00	2.0000+01	-1.4580+00	0.0000+00
(n,n'5)	55	1.6365+00	2.0000+01	-1.5540+00	0.0000+00
(n,n'6)	56	2.9276+00	2.0000+01	-2.7800+00	0.0000+00
(n,n'7)	57	4.1144+00	2.0000+01	-3.9070+00	0.0000+00
(n,n'8)	58	4.2103+00	2.0000+01	-3.9980+00	0.0000+00
(n,n'9)	59	4.2461+00	2.0000+01	-4.0320+00	0.0000+00
(n,n'10)	60	4.6104+00	2.0000+01	-4.3780+00	0.0000+00
(n,n'11)	61	4.7968+00	2.0000+01	-4.5550+00	0.0000+00
(n,n'12)	62	4.7989+00	2.0000+01	-4.5570+00	0.0000+00
(n,n'13)	63	4.8948+00	2.0000+01	-4.6480+00	0.0000+00
(n,n'14)	64	4.9316+00	2.0000+01	-4.6830+00	0.0000+00
(n,n'15)	65	5.3771+00	2.0000+01	-5.1060+00	0.0000+00
(n,n'16)	66	5.6235+00	2.0000+01	-5.3400+00	0.0000+00
(n,n'17)	67	5.7162+00	2.0000+01	-5.4280+00	0.0000+00
(n,n'18)	68	5.7541+00	2.0000+01	-5.4640+00	0.0000+00
(n,n'19)	69	5.7910+00	2.0000+01	-5.4990+00	0.0000+00
(n,n'20)	70	5.8341+00	2.0000+01	-5.5400+00	0.0000+00
(n,n'21)	71	5.9289+00	2.0000+01	-5.6300+00	0.0000+00
(n,n'c)	91	6.2585+00	2.0000+01	-5.9430+00	-5.9430+00
(n,γ)	102	1.0000-11	2.0000+01	6.6013+00	6.6013+00
(n,p)	103	4.2503+00	2.0000+01	-4.0360+00	-4.0360+00
(n,d)	104	6.0742+00	2.0000+01	-5.7680+00	-5.7680+00
(n,t)	105	7.9582+00	2.0000+01	-7.5570+00	-7.5570+00
(n,α)	107	1.6039+00	2.0000+01	-1.5230+00	-1.5230+00

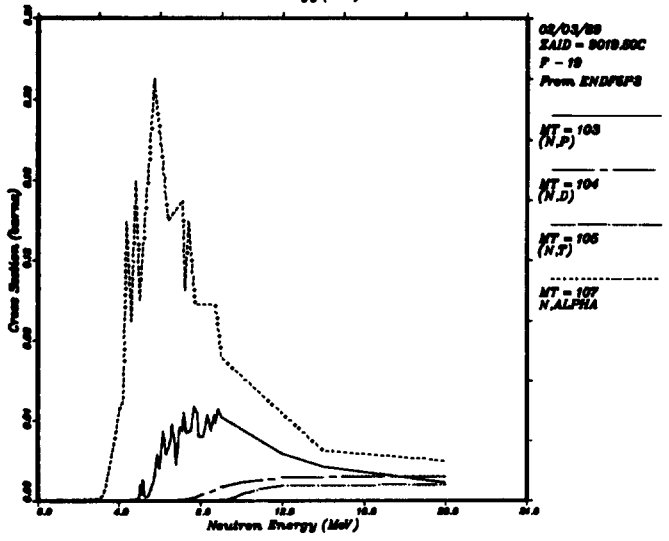
9019.50C

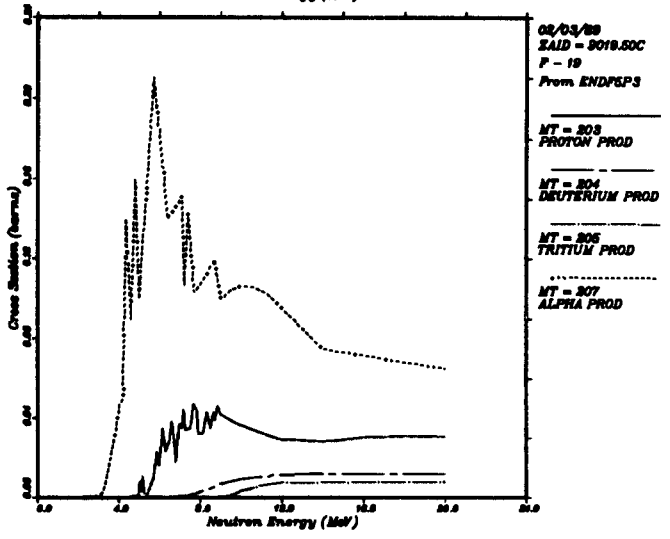

02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 301
HEATING
Neutron Energy (MeV)


02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ΣAID = 9019.50C
P - 19
From ENDFSP3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Sodium – 23

ZAID=11023.50C
SOURCE: ENDF/B-V (MAT=1311, Tape 506)
REFERENCE: "Summary Documentation Sodium Evaluation ENDF/B-V MAT 1311," by D. C. Larson, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=11023.50C	NES=2703	T=300°K
ZAID=11023.51C	NES=2228	T=300°K

Discrete Reaction

ZAID=11023.50D	NES=263	T=300°K
ZAID=11023.51D	NES=263	T=300°K

Multigroup

ZAID=11023.50M	30-Group	T=300°K

Isotope Information

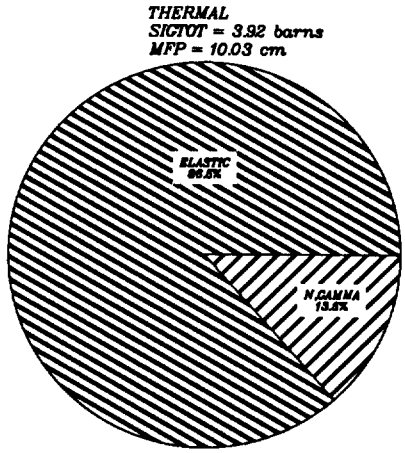
Abundance=100.00%
Density=0.97 gm/cm^3

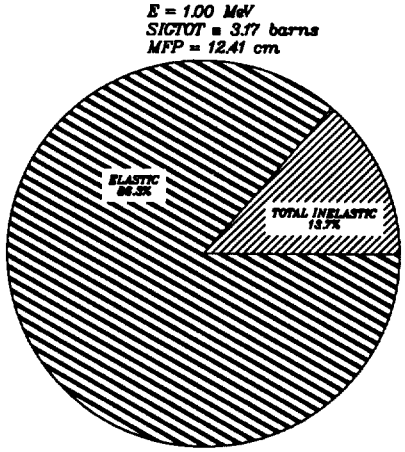
Evaluation Information

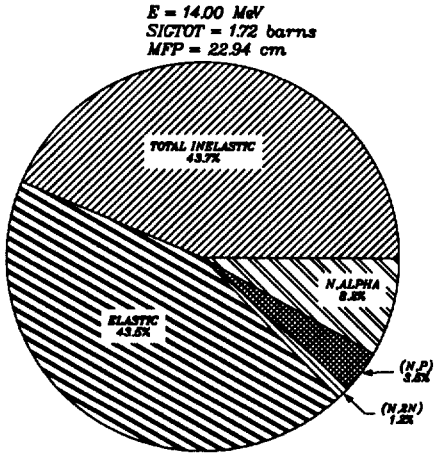
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

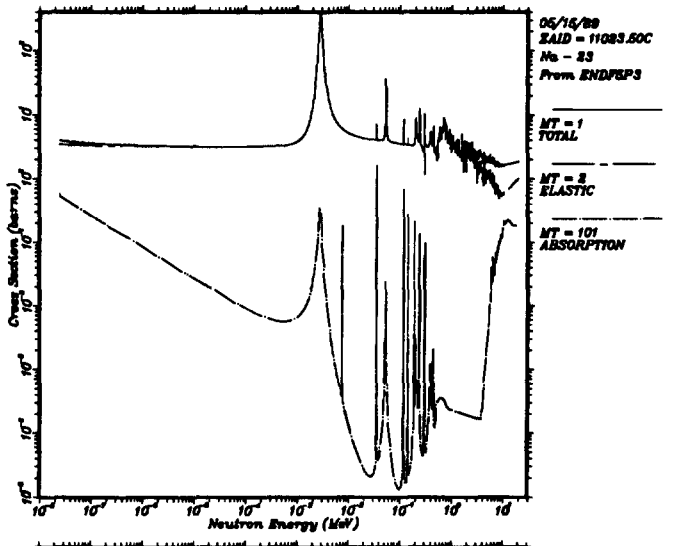
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.2959+01	2.0000+01	-1.2414+01	-1.2414+01
(n,n'1)	51	4.5931-01	2.0000+01	-4.4000-01	0.0000+00
(n,n'2)	52	2.1692+00	2.0000+01	-2.0780+00	0.0000+00
(n,n'3)	53	2.4980+00	2.0000+01	-2.3930+00	0.0000+00
(n,n'4)	54	2.7558+00	2.0000+01	-2.6400+00	0.0000+00
(n,n'5)	55	2.8237+00	2.0000+01	-2.7050+00	0.0000+00
(n,n'6)	56	3.1139+00	2.0000+01	-2.9830+00	0.0000+00
(n,n'7)	57	3.8415+00	2.0000+01	-3.6800+00	0.0000+00
(n,n'8)	58	4.0502+00	2.0000+01	-3.8800+00	0.0000+00
(n,n'9)	59	4.6244+00	2.0000+01	-4.4300+00	0.0000+00
(n,n'10)	60	4.9793+00	2.0000+01	-4.7700+00	0.0000+00
(n,n'11)	61	5.6160+00	2.0000+01	-5.3800+00	0.0000+00
(n,n'12)	62	5.7726+00	2.0000+01	-5.5300+00	0.0000+00
(n,n'13)	63	6.0127+00	2.0000+01	-5.7600+00	0.0000+00
(n,n'14)	64	6.2163+00	2.0000+01	-5.9550+00	0.0000+00
(n,n'15)	65	6.3452+00	2.0000+01	-6.0785+00	0.0000+00
(n,n'16)	66	6.5451+00	2.0000+01	-6.2700+00	0.0000+00
(n,n'17)	67	7.4220+00	2.0000+01	-7.1100+00	0.0000+00
(n,n'18)	68	8.1318+00	2.0000+01	-7.7900+00	0.0000+00
(n,n'c)	91	6.1000+00	2.0000+01	-5.8436+00	-5.8436+00
(n,γ)	102	1.0000-11	2.0000+01	6.9615+00	6.9615+00
(n,p)	103	3.7548+00	2.0000+01	-3.5970+00	-3.5970+00
(n,α)	107	4.0356+00	2.0000+01	-3.8660+00	-3.8660+00







11023.50C


05/15/89
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No. = 23
From ENDF&P3
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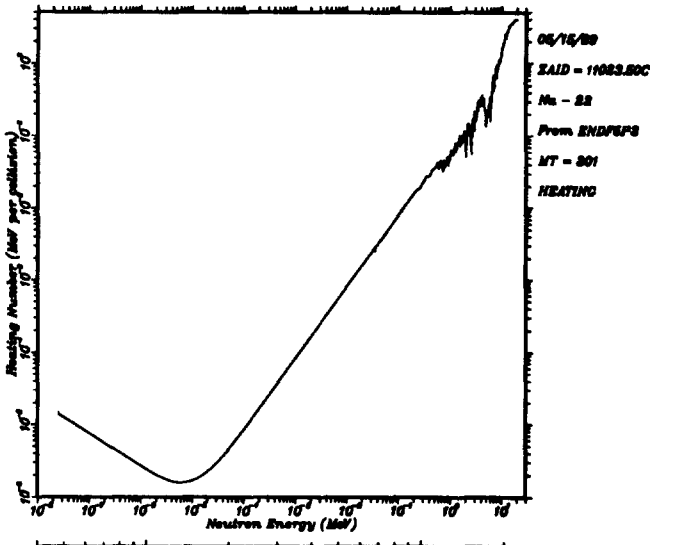
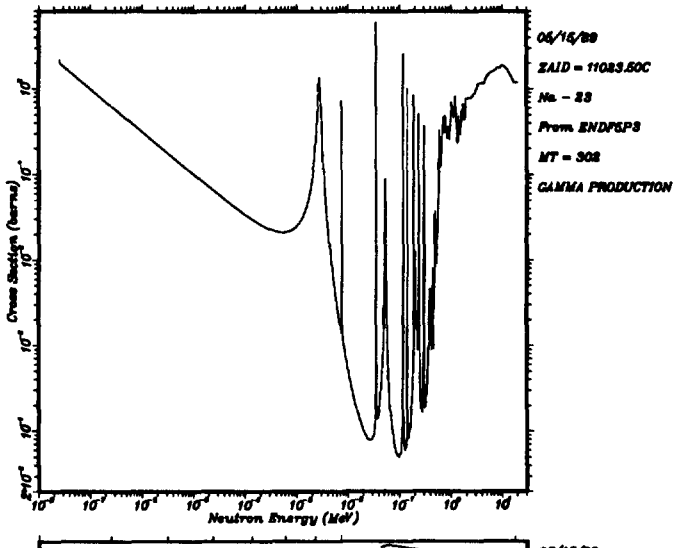
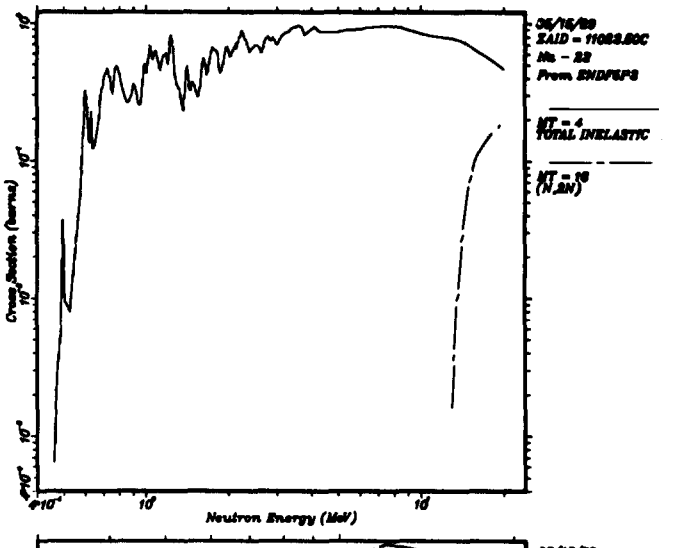
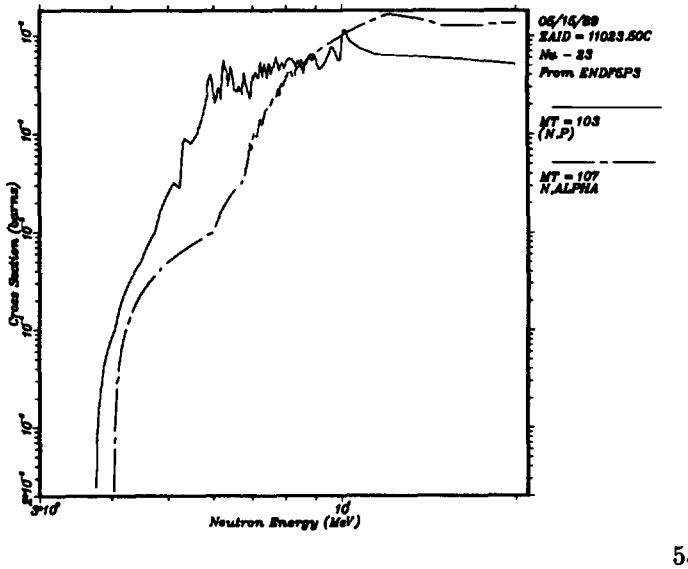
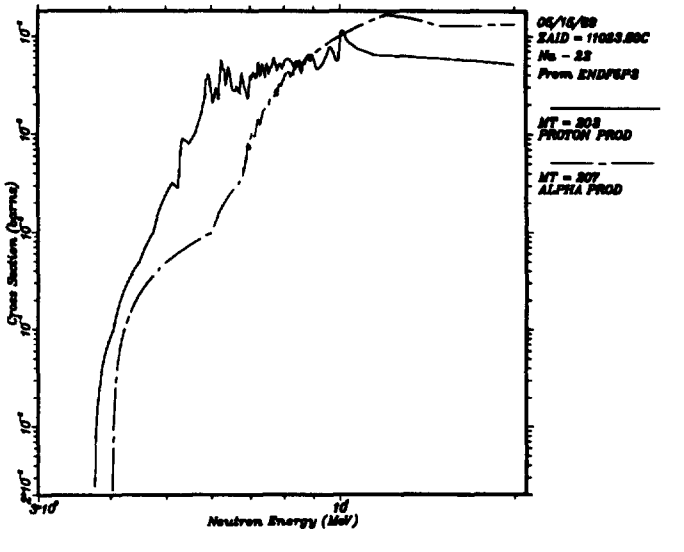
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


05/15/89
ZAID = 11023.50C
No. = 23
From ENDF&P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


05/15/89
ZAID = 11023.50C
No. = 23
From ENDF&P3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


05/15/89
ZAID = 11023.50C
No. = 23
From ENDF&P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


05/15/89
ZAID = 11023.50C
No. = 23
From ENDF&P3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


05/15/89
ZAID = 11023.50C
No. = 23
From ENDF&P3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Magnesium

ZAID=12000.50C
SOURCE: ENDF/B-V (MAT=1312, Tape 506)
REFERENCE: "Summary Documentation Natural Magnesium Evaluation ENDF/B-V MAT=1312," by D. C. Larson, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=12000.50C	NES=2430	T=300°K
ZAID=12000.51C	NES=1928	T=300°K

Discrete Reaction

ZAID=12000.50D	NES=263	T=300°K
ZAID=12000.51D	NES=263	T=300°K

Multigroup

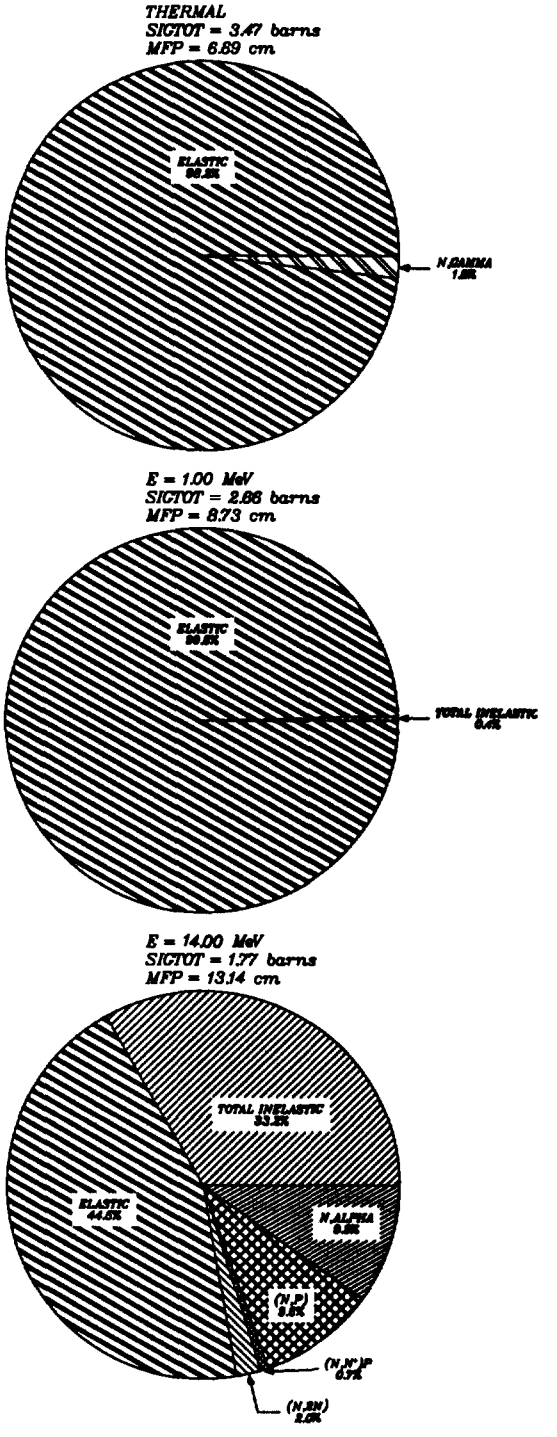
ZAID=12000.50M	30-Group	T=300°K

Isotope Information
Abundance=Natural
Density=1.74 gm/cm^3

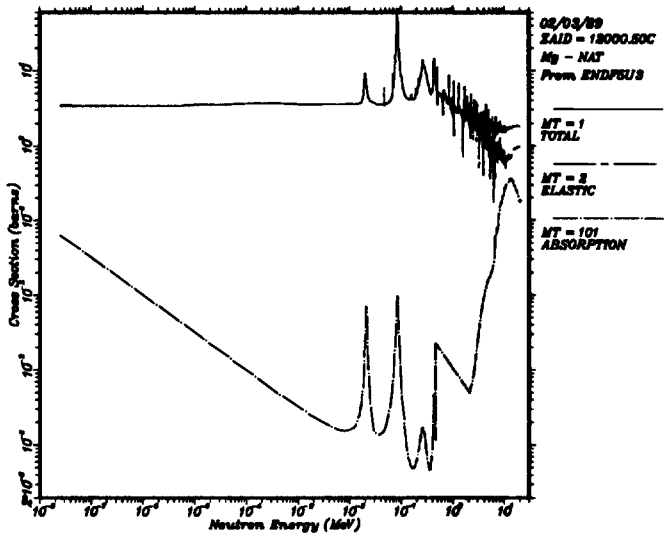
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

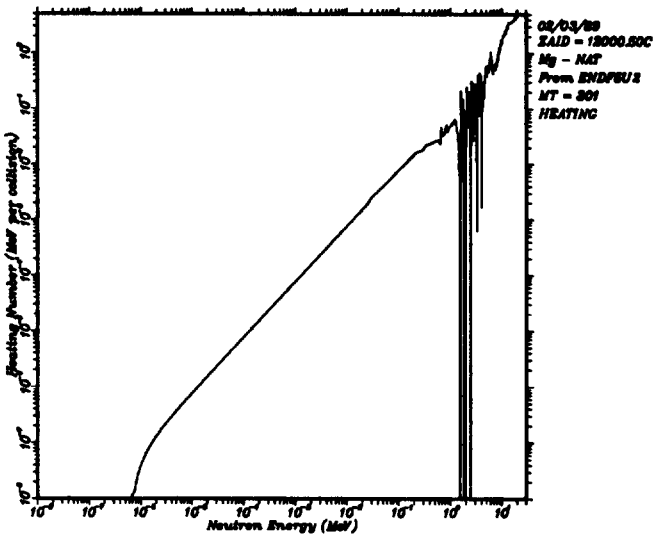
Reaction Information

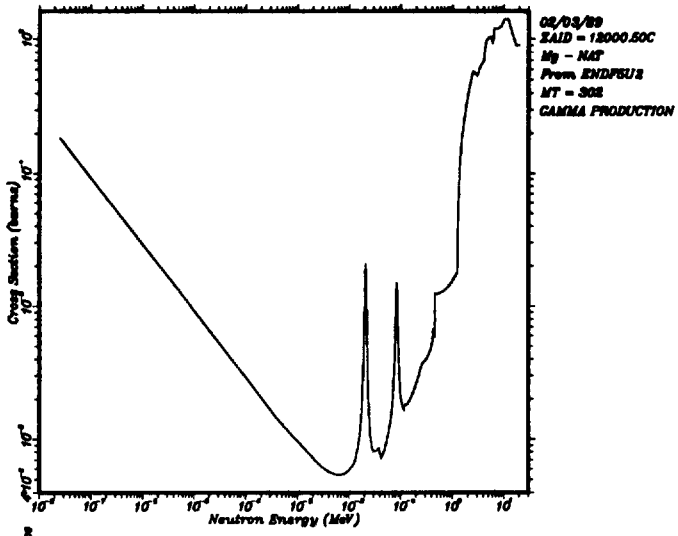
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.6200+00	2.0000+01	-7.3160+00	-7.3160+00
(n,n')α	22	1.1800+01	2.0000+01	-9.3130+00	-9.3130+00
(n,n')p	28	1.2650+01	2.0000+01	-1.1695+01	-1.1695+01
(n,n'1)	51	6.0900-01	2.0000+01	-5.8400-01	0.0000+00
(n,n'2)	52	1.0165+00	2.0000+01	-9.7600-01	0.0000+00
(n,n'3)	53	1.4270+00	2.0000+01	-1.3700+00	0.0000+00
(n,n'4)	54	1.6779+00	2.0000+01	-1.6110+00	0.0000+00
(n,n'5)	55	1.8830+00	2.0000+01	-1.8080+00	0.0000+00
(n,n'6)	56	2.0434+00	2.0000+01	-1.9620+00	0.0000+00
(n,n'7)	57	2.7400+00	2.0000+01	-2.5650+00	0.0000+00
(n,n'8)	58	2.8495+00	2.0000+01	-2.7360+00	0.0000+00
(n,n'9)	59	2.9193+00	2.0000+01	-2.8030+00	0.0000+00
(n,n'10)	60	3.0620+00	2.0000+01	-2.9400+00	0.0000+00
(n,n'11)	61	3.5440+00	2.0000+01	-3.3990+00	0.0000+00
(n,n'12)	62	3.5494+00	2.0000+01	-3.4080+00	0.0000+00
(n,n'13)	63	3.7348+00	2.0000+01	-3.5860+00	0.0000+00
(n,n'14)	64	4.0650+00	2.0000+01	-3.9030+00	0.0000+00
(n,n'15)	65	4.1056+00	2.0000+01	-3.9420+00	0.0000+00
(n,n'16)	66	4.1337+00	2.0000+01	-3.9690+00	0.0000+00
(n,n'17)	67	4.2233+00	2.0000+01	-4.0550+00	0.0000+00
(n,n'18)	68	4.2920+00	2.0000+01	-4.1200+00	0.0000+00
(n,n'19)	69	4.4060+00	2.0000+01	-4.2300+00	0.0000+00
(n,n'20)	70	4.4472+00	2.0000+01	-4.2700+00	0.0000+00
(n,n'21)	71	4.5000+00	2.0000+01	-4.3200+00	0.0000+00
(n,n'22)	72	4.5128+00	2.0000+01	-4.3330+00	0.0000+00
(n,n'23)	73	4.5350+00	2.0000+01	-4.3510+00	0.0000+00
(n,n'24)	74	4.5317+00	2.0000+01	-4.3511+00	0.0000+00
(n,n'25)	75	4.8992+00	2.0000+01	-4.7040+00	0.0000+00
(n,n'26)	76	4.9075+00	2.0000+01	-4.7120+00	0.0000+00
(n,n'27)	77	5.0357+00	2.0000+01	-4.8350+00	0.0000+00
(n,n'28)	78	5.4480+00	2.0000+01	-5.2300+00	0.0000+00
(n,n'29)	79	6.2500+00	2.0000+01	-6.0000+00	0.0000+00
(n,n'30)	80	6.9000+00	2.0000+01	-6.4400+00	0.0000+00
(n,n'31)	81	7.6560+00	2.0000+01	-7.3500+00	0.0000+00
(n,n'32)	82	7.9380+00	2.0000+01	-7.5600+00	0.0000+00
(n,n'33)	83	7.9380+00	2.0000+01	-7.6200+00	0.0000+00
(n,n'34)	84	8.0720+00	2.0000+01	-7.7500+00	0.0000+00
(n,n'35)	85	8.7930+00	2.0000+01	-8.1200+00	0.0000+00
(n,n'36)	86	8.6980+00	2.0000+01	-8.3500+00	0.0000+00
(n,n'37)	87	8.7920+00	2.0000+01	-8.4400+00	0.0000+00
(n,n'38)	88	8.7930+00	2.0000+01	-8.4410+00	0.0000+00
(n,n'39)	89	9.0100+00	2.0000+01	-8.6500+00	0.0000+00
(n,n'40)	90	9.2290+00	2.0000+01	-8.8600+00	0.0000+00
(n,n'c)	91	5.5000+00	2.0000+01	-4.3000+00	-4.3000+00
(n,γ)	102	1.0000-11	2.0000+01	8.1670+00	8.1670+00
(n,p)	103	4.9500+00	2.0000+01	-3.0400+00	-3.0400+00
(n,α)	107	2.1100+00	2.0000+01	4.6000-01	4.6000-01

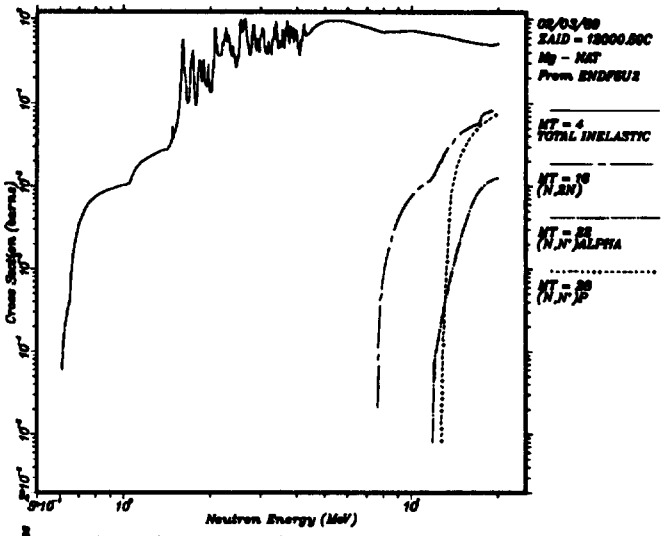


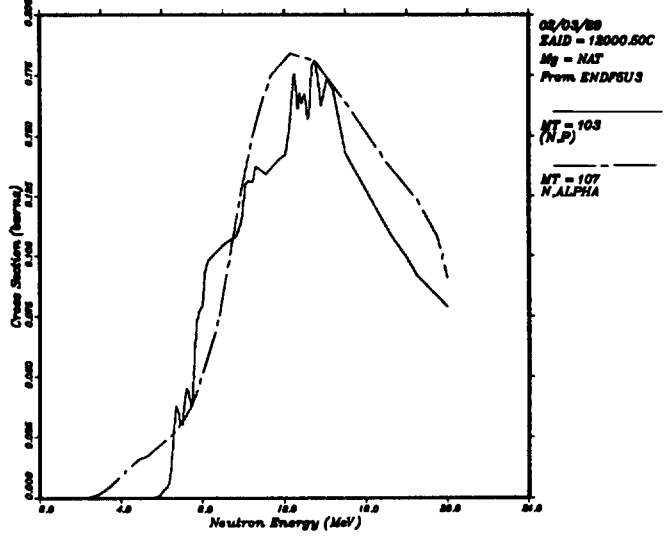
12000.50C

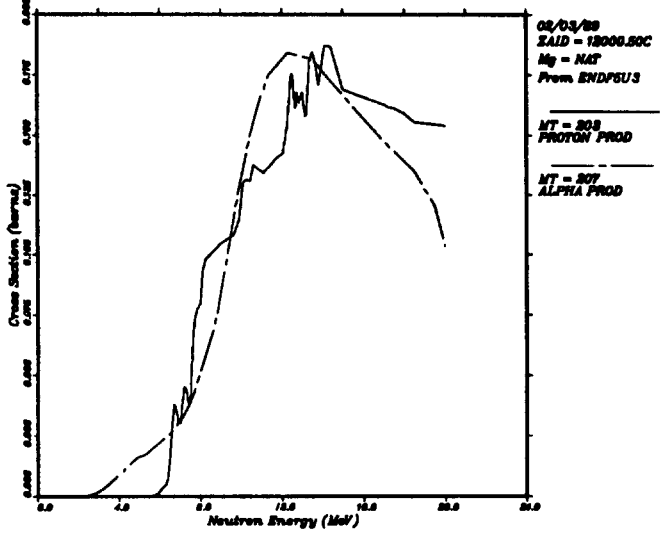

02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 12000.50C
Mg - NAT
From ENDF5U3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

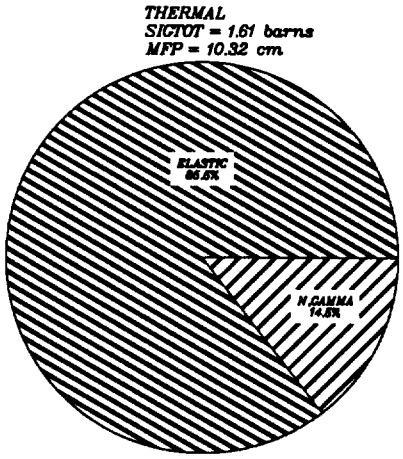
Aluminum – 27

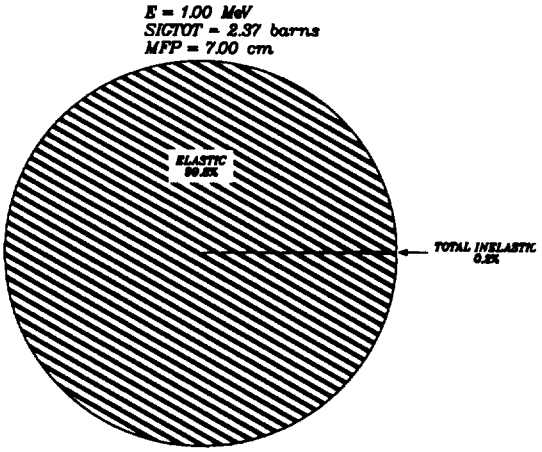
ZAID=13027.50C
SOURCE: ENDF/B–V (MAT=1313, Tape 506)
REFERENCE: "Summary Documentation for ^{27}Al,"
by P. G. Young and D. G. Foster, Jr.
contained in ENDF–201

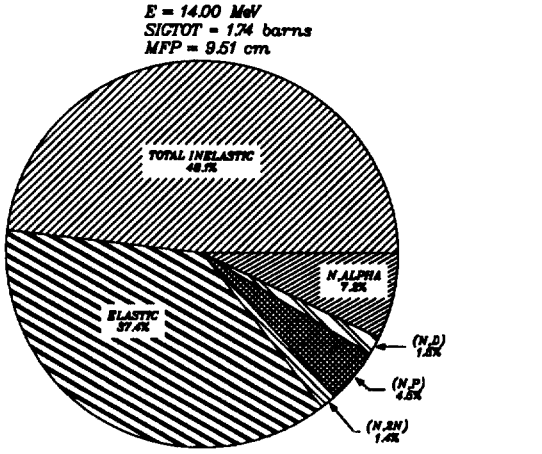
Data Availability

	Continuous Energy	
ZAID=13027.50C	NES=2028	T=300°K
ZAID=13027.51C	NES=1952	T=300°K
	Discrete Reaction	
ZAID=13027.50D	NES=263	T=300°K
	Multigroup	
ZAID=13027.50M	30–Group	T=300°K
ZAID=13027.00M	187–Group	T=300°K

Isotope Information
Abundance=100.00%
Density=2.702 gm/cm^3
Evaluation Information
Photon-Production Data = Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV





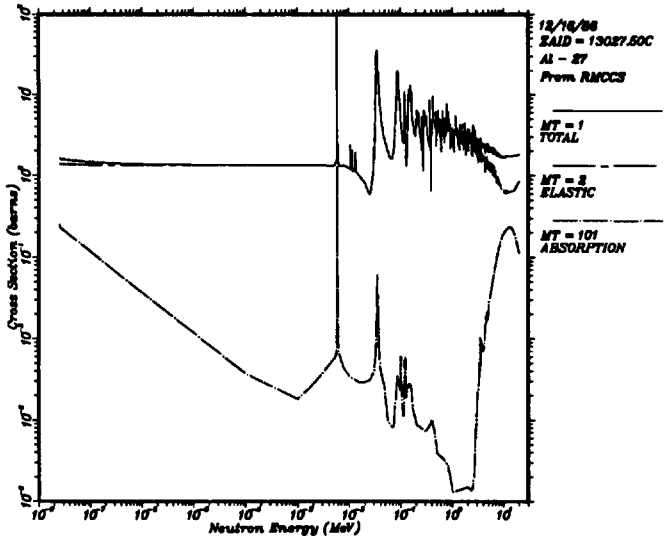


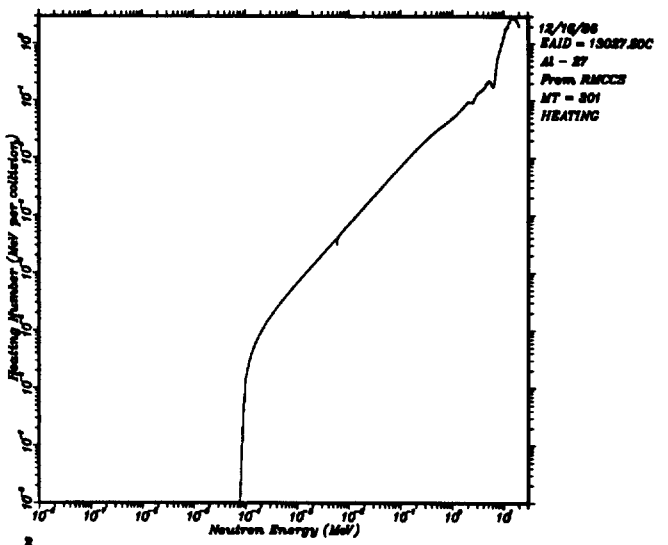
Reaction Information

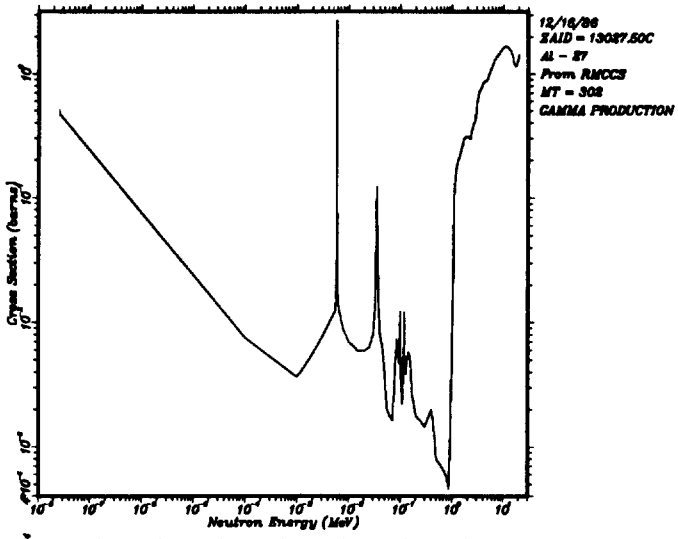
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.3545+01	2.0000+01	-1.3057+01	-1.3057+01
(n,n'1)	51	8.7500-01	2.0000+01	-8.4300-01	0.0000+00
(n,n'2)	52	1.0510+00	2.0000+01	-1.0130+00	0.0000+00
(n,n'3)	53	2.2930+00	2.0000+01	-2.2100+00	0.0000+00
(n,n'4)	54	2.8341+00	2.0000+01	-2.7320+00	0.0000+00
(n,n'5)	55	3.0914+00	2.0000+01	-2.9800+00	0.0000+00
(n,n'6)	56	3.1132+00	2.0000+01	-3.0010+00	0.0000+00
(n,n'7)	57	3.8155+00	2.0000+01	-3.6780+00	0.0000+00
(n,n'8)	58	4.1040+00	2.0000+01	-3.9560+00	0.0000+00
(n,n'9)	59	4.2070+00	2.0000+01	-4.0550+00	0.0000+00
(n,n'10)	60	4.5740+00	2.0000+01	-4.4090+00	0.0000+00
(n,n'11)	61	4.6770+00	2.0000+01	-4.5080+00	0.0000+00
(n,n'12)	62	4.7512+00	2.0000+01	-4.5800+00	0.0000+00
(n,n'13)	63	4.9910+00	2.0000+01	-4.8110+00	0.0000+00
(n,n'14)	64	5.4463+00	2.0000+01	-5.2500+00	0.0000+00
(n,n'15)	65	5.9650+00	2.0000+01	-5.7500+00	0.0000+00
(n,n'16)	66	6.4840+00	2.0000+01	-6.2500+00	0.0000+00
(n,n'17)	67	7.0023+00	2.0000+01	-6.7500+00	0.0000+00
(n,n'18)	68	7.5210+00	2.0000+01	-7.2500+00	0.0000+00
(n,n'19)	69	8.0400+00	2.0000+01	-7.7500+00	0.0000+00
(n,n'20)	70	8.5584+00	2.0000+01	-8.2500+00	0.0000+00
(n,n'21)	71	9.0771+00	2.0000+01	-8.7500+00	0.0000+00
(n,n'22)	72	9.5960+00	2.0000+01	-9.2500+00	0.0000+00
(n,n'23)	73	1.0114+01	2.0000+01	-9.7500+00	0.0000+00
(n,n'24)	74	1.0633+01	2.0000+01	-1.0250+01	0.0000+00
(n,n')p	75	1.1152+01	2.0000+01	-1.0750+01	-8.2710+00
(n,n'26)	76	1.1671+01	2.0000+01	-1.1250+01	0.0000+00
(n,n'27)	77	1.2189+01	2.0000+01	-1.1750+01	0.0000+00
(n,n')p	78	1.2708+01	2.0000+01	-1.2250+01	-8.2710+00
(n,n'29)	79	1.3227+01	2.0000+01	-1.2750+01	0.0000+00
(n,n')p	80	1.3745+01	2.0000+01	-1.3250+01	-8.2710+00
(n,n')p	81	1.4264+01	2.0000+01	-1.3750+01	-8.2710+00
(n,n')α	82	1.4783+01	2.0000+01	-1.4250+01	-1.0101+01
(n,n')p	83	1.5302+01	2.0000+01	-1.4750+01	-8.2710+00
(n,n')p	84	1.5820+01	2.0000+01	-1.5250+01	-8.2710+00
(n,n')p	85	1.6339+01	2.0000+01	-1.5750+01	-8.2710+00
(n,n')α	86	1.6858+01	2.0000+01	-1.6250+01	-1.0101+01
(n,n')p	87	1.7376+01	2.0000+01	-1.6750+01	-8.2710+00
(n,n')p	88	1.8025+01	2.0000+01	-1.7375+01	-8.2710+00
(n,n')α	89	1.8803+01	2.0000+01	-1.8125+01	-1.0101+01
(n,n')p	90	1.9581+01	2.0000+01	-1.8875+01	-8.2710+00
(n,γ)	102	1.0000-11	2.0000+01	7.7240+00	7.7240+00
(n,p)	103	1.8961+00	2.0000+01	-1.8278+00	-1.8278+00
(n,d)	104	6.2720+00	2.0000+01	-6.0460+00	-6.0460+00
(n,t)	105	1.1291+01	2.0000+01	-1.0884+01	-1.0884+01
(n,α)	107	3.2487+00	2.0000+01	-3.1316+00	-3.1316+00

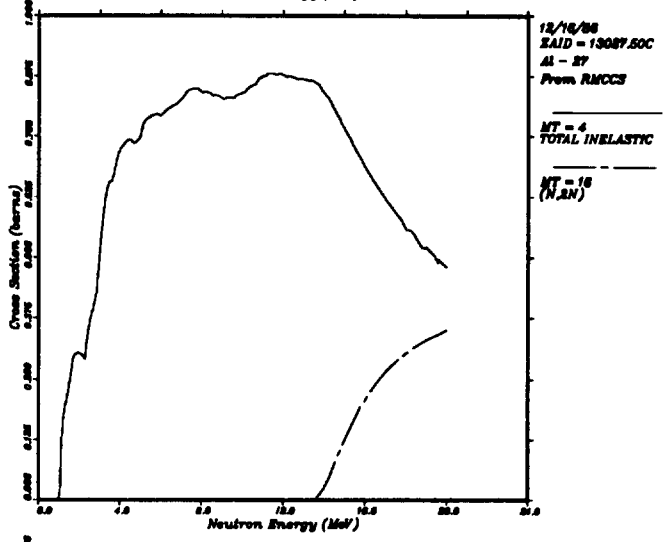
NOTE:(PLEASE SEE APPENDIX B)

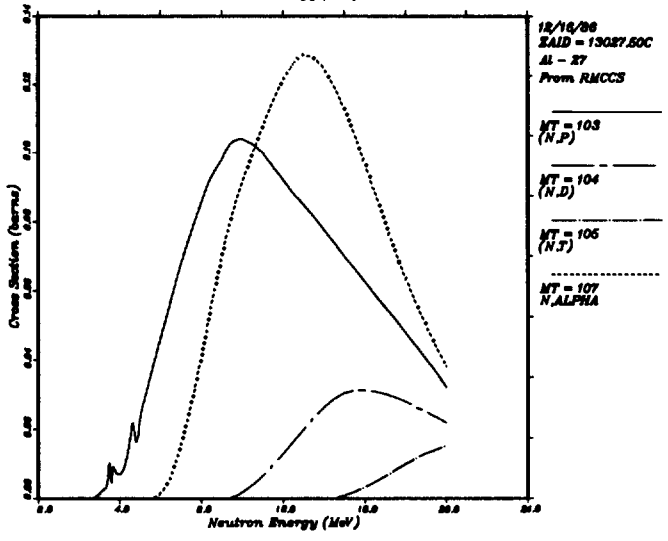
13027.50C

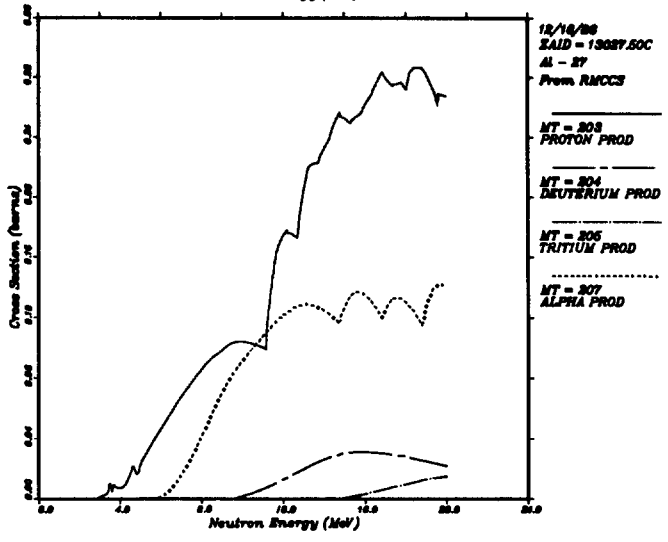

12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


12/16/96
ZAID = 13027.50C
Al - 27
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Silicon

ZAID=14000.50C

SOURCE: ENDF/B-V (MAT=1314, Tape 507)

REFERENCE: "Summary Documentation Natural Silicon Evaluation ENDF/B-V MAT 1314," by D. C. Larson, contained in ENDF-201

<u>Data Availability</u>

Continuous Energy

ZAID=14000.50C	NES=2440	T=300°K
ZAID=14000.51C	NES=1887	T=300°K

Discrete Reaction

ZAID=14000.50D	NES=263	T=300°K
ZAID=14000.51D	NES=263	T=300°K

Multigroup

ZAID=14000.50M	30-Group	T=300°K

<u>Isotope Information</u>

Abundance=Natural

Density=2.32 gm/cm^3

<u>Evaluation Information</u>

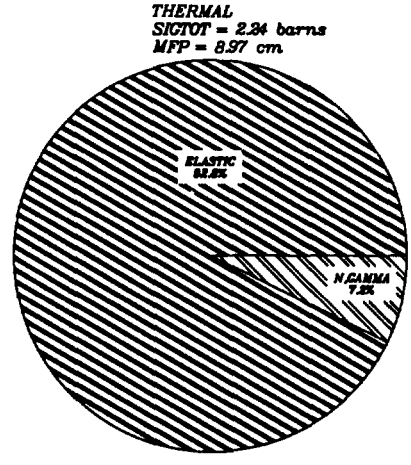
Photon-Production Data - Yes

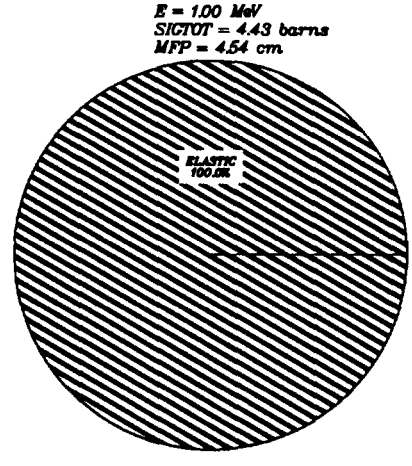
Heating Numbers - Local

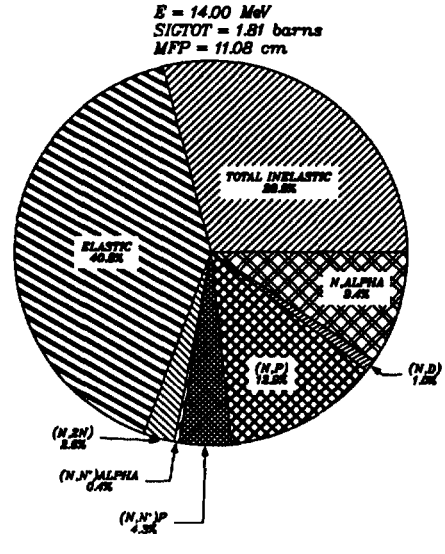
Energy Range - 10^{-11} to 20 MeV

<u>Reaction Information</u>

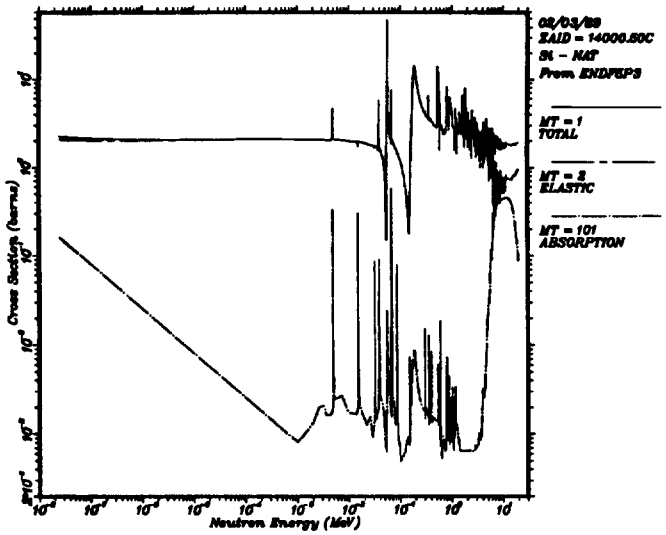
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.7781+00	2.0000+01	-8.4738+00	-8.4738+00
(n,n')α	22	1.0343+01	2.0000+01	-9.9848+00	-9.9848+00
(n,n')p	28	1.2001+01	2.0000+01	-1.1585+01	-1.1585+01
(n,n'1)	51	1.3187+00	2.0000+01	-1.2730+00	0.0000+00
(n,n'2)	52	1.8429+00	2.0000+01	-1.7790+00	0.0000+00
(n,n'3)	53	2.1008+00	2.0000+01	-2.0280+00	0.0000+00
(n,n'4)	54	2.3153+00	2.0000+01	-2.2350+00	0.0000+00
(n,n'5)	55	2.5121+00	2.0000+01	-2.4250+00	0.0000+00
(n,n'6)	56	3.1782+00	2.0000+01	-3.0680+00	0.0000+00
(n,n'7)	57	3.6236+00	2.0000+01	-3.4980+00	0.0000+00
(n,n'8)	58	3.7542+00	2.0000+01	-3.6240+00	0.0000+00
(n,n'9)	59	3.9054+00	2.0000+01	-3.7700+00	0.0000+00
(n,n'10)	60	3.9241+00	2.0000+01	-3.7880+00	0.0000+00
(n,n'11)	61	4.7828+00	2.0000+01	-4.6170+00	0.0000+00
(n,n'12)	62	4.9817+00	2.0000+01	-4.8090+00	0.0000+00
(n,n'13)	63	5.0035+00	2.0000+01	-4.8300+00	0.0000+00
(n,n'14)	64	5.1537+00	2.0000+01	-4.9750+00	0.0000+00
(n,n'15)	65	6.4973+00	2.0000+01	-6.2720+00	0.0000+00
(n,n'16)	66	6.9303+00	2.0000+01	-6.6900+00	0.0000+00
(n,n'17)	67	7.1250+00	2.0000+01	-6.8780+00	0.0000+00
(n,n'18)	68	7.1344+00	2.0000+01	-6.8870+00	0.0000+00
(n,n'19)	69	7.6450+00	2.0000+01	-7.3800+00	0.0000+00
(n,n'20)	70	7.6813+00	2.0000+01	-7.4150+00	0.0000+00
(n,n'21)	71	8.0781+00	2.0000+01	-7.7980+00	0.0000+00
(n,n'22)	72	8.2200+00	2.0000+01	-7.9350+00	0.0000+00
(n,n'c)	91	4.1437+00	2.0000+01	-4.0000+00	-4.0000+00
(n,γ)	102	1.0000-11	2.0000+01	8.7676+00	8.7676+00
(n,p)	103	3.9986+00	2.0000+01	-3.8600+00	-3.8600+00
(n,d)	104	1.0500+01	2.0000+01	-9.3583+00	-9.3583+00
(n,α)	107	2.7452+00	2.0000+01	-2.6500+00	-2.6500+00







14000.50C


02/03/89
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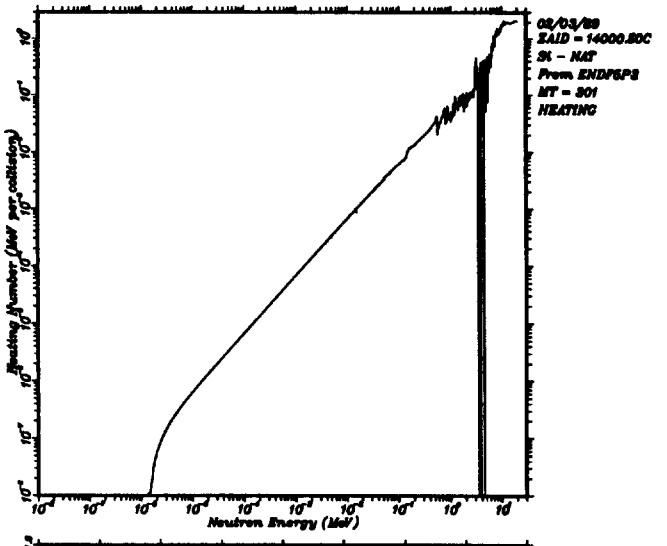
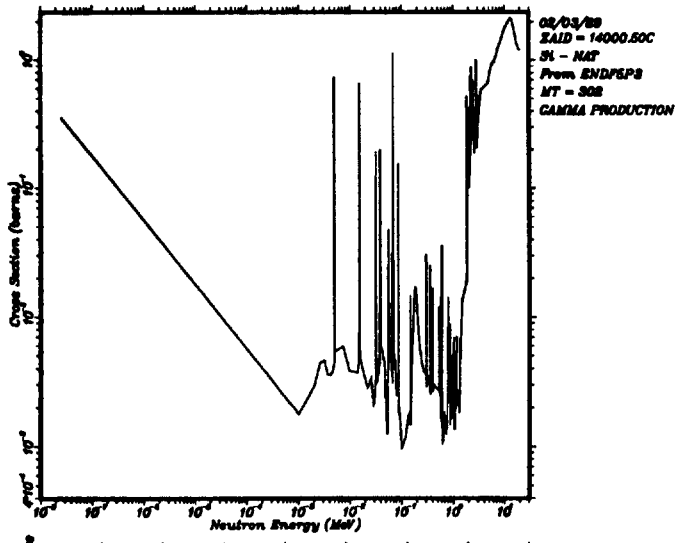
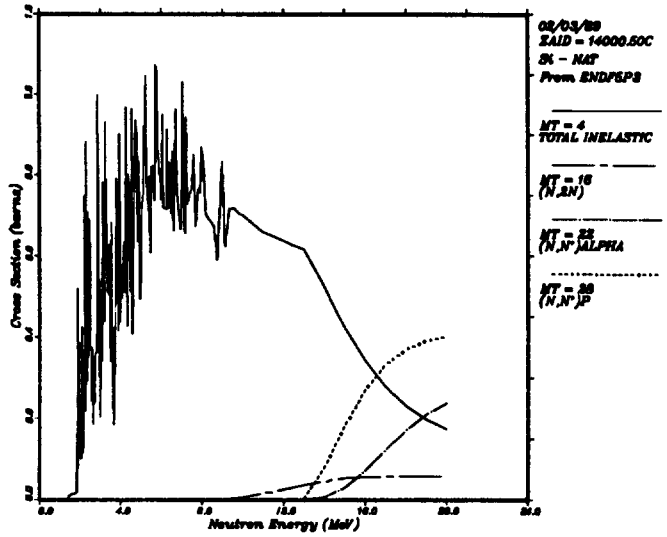
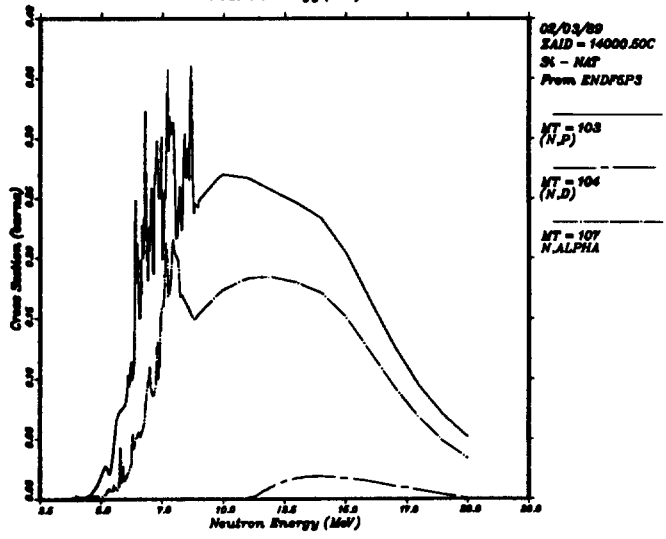
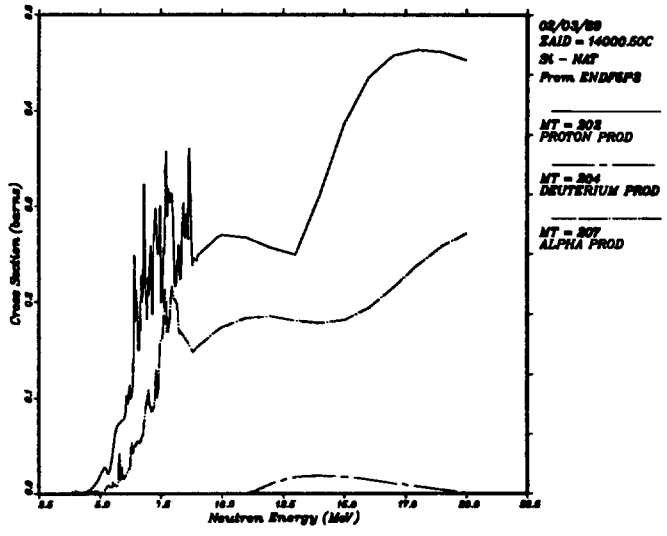
Si - NAT
From ENDF6P3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 14000.50C
Si - NAT
From ENDF6P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/03/89
ZAID = 14000.50C
Si - NAT
From ENDF6P3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 14000.50C
Si - NAT
From ENDF6P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 14000.50C
Si - NAT
From ENDF6P3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
ZAID = 14000.50C
Si - NAT
From ENDF6P3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Phosphorus – 31

ZAID=15031.50C
SOURCE: ENDF/B–V (MAT=1315, Tape 503)
REFERENCE: "Phosphorus – 31,"
by R. J. Howerton, contained in ENDF–201

<u>Data Availability</u>

Continuous Energy		
ZAID=15031.50C	NES=326	T=300°K
ZAID=15031.51C	NES=326	T=300°K
Discrete Reaction		
ZAID=15031.50D	NES=263	T=300°K
ZAID=15031.51D	NES=263	T=300°K
Multigroup		
ZAID=15031.50M	30–Group	T=300°K

<u>Isotope Information</u>

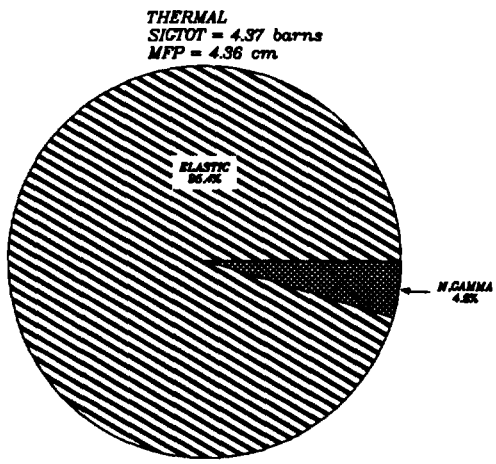
Abundance=100.00%
Density=2.70 gm/cm^3

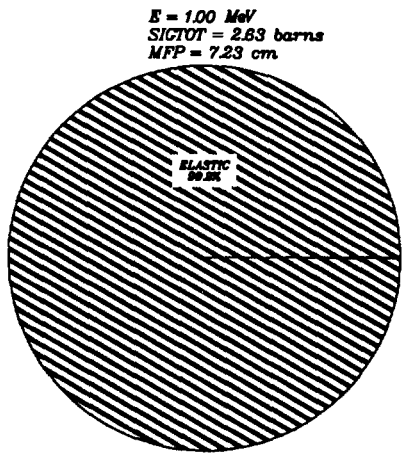
<u>Evaluation Information</u>

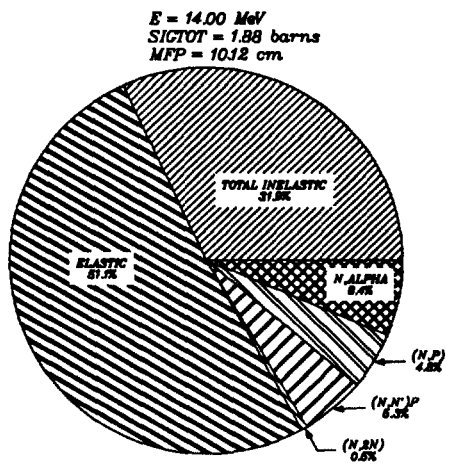
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

<u>Reaction Information</u>

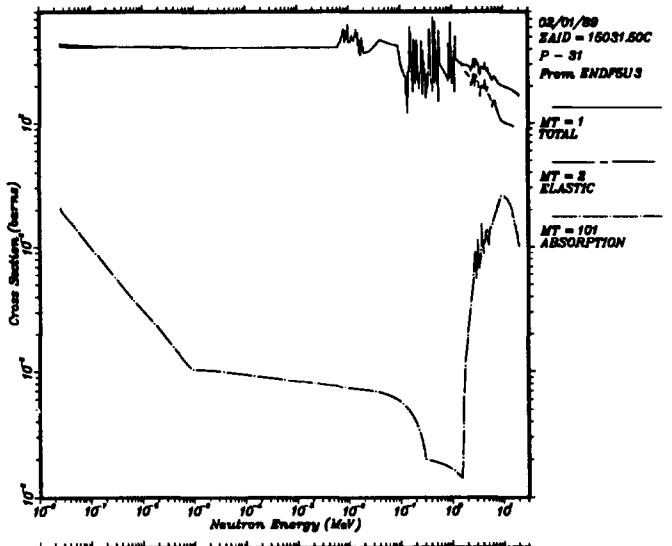
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.2711+01	2.0000+01	-1.2310+01	-1.2310+01
(n,n')p	28	7.5377+00	2.0000+01	-7.3000+00	-7.3000+00
(n,n'c)	91	1.3100+00	2.0000+01	-1.2687+00	-1.2687+00
(n,γ)	102	1.0000-11	2.0000+01	7.9300+00	7.9300+00
(n,p)	103	1.5000+00	2.0000+01	-7.1000-01	-7.1000-01
(n,α)	107	3.0000+00	2.0000+01	-1.9400+00	-1.9400+00







15031.50C


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
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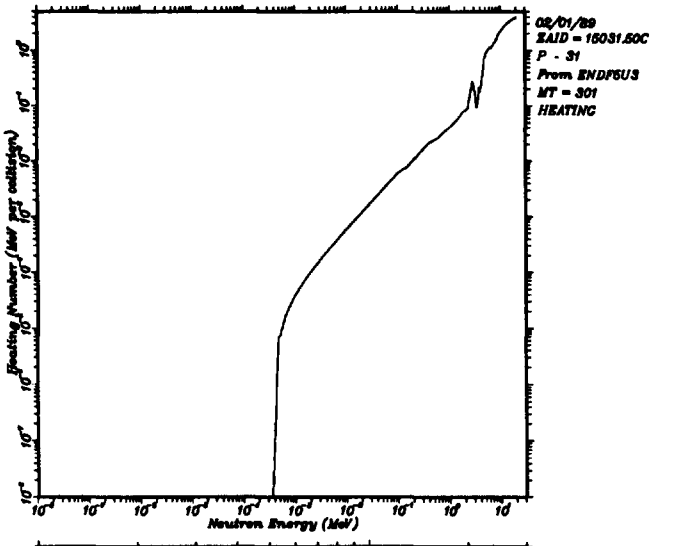
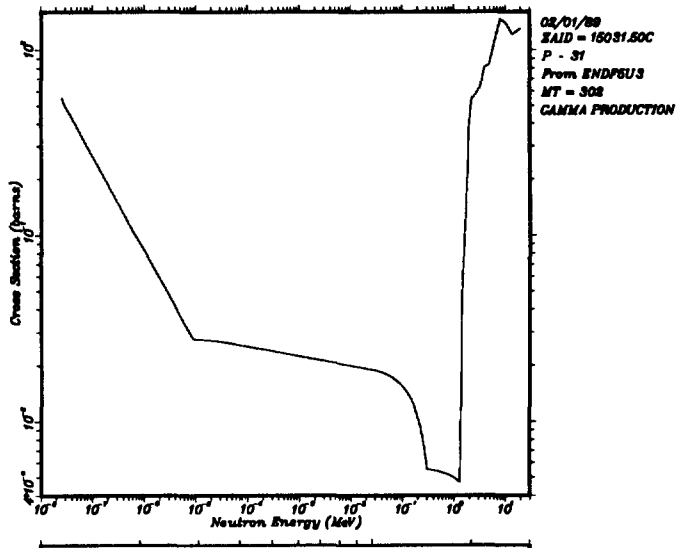
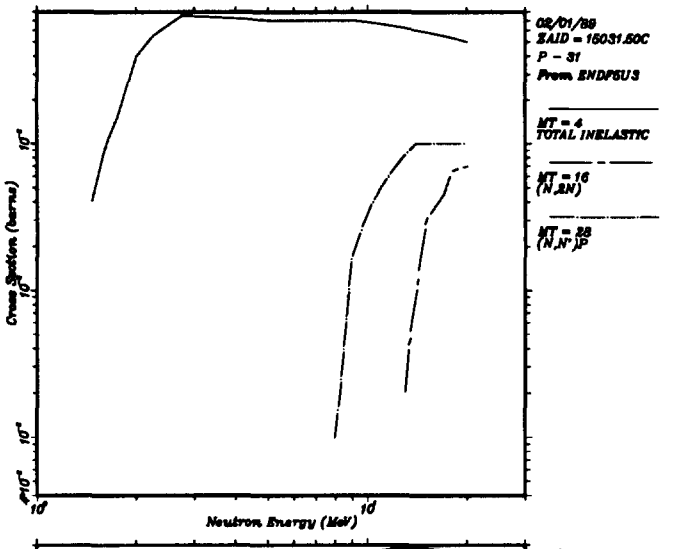
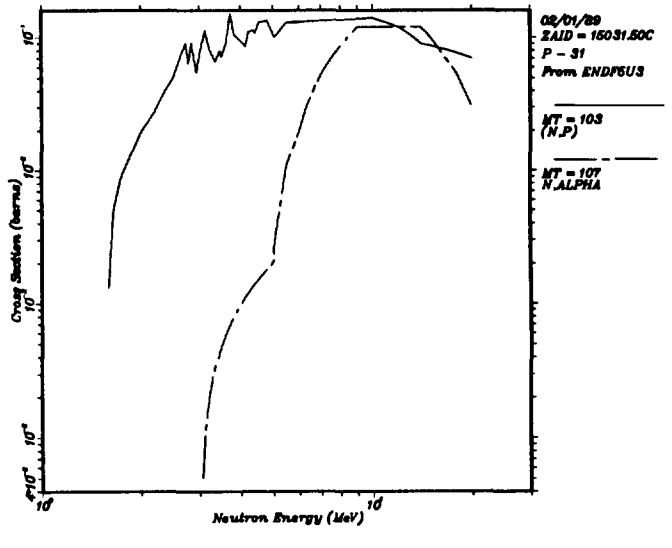
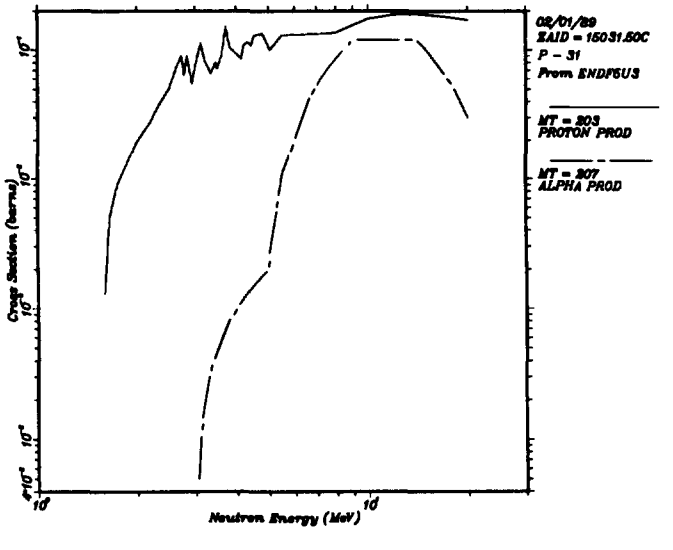
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 28
(N,N'P)
Cross Section (barns)
Neutron Energy (MeV)


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/01/89
ZAID = 15031.50C
P - 31
From ENDF6U3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Sulphur – 32

ZAID=16032.50C
SOURCE: ENDF/B–V (MAT=1316, Tape 503)
REFERENCE: "Sulfur – 32,"
by R. J. Howerton, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=16032.50C	NES=363	T=300°K
ZAID=16032.51C	NES=362	T=300°K

Discrete Reaction

ZAID=16032.50D	NES=263	T=300°K
ZAID=16032.51D	NES=263	T=300°K

Multigroup

ZAID=16032.50M	30-Group	T=300°K

Isotope Information

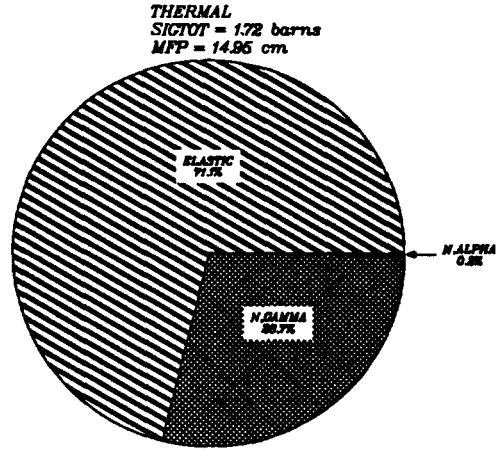
Abundance=95.02%
Density=2.07 gm/cm^3

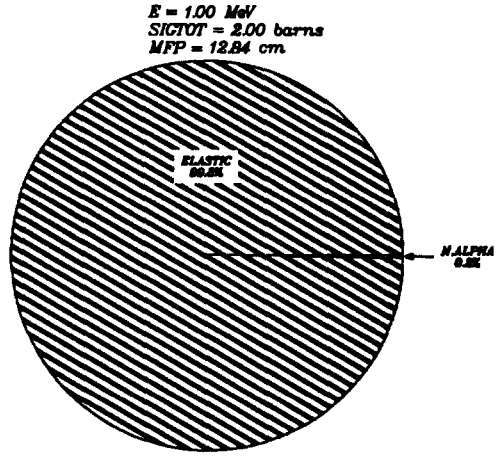
Evaluation Information

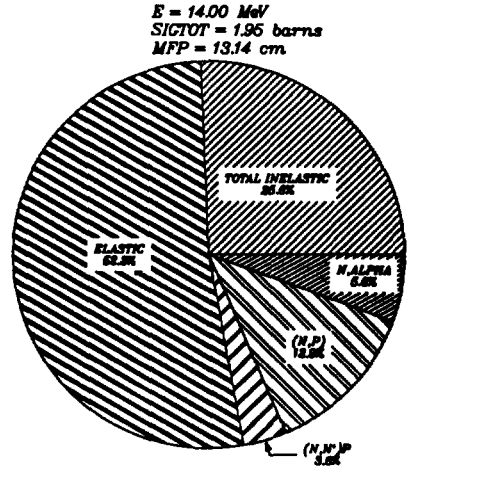
Photon-Production Data – Yes
Heating Numbers - Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

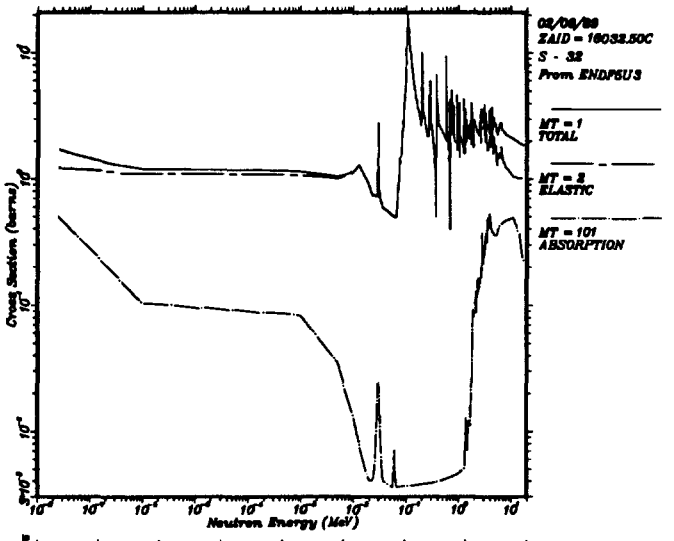
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.5564+01	2.0000+01	-1.5088+01	-1.5088+01
(n,n')p	28	9.1400+00	2.0000+01	-8.8600+00	-8.8600+00
(n,n'c)	91	2.3100+00	2.0000+01	-2.2393+00	-2.2393+00
(n,γ)	102	1.0000-11	2.0000+01	8.6400+00	8.6400+00
(n,p)	103	1.6000+00	2.0000+01	-9.2000-01	-9.2000-01
(n,t)	105	1.3070+01	2.0000+01	-1.2670+01	-1.2670+01
(n,α)	107	1.0000-11	2.0000+01	1.5300+00	1.5300+00

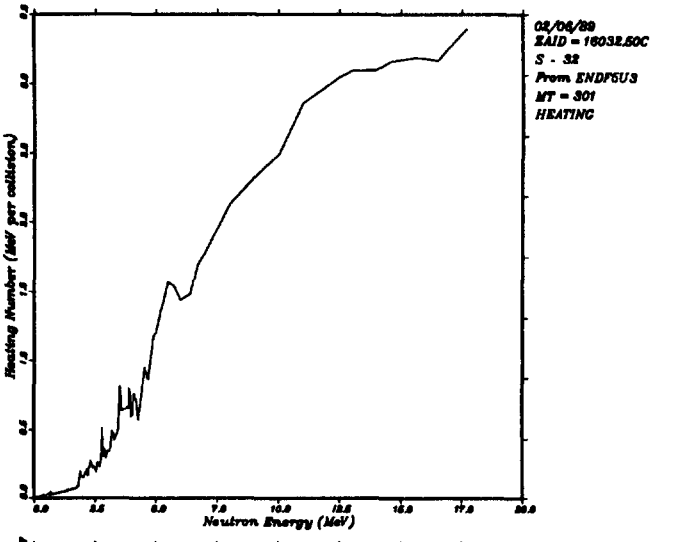


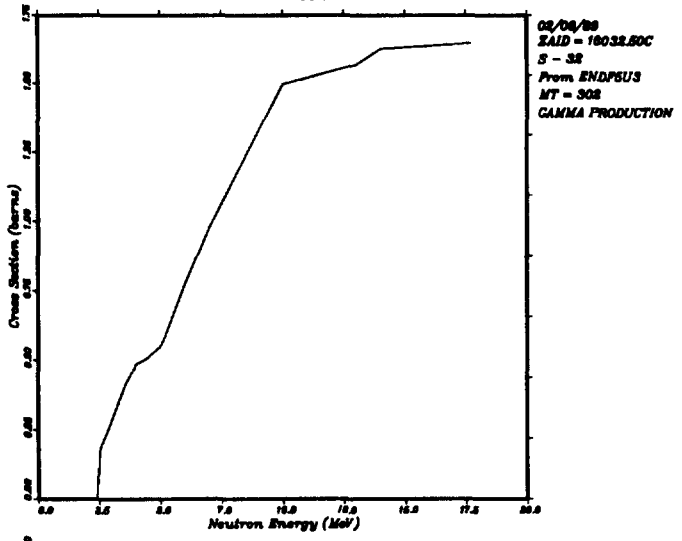


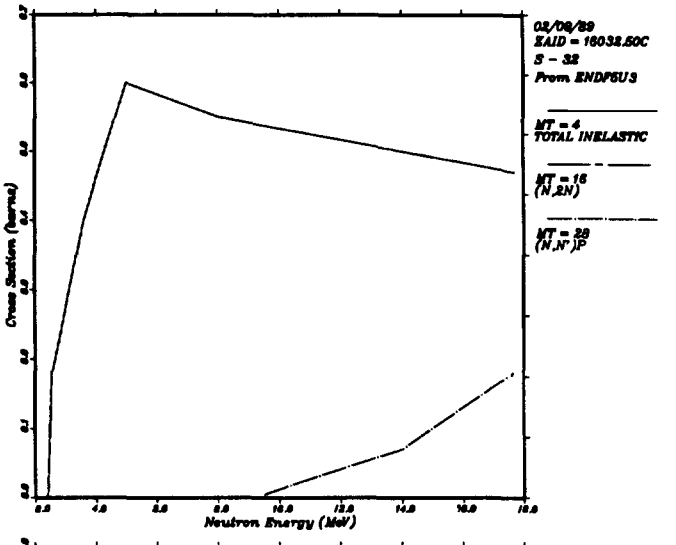


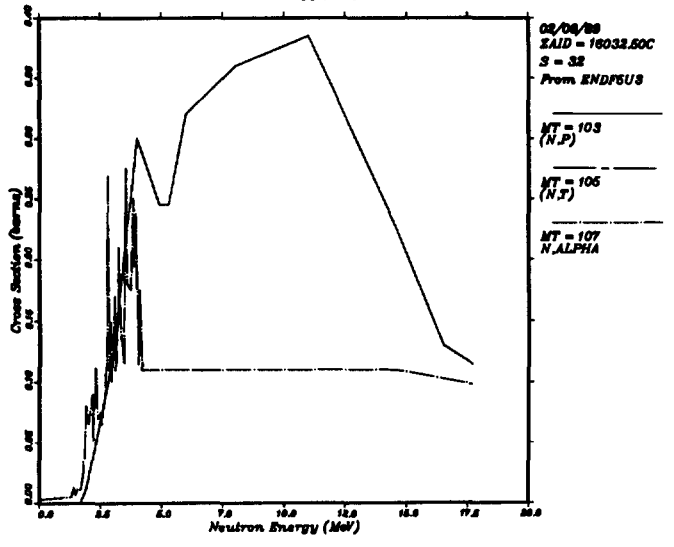
16032.50C

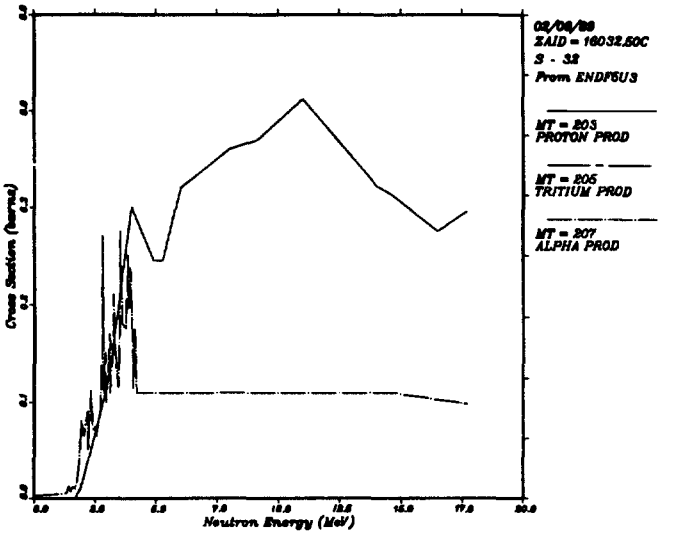

02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

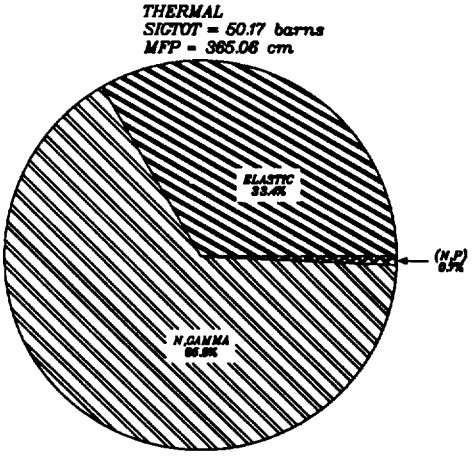

02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)

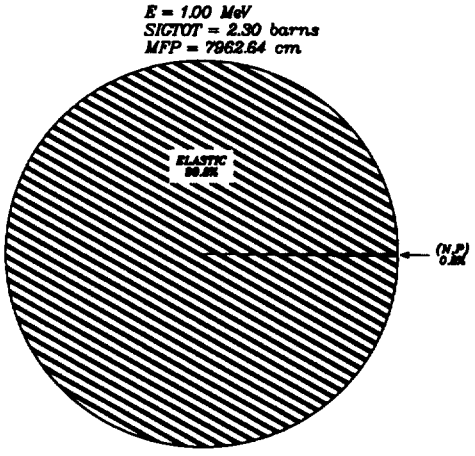

02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 103
(N,P)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

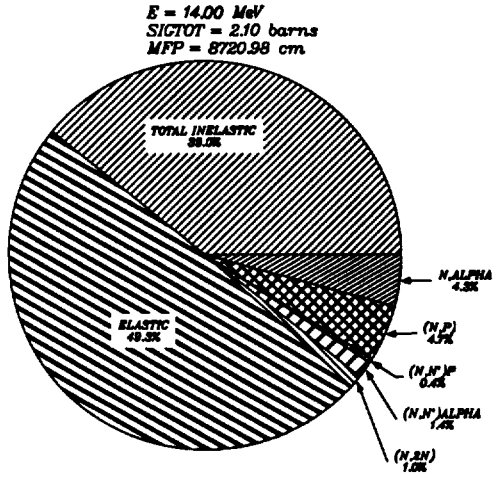

02/06/89
ZAID = 16032.50C
S - 32
From ENDF6US
MT = 203
PROTON PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Chlorine

ZAID=17000.50C
SOURCE: ENDF/B-V (MAT=1149, Tape 513)
REFERENCE: "MAT 1149,"
by M. S. Allen and M. K. Drake
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=17000.50C	NES=1499	T=300°K
ZAID=17000.51C	NES=1375	T=300°K

Discrete Reaction

ZAID=17000.50D	NES=263	T=300°K
ZAID=17000.51D	NES=263	T=300°K

Multigroup

ZAID=17000.50M	30-Group	T=300°K

Isotope Information

Abundance=Natural
Density=3.214E-03 gm/cm^3

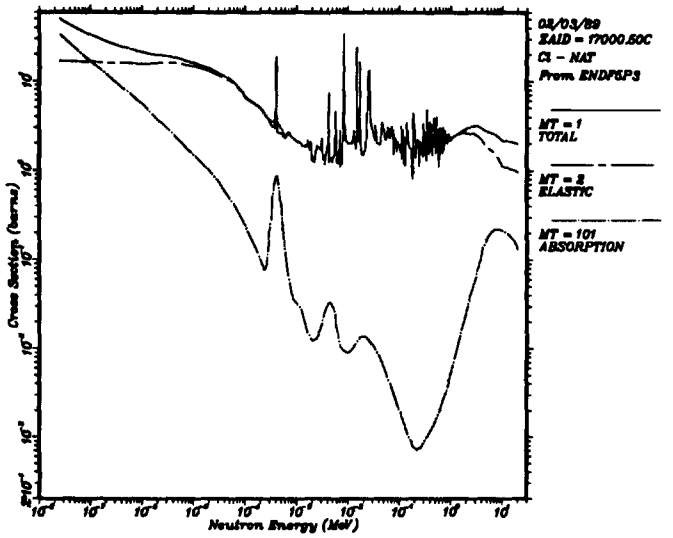
Evaluation Information

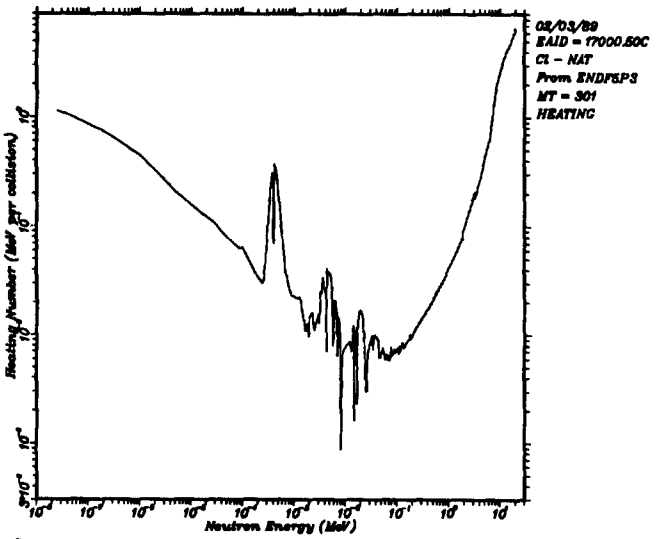
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

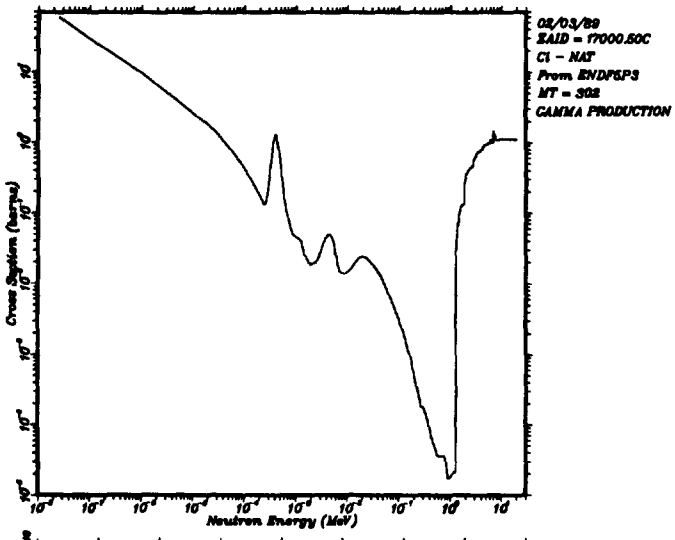
Reaction Information

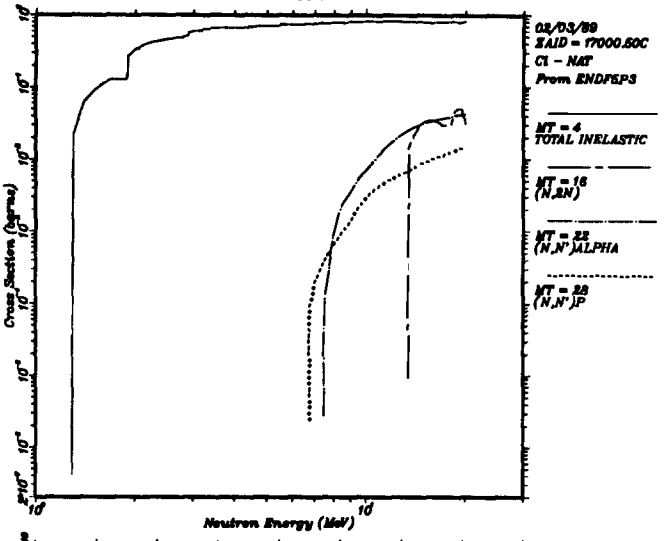
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.3010+01	2.0000+01	-1.2650+01	-1.2650+01
(n,n')α	22	7.1900+00	2.0000+01	-6.9900+00	-6.9900+00
(n,n')p	28	6.5513+00	2.0000+01	-6.3700+00	-6.3700+00
(n,n'1)	51	1.2550+00	2.0000+01	-1.2200+00	0.0000+00
(n,n'2)	52	1.8130+00	2.0000+01	-1.7620+00	0.0000+00
(n,n'3)	53	2.7210+00	2.0000+01	-2.6450+00	0.0000+00
(n,n'4)	54	2.7730+00	2.0000+01	-2.6950+00	0.0000+00
(n,n'5)	55	3.0930+00	2.0000+01	-3.0060+00	0.0000+00
(n,n'6)	56	3.2540+00	2.0000+01	-3.1630+00	0.0000+00
(n,n'7)	57	4.1750+00	2.0000+01	-4.0580+00	0.0000+00
(n,n'8)	58	4.2320+00	2.0000+01	-4.1130+00	0.0000+00
(n,n'9)	59	4.2940+00	2.0000+01	-4.1740+00	0.0000+00
(n,n'10)	60	5.2780+00	2.0000+01	-5.1300+00	0.0000+00
(n,n'11)	61	5.3710+00	2.0000+01	-5.2200+00	0.0000+00
(n,n'12)	62	6.2410+00	2.0000+01	-6.0683+00	0.0000+00
(n,n'13)	63	6.2736+00	2.0000+01	-6.1000+00	0.0000+00
(n,n'c)	91	1.7600+00	2.0000+01	-1.7113+00	-1.7113+00
(n,γ)	102	1.0000-11	2.0000+01	7.9761+00	7.9761+00
(n,p)	103	1.0000-11	2.0000+01	6.1507-01	6.1507-01
(n,α)	107	1.0000+00	2.0000+01	8.9250-01	8.9250-01

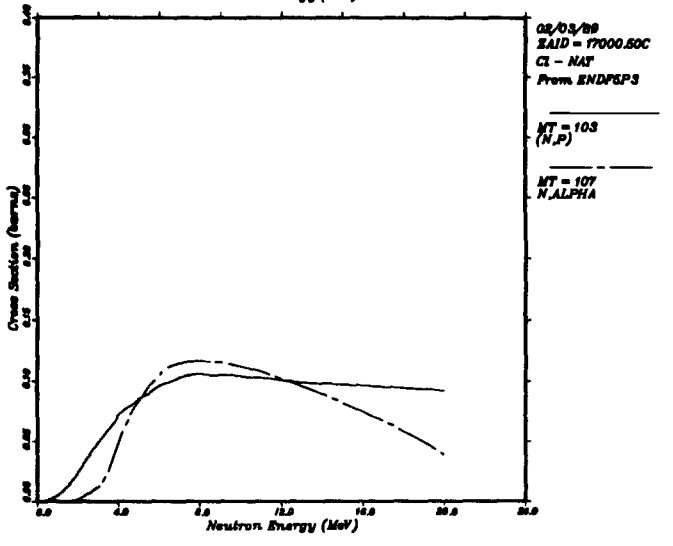
17000.50C

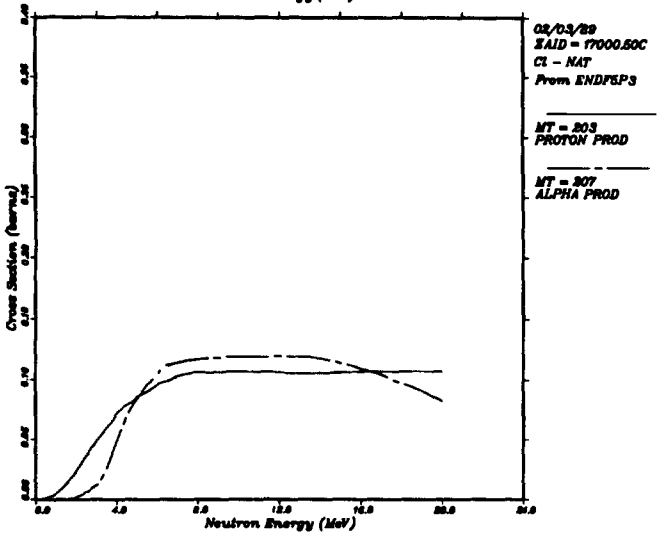

02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'a)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/03/89
EAID = 17000.50C
Cl - NAT
From ENDF&PS
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Argon

ZAID=18000.35C

SOURCE: ENDL-85 (ZA=18000 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=18000.35C NES=259 T=0°K

Discrete Reaction

ZAID=18000.35D NES=263 T=0°K

Multigroup

ZAID=18000.35M 30-Group T=0°K

Isotope Information

Abundance=Natural

Density=1.784E-03 gm/cm^3

Evaluation Information

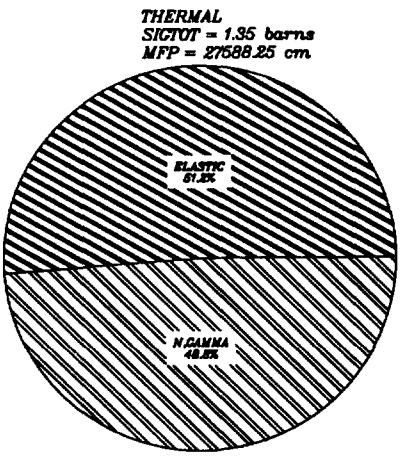
Photon-Production Data - Yes

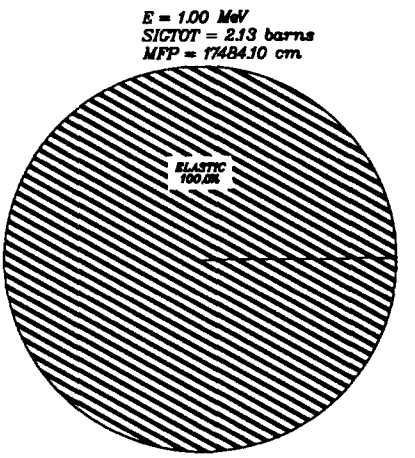
Heating Numbers - Local

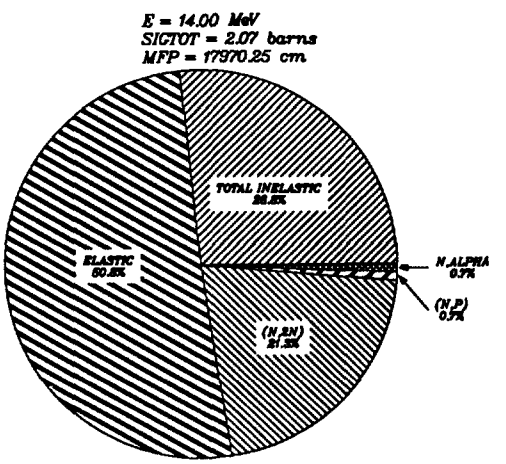
Energy Range - 10^{-11} to 20 MeV

Reaction Information

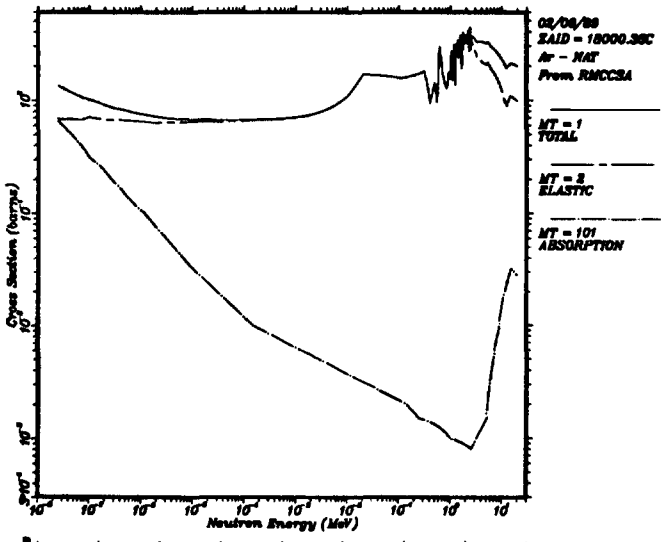
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.5000+00	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	1.0119+01	2.0000+01	-9.8700+00	-9.8700+00
(n,p)	103	6.8897+00	2.0000+01	-6.7200+00	-6.7200+00
(n,α)	107	2.5529+00	2.0000+01	-2.4900+00	-2.4900+00
(n,γ)	102	1.0000-10	2.0000+01	6.1000+00	6.1000+00

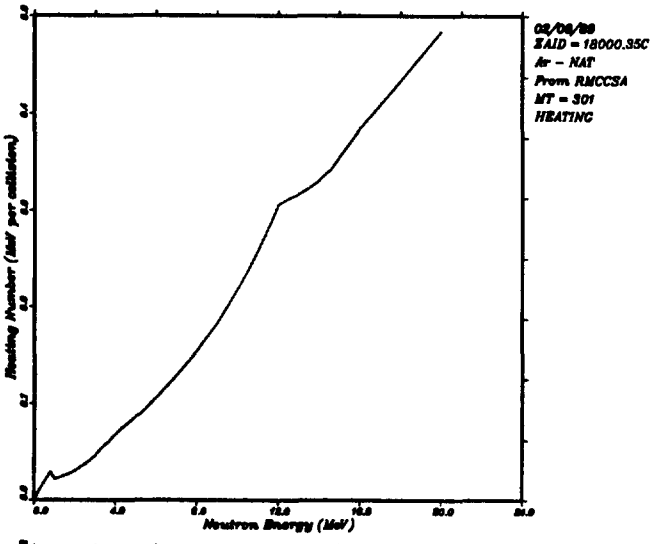


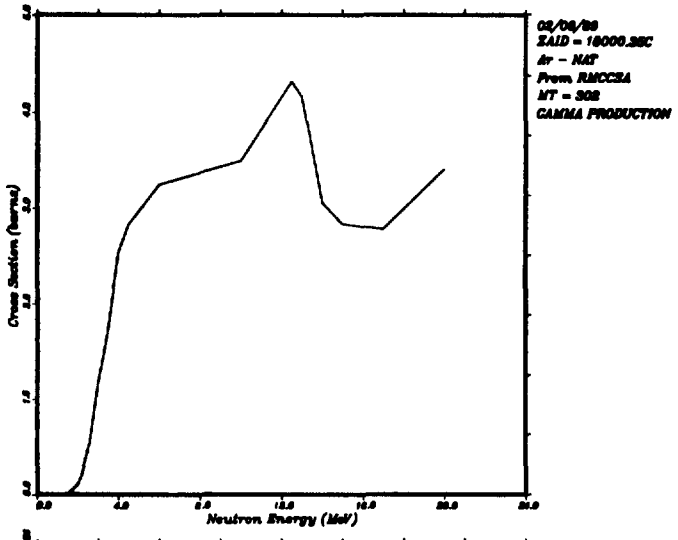


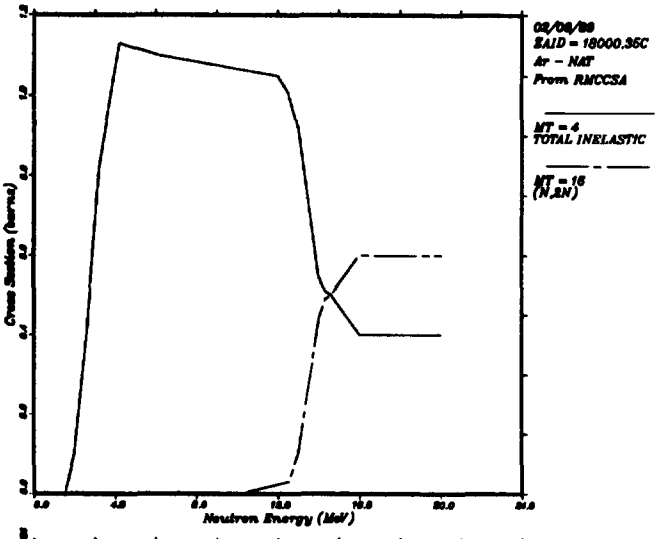


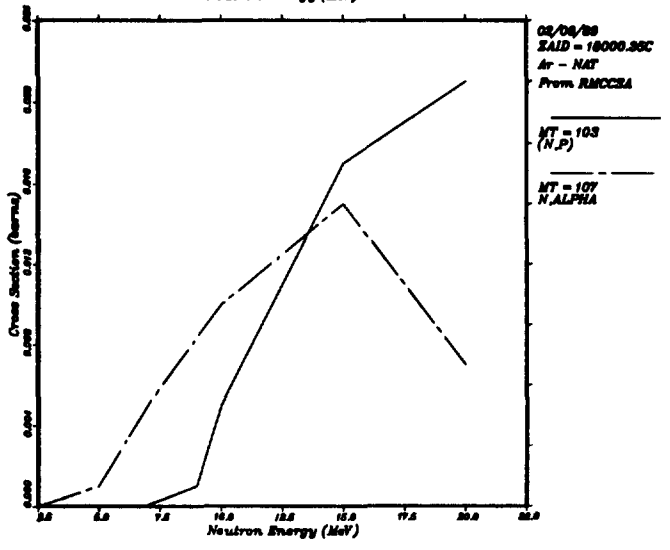
18000.35C

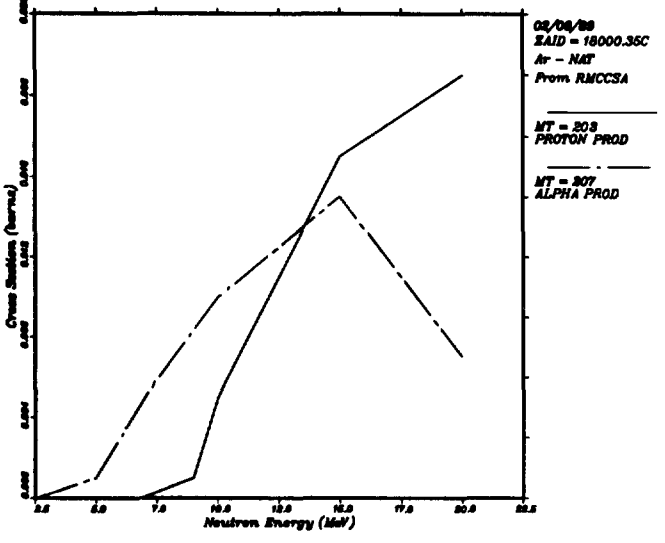

02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ΣAID = 18000.35C
Ar - NAT
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Potassium

ZAID=19000.50C
SOURCE: ENDF/B-V (MAT=1150, Tape 513)
REFERENCE: "MAT 1150,"
by M. K. Drake, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=19000.50C	NES=1243	T=300°K
ZAID=19000.51C	NES=1046	T=300°K

Discrete Reaction

ZAID=19000.50D	NES=263	T=300°K
ZAID=19000.51D	NES=263	T=300°K

Multigroup

ZAID=19000.50M	30-Group	T=300°K

Isotope Information

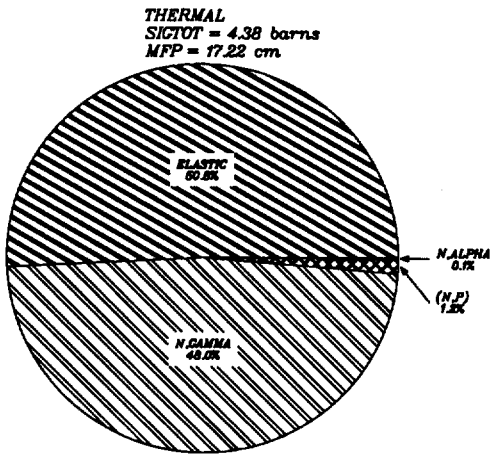
Abundance=Natural
Density=0.86 gm/cm^3

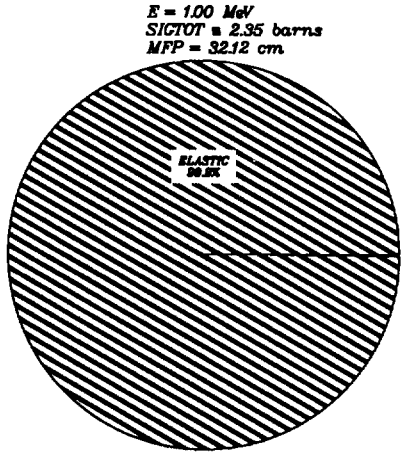
Evaluation Information

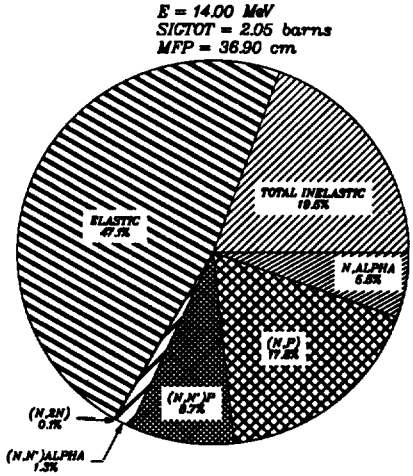
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

Reaction Information

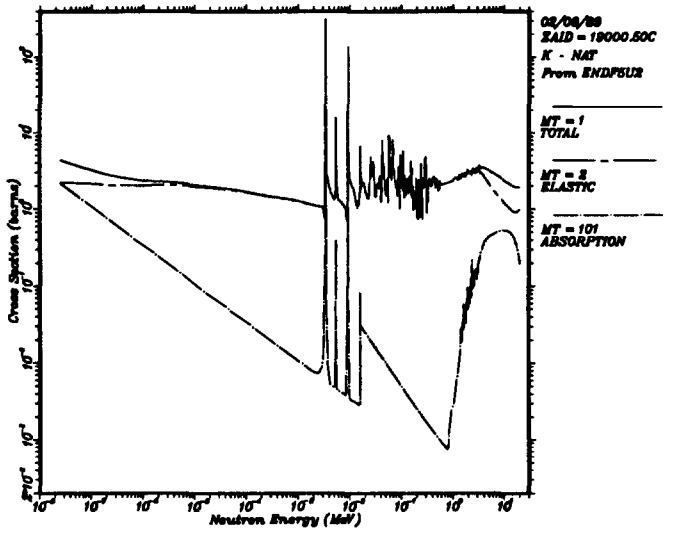
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.3410+01	2.0000+01	-1.3071+01	-1.3071+01
(n,n')α	22	7.6000+00	2.0000+01	-7.4089+00	-7.4089+00
(n,n')p	28	6.6000+00	2.0000+01	-6.4340+00	-6.4340+00
(n,n'1)	51	2.5912+00	2.0000+01	-2.5260+00	0.0000+00
(n,n'2)	52	2.8900+00	2.0000+01	-2.8170+00	0.0000+00
(n,n'3)	53	3.1000+00	2.0000+01	-3.0210+00	0.0000+00
(n,n'4)	54	3.6960+00	2.0000+01	-3.6030+00	0.0000+00
(n,n'5)	55	3.9800+00	2.0000+01	-3.8790+00	0.0000+00
(n,n'6)	56	4.0370+00	2.0000+01	-3.9350+00	0.0000+00
(n,n'7)	57	4.2290+00	2.0000+01	-4.1220+00	0.0000+00
(n,n'8)	58	4.8200+00	2.0000+01	-4.6988+00	0.0000+00
(n,n'9)	59	5.4170+00	2.0000+01	-5.2800+00	0.0000+00
(n,n'10)	60	5.5090+00	2.0000+01	-5.3700+00	0.0000+00
(n,n'11)	61	5.7660+00	2.0000+01	-5.6200+00	0.0000+00
(n,n'12)	62	5.8890+00	2.0000+01	-5.7400+00	0.0000+00
(n,n'13)	63	6.1200+00	2.0000+01	-5.9661+00	0.0000+00
(n,n'14)	64	6.2800+00	2.0000+01	-6.1200+00	0.0000+00
(n,n'15)	65	6.3702+00	2.0000+01	-6.2100+00	0.0000+00
(n,n'16)	66	6.5200+00	2.0000+01	-6.3500+00	0.0000+00
(n,n'17)	67	6.6700+00	2.0000+01	-6.5000+00	0.0000+00
(n,n'c)	91	1.0100+00	2.0000+01	-9.8460-01	-9.8460-01
(n,γ)	102	1.0000-11	2.0000+01	7.8000+00	7.8000+00
(n,p)	103	1.0000-11	2.0000+01	2.1700-01	2.1700-01
(n,α)	107	1.0000-11	2.0000+01	1.3634+00	1.3634+00

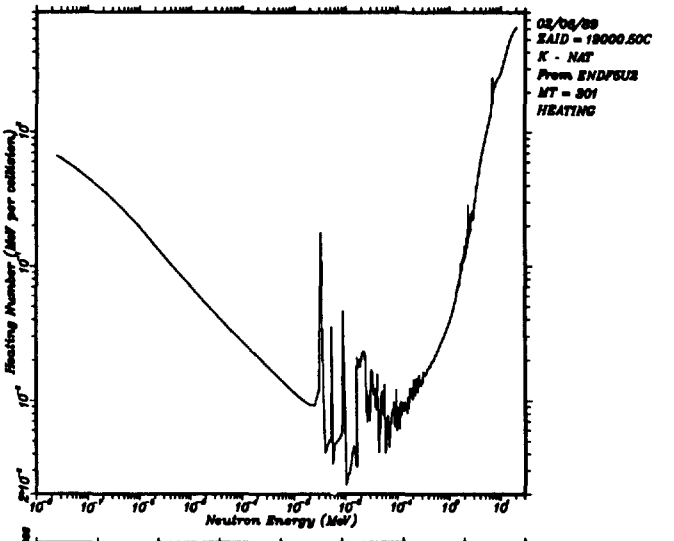


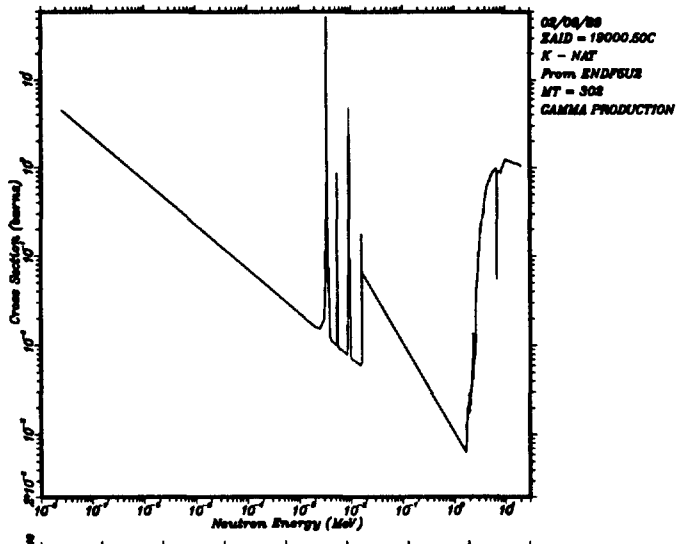


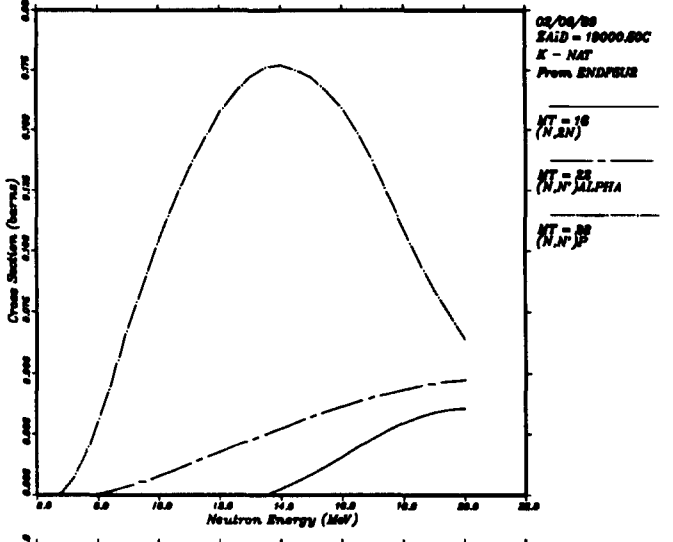


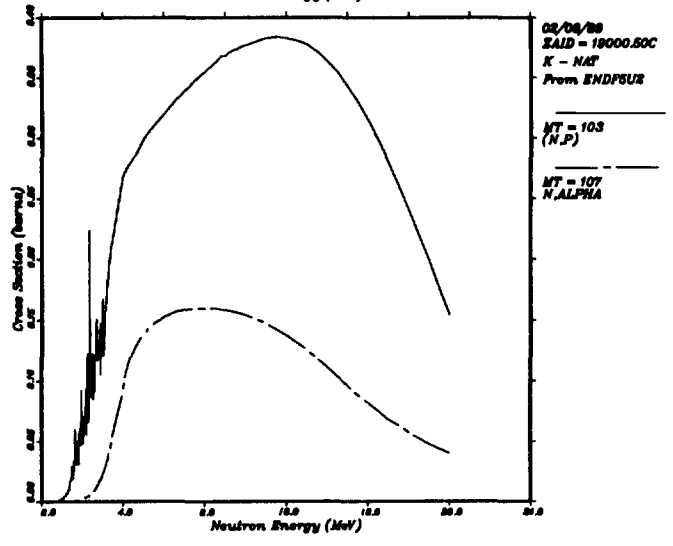
19000.50C

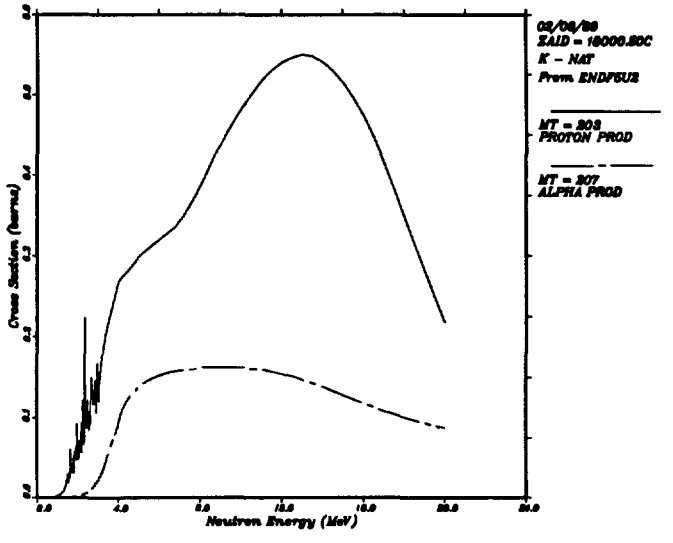

02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 16
(N,2N)
MT = 22
(N,N'α)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 103
(N,P)
MT = 107
N ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 19000.50C
K - NAT
From ENDF5U2
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Calcium

ZAID=20000.50C
SOURCE: ENDF/B–V (MAT=1320, Tape 507)
REFERENCE: "Summary Documentation Calcium Evaluation ENDF/B–V Preliminary MAT=1320,"
by C. Y. Fu and F. G. Perey
contained in ENDF–201

Data Availability

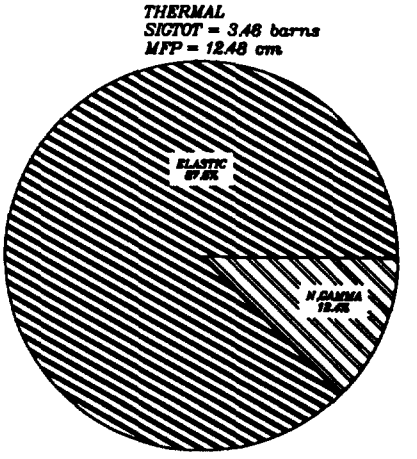
Continuous Energy		
ZAID=20000.50C	NES=2394	T=300°K
ZAID=20000.51C	NES=1796	T=300°K
Discrete Reaction		
ZAID=20000.50D	NES=263	T=300°K
ZAID=20000.51D	NES=263	T=300°K
Multigroup		
ZAID=20000.50M	30–Group	T=300°K

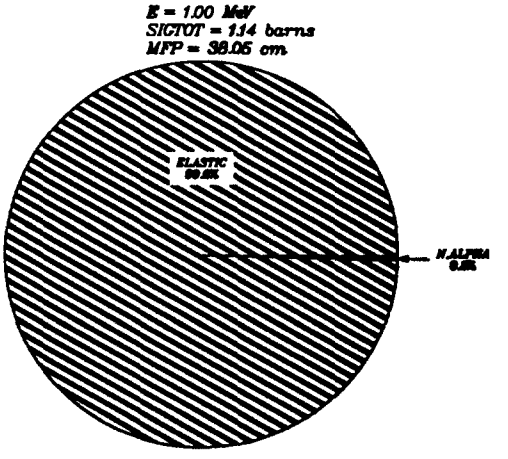
Isotope Information
Abundance=Natural
Density=1.54 gm/cm^3

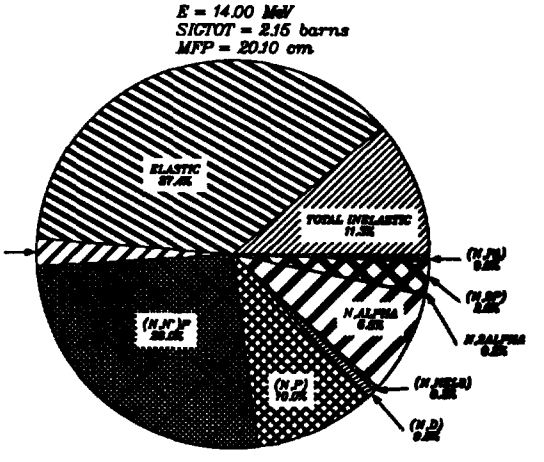
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

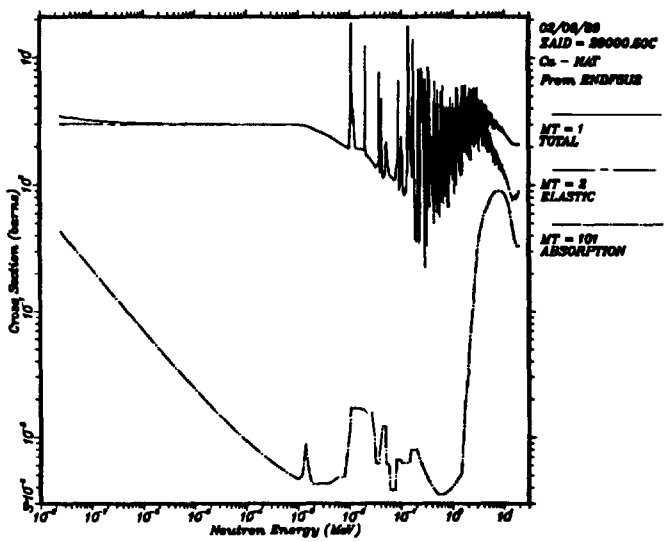
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0280+01	2.0000+01	-1.0028+01	-1.0028+01
(n,n′)α	22	7.2172+00	2.0000+01	-7.0400+00	-7.0400+00
(n,n′)p	28	8.5396+00	2.0000+01	-8.3300+00	-8.3300+00
(n,n′1)	51	1.1872+00	2.0000+01	-1.1580+00	0.0000+00
(n,n′2)	52	3.4384+00	2.0000+01	-3.3540+00	0.0000+00
(n,n′3)	53	3.8311+00	2.0000+01	-3.7370+00	0.0000+00
(n,n′4)	54	4.0023+00	2.0000+01	-3.9040+00	0.0000+00
(n,n′5)	55	4.6050+00	2.0000+01	-4.4920+00	0.0000+00
(n,n′6)	56	5.3432+00	2.0000+01	-5.2120+00	0.0000+00
(n,n′7)	57	5.3811+00	2.0000+01	-5.2490+00	0.0000+00
(n,n′8)	58	5.4119+00	2.0000+01	-5.2790+00	0.0000+00
(n,n′9)	59	5.7563+00	2.0000+01	-5.6150+00	0.0000+00
(n,n′10)	60	5.7686+00	2.0000+01	-5.6270+00	0.0000+00
(n,n′11)	61	6.0485+00	2.0000+01	-5.9000+00	0.0000+00
(n,n′12)	62	6.1766+00	2.0000+01	-6.0250+00	0.0000+00
(n,n′13)	63	6.1807+00	2.0000+01	-6.0290+00	0.0000+00
(n,n′14)	64	6.4432+00	2.0000+01	-6.2850+00	0.0000+00
(n,n′15)	65	6.6738+00	2.0000+01	-6.5100+00	0.0000+00
(n,n′16)	66	6.9219+00	2.0000+01	-6.7520+00	0.0000+00
(n,n′17)	67	7.2930+00	2.0000+01	-7.1140+00	0.0000+00
(n,n′18)	68	7.4632+00	2.0000+01	-7.2800+00	0.0000+00
(n,n′19)	69	7.7257+00	2.0000+01	-7.5360+00	0.0000+00
(n,n′20)	70	7.9553+00	2.0000+01	-7.7600+00	0.0000+00
(n,n′21)	71	8.2218+00	2.0000+01	-8.0200+00	0.0000+00
(n,n′22)	72	8.4792+00	2.0000+01	-8.2710+00	0.0000+00
(n,n′23)	73	8.7549+00	2.0000+01	-8.5400+00	0.0000+00
(n,n′c)	91	8.8882+00	2.0000+01	-8.6700+00	-8.6700+00
(n,γ)	102	1.0000-11	2.0000+01	8.3632+00	8.3632+00
(n,p)	103	5.3821-01	2.0000+01	-5.2500-01	-5.2500-01
(n,d)	104	6.1705+00	2.0000+01	-6.0190+00	-6.0190+00
(n,t)	105	1.3259+01	2.0000+01	-1.2933+01	-1.2933+01
(n,^{3}He)	106	7.1669+00	2.0000+01	-6.9910+00	-6.9910+00
(n,α)	107	1.0000-11	2.0000+01	1.7490+00	1.7490+00
(n,2α)	108	5.1638+00	2.0000+01	-5.0370+00	-5.0370+00
(n,2p)	111	8.3161+00	2.0000+01	-8.1120+00	-8.1120+00
(n,pα)	112	7.1413+00	2.0000+01	-6.9660+00	-6.9660+00

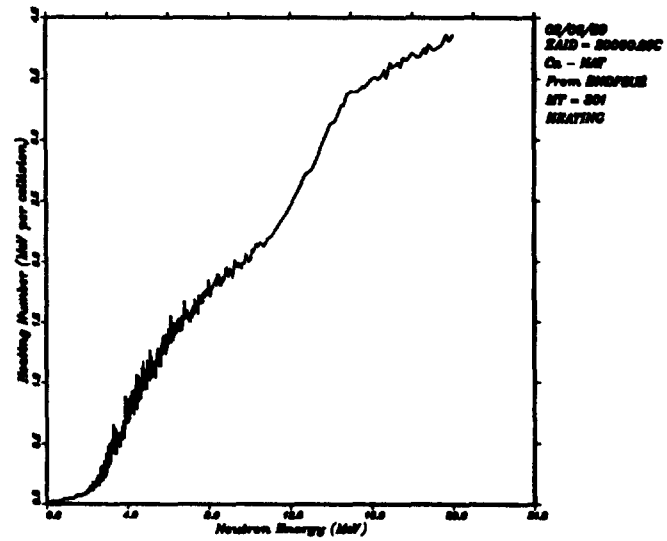


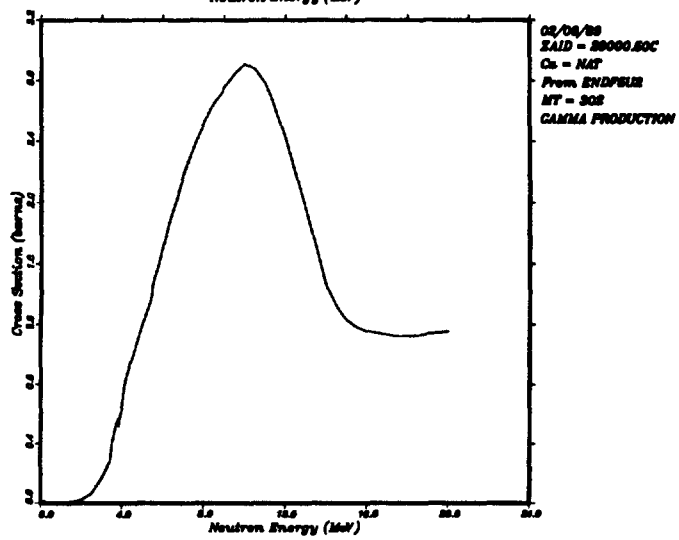


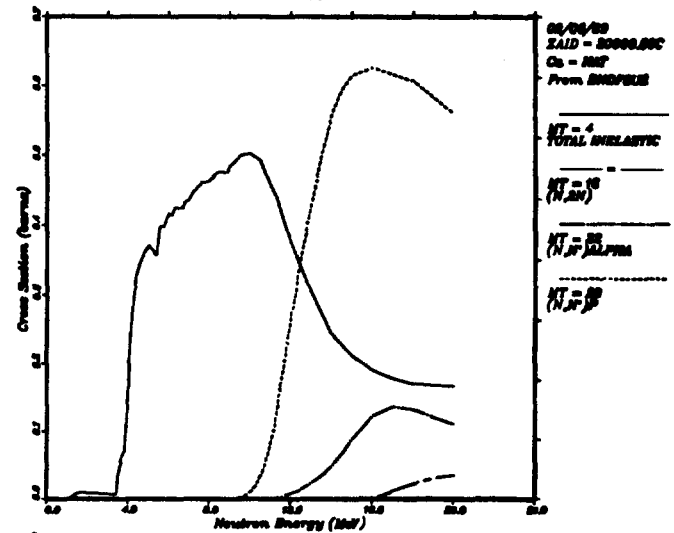


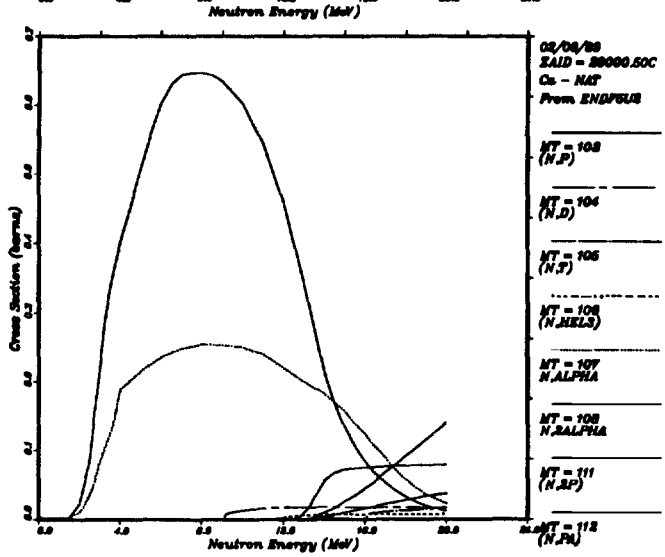
20000.50C

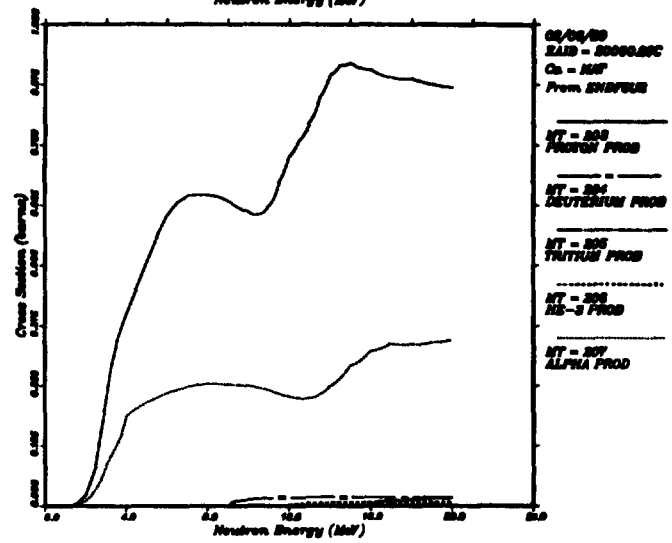

Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION


Heating Number (MeV per collision)
Neutron Energy (MeV)
HEATING


Cross Section (barns)
Neutron Energy (MeV)
MT = 302
GAMMA PRODUCTION

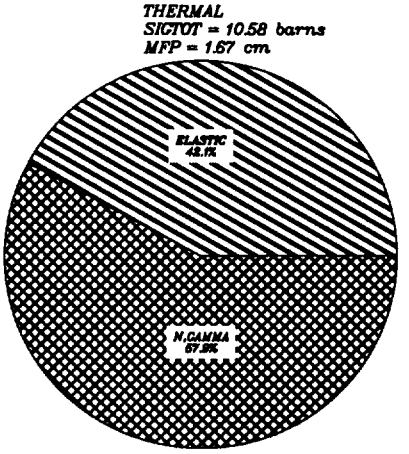

Cross Section (barns)
Neutron Energy (MeV)
MT = 4
TOTAL INELASTIC

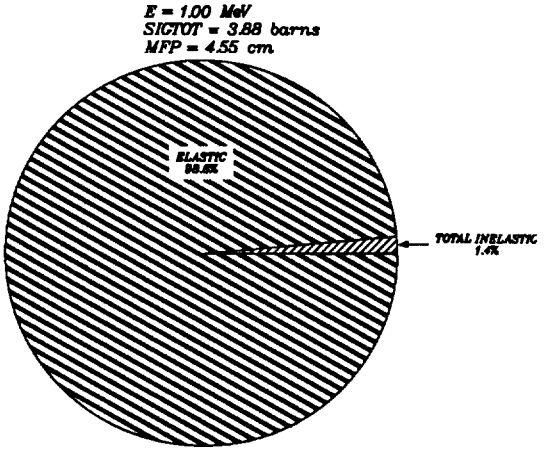

Cross Section (barns)
Neutron Energy (MeV)
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
MT = 108
N,2ALPHA
MT = 111
(N,2P)
MT = 112
(N,PA)

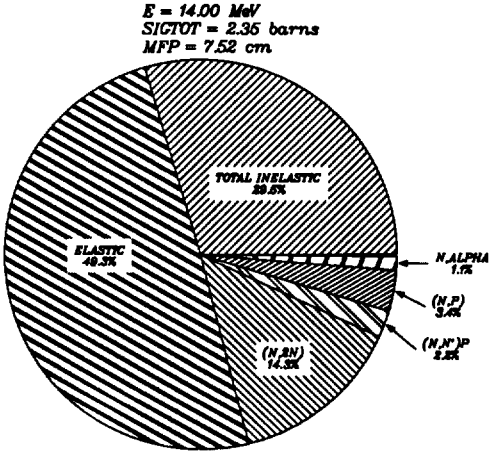

Cross Section (barns)
Neutron Energy (MeV)
PROTON PROD
DEUTERIUM PROD
TRITIUM PROD
HE-3 PROD
ALPHA PROD

Titanium

ZAID=22000.50C
SOURCE: ENDF/B–V (MAT=1322, Tape 508)
REFERENCE: "Titanium-II: An Evaluated Nuclear Data File,"
by C. Philis, R. Howerton, and A. B. Smith
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=22000.50C	NES=4434	T=300°K
ZAID=22000.51C	NES=1934	T=300°K

Discrete Reaction

ZAID=22000.50D	NES=263	T=300°K
ZAID=22000.51D	NES=263	T=300°K

Multigroup

ZAID=22000.50M	30-Group	T=300°K

Isotope Information

Abundance=Natural
Density=4.50 gm/cm^3

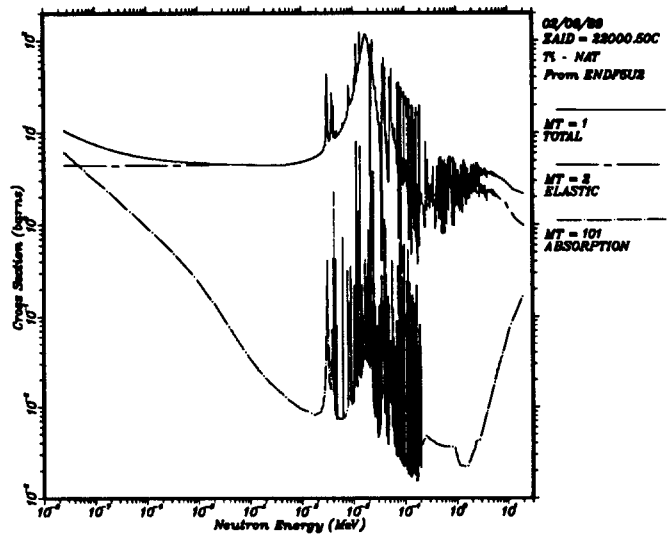
Evaluation Information

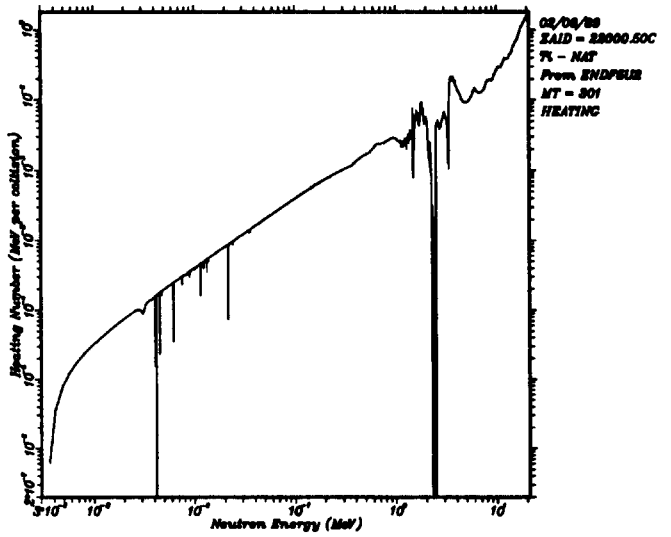
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

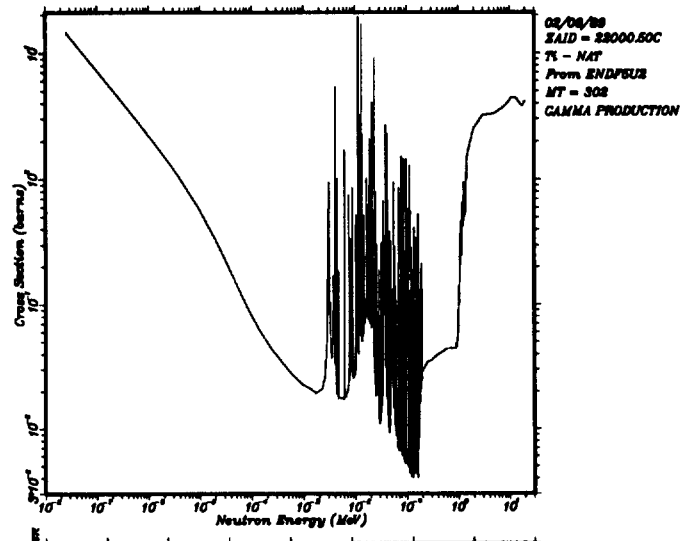
Reaction Information

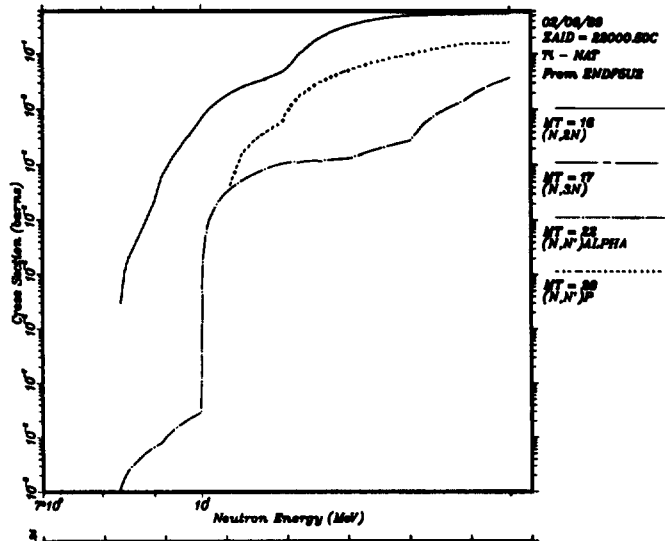
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.3145+00	2.0000+01	-8.1430+00	-8.1430+00
(n,3n)	17	1.9494+01	2.0000+01	-1.9092+01	-1.9092+01
(n,n')α	22	8.1870+00	2.0000+01	-8.0130+00	-8.0130+00
(n,n')p	28	1.0570+01	2.0000+01	-1.0350+01	-1.0350+01
(n,n'1)	51	1.6235-01	2.0000+01	-1.5900-01	0.0000+00
(n,n'2)	52	9.0773-01	2.0000+01	-8.8900-01	0.0000+00
(n,n'3)	53	1.0040+00	2.0000+01	-9.8300-01	0.0000+00
(n,n'4)	54	1.4601+00	2.0000+01	-1.4300+00	0.0000+00
(n,n'5)	55	1.5827+00	2.0000+01	-1.5500+00	0.0000+00
(n,n'6)	56	1.8583+00	2.0000+01	-1.8200+00	0.0000+00
(n,n'7)	57	2.0513+00	2.0000+01	-2.0090+00	0.0000+00
(n,n'8)	58	2.3433+00	2.0000+01	-2.2950+00	0.0000+00
(n,n'9)	59	2.4720+00	2.0000+01	-2.4210+00	0.0000+00
(n,n'10)	60	2.6701+00	2.0000+01	-2.6150+00	0.0000+00
(n,n'11)	61	3.0632+00	2.0000+01	-3.0000+00	0.0000+00
(n,n'12)	62	3.3185+00	2.0000+01	-3.2500+00	0.0000+00
(n,n'c)	91	3.5000+00	2.0000+01	-3.4278+00	-3.4278+00
(n,γ)	102	1.0000-11	2.0000+01	8.5137+00	8.5137+00
(n,p)	103	1.0000-11	2.0000+01	0.0000+00	0.0000+00
(n,d)	104	8.2982+00	2.0000+01	-8.1270+00	-8.1270+00
(n,t)	105	1.0966+01	2.0000+01	-1.0740+01	-1.0740+01
(n,^{3}He)	106	9.7290+00	2.0000+01	-9.5220+00	-9.5220+00
(n,α)	107	2.0000-01	2.0000+01	0.0000+00	0.0000+00
(n,2p)	111	8.4730+00	2.0000+01	-8.2970+00	-8.2970+00
(n,pα)	112	1.0148+01	2.0000+01	-9.9390+00	-9.9390+00

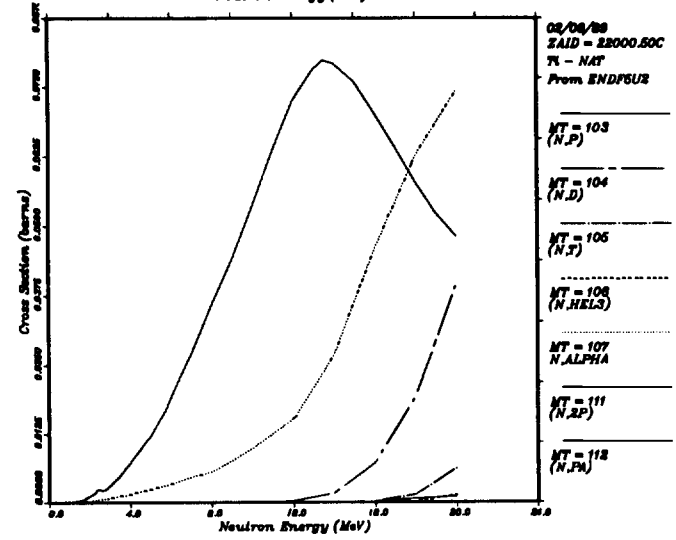
22000.50C

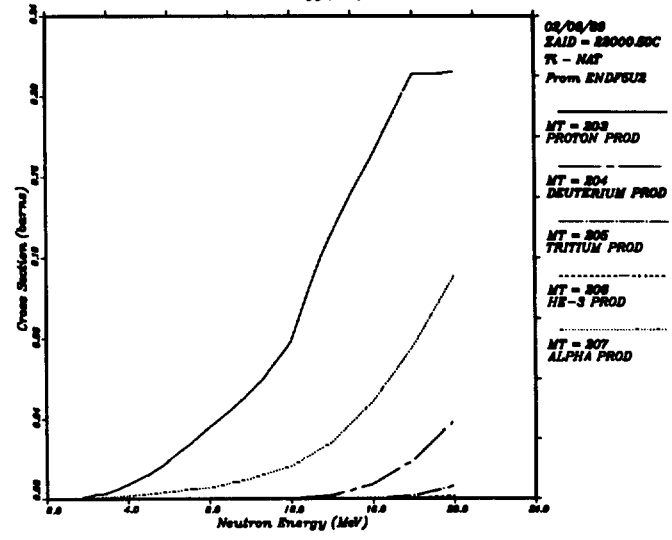

02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
MT = 111
(N,2P)
MT = 112
(N,PA)
Cross Section (barns)
Neutron Energy (MeV)

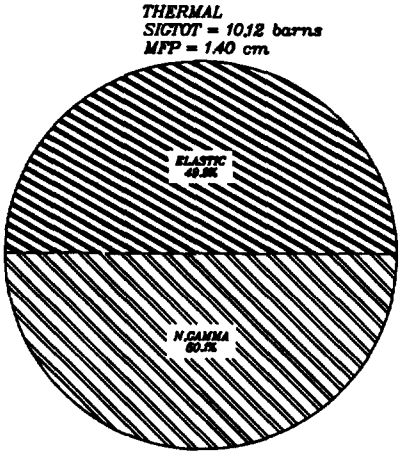

02/06/99
ZAID = 22000.50C
Ti - NAT
From ENDFSUB
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

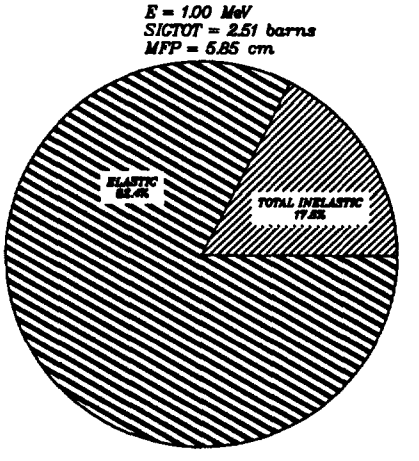
Vanadium

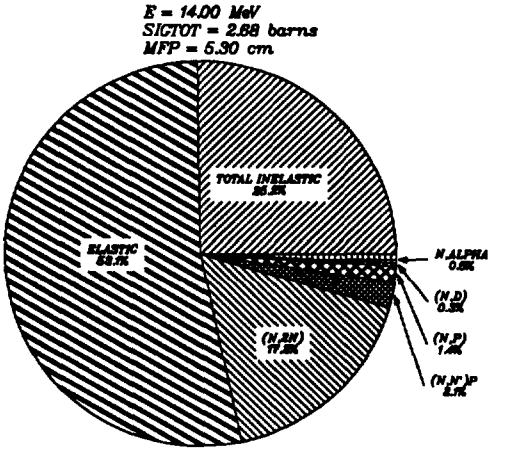
ZAID=23000.50C

SOURCE: ENDF/B–V (MAT=1323, Tape 508)

REFERENCE: "Fast Neutron Cross Sections of Vanadium and an Evaluated Neutronic File," by P. Guenther, D. Havel, R. Howerton, F. Mann, D. Smith, A. Smith, and J. Whalen contained in ENDF–201







Data Availability

Continuous Energy

ZAID=23000.50C	NES=2265	T=300°K
ZAID=23000.51C	NES=1899	T=300°K

Discrete Reaction

ZAID=23000.50D	NES=263	T=300°K
ZAID=23000.51D	NES=263	T=300°K

Multigroup

ZAID=23000.50M	30–Group	T=300°K

Isotope Information

Abundance=Natural

Density=5.960 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

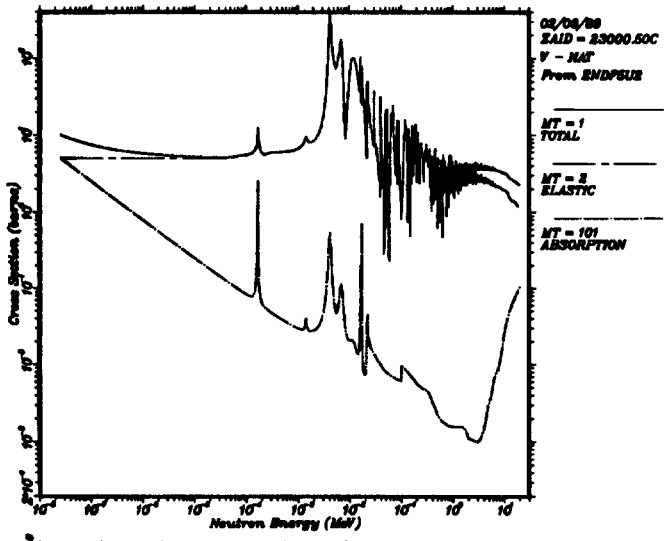
Heating Numbers – Local

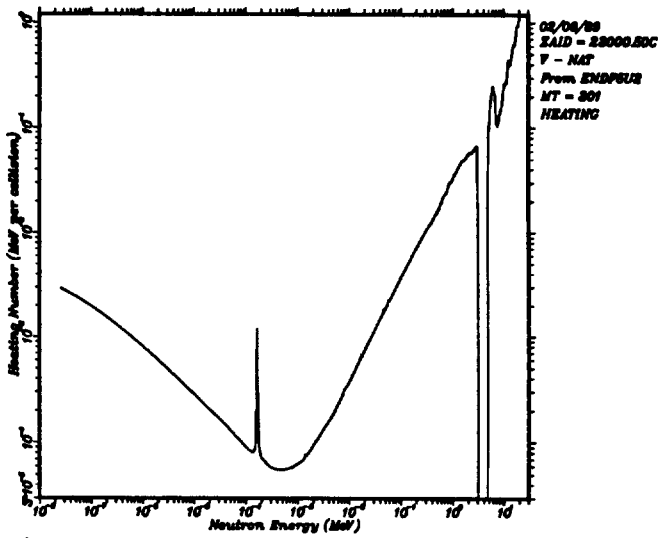
Energy Range – 10^{-11} to 20 MeV

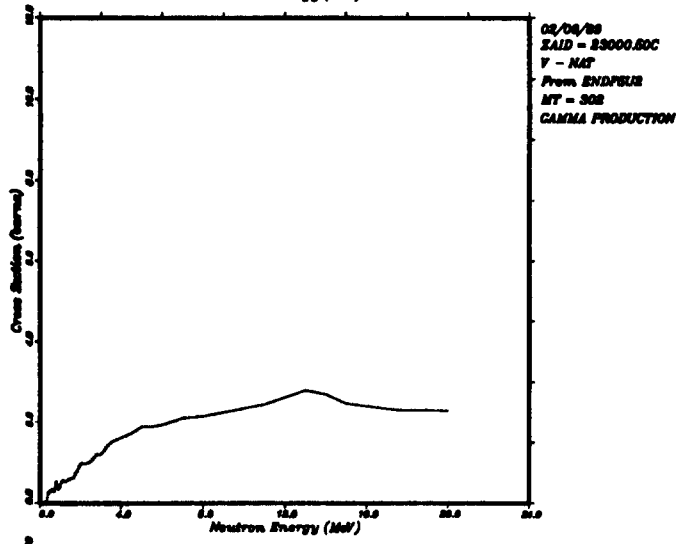
Reaction Information

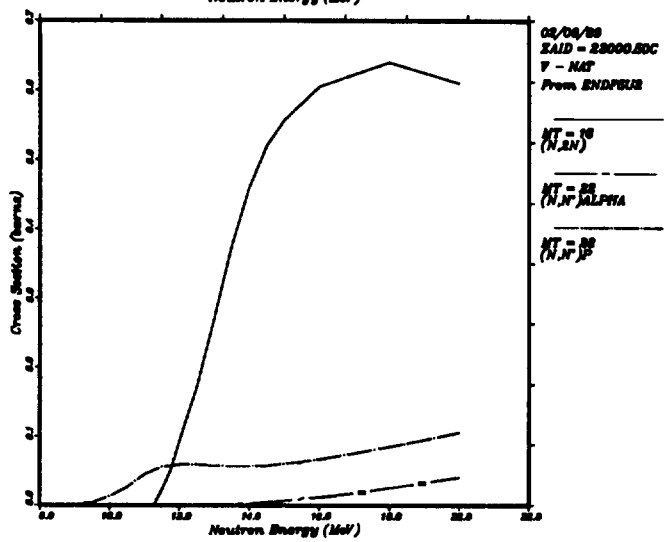
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1271+01	2.0000+01	-1.1052+01	-1.1052+01
(n,n')α	22	1.0497+01	2.0000+01	-1.0293+01	-1.0293+01
(n,n')p	28	8.2114+00	2.0000+01	-8.0520+00	-8.0520+00
(n,n'1)	51	3.2644-01	2.0000+01	-3.2010-01	0.0000+00
(n,n'2)	52	9.4739-01	2.0000+01	-9.2900-01	0.0000+00
(n,n'3)	53	1.6410+00	2.0000+01	-1.6090+00	0.0000+00
(n,n'4)	54	1.8490+00	2.0000+01	-1.8130+00	0.0000+00
(n,n'5)	55	2.4567+00	2.0000+01	-2.4090+00	0.0000+00
(n,n'6)	56	2.7280+00	2.0000+01	-2.6750+00	0.0000+00
(n,n'7)	57	3.1410+00	2.0000+01	-3.0800+00	0.0000+00
(n,n'c)	91	3.0004+00	2.0000+01	-2.9421+00	-2.9421+00
(n,γ)	102	1.0000-11	2.0000+01	7.3040+00	7.3040+00
(n,p)	103	1.0000-11	2.0000+01	3.0000+00	3.0000+00
(n,d)	104	5.9424+00	2.0000+01	-5.8270+00	-5.8270+00
(n,t)	105	1.0726+01	2.0000+01	-1.0518+01	-1.0518+01
(n,α)	107	1.0000-11	2.0000+01	7.5900-01	7.5900-01

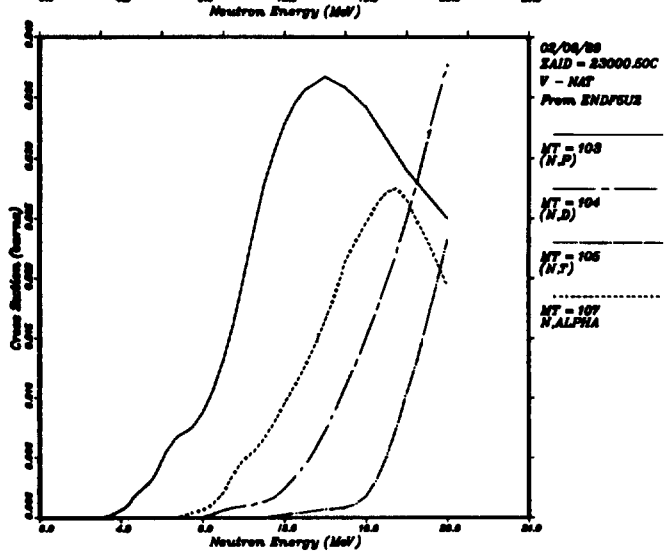
23000.50C

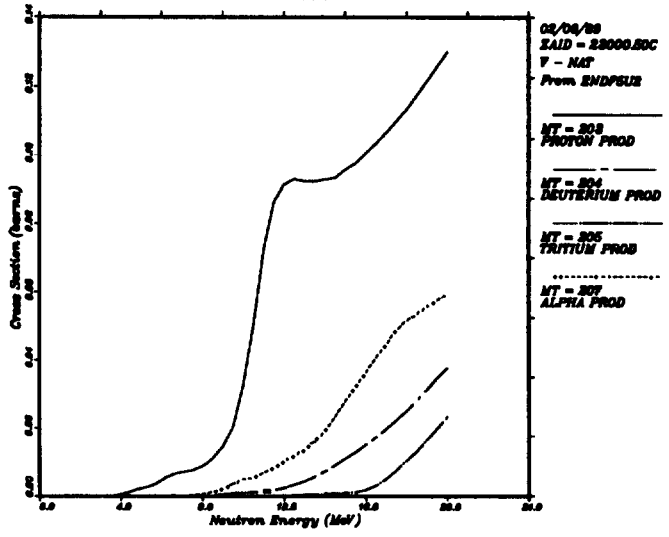

02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 16
(N,2N)
MT = 22
(N,NF)ALPHA
MT = 28
(N,NF)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 23000.50C
V - NAT
From ENDFSUB
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Chromium

ZAID=24000.50C

SOURCE: ENDF/B-V (MAT=1324, Tape 512)

REFERENCE: "Summary Documentation Natural Chromium Evaluation ENDF/B-V MAT=1324,"
by A. Prince and T. W. Burrows
contained in ENDF-201

Data Availability

Continuous Energy

ZAID=24000.50C	NES=11050	T=300°K
ZAID=24000.51C	NES=1927	T=300°K

Discrete Reaction

ZAID=24000.50D	NES=263	T=300°K

Multigroup

ZAID=24000.50M	30-Group	T=300°K

Isotope Information

Abundance=Natural

Density=7.20 gm/cm^3

Evaluation Information

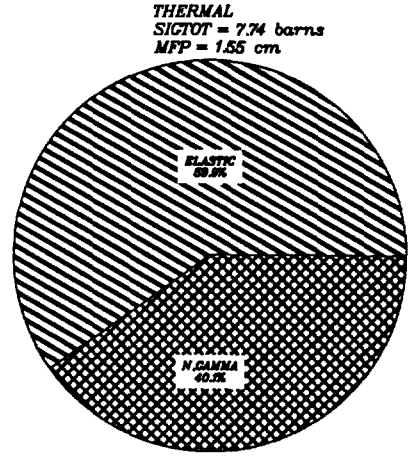
Photon-Production Data = Yes

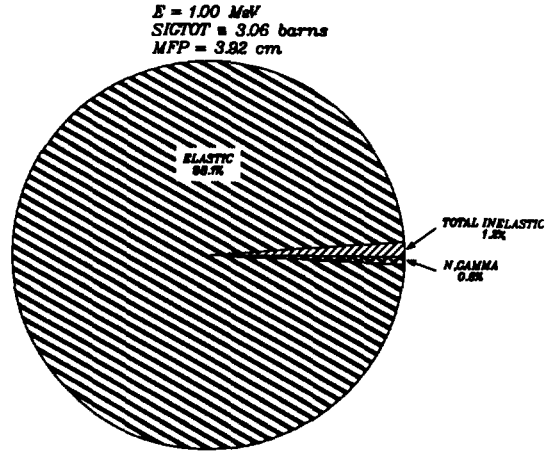
Heating Numbers – Local

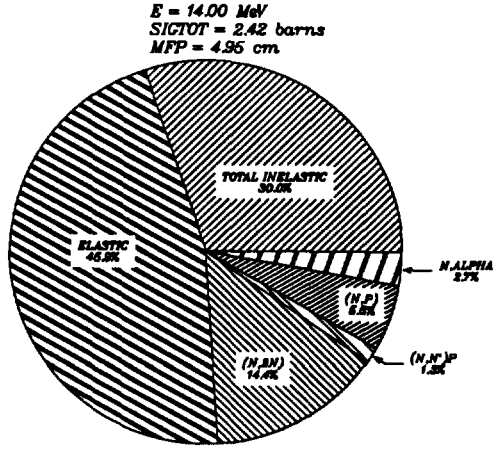
Energy Range – 10^{-11} to 20 MeV

Reaction Information

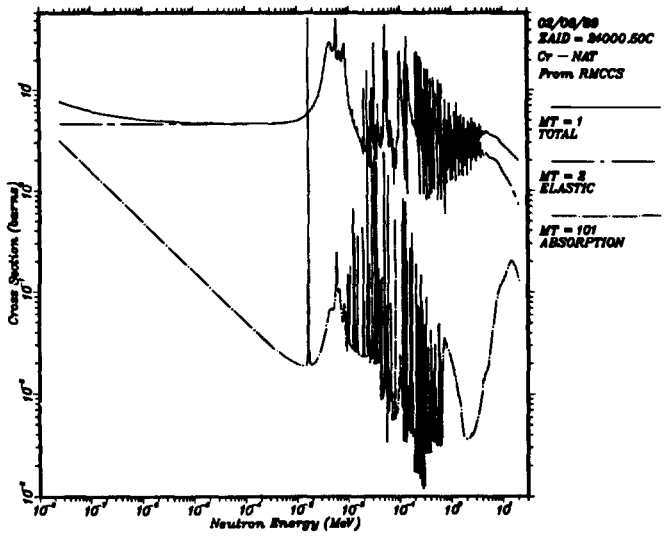
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.0940+00	2.0000+01	-7.9400+00	-7.9400+00
(n,3n)	17	1.8004+01	2.0000+01	-1.7661+01	-1.7661+01
(n,n')α	22	8.0808+00	2.0000+01	-7.9270+00	-7.9270+00
(n,n')p	28	1.0068+01	2.0000+01	-9.5883+00	-9.5883+00
(n,n'1)	51	7.0000-01	2.0000+01	-5.6400-01	0.0000+00
(n,n'2)	52	7.9829-01	2.0000+01	-7.8310-01	0.0000+00
(n,n'3)	53	8.5099-01	2.0000+01	-8.3480-01	0.0000+00
(n,n'4)	54	1.0255+00	2.0000+01	-1.0060+00	0.0000+00
(n,n'5)	55	1.3120+00	2.0000+01	-1.2870+00	0.0000+00
(n,n'6)	56	1.4618+00	2.0000+01	-1.4340+00	0.0000+00
(n,n'7)	57	1.5689+00	2.0000+01	-1.5390+00	0.0000+00
(n,n'8)	58	2.0113+00	2.0000+01	-1.9730+00	0.0000+00
(n,n'9)	59	2.2152+00	2.0000+01	-2.1730+00	0.0000+00
(n,n'10)	60	2.2763+00	2.0000+01	-2.2330+00	0.0000+00
(n,n'11)	61	2.3660+00	2.0000+01	-2.3210+00	0.0000+00
(n,n'12)	62	2.4160+00	2.0000+01	-2.3700+00	0.0000+00
(n,n'13)	63	2.5026+00	2.0000+01	-2.4550+00	0.0000+00
(n,n'14)	64	2.6983+00	2.0000+01	-2.6470+00	0.0000+00
(n,n'15)	65	2.7126+00	2.0000+01	-2.6610+00	0.0000+00
(n,n'16)	66	2.7218+00	2.0000+01	-2.6700+00	0.0000+00
(n,n'17)	67	2.7636+00	2.0000+01	-2.7110+00	0.0000+00
(n,n'18)	68	2.8217+00	2.0000+01	-2.7680+00	0.0000+00
(n,n'19)	69	2.8288+00	2.0000+01	-2.7750+00	0.0000+00
(n,n'20)	70	3.0225+00	2.0000+01	-2.9650+00	0.0000+00
(n,n'21)	71	3.0531+00	2.0000+01	-2.9950+00	0.0000+00
(n,n'22)	72	3.1744+00	2.0000+01	-3.1140+00	0.0000+00
(n,n'23)	73	3.1928+00	2.0000+01	-3.1320+00	0.0000+00
(n,n'24)	74	3.2142+00	2.0000+01	-3.1530+00	0.0000+00
(n,n'25)	75	3.2233+00	2.0000+01	-3.1620+00	0.0000+00
(n,n'26)	76	3.2478+00	2.0000+01	-3.1860+00	0.0000+00
(n,n'27)	77	3.3314+00	2.0000+01	-3.2680+00	0.0000+00
(n,n'28)	78	3.4170+00	2.0000+01	-3.3520+00	0.0000+00
(n,n'29)	79	3.4810+00	2.0000+01	-3.4140+00	0.0000+00
(n,n'30)	80	3.5383+00	2.0000+01	-3.4710+00	0.0000+00
(n,n'31)	81	3.6872+00	2.0000+01	-3.6170+00	0.0000+00
(n,n'32)	82	3.8442+00	2.0000+01	-3.7710+00	0.0000+00
(n,n'33)	83	4.0240+00	2.0000+01	-3.9470+00	0.0000+00
(n,n'34)	84	4.0930+00	2.0000+01	-4.0150+00	0.0000+00
(n,n'35)	85	4.1174+00	2.0000+01	-4.0390+00	0.0000+00
(n,n'36)	86	4.6520+00	2.0000+01	-4.5630+00	0.0000+00
(n,n'37)	87	4.7200+00	2.0000+01	-4.6300+00	0.0000+00
(n,n'38)	88	4.9310+00	2.0000+01	-4.8370+00	0.0000+00
(n,n'39)	89	5.1960+00	2.0000+01	-5.0970+00	0.0000+00
(n,n'40)	90	5.3947+00	2.0000+01	-5.2920+00	0.0000+00
(n,n'c)	91	5.2000+00	2.0000+01	-1.8246+00	-1.8246+00
(n,γ)	102	1.0000-11	2.0000+01	9.2371+00	9.2371+00
(n,p)	103	1.8000+00	2.0000+01	-2.5660-01	-2.5660-01
(n,d)	104	9.0000+00	2.0000+01	-7.3642+00	-7.3642+00
(n,t)	105	1.0158+01	2.0000+01	-9.9650+00	-9.9650+00
(n,^{3}He)	106	8.7955+00	2.0000+01	-8.6281+00	-8.6281+00
(n,α)	107	1.0000+00	2.0000+01	1.7940+00	1.7940+00

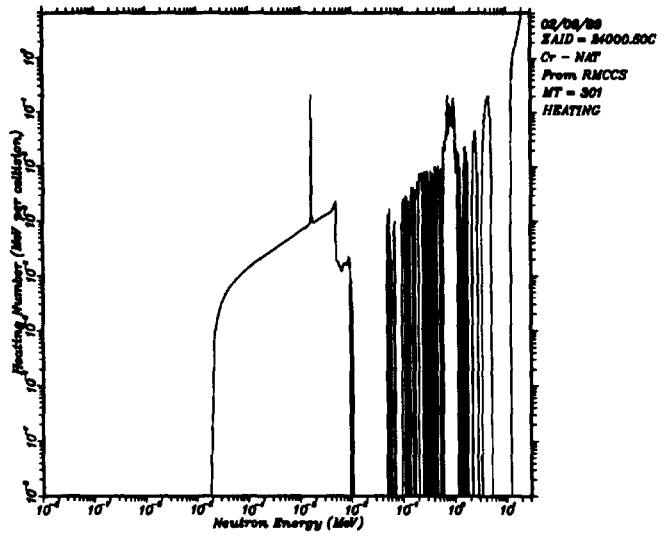


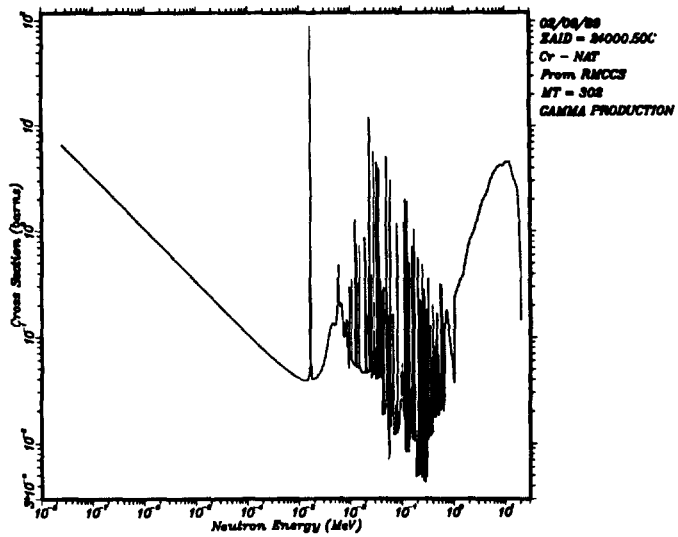


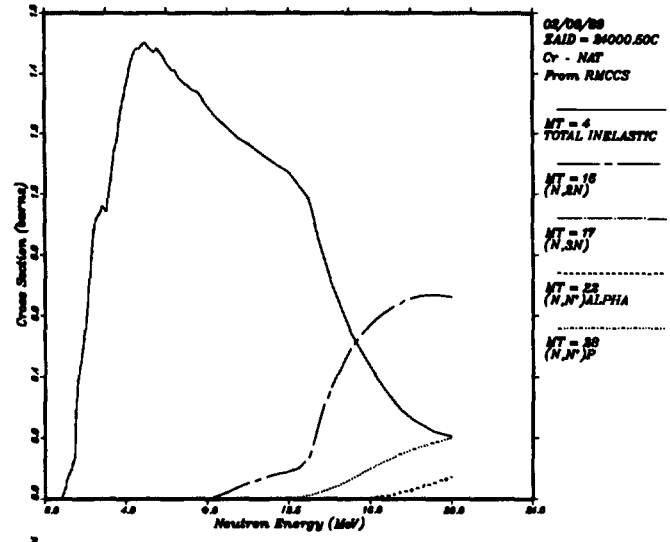


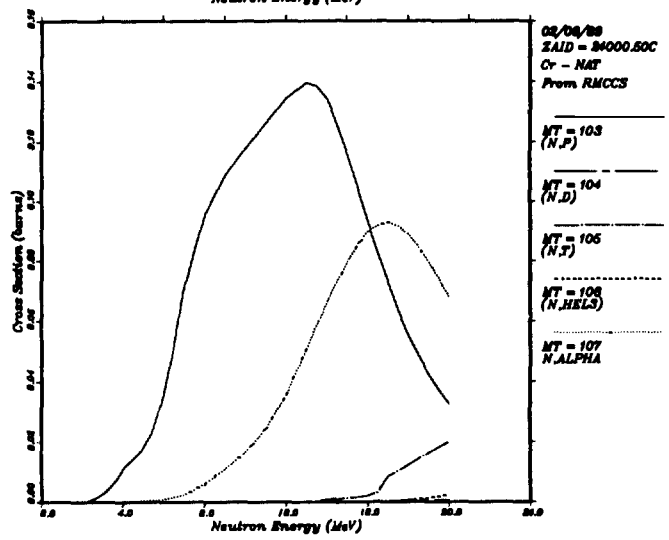
24000.50C

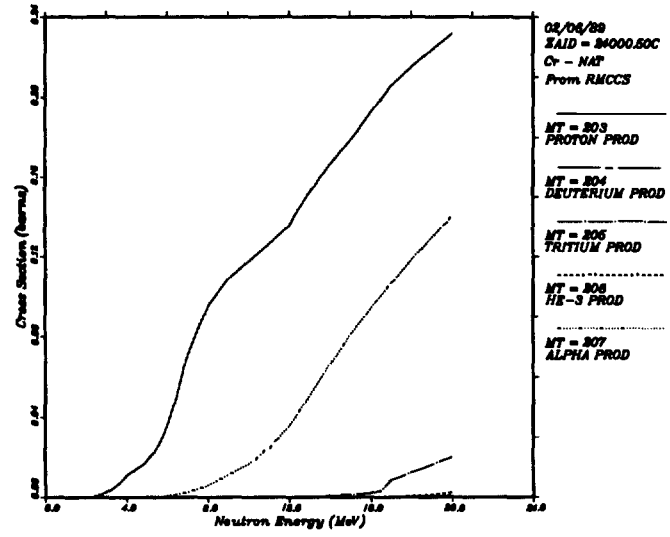

02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 301
HEATING
Neutron Energy (MeV)


02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'a)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 24000.50C
Cr - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Manganese – 55

ZAID=25055.50C

SOURCE: ENDF/B–V (MAT=1325, Tape 508)

REFERENCE: "Summary Documentation of the Neutron and Gamma Ray Production Cross Sections of Mn," by S. F. Mughabghab, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=25055.50C	NES=12525	T=300°K
ZAID=25055.51C	NES=1578	T=300°K

Discrete Reaction

ZAID=25055.50D	NES=263	T=300°K
ZAID=25055.51D	NES=263	T=300°K

Multigroup

ZAID=25055.50M	30–Group	T=300°K

Isotope Information

Abundance=100.00%

Density=7.20 gm/cm^3

Evaluation Information

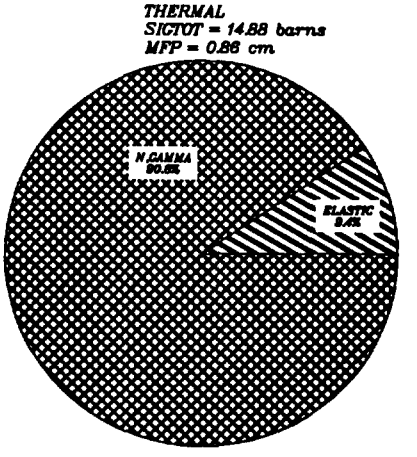
Photon-Production Data – Yes

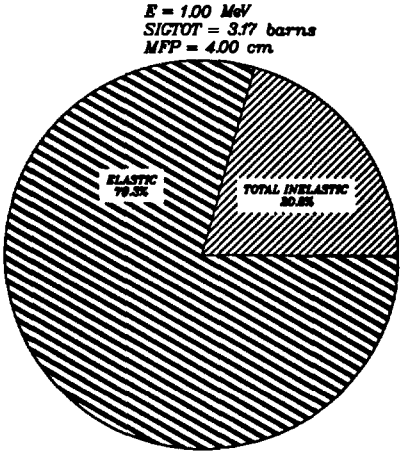
Heating Numbers – Local

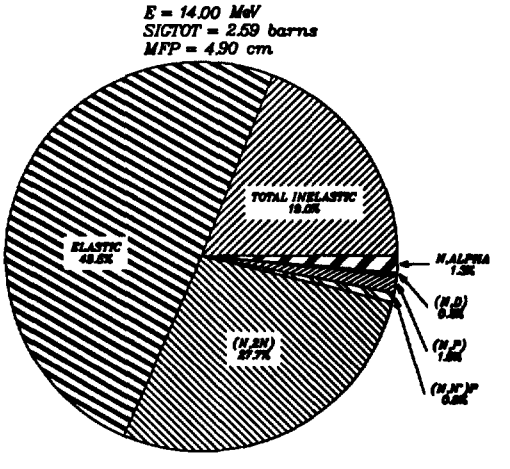
Energy Range – 10^{-11} to 20 MeV

Reaction Information

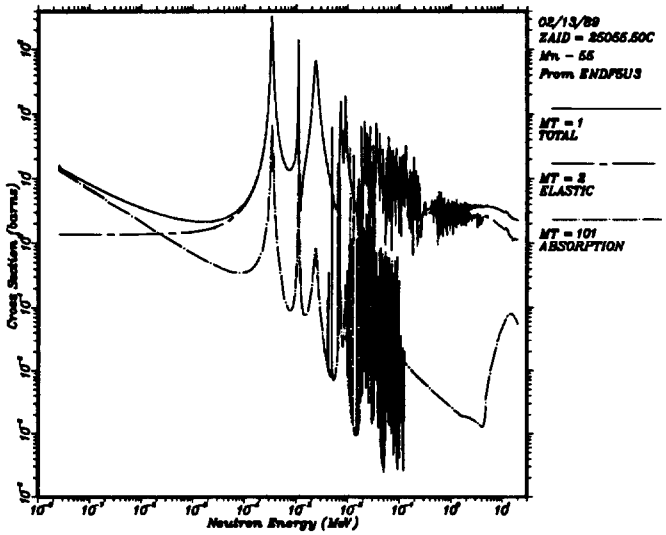
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0413+01	2.0000+01	-1.0225+01	-1.0225+01
(n,3n)	17	1.9520+01	2.0000+01	-1.9168+01	-1.9168+01
(n,n')α	22	1.1000+01	2.0000+01	-7.9306+00	-7.9306+00
(n,n')p	28	9.0000+00	2.0000+01	-8.0633+00	-8.0633+00
(n,n'1)	51	1.2811-01	2.0000+01	-1.2580-01	0.0000+00
(n,n'2)	52	1.0024+00	2.0000+01	-9.8430-01	0.0000+00
(n,n'3)	53	1.3158+00	2.0000+01	-1.2920+00	0.0000+00
(n,n'4)	54	1.5570+00	2.0000+01	-1.5289+00	0.0000+00
(n,n'5)	55	1.9200+00	2.0000+01	-1.8853+00	0.0000+00
(n,n'6)	56	2.2395+00	2.0000+01	-2.1990+00	0.0000+00
(n,n'7)	57	2.2955+00	2.0000+01	-2.2540+00	0.0000+00
(n,n'8)	58	2.3108+00	2.0000+01	-2.2690+00	0.0000+00
(n,n'9)	59	2.3536+00	2.0000+01	-2.3110+00	0.0000+00
(n,n'10)	60	2.4096+00	2.0000+01	-2.3660+00	0.0000+00
(n,n'11)	61	2.4420+00	2.0000+01	-2.3980+00	0.0000+00
(n,n'12)	62	2.4737+00	2.0000+01	-2.4290+00	0.0000+00
(n,n'c)	91	2.4737+00	2.0000+01	-2.4290+00	-2.4290+00
(n,γ)	102	1.0000-11	2.0000+01	7.2704+00	7.2704+00
(n,p)	103	1.8430+00	2.0000+01	-1.8098+00	-1.8098+00
(n,d)	104	5.9473+00	2.0000+01	-5.8388+00	-5.8388+00
(n,^{3}He)	106	1.3500+01	2.0000+01	-1.2380+01	-1.2380+01
(n,α)	107	6.3310-01	2.0000+01	-6.2160-01	-6.2160-01

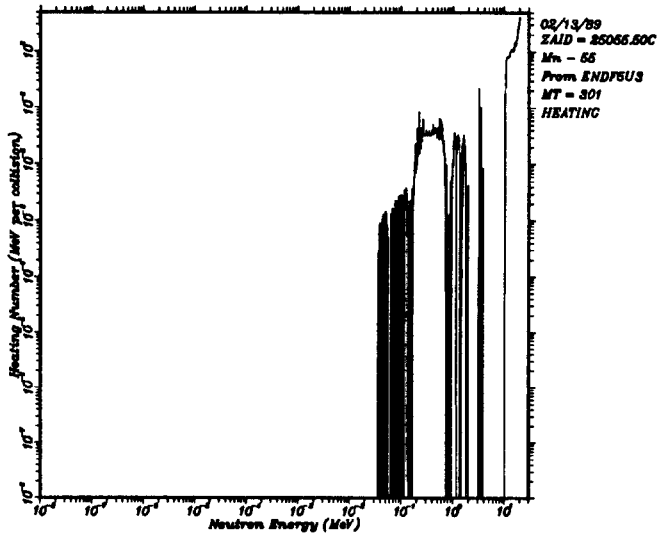


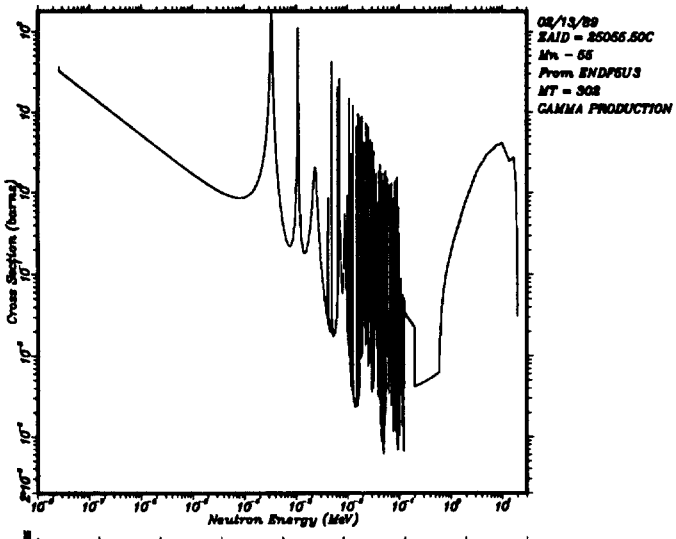


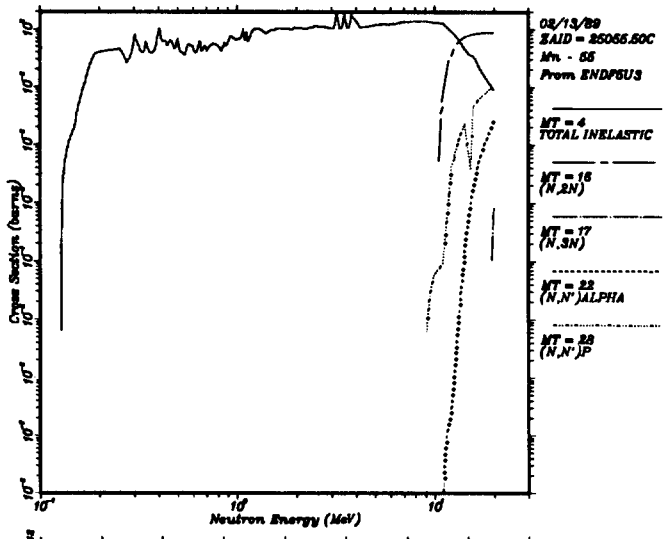


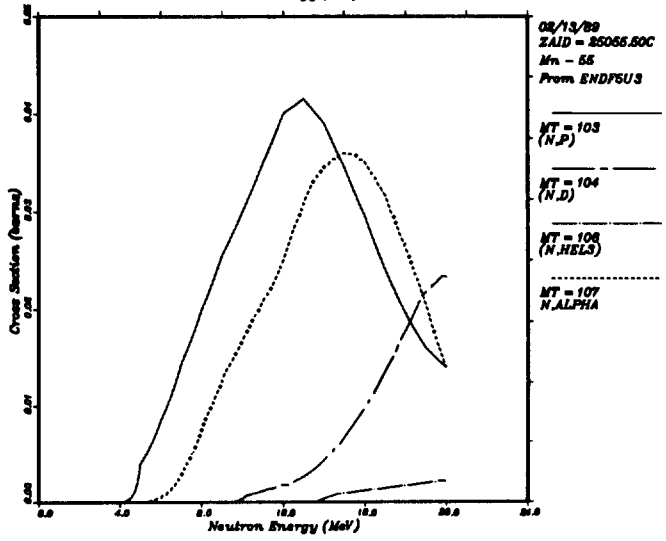
25055.50C

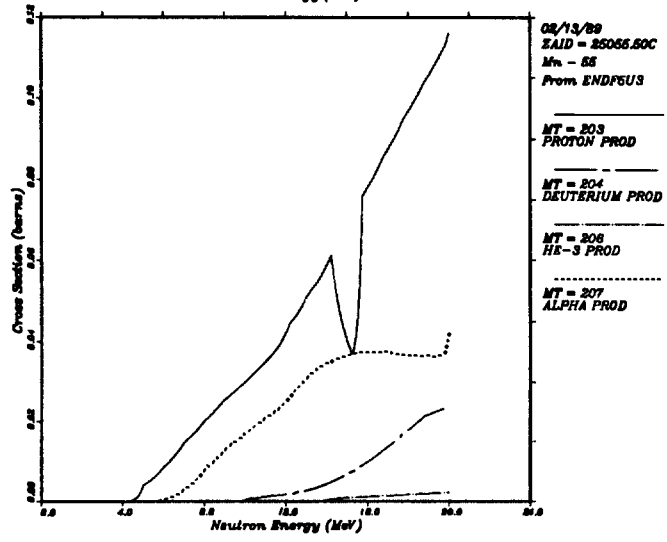

02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 106
(N,HEL3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 25055.50C
Mn - 55
From ENDF6U3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Iron

ZAID=26000.55C
SOURCE: Group T-2 (MAT=260, File /T2/PGY/FE5/LAFE)
REFERENCE: "Evaluated Neutron-Induced Cross Sections for ^{54,56}Fe to 40 MeV,"
by E. D. Arthur and P. G. Young
Los Alamos National Laboratory report LA-8626-MS (December 1980)

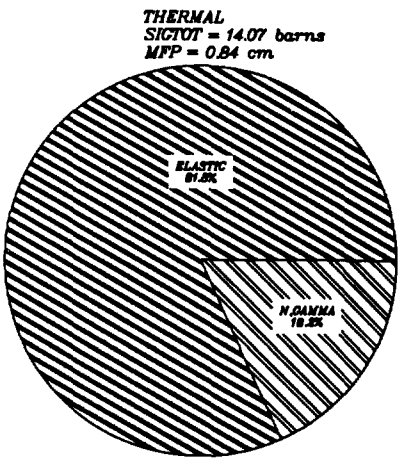
Data Availability
Continuous Energy
ZAID=26000.55C NES=6899 T=300°K
Discrete Reaction
ZAID=26000.55D NES=263 T=300°K
Multigroup
ZAID=26000.55M 30-Group T=300°K

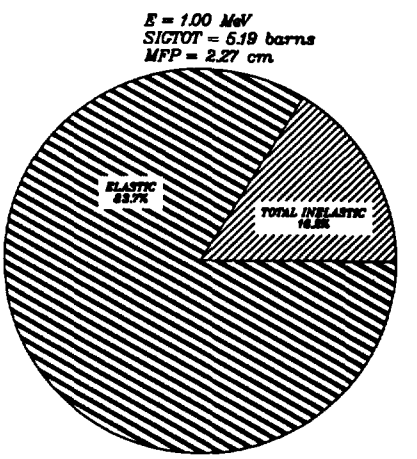
Isotope Information
Abundance=Natural
Density=7.86 gm/cm^3

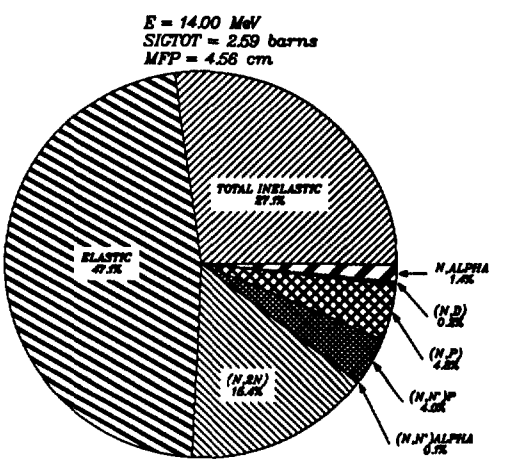
Evaluation Information
Photon-Production Data = Yes
Heating Numbers = Local
Energy Range = 10^{-11} to 20 MeV

Reaction Information

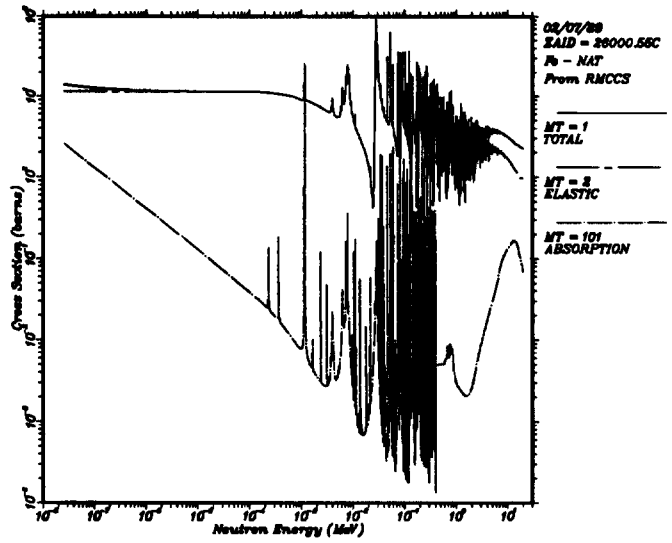
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1399+01	2.0000+01	-1.1197+01	-1.1197+01
(n,n')α	22	7.7515+00	2.0000+01	-7.6140+00	-7.6140+00
(n,n')p	28	9.0130+00	2.0000+01	-8.8530+00	-8.8530+00
(n,n'1)	51	8.6210-01	2.0000+01	-8.4680-01	0.0000+00
(n,n'2)	52	1.4342+00	2.0000+01	-1.4084+00	0.0000+00
(n,n'3)	53	2.1228+00	2.0000+01	-2.0851+00	0.0000+00
(n,n'4)	54	2.5944+00	2.0000+01	-2.5384+00	0.0000+00
(n,n'5)	55	2.6076+00	2.0000+01	-2.5613+00	0.0000+00
(n,n'6)	56	2.7056+00	2.0000+01	-2.6576+00	0.0000+00
(n,n'7)	57	3.0000+00	2.0000+01	-2.9417+00	0.0000+00
(n,n'8)	58	3.0135+00	2.0000+01	-2.9590+00	0.0000+00
(n,n'9)	59	3.0135+00	2.0000+01	-2.9600+00	0.0000+00
(n,n'10)	60	3.1764+00	2.0000+01	-3.1200+00	0.0000+00
(n,n'11)	61	3.1794+00	2.0000+01	-3.1230+00	0.0000+00
(n,n'12)	62	3.2233+00	2.0000+01	-3.1661+00	0.0000+00
(n,n'13)	63	3.3547+00	2.0000+01	-3.2952+00	0.0000+00
(n,n'14)	64	3.4054+00	2.0000+01	-3.3450+00	0.0000+00
(n,n'15)	65	3.4311+00	2.0000+01	-3.3702+00	0.0000+00
(n,n'16)	66	3.4492+00	2.0000+01	-3.3880+00	0.0000+00
(n,n'17)	67	3.5072+00	2.0000+01	-3.4450+00	0.0000+00
(n,n'18)	68	3.5123+00	2.0000+01	-3.4500+00	0.0000+00
(n,n'19)	69	3.6670+00	2.0000+01	-3.6019+00	0.0000+00
(n,n'20)	70	3.6729+00	2.0000+01	-3.6070+00	0.0000+00
(n,n'21)	71	3.8300+00	2.0000+01	-3.7558+00	0.0000+00
(n,n'22)	72	3.9012+00	2.0000+01	-3.8320+00	0.0000+00
(n,n'23)	73	3.9262+00	2.0000+01	-3.8565+00	0.0000+00
(n,n'24)	74	4.1221+00	2.0000+01	-4.0490+00	0.0000+00
(n,n'25)	75	4.1744+00	2.0000+01	-4.1003+00	0.0000+00
(n,n'26)	76	4.1944+00	2.0000+01	-4.1200+00	0.0000+00
(n,n'27)	77	4.3756+00	2.0000+01	-4.2980+00	0.0000+00
(n,n'28)	78	4.3797+00	2.0000+01	-4.3020+00	0.0000+00
(n,n'29)	79	4.4744+00	2.0000+01	-4.3950+00	0.0000+00
(n,n'30)	80	4.4805+00	2.0000+01	-4.4010+00	0.0000+00
(n,n'31)	81	4.5385+00	2.0000+01	-4.4580+00	0.0000+00
(n,n'32)	82	4.5915+00	2.0000+01	-4.5100+00	0.0000+00
(n,n'33)	83	4.6215+00	2.0000+01	-4.5395+00	0.0000+00
(n,n'34)	84	4.6363+00	2.0000+01	-4.5540+00	0.0000+00
(n,n'35)	85	4.6953+00	2.0000+01	-4.6120+00	0.0000+00
(n,n'36)	86	4.7442+00	2.0000+01	-4.6600+00	0.0000+00
(n,n'37)	87	4.7693+00	2.0000+01	-4.6847+00	0.0000+00
(n,n'38)	88	4.8153+00	2.0000+01	-4.7299+00	0.0000+00
(n,n'39)	89	4.8252+00	2.0000+01	-4.7396+00	0.0000+00
(n,n'40)	90	4.9661+00	2.0000+01	-4.8780+00	0.0000+00
(n,n'c)	91	4.9661+00	2.0000+01	-4.8780+00	-4.8780+00
(n,γ)	102	1.0000-11	2.0000+01	7.7500+00	7.7500+00
(n,p)	103	1.0000-11	2.0000+01	8.5300-02	8.5300-02
(n,d)	104	8.1028+00	2.0000+01	-7.9590+00	-7.9590+00
(n,t)	105	1.2144+01	2.0000+01	-1.1928+01	-1.1928+01
(n,^{3}He)	106	1.0723+01	2.0000+01	-1.0533+01	-1.0533+01
(n,α)	107	1.0000-11	2.0000+01	3.2610-01	3.2610-01

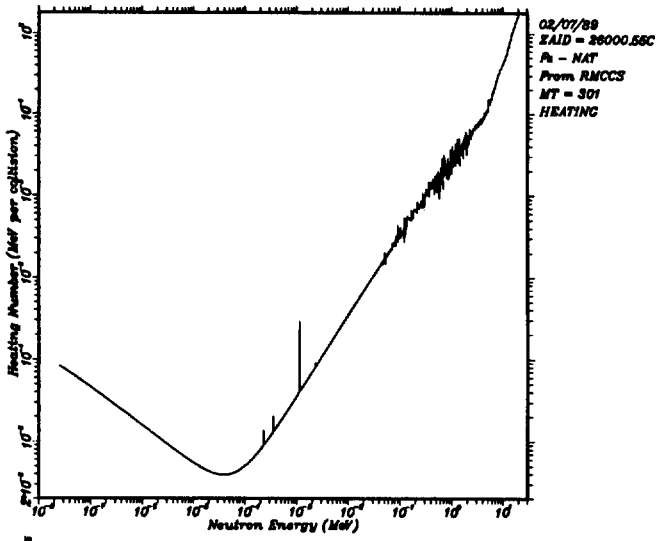


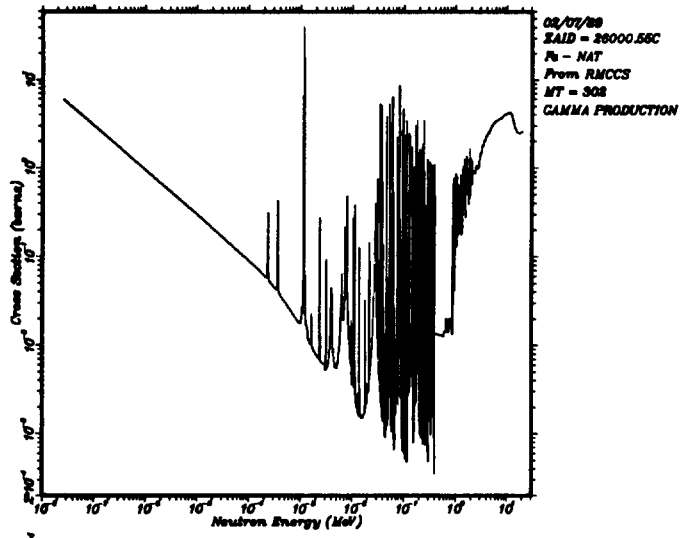


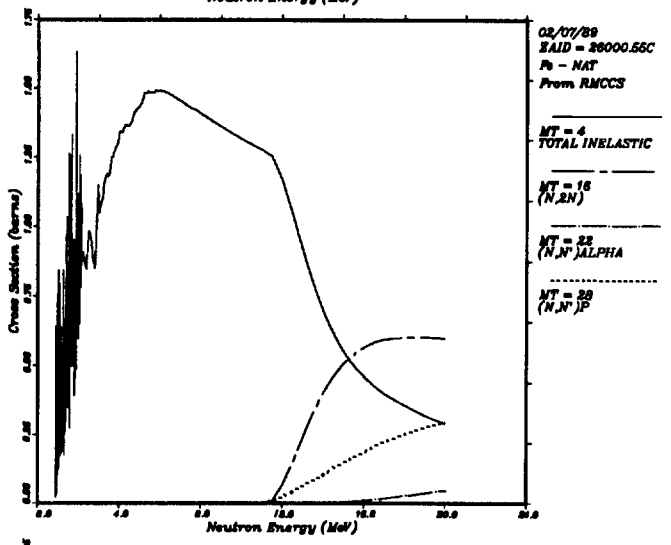


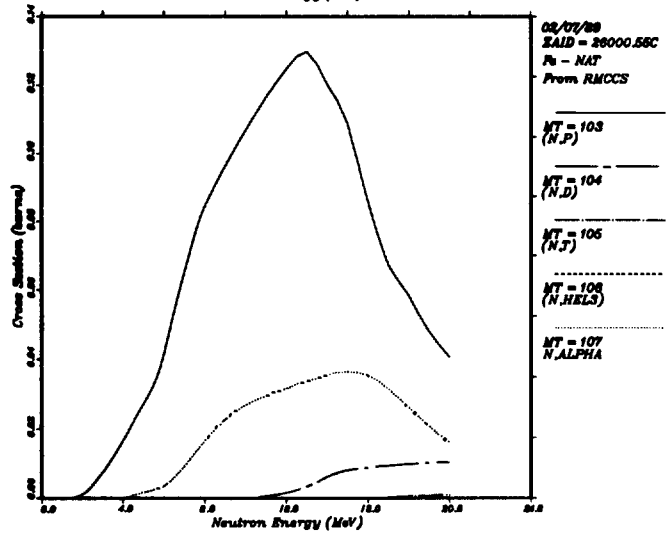
26000.55C

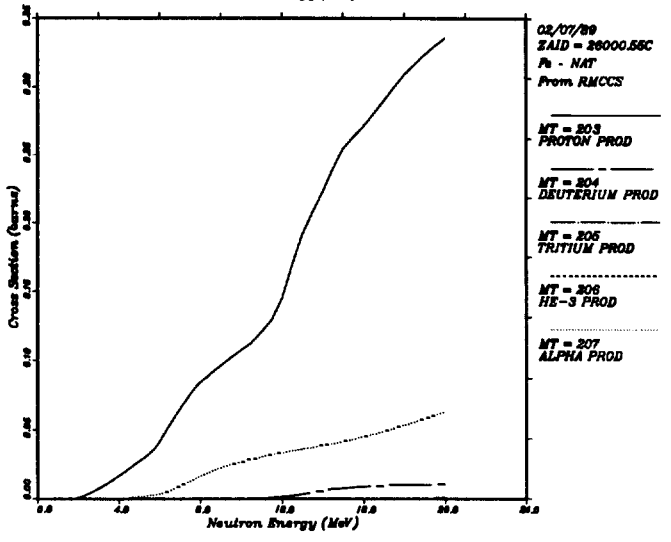

02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

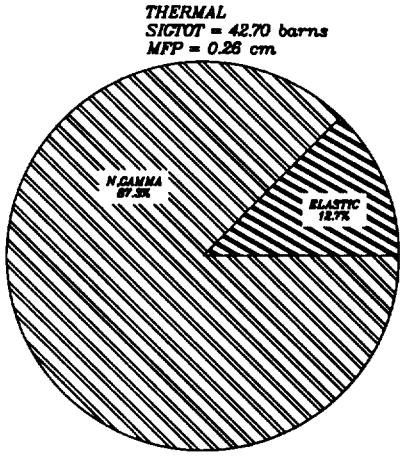

02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)

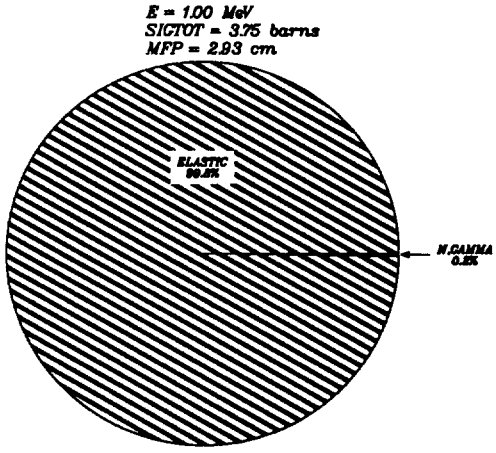

02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HELS)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

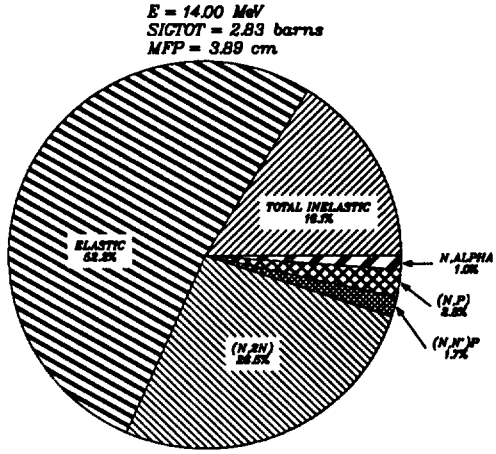

02/07/89
ZAID = 26000.55C
Fe - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Cobalt – 59

ZAID=27059.50C
SOURCE: ENDF/B-V (MAT=1327, Neutron Data from Tape 501;
Photon Production Data from Tape 553 after correction)
REFERENCE: "Summary Documentation for ^{59}Co,"
by S. F. Mughabghab, contained in ENDF-201







Data Availability

Continuous Energy

ZAID=27059.50C	NES=14502	T=300°K
ZAID=27059.51C	NES=1928	T=300°K

Discrete Reaction

ZAID=27059.50D	NES=263	T=300°K
ZAID=27059.51D	NES=263	T=300°K

Multigroup

ZAID=27059.50M	30-Group	T=300°K

Isotope Information

Abundance=100.00%
Density=8.90 gm/cm^3

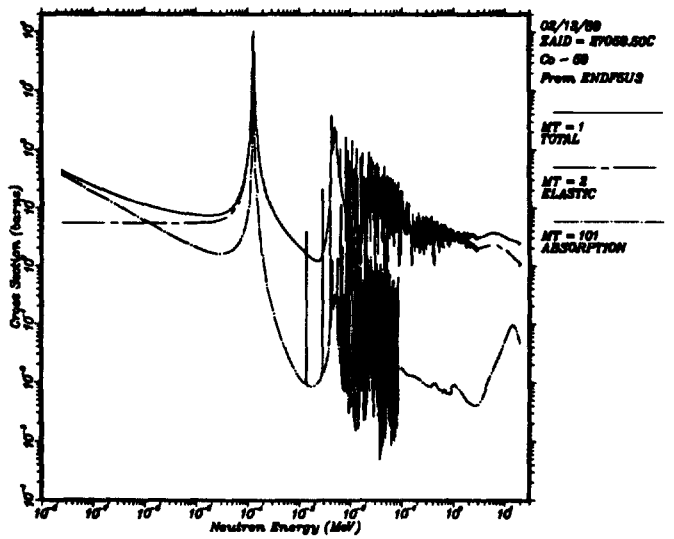
Evaluation Information

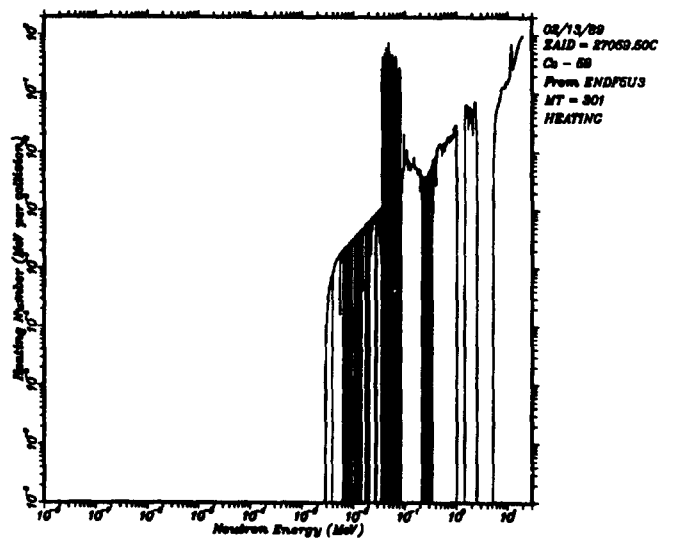
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

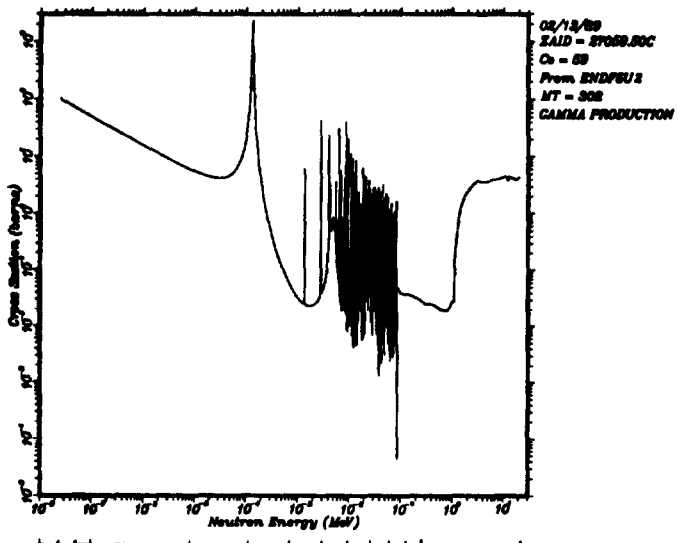
Reaction Information

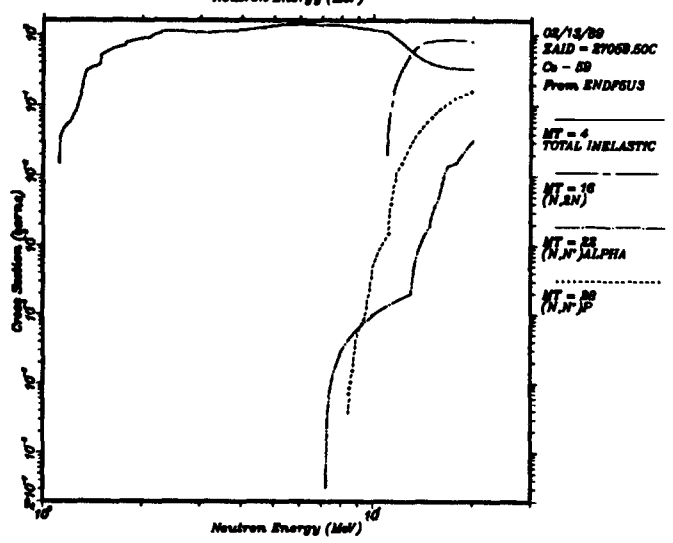
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0640+01	2.0000+01	-1.0461+01	-1.0461+01
(n,n')α	22	7.1910+00	2.0000+01	-7.0700+00	-7.0700+00
(n,n')p	28	8.4000+00	2.0000+01	-7.5000+00	-7.5000+00
(n,n'1)	51	1.1180+00	2.0000+01	-1.0990+00	0.0000+00
(n,n'2)	52	1.2104+00	2.0000+01	-1.1900+00	0.0000+00
(n,n'3)	53	1.3131+00	2.0000+01	-1.2910+00	0.0000+00
(n,n'4)	54	1.4586+00	2.0000+01	-1.4340+00	0.0000+00
(n,n'5)	55	1.4840+00	2.0000+01	-1.4590+00	0.0000+00
(n,n'6)	56	1.7744+00	2.0000+01	-1.7445+00	0.0000+00
(n,n'7)	57	2.0998+00	2.0000+01	-2.0645+00	0.0000+00
(n,n'8)	58	2.1233+00	2.0000+01	-2.0876+00	0.0000+00
(n,n'9)	59	2.1899+00	2.0000+01	-2.1530+00	0.0000+00
(n,n'10)	60	2.2214+00	2.0000+01	-2.1840+00	0.0000+00
(n,n'11)	61	2.2438+00	2.0000+01	-2.2060+00	0.0000+00
(n,n'c)	91	2.4400+00	2.0000+01	-2.3989+00	-2.3989+00
(n,γ)	102	1.0000-11	2.0000+01	7.4900+00	7.4900+00
(n,p)	103	7.9640-01	2.0000+01	-7.8300-01	-7.8300-01
(n,d)	104	5.2331+00	2.0000+01	-5.1450+00	-5.1450+00
(n,t)	105	9.0828+00	2.0000+01	-8.9300+00	-8.9300+00
(n,^{3}He)	106	1.1670+01	2.0000+01	-1.1470+01	-1.1470+01
(n,α)	107	5.5000+00	2.0000+01	3.1780-01	3.1780-01

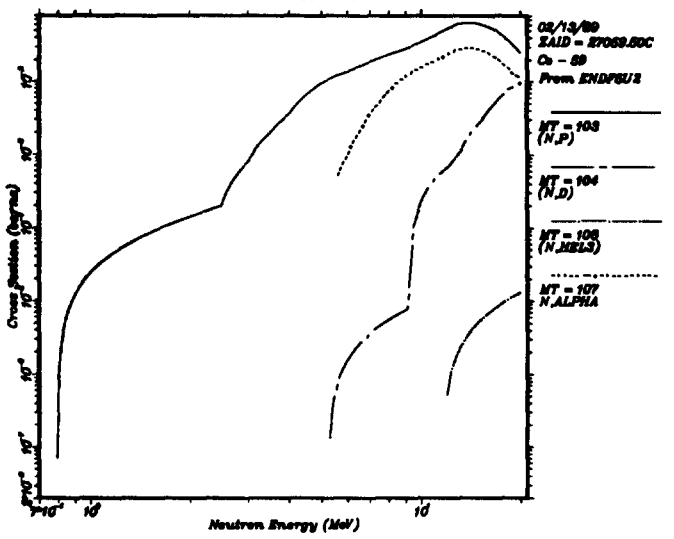
27059.50C

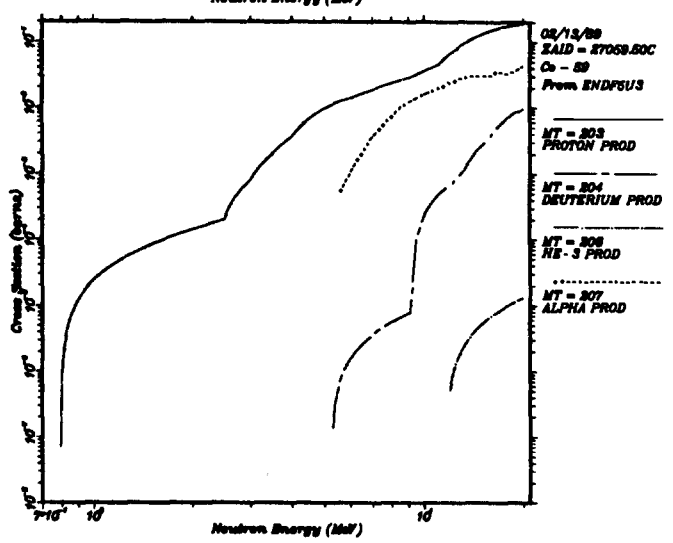

02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,3HE5)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/13/89
ZAID = 27059.50C
Co - 59
From ENDF5U3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Nickel

ZAID=28000.50C
SOURCE: ENDF/B-V (MAT=1328, Tape 512)
REFERENCE: "Summary Documentation for Ni,"
by M. Divadeenam, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=28000.50C	NES=4465	T=300°K
ZAID=28000.51C	NES=4465	T=300°K

Discrete Reaction

ZAID=28000.50D	NES=263	T=300°K

Multigroup

ZAID=28000.50M	30-Group	T=300°K

Isotope Information

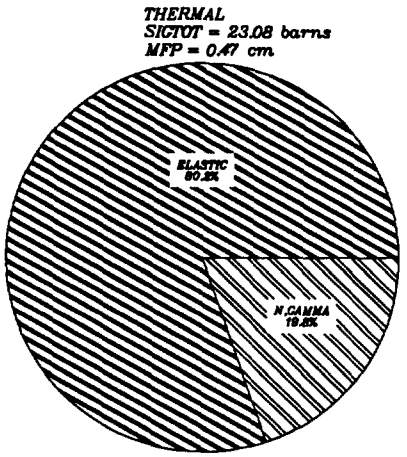
Abundance=Natural
Density=8.90 gm/cm^3

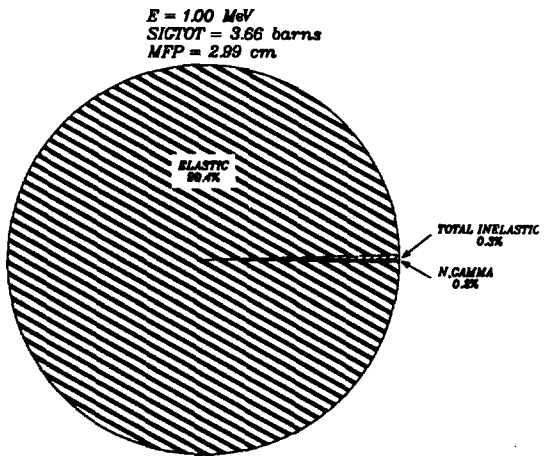
Evaluation Information

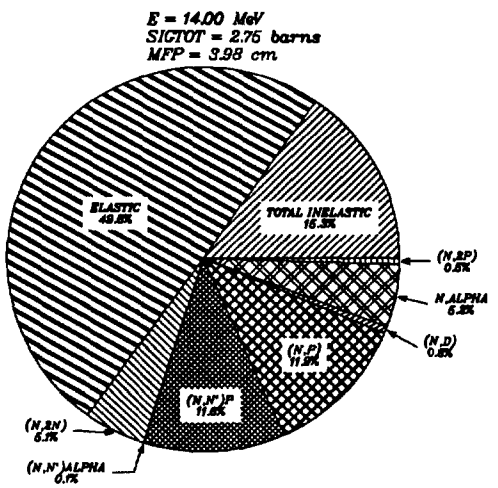
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

Reaction Information

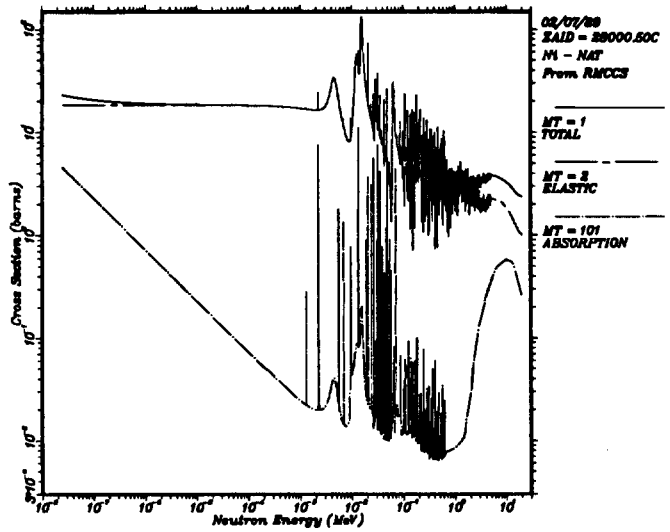
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.9539+00	2.0000+01	-7.8195+00	-7.8195+00
(n,n')α	22	1.0500+01	2.0000+01	-6.2948+00	-6.2948+00
(n,n')p	28	9.0000+00	2.0000+01	-8.1772+00	-8.1772+00
(n,n'1)	51	7.1203-02	2.0000+01	-7.0000-02	0.0000+00
(n,n'2)	52	2.8483-01	2.0000+01	-2.8000-01	0.0000+00
(n,n'3)	53	6.7134-01	2.0000+01	-6.6000-01	0.0000+00
(n,n'4)	54	9.2564-01	2.0000+01	-9.1000-01	0.0000+00
(n,n'5)	55	1.1921+00	2.0000+01	-1.1720+00	0.0000+00
(n,n'6)	56	1.3549+00	2.0000+01	-1.3320+00	0.0000+00
(n,n'7)	57	1.3712+00	2.0000+01	-1.3480+00	0.0000+00
(n,n'8)	58	1.4791+00	2.0000+01	-1.4540+00	0.0000+00
(n,n'9)	59	2.0822+00	2.0000+01	-2.0470+00	0.0000+00
(n,n'10)	60	2.1951+00	2.0000+01	-2.1580+00	0.0000+00
(n,n'11)	61	2.3110+00	2.0000+01	-2.2720+00	0.0000+00
(n,n'12)	62	2.3253+00	2.0000+01	-2.2860+00	0.0000+00
(n,n'13)	63	2.3324+00	2.0000+01	-2.2930+00	0.0000+00
(n,n'14)	64	2.3761+00	2.0000+01	-2.3360+00	0.0000+00
(n,n'15)	65	2.5015+00	2.0000+01	-2.4590+00	0.0000+00
(n,n'16)	66	2.5491+00	2.0000+01	-2.5060+00	0.0000+00
(n,n'17)	67	2.6499+00	2.0000+01	-2.6050+00	0.0000+00
(n,n'18)	68	2.6700+00	2.0000+01	-2.6250+00	0.0000+00
(n,n'19)	69	2.8229+00	2.0000+01	-2.7750+00	0.0000+00
(n,n'20)	70	2.9122+00	2.0000+01	-2.8630+00	0.0000+00
(n,n'21)	71	2.9521+00	2.0000+01	-2.9020+00	0.0000+00
(n,n'22)	72	2.9928+00	2.0000+01	-2.9420+00	0.0000+00
(n,n'23)	73	3.0904+00	2.0000+01	-3.0380+00	0.0000+00
(n,n'24)	74	3.1774+00	2.0000+01	-3.1230+00	0.0000+00
(n,n'25)	75	3.3201+00	2.0000+01	-3.2640+00	0.0000+00
(n,n'26)	76	3.4790+00	2.0000+01	-3.4200+00	0.0000+00
(n,n'c)	91	3.0000+00	2.0000+01	-2.9493+00	-2.9493+00
(n,γ)	102	1.0000-11	2.0000+01	8.6000+00	8.6000+00
(n,p)	103	1.0000-11	2.0000+01	3.9470-01	3.9470-01
(n,d)	104	6.0562+00	2.0000+01	-5.9526+00	-5.9526+00
(n,α)	107	4.4229-01	2.0000+01	3.5749+00	3.5749+00
(n,2p)	111	6.6711+00	2.0000+01	-6.5579+00	-6.5579+00

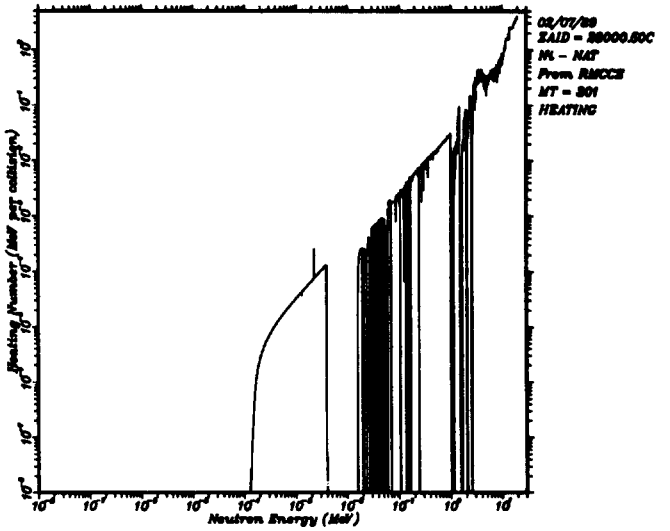


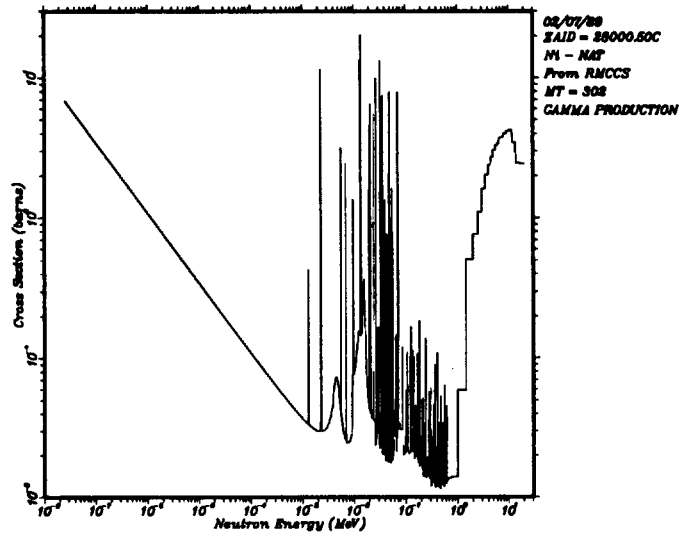


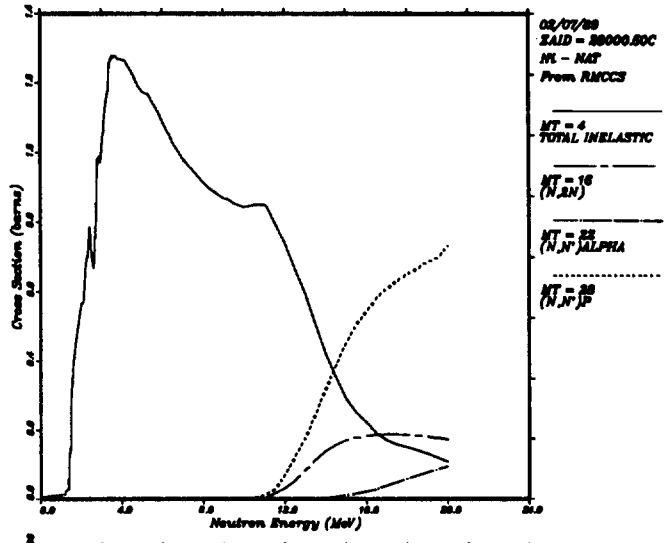


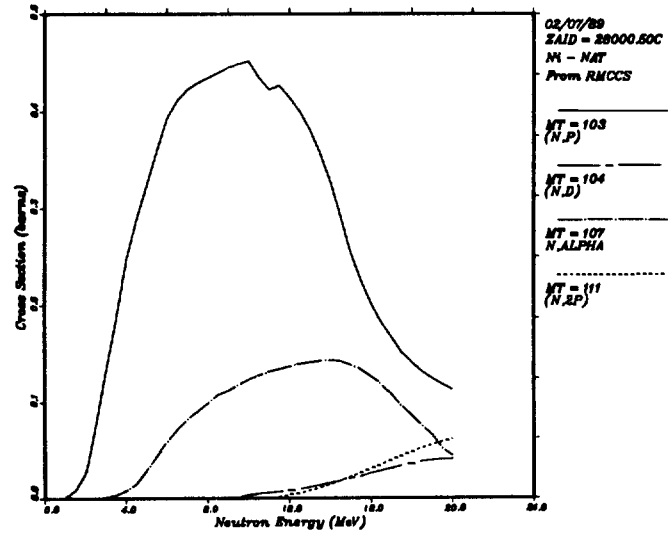
28000.50C

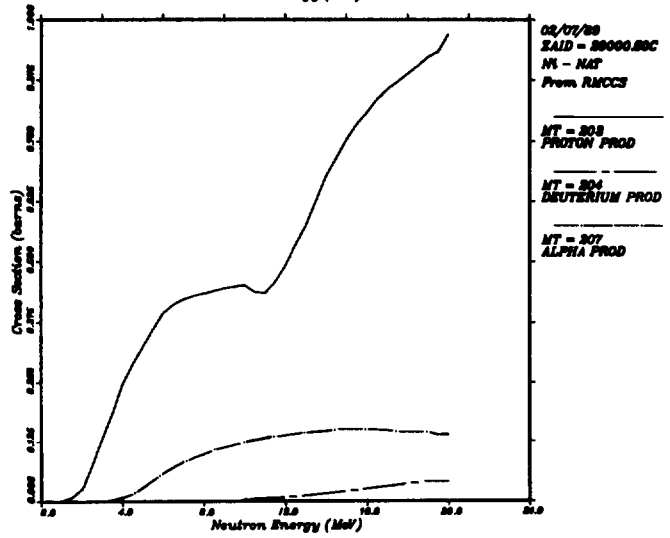

02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'A)ALPHA
MT = 28
(N,N'P)
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
MT = 111
(N,2P)
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 28000.50C
Mt - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Nickel – 58

ZAID=28058.35C

SOURCE: ENDL-85 (ZA=28058 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=28058.35C NES=4806 T=0°K

Isotope Information

Abundance=68.27%

Density=8.78856 gm/cm^3

Evaluation Information

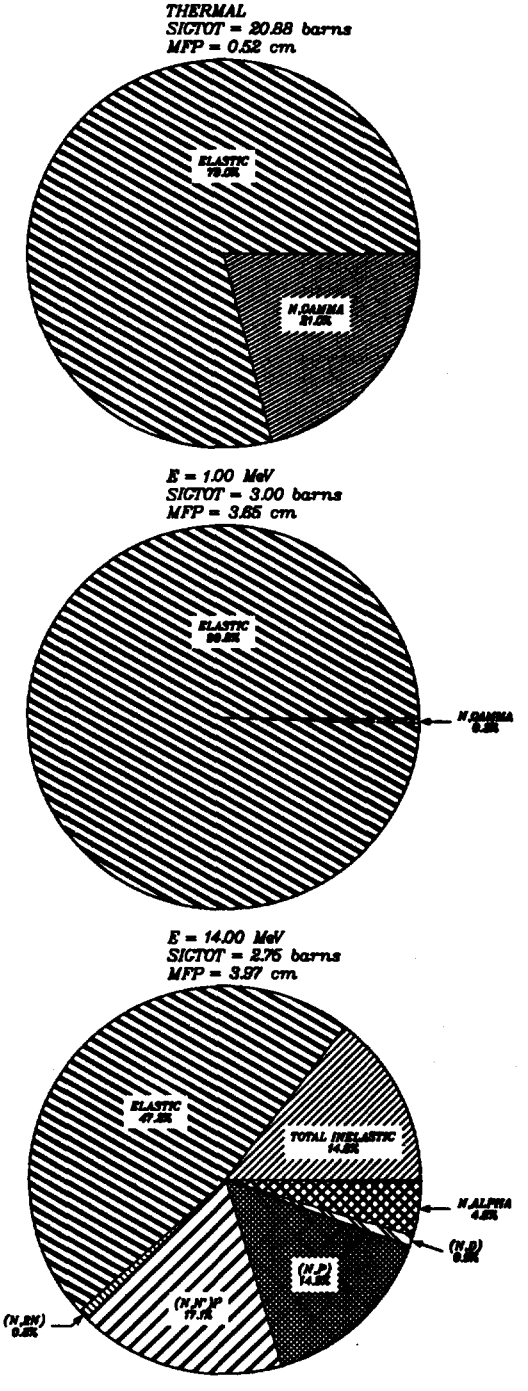
Photon-Production Data – Yes

Heating Numbers – Local

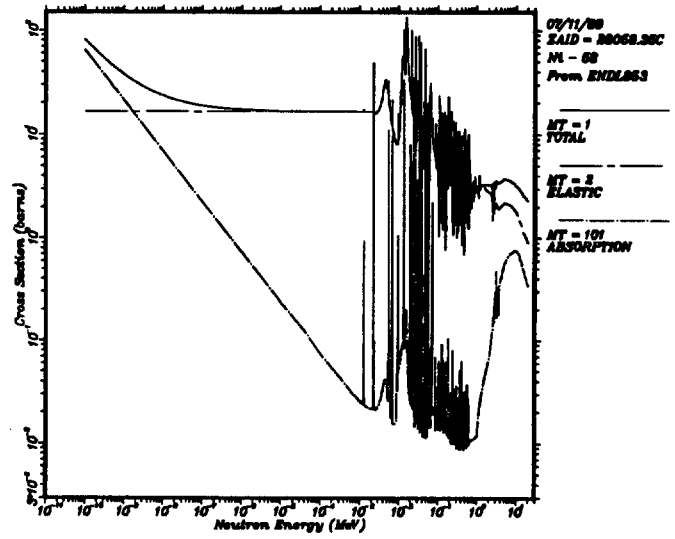
Energy Range – 10^{-11} to 20 MeV

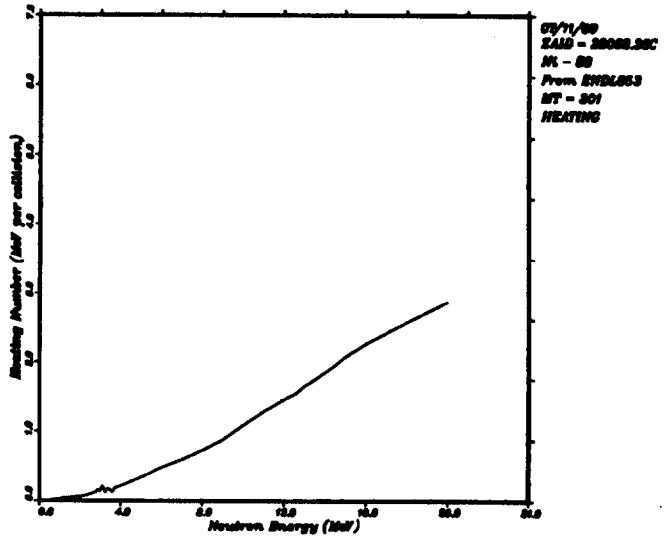
Reaction Information

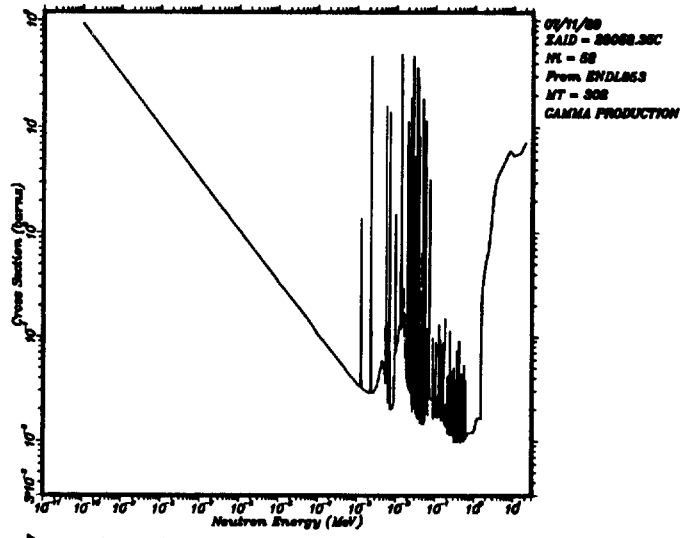
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.3530+00	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	1.2392+01	2.0000+01	-1.2180+01	-1.2180+01
(n,n')p	28	8.3224+00	2.0000+01	-8.1800+00	-8.1800+00
(n,p)	103	4.9689-01	2.0000+01	4.0000-01	4.0000-01
(n,d)	104	6.0536+00	2.0000+01	-5.9500+00	-5.9500+00
(n,α)	107	1.0000-10	2.0000+01	2.8900+00	2.8900+00
(n,γ)	102	1.0000-10	2.0000+01	8.5200+00	8.5200+00

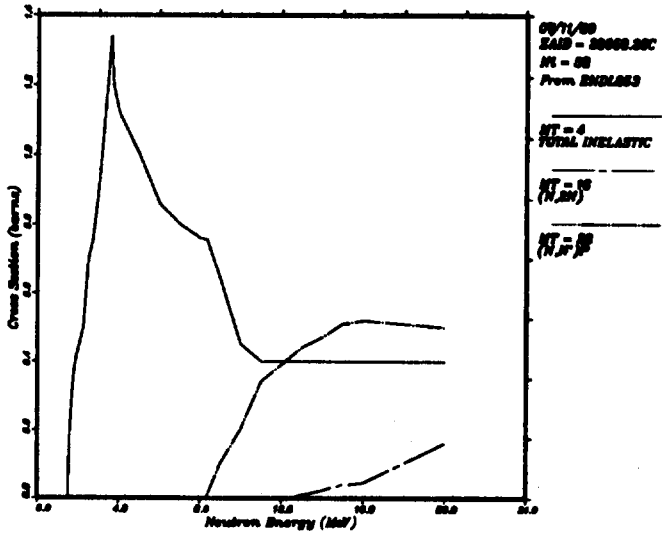


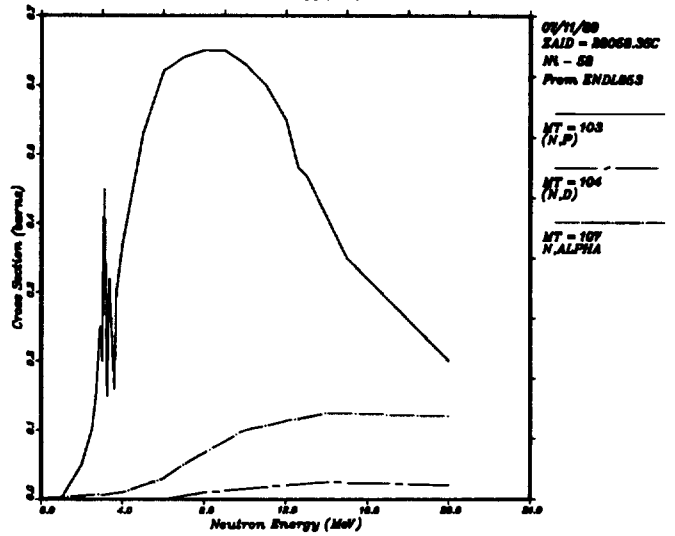
28058.35C


MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Neutron Energy (MeV)


HEATING
Neutron Energy (MeV)


CAMMA PRODUCTION
Neutron Energy (MeV)


TOTAL INELASTIC
Neutron Energy (MeV)


MT = 103
(N,P)
MT = 104
(N,D)
MT = 107
N,ALPHA
Neutron Energy (MeV)

Copper

ZAID=29000.50C
SOURCE: ENDF/B–V (MAT=1329, Tape 508)
REFERENCE: "Summary Documentation Copper Evaluation ENDF/B–V MAT 1329," by C. Y. Fu, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=29000.50C	NES=3435	T=300°K
ZAID=29000.51C	NES=3388	T=300°K

Discrete Reaction

ZAID=29000.50D	NES=263	T=300°K

Multigroup

ZAID=29000.50M	30–Group	T=300°K

Isotope Information

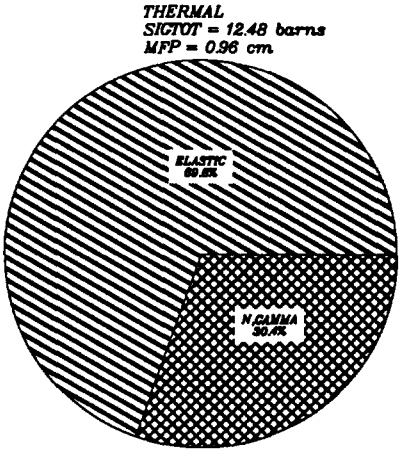
Abundance=Natural
Density=8.92 gm/cm^3

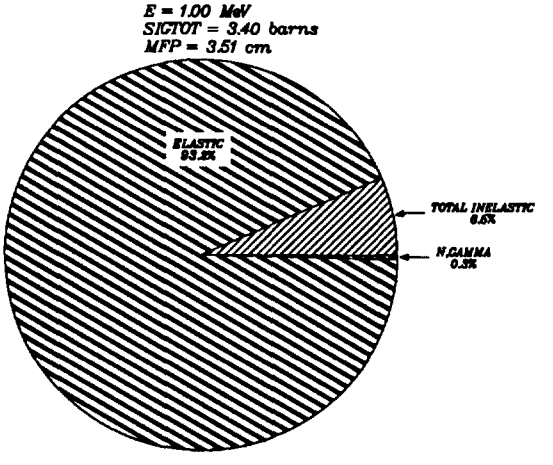
Evaluation Information

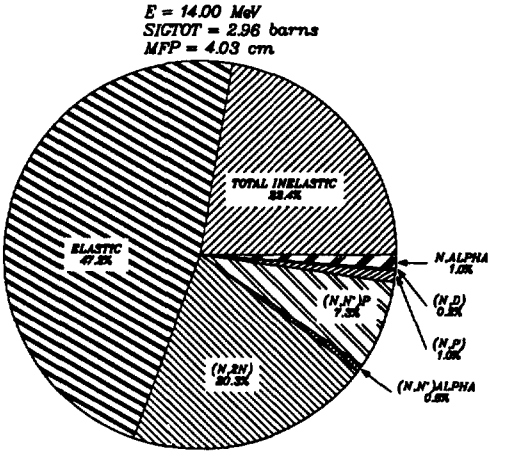
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

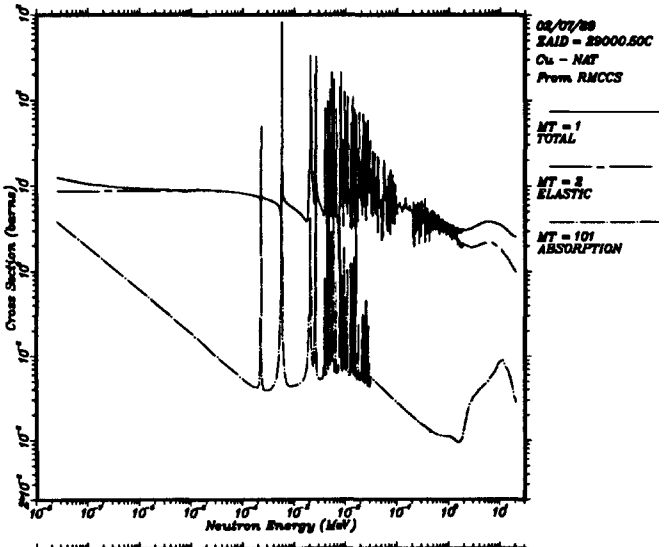
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0060+01	2.0000+01	-9.9000+00	-9.9000+00
(n,3n)	17	1.8100+01	2.0000+01	-1.7810+01	-1.7810+01
(n,n')α	22	5.8687+00	2.0000+01	-5.7770+00	-5.7770+00
(n,n')p	28	6.2171+00	2.0000+01	-6.1200+00	-6.1200+00
(n,n'1)	51	6.8070-01	2.0000+01	-6.7000-01	0.0000+00
(n,n'2)	52	7.8212-01	2.0000+01	-7.7000-01	0.0000+00
(n,n'3)	53	9.7730-01	2.0000+01	-9.6200-01	0.0000+00
(n,n'4)	54	1.1325+00	2.0000+01	-1.1150+00	0.0000+00
(n,n'5)	55	1.3471+00	2.0000+01	-1.3260+00	0.0000+00
(n,n'6)	56	1.4345+00	2.0000+01	-1.4120+00	0.0000+00
(n,n'7)	57	1.5053+00	2.0000+01	-1.4820+00	0.0000+00
(n,n'8)	58	1.5716+00	2.0000+01	-1.5470+00	0.0000+00
(n,n'9)	59	1.6486+00	2.0000+01	-1.6230+00	0.0000+00
(n,n'10)	60	1.7521+00	2.0000+01	-1.7250+00	0.0000+00
(n,n'11)	61	1.8947+00	2.0000+01	-1.8650+00	0.0000+00
(n,n'c)	91	2.0000+00	2.0000+01	-1.9690+00	-1.9690+00
(n,γ)	102	1.0000-11	2.0000+01	7.7500+00	7.7500+00
(n,p)	103	1.0000-11	2.0000+01	7.0860-01	7.0860-01
(n,d)	104	4.0000+00	2.0000+01	-3.9370+00	-3.9370+00
(n,^{3}He)	106	9.7000+00	2.0000+01	-9.5480+00	-9.5480+00
(n,α)	107	1.0000-11	2.0000+01	1.6930-02	1.6930-02

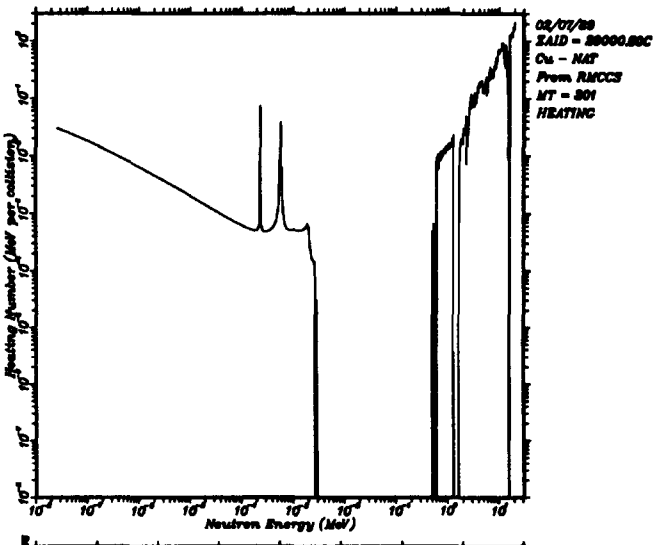


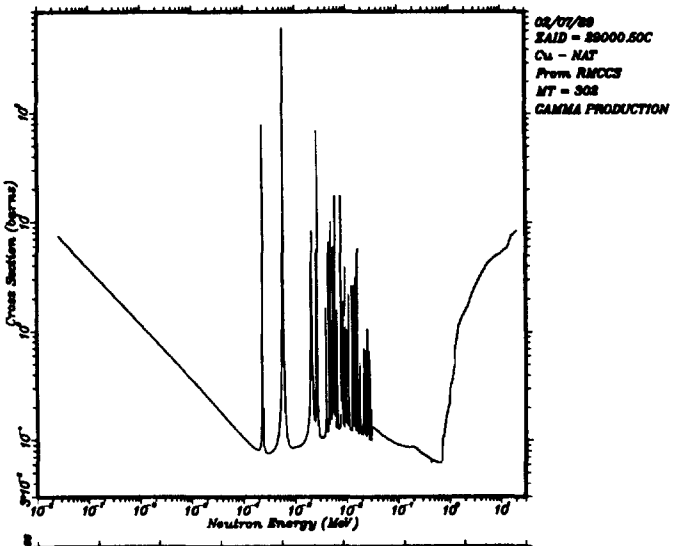


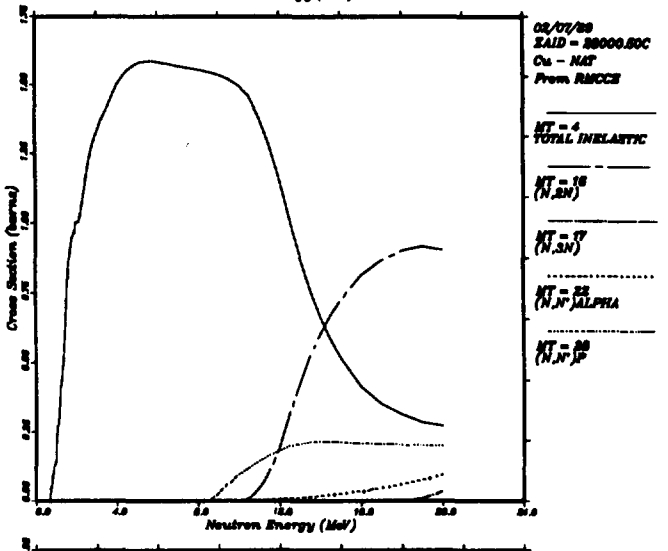


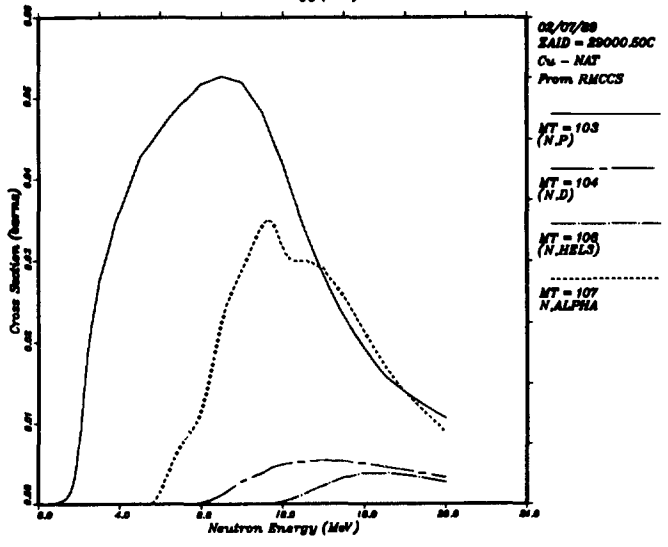
29000.50C

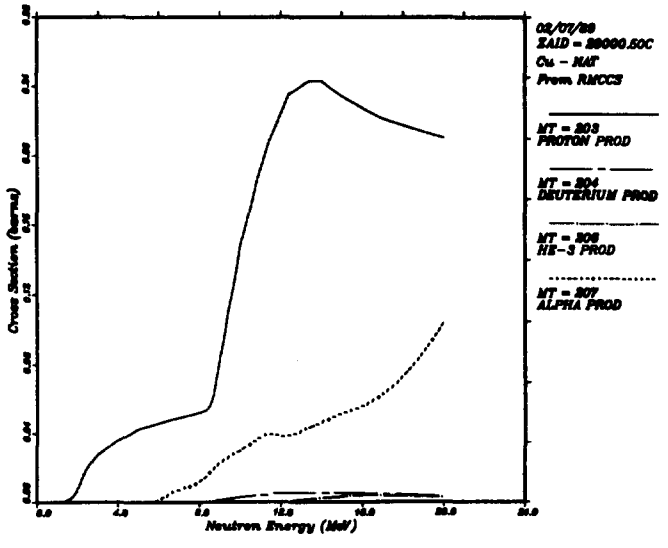

02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 103
(N,P)
MT = 104
(N,D)
MT = 106
(N,HELS)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 29000.50C
Cu - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gallium

ZAID=31000.50C
SOURCE: ENDF/B–V (MAT=1358, Tape 517)
REFERENCE: "Summary Documentation for Ga,"
by P. G. Young and R. J. Howerton
contained in ENDF–201 Supplement I

Data Availability

Continuous Energy

ZAID=31000.50C	NES=511	T=300°K
ZAID=31000.51C	NES=511	T=300°K

Discrete Reaction

ZAID=31000.50D	NES=263	T=300°K

Multigroup

ZAID=31000.50M	30–Group	T=300°K

Isotope Information

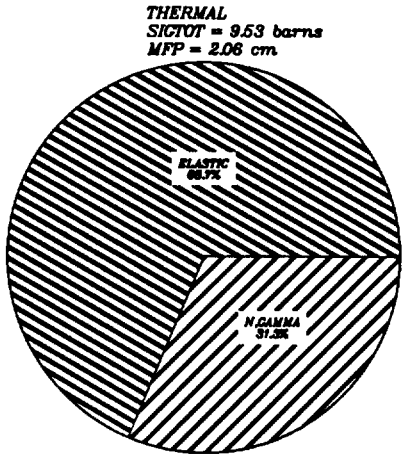
Abundance=Natural
Density=5.904 gm/cm^3

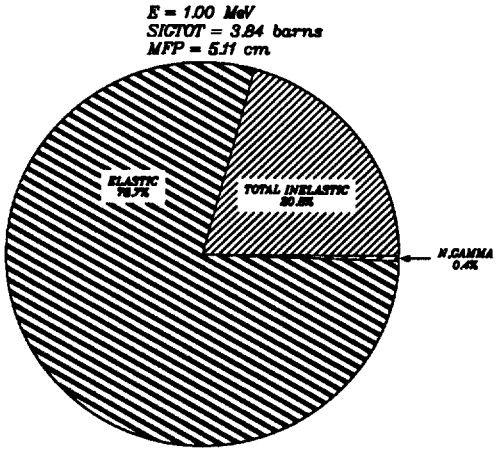
Evaluation Information

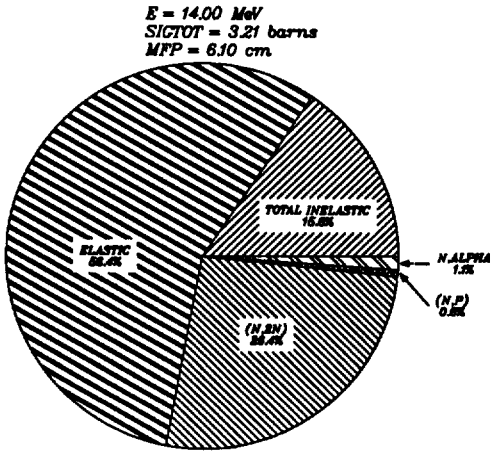
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

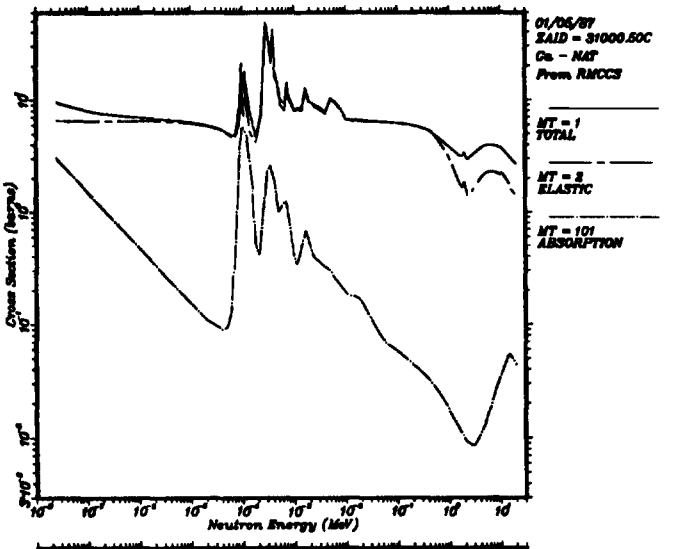
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	9.4427+00	2.0000+01	-9.3080+00	-9.3080+00
(n,n'c)	91	3.4290-01	2.0000+01	-3.3800-01	-3.3800-01
(n,γ)	102	1.0000-11	2.0000+01	7.2000+00	7.2000+00
(n,p)	103	5.0000+00	2.0000+01	-1.0650-01	-1.0650-01
(n,α)	107	1.8400+00	2.0000+01	2.5800+00	2.5800+00

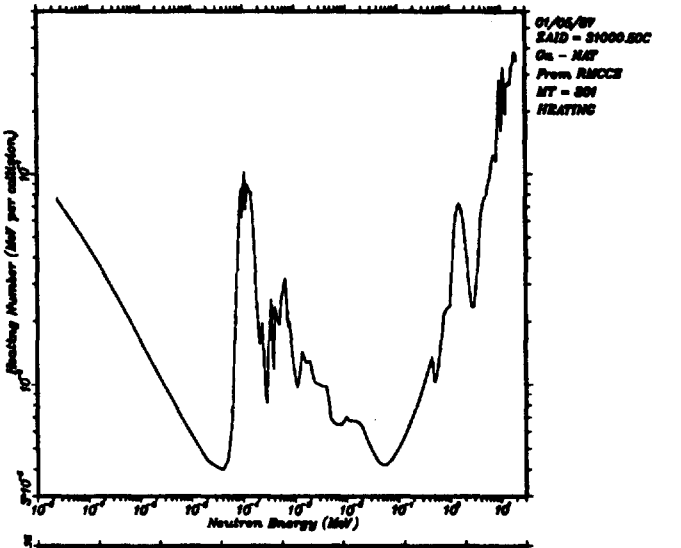


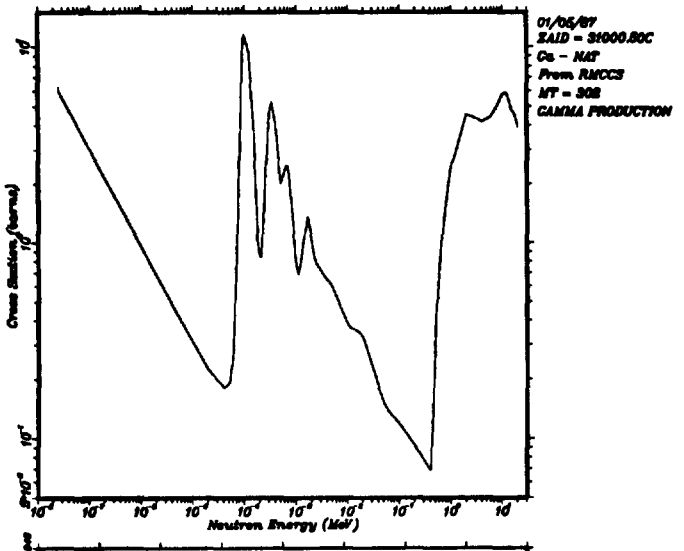


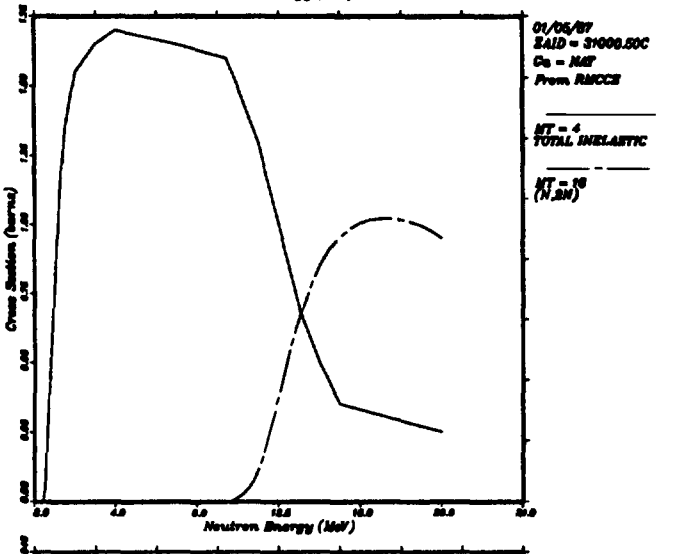


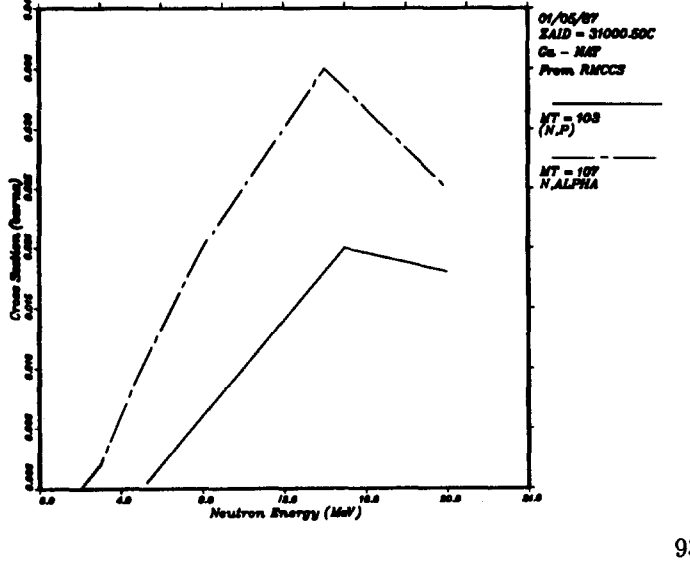
31000.50C

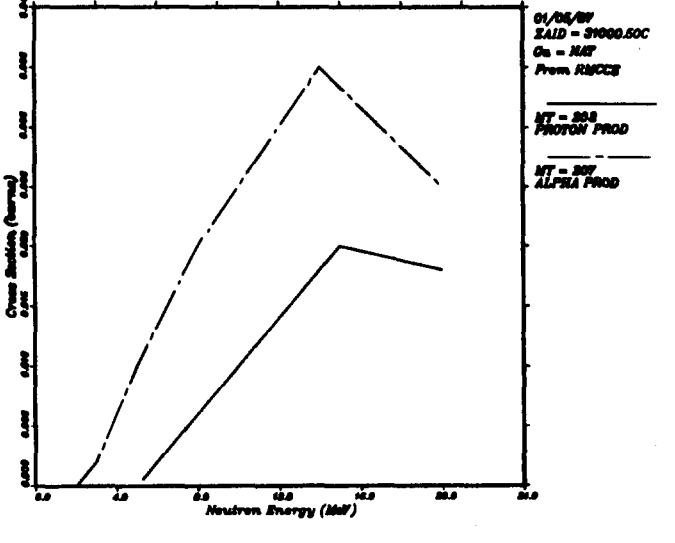

01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 102
CAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 31000.50C
Ga - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Arsenic – 74

ZAID=33074.35C

SOURCE: ENDL–85 (ZA=33074 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=33074.35C NES=6424 T=0°K

Isotope Information

Abundance=0.00%

Density=5.65073 gm/cm^3

Evaluation Information

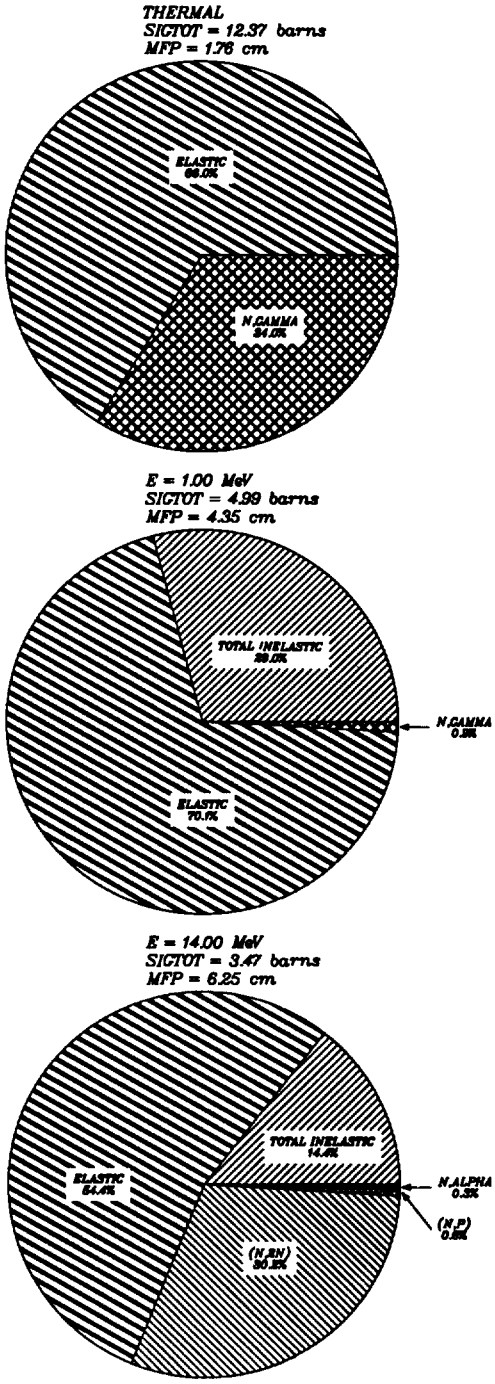
Photon-Production Data – Yes

Heating Numbers – Local

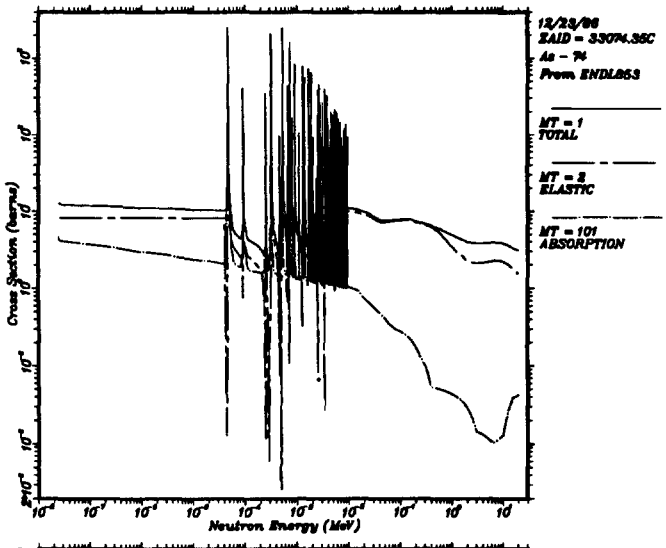
Energy Range – 10^{-10} to 20 MeV

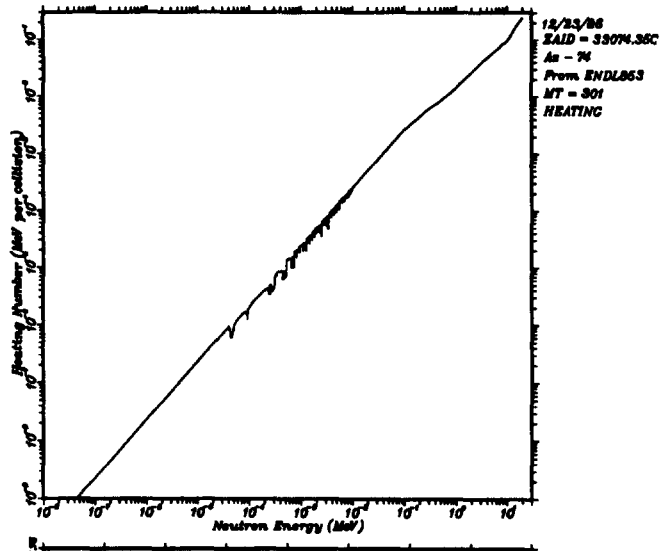
Reaction Information

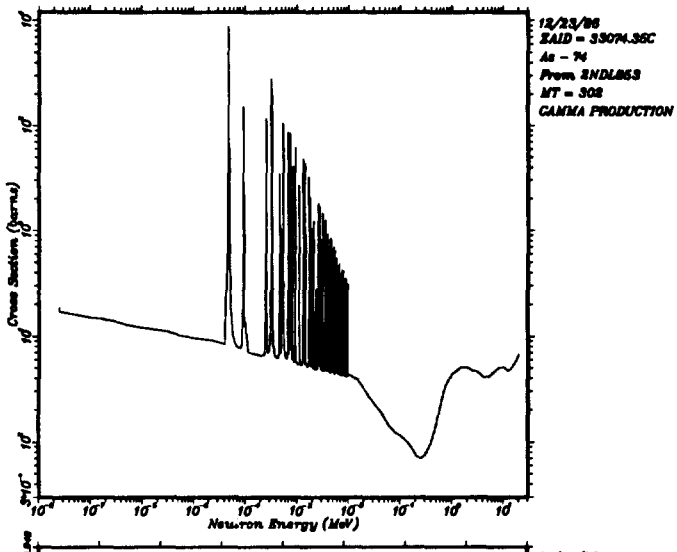
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.0100-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	8.0909+00	2.0000+01	-7.9820+00	-7.9820+00
(n,3n)	17	1.9027+01	2.0000+01	-1.8771+01	-1.8771+01
(n,p)	103	1.0000+00	2.0000+01	3.3450+00	3.3450+00
(n,α)	107	1.0000+00	2.0000+01	4.9290+00	4.9290+00
(n,γ)	102	1.0000-10	2.0000+01	1.0246+01	1.0246+01

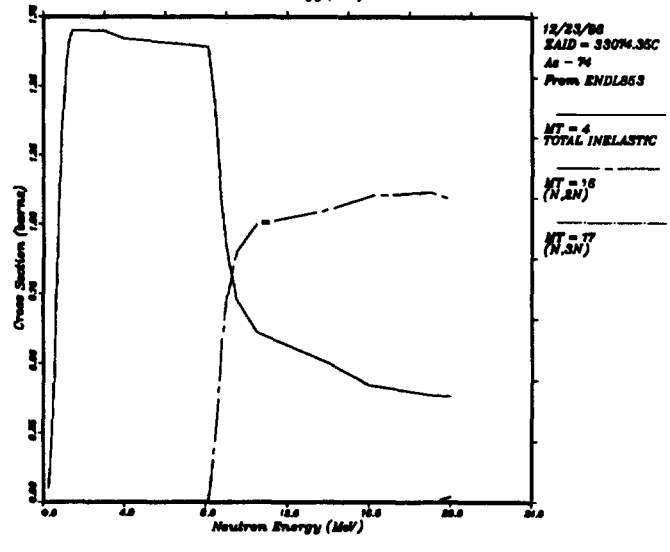


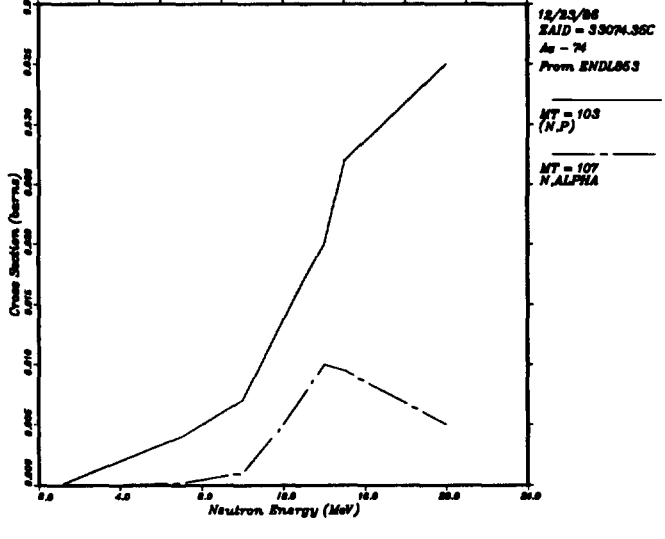
33074.35C


12/23/96
ZAID = 33074.35C
As - 74
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


12/23/96
ZAID = 33074.35C
As - 74
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


12/23/96
ZAID = 33074.35C
As - 74
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


12/23/96
ZAID = 33074.35C
As - 74
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


12/23/96
ZAID = 33074.35C
As - 74
From ENDL85S
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

Arsenic – 75

ZAID=33075.35C

SOURCE: ENDL–85 (ZA=33075 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=33075.35C	NES=6421	T=0°K

Discrete Reaction

ZAID=33075.35D	NES=263	T=0°K

Multigroup

ZAID=33075.35M	30–Group	T=0°K

Isotope Information

Abundance=100.00%

Density=5.727 gm/cm^3

Evaluation Information

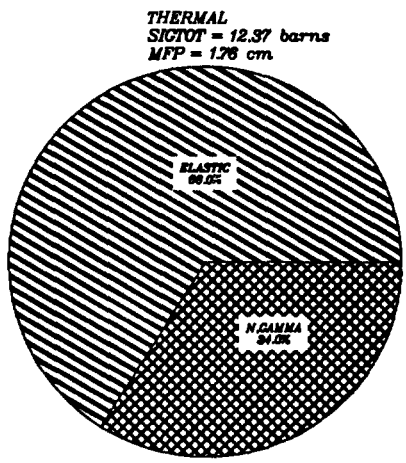
Photon-Production Data – Yes

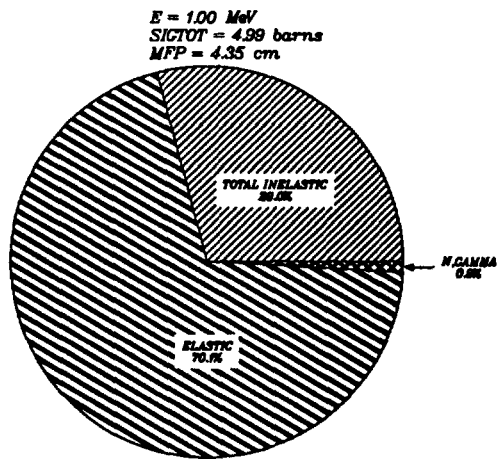
Heating Numbers – Local

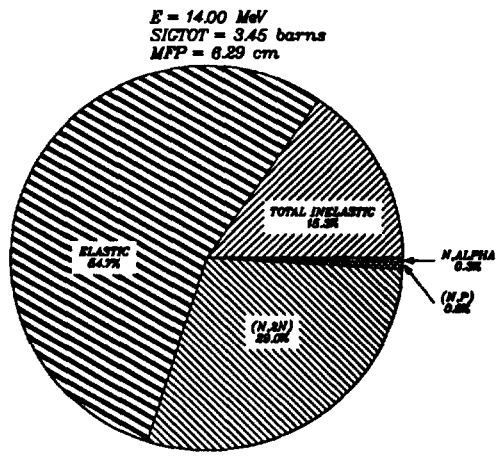
Energy Range – 10^{-10} to 20 MeV

Reaction Information

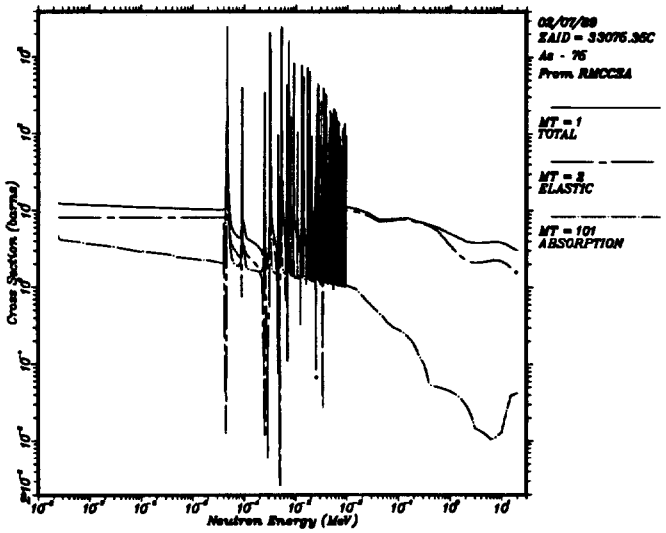
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.0100-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	1.0384+01	2.0000+01	-1.0246+01	-1.0246+01
(n,3n)	17	1.8473+01	2.0000+01	-1.8228+01	-1.8228+01
(n,p)	103	4.0032-01	2.0000+01	-3.9500-01	-3.9500-01
(n,α)	107	1.0000+00	2.0000+01	1.2040+00	1.2040+00
(n,γ)	102	1.0000-10	2.0000+01	7.3280+00	7.3280+00

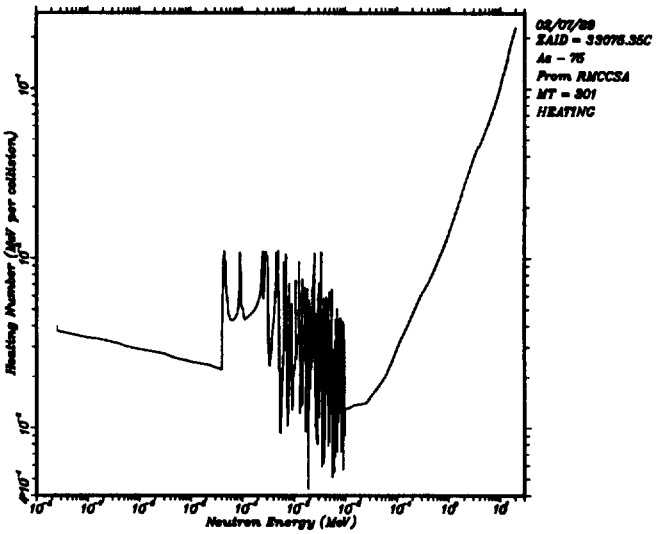


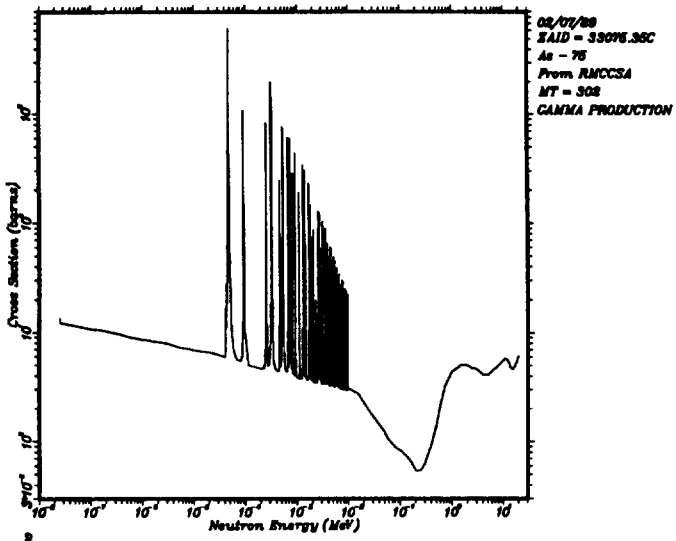


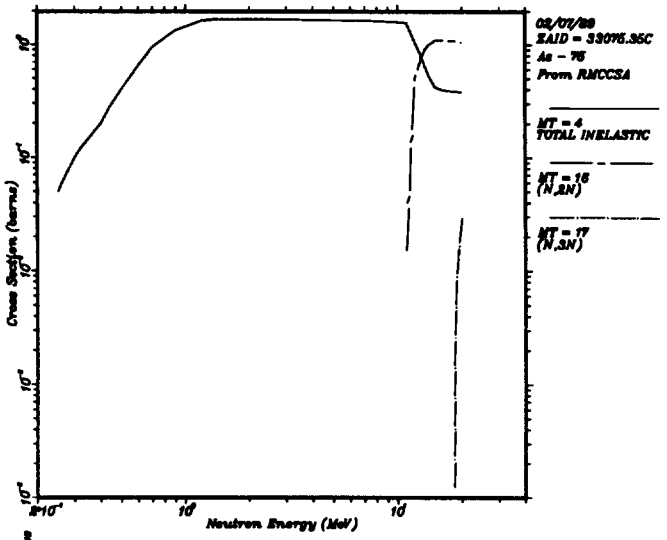


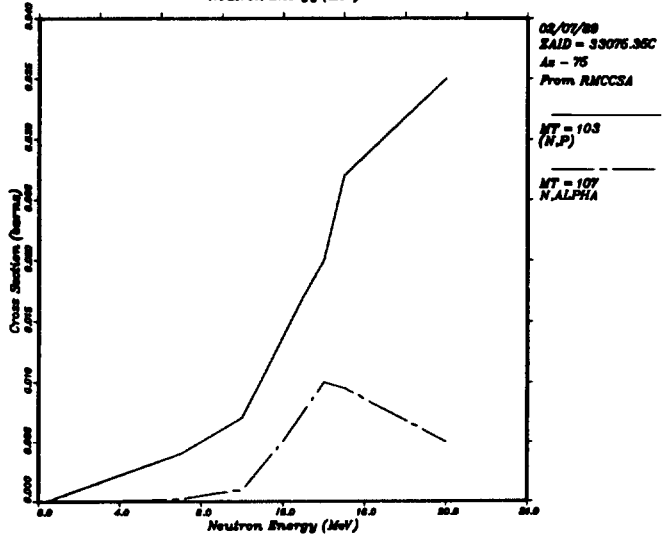
33075.35C

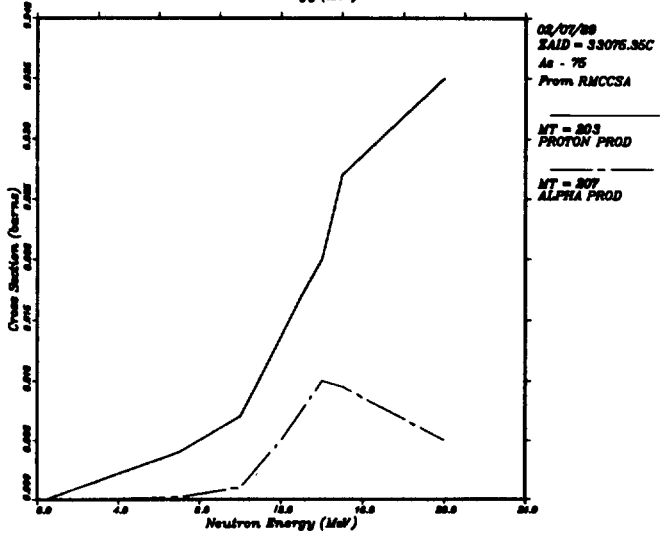

02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 33075.35C
As - 75
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Krypton – 78

ZAID=36078.50C
SOURCE: ENDF/B-V (MAT=1330, Tape 509)
REFERENCE: "Summary Documentation for the Krypton Isotopes,"
by A. Prince, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=36078.50C NES=939 T=300°K

Discrete Reaction

ZAID=36078.50D NES=263 T=300°K

Multigroup

ZAID=36078.50M 30-Group T=300°K

Isotope Information

Abundance=0.35%

Density=3.49625E-03 gm/cm^3

Evaluation Information

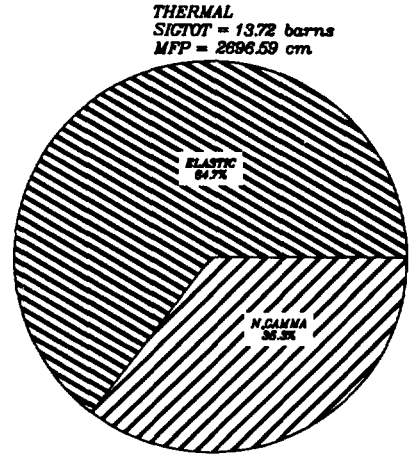
Photon-Production Data – No

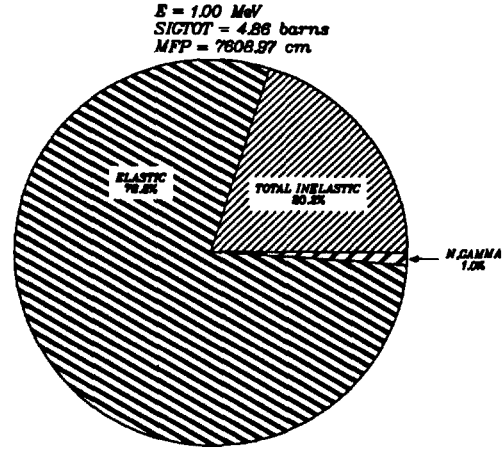
Heating Numbers – Total

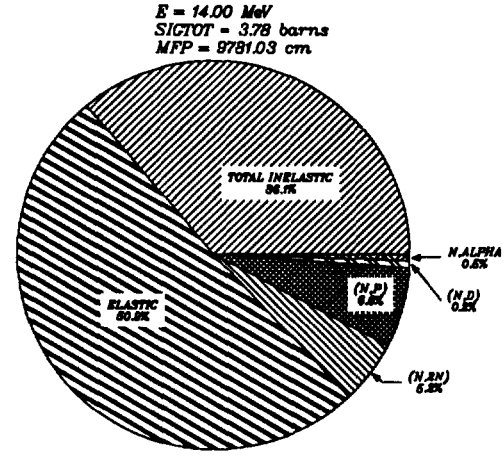
Energy Range – 10^{-11} to 20 MeV

Reaction Information

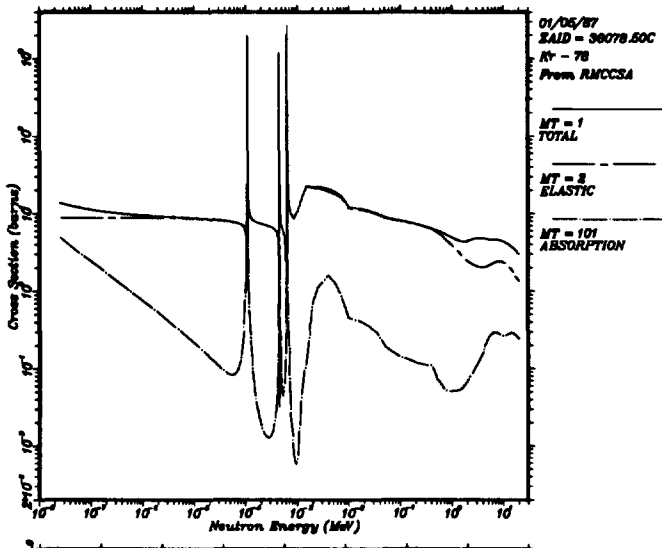
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.2136+01	2.0000+01	-1.1981+01	-1.1981+01
(n,n'1)	51	4.6089-01	2.0000+01	-4.5500-01	0.0000+00
(n,n'2)	52	1.1335+00	2.0000+01	-1.1190+00	0.0000+00
(n,n'3)	53	2.0036+00	2.0000+01	-1.9780+00	0.0000+00
(n,n'c)	91	5.7000-01	2.0000+01	-4.5500-01	-4.5500-01
(n,γ)	102	1.0000-11	2.0000+01	8.3680+00	8.3680+00
(n,p)	103	1.7000+00	2.0000+01	8.9000-02	8.9000-02
(n,d)	104	8.5000+00	2.0000+01	-5.9744+00	-5.9744+00
(n,t)	105	1.4000+01	2.0000+01	-1.0870+01	-1.0870+01
(n,^{3}He)	106	1.3000+01	2.0000+01	-5.7516+00	-5.7516+00
(n,α)	107	2.3000+00	2.0000+01	3.6655+00	3.6655+00

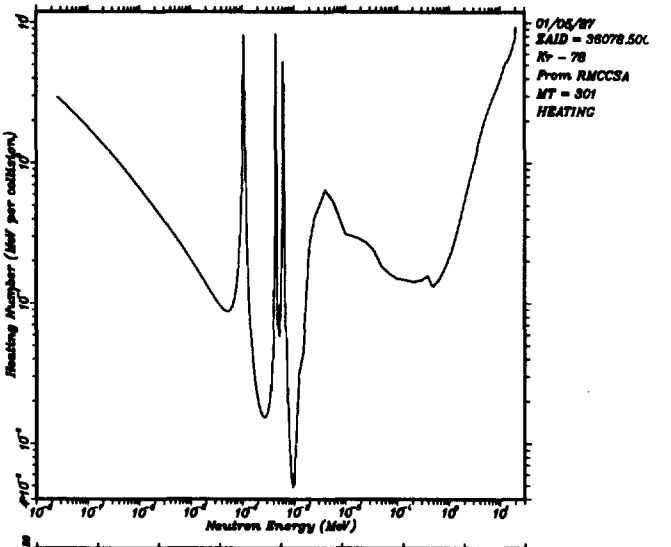


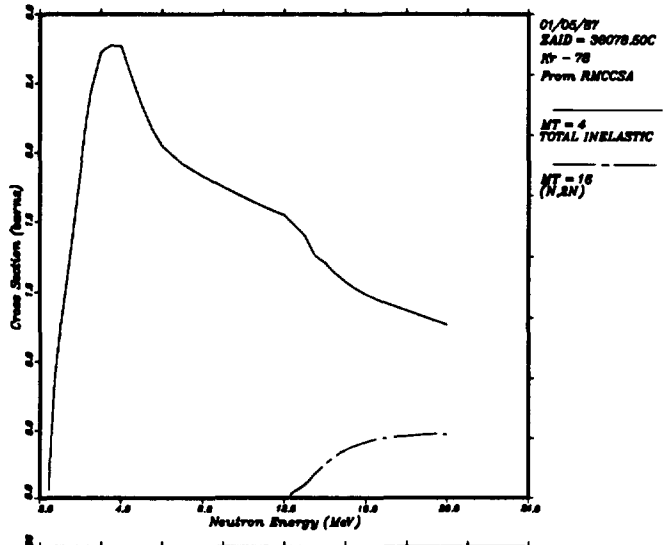


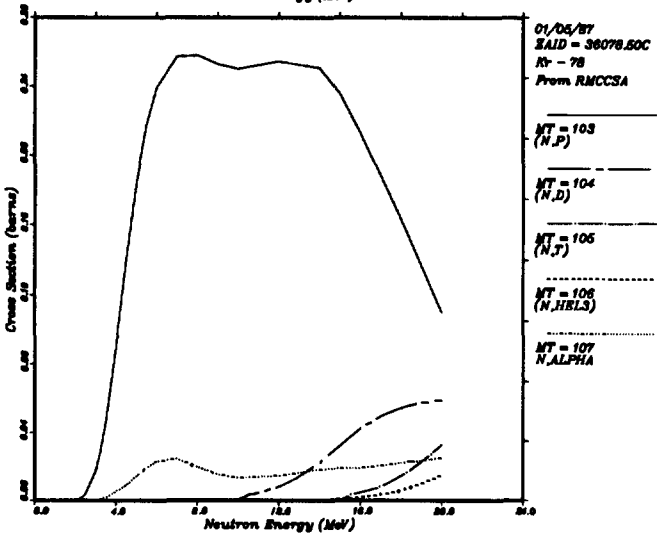


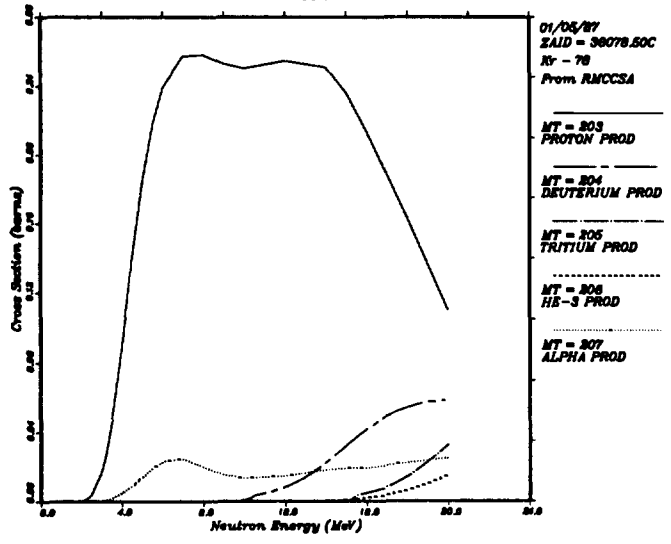
36078.50C


01/05/97
ZAID = 36078.50C
Kr - 78
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 36078.50C
Kr - 78
From RMCCSA
MT = 301
HEATING
Neutron Energy (MeV)


01/05/97
ZAID = 36078.50C
Kr - 78
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 36078.50C
Kr - 78
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HELS)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


01/05/97
ZAID = 36078.50C
Kr - 78
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Krypton – 80

ZAID=36080.50C
SOURCE: ENDF/B–V (MAT=1331, Tape 509)
REFERENCE: "Summary Documentation for the Krypton Isotopes,"
by A. Prince, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=36080.50C	NES=1108	T=300°K

Discrete Reaction

ZAID=36080.50D	NES=263	T=300°K

Multigroup

ZAID=36080.50M	30–Group	T=300°K

Isotope Information

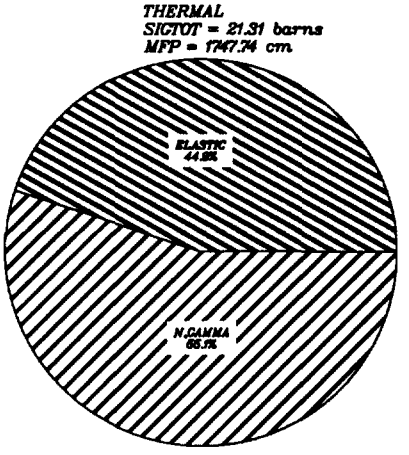
Abundance=2.250%
Density=3.56286E-03 gm/cm^3

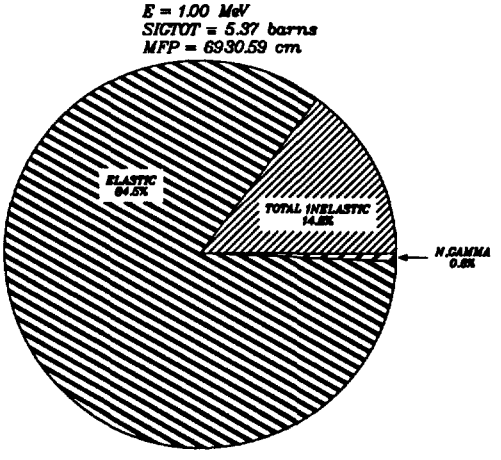
Evaluation Information

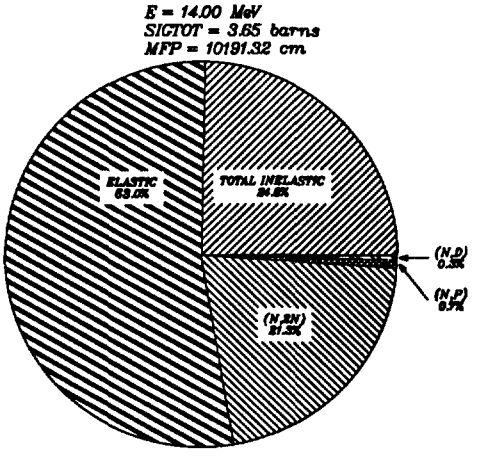
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

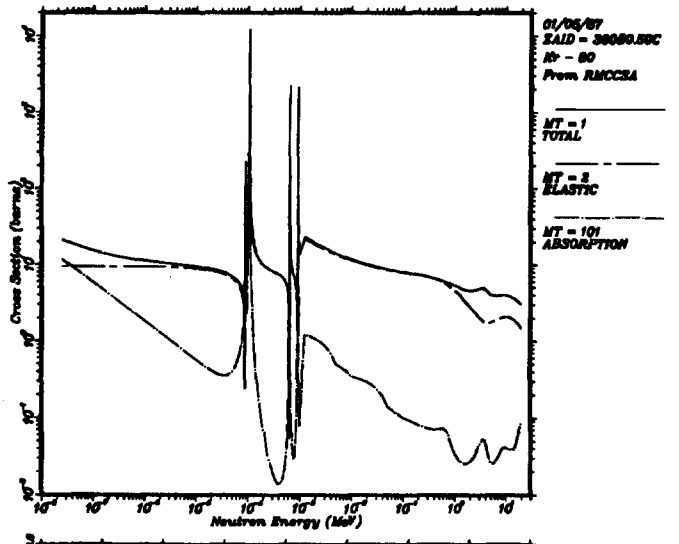
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1690+01	2.0000+01	-1.1525+01	-1.1525+01
(n,n'1)	51	6.2377-01	2.0000+01	-6.1600-01	0.0000+00
(n,n'2)	52	1.2720+00	2.0000+01	-1.2560+00	0.0000+00
(n,n'3)	53	1.3370+00	2.0000+01	-1.3200+00	0.0000+00
(n,n'4)	54	1.4541+00	2.0000+01	-1.4360+00	0.0000+00
(n,n'5)	55	2.4202+00	2.0000+01	-2.3900+00	0.0000+00
(n,n'6)	56	3.4429+00	2.0000+01	-3.4000+00	0.0000+00
(n,n'c)	91	1.3500+00	2.0000+01	-6.1600-01	-6.1600-01
(n,γ)	102	1.0000-11	2.0000+01	7.8500+00	7.8500+00
(n,p)	103	2.0000+00	2.0000+01	-1.2280+00	-1.2280+00
(n,d)	104	9.5000+00	2.0000+01	-6.8864+00	-6.8864+00
(n,t)	105	1.4500+01	2.0000+01	-1.1322+01	-1.1322+01
(n,^{3}He)	106	7.8272+00	2.0000+01	-7.7296+00	-7.7296+00
(n,α)	107	2.0000+00	2.0000+01	9.6850-01	9.6850-01

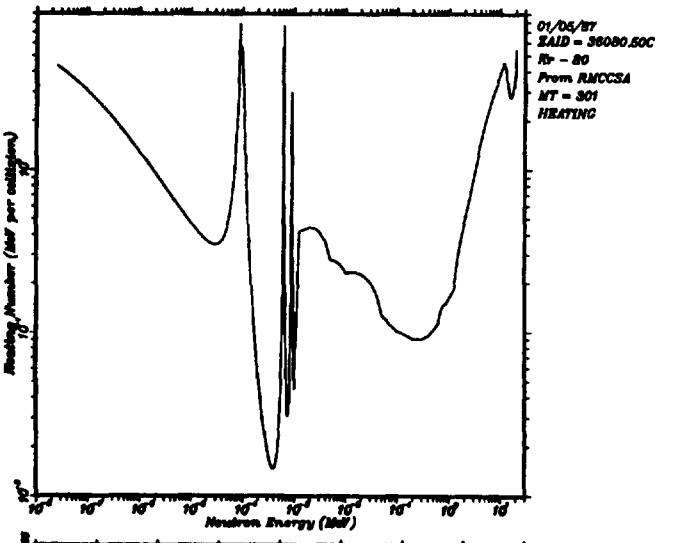


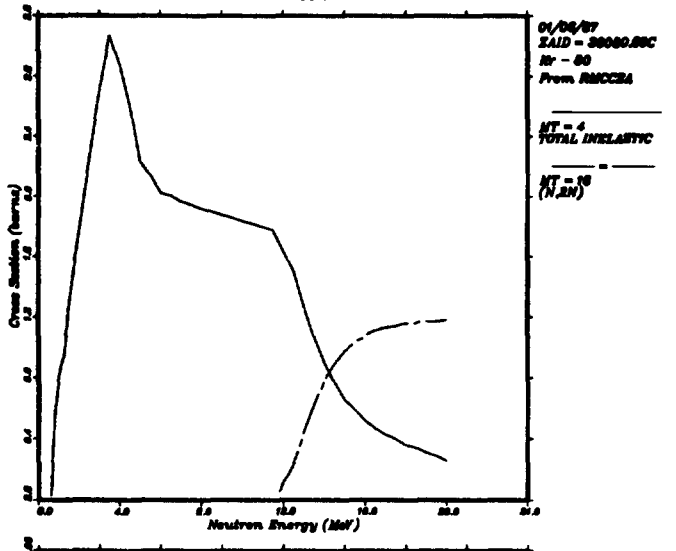


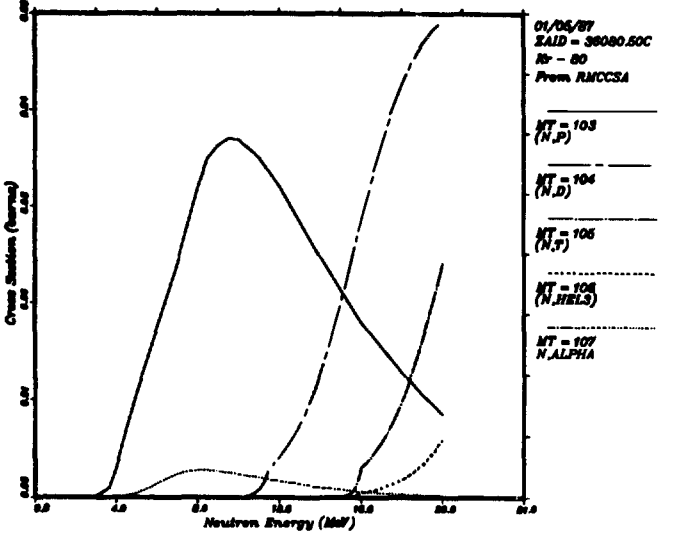


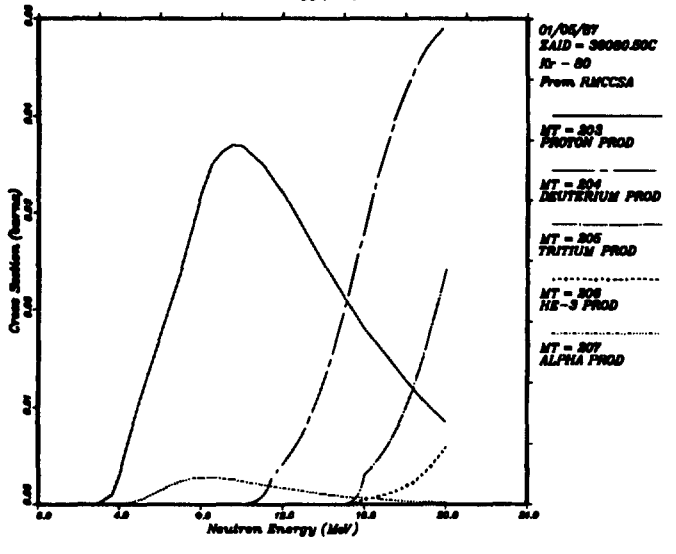
36080.50C


01/05/87
ZAID = 36080.50C
Kr - 80
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


01/05/87
ZAID = 36080.50C
Kr - 80
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


01/05/87
ZAID = 36080.50C
Kr - 80
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


01/05/87
ZAID = 36080.50C
Kr - 80
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HELS)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


01/05/87
ZAID = 36080.50C
Kr - 80
From RMCCSA
MT = 203
PHOTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Krypton – 82

ZAID=36082.50C

SOURCE: ENDF/B–V (MAT=1332, Tape 509)

REFERENCE: "Summary Documentation for the Krypton Isotopes," by A. Prince, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=36082.50C NES=586 T=300°K

Discrete Reaction

ZAID=36082.50D NES=263 T=300°K

Multigroup

ZAID=36082.50M 30–Group T=300°K

Isotope Information

Abundance=11.60%

Density=3.65189E-03 gm/cm^3

Evaluation Information

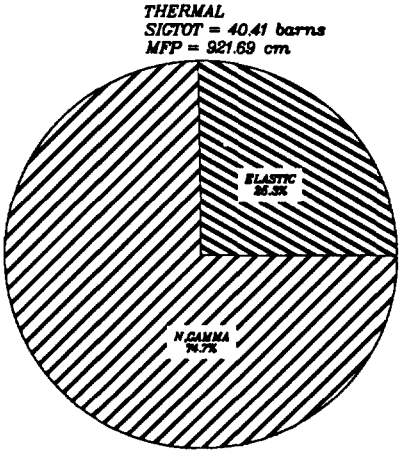
Photon-Production Data – No

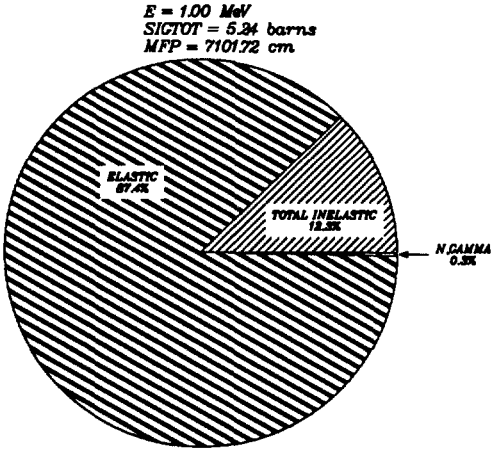
Heating Numbers – Total

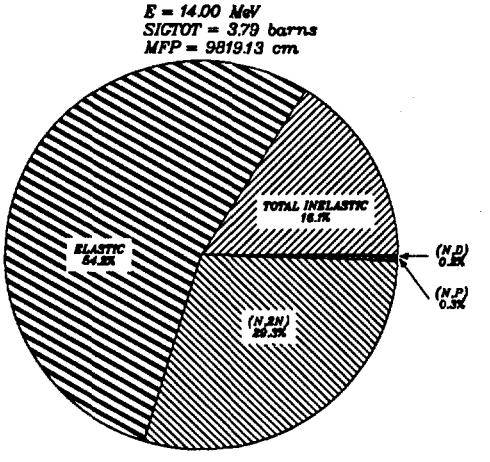
Energy Range – 10^{-11} to 20 MeV

Reaction Information

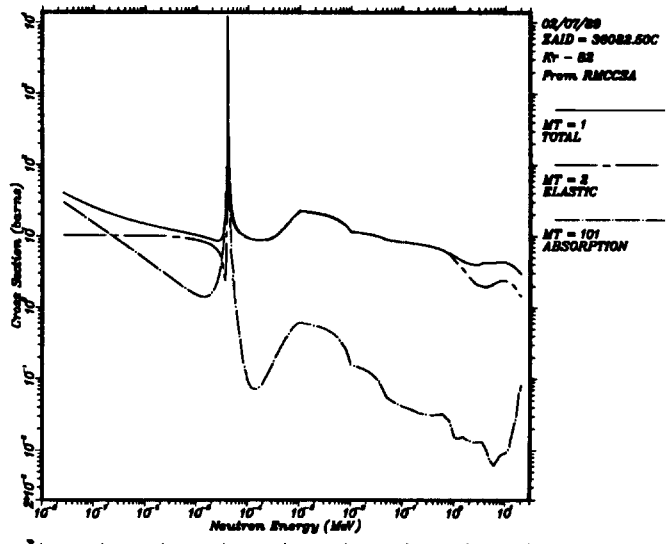
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.1200+01	2.0000+01	-1.0980+01	-1.0980+01
(n,n'1)	51	7.8657-01	2.0000+01	-7.7700-01	0.0000+00
(n,n'2)	52	1.4932+00	2.0000+01	-1.4750+00	0.0000+00
(n,n'3)	53	1.8424+00	2.0000+01	-1.8200+00	0.0000+00
(n,n'4)	54	2.1198+00	2.0000+01	-2.0940+00	0.0000+00
(n,n'5)	55	2.1987+00	2.0000+01	-2.1720+00	0.0000+00
(n,n'6)	56	2.4569+00	2.0000+01	-2.4270+00	0.0000+00
(n,n'7)	57	2.6806+00	2.0000+01	-2.6480+00	0.0000+00
(n,n'8)	58	2.8628+00	2.0000+01	-2.8280+00	0.0000+00
(n,n'9)	59	2.9560+00	2.0000+01	-2.9200+00	0.0000+00
(n,n'c)	91	2.4560+00	2.0000+01	-7.7700-01	-7.7700-01
(n,γ)	102	1.0000-11	2.0000+01	7.4670+00	7.4670+00
(n,p)	103	4.0000+00	2.0000+01	-2.3060+00	-2.3060+00
(n,d)	104	7.8617+00	2.0000+01	-7.7661+00	-7.7661+00
(n,t)	105	1.4500+01	2.0000+01	-1.1585+01	-1.1585+01
(n,^{3}He)	106	1.7000+01	2.0000+01	-9.6946+00	-9.6946+00
(n,α)	107	5.0000+00	2.0000+01	1.1105+00	1.1105+00

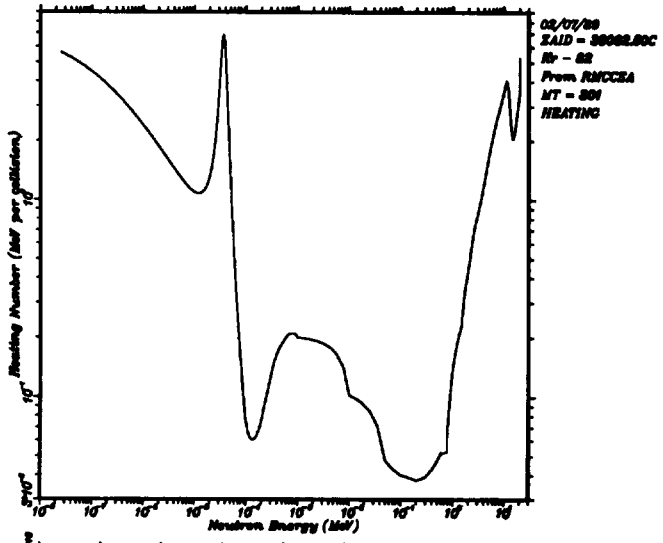


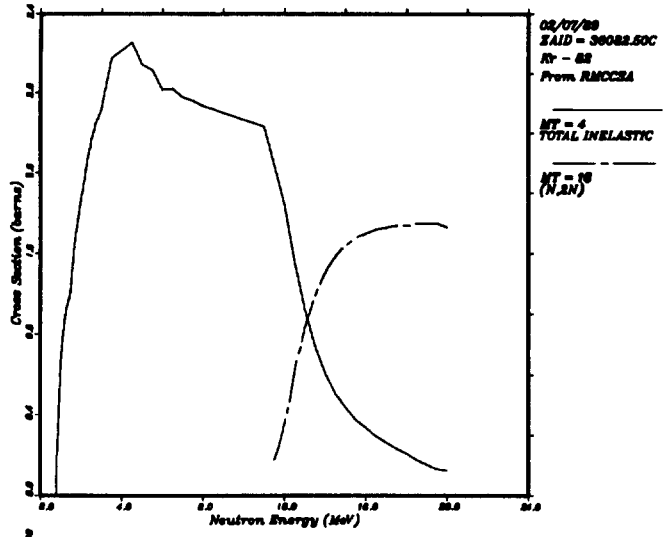


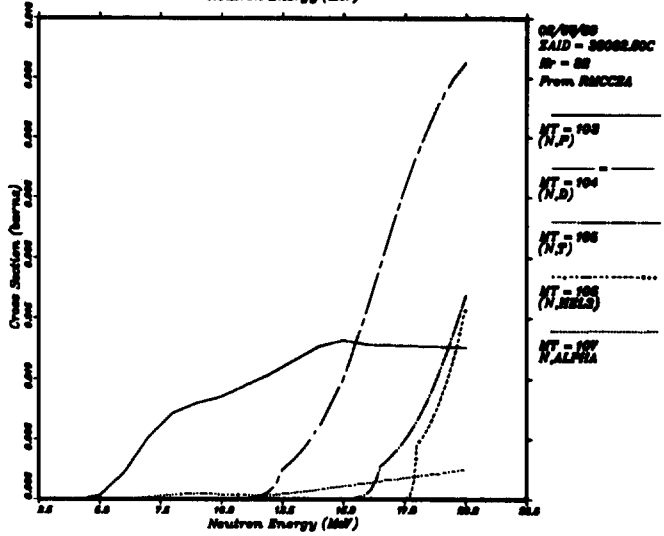


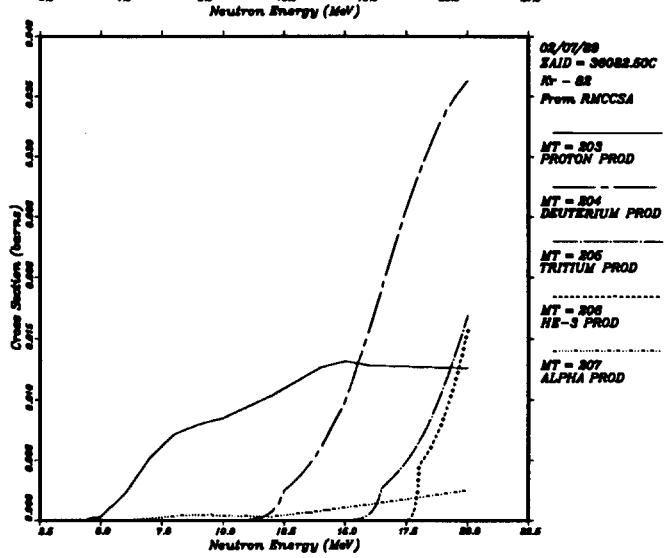
36082.50C


Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION


Heating Number (MeV per collision)
Neutron Energy (MeV)
HEATING


Cross Section (barns)
Neutron Energy (MeV)
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)


Cross Section (barns)
Neutron Energy (MeV)


Cross Section (barns)
Neutron Energy (MeV)
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD

Krypton – 83

ZAID=36083.50C
SOURCE: ENDF/B–V (MAT=1333, Tape 509)
REFERENCE: "Summary Documentation for the Krypton Isotopes,"
by A. Prince, contained in ENDF–201

Data Availability

Continuous Energy
ZAID=36083.50C NES=811 T=300°K
Discrete Reaction
ZAID=36083.50D NES=263 T=300°K
Multigroup
ZAID=36083.50M 30-Group T=300°K

Isotope Information

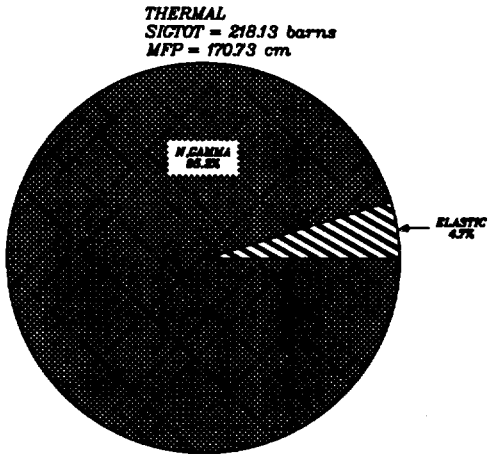
Abundance=11.50%
Density=3.69651E-03 gm/cm^3

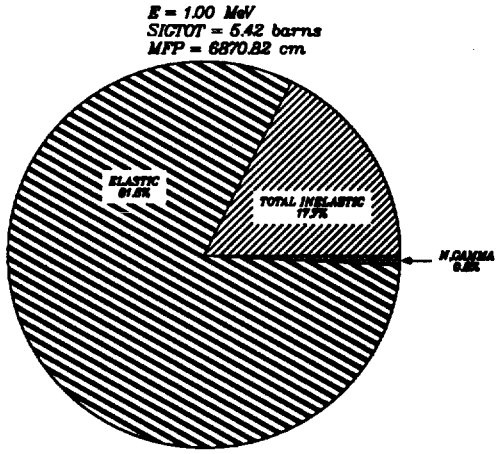
Evaluation Information

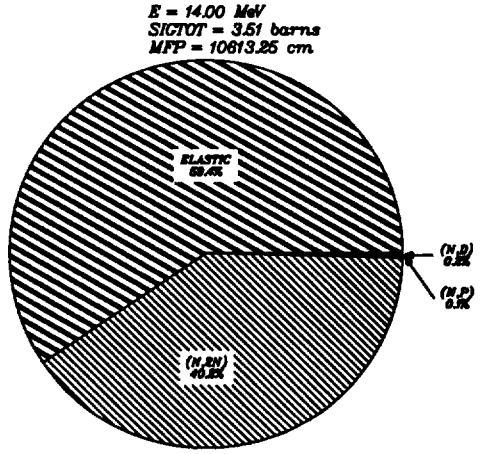
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

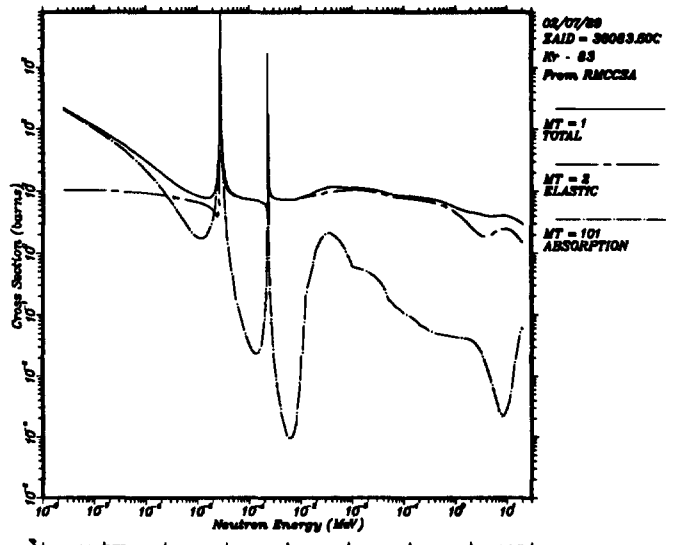
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.5578+00	2.0000+01	-7.4670+00	-7.4670+00
(n,3n)	17	1.8800+01	2.0000+01	-1.8450+01	-1.8450+01
(n,n'1)	51	9.5144-03	2.0000+01	-9.4000-03	0.0000+00
(n,n'2)	52	4.2005-02	2.0000+01	-4.1500-02	0.0000+00
(n,n'3)	53	5.6884-01	2.0000+01	-5.6200-01	0.0000+00
(n,n'4)	54	5.7795-01	2.0000+01	-5.7100-01	0.0000+00
(n,n'5)	55	6.9839-01	2.0000+01	-6.9000-01	0.0000+00
(n,n'6)	56	8.0771-01	2.0000+01	-7.9800-01	0.0000+00
(n,n'c)	91	5.0000-01	2.0000+01	-9.4000-03	-9.4000-03
(n,γ)	102	1.0000-11	2.0000+01	1.0518+01	1.0518+01
(n,p)	103	2.0000+00	2.0000+01	-1.8700-01	-1.8700-01
(n,d)	104	1.0000+01	2.0000+01	-7.5484+00	-7.5484+00
(n,t)	105	9.0002+00	2.0000+01	-8.8920+00	-8.8920+00
(n,^{3}He)	106	1.0588+01	2.0000+01	-1.0461+01	-1.0461+01
(n,α)	107	2.5000+00	2.0000+01	1.5265+00	1.5265+00

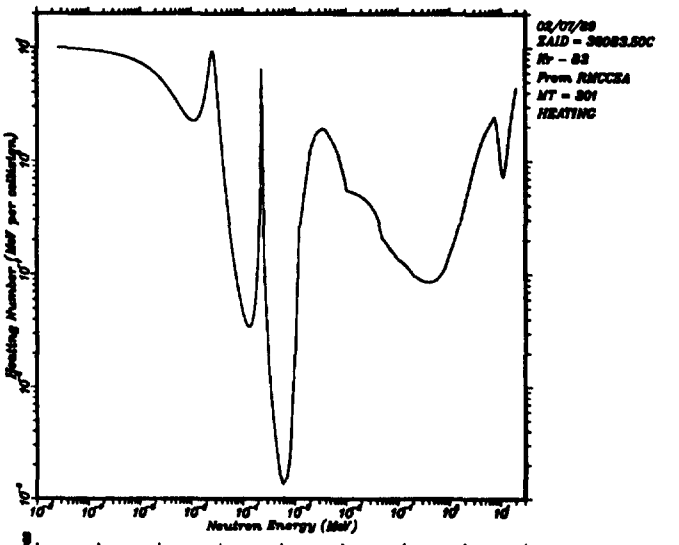


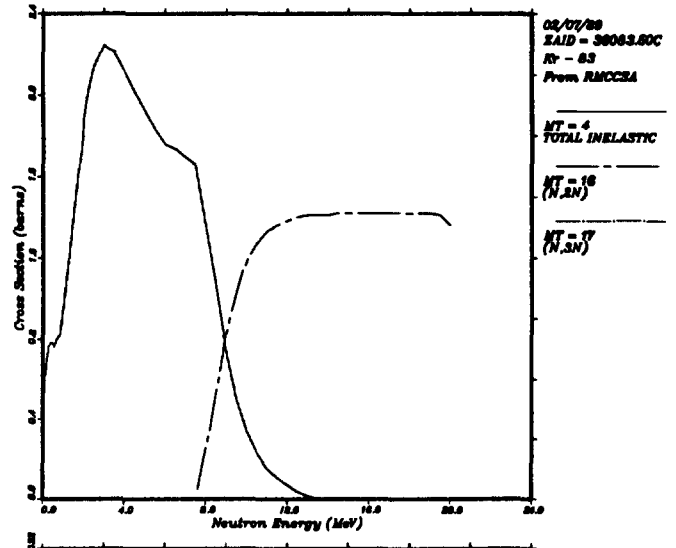


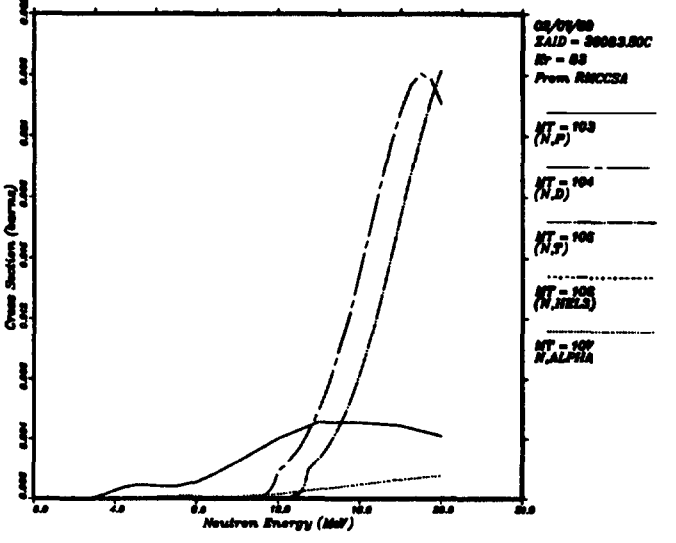


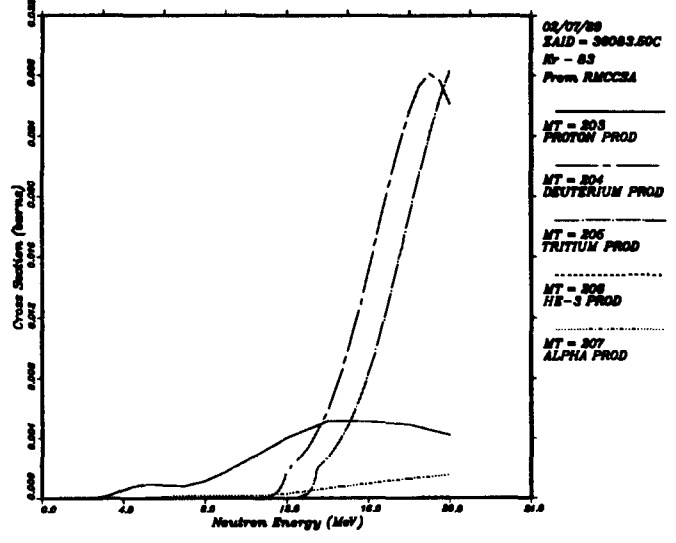
36083.50C


02/07/89
ZAID = 36083.50C
Kr - 83
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/89
ZAID = 36083.50C
Kr - 83
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

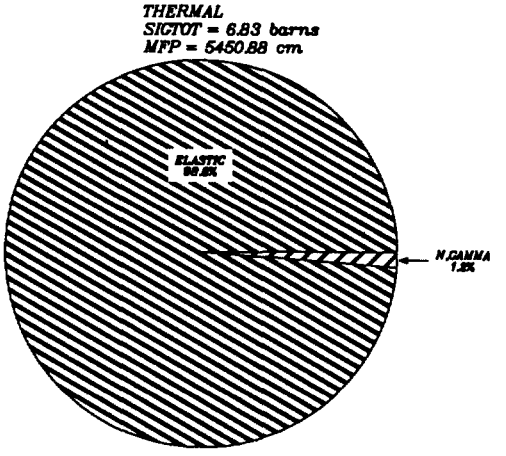

02/07/89
ZAID = 36083.50C
Kr - 83
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

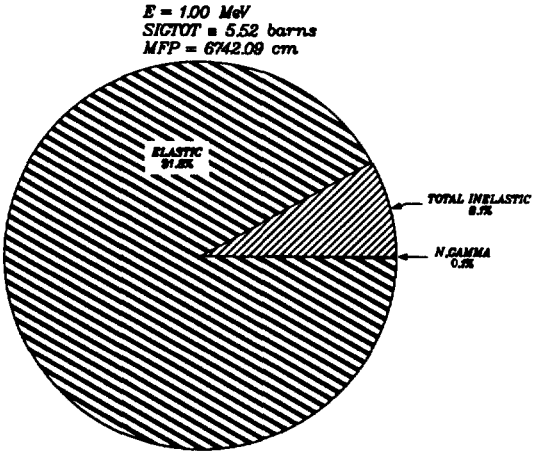

02/07/89
ZAID = 36083.50C
Kr - 83
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

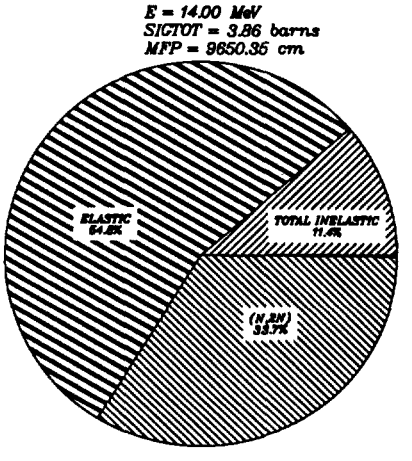

02/07/89
ZAID = 36083.50C
Kr - 83
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Krypton – 84

ZAID=36084.50C
SOURCE: ENDF/B–V (MAT=1334, Tape 509)
REFERENCE: "Summary Documentation for the Krypton Isotopes,"
by A. Prince, contained in ENDF–201







Data Availability

Continuous Energy

ZAID=36084.50C NES=944 T=300°K

Discrete Reaction

ZAID=36084.50D NES=263 T=300°K

Multigroup

ZAID=36084.50M 30-Group T=300°K

Isotope Information

Abundance=57.00%

Density=3.7411E-03 gm/cm^3

Evaluation Information

Photon-Production Data – No

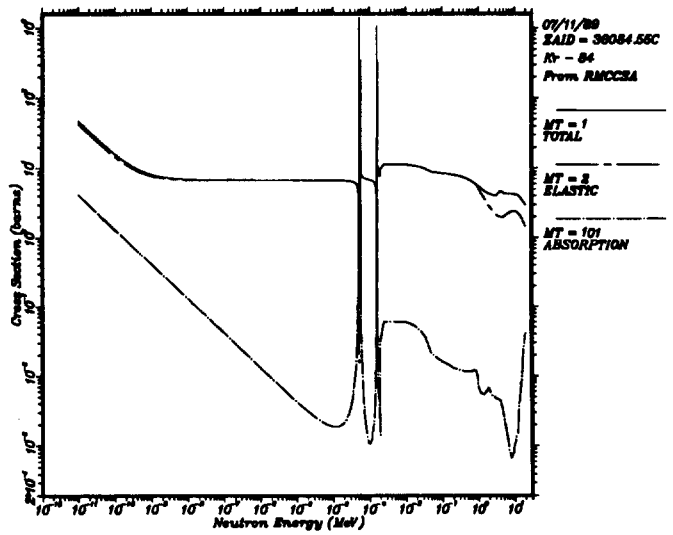
Heating Numbers – Total

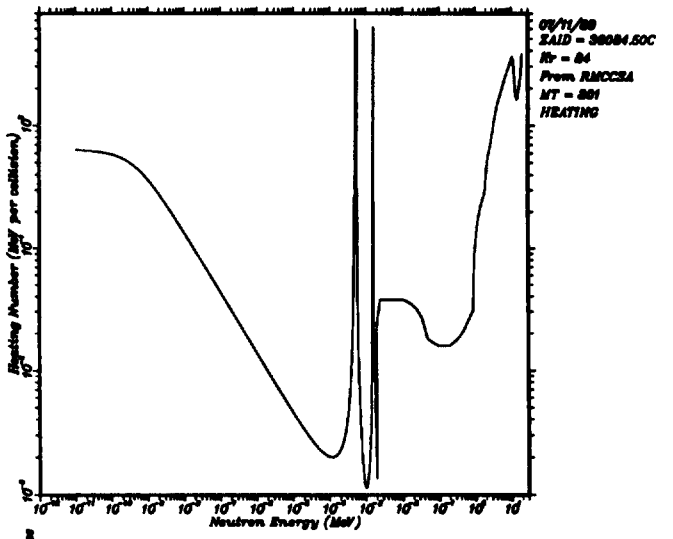
Energy Range – 10^{-11} to 20 MeV

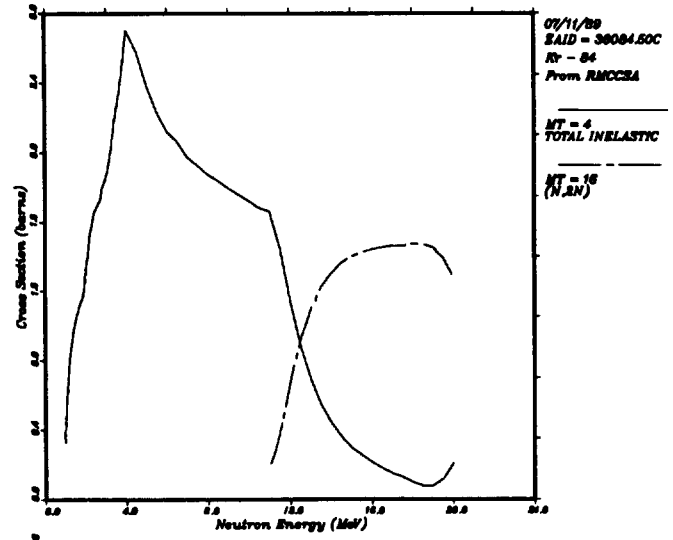
Reaction Information

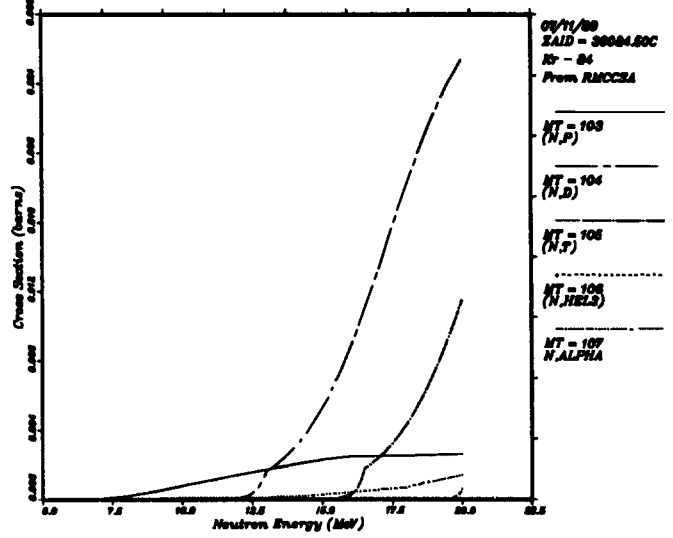
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	1.0644+01	2.0000+01	-1.0518+01	-1.0518+01
(n,n'1)	51	8.9260-01	2.0000+01	-8.8200-01	0.0000+00
(n,n'2)	52	1.8560+00	2.0000+01	-1.8340+00	0.0000+00
(n,n'3)	53	1.9228+00	2.0000+01	-1.9000+00	0.0000+00
(n,n'4)	54	2.1111+00	2.0000+01	-2.0860+00	0.0000+00
(n,n'5)	55	2.3651+00	2.0000+01	-2.3370+00	0.0000+00
(n,n'6)	56	2.7375+00	2.0000+01	-2.7050+00	0.0000+00
(n,n'7)	57	2.8084+00	2.0000+01	-2.7750+00	0.0000+00
(n,n'8)	58	3.0846+00	2.0000+01	-3.0480+00	0.0000+00
(n,n'9)	59	3.2638+00	2.0000+01	-3.2250+00	0.0000+00
(n,n'10)	60	3.4884+00	2.0000+01	-3.4470+00	0.0000+00
(n,n'11)	61	3.6129+00	2.0000+01	-3.5700+00	0.0000+00
(n,n'12)	62	3.6939+00	2.0000+01	-3.6500+00	0.0000+00
(n,n'13)	63	3.7657+00	2.0000+01	-3.7210+00	0.0000+00
(n,n'c)	91	8.9260-01	2.0000+01	-8.8200-01	-8.8200-01
(n,γ)	102	1.0000-11	2.0000+01	7.1110+00	7.1110+00
(n,p)	103	5.5000+00	2.0000+01	-3.9200+00	-3.9200+00
(n,d)	104	1.1000+01	2.0000+01	-8.4804+00	-8.4804+00
(n,t)	105	1.1950+01	2.0000+01	-1.1808+01	-1.1808+01
(n,^{3}He)	106	1.9000+01	2.0000+01	-1.1707+01	-1.1707+01
(n,α)	107	6.0000+00	2.0000+01	1.1685+00	1.1685+00

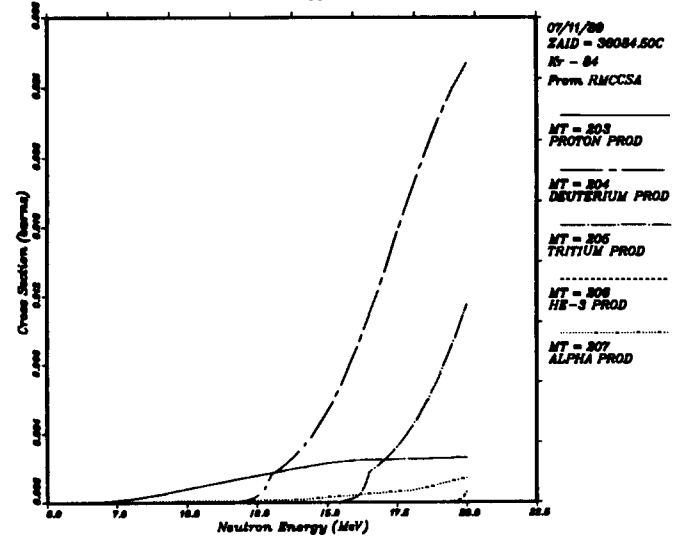
36084.50C


07/11/89
ZAID = 36084.56C
Kr - 84
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 36084.50C
Kr - 84
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


07/11/89
ZAID = 36084.50C
Kr - 84
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 36084.50C
Kr - 84
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 36084.50C
Kr - 84
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Krypton – 86

ZAID=36086.50C
SOURCE: ENDF/B–V (MAT=1336, Tape 509)
REFERENCE: "Summary Documentation for the Krypton Isotopes,"
by A. Prince, contained in ENDF–201

Data Availability

Continuous Energy
ZAID=36086.50C NES=741 T=300°K

Discrete Reaction
ZAID=36086.50D NES=263 T=300°K

Multigroup
ZAID=36086.50M 30–Group T=300°K

Isotope Information

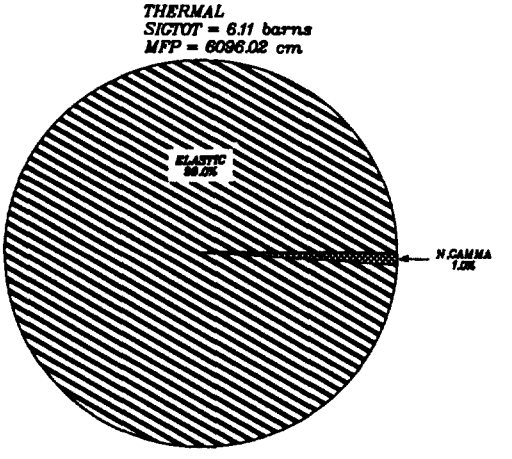
Abundance=17.30%
Density=3.8301E-03 gm/cm^3

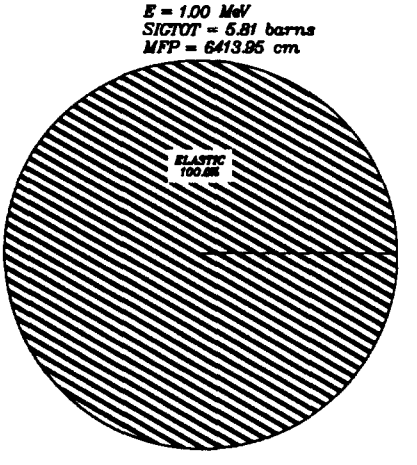
Evaluation Information

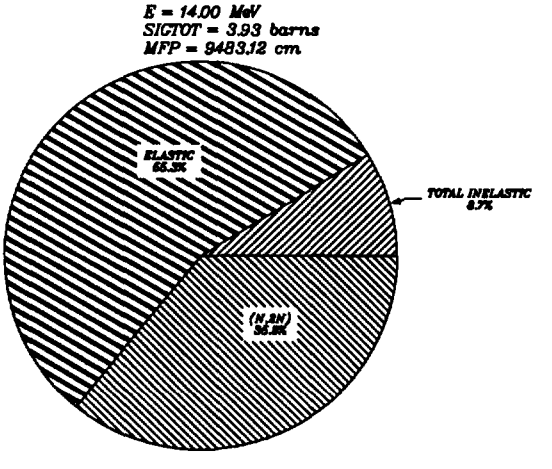
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

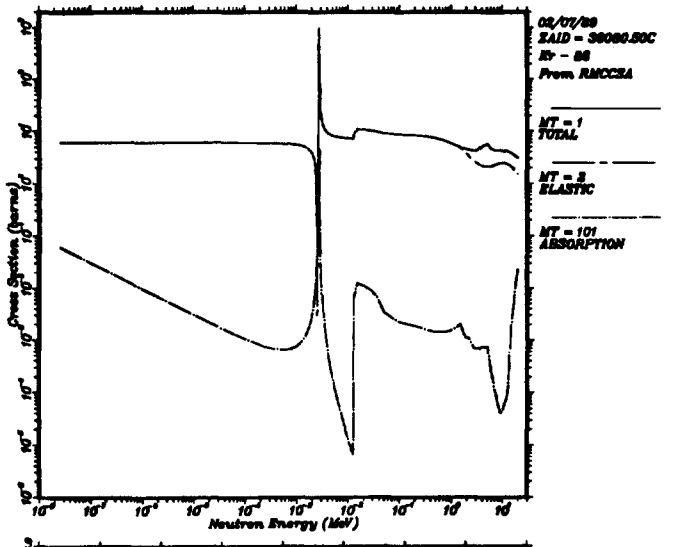
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	9.9900+00	2.0000+01	-9.8600+00	-9.8600+00
(n,3n)	17	1.7300+01	2.0000+01	-1.6971+01	-1.6971+01
(n,n'1)	51	1.5814+00	2.0000+01	-1.5630+00	0.0000+00
(n,n'2)	52	2.2744+00	2.0000+01	-2.2480+00	0.0000+00
(n,n'3)	53	2.3826+00	2.0000+01	-2.3550+00	0.0000+00
(n,n'4)	54	2.7651+00	2.0000+01	-2.7330+00	0.0000+00
(n,n'5)	55	3.1455+00	2.0000+01	-3.1090+00	0.0000+00
(n,n'6)	56	3.5836+00	2.0000+01	-3.5420+00	0.0000+00
(n,n'7)	57	3.8770+00	2.0000+01	-3.8320+00	0.0000+00
(n,n'8)	58	4.0055+00	2.0000+01	-3.9590+00	0.0000+00
(n,n'9)	59	4.1593+00	2.0000+01	-4.1110+00	0.0000+00
(n,n'10)	60	4.2432+00	2.0000+01	-4.1940+00	0.0000+00
(n,n'11)	61	4.3485+00	2.0000+01	-4.2980+00	0.0000+00
(n,n'12)	62	4.7228+00	2.0000+01	-4.6680+00	0.0000+00
(n,n'13)	63	4.8827+00	2.0000+01	-4.8260+00	0.0000+00
(n,n'14)	64	5.0061+00	2.0000+01	-4.9480+00	0.0000+00
(n,n'c)	91	1.5884+00	2.0000+01	-1.5630+00	-1.5630+00
(n,γ)	102	1.0000-11	2.0000+01	5.5110+00	5.5110+00
(n,p)	103	8.0000+00	2.0000+01	-6.5200+00	-6.5200+00
(n,d)	104	1.2500+01	2.0000+01	-9.6554+00	-9.6554+00
(n,t)	105	1.5500+01	2.0000+01	-1.2410+01	-1.2410+01







36086.50C


02/07/99
ZAID = 36086.50C
Mr - 86
From RMCCSA
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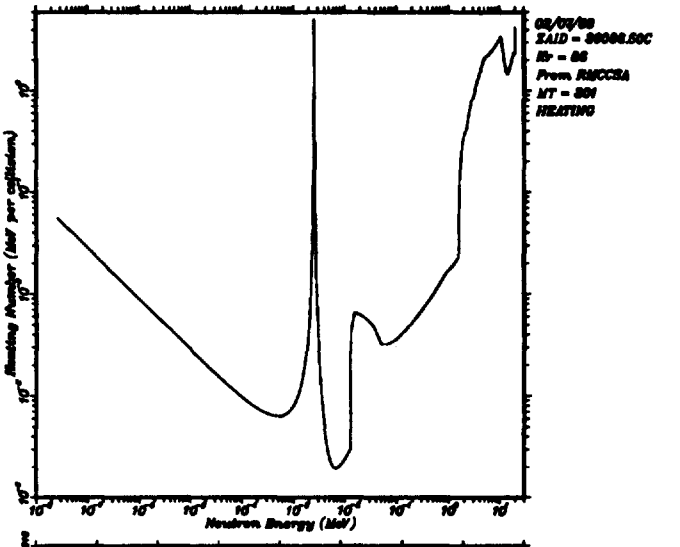
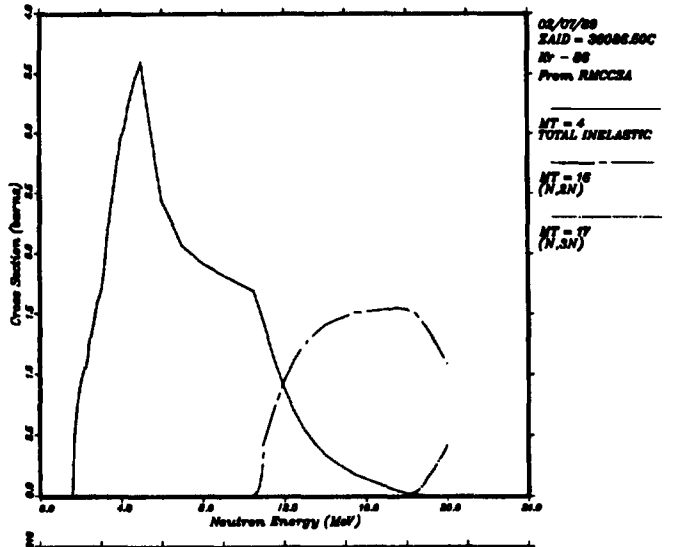
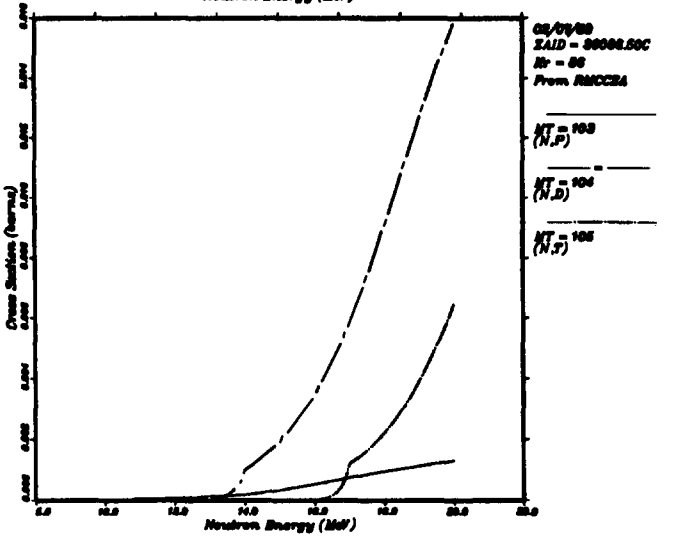
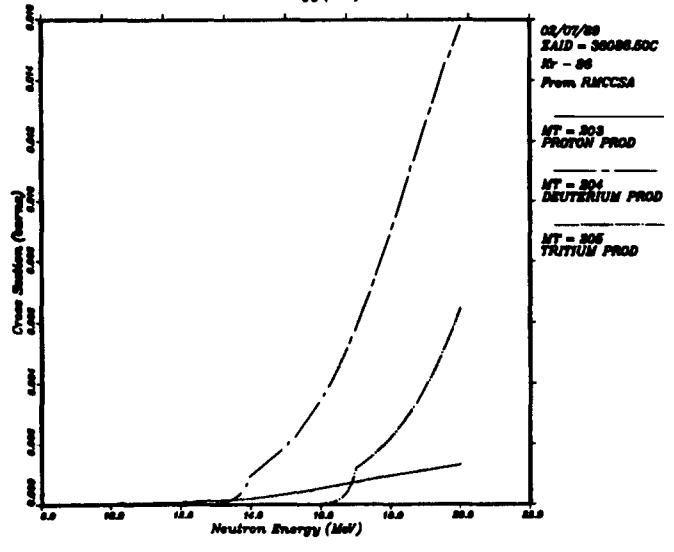
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 36086.50C
Mr - 86
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/99
ZAID = 36086.50C
Mr - 86
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 36086.50C
Mr - 86
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
Cross Section (barns)
Neutron Energy (MeV)


02/07/99
ZAID = 36086.50C
Mr - 86
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
Cross Section (barns)
Neutron Energy (MeV)

Yttrium – 88

ZAID=39088.35C

SOURCE: ENDL–85 (ZA=39088 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=39088.35C NES=272 T=0°K

Isotope Information

Abundance=0.00%

Density=4.41892 gm/cm^3

Evaluation Information

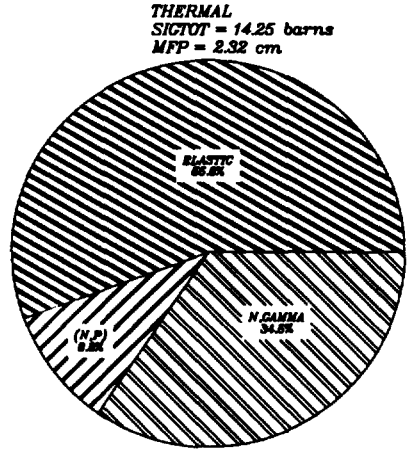
Photon-Production Data – Yes

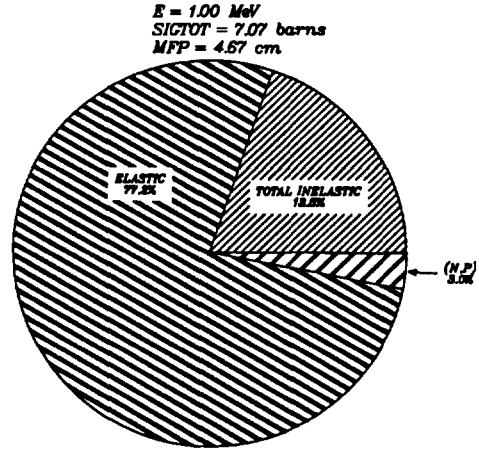
Heating Numbers – Local

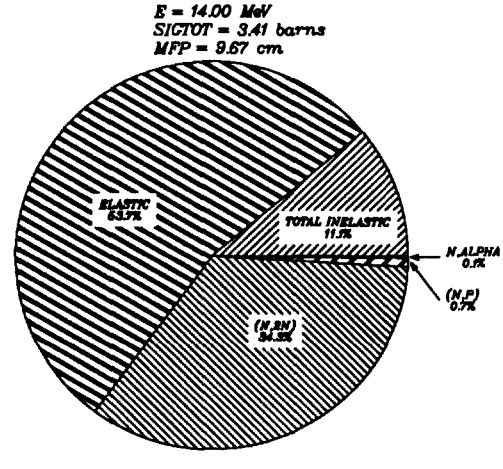
Energy Range – 10^{-10} to 20 MeV

Reaction Information

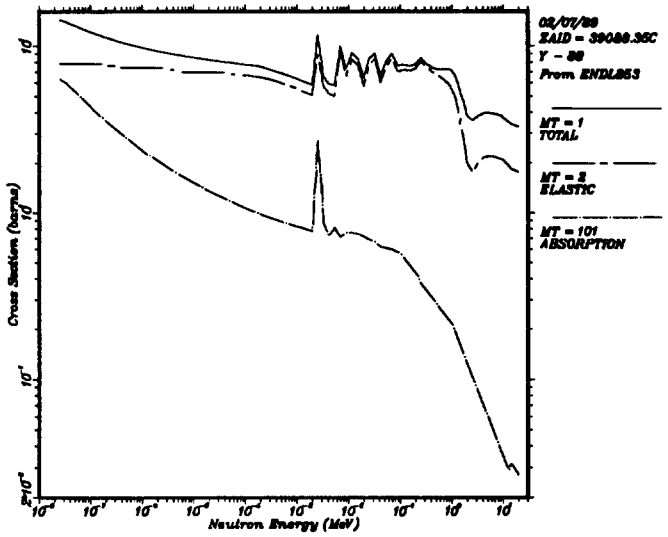
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.5000-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	9.4704+00	2.0000+01	-9.3630+00	-9.3630+00
(n,p)	103	1.0000-10	2.0000+01	4.3950+00	4.3950+00
(n,α)	107	1.0000+00	2.0000+01	3.5070+00	3.5070+00
(n,γ)	102	1.0000-10	2.0000+01	1.1469+01	1.1469+01

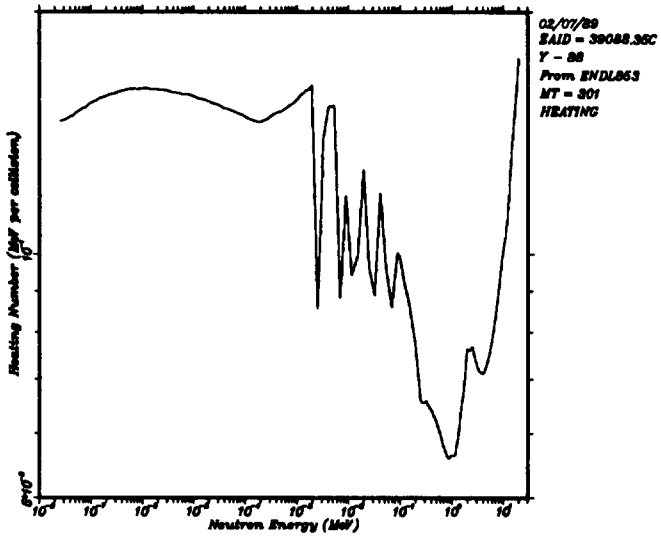


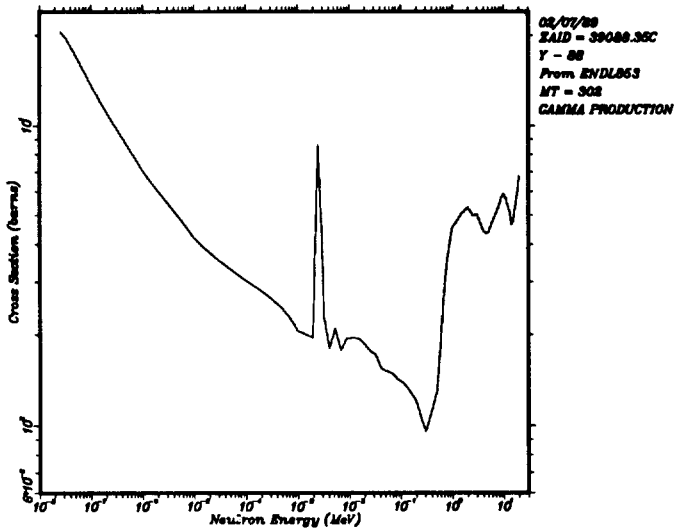


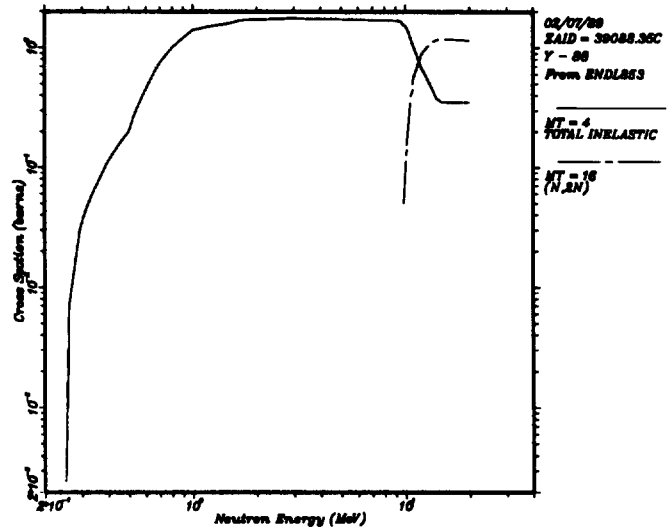


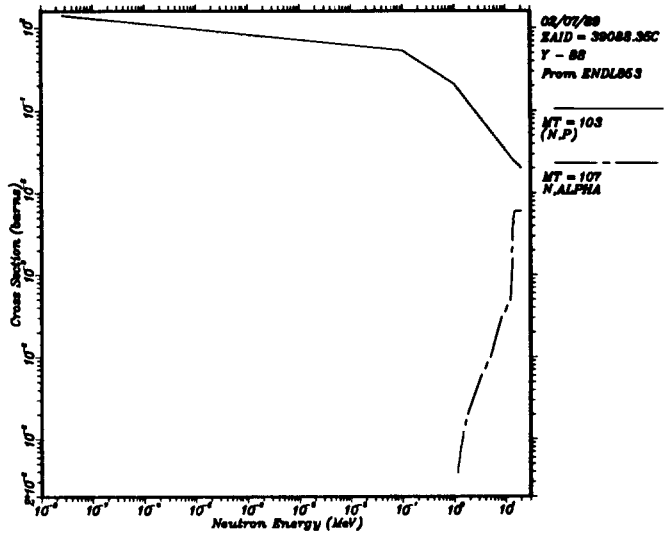
39088.35C


02/07/89
ZAID = 39088.35C
Y - 89
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/89
ZAID = 39088.35C
Y - 89
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/07/89
ZAID = 39088.35C
Y - 89
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/07/89
ZAID = 39088.35C
Y - 89
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/07/89
ZAID = 39088.35C
Y - 89
From ENDL85S
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

Yttrium – 89

ZAID=39089.50C
SOURCE: ENDF/B–V (MAT=9202, Tape 542)
REFERENCE: File 1 information on Fission Products Tape
by R. E. Schenter and F. Schmittroth

Data Availability

Continuous Energy

ZAID=39089.50C NES=3029 T=300°K

Discrete Reaction

ZAID=39089.50D NES=263 T=300°K

Isotope Information

Abundance=100.00%

Density=4.469 gm/cm^3

Evaluation Information

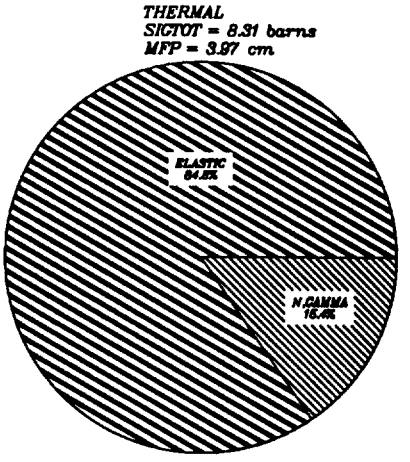
Photon-Production Data – No

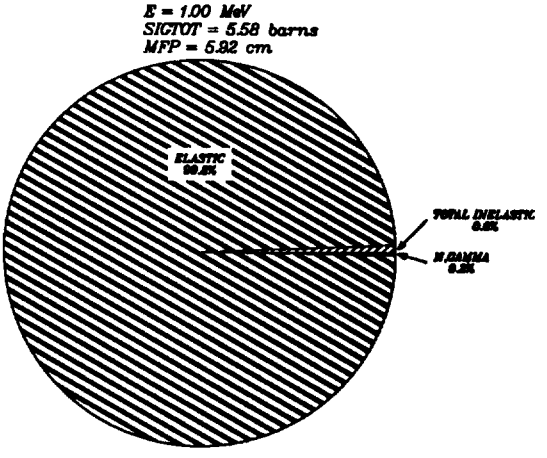
Heating Numbers – Total

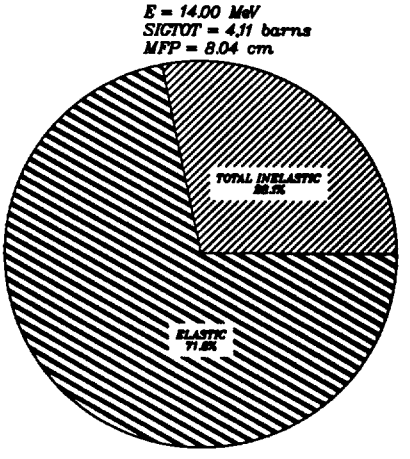
Energy Range – 10^{-11} to 20 MeV

Reaction Information

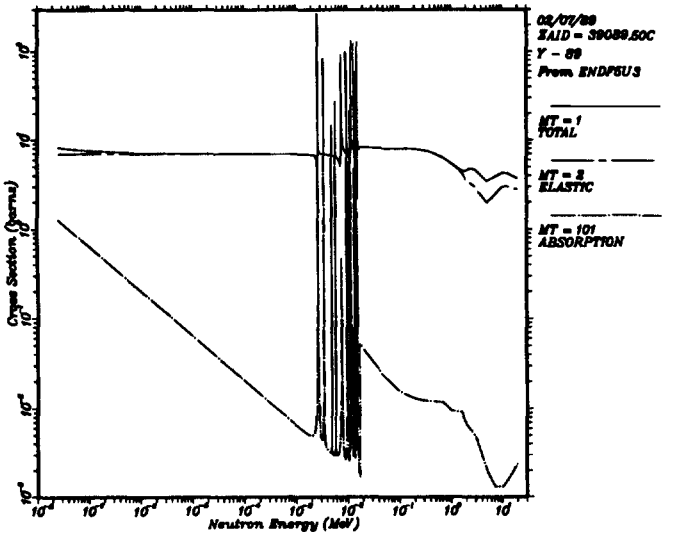
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,n'1)	51	9.2032-01	2.0000+01	-9.1000-01	0.0000+00
(n,n'2)	52	1.5271+00	2.0000+01	-1.5100+00	0.0000+00
(n,n'3)	53	1.7597+00	2.0000+01	-1.7400+00	0.0000+00
(n,n'4)	54	2.2553+00	2.0000+01	-2.2300+00	0.0000+00
(n,n'5)	55	2.5587+00	2.0000+01	-2.5300+00	0.0000+00
(n,n'6)	56	2.6396+00	2.0000+01	-2.6100+00	0.0000+00
(n,n'c)	91	2.6200+00	2.0000+01	-2.5906+00	-2.5906+00
(n,γ)	102	1.0000-11	2.0000+01	6.8600+00	6.8600+00

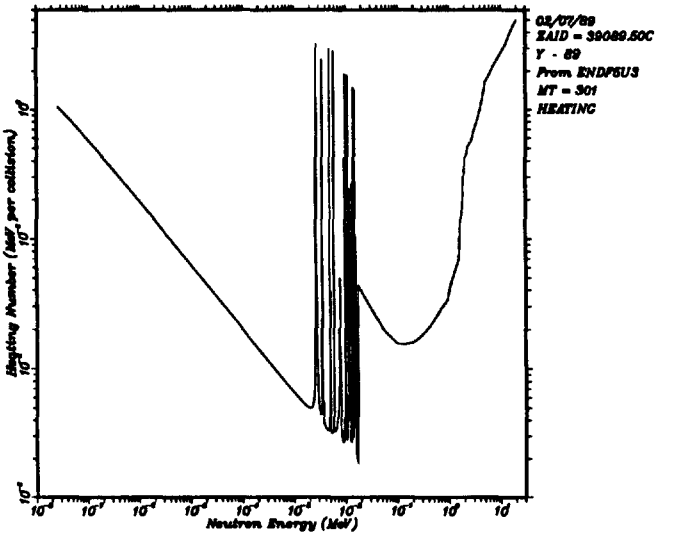


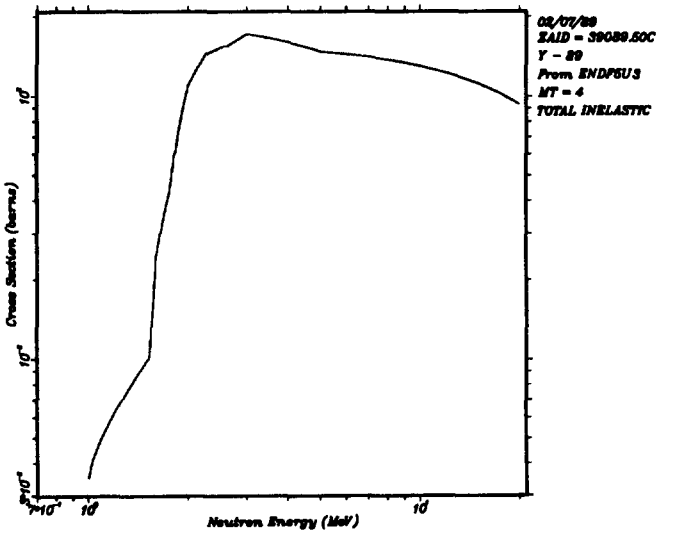




39089.50C

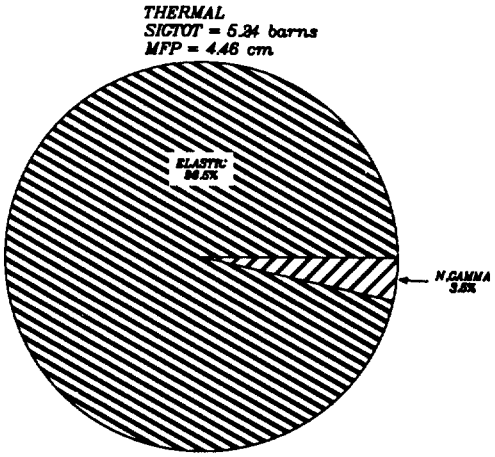

02/07/89
ZAID = 39089.50C
Y - 89
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)

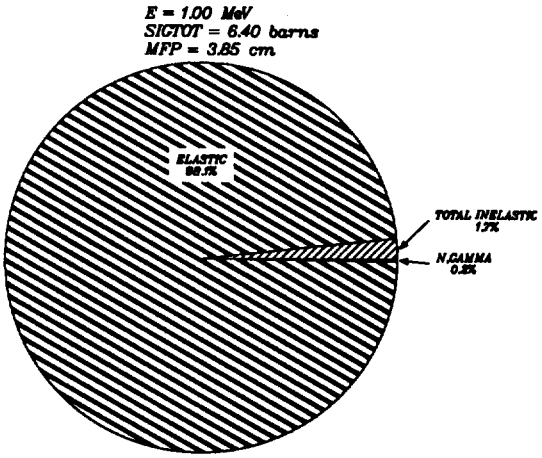

02/07/89
ZAID = 39089.50C
Y - 89
From ENDFSU3
MT = 301
HEATING
Neutron Energy (MeV)

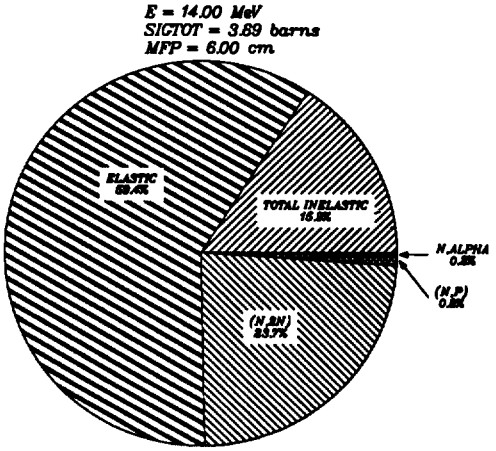

02/07/89
ZAID = 39089.50C
Y - 89
From ENDFSU3
MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)

Zirconium

ZAID=40000.50C
SOURCE: ENDF/B-V (MAT=1340, Tape 508)
REFERENCE: "Evaluated Neutron Cross Sections for Natural Zirconium and the Zirconium Isotopes 90, 91, 92, 94, and 96,"
by M. K. Drake, D. A. Sargis, Tin Maung, and S. Pearlstein
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=40000.50C	NES=7944	T=300°K
ZAID=40000.51C	NES=2116	T=300°K
ZAID=40000.53C	NES=8777	T=600°K

Discrete Reaction

ZAID=40000.50D	NES=263	T=300°K
ZAID=40000.51D	NES=263	T=300°K

Multigroup

ZAID=40000.50M	30-Group	T=300°K

Isotope Information

Abundance=Natural
Density=6.49 gm/cm^3

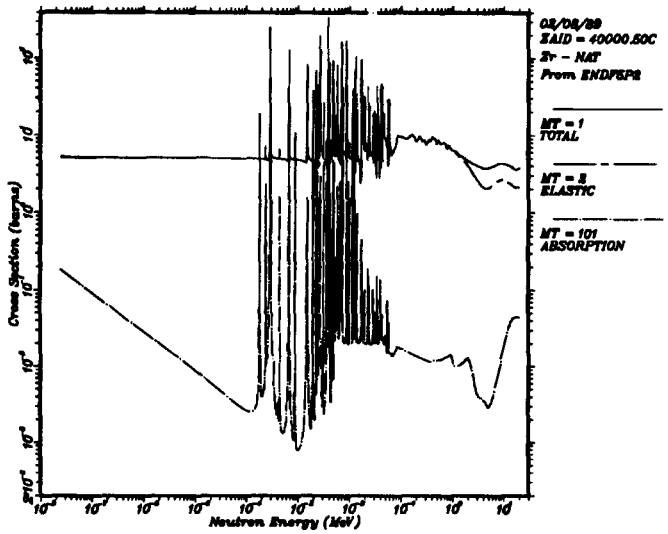
Evaluation Information

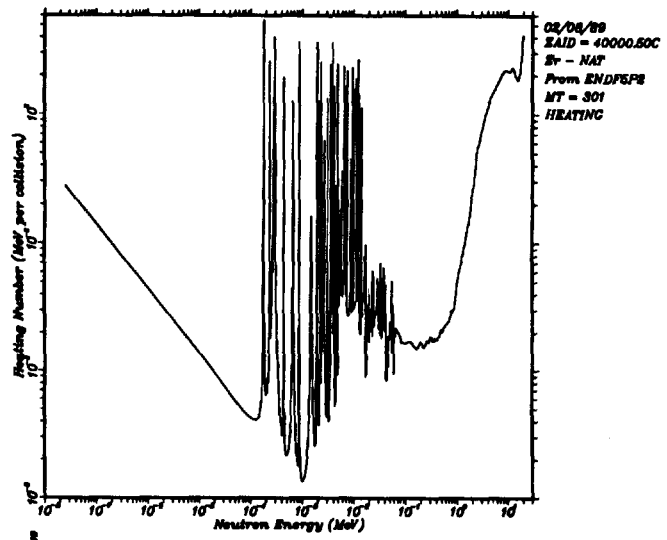
Photon-Production Data - No
Heating Numbers - Total
Energy Range - 10^{-11} to 20 MeV

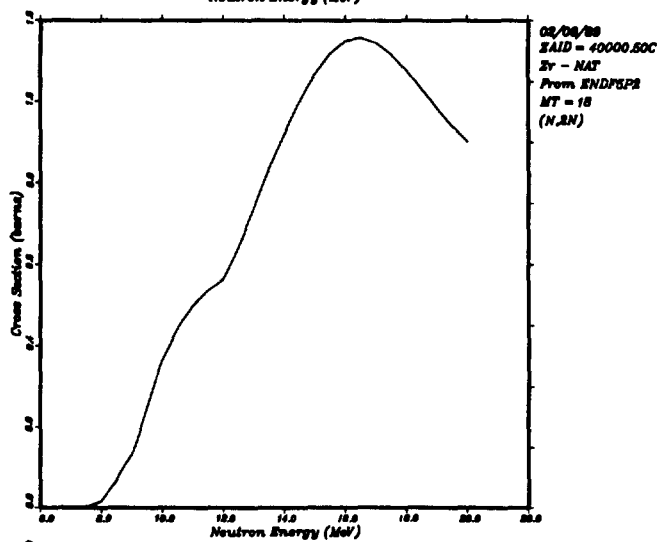
Reaction Information

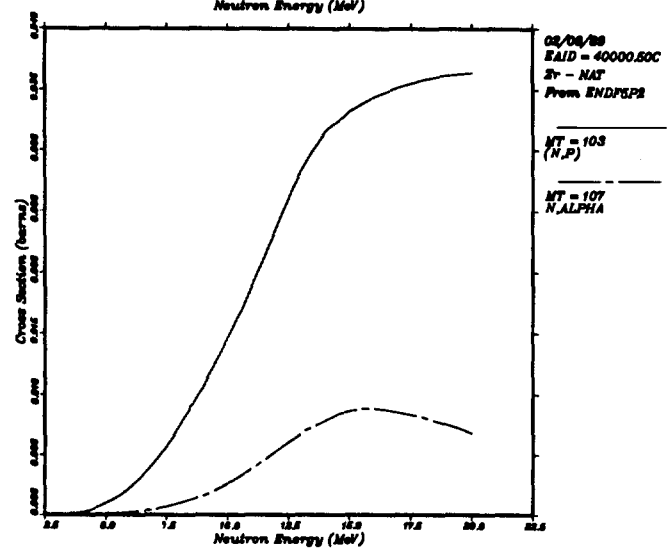
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.2700+00	2.0000+01	-7.1900+00	-7.1900+00
(n,n'1)	51	9.2835-01	2.0000+01	-9.1820-01	0.0000+00
(n,n'2)	52	9.4483-01	2.0000+01	-9.3450-01	0.0000+00
(n,n'3)	53	1.2183+00	2.0000+01	-1.2049+00	0.0000+00
(n,n'4)	54	1.3144+00	2.0000+01	-1.3000+00	0.0000+00
(n,n'5)	55	1.3953+00	2.0000+01	-1.3800+00	0.0000+00
(n,n'6)	56	1.4762+00	2.0000+01	-1.4600+00	0.0000+00
(n,n'7)	57	1.6875+00	2.0000+01	-1.6690+00	0.0000+00
(n,n'8)	58	1.7802+00	2.0000+01	-1.7607+00	0.0000+00
(n,n'9)	59	1.8705+00	2.0000+01	-1.8500+00	0.0000+00
(n,n'10)	60	2.0730+00	2.0000+01	-2.0500+00	0.0000+00
(n,n'11)	61	2.1740+00	2.0000+01	-2.1500+00	0.0000+00
(n,n'12)	62	2.2860+00	2.0000+01	-2.2610+00	0.0000+00
(n,n'13)	63	2.3450+00	2.0000+01	-2.3190+00	0.0000+00
(n,n'14)	64	2.3460+00	2.0000+01	-2.3200+00	0.0000+00
(n,n'15)	65	2.3760+00	2.0000+01	-2.3500+00	0.0000+00
(n,n'16)	66	2.5853+00	2.0000+01	-2.5570+00	0.0000+00
(n,n'17)	67	3.0730+00	2.0000+01	-2.6100+00	0.0000+00
(n,n'18)	68	2.7790+00	2.0000+01	-2.7380+00	0.0000+00
(n,n'19)	69	2.7790+00	2.0000+01	-2.7480+00	0.0000+00
(n,n'c)	91	2.8522+00	2.0000+01	-2.8210+00	-2.8210+00
(n,γ)	102	1.0000-11	2.0000+01	7.9800+00	7.9800+00
(n,p)	103	3.0730+00	2.0000+01	-7.6100-01	-7.6100-01
(n,α)	107	4.4000+00	2.0000+01	5.6600+00	5.6600+00

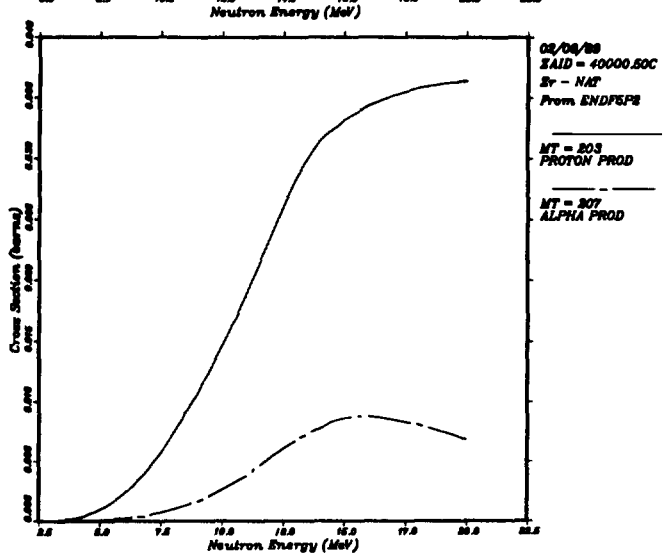
40000.50C


02/06/89
ZAID = 40000.50C
Zr - NAT
From ENDF5P2
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 40000.50C
Zr - NAT
From ENDF5P2
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

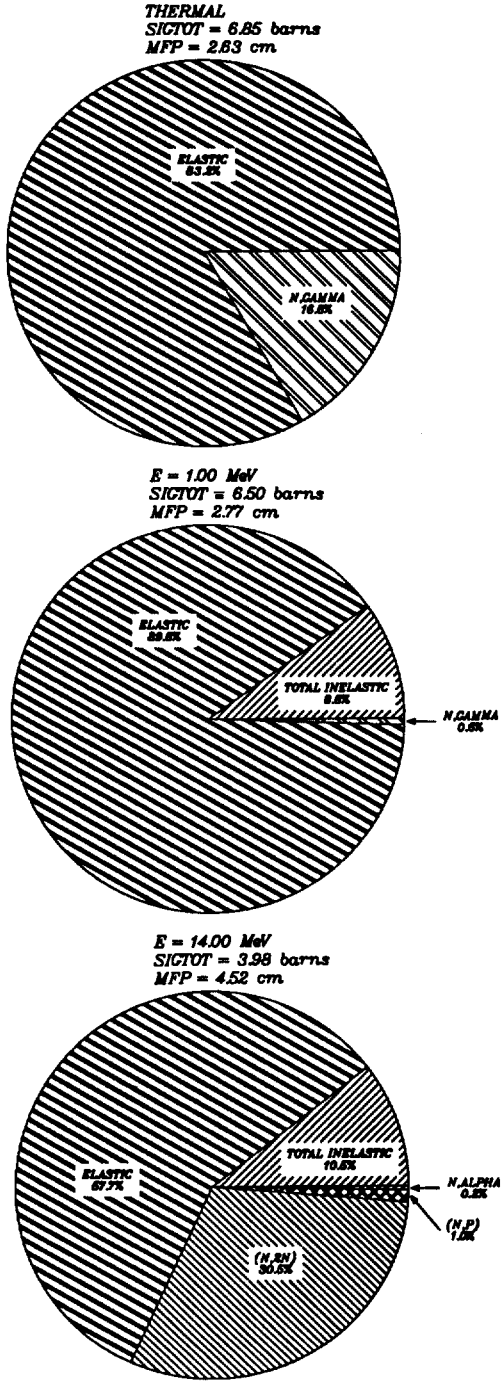

02/06/89
ZAID = 40000.50C
Zr - NAT
From ENDF5P2
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 40000.50C
Zr - NAT
From ENDF5P2
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 40000.50C
Zr - NAT
From ENDF5P2
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Niobium – 93

ZAID=41093.50C
SOURCE: ENDF/B-V (MAT=1189, Tape 510)
REFERENCE: "Evaluated Neutronic Cross Section File for Niobium,"
by R. Howerton, A. Smith, P. Guenther, and J. Whalen
contained in ENDF–201



Data Availability

Continuous Energy

ZAID=41093.50C	NES=17279	T=300°K
ZAID=41093.51C	NES=963	T=300°K

Discrete Reaction

ZAID=41093.50D	NES=263	T=300°K
ZAID=41093.51D	NES=263	T=300°K

Multigroup

ZAID=41093.50M	30-Group	T=300°K

Isotope Information

Abundance=100.00%
Density=8.57 gm/cm^3

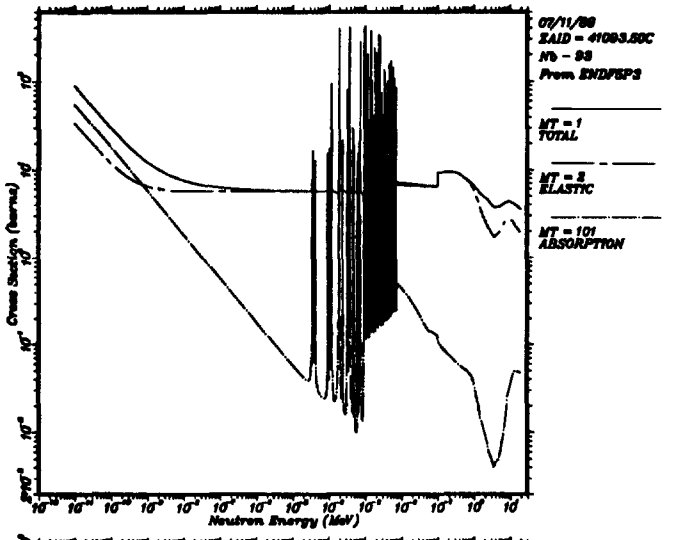
Evaluation Information

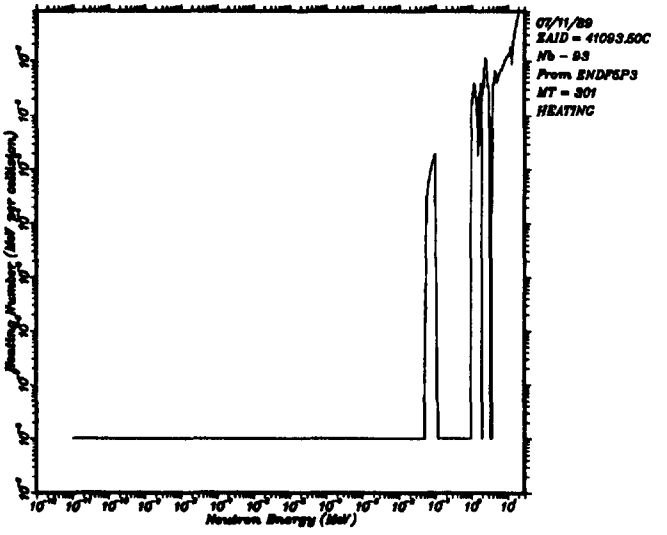
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

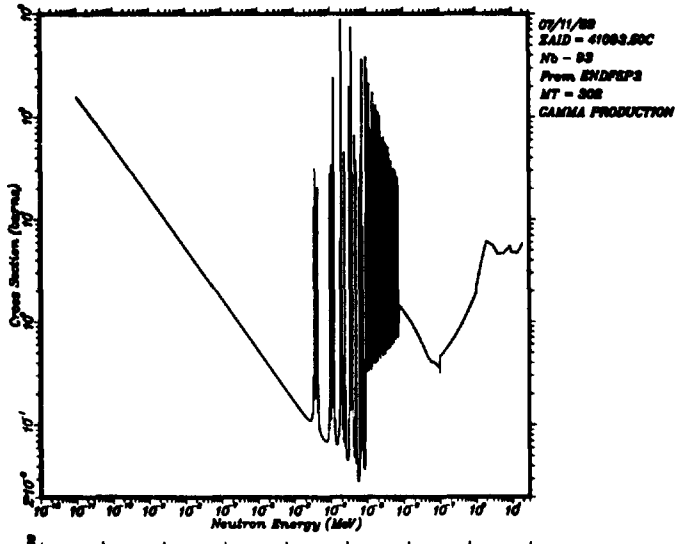
Reaction Information

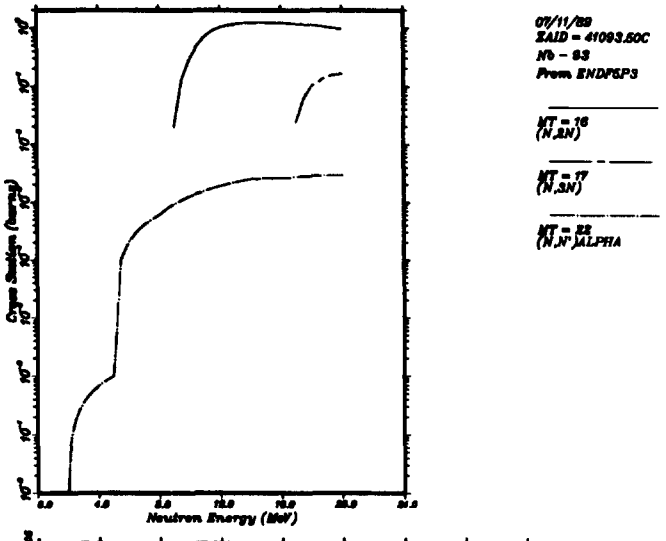
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.9218+00	2.0000+01	-8.8260+00	-8.8260+00
(n,3n)	17	1.6900+01	2.0000+01	-1.6718+01	-1.6718+01
(n,n')α	22	1.9671+00	2.0000+01	-1.9460+00	-1.9460+00
(n,n'1)	51	2.9315-02	2.0000+01	-2.9000-02	0.0000+00
(n,n'2)	52	7.4803-01	2.0000+01	-7.4000-01	0.0000+00
(n,n'3)	53	8.1880-01	2.0000+01	-8.1000-01	0.0000+00
(n,n'4)	54	9.6941-01	2.0000+01	-9.5900-01	0.0000+00
(n,n'5)	55	1.0816+00	2.0000+01	-1.0700+00	0.0000+00
(n,n'6)	56	1.3293+00	2.0000+01	-1.3150+00	0.0000+00
(n,n'7)	57	1.5046+00	2.0000+01	-1.4884+00	0.0000+00
(n,n'8)	58	1.6922+00	2.0000+01	-1.6740+00	0.0000+00
(n,n'9)	59	1.9681+00	2.0000+01	-1.9470+00	0.0000+00
(n,n'10)	60	2.1824+00	2.0000+01	-2.1590+00	0.0000+00
(n,n'11)	61	2.3604+00	2.0000+01	-2.3350+00	0.0000+00
(n,n'12)	62	2.5495+00	2.0000+01	-2.5190+00	0.0000+00
(n,n'c)	91	2.5495+00	2.0000+01	-2.5221+00	-2.5221+00
(n,γ)	102	1.0000-11	2.0000+01	7.2139+00	7.2139+00
(n,p)	103	3.5000+00	2.0000+01	7.1900-01	7.1900-01
(n,α)	107	4.5000+00	2.0000+01	4.9140+00	4.9140+00

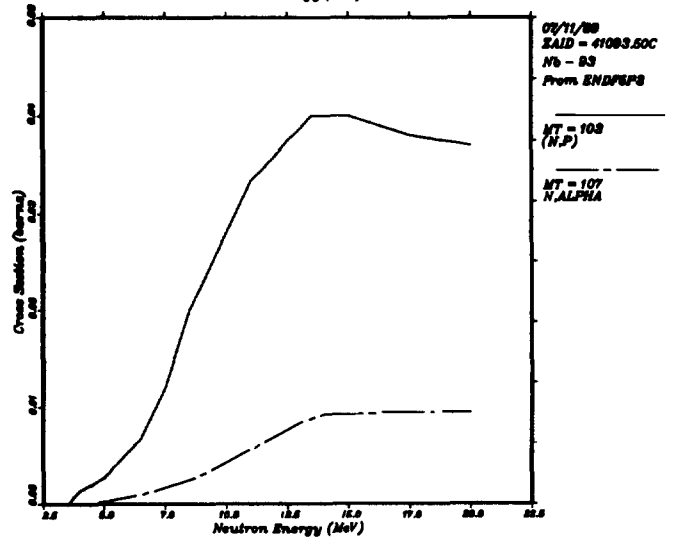
41093.50C

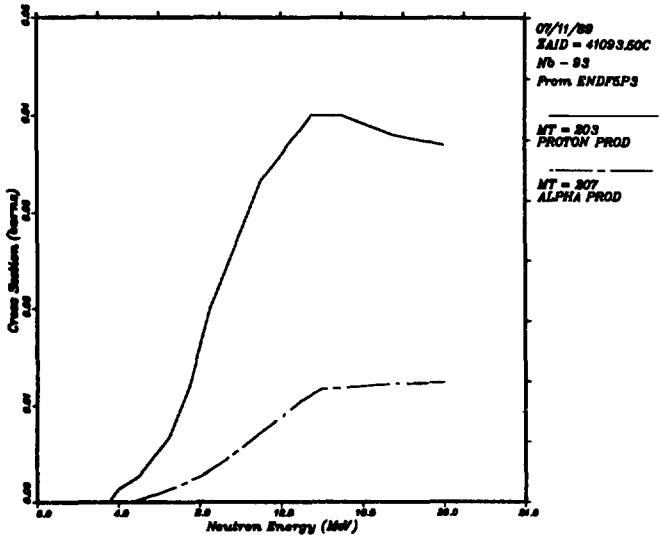

07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 301
HEATING
Neutron Energy (MeV)


07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 41093.50C
Nb - 93
From ENDF&PS
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Molybdenum

ZAID=42000.50C
SOURCE: ENDF/B–V (MAT=1321, Tape 513)
REFERENCE: "Molybdenum,"
by R. J. Howerton, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=42000.50C	NES=4260	T=300°K
ZAID=42000.51C	NES=618	T=300°K

Discrete Reaction

ZAID=42000.50D	NES=263	T=300°K
ZAID=42000.51D	NES=263	T=300°K

Multigroup

ZAID=42000.50M	30–Group	T=300°K

Isotope Information

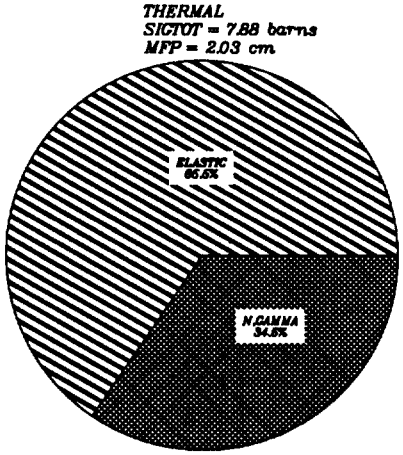
Abundance=Natural
Density=10.20 gm/cm^3

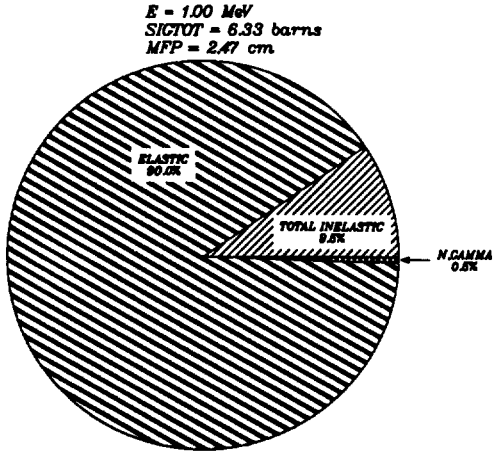
Evaluation Information

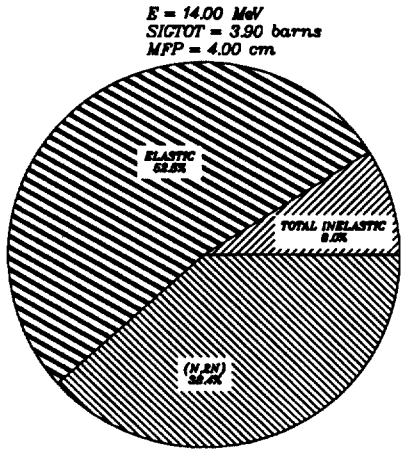
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

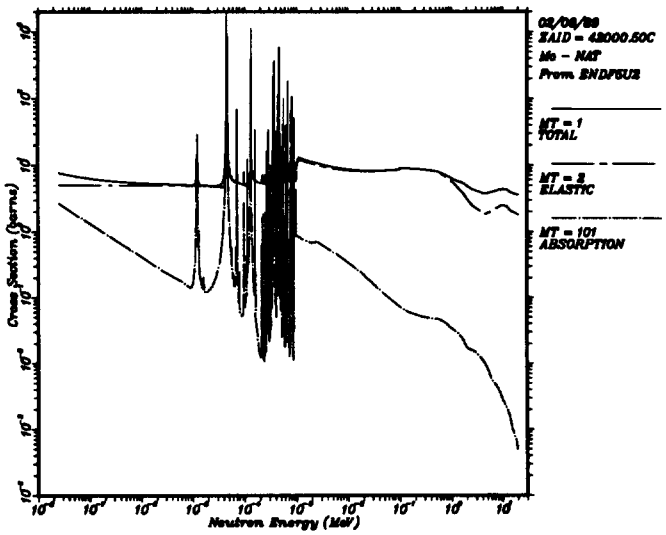
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.0000+00	2.0000+01	-7.9168+00	-7.9168+00
(n,3n)	17	1.5000+01	2.0000+01	-1.4844+01	-1.4844+01
(n,n'c)	91	2.5000-01	2.0000+01	-2.4740-01	-2.4740-01
(n,γ)	102	1.0000-11	2.0000+01	7.2500+00	7.2500+00

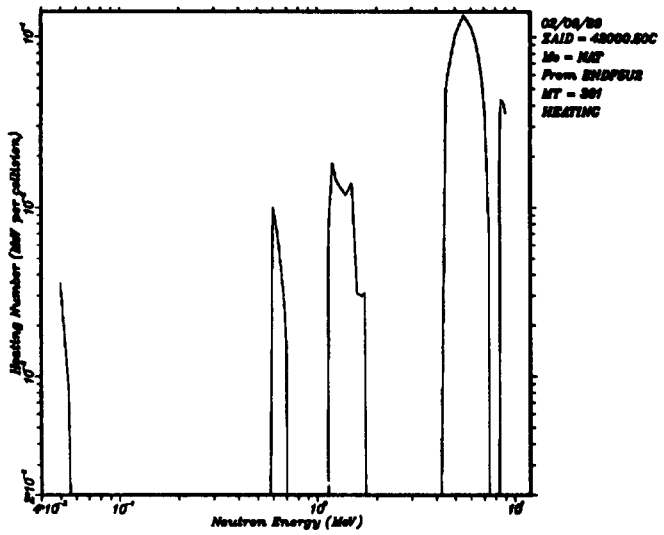


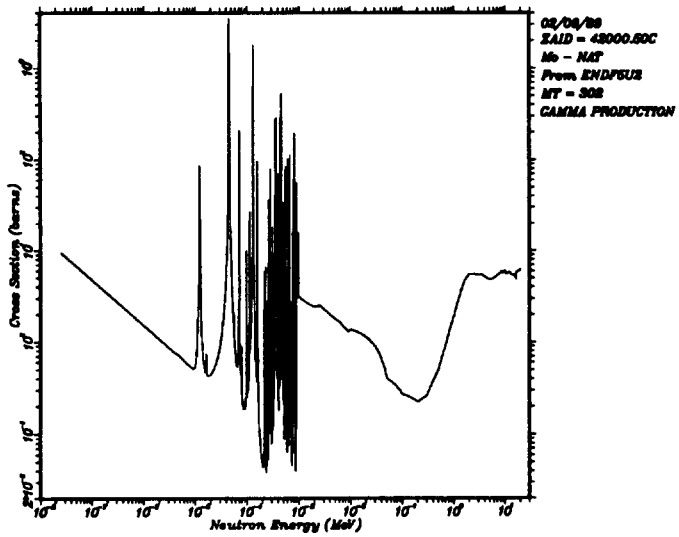


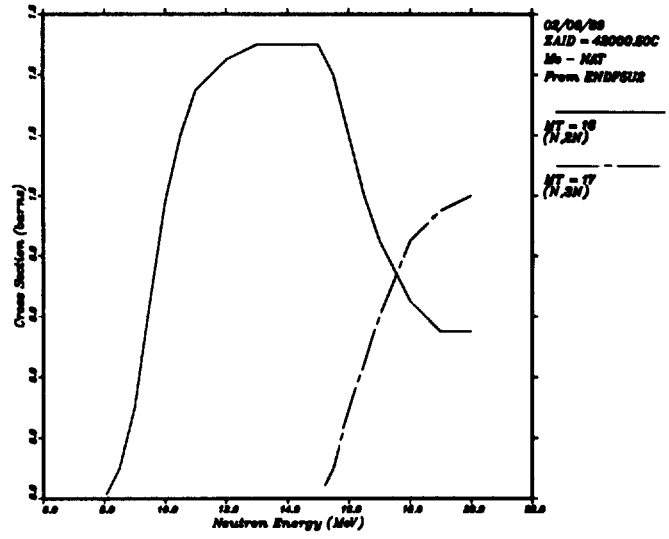


42000.50C


02/06/99
ZAID = 42000.50C
Mo - NAT
From ENDF/B-VI
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 42000.50C
Mo - NAT
From ENDF/B-VI
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 42000.50C
Mo - NAT
From ENDF/B-VI
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 42000.50C
Mo - NAT
From ENDF/B-VI
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Rhodium – 103

ZAID=45103.50C
SOURCE: ENDF/B–V (MAT=1310, Tape 510)
REFERENCE: "Summary Documentation Isotope: 45–Rh–103,"
by R. E. Schenter, D. L. Johnson, F. M. Mann, F. Schmittroth, H. Gruppelaar, and A. Z. Livolsi
contained in ENDF–201

Data Availability

Continuous Energy

ZAID=45103.50C	NES=2608	T=300°K

Discrete Reaction

ZAID=45103.50D	NES=263	T=300°K

Multigroup

ZAID=45103.50M	30–Group	T=300°K

Isotope Information

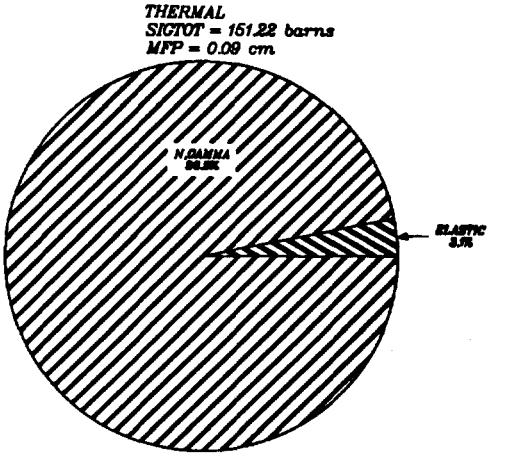
Abundance=100.00%
Density=12.40 gm/cm^3

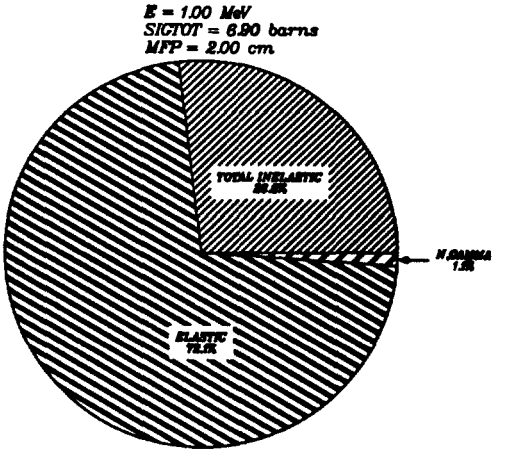
Evaluation Information

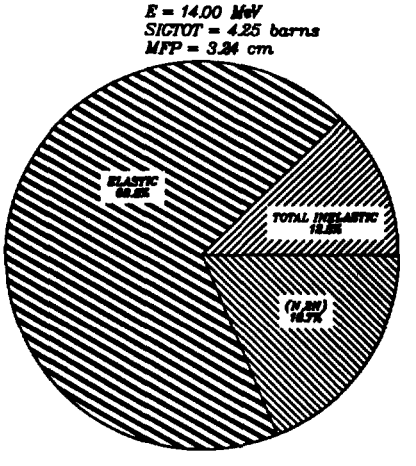
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

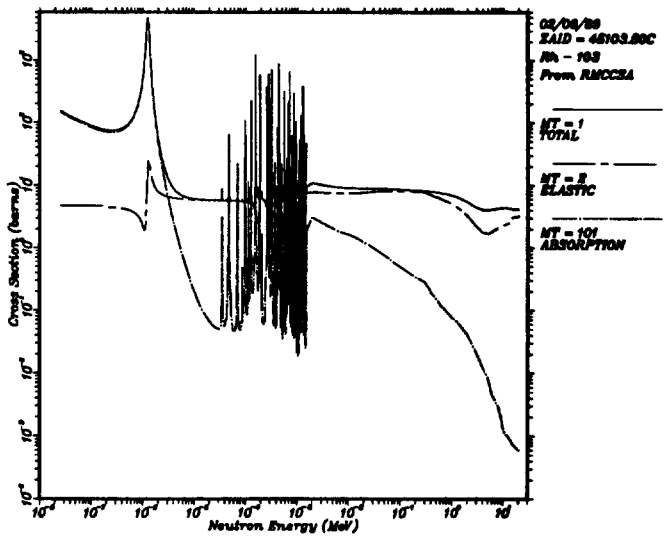
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	**2**	1.0000-11	2.0000+01		
(n,2n)	16	9.5000+00	2.0000+01	-9.4000+00	-9.4000+00
(n,n'1)	51	4.0400-02	2.0000+01	-4.0000-02	0.0000+00
(n,n'2)	52	9.3912-02	2.0000+01	-9.3000-02	0.0000+00
(n,n'3)	53	2.9991-01	2.0000+01	-2.9700-01	0.0000+00
(n,n'4)	54	3.6555-01	2.0000+01	-3.6200-01	0.0000+00
(n,n'5)	55	5.4327-01	2.0000+01	-5.3800-01	0.0000+00
(n,n'6)	56	6.5637-01	2.0000+01	-6.5000-01	0.0000+00
(n,n'7)	57	8.0582-01	2.0000+01	-7.9800-01	0.0000+00
(n,n'8)	58	8.5126-01	2.0000+01	-8.4300-01	0.0000+00
(n,n'9)	59	8.8358-01	2.0000+01	-8.7500-01	0.0000+00
(n,n'10)	60	9.2397-01	2.0000+01	-9.1500-01	0.0000+00
(n,n'11)	61	1.0532+00	2.0000+01	-1.0430+00	0.0000+00
(n,n'12)	62	1.1130+00	2.0000+01	-1.1020+00	0.0000+00
(n,n'13)	63	1.2592+00	2.0000+01	-1.2470+00	0.0000+00
(n,n'14)	64	1.2824+00	2.0000+01	-1.2700+00	0.0000+00
(n,n'c)	91	1.4006+00	2.0000+01	-1.3870+00	-1.3870+00
(n,γ)	102	1.0000-11	2.0000+01	6.9993+00	6.9993+00

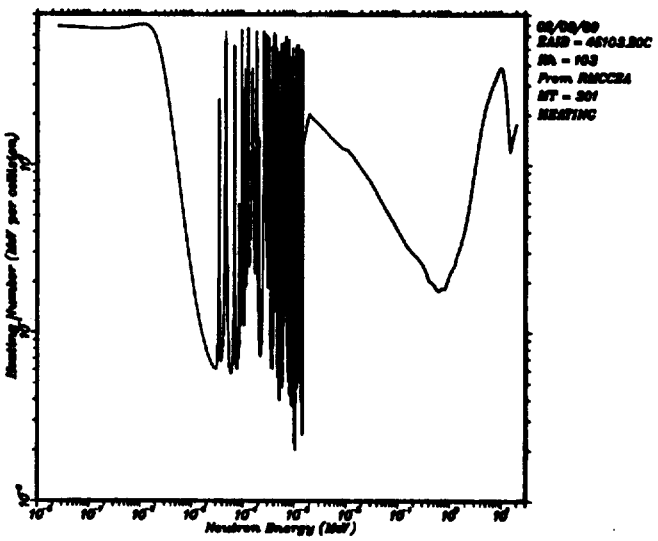


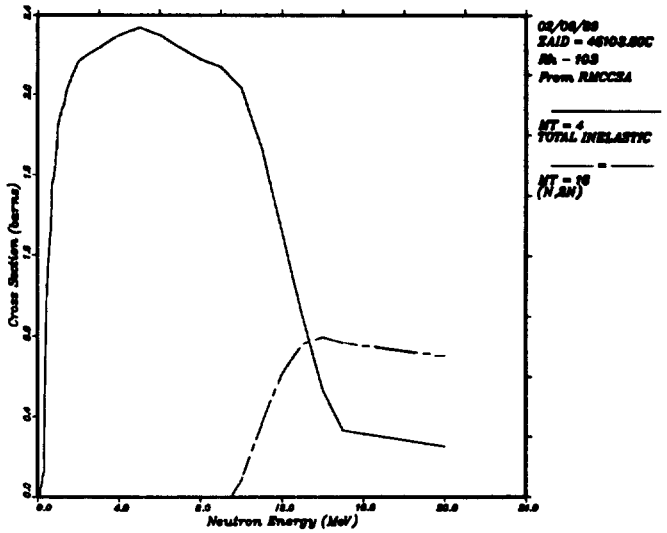




45103.50C


02/06/99
ZAID = 45103.50C
Rh - 103
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 45103.50C
Rh - 103
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 45103.50C
Rh - 103
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)

Average Fission Product from ^{235}U

ZAID=45117.90C

SOURCE: Group T-2 (MAT=998, File /077433/AVFISPRO/SIGMA/U235E3)

REFERENCE: "Average Neutronic Properties of "Prompt" Fission Products,"
by D. G. Foster, Jr. and E. D. Arthur
Los Alamos National Laboratory report LA-9168-MS (February 1982)

Data Availability

Continuous Energy

ZAID=45117.90C	NES=399	T=300°K

Discrete Reaction

ZAID=45117.90D	NES=263	T=300°K

Multigroup

ZAID=45117.90M	30-Group	T=300°K

Isotope Information

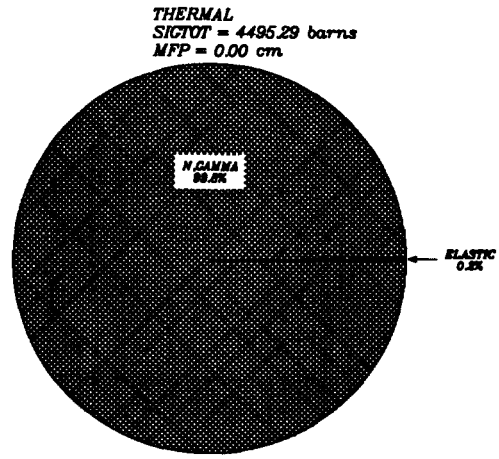
Abundance:See Appendix A.
Density:See Appendix A.

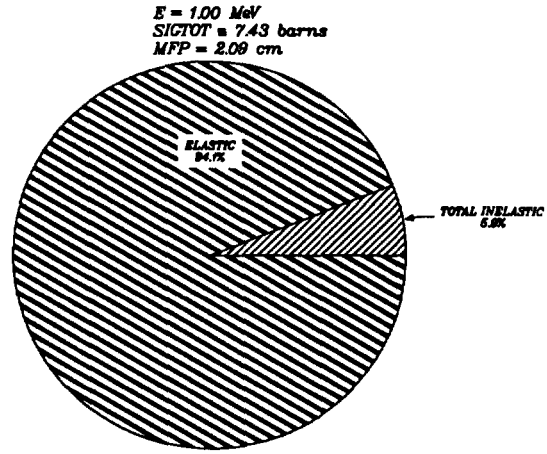
Evaluation Information

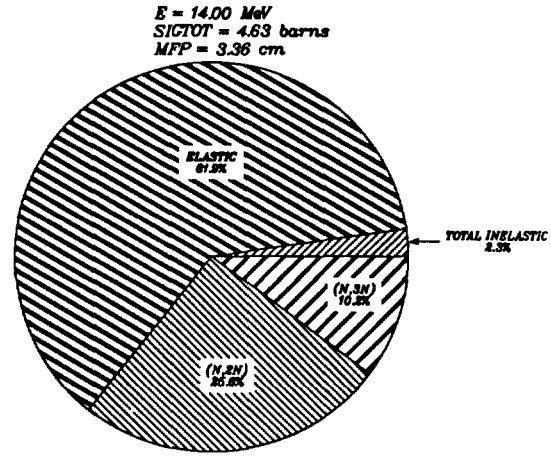
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

Reaction Information

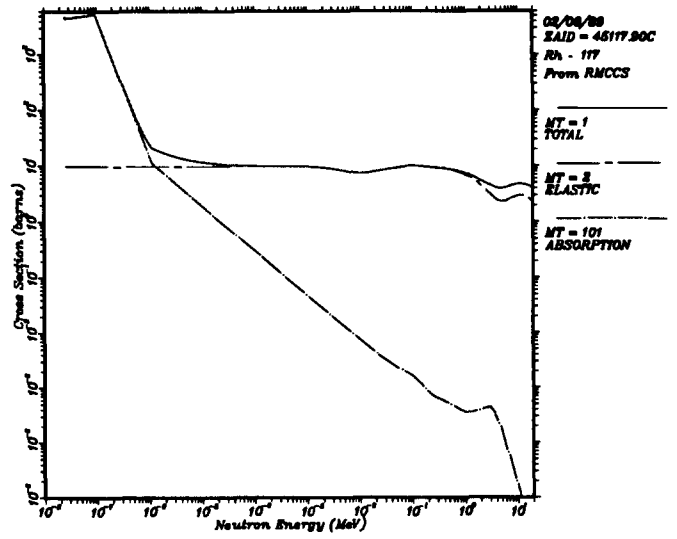
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	3.6983+00	2.0000+01	-3.6666+00	-3.6666+00
(n,3n)	17	9.7490+00	2.0000+01	-9.6650+00	-9.6650+00
(n,n'c)	91	1.5341-01	2.0000+01	-1.5209-01	-1.5209-01
(n,γ)	102	1.0000-11	2.0000+01	7.1917+00	7.1917+00

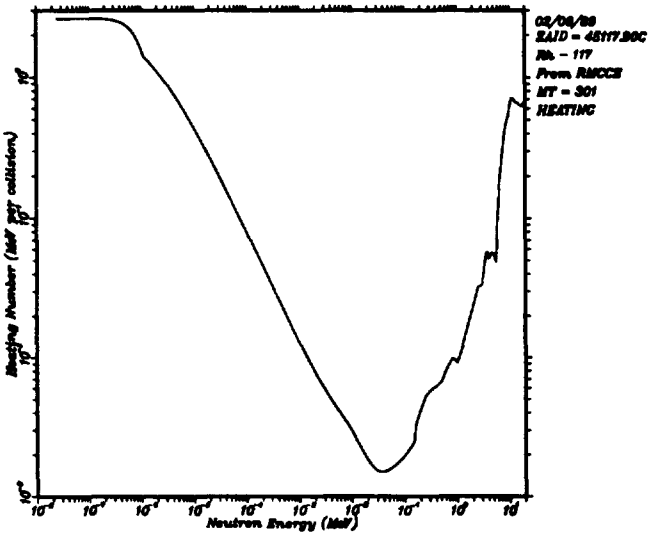


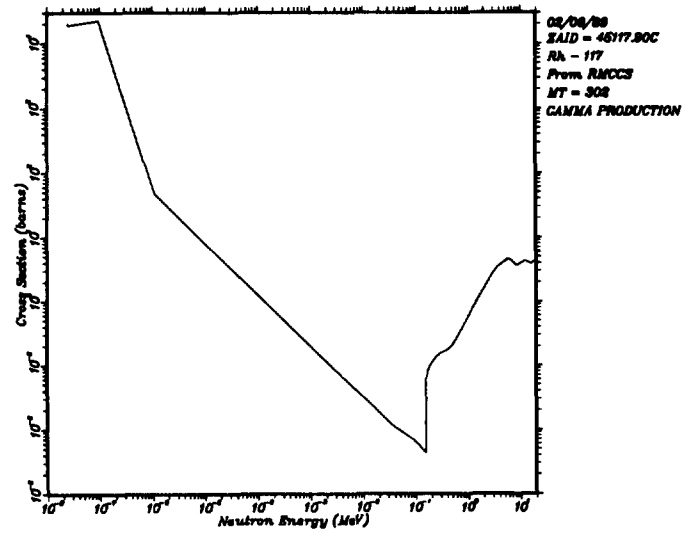


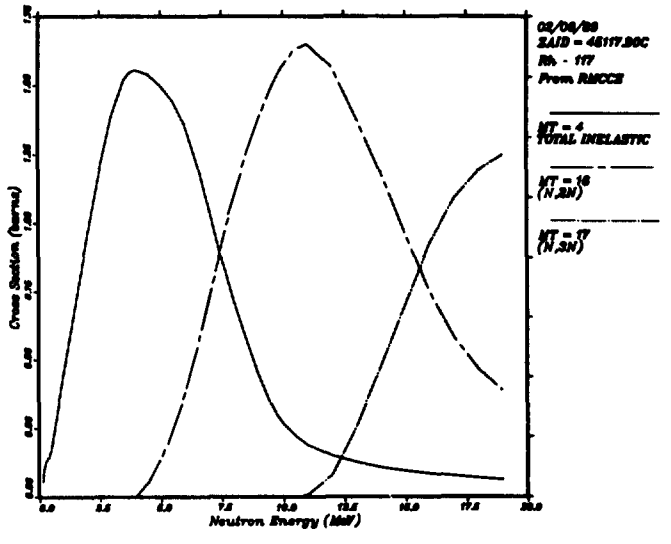


45117.90C


02/06/99
ZAID = 45117.90C
Rh - 117
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 45117.90C
Rh - 117
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 45117.90C
Rh - 117
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

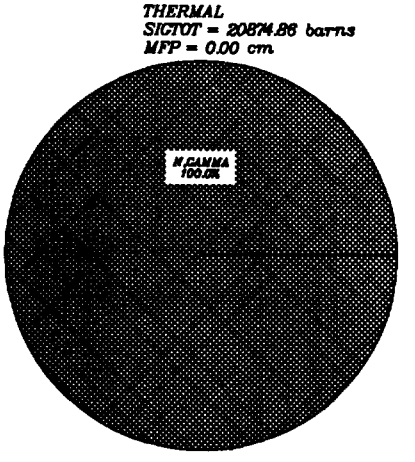

02/06/99
ZAID = 45117.90C
Rh - 117
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

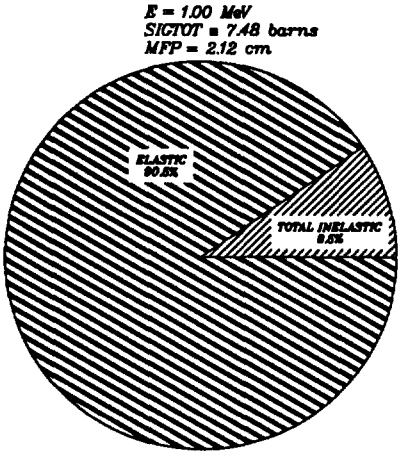
Average Fission Product from ^{239}Pu

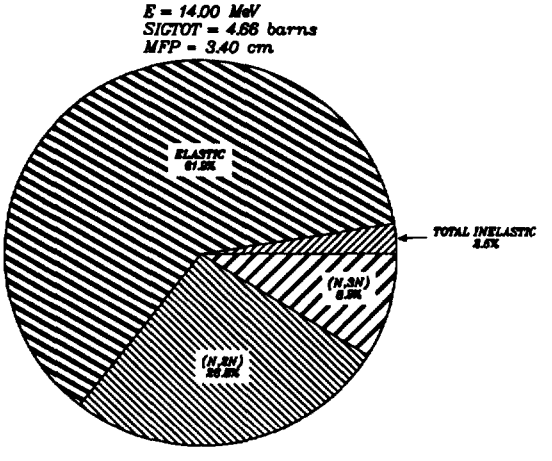
ZAID=46119.90C

SOURCE: Group T-2 (MAT=999, File /077433/AVFISPRO/SIGMA/PU239E3)

REFERENCE: "Average Neutronic Properties of "Prompt" Fission Products,"
by D. G. Foster, Jr. and E. D. Arthur
Los Alamos National Laboratory report LA-9168-MS (February 1982)







Data Availability

Continuous Energy

ZAID=46119.90C	NES=407	T=300°K

Discrete Reaction

ZAID=46119.90D	NES=263	T=300°K

Multigroup

ZAID=46119.90M	30-Group	T=300°K

Isotope Information

Abundance:See Appendix A.

Density:See Appendix A.

Evaluation Information

Photon-Production Data - Yes

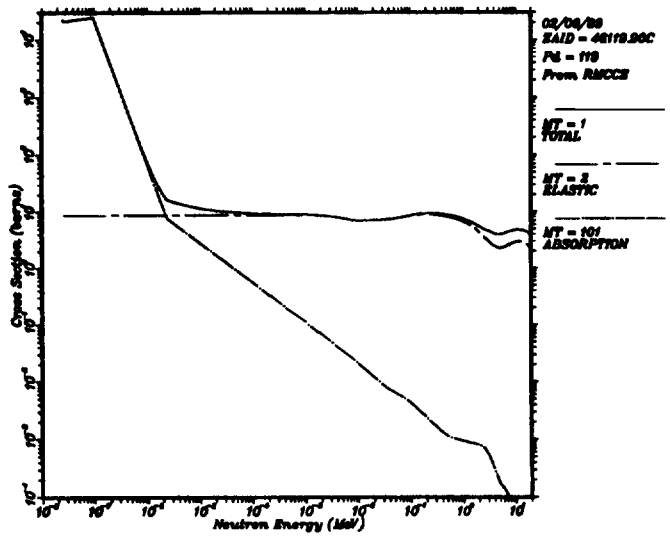
Heating Numbers - Local

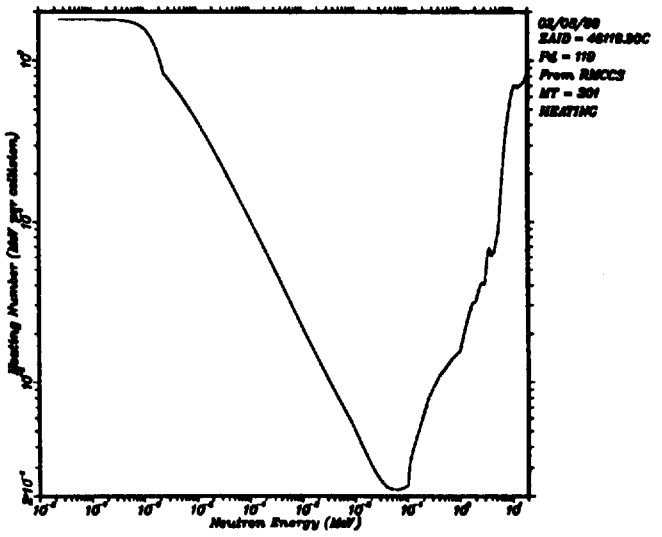
Energy Range - 10^{-11} to 20 MeV

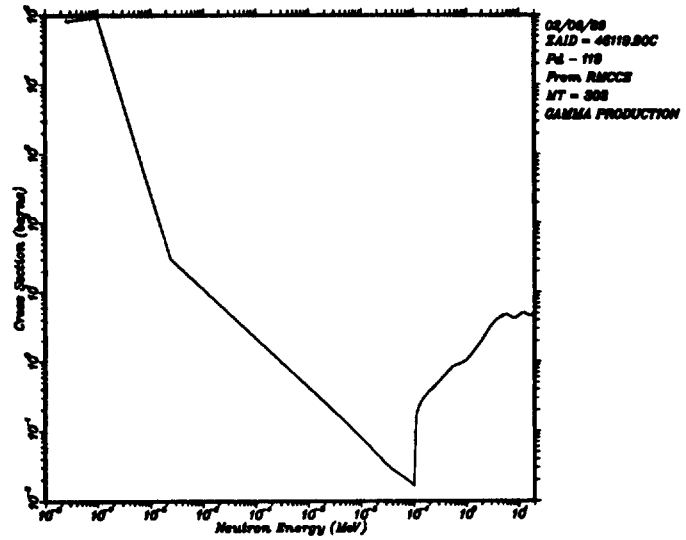
Reaction Information

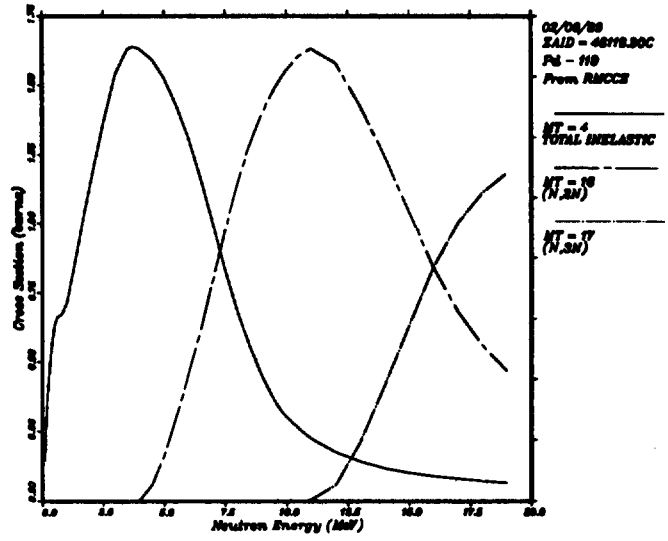
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	**2**	1.0000-11	2.0000+01		
(n,2n)	16	3.5020+00	2.0000+01	-3.4721+00	-3.4721+00
(n,3n)	17	9.6852+00	2.0000+01	-9.6035+00	-9.6035+00
(n,n'c)	91	1.0070-01	2.0000+01	-9.9846-02	-9.9846-02
(n,γ)	102	1.0000-11	2.0000+01	6.8490+00	6.8490+00

46119.90C


02/06/99
ZAID = 46119.90C
Pd - 119
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)

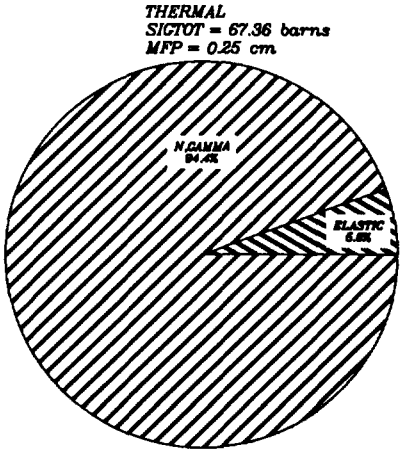

02/06/99
ZAID = 46119.90C
Pd - 119
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

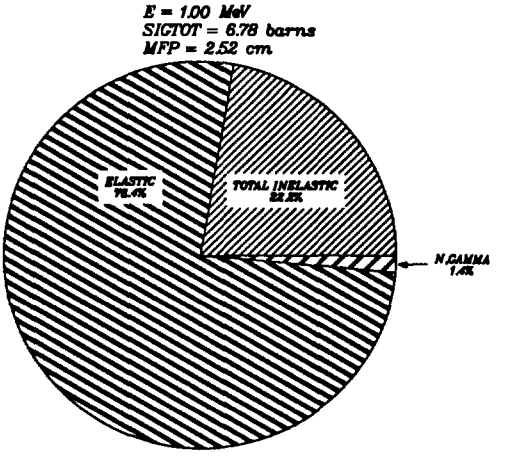

02/06/99
ZAID = 46119.90C
Pd - 119
From RMCCS
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

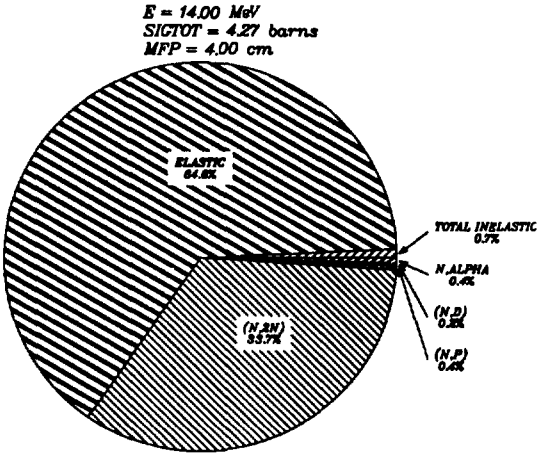

02/06/99
ZAID = 46119.90C
Pd - 119
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Silver

ZAID=47000.55C
SOURCE: Group T-2 (MAT=47, File /T2/PGY/EVAL/LAS/AGNAT)
REFERENCE: "Evaluation of n + ^{NAT}Ag,"
by P. G. Young
Los Alamos National Laboratory internal memorandum T-2-M-1519 (August 3, 1984)







Data Availability

Continuous Energy

ZAID=47000.55C	NES=2350	T=300°K

Discrete Reaction

ZAID=47000.55D	NES=263	T=300°K

Multigroup

ZAID=47000.55M	30-Group	T=300°K

Isotope Information

Abundance=Natural
Density=10.50 gm/cm^3

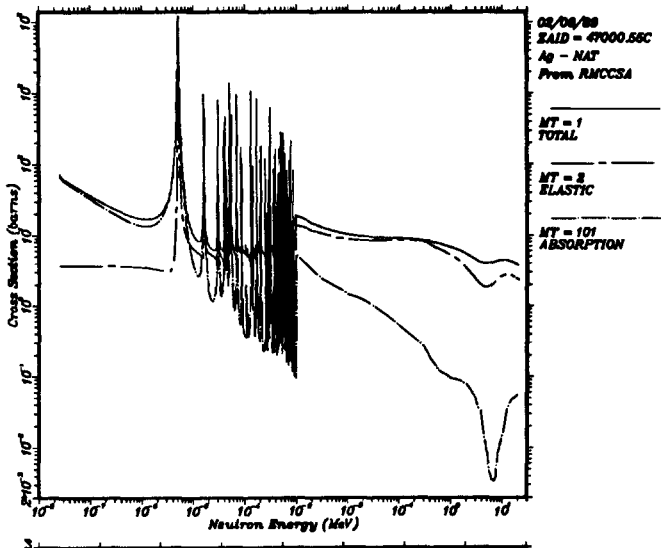
Evaluation Information

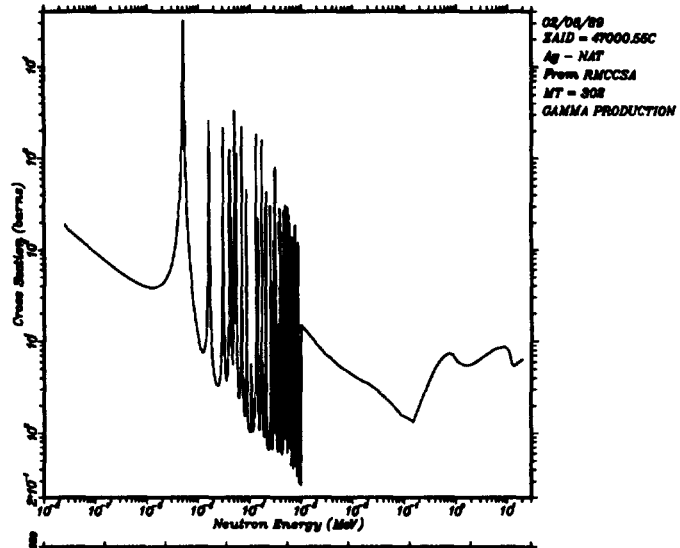
Photon-Production Data - Yes
Heating Numbers - Not Available
Energy Range - 10^{-11} to 20 MeV

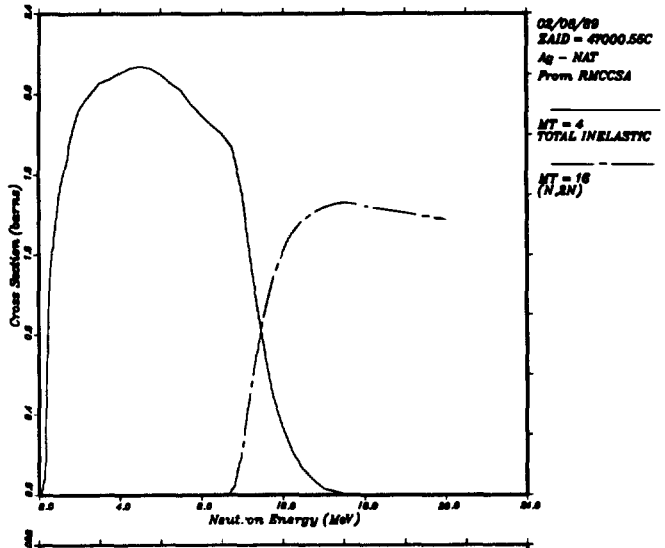
Reaction Information

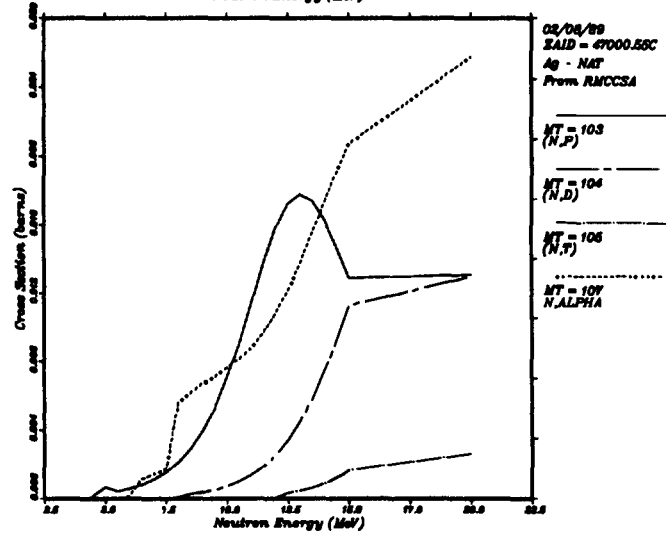
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	9.2679+00	2.0000+01	-9.1820+00	-9.1820+00
(n,n'1)	51	8.8823-02	2.0000+01	-8.8000-02	0.0000+00
(n,n'2)	52	9.3877-02	2.0000+01	-9.3000-02	0.0000+00
(n,n'3)	53	1.2719-01	2.0000+01	-1.2600-01	0.0000+00
(n,n'4)	54	1.3424-01	2.0000+01	-1.3300-01	0.0000+00
(n,n'5)	55	3.1391-01	2.0000+01	-3.1100-01	0.0000+00
(n,n'6)	56	3.2807-01	2.0000+01	-3.2500-01	0.0000+00
(n,n'7)	57	4.1888-01	2.0000+01	-4.1500-01	0.0000+00
(n,n'8)	58	4.2700-01	2.0000+01	-4.2300-01	0.0000+00
(n,n'9)	59	7.0856-01	2.0000+01	-7.0200-01	0.0000+00
(n,n'10)	60	7.9436-01	2.0000+01	-7.8700-01	0.0000+00
(n,n'11)	61	9.3100-01	2.0000+01	-9.2200-01	0.0000+00
(n,n'c)	91	7.1000-01	2.0000+01	-7.0300-01	-7.0300-01
(n,γ)	102	1.0000-11	2.0000+01	6.9480+00	6.9480+00
(n,p)	103	3.5000+00	2.0000+01	7.5200-01	7.5200-01
(n,d)	104	7.5000+00	2.0000+01	-3.3170+00	-3.3170+00
(n,t)	105	1.1500+01	2.0000+01	-6.9900+00	-6.9900+00
(n,α)	107	5.5000+00	2.0000+01	4.3540+00	4.3540+00

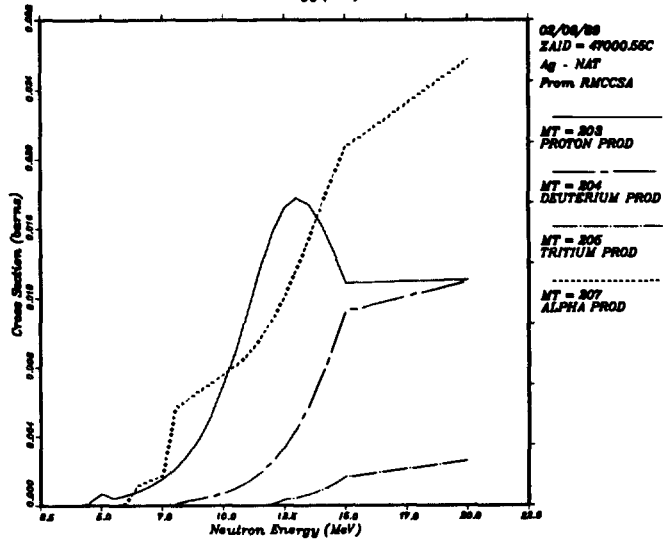
47000.55C


02/06/99
ZAID = 47000.55C
Ag - NAT
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 47000.55C
Ag - NAT
From RMCCSA
MT = 202
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

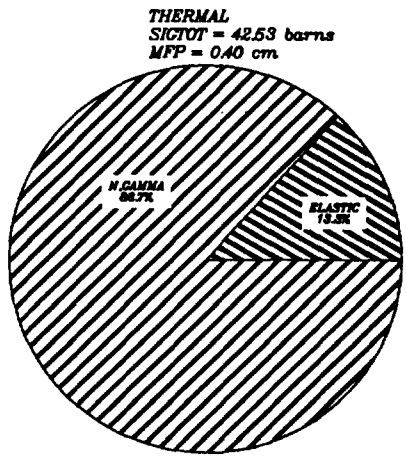

02/06/99
ZAID = 47000.55C
Ag - NAT
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)

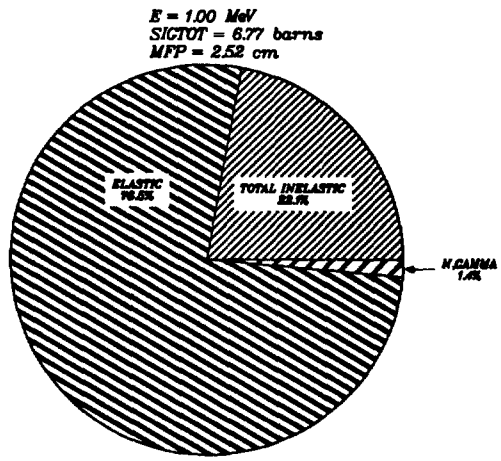

02/06/99
ZAID = 47000.55C
Ag - NAT
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

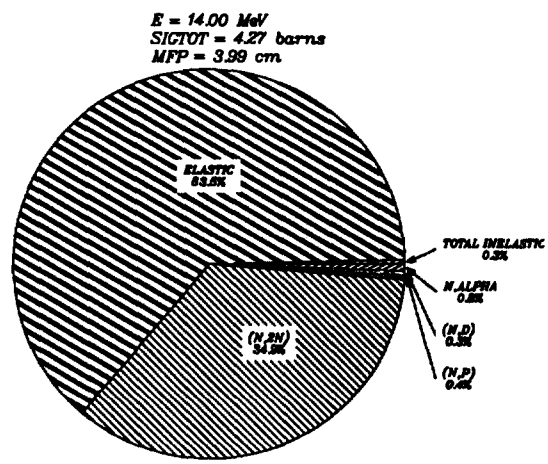

02/06/99
ZAID = 47000.55C
Ag - NAT
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Silver – 107

ZAID=47107.50C
SOURCE: ENDF/B–V (MAT=1371, Tape 510)
REFERENCE: "Summary Documentation Isotope: 47–Ag–107,"
by R. E. Schenter, D. L. Johnson, F. M. Mann, F. Schmittroth, M. R. Bhat, and A. Prince
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=47107.50C	NES=1669	T=300°K

Discrete Reaction

ZAID=47107.50D	NES=263	T=300°K

Multigroup

ZAID=47107.50M	30–Group	T=300°K

Isotope Information

Abundance=51.84%
Density=10.40625 gm/cm^3

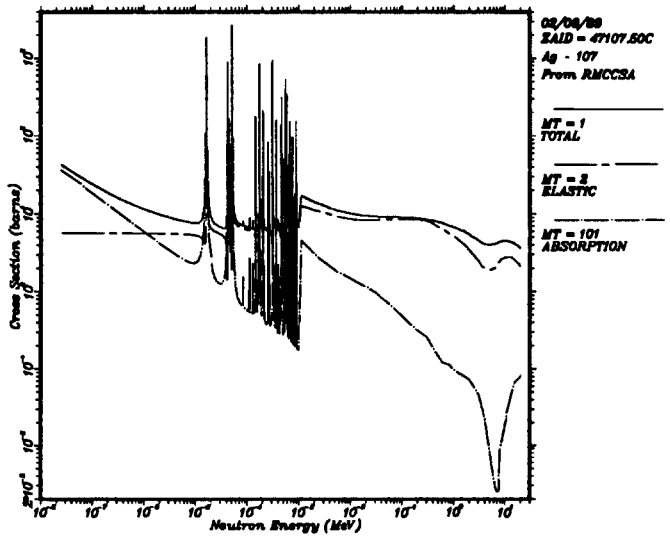
Evaluation Information

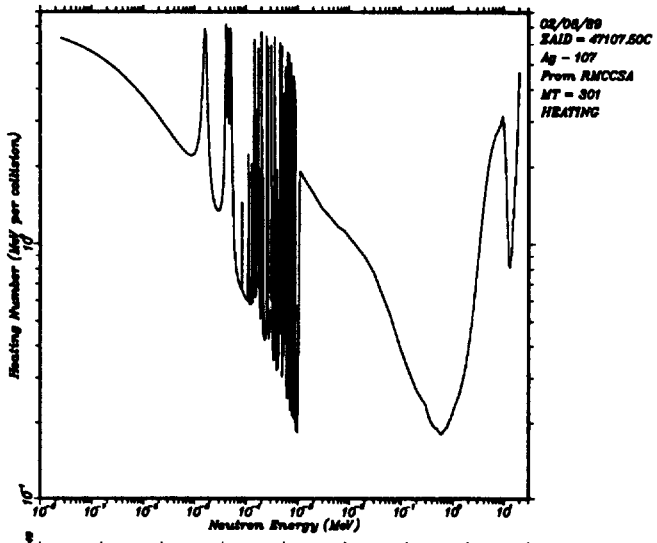
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

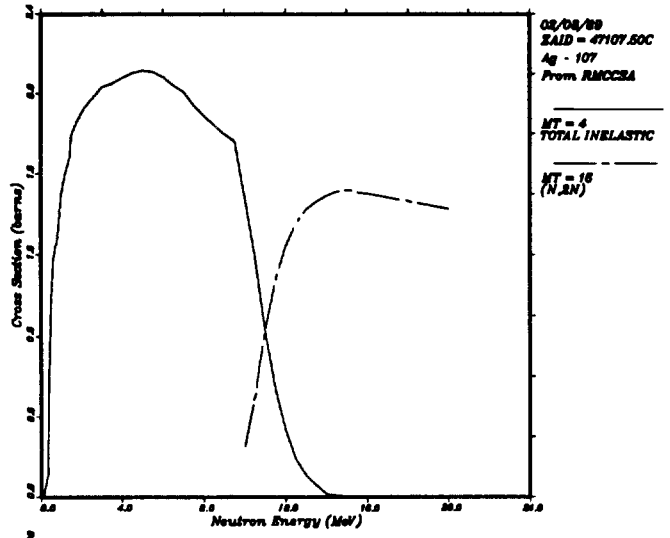
Reaction Information

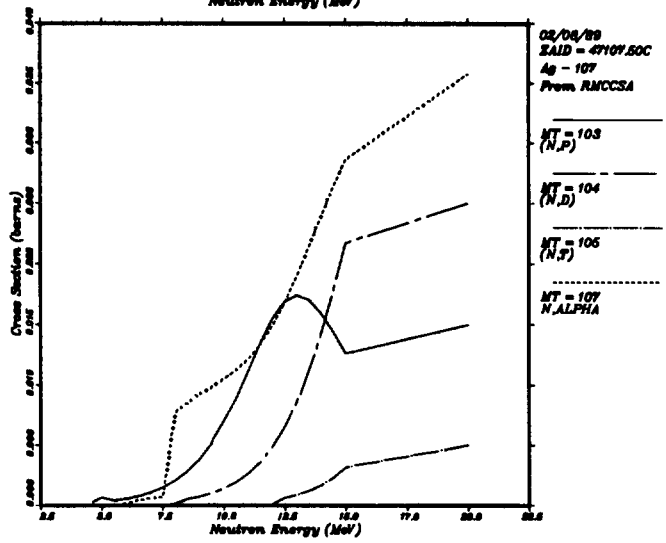
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	9.6209+00	2.0000+01	-9.5310+00	-9.5310+00
(n,n'1)	51	9.4000-02	2.0000+01	-9.3000-02	0.0000+00
(n,n'2)	52	1.2719-01	2.0000+01	-1.2600-01	0.0000+00
(n,n'3)	53	3.2807-01	2.0000+01	-3.2500-01	0.0000+00
(n,n'4)	54	4.2699-01	2.0000+01	-4.2300-01	0.0000+00
(n,n'5)	55	7.9443-01	2.0000+01	-7.8700-01	0.0000+00
(n,n'6)	56	9.3070-01	2.0000+01	-9.2200-01	0.0000+00
(n,n'c)	91	9.4988-01	2.0000+01	-9.4100-01	-9.4100-01
(n,γ)	102	1.0000-11	2.0000+01	7.2760+00	7.2760+00
(n,p)	103	4.5000+00	2.0000+01	7.5200-01	7.5200-01
(n,d)	104	7.5000+00	2.0000+01	-3.3170+00	-3.3170+00
(n,t)	105	1.1500+01	2.0000+01	-6.9900+00	-6.9900+00
(n,α)	107	5.5000+00	2.0000+01	4.3540+00	4.3540+00

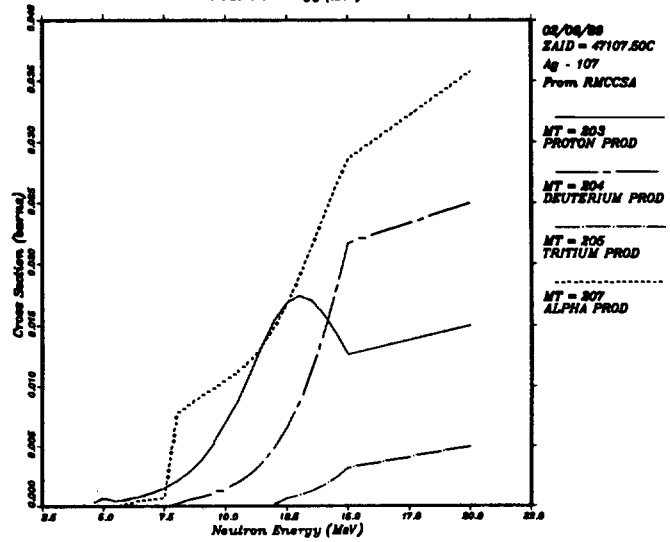
47107.50C


02/06/89
ZAID = 47107.50C
Ag - 107
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 47107.50C
Ag - 107
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 47107.50C
Ag - 107
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 47107.50C
Ag - 107
From RMCCSA
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 47107.50C
Ag - 107
From RMCCSA
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Silver – 109

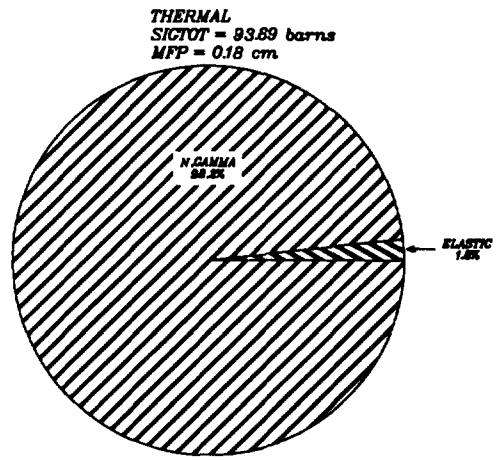
ZAID=47109.50C

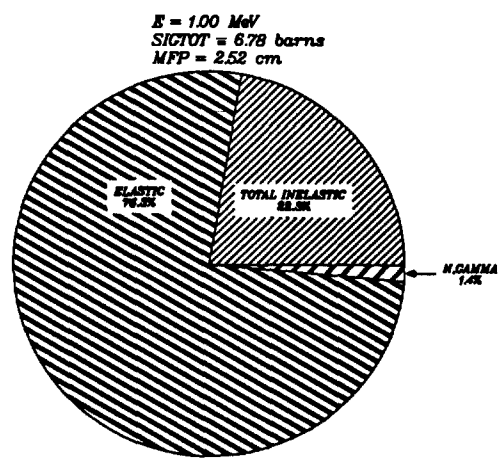
SOURCE: ENDF/B–V (MAT=1373, Tape 510)

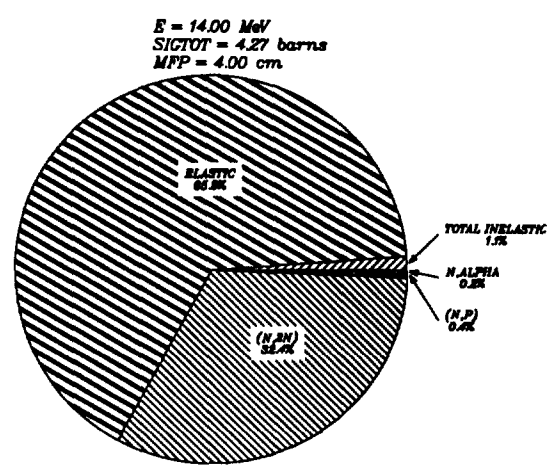
REFERENCE: "Summary Documentation Isotope: 47–Ag–109,"

by R. E. Schenter, D. L. Johnson, F. M. Mann, F. Schmittroth, H. Gruppelaar, M. R. Bhat, and A. Prince

contained in ENDF–201







Data Availability

Continuous Energy

ZAID=47109.50C	NES=2120	T=300°K

Discrete Reaction

ZAID=47109.50D	NES=263	T=300°K

Multigroup

ZAID=47109.50M	30–Group	T=300°K

Isotope Information

Abundance=48.16%

Density=10.6009 gm/cm^3

Evaluation Information

Photon-Production Data – No

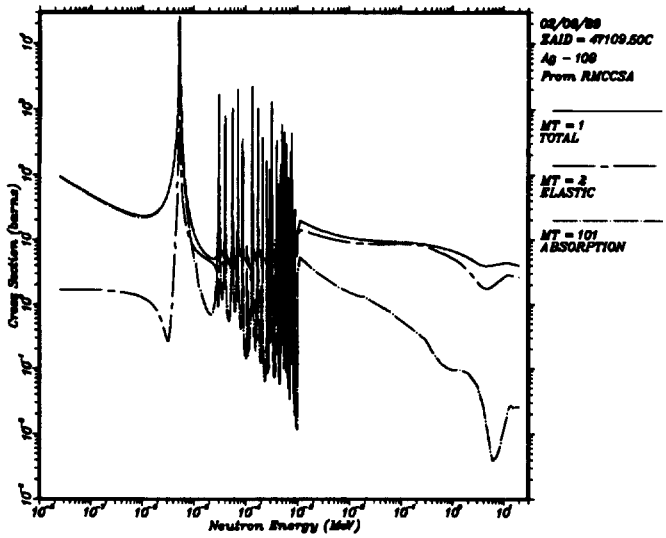
Heating Numbers – Total

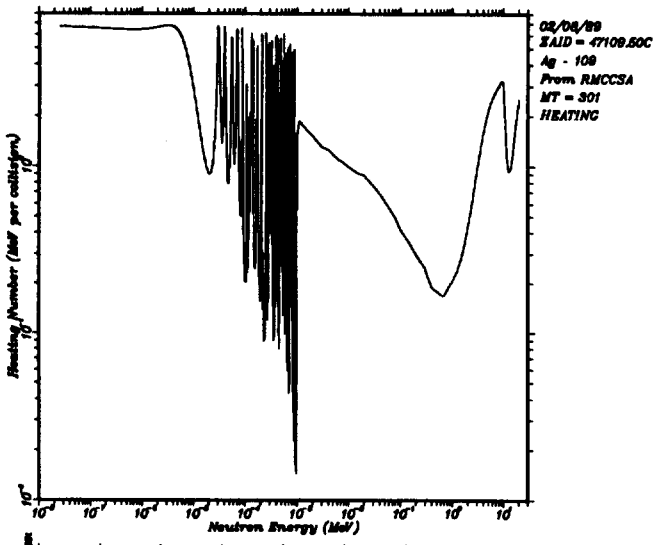
Energy Range – 10^{-11} to 20 MeV

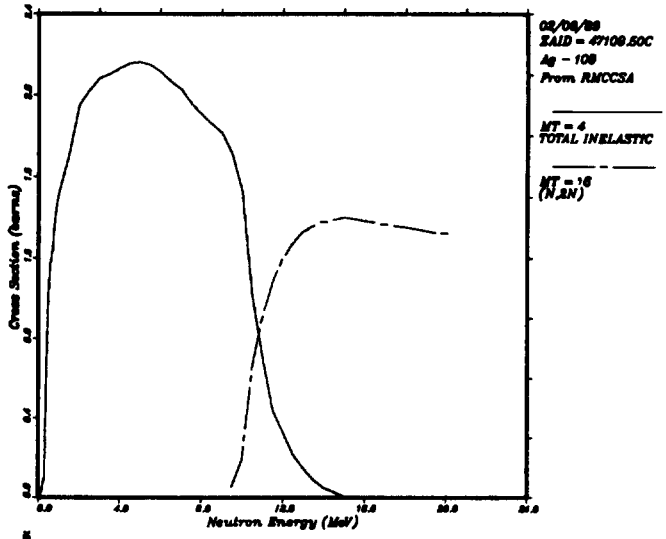
Reaction Information

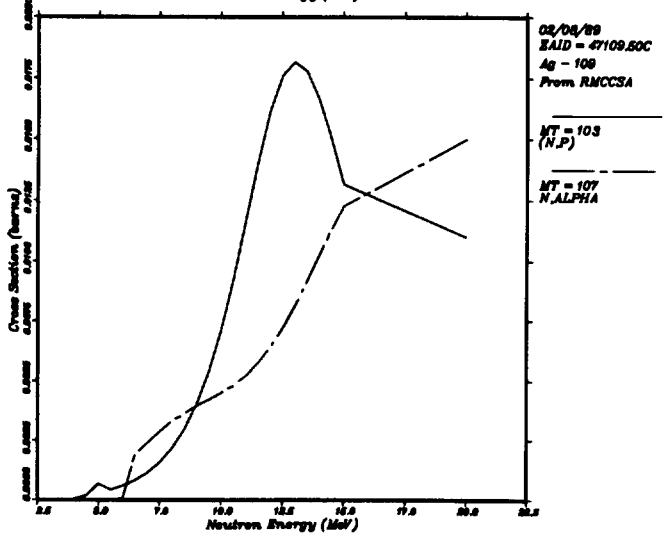
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	9.2670+00	2.0000+01	-9.1820+00	-9.1820+00
(n,n'1)	51	8.8815-02	2.0000+01	-8.8000-02	0.0000+00
(n,n'2)	52	1.3423-01	2.0000+01	-1.3300-01	0.0000+00
(n,n'3)	53	3.1388-01	2.0000+01	-3.1100-01	0.0000+00
(n,n'4)	54	4.1884-01	2.0000+01	-4.1500-01	0.0000+00
(n,n'5)	55	7.0850-01	2.0000+01	-7.0200-01	0.0000+00
(n,n'c)	91	7.0951-01	2.0000+01	-7.0300-01	-7.0300-01
(n,γ)	102	1.0000-11	2.0000+01	6.8250+00	6.8250+00
(n,p)	103	3.5000+00	2.0000+01	-5.3800-01	-5.3800-01
(n,α)	107	5.5000+00	2.0000+01	3.4030+00	3.4030+00

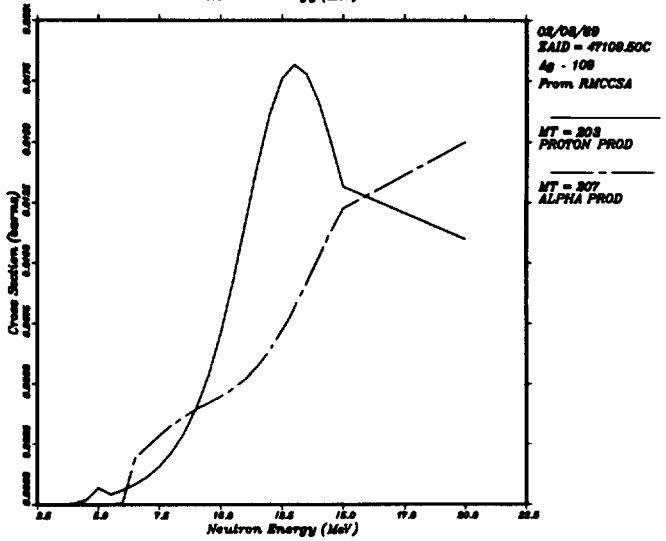
47109.50C


02/06/89
ZAID = 47109.50C
Ag - 109
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 47109.50C
Ag - 109
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

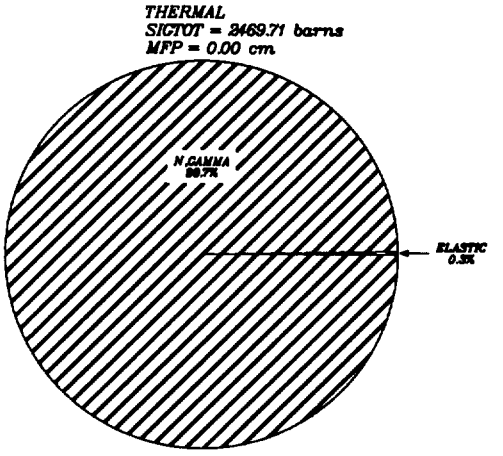

02/06/89
ZAID = 47109.50C
Ag - 109
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)

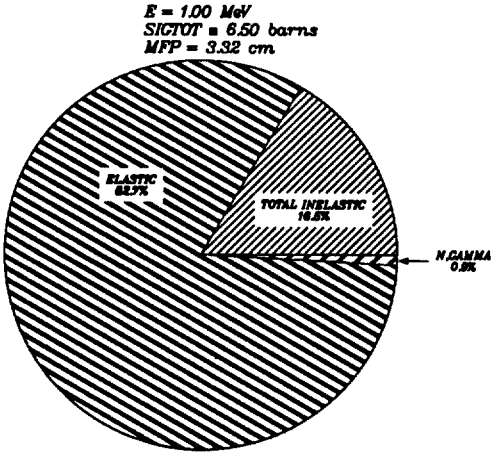

02/06/89
ZAID = 47109.50C
Ag - 109
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

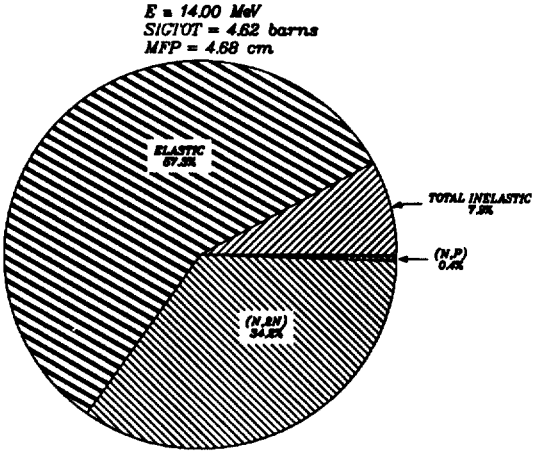

02/06/89
ZAID = 47109.50C
Ag - 109
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Cadmium

ZAID=48000.50C
SOURCE: ENDF/B-V (MAT=1281, Tape 501)
REFERENCE: "Natural Cadmium (MAT 1281) and Cadmium-113 (MAT 1282),"
by M. F. James, M. K. Drake, and S. Pearlstein
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=48000.50C	NES=2981	T=300°K
ZAID=48000.51C	NES=818	T=300°K

Discrete Reaction

ZAID=48000.50D	NES=263	T=300°K
ZAID=48000.51D	NES=263	T=300°K

Multigroup

ZAID=48000.50M	30-Group	T=300°K

Isotope Information

Abundance=Natural
Density=8.642 gm/cm^3

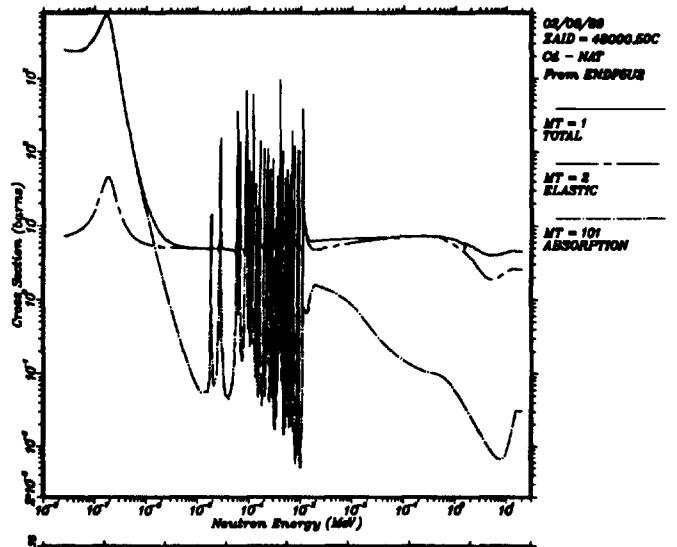
Evaluation Information

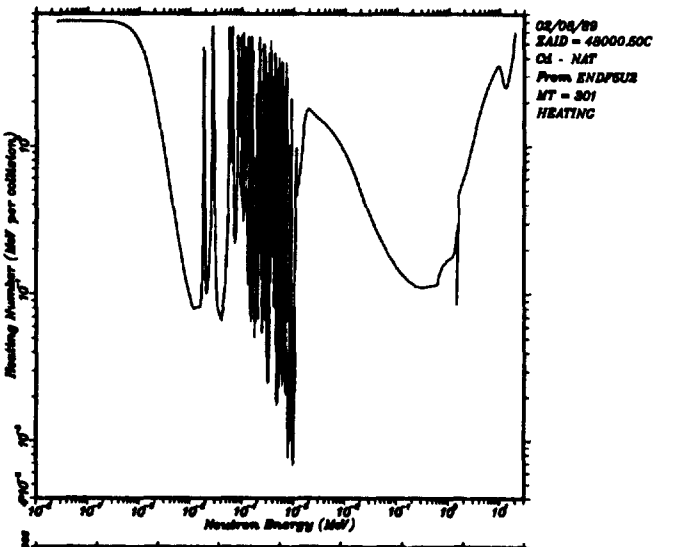
Photon-Production Data - No
Heating Numbers - Total
Energy Range - 10^{-11} to 20 MeV

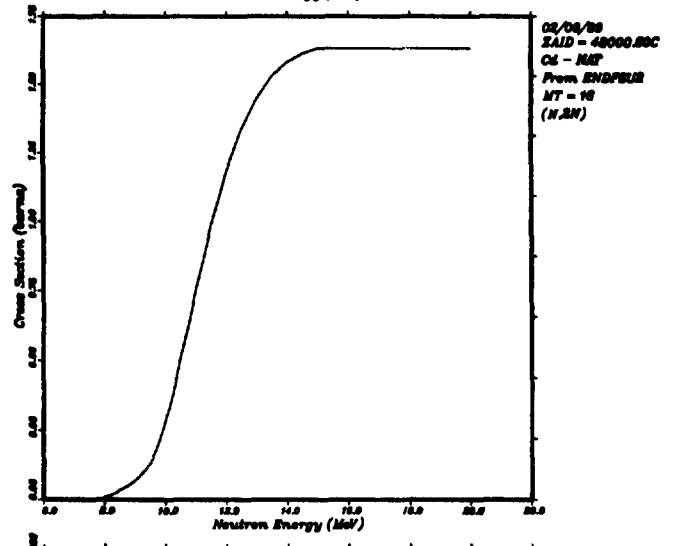
Reaction Information

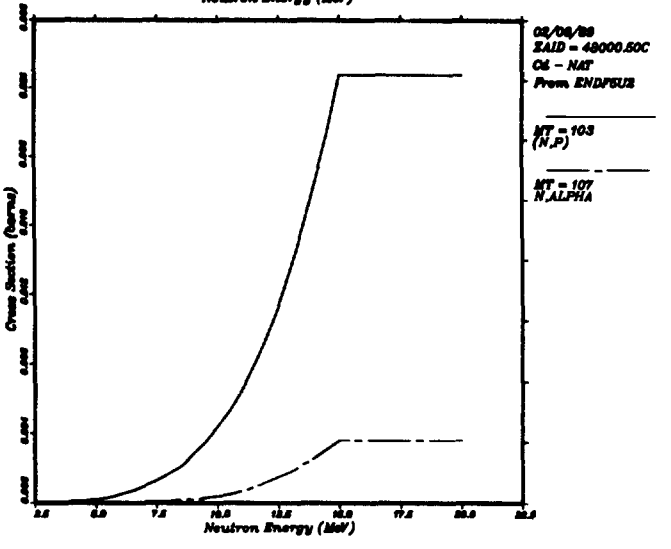
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.5000+00	2.0000+01	-7.4330+00	-7.4330+00
(n,n'1)	51	3.0000-01	2.0000+01	-2.9730-01	0.0000+00
(n,n'2)	52	6.0004-01	2.0000+01	-5.9470-01	0.0000+00
(n,n'3)	53	1.2000+00	2.0000+01	-1.1890+00	0.0000+00
(n,n'4)	54	1.3000+00	2.0000+01	-1.2880+00	0.0000+00
(n,n'c)	91	1.5003+00	2.0000+01	-1.4870+00	-1.4870+00
(n,γ)	102	1.0000-11	2.0000+01	7.1172+00	7.1172+00
(n,p)	103	3.5000+00	2.0000+01	2.7000-01	2.7000-01
(n,α)	107	6.5000+00	2.0000+01	3.0000+00	3.0000+00

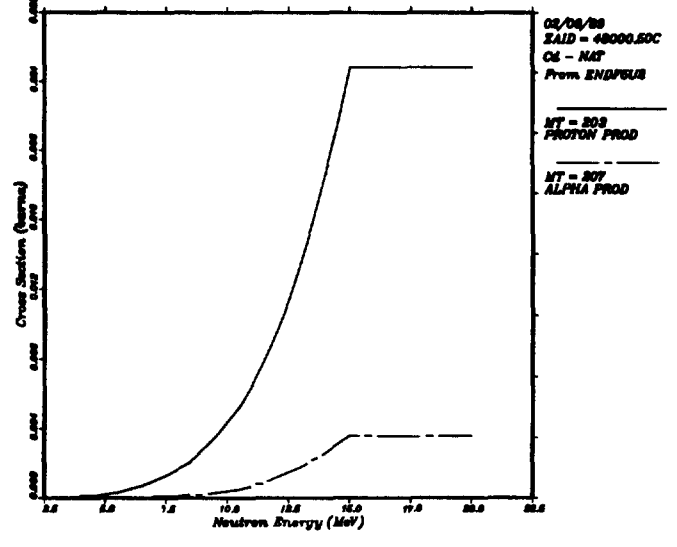
48000.50C


02/06/99
ZAID = 48000.50C
Cd - NAT
From ENDFSUB
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 48000.50C
Cd - NAT
From ENDFSUB
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 48000.50C
Cd - NAT
From ENDFSUB
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 48000.50C
Cd - NAT
From ENDFSUB
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 48000.50C
Cd - NAT
From ENDFSUB
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Tin

ZAID=50000.35C
SOURCE: ENDL-85 (ZA=50000 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

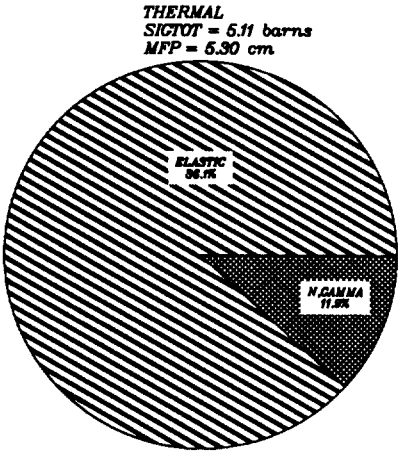
Data Availability
Continuous Energy
ZAID=50000.35C NES=205 T=0°K

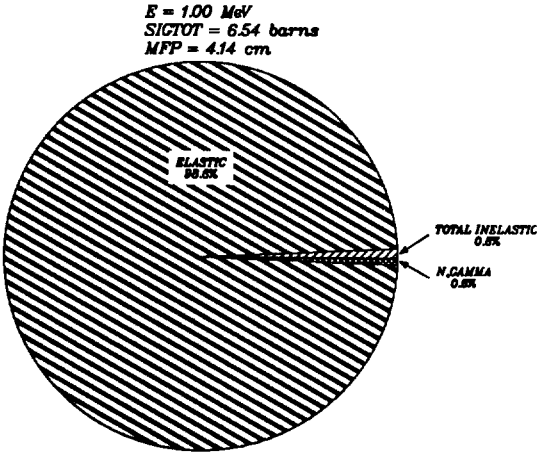
Isotope Information
Abundance=Natural
Density=7.28 gm/cm^3

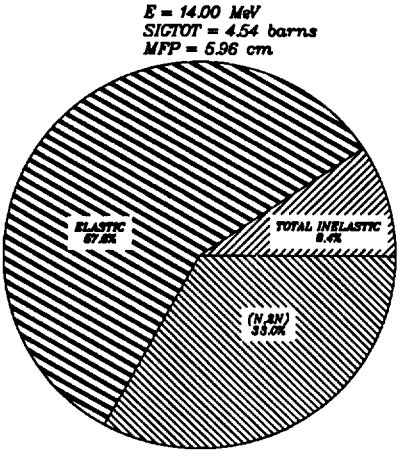
Evaluation Information
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-10} to 20 MeV

Reaction Information

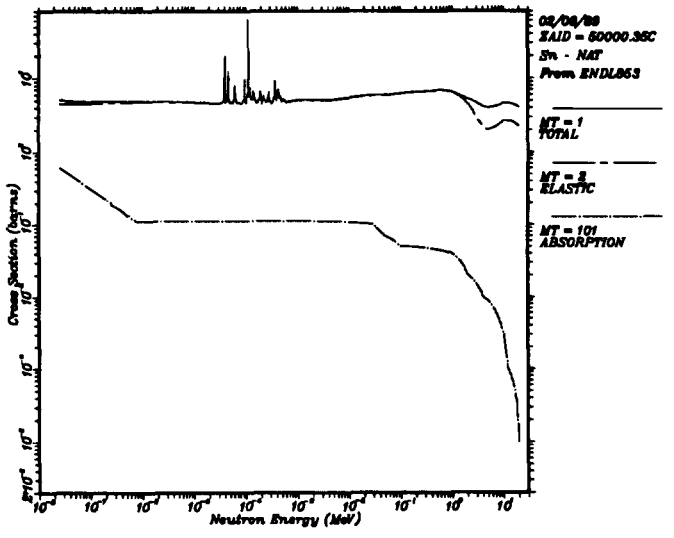
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	7.5000-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	9.3790+00	2.0000+01	-9.3000+00	-9.3000+00
(n,3n)	17	1.5127+01	2.0000+01	-1.5000+01	-1.5000+01
(n,γ)	102	1.0000-10	2.0000+01	9.3500+00	9.3500+00

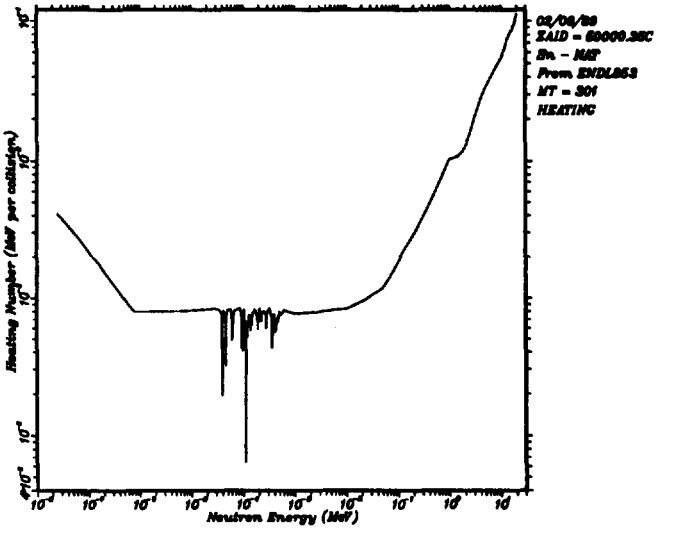


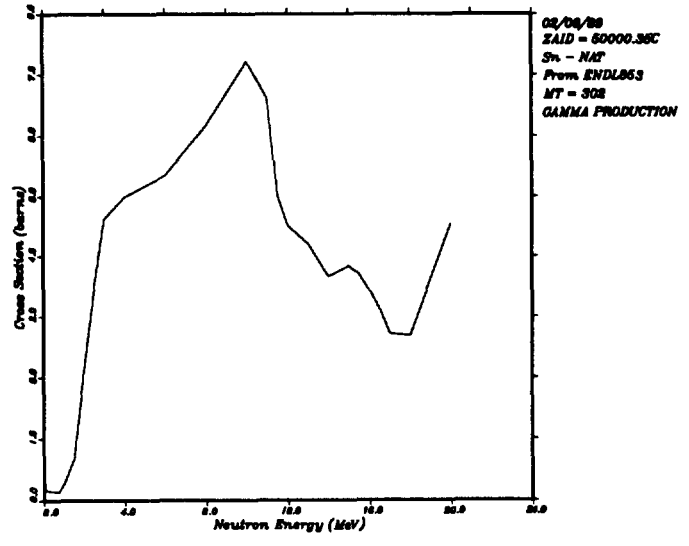


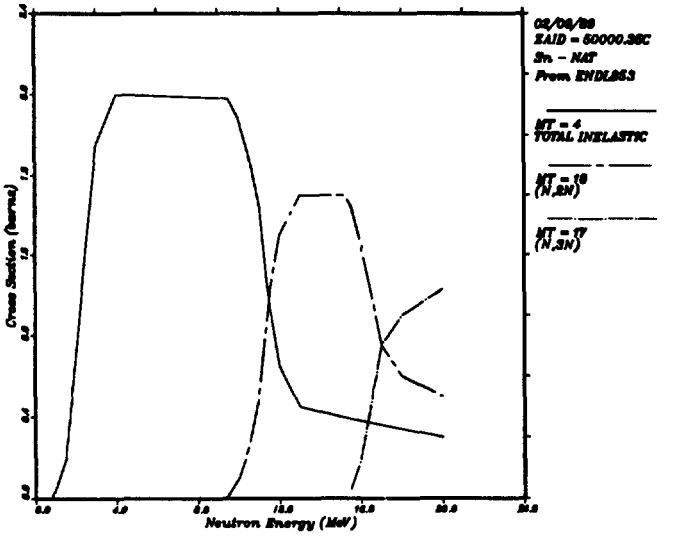


50000.35C


02/06/99
ZAID = 50000.35C
Sn - NAT
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 50000.35C
Sn - NAT
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 50000.35C
Sn - NAT
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 50000.35C
Sn - NAT
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Average Fission Product

ZAID=50120.35C

SOURCE: ENDL-85 (ZA=99120 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=50120.35C	NES=232	T=0°K

Discrete Reaction

ZAID=50120.35D	NES=263	T=0°K

Multigroup

ZAID=50120.35M	30-Group	T=0°K

Isotope Information

Abundance:See Appendix A.

Density:See Appendix A.

Evaluation Information

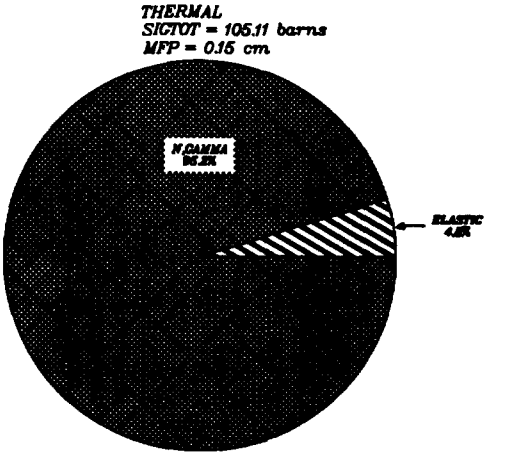
Photon-Production Data - Yes

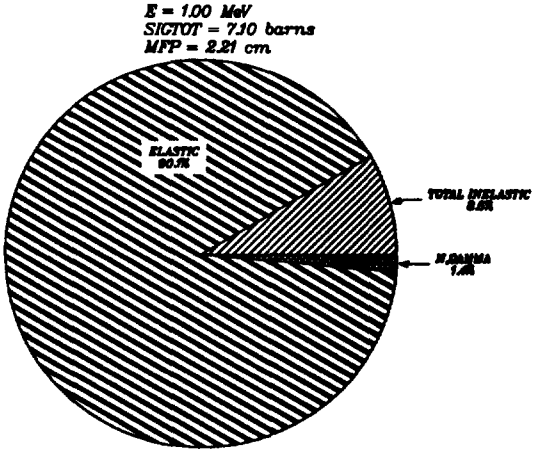
Heating Numbers - Local

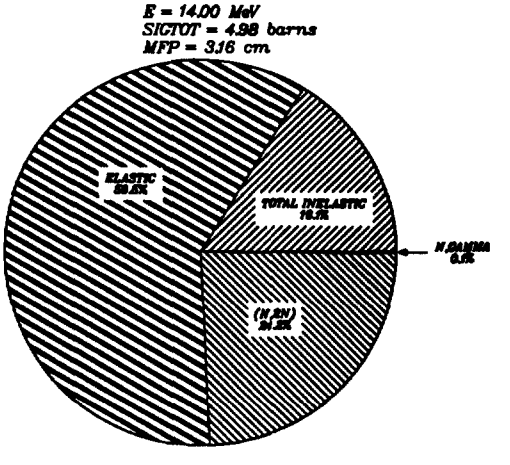
Energy Range - 10^{-10} to 20 MeV

Reaction Information

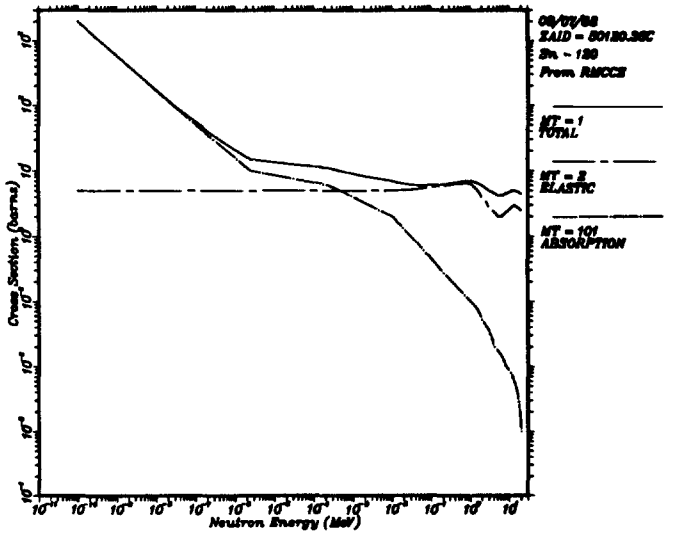
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.0000-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	8.0687+00	2.0000+01	-8.0000+00	-8.0000+00
(n,3n)	17	1.5482+01	2.0000+01	-1.5350+01	-1.5350+01
(n,γ)	102	1.0000-10	2.0000+01	8.0000+00	8.0000+00

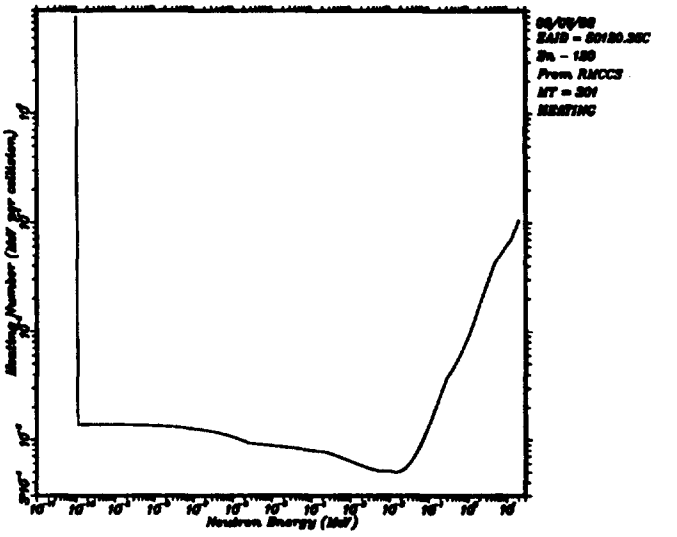


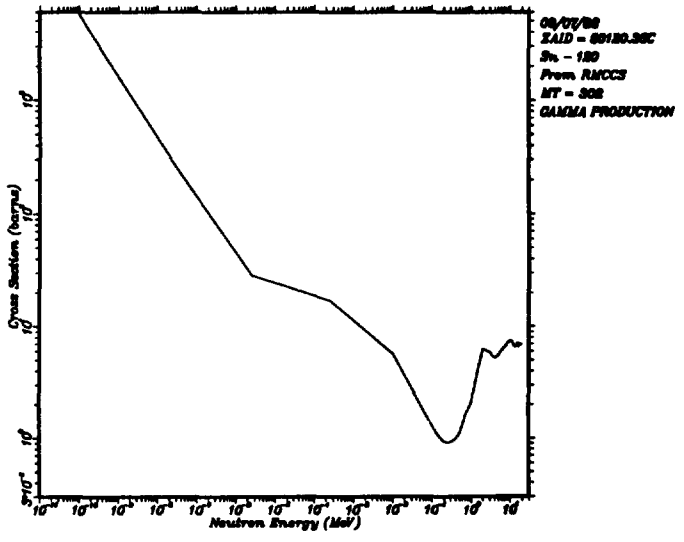


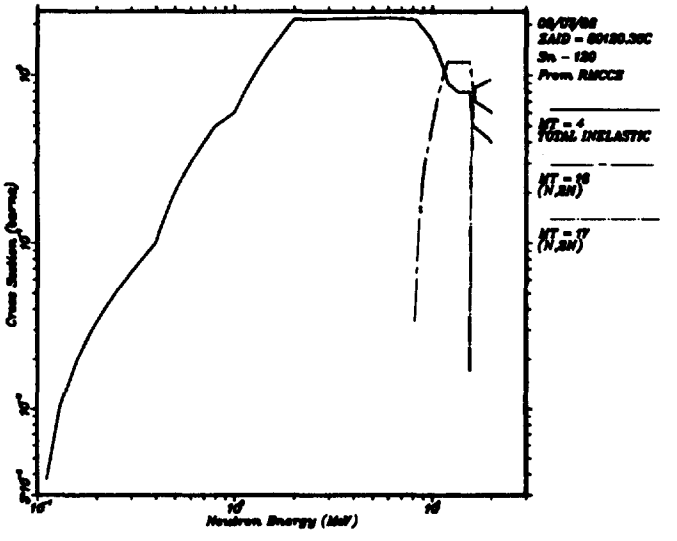


50120.35C


MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


Neutron Energy (MeV)


MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


MT = 4
TOTAL INELASTIC
Cross Section (barns)
Neutron Energy (MeV)

Xenon

ZAID=54000.35C

SOURCE: ENDL–85 (ZA=54000 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=54000.35C NES=5228 T=0°K

Multigroup

ZAID=54000.35M 30–Group T=0°K

Isotope Information

Abundance=Natural

Density=5.887E-03 gm/cm^3

Evaluation Information

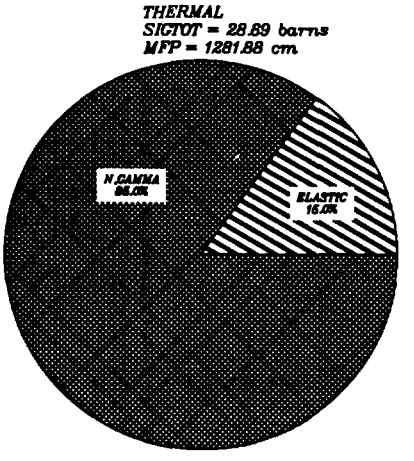
Photon-Production Data – Yes

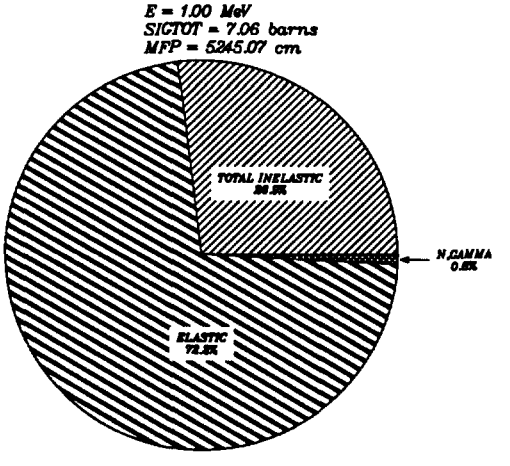
Heating Numbers – Local

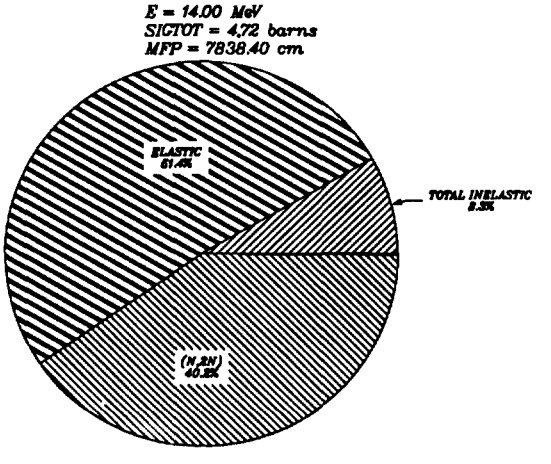
Energy Range – 10^{-10} to 20 MeV

Reaction Information

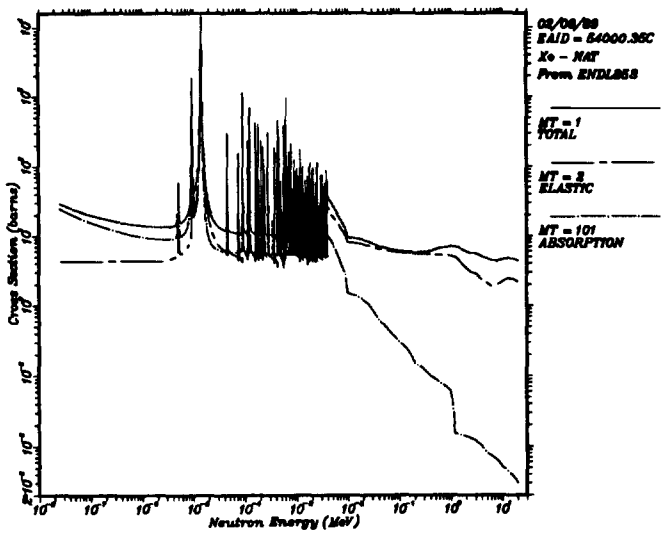
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	7.8307+00	2.0000+01	-7.7710+00	-7.7710+00
(n,3n)	17	1.5916+01	2.0000+01	-1.5795+01	-1.5795+01
(n,γ)	102	1.0000-10	2.0000+01	7.8600+00	7.8600+00

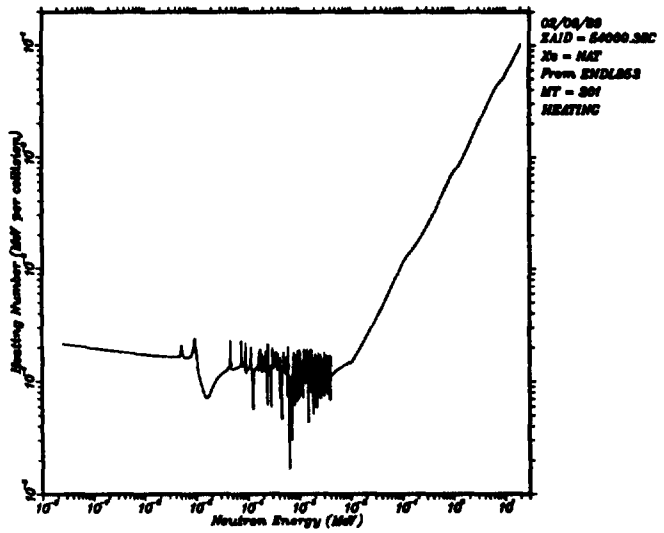


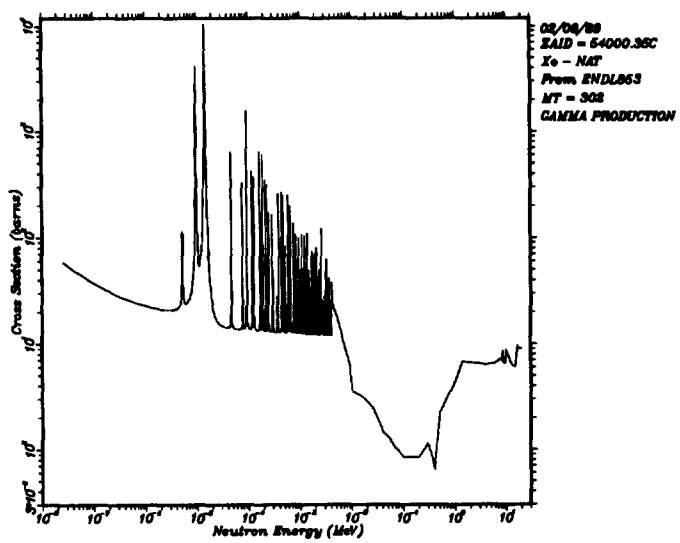


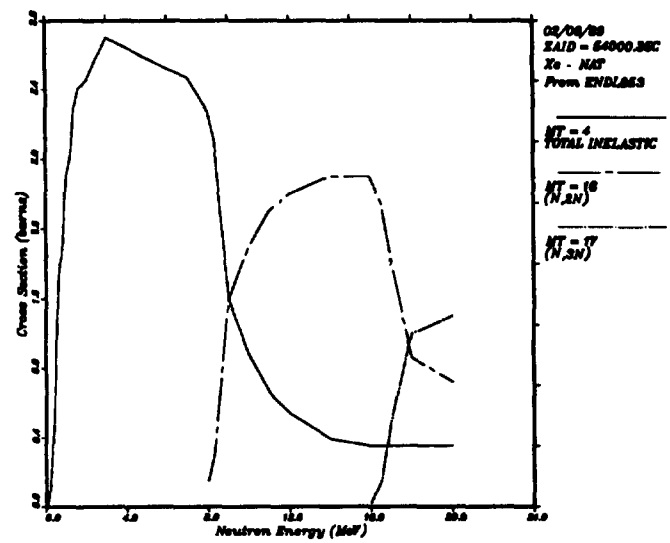


54000.35C


02/06/89
ZAID = 54000.35C
Xe - NAT
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 54000.35C
Xe = NAT
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 54000.35C
Xe - NAT
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 54000.35C
Xe - NAT
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Xenon – 134

ZAID=54134.35C

SOURCE: ENDL–85 (ZA=54134 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=54134.35C NES=359 T=0°K

Isotope Information

Abundance=10.40%

Density=6.0043E-03 gm/cm^3

Evaluation Information

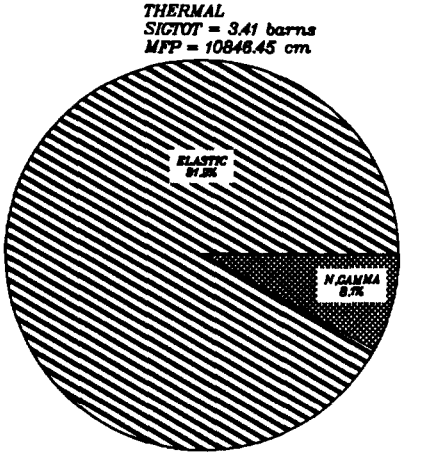
Photon-Production Data – Yes

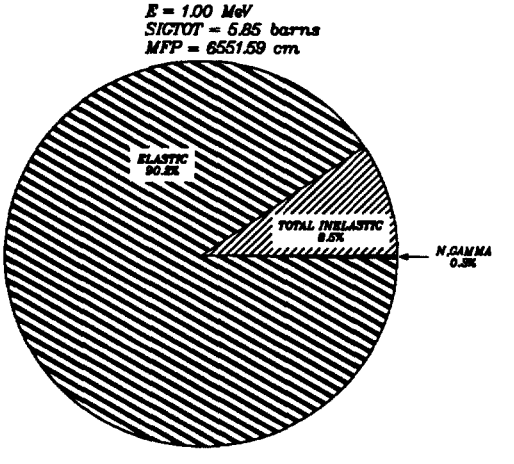
Heating Numbers – Local

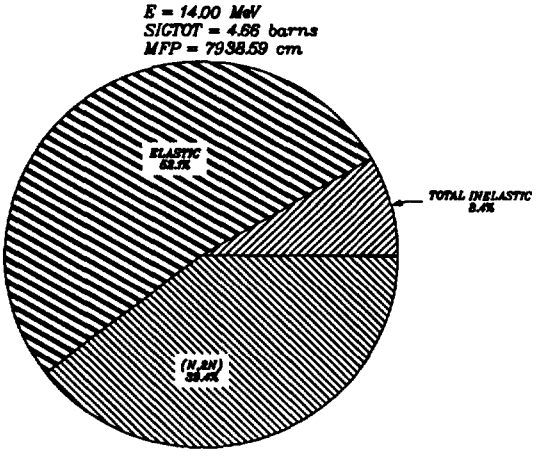
Energy Range – 10^{-10} to 20 MeV

Reaction Information

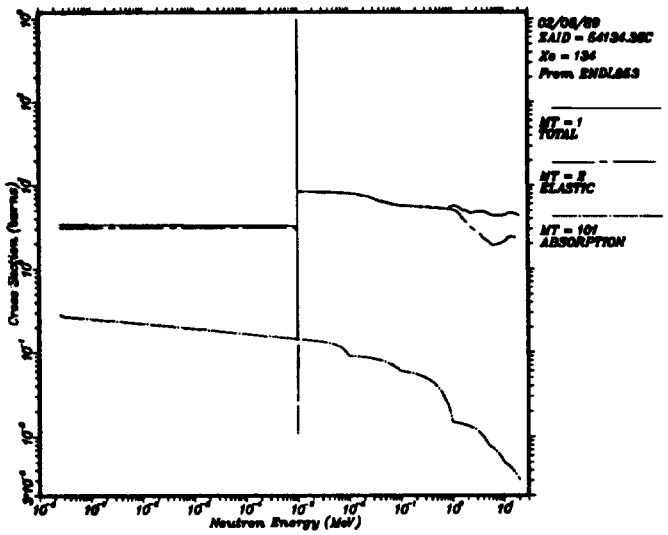
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.9000+00	2.0000+01	0.0000+00	0.0000+00
(n,n'1)	51	8.5338-01	2.0000+01	-8.4700-01	0.0000+00
(n,n'2)	52	1.6252+00	2.0000+01	-1.6130+00	0.0000+00
(n,n'3)	53	1.7440+00	2.0000+01	-1.7310+00	0.0000+00
(n,2n)	16	8.5983+00	2.0000+01	-8.5340+00	-8.5340+00
(n,3n)	17	1.5094+01	2.0000+01	-1.4981+01	-1.4981+01
(n,γ)	102	1.0000-10	2.0000+01	6.4530+00	6.4530+00

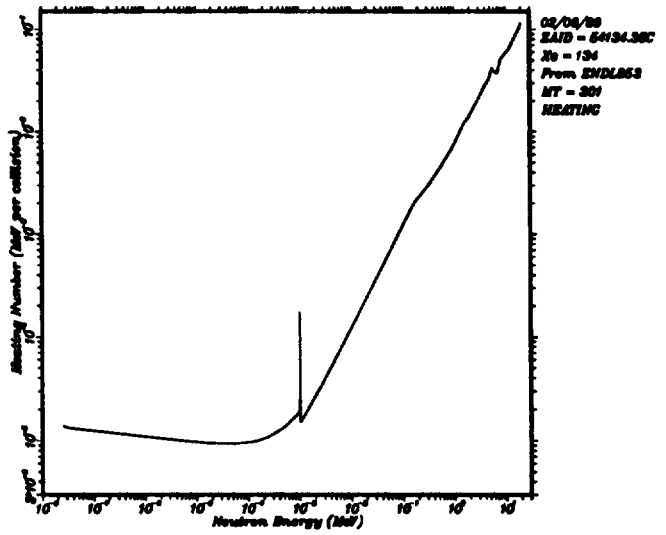


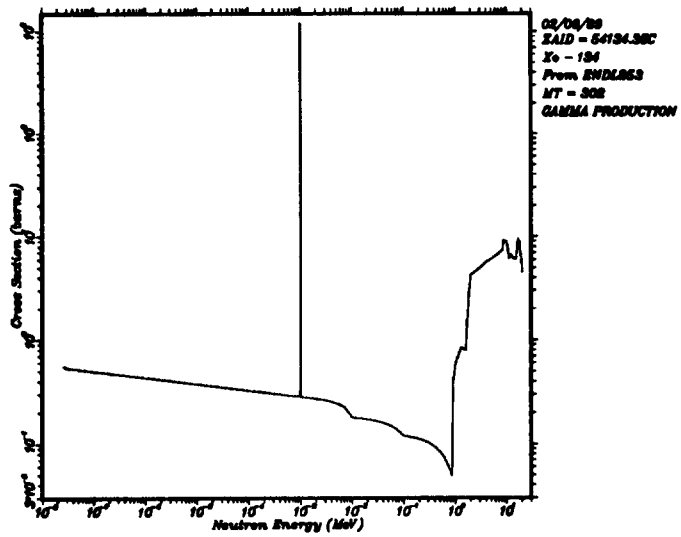


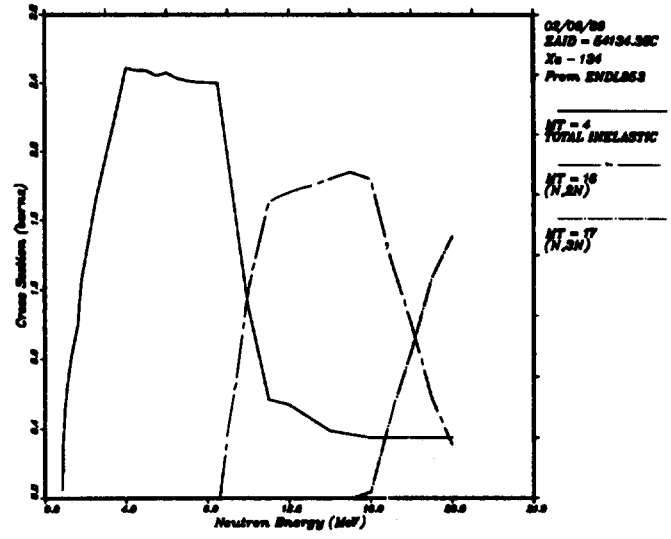


54134.35C


02/06/99
ZAID = 54134.35C
Xs = 134
From ENDL85
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 54134.35C
Xs = 134
From ENDL85
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 54134.35C
Xs = 134
From ENDL85
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 54134.35C
Xs = 134
From ENDL85
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Barium – 138

ZAID=56138.50C
SOURCE: ENDF/B–V (MAT=1353, Tape 508)
REFERENCE: "Barium – 138,"
by R. J. Howerton, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=56138.50C	NES=292	T=300°K
ZAID=56138.51C	NES=291	T=300°K

Discrete Reaction

ZAID=56138.50D	NES=263	T=300°K

Multigroup

ZAID=56138.50M	30–Group	T=300°K

Isotope Information

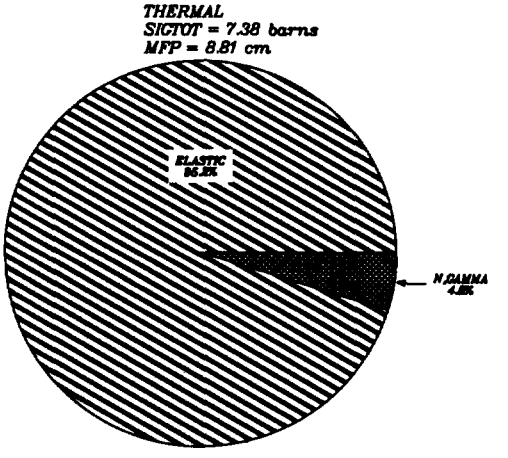
Abundance=71.70%
Density=3.5247 gm/cm^3

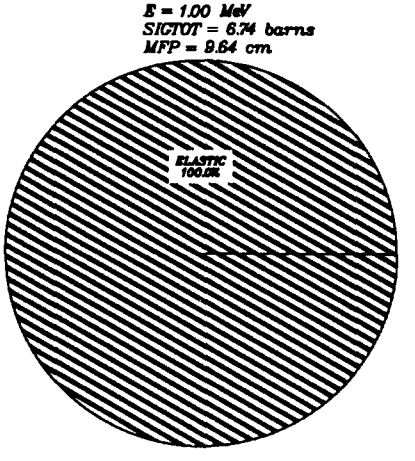
Evaluation Information

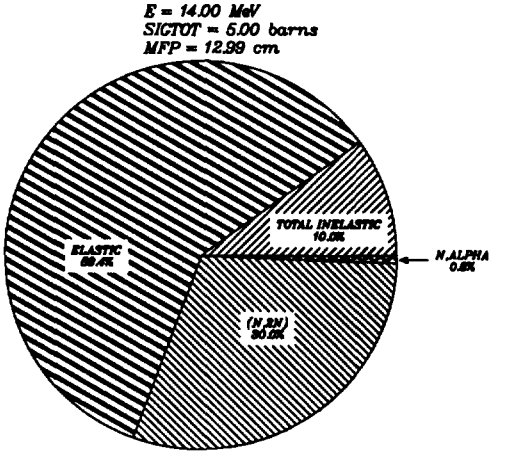
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

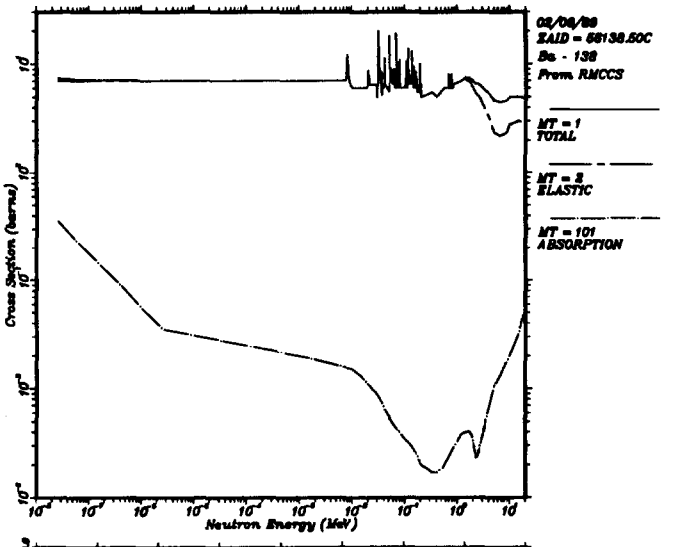
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.6500+00	2.0000+01	-8.5872+00	-8.5872+00
(n,3n)	17	1.5650+01	2.0000+01	-1.5536+01	-1.5536+01
(n,n'c)	91	1.4400+00	2.0000+01	-1.4295+00	-1.4295+00
(n,γ)	102	1.0000-11	2.0000+01	4.7100+00	4.7100+00
(n,p)	103	6.0000+00	2.0000+01	-4.0400+00	-4.0400+00
(n,α)	107	2.2500+00	2.0000+01	3.8700+00	3.8700+00

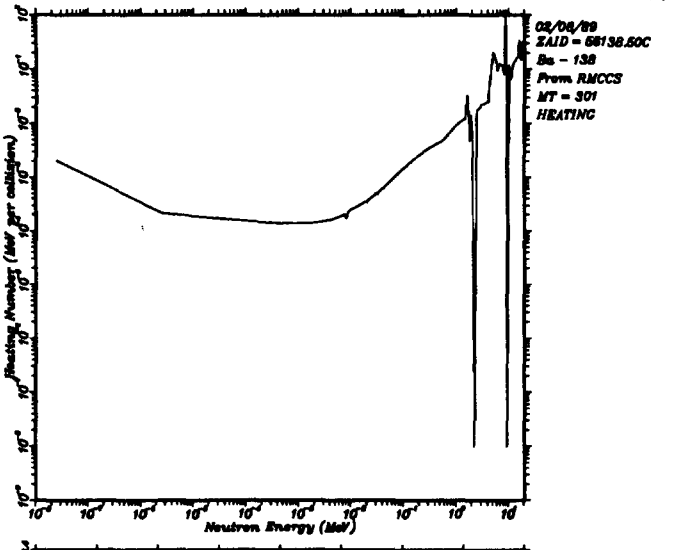


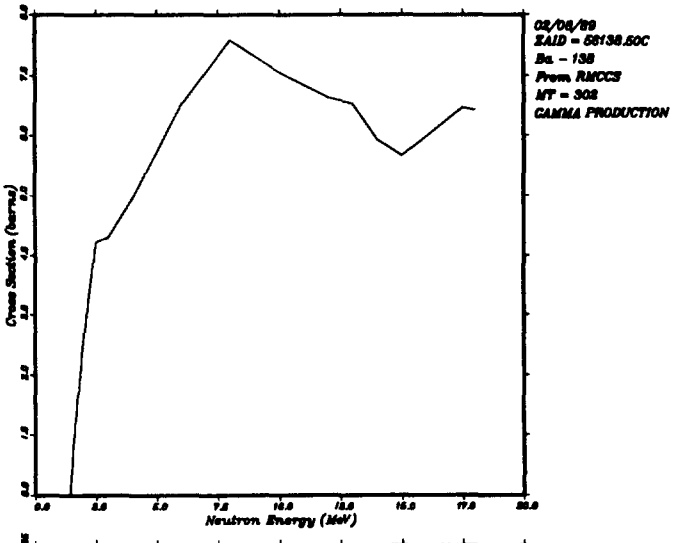


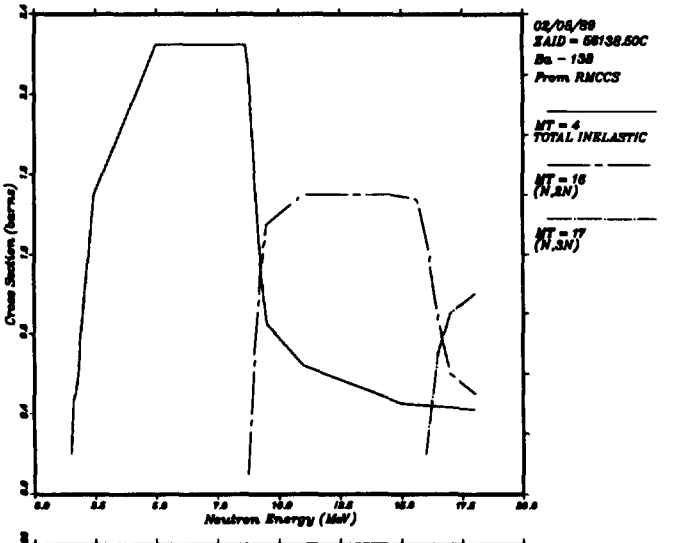


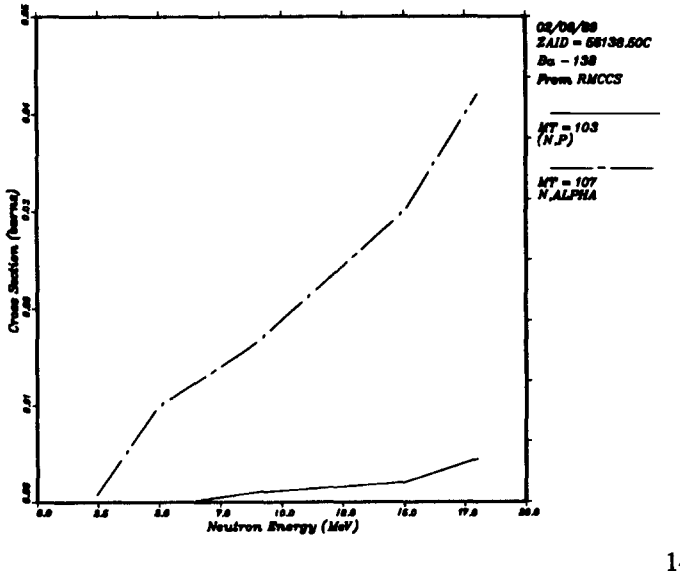
56138.50C

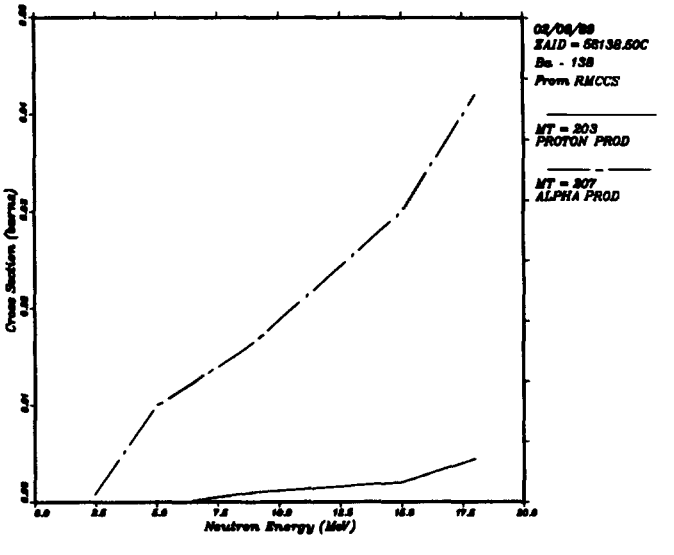

02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

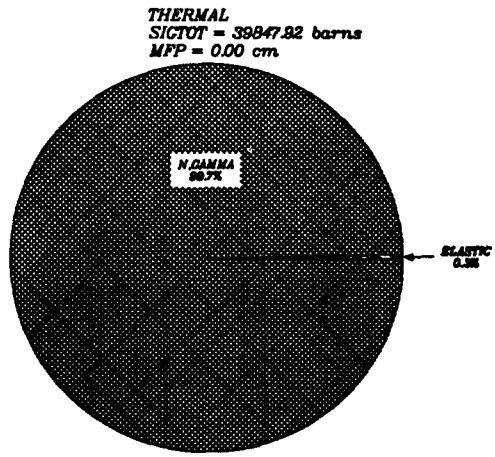

02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 56138.50C
Ba - 138
From RMCCS
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Samarium – 149

ZAID=62149.50C
SOURCE: ENDF/B–V (MAT=1319, Tape 510)
REFERENCE: "Summary Documentation Isotope: 62–Sm–149,"
by R. E. Schenter, D. L. Johnson, F. M. Mann, F. Schmittroth, H. Gruppelaar, W. H. Walker, B. R. Leonard, and K. B. Stewart
contained in ENDF–201



Data Availability

Continuous Energy

ZAID=62149.50C NES=2008 T=300°K

Discrete Reaction

ZAID=62149.50D NES=263 T=300°K

Isotope Information

Abundance=13.80%

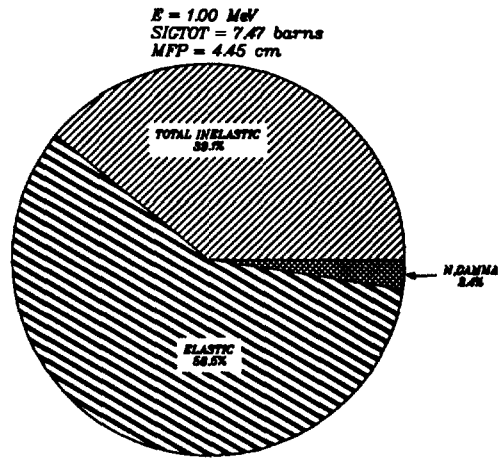
Density=7.43449 gm/cm^3

Evaluation Information

Photon-Production Data – No

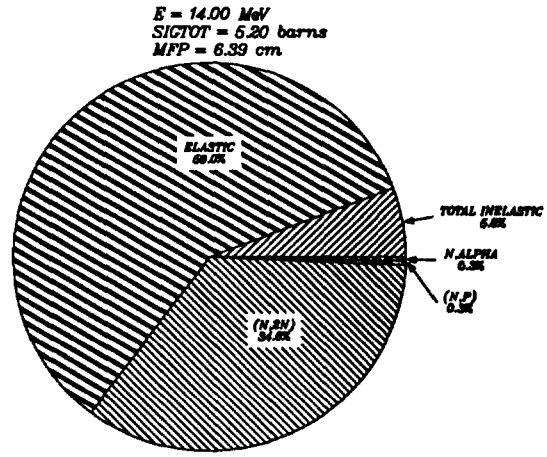
Heating Numbers – Total

Energy Range – 10^{-11} to 20 MeV

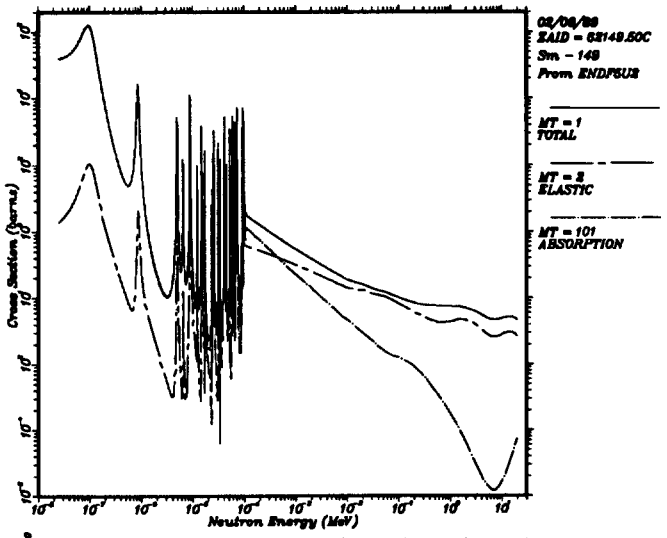


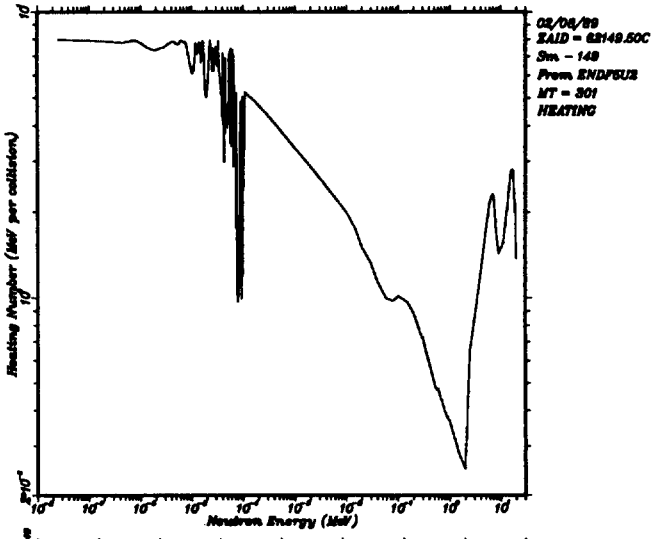
Reaction Information

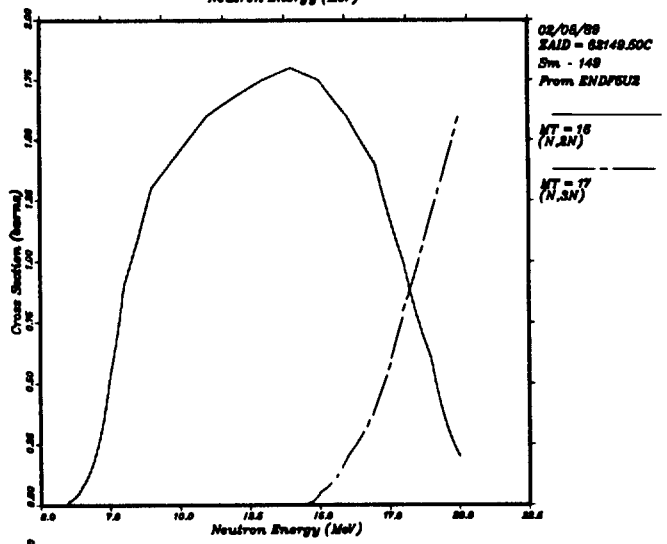
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.8997+00	2.0000+01	-5.8600+00	-5.8600+00
(n,3n)	17	1.4165+01	2.0000+01	-1.4070+01	-1.4070+01
(n,n'1)	51	2.2149-02	2.0000+01	-2.2000-02	0.0000+00
(n,n'2)	52	2.7888-01	2.0000+01	-2.7700-01	0.0000+00
(n,n'3)	53	2.8794-01	2.0000+01	-2.8600-01	0.0000+00
(n,n'4)	54	3.5237-01	2.0000+01	-3.5000-01	0.0000+00
(n,n'5)	55	4.0070-01	2.0000+01	-3.9800-01	0.0000+00
(n,n'6)	56	5.3258-01	2.0000+01	-5.2900-01	0.0000+00
(n,n'7)	57	5.6178-01	2.0000+01	-5.5800-01	0.0000+00
(n,n'8)	58	5.8594-01	2.0000+01	-5.8200-01	0.0000+00
(n,n'9)	59	6.5440-01	2.0000+01	-6.5000-01	0.0000+00
(n,n'10)	60	8.5878-01	2.0000+01	-8.5300-01	0.0000+00
(n,n'c)	91	2.0000+00	2.0000+01	-1.9865+00	-1.9865+00
(n,γ)	102	1.0000-11	2.0000+01	7.9824+00	7.9824+00
(n,p)	103	4.0000+00	2.0000+01	-2.7700-01	-2.7700-01
(n,α)	107	4.0000+00	2.0000+01	9.6000+00	9.6000+00

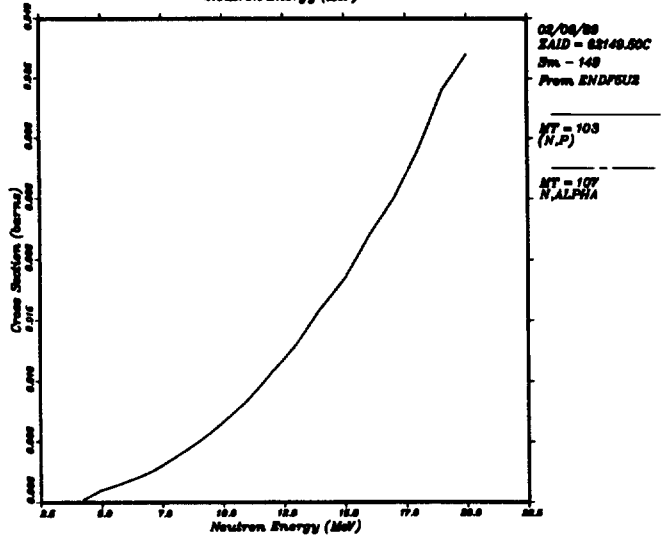


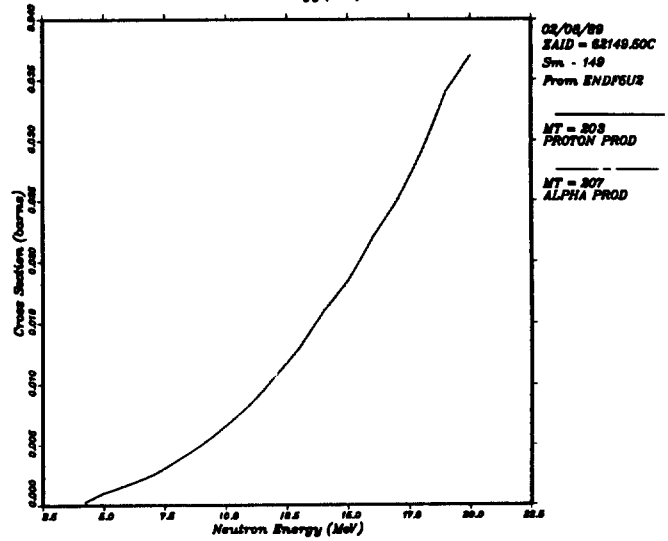
62149.50C


02/06/99
ZAID = 62149.50C
Sm - 149
From ENDFSU2
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 62149.50C
Sm - 149
From ENDFSU2
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 62149.50C
Sm - 149
From ENDFSU2
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 62149.50C
Sm - 149
From ENDFSU2
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 62149.50C
Sm - 149
From ENDFSU2
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Europium

ZAID=63000.35C

SOURCE: ENDL-85 (ZA=63000 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

<u>Data Availability</u>

Continuous Energy

ZAID=63000.35C NES=364 T=0°K

Discrete Reaction

ZAID=63000.35D NES=263 T=0°K

Multigroup

ZAID=63000.35M 30-Group T=0°K

<u>Isotope Information</u>

Abundance=Natural

Density=7.5419 gm/cm^3

<u>Evaluation Information</u>

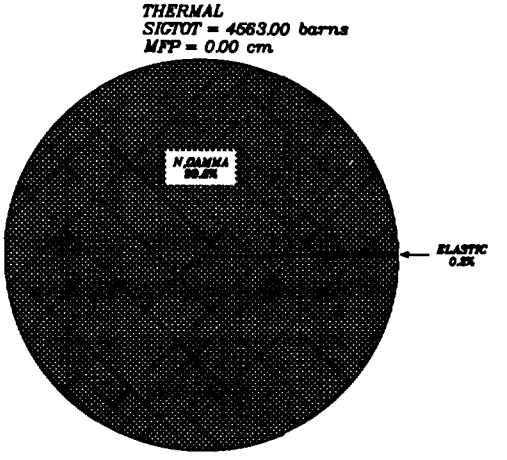
Photon-Production Data - Yes

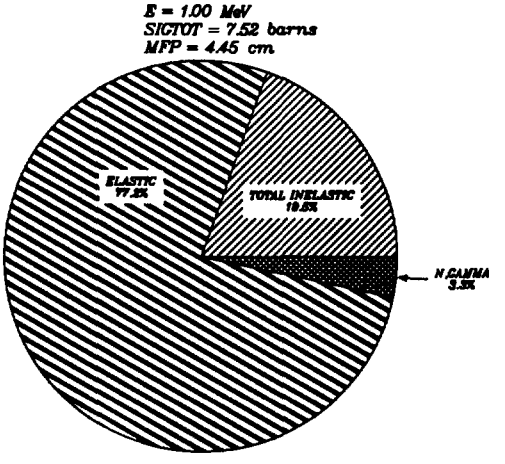
Heating Numbers - Local

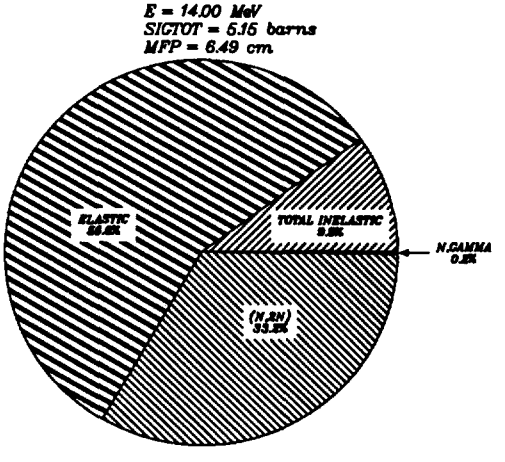
Energy Range - 10^{-10} to 20 MeV

<u>Reaction Information</u>

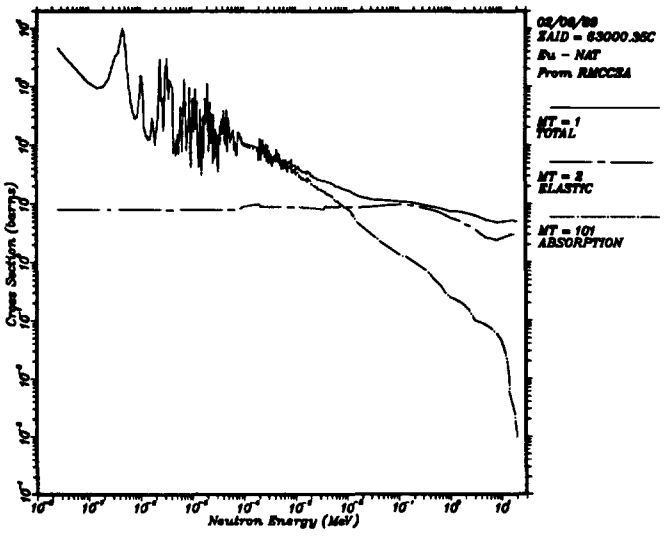
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.4800-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	8.3249+00	2.0000+01	-8.2700+00	-8.2700+00
(n,3n)	17	1.4999+01	2.0000+01	-1.4900+01	-1.4900+01
(n,γ)	102	1.0000-10	2.0000+01	6.2600+00	6.2600+00

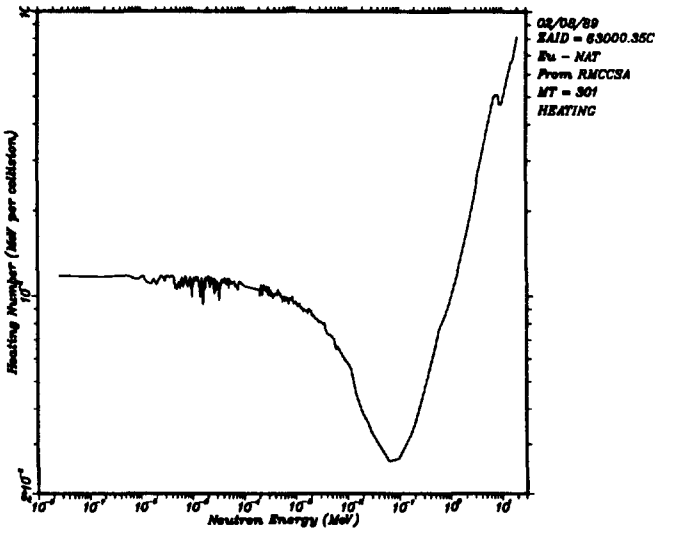


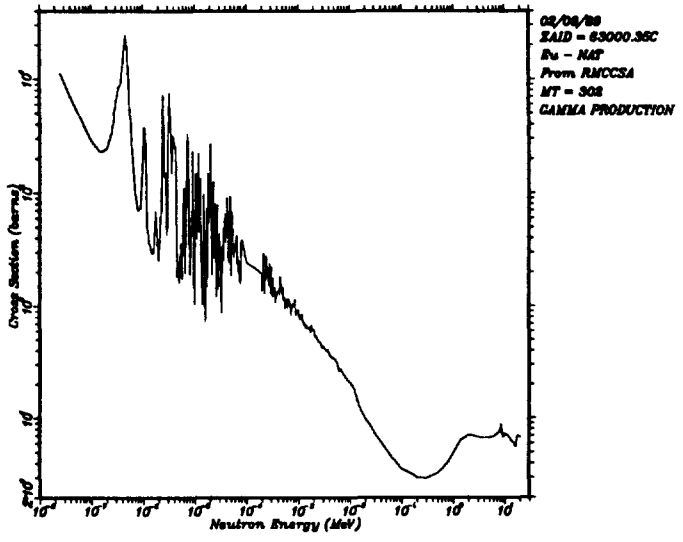


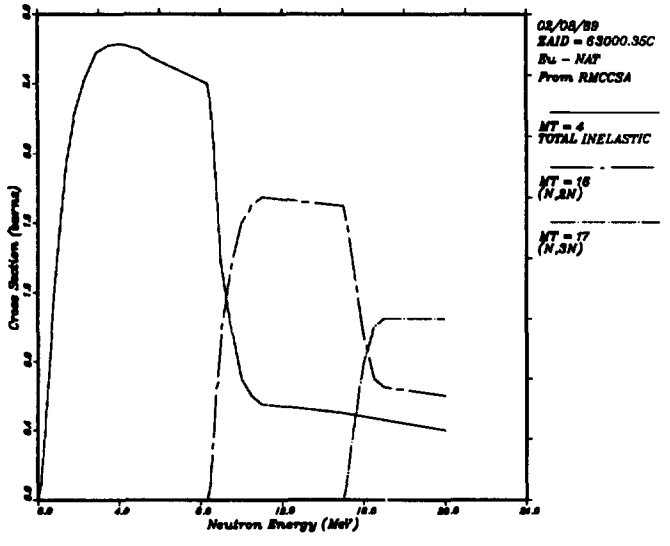


63000.35C


02/06/89
ZAID = 63000.35C
Eu - NAT
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63000.35C
Eu - NAT
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 63000.35C
Eu - NAT
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

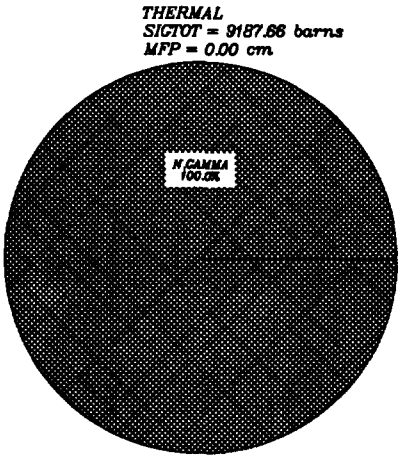

02/06/89
ZAID = 63000.35C
Eu - NAT
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

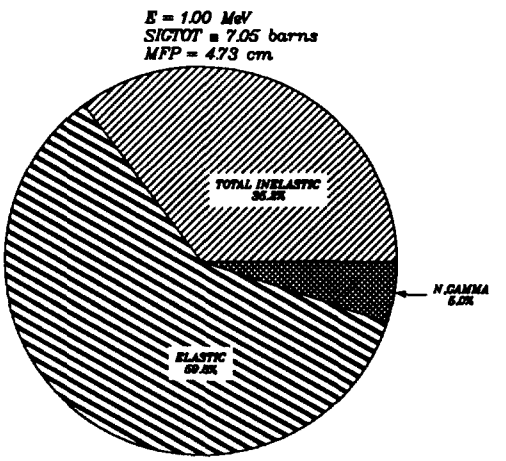
Europium – 151

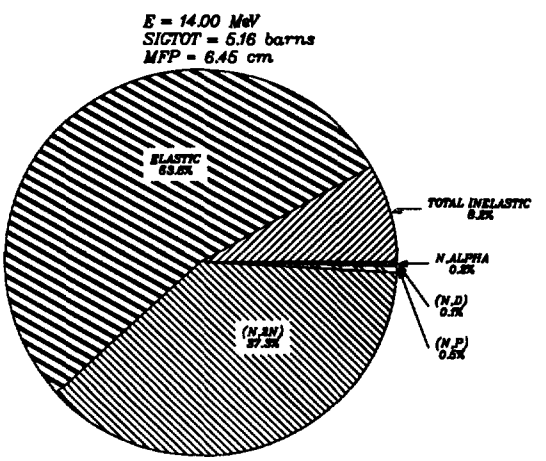
ZAID=63151.55C

SOURCE: Group T-2 (MAT=151, File /T2/PGY/EVAL/LAS/EU151LA)

REFERENCE: "n + ^{151}Eu, ^{153}Eu, and ^{165}Ho Evaluated Cross Sections,"
by P. G. Young, E. D. Arthur, and R. E. MacFarlane
Los Alamos National Laboratory internal memorandum T-2-M-1713 (April 29, 1986)







Data Availability

Continuous Energy

ZAID=63151.55C	NES=4749	T=300°K

Discrete Reaction

ZAID=63151.55D	NES=263	T=300°K

Multigroup

ZAID=63151.55M	30-Group	T=300°K

Isotope Information

Abundance=47.80%

Density=7.5180 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

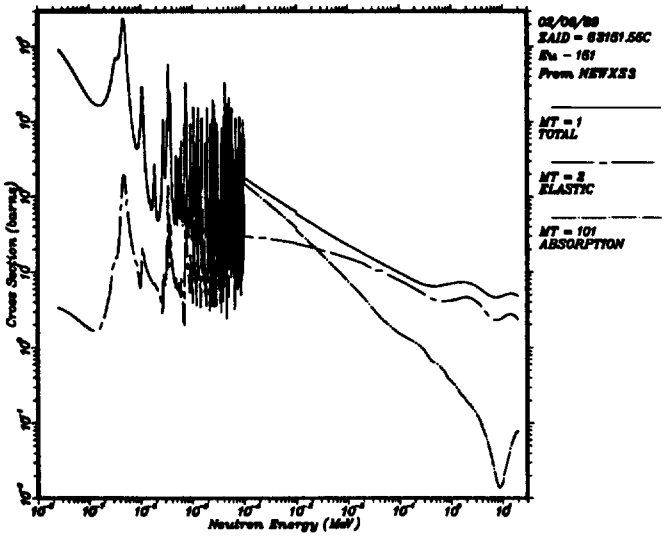
Heating Numbers – Local

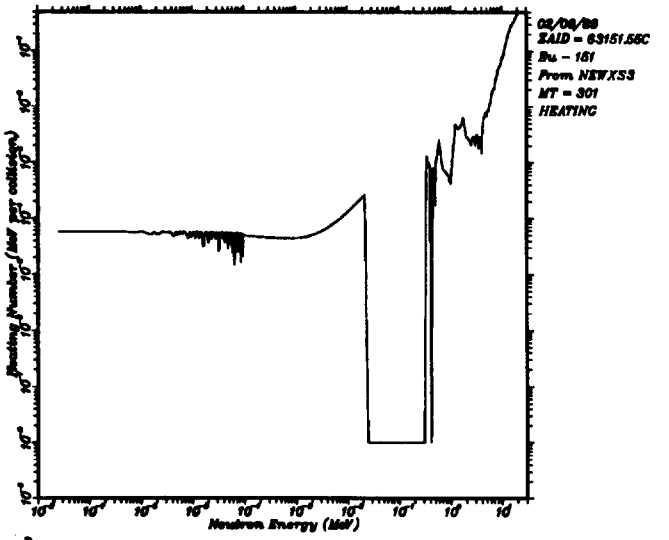
Energy Range – 10^{-11} to 20 MeV

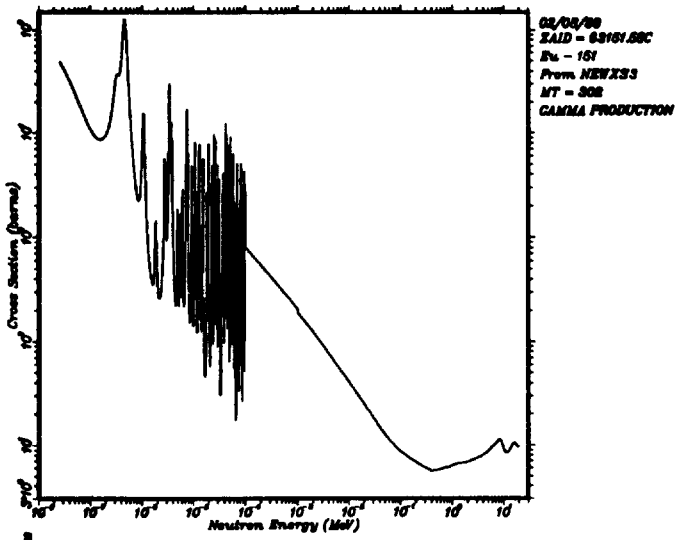
Reaction Information

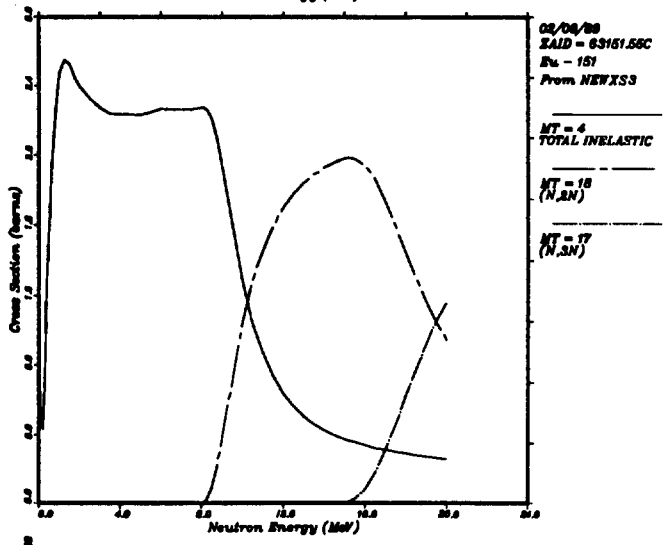
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.0647+00	2.0000+01	-7.9682+00	-7.9682+00
(n,3n)	17	1.4500+01	2.0000+01	-1.4354+01	-1.4354+01
(n,n'1)	51	2.1644-02	2.0000+01	-2.1500-02	0.0000+00
(n,n'2)	52	1.9751-01	2.0000+01	-1.9620-01	0.0000+00
(n,n'3)	53	1.9781-01	2.0000+01	-1.9650-01	0.0000+00
(n,n'4)	54	2.4493-01	2.0000+01	-2.4330-01	0.0000+00
(n,n'5)	55	2.6224-01	2.0000+01	-2.6050-01	0.0000+00
(n,n'6)	56	3.0925-01	2.0000+01	-3.0720-01	0.0000+00
(n,n'7)	57	3.0966-01	2.0000+01	-3.0760-01	0.0000+00
(n,n'8)	58	3.0986-01	2.0000+01	-3.0780-01	0.0000+00
(n,n'9)	59	3.3442-01	2.0000+01	-3.3220-01	0.0000+00
(n,n'10)	60	3.5214-01	2.0000+01	-3.4980-01	0.0000+00
(n,n'11)	61	3.5606-01	2.0000+01	-3.5370-01	0.0000+00
(n,n'12)	62	4.1848-01	2.0000+01	-4.1570-01	0.0000+00
(n,n'13)	63	5.0294-01	2.0000+01	-4.9960-01	0.0000+00
(n,n'14)	64	5.0556-01	2.0000+01	-5.0220-01	0.0000+00
(n,n'15)	65	5.0676-01	2.0000+01	-5.0340-01	0.0000+00
(n,n'16)	66	5.1462-01	2.0000+01	-5.1120-01	0.0000+00
(n,n'17)	67	5.2559-01	2.0000+01	-5.2210-01	0.0000+00
(n,n'c)	91	5.2559-01	2.0000+01	-5.2210-01	-5.2210-01
(n,γ)	102	1.0000-11	2.0000+01	6.3056+00	6.3056+00
(n,p)	103	1.0000-11	2.0000+01	7.0644-01	7.0644-01
(n,d)	104	2.6832+00	2.0000+01	-2.6654+00	-2.6654+00
(n,t)	105	4.4229+00	2.0000+01	-4.3935+00	-4.3935+00
(n,^{3}He)	106	5.4832+00	2.0000+01	-5.4468+00	-5.4468+00
(n,α)	107	1.0000-11	2.0000+01	7.8655+00	7.8655+00

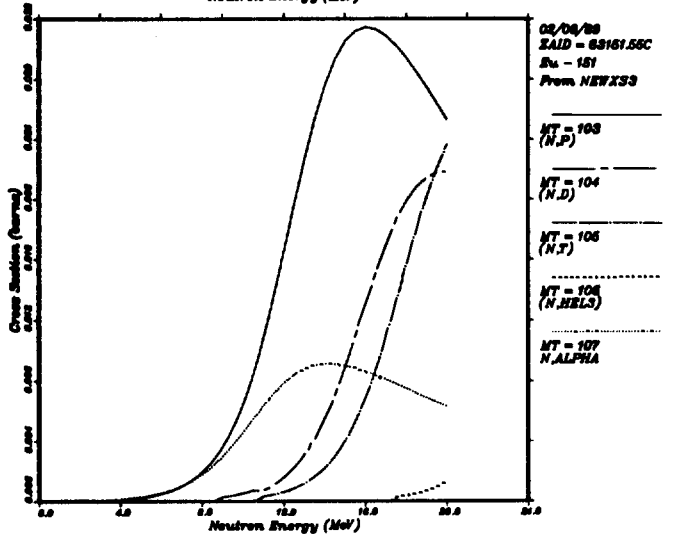
63151.55C

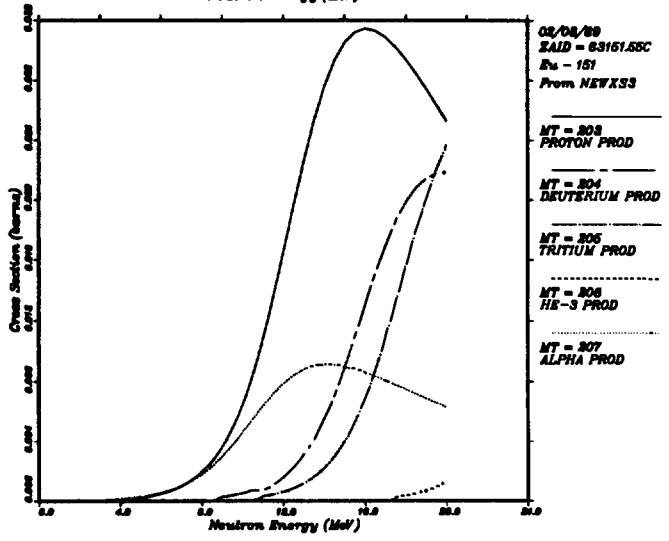

02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63151.55C
Eu - 151
From NEWXS3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Europium – 152

ZAID=63152.50C
SOURCE: ENDF/B-V (MAT=1292, Tape 509)
REFERENCE: "Summary Documentation for ^{152}Eu and ^{154}Eu,"
by H. Takahashi, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=63152.50C	NES=4553	T=300°K
ZAID=63152.51C	NES=736	T=300°K

Discrete Reaction

ZAID=63152.50D	NES=263	T=300°K

Isotope Information

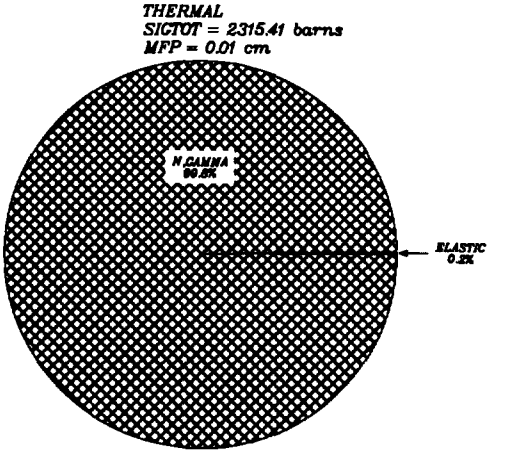
Abundance=0.00%
Density=7.51811 gm/cm^3

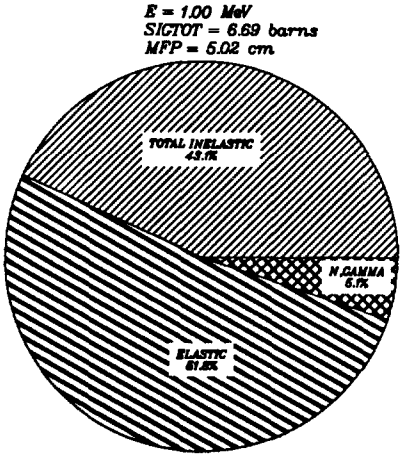
Evaluation Information

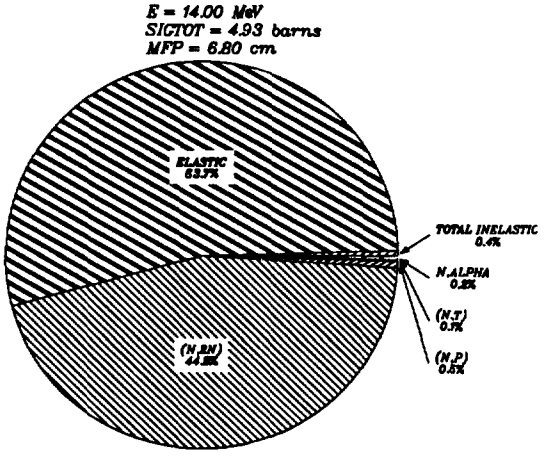
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

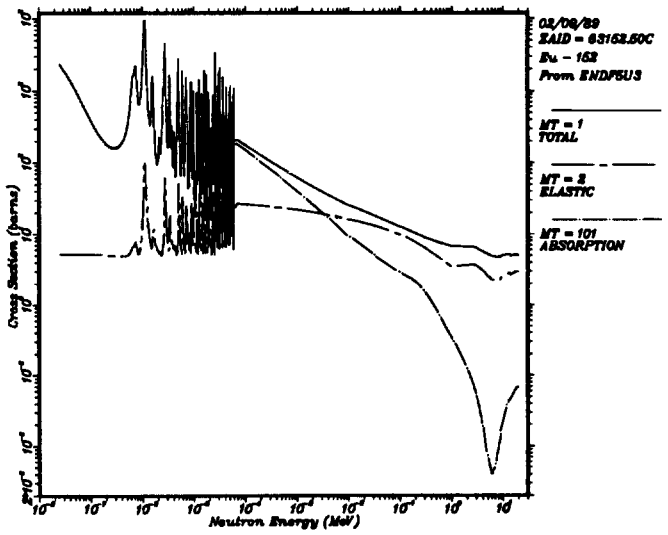
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.3469+00	2.0000+01	-6.3050+00	-6.3050+00
(n,3n)	17	1.4500+01	2.0000+01	-1.4276+01	-1.4276+01
(n,n')α	22	9.0000+00	2.0000+01	1.5600+00	1.5600+00
(n,n')p	28	9.0000+00	2.0000+01	-5.5990+00	-5.5990+00
(n,n'1)	51	5.0332-02	2.0000+01	-5.0000-02	0.0000+00
(n,n'2)	52	9.0094-02	2.0000+01	-8.9500-02	0.0000+00
(n,n'3)	53	1.0882-01	2.0000+01	-1.0810-01	0.0000+00
(n,n'4)	54	1.3086-01	2.0000+01	-1.3000-01	0.0000+00
(n,n'5)	55	1.4878-01	2.0000+01	-1.4780-01	0.0000+00
(n,n'c)	91	1.7000-01	2.0000+01	-1.6600-01	-1.6600-01
(n,γ)	102	1.0000-11	2.0000+01	8.5510+00	8.5510+00
(n,p)	103	1.0000-11	2.0000+01	2.6584+00	2.6584+00
(n,d)	104	3.3968+00	2.0000+01	-3.3744+00	-3.3744+00
(n,t)	105	2.7315+00	2.0000+01	-2.7135+00	-2.7135+00
(n,^{3}He)	106	6.2359+00	2.0000+01	-6.1948+00	-6.1948+00
(n,α)	107	1.0000-11	2.0000+01	8.8255+00	8.8255+00

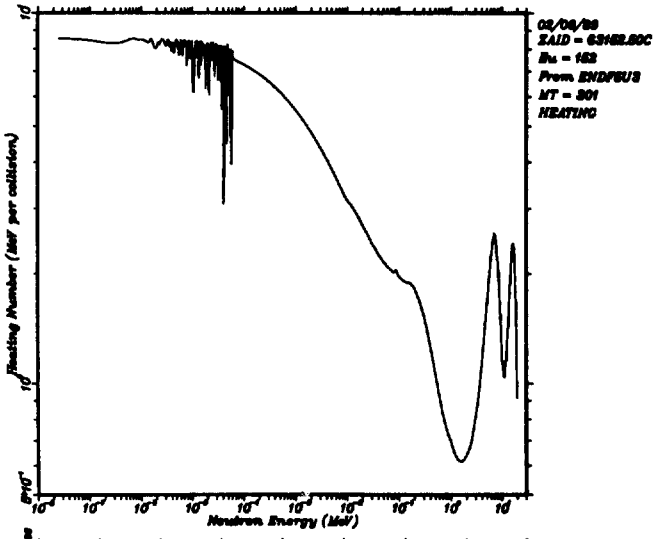


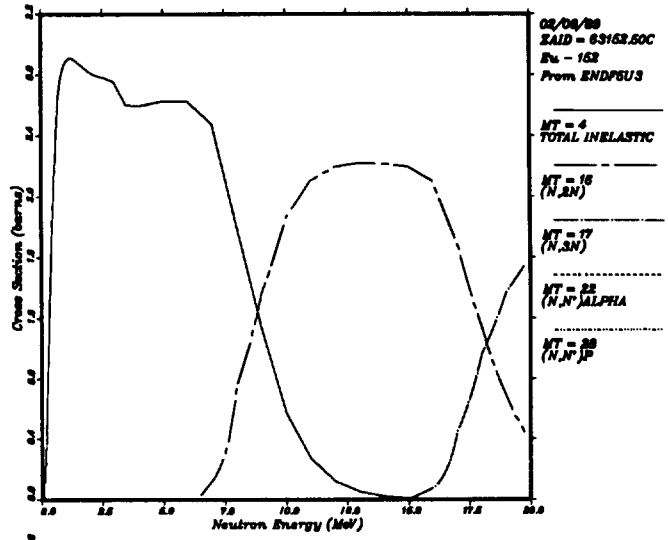


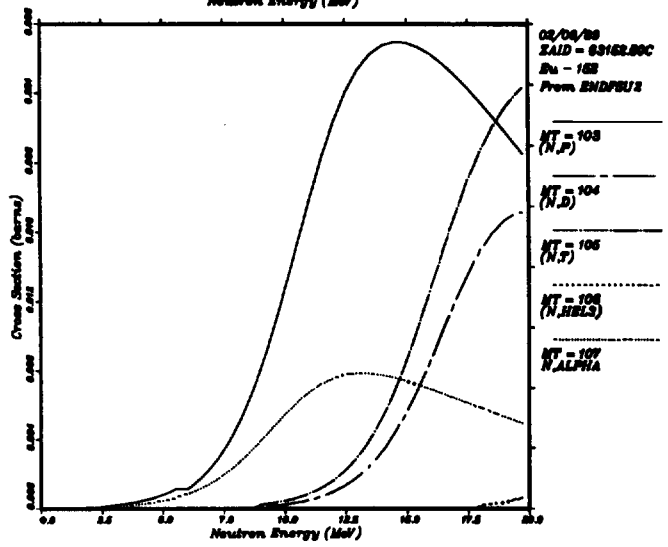


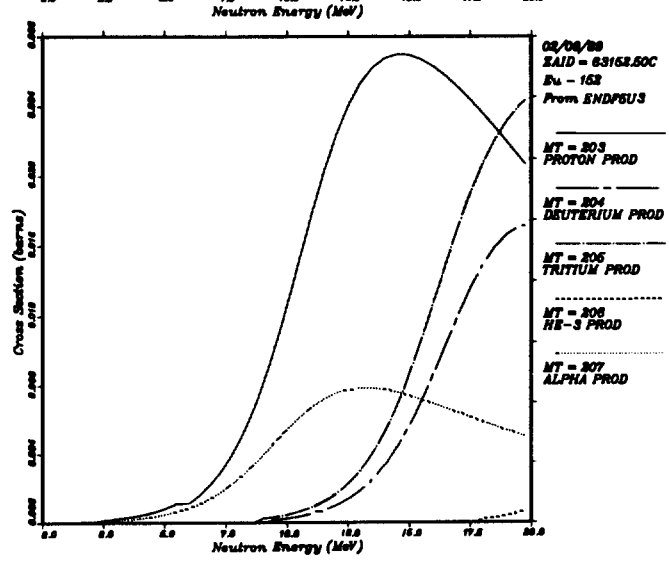
63152.50C


02/06/89
ZAID = 63152.50C
Eu - 152
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63152.50C
Eu - 152
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 63152.50C
Eu - 152
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63152.50C
Eu - 152
From ENDFSU3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63152.50C
Eu - 152
From ENDFSU3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Europium – 153

ZAID=63153.55C

SOURCE: Group T-2 (MAT=153, File /T2/PGY/EVAL/LAS/EU153LA)

REFERENCE: "n + ^{151}Eu, ^{153}Eu, and ^{165}Ho Evaluated Cross Sections,"
by P. G. Young, E. D. Arthur, and R. E. MacFarlane
Los Alamos National Laboratory internal memorandum T-2-M-1713 (April 29, 1986)

Data Availability

Continuous Energy

ZAID=63153.55C	NES=4174	T=300°K

Discrete Reaction

ZAID=63153.55D	NES=263	T=300°K

Multigroup

ZAID=63153.55M	30-Group	T=300°K

Isotope Information

Abundance=52.20%

Density=7.56757 gm/cm^3

Evaluation Information

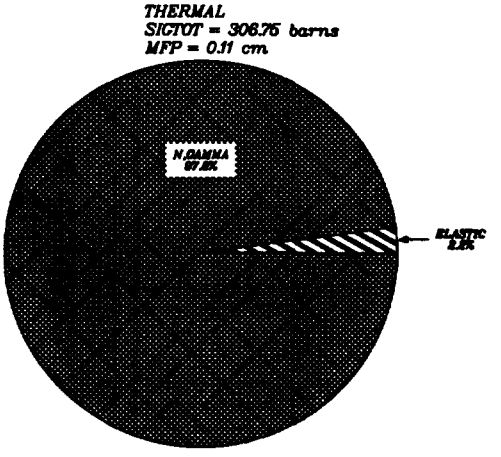
Photon-Production Data - Yes

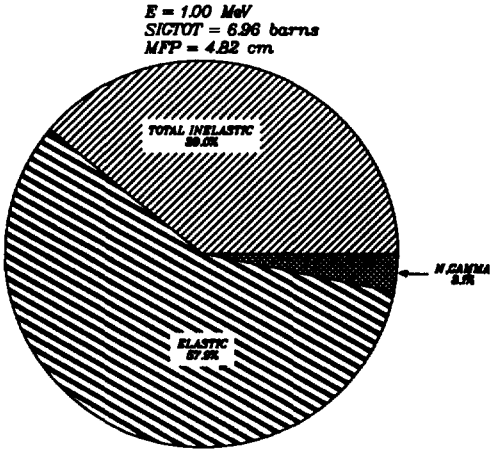
Heating Numbers - Local

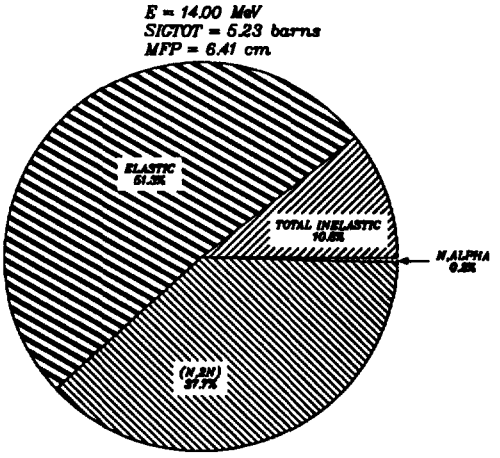
Energy Range - 10^{-11} to 20 MeV

Reaction Information

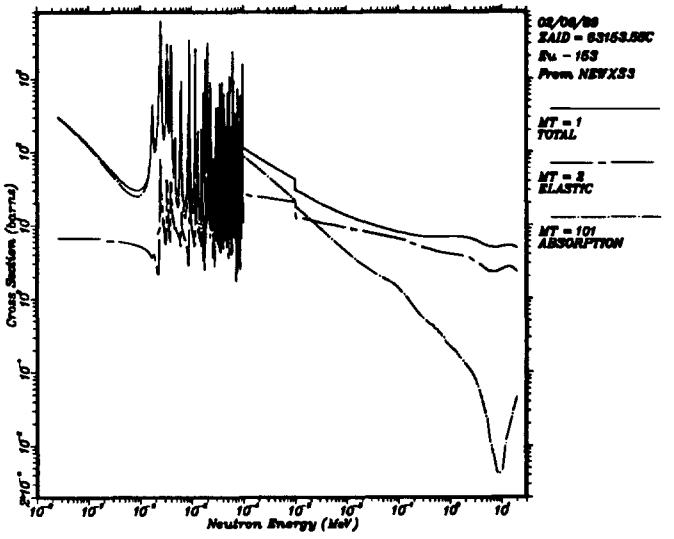
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.6372+00	2.0000+01	-8.5532+00	-8.5532+00
(n,3n)	17	1.4978+01	2.0000+01	-1.4859+01	-1.4859+01
(n,n'1)	51	8.3950-02	2.0000+01	-8.3400-02	0.0000+00
(n,n'2)	52	9.8042-02	2.0000+01	-9.7400-02	0.0000+00
(n,n'3)	53	1.0388-01	2.0000+01	-1.0320-01	0.0000+00
(n,n'4)	54	1.5260-01	2.0000+01	-1.5160-01	0.0000+00
(n,n'5)	55	1.7404-01	2.0000+01	-1.7290-01	0.0000+00
(n,n'6)	56	1.9437-01	2.0000+01	-1.9310-01	0.0000+00
(n,n'7)	57	2.3685-01	2.0000+01	-2.3530-01	0.0000+00
(n,n'8)	58	2.7148-01	2.0000+01	-2.6970-01	0.0000+00
(n,n'9)	59	3.2392-01	2.0000+01	-3.2180-01	0.0000+00
(n,n'10)	60	3.2725-01	2.0000+01	-3.2510-01	0.0000+00
(n,n'c)	91	3.2725-01	2.0000+01	-3.2510-01	-3.2510-01
(n,γ)	102	1.0000-11	2.0000+01	6.4422+00	6.4422+00
(n,p)	103	2.6735-02	2.0000+01	-2.6560-02	-2.6560-02
(n,d)	104	3.6926+00	2.0000+01	-3.6684+00	-3.6684+00
(n,t)	105	5.7059+00	2.0000+01	-5.6685+00	-5.6685+00
(n,^{3}He)	106	6.8830+00	2.0000+01	-6.8379+00	-6.8379+00
(n,α)	107	1.0000-11	2.0000+01	5.8315+00	5.8315+00

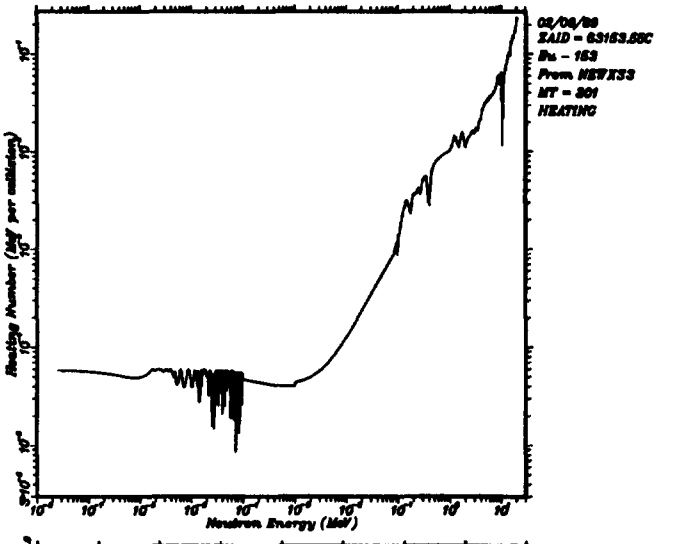


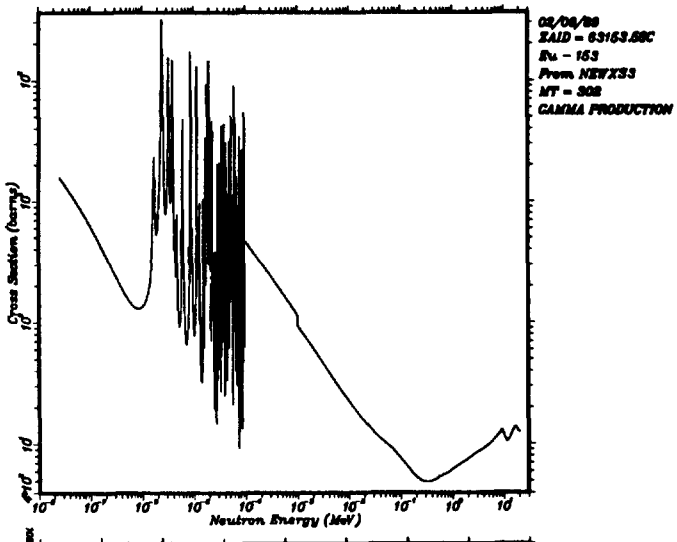


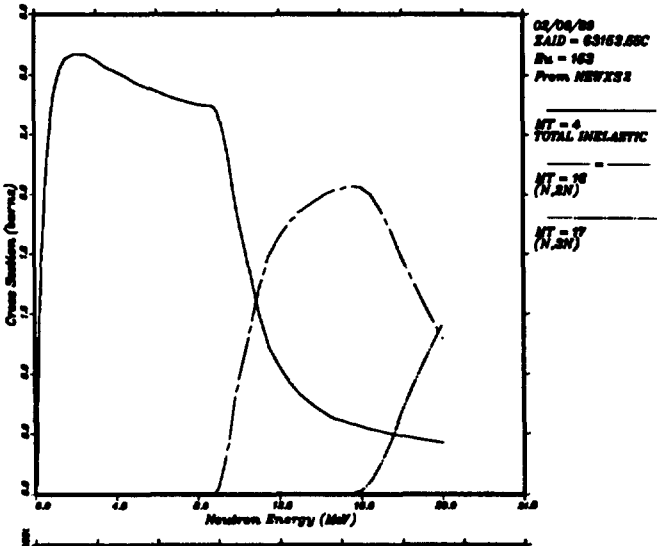


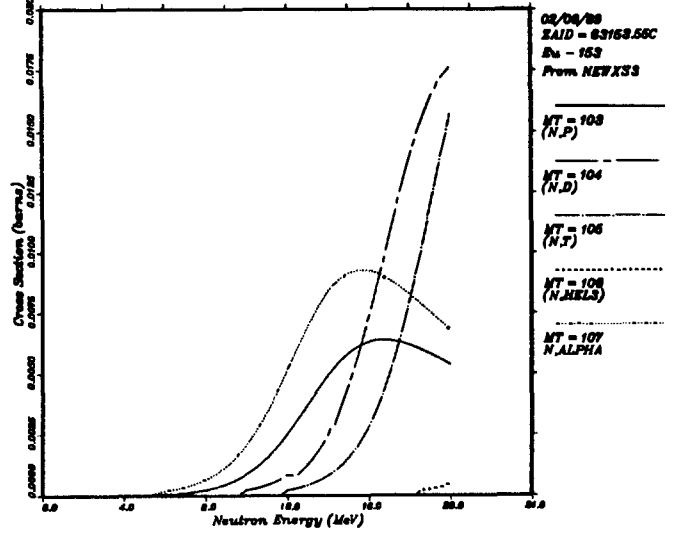
63153.55C

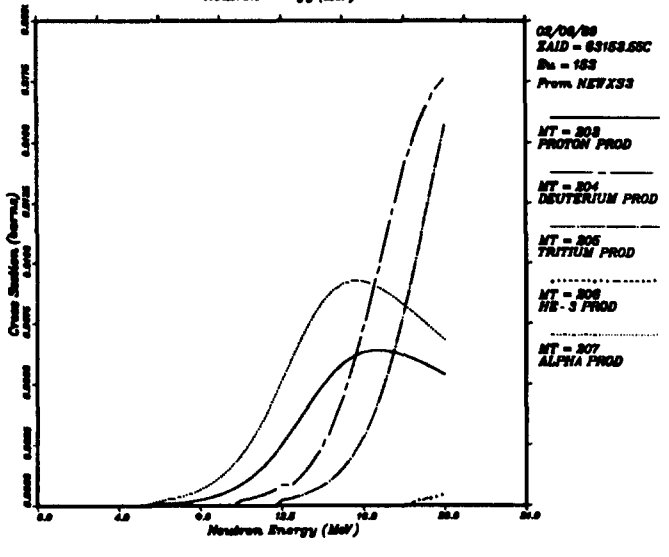

02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 63153.55C
Eu - 153
From NEWXS3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE - 3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Europium – 154

ZAID=63154.50C
SOURCE: ENDF/B–V (MAT=1293, Tape 509)
REFERENCE: "Summary Documentation for ^{152}Eu and ^{154}Eu,"
by H. Takahashi, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=63154.50C	NES=4030	T=300°K
ZAID=63154.51C	NES=748	T=300°K

Discrete Reaction

ZAID=63154.50D	NES=263	T=300°K

Isotope Information

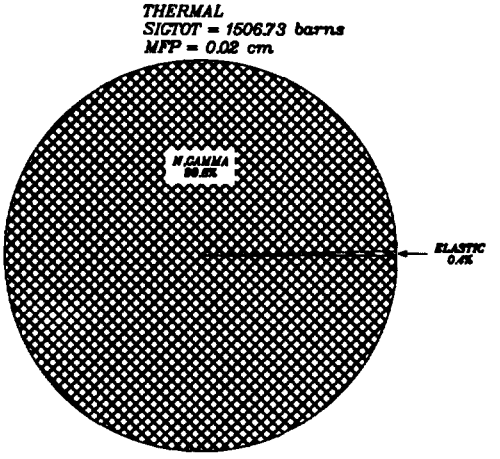
Abundance=0.00%
Density=7.61714 gm/cm^3

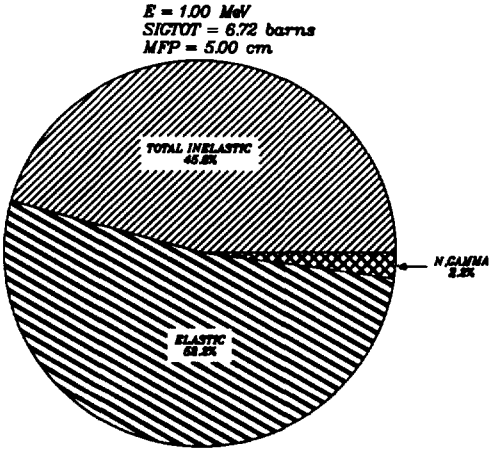
Evaluation Information

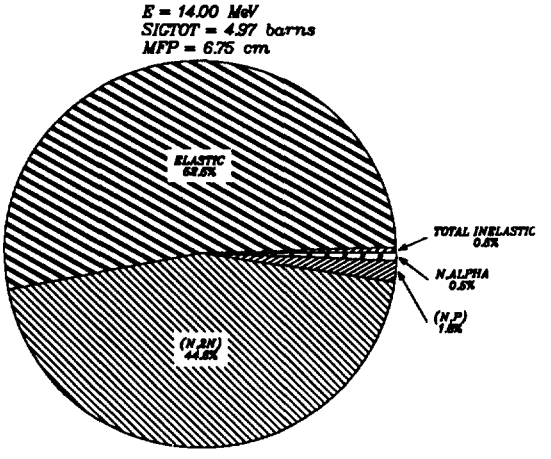
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

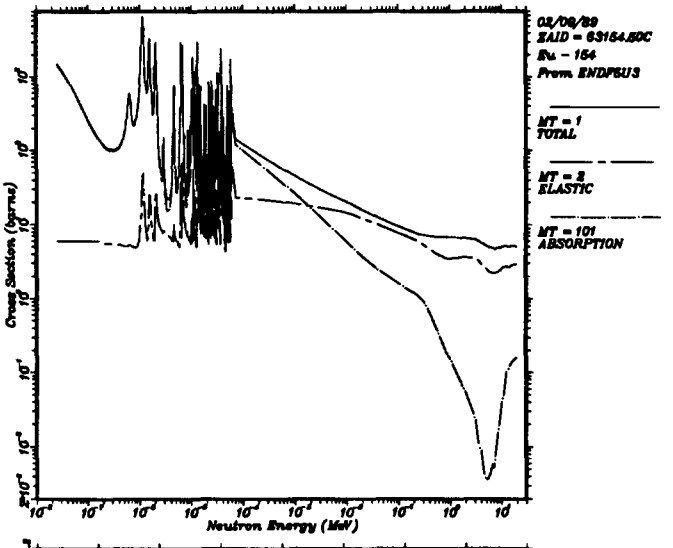
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.8000+00	2.0000+01	-6.4380+00	-6.4380+00
(n,3n)	17	1.5088+01	2.0000+01	-1.4990+01	-1.4990+01
(n,n')α	22	1.1000+01	2.0000+01	-6.0700-01	-6.0700-01
(n,n')p	28	6.5074+00	2.0000+01	-6.4650+00	-6.4650+00
(n,n'1)	51	6.8446-02	2.0000+01	-6.8000-02	0.0000+00
(n,n'2)	52	8.3343-02	2.0000+01	-8.2800-02	0.0000+00
(n,n'3)	53	1.2290-01	2.0000+01	-1.2210-01	0.0000+00
(n,n'4)	54	1.7333-01	2.0000+01	-1.7220-01	0.0000+00
(n,n'5)	55	1.8118-01	2.0000+01	-1.8000-01	0.0000+00
(n,n'c)	91	2.5000-01	2.0000+01	-2.3190-01	-2.3190-01
(n,γ)	102	1.0000-11	2.0000+01	8.1670+00	8.1670+00
(n,p)	103	1.0000-02	2.0000+01	1.5124+00	1.5124+00
(n,d)	104	4.2682+00	2.0000+01	-4.2404+00	-4.2404+00
(n,t)	105	3.8747+00	2.0000+01	-3.8495+00	-3.8495+00
(n,^{3}He)	106	7.3800+00	2.0000+01	-7.3319+00	-7.3319+00
(n,α)	107	1.0000-11	2.0000+01	7.3015+00	7.3015+00

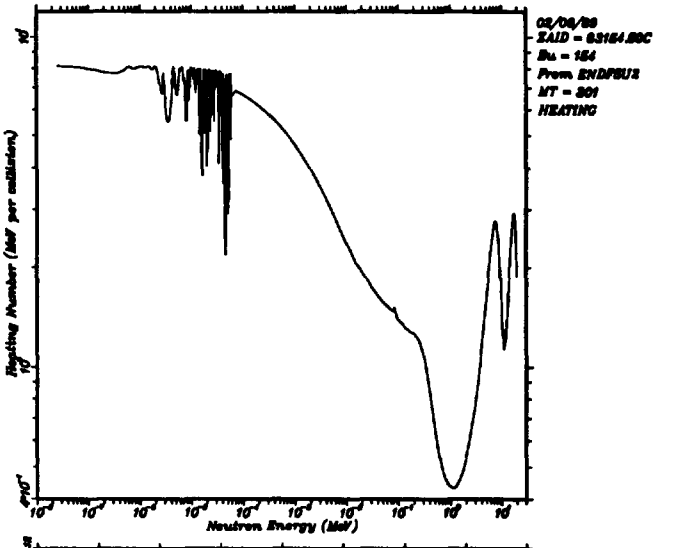


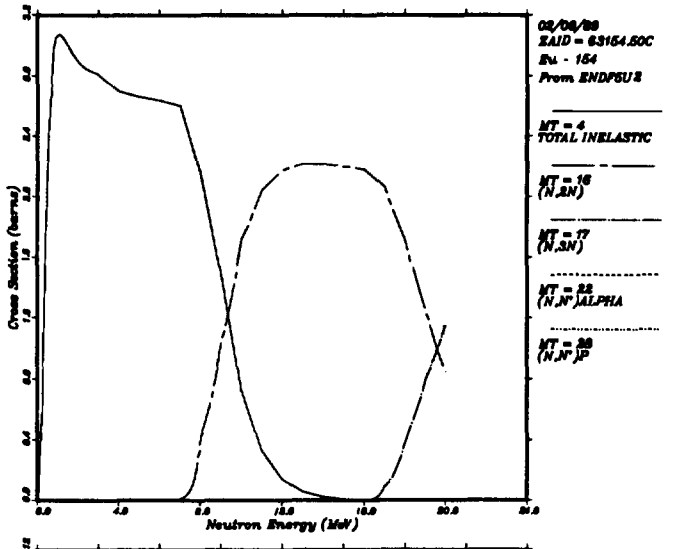


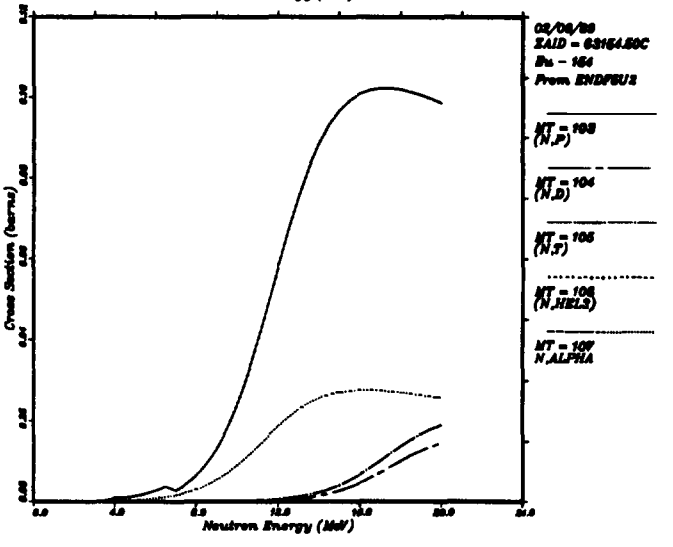


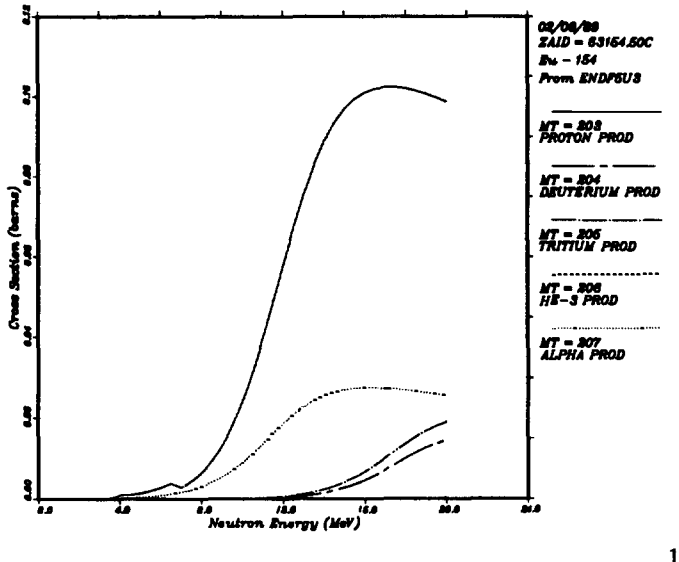
63154.50C


02/06/89
ZAID = 63154.50C
Eu - 154
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63154.50C
Eu - 154
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 63154.50C
Eu - 154
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63154.50C
Eu - 154
From ENDF6U3
MT = 103
(N,P)
MT = 104
(N,D)
MT = 105
(N,T)
MT = 106
(N,HE3)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 63154.50C
Eu - 154
From ENDF6U3
MT = 203
PROTON PROD
MT = 204
DEUTERIUM PROD
MT = 205
TRITIUM PROD
MT = 206
HE-3 PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium

ZAID=64000.35C

SOURCE: ENDL–85 (ZA=64000 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=64000.35C	NES=454	T=0°K

Discrete Reaction

ZAID=64000.35D	NES=263	T=0°K

Multigroup

ZAID=64000.35M	30–Group	T=0°K

Isotope Information

Abundance=Natural

Density=7.901 gm/cm^3

Evaluation Information

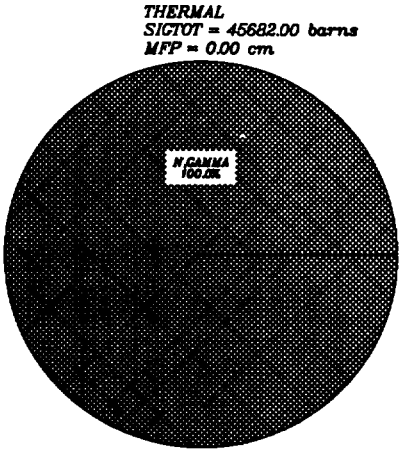
Photon-Production Data – Yes

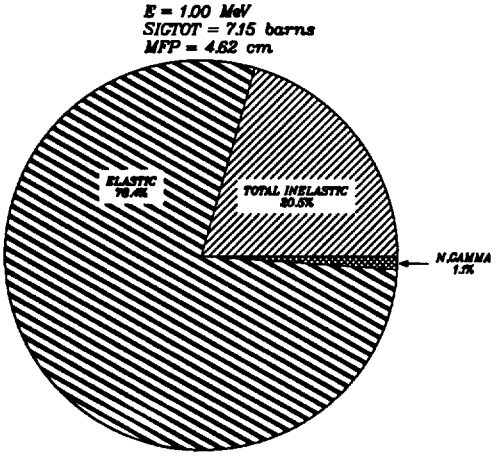
Heating Numbers – Local

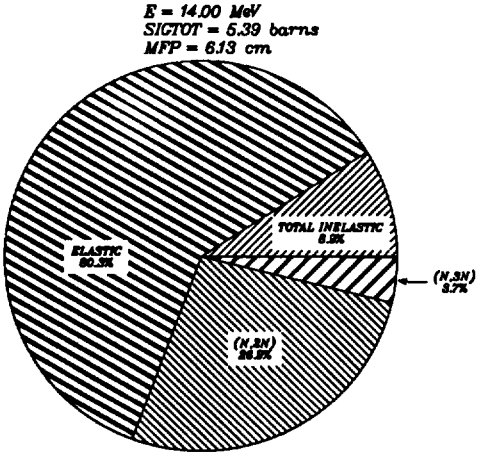
Energy Range – 10^{-10} to 20 MeV

Reaction Information

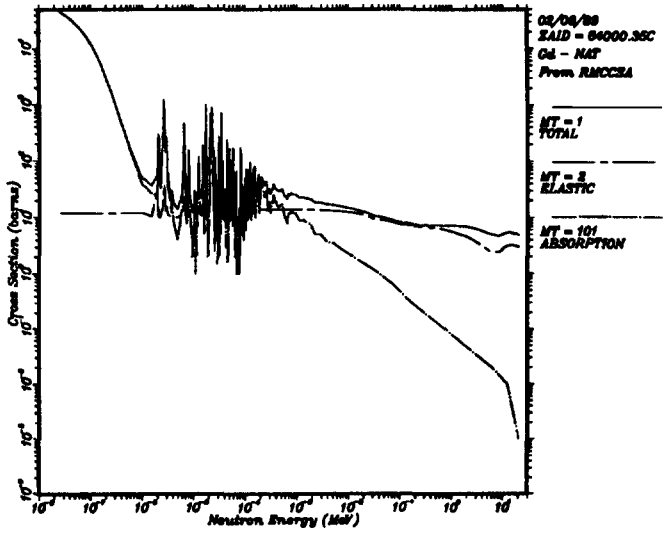
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.5942-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.4109+00	2.0000+01	-6.3700+00	-6.3700+00
(n,3n)	17	1.3486+01	2.0000+01	-1.3400+01	-1.3400+01
(n,γ)	102	1.0000-10	2.0000+01	8.0400+00	8.0400+00

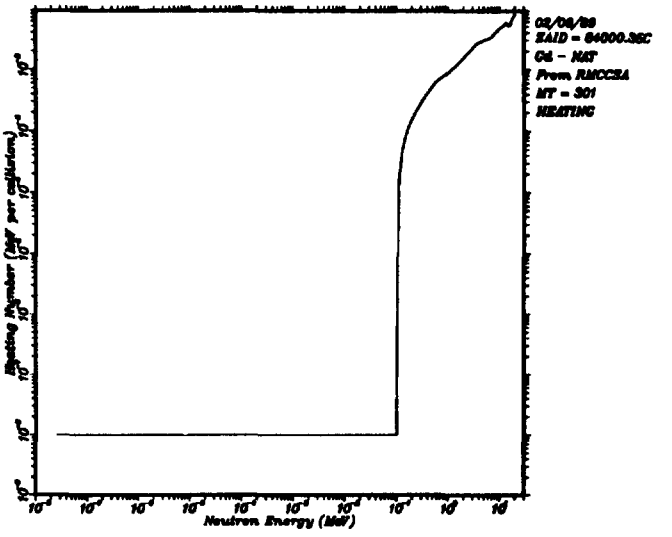


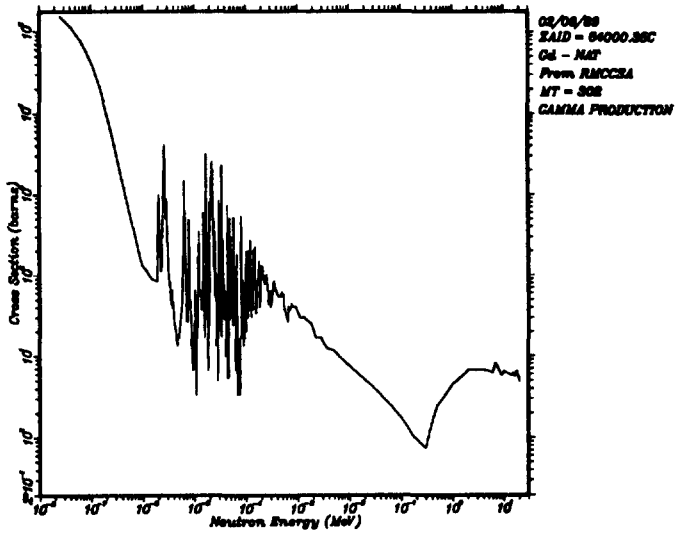


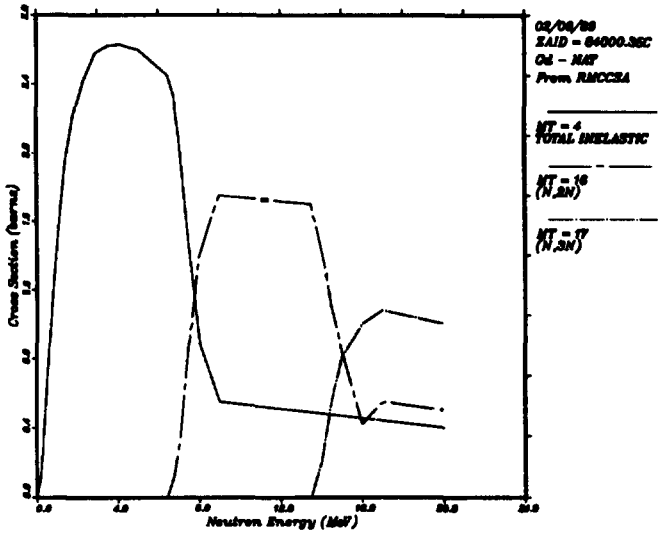


64000.35C


02/06/98
ZAID = 64000.35C
Gd - NAT
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/98
ZAID = 64000.35C
Gd - NAT
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/98
ZAID = 64000.35C
Gd - NAT
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/98
ZAID = 64000.35C
Gd - NAT
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 152

ZAID=64152.50C
SOURCE: ENDF/B–V (MAT=1362, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=64152.50C	NES=3285	T=300°K
ZAID=64152.51C	NES=803	T=300°K

Discrete Reaction

ZAID=64152.50D	NES=263	T=300°K

Isotope Information

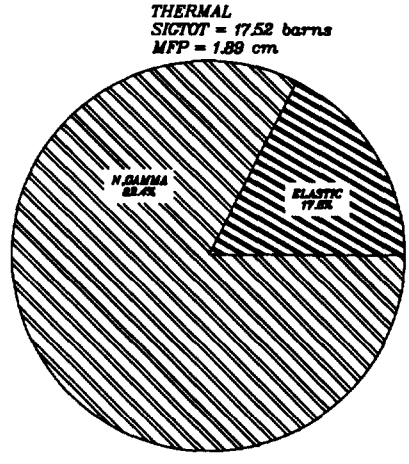
Abundance=0.200%
Density=7.63318 gm/cm^3

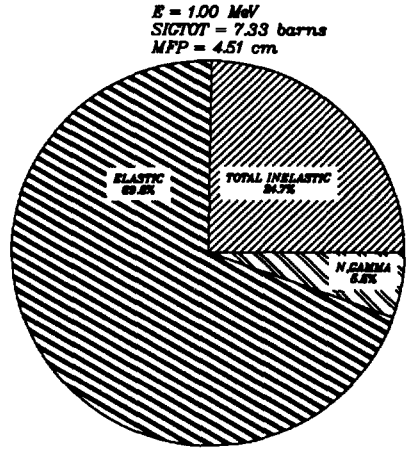
Evaluation Information

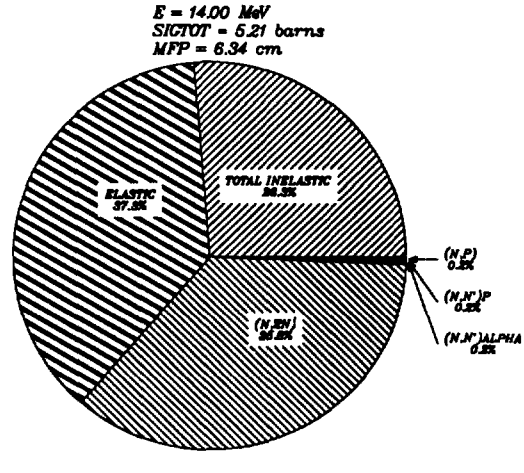
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

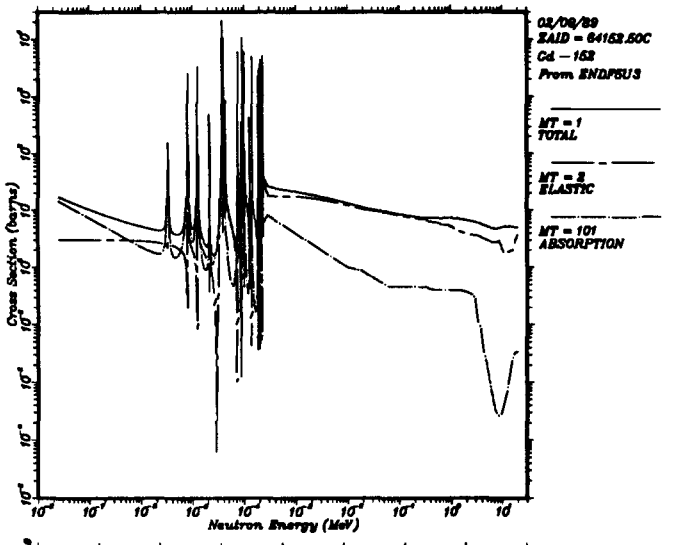
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.6536+00	2.0000+01	-8.5965+00	-8.5965+00
(n,n')α	22	5.0000-01	2.0000+01	2.2040+00	2.2040+00
(n,n')p	28	7.3928+00	2.0000+01	-7.3440+00	-7.3440+00
(n,n'1)	51	3.3622-01	2.0000+01	-3.3400-01	0.0000+00
(n,n'2)	52	6.1908-01	2.0000+01	-6.1500-01	0.0000+00
(n,n'3)	53	7.6001-01	2.0000+01	-7.5500-01	0.0000+00
(n,n'4)	54	9.3718-01	2.0000+01	-9.3100-01	0.0000+00
(n,n'5)	55	1.0550+00	2.0000+01	-1.0480+00	0.0000+00
(n,n'6)	56	1.1164+00	2.0000+01	-1.1090+00	0.0000+00
(n,n'7)	57	1.1305+00	2.0000+01	-1.1230+00	0.0000+00
(n,n'8)	58	1.2351+00	2.0000+01	-1.2270+00	0.0000+00
(n,n'9)	59	1.2915+00	2.0000+01	-1.2830+00	0.0000+00
(n,n'10)	60	1.3237+00	2.0000+01	-1.3150+00	0.0000+00
(n,n'11)	61	1.3278+00	2.0000+01	-1.3190+00	0.0000+00
(n,n'12)	62	1.4435+00	2.0000+01	-1.4340+00	0.0000+00
(n,n'13)	63	1.6167+00	2.0000+01	-1.6060+00	0.0000+00
(n,n'14)	64	1.6549+00	2.0000+01	-1.6440+00	0.0000+00
(n,n'c)	91	1.4596+00	2.0000+01	-1.4500+00	-1.4500+00
(n,γ)	102	1.0000-11	2.0000+01	6.4870+00	6.4870+00
(n,p)	103	1.0455+00	2.0000+01	-1.0386+00	-1.0386+00
(n,α)	107	5.0000-01	2.0000+01	8.0765+00	8.0765+00

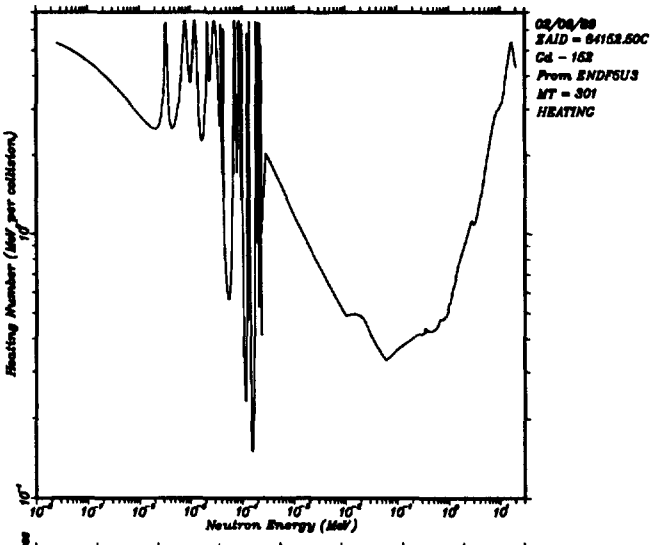


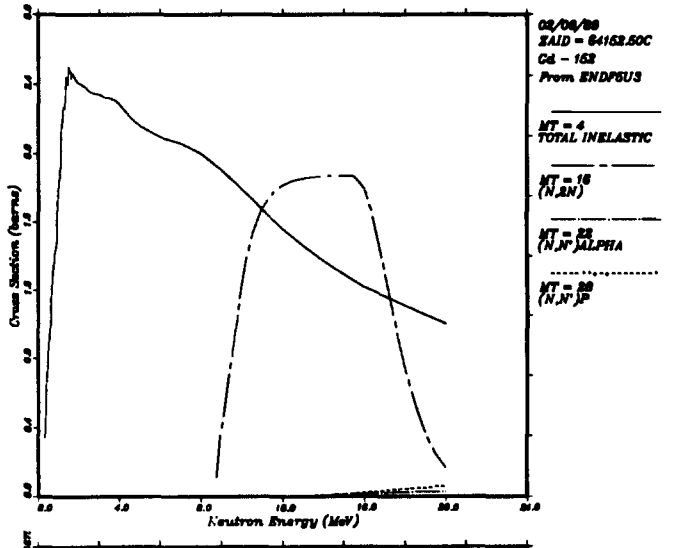


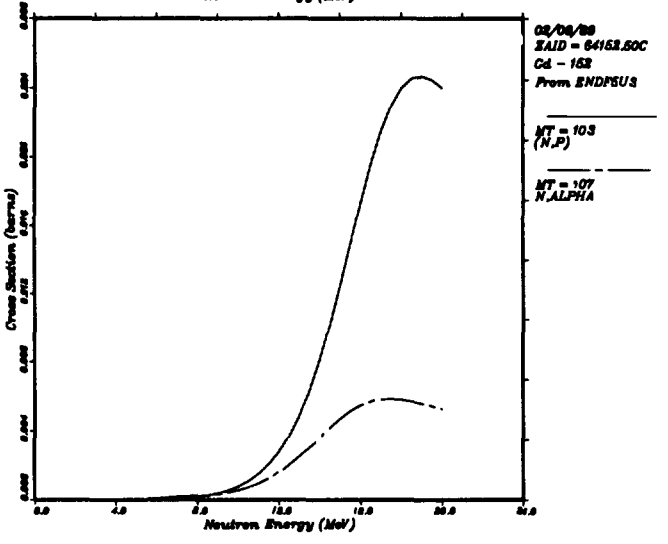


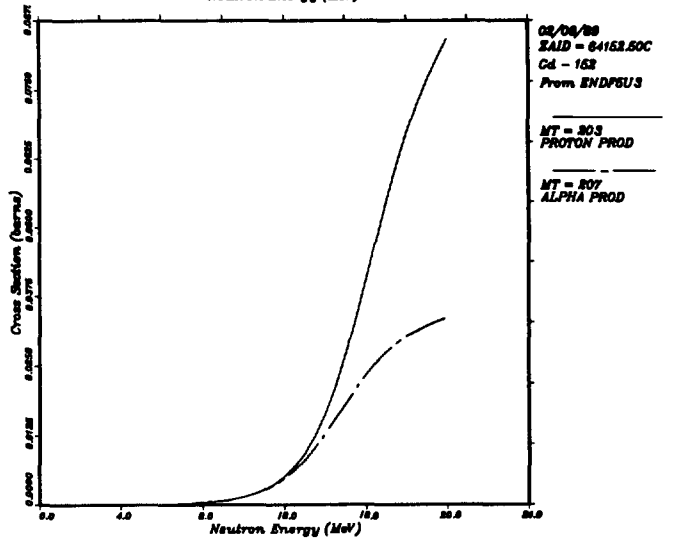
64152.50C


02/06/99
ZAID = 64152.50C
Cd - 152
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 64152.50C
Cd - 152
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 64152.50C
Cd - 152
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'a)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 64152.50C
Cd - 152
From ENDF6U3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 64152.50C
Cd - 152
From ENDF6U3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 154

ZAID=64154.50C
SOURCE: ENDF/B–V (MAT=1364, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=64154.50C	NES=7167	T=300°K
ZAID=64154.51C	NES=892	T=300°K

Discrete Reaction

ZAID=64154.50D	NES=263	T=300°K

Isotope Information

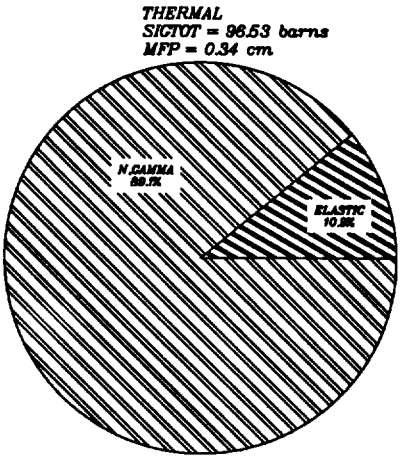
Abundance=2.18%
Density=7.73373 gm/cm^3

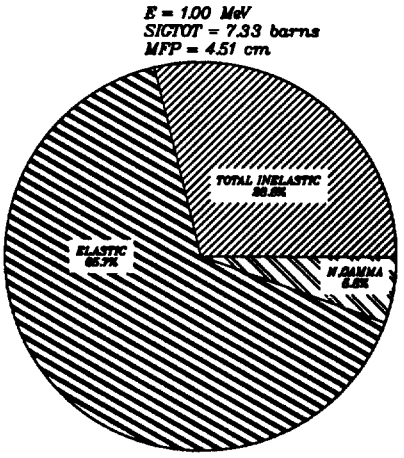
Evaluation Information

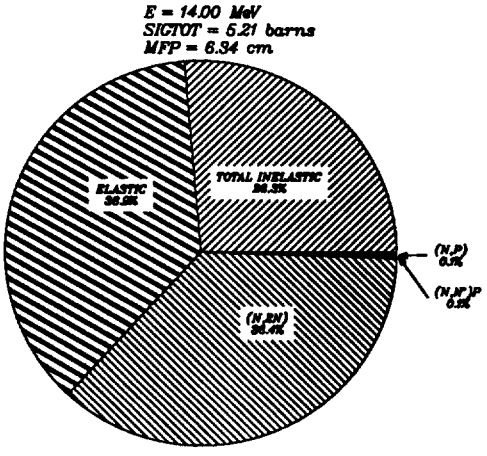
Photon-Production Data - No
Heating Numbers - Total
Energy Range - 10^{-11} to 20 MeV

Reaction Information

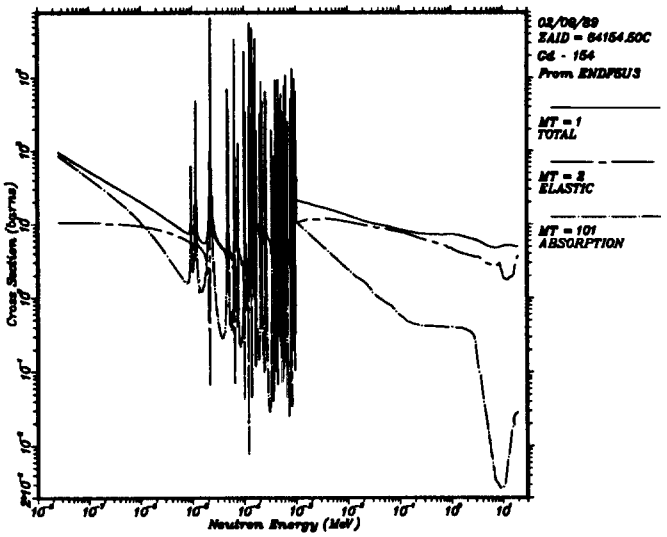
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.7132+00	2.0000+01	-8.6565+00	-8.6565+00
(n,n')α	22	5.0000-01	2.0000+01	9.1600-01	9.1600-01
(n,n')p	28	7.6830+00	2.0000+01	-7.6330+00	-7.6330+00
(n,n'1)	51	1.2381-01	2.0000+01	-1.2300-01	0.0000+00
(n,n'2)	52	3.7343-01	2.0000+01	-3.7100-01	0.0000+00
(n,n'3)	53	6.8546-01	2.0000+01	-6.8100-01	0.0000+00
(n,n'4)	54	7.3000-01	2.0000+01	-7.1800-01	0.0000+00
(n,n'5)	55	8.2135-01	2.0000+01	-8.1600-01	0.0000+00
(n,n'6)	56	1.0025+00	2.0000+01	-9.9600-01	0.0000+00
(n,n'7)	57	1.0549+00	2.0000+01	-1.0480+00	0.0000+00
(n,n'8)	58	1.1354+00	2.0000+01	-1.1280+00	0.0000+00
(n,n'9)	59	1.2491+00	2.0000+01	-1.2410+00	0.0000+00
(n,n'10)	60	1.2602+00	2.0000+01	-1.2520+00	0.0000+00
(n,n'11)	61	1.2723+00	2.0000+01	-1.2640+00	0.0000+00
(n,n'12)	62	1.3045+00	2.0000+01	-1.2960+00	0.0000+00
(n,n'13)	63	1.4072+00	2.0000+01	-1.3980+00	0.0000+00
(n,n'14)	64	1.4243+00	2.0000+01	-1.4150+00	0.0000+00
(n,n'c)	91	1.4092+00	2.0000+01	-1.4000+00	-1.4000+00
(n,γ)	102	1.0000-11	2.0000+01	6.4460+00	6.4460+00
(n,p)	103	1.2024+00	2.0000+01	-1.1946+00	-1.1946+00
(n,α)	107	1.5000+00	2.0000+01	6.5125+00	6.5125+00

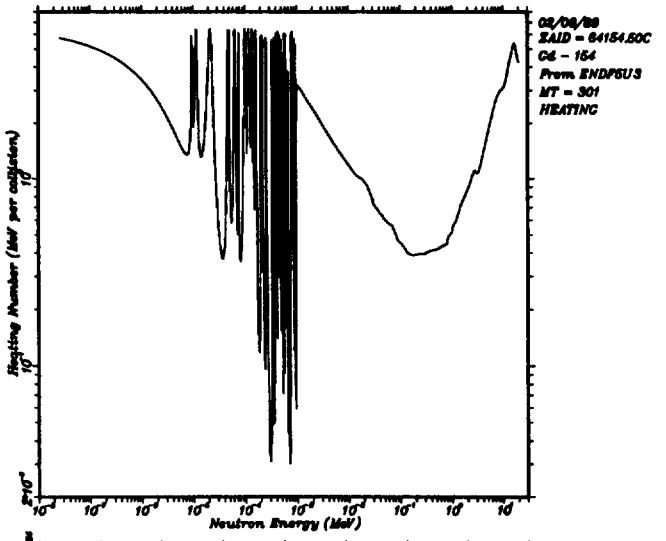


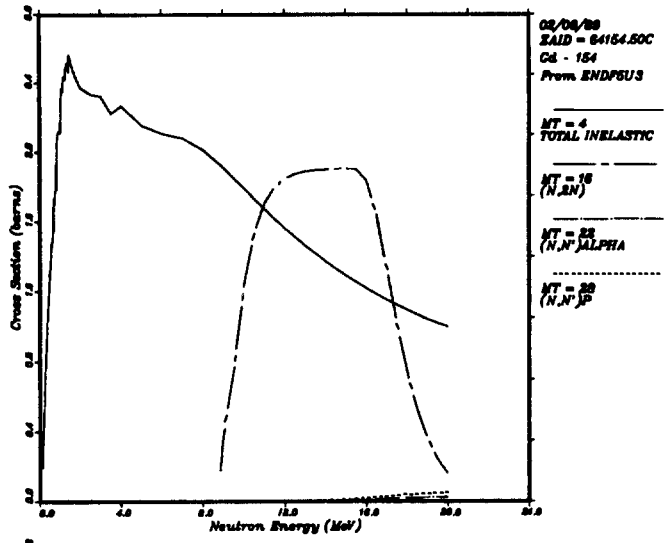


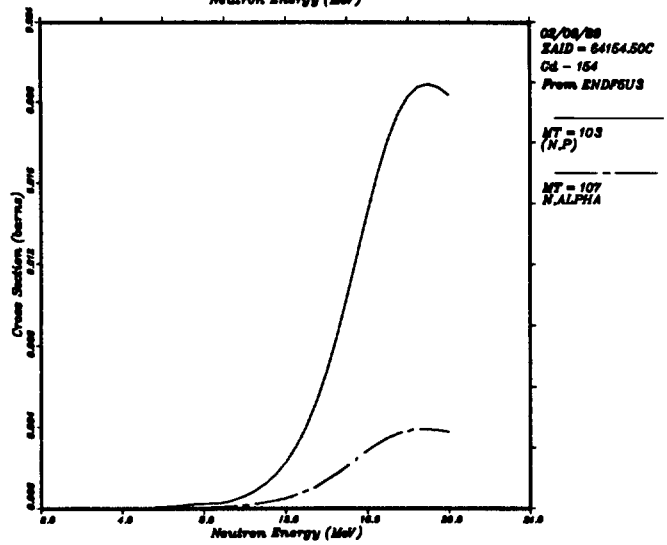


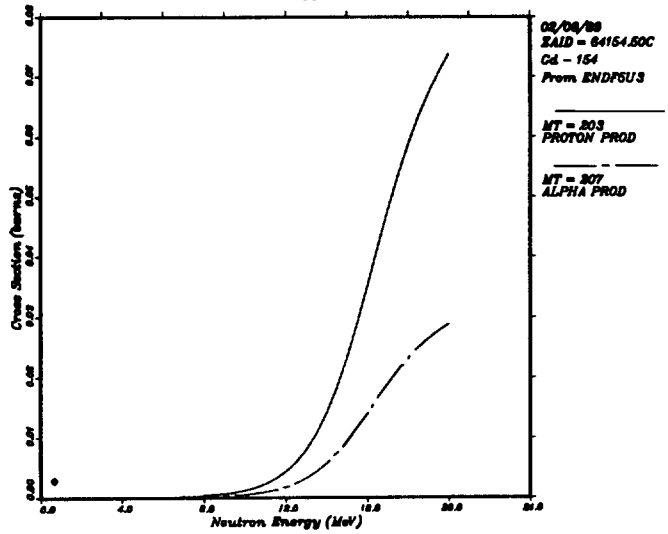
64154.50C


02/06/89
ZAID = 64154.50C
Cd - 154
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64154.50C
Cd - 154
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 64154.50C
Cd - 154
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64154.50C
Cd - 154
From ENDFSU3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64154.50C
Cd - 154
From ENDFSU3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 155

ZAID=64155.50C
SOURCE: ENDF/B-V (MAT=1365, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=64155.50C	NES=6314	T=300°K
ZAID=64155.51C	NES=879	T=300°K

Discrete Reaction

ZAID=64155.50D	NES=263	T=300°K

Isotope Information

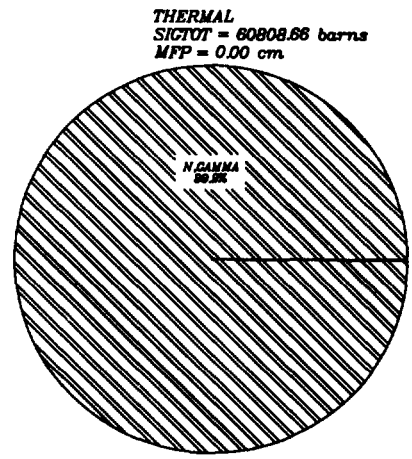
Abundance=14.80%
Density=7.7841 gm/cm^3

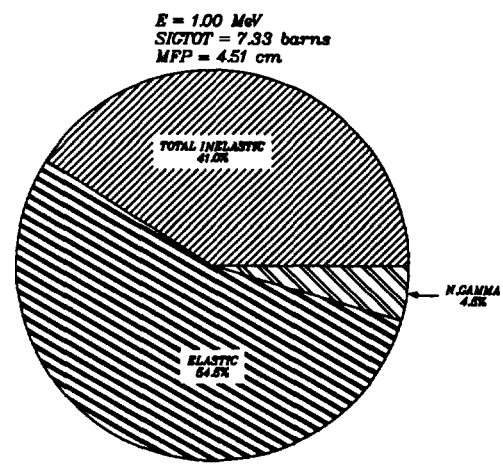
Evaluation Information

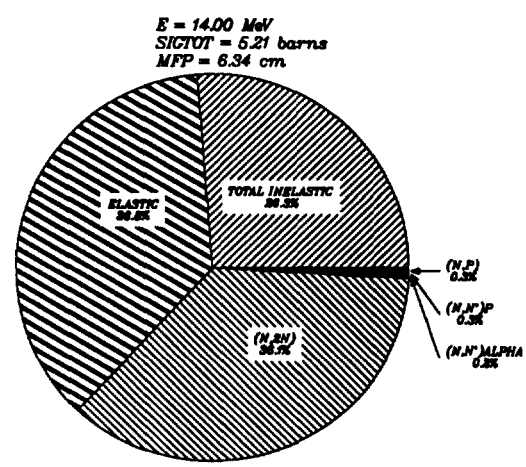
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

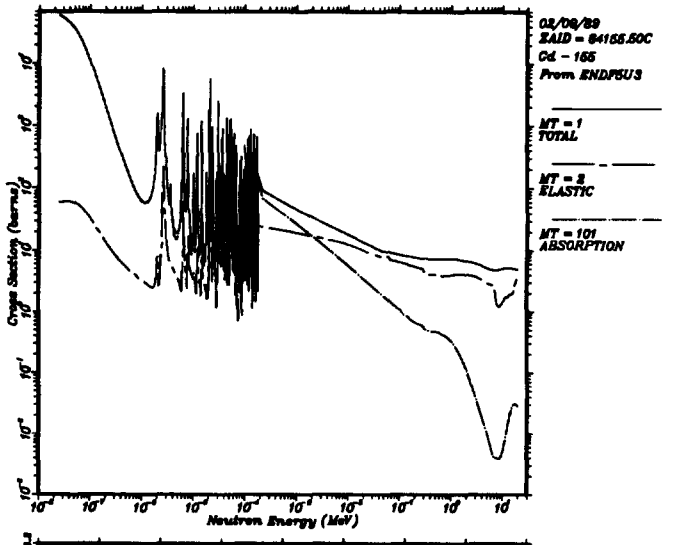
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.4794+00	2.0000+01	-6.4375+00	-6.4375+00
(n,n')α	22	5.0000-01	2.0000+01	7.5000-02	7.5000-02
(n,n')p	28	7.6817+00	2.0000+01	-7.6320+00	-7.6320+00
(n,n'1)	51	6.0391-02	2.0000+01	-6.0000-02	0.0000+00
(n,n'2)	52	8.7063-02	2.0000+01	-8.6500-02	0.0000+00
(n,n'3)	53	1.0599-01	2.0000+01	-1.0530-01	0.0000+00
(n,n'4)	54	1.0830-01	2.0000+01	-1.0760-01	0.0000+00
(n,n'5)	55	1.1877-01	2.0000+01	-1.1800-01	0.0000+00
(n,n'6)	56	1.4705-01	2.0000+01	-1.4610-01	0.0000+00
(n,n'7)	57	2.6844-01	2.0000+01	-2.6670-01	0.0000+00
(n,n'8)	58	2.7035-01	2.0000+01	-2.6860-01	0.0000+00
(n,n'9)	59	2.8877-01	2.0000+01	-2.8690-01	0.0000+00
(n,n'10)	60	3.2812-01	2.0000+01	-3.2600-01	0.0000+00
(n,n'11)	61	3.6909-01	2.0000+01	-3.6670-01	0.0000+00
(n,n'12)	62	4.9198-01	2.0000+01	-4.8880-01	0.0000+00
(n,n'13)	63	5.9626-01	2.0000+01	-5.9240-01	0.0000+00
(n,n'14)	64	6.5182-01	2.0000+01	-6.4760-01	0.0000+00
(n,n'c)	91	6.7436-01	2.0000+01	-6.7000-01	-6.7000-01
(n,γ)	102	1.0000-11	2.0000+01	8.5354+00	8.5354+00
(n,p)	103	5.0000-01	2.0000+01	5.3544-01	5.3544-01
(n,α)	107	5.0000-01	2.0000+01	8.3325+00	8.3325+00

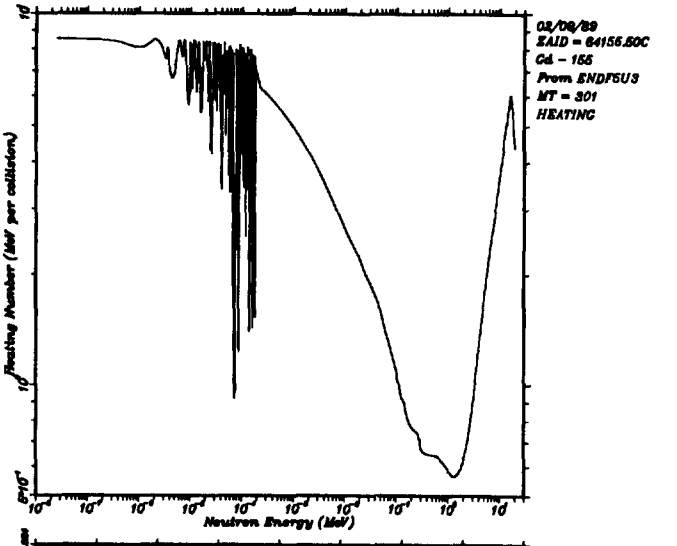


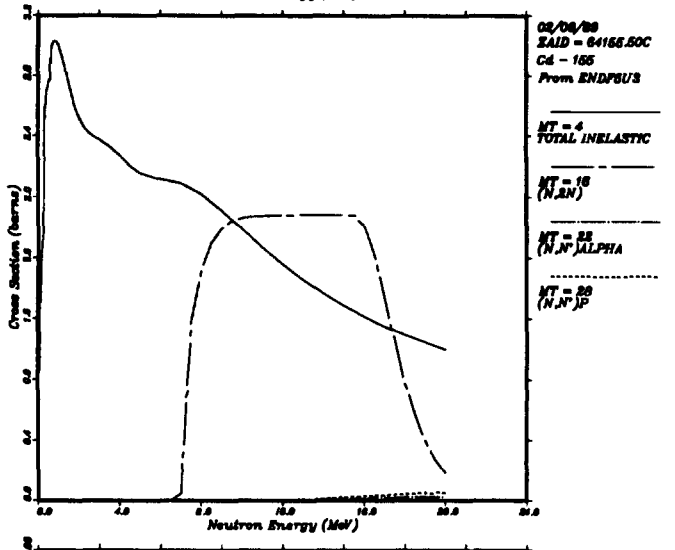


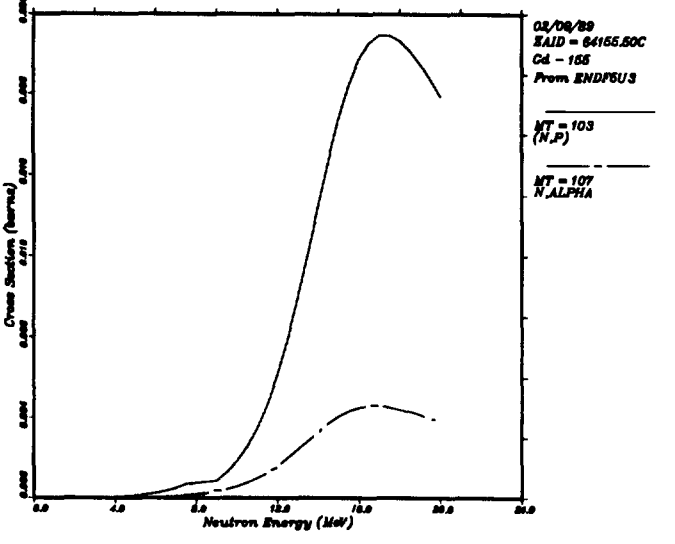


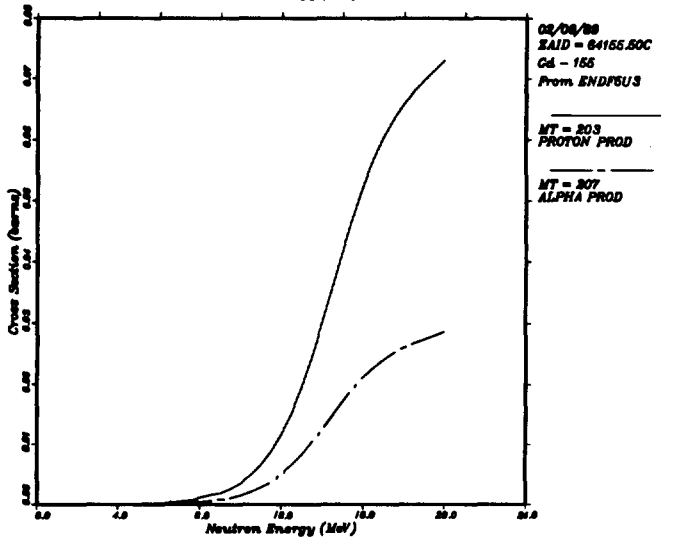
64155.50C


02/06/89
ZAID = 64155.50C
Cd. - 155
From ENDF5U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64155.50C
Cd. - 155
From ENDF5U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 64155.50C
Cd. - 155
From ENDF5U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N')ALPHA
MT = 28
(N,N')P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64155.50C
Cd. - 155
From ENDF5U3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64155.50C
Cd. - 155
From ENDF5U3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 156

ZAID=64156.50C
SOURCE: ENDF/B-V (MAT=1366, Tape 554)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=64156.50C	NES=3964	T=300°K
ZAID=64156.51C	NES=763	T=300°K

Discrete Reaction

ZAID=64156.50D	NES=263	T=300°K

Isotope Information

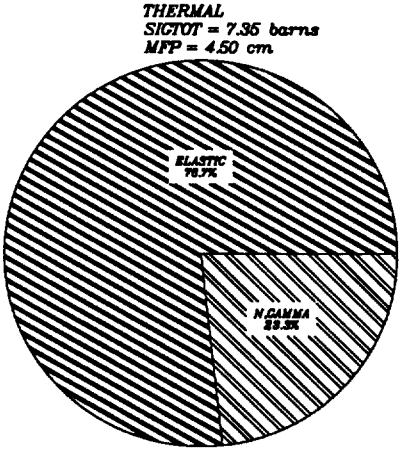
Abundance=20.47%
Density=7.83428 gm/cm^3

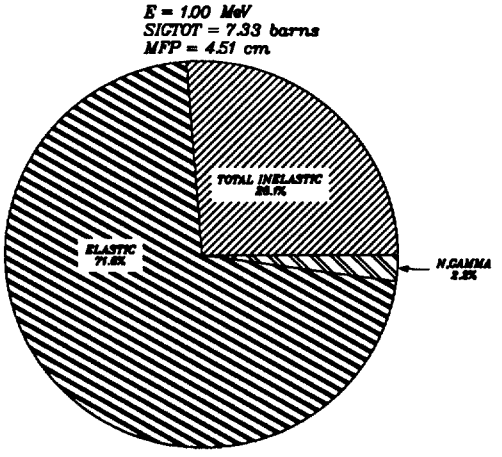
Evaluation Information

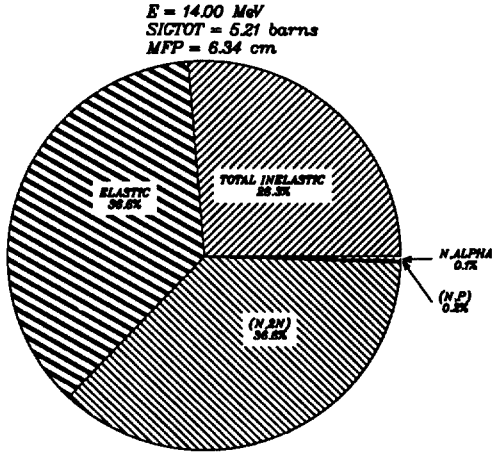
Photon-Production Data – No
Heating Numbers - Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

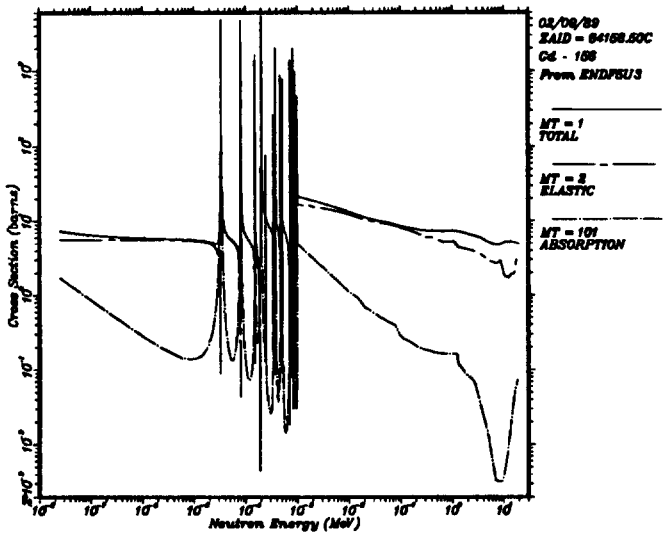
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.5917+00	2.0000+01	-8.5365+00	-8.5365+00
(n,n')α	22	2.0527-01	2.0000+01	-2.0395-01	-2.0395-01
(n,n')p	28	8.0528+00	2.0000+01	-8.0010+00	-8.0010+00
(n,n'1)	51	8.9576-02	2.0000+01	-8.9000-02	0.0000+00
(n,n'2)	52	2.8986-01	2.0000+01	-2.8800-01	0.0000+00
(n,n'3)	53	5.8878-01	2.0000+01	-5.8500-01	0.0000+00
(n,n'4)	54	9.7124-01	2.0000+01	-9.6500-01	0.0000+00
(n,n'5)	55	1.0558+00	2.0000+01	-1.0490+00	0.0000+00
(n,n'6)	56	1.1363+00	2.0000+01	-1.1290+00	0.0000+00
(n,n'7)	57	1.1615+00	2.0000+01	-1.1540+00	0.0000+00
(n,n'8)	58	1.1756+00	2.0000+01	-1.1680+00	0.0000+00
(n,n'9)	59	1.2500+00	2.0000+01	-1.2420+00	0.0000+00
(n,n'10)	60	1.2561+00	2.0000+01	-1.2480+00	0.0000+00
(n,n'11)	61	1.2661+00	2.0000+01	-1.2580+00	0.0000+00
(n,n'12)	62	1.2843+00	2.0000+01	-1.2760+00	0.0000+00
(n,n'13)	63	1.3064+00	2.0000+01	-1.2980+00	0.0000+00
(n,n'14)	64	1.3285+00	2.0000+01	-1.3200+00	0.0000+00
(n,n'c)	91	1.3336+00	2.0000+01	-1.3250+00	-1.3250+00
(n,γ)	102	1.0000-11	2.0000+01	6.3598+00	6.3598+00
(n,p)	103	1.6814+00	2.0000+01	-1.6706+00	-1.6706+00
(n,α)	107	1.0000-11	2.0000+01	5.6625+00	5.6625+00

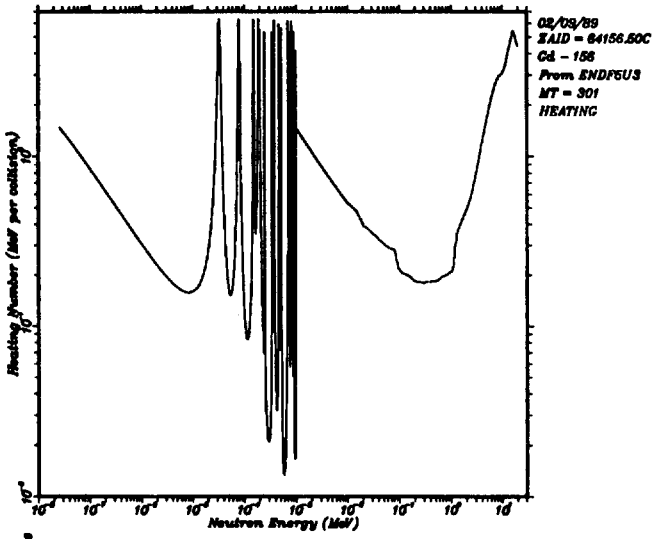


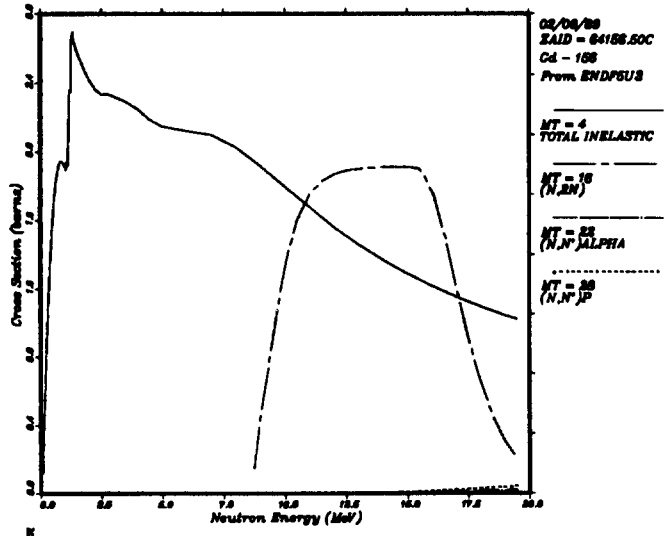


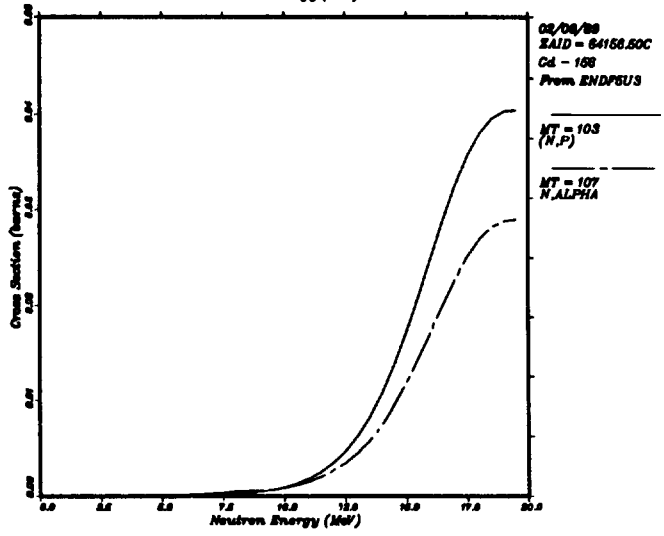


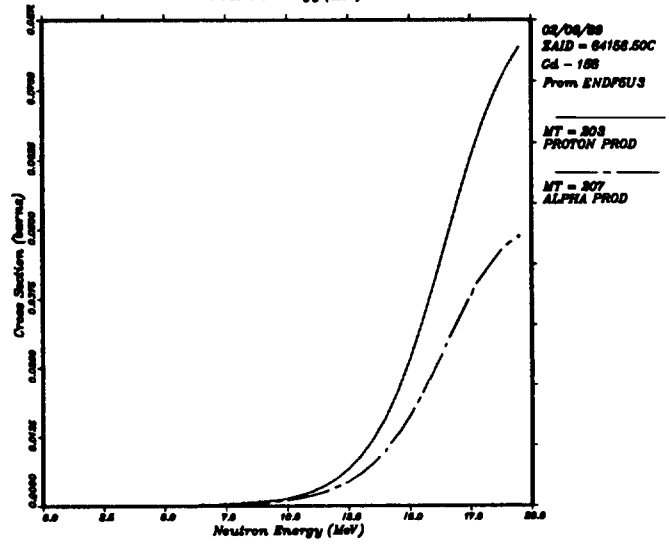
64156.50C


02/06/89
ZAID = 64156.50C
Gd - 156
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64156.50C
Gd - 156
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 64156.50C
Gd - 156
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'a)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64156.50C
Gd - 156
From ENDF6U3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64156.50C
Gd - 156
From ENDF6U3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 157

ZAID=64157.50C
SOURCE: ENDF/B–V (MAT=1367, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=64157.50C	NES=5370	T=300°K
ZAID=64157.51C	NES=826	T=300°K

Discrete Reaction

ZAID=64157.50D	NES=263	T=300°K

Isotope Information

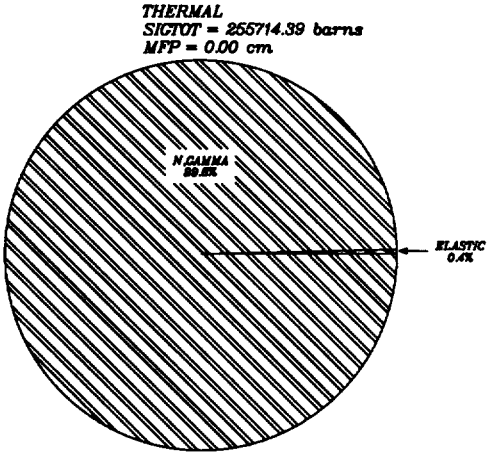
Abundance=15.65%
Density=7.88462 gm/cm^3

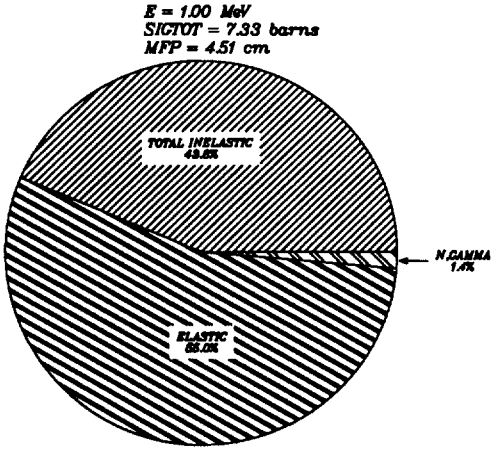
Evaluation Information

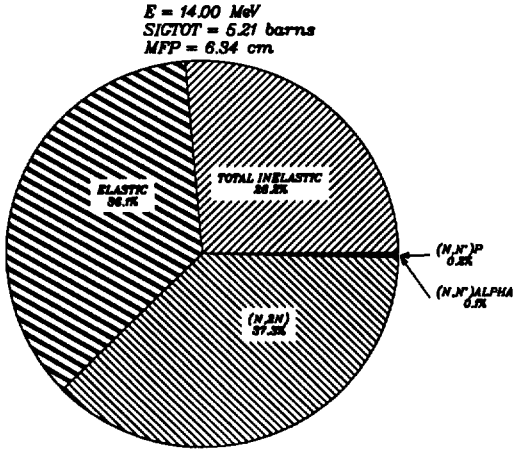
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

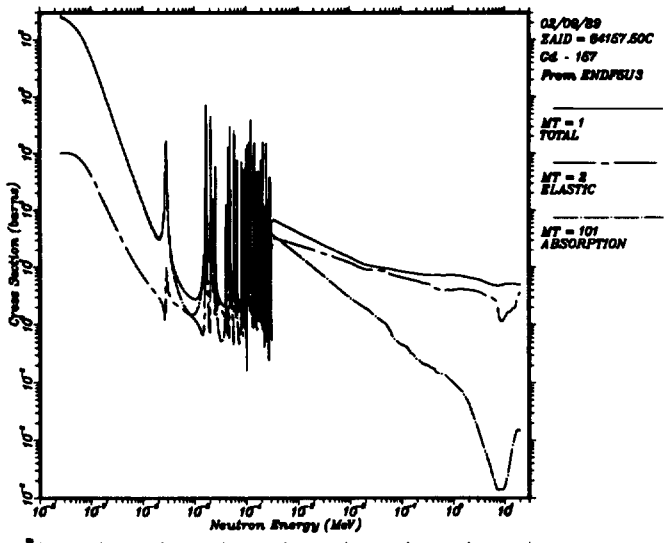
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.4004+00	2.0000+01	-6.3595+00	-6.3595+00
(n,n')α	22	7.0143-01	2.0000+01	-6.9695-01	-6.9695-01
(n,n')p	28	8.0816+00	2.0000+01	-8.0300+00	-8.0300+00
(n,n'1)	51	5.4850-02	2.0000+01	-5.4500-02	0.0000+00
(n,n'2)	52	6.4411-02	2.0000+01	-6.4000-02	0.0000+00
(n,n'3)	53	1.1654-01	2.0000+01	-1.1580-01	0.0000+00
(n,n'4)	54	1.3235-01	2.0000+01	-1.3150-01	0.0000+00
(n,n'5)	55	1.8216-01	2.0000+01	-1.8100-01	0.0000+00
(n,n'6)	56	2.2886-01	2.0000+01	-2.2740-01	0.0000+00
(n,n'7)	57	3.4822-01	2.0000+01	-3.4600-01	0.0000+00
(n,n'8)	58	3.6231-01	2.0000+01	-3.6000-01	0.0000+00
(n,n'9)	59	4.2773-01	2.0000+01	-4.2500-01	0.0000+00
(n,n'10)	60	4.3961-01	2.0000+01	-4.3680-01	0.0000+00
(n,n'11)	61	6.9041-01	2.0000+01	-6.8600-01	0.0000+00
(n,n'12)	62	7.9608-01	2.0000+01	-7.9100-01	0.0000+00
(n,n'13)	63	8.1823-01	2.0000+01	-8.1300-01	0.0000+00
(n,n'14)	64	8.4439-01	2.0000+01	-8.3900-01	0.0000+00
(n,n'c)	91	6.7431-01	2.0000+01	-6.7000-01	-6.7000-01
(n,γ)	102	1.0000-11	2.0000+01	7.9368+00	7.9368+00
(n,p)	103	5.8127-01	2.0000+01	-5.7756-01	-5.7756-01
(n,α)	107	1.5000+00	2.0000+01	7.2805+00	7.2805+00

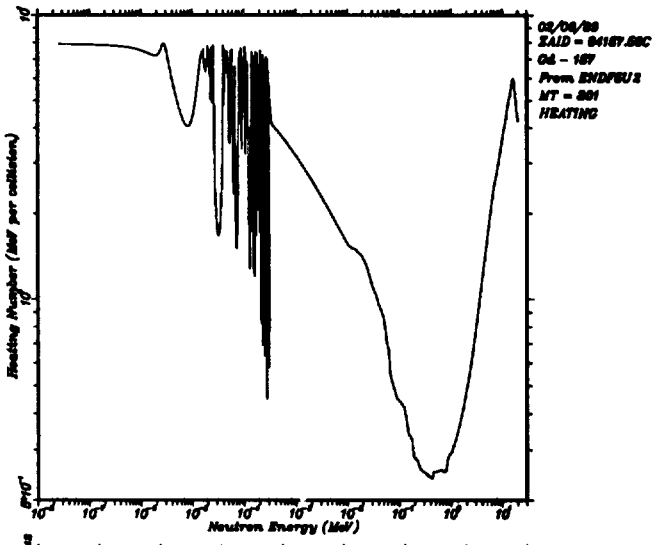


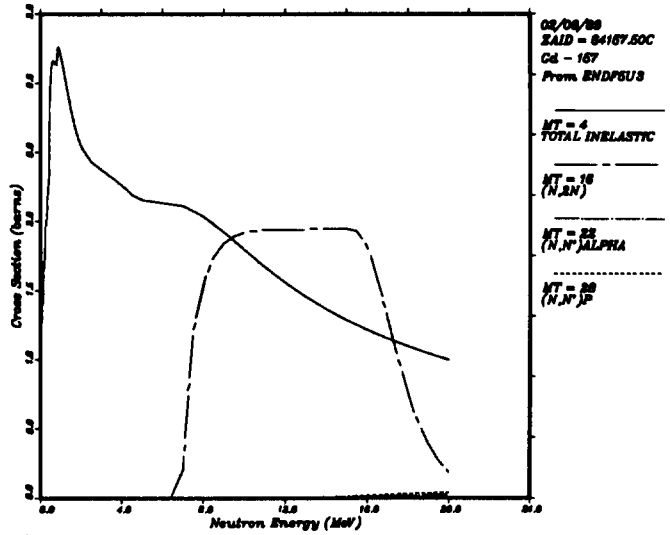


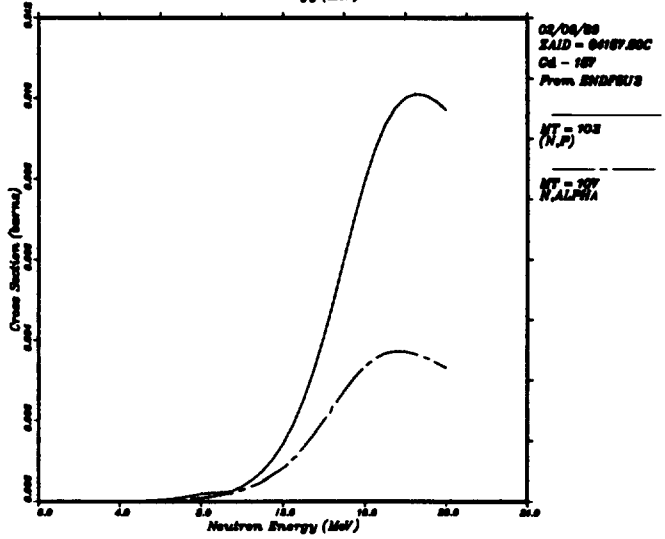


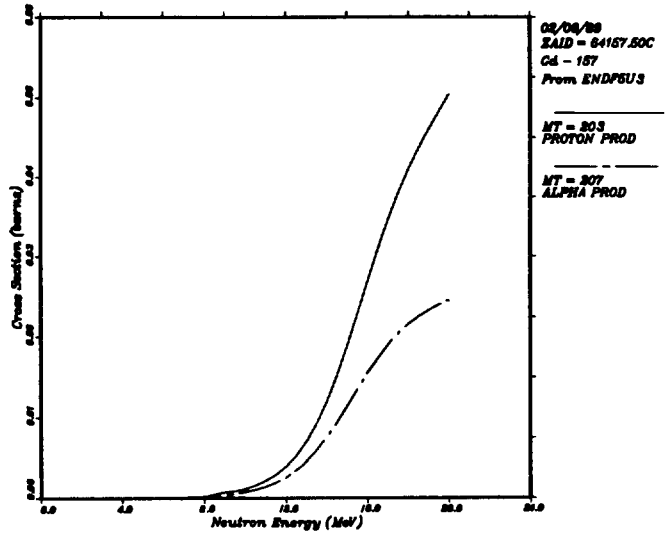
64157.50C


02/06/89
ZAID = 64157.50C
Cd - 157
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64157.50C
Cd - 157
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 64157.50C
Cd - 157
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64157.50C
Cd - 157
From ENDFSU3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 64157.50C
Cd - 157
From ENDFSU3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Gadolinium – 158

ZAID=64158.50C
SOURCE: ENDF/B–V (MAT=1368, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=64158.50C	NES=15000	T=300°K
ZAID=64158.51C	NES=1074	T=300°K

Discrete Reaction

ZAID=64158.50D	NES=263	T=300°K

Isotope Information

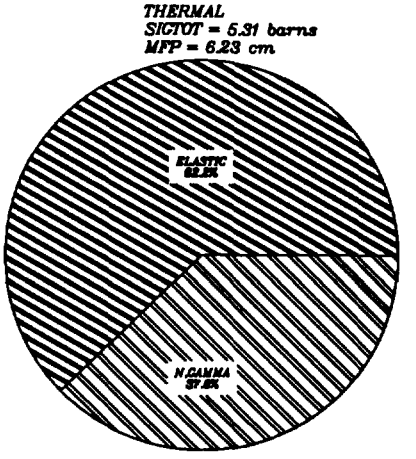
Abundance=24.84%
Density=7.93487 gm/cm^3

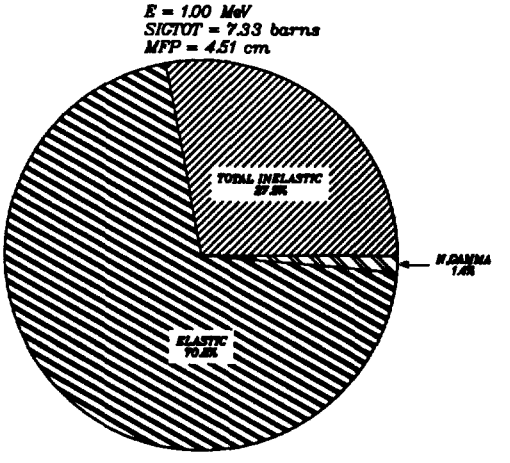
Evaluation Information

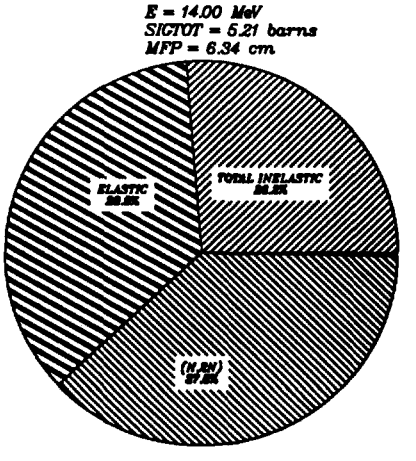
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

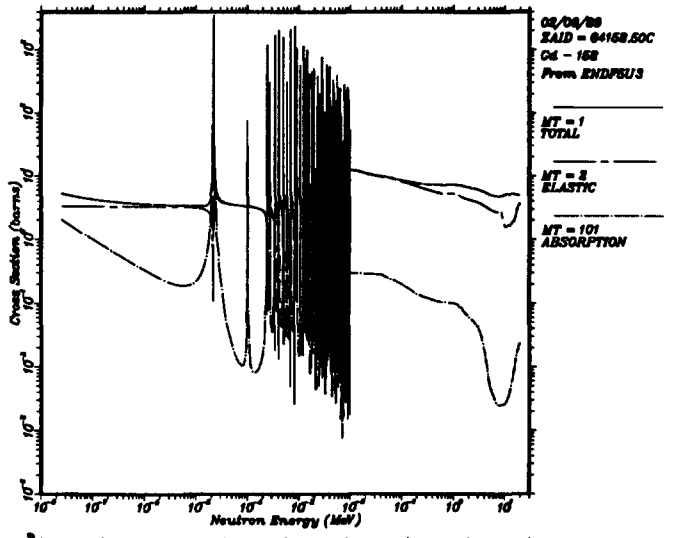
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	**2**	1.0000-11	2.0000+01		
(n,2n)	16	7.9882+00	2.0000+01	-7.9375+00	-7.9375+00
(n,n')α	22	6.6115-01	2.0000+01	-6.5695-01	-6.5695-01
(n,n')p	28	8.5694+00	2.0000+01	-8.5150+00	-8.5150+00
(n,n'1)	51	8.0008-02	2.0000+01	-7.9500-02	0.0000+00
(n,n'2)	52	2.6277-01	2.0000+01	-2.6110-01	0.0000+00
(n,n'3)	53	6.0000-01	2.0000+01	-5.9300-01	0.0000+00
(n,n'4)	54	9.7730-01	2.0000+01	-9.7110-01	0.0000+00
(n,n'5)	55	1.0523+00	2.0000+01	-1.0456+00	0.0000+00
(n,n'6)	56	1.2036+00	2.0000+01	-1.1960+00	0.0000+00
(n,n'7)	57	1.2735+00	2.0000+01	-1.2654+00	0.0000+00
(n,n'8)	58	1.3671+00	2.0000+01	-1.3584+00	0.0000+00
(n,n'9)	59	1.4156+00	2.0000+01	-1.4066+00	0.0000+00
(n,n'10)	60	1.4616+00	2.0000+01	-1.4523+00	0.0000+00
(n,n'11)	61	1.4909+00	2.0000+01	-1.4814+00	0.0000+00
(n,n'12)	62	1.5271+00	2.0000+01	-1.5174+00	0.0000+00
(n,n'13)	63	1.5891+00	2.0000+01	-1.5790+00	0.0000+00
(n,n'14)	64	1.6498+00	2.0000+01	-1.6393+00	0.0000+00
(n,n'c)	91	1.0487+00	2.0000+01	-1.0420+00	-1.0420+00
(n,γ)	102	1.0000-11	2.0000+01	5.9450+00	5.9450+00
(n,p)	103	2.6685+00	2.0000+01	-2.6516+00	-2.6516+00
(n,α)	107	1.5000+00	2.0000+01	5.1565+00	5.1565+00

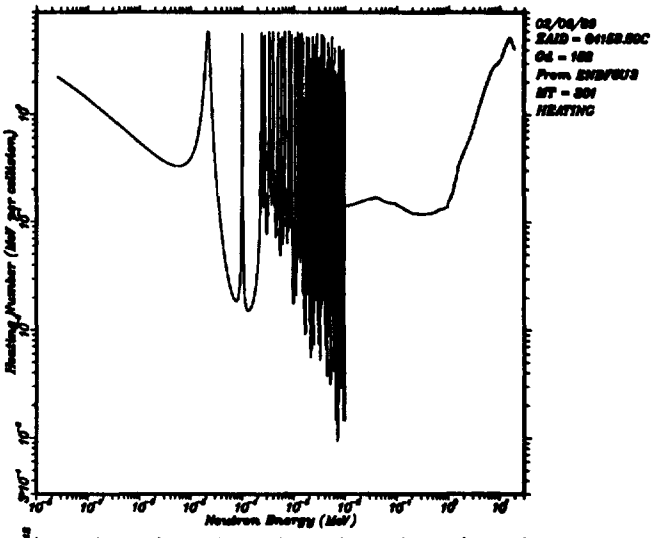


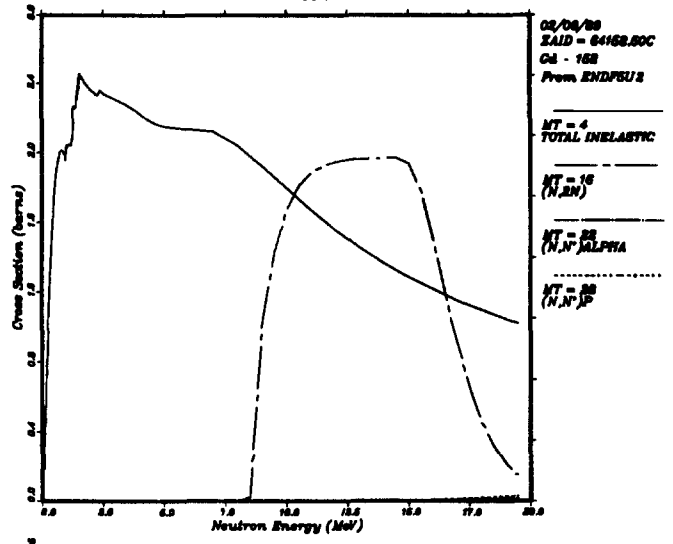


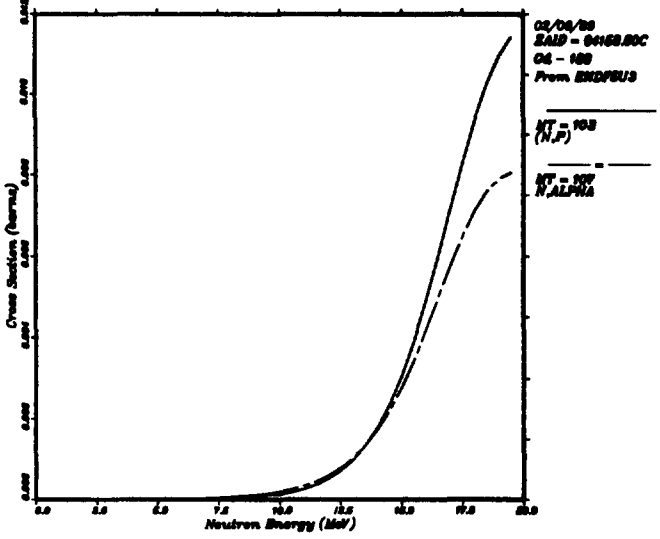


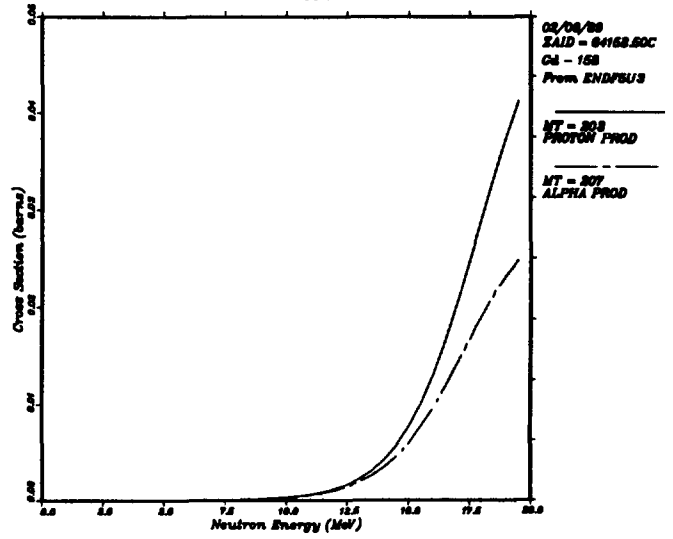
64158.50C


Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION


Heating Number (MeV per collision)
Neutron Energy (MeV)
MT = 301
HEATING


Cross Section (barns)
Neutron Energy (MeV)
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'ALPHA
MT = 28
(N,N'P


Cross Section (barns)
Neutron Energy (MeV)
MT = 103
(N,P)
MT = 107
N,ALPHA


Cross Section (barns)
Neutron Energy (MeV)
MT = 203
PROTON PROD
MT = 207
ALPHA PROD

Gadolinium – 160

ZAID=64160.50C
SOURCE: ENDF/B–V (MAT=1370, Tape 503)
REFERENCE: "Summary Documentation for the Isotopes of Gadolinium,"
by B. A. Magurno, contained in ENDF–201

<u>Data Availability</u>

Continuous Energy

ZAID=64160.50C	NES=8229	T=300°K
ZAID=64160.51C	NES=947	T=300°K

Discrete Reaction

ZAID=64160.50D	NES=263	T=300°K

<u>Isotope Information</u>

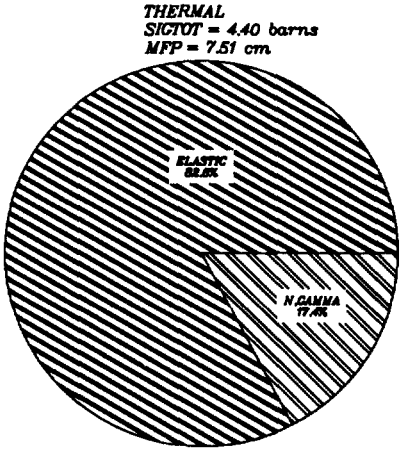
Abundance=21.86%
Density=8.03551 gm/cm^3

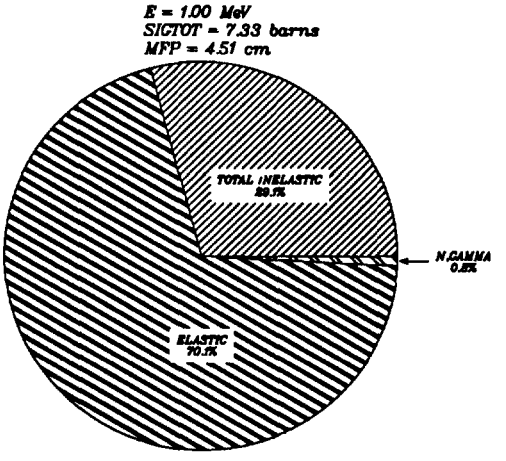
<u>Evaluation Information</u>

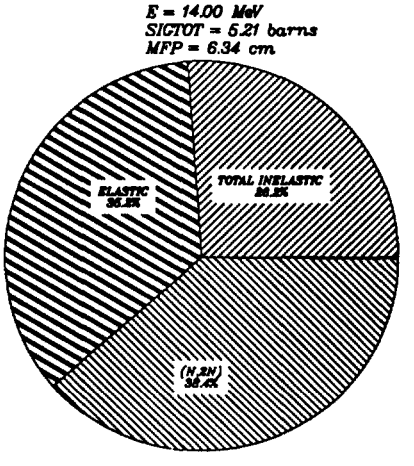
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

<u>Reaction Information</u>

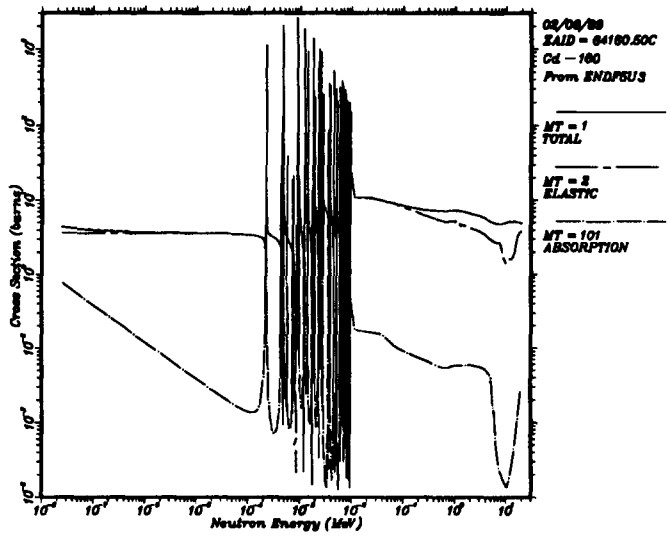
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.5055+00	2.0000+01	-7.4585+00	-7.4585+00
(n,n')α	22	1.0103+00	2.0000+01	-1.0040+00	-1.0040+00
(n,n')p	28	9.3597+00	2.0000+01	-9.3010+00	-9.3010+00
(n,n'1)	51	7.5473-02	2.0000+01	-7.5000-02	0.0000+00
(n,n'2)	52	2.4956-01	2.0000+01	-2.4800-01	0.0000+00
(n,n'3)	53	5.1724-01	2.0000+01	-5.1400-01	0.0000+00
(n,n'4)	54	8.7347-01	2.0000+01	-8.6800-01	0.0000+00
(n,n'5)	55	9.9423-01	2.0000+01	-9.8800-01	0.0000+00
(n,n'6)	56	1.0767+00	2.0000+01	-1.0700+00	0.0000+00
(n,n'7)	57	1.1553+00	2.0000+01	-1.1480+00	0.0000+00
(n,n'8)	58	1.2317+00	2.0000+01	-1.2240+00	0.0000+00
(n,n'c)	91	1.0063+00	2.0000+01	-1.0000+00	-1.0000+00
(n,γ)	102	1.0000-11	2.0000+01	5.6330+00	5.6330+00
(n,p)	103	3.6424+00	2.0000+01	-3.6196+00	-3.6196+00
(n,α)	107	2.5000+00	2.0000+01	4.4545+00	4.4545+00

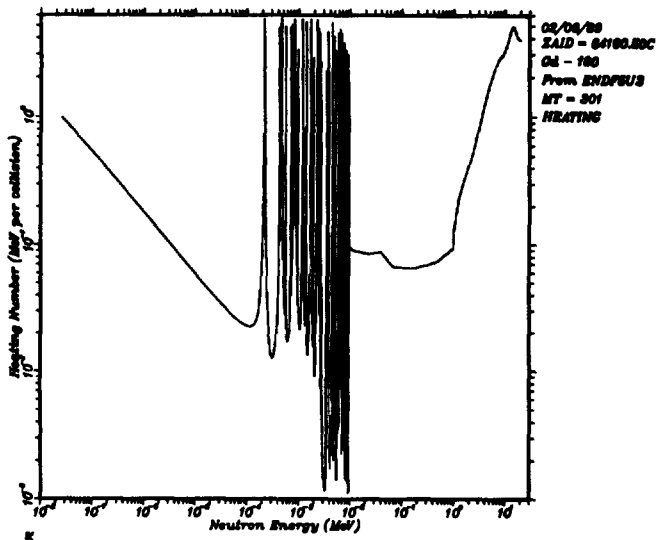


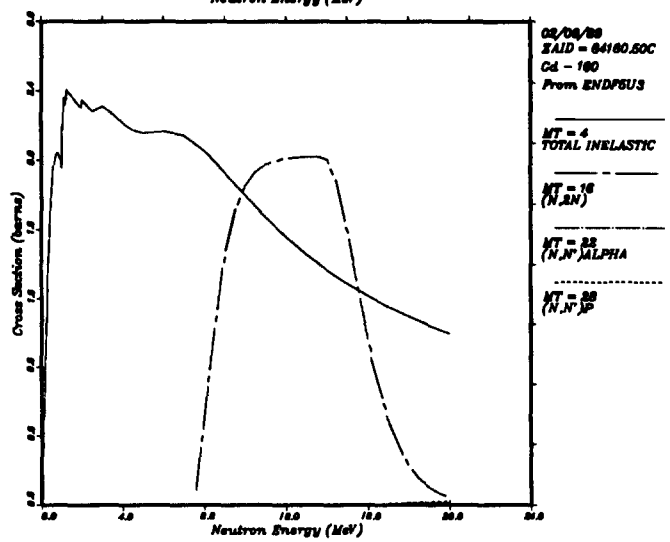


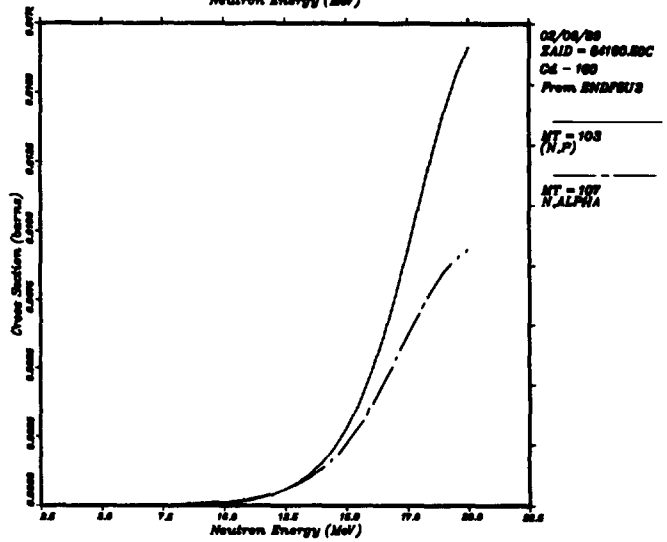


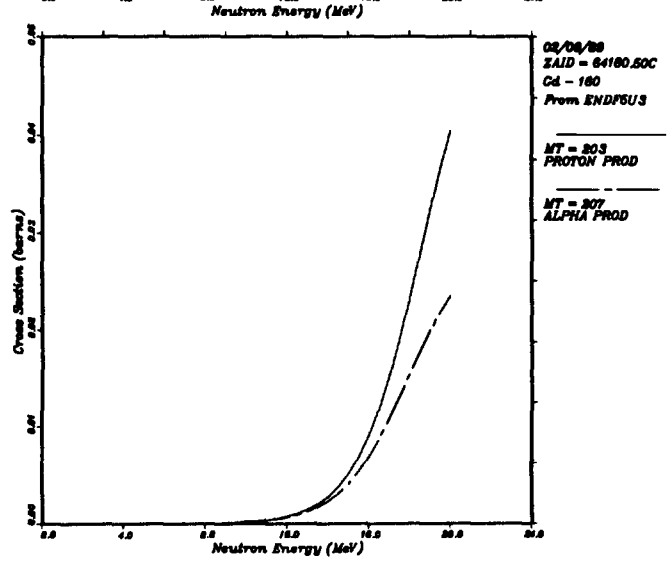
64160.50C


02/06/99
ZAID = 64160.50C
Cd - 160
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 64160.50C
Cd - 160
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 64160.50C
Cd - 160
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 22
(N,N'a)ALPHA
MT = 28
(N,N'p)P
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 64160.50C
Cd - 160
From ENDFSU3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

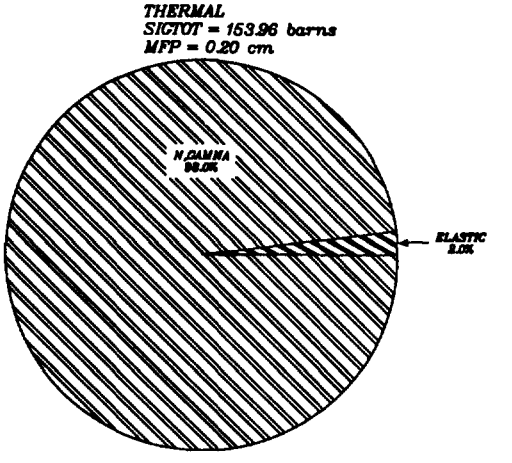

02/06/99
ZAID = 64160.50C
Cd - 160
From ENDFSU3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

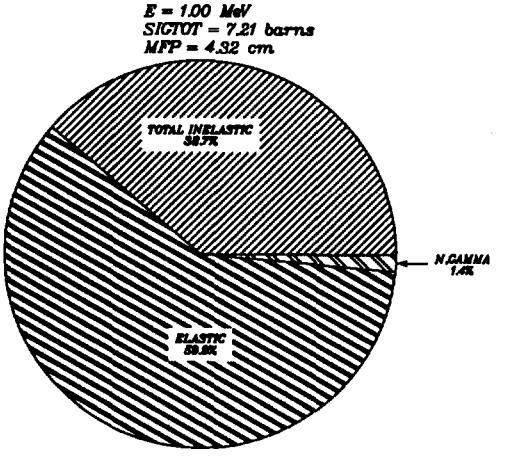
Holmium – 165

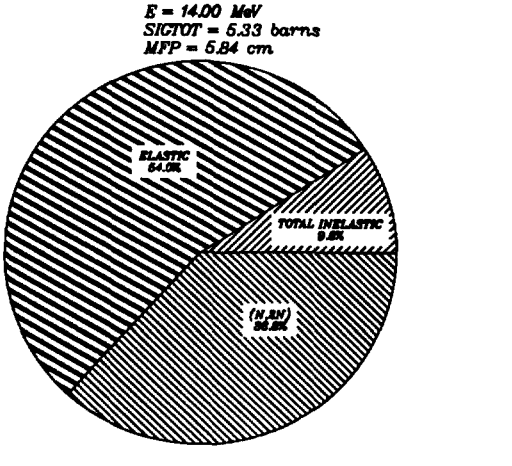
ZAID=67165.55C

SOURCE: Group T-2 (MAT=165, File /T2/PGY/EVAL/LAS/HO165LA)

REFERENCE: "n + ^{151}Eu, ^{153}Eu, and ^{165}Ho Evaluated Cross Sections,"
by P. G. Young, E. D. Arthur, and R. E. MacFarlane
Los Alamos National Laboratory internal memorandum T-2-M-1713 (April 29, 1986)







Data Availability

Continuous Energy

ZAID=67165.55C	NES=2426	T=300°K

Discrete Reaction

ZAID=67165.55D	NES=263	T=300°K

Multigroup

ZAID=67165.55M	30-Group	T=300°K

Isotope Information

Abundance=100.00%

Density=8.795 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

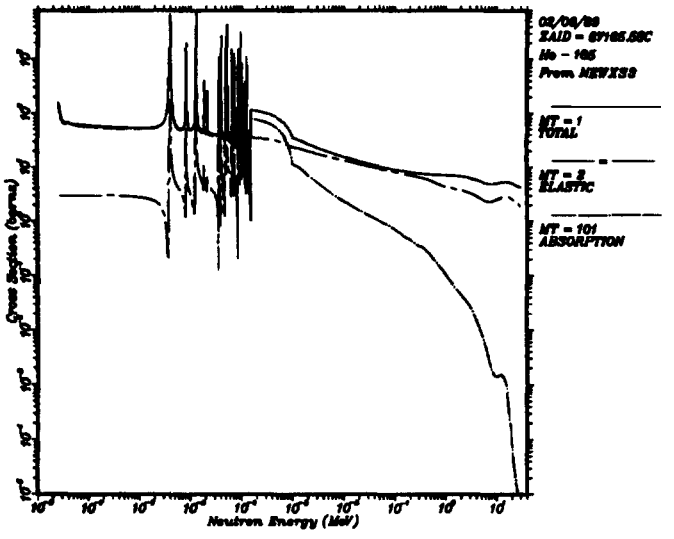
Heating Numbers – Local

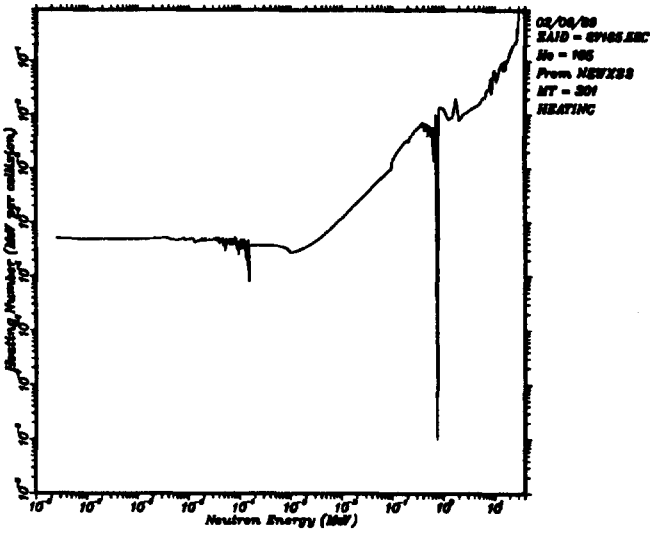
Energy Range – 10^{-11} to 30 MeV

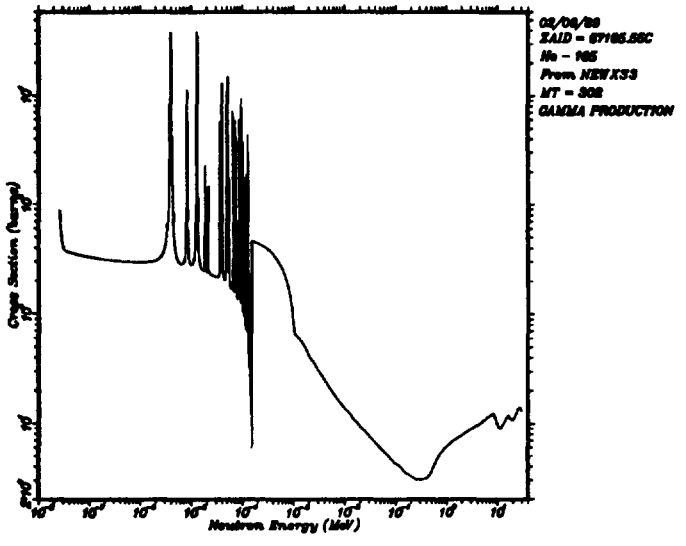
Reaction Information

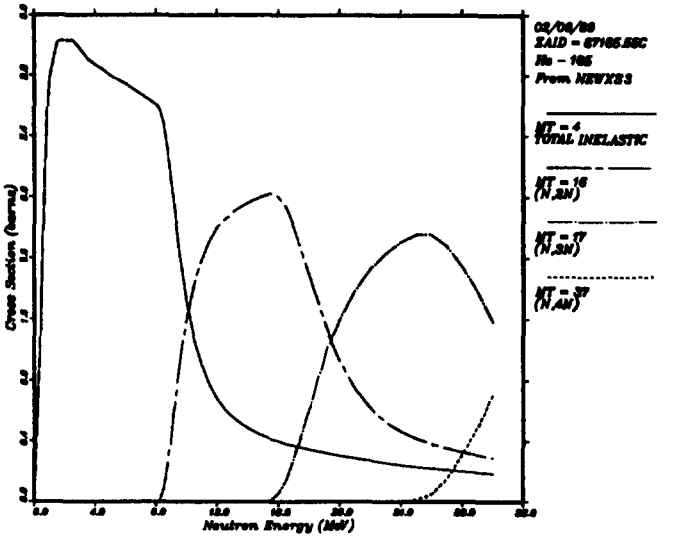
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	3.0000+01		
(n,2n)	16	8.1000+00	3.0000+01	-8.0304+00	-8.0304+00
(n,3n)	17	1.4750+01	3.0000+01	-1.4660+01	-1.4660+01
(n,4n)	37	2.3243+01	3.0000+01	-2.3063+01	-2.3063+01
(n,n'1)	51	9.5279-02	3.0000+01	-9.4700-02	0.0000+00
(n,n'2)	52	2.1108-01	3.0000+01	-2.0980-01	0.0000+00
(n,n'3)	53	3.4711-01	3.0000+01	-3.4500-01	0.0000+00
(n,n'4)	54	3.6391-01	3.0000+01	-3.6170-01	0.0000+00
(n,n'5)	55	4.2207-01	3.0000+01	-4.1950-01	0.0000+00
(n,n'6)	56	4.3203-01	3.0000+01	-4.2940-01	0.0000+00
(n,n'7)	57	4.5195-01	3.0000+01	-4.4920-01	0.0000+00
(n,n'8)	58	4.9400-01	3.0000+01	-4.9100-01	0.0000+00
(n,n'9)	59	5.0225-01	3.0000+01	-4.9920-01	0.0000+00
(n,n'10)	60	5.1865-01	3.0000+01	-5.1550-01	0.0000+00
(n,n'11)	61	5.4230-01	3.0000+01	-5.3900-01	0.0000+00
(n,n'12)	62	5.7027-01	3.0000+01	-5.6680-01	0.0000+00
(n,n'13)	63	5.9341-01	3.0000+01	-5.8980-01	0.0000+00
(n,n'c)	91	5.9341-01	3.0000+01	-5.8980-01	-5.8980-01
(n,γ)	102	1.0000-11	3.0000+01	6.2424+00	6.2424+00

67165.55C


02/06/99
ZAID = 67165.55C
Ho - 165
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)

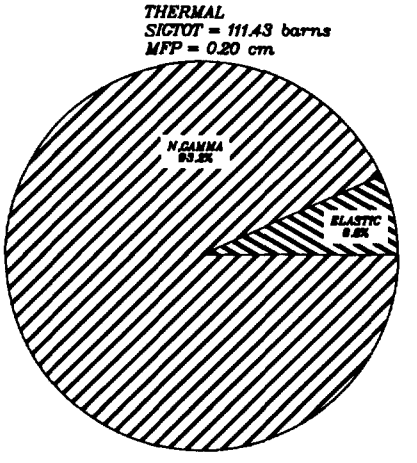

02/06/99
ZAID = 67165.55C
Ho - 165
From NEWXS3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 67165.55C
Ho - 165
From NEWXS3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 67165.55C
Ho - 165
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)

Hafnium

ZAID=72000.50C
SOURCE: ENDF/B–V (MAT=1372, Tape 501)
REFERENCE: "Evaluated Neutron Cross Sections for Natural Hafnium and the Hafnium Isotopes 174, 176, 177, 178, 179, and 180," by M. K. Drake, D. A. Sargis, and Tin Maung contained in ENDF–201



Data Availability

Continuous Energy

ZAID=72000.50C NES=8270 T=300°K

Discrete Reaction

ZAID=72000.50D NES=263 T=300°K

Isotope Information

Abundance=Natural

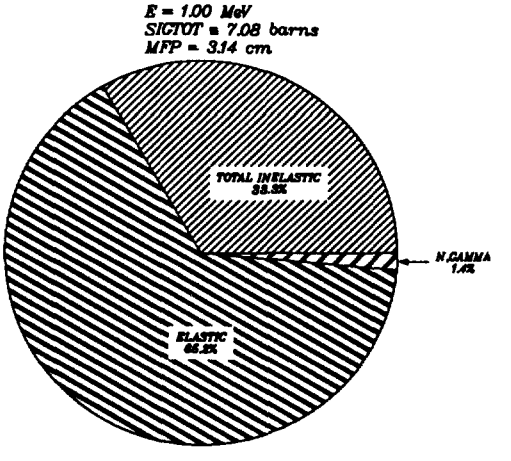
Density=13.31 gm/cm^3

Evaluation Information

Photon-Production Data – No

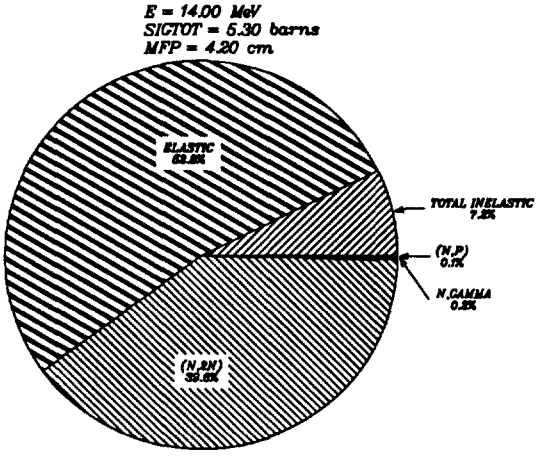
Heating Numbers – Total

Energy Range – 10^{-11} to 20 MeV

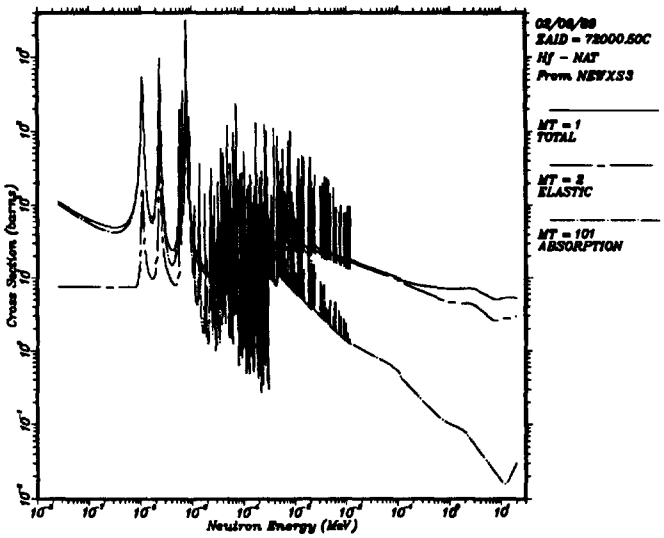


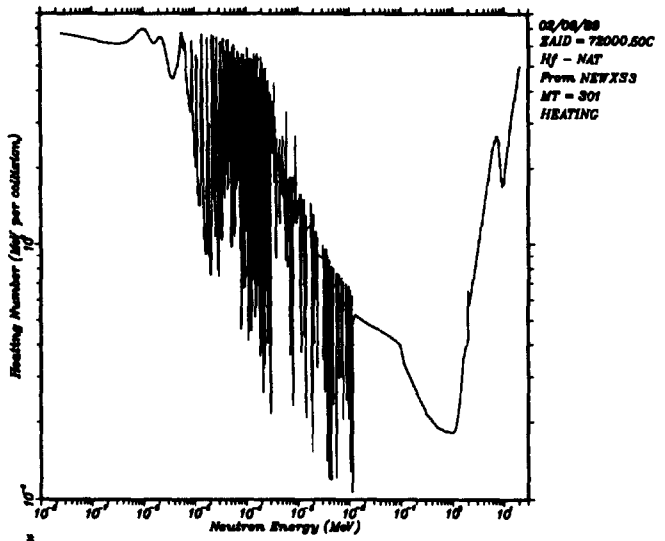
Reaction Information

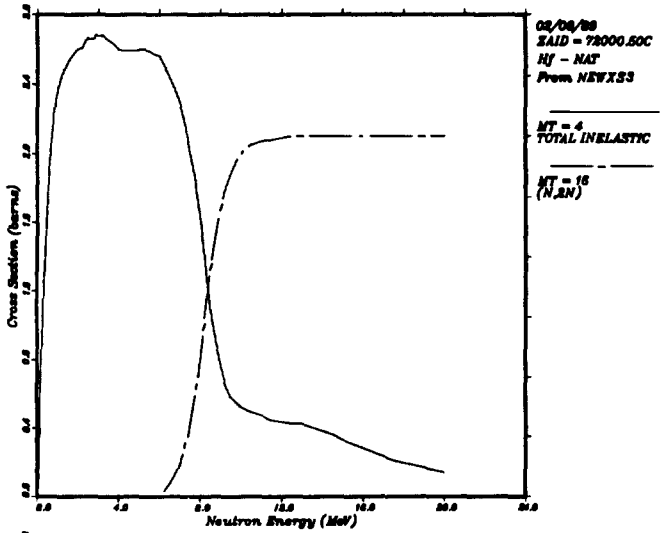
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.1300+00	2.0000+01	-6.0700+00	-6.0700+00
(n,n'1)	51	9.3727-02	2.0000+01	-9.3200-02	0.0000+00
(n,n'2)	52	1.1364-01	2.0000+01	-1.1300-01	0.0000+00
(n,n'3)	53	2.5202-01	2.0000+01	-2.5060-01	0.0000+00
(n,n'4)	54	3.0900-01	2.0000+01	-3.0700-01	0.0000+00
(n,n'5)	55	3.2300-01	2.0000+01	-3.2100-01	0.0000+00
(n,n'6)	56	3.8718-01	2.0000+01	-3.8500-01	0.0000+00
(n,n'7)	57	4.1131-01	2.0000+01	-4.0900-01	0.0000+00
(n,n'8)	58	4.2941-01	2.0000+01	-4.2700-01	0.0000+00
(n,n'9)	59	5.1200-01	2.0000+01	-5.0900-01	0.0000+00
(n,n'10)	60	5.5814-01	2.0000+01	-5.5500-01	0.0000+00
(n,n'11)	61	5.9434-01	2.0000+01	-5.9100-01	0.0000+00
(n,n'12)	62	6.3600-01	2.0000+01	-6.3200-01	0.0000+00
(n,n'c)	91	1.0000+00	2.0000+01	-9.3200-02	-9.3200-02
(n,γ)	102	1.0000-11	2.0000+01	7.1800+00	7.1800+00
(n,p)	103	7.5000+00	2.0000+01	2.9000-01	2.9000-01

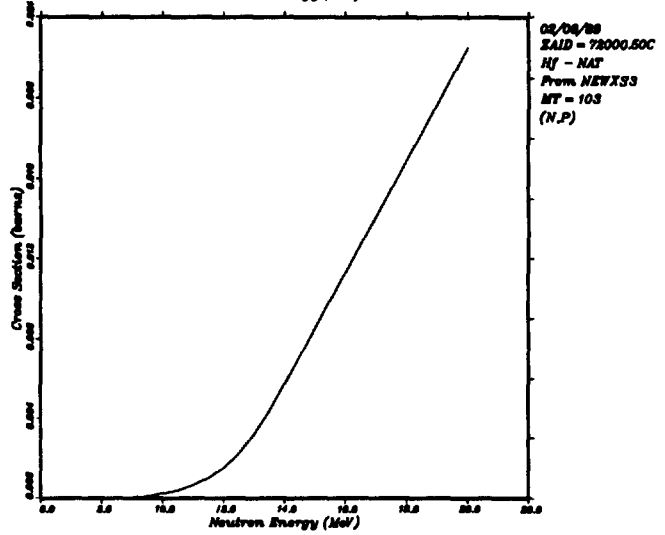


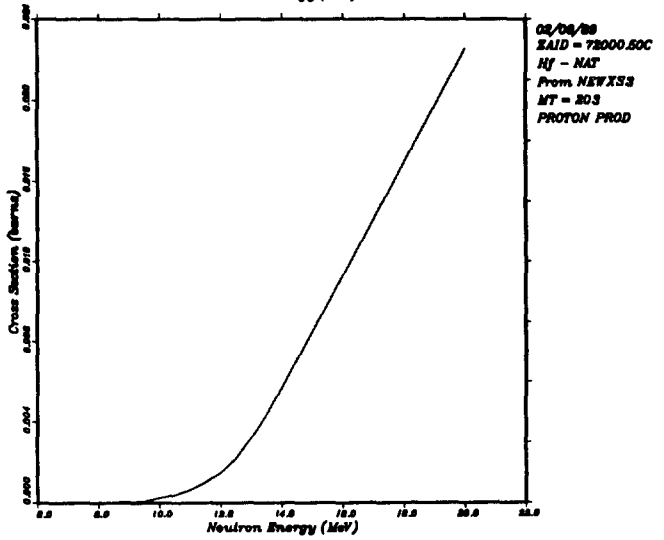
72000.50C


02/06/99
ZAID = 72000.50C
Hf - NAT
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 72000.50C
Hf - NAT
From NEWXS3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

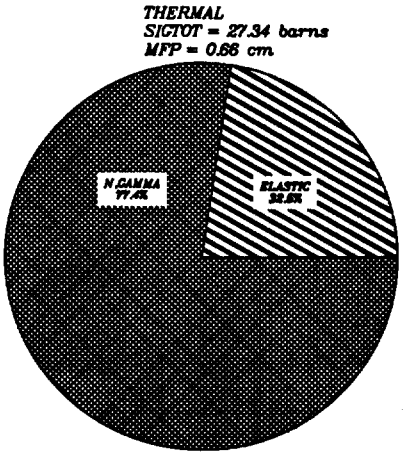

02/06/99
ZAID = 72000.50C
Hf - NAT
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
Cross Section (barns)
Neutron Energy (MeV)

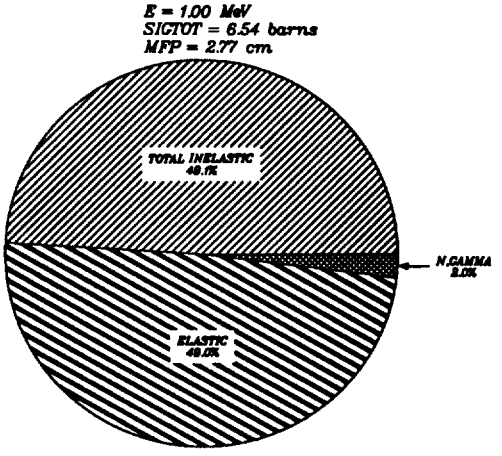

02/06/99
ZAID = 72000.50C
Hf - NAT
From NEWXS3
MT = 103
(N,P)
Cross Section (barns)
Neutron Energy (MeV)

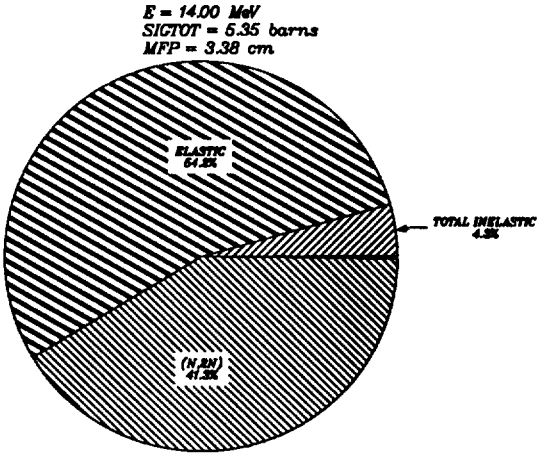

02/06/99
ZAID = 72000.50C
Hf - NAT
From NEWXS3
MT = 203
PROTON PROD
Cross Section (barns)
Neutron Energy (MeV)

Tantalum – 181

ZAID=73181.50C
SOURCE: ENDF/B–V (MAT=1285, Tape 502)
REFERENCE: "Ta–181 Evaluated Neutron Cross Sections,"
by R. J. Howerton, S. T. Perkins, R. C. Haight, and M. H. MacGregor
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=73181.50C	NES=6341	T=300°K
ZAID=73181.51C	NES=753	T=300°K

Discrete Reaction

ZAID=73181.50D	NES=263	T=300°K
ZAID=73181.51D	NES=263	T=300°K

Multigroup

ZAID=73181.50M	30–Group	T=300°K

Isotope Information

Abundance=99.998%
Density=16.60 gm/cm^3

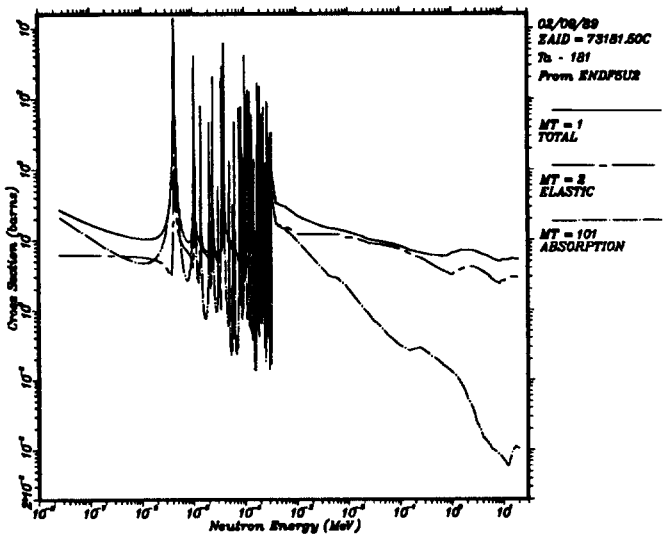
Evaluation Information

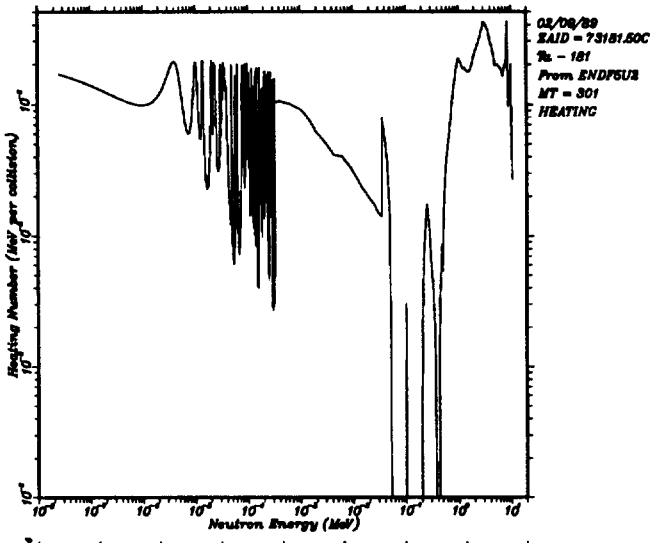
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

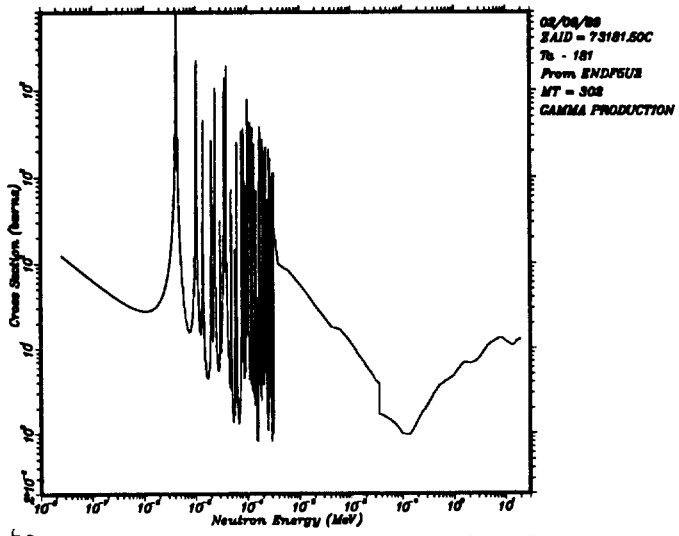
Reaction Information

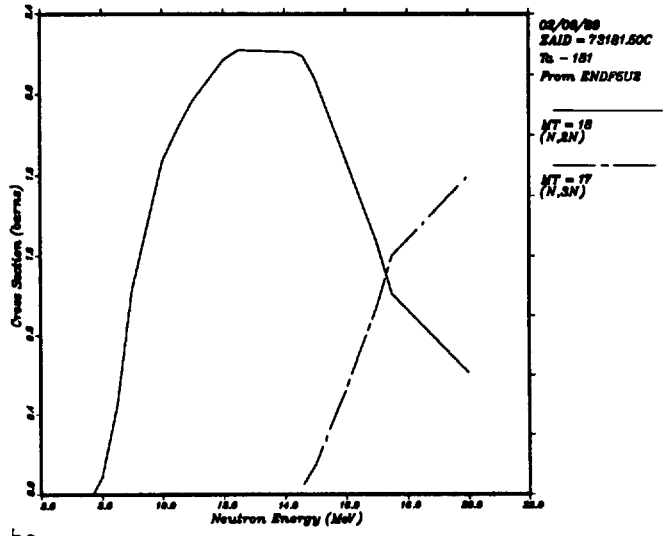
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.6725+00	2.0000+01	-7.6300+00	-7.6300+00
(n,3n)	17	1.4299+01	2.0000+01	-1.4220+01	-1.4220+01
(n,n'1)	51	6.2346-03	2.0000+01	-6.2000-03	0.0000+00
(n,n'2)	52	1.3686-01	2.0000+01	-1.3610-01	0.0000+00
(n,n'3)	53	1.5948-01	2.0000+01	-1.5860-01	0.0000+00
(n,n'4)	54	3.0318-01	2.0000+01	-3.0150-01	0.0000+00
(n,n'5)	55	3.3938-01	2.0000+01	-3.3750-01	0.0000+00
(n,n'6)	56	4.8489-01	2.0000+01	-4.8220-01	0.0000+00
(n,n'7)	57	4.9776-01	2.0000+01	-4.9500-01	0.0000+00
(n,n'8)	58	6.2346-01	2.0000+01	-6.2000-01	0.0000+00
(n,n'9)	59	7.2401-01	2.0000+01	-7.2000-01	0.0000+00
(n,n'10)	60	9.3016-01	2.0000+01	-9.2500-01	0.0000+00
(n,n'c)	91	1.1997+00	2.0000+01	-1.1930+00	-1.1930+00
(n,γ)	102	1.0000-11	2.0000+01	6.0700+00	6.0700+00
(n,p)	103	2.4003-01	2.0000+01	-2.3870-01	-2.3870-01

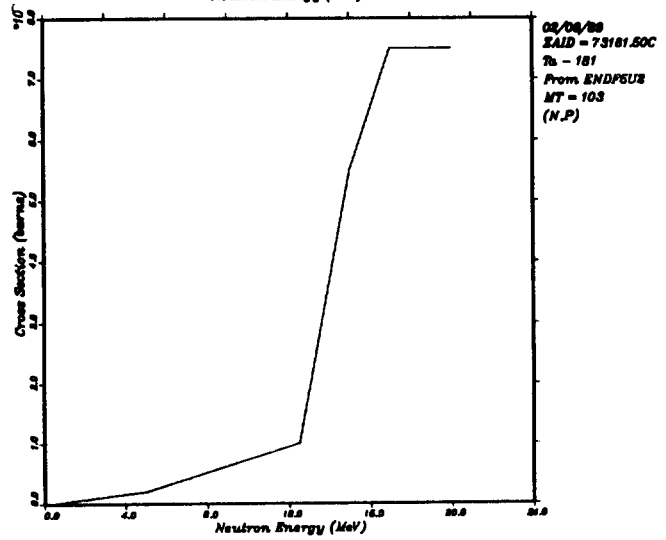
73181.50C

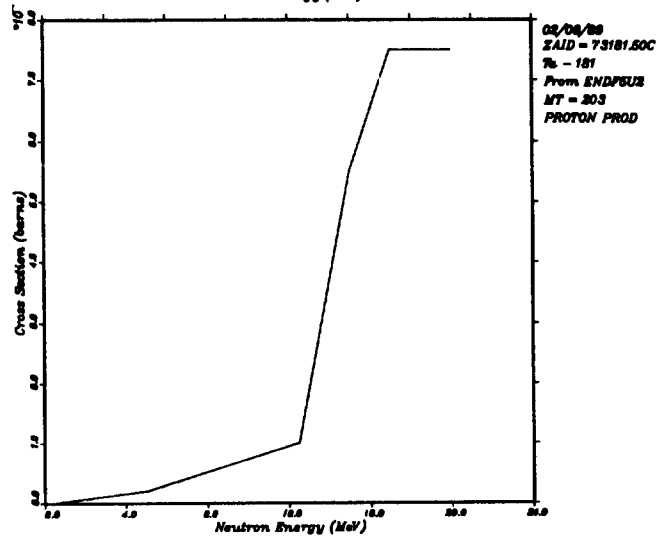

02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 103
(N,P)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 73181.50C
Ta - 181
From ENDF5U2
MT = 203
PROTON PROD
Cross Section (barns)
Neutron Energy (MeV)

Tungsten

ZAID=74000.55C
SOURCE: Group T-2 (MAT=7400, File /T2/PGY/PROB/W/NAT/WNATV6D)
REFERENCE: "Summary Documentation for ^{NAT}W,"
by E. D. Arthur, P. G. Young, and R. Boicourt
contained in ENDF-201 Supplement I

Data Availability

Continuous Energy
ZAID=74000.55C NES=1816 T=300°K

Discrete Reaction
ZAID=74000.55D NES=263 T=300°K

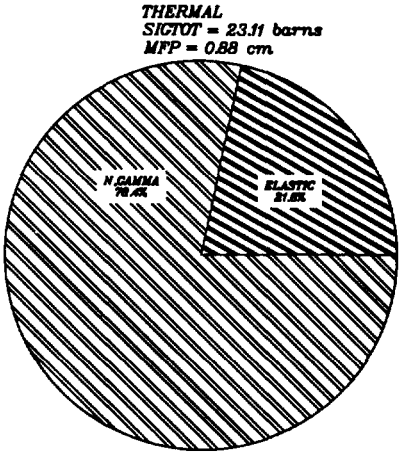
Multigroup
ZAID=74000.55M 30-Group T=300°K

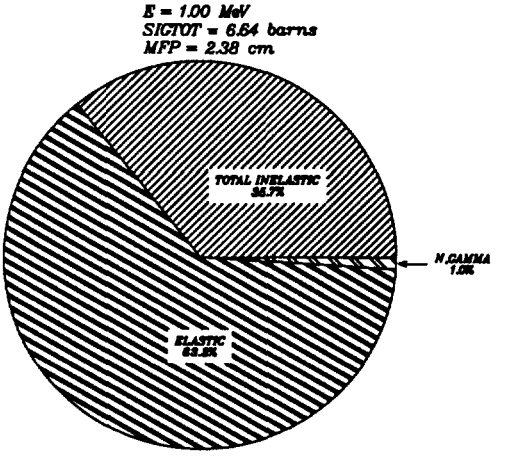
Isotope Information
Abundance=Natural
Density=19.35 gm/cm^3

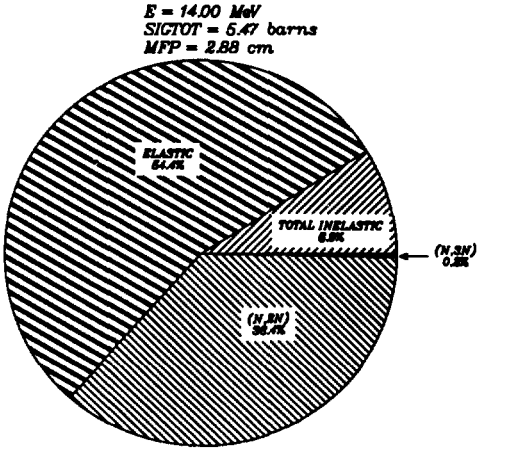
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range = 10^{-11} to 20 MeV

Reaction Information

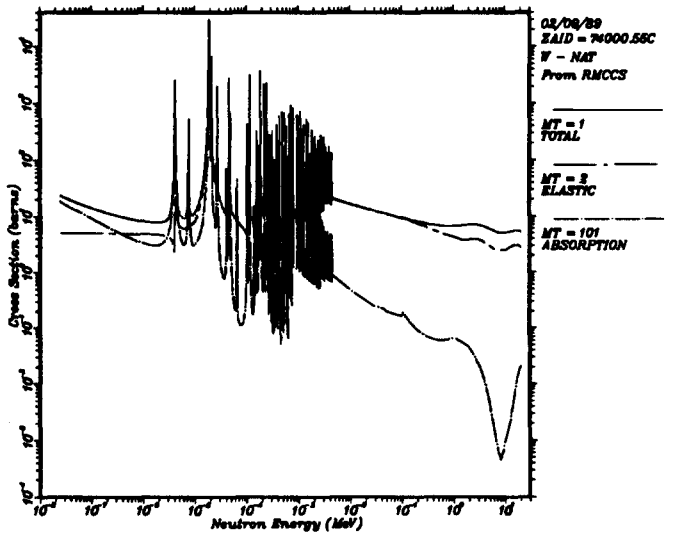
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.2246+00	2.0000+01	-6.1904+00	-6.1904+00
(n,3n)	17	1.3025+01	2.0000+01	-1.2954+01	-1.2954+01
(n,n')p	28	7.1313+00	2.0000+01	-7.0920+00	-7.0920+00
(n,n'1)	51	4.7260-02	2.0000+01	-4.7001-02	0.0000+00
(n,n'2)	52	9.9550-02	2.0000+01	-9.9004-02	0.0000+00
(n,n'3)	53	1.0060-01	2.0000+01	-1.0005-01	0.0000+00
(n,n'4)	54	1.1180-01	2.0000+01	-1.1119-01	0.0000+00
(n,n'5)	55	1.3000-01	2.0000+01	-1.2234-01	0.0000+00
(n,n'6)	56	2.0810-01	2.0000+01	-2.0696-01	0.0000+00
(n,n'7)	57	2.1020-01	2.0000+01	-2.0905-01	0.0000+00
(n,n'8)	58	2.9360-01	2.0000+01	-2.9199-01	0.0000+00
(n,n'9)	59	3.1070-01	2.0000+01	-3.0900-01	0.0000+00
(n,n'10)	60	3.1120-01	2.0000+01	-3.0949-01	0.0000+00
(n,n'11)	61	3.3080-01	2.0000+01	-3.2898-01	0.0000+00
(n,n'12)	62	3.6605-01	2.0000+01	-3.6405-01	0.0000+00
(n,n'13)	63	3.9873-01	2.0000+01	-3.9655-01	0.0000+00
(n,n'14)	64	4.1430-01	2.0000+01	-4.1203-01	0.0000+00
(n,n'15)	65	4.5550-01	2.0000+01	-4.5300-01	0.0000+00
(n,n'16)	66	4.8970-01	2.0000+01	-4.8701-01	0.0000+00
(n,n'17)	67	5.5710-01	2.0000+01	-5.5405-01	0.0000+00
(n,n'18)	68	6.0330-01	2.0000+01	-5.9999-01	0.0000+00
(n,n'19)	69	6.2340-01	2.0000+01	-6.1998-01	0.0000+00
(n,n'20)	70	6.8380-01	2.0000+01	-6.8003-01	0.0000+00
(n,n'21)	71	7.4158-01	2.0000+01	-7.3753-01	0.0000+00
(n,n'22)	72	7.4410-01	2.0000+01	-7.4002-01	0.0000+00
(n,n'23)	73	7.5244-01	2.0000+01	-7.4833-01	0.0000+00
(n,n'24)	74	8.1299-01	2.0000+01	-8.0855-01	0.0000+00
(n,n'25)	75	8.6660-01	2.0000+01	-8.6187-01	0.0000+00
(n,n'26)	76	8.8690-01	2.0000+01	-8.8206-01	0.0000+00
(n,n'27)	77	9.0825-01	2.0000+01	-9.0329-01	0.0000+00
(n,n'28)	78	9.5771-01	2.0000+01	-9.5248-01	0.0000+00
(n,n'29)	79	1.0080+00	2.0000+01	-1.0025+00	0.0000+00
(n,n'30)	80	1.0111+00	2.0000+01	-1.0056+00	0.0000+00
(n,n'31)	81	1.0120+00	2.0000+01	-1.0065+00	0.0000+00
(n,n'32)	82	1.0211+00	2.0000+01	-1.0155+00	0.0000+00
(n,n'33)	83	1.0372+00	2.0000+01	-1.0315+00	0.0000+00
(n,n'34)	84	1.0511+00	2.0000+01	-1.0454+00	0.0000+00
(n,n'35)	85	1.1281+00	2.0000+01	-1.1219+00	0.0000+00
(n,n'36)	86	1.1361+00	2.0000+01	-1.1299+00	0.0000+00
(n,n'37)	87	1.1400+00	2.0000+01	-1.1338+00	0.0000+00
(n,n'38)	88	1.1420+00	2.0000+01	-1.1357+00	0.0000+00
(n,n'39)	89	1.1508+00	2.0000+01	-1.1445+00	0.0000+00
(n,n'40)	90	1.1561+00	2.0000+01	-1.1498+00	0.0000+00
(n,n'c)	91	3.1070-01	2.0000+01	-2.9838-01	-2.9838-01
(n,γ)	102	1.0000-11	2.0000+01	7.4114+00	7.4114+00
(n,p)	103	2.8760-01	2.0000+01	-2.8600-01	-2.8600-01
(n,α)	107	1.0000-11	2.0000+01	9.0785+00	9.0785+00

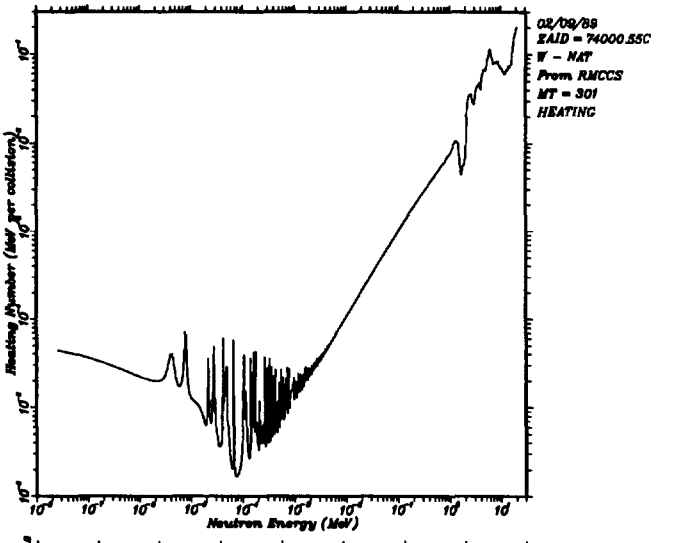


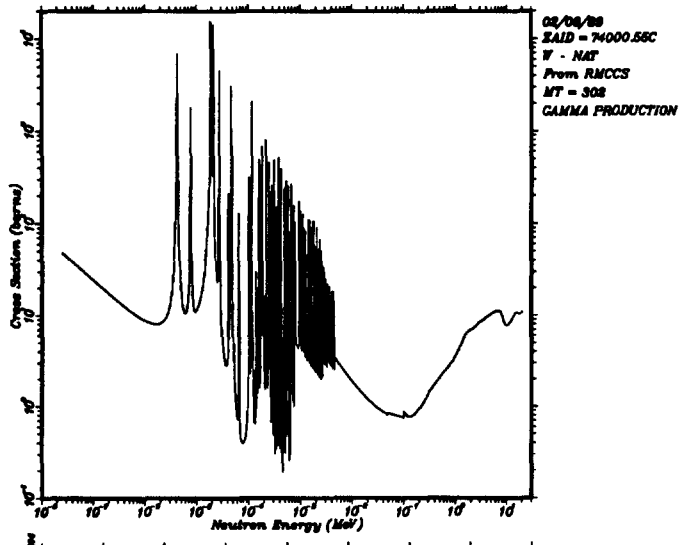


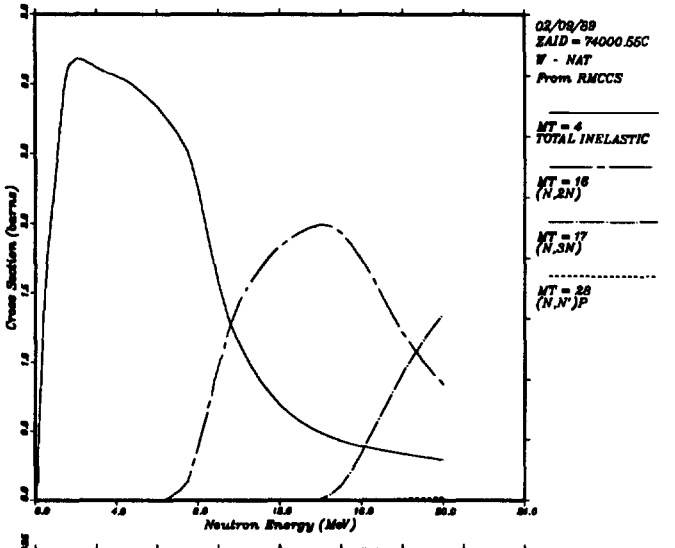


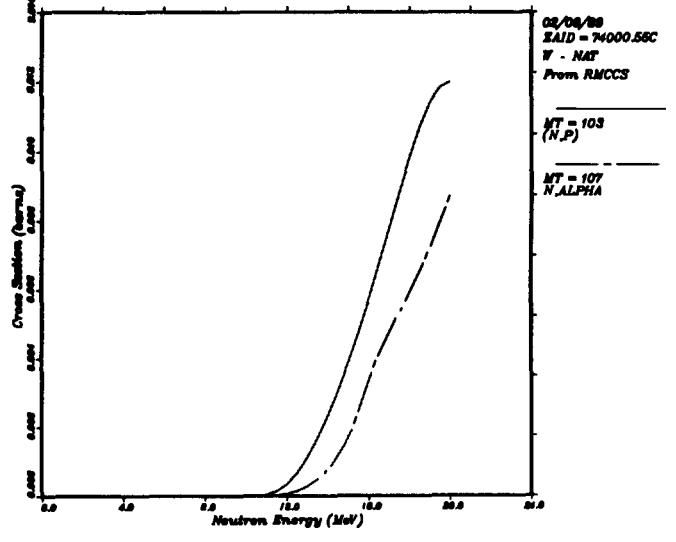
74000.55C

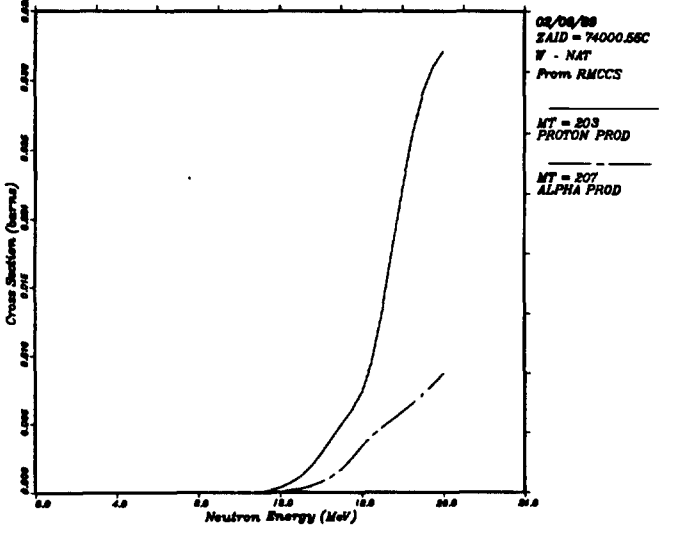

02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 28
(N,N'P)
Cross Section (barns)
Neutron Energy (MeV)


02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

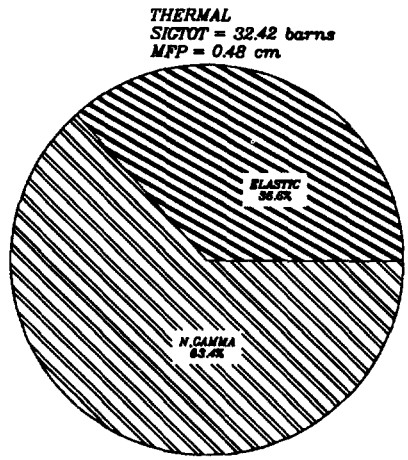

02/08/89
ZAID = 74000.55C
W - NAT
From RMCCS
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

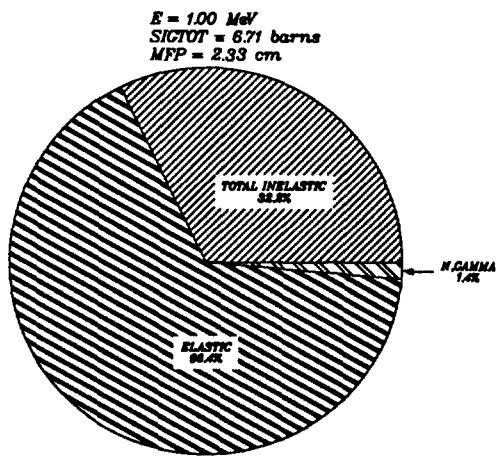
Tungsten – 182

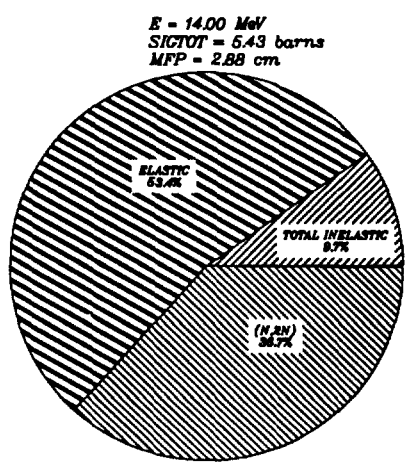
ZAID=74182.55C

SOURCE: Group T-2 (MAT=182, File /T2/PGY/W182/W2LASL1D)

REFERENCE: "Summary Documentation for ^{182}W, ^{183}W, ^{184}W, and ^{186}W,"
by E. D. Arthur, P. G. Young, A. B. Smith, and C. A. Philis
contained in ENDF-201 Supplement I







Data Availability

Continuous Energy

ZAID=74182.55C	NES=13865	T=300°K

Discrete Reaction

ZAID=74182.55D	NES=263	T=300°K

Multigroup

ZAID=74182.55M	30-Group	T=300°K

Isotope Information

Abundance=26.30%

Density=19.29829 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

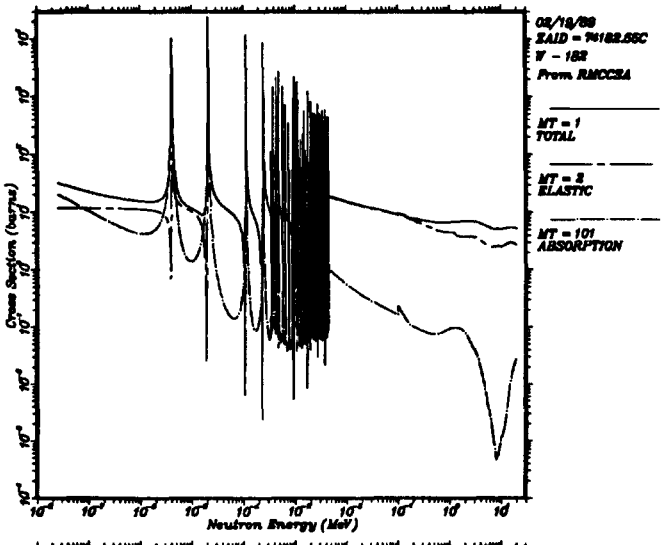
Heating Numbers – Local

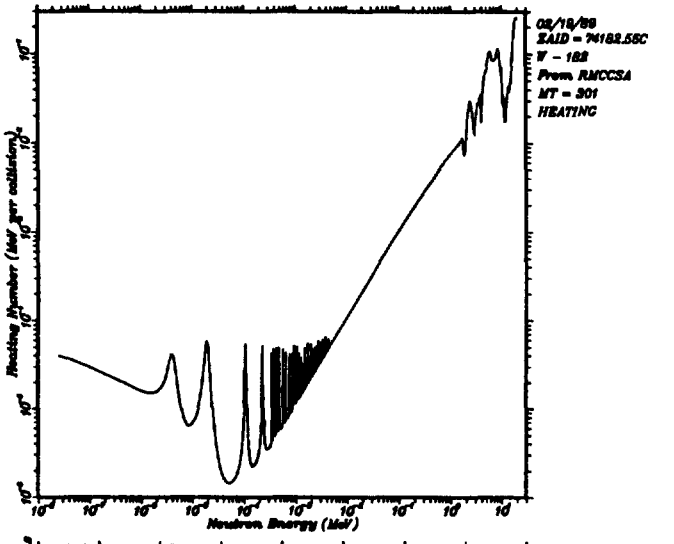
Energy Range – 10^{-11} to 20 MeV

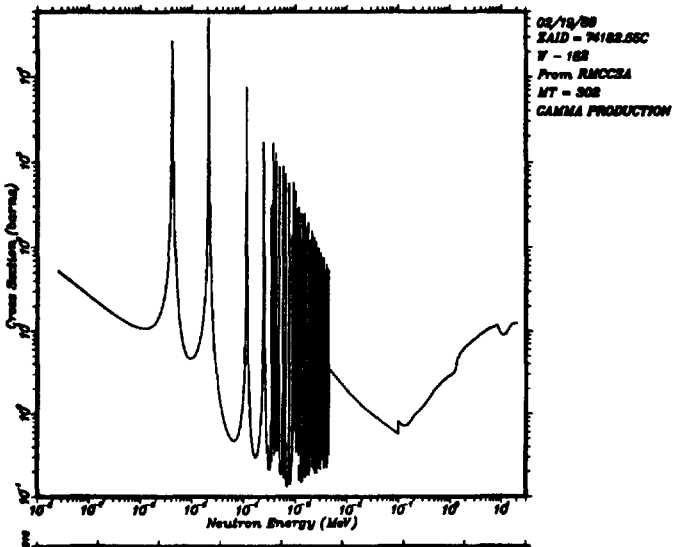
Reaction Information

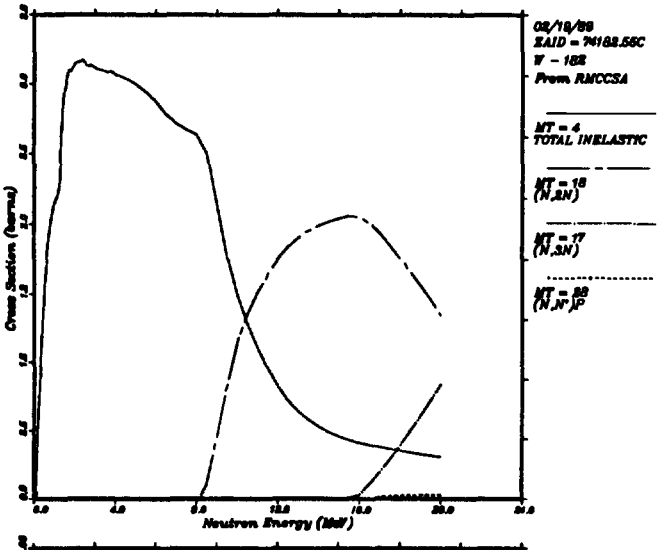
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	8.1071+00	2.0000+01	-8.0624+00	-8.0624+00
(n,3n)	17	1.4829+01	2.0000+01	-1.4747+01	-1.4747+01
(n,n')p	28	1.1500+01	2.0000+01	-7.0920+00	-7.0920+00
(n,n'1)	51	1.0060-01	2.0000+01	-1.0005-01	0.0000+00
(n,n'2)	52	3.3080-01	2.0000+01	-3.2898-01	0.0000+00
(n,n'3)	53	6.8380-01	2.0000+01	-6.8003-01	0.0000+00
(n,n'4)	54	1.1420+00	2.0000+01	-1.1357+00	0.0000+00
(n,n'5)	55	1.1508+00	2.0000+01	-1.1445+00	0.0000+00
(n,n'6)	56	1.2290+00	2.0000+01	-1.2222+00	0.0000+00
(n,n'7)	57	1.2650+00	2.0000+01	-1.2580+00	0.0000+00
(n,n'8)	58	1.2960+00	2.0000+01	-1.2889+00	0.0000+00
(n,n'9)	59	1.3380+00	2.0000+01	-1.3306+00	0.0000+00
(n,n'10)	60	1.3780+00	2.0000+01	-1.3704+00	0.0000+00
(n,n'11)	61	1.4480+00	2.0000+01	-1.4400+00	0.0000+00
(n,n'12)	62	1.4950+00	2.0000+01	-1.4868+00	0.0000+00
(n,n'13)	63	1.5180+00	2.0000+01	-1.5096+00	0.0000+00
(n,n'14)	64	1.5620+00	2.0000+01	-1.5534+00	0.0000+00
(n,n'15)	65	1.6310+00	2.0000+01	-1.6220+00	0.0000+00
(n,n'16)	66	1.6420+00	2.0000+01	-1.6329+00	0.0000+00
(n,n'17)	67	1.6700+00	2.0000+01	-1.6608+00	0.0000+00
(n,n'18)	68	1.7210+00	2.0000+01	-1.7115+00	0.0000+00
(n,n'19)	69	1.7680+00	2.0000+01	-1.7583+00	0.0000+00
(n,n'c)	91	3.0000-01	2.0000+01	-2.9835-01	-2.9835-01
(n,γ)	102	1.0000-11	2.0000+01	6.1904+00	6.1904+00
(n,p)	103	1.0500+01	2.0000+01	-1.0286+00	-1.0286+00
(n,α)	107	1.1000+01	2.0000+01	7.8805+00	7.8805+00

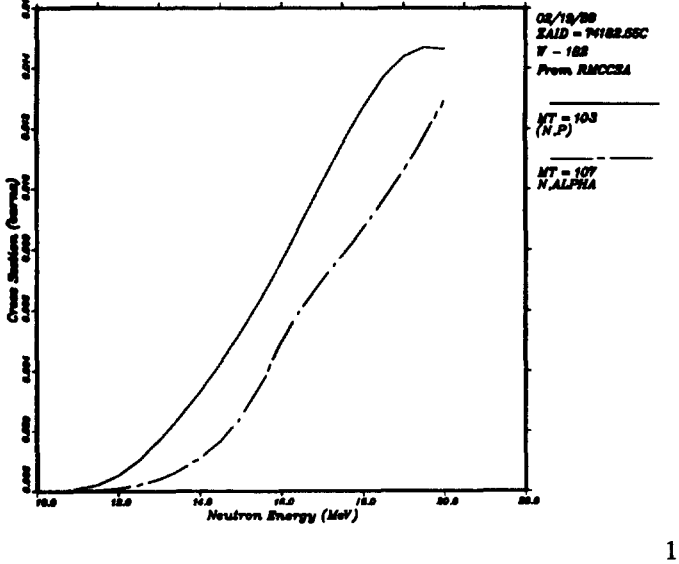
74182.55C

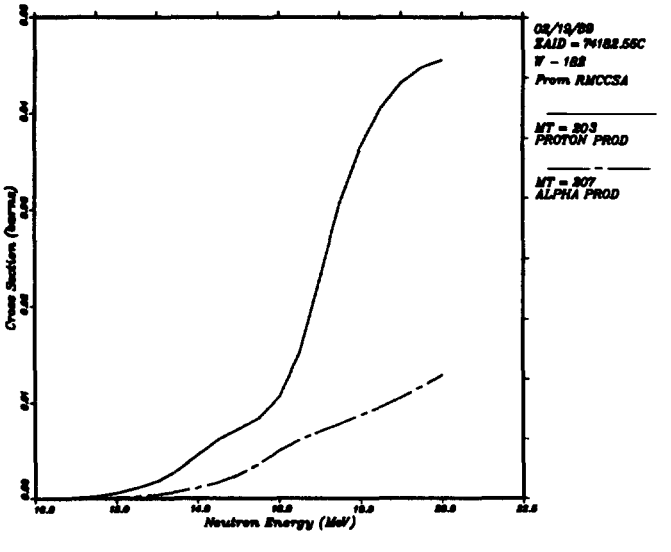

02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 301
HEATING
Neutron Energy (MeV)


02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 28
(N,NP)
Cross Section (barns)
Neutron Energy (MeV)


02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

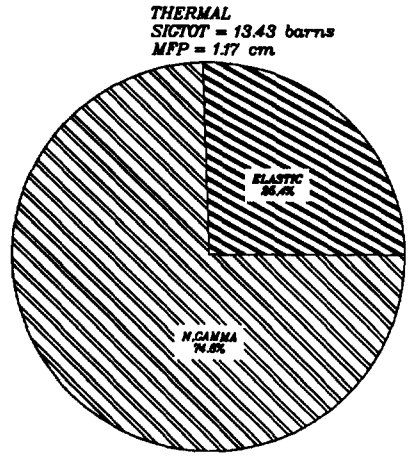

02/19/99
ΣAID = 74182.55C
W - 182
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

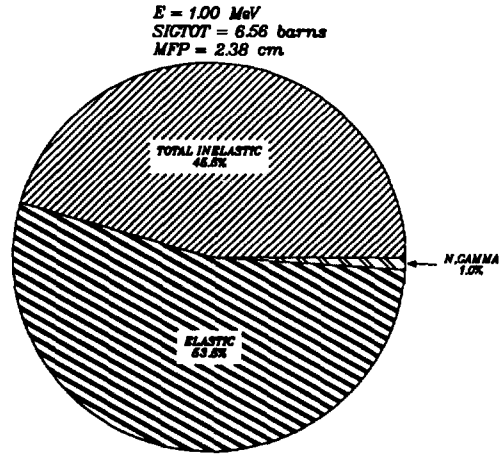
Tungsten – 183

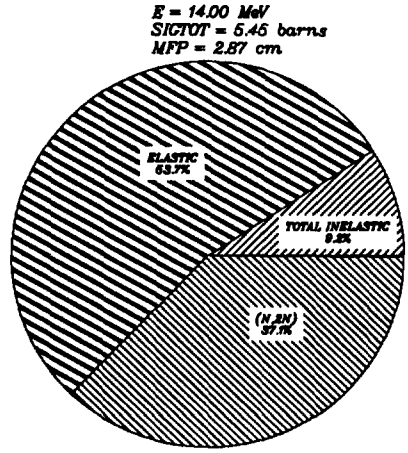
ZAID=74183.55C

SOURCE: Group T-2 (MAT=183, File /T2/PGY/W183/W3LASL1D)

REFERENCE: "Summary Documentation for ^{182}W, ^{183}W, ^{184}W, and ^{186}W,"
by E. D. Arthur, P. G. Young, A. B. Smith, and C. A. Philis
contained in ENDF-201 Supplement I







Data Availability

Continuous Energy

ZAID=74183.55C	NES=8083	T=300°K

Discrete Reaction

ZAID=74183.55D	NES=263	T=300°K

Multigroup

ZAID=74183.55M	30-Group	T=300°K

Isotope Information

Abundance=14.30%

Density=19.40457 gm/cm^3

Evaluation Information

Photon-Production Data – Yes

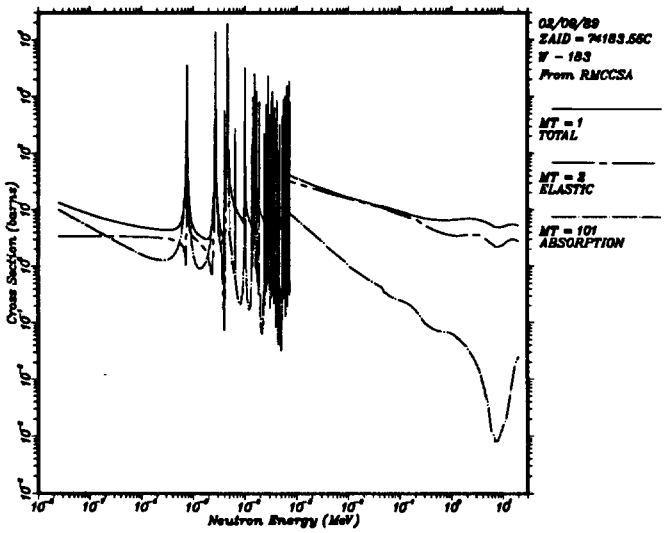
Heating Numbers – Local

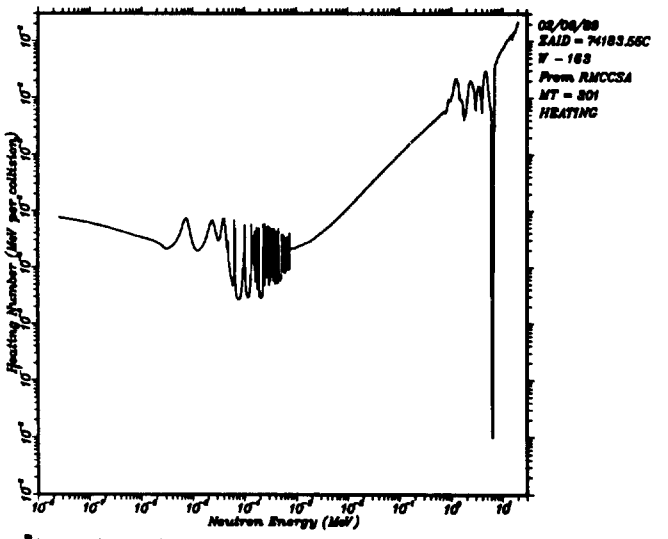
Energy Range – 10^{-11} to 20 MeV

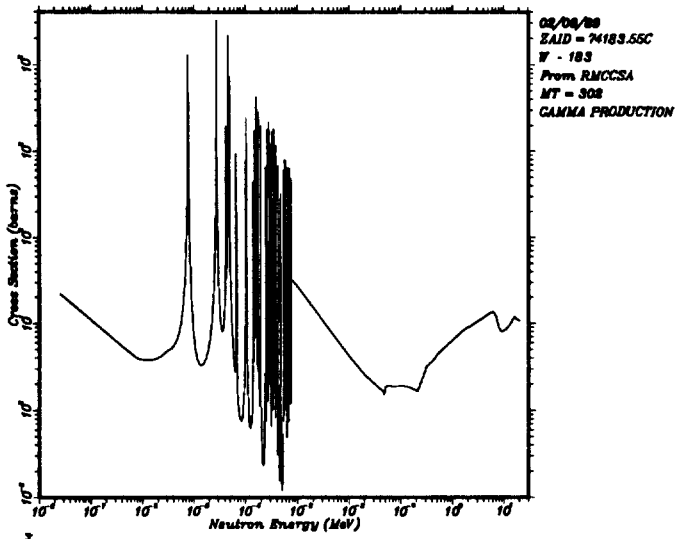
Reaction Information

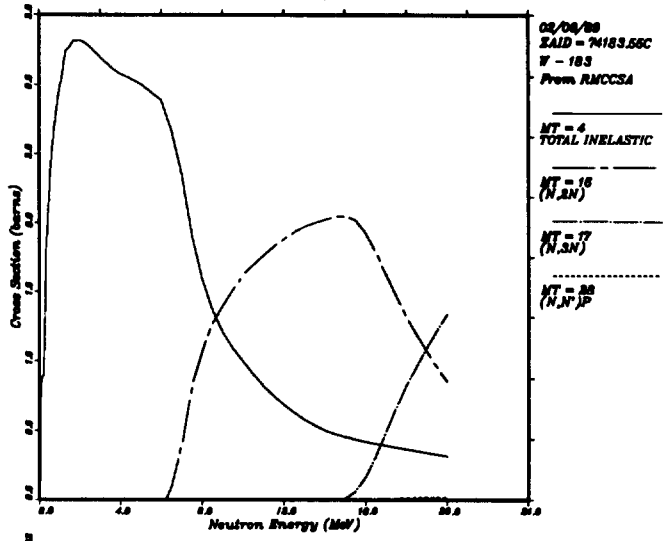
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.2246+00	2.0000+01	-6.1904+00	-6.1904+00
(n,3n)	17	1.4332+01	2.0000+01	-1.4253+01	-1.4253+01
(n,n')p	28	1.1500+01	2.0000+01	-7.2190+00	-7.2190+00
(n,n'1)	51	4.7260-02	2.0000+01	-4.7001-02	0.0000+00
(n,n'2)	52	9.9550-02	2.0000+01	-9.9004-02	0.0000+00
(n,n'3)	53	2.0810-01	2.0000+01	-2.0696-01	0.0000+00
(n,n'4)	54	2.1020-01	2.0000+01	-2.0905-01	0.0000+00
(n,n'5)	55	2.9360-01	2.0000+01	-2.9199-01	0.0000+00
(n,n'6)	56	3.1070-01	2.0000+01	-3.0900-01	0.0000+00
(n,n'7)	57	3.1120-01	2.0000+01	-3.0949-01	0.0000+00
(n,n'8)	58	4.1430-01	2.0000+01	-4.1203-01	0.0000+00
(n,n'9)	59	4.5550-01	2.0000+01	-4.5300-01	0.0000+00
(n,n'10)	60	4.8970-01	2.0000+01	-4.8701-01	0.0000+00
(n,n'11)	61	5.5711-01	2.0000+01	-5.5405-01	0.0000+00
(n,n'12)	62	6.0330-01	2.0000+01	-5.9999-01	0.0000+00
(n,n'13)	63	6.2340-01	2.0000+01	-6.1998-01	0.0000+00
(n,n'14)	64	7.4410-01	2.0000+01	-7.4002-01	0.0000+00
(n,n'c)	91	7.4410-01	2.0000+01	-7.4002-01	-7.4002-01
(n,γ)	102	1.0000-11	2.0000+01	7.4114+00	7.4114+00
(n,p)	103	1.0000+01	2.0000+01	-2.8600-01	-2.8600-01
(n,α)	107	1.1000+01	2.0000+01	9.0785+00	9.0785+00

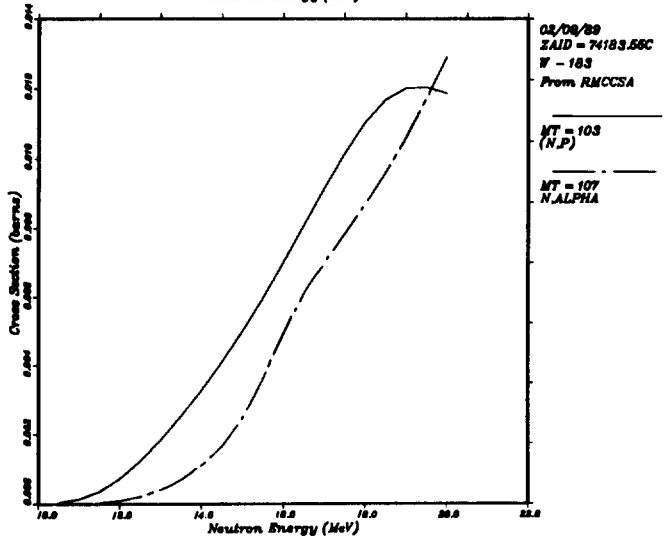
74183.55C

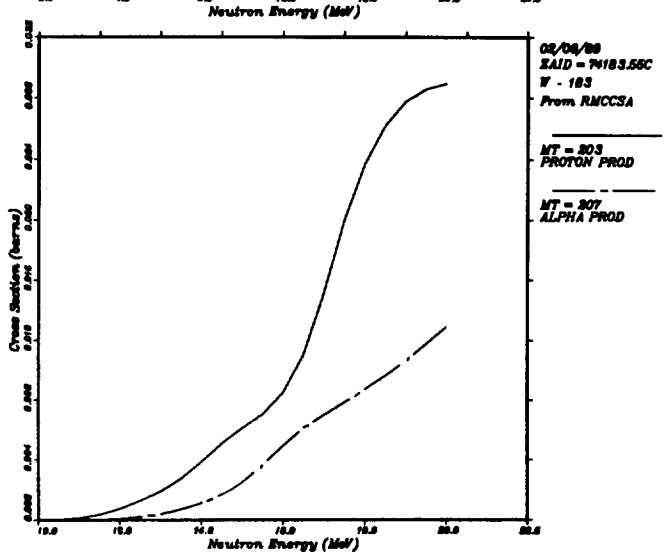

02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 28
(N,N'P)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)

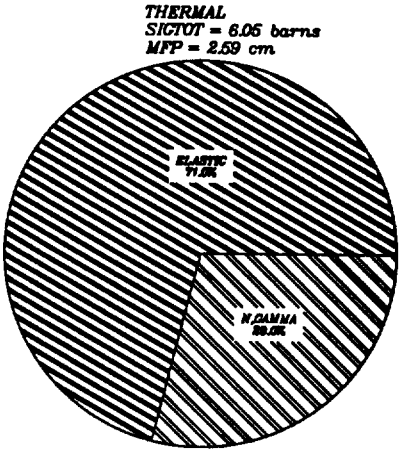

02/06/89
ZAID = 74183.55C
W - 183
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

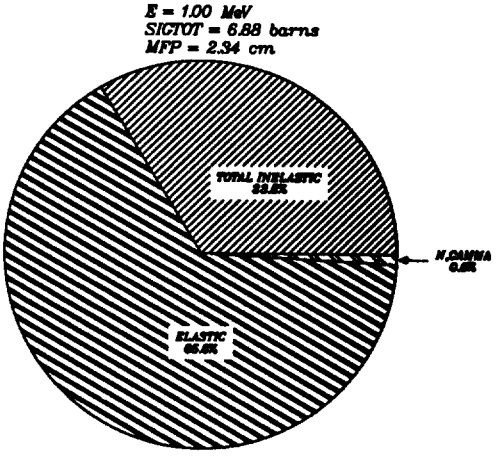
Tungsten – 184

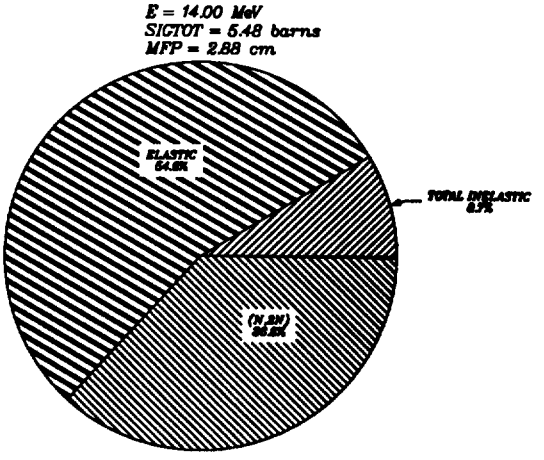
ZAID=74184.55C

SOURCE: Group T-2 (MAT=184, File /T2/PGY/W184/W4LASL1D)

REFERENCE: "Summary Documentation for ^{182}W, ^{183}W, ^{184}W, and ^{186}W,"
by E. D. Arthur, P. G. Young, A. B. Smith, and C. A. Philis
contained in ENDF-201 Supplement I







Data Availability

Continuous Energy

ZAID=74184.55C	NES=7835	T=300°K

Discrete Reaction

ZAID=74184.55D	NES=263	T=300°K

Multigroup

ZAID=74184.55M	30-Group	T=300°K

Isotope Information

Abundance=30.67%

Density=19.5107 gm/cm^3

Evaluation Information

Photon-Production Data - Yes

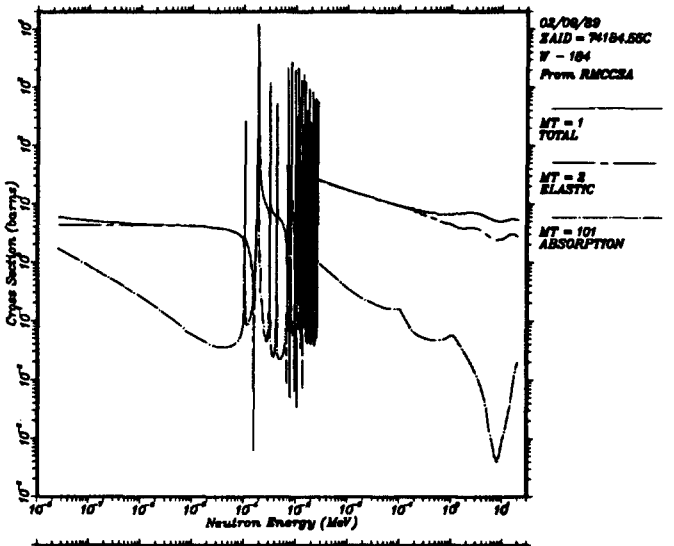
Heating Numbers - Local

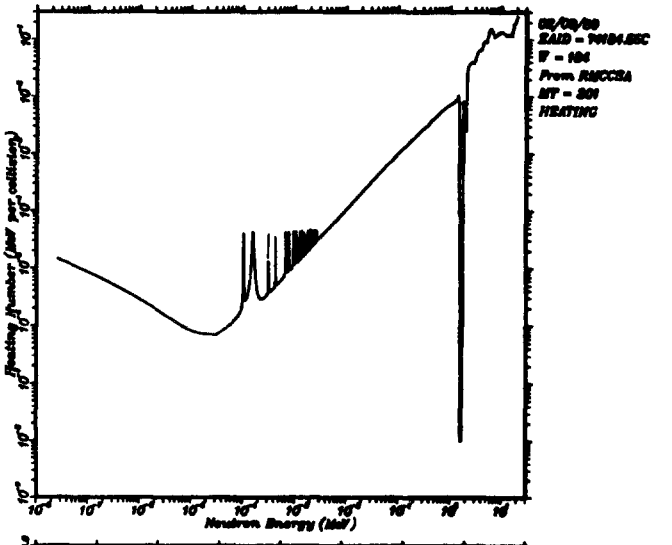
Energy Range - 10^{-11} to 20 MeV

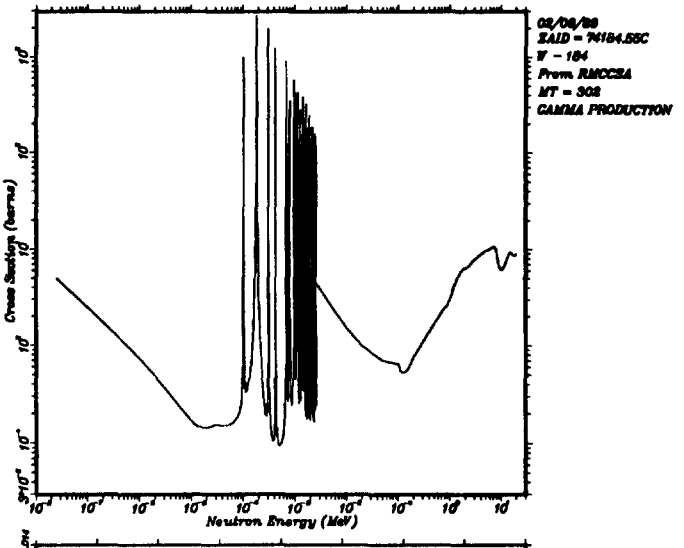
Reaction Information

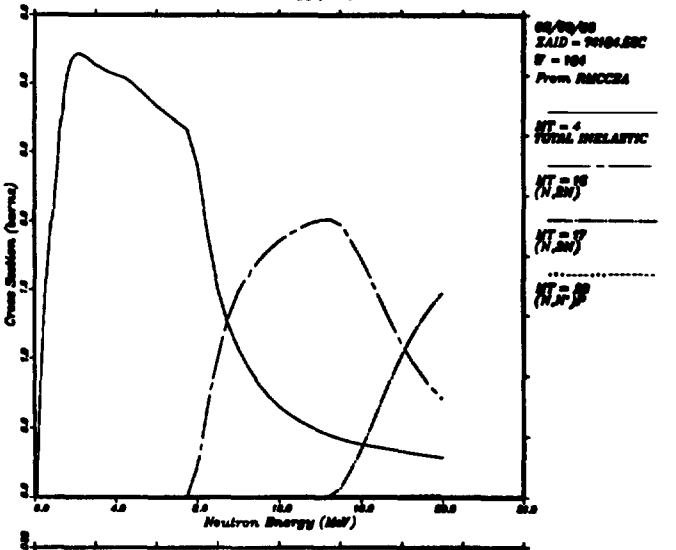
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.4521+00	2.0000+01	-7.4114+00	-7.4114+00
(n,3n)	17	1.3677+01	2.0000+01	-1.3602+01	-1.3602+01
(n,n')p	28	1.2000+01	2.0000+01	-7.7000+00	-7.7000+00
(n,n'1)	51	1.1180-01	2.0000+01	-1.1119-01	0.0000+00
(n,n'2)	52	3.6605-01	2.0000+01	-3.6405-01	0.0000+00
(n,n'3)	53	7.5243-01	2.0000+01	-7.4833-01	0.0000+00
(n,n'4)	54	9.0824-01	2.0000+01	-9.0329-01	0.0000+00
(n,n'5)	55	1.0080+00	2.0000+01	-1.0025+00	0.0000+00
(n,n'6)	56	1.0120+00	2.0000+01	-1.0065+00	0.0000+00
(n,n'7)	57	1.1281+00	2.0000+01	-1.1219+00	0.0000+00
(n,n'8)	58	1.1361+00	2.0000+01	-1.1299+00	0.0000+00
(n,n'9)	59	1.1400+00	2.0000+01	-1.1338+00	0.0000+00
(n,n'10)	60	1.2281+00	2.0000+01	-1.2214+00	0.0000+00
(n,n'11)	61	1.2920+00	2.0000+01	-1.2850+00	0.0000+00
(n,n'12)	62	1.3011+00	2.0000+01	-1.2940+00	0.0000+00
(n,n'13)	63	1.3290+00	2.0000+01	-1.3218+00	0.0000+00
(n,n'14)	64	1.3521+00	2.0000+01	-1.3447+00	0.0000+00
(n,n'15)	65	1.3660+00	2.0000+01	-1.3586+00	0.0000+00
(n,n'16)	66	1.3941+00	2.0000+01	-1.3865+00	0.0000+00
(n,n'17)	67	1.4331+00	2.0000+01	-1.4253+00	0.0000+00
(n,n'18)	68	1.4390+00	2.0000+01	-1.4312+00	0.0000+00
(n,n'c)	91	5.0000-01	2.0000+01	-4.9727-01	-4.9727-01
(n,γ)	102	1.0000-11	2.0000+01	5.7544+00	5.7544+00
(n,p)	103	1.0500+01	2.0000+01	-2.0836+00	-2.0836+00
(n,α)	107	1.1000+01	2.0000+01	7.3620+00	7.3620+00

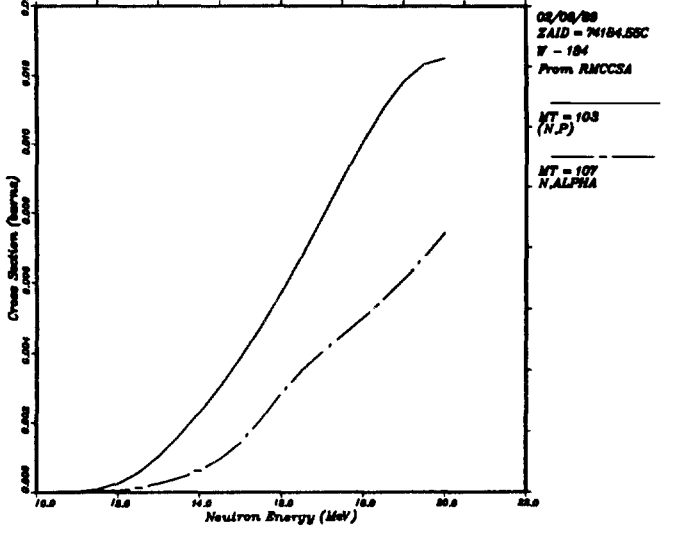
74184.55C

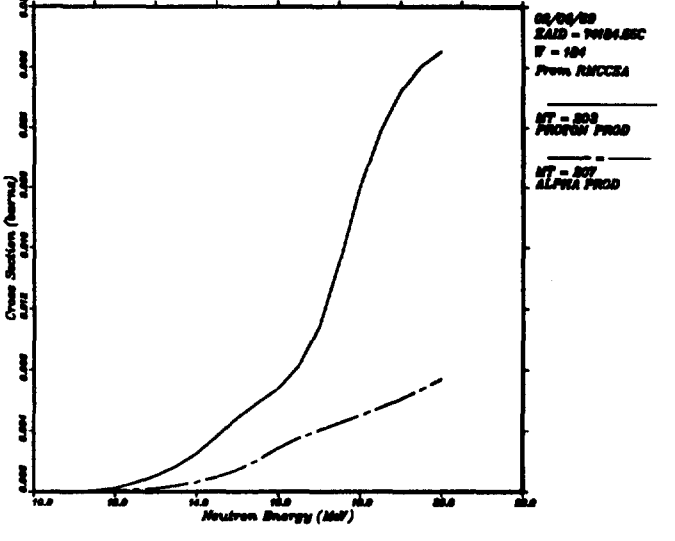

Cross Section (barns)
Neutron Energy (MeV)
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION


Heating Number (MeV per collision)
Neutron Energy (MeV)
MT = 301
HEATING


Cross Section (barns)
Neutron Energy (MeV)
MT = 302
GAMMA PRODUCTION

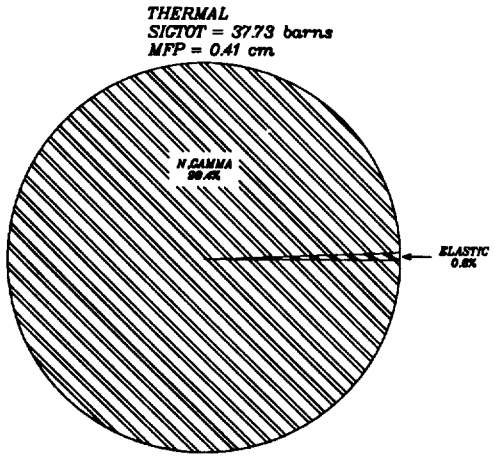

Cross Section (barns)
Neutron Energy (MeV)
MT = 4
TOTAL INELASTIC

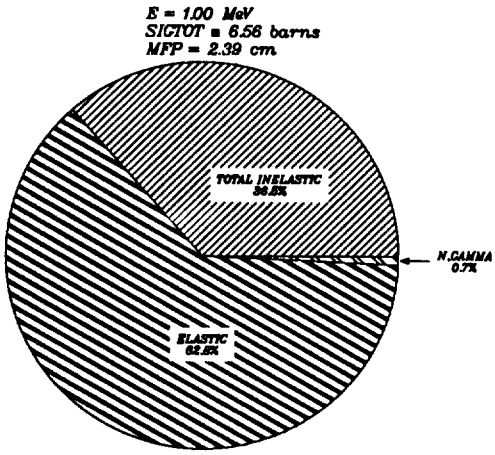

Cross Section (barns)
Neutron Energy (MeV)
MT = 103
(N,P)
MT = 107
N,ALPHA

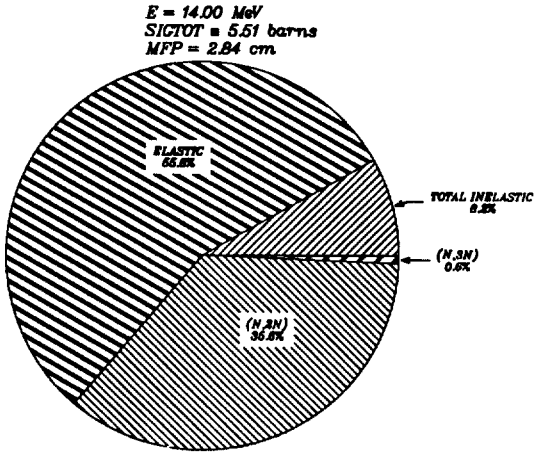

Cross Section (barns)
Neutron Energy (MeV)

Tungsten – 186

ZAID=74186.55C
SOURCE: Group T-2 (MAT=186, File /T2/PGY/W186/W6LASL1D)
REFERENCE: "Summary Documentation for ^{182}W, ^{183}W, ^{184}W, and ^{186}W,"
by E. D. Arthur, P. G. Young, A. B. Smith, and C. A. Philis
contained in ENDF-201 Supplement I







Data Availability

Continuous Energy

ZAID=74186.55C	NES=8342	T=300°K

Discrete Reaction

ZAID=74186.55D	NES=263	T=300°K

Multigroup

ZAID=74186.55M	30-Group	T=300°K

Isotope Information

Abundance=28.60%
Density=19.7232 gm/cm^3

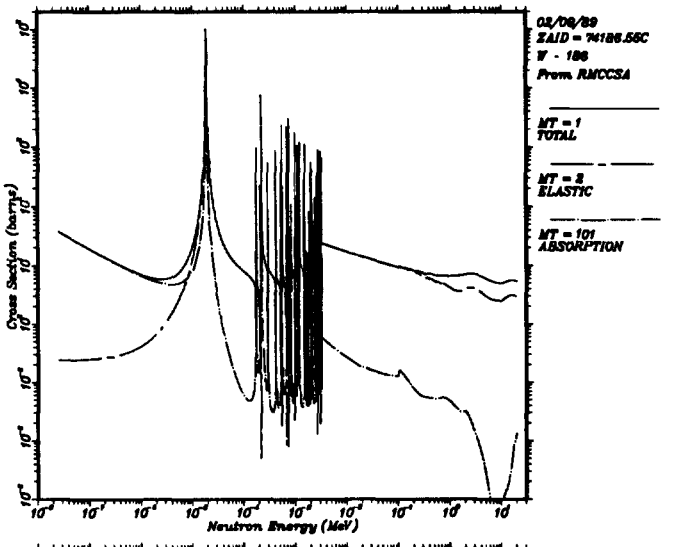
Evaluation Information

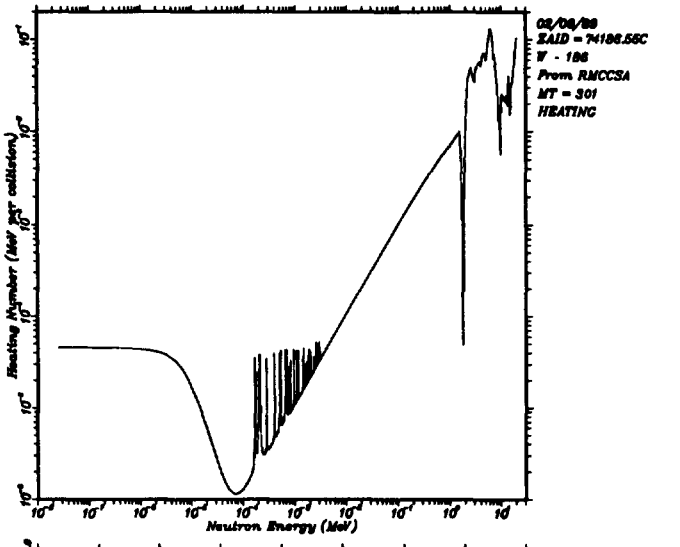
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

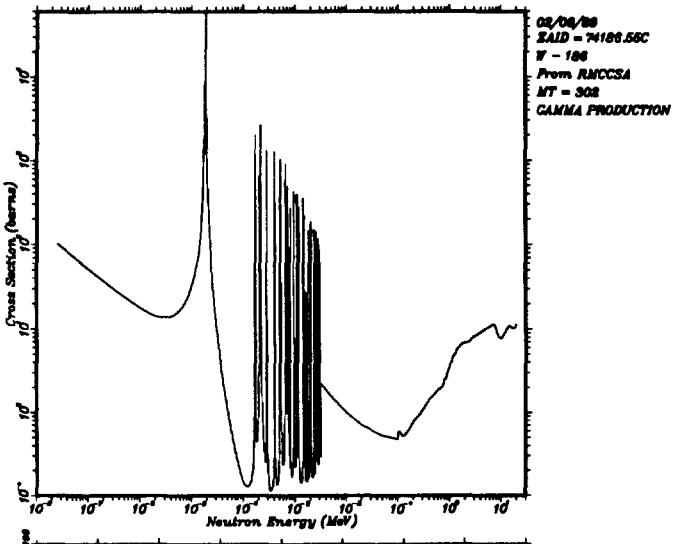
Reaction Information

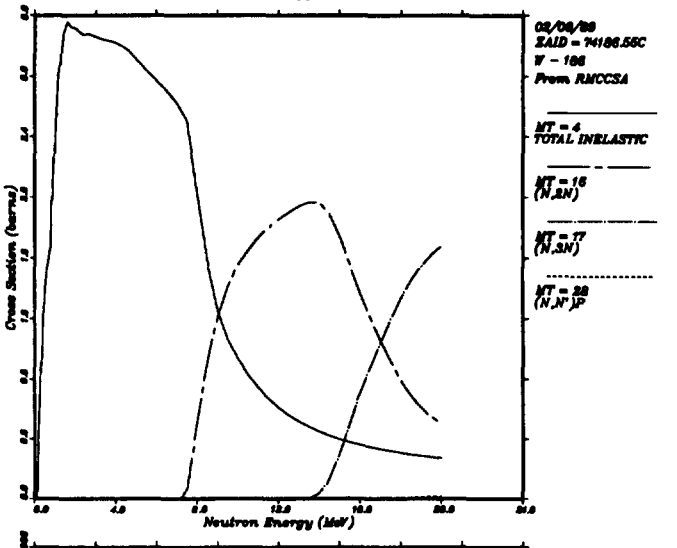
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.2386+00	2.0000+01	-7.1995+00	-7.1995+00
(n,3n)	17	1.3024+01	2.0000+01	-1.2954+01	-1.2954+01
(n,n')p	28	1.3000+01	2.0000+01	-8.4270+00	-8.4270+00
(n,n'1)	51	1.2300-01	2.0000+01	-1.2234-01	0.0000+00
(n,n'2)	52	3.9870-01	2.0000+01	-3.9655-01	0.0000+00
(n,n'3)	53	7.4153-01	2.0000+01	-7.3753-01	0.0000+00
(n,n'4)	54	8.1294-01	2.0000+01	-8.0855-01	0.0000+00
(n,n'5)	55	8.6654-01	2.0000+01	-8.6187-01	0.0000+00
(n,n'6)	56	8.8684-01	2.0000+01	-8.8206-01	0.0000+00
(n,n'7)	57	9.5765-01	2.0000+01	-9.5248-01	0.0000+00
(n,n'8)	58	1.0111+00	2.0000+01	-1.0056+00	0.0000+00
(n,n'9)	59	1.0210+00	2.0000+01	-1.0155+00	0.0000+00
(n,n'10)	60	1.0371+00	2.0000+01	-1.0315+00	0.0000+00
(n,n'11)	61	1.0511+00	2.0000+01	-1.0454+00	0.0000+00
(n,n'12)	62	1.1560+00	2.0000+01	-1.1498+00	0.0000+00
(n,n'13)	63	1.2860+00	2.0000+01	-1.2791+00	0.0000+00
(n,n'14)	64	1.2911+00	2.0000+01	-1.2841+00	0.0000+00
(n,n'15)	65	1.3050+00	2.0000+01	-1.2980+00	0.0000+00
(n,n'16)	66	1.3261+00	2.0000+01	-1.3189+00	0.0000+00
(n,n'17)	67	1.4710+00	2.0000+01	-1.4631+00	0.0000+00
(n,n'18)	68	1.5280+00	2.0000+01	-1.5198+00	0.0000+00
(n,n'c)	91	3.0000-01	2.0000+01	-2.9838-01	-2.9838-01
(n,γ)	102	1.0000-11	2.0000+01	5.4661+00	5.4661+00
(n,p)	103	1.1500+01	2.0000+01	-3.1156+00	-3.1156+00
(n,α)	107	1.1000+01	2.0000+01	6.4175+00	6.4175+00

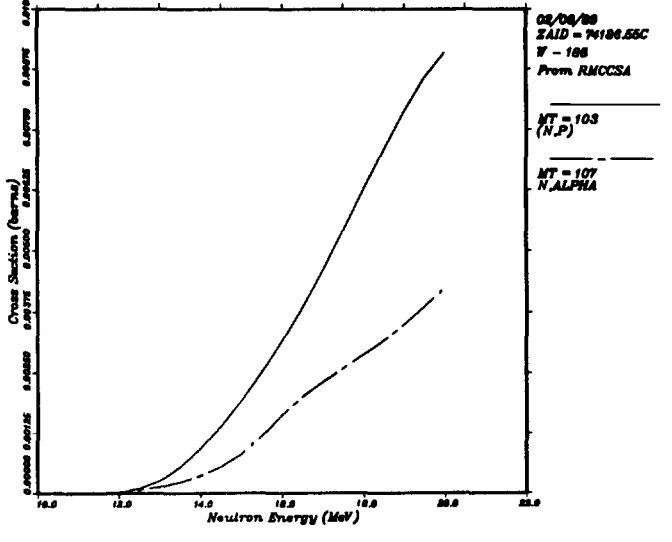
74186.55C

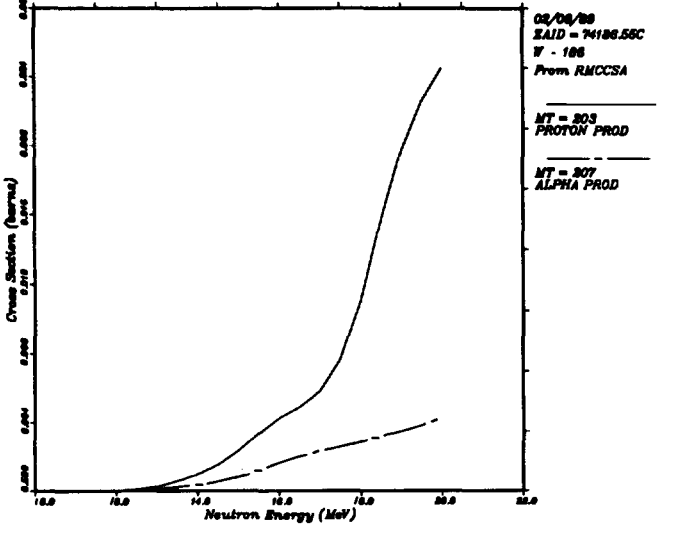

02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 28
(N,N'P)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 74186.55C
W - 186
From RMCCSA
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Rhenium – 185

ZAID=75185.50C
SOURCE: ENDF/B-V (MAT=1083, Tape 503)
REFERENCE: "Rhenium-185 (MAT 1083) and Rhenium-187 (MAT 1084),"
by W. B. Henderson and J. W. Zwick
contained in ENDF-201

Data Availability

Continuous Energy

ZAID=75185.50C	NES=1168	T=300°K

Discrete Reaction

ZAID=75185.50D	NES=263	T=300°K

Multigroup

ZAID=75185.50M	30-Group	T=300°K

Isotope Information

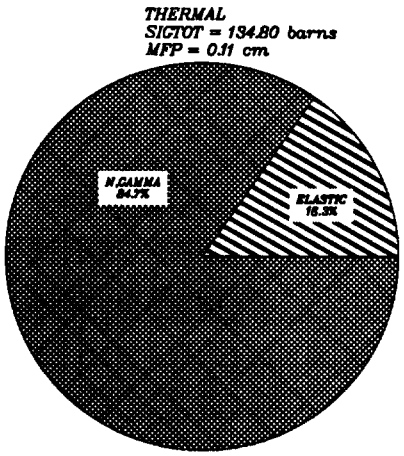
Abundance=37.40%
Density=20.39174 gm/cm^3

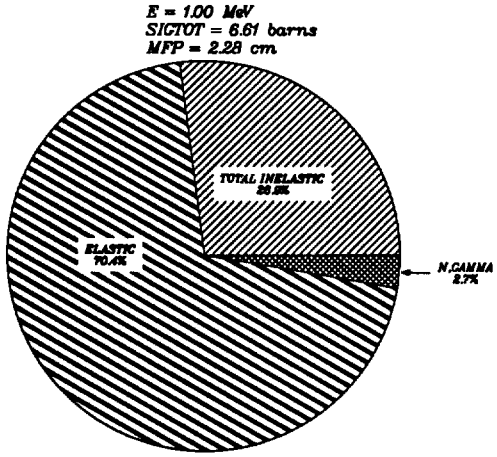
Evaluation Information

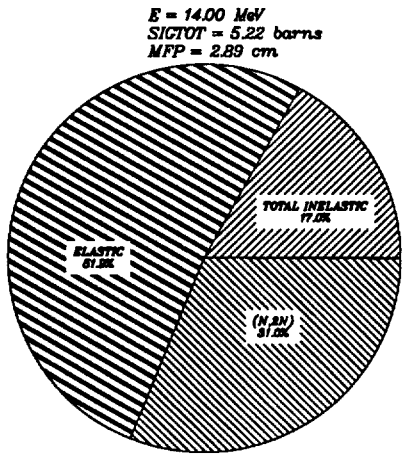
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

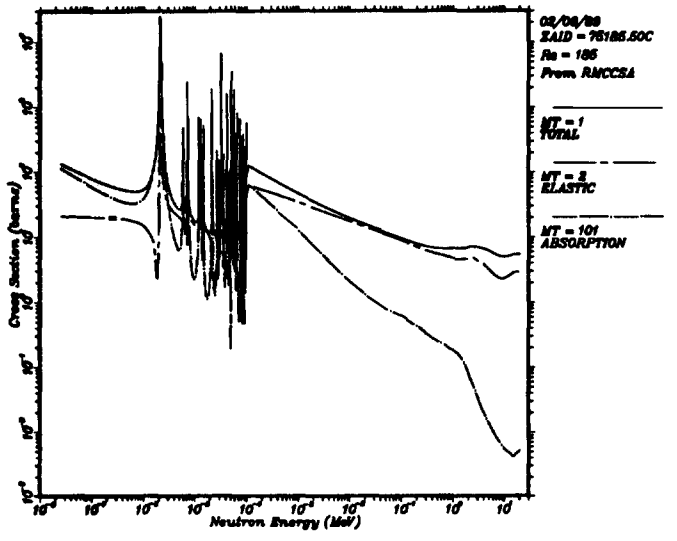
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.8526+00	2.0000+01	-7.8100+00	-7.8100+00
(n,3n)	17	1.4549+01	2.0000+01	-1.4470+01	-1.4470+01
(n,n'1)	51	1.2568-01	2.0000+01	-1.2500-01	0.0000+00
(n,n'2)	52	2.8756-01	2.0000+01	-2.8600-01	0.0000+00
(n,n'3)	53	3.8911-01	2.0000+01	-3.8700-01	0.0000+00
(n,n'4)	54	6.4952-01	2.0000+01	-6.4600-01	0.0000+00
(n,n'5)	55	7.2091-01	2.0000+01	-7.1700-01	0.0000+00
(n,n'6)	56	7.5409-01	2.0000+01	-7.5000-01	0.0000+00
(n,n'7)	57	8.7575-01	2.0000+01	-8.7100-01	0.0000+00
(n,n'8)	58	8.8379-01	2.0000+01	-8.7900-01	0.0000+00
(n,n'c)	91	1.2699-01	2.0000+01	-1.2630-01	-1.2630-01
(n,γ)	102	1.0000-11	2.0000+01	6.1780+00	6.1780+00

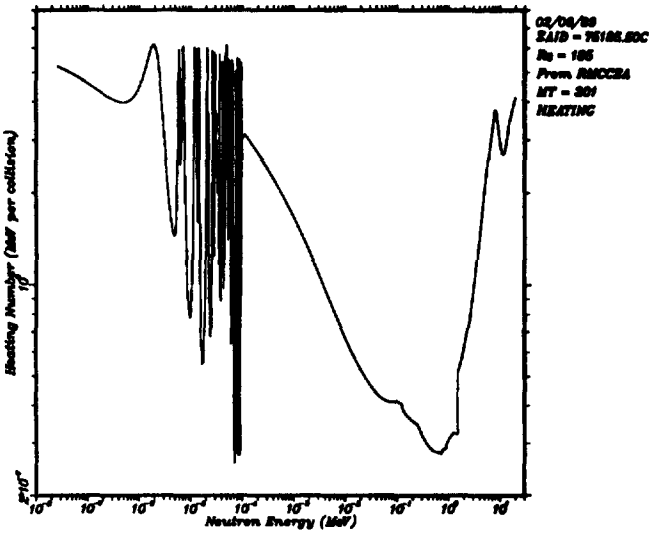


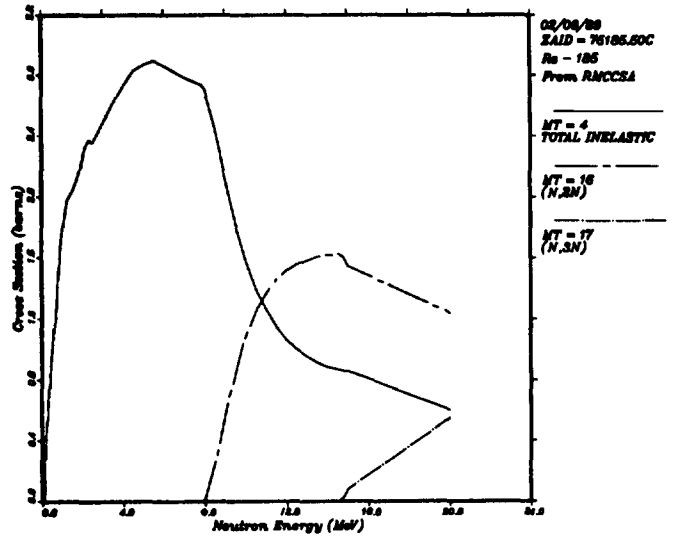




75185.50C

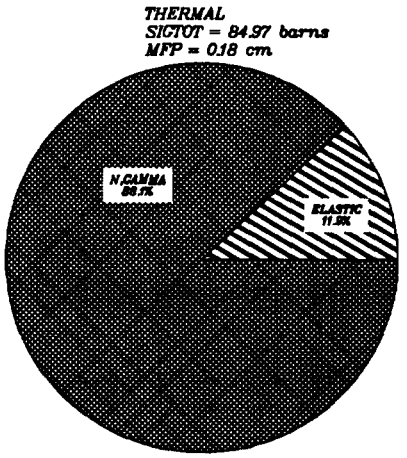

02/04/99
ZAID = 75185.50C
Re = 185
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/04/99
ZAID = 75185.50C
Re = 185
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/04/99
ZAID = 75185.50C
Re = 185
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Rhenium – 187

ZAID=75187.50C
SOURCE: ENDF/B-V (MAT=1084, Tape 513)
REFERENCE: "Rhenium-185 (MAT 1083) and Rhenium-187 (MAT 1084),"
by W. B. Henderson and J. W. Zwick
contained in ENDF-201



Data Availability

Continuous Energy

ZAID=75187.50C	NES=959	T=300°K

Discrete Reaction

ZAID=75187.50D	NES=263	T=300°K

Multigroup

ZAID=75187.50M	30-Group	T=300°K

Isotope Information

Abundance=62.60%

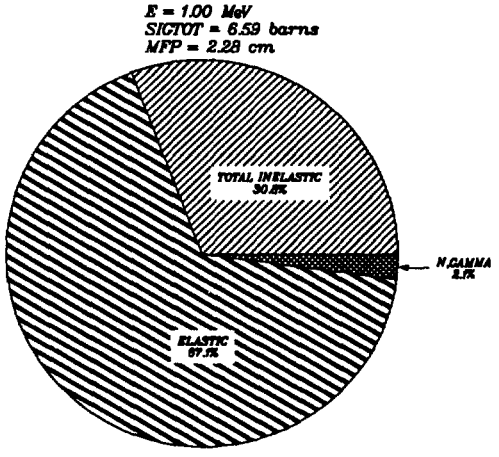
Density=20.61255 gm/cm^3

Evaluation Information

Photon-Production Data – No

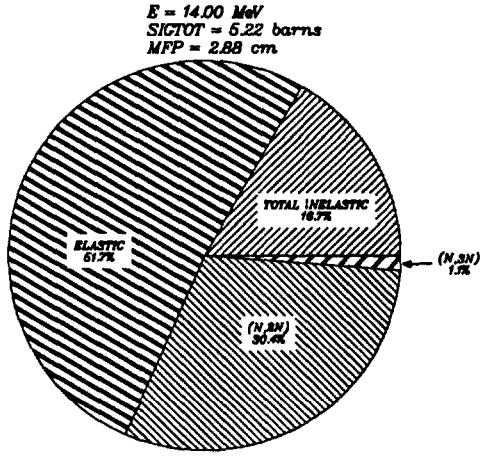
Heating Numbers – Total

Energy Range – 10^{-11} to 20 MeV

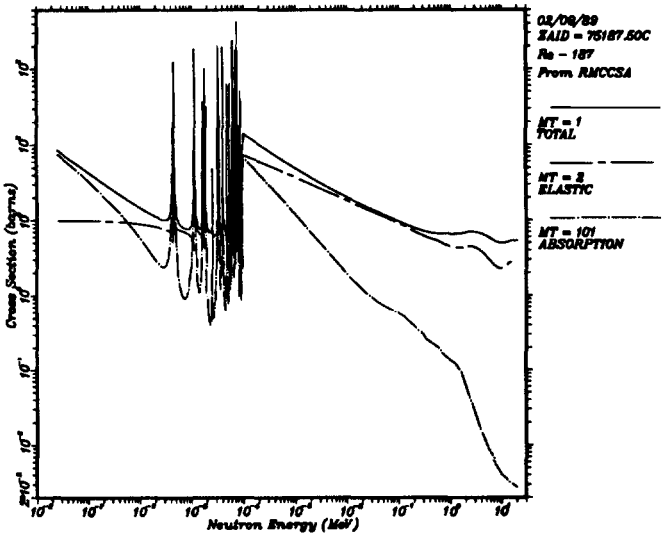


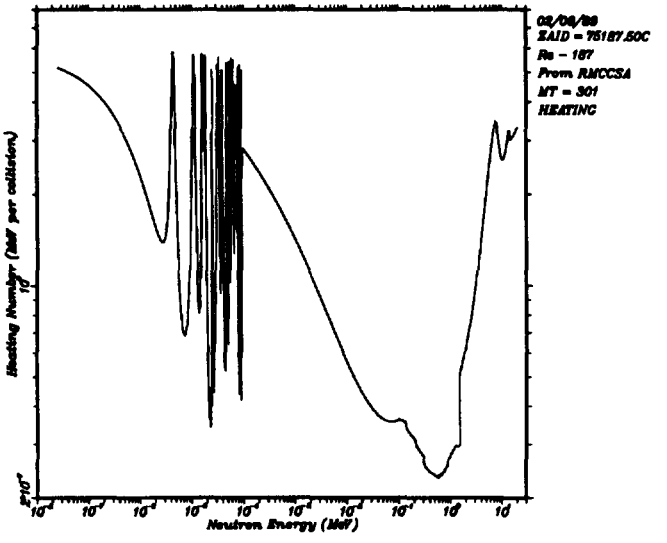
Reaction Information

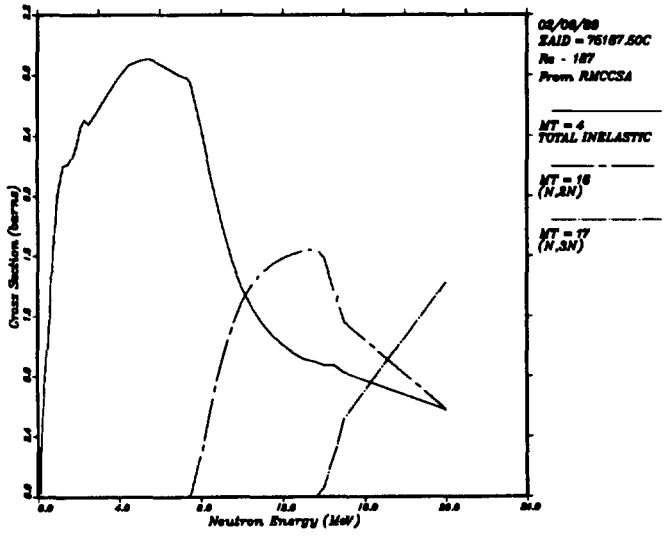
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.3595+00	2.0000+01	-7.3200+00	-7.3200+00
(n,3n)	17	1.3633+01	2.0000+01	-1.3560+01	-1.3560+01
(n,n'1)	51	1.3472-01	2.0000+01	-1.3400-01	0.0000+00
(n,n'2)	52	2.0711-01	2.0000+01	-2.0600-01	0.0000+00
(n,n'3)	53	3.0262-01	2.0000+01	-3.0100-01	0.0000+00
(n,n'4)	54	5.1476-01	2.0000+01	-5.1200-01	0.0000+00
(n,n'5)	55	5.9218-01	2.0000+01	-5.8900-01	0.0000+00
(n,n'6)	56	6.2133-01	2.0000+01	-6.1800-01	0.0000+00
(n,n'7)	57	6.2837-01	2.0000+01	-6.2500-01	0.0000+00
(n,n'8)	58	6.8970-01	2.0000+01	-6.8600-01	0.0000+00
(n,n'9)	59	7.7717-01	2.0000+01	-7.7300-01	0.0000+00
(n,n'10)	60	8.6967-01	2.0000+01	-8.6500-01	0.0000+00
(n,n'11)	61	8.8475-01	2.0000+01	-8.8000-01	0.0000+00
(n,n'c)	91	1.3603-01	2.0000+01	-1.3530-01	-1.3530-01
(n,γ)	102	1.0000-11	2.0000+01	5.8730+00	5.8730+00



75187.50C


02/08/89
ZAID = 75187.50C
Re - 187
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/08/89
ZAID = 75187.50C
Re - 187
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/08/89
ZAID = 75187.50C
Re - 187
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Platinum

ZAID=78000.35C

SOURCE: ENDL–85 (ZA=78000 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=78000.35C NES=1497 T=0°K

Discrete Reaction

ZAID=78000.35D NES=263 T=0°K

Multigroup

ZAID=78000.35M 30–Group T=0°K

Isotope Information

Abundance=Natural

Density=21.45 gm/cm^3

Evaluation Information

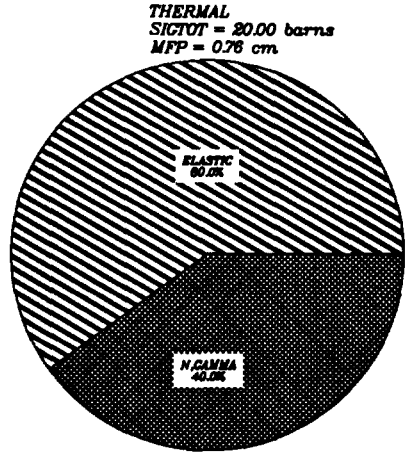
Photon-Production Data – Yes

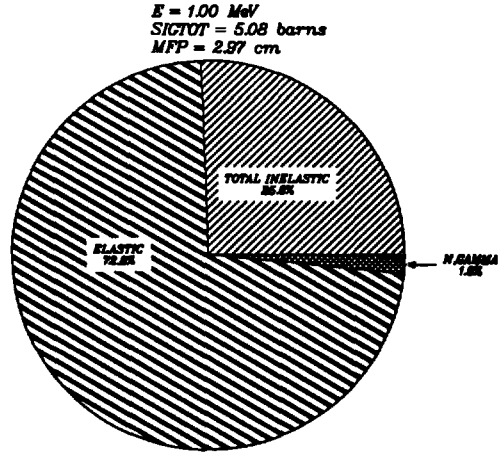
Heating Numbers – Local

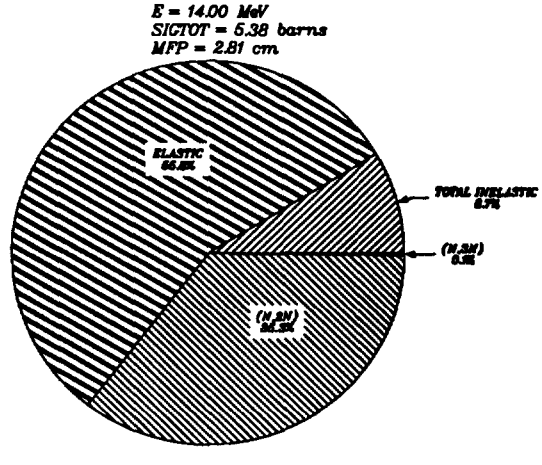
Energy Range – 10^{-10} to 20 MeV

Reaction Information

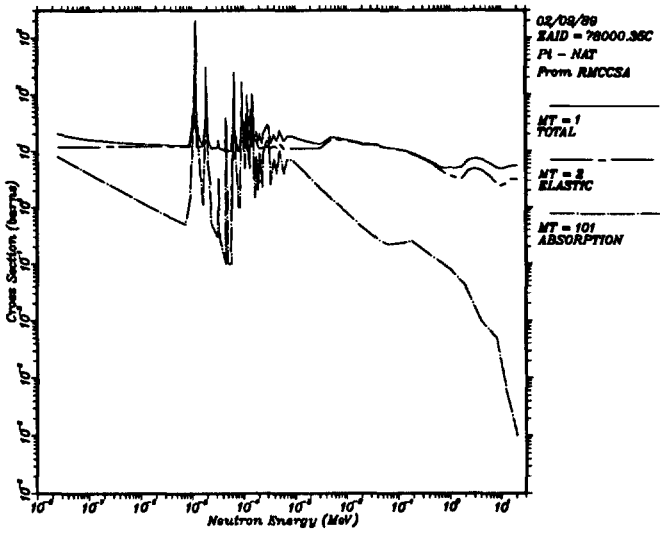
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.5000-01	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.1014+00	2.0000+01	-6.0700+00	-6.0700+00
(n,3n)	17	1.3972+01	2.0000+01	-1.3900+01	-1.3900+01
(n,γ)	102	1.0000-10	2.0000+01	7.7200+00	7.7200+00

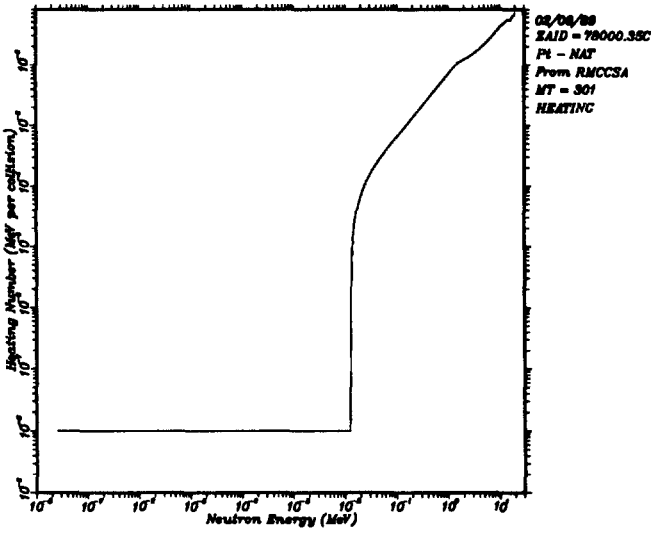


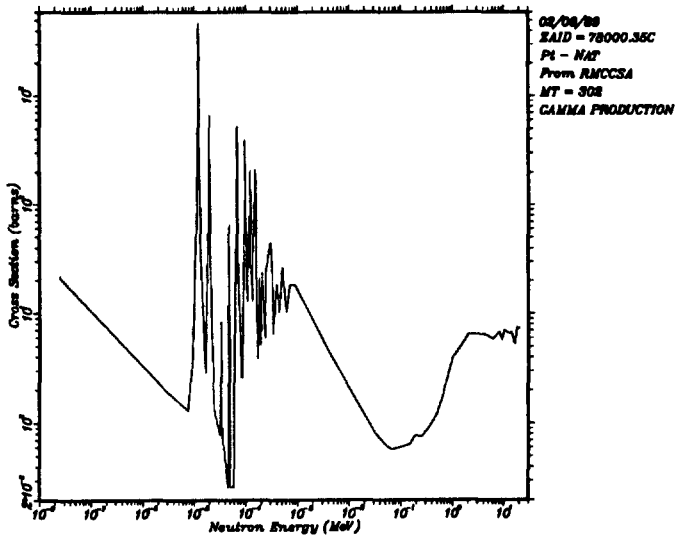


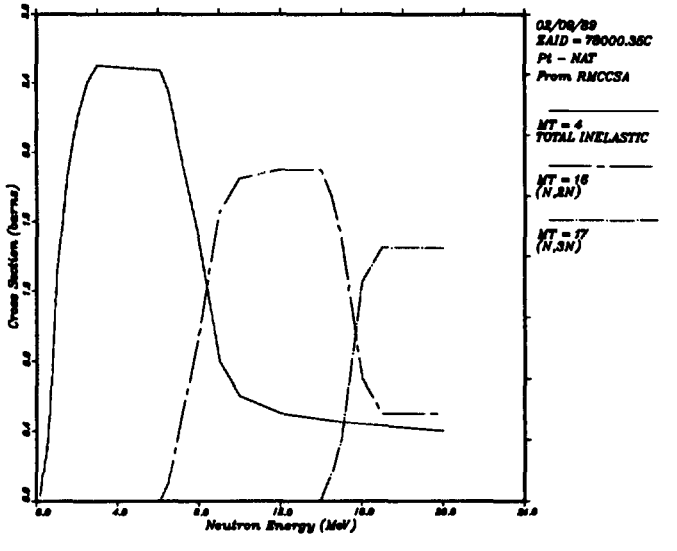


78000.35C


02/09/99
ZAID = 78000.35C
Pt - NAT
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/09/99
ZAID = 78000.35C
Pt - NAT
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/09/99
ZAID = 78000.35C
Pt - NAT
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/09/99
ZAID = 78000.35C
Pt - NAT
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

Gold – 197

ZAID=79197.56C

SOURCE: Group T-2 (MAT=197, File /T2/PGY/EVAL/LAS/AU197LA

REFERENCE: "Analysis of n + ^{197}Au Cross Sections for E_n = 0.01–20 MeV,"
by P. G. Young and E. D. Arthur
page 530 in Proc. Int. Symp. on Capture Gamma-Ray Spectroscopy, Knoxville, Tenn., 1984,
S. Raman, Ed., American Institute of Physics publication 125 (1985)

Data Availability

Continuous Energy

ZAID=79197.56C	NES=11823	T=300°K

Discrete Reaction

ZAID=79197.56D	NES=263	T=300°K

Multigroup

ZAID=79197.56M	30-Group	T=300°K

Isotope Information

Abundance=100.00%

Density=19.31 gm/cm^3

Evaluation Information

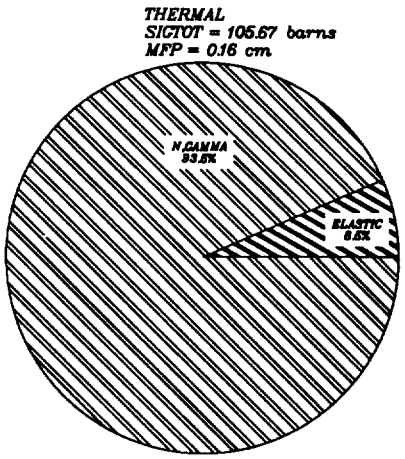
Photon-Production Data – Yes

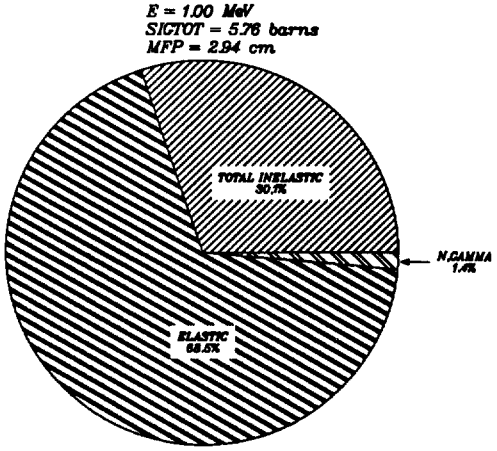
Heating Numbers – Local

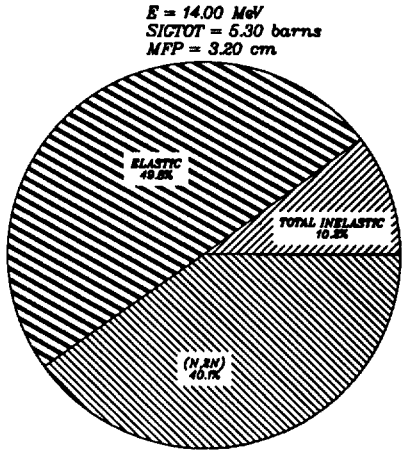
Energy Range – 10^{-11} to 30 MeV

Reaction Information

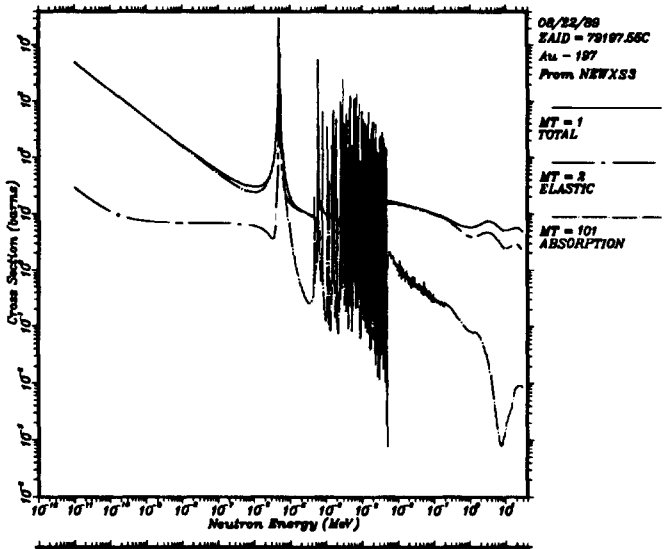
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	3.0000+01		
(n,2n)	16	8.1007+00	3.0000+01	-8.0594+00	-8.0594+00
(n,3n)	17	1.4796+01	3.0000+01	-1.4721+01	-1.4721+01
(n,4n)	37	2.3262+01	3.0000+01	-2.3108+01	-2.3108+01
(n,n'1)	51	7.7796-02	3.0000+01	-7.7400-02	0.0000+00
(n,n'2)	52	2.7038-01	3.0000+01	-2.6900-01	0.0000+00
(n,n'3)	53	2.8043-01	3.0000+01	-2.7900-01	0.0000+00
(n,n'4)	54	4.1109-01	3.0000+01	-4.0900-01	0.0000+00
(n,n'5)	55	5.0558-01	3.0000+01	-5.0300-01	0.0000+00
(n,n'6)	56	5.5081-01	3.0000+01	-5.4800-01	0.0000+00
(n,n'7)	57	7.4077-01	3.0000+01	-7.3700-01	0.0000+00
(n,n'8)	58	8.5938-01	3.0000+01	-8.5500-01	0.0000+00
(n,n'9)	59	8.9255-01	3.0000+01	-8.8800-01	0.0000+00
(n,n'10)	60	9.4079-01	3.0000+01	-9.3600-01	0.0000+00
(n,n'11)	61	1.0504+00	3.0000+01	-1.0450+00	0.0000+00
(n,n'12)	62	1.1559+00	3.0000+01	-1.1500+00	0.0000+00
(n,n'13)	63	1.2236+00	3.0000+01	-1.2174+00	0.0000+00
(n,n'c)	91	1.0000-01	3.0000+01	-9.9490-02	-9.9490-02
(n,γ)	102	1.0000-11	3.0000+01	6.5120+00	6.5120+00
(n,p)	103	4.9997-03	3.0000+01	6.3400-02	6.3400-02
(n,α)	107	4.9997-03	3.0000+01	7.0105+00	7.0105+00

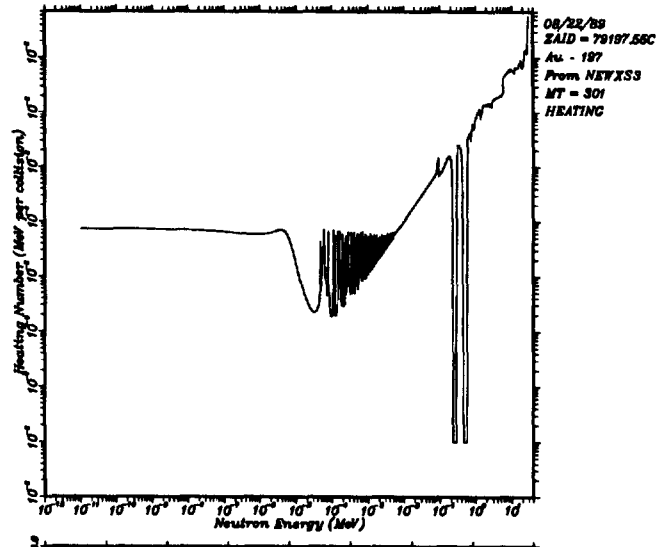


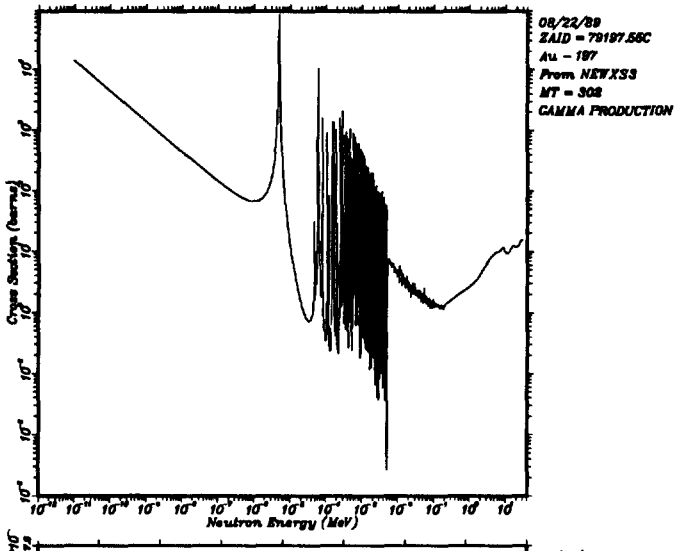


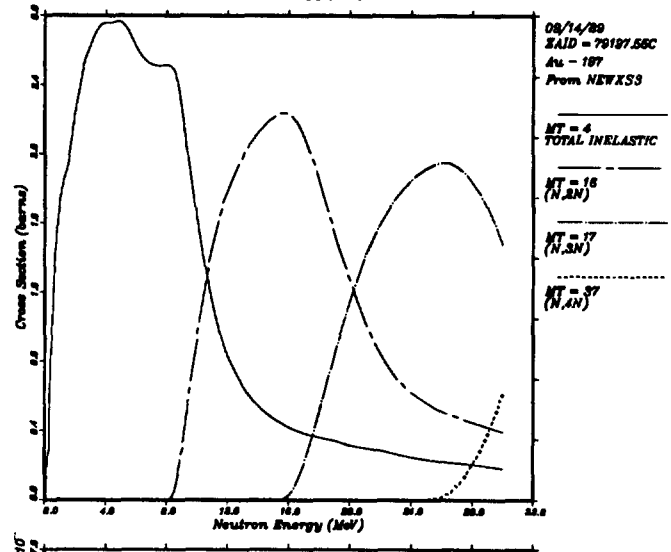


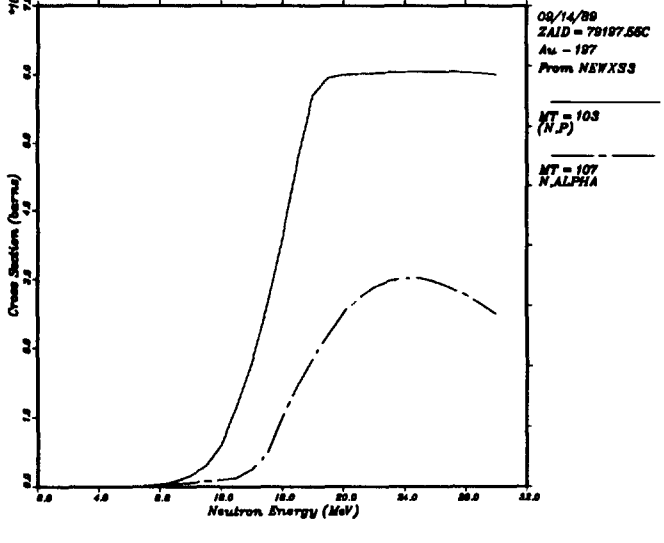
79197.56C

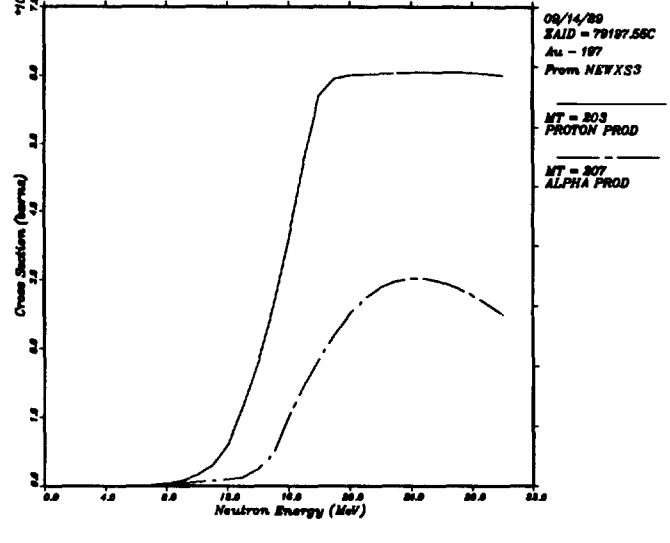

08/22/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


08/22/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 301
HEATING
Heating Numbers (MeV per collision)
Neutron Energy (MeV)


08/22/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


09/14/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


09/14/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


09/14/89
ZAID = 79197.56C
Au - 197
From NEWXS3
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Lead

ZAID=82000.50C

SOURCE: ENDF/B-V (MAT=1382, Neutron Data from Tape 508;
Photon Production Data from Tape 558)

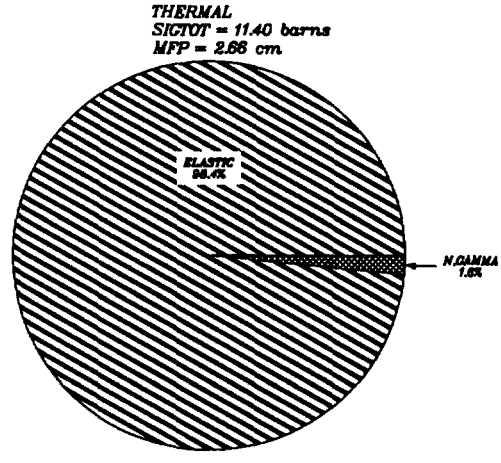
REFERENCE: "Summary Documentation Lead Evaluation ENDF/B-V MAT 1382,"
by C. Y. Fu and F. G. Perey
contained in ENDF-201

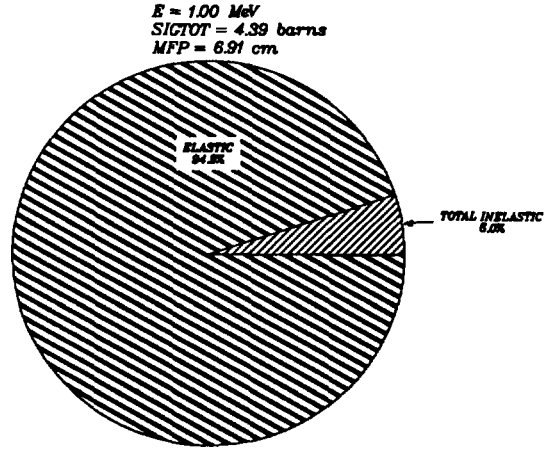
Data Availability

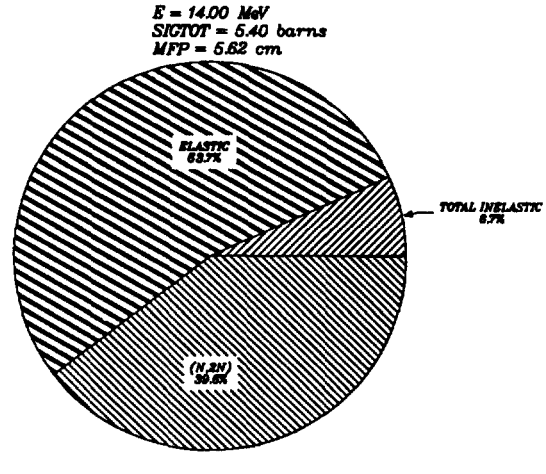
Continuous Energy		
ZAID=82000.50C	NES=1346	T=300°K
ZAID=82000.51C	NES=1346	T=300°K
Discrete Reaction		
ZAID=82000.50D	NES=263	T=300°K
Multigroup		
ZAID=82000.50M	30-Group	T=300°K

Isotope Information
Abundance=Natural
Density=11.3437 gm/cm^3

Evaluation Information
Photon-Production Data – Yes
Heating Numbers = Local
Energy Range = 10^{-11} to 20 MeV



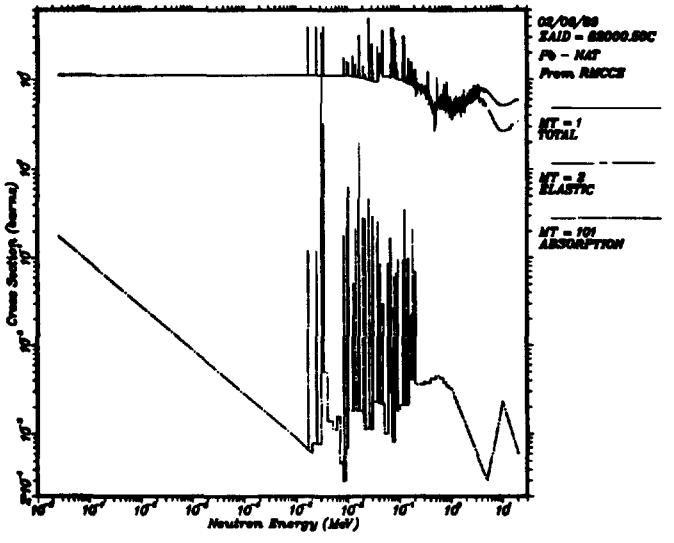


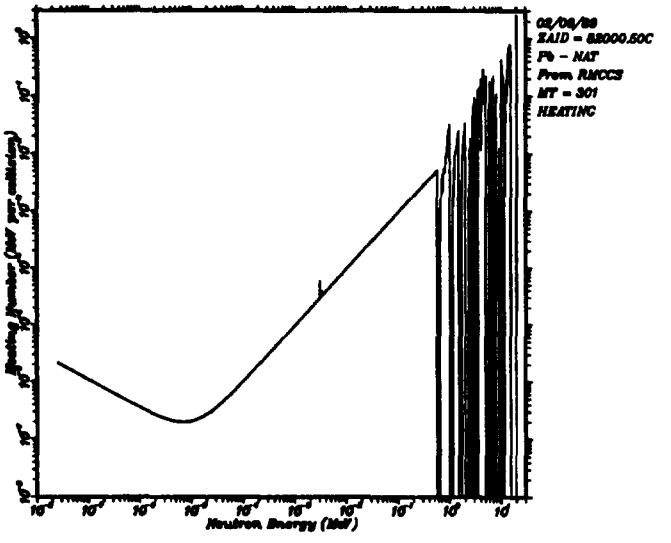


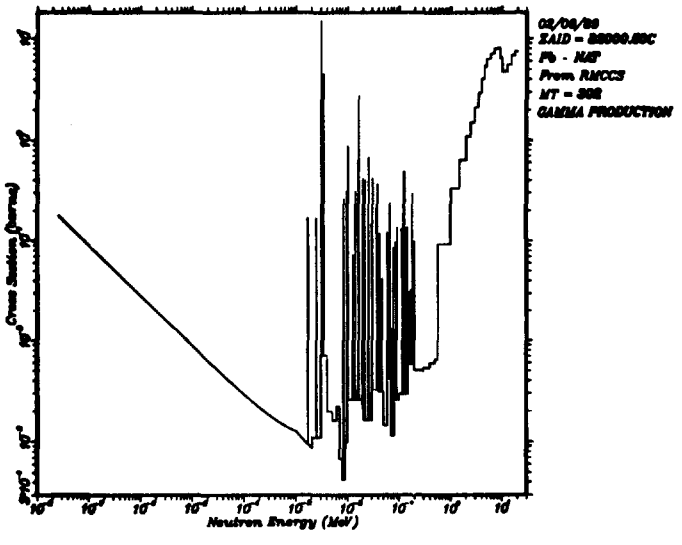
Reaction Information

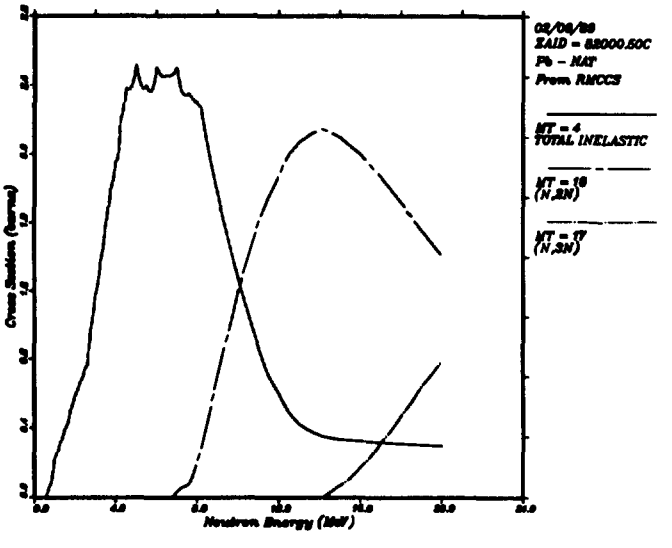
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.7658+00	2.0000+01	-6.7330+00	-6.7330+00
(n,3n)	17	1.4179+01	2.0000+01	-1.4110+01	-1.4110+01
(n,n'1)	51	5.7300-01	2.0000+01	-5.7000-01	0.0000+00
(n,n'2)	52	8.0691-01	2.0000+01	-8.0300-01	0.0000+00
(n,n'3)	53	9.0237-01	2.0000+01	-8.9800-01	0.0000+00
(n,n'4)	54	1.1810+00	2.0000+01	-1.1750+00	0.0000+00
(n,n'5)	55	1.3480+00	2.0000+01	-1.3410+00	0.0000+00
(n,n'6)	56	1.4691+00	2.0000+01	-1.4620+00	0.0000+00
(n,n'7)	57	1.6410+00	2.0000+01	-1.6330+00	0.0000+00
(n,n'8)	58	1.6902+00	2.0000+01	-1.6820+00	0.0000+00
(n,n'9)	59	1.7710+00	2.0000+01	-1.7620+00	0.0000+00
(n,n'10)	60	2.0080+00	2.0000+01	-1.9980+00	0.0000+00
(n,n'11)	61	2.1705+00	2.0000+01	-2.1600+00	0.0000+00
(n,n'12)	62	2.3520+00	2.0000+01	-2.3400+00	0.0000+00
(n,n'13)	63	2.3966+00	2.0000+01	-2.3850+00	0.0000+00
(n,n'14)	64	2.6277+00	2.0000+01	-2.6150+00	0.0000+00
(n,n'15)	65	2.6368+00	2.0000+01	-2.6240+00	0.0000+00
(n,n'16)	66	2.6468+00	2.0000+01	-2.6340+00	0.0000+00
(n,n'17)	67	2.7965+00	2.0000+01	-2.7830+00	0.0000+00
(n,n'18)	68	3.0317+00	2.0000+01	-3.0170+00	0.0000+00
(n,n'19)	69	3.0719+00	2.0000+01	-3.0570+00	0.0000+00
(n,n'20)	70	3.2136+00	2.0000+01	-3.1980+00	0.0000+00
(n,n'21)	71	3.2658+00	2.0000+01	-3.2500+00	0.0000+00
(n,n'22)	72	3.3985+00	2.0000+01	-3.3820+00	0.0000+00
(n,n'23)	73	3.4698+00	2.0000+01	-3.4530+00	0.0000+00
(n,n'24)	74	3.4920+00	2.0000+01	-3.4750+00	0.0000+00
(n,n'25)	75	3.5773+00	2.0000+01	-3.5600+00	0.0000+00
(n,n'26)	76	3.7261+00	2.0000+01	-3.7080+00	0.0000+00
(n,n'27)	77	3.7683+00	2.0000+01	-3.7500+00	0.0000+00
(n,n'28)	78	3.8728+00	2.0000+01	-3.8540+00	0.0000+00
(n,n'29)	79	3.9391+00	2.0000+01	-3.9200+00	0.0000+00
(n,n'30)	80	4.0084+00	2.0000+01	-3.9890+00	0.0000+00
(n,n'31)	81	4.0958+00	2.0000+01	-4.0760+00	0.0000+00
(n,n'32)	82	4.1451+00	2.0000+01	-4.1250+00	0.0000+00
(n,n'33)	83	4.2204+00	2.0000+01	-4.2000+00	0.0000+00
(n,n'34)	84	4.3089+00	2.0000+01	-4.2880+00	0.0000+00
(n,n'35)	85	4.3601+00	2.0000+01	-4.3390+00	0.0000+00
(n,n'c)	91	4.4214+00	2.0000+01	-4.4000+00	-4.4000+00
(n,γ)	102	1.0000-11	2.0000+01	7.3354+00	7.3354+00

82000.50C


02/06/99
ZAID = 82000.50C
Pb - NAT
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Neutron Energy (MeV)


02/06/99
ZAID = 82000.50C
Pb - NAT
From RMCCS
MT = 301
HEATING
Neutron Energy (MeV)


02/06/99
ZAID = 82000.50C
Pb - NAT
From RMCCS
MT = 202
GAMMA PRODUCTION
Neutron Energy (MeV)


02/06/99
ZAID = 82000.50C
Pb - NAT
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Neutron Energy (MeV)

Bismuth – 209

ZAID=83209.50C
SOURCE: ENDF/B–V (MAT=1375, Tape 517)
REFERENCE: File 1 information
by D. Smith, A. Smith, P. Guenther, and R. Howerton

Data Availability

Continuous Energy

ZAID=83209.50C	NES=1300	T=300°K
ZAID=83209.51C	NES=1186	T=300°K

Discrete Reaction

ZAID=83209.50D	NES=263	T=300°K
ZAID=83209.51D	NES=263	T=300°K

Multigroup

ZAID=83209.50M	30–Group	T=300°K

Isotope Information

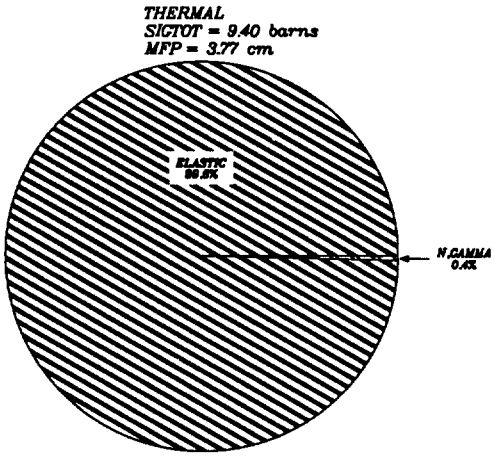
Abundance=100.00%
Density=9.80 gm/cm^3

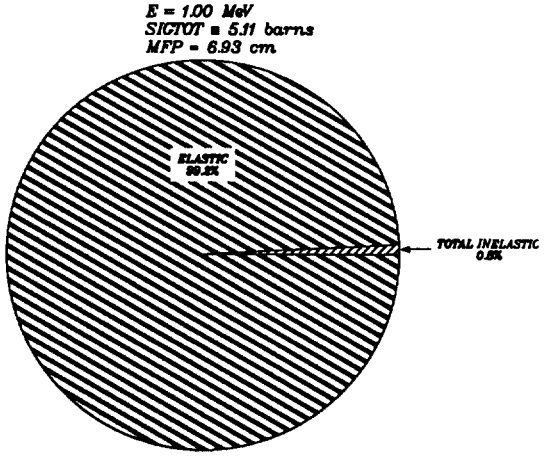
Evaluation Information

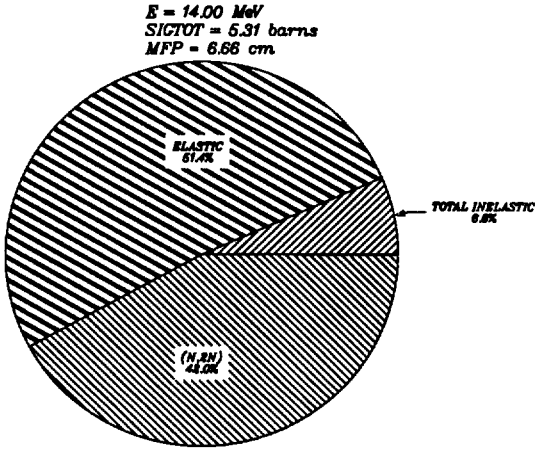
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

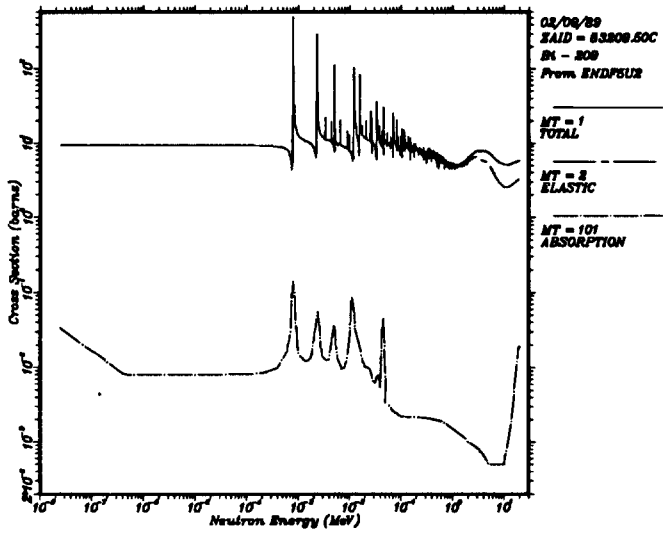
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.4425+00	2.0000+01	-7.4067+00	-7.4067+00
(n,3n)	17	1.4429+01	2.0000+01	-1.4359+01	-1.4359+01
(n,n′)α	22	1.3900+01	2.0000+01	3.1300+00	3.1300+00
(n,n′1)	51	9.0093-01	2.0000+01	-8.9660-01	0.0000+00
(n,n′2)	52	1.6163+00	2.0000+01	-1.6085+00	0.0000+00
(n,n′3)	53	2.5714+00	2.0000+01	-2.5590+00	0.0000+00
(n,n′4)	54	2.7553+00	2.0000+01	-2.7420+00	0.0000+00
(n,n′5)	55	3.0145+00	2.0000+01	-3.0000+00	0.0000+00
(n,n′6)	56	3.1361+00	2.0000+01	-3.1210+00	0.0000+00
(n,n′c)	91	3.2768+00	2.0000+01	-3.2610+00	-3.2610+00
(n,γ)	102	1.0000-11	2.0000+01	4.6000+00	4.6000+00
(n,p)	103	9.9000+00	2.0000+01	1.3000-01	1.3000-01
(n,α)	107	1.2900+01	2.0000+01	9.6300+00	9.6300+00

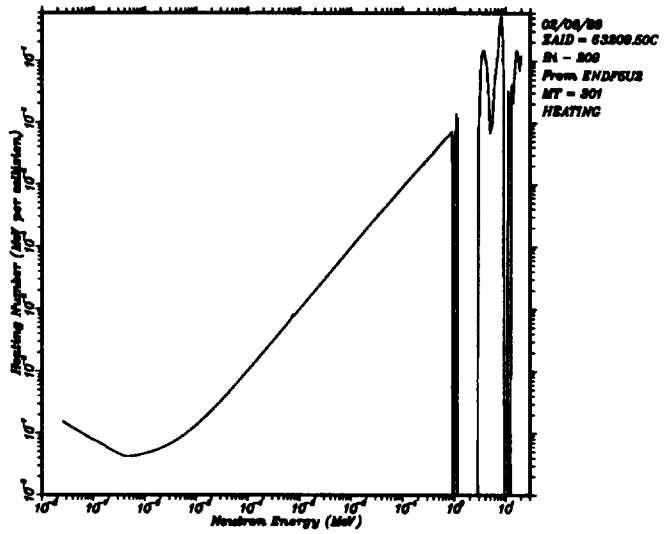


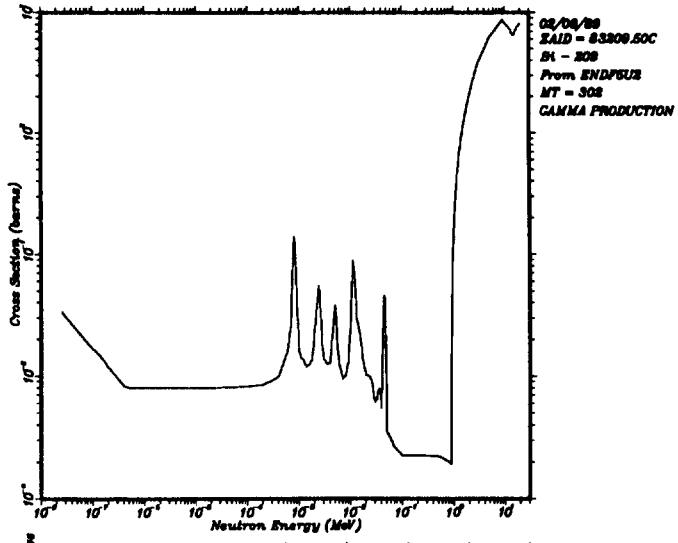


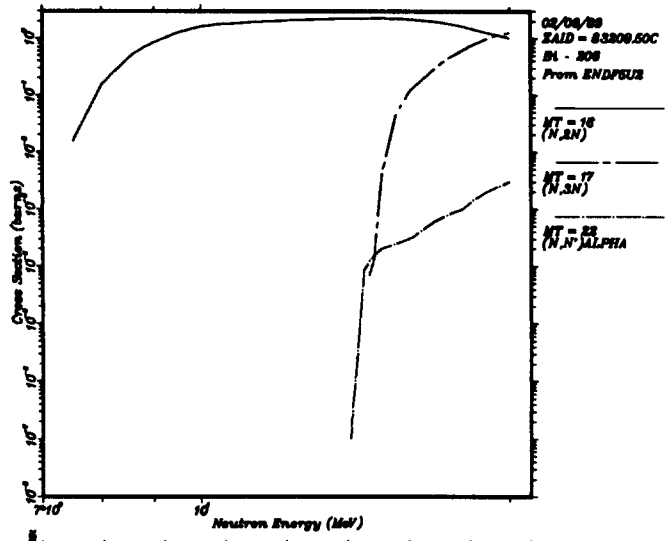


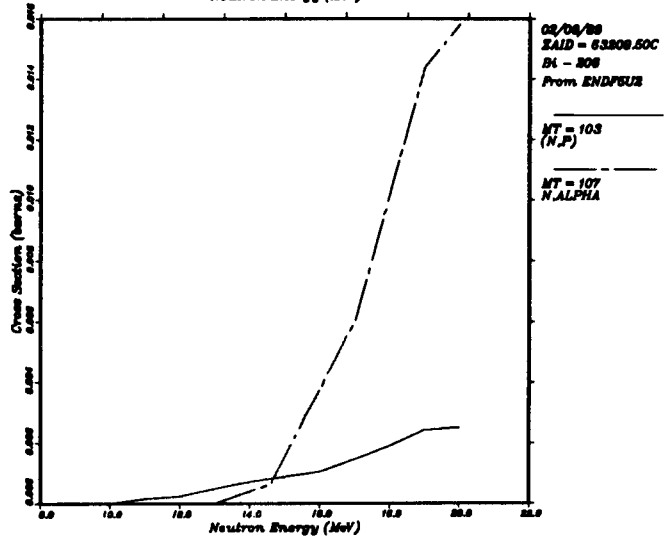
83209.50C

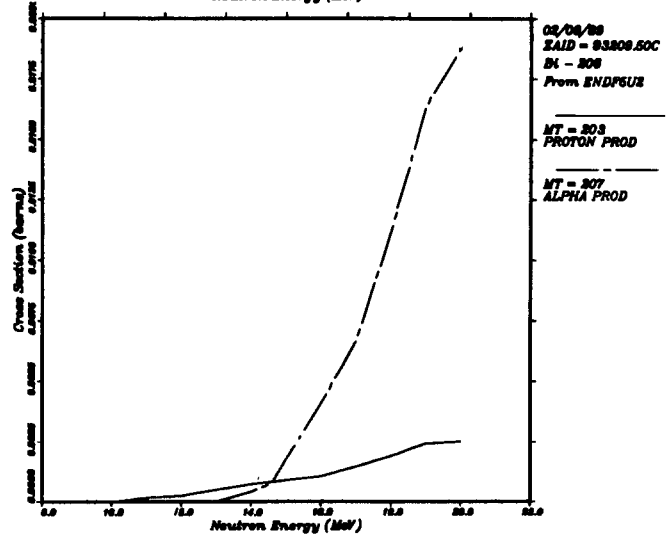

02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 301
HEATING
Neutron Energy (MeV)


02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 22
(N,N')ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 103
(N,P)
MT = 107
N,ALPHA
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 83209.50C
Bk - 209
From ENDFSU2
MT = 203
PROTON PROD
MT = 207
ALPHA PROD
Cross Section (barns)
Neutron Energy (MeV)

Thorium – 231

ZAID=90231.35C

SOURCE: ENDL–85 (ZA=90231 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=90231.35C NES=308 T=0°K

Isotope Information

Abundance=0.00%

Density=11.64949 gm/cm^3

Evaluation Information

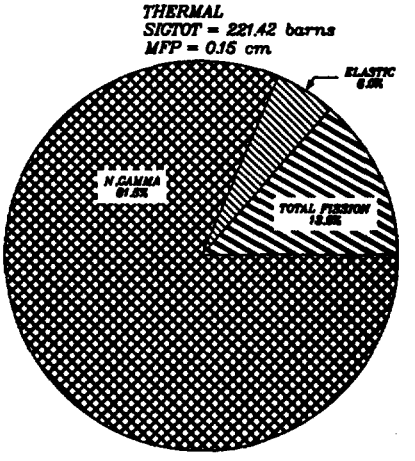
Photon-Production Data – Yes

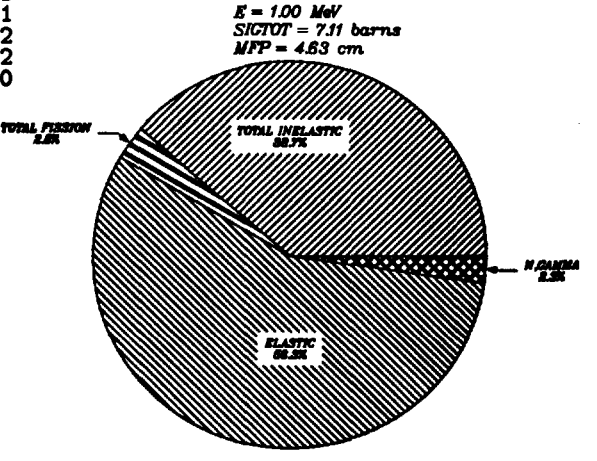
Heating Numbers – Local

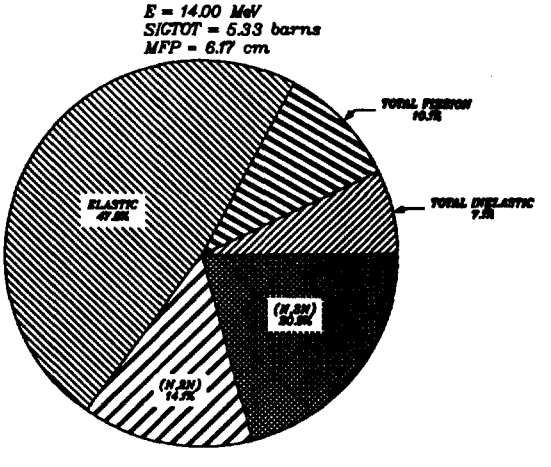
Energy Range – 10^{-10} to 20 MeV

Reaction Information

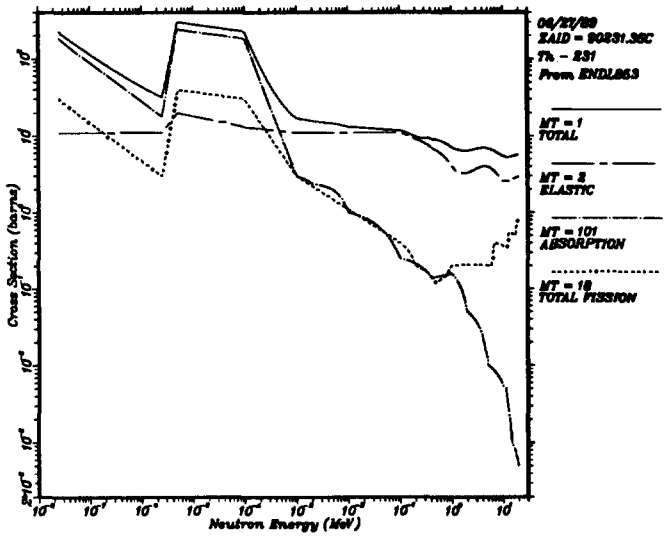
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.1424+00	2.0000+01	-5.1200+00	-5.1200+00
(n,3n)	17	1.1962+01	2.0000+01	-1.1910+01	-1.1910+01
(n,4n)	37	1.7225+01	2.0000+01	-1.7150+01	-1.7150+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.8500+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	6.4300+00	6.4300+00

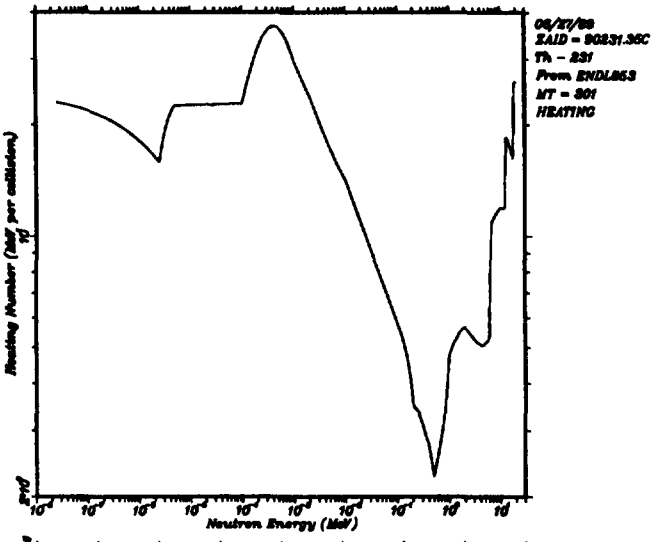


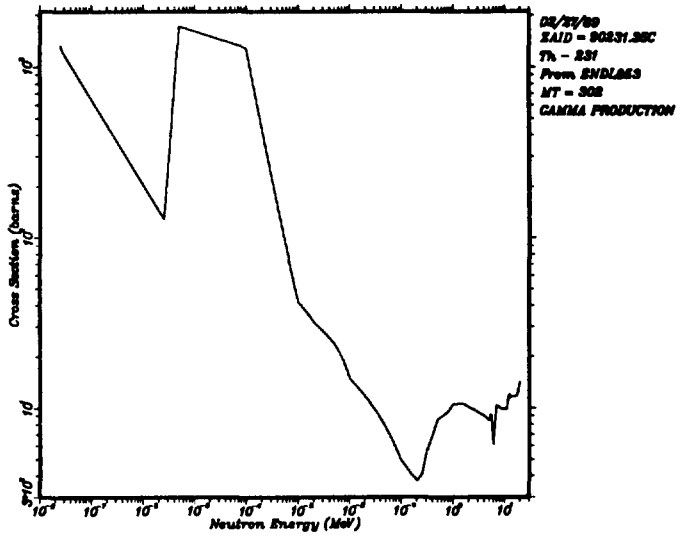


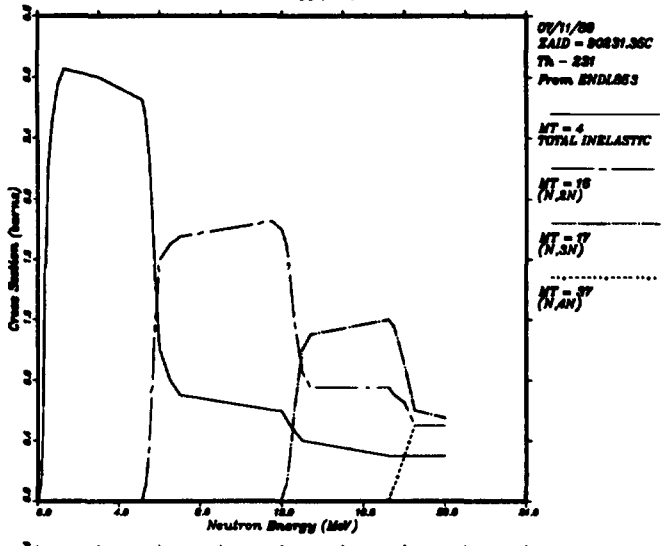


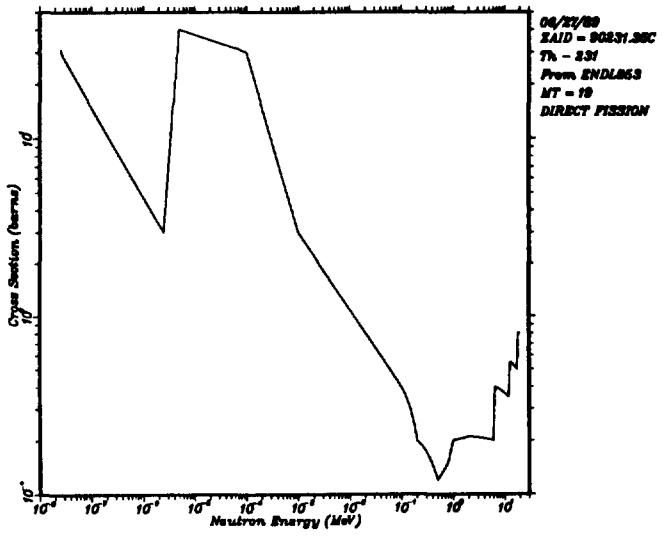
90231.35C

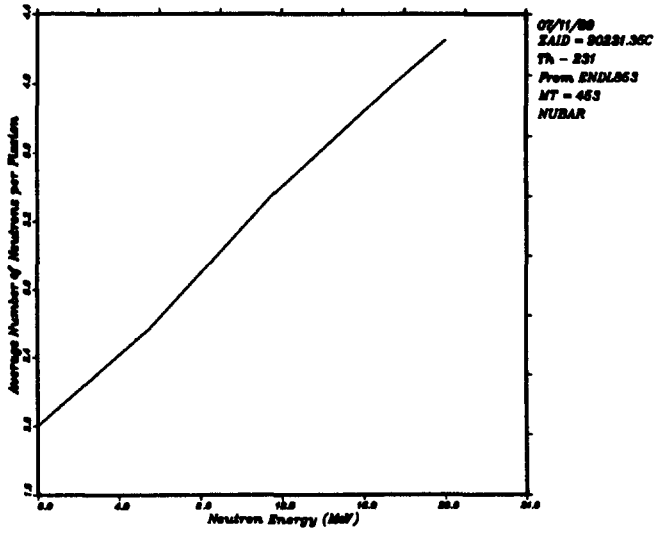

04/22/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


04/22/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/22/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 102
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


07/11/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


04/22/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


07/11/99
ZAID = 90231.35C
Th - 231
From ENDL863
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Thorium – 232

ZAID=90232.50C
SOURCE: ENDF/B–V (MAT=1390, Tape 516)
REFERENCE: "Summary Documentation for ^{232}Th,"
by M. R. Bhat, contained in ENDF–201

Data Availability

Continuous Energy

ZAID=90232.50C	NES=17901	T=300°K
ZAID=90232.51C	NES=1062	T=300°K

Discrete Reaction

ZAID=90232.50D	NES=263	T=300°K
ZAID=90232.51D	NES=263	T=300°K

Multigroup

ZAID=90232.50M	30–Group	T=300°K

Isotope Information

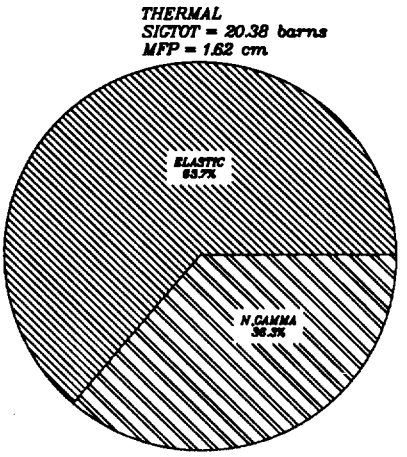
Abundance=100.00%
Density=11.70 gm/cm^3

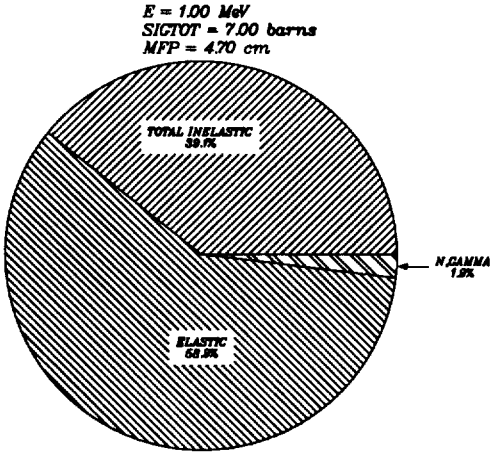
Evaluation Information

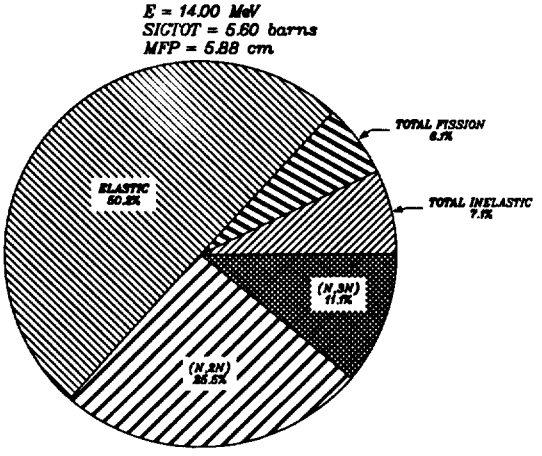
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

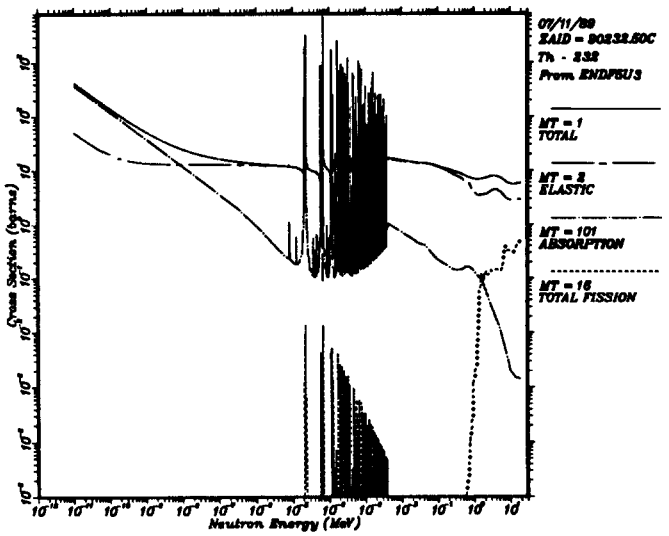
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.3676+00	2.0000+01	-6.3400+00	-6.3400+00
(n,3n)	17	1.1419+01	2.0000+01	-1.1370+01	-1.1370+01
fission	18	4.8000-06	2.0000+01	1.8921+02	1.8921+02
(n,n'1)	51	4.9715-02	2.0000+01	-4.9500-02	0.0000+00
(n,n'2)	52	1.6321-01	2.0000+01	-1.6250-01	0.0000+00
(n,n'3)	53	3.3445-01	2.0000+01	-3.3300-01	0.0000+00
(n,n'4)	54	7.2514-01	2.0000+01	-7.2200-01	0.0000+00
(n,n'5)	55	7.9645-01	2.0000+01	-7.9300-01	0.0000+00
(n,n'6)	56	8.8614-01	2.0000+01	-8.8230-01	0.0000+00
(n,n'7)	57	9.5443-01	2.0000+01	-9.5030-01	0.0000+00
(n,n'8)	58	1.0857+00	2.0000+01	-1.0810+00	0.0000+00
(n,n'9)	59	1.1419+00	2.0000+01	-1.1370+00	0.0000+00
(n,n'10)	60	1.1871+00	2.0000+01	-1.1820+00	0.0000+00
(n,n'11)	61	1.2183+00	2.0000+01	-1.2130+00	0.0000+00
(n,n'12)	62	1.3057+00	2.0000+01	-1.3000+00	0.0000+00
(n,n'13)	63	1.3810+00	2.0000+01	-1.3750+00	0.0000+00
(n,n'14)	64	1.4312+00	2.0000+01	-1.4250+00	0.0000+00
(n,n'15)	65	1.4563+00	2.0000+01	-1.4500+00	0.0000+00
(n,n'c)	91	1.2500+00	2.0000+01	-1.2446+00	-1.2446+00
(n,γ)	102	1.0000-11	2.0000+01	4.7864+00	4.7864+00

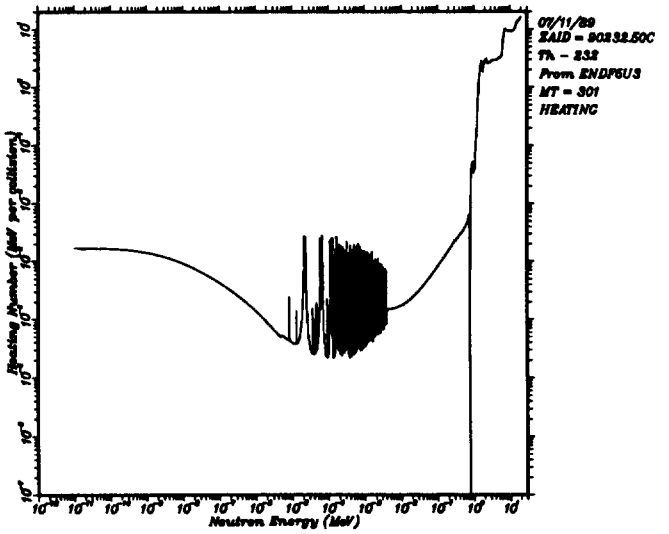


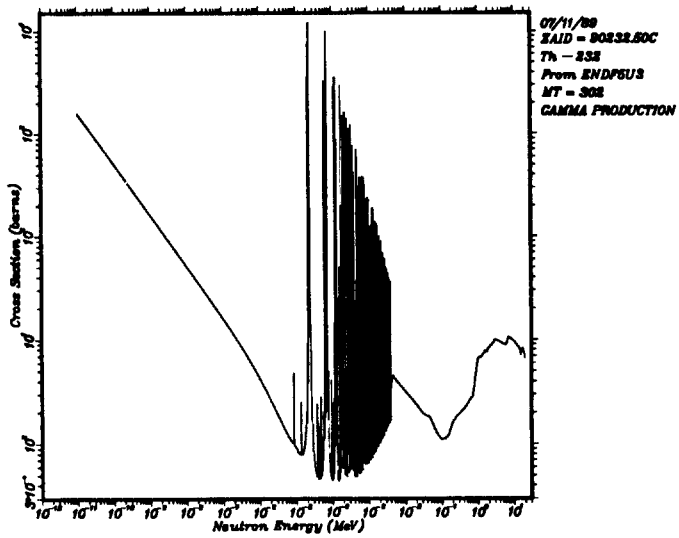


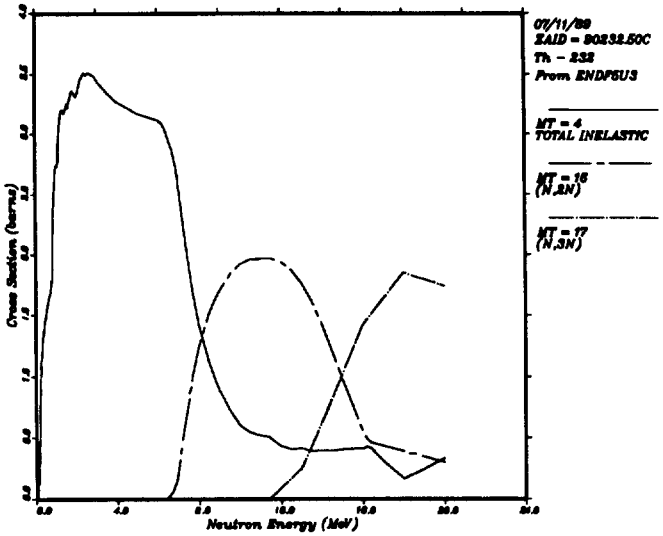


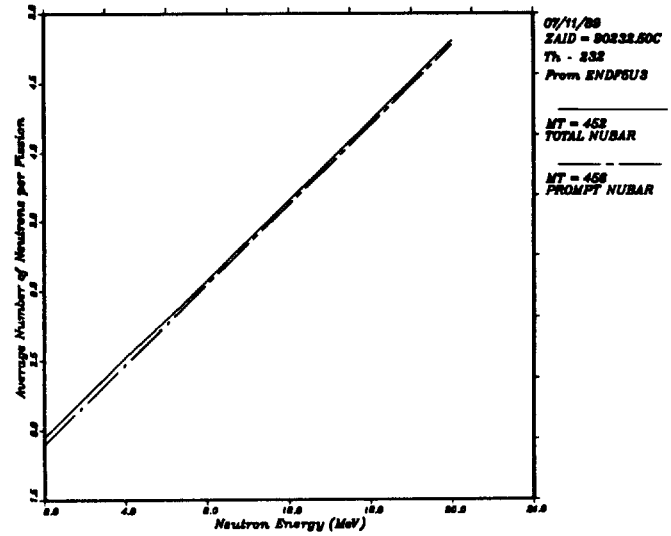
90232.50C


07/11/89
ZAID = 90232.50C
Th - 232
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 90232.50C
Th - 232
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


07/11/89
ZAID = 90232.50C
Th - 232
From ENDFSU3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 90232.50C
Th - 232
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


07/11/89
ZAID = 90232.50C
Th - 232
From ENDFSU3
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Thorium – 233

ZAID=90233.35C

SOURCE: ENDL–85 (ZA=90233 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=90233.35C NES=348 T=0°K

Isotope Information

Abundance=0.00%

Density=11.7506 gm/cm^3

Evaluation Information

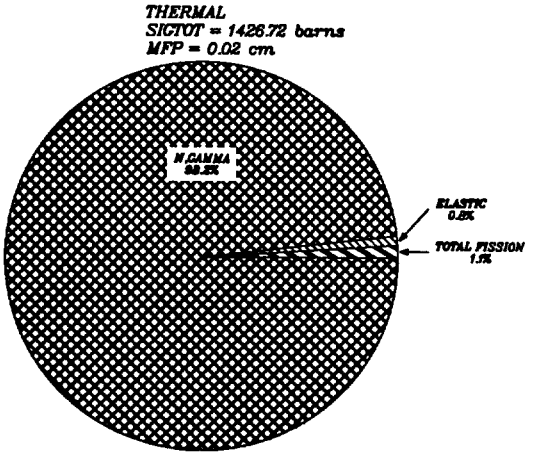
Photon-Production Data – Yes

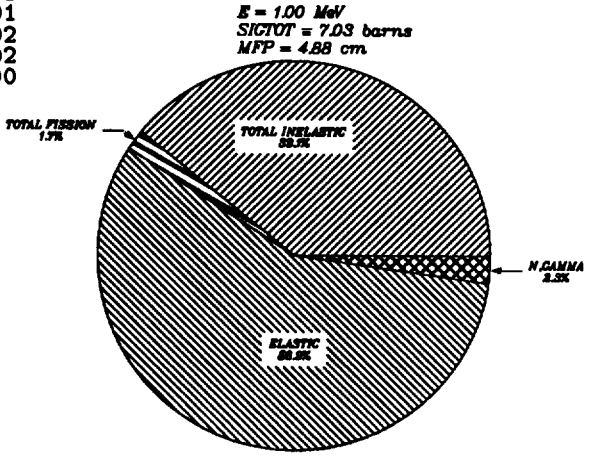
Heating Numbers – Local

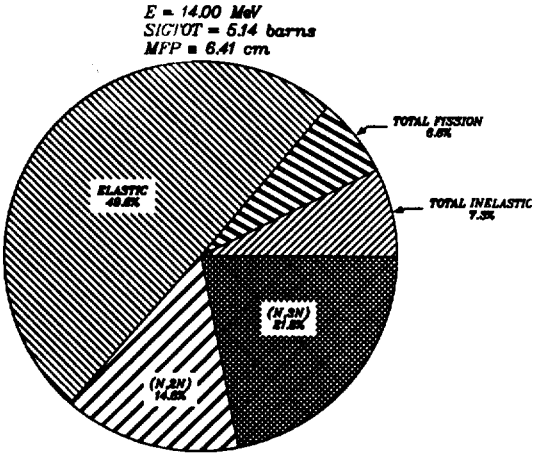
Energy Range – 10^{-10} to 20 MeV

Reaction Information

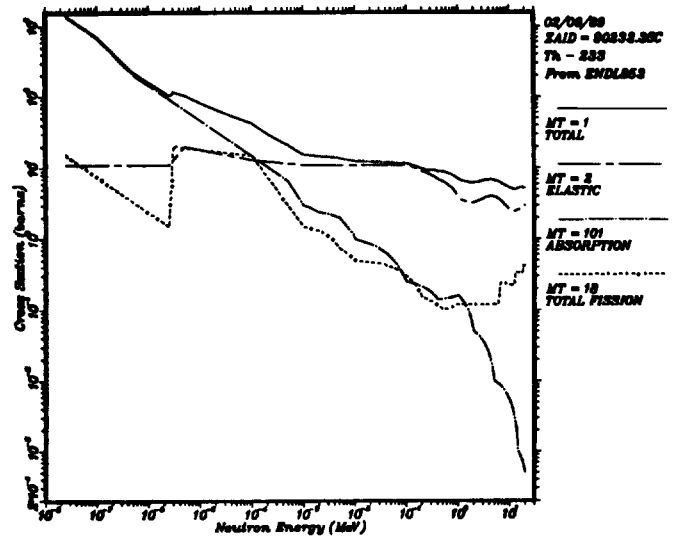
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	4.8007+00	2.0000+01	-4.7800+00	-4.7800+00
(n,3n)	17	1.1269+01	2.0000+01	-1.1220+01	-1.1220+01
(n,4n)	37	1.6411+01	2.0000+01	-1.6340+01	-1.6340+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.8500+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	6.1800+00	6.1800+00

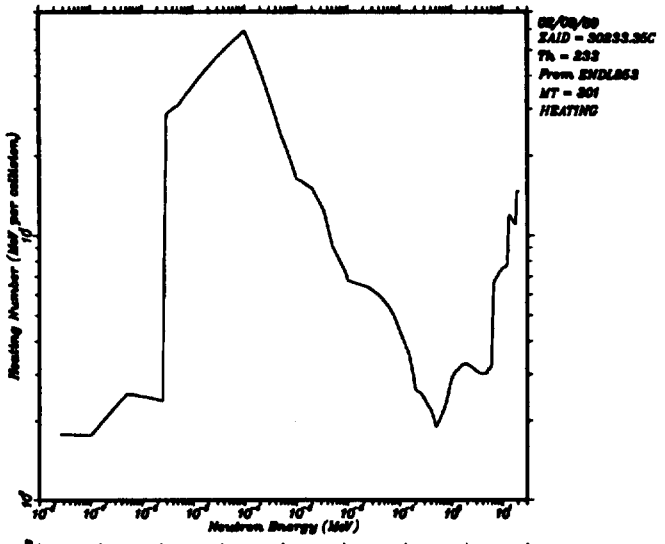


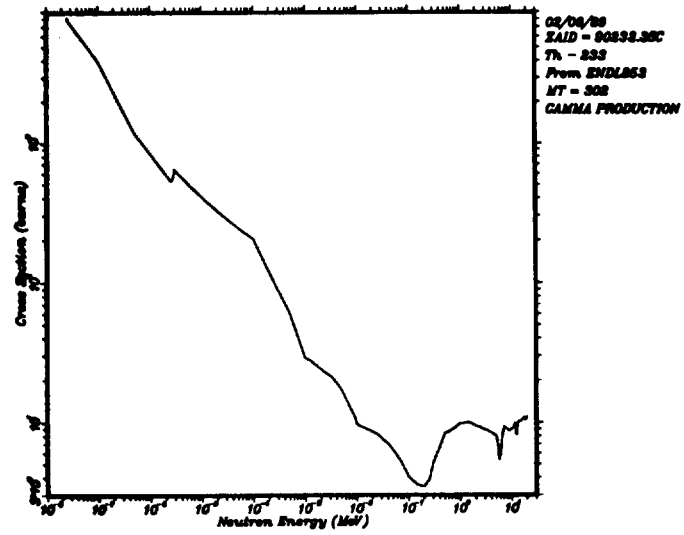


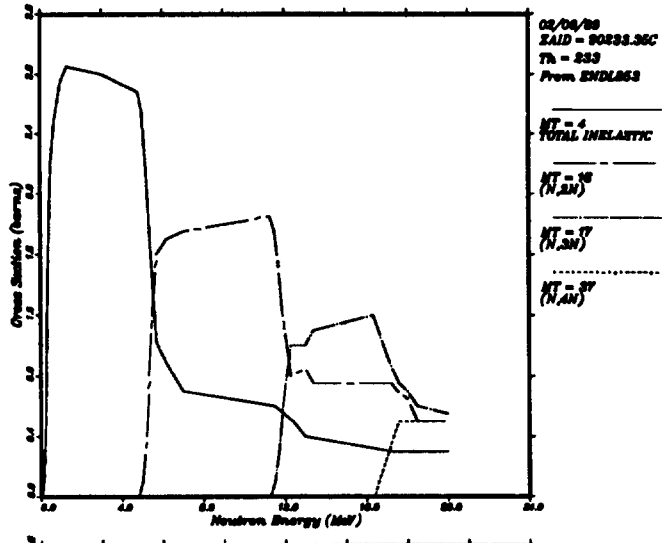


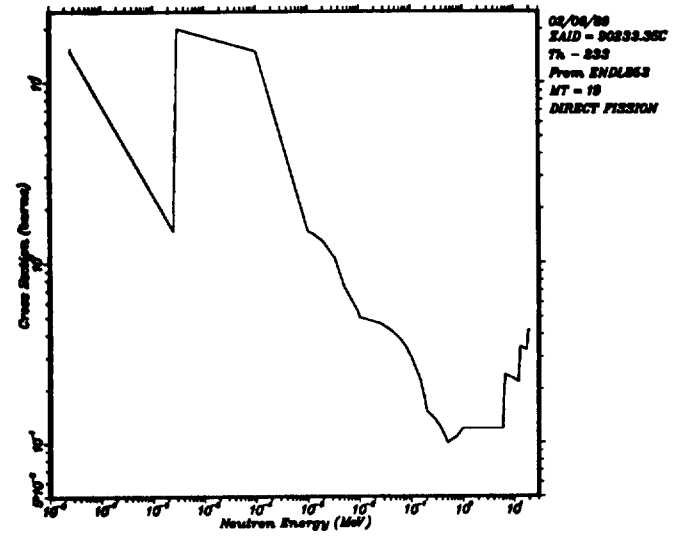
90233.35C

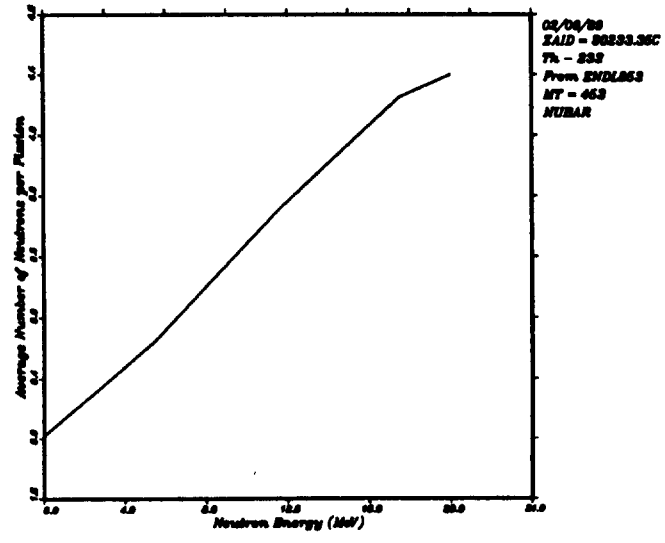

02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

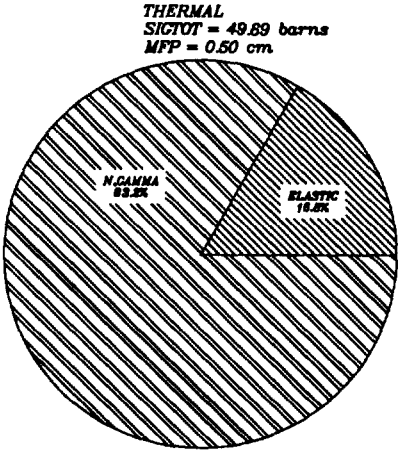

02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)

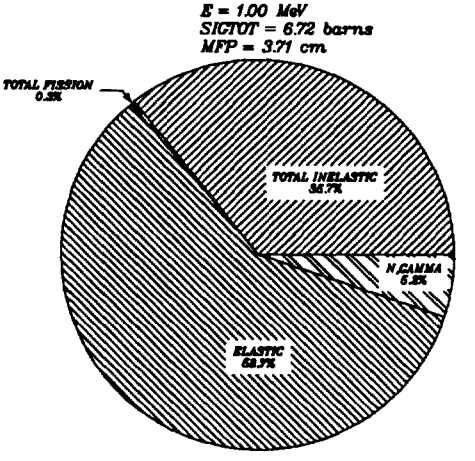

02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)

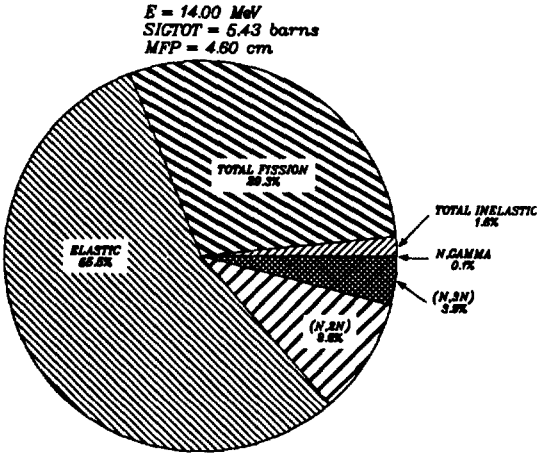

02/06/99
ZAID = 90233.35C
Th - 233
From ENDL863
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Protactinium – 233

ZAID=91233.50C
SOURCE: ENDF/B–V (MAT=1391, Tape 514)
REFERENCE: "Summary Documentation Isotope: 91–Pa–233,"
by F. M. Mann and C. R. Reich
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=91233.50C	NES=2915	T=300°K
ZAID=91233.51C	NES=637	T=300°K

Discrete Reaction

ZAID=91233.50D	NES=263	T=300°K
ZAID=91233.51D	NES=263	T=300°K

Multigroup

ZAID=91233.50M	30–Group	T=300°K

Isotope Information

Abundance=0.00%
Density=15.50334 gm/cm^3

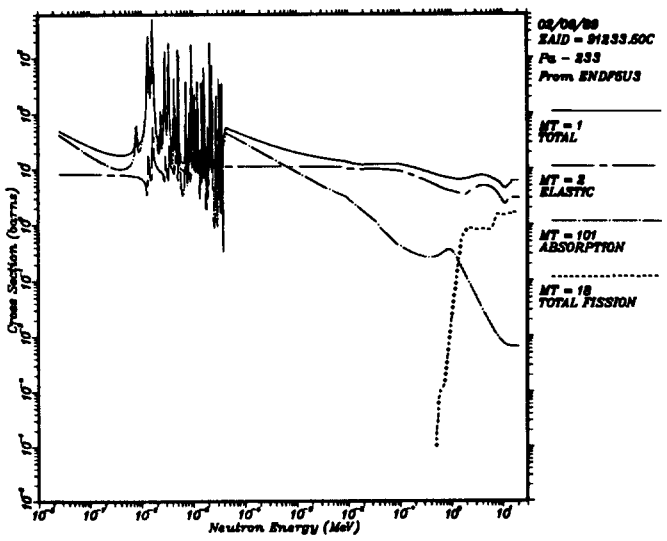
Evaluation Information

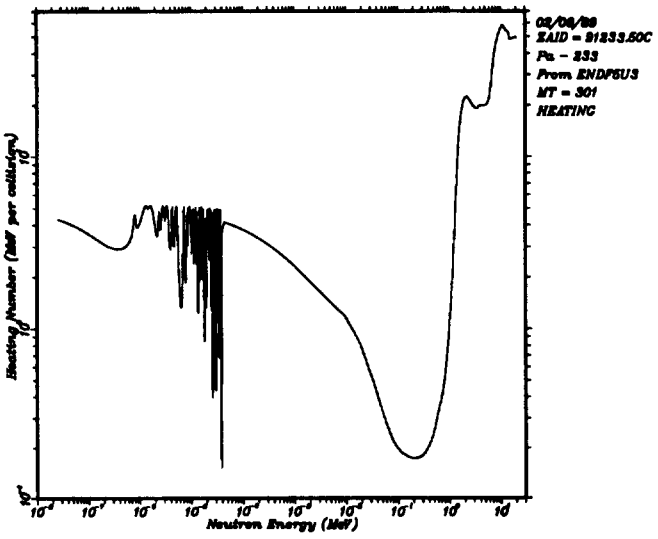
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

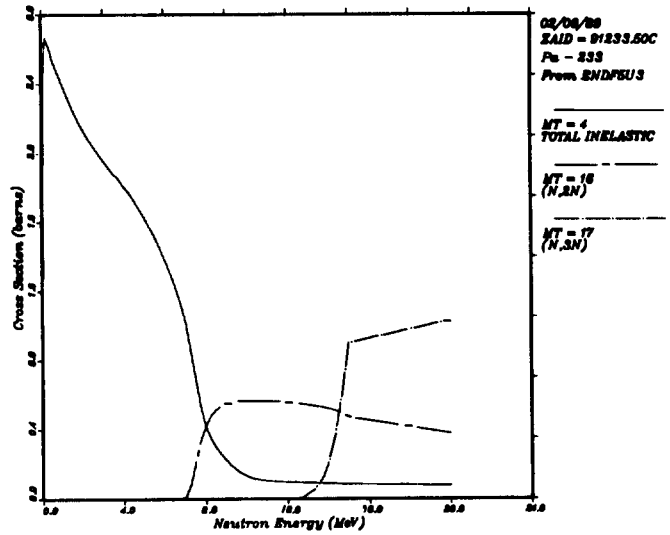
Reaction Information

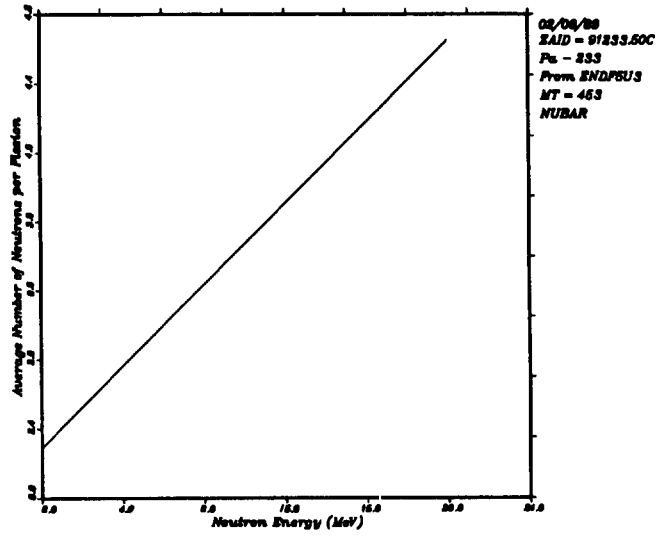
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.6844+00	2.0000+01	-6.6556+00	-6.6556+00
(n,3n)	17	1.2232+01	2.0000+01	-1.2179+01	-1.2179+01
fission	18	4.8000-01	2.0000+01	1.8910+02	1.8910+02
(n,n'1)	51	1.8781-02	2.0000+01	-1.8700-02	0.0000+00
(n,n'2)	52	5.7146-02	2.0000+01	-5.6900-02	0.0000+00
(n,n'3)	53	7.1508-02	2.0000+01	-7.1200-02	0.0000+00
(n,n'4)	54	8.7176-02	2.0000+01	-8.6800-02	0.0000+00
(n,n'5)	55	1.0445-01	2.0000+01	-1.0400-01	0.0000+00
(n,n'c)	91	2.0000-01	2.0000+01	-1.9914-01	-1.9914-01
(n,γ)	102	1.0000-11	2.0000+01	5.1970+00	5.1970+00

91233.50C


02/06/89
ZAID = 91233.50C
Pa - 233
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 91233.50C
Pa - 233
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 91233.50C
Pa - 233
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 91233.50C
Pa - 233
From ENDF6U3
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 233

ZAID=92233.50C
SOURCE: ENDF/B–V (MAT=1393, Tape 516)
REFERENCE: "Summary Documentation for ^{233}U,"
by L. Stewart, D. G. Madland, P. G. Young, L. Weston, G. de Saussure, F. Mann, and N. Steen
contained in ENDF–201

Data Availability

Continuous Energy

ZAID=92233.50C	NES=2293	T=300°K
ZAID=92233.51C	NES=732	T=300°K

Discrete Reaction

ZAID=92233.50D	NES=263	T=300°K

Multigroup

ZAID=92233.50M	30–Group	T=300°K

Isotope Information

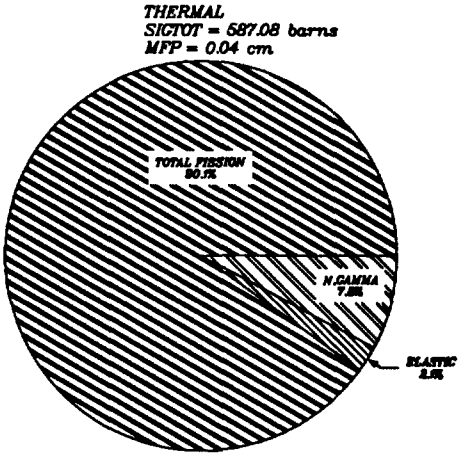
Abundance=0.00%
Density=18.6507 gm/cm^3

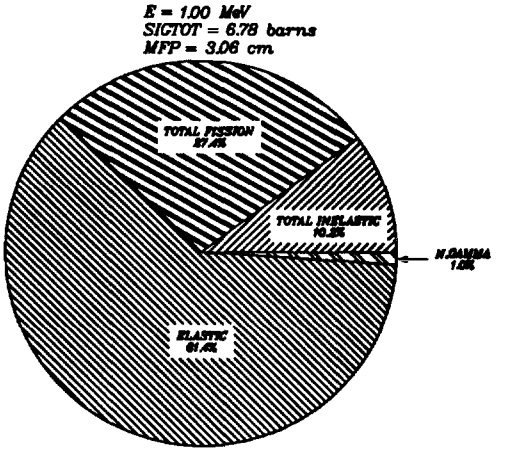
Evaluation Information

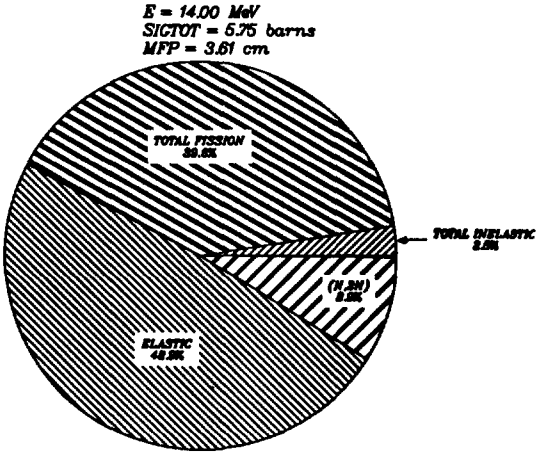
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

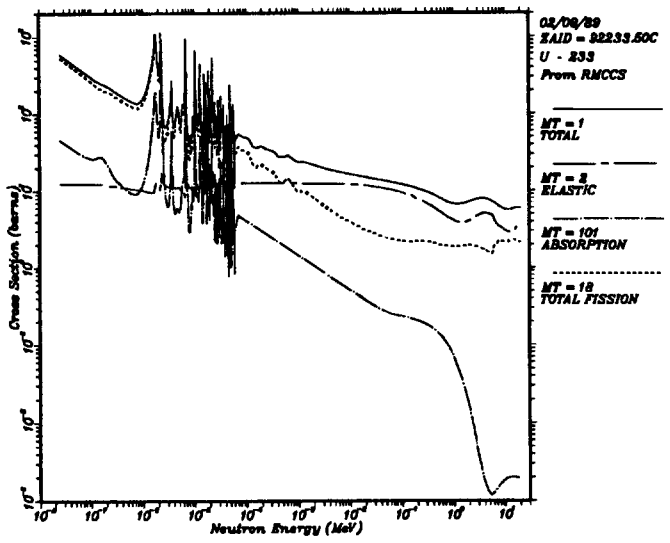
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	**2**	1.0000-11	2.0000+01		
(n,2n)	16	5.7669+00	2.0000+01	-5.7420+00	-5.7420+00
(n,3n)	17	1.3066+01	2.0000+01	-1.3010+01	-1.3010+01
fission	18	1.0000-11	2.0000+01	1.9129+02	1.9129+02
(n,n'1)	51	4.0525-02	2.0000+01	-4.0350-02	0.0000+00
(n,n'2)	52	9.2398-02	2.0000+01	-9.2000-02	0.0000+00
(n,n'3)	53	1.5768-01	2.0000+01	-1.5700-01	0.0000+00
(n,n'4)	54	2.3501-01	2.0000+01	-2.3400-01	0.0000+00
(n,n'c)	91	3.1325-01	2.0000+01	-3.1190-01	-3.1190-01
(n,γ)	102	1.0000-11	2.0000+01	6.8410+00	6.8410+00

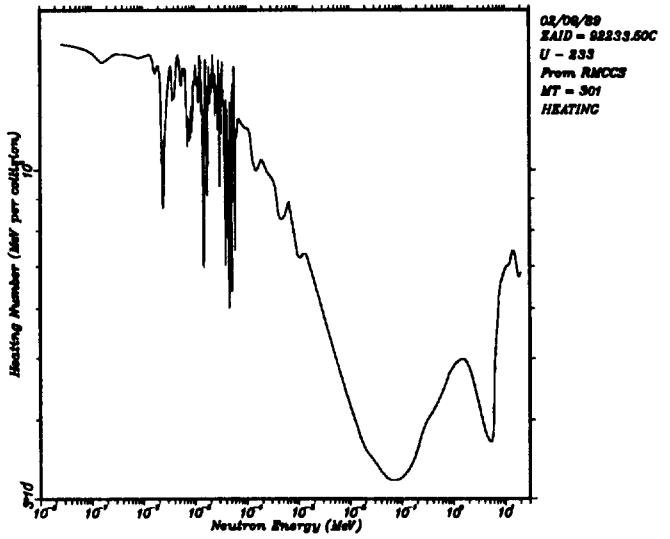


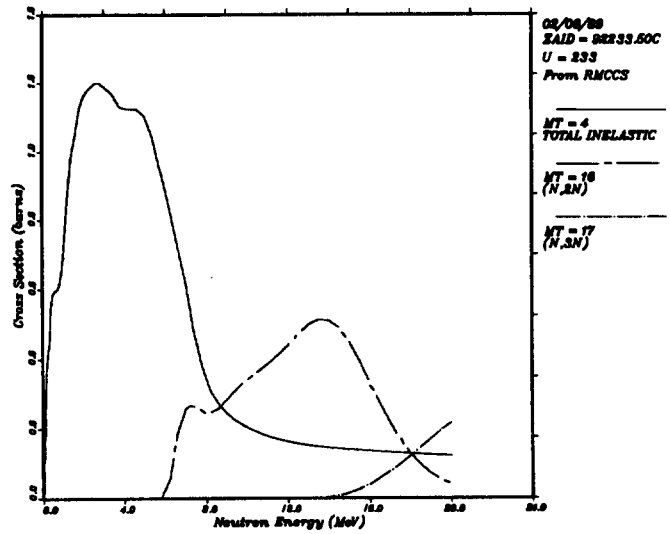


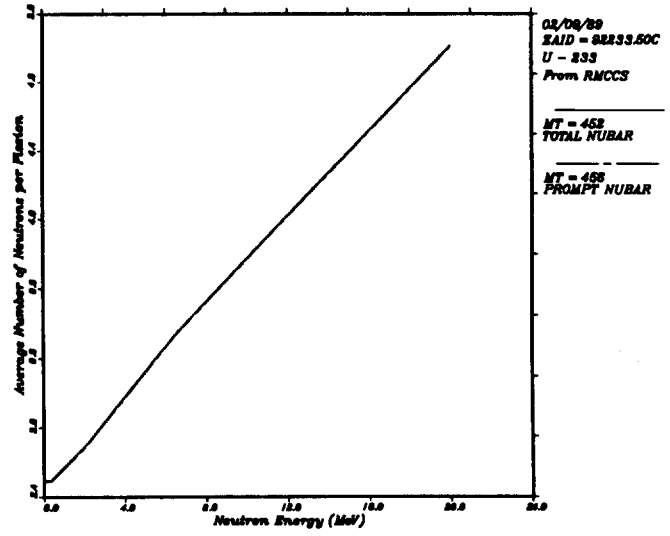


92233.50C


02/06/89
ZAID = 92233.50C
U - 233
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)

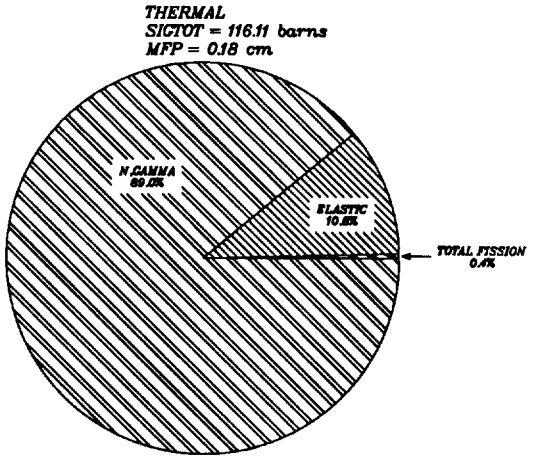

02/06/89
ZAID = 92233.50C
U - 233
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

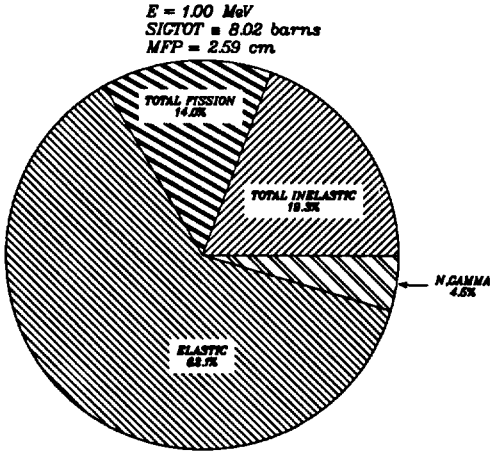

02/06/89
ZAID = 92233.50C
U - 233
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

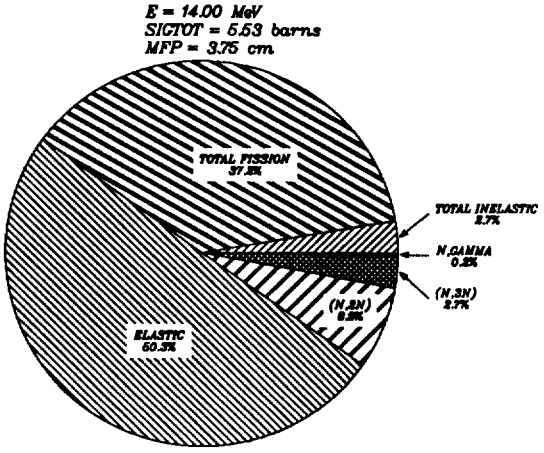

02/06/89
ZAID = 92233.50C
U - 233
From RMCCS
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 234

ZAID=92234.50C
SOURCE: ENDF/B-V (MAT=1394, Tape 514)
REFERENCE: "Summary Documentation Isotope: 92-U-234,"
by M. Divadeenam, F. M. Mann, R. E. Schenter, C. R. Reich, M. K. Drake, and P. F. Nichols
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=92234.50C	NES=12430	T=300°K
ZAID=92234.51C	NES=672	T=300°K

Discrete Reaction

ZAID=92234.50D	NES=263	T=300°K
ZAID=92234.51D	NES=263	T=300°K

Multigroup

ZAID=92234.50M	30-Group	T=300°K

Isotope Information

Abundance=0.0055%
Density=18.7308 gm/cm^3

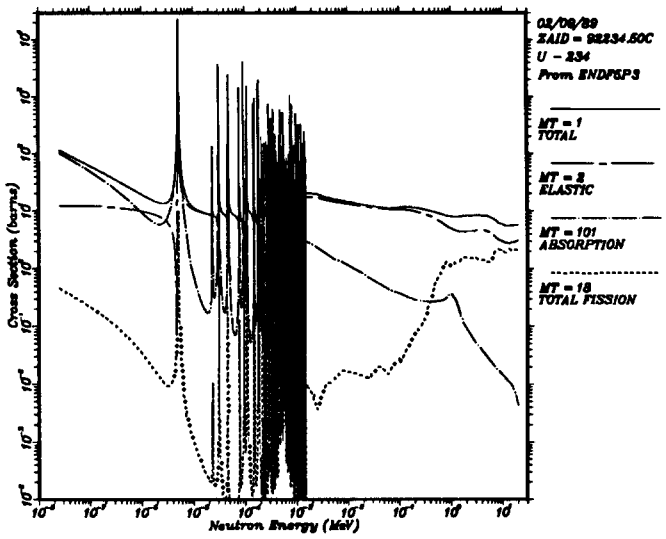
Evaluation Information

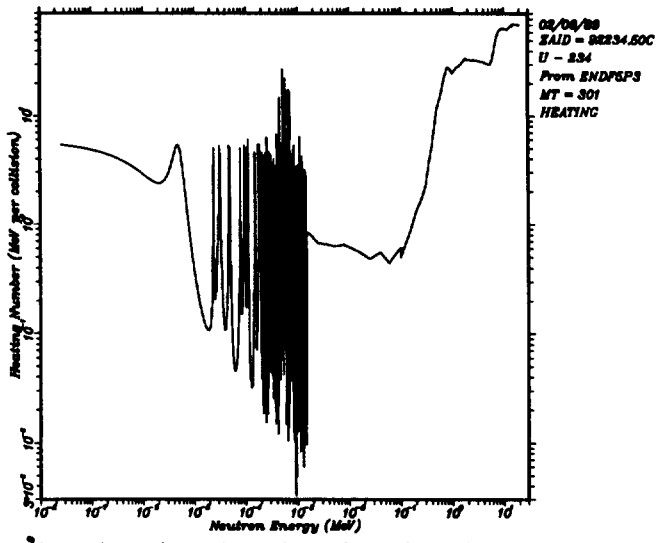
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

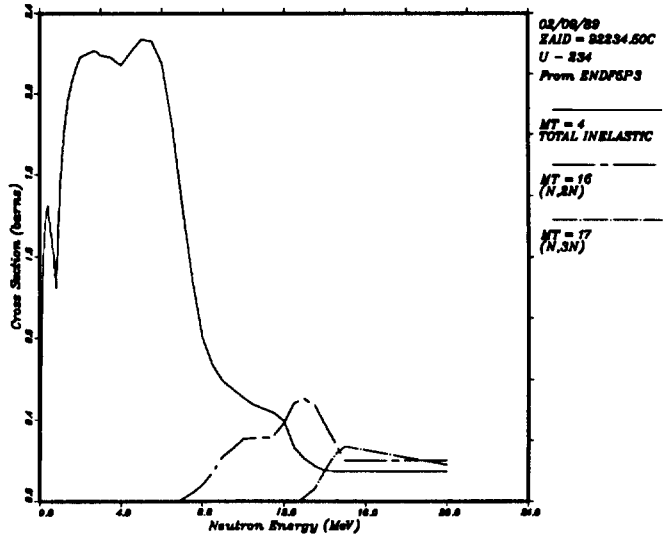
Reaction Information

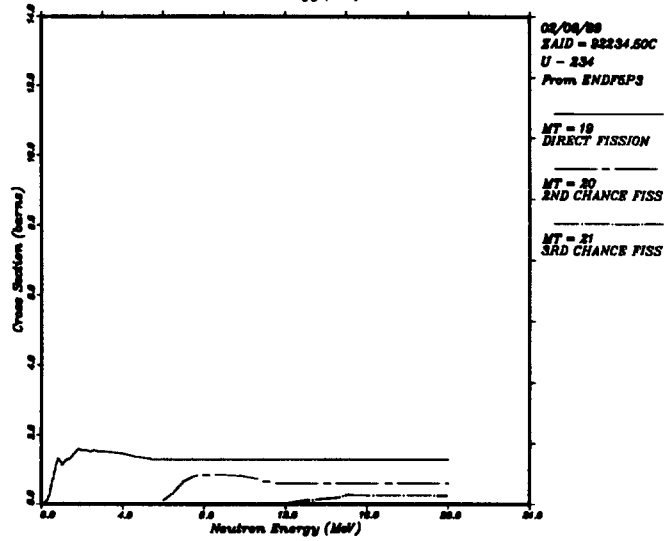
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.8002+00	2.0000+01	-6.7710+00	-6.7710+00
(n,3n)	17	1.2725+01	2.0000+01	-1.2670+01	-1.2670+01
(n,f)	19	1.0000-11	2.0000+01	1.9030+02	1.9030+02
(n,n'f)	20	5.5000+00	2.0000+01	1.9030+02	1.9030+02
(n,2nf)	21	1.1500+01	2.0000+01	2.0000+02	2.0000+02
(n,n'1)	51	4.4190-02	2.0000+01	-4.4000-02	0.0000+00
(n,n'2)	52	1.4462-01	2.0000+01	-1.4400-01	0.0000+00
(n,n'3)	53	2.9828-01	2.0000+01	-2.9700-01	0.0000+00
(n,n'4)	54	8.0345-01	2.0000+01	-8.0000-01	0.0000+00
(n,n'5)	55	9.4907-01	2.0000+01	-9.4500-01	0.0000+00
(n,n'6)	56	1.0395+00	2.0000+01	-1.0350+00	0.0000+00
(n,n'c)	91	8.9886-01	2.0000+01	-8.9500-01	-8.9500-01
(n,γ)	102	1.0000-11	2.0000+01	5.2970+00	5.2970+00

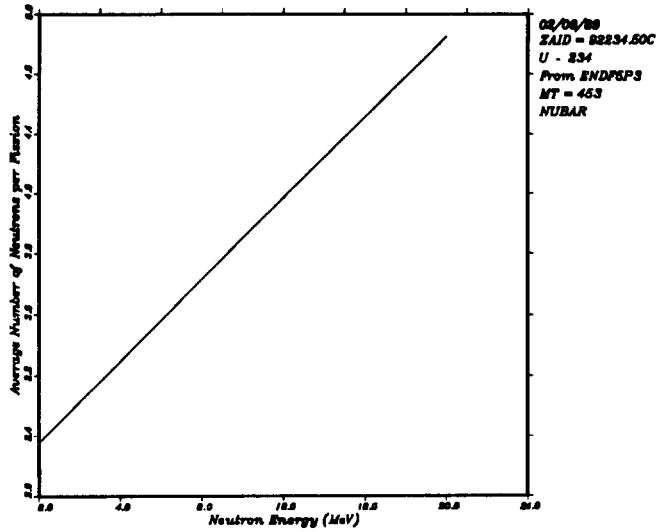
92234.50C


02/06/89
ZAID = 92234.50C
U - 234
From ENDF5P3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92234.50C
U - 234
From ENDF5P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 92234.50C
U - 234
From ENDF5P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92234.50C
U - 234
From ENDF5P3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
MT = 21
3RD CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92234.50C
U - 234
From ENDF5P3
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 235

ZAID=92235.50C
SOURCE: ENDF/B-V (MAT=1395, Tape 511)
REFERENCE: "Summary Documentation for ^{235}U,"
by M. R. Bhat, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=92235.50C	NES=5725	T=300°K
ZAID=92235.51C	NES=1392	T=300°K
ZAID=92235.53C	NES=2685	T=600°K
ZAID=92235.54C	NES=2671	T=900°K
ZAID=92235.56C	NES=1729	T=12000°K
ZAID=92235.57C	NES=1319	T=120000°K
ZAID=92235.58C	NES=1038	T=1200000°K
ZAID=92235.59C	NES=968	T=12000000°K

Discrete Reaction

ZAID=92235.50D	NES=263	T=300°K

Multigroup

ZAID=92235.50M	30-Group	T=300°K

Isotope Information

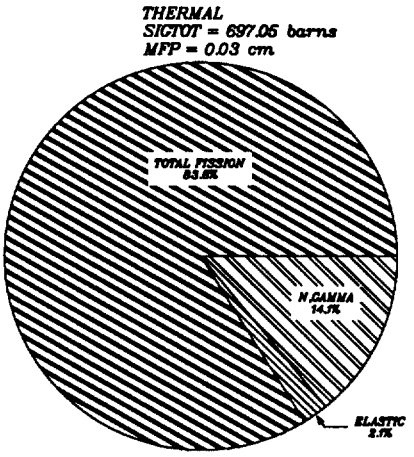
Abundance=0.7200%
Density=18.811 gm/cm^3

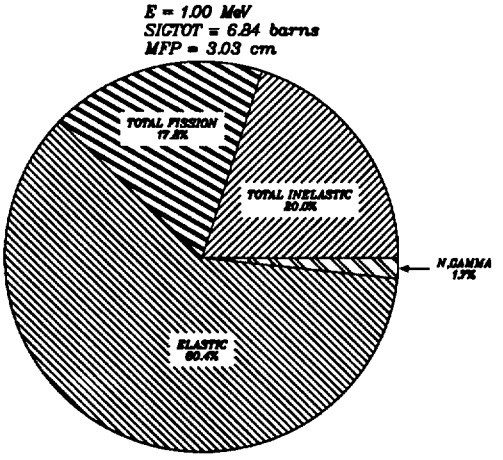
Evaluation Information

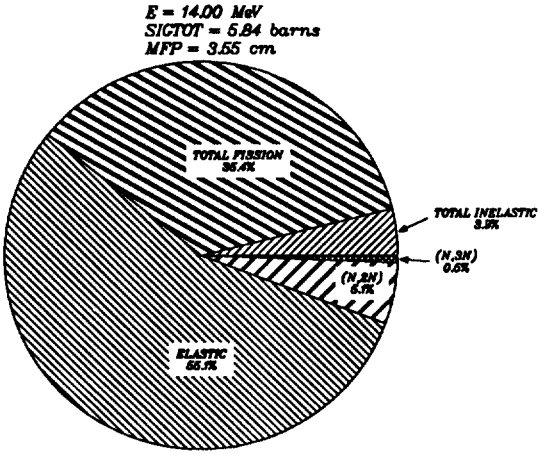
Photon-Production Data - Yes
Heating Numbers - Local
Energy Range - 10^{-11} to 20 MeV

Reaction Information

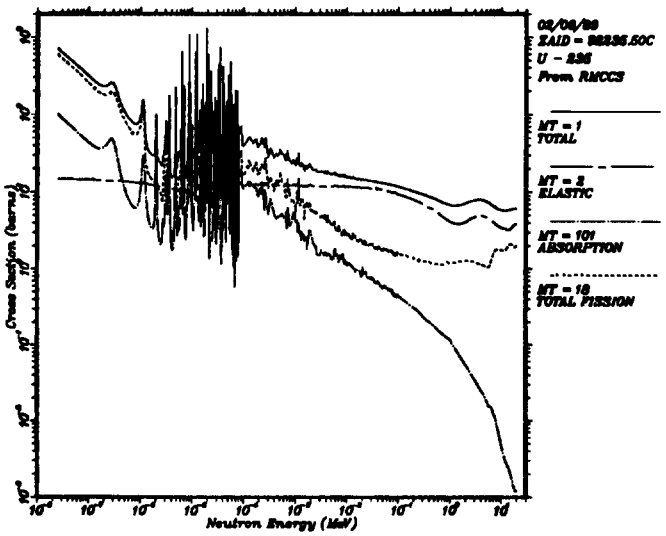
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.3288+00	2.0000+01	-5.3060+00	-5.3060+00
(n,3n)	17	1.2199+01	2.0000+01	-1.2147+01	-1.2147+01
(n,f)	19	1.0000-11	2.0000+01	1.9402+02	1.9402+02
(n,n'f)	20	5.5000+00	2.0000+01	1.9402+02	1.9402+02
(n,2nf)	21	1.2200+01	2.0000+01	1.9402+02	1.9402+02
(n,n'1)	51	1.3056-02	2.0000+01	-1.3000-02	0.0000+00
(n,n'2)	52	4.9813-02	2.0000+01	-4.9600-02	0.0000+00
(n,n'3)	53	8.3959-02	2.0000+01	-8.3600-02	0.0000+00
(n,n'4)	54	1.0294-01	2.0000+01	-1.0250-01	0.0000+00
(n,n'5)	55	1.4984-01	2.0000+01	-1.4920-01	0.0000+00
(n,n'6)	56	1.7274-01	2.0000+01	-1.7200-01	0.0000+00
(n,n'7)	57	2.3500-01	2.0000+01	-2.3400-01	0.0000+00
(n,n'8)	58	2.6915-01	2.0000+01	-2.6800-01	0.0000+00
(n,n'9)	59	3.9971-01	2.0000+01	-3.9800-01	0.0000+00
(n,n'10)	60	5.9956-01	2.0000+01	-5.9700-01	0.0000+00
(n,n'11)	61	1.0000+00	2.0000+01	-9.9576-01	0.0000+00
(n,n'12)	62	2.0000+00	2.0000+01	-1.9915+00	0.0000+00
(n,n'13)	63	3.0001+00	2.0000+01	-2.9873+00	0.0000+00
(n,n'14)	64	4.0001+00	2.0000+01	-3.9830+00	0.0000+00
(n,n'15)	65	5.0002+00	2.0000+01	-4.9788+00	0.0000+00
(n,n'16)	66	6.0002+00	2.0000+01	-5.9746+00	0.0000+00
(n,n'c)	91	9.5000-01	2.0000+01	-9.4594-01	-9.4594-01
(n,γ)	102	1.0000-11	2.0000+01	6.5451+00	6.5451+00

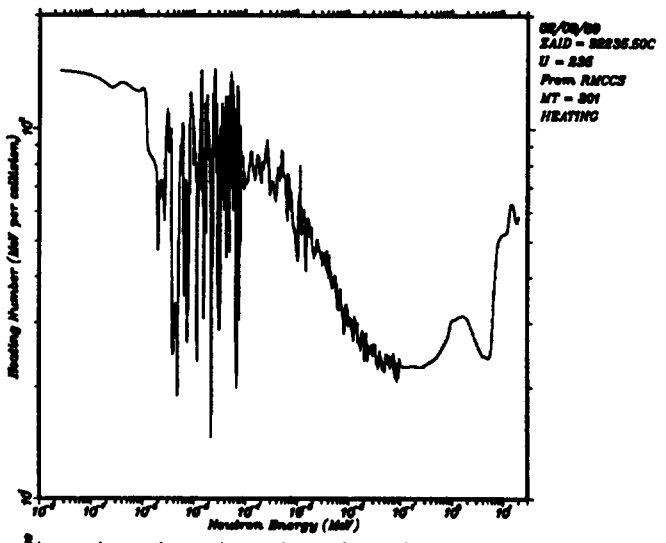


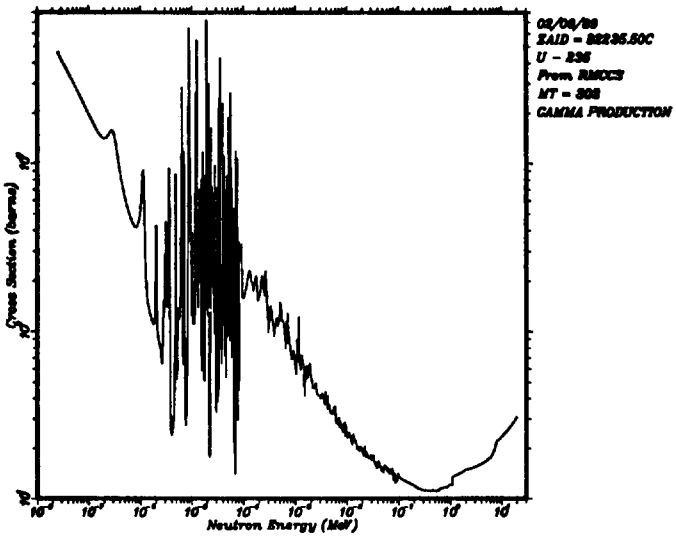


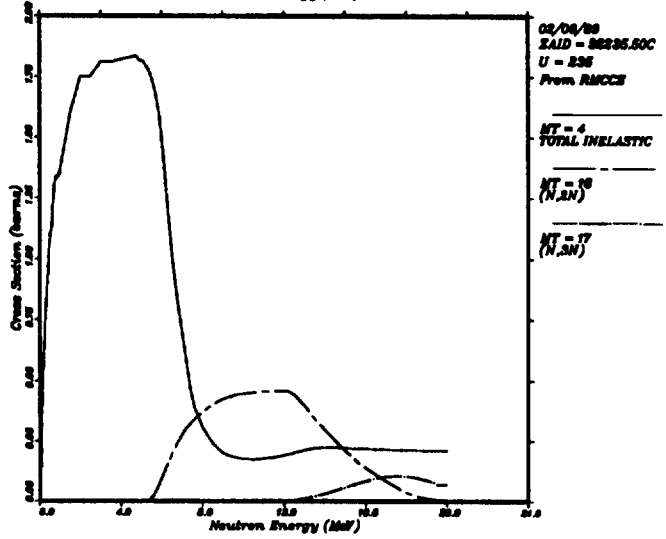


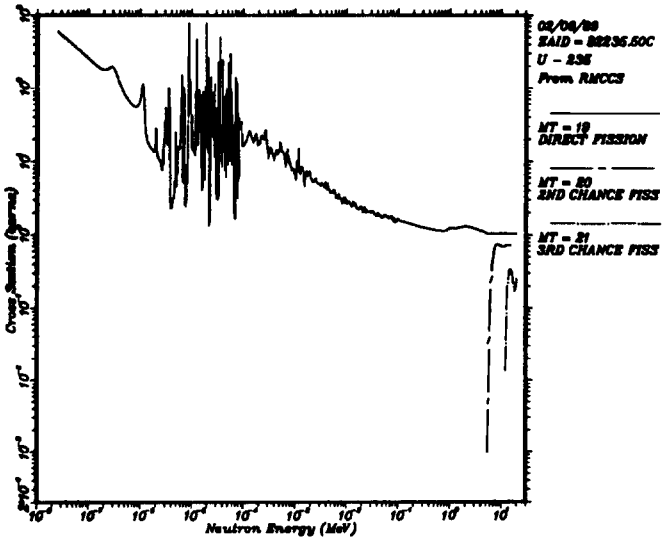
92235.50C

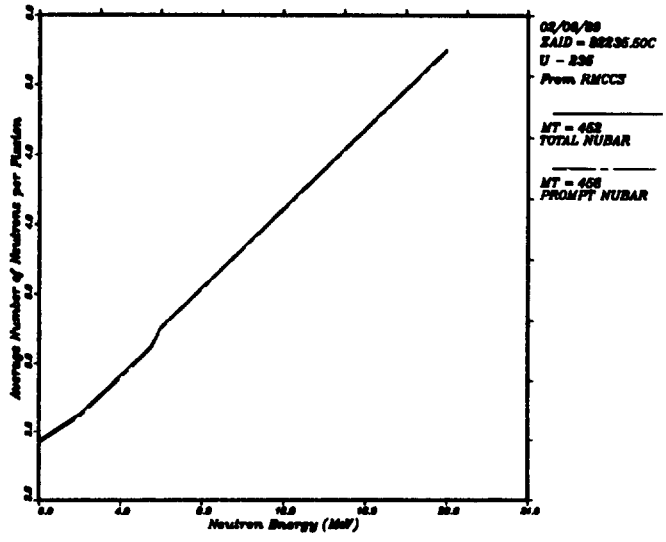

02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

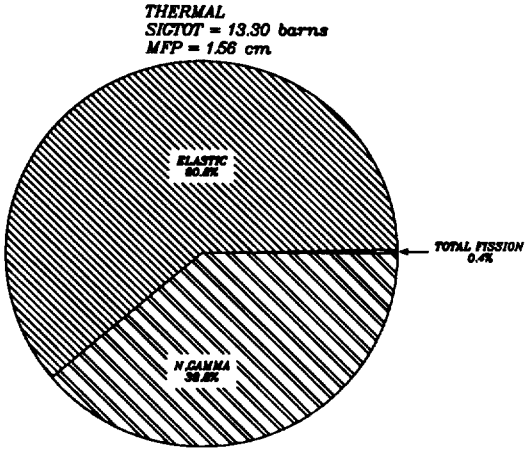

02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

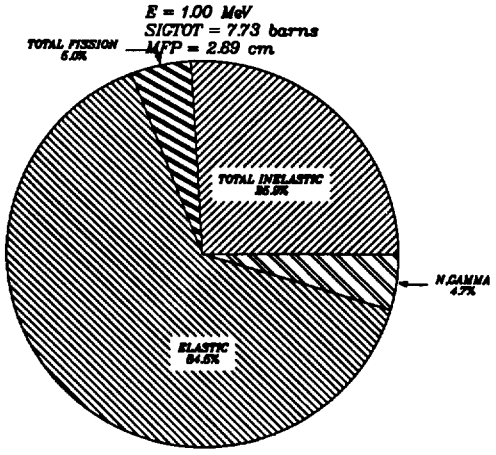

02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
MT = 21
3RD CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)

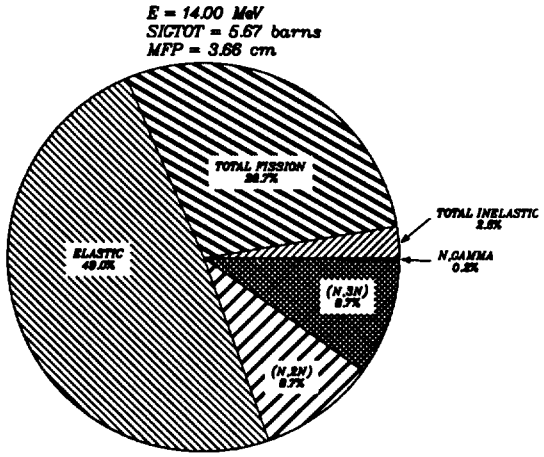

02/06/99
ZAID = 92235.50C
U - 235
From RMCCS
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 236

ZAID=92236.50C
SOURCE: ENDF/B-V (MAT=1396, Tape 514)
REFERENCE: "Summary Documentation Isotope: 92–U–236,"
by M. Divadeenam, F. M. Mann, R. E. Schenter, C. R. Reich, J. McCrosson
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=92236.50C	NES=19473	T=300°K
ZAID=92236.51C	NES=800	T=300°K

Discrete Reaction

ZAID=92236.50D	NES=263	T=300°K
ZAID=92236.51D	NES=263	T=300°K

Multigroup

ZAID=92236.50M	30–Group	T=300°K

Isotope Information

Abundance=0.00%
Density=18.89127 gm/cm^3

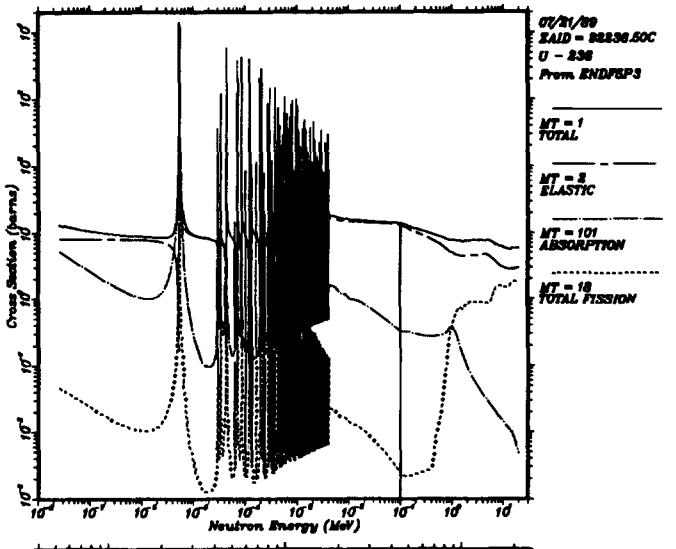
Evaluation Information

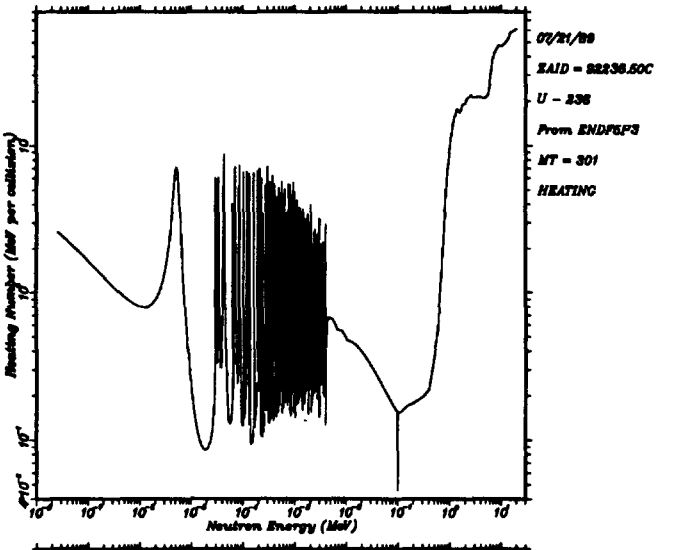
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

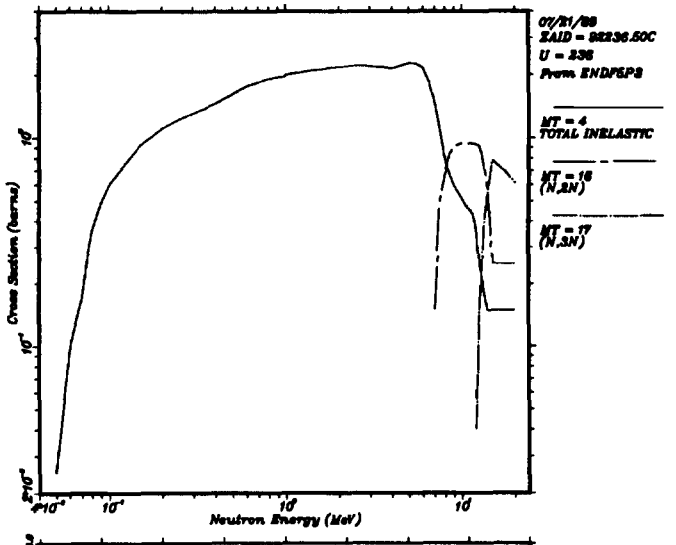
Reaction Information

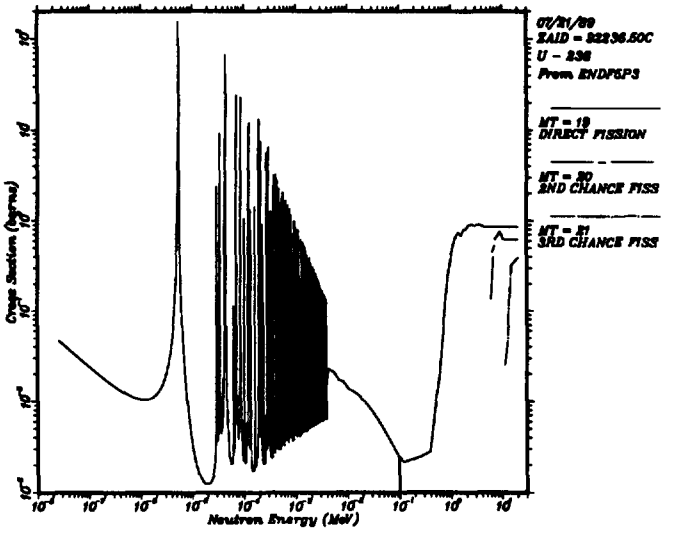
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.9399+00	2.0000+01	-6.9104+00	-6.9104+00
(n,3n)	17	1.1690+01	2.0000+01	-1.1640+01	-1.1640+01
(n,f)	19	1.0000-11	2.0000+01	1.9280+02	1.9280+02
(n,n'f)	20	5.5000+00	2.0000+01	1.9280+02	1.9280+02
(n,2nf)	21	1.1000+01	2.0000+01	2.0000+02	2.0000+02
(n,n'1)	51	4.5473-02	2.0000+01	-4.5280-02	0.0000+00
(n,n'2)	52	1.4662-01	2.0000+01	-1.4600-01	0.0000+00
(n,n'3)	53	2.9927-01	2.0000+01	-2.9800-01	0.0000+00
(n,n'4)	54	6.9797-01	2.0000+01	-6.9500-01	0.0000+00
(n,n'5)	55	9.8419-01	2.0000+01	-9.8000-01	0.0000+00
(n,n'6)	56	1.0645+00	2.0000+01	-1.0600+00	0.0000+00
(n,n'c)	91	8.9882-01	2.0000+01	-8.9500-01	-8.9500-01
(n,γ)	102	1.0000-11	2.0000+01	5.1244+00	5.1244+00

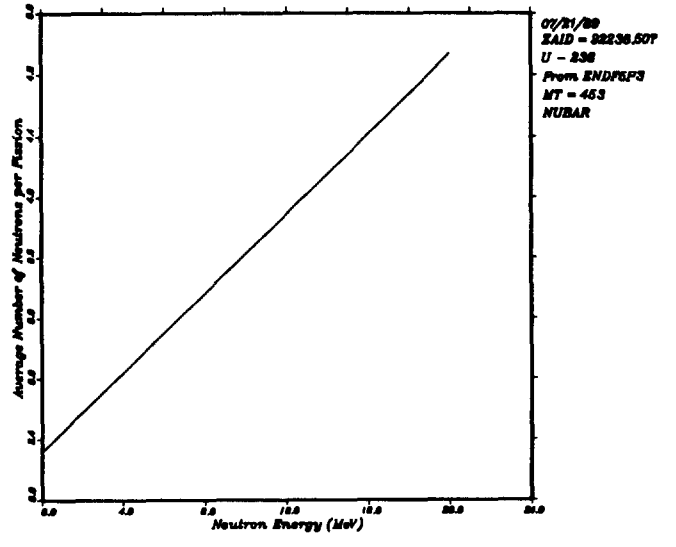
92236.50C


07/21/89
ZAID = 92236.50C
U - 236
From ENDF&FP3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


07/21/89
ZAID = 92236.50C
U - 236
From ENDF&FP3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


07/21/89
ZAID = 92236.50C
U - 236
From ENDF&FP3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


07/21/89
ZAID = 92236.50C
U - 236
From ENDF&FP3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
MT = 21
3RD CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


07/21/89
ZAID = 92236.50T
U - 236
From ENDF&FP3
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 237

ZAID=92237.50C

SOURCE: ENDF/B-V (MAT=8237, Tape 521)

REFERENCE: File 1 information on ENDF/B-V Actinide Special Purpose Tape 521
by R. Benjamin, J. McCrosson, R. Howerton, and R. Kinsey

Data Availability

Continuous Energy

ZAID=92237.50C	NES=3293	T=300°K
ZAID=92237.51C	NES=527	T=300°K

Discrete Reaction

ZAID=92237.50D	NES=263	T=300°K
ZAID=92237.51D	NES=263	T=300°K

Multigroup

ZAID=92237.50M	30-Group	T=300°K

Isotope Information

Abundance=0.00%

Density=18.97155 gm/cm^3

Evaluation Information

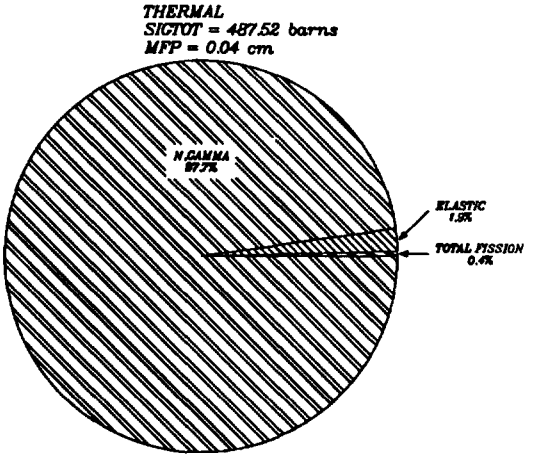
Photon-Production Data – Yes

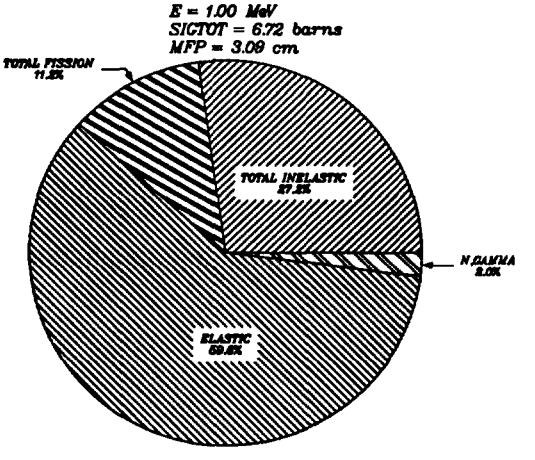
Heating Numbers – Local

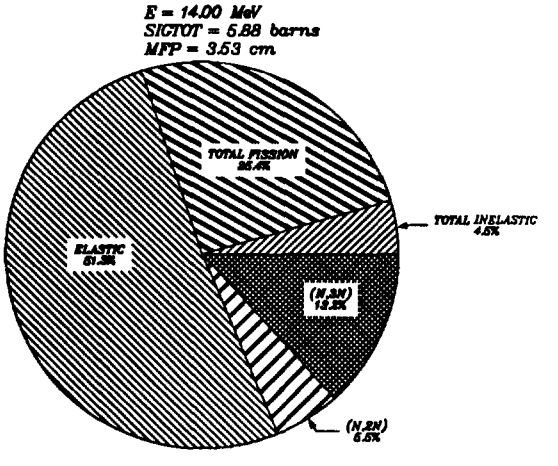
Energy Range – 10^{-11} to 20 MeV

Reaction Information

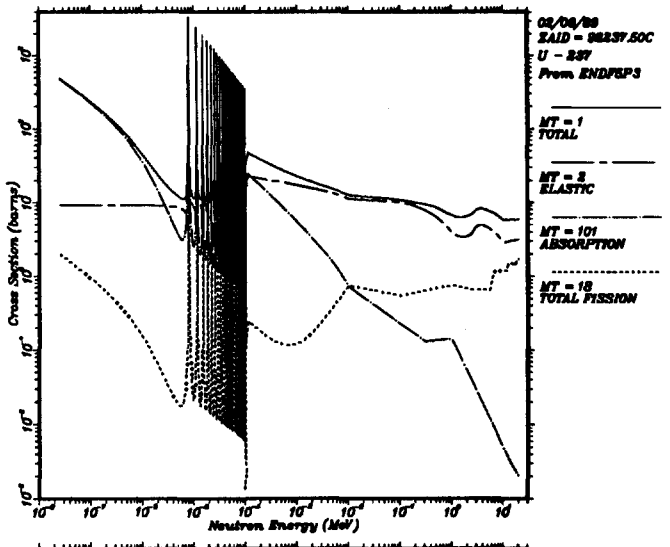
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.1500+00	2.0000+01	-5.1200+00	-5.1200+00
(n,3n)	17	1.1720+01	2.0000+01	-1.1670+01	-1.1670+01
fission	18	1.0000-11	2.0000+01	1.8000+02	1.8000+02
(n,n'c)	91	2.0000-02	2.0000+01	-1.9915-02	-1.9915-02
(n,γ)	102	1.0000-11	2.0000+01	6.1400+00	6.1400+00

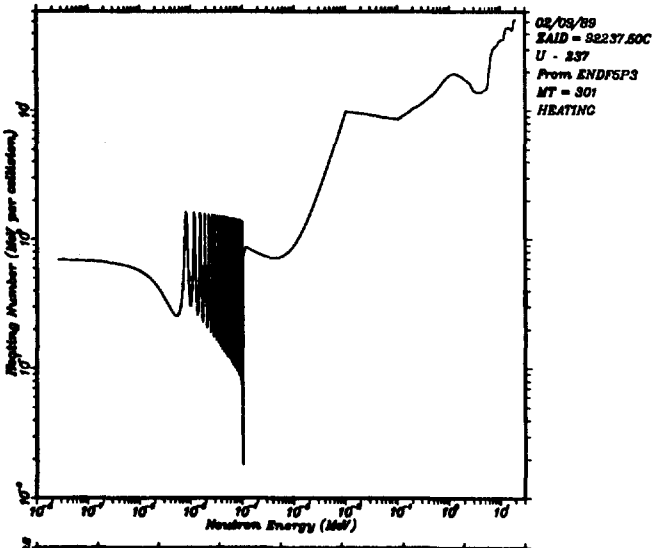


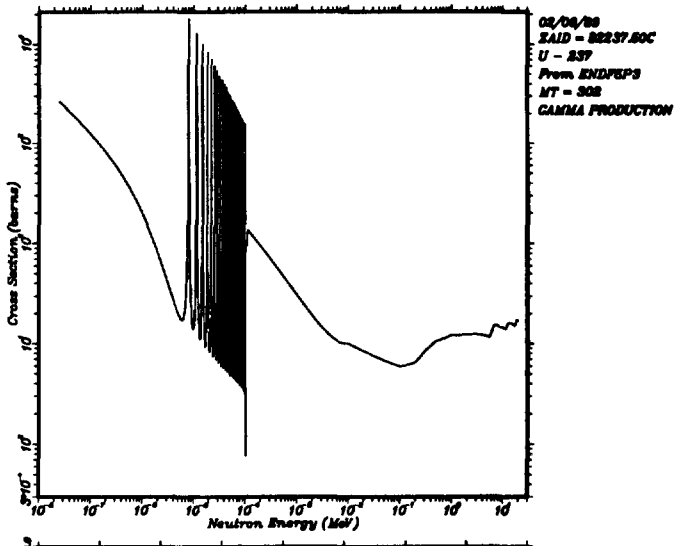


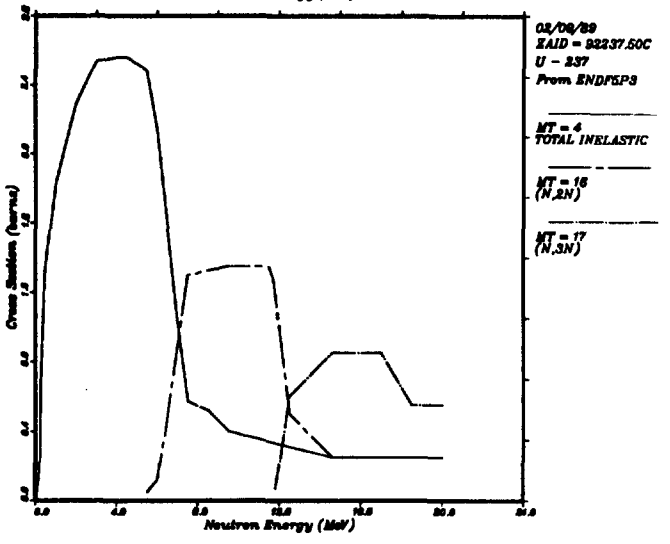


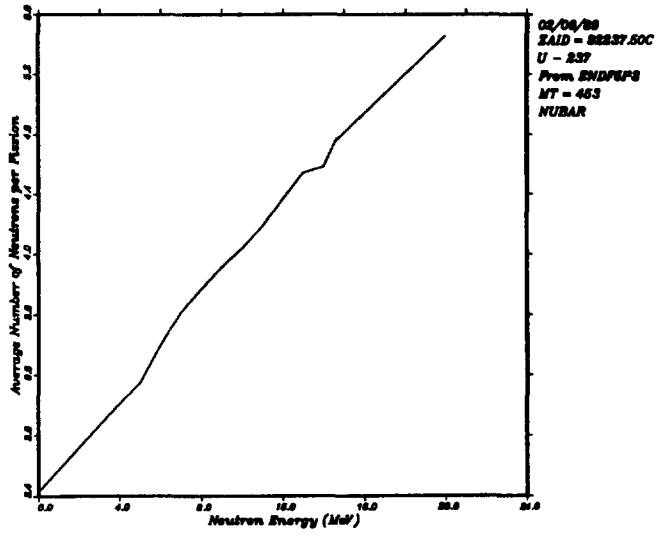
92237.50C


02/09/89
ZAID = 92237.50C
U - 237
From ENDF6P3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/09/89
ZAID = 92237.50C
U - 237
From ENDF6P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/09/89
ZAID = 92237.50C
U - 237
From ENDF6P3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/09/89
ZAID = 92237.50C
U - 237
From ENDF6P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/09/89
ZAID = 92237.50C
U - 237
From ENDF6P3
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 238

ZAID=92238.50C
SOURCE: ENDF/B-V (MAT=1398, Tape 516)
REFERENCE: "Summary Documentation for ENDF/B-V ^{238}U (MAT=1398),"
by E. M. Pennington, A. B. Smith, and W. Poenitz, contained in ENDF-201

Data Availability

Continuous Energy

ZAID=92238.50C	NES=9285	T=300°K
ZAID=92238.51C	NES=1171	T=300°K
ZAID=92238.53C	NES=17876	T=600°K
ZAID=92238.54C	NES=17984	T=900°K
ZAID=92238.56C	NES=8176	T=12000°K
ZAID=92238.57C	NES=3768	T=120000°K
ZAID=92238.58C	NES=1344	T=1200000°K
ZAID=92238.59C	NES=627	T=12000000°K

Discrete Reaction

ZAID=92238.50D	NES=263	T=300°K

Multigroup

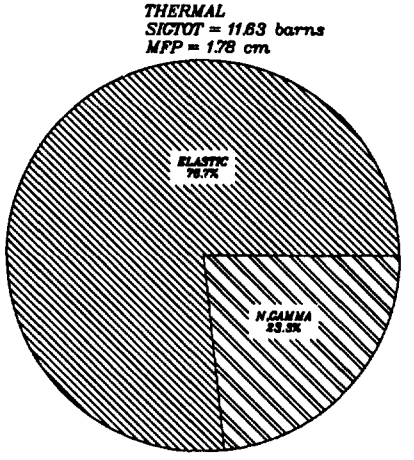
ZAID=92238.50M	30-Group	T=300°K
ZAID=92238.00M	187-Group	T=300°K

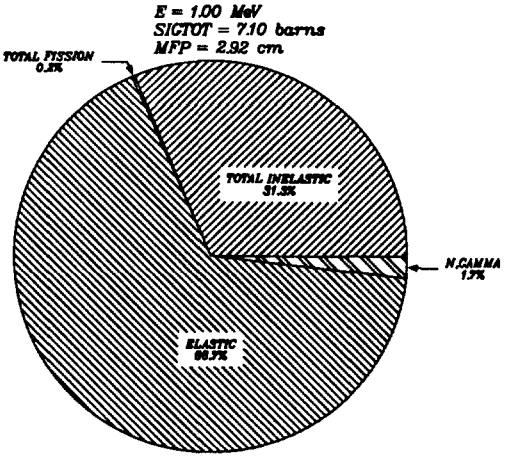
Isotope Information

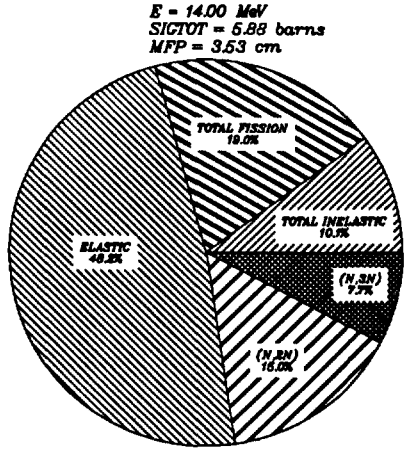
Abundance=99.2746%
Density=19.05 gm/cm^3

Evaluation Information

Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV



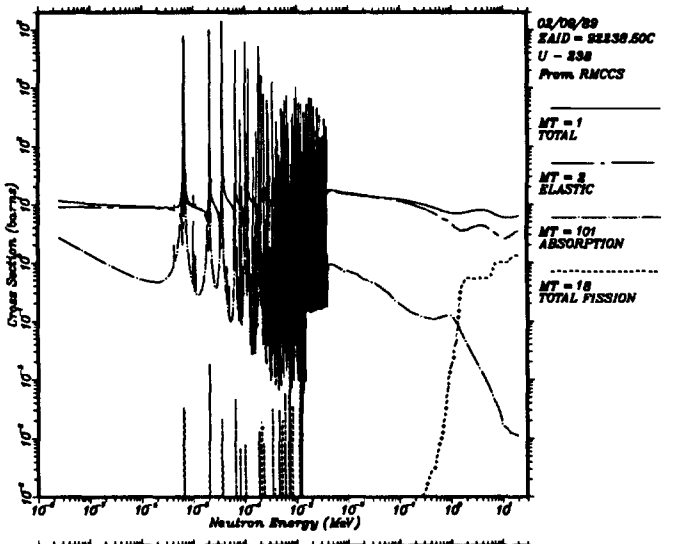


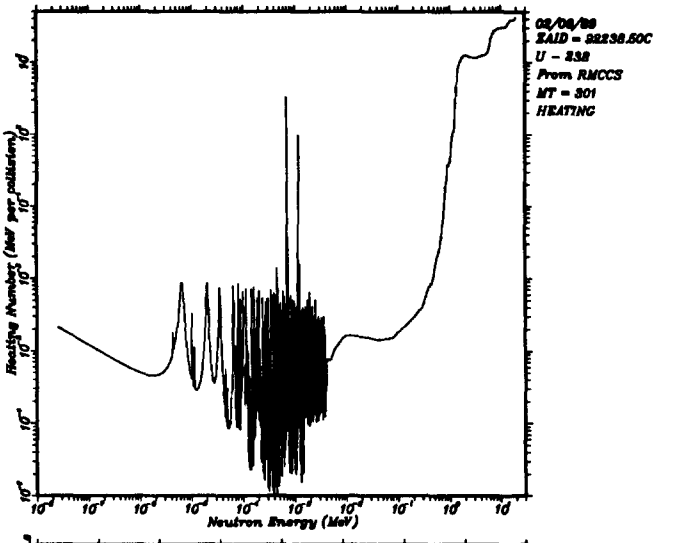


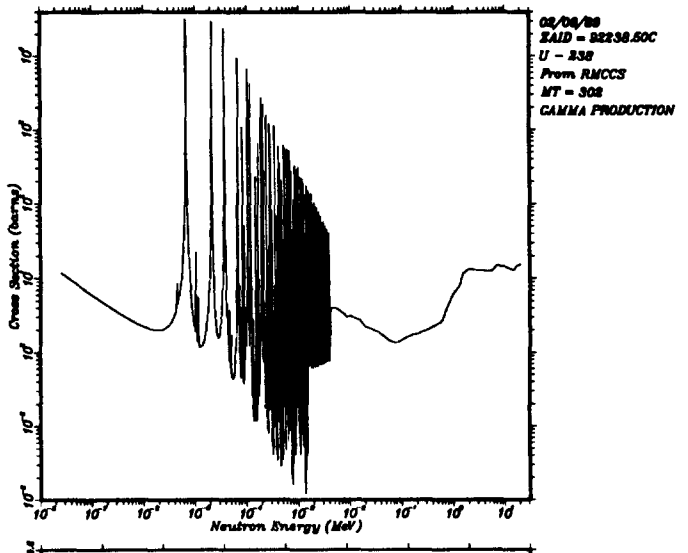
Reaction Information

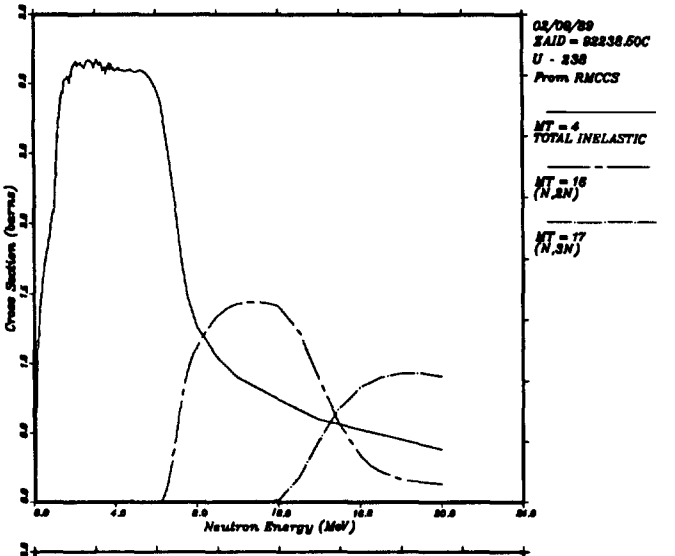
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.1700+00	2.0000+01	-6.1440+00	-6.1440+00
(n,3n)	17	1.1317+01	2.0000+01	-1.1269+01	-1.1269+01
(n,f)	19	1.0000-11	2.0000+01	1.9812+02	1.9812+02
(n,n'f)	20	5.0000+00	2.0000+01	1.9812+02	1.9812+02
(n,2nf)	21	1.2000+01	2.0000+01	1.9812+02	1.9812+02
(n,3nf)	38	1.8000+01	2.0000+01	1.9812+02	1.9812+02
(n,n'1)	51	4.5191-02	2.0000+01	-4.5000-02	0.0000+00
(n,n'2)	52	1.4903-01	2.0000+01	-1.4840-01	0.0000+00
(n,n'3)	53	3.0931-01	2.0000+01	-3.0800-01	0.0000+00
(n,n'4)	54	6.8288-01	2.0000+01	-6.8000-01	0.0000+00
(n,n'5)	55	7.3510-01	2.0000+01	-7.3200-01	0.0000+00
(n,n'6)	56	8.3050-01	2.0000+01	-8.2700-01	0.0000+00
(n,n'7)	57	9.6909-01	2.0000+01	-9.6500-01	0.0000+00
(n,n'8)	58	1.0524+00	2.0000+01	-1.0480+00	0.0000+00
(n,n'9)	59	1.1750+00	2.0000+01	-1.1700+00	0.0000+00
(n,n'10)	60	1.2553+00	2.0000+01	-1.2500+00	0.0000+00
(n,n'11)	61	1.4461+00	2.0000+01	-1.4400+00	0.0000+00
(n,n'12)	62	1.5967+00	2.0000+01	-1.5900+00	0.0000+00
(n,n'13)	63	1.7574+00	2.0000+01	-1.7500+00	0.0000+00
(n,n'14)	64	1.8578+00	2.0000+01	-1.8500+00	0.0000+00
(n,n'15)	65	1.9583+00	2.0000+01	-1.9500+00	0.0000+00
(n,n'16)	66	2.1591+00	2.0000+01	-2.1500+00	0.0000+00
(n,n'17)	67	2.3098+00	2.0000+01	-2.3000+00	0.0000+00
(n,n'18)	68	2.4001+00	2.0000+01	-2.3900+00	0.0000+00
(n,n'19)	69	2.5034+00	2.0000+01	-2.4928+00	0.0000+00
(n,n'20)	70	2.9525+00	2.0000+01	-2.9400+00	0.0000+00
(n,n'21)	71	3.2025+00	2.0000+01	-3.1890+00	0.0000+00
(n,n'22)	72	3.4024+00	2.0000+01	-3.3880+00	0.0000+00
(n,n'23)	73	3.5530+00	2.0000+01	-3.5380+00	0.0000+00
(n,n'24)	74	3.6524+00	2.0000+01	-3.6370+00	0.0000+00
(n,n'25)	75	3.7528+00	2.0000+01	-3.7370+00	0.0000+00
(n,n'26)	76	3.8533+00	2.0000+01	-3.8370+00	0.0000+00
(n,n'27)	77	3.9256+00	2.0000+01	-3.9090+00	0.0000+00
(n,n'c)	91	2.5001+00	2.0000+01	-2.4895+00	-2.4895+00
(n,γ)	102	1.0000-11	2.0000+01	4.8044+00	4.8044+00

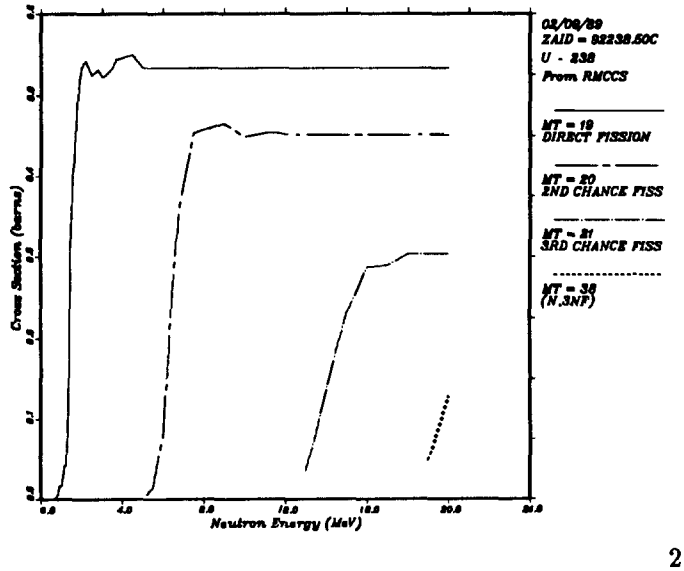
92238.50C

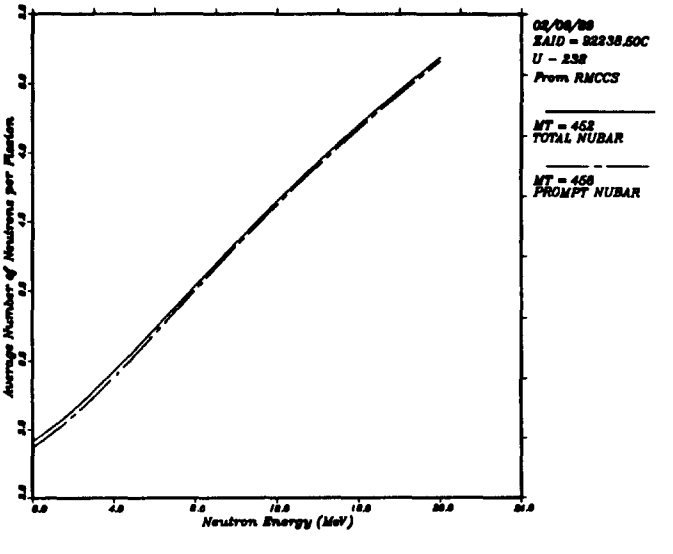

02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
MT = 21
3RD CHANCE FISS
MT = 38
(N,3NF)
Cross Section (barns)
Neutron Energy (MeV)


02/06/89
ZAID = 92238.50C
U - 238
From RMCCS
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 239

ZAID=92239.35C

SOURCE: ENDL–85 (ZA=92239 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=92239.35C	NES=394	T=0°K

Discrete Reaction

ZAID=92239.35D	NES=263	T=0°K

Multigroup

ZAID=92239.35M	30–Group	T=0°K

Isotope Information

Abundance=Nonnatural

Density=19.13206 gm/cm^3

Evaluation Information

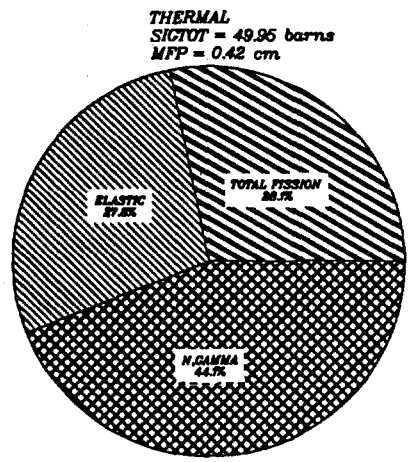
Photon-Production Data – Yes

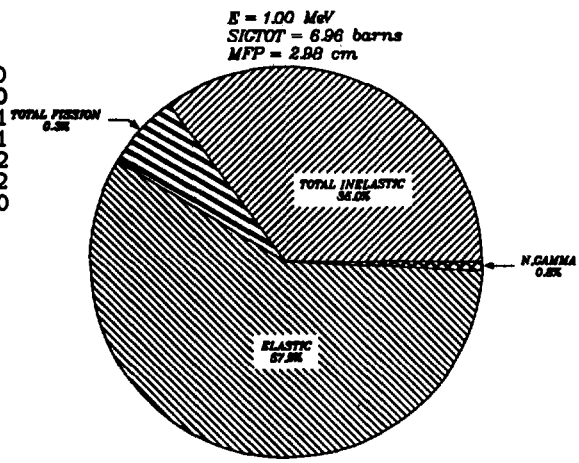
Heating Numbers – Local

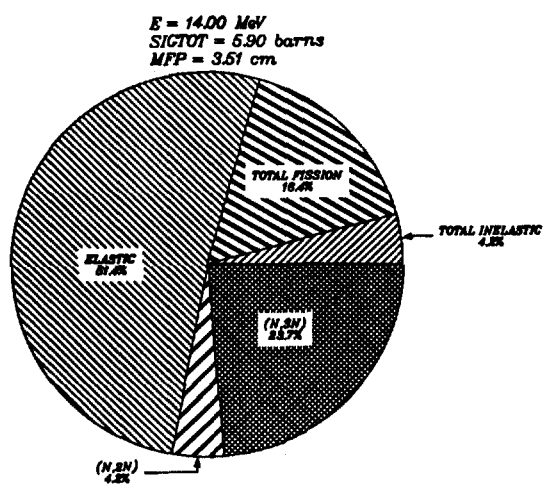
Energy Range – 10^{-10} to 20 MeV

Reaction Information

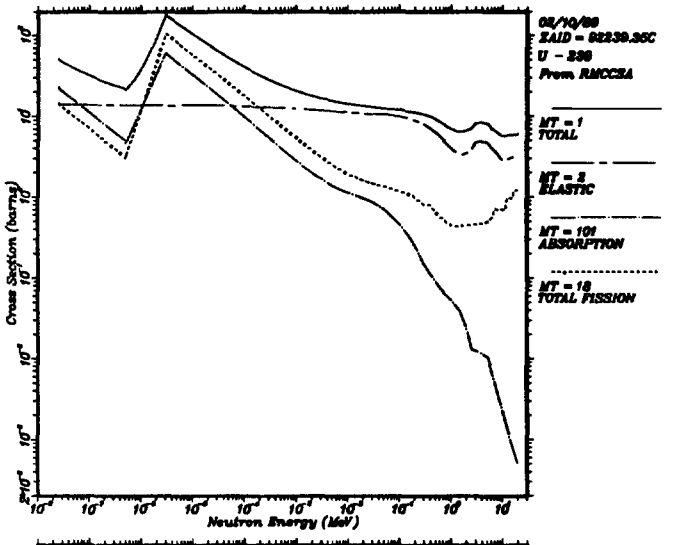
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	4.8203+00	2.0000+01	-4.8000+00	-4.8000+00
(n,3n)	17	1.0996+01	2.0000+01	-1.0950+01	-1.0950+01
(n,4n)	37	1.6138+01	2.0000+01	-1.6070+01	-1.6070+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.8419+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	5.9300+00	5.9300+00

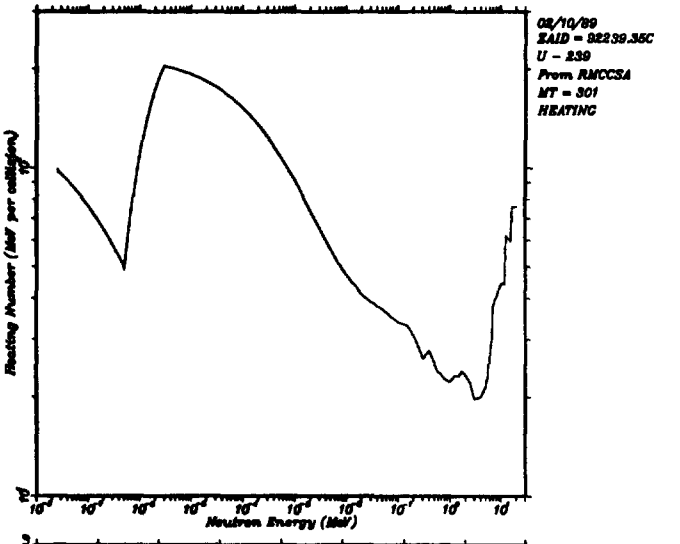


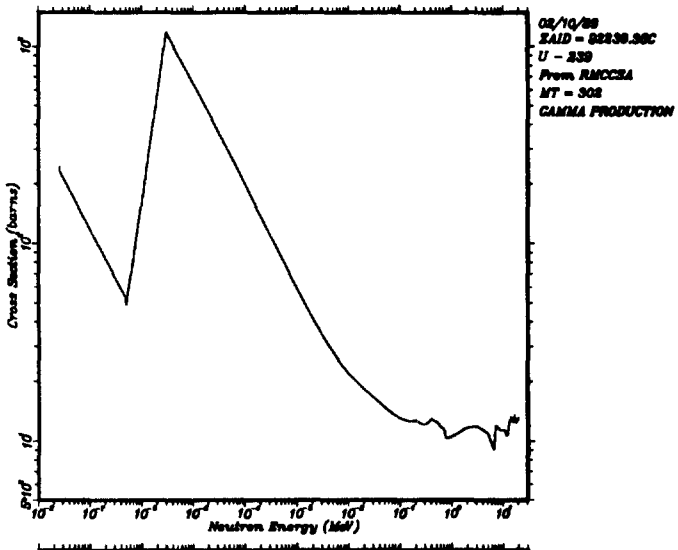


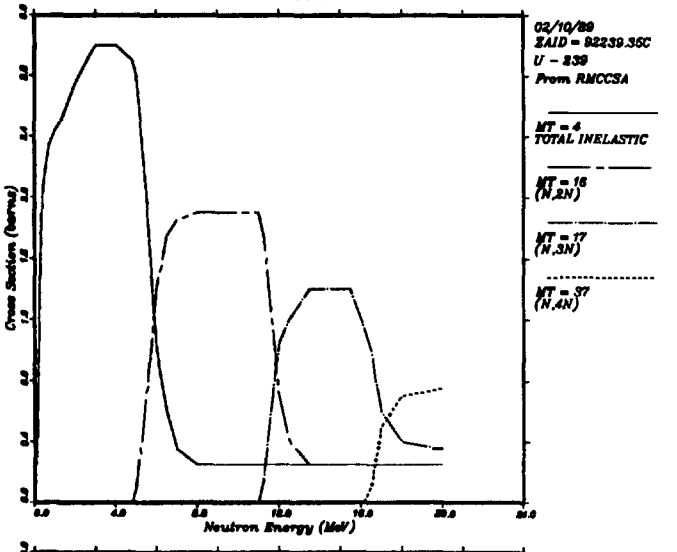


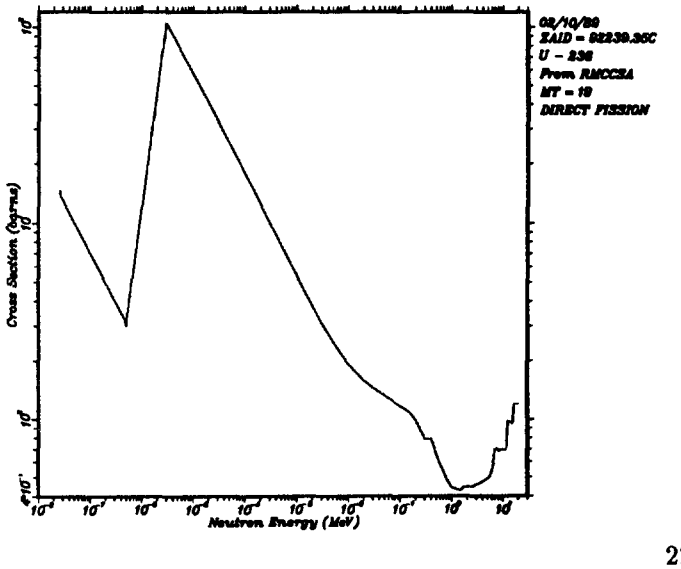
92239.35C

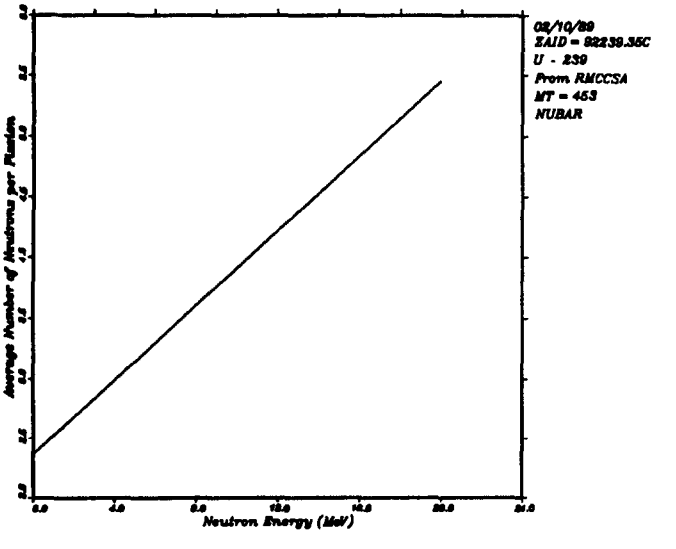

02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92239.35C
U - 239
From RMCCSA
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Uranium – 240

ZAID=92240.35C

SOURCE: ENDL–85 (ZA=92240 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=92240.35C NES=218 T=0°K

Isotope Information

Abundance=0.00%

Density=19.21228 gm/cm^3

Evaluation Information

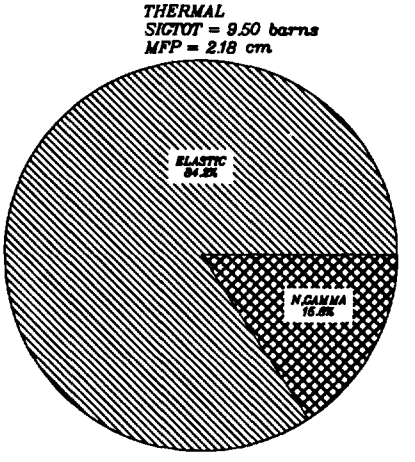
Photon-Production Data – Yes

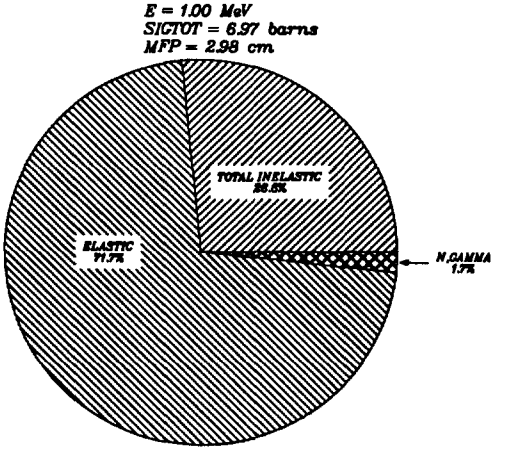
Heating Numbers – Local

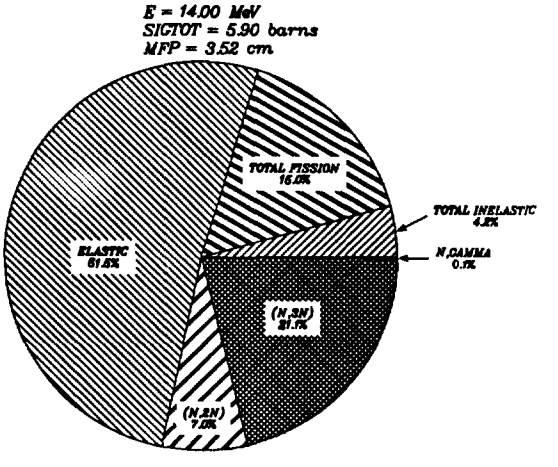
Energy Range – 10^{-10} to 20 MeV

Reaction Information

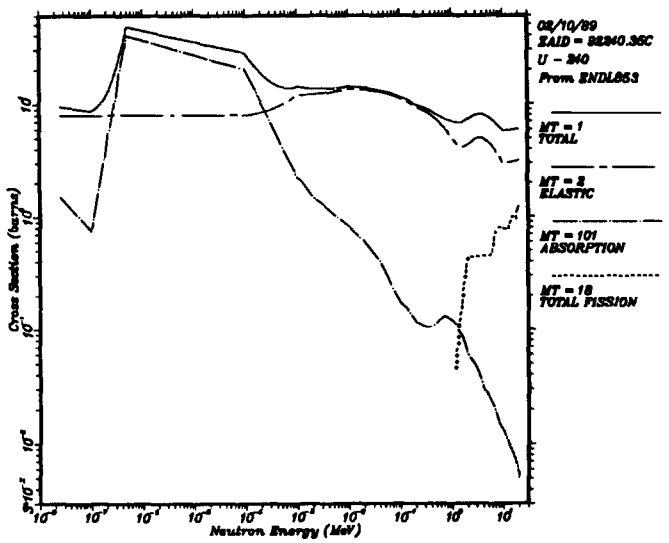
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	1.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.9549+00	2.0000+01	-5.9300+00	-5.9300+00
(n,3n)	17	1.0785+01	2.0000+01	-1.0740+01	-1.0740+01
(n,4n)	37	1.6951+01	2.0000+01	-1.6880+01	-1.6880+01
(n,f)	19	1.0000+00	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.8500+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	6.0800+00	6.0800+00

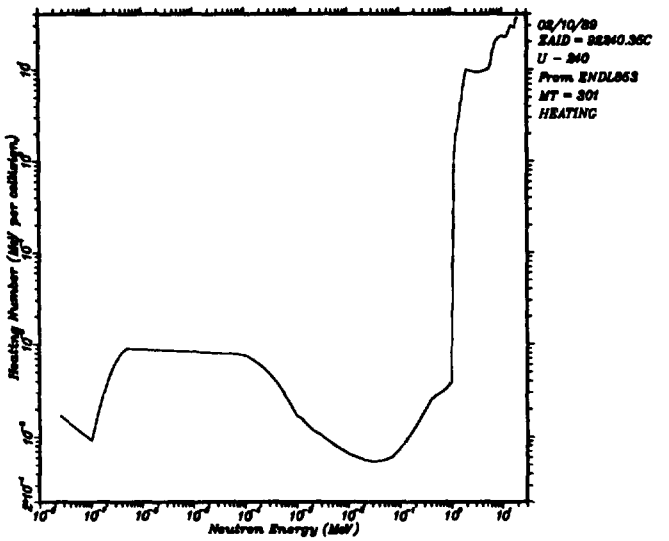


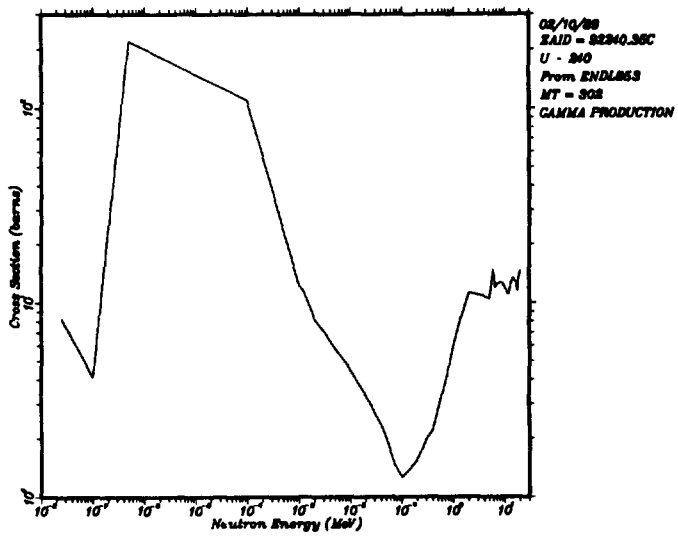


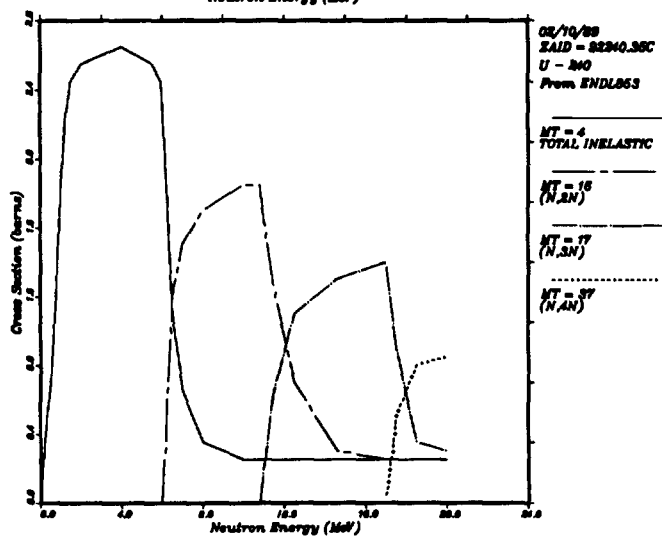


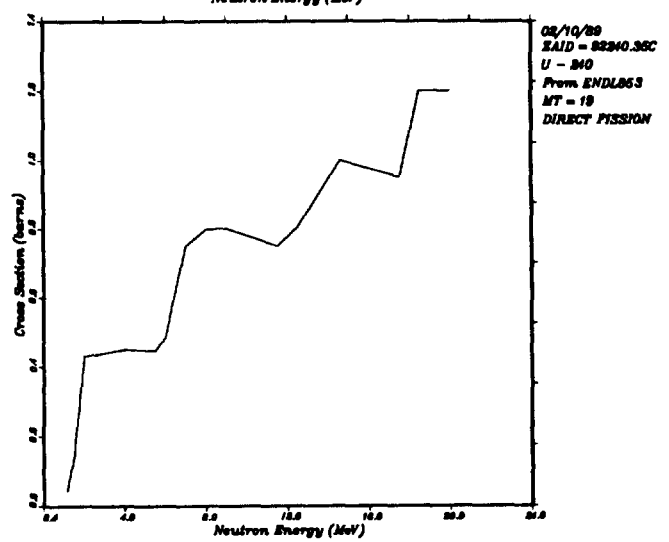
92240.35C

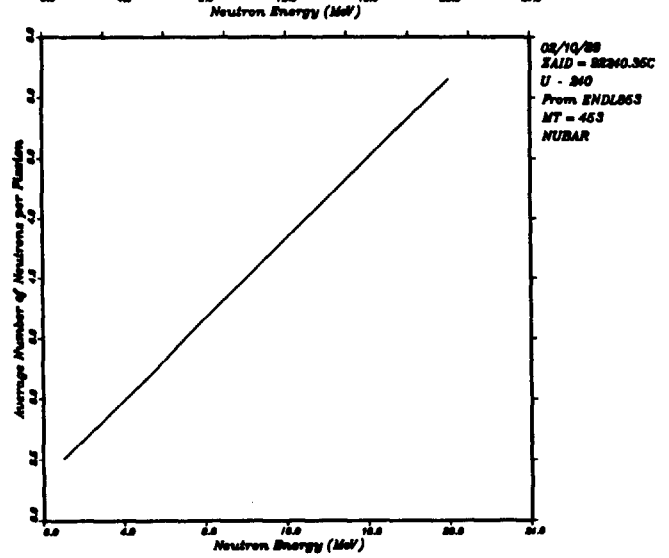

02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 92240.35C
U - 240
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Neptunium – 235

ZAID=93235.35C

SOURCE: ENDL-85 (ZA=93235 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL-50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=93235.35C NES=364 T=0°K

Isotope Information

Abundance=Nonnatural

Density=20.27711 gm/cm^3

Evaluation Information

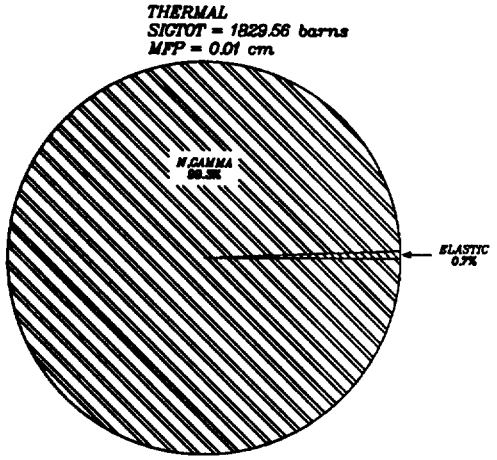
Photon-Production Data – Yes

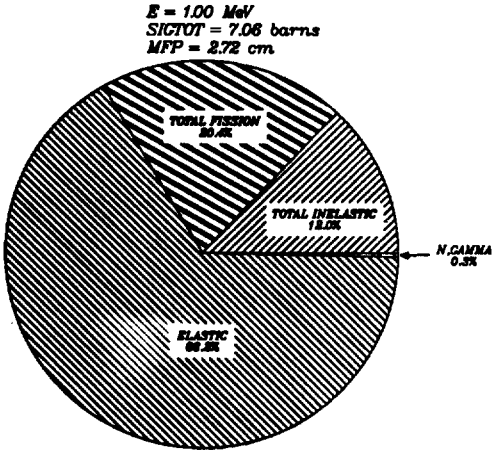
Heating Numbers – Local

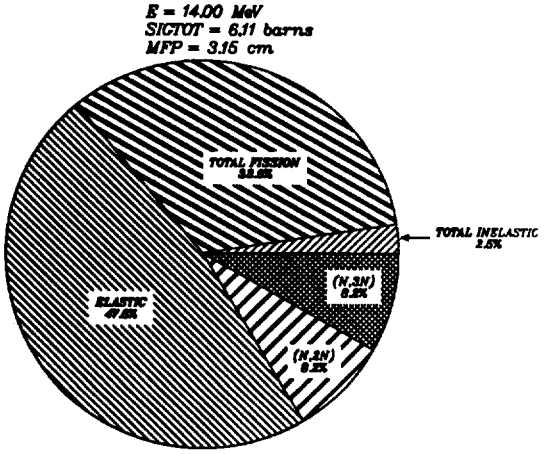
Energy Range – 10^{-10} to 20 MeV

Reaction Information

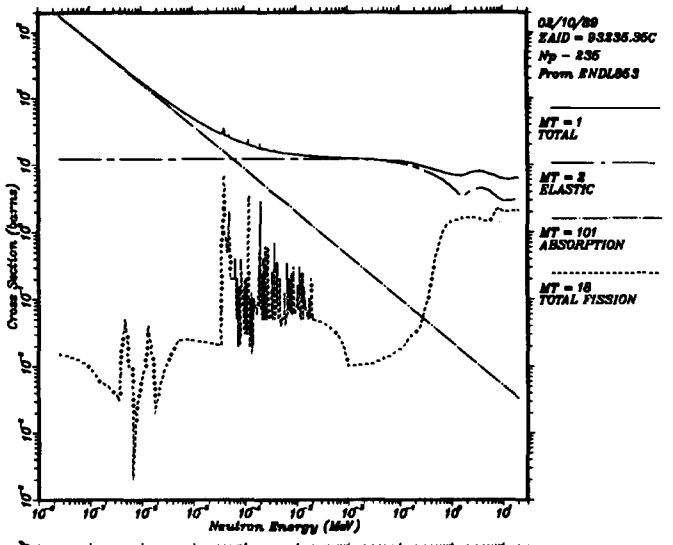
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	3.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	7.0130+00	2.0000+01	-6.9830+00	-6.9830+00
(n,3n)	17	1.3170+01	2.0000+01	-1.3114+01	-1.3114+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.9000+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	5.6850+00	5.6850+00

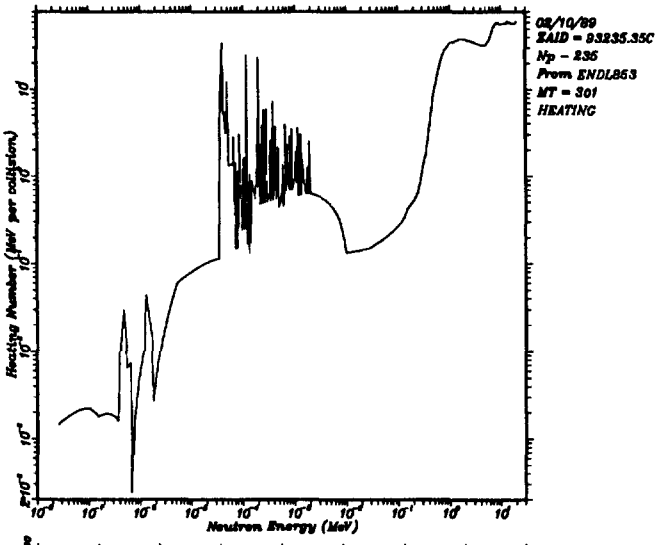


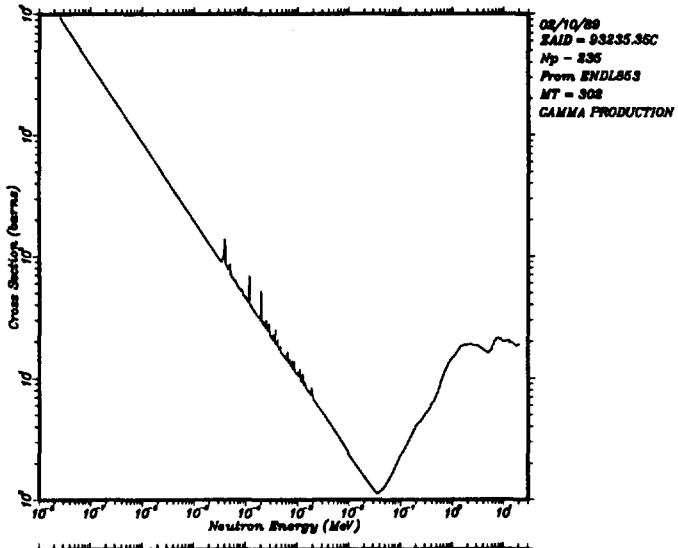


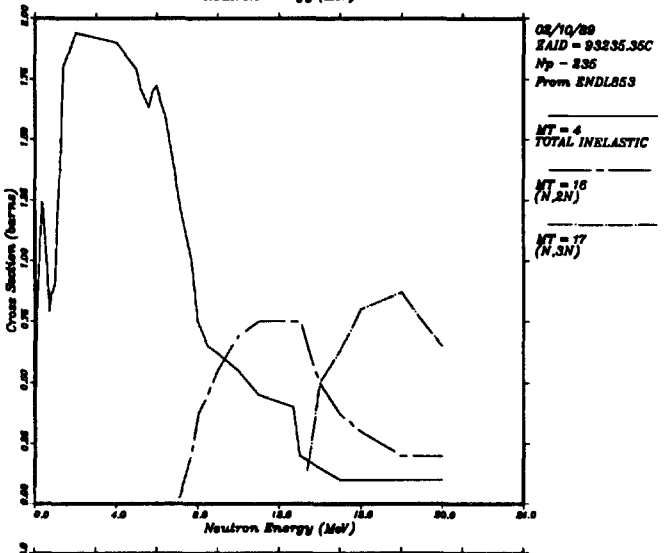


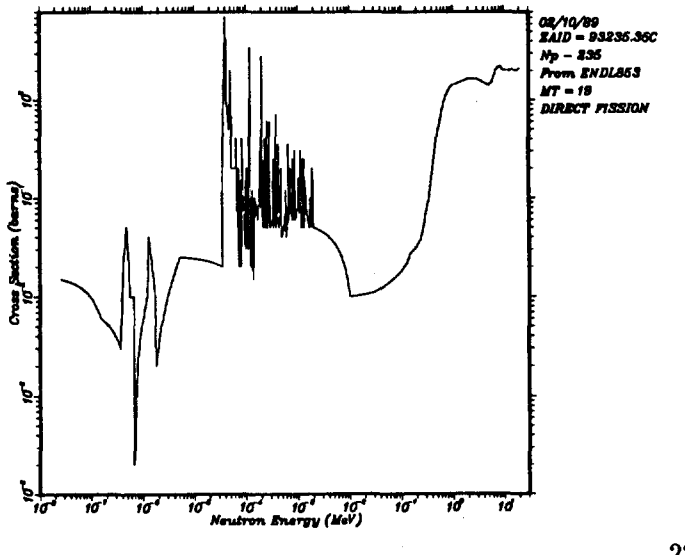
93235.35C

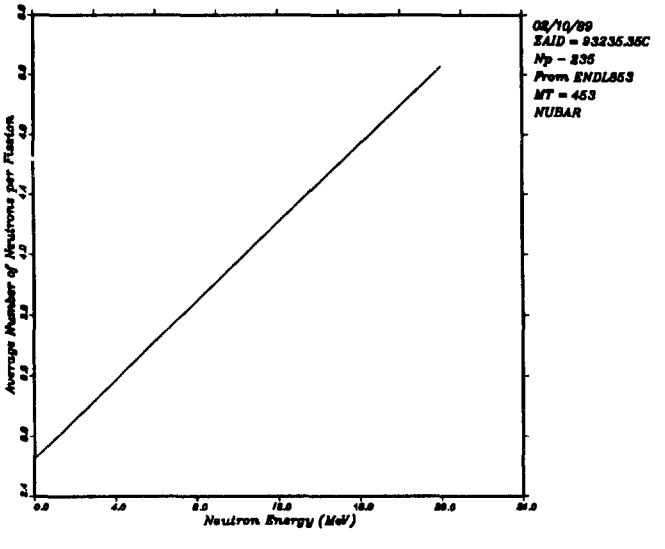

02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93235.35C
Np = 235
From ENDL853
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Neptunium – 236

ZAID=93236.35C

SOURCE: ENDL-85 (ZA=93236 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=93236.35C NES=284 T=0°K

Isotope Information

Abundance=Nonnatural

Density=20.36359 gm/cm^3

Evaluation Information

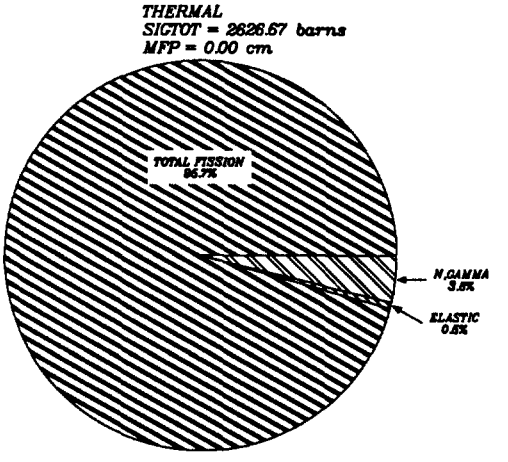
Photon-Production Data – Yes

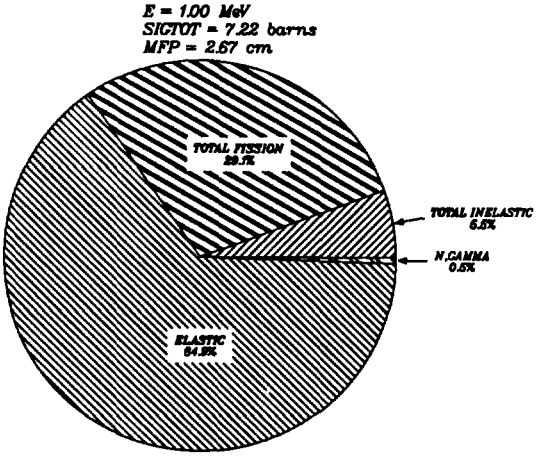
Heating Numbers – Local

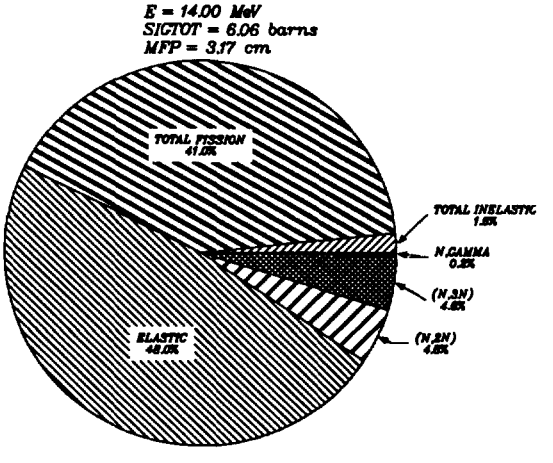
Energy Range – 10^{-10} to 20 MeV

Reaction Information

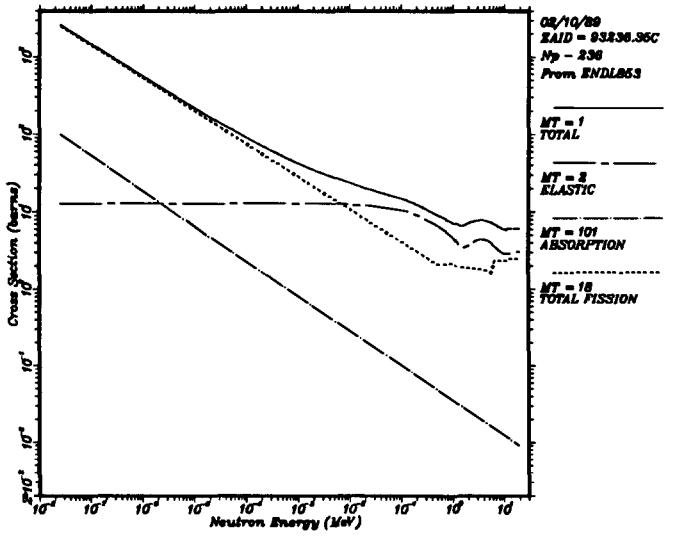
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	3.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.7093+00	2.0000+01	-5.6850+00	-5.6850+00
(n,3n)	17	1.2722+01	2.0000+01	-1.2668+01	-1.2668+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.9000+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	6.6280+00	6.6280+00

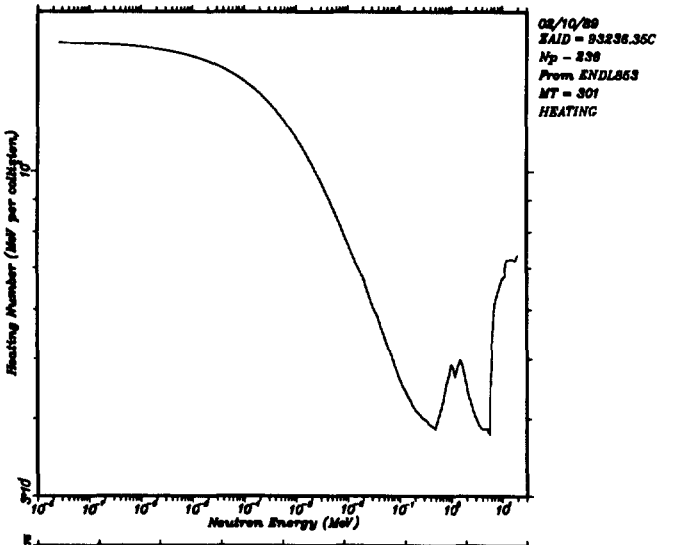


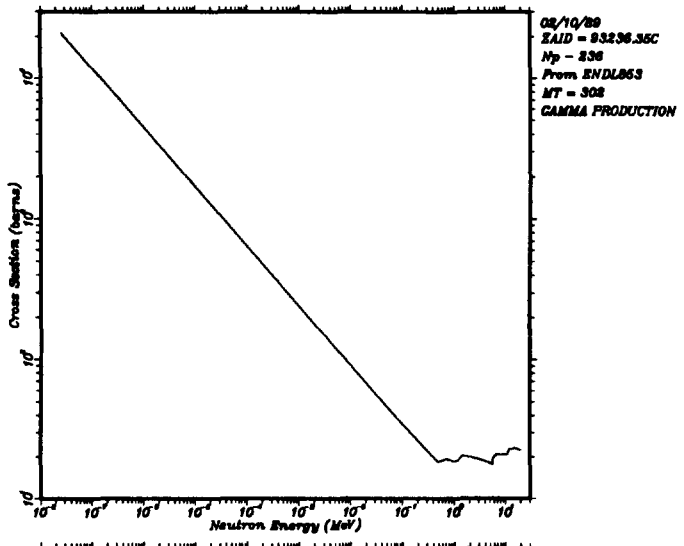


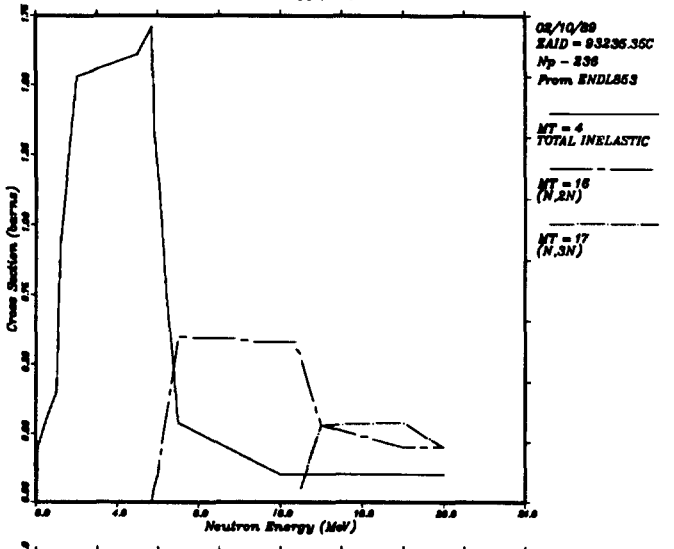


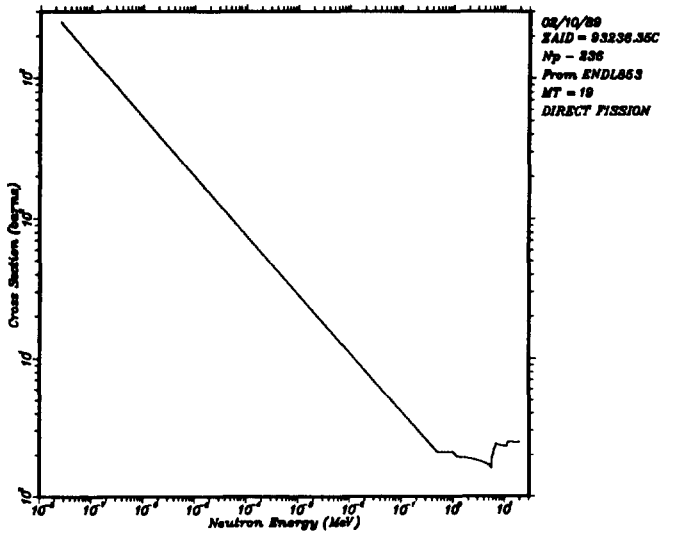
93236.35C

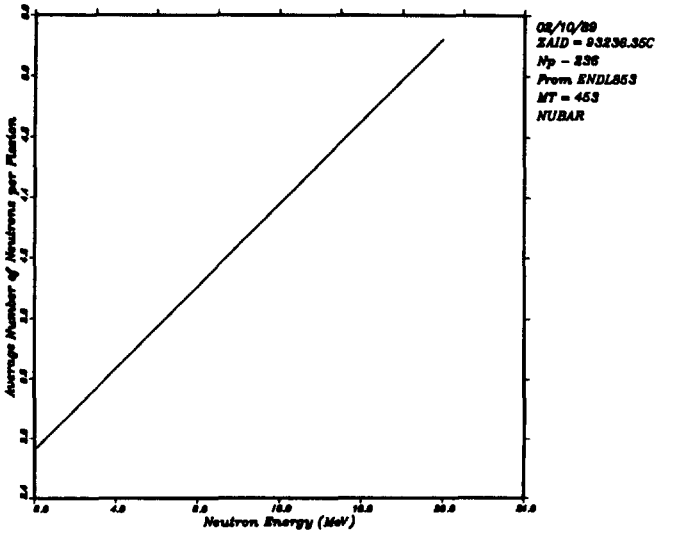

02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93236.35C
Np - 236
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Neptunium – 237

ZAID=93237.55C
SOURCE: Group T-2 (MAT=1337, File unknown)
REFERENCE: "Revised ^{237}Np Evaluation
by E. D. Arthur and R. E. MacFarlane
Los Alamos National Laboratory internal memorandum T-2-M-1467 (March 19, 1984)

Data Availability

Continuous Energy

ZAID=93237.55C	NES=1682	T=300°K

Discrete Reaction

ZAID=93237.55D	NES=263	T=300°K

Multigroup

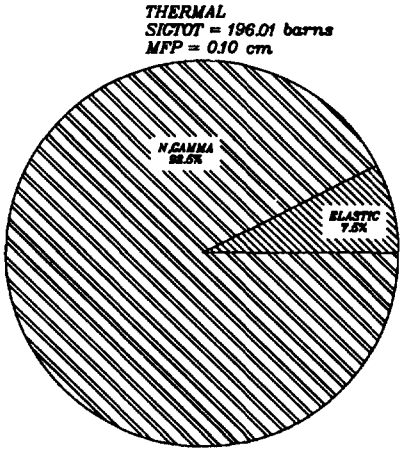
ZAID=93237.55M	30-Group	T=300°K

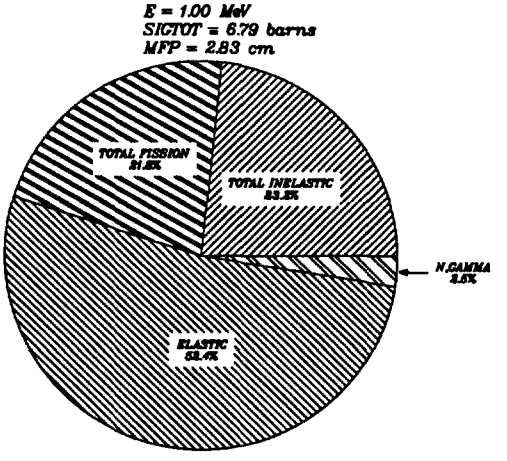
Isotope Information

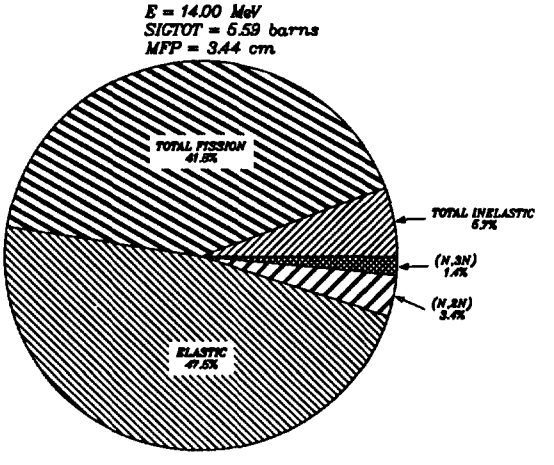
Abundance=Nonnatural
Density=20.45 gm/cm^3

Evaluation Information

Photon-Production Data = No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV



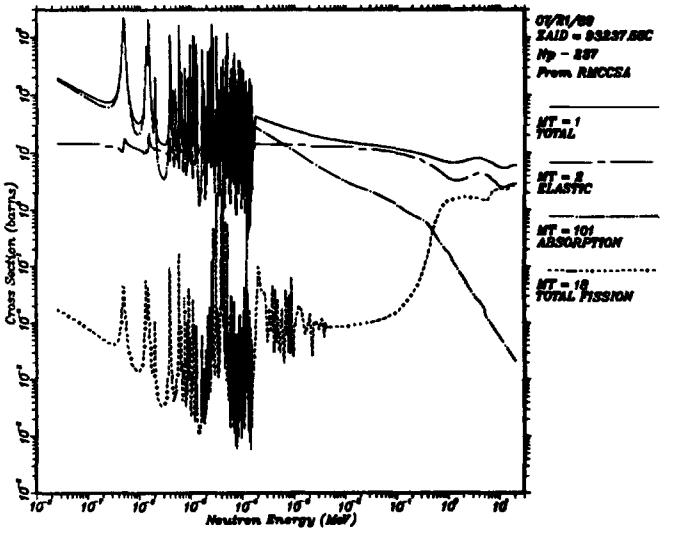


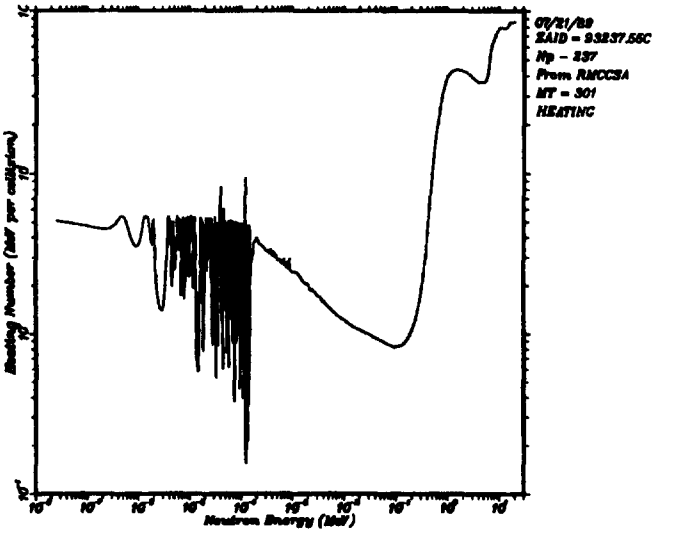


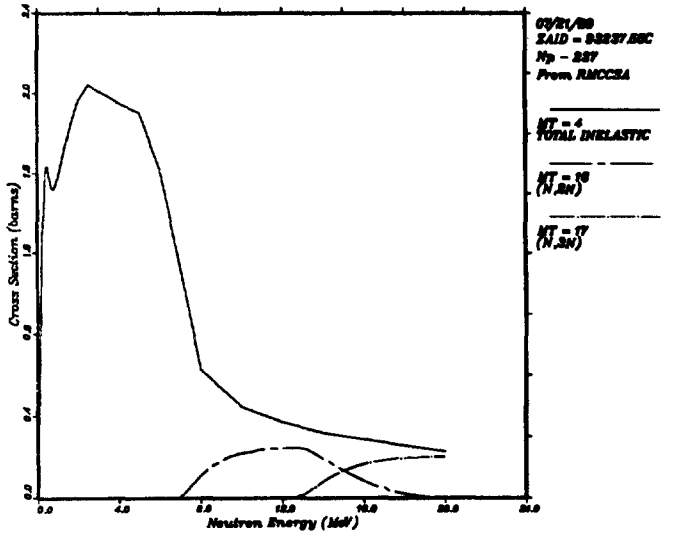
Reaction Information

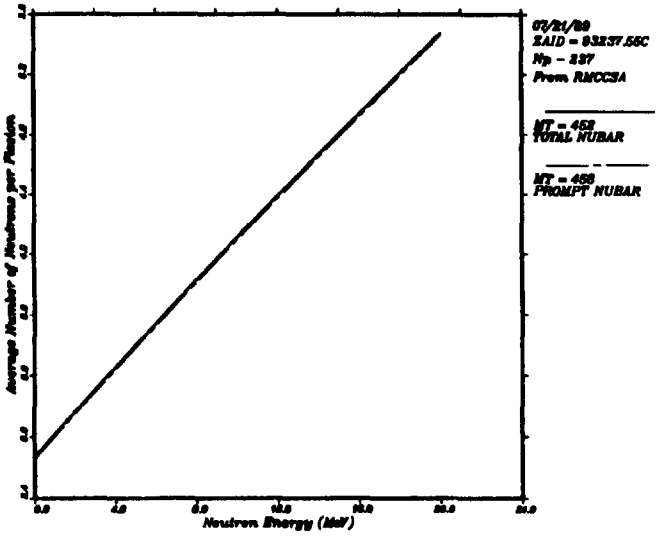
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.7890+00	2.0000+01	-6.7600+00	-6.7600+00
(n,3n)	17	1.2342+01	2.0000+01	-1.2290+01	-1.2290+01
fission	18	1.0000-11	2.0000+01	1.9510+02	1.9510+02
(n,n'1)	51	3.3341-02	2.0000+01	-3.3200-02	0.0000+00
(n,n'2)	52	5.9854-02	2.0000+01	-5.9600-02	0.0000+00
(n,n'3)	53	7.6323-02	2.0000+01	-7.6000-02	0.0000+00
(n,n'4)	54	1.0344-01	2.0000+01	-1.0300-01	0.0000+00
(n,n'5)	55	1.2854-01	2.0000+01	-1.2800-01	0.0000+00
(n,n'6)	56	1.5970-01	2.0000+01	-1.5900-01	0.0000+00
(n,n'7)	57	1.9081-01	2.0000+01	-1.9000-01	0.0000+00
(n,n'8)	58	2.2800-01	2.0000+01	-2.2700-01	0.0000+00
(n,n'9)	59	2.6211-01	2.0000+01	-2.6100-01	0.0000+00
(n,n'10)	60	2.6914-01	2.0000+01	-2.6800-01	0.0000+00
(n,n'11)	61	2.8220-01	2.0000+01	-2.8100-01	0.0000+00
(n,n'12)	62	3.0931-01	2.0000+01	-3.0800-01	0.0000+00
(n,n'13)	63	3.2540-01	2.0000+01	-3.2400-01	0.0000+00
(n,n'14)	64	3.3341-01	2.0000+01	-3.3200-01	0.0000+00
(n,n'15)	65	3.4145-01	2.0000+01	-3.4000-01	0.0000+00
(n,n'16)	66	3.5852-01	2.0000+01	-3.5700-01	0.0000+00
(n,n'17)	67	3.7100-01	2.0000+01	-3.6900-01	0.0000+00
(n,n'18)	68	3.7260-01	2.0000+01	-3.7100-01	0.0000+00
(n,n'19)	69	4.0200-01	2.0000+01	-4.0000-01	0.0000+00
(n,n'20)	70	4.3400-01	2.0000+01	-4.3200-01	0.0000+00
(n,n'21)	71	4.3600-01	2.0000+01	-4.3400-01	0.0000+00
(n,n'22)	72	4.5600-01	2.0000+01	-4.5400-01	0.0000+00
(n,n'23)	73	4.6100-01	2.0000+01	-4.5900-01	0.0000+00
(n,n'24)	74	4.8706-01	2.0000+01	-4.8500-01	0.0000+00
(n,n'25)	75	5.0815-01	2.0000+01	-5.0600-01	0.0000+00
(n,n'26)	76	5.1619-01	2.0000+01	-5.1400-01	0.0000+00
(n,n'27)	77	5.3426-01	2.0000+01	-5.3200-01	0.0000+00
(n,n'28)	78	5.4832-01	2.0000+01	-5.4600-01	0.0000+00
(n,n'c)	91	4.0000-01	2.0000+01	-3.9800-01	-3.9800-01
(n,γ)	102	1.0000-11	2.0000+01	5.4820+00	5.4820+00

93237.55C


07/21/89
ZAID = 93237.55C
Np - 237
From RMCCSA
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


07/21/89
ZAID = 93237.55C
Np - 237
From RMCCSA
MT = 301
HEATING
Neutron Energy (MeV)


07/21/89
ZAID = 93237.55C
Np - 237
From RMCCSA
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


07/21/89
ZAID = 93237.55C
Np - 237
From RMCCSA
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Neptunium – 238

ZAID=93238.35C

SOURCE: ENDL–85 (ZA=93238 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=93238.35C NES=282 T=0°K

Isotope Information

Abundance=Nonnatural

Density=20.53651 gm/cm^3

Evaluation Information

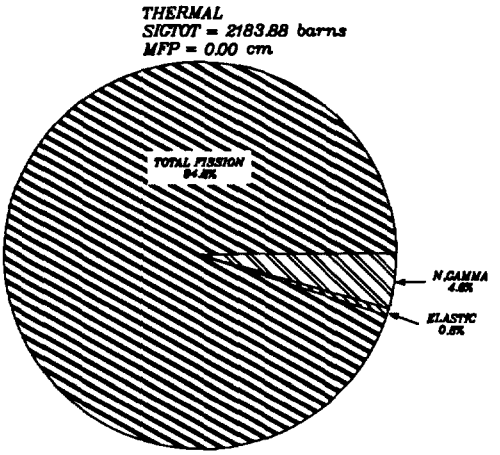
Photon-Production Data – Yes

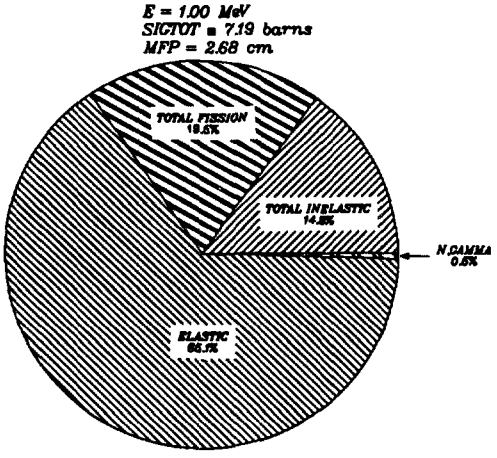
Heating Numbers – Local

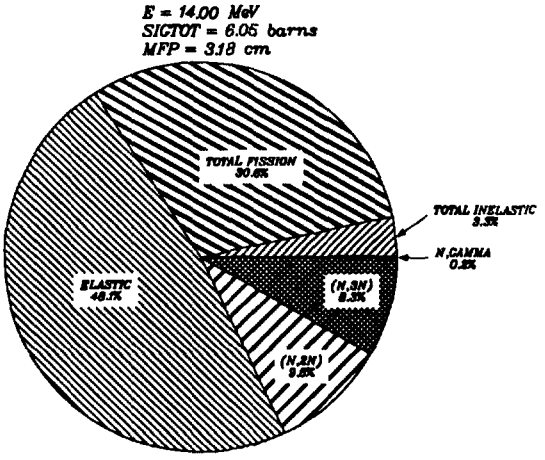
Energy Range – 10^{-10} to 20 MeV

Reaction Information

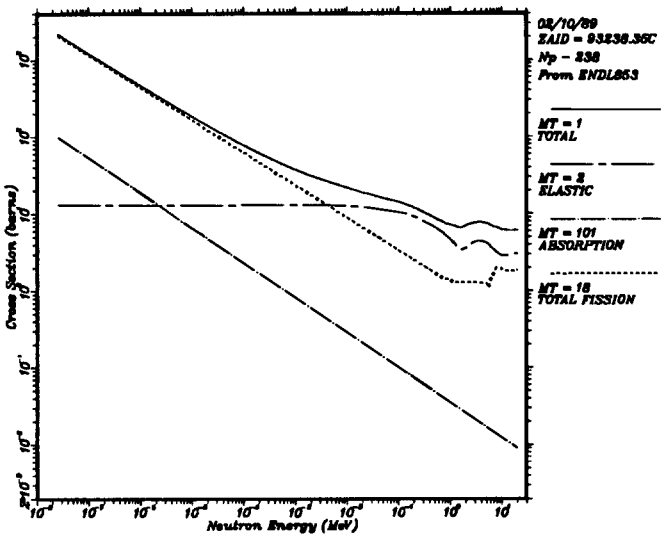
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	3.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.5113+00	2.0000+01	-5.4880+00	-5.4880+00
(n,3n)	17	1.2167+01	2.0000+01	-1.2116+01	-1.2116+01
(n,f)	19	1.0000-10	2.0000+01	1.8000+02	1.8000+02
(n,n'f)	20	1.9000+01	2.0000+01	1.8000+02	1.8000+02
(n,γ)	102	1.0000-10	2.0000+01	6.2180+00	6.2180+00

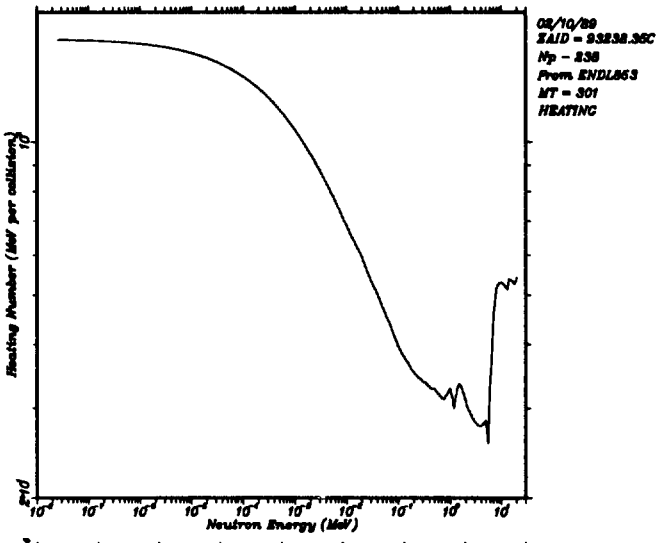


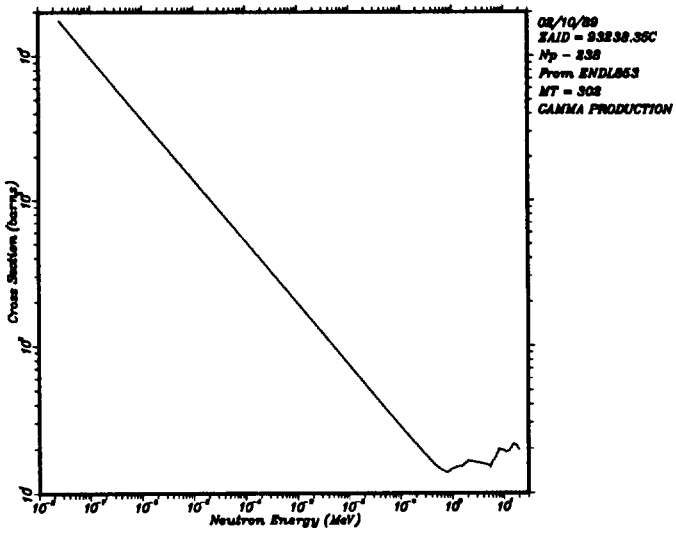


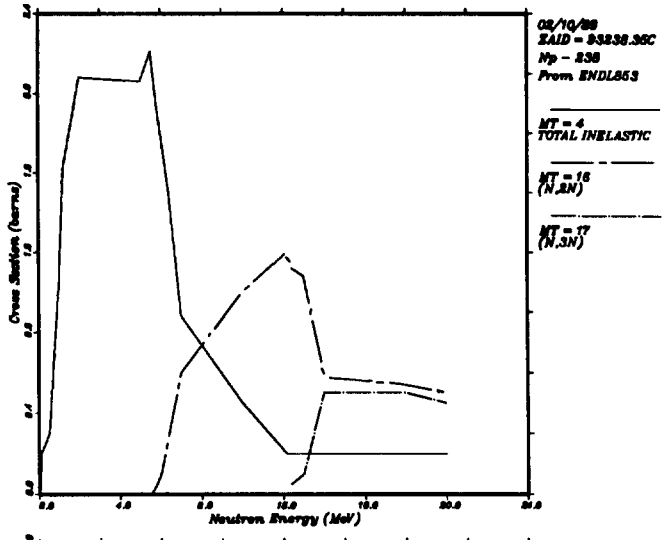


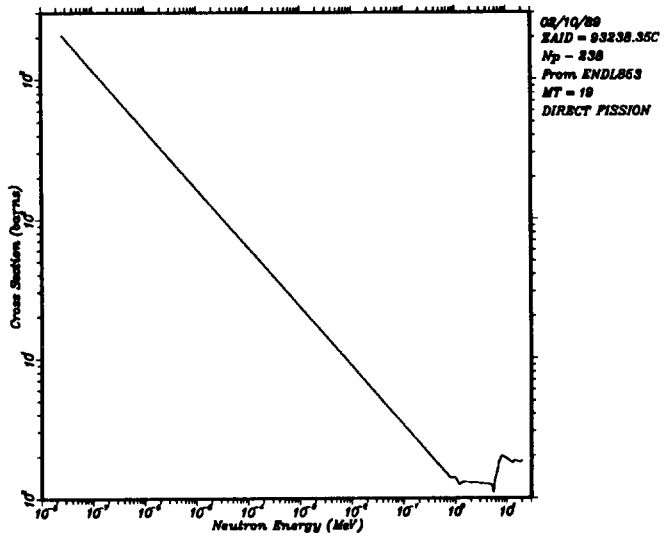
93238.35C

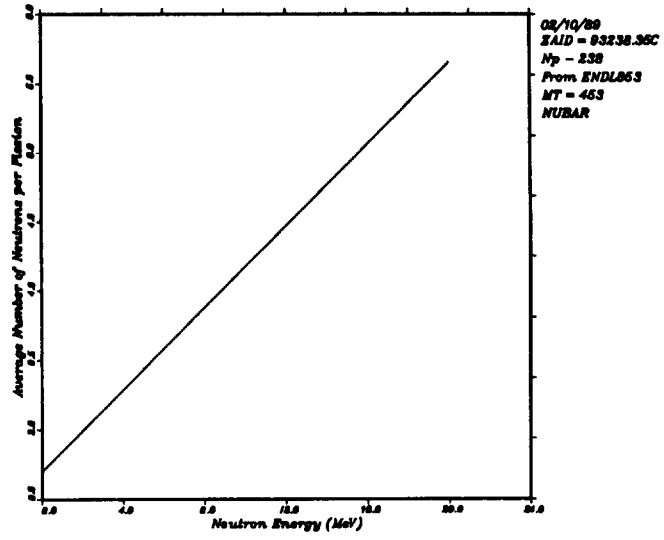

02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 93238.35C
Np - 238
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 237

ZAID=94237.35C
SOURCE: ENDL–85 (ZA=94237 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

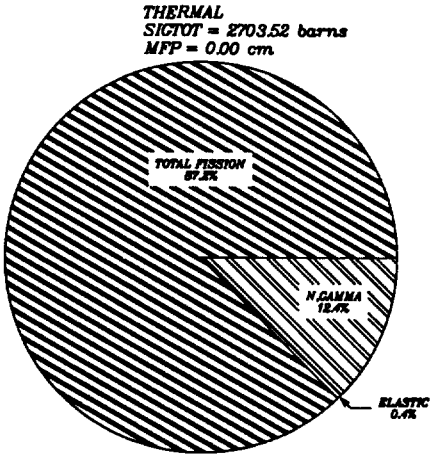
Data Availability
Continuous Energy
ZAID=94237.35C NES=202 T=0°K

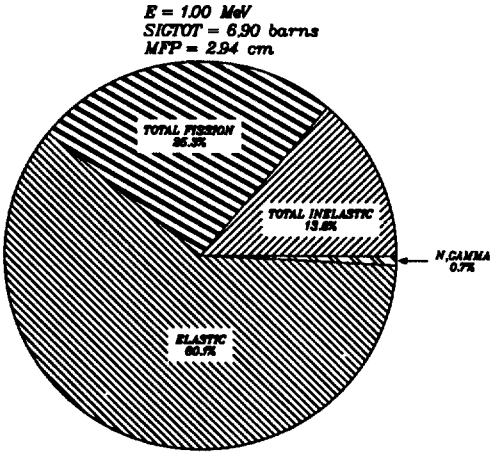
Isotope Information
Abundance=Nonnatural
Density=19.42933 gm/cm^3

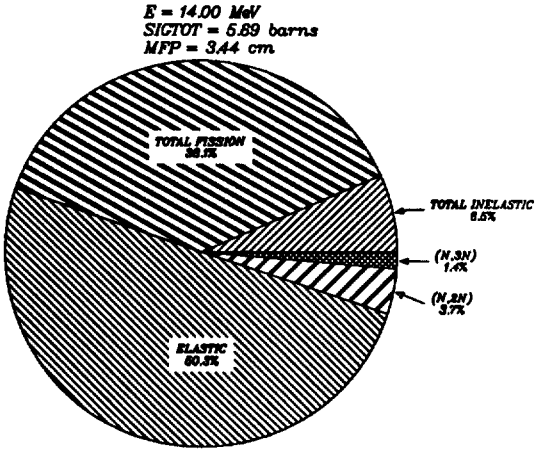
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range - 10^{-10} to 20 MeV

Reaction Information

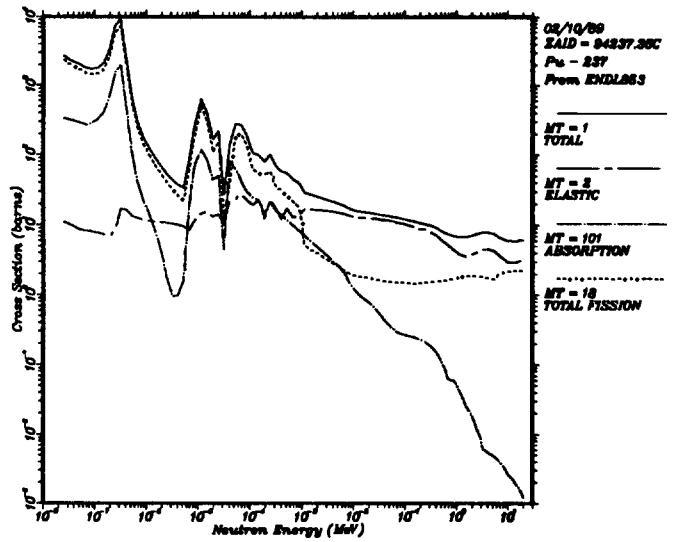
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.0000-01	2.0000+01	0.0000+00	0.0000+00
(n,n'1)	51	4.7903-02	2.0000+01	-4.7700-02	0.0000+00
(n,n'2)	52	1.0645-01	2.0000+01	-1.0600-01	0.0000+00
(n,2n)	16	5.8980+00	2.0000+01	-5.8730+00	-5.8730+00
(n,3n)	17	1.3271+01	2.0000+01	-1.3215+01	-1.3215+01
(n,f)	19	1.0000-10	2.0000+01	1.8600+02	1.8600+02
(n,n'f)	20	1.9000+01	2.0000+01	1.8600+02	1.8600+02
(n,γ)	102	1.0000-10	2.0000+01	6.9980+00	6.9980+00

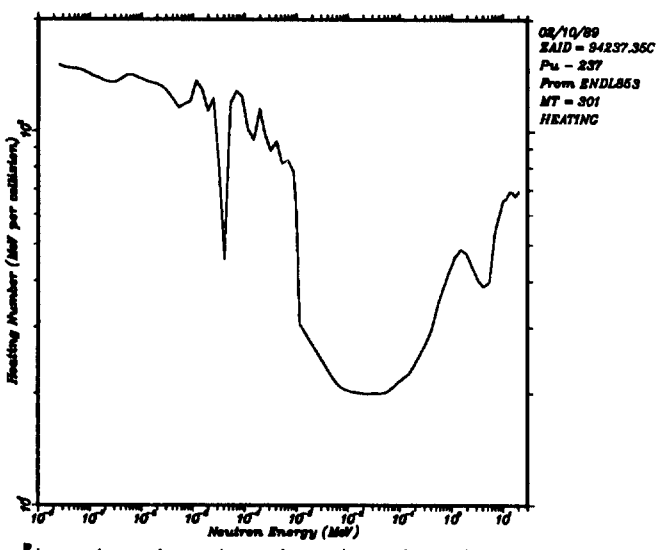


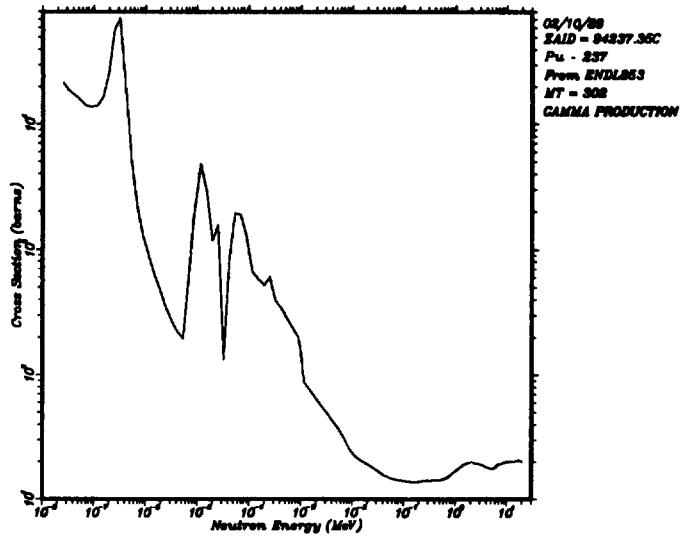


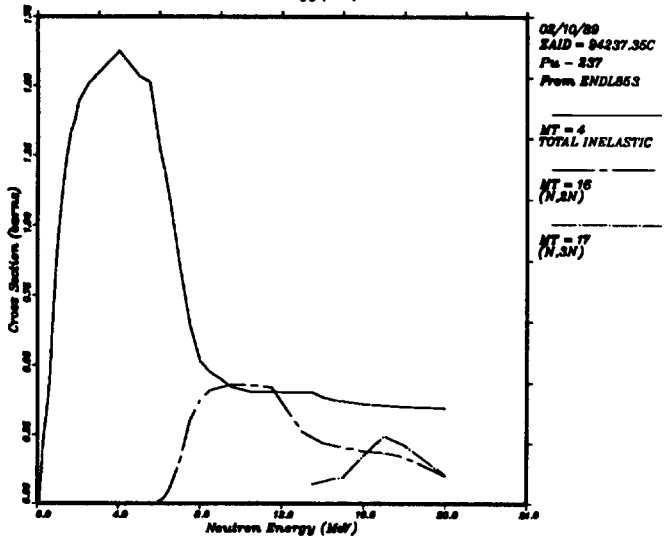


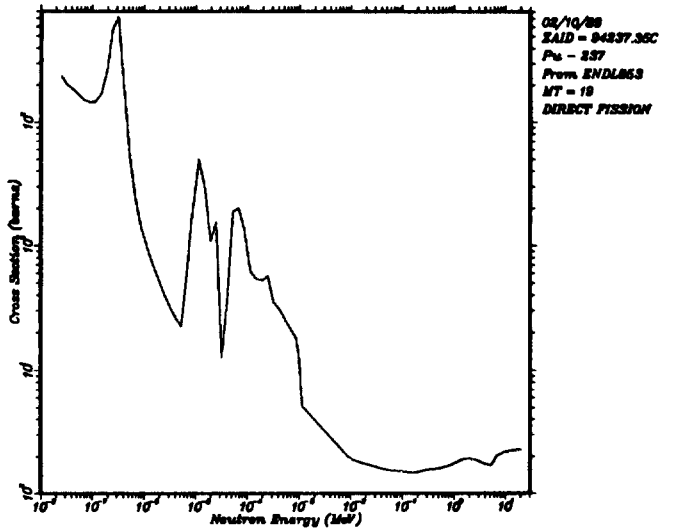
94237.35C

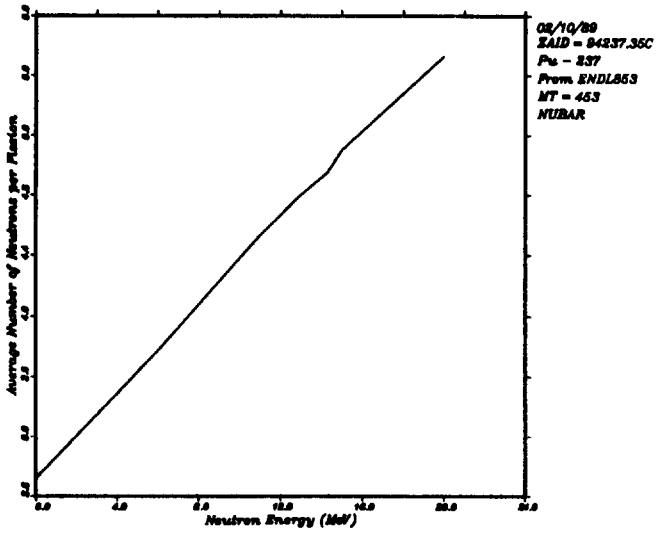

02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 202
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94237.35C
Pu - 237
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 238

ZAID=94238.50C
SOURCE: ENDF/B–V (MAT=1338, Tape 514)
REFERENCE: "Summary Documentation Isotope: 94–Pu–238,"
by F. M. Mann, R. E. Schenter, C. R. Reich, H. Alter, and C. Dunford
contained in ENDF–201

Data Availability

Continuous Energy

ZAID=94238.50C	NES=2301	T=300°K
ZAID=94238.51C	NES=537	T=300°K

Discrete Reaction

ZAID=94238.50D	NES=263	T=300°K
ZAID=94238.51D	NES=263	T=300°K

Multigroup

ZAID=94238.50M	30–Group	T=300°K

Isotope Information

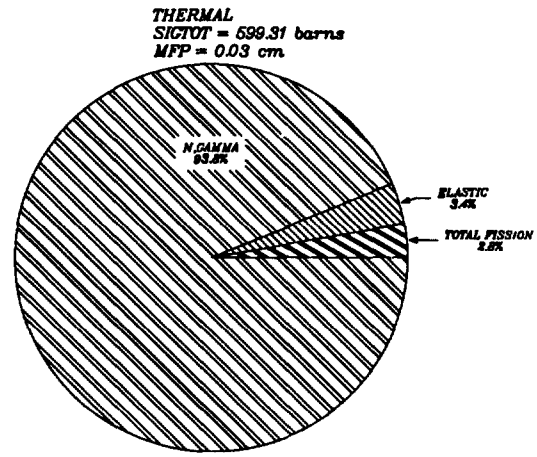
Abundance=Nonnatural
Density=19.51139 gm/cm^3

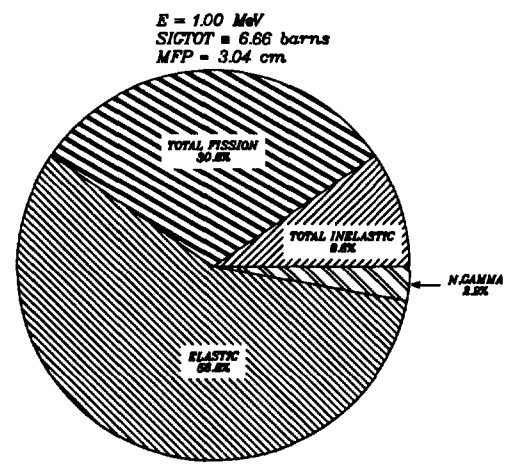
Evaluation Information

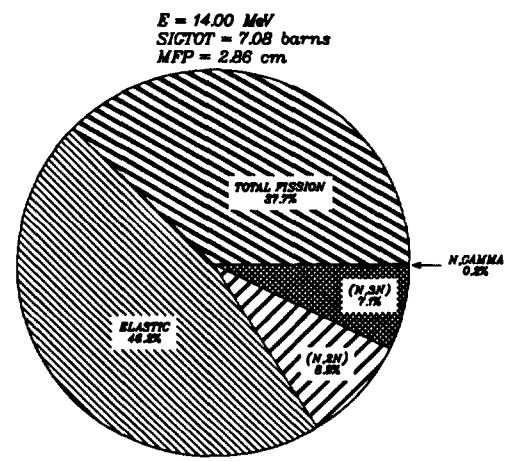
Photon-Production Data – No
Heating Numbers – Total
Energy Range – 10^{-11} to 20 MeV

Reaction Information

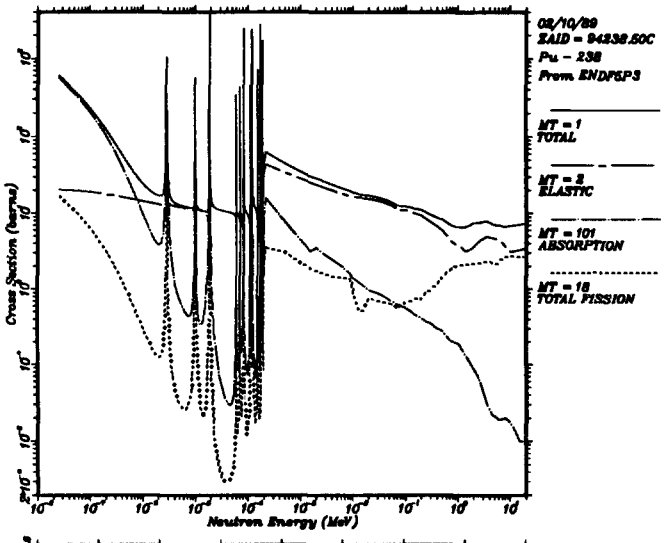
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	7.0000+00	2.0000+01	-6.9705+00	-6.9705+00
(n,3n)	17	1.2911+01	2.0000+01	-1.2857+01	-1.2857+01
(n,f)	19	1.0000-11	2.0000+01	1.9780+02	1.9780+02
(n,n'f)	20	5.5000+00	2.0000+01	1.9780+02	1.9780+02
(n,n'1)	51	4.4000-02	2.0000+01	-4.3814-02	0.0000+00
(n,n'2)	52	1.4600-01	2.0000+01	-1.4538-01	0.0000+00
(n,n'3)	53	3.0400-01	2.0000+01	-3.0272-01	0.0000+00
(n,n'4)	54	6.0500-01	2.0000+01	-6.0245-01	0.0000+00
(n,n'5)	55	6.6100-01	2.0000+01	-6.5821-01	0.0000+00
(n,n'6)	56	7.5100-01	2.0000+01	-7.4783-01	0.0000+00
(n,n'7)	57	9.4200-01	2.0000+01	-9.3803-01	0.0000+00
(n,n'8)	58	9.6200-01	2.0000+01	-9.5794-01	0.0000+00
(n,n'9)	59	9.8400-01	2.0000+01	-9.7985-01	0.0000+00
(n,n'10)	60	9.8499-01	2.0000+01	-9.8084-01	0.0000+00
(n,n'11)	61	9.8700-01	2.0000+01	-9.8284-01	0.0000+00
(n,n'12)	62	1.0200+00	2.0000+01	-1.0157+00	0.0000+00
(n,n'13)	63	1.0260+00	2.0000+01	-1.0217+00	0.0000+00
(n,n'14)	64	1.0640+00	2.0000+01	-1.0595+00	0.0000+00
(n,n'15)	65	1.0700+00	2.0000+01	-1.0655+00	0.0000+00
(n,n'c)	91	1.0700+00	2.0000+01	-1.0655+00	-1.0655+00
(n,γ)	102	1.0000-11	2.0000+01	0.0000+00	0.0000+00

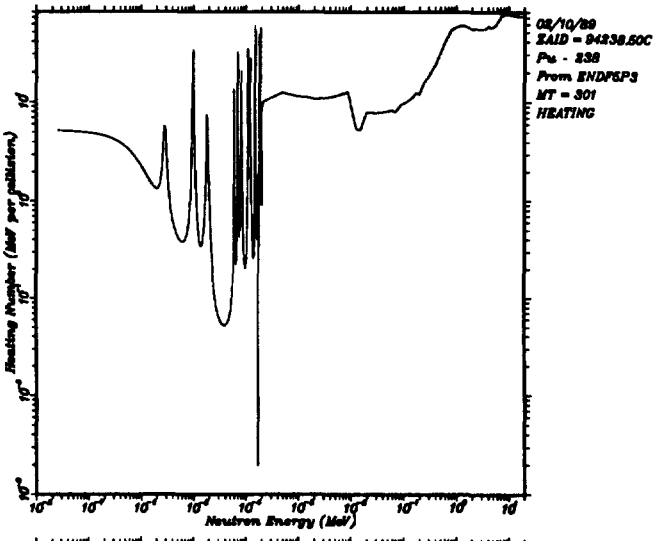


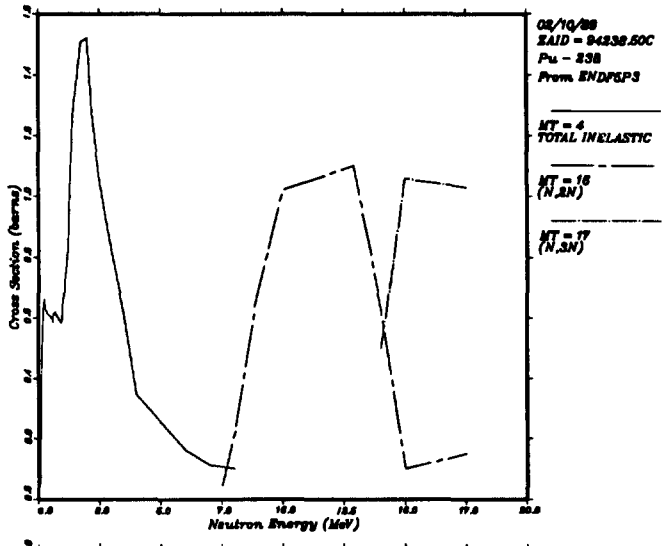


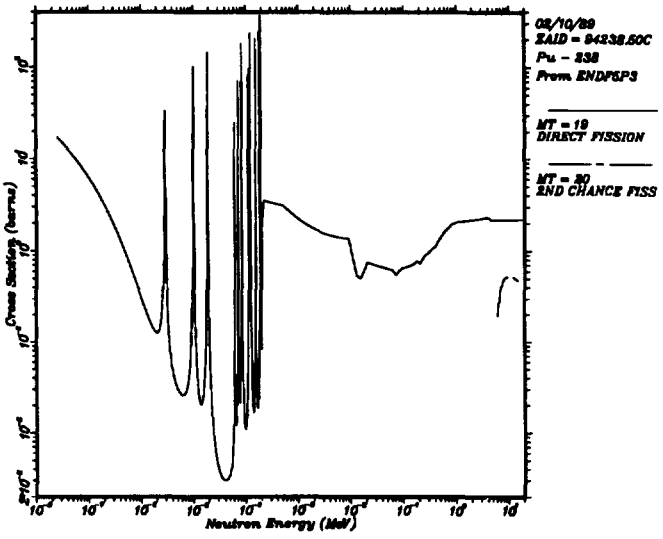


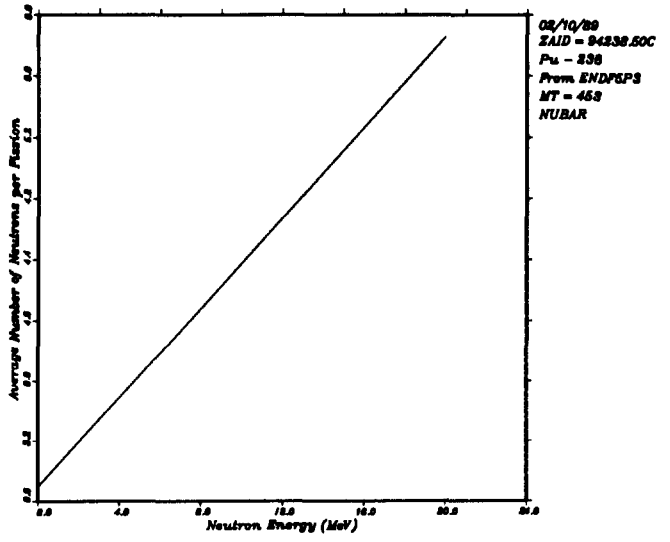
94238.50C


02/10/89
ZAID = 94238.50C
Pu - 238
From ENDF&PS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94238.50C
Pu - 238
From ENDF&PS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/10/89
ZAID = 94238.50C
Pu - 238
From ENDF&PS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94238.50C
Pu - 238
From ENDF&PS
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)

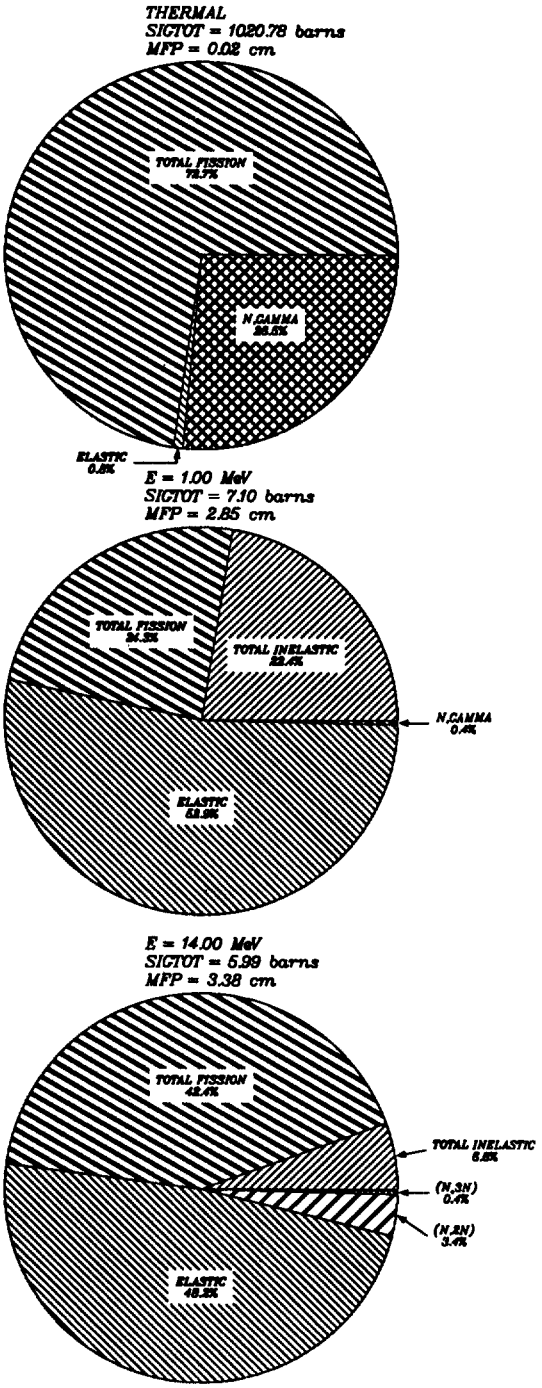

02/10/89
ZAID = 94238.50C
Pu - 238
From ENDF&PS
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 239

ZAID=94239.55C

SOURCE: Group T-2 (MAT=1399, File unknown)

REFERENCE: "Evaluation of n + ^{239}Pu Nuclear Data for Revision 2 of ENDF/B-V,"
by E. D. Arthur, P. G. Young, D. G. Madland, and R. E. MacFarlane
Los Alamos National Laboratory report LA-9873-MS (October 1983)



Data Availability

Continuous Energy

ZAID=94239.55C	NES=10318	T=300°K
ZAID=94239.56C	NES=2547	T=12000°K
ZAID=94239.57C	NES=1381	T=120000°K
ZAID=94239.58C	NES=737	T=1200000°K
ZAID=94239.59C	NES=576	T=12000000°K

Discrete Reaction

ZAID=94239.55D	NES=263	T=300°K

Multigroup

ZAID=94239.55M	30-Group	T=0°K

Isotope Information

Abundance=Nonnatural

Density=19.59357 gm/cm^3

Evaluation Information

Photon-Production Data - Yes

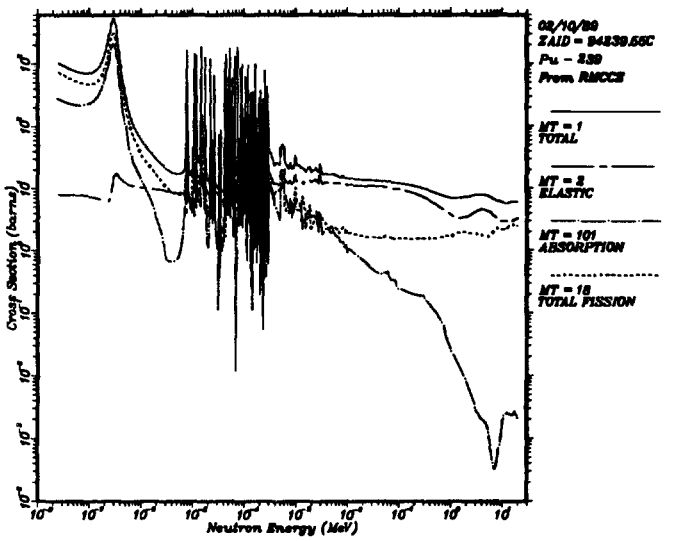
Heating Numbers - Local

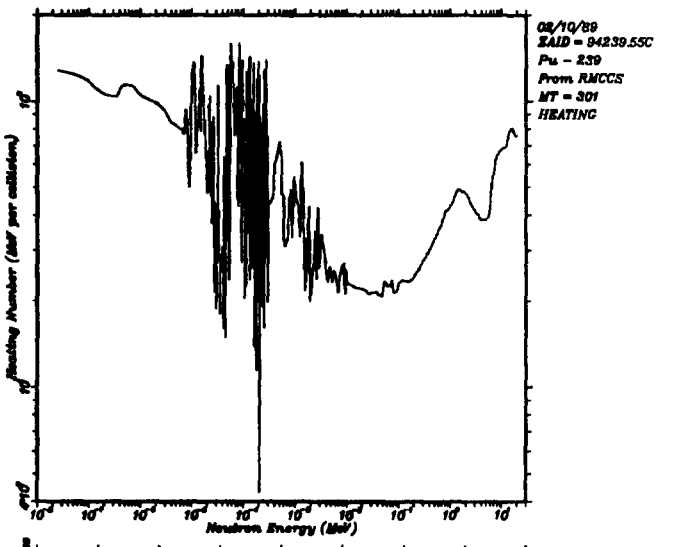
Energy Range - 10^{-11} to 20 MeV

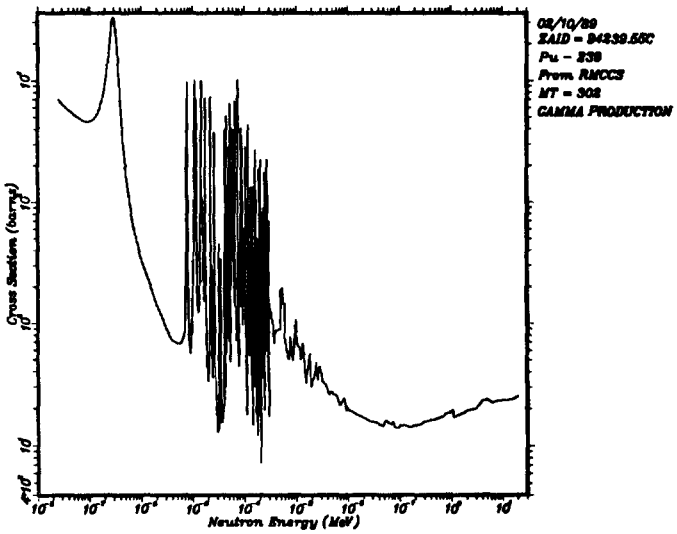
Reaction Information

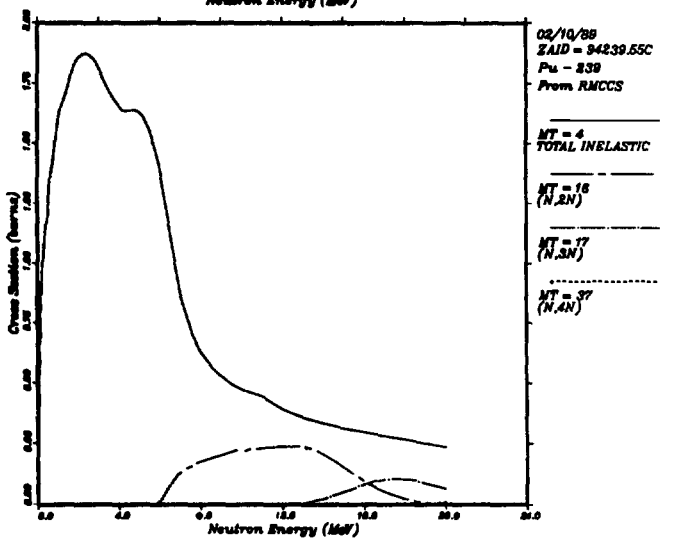
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.6799+00	2.0000+01	-5.6560+00	-5.6560+00
(n,3n)	17	1.2707+01	2.0000+01	-1.2654+01	-1.2654+01
fission	18	1.0000-11	2.0000+01	1.9992+02	1.9992+02
(n,4n)	37	1.8591+01	2.0000+01	-1.8513+01	-1.8513+01
(n,n'1)	51	7.8932-03	2.0000+01	-7.8600-03	0.0000+00
(n,n'2)	52	5.7515-02	2.0000+01	-5.7273-02	0.0000+00
(n,n'3)	53	7.6019-02	2.0000+01	-7.5700-02	0.0000+00
(n,n'4)	54	1.6447-01	2.0000+01	-1.6378-01	0.0000+00
(n,n'5)	55	1.9381-01	2.0000+01	-1.9300-01	0.0000+00
(n,n'6)	56	2.8666-01	2.0000+01	-2.8546-01	0.0000+00
(n,n'7)	57	3.3151-01	2.0000+01	-3.3012-01	0.0000+00
(n,n'8)	58	3.8905-01	2.0000+01	-3.8742-01	0.0000+00
(n,n'9)	59	3.9325-01	2.0000+01	-3.9160-01	0.0000+00
(n,n'10)	60	4.3583-01	2.0000+01	-4.3400-01	0.0000+00
(n,n'11)	61	4.7198-01	2.0000+01	-4.7000-01	0.0000+00
(n,n'12)	62	4.9408-01	2.0000+01	-4.9200-01	0.0000+00
(n,n'13)	63	5.0713-01	2.0000+01	-5.0500-01	0.0000+00
(n,n'14)	64	5.0914-01	2.0000+01	-5.0700-01	0.0000+00
(n,n'15)	65	5.4027-01	2.0000+01	-5.3800-01	0.0000+00
(n,n'16)	66	5.5935-01	2.0000+01	-5.5700-01	0.0000+00
(n,n'17)	67	5.6738-01	2.0000+01	-5.6500-01	0.0000+00
(n,n'18)	68	5.8546-01	2.0000+01	-5.8300-01	0.0000+00
(n,n'c)	91	4.0000-01	2.0000+01	-3.9832-01	-3.9832-01
(n,γ)	102	1.0000-11	2.0000+01	6.5330+00	6.5330+00

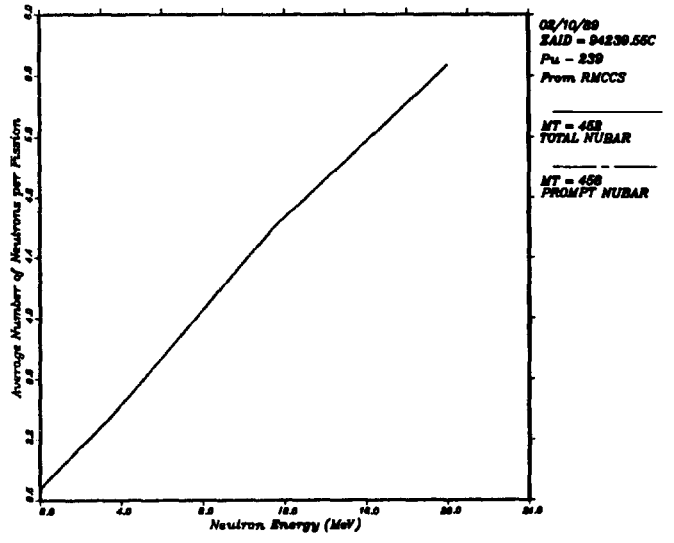
94239.55C


02/10/89
ZAID = 94239.55C
Pu - 239
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/10/89
ZAID = 94239.55C
Pu - 239
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)

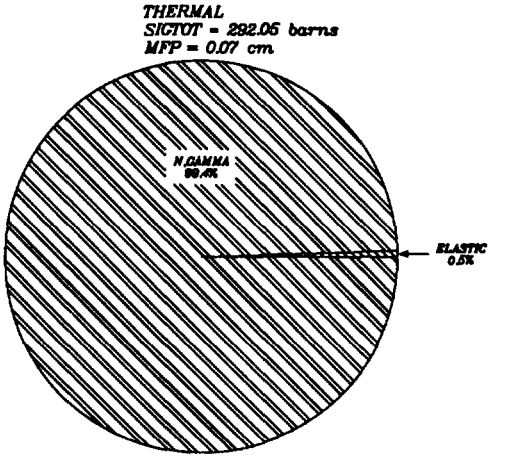

02/10/89
ZAID = 94239.55C
Pu - 239
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

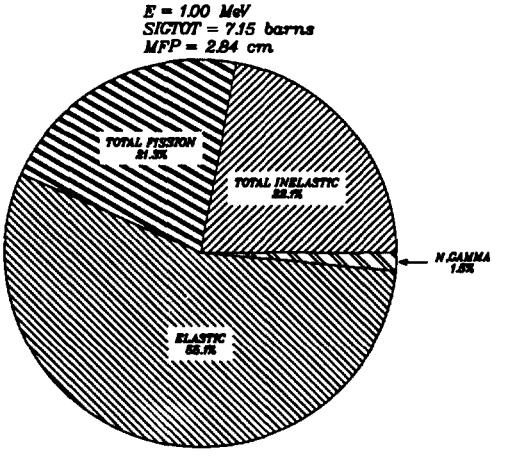

02/10/89
ZAID = 94239.55C
Pu - 239
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)

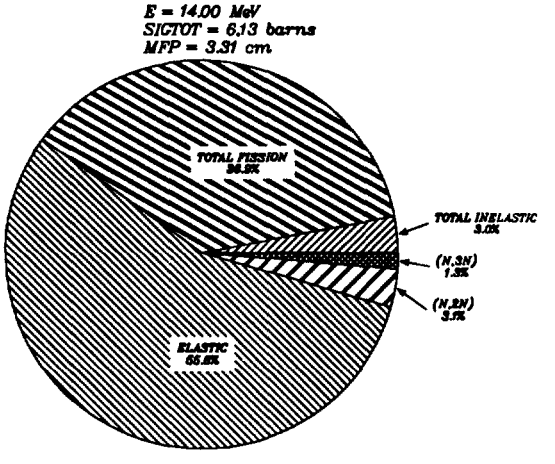

02/10/89
ZAID = 94239.55C
Pu - 239
From RMCCS
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 240

ZAID=94240.50C
SOURCE: ENDF/B-V (MAT=1380, Tape 515)
REFERENCE: "Summary Documentation ^{240}Pu ENDF/B-V MAT=1380,"
by L. W. Weston and R. Q. Wright
contained in ENDF-201







Data Availability

Continuous Energy

ZAID=94240.50C	NES=6549	T=300°K
ZAID=94240.51C	NES=1085	T=300°K
ZAID=94240.50D	NES=263	T=300°K

Multigroup

ZAID=94240.50M	30-Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=19.67567 gm/cm^3

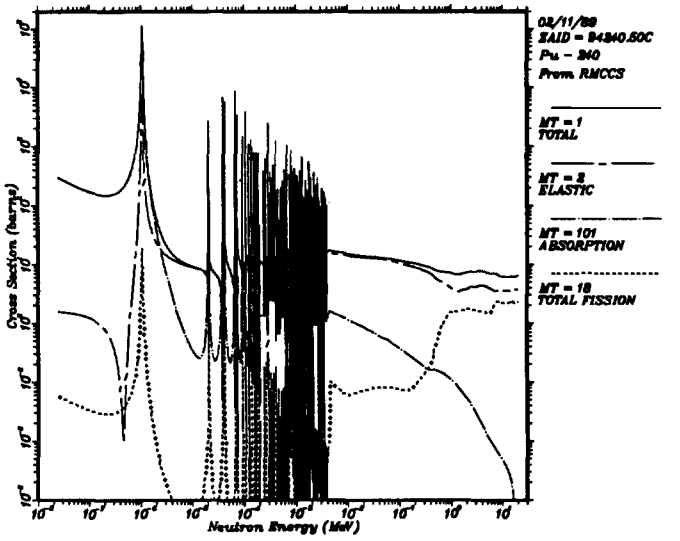
Evaluation Information

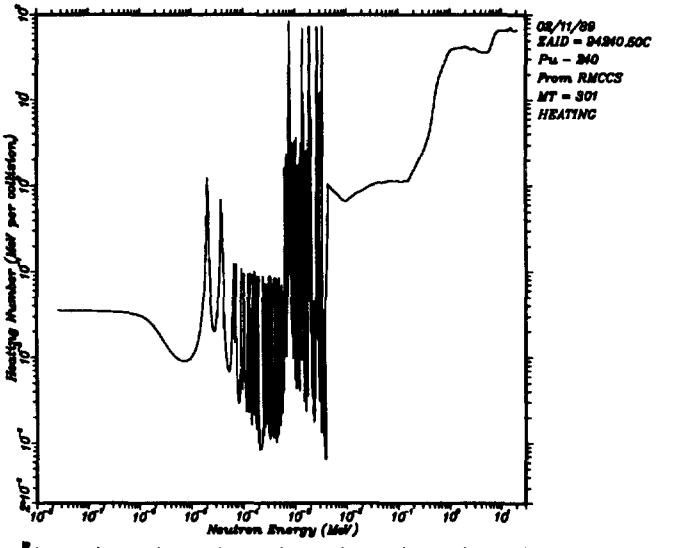
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

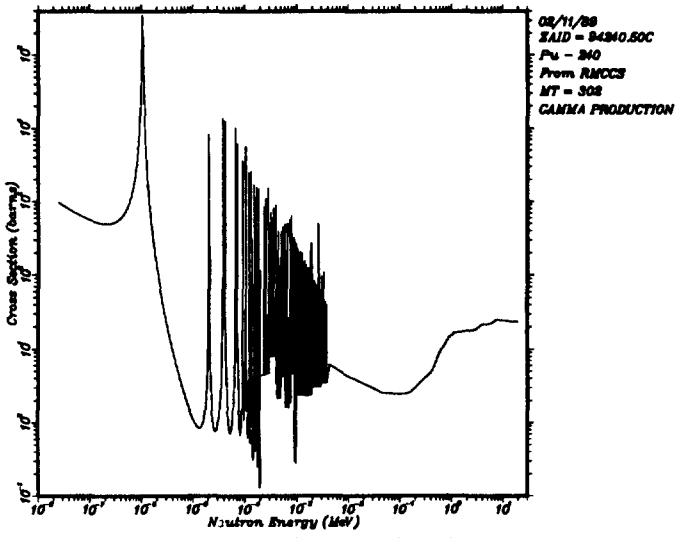
Reaction Information

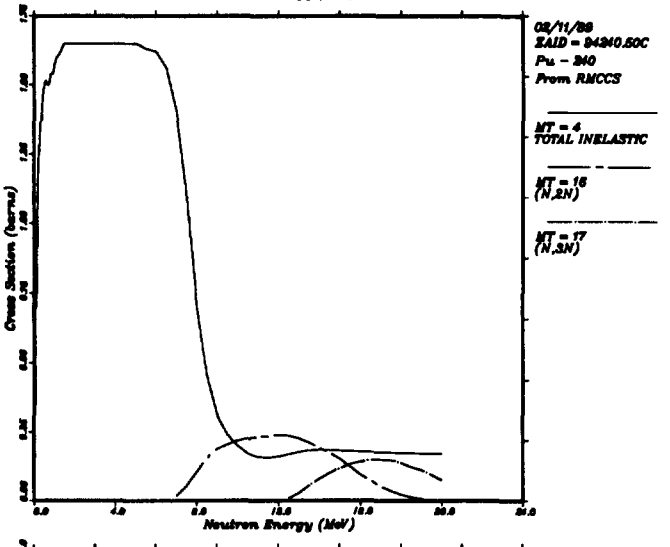
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.5610+00	2.0000+01	-6.5335+00	-6.5335+00
(n,3n)	17	1.2240+01	2.0000+01	-1.2189+01	-1.2189+01
(n,f)	19	1.0000-11	2.0000+01	1.9500+02	1.9500+02
(n,n'f)	20	5.8000+00	2.0000+01	1.9500+02	1.9500+02
(n,2nf)	21	1.2240+01	2.0000+01	1.9500+02	1.9500+02
(n,n'1)	51	4.3181-02	2.0000+01	-4.3000-02	0.0000+00
(n,n'2)	52	1.4260-01	2.0000+01	-1.4200-01	0.0000+00
(n,n'3)	53	2.9724-01	2.0000+01	-2.9600-01	0.0000+00
(n,n'4)	54	6.0152-01	2.0000+01	-5.9900-01	0.0000+00
(n,n'5)	55	8.6663-01	2.0000+01	-8.6300-01	0.0000+00
(n,n'6)	56	9.0679-01	2.0000+01	-9.0300-01	0.0000+00
(n,n'7)	57	9.4897-01	2.0000+01	-9.4500-01	0.0000+00
(n,n'8)	58	1.4260+00	2.0000+01	-1.4200+00	0.0000+00
(n,n'9)	59	2.0084+00	2.0000+01	-2.0000+00	0.0000+00
(n,n'10)	60	3.0126+00	2.0000+01	-3.0000+00	0.0000+00
(n,n'11)	61	4.0168+00	2.0000+01	-4.0000+00	0.0000+00
(n,n'12)	62	5.0210+00	2.0000+01	-5.0000+00	0.0000+00
(n,n'c)	91	9.4897-01	2.0000+01	-9.4500-01	-9.4500-01
(n,γ)	102	1.0000-11	2.0000+01	5.2410+00	5.2410+00

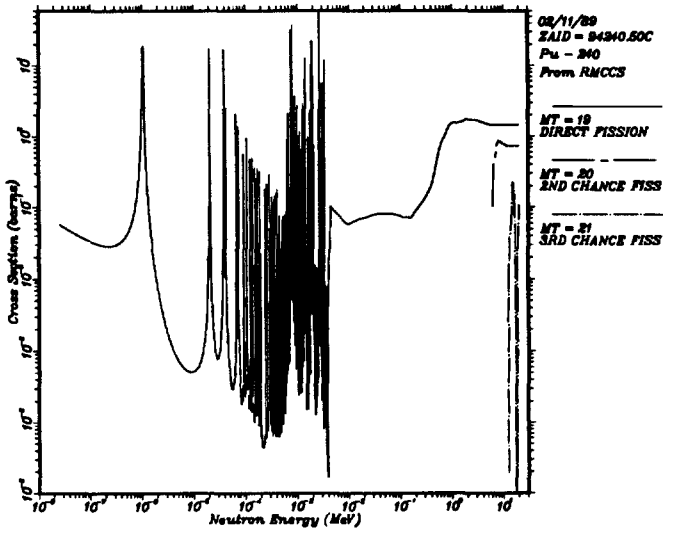
94240.50C

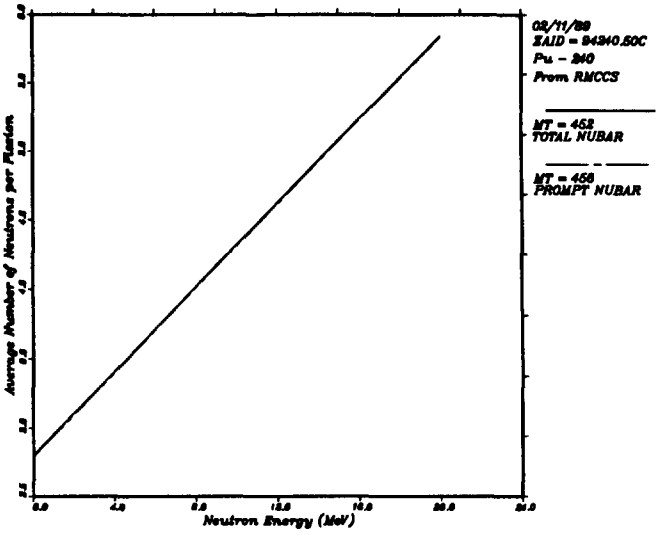

02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

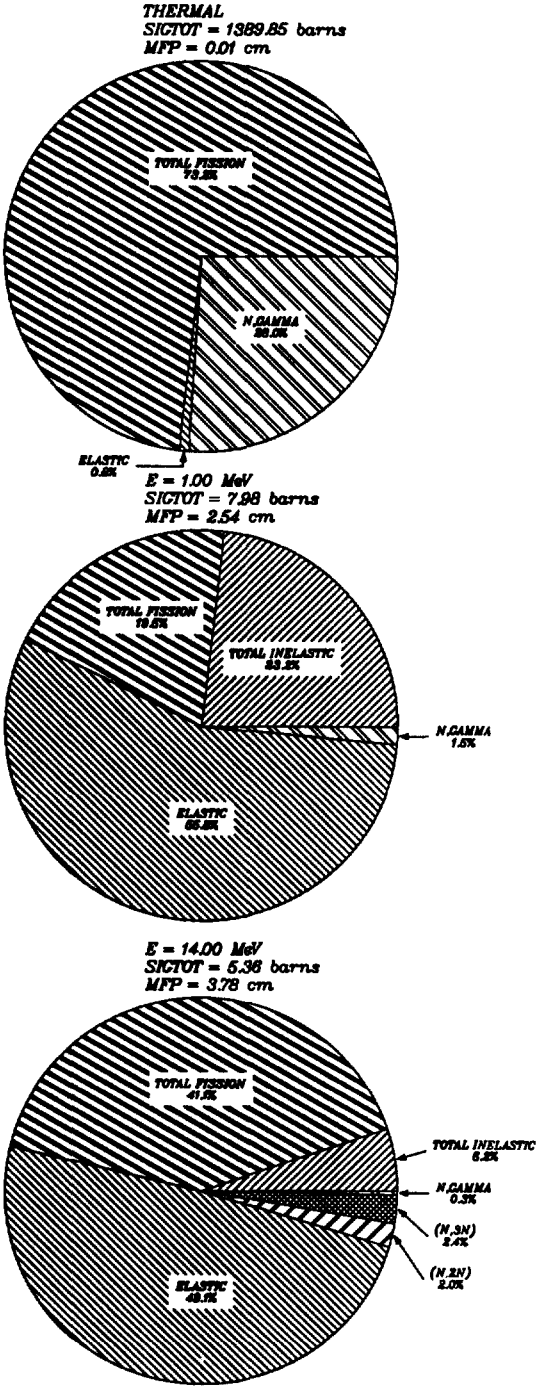

02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
MT = 21
3RD CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/11/89
ZAID = 94240.50C
Pu - 240
From RMCCS
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 241

ZAID=94241.50C
SOURCE: ENDF/B–V (MAT=1381, Tape 515)
REFERENCE: "Summary Documentation ^{241}Pu ENDF/B–V MAT=1381,"
by L. W. Weston, R. Q. Wright, and R. J. Howerton
contained in ENDF–201



Data Availability

Continuous Energy

ZAID=94241.50C	NES=3744	T=300°K
ZAID=94241.51C	NES=623	T=300°K

Discrete Reaction

ZAID=94241.50D	NES=263	T=300°K
ZAID=94241.51D	NES=263	T=300°K

Multigroup

ZAID=94241.50M	30–Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=19.75788 gm/cm^3

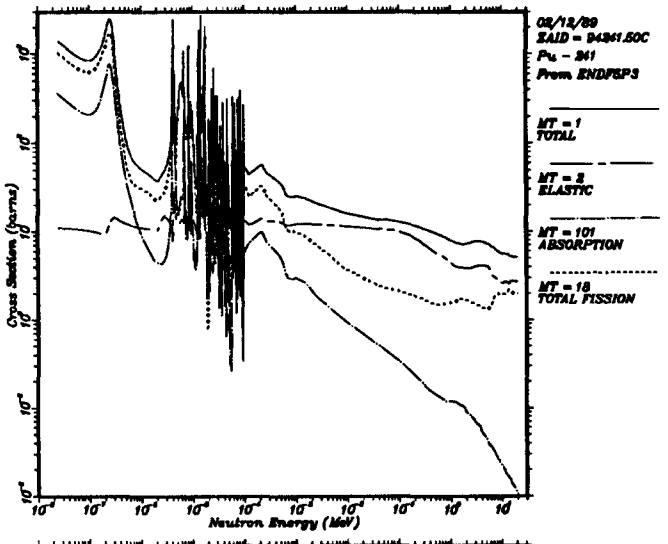
Evaluation Information

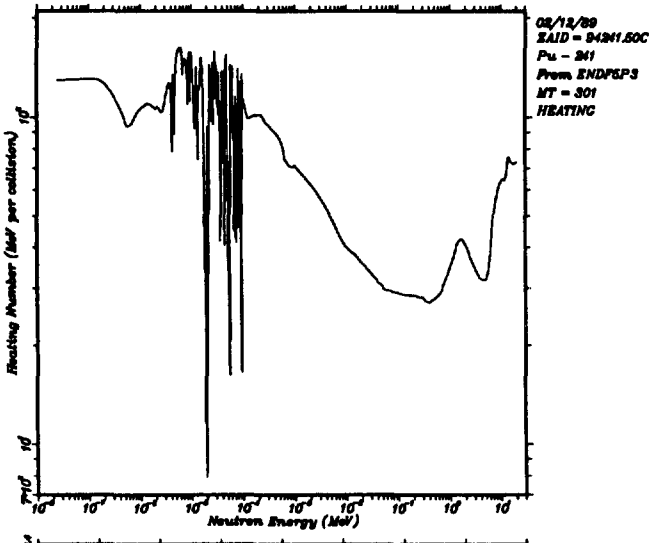
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

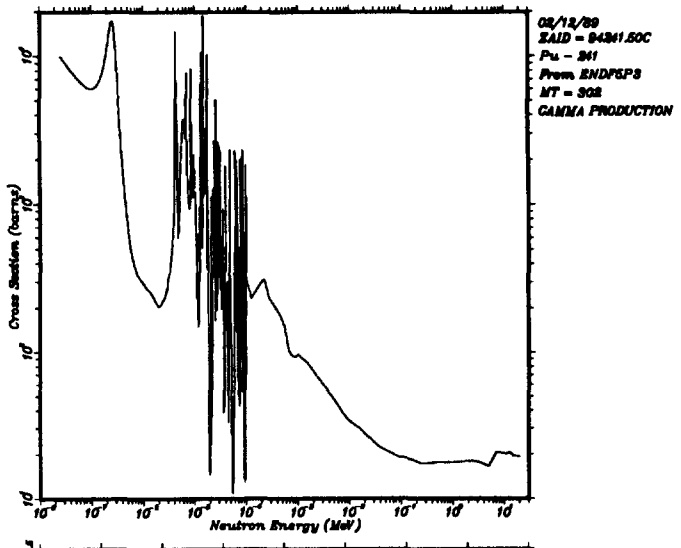
Reaction Information

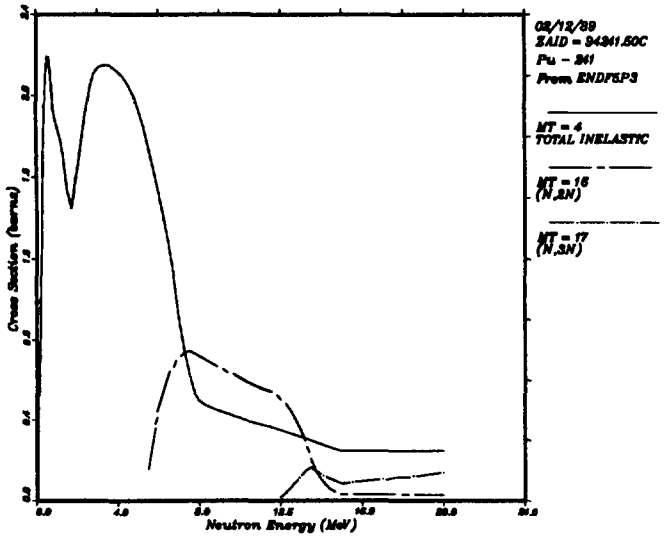
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.2700+00	2.0000+01	-5.2480+00	-5.2480+00
(n,3n)	17	1.1750+01	2.0000+01	-1.1701+01	-1.1701+01
fission	18	1.0000-11	2.0000+01	2.0222+02	2.0222+02
(n,n'1)	51	4.0167-02	2.0000+01	-4.0000-02	0.0000+00
(n,n'2)	52	9.5398-02	2.0000+01	-9.5000-02	0.0000+00
(n,n'3)	53	1.6368-01	2.0000+01	-1.6300-01	0.0000+00
(n,n'4)	54	1.7470-01	2.0000+01	-1.6900-01	0.0000+00
(n,n'5)	55	1.8000-01	2.0000+01	-1.7400-01	0.0000+00
(n,n'6)	56	2.3197-01	2.0000+01	-2.3100-01	0.0000+00
(n,n'7)	57	2.4603-01	2.0000+01	-2.4500-01	0.0000+00
(n,n'8)	58	3.0126-01	2.0000+01	-3.0000-01	0.0000+00
(n,n'9)	59	3.3640-01	2.0000+01	-3.3500-01	0.0000+00
(n,n'10)	60	4.4987-01	2.0000+01	-4.4800-01	0.0000+00
(n,n'11)	61	7.5615-01	2.0000+01	-7.5300-01	0.0000+00
(n,n'12)	62	8.3147-01	2.0000+01	-8.2800-01	0.0000+00
(n,n'13)	63	8.9774-01	2.0000+01	-8.9400-01	0.0000+00
(n,n'14)	64	9.2184-01	2.0000+01	-9.1800-01	0.0000+00
(n,n'15)	65	9.4494-01	2.0000+01	-9.4100-01	0.0000+00
(n,n'c)	91	1.2000+00	2.0000+01	-1.1950+00	-1.1950+00
(n,γ)	102	1.0000-11	2.0000+01	6.3008+00	6.3008+00

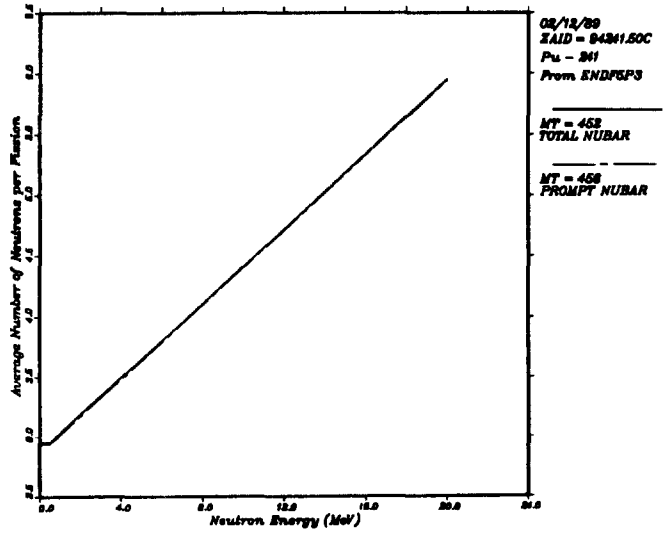
94241.50C


02/12/89
ZAID = 94241.50C
Pu - 241
From ENDF5P3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94241.50C
Pu - 241
From ENDF5P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 94241.50C
Pu - 241
From ENDF5P3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94241.50C
Pu - 241
From ENDF5P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94241.50C
Pu - 241
From ENDF5P3
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 242

ZAID=94242.50C
SOURCE: ENDF/B-V (MAT=1342, Tape 514)
REFERENCE: "Summary Documentation for ^{242}Pu,"
by F. Mann, R. Schenter, D. G. Madland, and P. G. Young
contained in ENDF-201

Data Availability

Continuous Energy

ZAID=94242.50C	NES=7636	T=300°K
ZAID=94242.51C	NES=728	T=300°K

Discrete Reaction

ZAID=94242.50D	NES=263	T=300°K
ZAID=94242.51D	NES=263	T=300°K

Multigroup

ZAID=94242.50M	30-Group	T=300°K

Isotope Information

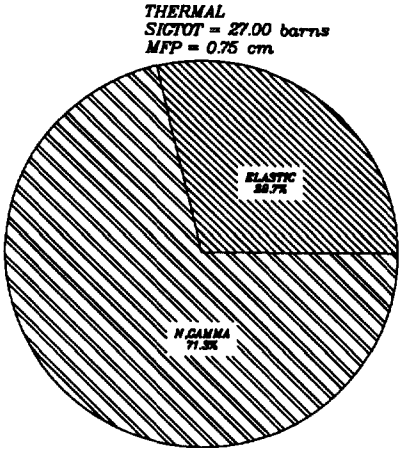
Abundance=Nonnatural
Density=19.84 gm/cm^3

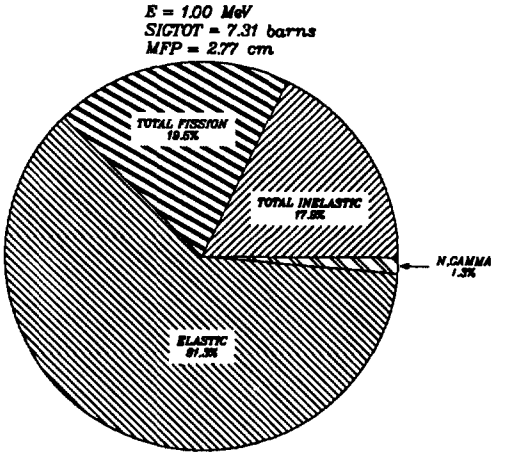
Evaluation Information

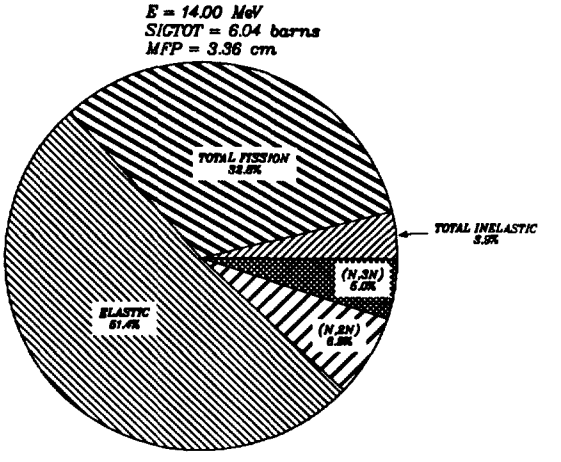
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

Reaction Information

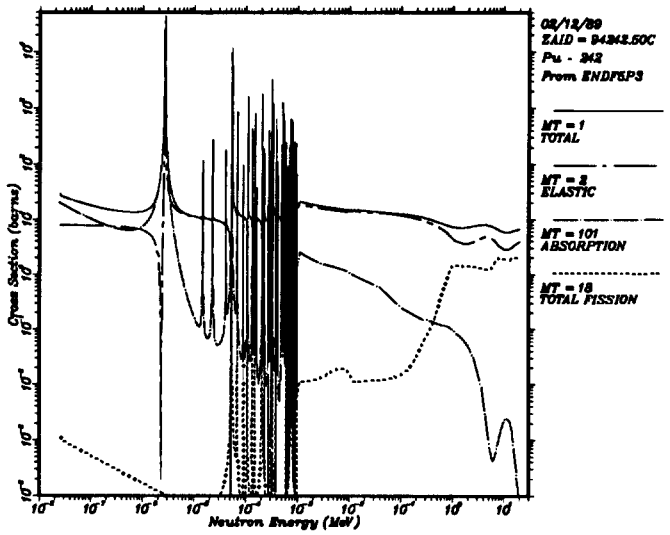
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.3271+00	2.0000+01	-6.3008+00	-6.3008+00
(n,3n)	17	1.1589+01	2.0000+01	-1.1541+01	-1.1541+01
fission	18	1.0000-11	2.0000+01	2.0061+02	2.0061+02
(n,n'1)	51	4.4726-02	2.0000+01	-4.4540-02	0.0000+00
(n,n'2)	52	1.4781-01	2.0000+01	-1.4720-01	0.0000+00
(n,n'3)	53	3.0717-01	2.0000+01	-3.0590-01	0.0000+00
(n,n'4)	54	5.1976-01	2.0000+01	-5.1760-01	0.0000+00
(n,n'5)	55	8.3640-01	2.0000+01	-7.7870-01	0.0000+00
(n,n'6)	56	7.8355-01	2.0000+01	-7.8030-01	0.0000+00
(n,n'7)	57	8.3637-01	2.0000+01	-8.3290-01	0.0000+00
(n,n'8)	58	8.6860-01	2.0000+01	-8.6500-01	0.0000+00
(n,n'9)	59	9.3086-01	2.0000+01	-9.2700-01	0.0000+00
(n,n'10)	60	9.5998-01	2.0000+01	-9.5600-01	0.0000+00
(n,n'11)	61	9.8971-01	2.0000+01	-9.8560-01	0.0000+00
(n,n'12)	62	9.9915-01	2.0000+01	-9.9500-01	0.0000+00
(n,n'13)	63	1.0232+00	2.0000+01	-1.0190+00	0.0000+00
(n,n'14)	64	1.0443+00	2.0000+01	-1.0400+00	0.0000+00
(n,n'15)	65	1.0684+00	2.0000+01	-1.0640+00	0.0000+00
(n,n'16)	66	1.2500+00	2.0000+01	-1.0870+00	0.0000+00
(n,n'17)	67	1.1066+00	2.0000+01	-1.1020+00	0.0000+00
(n,n'18)	68	1.1267+00	2.0000+01	-1.1220+00	0.0000+00
(n,n'19)	69	1.1568+00	2.0000+01	-1.1520+00	0.0000+00
(n,n'c)	91	4.2500-01	2.0000+01	-4.2324-01	-4.2324-01
(n,γ)	102	1.0000-11	2.0000+01	5.0710+00	5.0710+00

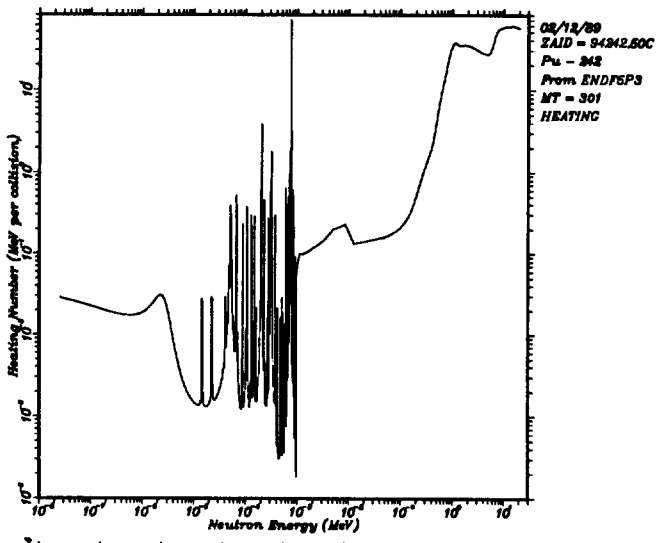


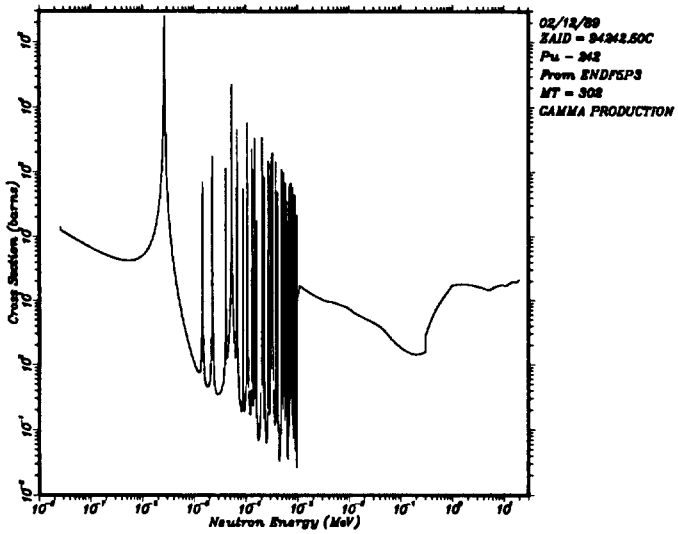


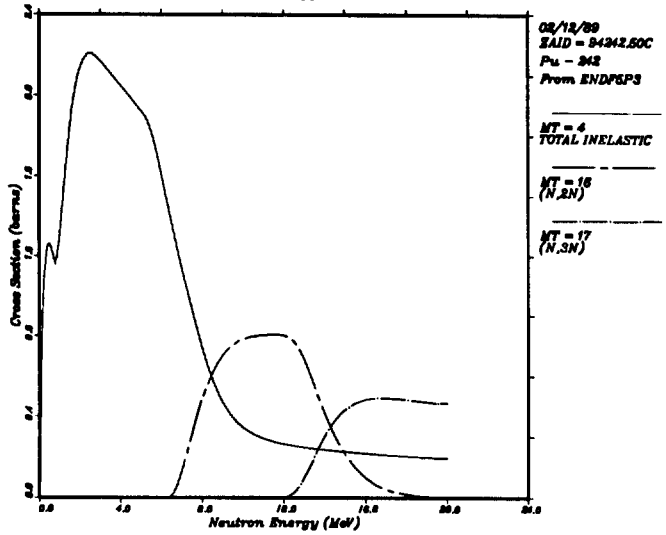


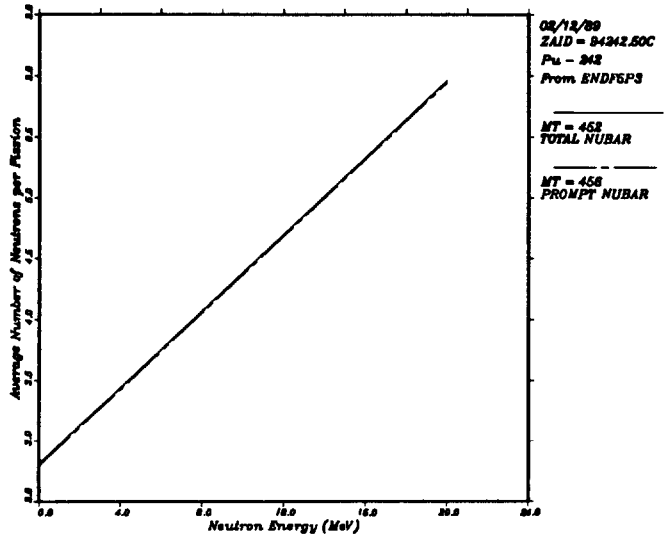
94242.50C


02/12/89
ZAID = 94242.50C
Pu - 242
From ENDF6P3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94242.50C
Pu - 242
From ENDF6P3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 94242.50C
Pu - 242
From ENDF6P3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94242.50C
Pu - 242
From ENDF6P3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94242.50C
Pu - 242
From ENDF6P3
MT = 452
TOTAL NUBAR
MT = 456
PROMPT NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Plutonium – 243

ZAID=94243.35C

SOURCE: ENDL–85 (ZA=94243 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=94243.35C NES=485 T=0°K

Isotope Information

Abundance=Nonnatural

Density=19.92223 gm/cm^3

Evaluation Information

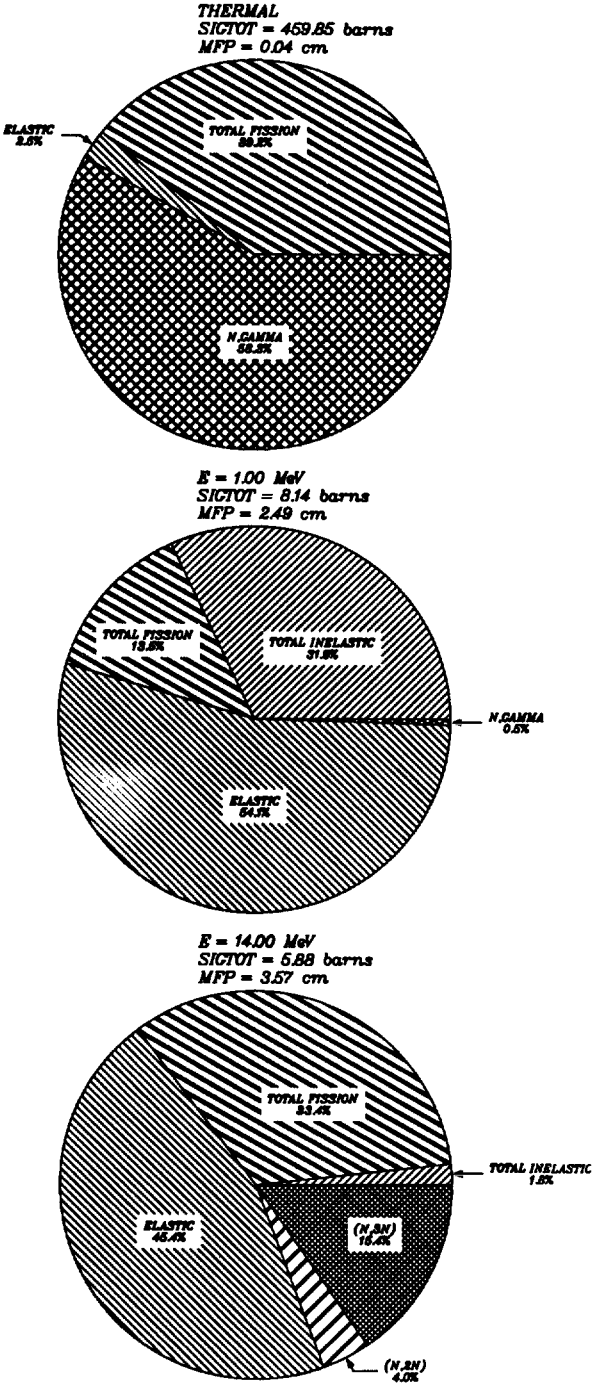
Photon-Production Data – Yes

Heating Numbers – Local

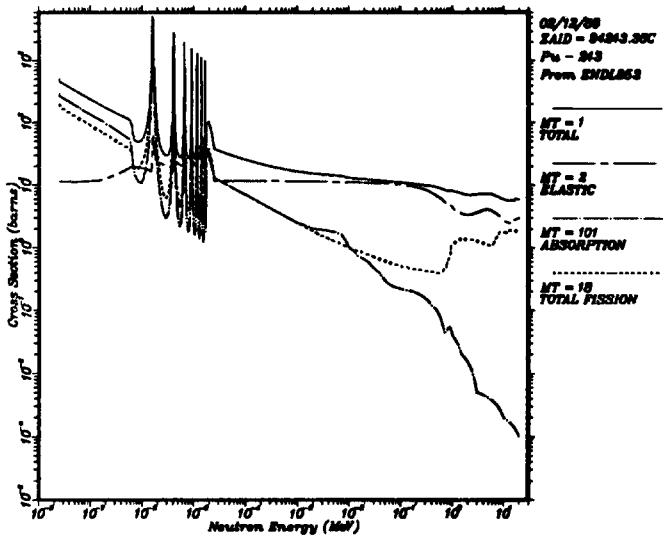
Energy Range – 10^{-10} to 20 MeV

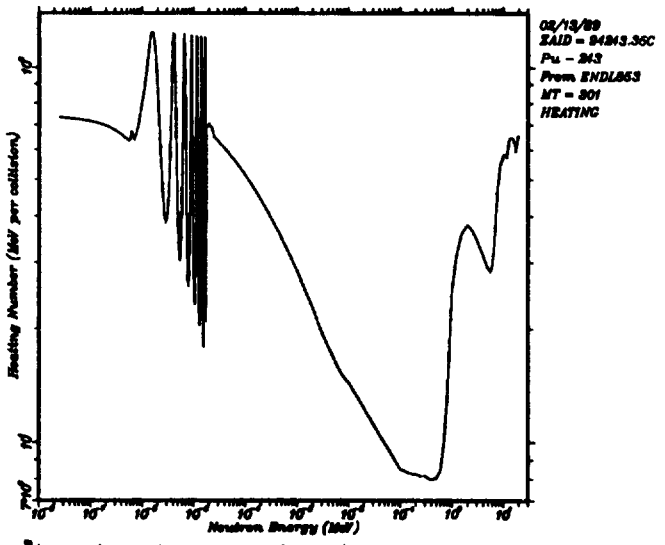
Reaction Information

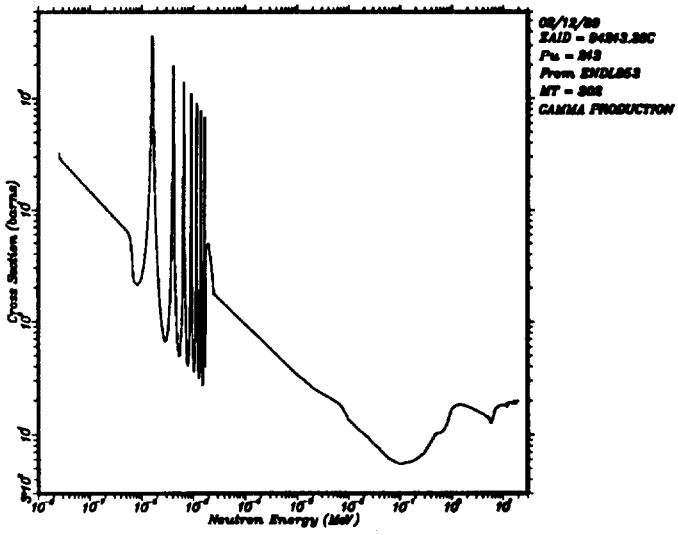
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	6.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.0601+00	2.0000+01	-5.0392+00	-5.0392+00
(n,3n)	17	1.1380+01	2.0000+01	-1.1333+01	-1.1333+01
(n,4n)	37	1.6650+01	2.0000+01	-1.6581+01	-1.6581+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9000+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.0200+00	6.0200+00

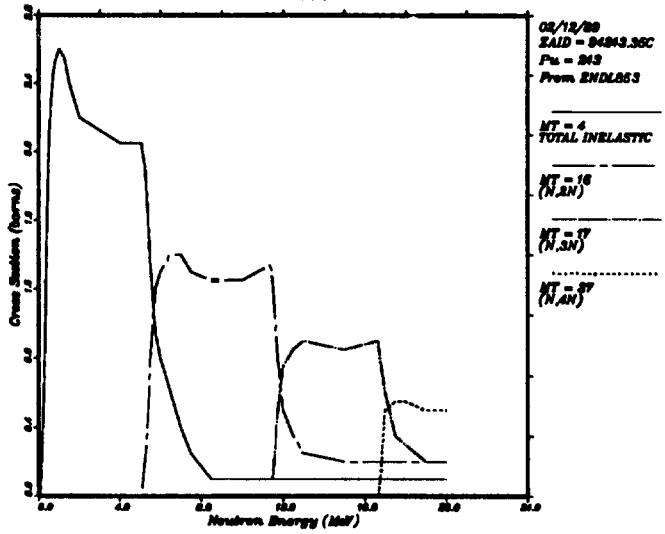


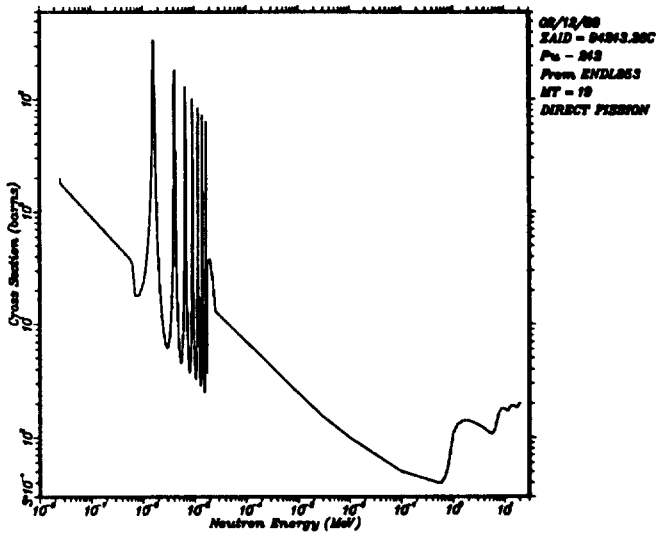
94243.35C

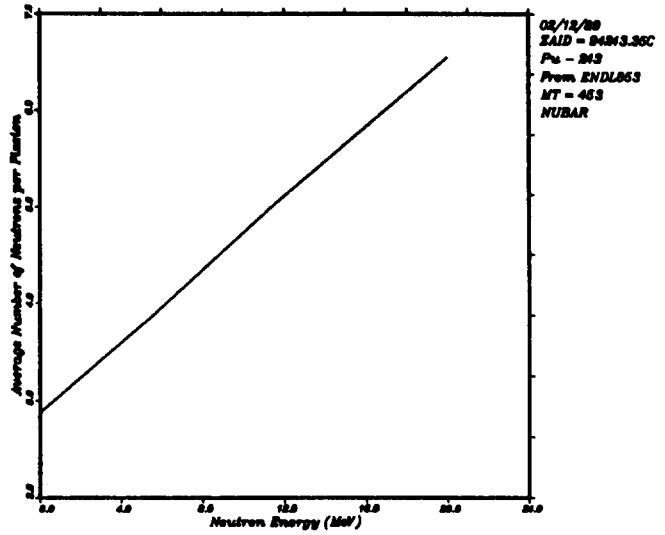

02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

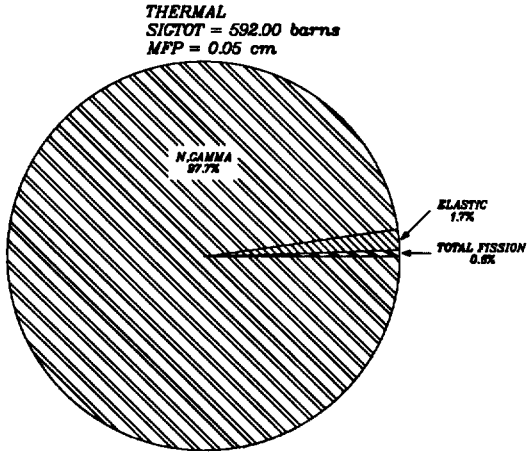

02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)

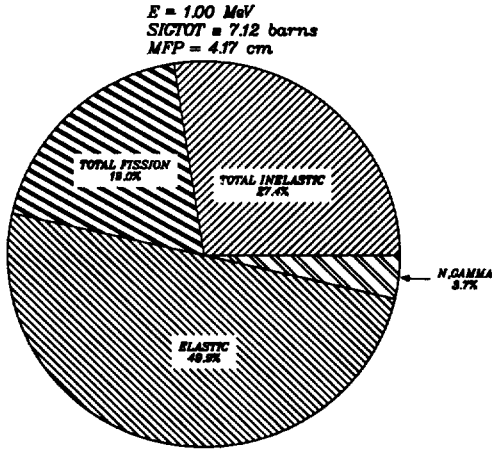

02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)

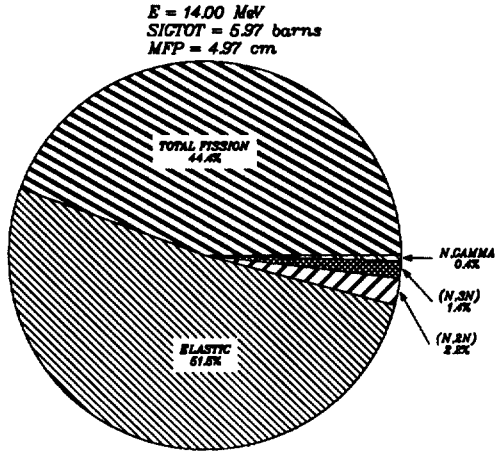

02/12/89
ZAID = 94243.35C
Pu - 243
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Americium – 241

ZAID=95241.50C
SOURCE: ENDF/B–V (MAT=1361, Tape 514)
REFERENCE: "Summary Documentation Isotope: 95–Am–241,"
by F. M. Mann, R. E. Schenter, L. Weston, C. R. Reich, R. J. Howerton
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=95241.50C	NES=4420	T=300°K
ZAID=95241.51C	NES=713	T=300°K

Discrete Reaction

ZAID=95241.50D	NES=263	T=300°K
ZAID=95241.51D	NES=263	T=300°K

Multigroup

ZAID=95241.50M	30–Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=13.49 gm/cm^3

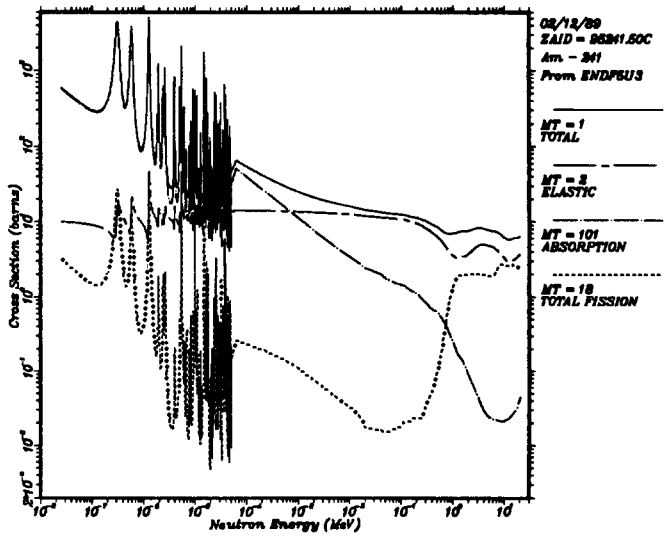
Evaluation Information

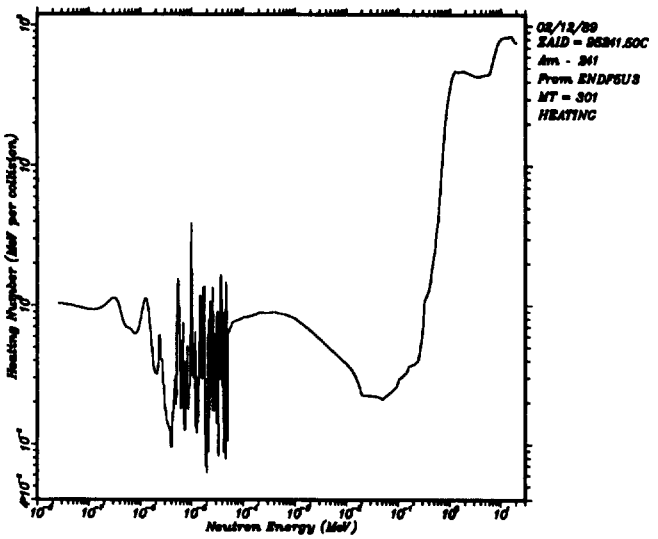
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

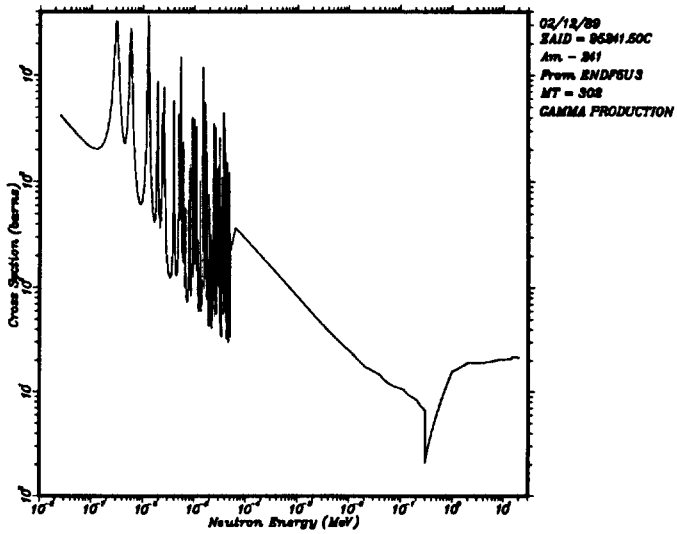
Reaction Information

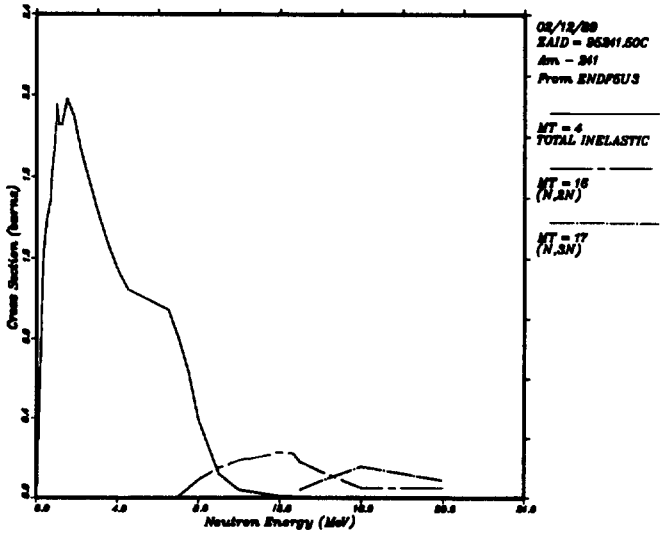
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.6600+00	2.0000+01	-6.6322+00	-6.6322+00
(n,3n)	17	1.2653+01	2.0000+01	-1.2600+01	-1.2600+01
(n,f)	19	1.0000-11	2.0000+01	2.0230+02	2.0230+02
(n,n'f)	20	6.0000+00	2.0000+01	2.0230+02	2.0230+02
(n,n'1)	51	4.2000-02	2.0000+01	-4.1825-02	0.0000+00
(n,n'2)	52	9.5000-02	2.0000+01	-9.4604-02	0.0000+00
(n,n'3)	53	1.6100-01	2.0000+01	-1.6033-01	0.0000+00
(n,n'4)	54	2.0700-01	2.0000+01	-2.0614-01	0.0000+00
(n,n'5)	55	2.3700-01	2.0000+01	-2.3601-01	0.0000+00
(n,n'6)	56	2.7500-01	2.0000+01	-2.7385-01	0.0000+00
(n,n'7)	57	3.2400-01	2.0000+01	-3.2265-01	0.0000+00
(n,n'8)	58	4.7500-01	2.0000+01	-4.7302-01	0.0000+00
(n,n'9)	59	5.0600-01	2.0000+01	-5.0389-01	0.0000+00
(n,n'10)	60	5.4900-01	2.0000+01	-5.4671-01	0.0000+00
(n,n'11)	61	5.9000-01	2.0000+01	-5.8754-01	0.0000+00
(n,n'12)	62	6.2300-01	2.0000+01	-6.2040-01	0.0000+00
(n,n'13)	63	6.3600-01	2.0000+01	-6.3335-01	0.0000+00
(n,n'14)	64	6.5190-01	2.0000+01	-6.4918-01	0.0000+00
(n,n'15)	65	6.5200-01	2.0000+01	-6.4928-01	0.0000+00
(n,n'16)	66	6.5490-01	2.0000+01	-6.5217-01	0.0000+00
(n,n'17)	67	6.5500-01	2.0000+01	-6.5227-01	0.0000+00
(n,n'18)	68	6.6990-01	2.0000+01	-6.6711-01	0.0000+00
(n,n'c)	91	6.7000-01	2.0000+01	-6.6721-01	-6.6721-01
(n,γ)	102	1.0000-11	2.0000+01	5.5290+00	5.5290+00

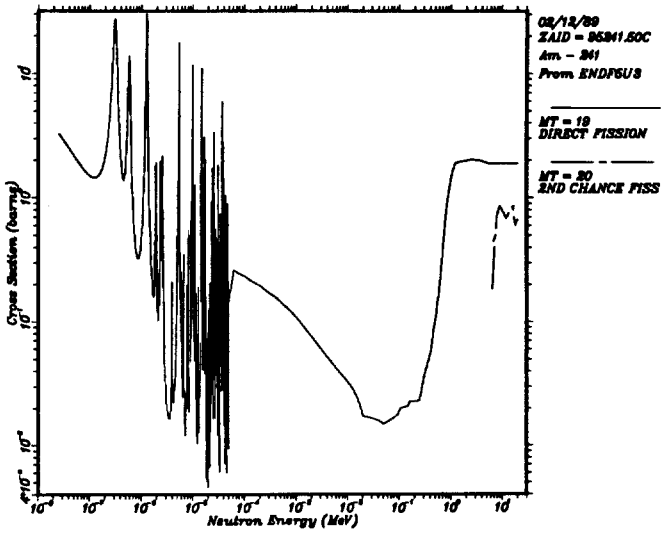
95241.50C

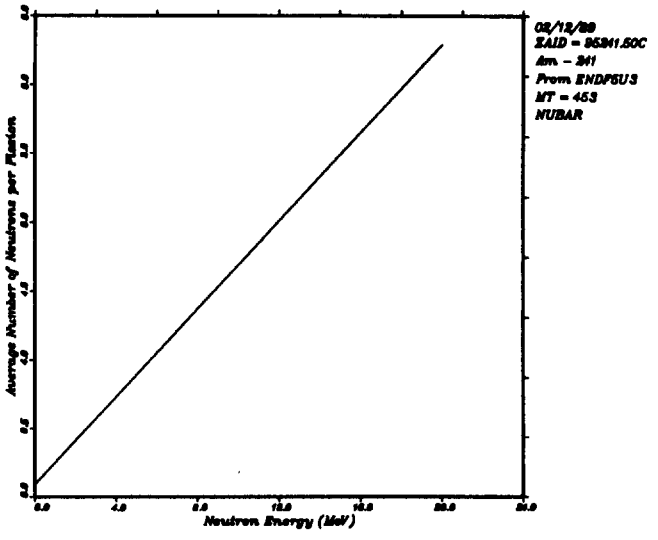

02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

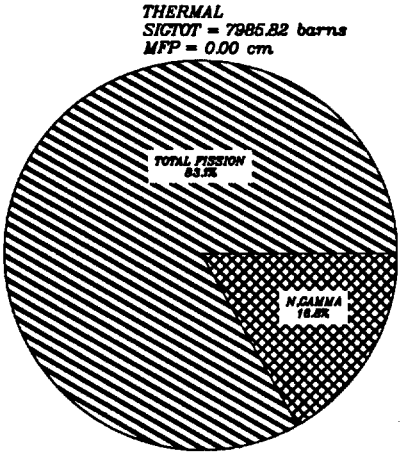

02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)

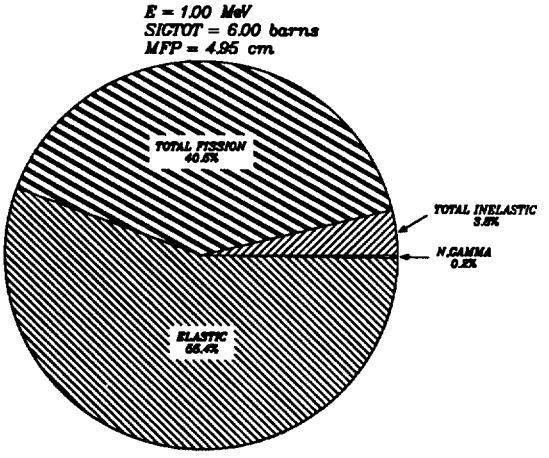

02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)

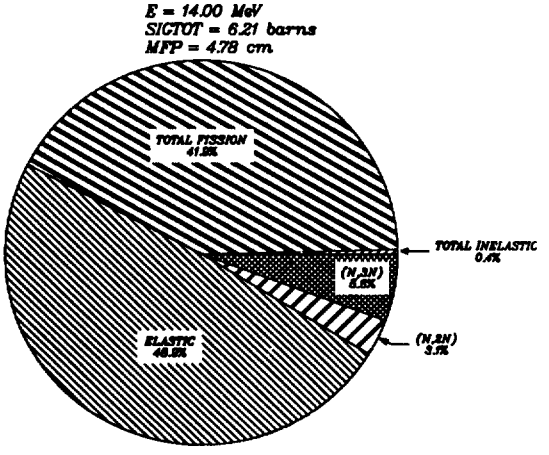

02/12/89
ZAID = 95241.50C
Am - 241
From ENDF6U3
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Americium – 242 (metastable)

ZAID=95242.50C
SOURCE: ENDF/B–V (MAT=1369, Tape 514)
REFERENCE: "Summary Documentation Isotope: 95–Am–242*,"
by F. M. Mann, R. E. Schenter, R. Benjamin, R. J. Howerton, and C. R. Reich
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=95242.50C	NES=323	T=300°K
ZAID=95242.51C	NES=317	T=300°K

Discrete Reaction

ZAID=95242.50D	NES=263	T=300°K
ZAID=95242.51D	NES=263	T=300°K

Multigroup

ZAID=95242.50M	30–Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=13.54 gm/cm^3

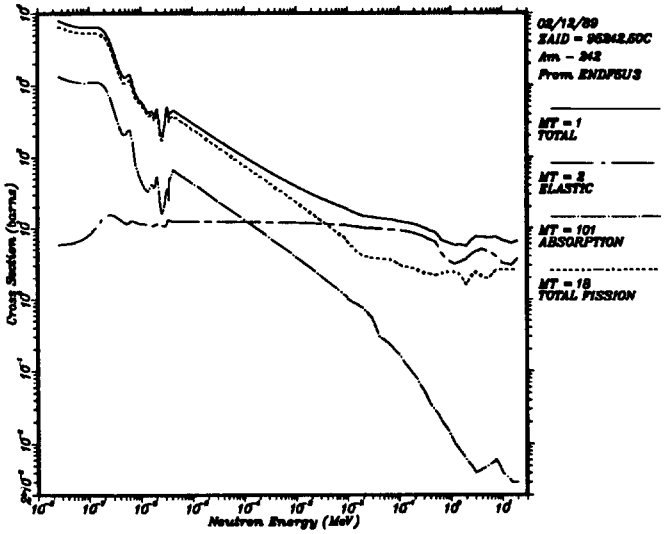
Evaluation Information

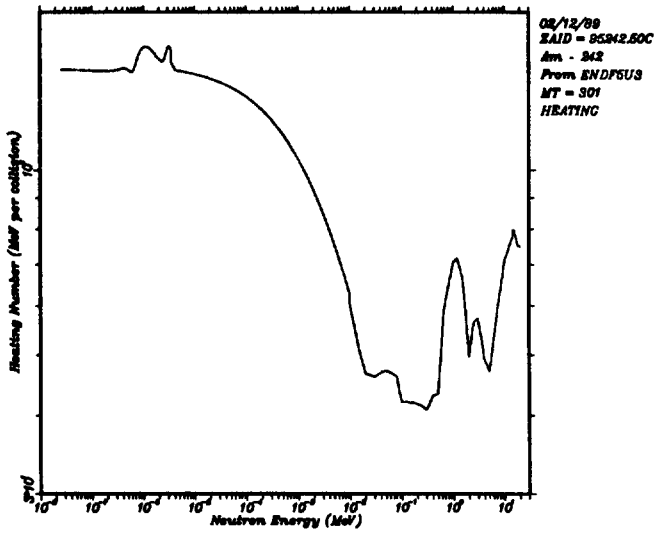
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

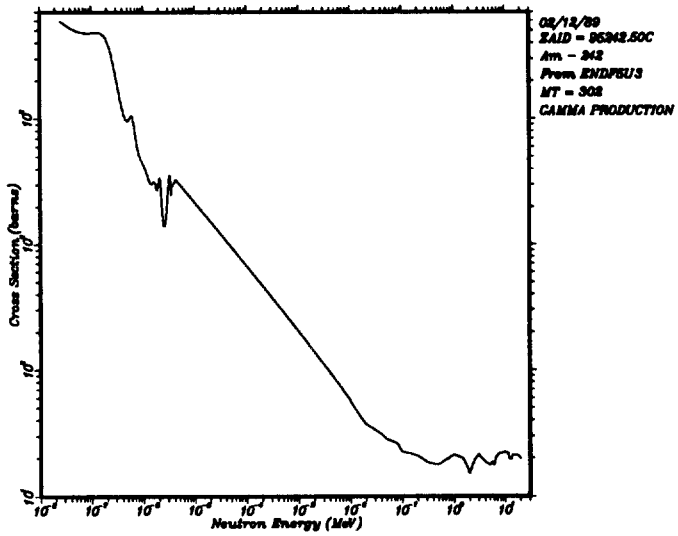
Reaction Information

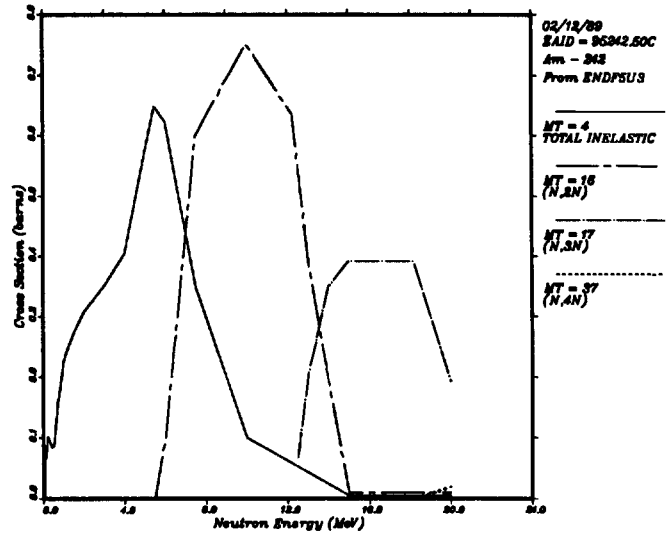
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	5.4788+00	2.0000+01	-5.4561+00	-5.4561+00
(n,3n)	17	1.2241+01	2.0000+01	-1.2190+01	-1.2190+01
(n,f)	19	1.0000-11	2.0000+01	2.0229+02	2.0229+02
(n,n'f)	20	4.5000+00	2.0000+01	2.0229+02	2.0229+02
(n,4n)	37	1.8165+01	2.0000+01	-1.8090+01	-1.8090+01
(n,n'1)	51	1.0000-11	2.0000+01	4.8797-02	0.0000+00
(n,n'2)	52	1.0000-11	2.0000+01	4.8797-02	0.0000+00
(n,n'3)	53	1.0000-11	2.0000+01	2.1909-02	0.0000+00
(n,n'4)	54	1.0000-11	2.0000+01	3.9834-03	0.0000+00
(n,n'5)	55	4.1000-02	2.0000+01	-4.0830-02	0.0000+00
(n,n'6)	56	5.4000-02	2.0000+01	-5.3776-02	0.0000+00
(n,n'7)	57	7.5000-02	2.0000+01	-7.4689-02	0.0000+00
(n,n'8)	58	1.1200-01	2.0000+01	-1.1154-01	0.0000+00
(n,n'9)	59	1.1700-01	2.0000+01	-1.1651-01	0.0000+00
(n,n'10)	60	1.2300-01	2.0000+01	-1.2249-01	0.0000+00
(n,n'11)	61	1.2500-01	2.0000+01	-1.2448-01	0.0000+00
(n,n'12)	62	1.4000-01	2.0000+01	-1.3942-01	0.0000+00
(n,n'13)	63	1.4801-01	2.0000+01	-1.4739-01	0.0000+00
(n,n'c)	91	1.4801-01	2.0000+01	-1.4739-01	-1.4739-01
(n,γ)	102	1.0000-11	2.0000+01	6.4260+00	6.4260+00

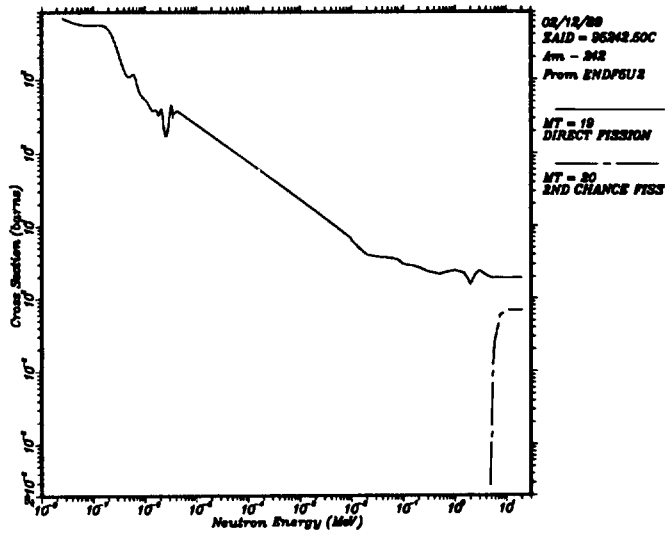
95242.50C

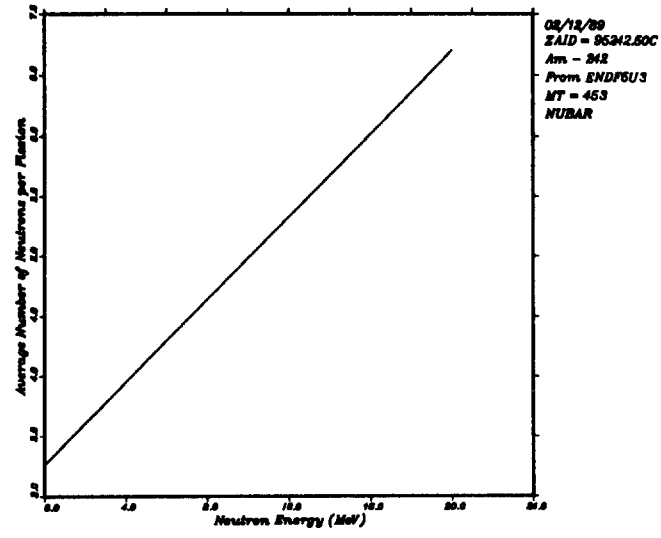

02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

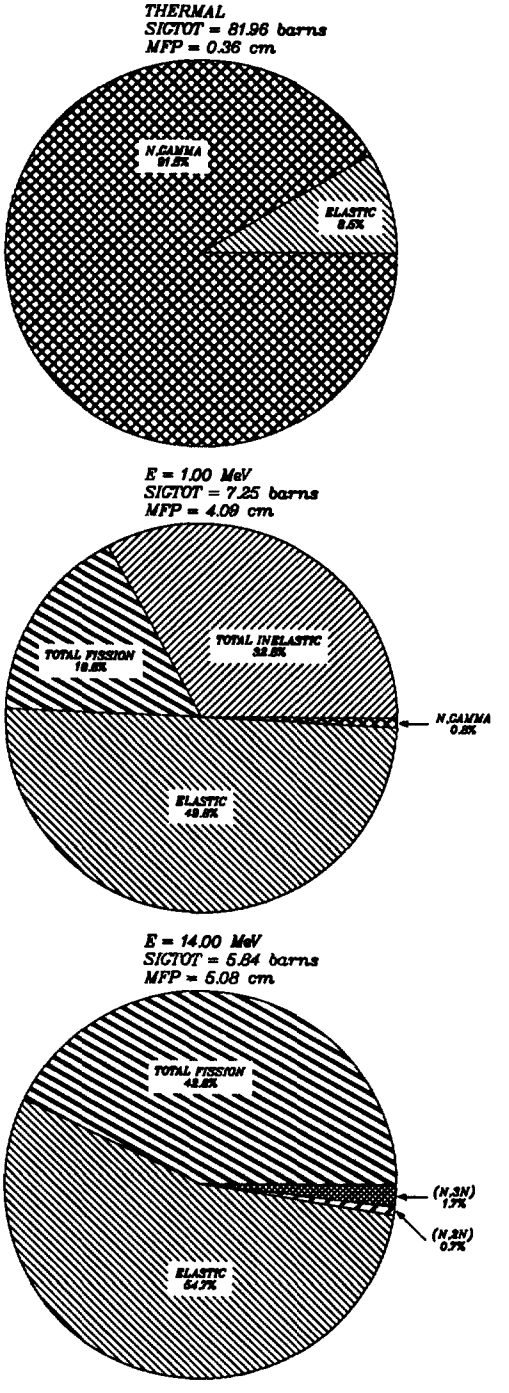

02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95242.50C
Am - 242
From ENDF6U3
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Americium – 243

ZAID=95243.50C
SOURCE: ENDF/B–V (MAT=1363, Tape 514)
REFERENCE: "Summary Documentation Isotope: 95–Am–243,"
by F. M. Mann, R. E. Schenter, R. Benjamin, R. J. Howerton, and C. R. Reich
contained in ENDF–201



Data Availability

Continuous Energy

ZAID=95243.50C	NES=11921	T=300°K
ZAID=95243.51C	NES=757	T=300°K

Discrete Reaction

ZAID=95243.50D	NES=263	T=300°K
ZAID=95243.51D	NES=263	T=300°K

Multigroup

ZAID=95243.50M	30–Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=13.60 gm/cm^3

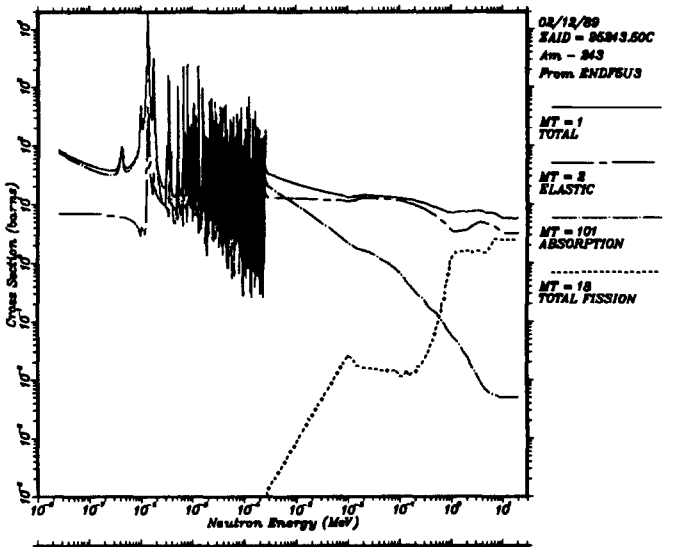
Evaluation Information

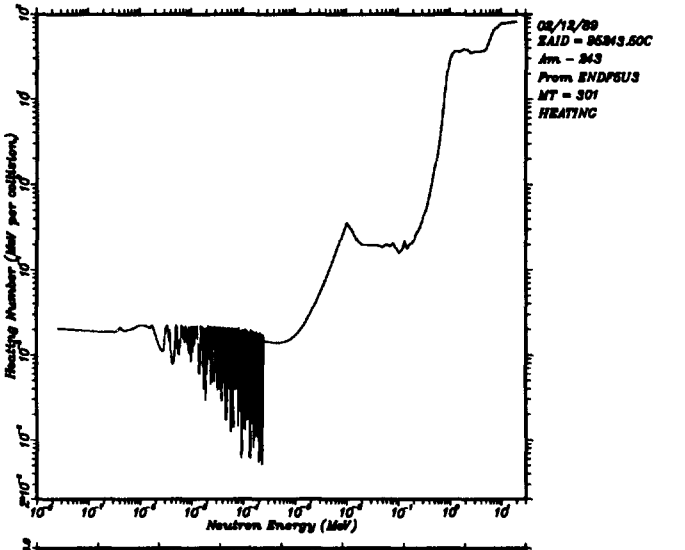
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

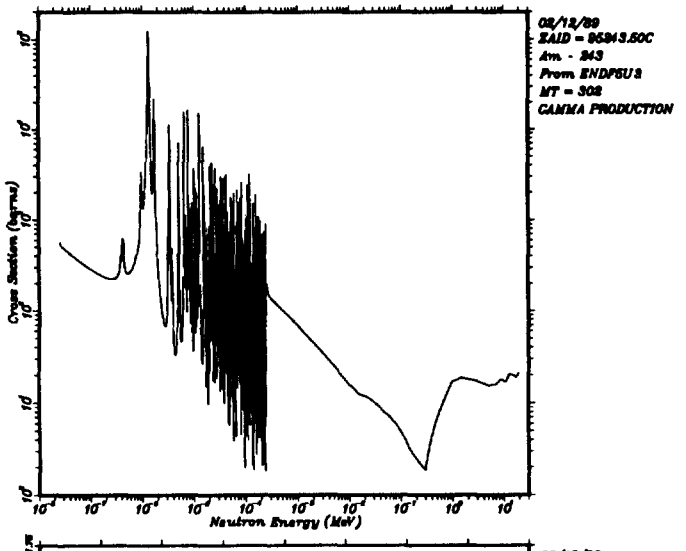
Reaction Information

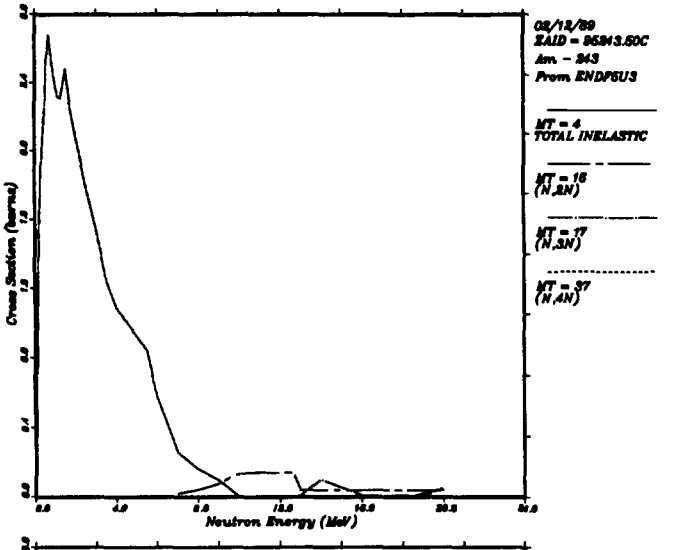
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.3770+00	2.0000+01	-6.3506+00	-6.3506+00
(n,3n)	17	1.2652+01	2.0000+01	-1.2600+01	-1.2600+01
(n,f)	19	2.4868-04	2.0000+01	2.0210+02	2.0210+02
(n,n'f)	20	4.5000+00	2.0000+01	2.0210+02	2.0210+02
(n,4n)	37	1.8647+01	2.0000+01	-1.8570+01	-1.8570+01
(n,n'1)	51	4.2000-02	2.0000+01	-4.1826-02	0.0000+00
(n,n'2)	52	8.4000-02	2.0000+01	-8.3653-02	0.0000+00
(n,n'3)	53	9.7000-02	2.0000+01	-9.6599-02	0.0000+00
(n,n'4)	54	1.2600-01	2.0000+01	-1.2548-01	0.0000+00
(n,n'5)	55	1.6100-01	2.0000+01	-1.6033-01	0.0000+00
(n,n'6)	56	1.6300-01	2.0000+01	-1.6233-01	0.0000+00
(n,n'7)	57	1.9500-01	2.0000+01	-1.9419-01	0.0000+00
(n,n'8)	58	2.4500-01	2.0000+01	-2.4399-01	0.0000+00
(n,n'9)	59	2.5200-01	2.0000+01	-2.5096-01	0.0000+00
(n,n'10)	60	2.6500-01	2.0000+01	-2.6390-01	0.0000+00
(n,n'11)	61	2.9800-01	2.0000+01	-2.9677-01	0.0000+00
(n,n'12)	62	3.3600-01	2.0000+01	-3.3461-01	0.0000+00
(n,n'13)	63	3.4000-01	2.0000+01	-3.3859-01	0.0000+00
(n,n'14)	64	4.6400-01	2.0000+01	-4.6208-01	0.0000+00
(n,n'15)	65	4.6500-01	2.0000+01	-4.6308-01	0.0000+00
(n,n'16)	66	4.7000-01	2.0000+01	-4.6806-01	0.0000+00
(n,n'17)	67	4.8000-01	2.0000+01	-4.7802-01	0.0000+00
(n,n'c)	91	4.8000-01	2.0000+01	-4.7802-01	-4.7802-01
(n,γ)	102	1.0000-11	2.0000+01	5.3630+00	5.3630+00

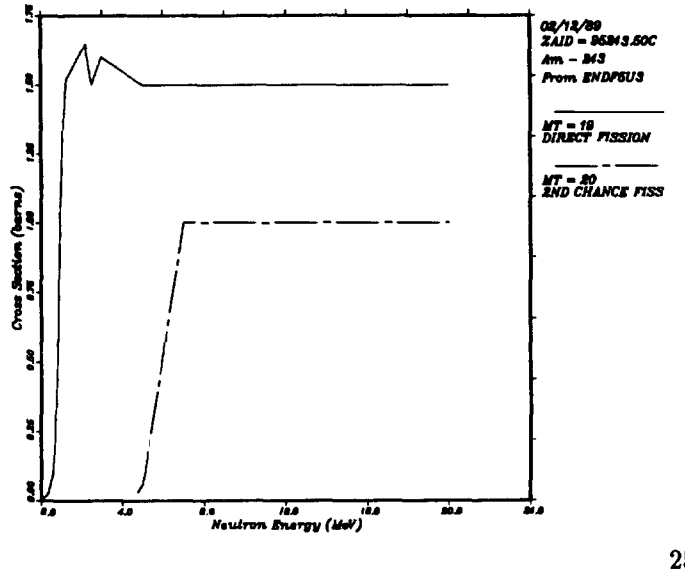
95243.50C

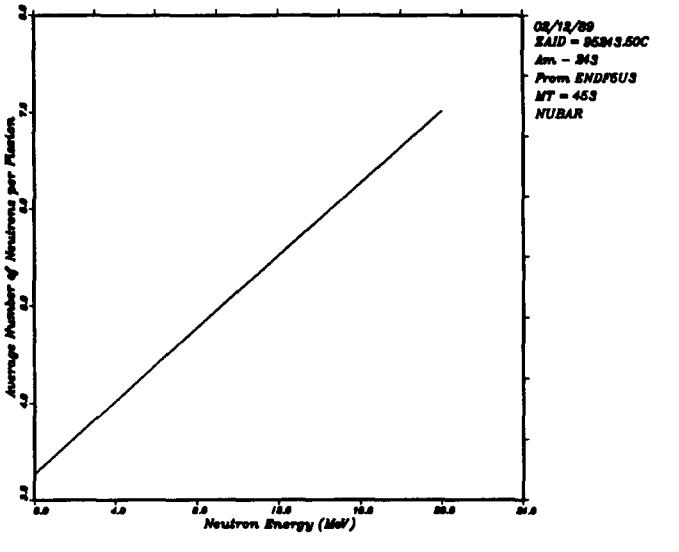

02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 95243.50C
Am - 243
From ENDF6U3
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 242

ZAID=96242.50C
SOURCE: ENDF/B–V (MAT=8642, Tape 522)
REFERENCE: File 1 information on ENDF/B–V Actinide Special Purpose Tape 522
by F. Mann, R. Benjamin, R. Howerton, *et. al.*

<u>Data Availability</u>

Continuous Energy		
ZAID=96242.50C	NES=3113	T=300°K
ZAID=96242.51C	NES=472	T=300°K
Discrete Reaction		
ZAID=96242.50D	NES=263	T=300°K
ZAID=96242.51D	NES=263	T=300°K
Multigroup		
ZAID=96242.50M	30-Group	T=300°K

<u>Isotope Information</u>

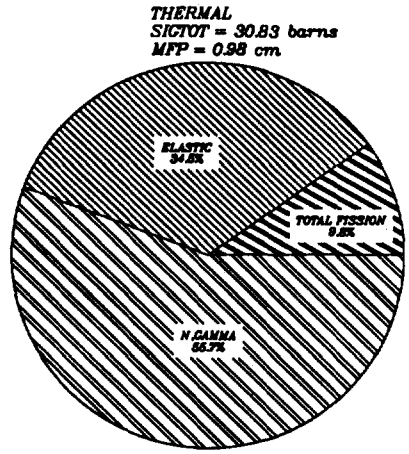
Abundance=Nonnatural
Density=13.24 gm/cm^3

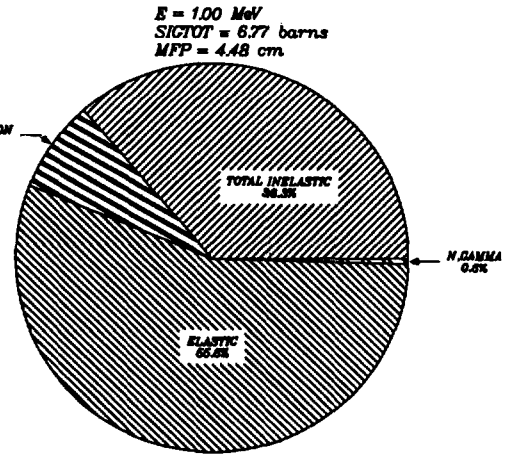
<u>Evaluation Information</u>

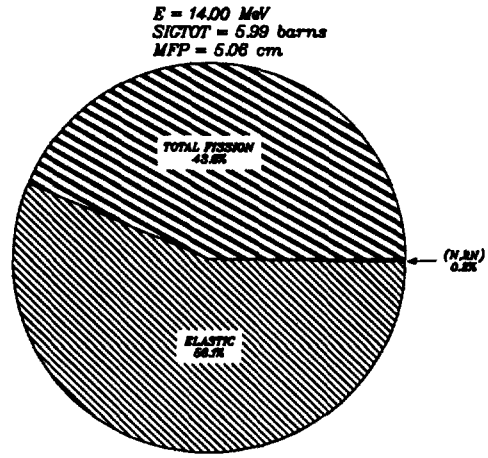
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

<u>Reaction Information</u>

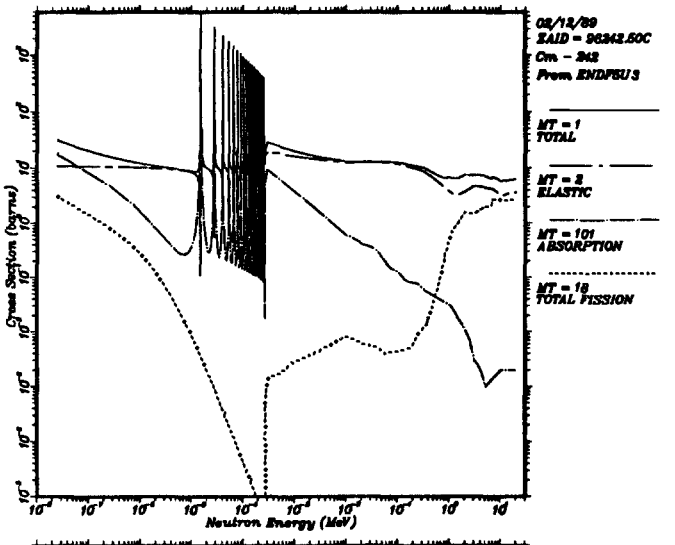
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.9680+00	2.0000+01	-6.9391+00	-6.9391+00
(n,3n)	17	1.3092+01	2.0000+01	-1.3038+01	-1.3038+01
(n,f)	19	1.0000-11	2.0000+01	2.0255+02	2.0255+02
(n,n'f)	20	6.5000+00	2.0000+01	2.0255+02	2.0255+02
(n,n'1)	51	4.2000-02	2.0000+01	-4.1826-02	0.0000+00
(n,n'2)	52	1.3900-01	2.0000+01	-1.3842-01	0.0000+00
(n,n'3)	53	2.8500-01	2.0000+01	-2.8382-01	0.0000+00
(n,n'c)	91	2.8500-01	2.0000+01	-2.8382-01	-2.8382-01
(n,γ)	102	1.0000-11	2.0000+01	5.7030+00	5.7030+00

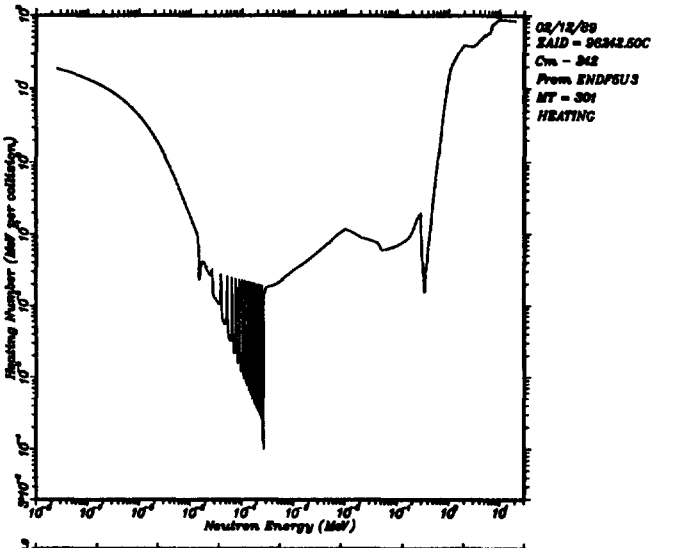


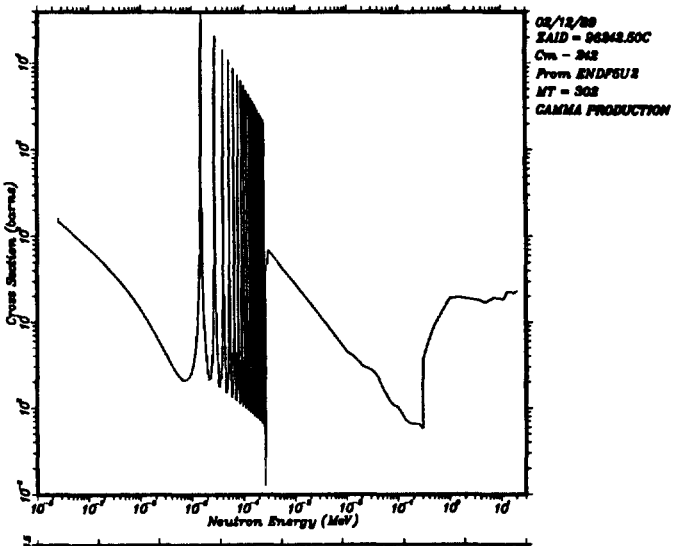


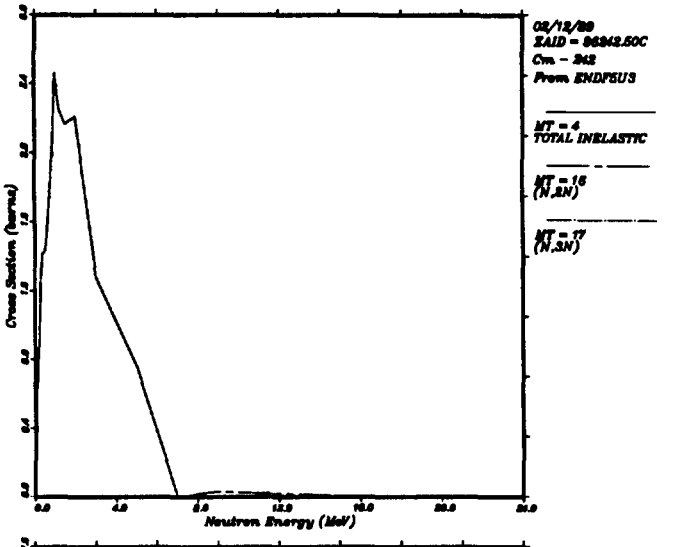


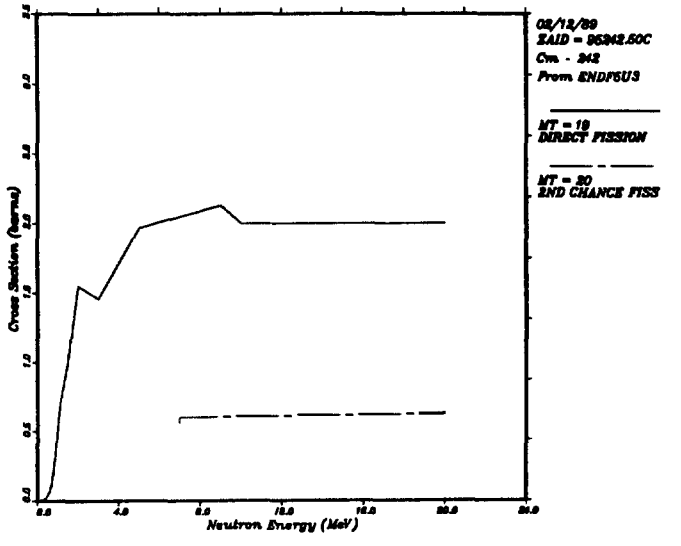
96242.50C

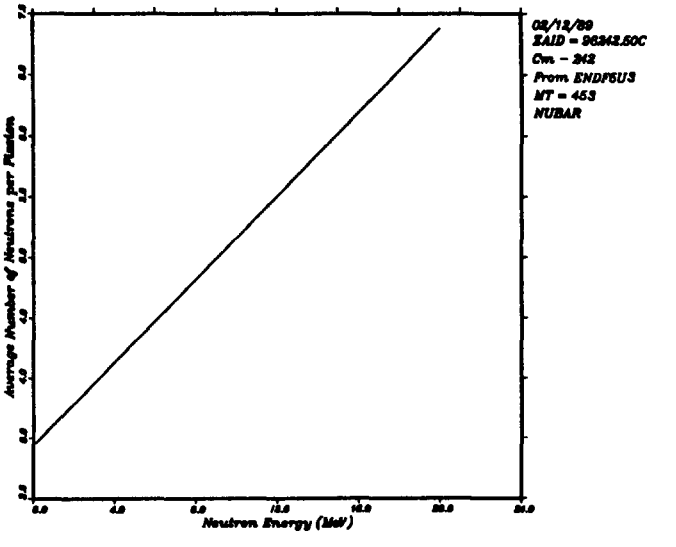

02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 102
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96242.50C
Cm - 242
From ENDFSU3
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 243

ZAID=96243.35C

SOURCE: ENDL–85 (ZA=96243 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=96243.35C NES=1880 T=0°K

Isotope Information

Abundance=Nonnatural

Density=13.292 gm/cm^3

Evaluation Information

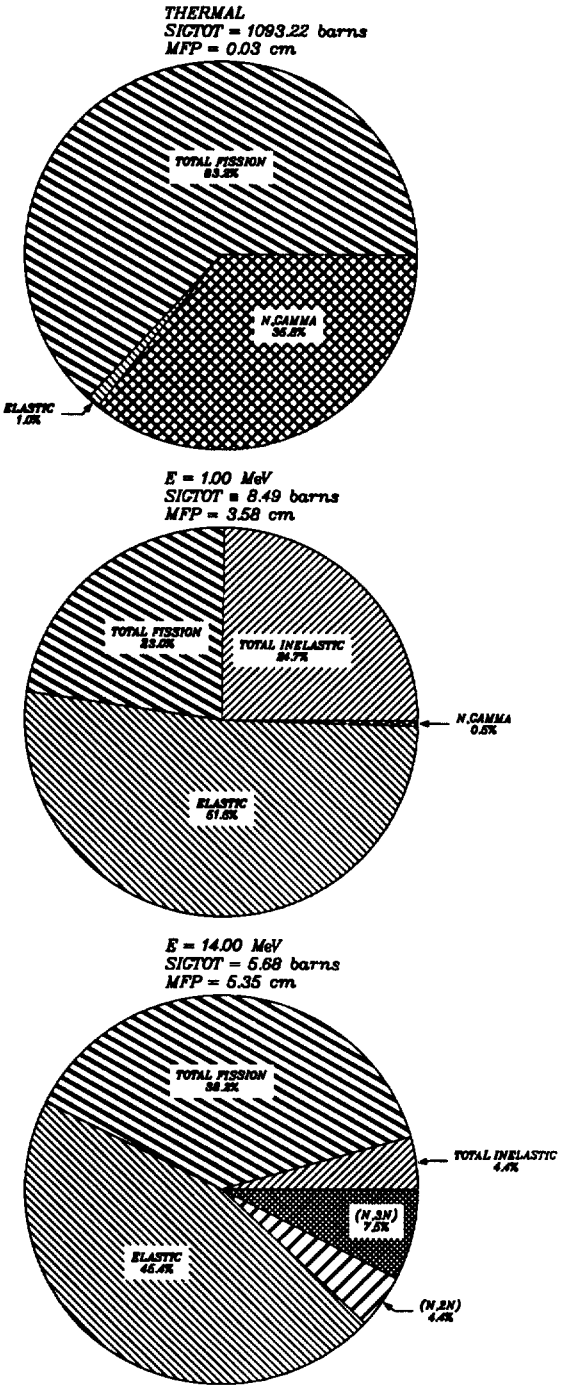
Photon-Production Data – Yes

Heating Numbers – Local

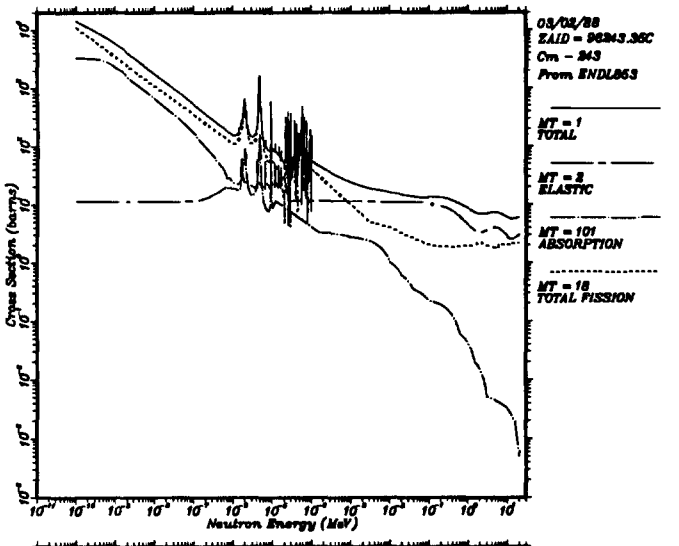
Energy Range – 10^{-10} to 20 MeV

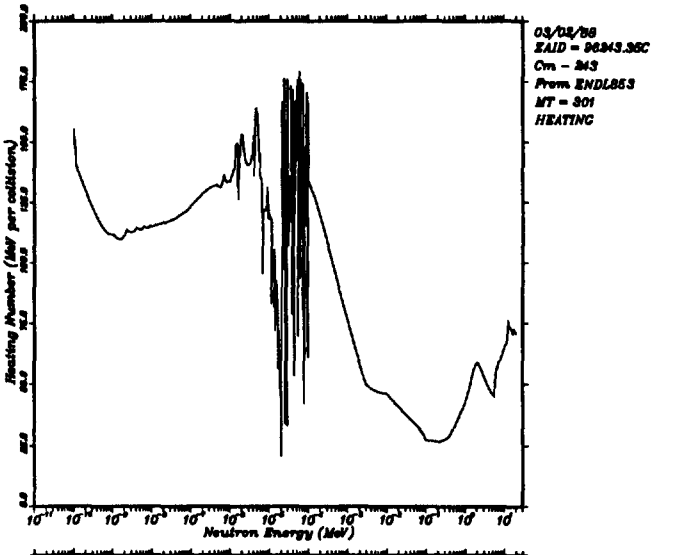
Reaction Information

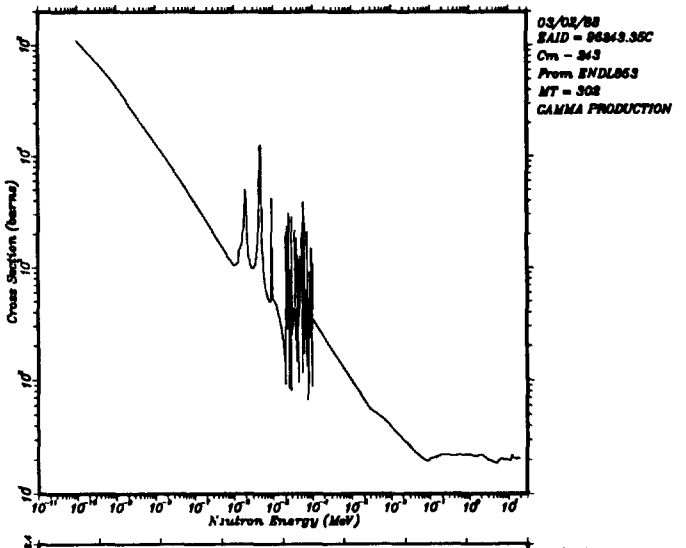
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	6.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.7136+00	2.0000+01	-5.6900+00	-5.6900+00
(n,3n)	17	1.2713+01	2.0000+01	-1.2660+01	-1.2660+01
(n,4n)	37	1.8818+01	2.0000+01	-1.8740+01	-1.8740+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.8820+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.8000+00	6.8000+00

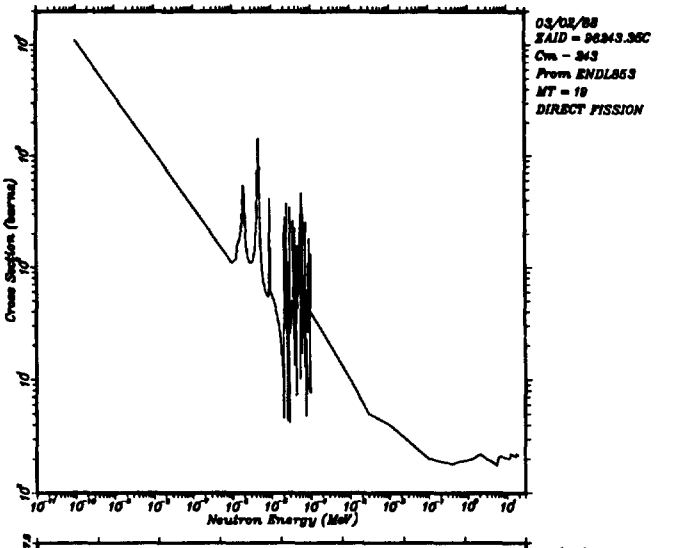


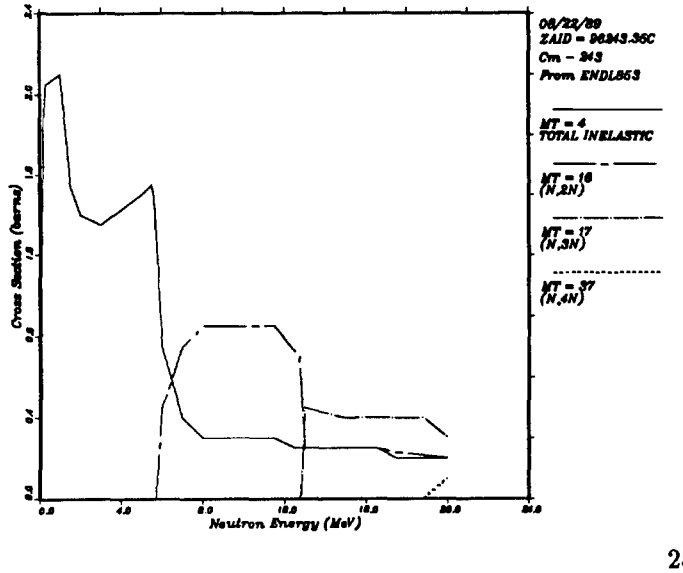
96243.35C

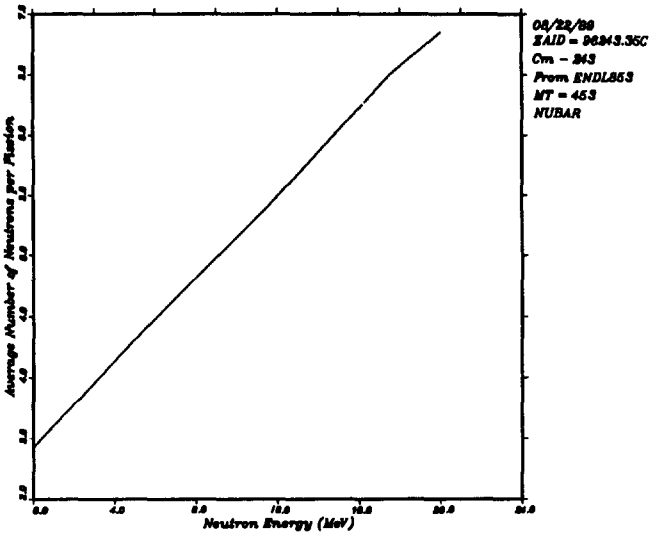

03/02/88
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


03/02/88
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


03/02/88
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 102
CAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)

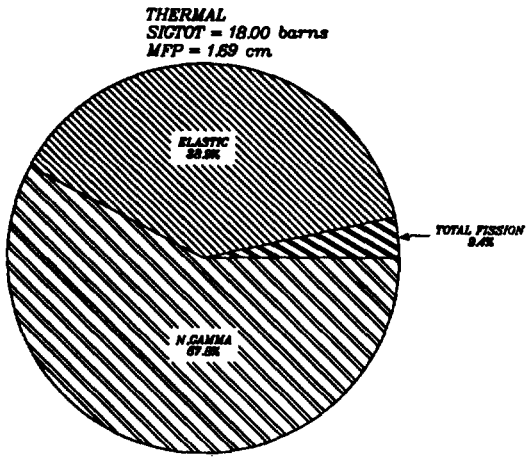

03/02/88
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)

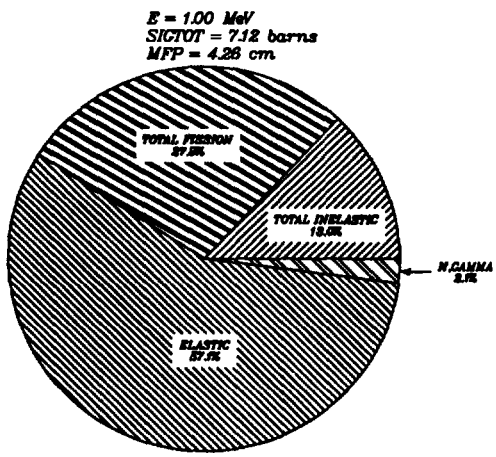

06/22/89
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)

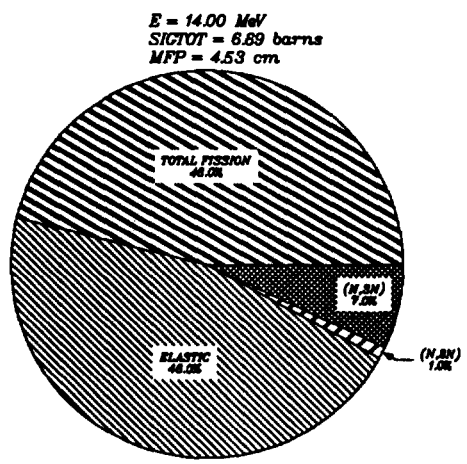

06/22/89
ZAID = 96243.35C
Cm - 243
From ENDL83
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 244

ZAID=96244.50C
SOURCE: ENDF/B–V (MAT=1344, Tape 514)
REFERENCE: "Summary Documentation Isotope: 96–Cm–244,"
by F. M. Mann, R. E. Schenter, R. Benjamin, R. J. Howerton, C. R. Reich, H. Alter, and C. Dunford
contained in ENDF–201







Data Availability

Continuous Energy

ZAID=96244.50C	NES=4919	T=300°K
ZAID=96244.51C	NES=566	T=300°K

Discrete Reaction

ZAID=96244.50D	NES=263	T=300°K
ZAID=96244.51D	NES=263	T=300°K

Multigroup

ZAID=96244.50M	30–Group	T=300°K

Isotope Information

Abundance=Nonnatural
Density=13.35 gm/cm^3

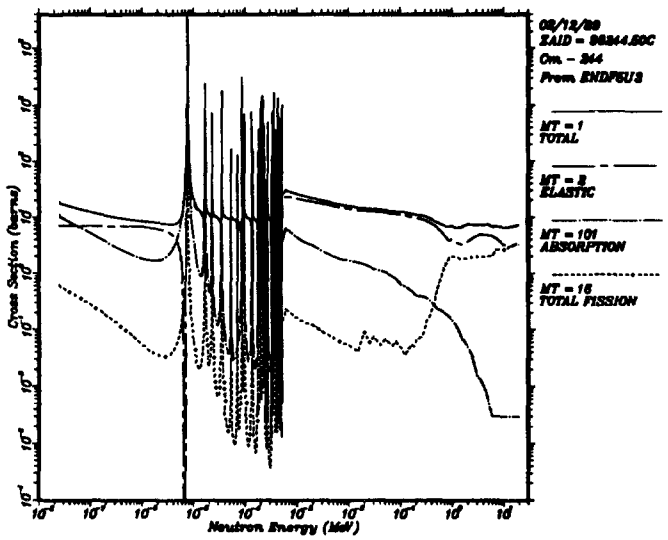
Evaluation Information

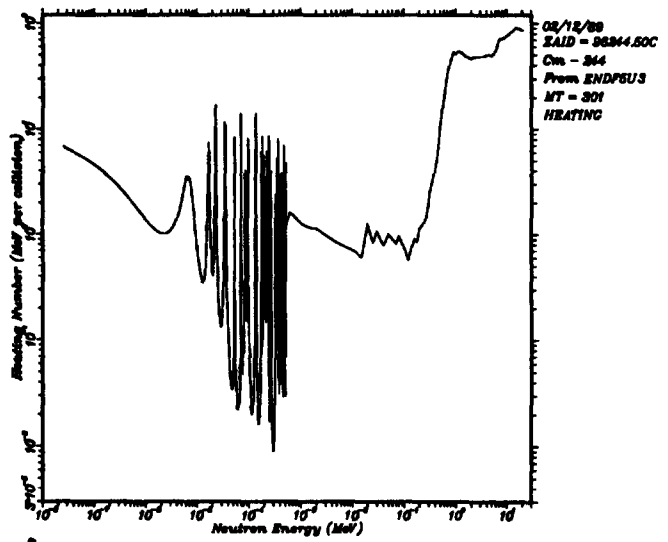
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-11} to 20 MeV

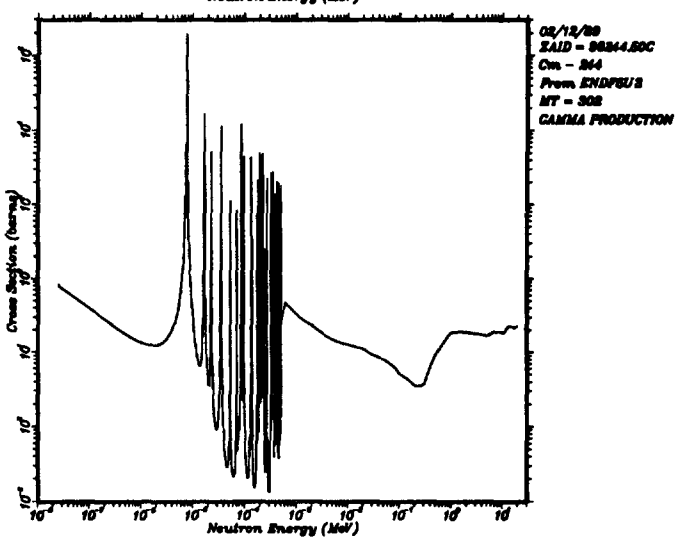
Reaction Information

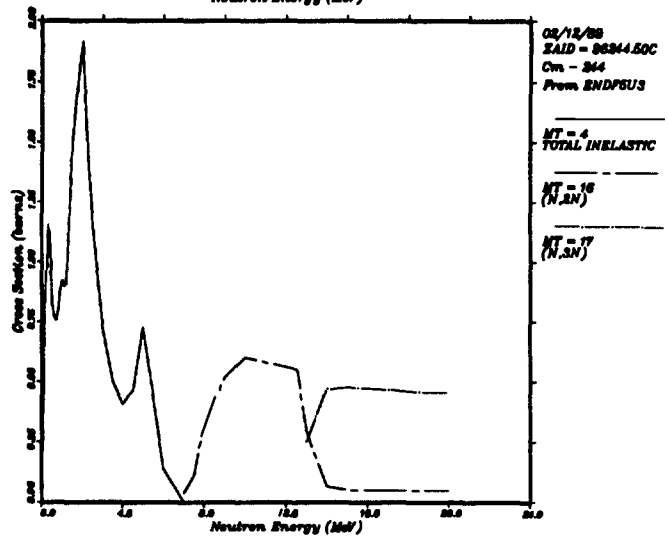
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-11	2.0000+01		
(n,2n)	16	6.7990+00	2.0000+01	-6.7710+00	-6.7710+00
(n,3n)	17	1.2550+01	2.0000+01	-1.2499+01	-1.2499+01
(n,f)	19	1.0000-11	2.0000+01	2.0660+02	2.0660+02
(n,n'f)	20	6.0000+00	2.0000+01	2.0660+02	2.0660+02
(n,n'1)	51	4.3000-02	2.0000+01	-4.2823-02	0.0000+00
(n,n'2)	52	1.4200-01	2.0000+01	-1.4142-01	0.0000+00
(n,n'3)	53	2.9600-01	2.0000+01	-2.9478-01	0.0000+00
(n,n'c)	91	2.9600-01	2.0000+01	-2.9478-01	-2.9478-01
(n,γ)	102	1.0000-11	2.0000+01	6.4510+00	6.4510+00

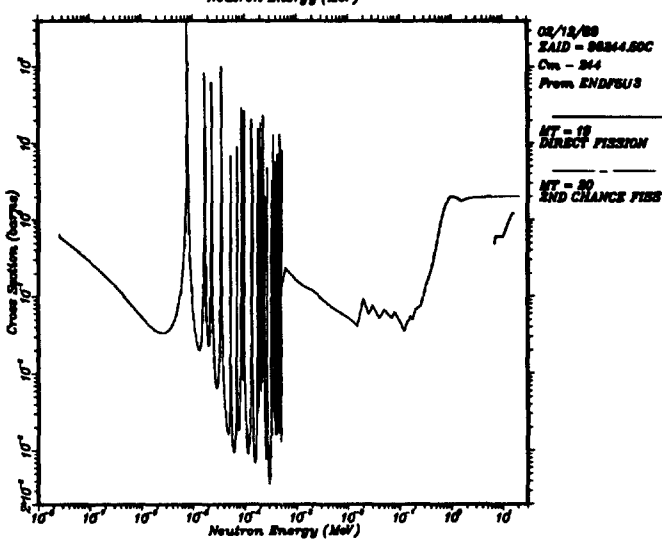
96244.50C

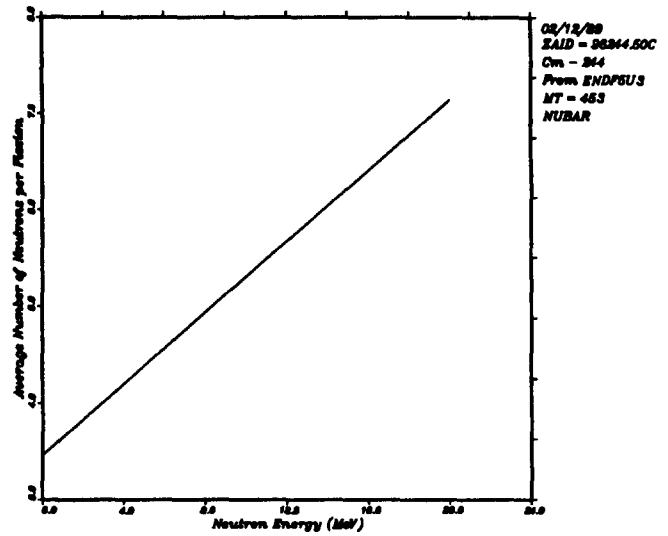

02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 19
DIRECT FISSION
MT = 20
2ND CHANCE FISS
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96244.50C
Cm - 244
From ENDFSU3
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 245

ZAID=96245.35C

SOURCE: ENDL–85 (ZA=96245 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=96245.35C NES=2230 T=0°K

Isotope Information

Abundance=Nonnatural

Density=13.40 gm/cm^3

Evaluation Information

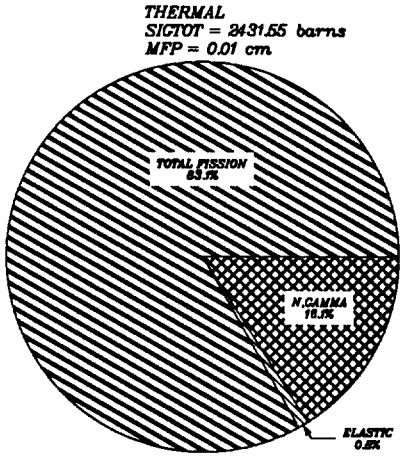
Photon-Production Data – Yes

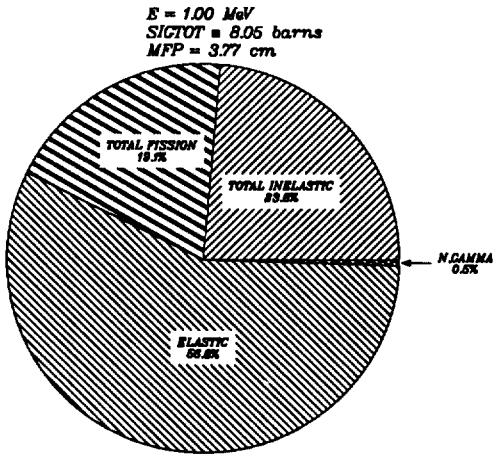
Heating Numbers – Local

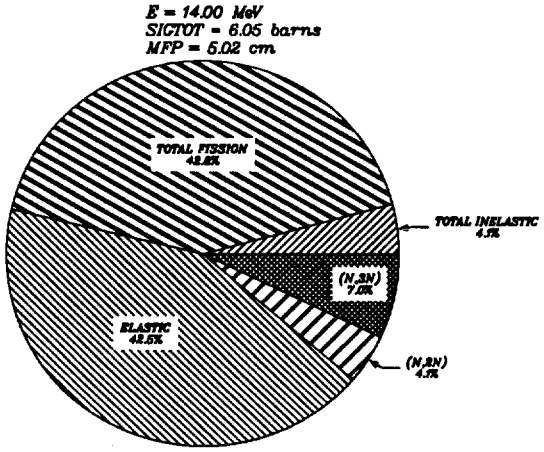
Energy Range – 10^{-10} to 20 MeV

Reaction Information

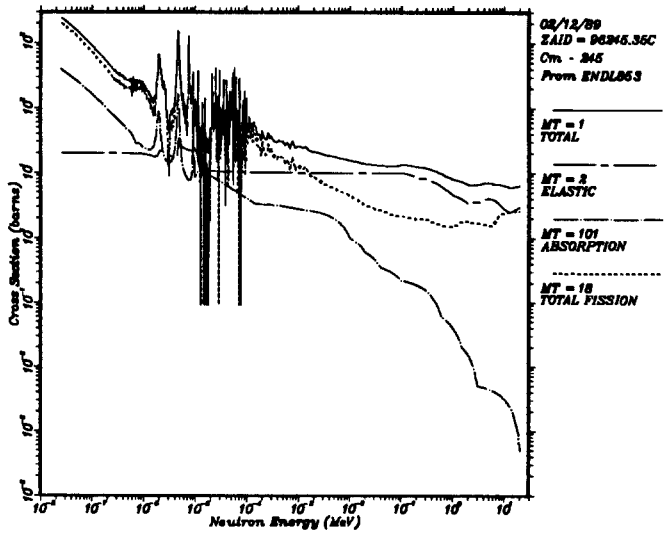
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	6.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.5427+00	2.0000+01	-5.5200+00	-5.5200+00
(n,3n)	17	1.2371+01	2.0000+01	-1.2320+01	-1.2320+01
(n,4n)	37	1.8094+01	2.0000+01	-1.8020+01	-1.8020+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9000+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.4500+00	6.4500+00

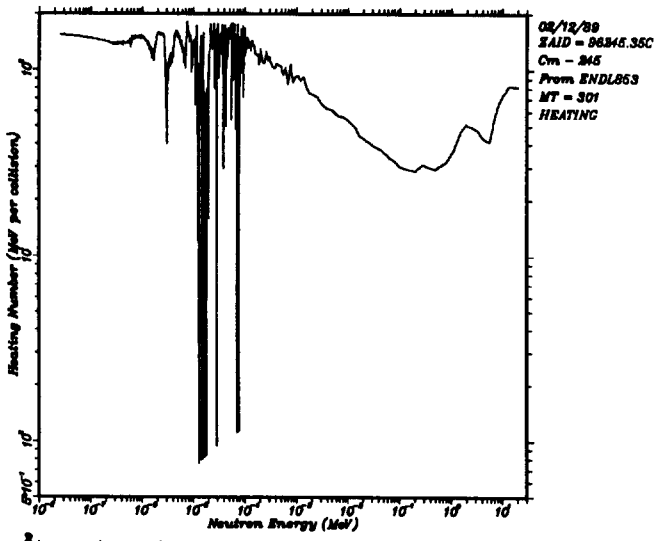


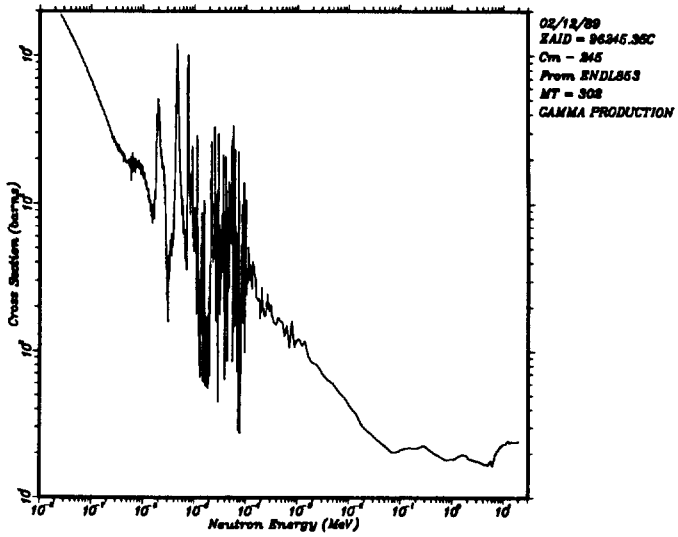


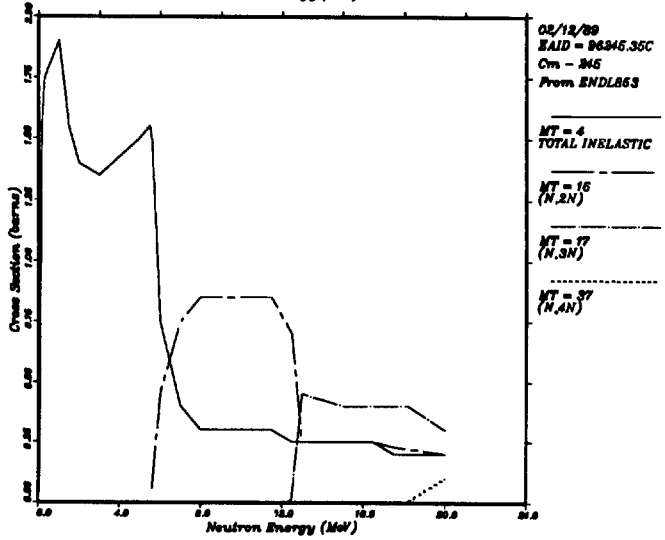


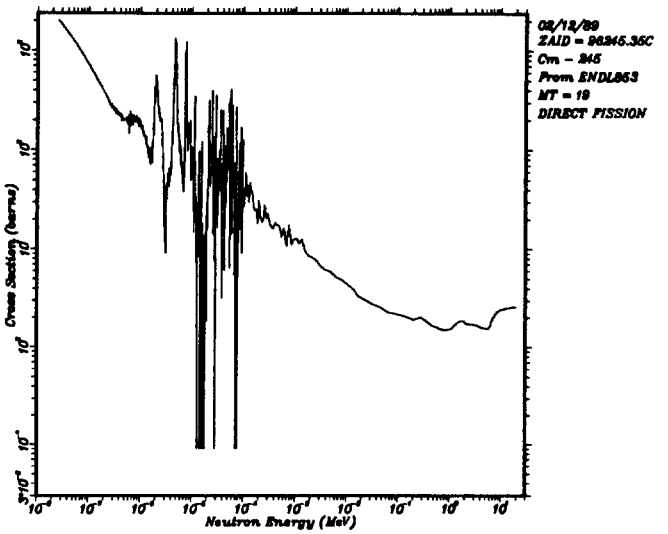
96245.35C

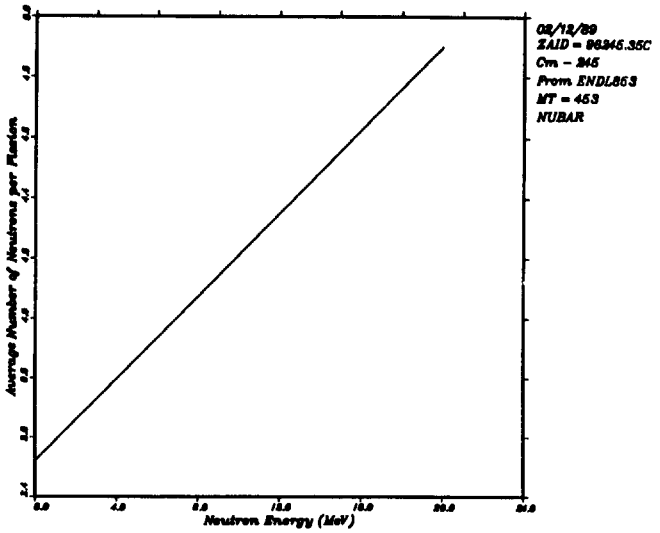

02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 102
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96245.35C
Cm - 245
From ENDL85S
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 246

ZAID=96246.35C

SOURCE: ENDL–85 (ZA=96246 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=96246.35C NES=711 T=0°K

Isotope Information

Abundance=Nonnatural

Density=13.46 gm/cm^3

Evaluation Information

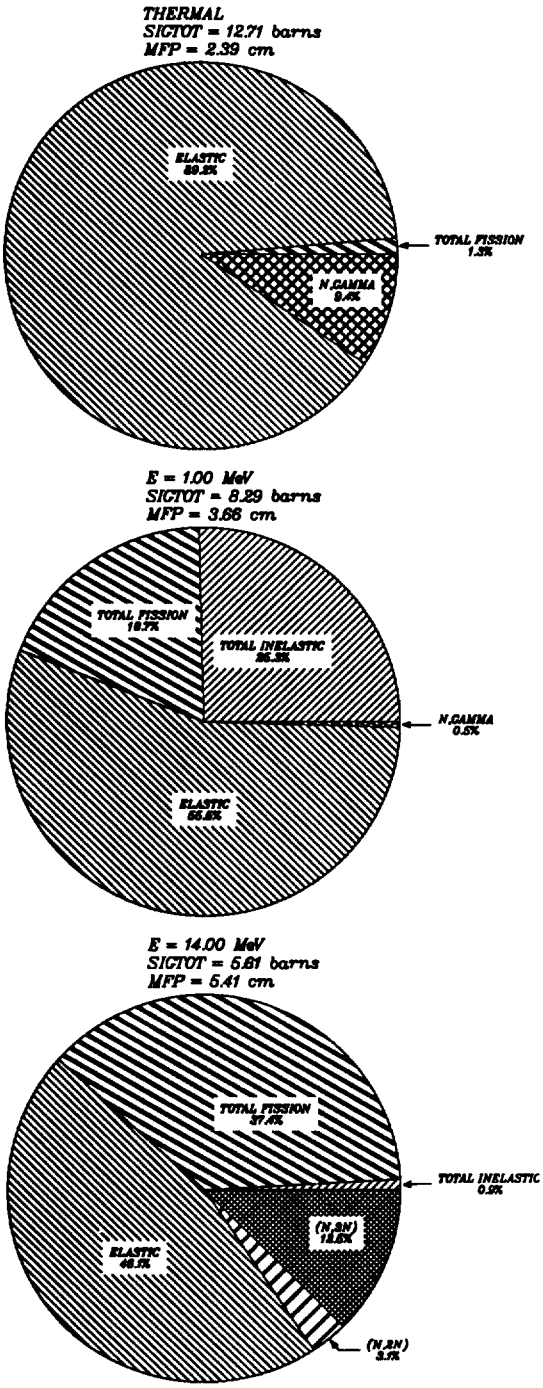
Photon-Production Data - Yes

Heating Numbers - Local

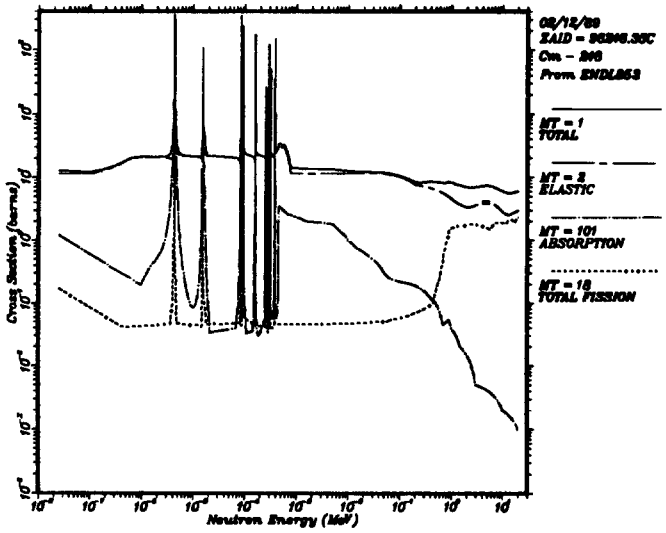
Energy Range - 10^{-10} to 20 MeV

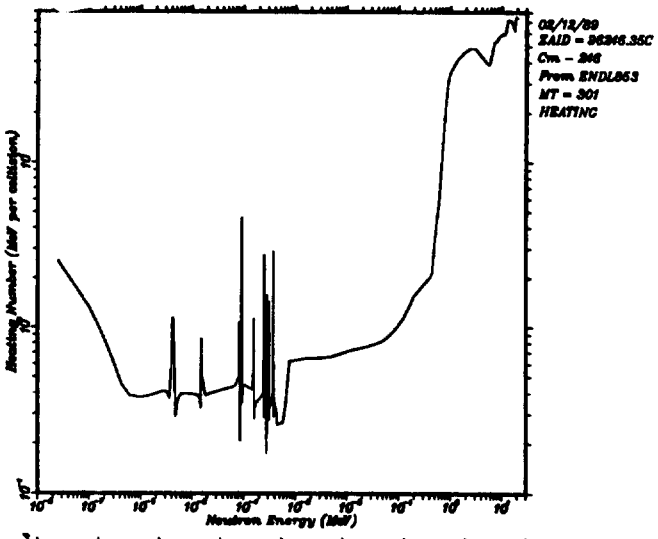
Reaction Information

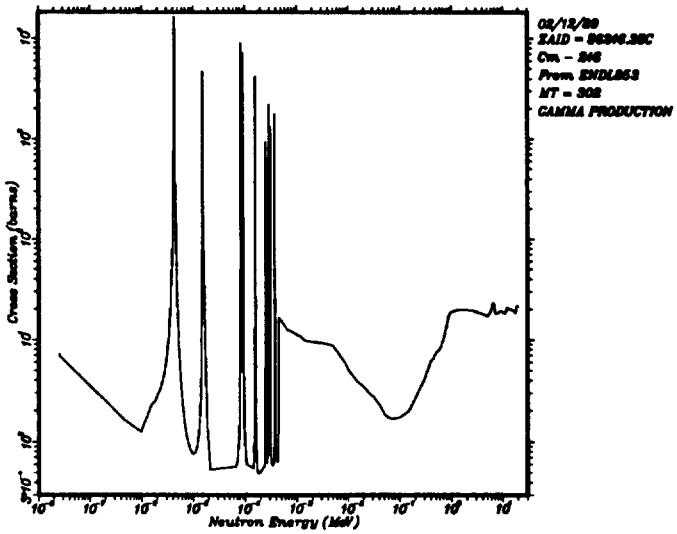
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.3000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.4764+00	2.0000+01	-6.4500+00	-6.4500+00
(n,3n)	17	1.2019+01	2.0000+01	-1.1970+01	-1.1970+01
(n,4n)	37	1.8837+01	2.0000+01	-1.8760+01	-1.8760+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9500+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	5.1600+00	5.1600+00

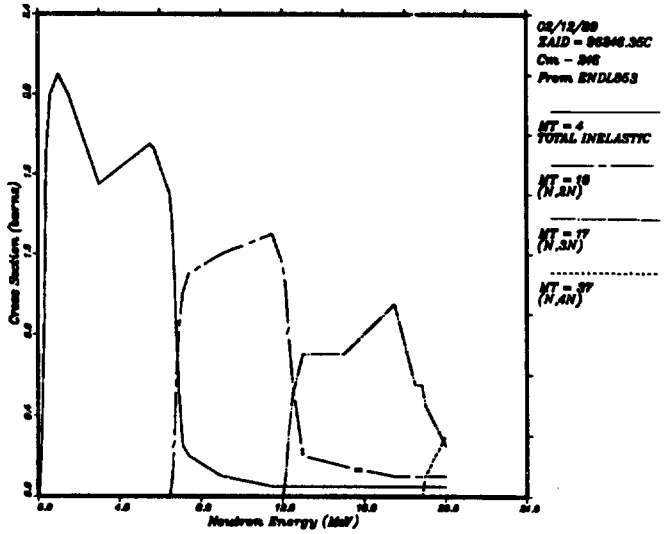


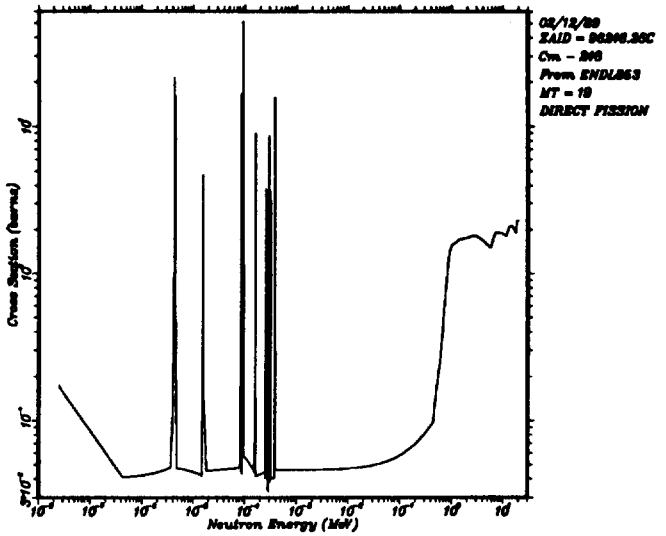
96246.35C

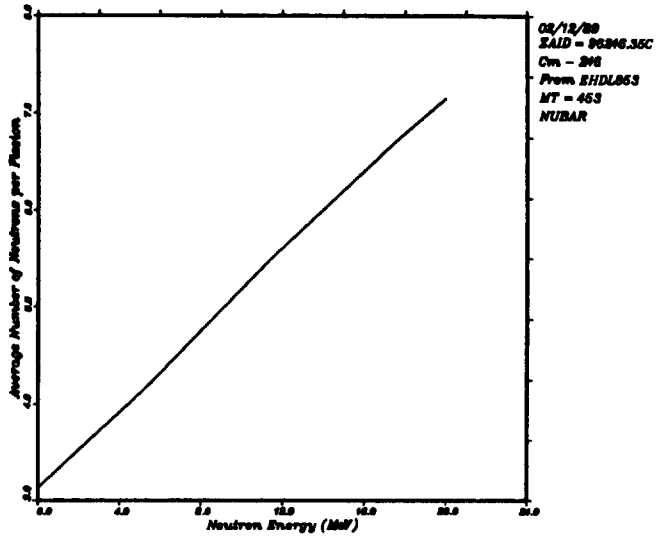

02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96246.35C
Cm - 246
From ENDL863
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 247

ZAID=96247.35C
SOURCE: ENDL–85 (ZA=96247 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

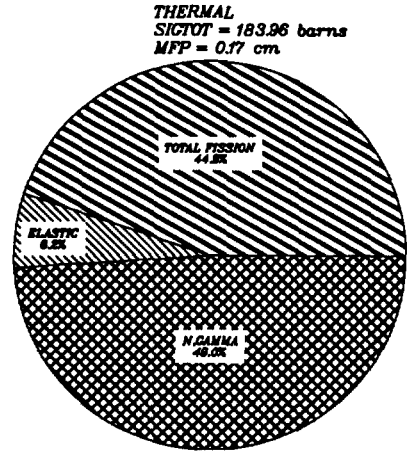
Data Availability
Continuous Energy
ZAID=96247.35C NES=1654 T=0°K

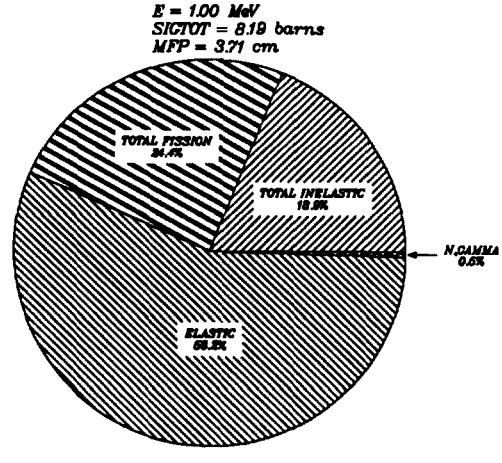
Isotope Information
Abundance=Nonnatural
Density=13.511 gm/cm^3

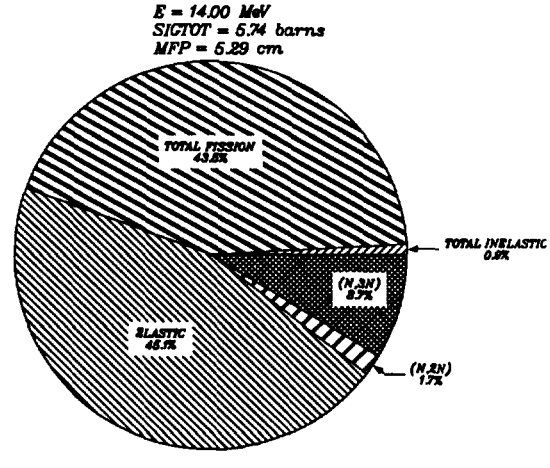
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

Reaction Information

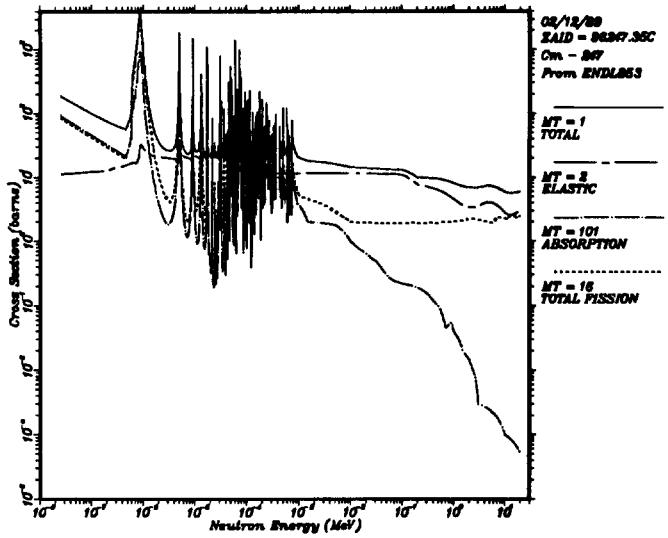
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.1710+00	2.0000+01	-5.1500+00	-5.1500+00
(n,3n)	17	1.1647+01	2.0000+01	-1.1600+01	-1.1600+01
(n,4n)	37	1.7170+01	2.0000+01	-1.7100+01	-1.7100+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9000+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.2100+00	6.2100+00

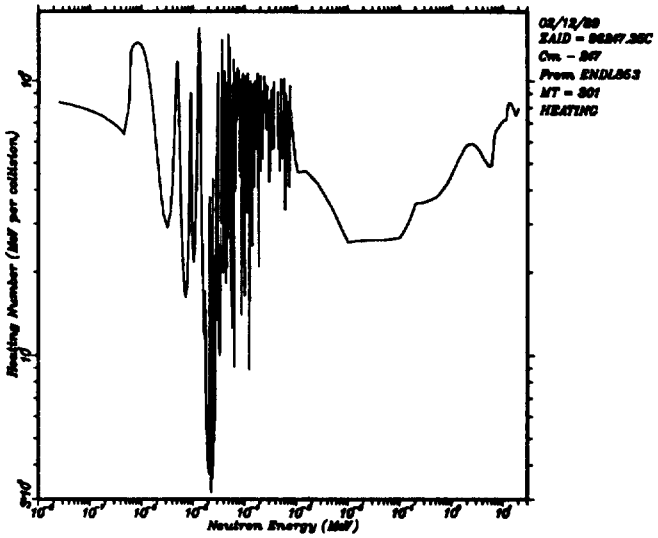


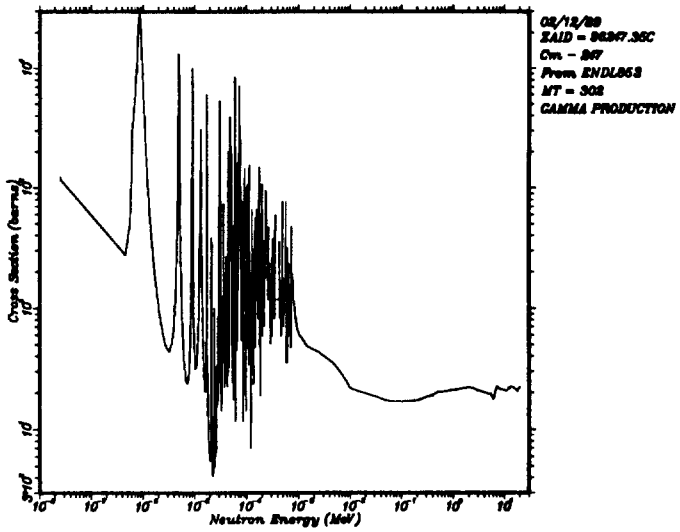


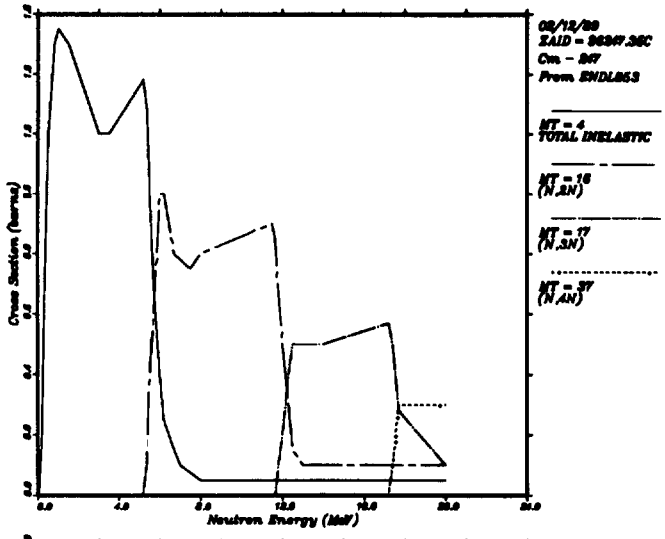


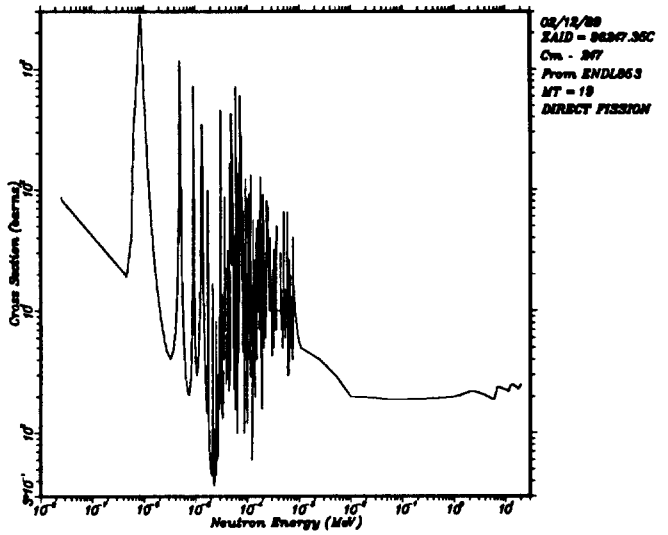
96247.35C

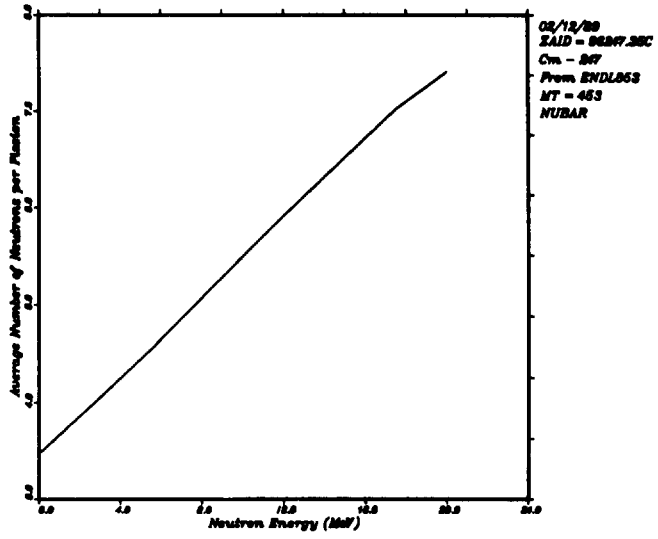

02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/99
ZAID = 96247.35C
Cm - 247
From ENDL863
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Curium – 248

ZAID=96248.35C
SOURCE: ENDL–85 (ZA=96248 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

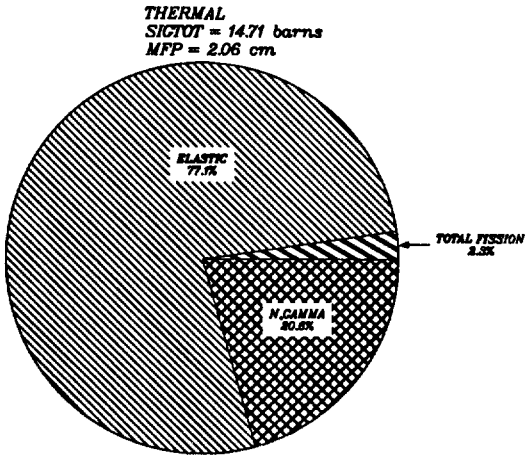
Data Availability
Continuous Energy
ZAID=96248.35C NES=1425 T=0°K

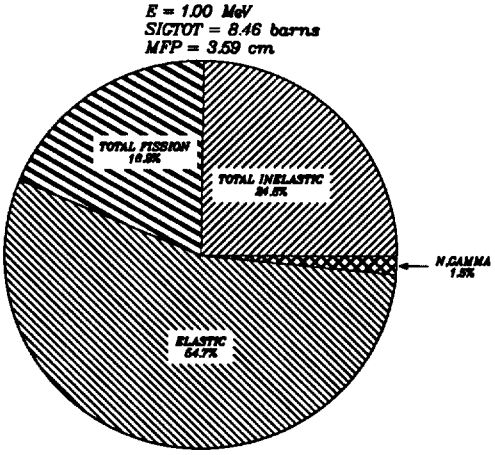
Isotope Information
Abundance=Nonnatural
Density=13.57 gm/cm^3

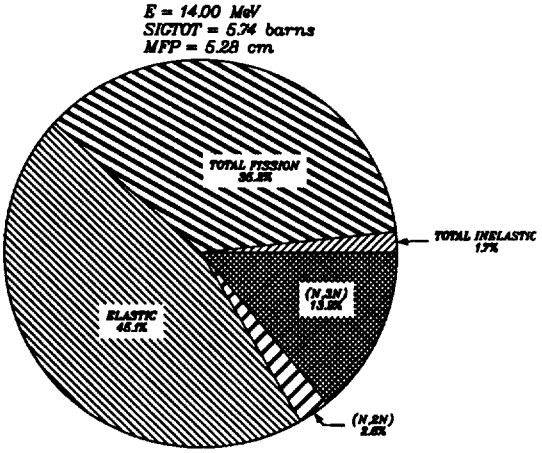
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

Reaction Information

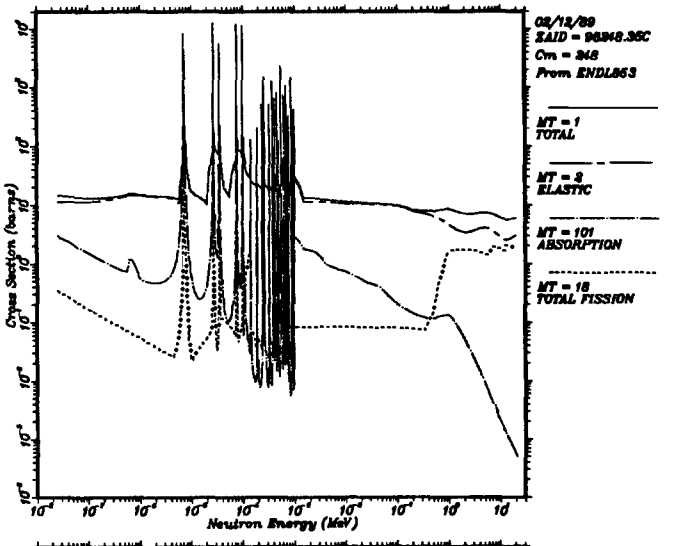
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.2252+00	2.0000+01	-6.2000+00	-6.2000+00
(n,3n)	17	1.1406+01	2.0000+01	-1.1360+01	-1.1360+01
(n,4n)	37	1.7882+01	2.0000+01	-1.7810+01	-1.7810+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.8500+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	4.7100+00	4.7100+00

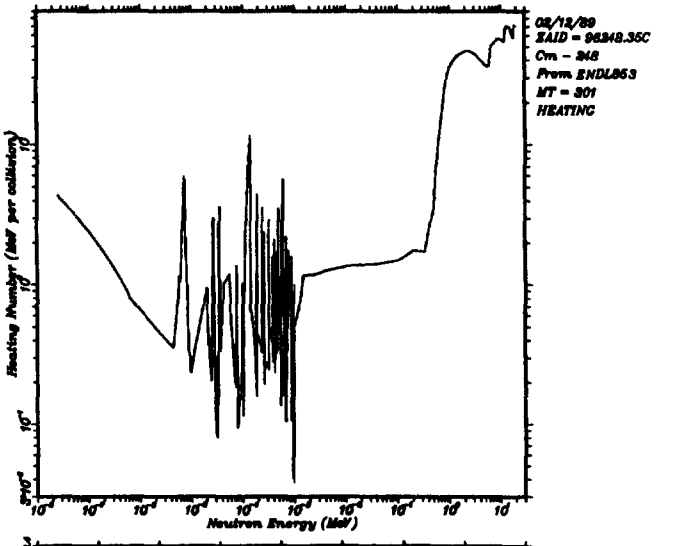


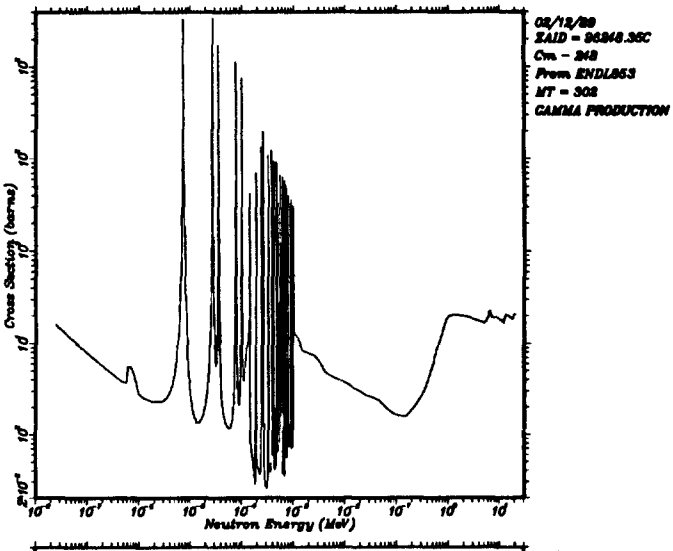


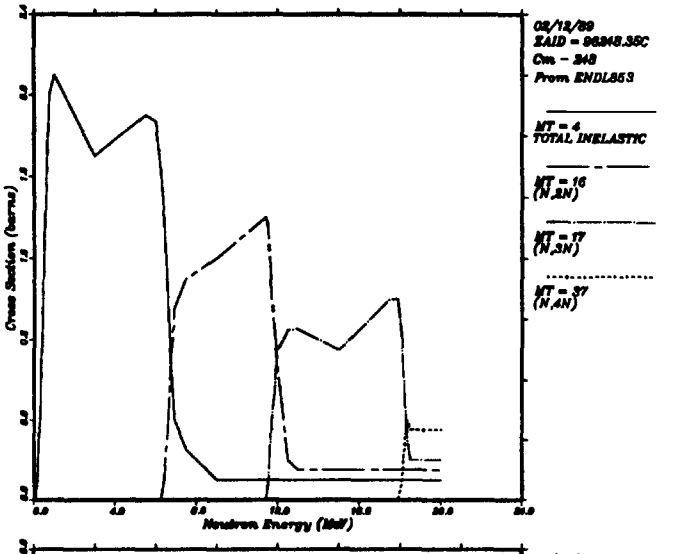


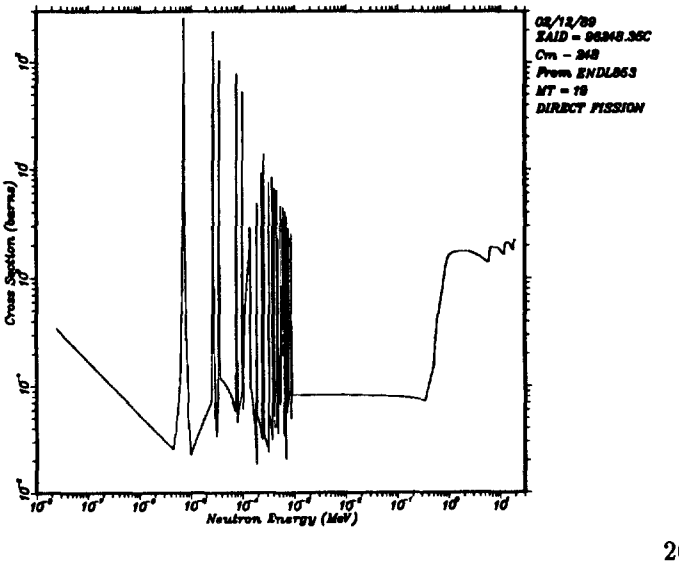
96248.35C

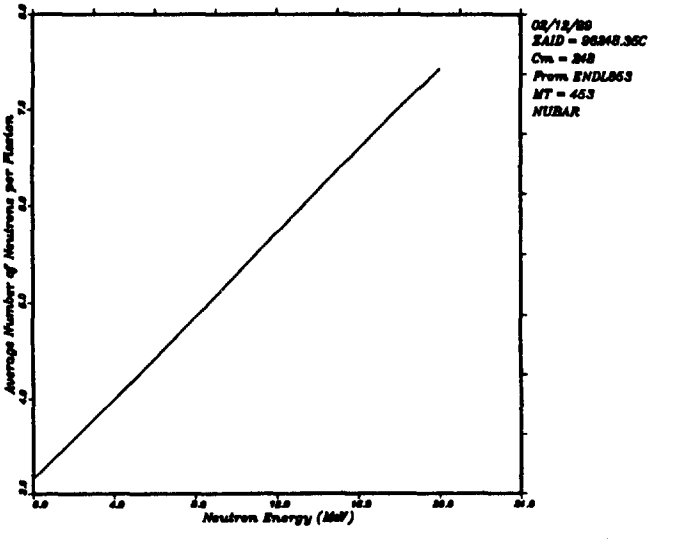

02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 96248.35C
Cm - 248
From ENDL863
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Berkelium – 249

ZAID=97249.35C
SOURCE: ENDL–85 (ZA=97249 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

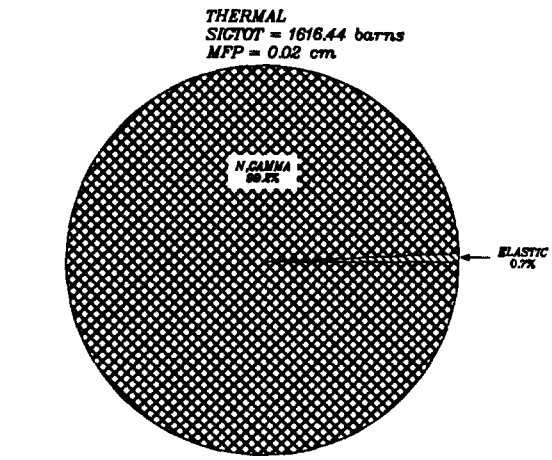
Data Availability
Continuous Energy
ZAID=97249.35C NES=633 T=0°K

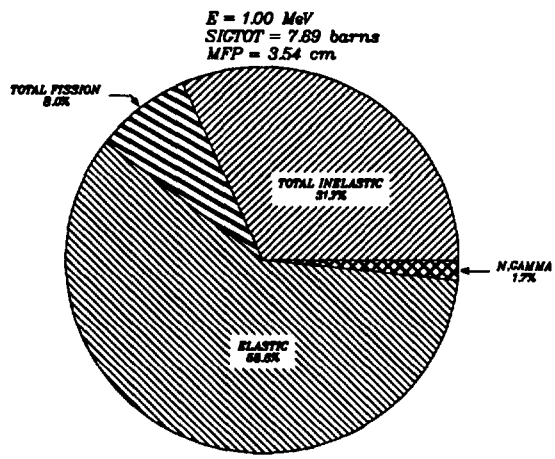
Isotope Information
Abundance=Nonnatural
Density=14.78 gm/cm^3

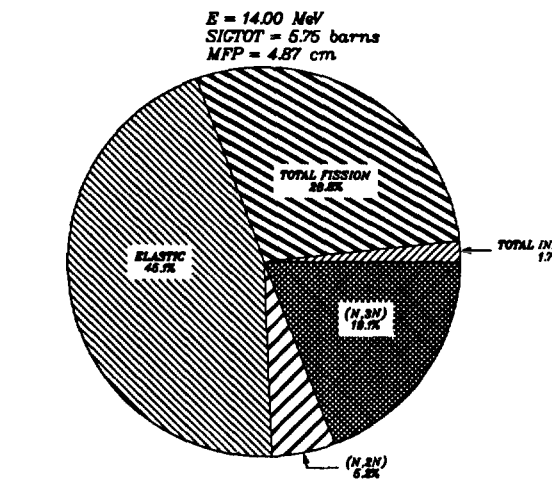
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

Reaction Information

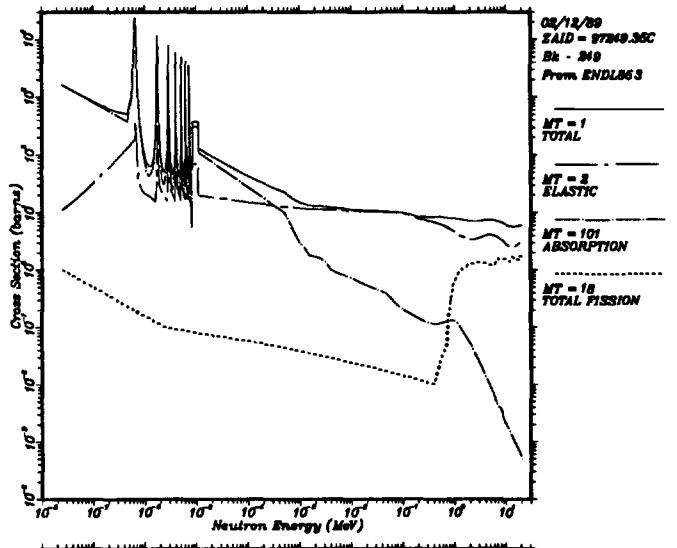
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.2251+00	2.0000+01	-6.2000+00	-6.2000+00
(n,3n)	17	1.1828+01	2.0000+01	-1.1780+01	-1.1780+01
(n,4n)	37	1.7872+01	2.0000+01	-1.7800+01	-1.7800+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.8700+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	4.9700+00	4.9700+00

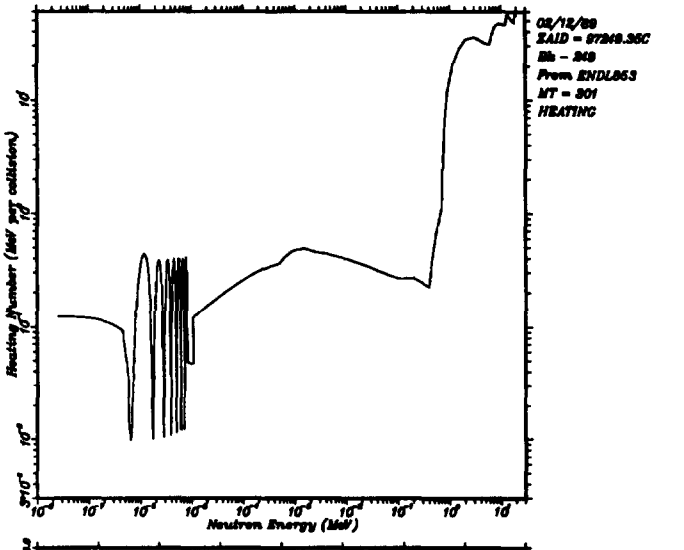


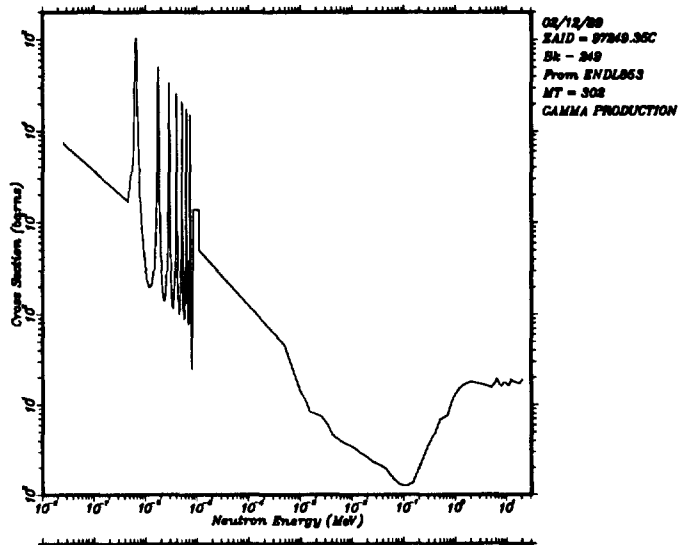


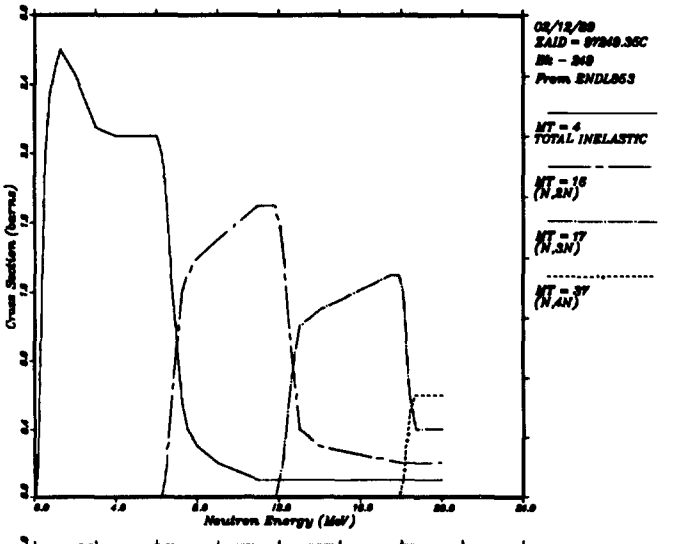


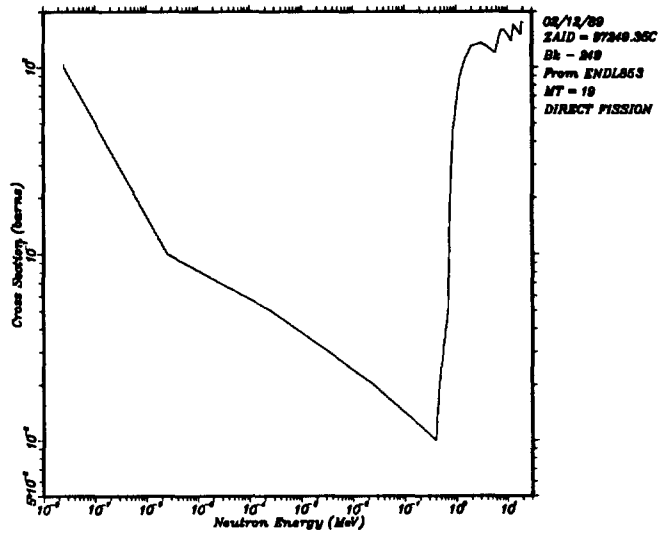
97249.35C

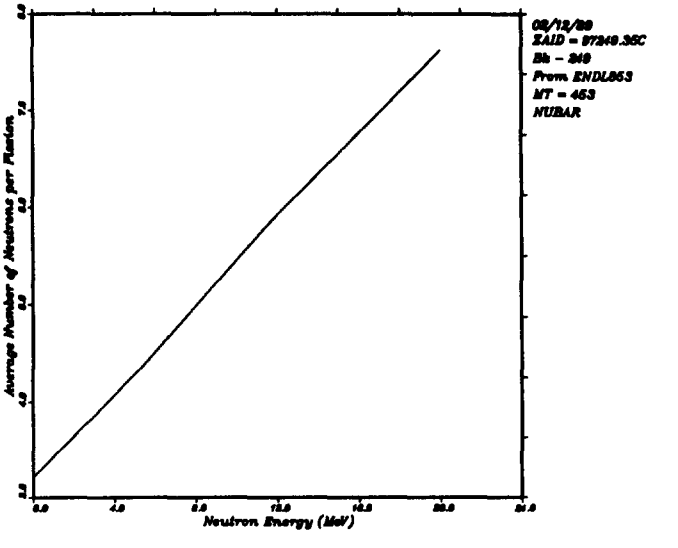

02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 97249.35C
Bk - 249
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Californium – 249

ZAID=98249.35C

SOURCE: ENDL–85 (ZA=98249 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=98249.35C NES=2659 T=0°K

Isotope Information

Abundance=Nonnatural

Density=15.16 gm/cm^3

Evaluation Information

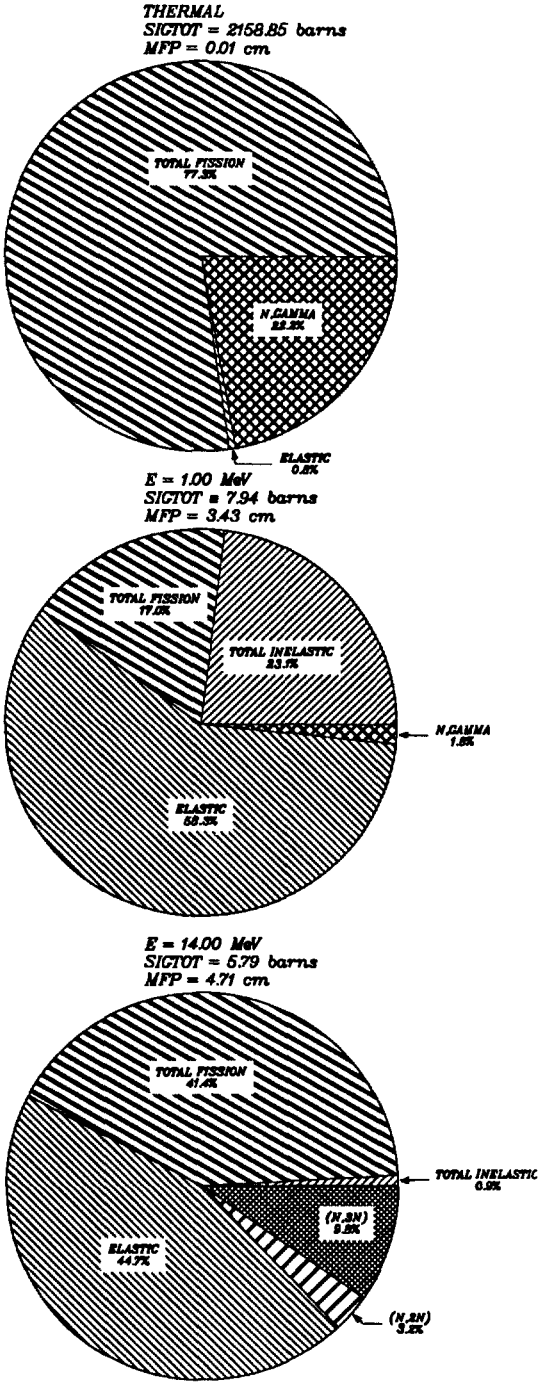
Photon-Production Data – Yes

Heating Numbers – Local

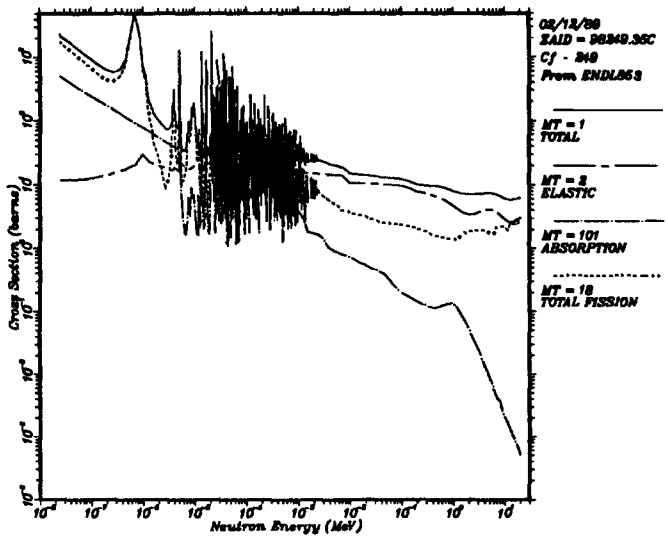
Energy Range – 10^{-10} to 20 MeV

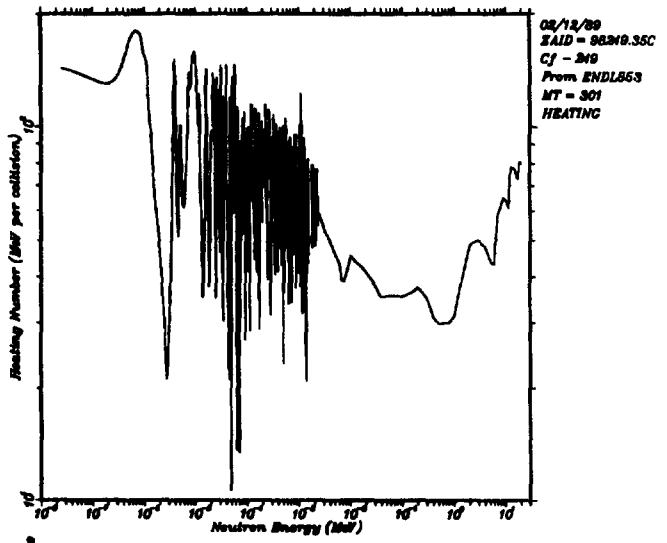
Reaction Information

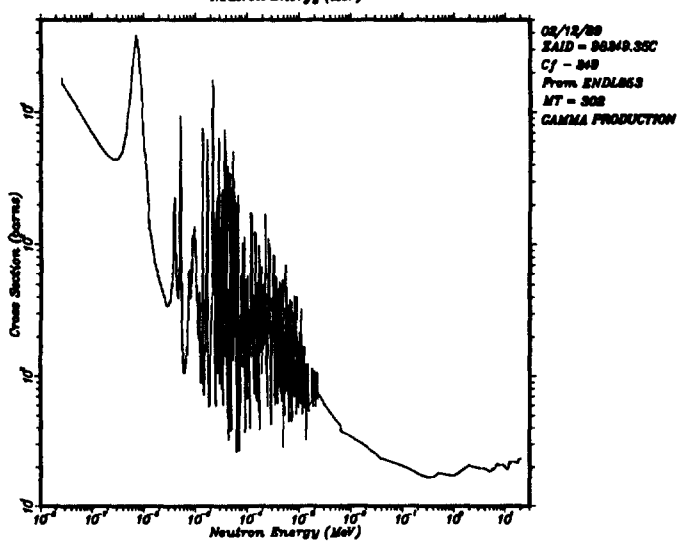
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.6126+00	2.0000+01	-5.5900+00	-5.5900+00
(n,3n)	17	1.1828+01	2.0000+01	-1.1780+01	-1.1780+01
(n,4n)	37	1.8665+01	2.0000+01	-1.8590+01	-1.8590+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9300+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.6200+00	6.6200+00

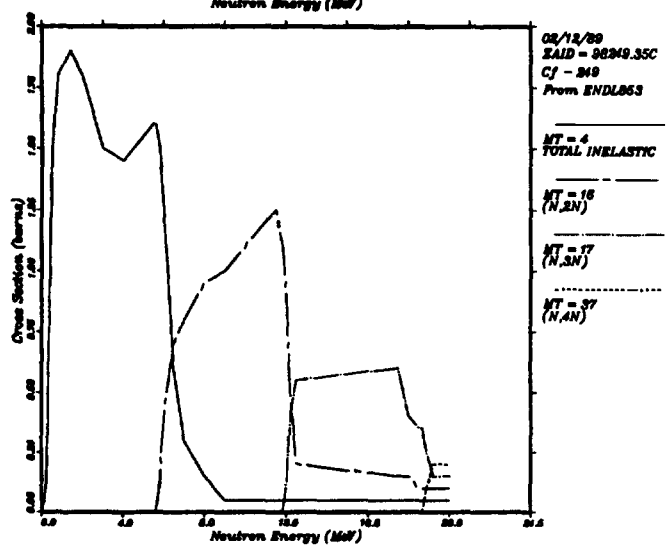


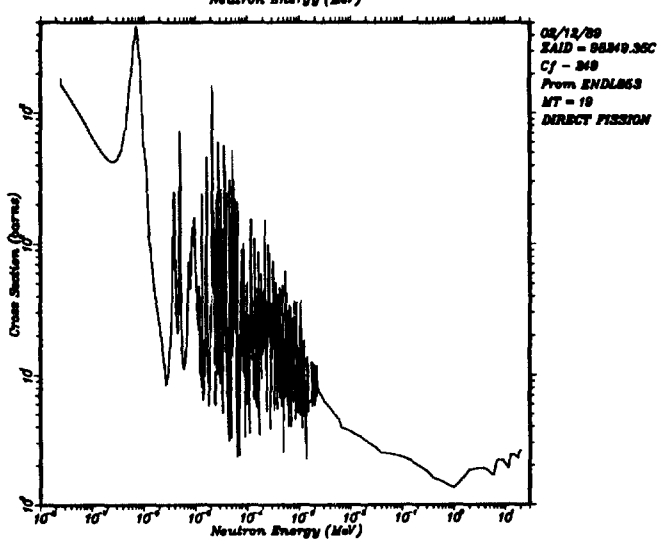
98249.35C

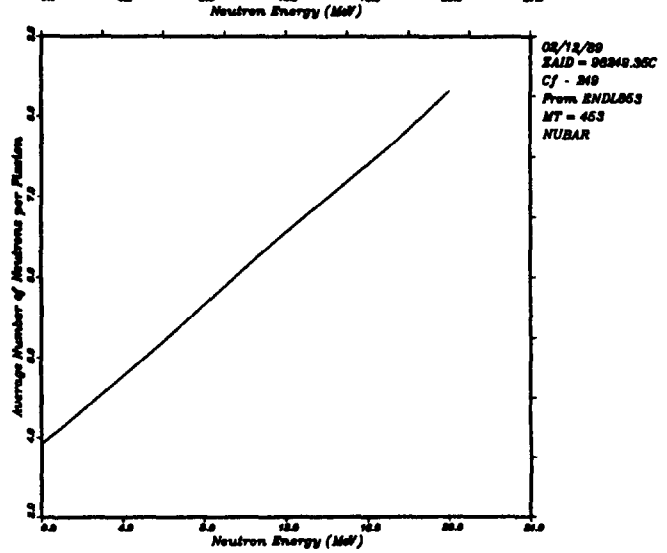

02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 203
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98249.35C
Cf - 249
From ENDL85S
MT = 453
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Californium – 250

ZAID=98250.35C
SOURCE: ENDL–85 (ZA=98250 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

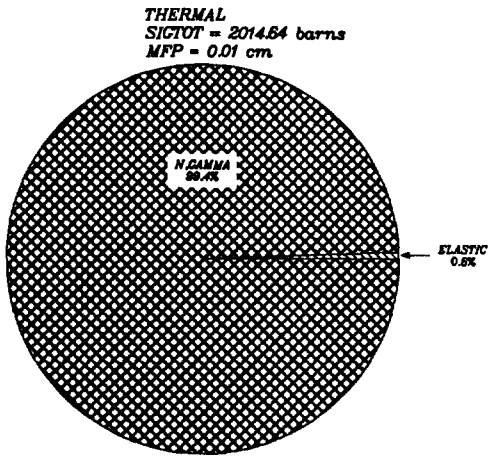
Data Availability
Continuous Energy
ZAID=98250.35C NES=457 T=0°K

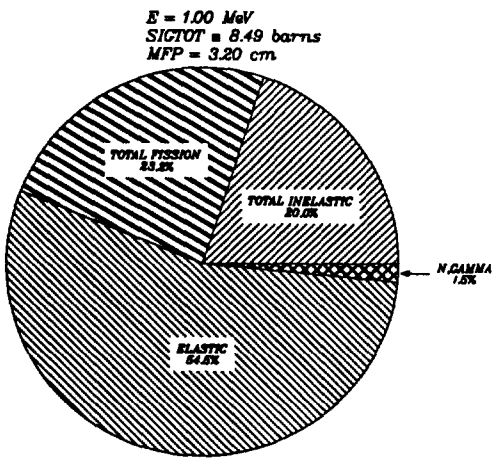
Isotope Information
Abundance=Nonnatural
Density=15.28 gm/cm^3

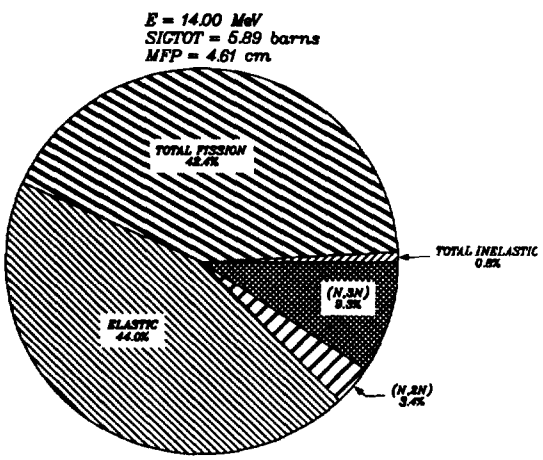
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

Reaction Information

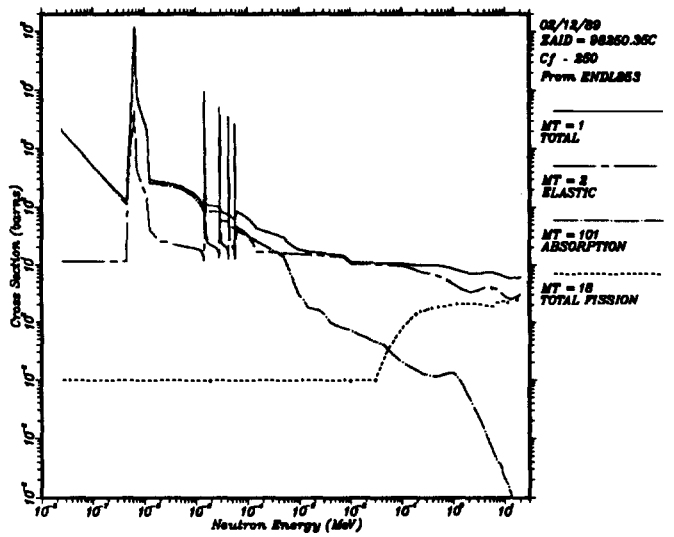
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	4.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.6367+00	2.0000+01	-6.6100+00	-6.6100+00
(n,3n)	17	1.2259+01	2.0000+01	-1.2210+01	-1.2210+01
(n,4n)	37	1.8665+01	2.0000+01	-1.8590+01	-1.8590+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9300+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	5.1100+00	5.1100+00

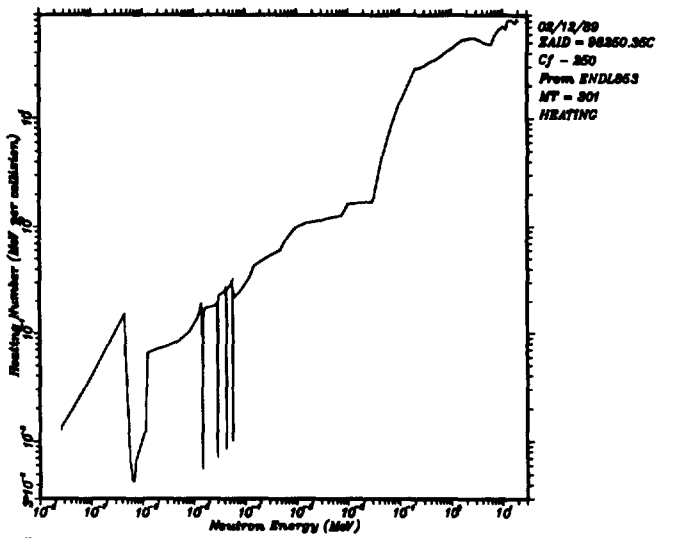


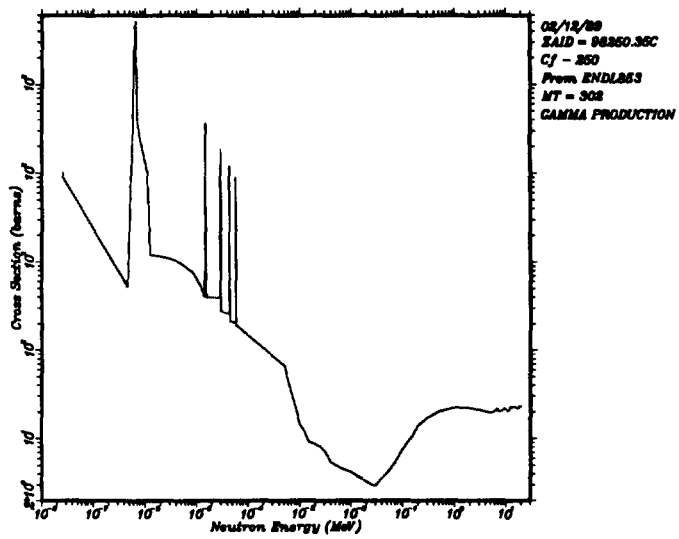


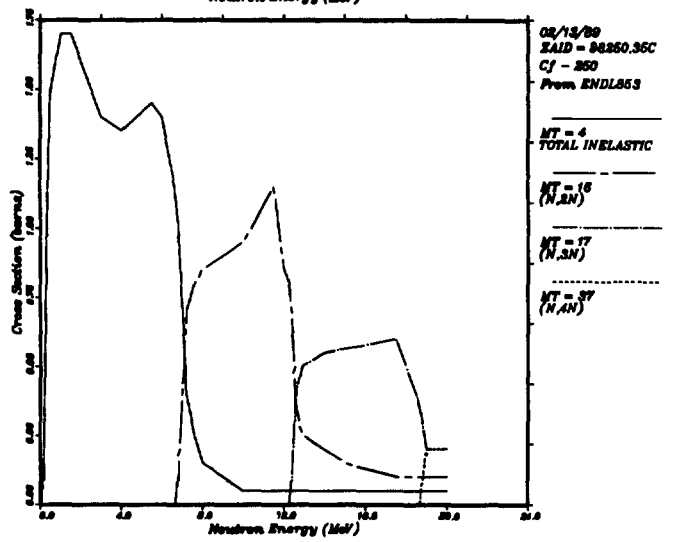


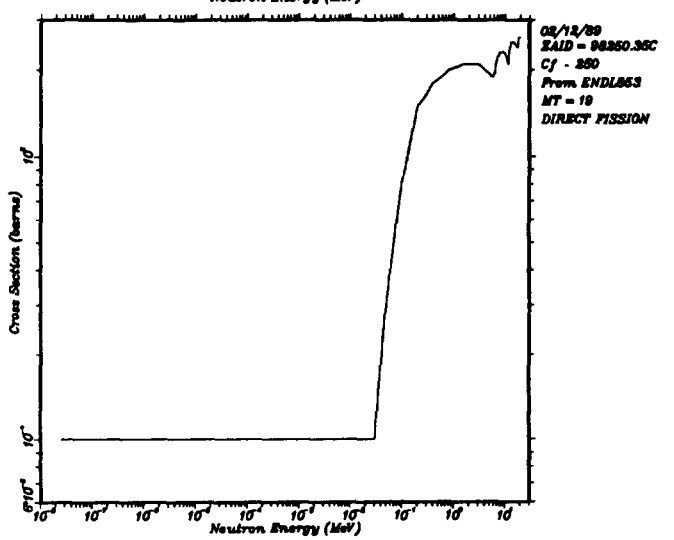
98250.35C

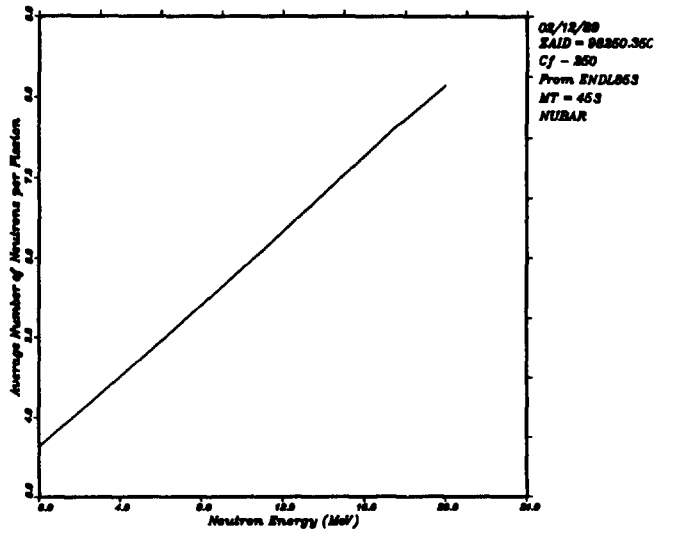

02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98250.35C
Cf - 250
From ENDL85S
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Californium – 251

ZAID=98251.35C
SOURCE: ENDL–85 (ZA=98251 on ND850424)
REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

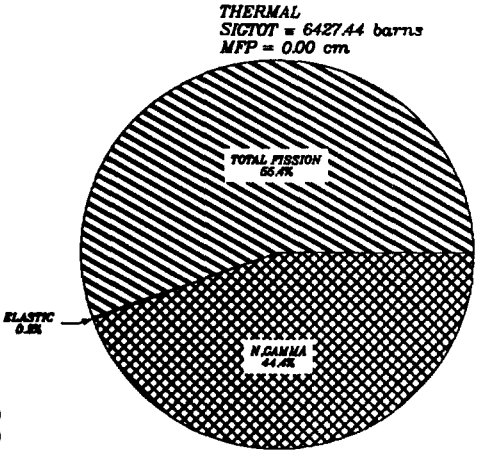
Data Availability
Continuous Energy
ZAID=98251.35C NES=516 T=0°K

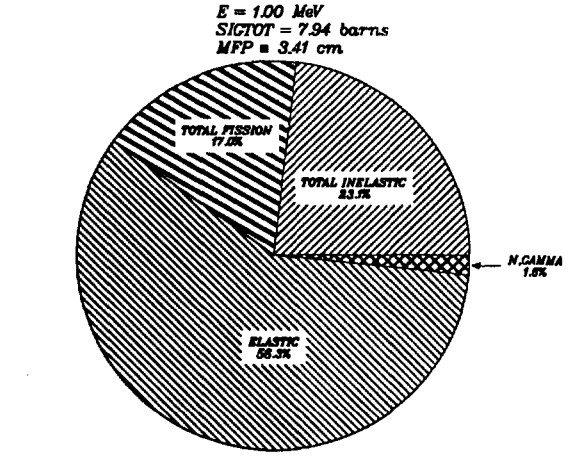
Isotope Information
Abundance=Nonnatural
Density=15.40 gm/cm^3

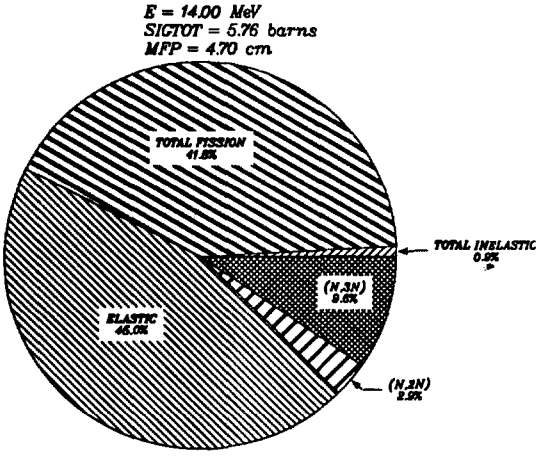
Evaluation Information
Photon-Production Data – Yes
Heating Numbers – Local
Energy Range – 10^{-10} to 20 MeV

Reaction Information

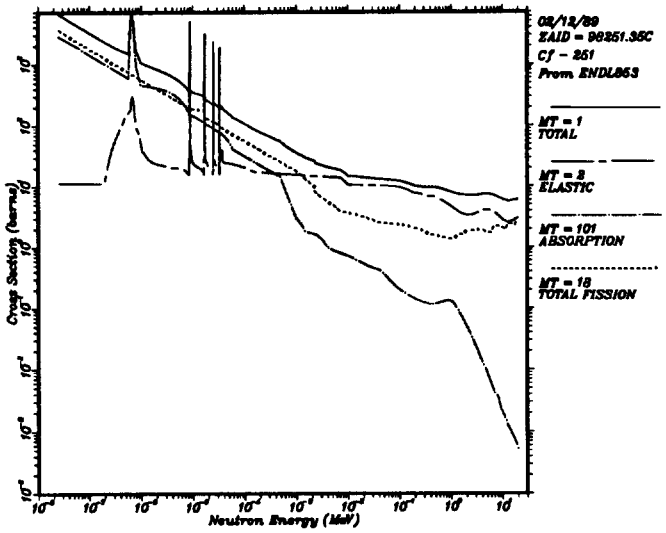
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	2.5000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	5.1205+00	2.0000+01	-5.1000+00	-5.1000+00
(n,3n)	17	1.1777+01	2.0000+01	-1.1730+01	-1.1730+01
(n,4n)	37	1.7390+01	2.0000+01	-1.7320+01	-1.7320+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.9000+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	6.1700+00	6.1700+00

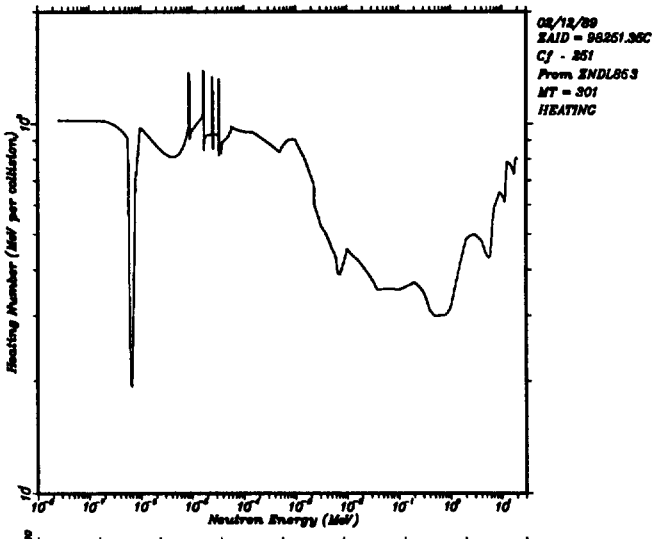


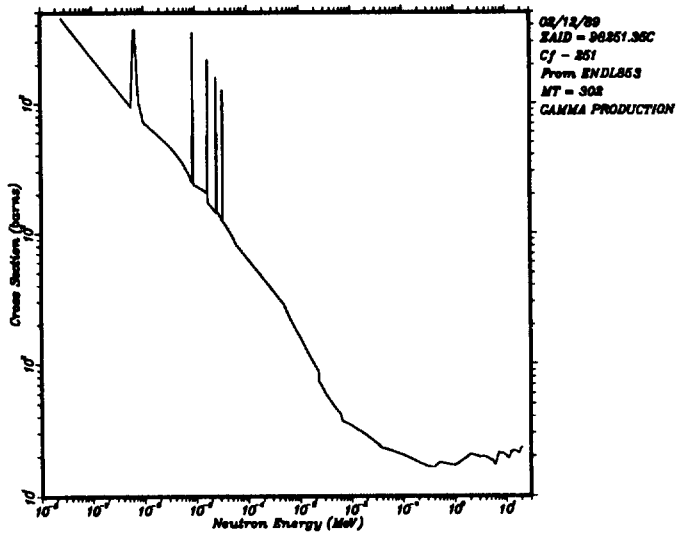


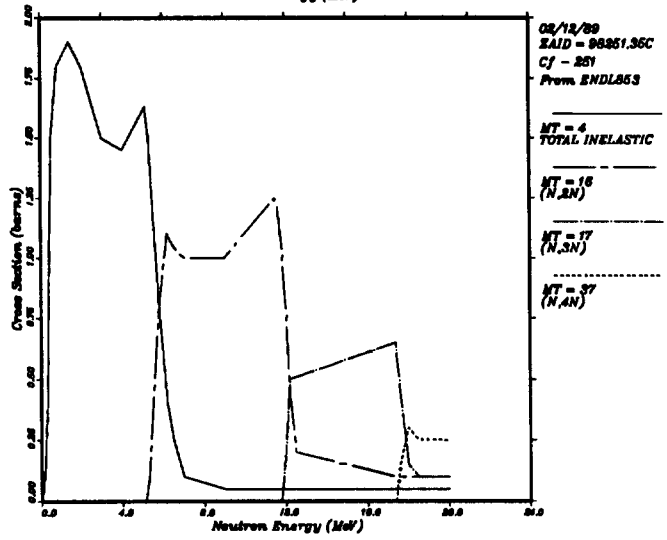


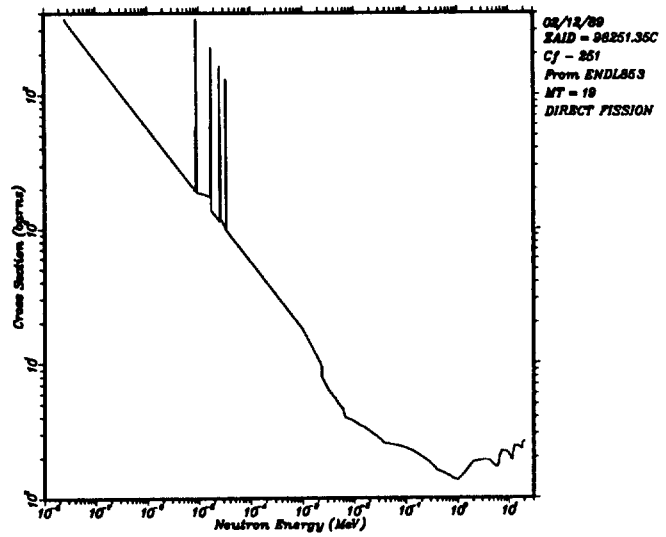
98251.35C

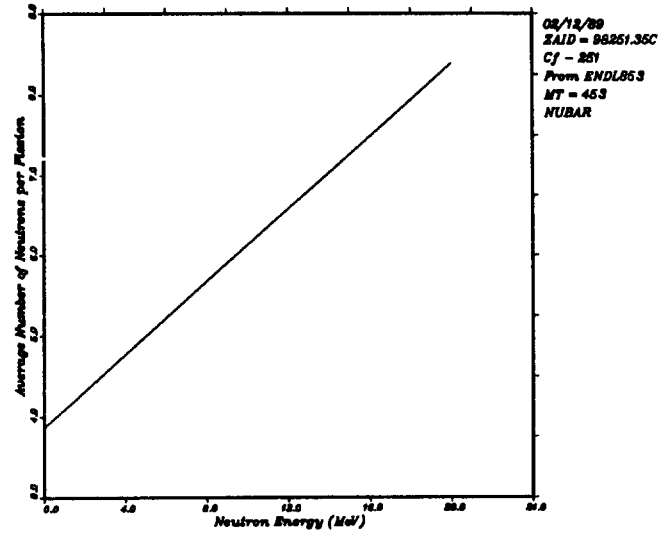

02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98251.35C
Cf - 251
From ENDL85S
MT = 455
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

Californium – 252

ZAID=98252.35C

SOURCE: ENDL–85 (ZA=98252 on ND850424)

REFERENCE: Lawrence Livermore Laboratory report UCRL–50400, Vol. 15, Part D, Rev. 1
by R. J. Howerton and M. H. MacGregor

Data Availability

Continuous Energy

ZAID=98252.35C NES=1535 T=0°K

Isotope Information

Abundance=Nonnatural

Density=15.10 gm/cm^3

Evaluation Information

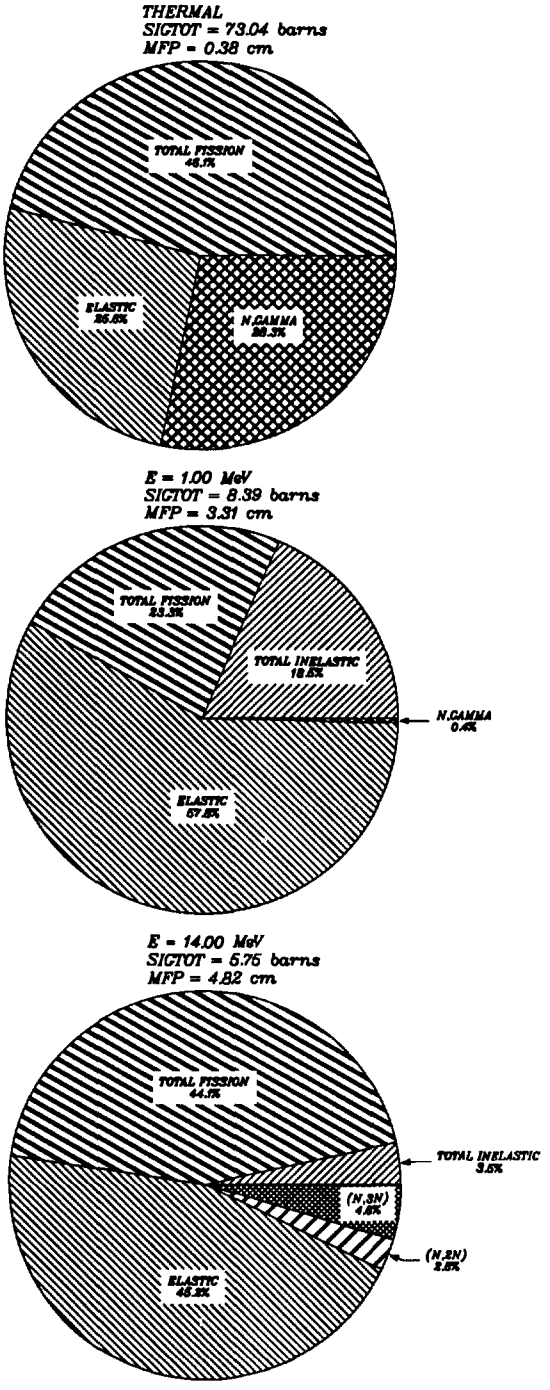
Photon-Production Data – Yes

Heating Numbers – Local

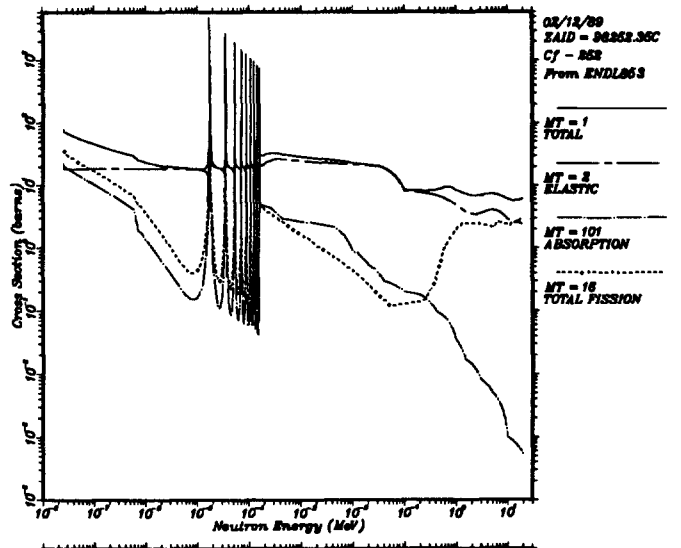
Energy Range – 10^{-10} to 20 MeV

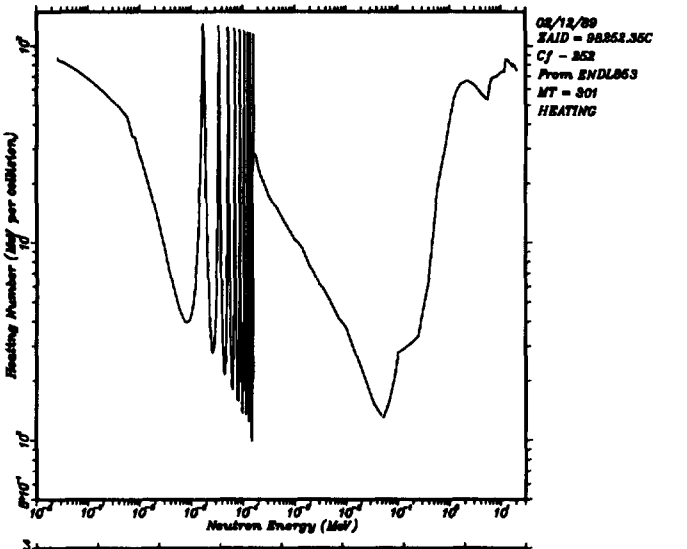
Reaction Information

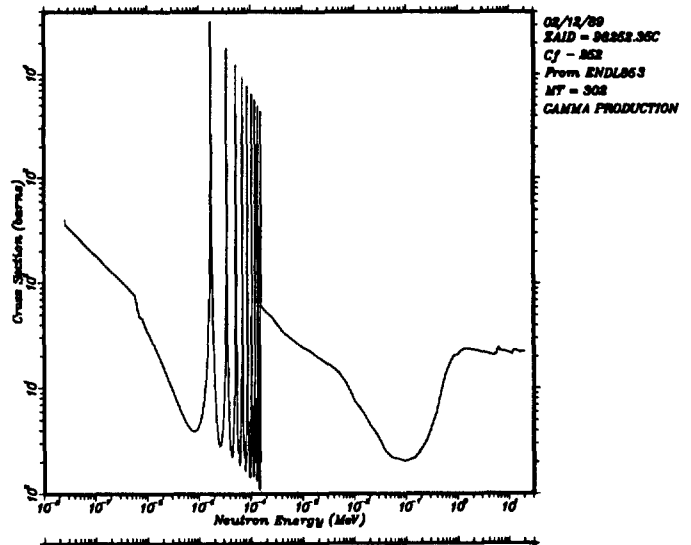
Reaction	MT	E_{min}(MeV)	E_{max}(MeV)	Q_K(MeV)	Q_R(MeV)
elastic	2	1.0000-10	2.0000+01		
(n,n'c)	91	5.0000-02	2.0000+01	0.0000+00	0.0000+00
(n,2n)	16	6.1947+00	2.0000+01	-6.1700+00	-6.1700+00
(n,3n)	17	1.1325+01	2.0000+01	-1.1280+01	-1.1280+01
(n,4n)	37	1.7972+01	2.0000+01	-1.7900+01	-1.7900+01
(n,f)	19	1.0000-10	2.0000+01	2.0000+02	2.0000+02
(n,n'f)	20	1.8500+01	2.0000+01	2.0000+02	2.0000+02
(n,γ)	102	1.0000-10	2.0000+01	4.7900+00	4.7900+00

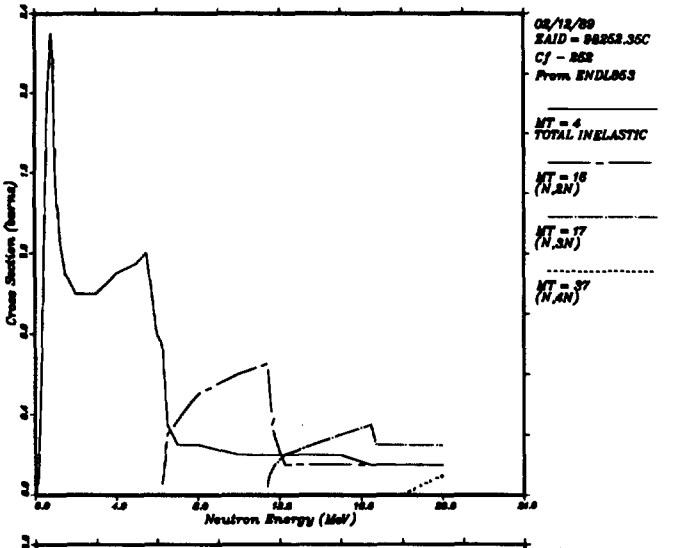


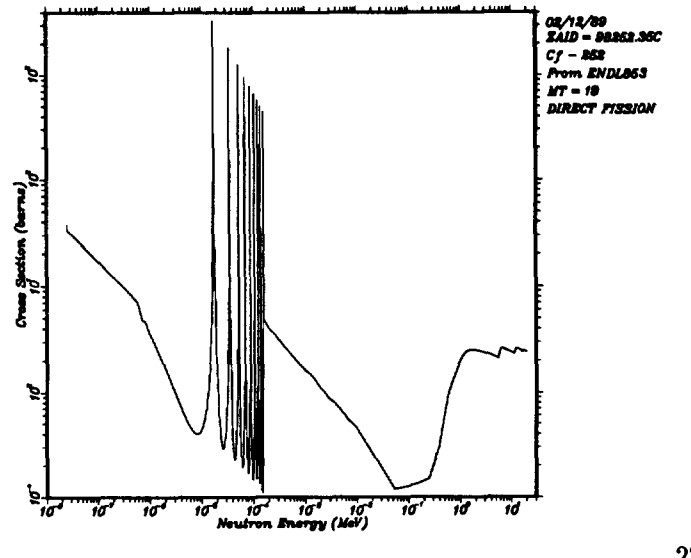
98252.35C

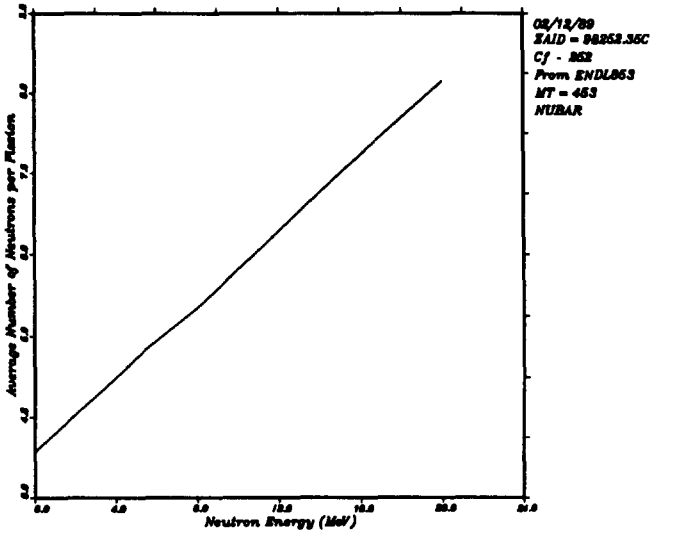

02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 1
TOTAL
MT = 2
ELASTIC
MT = 101
ABSORPTION
MT = 18
TOTAL FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 301
HEATING
Heating Number (MeV per collision)
Neutron Energy (MeV)


02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 302
GAMMA PRODUCTION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 4
TOTAL INELASTIC
MT = 16
(N,2N)
MT = 17
(N,3N)
MT = 37
(N,4N)
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 19
DIRECT FISSION
Cross Section (barns)
Neutron Energy (MeV)


02/12/89
ZAID = 98252.35C
Cf - 252
From ENDL863
MT = 452
NUBAR
Average Number of Neutrons per Fission
Neutron Energy (MeV)

APPENDIX A
EXPLANATORY NOTES

Density Values

Density values are given in units of grams/cm^3 and were obtained from the 1988-89 Edition of the CRC Handbook of Mathematics and Physics (Ref. 18). In the case of the Transuranium Elements, the density value was gleaned from the most recent publication in the literature for the best known isotope. The ratio-of-masses principle was subsequently applied to obtain the density values for the remaining isotopes (please see Refs. 19 and 20). The density value of 12.44 grams/cm^3 was used for all of the average fission product pairs. There is absolutely nothing magical about this value. It was chosen for the sake of thoroughness and completeness of the data presented and because it is a good average representation of the density, based upon the masses of the fission products. In every case, the density value quoted is that value used to calculate the mean free paths given with the plots.

Abundance Values

The isotopic abundances were taken from the Table of the Isotopes compiled by Russell L. Heath, found on pages B-227 through B-448 of the 1988-1989 edition of the CRC Handbook of Chemistry and Physics. The abundances for the uranium isotopes were taken from the 13th edition of the Chart of the Nuclides (Ref. 21).

Q-Values

Note that in the tabular data for any given nuclide, two Q-Values are listed for a specified reaction, Q_K and Q_R. Q_R is the Reaction Q-value. It is obtained by taking the difference between the masses of the constituent particles of a reaction before and after the occurrence of that reaction. Q_K is the Kinematic Q-value. For discrete-level inelastic scattering, Q_K differs from Q_R. It is the negative of the energy of the discrete level excited in the target nucleus. Q_K is used in the formula for calculating the secondary energy from discrete-inelastic scattering. As a matter of fact, it is the Kinematic Q-value that is carried on the A C E files for a particular reaction on the MCNP Library, not the Reaction Q-value. Furthermore, it is only for discrete-inelastic reactions that the Q value is used explicitly in MCNP calculations. The Reaction Q-value is used when the heating numbers are calculated in the NJOY processing code (Ref. 9)

APPENDIX B
CROSS SECTION NOTES

Note 1

For 1002.55C total inelastic MT=4 is equivalent to the (n,2n) reaction.

Note 2

For 2003.50C tritium production curve is identical to the proton production curve.

Note 3

For 3006.50C the (n,n′)d,α reaction is represented by the sum of all inelastic scattering levels except MT=57.

Note 4

For 3007.55C the (n,n′)t,α reaction is represented by the sum of inelastic scattering levels MT=52-88, inclusive.

Note 5

For 4009.50C, the reaction labeled with question marks in the pie plot at 14 MeV is really the (n,γ) reaction; 14 MeV is below the threshold for the (n,p) and (n,d) reactions.

Note 6

For 5010.50C, the cross sections for the (n,n′)α (Q=-4.46 MeV), the (n,n′)d2α (Q=-5.934 MeV), and (n,n′)p (Q=-6.585 MeV) reactions are divided among discrete-inelastic scattering reactions.

Note 7

For 6000.50C and 6012.50C the cross section for the (n,n′)3α reaction is divided among the inelastic levels MT=52-91.

Note 8

For 7014.50C the cross sections for the (n,n′)α (Q=-11.613 MeV) and the (n,n′)p (Q=-7.550 MeV) reactions are divided among the discrete-inelastic scattering reactions.

Note 9

For 8016.50C the cross sections for the (n,n′)α (Q=-7.161 MeV) and the (n,n′)p (Q=-12.126 MeV) reactions are divided among the discrete-inelastic scattering reactions.

Note 10

For 13027.50C the cross section for the (n,n′)α (Q=-10.101 MeV) and the (n,n′)p (Q=-8.271 MeV) reactions are divided among the discrete-inelastic scattering reactions.

Note 11

For 16032.50C the curve for MT=105 does not show up because $\sigma(E) < 10^{-3}$ barns. So also for MT=16 where $\sigma(E) < 2\text{x}10^{-3}$ barns.

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