

I 803
ORNL-5262
(ENDF-234)

Compilation of Sensitivity Profiles for Several CSEWG Fast Reactor Benchmarks

J. H. Marable
J. L. Lucius
C. R. Weisbin

OAK RIDGE NATIONAL LABORATORY

OPERATED BY UNION CARBIDE CORPORATION FOR THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Printed in the United States of America. Available from
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road, Springfield, Virginia 22161
Price: Printed Copy \$7.75; Microfiche \$3.00

This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the Energy Research and Development Administration/United States Nuclear Regulatory Commission, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

ORNL-5262
Distribution Category UC-79d
(ENDF-234)

Contract No. W-7405-eng-26

Neutron Physics Division

COMPILATION OF SENSITIVITY PROFILES FOR SEVERAL
CSEWG FAST REACTOR BENCHMARKS

J. H. Marable, J. L. Lucius,* and C. R. Weisbin

*Computer Science Division.

Date Published: March 1977

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
operated by
UNION CARBIDE CORPORATION
for the
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Manuscript typed by Virginia Glidewell

Table of Contents

	<u>Page No.</u>
ABSTRACT -----	v
INTRODUCTION -----	1
THE SCOPE OF THE REPORT -----	1
THE METHOD -----	3
THE RESULTS* -----	5
DISCUSSION -----	10
CONCLUSIONS -----	14
ACKNOWLEDGEMENTS -----	15
REFERENCES -----	16
APP. A. The Format for Standard Interface File SENPRO for Group-Dependent Sensitivity Coefficients -----	127
APP. B. The Sensitivity Coefficients for the Profiles of Figs. 1-219 in SENPRO Format -----	133
App. C. An Example of Using the Graphs and the SENPRO Data -----	209

*The organization of the graphs and data is given on page iv.

Organization of the Profile Graphs and Data
by Assembly and Response

	<u>Page No. of Graphs</u>	<u>Page No. of SENPRO Data</u>
Assembly ZPR-6/7		
Multiplication factor k	17	134
Central ratio (^{238}U capture)/(^{239}Pu fission)	42	151
Central ratio (^{238}U fission)/(^{239}Pu fission)	53	158
Assembly ZPR-6/6A		
Multiplication factor k	60	163
Central ratio (^{238}U capture)/(^{235}U fission)	67	168
Central ratio (^{238}U fission)/(^{235}U fission)	74	172
Assembly ZPR-3/56B		
Multiplication factor k	81	177
Central ratio (^{238}U fission)/(^{235}U fission)	88	182
Central ratio (^{239}Pu fission)/(^{235}U fission)	95	186
Assembly ZPR-3/11		
Multiplication factor k	102	191
Central ratio (^{238}U capture)/(^{235}U fission)	109	196
Central ratio (^{238}U fission)/(^{235}U fission)	115	200
Assembly GODIVA		
Multiplication factor k	122	204

Abstract

Sensitivity profiles of the multiplication factor and several central reaction rate ratios for five CSEWG fast reactor benchmarks, ZPR-6/7, ZPR-6/6A, ZPR-3/11, ZPR-3/56B, and GODIVA, are presented in graphic form and in tabular form using SENPRØ format. A summary table of total relative sensitivities for each of these five benchmarks is also given.

Introduction

The ORNL sensitivity analysis code system FORSS^{1,2} is a tool for studying relationships between cross sections, integral experiments, performance parameter predictions, and associated uncertainties. Fundamental to all studies involving sensitivity analysis are the relative sensitivities or sensitivity coefficients, which are the derivatives of the logarithms of the performance parameters with respect to the logarithms of the nuclear data parameters. Especially important are the sensitivity profiles, which are the energy-dependent sensitivities. Accordingly, a substantial part of the FORSS system is devoted to the calculation of the sensitivity coefficients and profiles, while the remainder of the system is devoted to various applications which use these quantities.

Although these sensitivity coefficients and profiles are required for many applications, they may be considered as an end unto themselves, for a great deal of understanding and insight is obtained by studying and comparing these sensitivities. It is with this thought in mind that the tables and plots are herewith reported. In addition, for those interested in applying the coefficients, the SENPRØ format³ for reporting sensitivity coefficients is presented in Appendix A, and the sensitivity data are tabulated in Appendix B using SENPRØ.

The Scope of the Report

The sensitivities reported here are based on the analysis of five CSEWG fast benchmarks,⁴ ZPR-6/7, ZPR-6/6A, ZPR-3/56B, ZPR-3/11, and the GODIVA assembly. These assemblies were chosen because they are well documented and represent a range of reactor types which are of interest.

ZPR-6/7 is a large (3100 liters) plutonium-oxide fueled fast critical assembly with a soft spectrum and other characteristics representative of several LMFBR designs. The core is blanketed with depleted uranium.

ZPR-6/6A is similar except that the fuel is enriched uranium rather than plutonium. ZPR-3/11, with its enriched uranium metal and ^{238}U blanket, provides additional opportunity to test ^{235}U and ^{238}U cross-section sensitivities at the higher fertile-to-fissile ratio of 7:1. ZPR-3/56B is a plutonium-oxide fueled critical assembly with a relatively large core and a nickel reflector. GODIVA is an enriched-uranium metal sphere.

Three types of response were considered: (1) the multiplication factor k , (2) a central capture-to-fission ratio, or (3) a central fission-to-fission ratio. (A central ratio is one for which the reactions considered are at the central point of the core.) The nuclear data included fission neutron yields and neutron reaction cross sections for fission, capture, elastic scattering, total inelastic scattering, and inelastic scattering from individual levels as well as from the continuum.

A positive flux solution to the homogeneous reactor transport equations exists only if a steady-state condition relating the parameters is satisfied.⁵ If initially this steady-state condition is satisfied, then an arbitrary variation in one parameter will in general cause the condition to become violated. Hence, a new positive solution can be found only if another parameter is simultaneously varied in such a way as to reestablish the validity of the steady-state condition. All results reported here are based on the usual computational convention of introducing the multiplication factor k , thereby transforming the steady-state condition into the definition of k . It is k which has been varied in response to the variation of the parameters. It is important to recognize this fact in understanding and applying the sensitivity coefficients. For this is not in accord with engineering design conventions which typically vary the enrichment, or with operating conventions in which a control rod position is changed in order to maintain the steady-state condition.

The sensitivities presented represent what are presently available at ORNL and are in no sense complete. There are omissions in assemblies,

performance parameters, reaction types, and nuclides. However, it is felt that many of the most important coefficients are represented, and that these, being already quite numerous, were of sufficient interest to present in one report. These sensitivity coefficients have been compiled into a library for distribution in a computer-readable format. The data are available on tape from the Radiation Shielding Information Center at Oak Ridge National Laboratory. This library is continually growing and will be documented at appropriate intervals in the sense of the "open code package."⁶

The Method

The method of calculating the sensitivity coefficients has been extensively described in previous reports and only a brief description is included here for completeness.

The first order of business of almost any calculation is the formation or selection of a multigroup cross-section library. The cross-section library upon which these calculations were based was ORNL's 126/36 pseudo-composition independent fine-group LMFBR neutron-gamma coupled library.^{7,8} This library in turn was based on ENDF/B-IV data. The energy bounds for the 126 neutron groups are listed in Table 1. For each region in each reactor assembly, self shielding was employed to obtain a library of 126 neutron energy group composition-dependent cross sections. Legendre scattering components were included for values of ℓ from 0 through 3.

The ANISN discrete-ordinates transport code⁹ (in S_4 , P_3 approximation) was applied to one-dimensional models of the assemblies for the calculation of forward and adjoint fluxes, as well as the multiplication eigenvalue. These in turn were used in the JULIET code for calculating the values of the performance parameters and the corresponding sources to the generalized-adjoint transport equations. The generalized adjoint solutions of these latter equations were provided by ANISN (modified to allow negative fluxes) and then used in the SWANLAKE

Table 1. Group Energy Bounds

Group No.	Upper Energy (MeV)	Group No.	Upper Energy (MeV)	Group No.	Upper Energy (MeV)
1	1.7333E 01	43	6.3928E-01	85	3.4307E-02
2	1.2214E 01	44	6.0810E-01	86	3.1828E-02
3	1.0000E 01	45	5.7844E-01	87	2.8500E-02
4	8.1873E 00	46	5.5023E-01	88	2.7000E-02
5	6.7032E 00	47	5.2340E-01	89	2.6058E-02
6	6.0653E 00	48	4.9787E-01	90	2.4788E-02
7	5.4881E 00	49	4.5049E-01	91	2.3579E-02
8	4.4933E 00	50	4.0762E-01	92	2.1875E-02
9	3.6788E 00	51	3.6883E-01	93	1.9305E-02
10	3.1664E 00	52	3.3373E-01	94	1.5034E-02
11	3.0119E 00	53	3.0197E-01	95	1.1709E-02
12	2.8650E 00	54	2.9850E-01	96	9.1188E-03
13	2.7253E 00	55	2.9720E-01	97	7.1017E-03
14	2.5924E 00	56	2.9452E-01	98	5.5308E-03
15	2.4660E 00	57	2.8725E-01	99	4.3074E-03
16	2.3852E 00	58	2.7324E-01	100	3.7074E-03
17	2.3653E 00	59	2.4724E-01	101	3.3546E-03
18	2.3069E 00	60	2.2371E-01	102	3.0354E-03
19	2.2313E 00	61	2.1280E-01	103	2.7465E-03
20	2.1225E 00	62	2.0242E-01	104	2.6126E-03
21	2.0190E 00	63	1.9255E-01	105	2.4852E-03
22	1.9205E 00	64	1.8316E-01	106	2.2487E-03
23	1.8268E 00	65	1.7422E-01	107	2.0347E-03
24	1.7377E 00	66	1.6573E-01	108	1.5846E-03
25	1.6530E 00	67	1.5764E-01	109	1.2341E-03
26	1.5724E 00	68	1.4996E-01	110	9.6112E-04
27	1.4957E 00	69	1.4264E-01	111	7.4852E-04
28	1.4227E 00	70	1.3569E-01	112	4.5400E-04
29	1.3534E 00	71	1.2907E-01	113	2.7536E-04
30	1.2873E 00	72	1.2277E-01	114	2.1445E-04
31	1.2246E 00	73	1.1679E-01	115	1.6702E-04
32	1.1648E 00	74	1.1109E-01	116	1.0130E-04
33	1.1080E 00	75	9.8037E-02	117	6.1442E-05
34	1.0026E 00	76	8.6517E-02	118	4.7851E-05
35	9.6164E-01	77	8.2500E-02	119	3.7267E-05
36	9.0718E-01	78	7.9500E-02	120	2.2603E-05
37	8.6294E-01	79	7.2000E-02	121	1.0677E-05
38	8.2085E-01	80	6.7379E-02	122	5.0435E-06
39	7.8082E-01	81	5.6562E-02	123	2.3724E-06
40	7.4274E-01	82	5.2475E-02	124	1.1254E-06
41	7.0651E-01	83	4.6309E-02	125	4.1399E-07
42	6.7206E-01	84	4.0868E-02	126	1.0000E-07

code¹⁰ for the calculation of the sensitivity coefficients. More detail concerning the functional relationships between these codes when employed for sensitivity analysis is provided in ref. 2.

The Results

The results of the sensitivity calculations described briefly above are presented here in the form of summary tables and graphs. Agreement with previously reported¹¹ results using independent methods is good. The graphs (Figs. 1-219) present relative sensitivities per unit lethargy^a as a function of the neutron reaction energy. We have chosen to plot the profiles in this form because the relative sensitivity per unit lethargy is independent of the group structure if the group structure is sufficiently fine. Thus these plots can be compared directly with similar plots which use a different group structure. Observe that these are log-log plots in which a solid continuous curve represents a negative quantity and a broken-line dashed curve represents a positive quantity.

Tables 2-6 present for each response, nuclide, and reaction, the total relative sensitivity, which is the relative sensitivity of the response with respect to the group reaction cross section summed over all groups. Such a total relative sensitivity is actually a relative sensitivity with respect to a group-independent scale factor λ . This multiplicative factor affects the associated cross section or yield (considered as mathematical variables) in the same proportion at all energies and in all groups. Thus, if the scale factor λ increases by 10%, all the group cross sections for the associated reaction type increase by the same 10%. For convenience λ may be set to unity when

^aNote the definitions used here: The sensitivity of response R with respect to a nuclear data parameter such as the group i cross section σ_i is the derivative $dR/d\sigma_i$. The sensitivity coefficient or relative sensitivity of response R with respect the group cross section σ_i is $(dR/R)/(d\sigma_i/\sigma_i)$. The relative sensitivity per unit lethargy of R with respect to an energy (or rather a group) dependent parameter such as σ_i is $[(dR/R)/(d\sigma_i/\sigma_i)]/\Delta u_i$ where Δu_i is the lethargy width of group i.

Table 2. Total Sensitivities for ZPR-6/7

Response	Nuclide	Reaction Type				
		Elastic	Inelastic	Fission	Capture	Neutron Yield
k	O	-0.00876				
	Na	0.00926	-0.00993		-0.00254	
	Fe	0.01905	-0.02350		-0.02049	
	²³⁵ U			0.00880	-0.00113	
	²³⁸ U		-0.04206 ^a	0.07852	-0.23941	0.12562
	²³⁹ Pu		-0.00375	0.59145	-0.06676	0.81847
	²⁴⁰ Pu			0.01628	-0.00930	0.02314
	²⁴¹ Pu			0.01286	-0.00092	0.01765
²⁸ C/ ⁴⁹ F	O	0.10870				
	Na	0.02812	0.01630		-0.00089	
	Fe	0.02382	0.02517		-0.00654	
	²³⁵ U			-0.00066	-0.00041	
	²³⁸ U		0.06759	0.00519	0.89587	0.00338
	²³⁹ Pu			-1.0725	0.02021	-0.00329
	²⁴⁰ Pu			-0.00048	-0.00297	-0.00010
	²⁴¹ Pu			-0.00162	-0.00030	-0.00003
²⁸ F/ ⁴⁹ F	O	-0.08922				
	Na	-0.04794	-0.07527		0.00295	
	Fe	-0.04415	-0.19932		0.02368	
	²³⁸ U		-0.24814	0.95994	0.27079	
	²³⁹ Pu			0.76083	0.07882	0.01364
	²⁴⁰ Pu			0.00292		
	²⁴¹ Pu			0.00497		

^aThis is broken up into 26 individual level contributions of -0.02990 and a continuum contribution of -0.01218 (see the graphs).

Table 3. Total Sensitivities for ZPR-6/6A

Response	Nuclide	Reaction Type				
		Elastic	Inelastic	Fission	Capture	Neutron Yield
k	O	0.03375				
	Na	0.02669	-0.00443		-0.00274	
	Fe	0.02876	-0.01431		-0.01871	
	²³⁵ U			0.53709	-0.09960	0.88036
	²³⁸ U		-0.01746	0.07451	-0.26471	0.11932
²⁸ c/ ²⁵ f	O	0.04115				
	Na	-0.00061	0.00810		-0.00005	
	Fe	0.00374	0.01358		-0.00143	
	²³⁵ U			1.0328	-0.00848	
	²³⁸ U		0.03495	0.00224	0.96644	
²⁸ f/ ²⁵ f	O	-0.14148				
	Na	-0.06889	-0.08190		0.00311	
	Fe	-0.05576	-0.22551		0.02118	
	²³⁵ U			-0.62869	0.11358	
	²³⁸ U		-0.27938	0.96402	0.29384	

Table 4. Total Sensitivities for ZPR-3/56B

Response	Nuclide	Reaction Type			
		Elastic	Inelastic	Fission	Capture
k	Na	0.02129	-0.00392		-0.00205
	Fe	0.02726	-0.01236		-0.01440
	²³⁵ U			0.00501	
	²³⁸ U		-0.02069	0.06434	-0.16255
	²³⁹ Pu		-0.00311	0.60148	-0.06797
	²⁴⁰ Pu			0.01921	
²⁸ f/ ²⁵ f	Na	-0.09502	-0.07327		0.00310
	Fe	-0.07761	-0.21313		0.02113
	²³⁵ U			-0.99673	
	²³⁸ U		-0.29399	0.96823	0.25640
	²³⁹ Pu		-0.04137	0.32035	0.10985
	²⁴⁰ Pu			0.00424	
⁴⁹ f/ ²⁵ f	Na	-0.04147	-0.00864		0.00090
	Fe	-0.02970	-0.01439		0.00540
	²³⁵ U			-0.99906	
	²³⁸ U		-0.04105	-0.00122	0.07174
	²³⁹ Pu		-0.00645	1.0726	0.03266
	²⁴⁰ Pu			0.00051	

Table 5. Total Sensitivities for ZPR-3/11

Response	Nuclide	Reaction Type			
		Elastic	Inelastic	Fission	Capture
k	Cr				-0.00049
	Fe	0.00720	-0.00542		-0.00169
	Ni				-0.00086
	²³⁵ U	0.00720	-0.00543	0.50042	-0.04935
	²³⁸ U	0.10657	-0.07525	0.14842	-0.22544
²⁸ C/ ²⁵ F	Cr				-0.00020
	Fe	0.00876	0.00349		-0.00046
	Ni				-0.00013
	²³⁵ U	0.00423	0.01754	-1.0758	-0.02203
	²³⁸ U	0.04516	0.14197	0.00612	0.91217
²⁸ F/ ²⁵ F	Cr				0.00054
	Fe	-0.01271	-0.03526		0.00144
	Ni				0.00002
	²³⁵ U	-0.01034	-0.04984	-0.70980	0.06536
	²³⁸ U	-0.13554	-0.65392	0.92402	0.28255

Table 6. Total Sensitivities for GODIVA

Response	Nuclide	Fission	Capture	Neutron Yield
k	²³⁴ U	0.00568	-0.00061	0.00829
	²³⁵ U	0.65922	-0.03681	0.98199
	²³⁸ U	0.00678	-0.00133	0.00976

the group cross sections have their nominal values σ_i^0 . Then the group cross sections are given by

$$\sigma_i = \lambda \sigma_i^0 . \quad (1)$$

In contrast to the plots, the sensitivities given in Appendix B using the SENPRØ format are not per unit lethargy but are simply relative sensitivities to the group cross sections or group yields. The reason for this is that these are the quantities currently used in numerical computations.

Discussion

A study of the sensitivity profiles leads to many interesting insights. In general, the collection of profiles show that a great amount of structure is possible in the energy dependence of the sensitivity coefficients. Frequently, such structure can be traced back to cross section resonances, thresholds, etc. In addition, comparison of related profiles is often enlightening. However, detailed discussion of this is beyond the purpose of the present report.

The remainder of this discussion is devoted to a few items which are pertinent to interpreting the summary tables of total relative sensitivities. For interpreting the summary tables it is useful to first calculate the direct effect contribution to the total relative sensitivity. This contribution is that which arises from the explicit dependence of the performance parameter on the nuclear data parameter of interest, which, as discussed in the previous section for a total relative sensitivity, is a scale factor. In calculating the direct effect contribution, the shape of the forward flux (as well as that of the adjoint flux) is assumed to remain unchanged.

The following theorem is especially applicable to the calculation of direct effects to total sensitivities of reaction rate ratios: If

the mathematical expression for a response is explicitly homogeneous of degree n in a nuclear data parameter, then the direct effect contribution to the relative sensitivity of that response with respect to the nuclear data parameter is n . Reaction rate ratios are typically homogeneous of degree $+1$, -1 , or 0 in the scale factors (not the group cross sections). Accordingly, the direct effect contribution to the total sensitivity of a reaction rate ratio is typically $+1$, -1 , or 0 .

For example, the ^{238}U -capture-to- ^{235}U -fission ratio is homogeneous for degree 1 in the ^{238}U -capture scale factor, of degree -1 in the ^{235}U -fission scale factor, and of degree 0 in the ^{235}U -capture scale factor. The corresponding direct effect contributions to the total relative sensitivities are 1 , -1 , and 0 respectively.

The direct effect gives the contributions to the sensitivity coefficients ignoring explicit variations in the forward (and adjoint) flux. Frequently, however, it is just those effects due to flux modifications, the indirect effects, which are most interesting. These indirect effects arise largely through the shielding of one reaction by another (or itself) and include self shielding as well as the shadowing of one resonance by another. There are also resulting modifications to the leakage and to the slowing down.

A measure of these indirect effects is given by the difference between the total relative sensitivity and the direct effect contribution. Deviations from the direct effect contribution range typically from very small values through ten to twenty percent. Especially large is the effect of inelastic scattering from ^{238}U on the ^{238}U -fission-to- ^{235}U (or ^{239}Pu)-fission ratio. In ZPR-3/11 (for which the fertile-to-fission ratio is greater than seven) this gives the largest deviation from the direct effect (-0.654 compared to 0.0).

For those total relative sensitivities of reaction rate ratios with a direct effect contribution of unit magnitude the indirect effect

contribution is frequently of opposite sign to the direct effect contribution, resulting in total relative sensitivities with magnitudes less than unity. These illustrate that a reaction cross section commonly shields itself more than it shields another reaction cross section. For example, in ZPR-6/6A the total relative sensitivity of $^{28}\text{f}/^{25}\text{f}$ with respect to ^{235}U fission is -0.63 compared to -1.0, the direct effect contribution. This is an extreme example in that the indirect contribution is quite large.

On the other hand, there are several examples for which the magnitude of the total relative sensitivity is greater than the unit contribution given by the direct effect. These illustrate shielding (or another cross section) which is greater in effect than the self shielding. Thus, in ZPR-3/56B the total relative sensitivity of the central reaction rate ratio $^{49}\text{f}/^{25}\text{f}$ with respect to ^{239}Pu fission is 1.0726, which is 7% greater than the direct contribution. This shows that an increase in the ^{239}Pu fission scale factor (and, hence an equal increase in all the group cross sections for ^{239}Pu fission) results in a flux spectrum modification at the center of the core of ZPR-3/56B which modification decreases the ^{235}U fissions more than it decreases the ^{239}Pu fissions. In other words, the ^{239}Pu fission reaction shields the ^{235}U fission reaction more than itself at the center of the ZPR-3/56B core. Similarly, ^{235}U fission in ZPR-6/6A and in ZPR-3/11 and ^{239}Pu fission in ZPR-6/7 all shield ^{238}U capture more than themselves to produce total relative sensitivities with magnitudes greater than unity. (The word "shielding" in the above discussion is meant to include energy-transfer effects. This is a somewhat broader use of the word, which ordinarily refers to spatial effects due to absorption.)

The above discussion and results apply to sensitivity coefficients for reaction rate ratios, which are generally homogeneous in the nuclear data scale factors. Generally, they do not apply to sensitivity coefficients for the multiplication factor k because the mathematical expression for k is generally not homogeneous in any scale parameter.

For this and other reasons, it is not convenient to divide k-sensitivities into direct-effect of the indirect-effect contributions. The sensitivity coefficient for k with respect to nuclear data parameter a naturally breaks up into two terms - one from the source and the other from the losses. The expressions for these are given by

$$\frac{a}{k} \frac{dk}{da} = f_a - k \alpha_a \quad (2)$$

where f_a is the fraction of adjoint-weighted fission sources which are of degree 1 in the parameter a and α_a is the ratio of loss terms of degree 1 in the parameter a to the total adjoint-weighted fission source. The mathematical expression for these are

$$f_a \equiv \frac{(\phi^*, B_a \phi)}{(\phi^*, B\phi)} \quad (3)$$

$$\alpha_a \equiv \frac{(\phi^*, A_a \phi)}{(\phi^*, B\phi)} \quad (4)$$

where B_a is the part of the fission source proportional to parameter a, and A_a is the loss operator (everything but fission) proportional to parameter a, and ϕ and ϕ^* are the forward and adjoint fluxes respectively.

Equation (2) immediately shows that the sum of all the sensitivity coefficients with respect to the neutron fission yields its unity. Another relation which is obvious from Eq. (2) is that the capture sensitivities are simply given by -k times the adjoint-weighted nuclide capture to total fission ratio. Only slightly less obvious is that the difference between the yield sensitivity and the corresponding fission reaction sensitivity is simply k times the nuclide capture sensitivity divided by the nuclide capture-to-fission ratio (adjoint weighted).

The unity sum rule given above for sensitivity coefficients of k with respect to neutron yield $\bar{\nu}$ should be compared with the zero sum rule for sensitivity coefficients of other performance parameters which do not depend explicitly on the multiplication factor or a neutron yield. Such

sensitivity coefficients add algebraically to zero when summed over all neutron yields because the resulting change in k (assuming k is not reset) exactly compensates the changes in the neutron yields.

Conclusions

The sensitivity coefficients are an important data base for calculation of many quantities of interest in reactor design. In addition, a study of sensitivity profiles and of the total relative sensitivities leads one to many important insights into reactor physics. The sensitivity profiles and the summary tables contained in this report and the data file in SENPRØ format in the Appendix are presented as aids to attaining the above ends.

Acknowledgements

The authors wish to thank J. D. Drischler for his aid in organizing the profiles, handling the data, and especially for creating the file of sensitivity coefficients in SENPRØ format. Thanks are due to E. M. Oblow for his helpful discussions concerning the eternal problem of understanding and interpreting what the profiles mean. We owe our gratitude to Virginia Glidewell for typing this report and organizing it in its final form.

1. C. R. Weisbin, E. M. Oblow, F. R. Mynatt, and G. F. Flanagan, "The FORSS Sensitivity Analysis Code System," *Trans. Am. Nucl. Soc.*, 22, 792 (1975).
2. C. R. Weisbin, J. H. Marable, J. L. Lucius, E. M. Oblow, F. R. Mynatt, R. W. Peelle, and F. G. Perey, "Application of FORSS Sensitivity and Uncertainty Methodology to Fast Reactor Benchmark Analysis," ORNL/TM-5563 (1976).
3. J. L. Lucius and C. R. Weisbin, "Interface Specifications for Sensitivity Profiles (SENPRØ) and Covariance Files (COVERX)," Presentation to the Committee on Computer Code Coordination, Los Alamos Scientific Laboratory (May 1976).
4. ENDF-202 Cross Section Evaluation Working Group Benchmark Specification, BNL-19302 (ENDF-202) (November 1974).
5. G. I. Bell and S. Glasstone, Nuclear Reactor Theory, Van Nostrand Reinhold Company, pp. 37-48 (1970).
6. B. F. Maskewitz, D. K. Trubey, R. W. Roussin, and F. H. Clark, "The Radiation Shielding Information Center (RSIC) - A Unifying Force in the International Shielding Community," Proceedings of the fourth International Conference on Reactor Shielding, CONF-721018, Vol. 1, pp. 215-223 (1972).
7. C. R. Weisbin, R. W. Roussin, J. E. White, and R. Q. Wright, "Specification for Pseudo-Composition Independent Fine-Group and Composition-Dependent Fine- and Broad-Group LMFBR Neutron-Gamma Libraries at ORNL," ORNL-TM-5142 (ENDF-224) (December 1975).
8. J. E. White, R. Q. Wright, L. R. Williams, and C. R. Weisbin, "Data Testing of the 126/36 Neutron-Gamma ENDF/B-IV Coupled Library for LMFBR Core and Shield Analysis," *Trans. Am. Nucl. Soc.*, 23, 507 (June 1976).
9. W. W. Engle, Jr., "A User's Manual for ANISN, A One-Dimensional Discrete Ordinates Transport Code with Anisotropic Scattering," K-1693, Computing Technology Center, Oak Ridge Gaseous Diffusion Plant (1967).
10. D. E. Bartine, E. M. Oblow, and F. R. Mynatt, "SWANLAKE - A Computer Code Utilizing ANISN Radiation Transport Calculations for Cross Section Sensitivity Analysis," ORNL-TM-3809 (1973).
11. E. M. Bohn, I. K. Olsen, and K. E. Freese, "A Compilation of Cross Section Sensitivity Coefficients for ZPR-6/6A, ZPR-6/7, and ZPR-3/48," ZPR-TM-240 (May 1976).

ORNL DWG 76-16106

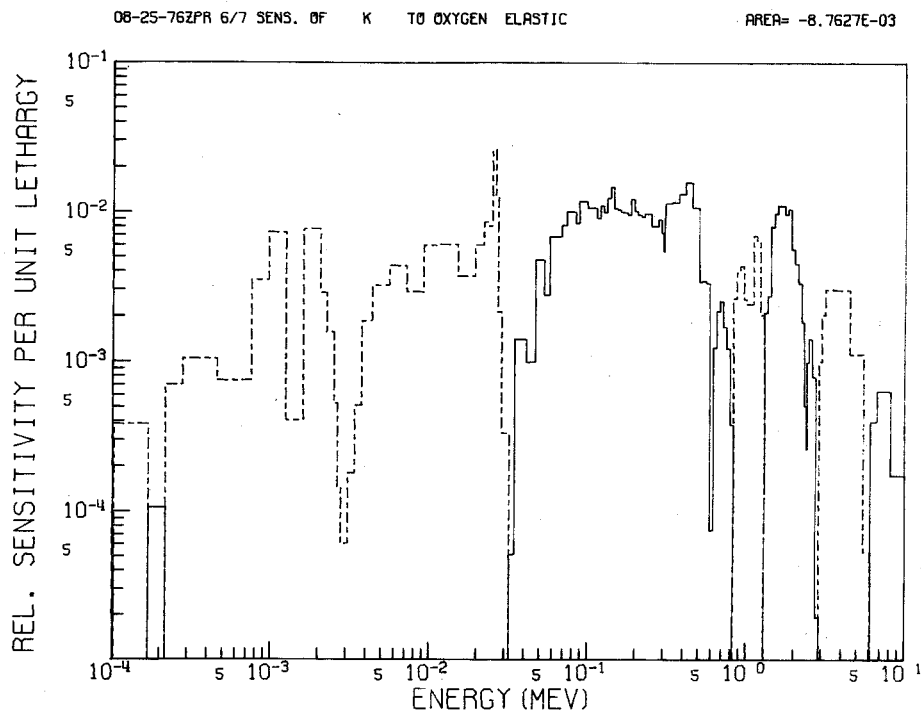


Fig. 1. Sensitivity of k in Assembly ZPR-6/7 to the Oxygen Elastic Scattering Cross Section.

ORNL DWG 76-6118

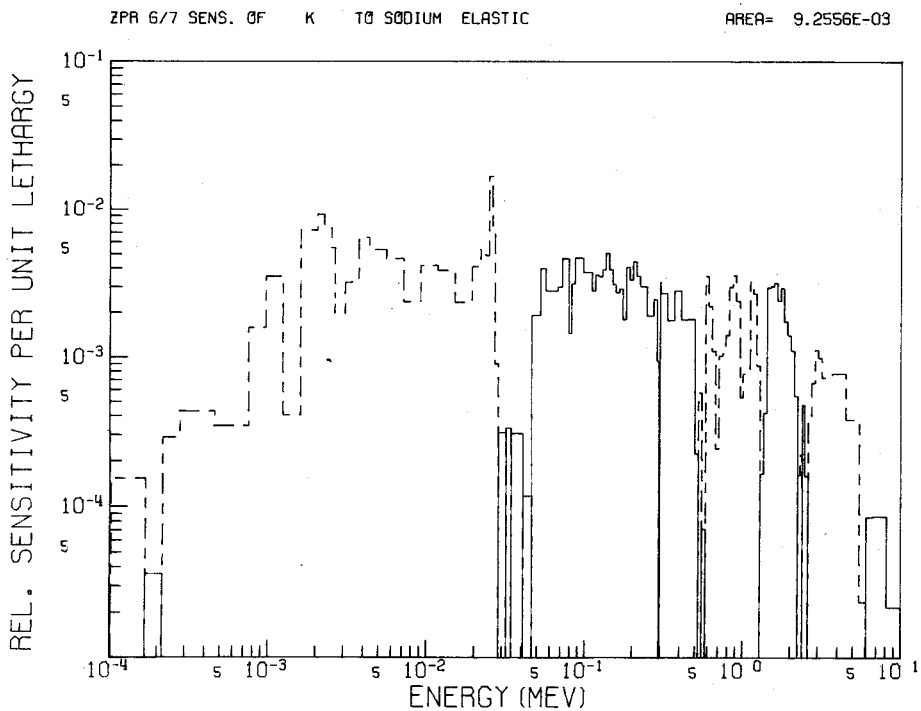


Fig. 2. Sensitivity of k in Assembly ZPR-6/7 to the Sodium Elastic Scattering Cross Section.

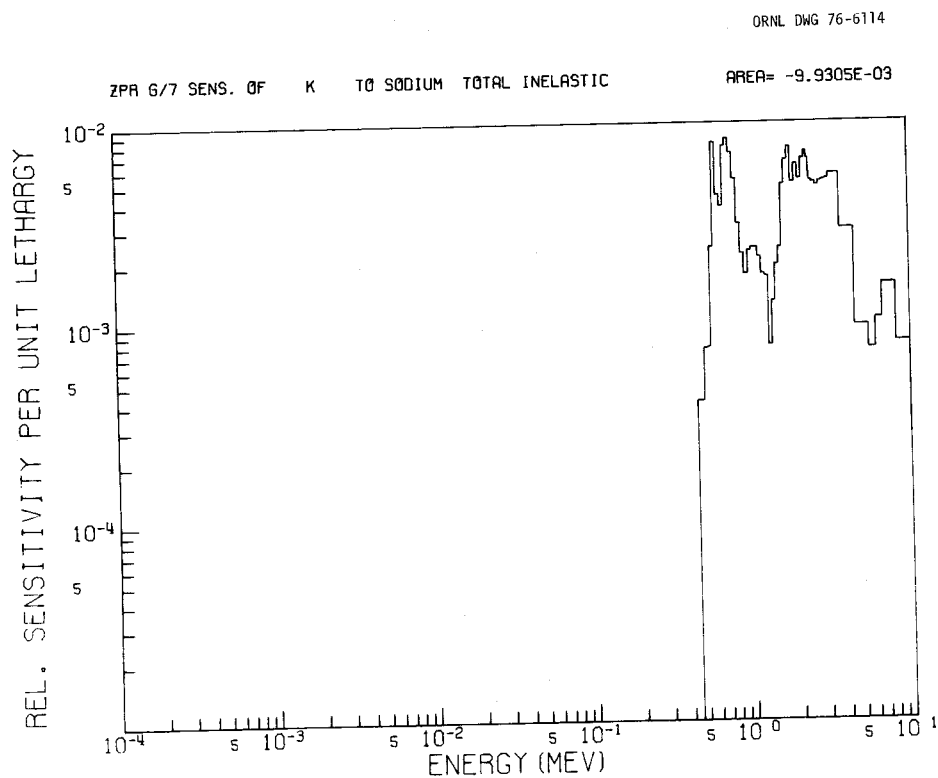


Fig. 3. Sensitivity of k in Assembly ZPR-6/7 to the Sodium Inelastic Scattering Cross Section.

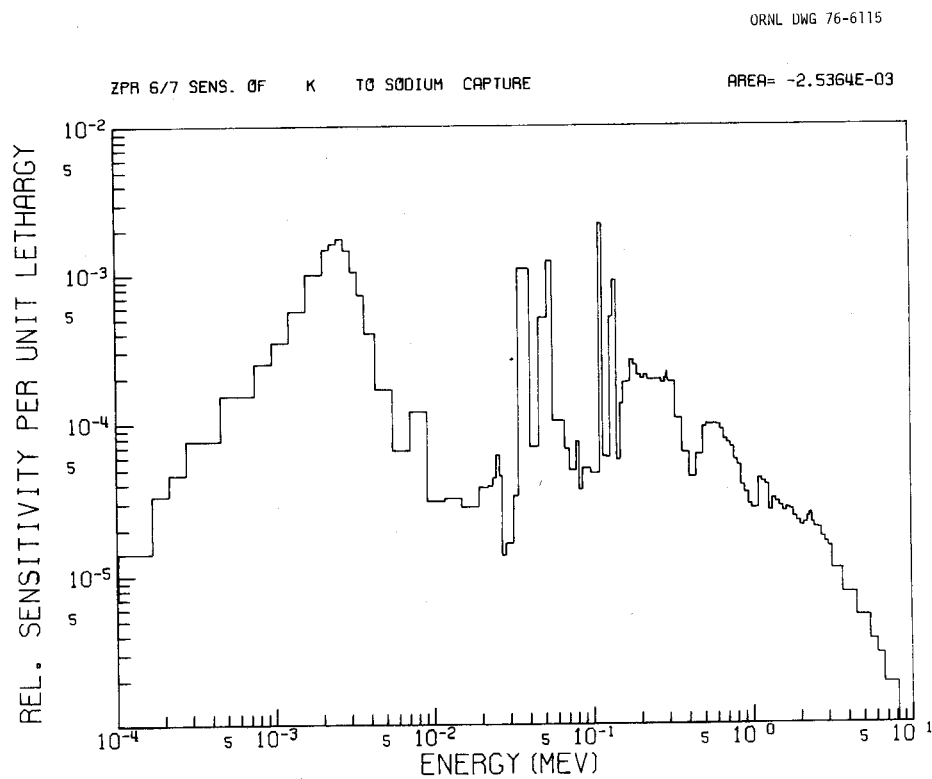


Fig. 4. Sensitivity of k in Assembly ZPR-6/7 to the Sodium Capture Cross Section.

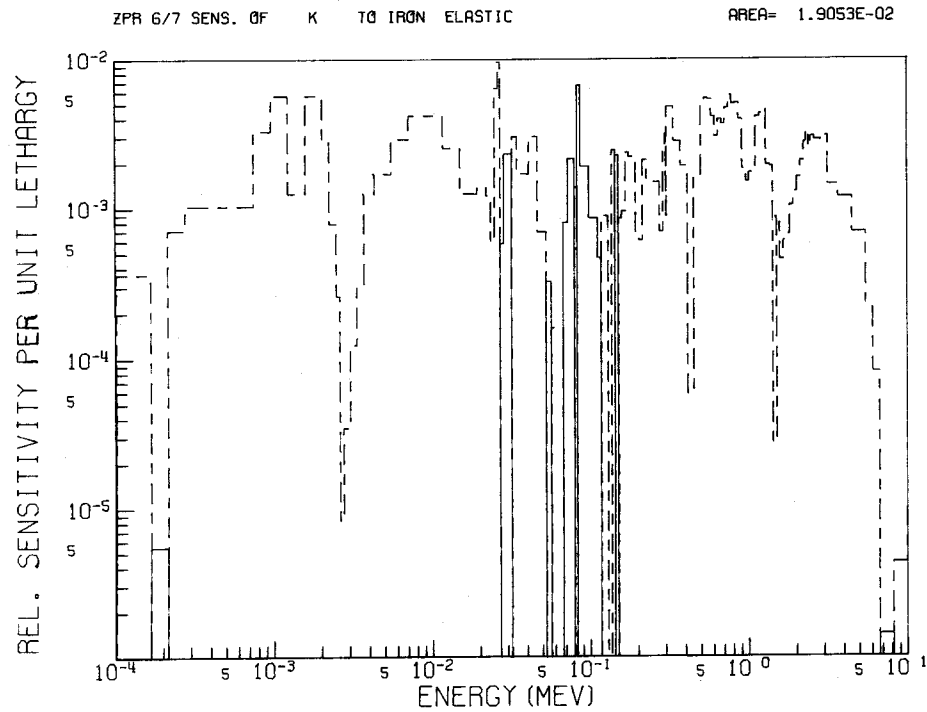


Fig. 5. Sensitivity of k in Assembly ZPR-6/7 to the Iron Elastic Scattering Cross Section.

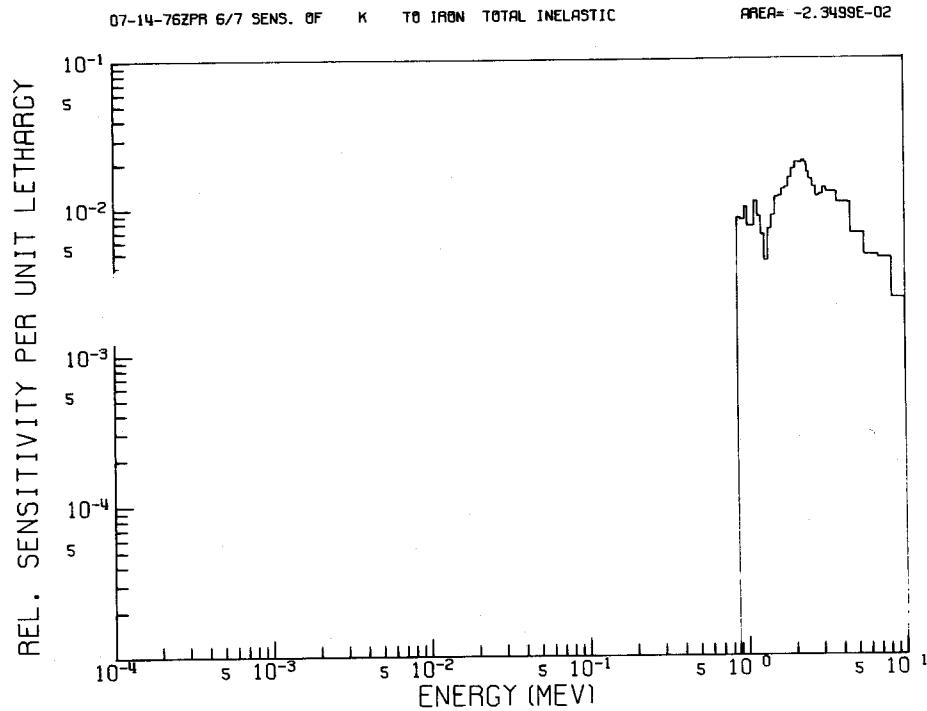


Fig. 6. Sensitivity of k in Assembly ZPR-6/7 to the Iron Inelastic Scattering Cross Section.

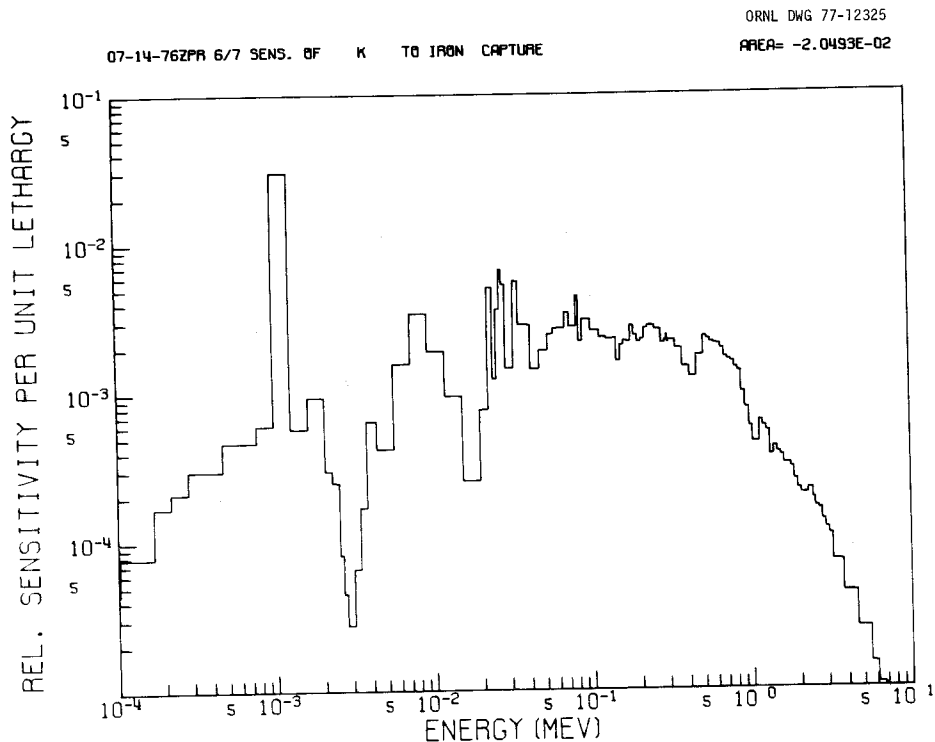


Fig. 7. Sensitivity of k in Assembly ZPR-6/7 to the Iron Capture Cross Section.

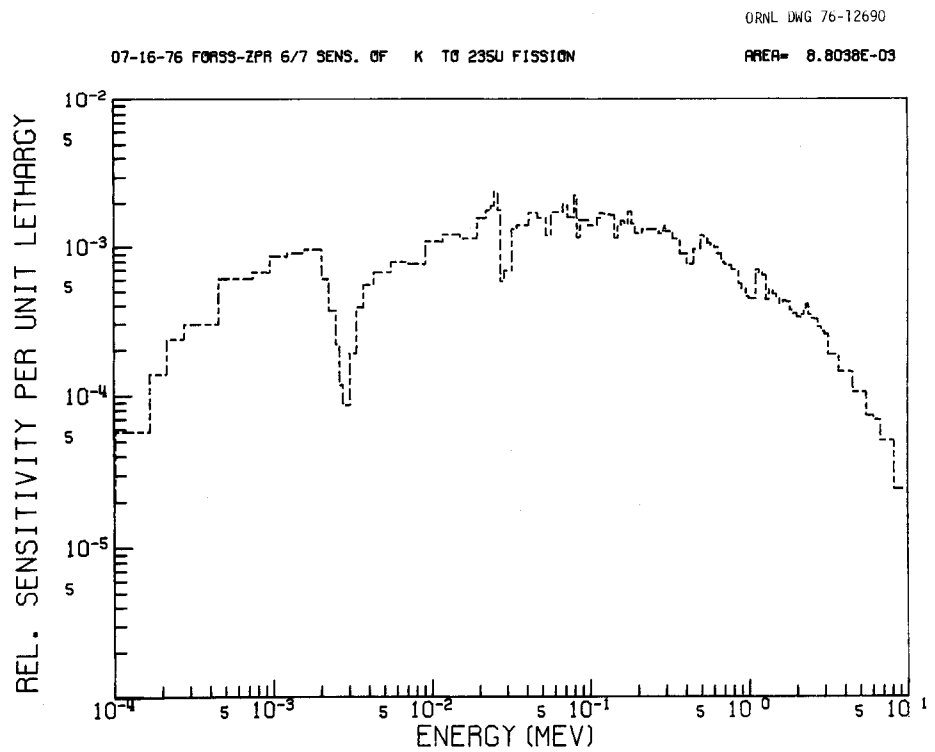


Fig. 8. Sensitivity of k in Assembly ZPR-6/7 to the ²³⁵U Fission Cross Section.

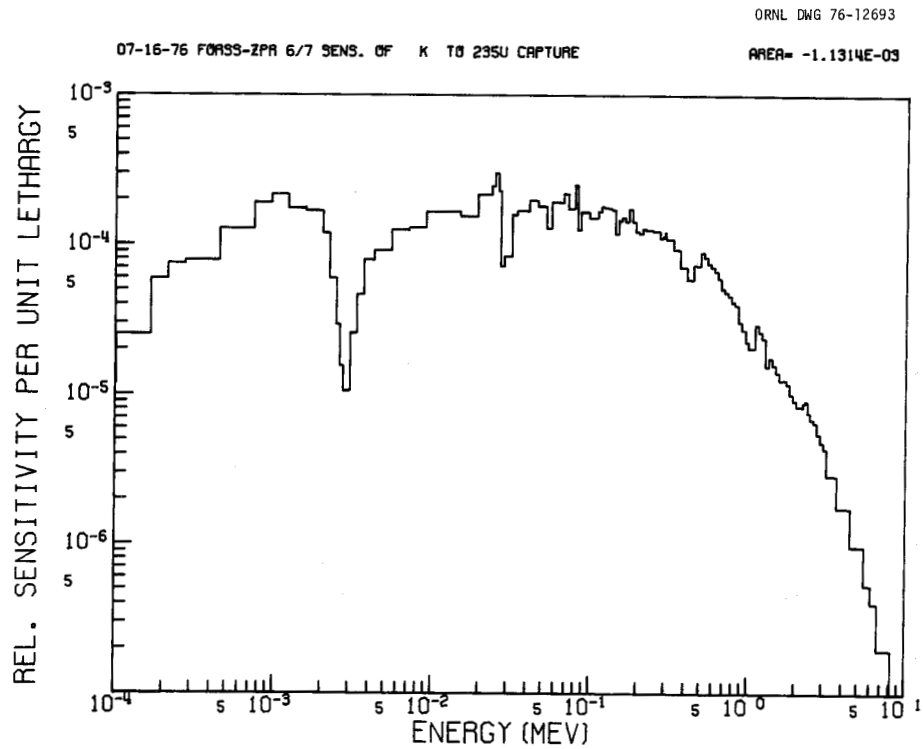


Fig. 9. Sensitivity of k in Assembly ZPR-6/7 to the ^{235}U Capture Cross Section.

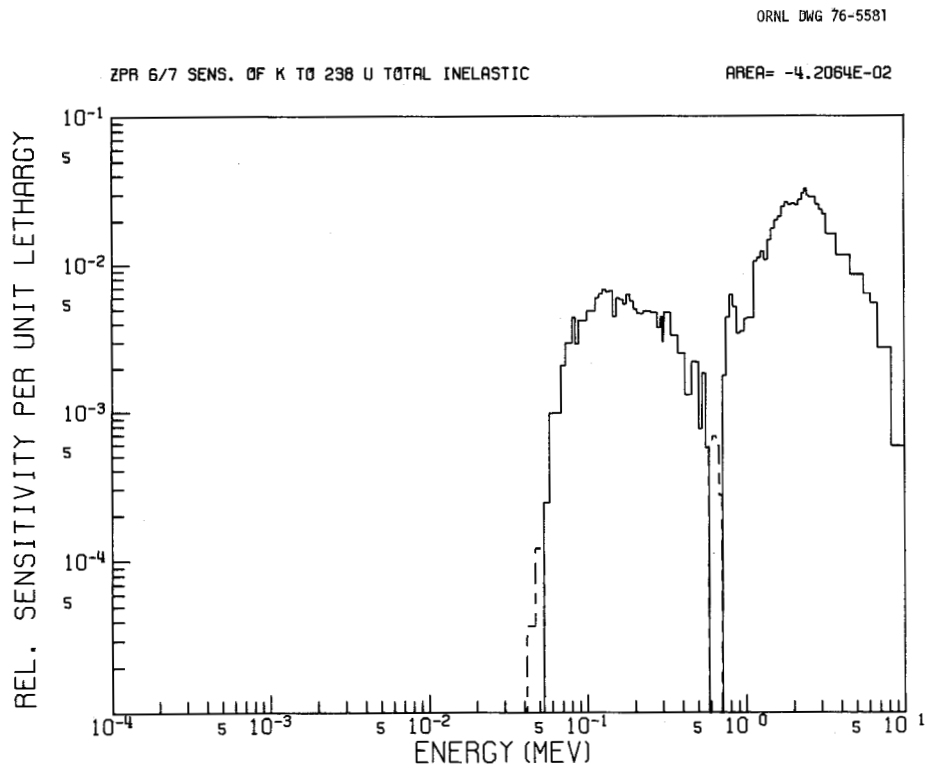


Fig. 10. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-6907

04-13-76 ZPR6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 1

AREA= -5.4683E-03

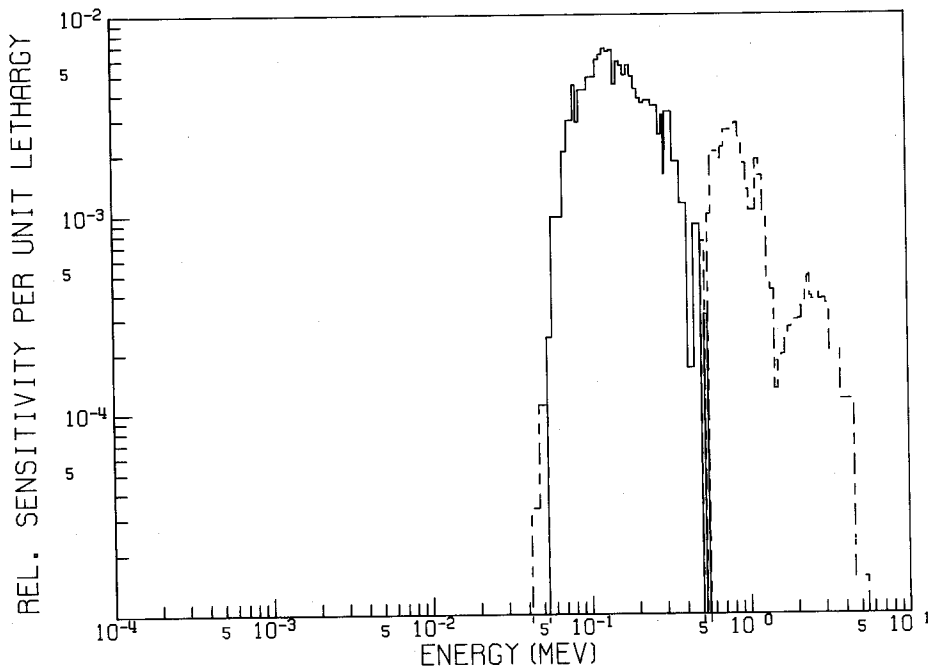


Fig. 11. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U First Level Inelastic Scattering Cross Section.

ORNL DWG 76-6868

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 2

AREA= -1.3115E-03

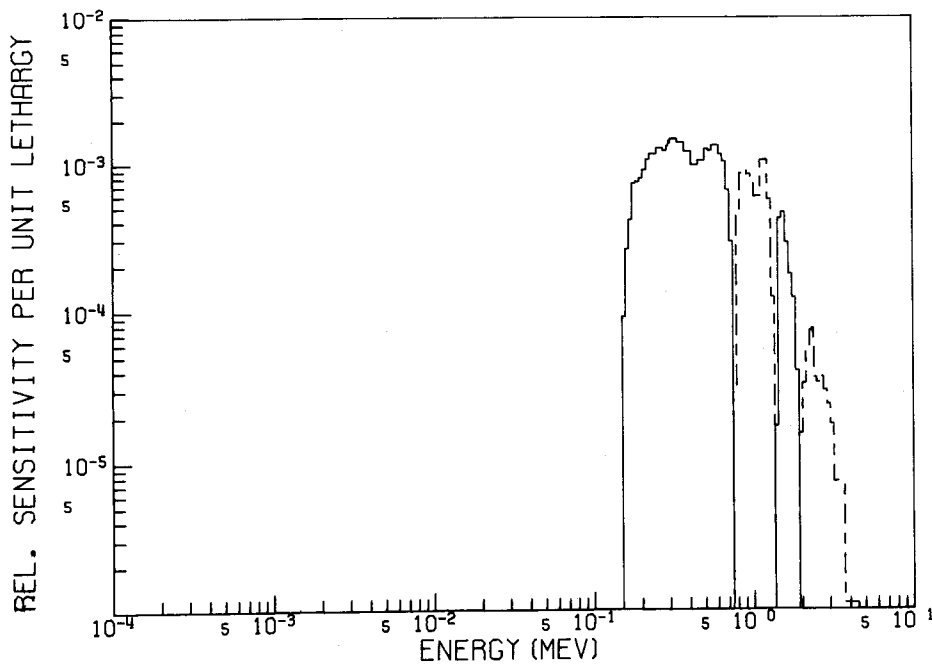


Fig. 12. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Second Level Inelastic Scattering Cross Section.

ORNL DWG 76-6869

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 3

AREA= -2.4419E-04

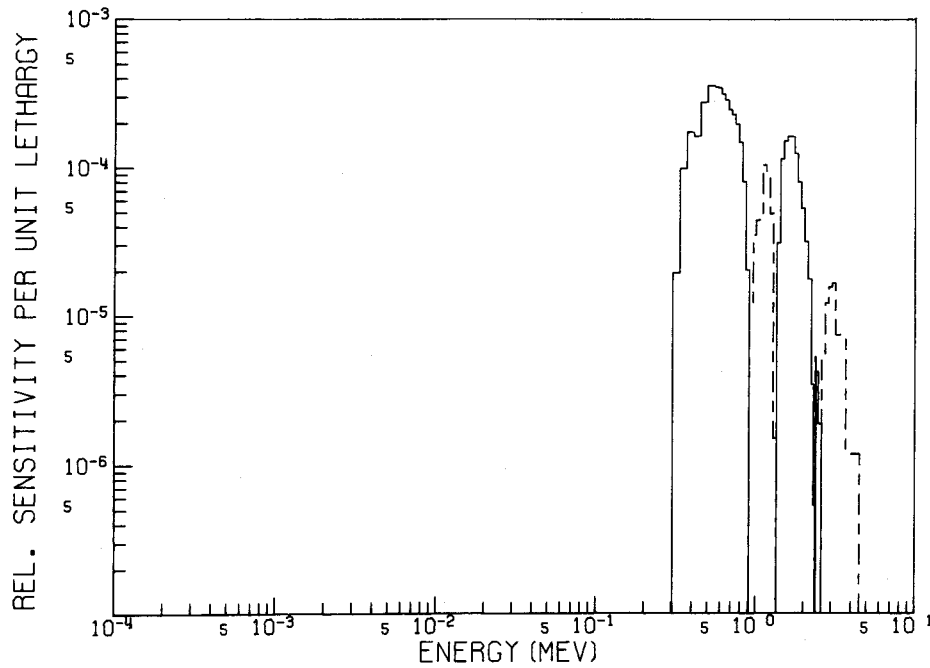


Fig. 13. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Third Level Inelastic Scattering Cross Section.

ORNL DWG 76-6901

04-12-76 ZPR6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 4

AREA= -2.2517E-03

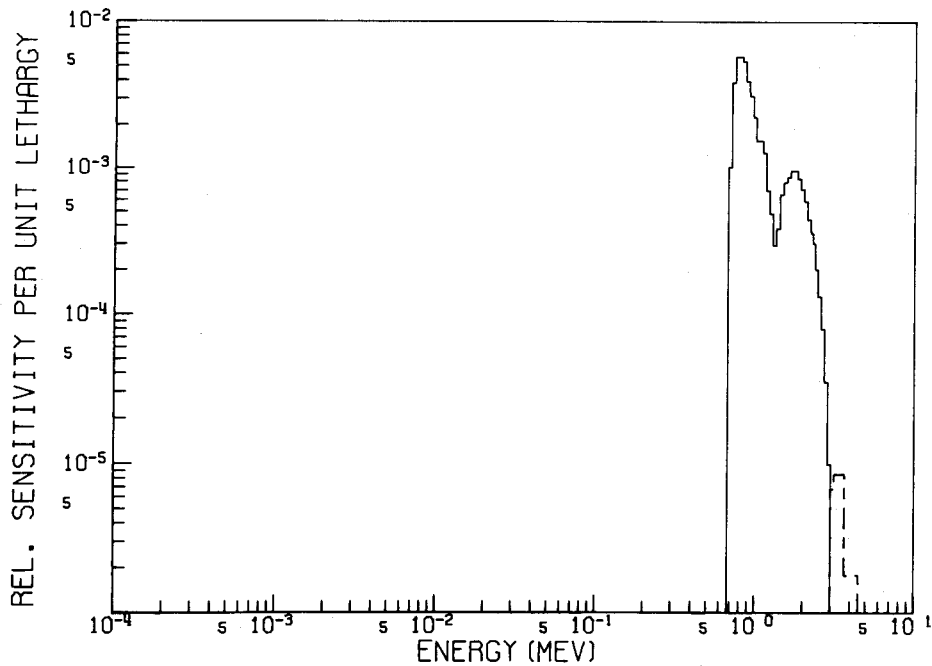


Fig. 14. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Fourth Level Inelastic Scattering Cross Section.

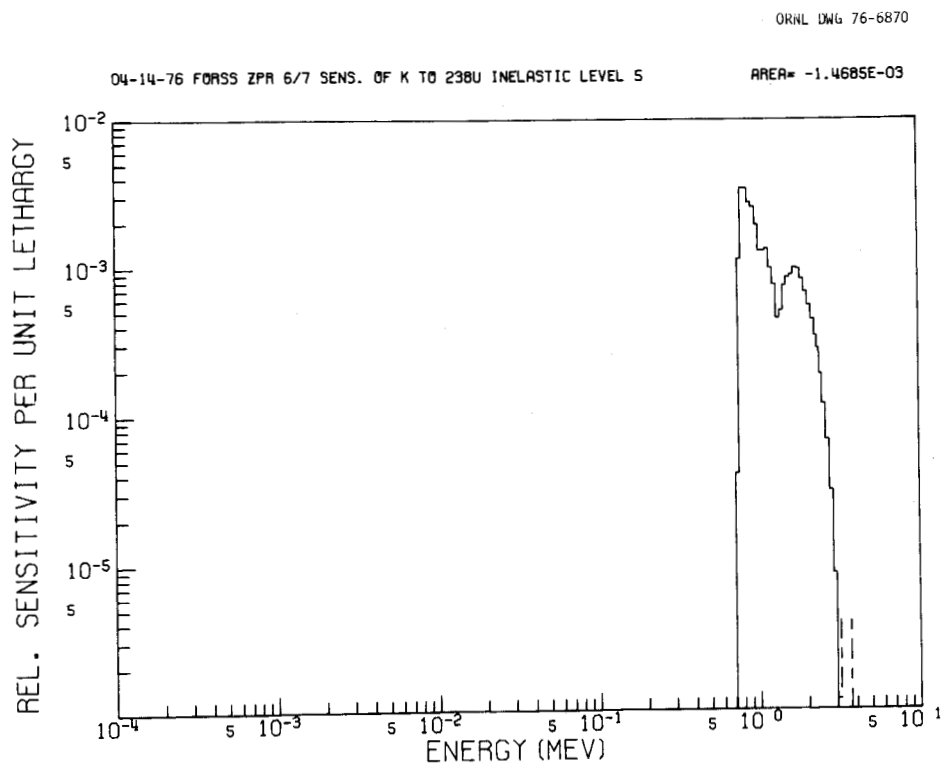


Fig. 15. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Fifth Level Inelastic Scattering Cross Section.

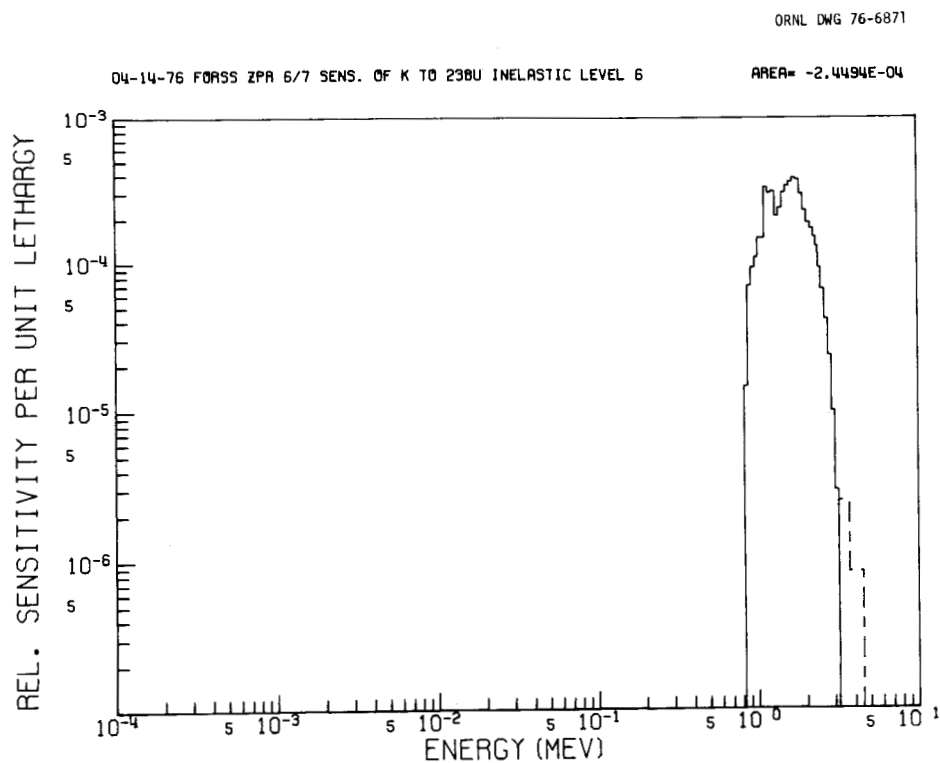


Fig. 16. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Sixth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6872

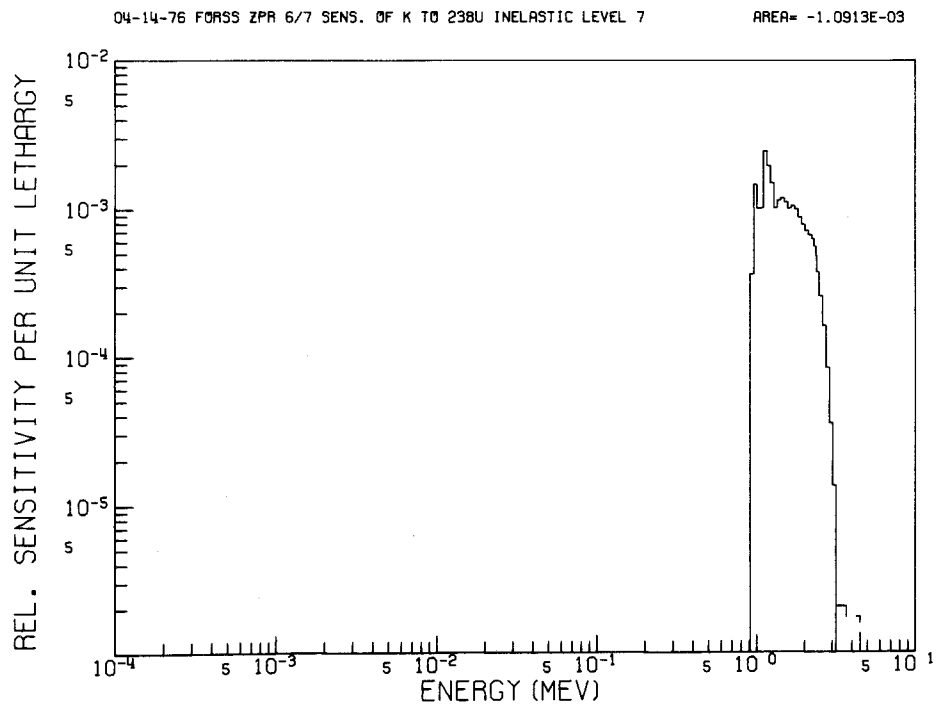


Fig. 17. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Seventh Level Inelastic Scattering Cross Section.

ORNL DWG 76-6873

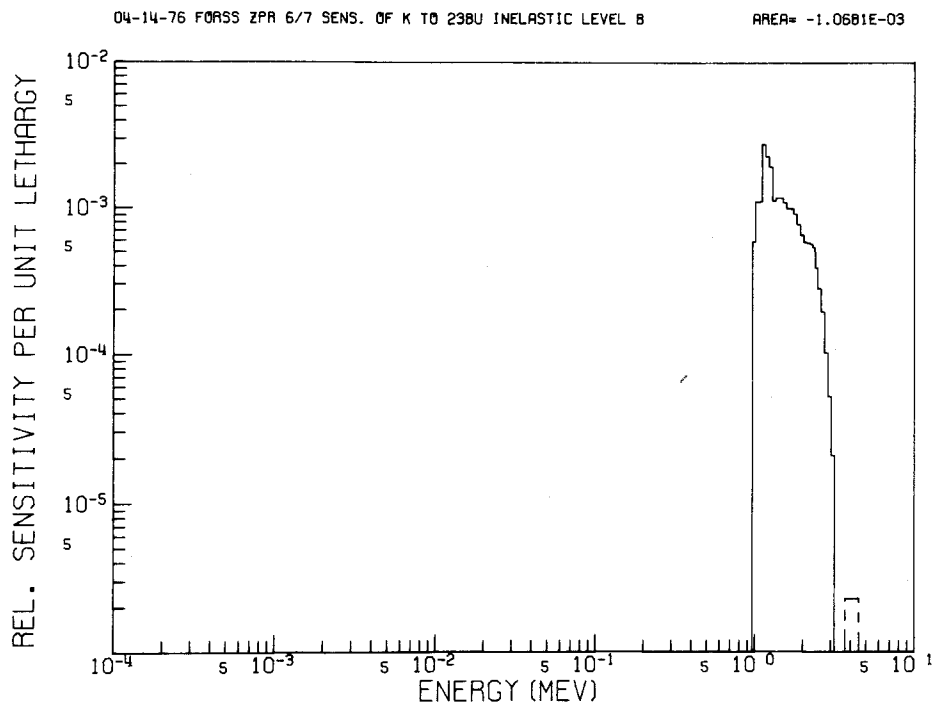


Fig. 18. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Eighth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6874

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 9

AREA= -1.0791E-03

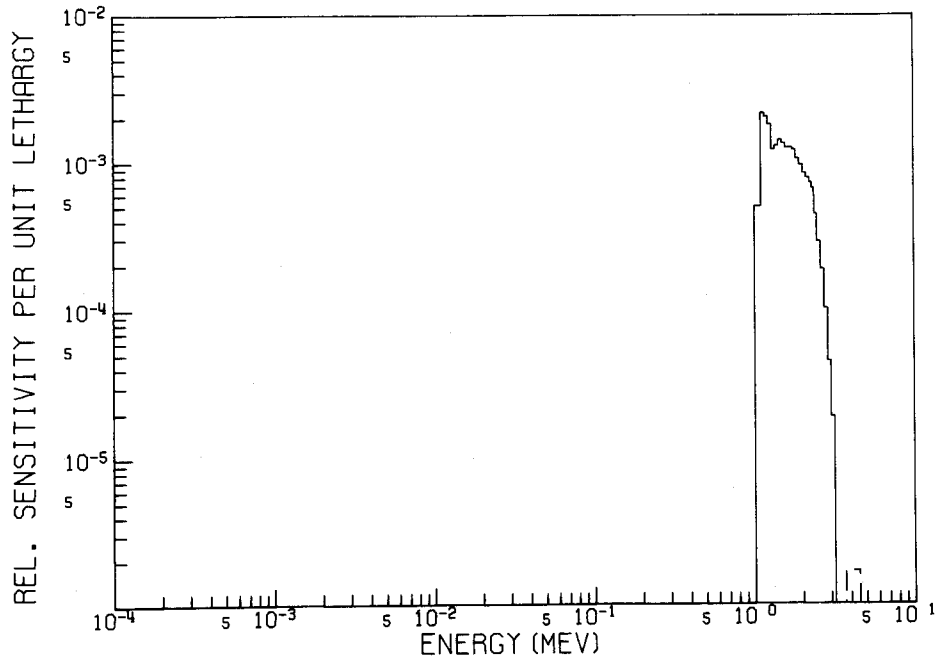


Fig. 19. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Ninth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6875

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 10

AREA= -9.8731E-04

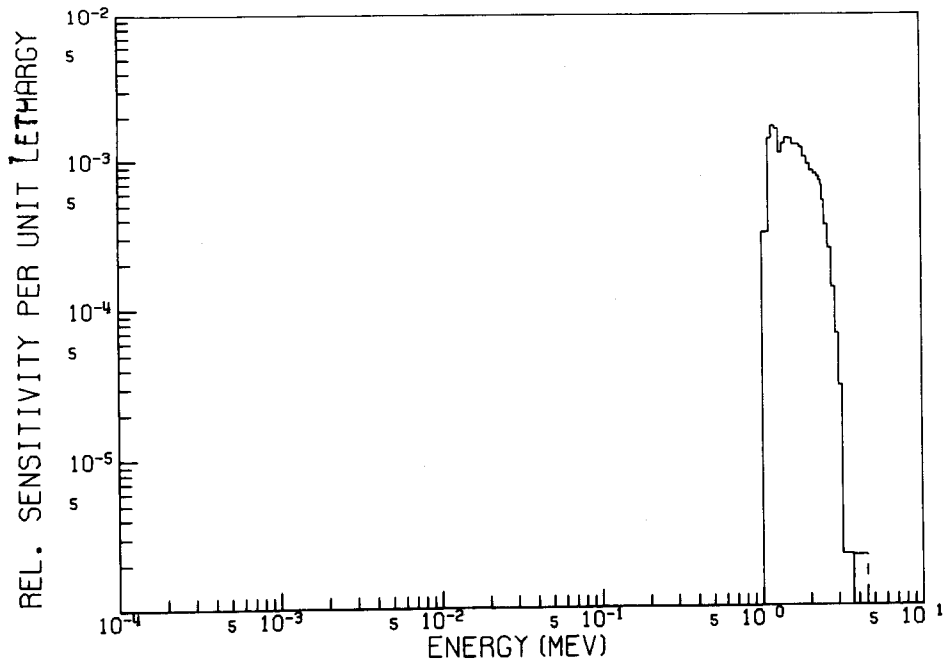


Fig. 20. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Tenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6876

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 11

AREA= -1.4944E-03

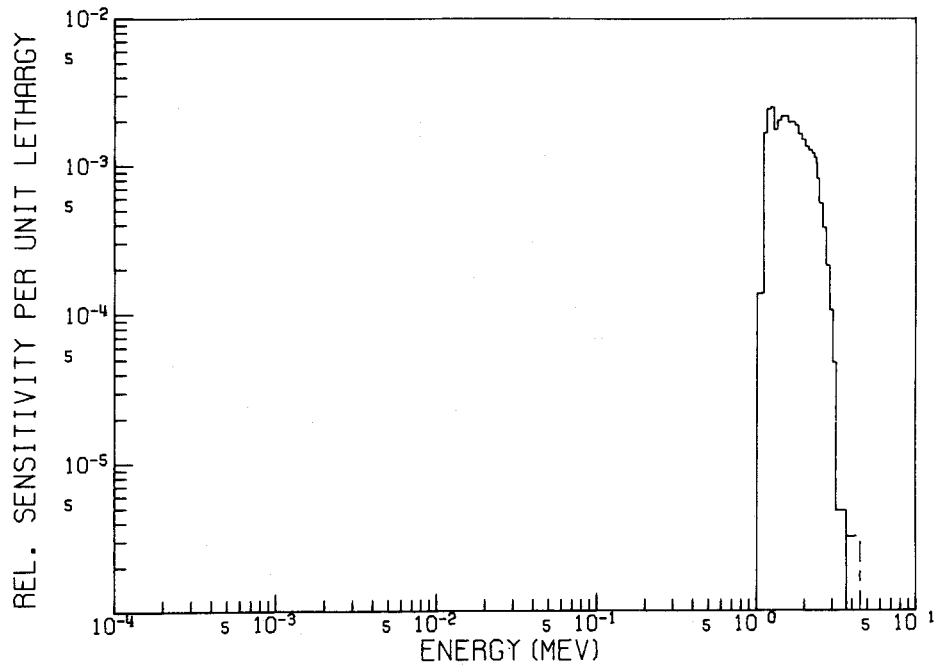


Fig. 21. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Eleventh Level Inelastic Scattering Cross Section.

ORNL DWG 76-6877

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 12

AREA= -9.8697E-04

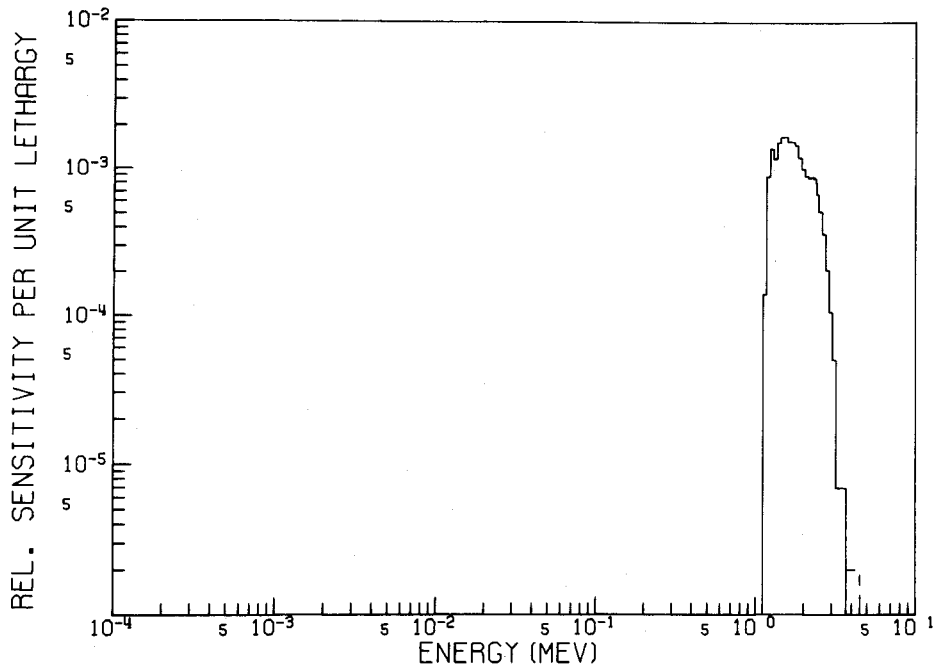


Fig. 22. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twelfth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6878

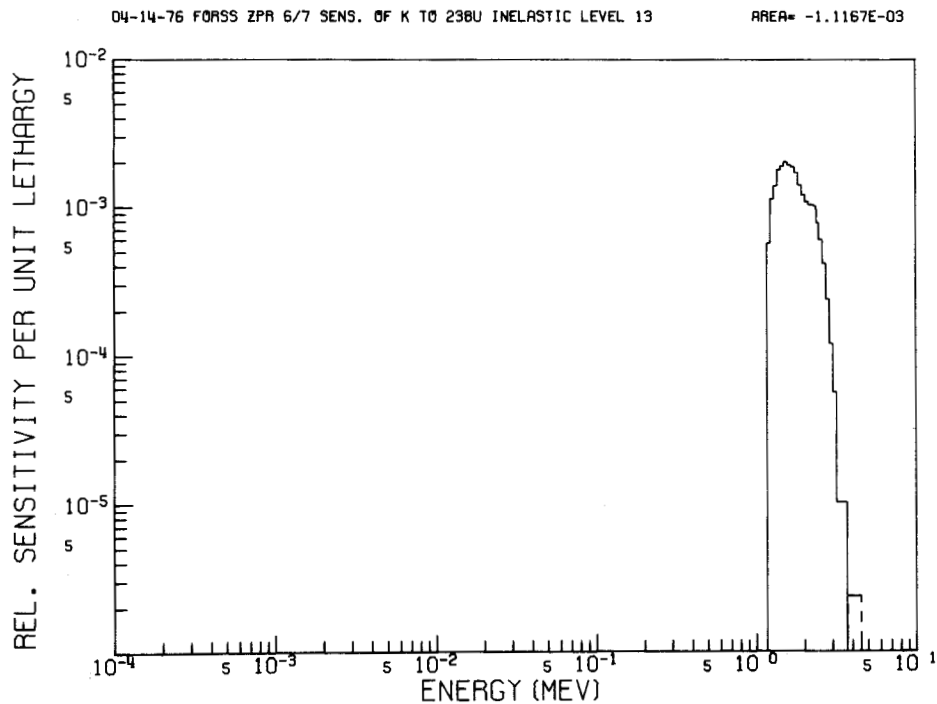


Fig. 23. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Thirteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6879

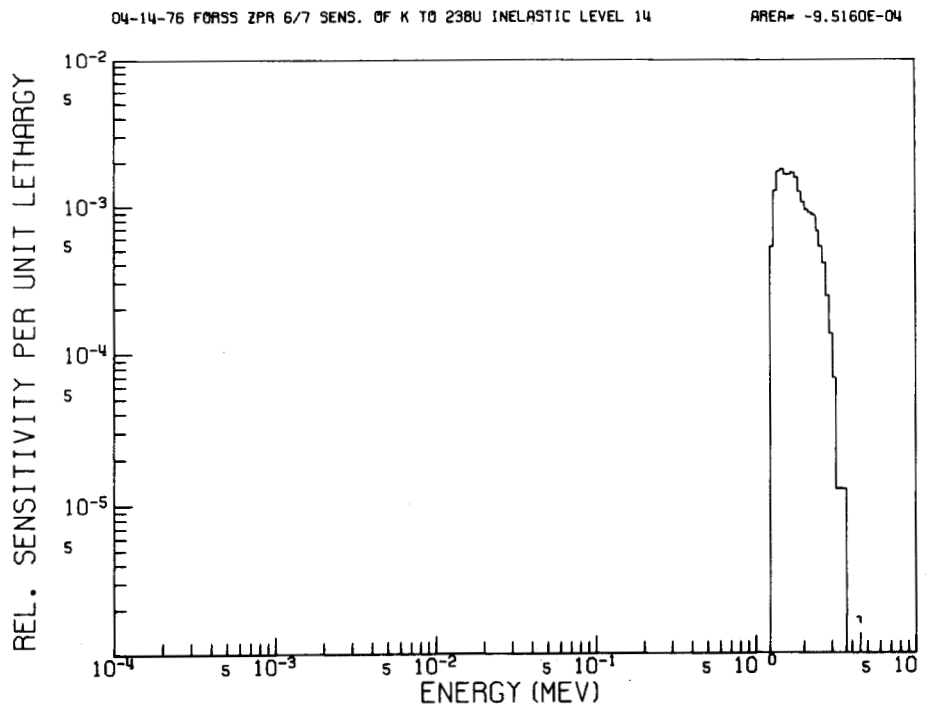


Fig. 24. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Fourteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6880

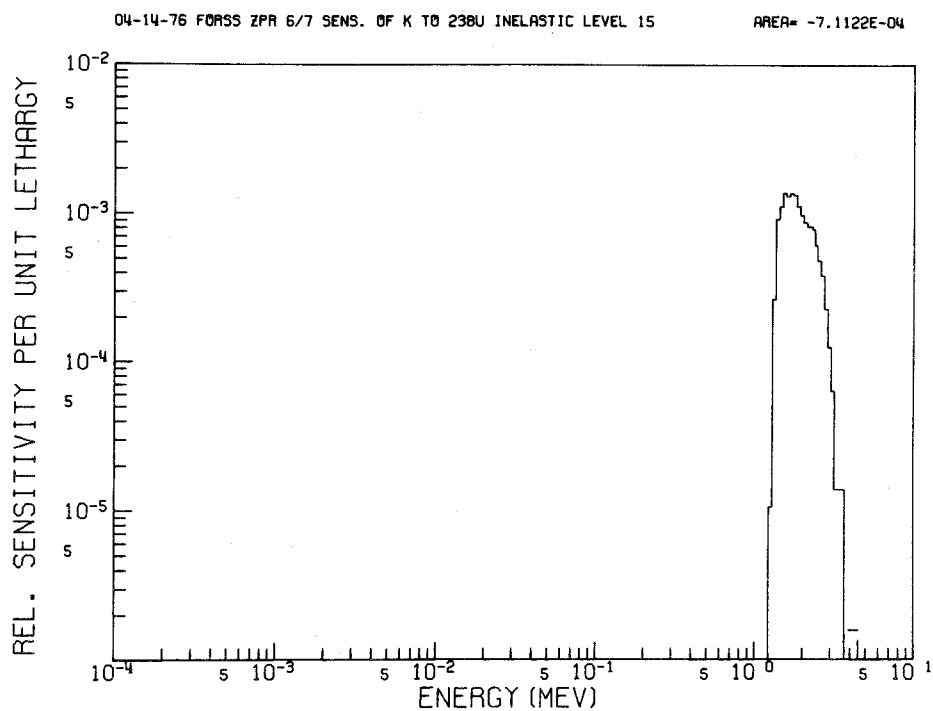


Fig. 25. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Fifteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6881

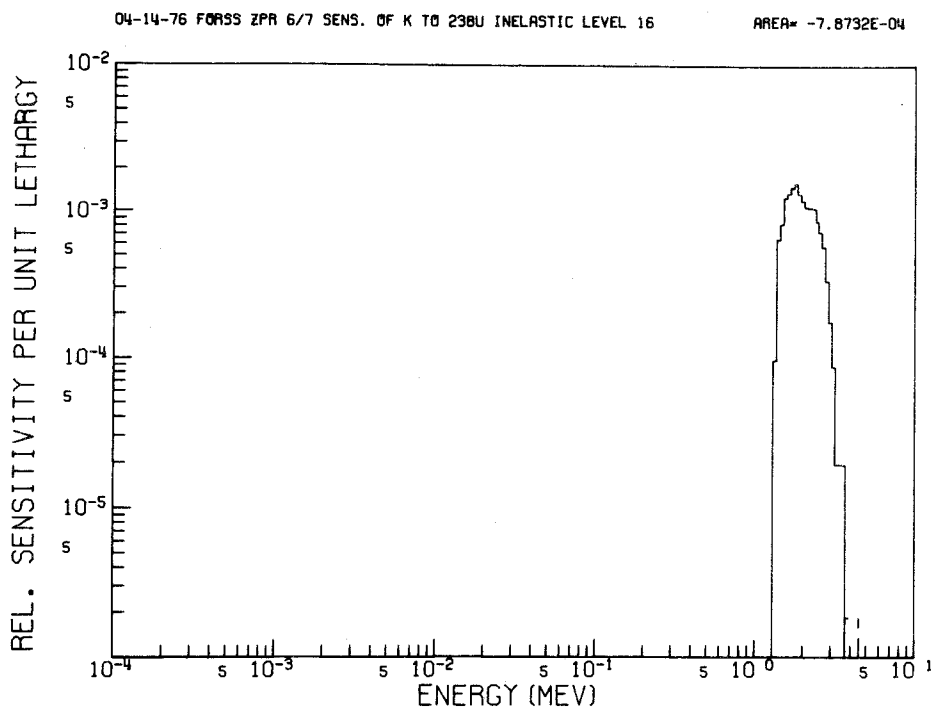


Fig. 26. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Sixteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6882

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 17

AREA= -5.1982E-04

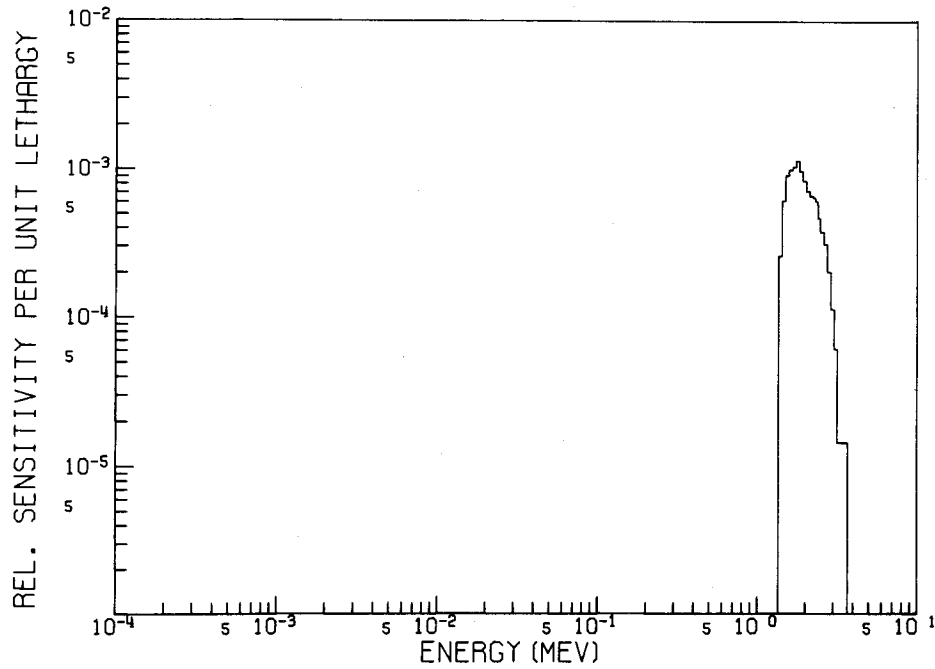


Fig. 27. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Seventeenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6883

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 18

AREA= -4.1170E-04

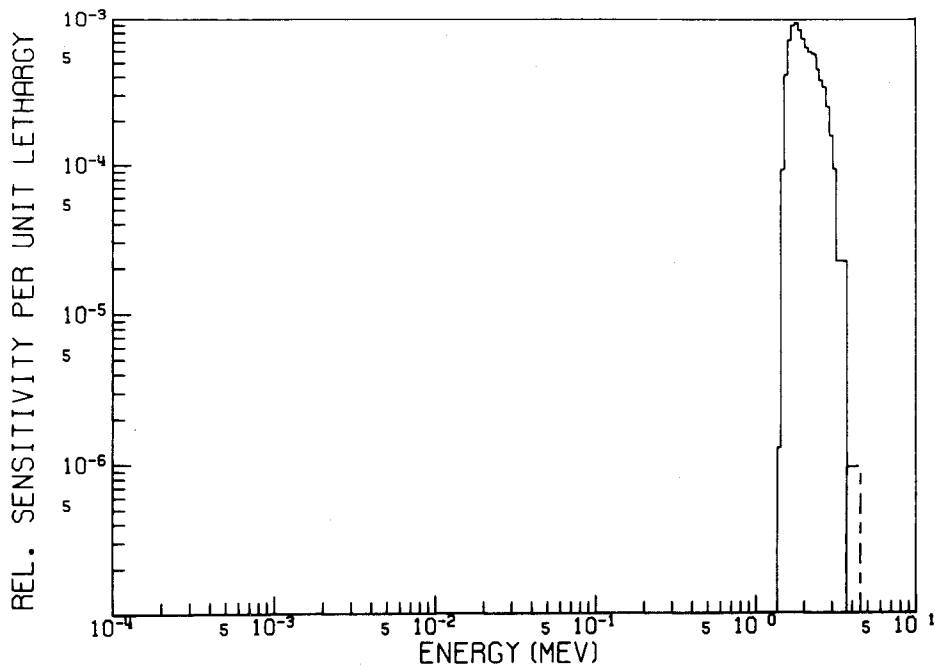


Fig. 28. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Eighteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6884

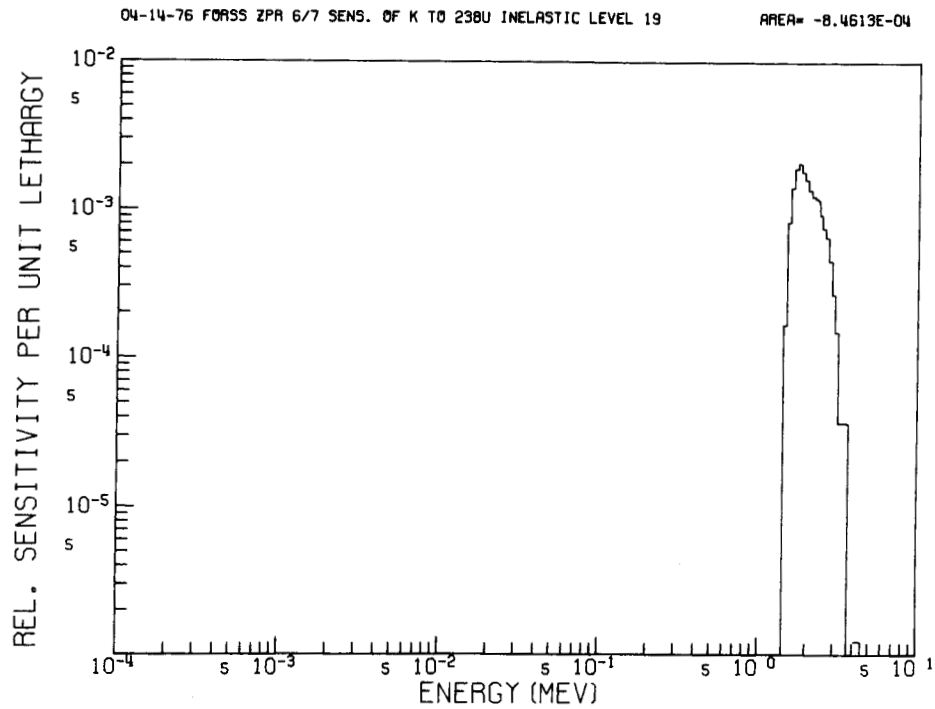


Fig. 29. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Nineteenth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6902

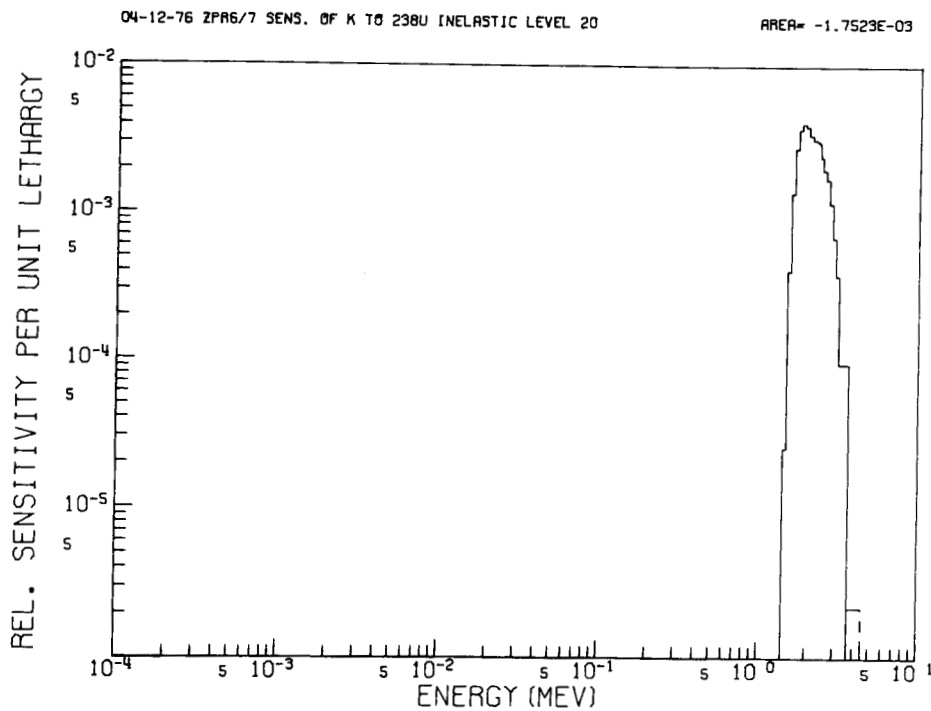


Fig. 30. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twentieth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6903

04-12-76 ZPR6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 21

AREA= -2.7831E-03

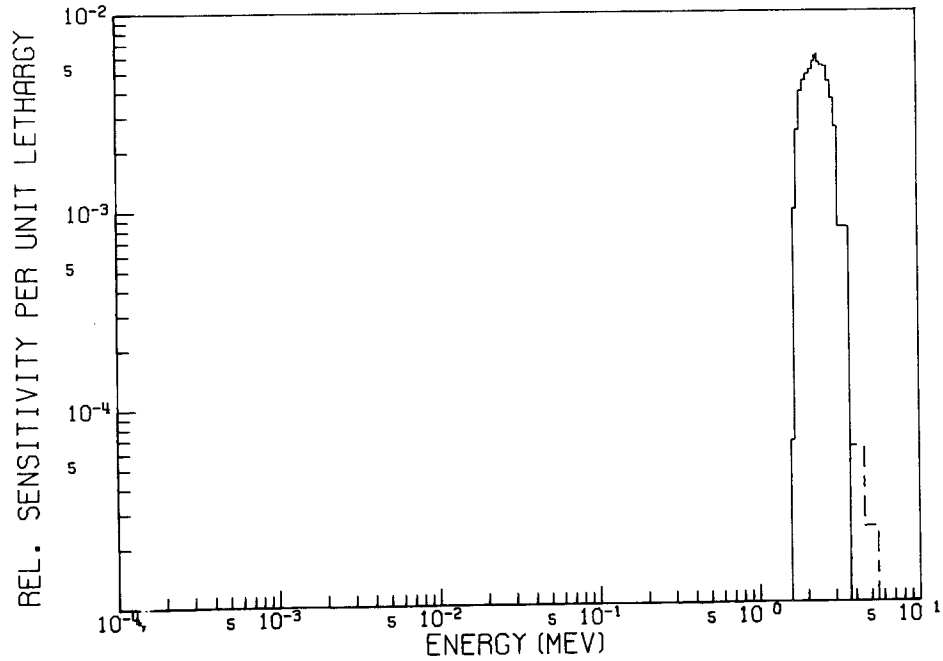


Fig. 31. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-First Level Inelastic Scattering Cross Section.

ORNL DWG 76-6904

04-12-76 ZPR6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 22

AREA= -2.3971E-03

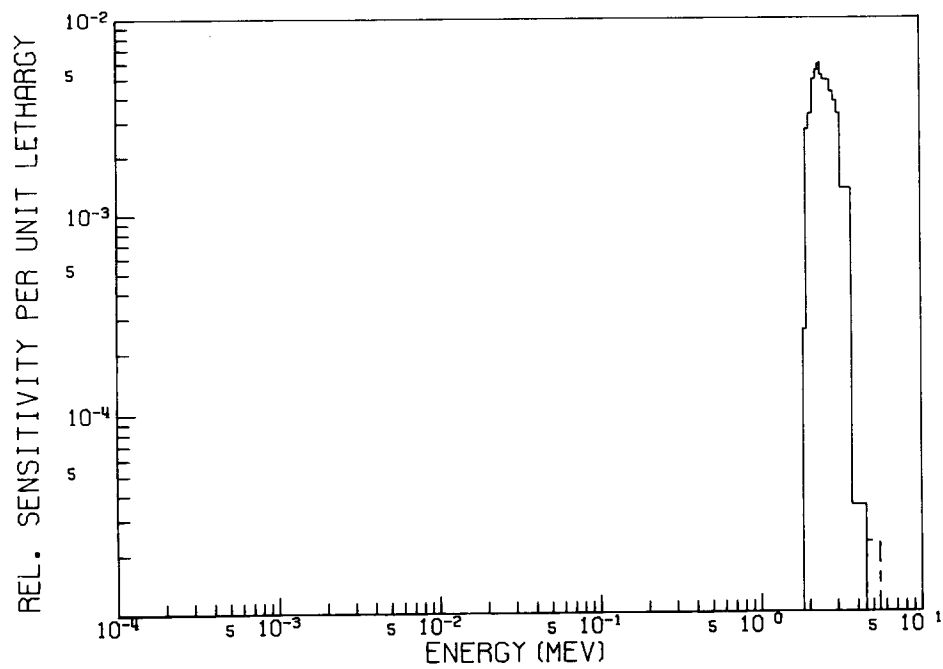


Fig. 32. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-Second Level Inelastic Scattering Cross Section.

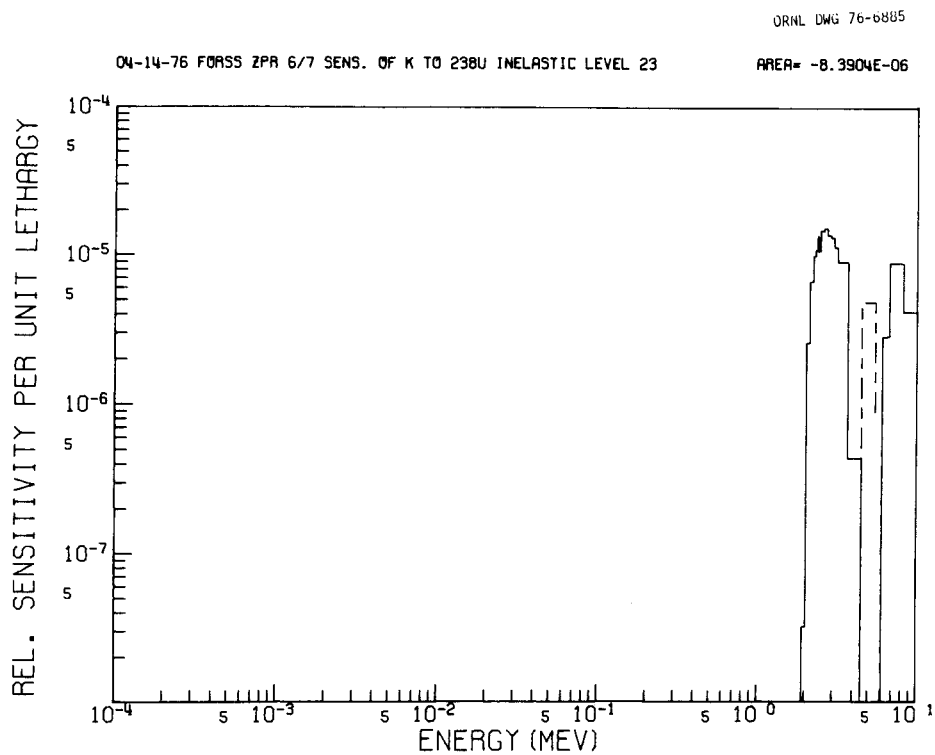


Fig. 33. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-Third Level Inelastic Scattering Cross Section.

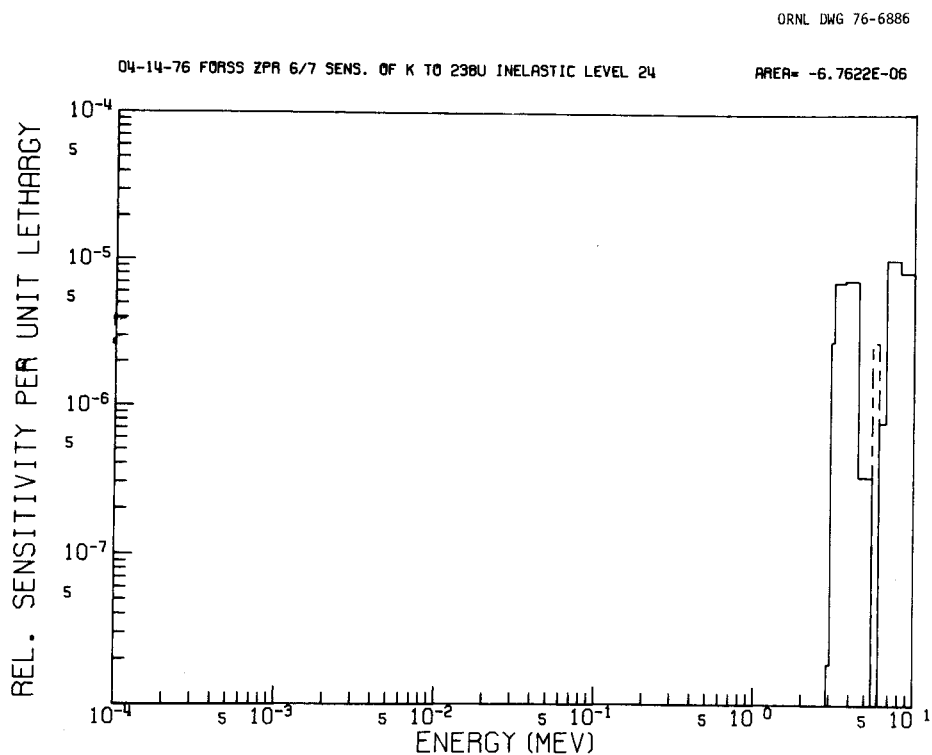


Fig. 34. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-Fourth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6887

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 25

AREA= -6.4721E-06

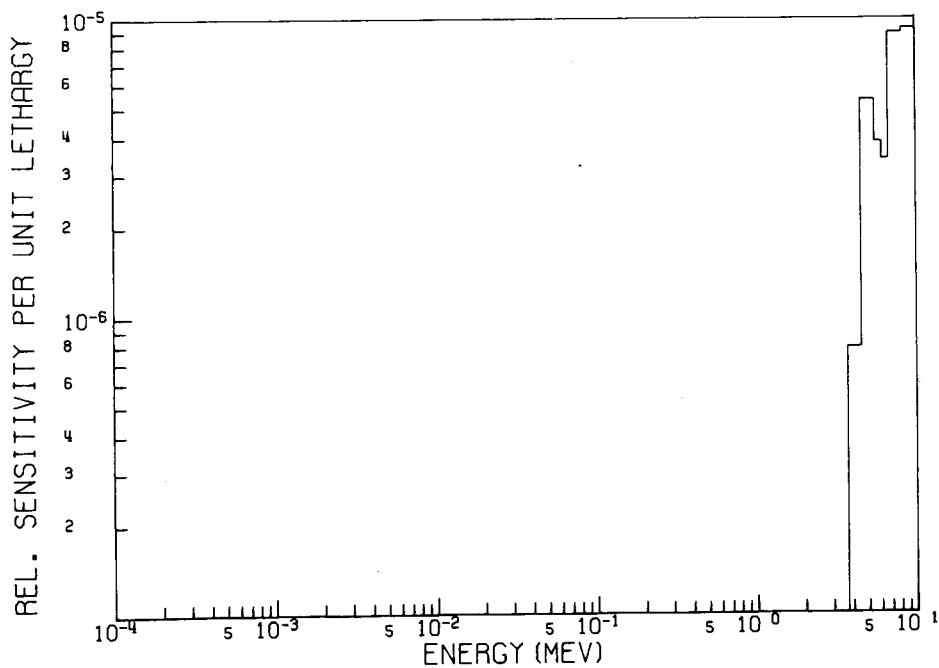


Fig. 35. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-Fifth Level Inelastic Scattering Cross Section.

ORNL DWG 76-6888

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC LEVEL 26

AREA= -7.9444E-06

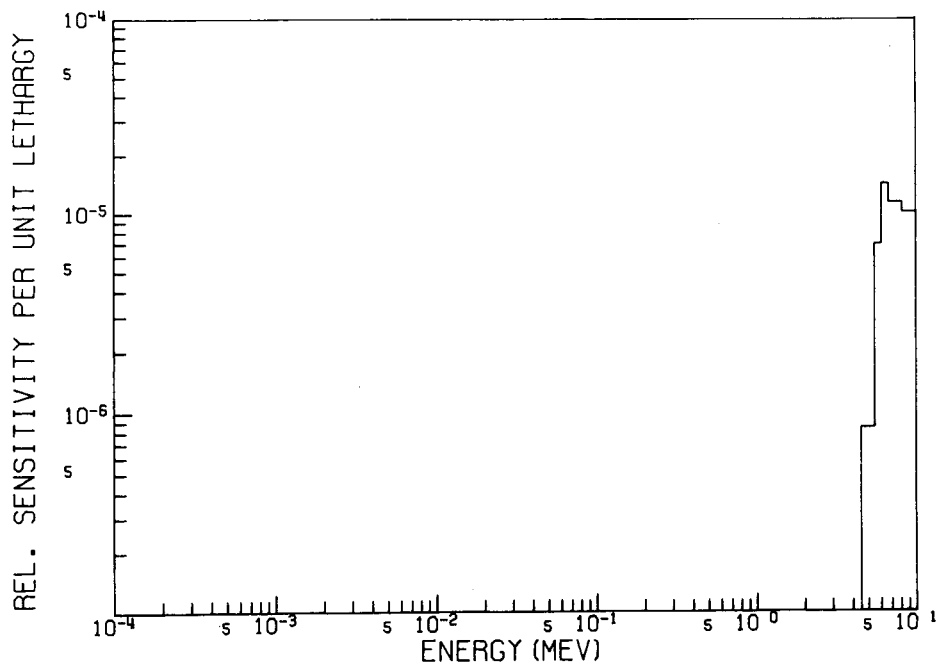


Fig. 36. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Twenty-Sixth Level Inelastic Scattering Cross Section.

ORNL DMG 76-6889

04-14-76 FORSS ZPR 6/7 SENS. OF K TO ^{238}U INELASTIC CONTINUUM

AREA= -1.2177E-02

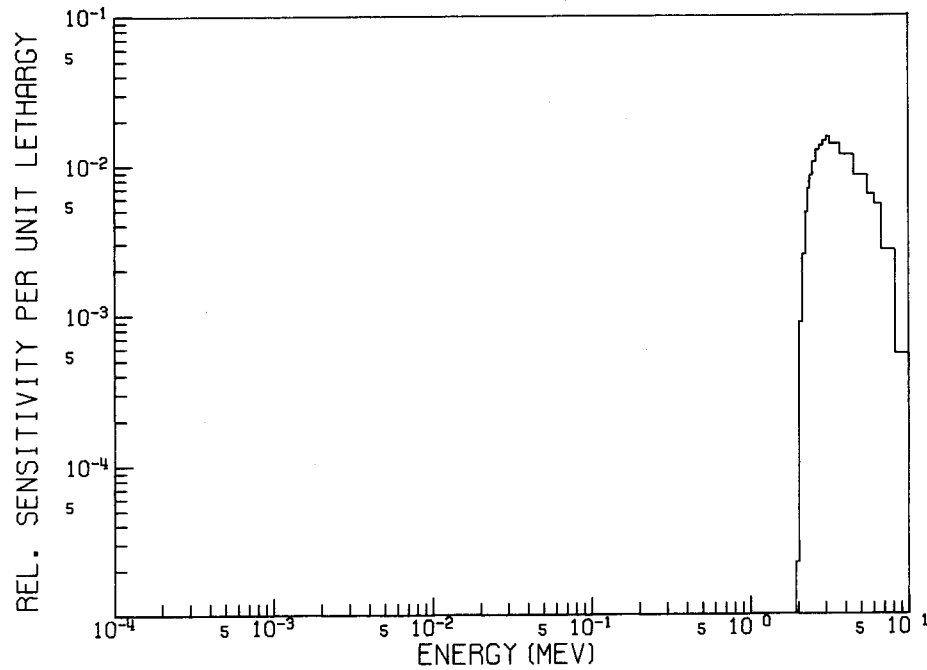


Fig. 37. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Inelastic Continuum Scattering Cross Section.

ORNL DMG 76-5555

ZPR 6/7 SENS. OF K TO ^{238}U FISSION

AREA= 7.8516E-02

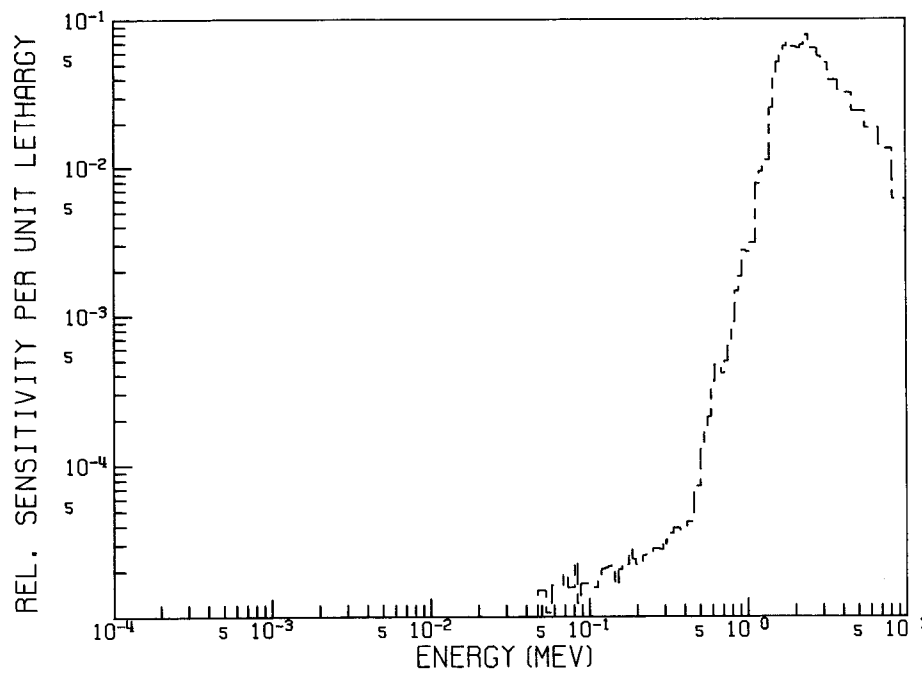


Fig. 38. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Fission Cross Section.

ORNL DWG 76-5583

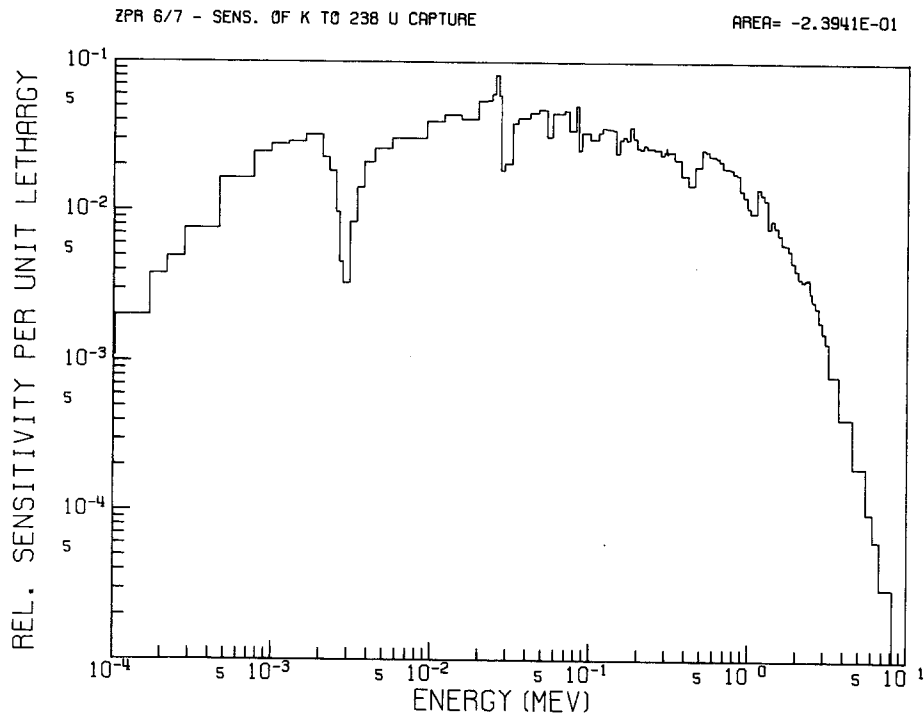


Fig. 39. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Capture Cross Section.

ORNL DWG 76-6897

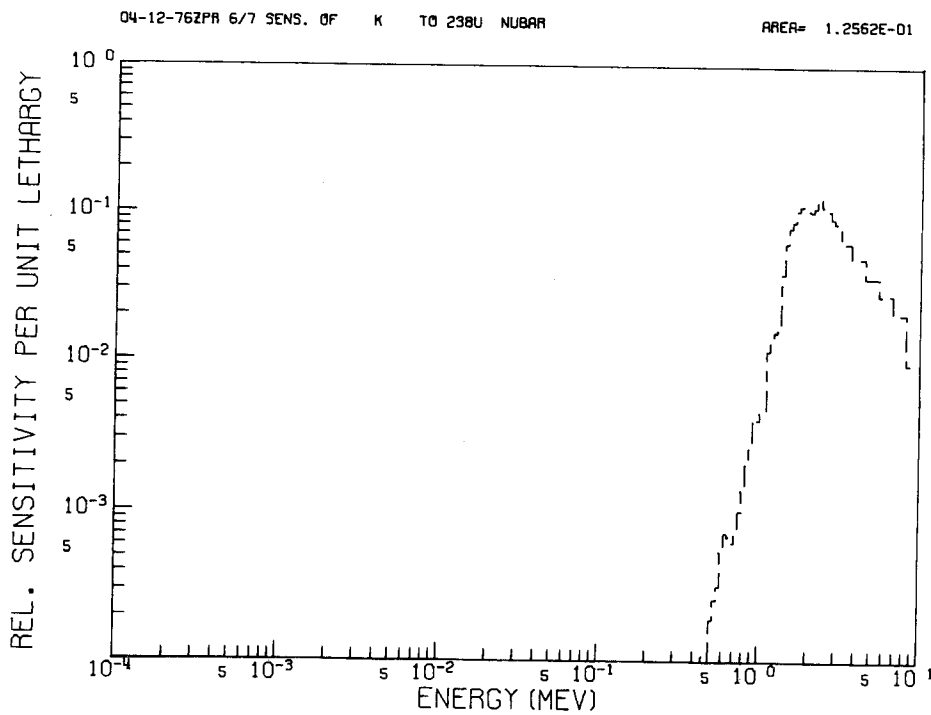


Fig. 40. Sensitivity of k in Assembly ZPR-6/7 to the ^{238}U Neutron Yield per Fission.

ORNL DWG 76-5577

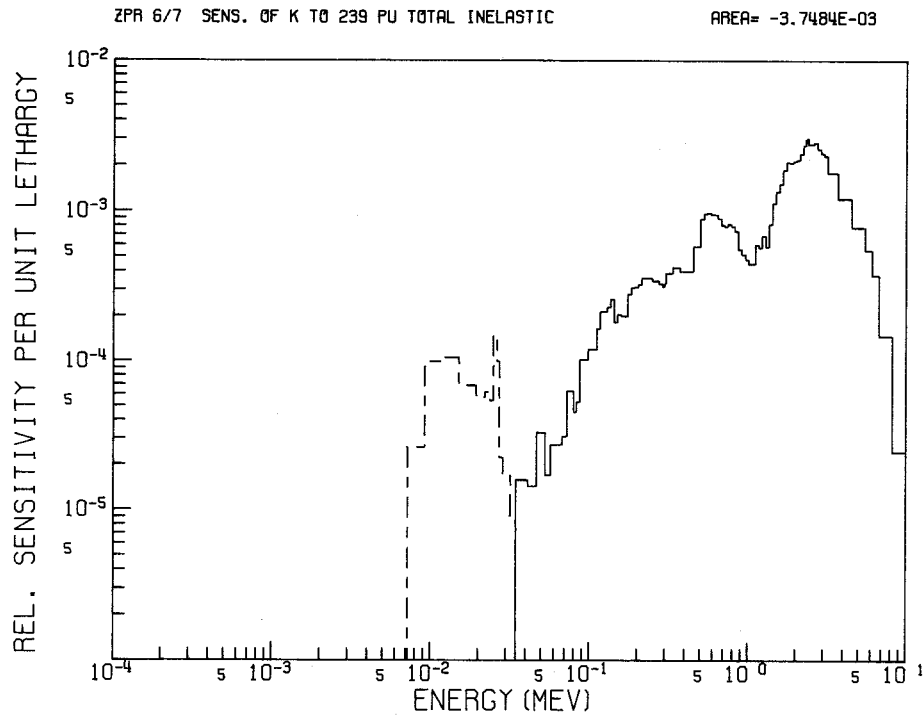


Fig. 41. Sensitivity of k in Assembly ZPR-6/7 to the ^{239}Pu Inelastic Scattering Cross Section.

ORNL DWG 76-5557

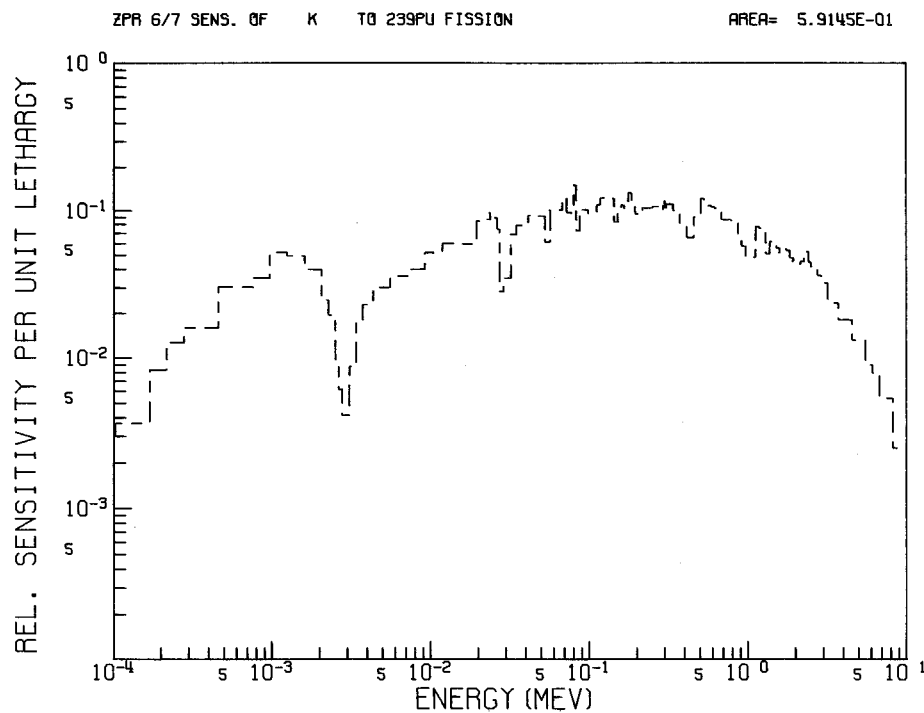


Fig. 42. Sensitivity of k in Assembly ZPR-6/7 to the ^{239}Pu Fission Cross Section.

ORNL DWG 76-6120

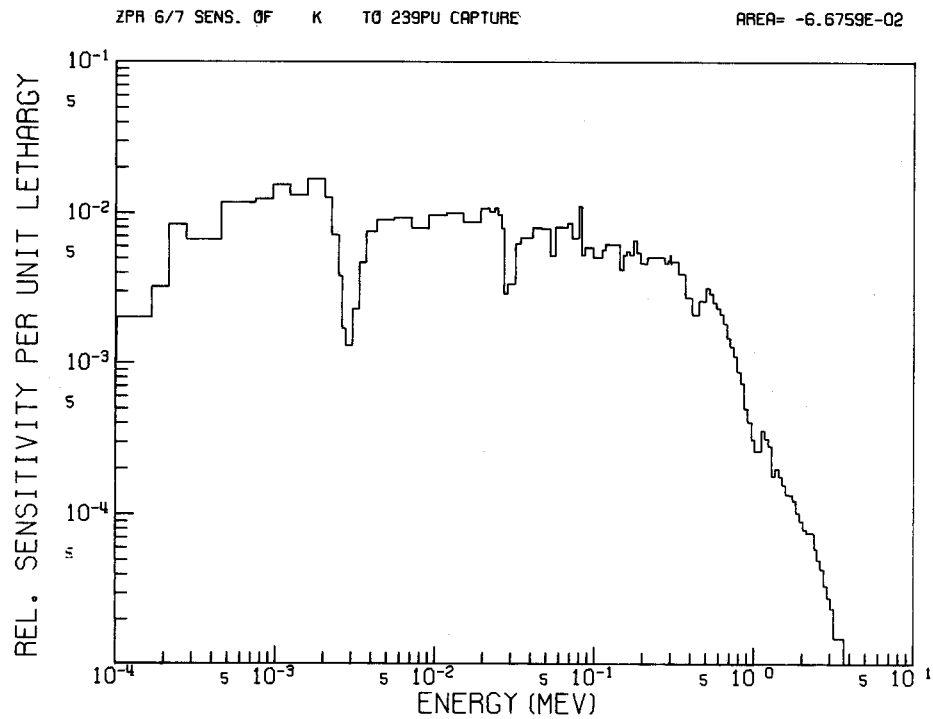


Fig. 43. Sensitivity of k in Assembly ZPR-6/7 to the ^{239}Pu Capture Cross Section.

ORNL DWG 76-6894

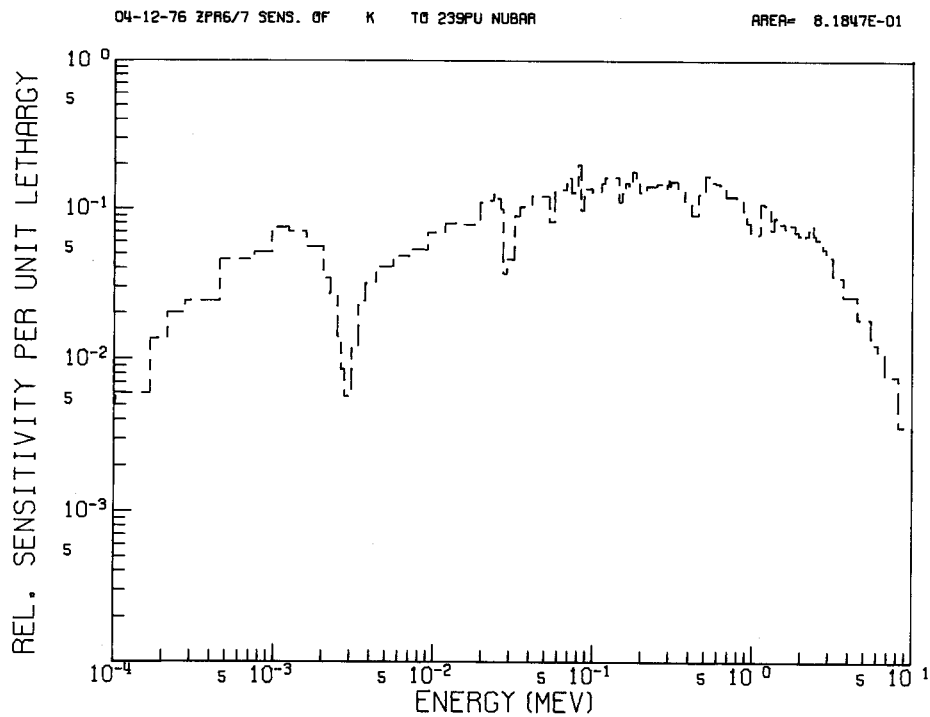


Fig. 44. Sensitivity of k in Assembly ZPR-6/7 to the ^{239}Pu Neutron Yield per Fission.

ORNL DWG 76-5554

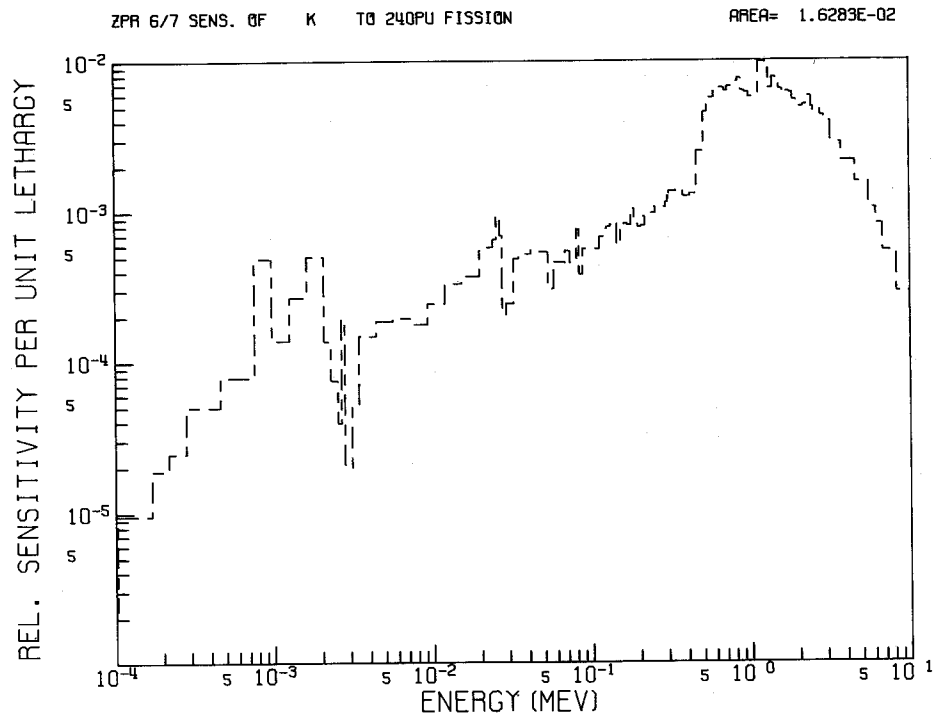


Fig. 45. Sensitivity of k in Assembly ZPR-6/7 to the ^{240}Pu Fission Cross Section.

ORNL DWG 76-12695

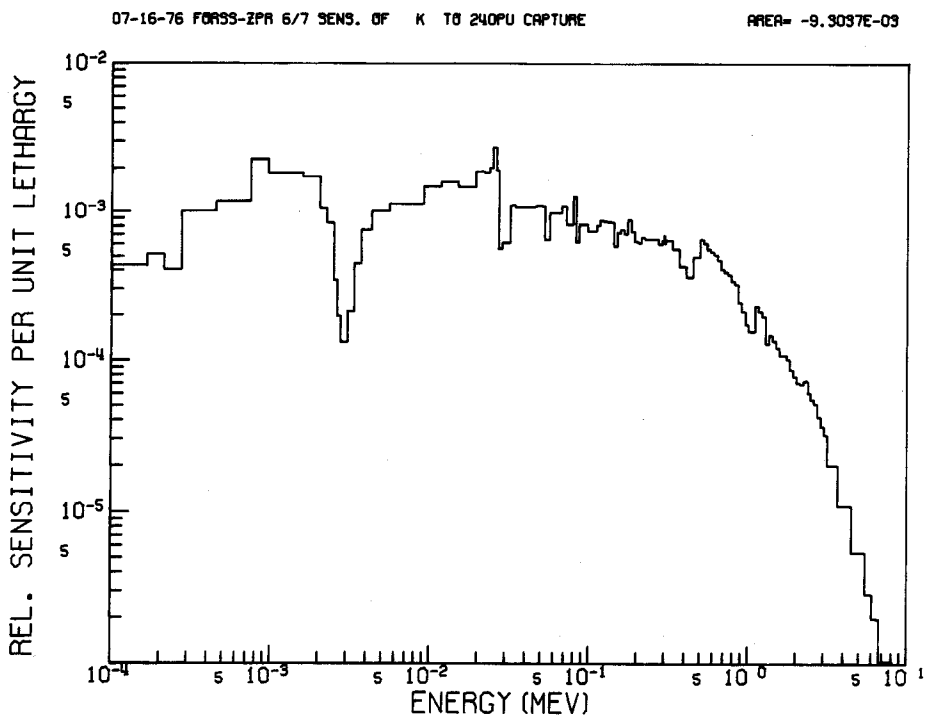


Fig. 46. Sensitivity of k in Assembly ZPR-6/7 to the ^{240}Pu Capture Cross Section.

ORNL DWG 76-6895

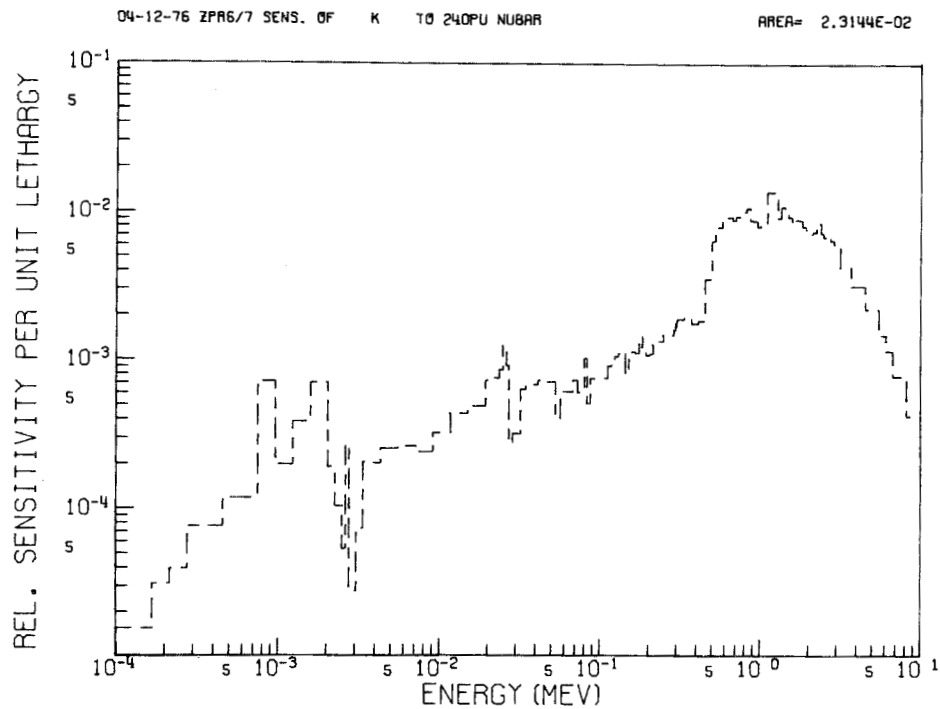


Fig. 47. Sensitivity of k in Assembly ZPR-6/7 to the ^{240}Pu Neutron Yield per Fission.

ORNL DWG 76-5560

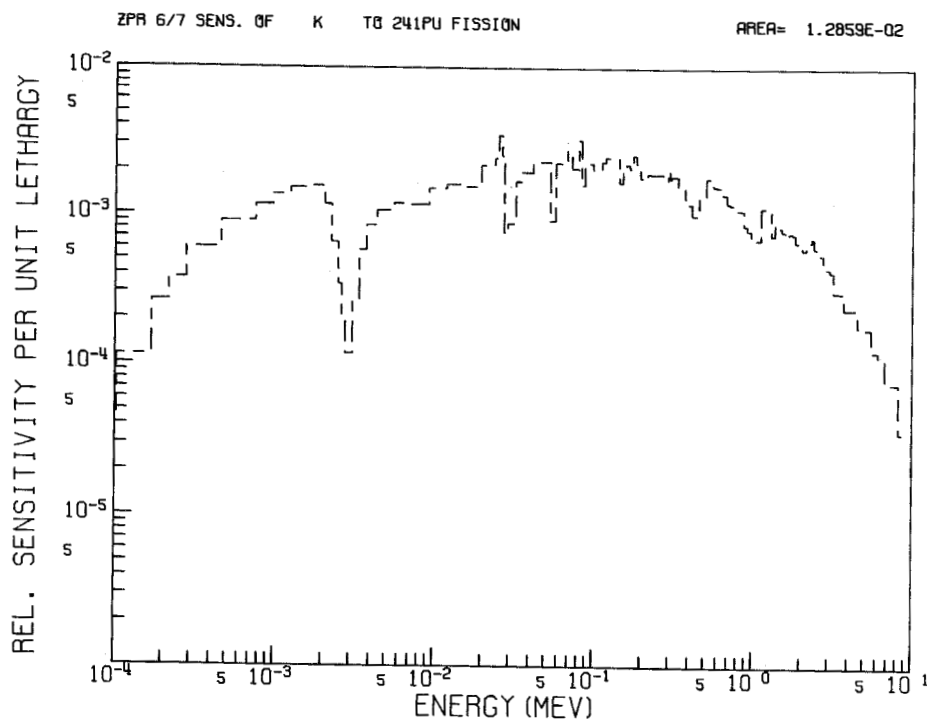


Fig. 48. Sensitivity of k in Assembly ZPR-6/7 to the ^{241}Pu Fission Cross Section.

ORNL DWG 76-12696

07-16-76 FORSS-ZPR 6/7 SENS. OF K TO ^{241}Pu CAPTURE

AREA= -9.1599E-04

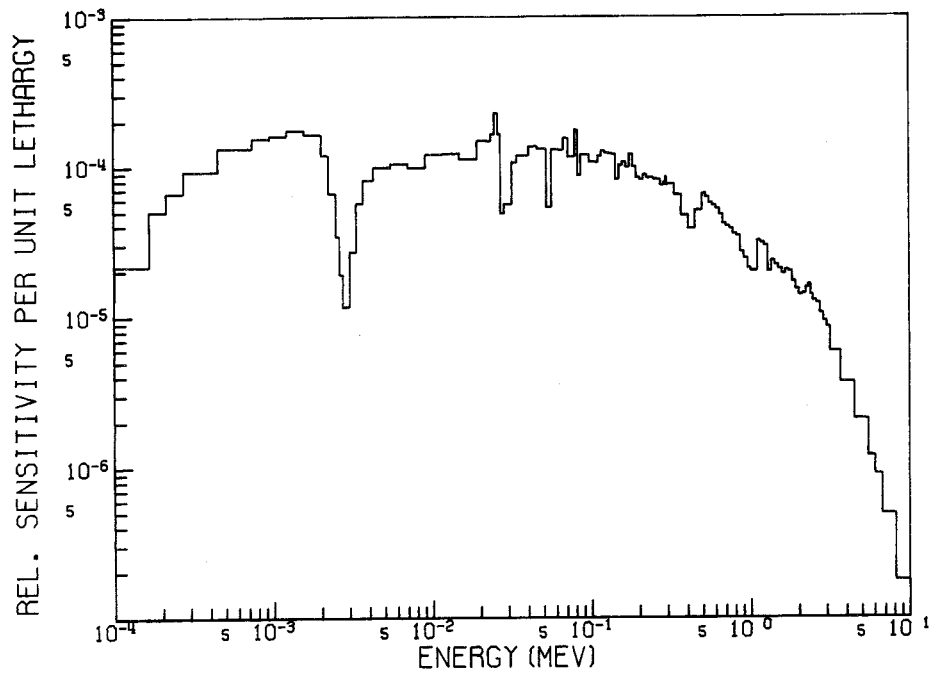


Fig. 49. Sensitivity of k in Assembly ZPR-6/7 to the ^{241}Pu Capture Cross Section.

ORNL DWG 76-6896

04-12-76 ZPR6/7 SENS. OF K TO ^{241}Pu NUBARR

AREA= 1.7651E-02

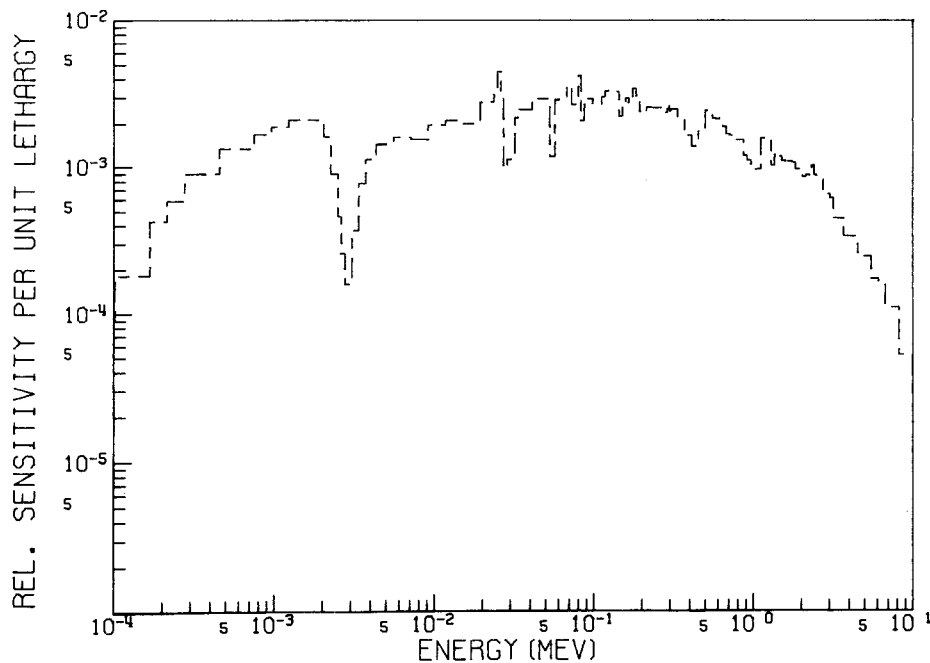


Fig. 50. Sensitivity of k in Assembly ZPR-6/7 to the ^{241}Pu Neutron Yield per Fission.

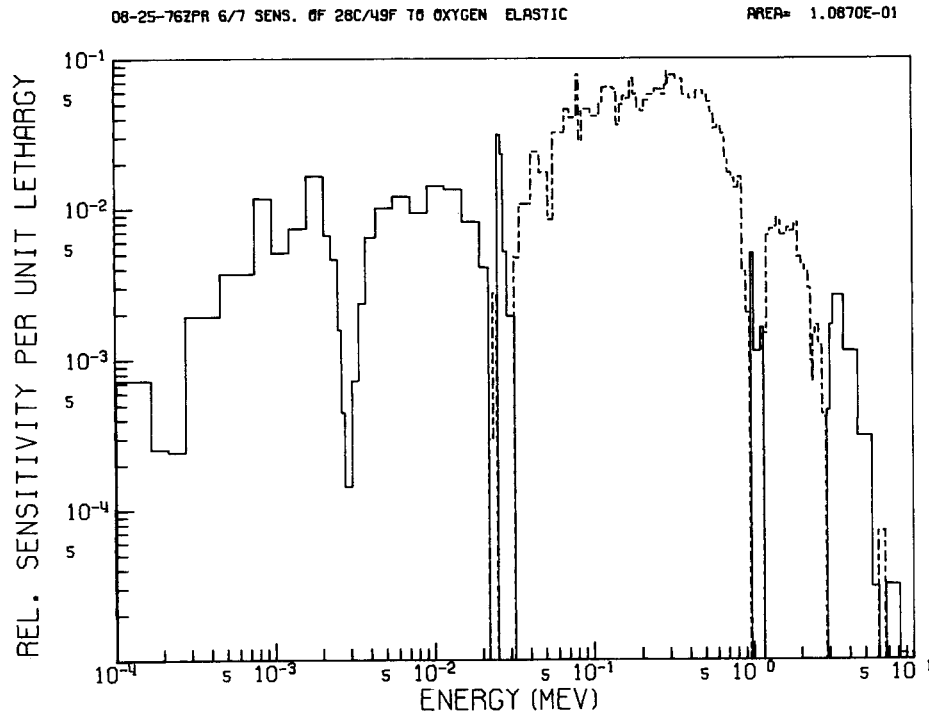


Fig. 51. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Oxygen Elastic Scattering Cross Section.

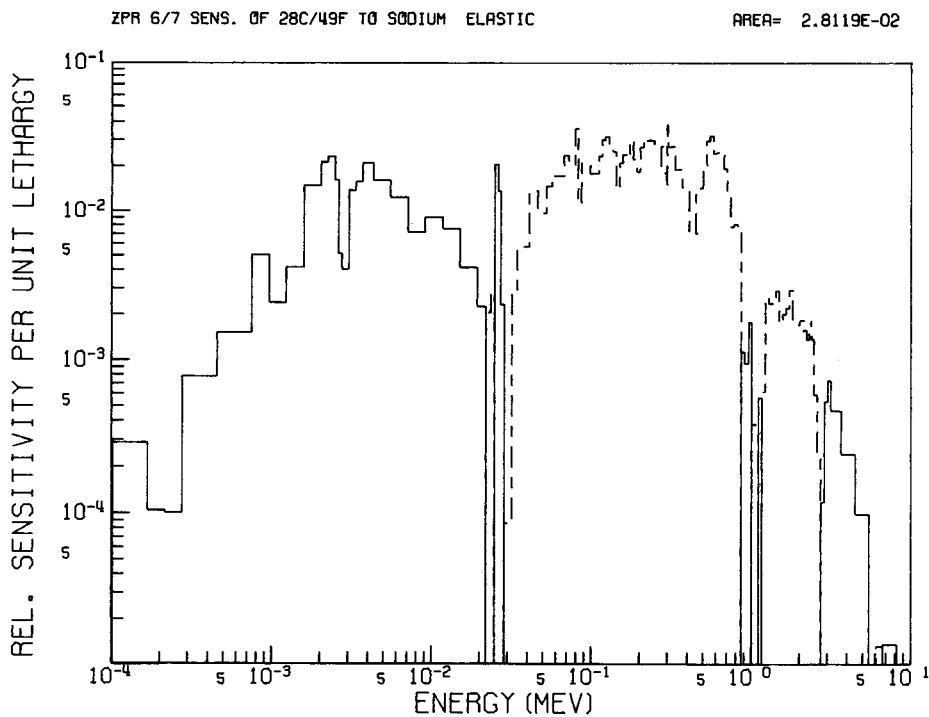


Fig. 52. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Elastic Scattering Cross Section.

ORNL DWG 76-5535

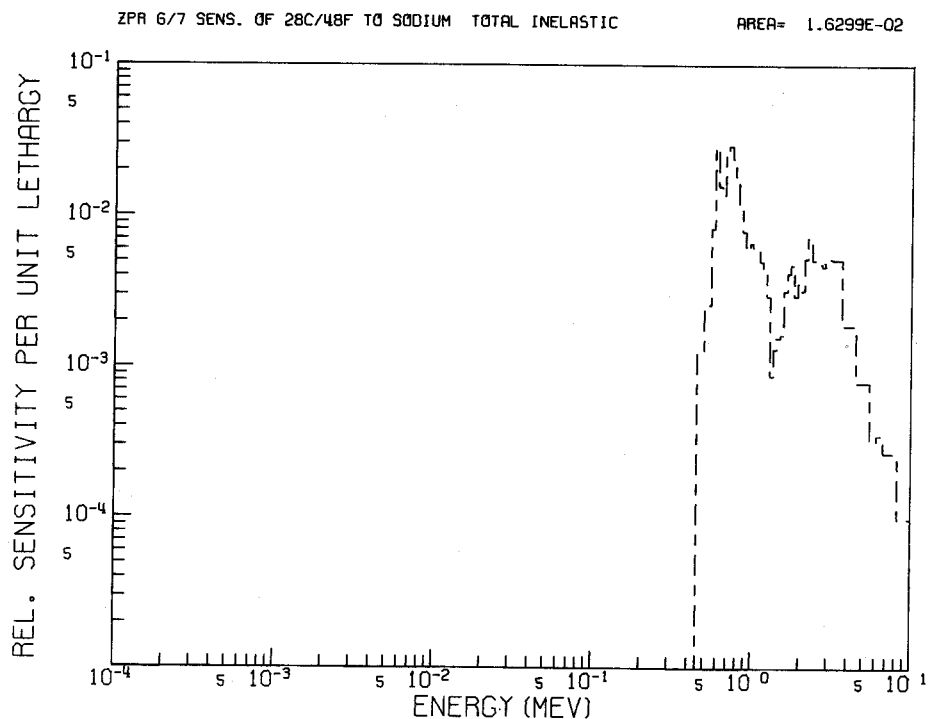


Fig. 53. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Inelastic Scattering Cross Section.

ORNL DWG 76-5533

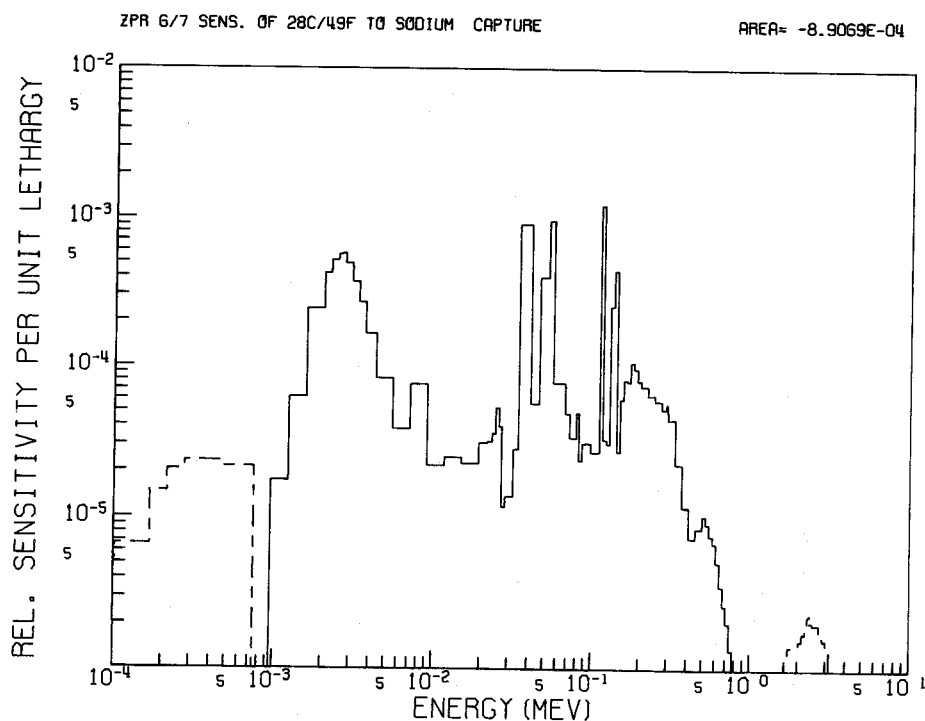


Fig. 54. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Capture Cross Section.

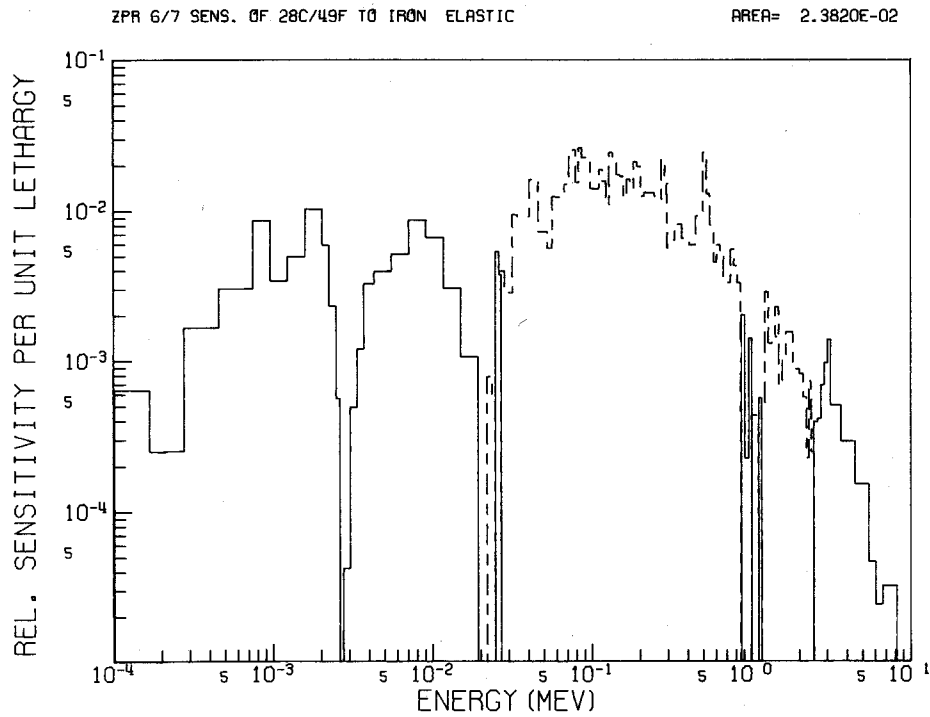


Fig. 55. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Elastic Scattering Cross Section.

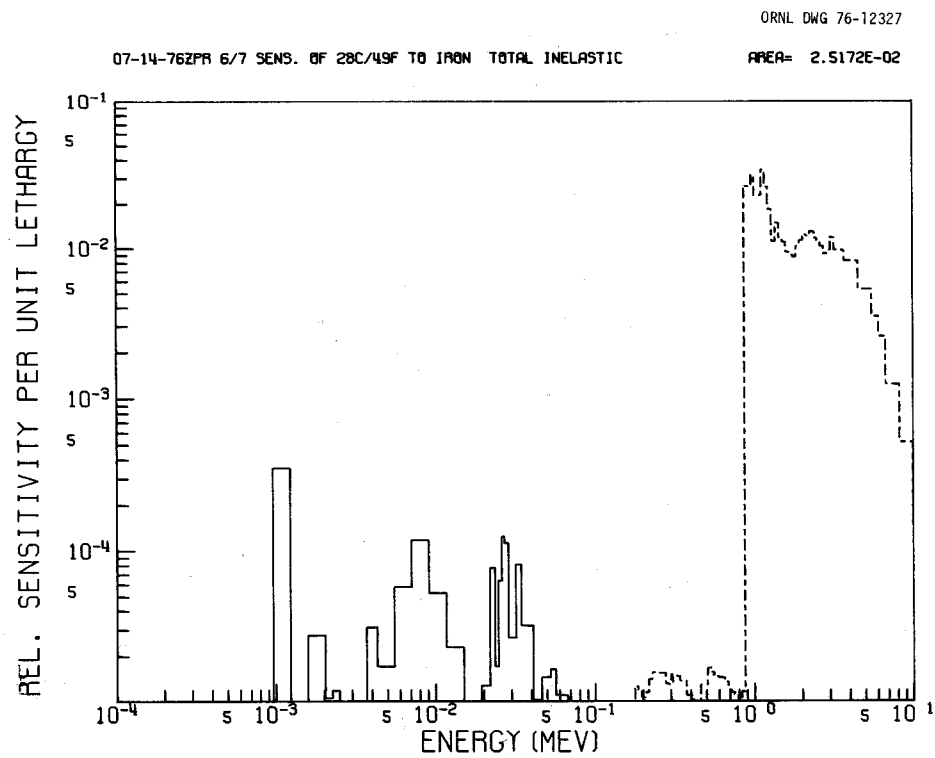


Fig. 56. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-12328

07-14-76ZPR 6/7 SENS. OF 28C/49F TO IRON CAPTURE

AREA= -6.5393E-03

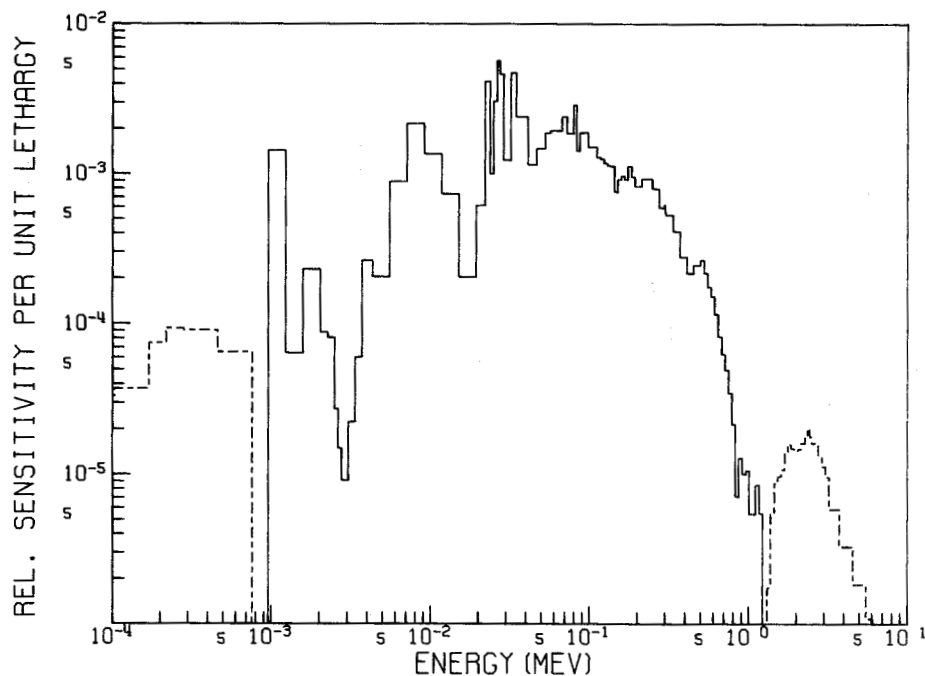


Fig. 57. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Capture Cross Section.

ORNL DWG 76-12694

07-16-76 FORSS-ZPR 6/7 SENS. OF 28C/49F TO ^{235}U FISSION

AREA= -6.5790E-04

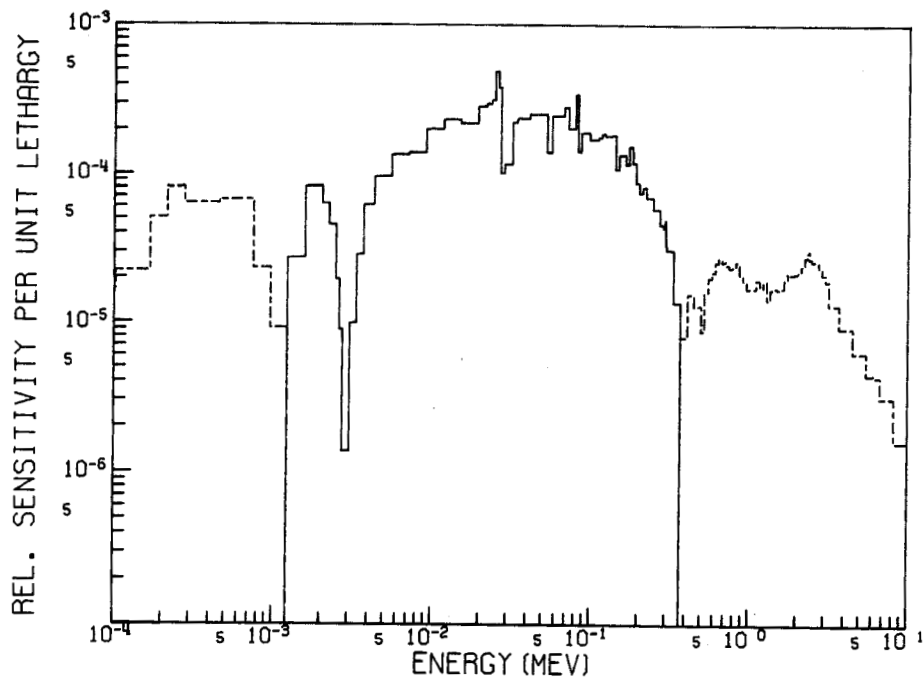


Fig. 58. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{235}U Fission Cross Section.

07-16-76 FOR35-ZPR 6/7 SENS. OF 28C/49F TO 235U CAPTURE

AREA= -4.1003E-04

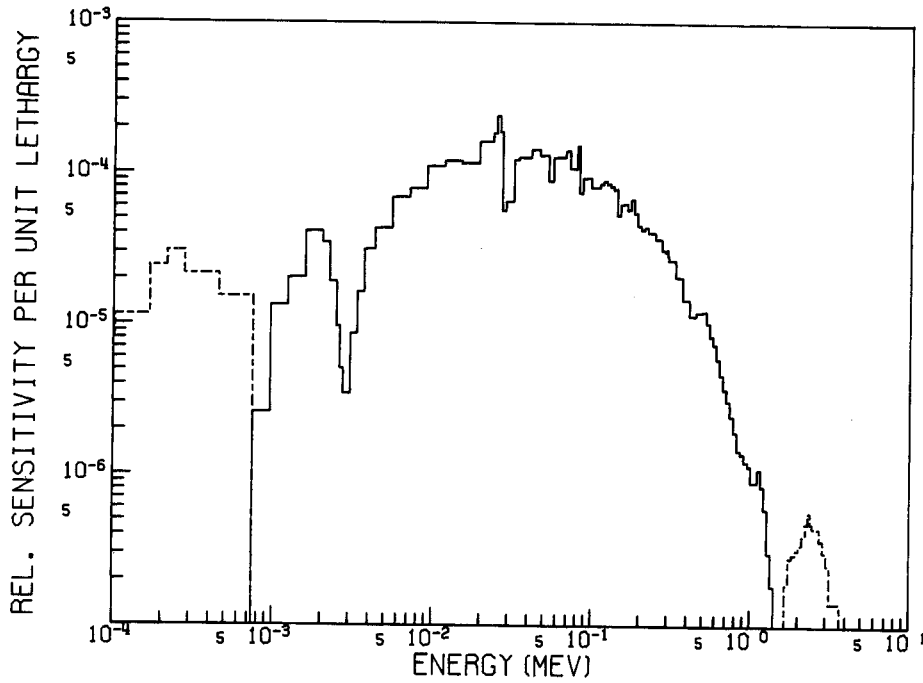


Fig. 59. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{235}U Capture Cross Section.

ZPR 6/7 SENS. OF 28C/49F TO 238U TOTAL INEL, CENTRAL REGION

AREA= 6.7594E-02

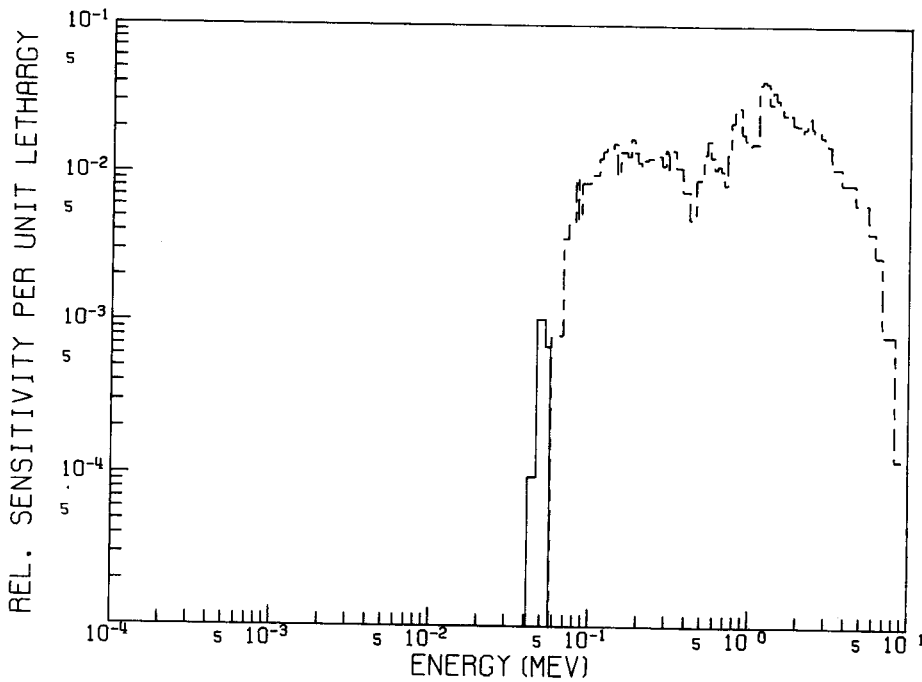


Fig. 60. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-5569

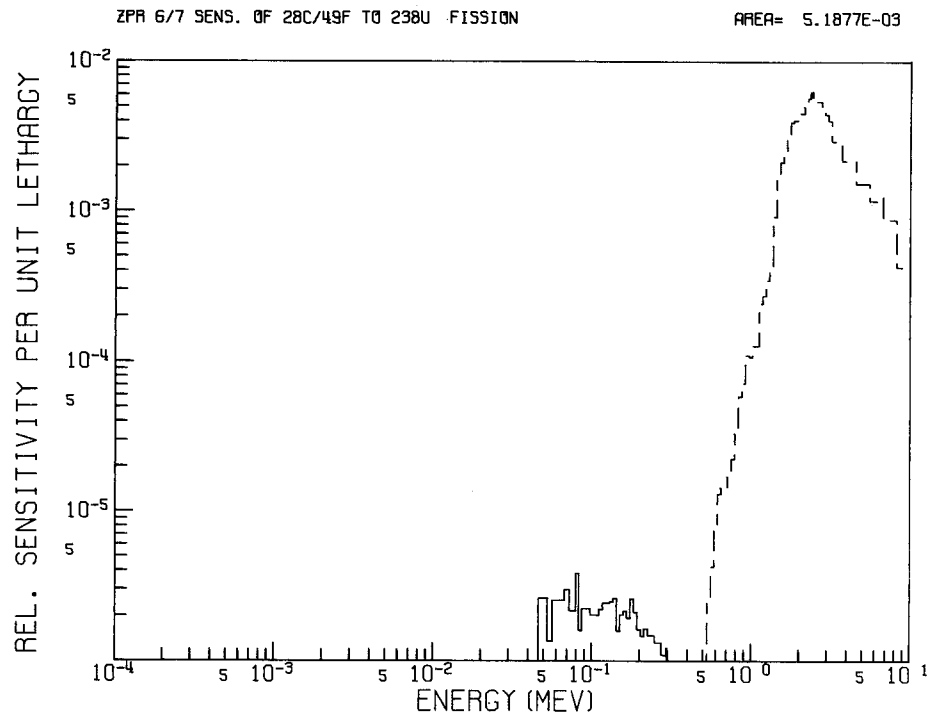


Fig. 61. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Fission Cross Section.

ORNL DWG 76-5527

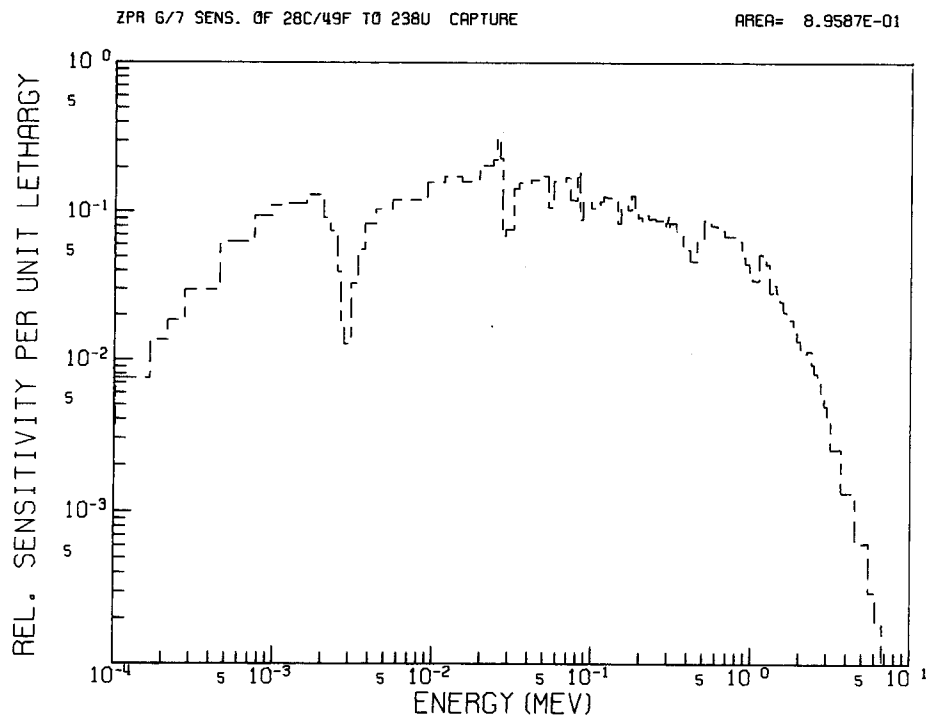


Fig. 62. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Capture Cross Section.

ORNL DWG 76-6890

04-12-76 ZPR6/7 SENS. OF 28C/49F TO 238U NUBAR

AREA= 3.3848E-03

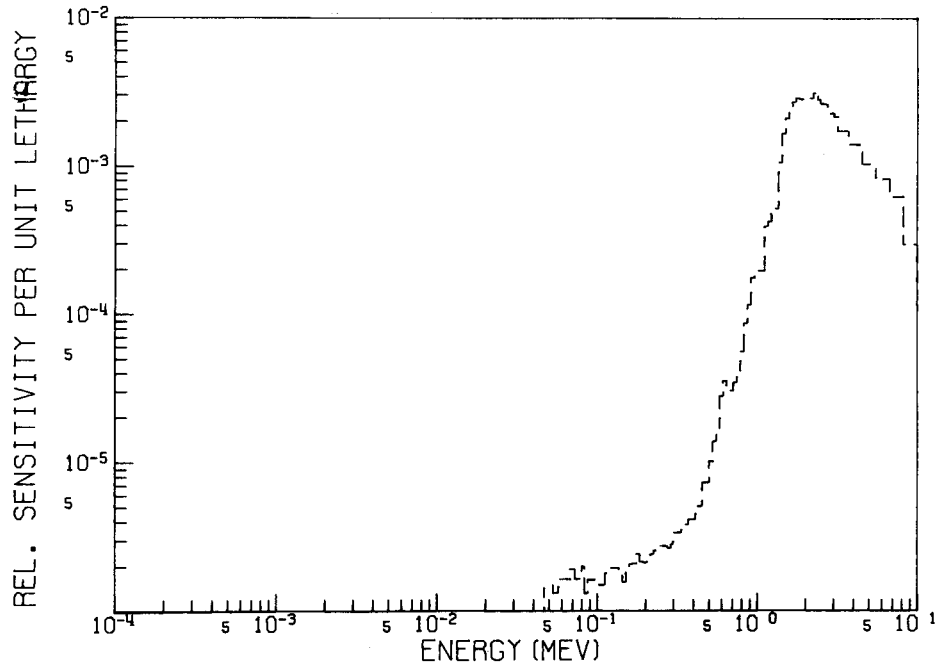


Fig. 63. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Neutron Yield per Fission.

ORNL DWG 76-5564

ZPR 6/7 SENS. OF 28C/49F TO 239PU FISSION

AREA= -1.0725E 00

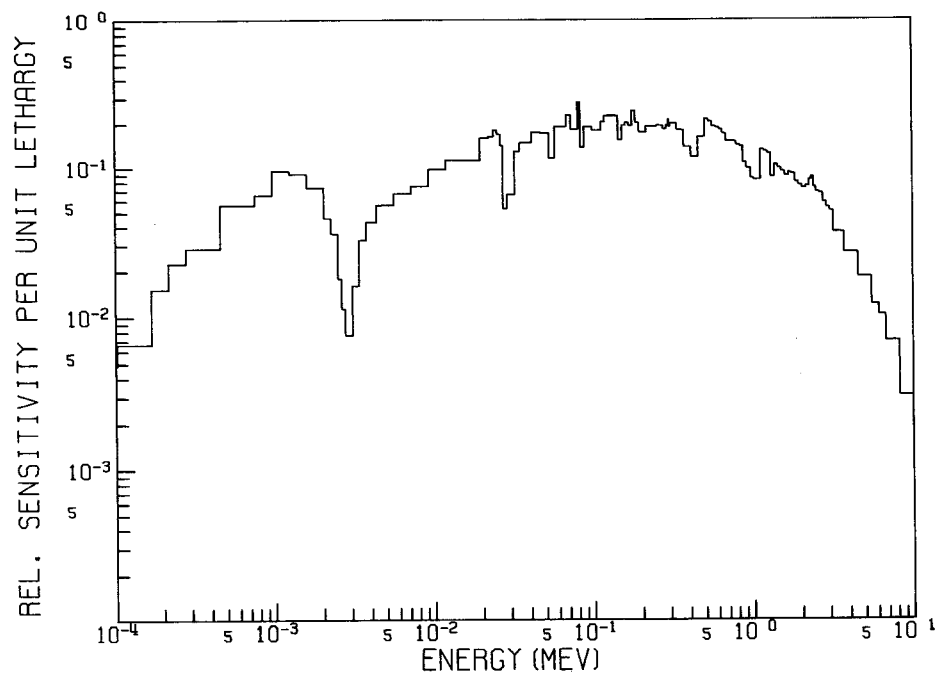


Fig. 64. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Fission Cross Section.

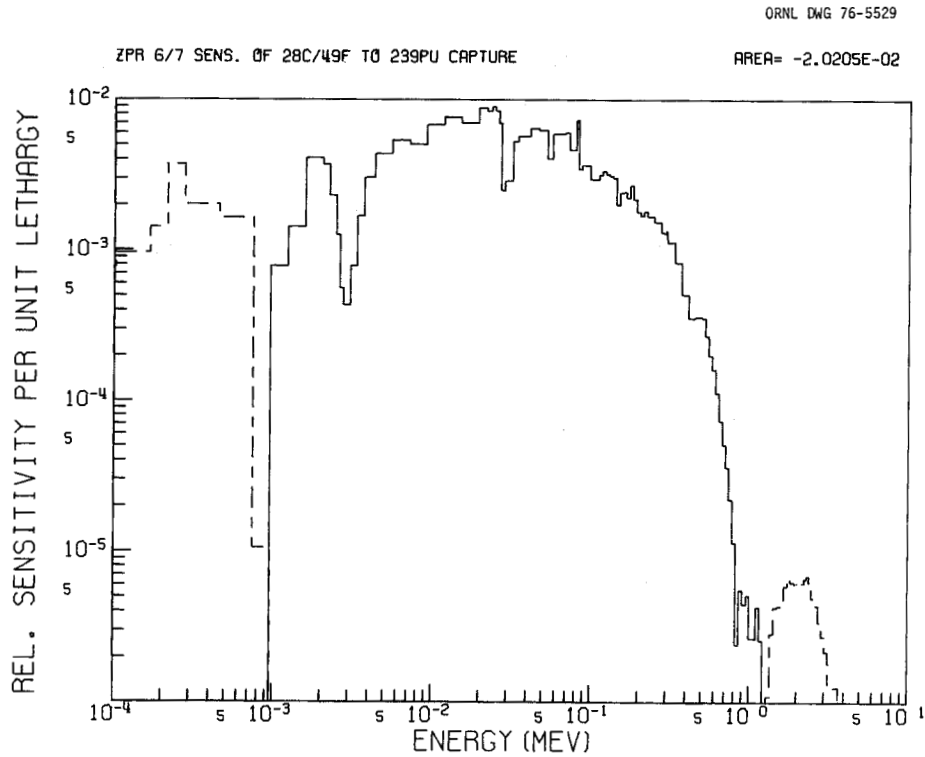


Fig. 65. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Capture Cross Section.

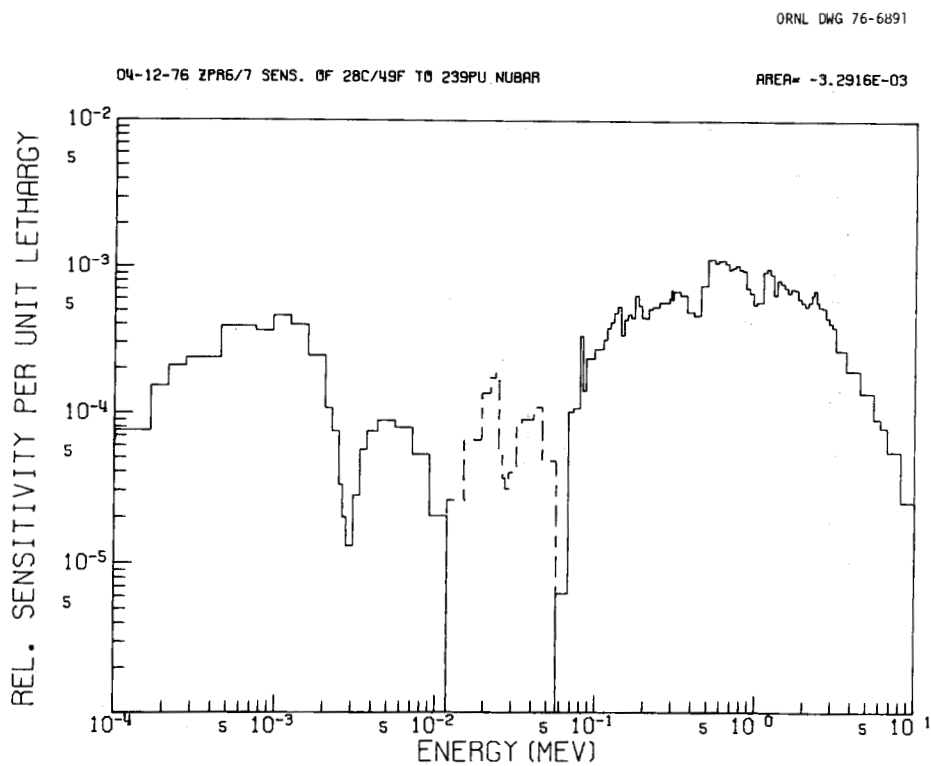


Fig. 66. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Neutron Yield per Fission.

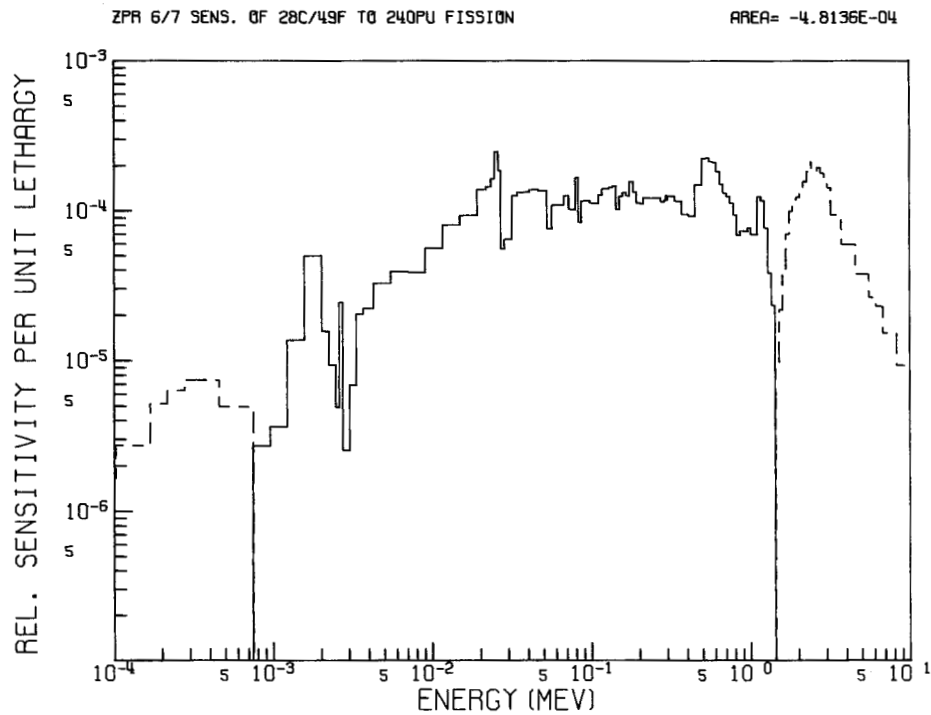


Fig. 67. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{240}Pu Fission Cross Section.

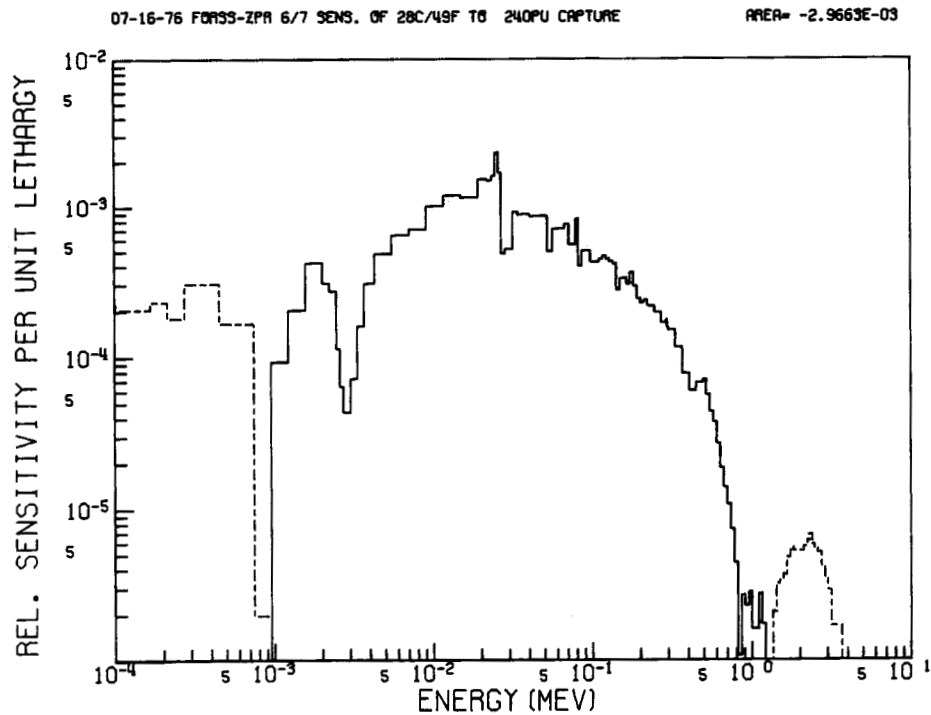


Fig. 68. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{240}Pu Capture Cross Section.

ORNL DWG 76-6892

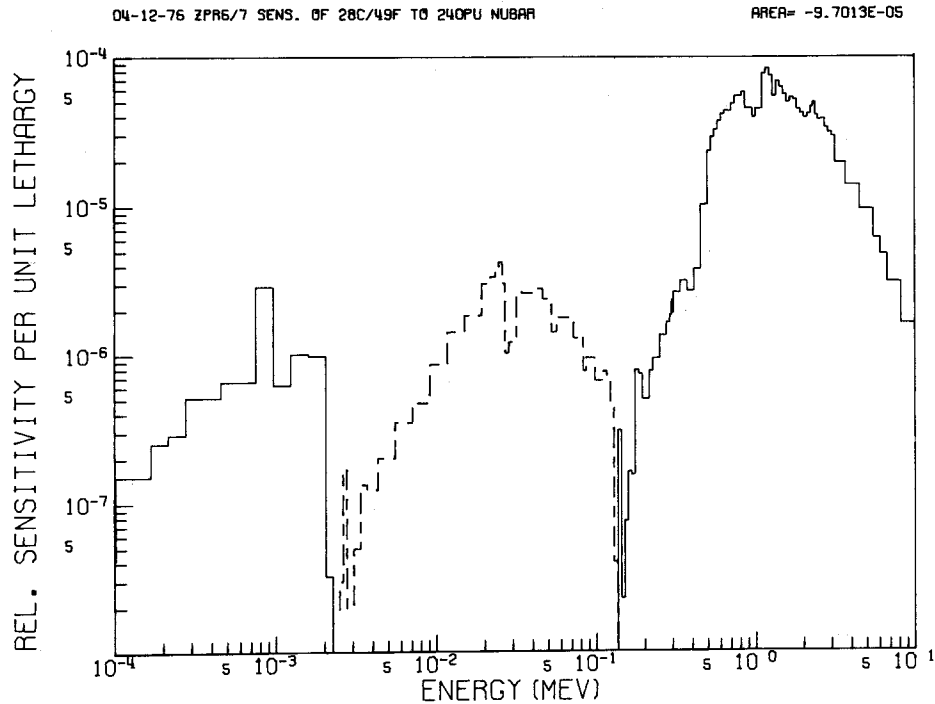


Fig. 69. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{240}Pu Neutron Yield per Fission.

ORNL DWG 76-5571

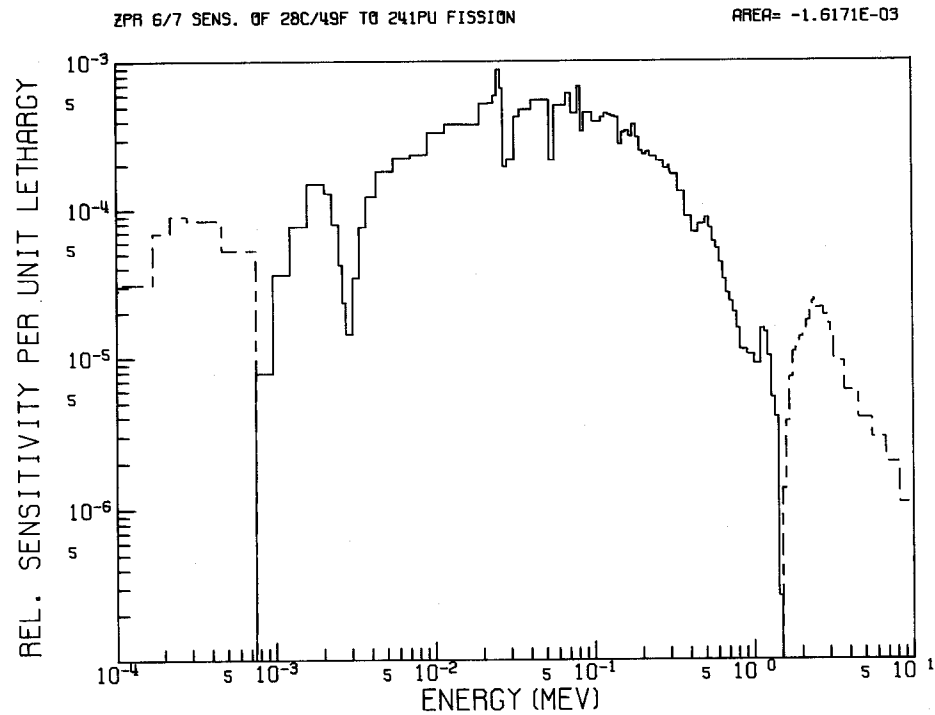


Fig. 70. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{241}Pu Fission Cross Section.

ORNL DWG 76-12689

07-16-76 FORSS-ZPR 6/7 SENS. OF ^{238}U CAPTURE TO ^{241}Pu CAPTURE

AREA= -3.0089E-04

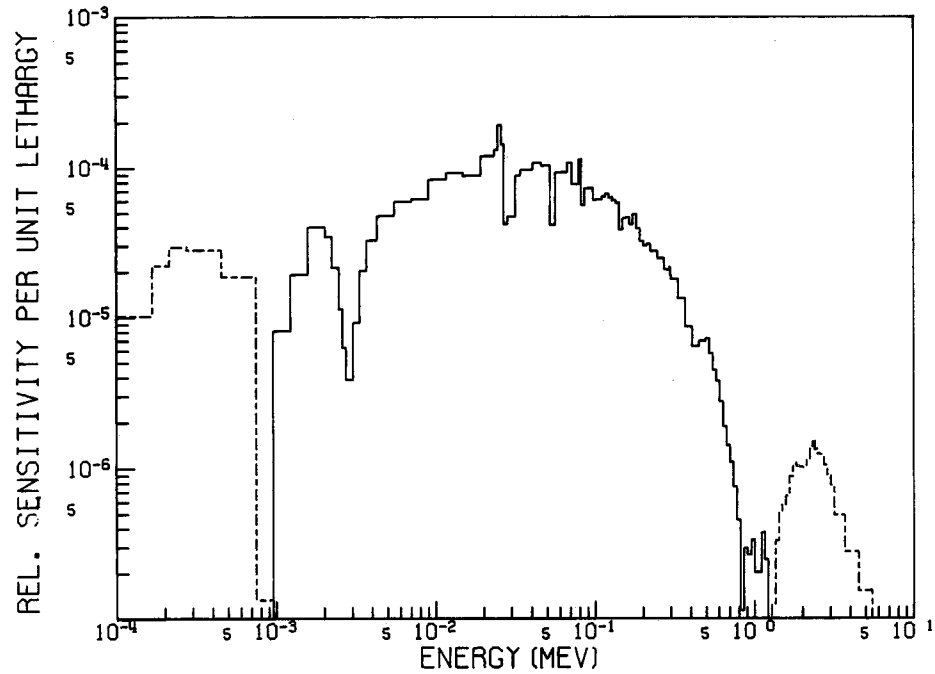


Fig. 71. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{241}Pu Capture Cross Section.

ORNL DWG 76-6893

04-12-76 ZPR6/7 SENS. OF ^{238}U CAPTURE TO ^{241}Pu NUBAR

AREA= -2.7897E-05

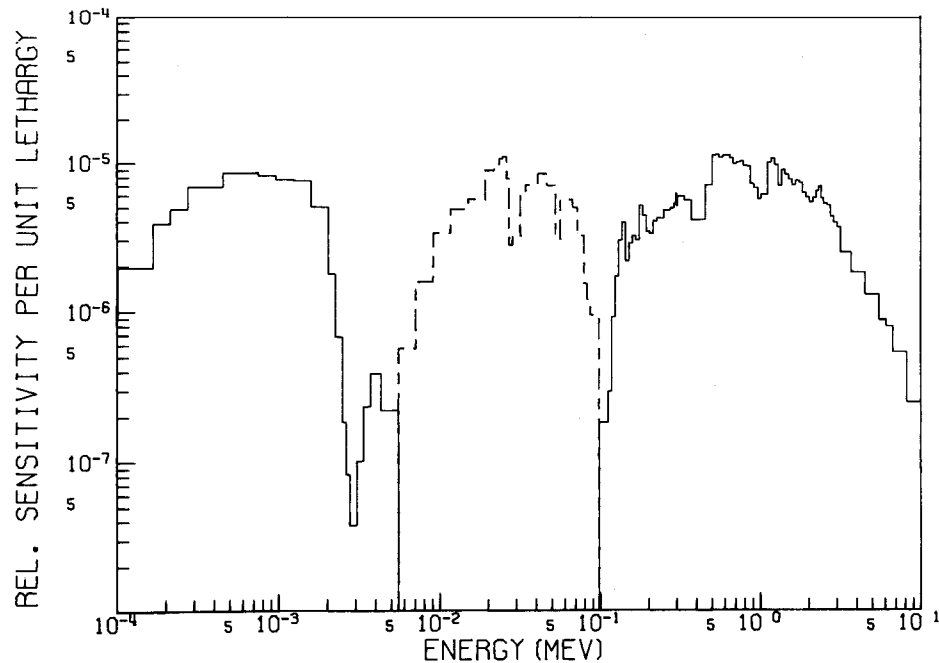


Fig. 72. Sensitivity of ^{238}U Capture/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{241}Pu Neutron Yield per Fission.

08-25-76ZPR 6/7 SENS. OF ^{238}U / ^{239}Pu TO OXYGEN ELASTIC

AREA= -8.9221E-02

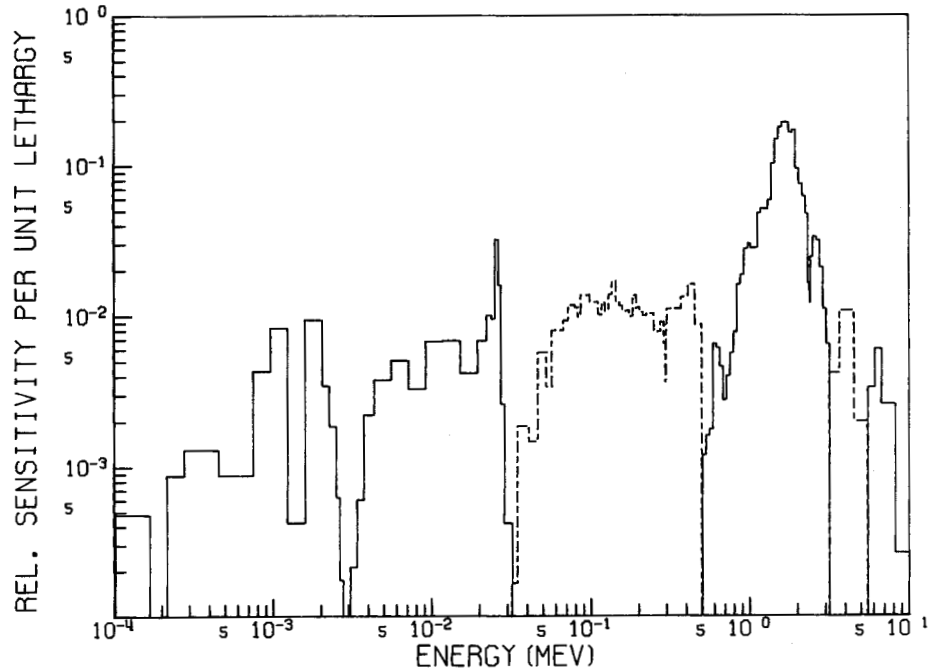


Fig. 73. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Oxygen Elastic Scattering Cross Section.

ZPR 6/7 SENS. OF ^{238}U / ^{239}Pu TO SODIUM ELASTIC

AREA= -4.7943E-02

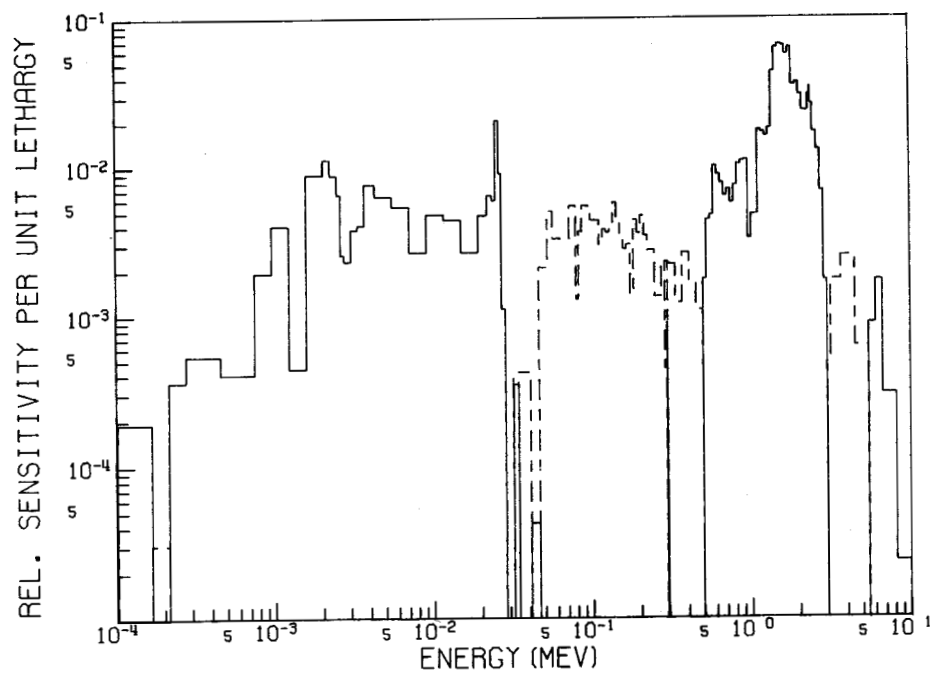


Fig. 74. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Elastic Scattering Cross Section.

ORNL DWG 76-5543

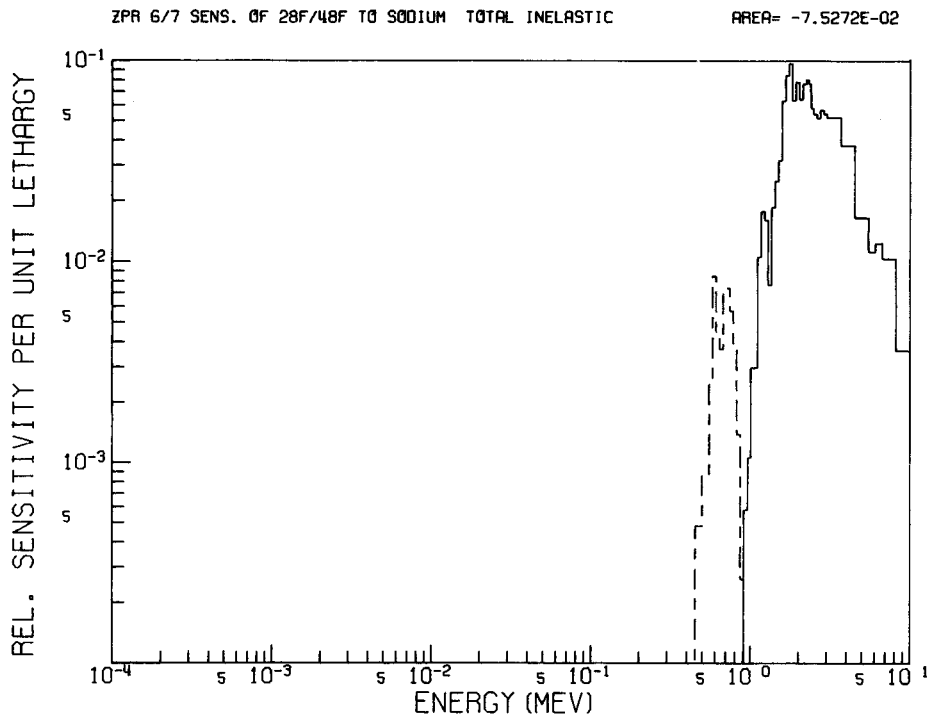


Fig. 75. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Inelastic Scattering Cross Section.

ORNL DWG 76-5545

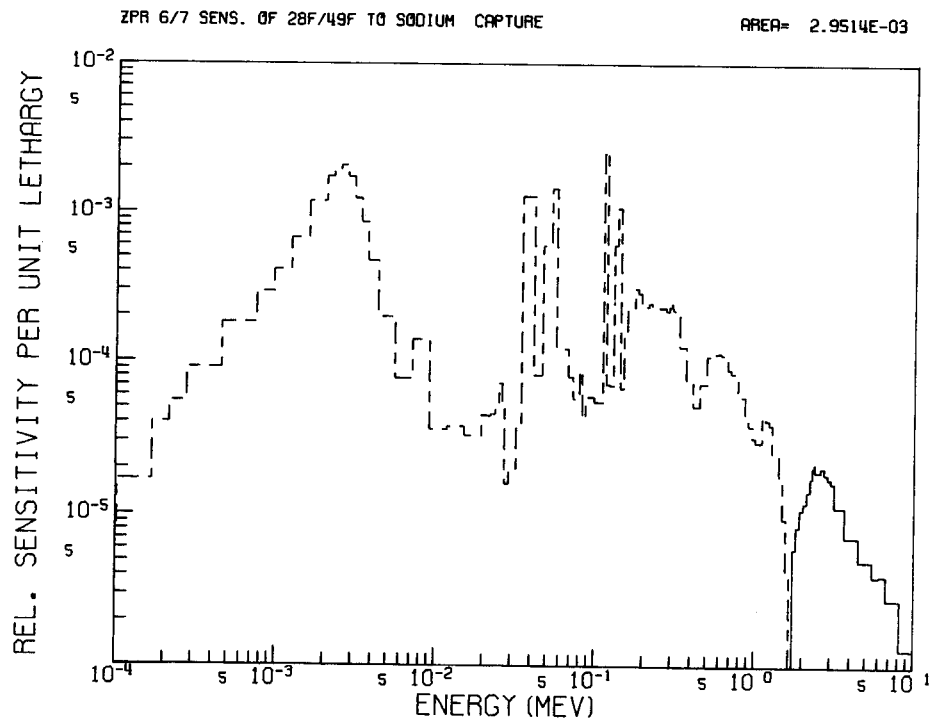


Fig. 76. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Sodium Capture Cross Section.

ORNL DWG 76-12697

07-16-76ZPR 6/7 SENS. OF 28F/49F TO IRON ELASTIC

AREA= -4.4145E-02

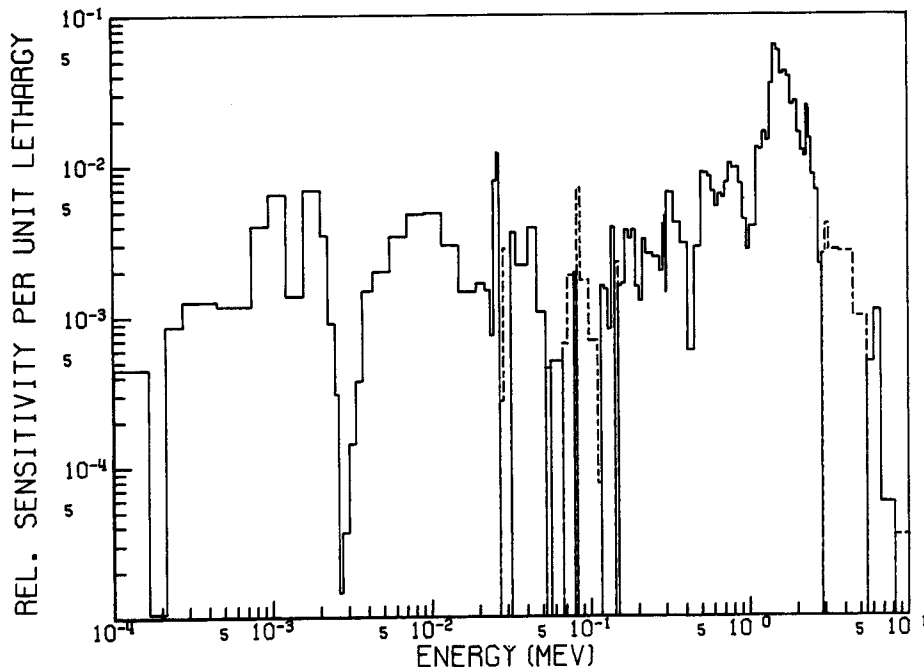


Fig. 77. Sensitivity of ²³⁸U Fission/²³⁹Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-12326

07-14-76ZPR 6/7 SENS. OF 28F/49F TO IRON TOTAL INELASTIC

AREA= -1.9932E-01

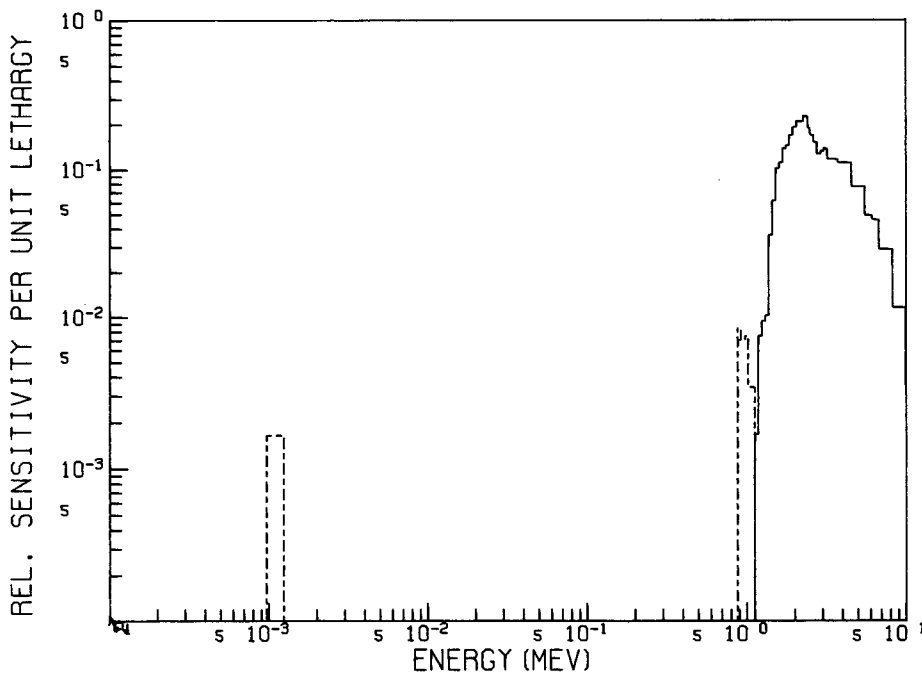


Fig. 78. Sensitivity of ²³⁸U Fission/²³⁹Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-12329

07-14-76ZPR 6/7 SENS. OF 28F/49F TO IRON CAPTURE

AREA= 2.3675E-02

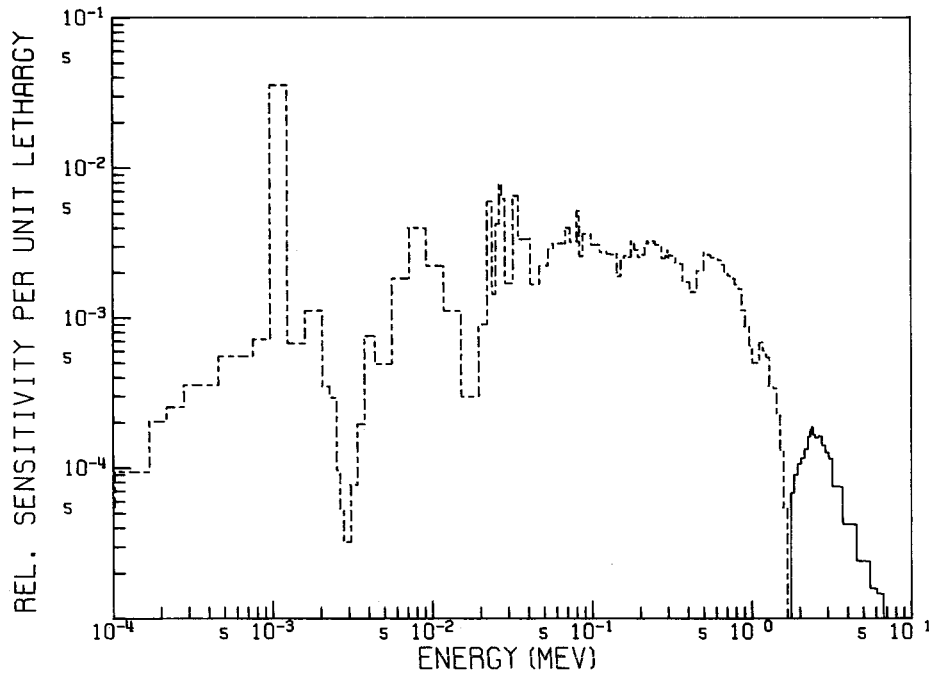


Fig. 79. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the Iron Capture Cross Section.

ORNL DWG 76-5588

ZPR 6/7 SENS. OF 28F/49F TO ^{238}U TOT INEL, CENT REGION

AREA= -2.4814E-01

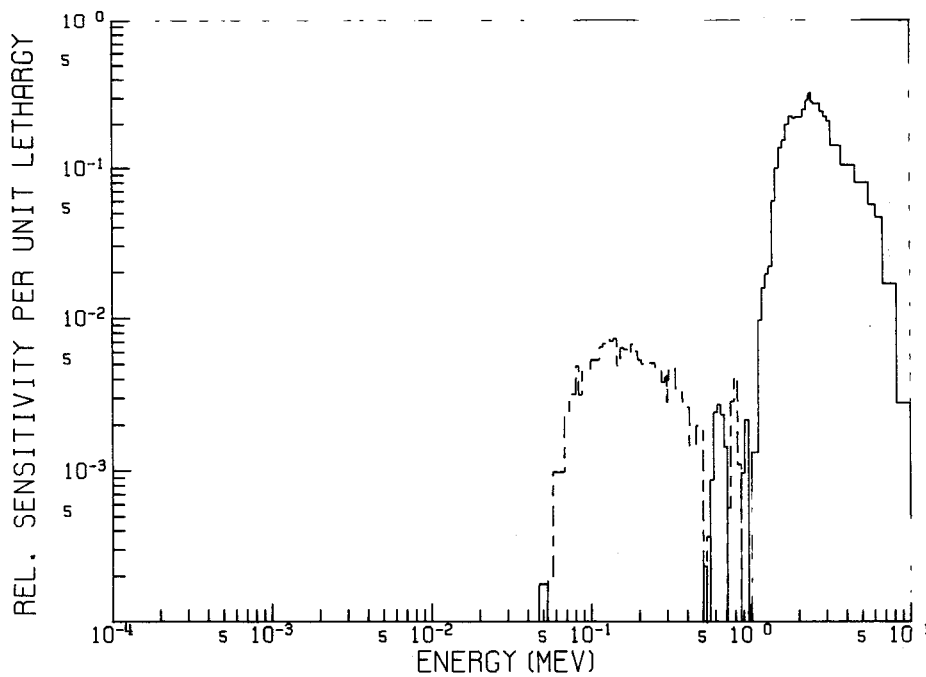


Fig. 80. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-6139

ZPR 6/7 SENS. OF 28F/49F TO 238U FISSION

AREA= 9.5994E-01

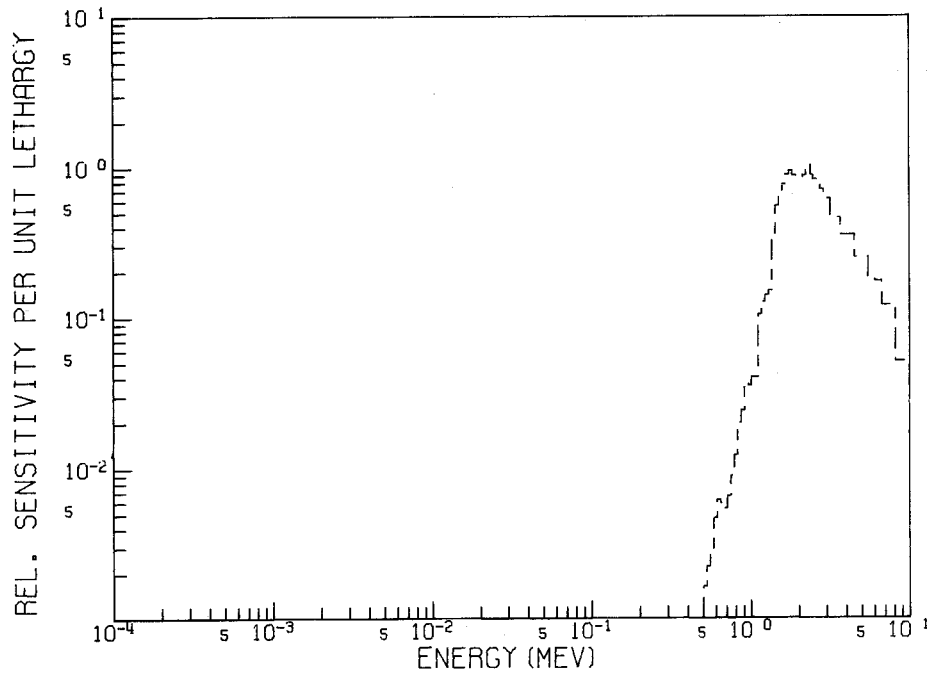


Fig. 81. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Fission Cross Section.

ORNL DWG 76-5551

ZPR 6/7 SENS. OF 28F/49F TO 238U CAPTURE

AREA= 2.7079E-01

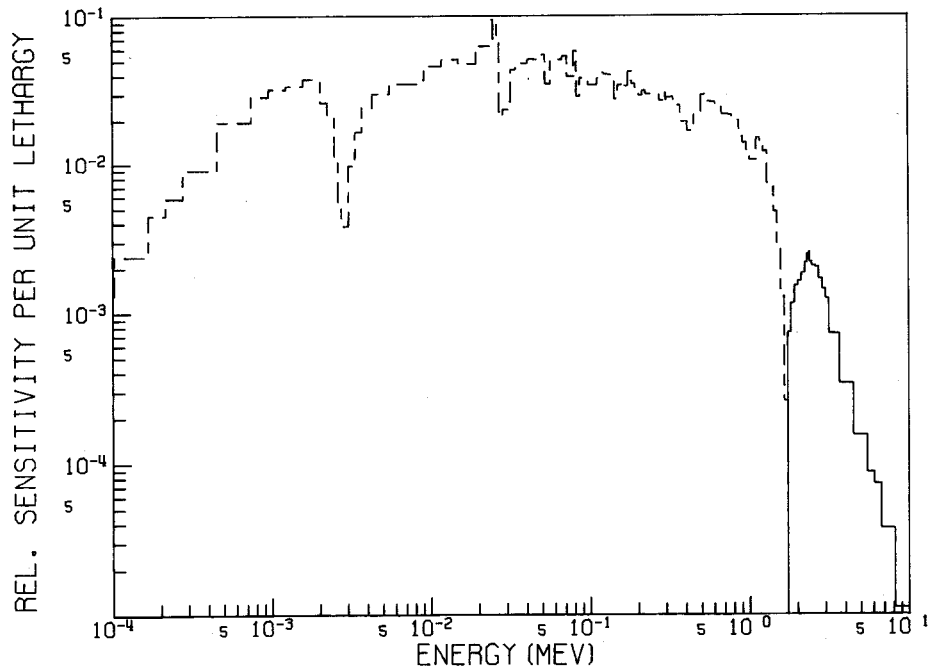


Fig. 82. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{238}U Capture Cross Section.

ORNL DWG 76-6143

ZPR 6/7 SENS. OF 28F/49F TO 239PU FISSION

AREA= -7.6083E-01

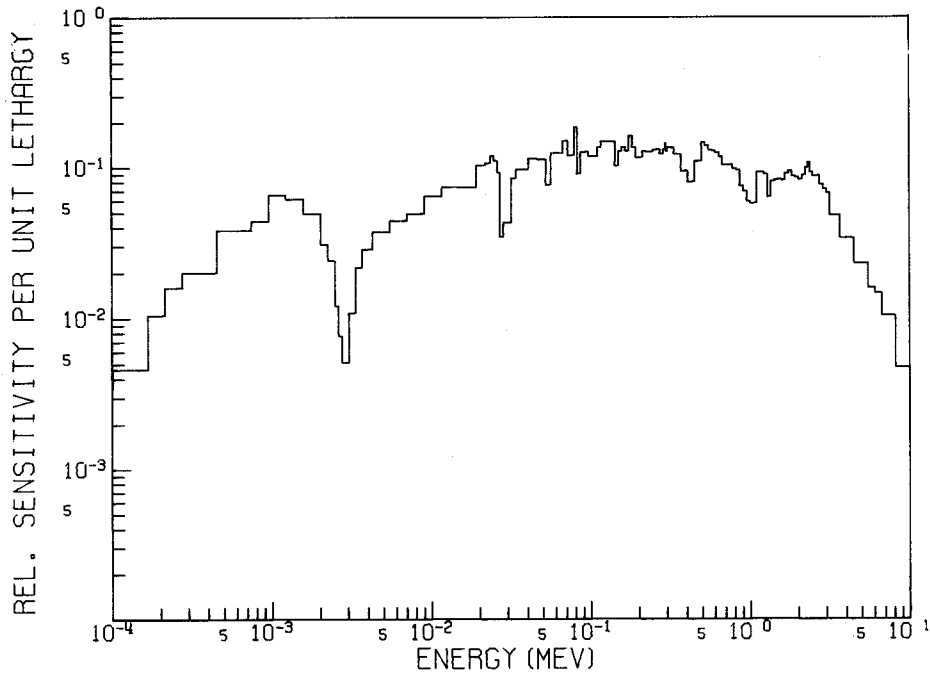


Fig. 83. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Fission Cross Section.

ORNL DWG 76-5549

ZPR 6/7 SENS. OF 28F/49F TO 239PU CAPTURE

AREA= 7.8823E-02

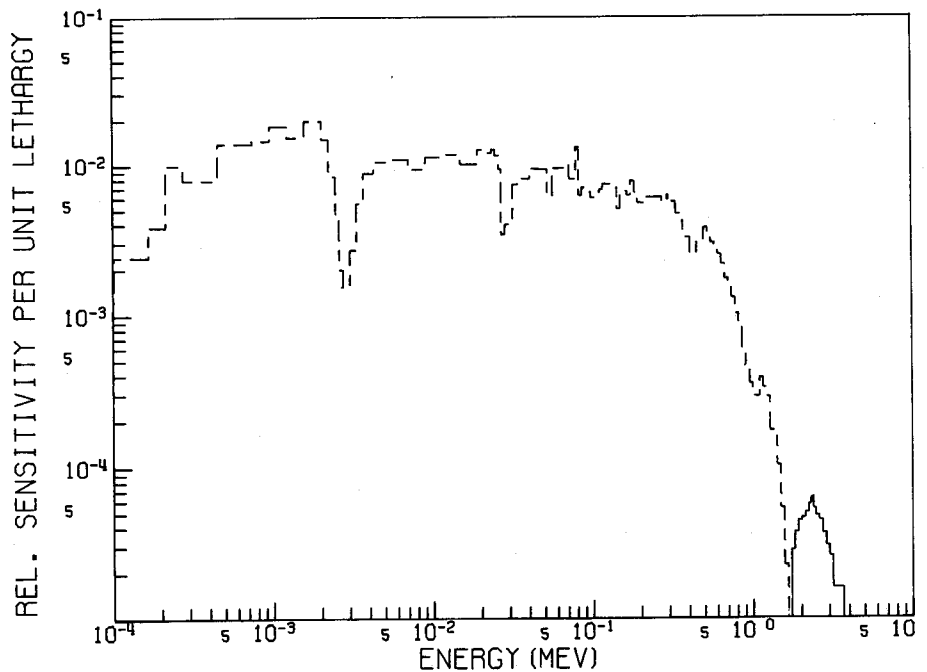


Fig. 84. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Capture Cross Section.

ORNL DWG 76-16105

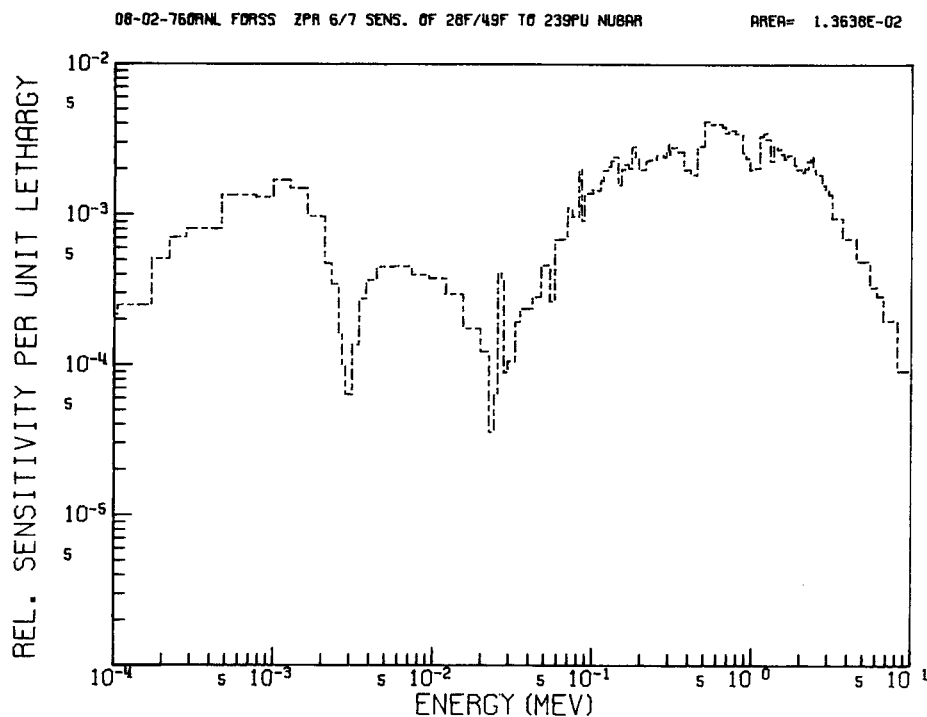


Fig. 85. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{239}Pu Neutron Yield per Fission.

ORNL DWG 76-5562

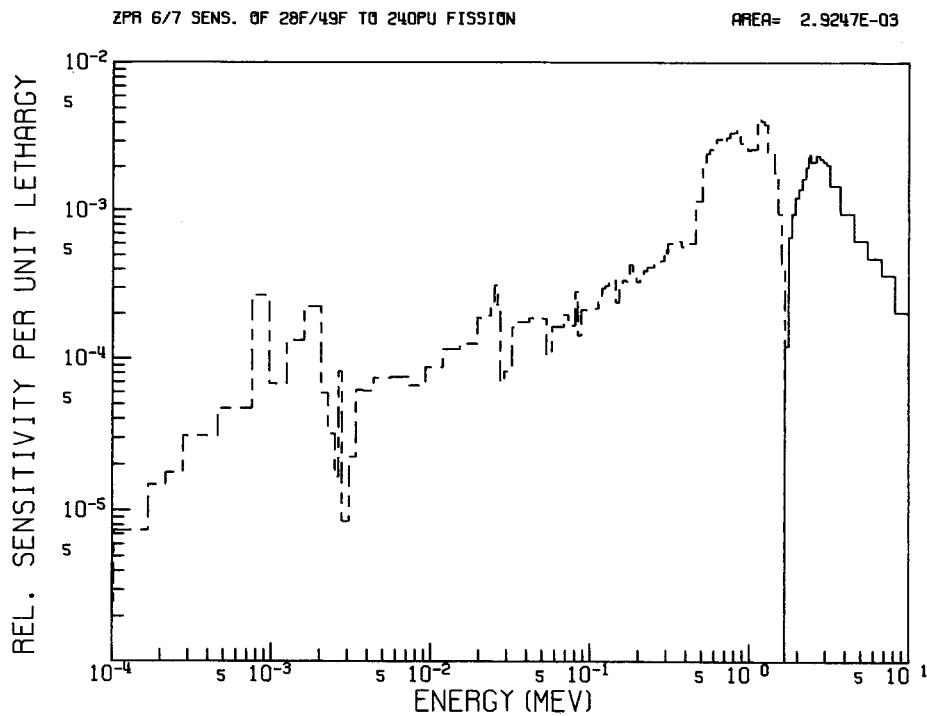


Fig. 86. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{240}Pu Fission Cross Section.

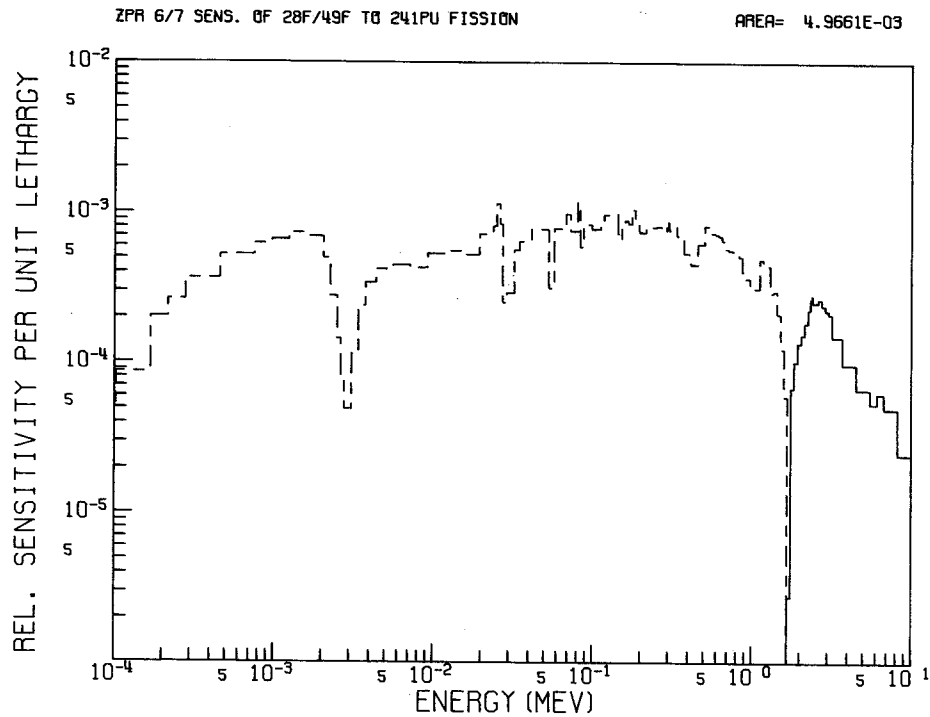


Fig. 87. Sensitivity of ^{238}U Fission/ ^{239}Pu Fission Central Reaction Ratio in Assembly ZPR-6/7 to the ^{241}Pu Fission Cross Section.

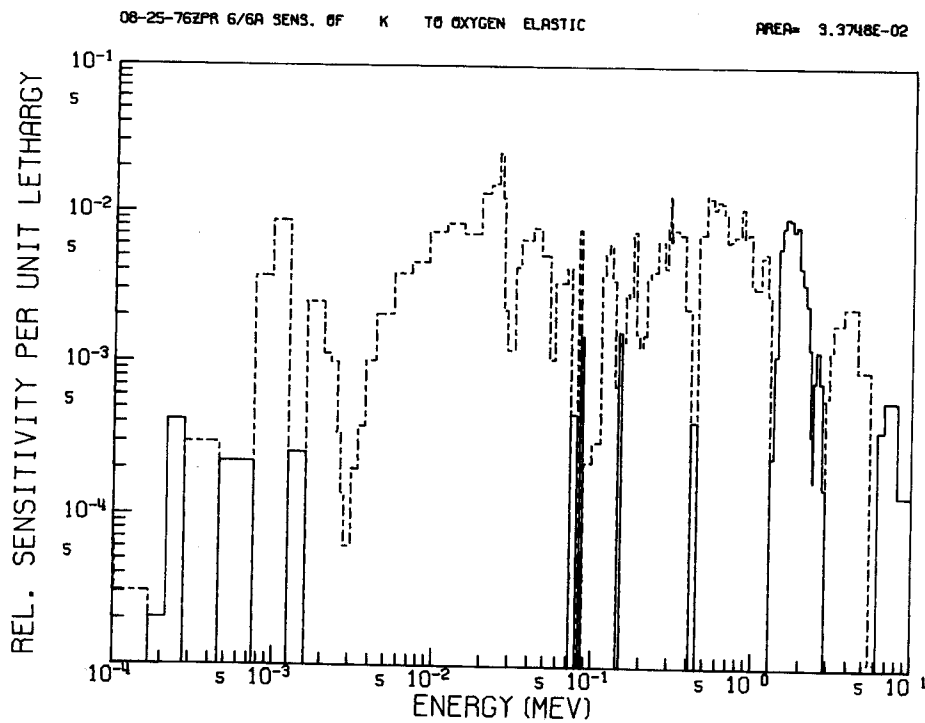


Fig. 88. Sensitivity of k in Assembly ZPR-6/6A to the Oxygen Elastic Scattering Cross Section.

ORNL DWG 76-6166

ZPR 6/6A SEN. OF K TO SODIUM ELASTIC

AREA= 2.6691E-02

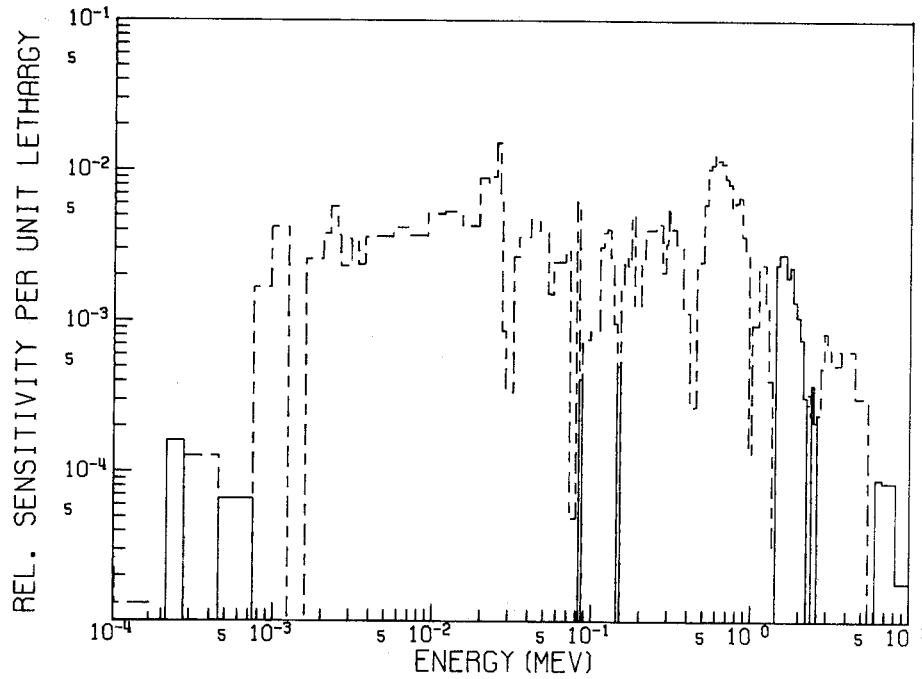


Fig. 89. Sensitivity of k in Assembly ZPR-6/6A to the Sodium Elastic Scattering Cross Section.

ORNL DWG 76-5629

ZPR 6/6A SENS. OF K TO SODIUM TOTAL INELASTIC

AREA= -4.4272E-03

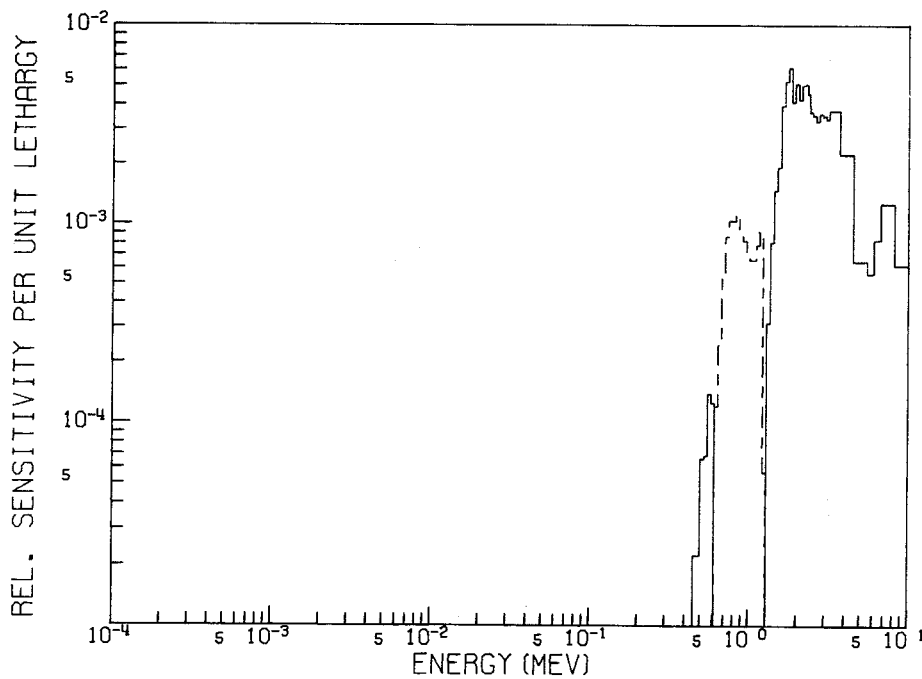


Fig. 90. Sensitivity of k in Assembly ZPR-6/6A to the Sodium Inelastic Cross Section.

ORNL DWG 76-6165

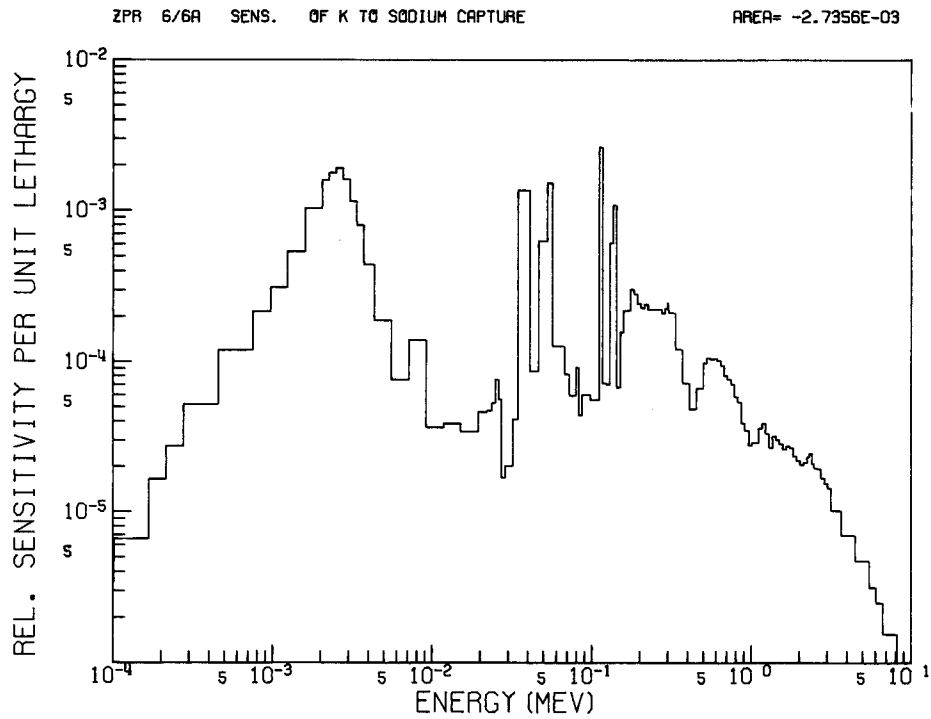


Fig. 91. Sensitivity of k in Assembly ZPR-6/6A to the Sodium Capture Cross Section.

ORNL DWG 76-5622

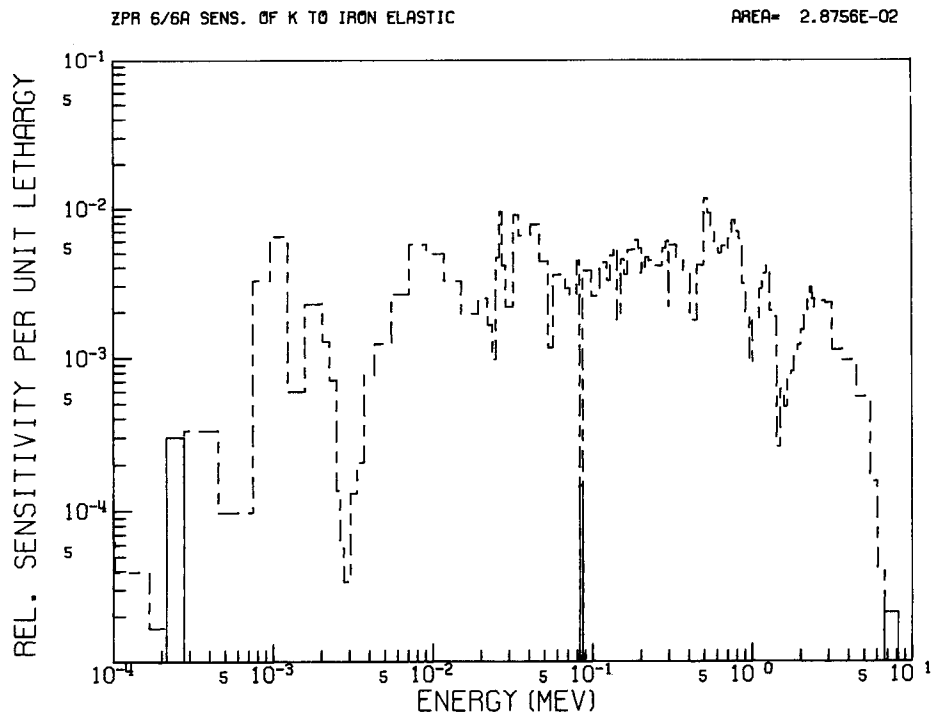


Fig. 92. Sensitivity of k in Assembly ZPR-6/6A to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-5625

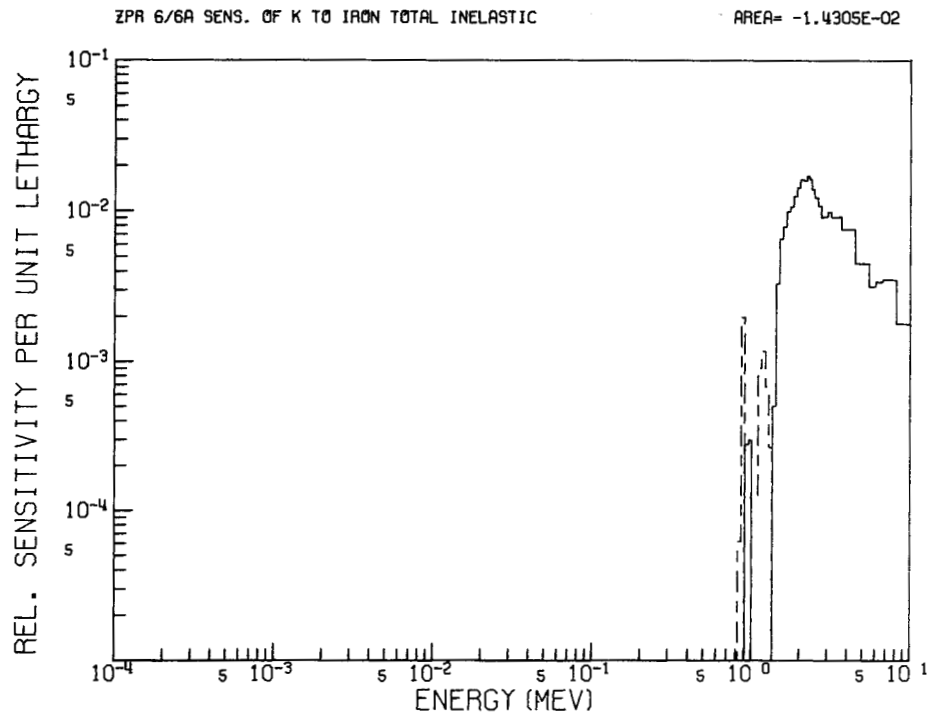


Fig. 93. Sensitivity of k in Assembly ZPR-6/6A to the Iron Inelastic Cross Section.

ORNL DWG 76-5623

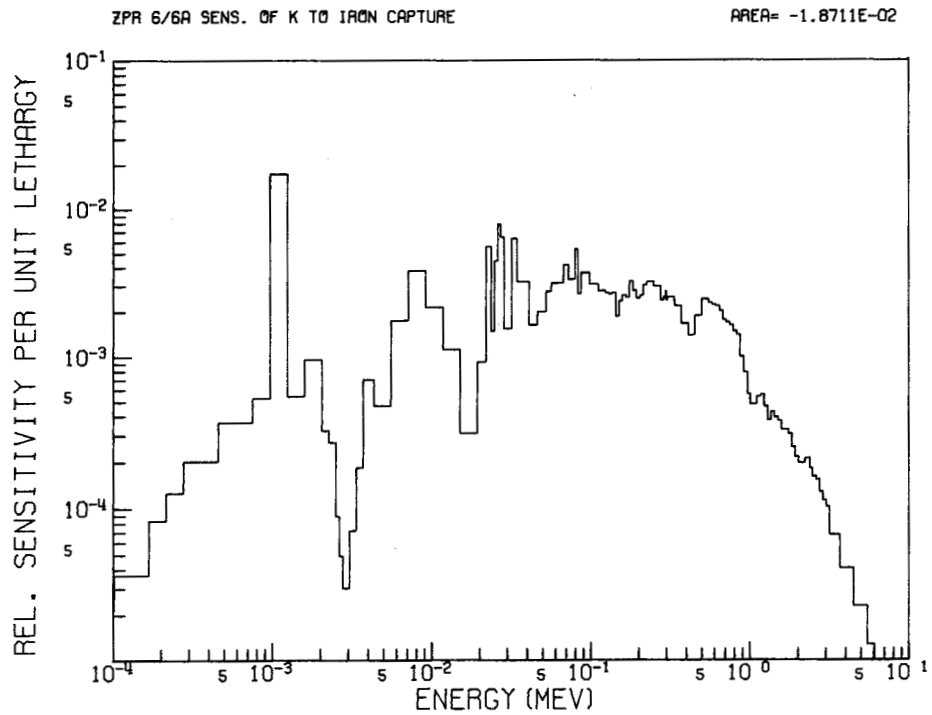


Fig. 94. Sensitivity of k in Assembly ZPR-6/6A to the Iron Capture Cross Section.

ORNL DWG 76-6125

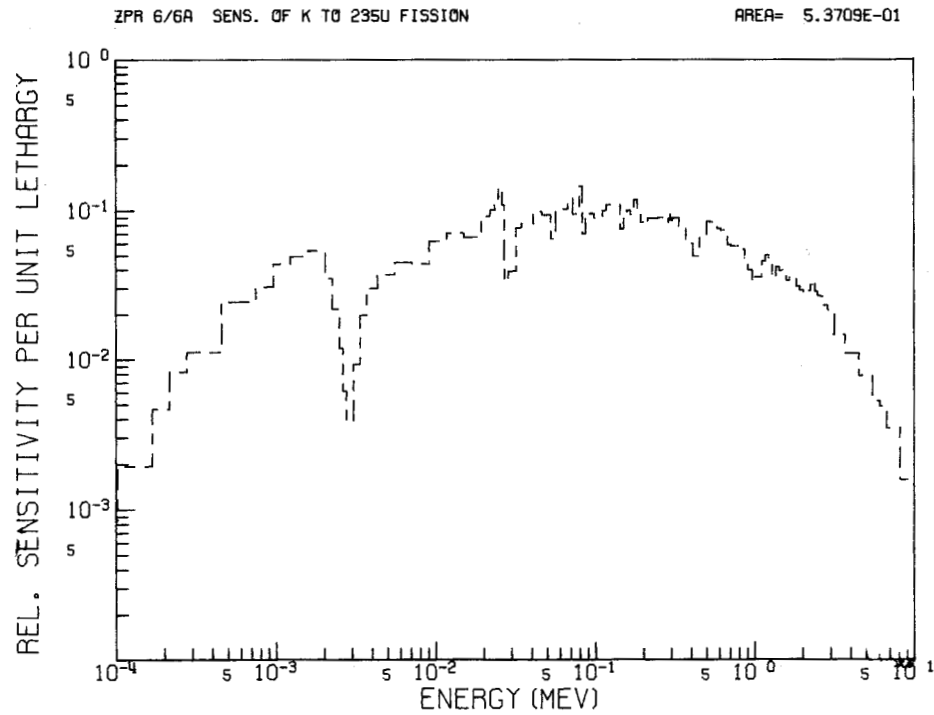


Fig. 95. Sensitivity of k in Assembly ZPR-6/6A to the ^{235}U Fission Cross Section.

ORNL DWG 76-6123

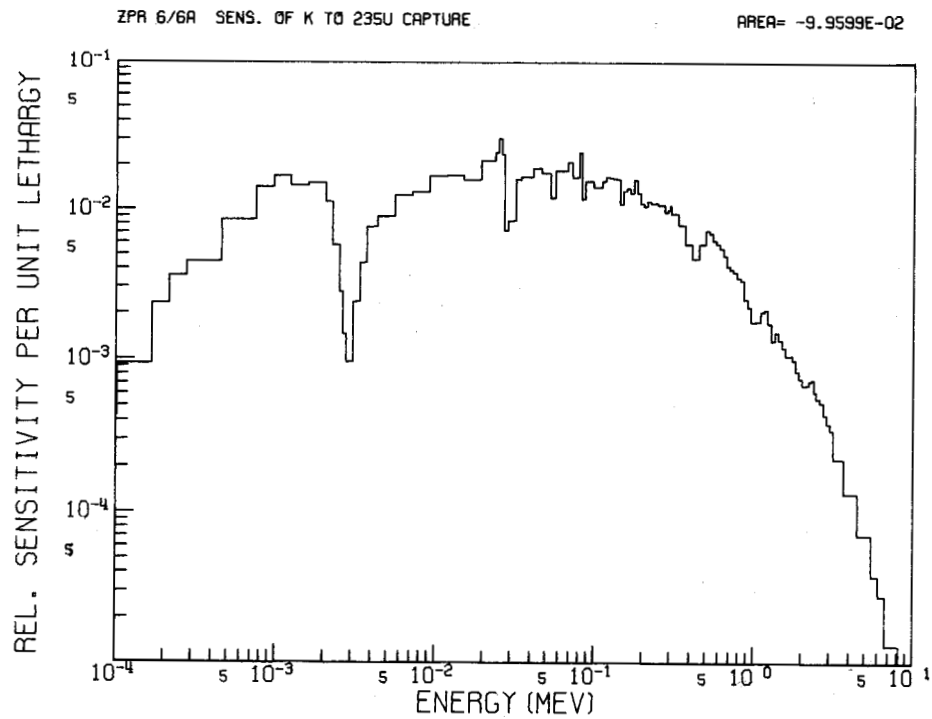


Fig. 96. Sensitivity of k in Assembly ZPR-6/6A to the ^{235}U Capture Cross Section.

ORNL DWG 76-16109

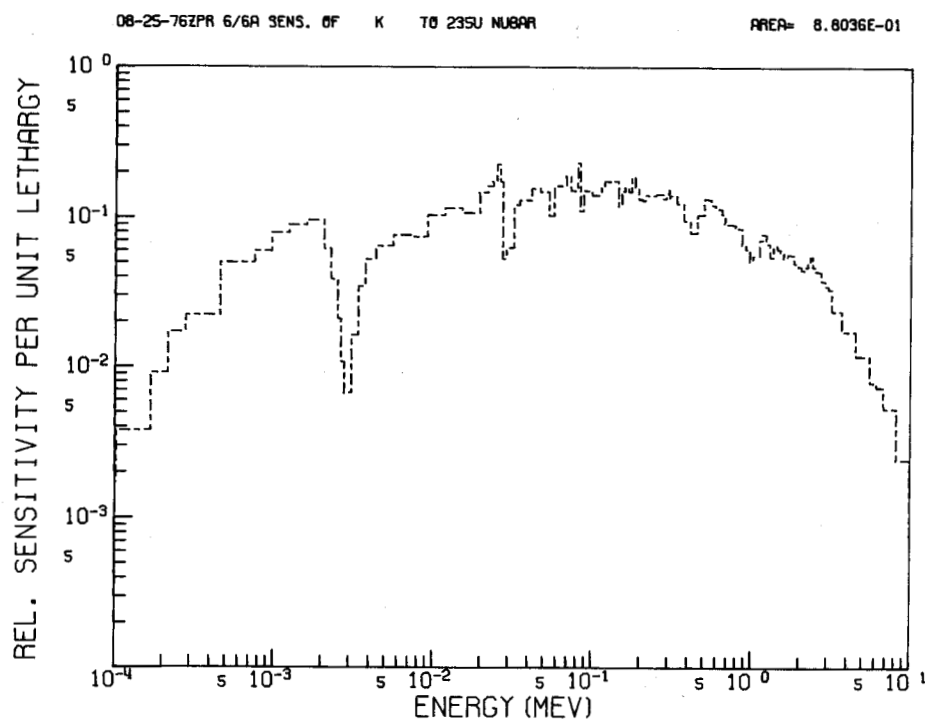


Fig. 97. Sensitivity of k in Assembly ZPR-6/6A to the ^{235}U Neutron Yield per Fission.

ORNL DWG 76-6169

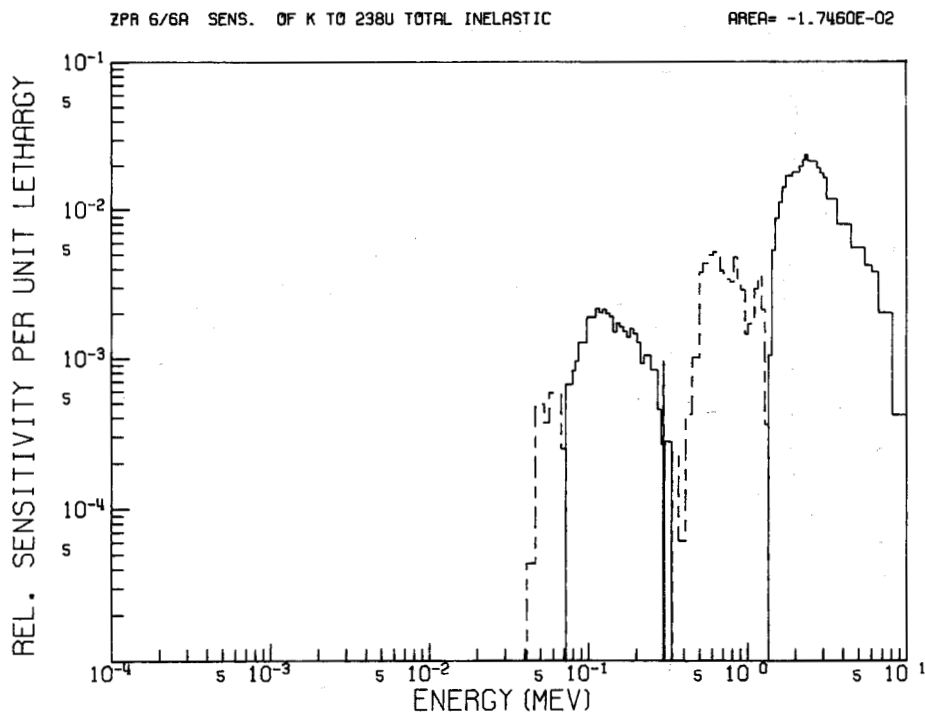


Fig. 98. Sensitivity of k in Assembly ZPR-6/6A to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-6127

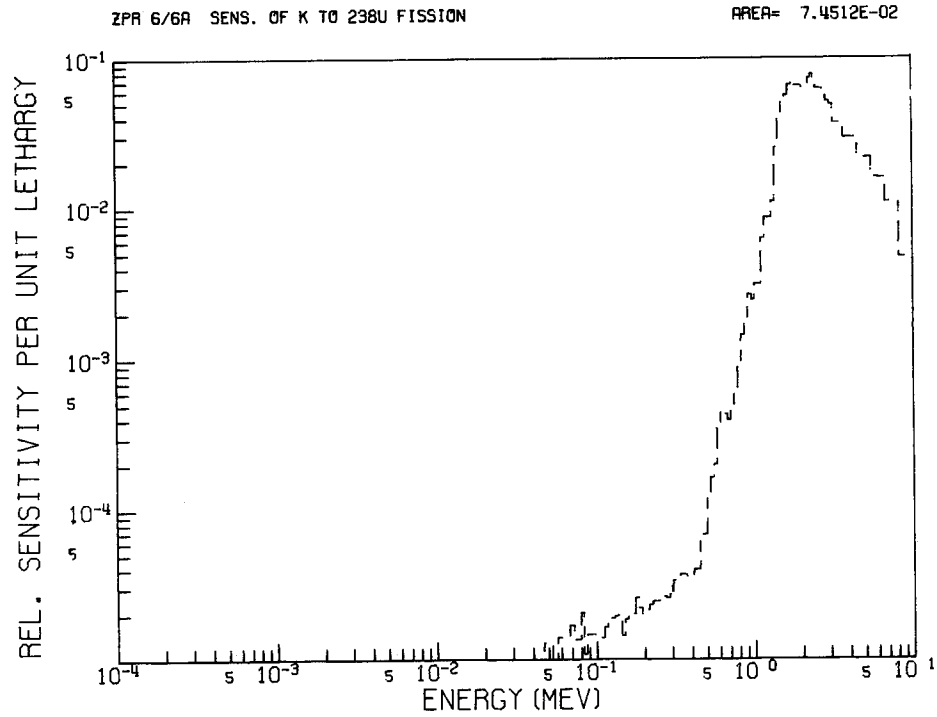


Fig. 99. Sensitivity of k in Assembly ZPR-6/6A to the ^{238}U Fission Cross Section.

ORNL DWG 76-6170

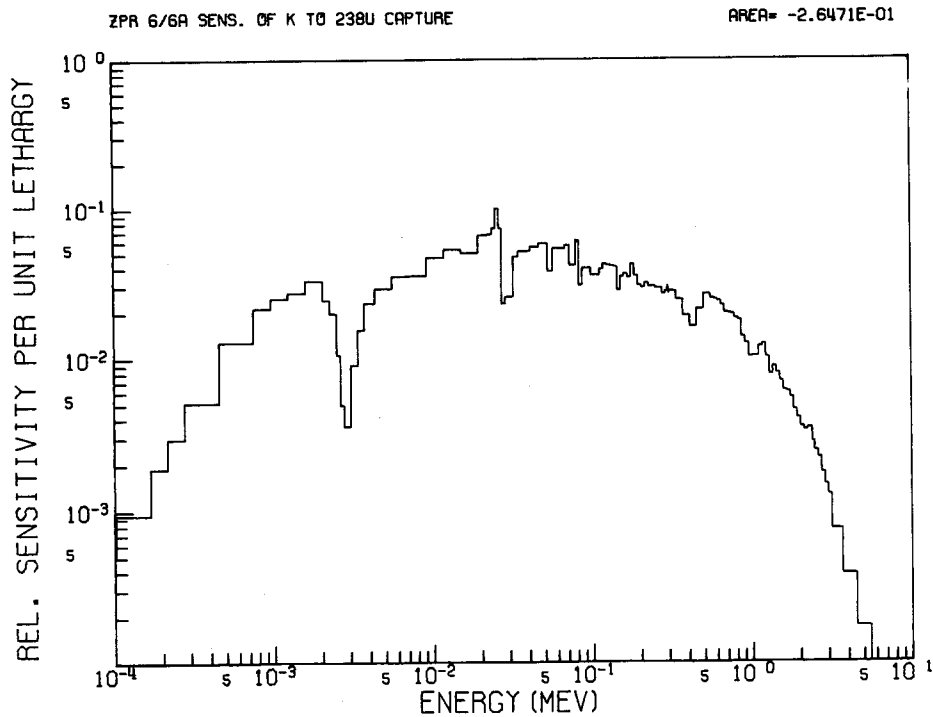


Fig. 100. Sensitivity of k in Assembly ZPR-6/6A to the ^{238}U Capture Cross Section.

ORNL DWG 76-16110

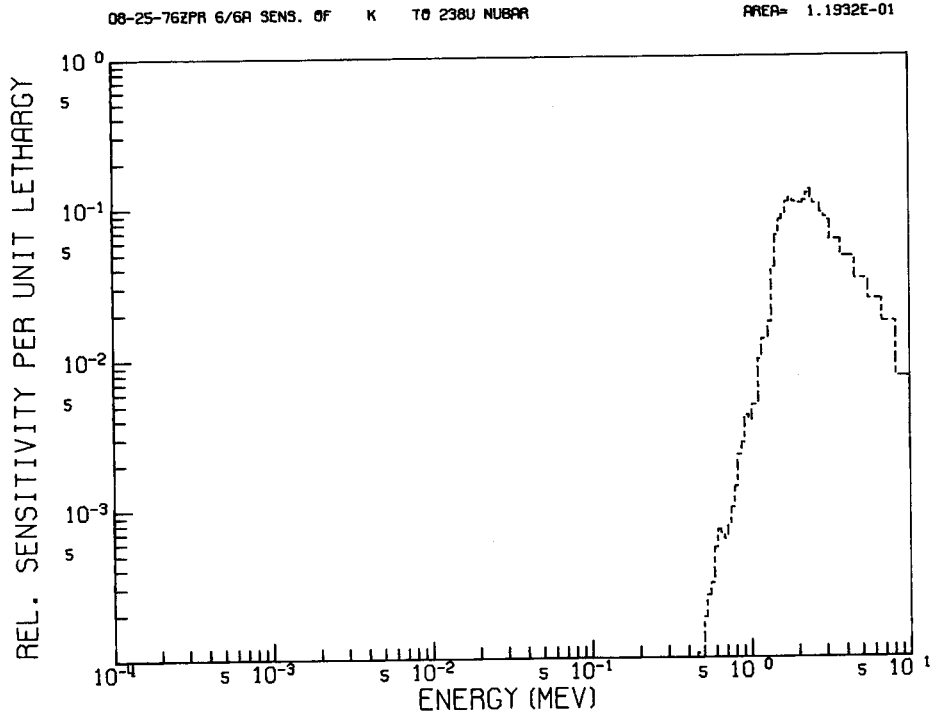


Fig. 101. Sensitivity of k in Assembly ZPR-6/6A to the ^{238}U Neutron Yield per Fission.

ORNL DWG 76-16114

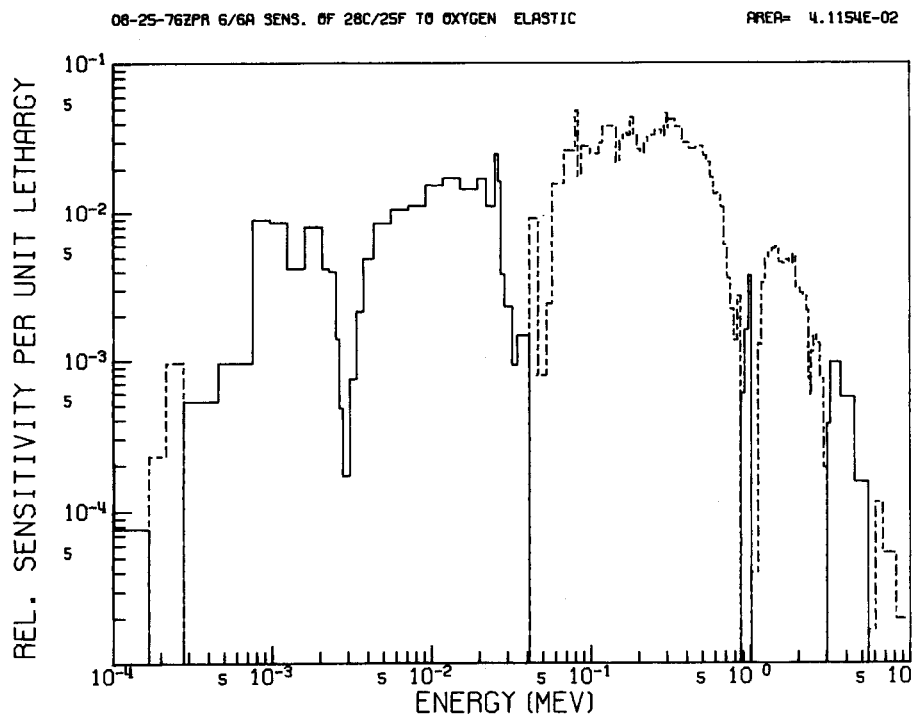


Fig. 102. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Oxygen Elastic Scattering Cross Section.

ORNL DWG 76-5637

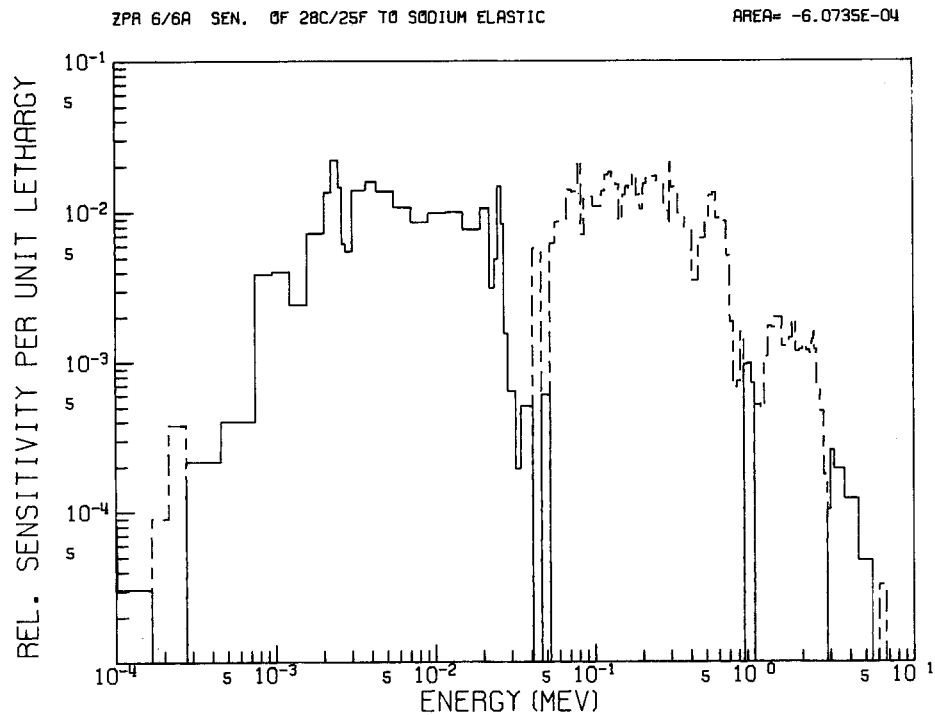


Fig. 103. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Elastic Cross Section.

ORNL DWG 76-6106

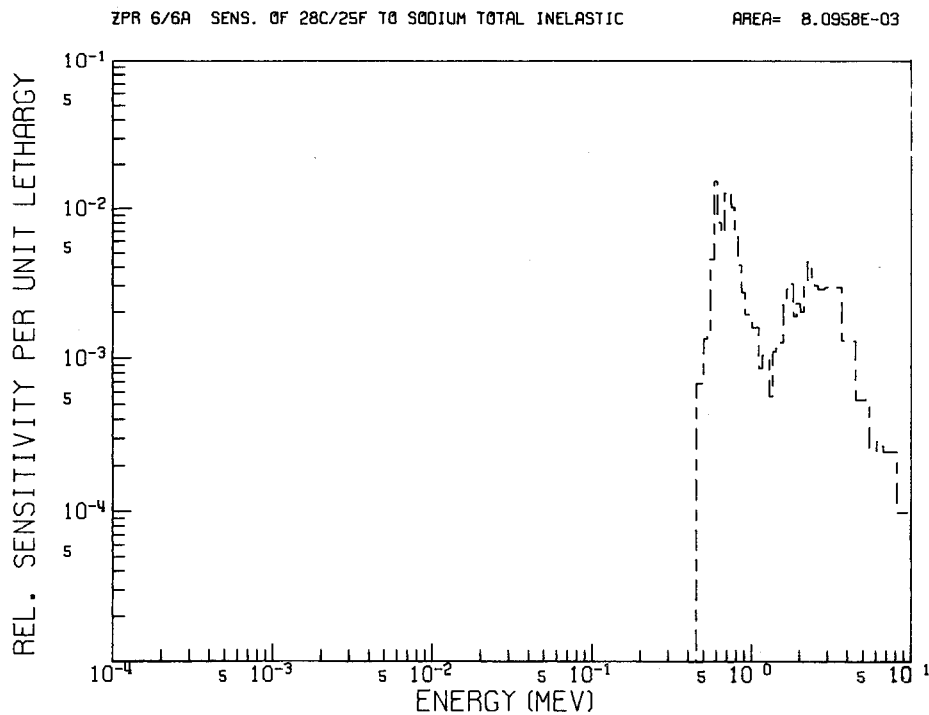


Fig. 104. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Inelastic Cross Section.

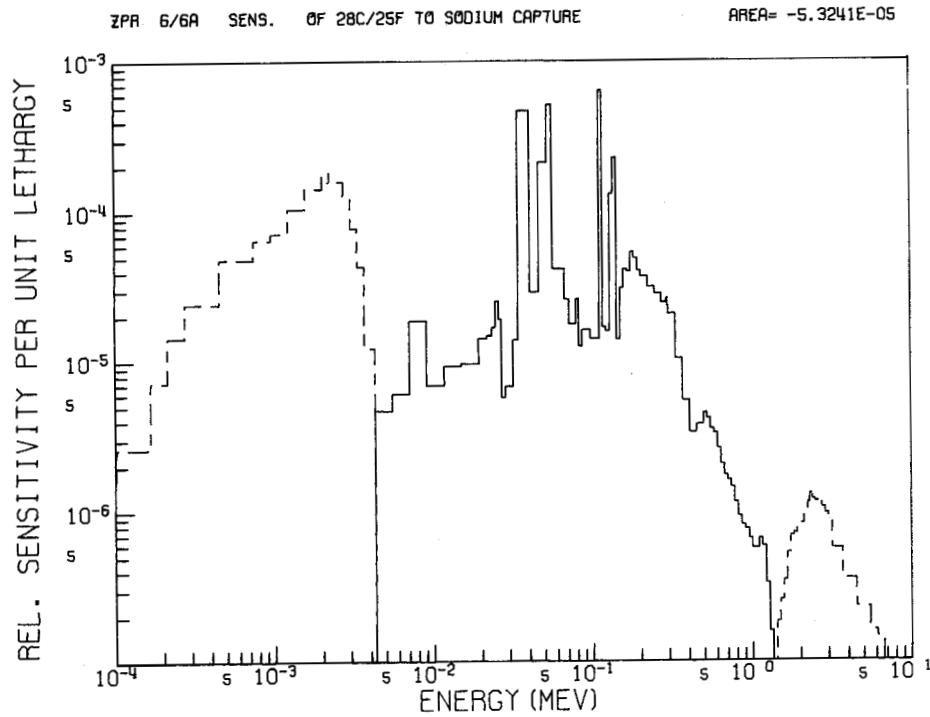


Fig. 105. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Capture Cross Section.

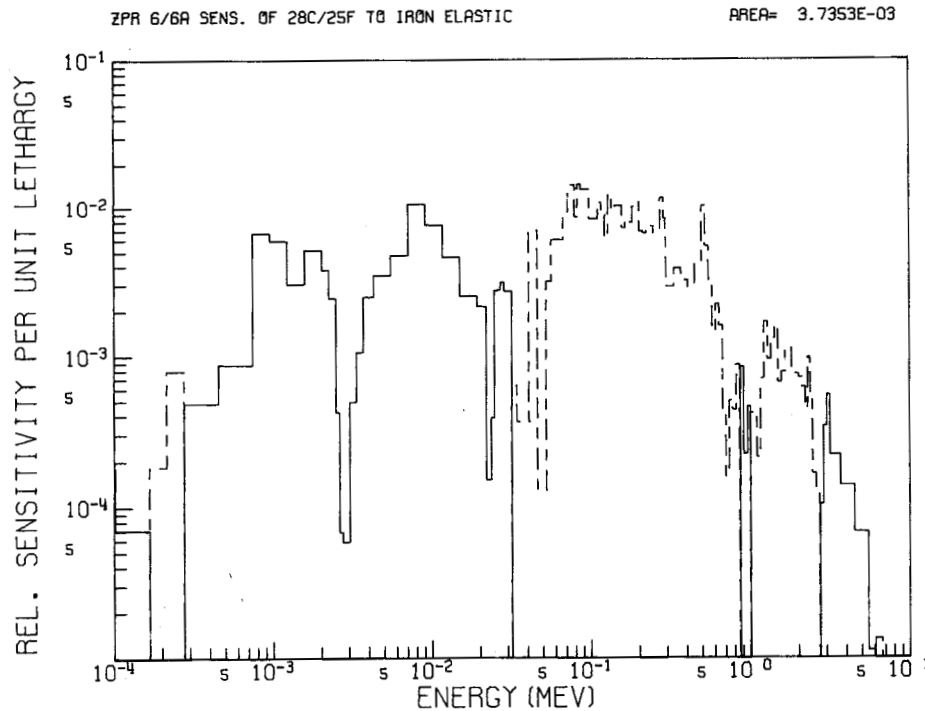


Fig. 106. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-6107

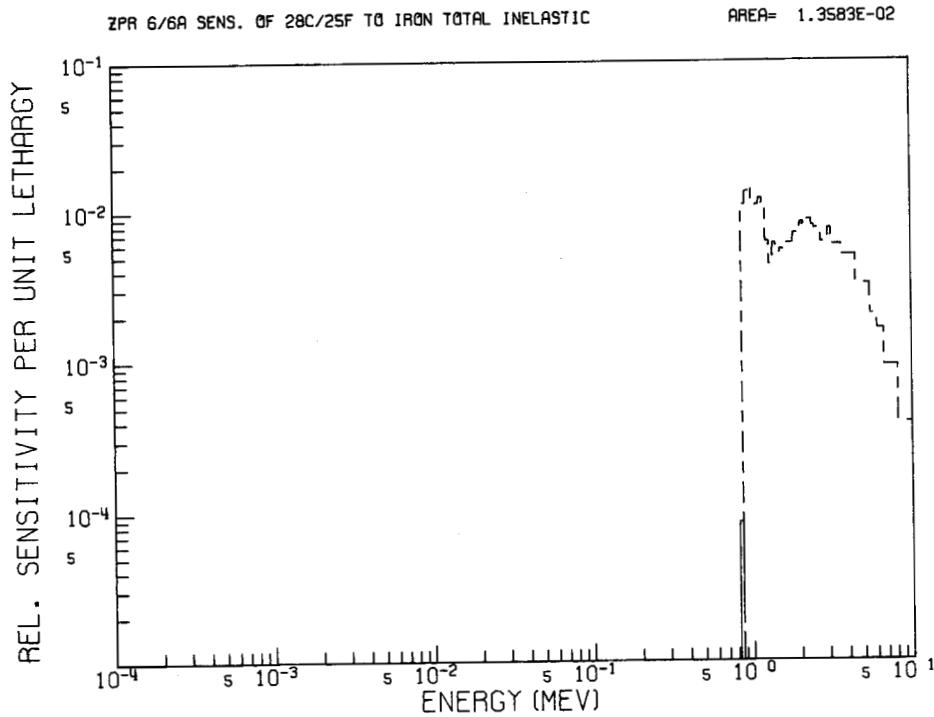


Fig. 107. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-6102

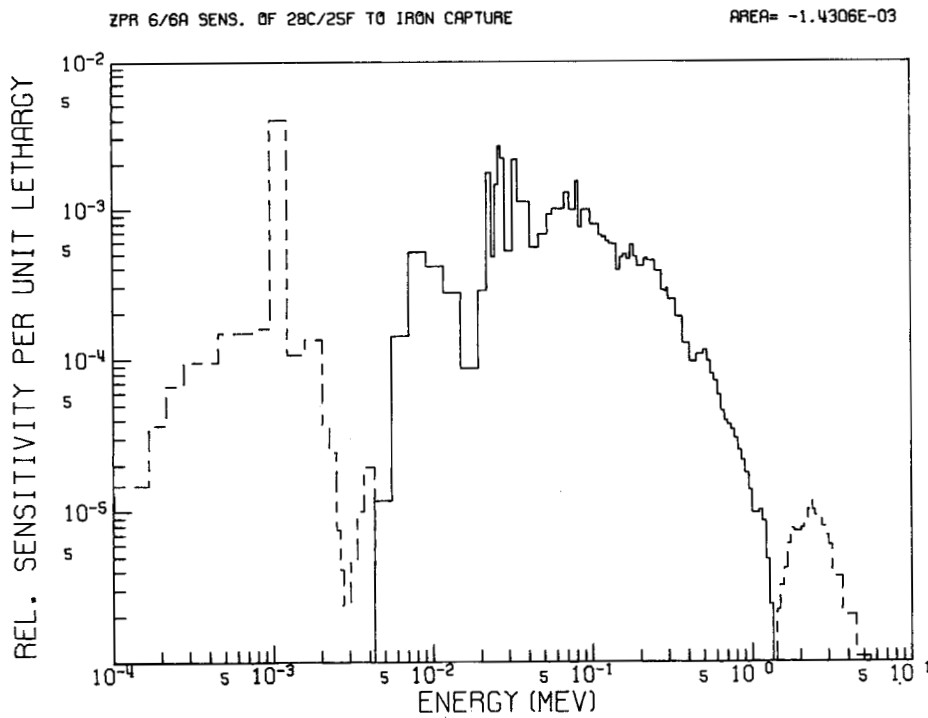


Fig. 108. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Capture Cross Section.

ORNL DWG 76-5524

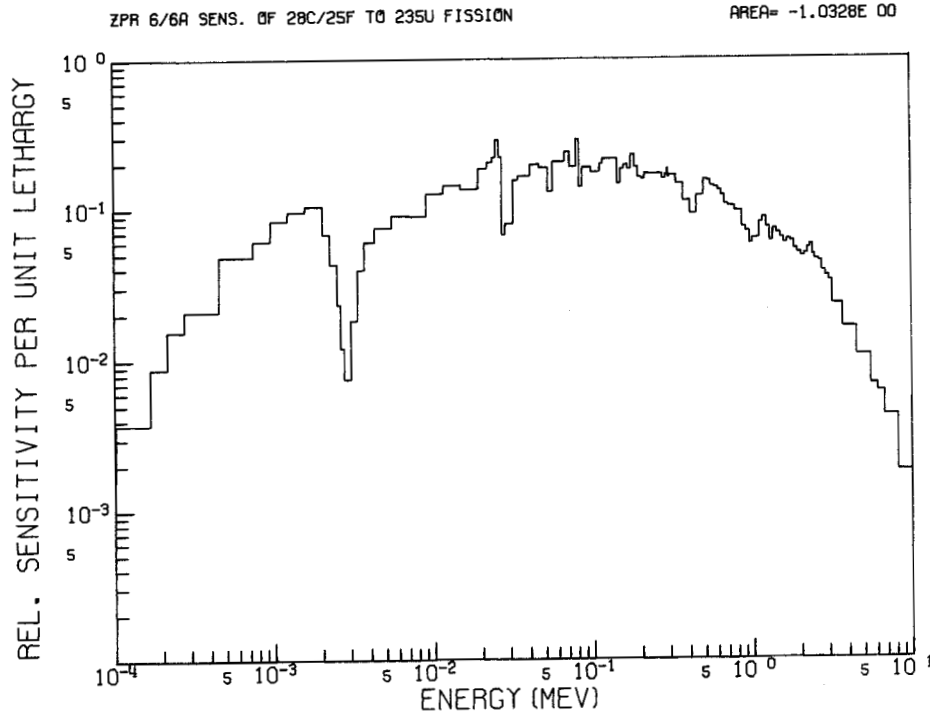


Fig. 109. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Fission Cross Section.

ORNL DWG 76-5621

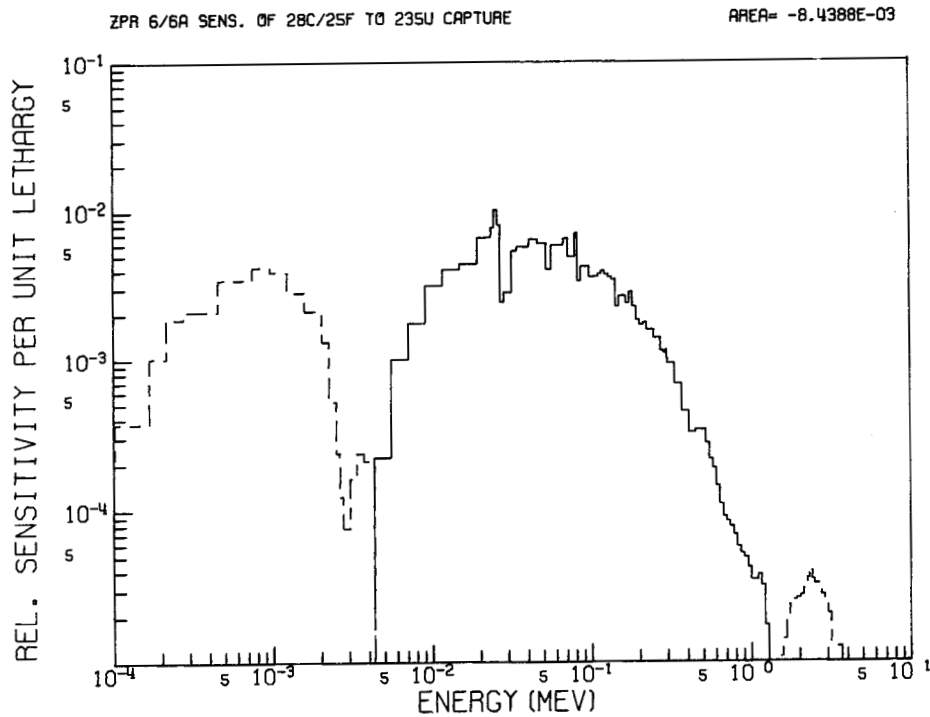


Fig. 110. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Capture Cross Section.

ORNL DWG 76-16112

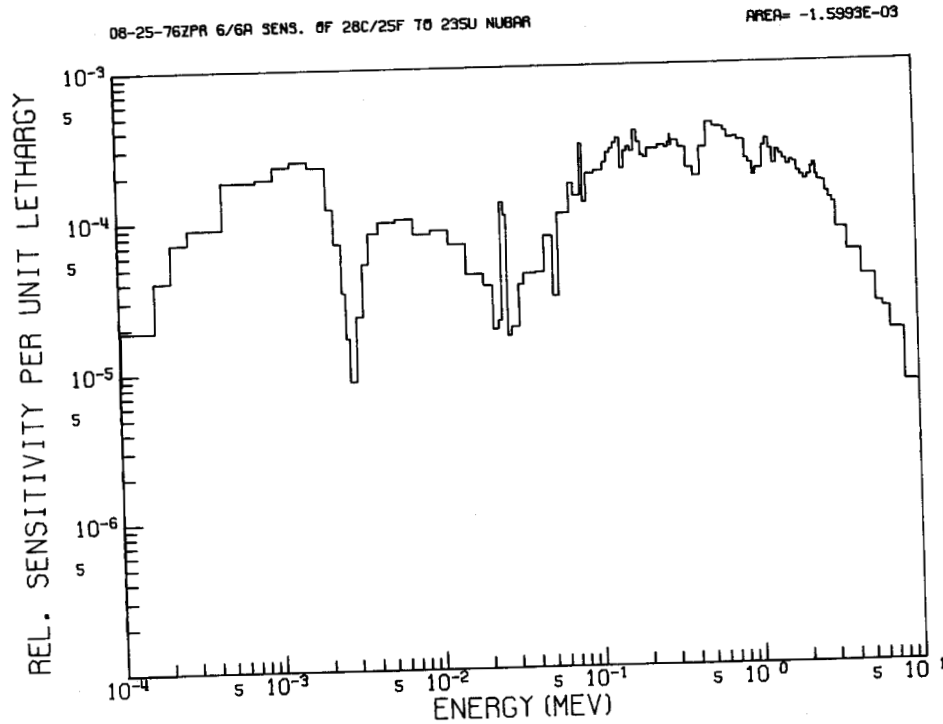


Fig. 111. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Neutron Yield per Fission.

ORNL DWG 76-5630

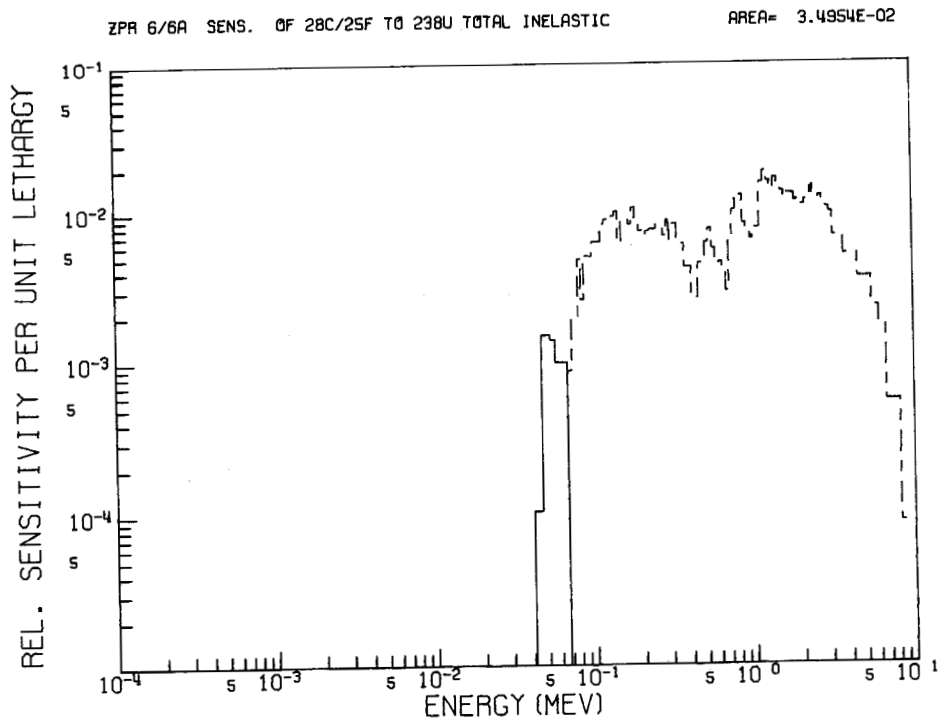


Fig. 112. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-5618

ZPR 6/6A SENS. OF 28C/25F TO 238U FISSION

AREA= 2.2404E-03

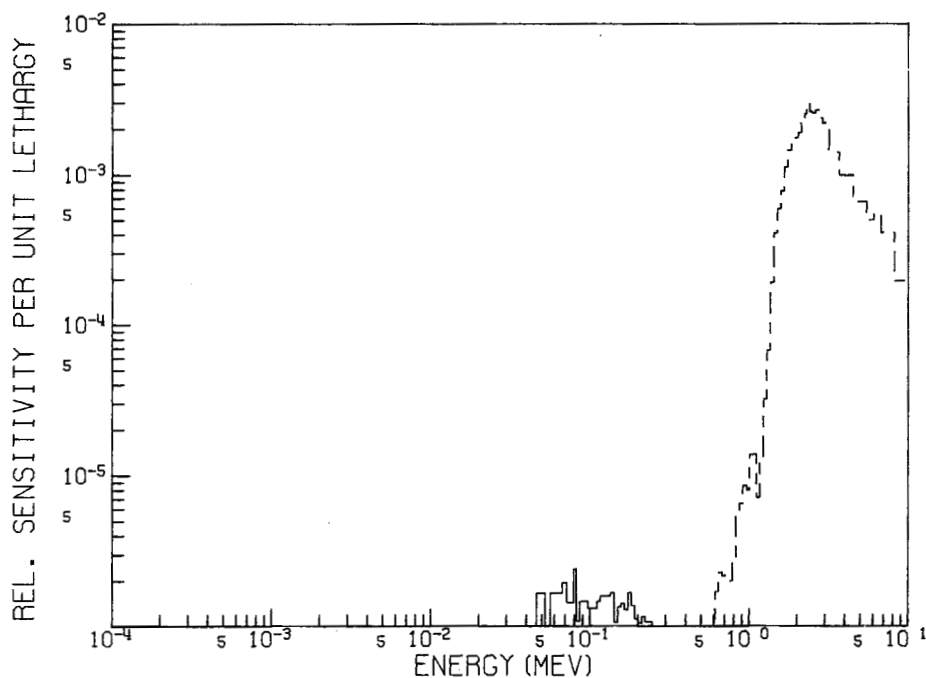


Fig. 113. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Fission Cross Section.

ORNL DWG 76-5635

ZPR 6/6A SENS. OF 28C/25F TO 238U CAPTURE

AREA= 9.6644E-01

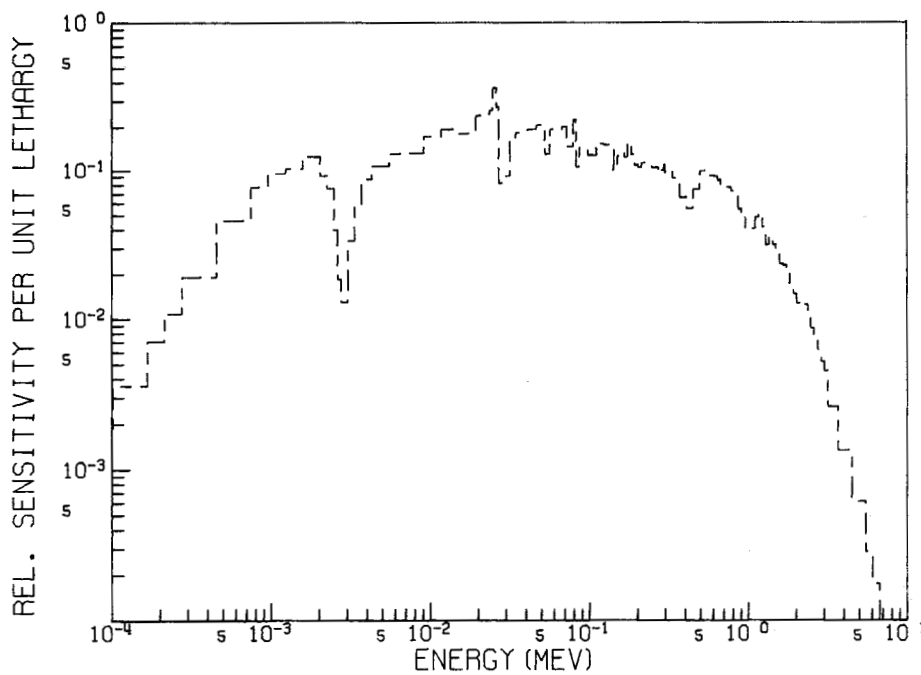


Fig. 114. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Capture Cross Section.

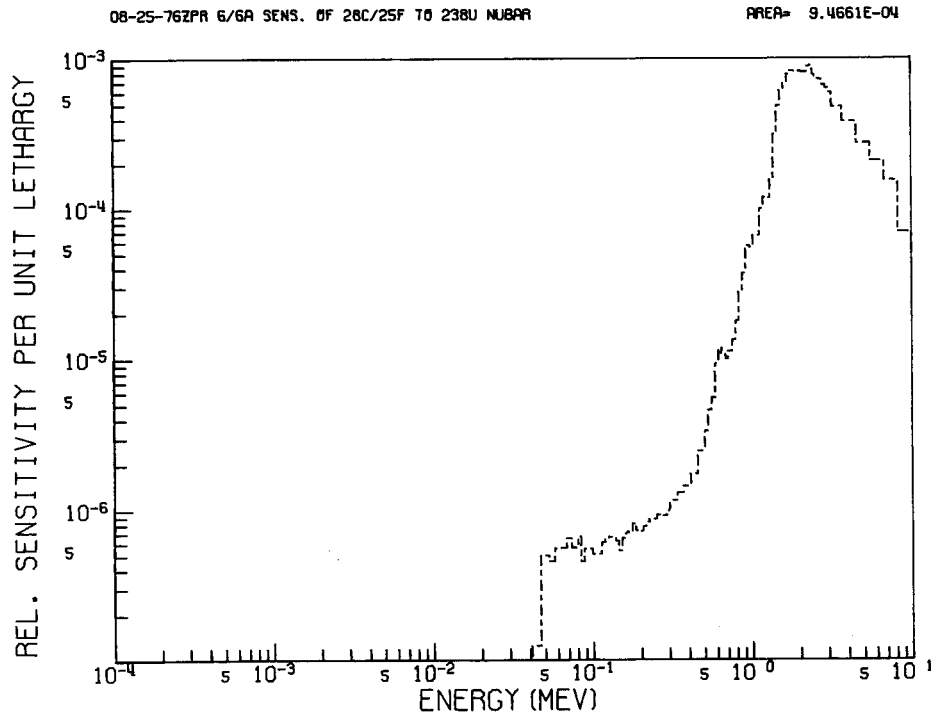


Fig. 115. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Neutron Yield per Fission.

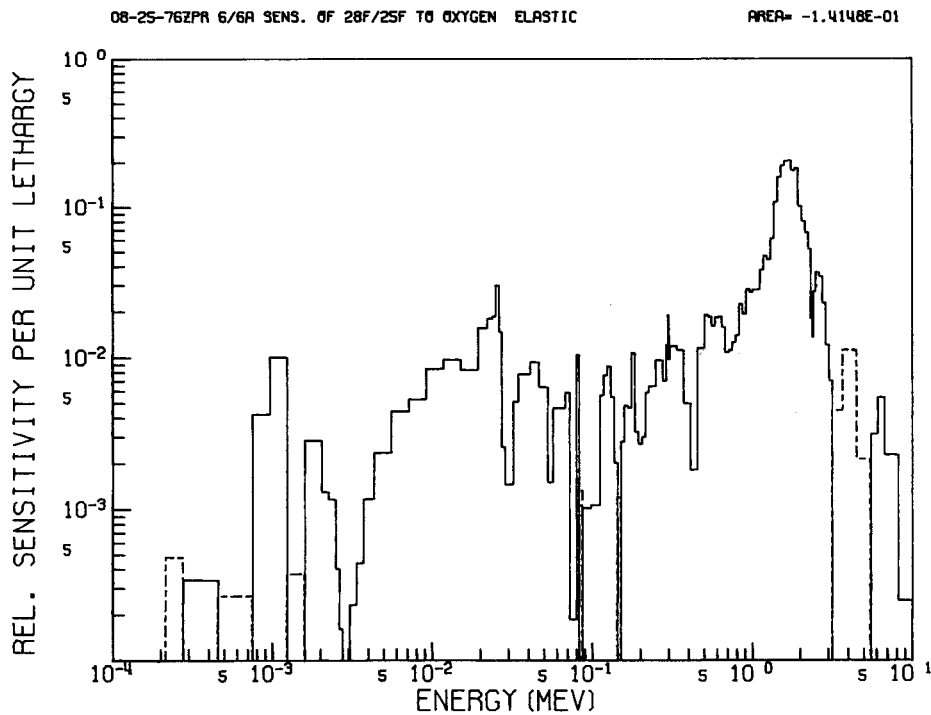


Fig. 116. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Oxygen Elastic Scattering Cross Section.

ORNL DWG 76-5638

ZPR 6/6A SEN. OF 28F/25F TO SODIUM ELASTIC

AREA= -6.8892E-02

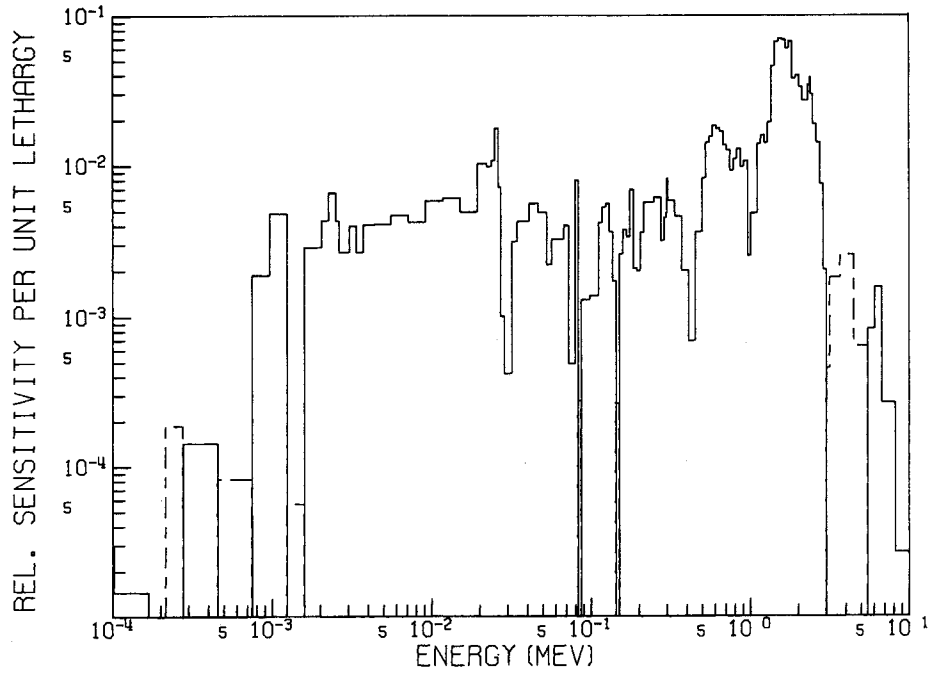


Fig. 117. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Elastic Scattering Cross Section.

ORNL DWG 76-5615

ZPR 6/6A SENS. OF 28F/25F TO SODIUM TOTAL INELASTIC

AREA= -8.1903E-02

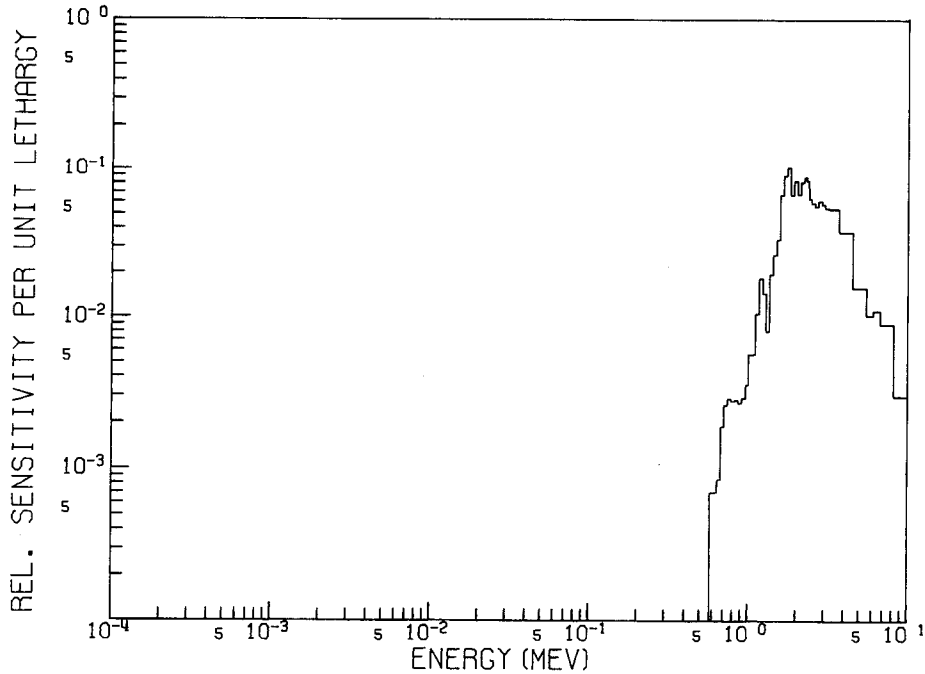


Fig. 118. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Inelastic Scattering Cross Section.

ORNL DWG 76-5644

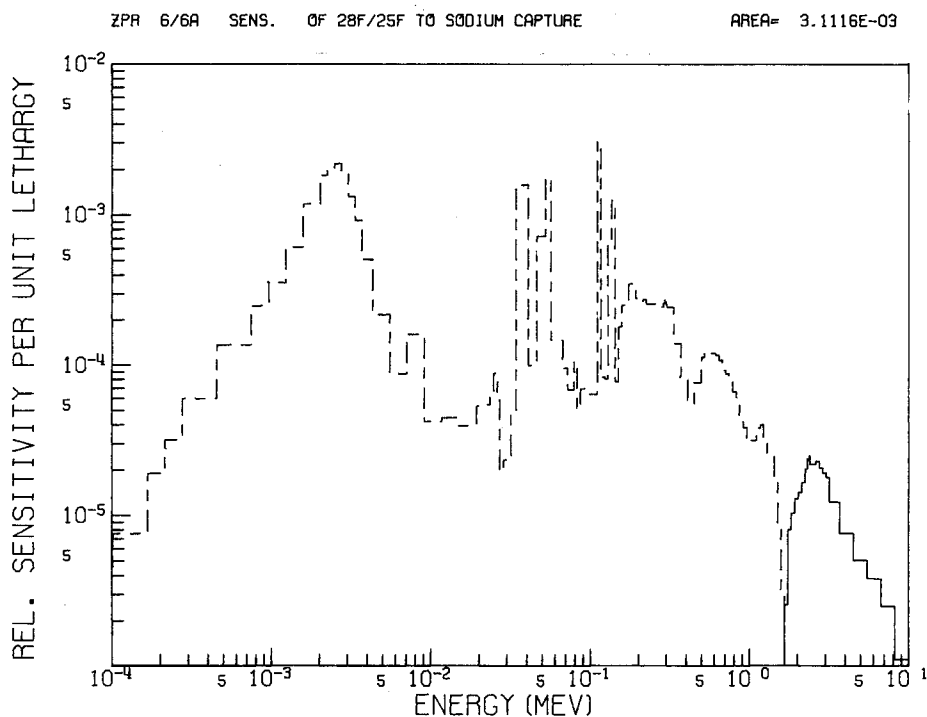


Fig. 119. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Sodium Capture Cross Section.

ORNL DWG 76-5611

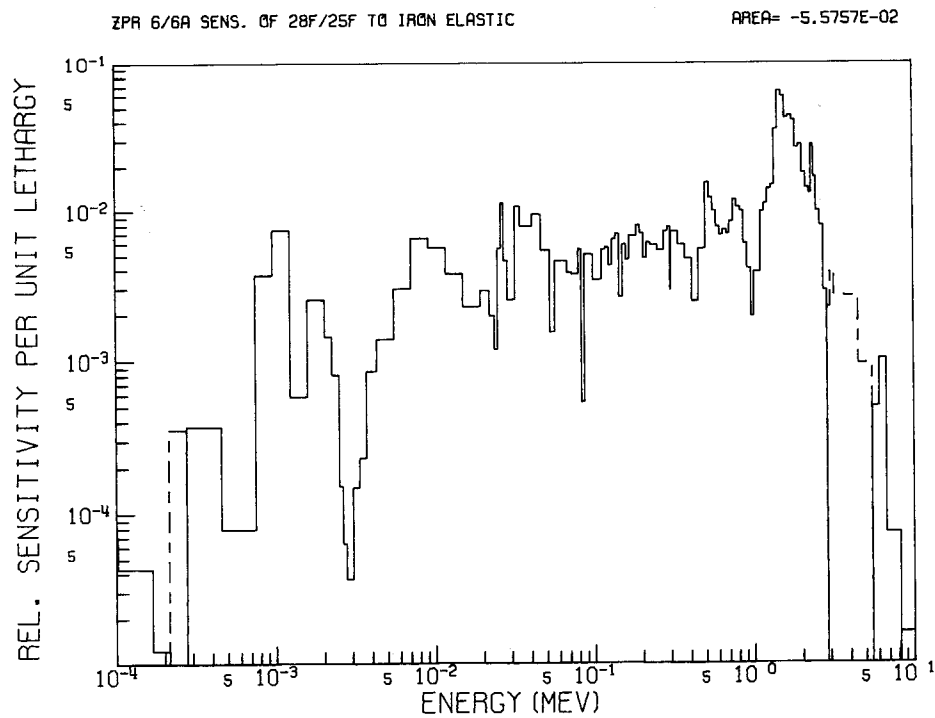


Fig. 120. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-5616

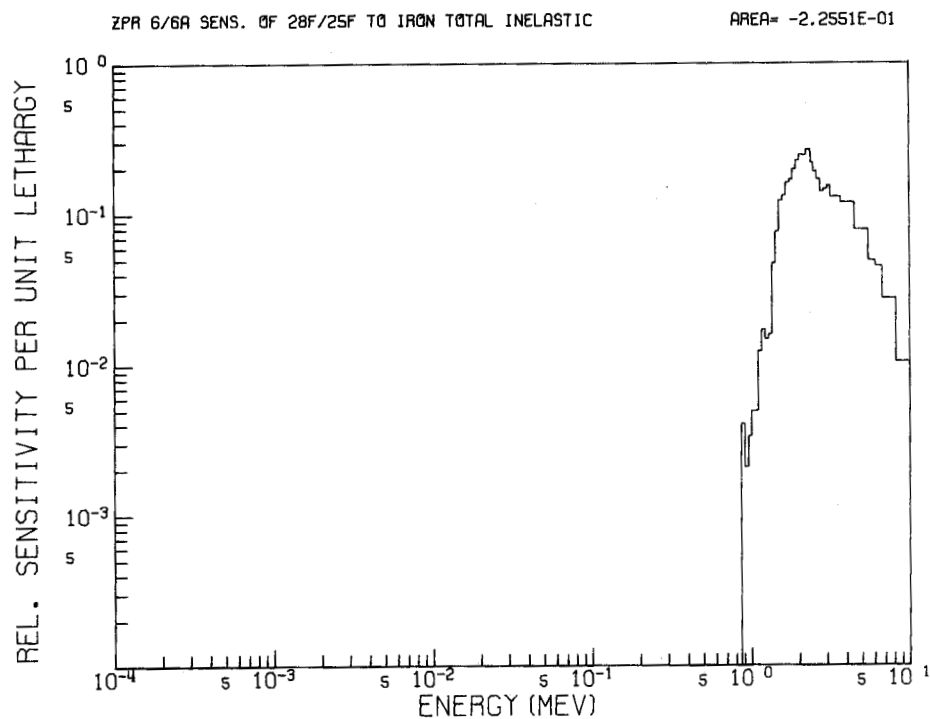


Fig. 121. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-5612

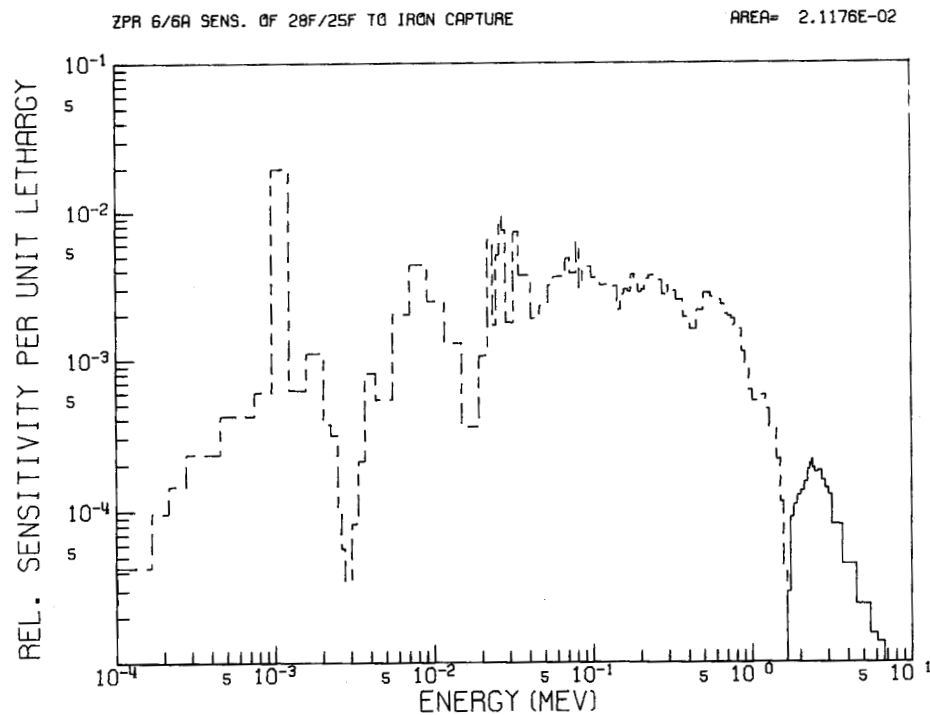


Fig. 122. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the Iron Capture Cross Section.

ORNL DWG 76-5525

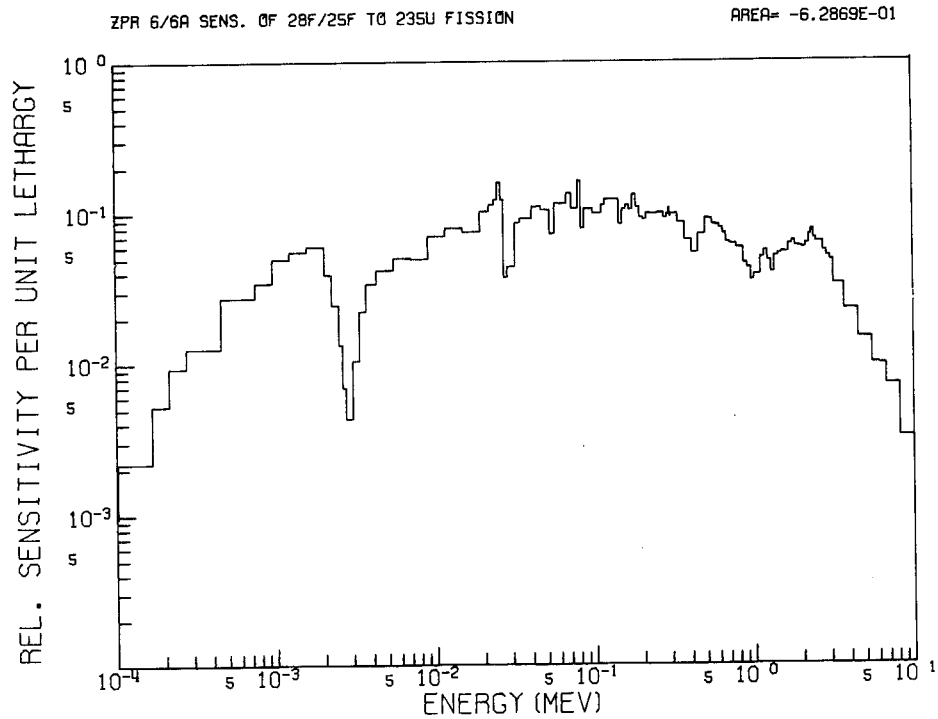


Fig. 123. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Fission Cross Section.

ORNL DWG 76-5688

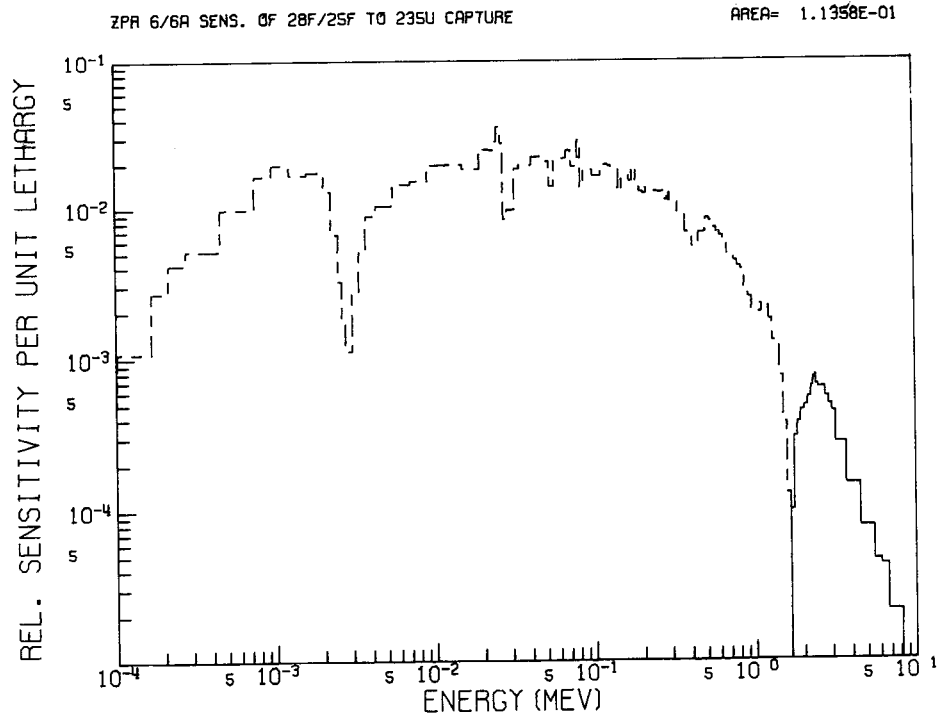


Fig. 124. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Capture Cross Section.

ORNL DWG 76-16115

08-25-76ZPR 6/6A SENS. OF 28F/25F TO 235U NUBAR

AREA= 1.2490E-02

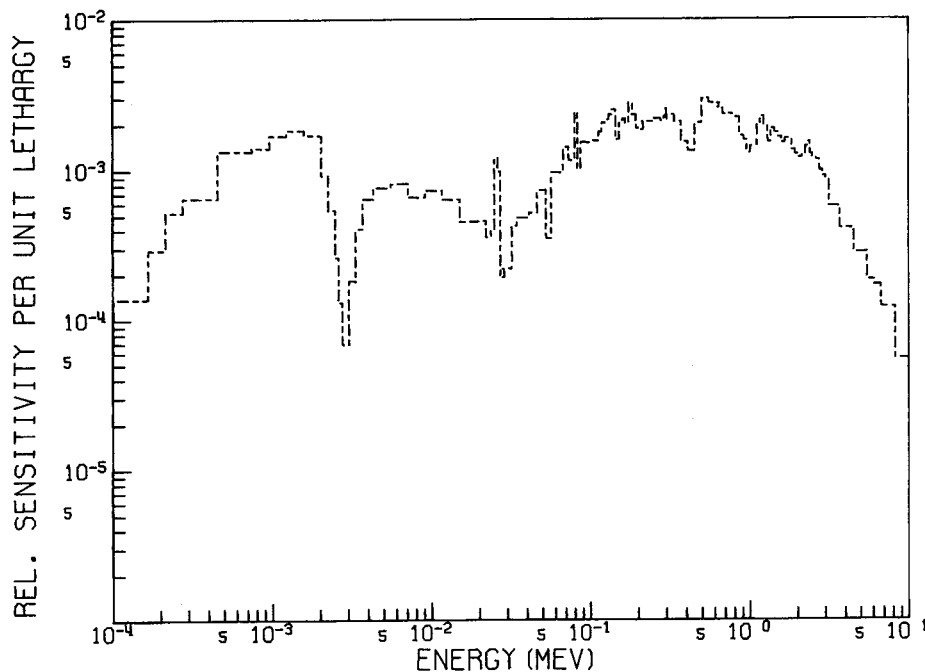


Fig. 125. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{235}U Neutron Yield per Fission.

ORNL DWG 76-5641

ZPR 6/6A SENS. OF 28F/25F TO 238U TOTAL INELASTIC

AREA= -2.7930E-01

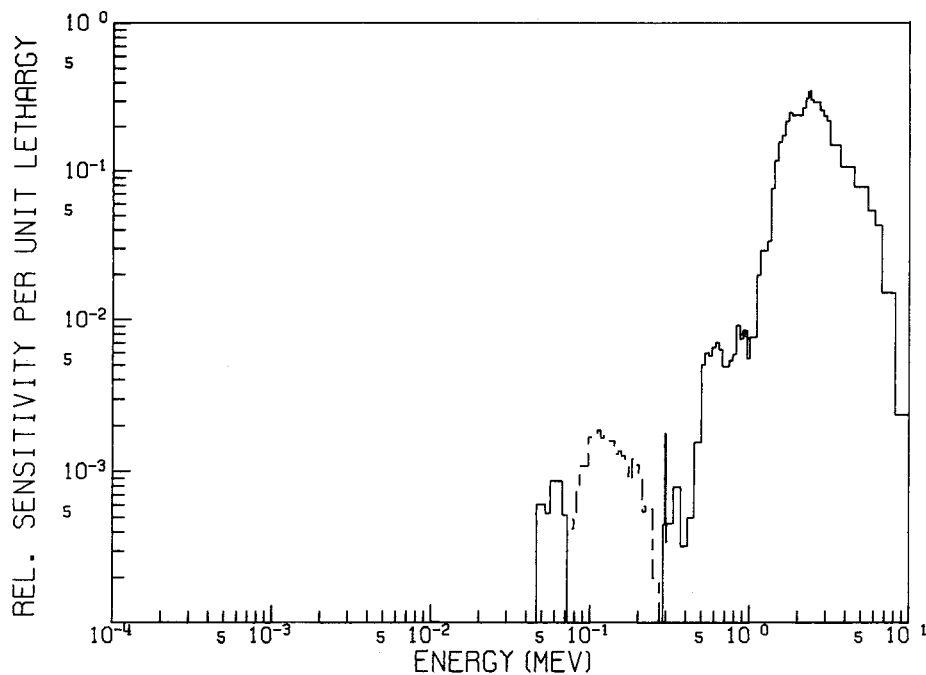


Fig. 126. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-5691

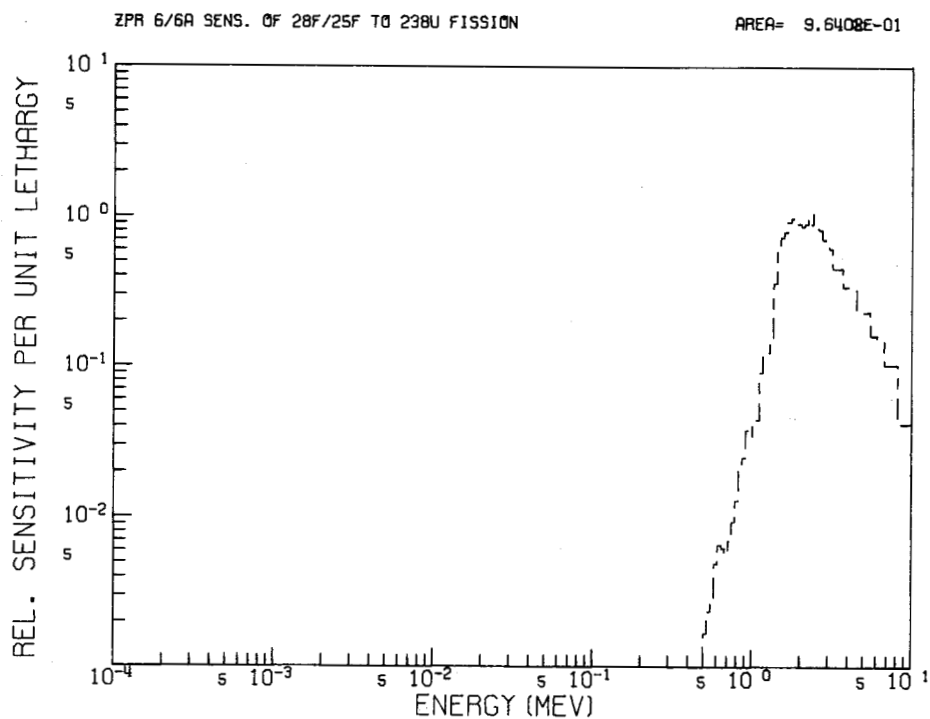


Fig. 127. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Fission Cross Section.

ORNL DWG 76-5645

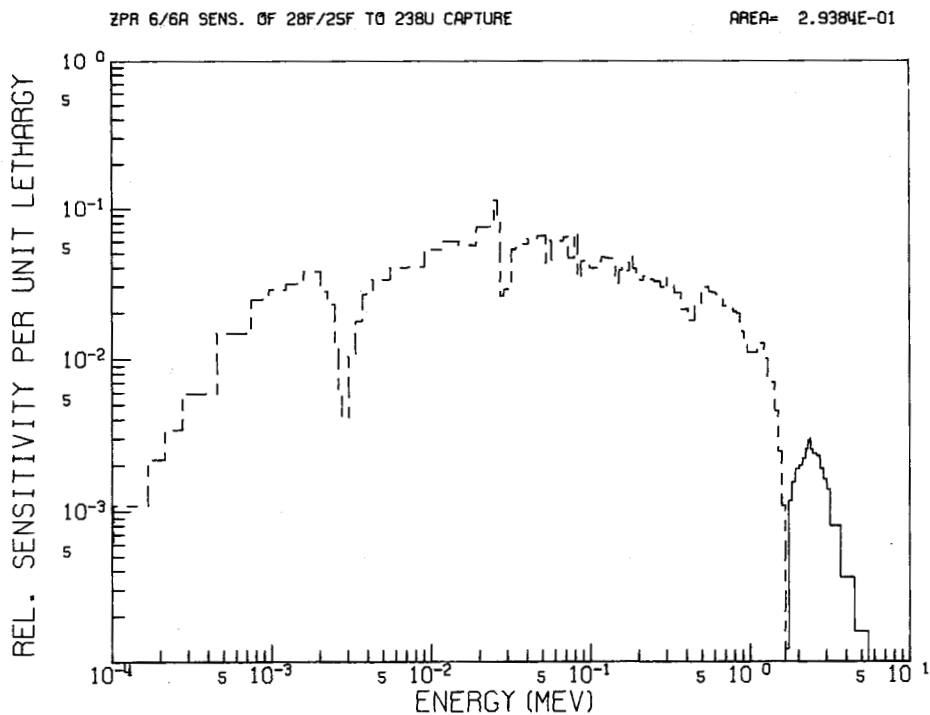


Fig. 128. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Capture Cross Section.

ORNL DWG 76-16116

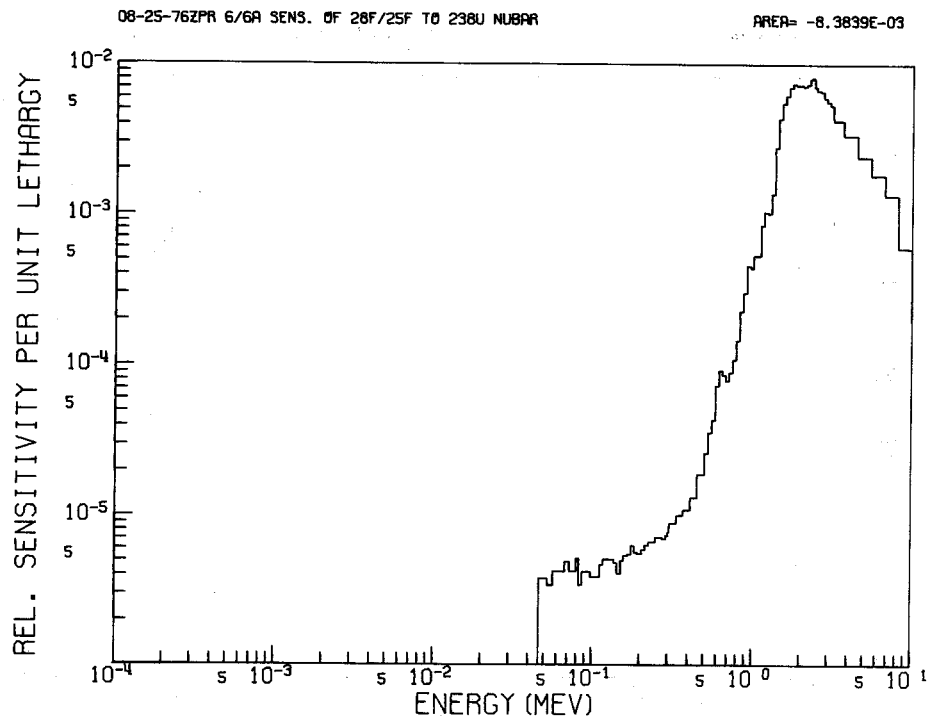


Fig. 129. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-6/6A to the ^{238}U Neutron Yield per Fission.

ORNL DWG 76-13292

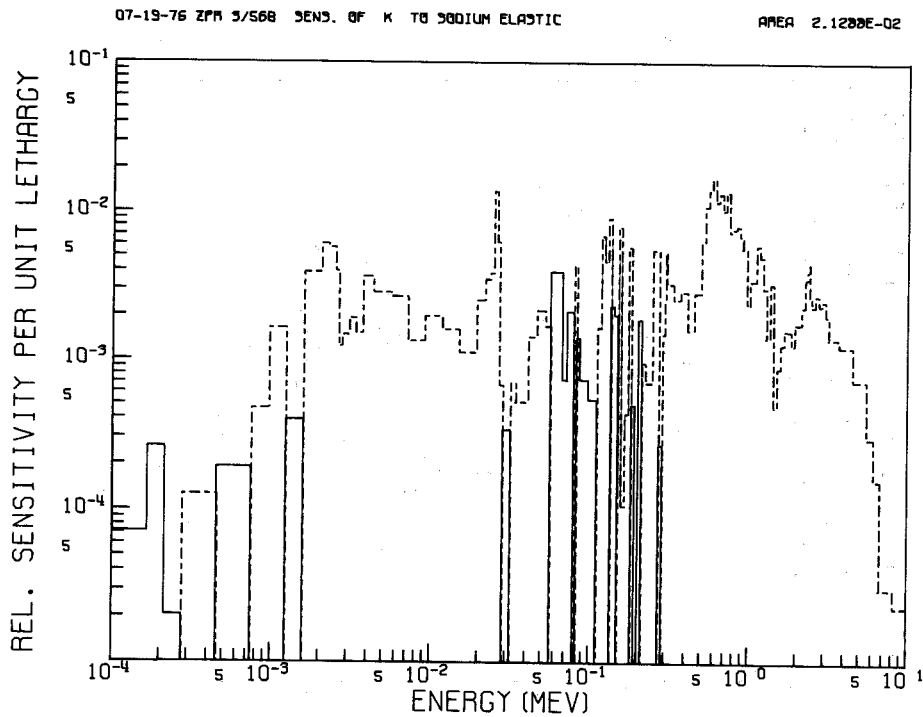


Fig. 130. Sensitivity of k in Assembly ZPR-3/56B to the Sodium Elastic Scattering Cross Section.

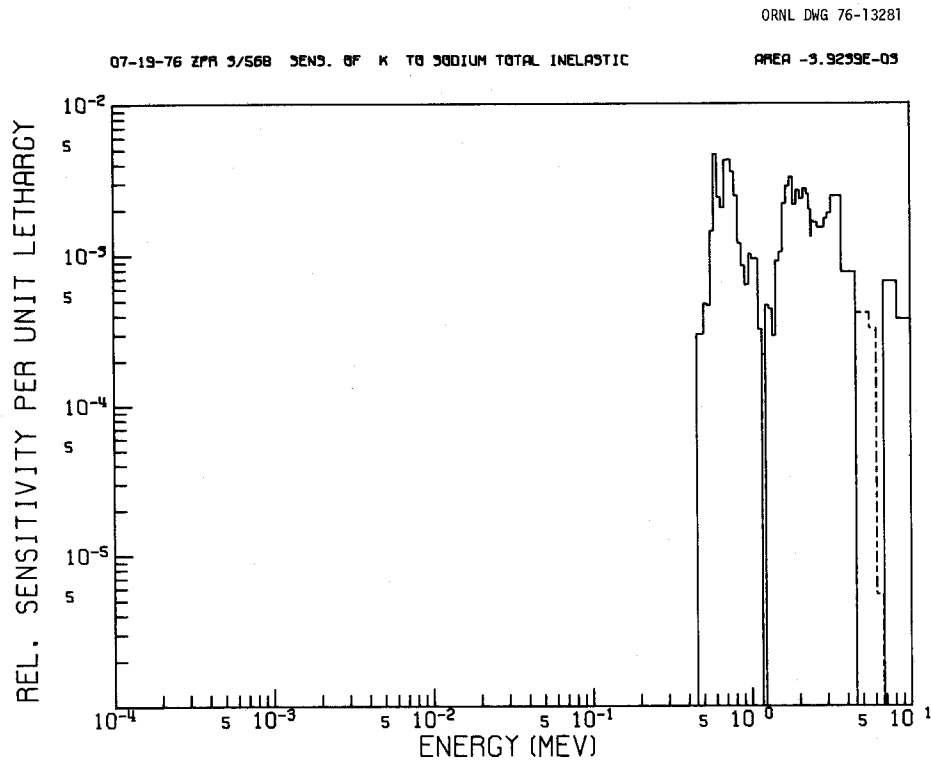


Fig. 131. Sensitivity of k in Assembly ZPR-3/56B to the Sodium Inelastic Scattering Cross Section.

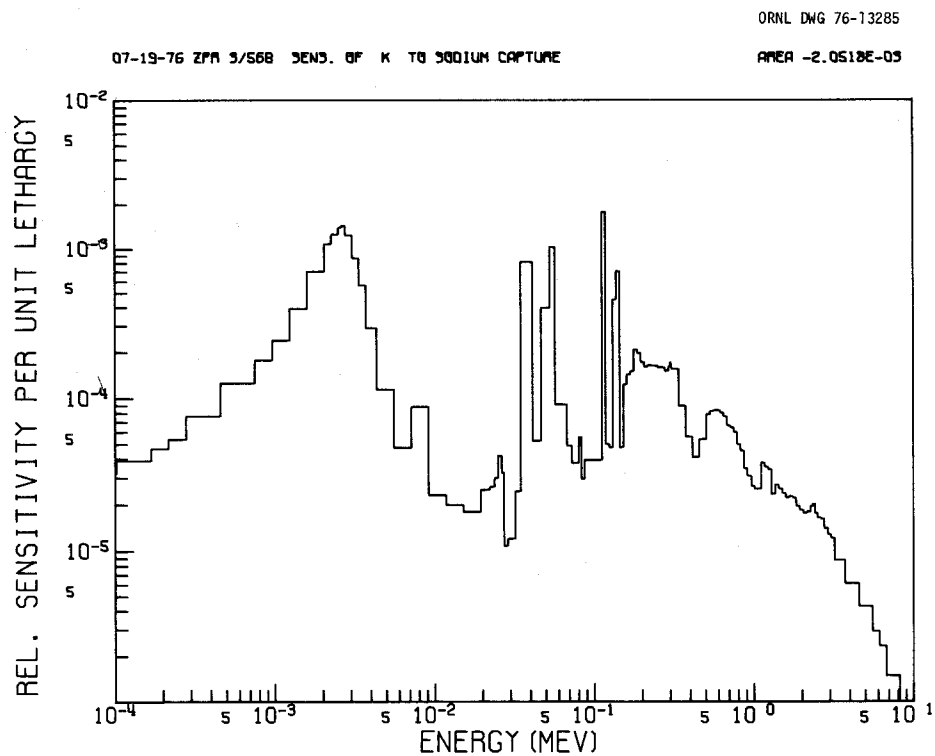


Fig. 132. Sensitivity of k in Assembly ZPR-3/56B to the Sodium Capture Cross Section.

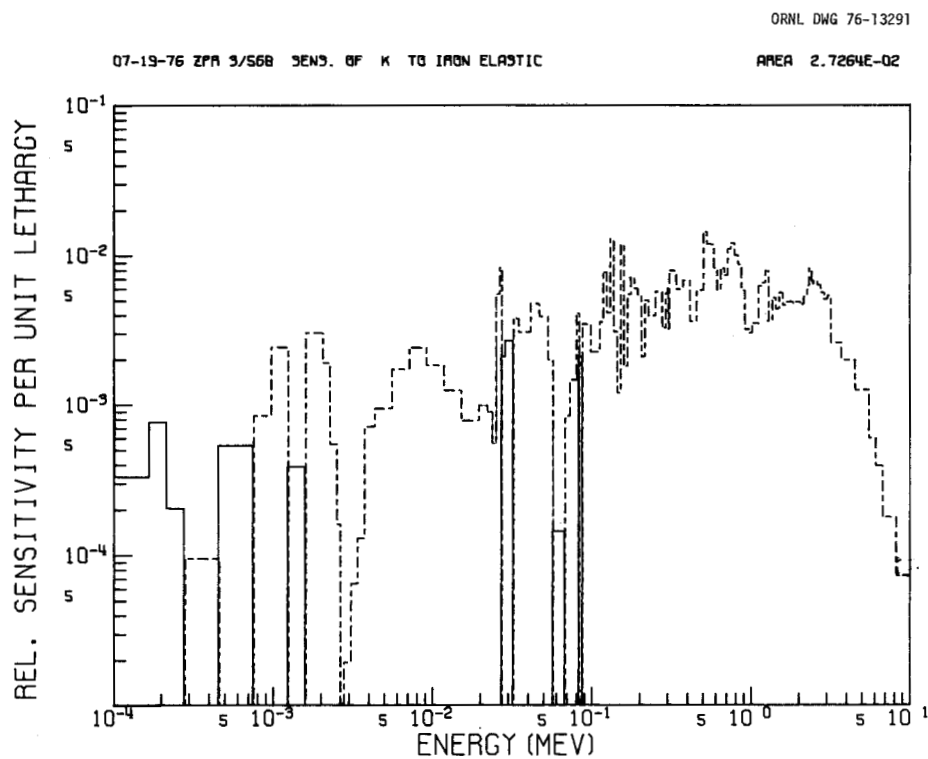


Fig. 133. Sensitivity of k in Assembly ZPR-3/56B to the Iron Elastic Scattering Cross Section.

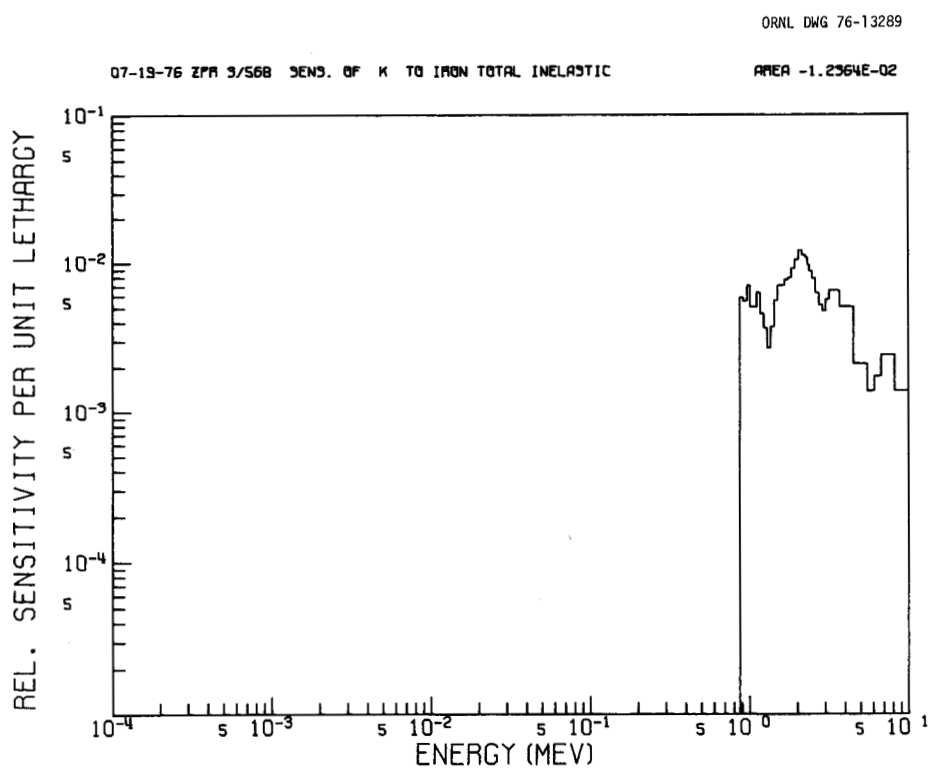


Fig. 134. Sensitivity of k in Assembly ZPR-3/56B to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-13293

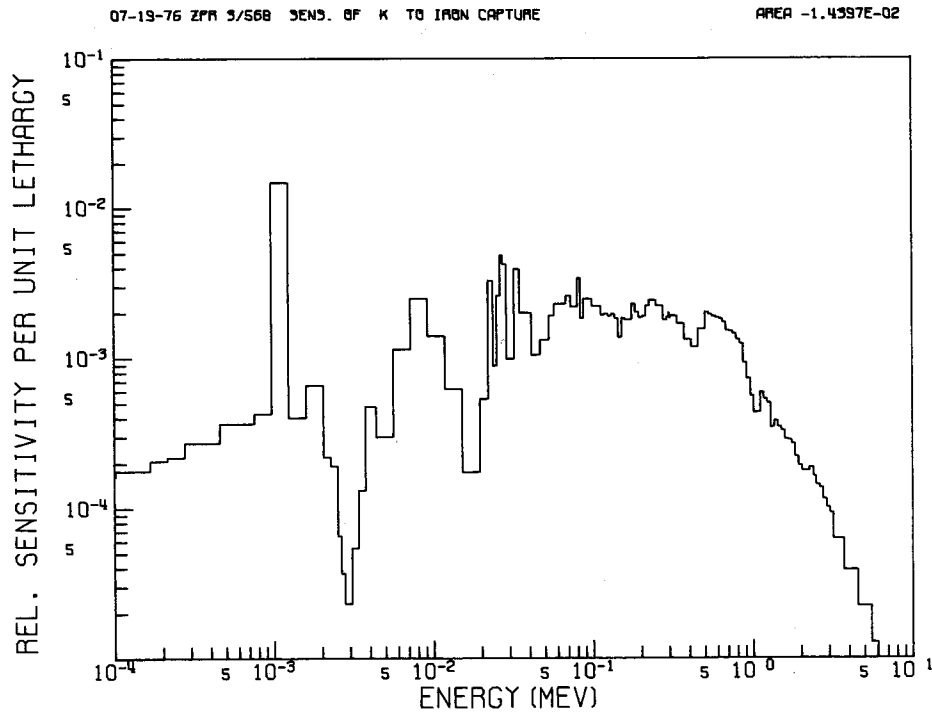


Fig. 135. Sensitivity of k in Assembly ZPR-3/56B to the Iron Capture Cross Section.

ORNL DWG 76-13290

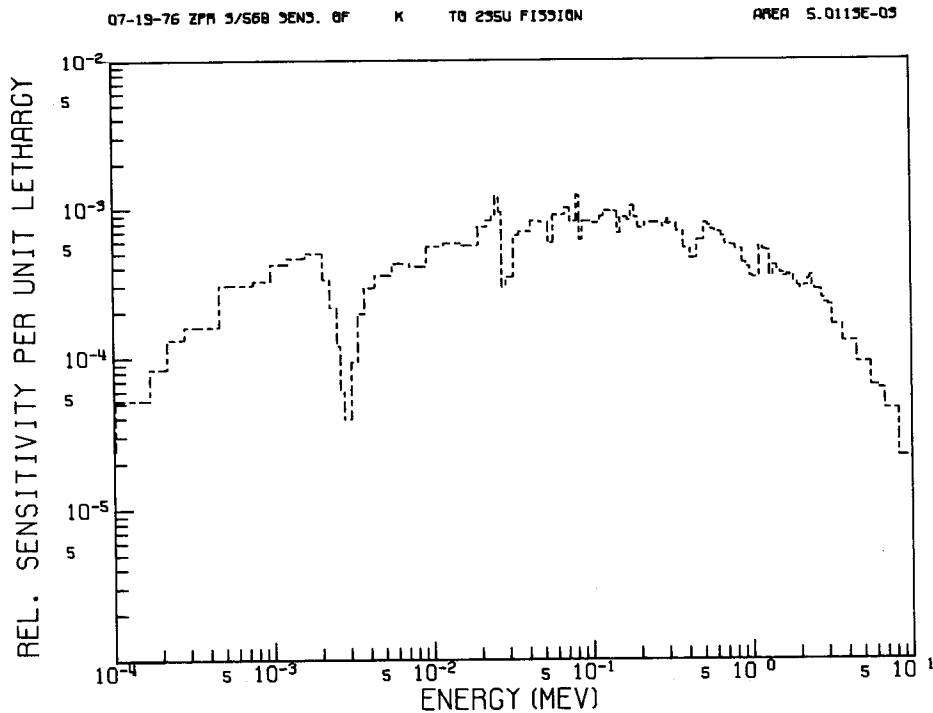


Fig. 136. Sensitivity of k in Assembly ZPR-3/56B to the ^{235}U Fission Cross Section.

ORNL DWG 76-13286

07-19-76 ZPR 3/56B SENS. OF K TO ^{238}U TOTAL INELASTIC

AREA -2.0690E-02

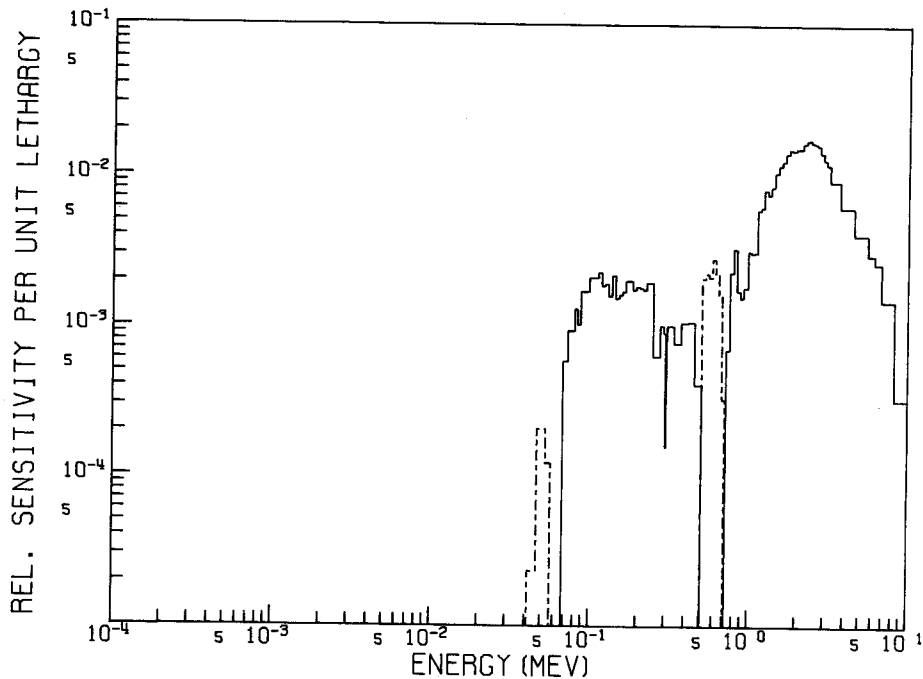


Fig. 137. Sensitivity of k in Assembly ZPR-3/56B to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-13282

07-19-76 ZPR 3/56B SENS. OF K TO ^{238}U FISSION

AREA 6.4395E-02

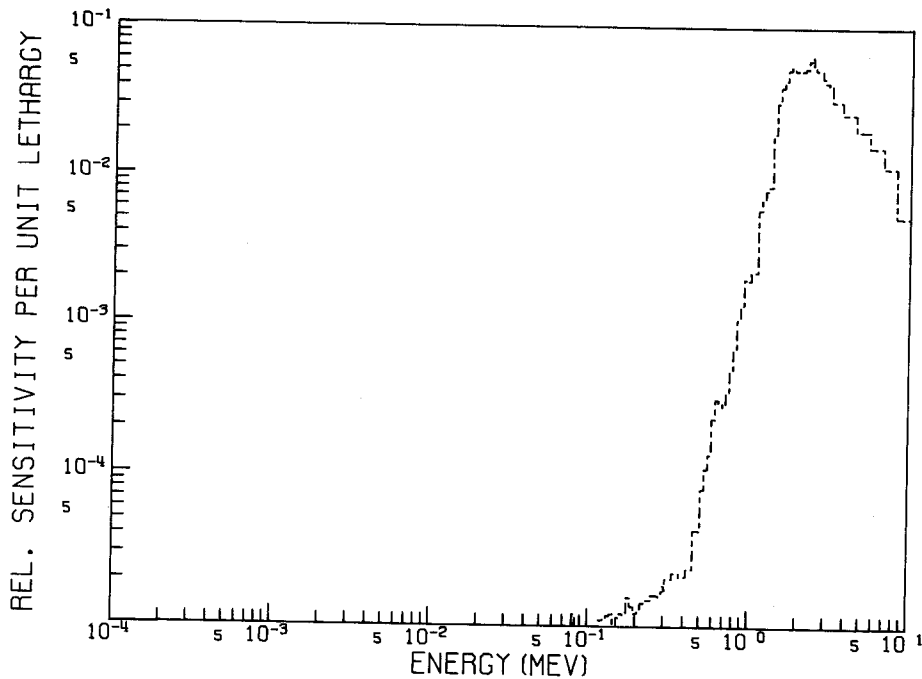


Fig. 138. Sensitivity of k in Assembly ZPR-3/56B to the ^{238}U Fission Cross Section.

ORNL DWG 76-13294

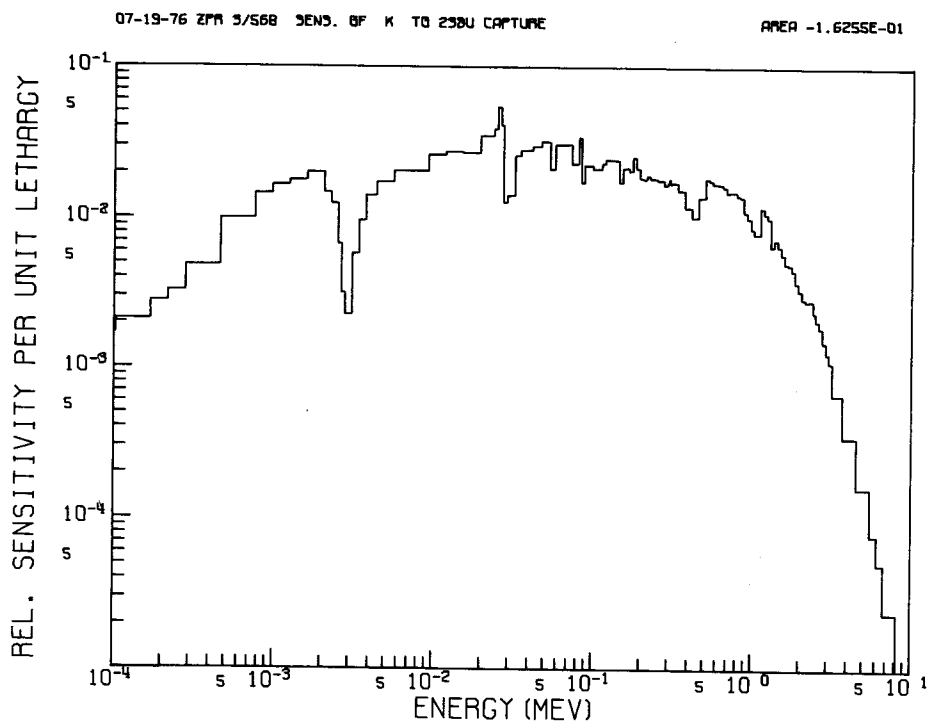


Fig. 139. Sensitivity of k in Assembly ZPR-3/56B to the ^{238}U Capture Cross Section.

ORNL DWG 76-13283

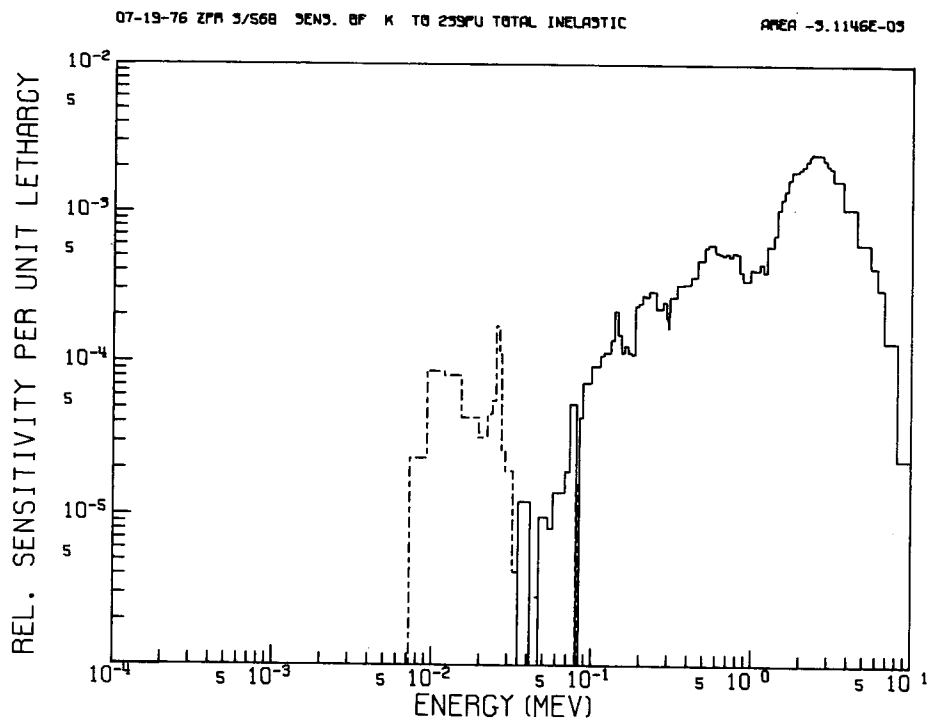


Fig. 140. Sensitivity of k in Assembly ZPR-3/56B to the ^{239}Pu Inelastic Scattering Cross Section.

ORNL DWG 76-13284

07-19-76 ZPR 3/56B SENS. OF K TO ^{239}Pu FISSION

AREA 6.0148E-01

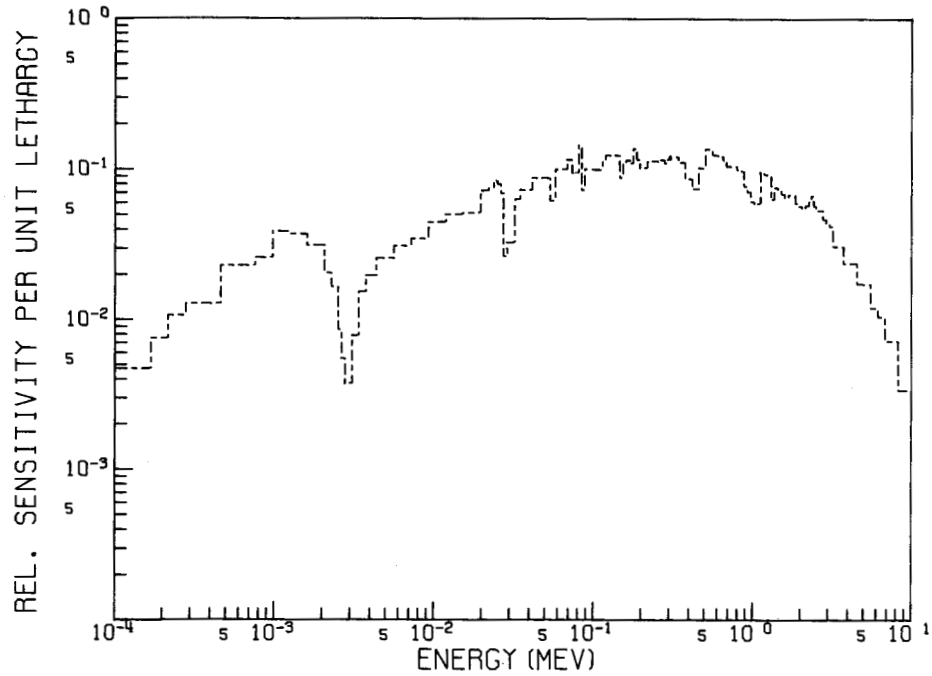


Fig. 141. Sensitivity of k in Assembly ZPR-3/56B to the ^{239}Pu Fission Cross Section.

ORNL DWG 76-13288

07-19-76 ZPR 3/56B SENS. OF K TO ^{239}Pu CAPTURE

AREA -6.7965E-02

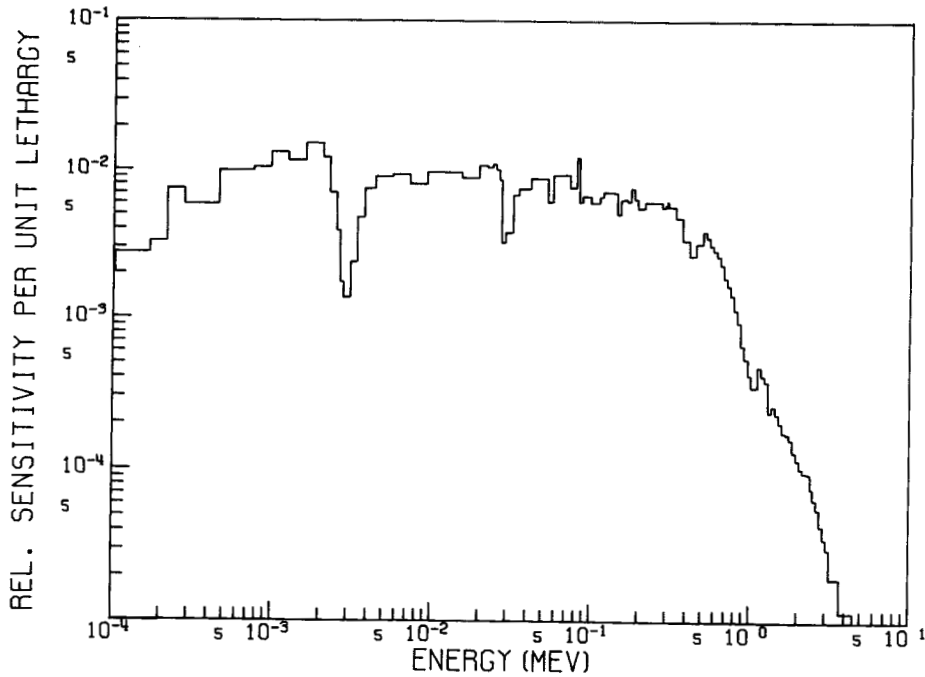


Fig. 142. Sensitivity of k in Assembly ZPR-3/56B to the ^{239}Pu Capture Cross Section.

ORNL DWG 76-13287

07-19-76 ZPR 3/568 SENS. OF K TO ^{240}Pu FISSION

AREA 1.9207E-02

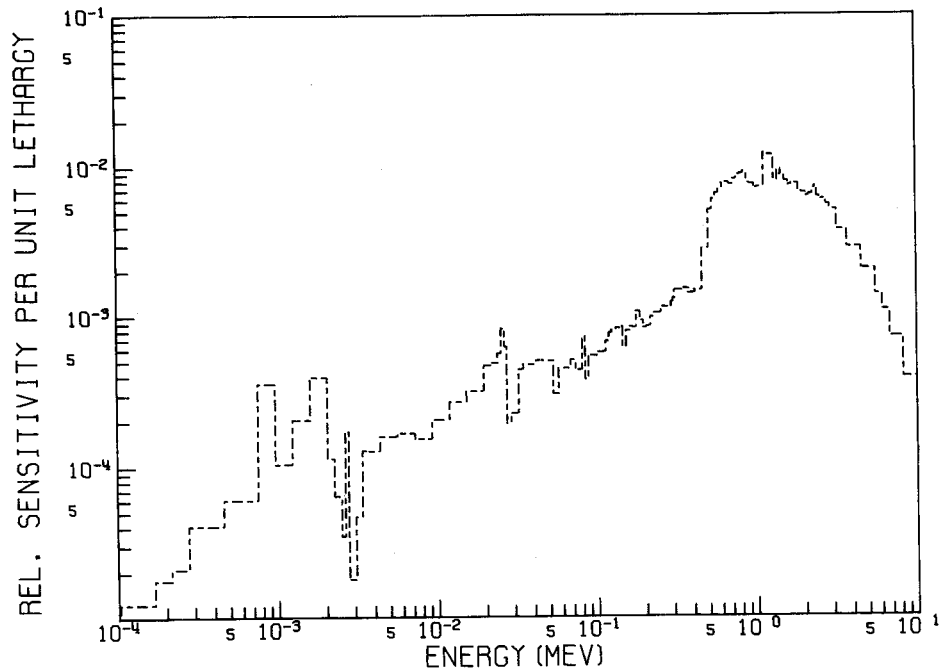


Fig. 143. Sensitivity of k in Assembly ZPR-3/56B to the ^{240}Pu Fission Cross Section.

ORNL DWG 76-5700

ZPR 3/568 SENS. OF ^{238}U FISSION/ ^{235}U FISSION CENTRAL REACTION RATIO TO SODIUM ELASTIC

AREA= -9.5024E-02

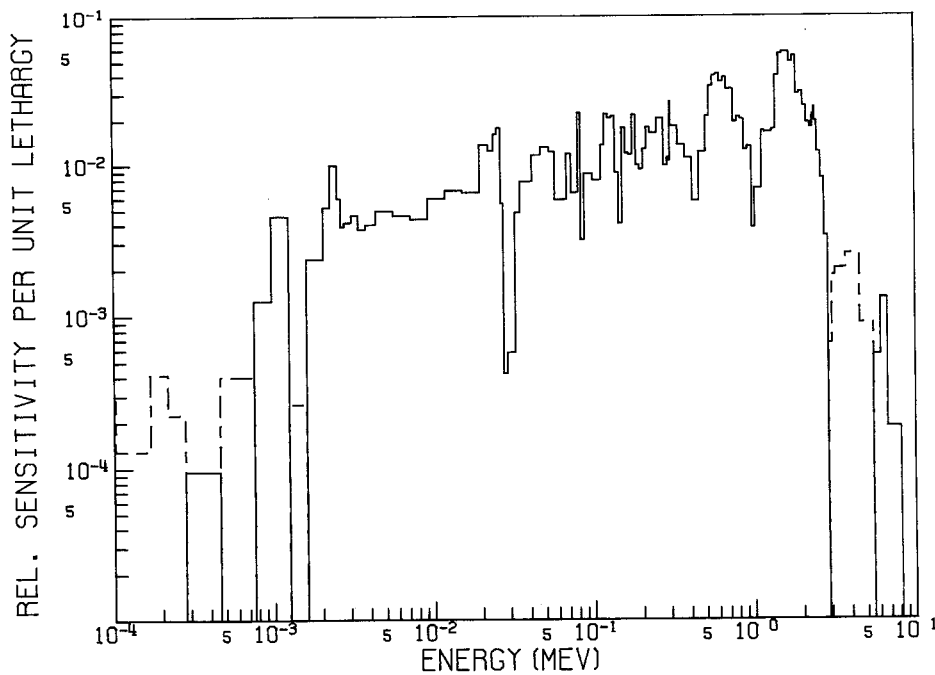


Fig. 144. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Elastic Scattering Cross Section.

ORNL DWG 76-5600

ZPR 3/56B SENS. OF 28F/25F TO SODIUM TOTAL INELASTIC

AREA= -7.3269E-02

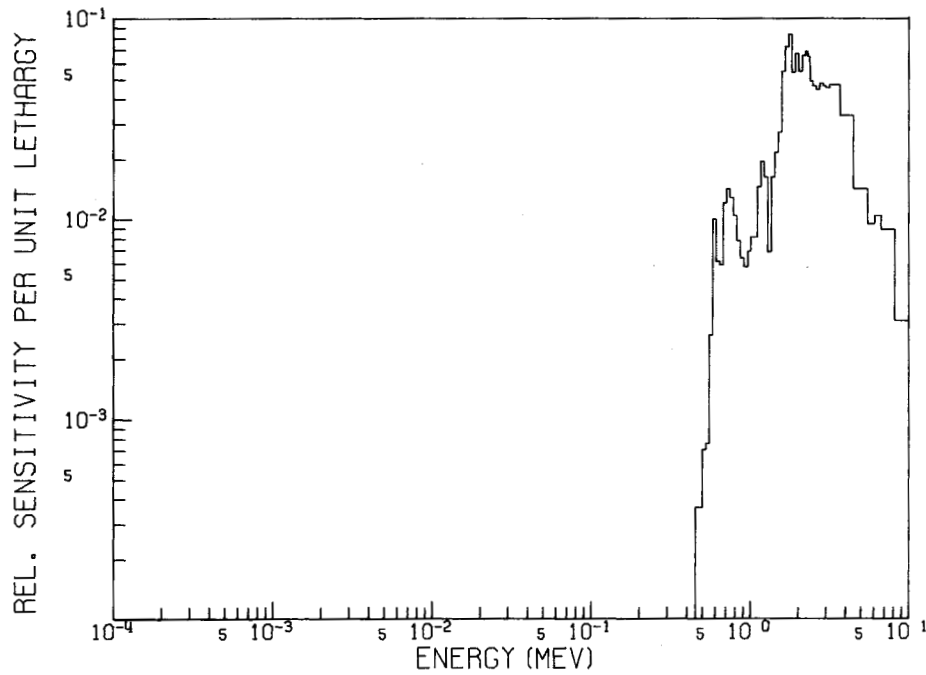


Fig. 145. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Inelastic Scattering Cross Section.

ORNL DWG 76-5592

ZPR 3/56B SENS. OF 28F/25F TO SODIUM CAPTURE

AREA= 3.0982E-03

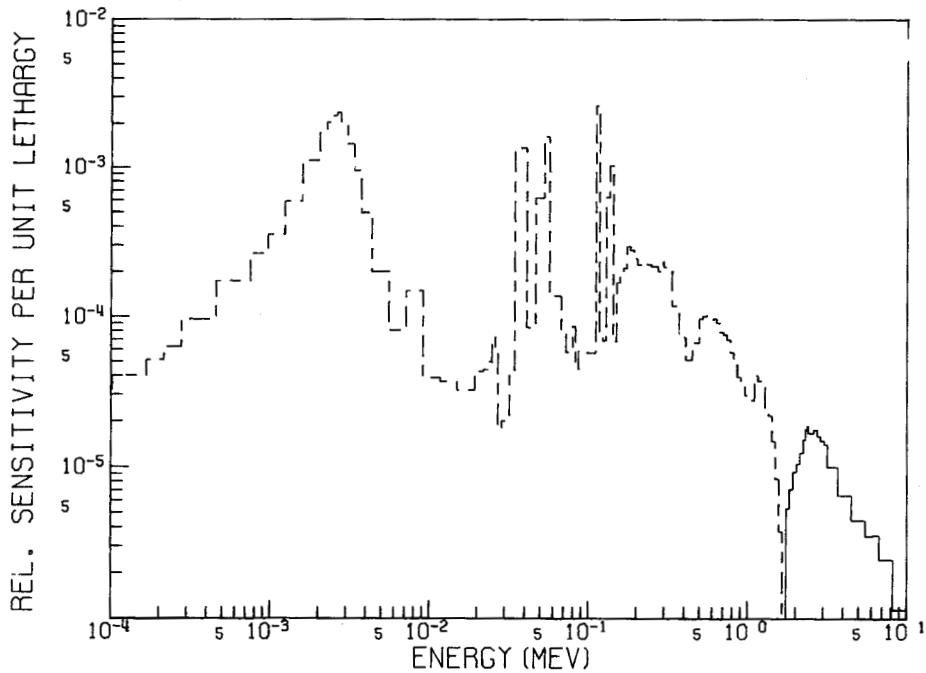


Fig. 146. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Capture Cross Section.

ORNL DWG 76-5594

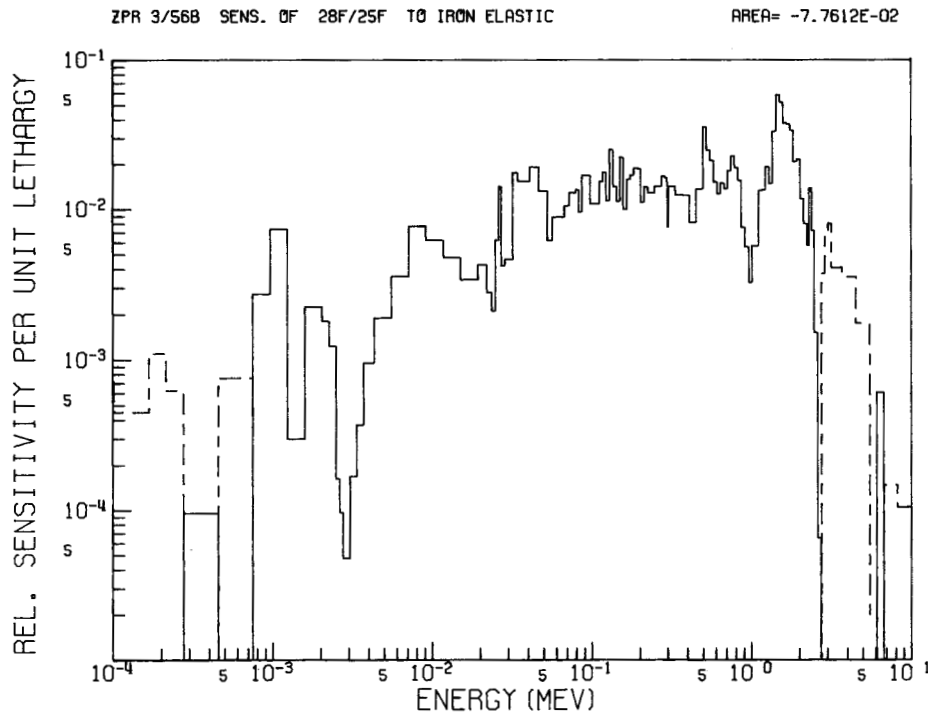


Fig. 147. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-5598

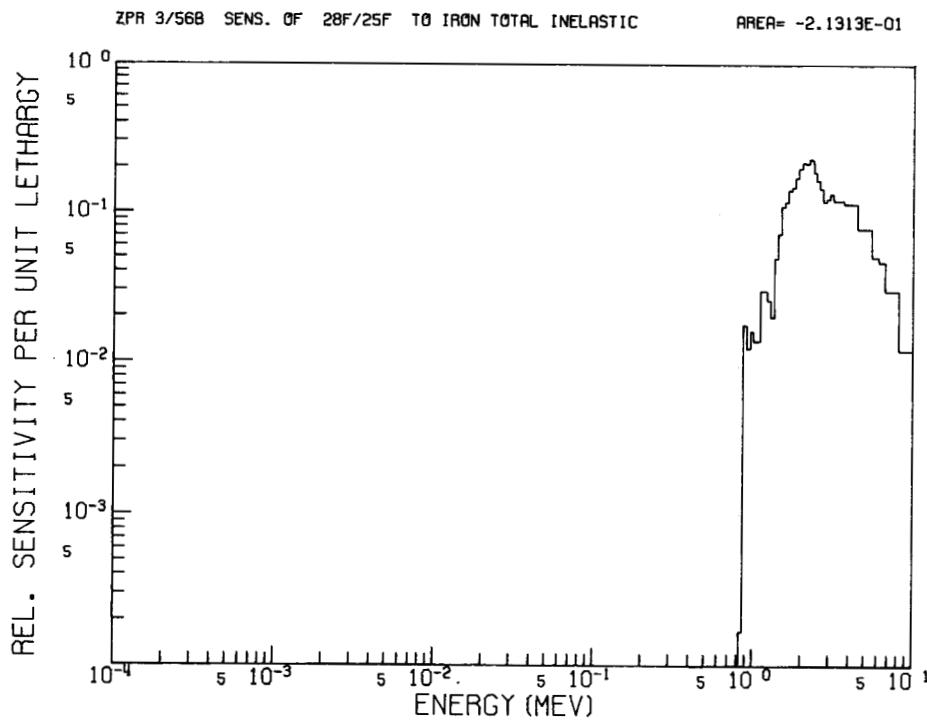


Fig. 148. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-5597

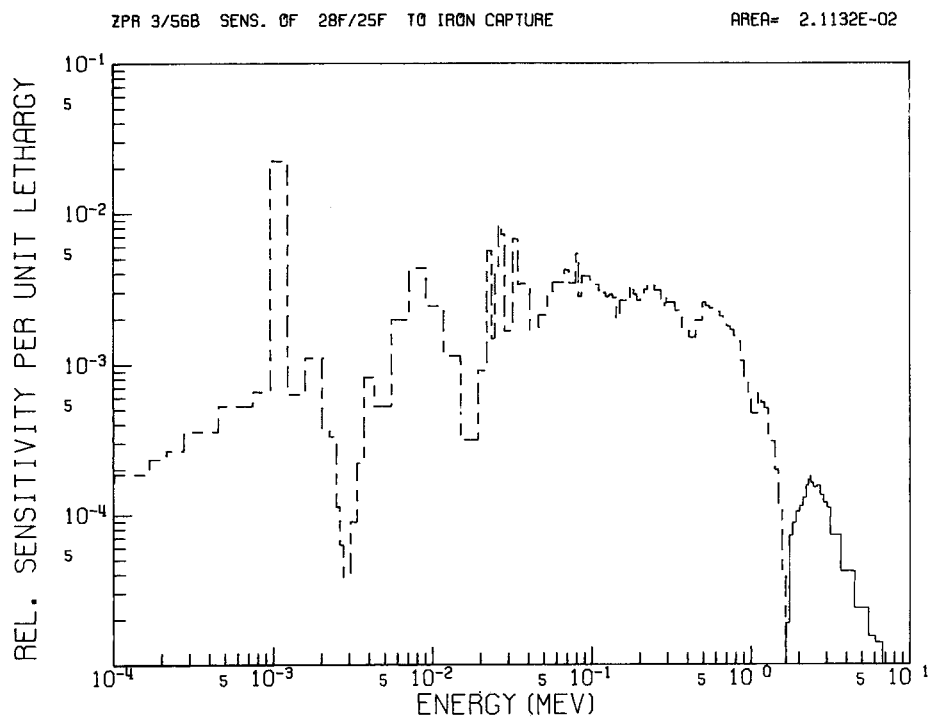


Fig. 149. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Capture Cross Section.

ORNL DWG 76-13264

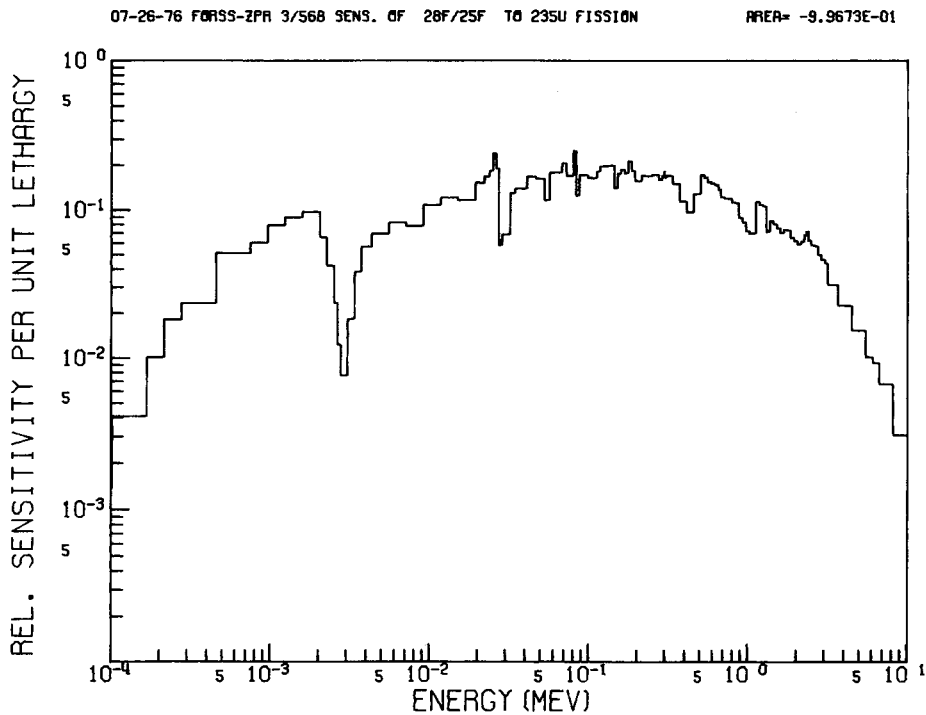


Fig. 150. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{235}U Fission Cross Section.

ORNL DWG 76-5696

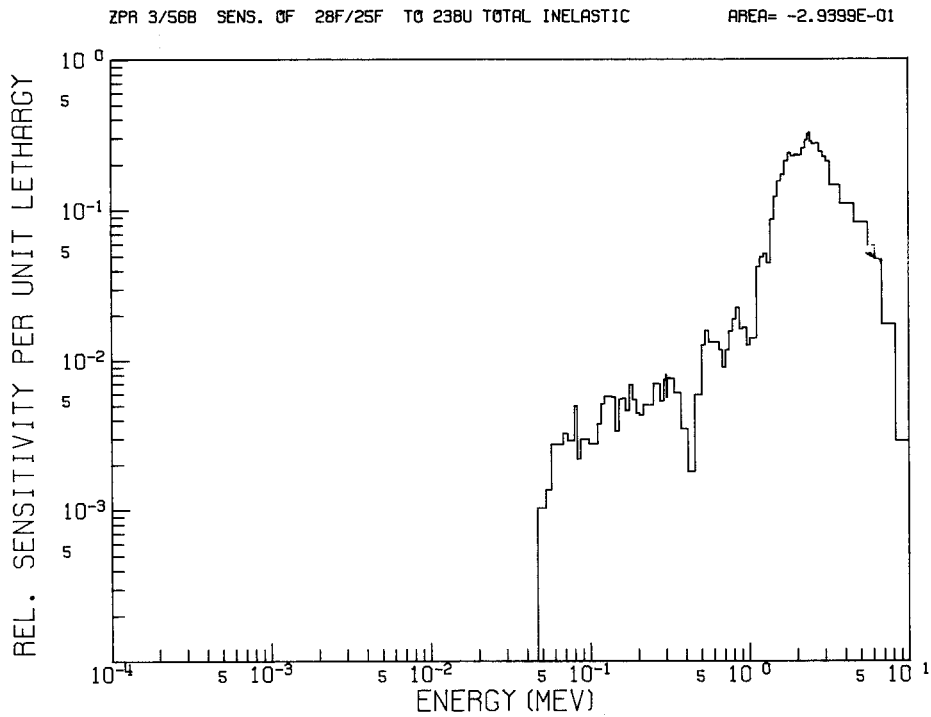


Fig. 151. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-13263

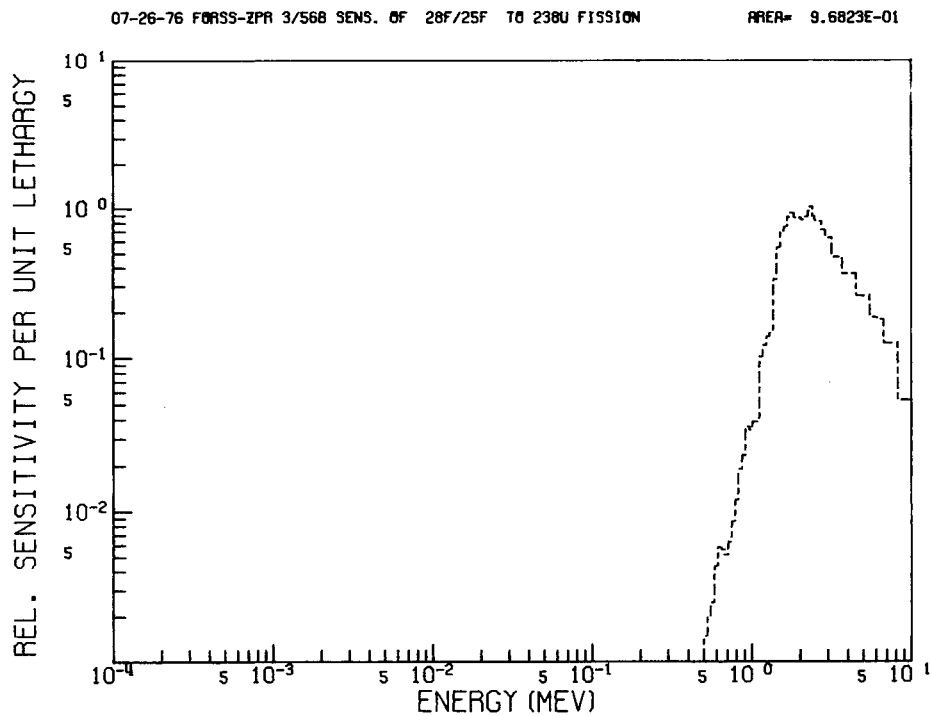


Fig. 152. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Fission Cross Section.

ORNL DWG 76-5693

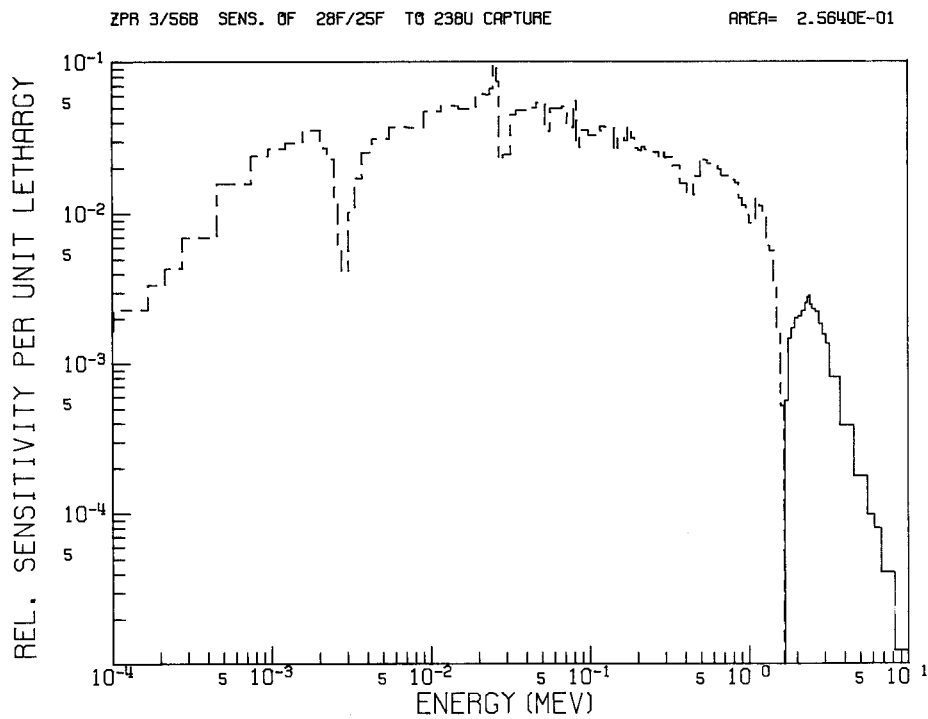


Fig. 153. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Capture Cross Section.

ORNL DWG 76-5702

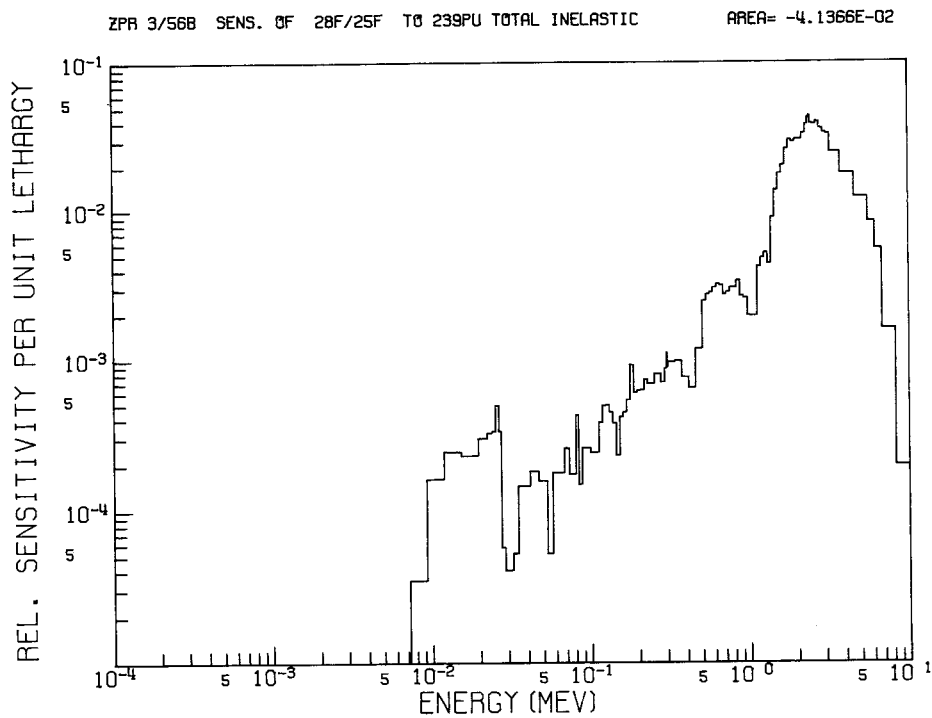


Fig. 154. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Inelastic Scattering Cross Section.

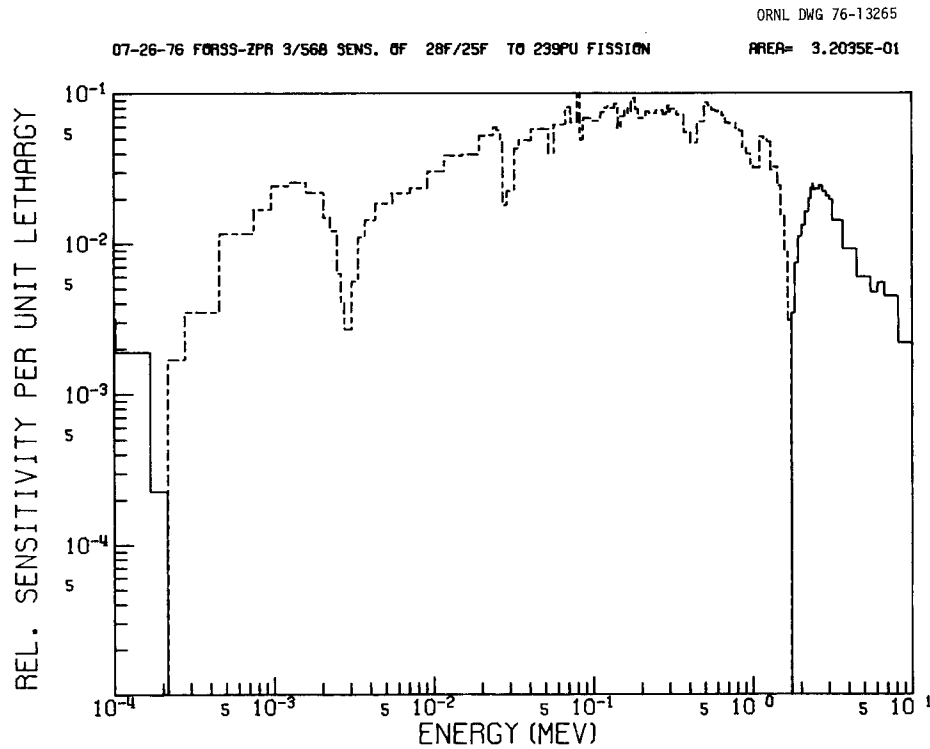


Fig. 155. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Fission Cross Section.

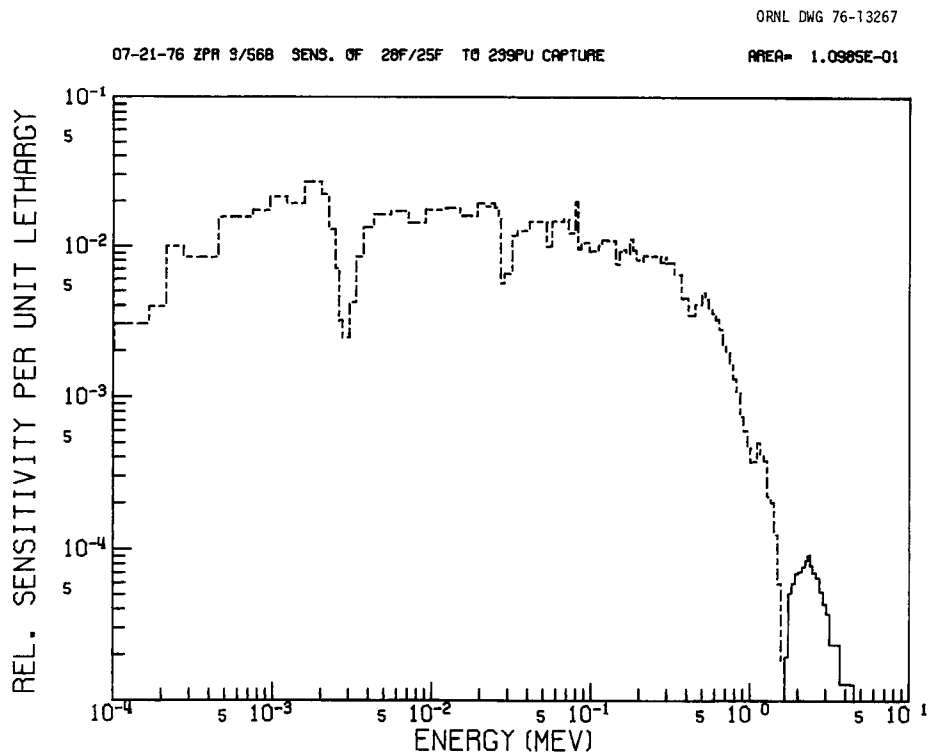


Fig. 156. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Capture Cross Section.

ORNL DWG 76-13266

07-26-76 FORSS-ZPR 3/56B SENS. OF 28F/25F TO 240PU FISSION

AREA= 4.2403E-03

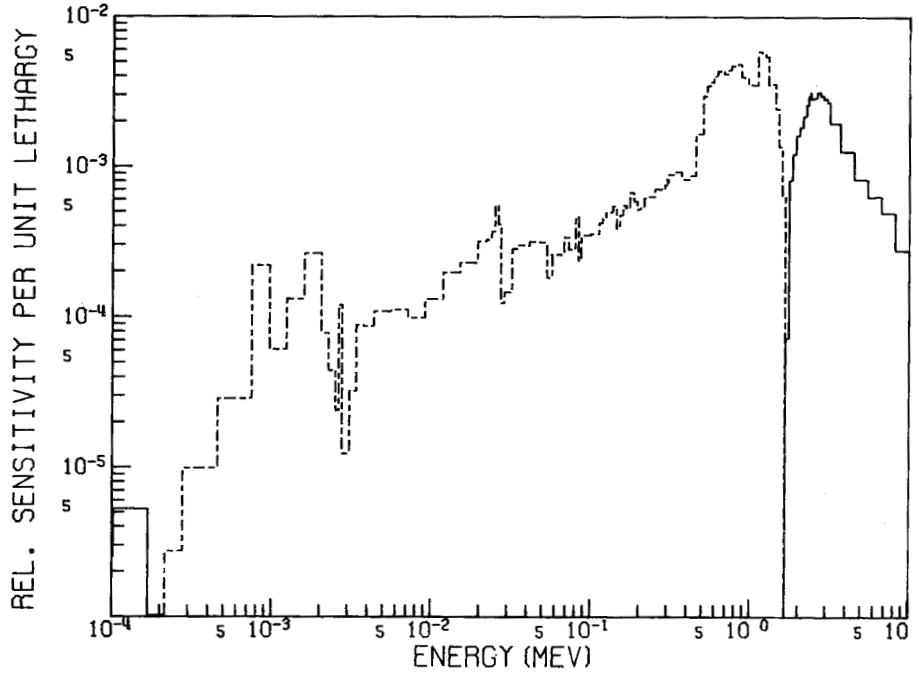


Fig. 157. Sensitivity of ²³⁸U Fission/²³⁵U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ²⁴⁰Pu Fission Cross Section.

ORNL DWG 76-6094

ZPR 3/56B SENS. OF 49F/25F TO SODIUM ELASTIC

AREA= -4.1465E-02

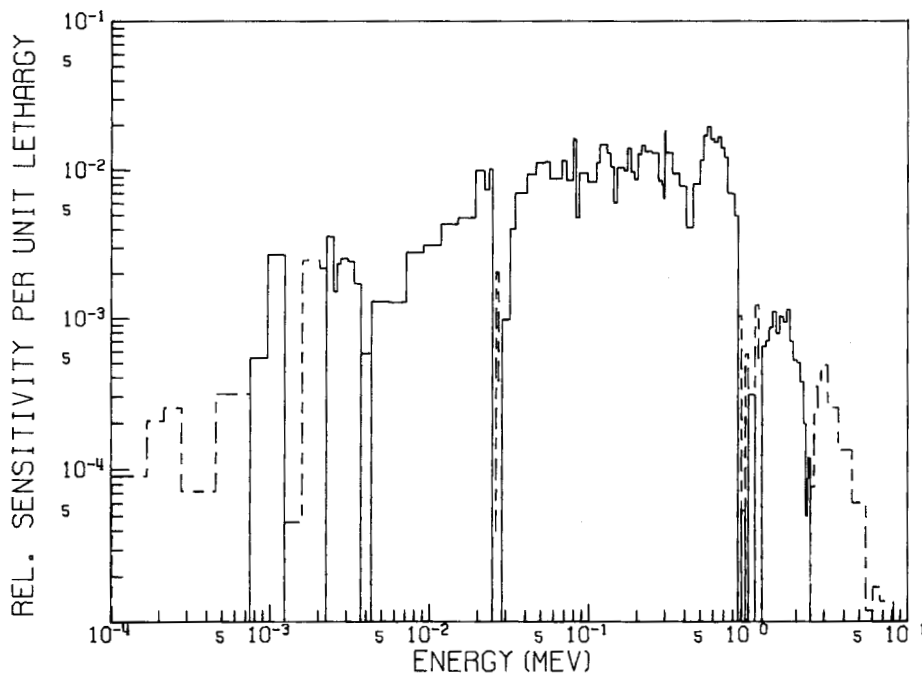


Fig. 158. Sensitivity of the ²³⁹Pu Fission/²³⁵U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Elastic Scattering Cross Section.

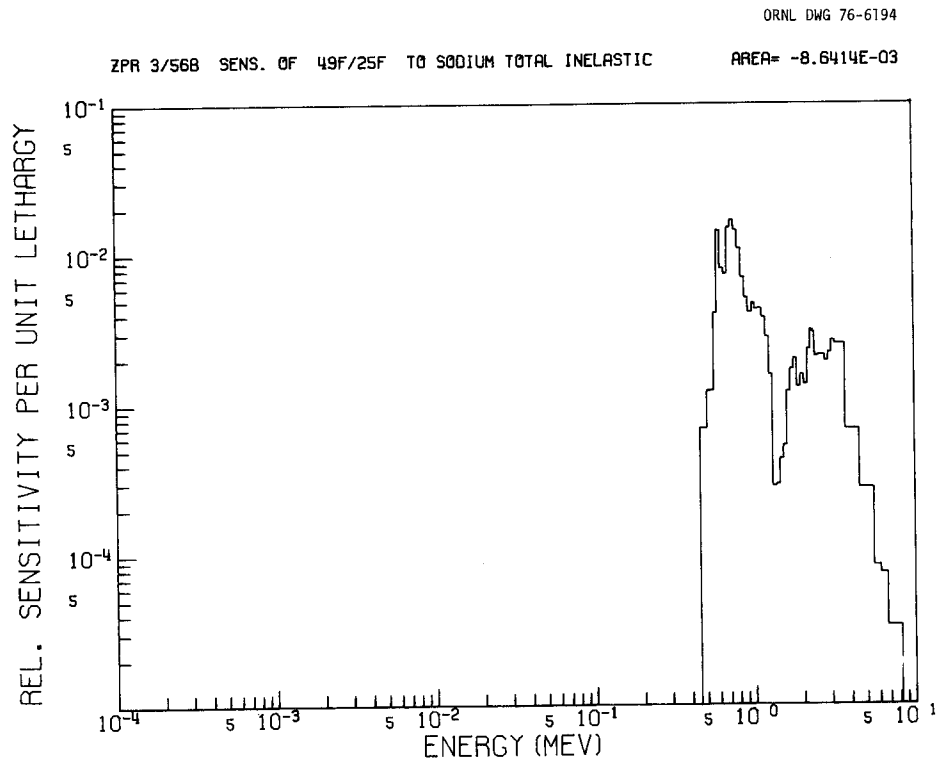


Fig. 159. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Inelastic Scattering Cross Section.

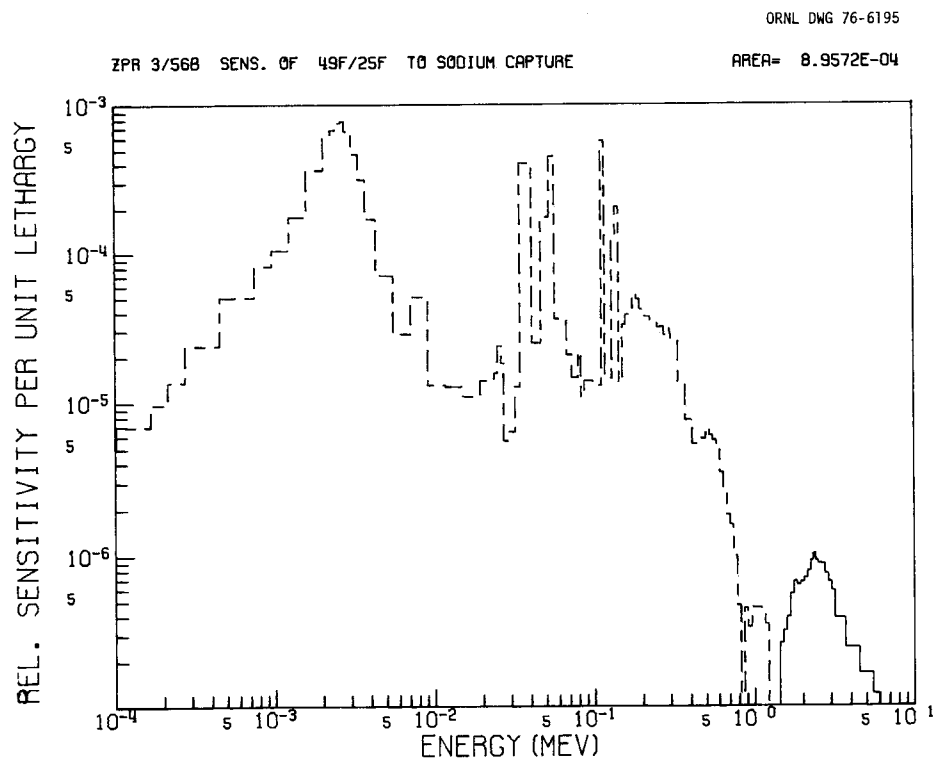


Fig. 160. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Sodium Capture Cross Section.

ORNL DWG 76-6193

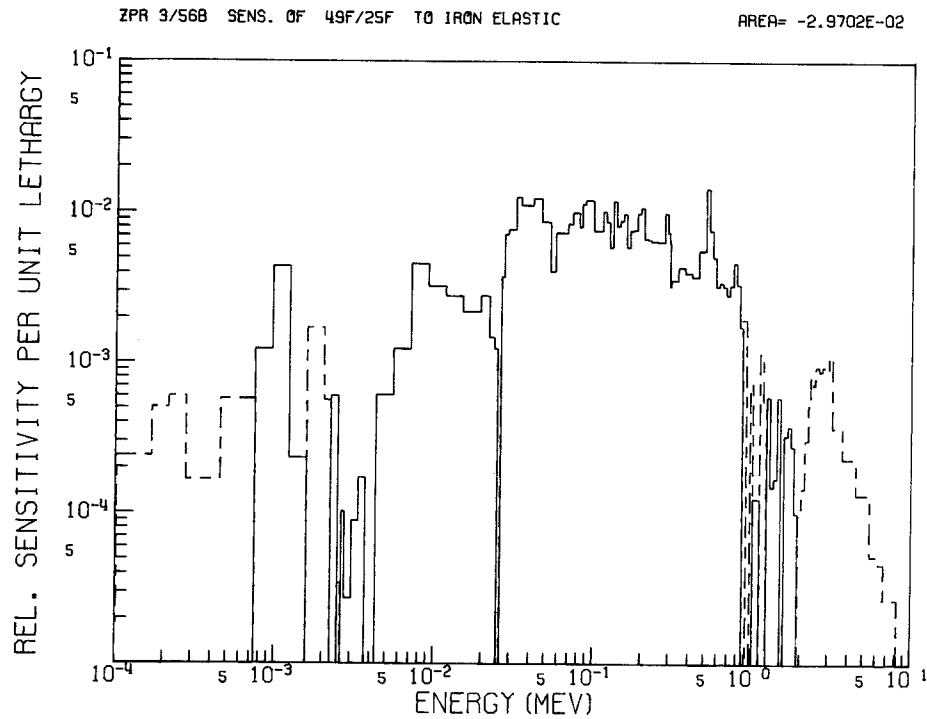


Fig. 161. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-6189

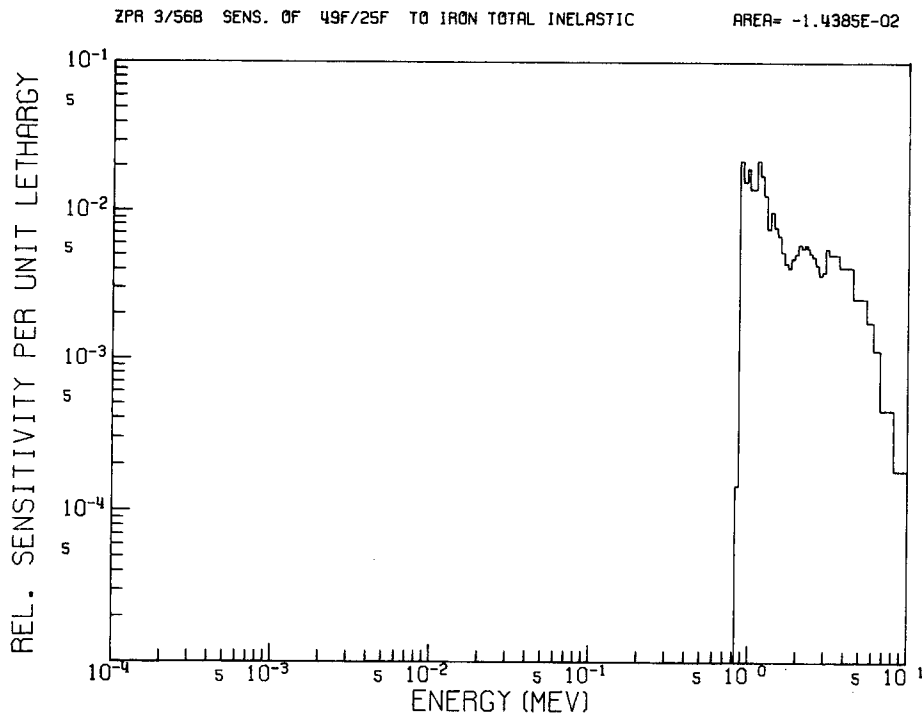


Fig. 162. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-6188

ZPR 3/56B SENS. OF 49F/25F TO IRON CAPTURE

AREA= 5.4018E-03

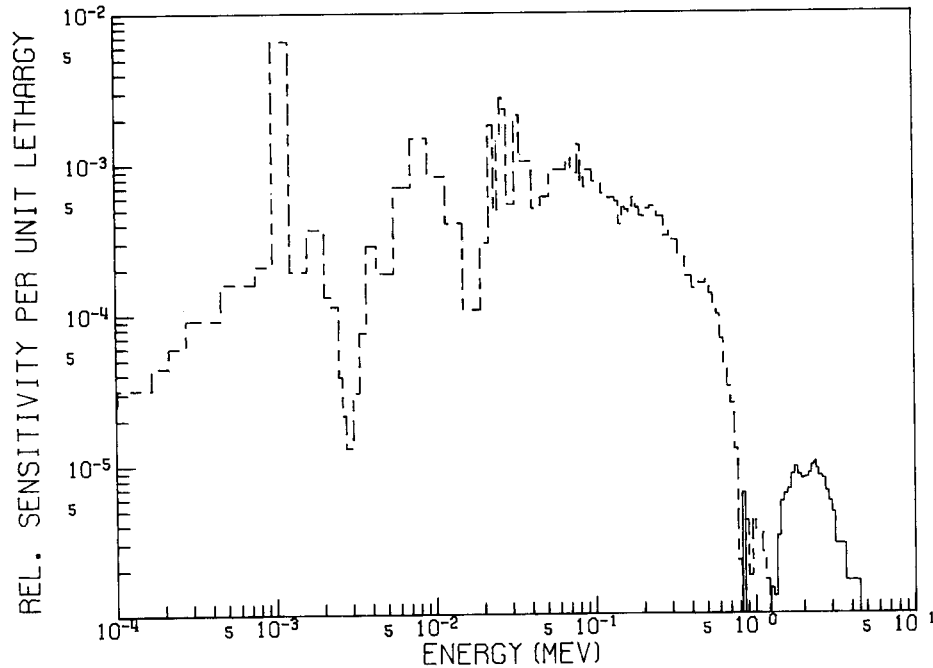


Fig. 163. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the Iron Capture Cross Section.

ORNL DWG 76-5606

ZPR 3/56B SENS. OF 49F/25F TO ^{235}U FISSION

AREA= -9.9906E-01

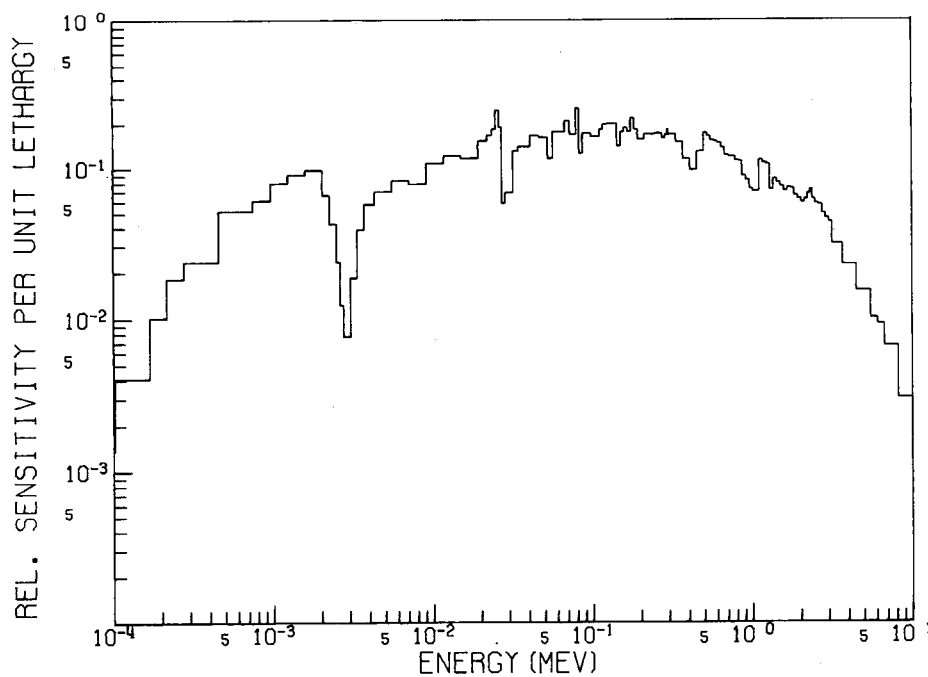


Fig. 164. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{235}U Fission Cross Section.

ORNL DWG 76-6101

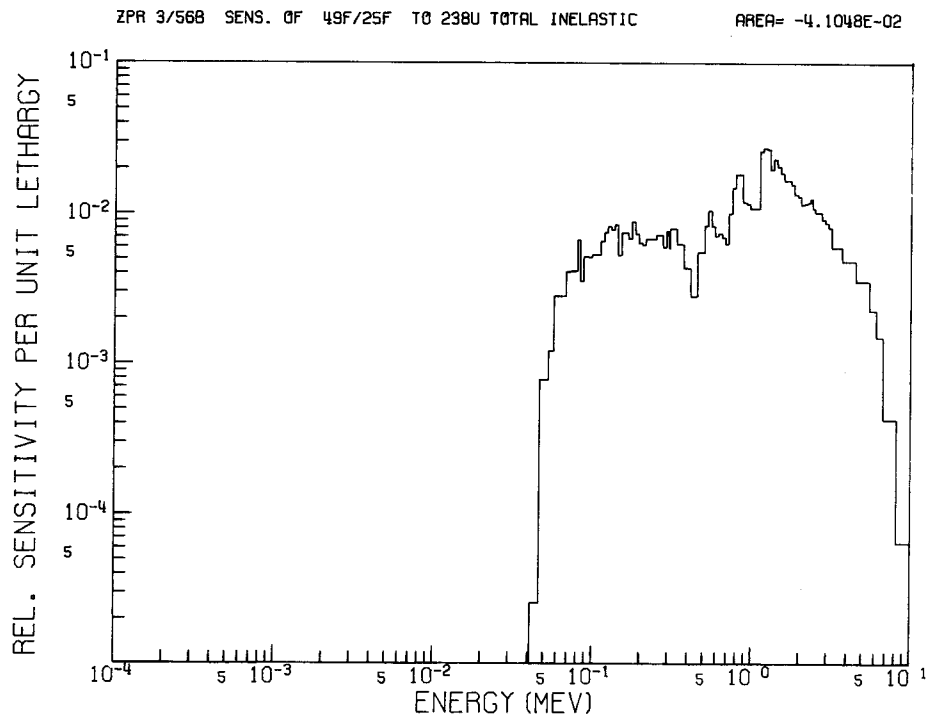


Fig. 165. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-5602

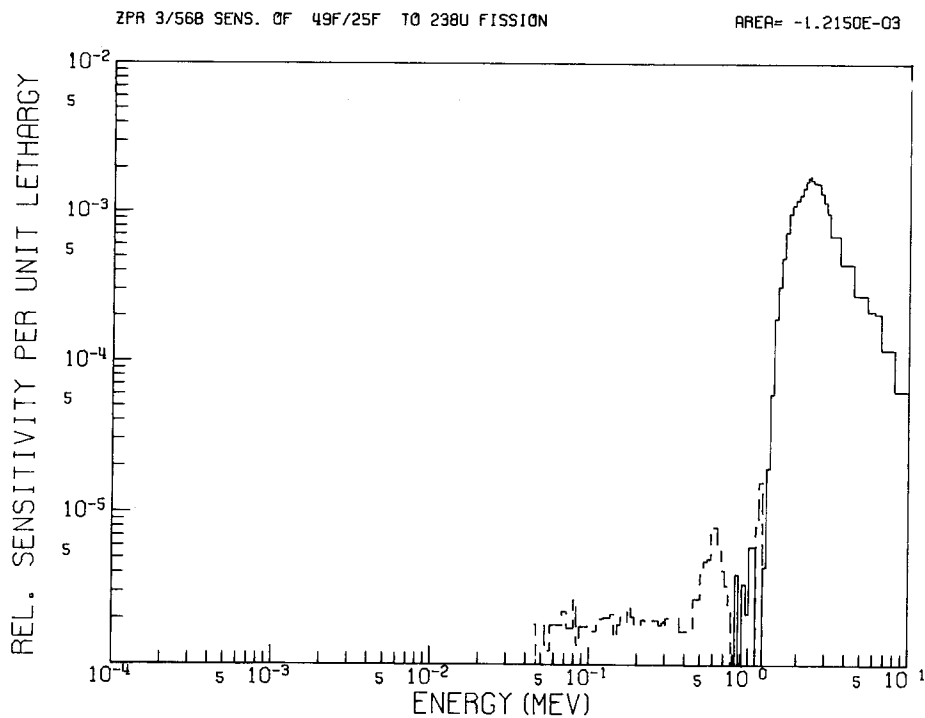


Fig. 166. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Fission Cross Section.

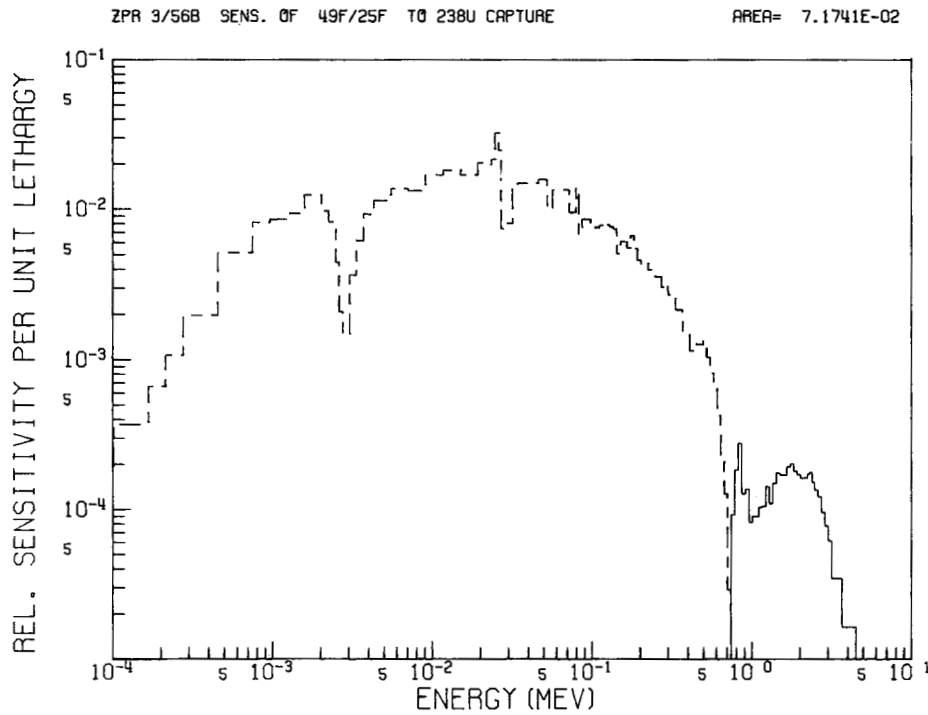


Fig. 167. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{238}U Capture Cross Section.

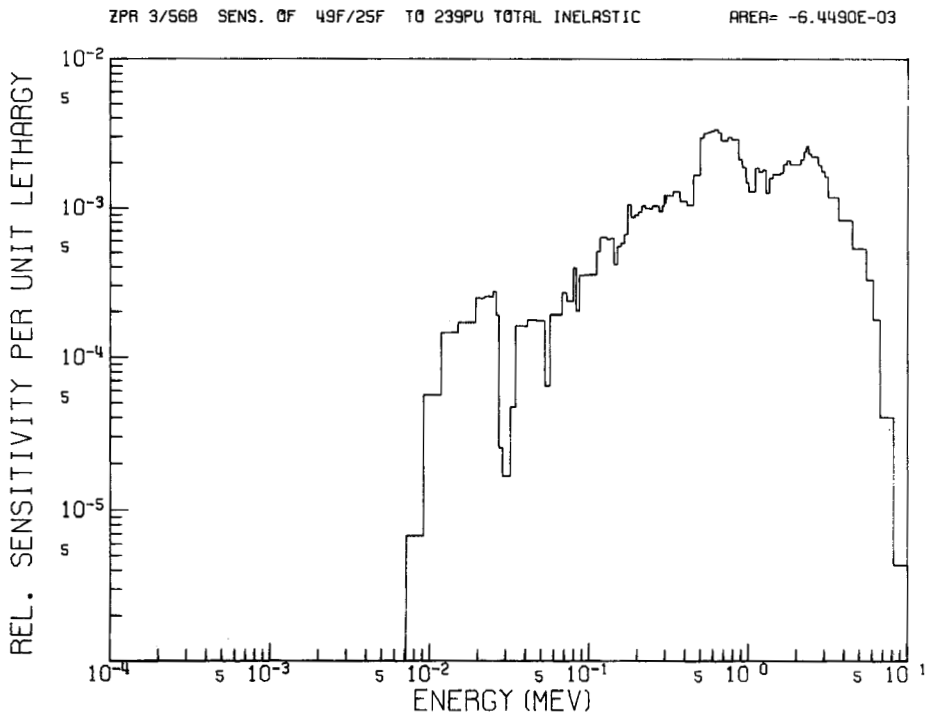


Fig. 168. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Inelastic Scattering Cross Section.

ORNL DWG 76-5604

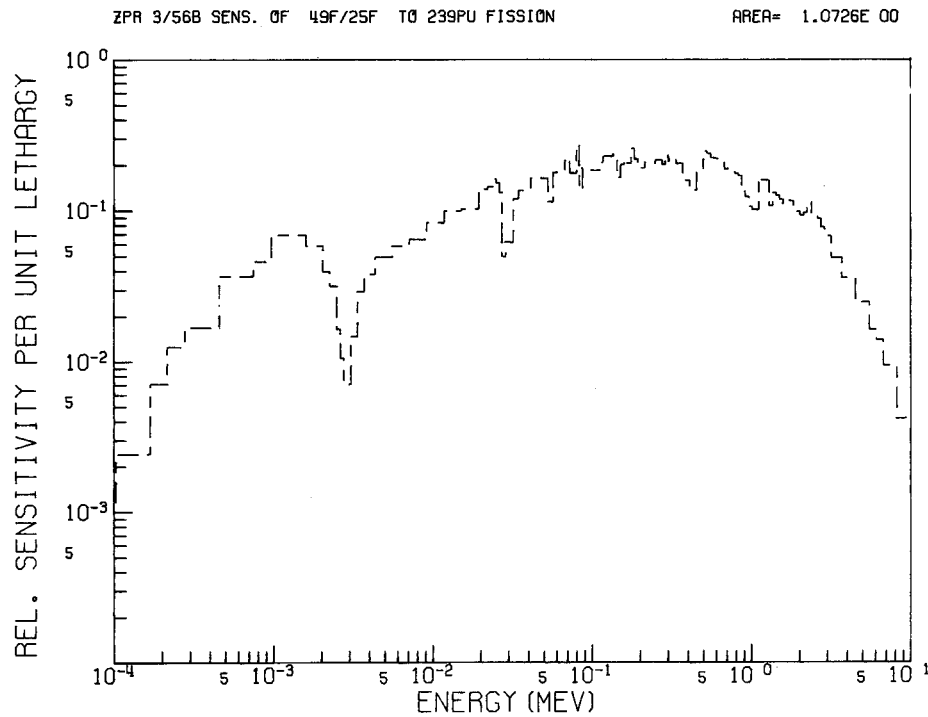


Fig. 169. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Fission Cross Section.

ORNL DWG 76-6096

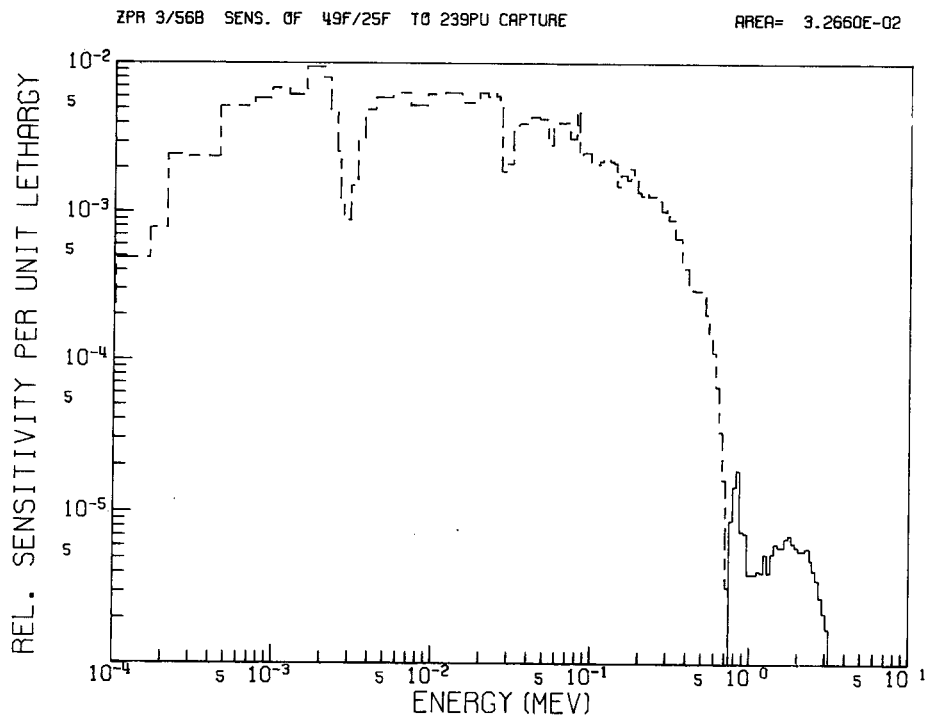


Fig. 170. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{239}Pu Capture Cross Section.

ORNL DWG 76-5603

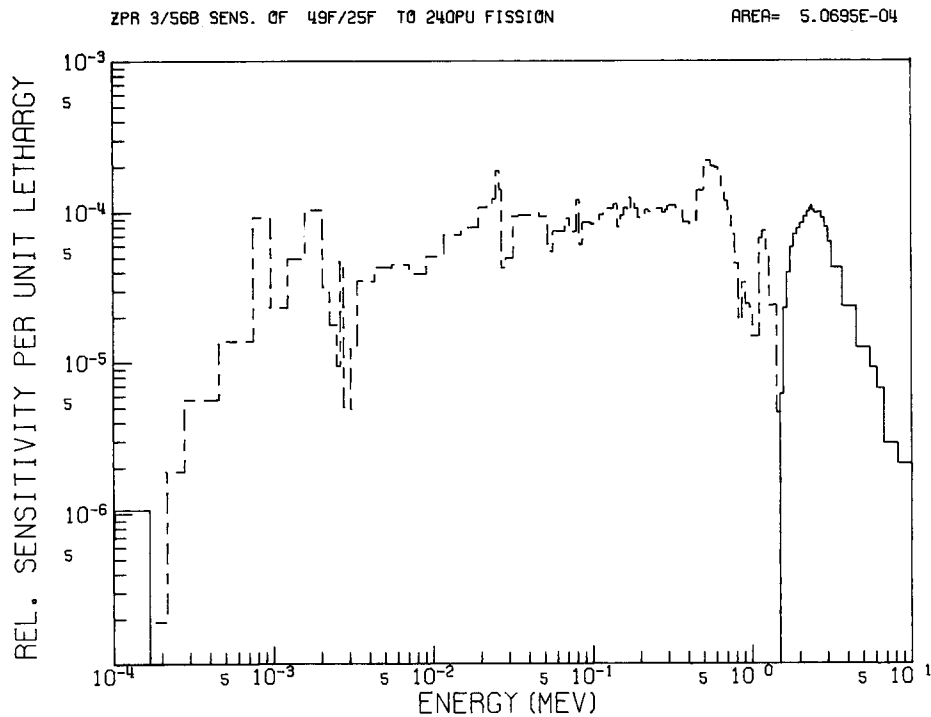


Fig. 171. Sensitivity of the ^{239}Pu Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/56B to the ^{240}Pu Fission Cross Section.

ORNL DWG 76-6153

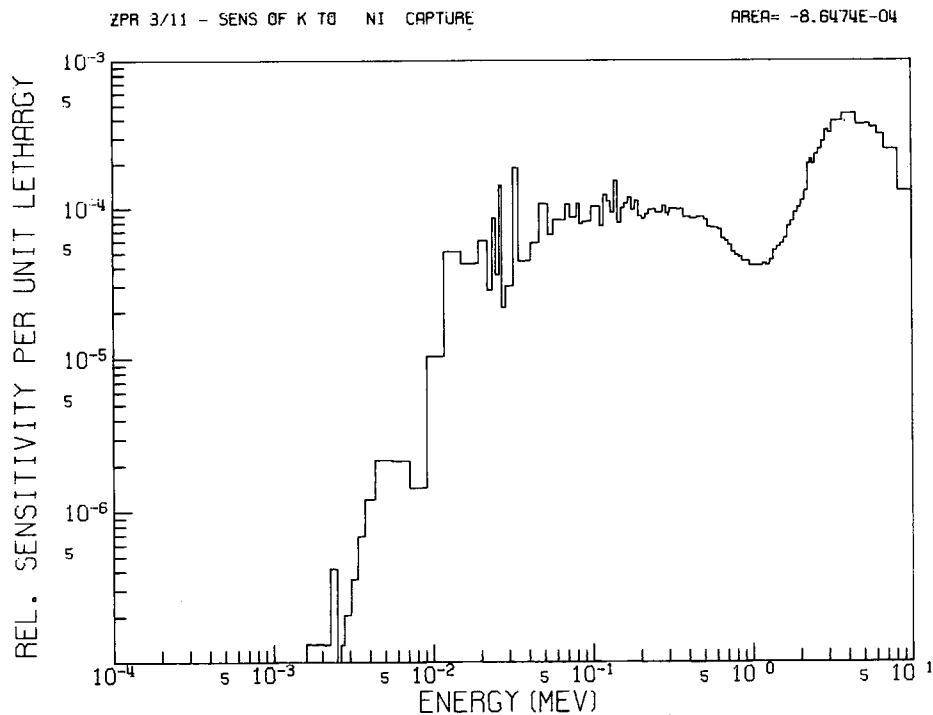


Fig. 172. Sensitivity of k in Assembly ZPR-3/11 to the Nickel Capture Cross Section.

ORNL DWG 76-6155

ZPR 3/11 - SENS OF K TO CR CAPTURE

AREA= -4.9321E-04

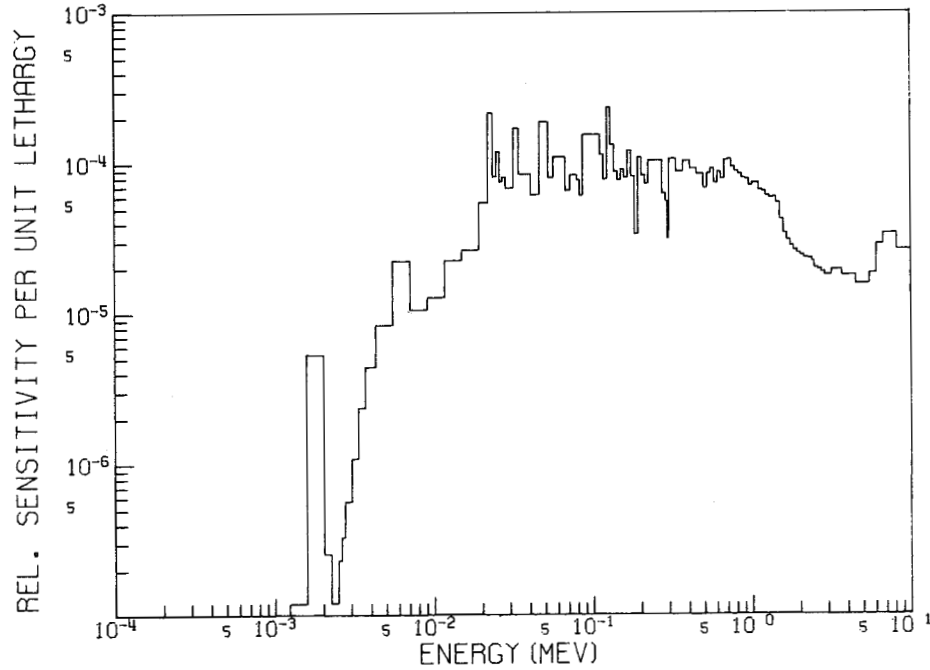


Fig. 173. Sensitivity of k in Assembly ZPR-3/11 to the Chromium Capture Cross Section.

ORNL DWG 76-5671

ZPR 3/11 - SENS OF K TO FE ELASTIC

AREA= 7.1955E-03

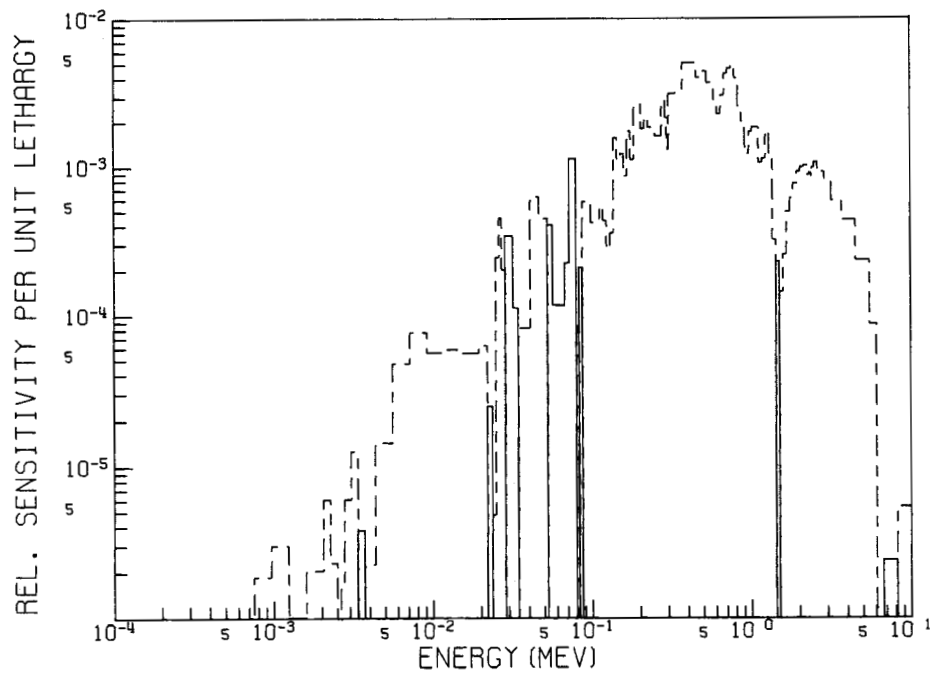


Fig. 174. Sensitivity of k in Assembly ZPR-3/11 to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-5672

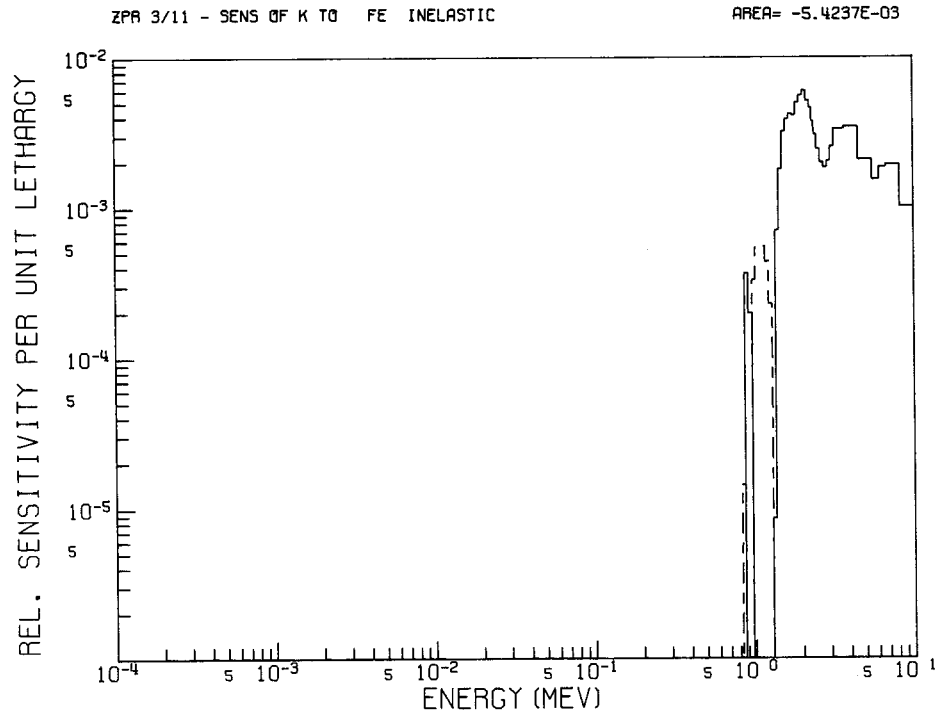


Fig. 175. Sensitivity of k in Assembly ZPR-3/11 to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-6156

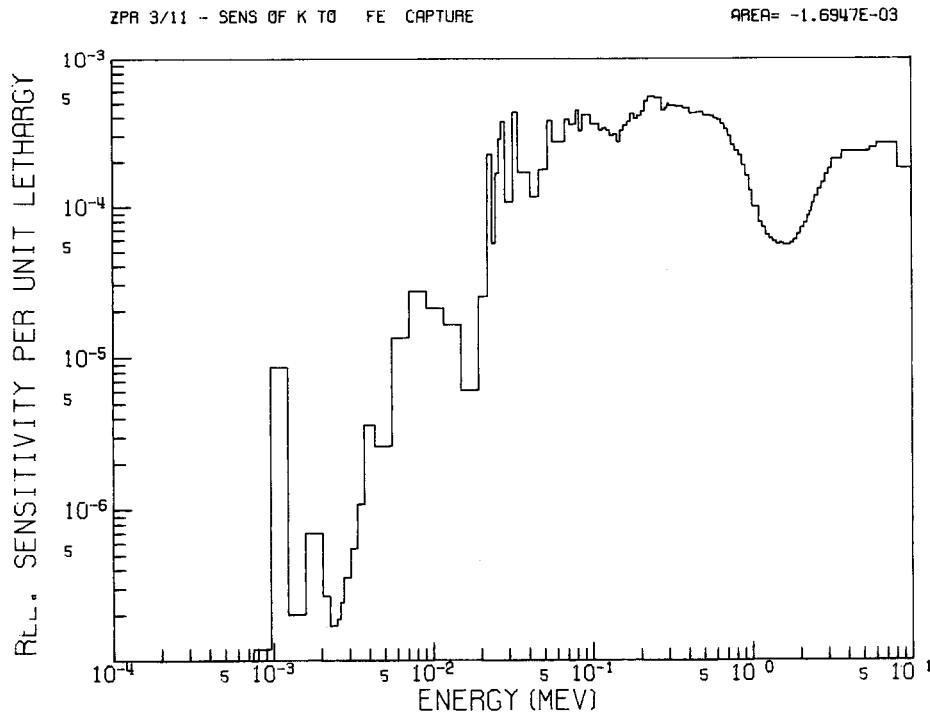


Fig. 176. Sensitivity of k in Assembly ZPR-3/11 to the Iron Capture Cross Section.

ORNL DWG 76-5676

ZPR 3/11 - SENS OF K TO ^{235}U ELASTIC

AREA= 7.2036E-03

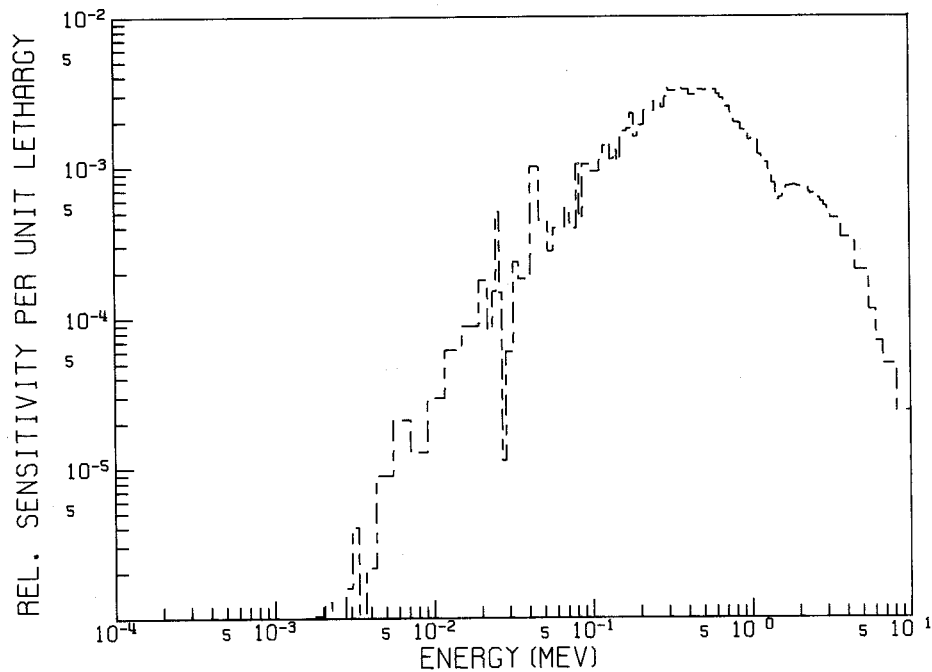


Fig. 177. Sensitivity of k in Assembly ZPR-3/11 to the ^{235}U Elastic Scattering Cross Section.

ORNL DWG 76-5678

ZPR 3/11 - SENS OF K TO ^{235}U INELASTIC

AREA= -5.4263E-03

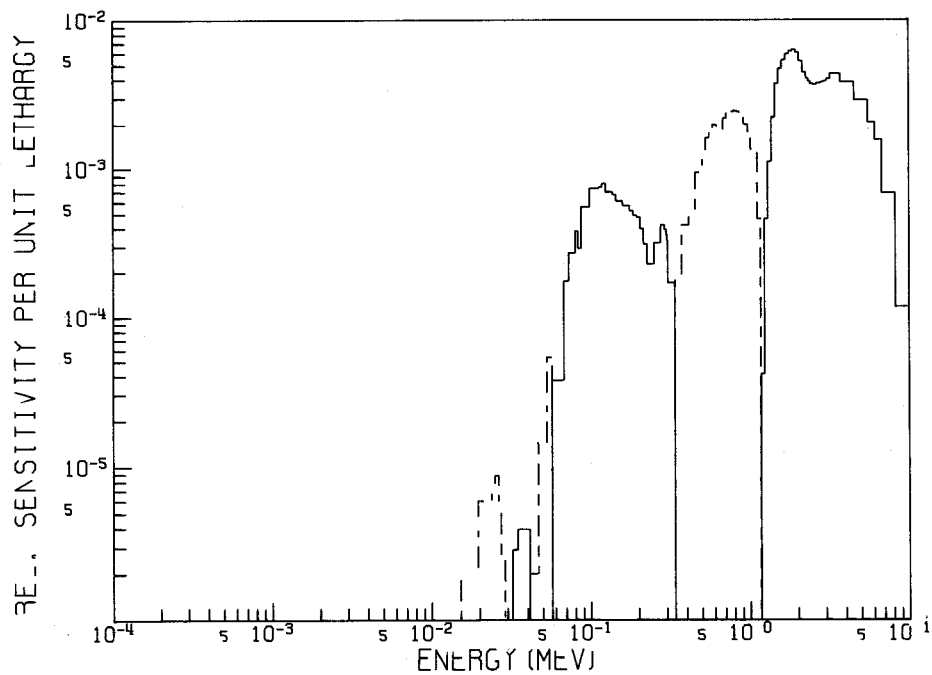


Fig. 178. Sensitivity of k in Assembly ZPR-3/11 to the ^{235}U Inelastic Scattering Cross Section.

ORNL DWG 76-6133

ZPR 3/11 - SENS OF K TO ^{235}U FISSION

AREA= 5.0042E-01

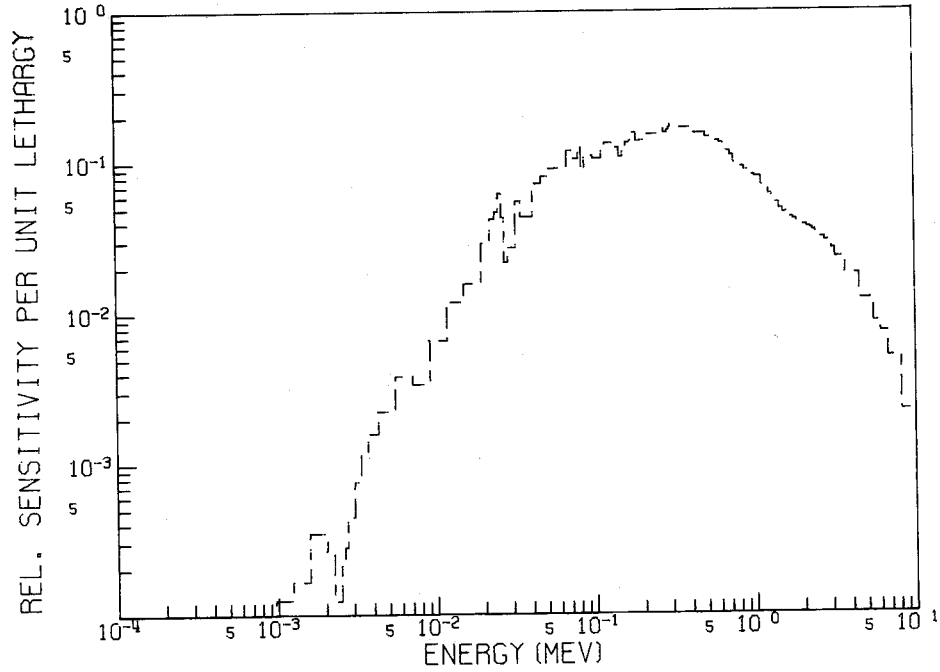


Fig. 179. Sensitivity of k in Assembly ZPR-3/11 to the ^{235}U Fission Cross Section.

ORNL DWG 76-6128

ZPR 3/11 - SENS OF K TO ^{235}U CAPTURE

AREA= -4.9346E-02

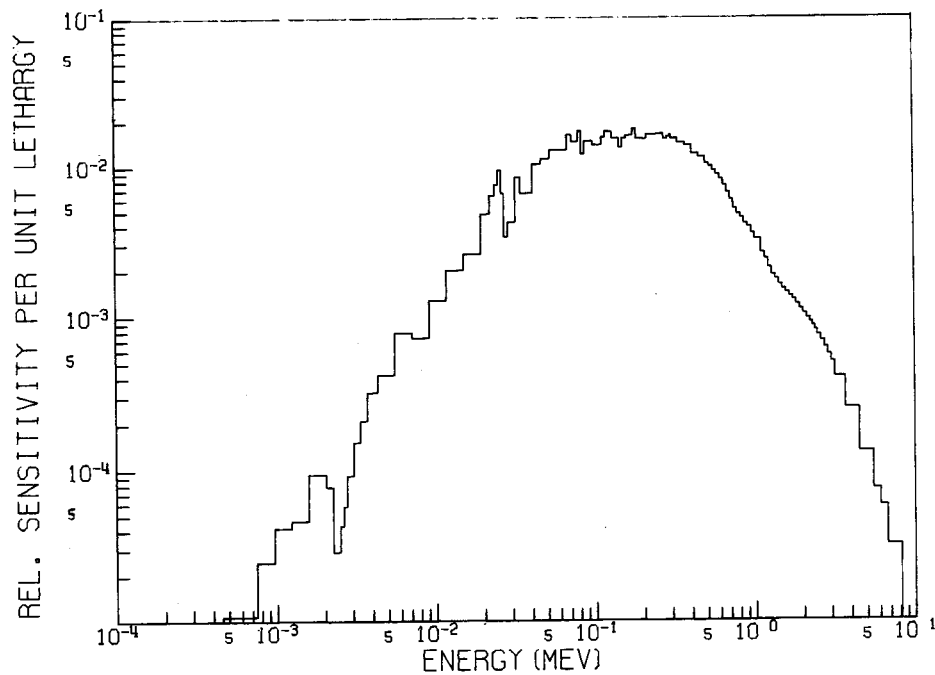


Fig. 180. Sensitivity of k in Assembly ZPR-3/11 to the ^{235}U Capture Cross Section.

ORNL DWG 76-5673

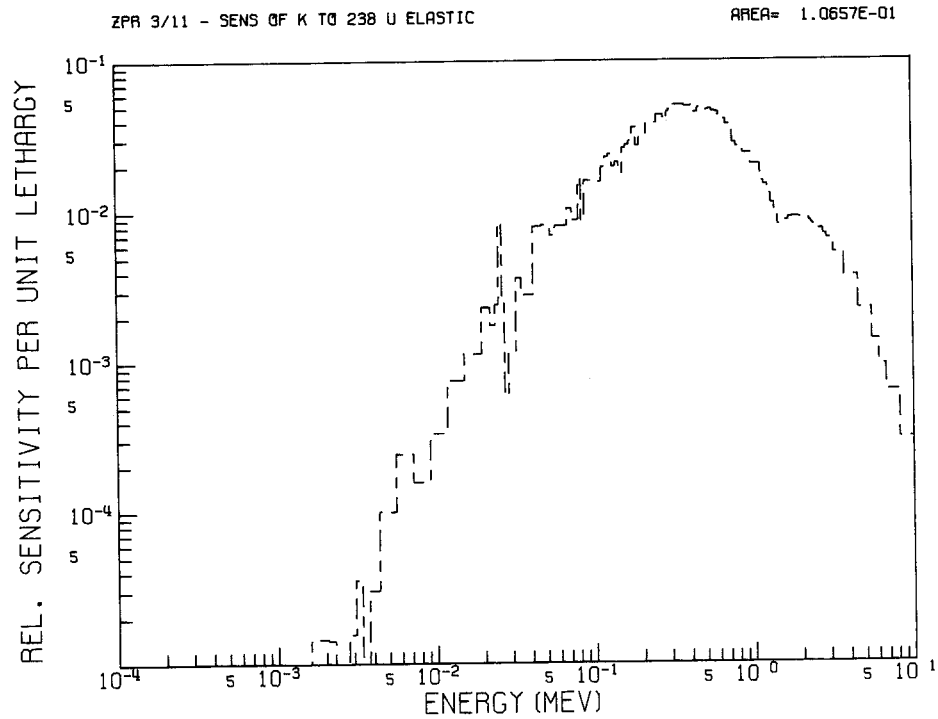


Fig. 181. Sensitivity of k in Assembly ZPR-3/11 to the ^{238}U Elastic Scattering Cross Section.

ORNL DWG 76-5679

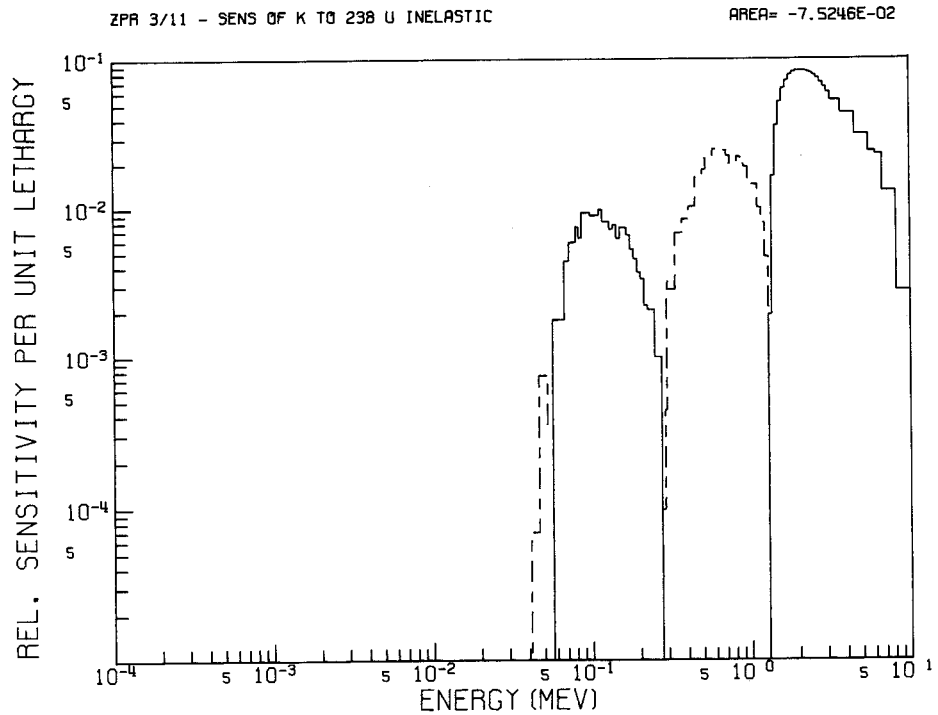


Fig. 182. Sensitivity of k in Assembly ZPR-3/11 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-6130

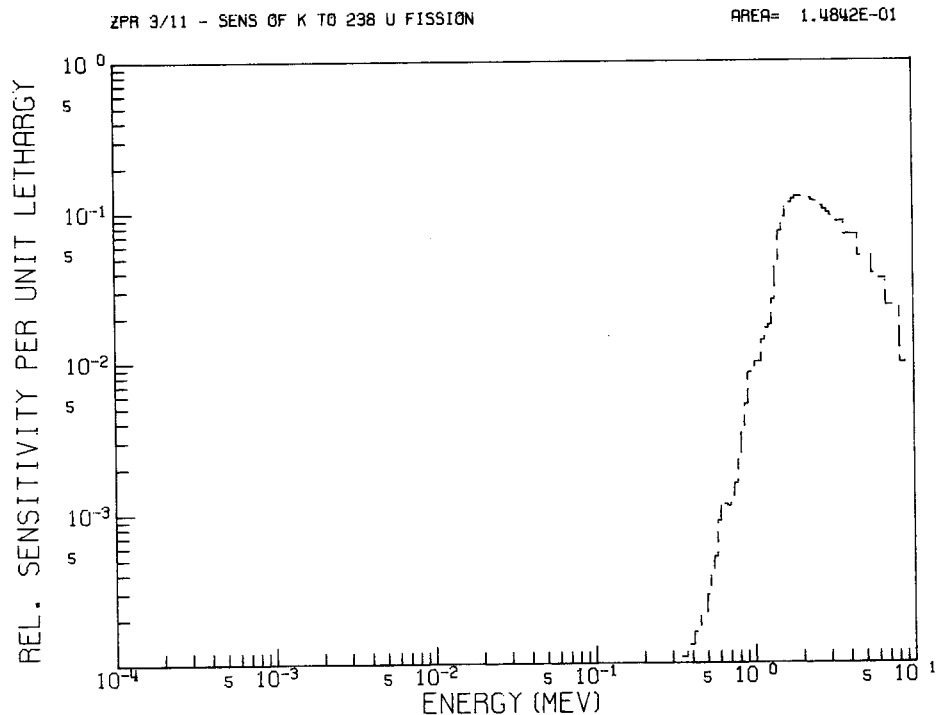


Fig. 183. Sensitivity of k in Assembly ZPR-3/11 to the ^{238}U Fission Cross Section.

ORNL DWG 76-6134

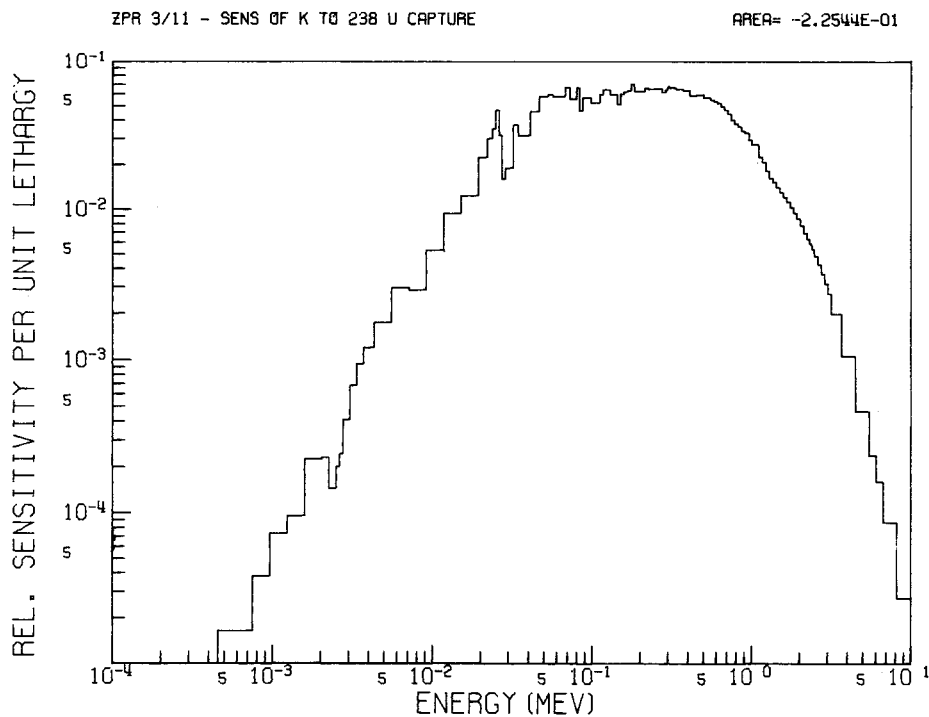


Fig. 184. Sensitivity of k in Assembly ZPR-3/11 to the ^{238}U Capture Cross Section.

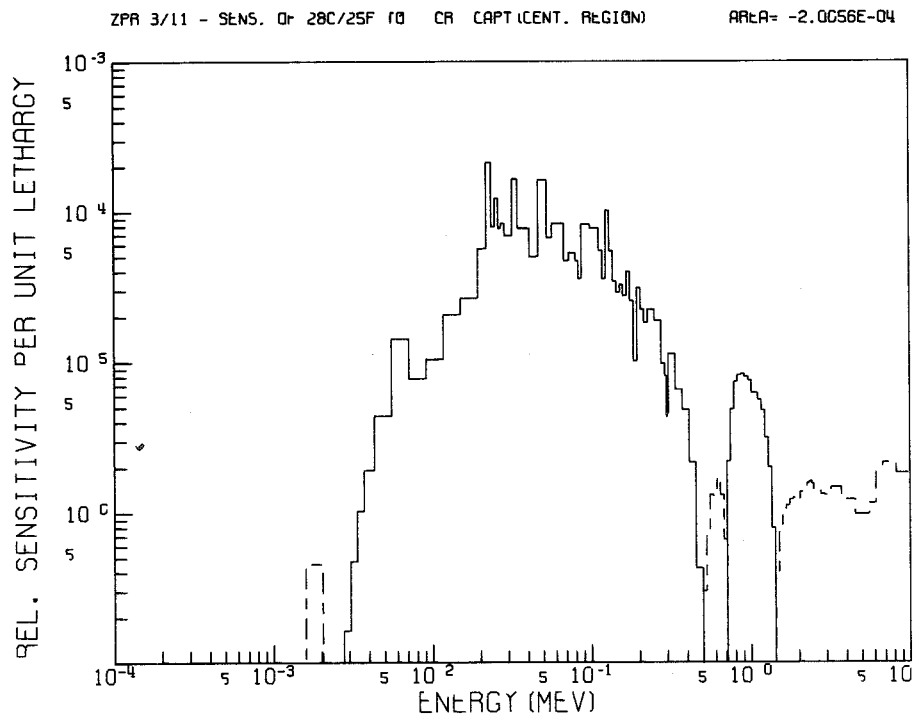


Fig. 185. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Chromium Capture Cross Section.

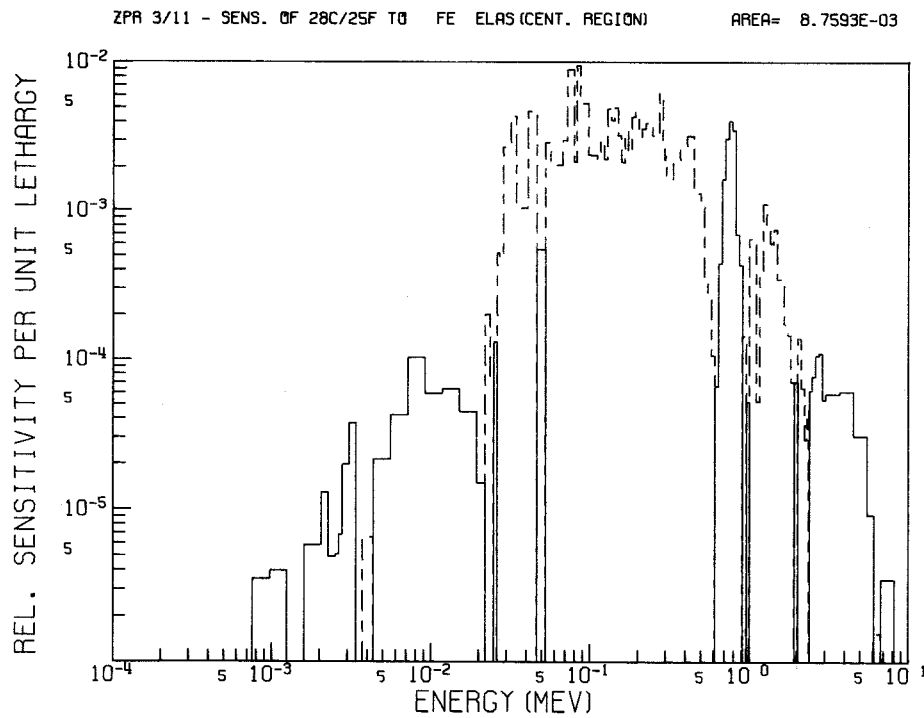


Fig. 186. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-5650

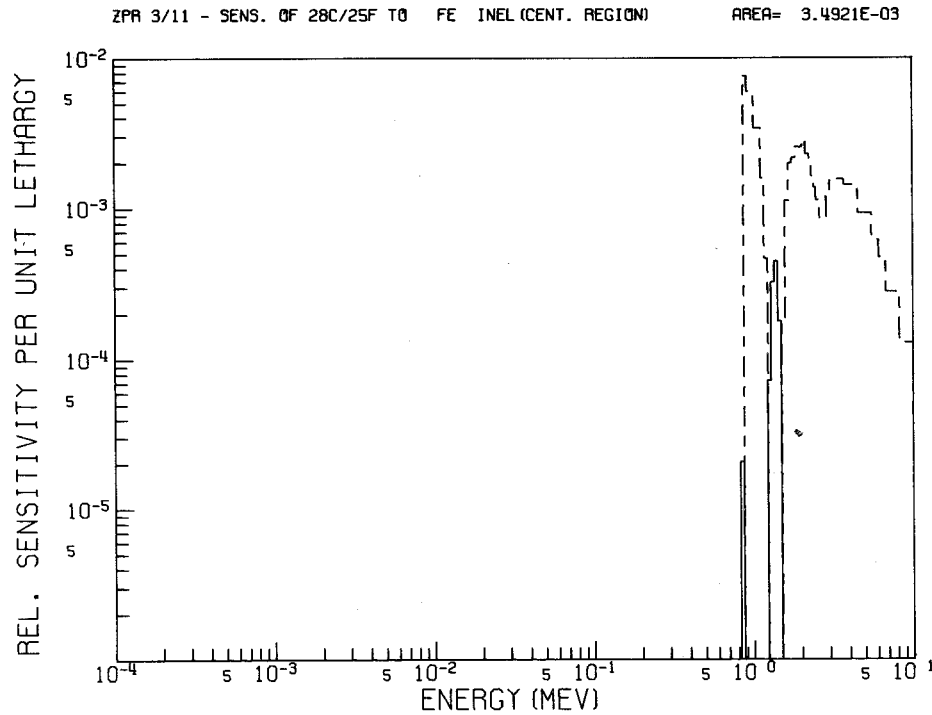


Fig. 187. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-5684

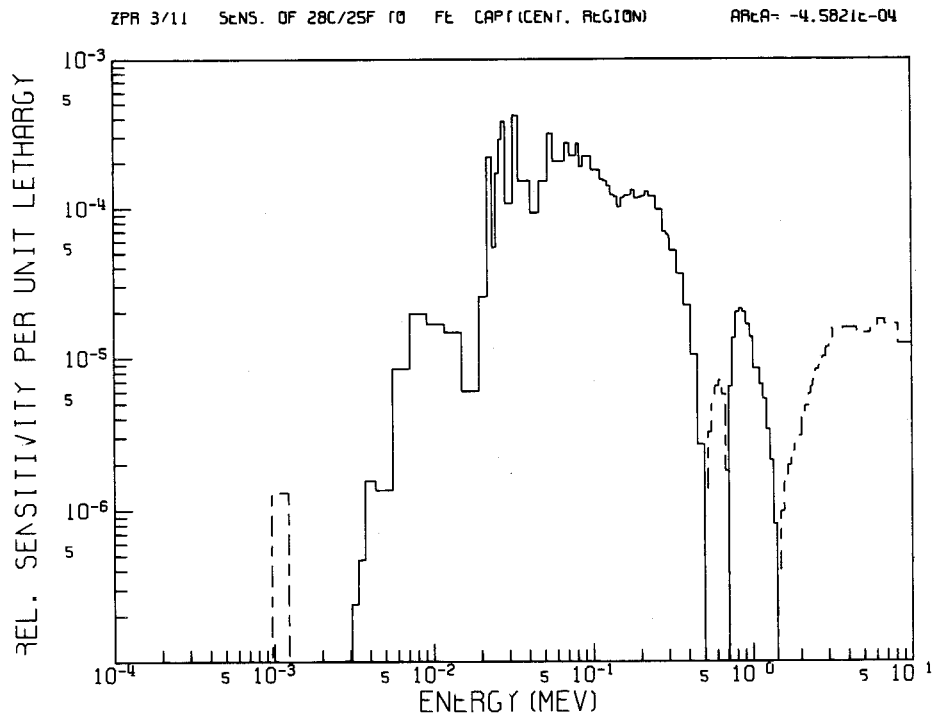


Fig. 188. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Capture Cross Section.

ORNL DWG 76-5686

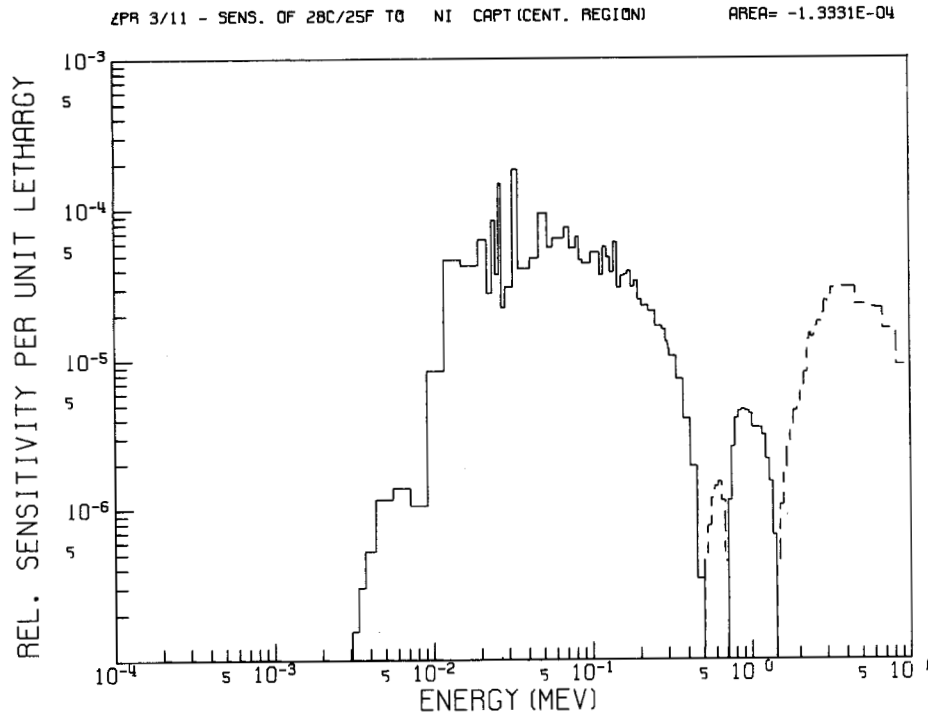


Fig. 189. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Nickel Capture Cross Section.

ORNL DWG 76-5656

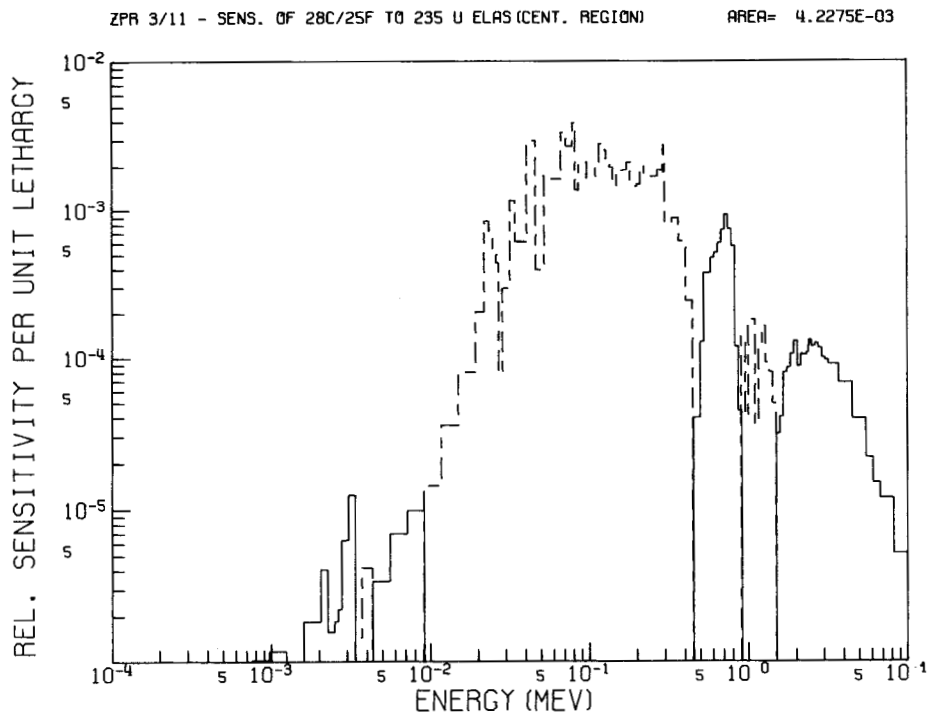


Fig. 190. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Elastic Scattering Cross Section.

ORNL DWG 76-5652

ZPR 3/11 - SENS. OF 28C/25F TO 235 U INEL (CENT. REGION)

AREA= 1.7539E-02

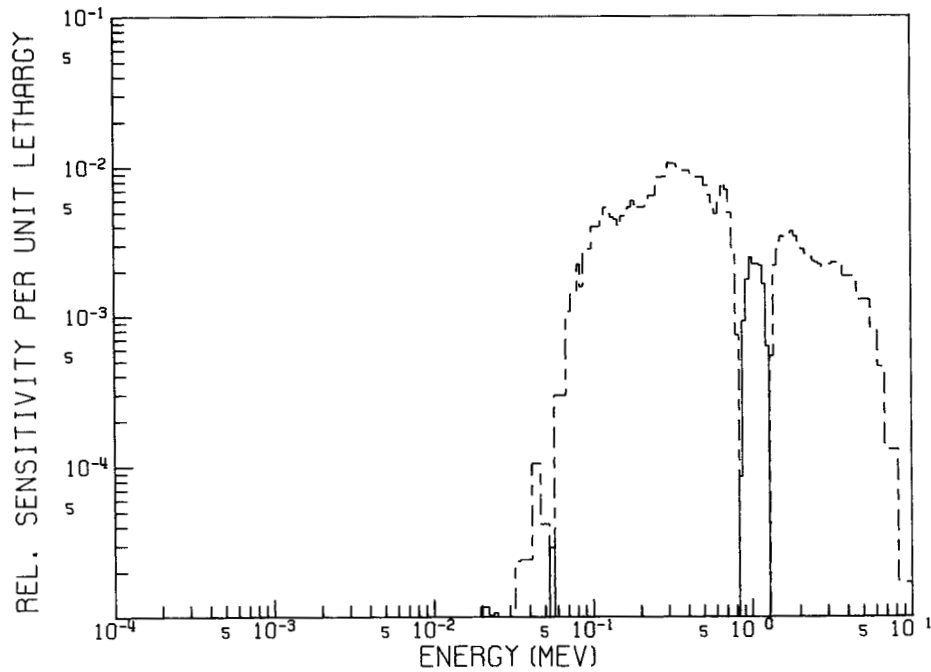


Fig. 191. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Inelastic Scattering Cross Section.

ORNL DWG 76-6177

ZPR 3/11 - SENS. OF 28C/25F TO 235 U FISS (CENT. REGION)

AREA= -1.0758E 00

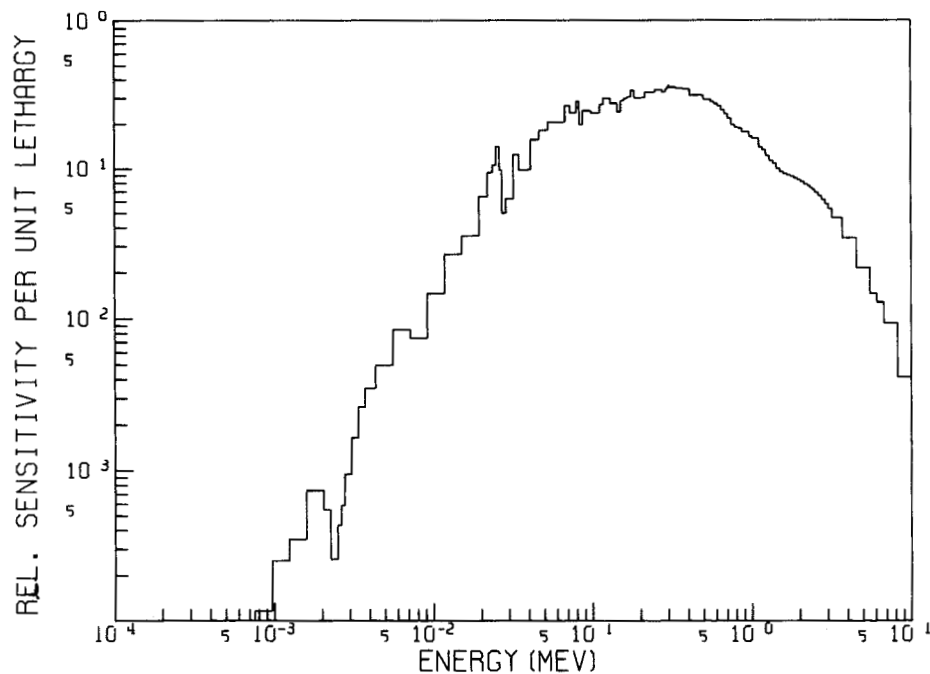


Fig. 192. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Fission Cross Section.

ZPR 3/11 - SENS. OF 28C/25F TO 235 U CAPT (CENT. REGION)

AREA= -2.2031E-02

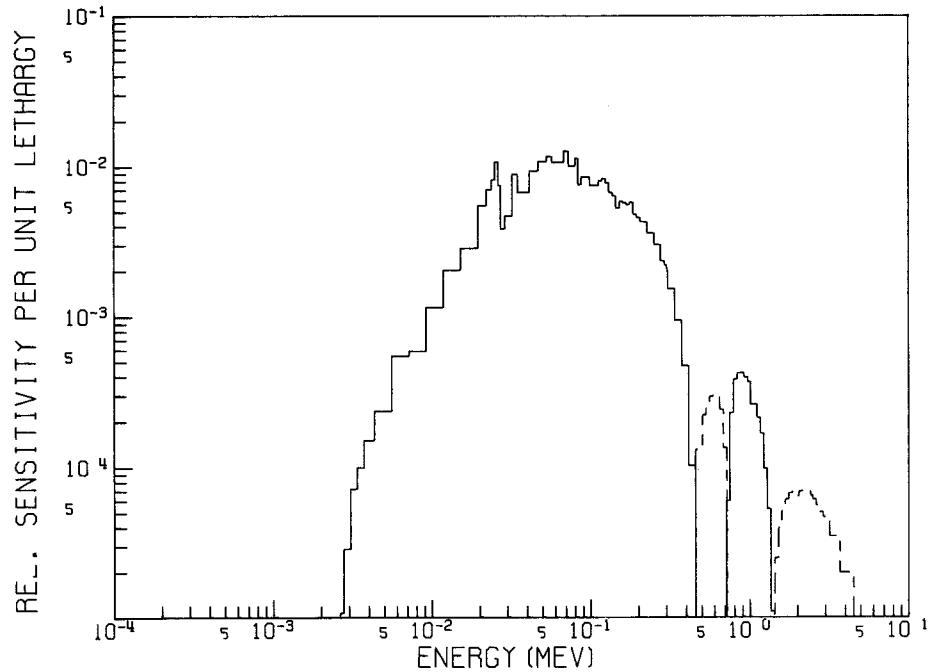


Fig. 193. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Capture Cross Section.

ZPR 3/11 - SENS. OF 28C/25F TO 238 U ELAS (CENT. REGION)

AREA= 4.5164E-02

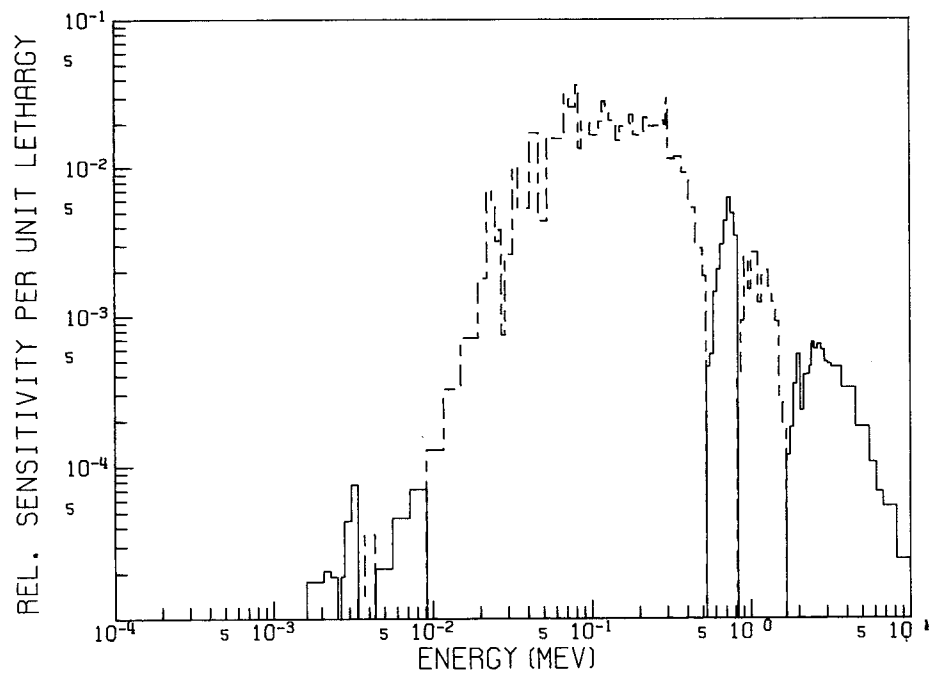


Fig. 194. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Elastic Scattering Cross Section.

ORNL DWG 76-5657

ZPR 3/11 - SENS. OF 28C/25F TO 238 U INEL (CENT. REGION)

AREA= 1.4197E-01

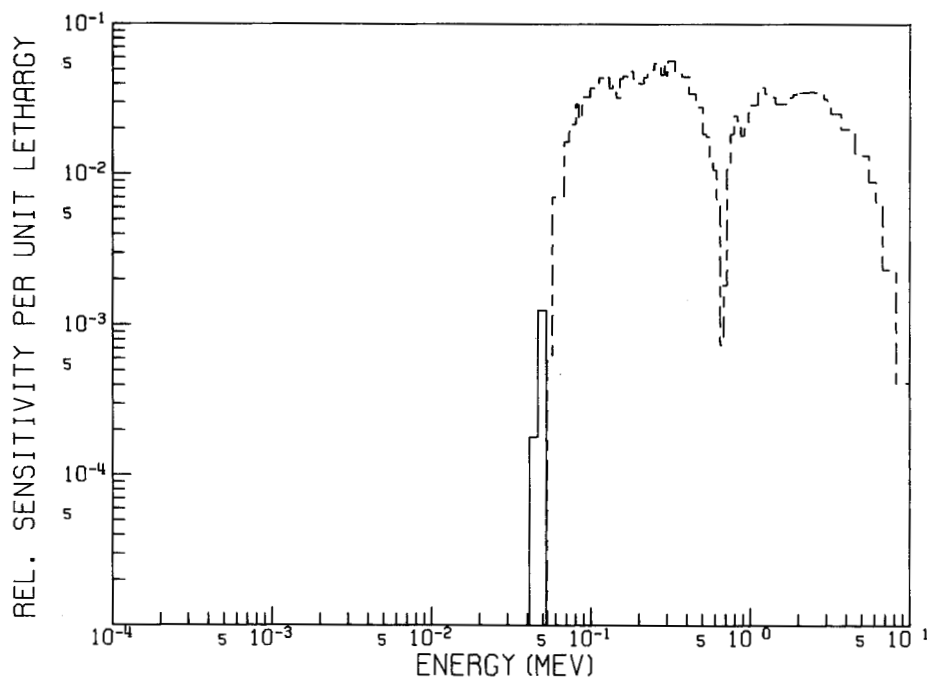


Fig. 195. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-6172

ZPR 3/11 - SENS. OF 28C/25F TO 238 U FISS (CENT. REGION)

AREA= 6.1249E-03

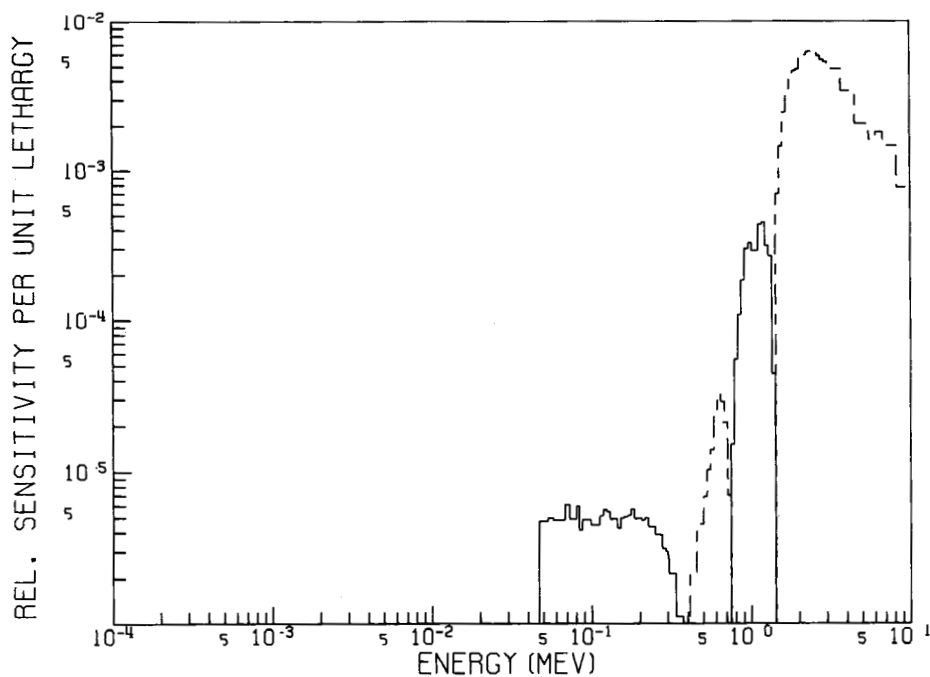


Fig. 196. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Fission Cross Section.

ORNL DWG 76-6178

ZPR 3/11 SENS. OF $^{238}\text{U}/^{235}\text{U}$ TO ^{238}U CAPT (CENT. REGION)

AREA= 9.1217E-01

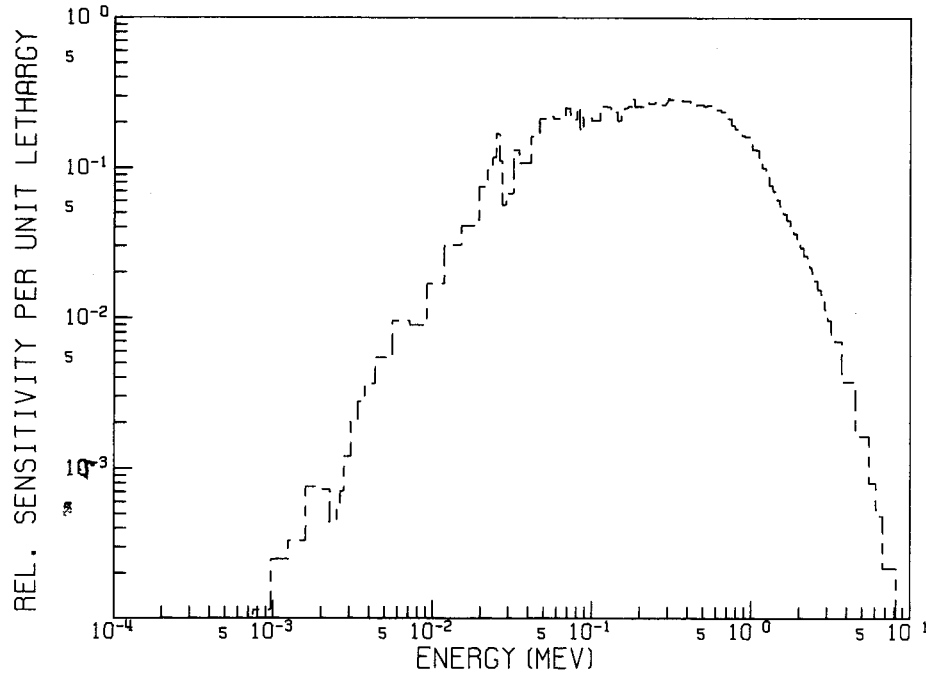


Fig. 197. Sensitivity of ^{238}U Capture/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Capture Cross Section.

ORNL DWG 76-13274

07-21-76ZPR 3/11 - SENS. OF $^{238}\text{U}/^{235}\text{U}$ TO CR CAPT (CENT. REGION)

AREA= 5.3905E-04

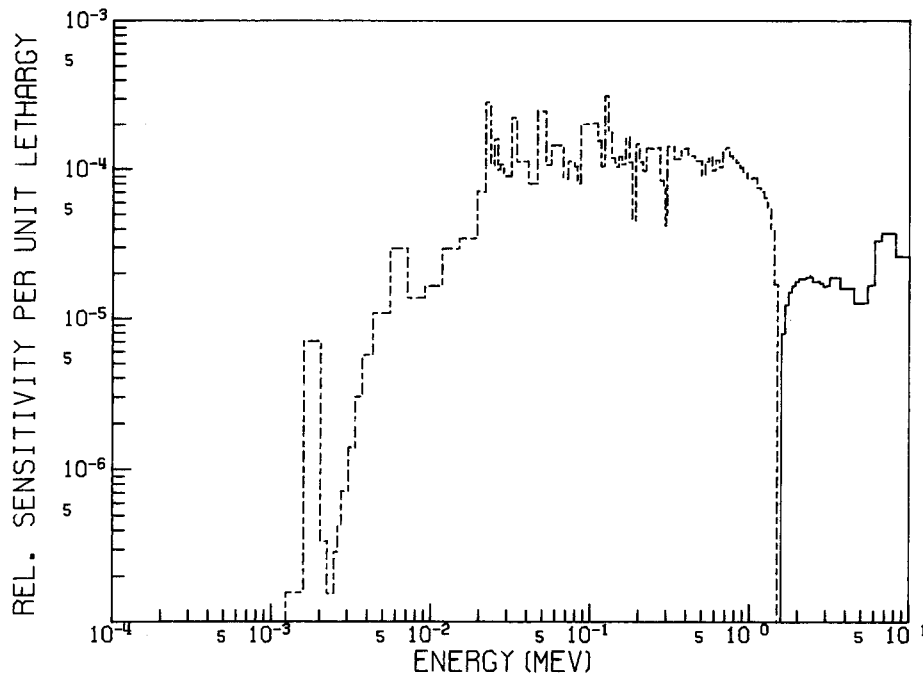


Fig. 198. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Chromium Capture Cross Section.

ORNL DWG 76-13275

07-21-76ZPR 3/11 - SENS. OF ^{238}U FISSION/ ^{235}U FISSION TO FE ELAS (CENT. REGION)

AREA= -1.2707E-02

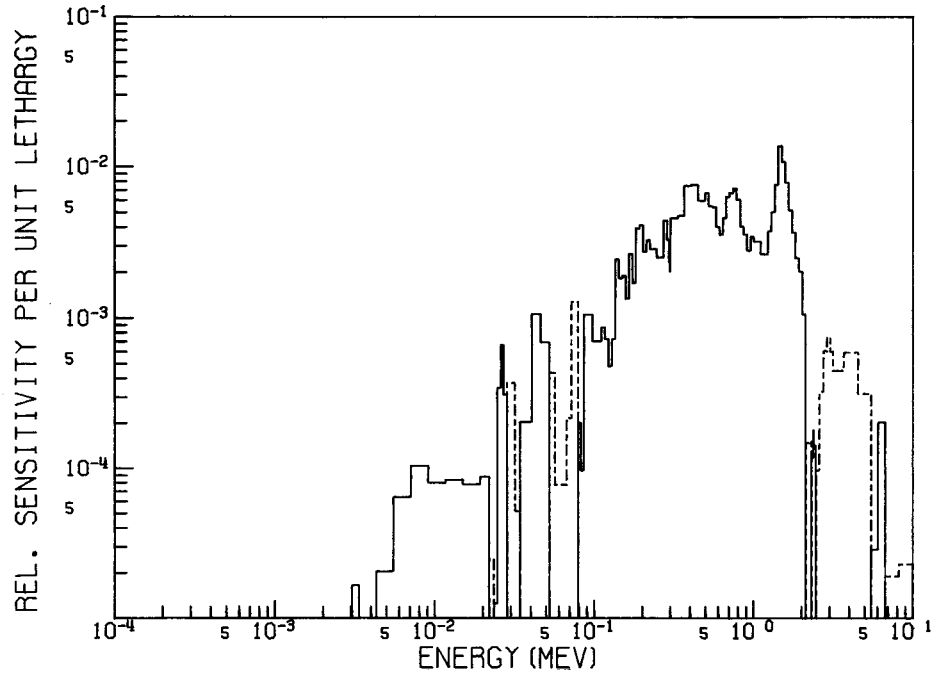


Fig. 199. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Elastic Scattering Cross Section.

ORNL DWG 76-13273

07-21-76ZPR 3/11 - SENS. OF ^{238}U FISSION/ ^{235}U FISSION TO FE INEL (CENT. REGION)

AREA= -3.5261E-02

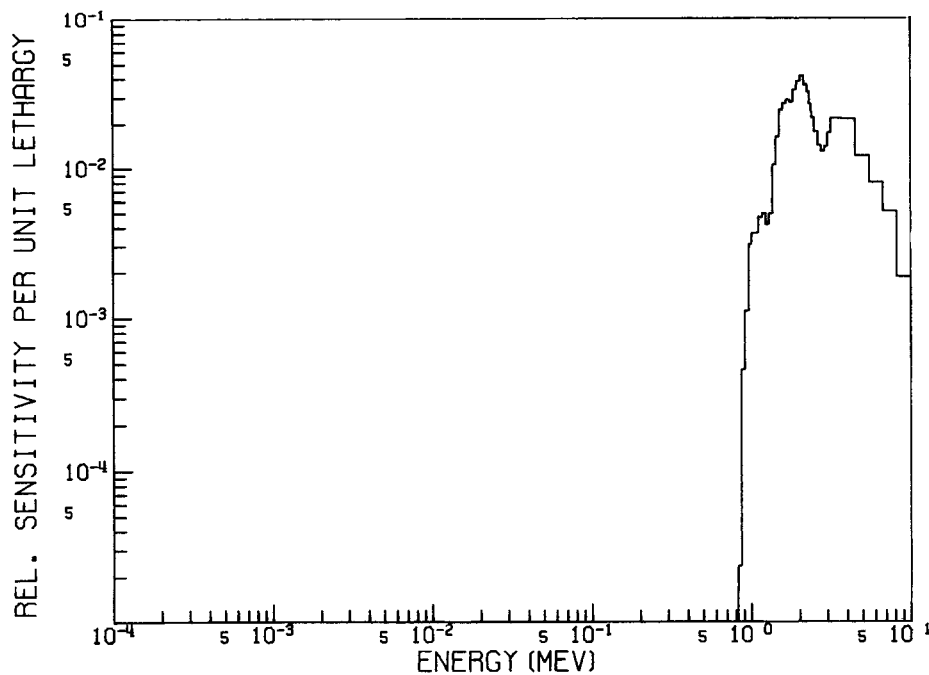


Fig. 200. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Inelastic Scattering Cross Section.

ORNL DWG 76-13280

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO FE CAPT(CENT. REGION)

AREA= 1.4358E-03

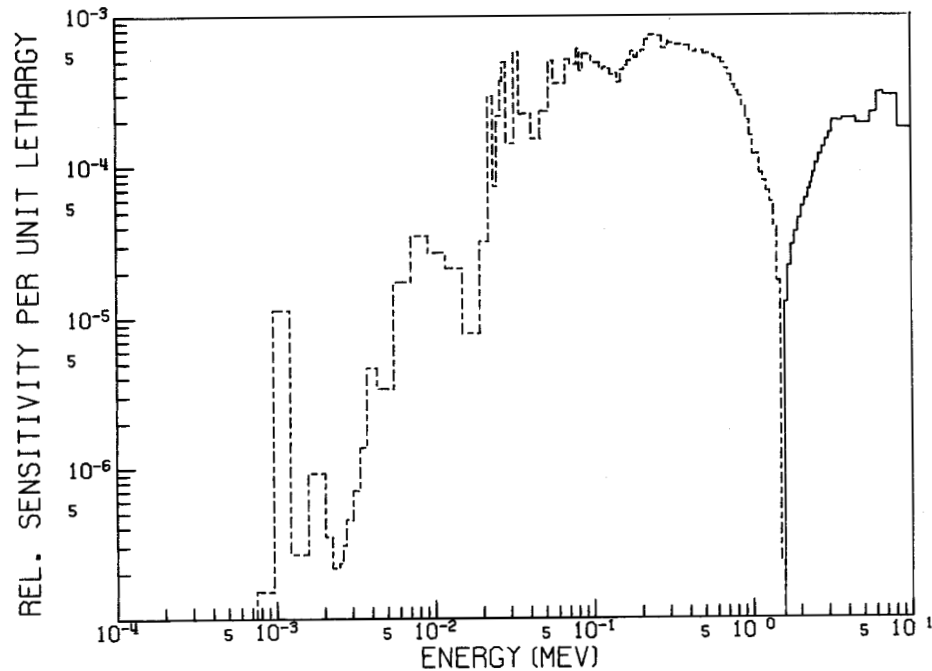


Fig. 201. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Iron Capture Cross Section.

ORNL DWG 76-13269

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO NI CAPT(CENT. REGION)

AREA= 2.1530E-05

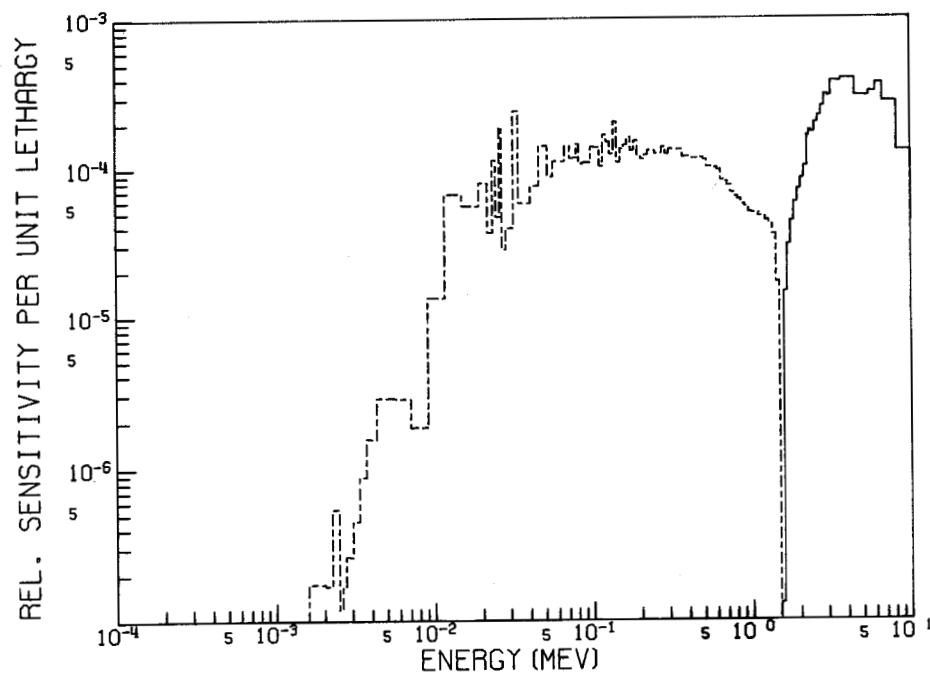


Fig. 202. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the Nickel Capture Cross Section.

ORNL DWG 76-13268

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 235 U ELAS (CENT. REGION)

AREA= -1.0342E-02

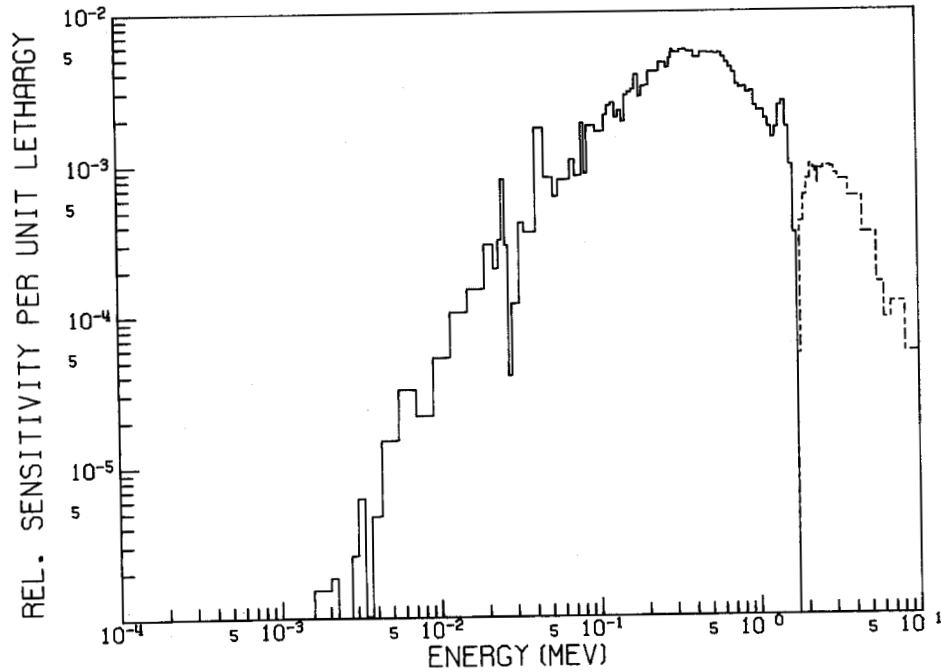


Fig. 203. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Elastic Scattering Cross Section.

ORNL DWG 76-13270

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 235 U INEL (CENT. REGION)

AREA= -4.9842E-02

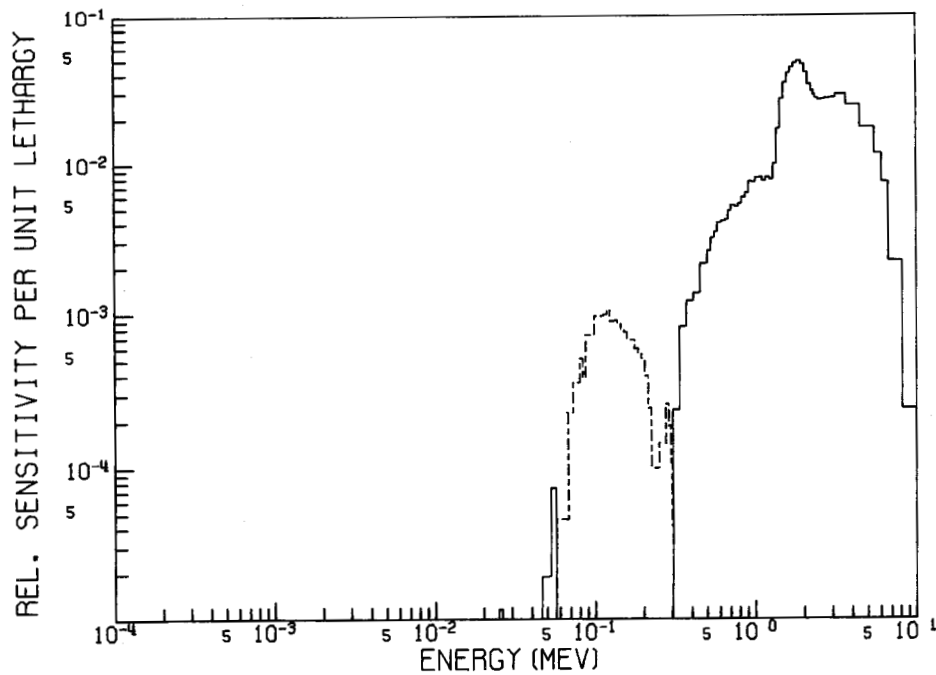


Fig. 204. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Inelastic Scattering Cross Section.

ORNL DWG 76-13277

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 235 U FISS (CENT. REGION)

AREA= -7.0980E-01

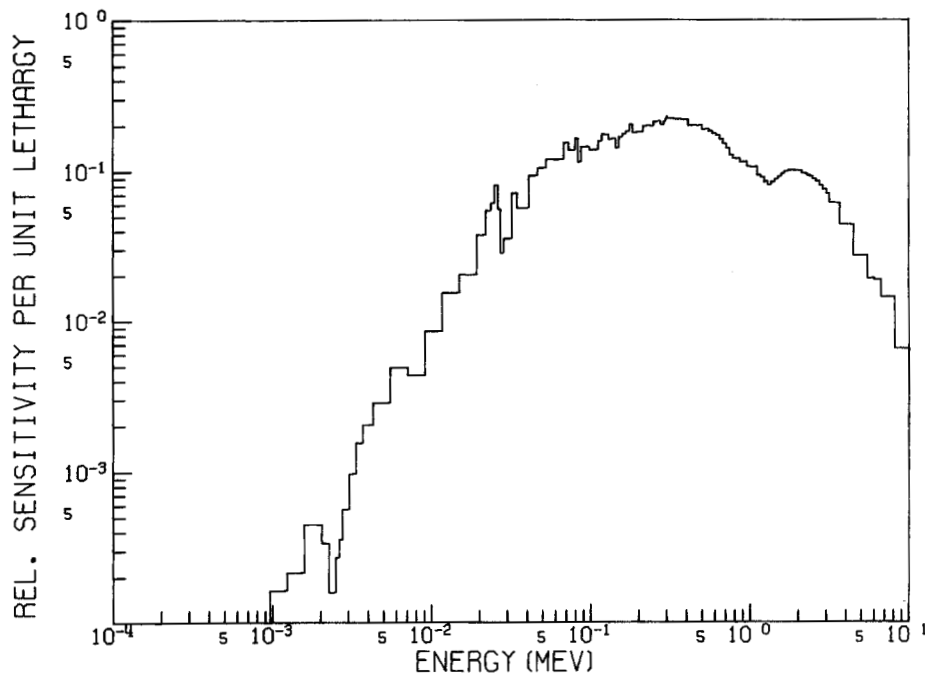


Fig. 205. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Fission Cross Section.

ORNL DWG 76-13272

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 235 U CAPT (CENT. REGION)

AREA= 6.5363E-02

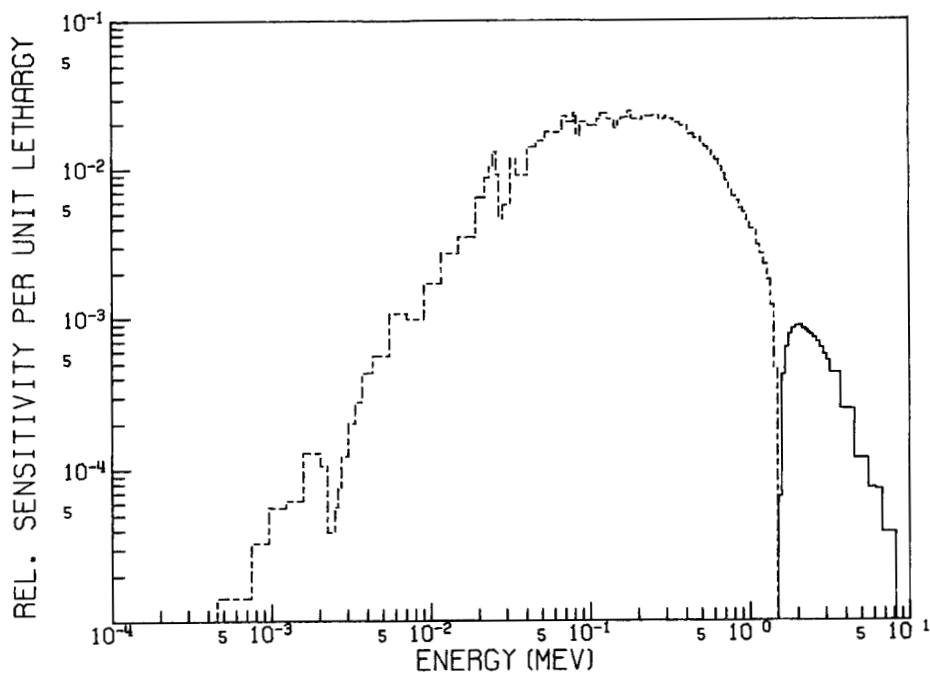


Fig. 206. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{235}U Capture Cross Section.

ORNL DWG 76-13271

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 238 U ELAS (CENT. REGION)

AREA= -1.9555E-01

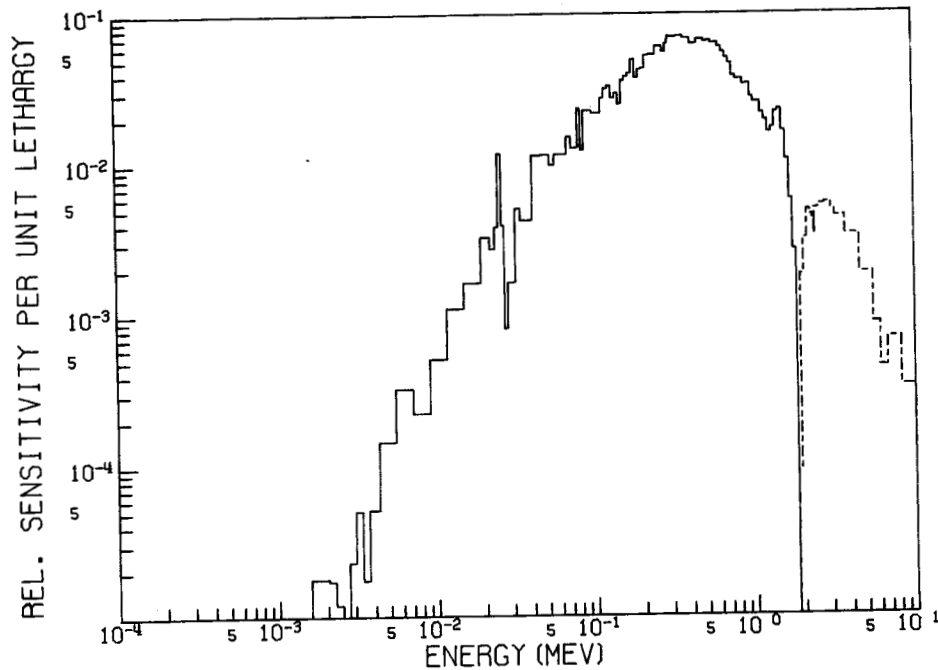


Fig. 207. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Elastic Scattering Cross Section.

ORNL DWG 76-13276

07-21-76ZPR 3/11 - SENS. OF 28F/25F TO 238 U INEL (CENT. REGION)

AREA= -6.5394E-01

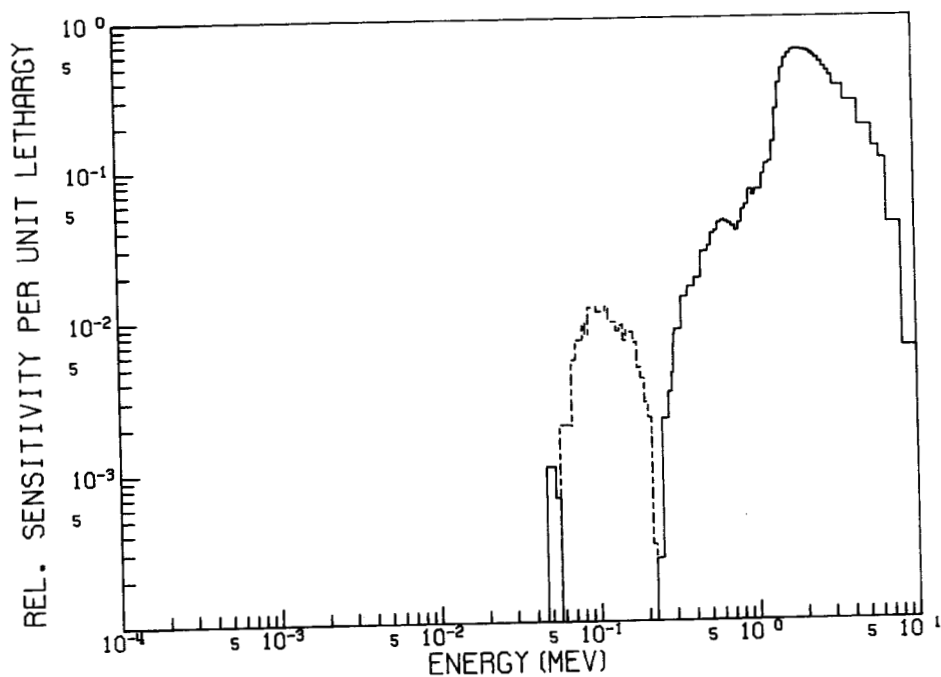


Fig. 208. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Inelastic Scattering Cross Section.

ORNL DWG 76-13279

07-21-76ZPR 3/11 - SENS. OF 238F/235F TO 238 U FISS (CENT. REGION)

AREA= 9.2269E-01

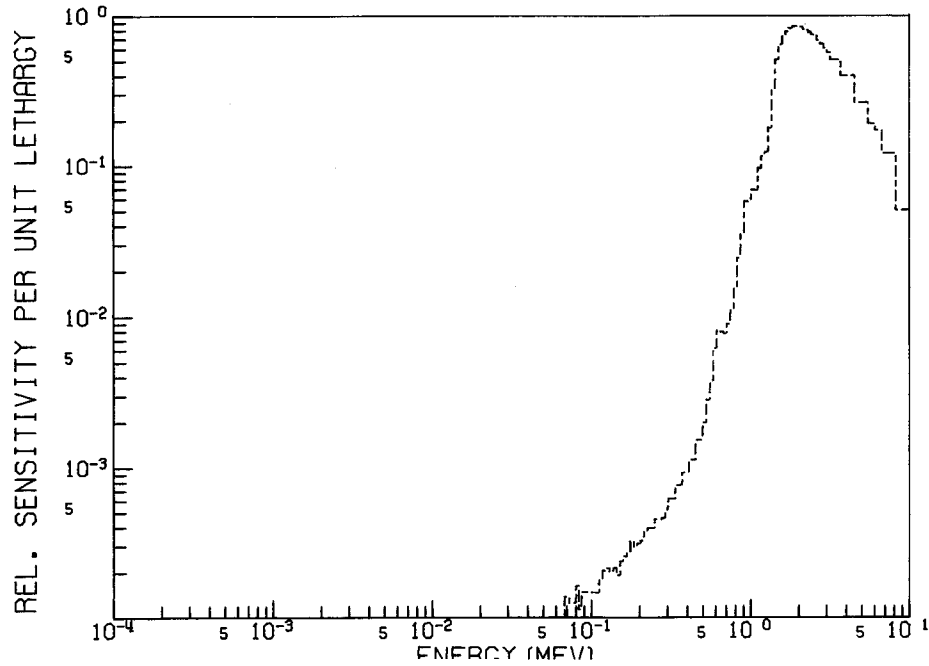


Fig. 209. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Fission Cross Section.

ORNL DWG 76-13278

07-21-76ZPR 3/11 - SENS. OF 238F/235F TO 238 U CAPT (CENT. REGION)

AREA= 2.8255E-01

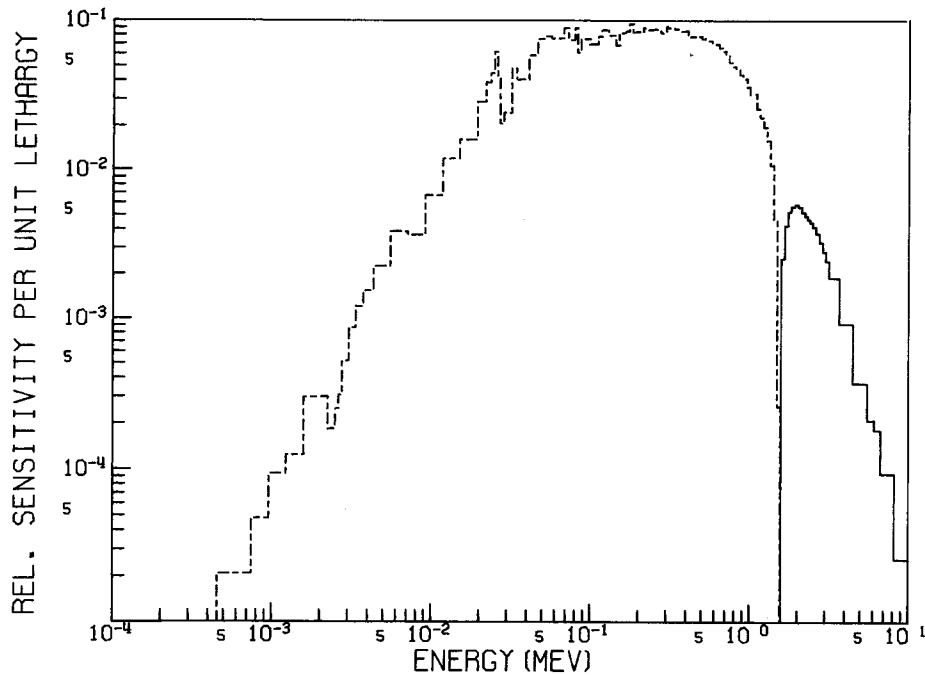


Fig. 210. Sensitivity of ^{238}U Fission/ ^{235}U Fission Central Reaction Ratio in Assembly ZPR-3/11 to the ^{238}U Capture Cross Section.

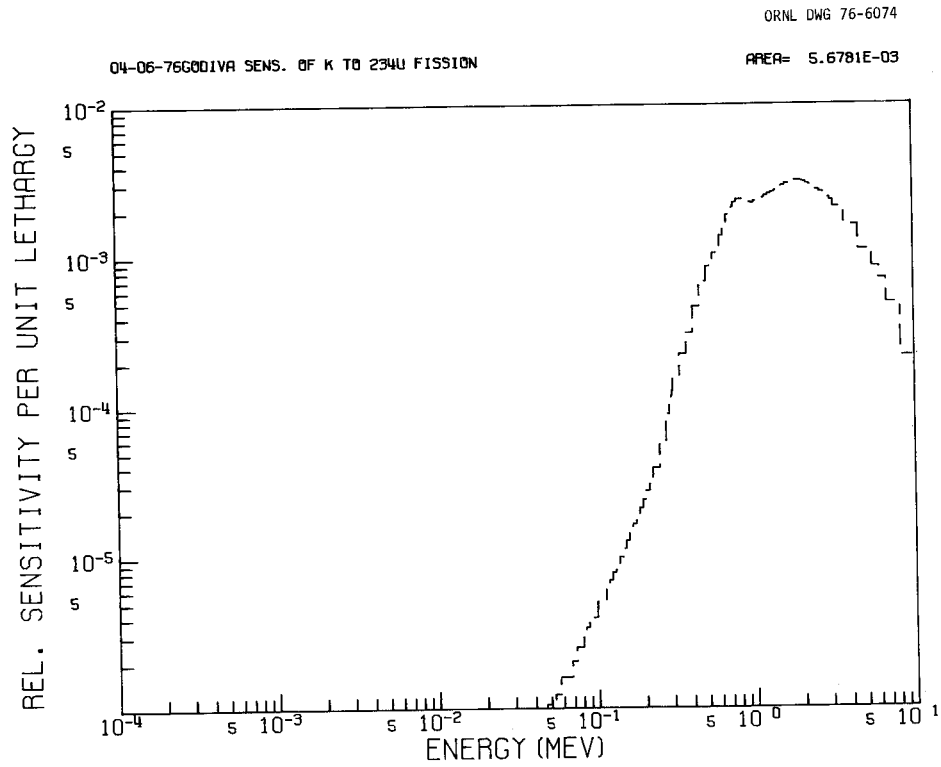


Fig. 211. Sensitivity of k in GODIVA to the ^{234}U Fission Cross Section.

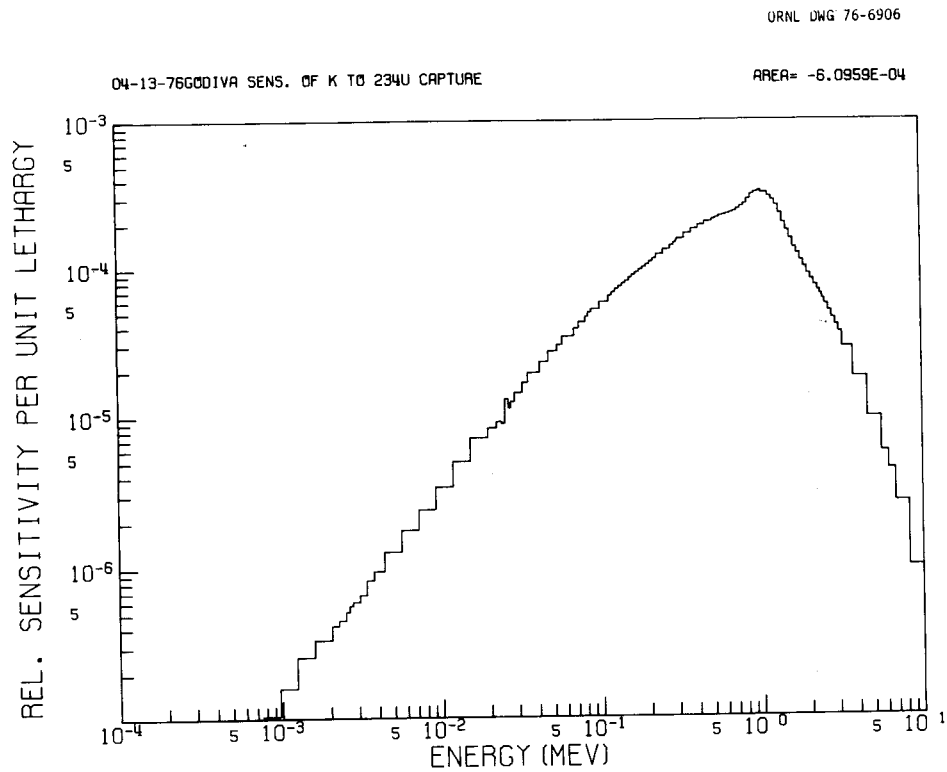


Fig. 212. Sensitivity of k in GODIVA to the ^{234}U Capture Cross Section.

ORNL DWG 76-6900

04-09-76GODIVA SENS. OF K TO ^{234}U NBARR

AREA= 6.2857E-03

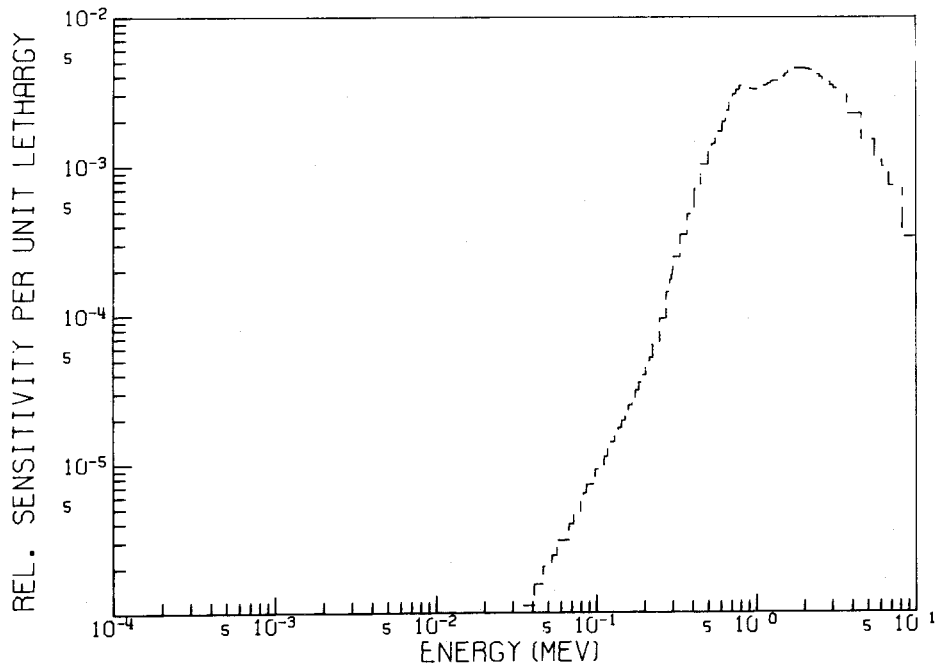


Fig. 213. Sensitivity of k in GODIVA to the ^{234}U Neutron Yield per Fission.

ORNL DWG 76-6066

04-06-76GODIVA SENS. OF K TO ^{235}U FISSION

AREA= 6.5922E-01

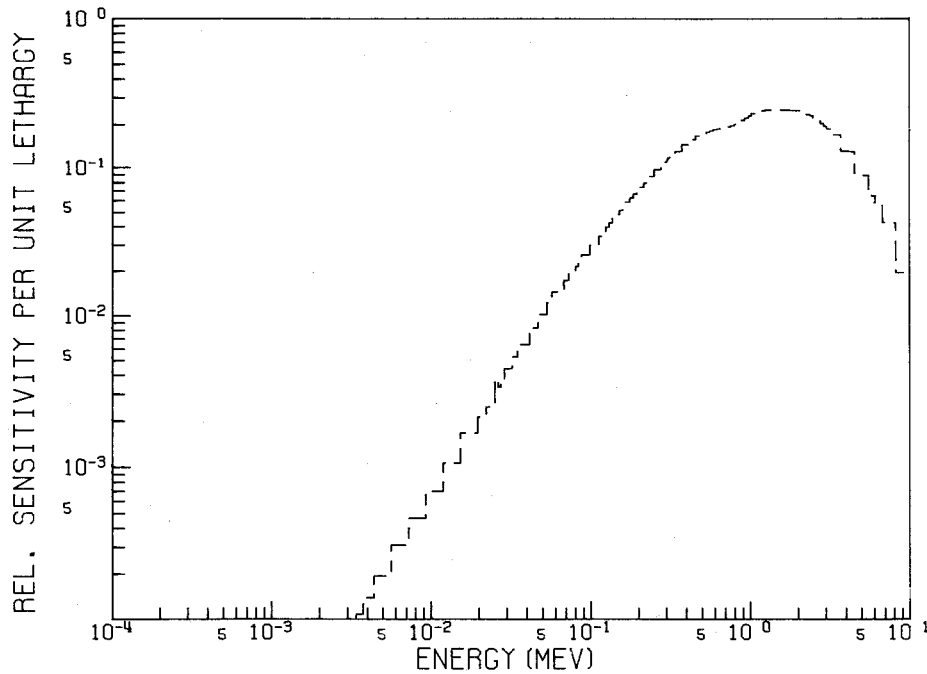


Fig. 214. Sensitivity of k in GODIVA to the ^{235}U Fission Cross Section.

ORNL DWG 76-6070

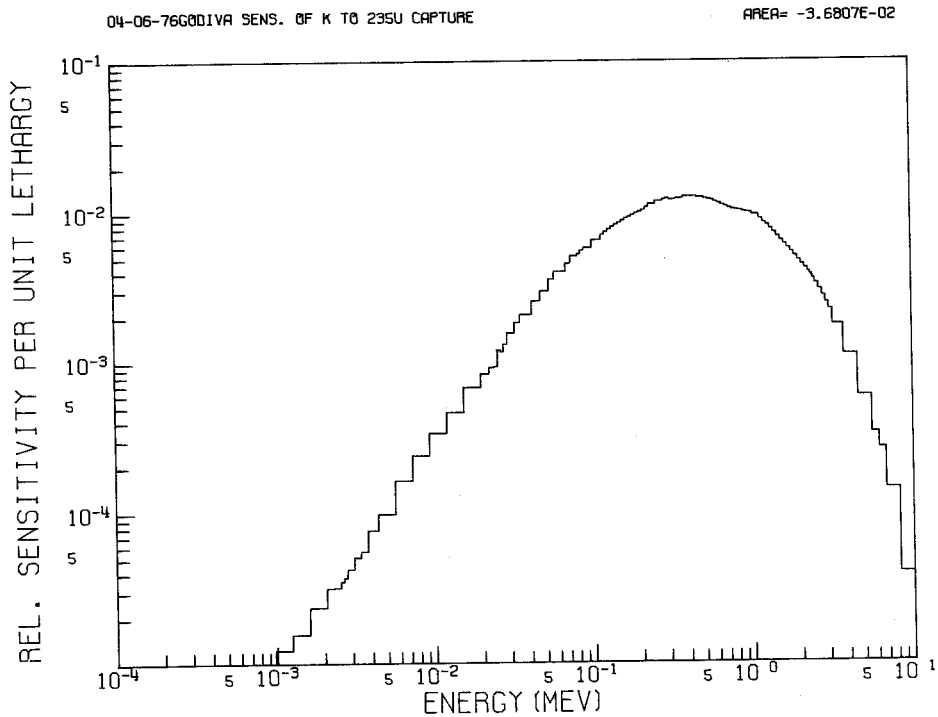


Fig. 215. Sensitivity of k in GODIVA to the ^{235}U Capture Cross Section.

ORNL DWG 76-6898

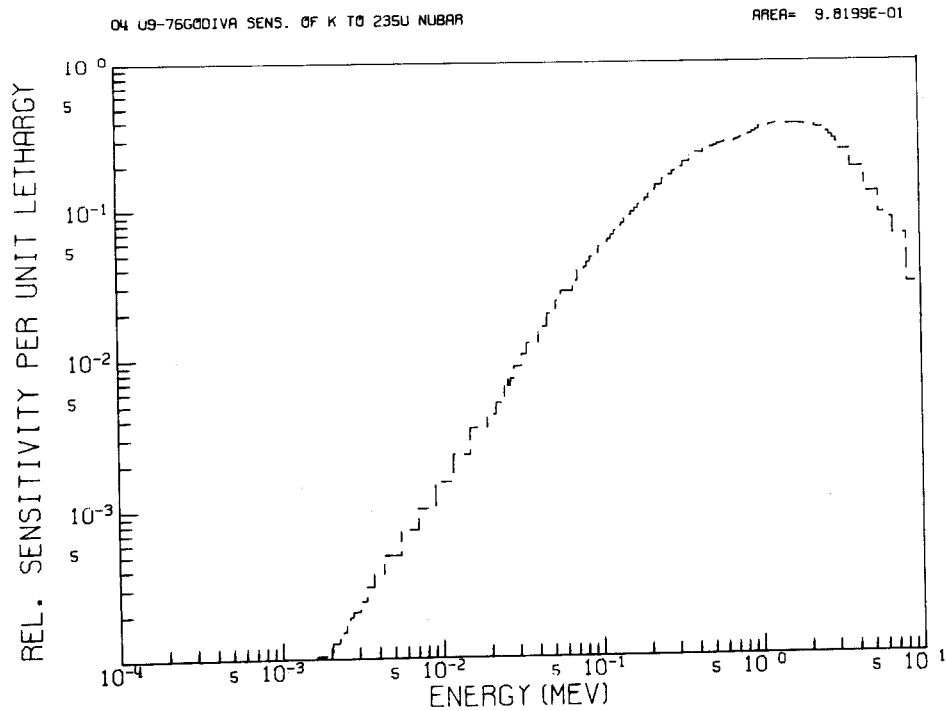


Fig. 216. Sensitivity of k in GODIVA to the ^{235}U Neutron Yield per Fission.

ORNL DWG 76-6068

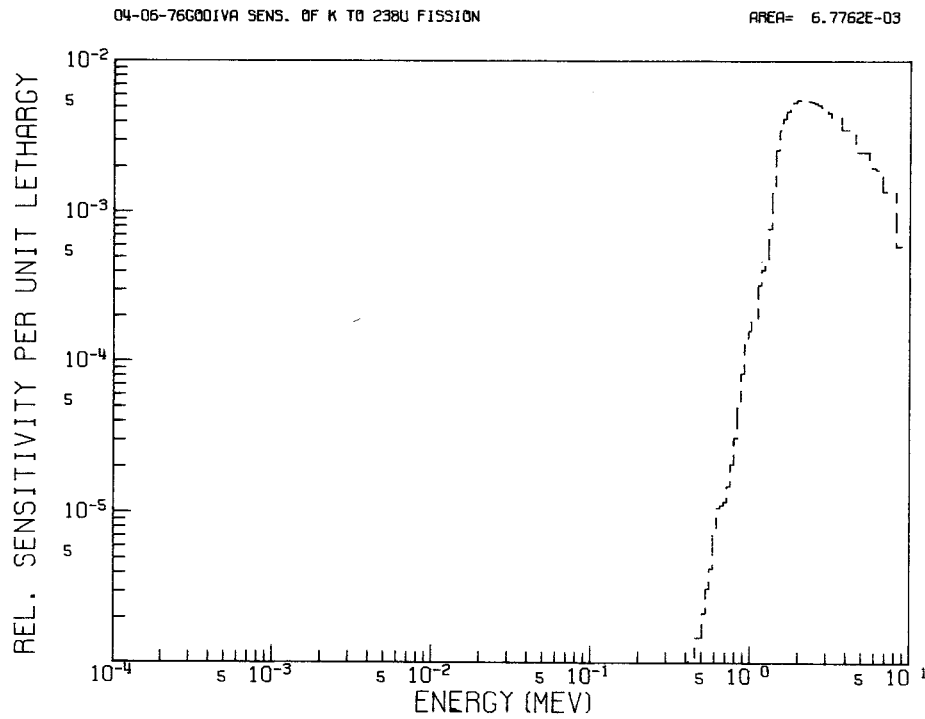


Fig. 217. Sensitivity of k in GODIVA to the ^{238}U Fission Cross Section.

ORNL DWG 76-6071

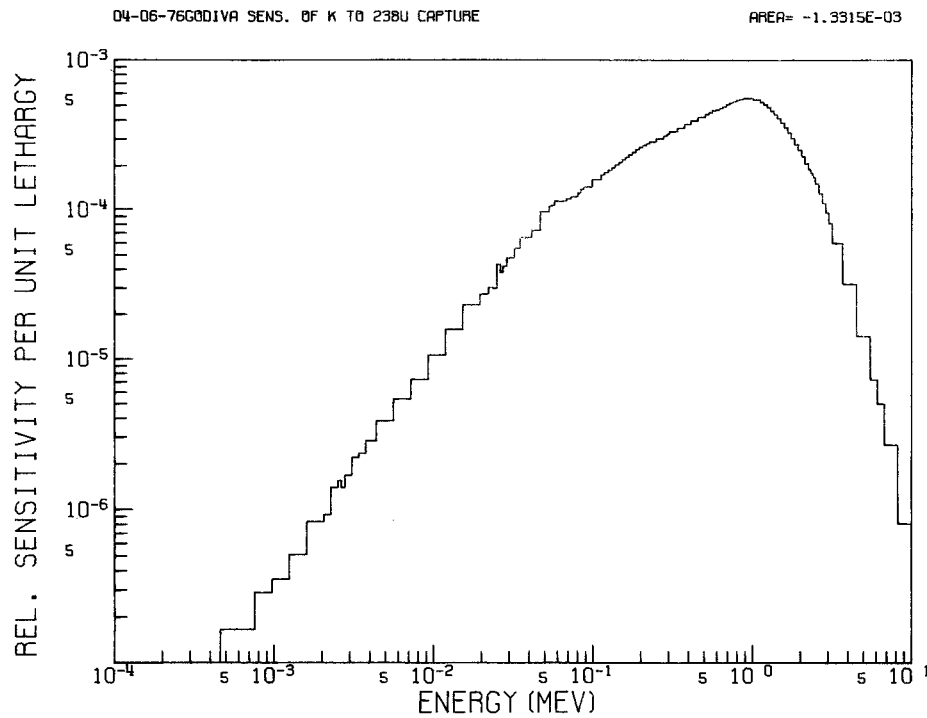


Fig. 218. Sensitivity of k in GODIVA to the ^{238}U Capture Cross Section.

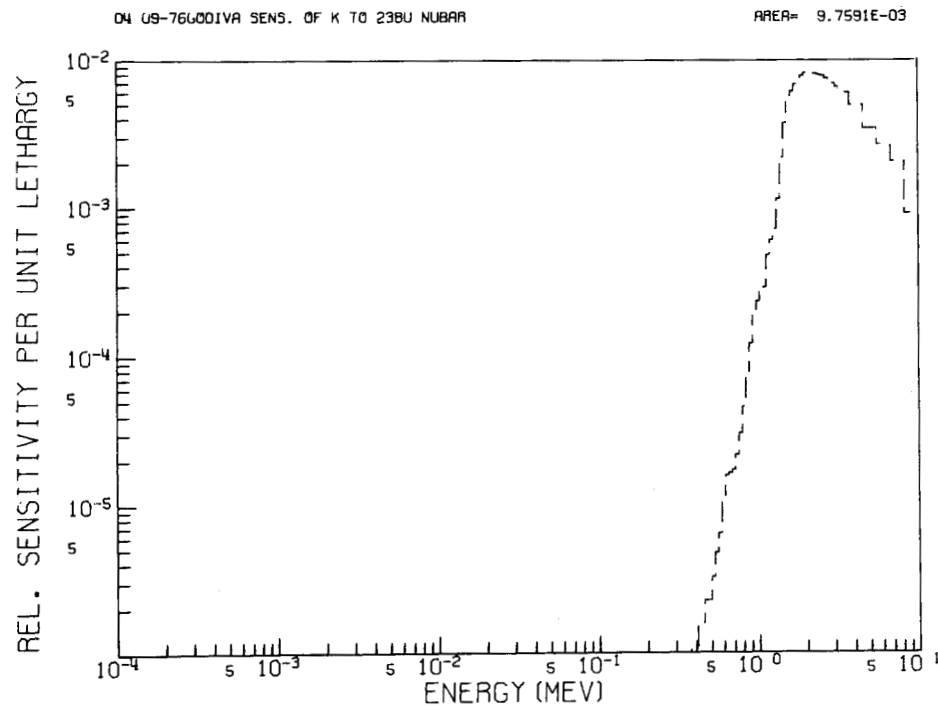


Fig. 219. Sensitivity of k in GODIVA to the ^{238}U Neutron Yield per Fission.

APPENDIX A

The Format for Standard Interface File SENPRO for
Group-Dependent Sensitivity Coefficients

```

C*****
C          REVISED 05/12/76
C
CF          SENPRO
CE          THIS FILE CONTAINS SENSITIVITY
CE          COEFFICIENTS BY GROUP AS A FUNCTION OF
CE          MATERIAL - REACTION TYPE, ASSEMBLY, AND RESPONSE
C
CN          DIVISION BY GROUP LETHARGY WIDTHS MAY BE
CN          NECESSARY FOR MEANINGFUL GRAPHIC DISPLAY.
CN          INCLUDED ARE, TOTAL SENSITIVITY COEFFICIENTS
CN          BY GROUP SUMMED OVER EFFECT TYPES, ZONES, AND
CN          SCATTERING ORDERS. ON OPTION, PARTIAL
CN          COEFFICIENTS MAY ALSO BE REPRESENTED AS VARIOUS
CN          COMBINATIONS OF DIRECT AND INDIRECT EFFECT,
CN          ZONE, AND SCATTERING ORDER
C
CE          A FILE SUCH AS THIS IS NEEDED BY ORNL - FORSS
C
C          J. L. LUCIUS
C
C*****

```

```

C-----
CS          FILE STRUCTURE
CS
CS          RECORD TYPE          PRESENT IF
CS          =====
CS          FILE IDENTIFICATION  ALWAYS
CS          FILE CONTROL          ALWAYS
CS          NEUTRON GROUP BOUNDARIES  NNGRUP.GT.0
CS          GAMMA GROUP BOUNDARIES  NGGRUP.GT.0
CS          ***** (REPEAT FOR ALL MATERIAL -
CS          *          REACTION PAIRS, MAT - MT)
CS          *          MAT - MT CONTROL          ALWAYS
CS          *          RESPONSE DESCRIPTION      NWRD.GT.0
CS          *          ZONE DENSITIES           NZDEN.GT.0
CS          *          HOLLERITH DESCRIPTION OF TOTAL  ALWAYS
CS          *          SENSITIVITY COEFFICIENTS
CS          *          TOTAL SENSITIVITY COEFFICIENTS  ALWAYS
CS          *          BY GROUP SUMMED OVER, TYPE, ZONE,
CS          *          AND SCATTERING ORDER
CS          *          PARTIAL CONTROL          NPART.GT.0
CS          *          ***** (REPEAT FOR ALL PARTIAL
CS          *          *          COEFFICIENT SETS)
CS          *          *          HOLLERITH DESCRIPTION OF  NPART.GT.0
CS          *          *          PARTIAL SET
CS          *          *          PARTIAL COEFFICIENTS BY GROUP  NPART.GT.0
CS          *****
C
C-----

```

```

C-----
CR          FILE IDENTIFICATION
C
CL          HNAME, (HUSE(I), I=1, 2), IVERS
CW          1+3*MULT
C
CB          FORMAT(11H 0V SENPRO , A6, 1H*, 2A6, 1H*, I6)
CD          HNAME          HOLLERITH FILE NAME-SENPRO- (A6)
CD          HUSE          HOLLERITH USER IDENTIFICATION (A6)
CD          IVERS          FILE VERSION NUMBER
CD          MULT          1 - A6 IS SINGLE PRECISION WORD
CD          2 - A6 IS DOUBLE PRECISION WORD
C-----

```



```

C-----
CR          FILE CONTROL
C
CL  NGROUP, NNGROUP, NGGROUP, NMAT, MAXORD, MZONE
C
CW  6
C
CB  FORMAT(4H 1D ,6I6)
CD  NGROUP      NUMBER OF ENERGY GROUPS
CD  NNGRP       NUMBER OF NEUTRON GROUPS
CD  NGGROUP     NUMBER OF GAMMA GROUPS
CD  NMAT        NUMBER OF MAT- MT PAIRS
CD  MAXORD      MAXIMUM SCATTERING ORDER
CD  MZONE       MAXIMUM NUMBER OF ZONES
C-----

```

```

C-----
CR          NEUTRON GROUP BOUNDARIES
C
CL  (GPBN(J), J=1, NNGRP), ENMIN
C
CC          PRESENT IF NNGRP.GT.0
CW  NNGRP+1
C
CB  FORMAT(4H 2D ,5E12.4/(6E12.4))
CD  GPBN(J)     MAXIMUM ENERGY BOUND OF NEUTRON GROUP (J) (EV)
CD  ENMIN       MINIMUM ENERGY OF NEUTRON ENERGY RANGE
C-----

```

```

C-----
CR          GAMMA GROUP BOUNDARIES
C
CL  (GPBG(J), J=1, NGGRP), EGMIN
C
CC          PRESENT IF NGGRP.GT.0
CW  NGGRP+1
C
CB  FORMAT(4H 3D ,5E12.4/(6E12.4))
CD  GPBG(J)     MAXIMUM ENERGY BOUND OF GAMMA GROUP (J) (EV)
CD  EGMIN       MINIMUM ENERGY OF GAMMA ENERGY RANGE
C-----

```

```

C-----
CR          MAT - MT CONTROL
C
CL  IASB, IRESP, MATID, MT, MZONE, ISTD, NPART, NWRD, NZDEN, MATRIX, NTRN, NTRD
CW  12
C
CB  FORMAT(4H 4D ,11I6/I6)
C
CD  IASB        ASSEMBLY IDENTIFICATION
CD                      REFERENCE BNL 19302 (ENDF-202) F-1
CD  IRESP       RESPONSE IDENTIFICATION
CD                      1 - K
CD                      2 - BREEDING RATIO
CD                      3 - WORTH
CD                      4 - REACTION RATE RATIO
CD                      5 - OTHER
CD  MATID       MATERIAL IDENTIFICATION
CD  MT          REACTION TYPE IDENTIFICATION
CD  MZONE       NUMBER OF ZONES
CD  ISTD        SCATTERING ORDER FOR TOTAL COEFFICIENTS
CD  NPART       NUMBER OF PARTIAL SETS
CD  NWRD        NUMBER OF HOLLERITH(A6) WORDS USED TO DESCRIBE
CD                      THE RESPONSE
CD  NZDEN       ZONE DENSITY OPTION
CD                      0 - ZONE DENSITIES ARE OMITTED
CD                      1 - ZONE DENSITIES ARE PRESENT
CD  MATRIX      RESERVED
CD  NTRN        RESERVED
CD  NTRD        RESERVED
C-----

```

```

C-----
CR          RESPONSE DESCRIPTION          -
C                                               -
CL      (RDES ( I) , I=1, NWRD)         -
C                                               -
CC          PRESENT IF NWRD.GT.0         -
C                                               -
CW      NWRD*MULT                         -
C                                               -
CB      FORMAT(4H 5D , 1H* , 11A6/(11A6)) -
C                                               -
CD      RDES ( I)      ARRAY CONTAINING HOLLERITH DESCRIPTION OF -
CD          RESPONSE                                     -
C-----

```

```

C-----
CR          ZONE DENSITIES                -
C                                               -
CL      (ZDEN ( J) , J=1, NZONE)         -
C                                               -
CC          PRESENT IF NZDEN.EQ.1        -
C                                               -
CW      NZONE                             -
C                                               -
CB      FORMAT(4H 6D , 5E12.4/(6E12.4)) -
C                                               -
CD      ZDEN          ZONE DENSITIES      -
C-----

```

```

C-----
CR          HOLLERITH DESCRIPTION OF TOTAL SENSITIVITY COEFFICIENTS -
C                                               -
CL      (HOL ( I) , I=1, 11)             -
C                                               -
CW      11*MULT                           -
C                                               -
CB      FORMAT(4H 7D , 1H* , 11A6, 1H*) -
C-----

```

```

C-----
CR          TOTAL SENSITIVITY COEFFICIENTS BY GROUP -
C                                               -
CL      (TOTS ( J) , J=1, NGROUP)        -
C                                               -
CW      NGROUP                             -
C                                               -
CB      FORMAT(4H 8D , 5E12.4/(6E12.4)) -
C                                               -
CD      TOTS          SENSITIVITY COEFFICIENTS -
C-----

```

```

-----
CR          PARTIAL CONTROL -
C
CL      (ITYPE (I) , IZON1 (I) , IZON2 (I) , ISCAT (I) , I=1, NPART) -
C
CC          PRESENT IF NPART.GT.0 -
C
CW      4*NPART -
C
CB      FORMAT(4H 9D ,4I6/(4I6)) -
C
CD      ITYPE (I)      TYPE IDENTIFICATION -
CD              1 - H1 DIRECT EFFECT(H1DE) -
CD              2 - H2 DIRECT EFFECT (H2DE) -
CD              3 - FORWARD FLUX PERTURBATION (FFP) -
CD              4 - ADJOINT FLUX PERTURBATION (AFP) -
CD              5 - H1DE+H2DE+FFP -
CD              6 - H1DE+H2DE+FFP+AFP -
CD      IZON1 (I)      LOWER DO LIMITER FOR ZONE SUMMATION -
CD      IZON2 (I)      UPPER DO LIMITER FOR ZONE SUMMATION -
CD      ISCAT (I)      SCATTERING ORDER SPECIFICATION -
CD                      LE.ISTC - SCATTERING ORDER -
CD                      GT.ISTC - SUM OVER ALL SCATTERING ORDERS -
-----

```

```

-----
CR          HOLLERITH DESCRIPTION OF PARTIAL SET -
C
CL      (HOLP (I) ,I=1,11) -
C
CC          PRESENT IF NPART.GT.0 -
C
CW      11*MULT -
C
CB      FORMAT(4H10D ,1H*,11A6,1H*) -
-----

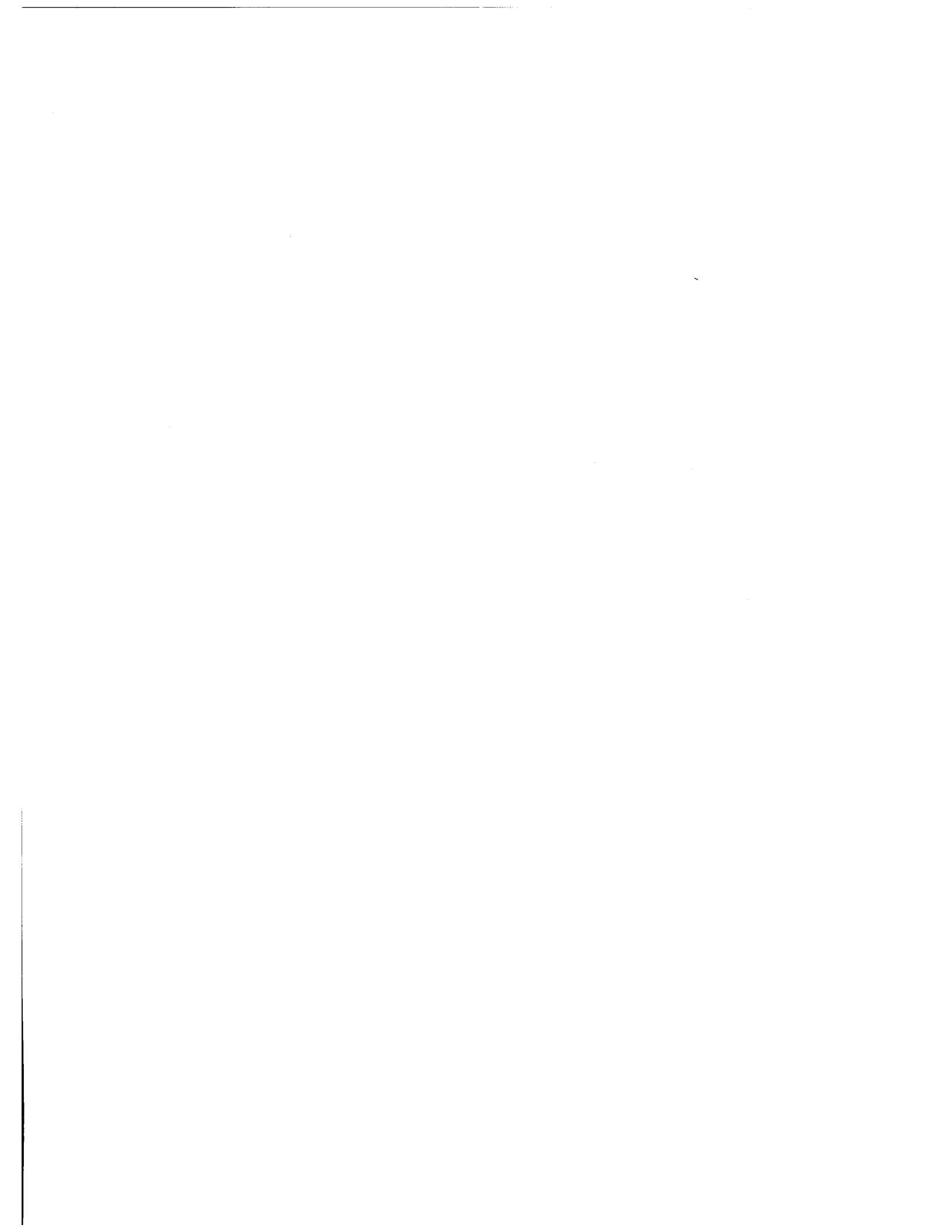
```

```

-----
CR          PARTIAL SENSITIVITY COEFFICIENTS BY GROUP -
C
CL      (PARTS (J) ,J=1,NGROUP) -
C
CC          PRESENT IF NPART.GT.0 -
C
CW      NGROUP -
C
CB      FORMAT(4H11D ,5E12.4/(6E12.4)) -
C
CD      PARTS          SENSITIVITY COEFFICIENTS -
-----

```

IHC002I STOP 0



APPENDIX B

The Sensitivity Coefficients for the Profiles of
Figs. 1-219 in SENPRO Format


```

4D      12      1 1156 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO SODIUM CAPTURE A= -2.5364E-03*
8D -2.1464E-08 -5.9570E-08 -1.7432E-07 -3.7948E-07 -2.9537E-07
-3.6561E-07 -1.0607E-06 -1.5127E-06 -1.6233E-06 -7.6079E-07 -8.0791E-07
-8.7735E-07 -1.0055E-06 -1.0159E-06 -7.2165E-07 -2.1118E-07 -6.2664E-07
-7.8940E-07 -1.0755E-06 -1.0418E-06 -1.1107E-06 -1.1821E-06 -1.3381E-06
-1.3643E-06 -1.2950E-06 -1.4037E-06 -1.4928E-06 -1.5653E-06 -1.3113E-06
-1.9366E-06 -2.0241E-06 -2.1144E-06 -2.6993E-06 -1.1975E-06 -1.9965E-06
-1.9235E-06 -2.6058E-06 -2.8298E-06 -3.4204E-06 -3.6587E-06 -3.8445E-06
-4.4750E-06 -4.8078E-06 -4.8865E-06 -4.8212E-06 -4.8913E-06 -4.6507E-06
-6.1025E-06 -4.3271E-06 -6.3347E-06 -1.0698E-05 -1.8661E-05 -2.2245E-06
-8.8499E-07 -1.9669E-06 -4.9160E-06 -9.2109E-06 -1.9378E-05 -1.9242E-05
-1.0312E-05 -9.8249E-06 -1.0383E-05 -1.2083E-05 -1.2995E-05 -9.2738E-06
-9.2152E-06 -6.6096E-06 -2.8296E-06 -4.5635E-05 -2.5386E-05 -2.9428E-06
-3.0064E-06 -1.1058E-04 -5.7752E-06 -6.2337E-06 -1.7112E-06 -2.7795E-06
-4.8046E-06 -4.4906E-06 -1.8125E-05 -9.2845E-05 -6.3000E-05 -8.6448E-06
-1.9187E-04 -2.4640E-06 -1.7680E-06 -7.2759E-07 -1.6042E-06 -3.0640E-06
-2.1542E-06 -2.8728E-06 -4.7030E-06 -6.9700E-06 -7.9854E-06 -7.6359E-06
-2.9713E-05 -1.6343E-05 -4.1841E-05 -5.9930E-05 -7.2917E-05 -1.0524E-04
-1.4714E-04 -8.7806E-05 -8.6512E-05 -1.6100E-04 -1.4655E-04 -2.4783E-04
-1.3971E-04 -8.5292E-05 -6.1496E-05 -7.5306E-05 -3.7952E-05 -1.1383E-05
-8.2455E-06 -6.9196E-06 -3.5001E-06 -6.4980E-07 -1.5596E-07 -2.8960E-07
-1.0201E-07 -1.0708E-08 -9.4335E-09 -1.6625E-09 -7.5131E-11 -8.4034E-11
1.1472E-10
4D      12      1 1192      2      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO IRON ELASTIC A= 1.9053E-02*
8D 7.2764E-08 1.9749E-06 8.5429E-07 -2.8479E-07 8.1793E-06
2.1423E-05 1.3753E-04 2.3717E-04 2.1572E-04 1.5237E-04 1.4256E-04
1.4442E-04 1.4298E-04 1.5005E-04 8.3827E-05 2.5238E-05 8.1932E-05
9.1283E-05 1.0273E-04 7.9678E-05 6.3847E-05 5.1811E-05 3.2956E-05
3.0019E-05 2.2608E-05 4.3434E-05 1.3476E-06 9.5923E-05 9.8146E-05
2.2939E-04 2.1647E-04 2.0518E-04 1.7082E-04 6.2450E-05 1.0701E-04
1.9643E-04 2.5423E-04 2.4896E-04 2.8499E-04 2.3187E-04 1.8185E-04
1.9759E-04 1.4927E-04 2.0593E-04 2.6681E-04 2.7169E-04 2.4811E-04
1.5617E-04 5.8207E-06 1.9243E-04 2.8229E-04 4.7852E-04 9.7993E-06
6.8980E-06 2.8544E-05 6.4389E-05 3.4452E-05 1.4967E-04 1.5679E-04
1.0502E-04 3.0113E-05 3.3317E-05 1.0717E-04 1.0965E-04 1.1719E-04
4.7708E-05 4.2398E-05 -1.1328E-04 1.2211E-04 -3.7988E-08 4.4665E-05
4.1651E-05 -2.3020E-05 -1.0600E-04 -2.3535E-04 -3.1900E-04 5.1144E-05
-2.1385E-04 -5.3255E-05 2.8167E-05 -2.4346E-05 8.6875E-05 3.7933E-04
2.9443E-04 2.2629E-04 -2.5727E-04 -3.1350E-05 3.4115E-04 3.1376E-04
2.9162E-05 9.0896E-05 1.7295E-04 3.0925E-04 6.3301E-04 1.0484E-03
1.0445E-03 7.2060E-04 4.2068E-04 1.8659E-04 3.1107E-05 1.2198E-05
3.4350E-06 4.1462E-07 1.2995E-05 7.8503E-05 2.8637E-04 1.4229E-03
3.0862E-04 1.4204E-03 8.1422E-04 5.0916E-04 5.1211E-04 1.7525E-04
-1.3724E-06 1.8149E-04 -2.5385E-05 -6.1172E-05 8.8862E-06 7.7269E-06
-8.0151E-07 9.4449E-08 -3.1709E-08 -4.3318E-09 7.1268E-10 1.7703E-11
-9.3605E-12
4D      12      1 1192      4      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO IRON TOTAL INELASTIC A= -2.3499E-02*
8D -3.6628E-05 -1.5187E-04 -4.7752E-04 -8.9744E-04 -4.6744E-04
-4.6967E-04 -1.3277E-03 -2.1392E-03 -1.8793E-03 -6.7481E-04 -5.9144E-04
-5.7659E-04 -6.8892E-04 -7.7732E-04 -5.7239E-04 -1.5888E-04 -4.9506E-04
-6.8501E-04 -9.7067E-04 -9.9534E-04 -8.7888E-04 -7.7851E-04 -6.6665E-04
-6.4982E-04 -5.7516E-04 -5.6776E-04 -4.3041E-04 -3.4870E-04 -2.1472E-04
-3.2829E-04 -4.3319E-04 -5.4713E-04 -7.2904E-04 -4.2016E-04 -4.7178E-04
-4.2460E-04 1.1430E-07 -4.4280E-09 -4.8602E-09 -5.0124E-09 -5.1706E-09
-5.9437E-09 -6.3667E-09 -6.4132E-09 -6.5315E-09 -6.8975E-09 -7.1399E-09
-1.0470E-08 -7.5047E-09 -8.9083E-09 -1.1831E-08 -1.3396E-08 -1.4697E-09
-5.9357E-10 -1.3244E-09 -3.3177E-09 -6.3313E-09 -1.5826E-08 -1.6732E-08
-7.9331E-09 -6.6865E-09 -6.4346E-09 -7.2421E-09 -8.3894E-09 -6.4468E-09
-6.6772E-09 -6.1084E-09 -4.7764E-09 -6.9351E-09 -6.7909E-09 -6.8672E-09
-7.0660E-09 -6.9851E-09 -1.9575E-08 -2.3176E-08 -6.2129E-09 -9.9093E-09
-1.6204E-08 -1.3662E-08 -2.7845E-08 -1.0876E-08 -1.4102E-08 -1.0616E-08
-2.9908E-08 -2.5130E-08 -9.4779E-09 -1.7291E-08 -1.4286E-08 -1.0763E-08
-3.6396E-09 -2.2959E-08 -5.6985E-09 -3.7851E-09 -1.4293E-08 -2.8726E-08
-5.1681E-08 -2.3396E-08 -6.2623E-09 -5.8613E-09 -1.0087E-09 -3.9346E-10
-1.6499E-10 -1.3627E-10 -2.4798E-10 -1.5165E-09 -1.8170E-09 -1.4374E-08
-8.7290E-09 -4.6190E-07 -9.2011E-09 -1.4190E-08 -9.1395E-09 -3.2295E-09
-2.5850E-09 -2.4021E-09 -1.3675E-09 -2.7312E-10 -6.7076E-11 -1.2544E-10
-4.4171E-11 -4.6664E-12 -4.1426E-12 -7.2220E-13 -3.2119E-14 -3.5442E-14
4.8470E-14

```

```

4D      12      1 1192 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO IRON CAPTURE A= -2.0493E-02*
8D -3.3533E-08 -1.2532E-07 -4.3562E-07 -1.1957E-06 -1.0718E-06
-1.4781E-06 -5.1310E-06 -8.8690E-06 -1.0768E-05 -5.3960E-06 -5.9260E-06
-6.6820E-06 -7.9697E-06 -8.2691E-06 -6.2576E-06 -1.8234E-06 -5.3936E-06
-7.1966E-06 -9.9687E-06 -1.0031E-05 -1.0911E-05 -1.2594E-05 -1.5267E-05
-1.6155E-05 -1.6173E-05 -1.8377E-05 -1.9329E-05 -2.0977E-05 -1.8325E-05
-2.6935E-05 -2.9017E-05 -3.1649E-05 -4.4681E-05 -2.4232E-05 -4.5315E-05
-4.9511E-05 -6.8451E-05 -7.2134E-05 -7.9218E-05 -8.1861E-05 -8.4573E-05
-9.7128E-05 -1.0403E-04 -1.0484E-04 -1.0683E-04 -1.1277E-04 -1.1675E-04
-1.7233E-04 -1.2435E-04 -1.4758E-04 -1.9531E-04 -2.2103E-04 -2.4280E-05
-9.7919E-06 -2.1795E-05 -5.4699E-05 -1.0449E-04 -2.6114E-04 -2.7620E-04
-1.3091E-04 -1.1048E-04 -1.0625E-04 -1.1941E-04 -1.3813E-04 -1.0640E-04
-1.1011E-04 -1.0075E-04 -7.8913E-05 -1.1423E-04 -1.1199E-04 -1.1329E-04
-1.1662E-04 -1.1537E-04 -3.2342E-04 -3.8335E-04 -1.0301E-04 -1.6337E-04
-2.6868E-04 -2.2628E-04 -4.6194E-04 -1.8130E-04 -2.3418E-04 -1.7641E-04
-4.9722E-04 -4.1799E-04 -1.5781E-04 -2.8811E-04 -2.3693E-04 -1.7826E-04
-6.0556E-05 -3.8186E-04 -9.4630E-05 -6.2789E-05 -2.3676E-04 -4.7510E-04
-8.5443E-04 -3.8624E-04 -1.0334E-04 -9.6797E-05 -1.6682E-05 -6.5132E-06
-2.7360E-06 -2.2544E-06 -4.0999E-06 -2.5016E-05 -2.9948E-05 -5.2603E-04
-1.4291E-04 -7.5649E-03 -1.5034E-04 -2.3107E-04 -1.4854E-04 -5.2408E-05
-4.1811E-05 -3.8684E-05 -2.2056E-05 -4.4143E-06 -1.0766E-06 -2.0012E-06
-7.0575E-07 -7.4190E-08 -6.5437E-08 -1.1562E-08 -5.3678E-10 -5.8915E-10
7.9190E-10
4D      12      1 1261 18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D * PORSS-ZPR 6/7 SENS. OF K TO 235U FISSION A= 8.8038E-03*
8D 5.7052E-07 1.6688E-06 4.8679E-06 1.0106E-05 6.8817E-06
7.3382E-06 2.0998E-05 2.8728E-05 2.7888E-05 1.2661E-05 1.3261E-05
1.4227E-05 1.6197E-05 1.6327E-05 1.1617E-05 3.4169E-06 1.0162E-05
1.2798E-05 1.7341E-05 1.6686E-05 1.7616E-05 1.8620E-05 2.0982E-05
2.1476E-05 2.0474E-05 2.2251E-05 2.3862E-05 2.5574E-05 2.1662E-05
3.1939E-05 3.3365E-05 3.4697E-05 4.4285E-05 1.9035E-05 3.0420E-05
2.8075E-05 3.4939E-05 3.5029E-05 3.7328E-05 3.8207E-05 3.9464E-05
4.5156E-05 4.9086E-05 5.1226E-05 5.2599E-05 5.7165E-05 6.0007E-05
9.6070E-05 7.5888E-05 8.9283E-05 1.1350E-04 1.2852E-04 1.4521E-05
5.7284E-06 1.2579E-05 3.2073E-05 6.1408E-05 1.3266E-04 1.3129E-04
6.6515E-05 6.1518E-05 6.2586E-05 7.2217E-05 8.6733E-05 7.0872E-05
7.5207E-05 7.1237E-05 5.7559E-05 8.1580E-05 8.3091E-05 8.3872E-05
8.4547E-05 7.8227E-05 1.7368E-04 1.9025E-04 5.4855E-05 8.3145E-05
1.5569E-04 1.3012E-04 2.9635E-04 8.7970E-05 1.9493E-04 2.1130E-04
2.4157E-04 9.7450E-05 7.4302E-05 3.0944E-05 6.2365E-05 1.1699E-04
9.4246E-05 1.2976E-04 1.9133E-04 2.7848E-04 2.9944E-04 2.6686E-04
1.8874E-04 1.9590E-04 1.6456E-04 8.1510E-05 3.8134E-05 1.8755E-05
8.5139E-06 5.7816E-06 1.0838E-05 3.6440E-05 6.0048E-05 2.3889E-04
2.2450E-04 2.1546E-04 1.6634E-04 3.0080E-04 1.4756E-04 5.8702E-05
3.4354E-05 2.8660E-05 1.0070E-05 4.7900E-06 1.6936E-06 2.7746E-06
4.1152E-07 6.7453E-08 6.2325E-09 2.1523E-09 5.1500E-10 8.8378E-11
-4.5916E-11
4D      12      1 1261 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D * PORSS-ZPR 6/7 SENS. OF K TO 235U CAPTURE A= -1.1314E-03*
8D -4.1660E-10 -1.9967E-09 -1.0864E-08 -3.9276E-08 -4.0306E-08
-5.3381E-08 -1.9360E-07 -3.5104E-07 -4.3407E-07 -2.2039E-07 -2.4328E-07
-2.7564E-07 -3.2798E-07 -3.4553E-07 -2.5508E-07 -7.5871E-08 -2.2890E-07
-2.9631E-07 -4.1827E-07 -4.1915E-07 -4.6021E-07 -5.0906E-07 -5.9688E-07
-6.3165E-07 -6.2782E-07 -7.0742E-07 -7.9049E-07 -8.7787E-07 -7.7663E-07
-1.1993E-06 -1.3154E-06 -1.4569E-06 -2.0402E-06 -9.4640E-07 -1.5805E-06
-1.5273E-06 -1.9924E-06 -2.0770E-06 -2.2853E-06 -2.4010E-06 -2.5482E-06
-2.9922E-06 -3.3299E-06 -3.5501E-06 -3.7378E-06 -4.1417E-06 -4.4307E-06
-7.2216E-06 -5.8147E-06 -7.0789E-06 -9.3021E-06 -1.0928E-05 -1.2585E-06
-4.9931E-07 -1.1029E-06 -2.8321E-06 -5.5304E-06 -1.2351E-05 -1.2543E-05
-6.4046E-06 -5.9214E-06 -6.0875E-06 -7.1475E-06 -8.6585E-06 -7.0721E-06
-7.5904E-06 -7.2481E-06 -5.8913E-06 -8.5750E-06 -8.7483E-06 -8.8690E-06
-8.9839E-06 -8.3128E-06 -1.8708E-05 -2.0651E-05 -5.9045E-06 -9.3012E-06
-1.7087E-05 -1.4497E-05 -3.3187E-05 -9.5056E-06 -2.2594E-05 -2.4618E-05
-2.9079E-05 -1.1821E-05 -9.0901E-06 -3.8288E-06 -8.1309E-06 -1.5055E-05
-1.2200E-05 -1.5990E-05 -2.6537E-05 -3.8090E-05 -4.1313E-05 -4.0956E-05
-3.2019E-05 -3.0847E-05 -2.2567E-05 -1.1721E-05 -4.5633E-06 -2.5276E-06
-1.0480E-06 -7.7425E-07 -1.4652E-06 -5.9634E-06 -1.1913E-05 -4.1939E-05
-4.3412E-05 -5.3777E-05 -4.6850E-05 -6.2868E-05 -3.8609E-05 -1.8469E-05
-1.4577E-05 -1.2436E-05 -5.8398E-06 -1.9654E-06 -2.9574E-07 -7.6110E-07
-2.7672E-07 -1.5092E-08 -4.3466E-09 -3.8931E-10 -1.5322E-11 -2.7597E-11
2.7914E-11

```


4D 12 1 1262 76 2 3 0 8 0 0 0

0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 238U INELASTIC LEVEL 26 A= -7.9444E-06*

8D	-3.7127E-07	-9.6267E-07	-2.0374E-06	-2.2868E-06	-1.4296E-06		
	-6.8992E-07	-1.6674E-07	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0

4D 12 1 1262 91 2 0 0 8 0 0 0

0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 238U INELASTIC CONTINUUM A= -1.2177E-02*

8D	-5.2328E-06	-2.1049E-05	-1.1002E-04	-5.3889E-04	-5.4544E-04		
	-6.3308E-04	-1.7138E-03	-2.3598E-03	-2.0862E-03	-7.7515E-04	-7.2541E-04	
	-6.6975E-04	-6.3017E-04	-5.2142E-04	-2.7925E-04	-6.6413E-05	-1.6973E-04	
	-1.5777E-04	-1.2352E-04	-4.3846E-05	-1.1070E-06	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	0.0	0.0	0.0	

4D 12 1 1262 102 2 0 0 8 0 0 0

0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 238U CAPTURE A= -2.3940E-01*

8D	-8.1665E-08	-4.0762E-07	-1.8387E-06	-6.0963E-06	-6.3319E-06		
	-9.6490E-06	-3.9149E-05	-8.4143E-05	-1.2201E-04	-6.7296E-05	-7.8241E-05	
	-9.2571E-05	-1.1561E-04	-1.2755E-04	-9.6930E-05	-2.9167E-05	-8.8936E-05	
	-1.1762E-04	-1.7122E-04	-1.7920E-04	-2.0393E-04	-2.3013E-04	-2.7627E-04	
	-3.0034E-04	-3.0409E-04	-3.5946E-04	-3.9351E-04	-4.3371E-04	-3.8362E-04	
	-5.9280E-04	-6.4801E-04	-7.0320E-04	-9.6342E-04	-4.4093E-04	-7.2623E-04	
	-6.8840E-04	-8.7592E-04	-8.9318E-04	-9.5375E-04	-9.6314E-04	-9.6939E-04	
	-1.0771E-03	-1.1359E-03	-1.1584E-03	-1.1726E-03	-1.2492E-03	-1.2823E-03	
	-1.9651E-03	-1.4799E-03	-1.7285E-03	-2.2101E-03	-2.4914E-03	-2.7775E-04	
	-1.0972E-04	-2.4151E-04	-6.1506E-04	-1.1829E-03	-2.5845E-03	-2.6329E-03	
	-1.3750E-03	-1.2878E-03	-1.3218E-03	-1.5307E-03	-1.8298E-03	-1.4733E-03	
	-1.5639E-03	-1.4858E-03	-1.2044E-03	-1.7431E-03	-1.7663E-03	-1.7805E-03	
	-1.8002E-03	-1.6638E-03	-3.7277E-03	-4.1720E-03	-1.1969E-03	-1.8871E-03	
	-3.3938E-03	-3.1251E-03	-7.8038E-03	-2.3215E-03	-5.9873E-03	-5.6373E-03	
	-7.2546E-03	-2.8515E-03	-2.2495E-03	-9.9272E-04	-2.1202E-03	-4.0921E-03	
	-3.0115E-03	-4.0850E-03	-6.7538E-03	-1.0205E-02	-1.0945E-02	-9.8209E-03	
	-7.4797E-03	-7.5186E-03	-6.3938E-03	-3.1180E-03	-1.4027E-03	-8.2546E-04	
	-3.2691E-04	-2.2802E-04	-4.8674E-04	-1.8360E-03	-2.2576E-03	-8.0420E-03	
	-7.1400E-03	-6.8530E-03	-6.0862E-03	-8.1094E-03	-3.7577E-03	-1.2187E-03	
	-9.3591E-04	-9.9313E-04	-5.3194E-04	-5.1516E-06	-1.4707E-05	-4.2499E-05	
	-1.9116E-05	-2.4620E-06	-1.1489E-07	-8.3758E-09	-4.3278E-10	-3.3106E-10	
	3.5536E-10						

```

4D      12      1 1262  452      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 238U NUBAR A= 1.2562E-01*
8D  2.2888E-04  6.6596E-04  1.9273E-03  4.1795E-03  2.8347E-03
2.7816E-03  7.3793E-03  1.0042E-02  9.5011E-03  4.1731E-03  4.3553E-03
4.6676E-03  5.2893E-03  5.3042E-03  3.7386E-03  1.0907E-03  3.2320E-03
4.0505E-03  5.4606E-03  5.1933E-03  5.3225E-03  5.3517E-03  5.6202E-03
5.2361E-03  4.4380E-03  4.0067E-03  3.1492E-03  1.9299E-03  8.4960E-04
7.8288E-04  7.0417E-04  5.8580E-04  4.6611E-04  1.6959E-04  2.4493E-04
1.3846E-04  1.1155E-04  6.9041E-05  5.0184E-05  3.7640E-05  3.1126E-05
3.4190E-05  3.5845E-05  2.7126E-05  1.5798E-05  1.2974E-05  9.5592E-06
1.0932E-05  6.3317E-06  5.5514E-06  5.8099E-06  5.2651E-06  5.1375E-07
2.0066E-07  4.3833E-07  1.1006E-06  2.0423E-06  4.1684E-06  3.8439E-06
1.8413E-06  1.6347E-06  1.5917E-06  1.7623E-06  2.0300E-06  1.5879E-06
1.6171E-06  1.4748E-06  1.1475E-06  1.5745E-06  1.5427E-06  1.5028E-06
1.4646E-06  1.3103E-06  2.7483E-06  2.9219E-06  8.1485E-07  1.2202E-06
2.1349E-06  1.7802E-06  3.9047E-06  1.0867E-06  2.5804E-06  5.9865E-07
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.8469E-13 2.2297E-13 1.4572E-13
9.2551E-14 8.4215E-14 1.7625E-13 8.3189E-13 2.2531E-12 2.0062E-11
6.3493E-10 2.1715E-06 6.9339E-10 3.9259E-06 3.3034E-11 6.0330E-12
3.8147E-12 2.8538E-12 1.2069E-12 2.5121E-13 1.0918E-13 1.5372E-13
3.6742E-14 5.7455E-15 3.5639E-15 1.0508E-15 6.7098E-17 2.4498E-18
-1.6424E-19
4D      12      1 1264   4      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 239 PU TOTAL INELASTIC A= -3.7484E-03*
8D  -2.8615E-07 -8.0452E-07 -4.8735E-06 -2.9391E-05 -3.7635E-05
-5.5081E-05 -1.5675E-04 -2.4267E-04 -2.6748E-04 -1.1600E-04 -1.2043E-04
-1.2836E-04 -1.4137E-04 -1.3651E-04 -9.1511E-05 -2.5368E-05 -7.3413E-05
-8.9621E-05 -1.1849E-04 -1.0752E-04 -1.0556E-04 -1.0313E-04 -1.0447E-04
-9.2177E-05 -7.4978E-05 -6.6705E-05 -5.6022E-05 -4.0624E-05 -2.8845E-05
-3.4238E-05 -2.8353E-05 -2.9913E-05 -4.4176E-05 -1.9795E-05 -3.0051E-05
-2.7940E-05 -3.6878E-05 -3.9714E-05 -4.1027E-05 -3.9493E-05 -4.0461E-05
-4.4781E-05 -4.7150E-05 -4.7368E-05 -4.8495E-05 -4.7708E-05 -4.3924E-05
-5.7593E-05 -3.9312E-05 -3.9422E-05 -4.2231E-05 -3.8338E-05 -3.7998E-06
-1.4152E-06 -2.9010E-06 -7.7822E-06 -1.6443E-05 -3.4230E-05 -3.5832E-05
-1.7804E-05 -1.6124E-05 -1.5404E-05 -1.5328E-05 -1.3830E-05 -9.8659E-06
-1.0037E-05 -1.0213E-05 -8.9925E-06 -1.2900E-05 -1.1307E-05 -1.0560E-05
-1.0537E-05 -8.1305E-06 -1.4770E-05 -1.2604E-05 -2.4993E-06 -1.6579E-06
-6.2193E-06 -2.0228E-06 -4.6980E-06 -1.2581E-06 -4.1019E-06 -1.7658E-06
-2.7581E-06 6.8475E-07 1.9383E-06 1.2003E-06 3.5244E-06 7.4256E-06
2.6801E-06 4.6478E-06 7.0651E-06 1.7143E-05 2.6381E-05 2.4634E-05
6.4860E-06 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      12      1 1264  18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 239PU FISSION A= 5.9145E-01*
8D  5.1728E-05 1.7137E-04 5.0001E-04 1.0733E-03 7.8343E-04
8.9902E-04 2.6176E-03 3.6068E-03 3.5413E-03 1.6157E-03 1.6885E-03
1.8082E-03 2.0621E-03 2.0808E-03 1.4879E-03 4.3957E-04 1.3073E-03
1.6464E-03 2.2295E-03 2.1404E-03 2.2567E-03 2.3801E-03 2.6770E-03
2.7218E-03 2.5722E-03 2.7782E-03 2.9405E-03 3.0801E-03 2.5325E-03
3.6841E-03 3.7941E-03 3.8686E-03 4.7497E-03 2.0488E-03 3.3438E-03
3.1354E-03 4.0185E-03 4.0713E-03 4.3142E-03 4.2924E-03 4.3143E-03
4.8703E-03 5.2056E-03 5.3255E-03 5.3966E-03 5.8087E-03 6.0186E-03
8.9511E-03 6.5042E-03 7.7036E-03 1.0052E-02 1.1110E-02 1.2001E-03
4.7773E-04 1.0651E-03 2.6642E-03 5.0120E-03 1.0659E-02 1.0358E-02
5.1992E-03 4.6898E-03 4.7469E-03 5.5224E-03 6.6067E-03 5.1896E-03
5.4967E-03 5.1728E-03 4.1076E-03 6.0574E-03 6.0339E-03 6.0302E-03
6.0302E-03 5.4742E-03 1.1934E-02 1.2726E-02 3.4438E-03 5.715E-03
9.5302E-03 8.0812E-03 1.7585E-02 4.5889E-03 1.1493E-02 1.1631E-02
1.3633E-02 5.0867E-03 3.8053E-03 1.5056E-03 2.6629E-03 4.4768E-03
4.8230E-03 6.4467E-03 1.0420E-02 1.4720E-02 1.4958E-02 1.2834E-02
9.8311E-03 8.8335E-03 7.4363E-03 3.4173E-03 1.7303E-03 8.6075E-04
4.0717E-04 3.0732E-04 4.8465E-04 1.9360E-03 2.4628E-03 9.9232E-03
1.2310E-02 1.3061E-02 8.6310E-03 1.5083E-02 7.8960E-03 3.1344E-03
2.0567E-03 1.8123E-03 1.3462E-03 3.5008E-04 4.8107E-05 3.2479E-05
4.0426E-05 2.5026E-06 3.3375E-07 1.5940E-07 3.6764E-08 2.2689E-08
-8.0733E-09

```

```

4D      12      1 1264 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 239 PU CAPTURE A= -6.6762E-02*
8D -2.5198E-08 -7.3045E-08 -9.2416E-08 -8.1721E-08 -7.5682E-08
-1.7195E-07 -9.9144E-07 -1.7920E-06 -2.2645E-06 -1.1940E-06 -1.4014E-06
-1.6944E-06 -2.1833E-06 -2.5096E-06 -1.9800E-06 -6.0915E-07 -1.8788E-06
-2.5272E-06 -3.7574E-06 -3.9617E-06 -4.5237E-06 -5.1338E-06 -6.1800E-06
-6.7048E-06 -6.7788E-06 -7.8489E-06 -8.9329E-06 -1.0019E-05 -8.9748E-06
-1.4192E-05 -1.5883E-05 -1.7928E-05 -2.5963E-05 -1.3060E-05 -2.3807E-05
-2.5118E-05 -3.6736E-05 -4.3922E-05 -5.5758E-05 -6.4527E-05 -7.3495E-05
-9.1780E-05 -1.0607E-04 -1.1635E-04 -1.2642E-04 -1.4460E-04 -1.5860E-04
-2.5814E-04 -2.0928E-04 -2.7367E-04 -3.9574E-04 -4.7616E-04 -5.3359E-05
-2.1313E-05 -4.7621E-05 -1.2061E-04 -2.3253E-04 -5.0841E-04 -5.0301E-04
-2.5294E-04 -2.2924E-04 -2.3333E-04 -2.7354E-04 -3.2840E-04 -2.6012E-04
-2.7685E-04 -2.6168E-04 -2.0936E-04 -3.1030E-04 -3.0989E-04 -3.1039E-04
-3.1180E-04 -2.8508E-04 -6.3133E-04 -7.4021E-04 -2.4860E-04 -4.1275E-04
-6.6742E-04 -5.6367E-04 -1.4027E-03 -3.8489E-04 -9.8378E-04 -9.9856E-04
-1.1928E-03 -4.6433E-04 -3.7065E-04 -1.5519E-04 -2.8162E-04 -4.8661E-04
-5.4062E-04 -7.6537E-04 -1.3459E-03 -2.1508E-03 -2.4998E-03 -2.4044E-03
-1.9662E-03 -2.3248E-03 -2.2350E-03 -1.1163E-03 -4.6520E-04 -2.2677E-04
-1.2952E-04 -8.4462E-05 -1.9068E-04 -7.1554E-04 -1.2727E-03 -4.2114E-03
-3.2490E-03 -3.8507E-03 -3.0795E-03 -5.8417E-03 -3.3010E-03 -2.0844E-03
-7.9873E-04 -9.9549E-04 -5.1146E-04 -1.5360E-04 -3.5306E-05 -1.2633E-05
-1.6333E-05 -5.2439E-07 -1.6987E-08 -1.3048E-08 -2.8958E-09 -2.0886E-08
5.6064E-09
4D      12      1 1264 452      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 239PU NUBAR A= 8.1847E-01*
8D 7.6449E-05 2.4527E-04 7.2869E-04 1.5499E-03 1.1058E-03
1.2614E-03 3.6901E-03 5.1870E-03 5.2058E-03 2.3877E-03 2.5043E-03
2.6903E-03 3.0709E-03 3.0989E-03 2.2120E-03 6.5153E-04 1.9359E-03
2.4365E-03 3.2992E-03 3.1614E-03 3.3222E-03 3.4903E-03 3.9062E-03
3.9480E-03 3.7114E-03 3.9861E-03 4.1942E-03 4.3615E-03 3.5802E-03
5.1965E-03 5.3405E-03 5.4500E-03 6.7113E-03 2.8953E-03 4.7199E-03
4.4247E-03 5.6753E-03 5.7558E-03 6.0972E-03 6.0627E-03 6.0900E-03
6.8655E-03 7.3268E-03 7.4854E-03 7.5848E-03 8.1533E-03 8.4385E-03
1.2544E-02 9.1001E-03 1.0755E-02 1.3987E-02 1.5417E-02 1.6622E-03
6.6129E-04 1.4733E-03 3.6863E-03 6.9326E-03 1.4711E-02 1.4269E-02
7.1474E-03 6.4410E-03 6.5119E-03 7.5666E-03 9.0310E-03 7.0889E-03
7.4977E-03 7.0480E-03 5.5927E-03 8.2330E-03 8.1842E-03 8.1644E-03
8.1542E-03 7.3912E-03 1.6087E-02 1.7091E-02 4.6120E-03 7.4429E-03
1.2725E-02 1.0756E-02 2.3348E-02 6.0745E-03 1.5196E-02 1.5337E-02
1.7957E-02 6.6910E-03 5.0068E-03 1.9796E-03 3.4989E-03 5.8775E-03
6.3559E-03 8.4977E-03 1.3759E-02 1.9475E-02 1.9842E-02 1.7112E-02
1.3200E-02 1.1919E-02 1.0120E-02 4.6866E-03 2.3834E-03 1.1872E-03
5.6225E-04 4.2466E-04 6.6959E-04 2.6778E-03 3.4163E-03 1.3851E-02
1.7569E-02 1.8636E-02 1.2697E-02 2.2605E-02 1.1991E-02 5.0016E-03
3.3693E-03 2.9443E-03 2.5385E-03 6.0266E-04 6.1433E-05 4.5378E-05
6.7127E-05 3.3440E-06 5.3042E-07 2.0804E-07 4.3130E-08 5.6122E-08
-2.2605E-08
4D      12      1 1265 18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 240PU FISSION A= 1.6283E-02*
8D 6.2983E-06 2.0227E-05 5.7814E-05 1.0811E-04 8.1846E-05
1.0479E-04 3.1179E-04 4.3668E-04 4.3149E-04 1.9797E-04 2.0537E-04
2.1527E-04 2.3540E-04 2.2835E-04 1.6233E-04 4.8131E-05 1.4363E-04
1.8221E-04 2.4961E-04 2.4230E-04 2.5753E-04 2.7168E-04 3.0424E-04
3.0828E-04 2.9217E-04 3.2205E-04 3.5416E-04 3.8446E-04 3.2188E-04
4.7129E-04 4.8493E-04 4.8992E-04 5.7824E-04 2.3379E-04 3.5793E-04
3.1334E-04 3.7877E-04 3.5678E-04 3.5450E-04 3.3022E-04 3.0994E-04
3.2745E-04 3.2416E-04 3.0429E-04 2.7950E-04 2.6226E-04 2.2444E-04
2.4927E-04 1.2975E-04 1.2486E-04 1.3888E-04 1.3465E-04 1.3494E-05
5.2235E-06 1.1513E-05 2.8508E-05 5.2468E-05 1.0577E-04 9.5790E-05
4.5669E-05 3.9651E-05 3.8918E-05 4.4583E-05 5.2165E-05 4.0041E-05
4.1416E-05 3.7933E-05 2.9373E-05 4.1964E-05 4.0325E-05 3.8959E-05
3.7751E-05 3.3436E-05 6.9480E-05 6.9482E-05 1.7972E-05 2.8196E-05
4.4633E-05 3.6188E-05 8.0053E-05 2.2641E-05 6.7109E-05 6.8963E-05
9.0203E-05 3.5870E-05 2.6661E-05 1.1117E-05 2.4524E-05 4.6886E-05
3.2318E-05 4.2812E-05 6.8250E-05 9.1627E-05 8.1877E-05 6.0262E-05
4.4174E-05 4.8851E-05 4.6293E-05 2.2026E-05 1.4849E-05 5.2710E-06
1.9906E-06 9.7461E-06 1.9379E-06 7.5197E-06 1.3744E-05 1.2555E-04
6.6850E-05 3.4410E-05 1.2194E-04 3.9160E-05 2.4822E-05 6.1057E-06
4.6890E-06 4.7404E-06 1.1219E-06 1.7686E-09 2.9082E-07 1.6185E-09
1.4922E-08 9.0303E-12 7.6397E-12 6.7168E-11 3.8938E-11 1.1233E-13
-8.8208E-14

```

```

4D      12      1 1265 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D * FORSS-ZPR 6/7 SENS. OF K TO 240PU CAPTURE A= -9.3037E-03*
8D -3.5829E-09 -1.8400E-08 -7.1567E-08 -2.0824E-07 -1.9952E-07
-2.8954E-07 -1.0897E-06 -2.2082E-06 -3.0345E-06 -1.6135E-06 -1.8222E-06
-2.1080E-06 -2.5792E-06 -2.7619E-06 -2.0426E-06 -6.1175E-07 -1.8562E-06
-2.4257E-06 -3.4745E-06 -3.5503E-06 -3.9481E-06 -4.3716E-06 -5.1391E-06
-5.4346E-06 -5.4056E-06 -6.1165E-06 -6.8220E-06 -7.4433E-06 -6.4725E-06
-9.8933E-06 -1.0689E-05 -1.1611E-05 -1.5686E-05 -7.2765E-06 -1.2408E-05
-1.2249E-05 -1.6311E-05 -1.7094E-05 -1.8809E-05 -1.9494E-05 -2.0341E-05
-2.3628E-05 -2.5867E-05 -2.7038E-05 -2.8025E-05 -3.0726E-05 -3.2461E-05
-4.9203E-05 -3.5957E-05 -4.2623E-05 -5.6359E-05 -6.4172E-05 -7.0455E-06
-2.8131E-06 -6.2747E-06 -1.5791E-05 -3.0053E-05 -6.5277E-05 -6.5306E-05
-3.3378E-05 -3.0522E-05 -3.1295E-05 -3.6914E-05 -4.4500E-05 -3.5395E-05
-3.7989E-05 -3.6101E-05 -2.8938E-05 -4.2810E-05 -4.3002E-05 -4.3380E-05
-4.3893E-05 -4.0533E-05 -9.1794E-05 -1.0358E-04 -2.9171E-05 -4.7409E-05
-8.1010E-05 -7.2456E-05 -1.6978E-04 -4.7913E-05 -1.3682E-04 -1.3446E-04
-1.8625E-04 -8.2411E-05 -6.7047E-05 -3.0205E-05 -6.9190E-05 -1.3658E-04
-9.9509E-05 -1.3822E-04 -2.3689E-04 -3.6027E-04 -3.9291E-04 -3.6097E-04
-2.7930E-04 -2.8238E-04 -2.4888E-04 -1.1269E-04 -4.4071E-05 -2.1121E-05
-1.3169E-05 -9.8610E-06 -1.7267E-05 -8.4422E-05 -1.0545E-04 -4.3317E-04
-4.6127E-04 -4.5860E-04 -5.7143E-04 -5.8525E-04 -4.9794E-04 -1.0016E-04
-1.2964E-04 -2.1417E-04 -1.4737E-04 -1.9550E-07 -1.6943E-05 -1.5087E-07
-1.6171E-06 -2.8484E-09 -1.4196E-08 -1.0654E-07 -3.5488E-08 -8.5374E-10
8.0880E-10
4D      12      1 1265 452      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR6/7 SENS. OF K TO 240PU NUBAR A= 2.3144E-02*
8D 9.3129E-06 2.9055E-05 8.4542E-05 1.5652E-04 1.1581E-04
1.4735E-04 4.4039E-04 6.2908E-04 6.3526E-04 2.9297E-04 3.0500E-04
3.2070E-04 3.5097E-04 3.4046E-04 2.4158E-04 7.1409E-05 2.1290E-04
2.6991E-04 3.6969E-04 3.5818E-04 3.7943E-04 3.9874E-04 4.4434E-04
4.4758E-04 4.2199E-04 4.6255E-04 5.0570E-04 5.4500E-04 4.5558E-04
6.6555E-04 6.8342E-04 6.9107E-04 8.1815E-04 3.3085E-04 5.0597E-04
4.4285E-04 5.3574E-04 5.0517E-04 5.0181E-04 4.6716E-04 4.3822E-04
4.6236E-04 4.5702E-04 4.2843E-04 3.9350E-04 3.6875E-04 3.1522E-04
3.4993E-04 1.8185E-04 1.7463E-04 1.9360E-04 1.8720E-04 1.8725E-05
7.2439E-06 1.5955E-05 3.9519E-05 7.2708E-05 1.4624E-04 1.3220E-04
6.2897E-05 5.4558E-05 5.3487E-05 6.1199E-05 7.1438E-05 5.4796E-05
5.6596E-05 5.1778E-05 4.0066E-05 5.7140E-05 5.4796E-05 5.2844E-05
5.1140E-05 4.5226E-05 9.3825E-05 9.3482E-05 2.4110E-05 3.7732E-05
5.9700E-05 4.8250E-05 1.0648E-04 3.0023E-05 8.8880E-05 9.1089E-05
1.1901E-04 4.7263E-05 3.5139E-05 1.4642E-05 3.2278E-05 6.1658E-05
4.2662E-05 5.6528E-05 9.0278E-05 1.2144E-04 1.0880E-04 8.0491E-05
5.9419E-05 6.6038E-05 6.3124E-05 3.0267E-05 2.0496E-05 7.2848E-06
2.7543E-06 1.3495E-05 2.6830E-06 1.0422E-05 1.9104E-05 1.7561E-04
9.5632E-05 4.9211E-05 1.7983E-04 5.8851E-05 3.7802E-05 9.7750E-06
7.7083E-06 7.7274E-06 2.1254E-06 3.0565E-09 3.7193E-07 2.2661E-09
2.4866E-08 1.2088E-11 1.2180E-11 8.7808E-11 4.5723E-11 2.8007E-13
-2.4938E-13
4D      12      1 1266 18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO 241PU FISSION A= 1.2859E-02*
8D 7.7752E-07 2.4920E-06 7.2021E-06 1.5287E-05 1.1240E-05
1.2399E-05 3.5094E-05 4.7330E-05 4.6005E-05 2.1049E-05 2.2132E-05
2.3914E-05 2.7496E-05 2.7902E-05 1.9976E-05 5.8995E-06 1.7533E-05
2.2094E-05 3.0045E-05 2.9058E-05 3.0944E-05 3.3057E-05 3.7585E-05
3.8385E-05 3.6354E-05 3.9325E-05 4.1776E-05 4.4002E-05 3.6395E-05
5.3165E-05 5.4846E-05 5.5689E-05 6.7816E-05 2.8850E-05 4.6233E-05
4.2719E-05 5.3984E-05 5.4270E-05 5.8140E-05 5.8996E-05 6.0315E-05
6.8852E-05 7.4321E-05 7.6673E-05 7.8151E-05 8.4467E-05 8.7784E-05
1.3202E-04 9.7996E-05 1.1873E-04 1.5836E-04 1.8250E-04 2.0318E-05
8.1102E-06 1.8113E-05 4.5513E-05 8.6539E-05 1.8737E-04 1.8575E-04
9.4868E-05 8.6597E-05 8.8773E-05 1.0490E-04 1.2723E-04 1.0131E-04
1.0862E-04 1.0264E-04 8.1751E-05 1.2094E-04 1.2092E-04 1.2133E-04
1.2193E-04 1.1186E-04 2.4835E-04 2.7564E-04 7.4282E-05 1.1747E-04
2.0047E-04 1.7991E-04 3.8153E-04 6.6694E-05 2.7911E-04 2.8069E-04
3.2975E-04 1.2439E-04 9.4202E-05 3.9894E-05 8.8713E-05 1.7090E-04
1.1896E-04 1.5965E-04 2.6170E-04 3.7777E-04 3.9644E-04 3.6709E-04
2.8437E-04 2.9102E-04 2.6030E-04 1.2317E-04 5.6508E-05 2.6688E-05
1.1505E-05 9.4110E-06 1.6908E-05 6.4928E-05 1.1494E-04 3.8617E-04
3.7301E-04 3.3367E-04 2.8239E-04 4.4242E-04 2.9440E-04 9.1944E-05
6.5126E-05 5.6069E-05 2.2938E-05 5.5481E-06 2.4316E-06 5.3450E-06
1.2115E-06 3.5638E-07 7.8796E-08 3.2348E-09 2.7940E-10 3.6300E-10
-1.8454E-10

```

```

4D      12      1 1266      102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D * FORSS-ZPR 6/7 SENS. OF K TO 241PU CAPTURE A= -9.1599E-04*
8D -2.4418E-09 -9.7040E-09 -3.5530E-08 -9.8749E-08 -9.0708E-08
-1.2034E-07 -4.2109E-07 -7.3899E-07 -8.8793E-07 -4.2693E-07 -4.6769E-07
-5.2491E-07 -6.1487E-07 -6.3696E-07 -4.6294E-07 -1.3650E-07 -4.0619E-07
-5.1413E-07 -7.0717E-07 -6.9370E-07 -7.5933E-07 -8.5295E-07 -9.9177E-07
-1.0120E-06 -9.5482E-07 -1.0283E-06 -1.0993E-06 -1.1682E-06 -9.9066E-07
-1.4691E-06 -1.5324E-06 -1.5834E-06 -1.9879E-06 -8.6652E-07 -1.4207E-06
-1.3392E-06 -1.7175E-06 -1.7582E-06 -1.9170E-06 -1.9754E-06 -2.0514E-06
-2.3765E-06 -2.5984E-06 -2.7162E-06 -2.8217E-06 -3.0917E-06 -3.2554E-06
-5.0045E-06 -3.7910E-06 -4.6900E-06 -6.4379E-06 -7.6042E-06 -8.5604E-07
-3.4221E-07 -7.6445E-07 -1.9352E-06 -3.7258E-06 -8.2056E-06 -8.3366E-06
-4.3485E-06 -4.0287E-06 -4.1721E-06 -4.9462E-06 -6.0054E-06 -4.8815E-06
-5.3002E-06 -5.0357E-06 -4.0383E-06 -6.0048E-06 -6.0706E-06 -6.1581E-06
-6.2625E-06 -5.8115E-06 -1.3174E-05 -1.4893E-05 -4.0820E-06 -6.4948E-06
-1.1291E-05 -1.0221E-05 -2.2257E-05 -3.9583E-06 -1.6347E-05 -1.6869E-05
-2.0427E-05 -7.8749E-06 -6.0881E-06 -2.6107E-06 -5.8432E-06 -1.1318E-05
-8.0801E-06 -1.0977E-05 -1.8430E-05 -2.7572E-05 -3.0262E-05 -2.9598E-05
-2.4227E-05 -2.5918E-05 -2.4451E-05 -1.2034E-05 -5.6345E-06 -2.6803E-06
-1.1629E-06 -9.5473E-07 -1.7158E-06 -6.6349E-06 -1.1919E-05 -4.1219E-05
-4.3608E-05 -3.9954E-05 -3.8295E-05 -6.5616E-05 -4.5945E-05 -1.6398E-05
-1.2401E-05 -1.0680E-05 -6.4733E-06 -7.5188E-07 -7.8478E-08 -1.7236E-07
-2.8315E-07 -9.6974E-09 -1.8299E-08 -8.1325E-11 -1.3598E-11 -1.9447E-10
1.1097E-10
4D      12      1 1266      452      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR6/7 SENS. OF K TO 241PU NUBAR A= 1.7651E-02*
8D 1.1470E-06 3.5703E-06 1.0492E-05 2.2036E-05 1.5828E-05
1.7346E-05 4.9292E-05 6.7739E-05 6.7225E-05 3.0905E-05 3.2605E-05
3.5332E-05 4.0652E-05 4.1247E-05 2.9475E-05 8.6784E-06 2.5769E-05
3.2448E-05 4.4115E-05 4.2581E-05 4.5195E-05 4.8097E-05 5.4422E-05
5.5255E-05 5.2064E-05 5.6010E-05 5.9158E-05 6.1870E-05 5.1093E-05
7.4469E-05 7.6668E-05 7.7910E-05 9.5151E-05 4.0484E-05 6.4803E-05
5.9863E-05 7.5705E-05 7.6183E-05 8.1589E-05 8.2741E-05 8.4542E-05
9.6380E-05 1.0388E-04 1.0702E-04 1.0908E-04 1.1774E-04 1.2223E-04
1.8374E-04 1.3617E-04 1.6463E-04 2.1887E-04 2.5157E-04 2.7957E-05
1.1153E-05 2.4892E-05 6.2561E-05 1.1891E-04 2.5692E-04 2.5422E-04
1.2958E-04 1.1817E-04 1.2100E-04 1.4282E-04 1.7282E-04 1.3752E-04
1.4723E-04 1.3897E-04 1.1062E-04 1.6336E-04 1.6301E-04 1.6328E-04
1.6388E-04 1.5012E-04 3.3277E-04 3.6800E-04 9.8897E-05 1.5602E-04
2.6613E-04 2.3809E-04 5.0374E-04 8.7794E-05 3.6698E-04 3.6809E-04
4.3196E-04 1.6273E-04 1.2327E-04 5.2169E-05 1.1593E-04 2.2316E-04
1.5591E-04 2.0929E-04 3.4366E-04 4.9704E-04 5.2292E-04 4.8664E-04
3.7955E-04 3.9031E-04 3.5205E-04 1.6784E-04 7.7333E-05 3.6570E-05
1.5784E-05 1.2919E-05 2.3207E-05 8.9212E-05 1.5838E-04 5.3535E-04
5.2844E-04 4.7257E-04 4.1205E-04 6.5737E-04 4.4310E-04 1.4522E-04
1.0552E-04 9.0118E-05 4.2596E-05 9.4328E-06 3.0904E-06 7.4165E-06
1.9889E-06 4.7344E-07 1.2396E-07 4.1998E-09 3.2680E-10 8.7552E-10
-5.0106E-10
4D      12      1 1276      2      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/7 *
7D *ZPR 6/7 SENS. OF K TO OXYGEN ELASTIC A= -8.7627E-03*
8D -3.7329E-06 1.2642E-06 -3.4828E-05 -1.2720E-04 -3.9287E-05
5.3322E-06 2.2395E-04 5.9709E-04 4.5340E-04 1.0200E-04 4.9811E-05
-9.6696E-07 -3.9505E-05 -7.1254E-05 -3.2717E-05 -2.1618E-06 -1.2739E-05
-6.1168E-05 -1.6675E-04 -2.2493E-04 -2.8264E-04 -5.2569E-04 -4.7920E-04
-5.5431E-04 -5.5392E-04 -4.8373E-04 -3.9818E-04 -1.3499E-04 -1.0523E-04
1.0143E-04 3.1377E-04 3.4892E-04 2.3873E-04 1.0798E-04 2.5241E-04
1.9496E-04 1.3065E-04 -1.8929E-05 -6.1051E-05 -8.4984E-05 -1.2537E-04
-1.0729E-04 -6.1290E-05 -3.6948E-06 -1.6633E-04 -1.7070E-04 -1.6868E-04
-1.0736E-03 -1.5766E-03 -1.3067E-03 -1.1486E-03 -1.1309E-03 -1.0410E-04
-3.2666E-05 -4.8359E-05 -1.8009E-04 -4.4221E-04 -7.9154E-04 -9.6796E-04
-4.5994E-04 -4.7309E-04 -5.0245E-04 -6.0707E-04 -4.6974E-04 -4.8845E-04
-4.9655E-04 -5.1152E-04 -5.2387E-04 -7.3140E-04 -6.1098E-04 -4.8755E-04
-5.4458E-04 -4.4632E-04 -1.3132E-03 -1.4646E-03 -3.9153E-04 -3.6488E-04
-9.8863E-04 -5.3117E-04 -1.1727E-03 -2.0398E-04 -5.9284E-04 -1.2306E-04
-2.4554E-04 -3.8104E-06 3.7051E-05 1.1602E-04 4.6647E-04 1.3058E-03
3.9896E-04 6.4424E-04 7.4776E-04 9.2627E-04 1.5162E-03 1.4882E-03
7.2695E-04 1.0890E-03 7.9786E-04 2.7848E-04 5.0709E-05 1.8005E-05
6.0220E-06 7.1716E-06 2.6495E-05 1.5715E-04 2.8642E-04 1.9350E-03
1.0055E-04 1.8318E-03 8.7010E-04 3.7151E-04 5.2359E-04 1.7429E-04
-2.6582E-05 1.9116E-04 -3.7016E-05 -7.1271E-05 1.0015E-05 8.3354E-06
-1.0164E-06 1.0098E-07 -4.3328E-08 -5.4730E-09 8.1749E-10 2.1349E-11
-2.7064E-12

```



```

4D      12      4  1192      2      2      3      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28C/49F TO IRON ELASTIC A= 2.3820E-02*
8D -2.7431E-07 -7.9364E-07 -1.3106E-06 -6.4906E-06 -2.4086E-06
-4.7124E-06 -3.0716E-05 -5.8774E-05 -7.6701E-05 -6.9687E-05 -4.8274E-05
-3.4271E-05 -2.0522E-05 -1.9698E-05 8.3121E-06 6.0549E-06 1.8477E-05
7.5158E-06 2.8597E-05 4.0791E-05 4.3849E-05 4.7555E-05 7.7956E-05
7.8072E-05 5.3211E-05 3.4035E-05 1.1420E-04 7.2324E-05 6.5336E-05
1.4405E-04 2.5036E-05 -2.8422E-05 4.3709E-05 -5.9297E-05 -1.3081E-05
-1.0176E-04 1.6463E-04 2.1318E-04 2.7843E-04 1.6566E-04 1.7328E-04
2.5553E-04 2.9754E-04 2.2637E-04 3.9820E-04 6.4939E-04 1.2259E-03
9.2902E-04 5.9150E-04 6.5127E-04 8.1325E-04 6.3542E-04 6.4701E-05
3.5695E-05 1.1622E-04 3.7792E-04 1.1006E-03 1.1889E-03 1.3100E-03
6.5845E-04 6.2396E-04 9.9119E-04 1.0652E-03 7.0679E-04 8.1357E-04
6.1013E-04 8.5005E-04 8.6522E-04 1.0662E-03 1.2155E-03 5.4626E-04
7.7830E-04 9.4550E-04 1.7460E-03 2.8451E-03 1.2470E-03 5.7046E-04
2.5273E-03 1.0041E-03 2.1797E-03 4.1969E-04 9.0934E-04 2.0345E-03
1.6158E-03 7.1122E-04 3.1193E-04 2.1468E-04 -1.3409E-04 -2.6871E-04
2.6723E-05 5.9254E-05 -1.1310E-06 -2.6831E-04 -7.6610E-04 -1.6730E-03
-2.1857E-03 -1.2753E-03 -9.7966E-04 -4.8677E-04 -1.1908E-04 -4.8788E-05
-4.1925E-06 8.8528E-07 -2.8176E-05 -2.3288E-04 -5.9420E-04 -2.5888E-03
-1.2309E-03 -8.5159E-04 -2.1657E-03 -1.5038E-03 -8.2676E-04 -6.2622E-05
-6.1822E-05 -3.1916E-04 5.2529E-06 1.4161E-04 1.4842E-05 -2.1069E-05
3.2202E-06 -4.5182E-07 -1.2123E-08 3.6340E-09 -8.9576E-10 -1.3105E-11
7.5019E-12
4D      12      4  1192      4      2      3      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28C/49F TO IRON TOTAL INELASTIC A= 2.5172E-02*
8D 1.8162E-06 2.9536E-05 1.0397E-04 2.4818E-04 2.5508E-04
3.4886E-04 1.0607E-03 1.6486E-03 1.4519E-03 5.9291E-04 4.7621E-04
4.5071E-04 5.1862E-04 5.6661E-04 3.9347E-04 1.0889E-04 3.2516E-04
4.2840E-04 5.9597E-04 6.1840E-04 5.5471E-04 5.0723E-04 4.2929E-04
4.4887E-04 4.6856E-04 5.5236E-04 5.9156E-04 7.4165E-04 5.4818E-04
9.2003E-04 1.3122E-03 1.6928E-03 2.2382E-03 1.3029E-03 1.5031E-03
1.3187E-03 5.8534E-07 5.1074E-07 5.6231E-07 5.7818E-07 5.9915E-07
6.7959E-07 7.2291E-07 7.2598E-07 7.4733E-07 7.8983E-07 8.2574E-07
1.2831E-06 9.9234E-07 1.1059E-06 1.3701E-06 1.4796E-06 1.5684E-07
6.2385E-08 1.3741E-07 3.4658E-07 6.5818E-07 1.5576E-06 1.5681E-06
6.9916E-07 5.7220E-07 5.3255E-07 5.8375E-07 6.3577E-07 4.8965E-07
4.9024E-07 4.4202E-07 3.4816E-07 4.7491E-07 4.3542E-07 4.1886E-07
4.0914E-07 3.7489E-07 9.0065E-07 7.1258E-07 9.1462E-08 7.5458E-08
-3.6678E-08 -4.0485E-07 -1.9247E-06 -1.2375E-06 -1.8217E-06 -1.2746E-06
-5.5201E-06 -6.1160E-06 -2.9043E-06 -5.9981E-06 -4.4118E-06 -3.1739E-06
-8.4870E-07 -5.8025E-06 -1.6057E-06 -1.3119E-06 -5.6860E-06 -1.3022E-05
-2.9393E-05 -1.4490E-05 -4.2216E-06 -4.6960E-06 -8.6468E-07 -3.8826E-07
-1.5116E-07 -1.1698E-07 -2.1492E-07 -1.1873E-06 -1.0562E-06 -6.9120E-06
-1.9056E-06 -8.8031E-05 -2.4191E-06 1.6475E-08 2.0915E-06 2.0178E-06
1.3981E-06 1.2899E-06 2.5873E-06 9.5255E-07 -4.7736E-08 -2.5045E-07
5.5973E-08 -2.9755E-08 2.5476E-09 2.1416E-09 3.7256E-10 5.6777E-10
-6.8970E-10
4D      12      4  1192     102      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28C/49F TO IRON CAPTURE A= -6.5393E-03*
8D 2.2334E-09 9.6558E-09 3.4338E-08 8.7311E-08 8.4708E-08
1.0939E-07 3.6646E-07 6.6042E-07 8.8150E-07 4.8360E-07 5.7017E-07
6.6242E-07 7.8959E-07 7.9884E-07 5.9037E-07 1.6941E-07 4.8537E-07
6.1154E-07 7.9809E-07 7.3284E-07 7.1634E-07 7.4552E-07 7.9709E-07
6.8503E-07 5.3107E-07 4.8039E-07 4.3181E-07 2.6934E-07 8.6950E-08
-4.4534E-08 -2.7208E-07 -4.2503E-07 -5.3953E-07 -4.4373E-07 -5.8100E-07
-6.4661E-07 -3.5238E-07 -1.0683E-06 -1.7116E-06 -2.4374E-06 -3.0900E-06
-4.0513E-06 -5.6887E-06 -7.4688E-06 -8.6050E-06 -1.0656E-05 -1.3167E-05
-2.4348E-05 -2.1182E-05 -2.7265E-05 -4.0435E-05 -5.1986E-05 -6.2375E-06
-2.5106E-06 -5.5838E-06 -1.4492E-05 -2.9143E-05 -7.8254E-05 -9.0970E-05
-4.6331E-05 -4.0813E-05 -4.0602E-05 -4.7102E-05 -5.6267E-05 -4.5035E-05
-4.8283E-05 -4.5799E-05 -3.7183E-05 -5.5115E-05 -5.5712E-05 -5.7947E-05
-6.1582E-05 -6.3254E-05 -1.8580E-04 -2.3446E-04 -6.6591E-05 -1.0668E-04
-1.8107E-04 -1.5903E-04 -3.3930E-04 -1.4028E-04 -1.8388E-04 -1.4114E-04
-4.1188E-04 -3.5327E-04 -1.3405E-04 -2.4622E-04 -2.0325E-04 -1.5234E-04
-4.9340E-05 -3.1024E-04 -7.6763E-05 -5.0141E-05 -1.8063E-04 -3.3464E-04
-5.4170E-04 -2.2179E-04 -5.0451E-05 -3.9461E-05 -6.0602E-06 -2.2506E-06
-9.0313E-07 -7.3595E-07 -1.3434E-06 -7.9914E-06 -8.6503E-06 -5.7571E-05
-1.5852E-05 -3.5812E-04 1.1507E-08 3.2516E-05 4.5248E-05 2.3281E-05
1.8468E-05 1.8377E-05 1.6340E-05 3.5020E-06 -6.4201E-07 -1.7218E-06
1.7882E-07 -1.2327E-07 4.0754E-08 1.2615E-08 6.2986E-10 7.1909E-10
-9.5493E-10

```


4D 12 4 1262 18 2 0 0 12 0 0 1
0

5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28C/49F TO 238U FISSION A= 5.1877E-03*

8D 8.9396E-06 2.8111E-05 8.3946E-05 1.7477E-04 1.2333E-04
 1.1773E-04 3.0553E-04 4.3191E-04 4.3701E-04 2.0115E-04 2.2155E-04
 2.4208E-04 2.7154E-04 2.6784E-04 1.8523E-04 5.2798E-05 1.5411E-04
 1.8759E-04 2.4545E-04 2.2249E-04 2.1324E-04 2.0113E-04 1.9400E-04
 1.6364E-04 1.2698E-04 1.0536E-04 8.0053E-05 4.5268E-05 2.0104E-05
 1.6976E-05 1.3426E-05 1.1896E-05 1.2556E-05 4.4316E-06 6.3877E-06
 3.5590E-06 2.9061E-06 1.6458E-06 1.1096E-06 8.4897E-07 7.0441E-07
 7.1970E-07 6.4677E-07 4.0471E-07 2.0925E-07 1.2572E-07 4.9337E-08
 9.7217E-08 8.4207E-08 2.9308E-08 -5.1644E-08 -9.1685E-08 -9.9434E-09
 -4.3684E-09 -1.1206E-08 -2.7126E-08 -5.4868E-08 -1.3166E-07 -1.4676E-07
 -8.2107E-08 -7.2955E-08 -8.0151E-08 -1.0431E-07 -1.3012E-07 -9.5545E-08
 -1.0686E-07 -1.0173E-07 -7.8814E-08 -1.3018E-07 -1.2356E-07 -1.2099E-07
 -1.2115E-07 -1.1034E-07 -2.5028E-07 -2.7932E-07 -7.5312E-08 -1.4216E-07
 -2.1073E-07 -1.9747E-07 -4.4301E-07 -1.0095E-07 -3.2626E-07 -7.2459E-08
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 -1.5738E-14 -1.2484E-14 -5.7861E-15
 -1.2428E-15 -4.7014E-15 -1.1347E-14 -7.2255E-14 -1.6283E-13 -1.2058E-12
 -1.0540E-11 -4.3750E-09 1.5822E-11 2.7652E-07 4.5484E-12 1.2508E-12
 8.1849E-13 6.3875E-13 4.9619E-13 9.8258E-14 -1.5809E-14 -4.1902E-14
 4.6079E-15 -2.9501E-15 9.8535E-16 3.1923E-16 1.5165E-17 1.7052E-18
 -1.6311E-19

4D 12 4 1262 102 2 0 0 12 0 0 1
0

5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28C/49F TO 238U CAPTURE A= 8.9587E-01*

8D 1.6638E-07 9.6003E-07 4.4853E-06 1.6247E-05 1.8756E-05
 2.9888E-05 1.2450E-04 2.6531E-04 3.7927E-04 2.1187E-04 2.4644E-04
 2.9218E-04 3.6760E-04 4.0716E-04 3.1188E-04 9.4972E-05 2.8961E-04
 3.8300E-04 5.5778E-04 5.8608E-04 6.7404E-04 7.6981E-04 9.4001E-04
 1.0372E-03 1.0623E-03 1.2482E-03 1.4291E-03 1.6064E-03 1.4171E-03
 2.2111E-03 2.4339E-03 2.6111E-03 3.4542E-03 1.5705E-03 2.6147E-03
 2.4851E-03 3.1980E-03 3.2329E-03 3.4351E-03 3.4095E-03 3.3909E-03
 3.7817E-03 3.9849E-03 4.0425E-03 4.0783E-03 4.3540E-03 4.4647E-03
 6.5012E-03 4.6633E-03 5.5783E-03 7.4445E-03 8.4881E-03 9.3675E-04
 3.7462E-04 8.3894E-04 2.1098E-03 4.0371E-03 8.8491E-03 9.0314E-03
 4.7466E-03 4.4076E-03 4.5710E-03 5.3887E-03 6.5015E-03 5.1327E-03
 5.5033E-03 5.2309E-03 4.1970E-03 6.2661E-03 6.2747E-03 6.3080E-03
 6.3732E-03 5.8726E-03 1.3223E-02 1.4778E-02 4.1786E-03 6.9438E-03
 1.1937E-02 1.1215E-02 2.7968E-02 7.9622E-03 2.1699E-02 2.0307E-02
 2.6952E-02 1.0654E-02 8.3816E-03 3.6946E-03 8.2274E-03 1.5801E-02
 1.1211E-02 1.5339E-02 2.5737E-02 3.9451E-02 4.2839E-02 3.8808E-02
 2.9863E-02 3.0186E-02 2.5675E-02 1.2522E-02 5.5686E-03 3.2762E-03
 1.2749E-03 9.1424E-04 1.9755E-03 7.5147E-03 9.1602E-03 3.2648E-02
 2.8381E-02 2.7474E-02 2.3248E-02 3.1138E-02 1.4761E-02 4.5855E-03
 3.3865E-03 3.7353E-03 1.8010E-03 1.8452E-05 7.6934E-05 1.5370E-04
 6.6410E-05 8.5527E-06 4.6075E-07 5.1111E-08 2.6381E-09 8.9273E-10
 -1.1421E-09

4D 12 4 1262 452 2 0 0 12 0 0 1
0

5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28C/49F TO 238U NUBAR A= 3.3848E-03*

8D 7.4459E-06 2.1152E-05 5.9480E-05 1.2503E-04 8.2455E-05
 8.0350E-05 2.0695E-04 2.8053E-04 2.5848E-04 1.0725E-04 1.1298E-04
 1.1940E-04 1.3070E-04 1.3194E-04 9.2750E-05 2.6107E-05 7.9525E-05
 1.0291E-04 1.4226E-04 1.3915E-04 1.4173E-04 1.4135E-04 1.4347E-04
 1.3481E-04 1.1783E-04 1.0461E-04 8.2579E-05 5.2518E-05 2.5974E-05
 2.3702E-05 2.1231E-05 1.9586E-05 1.9683E-05 7.4456E-06 1.0267E-05
 5.7669E-06 4.3437E-06 2.7804E-06 2.0660E-06 1.7113E-06 1.5091E-06
 1.6536E-06 1.7673E-06 1.3914E-06 8.2808E-07 6.8380E-07 5.1018E-07
 7.2759E-07 5.0279E-07 4.1394E-07 3.8009E-07 3.3639E-07 3.4570E-08
 1.2973E-08 2.6617E-08 7.0295E-08 1.3317E-07 2.7287E-07 2.5384E-07
 1.2060E-07 1.1214E-07 1.0548E-07 1.0817E-07 1.2114E-07 1.0479E-07
 1.0347E-07 9.5294E-08 7.7920E-08 9.2931E-08 9.7957E-08 9.8280E-08
 9.7324E-08 8.9781E-08 1.8618E-07 2.0436E-07 6.2520E-08 7.4422E-08
 1.6230E-07 1.2728E-07 2.8832E-07 9.8909E-08 1.8562E-07 4.5769E-08
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 7.4724E-15 1.1877E-14 9.0062E-15
 7.3252E-15 3.8727E-15 6.9966E-15 1.6733E-14 5.5600E-14 4.7641E-13
 1.6267E-11 4.0981E-08 1.9286E-11 7.8333E-08 7.9327E-13 1.4185E-13
 9.3263E-14 2.4369E-14 3.0375E-14 6.0738E-15 1.1258E-15 2.2000E-15
 2.9233E-16 -1.2483E-17 3.2767E-17 2.8576E-17 6.7233E-18 2.2400E-19
 1.9048E-21

4D 0 12 4 1264 18 2 0 0 12 0 0 1
 0
 5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
 6/7 *
 7D *ZPR 6/7 SENS. OF 28C/49F TO 239PU FISSION A= -1.0725E 00*
 8D -5.5317E-05 -1.9334E-04 -6.1478E-04 -1.3922E-03 -1.0321E-03
 -1.2092E-03 -3.6654E-03 -5.3443E-03 -5.5062E-03 -2.5606E-03 -2.6994E-03
 -2.9178E-03 -3.3556E-03 -3.4103E-03 -2.4491E-03 -7.2415E-04 -2.1572E-03
 -2.7268E-03 -3.7123E-03 -3.5811E-03 -3.7904E-03 -4.0092E-03 -4.5199E-03
 -4.6011E-03 -4.3523E-03 -4.7032E-03 -4.9745E-03 -5.2039E-03 -4.2879E-03
 -6.2432E-03 -6.4600E-03 -6.5997E-03 -8.1520E-03 -3.5267E-03 -5.7596E-03
 -5.4107E-03 -6.9488E-03 -7.0781E-03 -7.5232E-03 -7.5012E-03 -7.5516E-03
 -8.5300E-03 -9.1374E-03 -9.3755E-03 -9.5248E-03 -1.0277E-02 -1.0684E-02
 -1.5964E-02 -1.1641E-02 -1.3797E-02 -1.8064E-02 -2.0041E-02 -2.1701E-03
 -8.6336E-04 -1.9243E-03 -4.8221E-03 -9.0991E-03 -1.9388E-02 -1.8923E-02
 -1.7826E-02 -8.6108E-03 -8.7305E-03 -1.0177E-02 -1.2174E-02 -9.5741E-03
 -1.0157E-02 -9.5770E-03 -7.6249E-03 -1.1257E-02 -1.1208E-02 -1.1191E-02
 -1.1202E-02 -1.0184E-02 -2.2272E-02 -2.3778E-02 -6.4484E-03 -1.0416E-02
 -1.5274E-02 -1.5120E-02 -3.2918E-02 -8.5999E-03 -2.1558E-02 -2.1752E-02
 -2.5585E-02 -9.5560E-03 -7.1610E-03 -2.8325E-03 -5.0153E-03 -8.4130E-03
 -9.0202E-03 -1.2057E-02 -1.9548E-02 -2.7671E-02 -2.8103E-02 -2.4093E-02
 -1.8445E-02 -1.6538E-02 -1.3873E-02 -6.3406E-03 -3.1977E-03 -1.5873E-03
 -7.4941E-04 -5.6584E-04 -8.9269E-04 -3.5696E-03 -4.5332E-03 -1.8308E-02
 -2.2700E-02 -2.3791E-02 -1.6070E-02 -2.7721E-02 -1.4090E-02 -5.5814E-03
 -3.7530E-03 -3.2730E-03 -2.4011E-03 -5.8024E-04 -8.7845E-05 -7.0394E-05
 -8.1172E-05 -5.7971E-06 -5.7830E-07 -2.2009E-07 -4.7958E-08 -2.9972E-08
 1.1302E-08

4D 0 12 4 1264 102 2 0 0 12 0 0 1
 0
 5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
 6/7 *
 7D *ZPR 6/7 SENS. OF 28C/49F TO 239EU CAPTURE A= -2.0205E-02*
 8D 1.7668E-09 5.8461E-09 7.5339E-09 6.1630E-09 6.1455E-09
 1.3068E-08 7.2680E-08 1.3686E-07 1.8966E-07 1.0917E-07 1.3745E-07
 1.7113E-07 2.2027E-07 2.4703E-07 1.9041E-07 5.7665E-08 1.7243E-07
 2.1935E-07 3.0774E-07 2.9679E-07 3.0518E-07 3.1292E-07 3.3292E-07
 2.9513E-07 2.3333E-07 2.1681E-07 2.1222E-07 1.4220E-07 5.5337E-08
 -4.4981E-09 -1.2811E-07 -2.1516E-07 -2.6378E-07 -2.1337E-07 -2.5856E-07
 -2.7876E-07 -1.1991E-07 -5.6648E-07 -1.0958E-06 -1.7822E-06 -2.5174E-06
 -3.6240E-06 -5.5726E-06 -8.0489E-06 -9.9299E-06 -1.3396E-05 -1.7621E-05
 -3.6005E-05 -3.5271E-05 -5.0164E-05 -8.1546E-05 -1.1170E-04 -1.3685E-05
 -5.4559E-06 -1.2182E-05 -3.1919E-05 -6.4816E-05 -1.5237E-04 -1.6584E-04
 -8.9662E-05 -8.4855E-05 -8.9358E-05 -1.0812E-04 -1.3407E-04 -1.1040E-04
 -1.2174E-04 -1.1932E-04 -9.8983E-05 -1.5015E-04 -1.5468E-04 -1.5934E-04
 -1.6527E-04 -1.5693E-04 -3.6417E-04 -4.5475E-04 -1.6153E-04 -2.7057E-04
 -4.5208E-04 -3.9804E-04 -1.0356E-03 -2.9998E-04 -7.7725E-04 -8.0381E-04
 -9.9374E-04 -3.9480E-04 -3.1720E-04 -1.3333E-04 -2.4262E-04 -4.1744E-04
 -4.4246E-04 -6.2558E-04 -1.0957E-03 -1.7224E-03 -1.9126E-03 -1.6997E-03
 -1.2513E-03 -1.3382E-03 -1.0922E-03 -4.5592E-04 -1.6908E-04 -7.8388E-05
 -4.2773E-05 -2.7577E-05 -6.2488E-05 -2.2859E-04 -3.6757E-04 -1.0274E-03
 -3.5932E-04 -1.9630E-04 2.6627E-06 8.2828E-04 1.0102E-03 9.2956E-04
 3.5406E-04 4.7371E-04 3.8000E-04 1.2243E-04 -2.1066E-05 -1.0878E-05
 4.1446E-06 -8.7142E-07 1.0601E-08 1.4311E-08 3.5246E-09 2.5845E-08
 -6.7666E-09

4D 0 12 4 1264 452 2 0 0 12 0 0 1
 0
 5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
 6/7 *
 7D *ZPR 6/7 SENS. OF 28C/49F TO 239PU NUBAR A= -3.2916E-03*
 8D -5.1823E-07 -1.6669E-06 -5.0292E-06 -1.0891E-05 -7.9268E-06
 -9.0786E-06 -2.7287E-05 -3.8731E-05 -3.9952E-05 -1.9337E-05 -2.0468E-05
 -2.2319E-05 -2.6270E-05 -2.6645E-05 -1.9226E-05 -5.8059E-06 -1.7151E-05
 -2.1368E-05 -2.8534E-05 -2.6956E-05 -2.8478E-05 -3.0289E-05 -3.4911E-05
 -3.5621E-05 -3.3287E-05 -3.6388E-05 -3.8973E-05 -4.0823E-05 -3.2305E-05
 -4.5165E-05 -4.9241E-05 -4.6827E-05 -5.7066E-05 -2.3108E-05 -3.8784E-05
 -3.6107E-05 -4.7897E-05 -4.8678E-05 -5.1446E-05 -4.9810E-05 -4.8471E-05
 -5.3359E-05 -5.5552E-05 -5.5001E-05 -5.3982E-05 -5.6594E-05 -5.6537E-05
 -7.4329E-05 -4.6277E-05 -4.8917E-05 -6.4926E-05 -6.8150E-05 -6.9514E-06
 -2.7859E-06 -6.3961E-06 -1.5399E-05 -2.8719E-05 -5.7799E-05 -5.3012E-05
 -2.5849E-05 -2.2265E-05 -2.2593E-05 -2.7330E-05 -3.2099E-05 -2.2265E-05
 -2.3572E-05 -2.1658E-05 -1.6939E-05 -2.6941E-05 -2.4258E-05 -2.0946E-05
 -1.8928E-05 -1.5803E-05 -3.3911E-05 -2.9277E-05 -6.7249E-06 -1.2434E-05
 -1.0632E-05 -6.7533E-06 -1.0893E-06 3.5292E-06 5.9340E-06 1.3683E-05
 1.5848E-05 6.2317E-06 4.3750E-06 1.6644E-06 1.2886E-06 2.6908E-06
 9.3051E-06 1.2964E-05 1.7106E-05 1.6507E-05 6.5026E-06 -5.1205E-06
 -1.3125E-05 -1.9937E-05 -2.2317E-05 -1.1249E-05 -5.6011E-06 -2.7589E-06
 -1.2835E-06 -1.0062E-06 -1.6413E-06 -7.5588E-06 -1.0877E-05 -6.1509E-05
 -1.0034E-04 -1.1562E-04 -9.0283E-05 -1.9494E-04 -1.1758E-04 -5.2023E-05
 -3.7788E-05 -3.7696E-05 -3.2531E-05 -7.9663E-06 -8.5410E-07 -6.8399E-07
 -1.0605E-06 -5.6092E-08 -9.5382E-09 -3.4340E-09 -5.1713E-10 -4.4900E-10
 2.0238E-10

```

4D      12      4 1265      18      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28C/49F TO 240PU FISSION A= -4.8136E-04*
8D 1.6993E-07 5.9401E-07 1.8515E-06 3.0279E-06 2.2803E-06
2.6223E-06 7.5140E-06 1.1916E-05 1.4130E-05 7.2090E-06 8.2110E-06
8.9680E-06 9.7318E-06 9.1501E-06 6.2610E-06 1.7861E-06 5.1238E-06
6.0710E-06 7.7690E-06 6.7227E-06 6.1320E-06 5.5053E-06 4.9383E-06
3.4657E-06 1.9774E-06 1.0774E-06 4.5307E-07 -1.1498E-06 -1.8898E-06
-3.8079E-06 -5.8058E-06 -6.2366E-06 -6.8914E-06 -3.2161E-06 -4.2190E-06
-3.6979E-06 -3.3953E-06 -4.6411E-06 -5.5944E-06 -6.1930E-06 -6.5444E-06
-7.5104E-06 -9.0524E-06 -1.0431E-05 -1.0558E-05 -1.1304E-05 -1.1241E-05
-1.5054E-05 -9.1577E-06 -9.3903E-06 -1.1591E-05 -1.2590E-05 -1.3636E-06
-5.2590E-07 -1.1576E-06 -2.9599E-06 -5.7243E-06 -1.2266E-05 -1.2098E-05
-6.1455E-06 -5.5425E-06 -5.6045E-06 -6.6052E-06 -7.9078E-06 -6.2702E-06
-6.6835E-06 -6.3172E-06 -5.0569E-06 -7.3594E-06 -7.2216E-06 -7.1054E-06
-7.0630E-06 -6.4519E-06 -1.3961E-05 -1.4627E-05 -3.9521E-06 -6.2022E-06
-1.0079E-05 -8.4054E-06 -1.9199E-05 -5.6469E-06 -1.6904E-05 -1.7461E-05
-2.3545E-05 -9.5037E-06 -7.1209E-06 -2.9727E-06 -6.5731E-06 -1.2463E-05
-8.2786E-06 -1.0959E-05 -1.7557E-05 -2.3416E-05 -2.0243E-05 -1.4087E-05
-9.5857E-06 -9.8077E-06 -8.1765E-06 -3.3482E-06 -2.0394E-06 -6.9133E-07
-2.5028E-07 -1.2158E-06 -2.4273E-07 -9.2540E-07 -1.5517E-06 -1.2463E-05
-3.4393E-06 -9.1014E-07 -6.7929E-07 2.4658E-06 3.7194E-06 1.5654E-06
1.2762E-06 1.3469E-06 7.2517E-07 9.9588E-10 -5.2432E-08 -5.8487E-10
2.2094E-09 -5.2486E-12 2.6536E-12 2.1474E-11 7.8541E-12 2.0619E-13
-1.9306E-13
4D      12      4 1265     102      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D * FORSS-ZPR 6/7 SENS. OF 28C/49F TO 240PU CAPTURE A= -2.9663E-03*
8D 2.4907E-10 1.4707E-09 5.8330E-09 1.5704E-08 1.6200E-08
2.2003E-08 7.9879E-08 1.6864E-07 2.5413E-07 1.4752E-07 1.7871E-07
2.1289E-07 2.6020E-07 2.7184E-07 1.9641E-07 5.7904E-08 1.7034E-07
2.1052E-07 2.8455E-07 2.6595E-07 2.6632E-07 2.6644E-07 2.7683E-07
2.3921E-07 1.8606E-07 1.6895E-07 1.6206E-07 1.0564E-07 3.9911E-08
-3.1284E-09 -8.6201E-08 -1.3934E-07 -1.5938E-07 -1.1886E-07 -1.3474E-07
-1.3591E-07 -5.3206E-08 -2.2043E-07 -3.6960E-07 -5.3834E-07 -6.9664E-07
-9.3283E-07 -1.3589E-06 -1.8702E-06 -2.2010E-06 -2.8462E-06 -3.6061E-06
-6.8619E-06 -6.0595E-06 -7.8121E-06 -1.1612E-05 -1.5052E-05 -1.8068E-06
-7.2005E-07 -1.6050E-06 -4.1785E-06 -8.3762E-06 -1.9561E-05 -2.1529E-05
-1.1830E-05 -1.1297E-05 -1.1984E-05 -1.4590E-05 -1.8166E-05 -1.5021E-05
-1.6703E-05 -1.6459E-05 -1.3681E-05 -2.0714E-05 -2.1463E-05 -2.2268E-05
-2.3263E-05 -2.2310E-05 -5.2946E-05 -6.3631E-05 -1.8952E-05 -3.1075E-05
-5.4868E-05 -5.1161E-05 -1.2534E-04 -3.7339E-05 -1.0809E-04 -1.0822E-04
-1.5515E-04 -7.0064E-05 -5.7374E-05 -2.5949E-05 -5.9605E-05 -1.1716E-04
-8.1435E-05 -1.1296E-04 -1.9285E-04 -2.8849E-04 -3.0060E-04 -2.5515E-04
-1.7774E-04 -1.6253E-04 -1.2161E-04 -4.6022E-05 -1.6017E-05 -7.3006E-06
-4.3487E-06 -3.2195E-06 -5.6584E-06 -2.6969E-05 -3.0452E-05 -1.0567E-04
-5.1013E-05 -2.3379E-05 4.9676E-07 8.2979E-05 1.5238E-04 4.4668E-05
5.7467E-05 1.0192E-04 1.0949E-04 1.5582E-07 -1.0109E-05 -1.2990E-07
4.1036E-07 -4.7334E-09 8.8587E-09 1.1685E-07 4.3192E-08 1.0564E-09
-9.7607E-10
4D      12      4 1265     452      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR6/7 SENS. OF 28C/49F TO 240PU NUBAR A= -9.7013E-05*
8D -3.4779E-08 -1.0900E-07 -3.2603E-07 -6.2295E-07 -4.7713E-07
-6.1126E-07 -1.9130E-06 -2.7773E-06 -2.9349E-06 -1.4768E-06 -1.5600E-06
-1.6792E-06 -1.9275E-06 -1.8845E-06 -1.3595E-06 -4.1740E-07 -1.2336E-06
-1.5401E-06 -2.0650E-06 -1.9574E-06 -2.0905E-06 -2.2387E-06 -2.6087E-06
-2.6654E-06 -2.4906E-06 -2.8031E-06 -3.1463E-06 -3.4275E-06 -2.7135E-06
-3.7454E-06 -4.2038E-06 -3.8214E-06 -4.4529E-06 -1.6299E-06 -2.6104E-06
-2.2600E-06 -2.8821E-06 -2.7265E-06 -2.6989E-06 -2.4101E-06 -2.1497E-06
-2.1827E-06 -2.0717E-06 -1.8430E-06 -1.6031E-06 -1.4382E-06 -1.1541E-06
-1.0133E-06 -3.7558E-07 -2.6788E-07 -3.1472E-07 -2.6331E-07 -2.1921E-08
-8.6989E-09 -2.1184E-08 -4.6063E-08 -8.2252E-08 -1.3454E-07 -9.3630E-08
-3.8406E-08 -2.4677E-08 -2.4852E-08 -3.7059E-08 -3.9183E-08 -7.6435E-09
-8.0559E-09 -3.7315E-09 -1.1297E-09 -1.5360E-08 1.9724E-09 2.2724E-08
3.4360E-08 3.8583E-08 8.2850E-08 1.1908E-07 3.6789E-08 4.9686E-08
1.2788E-07 1.1330E-07 3.1126E-07 1.0639E-07 2.9830E-07 3.5097E-07
4.5754E-07 1.8401E-07 1.3481E-07 5.5690E-08 1.0772E-07 2.1126E-07
1.8863E-07 2.5338E-07 3.7949E-07 4.6312E-07 3.5905E-07 2.1578E-07
1.1848E-07 8.7405E-08 5.0321E-08 1.8298E-08 1.3395E-08 4.9505E-09
1.9833E-09 8.5626E-09 1.4863E-09 1.9472E-09 -3.2501E-09 -2.4810E-07
-2.5532E-07 -1.5540E-07 -7.2920E-07 -3.2679E-07 -2.5414E-07 -7.1474E-08
-6.2576E-08 -7.4868E-08 -2.0622E-08 -3.0877E-11 -4.0090E-09 -2.7053E-11
-3.1471E-10 -1.6465E-13 -1.8050E-13 -1.1732E-12 -4.0661E-13 -1.3847E-15
1.4675E-15

```

```

4D      12      4 1266      18      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28C/49F TO 241EU FISSION      A= -1.6171E-03*
8D  1.9703E-08  6.9018E-08  2.1739E-07  3.9991E-07  2.9189E-07
2.8712E-07  7.7877E-07  1.1937E-06  1.4012E-06  7.1532E-07  8.2858E-07
9.3374E-07  1.0644E-06  1.0451E-06  7.1879E-07  2.0386E-07  5.8137E-07
6.8181E-07  8.6287E-07  7.3886E-07  6.6829E-07  5.9975E-07  5.3431E-07
3.5954E-07  1.8259E-07  6.6695E-08  -1.2991E-08  -1.9605E-07  -2.6363E-07
-4.9853E-07  -7.2258E-07  -7.7354E-07  -8.8840E-07  -4.2891E-07  -5.9918E-07
-5.5410E-07  -5.5201E-07  -7.6807E-07  -9.7919E-07  -1.1633E-06  -1.3268E-06
-1.6356E-06  -2.1247E-06  -2.6638E-06  -2.9792E-06  -3.6560E-06  -4.3931E-06
-7.9233E-06  -6.8462E-06  -8.8240E-06  -1.3036E-05  -1.6799E-05  -2.0187E-06
-8.0290E-07  -1.7910E-06  -4.6446E-06  -9.2733E-06  -2.1326E-05  -2.2999E-05
-1.2506E-05  -1.1853E-05  -1.2515E-05  -1.5211E-05  -1.8873E-05  -1.5519E-05
-1.7141E-05  -1.6711E-05  -1.3756E-05  -2.0728E-05  -2.1160E-05  -2.1619E-05
-2.2282E-05  -2.1077E-05  -4.8719E-05  -5.6631E-05  -1.5938E-05  -2.5214E-05
-4.4162E-05  -4.0759E-05  -8.9232E-05  -1.6217E-05  -6.8545E-05  -6.9289E-05
-8.3907E-05  -3.2124E-05  -2.4523E-05  -1.0398E-05  -2.3177E-05  -4.4284E-05
-2.9703E-05  -3.9838E-05  -6.5618E-05  -9.4104E-05  -9.5557E-05  -8.3679E-05
-6.0194E-05  -5.7021E-05  -4.4902E-05  -1.8306E-05  -7.5939E-06  -3.4268E-06
-1.4169E-06  -1.1497E-06  -2.0740E-06  -7.8285E-06  -1.2727E-05  -3.7674E-05
-1.9116E-05  -9.0336E-06  -1.9597E-06  2.6193E-05  4.2107E-05  2.2563E-05
1.6952E-05  1.5245E-05  1.4154E-05  2.9926E-06  -4.2967E-07  -1.8804E-06
1.7018E-07  -2.0154E-07  2.6232E-08  9.9844E-10  5.4482E-11  6.2905E-10
-3.7859E-10
4D      12      4 1266     102      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D * FORSS-ZPR 6/7 SENS. OF 28C/49F TO 241PU CAPTURE      A= -3.0089E-04*
8D  1.6975E-10  7.7564E-10  2.8958E-09  7.4468E-09  7.3651E-09
9.1446E-09  3.0867E-08  5.6436E-08  7.4363E-08  3.9034E-08  4.5867E-08
5.3011E-08  6.2031E-08  6.2693E-08  4.4517E-08  1.2920E-08  3.7276E-08
4.4621E-08  5.7914E-08  5.1965E-08  5.1222E-08  5.1985E-08  5.3424E-08
4.4542E-08  3.2864E-08  2.8404E-08  2.6115E-08  1.6580E-08  6.1087E-09
-4.6455E-10  -1.2358E-08  -1.9001E-08  -2.0199E-08  -1.4154E-08  -1.5427E-08
-1.4859E-08  -5.6026E-09  -2.2672E-08  -3.7668E-08  -5.4554E-08  -7.0257E-08
-9.3824E-08  -1.3650E-07  -1.8788E-07  -2.2161E-07  -2.8639E-07  -3.6165E-07
-6.9794E-07  -6.3886E-07  -8.5961E-07  -1.3265E-06  -1.7836E-06  -2.1953E-07
-8.7593E-08  -1.9554E-07  -5.1208E-07  -1.0384E-06  -2.4589E-06  -2.7483E-06
-1.5413E-06  -1.4911E-06  -1.5976E-06  -1.9550E-06  -2.4515E-06  -2.0716E-06
-2.3304E-06  -2.2959E-06  -1.9091E-06  -2.9054E-06  -3.0299E-06  -3.1611E-06
-3.3192E-06  -3.1987E-06  -7.5984E-06  -9.1487E-06  -2.6520E-06  -4.2571E-06
-7.6475E-06  -7.2170E-06  -1.6431E-05  -3.0848E-06  -1.2914E-05  -1.3578E-05
-1.7016E-05  -6.6951E-06  -5.2098E-06  -2.2428E-06  -5.0338E-06  -9.7086E-06
-6.6124E-06  -8.9715E-06  -1.5004E-05  -2.2079E-05  -2.3152E-05  -2.0921E-05
-1.5417E-05  -1.4918E-05  -1.1947E-05  -4.9147E-06  -2.0477E-06  -9.2649E-07
-3.8400E-07  -3.1170E-07  5.6226E-07  -2.1195E-06  -3.4420E-06  -1.0055E-05
-4.8227E-06  -2.0368E-06  3.3291E-08  9.3033E-06  1.4060E-05  7.3130E-06
5.4971E-06  5.0821E-06  4.8094E-06  5.9928E-07  -4.6826E-08  -1.4841E-07
7.1854E-08  -1.6115E-08  1.1419E-08  8.9198E-11  1.6550E-11  2.4063E-10
-1.3393E-10
4D      12      4 1266     452      2      0      0      12      0      0      1
0
5D *RESPONSE IS REACTION RATE 28C/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D * ZPR6/7 SENS. OF 28C/49F TO 241EU NUBAR      A= -2.7897E-05*
8D  -5.3949E-09  -1.6853E-08  -5.0626E-08  -1.0907E-07  -8.0566E-08
-8.8791E-08  -2.6197E-07  -3.6483E-07  -3.7591E-07  -1.8585E-07  -1.9849E-07
-2.1939E-07  -2.6286E-07  -2.6850E-07  -1.9460E-07  -5.9192E-08  -1.7445E-07
-2.1678E-07  -2.8940E-07  -2.7418E-07  -2.9304E-07  -3.1692E-07  -3.7260E-07
-3.8297E-07  -3.5809E-07  -3.9411E-07  -4.2586E-07  -4.4955E-07  -3.5417E-07
-4.9167E-07  -5.4645E-07  -5.0674E-07  -6.1053E-07  -2.3878E-07  -3.9739E-07
-3.6372E-07  -4.8098E-07  -4.8534E-07  -5.1823E-07  -5.0734E-07  -4.9686E-07
-5.4858E-07  -5.7169E-07  -5.6413E-07  -5.5000E-07  -5.7311E-07  -5.6568E-07
-7.0917E-07  -4.1207E-07  -4.1044E-07  -5.6585E-07  -5.9515E-07  -5.9510E-08
-2.4082E-08  -5.6919E-08  -1.3287E-07  -2.4844E-07  -4.8239E-07  -4.2334E-07
-2.0305E-07  -1.6639E-07  -1.7190E-07  -2.2311E-07  -2.6010E-07  -1.5052E-07
-1.6156E-07  -1.4270E-07  -1.0874E-07  -2.0006E-07  -1.4975E-07  -8.5432E-08
-4.5985E-08  -1.4825E-08  -2.2900E-08  1.1901E-07  5.7010E-08  5.7130E-08
3.1789E-07  3.3357E-07  9.9666E-07  2.2835E-07  8.8537E-07  1.0715E-06
1.2535E-06  4.8019E-07  3.5672E-07  1.4925E-07  2.7738E-07  5.5381E-07
5.4262E-07  7.4121E-07  1.1209E-06  1.4264E-06  1.2313E-06  8.4320E-07
3.9589E-07  1.4441E-07  -5.5731E-08  -5.9004E-08  -2.3365E-08  -1.0093E-08
-3.7176E-09  -4.1509E-09  -9.3401E-09  -6.8762E-08  -1.7879E-07  -1.2721E-06
-1.9221E-06  -1.9503E-06  -2.0715E-06  -4.2926E-06  -3.4135E-06  -1.2046E-06
-9.6065E-07  -9.6244E-07  -4.5548E-07  -1.0464E-07  -3.6382E-08  -9.5937E-08
-2.7160E-08  -6.9234E-09  -1.9618E-09  -6.0317E-11  -3.2284E-12  -5.1799E-12
3.4378E-12

```



```

4D      12      4  1156  102      2      0      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO SODIUM CAPTURE      A= 2.9514E-03*
8D -3.2222E-08 -9.0233E-08 -2.6305E-07 -5.6383E-07 -4.0811E-07
-3.9779E-07 -1.0125E-06 -1.4621E-06 -1.7252E-06 -8.2721E-07 -8.7474E-07
-9.3920E-07 -1.0350E-06 -9.7342E-07 -6.4728E-07 -1.8479E-07 -5.2031E-07
-5.8785E-07 -7.1824E-07 -6.0602E-07 -5.4352E-07 -4.2256E-07 -3.0246E-07
-4.7719E-08 2.1424E-07 4.8155E-07 8.6295E-07 1.2625E-06 1.2609E-06
1.9692E-06 2.1110E-06 2.2701E-06 2.9938E-06 1.3481E-06 2.2538E-06
2.1984E-06 3.0028E-06 3.2867E-06 3.9892E-06 4.2805E-06 4.5076E-06
5.2536E-06 5.6552E-06 5.7618E-06 5.6962E-06 5.7877E-06 5.5114E-06
7.2423E-06 5.1388E-06 7.5213E-06 1.2706E-05 2.2166E-05 2.6426E-06
1.0512E-06 2.3362E-06 5.8398E-06 1.0945E-05 2.3024E-05 2.2865E-05
1.2254E-05 1.1675E-05 1.2339E-05 1.4361E-05 1.5441E-05 1.1017E-05
1.0947E-05 7.8519E-06 3.3618E-06 5.4222E-05 3.0150E-05 3.4933E-06
3.5680E-06 1.3122E-04 6.8534E-06 7.3935E-06 2.0290E-06 3.2950E-06
5.6922E-06 5.3175E-06 2.1448E-05 1.0979E-04 7.4468E-05 1.0211E-05
2.2647E-04 2.9070E-06 2.0956E-06 8.5823E-07 1.8926E-06 3.6133E-06
2.5397E-06 3.3863E-06 5.5437E-06 8.2133E-06 9.4048E-06 8.9881E-06
3.4960E-05 1.9225E-05 4.9225E-05 7.0516E-05 8.5808E-05 1.2385E-04
1.7316E-04 1.0332E-04 1.0182E-04 1.8955E-04 1.7257E-04 2.9226E-04
1.6530E-04 1.0093E-04 7.2654E-05 8.9259E-05 4.5030E-05 1.3579E-05
9.8645E-06 8.3134E-06 4.2413E-06 7.7295E-07 1.7453E-07 3.2095E-07
1.2164E-07 1.1358E-08 9.8581E-09 2.0183E-09 9.1788E-11 1.0224E-10
-1.3797E-10
4D      12      4  1192      2      2      3      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO IRON ELASTIC      A= -4.4145E-02*
8D 1.1408E-06 5.3893E-06 6.9143E-06 -1.1406E-05 -1.0797E-04
-4.8583E-05 1.9744E-04 5.3014E-04 4.0745E-04 2.0021E-04 1.2597E-04
-1.0930E-04 -3.3960E-04 -4.2857E-04 -4.9681E-04 -1.9575E-04 -6.1069E-04
-3.7547E-04 -6.1954E-04 -8.1268E-04 -1.3193E-03 -1.2532E-03 -1.9302E-03
-2.0838E-03 -2.0159E-03 -2.8808E-03 -3.1253E-03 -1.6981E-03 -7.1943E-04
-8.2220E-04 -6.2510E-04 -6.4506E-04 -3.8484E-04 -1.1336E-04 -2.5225E-04
-3.7432E-04 -4.7784E-04 -4.7023E-04 -5.1058E-04 -3.7685E-04 -3.0287E-04
-3.1528E-04 -2.6017E-04 -3.3147E-04 -4.1536E-04 -4.3704E-04 -4.4452E-04
-2.8228E-04 -5.8373E-05 -3.0034E-04 -4.1266E-04 -6.5483E-04 -1.6299E-05
-1.0556E-05 -4.1387E-05 -9.9451E-05 -9.8034E-05 -2.4403E-04 -2.5675E-04
-1.5969E-04 -6.2579E-05 -7.8107E-05 -1.8516E-04 -1.6259E-04 -1.8356E-04
-8.1049E-05 -7.8484E-05 1.1258E-04 -1.9258E-04 -4.0637E-05 -7.5209E-05
-7.8881E-05 3.8355E-06 8.5966E-05 2.1551E-04 3.3513E-04 -7.1581E-05
1.8371E-04 4.3278E-05 -8.8081E-05 3.3777E-05 -1.3350E-04 -4.8207E-04
-3.7913E-04 -2.6788E-04 3.0721E-04 1.4685E-05 -4.3088E-04 -3.9155E-04
-3.7119E-05 -1.1149E-04 -2.0593E-04 -3.6102E-04 -7.3405E-04 -1.2077E-03
-1.1841E-03 -8.3795E-04 -4.9223E-04 -2.2006E-04 -3.6908E-05 -1.4099E-05
-3.6072E-06 -7.2433E-07 -1.5276E-05 -9.0599E-05 -3.4489E-04 -1.7225E-03
-3.4029E-04 -1.6173E-03 -9.8520E-04 -5.8293E-04 -6.2715E-04 -2.1396E-04
-2.6254E-06 -2.2377E-04 3.9004E-05 7.7683E-05 -9.4830E-06 -1.0545E-05
1.1935E-06 -9.3968E-08 2.2378E-08 5.2715E-09 -8.6915E-10 -1.8403E-11
7.5258E-12
4D      12      4  1192      4      2      3      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO IRON TOTAL INELASTIC A= -1.9932E-01*
8D -9.9406E-05 -6.8562E-04 -2.3387E-03 -5.8140E-03 -4.6060E-03
-4.9405E-03 -1.5407E-02 -2.2291E-02 -1.7721E-02 -6.9214E-03 -6.5653E-03
-6.2956E-03 -7.6119E-03 -8.5125E-03 -6.4285E-03 -1.8770E-03 -5.7872E-03
-7.7380E-03 -1.0584E-02 -1.0635E-02 -9.6215E-03 -8.3276E-03 -7.1098E-03
-6.8118E-03 -5.4872E-03 -5.0085E-03 -3.0424E-03 -1.7757E-03 -5.0785E-04
-4.6640E-04 -3.6952E-04 -8.2507E-05 3.4082E-04 3.1189E-04 4.0588E-04
4.2114E-04 6.6962E-07 7.6220E-07 8.6230E-07 8.9851E-07 9.3172E-07
1.0499E-06 1.1148E-06 1.1312E-06 1.1714E-06 1.2407E-06 1.3011E-06
2.0315E-06 1.5983E-06 1.8123E-06 2.3132E-06 2.6063E-06 2.8607E-07
1.1404E-07 2.5162E-07 6.4233E-07 1.2518E-06 3.1070E-06 3.3748E-06
1.6184E-06 1.3920E-06 1.3497E-06 1.5234E-06 1.7110E-06 1.3605E-06
1.4170E-06 1.3315E-06 1.0971E-06 1.5590E-06 1.5025E-06 1.5206E-06
1.5917E-06 1.6148E-06 4.7001E-06 5.6379E-06 1.5970E-06 2.3155E-06
4.1057E-06 3.3824E-06 7.1527E-06 3.0284E-06 3.7488E-06 2.7169E-06
8.3136E-06 7.4185E-06 3.0044E-06 5.1248E-06 3.3054E-06 2.1929E-06
9.5982E-07 6.2257E-06 1.6035E-06 1.1610E-06 4.6446E-06 1.0214E-05
2.3195E-05 1.0559E-05 3.2511E-06 3.7572E-06 7.5638E-07 3.2309E-07
1.3208E-07 1.0377E-07 1.7768E-07 1.0306E-06 1.0500E-06 8.7445E-06
6.3732E-06 4.1252E-04 7.3993E-06 1.4556E-05 1.1214E-05 4.9538E-06
3.9718E-06 4.3426E-06 3.8659E-06 9.4974E-07 1.3387E-07 1.7775E-07
1.9403E-07 1.4596E-08 4.4466E-09 2.2464E-09 3.5902E-10 5.3393E-10
-6.5698E-10

```

```

4D      12      4  1192  102      2      0      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO IRON CAPTURE A= 2.3675E-02*
8D -4.9705E-08 -1.8754E-07 -6.5002E-07 -1.7585E-06 -1.4671E-06
-1.5928E-06 -4.8499E-06 -8.4895E-06 -1.1341E-05 -5.8180E-06 -6.3617E-06
-7.0925E-06 -8.1342E-06 -7.8544E-06 -5.5616E-06 -1.5813E-06 -4.4364E-06
-5.3044E-06 -6.5833E-06 -5.7624E-06 -5.2653E-06 -4.4259E-06 -3.3714E-06
-4.9526E-07 2.7306E-06 6.3489E-06 1.1199E-05 1.6926E-05 1.7613E-05
2.7371E-05 3.0241E-05 3.3949E-05 4.9488E-05 2.7239E-05 5.1078E-05
5.6498E-05 7.8761E-05 8.3648E-05 9.2233E-05 9.5585E-05 9.8950E-05
1.1378E-04 1.2210E-04 1.2333E-04 1.2593E-04 1.3312E-04 1.3804E-04
2.0391E-04 1.4714E-04 1.7464E-04 2.3132E-04 2.6186E-04 2.8762E-05
1.1600E-05 2.5825E-05 6.4811E-05 1.2384E-04 3.0946E-04 3.2736E-04
1.5518E-04 1.3095E-04 1.2595E-04 1.4161E-04 1.6378E-04 1.2610E-04
1.3052E-04 1.1942E-04 9.3535E-05 1.3546E-04 1.3272E-04 1.3418E-04
1.3810E-04 1.3661E-04 3.8296E-04 4.5367E-04 1.2185E-04 1.9332E-04
3.1757E-04 2.6738E-04 5.4521E-04 2.1357E-04 2.7575E-04 2.0771E-04
5.8513E-04 4.9162E-04 1.8542E-04 3.3909E-04 2.7901E-04 2.0990E-04
7.1268E-05 4.4874E-04 1.1138E-04 7.3906E-05 2.7850E-04 5.5832E-04
1.0036E-03 4.5384E-04 1.2150E-04 1.1379E-04 1.9617E-05 7.6585E-06
3.2160E-06 2.6511E-06 4.8226E-06 2.9443E-05 3.5251E-05 2.7818E-04
1.6900E-04 8.7962E-03 1.7751E-04 2.7372E-04 1.7614E-04 6.2481E-05
4.9993E-05 4.6463E-05 2.6712E-05 5.2463E-06 1.2045E-06 2.2173E-06
8.4142E-07 7.8692E-08 6.8369E-08 1.4020E-08 6.5063E-10 7.1463E-10
-9.5111E-10
4D      12      4  1262      4      2      3      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO 238 U TOT INEL, CI A= -2.4814E-01*
8D -1.8663E-05 -9.8703E-05 -5.6132E-04 -3.3987E-03 -4.6811E-03
-5.7182E-03 -1.6129E-02 -2.1144E-02 -2.1509E-02 -1.0523E-02 -1.1295E-02
-1.2223E-02 -1.3839E-02 -1.3589E-02 -9.4298E-03 -2.7510E-03 -7.9837E-03
-9.5637E-03 -1.2444E-02 -1.1116E-02 -1.1195E-02 -1.0938E-02 -1.1325E-02
-9.8409E-03 -7.6896E-03 -6.8138E-03 -4.9669E-03 -2.9752E-03 -1.0877E-03
-9.6574E-04 -7.8382E-04 -4.7939E-04 -1.3105E-04 5.0425E-06 -1.2701E-04
-4.8043E-05 5.5400E-05 2.0780E-04 1.4160E-04 2.8218E-05 -7.2487E-05
-1.1704E-04 -1.3658E-04 -1.2045E-04 -4.3061E-05 1.8281E-05 -1.1697E-05
1.9856E-04 1.4459E-04 2.6316E-04 3.3129E-04 4.7439E-04 3.9355E-05
1.2555E-05 2.5313E-05 1.1068E-04 1.8961E-04 4.7865E-04 5.0991E-04
2.4701E-04 2.5082E-04 2.6682E-04 3.0389E-04 3.3802E-04 2.8894E-04
3.1153E-04 3.1953E-04 2.4226E-04 3.6732E-04 3.5133E-04 3.6598E-04
3.3954E-04 3.2235E-04 6.6140E-04 5.7909E-04 1.4927E-04 1.8070E-04
3.1368E-04 1.4891E-04 1.7035E-04 1.3791E-05 -2.2227E-05 -5.3301E-06
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      12      4  1262  18      2      0      0      12      0      0      2
0
5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR
6/7 *
7D *ZPR 6/7 SENS. OF 28F/49F TO 238U FISSION A= 9.5994E-01*
8D 9.9093E-04 3.2486E-03 1.0219E-02 2.3940E-02 1.7239E-02
1.7741E-02 4.9630E-02 7.0685E-02 6.9074E-02 3.1039E-02 3.2647E-02
3.5346E-02 4.0595E-02 4.1137E-02 2.9268E-02 8.6034E-03 2.5542E-02
3.2166E-02 4.3648E-02 4.1820E-02 4.3329E-02 4.4111E-02 4.7004E-02
4.4332E-02 3.7945E-02 3.4709E-02 2.7626E-02 1.7070E-02 7.4870E-03
6.9464E-03 6.2790E-03 5.1798E-03 4.0024E-03 1.4540E-03 2.1234E-03
1.2060E-03 9.8549E-04 6.0850E-04 4.4188E-04 3.2637E-04 2.6710E-04
2.9413E-04 3.0773E-04 2.3130E-04 1.3432E-04 1.1035E-04 8.1198E-05
8.7741E-05 4.7935E-05 4.3129E-05 4.7206E-05 4.3155E-05 4.1494E-06
1.6405E-06 3.6480E-06 9.0335E-06 1.6671E-05 3.4020E-05 3.1328E-05
1.5056E-05 1.3183E-05 1.2983E-05 1.4707E-05 1.7075E-05 1.2984E-05
1.3349E-05 1.2144E-05 9.3089E-06 1.3306E-05 1.2779E-05 1.2341E-05
1.1971E-05 1.0609E-05 2.2340E-05 2.3515E-05 6.3480E-06 1.0235E-05
1.6690E-05 1.4223E-05 3.0850E-05 7.8741E-06 2.0581E-05 4.6704E-06
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
7.1617E-13 7.5943E-13 1.6323E-12 8.3326E-12 1.9470E-12 1.2247E-12
6.2418E-09 2.1915E-05 6.7781E-09 3.9646E-05 3.2875E-10 6.0435E-11
3.8152E-11 3.0284E-11 1.2177E-11 2.5267E-12 1.1224E-12 1.5696E-12
3.9106E-13 6.1954E-14 3.7410E-14 1.0184E-14 4.5858E-16 1.8819E-17
-1.9386E-18

```


4D 12 4 1262 102 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 238 U CAPT., CI A= 2.7080E-01*

8D -9.5120E-08 -4.8817E-07 -2.2329E-06 -7.4302E-06 -7.2898E-06
-8.6851E-06 -3.0794E-05 -6.7060E-05 -1.0843E-04 -6.1978E-05 -7.1590E-05
-8.3789E-05 -1.0069E-04 -1.0254E-04 -7.2478E-05 -2.1365E-05 -6.1170E-05
-7.1199E-05 -9.1111E-05 -8.0710E-05 -7.4928E-05 -5.7129E-05 -3.6353E-05
1.2944E-05 6.9074E-05 1.3583E-04 2.3706E-04 3.5237E-04 3.6623E-04
5.9618E-04 6.6718E-04 7.4277E-04 1.0430E-03 4.8326E-04 7.9846E-04
7.6536E-04 9.8273E-04 1.0081E-03 1.0792E-03 1.0888E-03 1.0951E-03
1.2183E-03 1.2863E-03 1.3131E-03 1.3309E-03 1.4201E-03 1.4597E-03
2.2189E-03 1.6567E-03 1.9430E-03 2.5040E-03 2.8288E-03 3.1472E-04
1.2458E-04 2.7507E-04 6.9921E-04 1.3442E-03 2.9377E-03 2.9950E-03
1.5661E-03 1.4644E-03 1.5062E-03 1.7504E-03 2.0943E-03 1.6798E-03
1.7866E-03 1.6977E-03 1.3738E-03 2.0000E-03 2.0199E-03 2.0334E-03
2.0556E-03 1.8986E-03 4.2589E-03 4.7606E-03 1.3611E-03 2.1660E-03
3.8613E-03 3.5665E-03 8.9000E-03 2.6225E-03 6.8350E-03 6.4167E-03
8.3116E-03 3.2689E-03 2.5781E-03 1.1368E-03 2.4483E-03 4.7149E-03
3.4489E-03 4.6870E-03 7.7820E-03 1.1799E-02 1.2680E-02 1.1400E-02
8.7074E-03 8.7562E-03 7.4584E-03 3.6404E-03 1.6345E-03 9.6169E-04
3.7924E-04 2.6627E-04 5.6999E-04 2.1547E-03 2.6444E-03 9.4388E-03
8.4043E-03 8.0526E-03 7.1479E-03 9.5595E-03 4.4364E-03 1.4466E-03
1.1133E-03 1.1902E-03 6.4100E-04 6.0278E-06 1.6408E-05 4.6981E-05
2.2758E-05 2.6107E-06 1.1958E-07 9.9606E-09 4.7540E-10 3.8326E-10
-4.2872E-10

4D 12 4 1264 18 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 239EU FISSION A= -7.6083E-01*

8D -9.1511E-05 -3.0333E-04 -9.5510E-04 -2.0858E-03 -1.4670E-03
-1.5891E-03 -4.6421E-03 -6.8145E-03 -7.2317E-03 -3.3828E-03 -3.5697E-03
-3.8502E-03 -4.3771E-03 -4.3660E-03 -3.0816E-03 -9.0360E-04 -2.6598E-03
-3.2875E-03 -4.3857E-03 -4.1298E-03 -4.2551E-03 -4.3373E-03 -4.7072E-03
-4.5382E-03 -4.0537E-03 -4.1592E-03 -4.1053E-03 -4.0062E-03 -3.1420E-03
-4.5014E-03 -4.6143E-03 -4.6716E-03 -5.6986E-03 -2.4546E-03 -4.0151E-03
-3.7587E-03 -4.8174E-03 -4.8796E-03 -5.1759E-03 -5.1550E-03 -5.1875E-03
-5.8645E-03 -6.2754E-03 -6.4253E-03 -6.5171E-03 -7.0221E-03 -7.2824E-03
-1.0843E-02 -7.8931E-03 -9.3684E-03 -1.2254E-02 -1.3568E-02 -1.4669E-03
-5.8402E-04 -1.3023E-03 -3.2581E-03 -6.1334E-03 -1.3057E-02 -1.2706E-02
-6.3839E-03 -5.7614E-03 -5.8353E-03 -6.7937E-03 -8.1315E-03 -6.3882E-03
-6.7697E-03 -6.3734E-03 -5.0634E-03 -7.4716E-03 -7.4434E-03 -7.4385E-03
-7.4394E-03 -6.7548E-03 -1.4734E-02 -1.5717E-02 -4.2545E-03 -6.8849E-03
-1.1772E-02 -9.9830E-03 -2.1721E-02 -5.6679E-03 -1.4203E-02 -1.4370E-02
-1.6853E-02 -6.2905E-03 -4.7077E-03 -1.8630E-03 -3.2965E-03 -5.5412E-03
-5.9638E-03 -7.9722E-03 -1.2893E-02 -1.8229E-02 -1.8545E-02 -1.5933E-02
-1.2224E-02 -1.0997E-02 -9.2684E-03 -4.2623E-03 -2.1584E-03 -1.0738E-03
-5.0799E-04 -3.8349E-04 -6.0479E-04 -2.4170E-03 -3.0762E-03 -1.2411E-02
-1.5420E-02 -1.6370E-02 -1.0856E-02 -1.9001E-02 -9.9667E-03 -3.9592E-03
-2.6005E-03 -2.2899E-03 -1.7026E-03 -4.4702E-04 -6.1328E-05 -4.2082E-05
-5.1619E-05 -3.2689E-06 -4.5541E-07 -1.9986E-07 -4.5682E-08 -2.8626E-08
1.0455E-08

4D 12 4 1264 102 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 239EU CAPTURE A= 7.8823E-02*

8D -3.8138E-08 -1.1078E-07 -1.3947E-07 -1.2142E-07 -1.0457E-07
-1.8709E-07 -9.4633E-07 -1.7321E-06 -2.4066E-06 -1.2982E-06 -1.5174E-06
-1.8139E-06 -2.2472E-06 -2.4048E-06 -1.7760E-06 -5.3301E-07 -1.5600E-06
-1.8820E-06 -2.5094E-06 -2.3045E-06 -2.2137E-06 -1.8352E-06 -1.3969E-06
-2.3452E-07 1.1215E-06 2.6926E-06 5.1639E-06 8.0809E-06 8.6295E-06
1.4431E-05 1.6565E-05 1.9248E-05 2.8796E-05 1.4703E-05 2.6874E-05
2.8707E-05 4.2332E-05 5.1015E-05 6.5029E-05 7.5492E-05 8.6172E-05
1.0775E-04 1.2476E-04 1.3719E-04 1.4936E-04 1.7111E-04 1.8795E-04
3.0635E-04 2.4854E-04 3.2493E-04 4.7000E-04 5.6561E-04 6.3387E-05
2.5316E-05 5.6563E-05 1.4328E-04 2.7631E-04 6.0405E-04 5.9771E-04
3.0058E-04 2.7241E-04 2.728E-04 3.2509E-04 3.9019E-04 3.0900E-04
3.2888E-04 3.1087E-04 2.4873E-04 3.6868E-04 3.6804E-04 3.6845E-04
3.7004E-04 3.3830E-04 7.4918E-04 8.7792E-04 2.9477E-04 4.8930E-04
7.9069E-04 6.6745E-04 1.6599E-03 4.5512E-04 1.1629E-03 1.1794E-03
1.4080E-03 5.4780E-04 4.3724E-04 1.8306E-04 3.3222E-04 5.7384E-04
6.3736E-04 9.0215E-04 1.5864E-03 2.5343E-03 2.9440E-03 2.8301E-03
2.3133E-03 2.7346E-03 2.6293E-03 1.3134E-03 5.4743E-04 2.6685E-04
1.5242E-04 9.9384E-05 2.2441E-04 8.4237E-04 1.4986E-03 4.9662E-03
3.8437E-03 4.5564E-03 3.6381E-03 6.9237E-03 3.9163E-03 2.4863E-03
9.5549E-04 1.1959E-03 6.1972E-04 1.8270E-04 3.9506E-05 1.4000E-05
1.9474E-05 5.5618E-07 1.7751E-08 1.5839E-08 3.5377E-09 2.5410E-08
-6.7430E-09

4D 12 4 1264 452 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 239PU NUBAR A= 1.3638E-02*

8D 1.8956E-06 6.0917E-06 1.8327E-05 3.9557E-05 2.8688E-05
 3.2825E-05 9.8168E-05 1.3904E-04 1.4270E-04 6.8468E-05 7.2374E-05
 7.8728E-05 9.2219E-05 9.3459E-05 6.7325E-05 2.0262E-05 5.9916E-05
 7.4763E-05 1.0003E-04 9.4696E-05 9.9951E-05 1.0611E-04 1.2175E-04
 1.2405E-04 1.1603E-04 1.2651E-04 1.3514E-04 1.4144E-04 1.1253E-04
 1.5820E-04 1.7100E-04 1.6438E-04 2.0076E-04 8.2132E-05 1.3720E-04
 1.2789E-04 1.6877E-04 1.7146E-04 1.8131E-04 1.7637E-04 1.7260E-04
 1.9088E-04 1.9968E-04 1.9891E-04 1.9646E-04 2.0705E-04 2.0832E-04
 2.8114E-04 1.8151E-04 1.9758E-04 2.6086E-04 2.7756E-04 2.8760E-05
 1.1505E-05 2.6182E-05 6.3743E-05 1.1919E-04 2.4368E-04 2.2742E-04
 1.1188E-04 9.7781E-05 9.9108E-05 1.1835E-04 1.3973E-04 1.0104E-04
 1.0693E-04 9.9045E-05 7.7858E-05 1.2053E-04 1.1238E-04 1.0249E-04
 9.6472E-05 8.3452E-05 1.8014E-04 1.7141E-04 4.2806E-05 7.3654E-05
 9.4622E-05 7.3312E-05 1.1872E-04 1.9684E-05 5.7550E-05 3.5038E-05
 4.1201E-05 1.4363E-05 1.1598E-05 4.7772E-06 1.3279E-05 2.0563E-05
 3.2184E-06 2.6398E-06 1.5362E-05 4.3627E-05 7.3811E-05 9.4453E-05
 9.9598E-05 1.1341E-04 1.1192E-04 5.4471E-05 2.7343E-05 1.3533E-05
 6.3408E-06 4.8968E-06 7.8816E-06 3.4439E-05 4.7540E-05 2.4350E-04
 3.7378E-04 4.2292E-04 3.2159E-04 6.7241E-04 3.9821E-04 1.7484E-04
 1.2583E-04 1.2372E-04 1.0677E-04 2.6070E-05 2.7815E-06 2.2125E-06
 3.4174E-06 1.7992E-07 3.0510E-08 1.1080E-08 1.7274E-09 1.5934E-09
 -7.0437E-10

4D 12 4 1265 18 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 240PU FISSION A= 2.9245E-03*

8D -4.5284E-06 -1.3592E-05 -4.1043E-05 -7.3218E-05 -4.7829E-05
 -4.7438E-05 -1.2591E-04 -1.9036E-04 -2.2062E-04 -1.0481E-04 -1.0938E-04
 -1.1434E-04 -1.2031E-04 -1.0870E-04 -7.1923E-05 -2.0572E-05 -5.8156E-05
 -6.6182E-05 -8.1524E-05 -6.8818E-05 -6.1098E-05 -4.6823E-05 -3.2903E-05
 -6.0073E-06 2.0342E-05 4.7166E-05 8.6709E-05 1.2863E-04 1.2740E-04
 1.9521E-04 2.0567E-04 2.1337E-04 2.6281E-04 1.0746E-04 1.6468E-04
 1.4581E-04 1.7865E-04 1.7029E-04 1.6971E-04 1.5798E-04 1.4801E-04
 1.5560E-04 1.5328E-04 1.4329E-04 1.3160E-04 1.2294E-04 1.0475E-04
 1.1555E-04 5.9414E-05 5.6456E-05 6.2122E-05 5.9528E-05 5.9126E-06
 2.2838E-06 5.0265E-06 1.2443E-05 2.2872E-05 4.5634E-05 4.0961E-05
 1.9360E-05 1.6724E-05 1.6345E-05 1.8664E-05 2.1623E-05 1.6484E-05
 1.6957E-05 1.5452E-05 1.1929E-05 1.6965E-05 1.6115E-05 1.5389E-05
 1.4798E-05 1.3002E-05 1.6827E-05 2.6307E-05 6.7047E-06 1.0429E-05
 1.6322E-05 1.3020E-05 2.8302E-05 7.8387E-06 2.3148E-05 2.3351E-05
 3.0370E-05 1.1991E-05 8.9282E-06 3.7120E-06 8.2081E-06 1.5609E-05
 1.0820E-05 1.4334E-05 2.3106E-05 3.1417E-05 2.8535E-05 2.1604E-05
 1.6423E-05 1.8659E-05 1.8407E-05 9.0442E-06 6.2001E-06 2.2112E-06
 8.3845E-07 4.1196E-06 8.1942E-07 3.2044E-06 5.9423E-06 5.6255E-05
 3.2879E-05 1.6977E-05 6.6885E-05 2.3097E-05 1.5372E-05 4.3860E-06
 3.6369E-06 3.6482E-06 1.2325E-06 1.5591E-09 9.4808E-08 7.4985E-10
 1.2262E-08 3.4739E-12 5.0200E-12 2.6685E-11 8.5545E-12 2.0255E-13
 -1.9315E-13

4D 12 4 1266 18 2 0 0 12 0 0 2
0

5D *RESPONSE IS REACTION RATE 28F/49F FOR THE CENTRAL INTERVAL OF ZPR

6/7 *

7D *ZPR 6/7 SENS. OF 28F/49F TO 241PU FISSION A= 4.9659E-03*

8D -5.4284E-07 -1.6224E-06 -4.9409E-06 -9.9750E-06 -6.2933E-06
 -5.3320E-06 -1.3381E-05 -1.9477E-05 -2.2264E-05 -1.0547E-05 -1.1152E-05
 -1.2009E-05 -1.3264E-05 -1.2502E-05 -8.3072E-06 -2.3634E-06 -6.6397E-06
 -7.4684E-06 -9.0836E-06 -7.5796E-06 -6.6633E-06 -5.0315E-06 -3.3745E-06
 -1.3873E-07 3.0161E-06 6.1982E-06 1.0578E-05 1.4977E-05 1.4550E-05
 2.2199E-05 2.3429E-05 2.4397E-05 3.0955E-05 1.3307E-05 2.1344E-05
 1.9937E-05 2.5524E-05 2.5953E-05 2.7880E-05 2.8268E-05 2.8844E-05
 3.2765E-05 3.5194E-05 3.6155E-05 3.6843E-05 3.9645E-05 4.1022E-05
 6.1271E-05 4.4928E-05 5.3751E-05 7.0939E-05 8.0820E-05 8.9187E-06
 3.5526E-06 7.9239E-06 1.9903E-05 3.7795E-05 8.1017E-05 7.9609E-05
 4.0314E-05 3.6615E-05 3.7380E-05 4.4036E-05 5.2898E-05 4.1838E-05
 4.4615E-05 4.1950E-05 3.3313E-05 4.9068E-05 4.8513E-05 4.8124E-05
 4.8000E-05 4.3690E-05 9.6342E-05 1.0490E-04 2.7865E-05 4.3704E-05
 7.3751E-05 6.5144E-05 1.3581E-04 2.3259E-05 9.6994E-05 9.5797E-05
 1.1193E-04 4.1928E-05 3.1807E-05 1.3433E-05 2.9943E-05 5.7389E-05
 4.0147E-05 5.3885E-05 8.9284E-05 1.3049E-04 1.3914E-04 1.3243E-04
 1.0628E-04 1.1167E-04 1.0385E-04 5.0696E-05 2.3638E-05 1.1216E-05
 4.8543E-06 3.9833E-06 7.1594E-06 2.7708E-05 4.9746E-05 1.7310E-04
 1.9300E-04 1.6423E-04 1.5413E-04 2.5911E-04 1.8085E-04 6.5253E-05
 4.9806E-05 4.2578E-05 2.4612E-05 4.8073E-06 8.0438E-07 2.4821E-06
 9.8114E-07 1.3839E-07 5.1368E-08 1.2953E-09 6.3338E-11 6.2811E-10
 -3.8465E-10


```

4D      15      1 1192 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO IRON CAPTURE                                A= -1.8711E-02*
8D -2.3310E-08 -9.0541E-08 -3.3794E-07 -9.8510E-07 -9.0943E-07
-1.2796E-06 -4.5772E-06 -8.1672E-06 -1.0130E-05 -5.1328E-06 -5.6588E-06
-6.4044E-06 -7.6740E-06 -8.0071E-06 -6.0863E-06 -1.7805E-06 -5.2802E-06
-7.0655E-06 -9.8089E-06 -9.9102E-06 -1.0834E-05 -1.2567E-05 -1.5314E-05
-1.6282E-05 -1.6365E-05 -1.8672E-05 -1.9686E-05 -2.1474E-05 -1.8773E-05
-2.3245E-05 -2.8066E-05 -2.6980E-05 -4.7928E-05 -2.3478E-05 -4.6092E-05
-5.0324E-05 -7.0745E-05 -7.4643E-05 -8.2145E-05 -8.5409E-05 -8.8566E-05
-1.0222E-04 -1.1029E-04 -1.1200E-04 -1.1479E-04 -1.2198E-04 -1.2298E-04
-1.8660E-04 -1.3839E-04 -1.6733E-04 -2.2078E-04 -2.5176E-04 -2.7736E-05
-1.1189E-05 -2.4925E-05 -6.2547E-05 -1.1977E-04 -2.9930E-04 -3.1884E-04
-1.5171E-04 -1.2849E-04 -1.2389E-04 -1.3937E-04 -1.6183E-04 -1.2456E-04
-1.2945E-04 -1.1868E-04 -9.3124E-05 -1.3526E-04 -1.3279E-04 -1.3452E-04
-1.3880E-04 -1.3762E-04 -3.8666E-04 -4.6179E-04 -1.2507E-04 -1.9874E-04
-3.2702E-04 -2.7635E-04 -5.4443E-04 -2.0579E-04 -2.4889E-04 -2.0346E-04
-5.6294E-04 -4.7409E-04 -1.6966E-04 -3.4955E-04 -2.8171E-04 -2.1872E-04
-7.3850E-05 -4.2069E-04 -1.1478E-04 -7.6671E-05 -2.8172E-04 -5.4034E-04
-9.5443E-04 -4.3683E-04 -1.1659E-04 -1.0598E-04 -1.8262E-05 -7.1081E-06
-2.9830E-06 -2.4576E-06 -4.4689E-06 -2.7155E-05 -3.2189E-05 -2.4088E-04
-1.3513E-04 -4.3253E-03 -1.3075E-04 -1.8078E-04 -1.0058E-04 -3.1375E-05
-2.0671E-05 -1.8190E-05 -1.0625E-05 -2.6442E-06 -1.0992E-06 -7.8362E-07
-1.8321E-07 -2.4465E-08 -1.6287E-08 -1.2772E-08 -8.0326E-09 -2.7558E-09
8.7944E-10
4D      15      1 1261 18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 235U FISSION                                A= 5.3709E-01*
8D 3.2631E-05 1.0098E-04 3.1471E-04 6.8958E-04 4.8656E-04
5.2871E-04 1.5582E-03 2.2000E-03 2.1925E-03 1.0133E-03 1.0684E-03
1.1535E-03 1.3225E-03 1.3389E-03 9.5679E-04 2.8275E-04 8.4053E-04
1.0573E-03 1.4313E-03 1.3764E-03 1.4562E-03 1.5418E-03 1.7430E-03
1.7811E-03 1.6900E-03 1.8367E-03 1.9651E-03 2.0931E-03 1.7463E-03
2.1659E-03 2.5199E-03 2.2825E-03 3.5476E-03 1.3673E-03 2.3188E-03
2.1370E-03 2.7381E-03 2.7164E-03 2.8757E-03 2.8964E-03 2.9551E-03
3.3853E-03 3.6642E-03 3.7866E-03 3.8688E-03 4.1939E-03 4.2349E-03
6.5031E-03 4.9191E-03 6.0019E-03 7.8530E-03 8.9113E-03 9.8692E-04
3.9400E-04 8.8053E-04 2.2069E-03 4.1842E-03 8.9934E-03 8.8231E-03
4.4627E-03 4.0532E-03 4.1586E-03 4.8973E-03 5.9170E-03 4.6759E-03
4.9954E-03 4.7005E-03 3.7254E-03 5.4986E-03 5.4742E-03 5.4674E-03
4.5646E-03 4.9849E-03 1.1038E-02 1.1899E-02 3.3041E-03 5.4019E-03
9.3700E-03 7.9746E-03 1.7824E-02 4.8130E-03 1.1722E-02 1.2227E-02
1.4276E-02 5.6715E-03 4.2822E-03 1.7816E-03 3.8854E-03 7.0838E-03
5.3894E-03 7.4994E-03 1.1292E-02 1.6468E-02 1.7561E-02 1.5495E-02
1.0902E-02 1.1161E-02 9.2107E-03 4.4643E-03 1.9652E-03 9.2106E-04
3.8015E-04 3.0722E-04 5.9410E-04 2.1828E-03 3.4903E-03 1.3442E-02
1.2269E-02 1.0893E-02 7.6007E-03 1.2103E-02 5.5381E-03 2.0557E-03
1.1521E-03 9.5683E-04 4.1838E-04 1.3568E-04 4.8554E-05 4.2809E-05
9.6435E-06 1.0887E-06 1.1745E-07 5.2417E-08 3.2161E-08 1.5623E-08
-4.5058E-09
4D      15      1 1261 102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 235U CAPTURE                                A= -9.9599E-02*
8D -2.2846E-08 -1.1519E-07 -6.7994E-07 -2.6383E-06 -2.8201E-06
-3.8358E-06 -1.4401E-05 -2.6941E-05 -3.4112E-05 -1.7606E-05 -1.9492E-05
-2.2183E-05 -2.6566E-05 -2.8103E-05 -2.0849E-05 -6.2445E-06 -1.8845E-05
-2.4394E-05 -3.4454E-05 -3.4594E-05 -3.8222E-05 -4.2512E-05 -5.0258E-05
-5.3457E-05 -5.3265E-05 -6.0488E-05 -6.7920E-05 -7.5886E-05 -6.6791E-05
-8.7224E-05 -1.0711E-04 -1.0370E-04 -1.7765E-04 -7.3997E-05 -1.3019E-04
-1.2572E-04 -1.6793E-04 -1.7441E-04 -1.9122E-04 -1.9892E-04 -2.0962E-04
-2.4740E-04 -2.7675E-04 -2.9587E-04 -3.1275E-04 -3.4935E-04 -3.6388E-04
-5.8593E-04 -4.6582E-04 -5.8872E-04 -7.9742E-04 -9.5170E-04 -1.0901E-04
-4.3658E-05 -9.7797E-05 -2.4898E-04 -4.8561E-04 -1.0896E-03 -1.1149E-03
-5.7518E-04 -5.2927E-04 -5.5015E-04 -6.5711E-04 -8.0143E-04 -6.4507E-04
-7.0010E-04 -6.7033E-04 -5.4159E-04 -8.1039E-04 -8.1772E-04 -8.2767E-04
-8.3983E-04 -7.7738E-04 -1.7637E-03 -1.9521E-03 -5.5498E-04 -9.1163E-04
-1.6184E-03 -1.3982E-03 -3.2069E-03 -8.9088E-04 -2.2200E-03 -2.3880E-03
-2.9097E-03 -1.1937E-03 -9.1913E-04 -3.8632E-04 -8.4629E-04 -1.5250E-03
-1.2024E-03 -1.6025E-03 -2.6966E-03 -3.9109E-03 -4.2411E-03 -4.1802E-03
-3.2576E-03 -3.1079E-03 -2.2297E-03 -1.1361E-03 -4.3251E-04 -2.3709E-04
-9.5637E-05 -7.3431E-05 -1.3982E-04 -5.7982E-04 -1.1353E-03 -3.8043E-03
-3.6310E-03 -4.2278E-03 -3.5215E-03 -4.2284E-03 -2.2090E-03 -8.8729E-04
-5.7699E-04 -4.6398E-04 -2.1137E-04 -8.5006E-05 -2.2689E-05 -1.8912E-05
-3.9818E-06 -2.9718E-07 -7.8750E-08 -3.3949E-08 -1.3353E-08 -9.6888E-09
2.5572E-09

```

```

4D      15      1 1261  452      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 235U NUBAR A= 8.8036E-01*
8D  5.1005E-05  1.5311E-04  4.8934E-04  1.0643E-03  7.3170E-04
7.9119E-04  2.3574E-03  3.4323E-03  3.5311E-03  1.6454E-03  1.7415E-03
1.8862E-03  2.1643E-03  2.1910E-03  1.5620E-03  4.5995E-04  1.3660E-03
1.7173E-03  2.3255E-03  2.2325E-03  2.3545E-03  2.4830E-03  2.7928E-03
2.8366E-03  2.6776E-03  2.8924E-03  3.0726E-03  3.2472E-03  2.7055E-03
3.3494E-03  3.8924E-03  3.5310E-03  5.5076E-03  2.1257E-03  3.5975E-03
3.3178E-03  4.2515E-03  4.2347E-03  4.4912E-03  4.5314E-03  4.6298E-03
5.3036E-03  5.7459E-03  5.9474E-03  6.0894E-03  6.6084E-03  6.6859E-03
1.0309E-02  7.8167E-03  9.5323E-03  1.2460E-02  1.4143E-02  1.5669E-03
6.2502E-04  1.3956E-03  3.5026E-03  6.6493E-03  1.4285E-02  1.4027E-02
7.0953E-03  6.4478E-03  6.6156E-03  7.7899E-03  9.3959E-03  7.4315E-03
7.9372E-03  7.4703E-03  5.9253E-03  8.7355E-03  8.6863E-03  8.6670E-03
8.6634E-03  7.9043E-03  1.7515E-02  1.8865E-02  5.2377E-03  8.5387E-03
1.4833E-02  1.2599E-02  2.8160E-02  7.6090E-03  1.8529E-02  1.9329E-02
2.2635E-02  9.0209E-03  6.8297E-03  2.8425E-03  6.1987E-03  1.1289E-02
8.6125E-03  1.2014E-02  1.8175E-02  2.6736E-02  2.8789E-02  2.5721E-02
1.8368E-02  1.9072E-02  1.5948E-02  7.7974E-03  3.4456E-03  1.6167E-03
6.6849E-04  5.4141E-04  1.0478E-03  3.8551E-03  6.1935E-03  2.3950E-02
2.2130E-02  1.9556E-02  1.4765E-02  2.4654E-02  1.1045E-02  4.2546E-03
2.2654E-03  1.8707E-03  8.4280E-04  3.3317E-04  9.5036E-05  7.7873E-05
1.5156E-05  1.6593E-06  2.1275E-07  1.2270E-07  1.3429E-07  6.2768E-08
-1.9706E-08
4D      15      1 1262      4      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 238U TOTAL INELASTIC A= -1.7460E-02*
8D -4.2332E-06 -1.5238E-05 -8.3151E-05 -4.0318E-04 -3.7968E-04
-4.1995E-04 -1.1084E-03 -1.5912E-03 -1.7607E-03 -8.1682E-04 -8.7752E-04
-9.5931E-04 -1.0802E-03 -1.0746E-03 -7.3029E-04 -2.0096E-04 -5.8877E-04
-7.3000E-04 -9.7980E-04 -8.8018E-04 -8.7218E-04 -8.3398E-04 -8.2265E-04
-6.9919E-04 -5.4718E-04 -4.3411E-04 -2.6225E-04 -5.1960E-05 1.7901E-05
1.0539E-04 1.7951E-04 1.4461E-04 1.6900E-04 6.0071E-05 1.6816E-04
1.5879E-04 2.3731E-04 1.6046E-04 1.6801E-04 1.7510E-04 1.9136E-04
2.3843E-04 2.5865E-04 2.4457E-04 2.1466E-04 2.1479E-04 1.8715E-04
1.0057E-04 4.1479E-05 6.1444E-06 2.3610E-05 -2.7784E-05 -2.6366E-06
1.6138E-06 8.6416E-06 -6.7035E-06 -2.2601E-05 -8.3354E-05 -1.0482E-04
-4.6014E-05 -6.3851E-05 -7.3110E-05 -7.9425E-05 -6.9344E-05 -7.6254E-05
-8.1932E-05 -8.5555E-05 -7.5225E-05 -9.5184E-05 -9.9700E-05 -1.0605E-04
-1.0099E-04 -1.0718E-04 -2.3502E-04 -1.5790E-04 -4.5040E-05 -3.0491E-05
-6.5667E-05 1.6601E-05 1.0276E-04 2.7559E-05 6.1359E-05 5.3898E-06
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      15      1 1262      18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 238U FISSION A= 7.4512E-02*
8D  9.8447E-05  3.1084E-04  9.3764E-04  2.1781E-03  1.5814E-03
1.5971E-03  4.3187E-03  5.8852E-03  5.5305E-03  2.4467E-03  2.5586E-03
2.7429E-03  3.1165E-03  3.1362E-03  2.2240E-03  6.5342E-04  1.9408E-03
2.4353E-03  3.2830E-03  3.1317E-03  3.2282E-03  3.2658E-03  3.4569E-03
3.2455E-03  2.7660E-03  2.5188E-03  1.9978E-03  1.2376E-03  5.4514E-04
4.2282E-04  4.2549E-04  3.1139E-04  3.0987E-04  1.0158E-04  1.5434E-04
8.7007E-05  7.1221E-05  4.3758E-05  3.1649E-05  2.3683E-05  1.9534E-05
2.1480E-05  2.2541E-05  1.7055E-05  9.9324E-06  8.1653E-06  5.8273E-06
6.7565E-06  3.9742E-06  3.5306E-06  3.6761E-06  3.3338E-06  3.2485E-07
1.2704E-07  2.7805E-07  6.9661E-07  1.2905E-06  2.6329E-06  2.4267E-06
1.1635E-06  1.0328E-06  1.0056E-06  1.1122E-06  1.2807E-06  1.0011E-06
1.0200E-06  9.3023E-07  7.2381E-07  9.9172E-07  9.7155E-07  9.4694E-07
9.2248E-07  8.2580E-07  1.7295E-06  1.8379E-06  5.1543E-07  7.6721E-07
1.3473E-06  1.1212E-06  2.4566E-06  6.9011E-07  1.6156E-06  3.7397E-07
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4.7325E-14  4.0875E-14  8.4576E-14  3.8651E-13  1.0367E-12  8.8582E-12
2.6649E-10  8.7068E-07  2.4508E-10  1.1686E-06  9.1818E-12  1.5083E-12
9.1846E-13  6.3551E-13  3.2133E-13  5.0783E-14  2.9716E-14  2.5729E-14
7.9595E-15  1.0803E-15  4.9723E-16  2.5232E-16  4.7132E-17  2.2002E-18
-3.3870E-20

```

```

4D 15 1 1262 102 2 0 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 238U CAPTURE A= -2.6471E-01*
8D -5.6226E-08 -2.9181E-07 -1.4140E-06 -4.9838E-06 -5.3361E-06
-8.3045E-06 -3.4761E-05 -7.7083E-05 -1.1420E-04 -6.3738E-05 -7.4389E-05
-8.8351E-05 -1.1087E-04 -1.2293E-04 -9.3876E-05 -2.8374E-05 -8.6714E-05
-1.1493E-04 -1.6765E-04 -1.7613E-04 -2.0154E-04 -2.2851E-04 -2.7587E-04
-3.0141E-04 -3.0620E-04 -3.5458E-04 -3.9930E-04 -4.4243E-04 -3.9140E-04
-5.0945E-04 -6.2408E-04 -5.9670E-04 -1.0236E-03 -4.2361E-04 -7.3255E-04
-6.9433E-04 -8.9744E-04 -9.1595E-04 -9.7911E-04 -9.9230E-04 -1.0014E-03
-1.1180E-03 -1.1872E-03 -1.2188E-03 -1.2405E-03 -1.3303E-03 -1.3317E-03
-2.0841E-03 -1.6023E-03 -1.9088E-03 -2.4476E-03 -2.7814E-03 -3.1083E-04
-1.2298E-04 -2.7143E-04 -6.9062E-04 -1.3299E-03 -2.9151E-03 -2.9854E-03
-1.5681E-03 -1.4706E-03 -1.5152E-03 -1.7623E-03 -2.1121E-03 -1.6989E-03
-1.8108E-03 -1.7243E-03 -1.3994E-03 -2.0375E-03 -2.0640E-03 -2.0835E-03
-2.1106E-03 -1.9559E-03 -4.4003E-03 -4.9511E-03 -1.4295E-03 -2.2681E-03
-4.0641E-03 -3.7612E-03 -9.4148E-03 -2.8097E-03 -7.2928E-03 -6.8819E-03
-8.9124E-03 -3.5244E-03 -2.7880E-03 -1.2309E-03 -2.6285E-03 -5.0410E-03
-3.6320E-03 -4.9700E-03 -8.2051E-03 -1.2374E-02 -1.3156E-02 -1.1627E-02
-8.7401E-03 -8.6602E-03 -7.2130E-03 -3.4523E-03 -1.5352E-03 -9.0108E-04
-3.5581E-04 -2.4894E-04 -5.3146E-04 -1.9986E-03 -2.4291E-03 -8.2460E-04
-6.7541E-03 -6.1801E-03 -5.3252E-03 -6.3915E-03 -2.5578E-03 -7.3625E-04
-4.6994E-04 -4.6951E-04 -2.5228E-04 -3.0698E-06 -1.4976E-05 -1.7935E-05
-5.1283E-06 -7.9200E-07 -2.8955E-08 -9.2304E-09 -4.5507E-09 -1.3641E-09
3.9986E-10
4D 15 1 1262 452 2 0 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO 238U NUBAR A= 1.1932E-01*
8D 1.5554E-04 4.7838E-04 1.4830E-03 3.4073E-03 2.3947E-03
2.3998E-03 6.5537E-03 9.2021E-03 8.9153E-03 3.9714E-03 4.1702E-03
4.4909E-03 5.1138E-03 5.1529E-03 3.6486E-03 1.0683E-03 3.1713E-03
3.9797E-03 5.3714E-03 5.1200E-03 5.2646E-03 5.3079E-03 5.5918E-03
5.2183E-03 4.4234E-03 4.0007E-03 3.1472E-03 1.9308E-03 8.4794E-04
6.5648E-04 6.5993E-04 4.8342E-04 4.8203E-04 1.5839E-04 2.4060E-04
1.3584E-04 1.1136E-04 6.8706E-05 4.9839E-05 3.7370E-05 3.0879E-05
3.3973E-05 3.5676E-05 2.7011E-05 1.5752E-05 1.2955E-05 9.2537E-06
1.0711E-05 6.2765E-06 5.5871E-06 5.8292E-06 5.2844E-06 5.1394E-07
2.0103E-07 4.4023E-07 1.1021E-06 2.0414E-06 4.1591E-06 3.8285E-06
1.8335E-06 1.6236E-06 1.5821E-06 1.7547E-06 2.0201E-06 1.5723E-06
1.6021E-06 1.4591E-06 1.1326E-06 1.5599E-06 1.5223E-06 1.4798E-06
1.4392E-06 1.2847E-06 2.6901E-06 2.8493E-06 7.9274E-07 1.1931E-06
2.0695E-06 1.7241E-06 3.7623E-06 1.0382E-06 2.4770E-06 5.7120E-07
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 1.5400E-13 1.8434E-13 1.1993E-13
7.5707E-14 6.9590E-14 1.4582E-13 6.9032E-13 1.8500E-12 1.5888E-11
4.8167E-10 1.5792E-06 4.7494E-10 2.4039E-06 1.8314E-11 3.1203E-12
1.7889E-12 1.2662E-12 6.4082E-13 1.2636E-13 5.9000E-14 4.6304E-14
1.2546E-14 1.6691E-15 8.9806E-16 5.7589E-16 1.8286E-16 8.5629E-18
-1.8557E-19
4D 15 1 1276 2 2 3 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 6/6A *
7D *ZPR 6/6A SENS. OF K TO OXYGEN ELASTIC A= 3.3748E-02*
8D -3.0356E-06 8.0881E-07 -2.8124E-05 -1.1777E-04 -3.7483E-05
1.1236E-06 1.8563E-04 4.8348E-04 2.8243E-04 6.1428E-05 3.1427E-05
-7.9211E-06 -3.9311E-05 -6.2845E-05 -2.6161E-05 -1.4580E-06 -8.8661E-06
-4.3795E-05 -1.2662E-04 -1.7497E-04 -2.2551E-04 -4.2581E-04 -3.9283E-04
-4.6732E-04 -4.7884E-04 -4.1325E-04 -2.9937E-04 -5.7939E-05 -1.2394E-05
1.4674E-04 2.7851E-04 2.6012E-04 3.2145E-04 1.4579E-04 4.3470E-04
3.5601E-04 5.5672E-04 3.6881E-04 3.5993E-04 3.3264E-04 3.2711E-04
5.0222E-04 6.0224E-04 6.2150E-04 5.5129E-04 6.5506E-04 6.8056E-04
7.3524E-04 -4.2641E-05 2.3527E-04 7.3620E-04 7.9033E-04 7.4183E-05
4.2138E-05 1.2491E-04 2.0696E-04 2.2007E-04 6.5852E-04 4.1099E-04
1.8627E-04 7.8519E-05 6.5151E-05 8.0553E-05 3.8079E-04 1.3926E-04
1.4771E-04 6.9774E-05 -8.1831E-05 3.6002E-05 1.7950E-04 3.1340E-04
2.6587E-04 1.9599E-04 3.8205E-05 -7.3143E-05 2.8896E-04 2.8896E-04
-4.6600E-05 2.8386E-04 5.9583E-04 7.9839E-05 6.5241E-04 9.9763E-04
1.1519E-03 3.2311E-04 1.3467E-04 1.2090E-04 4.5142E-04 1.2774E-03
7.8607E-04 1.1533E-03 1.6850E-03 1.7910E-03 2.1207E-03 1.8414E-03
1.1511E-03 9.6265E-04 5.1884E-04 1.5336E-04 3.8115E-05 1.9979E-05
6.1269E-06 6.9870E-06 1.7399E-05 1.0121E-04 1.1450E-04 6.2676E-04
-6.4513E-05 2.1894E-03 9.2159E-04 -1.1203E-04 -1.4941E-04 -1.0363E-04
-5.0430E-06 1.5165E-05 3.2555E-05 -1.5382E-05 -2.4925E-06 -1.4926E-06
-3.2635E-08 2.1414E-08 9.0682E-09 5.6983E-09 -2.2489E-11 3.5997E-11
-3.2943E-12

```

4D 15 4 1156 2 2 3 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SEN. OF 28C/25F TO SODIUM ELASTIC A= -6.0735E-04*

8D 4.4627E-09 -1.3461E-07 5.2445E-07 9.8643E-07 3.2717E-06

4.1624E-07 -9.5291E-06 -2.4621E-05 -2.9106E-05 -1.2949E-05 -5.1112E-06

8.8694E-06 2.3701E-05 3.3775E-05 4.0312E-05 1.3299E-05 3.5124E-05

3.7836E-05 5.9740E-05 6.5204E-05 6.0390E-05 5.8591E-05 9.5711E-05

7.2102E-05 6.7355E-05 6.3737E-05 9.9590E-05 9.9615E-05 8.5096E-05

8.6557E-05 5.4148E-05 2.4060E-05 5.1915E-05 -3.0190E-05 -5.7430E-05

-4.8266E-05 7.9074E-05 3.7128E-05 3.3499E-05 9.3261E-05 2.5722E-04

4.3507E-04 4.6142E-04 4.5282E-04 6.6842E-04 6.4005E-04 4.4392E-04

6.6244E-04 3.4991E-04 7.5107E-04 9.7874E-04 1.4526E-03 2.4577E-04

7.0883E-05 7.2834E-05 2.5275E-04 5.6178E-04 1.5823E-03 1.7197E-03

8.6896E-04 7.5583E-04 5.2205E-04 6.3550E-04 8.8635E-04 6.8474E-04

7.3239E-04 6.4230E-04 4.2724E-04 7.5849E-04 8.0067E-04 9.1839E-04

8.7379E-04 6.7796E-04 1.3510E-03 1.5738E-03 3.3108E-04 8.0841E-04

1.3326E-03 9.1828E-04 1.4928E-03 4.6137E-04 -7.5884E-05 7.1626E-04

-8.9287E-05 -1.4423E-05 -7.0959E-05 -8.4476E-05 -2.9901E-04 -7.4116E-04

-2.4198E-04 -2.3366E-04 -1.3344E-03 -1.8938E-03 -2.5061E-03 -2.4468E-03

-2.1175E-03 -2.6903E-03 -3.4245E-03 -2.3816E-03 -1.3838E-03 -1.3728E-03

-5.4501E-04 -3.0818E-04 -7.2997E-04 -2.2087E-03 -1.3299E-03 -1.7840E-03

-5.9937E-04 -1.0118E-03 -9.6390E-04 -1.9941E-04 -1.0701E-04 9.5169E-05

2.2408E-05 -1.5352E-05 -4.1168E-05 1.9016E-05 3.1073E-06 1.7245E-06

1.2844E-07 -5.3078E-08 -6.5720E-09 -3.2153E-09 -2.5041E-11 -1.6705E-11

1.8265E-12

4D 15 4 1156 4 2 3 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO SODIUM TOTAL INELASTIC A= 8.0958E-03*

8D 1.8158E-06 6.1507E-06 1.9818E-05 4.9889E-05 2.8922E-05

2.5196E-05 1.0810E-04 2.6241E-04 4.4510E-04 1.4817E-04 1.4669E-04

1.4309E-04 1.4305E-04 1.5069E-04 1.0438E-04 3.0788E-05 1.0998E-04

1.4595E-04 1.5926E-04 1.0133E-04 1.1478E-04 9.4540E-05 1.5611E-04

1.4253E-04 1.1576E-04 6.3357E-05 6.2526E-05 5.5655E-05 2.8291E-05

5.2353E-05 5.2635E-05 4.3181E-05 1.6016E-04 7.6291E-05 1.1272E-04

1.3712E-04 2.0897E-04 3.4683E-04 5.0965E-04 6.5704E-04 6.3699E-04

3.3796E-04 4.0418E-04 7.6199E-04 2.2540E-04 7.2718E-05 6.6844E-05

6.8473E-05 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

0.0 0.0 0.0 0.0 0.0 0.0

4D 15 4 1156 102 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO SODIUM CAPTURE A= -5.3241E-05*

8D 9.8076E-10 2.8637E-09 9.0047E-09 1.8772E-08 1.4579E-08

1.6075E-08 4.6055E-08 7.1077E-08 8.4955E-08 4.2972E-08 4.7886E-08

5.2804E-08 5.9596E-08 5.7581E-08 3.9386E-08 1.1347E-08 3.2374E-08

3.7701E-08 4.7427E-08 4.0891E-08 3.8253E-08 3.5614E-08 3.4219E-08

2.6353E-08 1.7317E-08 1.2850E-08 9.1888E-09 3.6650E-11 -7.8638E-09

-1.6412E-08 -2.8897E-08 -3.2706E-08 -5.6209E-08 -2.7117E-08 -4.3764E-08

-3.9875E-08 -4.5763E-08 -5.6801E-08 -7.1040E-08 -7.9328E-08 -8.5320E-08

-1.0163E-07 -1.2949E-07 -1.6307E-07 -1.7513E-07 -2.0540E-07 -2.2401E-07

-3.7535E-07 -3.3023E-07 -5.3654E-07 -1.0232E-06 -2.0583E-06 -2.6986E-07

-1.0710E-07 -2.3793E-07 -6.1759E-07 -1.2279E-06 -2.8112E-06 -3.1195E-06

-1.8195E-06 -1.8188E-06 -1.9949E-06 -2.4031E-06 -2.6784E-06 -1.9926E-06

-2.0630E-06 -1.5432E-06 -6.8874E-07 -1.1422E-05 -6.5761E-06 -7.8669E-07

-8.3216E-07 -3.1870E-05 -1.7482E-06 -2.0227E-06 -5.9106E-07 -9.7043E-07

-1.7342E-06 -1.7043E-06 -7.1882E-06 -3.8486E-05 -2.6476E-05 -3.6124E-06

-8.1836E-05 -1.0448E-06 -7.4730E-07 -3.0604E-07 -6.7064E-07 -1.2688E-06

-8.4335E-07 -1.1082E-06 -1.7733E-06 -2.3981E-06 -2.3140E-06 -1.7093E-06

-4.6930E-06 -1.5241E-06 -1.1750E-06 1.8475E-06 4.3589E-06 7.7627E-06

1.2907E-05 8.0355E-06 8.0013E-06 1.5705E-05 1.8312E-05 3.5524E-05

2.5978E-05 1.7945E-05 1.6091E-05 2.4036E-05 1.2157E-05 3.5850E-06

1.7931E-06 1.3002E-06 8.1068E-07 3.5241E-07 6.9951E-08 2.4299E-08

-1.0987E-08 -3.1777E-09 1.9188E-09 1.8997E-09 1.2880E-09 4.4869E-10

-1.4484E-10


```

4D      15      4      1192      2      2      3      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO IRON ELASTIC      A= 3.7353E-03*
8D -5.4252E-08 -2.5306E-07 -6.6234E-09 -7.7958E-07 1.3366E-06
-1.1234E-06 -1.3685E-05 -2.7712E-05 -3.2952E-05 -2.7270E-05 -1.6651E-05
-5.1316E-06 6.3847E-06 8.2368E-06 1.8041E-05 7.8662E-06 2.4306E-05
1.4348E-05 3.0353E-05 3.5250E-05 3.7287E-05 3.7552E-05 5.5708E-05
5.3455E-05 3.8610E-05 3.3076E-05 7.8788E-05 5.8737E-05 4.7350E-05
8.3711E-05 3.5121E-05 1.0448E-05 4.1208E-05 -1.8991E-05 -1.2818E-05
-4.2305E-05 4.3530E-05 2.1513E-05 2.5011E-05 7.8647E-06 2.1816E-05
7.9102E-05 1.1047E-04 7.1631E-05 1.5203E-04 2.6934E-04 5.1067E-04
4.1634E-04 2.8509E-04 3.1726E-04 3.8466E-04 2.8740E-04 3.5021E-05
1.9548E-05 6.3707E-05 2.0598E-04 5.7699E-04 6.5991E-04 7.3802E-04
3.3177E-04 3.4004E-04 5.3763E-04 5.0532E-04 3.9184E-04 4.0838E-04
3.6319E-04 5.0921E-04 5.1434E-04 4.6837E-04 6.1566E-04 3.0568E-04
4.3083E-04 5.4048E-04 1.0273E-03 1.6479E-03 6.7183E-04 3.1295E-04
1.3921E-03 5.7982E-04 1.0477E-03 2.3511E-04 1.5916E-05 8.6414E-04
6.2898E-05 4.7458E-05 -2.9972E-04 -1.6752E-04 -9.7537E-05 -1.3567E-04
-1.9083E-05 -1.1207E-05 -2.6962E-04 -6.2768E-04 -1.1550E-03 -1.9225E-03
-2.6608E-03 -1.1737E-03 -8.6115E-04 -3.7019E-04 -1.0547E-04 -4.8734E-05
-5.8160E-06 -3.4041E-06 -2.1064E-05 -2.4450E-04 -3.7936E-04 -1.2919E-03
-7.5477E-04 -1.4830E-03 -1.6797E-03 -4.3496E-04 -2.3878E-04 1.9862E-04
4.5988E-05 -3.5314E-05 -9.1462E-05 4.1481E-05 6.7890E-06 3.7835E-06
2.8805E-07 -1.1507E-07 -1.4864E-08 -7.2998E-09 -1.1052E-10 -3.2434E-11
9.0911E-12
4D      15      4      1192      4      2      3      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO IRON TOTAL INELASTIC      A= 1.3583E-02*
8D 2.8392E-06 2.1236E-05 7.7721E-05 1.8516E-04 1.6131E-04
2.0198E-04 6.4386E-04 1.0031E-03 8.8490E-04 3.7837E-04 3.2566E-04
3.0438E-04 3.4480E-04 3.7274E-04 2.6061E-04 7.2758E-05 2.1733E-04
2.8464E-04 3.9475E-04 4.1132E-04 3.7779E-04 3.4892E-04 2.9775E-04
2.9552E-04 2.6787E-04 2.7319E-04 2.5688E-04 2.9739E-04 2.1471E-04
3.0757E-04 5.0515E-04 6.0315E-04 1.0744E-03 6.0255E-04 7.7327E-04
5.4144E-04 -4.2769E-06 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      15      4      1192      102      2      0      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO IRON CAPTURE      A= -1.4306E-03*
8D 1.5085E-09 5.9122E-09 2.2117E-08 5.8165E-08 5.2067E-08
6.3941E-08 2.1934E-07 4.1040E-07 5.5558E-07 3.0088E-07 3.4681E-07
3.9715E-07 4.6659E-07 4.6293E-07 3.3701E-07 9.6704E-08 2.7484E-07
3.3869E-07 4.3253E-07 3.8655E-07 3.6815E-07 3.7109E-07 3.8097E-07
3.0248E-07 2.0711E-07 1.5860E-07 1.0938E-07 -9.2965E-09 -1.1861E-07
-2.3797E-07 -4.2562E-07 -5.0128E-07 -9.5691E-07 -5.6198E-07 -1.0189E-06
-1.0548E-06 -1.2411E-06 -1.4894E-06 -1.6932E-06 -1.8307E-06 -1.9385E-06
-2.2772E-06 -2.8761E-06 -3.5702E-06 -3.9524E-06 -4.8051E-06 -5.6873E-06
-1.0696E-05 -9.5533E-06 -1.2558E-05 -1.8720E-05 -2.4408E-05 -2.9440E-06
-1.1845E-06 -2.6356E-06 -6.8668E-06 -1.3924E-05 -3.7722E-05 -4.4660E-05
-2.2999E-05 -2.0387E-05 -2.0348E-05 -2.3635E-05 -2.8378E-05 -2.2747E-05
-2.4554E-05 -2.3427E-05 -1.9121E-05 -2.8481E-05 -2.8883E-05 -3.0131E-05
-3.2129E-05 -3.3072E-05 -9.7272E-05 -1.2373E-04 -3.5370E-05 -5.6782E-05
-9.6408E-05 -8.5408E-05 -1.7536E-04 -6.8827E-05 -8.4360E-05 -6.8163E-05
-1.9254E-04 -1.6014E-04 -5.7001E-05 -1.1682E-04 -9.4046E-05 -7.2645E-05
-2.3595E-05 -1.3139E-04 -3.5222E-05 -2.1583E-05 -6.7498E-05 -1.0173E-04
-1.2891E-04 -3.5374E-05 -2.9256E-06 2.9182E-06 9.8869E-07 4.7650E-07
2.3738E-07 2.0509E-07 3.7723E-07 2.4339E-06 3.7305E-06 3.3557E-05
2.6481E-05 1.0034E-03 3.9196E-05 7.3520E-05 4.7442E-05 1.6457E-05
9.0681E-06 7.2588E-06 5.0958E-06 2.3849E-06 4.8208E-07 1.6755E-07
-7.5975E-08 -2.2012E-08 1.3288E-08 1.3151E-08 8.9325E-09 3.1092E-09
-9.9693E-10

```

4D 15 4 1261 18 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO 235U FISSION A= -1.0328E 00*
8D -3.2016E-05 -1.0556E-04 -3.6121E-04 -8.4094E-04 -6.0766E-04
-6.7960E-04 -2.1163E-03 -3.2276E-03 -3.4374E-03 -1.6319E-03 -1.7394E-03
-1.8957E-03 -2.1908E-03 -2.2332E-03 -1.6014E-03 -4.7318E-04 -1.4087E-03
-1.7784E-03 -2.4204E-03 -2.3380E-03 -2.4819E-03 -2.6338E-03 -2.9820E-03
-3.0484E-03 -2.8935E-03 -3.1428E-03 -3.3549E-03 -3.5646E-03 -2.9812E-03
-3.7085E-03 -4.3305E-03 -3.9402E-03 -6.1555E-03 -2.3857E-03 -4.0457E-03
-3.7383E-03 -4.8009E-03 -4.7958E-03 -5.0972E-03 -5.1495E-03 -5.2669E-03
-6.0414E-03 -6.5603E-03 -6.8087E-03 -6.9829E-03 -7.5976E-03 -7.7098E-03
-1.1918E-02 -9.0634E-03 -1.1084E-02 -1.4571E-02 -1.6625E-02 -1.8474E-03
-7.3705E-04 -1.6467E-03 -4.1368E-03 -7.8732E-03 -1.6973E-02 -1.6752E-02
-8.5100E-03 -7.7502E-03 -7.9711E-03 -9.4126E-03 -1.1376E-02 -9.0089E-03
-9.6482E-03 -9.1038E-03 -7.2398E-03 -1.0705E-02 -1.0658E-02 -1.0645E-02
-1.0660E-02 -9.7488E-03 -2.1687E-02 -2.3456E-02 -6.5369E-03 -1.0678E-02
-1.8550E-02 -1.5818E-02 -3.5443E-02 -9.5907E-03 -2.3427E-02 -2.4373E-02
-2.8634E-02 -1.1403E-02 -8.6351E-03 -3.5928E-03 -7.8512E-03 -1.4283E-02
-1.0824E-02 -1.5073E-02 -2.2807E-02 -3.3379E-02 -3.5580E-02 -3.1371E-02
-2.2087E-02 -2.2573E-02 -1.8540E-02 -8.8945E-03 -3.8878E-03 -1.8142E-03
-7.4551E-04 -6.0426E-04 -1.1696E-03 -4.3036E-03 -6.8479E-03 -2.6329E-02
-2.3840E-02 -2.0781E-02 -1.5103E-02 -2.3814E-02 -1.0398E-02 -3.8600E-03
-2.1864E-03 -1.8560E-03 -7.9693E-04 -2.1756E-04 -9.2903E-05 -8.5309E-05
-2.0404E-05 -2.5014E-06 -1.7615E-07 -7.2743E-08 -4.4067E-08 -2.0330E-08
5.9530E-09

4D 15 4 1261 102 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO 235U CAPTURE A= -8.4388E-03*
8D 1.5008E-09 7.6306E-09 4.5095E-08 1.5780E-07 1.6337E-07
1.9400E-07 6.9835E-07 1.3694E-06 1.8907E-06 1.0419E-06 1.2057E-06
1.3883E-06 1.6300E-06 1.6402E-06 1.1658E-06 3.4241E-07 9.9091E-07
1.1824E-06 1.5376E-06 1.3677E-06 1.3182E-06 1.2761E-06 1.2733E-06
1.0165E-06 6.9676E-07 5.3766E-07 4.0285E-07 -6.0090E-09 -3.9771E-07
-8.6392E-07 -1.5897E-06 -1.8906E-06 -3.4670E-06 -1.7370E-06 -2.8184E-06
-2.5768E-06 -2.8719E-06 -3.4011E-06 -3.8514E-06 -4.1588E-06 -4.4685E-06
-5.3713E-06 -7.0640E-06 -9.2732E-06 -1.0604E-05 -1.3590E-05 -1.6663E-05
-3.3298E-05 -3.1925E-05 -4.3948E-05 -6.7396E-05 -9.2098E-05 -1.1557E-05
-4.6165E-06 -1.0330E-05 -2.7312E-05 -5.6432E-05 -1.3734E-04 -1.5627E-04
-8.7293E-05 -8.4092E-05 -9.0486E-05 -1.1160E-04 -1.4075E-04 -1.1802E-04
-1.3304E-04 -1.3259E-04 -1.1146E-04 -1.7097E-04 -1.7826E-04 -1.8584E-04
-1.9489E-04 -1.8732E-04 -4.4490E-04 -5.2458E-04 -1.5747E-04 -2.6111E-04
-4.7871E-04 -4.3345E-04 -1.0364E-03 -2.9936E-04 -7.5529E-04 -8.0307E-04
-9.9840E-04 -4.0444E-04 -3.0983E-04 -1.2949E-04 -2.8312E-04 -5.0761E-04
-3.8522E-04 -5.0193E-04 -8.2927E-04 -1.1027E-03 -1.0174E-03 -7.8767E-04
-4.4005E-04 -2.5142E-04 -5.5586E-05 3.1564E-05 2.3569E-05 1.5993E-05
7.6716E-06 6.1545E-06 1.1847E-05 5.2063E-05 1.3187E-04 5.3113E-04
7.1292E-04 9.8500E-04 1.0582E-03 1.7231E-03 1.0440E-03 4.6630E-04
2.5358E-04 1.8531E-04 1.0153E-04 7.6846E-05 9.9586E-06 4.0501E-06
-1.6518E-06 -2.6742E-07 6.4338E-08 3.5062E-08 1.4900E-08 1.0958E-08
-2.8978E-09

4D 15 4 1261 452 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO 235U NUBAR A= -1.5993E-03*
8D -1.5239E-07 -4.5824E-07 -1.4833E-06 -3.2768E-06 -2.2926E-06
-2.4847E-06 -7.5758E-06 -1.1103E-05 -1.1695E-05 -5.7262E-06 -6.1127E-06
-6.7091E-06 -7.9118E-06 -8.0459E-06 -5.7969E-06 -1.7496E-06 -5.1719E-06
-6.4391E-06 -8.6008E-06 -8.1468E-06 -8.6369E-06 -9.2101E-06 -1.0641E-05
-1.0896E-05 -1.0218E-05 -1.1215E-05 -1.2093E-05 -1.2859E-05 -1.0335E-05
-1.3088E-05 -1.5431E-05 -1.3605E-05 -1.9300E-05 -7.2634E-06 -1.2438E-05
-1.1409E-05 -1.5168E-05 -1.5112E-05 -1.5995E-05 -1.5700E-05 -1.5574E-05
-1.7560E-05 -1.8664E-05 -1.8822E-05 -1.8803E-05 -2.0075E-05 -1.9864E-05
-2.6982E-05 -1.7522E-05 -2.0107E-05 -2.7526E-05 -3.0523E-05 -3.2225E-06
-1.3048E-06 -3.0152E-06 -7.2872E-06 -1.3693E-05 -2.8458E-05 -2.6954E-05
-1.3457E-05 -1.1743E-05 -1.2193E-05 -1.5027E-05 -1.8125E-05 -1.2959E-05
-1.3990E-05 -1.2963E-05 -1.0033E-05 -1.6100E-05 -1.4864E-05 -1.3568E-05
-1.2792E-05 -1.1054E-05 -2.4353E-05 -2.3443E-05 -5.7741E-06 -1.1068E-05
-1.3311E-05 -1.0874E-05 -1.8153E-05 -2.2199E-06 -9.3398E-06 -5.3499E-06
-7.3810E-06 -2.6870E-06 -2.0722E-06 -8.9221E-07 -3.7079E-06 -6.2918E-06
-1.0367E-06 -1.3717E-06 -4.4951E-06 -1.0726E-05 -1.7066E-05 -2.1096E-05
-1.9816E-05 -2.5234E-05 -2.4006E-05 -1.2164E-05 -5.0830E-06 -2.2832E-06
-8.5187E-07 -8.2498E-07 -1.6641E-06 -7.0173E-06 -1.1913E-05 -5.6283E-05
-6.1447E-05 -5.6363E-05 -4.6822E-05 -8.9838E-05 -4.4297E-05 -1.7838E-05
-1.0018E-05 -9.4262E-06 -4.2669E-06 -1.7297E-06 -5.2603E-07 -4.2875E-07
-8.8738E-08 -1.0158E-08 -1.2125E-09 -5.8067E-10 -5.3079E-10 -2.2660E-10
7.7685E-11

```

4D      15      4 1262      4      2      3      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO 238U TOTAL INELASTIC A= 3.4954E-02*
8D 4.9348E-07 2.7809E-06 1.7541E-05 1.0916E-04 1.6561E-04
2.2675E-04 7.1325E-04 1.0056E-03 1.0095E-03 4.8696E-04 5.2838E-04
5.6765E-04 6.3086E-04 6.0814E-04 4.2050E-04 1.2378E-04 3.5701E-04
4.2966E-04 5.8340E-04 5.4183E-04 5.9120E-04 5.7960E-04 6.5497E-04
6.5969E-04 6.0834E-04 6.7994E-04 7.4309E-04 8.3496E-04 6.8874E-04
7.9235E-04 9.3243E-04 7.7236E-04 7.5722E-04 2.6844E-04 4.1372E-04
4.1371E-04 6.3864E-04 6.4057E-04 4.9883E-04 3.0287E-04 1.4339E-04
1.9769E-04 2.2500E-04 2.1817E-04 2.8199E-04 3.8137E-04 3.0633E-04
4.4024E-04 2.5735E-04 4.1939E-04 6.0480E-04 8.2617E-04 7.3274E-05
2.9894E-05 7.4884E-05 2.1600E-04 3.3876E-04 8.0218E-04 7.5487E-04
3.6620E-04 3.3949E-04 3.6777E-04 4.3494E-04 5.3520E-04 4.0856E-04
4.3750E-04 4.3046E-04 3.0225E-04 5.0010E-04 4.6151E-04 4.7366E-04
4.3964E-04 4.0563E-04 7.7389E-04 6.2384E-04 1.2078E-04 1.7659E-04
1.8412E-04 5.7351E-05 -1.7354E-04 -1.0425E-04 -1.8716E-04 -1.3079E-05
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      15      4 1262      18      2      0      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO 238U FISSION A= 2.2404E-03*
8D 4.0268E-06 1.2097E-05 3.9007E-05 8.2303E-05 5.5033E-05
4.9835E-05 1.3267E-04 1.9916E-04 2.1232E-04 9.9553E-05 1.0911E-04
1.1885E-04 1.3235E-04 1.2792E-04 8.7071E-05 2.4812E-05 7.1414E-05
8.4326E-05 1.0721E-04 9.3543E-05 8.6384E-05 7.8218E-05 7.1854E-05
5.5668E-05 3.9044E-05 2.9452E-05 2.0448E-05 9.4728E-06 3.3804E-06
1.5965E-06 6.1604E-07 3.5754E-07 1.3763E-06 3.3378E-07 4.9776E-07
3.2421E-07 2.7940E-07 1.4004E-07 9.9912E-08 1.0698E-07 1.0869E-07
1.1358E-07 8.5339E-08 3.0248E-08 9.8144E-09 -1.1334E-08 -2.5072E-08
-2.1435E-08 -7.6136E-09 -2.7449E-08 -6.4460E-08 -8.1452E-08 -8.6989E-09
-3.5829E-09 -8.4810E-09 -2.1268E-08 -4.2474E-08 -9.8614E-08 -1.0653E-07
-5.7999E-08 -5.2524E-08 -5.5631E-08 -6.8849E-08 -8.4477E-08 -6.4357E-08
-7.0665E-08 -6.7342E-08 -5.3061E-08 -8.3099E-08 -8.0637E-08 -7.9681E-08
-7.9942E-08 -7.3222E-08 -1.6376E-07 -1.8388E-07 -5.1131E-08 -8.9900E-08
-1.4171E-07 -1.3029E-07 -2.9276E-07 -7.1704E-08 -2.0913E-07 -4.5659E-08
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 3.4862E-15 6.8164E-15 5.3188E-15
4.0357E-15 3.2407E-15 6.6307E-15 2.9851E-14 1.0260E-13 1.0393E-12
4.3673E-11 1.6749E-07 6.9385E-11 4.9746E-07 4.2434E-12 8.2975E-13
3.7927E-13 2.4827E-13 1.5182E-13 6.5195E-14 1.2676E-14 4.5132E-15
-1.8551E-15 -5.3054E-16 3.2027E-16 3.1637E-16 1.4159E-16 6.8560E-18
-1.7253E-19
4D      15      4 1262      102      2      0      0      12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28C/25F TO 238U CAPTURE A= 9.6644E-01*
8D 1.2826E-07 7.7167E-07 3.8516E-06 1.4763E-05 1.7565E-05
2.8551E-05 1.2246E-04 2.6910E-04 3.9312E-04 2.2208E-04 2.5964E-04
3.0905E-04 3.9038E-04 4.3459E-04 3.3445E-04 1.0217E-04 3.1234E-04
4.1404E-04 6.0432E-04 6.3726E-04 7.3587E-04 8.4320E-04 1.0330E-03
1.1431E-03 1.1728E-03 1.3809E-03 1.5827E-03 1.7834E-03 1.5740E-03
2.0696E-03 2.5435E-03 2.4083E-03 4.0108E-03 1.6472E-03 2.8780E-03
2.7297E-03 3.5710E-03 3.6070E-03 3.8312E-03 3.8203E-03 3.8101E-03
4.2606E-03 4.5098E-03 4.5960E-03 4.6545E-03 4.9885E-03 4.9652E-03
7.4272E-03 5.4727E-03 6.6446E-03 8.7878E-03 1.0046E-02 1.1105E-03
4.4384E-04 9.9349E-04 2.4983E-03 4.7826E-03 1.0490E-02 1.0723E-02
5.6464E-03 5.2477E-03 5.4444E-03 6.4181E-03 7.7420E-03 6.1127E-03
6.5589E-03 6.2359E-03 5.0067E-03 7.4744E-03 7.4854E-03 7.5269E-03
7.6047E-03 7.0111E-03 1.5781E-02 1.7657E-02 5.0128E-03 8.3072E-03
1.4301E-02 1.3420E-02 3.3418E-02 9.5603E-03 2.5934E-02 2.4231E-02
3.2023E-02 1.2650E-02 9.9506E-03 4.3812E-03 9.6834E-03 1.8489E-02
1.2942E-02 1.7806E-02 2.9684E-02 4.5046E-02 4.8144E-02 4.2728E-02
3.2281E-02 3.1979E-02 2.6662E-02 1.2829E-02 5.6692E-03 3.3315E-03
1.2967E-03 9.2846E-04 2.0005E-03 7.5837E-03 9.1630E-03 3.1300E-02
2.5680E-02 2.3700E-02 1.9216E-02 2.2860E-02 9.5225E-03 2.6986E-03
1.7563E-03 1.7745E-03 9.3936E-04 1.0793E-05 5.7211E-05 6.9505E-05
2.1376E-05 3.1490E-06 1.2746E-07 3.3817E-08 1.3810E-08 4.2829E-09
-1.3207E-09

```

4D 15 4 1262 452 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR

6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO 238U NUBAR A= 9.4661E-04*

8D 1.5652E-06 4.6729E-06 1.3998E-05 3.0959E-05 2.1035E-05
2.0895E-05 5.5058E-05 7.6881E-05 7.2027E-05 2.9932E-05 3.1761E-05
3.3596E-05 3.6620E-05 3.7143E-05 2.6177E-05 7.3208E-06 2.2524E-05
2.9403E-05 4.0882E-05 4.0316E-05 4.1105E-05 4.1005E-05 4.1407E-05
3.9051E-05 3.4385E-05 3.0462E-05 2.4102E-05 1.5490E-05 7.8452E-06
5.7970E-06 5.9316E-06 4.9372E-06 6.5563E-06 2.2819E-06 3.2892E-06
1.8564E-06 1.3851E-06 8.9230E-07 6.6682E-07 5.6016E-07 4.9849E-07
5.4656E-07 5.8623E-07 4.6358E-07 2.7671E-07 2.2850E-07 1.6737E-07
2.4621E-07 1.7440E-07 1.4384E-07 1.3043E-07 1.1506E-07 1.1871E-08
4.4390E-09 9.0566E-09 2.4053E-08 4.5665E-08 9.3408E-08 8.6899E-08
4.1227E-08 3.8504E-08 3.6113E-08 3.6702E-08 4.0872E-08 3.5778E-08
3.5195E-08 3.2447E-08 2.6726E-08 3.1303E-08 3.3202E-08 3.3390E-08
3.3091E-08 3.0639E-08 6.3561E-08 6.9747E-08 2.1597E-08 2.4943E-08
5.5741E-08 4.3289E-08 9.8200E-08 3.4318E-08 6.2902E-08 1.5580E-08
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 2.0876E-15 3.4342E-15 2.6381E-15
2.1965E-15 1.0922E-15 1.9367E-15 3.8059E-15 1.3461E-14 1.1031E-13
3.7290E-12 8.3187E-09 4.1860E-12 1.4131E-08 1.4027E-13 2.3595E-14
1.4585E-14 2.1487E-15 4.4943E-15 8.9914E-16 1.0408E-16 3.0250E-16
2.8725E-17 -2.8590E-18 5.2341E-18 7.2993E-18 2.7115E-18 9.5742E-20
1.0156E-21

4D 15 4 1276 2 2 3 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR

6/6A *

7D *ZPR 6/6A SENS. OF 28C/25F TO OXYGEN ELASTIC A= 4.1154E-02*

8D 9.7012E-08 -4.8040E-07 3.9697E-06 1.0671E-05 1.1456E-05
1.6594E-06 -3.1030E-05 -1.1304E-04 -1.4484E-04 -1.8437E-05 9.5954E-06
3.7349E-05 6.4863E-05 7.3538E-05 3.9208E-05 4.7491E-06 1.8696E-05
7.2028E-05 1.3572E-04 1.4294E-04 1.5667E-04 2.5918E-04 2.2603E-04
2.3874E-04 2.2593E-04 2.3148E-04 2.9423E-04 2.8393E-04 2.7503E-04
2.4766E-04 1.6704E-04 6.4311E-05 3.9276E-06 -1.5698E-04 -9.2427E-05
-2.9407E-05 1.3635E-04 6.7546E-05 1.1051E-04 1.7927E-04 3.0235E-04
5.4396E-04 6.7166E-04 6.5417E-04 8.8015E-04 1.1033E-03 1.2114E-03
2.8119E-03 2.6875E-03 2.9385E-03 3.7933E-03 4.2306E-03 4.2787E-04
1.8120E-04 4.2281E-04 9.4779E-04 1.6381E-03 3.5939E-03 3.2833E-03
1.4788E-03 1.2501E-03 1.3315E-03 1.6908E-03 2.1933E-03 1.6426E-03
1.7127E-03 1.5081E-03 1.0917E-03 1.8783E-03 1.9090E-03 1.9023E-03
1.8810E-03 1.4733E-03 3.1096E-03 3.5146E-03 8.4605E-04 1.8032E-03
2.5783E-03 1.7319E-03 2.7364E-03 1.8108E-04 9.9074E-05 1.1493E-03
-2.5816E-04 -6.9396E-05 -2.5591E-04 -2.0784E-04 -5.8606E-04 -1.2479E-03
-5.4576E-04 -8.2556E-04 -2.1456E-03 -3.5313E-03 -4.3360E-03 -3.7869E-03
-2.7369E-03 -2.5976E-03 -2.0814E-03 -7.2845E-04 -2.1236E-04 -7.4419E-05
-1.6804E-05 -2.3936E-05 -6.9865E-05 -3.9971E-04 -4.1670E-04 -1.9904E-03
-1.0435E-03 -2.1352E-03 -2.2228E-03 -4.7500E-04 -2.6287E-04 2.3990E-04
5.6842E-05 -3.8388E-05 -1.0391E-04 4.8201E-05 7.8555E-06 4.3767E-06
3.2487E-07 -1.3354E-07 -1.6220E-08 -7.9187E-09 -4.7546E-11 -3.9417E-11
3.0579E-12

4D 15 4 1156 2 2 3 0 12 0 0 4
0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

6/6A *

7D *ZPR 6/6A SEN. OF 28F/25F TO SODIUM ELASTIC A= -6.8892E-02*

8D -4.7762E-07 1.2872E-06 -5.3926E-06 -5.3629E-05 -1.5655E-04
-8.2498E-05 1.2673E-04 5.1201E-04 2.7158E-04 2.2842E-05 -1.0207E-04
-3.7838E-04 -7.1178E-04 -9.4058E-04 -9.9007E-04 -3.2407E-04 -8.5147E-04
-8.8176E-04 -1.3313E-03 -1.6634E-03 -1.9857E-03 -1.8981E-03 -3.3663E-03
-3.0163E-03 -3.4412E-03 -3.4984E-03 -3.3276E-03 -2.2574E-03 -9.5125E-04
-6.9385E-04 -7.8418E-04 -6.9080E-04 -4.7736E-04 -1.0405E-04 -6.2426E-04
-4.8397E-04 -6.4658E-04 -5.4706E-04 -4.5713E-04 -6.3356E-04 -6.8575E-04
-8.3757E-04 -8.6749E-04 -9.0576E-04 -7.6607E-04 -6.9863E-04 -4.0480E-04
-3.6038E-04 -6.8613E-05 -2.0184E-04 -4.6323E-04 -5.8591E-04 -9.4974E-05
-3.4776E-05 -4.3198E-05 -1.1188E-04 -1.5732E-04 -6.1569E-04 -5.6934E-04
-2.8151E-04 -1.7836E-04 -9.9471E-05 -1.0348E-04 -3.4718E-04 -1.6706E-04
-1.8724E-04 -1.2833E-04 1.3138E-05 -8.6116E-05 -1.8272E-04 -2.7994E-04
-2.6368E-04 -2.0708E-04 -1.7042E-04 -1.6043E-04 1.3129E-05 -2.9682E-04
-4.8096E-05 -2.6587E-04 -5.6806E-04 -1.6427E-04 -6.1232E-04 -7.0114E-04
-7.3923E-04 -2.3316E-04 -4.6083E-05 -5.4668E-05 -2.5744E-04 -8.8185E-04
-5.3093E-04 -7.2930E-04 -1.2791E-03 -1.2224E-03 -1.5196E-03 -1.4548E-03
-1.0467E-03 -1.1743E-03 -1.0106E-03 -6.0292E-04 -2.6467E-04 -3.9974E-04
-2.6466E-04 -1.3345E-04 -2.1541E-04 -6.6292E-04 -4.2896E-04 -7.1530E-04
1.4073E-05 -1.2072E-03 -4.6643E-04 4.1158E-05 -7.1798E-05 4.6788E-05
1.9735E-06 -7.2873E-06 -1.4944E-05 7.0008E-06 1.1371E-06 6.7777E-07
1.4334E-08 -9.9842E-09 -4.2703E-09 -2.6591E-09 1.0733E-11 -1.7424E-11
1.6061E-12

4D 15 4 1156 4 2 3 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 6/6A *
 7D *ZPR 6/6A SENS. OF 28F/25F TO SODIUM TOTAL INELASTI A= -8.1903E-02*
 8D -5.0582E-05 -1.8497E-04 -5.9455E-04 -1.7957E-03 -1.1067E-03
 -1.0242E-03 -3.1544E-03 -7.5242E-03 -8.1281E-03 -2.7409E-03 -2.8831E-03
 -3.0265E-03 -2.7843E-03 -2.9481E-03 -2.1041E-03 -6.3517E-04 -2.0988E-03
 -2.9057E-03 -4.0854E-03 -3.3866E-03 -4.1666E-03 -3.3385E-03 -5.1823E-03
 -4.4650E-03 -3.3223E-03 -1.6662E-03 -1.3127E-03 -9.6500E-04 -4.0067E-04
 -7.2792E-04 -9.1658E-04 -5.2148E-04 -5.6014E-04 -1.4574E-04 -1.6758E-04
 -1.3313E-04 -1.3943E-04 -1.3733E-04 -1.4216E-04 -1.2842E-04 -9.2778E-05
 -4.2060E-05 -3.4724E-05 -3.4626E-05 -1.7977E-06 1.2997E-06 1.7584E-06
 6.5447E-07 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 4D 15 4 1156 102 2 0 0 12 0 0 4

0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 6/6A *
 7D *ZPR 6/6A SENS. OF 28F/25F TO SODIUM CAPTURE A= 3.1116E-03*
 8D -2.4187E-08 -7.1602E-08 -2.2250E-07 -5.0577E-07 -3.8262E-07
 -3.8591E-07 -1.0197E-06 -1.5346E-06 -1.8564E-06 -9.0489E-07 -9.6439E-07
 -1.0411E-06 -1.1543E-06 -1.0939E-06 -7.3311E-07 -2.1044E-07 -5.9453E-07
 -6.7526E-07 -8.2904E-07 -7.0509E-07 -6.4123E-07 -5.1665E-07 -3.9813E-07
 -1.2700E-07 1.5697E-07 4.3641E-07 8.3624E-07 1.2597E-06 1.2698E-06
 1.6741E-06 2.0107E-06 1.9062E-06 3.1615E-06 1.2846E-06 2.2547E-06
 2.1962E-06 3.0451E-06 3.3331E-06 4.0479E-06 4.3655E-06 4.6122E-06
 5.3961E-06 5.8462E-06 5.9962E-06 5.9569E-06 6.0887E-06 5.6410E-06
 7.6191E-06 5.5581E-06 8.2849E-06 1.3951E-05 2.4509E-05 2.9332E-06
 1.1670E-06 2.5953E-06 6.4875E-06 1.2178E-05 2.5704E-05 2.5654E-05
 1.3821E-05 1.3198E-05 1.3985E-05 1.6319E-05 1.7587E-05 1.2558E-05
 1.2520E-05 8.9989E-06 3.8605E-06 6.2465E-05 3.4796E-05 4.0403E-06
 4.1352E-06 1.5253E-04 7.9939E-06 8.6812E-06 2.4025E-06 3.9084E-06
 6.7594E-06 6.3384E-06 2.5639E-05 1.3199E-04 8.9712E-05 1.2379E-05
 2.7487E-04 3.5538E-06 2.5552E-06 1.0524E-06 2.3116E-06 4.3942E-06
 3.0320E-06 4.0754E-06 6.6440E-06 9.8015E-06 1.1118E-05 1.0457E-05
 4.0054E-05 2.1731E-05 5.4451E-05 7.6472E-05 9.2040E-05 1.3241E-04
 1.8505E-04 1.1038E-04 1.0874E-04 2.0156E-04 1.8170E-04 2.9347E-04
 1.5269E-04 8.8854E-05 6.1803E-05 6.8091E-05 2.9715E-05 7.8812E-06
 4.7165E-06 3.7670E-06 1.9529E-06 4.5057E-07 1.8442E-07 1.3126E-07
 3.0666E-08 4.0898E-09 2.7224E-09 2.1267E-09 1.3308E-09 4.5659E-10
 -1.4722E-10
 4D 15 4 1192 2 2 3 0 12 0 0 4

0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 6/6A *
 7D *ZPR 6/6A SENS. OF 28F/25F TO IRON ELASTIC A= -5.5757E-02*
 8D 6.1160E-07 3.3804E-06 3.1840E-06 -1.4874E-05 -1.0180E-04
 -4.9141E-05 1.8970E-04 5.2372E-04 4.0370E-04 1.9332E-04 1.1062E-04
 -1.4485E-04 -3.9691E-04 -4.9533E-04 -5.6198E-04 -2.2226E-04 -6.9205E-04
 -4.2990E-04 -7.0622E-04 -8.9888E-04 -1.4024E-03 -1.3305E-03 -2.0386E-03
 -2.1861E-03 -2.1078E-03 -2.9357E-03 -3.2132E-03 -1.7221E-03 -7.2964E-04
 -6.9153E-04 -5.5032E-04 -4.8530E-04 -3.7700E-04 -8.0159E-05 -2.3587E-04
 -2.9885E-04 -4.9698E-04 -5.2305E-04 -5.9005E-04 -4.1433E-04 -3.4404E-04
 -3.6678E-04 -3.3808E-04 -3.8848E-04 -4.9824E-04 -6.0982E-04 -7.7099E-04
 -5.4281E-04 -2.4162E-04 -4.7321E-04 -5.8731E-04 -7.2149E-04 -3.3197E-05
 -1.9751E-05 -7.0562E-05 -1.9302E-04 -3.5972E-04 -5.3274E-04 -5.7884E-04
 -2.9980E-04 -2.3636E-04 -3.5274E-04 -3.9688E-04 -3.3447E-04 -3.3797E-04
 -2.3153E-04 -2.9165E-04 -1.2947E-04 -3.4880E-04 -3.1511E-04 -2.1117E-04
 -2.8072E-04 -2.7192E-04 -4.2227E-04 -6.3425E-04 -2.5372E-05 -2.0340E-04
 -3.6374E-04 -2.5131E-04 -8.0256E-04 -1.1443E-04 -6.7759E-04 -1.1815E-03
 -1.3632E-03 -8.0515E-04 -2.7389E-04 -2.5016E-04 -4.0354E-04 -2.7409E-04
 -5.8486E-05 -1.4760E-04 -3.6147E-04 -5.5935E-04 -9.3492E-04 -1.4066E-03
 -1.6274E-03 -7.3959E-04 -3.4380E-04 -1.2786E-04 -2.3020E-05 -1.4750E-05
 -3.6374E-06 -3.1961E-06 -7.6158E-06 -8.1315E-05 -1.4442E-04 -6.2929E-04
 -1.4550E-04 -1.8586E-03 -9.1007E-04 -3.9154E-05 -1.8634E-04 8.9093E-05
 -3.0799E-06 -2.1452E-05 -3.5662E-05 1.5090E-05 2.3672E-06 1.4063E-06
 1.6291E-08 -2.3041E-08 -1.0217E-08 -6.1482E-09 -4.3966E-11 -3.8309E-11
 9.0580E-12


```

4D      15      4 1262      18      2      0      0      12      0      0      4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28F/25F TO 238U FISSION                      A= 9.6402E-01*
8D  7.1281E-04  2.4648E-03  8.2967E-03  2.0577E-02  1.5338E-02
1.6119E-02  4.6389E-02  6.8103E-02  6.8052E-02  3.0970E-02  3.2777E-02
3.5650E-02  4.1125E-02  4.1892E-02  2.9948E-02  8.8314E-03  2.6279E-02
3.3167E-02  4.5095E-02  4.3339E-02  4.5061E-02  4.6005E-02  4.9158E-02
4.6460E-02  3.9800E-02  3.6468E-02  2.9057E-02  1.7987E-02  7.8871E-03
6.1650E-03  6.2165E-03  4.5238E-03  4.3975E-03  1.4416E-03  2.2114E-03
1.2530E-03  1.0423E-03  6.4175E-04  4.6509E-04  3.4430E-04  2.8203E-04
3.1110E-04  3.2628E-04  2.4575E-04  1.4304E-04  1.1776E-04  8.3899E-05
9.2635E-05  5.1716E-05  4.7190E-05  5.1133E-05  4.6741E-05  4.4889E-06
1.7746E-06  3.9468E-06  9.7591E-06  1.7989E-05  3.6659E-05  3.3714E-05
1.6199E-05  1.4171E-05  1.3947E-05  1.5787E-05  1.8309E-05  1.3893E-05
1.4280E-05  1.2975E-05  9.9340E-06  1.4197E-05  1.3614E-05  1.3135E-05
1.2721E-05  1.1257E-05  2.3642E-05  2.4834E-05  6.7080E-06  1.0799E-05
1.7577E-05  1.4940E-05  3.2266E-05  8.2336E-06  2.1425E-05  4.8413E-06
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      1.5152E-12  1.7254E-12  1.0842E-12
6.3436E-13  6.7107E-13  1.4398E-12  7.3240E-12  1.9326E-11  1.6661E-10
5.0127E-09  1.6804E-05  4.9170E-09  2.5626E-05  1.9187E-10  3.2780E-11
1.8636E-11  1.3959E-11  6.7518E-12  1.3442E-12  6.4992E-13  4.8702E-13
1.3571E-13  1.8644E-14  9.5070E-15  5.8095E-15  1.8458E-15  8.9322E-17
-2.2361E-18
4D      15      4 1262     102      2      0      0      12      0      0      4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28F/25F TO 238U CAPTURE                      A= 2.9384E-01*
8D  -7.4648E-08 -3.9948E-07 -1.9409E-06 -6.8352E-06 -6.9991E-06
-8.6640E-06 -3.2000E-05 -7.2640E-05 -1.2003E-04 -6.9593E-05 -8.1060E-05
-9.5407E-05 -1.1540E-04 -1.1868E-04 -8.4713E-05 -2.5101E-05 -7.2275E-05
-8.4986E-05 -1.0990E-04 -9.8965E-05 -9.4192E-05 -7.6852E-05 -5.7607E-05
-6.0273E-06  5.4161E-05  1.2315E-04  2.2879E-04  3.5058E-04  3.6787E-04
5.0544E-04  6.3401E-04  6.2229E-04  1.0946E-03  4.5820E-04  7.9473E-04
7.6122E-04  9.9190E-04  1.0173E-03  1.0892E-03  1.1026E-03  1.1116E-03
1.2416E-03  1.3192E-03  1.3549E-03  1.3799E-03  1.4813E-03  1.4833E-03
2.3066E-03  1.7618E-03  2.1062E-03  2.7172E-03  3.0938E-03  3.4523E-04
1.3681E-04  3.0268E-04  7.6900E-04  1.4805E-03  3.2466E-03  3.3276E-03
1.7500E-03  1.6393E-03  1.6918E-03  1.9736E-03  2.3674E-03  1.8986E-03
2.0271E-03  1.9308E-03  1.5648E-03  2.2894E-03  2.3135E-03  2.3333E-03
2.3636E-03  2.1896E-03  4.9314E-03  5.5454E-03  1.5971E-03  2.5535E-03
4.5442E-03  4.2173E-03  1.0554E-02  3.1273E-03  8.1889E-03  7.7115E-03
1.0041E-02  3.9740E-03  3.1429E-03  1.3869E-03  2.9821E-03  5.7100E-03
4.0913E-03  5.6079E-03  9.2901E-03  1.4051E-02  1.4968E-02  1.3256E-02
9.9898E-03  9.9093E-03  8.2597E-03  3.9550E-03  1.7556E-03  1.0303E-03
4.0555E-04  2.8519E-04  6.1017E-04  2.2985E-03  2.7896E-03  9.4799E-03
7.7663E-03  7.0940E-03  6.1207E-03  7.3509E-03  2.9446E-03  8.4778E-04
5.4106E-04  5.4244E-04  2.9090E-04  3.5071E-06  1.7295E-05  2.0697E-05
5.9296E-06  9.1676E-07  3.3319E-08  1.0514E-08  5.1611E-09  1.5516E-09
-4.6137E-10
4D      15      4 1262     452      2      0      0      12      0      0      4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
6/6A *
7D *ZPR 6/6A SENS. OF 28F/25F TO 238U NUBAR                      A= -8.3839E-03*
8D  -1.3213E-05 -3.9663E-05 -1.1959E-04 -2.6647E-04 -1.8229E-04
-1.8140E-04 -4.8153E-04 -6.7322E-04 -6.3531E-04 -2.6814E-04 -2.8386E-04
-3.0151E-04 -3.3204E-04 -3.3626E-04 -2.3726E-04 -6.7101E-05 -2.0464E-04
-2.6466E-04 -3.6548E-04 -3.5768E-04 -3.6537E-04 -3.6536E-04 -3.7255E-04
-3.5050E-04 -3.0597E-04 -2.7234E-04 -2.1521E-04 -1.3689E-04 -6.7319E-05
-5.0210E-05 -5.1195E-05 -4.1590E-05 -5.2753E-05 -1.8215E-05 -2.6446E-05
-1.4928E-05 -1.1293E-05 -7.2281E-06 -5.3783E-06 -4.4483E-06 -3.9218E-06
-4.3018E-06 -4.6022E-06 -3.6207E-06 -2.1554E-06 -1.7791E-06 -1.2994E-06
-1.8667E-06 -1.3021E-06 -1.0802E-06 -9.9121E-07 -8.7656E-07 -8.9951E-08
-3.3775E-08 -6.9368E-08 -1.8320E-07 -3.4703E-07 -7.0958E-07 -6.5949E-07
-3.1313E-07 -2.9108E-07 -2.7391E-07 -2.8064E-07 -3.1353E-07 -2.7144E-07
-2.6786E-07 -2.4667E-07 -2.0211E-07 -2.4031E-07 -2.5285E-07 -2.5349E-07
-2.5080E-07 -2.3148E-07 -4.8058E-07 -5.2577E-07 -1.6142E-07 -1.9068E-07
-4.1698E-07 -3.2562E-07 -7.3635E-07 -2.5310E-07 -4.7269E-07 -1.1643E-07
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      -1.6793E-14 -2.6565E-14 -2.0076E-14
-1.6345E-14 -8.6186E-15 -1.5626E-14 -3.6914E-14 -1.2145E-13 -1.0069E-12
-3.3195E-11 -8.1895E-08 -3.6275E-11 -1.3497E-07 -1.2540E-12 -2.1161E-13
-1.2867E-13 -3.4638E-14 -4.1076E-14 -8.1906E-15 -1.6443E-15 -2.8162E-15
-3.9547E-16 -6.4803E-18 -5.0227E-17 -5.9414E-17 -2.1573E-17 -7.9412E-19
-4.1537E-21

```



```

4D      13      1 1264      18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/56B *
7D * ZPR 3/56B SENS. OF K TO 239PU FISSION A= 6.0148E-01*
8D 6.9915E-05 2.3201E-04 6.7681E-04 1.4476E-03 1.0505E-03
1.2042E-03 3.4855E-03 4.7782E-03 4.6484E-03 2.1090E-03 2.1847E-03
2.3468E-03 2.6670E-03 2.6893E-03 1.9195E-03 5.6144E-04 1.6621E-03
2.0904E-03 2.8463E-03 2.7384E-03 2.8730E-03 3.0016E-03 3.3779E-03
3.4030E-03 3.2262E-03 3.4543E-03 3.6457E-03 3.7958E-03 3.1382E-03
4.6237E-03 4.6615E-03 4.8192E-03 5.8617E-03 2.5605E-03 4.1524E-03
3.8872E-03 4.8945E-03 4.9948E-03 5.2556E-03 5.2258E-03 5.2000E-03
5.7957E-03 6.0989E-03 6.1992E-03 6.2420E-03 6.5723E-03 6.7642E-03
1.0024E-02 7.3769E-03 8.6551E-03 1.1126E-02 1.2122E-02 1.3184E-03
5.1893E-04 1.1368E-03 2.8622E-03 5.3976E-03 1.1532E-02 1.1153E-02
5.5442E-03 5.0154E-03 5.0505E-03 5.8068E-03 6.8679E-03 5.3842E-03
5.6626E-03 5.4627E-03 4.3325E-03 6.1655E-03 6.1995E-03 6.1486E-03
6.0866E-03 5.5002E-03 1.2222E-02 1.2520E-02 3.4113E-03 5.3352E-03
9.1991E-03 7.6498E-03 1.7142E-02 4.5770E-03 1.0930E-02 1.0791E-02
1.2544E-02 4.6677E-03 3.5502E-03 1.4134E-03 2.4511E-02 3.9824E-03
4.1889E-03 5.5319E-03 8.8957E-03 1.2668E-02 1.2402E-02 1.1014E-02
8.5395E-03 7.6783E-03 6.3781E-03 2.9493E-03 1.5189E-03 7.6948E-04
3.6959E-04 2.7721E-04 4.3286E-04 1.6785E-03 2.0672E-03 7.8058E-03
9.3643E-03 9.7146E-03 6.3948E-03 1.1333E-02 6.3101E-03 2.6261E-03
1.8453E-03 2.3127E-03 2.4623E-03 9.5904E-04 2.2877E-04 4.2795E-04
1.3667E-03 4.5689E-04 2.7607E-04 1.8486E-04 6.7668E-05 2.5404E-05
2.4737E-06
4D      13      1 1264     102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/56B *
7D * ZPR 3/56E SENS. OF K TO 239FU CAPTURE A= -6.7965E-02*
8D -3.1036E-08 -9.1211E-08 -1.1586E-07 -1.0357E-07 -9.6221E-08
-2.2127E-07 -1.2834E-06 -2.3324E-06 -2.9287E-06 -1.5235E-06 -1.7764E-06
-2.1595E-06 -2.7773E-06 -3.2129E-06 -2.5345E-06 -7.6802E-07 -2.3684E-06
-3.2069E-06 -4.8322E-06 -5.1300E-06 -5.8365E-06 -6.5868E-06 -7.9598E-06
-8.6201E-06 -8.8171E-06 -1.0176E-05 -1.1630E-05 -1.3017E-05 -1.1836E-05
-1.8905E-05 -2.0680E-05 -2.3691E-05 -3.4120E-05 -1.7388E-05 -3.1318E-05
-3.2966E-05 -4.7224E-05 -5.7100E-05 -7.2057E-05 -8.3372E-05 -9.4192E-05
-1.1586E-04 -1.3215E-04 -1.4440E-04 -1.5647E-04 -1.7572E-04 -1.9241E-04
-3.1523E-04 -2.6065E-04 -3.3718E-04 -4.8081E-04 -5.7166E-04 -6.4664E-05
-2.5527E-05 -5.6025E-05 -1.4325E-04 -2.7749E-04 -6.0846E-04 -6.0384E-04
-3.0090E-04 -2.7416E-04 -2.7752E-04 -3.2173E-04 -3.8083E-04 -3.0290E-04
-3.2038E-04 -3.1082E-04 -2.4973E-04 -3.5687E-04 -3.5900E-04 -3.5757E-04
-3.5694E-04 -3.2699E-04 -7.4145E-04 -8.3749E-04 -2.8462E-04 -4.5438E-04
-7.4535E-04 -6.1676E-04 -1.5890E-03 -4.4794E-04 -1.0918E-03 -1.0857E-03
-1.2903E-03 -5.0187E-04 -4.0727E-04 -1.7140E-04 -3.0384E-04 -5.0579E-04
-5.5220E-04 -7.7351E-04 -1.3521E-03 -2.1693E-03 -2.4164E-03 -2.3963E-03
-1.9740E-03 -2.3269E-03 -2.2023E-03 -1.1044E-03 -4.6842E-04 -2.3221E-04
-1.3466E-04 -8.7239E-05 -1.9461E-04 -7.0841E-04 -1.2175E-03 -3.7897E-03
-2.8473E-03 -3.2609E-03 -2.5609E-03 -4.8746E-03 -2.8706E-03 -1.8598E-03
-8.0034E-04 -1.3481E-03 -1.0006E-03 -4.4746E-04 -1.6569E-04 -1.8134E-04
-5.9809E-04 -1.0122E-04 -1.4689E-05 -1.6085E-05 -5.6417E-06 -2.4168E-05
-1.8866E-06
4D      13      1 1265      18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/56B *
7D * ZPR 3/56B SENS. OF K TO 240PU FISSION A= 1.9207E-02*
8D 8.4350E-06 2.7141E-05 7.7563E-05 1.4450E-04 1.0875E-04
1.3908E-04 4.1138E-04 5.7322E-04 5.6121E-04 2.5607E-04 2.6332E-04
2.7688E-04 3.0170E-04 2.9246E-04 2.0752E-04 6.0914E-05 1.8095E-04
2.2926E-04 3.1576E-04 3.0719E-04 3.2490E-04 3.3950E-04 3.8040E-04
3.8190E-04 3.6310E-04 3.9674E-04 4.3505E-04 4.6943E-04 3.9520E-04
5.8602E-04 5.9029E-04 6.0468E-04 7.0702E-04 2.8950E-04 4.4038E-04
3.8489E-04 4.5707E-04 4.3366E-04 4.2787E-04 3.9832E-04 3.7011E-04
3.8607E-04 3.7627E-04 3.5094E-04 3.2029E-04 2.9398E-04 2.4989E-04
2.7655E-04 1.4578E-04 1.3898E-04 1.5228E-04 1.4555E-04 1.4687E-05
5.6209E-06 1.2173E-05 3.0344E-05 5.5977E-05 1.1336E-04 1.0217E-04
4.8244E-05 4.2007E-05 4.1020E-05 4.6440E-05 5.3717E-05 4.1153E-05
4.2266E-05 3.9684E-05 3.0691E-05 4.2313E-05 4.1044E-05 3.9352E-05
3.7747E-05 3.3278E-05 7.0484E-05 6.7721E-05 1.7634E-05 2.6745E-05
4.2676E-05 3.3933E-05 7.7298E-05 2.2370E-05 6.3220E-05 6.3374E-05
8.2189E-05 3.2600E-05 2.4644E-05 1.0337E-05 2.2355E-05 4.1336E-05
2.7782E-05 3.6365E-05 5.7686E-05 7.8052E-05 6.7199E-05 5.1176E-05
3.8008E-05 4.2087E-05 3.9401E-05 1.8858E-05 1.2945E-05 4.6762E-06
1.7916E-06 8.6928E-06 1.7186E-06 6.4813E-06 1.1479E-05 9.8601E-05
5.1003E-05 2.5761E-05 8.9123E-05 2.9960E-05 2.0153E-05 5.2187E-06
4.4002E-06 6.0937E-06 1.8724E-06 5.1275E-09 1.3082E-06 2.2622E-08
5.1071E-07 1.8011E-09 6.2657E-09 7.3458E-08 6.6637E-08 1.2797E-10
2.7038E-11

```

4D 13 4 1156 2 2 3 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D *ZPR 3/56B SENS. OF 28F/25F TO SODIUM ELASTIC A= -9.5024E-02*
 8D 4.4128E-07 4.1458E-06 1.5877E-06 -3.7228E-05 -1.3009E-04
 -5.4665E-05 1.7728E-04 5.0435E-04 3.0136E-04 9.0791E-05 3.2604E-05
 -1.6663E-04 -4.0675E-04 -6.0468E-04 -6.4847E-04 -2.0262E-04 -5.3326E-04
 -5.8442E-04 -9.5205E-04 -1.2263E-03 -1.5335E-03 -1.4840E-03 -2.6759E-03
 -2.4161E-03 -2.8359E-03 -2.8450E-03 -2.7399E-03 -1.9419E-03 -8.4842E-04
 -8.0713E-04 -8.0761E-04 -8.3494E-04 -6.8066E-04 -1.5629E-04 -7.6901E-04
 -6.2084E-04 -1.0051E-03 -1.0364E-03 -9.5760E-04 -1.6075E-03 -1.5815E-03
 -1.9144E-03 -1.7734E-03 -2.0334E-03 -1.9691E-03 -1.6536E-03 -1.0418E-03
 -1.2004E-03 -5.6617E-04 -1.1102E-03 -1.3602E-03 -1.8233E-03 -3.0707E-04
 -9.1066E-05 -9.4734E-05 -2.7847E-04 -4.8604E-04 -2.0453E-03 -1.6132E-03
 -8.9000E-04 -6.2752E-04 -4.5884E-04 -4.9437E-04 -1.0793E-03 -5.7483E-04
 -5.9977E-04 -8.8537E-04 -2.0030E-04 -4.4295E-04 -1.0591E-03 -1.0170E-03
 -1.0875E-03 -6.6846E-04 -9.7660E-04 -1.0855E-03 -1.4788E-04 -8.2390E-04
 -6.3672E-04 -7.8461E-04 -1.0112E-03 -9.1785E-04 -1.6407E-03 -1.4328E-03
 -1.3354E-03 -3.5560E-04 -6.3065E-05 -2.2529E-05 -1.9652E-04 -8.8469E-04
 -7.9230E-03 -9.2404E-04 -1.6978E-03 -1.6125E-03 -1.6756E-03 -1.4765E-03
 -1.0764E-03 -1.1443E-03 -1.2332E-03 -5.9338E-04 -3.6570E-04 -4.6050E-04
 -4.0790E-04 -1.9169E-04 -3.0037E-04 -9.9258E-04 -5.1484E-04 -5.8143E-04
 6.5680E-05 -1.1368E-03 -3.0968E-04 1.9997E-04 -4.7736E-05 5.5924E-05
 1.0396E-04 6.4261E-05 1.4180E-04 1.0405E-04 -1.2766E-05 1.1187E-05
 9.6066E-05 1.7900E-05 3.5800E-05 8.0228E-06 -4.8659E-08 5.9413E-07
 5.1431E-08

4D 13 4 1156 4 2 3 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D *ZPR 3/56B SENS. OF 28F/25F TO SODIUM TOTAL INELA A= -7.3269E-02*
 8D -5.7185E-05 -2.0609E-04 -6.1997E-04 -1.7831E-03 -1.0388E-03
 -9.4377E-04 -2.8475E-03 -6.6356E-03 -7.0702E-03 -2.2747E-03 -2.3101E-03
 -2.3753E-03 -2.2000E-03 -2.3126E-03 -1.6416E-03 -4.8586E-04 -1.6253E-03
 -2.2898E-03 -3.2646E-03 -2.7254E-03 -3.3648E-03 -2.6848E-03 -4.1948E-03
 -3.6002E-03 -2.7089E-03 -1.3482E-03 -1.0702E-03 -7.9978E-04 -3.4057E-04
 -8.1308E-04 -9.7287E-04 -7.1957E-04 -8.0499E-04 -2.8572E-04 -3.3399E-04
 -3.1748E-04 -3.9122E-04 -5.2155E-04 -6.4418E-04 -7.0940E-04 -6.0014E-04
 -2.9199E-04 -3.0523E-04 -5.0039E-04 -1.3016E-04 -3.7596E-05 -3.4968E-05
 -3.6005E-05 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 13 4 1156 102 2 0 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D *ZPR 3/56B SENS. OF 28F/25F TO SODIUM CAPTURE A= 3.0982E-03*
 8D -2.7388E-08 -7.8730E-08 -2.2993E-07 -4.9286E-07 -3.5444E-07
 -3.4852E-07 -8.9090E-07 -1.2946E-06 -1.5016E-06 -7.0773E-07 -7.4223E-07
 -8.0177E-07 -8.8595E-07 -8.4023E-07 -5.5808E-07 -1.5670E-07 -4.4210E-07
 -5.0303E-07 -6.1789E-07 -5.2125E-07 -4.6242E-07 -3.5349E-07 -2.6343E-07
 -4.3812E-08 1.8579E-07 4.1309E-07 7.3443E-07 1.0843E-06 1.1043E-06
 1.7151E-06 1.8284E-06 1.9966E-06 2.7341E-06 1.2296E-06 1.9988E-06
 1.9458E-06 2.5499E-06 2.8439E-06 3.4646E-06 3.7579E-06 3.9003E-06
 4.5101E-06 4.8234E-06 5.0551E-06 5.0386E-06 4.9961E-06 4.8079E-06
 6.6436E-06 5.0859E-06 7.1545E-06 1.1700E-05 2.0519E-05 2.4719E-06
 9.6855E-07 2.0942E-06 5.3061E-06 1.0052E-05 2.1663E-05 2.2310E-05
 1.1478E-05 1.1113E-05 1.2063E-05 1.3892E-05 1.4760E-05 1.0526E-05
 1.0221E-05 8.3741E-06 3.3699E-06 5.1584E-05 3.1294E-05 3.4219E-06
 3.5951E-06 1.3101E-04 7.1148E-06 7.3394E-06 2.0957E-06 3.1815E-06
 5.6670E-06 5.1412E-06 2.3905E-05 1.2209E-04 7.7774E-05 1.0438E-05
 2.3522E-04 3.0285E-06 2.2143E-06 9.5453E-07 1.9717E-06 3.6088E-06
 2.4765E-06 3.2880E-06 5.3405E-06 7.9724E-06 9.0271E-06 9.6261E-06
 3.7329E-05 2.0113E-05 4.9919E-05 7.3765E-05 9.3239E-05 1.4088E-04
 2.0083E-04 1.1742E-04 1.1338E-04 2.0308E-04 1.7657E-04 2.7930E-04
 1.4802E-04 8.8669E-05 6.5902E-05 8.6946E-05 4.7892E-05 1.5675E-05
 1.2844E-05 2.0051E-05 1.6015E-05 5.2254E-06 4.0334E-06 1.1071E-05
 1.5165E-05 8.5479E-06 1.0060E-05 3.1787E-06 8.7034E-07 3.6590E-07
 7.8458E-08

```

4D      13      4  1192      2      2      3      0      12      0      0      4
  0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56B SENS. OF 28F/25F TO IRON ELASTIC          A= -7.7612E-02*
8D  2.5504E-06  9.4031E-06  2.0964E-05  2.9489E-05 -6.1245E-05
   1.9484E-06  3.4973E-04  7.1188E-04  6.1079E-04  4.0480E-04  3.4022E-04
   1.8455E-04 -3.2809E-06 -7.5844E-05 -2.4125E-04 -1.1012E-04 -3.4781E-04
  -1.8861E-04 -4.0208E-04 -5.9053E-04 -1.0821E-03 -1.0426E-03 -1.6922E-03
  -1.8583E-03 -1.8827E-03 -2.6019E-03 -2.9146E-03 -1.6359E-03 -7.3795E-04
  -9.6371E-04 -6.6733E-04 -6.5819E-04 -5.6175E-04 -1.3439E-04 -3.2739E-04
  -3.8104E-04 -7.8135E-04 -9.4571E-04 -1.1341E-03 -8.9585E-04 -6.7783E-04
  -7.4541E-04 -6.3018E-04 -7.5670E-04 -1.0629E-03 -1.2472E-03 -1.7773E-03
  -1.3495E-03 -8.0532E-04 -1.2435E-03 -1.2480E-03 -1.4172E-03 -8.6754E-05
  -4.4725E-05 -1.3888E-04 -4.0268E-04 -8.2553E-04 -1.4056E-03 -1.2810E-03
  -7.0606E-04 -5.4965E-04 -9.3545E-04 -9.4614E-04 -8.4689E-04 -7.8333E-04
  -4.9261E-04 -1.1154E-03 -5.5843E-04 -7.1182E-04 -1.2590E-03 -5.6293E-04
  -8.8299E-04 -7.5802E-04 -1.3410E-03 -2.0958E-03 -4.4850E-04 -5.0138E-04
  -1.2731E-03 -6.8741E-04 -1.5300E-03 -4.5801E-04 -1.6627E-03 -2.4022E-03
  -2.6714E-03 -1.3064E-03 -5.0536E-04 -2.2544E-04 -5.0548E-04 -3.0561E-04
  -1.0429E-04 -2.1103E-04 -5.3591E-04 -8.4092E-04 -1.1902E-03 -1.5566E-03
  -1.9226E-03 -8.8090E-04 -4.6860E-04 -1.4183E-04 -3.6675E-05 -1.6635E-05
  -4.7168E-06 -4.8284E-06 -8.1491E-06 -1.2351E-04 -1.8099E-04 -5.6129E-04
  -7.4272E-05 -1.8438E-03 -6.7306E-04  3.7727E-04 -4.7844E-05  1.5615E-04
   2.7540E-04  2.2228E-04  4.0387E-04  2.7169E-04 -1.8825E-05  7.0286E-05
   2.7432E-04  6.7805E-05  1.1397E-04  2.6038E-05  1.5732E-06  1.8053E-06
  2.0561E-07
  
```

```

4D      13      4  1192      4      2      3      0      12      0      0      4
  0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56E SENS. OF 28F/25F TO IRON TOTAL INELAST A= -2.1313E-01*
8D  -9.7408E-05 -7.0297E-04 -2.4120E-03 -6.0241E-03 -4.7067E-03
   5.0624E-03 -1.5801E-02 -2.3322E-02 -1.8198E-02 -6.7772E-03 -6.1798E-03
  -5.9805E-03 -7.2699E-03 -8.2746E-03 -6.3030E-03 -1.8231E-03 -5.6596E-03
  -7.7143E-03 -1.0746E-02 -1.0896E-02 -9.8566E-03 -8.5301E-03 -7.3549E-03
  -7.0946E-03 -5.9148E-03 -5.4958E-03 -3.5828E-03 -2.4419E-03 -9.8826E-04
  -1.2909E-03 -1.4890E-03 -1.4977E-03 -1.3729E-03 -6.6536E-04 -7.1707E-04
  -8.8280E-04 -8.3974E-06  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
   0.0  0.0  0.0  0.0  0.0  0.0
  
```

```

4D      13      4  1192     102      2      0      0      12      0      0      4
  0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56E SENS. OF 28F/25F TO IRON CAPTURE          A=  2.1132E-02*
8D  -4.6601E-08 -1.8038E-07 -6.2629E-07 -1.6949E-06 -1.4065E-06
  -1.5449E-06 -4.7363E-06 -8.3463E-06 -1.0952E-05 -5.5232E-06 -5.9952E-06
  -6.7306E-06 -7.7514E-06 -7.5674E-06 -5.3614E-06 -1.5002E-06 -4.2237E-06
  -5.1136E-06 -6.4186E-06 -5.6572E-06 -5.1701E-06 -4.3766E-06 -3.5946E-06
  -9.2905E-07  2.1141E-06  5.4112E-06  9.8202E-06  1.5152E-05  1.6133E-05
  2.5113E-05  2.7484E-05  3.1333E-05  4.6632E-05  2.5782E-05  4.7211E-05
  5.2154E-05  7.0170E-05  7.5909E-05  8.3944E-05  8.7778E-05  8.9906E-05
  1.0255E-04  1.0944E-04  1.1285E-04  1.1602E-04  1.2035E-04  1.2608E-04
  1.9365E-04  1.4839E-04  1.7161E-04  2.2268E-04  2.5334E-04  2.8190E-04
  1.1216E-05  2.4394E-05  6.2033E-05  1.1991E-04  3.0479E-04  3.3251E-04
  1.5358E-04  1.3167E-04  1.2884E-04  1.4343E-04  1.6439E-04  1.2682E-04
  1.2959E-04  1.3036E-04  9.8517E-05  1.3627E-04  1.4189E-04  1.3826E-04
  1.4488E-04  1.4204E-04  4.1534E-04  4.7510E-04  1.3196E-04  1.9835E-04
  3.3450E-04  2.7581E-04  6.0168E-04  2.2600E-04  2.6190E-04  2.1050E-04
  5.8634E-04  4.9871E-04  1.8232E-04  3.8465E-04  2.9721E-04  2.2234E-04
  7.4085E-05  4.2171E-04  1.1409E-04  7.7734E-05  2.8387E-04  5.9953E-04
  1.0757E-03  4.9307E-04  1.3063E-04  1.2350E-04  2.2087E-05  8.9164E-06
  3.8224E-06  3.1073E-06  5.5622E-06  3.2732E-05  3.7645E-05  2.7541E-04
  1.5663E-04  5.5867E-03  1.6415E-04  2.6367E-04  1.7790E-04  6.6247E-04
  5.8285E-05  9.2870E-05  8.1594E-05  2.8314E-05  2.0848E-05  6.0671E-05
  7.9694E-05  4.4771E-05  6.1608E-05  1.8665E-05  4.4095E-06  1.9205E-06
  4.4100E-07
  
```

4D 13 4 1261 18 2 0 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D * FORSS-ZPR 3/56B SENS. OF 28F/25F TO 235U FISSION A= -9.9673E-01*
 8D -6.0964E-05 -1.9218E-04 -6.1485E-04 -1.3469E-03 -9.3415E-04
 -1.0202E-03 -3.0752E-03 -4.5371E-03 -4.6933E-03 -2.1923E-03 -2.3043E-03
 -2.5088E-03 -2.8780E-03 -2.9171E-03 -2.0759E-03 -6.0485E-04 -1.7899E-03
 -2.2492E-03 -3.0648E-03 -2.9516E-03 -3.0973E-03 -3.2424E-03 -3.6695E-03
 -3.7051E-03 -3.5170E-03 -3.7805E-03 -4.0212E-03 -4.2193E-03 -3.5403E-03
 -5.2873E-03 -5.4017E-03 -5.6278E-03 -6.8802E-03 -2.9969E-03 -4.8282E-03
 -4.4695E-03 -5.5621E-03 -5.6186E-03 -5.9471E-03 -5.9984E-03 -6.1058E-03
 -6.9136E-03 -7.3890E-03 -7.5529E-03 -7.6793E-03 -8.1953E-03 -8.5171E-03
 -1.2795E-02 -9.5795E-03 -1.1460E-02 -1.5027E-02 -1.6838E-02 -1.8885E-03
 -7.4553E-04 -1.6398E-03 -4.1570E-03 -7.9273E-03 -1.7103E-02 -1.6662E-02
 -8.4568E-03 -7.7190E-03 -7.8215E-03 -9.1214E-03 -1.0894E-02 -8.6671E-03
 -9.2712E-03 -6.6399E-03 -7.0008E-03 -1.0066E-02 -9.8524E-03 -9.9221E-03
 -9.7632E-03 -8.9733E-03 -2.0225E-02 -2.1148E-02 -5.8978E-03 -9.3835E-03
 -1.6463E-02 -1.3876E-02 -3.0619E-02 -8.5804E-03 -2.0109E-02 -2.0580E-02
 -2.4169E-02 -9.6601E-03 -7.4605E-03 -3.1183E-03 -6.7499E-03 -1.2232E-02
 -8.9926E-03 -1.2340E-02 -1.8827E-02 -2.8727E-02 -3.0028E-02 -2.6564E-02
 -1.9346E-02 -2.0474E-02 -1.7190E-02 -8.4802E-03 -3.8079E-03 -1.8193E-03
 -7.6287E-04 -6.1537E-04 -1.1800E-03 -4.2206E-03 -6.5939E-03 -2.4406E-02
 -2.2391E-02 -1.9624E-02 -1.4984E-02 -2.5467E-02 -1.1612E-02 -4.5138E-03
 -2.5161E-03 -2.0255E-03 -6.7820E-04 -2.6143E-04 -6.5648E-05 -1.2965E-04
 -2.8326E-05 -1.2072E-05 -5.5570E-06 -2.0793E-06 -5.1815E-07 -5.0195E-08
 8.2223E-09

4D 13 4 1262 4 2 3 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D *ZPR 3/56B SENS. OF 28F/25F TO 238U TOTAL INELAST A= -2.9399E-01*
 8D -1.8731E-05 -1.0203E-04 -5.8245E-04 -3.5170E-03 -4.7987E-03
 -5.9149E-03 -1.6774E-02 -2.2073E-02 -2.1983E-02 -1.0547E-02 -1.1230E-02
 -1.2200E-02 -1.3813E-02 -1.3665E-02 -9.4895E-03 -2.7305E-03 -7.9294E-03
 -9.5904E-03 -1.2684E-02 -1.1452E-02 -1.1601E-02 -1.1291E-02 -1.1891E-02
 -1.0486E-02 -8.4801E-03 -7.7203E-03 -6.0945E-03 -4.2977E-03 -2.2374E-03
 -2.5973E-03 -2.4630E-03 -2.0995E-03 -1.3984E-03 -5.2423E-04 -9.6982E-04
 -8.0623E-04 -1.1331E-03 -9.3631E-04 -7.7784E-04 -5.8155E-04 -4.4494E-04
 -5.9048E-04 -6.6662E-04 -6.6032E-04 -6.6217E-04 -7.9210E-04 -6.2894E-04
 -5.8452E-04 -1.7839E-04 -3.4958E-04 -6.0952E-04 -7.6013E-04 -6.4712E-05
 -2.8295E-05 -7.3101E-05 -1.8424E-04 -2.6570E-04 -6.9946E-04 -4.9988E-04
 -2.5256E-04 -2.1324E-04 -2.2148E-04 -2.7388E-04 -3.4426E-04 -2.2896E-04
 -2.7935E-04 -2.7353E-04 -1.6634E-04 -2.8562E-04 -2.8893E-04 -2.8723E-04
 -2.5423E-04 -1.8699E-04 -3.4149E-04 -3.7053E-04 -1.0341E-04 -1.8494E-04
 -2.8419E-04 -2.1534E-04 -4.7437E-04 -1.0073E-04 -1.2734E-04 -6.7006E-06
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 13 4 1262 18 2 0 0 12 0 0 4
 0
 5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
 3/56B *
 7D * FORSS-ZPR 3/56B SENS. OF 28F/25F TO 238U FISSION A= 9.6823E-01*
 8D 1.0254E-03 3.3961E-03 1.0677E-02 2.5038E-02 1.7997E-02
 1.8532E-02 5.1652E-02 7.3228E-02 7.0934E-02 3.1754E-02 3.3103E-02
 3.5947E-02 4.1170E-02 4.1725E-02 2.9630E-02 8.6247E-03 2.5528E-02
 3.2093E-02 4.3720E-02 4.1963E-02 4.3203E-02 4.3589E-02 4.6648E-02
 4.3657E-02 3.7486E-02 3.4058E-02 2.7080E-02 1.6597E-02 7.3208E-03
 6.8781E-03 6.0789E-03 5.0726E-03 3.8653E-03 1.4266E-03 2.0770E-03
 1.1786E-03 9.4841E-04 5.9136E-04 4.2705E-04 3.1602E-04 2.5791E-04
 2.8088E-04 2.9045E-04 2.1593E-04 1.2476E-04 1.0097E-04 7.3874E-05
 7.9823E-05 4.4185E-05 3.9459E-05 4.2702E-05 3.8479E-05 3.7459E-06
 1.4641E-06 3.2029E-06 8.0107E-06 1.4836E-05 3.0350E-05 2.7681E-05
 1.3348E-05 1.1741E-05 1.1393E-05 1.2742E-05 1.4620E-05 1.1197E-05
 1.1520E-05 1.0344E-05 8.1104E-06 1.1266E-05 1.0638E-05 1.0384E-05
 9.9051E-06 8.8463E-06 1.8887E-05 1.9298E-05 5.2527E-06 8.2018E-06
 1.3589E-05 1.1452E-05 2.4411E-05 6.5256E-06 1.6205E-05 3.6063E-06
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 5.0359E-13 5.2356E-13 1.1111E-12 5.4599E-12 1.4023E-11 1.1537E-10
 3.4200E-09 1.1325E-05 3.3408E-09 1.7481E-05 1.2971E-10 2.1614E-11
 1.2474E-11 8.3005E-12 2.6621E-12 4.0006E-13 -1.3070E-14 -5.4396E-13
 -3.9586E-13 -5.3862E-13 -9.9506E-13 -5.2211E-13 -4.7121E-14 -3.3324E-16
 -7.8834E-18

4D 0 13 4 1262 102 2 0 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56B SENS. OF 28F/25F TO 238U CAPTURE A= 2.5640E-01*

8D -1.0446E-07 -5.4298E-07 -2.4702E-06 -8.1752E-06 -7.9673E-06
 -9.7720E-06 -3.5286E-05 -7.7353E-05 -1.2147E-04 -6.7812E-05 -7.7970E-05
 -9.2059E-05 -1.1144E-04 -1.1589E-04 -8.2737E-05 -2.4001E-05 -6.9634E-05
 -8.3923E-05 -1.1146E-04 -1.0295E-04 -1.0007E-04 -8.5388E-05 -7.2456E-05
 -2.7779E-05 2.5773E-05 8.5145E-05 1.7638E-04 2.8178E-04 3.0375E-04
 5.0576E-04 5.5650E-04 6.2667E-04 8.5470E-04 4.0120E-04 6.5456E-04
 6.2830E-04 7.9079E-04 8.2409E-04 8.7943E-04 8.8297E-04 8.7960E-04
 9.6976E-04 1.0190E-03 1.0435E-03 1.0613E-03 1.1242E-03 1.1670E-03
 1.7582E-03 1.3161E-03 1.5634E-03 2.0653E-03 2.3544E-03 2.6543E-04
 1.0459E-04 2.2932E-04 5.8703E-04 1.1388E-03 2.5220E-03 2.6123E-03
 1.3778E-03 1.2971E-03 1.3409E-03 1.5673E-03 1.8658E-03 1.4959E-03
 1.6042E-03 1.5596E-03 1.2744E-03 1.8362E-03 1.8470E-03 1.8613E-03
 1.8765E-03 1.7504E-03 4.0687E-03 4.4435E-03 4.2871E-03 2.0424E-03
 3.6230E-03 3.3596E-03 8.6328E-03 2.5943E-03 6.7360E-03 6.2268E-03
 8.3571E-03 3.3505E-03 2.7044E-03 1.1994E-03 2.6048E-03 4.8273E-03
 3.3392E-03 4.5530E-03 7.6871E-03 1.2136E-02 1.2789E-02 1.1769E-02
 9.1701E-03 9.3182E-03 7.7959E-03 3.7999E-03 1.7081E-03 1.0236E-03
 4.0484E-04 2.8761E-04 6.1024E-04 2.2659E-03 2.6809E-03 8.8827E-03
 7.3171E-03 6.7013E-03 5.9965E-03 7.8344E-03 3.4535E-03 1.0823E-03
 8.4111E-04 1.1447E-03 8.3139E-04 1.2428E-05 6.6520E-05 4.7948E-04
 5.8138E-04 3.8199E-04 6.6456E-05 6.7295E-06 3.8617E-07 2.3403E-07
 8.8322E-08

4D 0 13 4 1264 4 2 3 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56B SENS. OF 28F/25F TO 239PU TOTAL INELAS A= -4.1366E-02*

8D -9.0096E-07 -5.1831E-06 -3.9404E-05 -3.2190E-04 -5.5174E-04
 -8.3901E-04 -2.4927E-03 -3.6604E-03 -3.7723E-03 -1.6619E-03 -1.7013E-03
 -1.8080E-03 -1.9896E-03 -1.9095E-03 -1.2923E-03 -3.6663E-04 -1.0539E-03
 -1.2605E-03 -1.6490E-03 -1.5065E-03 -1.5020E-03 -1.4561E-03 -1.5134E-03
 -1.3060E-03 -1.0273E-03 -8.9642E-04 -6.7819E-04 -4.4243E-04 -2.1796E-04
 -2.6106E-04 -2.4013E-04 -2.0732E-04 -1.9566E-04 -8.2103E-05 -1.5117E-04
 -1.3301E-04 -1.7006E-04 -1.5083E-04 -1.5053E-04 -1.4059E-04 -1.3574E-04
 -1.5736E-04 -1.6090E-04 -1.5191E-04 -1.3938E-04 -1.3543E-04 -1.2262E-04
 -1.1759E-04 -6.3894E-05 -7.6218E-05 -9.8167E-05 -9.6097E-05 -1.0212E-05
 -4.3070E-06 -1.0043E-05 -2.1513E-05 -3.4798E-05 -8.0403E-05 -6.7997E-05
 -3.6706E-05 -3.0910E-05 -3.0697E-05 -2.9823E-05 -4.6193E-05 -2.6504E-05
 -2.1948E-05 -2.0316E-05 -1.1445E-05 -1.8725E-05 -2.2059E-05 -2.4832E-05
 -2.4297E-05 -1.8733E-05 -2.9841E-05 -3.2396E-05 -7.0004E-06 -1.5728E-05
 -1.7124E-05 -1.7029E-05 -3.0883E-05 -3.8806E-06 -1.9710E-05 -2.2721E-05
 -2.5218E-05 -3.8742E-06 -4.4322E-06 -3.0871E-06 -1.1803E-05 -2.4797E-05
 -1.6362E-05 -2.3956E-05 -3.6952E-05 -5.7060E-05 -6.1240E-05 -4.0164E-05
 -8.5902E-06 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 0 13 4 1264 18 2 0 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *FORSS-ZPR 3/56B SENS. OF 28F/25F TO 239PU FISSIO A= 3.2035E-01*

8D -4.5213E-05 -1.4133E-04 -4.4000E-04 -8.9849E-04 -5.5041E-04
 -4.7246E-04 -1.2024E-03 -1.8435E-03 -2.1547E-03 -9.9506E-04 -1.0434E-03
 -1.1248E-03 -1.2298E-03 -1.1575E-03 -7.6094E-04 -2.1017E-04 -5.8641E-04
 -6.6141E-04 -8.0775E-04 -6.5758E-04 -5.5054E-04 -3.6558E-04 -1.7057E-04
 1.5502E-04 4.5194E-04 7.8283E-04 1.2175E-03 1.6306E-03 1.5543E-03
 2.3879E-03 2.4559E-03 2.5775E-03 3.1879E-03 4.206E-03 3.3226E-03
 2.2042E-03 2.8162E-03 2.9379E-03 3.1252E-03 3.1343E-03 3.1800E-03
 3.5563E-03 3.7856E-03 3.8187E-03 3.8758E-03 4.1626E-03 4.3161E-03
 6.4368E-03 4.7026E-03 5.5416E-03 7.2378E-03 7.9018E-03 8.6922E-04
 3.4198E-04 7.5256E-04 1.9113E-03 3.6253E-03 7.6935E-03 7.3786E-03
 3.7866E-03 3.4355E-03 3.3926E-03 3.9135E-03 4.6102E-03 3.6748E-03
 3.9415E-03 3.4804E-03 2.9230E-03 4.2555E-03 3.9882E-03 4.1051E-03
 3.9950E-03 3.7121E-03 8.1772E-03 8.5382E-03 2.3186E-03 3.6681E-03
 6.3560E-03 5.3813E-03 1.0749E-02 2.9840E-03 7.2203E-03 7.1688E-03
 8.5183E-03 3.2136E-03 2.4710E-03 9.7476E-04 1.7135E-03 2.8291E-03
 2.9510E-03 3.9284E-03 6.4903E-03 9.8094E-03 9.6094E-03 7.5284E-03
 5.8619E-03 5.4088E-03 4.6306E-03 2.1498E-03 1.1028E-03 5.5823E-04
 2.6921E-04 2.0229E-04 3.1553E-04 1.2192E-03 1.5073E-03 5.5213E-03
 6.4416E-03 6.1222E-03 4.1937E-03 5.7912E-03 1.7441E-03 4.2211E-04
 -5.7016E-05 -9.5108E-04 -1.5896E-03 -7.0704E-04 -2.0382E-04 -4.0649E-04
 -1.3617E-03 -4.6281E-04 -2.7619E-04 -1.8488E-04 -6.8725E-05 -2.5459E-05
 -2.4830E-06

4D 13 4 1264 102 2 0 0 12 0 0 4
0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/56B *

7D * ZPR 3/56B SENS. OF 28F/25F TO 239PU CAPTURE A= 1.0985E-01*

8D -5.3817E-08 -1.6031E-07 -2.0235E-07 -1.7649E-07 -1.5149E-07
 -2.7506E-07 -1.4054E-06 -2.5917E-06 -3.5381E-06 -1.8778E-06 -2.1819E-06
 -2.6306E-06 -3.2787E-06 -3.5562E-06 -2.6360E-06 -7.7944E-07 -2.2928E-06
 -2.8178E-06 -3.8305E-06 -3.5725E-06 -3.4812E-06 -2.9847E-06 -2.5317E-06
 -9.6854E-07 8.9834E-07 2.9702E-06 6.2200E-06 1.0101E-05 1.1095E-05
 1.8838E-05 2.1237E-05 2.5085E-05 3.7241E-05 1.9330E-05 3.4786E-05
 3.7166E-05 5.3357E-05 6.5550E-05 8.3620E-05 9.7816E-05 1.1156E-04
 1.3816E-04 1.5944E-04 1.7652E-04 1.9305E-04 2.1927E-04 2.4319E-04
 4.0550E-04 3.4061E-04 4.4420E-04 6.4128E-04 7.7323E-04 8.8444E-05
 3.4908E-05 7.6641E-05 1.9681E-04 3.8383E-04 8.4922E-04 8.5187E-04
 4.3033E-04 3.9478E-04 4.0118E-04 4.6767E-04 5.5652E-04 4.4585E-04
 4.7546E-04 4.5956E-04 3.7361E-04 5.3768E-04 5.3988E-04 5.4254E-04
 5.4351E-04 5.0277E-04 1.1494E-03 1.3196E-03 4.5381E-04 7.2774E-04
 1.2030E-03 1.0078E-03 2.5819E-03 7.4484E-04 1.8264E-03 1.8381E-03
 2.2215E-03 8.7839E-04 7.1814E-04 3.0313E-04 5.3999E-04 9.0167E-04
 9.6689E-04 1.3642E-03 2.4066E-03 3.9620E-03 4.4800E-03 4.3662E-03
 3.6061E-03 4.2934E-03 4.0485E-03 2.0163E-03 8.4777E-04 4.2018E-04
 2.4390E-04 1.5805E-04 3.5325E-04 1.2820E-03 2.2036E-03 6.7177E-03
 4.7780E-03 5.3966E-03 4.3213E-03 7.8559E-03 4.1963E-03 2.5143E-03
 9.8427E-04 1.4990E-03 1.0110E-03 4.9666E-04 1.9509E-04 1.9393E-04
 6.1177E-04 1.0333E-04 1.4430E-05 1.6214E-05 5.8205E-06 2.5057E-05
 1.9587E-06

4D 13 4 1265 18 2 0 0 12 0 0 4
0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/56B *

7D * FORSS-ZPR 3/56B SENS. OF 28F/25F TO 240PU FISSIO A= 4.2403E-03*

8D -5.9045E-06 -1.8145E-05 -5.5068E-05 -9.8051E-05 -6.3103E-05
 -6.2185E-05 -1.6439E-04 -2.5300E-04 -2.9194E-04 -1.3537E-04 -1.4074E-04
 -1.4847E-04 -1.5630E-04 -1.4251E-04 -9.4022E-05 -2.6240E-05 -7.4047E-05
 -8.5440E-05 -1.0733E-04 -9.0927E-05 -8.0311E-05 -6.0154E-05 -4.0247E-05
 -3.5868E-06 3.1079E-05 6.8438E-05 1.2194E-04 1.7684E-04 1.7500E-04
 2.7207E-04 2.8032E-04 2.9215E-04 3.4820E-04 1.4577E-04 2.2369E-04
 1.9849E-04 2.3946E-04 2.3273E-04 2.3240E-04 2.1842E-04 2.0726E-04
 2.1703E-04 2.1421E-04 1.9829E-04 1.8257E-04 1.7119E-04 1.4674E-04
 1.6360E-04 8.5641E-05 8.2044E-05 9.1454E-05 8.7642E-05 8.9531E-06
 3.4249E-06 7.4525E-06 1.8749E-05 3.4808E-05 7.0015E-05 6.2582E-05
 3.0563E-05 2.6700E-05 2.5548E-05 2.9029E-05 3.3442E-05 2.6076E-05
 2.7343E-05 2.3401E-05 1.9224E-05 2.7146E-05 2.4461E-05 2.4388E-05
 2.2983E-05 2.0869E-05 4.3815E-05 4.2958E-05 1.1152E-05 1.7116E-05
 2.7463E-05 2.2253E-05 4.4957E-05 1.3559E-05 3.8857E-05 3.9196E-05
 5.2040E-05 2.0949E-05 1.6022E-05 6.6567E-06 1.4601E-05 2.7452E-05
 1.8286E-05 2.4143E-05 3.9403E-05 5.6757E-05 4.8927E-05 3.2720E-05
 2.4423E-05 2.7799E-05 2.6862E-05 1.2913E-05 8.8274E-06 3.1865E-06
 1.2259E-06 5.9616E-06 1.1773E-06 4.4226E-06 7.8663E-06 6.5462E-05
 3.2888E-05 1.5155E-05 5.4787E-05 1.4197E-05 4.9058E-06 6.7920E-07
 -2.5636E-07 -2.6231E-06 -1.2369E-06 -3.8263E-09 -1.1717E-06 -2.1579E-08
 -5.1072E-07 -1.8291E-09 -6.2962E-09 -7.3695E-08 -6.7813E-08 -1.2873E-10
 -2.7247E-11

4D 13 4 1156 2 2 3 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/56B *

7D *ZPR 3/56B SENS. OF 49F/25F TO SODIUM ELASTIC A= -4.1465E-02*

8D 1.3148E-07 1.5477E-07 6.1253E-08 2.7457E-06 1.7127E-06
 1.1827E-06 1.2187E-05 2.6681E-05 3.7950E-05 2.4150E-05 2.2335E-05
 1.7250E-05 1.1691E-05 3.8198E-06 -3.9546E-06 -7.2417E-07 -1.2339E-06
 -6.6515E-06 -1.8688E-05 -2.5161E-05 -2.6113E-05 -3.5188E-05 -5.7503E-05
 -4.6949E-05 -5.1435E-05 -3.9203E-05 -5.5499E-05 -4.2828E-05 -3.5204E-05
 -3.2150E-05 2.5676E-05 6.1321E-05 -3.0779E-05 2.3940E-05 -3.1525E-06
 5.1914E-05 -2.4691E-04 -3.4763E-04 -3.5160E-04 -6.0694E-04 -7.0367E-04
 -8.3002E-04 -7.6175E-04 -7.9867E-04 -9.6904E-04 -8.3625E-04 -5.7012E-04
 -7.9474E-04 -4.0613E-04 -7.8009E-04 -9.5176E-04 -1.3155E-03 -2.0996E-04
 -5.8308E-05 -5.7360E-05 -1.9738E-04 -4.2643E-04 -1.3057E-03 -1.3279E-03
 -7.3398E-04 -6.3718E-04 -4.2872E-04 -4.8581E-04 -7.0072E-04 -4.9097E-04
 -5.1418E-04 -5.1997E-04 -2.9856E-04 -5.2489E-04 -6.5148E-04 -7.4391E-04
 -7.3410E-04 -5.4881E-04 -1.0286E-03 -1.1840E-03 -2.2488E-04 -5.9863E-04
 -8.3689E-04 -7.6135E-04 -1.5146E-03 -8.4923E-04 -1.3736E-03 -1.1661E-03
 -1.2105E-03 -2.9799E-04 -1.0749E-04 1.9355E-05 7.2988E-05 1.9143E-06
 -5.1037E-04 -5.4677E-04 -1.2443E-03 -1.1814E-03 -1.0702E-03 -7.6872E-04
 -6.8754E-04 -3.1767E-04 -3.2349E-04 8.7192E-05 -1.7186E-04 -2.4324E-04
 -2.5176E-04 -1.1617E-04 -7.5128E-05 -3.5917E-04 2.1732E-04 6.1747E-04
 1.1240E-05 -6.7240E-04 -1.3455E-04 1.5647E-04 3.5683E-05 6.3312E-05
 5.1596E-05 4.5081E-05 -3.9872E-07 1.0548E-05 -4.8513E-06 5.6520E-06
 1.7105E-05 3.2498E-06 6.1197E-06 1.4019E-06 -8.8998E-09 1.0838E-07
 9.3559E-09

4D 13 4 1156 4 2 3 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56B SENS. OF 49F/25F TO SODIUM TOTAL INELA A= -8.6414E-03*

8D 1.1525E-07 -1.2289E-06 -1.4600E-06 -6.7535E-06 -7.5168E-06
-8.4018E-06 -5.5333E-05 -1.3743E-04 -3.7988E-04 -1.3173E-04 -1.0998E-04
-9.6732E-05 -1.0589E-04 -1.0539E-04 -6.9161E-05 -1.9259E-05 -7.5506E-05
-1.0334E-04 -1.1472E-04 -6.7155E-05 -7.8087E-05 -6.5191E-05 -1.0108E-04
-8.4451E-05 -6.0205E-05 -2.6305E-05 -2.1504E-05 -1.4441E-05 -1.4188E-05
-7.8880E-05 -1.4110E-04 -1.9018E-04 -4.3209E-04 -1.9683E-04 -2.3717E-04
-2.5612E-04 -3.5142E-04 -5.4107E-04 -7.1632E-04 -8.3034E-04 -7.3914E-04
-3.6433E-04 -4.0244E-04 -7.1088E-04 -2.0014E-04 -6.1300E-05 -6.0829E-05
-6.8677E-05 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0

4D 13 4 1156 102 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56B SENS. OF 49F/25F TO SODIUM CAPTURE A= 8.9572E-04*

8D -3.5761E-10 -1.6728E-09 -4.8841E-09 -9.9056E-09 -9.4839E-09
-1.2052E-08 -3.3293E-08 -4.9526E-08 -5.8076E-08 -2.9404E-08 -3.3705E-08
-3.8060E-08 -4.4212E-08 -4.4421E-08 -3.0915E-08 -8.7161E-09 -2.5295E-08
-3.0583E-08 -3.9460E-08 -3.5385E-08 -3.3476E-08 -3.2054E-08 -3.3585E-08
-2.7752E-08 -1.9453E-08 -1.5878E-08 -1.3042E-08 -2.8564E-09 3.6821E-09
5.3367E-09 1.7733E-08 2.1266E-08 4.5153E-08 1.8862E-08 1.9636E-08
2.2380E-08 5.8697E-09 2.3390E-08 4.9207E-08 7.8984E-08 9.2783E-08
1.2842E-07 1.7383E-07 2.4943E-07 2.8102E-07 3.0297E-07 3.3713E-07
5.7842E-07 5.3066E-07 7.6217E-07 1.3151E-06 2.5388E-06 3.2371E-07
1.2666E-07 2.7241E-07 7.0506E-07 1.3827E-06 3.1484E-06 3.4903E-06
1.8559E-06 1.8558E-06 2.0792E-06 2.4463E-06 2.6567E-06 1.9422E-06
1.9269E-06 1.6263E-06 6.6737E-07 1.0377E-05 6.4145E-06 7.1575E-07
7.6634E-07 2.8716E-05 1.6065E-06 1.7376E-06 5.1357E-07 7.9081E-07
1.4385E-06 1.3477E-06 6.2286E-06 3.4042E-05 2.2027E-05 3.0511E-06
7.1319E-05 9.5192E-07 7.0717E-07 3.0232E-07 6.4115E-07 1.1808E-06
7.8071E-07 1.0517E-06 1.7386E-06 2.7212E-06 3.1546E-06 3.2288E-06
1.2722E-05 7.0830E-06 1.7591E-05 2.5362E-05 3.1239E-05 4.6597E-05
6.6293E-05 3.9077E-05 3.8066E-05 6.8226E-05 5.9856E-05 9.1977E-05
4.4363E-05 2.6104E-05 2.0474E-05 2.5296E-05 1.1865E-05 3.4148E-06
2.4208E-06 3.4763E-06 2.5703E-06 9.9340E-07 7.8546E-07 2.1089E-06
2.7227E-06 1.5298E-06 1.7656E-06 5.6796E-07 1.5865E-07 6.6760E-08
1.4331E-08

4D 13 4 1192 2 2 3 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56B SENS. OF 49F/25F TO IRON ELASTIC A= -2.9702E-02*

8D 1.7908E-07 3.9838E-07 9.6084E-07 5.4560E-06 4.6588E-06
5.2213E-06 2.6679E-05 4.5957E-05 5.5786E-05 5.5799E-05 4.4446E-05
4.6986E-05 4.4128E-05 4.7278E-05 2.3815E-05 6.2243E-06 2.0368E-05
1.7938E-05 1.5270E-05 7.2903E-06 5.4385E-06 -5.0590E-06 -1.4064E-05
-1.9023E-05 -1.6457E-05 9.3599E-07 -2.9855E-05 -8.4504E-06 -7.4819E-06
-2.9824E-05 2.5423E-05 5.8030E-05 -1.2569E-05 3.0408E-05 3.1442E-07
9.8279E-05 -8.8014E-05 -1.6886E-04 -2.3472E-04 -1.6388E-04 -1.4172E-04
-1.6232E-04 -1.7171E-04 -1.6300E-04 -2.5538E-04 -3.8347E-04 -7.1919E-04
-5.5381E-04 -3.7264E-04 -3.9703E-04 -4.3423E-04 -3.5378E-04 -3.7202E-05
-1.9013E-05 -5.7573E-05 -1.8577E-04 -4.9377E-04 -6.3255E-04 -6.4930E-04
-3.3069E-04 -3.3650E-04 -5.3721E-04 -4.8748E-04 -3.8307E-04 -3.7637E-04
-2.9289E-04 -4.8959E-04 -4.3750E-04 -4.0615E-04 -5.9302E-04 -2.9196E-04
-4.3547E-04 -5.0602E-04 -9.3608E-04 -1.5033E-03 -5.3618E-04 -2.9377E-04
-9.8244E-04 -5.5092E-04 -1.2694E-03 -3.0165E-04 -1.0853E-03 -1.5375E-03
-1.9163E-03 -9.4081E-04 -8.3669E-04 -3.8236E-04 -1.3128E-04 5.5895E-05
-6.1928E-05 -1.1036E-04 -3.5059E-04 -5.4414E-04 -6.9994E-04 -8.1697E-04
-1.1464E-03 -3.0546E-04 -1.5134E-04 -5.5630E-08 -1.7275E-05 -8.7761E-06
-2.7049E-06 -5.1252E-06 1.7228E-06 -6.0300E-05 5.6394E-05 4.2894E-04
-5.8177E-05 -1.1006E-03 3.0470E-04 2.8644E-04 8.2462E-05 1.4961E-04
1.2550E-04 1.1836E-04 9.1335E-06 2.8674E-05 -9.7019E-06 2.0738E-05
4.8341E-05 1.2014E-05 1.9210E-05 4.4981E-06 2.8567E-07 3.2881E-07
3.7352E-08

4D 13 4 1192 4 2 3 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO IRON TOTAL INELAST A= -1.4385E-02*

8D 8.2611E-07 -1.0769E-05 -3.6568E-05 -9.0890E-05 -1.1458E-04
-1.7684E-04 -5.1079E-04 -8.2983E-04 -7.5351E-04 -2.7854E-04 -1.9092E-04
-1.8338E-04 -2.1592E-04 -2.4392E-04 -1.7108E-04 -4.6312E-05 -1.4090E-04
-1.9535E-04 -2.7978E-04 -2.9336E-04 -2.5489E-04 -2.3712E-04 -2.0532E-04
-2.1908E-04 -2.6355E-04 -3.4147E-04 -3.8610E-04 -4.9651E-04 -3.7190E-04
-6.3291E-04 -8.7079E-04 -1.1113E-03 -1.4022E-03 -8.0316E-04 -9.1319E-04
-1.1062E-03 -7.2345E-06 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0

4D 13 4 1192 102 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO IRON CAPTURE A= 5.4018E-03*

8D -6.4300E-10 -3.9490E-09 -1.3734E-08 -3.5435E-08 -3.8985E-08
-5.5359E-08 -1.8434E-07 -3.3275E-07 -4.4106E-07 -2.3827E-07 -2.8220E-07
-3.3133E-07 -4.0146E-07 -4.1590E-07 -3.0921E-07 -8.6988E-08 -2.5215E-07
-3.2602E-07 -4.3259E-07 -4.0741E-07 -4.0054E-07 -4.2360E-07 -4.7709E-07
-4.2476E-07 -3.3966E-07 -3.1282E-07 -2.8055E-07 -1.6375E-07 -6.5113E-08
-7.3604E-08 8.4043E-08 1.2818E-07 3.4445E-07 1.8585E-07 1.0466E-07
2.1125E-07 -3.2376E-07 1.1389E-07 6.2540E-07 1.2543E-06 1.6163E-06
2.3266E-06 3.3559E-06 4.8777E-06 5.7637E-06 6.6811E-06 8.2280E-06
1.5814E-05 1.4586E-05 1.7484E-05 2.4275E-05 3.0569E-05 3.6204E-06
1.4393E-06 3.1193E-06 8.1113E-06 1.6258E-05 4.3694E-05 5.1365E-05
2.4671E-05 2.1861E-05 2.2064E-05 2.5126E-05 2.9468E-05 2.3337E-05
2.4396E-05 2.5274E-05 1.9508E-05 2.7421E-05 2.9138E-05 2.8974E-05
3.0989E-05 3.1249E-05 9.4287E-05 1.1310E-04 3.2588E-05 4.9567E-05
8.5465E-05 7.2663E-05 1.5929E-04 6.3616E-05 7.4822E-05 6.2114E-05
1.7946E-04 1.5814E-04 5.8650E-05 1.2365E-04 9.7410E-05 7.3242E-05
2.3558E-05 1.3586E-04 3.7400E-05 2.6625E-05 9.9821E-05 2.0536E-04
3.7367E-04 1.7633E-04 4.6664E-05 4.3266E-05 7.5768E-06 3.0341E-06
1.2982E-06 1.0617E-06 1.9140E-06 1.1258E-05 1.3036E-05 9.2706E-05
4.7973E-05 1.6417E-03 5.2521E-05 7.9776E-05 4.5897E-05 1.4912E-05
1.1101E-05 1.5919E-05 1.2546E-05 5.4904E-06 4.2044E-06 1.1806E-05
1.4291E-05 8.0128E-06 1.0778E-05 3.3229E-06 8.0331E-07 3.5017E-07
8.0569E-08

4D 13 4 1261 18 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO 235U FISSION A= -9.9906E-01*

8D -6.0524E-05 -1.9095E-04 -6.1102E-04 -1.3393E-03 -9.2970E-04
-1.0165E-03 -3.0656E-03 -4.5225E-03 -4.6765E-03 -2.1845E-03 -2.2961E-03
-2.5000E-03 -2.8683E-03 -2.9079E-03 -2.0698E-03 -6.0316E-04 -1.7852E-03
-2.2437E-03 -3.0580E-03 -2.9459E-03 -3.0922E-03 -3.2385E-03 -3.6666E-03
-3.7043E-03 -3.5183E-03 -3.7839E-03 -4.0274E-03 -4.2284E-03 -3.5494E-03
-5.3017E-03 -5.4167E-03 -5.6438E-03 -6.9003E-03 -3.0058E-03 -4.8426E-03
-4.4829E-03 -5.5790E-03 -5.6359E-03 -5.9655E-03 -6.0170E-03 -6.1248E-03
-6.9351E-03 -7.4120E-03 -7.5762E-03 -7.7030E-03 -8.2208E-03 -8.5436E-03
-1.2835E-02 -9.6089E-03 -1.1495E-02 -1.5073E-02 -1.6889E-02 -1.8942E-03
-7.4779E-04 -1.6448E-03 -4.1696E-03 -7.9514E-03 -1.7154E-02 -1.6711E-02
-8.4822E-03 -7.7422E-03 -7.8447E-03 -9.1483E-03 -1.0925E-02 -8.6927E-03
-9.2987E-03 -8.6642E-03 -7.0211E-03 -1.0095E-02 -9.8799E-03 -9.9503E-03
-9.7905E-03 -8.9987E-03 -2.0282E-02 -2.1208E-02 -5.9142E-03 -9.4096E-03
-1.6509E-02 -1.3915E-02 -3.0698E-02 -8.6027E-03 -2.0161E-02 -2.0633E-02
-2.4232E-02 -9.6852E-03 -7.4800E-03 -3.1264E-03 -6.7674E-03 -1.2264E-02
-9.0163E-03 -1.2372E-02 -1.8877E-02 -2.8807E-02 -3.0110E-02 -2.6631E-02
-1.9395E-02 -2.0526E-02 -1.7234E-02 -8.5025E-03 -3.8180E-03 -1.8242E-03
-7.6490E-04 -6.1701E-04 -1.1831E-03 -4.2318E-03 -6.6114E-03 -2.4471E-02
-2.2452E-02 -1.9674E-02 -1.5023E-02 -2.5523E-02 -1.1630E-02 -4.5194E-03
-2.5173E-03 -2.0187E-03 -6.7371E-04 -2.5611E-04 -6.1047E-05 -1.0905E-04
-1.9833E-05 -4.1559E-06 -2.7456E-06 -7.8501E-07 -1.3559E-07 -2.0278E-08
1.7032E-08

```

4D      13      4 1262      4      2      3      0      12      0      0      5
0
5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56B SENS. OF 49F/25F TO 238U TOTAL INELAST A= -4.1048E-02*
8D -1.1945E-07 -2.0483E-06 -1.3028E-05 -8.5309E-05 -1.4943E-04
-2.2687E-04 -7.0883E-04 -9.6704E-04 -8.9672E-04 -4.0597E-04 -4.3443E-04
-4.5960E-04 -5.0923E-04 -5.1313E-04 -3.6351E-04 -1.0636E-04 -3.1125E-04
-3.9655E-04 -5.8057E-04 -5.7132E-04 -6.5357E-04 -6.7179E-04 -7.8901E-04
-8.3864E-04 -8.2772E-04 -9.3529E-04 -1.0392E-03 -1.1589E-03 -9.8427E-04
-1.3559E-03 -1.3711E-03 -1.3038E-03 -1.0746E-03 -4.5365E-04 -6.7945E-04
-5.9639E-04 -9.2105E-04 -9.1298E-04 -7.4004E-04 -4.9579E-04 -3.1308E-04
-3.4833E-04 -3.6829E-04 -3.5643E-04 -4.1241E-04 -5.2625E-04 -4.1055E-04
-5.4652E-04 -2.7671E-04 -4.3530E-04 -6.2994E-04 -7.9819E-04 -6.6948E-05
-2.6660E-05 -6.5033E-05 -1.8996E-04 -2.9616E-04 -7.2056E-04 -6.7538E-04
-3.3563E-04 -3.0623E-04 -3.1629E-04 -3.6809E-04 -4.4347E-04 -3.3607E-04
-3.7355E-04 -3.7264E-04 -2.6071E-04 -4.2142E-04 -3.9174E-04 -4.0768E-04
-3.6934E-04 -3.2589E-04 -6.5564E-04 -6.3757E-04 -1.6626E-04 -2.4826E-04
-4.0403E-04 -2.6746E-04 -4.8325E-04 -8.9934E-05 -9.6767E-05 -3.1657E-06
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
4D      13      4 1262      18      2      0      0      12      0      0      5
0
5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56B SENS. OF 49F/25F TO 238U FISSION A= -1.2150E-03*
8D -5.2612E-07 -3.9923E-06 -1.2646E-05 -2.3965E-05 -2.0912E-05
-2.1613E-05 -5.5423E-05 -8.9653E-05 -1.0439E-04 -4.9301E-05 -5.8603E-05
-6.7379E-05 -7.7800E-05 -7.9008E-05 -5.4648E-05 -1.4880E-05 -4.2906E-05
-5.3603E-05 -7.2249E-05 -6.4991E-05 -6.0427E-05 -5.5100E-05 -4.8532E-05
-3.6128E-05 -2.4432E-05 -1.5690E-05 -9.6013E-06 -3.0025E-06 -9.6630E-07
-2.1704E-07 7.9149E-07 4.0273E-07 -5.9735E-07 -8.9545E-08 -1.9904E-07
-1.0264E-08 -1.9736E-07 2.0138E-08 1.1237E-07 1.6681E-07 2.0932E-07
2.8516E-07 4.0121E-07 3.7116E-07 2.4576E-07 2.3806E-07 2.0455E-07
2.6780E-07 1.7292E-07 1.6688E-07 2.0194E-07 2.0269E-07 2.1375E-08
8.3556E-09 1.8350E-08 4.7262E-08 9.1275E-08 1.9633E-07 1.9222E-07
9.9366E-08 9.0632E-08 8.9699E-08 1.0309E-07 1.2092E-07 9.6273E-08
1.0246E-07 9.1510E-08 7.5474E-08 1.0743E-07 1.0123E-07 1.0224E-07
9.9598E-08 9.2699E-08 2.0548E-07 2.2221E-07 6.3302E-08 9.9236E-08
1.6991E-07 1.4770E-07 3.1821E-07 9.1158E-08 2.3006E-07 5.3307E-08
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      0.0      0.0      0.0
0.0      0.0      0.0      2.4141E-14 2.7817E-14 1.7885E-14
1.0740E-14 1.1202E-14 2.3889E-14 1.1703E-13 3.0426E-13 2.4458E-12
6.6089E-11 2.1368E-07 7.5341E-11 3.9391E-07 2.2404E-12 2.9351E-13
7.1358E-14 -9.2308E-14 -1.2160E-13 -1.4174E-14 -3.1047E-14 -1.2814E-13
-8.5757E-14 -1.0030E-13 -1.9024E-13 -9.6744E-14 -8.6762E-15 -6.5330E-17
-1.2410E-18
4D      13      4 1262      102      2      0      0      12      0      0      5
0
5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *
7D *ZPR 3/56B SENS. OF 49F/25F TO 238U CAPTURE A= 7.1741E-02*
8D -1.5707E-09 -1.2473E-08 -5.7005E-08 -1.8194E-07 -2.3357E-07
-3.7042E-07 -1.4632E-06 -3.2887E-06 -5.2102E-06 -3.1027E-06 -3.8823E-06
-4.7958E-06 -6.1142E-06 -6.7611E-06 -5.0756E-06 -1.4830E-06 -4.4345E-06
-5.7437E-06 -8.1281E-06 -8.0692E-06 -8.5163E-06 -9.0097E-06 -1.0122E-05
-9.6776E-06 -8.4746E-06 -8.4817E-06 -8.7774E-06 -7.4351E-06 -5.4579E-06
-7.1428E-06 -5.2265E-06 -5.1355E-06 -8.9763E-06 -3.3894E-06 -8.0216E-06
-6.3431E-06 -1.3872E-05 -9.1223E-06 -4.5778E-06 1.4467E-06 6.3251E-06
1.1574E-05 2.1102E-05 3.3022E-05 4.0442E-05 5.1634E-05 6.5545E-05
1.2533E-04 1.1343E-04 1.4525E-04 2.1203E-04 2.7055E-04 3.2842E-05
1.2947E-05 2.8395E-05 7.4473E-05 1.5029E-04 3.5225E-04 3.9379E-04
2.1867E-04 2.1305E-04 2.2682E-04 2.7188E-04 3.3192E-04 2.7394E-04
3.0126E-04 3.0136E-04 2.5228E-04 3.6965E-04 3.8068E-04 3.9142E-04
4.0403E-04 3.8760E-04 9.3293E-04 1.0685E-03 3.2240E-04 5.1532E-04
9.3660E-04 8.9301E-04 2.3581E-03 7.4517E-04 1.9597E-03 1.8725E-03
2.6057E-03 1.0831E-03 8.8683E-04 3.9681E-04 8.6686E-04 1.6098E-03
1.0781E-03 1.4916E-03 2.5513E-03 4.1813E-03 4.5482E-03 4.2082E-03
3.3091E-03 3.4301E-03 2.8510E-03 1.3776E-03 6.1138E-04 3.6648E-04
1.4519E-04 1.0326E-04 2.1986E-04 8.1338E-04 9.6536E-04 3.1155E-03
2.3356E-03 2.1167E-03 2.0329E-03 2.5762E-03 9.8285E-04 2.6673E-04
1.6567E-04 1.8537E-04 9.6642E-05 2.6956E-06 1.8452E-05 1.0588E-04
1.0307E-04 6.8404E-05 1.1495E-05 1.1796E-06 6.9678E-08 4.2395E-08
1.6151E-08

```

4D 13 4 1264 4 2 3 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO 239PU TOTAL INELAS A= -6.4490E-03*

8D 1.1453E-08 -9.1757E-08 -8.6978E-07 -8.0578E-06 -1.7752E-05
-3.2876E-05 -1.0669E-04 -1.6575E-04 -1.7651E-04 -8.1003E-05 -8.7840E-05
-9.6798E-05 -1.1049E-04 -1.1067E-04 -7.7069E-05 -2.1833E-05 -6.3697E-05
-7.8907E-05 -1.0514E-04 -9.6952E-05 -9.6592E-05 -9.7174E-05 -1.0380E-04
-9.7255E-05 -8.4860E-05 -8.3673E-05 -8.3947E-05 -7.8923E-05 -6.2399E-05
-8.9712E-05 -8.7060E-05 -9.2132E-05 -1.2721E-04 -6.1752E-05 -1.0962E-04
-1.0553E-04 -1.4479E-04 -1.4416E-04 -1.4839E-04 -1.4139E-04 -1.4149E-04
-1.6072E-04 -1.6735E-04 -1.6401E-04 -1.5973E-04 -1.5727E-04 -1.4585E-04
-1.6398E-04 -1.0309E-04 -1.1003E-04 -1.2910E-04 -1.2090E-04 -1.2470E-05
-4.9813E-06 -1.0994E-05 -2.5683E-05 -4.7106E-05 -1.0267E-04 -9.9422E-05
-5.1422E-05 -4.6424E-05 -4.4700E-05 -4.3194E-05 -5.2166E-05 -3.2816E-05
-2.8738E-05 -2.7324E-05 -2.0663E-05 -3.1339E-05 -3.0518E-05 -3.1607E-05
-3.1347E-05 -2.5187E-05 -4.3915E-05 -4.3524E-05 -9.5412E-06 -1.4694E-05
-2.3025E-05 -1.7630E-05 -3.3052E-05 -4.8311E-06 -2.1828E-05 -2.2050E-05
-2.8050E-05 -3.5001E-06 -1.8109E-06 -1.3791E-06 -6.7777E-06 -1.3643E-05
-1.2486E-05 -1.8970E-05 -3.0739E-05 -4.2164E-05 -3.6143E-05 -1.3994E-05
-1.6791E-06 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0

4D 13 4 1264 18 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO 239PU FISSION A= 1.0726E 00*

8D 7.4739E-05 2.6184E-04 8.3259E-04 1.8831E-03 1.3910E-03
1.6287E-03 4.9218E-03 7.1539E-03 7.3153E-03 3.3920E-03 3.5465E-03
3.8472E-03 4.4126E-03 4.4835E-03 3.2123E-03 9.4030E-04 2.7913E-03
3.5193E-03 4.8061E-03 4.6386E-03 4.8736E-03 5.1037E-03 5.7755E-03
5.8261E-03 5.5212E-03 5.9223E-03 6.2549E-03 6.4807E-03 5.3582E-03
7.8966E-03 7.9800E-03 8.2346E-03 9.9984E-03 4.3911E-03 7.1613E-03
6.7263E-03 8.5162E-03 8.7500E-03 9.2464E-03 9.2271E-03 9.2600E-03
1.0348E-02 1.0947E-02 1.1087E-02 1.1198E-02 1.1893E-02 1.2273E-02
1.8219E-02 1.3369E-02 1.5746E-02 2.0415E-02 2.2282E-02 2.4361E-03
9.5909E-04 2.1060E-03 5.3203E-03 1.0056E-02 2.1437E-02 2.0658E-02
1.0418E-02 9.4366E-03 9.4231E-03 1.0853E-02 1.2825E-02 1.0126E-02
1.0747E-02 9.9729E-03 8.1055E-03 1.1659E-02 1.1374E-02 1.1468E-02
1.1267E-02 1.0305E-02 2.2806E-02 2.3569E-02 6.4121E-03 1.0092E-02
1.7426E-02 1.4618E-02 3.1149E-02 8.4516E-03 2.0302E-02 2.0093E-02
2.3563E-02 8.8160E-03 6.7351E-03 2.6710E-03 4.6609E-03 7.6320E-03
7.9939E-03 1.0587E-02 1.7218E-02 2.5162E-02 2.4602E-02 2.0592E-02
1.5955E-02 1.4484E-02 1.2169E-02 5.6264E-03 2.8899E-03 1.4630E-03
7.0375E-04 5.2819E-04 8.2426E-04 3.1906E-03 3.9325E-03 1.4625E-02
1.7260E-02 1.7241E-02 1.1421E-02 1.8166E-02 8.3782E-03 3.1050E-03
1.7664E-03 1.1975E-03 5.8106E-04 1.1746E-04 -9.6381E-06 -4.9943E-05
-2.3117E-04 -8.3110E-05 -4.8237E-05 -3.2716E-05 -1.2444E-05 -4.6633E-06
-4.7744E-07

4D 13 4 1264 102 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *

7D *ZPR 3/56E SENS. OF 49F/25F TO 239PU CAPTURE A= 3.2660E-02*

8D -8.0922E-10 -3.6826E-09 -4.6695E-09 -3.9277E-09 -4.4410E-09
-1.0427E-08 -5.8277E-08 -1.1019E-07 -1.5176E-07 -8.5916E-08 -1.0864E-07
-1.3704E-07 -1.7988E-07 -2.0748E-07 -1.6171E-07 -4.8160E-08 -1.4601E-07
-1.9285E-07 -2.7933E-07 -2.8001E-07 -2.9626E-07 -3.1493E-07 -3.5368E-07
-3.3741E-07 -2.9538E-07 -2.9587E-07 -3.0954E-07 -2.6652E-07 -1.9936E-07
-2.6605E-07 -1.9945E-07 -2.0557E-07 -3.9111E-07 -1.6330E-07 -4.2630E-07
-3.7521E-07 -9.3603E-07 -7.2561E-07 -4.3528E-07 1.6026E-07 8.0219E-07
1.6489E-06 3.3019E-06 5.5858E-06 7.3567E-06 1.0071E-05 1.3659E-05
2.8905E-05 2.9357E-05 4.1266E-05 6.5836E-05 8.8854E-05 1.0943E-05
4.3211E-06 9.4896E-06 2.4969E-05 5.0654E-05 1.1861E-04 1.2841E-04
6.8297E-05 6.4843E-05 6.7864E-05 8.1129E-05 9.9004E-05 8.1646E-05
8.9292E-05 8.8800E-05 7.3961E-05 1.0824E-04 1.1127E-04 1.1409E-04
1.1702E-04 1.1133E-04 2.6354E-04 3.1731E-04 1.1367E-04 1.8362E-04
3.1099E-04 2.6788E-04 7.0526E-04 2.1394E-04 5.3137E-04 5.5273E-04
6.9265E-04 2.8395E-04 2.3549E-04 1.0028E-04 1.7970E-04 3.0068E-04
3.1218E-04 4.4692E-04 7.9873E-04 1.3651E-03 1.5933E-03 1.5612E-03
1.3013E-03 1.5804E-03 1.4805E-03 7.3098E-04 3.0344E-04 1.5043E-04
8.7471E-05 5.6743E-05 1.2727E-04 4.6020E-04 7.9350E-04 2.3562E-03
1.5251E-03 1.7046E-03 1.4650E-03 2.5833E-03 1.1943E-03 6.1965E-04
1.9387E-04 2.4275E-04 1.1752E-04 1.0772E-04 5.4116E-05 4.2822E-05
1.0845E-04 1.8503E-05 2.4960E-06 2.8421E-06 1.0502E-06 4.5392E-06
3.5818E-07

4D 13 4 1265 18 2 0 0 12 0 0 5
0

5D *RESPONSE IS REACTION RATE 49F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/56B *

7D *ZPR 3/56B SENS. OF 49F/25F TO 240PU FISSION A= 5.0695E-04*
8D 5.1133E-09 -1.2843E-07 -4.2386E-07 -5.7793E-07 -6.6920E-07
-9.1409E-07 -2.4934E-06 -4.6650E-06 -6.3313E-06 -3.1501E-06 -3.9385E-06
-4.5234E-06 -5.0279E-06 -4.9574E-06 -3.4268E-06 -9.1718E-07 -2.6433E-06
-3.3692E-06 -4.6581E-06 -4.2085E-06 -3.9057E-06 -3.5674E-06 -2.9362E-06
-1.9809E-06 -1.1516E-06 -3.0840E-07 2.3273E-07 1.2091E-06 1.1812E-06
2.5091E-06 3.7769E-06 3.3278E-06 1.4769E-06 9.6792E-07 1.4182E-06
1.6940E-06 9.1985E-07 2.2838E-06 3.5774E-06 4.7492E-06 5.9338E-06
7.2817E-06 9.0063E-06 9.8295E-06 1.0049E-05 1.0887E-05 1.0625E-05
1.3836E-05 8.2737E-06 8.5072E-06 1.0448E-05 1.1016E-05 1.2031E-06
4.6087E-07 1.0057E-06 2.5840E-06 4.9615E-06 1.0476E-05 9.9920E-06
5.1281E-06 4.6182E-06 4.5349E-06 5.2742E-06 6.2198E-06 4.9782E-06
5.3358E-06 4.7227E-06 3.9524E-06 5.6538E-06 5.2545E-06 5.3137E-06
5.1396E-06 4.7759E-06 1.0401E-05 1.0633E-05 2.8772E-06 4.4192E-06
7.2685E-06 6.0087E-06 1.2954E-05 4.0680E-06 1.1752E-05 1.2245E-05
1.6789E-05 6.9954E-06 5.4169E-06 2.2790E-06 4.9923E-06 9.3182E-06
6.0506E-06 8.1046E-06 1.3313E-05 1.9568E-05 1.7534E-05 1.2591E-05
9.5913E-06 1.1136E-05 1.0664E-05 5.1219E-06 3.4767E-06 1.2579E-06
4.8480E-07 2.3610E-06 4.6837E-07 1.7575E-06 3.1470E-06 2.6007E-05
1.2145E-05 5.7383E-06 2.3283E-05 6.8429E-06 2.8064E-06 4.6673E-07
4.7521E-08 -5.2995E-07 -3.4084E-07 -5.0793E-10 -1.6643E-07 -3.4139E-09
-9.3552E-08 -3.3258E-10 -1.1318E-09 -1.3250E-08 -1.2354E-08 -2.3923E-11
-4.9891E-12

4D 8 1 1190 102 2 0 0 8 0 0 0
0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *

7D *ZPR 3/11 - SENS OF K TO NI CAPTURE A= -8.6474E-04*
8D -2.0999E-06 -8.9436E-06 -2.6300E-05 -5.0101E-05 -3.1566E-05
-3.5048E-05 -7.3415E-05 -8.7326E-05 -5.8158E-05 -1.5974E-05 -1.6702E-05
-1.4033E-05 -1.2378E-05 -1.1332E-05 -6.5549E-06 -1.6806E-06 -5.2930E-06
-6.6167E-06 -6.4177E-06 -5.5333E-06 -5.0106E-06 -4.6215E-06 -4.0179E-06
-3.7218E-06 -3.0933E-06 -2.8465E-06 -2.7345E-06 -2.5666E-06 -2.2185E-06
-2.0533E-06 -2.1114E-06 -2.0489E-06 -4.1273E-06 -1.6941E-06 -2.5530E-06
-2.1909E-06 -2.3360E-06 -2.3908E-06 -2.5207E-06 -2.8243E-06 -3.0107E-06
-3.1018E-06 -3.6042E-06 -3.6849E-06 -3.7025E-06 -3.7319E-06 -4.1721E-06
-8.6615E-06 -8.4847E-06 -8.7221E-06 -9.8279E-06 -9.9297E-06 -1.0714E-06
-3.8749E-07 -8.3288E-07 -2.3006E-06 -5.1389E-06 -9.2524E-06 -9.6900E-06
-4.5266E-06 -4.1920E-06 -4.3936E-06 -5.6038E-06 -4.8506E-06 -5.9029E-06
-5.3056E-06 -4.9590E-06 -3.9647E-06 -7.6531E-06 -4.6126E-06 -5.5356E-06
-6.1112E-06 -3.7558E-06 -1.2860E-05 -1.0031E-05 -3.7236E-06 -3.9860E-06
-8.5398E-06 -7.0033E-06 -1.4480E-05 -4.9171E-06 -1.3392E-05 -7.2079E-06
-7.6674E-06 -1.4086E-05 -3.2851E-06 -1.1532E-06 -5.0872E-06 -1.7636E-06
-4.3097E-06 -2.0868E-06 -7.5900E-06 -1.0564E-05 -1.2722E-05 -2.5728E-06
-3.5468E-07 -5.4010E-07 -5.4809E-07 -1.7853E-07 -6.8007E-08 -3.5099E-08
-2.0381E-08 -6.4350E-09 -4.7064E-09 -4.1929E-08 -1.2939E-08 -3.3011E-08
-1.7799E-08 -1.0642E-08 -7.0474E-09 -6.9506E-09 -2.2776E-09 -8.4269E-10
-4.5279E-10 -3.0529E-10 -2.8843E-10 -6.8699E-11 -3.5540E-11 -5.7655E-11
-2.9216E-11 -1.0901E-11 -3.7796E-11 -4.0842E-11 -2.4350E-11 -8.6334E-12
-4.8881E-12

4D 8 1 1191 102 2 0 0 8 0 0 0
0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *

7D *ZPR 3/11 - SENS OF K TO CR CAPTURE A= -4.9321E-04*
8D -1.1950E-06 -2.6910E-06 -5.3217E-06 -6.7864E-06 -2.8641E-06
-1.8221E-06 -3.0953E-06 -3.5601E-06 -2.9150E-06 -8.8925E-07 -8.9345E-07
-9.3458E-07 -9.7351E-07 -1.0003E-06 -7.4029E-07 -1.9399E-07 -5.7482E-07
-7.7821E-07 -1.1780E-06 -1.2162E-06 -1.2571E-06 -1.3194E-06 -1.4120E-06
-1.5452E-06 -1.7081E-06 -2.1145E-06 -2.7274E-06 -2.9466E-06 -2.9142E-06
-3.0176E-06 -3.2291E-06 -3.2905E-06 -7.3495E-06 -2.9584E-06 -4.5380E-06
-3.9712E-06 -4.2587E-06 -4.3928E-06 -4.6844E-06 -5.3023E-06 -5.1729E-06
-3.8605E-06 -4.3273E-06 -3.6624E-06 -4.5752E-06 -4.2118E-06 -3.3793E-06
-8.4428E-06 -9.1781E-06 -1.0289E-05 -8.6737E-06 -1.0633E-05 -4.0942E-07
-1.4929E-07 -2.8210E-07 -1.3967E-06 -3.1348E-06 -1.0424E-05 -1.0274E-05
-3.5907E-06 -4.1260E-06 -5.4530E-06 -1.6764E-06 -4.1017E-06 -6.0406E-06
-3.9592E-06 -4.5025E-06 -3.8097E-06 -4.3622E-06 -6.6515E-06 -1.1746E-05
-3.8540E-06 -5.7083E-06 -1.9343E-05 -1.9124E-05 -2.8603E-06 -2.8609E-06
-8.2891E-06 -4.3212E-06 -1.9172E-05 -5.9322E-06 -2.3487E-05 -7.6091E-06
-1.4878E-05 -1.2852E-05 -7.4679E-06 -4.3597E-06 -2.6498E-06 -5.9508E-06
-4.0350E-06 -1.6252E-05 -6.7801E-06 -6.6372E-06 -5.6496E-06 -3.1910E-06
-2.6318E-06 -5.6412E-06 -2.0909E-06 -6.5811E-07 -2.3407E-07 -1.0752E-07
-5.5930E-08 -1.6359E-08 -1.1508E-08 -1.1991E-08 -2.5837E-08 -1.3387E-06
-6.8888E-08 -1.7969E-08 -1.1347E-08 -1.0849E-08 -3.4567E-09 -1.2311E-09
-6.4926E-10 -4.2891E-10 -4.0679E-10 -9.8903E-11 -5.0038E-11 -8.1556E-11
-4.1179E-11 -1.5049E-11 -5.3860E-11 -5.8536E-11 -3.4869E-11 -1.2327E-11
-6.7762E-12

```

4D      8      1 1192      2      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO FE ELASTIC A= 7.1955E-03*
8D  2.4694E-07  9.3462E-07  1.0827E-06 -4.8097E-07  1.1289E-07
8.6605E-06  4.7084E-05  8.7489E-05  8.8662E-05  3.8806E-05  3.9849E-05
4.6140E-05  4.5251E-05  5.3576E-05  3.2699E-05  7.0697E-06  2.2693E-05
2.9112E-05  5.1172E-05  4.9288E-05  4.6002E-05  3.8356E-05  3.0476E-05
2.4453E-05  1.2684E-05  7.1226E-06 -1.1524E-05  1.6057E-05  5.8485E-05
8.6492E-05  5.5986E-05  5.2769E-05  1.8409E-04  7.1078E-05  7.0339E-05
9.1961E-05  1.2058E-04  1.9999E-04  2.4485E-04  2.3036E-04  2.1240E-04
1.5257E-04  1.1435E-04  1.3009E-04  1.8137E-04  1.8487E-04  2.2275E-04
4.0043E-04  5.0797E-04  5.0921E-04  3.1806E-04  3.1226E-04  1.4963E-05
5.8922E-06  1.3944E-05  5.4585E-05  1.4184E-04  1.6113E-04  1.8463E-04
1.0792E-04  8.9319E-05  1.3496E-04  1.2934E-04  5.5120E-05  8.6960E-05
4.2970E-05  6.1396E-05  5.5042E-05  7.9257E-05  1.7592E-05  1.3866E-05
2.1615E-05  2.6960E-05  5.2178E-05  7.2854E-05 -1.0022E-05  3.4067E-06
-1.1149E-04 -1.4978E-05 -2.0308E-05 -3.0465E-05  5.5763E-05  7.8659E-05
1.4226E-05 -8.3431E-06 -3.7931E-05  1.0975E-05  1.5970E-05  1.2195E-05
2.3536E-07 -1.8635E-06  7.8358E-06  1.3753E-05  1.4687E-05  1.3820E-05
1.9216E-05  1.1748E-05  3.5885E-06  3.3709E-07 -3.7887E-07  1.2659E-06
6.0535E-07  8.6539E-08  4.8191E-08  2.3243E-07  6.0774E-07  5.1188E-07
-2.5598E-07  7.5401E-07  4.6693E-07 -1.0826E-07  5.2353E-08 -2.6892E-08
-2.2388E-09  6.9682E-10  9.7730E-09 -2.2004E-09 -2.8716E-10 -3.6326E-10
7.7337E-12  4.6475E-11  1.3521E-10  9.3280E-11 -8.2162E-12 -8.3782E-13
-2.0294E-13
4D      8      1 1192      4      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO FE INELASTIC A= -5.4237E-03*
8D  -1.3601E-05 -6.7328E-05 -2.0477E-04 -3.8994E-04 -1.8564E-04
-1.5399E-04 -4.2098E-04 -6.9262E-04 -4.9684E-04 -1.2658E-04 -1.0157E-04
-9.2529E-05 -1.0045E-04 -1.2348E-04 -1.0285E-04 -2.8136E-05 -9.4375E-05
-1.5394E-04 -2.5839E-04 -2.9971E-04 -2.7658E-04 -2.4828E-04 -2.0406E-04
-2.1017E-04 -1.9228E-04 -1.5859E-04 -8.9573E-05 -3.4983E-05 -4.2867E-07
1.1453E-05  2.1781E-05  2.7599E-05  5.3711E-05  1.3626E-05 -1.1619E-05
-1.8341E-05  7.2115E-07  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
0.0  0.0  0.0  0.0  0.0  0.0
4D      8      1 1192  102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO FE CAPTURE A= -1.6947E-03*
8D  -6.2023E-06 -1.6730E-05 -3.6465E-05 -5.3394E-05 -2.6479E-05
-2.4652E-05 -4.6777E-05 -4.6564E-05 -3.0919E-05 -8.8193E-06 -8.0365E-06
-7.1608E-06 -6.4894E-06 -5.8334E-06 -3.4837E-06 -8.2118E-07 -2.3017E-06
-2.8791E-06 -3.8743E-06 -3.5555E-06 -3.2119E-06 -2.9553E-06 -2.8496E-06
-2.7669E-06 -2.7784E-06 -2.8302E-06 -2.7924E-06 -2.9086E-06 -3.0410E-06
-3.2029E-06 -3.6098E-06 -3.9128E-06 -9.9899E-06 -5.3447E-06 -9.3609E-06
-9.5044E-06 -1.1010E-05 -1.1794E-05 -1.2911E-05 -1.4988E-05 -1.6525E-05
-1.7963E-05 -1.9156E-05 -1.9542E-05 -2.0226E-05 -2.0618E-05 -2.0674E-05
-4.3258E-05 -4.2384E-05 -4.6416E-05 -4.7402E-05 -4.8369E-05 -5.6945E-06
-2.1577E-06 -4.3316E-06 -1.1534E-05 -2.2253E-05 -5.4024E-05 -5.4962E-05
-2.5546E-05 -2.1823E-05 -2.0436E-05 -1.9422E-05 -2.1231E-05 -1.8340E-05
-1.7408E-05 -1.6140E-05 -1.3455E-05 -1.5254E-05 -1.4929E-05 -1.6343E-05
-1.6758E-05 -1.6296E-05 -4.5095E-05 -5.1888E-05 -1.5157E-05 -1.6660E-05
-3.4954E-05 -2.5548E-05 -4.6920E-05 -2.8365E-05 -2.1776E-05 -1.4364E-05
-2.9683E-05 -3.2665E-05 -1.1683E-05 -2.0170E-05 -9.9260E-06 -8.2094E-06
-2.8052E-06 -1.6842E-05 -3.0900E-06 -1.5186E-06 -4.0865E-06 -5.2048E-06
-6.7505E-06 -3.3255E-06 -6.4770E-07 -5.4174E-07 -1.0702E-07 -5.4891E-08
-3.5146E-08 -1.1951E-08 -9.2643E-09 -1.6798E-08 -2.6863E-08 -1.7637E-07
-5.0149E-08 -2.1728E-06 -2.9506E-08 -2.9970E-08 -1.0191E-08 -3.8033E-09
-2.0070E-09 -1.3290E-09 -1.2895E-09 -3.1011E-10 -1.5648E-10 -2.5631E-10
-1.3032E-10 -4.7927E-11 -1.7018E-10 -1.8782E-10 -1.1287E-10 -3.9427E-11
-2.0544E-11

```



```

4D      8      1 1261      2      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO 235 U ELASTIC A= 7.2036E-03*
8D 4.1051E-07 1.7385E-06 4.7553E-06 9.8465E-06 6.9624E-06
1.1301E-05 4.1269E-05 6.7695E-05 6.7681E-05 2.5233E-05 2.7262E-05
2.9087E-05 3.0753E-05 3.1279E-05 2.1890E-05 5.4750E-06 1.6837E-05
2.3573E-05 3.6498E-05 3.6642E-05 3.7113E-05 3.7463E-05 3.6991E-05
3.6448E-05 3.3595E-05 3.0710E-05 2.9567E-05 3.8690E-05 4.5968E-05
5.2896E-05 5.7363E-05 6.0046E-05 1.5444E-04 6.2192E-05 1.0231E-04
8.7391E-05 9.7659E-05 9.8353E-05 1.0288E-04 1.2414E-04 1.3339E-04
1.4188E-04 1.5118E-04 1.6177E-04 1.5878E-04 1.6144E-04 1.5851E-04
3.2347E-04 2.9474E-04 3.2357E-04 3.3026E-04 3.1579E-04 3.7925E-05
1.4098E-05 2.7868E-05 7.1483E-05 1.2201E-04 2.6969E-04 2.3190E-04
1.1748E-04 9.3348E-05 9.3547E-05 7.8325E-05 1.1296E-04 8.8376E-05
8.5431E-05 8.2497E-05 5.3546E-05 6.4007E-05 5.5711E-05 7.2106E-05
6.8756E-05 5.9047E-05 1.1526E-04 1.2969E-04 2.1170E-05 3.8626E-05
3.8263E-05 3.5283E-05 6.8586E-05 2.0530E-05 5.3821E-05 1.2562E-04
3.1574E-05 1.7620E-05 6.5691E-06 6.0657E-07 5.2822E-06 2.5117E-05
7.4606E-06 6.2286E-06 2.2354E-05 2.2003E-05 1.5253E-05 7.2925E-06
3.1800E-06 5.2739E-06 2.2232E-06 3.2047E-07 -3.7415E-08 4.0468E-07
1.5778E-07 1.2783E-08 1.0170E-09 3.9185E-08 1.2998E-07 2.5910E-07
3.6703E-08 1.6224E-07 1.1351E-07 -1.6441E-08 9.1996E-09 -4.6821E-09
2.4981E-10 7.0785E-10 2.3236E-09 -2.7494E-10 -3.5124E-11 -1.0082E-11
2.0034E-11 1.0950E-11 3.0200E-11 1.6827E-11 -3.2938E-12 -3.9460E-13
-1.2495E-13
4D      8      1 1261      4      2      3      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO 235 U INELASTIC A= -5.4263E-03*
8D -1.0757E-06 -4.2058E-06 -2.3513E-05 -1.3754E-04 -1.5441E-04
-2.0922E-04 -5.8071E-04 -7.6730E-04 -6.5502E-04 -1.9945E-04 -1.9263E-04
-1.8906E-04 -1.8604E-04 -1.8248E-04 -1.2427E-04 -3.1189E-05 -9.6881E-05
-1.3511E-04 -2.2220E-04 -2.6512E-04 -3.0278E-04 -3.1518E-04 -3.0704E-04
-2.9319E-04 -2.6725E-04 -2.3415E-04 -1.8417E-04 -1.1129E-04 -5.4868E-05
-2.2843E-05 -2.0431E-06 2.3158E-05 1.3096E-04 6.9467E-05 1.1781E-04
1.1054E-04 1.2204E-04 1.2305E-04 1.2106E-04 1.2448E-04 1.1011E-04
9.1706E-05 9.5824E-05 1.0035E-04 8.7157E-05 7.8390E-05 6.1029E-05
9.3283E-05 4.9055E-05 4.1510E-05 1.9241E-05 -1.7039E-05 -3.8033E-06
-1.5216E-06 -3.2883E-06 -9.8612E-06 -2.0978E-05 -3.1598E-05 -2.2789E-05
-1.5640E-05 -1.9892E-05 -2.3881E-05 -2.4348E-05 -2.6396E-05 -2.8435E-05
-2.8574E-05 -3.0394E-05 -3.0533E-05 -3.3566E-05 -3.5053E-05 -3.4703E-05
-4.0184E-05 -3.7381E-05 -9.1242E-05 -6.9024E-05 -1.3717E-05 -1.4177E-05
-2.6668E-05 -1.1468E-05 -6.4725E-06 4.0218E-06 1.7800E-06 2.5058E-07
-6.8905E-07 -2.1586E-07 5.4702E-08 1.3643E-07 2.0517E-07 4.4003E-07
3.5354E-07 4.5528E-07 7.4736E-07 5.2449E-07 1.0441E-07 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
4D      8      1 1261      18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO 235 U FISSION A= 5.0042E-01*
8D 4.2942E-05 1.4272E-04 4.4389E-04 1.0138E-03 7.4513E-04
8.6620E-04 2.4497E-03 3.5921E-03 3.4612E-03 1.3089E-03 1.3918E-03
1.4707E-03 1.5581E-03 1.6261E-03 1.1287E-03 2.9186E-04 8.7180E-04
1.1962E-03 1.8264E-03 1.8882E-03 1.9508E-03 2.0046E-03 2.0643E-03
2.1197E-03 2.1809E-03 2.2706E-03 2.4332E-03 2.6659E-03 2.8155E-03
3.0326E-03 3.3291E-03 3.4624E-03 7.9315E-03 3.3764E-03 5.0926E-03
4.3755E-03 4.6175E-03 4.6680E-03 4.8836E-03 5.4565E-03 5.8436E-03
6.2134E-03 6.5874E-03 6.7982E-03 6.9744E-03 7.2009E-03 7.1989E-03
1.5260E-02 1.5162E-02 1.6627E-02 1.6680E-02 1.6860E-02 1.9964E-03
7.4624E-04 1.4979E-03 3.9982E-03 7.6550E-03 1.5942E-02 1.4991E-02
7.4304E-03 6.7906E-03 6.7946E-03 6.7262E-03 7.6840E-03 6.8109E-03
6.6395E-03 6.3393E-03 5.3417E-03 6.1615E-03 6.0905E-03 6.6387E-03
6.6322E-03 5.9419E-03 1.3020E-02 1.3626E-02 4.0886E-03 4.6373E-03
1.0301E-02 7.7565E-03 1.5742E-02 6.7854E-03 9.9367E-03 8.9212E-03
7.6150E-03 4.1322E-03 2.9910E-03 1.1696E-03 1.5305E-03 3.1133E-03
2.3490E-03 3.1531E-03 3.6174E-03 3.9256E-03 2.9740E-03 1.6617E-03
8.4117E-04 9.5177E-04 5.5233E-04 2.3581E-04 1.1987E-04 7.5301E-05
4.4011E-05 1.3871E-05 1.0513E-05 1.2304E-05 2.6379E-05 8.6872E-05
4.1056E-05 3.1185E-05 1.4750E-05 1.4153E-05 4.7981E-06 1.5949E-06
7.9182E-07 5.6323E-07 4.3634E-07 8.7896E-08 5.1298E-08 9.1617E-08
4.8593E-08 1.7212E-08 1.0662E-08 5.8540E-09 2.5029E-09 1.4271E-09
6.7269E-10

```



```

4D      8      1 1262      18      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO 238 U FISSION A= 1.4842E-01*
8D  1.9484E-04  6.5283E-04  1.9542E-03  4.7116E-03  3.5509E-03
3.8262E-03  9.9376E-03  1.4073E-02  1.2806E-02  4.6491E-03  4.8988E-03
5.1434E-03  5.4103E-03  5.6094E-03  3.8643E-03  9.9573E-04  2.9656E-03
4.0530E-03  6.1549E-03  6.3053E-03  6.3511E-03  6.2401E-03  6.0294E-03
5.6846E-03  5.2430E-03  4.5791E-03  3.6394E-03  2.3155E-03  1.2805E-03
8.6741E-04  8.2435E-04  6.8738E-04  9.8636E-04  3.5533E-04  4.8600E-04
2.5625E-04  1.7497E-04  1.0920E-04  7.7994E-05  6.4083E-05  5.5150E-05
5.6618E-05  5.8192E-05  4.3873E-05  2.5593E-05  2.0099E-05  1.4181E-05
2.1702E-05  1.6032E-05  1.3172E-05  1.0977E-05  8.9781E-06  9.2406E-07
3.4243E-07  6.8409E-07  1.8018E-06  3.3567E-06  6.6614E-06  5.8992E-06
2.7776E-06  2.4718E-06  2.3557E-06  2.2495E-06  2.4616E-06  2.1108E-06
1.9928E-06  1.8353E-06  1.5010E-06  1.6727E-06  1.6219E-06  1.6945E-06
1.6458E-06  1.4493E-06  3.0084E-06  3.1013E-06  9.2186E-07  1.0202E-06
2.1772E-06  1.6424E-06  3.2966E-06  1.3272E-06  2.0938E-06  4.1747E-07
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
1.0493E-14  4.4627E-15  4.9620E-15  6.0395E-15  1.7984E-14  1.1009E-13
1.8297E-12  3.8466E-09  1.0965E-12  3.0534E-09  2.0556E-14  3.4323E-15
1.7174E-15  7.1882E-16  6.7517E-16  7.4512E-17  5.7660E-17  1.1459E-16
8.1383E-17  3.3011E-17  9.7039E-17  6.8822E-17  1.4305E-17  7.1133E-19
2.2157E-20

```

```

4D      8      1 1262     102      2      0      0      8      0      0      0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR ZPR 3/11 *
7D *ZPR 3/11 - SENS OF K TO 238 U CAPTURE A= -2.2544E-01*
8D -2.3376E-07 -1.2104E-06 -5.4355E-06 -1.7379E-05 -1.6033E-05
-2.3781E-05 -9.3142E-05 -2.1280E-04 -2.9959E-04 -1.3565E-04 -1.5843E-04
-1.8356E-04 -2.1324E-04 -2.4325E-04 -1.8053E-04 -4.8053E-05 -1.4732E-04
-2.1193E-04 -3.4663E-04 -3.9085E-04 -4.3475E-04 -4.7595E-04 -5.2042E-04
-5.6360E-04 -6.0735E-04 -6.5409E-04 -7.0758E-04 -7.6454E-04 -8.1521E-04
-9.1169E-04 -1.0470E-03 -1.1256E-03 -2.7325E-03 -1.2320E-03 -1.9099E-03
-1.6849E-03 -1.8112E-03 -1.8701E-03 -1.9829E-03 -2.2179E-03 -2.3594E-03
-2.4853E-03 -2.6054E-03 -2.6792E-03 -2.7505E-03 -2.8352E-03 -2.8202E-03
-5.8970E-03 -5.8031E-03 -6.3720E-03 -6.4958E-03 -6.6609E-03 -7.8882E-04
-2.9538E-04 -5.9397E-04 -1.5917E-03 -3.0837E-03 -6.5584E-03 -6.4435E-03
-3.3145E-03 -3.1249E-03 -3.1447E-03 -3.1250E-03 -3.5430E-03 -3.1540E-03
-3.0964E-03 -2.9813E-03 -2.5534E-03 -2.9624E-03 -2.9661E-03 -3.2190E-03
-3.2416E-03 -2.9419E-03 -6.5352E-03 -7.0802E-03 -2.1799E-03 -2.4741E-03
-5.4970E-03 -4.4561E-03 -1.0046E-02 -4.4430E-03 -7.1686E-03 -5.6611E-03
-5.4262E-03 -2.7566E-03 -2.0697E-03 -8.5732E-04 -1.1261E-03 -2.3525E-03
-1.7176E-03 -2.2254E-03 -2.7541E-03 -3.0562E-03 -2.3181E-03 -1.3129E-03
-7.0804E-04 -7.3838E-04 -4.3503E-04 -1.7883E-04 -9.3518E-05 -6.7565E-05
-4.0452E-05 -1.1985E-05 -9.8982E-06 -1.4253E-05 -2.3069E-05 -5.6222E-05
-2.3607E-05 -1.8078E-05 -9.3476E-06 -8.1375E-06 -2.2484E-06 -6.5797E-07
-3.7380E-07 -2.5289E-07 -2.4076E-07 -5.0258E-09 -1.9638E-08 -4.4191E-08
-2.7772E-08 -1.2605E-08 -4.2364E-09 -1.8903E-09 -8.9782E-10 -2.7515E-10
-1.3488E-10

```

```

4D      8      4 1190     102      2      0      0     12      0      0      3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28C/25F TO NI CAPT(CENT. REG A= -1.3331E-04*
8D  1.4092E-07  5.9395E-07  1.8311E-06  3.2039E-06  2.1851E-06
2.2240E-06  4.6281E-06  6.0557E-06  4.4489E-06  1.1967E-06  1.2269E-06
1.0024E-06  8.9087E-07  8.2133E-07  4.6427E-07  1.1899E-07  3.7124E-07
4.4516E-07  4.0304E-07  3.1424E-07  2.4191E-07  2.2319E-07  1.7549E-07
1.3577E-07  9.1574E-08  5.2207E-08  2.1372E-08 -3.3097E-08 -7.5525E-08
-1.0679E-07 -1.5547E-07 -1.7351E-07 -3.4888E-07 -1.8029E-07 -2.6212E-07
-2.3017E-07 -2.2226E-07 -1.9895E-07 -1.2766E-07 -5.5710E-08  2.2166E-08
5.6139E-08  7.4822E-08  6.9053E-08  5.7529E-08  3.7623E-08  2.3073E-08
-3.4207E-08 -1.9111E-07 -4.0077E-07 -7.3920E-07 -1.0536E-06 -1.3600E-07
-5.1211E-08 -1.1363E-07 -3.3219E-07 -7.9942E-07 -1.6800E-06 -2.1125E-06
-1.1448E-06 -1.1410E-06 -1.2592E-06 -1.6724E-06 -1.5155E-06 -1.9419E-06
-1.8309E-06 -1.7909E-06 -1.4957E-06 -3.0105E-06 -1.8965E-06 -2.4031E-06
-2.7988E-06 -1.8179E-06 -6.4663E-06 -5.4236E-06 -2.2014E-06 -2.4250E-06
-5.4330E-06 -5.0231E-06 -1.1120E-05 -4.1545E-06 -1.1707E-05 -5.8846E-06
-7.0242E-06 -1.3714E-05 -3.3419E-06 -1.1989E-06 -5.2472E-06 -1.8352E-06
-4.2103E-06 -2.0692E-06 -7.8619E-06 -1.0561E-05 -1.1616E-05 -2.0918E-06
-2.6100E-07 -3.4556E-07 -2.8631E-07 -7.7830E-08 -2.9788E-08 -1.5413E-08
-5.9492E-09 -1.1770E-09 -7.3257E-10 -5.1509E-09 -3.3263E-10  2.8106E-09
3.2059E-09  1.6209E-09  2.1475E-09  3.5575E-09  1.1979E-09  5.8260E-10
2.5730E-10  1.7868E-10  1.2657E-10  7.8882E-11  2.5314E-11  2.7745E-11
-7.3200E-12 -1.2130E-11  1.9860E-11  3.3700E-11  2.2872E-11  9.0835E-12
5.6914E-12

```


4D 8 4 1261 18 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *

7D *ZPR 3/11 - SENS. OF 28C/25F TO 235 U FISS(CENT. REG A= -1.0758E 00*
8D -7.4166E-05 -2.4872E-04 -8.2405E-04 -1.8584E-03 -1.2716E-03
-1.4518E-03 -4.2946E-03 -6.7918E-03 -6.9495E-03 -2.6897E-03 -2.8878E-03
-3.0778E-03 -3.2820E-03 -3.4421E-03 -2.3960E-03 -6.1970E-04 -1.8531E-03
-2.5482E-03 -3.9067E-03 -4.0587E-03 -4.2015E-03 -4.3078E-03 -4.4239E-03
-4.5185E-03 -4.6153E-03 -4.7520E-03 -5.0106E-03 -5.3970E-03 -5.6569E-03
-6.0950E-03 -6.7226E-03 -7.0013E-03 -1.6007E-02 -6.8608E-03 -1.0338E-02
-8.8946E-03 -9.3786E-03 -9.4838E-03 -9.8855E-03 -1.1000E-02 -1.1757E-02
-1.2512E-02 -1.3303E-02 -1.3768E-02 -1.4192E-02 -1.4708E-02 -1.4759E-02
-3.1449E-02 -3.1502E-02 -3.4795E-02 -3.5150E-02 -3.5809E-02 -4.2642E-03
-1.5956E-03 -3.2054E-03 -8.5774E-03 -1.6466E-02 -3.4428E-02 -3.2630E-02
-1.6297E-02 -1.4951E-02 -1.5022E-02 -1.4903E-02 -1.7041E-02 -1.5157E-02
-1.4797E-02 -1.4170E-02 -1.1991E-02 -1.3849E-02 -1.3683E-02 -1.4947E-02
-1.4966E-02 -1.3425E-02 -2.9476E-02 -3.0859E-02 -9.3403E-03 -1.0563E-02
-2.3470E-02 -1.7704E-02 -3.5790E-02 -1.5484E-02 -2.2493E-02 -1.9420E-02
-1.6973E-02 -9.3333E-03 -6.8236E-03 -2.6730E-03 -3.4687E-03 -7.0351E-03
-5.2263E-03 -6.9815E-03 -7.9830E-03 -8.6613E-03 -6.5132E-03 -3.6041E-03
-1.8423E-03 -2.1131E-03 -1.2240E-03 -5.1850E-04 -2.6005E-04 -1.6257E-04
-9.3468E-05 -2.8943E-05 -2.1350E-05 -2.5456E-05 -5.4930E-05 -1.8463E-04
-8.6006E-05 -6.1887E-05 -2.8958E-05 -2.7624E-05 -9.0150E-06 -2.9015E-06
-1.5230E-06 -1.2013E-06 -9.5859E-07 -1.3186E-07 -1.0782E-07 -2.0010E-07
-1.1480E-07 -4.5484E-08 -1.9941E-08 -9.6146E-09 -4.1113E-09 -2.2151E-09
-1.0988E-09

4D 8 4 1261 102 2 0 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *

7D *ZPR 3/11 - SENS. OF 28C/25F TO 235 U CAPT(CENT. REG A= -2.2031E-02*
8D 5.1701E-09 2.5627E-08 1.4499E-07 4.6662E-07 4.5727E-07
5.4390E-07 1.8918E-06 3.9852E-06 5.2446E-06 2.1451E-06 2.3360E-06
2.5258E-06 2.8157E-06 3.0878E-06 2.1803E-06 5.7364E-07 1.7253E-06
2.3394E-06 3.4859E-06 3.4394E-06 3.1954E-06 3.4334E-06 3.3595E-06
3.0372E-06 2.7039E-06 1.9668E-06 1.2368E-06 -5.5183E-07 -2.6543E-06
-4.9125E-06 -8.3633E-06 -1.0666E-05 -2.6103E-05 -1.5328E-05 -2.3054E-05
-2.1188E-05 -2.0869E-05 -1.8875E-05 -1.1369E-05 -2.9845E-06 6.7223E-06
1.2064E-05 1.4710E-05 1.5081E-05 1.4608E-05 1.2904E-05 1.0982E-05
1.3003E-05 -1.0288E-05 -4.6909E-05 -9.4952E-05 -1.5347E-04 -2.3126E-05
-9.1024E-06 -1.9040E-05 -5.4878E-05 -1.1723E-04 -3.0193E-04 -3.6061E-04
-2.1323E-04 -2.1383E-04 -2.2865E-04 -2.4000E-04 -2.9003E-04 -2.7628E-04
-2.8779E-04 -2.9262E-04 -2.6287E-04 -3.2057E-04 -3.3682E-04 -3.9091E-04
-4.1683E-04 -3.9980E-04 -9.2881E-04 -1.0684E-03 -3.5932E-04 -4.2024E-04
-9.9536E-04 -8.4044E-04 -1.8547E-03 -8.7469E-04 -1.3385E-03 -1.1571E-03
-1.1633E-03 -6.6964E-04 -5.1140E-04 -2.0525E-04 -2.6705E-04 -5.3690E-04
-4.0528E-04 -5.2099E-04 -6.7922E-04 -7.0683E-04 -5.0422E-04 -2.8455E-04
-1.4638E-04 -1.3536E-04 -5.8364E-05 -2.2450E-05 -9.8928E-06 -7.1683E-06
-2.8497E-06 -5.3582E-07 -3.3093E-07 -3.3800E-07 -8.5337E-08 2.4595E-06
2.3612E-06 1.9613E-06 2.3108E-06 3.2992E-06 1.0989E-06 6.5635E-07
2.5725E-07 1.6527E-07 8.7026E-08 9.4520E-08 1.9338E-08 2.1457E-08
-4.8422E-09 -4.7820E-09 3.4425E-09 3.6216E-09 1.6350E-09 1.3564E-09
6.2422E-10

4D 8 4 1262 2 2 3 0 12 0 0 3
0

5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *

7D *ZPR 3/11 - SENS. OF 28C/25F TO 238 U ELAS(CENT. REG A= 4.5164E-02*
8D -4.9107E-07 -1.9846E-06 -4.9649E-06 -1.1015E-05 -6.8480E-06
-1.0625E-05 -3.6594E-05 -6.6302E-05 -6.8121E-05 -2.3761E-05 -2.4481E-05
-2.9579E-05 -3.2364E-05 -2.9674E-05 -2.2172E-05 -4.5471E-06 -1.1280E-05
-1.3299E-05 -1.9905E-05 -1.1602E-05 -2.7699E-05 -1.7275E-05 -8.9278E-06
-5.8624E-06 9.2940E-06 1.3015E-05 4.5471E-05 6.1252E-05 6.8847E-05
1.0167E-04 9.3367E-05 6.0775E-05 2.6862E-04 6.2432E-05 1.4605E-04
4.6605E-05 1.9224E-05 -1.7402E-04 -2.4682E-04 -3.1468E-04 -2.1687E-04
-1.5057E-04 -1.0179E-04 -7.1502E-05 -2.7446E-05 -2.2619E-05 9.1617E-05
2.8453E-04 5.3155E-04 9.1127E-04 1.1957E-03 1.1368E-03 2.9167E-04
1.2991E-04 2.5375E-04 4.8570E-04 1.0501E-03 1.9410E-03 1.9122E-03
1.1082E-03 8.5121E-04 8.1654E-04 8.2753E-04 1.1569E-03 1.0044E-03
9.7323E-04 9.6175E-04 7.4897E-04 9.9346E-04 1.0457E-03 1.2988E-03
1.4164E-03 1.0426E-03 2.0561E-03 2.5866E-03 6.3121E-04 1.3579E-03
2.5511E-03 2.1163E-03 2.7110E-03 1.2177E-03 5.4391E-04 2.1473E-03
9.2061E-04 7.5903E-04 2.8775E-04 4.0017E-05 1.3663E-04 1.5783E-04
2.9995E-04 5.3405E-04 2.2505E-04 1.7889E-04 8.1660E-05 3.2272E-05
-1.7737E-05 -1.1414E-05 -5.3209E-06 5.4018E-06 1.3942E-06 -7.6167E-06
-4.3515E-06 -9.4007E-07 -4.2592E-07 -1.8923E-06 -2.0629E-06 -4.3691E-06
3.5207E-07 -1.1912E-06 -7.8767E-07 -2.1048E-07 -1.0070E-07 3.4851E-08
-8.2454E-09 3.8802E-08 -5.1500E-09 7.1650E-09 9.7066E-09 2.5537E-09
4.2358E-10 -1.9195E-10 -3.1016E-10 -2.3376E-10 -1.4029E-11 1.6504E-13
4.8970E-13

4D 8 4 1262 4 2 3 0 12 0 0 3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28C/25F TO 238 U INEL(CENT. REG A= 1.4197E-01*
8D 2.6409E-06 1.4025E-05 8.3096E-05 4.6565E-04 6.5631E-04
8.9114E-04 2.6745E-03 3.9919E-03 3.8168E-03 1.4697E-03 1.5870E-03
1.6976E-03 1.7573E-03 1.7523E-03 1.1827E-03 2.9686E-04 8.6932E-04
1.1697E-03 1.7568E-03 1.7289E-03 1.7991E-03 1.6803E-03 1.6138E-03
1.5584E-03 1.4769E-03 1.4690E-03 1.4725E-03 1.6378E-03 1.7226E-03
1.7235E-03 1.9002E-03 1.8586E-03 2.8732E-03 1.0872E-03 1.2251E-03
8.9610E-04 1.1072E-03 1.2340E-03 9.1643E-04 5.3556E-04 9.0521E-05
3.6835E-05 3.0695E-04 5.3627E-04 6.5992E-04 8.8860E-04 9.2871E-04
2.8079E-03 3.4605E-03 4.4705E-03 4.7868E-03 5.7449E-03 5.6763E-04
1.9651E-04 4.1271E-04 1.3461E-03 2.2891E-03 5.5199E-03 4.9367E-03
2.1901E-03 1.9845E-03 2.0225E-03 2.0170E-03 2.4416E-03 2.2260E-03
2.2543E-03 2.1452E-03 1.6071E-03 1.9536E-03 1.8521E-03 2.2218E-03
2.1242E-03 2.1979E-03 4.6344E-03 4.0260E-03 1.0914E-03 1.0852E-03
2.1035E-03 1.0700E-03 1.2217E-03 4.5316E-05 -1.5680E-04 -2.2291E-05
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0

4D 8 4 1262 18 2 0 0 12 0 0 3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28C/25F TO 238 U PISS(CENT. REG A= 6.1249E-03*
8D 1.6881E-05 4.8926E-05 1.5332E-04 2.9105E-04 1.8128E-04
1.5904E-04 4.1046E-04 6.7911E-04 7.1633E-04 2.5654E-04 2.6636E-04
2.7438E-04 2.9203E-04 3.0516E-04 2.0531E-04 5.2717E-05 1.5551E-04
2.0424E-04 2.9101E-04 2.7240E-04 2.3523E-04 2.2877E-04 1.9919E-04
1.5780E-04 1.1979E-04 7.1139E-05 3.4293E-05 -2.1967E-06 -1.3278E-05
-1.5539E-05 -2.2396E-05 -2.1449E-05 -2.8416E-05 -1.3553E-05 -1.7103E-05
-9.0707E-06 -5.3251E-06 -2.7008E-06 -7.4669E-07 3.4924E-07 1.0492E-06
1.4361E-06 1.6005E-06 1.2179E-06 6.8683E-07 5.0799E-07 3.3982E-07
4.4610E-07 2.0705E-07 3.2357E-08 -1.1225E-07 -2.1409E-07 -3.1049E-08
-1.2275E-08 -2.5817E-08 -7.4961E-08 -1.5607E-07 -3.8332E-07 -4.3328E-07
-2.4914E-07 -2.3784E-07 -2.4621E-07 -2.4403E-07 -2.8315E-07 -2.5605E-07
-2.5173E-07 -2.4546E-07 -2.1023E-07 -2.4492E-07 -2.4176E-07 -2.7286E-07
-2.7954E-07 -2.5556E-07 -5.5281E-07 -6.0344E-07 -1.9377E-07 -2.2092E-07
-4.8034E-07 -4.0246E-07 -8.3067E-07 -3.7241E-07 -5.8379E-07 -9.8170E-08
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 -9.4416E-16 -1.1388E-15 -9.2558E-16
-1.5761E-16 1.4746E-16 3.7861E-16 3.4362E-16 1.4343E-15 1.3565E-14
3.3089E-13 6.2606E-10 3.1349E-13 1.5408E-09 8.5512E-15 2.1887E-15
8.0588E-16 3.9609E-16 2.6063E-16 1.3946E-16 4.2421E-17 4.8252E-17
-9.5466E-18 -1.7472E-17 3.6058E-17 5.8024E-17 2.5247E-17 1.3528E-18
6.0163E-20

4D 8 4 1262 102 2 0 0 12 0 0 3
0
5D *RESPONSE IS REACTION RATE 28C/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28C/25F TO 238 U CAPT(CENT. REG A= 9.1217E-01*
8D 3.9955E-07 2.4272E-06 1.1720E-05 4.3206E-05 4.8581E-05
8.0352E-05 3.2744E-04 7.4795E-04 1.0513E-03 4.8228E-04 5.6637E-04
6.5810E-04 7.6793E-04 8.8151E-04 6.5887E-04 1.7630E-04 5.4190E-04
7.8308E-04 1.2870E-03 1.4589E-03 1.6394E-03 1.8195E-03 2.0215E-03
2.2337E-03 2.4645E-03 2.7397E-03 3.0892E-03 3.5052E-03 3.8531E-03
4.3631E-03 5.0312E-03 5.4390E-03 1.3280E-02 5.9900E-03 9.3056E-03
8.2062E-03 8.8346E-03 9.0933E-03 9.6120E-03 1.0711E-02 1.1306E-02
1.1792E-02 1.2265E-02 1.2498E-02 1.2724E-02 1.2994E-02 1.2815E-02
2.6504E-02 2.5700E-02 2.7945E-02 2.8132E-02 2.8477E-02 3.3579E-03
1.2548E-03 2.5192E-03 6.7390E-03 1.2991E-02 2.7438E-02 2.6667E-02
1.3664E-02 1.2720E-02 1.2844E-02 1.2675E-02 1.4418E-02 1.2738E-02
1.2404E-02 1.1930E-02 1.0159E-02 1.1782E-02 1.1647E-02 1.2736E-02
1.2776E-02 1.1463E-02 2.5402E-02 2.7269E-02 8.2755E-03 9.4286E-03
2.0589E-02 1.6631E-02 3.6709E-02 1.6492E-02 2.6265E-02 2.0030E-02
1.8596E-02 9.8843E-03 7.3487E-03 3.0230E-03 3.9456E-03 8.3812E-03
5.7860E-03 7.5200E-03 9.2589E-03 1.0121E-02 7.5272E-03 4.1485E-03
2.2120E-03 2.3878E-03 1.3461E-03 5.4136E-04 2.7286E-04 2.0027E-04
1.1863E-04 3.5008E-05 2.7357E-05 4.3638E-05 7.2775E-05 1.8938E-04
8.1794E-05 6.1897E-05 2.8402E-05 2.3348E-05 7.5928E-06 1.9684E-06
1.2107E-06 9.7060E-07 9.0066E-07 1.6204E-08 7.5713E-08 1.7194E-07
1.1870E-07 5.0977E-08 1.6416E-08 5.4845E-09 2.0179E-09 7.0760E-10
3.8932E-10

4D 8 4 1190 102 2 0 0 12 0 0 4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28F/25F TO NI CAPT(CENT. REG A= 2.1530E-05*
8D -2.0286E-06 -8.6208E-06 -2.6061E-05 -5.5784E-05 -3.6784E-05
-3.2048E-05 -6.0268E-05 -7.8759E-05 -5.6617E-05 -1.4971E-05 -1.5455E-05
-1.2972E-05 -1.1288E-05 -1.0060E-05 -5.6291E-06 -1.4146E-06 -4.3871E-06
-5.3519E-06 -5.0431E-06 -4.2214E-06 -3.5386E-06 -2.9141E-06 -2.1487E-06
-1.4968E-06 -7.2353E-07 -6.4304E-09 8.3921E-07 1.7585E-06 2.1036E-06
2.1676E-06 2.3030E-06 2.3252E-06 4.8819E-06 2.0667E-06 3.1696E-06
2.8056E-06 3.0385E-06 3.1415E-06 3.3262E-06 3.7352E-06 3.9893E-06
4.1168E-06 4.7951E-06 4.9160E-06 4.9536E-06 4.9997E-06 5.5949E-06
1.1627E-05 1.1403E-05 1.1733E-05 1.3224E-05 1.3366E-05 1.4433E-06
5.2196E-07 1.1219E-06 3.1001E-06 6.9241E-06 1.2463E-05 1.3055E-05
6.1038E-06 5.6469E-06 5.9266E-06 7.5551E-06 6.5433E-06 7.9594E-06
7.1470E-06 6.6830E-06 5.3427E-06 1.0314E-05 6.2027E-06 7.4542E-06
8.2262E-06 5.0469E-06 1.7280E-05 1.3459E-05 4.9917E-06 5.3426E-06
1.1416E-05 9.3509E-06 1.9253E-05 6.5525E-06 1.7784E-05 9.4656E-06
1.0061E-05 1.8651E-05 4.3480E-06 1.5248E-06 6.7080E-06 2.3307E-06
5.6383E-06 2.7307E-06 9.9169E-06 1.3784E-05 1.6559E-05 3.3362E-06
4.6069E-07 7.6789E-07 7.1542E-07 2.3238E-07 8.7977E-08 4.564E-08
2.6314E-08 8.2884E-09 5.9459E-09 5.4101E-08 1.6878E-08 4.3696E-08
2.3644E-08 1.3934E-08 9.1265E-09 8.9995E-09 2.9721E-09 1.0941E-09
5.9645E-10 4.1657E-10 3.9266E-10 9.1551E-11 4.8585E-11 7.8738E-11
4.0118E-11 1.5000E-11 5.0456E-11 5.2909E-11 3.1196E-11 1.1241E-11
6.4983E-12

4D 8 4 1191 102 2 0 0 12 0 0 4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28F/25F TO CR CAPT(CENT. REG A= 5.3905E-04*
8D -1.1477E-06 -2.5790E-06 -5.2439E-06 -7.5171E-06 -3.3206E-06
-1.6567E-06 -2.5257E-06 -3.1921E-06 -2.8215E-06 -8.2854E-07 -8.2186E-07
-8.5872E-07 -8.8240E-07 -8.8257E-07 -6.3170E-07 -1.6224E-07 -4.7334E-07
-6.2527E-07 -9.1940E-07 -9.2140E-07 -8.8128E-07 -8.2536E-07 -7.4842E-07
-6.1473E-07 -3.9296E-07 1.8229E-09 8.4294E-07 2.0217E-06 2.7636E-06
3.1848E-06 3.5210E-06 3.7325E-06 8.6876E-06 3.6063E-06 5.6294E-06
5.0803E-06 5.5334E-06 5.7653E-06 6.1736E-06 7.0032E-06 6.8449E-06
5.1164E-06 5.7486E-06 4.8785E-06 6.1116E-06 5.6335E-06 4.5243E-06
1.1315E-05 1.2313E-05 1.3816E-05 1.1650E-05 1.4287E-05 5.5049E-07
2.0073E-07 3.7930E-07 1.8785E-06 4.2160E-06 1.4017E-05 1.3817E-05
4.8337E-06 5.5482E-06 7.3438E-06 2.2559E-06 5.5227E-06 8.1298E-06
5.3230E-06 6.0564E-06 5.1240E-06 5.8676E-06 8.9256E-06 1.5787E-05
5.1780E-06 7.6558E-06 2.5942E-05 2.5608E-05 3.8269E-06 3.8272E-06
1.1059E-05 5.7582E-06 2.5438E-05 7.8895E-06 3.1124E-05 9.9681E-06
1.9479E-05 1.6986E-05 9.8650E-06 5.7528E-06 3.4867E-06 7.8493E-06
5.2670E-06 2.1221E-05 8.8404E-06 8.6423E-06 7.3387E-06 4.1289E-06
3.4112E-06 7.3811E-06 2.7242E-06 8.5502E-07 3.0218E-07 1.3887E-07
7.2051E-08 2.1020E-08 1.4490E-08 1.5435E-08 3.3635E-08 1.7712E-06
3.9381E-08 2.3477E-08 1.4656E-08 1.4010E-08 4.4992E-09 1.5940E-09
8.5322E-10 5.8474E-10 5.5318E-10 1.3152E-10 6.8359E-11 1.1129E-10
5.6521E-11 2.0704E-11 7.1771E-11 7.5597E-11 4.4507E-11 1.6001E-11
8.9905E-12

4D 8 4 1192 2 2 3 0 12 0 0 4
0
5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *
7D *ZPR 3/11 - SENS. OF 28F/25F TO FE ELAS(CENT. REG A= -1.2707E-02*
8D 3.1396E-07 1.3033E-06 4.6042E-06 3.7823E-06 -2.0440E-05
-2.8662E-06 6.3610E-05 1.1896E-04 6.7343E-05 3.0102E-05 3.7863E-05
3.0429E-05 1.6205E-05 4.8237E-06 -4.7379E-06 -1.5055E-06 -2.9006E-06
5.1021E-06 7.4337E-06 -5.3174E-05 -1.0185E-04 -1.2487E-04 -1.8546E-04
-2.6007E-04 -3.9714E-04 -5.4263E-04 -6.9172E-04 -3.7794E-04 -2.5022E-04
-1.8694E-04 -1.3136E-04 -1.3270E-04 -3.2162E-04 -1.4479E-04 -1.6239E-04
-1.7984E-04 -2.0392E-04 -3.0604E-04 -3.6228E-04 -3.3696E-04 -3.1702E-04
-2.2826E-04 -1.7774E-04 -2.0120E-04 -2.7148E-04 -2.7529E-04 -3.3663E-04
-5.9515E-04 -7.6468E-04 -7.5148E-04 -4.7271E-04 -4.5721E-04 -2.3236E-05
-9.0560E-06 -2.1231E-05 -8.2596E-05 -2.2264E-04 -2.4983E-04 -2.8504E-04
-1.6378E-04 -1.3646E-04 -2.0651E-04 -1.9620E-04 -8.4728E-05 -1.3227E-04
-6.6709E-05 -9.5095E-05 -9.1555E-05 -1.2198E-04 -3.6102E-05 -2.3852E-05
-3.6507E-05 -4.3400E-05 -8.7827E-05 -1.3195E-04 -4.5596E-06 -7.5089E-06
1.2710E-04 1.4315E-05 1.3469E-05 3.2736E-05 -8.6795E-05 -1.3296E-04
-3.5451E-05 3.8899E-06 4.1383E-05 -1.6899E-05 -2.3615E-05 -1.7123E-05
-6.2045E-07 1.8696E-06 -1.1031E-05 -1.9518E-05 -2.0959E-05 -1.9965E-05
-2.6107E-05 -1.5928E-05 -5.0984E-06 -6.5736E-07 3.7392E-07 -1.6665E-06
-7.9161E-07 -1.0935E-07 -6.4394E-08 -2.7682E-07 -7.5000E-07 -6.3783E-07
3.5684E-07 -9.6440E-07 -6.1913E-07 1.2715E-07 -6.8561E-08 3.3074E-08
2.1914E-09 -5.9964E-10 -1.2456E-08 2.8120E-09 4.0528E-10 5.4171E-10
1.0851E-11 -5.9786E-11 -1.7355E-10 -1.2274E-10 8.6145E-12 6.8548E-13
1.8905E-13

4D 0 8 4 1261 4 2 3 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 235 U INEL(CENT. REG A= -4.9842E-02*

8D -1.2343E-06 -6.2058E-06 -4.9153E-05 -4.4499E-04 -7.5714E-04
 -1.1737E-03 -3.5067E-03 -4.9470E-03 -4.4107E-03 -1.3884E-03 -1.3655E-03
 -1.3593E-03 -1.3468E-03 -1.3287E-03 -9.1594E-04 -2.3379E-04 -7.2555E-04
 -1.0258E-03 -1.7045E-03 -2.0589E-03 -2.3686E-03 -2.4629E-03 -2.3805E-03
 -2.2381E-03 -2.0139E-03 -1.7282E-03 -1.3482E-03 -8.4944E-04 -4.9446E-04
 -3.9115E-04 -4.0749E-04 -3.8533E-04 -8.0844E-04 -3.1265E-04 -4.4644E-04
 -3.1625E-04 -2.9552E-04 -2.6864E-04 -2.5741E-04 -2.6320E-04 -2.4032E-04
 -2.1025E-04 -2.0532E-04 -2.0042E-04 -1.7356E-04 -1.5819E-04 -1.2930E-04
 -2.1287E-04 -1.3642E-04 -1.2181E-04 -8.2773E-05 -2.3790E-05 4.7705E-07
 3.0631E-07 9.7813E-07 4.6987E-06 1.3175E-05 1.4462E-05 9.9154E-06
 1.2339E-05 2.0021E-05 2.5925E-05 2.7541E-05 3.0017E-05 3.4228E-05
 3.5067E-05 3.8179E-05 3.9077E-05 4.3238E-05 4.5433E-05 4.4922E-05
 5.2976E-05 4.9630E-05 1.2130E-04 9.0740E-05 1.8372E-05 1.9048E-05
 3.5593E-05 1.5201E-05 8.0794E-06 -5.6129E-06 -2.3782E-06 -1.9987E-07
 8.7106E-07 2.7253E-07 -8.2576E-08 -1.8359E-07 -2.7470E-07 -5.8635E-07
 -4.7001E-07 -6.0311E-07 -9.8663E-07 -6.9487E-07 -1.3784E-07 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 0 8 4 1261 18 2 0 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 235 U FISS(CENT. REG A= -7.0980E-01*

8D -1.2919E-04 -4.0194E-04 -1.3099E-03 -2.8955E-03 -1.8691E-03
 -1.9130E-03 -5.4599E-03 -8.8723E-03 -9.3026E-03 -3.5512E-03 -3.7930E-03
 -4.0353E-03 -4.2850E-03 -4.4589E-03 -3.0719E-03 -7.8978E-04 -2.3515E-03
 -3.2089E-03 -4.8752E-03 -5.0158E-03 -5.0850E-03 -5.0934E-03 -5.0711E-03
 -4.9639E-03 -4.8093E-03 -4.6025E-03 -4.4079E-03 -4.2109E-03 -4.0527E-03
 -4.2126E-03 -4.5828E-03 -4.7084E-03 -1.0655E-02 -4.4996E-03 -6.7554E-03
 -5.7425E-03 -6.0344E-03 -6.0878E-03 -6.3717E-03 -7.1263E-03 -7.6384E-03
 -8.1278E-03 -8.6215E-03 -8.8967E-03 -9.1286E-03 -9.4294E-03 -9.4332E-03
 -2.0018E-02 -1.9916E-02 -2.1871E-02 -2.1962E-02 -2.2216E-02 -2.6322E-02
 -9.8383E-04 -1.9746E-03 -5.2718E-03 -1.0096E-02 -2.1034E-02 -1.9790E-02
 -9.8153E-03 -8.9697E-03 -8.9803E-03 -8.8911E-03 -1.0161E-02 -9.0065E-03
 -8.7783E-03 -8.3830E-03 -7.0664E-03 -8.1518E-03 -8.0537E-03 -8.7802E-03
 -8.7706E-03 -7.8538E-03 -1.7210E-02 -1.7999E-02 -5.4007E-03 -6.1215E-03
 -1.3582E-02 -1.0218E-02 -2.0690E-02 -8.9214E-03 -1.3037E-02 -1.1612E-02
 -9.9123E-03 -5.3903E-03 -3.9077E-03 -1.5288E-03 -1.9976E-03 -4.0596E-03
 -3.0501E-03 -4.0867E-03 -4.6792E-03 -5.0753E-03 -3.8380E-03 -2.1407E-03
 -1.0855E-03 -1.2310E-03 -7.1280E-04 -3.0384E-04 -1.5382E-04 -9.6703E-05
 -5.6515E-05 -1.7803E-05 -1.3435E-05 -1.5815E-05 -3.4059E-05 -1.1298E-04
 -5.3598E-05 -4.0675E-05 -1.9096E-05 -1.8295E-05 -6.2897E-06 -2.0732E-06
 -1.0376E-06 -7.5175E-07 -5.8165E-07 -1.1581E-07 -6.8672E-08 -1.2265E-07
 -6.5530E-08 -2.3287E-08 -1.4123E-08 -7.6315E-09 -3.1649E-09 -1.8532E-09
 -8.7768E-10

4D 0 8 4 1261 102 2 0 0 12 0 0 4

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR 3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 235 U CAPT(CENT. REG A= 6.5363E-02*

8D -7.0824E-08 -3.5394E-07 -1.9704E-06 -7.6825E-06 -7.3184E-06
 -7.4590E-06 -2.3530E-05 -4.9672E-05 -6.4212E-05 -2.5806E-05 -2.8269E-05
 -3.1337E-05 -3.4242E-05 -3.6353E-05 -2.5390E-05 -6.5542E-06 -1.9591E-05
 -2.6951E-05 -4.1590E-05 -4.3667E-05 -4.3553E-05 -4.2001E-05 -3.8441E-05
 -3.1163E-05 -2.0392E-05 -3.2429E-06 2.2670E-05 5.9537E-05 8.9306E-05
 1.1139E-04 1.3252E-04 1.5107E-04 3.8853E-04 1.8291E-04 2.9162E-04
 2.6998E-04 3.0159E-04 3.2072E-04 3.5052E-04 4.0714E-04 4.5601E-04
 5.0681E-04 5.6131E-04 6.0389E-04 6.4654E-04 6.9302E-04 7.1815E-04
 1.5972E-03 1.6804E-03 1.9238E-03 2.0120E-03 2.1490E-03 2.6337E-04
 9.9025E-05 1.9981E-04 5.4034E-04 1.0623E-03 2.3067E-03 2.2587E-03
 1.1398E-03 1.0557E-03 1.0704E-03 1.0757E-03 1.2396E-03 1.1178E-03
 1.1057E-03 1.0727E-03 9.2042E-04 1.0747E-03 1.0744E-03 1.1819E-03
 1.1917E-03 1.0761E-03 2.4041E-03 2.5598E-03 7.8376E-04 8.9089E-04
 2.0056E-03 1.4958E-03 3.0558E-03 1.3149E-03 1.9283E-03 1.7483E-03
 1.5647E-03 8.6818E-04 6.3188E-04 2.4685E-04 3.2172E-04 6.4662E-04
 5.0811E-04 6.4642E-04 8.0545E-04 8.6695E-04 6.7559E-04 4.2546E-04
 2.4288E-04 2.6554E-04 1.3959E-04 6.4380E-05 2.7914E-05 2.0189E-05
 1.2251E-05 3.8252E-06 2.8356E-06 3.8332E-06 1.0525E-05 3.2038E-05
 1.5587E-05 1.3973E-05 8.2280E-06 7.1481E-06 2.3505E-06 1.0591E-06
 5.2561E-07 3.7091E-07 2.5595E-07 9.9770E-08 3.6075E-08 5.8656E-08
 2.6500E-08 5.8831E-09 7.9838E-09 4.8257E-09 1.8045E-09 1.4284E-09
 6.5067E-10

4D 8 4 1262 2 2 3 0 12 0 0 4

0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 238 U ELAS(CENT. REG A= -1.3555E-01*

8D 5.4084E-06 2.1523E-05 6.6780E-05 1.3761E-04 4.4426E-05

8.6689E-05 3.7353E-04 6.7458E-04 6.6611E-04 2.4009E-04 2.7393E-04
 2.7100E-04 2.6421E-04 2.4996E-04 1.6469E-04 2.7542E-05 1.0752E-04
 1.5001E-04 2.4435E-04 1.5757E-04 9.0797E-05 4.5366E-06 -1.3387E-04
 -2.9007E-04 -5.3239E-04 -8.2660E-04 -1.1541E-03 -1.1014E-03 -8.5722E-04
 -8.0030E-04 -9.8099E-04 -1.0881E-03 -2.5890E-03 -1.1668E-03 -1.9995E-03
 -1.6859E-03 -1.8436E-03 -1.8265E-03 -1.9320E-03 -2.3440E-03 -2.5578E-03
 -2.7841E-03 -3.0033E-03 -3.1693E-03 -3.1807E-03 -3.2906E-03 -3.2304E-03
 -6.6994E-03 -6.2057E-03 -6.8359E-03 -7.0639E-03 -6.9266E-03 -8.1855E-04
 -3.0311E-04 -6.0193E-04 -1.5703E-03 -2.7597E-03 -6.0487E-03 -5.2855E-03
 -2.6100E-03 -2.1600E-03 -2.1245E-03 -1.8738E-03 -2.4858E-03 -1.9991E-03
 -1.9107E-03 -1.8023E-03 -1.2422E-03 -1.4753E-03 -1.3719E-03 -1.6636E-03
 -1.5876E-03 -1.3613E-03 -2.7097E-03 -2.8168E-03 -5.8092E-04 -8.7261E-04
 -1.2501E-03 -1.0079E-03 -1.9995E-03 -7.3381E-04 -1.4396E-03 -1.4153E-03
 -7.3746E-04 -3.8220E-04 -1.8152E-04 -4.3812E-05 -1.4050E-04 -5.8922E-04
 -1.9066E-04 -2.0471E-04 -4.0888E-04 -4.0531E-04 -2.7441E-04 -1.2794E-04
 -5.6316E-05 -8.2783E-05 -3.6380E-05 -7.7158E-06 -1.7521E-06 -5.1056E-06
 -2.2972E-06 -3.7469E-07 1.1635E-07 -1.2075E-06 -1.7471E-06 -4.4970E-06
 6.3290E-07 -1.5303E-06 -7.6850E-07 -5.1442E-08 -7.7983E-08 3.7847E-08
 -7.3835E-09 1.6149E-09 -8.9797E-09 3.4249E-09 3.7267E-09 5.5383E-10
 -1.9118E-10 -1.1302E-10 -3.3020E-10 -1.8047E-10 3.5033E-11 5.2774E-12
 1.0524E-12

4D 8 4 1262 4 2 3 0 12 0 0 4

0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 238 U INEL(CENT. REG A= -6.5394E-01*

8D -4.0637E-05 -2.1369E-04 -1.2470E-03 -8.1320E-03 -1.0953E-02

-1.3237E-02 -3.6880E-02 -5.3930E-02 -5.0889E-02 -1.9657E-02 -2.1344E-02
 -2.2831E-02 -2.4457E-02 -2.5794E-02 -1.7920E-02 -4.6194E-03 -1.3798E-02
 -1.8871E-02 -2.8839E-02 -2.9204E-02 -2.9701E-02 -2.9564E-02 -2.8965E-02
 -2.7368E-02 -2.5301E-02 -2.1990E-02 -1.7381E-02 -1.1622E-02 -7.0678E-03
 -5.2154E-03 -5.0751E-03 -4.3226E-03 -6.8489E-03 -2.6146E-03 -3.9959E-03
 -2.7091E-03 -2.5090E-03 -2.0637E-03 -1.8336E-03 -1.9605E-03 -2.0440E-03
 -2.1013E-03 -2.1400E-03 -2.0807E-03 -1.8369E-03 -1.7581E-03 -1.4457E-03
 -2.6766E-03 -1.7882E-03 -1.5748E-03 -1.3490E-03 -8.2424E-04 -8.7590E-05
 -3.2869E-05 -5.9446E-05 -1.0567E-04 -1.5916E-04 -2.1387E-04 -2.5712E-05
 1.6048E-05 1.1020E-04 1.3890E-04 1.9943E-04 2.3289E-04 3.4173E-04
 4.0239E-04 4.0996E-04 3.5398E-04 4.4529E-04 4.0823E-04 4.7023E-04
 4.6949E-04 5.9364E-04 1.3649E-03 1.4601E-03 3.6552E-04 3.4037E-04
 7.0427E-04 3.4710E-04 3.4604E-04 -5.0002E-05 -1.3294E-04 -1.1239E-05
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 8 4 1262 18 2 0 0 12 0 0 4

0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR

3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 238 U FISS(CENT. REG A= 9.2269E-01*

8D 8.5505E-04 3.0804E-03 1.0105E-02 2.4152E-02 1.7298E-02

1.9101E-02 5.2609E-02 7.9591E-02 7.6277E-02 2.8426E-02 3.0311E-02
 3.2202E-02 3.4279E-02 3.5953E-02 2.4969E-02 6.4526E-03 1.9286E-02
 2.6481E-02 4.0514E-02 4.1810E-02 4.2435E-02 4.2018E-02 4.0899E-02
 3.8818E-02 3.6057E-02 3.1672E-02 2.5264E-02 1.6090E-02 8.9147E-03
 6.0402E-03 5.7364E-03 4.7781E-03 6.8143E-03 2.4643E-03 3.3614E-03
 1.7743E-03 1.2134E-03 7.5951E-04 5.4436E-04 4.4766E-04 3.8613E-04
 3.9639E-04 4.0807E-04 3.0717E-04 1.7980E-04 1.4105E-04 9.9511E-05
 1.5206E-04 1.1206E-04 9.1754E-05 7.5826E-05 6.1556E-05 6.3215E-06
 2.3384E-06 4.6662E-06 1.2289E-05 2.2830E-05 4.4921E-05 3.9436E-05
 1.8526E-05 1.6267E-05 1.5615E-05 1.4794E-05 1.6202E-05 1.3792E-05
 1.2872E-05 1.1855E-05 9.6456E-06 1.0711E-05 1.0149E-05 1.0696E-05
 1.0317E-05 8.9061E-06 1.8434E-05 1.8633E-05 5.4220E-06 5.9982E-06
 1.2444E-05 9.2024E-06 1.7702E-05 7.2163E-06 1.0978E-05 2.0021E-06
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 3.9014E-14 1.6012E-14 1.2055E-14 2.1986E-14 8.4875E-14 6.8677E-13
 1.1377E-11 2.0536E-08 5.5456E-12 1.7284E-08 1.0115E-13 1.8207E-14
 9.3400E-15 6.4906E-15 5.4468E-15 8.5052E-16 5.7023E-16 9.7478E-16
 6.2159E-16 2.5080E-16 5.8787E-16 4.3023E-16 1.2081E-16 6.6609E-18
 3.0403E-19

4D 8 4 1262 102 2 0 0 12 0 0 4
0

5D *RESPONSE IS REACTION RATE 28F/25F FOR THE CENTRAL INTERVAL OF ZPR
3/11 *

7D *ZPR 3/11 - SENS. OF 28F/25F TO 238 U CAPT(CENT. REG A= 2.8255E-01*

8D -2.1660E-07 -1.1196E-06 -5.1752E-06 -1.8648E-05 -1.8019E-05
-2.0876E-05 -7.3236E-05 -1.8407E-04 -2.7995E-04 -1.2192E-04 -1.4051E-04
-1.6258E-04 -1.8618E-04 -2.0657E-04 -1.4813E-04 -3.8620E-05 -1.1653E-04
-1.6342E-04 -2.5942E-04 -2.8356E-04 -2.9117E-04 -2.8335E-04 -2.6097E-04
-2.0943E-04 -1.2569E-04 1.2850E-05 2.2791E-04 5.2901E-04 7.7371E-04
9.6094E-04 1.1394E-03 1.2732E-03 3.2176E-03 1.4950E-03 2.3571E-03
2.1426E-03 2.3381E-03 2.4375E-03 2.5942E-03 2.9068E-03 3.0968E-03
3.2660E-03 3.4311E-03 3.5366E-03 3.6403E-03 3.7563E-03 3.7392E-03
7.8244E-03 7.7058E-03 8.4675E-03 8.6315E-03 8.8520E-03 1.0491E-03
3.9283E-04 7.8992E-04 2.1175E-03 4.1017E-03 8.7203E-03 8.5677E-03
4.4120E-03 4.1536E-03 4.1876E-03 4.1583E-03 4.7183E-03 4.1979E-03
4.1161E-03 3.9657E-03 3.3959E-03 3.9405E-03 3.9344E-03 4.2786E-03
4.3070E-03 3.9005E-03 8.6655E-03 9.3724E-03 2.8829E-03 3.2725E-03
7.2478E-03 5.8687E-03 1.3168E-02 5.8406E-03 9.3820E-03 7.3173E-03
7.0180E-03 3.6077E-03 2.7055E-03 1.1186E-03 1.4650E-03 3.0711E-03
2.2155E-03 2.8736E-03 3.5526E-03 3.9359E-03 2.9789E-03 1.6806E-03
9.0834E-04 9.5823E-04 5.6181E-04 2.3029E-04 1.1956E-04 8.6521E-05
5.1672E-05 1.5283E-05 1.2468E-05 1.8343E-05 2.9883E-05 7.3986E-05
3.1131E-05 2.3437E-05 1.1974E-05 1.0424E-05 2.9283E-06 8.4695E-07
4.8610E-07 3.4380E-07 3.2565E-07 6.5979E-09 2.6768E-08 6.0143E-08
3.8075E-08 1.7328E-08 5.5856E-09 2.3990E-09 1.1225E-09 3.5093E-10
1.7701E-10

4D 5 1 1043 18 2 0 0 8 0 0 0
0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *

7D *GODIVA SENS. OF K TO 234U FISSION

A= 5.6781E-03*

8D 3.4304E-06 1.3081E-05 4.2805E-05 9.6897E-05 6.9888E-05
8.3828E-05 2.1785E-04 3.1853E-04 3.1115E-04 1.1492E-04 1.1977E-04
1.2437E-04 1.2938E-04 1.3442E-04 9.2268E-05 2.3525E-05 7.1038E-05
9.6473E-05 1.4828E-04 1.5209E-04 1.5455E-04 1.5453E-04 1.5406E-04
1.5051E-04 1.4684E-04 1.4159E-04 1.3605E-04 1.3076E-04 1.2812E-04
1.2525E-04 1.2190E-04 1.1770E-04 2.2442E-04 9.1005E-05 1.3048E-04
1.1431E-04 1.1660E-04 1.1701E-04 1.0968E-04 1.0166E-04 9.1544E-05
7.8409E-05 6.6567E-05 5.6588E-05 5.1591E-05 4.6644E-05 4.1934E-05
6.6848E-05 4.5518E-05 3.0511E-05 2.2192E-05 1.5540E-05 1.4619E-06
5.2633E-07 1.0558E-06 2.6817E-06 4.4386E-06 5.8463E-06 3.8610E-06
1.5731E-06 1.3585E-06 1.1821E-06 1.0417E-06 9.2013E-07 8.1327E-07
7.1800E-07 6.3136E-07 5.5862E-07 4.9694E-07 4.4124E-07 3.9177E-07
3.4699E-07 3.0852E-07 6.2577E-07 4.9143E-07 1.6132E-07 1.1105E-07
2.4762E-07 1.3579E-07 2.7970E-07 9.2605E-08 1.3263E-07 9.9307E-08
1.0048E-07 3.1197E-08 3.6042E-08 1.4330E-08 8.3982E-09 1.4175E-08
8.1147E-09 1.1431E-08 1.6534E-08 2.2857E-08 1.1861E-08 6.3547E-09
3.9008E-09 2.1982E-09 1.0904E-09 3.3229E-10 1.4293E-10 1.0333E-10
7.6597E-11 3.0188E-11 2.4376E-11 4.0113E-11 3.4119E-11 3.1935E-11
2.3108E-12 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0

4D 5 1 1043 102 2 0 0 8 0 0 0
0

5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *

7D *GODIVA SENS. OF K TO 234U CAPTURE

A= -6.0959E-04*

8D -1.2046E-08 -5.2448E-08 -1.9871E-07 -5.3078E-07 -4.3433E-07
-5.6988E-07 -1.9223E-06 -3.5718E-06 -4.2655E-06 -1.8049E-06 -2.0103E-06
-2.2410E-06 -2.5165E-06 -2.7984E-06 -2.0231E-06 -5.3022E-07 -1.6403E-06
-2.3183E-06 -3.7627E-06 -4.1209E-06 -4.5289E-06 -5.0398E-06 -5.5781E-06
-6.2109E-06 -6.8463E-06 -7.8511E-06 -8.9252E-06 -1.0072E-05 -1.1669E-05
-1.3168E-05 -1.4371E-05 -1.5217E-05 -3.2385E-05 -1.3853E-05 -1.9015E-05
-1.5667E-05 -1.4513E-05 -1.3503E-05 -1.2918E-05 -1.2474E-05 -1.2057E-05
-1.1794E-05 -1.1581E-05 -1.1356E-05 -1.1220E-05 -1.0954E-05 -1.0710E-05
-2.0620E-05 -1.9534E-05 -1.8372E-05 -1.7121E-05 -1.5787E-05 -1.7797E-06
-6.5992E-07 -1.3581E-06 -3.6816E-06 -7.1004E-06 -1.3333E-05 -1.2348E-05
-5.7939E-06 -5.5057E-06 -5.2620E-06 -5.0643E-06 -4.8683E-06 -4.6672E-06
-4.4847E-06 -4.2609E-06 -4.0734E-06 -3.9087E-06 -3.7364E-06 -3.5772E-06
-3.3946E-06 -3.2352E-06 -7.3257E-06 -6.5312E-06 -2.3643E-06 -1.7205E-06
-4.2348E-06 -2.5582E-06 -5.9468E-06 -2.2315E-06 -3.3730E-06 -2.8506E-06
-3.3792E-06 -1.2433E-06 -1.5751E-06 -6.7082E-07 -4.0026E-07 -6.4851E-07
-6.4418E-07 -6.8635E-07 -1.0367E-06 -1.7944E-06 -1.2541E-06 -8.5108E-07
-6.0432E-07 -4.4357E-07 -3.2026E-07 -1.4269E-07 -8.2883E-08 -6.6558E-08
-6.0018E-08 -2.8360E-08 -2.5722E-08 -4.4766E-08 -4.1351E-08 -8.3338E-08
-6.4089E-08 -3.9913E-08 -2.6113E-08 -3.6956E-08 -1.9769E-08 -1.5985E-09
-6.7826E-09 -9.0598E-09 -3.1470E-09 -1.0169E-09 -2.2634E-11 -9.0473E-10
-2.7163E-12 -5.8556E-10 -1.0546E-10 -4.1378E-12 -1.3669E-12 -3.4254E-13
-6.0757E-14

4D 5 1 1043 452 2 0 0 8 0 0 0
 0
 5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
 7D *GODIVA SENS. OF K TO 234U NUBAR A= 8.2857E-03*
 8D 5.5631E-06 2.0243E-05 6.7286E-05 1.4693E-04 9.9380E-05
 1.1503E-04 3.0079E-04 4.4707E-04 4.4299E-04 1.6499E-04 1.7270E-04
 1.8025E-04 1.8842E-04 1.9634E-04 1.3505E-04 3.4457E-05 1.0409E-04
 1.4146E-04 2.1756E-04 2.2320E-04 2.2687E-04 2.2698E-04 2.2611E-04
 2.2084E-04 2.1524E-04 2.0720E-04 1.9883E-04 1.9107E-04 1.8733E-04
 1.8327E-04 1.7827E-04 1.7257E-04 3.2908E-04 1.3330E-04 1.9076E-04
 1.6702E-04 1.7024E-04 1.7100E-04 1.6064E-04 1.4936E-04 1.3494E-04
 1.1584E-04 9.8466E-05 8.4001E-05 7.6929E-05 6.9838E-05 6.3157E-05
 1.0142E-04 6.9781E-05 4.7239E-05 3.4682E-05 2.4549E-05 2.3304E-06
 8.3989E-07 1.6861E-06 4.2880E-06 7.1182E-06 9.4264E-06 6.2721E-06
 2.5769E-06 2.2393E-06 1.9619E-06 1.7443E-06 1.5532E-06 1.3827E-06
 1.2318E-06 1.0901E-06 9.7097E-07 8.6942E-07 7.7700E-07 6.9537E-07
 6.1952E-07 5.5458E-07 1.1347E-06 8.9869E-07 2.9882E-07 2.0777E-07
 4.6940E-07 2.5870E-07 5.3882E-07 1.8065E-07 2.5578E-07 1.9333E-07
 1.9791E-07 6.2806E-08 7.2862E-08 2.8865E-08 1.6735E-08 2.7207E-08
 1.6639E-08 2.3858E-08 3.3771E-08 4.8147E-08 2.5995E-08 1.4114E-08
 8.7068E-09 5.3142E-09 2.8576E-09 9.0533E-10 4.1222E-10 2.8596E-10
 2.1530E-10 8.7542E-11 7.2059E-11 1.1211E-10 8.9070E-11 9.2298E-11
 6.6508E-12 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0
 0.0 0.0 0.0 0.0 0.0 0.0

4D 5 1 1261 18 2 0 0 8 0 0 0
 0
 5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
 7D *GODIVA SENS. OF K TO 235U FISSIGN A= 6.5922E-01*
 8D 3.7576E-04 1.2634E-03 3.8981E-03 8.5164E-03 5.7949E-03
 6.4758E-03 1.7926E-02 2.6106E-02 2.5054E-02 9.3392E-03 9.8128E-03
 1.0297E-02 1.0755E-02 1.1161E-02 7.6209E-03 1.9353E-03 5.8191E-03
 7.8446E-03 1.1933E-02 1.2094E-02 1.2224E-02 1.2307E-02 1.2407E-02
 1.2436E-02 1.2456E-02 1.2434E-02 1.2416E-02 1.2377E-02 1.2372E-02
 1.2310E-02 1.2186E-02 1.1997E-02 2.3384E-02 9.3850E-03 1.2741E-02
 1.0566E-02 1.0274E-02 9.9866E-03 9.7383E-03 9.5588E-03 9.3932E-03
 9.2809E-03 9.2244E-03 9.0697E-03 8.9102E-03 8.6657E-03 8.4222E-03
 1.6161E-02 1.5215E-02 1.4104E-02 1.2870E-02 1.1739E-02 1.3203E-03
 4.8864E-04 1.0040E-03 2.7130E-03 5.1947E-03 9.5855E-03 8.6165E-03
 3.9335E-03 3.6801E-03 3.4740E-03 3.2708E-03 3.0801E-03 2.9005E-03
 2.7322E-03 2.5538E-03 2.3905E-03 2.2417E-03 2.0971E-03 1.9580E-03
 1.8215E-03 1.6993E-03 3.7589E-03 3.1772E-03 1.1057E-03 7.8839E-04
 1.9471E-03 1.1290E-03 2.5056E-03 9.0590E-04 1.2597E-03 1.0240E-03
 1.1064E-03 3.9224E-04 4.8017E-04 1.9718E-04 1.1690E-04 1.8686E-04
 1.2249E-04 1.8413E-04 2.6184E-04 4.1318E-04 2.6390E-04 1.7306E-04
 1.1453E-04 7.6454E-05 4.7996E-05 2.0722E-05 1.0789E-05 8.9881E-06
 7.5465E-06 3.3470E-06 3.1347E-06 5.5071E-06 4.9699E-06 9.3072E-06
 6.1660E-06 4.3226E-06 2.8673E-06 2.9992E-06 1.4322E-06 3.8270E-07
 2.8787E-07 3.2991E-07 1.5707E-07 4.0199E-08 2.6946E-08 3.3863E-08
 2.1494E-08 6.7094E-09 2.2862E-09 6.5446E-10 1.1976E-10 4.0610E-11
 4.8479E-12

4D 5 1 1261 102 2 0 0 8 0 0 0
 0
 5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
 7D *GODIVA SENS. OF K TO 235U CAPTURE A= -3.6807E-02*
 8D -2.6303E-07 -1.3927E-06 -7.9029E-06 -2.8478E-05 -2.6320E-05
 -3.3296E-05 -1.1757E-04 -2.2286E-04 -2.6464E-04 -1.1154E-04 -1.2376E-04
 -1.3791E-04 -1.5234E-04 -1.6666E-04 -1.1957E-04 -3.1118E-05 -9.5317E-05
 -1.3267E-04 -2.1068E-04 -2.2395E-04 -2.3841E-04 -2.5512E-04 -2.7180E-04
 -2.8778E-04 -3.0584E-04 -3.2251E-04 -3.4309E-04 -3.6634E-04 -3.8842E-04
 -4.0985E-04 -4.2866E-04 -4.5277E-04 -4.96334E-04 -4.1478E-04 -5.8413E-04
 -5.0565E-04 -5.1117E-04 -5.1593E-04 -5.2208E-04 -5.3190E-04 -5.4307E-04
 -5.5675E-04 -5.7259E-04 -5.8611E-04 -6.0035E-04 -6.0728E-04 -6.1630E-04
 -1.2529E-03 -1.2691E-03 -1.2549E-03 -1.2197E-03 -1.2039E-03 -1.4334E-04
 -5.3492E-05 -1.1064E-04 -3.0360E-04 -6.0059E-04 -1.1750E-03 -1.1203E-03
 -5.3274E-04 -5.1229E-04 -4.9838E-04 -4.8652E-04 -4.7388E-04 -4.6139E-04
 -4.5144E-04 -4.3565E-04 -4.2131E-04 -4.0788E-04 -3.9381E-04 -3.8041E-04
 -3.6397E-04 -3.4963E-04 -8.0623E-04 -7.1450E-04 -2.6179E-04 -1.9308E-04
 -4.9966E-04 -2.9878E-04 -6.9609E-04 -2.6515E-04 -3.6871E-04 -3.1498E-04
 -3.6068E-04 -1.3670E-04 -1.7079E-04 -7.0293E-05 -4.0989E-05 -6.0232E-05
 -4.6184E-05 -6.8390E-05 -1.0309E-04 -1.6747E-04 -1.1406E-04 -8.3154E-05
 -5.9238E-05 -4.0530E-05 -2.4318E-05 -1.1483E-05 -5.5381E-06 -5.0658E-06
 -4.2268E-06 -1.8490E-06 -1.7457E-06 -3.1812E-06 -3.1519E-06 -5.8813E-06
 -3.9058E-06 -3.0766E-06 -2.0642E-06 -2.0085E-06 -1.0059E-06 -2.9253E-07
 -2.1034E-07 -2.3646E-07 -1.1797E-07 -3.7324E-08 -2.4230E-08 -2.8772E-08
 -1.8545E-08 -4.9476E-09 -1.8775E-09 -5.8133E-10 -1.1095E-10 -3.9817E-11
 -4.7605E-12

4D 5 1 1261 452 2 0 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
7D *GODIVA SENS. OF K TO 235U NUBAR A= 9.8199E-01*
8D 5.8737E-04 1.8937E-03 5.9274E-03 1.2562E-02 8.0831E-03
8.7544E-03 2.4451E-02 3.6300E-02 3.5438E-02 1.3344E-02 1.4086E-02
1.4852E-02 1.5581E-02 1.6214E-02 1.1091E-02 2.8183E-03 8.4770E-03
1.1434E-02 1.7400E-02 1.7636E-02 1.7827E-02 1.7955E-02 1.8085E-02
1.8119E-02 1.8127E-02 1.8063E-02 1.8010E-02 1.7949E-02 1.7950E-02
1.7871E-02 1.7679E-02 1.7448E-02 3.4014E-02 1.3636E-02 1.8479E-02
1.5315E-02 1.4881E-02 1.4478E-02 1.4149E-02 1.3931E-02 1.3732E-02
1.3598E-02 1.3532E-02 1.3350E-02 1.3173E-02 1.2863E-02 1.2574E-02
2.4300E-02 2.3110E-02 2.1630E-02 1.9916E-02 1.8358E-02 2.0829E-03
7.7169E-04 1.5866E-03 4.2930E-03 8.2436E-03 1.5292E-02 1.3846E-02
6.3719E-03 5.9978E-03 5.6998E-03 5.4125E-03 5.1372E-03 4.8715E-03
4.6292E-03 4.3539E-03 4.1019E-03 3.8709E-03 3.6440E-03 3.4285E-03
3.2078E-03 3.0123E-03 6.7200E-03 5.7267E-03 2.0178E-03 1.4528E-03
3.6337E-03 2.1172E-03 4.7494E-03 1.7381E-03 2.3902E-03 1.9608E-03
2.1426E-03 7.7582E-04 9.5353E-04 3.9022E-04 2.2894E-04 3.4285E-04
2.4660E-04 3.7708E-04 5.2518E-04 8.5371E-04 5.6647E-04 3.7627E-04
2.5020E-04 1.8032E-04 1.2229E-04 5.4793E-05 3.0117E-05 2.4124E-05
2.0557E-05 9.3914E-06 8.9577E-06 1.4919E-05 1.2616E-05 2.6033E-05
1.7179E-05 1.0910E-05 7.2687E-06 9.7364E-06 4.3244E-06 1.2829E-06
7.6944E-07 8.9884E-07 4.3980E-07 1.3076E-07 8.6156E-08 9.4495E-08
5.1194E-08 1.7825E-08 5.3963E-09 2.0533E-09 9.9085E-10 2.3451E-10
3.3154E-11

4D 5 1 1262 18 2 0 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
7D *GODIVA SENS. OF K TO 238U FISSION A= 6.7762E-03*
8D 1.1526E-05 3.9562E-05 1.1821E-04 2.7334E-04 1.9089E-04
1.9789E-04 5.0331E-04 7.0750E-04 6.4103E-04 2.2928E-04 2.3873E-04
2.4904E-04 2.5841E-04 2.6656E-04 1.8065E-04 4.5689E-05 1.3702E-04
1.8389E-04 2.7822E-04 2.7927E-04 2.7510E-04 2.6472E-04 2.5030E-04
2.3016E-04 2.0643E-04 1.7259E-04 1.2746E-04 7.3484E-05 3.8329E-05
2.3907E-05 2.0426E-05 1.6075E-05 1.9484E-05 6.6114E-06 8.1054E-06
4.1144E-06 2.5844E-06 1.5480E-06 1.0286E-06 7.3983E-07 5.8211E-07
5.5271E-07 5.3092E-07 3.7933E-07 2.1152E-07 1.5579E-07 1.0646E-07
1.4668E-07 1.0192E-07 7.0420E-08 5.2932E-08 3.8766E-08 3.7790E-09
1.3847E-09 2.8291E-09 7.5392E-09 1.4009E-08 2.4494E-08 2.0589E-08
8.9131E-09 8.0294E-09 7.2563E-09 6.5456E-09 5.9178E-09 5.3573E-09
4.8471E-09 4.3712E-09 3.9505E-09 3.5745E-09 3.2291E-09 2.9174E-09
2.6301E-09 2.3806E-09 4.9841E-09 4.1091E-09 1.3939E-09 9.7441E-10
2.2692E-09 1.3141E-09 2.8214E-09 9.7045E-10 1.4306E-09 2.5469E-10
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 0.0 0.0 0.0
0.0 0.0 0.0 3.8537E-18 5.0818E-18 5.8342E-18
6.9547E-18 3.9504E-18 4.1178E-18 1.0194E-17 1.5483E-17 6.6234E-17
1.4990E-15 5.0563E-12 1.1780E-15 4.4582E-12 3.6050E-17 4.5954E-18
4.8566E-18 5.3466E-18 2.2699E-18 1.9971E-19 2.2224E-19 3.4332E-19
3.2932E-19 1.1775E-19 1.2564E-19 3.0453E-20 1.0665E-21 4.3704E-23
4.0118E-25

4D 5 1 1262 102 2 0 0 8 0 0 0
0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
7D *GODIVA SENS. OF K TO 238U CAPTURE A= -1.3315E-03*
8D -6.2780E-09 -3.4381E-08 -1.6153E-07 -5.3435E-07 -4.9992E-07
-7.2779E-07 -2.8756E-06 -6.4609E-06 -8.9947E-06 -4.1178E-06 -4.8122E-06
-5.5995E-06 -6.4923E-06 -7.4383E-06 -5.4934E-06 -1.4465E-06 -4.4777E-06
-6.3673E-06 -1.0426E-05 -1.1575E-05 -1.2772E-05 -1.3944E-05 -1.5210E-05
-1.6544E-05 -1.7910E-05 -1.9318E-05 -2.0651E-05 -2.1884E-05 -2.3198E-05
-2.4495E-05 -2.5533E-05 -2.6422E-05 -5.4989E-05 -2.3356E-05 -3.2441E-05
-2.7547E-05 -2.7164E-05 -2.6818E-05 -2.6335E-05 -2.5784E-05 -2.4963E-05
-2.4218E-05 -2.3602E-05 -2.3108E-05 -2.2756E-05 -2.2130E-05 -2.1551E-05
-4.1183E-05 -3.9003E-05 -3.7002E-05 -3.5008E-05 -3.3163E-05 -3.8212E-06
-1.4199E-06 -2.9268E-06 -7.9656E-06 -1.5519E-05 -2.9707E-05 -2.8412E-05
-1.3818E-05 -1.3459E-05 -1.3075E-05 -1.2590E-05 -1.2102E-05 -1.1614E-05
-1.1239E-05 -1.0791E-05 -1.0407E-05 -1.0020E-05 -9.6082E-06 -9.2280E-06
-8.8127E-06 -8.4557E-06 -1.9415E-05 -1.7441E-05 -6.4117E-06 -4.7345E-06
-1.1992E-05 -7.7833E-06 -1.9784E-05 -7.8225E-06 -1.1808E-05 -8.9187E-06
-1.1181E-05 -4.0969E-06 -5.2055E-06 -2.2293E-06 -1.3341E-06 -2.1647E-06
-1.4778E-06 -2.2665E-06 -3.3892E-06 -5.7763E-06 -3.9278E-06 -2.6317E-06
-1.7968E-06 -1.3340E-06 -9.5075E-07 -4.2279E-07 -2.3229E-07 -2.1813E-07
-1.6749E-07 -6.9156E-08 -7.8491E-08 -1.3925E-07 -9.1668E-08 -2.0627E-07
-1.2605E-07 -8.7084E-08 -7.1380E-08 -8.2151E-08 -3.2520E-08 -9.2357E-09
-8.8163E-09 -1.2548E-08 -8.6314E-09 -2.1099E-11 -4.2674E-10 -1.8556E-09
-1.6411E-09 -7.9045E-10 -1.3726E-11 -2.1427E-12 -4.0137E-13 -5.9411E-14
-8.7559E-15

```

4D      5      1 1262  452      2      0      0      8      0      0      0
      0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR GODIVA *
7D *GODIVA SENS. OF K TO 238U NUBAR A= 9.7591E-03*
8D  1.7907E-05 5.9303E-05 1.8050E-04 4.0514E-04 2.6707E-04
  2.6823E-04 6.8820E-04 9.8551E-04 9.0763E-04 3.2778E-04 3.4299E-04
  3.5983E-04 3.7538E-04 3.8860E-04 2.6402E-04 6.6838E-05 2.0056E-04
  2.6945E-04 4.0811E-04 4.0995E-04 4.0416E-04 3.8933E-04 3.6800E-04
  3.3844E-04 3.0338E-04 2.5333E-04 1.8690E-04 1.0777E-04 5.6273E-05
  3.5141E-05 3.0017E-05 2.3692E-05 2.8732E-05 9.7433E-06 1.1925E-05
  6.0515E-06 3.7990E-06 2.2784E-06 1.5178E-06 1.0954E-06 8.6494E-07
  8.2335E-07 7.9205E-07 5.6804E-07 3.1828E-07 2.3545E-07 1.6190E-07
  2.2481E-07 1.5796E-07 1.1028E-07 8.3722E-08 6.2019E-08 6.1036E-09
  2.2390E-09 4.5778E-09 1.2216E-08 2.2771E-08 4.0045E-08 3.3930E-08
  1.4818E-08 1.3437E-08 1.2231E-08 1.1136E-08 1.0154E-08 9.2619E-09
  8.4597E-09 7.6808E-09 6.9904E-09 6.3688E-09 5.7929E-09 5.2776E-09
  4.7875E-09 4.3644E-09 9.2221E-09 7.6718E-09 2.6378E-09 1.8634E-09
  4.4000E-09 2.5617E-09 5.5649E-09 1.9397E-09 2.8252E-09 5.0797E-10
  0.0 0.0 0.0 0.0 0.0 0.0
  0.0 0.0 0.0 0.0 0.0 0.0
  0.0 0.0 0.0 1.0989E-17 1.5407E-17 1.6922E-17
  2.0521E-17 1.2049E-17 1.2826E-17 2.9884E-17 4.2178E-17 2.0155E-16
  4.5317E-15 1.3686E-11 3.2037E-15 1.6085E-11 1.1955E-16 1.7198E-17
  1.4022E-17 1.5774E-17 6.9080E-18 7.2170E-19 7.8734E-19 1.0408E-18
  8.3566E-19 3.3770E-19 3.1564E-19 1.0557E-19 1.3038E-20 3.2036E-22
  3.7039E-24

```

```

IHC002I STOP      0

```


APPENDIX C

An Example of Using the Graphs
and the SENPRO Data

Consider the following problem: what is the percent change in the ZPR-6/6A reaction-rate ratio (^{238}U capture)/(^{235}U fission) due to a 10% uniform increase in the ^{235}U fission cross section in the energy range 0.1 to 0.2 MeV.

- a) An estimate from the graph at the top of page 71 gives a value for the relative sensitivity per unit lethargy of -0.19 (solid lines represent negative values) for the range 0.1 to 0.2 MeV. The percent change in the response is given by

$$(-0.19) [\ln(0.2/0.1)] 10\%$$

which gives a decrease in the response of 1.3%.

- b) Table 1 on page 4 shows that 0.2 MeV lies in group 62 and 0.1 lies in group 74. We then sum the sensitivity coefficients at the top of page 170 over groups 63 through 73 adding 0.7594 of the group 62 and 0.8414 of the group 74 sensitivities (interpolating linearly in lethargy). This gives a total relative sensitivity of -0.1325, which, when multiplied by 10%, gives a predicted decrease of 1.325% in the response .

Utility programs for computer calculations using such sensitivity data in SENPRO format are available on request from Oak Ridge National Laboratory through Radiation Shielding Information Center.

ORNL-5262
 Distribution Category UC-79d
 (ENDF-234)

Internal Distribution

- | | |
|-------------------------------|-----------------------------------|
| 1. L. S. Abbott | 37. L. M. Petrie |
| 2. R. G. Alsmiller, Jr. | 38. H. Postma |
| 3. D. E. Bartine | 39. W. A. Rhoades |
| 4. T. J. Burns | 40. RSIC |
| 5. C. E. Clifford | 41. D. Steiner |
| 6. F. L. Culler | 42. M. L. Tobias |
| 7. G. deSaussure | 43. D. B. Trauger |
| 8. D. C. Difillipo | 44. E. T. Tomlinson |
| 9. J. D. Drischler | 45. D. R. Vondy |
| 10. W. W. Engle, Jr. | 46-79. C. R. Weisbin |
| 11. G. F. Flanagan | 80. R. M. Westfall |
| 12. W. E. Ford | 81. L. W. Weston |
| 13. H. Goldstein (consultant) | 82. J. E. White |
| 14. N. M. Greene | 83. G. E. Whitesides |
| 15. R. Gwin | 84. J. B. Wright |
| 16. W. O. Harms | 85. R. Q. Wright |
| 17. R. F. Hibbs | 86. A. Zucker |
| 18. J. D. Jenkins | 87. P. Greebler (consultant) |
| 19. J. L. Lucius | 88. W. W. Havens (consultant) |
| 20. R. A. Lillie | 89. A. F. Henry (consultant) |
| 21. F. C. Maienschein | 90. R. E. Uhrig (consultant) |
| 22-31. J. H. Marable | 91-92. Central Research Library |
| 32. F. R. Mynatt | 93. ORNL Y-12 Technical Library |
| 33. E. M. Oblow | Document Reference Section |
| 34. R. W. Peelle | 94. Laboratory Records Department |
| 35. F. G. Perey | 95. Laboratory Records ORNL RC |
| 36. R. B. Perez | 96. ORNL Patent Office |

External Distribution

97. USERDA Oak Ridge Operations, Research and Technical Support Division, P.O. Box E, Oak Ridge, TN. 37830: Director
98. USERDA Oak Ridge Operations, Reactor Division, P. O. Box E, Oak Ridge, TN. 37830: Director
- 99-100. USERDA Division of Reactor Research and Development, Washington, D.C. 20545: Director
- 101-431. For distribution as shown in TID-4500 Distribution Category, UC-79d, Liquid Metal Fast Breeder Reactor Physics (60 copies - ENDF distribution)



