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NEUTRON PHYSICS DIVISION

A Compendium of Energy-Dependent Sensitivity Profiles for the TRX-2 Thermal Lattice*

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ORGANIZATION OF GRAPHS AND DATA

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	k		$^{28}\rho$		$^{25}\delta$		$^{28}\delta$		CR	
	Graph	SENPRO Data	Graph	SENPRO Data	Graph	SENPRO Data	Graph	SENPRO Data	Graph	SENPRO Data
$^{238}U\ \bar{\nu}$	17	116	35	122	53	128	71	134	93	141
$^{238}U\ \sigma_f$	18	116	36	122	54	128	72	134	99	141
$^{238}U\ \sigma_c$	19	116	37	122	55	128	73	134	95	142
$^{238}U\ \sigma_s$	20	117	38	123	56	129	74	135	96	142
$^{238}U\ \sigma_s$ in(21st)							75	135		
$^{238}U\ \sigma_s$ in(22nd)							76	135		
$^{238}U\ \sigma_s$ in(cont.)							77	136		
$^{238}U\ \sigma_s$ in(total)							78	136		
$^{235}U\ \bar{\nu}$	21	117	39	123	57	129	79	136	97	142
$^{235}U\ \sigma_f$	22	117	40	123	58	129	80	137	98	143
$^{235}U\ \sigma_c$	23	118	41	124	59	130	81	137	99	143
$^{235}U\ \sigma_s$	24	118	42	124	60	130	82	137	100	143
Al σ_c	25	118	43	124	61	130	83	138	101	144
Al σ_s	26	119	44	125	62	131	84	138	102	144
H σ_c	27	119	45	125	63	131	85	138	103	144
H σ_s	28	119	46	125	64	131	86	139	104	145
O σ_c	29	120	47	126	65	132	87	139	105	145
O σ_s	30	120	48	126	66	132	88	139	106	145
DB^2 fuel	31	120	49	126	67	132	89	140	107	146
DB^2 void	32	121	50	127	68	133	90	140	108	146
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υB^2 moderator	34	121	52	127	70	133	92	141	110	147

ABSTRACT

Energy-dependent sensitivity profiles for five responses calculated for the TRX-2 thermal lattice with the ORNL sensitivity code system FORSS are presented here both in graphical form and in SENPRO format. The responses are the multiplication factor, k_{eff}; the ratio of epithermal-to-thermal captures in ^{238}U, $^{28}\rho$; the ratio of epithermal-to-thermal fissions in ^{235}U, $^{28}\delta$; the ratio of fissions in ^{238}U to fissions in ^{235}U, $^{28}\delta$; and the ratio of captures in ^{238}U to fissions in ^{235}U, CR. A summary table of the total sensitivities is also presented.

INTRODUCTION

The ORNL sensitivity code system FORSS,[1,2] a modular computer code system for studying relationships between nuclear cross sections, integral experiments, and calculated performance parameters for a given system, together with the associated uncertainties, has been applied to the CSEWG TRX-2 thermal lattice benchmark.[3] Of special interest are the sensitivity profiles, which show the sensitivity of the calculated responses to the various material cross sections as a function of neutron energy and to the resonance parameters. These profiles may be used in a myriad of ways; however, much insight can be gained merely through studying the profiles themselves. This report presents a set of typical sensitivity profiles for the selected system. In addition, for those interested in applying the sensitivity coefficients, the SENPRO format[4] for reporting sensitivity coefficients is presented in Appendix A, and the data are tabulated in Appendix B.

THE SCOPE OF THE REPORT

The TRX-2 thermal lattice was selected for this study because it represents a well-documented and often-calculated thermal benchmark. It was a slightly enriched (1.3%) water-moderated assembly with uranium metal rods clad in aluminum. The rods were 121.92 cm in length and 0.983 cm in diameter in a hexagonal pitched array with a water-to-fuel ratio of 4.02. This resulted in a spectrum that was considerably softer than that of a typical pressurized water reactor. The calculations were done using a single assembly cell (i.e., a single fuel rod surrounded by water).

A total of five responses were calculated for the assembly:

(1) the multiplication factor, k_{eff};
(2) the ratio of epithermal-to-thermal captures in ^{238}U, ^{28}c;
(3) the ratio of epithermal-to-thermal fissions in ^{235}U, $^{25}\delta$;
(4) the ratio of ^{238}U fissions to ^{235}U fissions, $^{28}\delta$;
(5) the ratio of ^{238}U captures to ^{235}U fissions, CR.

All reaction rate ratios were averaged over the fuel pin. An upper energy bound of 0.625 eV was assumed for the thermal region. The nuclear data

included were fission yields and neutron interaction cross sections for fission, capture, total scattering, and total inelastic scattering, as well as scattering from each inelastic level and from the inelastic continuum. Inelastic scattering sensitivities were considered only for ^{238}U and reported only if the magnitude of the sensitivity was greater than 10^{-6}.

The sensitivities presented represent a portion of what is presently available at ORNL in the thermal reactor field and is in no sense complete. Preliminary sets of sensitivity profiles are available for a number of mixed oxide lattices.[5] It was felt, however, that these data are of sufficient interest to warrant presentation in this report. The sensitivities have been compiled in a computer-readable format and are available from the Radiation Shielding Information Center at Oak Ridge National Laboratory. This RSIC library, which also presently contains a number of fast reactor benchmark sensitivities,[6] continues to grow and will be documented at appropriate intervals in the sense of the "open code package."

THE METHOD

The method of calculating the sensitivity coefficients for TRX-2 has been extensively described elsewhere[7] and only a brief description will be presented here.

A 131 energy group cross-section library[8] was developed for use in this study. The energy boundaries for this library are presented in Table 1. The weight function used for the averaging process consisted of a Maxwellian at 300°K in the thermal range with an upper energy cutoff of 0.625 eV coupled to a 1/E spectrum joined to a fission spectrum at high energies. (The breakpoint was taken to be 67 keV and the temperature of the fission spectrum was taken to be 1.27 MeV, corresponding to the ENDF/B-IV value for the thermal fissions in ^{235}U.) The thermal cross sections generated during this process were not used because of the inability of the MINX code to perform upscatter corrections. The upscatter corrected and self-shielded thermal data, including bound atom effects, used in this

Table 1. 131 Group Energy Boundaries for the TRX-2 Sensitivity Study

Group	Upper Energy (eV)	Group	Upper Energy (eV)	Group	Upper Energy (eV)
1	1.00000+7	45	6.51558+1	89	2.10000+1
2	6.06531+6	46	6.61462+1	90	2.09626+1
3	3.67879+6	47	6.61366+1	91	2.09252+1
4	2.23130+6	48	6.61270+1	92	2.09152+1
5	1.35335+6	49	6.60980+1	93	2.09053+1
6	8.20850+5	50	6.60700+1	94	2.08953+1
7	4.97871+5	51	6.59900+1	95	2.08854+1
8	3.01974+5	52	6.58700+1	96	2.08754+1
9	1.83156+5	53	6.55100+1	97	2.08377+1
10	1.11090+5	54	6.52300+1	98	2.08000+1
11	6.73795+4	55	6.50400+1	99	2.07600+1
12	4.08677+4	56	6.46200+1	100	2.06000+1
13	2.47875+4	57	6.38000+1	101	2.04000+1
14	1.50344+4	58	6.32200+1	102	2.01500+1
15	9.11882+3	59	6.30000+1	103	2.00000+1
16	5.53084+3	60	3.97000+1	104	1.98000+1
17	3.35463+3	61	3.87600+1	105	1.92600+1
18	2.03468+3	62	3.81850+1	106	1.05000+1
19	1.23410+3	63	3.78100+1	107	9.93000+0
20	7.48518+2	64	3.75200+1	108	8.06000+0
21	4.53999+2	65	3.72100+1	109	7.51000+0
22	2.75364+2	66	3.69800+1	110	7.19000+0
23	1.67017+2	67	3.69146+1	111	7.01000+0
24	1.01310+2	68	3.68491+1	112	6.90000+0
25	9.36000+1	69	3.68300+1	113	6.78000+0
26	9.30000+1	70	3.68108+1	114	6.71000+0
27	9.12800+1	71	3.67917+1	115	6.69690+0
28	9.06250+1	72	3.67725+1	116	6.68387+0
29	8.97500+1	73	3.67534+1	117	6.67830+0
30	8.87500+1	74	3.66767+1	118	6.67280+0
31	8.39200+1	75	3.66000+1	119	6.66720+0
32	8.32000+1	76	3.65000+1	120	6.66170+0
33	8.18000+1	77	3.63800+1	121	6.65616+0
34	8.00000+1	78	3.60955+1	122	6.64310+0
35	6.86800+1	79	3.57200+1	123	6.63000+0
36	6.79800+1	80	3.54900+1	124	6.56000+0
37	6.75000+1	81	3.51200+1	125	6.40000+0
38	6.68700+1	82	3.46000+1	126	6.25000+0
39	6.65900+1	83	2.30000+1	127	6.15000+0
40	6.63800+1	84	2.24500+1	128	5.95000+0
41	6.62200+1	85	2.19500+1	129	5.50000+0
42	6.61975+1	86	2.15800+1	130	1.00000+0
43	6.61750+1	87	2.13000+1	131	6.25000-1
44	6.61654+1	88	2.11000+1		1.00000-5

study were supplied by EPRI.[8] These were obtained from a 30-group THERMOS[9] calculation.

The scattering cross section for all the energy groups above thermal were expanded through P_1 except for hydrogen. The hydrogen scattering matrices were expanded through order 5. This was done to correctly account for the forward peaked angular distribution of neutrons scattering from hydrogen in the laboratory system, leading to an energy distribution appropriate for the fine energy mesh used in this study. Later results indicated that a P_3 expansion would have been sufficient. The thermal cross section data consisted of a transport corrected P_0 set. (In practice, this was run as P_5, with the higher moments set to zero.) This involved the assumption that all anisotropic scattering effects can be accounted for by use of the transport cross section instead of the total cross section.

The ANISN discrete ordinate transport code[10] (using an $S_{16}P_5$ approximation) was applied to a one-dimensional model of a TRX-2 cell, described in Table 2, for the calculation of the forward and adjoint fluxes, as well as the multiplication eigenvalue. These in turn were used in the JULIET[2] module for calculating the values of the performance parameters and the corresponding sources for the generalized-adjoint transport equations. The generalized adjoint solutions of these generalized equations were provided by ANISN (modified to allow negative sources and fluxes) and then used in JULIET for the calculation of sensitivity coefficients. Further details concerning these codes and procedures can be found in Ref. 7.

RESULTS

The results of this sensitivity study are presented here in the form of tables and graphs.* The nominal values of the performance parameters calculated using ENDF/B-IV cross sections are in good agreement with previously reported values[11] and experimental values (see Table 3).[12] The calculated resonance parameter sensitivities for the first four s wave resonances in ^{238}U are also in good agreement with previously reported results.[13] The

*The tables are in Appendix B, page 115, and the graphs begin on page 17; see page iv for page numbers of specific data.

Table 2. The Cylindricized Calculation Model of the TRX-2 Hexagonal Lattice

Region	Outer Radius (cm)	Isotope	Concentration atoms/barn-cm
Fuel	0.4915	^{235}U	0.0006253
		^{238}U	0.047205
Void	0.5042	-	-
Clad	0.5753	^{23}Al	0.06025
Moderator	1.14109	^{1}H	0.06676
		^{16}O	0.03338

Total Buckling = 0.005469 cm^{-2}

Table 3. TRX-2 Performance Parameters Based Upon ENDF/B-IV

Parameter	Experiment[a]	ORNL Calculation
k_{eff}	1.0000	1.0012
^{28}	0.837±0.016	0.867
^{25}	0.0614±0.0008	0.0602
^{28}	0.0693±0.0035	0.0698
CR	0.647±0.006	0.645

graphs, Figs. 1-94, present relative sensitivities per unit lethargy as a function of neutron energy. The profiles were plotted in this form because the relative sensitivity per unit lethargy is independent of 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. Note that these are log-log plots in which a solid curve represents a negative quantity and a broken line (dashed) curve represents a positive quantity.

The total sensitivities for each response, nuclide, and reaction are presented in Tables 4-8. The total sensitivity is the sum over all energy groups of the sensitivities of the response with respect to the group reaction cross sections. Such a total sensitivity is actually a relative sensitivity with respect to a single group-independent scale factor λ which affects the associated cross section in the same proportion at all energies and small 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 the group cross sections have their nominal values σ_g^0. Then the group cross sections are given by

$$\sigma_g' = \lambda \sigma_g^0. \tag{1}$$

The energy dependent sensitivity profiles provide a quantitative assessment of the rate of change in a particular response, R, with respect to the rate of change in some multigroup constant. Of more immediate interest is the sensitivity with respect to a specific resonance parameter, Γ_χ. The latter can be obtained from

$$\frac{dR/R}{d\Gamma_\chi/\Gamma_\chi} = \sum_g \left(\frac{dR/R}{d\bar{\sigma}_g/\bar{\sigma}_g}\right) \frac{d\bar{\sigma}_g/\bar{\sigma}_g}{d\Gamma_\chi/\Gamma_\chi} \tag{2}$$

The first term in each element of the sum is the sensitivity profile ($dR/R/d\bar{\sigma}_g/\bar{\sigma}_g$), whereas the second derivation ($d\bar{\sigma}_g/\bar{\sigma}_g/d\Gamma_\chi/\Gamma_\chi$) can be obtained numerically.

The numerical derivatives were obtained by direct recalculation of the group averaged cross section with a perturbed set of resonance parameters. The results of these calculations are given in Table 9 for the parameters

Table 4. Total Sensitivities for k_{eff} in the TRX-2 Thermal Lattice

Nuclide	Iter	$\frac{\partial R/R}{\partial \sigma/\sigma}$
[illegible]	[illegible]	0.925
[illegible]	[illegible]	0.430
[illegible]	[illegible]	-0.265
[illegible]	[illegible]	0.183
[illegible]	[illegible]	-0.160
Moderator	DB	-0.106
[illegible]	[illegible]	-0.092
[illegible]	[illegible]	0.075
[illegible]	[illegible]	0.048
Fuel	DB	-0.027
Clad	DB	-0.008
Al	[illegible]	-0.007
[illegible]	[illegible]	-0.002
O	[illegible]	-0.002
O	[illegible]	0.002
Void	DB	-0.002
Al	[illegible]	-0.0001
[illegible]	[illegible]	-0.00002

Table 5. Total Sensitivities for [illegible] in the TRX-2 Thermal Lattice

Nuclide	Iter	$\frac{\partial R/R}{\partial \sigma/\sigma}$
H	[illegible]	-0.035
[illegible]	[illegible]	0.549
H	[illegible]	0.182
[illegible]	[illegible]	0.096
Moderator	DB	0.029
[illegible]	[illegible]	-0.024
O	[illegible]	-0.011
Al	[illegible]	0.008
[illegible]	[illegible]	0.004
Fuel	DB	0.004
Clad	DB	0.002
Void	DB	0.0005
Al	[illegible]	-0.0005
[illegible]	[illegible]	-0.0003*
[illegible]	[illegible]	-0.0001
O	[illegible]	0.00004
[illegible]	[illegible]	-0.00003
[illegible]	[illegible]	-0.00002*

*These sensitivities should sum to zero, but due to numerical precision a small residual remains.

Table 6. Total Sensitivities for $^{25}\delta$ in the TRX-2 Thermal Lattice

Nuclide	Item	$\frac{\delta R/R}{\delta\sigma/\sigma}$
H	σ_s	-1.035
^{235}U	σ_f	0.538
^{238}U	σ_c	0.201
H	σ_c	0.181
^{235}U	σ_c	0.092
Moderator	DB^2	0.029
^{238}U	σ_s	-0.013
O	σ_s	-0.013
Al	σ_c	0.008
Fuel	DB^2	0.003
Clad	DB^2	0.002
Al	σ_s	-0.0003
^{238}U	σ_f	-0.0008
Void	DB^2	0.0005
^{235}U	σ_s	-0.0001
^{235}U	$\bar{\nu}$	0.00004*
O	σ_c	-0.00003
^{238}U	$\bar{\nu}$	-0.00001*

*These sensitivities should sum to zero, but due to numerical precision a small residual remains.

Table 7. Total Sensitivities for $^{28}\delta$ in the TRX-2 Thermal Lattice

Nuclide	Item	$\frac{\delta R/R}{\delta\sigma/\sigma}$
^{238}U	σ_f	0.975
H	σ_s	-0.749
^{235}U	σ_f	-0.467
^{238}U	σ_c	0.284
^{238}U	σ_s	-0.193
H	σ_c	0.173
^{235}U	σ_c	0.099
Moderator	DB^2	0.069
O	σ_s	-0.043
Fuel	DB^2	0.016
Al	σ_s	-0.013
Al	σ_c	0.007
Clad	DB^2	0.005
O	σ_c	-0.003
Void	DB^2	0.002
^{235}U	σ_s	-0.001
^{238}U	$\bar{\nu}$	-0.001*
^{235}U	$\bar{\nu}$	-0.0002*

*These sensitivities should sum to zero, but due to numerical precision a small residual remains.

Table 8. Total Sensitivities for CR in the TRX-2 Thermal Lattice

Nuclide	Item	$\frac{\delta R/R}{\delta \sigma/\sigma}$
^{236}U	σ_c	0.978
^{235}U	σ_f	-0.776
H	σ_s	-0.422
H	σ_c	0.074
^{235}U	ν_c	0.039
Moderator	DB^2	0.012
O	σ_s	-0.004
Al	σ_c	0.003
^{238}U	σ_s	0.003
Fuel	DB^2	0.002
Clad	DB^2	0.001
^{235}U	$\bar{\nu}$	-0.0003*
Void	DB^2	0.0002
Al	σ_s	-0.0002
O	σ_c	0.00003
^{238}U	σ_f	-0.00003
^{238}U	$\bar{\nu}$	-0.00002*
^{235}U	σ_s	-0.000004

*These sensitivities should sum to zero, but due to numerical precision a small residual remains.

Table 9. Performance Parameter Sensitivities to ^{238}U Resolved Resonance Parameters

E_o	6.67 eV		20.9 eV		36.8 eV		66.15 eV	
Parameter	Γ_n	Γ_γ	Γ_n	Γ_γ	Γ_n	Γ_γ	Γ_n	Γ_γ
k	-0.018	-0.018	-0.008	-0.008	-0.005	-0.006	-0.002	-0.002
$2\beta_o$	0.149	0.147	0.068	0.066	0.055	0.055	0.020	0.020
$2\gamma_o$	0.004	0.004	-0.0007	-0.0007	-0.002	-0.002	0.0004	0.0004[a]
$2\delta_o$	0.013	0.019	0.009	0.009	0.007	0.007	0.003	0.003
CR	0.069	0.068	0.031	0.031	0.026	0.026	0.009	0.009

[a]This value borders on the limit of computational precision.

of interest with respect to the capture and scattering widths of the first four resolved resonances.

The sensitivities given in Appendix B using the SENPRO format are not per unit lethargy but are simply relative sensitivities to the group cross sections. These relative sensitivities are the quantities currently used in numerical computations.

DISCUSSION

A study of the energy-dependent profiles can provide valuable insight into the interrelations between the various nuclides in the assembly. Large quantities of structure are readily observable in their profiles. This structure can often be traced back to resonances, thresholds, etc. in the cross sections. However, a more detailed examination of these effects is beyond the scope of this report.

The remainder of this discussion is concerned with a few items which are useful in interpreting the profiles presented here. The total sensitivity is a useful figure-of-merit indicating what reactions are likely to be important for a given response. However, since the total sensitivity is often composed of large positive and negative contributions (particularly for epithermal-to-thermal reaction rate ratios), one must be careful not to be misled by relatively small values of the total sensitivity such as that for the sensitivity of $^{28}\rho$ to ^{238}U capture. The graphical displays of the sensitivity profiles illustrate the detailed energy dependence.

The shape of the sensitivity profile of k and $^{28}\rho$ to $^{238}U(n,\gamma)$ show the effects of resonance self-shielding. The major portion of the captures (71%) in each resonance occur in the wings where the sensitivity is the highest. The self-shielded resonance peak, where the flux is depressed, has a low sensitivity. Similar behavior can be seen in other profiles.

The reaction rate ratios, in particular the epithermal-to-thermal ratios, have sensitivities to the hydrogen scattering cross section that are near unity, which is much higher than the sensitivities to most of the other nuclides and reaction types. The dominance of the hydrogen scattering sensitivity is due to the importance of hydrogen in the neutron thermalization process.

This study revealed that the total sensitivities are dominated by the contributions made in the thermal energy region. The lack of a fine energy mesh below 0.625 eV was a definite disadvantage during this study and it is highly recommended that future studies of thermal lattices use a fine energy mesh to perform detailed studies in this energy range.

The sensitivity of the performance parameters to the ^{238}U resonance data is dominated by the resolved resonance parameter of the 6.67 eV resonance. This is as expected since approximately 70% of the captures in ^{238}U occur below 100 eV and the majority of these are in the 6.67 eV resonance. It is also interesting to note that the sensitivity to the neutron width Γ_n is almost identical to the sensitivity to the capture width Γ_γ.

The sensitivities quoted as sensitivity to neutron scattering refer to the total scattering cross section (i.e., the sum of elastic, inelastic, etc.). The DB^2 sensitivity components refer to the pseudo-absorption term which was added to the total cross section to account for leakage from the lattice. The only performance parameters that have a relatively high sensitivity to leakage are k_{eff} and $^{28}\delta$. This is as expected since these are the only two parameters that are affected directly by fission in ^{238}U. A detailed discussion of this leakage treatment can be found in Ref. 7.

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 ratio of ^{238}U capture to ^{235}U fission is homogeneous of 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.

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.

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. This illustrates shielding (or another cross section) which is a greater effect than the self shielding. Thus, the relative sensitivity of ^{28}p to the scattering cross section of hydrogen is -1.035, which is greater in magnitude than the direct effect (0.0). This shows that an increase in the hydrogen scale factor results in a flux spectrum modification (due to changes in the rate of neutron thermalization) which greatly decreases the epithermal captures relative to the thermal captures. That is, it increases the resonance escape probability.

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 the direct-effect and 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

$$\frac{a}{k}\frac{dk}{da} = f_a - k\,\alpha_a \,, \tag{3}$$

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 expressions for these are

$$f_a \equiv \frac{(\phi^*, B_a\phi)}{(\phi^*, B\phi)} \,, \tag{4}$$

$$\alpha_a \equiv \frac{(\phi^*, A_a\phi)}{(\phi^*, B\phi)} \,, \tag{5}$$

where B_a is the part of the fission source proportional to parameter a, 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 is 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 for the changes in the neutron yields.

CONCLUSIONS

The sensitivity coefficients are an important tool for the calculation of many quantities of interest in reactor design. A comprehensive set of sensitivity profiles has been determined for integral performance parameters measured in TRX-2. These sensitivities are being used by the Cross Section Evaluation Working Group in providing additional guidance for future evaluations. These sensitivity profiles and summary tables are contained in this report; the data files in SENPRO format are in Appendix B.

ACKNOWLEDGMENTS

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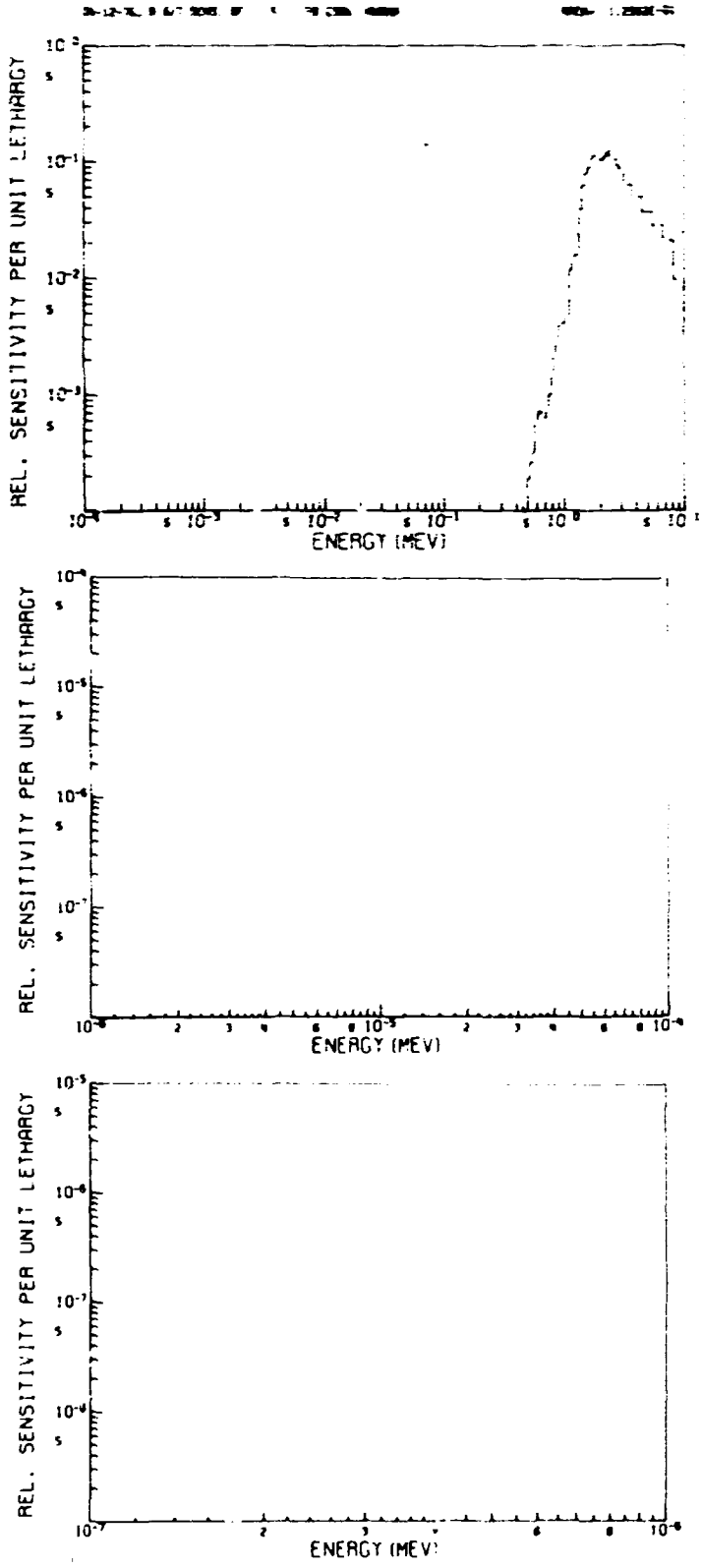

Fig. 1. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{238}U $\bar{\nu}$.

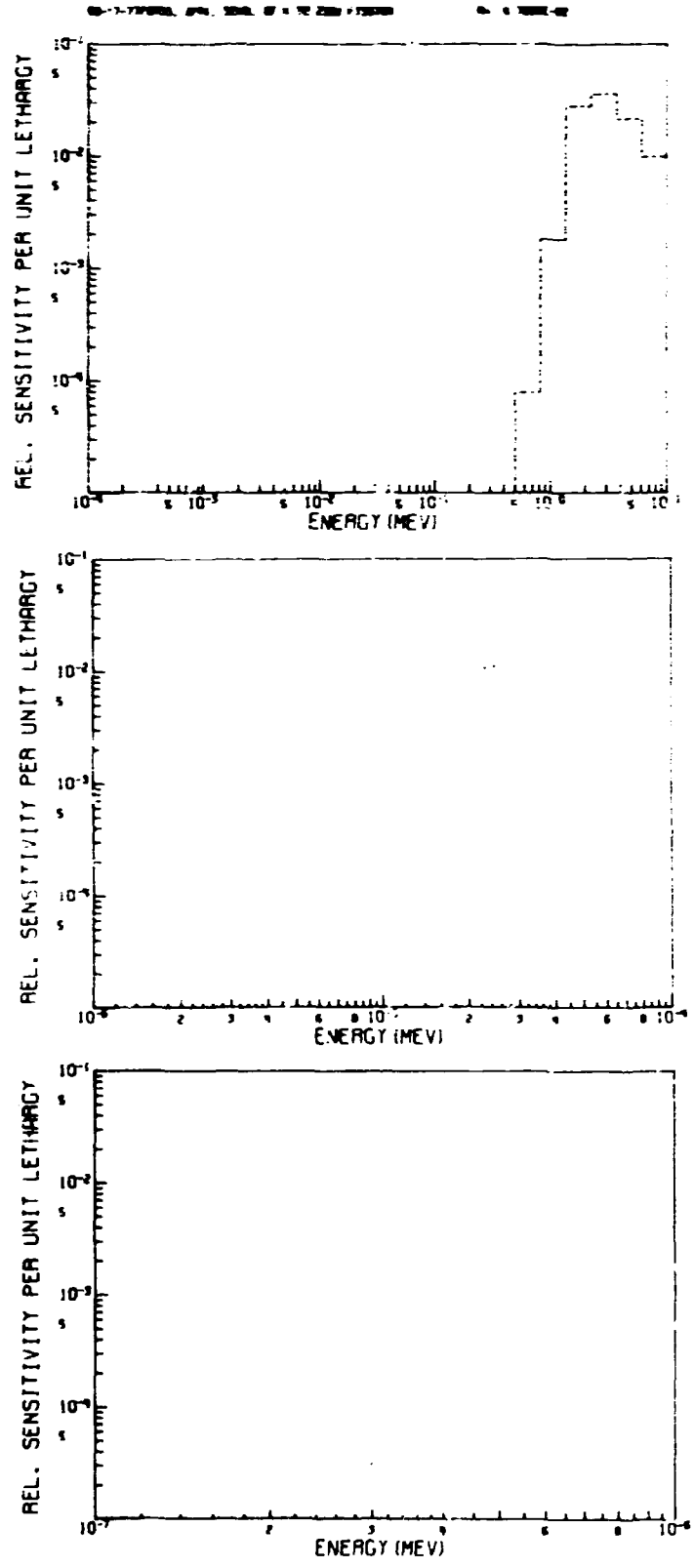

Fig. 2. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{238}U σ (n,f).

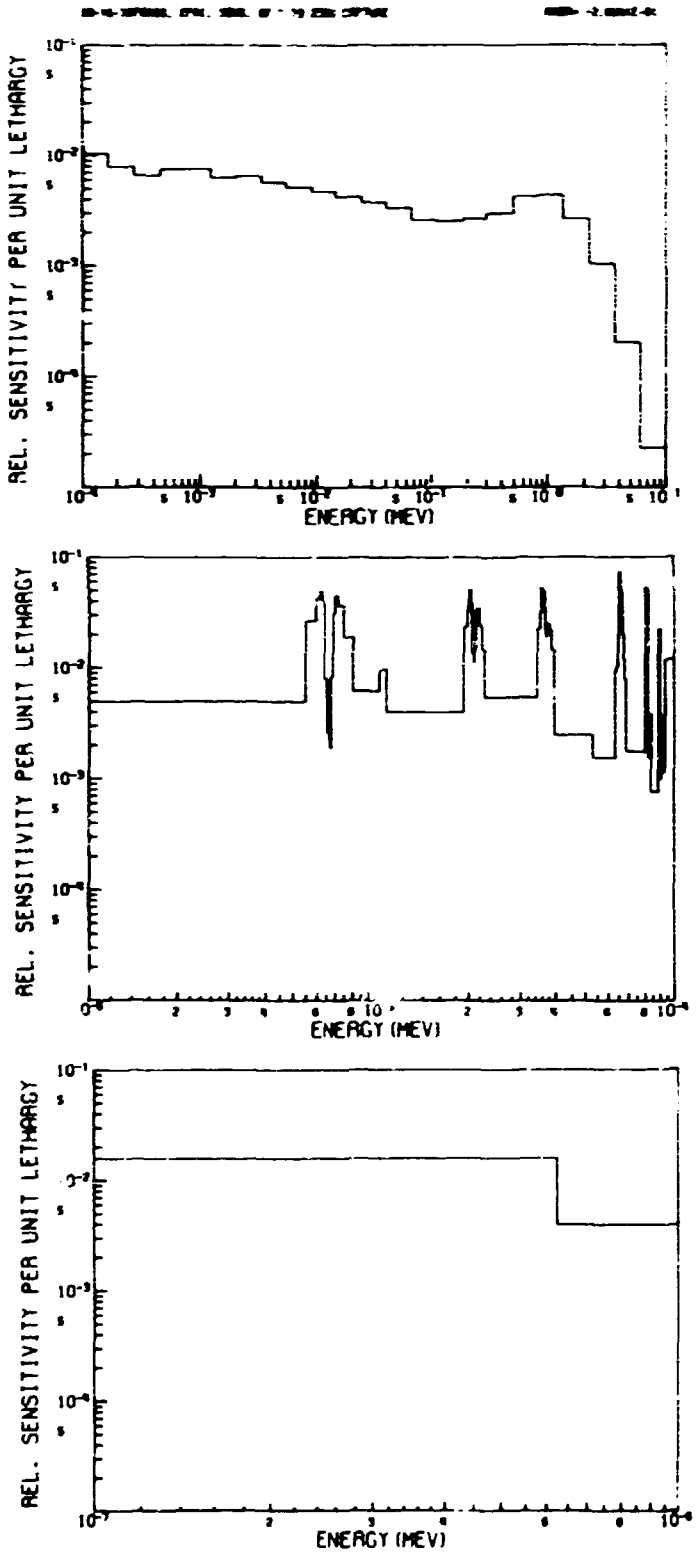

Fig. 3. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{238}U (n,γ).

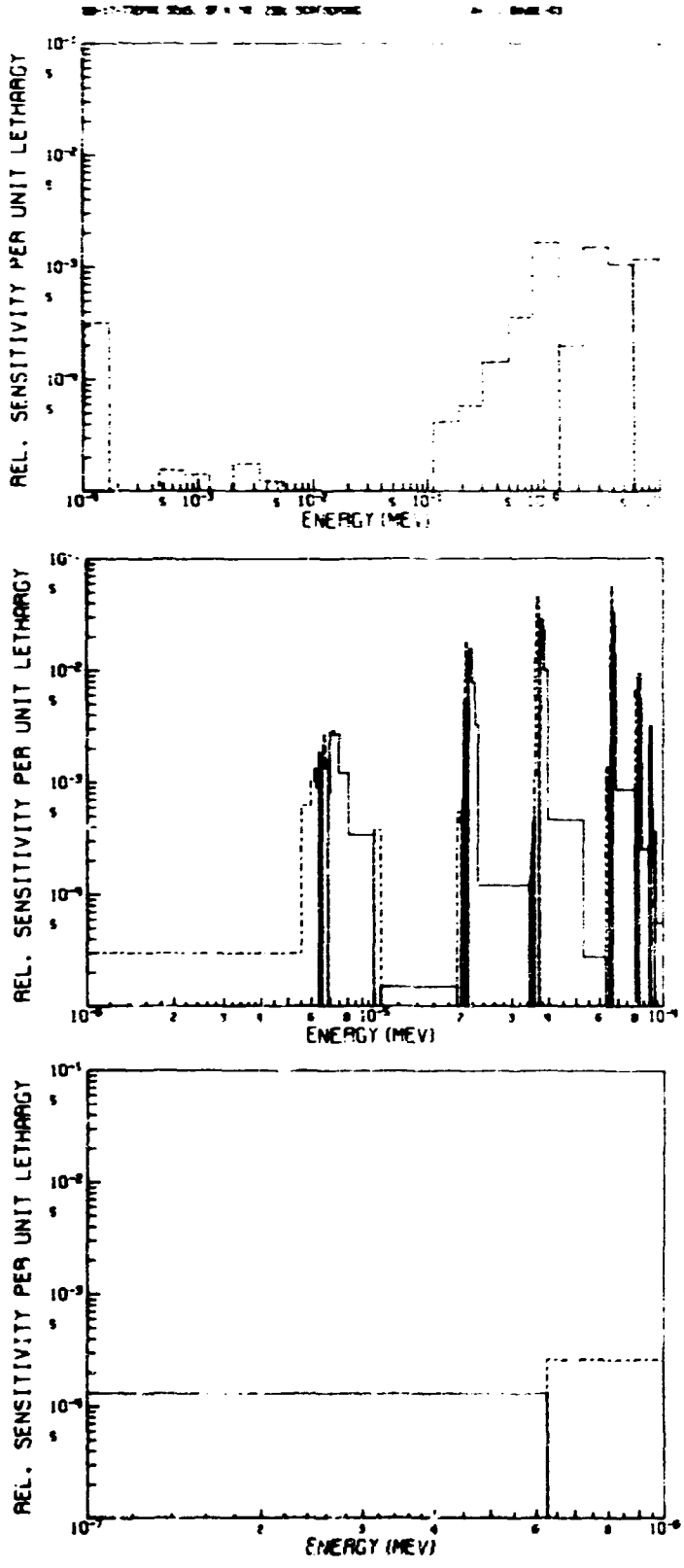

Fig. 4. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{238}U (n,n).

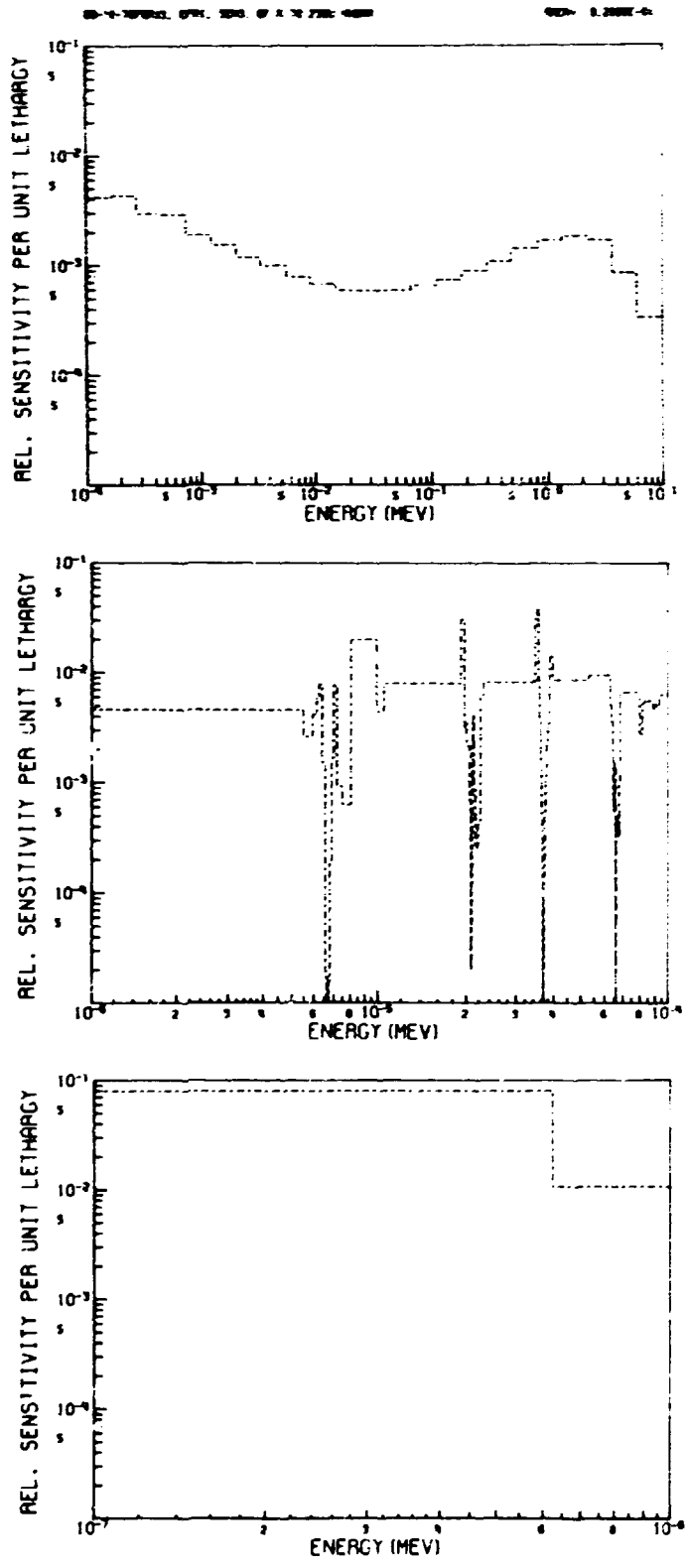

Fig. 5. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{235}U $\bar{\nu}$.

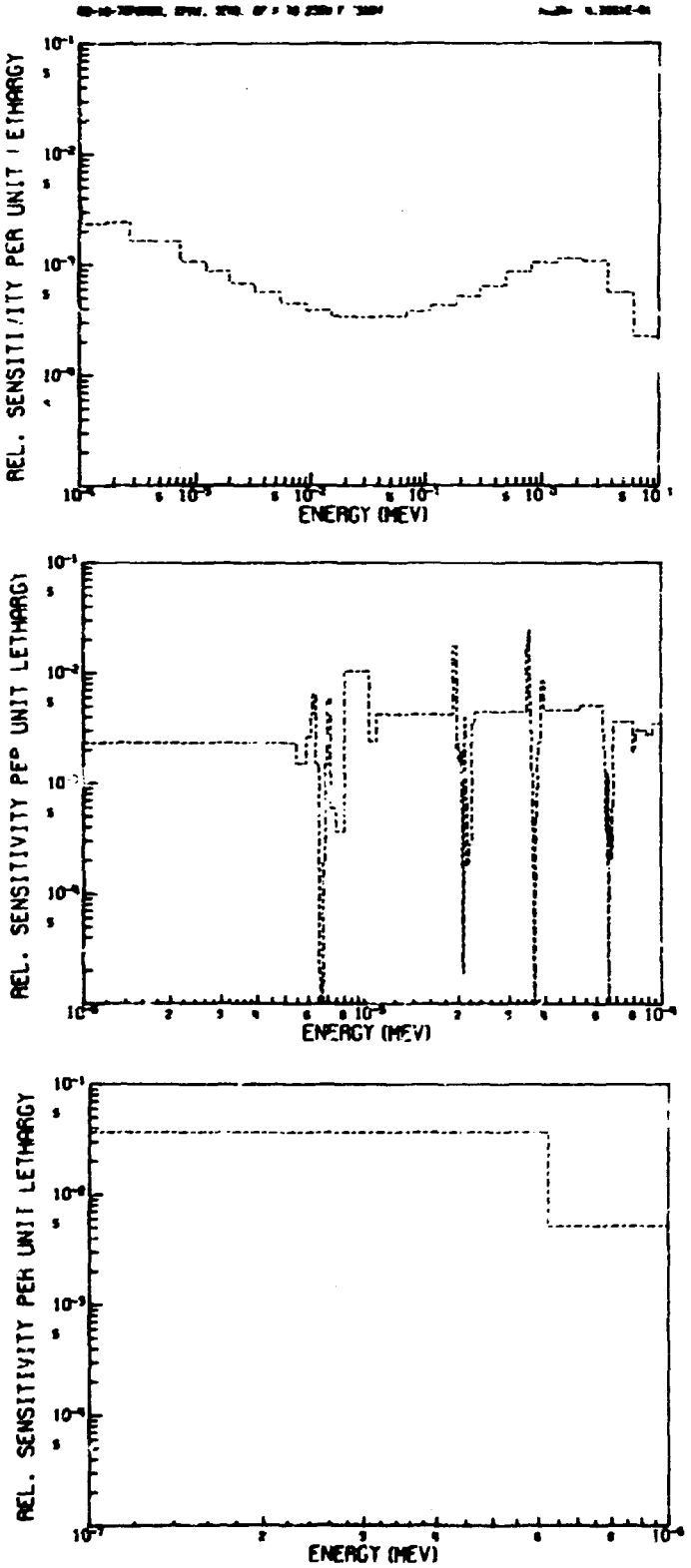

Fig. 6. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{235}U (n,f).

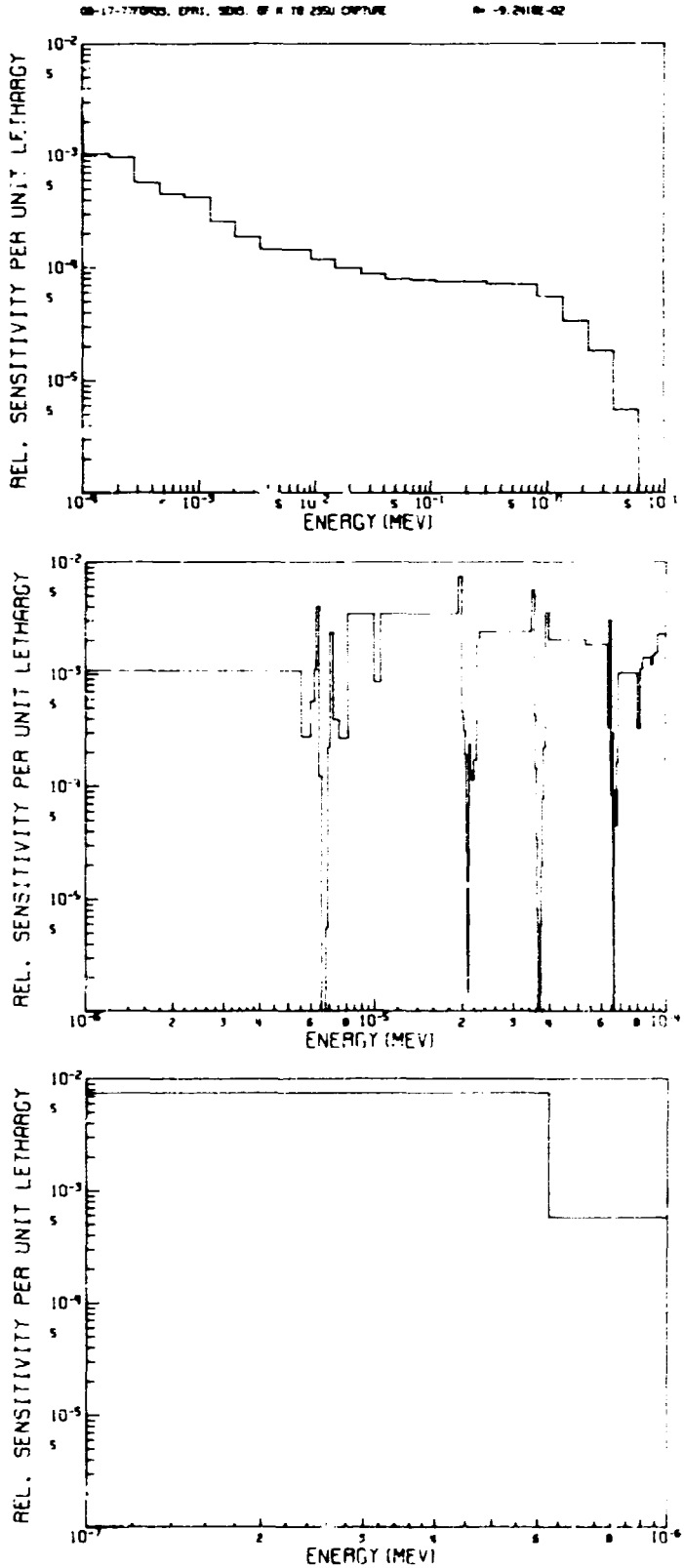

Fig. 7. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{235}U (n,γ).

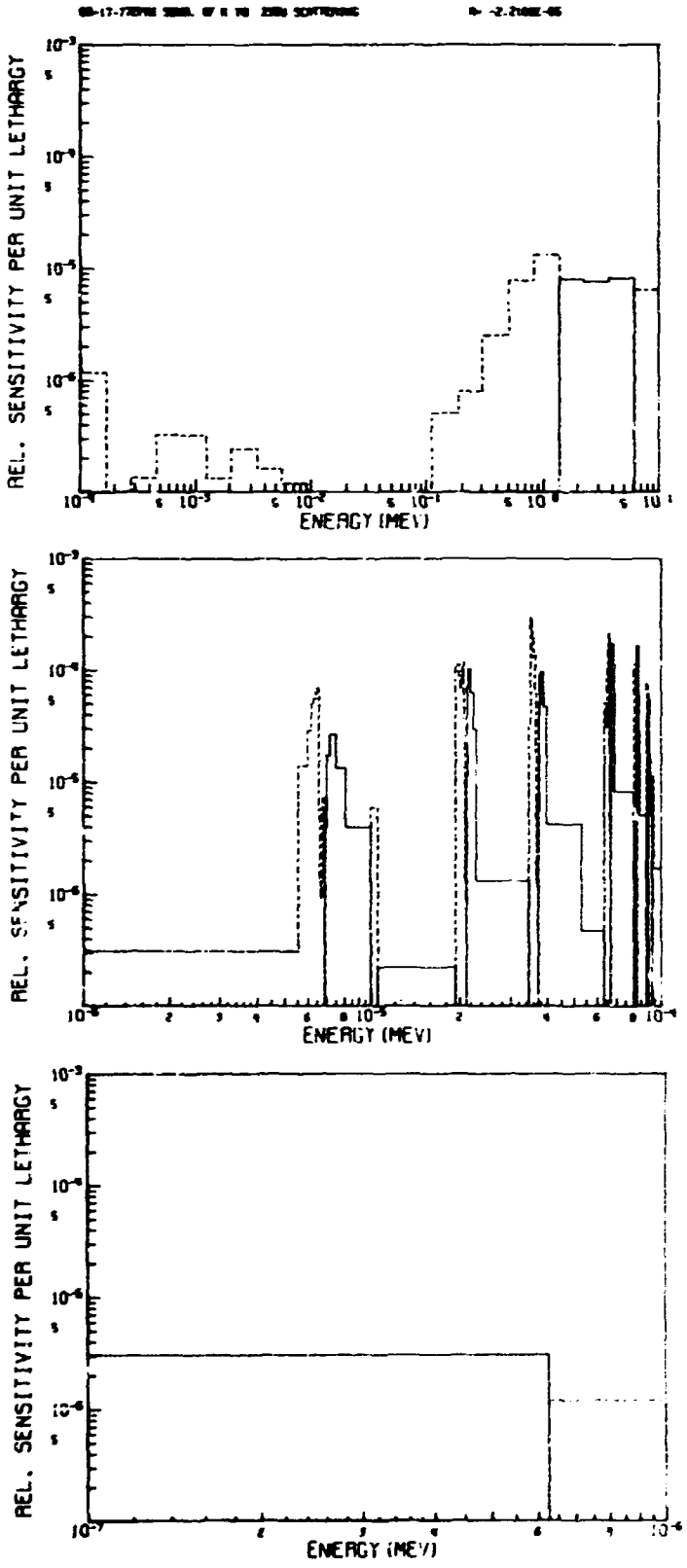

Fig. 8. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to ^{235}U (n,n).

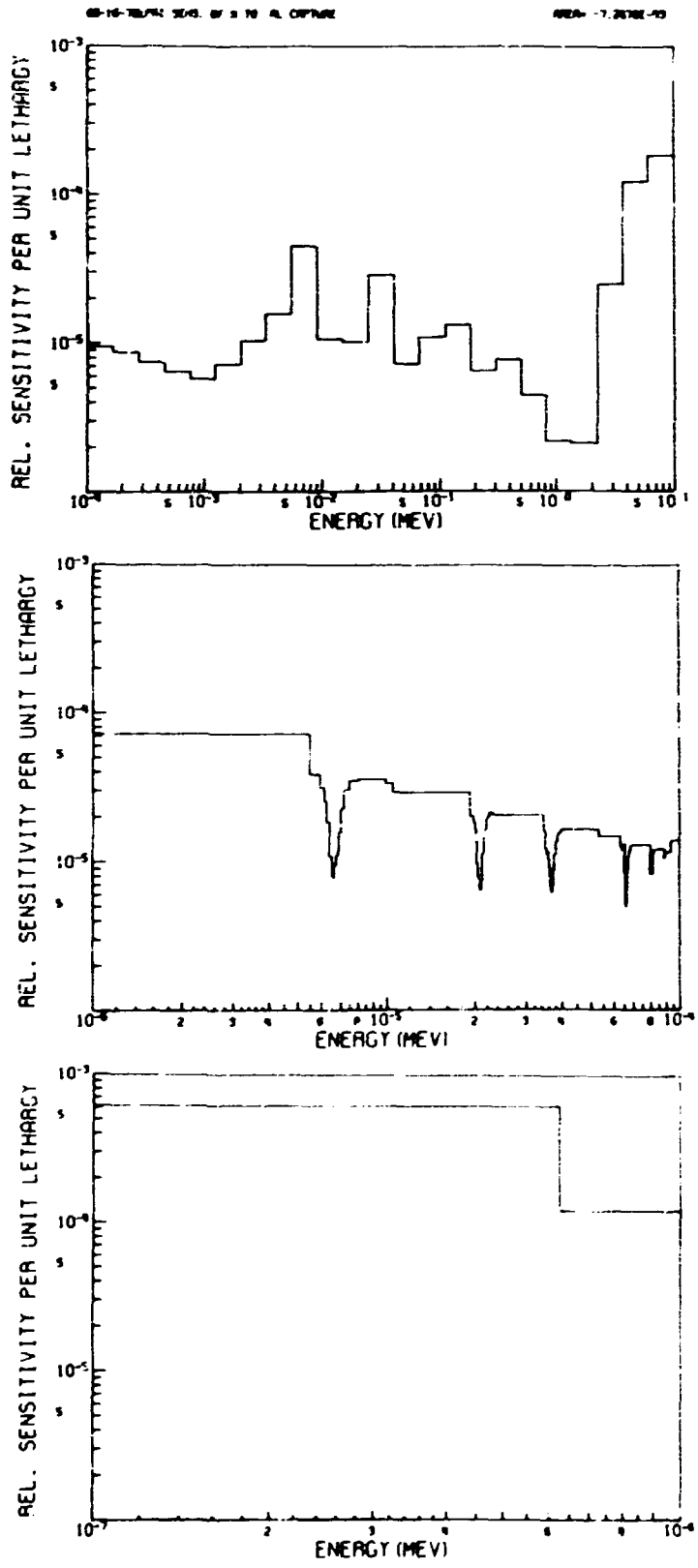

Fig. 9. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to Al (n,γ).

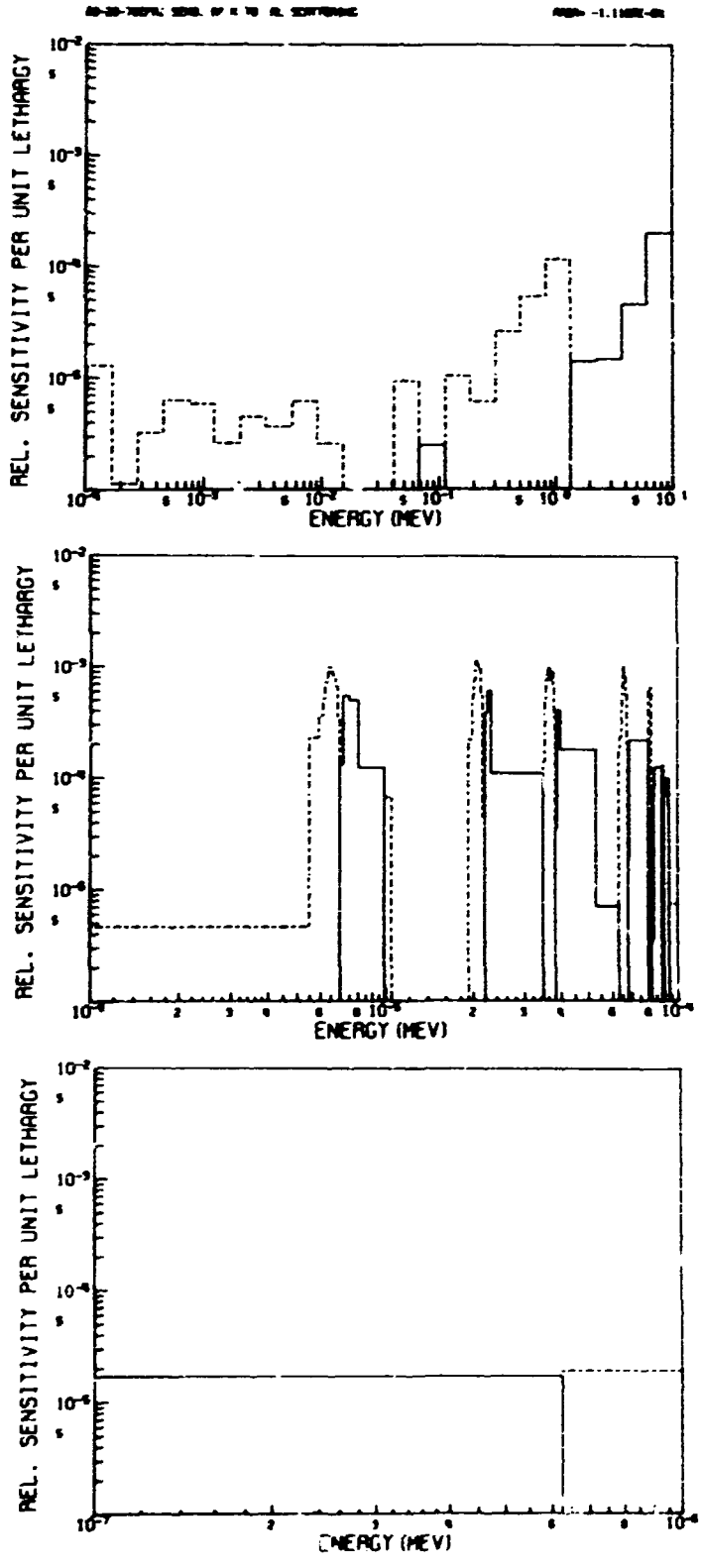

Fig. 10. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to Al (n,n).

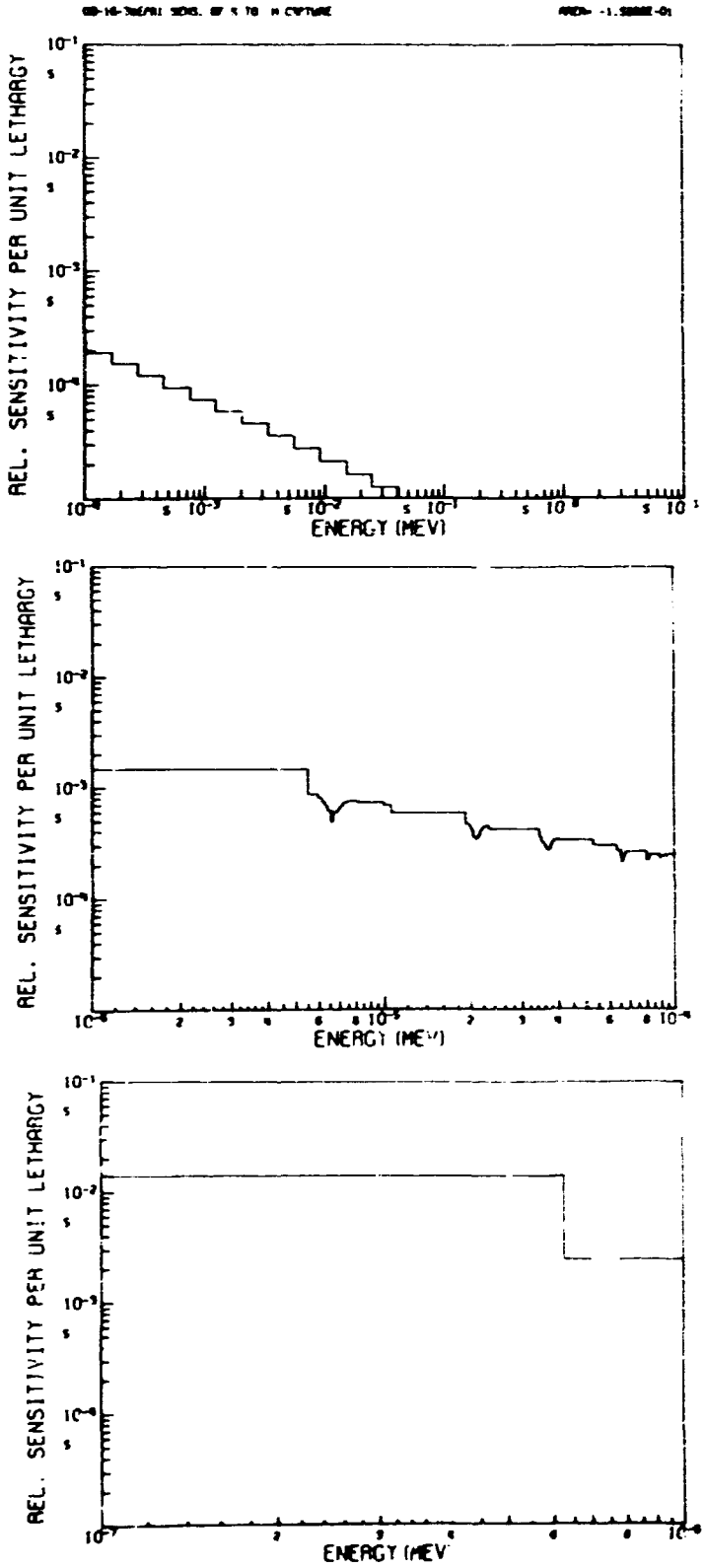

Fig. 11. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to H (n,γ).

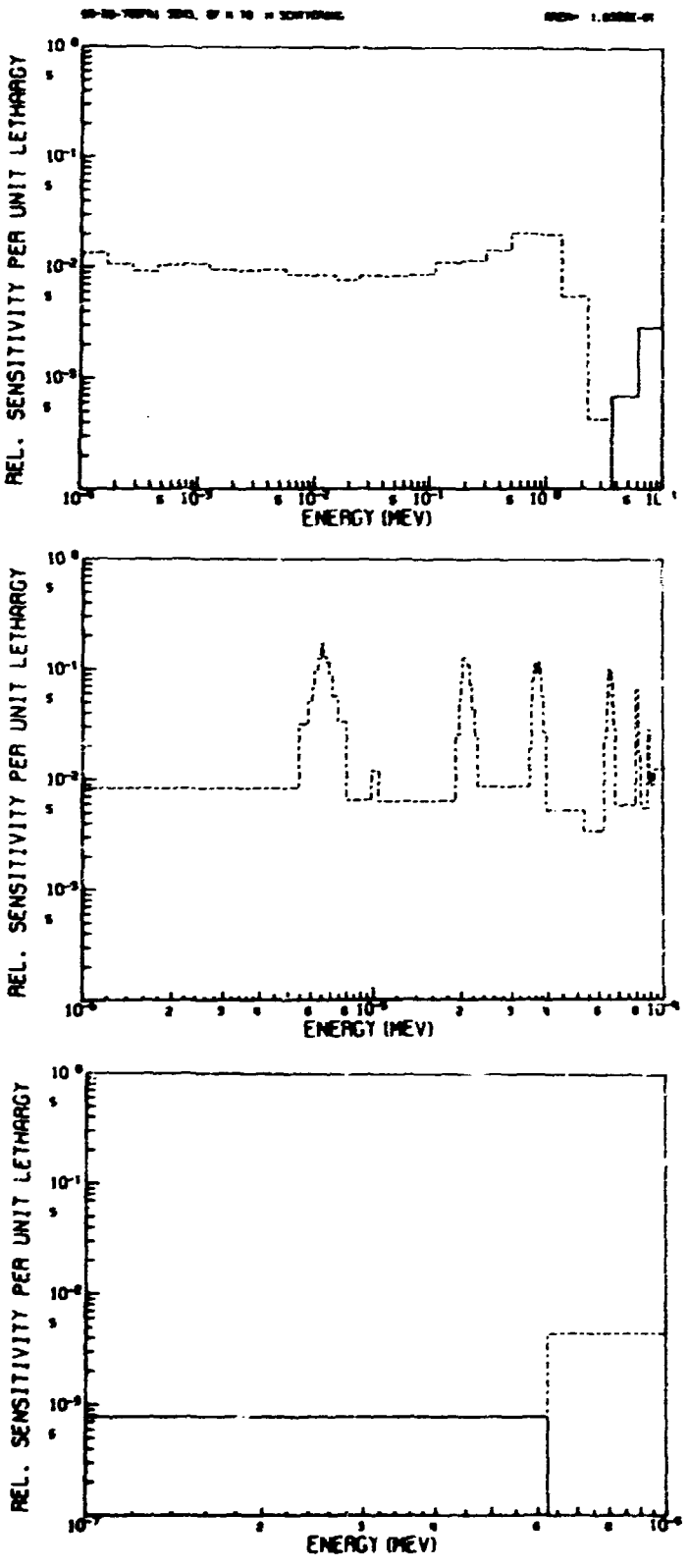

Fig. 12. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to H (n,n).

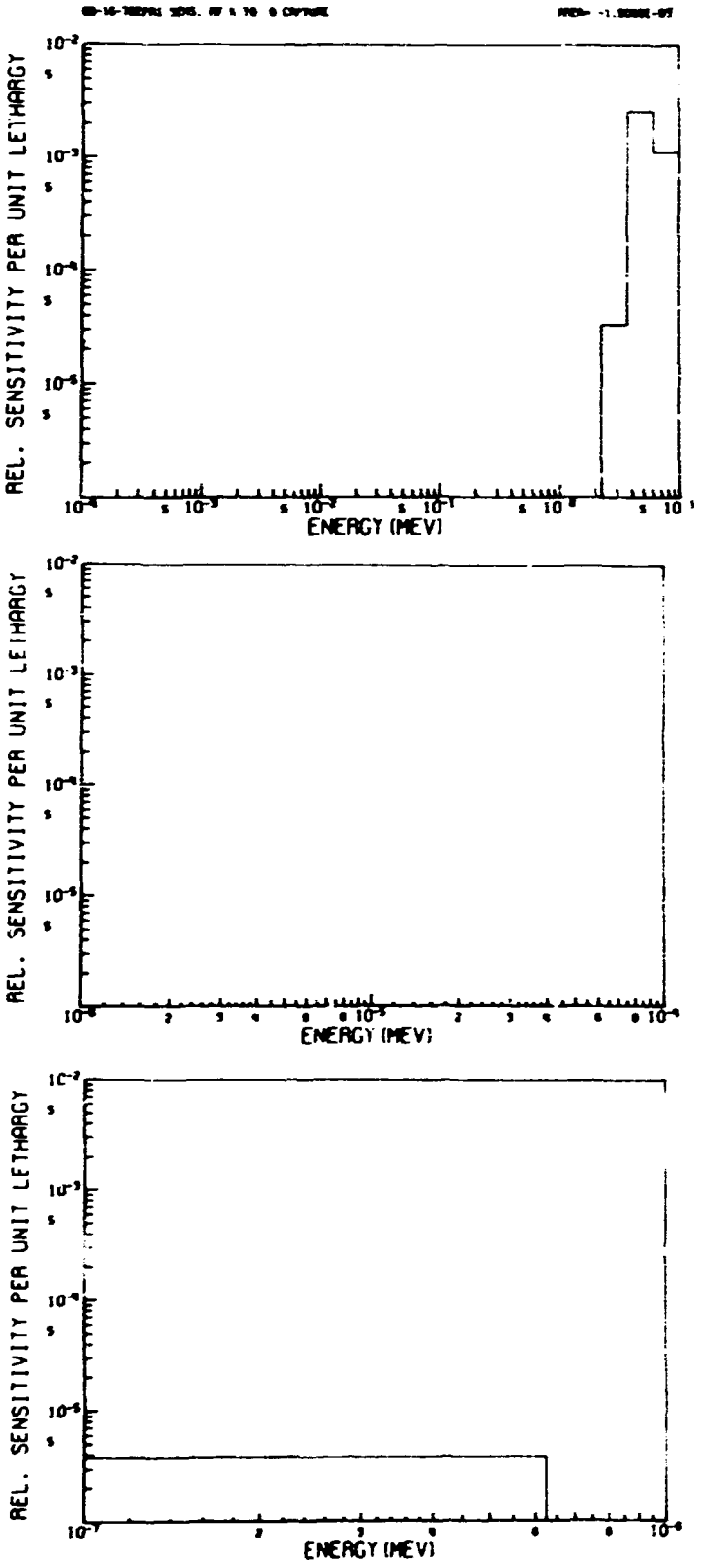

Fig. 13. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to O (n,γ).

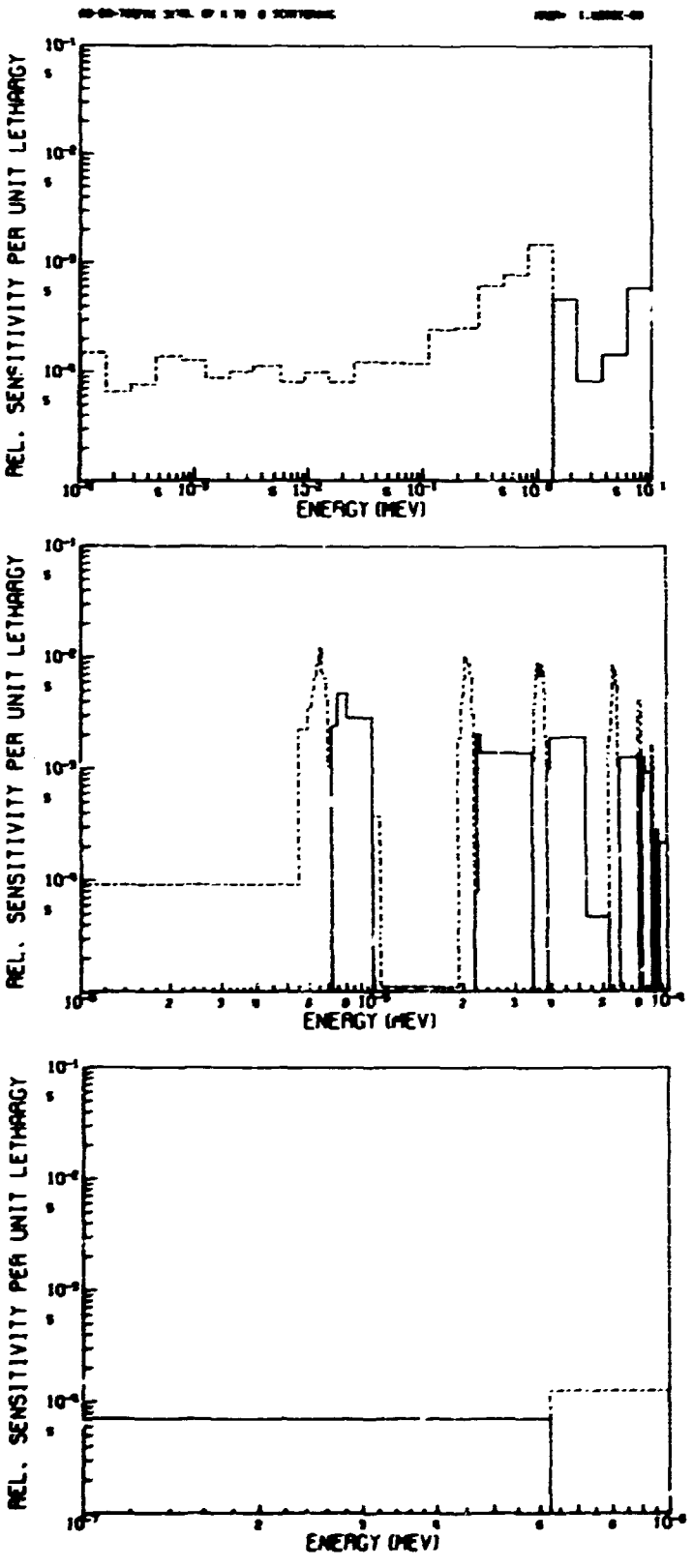

Fig. 14. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to O (n,n).

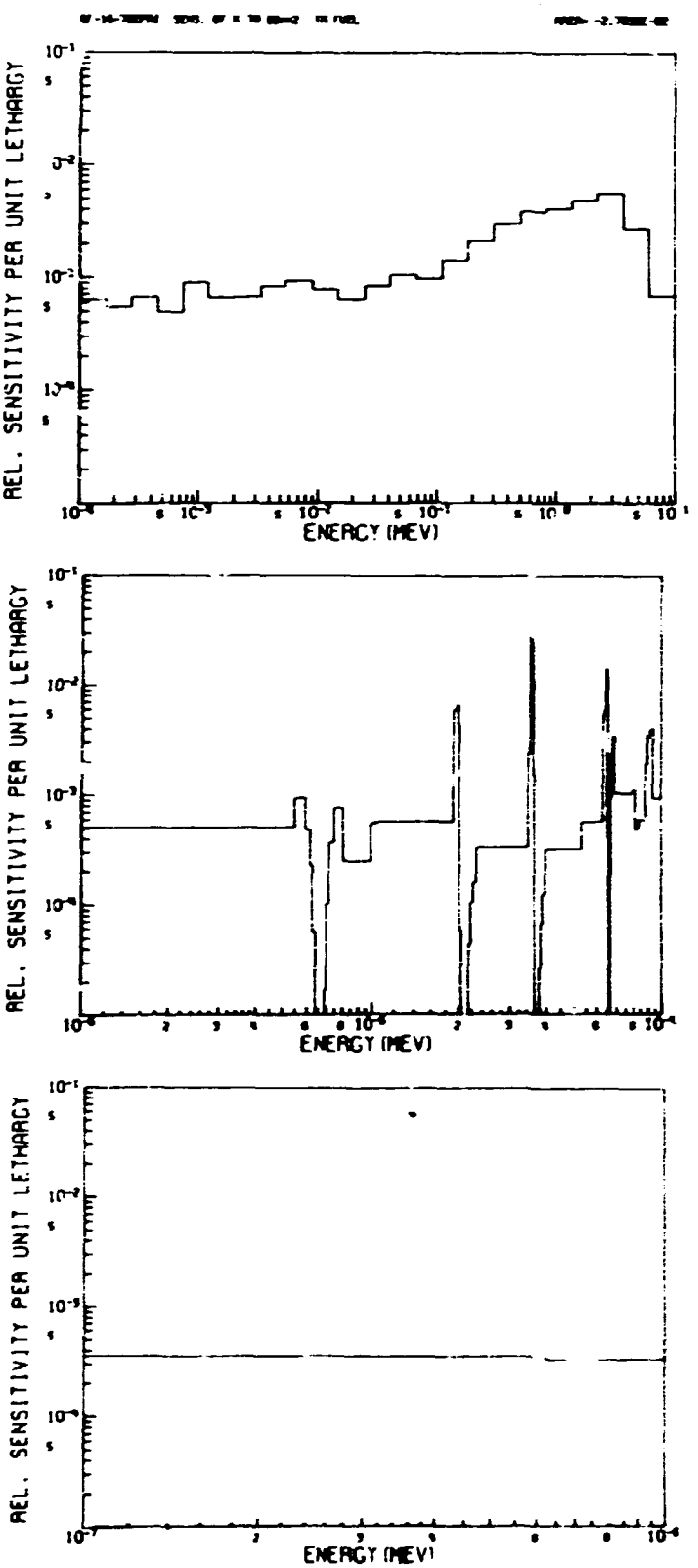

Fig. 15. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to DB^2 in the fuel.

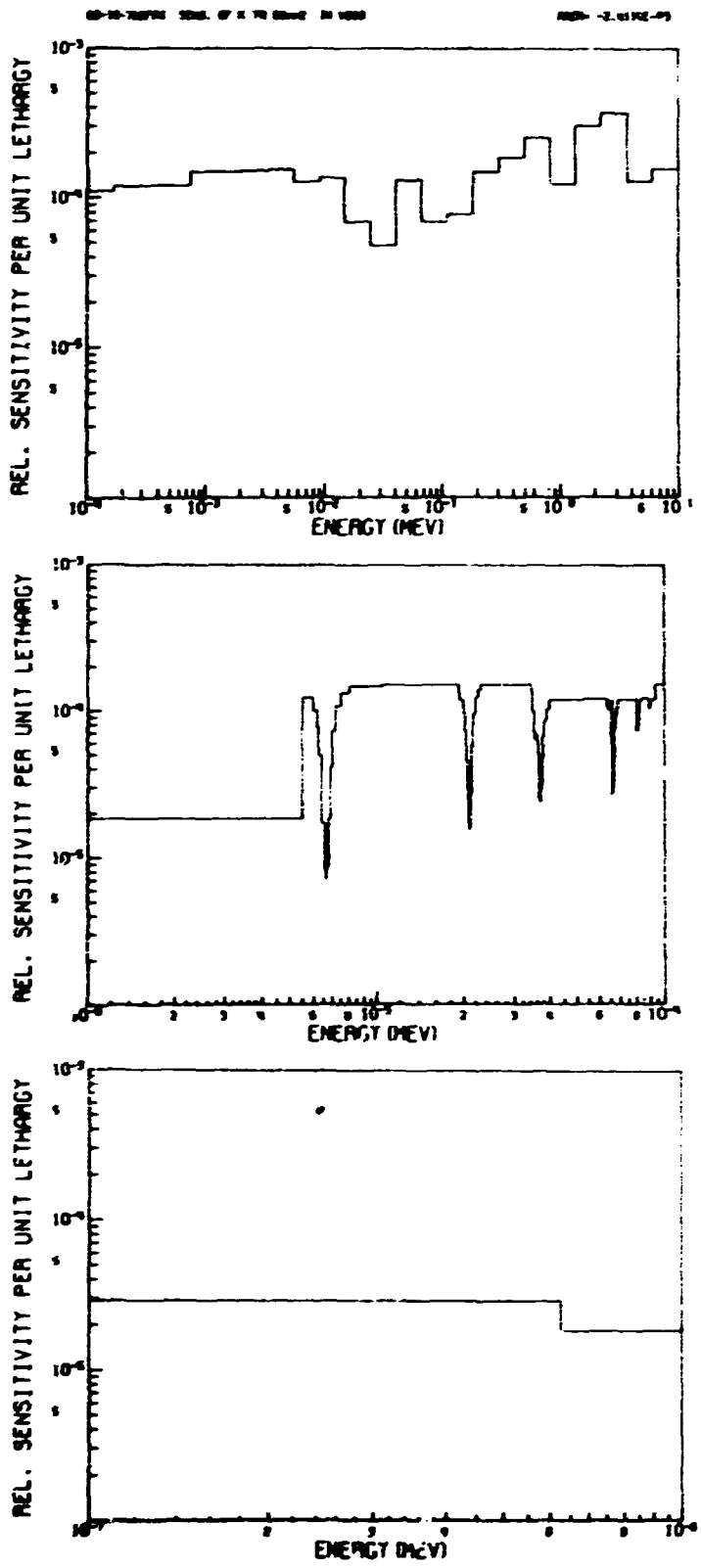

Fig. 16. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to DB^2 in the void.

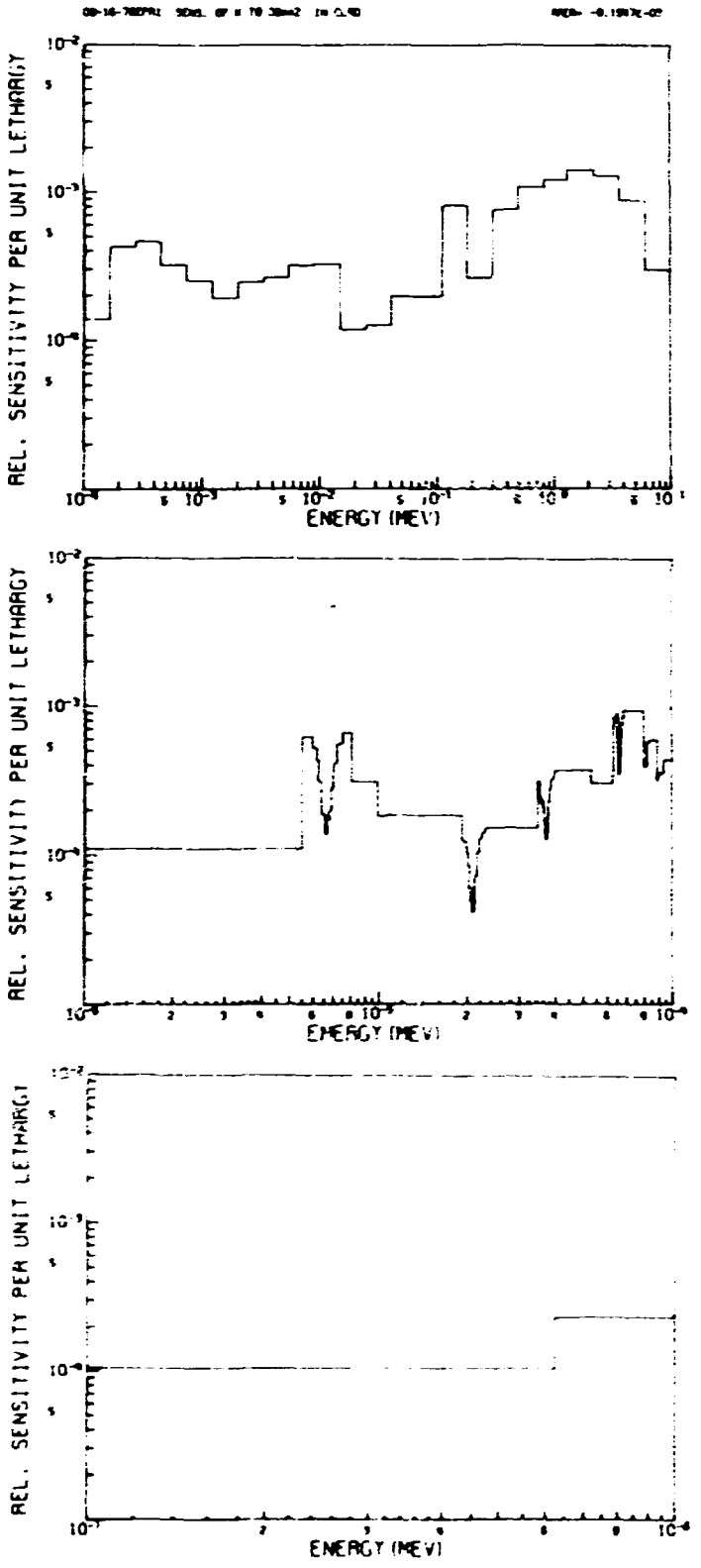

Fig. 17. The Energy-Dependent Sensitivity Profile of $k_{e,f}$ in TRX-2 to DB^2 in the clad.

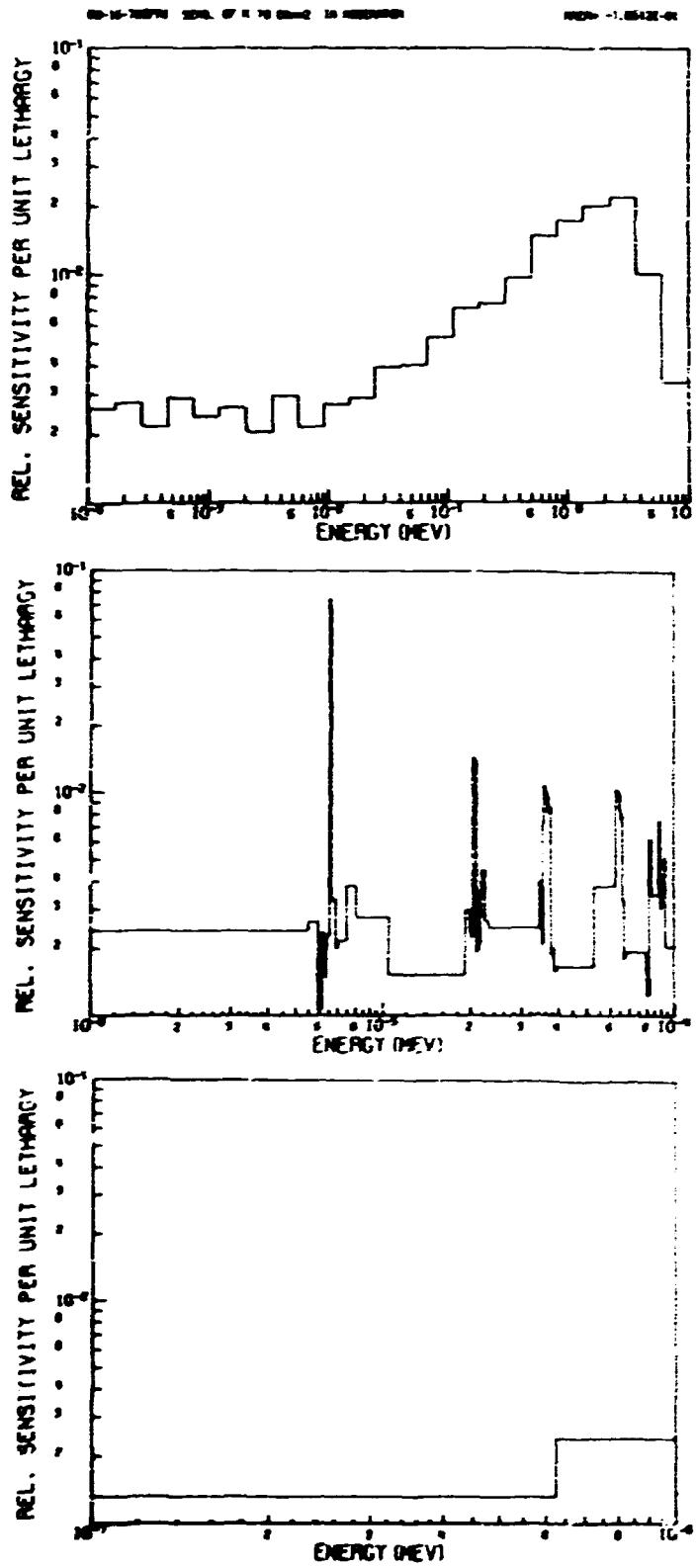

Fig. 18. The Energy-Dependent Sensitivity Profile of k_{eff} in TRX-2 to DB^2 in the moderator.

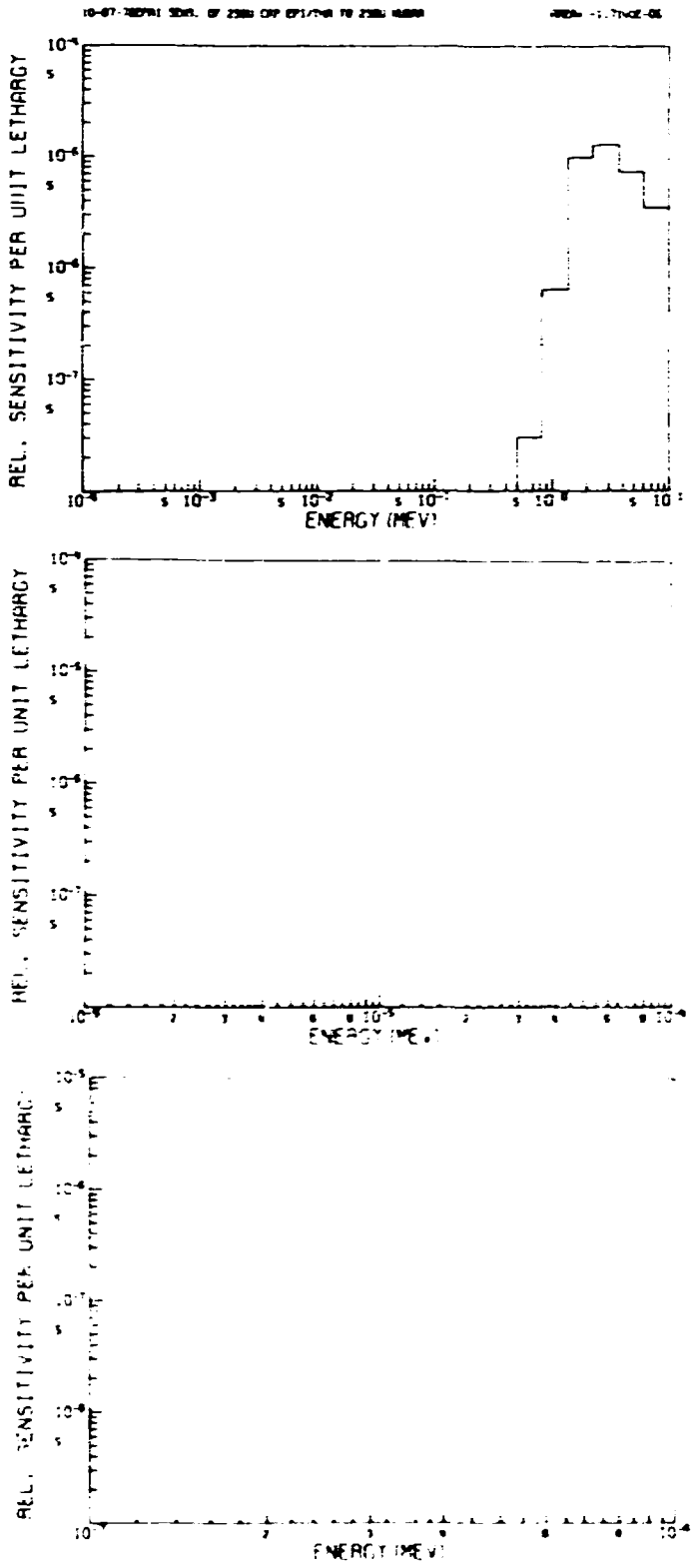

Fig. 19. The Energy-Dependent Sensitivity Profile of ^{28}Si in TRX-1 to ^{238}U $\bar{\nu}$.

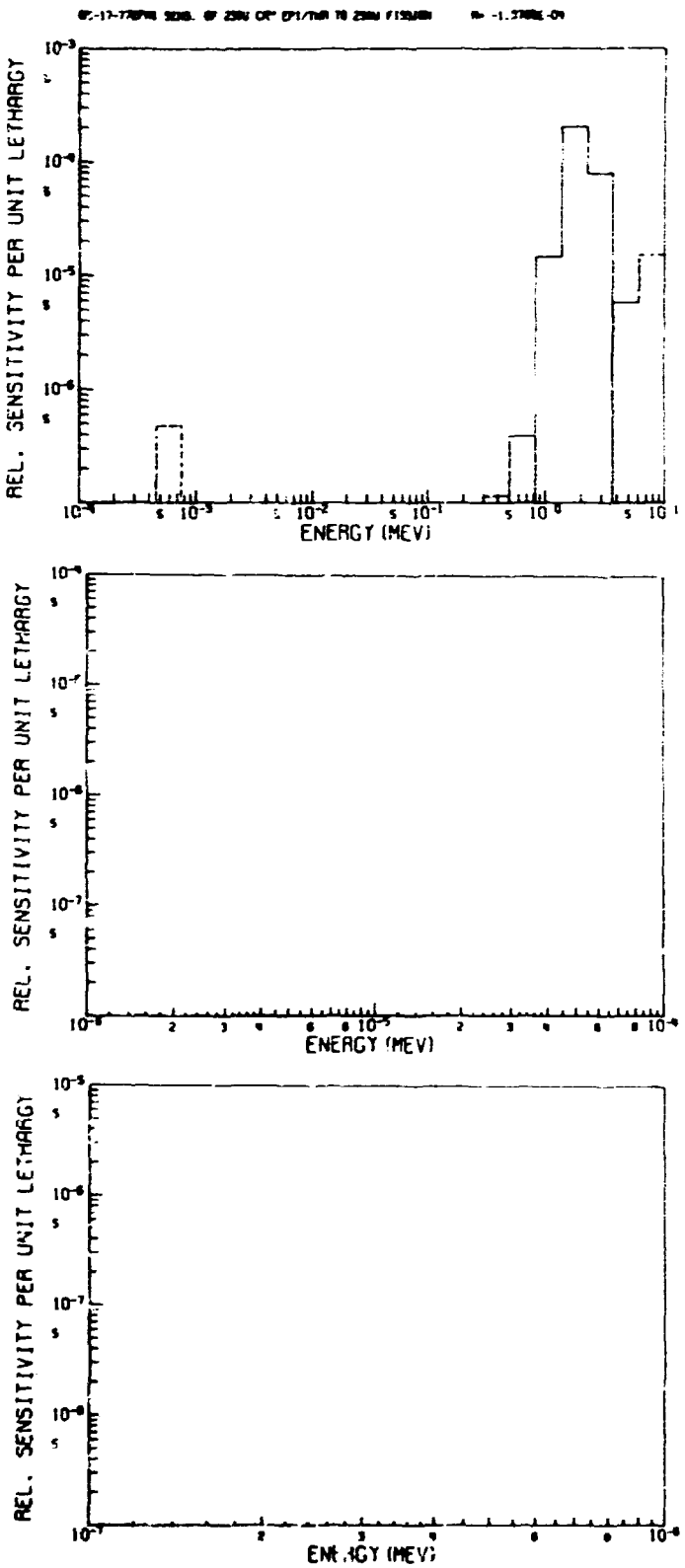

Fig. 20. The Energy Dependent Sensitivity Profile of ^{28}p in TRX-2 to ^{238}U (n,f).

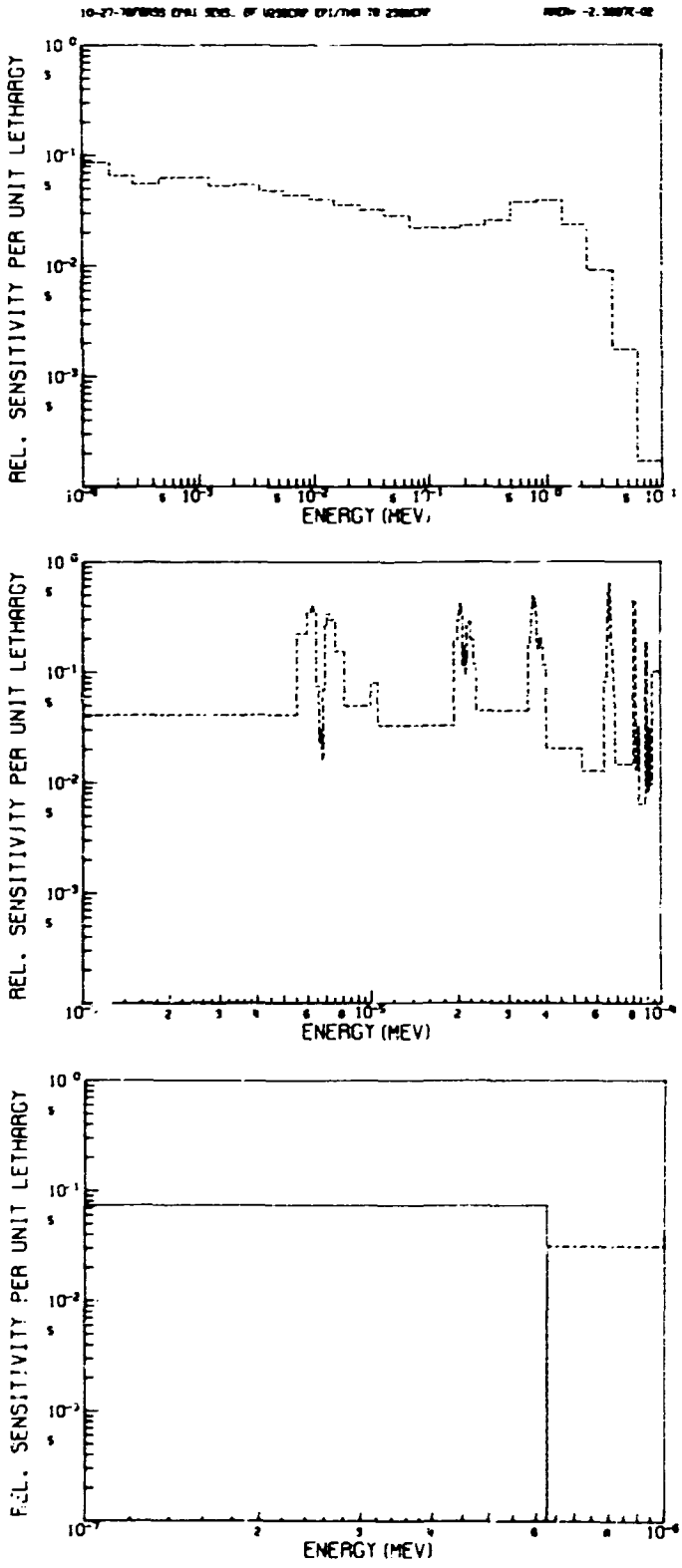

Fig. 21. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to ^{238}U (n,γ).

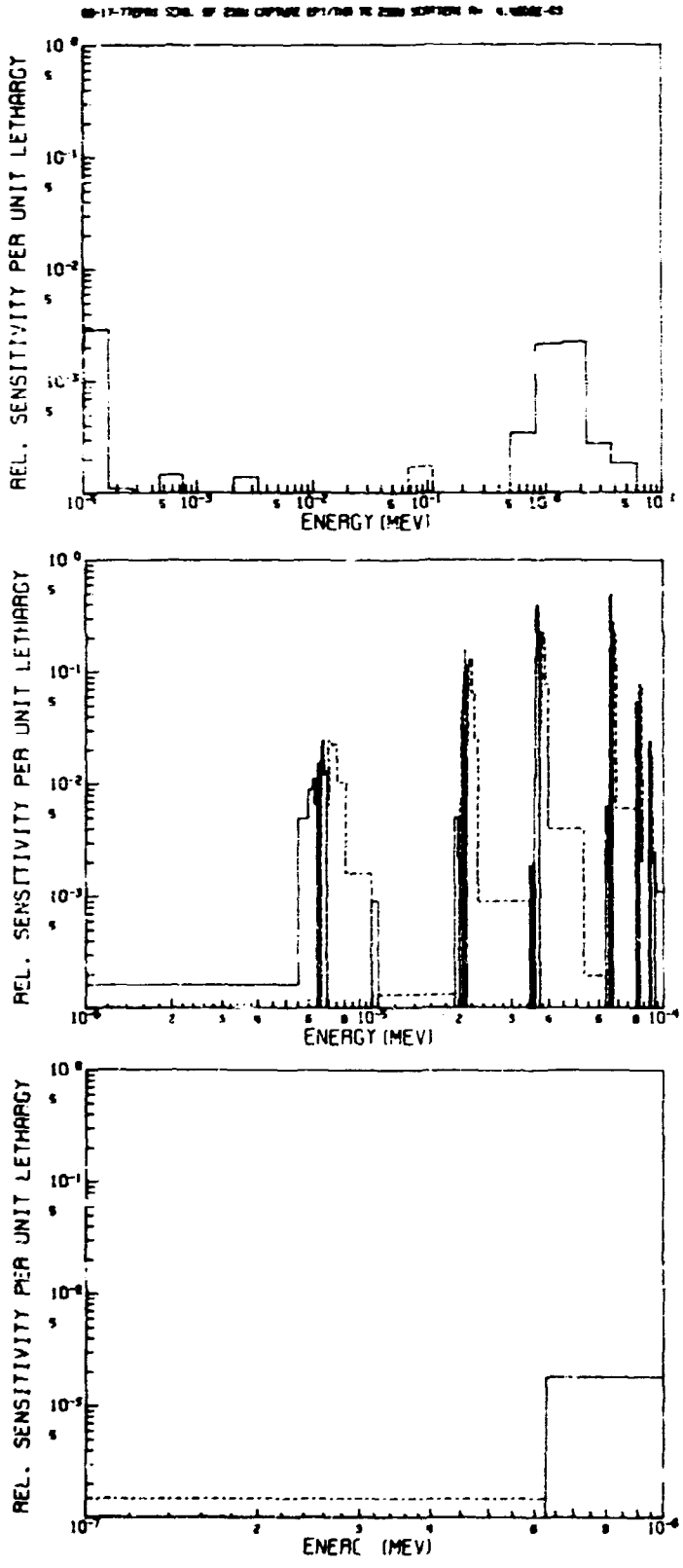

Fig. 22. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to ^{238}U (n,n).

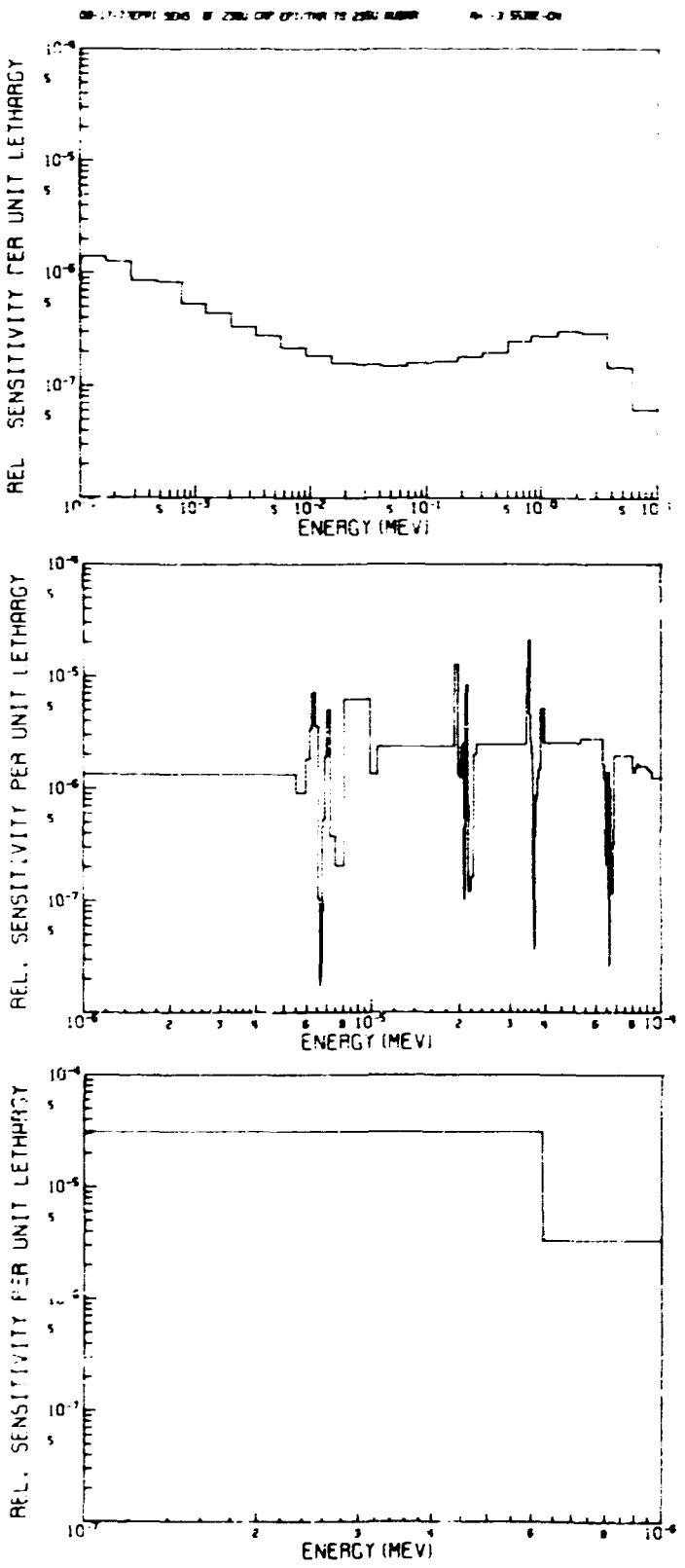

Fig. 23. The Energy-Dependent Sensitivity Profile of ^{28}p in TRX-2 to ^{235}U $\bar{\nu}$.

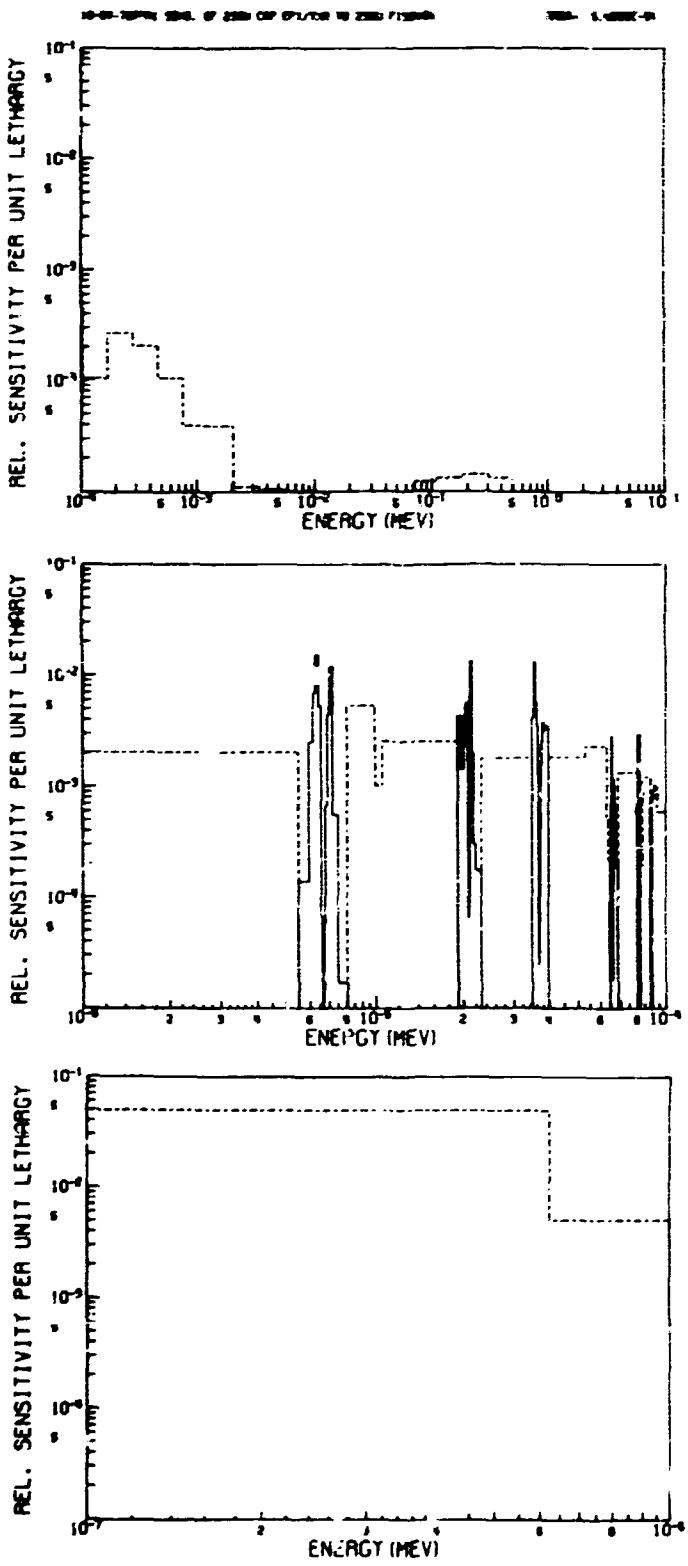

Fig. 24. The Energy-Dependent Sensitivity Profile of ^{28}p in TRX-2 to ^{235}U (n,f).

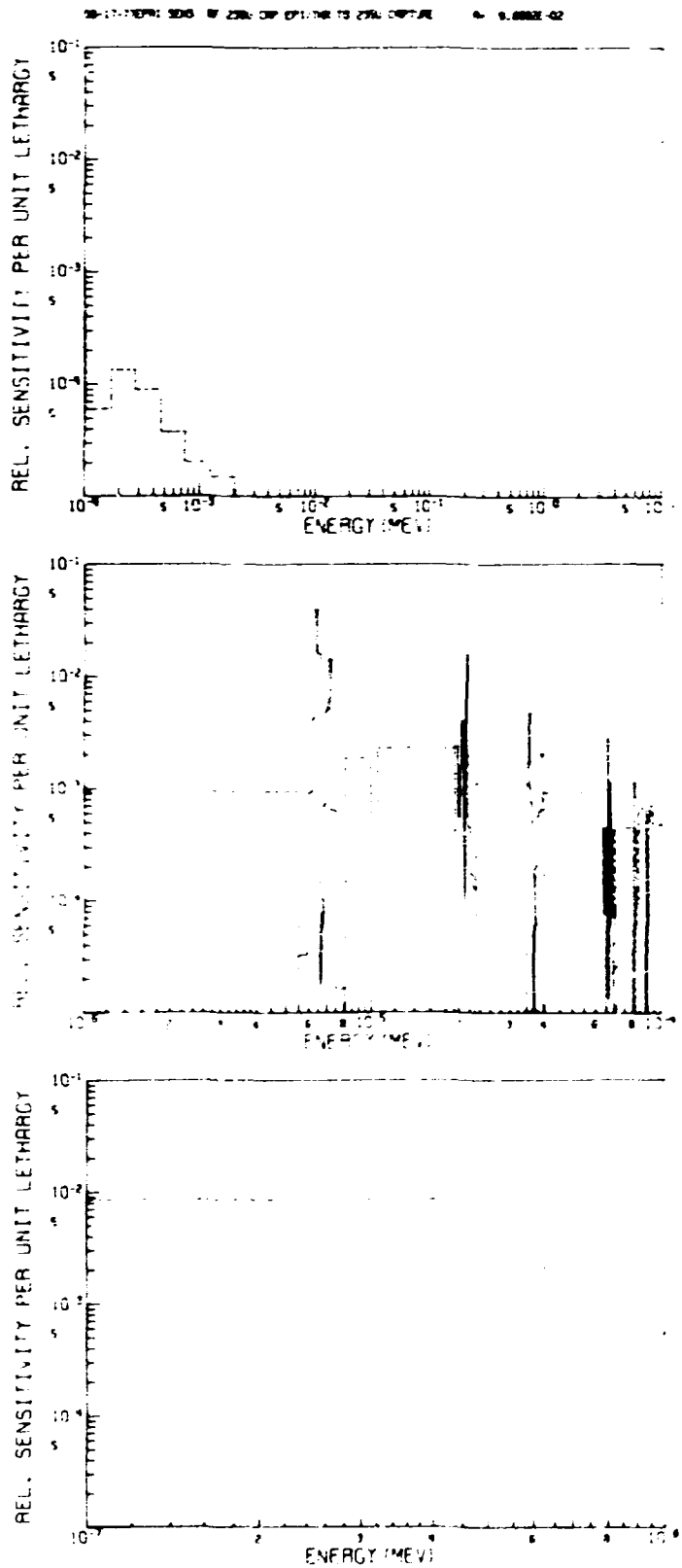

Fig. 25. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to ^{235}U (n,γ).

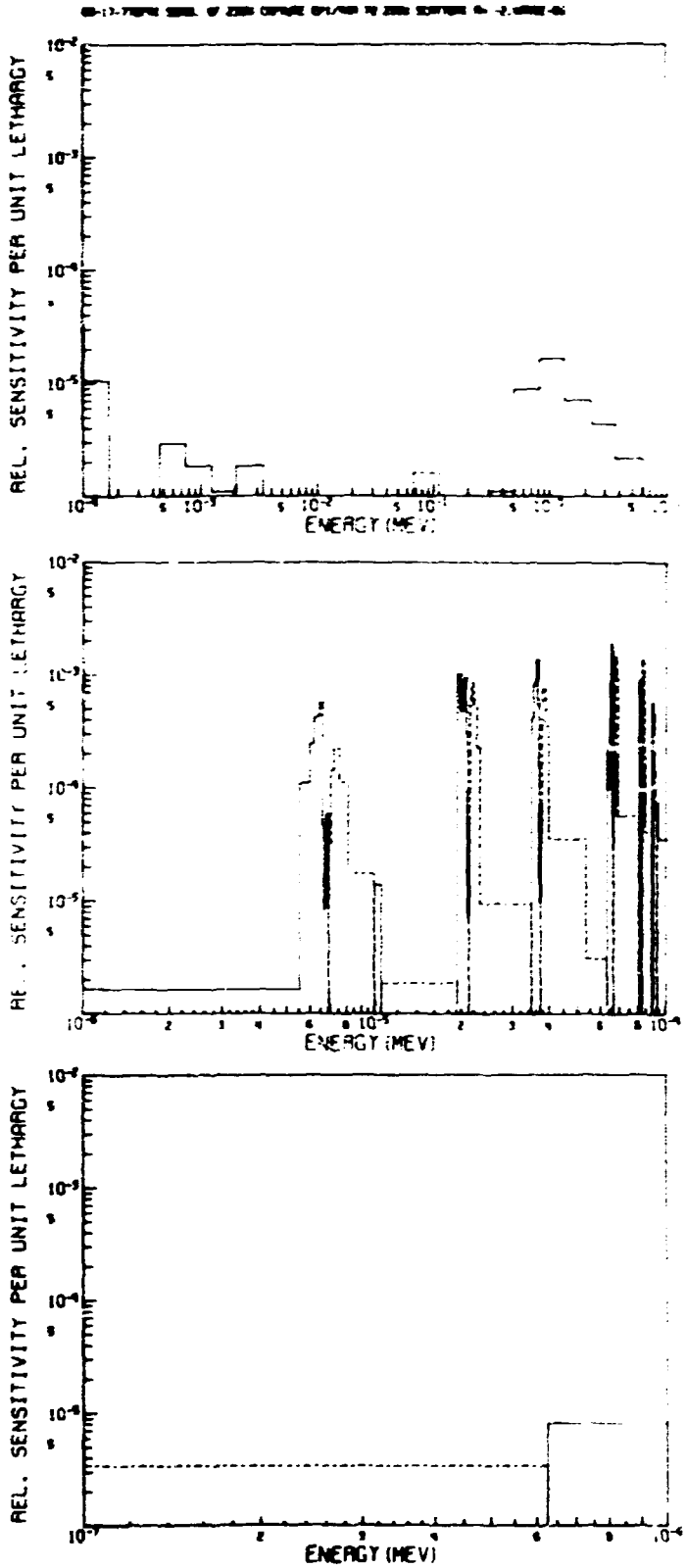

Fig. 26. The Energy-Dependent Sensitivity Profile of ^{28}p in TRX-2 to ^{235}U (n,n).

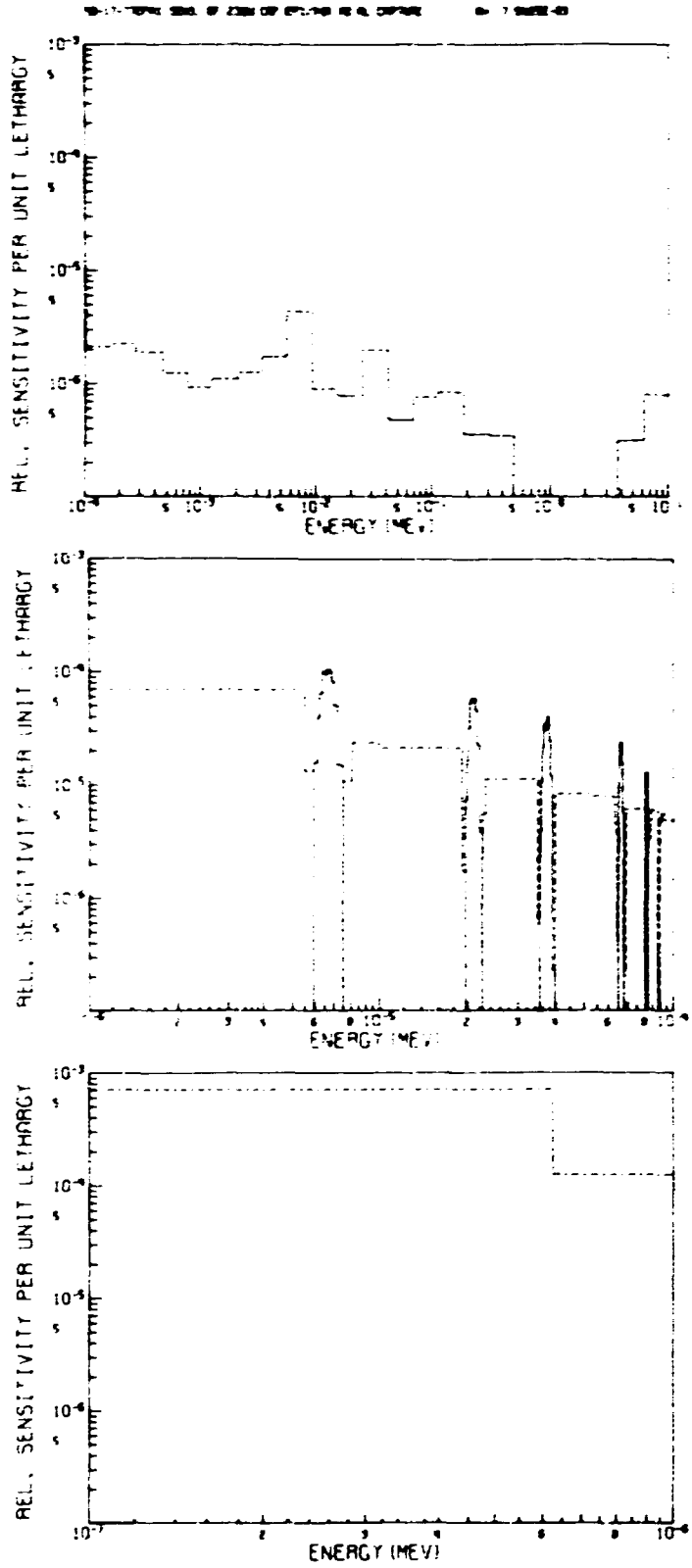

Fig. 27. The Energy-Dependent Sensitivity Profile of ^{28}P in TRX-2 to Al (n,γ).

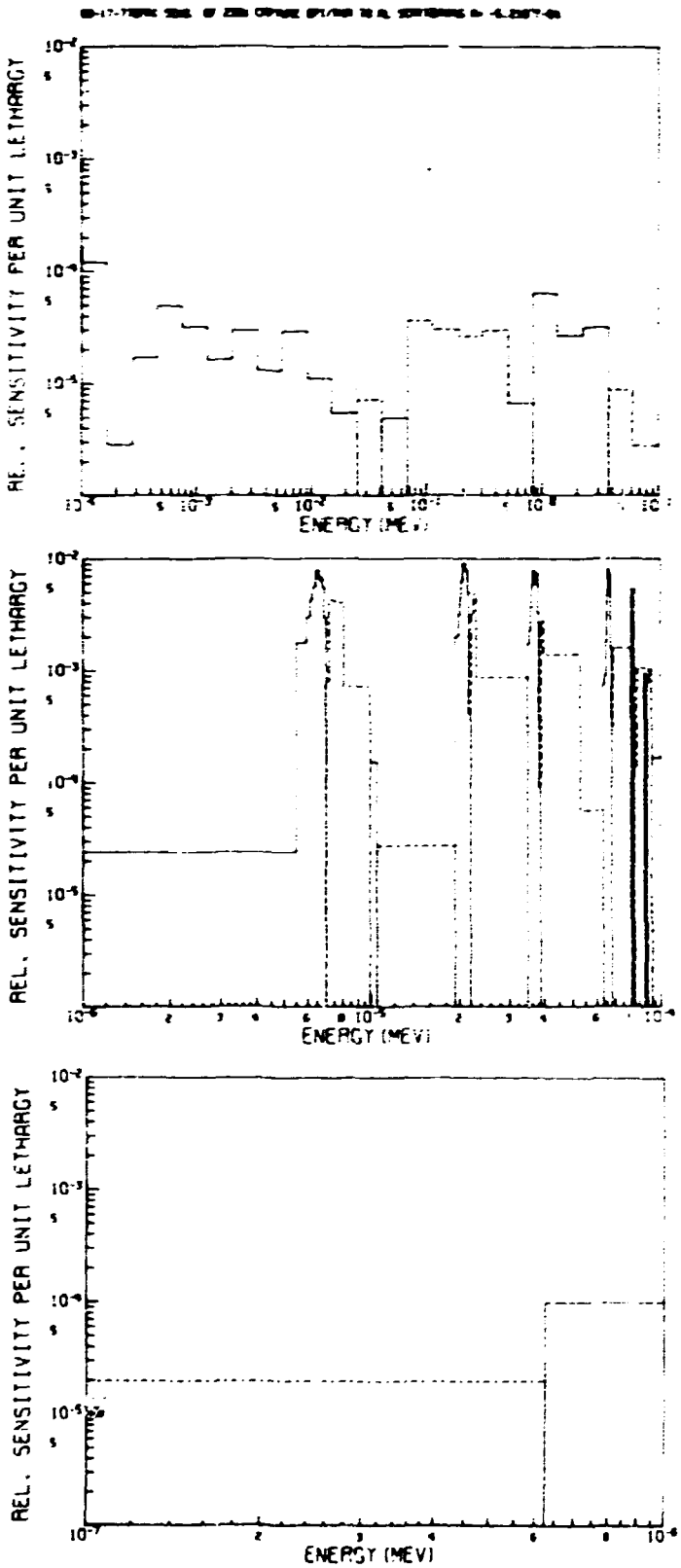

Fig. 28. The Energy-Dependent Sensitivity Profile of ^{28}P in TRX-2 to Al (n,n).

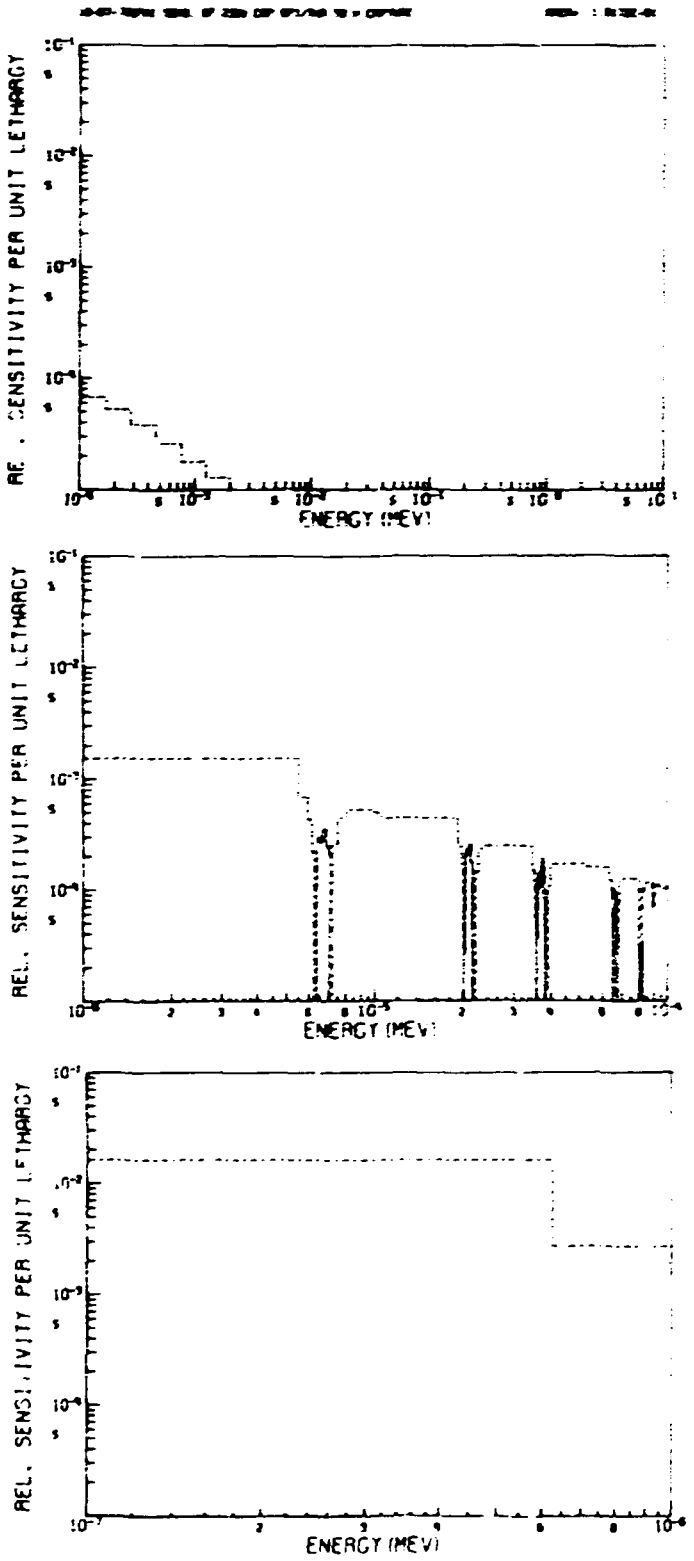

Fig. 29. The Energy-Dependent Sensitivity Profile of ^{28}P in TRX-2 to H (n,γ).

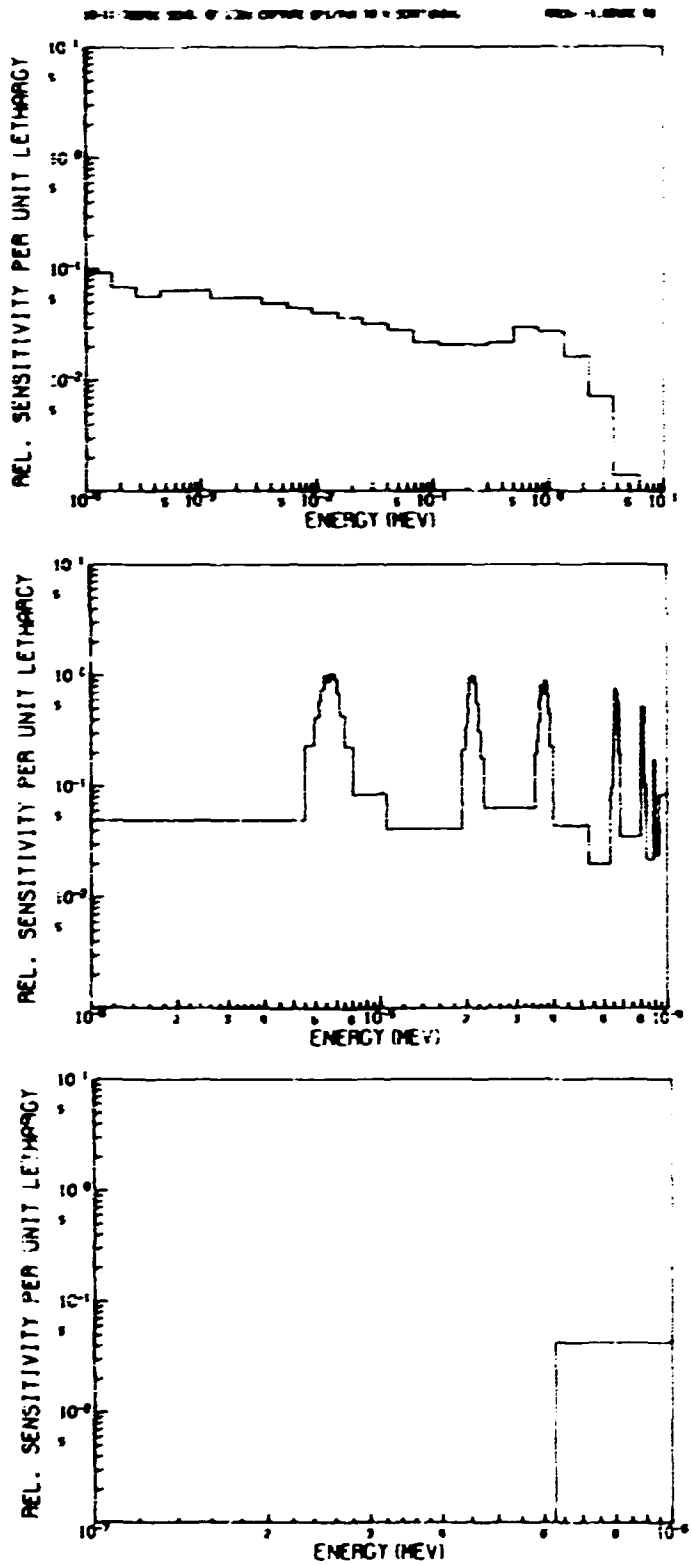

Fig. 30. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to H (n,n).

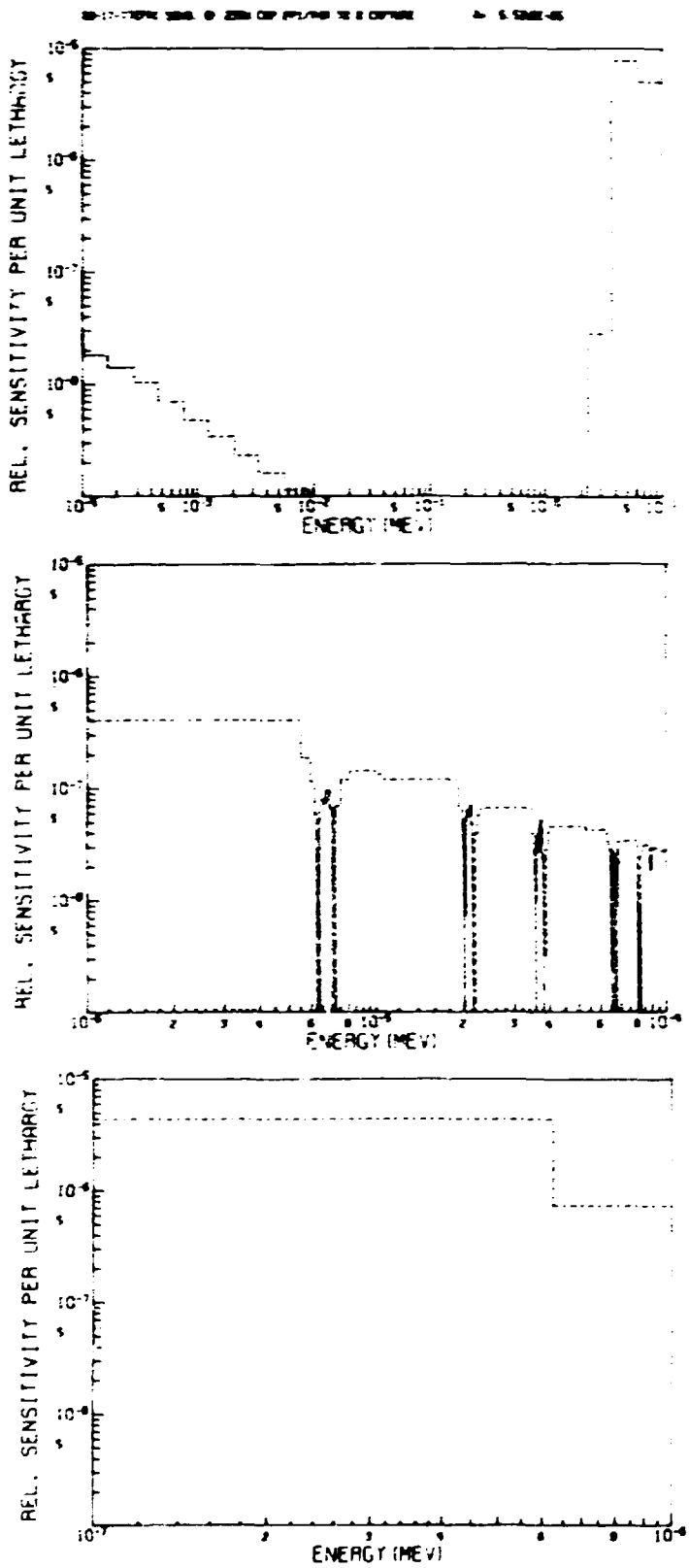

Fig. 31. The Energy-Dependent Sensitivity Profile of ^{28}p in TRX-2 to O (n,γ).

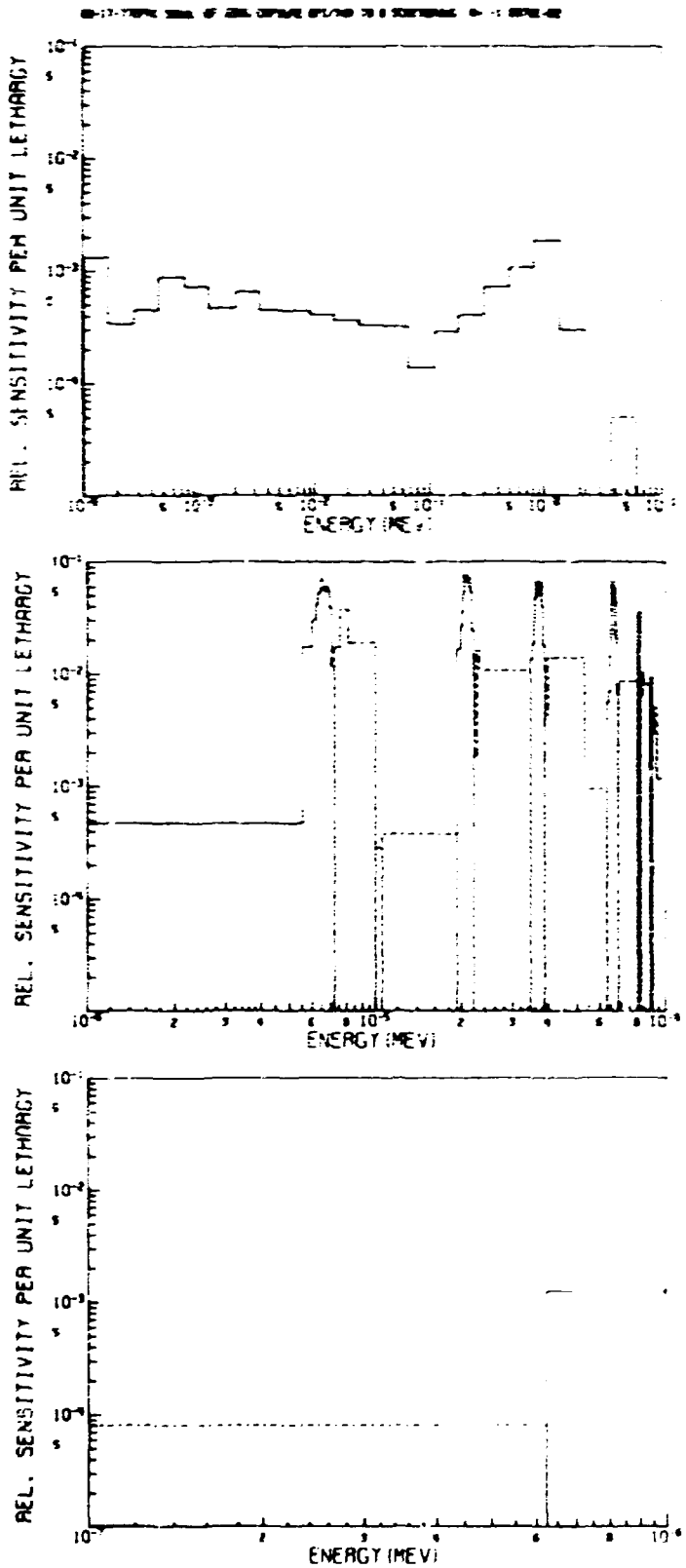

Fig. 32. The Energy-Dependent Sensitivity Profile of ^{28}Si in TRX-2 to O (n,n).

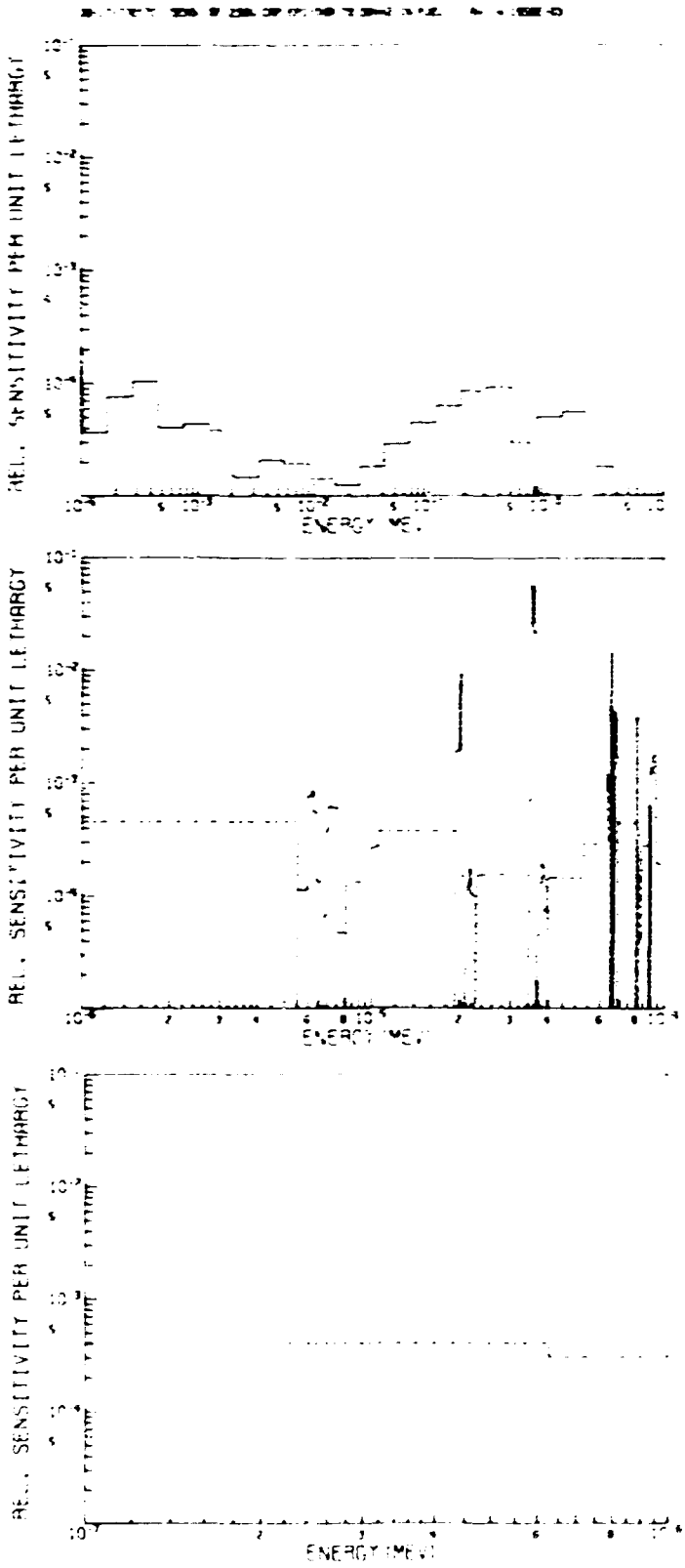

Fig. 33. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to DB^2 in the fuel.

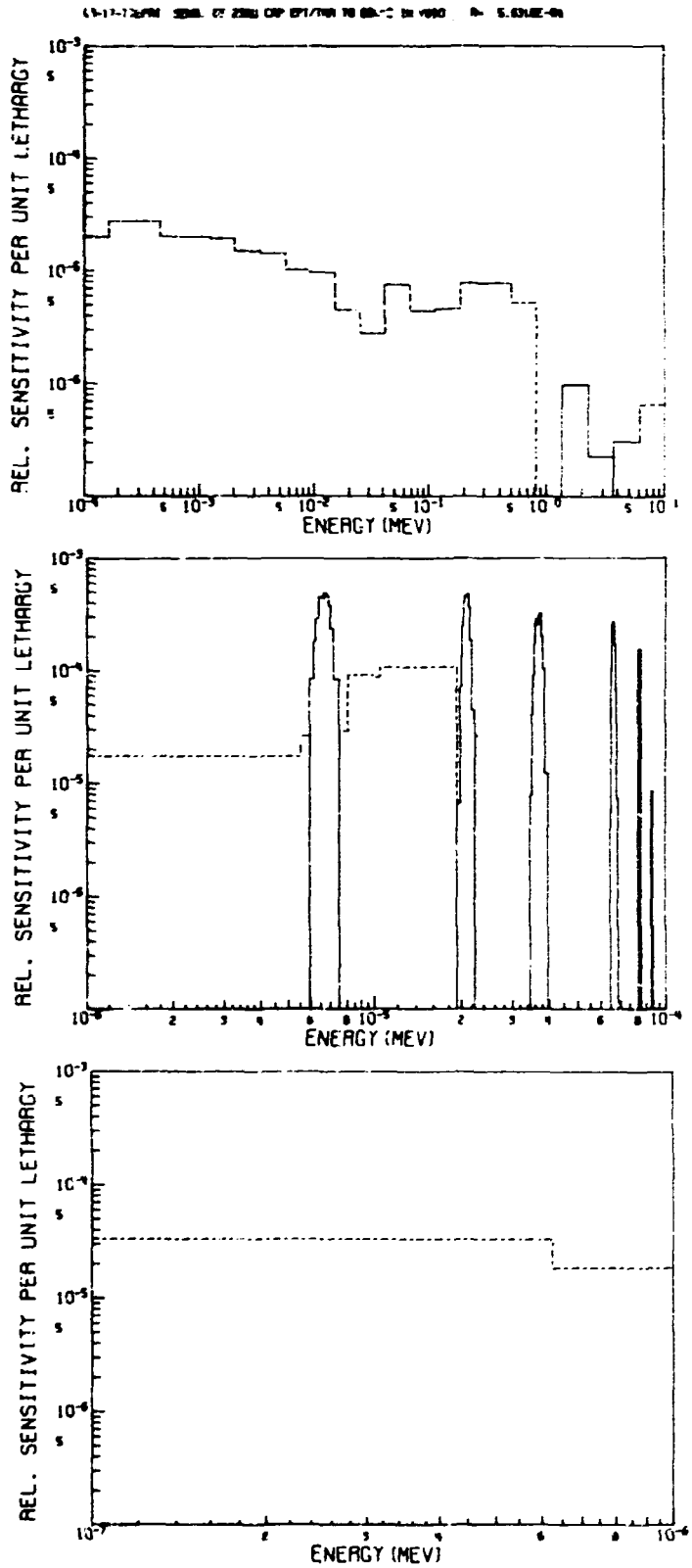

Fig. 34. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to DB^2 in the void.

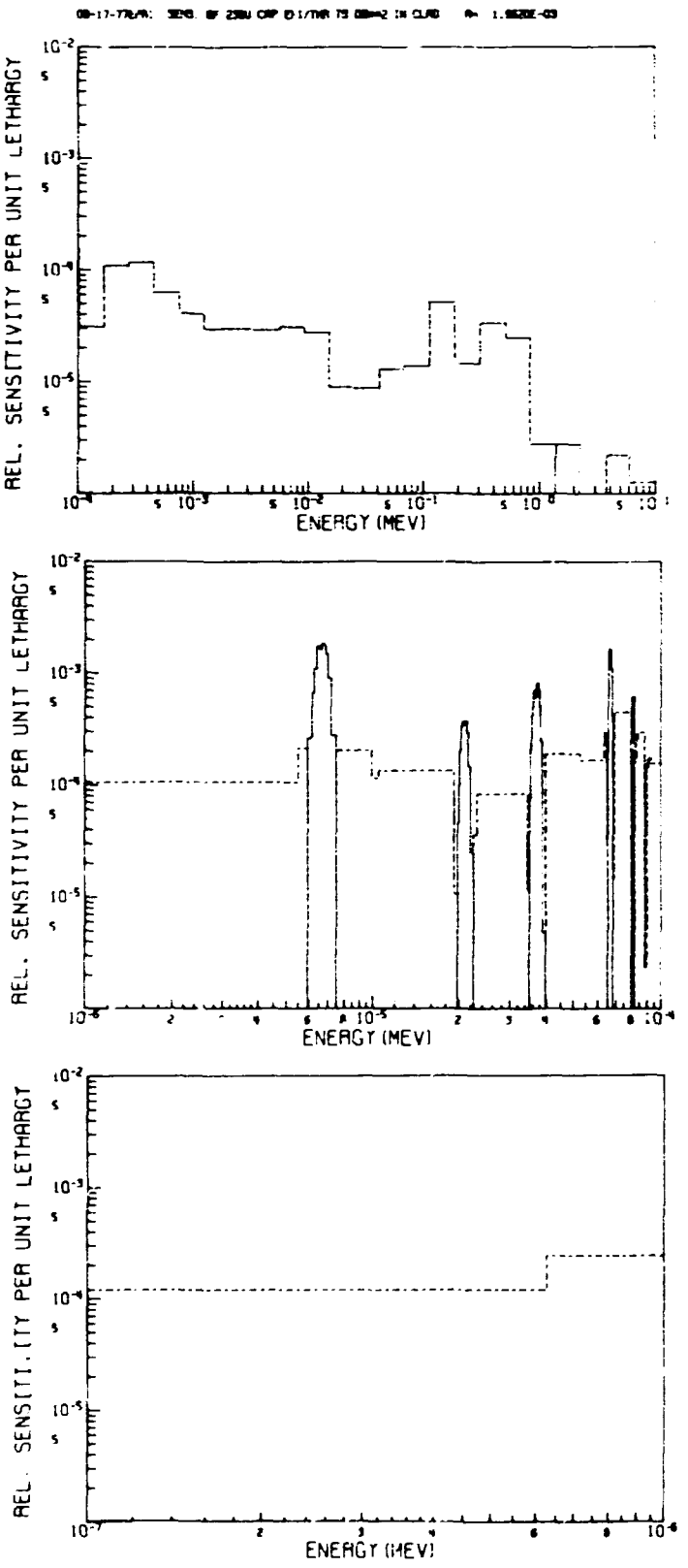

Fig. 35. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to DB^2 in the clad.

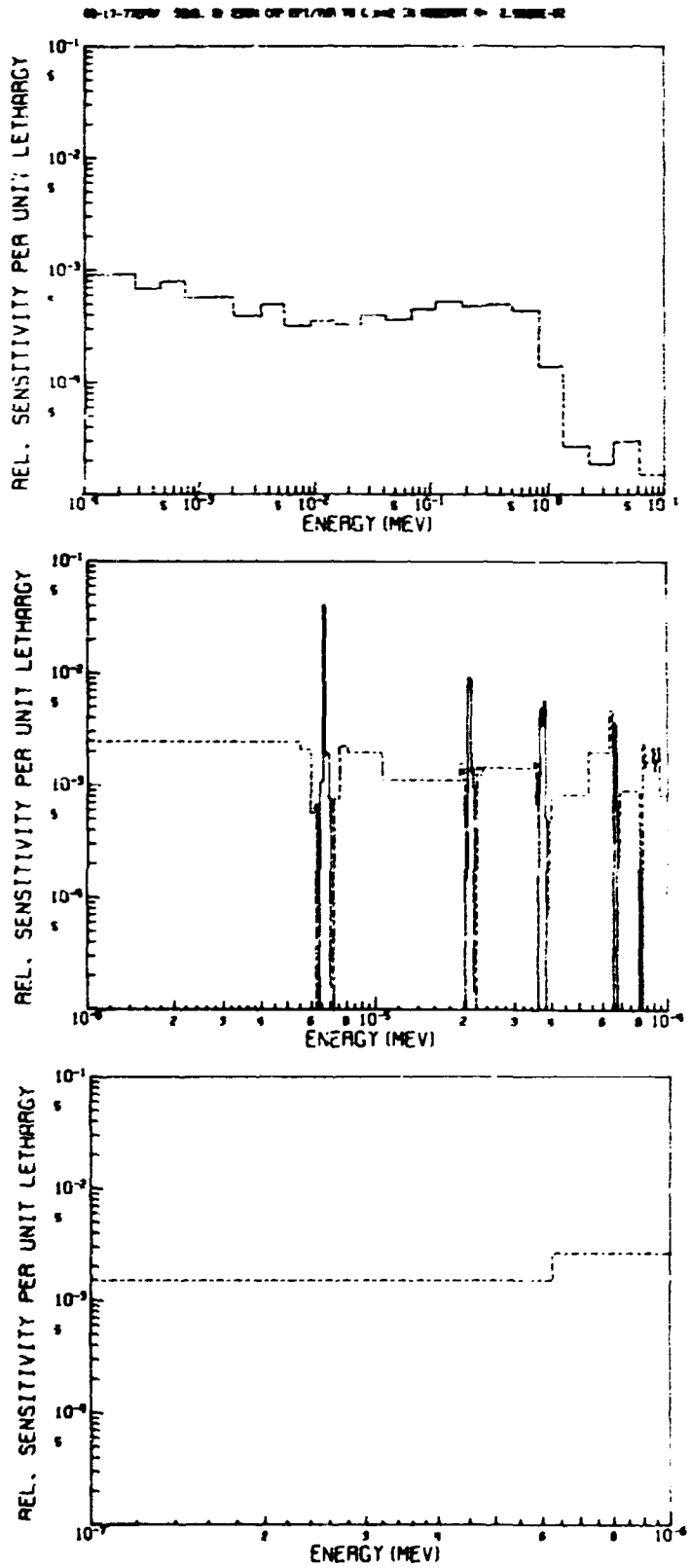

Fig. 36. The Energy-Dependent Sensitivity Profile of $^{28}\rho$ in TRX-2 to DB^2 in the moderator.

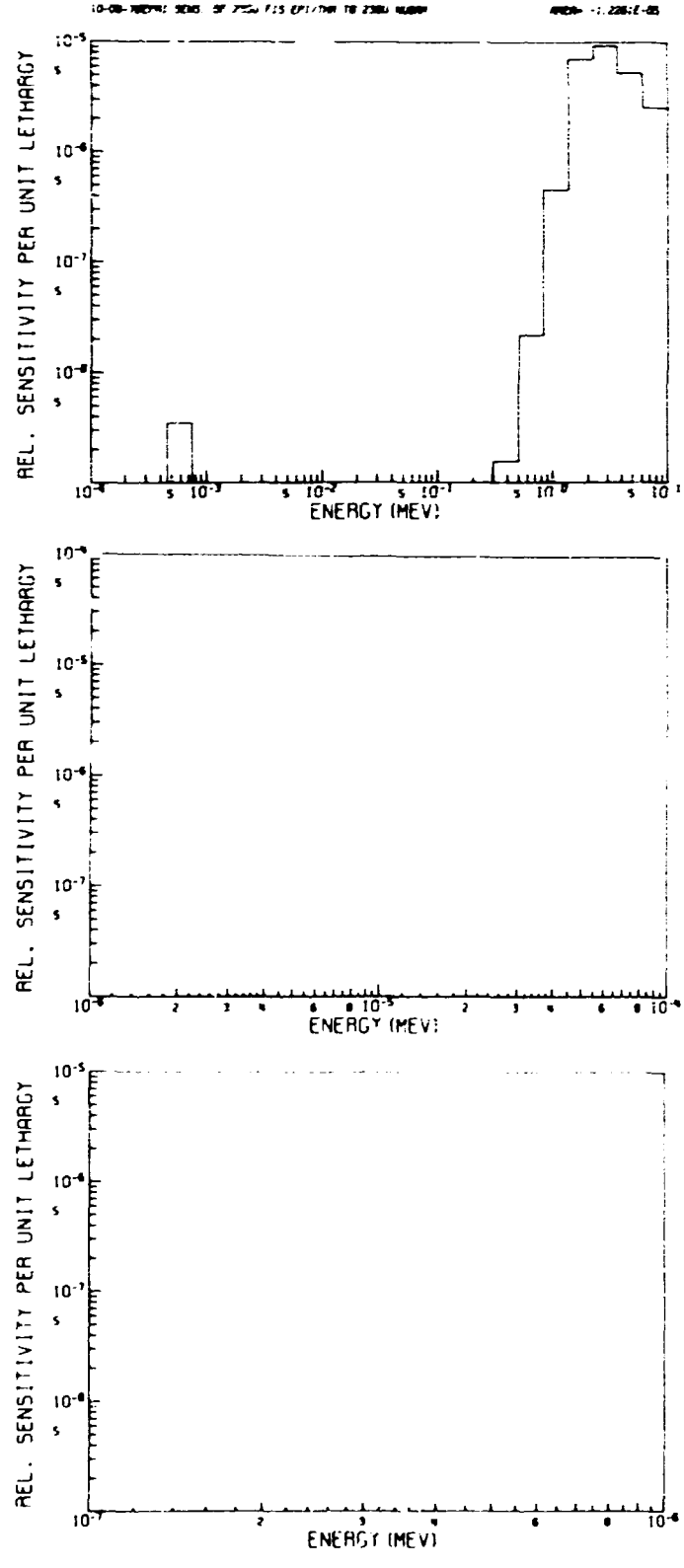

Fig. 37. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to ^{238}U $\bar{\nu}$.

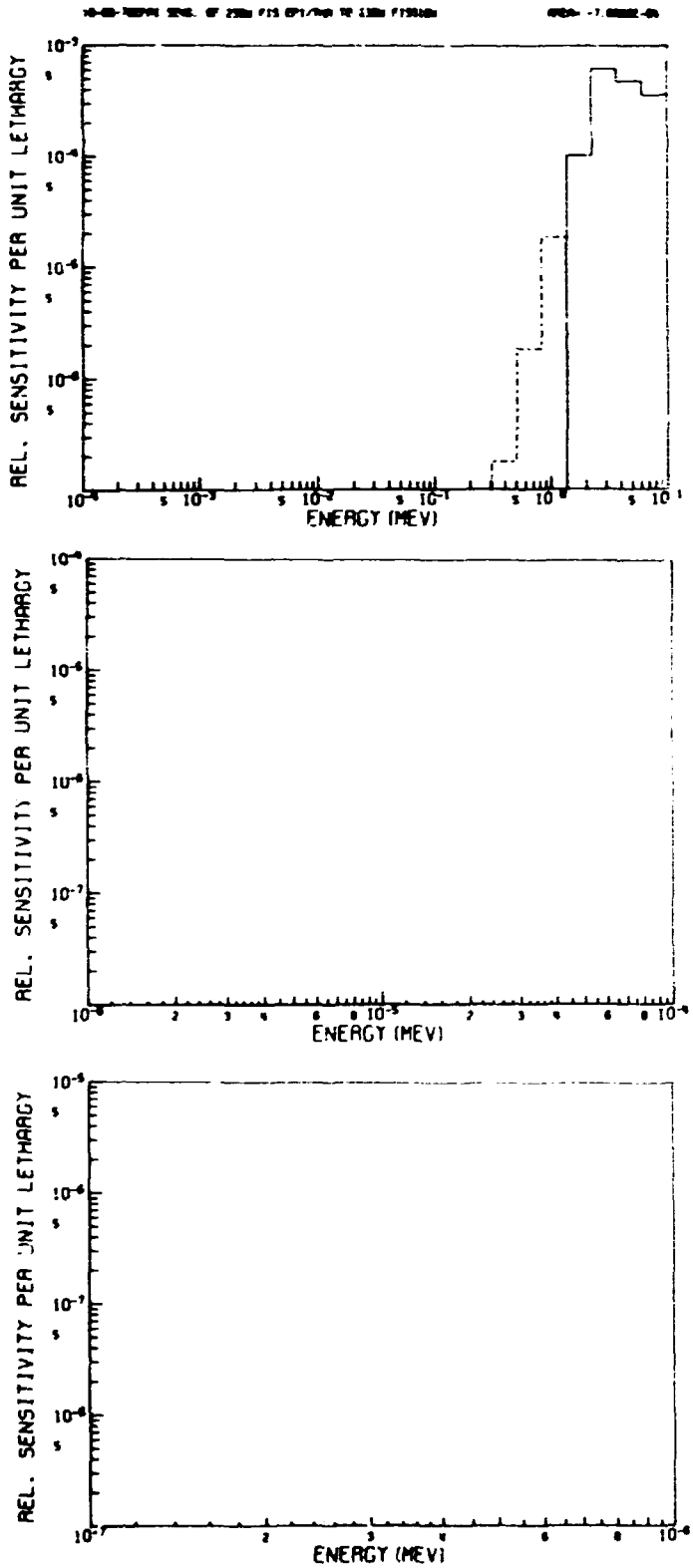

Fig. 38. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in FRX-2 to ^{238}U (n,f).

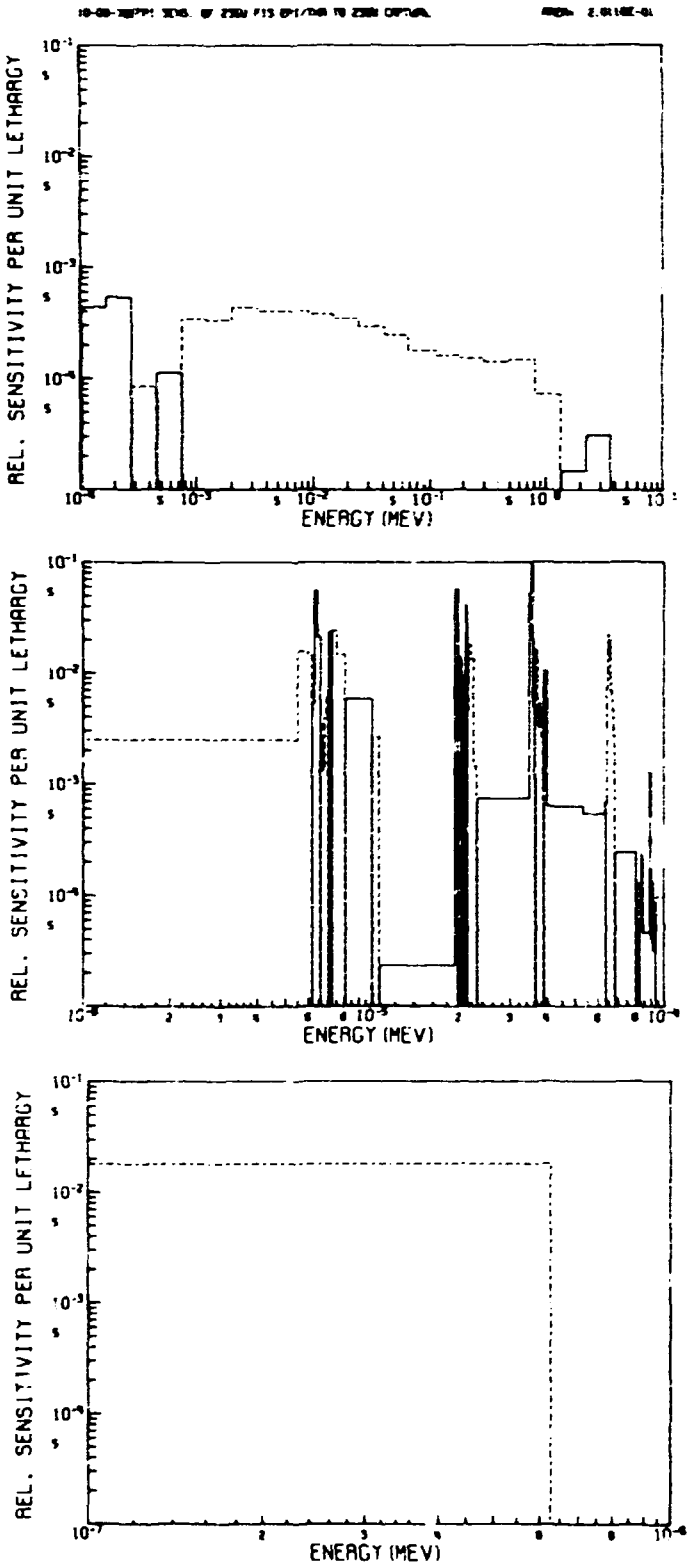

Fig. 39. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to ^{235}U (n,γ).

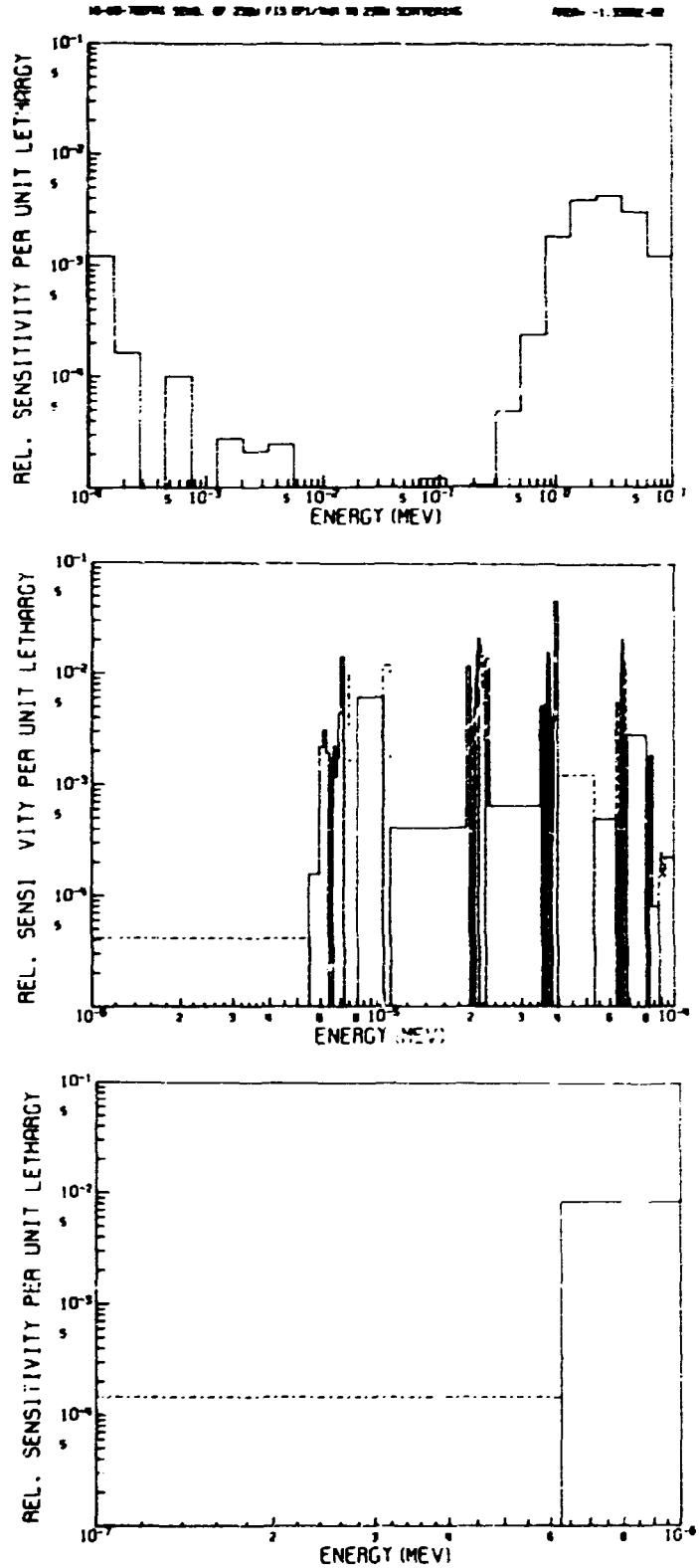

Fig. 40. The Energy-Dependent Sensitivity Profile of ^{25}S in TRX-2 to ^{238}U (n,n).

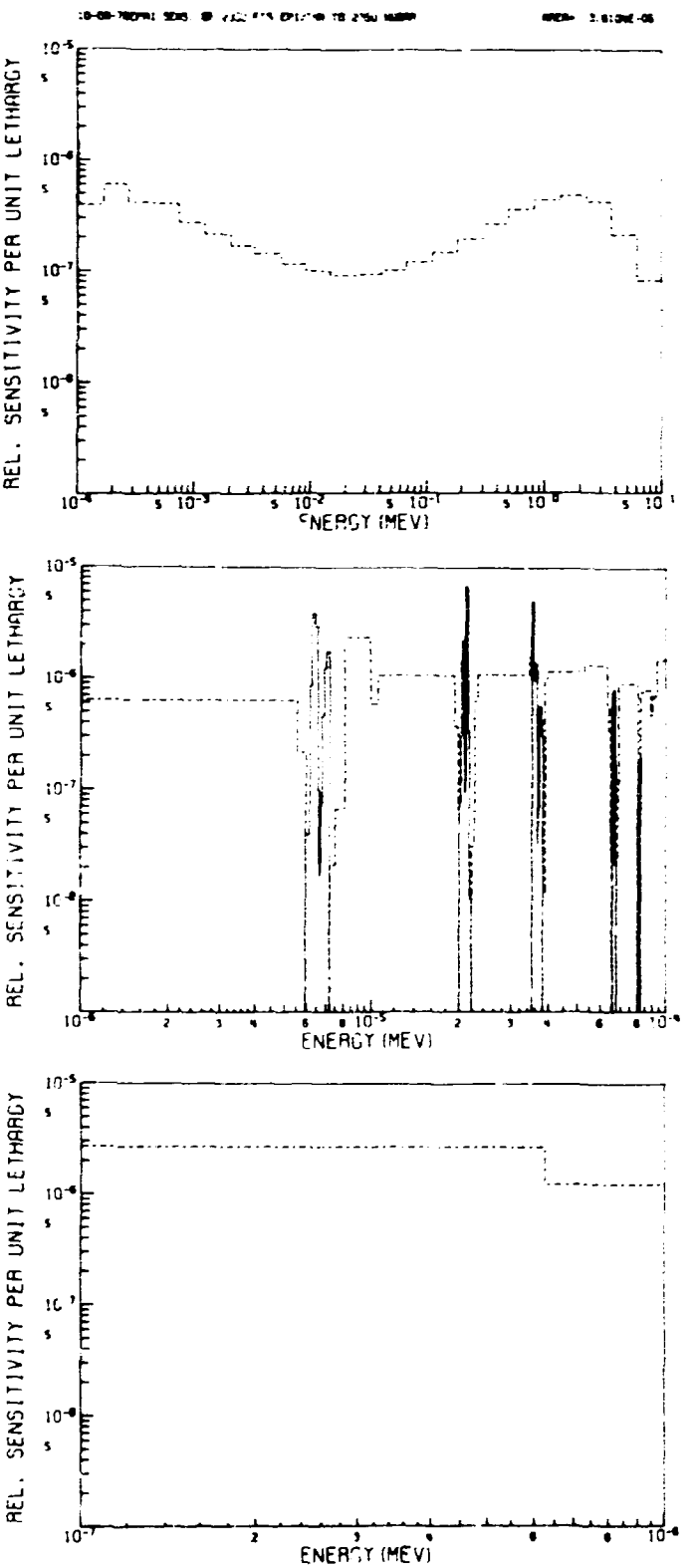

Fig. 41. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to ^{235}U $\bar{\nu}$.

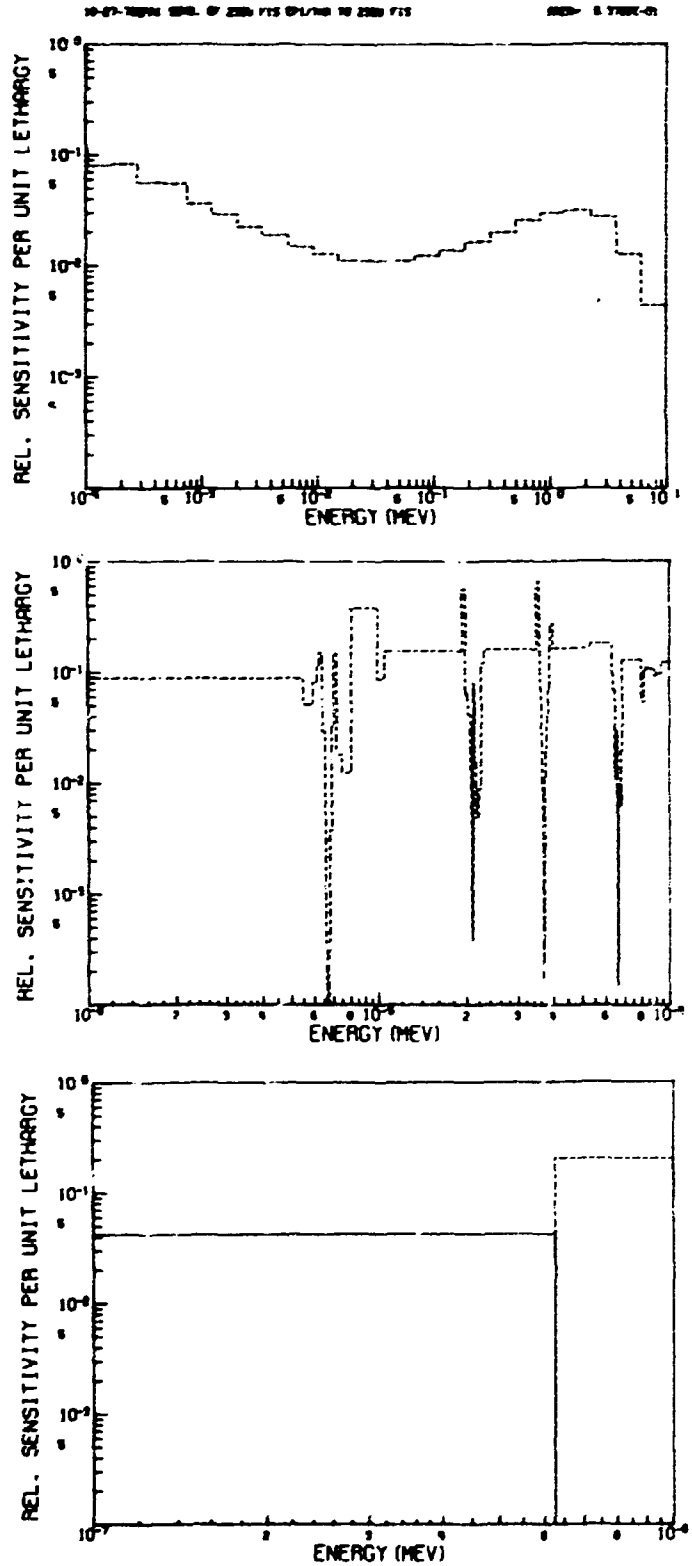

Fig. 42. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TNX-2 to ^{235}U (n,f).

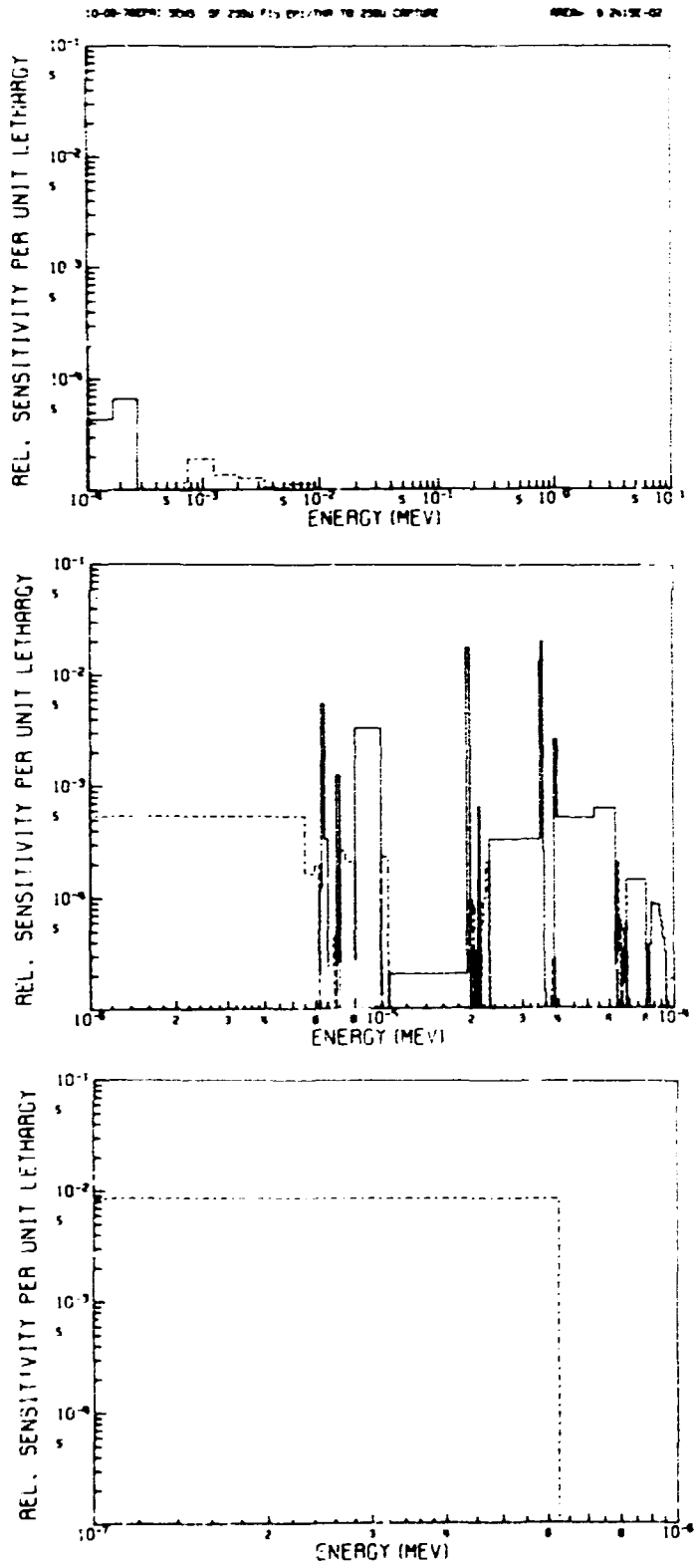

Fig. 43. *The Energy-Dependent Sensitivity Profile of* $^{25}\delta$ *in TRX-2 to* ^{235}U (n,γ).

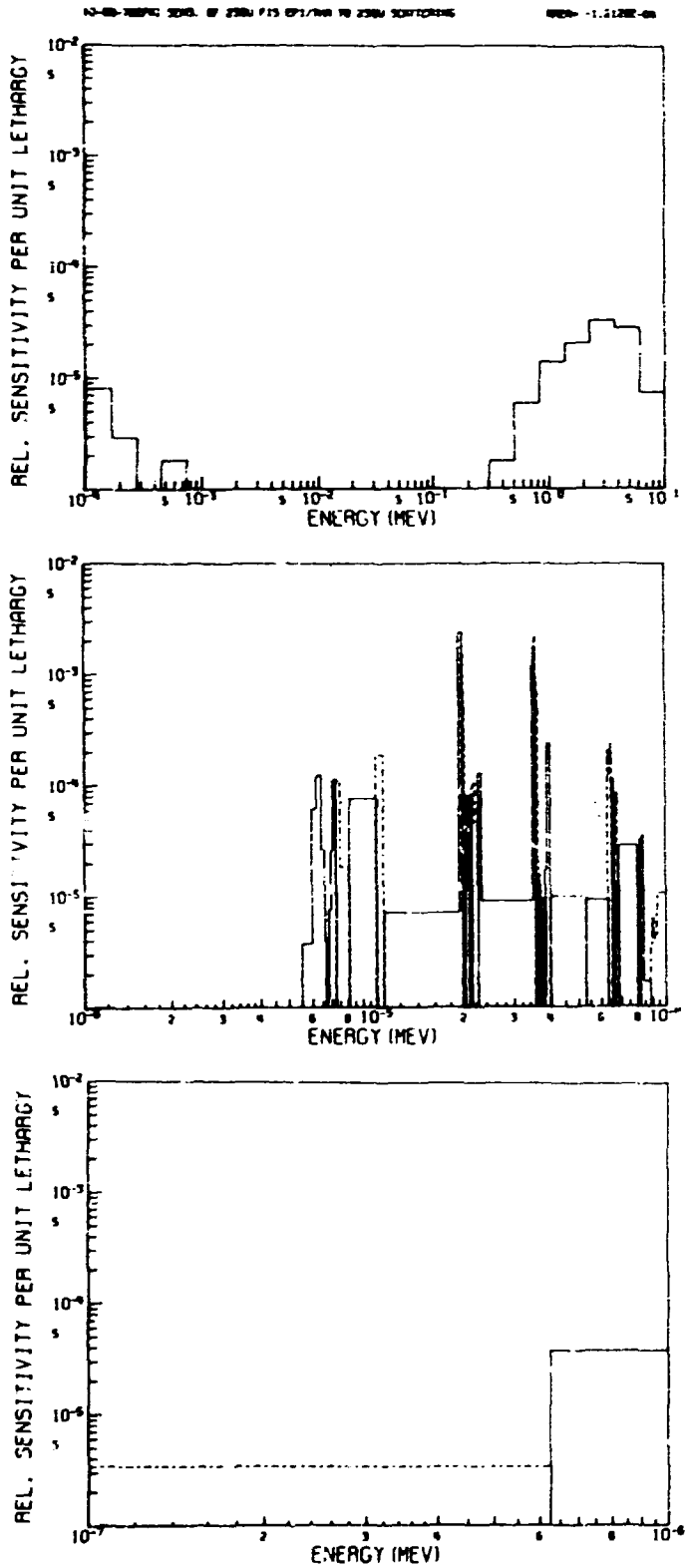

Fig. 44. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to ^{235}U (n,r).

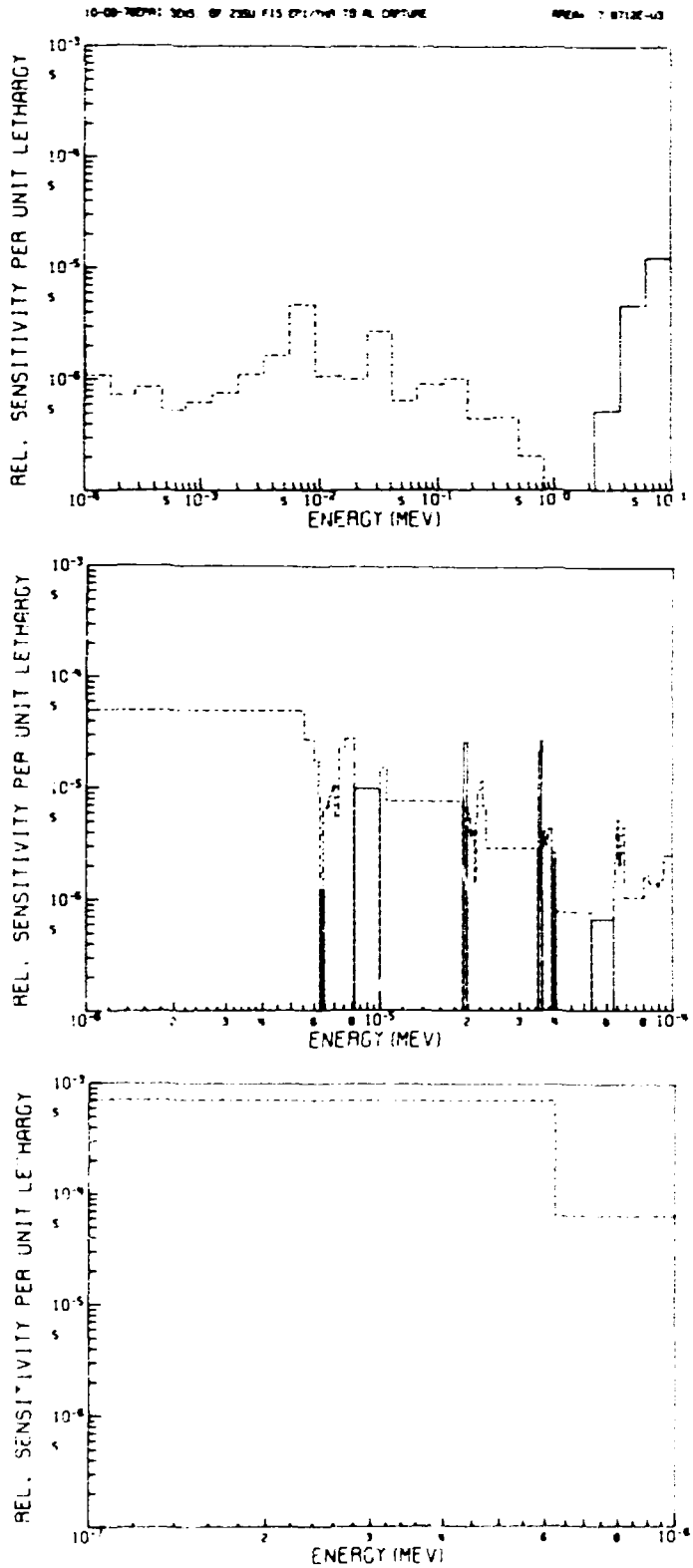

Fig. 45. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to Al (n,γ).

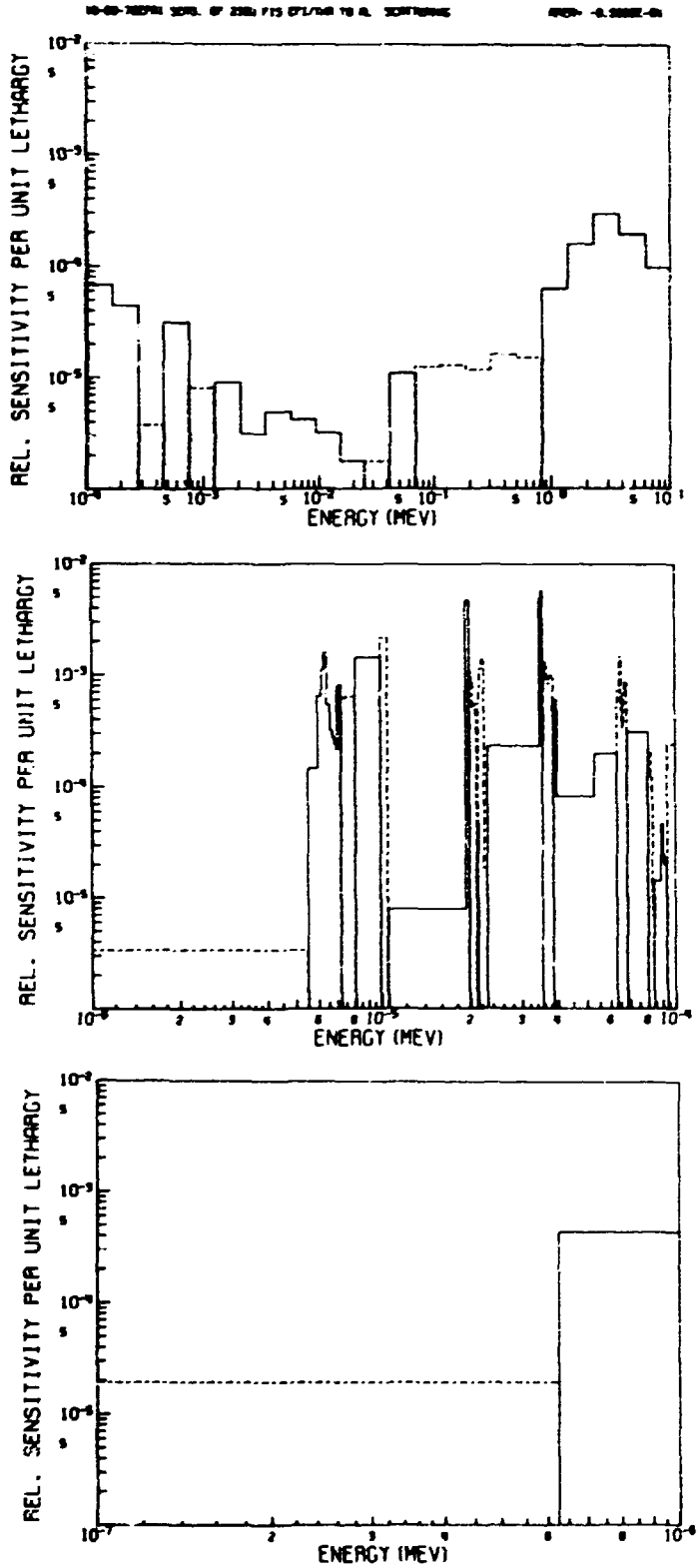

Fig. 46. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to Al (n,n).

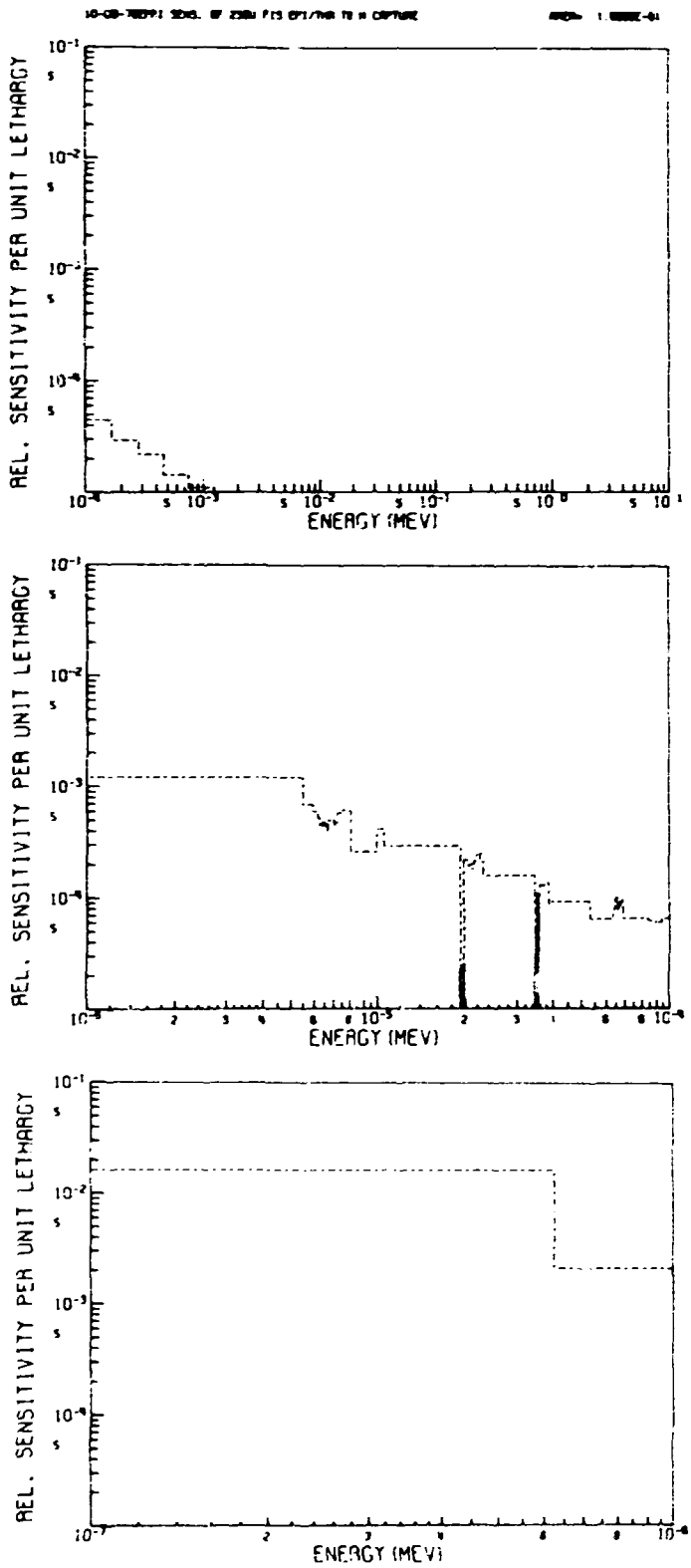

Fig. 47. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to H (n,γ).

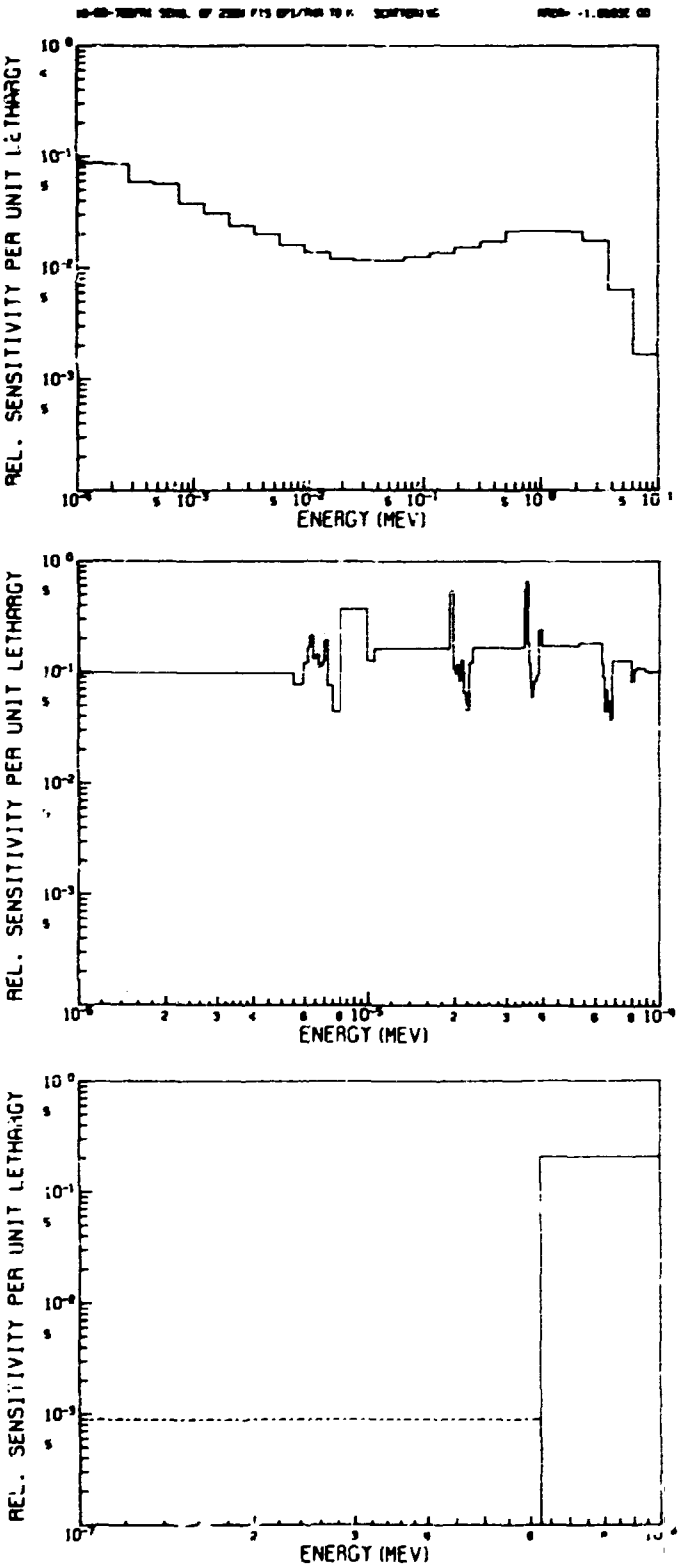

Fig. 48. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to H (n,n).

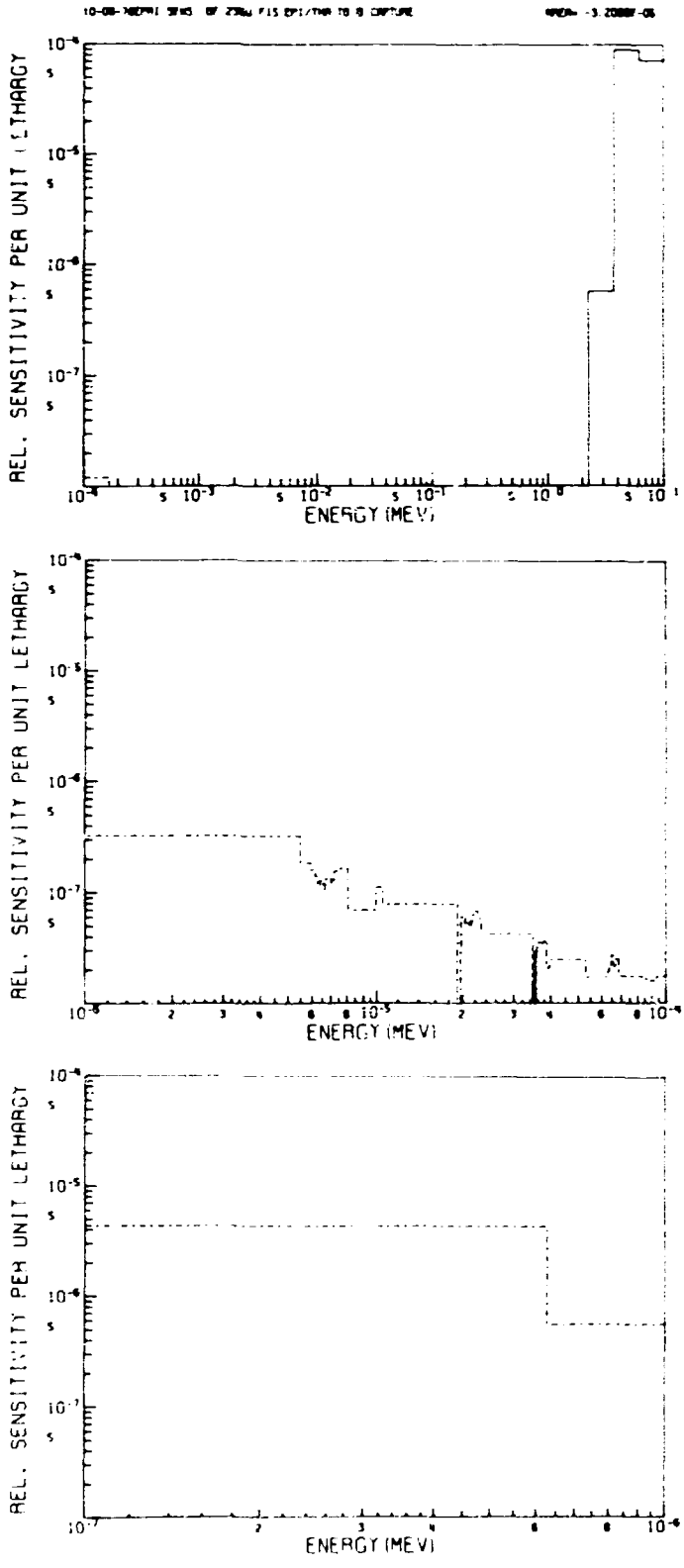

Fig. 49. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to 0 (n,γ).

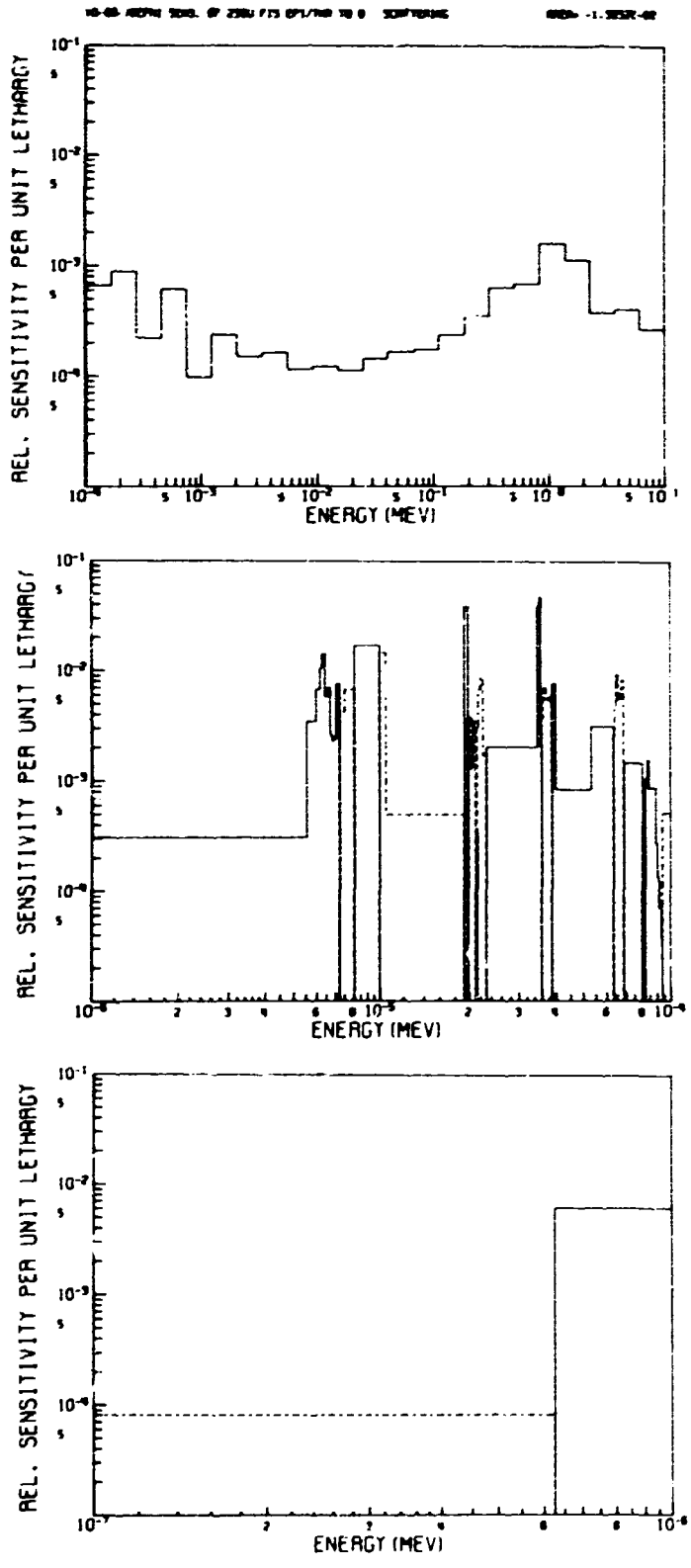

Fig. 50. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to O (n,n).

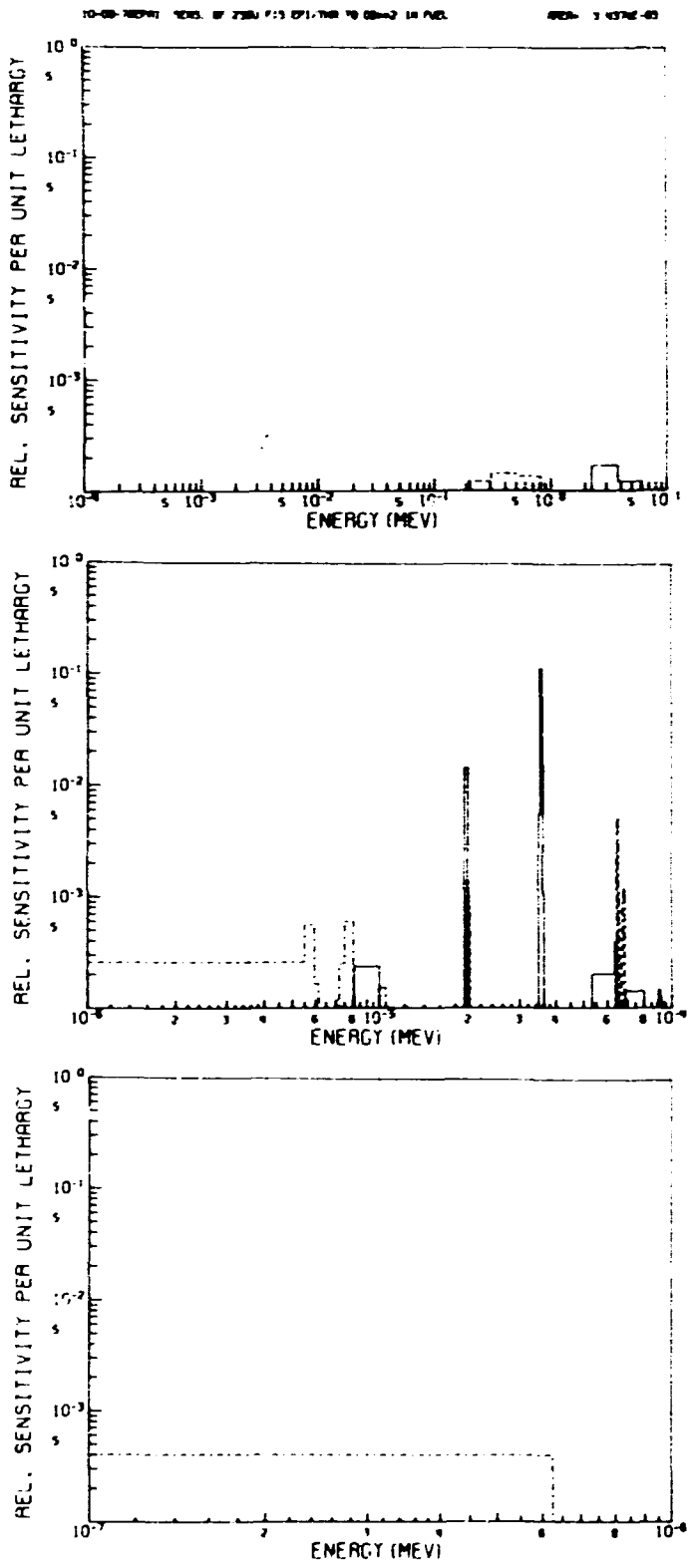

Fig. 51. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to DB^2 in the fuel.

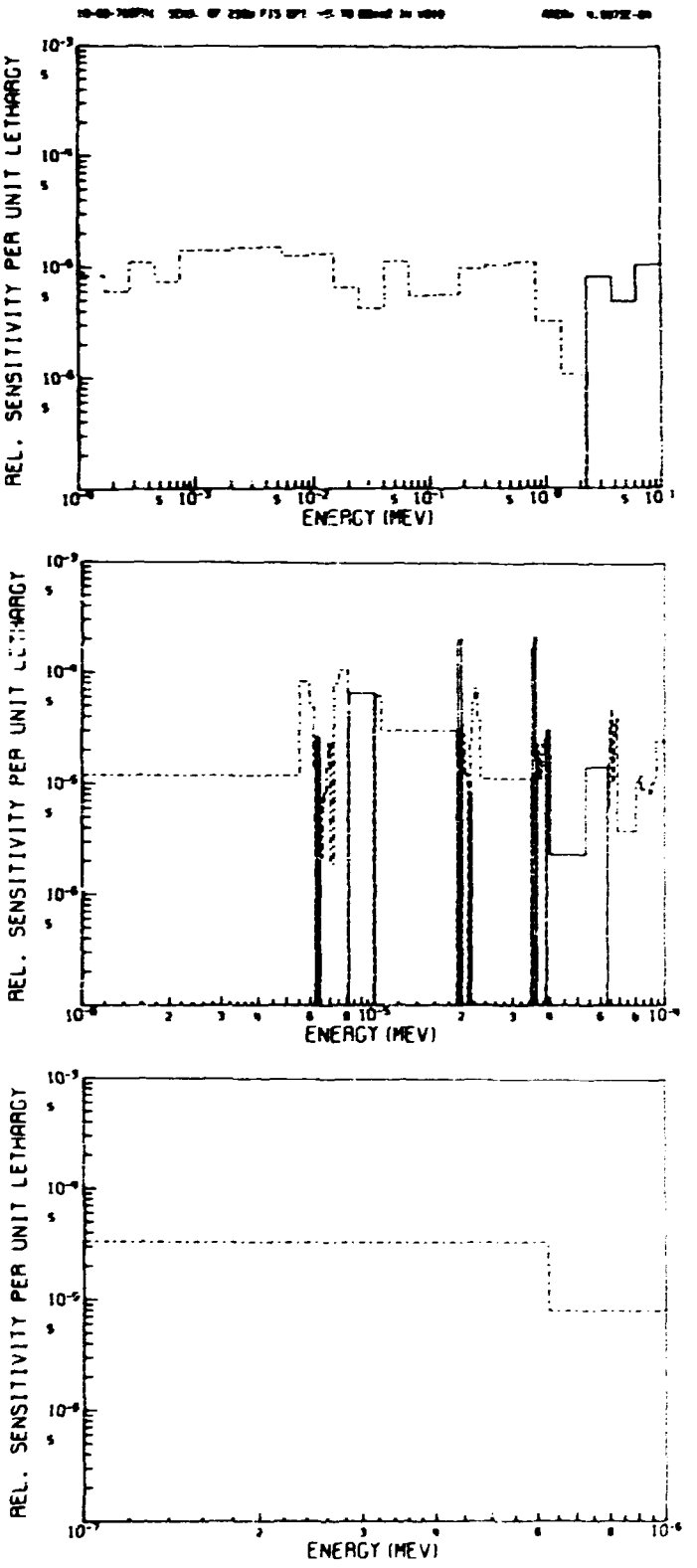

Fig. 52. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to DB^2 in the void.

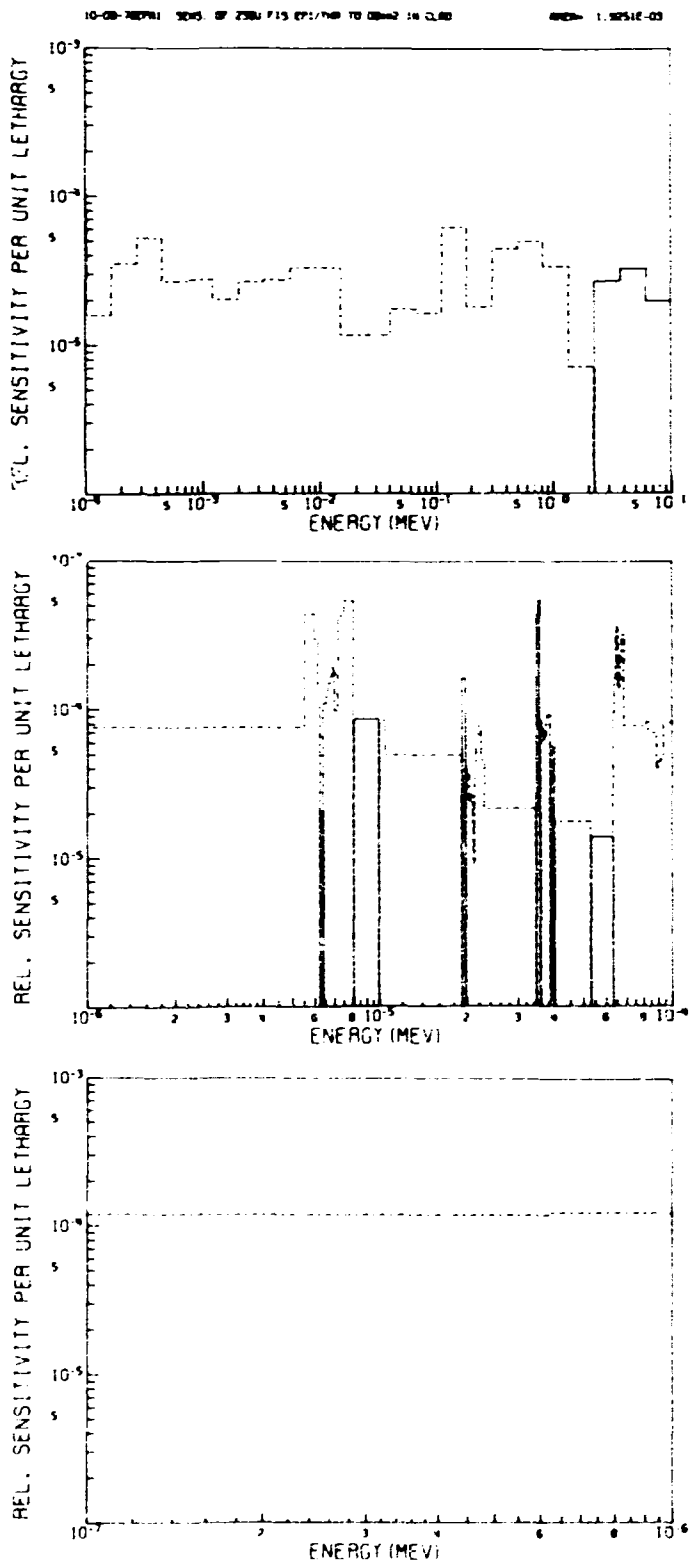

Fig. 53. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to DB^2 in the clad.

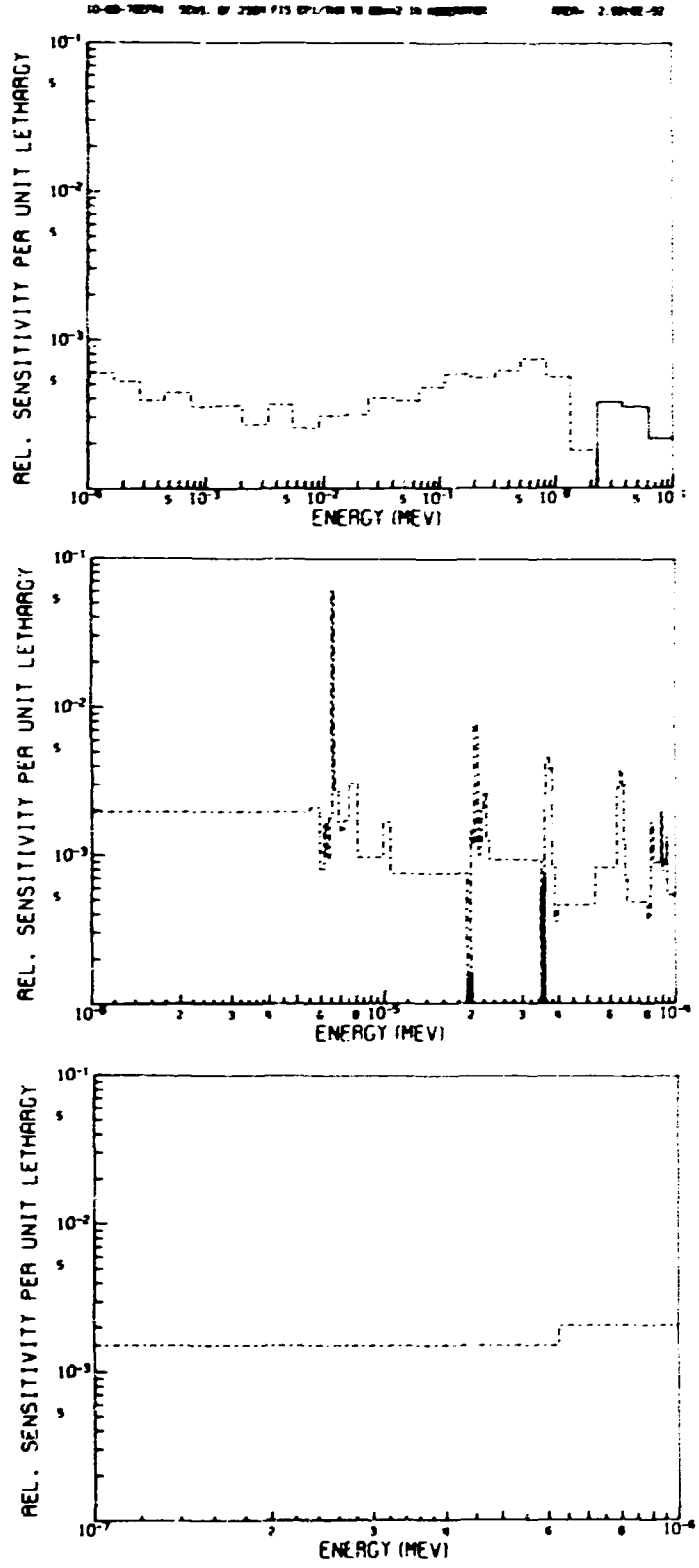

Fig. 54. The Energy-Dependent Sensitivity Profile of $^{25}\delta$ in TRX-2 to DB^2 in the moderator.

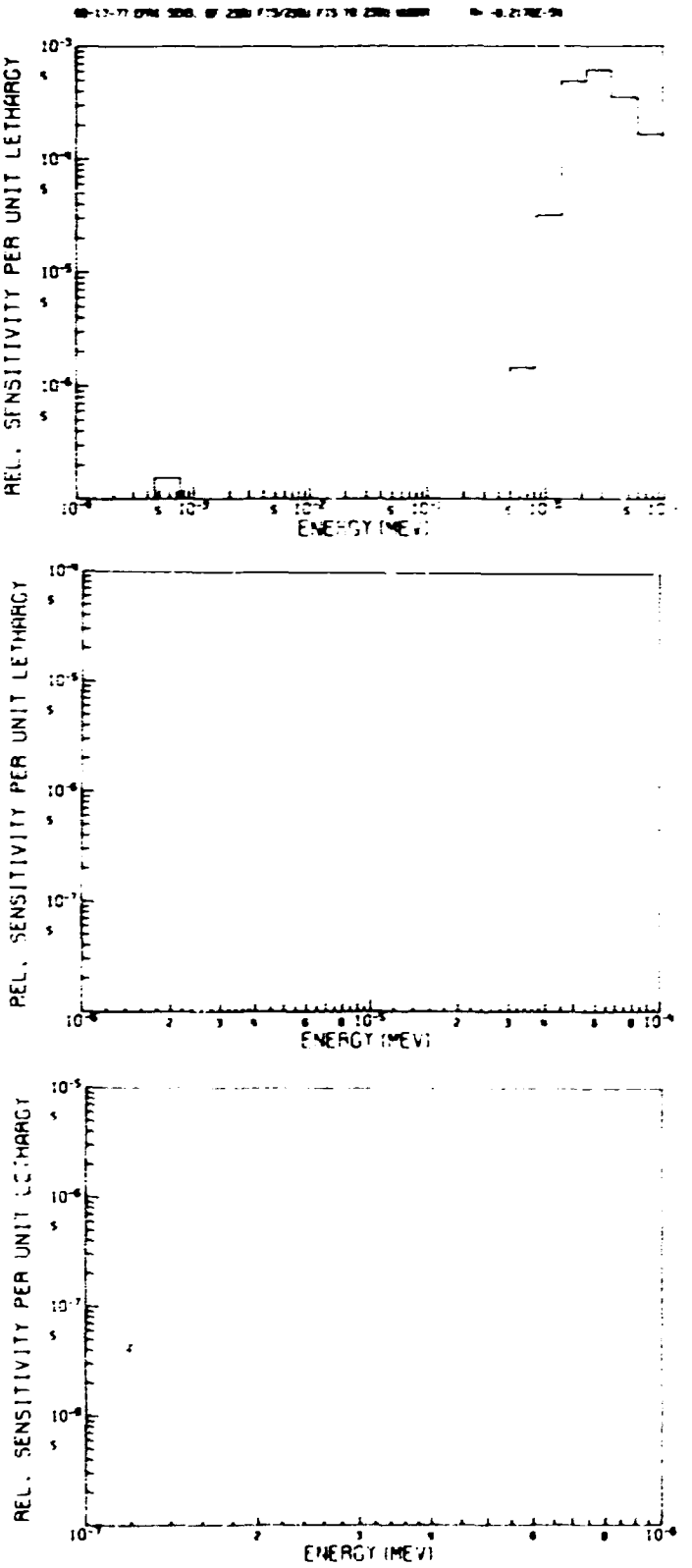

Fig. 55. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U $\bar{\nu}$.

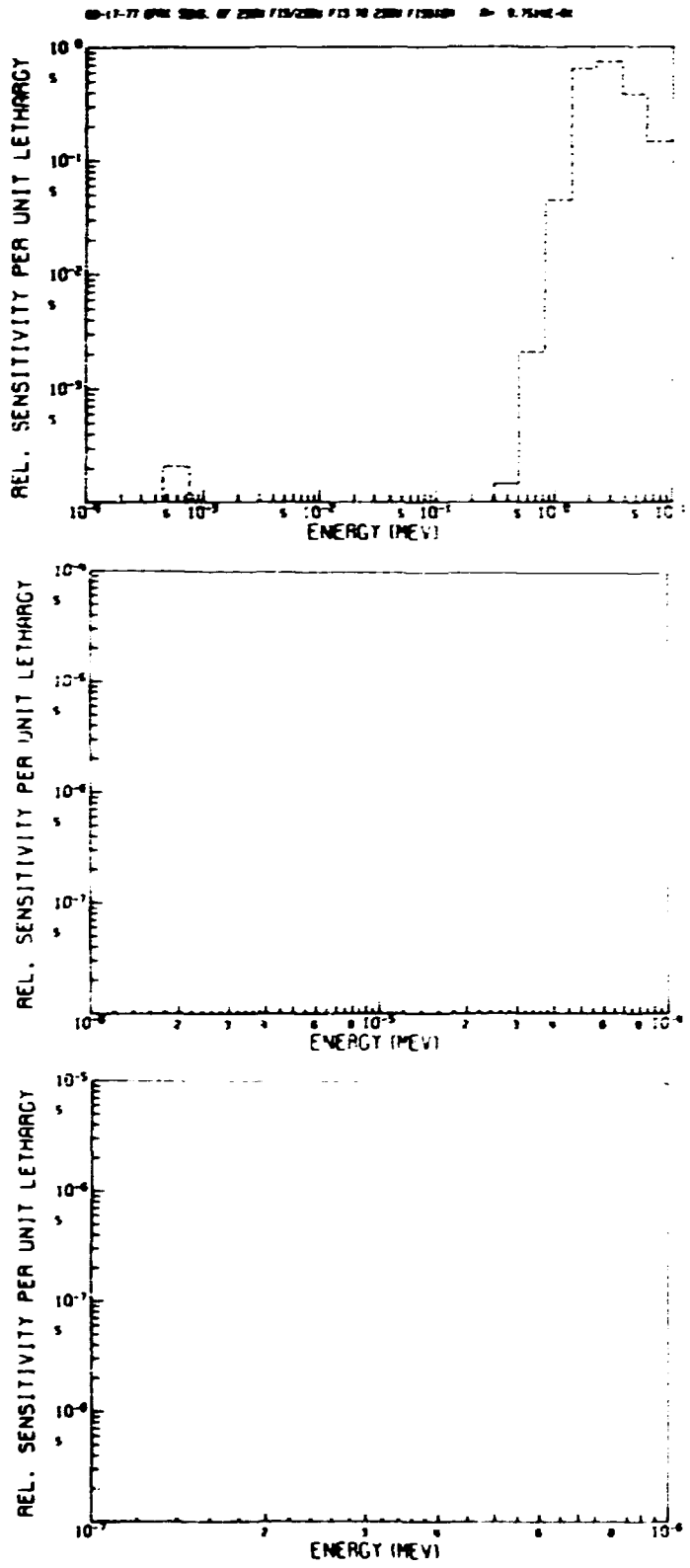

Fig. 56. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,f).

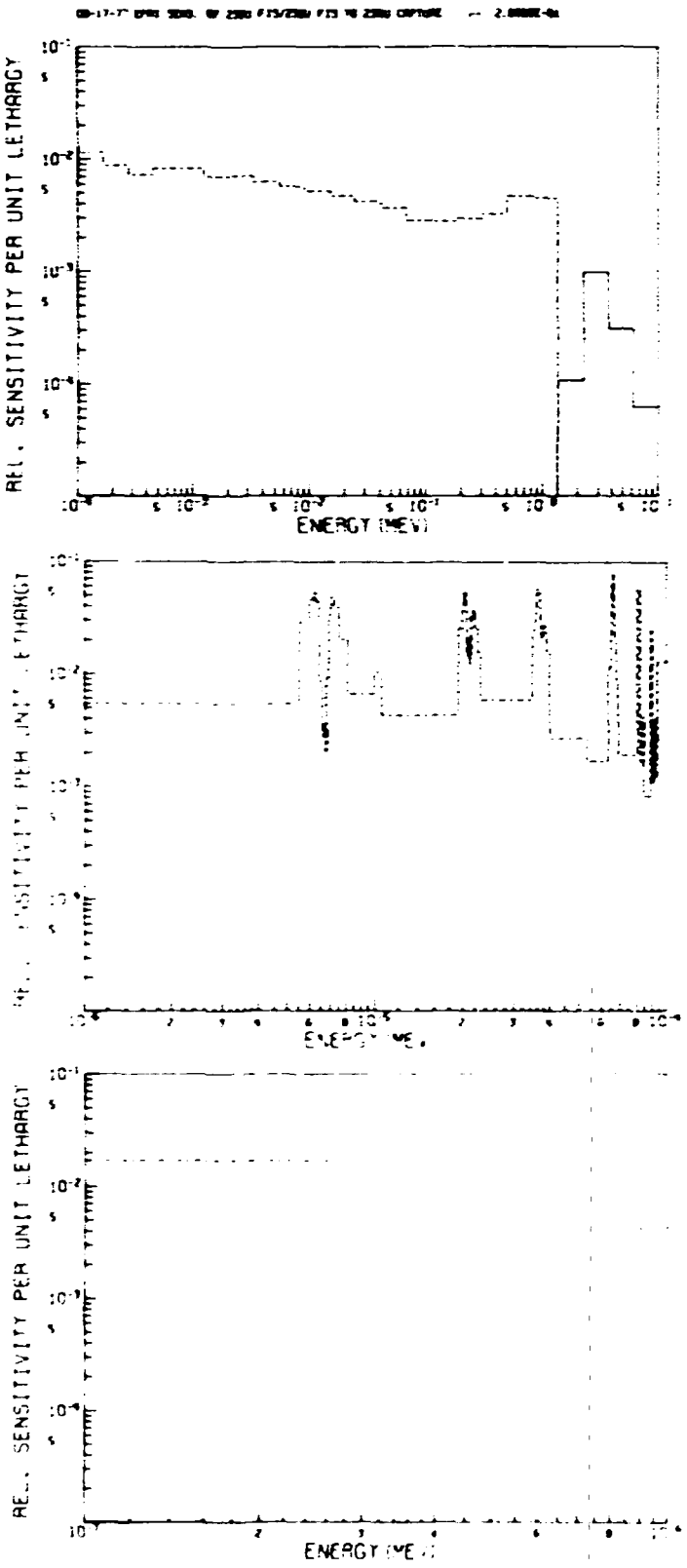

Fig. 57. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,γ).

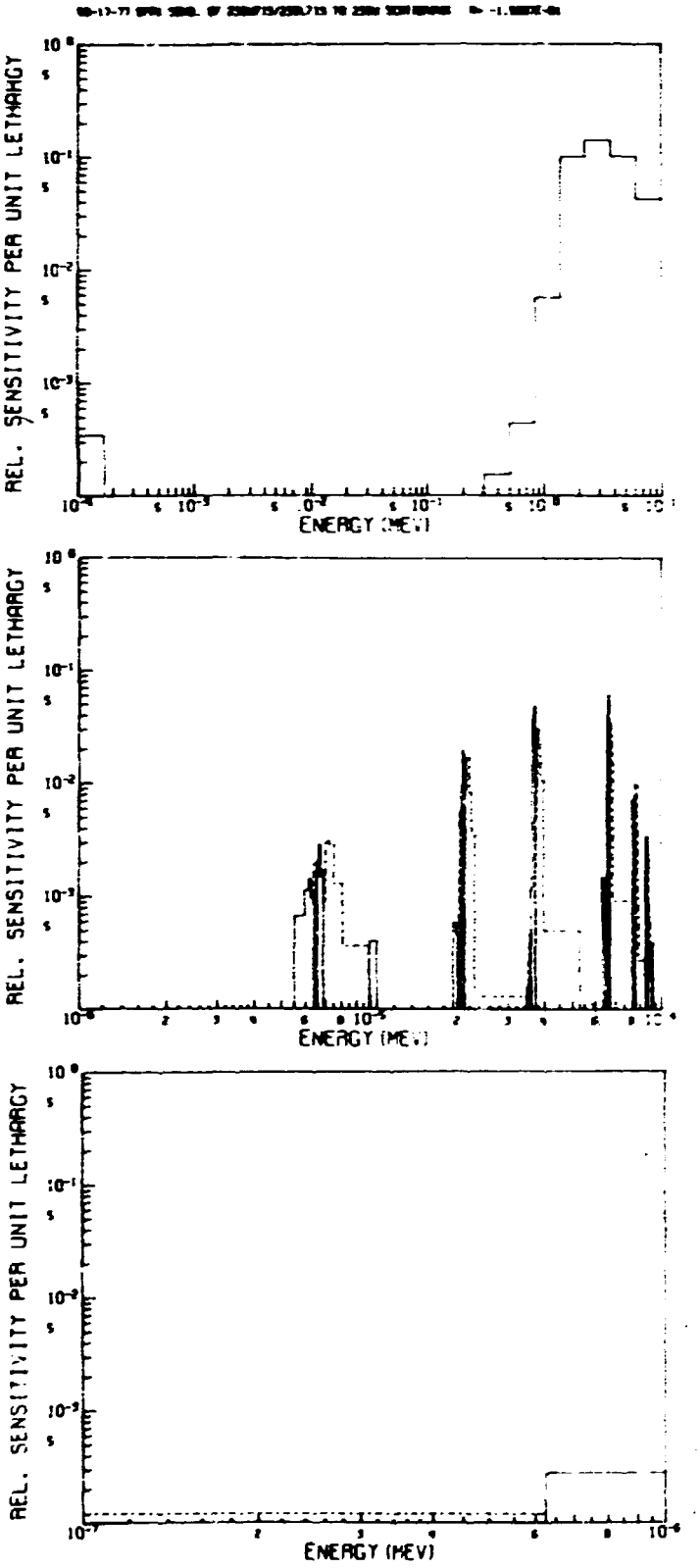

Fig. 58. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,n).

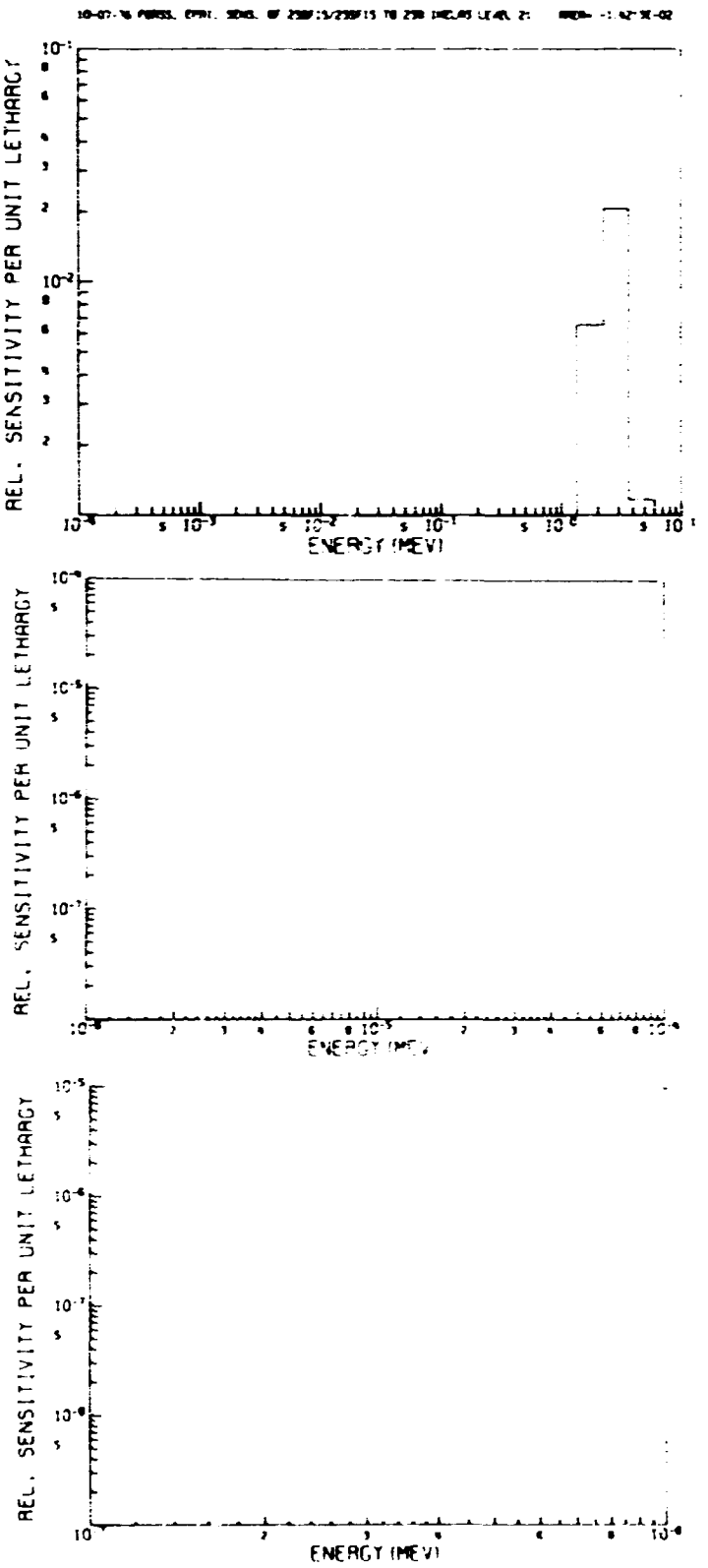

Fig. 59. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,n) inelastic level 21.

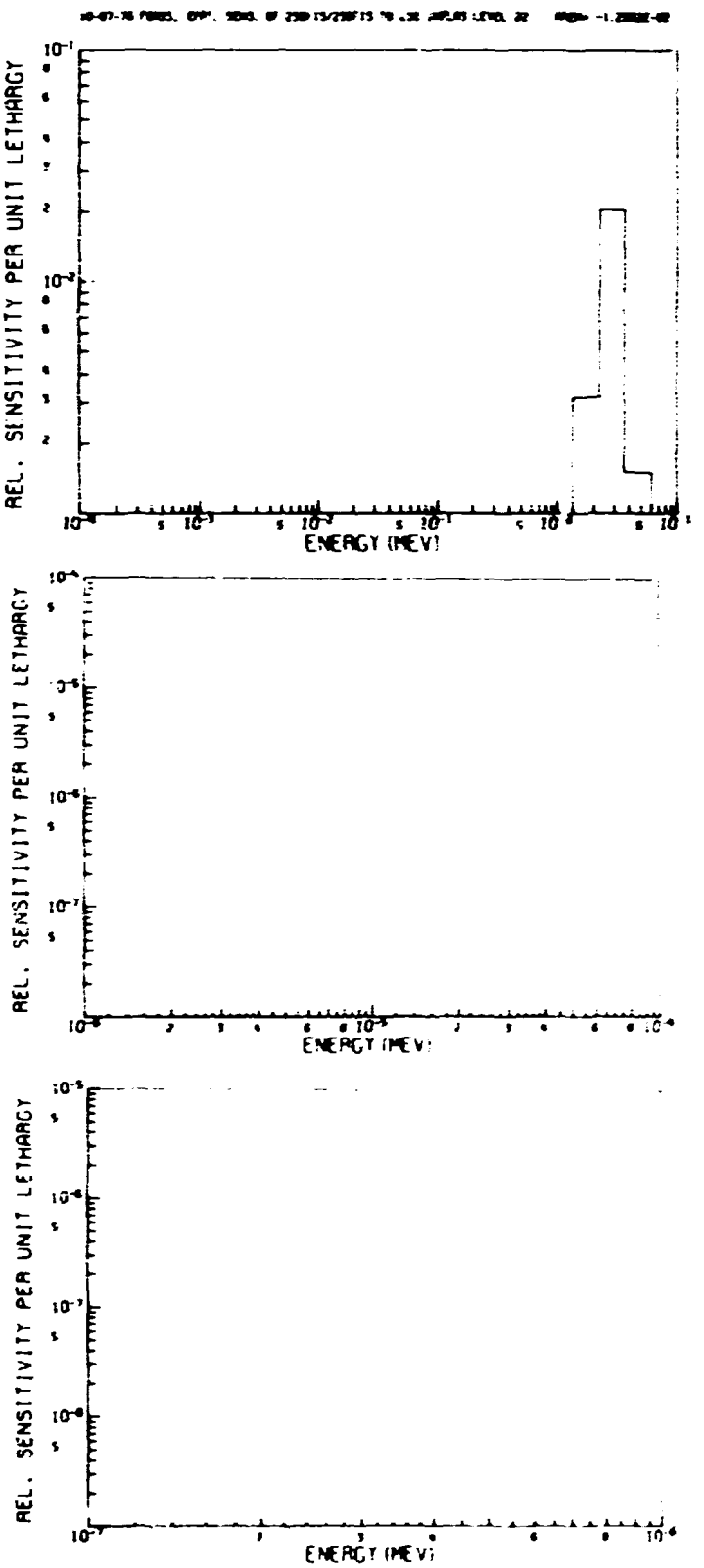

Fig. 60. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,n) inelastic level 22.

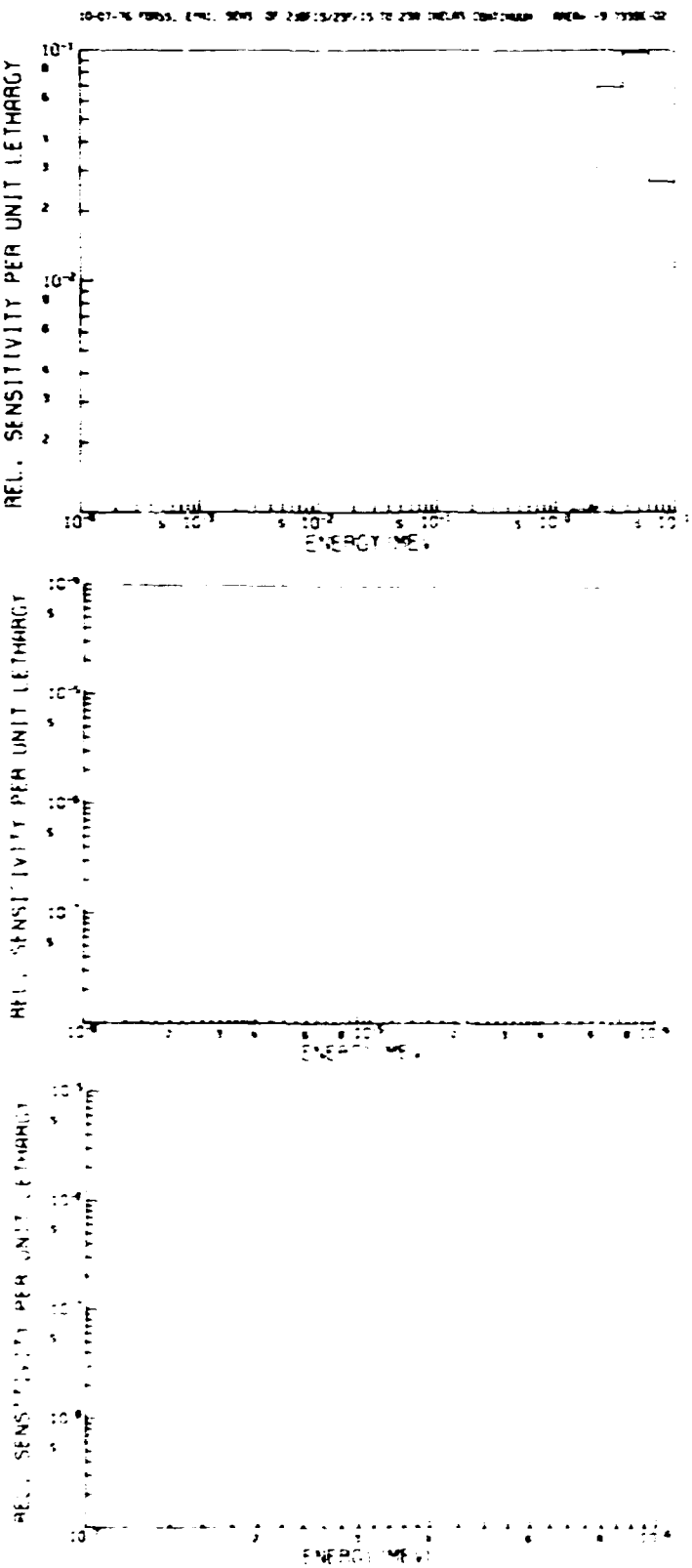

Fig. 61. The Energy-Dependent Sensitivity Profile of [illegible] in TRX-2 to ^{238}U (n,n') inelastic continuum.

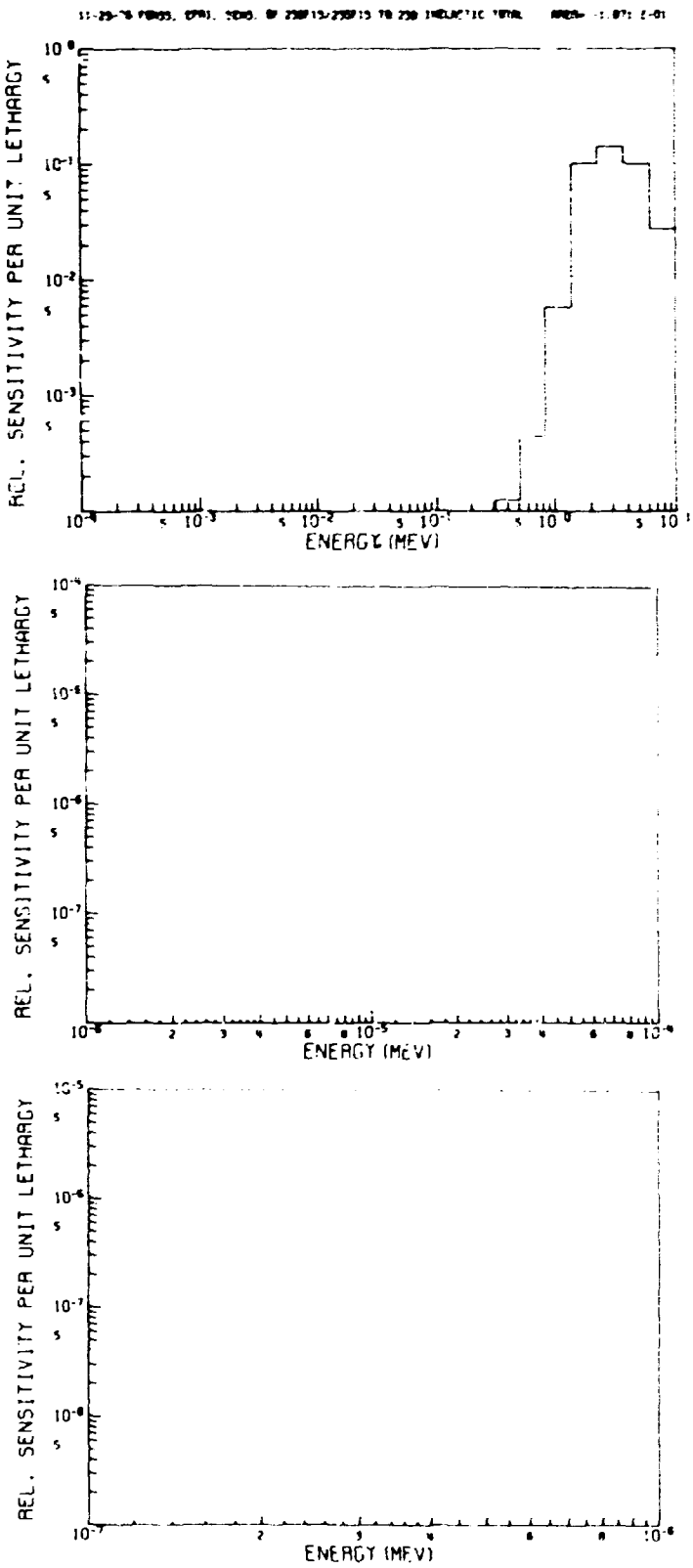

Fig. 62. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{238}U (n,n) inelastic total.

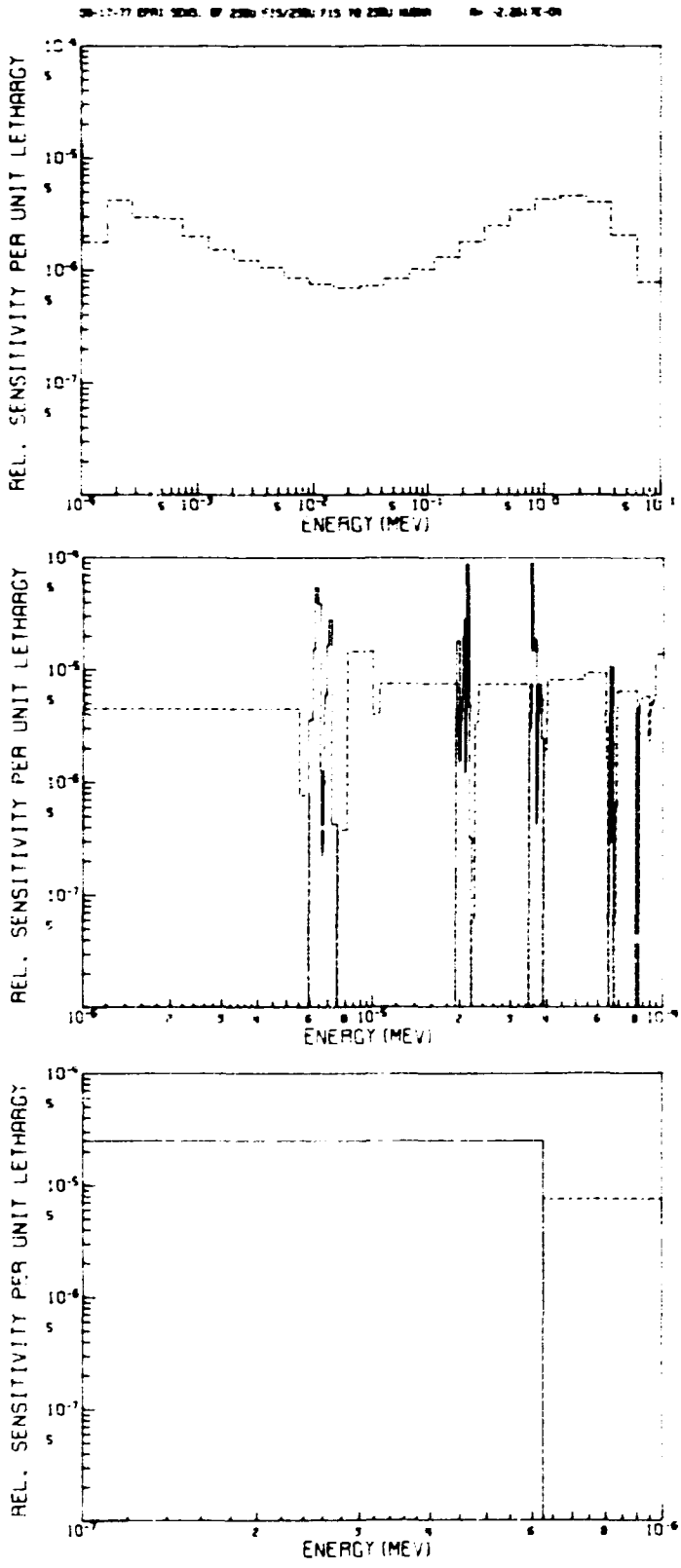

Fig. 63. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{235}U $\bar{\nu}$.

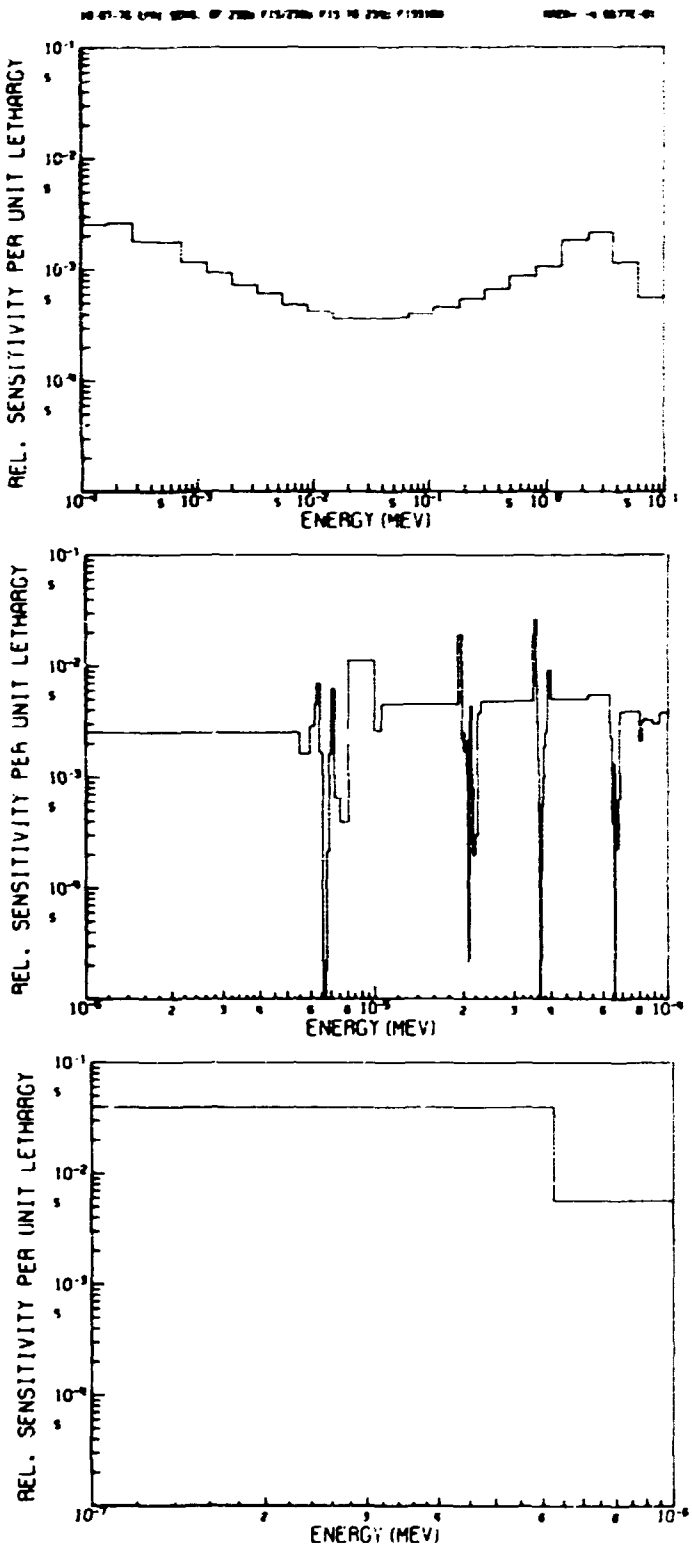

Fig. 64. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{235}U (n,f).

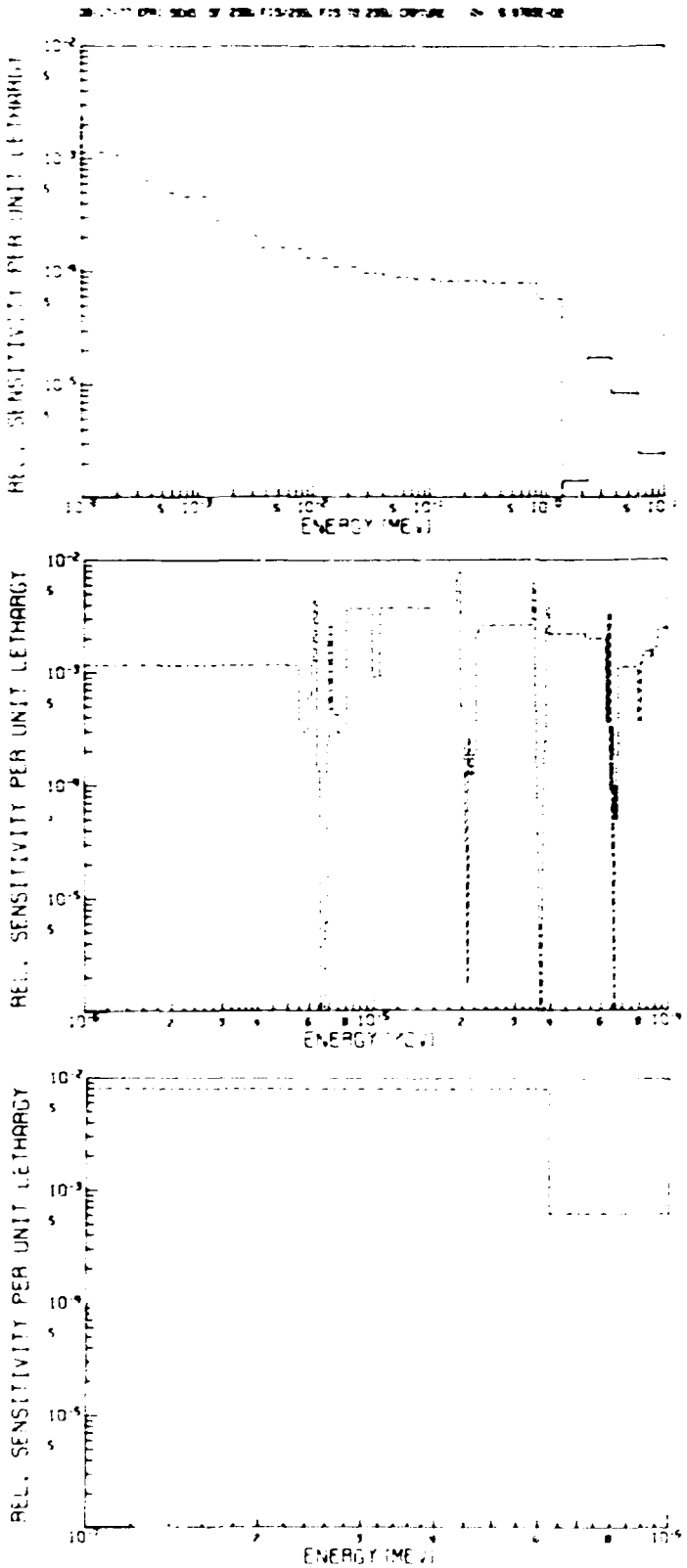

Fig. 65. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{235}U (n,γ).

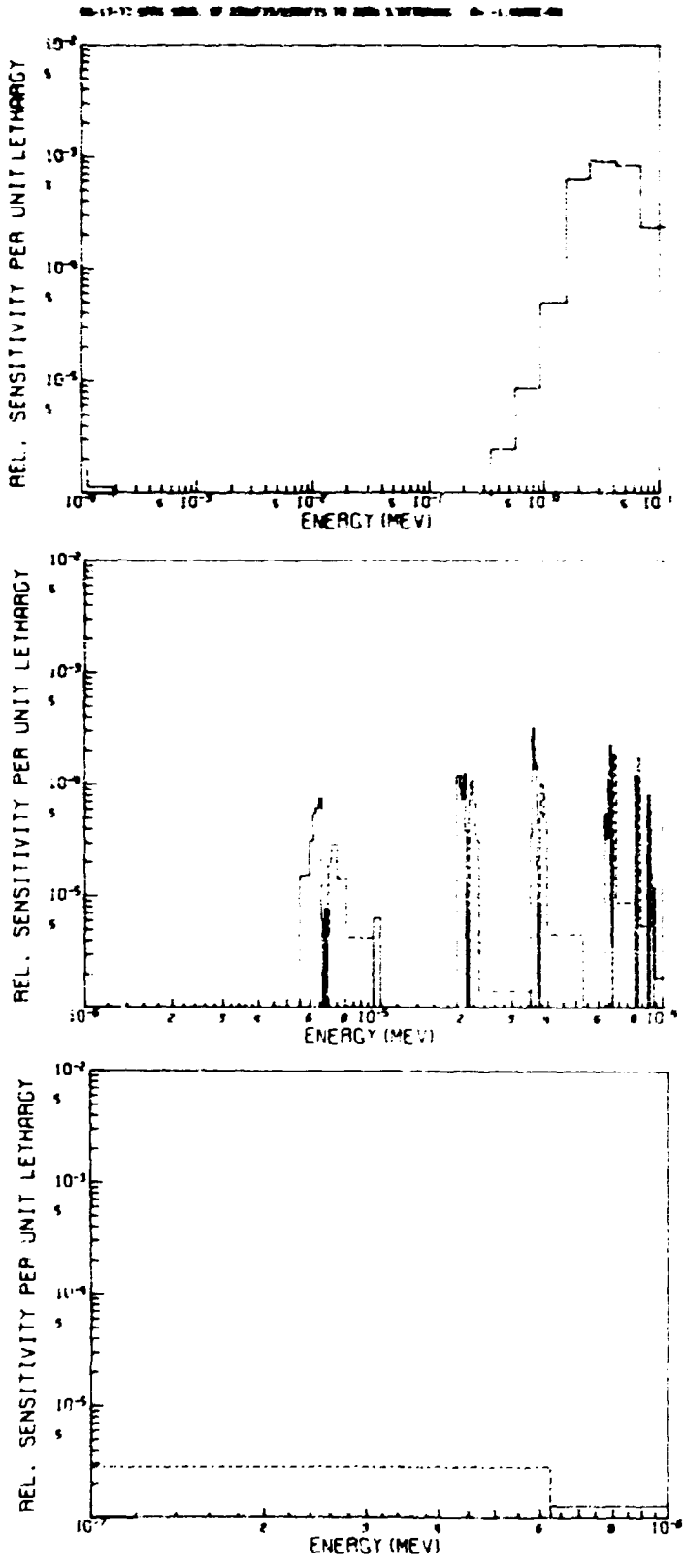

Fig. 66. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to ^{235}U (n,n).

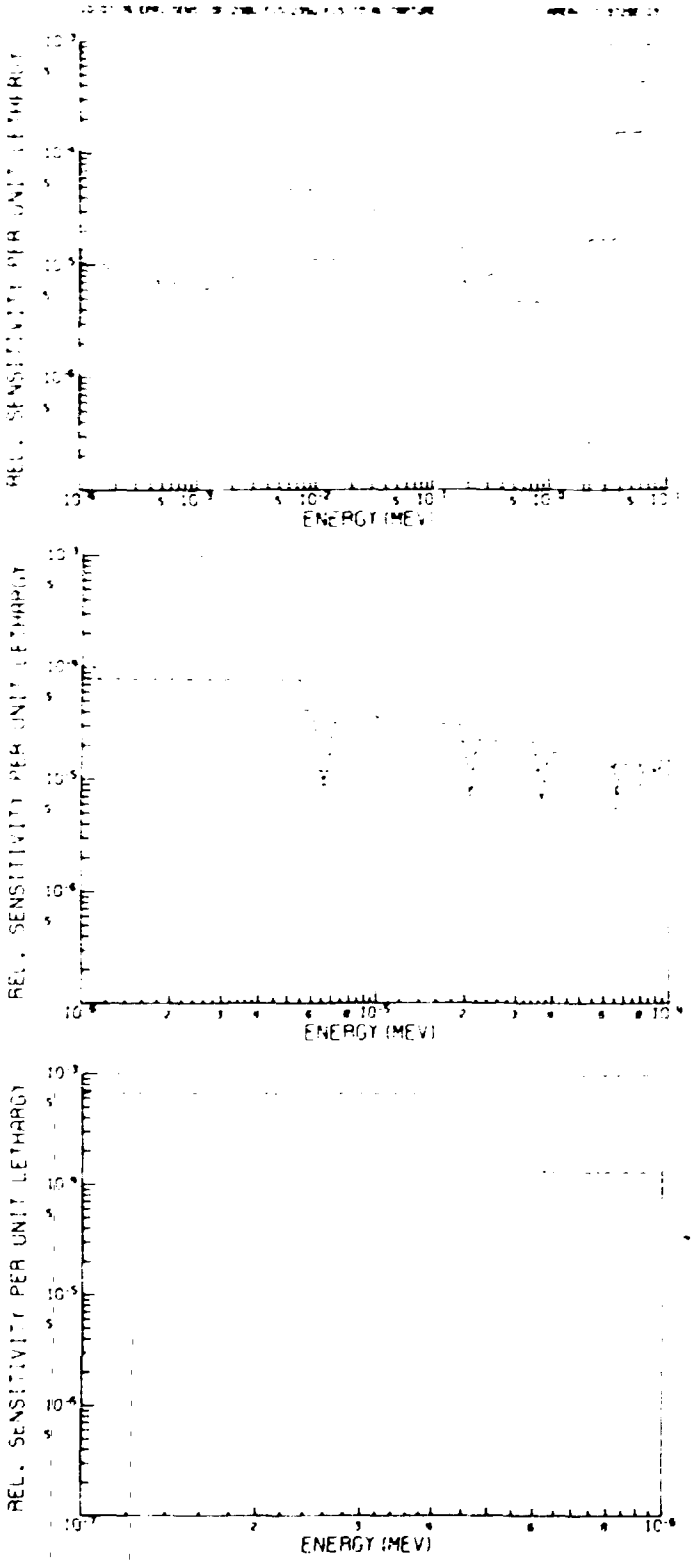

Fig. 67. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to Al (n,γ).

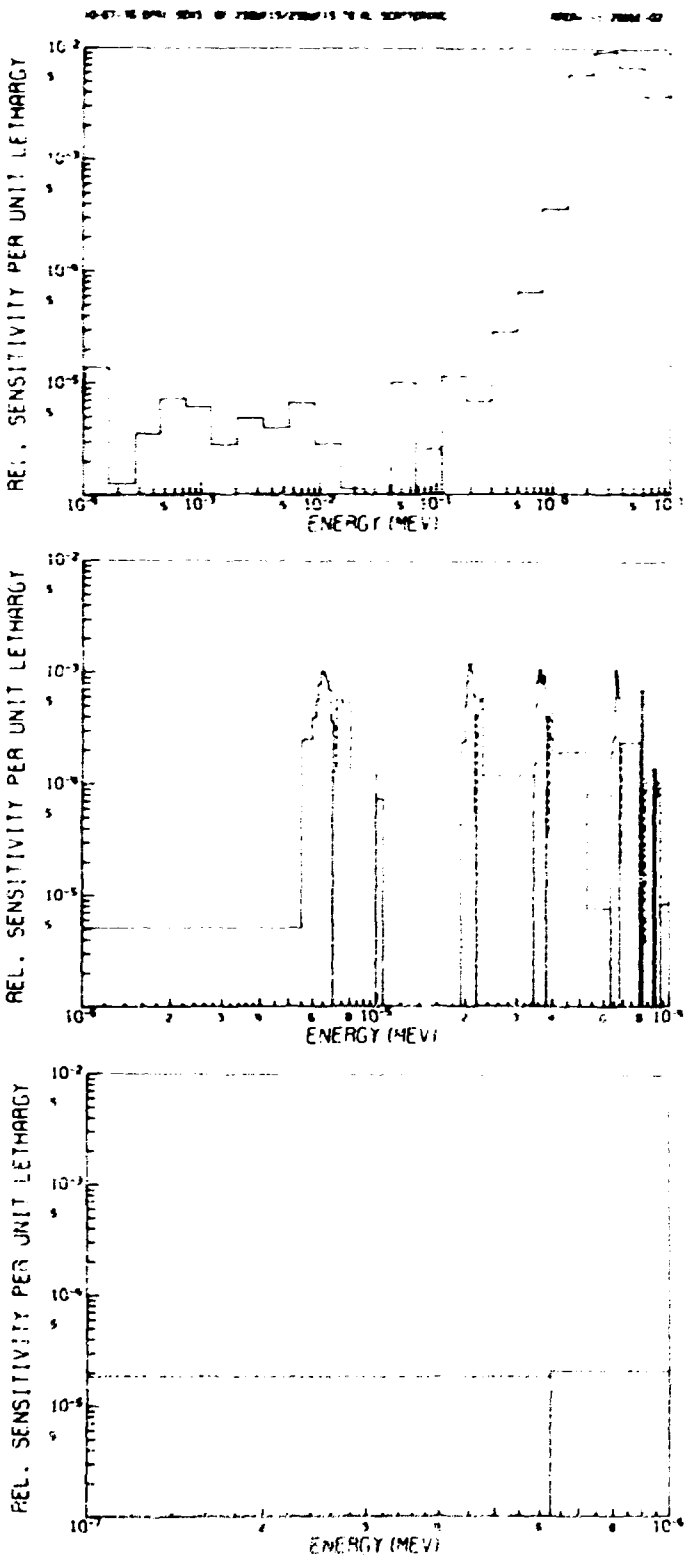

Fig. 68. The Energy-Dependent Sensitivity Profile of ^{28}S in TRX-2 to Al (n,n).

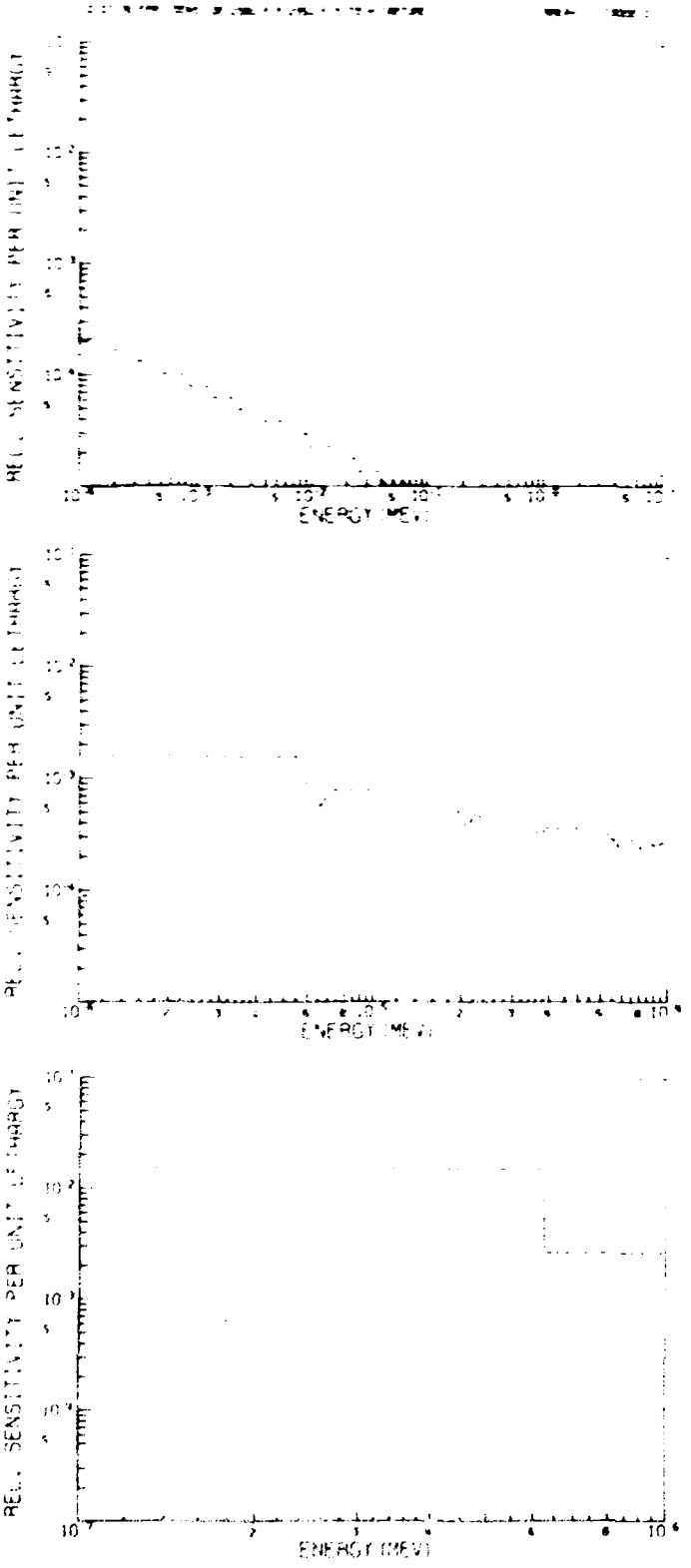

Fig. 69. The Energy-Dependent Sensitivity Profile of ^{28}Si in TRX-2 to H (n,γ).

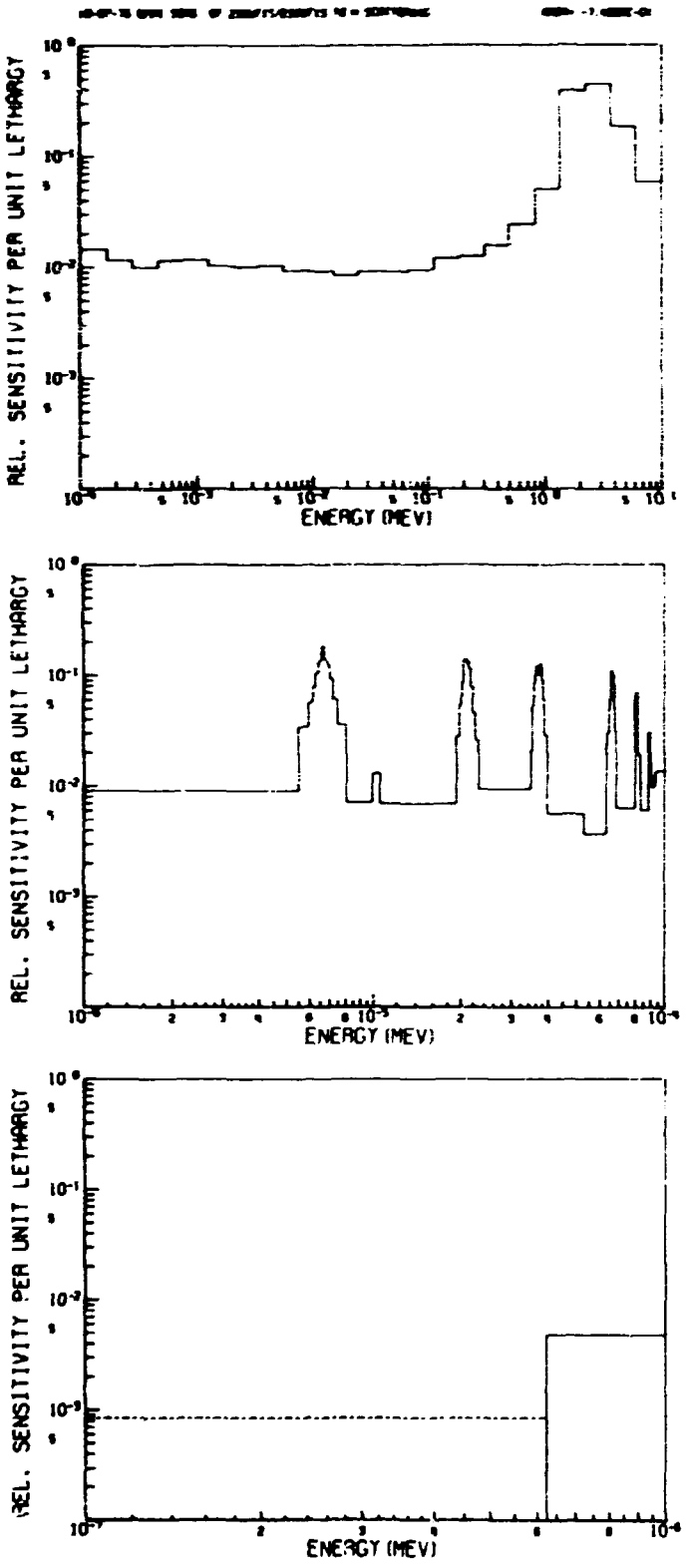

Fig. 70. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to H (n,n).

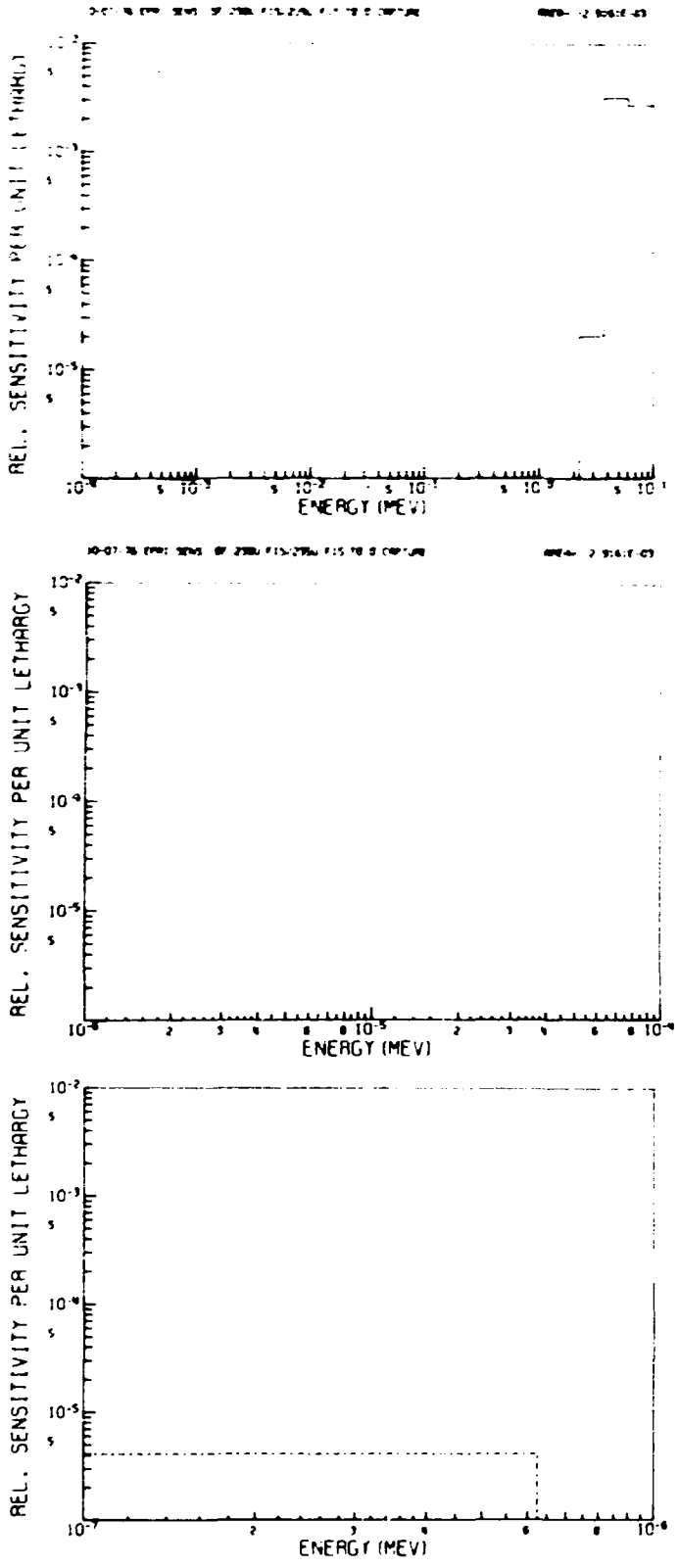

Fig. 71. The Energy-Dependent Sensitivity Profile of ^{28}S in TRY-2 to O (n,γ).

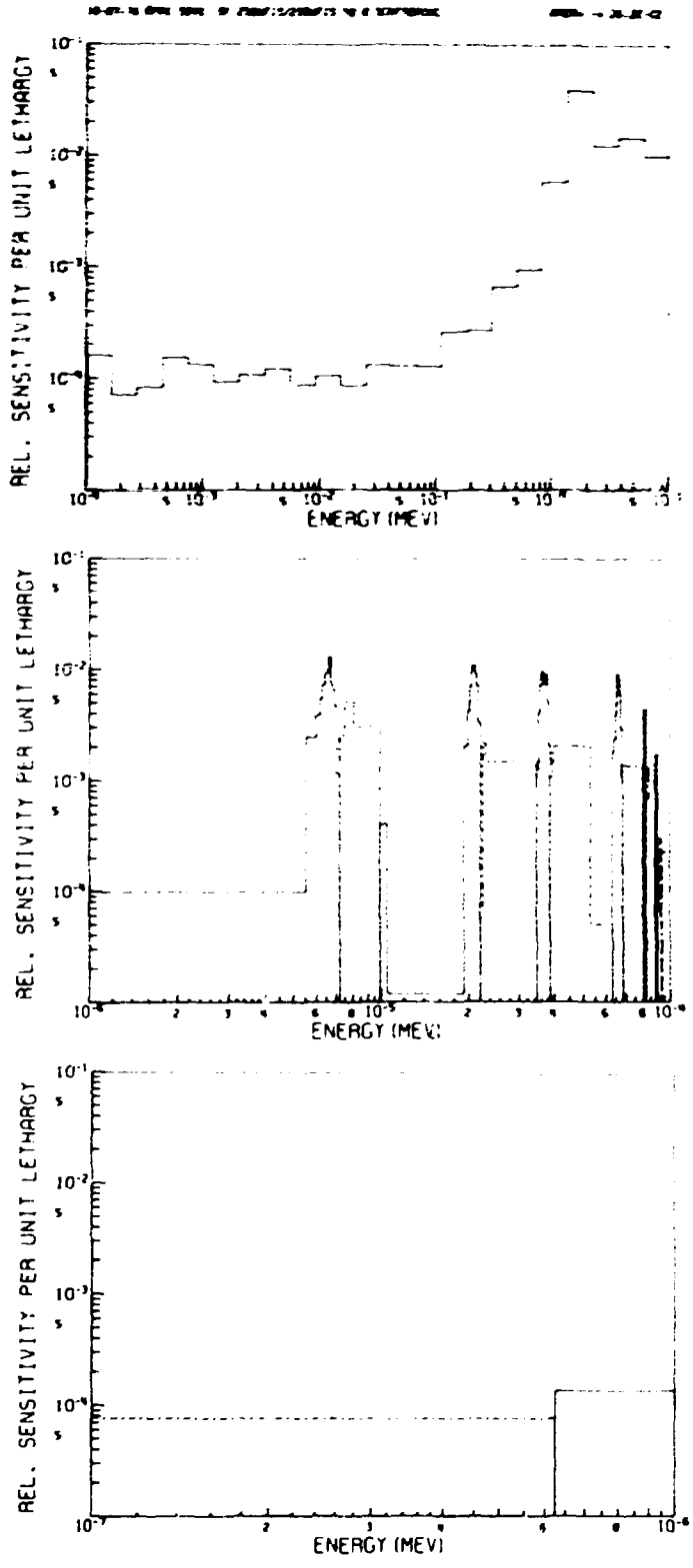

Fig. 72. The Energy-Dependent Sensitivity Profile of ^{28}Si in TRX-2 to O (n,n).

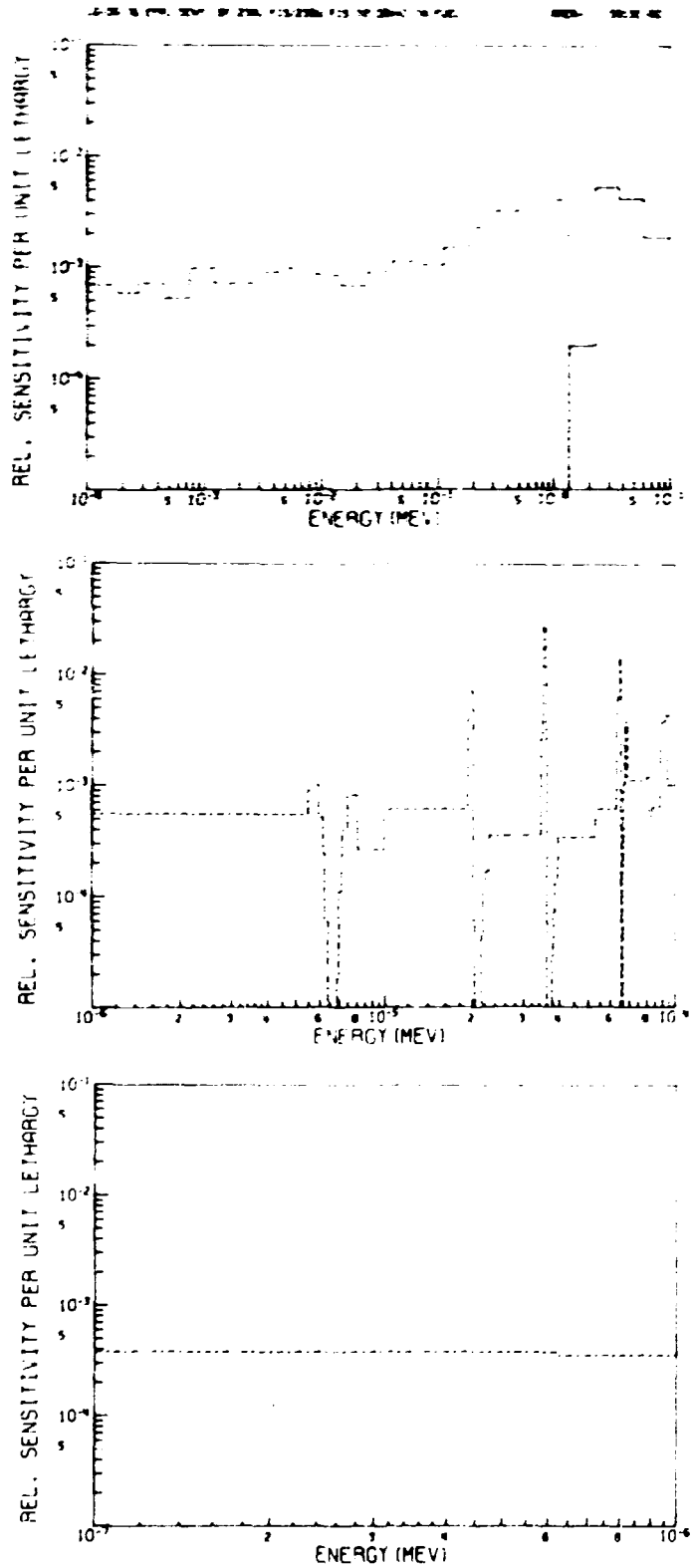

Fig. 73. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to DB^2 in the fuel.

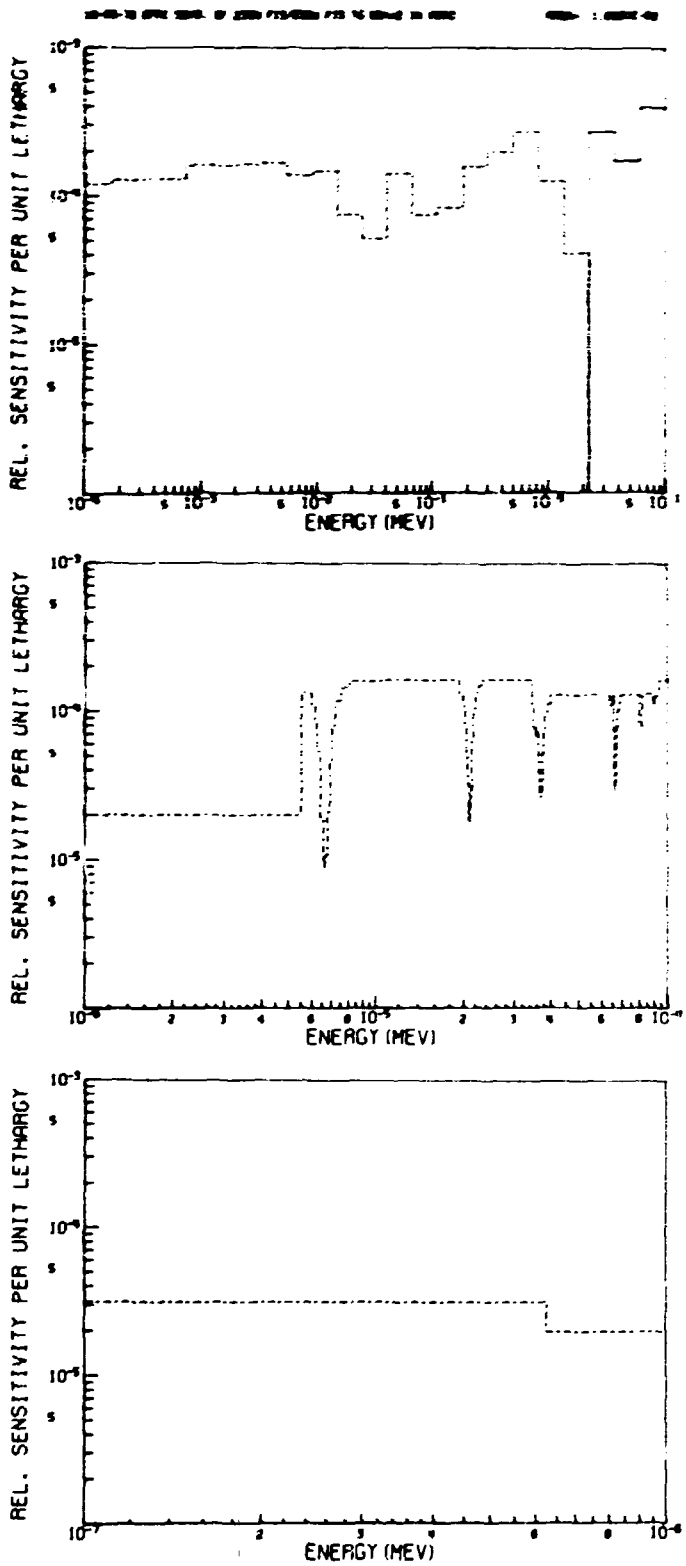

Fig. 74. The Energy-Dependent Sensitivity Profile of ^{28}S in TRX-2 to DB^2 in the void.

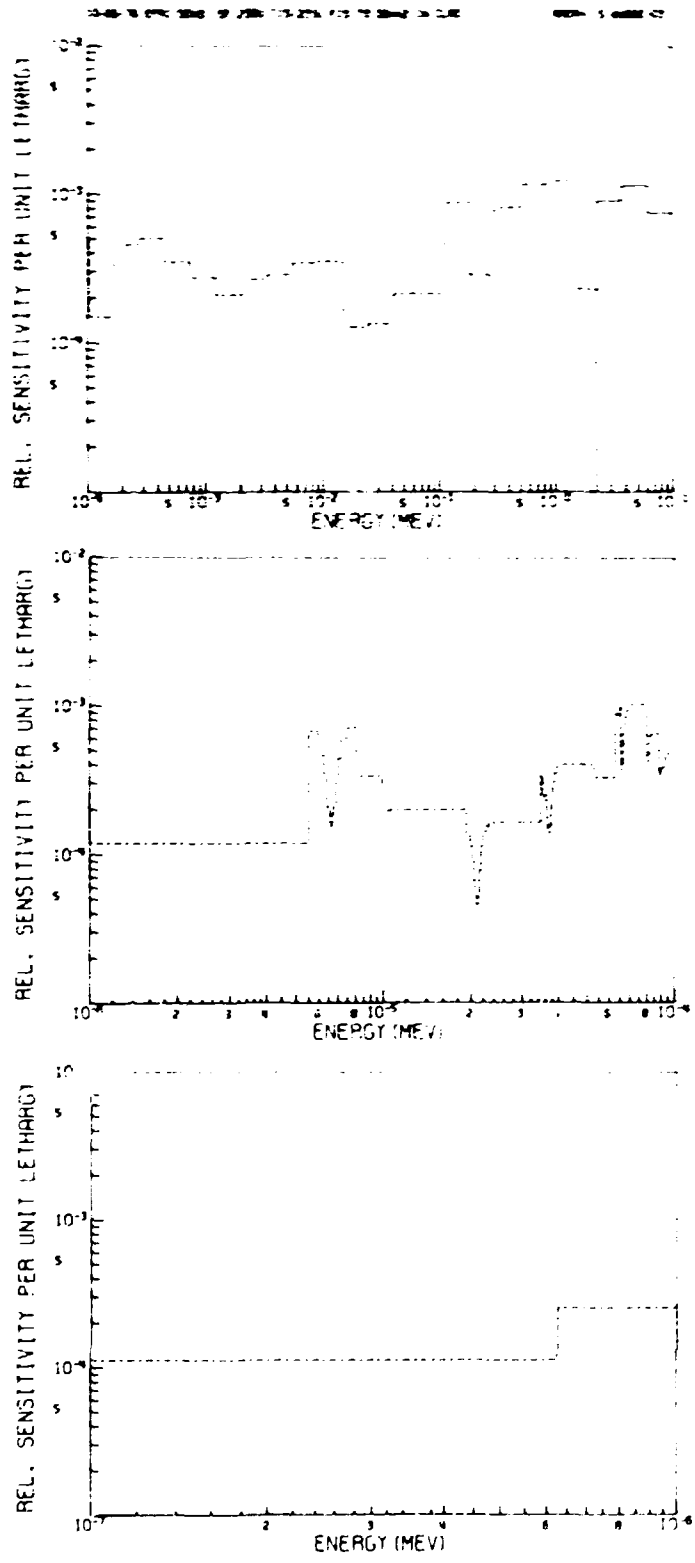

Fig. 75. The Energy-Dependent Sensitivity Profile of ^{238} in TRX-2 to DB^2 in the clad.

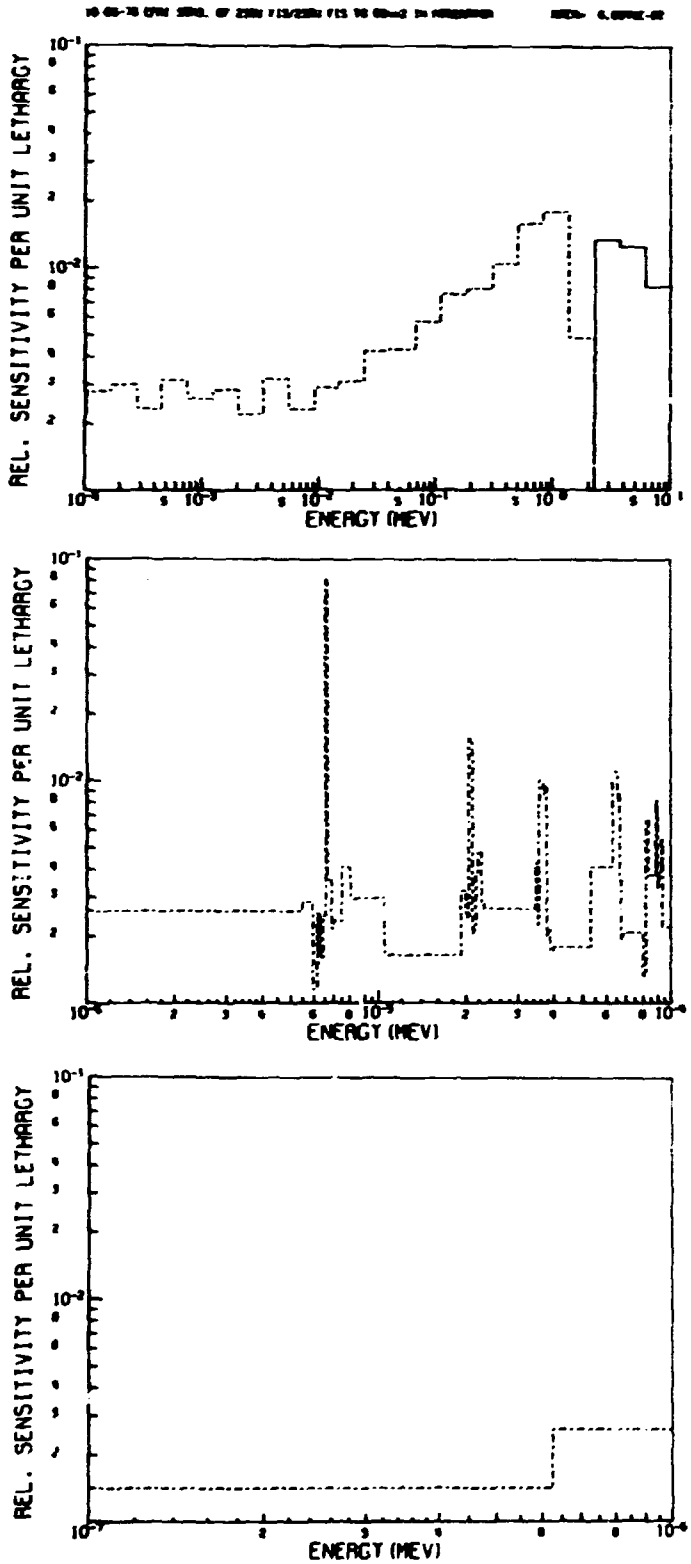

Fig. 76. The Energy-Dependent Sensitivity Profile of $^{28}\delta$ in TRX-2 to DB^2 in the moderator.

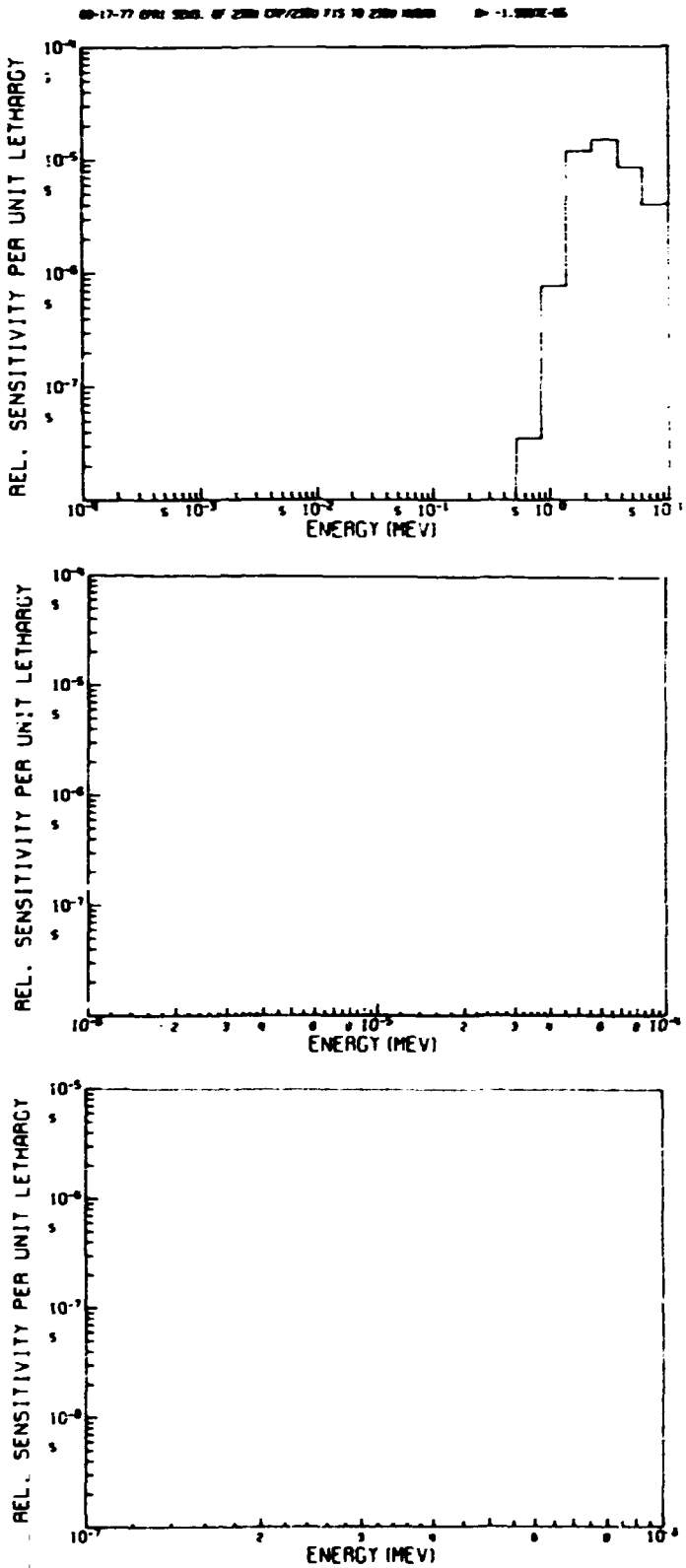

Fig. 77. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{238}U $\bar{\nu}$.

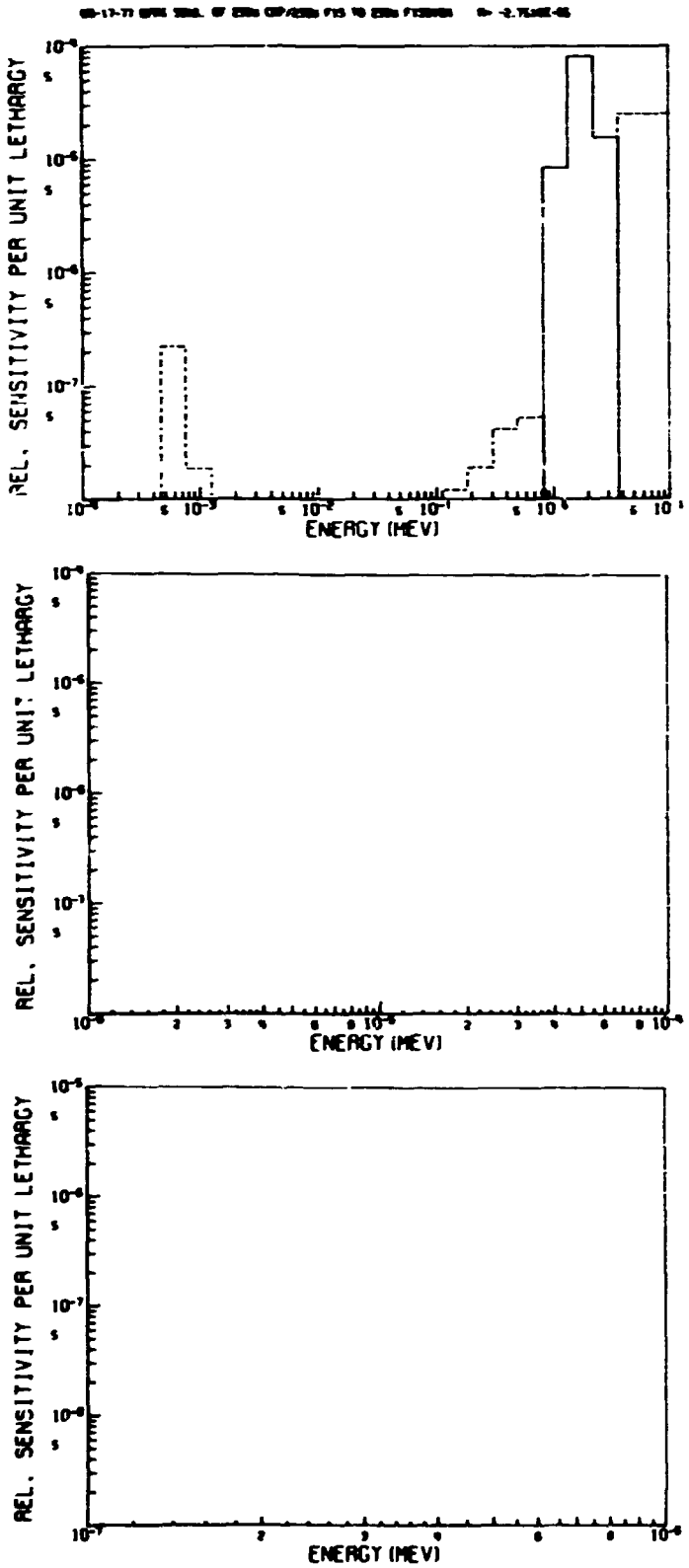

Fig. 78. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{238}U (n,f).

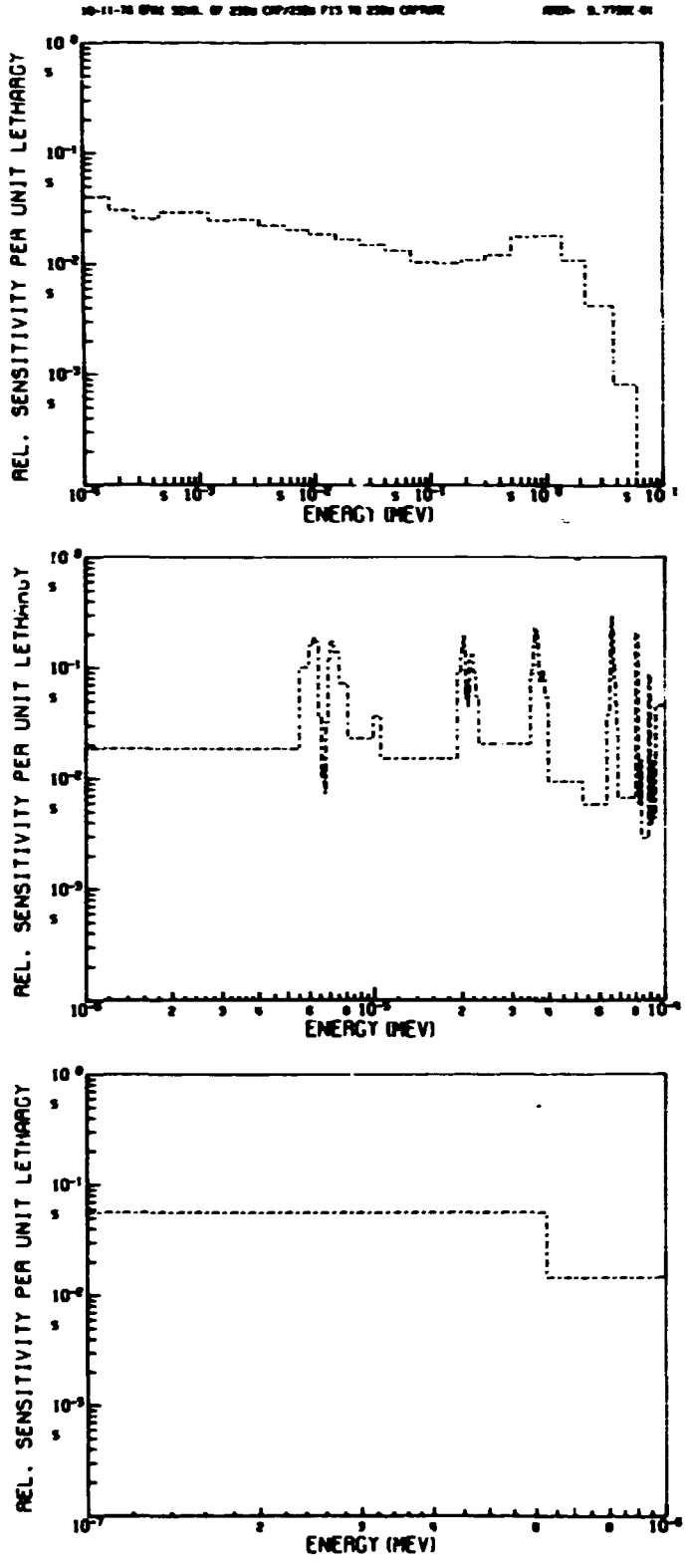

Fig. 79. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{238}U (n,γ).

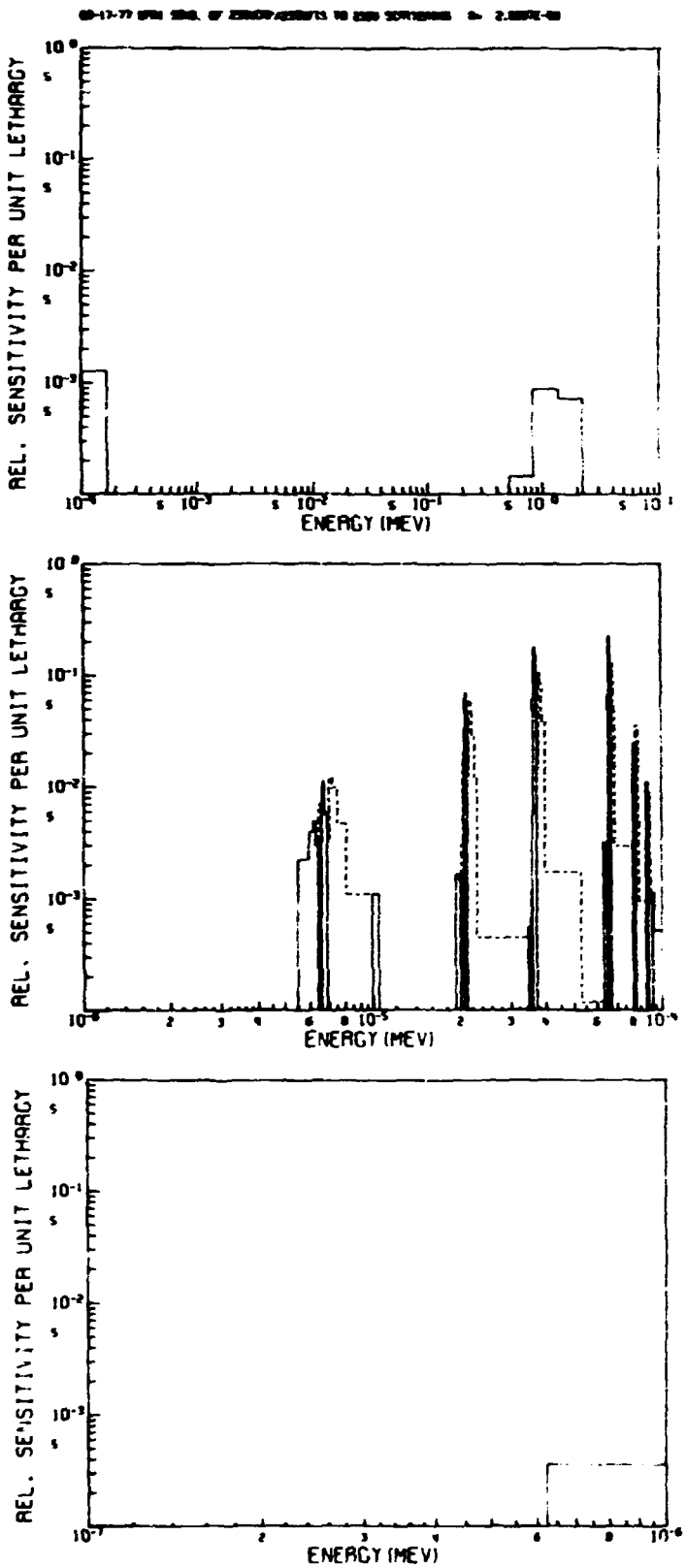

Fig. 80. The Energy-Dependent Sensitivity Profile of CR in TRA-2 to ^{238}U (n,n).

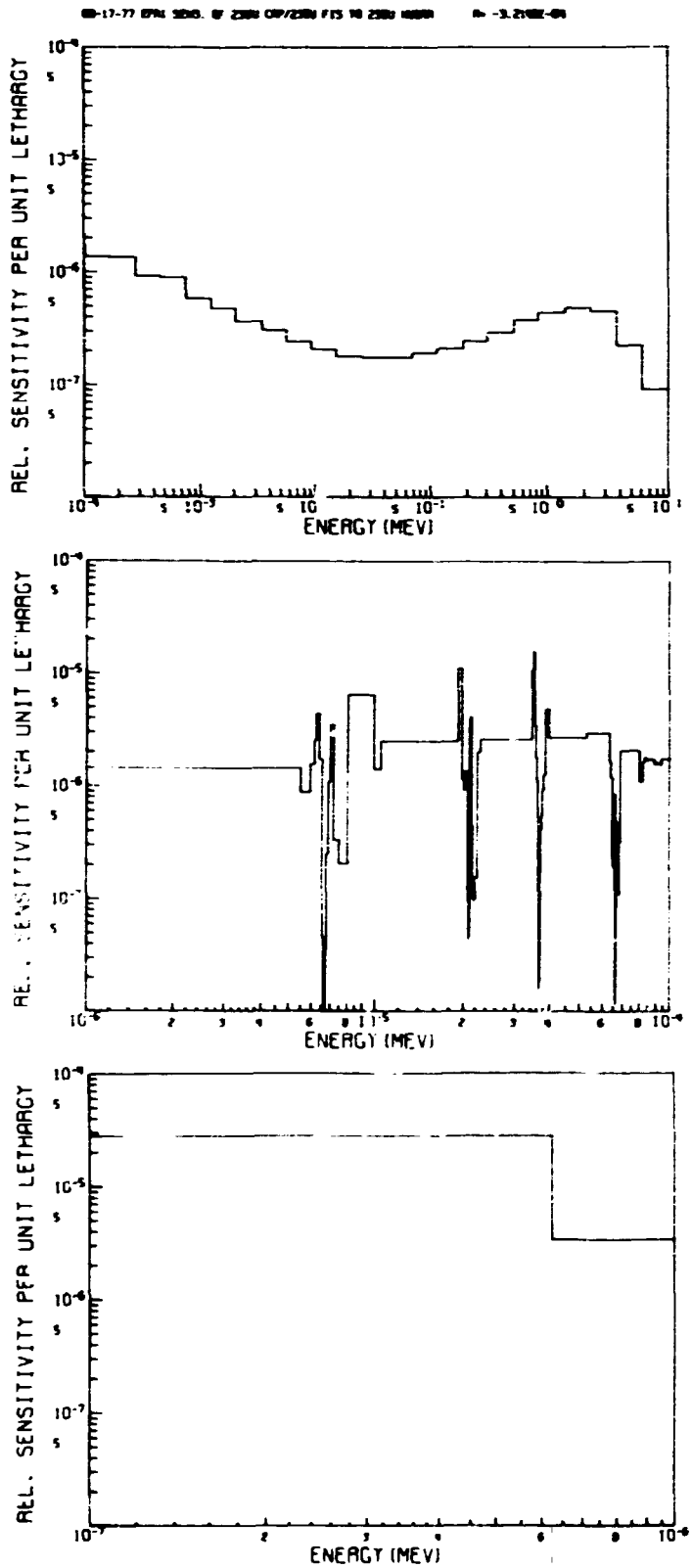

Fig. 81. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{235}U $\bar{\nu}$.

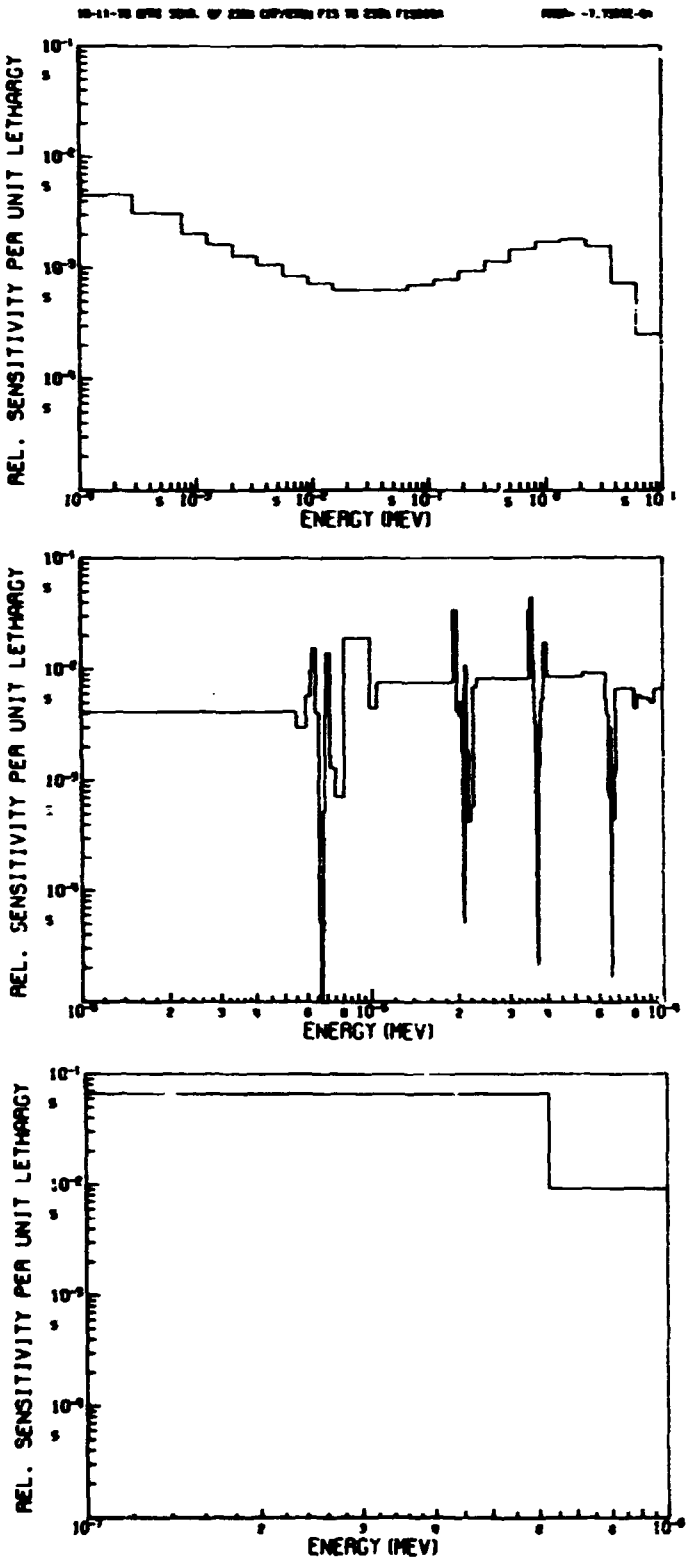

Fig. 82. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{235}U (n,f).

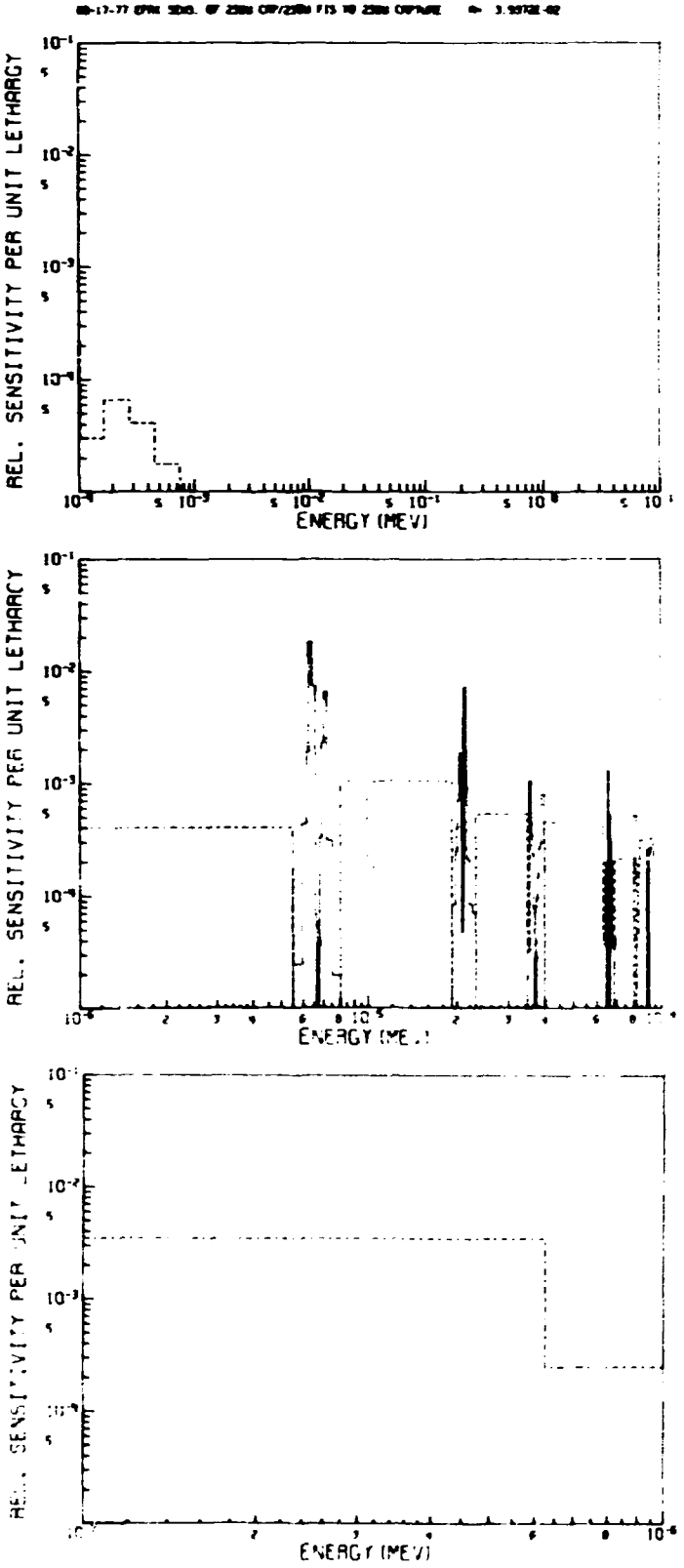

Fig. 83. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{235}U (n,γ).

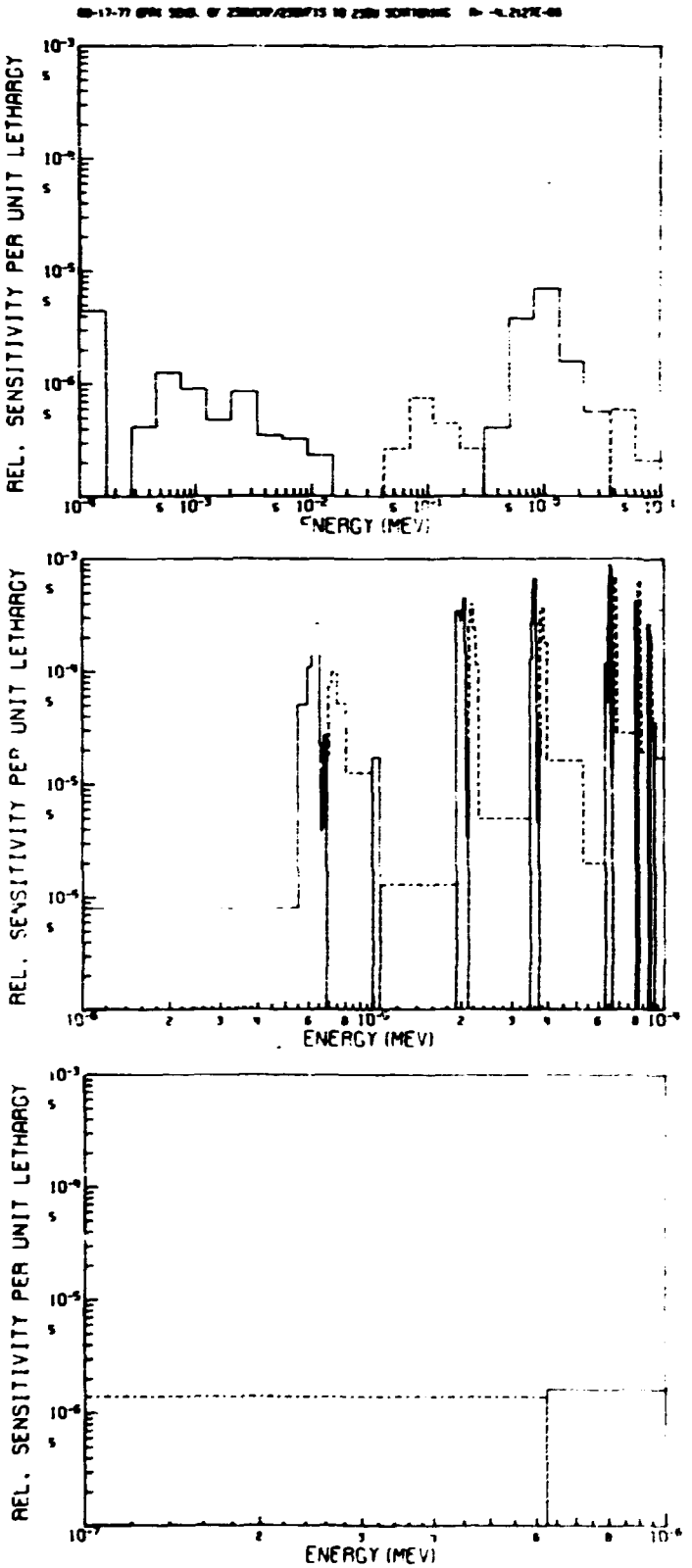

Fig. 84. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to ^{235}U (n,n).

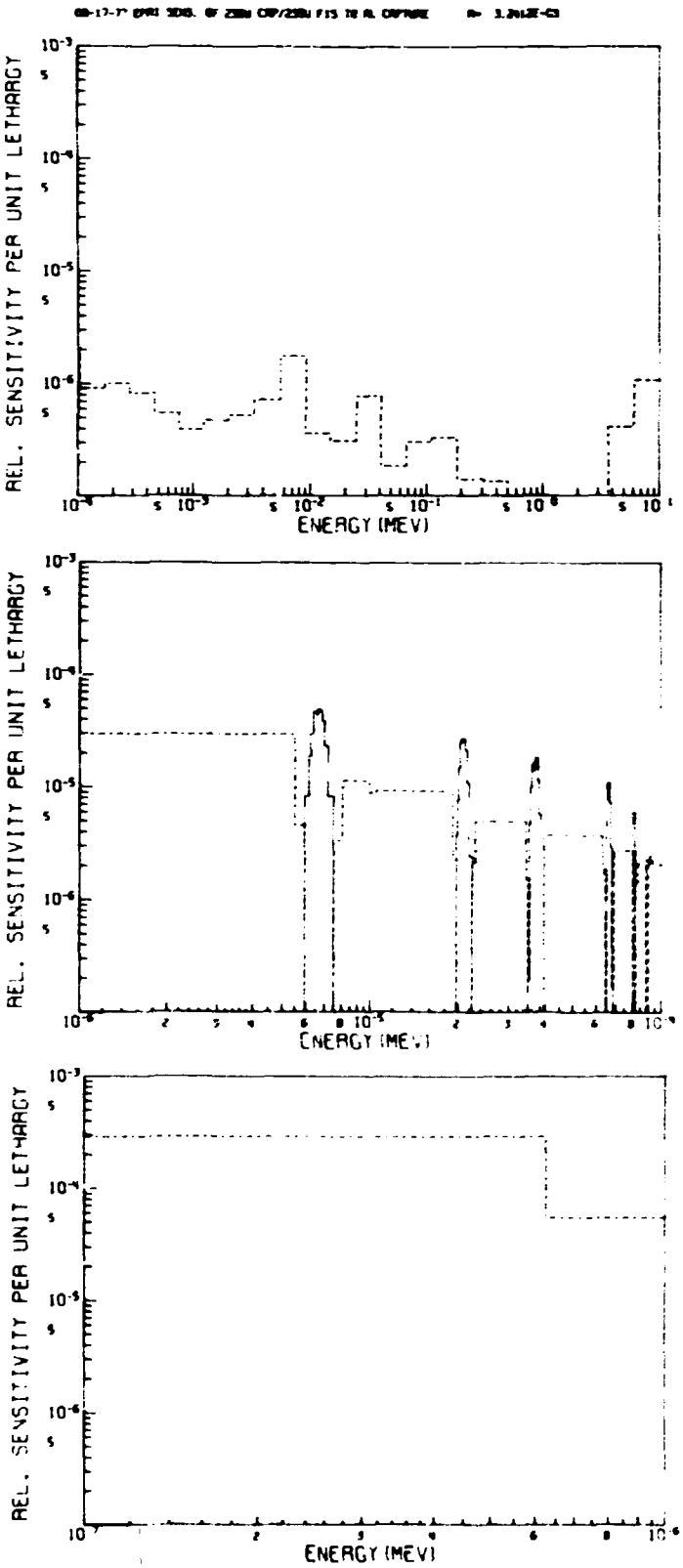

Fig. 85. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to Al (n,γ).

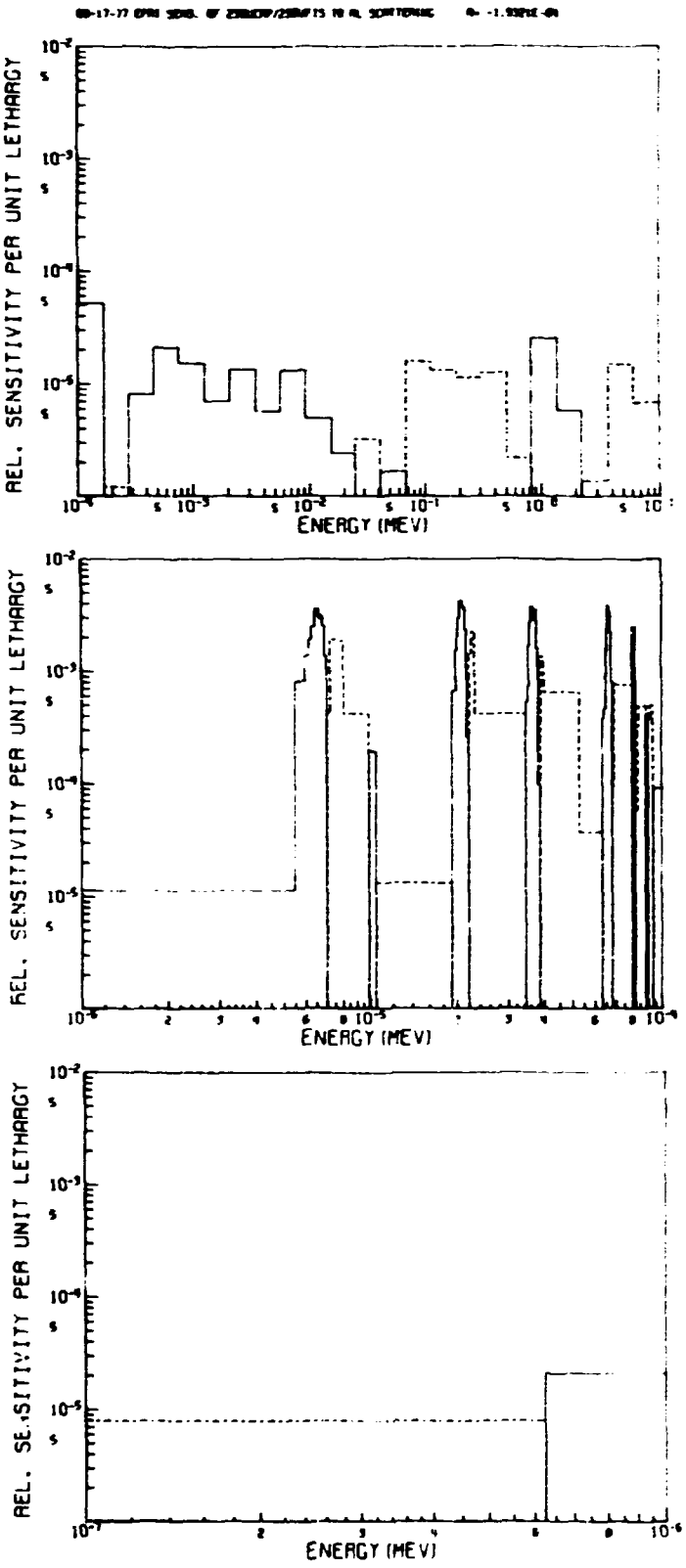

Fig. 86. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to Al (n,n).

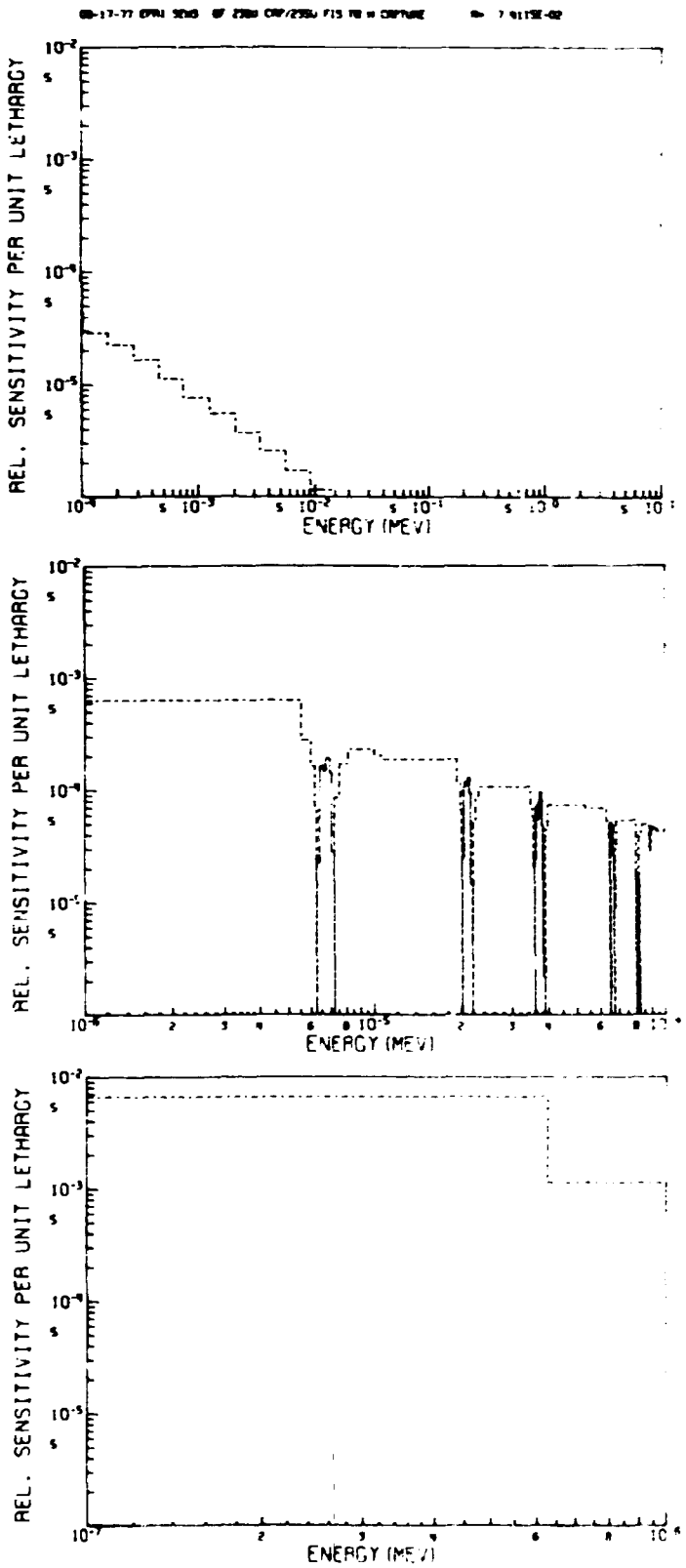

Fig. 87. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to H (n,γ).

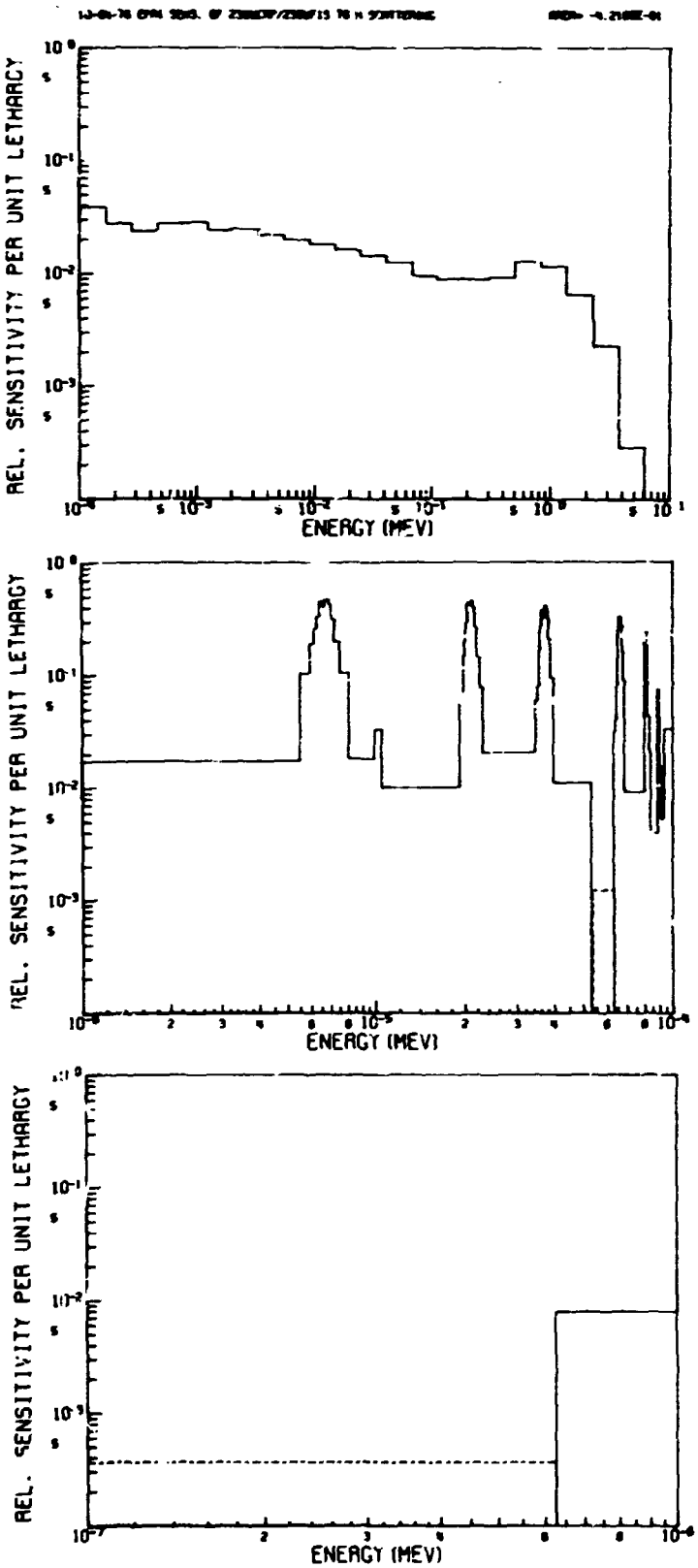

Fig. 88. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to H (n,n).

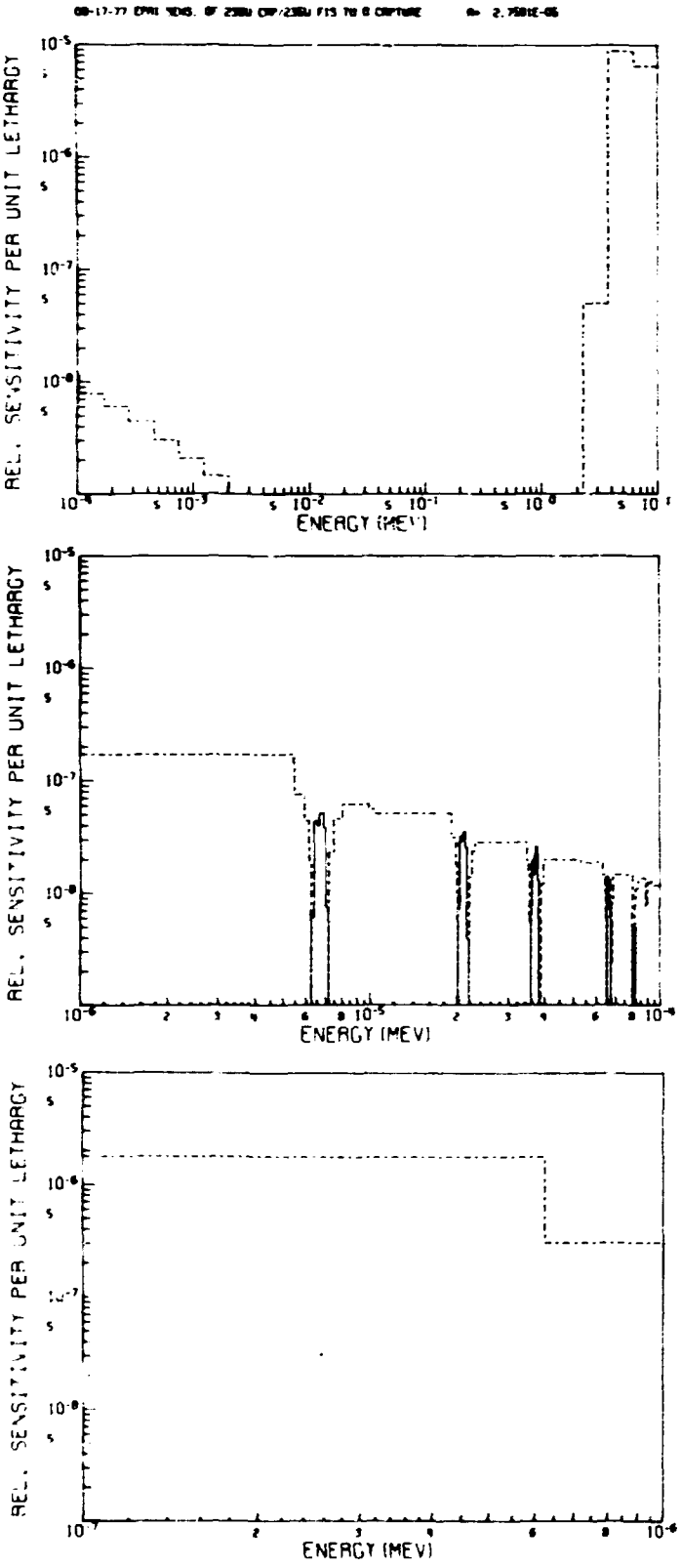

Fig. 89. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to O (n,γ).

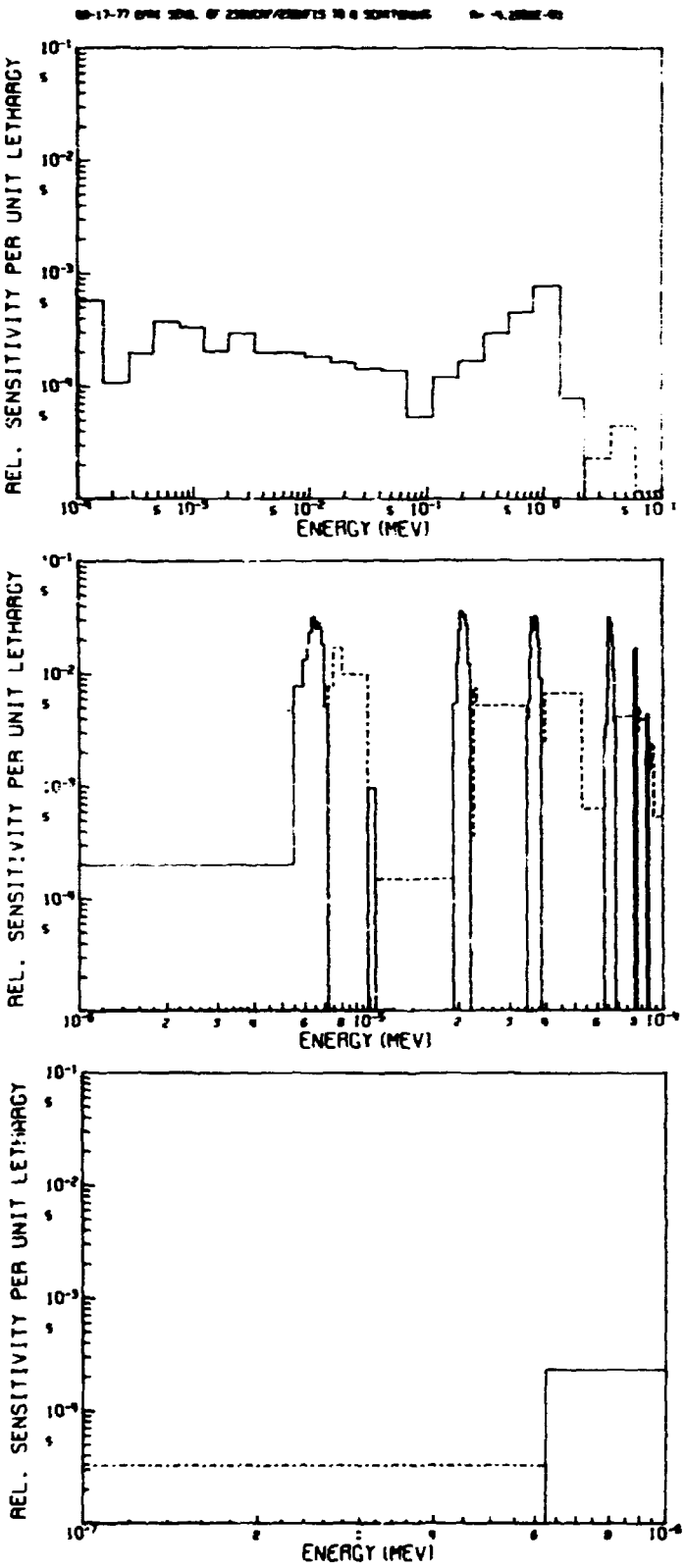

Fig. 90. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to O (n,n).

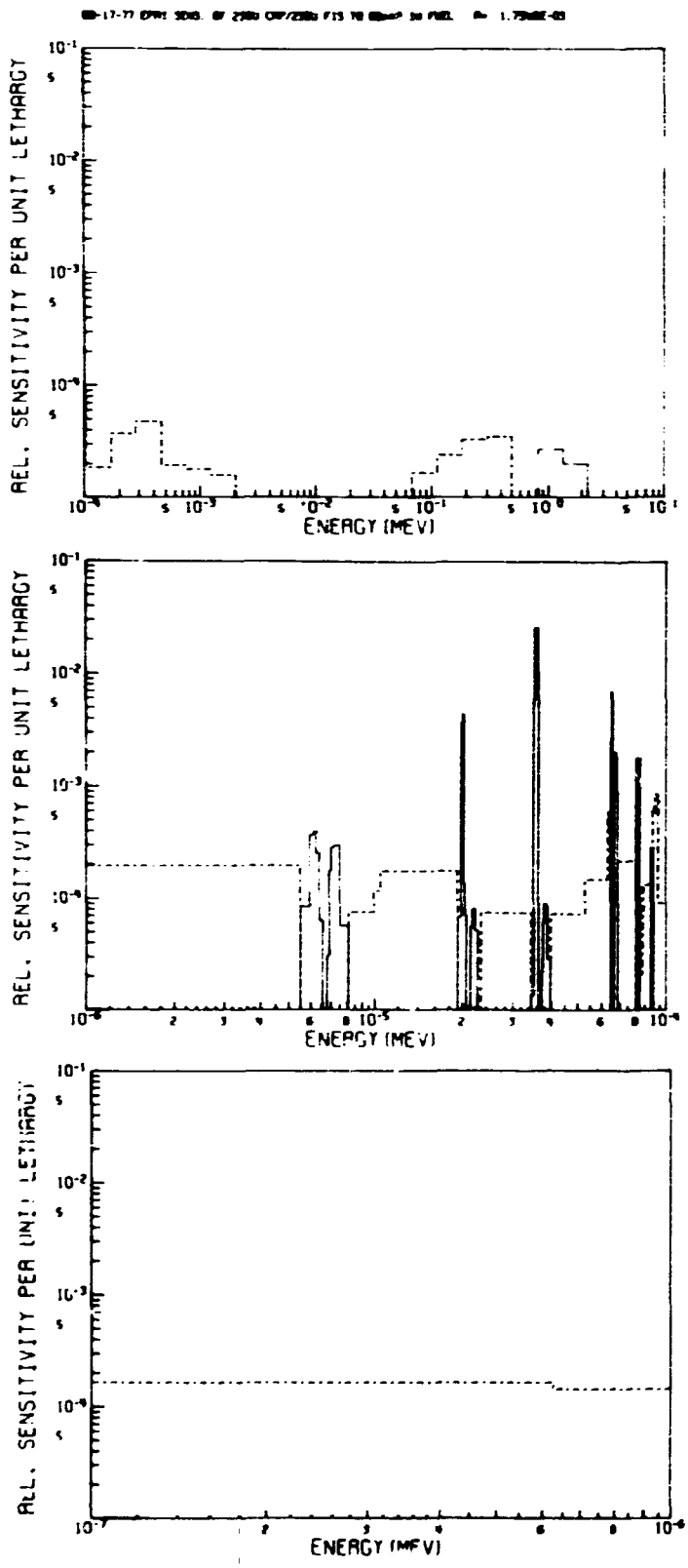

Fig. 91. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to DB^2 in the fuel.

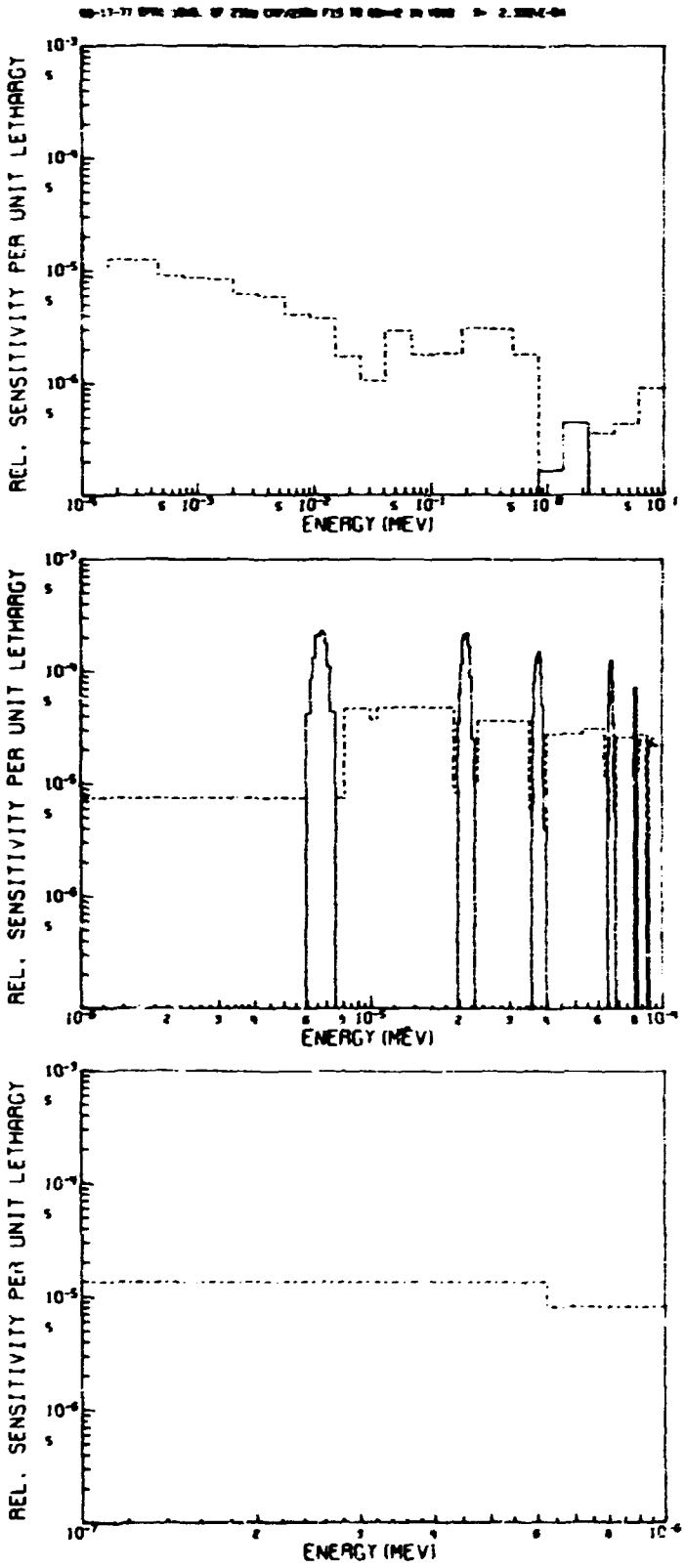

Fig. 92. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to DB^2 in the void.

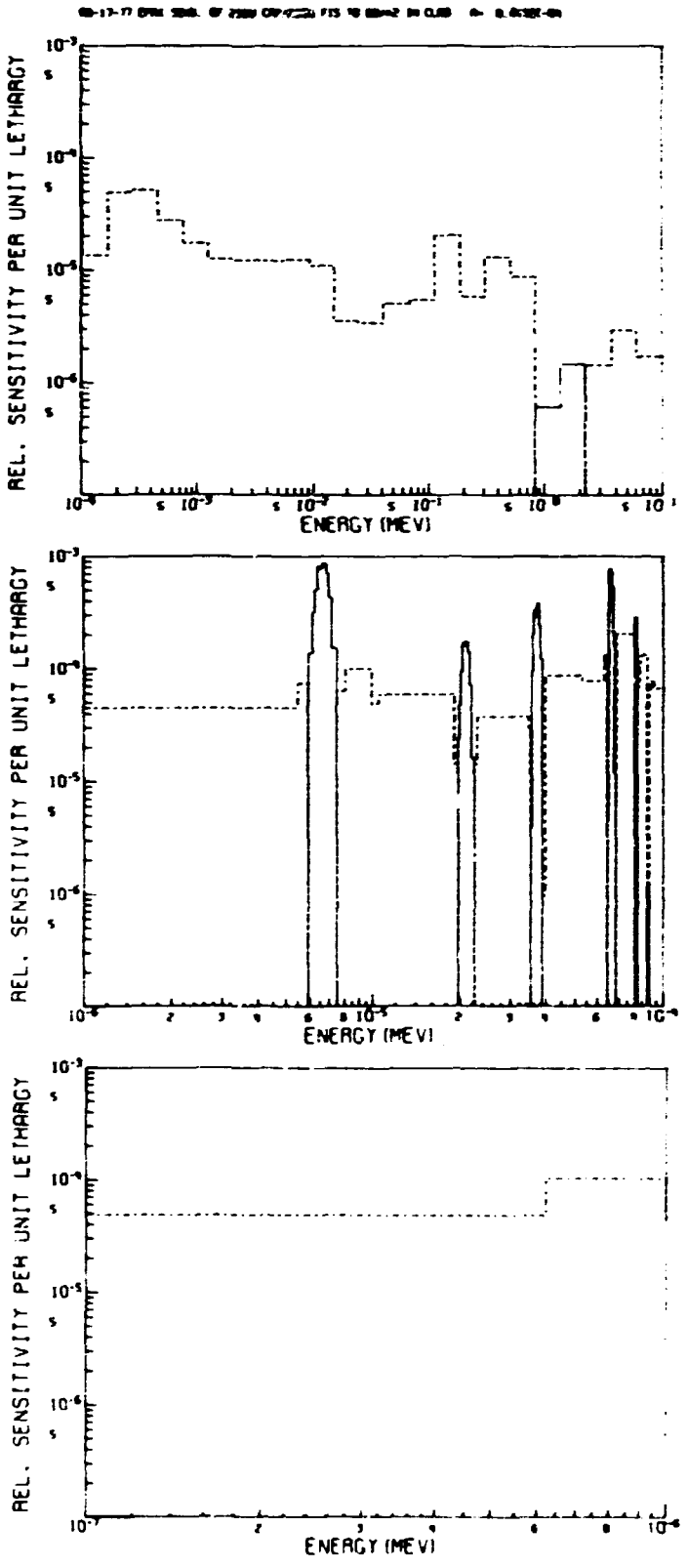

Fig. 93. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to DB^2 in the clad.

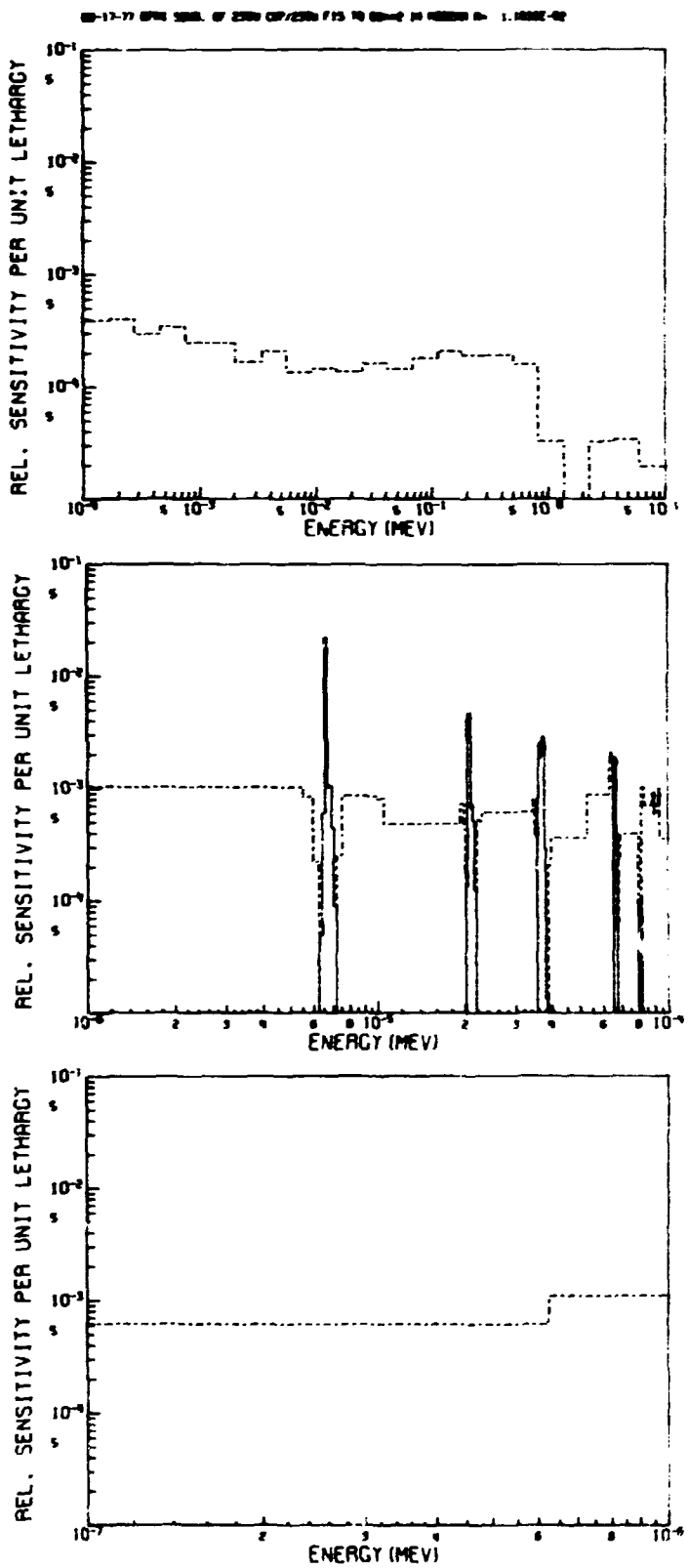

Fig. 94. The Energy-Dependent Sensitivity Profile of CR in TRX-2 to DB^2 in the moderator.

APPENDIX A

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

```
C*****************************************************************
C                        REVISED 05/12/76                        -
C                                                                -
CB          SENPXS                                               -
CB          THIS FILE CONTAINS SENSITIVITY                       -
CB          COEFFICIENTS BY GROUP AS A FUNCTION OF               -
CB          MATERIAL - REACTION TYPE, ASSEMBLY, AND RESPONSE     -
C                                                                -
CB                  DIVISION BY GROUP LETHARGY WIDTHS MAY BE     -
CB                  NECESSARY FOR PLOTTING GRAPHIC DISPLAY.      -
CB                  INCLUDED ARE, TOTAL SENSITIVITY COEFFICIENTS -
CB                  BY GROUP SUMMED OVER REACT TYPES, ZONES, AND
CB                  SCATTERING ORDERS. OR OPTION, PARTIAL        -
CB                  COEFFICIENTS MAY ALSO BE REPRESENTED AS VARIOUS
CB                  COMBINATIONS OF DIRECT AND INDIRECT EFFECT,  -
CB                  ZONE, AND SCATTERING ORDER                   -
C                                                                -
CB              A FILE SUCH AS THIS IS NEEDED BY CHAL - PARSS    -
C                                                                -
C                                                 J. L. LUCIUS   -
C                                                                -
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             NNGROUP.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    *         DISPOSE DESCRIPTION                  NWRD.GT.0   -
CS    *         ZONE DENSITIES                       NZDEN.GT.0  -
CS    *         ROLLERITH 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    *  *      ROLLERITH DESCRIPTION OF             NPART.GT.0  -
CS    *  *      PARTIAL SET                                      -
CS    *  *      PARTIAL COEFFICIENTS BY GROUP        NPART.GT.0  -
CS    **********                                                 -
C                                                                -
C-----------------------------------------------------------------


C-----------------------------------------------------------------
CB          FILE IDENTIFICATION                                  -
C                                                                -
CL    NNAME,(NUSE(I),I=1,2),IVERS                                -
CB    1*3*MULT                                                   -
C                                                                -
CB    FORMAT(11H DV SENPXS ,A6,1H*,2A4,1F*,I4)                   -
CE    NNAME         ROLLERITH FILE NAME-SENPXS- (A6)             -
CE    NUSE          ROLLERITH USER IDENTIFICATION (A4)           -
CE    IVERS         FILE VERSION NUMBER                          -
CE    MULT          1 - A6 IS SINGLE PRECISION WORD              -
CE                  2 - A6 IS DOUBLE PRECISION WORD              -
C-----------------------------------------------------------------


C-----------------------------------------------------------------
CB          FILE CONTROL                                         -
C                                                                -
CL    NGROUP,NNGSUP,NGGSUP,NPAT,MAXORD,MZONE                     -
C                                                                -
CB    6                                                          -
C                                                                -
CB    FORMAT(6H ID ,6I6)                                         -
CB    NGROUP        NUMBER OF ENERGY GROUPS                      -
CE    NNGSUP        NUMBER OF NEUTRON GROUPS                     -
CE    NGGSUP        NUMBER OF GAMMA GROUPS                       -
CB    NPAT          NUMBER OF MAT- MT PAIRS                      -
CB    MAXORD        MAXIMUM SCATTERING ORDER                     -
CE    MZONE         MAXIMUM NUMBER OF ZONES                      -
C-----------------------------------------------------------------
```

```
C-----------------------------------------------------------------------
CB          NEUTRON GROUP BOUNDARIES                                   -
C                                                                      -
CL    (GPNB(J),J=1,NNGPP),EGNIB                                        -
C                                                                      -
CC          PRESENT IF NNGPP.GT.0                                      -
CB    NNGPP+1                                                          -
C                                                                      -
CB    FORMAT(8H 2E ,5E12.4/(6E12.4))                                   -
CE    GPNB(J)       PARTIAL ENERGY BOUND OF NEUTRON GROUP(J) (EV)      -
CE    EGNIB         FIRST HIGH ENERGY OF NEUTRON ENERGY RANGE          -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          GAMMA GROUP BOUNDARIES                                     -
C                                                                      -
CL    (GPNG(J),J=1,NGGPP),EGNIS                                        -
C                                                                      -
CC          PRESENT IF NGGPP.GT.0                                      -
CB    NGGPP+1                                                          -
C                                                                      -
CB    FORMAT(8H 3E ,5E12.4/(6E12.4))                                   -
CE    GPNG(J)       PARTIAL ENERGY BOUND OF GAMMA GROUP(J) (EV)        -
CE    EGNIS         FIRST HIGH ENERGY OF GAMMA ENERGY RANGE            -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          MAT - MT CONTROL                                           -
C                                                                      -
CL    IASB,IRESP,MATID,MT,NZONE,ISTC,NPART,NWRD,NZDEN,MATBIX,NTBB,NTBD -
CB    12                                                               -
C                                                                      -
CF    FORMAT(8H 4D ,11I6/I6)                                           -
C                                                                      -
CE    IASB          ASSEMBLY IDENTIFICATION                          -
CE                      REFERENCE ENDL 1970)(ENDF-202) F-1             -
CE    IRPSP         RESPONSE IDENTIFICATION                          -
CE                      1 - K                                          -
CE                      2 - BREEDING RATIO                             -
CE                      3 - WORTH                                      -
CE                      4 - REACTION RATE RATIO                        -
CE                      5 - OTHER                                      -
CB    MATID         MATERIAL IDENTIFICATION                          -
CE    MT            REACTION TYPE IDENTIFICATION                     -
CE    NZONE         NUMBER OF ZONES                                  -
CE    ISTC          SCATTERING ORDER FOR TOTAL COEFFICIENTS          -
CE    NPART         NUMBER OF PARTIAL SETS                           -
CB    NWRD          NUMBER OF HOLLERITH(A6) WORDS USED TO DESCRIBE   -
CE                  THE RESPONSE                                     -
CE    NZDEN         ZONE DENSITY OPTION                              -
CE                      0 - ZONE DENSITIES ARE OMITTED               -
CE                      1 - ZONE DENSITIES ARE PRESENT               -
CE    MATBIX        RESERVED                                         -
CB    NTBB          RESERVED                                         -
CB    NTBD          RESERVED                                         -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          RESPONSE DESCRIPTION                                       -
C                                                                      -
CL    (PDES(I),I=1,NWRD)                                               -
C                                                                      -
CC          PRESENT IF NWRD.GT.0                                       -
C                                                                      -
CB    NWRD*MULT                                                        -
C                                                                      -
CF    FORMAT(8H 5D ,1H*,11A6/(11A6))                                   -
C                                                                      -
CE    PDES(I)       ARRAY CONTAINING HOLLERITH DESCRIPTION OF        -
CE                  RESPONSE                                         -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          ZONE DENSITIES                                             -
C                                                                      -
CL    (ZDEN(J),J=1,N*ONE)                                              -
C                                                                      -
CC          PRESENT IF NZDEN.EQ.1                                      -
C                                                                      -
CB    N*ONE                                                            -
C                                                                      -
CF    FORMAT(8H 6D ,5E12.4/(6E12.4))                                   -
C                                                                      -
CE    ZDEN          ZONE DENSITIES                                   -
C-----------------------------------------------------------------------
```

```
C-----------------------------------------------------------------------
CB          NCLLEPISN DESCRIPTION OF TOTAL SENSITIVITY COEFFICIENTS     -
C                                                                       -
CL    (PCL(I),I=1,11)                                                   -
C                                                                       -
CB    11*NULT                                                           -
C                                                                       -
CB    FORMAT(4H 7D ,1H=,11A6,1H*)                                       -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          TOTAL SENSITIVITY COEFFICIENTS BY GROUP                     -
C                                                                       -
CL    (TOTS(J),J=1,NGROUP)                                              -
C                                                                       -
CB    NGPCNF                                                            -
C                                                                       -
CP    FORMAT(4H 8E ,5E12.4/(6X12.4))                                    -
C                                                                       -
CE    TOTS          SENSITIVITY COEFFICIENTS                            -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          PARTIAL CONTROL                                             -
C                                                                       -
CL    (ITYPE(I),IZON1(I),IZON2(I),ISCAT(I),I=1,NPART)                   -
C                                                                       -
CC          PRESENT IF NPART.GT.0                                       -
C                                                                       -
CB    6*NPART                                                           -
C                                                                       -
CP    FORMAT(4H 9D ,6I6/(6I6))                                          -
C                                                                       -
CE    ITYPE(I)      TYPE IDENTIFICATION                                 -
CE                        1 - N1 DIRECT EFFECT(N1DE)                    -
CE                        2 - N2 DIRECT EFFECT(N2DE)                    -
CE                        3 - FORWARD FLUX PERTURBATION(FFP)            -
CE                        4 - ADJOINT FLUX PERTURBATION(AFP)            -
CE                        5 - N1DE*N2DE*FFP                             -
CE                        6 - N1DE*F1DP*FFP*AFP                         -
CE    IZON1(I)      LOWER BO LIMITS FOR ZONE SUMMATION                  -
CE    IZON2(I)      UPPER BO LIMITS FOR ZONE SUMMATION                  -
CE    ISCAT(I)      SCATTERING ORDER SPECIFICATION                      -
CE                        LP.ISTC    - SCATTERING ORDER                 -
CE                        GT.ISTC    - SUM OVER ALL SCATTERING ORDERS   -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          NCLLEPISN DESCRIPTION OF PARTIAL SET                        -
C                                                                       -
CL    (NOLP(I),I=1,11)                                                  -
C                                                                       -
CC          PRESENT IF NPART.GT.0                                       -
C                                                                       -
CB    11*NULT                                                           -
C                                                                       -
CE    FORMAT(4H10D ,1H*,11A6,1H*)                                       -
C-----------------------------------------------------------------------


C-----------------------------------------------------------------------
CB          PARTIAL SENSITIVITY COEFFICIENTS BY GROUP                   -
C                                                                       -
CL    (PARTS(J),J=1,NGROUP)                                             -
C                                                                       -
CC          PRESENT IF NPART.GT.0                                       -
C                                                                       -
CB    NGROUP                                                            -
C                                                                       -
CB    FORMAT(4H11D ,5E12.4/(6X12.4))                                    -
C                                                                       -
CE    PARTS         SENSITIVITY COEFFICIENTS                            -
C-----------------------------------------------------------------------
```

APPENDIX B

The Sensitivity Coefficients for the Profiles of Figures 1-94 in SENPRO Format

```
4E    107     1  1262   452     4     3     0     8     0     0     0
    0
5E *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7E *POFSS, EPRI, SEBS. OF E TO 23E" BOUND                    A=  7.4977E-02*
8D   7.2882E-03  1.6012E-02  2.7[illegible]E-02  2.2216E-02  1.0566E-03
 6.5328E-05  4.4677E-06  1.4900E-06  8.5369E-07  5.8040E-07  4.6096E-07
 7.8333E-07  8.2C95E-07  7.3244E-07  2.1395E-08  3.5830E-13  3.8881E-12
 3.1090E-10  1.0801E-06  6.2676E-06  1.2738E-10  8.3916E-11  7.1775E-11
 1.816CE-11  1.0911E-12  3.1299E-12  1.1913E-12  1.6241E-12  1.7113E-12
 9.6001E-12  1.4756E-12  2.9242E-12  2.6573E-12  2.6739E-11  1.7260E-12
 1.1211E-12  1.2374E-12  3.3919E-13  7.9800E-14  9.3244E-15  7.1190E-16
 6.7359E-16  2.8125E-16  2.7880E-16  2.7887E-16  2.7995E-16  2.8308E-16
 8.8977E-16  9.4196E-16  3.7400E-15  1.5723E-14  5.9983E-13  8.3076E-13
 5.4538E-13  1.0827E-12  2.0633E-12  [illegible].5311E-12  3.3104E-11  5.0688E-11
 8.5715E-12  2.6C15E-12  1.4397E-12  8.4843E-13  5.2602E-13  1.0892E-13
 8.6786E-15  2.3927E-15  5.4963E-16  5.2866E-16  5.1739E-16  5.2814E-16
 5.5243E-16  3.0501E-15  7.0313E-15  3.2594E-14  1.2499E-13  7.6409E-13
 1.2912E-12  1.1863E-12  1.0442E-12  2.7252E-12  5.7830E-11  5.9891E-12
 5.2898E-12  3.3945E-12  1.7692E-12  5.0395E-13  3.7880E-14  3.6733E-15
 2.3840E-15  5.4E647E-16  5.2885E-16  5.2834E-16  5.2786E-16  5.4558E-16
 2.3723E-15  3.4866E-15  6.8119E-15  2.0544E-13  1.0749E-12  2.0557E-12
 1.8797E-12  2.1685E-12  5.3599E-12  1.9372E-10  2.0557E-11  7.8977E-11
 2.7915E-11  1.5177E-11  6.8256E-12  2.5641E-12  1.0581E-12  7.3585E-14
 3.9094E-15  3.1986E-15  1.2482E-15  1.1910E-15  1.1876E-15  1.0551E-15
 1.0873E-15  2.7776E-15  3.3169E-15  6.3911E-14  1.8906E-12  8.5954E-12
 8.5408E-12  1.1823E-11  3.2691E-11  1.2685E-09  3.9146E-10  0.0


4E    107     1  1262    18     4     3     0     8     0     0     0
    0
5E *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7E *POFSS, EPRI, SEBS. OF E TO 23E8 FISSION                  A=  8.7880E-02*
8D   8.8482E-03  1.0E38E-02  1.7736E-02  1.3723E-02  8.9013E-04
 3.8767E-05  2.5968E-06  8.4892E-07  4.8201E-07  3.2474E-07  2.5714E-07
 8.1324E-07  8.5873E-07  8.0533E-07  1.1817E-08  1.9745E-13  2.1355E-12
 1.7000E-10  5.9074E-07  3.4009E-06  6.8561E-11  8.5128E-11  3.8899E-11
 9.7003E-12  5.797CE-13  1.6858E-12  6.3249E-13  8.5803E-13  9.6844E-13
 8.9619E-12  7.7625E-13  1.5816E-12  1.8063E-12  1.3885E-11  9.9796E-13
 7.0092E-13  8.7666E-13  2.7895E-13  6.8152E-14  7.9860E-15  6.0385E-16
 5.7026E-16  2.3788E-16  2.3561E-16  2.3548E-16  2.3627E-16  2.3872E-16
 7.8935E-16  7.9153E-16  3.1348E-15  1.3135E-14  8.7381E-13  5.8450E-13
 3.3764E-13  6.8686E-13  1.1495E-12  8.2978E-13  1.6847E-11  3.0080E-11
 2.5932E-12  1.7087E-12  1.0896E-12  7.1762E-13  8.7954E-13  1.0090E-13
 8.2315E-15  2.1382E-15  8.8735E-16  8.6751E-16  8.5655E-16  8.6514E-16
 8.8562E-16  2.6705E-15  6.0972E-15  2.8233E-14  1.0944E-13  6.4294E-13
 9.5782E-13  8.3894E-13  9.1297E-13  1.4788E-12  8.9962E-11  3.2693E-12
 3.1812E-12  2.3877CE-12  1.4786E-12  8.7819E-13  3.6777E-14  3.5810E-15
 2.2832E-15  5.2366E-16  5.0430E-16  5.0322E-16  5.0228E-16  5.1857E-16
 2.2503E-15  3.2958E-15  6.8251E-15  1.9689E-13  9.3885E-13  1.4692E-12
 9.5781E-13  1.3310E-12  1.2960E-12  9.7266E-11  1.0523E-11  3.8957E-11
 1.5337E-11  9.8165E-12  8.7358E-12  2.2853E-12  1.0287E-12  7.3165E-14
 3.8825E-15  3.1736E-15  1.2379E-15  1.1808E-15  1.1770E-15  1.0850E-15
 1.0762E-15  2.7273E-15  3.2970E-15  6.3312E-14  1.8367E-12  8.6680E-12
 8.1062E-12  7.0274E-12  1.7966E-11  6.1373E-10  1.0267E-10  0.0


4D    107     1  1262   102     4     3     0     8     0     0     0
    0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7D *POFSS, EPRI, SEBS. OF E TO 238U CAPTURE                  A= -2.6541E-01*
8D  -1.1266E-05 -1.C192E-04 -5.22C8E-04 -1.3282E-03 -2.1794E-03
-2.1218E-03 -1.8787E-03 -1.3329E-03 -1.2637E-03 -1.3000E-03 -1.6736E-03
-1.8891E-03 -2.1185E-03 -2.3561E-03 -2.5816E-03 -2.8897E-03 -3.2481E-03
-3.1868E-03 -3.7766E-03 -3.7690E-03 -3.2803E-03 -3.9576E-03 -5.1915E-03
-9.8493E-04 -2.4221E-05 -2.1228E-05 -2.6284E-05 -9.5925E-06 -2.5350E-04
-8.2861E-05 -3.3233E-05 -2.6197E-05 -1.1812E-03 -2.6675E-04 -7.9029E-05
-8.5600E-05 -1.2465E-04 -1.1501E-04 -1.1730E-04 -1.1487E-04 -1.7832E-05
-1.7732E-05 -7.6485E-06 -7.6989E-06 -7.7485E-06 -7.7980E-06 -7.8386E-06
-2.4017E-05 -2.360CE-05 -6.9859E-05 -1.0850E-04 -8.0583E-04 -2.5693E-04
-1.0545E-04 -1.3125E-04 -1.3153E-04 -8.6746E-05 -2.6996E-04 -7.1192E-04
-3.407CE-04 -3.215CE-04 -2.8527E-04 -1.7811E-04 -1.5685E-04 -1.3593E-04
-5.9907E-05 -6.8630E-05 -2.1561E-05 -2.2373E-05 -2.2754E-05 -2.3160E-05
-2.3395E-05 -9.729CE-05 -1.0166E-04 -1.3156E-04 -1.5046E-04 -8.0819E-04
-8.5872E-04 -2.6185E-04 -2.8023E-04 -3.3737E-04 -2.1971E-03 -3.4685E-04
-5.3290E-04 -5.8394E-04 -8.2548E-04 -1.4302E-04 -5.2225E-05 -2.4500E-05
-2.7985E-05 -7.9755E-06 -8.1088E-06 -8.3762E-06 -8.4672E-06 -8.7109E-06
-3.4018E-05 -3.5861E-05 -3.7533E-05 -1.0448E-04 -3.7108E-04 -6.2698E-04
-3.1298E-04 -3.8220E-04 -6.5013E-04 -2.3952E-03 -5.8118E-04 -1.2754E-03
-1.3181E-03 -1.5716E-03 -1.1400E-03 -4.9717E-04 -1.8756E-04 -1.9707E-05
-8.3657E-06 -8.8163E-06 -2.1660E-06 -2.1904E-06 -2.3243E-06 -2.1937E-06
-2.3523E-06 -5.959EE-06 -6.8915E-06 -2.7483E-05 -1.9875E-04 -9.7107E-04
-7.8987E-04 -1.8015E-03 -2.0964E-03 -8.4526E-03 -1.8243E-03 -1.7261E-01
```

```
8C    107     1  1262   904     4     3     0     4     3     0     0
    0
5C *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7C *EPRI SEBS. CR K TO    SEC SCATTERING                    A= -1.8496E-01*
8C   5.0685E-04 -5.2330E-05 -7.5281E-04 -9.9628E-05  8.2458E-04
 1.7608E-04  7.9655E-05  2.0368E-05  2.0665E-05  3.1760E-06  2.1830E-06
 3.3936E-06  1.2336E-06  3.8165E-06  5.0823E-06  4.1896E-06  4.8575E-06
 4.3998E-06  7.0965E-06  7.5075E-06  8.2616E-06  8.9922E-06  1.5917E-04
 4.4317E-06  2.3885E-06 -3.4275E-06 -4.0886E-06 -2.1380E-05  3.5959E-05
-1.3967E-05 -1.2587E-05 -1.5816E-04 -1.4787E-04 -1.2992E-04 -1.3896E-04
-1.7648E-04 -3.1C85E-04 -1.8435E-05  1.0355E-04  1.1498E-04  1.7451E-05
 1.7725E-05  7.6375E-06  7.6822E-06  7.7261E-06  7.7698E-06  7.8034E-06
 2.3866E-05  2.3375E-05  6.8174E-05  1.0210E-04  9.6995E-05 -4.8653E-06
-1.2040E-06  1.9577E-06  7.0443E-06  1.2729E-05 -4.8536E-06 -1.3224E-04
-2.3716E-04 -3.2965E-04 -2.7992E-04 -1.6694E-04 -3.7124E-05  1.2655E-04
 6.4302E-05  7.1183E-05  2.2033E-05  2.2720E-05  2.2967E-05  2.3230E-05
 2.3311E-05  9.5043E-05  9.4382E-05  1.1234E-04  1.1003E-04  1.0692E-04
 9.3587E-06 -3.6201E-06 -2.5274E-04  2.1613E-06 -4.8880E-05 -7.7635E-05
-1.7335E-04 -2.6385E-04 -1.8793E-04 -2.7830E-05  4.4893E-05  2.6342E-05
 2.9070E-05  8.1182E-06  8.1766E-06  8.3707E-06  8.3846E-06  8.5451E-06
 3.2501E-05  3.2331E-05  3.2155E-05  6.8196E-05 -5.2180E-05 -8.7222E-06
-4.5846E-07  4.2636E-06  1.4990E-05 -9.1361E-06  2.1152E-05 -7.0575E-05
-8.4525E-05 -1.1636E-04 -7.4126E-05 -1.2753E-05  2.7626E-05  1.4087E-05
 4.6585E-06  4.9838E-06  2.1841E-04  2.1711E-04  2.2493E-06  2.0608E-06
 2.1839E-04  5.1802E-06  5.2936E-04  2.0153E-05 -4.5612E-05  2.1263E-05
 2.1333E-05  3.4203E-05  4.8816E-05  5.0522E-05  1.2382E-04 -1.4268E-03


8E    107     1  1261   852     4     3     0     4     3     0     0
    0
5D *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7E *FOESS, EPRI, SEBS. OF K TO 2350 DOPPLER                 A=  9.2500E-01*
8D   1.6647E-04  4.2167E-04  8.3952E-04  9.1095E-04  8.3198E-04
 7.0265E-04  5.3723E-04  4.3758E-04  3.6488E-04  3.2579E-04  2.9381E-04
 2.9061E-04  2.9874E-04  3.3729E-04  3.9219E-04  4.9770E-04  5.9224E-04
 7.6915E-04  9.4780E-04  1.4521E-03  1.8858E-03  2.1831E-03  2.0860E-03
 5.0195E-04  3.2176E-05  9.3927E-05  3.6340E-05  5.0046E-05  5.3476E-05
 3.1091E-04  4.9822E-05  9.0117E-05  6.1937E-05  1.0229E-03  1.0262E-05
 2.2892E-06  4.7216E-06  1.5257E-06  1.5220E-06  1.4889E-07  3.5151E-09
 3.0194E-05  1.1951E-09  1.1588E-05  1.1310E-05  1.1156E-09  1.1139E-09
 3.8523E-05  3.6742E-05  1.6357E-22  2.2016E-07  8.3429E-06  2.7838E-06
 1.6288E-06  4.5196E-06  4.6287E-05  4.6581E-05  1.6885E-03  2.4890E-03
 3.8685E-04  5.2361E-05  2.2222E-05  8.2328E-06  4.6033E-06  8.6906E-07
 3.7966E-08  2.0376E-08  8.8792E-05  4.7316E-05  4.7171E-09  4.9115E-09
 5.2381E-05  3.0311E-08  7.5396E-08  3.7587E-07  1.5869E-06  1.2096E-05
 3.3597E-05  6.7905E-05  3.9844E-04  4.6608E-04  3.4062E-03  1.5033E-04
 1.0251E-05  4.3781E-06  1.1205E-05  3.9526E-05  9.4717E-06  2.2436E-07
 8.0875E-06  1.3838E-09  1.2043E-06  1.0956E-08  1.0065E-08  9.6050E-09
 3.5759E-06  4.4042E-08  7.9840E-09  5.3871E-06  2.1209E-05  2.6790E-05
 2.6102E-05  3.2235E-05  8.5587E-04  4.8865E-03  2.4976E-04  4.2364E-03
 4.4824E-05  4.0482E-05  1.9697E-04  2.6649E-05  3.4877E-06  1.6807E-07
 8.1826E-05  6.8027E-09  2.6955E-05  2.6012E-05  2.6231E-09  2.3577E-09
 2.4667E-05  6.4735E-09  4.1137E-05  2.0109E-07  3.7909E-05  1.8904E-04
 9.7730E-05  1.3974E-04  2.0712E-04  7.8297E-03  4.9780E-03  8.7205E-01


8B    107     1  1261    18     4     3     0     4     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7D *FOBSS, EPRI, SEBS. OF K TO 2350 FISSION                 A=  8.2961E-01*
8D   1.1121E-04  2.8088E-04  5.3460E-04  5.6732E-04  5.1568E-04
 4.2540E-04  3.1893E-04  2.5602E-04  2.1222E-04  1.8803E-04  1.6898E-04
 1.6604E-04  1.6865E-04  1.9280E-04  2.2384E-04  2.8388E-04  3.3643E-04
 4.3490E-04  5.3611E-04  8.1536E-04  8.2782E-04  1.2157E-03  1.1699E-03
 2.7778E-04  1.7706E-05  5.1217E-05  1.9997E-05  2.7816E-05  3.1222E-05
 1.6690E-04  2.6963E-05  5.0469E-05  4.2920E-05  5.5C01E-04  6.1125E-06
 1.8666E-06  3.4020E-06  1.2487E-06  1.3090E-06  1.2427E-07  3.0032E-09
 2.5753E-05  1.0103E-09  9.8293E-10  9.6225E-10  9.8867E-10  9.9654E-10
 2.9301E-09  3.1118E-09  1.3818E-08  1.8561E-07  6.6625E-06  1.8602E-06
 1.0312E-06  2.7756E-06  2.6612E-05  2.6126E-05  8.9349E-04  1.3257E-03
 2.0272E-04  3.5115E-05  1.7041E-05  7.0159E-06  4.2133E-06  8.0775E-07
 3.0487E-08  1.8266E-08  4.3153E-05  4.2069E-09  4.1853E-09  4.3898E-09
 4.6308E-09  2.6698E-08  6.5792E-08  3.2766E-07  1.3976E-06  1.0257E-05
 2.5270E-05  8.8624E-05  2.5793E-04  2.6107E-04  1.8151E-03  8.4879E-05
 6.2598E-06  3.0825E-06  5.4009E-06  3.7589E-05  9.2072E-06  2.1661E-07
 7.7594E-08  1.3238E-08  1.1507E-08  1.0857E-08  9.5965E-09  9.1890E-09
 3.3996E-08  4.1724E-08  7.5693E-08  5.1723E-06  1.8638E-05  1.9863E-05
 1.7263E-05  2.0295E-05  4.8939E-04  2.5581E-03  1.3289E-04  2.1784E-03
 2.5512E-05  2.5752E-05  1.4732E-04  2.3678E-05  3.3908E-06  1.6715E-07
 8.1288E-09  6.7523E-09  2.6742E-05  2.5800E-09  2.6065E-09  2.3359E-09
 2.4832E-05  6.4053E-09  8.0268E-05  1.9928E-07  3.6912E-05  1.5246E-04
 6.8130E-05  8.8188E-05  1.1768E-04  3.9553E-03  2.4325E-03  8.0075E-01
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8B    107     1  1261   102     4     3     0     8     0     0     0
      5
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7B *PURSS, EPRI, SIGS. OF E TO 235U CAPTURE                    A= -9.2818E-02*
8D  -4.3772E-07 -2.7044E-06 -9.2888E-06 -1.7222E-05 -2.8875E-05
-3.6010E-05 -3.6193E-05 -3.4022E-05 -3.7599E-05 -3.9125E-05 -4.0089E-05
-4.4208E-05 -4.9876E-05 -5.5330E-05 -7.2452E-05 -7.3031E-05 -9.4202E-05
-1.2851E-04 -2.1077E-04 -2.2550E-04 -2.8759E-04 -4.8155E-04 -5.1439E-04
-1.7899E-04 -1.8096E-05 -2.8550E-05 -1.0488E-05 -1.8181E-05 -1.3477E-05
-7.8601E-05 -1.1128E-05 -1.8972E-05 -7.2050E-06 -1.5688E-04 -1.6947E-06
-3.1329E-07 -8.5870E-07 -2.2169E-07 -2.0662E-07 -1.9738E-08 -4.1668E-10
-3.5198E-10 -1.3747E-10 -1.3261E-10 -1.2962E-10 -1.2747E-10 -1.2729E-10
-3.9551E-10 -4.2756E-10 -2.0182E-05 -3.4527E-08 -1.6527E-06 -5.2934E-07
-2.4425E-07 -1.1045E-06 -3.9065E-05 -3.8310E-06 -3.1938E-04 -5.8131E-04
-4.4634E-05 -3.3757E-06 -7.7895E-07 -1.5404E-07 -4.9380E-08 -8.7800E-09
-5.1173E-10 -3.0614E-10 -7.5426E-11 -7.4793E-11 -7.5330E-11 -7.9077E-11
-8.4991E-11 -8.9914E-10 -1.3033E-09 -6.6296E-09 -2.6365E-08 -2.6708E-07
-1.2752E-06 -3.4462E-06 -5.1816E-05 -8.4156E-05 -9.8098E-04 -4.9803E-05
-3.8741E-06 -1.9367E-06 -1.7492E-06 -2.2642E-06 -3.3415E-07 -1.0133E-08
-4.4887E-09 -8.5792E-10 -7.8184E-10 -7.3882E-10 -7.0078E-10 -6.9027E-10
-2.7322E-09 -3.6612E-09 -4.5023E-09 -2.0549E-07 -1.8623E-06 -3.8193E-06
-2.9079E-06 -4.6228E-06 -2.0813E-04 -2.0989E-03 -4.7225E-05 -7.2020E-04
-1.8757E-05 -1.6871E-05 -5.5787E-05 -3.5315E-06 -5.7492E-08 -1.2356E-09
-2.2635E-11 -7.9395E-11 -3.8167E-11 -3.8456E-11 -3.6983E-11 -3.6009E-11
-4.0581E-11 -1.1624E-10 -1.6318E-10 -3.9008E-09 -3.0273E-06 -9.5605E-05
-1.7822E-05 -1.8925E-05 -2.1878E-05 -1.8080E-03 -2.6882E-04 -8.1726E-02


8B    107     1  1261   904     4     3     0     8     0     0     0
      0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7B *EPRI SIGS. OF E TO  235U SCATTERING                         A= -2.2106E-05*
8D   3.1866E-06 -4.0349E-06 -3.7493E-06 -3.9734E-06  6.5771E-06
 3.8508E-06  1.2405E-06  3.9198E-07  2.5836E-07 -1.9599E-08 -4.8799E-08
 4.2105E-08 -1.2563E-08  4.4276E-08  6.0364E-08  8.1316E-08  1.2260E-07
 6.6141E-08  1.6208E-07  1.6856E-07  6.7727E-08 -2.4759E-10  5.8476E-07
 1.3547E-07  7.1553E-08 -9.4789E-08 -1.1163E-07 -5.2585E-07  8.5217E-07
-2.7824E-07 -2.3818E-07 -2.8067E-06  2.4883E-06 -1.2362E-06 -1.1408E-06
-1.2351E-06 -1.4913E-06 -4.7012E-08  8.9659E-08  1.8158E-08  1.2719E-09
 1.2368E-05  5.2673E-10  5.2746E-10  5.3275E-10  5.4085E-10  5.5228E-10
 1.7712E-05  1.9253E-09  8.0809E-09  3.7588E-08  1.1708E-06  6.7866E-07
 3.1614E-07  5.8136E-07  3.9335E-07  8.6602E-07 -8.2138E-08 -1.2013E-06
-1.1182E-06 -1.0337E-06 -9.0133E-07 -3.8263E-07 -8.4464E-08  8.7520E-08
 8.1138E-09  2.8581E-09  6.0300E-10  5.9358E-10  5.9297E-10  6.1508E-10
 6.3533E-10  3.8115E-09  9.4092E-09  8.7933E-08  2.0268E-07  1.1188E-06
 1.1371E-06  1.6124E-06  3.1167E-06  8.8711E-07 -5.3130E-07 -7.1099E-07
-1.8112E-06 -1.7473E-06 -9.2295E-07 -1.0572E-07  3.1075E-08  1.8968E-09
 1.5419E-09  8.0694E-10  8.1182E-10  8.2953E-10  8.4673E-10  8.7933E-10
 2.2636E-09  3.6972E-09  7.9082E-09  2.8330E-07  1.1407E-06  9.8164E-07
 5.1151E-07  8.8375E-07  3.6786E-06 -1.3521E-07  3.3278E-07 -8.1799E-07
-9.3507E-07 -1.1666E-06 -8.8139E-07 -6.3635E-08  1.2635E-07  1.4664E-08
 1.9219E-09  1.8082E-09  7.5014E-10  7.5246E-10  7.9858E-10  7.5400E-10
 8.1588E-10  2.2276E-09  7.8707E-09  6.0338E-08  1.7063E-06  1.3360E-06
 8.0436E-07  9.4097E-07  1.0922E-06  5.2379E-07  5.6214E-07 -3.3315E-05


8B    107     1  1193   102     4     3     0     8     0     0     0
      0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRX-2      *
7D *EPRI SIGS. OF E TO  AL CAPTURE                              A= -7.2570E-03*
8B  -9.0947E-05 -6.0778E-05 -1.2393E-05 -1.0517E-06 -1.0910E-06
-2.2225E-06 -3.8756E-06 -3.2189E-06 -6.6067E-06 -5.8681E-06 -3.6065E-06
-1.0365E-05 -5.0738E-06 -5.3160E-06 -2.2538E-05 -7.8249E-06 -5.1738E-06
-3.6003E-06 -2.8732E-06 -3.2055E-16 -3.7882E-06 -8.3883E-06 -8.7282E-06
-1.0991E-06 -7.4115E-08 -2.1635E-07 -8.2707E-08 -1.1299E-07 -1.1754E-07
-6.7978E-07 -1.0833E-07 -2.0305E-07 -1.8222E-07 -1.9752E-06 -1.2388E-07
-7.0299E-08 -8.0392E-08 -2.8010E-08 -1.6788E-08 -1.1930E-08 -1.6786E-09
-1.6796E-09 -7.1717E-10 -7.1775E-10 -7.1866E-10 -7.1913E-10 -7.1991E-10
-2.1012E-09 -2.1145E-09 -6.1260E-09 -9.6668E-09 -8.5805E-08 -5.6528E-08
-3.8696E-08 -7.7252E-08 -1.5394E-07 -1.1558E-07 -2.5978E-06 -8.7508E-06
-3.7526E-07 -2.0386E-07 -1.1059E-07 -6.8205E-08 -5.7525E-08 -3.8138E-08
-1.1135E-08 -1.1371E-08 -3.3018E-09 -3.2691E-09 -3.3633E-09 -3.3926E-09
-3.3898E-09 -1.3866E-08 -1.8710E-08 -2.1978E-08 -3.0488E-08 -8.2282E-08
-1.0088E-07 -9.0803E-08 -1.2808E-07 -2.3762E-07 -8.3862E-06 -5.1618E-07
-8.8305E-07 -2.7046E-07 -1.8682E-07 -6.3840E-08 -3.0515E-08 -1.1235E-08
-1.1368E-08 -3.0573E-09 -3.0383E-09 -3.0759E-09 -3.0561E-09 -3.0948E-09
-1.1775E-08 -1.2035E-08 -1.3288E-08 -5.9489E-08 -9.2138E-08 -1.6631E-07
-1.2206E-07 -1.8222E-07 -5.5396E-07 -1.7616E-05 -1.8683E-06 -7.8720E-06
-2.9777E-06 -1.3271E-06 -5.7718E-07 -2.5044E-07 -1.9425E-07 -9.8732E-08
-1.0568E-08 -1.0550E-08 -7.9535E-09 -7.8708E-09 -8.0313E-09 -6.3545E-09
-6.0228E-09 -1.5224E-08 -1.5408E-08 -8.8336E-08 -2.6583E-07 -8.3276E-07
-4.0982E-07 -1.0371E-06 -3.0289E-06 -1.2296E-08 -5.6522E-05 -6.7505E-03
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4B    107     1  1193   904     4     3     0     8     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TBX-2     *
7B *EPRI SETS. OF E TO   AL SCATTERING                          A= -1.1165E-04*
8B  -9.9965E-05 -2.2586E-05 -7.2315E-06 -6.9523E-06  5.7599E-05
 2.6644E-05  1.2872E-05  3.0283E-06  5.2138E-06 -1.2839E-06  4.6629E-06
-1.8867E-07  5.1112E-07  1.2835E-06  3.0837E-06  1.8082E-06  2.2313E-06
 1.3015E-06  2.9342E-06  3.7585E-06  1.5977E-06  5.6409E-07  6.4298E-06
 5.9821E-07 -3.5711E-07 -1.8677E-06 -5.0952E-07 -8.1732E-07  1.8587E-06
-7.0738E-06 -7.1043E-07 -6.0709E-08  1.4674E-05 -3.3336E-05 -1.9696E-07
 1.8353E-06  5.3871E-06  3.0678E-06  2.7369E-06  2.0898E-06  2.9827E-07
 2.9853E-07  1.2577E-07  1.2582E-07  1.2587E-07  1.2605E-07  1.2613E-07
 1.9195E-07  3.6965E-07  1.0666E-06  1.6519E-06  5.6078E-06  2.9565E-06
 1.5497E-06  2.7504E-06  3.0304E-06  1.6295E-06 -1.2328E-06 -5.1880E-05
-9.8716E-06 -5.2218E-07  3.5067E-06  5.2655E-06  7.5128E-06  5.4813E-06
 1.7622E-06  1.3213E-06  3.8063E-07  3.8709E-07  3.8646E-07  3.8961E-07
 3.9013E-07  1.5955E-06  1.6628E-06  2.3579E-06  3.1758E-06  7.9116E-06
 7.5759E-06  6.2765E-06  5.0959E-06  2.0908E-06 -8.8928E-05 -1.4830E-05
-8.0127E-06  7.5138E-07  7.6564E-06  8.9486E-06  8.7150E-06  1.7566E-06
 1.7602E-06  8.7203E-07  8.6969E-07  8.7534E-07  8.7257E-07  8.7868E-07
 1.8246E-06  1.0577E-06  2.0209E-06  8.8768E-06  1.1114E-05  9.3924E-06
 8.2380E-06  8.7062E-06  6.1319E-06 -2.3914E-08  3.7580E-06 -2.5756E-05
-3.5155E-05 -2.3983E-05 -3.3778E-06  5.3488E-06  1.1674E-05  8.3362E-06
 1.6207E-06  1.6324E-06  7.0436E-07  6.9976E-07  7.1633E-07  7.0005E-07
 7.0873E-07  1.6865E-06  1.7107E-06  9.6475E-06  2.8327E-05  1.7350E-05
 8.3257E-06  1.2011E-05  1.0150E-05  7.8554E-06  8.9218E-06 -1.8527E-04


4B    107     1  1269   102     4     5     0     8     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TBX-2     *
7B *EPRI SETS. OF E TO   N CAPTURE                          A= -1.5988E-01*
8B  -8.3788E-07 -1.5783E-06 -3.0239E-06 -3.1832E-06 -3.0634E-06
-3.1077E-06 -2.7370E-06 -2.9142E-06 -3.3589E-06 -8.0881E-06 -8.9258E-06
-6.2972E-06 -8.1775E-06 -1.0602E-05 -1.3836E-05 -1.7950E-05 -2.3049E-05
-2.9201E-05 -3.6977E-05 -4.7172E-05 -6.0569E-05 -7.7413E-05 -9.6207E-05
-1.9744E-05 -1.5081E-06 -8.8119E-06 -1.7024E-06 -2.3131E-06 -2.5599E-06
-1.3718E-05 -2.1292E-06 -8.1790E-06 -8.8689E-06 -8.0192E-05 -2.6901E-06
-1.8055E-06 -2.2327E-06 -9.1650E-07 -6.6260E-07 -5.0136E-07 -7.0555E-08
-7.0653E-08 -3.0144E-08 -3.0109E-08 -3.0161E-08 -3.0170E-08 -3.0177E-08
-9.1271E-08 -8.8217E-08 -2.5265E-07 -3.8241E-07 -1.2624E-06 -1.1540E-06
-7.9199E-07 -1.7045E-06 -3.3907E-06 -2.4736E-06 -5.2480E-05 -9.6580E-05
-8.2055E-06 -8.8905E-06 -3.0885E-06 -2.2121E-06 -2.2787E-06 -1.6823E-06
-8.8333E-07 -8.8630E-07 -1.8220E-07 -1.8303E-07 -1.8253E-07 -1.8341E-07
-1.8284E-07 -5.7578E-07 -5.8265E-07 -7.7756E-07 -9.6032E-07 -2.3526E-06
-2.7850E-06 -2.5635E-06 -3.8296E-06 -5.3806E-06 -1.7181E-08 -1.0997E-05
-9.9635E-06 -7.0764E-06 -8.9605E-06 -3.3500E-06 -1.6620E-06 -6.0993E-07
-6.1216E-07 -1.6398E-07 -1.6265E-07 -1.6832E-07 -1.6296E-07 -1.6465E-07
-6.2275E-07 -6.2577E-07 -6.6828E-07 -2.7173E-06 -3.5893E-06 -5.0823E-06
-3.2414E-06 -8.5112E-06 -1.2881E-05 -3.5928E-08 -3.8886E-05 -1.5383E-08
-5.3590E-05 -3.1987E-05 -1.7239E-05 -9.9970E-06 -1.0576E-05 -6.2116E-06
-1.1735E-06 -8.1710E-06 -5.0164E-07 -8.9612E-07 -5.0578E-07 -8.0268E-07
-8.0622E-07 -9.6005E-07 -9.6651E-07 -5.2173E-06 -1.5207E-05 -1.6080E-05
-1.1935E-05 -2.6314E-05 -6.8035E-05 -2.5068E-03 -1.1552E-03 -1.5438E-01


4B    107     1  1269   904     4     5     0     8     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TBX-2     *
7B *EPRI SETS. OF E TO   N SCATTERING                          A=  1.8322E-01*
8B  -1.8338E-03 -3.3878E-04  2.1289E-04  2.7632E-03  1.0073E-02
 1.0375E-02  7.1025E-03  5.7096E-03  5.0989E-03  4.2949E-03  4.1885E-03
 4.1836E-03  3.8021E-03  4.2061E-03  4.2565E-03  4.7739E-03  4.6257E-03
 4.7514E-03  5.3668E-03  5.1763E-03  4.5616E-03  5.3139E-03  6.6999E-03
 9.8559E-04  7.9054E-05  1.6698E-04  8.0009E-05  9.3522E-05  3.1980E-04
 3.0790E-04  8.5264E-05  3.0133E-04  1.8513E-03  8.8681E-04  3.0041E-04
 3.3081E-04  7.0775E-04  3.9631E-04  2.9013E-04  2.1444E-04  3.0042E-05
 3.0029E-05  1.2803E-05  1.2797E-05  1.2791E-05  1.2796E-05  1.2793E-05
 3.8667E-05  3.7326E-05  1.0706E-04  1.6403E-04  5.5905E-04  3.0648E-04
 1.6202E-04  2.9285E-04  3.5698E-04  1.9921E-04  5.9879E-04  1.5053E-03
 6.3840E-04  8.4180E-04  8.3803E-04  8.4192E-04  9.8262E-04  6.7142E-04
 1.7040E-04  1.6554E-04  4.7941E-05  4.8102E-05  4.7864E-05  4.8112E-05
 8.7952E-05  1.9816E-04  1.9914E-04  2.7626E-04  3.6161E-04  8.8507E-04
 8.3465E-04  6.8885E-04  5.1278E-04  2.8771E-04  3.5024E-03  5.7923E-04
 5.5877E-04  1.2318E-03  1.3970E-03  1.1611E-03  5.6250E-04  2.1833E-04
 2.1661E-04  5.7771E-05  5.7213E-05  5.7723E-05  5.7199E-05  5.7747E-05
 2.1832E-04  2.1944E-04  2.3550E-04  9.9710E-04  1.2275E-03  9.9151E-04
 8.8786E-04  8.9865E-04  7.1208E-04  3.8328E-03  6.4913E-04  1.3543E-03
 2.3448E-03  2.4511E-03  2.1985E-03  1.8131E-03  2.7468E-03  1.3440E-03
 2.5081E-04  2.8957E-04  1.0674E-04  1.0549E-04  1.0743E-04  1.3951E-04
 1.4058E-04  3.3172E-04  3.3328E-04  1.7959E-03  3.1014E-03  2.3002E-03
 1.1718E-03  1.7316E-03  2.4858E-03  1.8174E-02  2.0831E-03 -8.5297E-03
```

```
4B    107     1  1276   102     4     3     0     8     0     0     0
    0
5E *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7E *EPRI SENS. OF B TO  C CAPTURE                          A= -1.9088E-03*
8E  -5.5263E-04 -1.2886E-03 -1.6552E-05 -1.0030E-09 -1.2235E-09
-1.5165E-05 -1.4927E-09 -1.5352E-05 -1.5501E-05 -1.6614E-05 -1.7916E-09
-2.1035E-05 -2.5205E-09 -3.0928E-05 -3.8340E-09 -4.8378E-09 -6.1415E-09
-7.8013E-05 -1.0000E-08 -1.2773E-08 -1.6406E-08 -2.0927E-08 -2.5977E-08
-5.2936E-05 -4.8455E-10 -1.1848E-05 -4.5702E-10 -6.2112E-10 -6.8759E-10
-1.6874E-05 -5.7212E-10 -1.1218E-05 -1.3040E-05 -1.0792E-08 -7.2320E-10
-4.8516E-10 -5.9572E-10 -2.4611E-10 -1.7789E-10 -1.3458E-10 -1.8938E-11
-1.8964E-11 -8.0908E-12 -8.0922E-12 -8.0954E-12 -8.0976E-12 -8.0996E-12
-2.4897E-11 -2.3677E-11 -6.7806E-11 -1.0262E-10 -3.3871E-10 -3.0957E-10
-2.1242E-10 -8.5716E-10 -9.0883E-10 -6.6315E-10 -1.4098E-08 -2.5892E-08
-2.2012E-05 -1.3141E-09 -8.1891E-10 -5.9543E-10 -6.1376E-10 -8.5315E-10
-1.3018E-10 -1.3057E-10 -3.8295E-11 -3.8519E-11 -3.8382E-11 -3.8618E-11
-3.8864E-11 -1.5504E-10 -1.5688E-10 -2.0935E-10 -2.5853E-10 -6.3322E-10
-7.3865E-10 -6.8962E-10 -9.2234E-10 -1.4357E-05 -4.6890E-08 -2.9538E-09
-2.6804E-05 -1.9866E-09 -1.3371E-05 -9.0258E-10 -8.4761E-10 -1.6024E-10
-1.6882E-10 -8.8185E-11 -8.3708E-11 -8.8237E-11 -8.3871E-11 -8.8323E-11
-1.6765E-10 -1.6643E-10 -1.7986E-10 -7.3112E-10 -9.5855E-10 -1.3553E-09
-8.7079E-10 -1.2114E-09 -3.4557E-05 -9.6616E-08 -1.0366E-08 -8.1192E-08
-1.4410E-08 -8.6216E-09 -8.6429E-09 -2.6863E-09 -2.0367E-09 -1.6637E-09
-3.1812E-10 -3.1335E-10 -1.3023E-10 -1.3275E-10 -1.3532E-10 -1.0772E-10
-1.6866E-10 -2.5677E-10 -2.5865E-10 -1.3943E-05 -4.0600E-09 -8.3029E-09
-3.2011E-05 -7.0771E-09 -1.6372E-08 -6.7653E-07 -3.1188E-07 -8.1609E-05


4E    107     1  1276   504     4     3     0     8     0     0     0
    0
5E *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7E *EPRI SENS. OF B TO  C SCATTERING                        A=  1.0285E-03*
8E  -2.9132E-04 -7.0852E-05 -8.0410E-05 -2.3090E-04  7.4959E-04
 3.0626E-04  3.0066E-04  1.2816E-04  1.2011E-04  5.8516E-05  5.9849E-05
 6.1052E-05  3.9691E-05  4.8625E-05  3.9899E-05  5.6530E-05  8.9691E-05
 8.3141E-05  6.3017E-05  6.8660E-05  3.7909E-05  3.2555E-05  7.4691E-05
-1.6838E-05  5.0417E-08 -5.2264E-06 -8.8399E-07 -1.8396E-06  1.8175E-05
-5.1324E-05 -1.0972E-05 -1.0730E-05  9.1364E-05 -1.9237E-04  1.0322E-05
 1.9162E-05  5.1985E-05  3.1512E-05  2.3885E-05  1.7479E-05  2.4614E-06
 2.4632E-06  1.0511E-06  1.0511E-06  1.0512E-06  1.0523E-06  1.0526E-06
 3.1450E-06  3.0795E-06  8.8627E-06  1.3676E-05  4.7303E-05  2.5236E-05
 1.3138E-05  2.3692E-05  2.7828E-05  1.5392E-05 -8.1640E-06 -5.5000E-04
-2.8301E-05  2.8872E-05  8.7465E-05  5.7085E-05  7.1213E-05  8.9327E-05
 1.2398E-05  1.2041E-05  3.4968E-06  3.5103E-06  3.5038E-06  3.5291E-06
 3.5257E-06  1.4366E-05  1.4915E-05  2.1063E-05  2.8195E-05  7.0571E-05
 6.6897E-05  5.2538E-05  3.9943E-05  1.7117E-05 -5.6261E-04 -8.9206E-05
-1.7676E-06  5.1893E-07  8.7650E-05  8.1774E-05  8.0634E-05  1.6189E-05
 1.6151E-05  8.3252E-06  8.2910E-06  8.3371E-06  8.3059E-06  8.3557E-06
 1.6507E-05  1.6764E-05  1.8153E-05  7.8947E-05  1.0006E-04  7.8989E-05
 3.5337E-05  3.8928E-05  5.2180E-05  6.6510E-06  2.0925E-05 -5.9560E-04
-3.3761E-04 -1.0576E-04  2.6764E-05  6.9077E-05  1.1157E-04  7.3302E-05
 1.4089E-05  1.8155E-05  6.0971E-06  6.0510E-06  6.1980E-06  9.5889E-06
 9.6965E-06  2.3021E-05  2.3329E-05  1.2927E-04  2.1227E-04  1.6052E-04
 8.1172E-05  1.1825E-04  1.7773E-04  1.5372E-04  5.9561E-05 -7.7303E-04


4E    107     1  2000   901     4     3     0     8     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7B *EPRI  SENS. OF B TO ZB**2  IN FUEL                      A= -2.7038E-02*
8B  -3.3803E-04 -1.3698E-03 -2.0232E-03 -2.0393E-03 -2.0484E-03
-1.9108E-03 -1.8981E-03 -1.8609E-03 -7.8091E-04 -8.8466E-04 -5.2098E-04
-8.2112E-04 -3.1077E-04 -3.9252E-04 -8.6662E-04 -8.1614E-04 -3.2931E-04
-3.2604E-04 -8.5135E-04 -2.8272E-04 -3.3027E-04 -2.6986E-04 -3.1534E-04
-7.3610E-05 -2.6273E-05 -7.8808E-05 -2.6981E-05 -3.0642E-05 -2.2008E-05
-3.3457E-05 -4.3591E-06 -8.2097E-06 -2.4917E-05 -1.5725E-04 -3.6201E-05
-1.6860E-05 -9.8982E-06 -7.4117E-07 -3.5057E-08 -6.1024E-10 -2.5571E-11
-2.3056E-11 -9.4595E-12 -9.3207E-12 -9.3638E-12 -9.4546E-12 -9.7155E-12
-3.1808E-11 -3.7386E-11 -2.0877E-10 -2.5514E-09 -2.2313E-06 -2.7793E-05
-3.4977E-05 -9.3566E-05 -7.4091E-05 -8.9395E-05 -1.0145E-04 -9.2065E-05
-2.9927E-06 -9.9853E-07 -2.6550E-07 -6.8029E-08 -1.9591E-08 -5.1268E-10
-8.1103E-12 -1.2268E-12 -2.2067E-13 -2.1320E-13 -2.2067E-13 -2.1992E-13
-2.0576E-13 -1.9278E-12 -1.1071E-11 -2.0719E-10 -2.6387E-09 -1.1737E-05
-9.6116E-05 -2.0001E-04 -2.9052E-04 -3.5691E-05 -1.3624E-04 -3.0045E-06
-2.3525E-06 -7.0396E-07 -1.0880E-07 -3.3325E-09 -2.8678E-11 -6.6617E-13
-3.8159E-13 -7.2806E-10 -7.0227E-10 -7.1202E-10 -7.3077E-10 -7.9562E-10
-8.1693E-13 -9.9203E-13 -3.8021E-12 -7.0503E-10 -6.7096E-08 -7.0060E-07
-3.3559E-05 -6.6903E-05 -1.6666E-04 -3.0735E-04 -3.1205E-05 -5.1329E-05
-5.0121E-05 -1.6196E-05 -2.6001E-04 -2.7116E-07 -9.1778E-09 -1.5626E-11
-2.9137E-13 -2.2071E-13 -8.6569E-14 -8.3304E-14 -8.6606E-14 -8.3266E-14
-9.3337E-14 -2.7693E-13 -8.3323E-13 -2.3270E-11 -2.5937E-08  1.3103E-06
-3.6032E-06 -1.5902E-05 -7.4011E-05 -8.7137E-04 -1.5386E-04  3.8657E-03
```

```
4B    107     1  2000   503     4     3     0     0     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7B *EPSI  SENS. OF R TO EP**2  IN VOID                    A= -2.8114E-03*
8B  -7.7187E-05 -6.3983E-05 -1.8566E-04 -1.5873E-04 -6.1061E-05
-1.2595E-04 -9.1635E-05 -7.3048E-05 -3.0864E-05 -3.4346E-05 -6.5560E-05
-2.3825E-05 -3.4364E-05 -6.8273E-05 -6.3490E-05 -7.7143E-05 -7.5217E-05
-7.8153E-05 -7.0094E-05 -5.5009E-05 -5.9987E-05 -5.9370E-05 -5.4691E-05
-1.2047E-05 -7.7146E-07 -2.2363E-06 -8.4698E-07 -1.1539E-06 -1.1701E-06
-6.8285E-06 -1.0296E-06 -1.9894E-06 -1.6215E-06 -1.0335E-05 -1.0862E-06
-6.7205E-07 -6.0626E-07 -2.0220E-07 -1.0024E-07 -6.4341E-08 -8.9802E-09
-9.0381E-09 -3.0606E-09 -3.8664E-09 -3.8758E-09 -3.8803E-09 -3.8898E-09
-1.9813E-08 -1.1509E-08 -3.3781E-08 -5.6760E-08 -3.7260E-07 -5.0696E-07
-3.0396E-07 -6.6101E-07 -1.3065E-06 -9.0241E-07 -2.1304E-05 -3.4572E-05
-2.0793E-06 -1.2933E-06 -6.5973E-07 -3.7070E-07 -2.6561E-07 -1.0691E-07
-8.2388E-08 -8.3997E-08 -1.3056E-08 -1.3144E-08 -1.3162E-08 -1.3325E-08
-1.3363E-08 -5.5573E-08 -6.2077E-08 -1.0679E-07 -1.6908E-07 -8.9052E-07
-5.9982E-07 -5.2376E-07 -7.0987E-07 -1.0702E-06 -6.9663E-05 -3.3655E-06
-2.8187E-06 -1.6838E-06 -7.6068E-07 -2.5074E-07 -7.5213E-08 -2.7409E-08
-2.0308E-08 -7.6822E-09 -7.6702E-05 -7.0042E-05 -7.7907E-09 -7.9304E-09
-3.0665E-08 -3.2726E-08 -3.8465E-08 -2.2824E-07 -8.8275E-07 -9.8607E-07
-7.0284E-07 -1.0666E-06 -3.2732E-06 -9.1675E-05 -8.2345E-06 -3.0017E-05
-9.4048E-06 -8.7366E-06 -1.8525E-06 -6.6127E-07 -3.2566E-07 -9.0696E-08
-1.6278E-08 -1.6292E-08 -7.0038E-05 -6.9048E-09 -7.1135E-09 -5.7097E-09
-5.0902E-09 -1.0166E-08 -1.0602E-08 -0.6601E-08 -8.1956E-07 -1.1649E-06
-1.2527E-06 -3.3022E-06 -9.7310E-06 -3.1400E-05 -8.5076E-06 -3.1688E-06


4B    107     1  2CC0   902     4     3     0     8     0     0     0
    0
5B *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7E *EPSI  SENS. OF R TO EP**2  IN CLAD                    A= -8.1947E-03*
8E  -1.0845E-04 -8.3982E-08 -6.4616E-08 -7.0754E-08 -6.0662E-08
-5.0285E-08 -3.7966E-08 -1.3173E-08 -8.0715E-08 -9.8929E-05 -9.9310E-05
-6.2727E-05 -5.8882E-05 -1.6346E-08 -1.6010E-08 -1.3200E-08 -1.2342E-08
-9.6257E-05 -1.2685E-08 -1.6119E-08 -2.3133E-08 -2.1158E-08 -6.8887E-05
-3.0927E-05 -2.3815E-06 -6.6709E-06 -2.5380E-06 -3.8473E-06 -3.5677E-06
-3.3572E-05 -5.0776E-06 -9.0267E-06 -8.7350E-06 -1.4023E-08 -8.6936E-06
-5.8753E-06 -5.8801E-06 -1.9858E-06 -1.1439E-06 -8.2658E-07 -1.1598E-07
-1.1627E-07 -8.9681E-08 -8.9678E-08 -8.9738E-08 -8.9768E-08 -8.9818E-08
-1.5092E-07 -1.0631E-07 -8.2361E-07 -6.6789E-07 -3.1583E-06 -3.8872E-06
-2.6556E-06 -5.2803E-06 -1.0088E-05 -7.0257E-06 -5.3707E-05 -1.0789E-08
-7.9008E-06 -8.2895E-06 -2.2920E-06 -1.8077E-06 -1.1828E-06 -7.8150E-07
-2.2775E-07 -2.3235E-07 -6.8253E-08 -6.8780E-08 -6.8667E-08 -6.9259E-08
-6.9175E-08 -2.8267E-07 -2.9971E-07 -8.8731E-07 -6.1964E-07 -1.6664E-06
-2.0347E-06 -1.8225E-06 -2.5578E-06 -8.7182E-06 -8.2291E-05 -3.8373E-06
-2.9172E-06 -1.7901E-06 -9.5132E-07 -8.5028E-07 -1.9613E-07 -7.2111E-08
-7.2904E-08 -1.9596E-08 -1.9872E-08 -1.9709E-08 -1.9570E-08 -1.9819E-08
-7.5379E-08 -7.6986E-08 -8.4910E-08 -3.7943E-07 -5.8498E-07 -1.0497E-06
-7.6886E-07 -1.1305E-06 -3.0289E-06 -1.1226E-04 -1.0112E-05 -6.8709E-05
-8.6919E-05 -2.8883E-05 -1.0853E-05 -8.8902E-06 -3.8586E-06 -1.7810E-06
-3.2639E-07 -3.2575E-07 -1.3957E-07 -1.3805E-07 -1.4081E-07 -1.1137E-07
-1.1252E-07 -2.6652E-07 -2.6940E-07 -1.8703E-06 -8.5943E-06 -7.3938E-06
-6.9312E-06 -1.7301E-05 -8.9068E-05 -1.8626E-04 -1.0968E-04 -1.1390E-03


4E    107     1  2CC0   900     4     3     0     8     0     0     0
    0
5E *RESPONSE IS MULTIPLICATION FACTOR FOR TRE-2     *
7E *EPSI  SENS. OF R TO EP**2  IN MODERATOR                A= -1.0512E-01*
8D  -1.6724E-03 -5.C198E-03 -1.0927E-02 -9.9843E-03 -8.6859E-03
-7.3853E-03 -6.8C55E-03 -3.7218E-03 -3.5336E-03 -2.6395E-03 -1.9956E-03
-1.9564E-03 -1.8322E-03 -1.3428E-03 -1.0704E-03 -1.0702E-03 -1.0228E-03
-1.3121E-03 -1.1922E-03 -1.8831E-03 -1.0751E-03 -1.3798E-03 -1.2097E-03
-1.6129E-04 -3.3215E-05 -6.8161E-05 -2.6132E-05 -2.9331E-05 -8.6938E-05
-1.9514E-04 -2.9815E-05 -1.0578E-04 -2.7326E-05 -2.9872E-04 -1.0957E-05
-1.2666E-05 -3.0707E-05 -3.3697E-05 -2.8916E-05 -1.8374E-05 -2.5039E-06
-2.5871E-06 -1.1033E-06 -1.1041E-06 -1.1037E-06 -1.1043E-06 -1.1045E-06
-3.3402E-06 -3.2277E-06 -9.2803E-06 -1.3976E-05 -8.6052E-05 -8.1999E-05
-2.8774E-05 -6.5987E-05 -1.3063E-04 -9.8811E-05 -6.7308E-04 -8.7958E-04
-3.7763E-05 -2.9747E-05 -1.8411E-05 -6.6609E-05 -6.8366E-05 -5.0284E-05
-1.6967E-05 -1.7055E-05 -8.9839E-06 -5.0116E-06 -8.9925E-06 -5.0218E-06
-5.0004E-06 -2.0102E-05 -2.0359E-05 -2.7138E-05 -3.3057E-05 -8.1715E-05
-9.8921E-05 -5.9392E-05 -2.1750E-05 -5.9823E-05 -1.0861E-03 -6.3895E-05
-1.0167E-04 -6.0655E-05 -2.7116E-05 -1.8206E-05 -8.9983E-06 -2.8071E-05
-2.4537E-05 -6.5698E-06 -6.5139E-06 -6.5793E-06 -6.5233E-06 -6.5891E-06
-2.8905E-05 -2.5005E-05 -2.6678E-05  1.0821E-04 -1.8071E-04 -2.7554E-05
-1.7626E-05 -2.9111E-05 -8.2379E-05 -9.1956E-04 -1.5355E-04 -5.7055E-04
-2.6968E-04 -9.8238E-05 -5.8029E-05 -3.1828E-05 -5.8188E-05 -3.2999E-05
-6.3838E-06 -6.3638E-06 -2.7240E-06 -2.6929E-06 -2.7041E-06 -6.1647E-05
-6.1920E-05 -1.4622E-04 -1.8767E-04 -7.9132E-04 -5.6589E-05 -3.5079E-05
-3.7822E-05 -3.5237E-05 -2.0756E-04 -8.0818E-03 -1.1320E-03 -1.8444E-02
```

```
4B    107     6  1262    952     6     3     0     7     0     0     6
      0
5B *RESPONSE IS REACTION RATE RRC 2B FOR THX-2*
7B *EPRI SERS. OF 2300 CAP EPI/THB TO 2300 WDBAR          A= -1.7140E-05*
8B  -1.7305E-06 -3.6672E-06 -6.0727E-06 -9.9290E-06 -3.1939E-07
-1.0997E-08 -1.0656E-09 -3.0052E-10 -2.0325E-10 -1.7319E-10 -1.0252E-10
-2.3902E-10 -2.6857E-10 -2.4205E-10 -7.1059E-12 -1.2051E-16 -1.3165E-15
-1.0642E-13 -3.6413E-10 -2.1000E-05 -9.3001E-14 -2.0865E-10 -2.7778E-10
-8.0694E-15 -3.5656E-16 -1.0510E-15 -8.1105E-16 -5.5577E-16 -6.5237E-16
-3.2371E-15 -5.0281E-16 -9.0965E-16 -1.0477E-15 -9.1808E-15 -6.0300E-16
-8.5660E-16 -6.0350E-16 -3.1666E-16 -1.7212E-16 -3.0260E-17 -2.0531E-10
-2.3021E-10 -9.0304E-19 -9.7851E-19 -9.8185E-19 -9.8003E-19 -1.0033E-10
-3.1663E-10 -3.3716E-10 -1.3023E-17 -5.3109E-17 -5.0730E-16 -3.9401E-16
-2.3571E-16 -8.0770E-16 -7.9050E-16 -5.6955E-16 -1.1310E-10 -2.0231E-10
-1.0723E-15 -1.2354E-15 -8.7033E-16 -7.3131E-16 -7.0050E-16 -2.9677E-16
-1.6500E-17 -9.0052E-10 -2.1295E-10 -2.0700E-10 -2.0403E-10 -2.1030E-10
-2.2175E-10 -1.2500E-17 -2.9500E-17 -1.2879E-16 -1.6234E-16 -1.0000E-15
-9.3060E-16 -7.0510E-16 -8.7004E-16 -1.1663E-15 -3.0005E-10 -2.2561E-15
-2.1090E-15 -1.7596E-15 -1.5229E-15 -1.0329E-15 -1.0642E-16 -1.6677E-17
-1.1524E-17 -2.7063E-10 -2.6202E-10 -2.6363E-10 -2.6403E-10 -2.7517E-10
-1.2117E-17 -1.8101E-17 -3.5515E-17 -7.0519E-16 -1.2293E-15 -1.2792E-15
-7.0066E-16 -9.9251E-16 -2.7756E-15 -6.7100E-10 -7.1091E-15 -2.0710E-10
-1.0010E-10 -6.5101E-15 -8.5136E-15 -3.0059E-15 -2.9525E-15 -3.0313E-16
-2.2605E-17 -1.0900E-17 -7.0739E-10 -7.1065E-10 -7.2233E-10 -6.0059E-10
-6.6035E-10 -1.6952E-17 -2.0206E-17 -3.5597E-16 -8.4907E-15 -8.0039E-15
-2.0150E-15 -5.5670E-15 -1.2990E-10 -8.3539E-13 -1.0254E-13  0.0


4B    107     6  1262    10      6     3     0     7     0     0     C
      0
5B *RESPONSE IS REACTION RATE RRC 2B FOR THX-2*
7B *EPRI SERS. OF 2300 CAP EPI/THB TO 2300 FISSION        A= -1.3765E-04*
8B   7.5582E-06  2.8679E-06 -3.9306E-05 -1.0200E-04 -7.2360E-06
 1.9337E-07  5.7267E-08  2.5207E-08  1.6109E-08  1.1371E-08  5.0302E-09
 6.0520E-09  7.0216E-09  5.7290E-09  1.9373E-10  3.9109E-15  3.7053E-10
 8.2035E-12  2.3336E-08  2.3759E-07  9.1043E-12  5.3076E-12  1.0661E-12
 1.7499E-12  1.9816E-13  6.7890E-13  1.9503E-13  2.9594E-13 -2.3906E-13
 2.1925E-12  2.2205E-13  1.1379E-13 -7.9342E-12  5.5096E-12 -3.5437E-13
-6.7936E-13 -1.6163E-12 -7.3113E-13 -7.9159E-13 -2.3308E-10 -1.7645E-15
-1.6602E-15 -6.9095E-16 -6.0337E-16 -6  .81E-16 -6.0320E-16 -6.0919E-16
-2.1574E-15 -2.2673E-15 -8.9207E-15 -3.7030E-10 -1.1031E-12 -6.5100E-13
-2.0939E-13 -1.0870E-13  1.3129E-13  1.5768E-13  8.3073E-12  1.3019E-11
-1.1530E-12 -2.0512E-12 -2.5203E-12 -2.0994E-12 -1.5062E-12 -3.0155E-13
-1.3030E-10 -6.0225E-15 -1.5027E-15 -1.0732E-15 -1.0332E-15 -1.0552E-15
-1.5103E-15 -8.2671E-15 -1.0516E-10 -8.5263E-10 -3.3095E-13 -1.7012E-12
-1.6973E-12 -8.2612E-13 -5.1723E-13 -3.7043E-13  2.1977E-11 -1.7059E-13
-2.1104E-12 -8.1090E-12 -8.2672E-12 -1.6891E-12 -1.3200E-13 -1.2772E-10
-8.1655E-15 -1.0652E-15 -1.7932E-15 -1.7065E-15 -1.7006E-15 -1.0359E-15
-7.9053E-15 -1.1577E-10 -2.2510E-10 -7.0406E-13 -2.9172E-12 -2.9267E-12
-1.1353E-12 -9.8101E-13 -8.6160E-13  8.3003E-11  8.0026E-12  2.1606E-11
-7.7615E-13 -9.3056E-12 -1.0230E-11 -7.0203E-12 -3.7002E-12 -2.7075E-13
-1.0552E-10 -1.1001E-10 -8.6307E-15 -8.0150E-15 -8.3992E-15 -3.9010E-15
-8.0151E-15 -1.0202E-10 -1.2200E-10 -2.3656E-13 -6.6011E-12 -9.1597E-12
-5.0009E-12 -7.0502E-12 -1.7916E-12  5.8016E-10  1.9096E-10  0.0


4B    107     6  1262    102     6     3     0     7     0     0     6
      0
5B *RESPONSE IS REACTION RATE RRC 2B FOR THX-2*
7B *PORSS EPRI SERS. OF 0230CAP EPI/THB TO 2300CAP        A= -2.3697E-02*
8B   8.5308E-05  8.7673E-04  8.5317E-03  1.1649E-02  1.9540E-02
 1.0702E-02  1.2915E-02  1.1533E-02  1.0000E-02  1.1100E-02  1.0252E-02
 1.6030E-02  1.7905E-02  1.9097E-02  2.1763E-02  2.3973E-02  2.7223E-02
 2.6320E-02  3.1577E-02  3.1351E-02  2.7270E-02  3.2001E-02  0.2900E-02
 7.0773E-03  2.0300E-02  1.7030E-04  2.2020E-04  8.0313E-05  2.1103E-03
 3.5112E-04  2.7064E-04  2.1710E-04  9.0230E-03  2.1993E-03  6.7060E-04
 7.2192E-04  1.5593E-03  9.7955E-04  1.0015E-03  9.0072E-04  1.0900E-04
 1.5165E-04  6.5030E-05  6.5001E-05  6.6322E-05  6.6769E-05  6.7130E-05
 2.0503E-04  2.0200E-04  5.9699E-04  9.3611E-04  3.6667E-03  2.2206E-03
 9.3694E-04  1.1039E-03  1.1376E-03  7.1209E-04  2.2007E-03  5.0250E-03
 2.7673E-03  2.6403E-03  2.0207E-03  1.0909E-03  1.3365E-03  1.1709E-03
 5.1401E-04  5.0021E-04  1.0476E-04  1.9174E-04  1.9500E-04  1.9050E-04
 2.0065E-04  0.3496E-04  0.7653E-04  1.1020E-03  1.3201E-03  3.6678E-03
 0.3530E-03  2.7112E-03  2.2266E-03  2.6609E-03  1.0004E-02  2.0552E-03
 4.0100E-03  0.0301E-03  3.5795E-03  1.0763E-03  0.3634E-04  2.0600E-04
 2.3535E-04  6.7001E-05  6.  .7E-05  7.0470E-05  7.1221E-05  7.3266E-05
 2.0663E-04  2.9023E-04  3.1.59E-04  0.7370E-04  3.0962E-03  5.1515E-03
 2.6501E-03  2.9370E-03  5.2731E-03  1.9696E-02  0.0379E-03  1.0170E-02
 1.0967E-02  1.3040E-02  9.0209E-03  0.1132E-03  1.2316E-03  1.6625E-04
 3.9004E-05  0.3304E-05  1.9541E-05  1.9760E-05  2.0053E-05  1.9956E-05
 2.1100E-05  5.2907E-05  5.6030E-05  2.3921E-04  1.0470E-03  0.5032E-03
 6.0010E-03  1.1072E-02  1.7277E-02  6.9175E-02  1.0500E-02 -0.0209E-01
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9E    107     8  1262   904     0     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 2380 CAPTURE EPI/THE TO 2380 SCATTERI A=  0.42028-03*
8E  -3.7521E-05 -9.2048E-05 -1.3872E-04 -1.1044E-03 -1.0606E-03
-1.6981E-04 -8.5471E-06  2.0359E-05  3.1049E-05  8.6083E-05  2.6059E-05
 5.0978E-07 -7.8832E-06 -2.1607E-05 -2.9538E-05 -3.6928E-05 -6.9073E-05
-3.1179E-05 -4.8160E-05 -7.2878E-05 -2.9817E-05 -5.4695E-05 -1.0284E-03
-8.5614E-05 -1.5659E-05  3.6840E-05  3.7858E-05  1.0822E-04 -2.6996E-04
 1.1022E-04  9.0205E-05  1.3006E-03 -1.2017E-03  9.0931E-04  1.1016E-03
 1.4013E-03  2.5710E-03  1.3949E-04 -8.0456E-04 -9.8059E-04 -1.6910E-04
-8.5154E-04 -6.5222E-05 -6.5723E-05 -6.6116E-05 -6.6510E-05 -6.6828E-05
-2.0052E-04 -2.0055E-04 -5.0599E-04 -8.0192E-04 -8.0562E-04  4.7362E-05
 9.6788E-06 -9.5025E-06 -2.3297E-05 -5.7108E-05  3.3903E-05  1.1279E-03
 1.0132E-03  2.6586E-03  2.2046E-03  1.3543E-03  2.6278E-03 -1.0971E-03
-5.5021E-04 -6.0900E-04 -1.0868E-04 -1.9463E-04 -1.9602E    -1.9917E-04
-1.9998E-04 -8.1663E-04 -8.1597E-04 -9.8205E-04 -9.0562E-04 -1.0367E-03
-1.0140E-04  1.5836E-05  7.0041E-06 -2.7638E-05  3.6250E-04  5.9560E-05
 1.4020E-03  2.1928E-03  1.5552E-03  2.2357E-04 -3.7440E-04 -2.2154E-04
-2.4468E-04 -6.0340E-05 -6.0832E-05 -7.0467E-05 -7.0509E-05 -7.1903E-05
-2.7032E-04 -2.7212E-04 -2.7840E-04 -5.7041E-04  4.2789E-04  0.1153E-05
 4.0344E-06 -2.2515E-05 -1.3020E-04  7.9521E-05 -5.0030E-05  3.2785E-04
 7.1703E-04  9.7677E-04  6.1100E-04  1.0363E-04 -2.2402E-04 -1.2522E-04
-8.2726E-05 -8.5917E-05 -2.0159E-05 -2.0051E-05 -2.0656E-05 -1.0645E-05
-1.9172E-05 -8.9626E-05 -8.5720E-05 -1.6967E-04  3.7450E-04 -1.5792E-04
-1.7801E-04 -2.9211E-04 -3.0120E-04 -2.7192E-04 -8.4953E-04  1.6165E-03


4B    107     8  1261   852     0     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 2380 CAP EPI/THE TO 2350 BURAR          A= -3.5539E-04*
8E  -3.0547E-08 -7.3050E-08 -1.4932E-07 -1.5309E-07 -1.3766E-07
-1.2306E-07 -9.9176E-08 -9.0413E-06 -8.2882E-08 -7.9496E-08 -7.8738E-08
-7.7706E-08 -8.0323E-08 -9.3401E-08 -1.0956E-07 -1.4010E-07 -1.6015E-07
-2.2119E-07 -2.6772E-07 -8.1729E-07 -8.2579E-07 -6.3150E-07 -6.9208E-07
-9.6030E-08 -8.7516E-09 -2.6020E-08 -1.0562E-08 -1.0380E-08 -1.7844E-08
-8.7835E-08 -1.0135E-08 -2.5537E-08 -3.0260E-08 -2.9537E-08 -3.2590E-09
-8.0611E-10 -2.1916E-09 -1.3342E-09 -3.1788E-09 -8.5920E-10 -1.1837E-11
-1.0262E-11 -8.8078E-12 -3.9611E-12 -3.0931E-12 -3.0511E-12 -3.0604E-12
-1.2013E-11 -1.2862E-11 -5.7811E-11 -7.2710E-10 -7.6735E-09 -1.1652E-09
-6.1210E-10 -1.6193E-09 -1.5263E-08 -1.4767E-08 -8.0400E-07 -7.2176E-07
-1.2276E-07 -2.1940E-08 -1.2297E-08 -6.6137E-09 -6.5391E-09 -2.3050E-09
-1.3092E-10 -7.5051E-11 -1.0356E-11 -1.0176E-11 -1.0200E-11 -1.9158E-11
-2.0595E-11 -1.2177E-10 -3.1093E-10 -1.0565E-09 -8.0032E-09 -1.5081E-08
-2.2303E-08 -3.6511E-08 -2.1901E-07 -1.7366E-07 -1.0022E-06 -8.0365E-08
-3.6300E-09 -2.0241E-09 -8.9886E-09 -7.0391E-08 -2.5003E-08 -9.9925E-10
-3.0379E-10 -6.7045E-11 -5.8600E-11 -5.3688E-11 -8.9592E-11 -8.7580E-11
-1.7907E-10 -2.2463E-10 -8.0097E-10 -1.9110E-08 -2.2971E-08 -1.5140E-09
-1.1606E-08 -1.2963E-08 -3.5150E-07 -1.0252E-06 -7.3663E-08 -1.3080E-06
-1.0265E-08 -1.6203E-08 -1.2766E-07 -3.0440E-08 -9.0770E-09 -8.5976E-10
-8.6700E-11 -3.9558E-11 -1.5078E-11 -1.5402E-11 -1.5697E-11 -1.0173E-11
-1.0833E-11 -3.0872E-11 -8.0535E-11 -1.1012E-09 -8.7556E-08 -1.6995E-07
-5.5037E-08 -6.0308E-08 -7.0879E-08 -2.2590E-06 -1.5390E-06 -3.3957E-04


4B    107     8  1261    18     0     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 2380 CAP EPI/THE TO 2350 FISSION        A=  5.4885E-01*
8E   1.7919E-07  9.7783E-08 -1.1339E-06 -8.0035E-06 -8.0020E-06
 2.0522E-06  6.6710E-06  7.1523E-06  6.6468E-06  8.1807E-06  3.3285E-06
 2.5019E-06  2.4295E-06  2.5435E-06  3.0217E-06  5.2340E-06  5.5091E-06
 1.9492E-05  1.9667E-05  5.2036E-05  1.0275E-04  1.3469E-04  5.2078E-05
 4.6394E-05  5.5995E-06  1.9536E-05  5.7203E-06  8.7490E-06 -7.1600E-06
 6.0008E-05  7.1322E-06  3.3657E-06 -6.5563E-05  2.0503E-04 -2.0196E-06
-1.3298E-06 -5.9125E-06 -3.1528E-06 -3.6861E-06 -3.4863E-07 -8.3521E-09
-7.1350E-09 -2.0145E-09 -2.7120E-09 -2.6517E-09 -2.6105E-09 -2.6001E-09
-8.8257E-05 -8.8794E-09 -3.7486E-08 -8.9722E-07 -1.5776E-05 -2.0916E-06
-5.9785E-07 -5.9513E-07  2.8231E-06  8.6000E-06  8.0631E-04  5.2949E-04
-8.3759E-05 -8.7291E-05 -3.7012E-05 -1.9538E-05 -1.3308E-05 -2.6128E-06
-1.0760E-07 -5.5709E-08 -1.3023E-08 -1.2662E-08 -1.2528E-08 -1.2975E-08
-1.3766E-08 -7.8769E-08 -1.9036E-07 -9.8271E-07 -8.0772E-06 -2.7032E-05
-8.2338E-05 -8.5334E-05 -1.3679E-04 -6.1370E-05  7.3602E-04 -8.1016E-06
-3.9285E-06 -5.8817E-06 -2.5910E-05 -1.2701E-04 -3.2096E-05 -7.0791E-07
-2.6559E-07 -8.5116E-08 -3.9151E-08 -3.5520E-08 -3.2551E-08 -3.0909E-08
-1.1483E-07 -1.4020E-07 -2.5296E-07 -1.7711E-05 -5.5190E-05 -3.6565E-05
-1.9199E-05 -1.3988E-05 -1.1868E-04  1.5330E-03  5.6416E-05  1.1113E-03
-1.1931E-04 -2.3999E-05 -3.0000E-04 -7.0033E-05 -1.1005E-05 -6.0169E-07
-2.9204E-08 -2.4228E-08 -9.5085E-09 -9.2071E-09 -9.3161E-09 -8.3579E-09
-8.7360E-09 -2.2885E-08 -2.0630E-08 -7.1365E-07 -1.2767E-04 -3.6123E-04
-1.1160E-04 -8.2726E-05 -1.0875E-05  3.4330E-03  2.7770E-03  5.4006E-01
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4B    107     4  1261   102     4     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 238U CAP EPI/THB TO 235U CAPTURE       A=  9.6092E-02*
8B   1.6663E-09  3.3835E-09 -2.9980E-08 -1.9699E-07 -3.4281E-07
 2.8253E-07  1.1225E-06  1.5204E-06  1.6500E-06  1.7663E-06  1.0961E-06
 9.0906E-07  9.5276E-07  1.0833E-06  1.5197E-06  1.0423E-06  2.3054E-06
 7.5797E-06  1.0206E-05  1.0863E-05  8.5122E-05  6.7206E-05  2.9632E-05
 3.7120E-05  3.9111E-06  1.3079E-05  3.6830E-06  5.0736E-06 -4.3254E-06
 3.7211E-05  3.5410E-06  1.6220E-06 -2.6960E-05  6.0119E-05 -8.2339E-07
-5.0615E-07 -3.0464E-06 -2.5196E-06 -3.5728E-06 -3.3301E-07 -6.7097E-09
-5.6074E-09 -2.1921E-09 -2.0952E-09 -2.0337E-05 -1.9909E-09 -1.9748E-09
-6.0597E-09 -6.0362E-09 -2.9605E-08 -4.9323E-07 -1.5500E-05 -1.2031E-06
-2.0592E-07 -3.7598E-07  5.6067E-06  6.0392E-07  1.6303E-06  2.6096E-06
-4.9240E-05 -9.2506E-06 -5.6227E-06 -2.0710E-06 -1.6003E-06 -3.7302E-07
-1.5011E-08 -8.0703E-09 -1.0657E-05 -1.7995E-09 -1.7720E-09 -1.8239E-09
-1.9237E-05 -1.0850E-08 -2.5792E-08 -1.2905E-07 -5.6735E-07 -3.9202E-06
-6.4803E-06 -8.0967E-06 -5.0361E-05 -2.5122E-05  4.5080E-06 -3.0002E-06
-3.0012E-06 -7.5953E-06 -2.5602E-05 -1.0801E-06 -4.0506E-05 -9.7635E-07
-3.6208E-07 -6.4010E-08 -5.7033E-08 -5.2460E-08 -4.0638E-08 -4.6040E-08
-1.7766E-07 -2.2110E-07 -3.7777E-07 -1.6922E-05 -3.9959E-05 -1.9052E-05
-6.0857E-06 -5.0096E-06 -6.5066E-05  1.3006E-03  2.2027E-05  3.8934E-06
-1.1009E-06 -2.7067E-05 -3.6161E-06 -7.7805E-05 -1.2020E-05 -8.0641E-07
-8.0723E-08 -3.8052E-08 -1.5335E-08 -1.4952E-08 -1.5224E-08 -1.3801E-08
-1.4509E-08 -3.0926E-08 -5.0190E-08 -1.5371E-06 -3.0729E-06 -9.0302E-06
-6.7160E-05 -3.0356E-05 -2.5943E-06  1.6033E-03  2.5110E-06  9.3709E-02

4B    107     4  1261   504     4     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 238U CAPTURE EPI/THB TO 235U SCATTERI A= -2.0040E-05*
8B  -2.2124E-07 -1.0858E-06 -2.1984E-06 -3.5364E-06 -8.3020E-06
-8.3804E-06 -5.0461E-07  2.5608E-07  8.7261E-07  8.8855E-07  2.8567E-07
 6.0476E-09 -9.2706E-08 -2.5889E-07 -3.5522E-07 -3.9101E-07 -9.3020E-07
-5.4276E-07 -9.3274E-07 -1.0699E-06 -8.1618E-07 -1.2269E-07 -5.2835E-06
-2.7706E-06 -8.8386E-07  1.8191E-06  1.8194E-06  8.6370E-06 -6.3973E-06
 2.2744E-06  1.7834E-06  2.3801E-05 -2.0215E-05  8.6266E-06  9.7002E-06
 1.0366E-05  1.2335E-05  3.5404E-07 -7.6816E-07 -1.2070E-07 -1.0874E-08
-1.0500E-08 -8.5075E-09 -8.5159E-09 -8.5635E-09 -8.6345E-09 -8.7301E-09
-1.5196E-08 -1.6536E-08 -6.9576E-08 -3.2530E-07 -1.0695E-05 -6.5935E-06
-2.5306E-06 -2.6494E-06 -1.2609E-06 -2.8922E-06  5.4580E-07  1.0189E-05
 8.0634E-06  1.1561E-05  7.2266E-06  3.1036E-06  3.1183E-07 -8.1233E-07
-3.6057E-08 -2.1005E-08 -5.1650E-09 -5.0860E-09 -5.0829E-09 -5.2706E-09
-5.6236E-09 -3.2805E-08 -8.1892E-08 -8.2007E-07 -1.0200E-06 -1.1005E-05
-1.1793E-05 -7.0933E-06 -8.4865E-06 -6.2307E-06  3.0311E-06  5.0536E-06
 1.1739E-05  1.0503E-05  7.6377E-06  8.4879E-07 -2.6137E-07 -1.5953E-08
-1.2970E-08 -3.8256E-09 -3.0667E-05 -3.6158E-09 -3.7609E-09 -8.0355E-09
-1.9056E-08 -3.1115E-08 -6.6807E-08 -2.3598E-06 -9.3514E-06 -9.1767E-06
-8.1535E-06 -8.6794E-06 -2.0359E-05  1.1890E-06 -7.8613E-07  3.6304E-06
 7.9374E-06  9.7926E-06  3.6335E-06  5.1057E-07 -1.0303E-06 -1.2007E-07
-1.7627E-08 -1.6660E-08 -7.0163E-05 -6.9479E-09 -7.3051E-09 -6.7970E-09
-7.2733E-05 -1.9535E-08 -2.4739E-08 -5.0527E-07 -1.0229E-05 -1.0065E-05
-6.7099E-06 -8.0342E-06 -8.6039E-06 -2.7810E-06 -3.8299E-06  3.7741E-05

4B    107     4  1193   102     4     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR THE-2*
7B *EPRI SENS. OF 238U CAP EPI/THB TO AL CAPTURE         A=  7.9425E-03*
8B   3.9336E-07  1.5570E-07 -2.0466E-09 -2.0865E-09  2.5208E-09
 5.1262E-08  1.7383E-07  1.7962E-07  8.2185E-07  3.8001E-07  2.3638E-07
 9.9078E-07  3.9076E-07  8.5314E-07  2.1006E-06  8.6884E-07  6.2536E-07
 5.5116E-07  8.6080E-07  6.2229E-07  9.0532E-07  1.1219E-06  1.8532E-06
 3.0222E-07  3.2235E-08  1.0354E-07  3.0304E-08  8.9527E-08  8.5420E-10
 3.3230E-07  8.1101E-08  5.5860E-08 -2.0577E-07  9.3521E-07  2.0011E-09
-8.0379E-08 -1.8429E-07 -9.2022E-08 -7.3192E-08 -5.0900E-08 -7.6994E-09
-7.6892E-09 -3.2766E-09 -3.2737E-05 -3.2705E-09 -3.2711E-09 -3.2607E-09
-9.8716E-05 -9.5125E-09 -2.7215E-08 -8.1361E-08 -1.2735E-07 -8.0607E-08
-8.8205E-05  2.7575E-09  8.5986E-08  8.8864E-08  1.3993E-06  2.8029E-06
-5.8827E-09 -1.7672E-07 -2.3000E-07 -2.5932E-07 -3.2856E-07 -2.3083E-07
-5.7158E-08 -5.5101E-08 -1.5946E-08 -1.5987E-08 -1.5897E-08 -1.5968E-08
-1.5912E-08 -6.8208E-08 -6.5340E-08 -8.8803E-08 -1.1374E-07 -2.5973E-07
-1.8702E-07 -8.5238E-08 -8.0167E-09  8.6969E-09  8.5757E-06  1.3239E-07
-6.5257E-08 -3.7778E-07 -5.8849E-07 -5.5010E-07 -2.7663E-07 -9.8967E-08
-9.8058E-08 -2.6143E-08 -2.5805E-08 -2.6111E-08 -2.5872E-08 -2.6118E-08
-9.8712E-08 -9.9103E-08 -1.0608E-07 -8.4491E-07 -5.1980E-07 -3.9200E-07
-1.2016E-07 -7.8785E-08  8.7626E-08  1.2704E-05  1.1759E-06  8.9020E-06
 7.5887E-07 -6.4535E-07 -1.2584E-06 -1.3842E-06 -1.7720E-06 -1.0981E-06
-2.0573E-07 -2.0048E-07 -8.7653E-08 -8.6647E-08 -8.8275E-08 -7.7669E-08
-7.8268E-08 -1.8075E-07 -1.8570E-07 -1.8836E-06 -2.5094E-06 -1.5332E-06
-6.8369E-07 -5.2284E-07  1.0353E-06  1.1909E-06  5.8373E-05  7.7425E-03
```

```
4B    107     0  1193   904     0     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 28 PCR TRI-2*
7B *EPDI SENS. OF 2380 CAPTURE EPI/TRR TO AL SCATTERING A= -5.2187E-04*
8B   1.3800E-06  8.3233E-06 -1.5698E-05 -1.3254E-05 -3.1498E-05
 3.3118E-06  1.8716E-05  1.2937E-05  1.5153E-05  1.7921E-05 -2.4652E-06
 3.5907E-06 -2.7055E-06 -5.5722E-06 -1.4572E-05 -6.8892E-06 -1.4846E-05
-8.0529E-06 -1.5966E-05 -2.4628E-05 -8.3768E-06 -1.3987E-06 -5.9561E-05
-1.3212E-05  8.6416E-06  1.9749E-05  5.7296E-06  8.7219E-06 -9.6619E-06
 5.8945E-05  5.9390E-06  2.3671E-06 -1.1937E-04  2.4304E-04  3.1203E-06
-1.1064E-05 -8.3325E-05 -2.8107E-05 -2.2312E-05 -1.6971E-05 -2.3990E-06
-2.4019E-06 -1.0258E-06 -1.0256E-06 -1.8257E-06 -1.8270E-06 -1.8275E-06
-3.1100E-06 -3.0075E-06 -8.6642E-06 -1.3373E-05 -8.8850E-05 -2.1861E-05
-8.8670E-06 -1.1878E-05 -1.1458E-05 -6.9417E-06  9.7954E-06  3.9759E-06
 6.6975E-05 -1.3515E-06 -3.1875E-05 -8.8181E-05 -6.1819E-05 -8.5033E-05
-1.1253E-05 -1.8905E-05 -3.1843E-06 -3.2035E-06 -3.1970E-06 -3.2233E-06
-3.2206E-06 -1.3171E-05 -1.3669E-05 -1.9211E-05 -2.5597E-05 -6.2004E-05
-5.8663E-05 -2.9261E-05 -2.3990E-05 -2.5956E-05  3.5077E-04  1.1721E-04
 7.1902E-05 -6.9845E-06 -6.3089E-05 -7.2369E-05 -3.7941E-05 -1.3918E-05
-1.3930E-05 -3.7414E-06 -3.7163E-06 -3.7610E-06 -3.7392E-06 -3.7876E-06
-1.8438E-05 -1.4706E-05 -1.5989E-05 -7.8235E-05 -8.8454E-05 -7.7228E-05
-3.1714E-05 -3.1891E-05 -5.5789E-05  1.6588E-05 -8.5506E-06  1.8952E-04
 2.8724E-04  1.8428E-04  2.0150E-05 -8.6542E-05 -9.5536E-05 -6.7178E-05
-1.3021E-05 -1.3106E-05 -5.6534E-06 -5.6156E-06 -5.7488E-06 -5.8055E-06
-5.1890E-06 -1.2258E-05 -1.2461E-05 -7.8073E-05 -1.9320E-04 -1.3229E-04
-6.9274E-05 -9.9992E-05 -1.3918E-04 -8.8887E-05 -8.6381E-05  2.1320E-04


4B    107     0  1265   102     0     5     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 28 PCR TRI-2*
7B *EPDI SENS. OF 2380 CAP EPI/TRR TO N CAPTURE          A=  1.8172E-01*
8B   1.9890E-05  8.6736E-05  2.5834E-04  8.3882E-09  2.4516E-08
 9.1729E-08  1.4065E-07  1.8713E-07  2.4908E-07  3.8162E-07  8.3970E-07
 6.7793E-07  9.3837E-07  1.3040E-06  2.0595E-06  3.0339E-06  4.3681E-06
 6.4288E-06  8.9231E-06  1.2987E-05  1.9174E-05  2.6049E-05  3.3661E-05
 8.0309E-06  6.7769E-07  2.0559E-06  7.5221E-07  1.0813E-06  7.5940E-07
 6.4445E-06  9.1726E-07  1.6066E-06 -7.2102E-07  1.9024E-05  8.0747E-07
 2.1921E-07 -8.3756E-07 -3.9839E-07 -3.3048E-07 -2.1517E-07 -2.9883E-08
-2.9764E-08 -1.2666E-08 -1.2644E-08 -1.2616E-08 -1.2618E-08 -1.2599E-08
-3.8006E-08 -3.6551E-08 -1.0471E-07 -9.6209E-07 -5.6087E-07  3.8953E-08
 1.8353E-07  5.9691E-07  1.5050E-06  1.1811E-06  2.7683E-05  8.9163E-05
 2.5355E-06  1.8193E-07 -8.5059E-07 -1.2089E-06 -1.5984E-06 -1.0020E-06
-2.0844E-07 -1.9051E-07 -5.8099E-08 -5.3970E-08 -5.3494E-08 -5.3605E-08
-5.3428E-08 -2.1727E-07 -2.2677E-07 -3.3224E-07 -4.6894E-07 -1.0678E-06
-3.1893E-07  8.5196E-07  1.1632E-06  2.2183E-06  1.8107E-04  5.2325E-06
 3.2306E-06 -2.8751E-08 -2.2960E-06 -2.4414E-06 -1.1485E-06 -3.0980E-07
-3.7992E-07 -1.0066E-07 -9.9364E-08 -1.0001E-07 -5.8949E-08 -9.9752E-08
-1.7645E-07 -3.7802E-07 -8.0798E-07 -1.8122E-06 -2.0180E-06 -3.3332E-07
 7.5912E-07  1.7273E-06  6.7988E-06  2.6752E-04  2.7450E-05  1.1071E-04
 3.1552E-05  1.1211E-05 -1.2738E-07 -3.3559E-06 -6.1385E-06 -1.7029E-06
-6.7198E-07 -6.6366E-07 -2.8204E-07 -2.7843E-07 -2.8282E-07 -2.2357E-07
-2.2857E-07 -5.2771E-07 -5.2731E-07 -2.8267E-06 -7.2810E-06  9.0074E-08
 3.4833E-06  1.4067E-05  5.3573E-05  2.5780E-03  1.2612E-03  1.7704E-01


4B    107     0  1265   504     0     5     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 28 PCR TRI-2*
7B *EPDI SENS. OF 2380 CAPTURE EPI/TRR TO N SCATTERING  A= -1.0346E 00*
8B  -5.0531E-05 -7.0126E-04 -3.5810E-03 -8.1949E-03 -1.3718E-02
-1.4985E-02 -1.0606E-02 -1.0307E-02 -1.0313E-02 -1.0927E-02 -1.4091E-02
-1.6029E-02 -1.8085E-02 -2.0239E-02 -2.2220E-02 -2.4582E-02 -2.7835E-02
-2.7361E-02 -3.2333E-02 -3.2057E-02 -3.2853E-02 -3.8592E-02 -8.6542E-02
-6.5793E-03 -2.5349E-04 -8.3679E-04 -3.2773E-04 -3.6935E-04 -1.9495E-03
-1.2112E-03 -5.0315E-04 -1.7056E-03 -1.1566E-02 -5.3097E-03 -1.9828E-03
-2.0288E-03 -5.8123E-03 -2.5669E-03 -2.1883E-03 -1.6124E-03 -2.2572E-04
-2.2553E-04 -9.6131E-05 -9.6068E-05 -9.6003E-05 -9.6032E-05 -9.5991E-05
-2.9004E-04 -2.7981E-04 -8.0190E-04 -1.2278E-03 -8.1881E-03 -2.0043E-03
-8.6011E-04 -1.1883E-03 -1.2836E-03 -7.8710E-04 -3.8810E-03 -1.2781E-02
-5.8378E-03 -6.7317E-03 -6.6901E-03 -6.8166E-03 -7.5303E-03 -5.1162E-03
-1.2708E-03 -1.2368E-03 -3.5601E-04 -3.5705E-04 -3.5516E-04 -3.5690E-04
-3.5566E-04 -1.8397E-03 -1.8789E-03 -2.0518E-03 -2.6917E-03 -6.8293E-03
-5.2534E-03 -3.0984E-03 -2.6022E-03 -2.9059E-03 -2.5721E-03 -8.3377E-03
-7.0333E-03 -9.6182E-03 -1.1236E-02 -9.3532E-03 -8.5223E-03 -1.6167E-03
-1.6020E-03 -8.2716E-04 -8.2291E-04 -8.2668E-04 -8.2275E-04 -8.2680E-04
-1.6137E-03 -1.6225E-03 -1.7028E-03 -7.8062E-03 -9.0517E-03 -7.9360E-03
-3.2957E-03 -3.3506E-03 -5.8766E-03 -2.8910E-02 -8.7907E-03 -1.7501E-02
-1.5956E-02 -1.8751E-02 -1.7385E-02 -1.8883E-02 -1.7788E-02 -1.8625E-02
-1.9820E-03 -1.9717E-03 -8.8322E-04 -8.3326E-04 -8.8865E-04 -7.2863E-04
-7.3014E-04 -1.7231E-03 -1.7315E-03 -9.3882E-03 -2.8868E-02 -1.7587E-02
-9.3882E-03 -1.3854E-02 -1.8239E-02 -8.3885E-02 -1.9756E-02  9.7046E-03
```

```
9B     107      6  1276    982      8      3      0      7      0      0      6
     0
5B *RESPONSE IS REACTION RATE RDC 28 FOR THI-2*
7B *EPRI SERS. OF 2388 CAP EPI/THI TO G CAPTURE              A=  5.5208E-05*
8B    2.4559E-06  3.8254E-06  1.4139E-08  1.3700E-12  9.7919E-12
 8.4762E-11  7.6787E-11  9.7906E-11  1.1093E-10  1.3883E-10  1.5993E-10
 2.1313E-10  2.0926E-10  8.0379E-10  5.7069E-10  8.1770E-10  1.1639E-09
 1.7175E-09  2.4132E-09  3.5165E-09  5.1936E-09  7.0019E-09  9.0888E-09
 2.1532E-09  1.0081E-10  5.5174E-10  2.0194E-10  2.7962E-10  2.8397E-10
 1.7323E-09  2.4647E-10  8.3113E-10 -1.0775E-10  5.1042E-09  2.1787E-10
 5.0906E-11 -1.1753E-10 -1.0697E-10 -8.0677E-11 -5.7760E-11 -8.0212E-12
-7.9297E-12 -3.4081E-12 -3.3937E-12 -3.3067E-12 -3.3866E-12 -3.3815E-12
-1.0201E-11 -9.0100E-12 -2.0103E-11 -8.3898E-11 -1.5106E-10  1.0049E-11
 8.5224E-11  1.6006E-10  8.0340E-10  3.0593E-10  7.0368E-09  1.3100E-08
 6.0027E-10  8.8087E-11 -2.2879E-10 -3.2539E-10 -8.3053E-10 -2.6990E-10
-5.6139E-11 -5.1308E-11 -1.0569E-11 -1.0530E-11 -1.4406E-11 -1.0035E-11
-1.4388E-11 -5.0505E-11 -6.1059E-11 -8.9849E-11 -1.2620E-10 -2.0700E-10
-8.5020E-11  1.2157E-10  3.1283E-10  5.9647E-10  2.7114E-08  1.0055E-09
 8.6093E-10 -7.7435E-12 -6.1085E-10 -6.5778E-10 -1.0025E-10 -1.0096E-10
-1.0229E-10 -2.7005E-11 -2.6751E-11 -2.6925E-11 -2.6638E-11 -2.6054E-11
-1.0130E-10 -1.0775E-10 -1.0979E-10 -8.0766E-10 -5.0270E-10 -8.9590E-11
 2.0393E-10  8.6303E-10  1.0240E-09  7.1900E-08  7.3936E-09  2.9720E-08
 8.0043E-09  3.0218E-09 -3.0307E-11 -1.0369E-09 -1.6055E-09 -9.9179E-10
-1.7987E-10 -1.7756E-10 -7.5570E-11 -7.0497E-11 -2.5665E-11 -5.9809E-11
-6.0072E-11 -1.0114E-10 -1.0101E-10 -7.5507E-10 -1.9039E-09  2.0100E-11
 9.3427E-10  3.7033E-09  1.0466E-08  6.9576E-07  3.8049E-07  8.7719E-05


4B     107      6  1276    984      8      3      0      7      0      0      6
     0
5B *RESPONSE IS REACTION RATE RDC 28 FOR THI-2*
7B *EPRI SERS. OF 2388 CAPTURE EPI/THI TO G SCATTERING       A= -1.0070E-02*
8B   -3.4666E-06   2.0750E-05 -1.1913E-06 -1.0863E-08 -9.2640E-08
-5.2666E-08 -3.5216E-08 -1.9932E-08 -1.0227E-08 -6.7849E-09 -1.5993E-08
-1.6456E-08 -1.0193E-08 -2.0479E-08 -2.1908E-08 -2.2340E-08 -3.2569E-08
-2.3024E-08 -3.6267E-08 -8.3836E-08 -2.2116E-08 -1.6756E-08 -6.5423E-08
 9.2333E-09  2.2628E-09  9.3137E-09  2.1275E-09  3.5483E-09 -1.0612E-08
 8.0838E-08  8.8832E-09  1.8721E-08 -7.0207E-08  1.3025E-07 -6.9005E-09
-1.0980E-08 -8.1325E-08 -2.0207E-08 -1.0127E-08 -1.3499E-08 -1.0992E-09
-1.0990E-09 -8.1050E-06 -8.1038E-06 -8.1023E-06 -8.1098E-06 -8.1100E-06
-2.0531E-05 -2.3702E-05 -6.8106E-05 -1.0499E-04 -1.6206E-04 -1.6861E-04
-6.9960E-05 -9.2253E-05 -8.6520E-05 -5.0180E-05  1.6460E-04  8.0020E-03
 1.0419E-08 -2.6092E-08 -8.8635E-08 -8.8620E-08 -5.5858E-08 -3.8491E-08
-9.0523E-05 -9.1518E-05 -2.6503E-05 -2.6664E-05 -2.6572E-05 -2.6754E-05
-2.6723E-05 -1.0886E-04 -1.1298E-04 -1.5954E-04 -2.1372E-04 -5.1975E-04
-8.1050E-08 -2.3675E-08 -1.9039E-08 -1.9695E-08  8.3376E-03  3.0344E-04
 8.0319E-05 -8.1553E-08 -7.2305E-08 -6.7194E-08 -3.3312E-08 -1.1981E-08
-1.1935E-08 -3.1949E-05 -3.1691E-05 -3.2029E-05 -3.1798E-05 -3.2165E-05
-1.2221E-08 -1.2388E-08 -1.3430E-08 -5.0673E-08 -7.3775E-08 -6.4112E-08
-2.6164E-08 -2.6161E-08 -8.0955E-08  2.2035E-08 -1.5900E-05  3.9031E-03
 2.6279E-03  7.8165E-08 -2.9708E-08 -6.1228E-08 -9.4018E-08 -6.1357E-08
-1.1768E-08 -1.1814E-08 -5.0864E-05 -5.0467E-05 -5.1606E-05 -8.3515E-05
-8.4021E-05 -1.0461E-04 -1.0615E-04 -5.9240E-08 -1.6920E-03 -1.2315E-03
-6.6055E-08 -9.7601E-08 -1.3332E-03 -7.8840E-08 -5.8620E-08  8.7929E-08


8B     107      6  2000    981      8      3      0      7      0      0      6
     0
5B *RESPONSE IS REACTION RATE RDC 28 FOR THI-2*
7B *EPRI  SERS. OF 2388 CAP EPI/THI TO 80**2 IN FUEL     A=  8.1958E-03*
8B    1.2068E-06  1.6645E-06 -9.1125E-06 -2.7900E-05 -2.5011E-05
 1.4992E-05  8.6662E-05  8.2822E-05  3.8907E-05  2.1075E-05  1.4354E-05
 9.0477E-06  6.2654E-06  7.1660E-06  9.7870E-06  1.0401E-05  7.3601E-06
 1.9265E-05  2.1057E-05  2.0290E-05  5.1010E-05  3.7629E-05  1.8165E-05
 8.5266E-05  1.0104E-05  3.4082E-05  8.7723E-06  1.3408E-05 -7.8635E-06
 1.5035E-05  1.3871E-06  7.0107E-07 -8.5067E-05  6.8270E-05 -1.7600E-05
-2.6406E-05 -8.0732E-05 -8.0315E-08 -6.2000E-07 -1.0430E-08 -8.1667E-10
-3.6993E-10 -1.5006E-10 -1.0733E-10 -1.0692E-10 -1.0767E-10 -1.5073E-10
-8.0075E-10 -5.6205E-10 -3.0708E-05 -3.6408E-08 -2.0938E-05 -6.3170E-05
-3.5219E-05 -3.1038E-05  1.0999E-05  1.1146E-05  5.1912E-05  8.2328E-05
-1.7010E-06 -2.7265E-06 -1.9165E-06 -1.0272E-06 -3.9535E-07 -2.1020E-08
-1.2712E-10 -3.2341E-11 -5.6564E-12 -5.1296E-12 -8.0998E-12 -5.0725E-12
-5.5625E-12 -8.1916E-11 -2.2701E-10 -8.0054E-05 -5.6609E-08 -1.7265E-04
-8.0004E-08 -8.7604E-04 -2.8236E-08 -1.0655E-05  6.3175E-05 -2.3560E-07
-2.3002E-06 -2.9177E-06 -1.5974E-06 -2.1808E-07 -2.5056E-09 -6.8107E-11
-2.7615E-11 -5.4664E-12 -5.1229E-12 -5.0621E-12 -5.0997E-12 -5.3980E-12
-2.7110E-11 -5.9905E-11 -2.2594E-10 -6.1305E-08 -1.0560E-06 -3.5153E-06
-7.0673E-05 -7.0303E-05 -5.3756E-05  2.2057E-04  1.5004E-05  2.7749E-05
-3.3035E-06 -2.6361E-05 -1.5796E-05 -5.9772E-06 -1.1691E-06 -1.0190E-06
-1.5765E-10 -1.0776E-10 -3.0855E-11 -3.6140E-11 -3.5651E-11 -3.1914E-11
-3.3508E-11 -9.2723E-11 -1.3327E-10 -9.1720E-05 -3.3101E-06 -1.3014E-05
-1.3729E-05 -2.5502E-05 -8.9398E-06  7.7270E-04  1.0376E-04  8.0325E-03
```

```
4B    107     8  2000   903     8     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR TRE-2*
7B *EPRI  SENS. OF 2388 CAP EPI/TRR TO D0**2 IN VOID    A=  5.6310E-04*
8B   3.3059E-07  1.5353E-07 -1.1926E-07 -4.9363E-07  1.9104E-08
 2.6093E-06  3.9059E-06  3.8096E-06  2.2910E-06  2.2007E-06  3.7951E-06
 1.3918E-06  2.2066E-06  4.8686E-06  5.1335E-06  7.1753E-06  7.5290E-06
 9.8307E-06  1.0093E-05  1.0165E-05  1.3877E-05  1.3817E-05  9.9245E-06
 3.9719E-06  3.2717E-07  1.0630E-06  3.0029E-07  4.9021E-07 -9.6335E-08
 3.3228E-06  3.9105E-07  4.8297E-07 -3.0599E-06  8.5500E-06 -7.0819E-08
-4.0138E-07 -1.5708E-06 -1.0117E-06 -8.2579E-07 -6.2957E-07 -8.0232E-08
-8.0116E-08 -3.7503E-08 -3.7513E-08 -3.7076E-08 -3.7079E-08 -3.7049E-08
-1.1308E-07 -1.8094E-07 -3.1135E-07 -4.7859E-07 -1.3727E-06 -4.4872E-07
-1.1489E-07 -3.6726E-08  3.2829E-07  3.8153E-07  1.1373E-05  1.7137E-05
-2.9110E-07 -1.5276E-06 -1.9506E-06 -2.1099E-06 -2.6966E-06 -1.9379E-06
-4.8946E-07 -4.7822E-07 -1.3718E-07 -1.3751E-07 -1.3670E-07 -1.3733E-07
-1.3681E-07 -5.5220E-07 -5.5910E-07 -7.5310E-07 -9.0310E-07 -2.0895E-06
-1.5151E-06 -7.3087E-07 -4.3220E-07 -1.1776E-07  3.2207E-05  6.3569E-07
-9.9496E-07 -3.1175E-06 -4.6798E-06 -4.8337E-06 -2.2624E-06 -8.1927E-07
-4.1283E-07 -2.1662E-07 -2.1948E-07 -2.1630E-07 -2.1434E-07 -2.1635E-07
-4.1730E-07 -4.1958E-07 -4.7555E-07 -3.5966E-06 -4.0022E-06 -3.0861E-06
-1.0061E-06 -7.2205E-07 -1.0504E-07  6.0752E-05  4.8965E-06  1.9330E-05
 2.0609E-06 -3.6291E-06 -5.9202E-06 -5.9680E-06 -4.1702E-06 -5.1417E-06
-9.6357E-07 -9.5936E-07 -4.1036E-07 -4.0554E-07 -4.1385E-07 -3.6206E-07
-3.6555E-07 -4.6235E-07 -4.6603E-07 -4.6569E-06 -1.1283E-05 -4.8366E-06
-2.9588E-06 -2.0372E-06  2.0704E-06  2.9070E-05  4.6456E-06  3.6302E-06

4B    107     8  2000   902     8     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE ARC 28 FOR TRE-2*
7B *EPRI  SENS. OF 2388 CAP EPI/TRR TO D0**2 IN CLAD    A=  1.9620E-03*
8B   6.8223E-07  1.1270E-06 -1.2726E-07 -1.4038E-06  1.4060E-06
 1.2506E-05  1.7029E-05  7.3505E-06  2.5041E-06  6.8802E-06  6.5095E-06
 4.3602E-06  4.5301E-06  1.3933E-05  1.5009E-05  1.4666E-05  1.4910E-05
 1.4736E-05  2.0343E-05  3.1291E-05  5.0342E-05  5.0617E-05  1.5340E-05
 1.2186E-05  1.0011E-06  3.1944E-06  1.0535E-06  1.5113E-06  2.5927E-08
 1.6012E-05  2.8002E-06  2.7033E-06 -1.3696E-05  4.4285E-05  1.4609E-07
-2.8236E-06 -1.0853E-05 -6.8206E-06 -5.0766E-06 -3.0098E-06 -5.3307E-07
-5.3229E-07 -2.2608E-07 -2.2655E-07 -2.2635E-07 -2.2638E-07 -2.2622E-07
-6.8304E-07 -6.5616E-07 -1.0819E-06 -2.0577E-06 -8.7010E-06 -2.7379E-06
-6.0539E-07  1.8075E-07  3.1317E-06  2.7668E-06  2.9010E-05  5.0567E-05
-1.1059E-07 -3.6896E-06 -4.9894E-06 -5.3521E-06 -6.7555E-06 -4.7219E-06
-1.1691E-06 -1.1777E-06 -3.2571E-07 -3.2647E-07 -3.2057E-07 -3.2594E-07
-3.2076E-07 -1.3111E-06 -1.3313E-06 -1.8090E-06 -2.3117E-06 -5.2627E-06
-3.7719E-06 -1.7111E-06 -8.0230E-07  1.7254E-07  3.3987E-05  8.0962E-07
-5.6137E-07 -2.4605E-06 -3.0131E-06 -3.5467E-06 -1.7651E-06 -6.3520E-07
-6.2808E-07 -1.6758E-07 -1.6585E-07 -1.6731E-07 -1.6578E-07 -1.6720E-07
-6.3194E-07 -6.3395E-07 -6.7002E-07 -2.0377E-06 -3.3001E-06 -2.8701E-06
-7.5431E-07 -4.4718E-07  2.9355E-07  8.0959E-05  6.3646E-06  8.2053E-05
 1.4363E-05 -1.1886E-05 -2.2791E-05 -2.3303E-05 -3.1870E-05 -1.9361E-05
-3.6163E-06 -3.5570E-06 -1.5301E-06 -1.5190E-06 -1.5077E-06 -1.3612E-06
-1.3711E-06 -3.2303E-06 -3.2076E-06 -1.7098E-05 -4.3370E-05 -2.6196E-05
-1.0887E-05 -8.7223E-06  1.6771E-05  1.0039E-04  1.1327E-04  1.3060E-03

4B    107     8  2000   900     8     3     0     7     0     0     6
    0
5B *RESPONSE IS REACTION RATE RRC 20 FOR TRE-2*
7B *EPRI  SENS. OF 2388 CAP EPI/TRR TO D0**2 IN MODERAT A=  2.9020E-02*
8B   7.8890E-06  1.0902E-05  9.3352E-06  1.3639E-05  6.9192E-05
 2.1601E-04  2.4697E-04  2.3733E-04  2.6195E-04  2.2057E-04  1.7011E-04
 1.9819E-04  1.6833E-04  1.7530E-04  1.5932E-04  2.0917E-04  1.9383E-04
 2.0807E-04  2.8710E-04  3.9720E-04  3.8033E-04  8.6370E-04  8.5123E-04
 6.5607E-05  1.0927E-05  3.1762E-05  1.1547E-05  1.3205E-05  2.5197E-05
 9.1676E-05  1.2806E-05  8.0668E-05 -3.9340E-06  1.3950E-04  5.6981E-06
 1.5379E-06 -6.0256E-06 -1.4647E-05 -1.1027E-05 -7.0056E-06 -1.0900E-06
-1.0899E-06 -8.6375E-07 -8.6208E-07 -8.6102E-07 -8.6106E-07 -8.6113E-07
-1.3909E-06 -1.3373E-06 -3.0297E-06 -5.9237E-06 -2.0592E-05  1.0177E-06
 6.6679E-06  2.3103E-05  5.7984E-05  8.3739E-05  3.5505E-04  2.8013E-04
 1.1678E-05  1.1067E-06 -5.1039E-06 -3.6401E-05 -8.7957E-05 -2.9949E-05
-7.3172E-06 -6.6013E-06 -1.0961E-06 -1.0910E-06 -1.0730E-06 -1.0771E-06
-1.0704E-06 -7.6006E-06 -7.9238E-06 -1.1598E-05 -1.6337E-05 -3.7006E-05
-1.1028E-05  1.0072E-05  7.3770E-06  2.6600E-05  5.9105E-04  3.0003E-05
 3.2898E-05 -2.8405E-07 -1.2551E-05 -1.3260E-05 -6.1960E-06 -1.5639E-05
-1.5228E-05 -8.0301E-06 -3.9795E-06 -8.0005E-06 -3.9609E-06 -3.9921E-06
-1.5057E-05 -1.5105E-05 -1.6205E-05 -7.2165E-05 -8.0081E-05 -1.8218E-06
 8.1200E-06  1.1107E-05  8.3081E-05  6.8470E-04  1.0952E-04  8.1170E-04
 1.5066E-04  3.3629E-05 -8.0513E-07 -1.2122E-05 -3.3729E-05 -2.0208E-05
-3.6550E-06 -3.6053E-06 -1.5337E-06 -1.5113E-06 -1.5304E-06 -3.8093E-05
-3.8231E-05 -8.0301E-05 -8.0238E-05 -8.2073E-04 -2.7056E-05  1.9651E-07
 1.1039E-05  1.8837E-05  1.6304E-04  8.1970E-03  1.2363E-03  1.6564E-02
```

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4E    107     0  1262   852     0     3     0     0     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO 25 FOR TRI-2     *
7E *EPRI SENS. OF 235U FIS EPI/THR TO 238U RESAB          A= -1.2261E-05*
8E  -1.2554E-06 -2.6259E-06 -4.6573E-06 -3.4813E-06 -2.2938E-07
-1.0744E-08 -7.7501E-10 -2.9239E-10 -1.8548E-10 -1.3618E-10 -1.0313E-10
-1.9219E-10 -2.1607E-10 -1.9681E-10 -5.7902E-12 -9.7822E-17 -1.8704E-15
-8.6759E-10 -2.9575E-10 -1.7476E-05 -3.5427E-10 -2.3561E-10 -2.3291E-10
-3.2939E-15 -2.8732E-16 -8.5352E-16 -3.3621E-16 -4.5290E-16 -5.4510E-16
-2.6295E-15 -8.0938E-16 -8.0857E-16 -1.2082E-15 -7.4932E-15 -5.3069E-16
-3.0700E-16 -5.6892E-16 -2.9850E-16 -1.6976E-16 -3.0260E-17 -2.4565E-10
-2.3056E-10 -9.0555E-19 -9.0020E-15 -9.8369E-19 -9.9034E-15 -1.0053E-10
-1.1727E-10 -3.3707E-10 -1.3409E-17 -5.3136E-17 -5.5577E-16 -3.0335E-16
-2.0708E-14 -3.8053E-16 -6.6534E-16 -8.7336E-16 -9.2224E-15 -1.6521E-10
-1.5983E-15 -1.0763E-15 -7.9355E-16 -6.0492E-16 -7.5751E-16 -2.9894E-16
-1.6523E-17 -9.0308E-10 -2.1369E-16 -2.0817E-10 -2.0564E-10 -2.1119E-10
-2.2266E-16 -1.2556E-17 -2.9727E-17 -1.2913E-16 -3.6020E-16 -1.0132E-15
-8.6095E-16 -6.3086E-16 -7.9350E-16 -9.9762E-16 -2.7054E-10 -1.0000E-15
-1.0006E-15 -1.5540E-15 -1.0261E-15 -1.0160E-15 -1.0600E-16 -1.6702E-17
-1.3610E-17 -2.7270E-10 -2.6409E-10 -2.6573E-10 -2.6697E-10 -2.7702E-10
-1.2210E-17 -1.0255E-17 -3.5007E-17 -7.0472E-16 -1.1755E-15 -1.1585E-15
-6.5087E-16 -8.5940E-16 -2.4106E-15 -5.0873E-10 -5.0917E-15 -2.3749E-10
-8.6666E-15 -5.9855E-15 -8.1007E-15 -2.9602E-15 -2.9315E-15 -3.0613E-16
-2.2917E-17 -1.9106E-17 -7.5501E-16 -7.2606E-10 -7.3027E-10 -6.5172E-10
-6.7169E-16 -1.7135E-17 -2.0500E-17 -3.5910E-16 -8.0055E-15 -8.1595E-15
-2.5401E-15 -8.8715E-15 -1.0951E-10 -3.5524E-13 -1.1792E-13  0.0


4E    107     0  1262    10     0     3     0     0     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO 25 FOR TRI-2     *
7E *EPRI SENS. OF 235U FIS EPI/THR TO 238U FISSION        A= -7.6650E-06*
8E  -1.7759E-04 -2.3992E-04 -3.0859E-04 -5.0301E-05  9.2220E-06
 9.2100E-07  8.8938E-08  3.6238E-08  2.3396E-08  1.7400E-08  1.4831E-08
 2.5066E-08  2.9357E-08  2.5062E-08  7.0188E-10  1.1288E-10  1.1675E-13
 7.3560E-12  2.3827E-08 -8.4769E-08  7.3022E-13 -2.6680E-12 -1.3973E-12
 6.5296E-10 -1.0805E-10 -8.2520E-10 -2.0000E-10 -3.2025E-10 -8.2797E-10
-2.0576E-13 -8.9103E-10 -8.5025E-10  7.5310E-16 -1.0005E-12  2.0861E-13
 1.5985E-13  1.2805E-13  1.2579E-10  2.6660E-15  8.4962E-16  3.6339E-17
 1.4787E-17  1.4623E-17  1.0561E-17  1.0635E-17  1.0731E-17  1.0957E-17
 8.7310E-17  5.0636E-17  2.0327E-16  8.2936E-16  2.5166E-10  1.0060E-13
 7.9982E-10  1.5616E-13  6.0804E-10 -5.1959E-10 -5.7217E-12 -7.3036E-12
-1.0733E-12  1.0669E-13  6.2516E-10  2.9011E-10  7.1250E-15  1.5723E-15
 1.8101E-16  8.5705E-17  2.0830E-17  2.0801E-17  2.0277E-17  2.0883E-17
 2.2021E-17  1.2350E-16  2.8307E-16  1.0029E-15  1.5070E-15 -3.6051E-15
-3.3241E-10 -2.2085E-13 -2.2103E-12 -2.9256E-12 -6.5250E-12  2.7128E-13
 1.2265E-12  5.5325E-13  8.0836E-10 -7.1795E-10 -2.0119E-15  3.5512E-17
 3.8050E-17  9.8070E-18  9.8107E-18  1.0080E-17  1.0291E-17  1.0830E-17
 8.8530E-17  7.3732E-17  1.3855E-16 -8.2607E-15 -2.0509E-10  1.6129E-13
 9.9937E-10  1.7206E-13 -6.9812E-12 -6.2120E-13  2.7532E-12 -3.0700E-11
 9.8220E-12  3.8850E-12 -9.0103E-13  5.8801E-10  1.0812E-10 -9.6320E-17
-9.2803E-19  1.4201E-10  1.0209E-16  1.2062E-10  1.5080E-10  1.9265E-10
 2.8926E-16  7.8202E-10  1.1304E-17  1.6508E-17 -1.4579E-13 -1.2717E-12
-1.5898E-13  1.4916E-12  8.7520E-12  3.2997E-10 -2.2190E-13  0.0


4E    107     0  1262   102     0     3     0     0     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO 25 FOR TRI-2     *
7E *EPRI SENS. OF 235U FIS EPI/THR TO 238U CAPTURE        A=  2.0110E-01*
8E  -8.1410E-07 -8.4967E-06 -1.5601E-05 -7.3339E-06  3.6308E-05
 7.4002E-05  7.0528E-05  7.5934E-05  8.0174E-05  8.9212E-05  1.2271E-04
 1.4055E-04  1.7106E-04  1.8769E-04  2.0155E-04  2.0172E-04  2.1037E-04
 1.6620E-04  1.7074E-04 -5.6563E-05  8.2703E-05 -2.6982E-04 -2.1696E-04
 7.7016E-06 -8.9702E-07 -5.9582E-07 -9.6252E-07 -3.9536E-07 -1.8419E-05
-2.5920E-06 -2.3132E-06 -8.6280E-07  2.8334E-06 -3.7176E-05  2.7183E-05
 3.2642E-05  6.3026E-05  3.3790E-05  2.8558E-05  3.9817E-05  6.2543E-06
 6.3723E-06  2.7512E-06  2.7703E-06  2.7809E-06  2.8064E-06  2.8207E-06
 8.6376E-06  8.0771E-06  2.8057E-05  3.6774E-05  8.2755E-05  9.7052E-05
 8.0717E-05  8.7161E-05  8.8078E-06 -6.3683E-06 -5.8865E-05 -1.8234E-04
-2.5366E-04  3.8803E-05  8.8367E-05  8.0978E-05  2.6533E-05  3.1665E-05
 2.1108E-05  2.5165E-05  7.9525E-06  8.2811E-06  8.3520E-06  8.4531E-06
 8.4919E-06  3.4875E-05  3.4085E-05  3.6572E-05  1.8850E-05 -8.9136E-06
-8.8495E-05 -1.6396E-04 -1.0009E-03 -7.8989E-04 -3.0072E-04  3.4835E-05
 3.0865E-04  3.6931E-04  6.1892E-05 -3.9307E-04 -1.0722E-04  9.6703E-06
 1.3781E-05  8.0832E-06  8.1173E-06  8.2501E-06  8.2839E-06  8.3078E-06
 1.6938E-05  1.7002E-05  1.6917E-05 -8.3085E-05 -6.3934E-05  1.7360E-04
 5.7237E-05  7.0663E-05 -1.5823E-03 -1.8064E-05  1.4882E-04 -1.2326E-03
 1.0329E-01  1.0617E-03 -6.0563E-04  9.6408E-05  6.8978E-05  1.3586E-05
 3.5750E-06  3.9953E-06  1.8040E-06  1.8263E-06  1.9370E-06  1.8229E-06
 1.9048E-06  8.8706E-06  5.1817E-06  1.7222E-05 -5.3056E-04 -1.3273E-03
-8.6133E-05  8.7725E-04  1.2476E-03  8.2645E-03 -9.0850E-07  1.9793E-01
```

```
4E    107     4  1262   904     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE DELTA 25 FOR THX-2     *
7D *EPSI SENS. OF 2350 FIS EPI/THB TO 2388 SCATTERING    A= -1.3395E-02*
8D  -6.0214E-04 -1.5300E-03 -2.1280E-03 -1.9209E-03 -9.0401E-04
-1.1815E-04 -2.3920E-05 -5.2346E-06 -8.2998E-06 -6.0056E-06  1.1384E-06
-8.7804E-06 -2.0355E-06 -8.9766E-06 -2.6496E-06 -1.2290E-05 -7.0489E-05
-1.3808E-05 -1.1047E-06 -5.0405E-05  3.8732E-06 -8.1539E-05 -6.0856E-04
 1.7610E-05  1.4086E-06  2.7538E-06  1.2552E-06  2.3923E-06  1.6858E-06
-8.8808E-06 -1.5967E-05 -3.0986E-05  3.3251E-05 -8.3719E-04  2.8758E-05
 8.5595E-05  1.2636E-04  5.0973E-06 -5.1980E-05 -8.2892E-05 -6.3495E-06
-6.4449E-06 -2.7763E-06 -2.7921E-06 -2.8076E-06 -2.8219E-06 -2.8332E-06
-8.6576E-06 -8.4683E-06 -2.4667E-05 -3.8282E-05 -5.6748E-05 -1.8311E-06
-1.7581E-06  5.5681E-06  2.8232E-05  5.2397E-05 -8.8436E-05  3.5720E-04
-1.1110E-03 -5.6995E-05 -3.1052E-06  3.2393E-05 -9.6399E-07 -8.7884E-05
-2.8900E-05 -2.7705E-05 -8.3853E-06 -8.5946E-06 -8.6248E-06 -8.6458E-06
-8.6012E-06 -3.4062E-05 -3.1718E-05 -3.8339E-05 -2.9378E-05  3.8129E-06
 8.6065E-05 -3.9671E-05  1.5852E-05 -7.6787E-05 -2.6164E-04 -3.3634E-04
 1.2053E-04  2.7061E-04  2.4523E-04 -2.0393E-04 -7.1256E-05 -1.5837E-05
-1.6207E-05 -8.8396E-06 -8.8293E-06 -8.8935E-06 -8.8603E-06 -8.5027E-06
-1.6857E-05 -1.6085E-05 -1.5259E-05 -3.8299E-05  3.5175E-05  1.5183E-06
-3.8176E-07  7.4401E-05 -3.2100E-04 -2.4888E-04  6.6829E-04 -1.2878E-03
 1.1655E-04  8.6982E-04 -3.6548E-04 -6.9183E-05 -3.8704E-05 -1.2131E-05
-3.9826E-06 -8.2606E-06 -1.6678E-06 -1.8562E-06 -1.9285E-06 -1.7538E-06
-1.8186E-06 -8.3806E-06 -8.3844E-06 -1.5358E-05  8.2658E-05 -8.6526E-05
-5.8952E-05 -7.3183E-05 -1.2321E-05  7.8807E-05 -3.9688E-03  1.6122E-03


4E    107     4  1261   852     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE DELTA 25 FOR THX-2     *
7D *EPSI SENS. OF 2350 FIS EPI/THB TO 2350 NUBAR         A=  3.6104E-05*
8D   8.0631E-08  1.0651E-07  2.0959E-07  2.3674E-07  2.1842E-07
 1.7715E-07  1.3053E-07  9.6838E-08  7.2762E-08  5.9374E-08  5.0271E-08
 8.5982E-08  8.5132E-08  5.0134E-08  5.7322E-08  7.1566E-08  8.3802E-08
 1.0595E-07  1.3552E-07  2.0033E-07  2.0601E-07  2.9700E-07  1.9274E-07
 1.1808E-07  8.9833E-09  1.3534E-08  8.8912E-09  6.9011E-09  5.2585E-09
 8.4431E-08  6.8897E-09  1.2765E-08 -8.1828E-05  1.3971E-07  1.0989E-09
 1.6429E-10 -2.0107E-10 -7.0508E-10 -2.5977E-09 -8.0896E-10 -1.0641E-11
-9.2376E-12 -3.6821E-12 -3.5704E-12 -3.5107E-12 -3.8742E-12 -3.8845E-12
-1.0849E-11 -1.1624E-11 -5.1895E-11 -6.5090E-10 -8.2418E-09  1.0537E-11
 7.5498E-11  2.9594E-10  8.3675E-09  5.0167E-09  2.3336E-07  1.3675E-07
 2.8091E-08  1.7566E-10 -2.9780E-09 -3.2059E-09 -8.6996E-09 -1.9869E-09
-1.1801E-10 -6.8272E-11 -1.6763E-11 -1.6626E-11 -1.6748E-11 -1.7557E-11
-1.8892E-11 -1.1192E-10 -2.6674E-10 -1.3297E-09 -3.9045E-09 -1.0972E-08
-8.3713E-09 -8.0033E-09 -5.2633E-08  2.3731E-08  6.8599E-07  1.5861E-08
 7.0740E-10 -1.7845E-10 -8.1096E-09 -6.3078E-08 -3.2691E-08 -9.2959E-10
-3.5940E-10 -6.2916E-11 -5.5097E-11 -5.0837E-11 -8.6618E-11 -8.8786E-11
-1.6892E-10 -2.1175E-10 -3.8563E-10 -1.7248E-08 -1.8323E-08 -3.9164E-09
-5.9331E-10  6.6846E-10  1.0218E-08  6.5278E-07  3.2528E-08  8.9209E-07
 8.7692E-09  9.1721E-10 -8.8815E-08 -1.9612E-08 -8.1917E-09 -8.1022E-10
-8.8867E-11 -3.7727E-11 -1.5160E-11 -1.8753E-11 -1.5006E-11 -1.3553E-11
-1.8186E-11 -3.7165E-11 -8.6392E-11 -1.0841E-09 -7.3182E-08 -9.2076E-08
-1.8051E-08 -1.3106E-05  1.6967E-08  1.0709E-06  5.7556E-07  2.9814E-05


4E    107     4  1261    18     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE DELTA 25 FOR THX-2     *
7D *EPSI SENS. OF 2350 FIS EPI/THB TO 2350 FIS           A=  5.3755E-01*
8D   2.2003E-03  6.3983E-03  1.3952E-02  1.5903E-02  1.4987E-02
 1.2936E-02  1.0028E-02  8.2322E-03  6.8997E-03  6.1809E-03  5.5779E-03
 5.5312E-03  5.6186E-03  6.0267E-03  7.0706E-03  9.0858E-03  1.1287E-02
 1.4655E-02  1.8056E-02  2.7627E-02  2.8279E-02  8.1883E-02  3.9664E-02
 9.5545E-03  6.1207E-04  1.7868E-03  6.9103E-04  9.5156E-04  1.0165E-03
 1.9085E-03  9.3905E-04  1.7138E-03  1.1790E-03  1.9401E-02  1.9674E-04
 8.3884E-05  9.0327E-05  2.9128E-05  2.9045E-05  2.7689E-06  6.7191E-08
 5.7719E-08  2.2806E-08  2.2068E-08  2.1621E-08  2.1327E-08  2.1295E-08
 6.6003E-08  7.0208E-08  3.1278E-07  8.2085E-06  1.5918E-04  5.3336E-05
 3.1146E-05  8.6651E-05  8.8153E-04  8.8505E-04  3.1858E-02  8.7077E-02
 6.8870E-03  9.9869E-04  8.2398E-04  1.5701E-04  8.7728E-05  1.6574E-05
 7.2495E-07  3.8927E-07  9.2668E-08  9.0414E-08  9.0181E-08  9.3858E-08
 1.0010E-07  5.7930E-07  1.4410E-06  7.1801E-06  3.0265E-05  2.3029E-04
 6.3874E-04  1.2805E-03  6.9987E-03  8.3914E-03  6.4617E-02  2.8677E-03
 1.9740E-04  8.4019E-05  2.1357E-04  7.8759E-04  1.8005E-04  4.2824E-06
 1.5884E-06  2.6825E-07  2.3002E-07  2.0928E-07  1.9226E-07  1.8388E-07
 6.8314E-07  8.4183E-07  1.5253E-06  1.0261E-04  8.0337E-04  5.8197E-04
 8.9844E-04  6.1600E-04  1.5398E-02  9.2983E-02  8.7857E-03  7.8640E-02
 8.6825E-04  7.8047E-04  3.7232E-03  5.0803E-04  6.6504E-05  3.2073E-06
 1.5622E-07  1.2985E-07  5.1[illegible]E-06  8.9672E-08  5.0091E-08  4.5025E-08
 8.7122E-08  1.2363E-07  1.5896E-07  3.8386E-06  7.1951E-04  3.5889E-03
 1.8571E-03  2.6772E-03  3.9954E-03  1.5097E-01  9.8783E-02 -8.5957E-01
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4E    107     4  1261   103     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO FOR TRI-2    *
7E *EPRI SEBD. OF 235U FIS EPI/THR TO 235U CAPTURE       A=  9.2015E-02*
8E  -3.1633E-06 -1.2285E-07 -2.7756E-07 -9.5096E-08  4.6810E-07
 1.2634E-06  1.7263E-06  2.1661E-06  2.3855E-06  2.6849E-06  2.9395E-06
 3.3820E-06  4.0273E-06  4.7270E-06  5.6565E-06  5.1900E-06  6.3330E-06
 6.7884E-06  9.5208E-06 -3.3851E-06  3.7038E-06 -3.2831E-05 -2.1497E-05
 1.4512E-06 -2.6721E-07 -8.6145E-07 -3.8407E-07 -5.0285E-07 -7.6656E-07
-8.7982E-06 -7.7063E-07 -6.2407E-07  1.7380E-08 -2.1864E-05  5.7997E-07
 1.1947E-07  2.5675E-07  6.5883E-08  5.8303E-08  6.8410E-09  1.0949E-10
 1.2689E-10  4.9592E-11  8.7710E-11  8.6655E-11  4.5876E-11  8.5885E-11
 1.8228E-10  1.5356E-10  7.2225E-10  1.1703E-08  3.3734E-07  2.8160E-07
 9.4274E-08  3.9685E-07  2.6279E-06 -2.2251E-07 -1.1223E-04 -1.0880E-04
-6.2964E-05  8.8705E-07  1.4084E-07  3.5841E-08  8.3745E-09  2.8454E-09
 1.8038E-10  1.1226E-10  2.7820E-11  2.7549E-11  2.7651E-11  2.8862E-11
 3.0850E-11  1.7894E-10  8.3695E-10  1.8429E-09  3.3032E-09 -5.8900E-09
-1.2369E-07 -2.1604E-06 -2.1589E-04 -1.9684E-06 -1.3427E-04  5.0879E-06
 2.2148E-06  1.0256E-06  2.5845E-07 -6.2227E-06 -6.8605E-07  8.0829E-09
 2.2100E-05  8.3490E-10  3.9699E-10  3.7407E-10  3.5456E-10  3.4770E-10
 1.3604E-05  1.7595E-05  2.9387E-09 -8.8738E-08 -3.2885E-07  1.0580E-06
 5.0643E-07  9.5460E-07 -8.9684E-04 -1.2319E-05  1.2986E-05 -6.9602E-04
 1.4699E-05  1.1395E-05 -3.1720E-05  6.8800E-07  8.5573E-08  8.5100E-10
 6.7683E-11  6.5061E-11  2.8456E-11  2.8729E-11  3.0820E-11  2.9922E-11
 3.3518E-11  9.5003E-11  1.3025E-10  2.4444E-09 -8.2474E-06 -1.3068E-04
-1.9434E-04  6.8856E-06  1.2782E-05  9.1216E-04 -1.3387E-07  9.3711E-02

4E    107     4  1261   904     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO FOR TRI-2    *
7E *EPRI SEBD. OF 235U FIS EPI/THR TO 235U SCATTERING    A= -1.2129E-04*
8E  -3.6851E-06 -1.4278E-05 -1.6660E-05 -1.0312E-05 -6.9709E-06
-2.9997E-06 -8.9108E-07 -2.5168E-07 -9.6596E-08 -3.2667E-08  2.9699E-08
-6.0179E-08 -2.0602E-08 -5.8767E-08 -3.5179E-08 -1.3072E-07 -8.2624E-08
-2.7399E-07  3.3671E-07 -9.1136E-07  2.2023E-07 -1.4579E-06 -4.0128E-06
 8.3767E-07  4.5804E-08  7.5959E-08  3.3112E-08  6.0309E-08  4.0877E-08
-9.4385E-08 -3.0164E-07 -5.4997E-07  6.1496E-07 -8.3201E-06  2.3736E-07
 5.9876E-07  6.0703E-07  1.2629E-08 -4.8931E-08 -5.2935E-09 -4.6382E-10
-8.5073E-10 -1.9190E-10 -1.9204E-10 -1.9380E-10 -1.9663E-10 -2.0071E-10
-6.4296E-10 -6.5806E-10 -2.9234E-09 -1.4083E-08 -6.2855E-07  2.6383E-07
 4.6720E-07  1.5203E-06  1.5600E-06  1.9176E-06 -1.6323E-06  2.8817E-06
-5.6416E-06 -2.5046E-07 -1.2248E-08  7.2925E-08 -4.2242E-09 -1.7985E-08
-1.6302E-09 -9.8020E-10 -2.2866E-10 -2.2374E-10 -2.2170E-10 -2.2783E-10
-2.0049E-10 -1.3026E-09 -3.0788E-09 -1.6181E-08 -5.3711E-08  1.6193E-07
 7.7845E-06  1.7020E-05 -1.8478E-05 -1.7321E-05 -3.6694E-06 -3.8892E-06
 9.8103E-07  1.7973E-06  1.2178E-06 -7.8116E-07 -5.2666E-08 -1.1111E-09
-8.6044E-10 -2.2185E-10 -2.2241E-10 -2.2978E-10 -2.3671E-10 -2.5156E-10
-1.1583E-09 -1.8194E-09 -3.7201E-09 -1.5162E-07 -7.9123E-07 -1.4188E-07
 2.3336E-06  1.5308E-05 -6.5620E-05 -8.3148E-06  1.0518E-05 -1.5917E-05
 1.2895E-06  8.7305E-06 -2.8764E-06 -8.0313E-07 -1.3355E-07 -1.2630E-08
-1.6430E-09 -1.5461E-09 -6.0993E-10 -6.8329E-10 -6.8119E-10 -6.4056E-10
-6.8944E-10 -1.8601E-09 -2.3876E-09 -8.2542E-08 -6.5304E-07 -2.9896E-06
-1.9202E-06 -2.0165E-06 -2.9281E-07  9.2133E-07 -1.7864E-05  3.7640E-05

4E    107     4  1193   103     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE RATIO FOR TRI-2    *
7E *EPRI SEBD. OF 235U FIS EPI/THR TO AL CAPTURE         A=  7.8712E-03*
8E  -6.0424E-06 -2.2689E-06 -2.5737E-07  5.2771E-09  3.0328E-08
 1.0139E-07  2.2688E-07  2.2005E-07  5.0407E-07  8.4919E-07  3.1827E-07
 1.3357E-06  8.9914E-07  5.3628E-07  2.3337E-06  8.1625E-07  5.5965E-07
 3.7614E-07  3.1182E-07  2.6852E-07  8.2381E-07  3.6088E-07  5.8086E-07
 2.0130E-07  1.0211E-08  2.8808E-08  1.0538E-08  1.4168E-08  1.0398E-08
 7.8918E-08  1.2122E-08  2.9002E-08  3.6054E-08  1.6083E-07  4.6047E-08
 3.1055E-08  3.2696E-08  1.0737E-08  6.3310E-05  8.8325E-08  6.0283E-10
 6.8373E-10  2.9106E-10  2.9194E-10  2.9220E-10  2.9229E-10  2.9208E-10
 8.8548E-10  8.5737E-10  2.4770E-05  3.8395E-09  1.5946E-08  2.2736E-08
 1.5593E-08  2.9723E-08  3.0086E-08  1.2684E-08 -1.1834E-07  2.2562E-07
-6.3919E-08  6.7601E-08  8.3362E-08  3.0210E-08  2.6707E-08  1.8778E-08
 5.6551E-09  5.7621E-09  1.6893E-09  1.6996E-09  1.6937E-09  1.7066E-09
 1.6985E-09  6.9068E-09  7.2087E-09  1.0495E-08  1.3809E-08  3.2813E-08
 2.5814E-08 -8.3210E-09 -2.9248E-07 -3.1990E-07  1.1029E-06  1.6536E-07
 2.6379E-07  1.5978E-07  7.0578E-08  1.3387E-08  1.2782E-08  6.9861E-09
 7.1132E-09  1.9156E-09  1.9030E-09  1.9252E-09  1.9113E-09  1.9332E-09
 7.3366E-05  7.4867E-09  8.7813E-09  3.1783E-08  3.6558E-08  7.2281E-08
 8.9058E-08  6.7648E-08 -7.2716E-07  8.6587E-06  8.6305E-07 -2.0759E-06
 2.8107E-06  1.0088E-06  1.3656E-07  1.7096E-07  1.6887E-07  8.7525E-08
 1.6500E-08  1.6885E-08  7.0676E-09  6.9935E-09  7.1355E-09  5.6479E-09
 5.7061E-09  1.3516E-08  1.3650E-08  7.9383E-08  1.5660E-07 -2.8502E-08
 1.3888E-07  5.8102E-07  2.1366E-06  8.8539E-05  2.9987E-05  7.7428E-03
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8E    107     4  1153   904     4     3     0     8     0     0     7
    0
5E *RESPONSE IS REACTION RATE DELTA 25 FOR TRI-2     *
7B *E  OI SENS. OF 2350 FIS EPI/TBB TO NL  SCATTERING     A= -8.9665E-00*
8B  -8.853EE-05 -9.7691E-05 -1.4866E-04 -7.8063E-05 -3.1056E-05
 7.5454E-06  8.1246E-06  5.8021E-06  6.4513E-06  6.2092E-06 -5.4002E-06
 8.7873E-07 -8.8066E-07 -1.5900E-06 -2.1028E-06 -2.0567E-06 -1.5600E-06
-8.5101E-06  8.026EE-06 -1.5490E-05  1.0640E-06 -2.2200E-05 -3.3910E-05
 1.8853E-05 -1.1100E-06 -3.7530E-07 -1.7618E-07 -2.1506E-07 -5.2104E-07
-7.9160E-07  5.E47EE-08  2.0469E-06  8.4012E-06 -8.7329E-05  8.5067E-06
 6.2837E-06  6.3704E-06  1.9615E-06  1.0500E-06  8.5095E-07  1.2697E-07
 1.2611E-07  5.4895E-08  5.4209E-08  5.8510E-08  5.8687E-08  5.8894E-08
 1.6726E-07  1.6352E-07  8.8205E-07  7.7025E-07  3.7039E-06  6.2185E-06
 8.3747E-06  8.5076E-06  9.3751E-06  8.7307E-06 -3.4978E-05 -2.3399E-05
-1.0432E-05  1.4554E-05  9.0000E-06  7.2110E-06  6.0505E-06  5.1026E-06
 1.6073E-06  1.6647E-06  8.9397E-07  8.9981E-07  5.8096E-07  5.0783E-07
 5.0026E-07  2.0910E-06  2.2090E-06  3.2041E-06  8.2249E-06  1.0253E-05
 9.4622E-06  1.992EE-06 -6.0543E-05 -7.2905E-05 -9.3063E-05  8.4584E-07
 3.1315E-05  1.9857E-05  7.3599E-06 -8.3396E-07  9.7152E-07  7.6642E-07
 8.1731E-07  2.2473E-07  2.2516E-07  2.2950E-07  2.2969E-07  2.3011E-07
 9.0453E-07  9.8365E-07  1.0597E-06  8.2172E-06  5.0097E-06  1.1041E-05
 6.8781E-06  1.0772E-05 -1.2978E-06 -8.7557E-06  1.2076E-04 -3.8100E-04
 8.5251E-05  2.7101E-05 -2.0577E-05 -3.8128E-06 -8.1913E-06 -2.9092E-06
-5.3604E-07 -5.3055E-07 -2.2620E-07 -2.2320E-07 -2.2692E-07 -2.5060E-07
-2.6026E-07 -6.1367E-07 -6.1427E-07 -3.3790E-06 -1.3020E-05 -3.7635E-05
-1.8038E-05 -2.122EE-05 -1.1400E-05  5.7345E-06 -2.0510E-04  2.1301E-04


8E    107     4  1265   102     4     5     0     8     0     0     7
    0
5B *RESPONSE IS REACTION RATE DELTA 25 FOR TRI-2     *
7B *EPPI SENS. OF 2350 FIS EPI/TBB TO N CAPTURE          A=  1.8000E-01*
8D  -2.015EE-0E -5.4978E-08 -5.2274E-08  2.0036E-05  9.0677E-08
 1.5586E-07  1.7403E-07  2.1059E-07  2.7944E-07  3.7058E-07  4.8032E-07
 6.5134E-07  8.9134E-07  1.2040E-06  1.6434E-06  2.2197E-06  3.0109E-06
 4.0064E-06  5.4711E-06  7.1208E-06  1.0905E-05  1.4635E-05  2.2245E-05
 5.2064E-06  3.8780E-07  1.1275E-06  4.3471E-07  5.8088E-07  6.6217E-07
 3.4618E-06  5.4367E-07  1.1161E-06  1.4725E-06  9.9769E-06  9.9539E-07
 6.8220E-07  8.3137E-07  3.4073E-07  2.4637E-07  1.8918E-07  2.6651E-08
 2.6683E-08  1.1383E-08  1.1384E-08  1.1388E-08  1.1390E-08  1.1391E-08
 3.4447E-08  3.3284E-08  9.5268E-08  1.4361E-07  8.5437E-07  4.3513E-07
 2.9921E-07  6.3321E-07  1.0379E-06  6.7613E-07  1.1350E-05  2.6793E-05
 1.8585E-06  2.0546E-06  1.3539E-06  1.0288E-06  1.0652E-06  7.9669E-07
 2.3074E-07  2.3226E-07  6.7869E-08  6.8241E-08  6.7971E-08  6.8359E-08
 6.8047E-08  2.7395E-07  2.7620E-07  3.6506E-07  4.4469E-07  1.0056E-06
 1.1066E-06  7.9735E-07 -1.1542E-06 -7.7185E-07  6.4799E-05  5.2233E-06
 5.7660E-06  4.0565E-06  2.7229E-06  1.7081E-06  9.1600E-07  3.5326E-07
 3.5521E-07  9.5172E-08  9.8392E-08  9.5354E-08  9.4553E-08  9.5516E-08
 3.6114E-07  3.6283E-07  3.0638E-07  1.5341E-06  1.8998E-06  2.6971E-06
 1.6457E-06  2.2866E-06 -6.8922E-07  1.7757E-04  2.3238E-05  5.4275E-05
 8.3623E-05  2.5496E-05  1.1839E-05  7.9857E-06  8.7372E-06  5.1559E-06
 9.7409E-07  9.7202E-07  8.1639E-07  8.1181E-07  8.1981E-07  3.3819E-07
 3.3707E-07  7.9656E-07  8.0182E-07  8.3249E-06  1.2031E-05  1.0240E-05
 8.3190E-06  1.9695E-05  5.3792E-05  2.0481E-03  9.8101E-04  1.7705E-01


8E    107     4  1265   904     4     5     0     8     0     0     7
    0
5B *RESPONSE IS REACTION RATE DELTA 25 FOR TRI-2     *
7E *EPPI SENS. OF 2350 FIS EPI/TBB TO N   SCATTERING     A= -1.0353E 00*
8E  -8.223BE-04 -3.1787E-03 -8.8030E-03 -1.0525E-02 -1.8665E-02
-1.0651E-02 -8.5073E-03 -7.5104E-03 -6.7067E-03 -6.1901E-03 -5.7717E-03
-5.8283E-03 -5.9846E-03 -6.8779E-03 -7.9877E-03 -1.0040E-02 -1.1917E-02
-1.5407E-02 -1.8847E-02 -2.8375E-02 -2.9379E-02 -4.2456E-02 -6.3481E-02
-7.8663E-03 -6.2980E-04 -1.8533E-03 -7.2550E-04 -9.9172E-04 -1.1351E-03
-6.0398E-03 -9.8381E-04 -1.7398E-03 -1.7855E-03 -1.9391E-02 -3.8837E-04
-2.6373E-04 -8.7195E-04 -2.2791E-04 -1.6007E-04 -1.0089E-04 -1.5163E-05
-1.5177E-05 -6.8756E-06 -6.8768E-06 -6.8786E-06 -6.8848E-06 -6.8879E-06
-1.9638E-05 -1.9008E-05 -5.4766E-05 -8.6188E-05 -3.7980E-04 -2.2641E-04
-1.3245E-04 -2.8048E-04 -1.1581E-03 -1.0778E-03 -3.2202E-02 -8.8288E-02
-5.7228E-03 -1.3755E-03 -8.2522E-04 -6.2118E-04 -6.5427E-04 -4.2437E-04
-1.0541E-04 -1.0295E-04 -2.9939E-05 -3.0120E-05 -3.0053E-05 -3.0302E-05
-3.0285E-05 -1.2363E-04 -1.2985E-04 -1.8815E-04 -2.6402E-04 -7.6005E-04
-1.0586E-03 -1.4660E-03 -6.9035E-03 -8.2203E-03 -6.6489E-02 -2.8977E-03
-1.0045E-03 -1.0972E-03 -1.2833E-03 -1.2151E-03 -8.6954E-04 -1.8903E-04
-1.4589E-04 -3.9165E-05 -3.8804E-05 -3.9175E-05 -3.8850E-05 -3.9260E-05
-1.4880E-04 -1.5052E-04 -1.6303E-04 -7.5746E-04 -1.1392E-03 -1.1869E-03
-8.1230E-04 -1.0695E-03 -1.5158E-03 -9.7483E-02 -6.9500E-03 -7.7665E-02
-3.0846E-03 -3.2873E-03 -8.8827E-03 -1.9387E-03 -1.9817E-03 -1.1560E-03
-2.1588E-04 -2.1075E-04 -9.1881E-05 -9.0808E-05 -9.2490E-05 -1.1093E-04
-1.1985E-04 -2.8285E-04 -2.8836E-04 -1.5362E-03 -3.2630E-03 -5.0921E-03
-2.6754E-03 -3.9511E-03 -6.0288E-03 -1.6671E-01 -9.6175E-02  9.8572E-03
```

```
4E    107     4  1276   102     4     3     0     8     0     0     7
   0
5E *RESPONSE IS REACTION RATE DELTA 25 FOR TRX-2     *
7B *EPRI SENS. OF 235U FIS EPI/THR TO C CAPTURE          A= -3.2883E-05*
8B  -3.5536E-05 -4.5000E-05 -2.8619E-07  8.9595E-12  3.9412E-11
 7.6057E-11  9.5387E-11  1.1836E-10  1.2898E-10  1.5058E-10  1.7470E-10
 2.1761E-10  2.7076E-10  3.5143E-10  4.5540E-10  5.9825E-10  8.0333E-10
 1.0703E-09  1.4796E-09  1.9383E-09  2.9538E-09  3.9563E-09  6.0863E-09
 1.3959E-09  1.0485E-10  3.0260E-10  1.1671E-10  1.5013E-10  1.7786E-10
 9.3055E-10  1.8608E-10  2.9951E-10  3.9437E-10  2.6709E-09  2.6760E-10
 1.8332E-10  2.2331E-10  9.1893E-11  6.6140E-11  5.8702E-11  7.1535E-12
 7.1621E-12  3.0553E-12  3.0555E-12  3.0558E-12  3.0570E-12  3.0575E-12
 9.2455E-12  8.9332E-12  2.5566E-11  3.8540E-11  1.2192E-10  1.1673E-10
 8.0252E-11  1.6980E-10  2.7818E-10  1.8 .33E-10  3.0490E-09  7.1029E-09
 4.9867E-10  5.5214E-10  3.6019E-10  2.7477E-10  2.8689E-10  2.1460E-10
 6.2187E-11  6.2536E-11  1.8270E-11  1.8377E-11  1.8305E-11  1.8089E-11
 1.8324E-11  7.3767E-11  7.8365E-11  9.8501E-11  1.1971E-10  2.8144E-10
 2.9778E-10  2.1051E-10 -3.1041E-10 -2.0720E-10  1.7383E-08  1.4030E-09
 1.5512E-09  1.0926E-09  7.3394E-10  8.6020E-10  2.4670E-10  9.5124E-11
 9.5601E-11  2.5623E-11  2.5413E-11  2.5671E-11  2.5655E-11  2.5713E-11
 9.7213E-11  9.7552E-11  1.0399E-10  8.1278E-10  5.1092E-10  7.2494E-10
 4.8210E-10  6.1002E-10 -1.8496E-10  8.7751E-08  6.2591E-09  1.4572E-08
 1.1730E-08  6.8721E-09  3.0808E-09  2.1351E-09  2.3436E-09  1.3010E-09
 2.6079E-10  2.6014E-10  1.1182E-10  1.1018E-10  1.1232E-10  8.9389E-11
 9.0165E-11  2.1305E-10  2.1481E-10  1.1558E-09  3.2120E-09  2.7402E-09
 2.2313E-09  5.2966E-09  1.0526E-08  5.5168E-07  2.6485E-07  4.7722E-05


4E    107     4  1276   904     4     3     0     8     0     0     7
   0
5B *RESPONSE IS REACTION RATE DELTA 25 FOR TRX-2     *
7B *EPRI SENS. OF 235U FIS EPI/THR TO O    SCATTERING     A= -1.3252E-02*
8E  -1.3234E-04 -2.0281E-04 -1.8686E-04 -5.6423E-04 -7.9726E-04
-1.4037E-04 -3.1259E-04 -1.7365E-04 -1.1757E-04 -8.6916E-05 -8.2330E-05
-7.2019E-05 -5.6535E-05 -6.1540E-05 -5.7404E-05 -8.2192E-05 -7.5024E-05
-1.1939E-04 -8.8836E-05 -3.0793E-04 -1.1082E-04 -8.4476E-04 -3.2758E-04
 4.0817E-05 -2.3775E-07 -1.3256E-06 -8.8291E-07 -1.3164E-06 -3.0910E-06
-4.8709E-05 -1.3585E-05 -1.7796E-05  8.3285E-06 -2.2279E-04  8.3136E-05
 5.8563E-05  6.3072E-05  2.3398E-05  1.6760E-05  1.3656E-05  1.9425E-06
 1.9877E-06  8.3162E-07  8.3217E-07  8.3297E-07  8.3335E-07  8.3389E-07
 2.5240E-06  2.4023E-06  6.9996E-06  1.0486E-05  3.0193E-05  3.9132E-05
 2.8264E-05  5.9191E-05  6.0997E-05  2.3588E-05 -5.5370E-04 -2.4055E-04
-1.8288E-04  7.8798E-05  5.7265E-05  8.3438E-05  8.5117E-05  3.7752E-05
 1.2027E-05  1.2352E-05  3.6330E-06  3.6586E-06  3.6479E-06  3.6715E-06
 3.6581E-06  1.4696E-05  1.4684E-05  1.8865E-05  2.1365E-05  8.3848E-05
 3.2191E-05 -1.6766E-05 -8.9258E-04 -5.7087E-04 -8.1831E-04  8.0969E-05
 1.9507E-04  1.1505E-04  8.0621E-05 -3.3197E-06  9.7714E-06  5.9070E-06
 6.1634E-06  1.6693E-06  1.6606E-06  1.6816E-06  1.6697E-06  1.6884E-06
 6.3866E-06  6.3785E-06  6.7013E-06  2.0051E-05  1.2450E-05  8.6959E-05
 2.3761E-05  3.7535E-05 -1.0659E-03  3.0035E-04  8.1464E-04 -3.5685E-03
 8.8149E-04  1.2466E-04 -1.9221E-04 -3.8212E-05 -8.0192E-05 -2.7005E-05
-5.2231E-06 -5.2686E-06 -2.2775E-06 -2.2657E-06 -2.3218E-06 -5.8754E-06
-5.5401E-06 -1.3165E-05 -1.3372E-05 -7.8837E-05 -1.0298E-04 -3.3621E-04
-1.6874E-04 -2.2296E-04 -2.6902E-04 -5.2161E-04 -2.8650E-03  8.9264E-04


4E    107     4  2000   901     4     3     0     8     0     0     7
   0
5B *RESPONSE IS REACTION RATE DELTA 25 FOR TRX-2     *
7B *EPRI  SENS. OF 235U FIS EPI/THR TO DB**2 IN THRL     A=  3.8378E-03*
8B  -2.8428E-05 -6.0437E-05 -8.8364E-05 -1.3869E-05  3.8158E-05
 6.7040E-05  7.1854E-05  6.0437E-05  8.8469E-05  3.3246E-05  3.8894E-05
 3.2224E-05  2.5416E-05  3.1269E-05  3.6430E-05  2.9858E-05  2.2139E-05
 1.7254E-05  2.0807E-05 -3.6426E-06  4.2995E-06 -1.8371E-05 -1.3179E-05
 5.9686E-07 -5.3956E-07 -2.0885E-06 -9.1479E-07 -1.4278E-06 -1.2518E-06
-2.0424E-04 -3.0384E-07 -2.7040E-07  5.9770E-08 -2.1915E-05  1.2403E-05
 6.2797E-08  3.1425E-06  2.1779E-07  8.7297E-09  2.1830E-10  9.1701E-12
 8.2857E-12  3.1024E-12  3.3554E-12  3.3703E- 2  3.4026E-12  3.4960E-12
 1.1854E-11  1.3425E-11  7.4713E-1   8.6478E-1   4.5584E-07  1.0585E-05
 1.3500E-05  3.3605E-05  5.1187E-06 -3.6263E-0   -3.5649E-05 -2.3784E-05
-2.2264E-06  1.2016E-07  4.8006E-08  1.4731E-0   1.9657E-09  1.1943E-10
 1.4897E-12  8.4985E-13  8.8342E-14  7.8532E-14  7.6887E-14  8.0270E-14
 8.9203E-14  6.5106E-13  3.8459E-12  5.7594E-11  3.2959E-10 -2.5884E-07
-9.3230E-06 -1.2562E-04 -1.2105E-03 -8.3480E-05 -1.8648E-05  3.8210E-07
 1.3449E-06  3.9807E-07  1.5827E-08 -9.1590E-09 -8.2436E-11  2.6316E-13
 1.6810E-13  3.6907E-14  3.5659E-14  3.6168E-14  3.7175E-14  4.0076E-14
 2.0760E-13  4.7676E-13  1.7497E-12 -3.0739E-10 -1.1698E-08  1.9520E-07
 5.9543E-06  1.3832E-05 -4.0549E-04 -2.0395E-06  8.5811E-06 -4.9605E-05
 4.2411E-05  1.0935E-05 -1.3856E-06  5.2582E-08  4.2900E-09  1.0772E-11
 2.3865E-13  1.8681E-13  7.2101E-14  6.9857E-14  7.2178E-14  6.9191E-14
 7.7165E-14  2.2633E-13  3.4581E-13  1.4587E-11 -7.0661E-08 -1.8019E-06
-3.9728E-07  5.8150E-06  8.8045E-05  8.3962E-04 -7.6619E-08  8.8325E-03
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8E    107     0  2CC0   903     0     3     0     0     0     0     7
    0
5B *RESPCNSE IS REACTION RATE DELTA 25 FOR TRX-2    *
7D *EPRI  SENS. OF 235U FIS EPI/TRP TO DB**2 IN VOID    A=  4.9873E-04*
8E  -5.1910E-06 -2.4439E-06 -4.0957E-06  5.3801E-07  1.6181E-06
 5.8397E-06  5.2011E-06  4.8688E-06  2.8198E-06  2.7221E-06  5.5906E-06
 2.1208E-06  3.2597E-06  6.5935E-06  6.2885E-06  7.5048E-06  7.4502E-06
 6.9328E-06  7.0534E-06  3.6613E-06  5.8752E-06  2.9864E-06  4.1838E-06
 1.9321E-06  7.7897E-08  2.0828E-07  7.8219E-08  9.8737E-08  8.9483E-08
 5.1140E-07  7.5823E-08  2.0536E-07  2.3416E-07  5.7831E-07  4.8322E-07
 2.6798E-07  2.6066E-07  7.8590E-08  3.8576E-08  2.5219E-08  3.5648E-09
 3.5742E-09  1.5267E-05  1.5283E-05  1.5311E-05  1.5319E-09  1.5342E-09
 4.6582E-05  4.5240E-09  1.3219E-08  2.1641E-08  1.2293E-07  2.8302E-07
 1.3804E-07  2.5135E-07  2.0885E-07  5.8191E-08 -2.5213E-06 -6.6651E-07
-7.3795E-07  3.7523E-07  2.3826E-07  1.5260E-07  1.1323E-07  6.8567E-08
 2.1226E-08  2.1920E-08  6.4863E-05  6.4915E-05  6.4738E-09  6.5242E-09
 6.5102E-05  2.6785E-08  2.9498E-08  4.8098E-08  7.2427E-08  1.7888E-07
 1.1282E-07 -1.4095E-07 -2.2784E-06 -2.8911E-06  4.5395E-06  9.0226E-07
 1.6595E-06  9.4198E-07  3.1733E-07 -7.7173E-08 -1.3124E-09  1.6876E-08
 1.8035E-08  4.9125E-09  4.8984E-05  4.9734E-05  4.9512E-09  5.8232E-09
 1.9268E-08  2.6153E-08  2.3118E-08  9.3047E-08  1.2118E-07  3.3914E-07
 2.0730E-07  3.3665E-07 -5.5812E-06  1.8234E-05  3.4570E-06 -1.3770E-05
 7.5774E-06  3.5125E-06  4.7556E-08  3.7636E-07  2.6552E-07  8.8600E-08
 1.6120E-08  1.6140E-08  6.9381E-05  6.8714E-05  7.0308E-09  5.6977E-09
 5.7893E-05  1.3836E-08  1.4193E-08  8.1616E-08  5.2316E-08 -6.3203E-07
 2.2352E-07  1.6197E-06  6.5737E-06  2.0381E-05  3.7534E-06  3.6344E-06


8E    107     0  2CC0   902     0     3     0     0     0     0     7
    0
5E *RESPCNSE IS REACTION RATE DELTA 25 FOR TRX-2    *
7E *EPRI  SENS. OF 235U FIS EPI/TRP TO DB**2 IN CLAD    A=  1.9251E-03*
8E  -9.8653E-06 -1.6420E-05 -1.3819E-05  3.5504E-06  1.6363E-05
 2.8725E-05  2.2218E-05  9.0050E-06  3.0877E-06  8.1317E-06  8.7648E-06
 5.6311E-06  5.7926E-06  1.6890E-05  1.6577E-05  1.3744E-05  1.3231E-05
 1.0057E-05  1.3766E-05  1.3301E-05  2.6156E-05  1.7567E-05  7.8801E-06
 6.3967E-06  3.1708E-07  8.7622E-07  3.2285E-07  8.3225E-07  8.3689E-07
 3.8977E-06  5.9011E-07  9.4036E-06  1.7279E-06  1.1714E-05  3.2886E-06
 2.1996E-06  2.2781E-06  7.8591E-07  8.3911E-07  3.3878E-07  8.7248E-08
 8.7331E-08  2.0196E-08  2.5206E-08  2.0223E-08  2.0228E-08  2.0240E-08
 6.1268E-08  5.9313E-08  1.7129E-07  2.6528E-07  1.0995E-06  1.5635E-06
 1.0702E-06  2.0387E-06  2.0435E-06  8.5878E-07 -2.4540E-06  5.1236E-06
-1.3858E-06  1.8096E-06  8.9871E-07  6.2250E-07  5.8913E-07  3.8664E-07
 1.1567E-07  1.1776E-07  3.8506E-08  3.8707E-08  3.8580E-08  3.8794E-08
 3.8665E-08  1.8088E-07  1.8688E-07  2.1359E-07  2.8108E-07  6.5676E-07
 5.2063E-07 -1.6705E-07 -5.8812E-06 -6.3878E-06  8.7862E-06  1.1011E-06
 1.7365E-06  1.0424E-06  8.5732E-07  8.6052E-08  8.2156E-08  8.0582E-08
 8.5619E-08  1.2275E-08  1.2196E-08  1.2344E-08  1.2244E-08  1.2382E-08
 8.6968E-08  8.7635E-08  5.2037E-08  2.0221E-07  2.3208E-07  8.5620E-07
 2.7662E-07  8.2284E-07 -8.5009E-06  2.9688E-05  8.6711E-06 -1.7977E-05
 3.8077E-05  1.8588E-05  2.8733E-08  3.0652E-06  2.9216E-06  1.5034E-06
 2.9003E-07  2.8948E-07  1.2402E-07  1.2267E-07  1.2511E-07  9.8977E-08
 9.9962E-08  2.3662E-07  2.3867E-07  1.2961E-06  2.7065E-06 -8.8832E-07
 2.3489E-06  9.7061E-06  3.8612E-05  1.2806E-04  5.8187E-05  1.3065E-03


8E    107     0  2CC0   90C     0     3     0     0     0     0     7
    0
5C *RESPCNSE IS REACTION RATE DELTA 25 FOR TRX-2    *
7D *EPRI  SENS. OF 235U FIS EPI/TRP TO DB**2 IN MODERAT A=  2.9010E-02*
8D  -1.0755E-04 -1.7530E-04 -1.8850E-04  8.9190E-05  2.7849E-04
 3.6938E-04  3.0698E-04  2.7722E-04  2.9398E-04  2.3925E-04  1.9857E-04
 2.0235E-04  1.5610E-04  1.5260E-04  1.2710E-04  1.8230E-04  1.3379E-04
 1.8003E-04  1.7680E-04  2.1808E-04  1.9356E-04  2.6052E-04  2.9819E-04
 8.2533E-05  8.5831E-06  1.7420E-05  6.6730E-06  7.8672E-06  2.1970E-05
 8.9285E-05  7.6135E-06  2.8253E-05  8.2643E-06  7.3158E-05  7.0144E-06
 8.7860E-06  1.1485E-05  1.2527E-05  9.0415E-06  6.9329E-06  9.7602E-07
 9.7704E-07  8.1675E-07  8.1676E-07  8.1686E-07  8.1691E-07  8.1694E-07
 1.2606E-06  1.2178E-06  3.4840E-06  5.2485E-06  1.6576E-05  1.5837E-05
 1.0871E-05  2.4502E-05  3.9986E-05  2.5925E-05  1.4557E-04  1.3305E-04
 8.5550E-06  1.2495E-05  8.1880E-06  3.0738E-05  3.1957E-05  2.3813E-05
 8.1003E-06  8.1834E-06  2.3787E-06  2.3910E-06  2.3809E-06  2.3930E-06
 2.3822E-06  9.5838E-06  9.6512E-06  1.2767E-05  1.5892E-05  3.6318E-05
 3.9266E-05  1.8878E-05 -7.3198E-06 -8.5791E-06  3.7944E-04  3.0350E-05
 5.8779E-05  3.4772E-05  1.4884E-05  9.2826E-06  8.9595E-06  1.4173E-05
 1.4239E-05  3.8125E-06  3.7804E-06  3.8180E-06  3.7849E-06  3.8225E-06
 1.4484E-05  1.4482E-05  1.5424E-05  6.1091E-05  7.5316E-05  1.4738E-05
 8.9885E-06  1.4756E-05 -8.4079E-06  8.5888E-08  9.2718E-05  2.0183E-08
 2.1936E-04  7.5113E-05  3.6381E-05  2.8979E-05  8.8039E-05  2.8138E-05
 5.2987E-06  5.2821E-06  2.2611E-06  2.2352E-06  2.2777E-06  5.0955E-06
 5.1380E-05  1.2133E-04  1.2201E-04  6.5597E-04  8.8707E-05  2.2360E-05
 2.6364E-05  2.6373E-05  1.6411E-04  3.3285E-03  9.6165E-04  1.6565E-02
```

```
4B    107     8  1262    452     8     3     0     8     0     8     8
    0
5B *RESPONSE IS REACTION RATE DELTA 28 FOR TRE-2     *
7E * EPRI SENS. OF 2380 FIS/2350 FIS TO 2380 SUBAR       A= -8.2170E-04*
8B  -8.0685E-05 -1.7557E-04 -3.0713E-04 -2.8163E-04 -1.5793E-05
-2.1673E-07 -8.9523E-08 -1.6932E-06 -9.9219E-05 -6.0693E-09 -5.5179E-09
-9.0187E-05 -1.0013E-08 -8.9741E-05 -2.6280E-10 -8.4118E-15 -8.7987E-14
-3.6515E-12 -1.3310E-08 -7.7625E-05 -1.5764E-12 -1.0413E-12 -9.2963E-13
-2.0301E-13 -1.3305E-14 -3.8525E-14 -1.8082E-14 -2.0114E-14 -2.2032E-14
-1.1829E-13 -1.8256E-14 -3.6088E-14 -3.9672E-14 -3.3159E-13 -2.2834E-14
-1.4803E-14 -1.8085E-14 -6.7229E-15 -2.8183E-15 -8.6041E-16 -3.6996E-17
-3.5278E-17 -1.8805E-17 -1.4717E-17 -1.8760E-17 -1.8853E-17 -1.5068E-17
-8.7519E-17 -5.0556E-17 -2.0100E-16 -8.0168E-16 -1.2231E-14 -1.1678E-14
-7.3726E-15 -1.8375E-14 -2.6664E-14 -1.9534E-14 -8.0987E-13 -7.2877E-13
-6.0487E-14 -3.6556E-14 -2.2673E-14 -1.6088E-14 -1.8074E-14 -8.6304E-15
-2.4766E-16 -1.3395E-16 -3.1555E-17 -3.0601E-17 -3.0265E-17 -3.1054E-17
-3.2708E-17 -1.8383E-16 -8.3337E-16 -1.8977E-15 -5.5832E-15 -1.9358E-14
-2.2179E-14 -1.8847E-14 -2.2713E-14 -3.6606E-14 -1.2151E-12 -7.6772E-14
-7.0826E-14 -8.9567E-14 -3.3837E-14 -1.7083E-14 -2.1668E-15 -2.4218E-16
-1.6616E-16 -3.8935E-17 -3.7732E-17 -3.7888E-17 -3.8038E-17 -3.9698E-17
-1.7368E-16 -2.5895E-16 -5.0708E-16 -1.8073E-14 -2.8136E-14 -3.2689E-14
-2.1268E-14 -3.8001E-14 -8.3105E-14 -2.8097E-12 -2.5654E-13 -9.9937E-13
-3.5655E-13 -2.0964E-13 -1.0865E-13 -5.9587E-14 -3.5766E-14 -5.8696E-15
-3.2106E-16 -2.6726E-16 -1.0558E-16 -1.0138E-16 -1.0183E-16 -9.0838E-17
-9.3619E-17 -2.3896E-16 -2.8595E-16 -5.8485E-15 -7.1912E-14 -9.2078E-14
-7.2968E-14 -1.6225E-13 -8.2752E-13 -1.5727E-11 -8.9561E-12  0.0


4E    107     8  1262    1E      8     3     0     8     0     8     8
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRE-2     *
7E * EPRI SENS. OF 2380 FIS/2350 FIS TO 2380 FISSION     A=  9.7514E-01*
8E   7.2473E-02  1.9010E-01  3.6956E-01  3.1936E-01  2.2376E-02
 1.0350E-03  7.2206E-05  2.8360E-05  1.4048E-05  9.5907E-06  7.6359E-06
 1.2332E-05  1.3633E-05  1.2165E-05  3.5553E-07  5.9563E-12  6.4686E-11
 5.1702E-09  1.7968E-05  1.0827E-08  2.1198E-09  1.3966E-09  1.1902E-09
 3.0232E-10  1.8180E-11  5.2133E-11  1.9836E-11  2.7047E-11  2.8829E-11
 1.6006E-10  2.4581E-11  8.8659E-11  8.3817E-11  8.4561E-10  2.8651E-11
 1.8553E-11  2.0365E-11  5.5005E-12  1.3003E-12  1.5193E-13  1.1603E-14
 1.0978E-14  8.5601E-15  8.5443E-15  8.5057E-15  8.5634E-15  8.6165E-15
 1.8505E-14  1.5357E-14  6.0987E-14  2.5645E-13  9.8183E-12  1.3721E-11
 9.0289E-12  1.7945E-11  3.0297E-11  2.5076E-11  5.5200E-10  9.7038E-10
 7.5938E-11  8.2970E-11  2.3620E-11  1.3837E-11  8.5399E-12  1.7660E-12
 7.5957E-14  3.8876E-14  8.9332E-15  8.5936E-15  8.4115E-15  8.5871E-15
 8.9830E-15  8.9608E-14  1.1882E-13  5.3085E-13  2.0334E-12  1.2863E-11
 2.1204E-11  1.9536E-11  2.3887E-11  8.5346E-11  1.6242E-09  9.9627E-11
 8.7720E-11  5.5936E-11  2.8872E-11  8.1601E-12  6.1222E-13  5.9387E-14
 3.8556E-14  8.8716E-15  8.5551E-15  8.5875E-15  8.5802E-15  8.8275E-15
 3.8388E-14  5.6434E-14  1.1026E-13  3.3233E-12  1.7098E-11  3.3818E-11
 2.8852E-11  3.5912E-11  9.9088E-11  3.2316E-05  3.8271E-10  1.3102E-09
 8.6421E-10  2.5125E-10  1.0555E-10  8.1729E-11  1.7104E-11  1.1871E-12
 6.3062E-14  5.1598E-14  2.0135E-14  1.9213E-14  1.9159E-14  1.7022E-14
 1.7542E-14  8.4816E-14  5.3841E-14  1.0312E-12  3.0562E-11  7.5178E-11
 7.4851E-11  1.8915E-10  5.4368E-10  2.1186E-08  6.5858E-09  0.0


4B    107     8  1262    102     8     3     0     8     0     0     8
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRE-2     *
7E * EPRI SENS. OF 2380 FIS/2350 FIS TO 2380 CAPTURE     A=  2.8380E-01*
8B  -3.0763E-05 -1.5822E-04 -8.8775E-04 -5.3280E-05  2.1978E-03
 2.2877E-03  1.5993E-03  1.4818E-03  1.3670E-03  1.4064E-03  1.8105E-03
 2.0836E-03  2.2918E-03  2.5888E-03  2.7930E-03  3.0831E-03  3.5182E-03
 3.4047E-03  4.0852E-03  4.0702E-03  3.5492E-03  4.2819E-03  5.6160E-03
 1.0276E-03  1.6206E-05  2.2967E-05  2.0837E-05  1.0379E-05  2.7027E-04
 4.5939E-05  3.5954E-05  2.8343E-05  1.2780E-03  2.8860E-04  8.5946E-05
 9.2625E-05  1.5984E-04  1.2445E-04  1.2694E-04  1.2432E-04  1.8866E-05
 1.9189E-05  8.2776E-06  8.3317E-06  8.3858E-06  8.8390E-06  8.4829E-06
 2.5991E-05  2.5536E-05  7.5170E-05  1.1741E-04  4.3872E-04  2.7802E-04
 1.1815E-04  1.0207E-04  1.0231E-04  9.3851E-05  2.9204E-04  7.7016E-04
 3.6889E-04  3.4784E-04  2.6537E-04  1.9272E-04  1.6934E-04  1.4718E-04
 6.0859E-05  7.0287E-05  2.3340E-05  2.0220E-05  2.4632E-05  2.5071E-05
 2.5327E-05  1.2532E-04  1.1006E-04  1.0202E-04  1.6287E-04  8.3739E-04
 8.9635E-04  2.8280E-04  2.5988E-04  3.6869E-04  2.3769E-03  3.7526E-04
 5.7668E-04  6.3187E-04  8.6080E-04  1.5515E-04  5.6927E-05  2.6569E-05
 3.0389E-05  8.6510E-06  [illegible]  9.0856E-06  9.1837E-06  9.8872E-06
 3.6882E-05  3.8461E-05  8.0711E-05  1.1388E-04  8.0205E-04  6.7880E-04
 3.3863E-04  3.7024E-04  7.0273E-04  2.5913E-03  5.8549E-04  1.3793E-03
 1.0263E-03  1.7008E-03  1.2330E-03  5.3819E-04  1.6082E-04  2.1239E-05
 8.7261E-06  5.2223E-06  2.3489E-06  2.3749E-06  2.5199E-06  2.3776E-06
 2.5087E-06  6.8512E-06  7.0168E-06  2.9683E-05  2.1218E-04  1.0501E-03
 8.5483E-04  1.5163E-03  2.2683E-03  9.1458E-03  1.9731E-03  1.8643E-01
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4E    107     4  1262   904     4     3     0     8     0     0     4
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2    *
7E * EPRI SENS. OF 238UFIS/235UFIS TO 238U SCATTERING   A= -1.9337E-01*
8E  -2.0991E-02 -5.6642E-02 -7.0962E-02 -4.9830E-02 -2.0201E-03
-2.2033E-04 -7.7281E-05 -3.1753E-05 -2.2446E-05 -3.3007E-06 -2.3015E-06
-3.4159E-06 -1.2921E-06 -4.2735E-06 -5.4313E-06 -6.7395E-06 -9.5667E-06
-4.5657E-06 -7.4523E-06 -9.0324E-06 -4.6623E-06 -5.4922E-06 -1.7283E-04
-4.7515E-06 -2.5360E-06  3.7074E-06  4.4239E-06  2.3134E-05 -3.0907E-05
 1.5103E-05  1.3633E-05  1.7111E-04 -1.6000E-04  1.4038E-04  1.2235E-04
 1.9097E-04  3.3634E-04  1.9936E-05 -1.1205E-04 -1.2438E-04 -1.0107E-05
-1.9183E-05 -8.2655E-06 -8.3143E-06 -8.3610E-06 -8.4006E-06 -8.4455E-06
-2.5030E-05 -2.5295E-05 -7.3780E-05 -1.1050E-04 -1.0496E-04  5.2626E-06
 1.3020E-06 -2.1160E-06 -7.6122E-06 -1.3754E-05  5.2170E-06  1.4319E-04
 2.5605E-04  3.5664E-04  3.0280E-04  1.8061E-04  4.0250E-05 -1.3605E-04
-6.9590E-05 -7.7032E-05 -2.3859E-05 -2.4603E-05 -2.4871E-05 -2.5156E-05
-2.5244E-05 -1.0297E-04 -1.0220E-04 -1.2163E-04 -1.1907E-04 -1.1571E-04
-[illegible].0115E-05  3.9163E-06  2.7466E-06 -2.3608E-06  5.2671E-05  8.3045E-05
 1.0756E-04  2.8506E-04  2.3337E-04  3.0319E-05 -4.8049E-05 -2.9554E-05
-3.1538E-05 -8.8095E-06 -8.8738E-06 -9.0853E-06 -9.1013E-06 -9.2765E-06
-3.5377E-05 -3.5104E-05 -3.4905E-05 -7.3913E-05  5.6424E-05  9.4347E-06
 4.9603E-07 -4.5884E-06 -1.6365E-05  9.7168E-06 -2.2634E-05  7.5601E-05
 9.1462E-05  1.2602E-04  7.9900E-05  1.3810E-05 -2.9280E-05 -1.5159E-05
-5.0230E-06 -5.3773E-06 -2.3577E-06 -2.3442E-06 -2.4295E-06 -2.2274E-06
-2.3187E-06 -5.6071E-06 -5.7362E-06 -2.1051E-05  4.9313E-05 -2.3031E-05
-2.3107E-05 -3.7042E-05 -5.2401E-05 -5.4001E-05 -1.3153E-04  1.3852E-03
```

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4E    107     4  1262    71     4     3     0     8     0     0     4
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2    *
7E * FORSS, EPRI, SENS. OF 238FIS/235FIS TO 238 INELAS  A= -1.4213E-02*
8E   0.0        -5.8623E-04 -1.0349E-02 -3.2771E[illegible]  0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 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    107     4  1262    72     4     3     0     8     0     0     4
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2    *
7D * FORSS, EPRI, SENS. OF 238FIS/235FIS TO 238 INELAS  A= -1.2562E-02*
8D   0.0        -7.5494E-04 -1.0232E-02 -1.5751E-03  0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
```

```
4E     107      4  1262    91      4      3      0      8      0      0      4
   0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2    *
7E * PORSS, EPRI, SEBS. OF 238FIS/235FIS TO 238 INELAS  A= -9.7339E-02*
8E  -1.3365E-02 -4.6540E-02 -3.4510E-02 -5.1618E-04  0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0
 0.0         0.0         0.0         0.0         0.0         0.0

4E     107      4  1262     8      4      3      0      8      0      0      4
   0
5E *RESPONSE IS REACTION RATE DELTA 20 FOR TRX-2    *
7E * PORSS, EPRI, SEBS. OF 238FIS/235FIS TO 238 INELAST A= -1.8716E-01*
8E  -1.3497E-02 -5.0481E-02 -7.0537E-02 -4.9435E-02 -2.0585E-03
-2.1715E-04 -6.1705E-05 -2.8327E-05 -3.1091E-05 -6.0704E-06 -3.3223E-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

4E     107      4  1261   452      4      3      0      8      0      0      4
   0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2    *
7E * EPRI SEBS. OF 238U FIS/235U FIS TO 235U NUBAR         A= -2.2617E-04*
8E    3.8503E-07  1.0201E-06  2.0067E-06  2.2061E-06  2.1154E-06
  1.6951E-06  1.2348E-06  8.8270E-07  6.4077E-07  5.0222E-07  4.1244E-07
  3.6097E-07  3.4727E-07  3.7032E-07  4.2733E-07  5.2776E-07  6.1056E-07
  7.5726E-07  9.9491E-07  1.4339E-06  1.4807E-06  2.1040E-06  8.7487E-07
  1.1058E-06  3.8115E-08  1.0000E-07  3.4406E-08  4.9437E-08  2.6431E-08
  3.2673E-07  4.9754E-08  9.3241E-08 -9.7662E-08  9.9366E-07  6.1916E-09
  3.7277E-10 -5.9662E-09 -9.9266E-09 -3.3677E-08 -5.2595E-09 -1.3676E-10
 -1.1071E-10 -4.7313E-11 -4.5874E-11 -4.5104E-11 -4.4612E-11 -4.4760E-11
 -1.3934E-10 -1.4527E-10 -6.6611E-10 -8.3491E-09 -5.5077E-08 -1.9145E-09
 -2.5152E-10  3.8121E-10  2.0616E-08  2.8472E-08  1.6739E-06  2.3777E-06
  4.6741E-08 -3.6110E-08 -5.3300E-08 -4.6052E-08 -6.2130E-08 -2.5582E-08
 -1.5144E-09 -8.7539E-10 -2.1486E-10 -2.1307E-10 -2.1460E-10 -2.2494E-10
 -2.4291E-10 -1.4331E-09 -3.6685E-09 -1.6995E-08 -5.0074E-08 -1.4593E-07
 -1.2908E-07 -1.4956E-07 -9.4853E-07 -4.5092E-08  3.0691E-06  8.2804E-08
  1.3137E-09 -5.4353E-09 -6.2511E-08 -8.1800E-07 -4.1833E-07 -1.1885E-08
 -4.5924E-09 -8.0380E-10 -7.0388E-10 -6.4431E-10 -5.9545E-10 -5.7155E-10
 -2.1573E-09 -2.7037E-09 -4.9197E-09 -2.2012E-07 -1.9430E-07 -6.4495E-08
 -2.6520E-08 -1.5266E-08 -4.9967E-07  8.5600E-06  2.2286E-07  3.0376E-06
  2.6697E-08 -1.8273E-08 -7.0360E-07 -2.6441E-07 -1.0500E-07 -1.0329E-08
 -5.6716E-10 -4.8126E-10 -1.9336E-10 -1.8016E-10 -1.9138E-10 -1.7285E-10
 -1.8091E-10 -4.7402E-10 -5.9160E-10 -1.3303E-08 -9.4277E-07 -1.2879E-06
 -2.4689E-07 -1.1867E-07  6.0035E-08  7.6303E-06  3.5364E-06 -2.7083E-04
```

```
4E    107     4  1261    1E     4     3     0     8     0     0     4
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2     *
7E * EPRI SENS. OF 238U FIS/235U FIS TO 235U FISSION     A= -8.6677E-01*
8E  -2.7576E-08 -5.7632E-08 -1.0762E-03 -9.1527E-08 -5.3007E-08
-8.3385E-08 -3.3176E-08 -2.7080E-08 -2.2579E-08 -2.0116E-08 -1.8138E-08
-1.7952E-08 -1.8165E-08 -2.0792E-08 -2.4183E-08 -3.0585E-08 -3.6306E-08
-8.6940E-08 -5.7067E-08 -8.8069E-08 -8.9387E-08 -1.3122E-03 -1.2641E-03
-2.9918E-08 -1.9105E-05 -5.5272E-05 -2.1586E-05 -2.9591E-05 -3.3732E-05
-1.8012E-08 -2.9102E-05 -5.4051E-05 -8.6515E-05 -5.9363E-08 -6.6025E-06
-1.5858E-06 -3.6851E-06 -1.3608E-06 -1.8509E-06 -1.3990E-07 -3.3911E-09
-2.9095E-05 -1.1508E-09 -1.1111E-05 -1.0879E-09 -1.0727E-09 -1.0705E-09
-3.3188E-05 -3.5217E-09 -1.5681E-08 -2.0925E-07 -7.2667E-06 -2.0177E-06
-1.1152E-08 -3.0006E-06 -2.0752E-05 -2.0219E-05 -9.6858E-08 -1.8313E-03
-2.1928E-08 -3.8018E-05 -1.8885E-05 -7.6357E-06 -8.6217E-06 -9.8038E-07
-3.8883E-08 -2.6671E-08 -8.8908E-09 -8.7728E-09 -8.7518E-09 -8.9397E-09
-5.2615E-05 -3.0376E-08 -7.4992E-08 -3.7214E-07 -1.5639E-06 -1.1245E-05
-2.7862E-05 -5.2708E-05 -2.8815E-08 -2.8252E-08 -1.9598E-03 -9.1691E-05
-6.7663E-06 -3.3393E-06 -1.8275E-05 -8.1585E-05 -1.0398E-05 -2.8678E-07
-8.8727E-08 -1.5158E-08 -1.3181E-08 -1.1983E-08 -1.1002E-08 -1.0493E-08
-3.9025E-08 -8.7953E-08 -8.6792E-08 -5.0229E-06 -2.8357E-05 -2.1117E-05
-1.8695E-05 -2.1966E-05 -5.2037E-08 -2.7567E-03 -1.4346E-08 -2.3531E-03
-2.7555E-05 -2.7664E-05 -1.6006E-08 -2.5662E-05 -3.7009E-06 -1.9160E-07
-9.3861E-05 -7.8072E-09 -3.6945E-05 -2.9075E-09 -3.0131E-09 -2.7076E-09
-2.8320E-09 -7.4248E-09 -9.2951E-05 -2.2948E-07 -8.0902E-05 -1.6625E-08
-7.3939E-05 -9.5886E-05 -1.2718E-08 -8.2601E-03 -2.6272E-03 -8.3448E-01

4E    107     4  1261    102     4     3     0     8     0     0     4
    0
5D *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2     *
7E * EPRI SENS. OF 238U FIS/235U FIS TO 235U CAPTURE     A=  9.9783E-02*
8E  -1.1953E-06 -8.2133E-06 -8.6776E-06 -6.9038E-07  2.8307E-05
 3.8826E-05  3.9183E-05  8.1128E-05  8.0670E-05  8.2326E-05  8.3368E-05
 4.7924E-05  5.3954E-05  6.8191E-05  7.8386E-05  7.9845E-05  1.0192E-04
 1.3904E-04  2.2794E-04  2.8382E-04  3.1117E-04  5.2101E-04  5.5653E-04
 1.9366E-04  1.0917E-05  3.0894E-05  1.1387E-05  1.5300E-05  1.4581E-05
 8.5035E-05  1.2046E-05  2.0526E-05  7.8389E-06  1.6973E-04  1.8337E-06
 3.3900E-07  9.2925E-07  2.3966E-07  2.2360E-07  2.1362E-08  8.5094E-10
 3.8091E-10  1.4921E-10  1.4351E-10  1.4028E-10  1.3795E-10  1.3775E-10
 8.2802E-10  8.6264E-10  2.1841E-05  3.7365E-08  1.7884E-06  5.7280E-07
 2.6430E-07  1.1955E-06  8.2267E-05  3.2793E-08  3.4550E-04  6.2886E-04
 9.1538E-05  3.6523E-06  8.4279E-07  1.6668E-07  5.3448E-08  9.5070E-09
 5.5403E-10  3.3136E-10  8.1649E-11  8.0965E-11  8.1587E-11  8.5605E-11
 9.2008E-11  5.4038E-10  1.4105E-05  7.1768E-05  2.8540E-08  2.8902E-07
 1.3726E-06  3.7276E-06  5.5968E-05  9.0971E-05  1.0613E-03  5.3882E-05
 8.1922E-06  2.0956E-06  1.8928E-06  2.4563E-06  3.6424E-07  1.0989E-08
 8.8672E-07  9.3053E-10  8.8805E-10  8.0138E-10  7.6008E-10  7.4862E-10
 2.9622E-05  3.9710E-05  7.0525E-05  2.2389E-07  2.0177E-06  8.1330E-06
 3.2328E-06  5.0016E-06  2.2065E-04  2.2697E-03  5.1092E-05  7.7882E-04
 2.0296E-05  1.8255E-05  6.4578E-05  3.8228E-06  1.0626E-07  1.3317E-09
 8.9855E-11  5.6086E-11  3.7050E-11  3.7359E-11  4.0098E-11  3.9027E-11
 4.3926E-11  1.2583E-10  1.7638E-10  8.2130E-05  3.2976E-06  1.0339E-04
 1.9278E-05  2.0486E-05  2.3239E-05  1.9562E-03  2.9074E-04  8.8266E-02

4E    107     4  1261    908     4     3     0     8     0     0     4
    0
5E *RESPONSE IS REACTION RATE DELTA 28 FOR TRX-2     *
7E * EPRI SENS. OF 238OPIS/235UPIS TO 235U SCATTERING   A= -1.8625E-03*
8E  -1.2904E-04 -8.6802E-04 -5.0585E-04 -1.8863E-04 -2.7387E-05
-8.7618E-06 -1.3615E-06 -8.3002E-07 -2.7658E-07  2.2562E-08  8.8110E-08
-8.3075E-08  1.8886E-08 -8.9379E-06 -6.8541E-08 -8.8516E-08 -1.3212E-07
-7.1016E-06 -1.6764E-07 -1.3758E-07 -7.1817E-09 -1.1817E-09 -6.3852E-07
-1.8364E-07 -7.7375E-08  1.0253E-07  1.2078E-07  5.6900E-07 -9.2203E-07
 3.0090E-07  2.5754E-07  3.0365E-06 -2.6929E-06  1.1356E-06  1.2383E-06
 1.3365E-06  1.8137E-06  5.0880E-06 -9.6806E-08 -1.5322E-08 -1.3765E-08
-1.3385E-09 -5.7006E-10 -5.7085E-10 -5.7659E-10 -5.8535E-10 -5.9772E-10
-1.9170E-05 -2.0837E-09 -8.7453E-05 -8.0678E-08 -1.2669E-06 -7.3831E-07
-3.8185E-07 -5.8505E-07 -9.2506E-07 -5.0351E-07  8.8208E-08  1.3002E-06
 1.2028E-06  1.5505E-06  9.7501E-07  8.1396E-07  8.8218E-08 -5.1391E-08
-8.5603E-05 -2.6572E-09 -6.5257E-10 -6.8278E-10 -6.8218E-10 -6.6653E-10
-7.0970E-10 -8.1275E-09 -1.0232E-06 -5.1897E-08 -2.1938E-07 -1.2108E-05
-1.2284E-06 -1.7396E-06 -3.3790E-06 -5.3818E-07  5.7123E-07  7.6782E-07
 1.5270E-06  1.8906E-06  9.5874E-07  1.1517E-07 -3.3539E-08 -2.0561E-09
-1.6727E-05 -8.8155E-10 -8.8698E-10 -8.6620E-10 -8.8891E-10 -5.2036E-10
-2.8579E-09 -8.0141E-09 -8.5801E-05 -3.0661E-07 -1.2335E-06 -1.0618E-06
-5.5248E-07 -9.5137E-07 -3.3593E-06  1.4290E-07 -3.5611E-07  8.7461E-07
 1.0117E-06  1.2633E-06  8.7513E-07  6.8918E-08 -1.3531E-07 -1.5777E-08
-2.0723E-09 -1.9512E-05 -8.2057E-10 -8.1245E-10 -8.6269E-10 -8.1512E-10
-8.8247E-10 -2.8116E-09 -3.1111E-05 -6.5480E-08 -1.8855E-06 -1.8878E-06
-8.7093E-07 -1.0191E-06 -1.1821E-06 -5.6953E-07 -5.9871E-07  3.1408E-05
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4E    107     4  1193    102     4     3     0     0     0     0     4
   0
5E *RESPONSE IS REACTION RATE DELTA 2B FOR THK-4     *
7E * EPRI SEDS. OF 238U FIS/235U FIS TO AL CAPTURE        A=  7.3729E-01*
8D  -2.2976E-04 -7.5814E-05 -8.6940E-06  1.7187E-07  1.1183E-06
 2.3987E-06  8.1918E-06  3.4021E-06  7.1906E-06  5.9114E-06  3.9017E-06
 1.5505E-05  5.4091E-06  5.7512E-06  2.0305E-05  8.4661E-06  5.5978E-06
 3.8954E-06  3.1084E-06  3.0457E-06  4.0560E-06  6.7010E-06  5.1165E-06
 1.1898E-06  8.0282E-08  2.3412E-07  8.9500E-08  1.2227E-07  1.2719E-07
 7.3557E-07  1.1298E-07  2.1973E-07  1.9720E-07  2.1375E-06  1.3401E-07
 8.4728E-08  9.1324E-08  3.0332E-08  1.0288E-08  1.2952E-08  1.8170E-09
 1.0224E-05  7.7812E-10  7.7074E-10  7.7973E-10  7.8023E-10  7.8107E-10
 2.3665E-09  2.2947E-05  6.6470E-05  1.0400E-08  4.9647E-08  6.1172E-08
 4.1075E-08  8.3596E-08  1.6650E-07  1.2507E-07  2.8069E-06  5.1812E-06
 4.0614E-07  2.2055E-07  1.1968E-07  7.3964E-08  6.2078E-08  4.1737E-08
 1.2126E-08  1.2361E-08  3.6323E-05  3.6612E-09  3.6561E-09  3.6879E-09
 3.6846E-09  1.5066E-08  1.5998E-08  2.3907E-08  3.3202E-08  8.9294E-08
 1.0937E-07  9.8347E-08  1.3878E-07  2.5723E-07  9.0753E-06  5.5860E-07
 4.7983E-07  2.9690E-07  1.5940E-07  7.7229E-08  3.3893E-08  1.2465E-08
 1.2608E-08  3.3902E-09  3.3688E-05  3.4101E-09  3.3878E-09  3.4299E-09
 1.3046E-08  1.3325E-08  1.4701E-08  6.5707E-08  1.0074E-07  1.0031E-07
 1.3253E-07  1.9726E-07  5.9974E-07  1.9864E-05  2.0218E-06  8.0068E-06
 2.6811E-06  1.4361E-06  6.2894E-07  2.7318E-07  2.1582E-07  1.1118E-07
 2.0907E-08  2.0886E-08  8.9543E-05  8.0604E-05  9.0409E-09  7.1892E-09
 7.2256E-05  1.7123E-08  1.7320E-08  9.4780E-08  2.9607E-07  4.7838E-07
 4.4358E-07  1.1223E-06  3.2778E-06  1.3307E-04  6.1178E-05  7.3107E-03

4D    107     4  1193    904     4     3     0     0     0     0     4
   0
5E *RESPONSE IS REACTION RATE DELTA 2B FOR THK-2     *
7E * EPRI SEDS. OF 238UFIS/235UFIS TO AL SCATTERING       A= -1.2965E-02*
8D  -1.8872E-03 -3.4156E-03 -8.6679E-03 -2.8901E-03 -1.8014E-04
-3.2133E-05 -1.4156E-05 -3.3653E-06 -5.7303E-06  1.2762E-06 -5.0623E-06
 1.3820E-07 -5.6526E-07 -1.4220E-06 -3.3503E-06 -1.9700E-06 -2.4275E-06
-1.3957E-06 -3.0697E-06 -3.6366E-06 -1.7440E-06 -6.2603E-07 -6.9653E-06
-6.4803E-07  3.8615E-07  2.0201E-06  5.5103E-07  8.8305E-07 -1.5700E-06
 7.6506E-06  7.6813E-07  6.8165E-06 -1.5870E-05  3.6018E-05  2.0602E-07
-1.5581E-06 -5.7917E-06 -3.7403E-06 -2.9881E-06 -2.2398E-06 -3.1606E-07
-3.1739E-07 -1.3553E-07 -1.3559E-07 -1.3564E-07 -1.3584E-07 -1.3592E-07
-8.1161E-07 -3.9835E-07 -1.1092E-06 -1.7799E-06 -6.0459E-06 -3.1996E-06
-1.6677E-06 -2.9773E-06 -3.2899E-06 -1.7607E-06  1.3301E-06  5.5052E-05
 1.0581E-05  5.1601E-07 -3.8269E-06 -5.6081E-06 -8.0109E-06 -5.8391E-06
-1.8593E-06 -1.8198E-06 -8.1330E-07 -8.1593E-07 -8.1525E-07 -8.1888E-07
-8.1919E-07 -1.7184E-06 -1.7862E-06 -2.5278E-06 -3.3985E-06 -8.5083E-06
-8.1593E-06 -6.7777E-06 -5.8911E-06 -2.1855E-06  8.8101E-05  1.5067E-05
 9.3428E-06 -9.5082E-07 -8.2888E-06 -9.8570E-06 -8.9759E-06 -1.8560E-06
-1.8596E-06 -8.9955E-07 -8.9626E-07 -5.0227E-07 -8.9930E-07 -5.0587E-07
-1.9286E-06 -1.9643E-06 -2.1375E-06 -9.3869E-06 -1.1466E-05 -1.0116E-05
-8.5866E-06 -5.0950E-06 -6.5999E-06  1.2483E-08 -8.0906E-06  2.7911E-05
 3.7490E-05  2.5220E-05  3.2870E-06 -5.7894E-06 -1.2291E-05 -8.7005E-06
-1.6919E-06 -1.7081E-06 -7.3535E-07 -7.3058E-07 -7.8792E-07 -7.3680E-07
-7.8596E-07 -1.7752E-06 -1.8051E-06 -1.0160E-05 -2.5613E-05 -1.0688E-05
-9.0028E-06 -1.2993E-05 -1.9649E-05 -8.5573E-06 -9.8619E-06  2.0423E-04

4E    107     4  1265    102     4     5     0     0     0     0     4
   0
5E *RESPONSE IS REACTION RATE DELTA 2B FOR THK-2     *
7E * EPRI SEDS. OF 238U FIS/235U FIS TO U CAPTURE         A=  1.7300E-01*
8D  -1.0727E-06 -1.9533E-06 -1.8851E-06  7.7010E-07  3.1613E-06
 3.3540E-06  2.9605E-06  3.1742E-06  3.6338E-06  8.8228E-06  5.3291E-06
 6.8128E-06  8.8875E-06  1.1870E-05  1.0969E-05  1.9820E-05  2.8938E-05
 3.1594E-05  8.0006E-05  5.1029E-05  6.5540E-05  8.3766E-05  1.0410E-04
 2.1164E-05  1.6119E-06  8.7740E-06  1.8821E-06  2.5029E-06  2.7700E-06
 1.4843E-05  2.3046E-06  8.5220E-06  5.2686E-05  8.3891E-05  2.9110E-06
 1.9537E-06  2.8166E-06  9.9178E-07  7.1700E-07  5.8253E-07  7.6308E-08
 7.6458E-08  3.2618E-08  3.2624E-08  3.2637E-08  3.2686E-08  3.2655E-08
 5.8764E-08  9.5868E-08  2.7339E-07  8.1380E-07  1.3668E-06  1.2889E-06
 8.5700E-07  1.8885E-06  3.6690E-06  2.6766E-06  5.6787E-05  1.0851E-04
 8.8792E-06  5.2928E-06  3.2948E-06  2.3937E-06  2.8665E-06  1.8287E-06
 5.2308E-07  5.2624E-07  1.5388E-07  1.5878E-07  1.5428E-07  1.5519E-07
 1.5857E-07  6.2307E-07  6.3051E-07  8.8183E-07  1.0392E-06  2.5862E-06
 2.9708E-06  2.7783E-06  3.7115E-06  5.7790E-06  1.8592E-05  1.1899E-05
 1.0781E-05  1.6572E-06  5.3691E-06  3.6285E-06  1.8000E-06  6.6030E-07
 6.6272E-07  1.7752E-07  1.7608E-07  1.7709E-07  1.7642E-07  1.7028E-07
 6.7022E-07  6.7783E-07  7.2388E-07  2.9428E-06  3.8458E-06  5.8588E-06
 3.5079E-06  8.8815E-06  1.3938E-05  3.8878E-08  8.1685E-05  1.6602E-04
 5.7990E-05  3.8613E-05  1.8655E-05  1.0822E-05  1.1859E-05  6.7316E-06
 1.2715E-06  1.2686E-06  5.8352E-07  5.3754E-07  5.0000E-07  8.3620E-07
 8.8008E-07  1.0800E-06  1.0870E-06  5.6514E-06  1.6883E-05  1.7810E-05
 1.2916E-05  2.8878E-05  7.3621E-05  2.7126E-03  1.2500E-03  1.6705E-01
```

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9E    107     0  1269   904     0     5     0     0     0     0     0
    0
5E *RESPONSE IS REACTION RATE RELTA 28 FOR TBI-2     *
7E * EPRI SENS. OF 238UFIS/235UFIS TO 0 SCATTERING       A= -7.4928E-01*
8E  -2.9013E-02 -9.2163E-02 -2.2266E-01 -1.9340E-01 -2.4926E-02
-1.2029E-02 -7.7985E-03 -6.2030E-03 -5.9613E-03 -8.6523E-03 -8.4805E-03
-8.5356E-03 -8.1680E-03 -8.5616E-03 -8.6048E-03 -5.1664E-03 -5.0062E-03
-5.1026E-03 -5.8282E-03 -5.7088E-03 -8.9417E-03 -5.7592E-03 -7.2560E-03
-1.0688E-03 -8.5753E-05 -1.8120E-04 -8.6779E-05 -1.0147E-04 -3.4637E-04
-3.3468E-04 -9.2537E-05 -3.2658E-04 -1.5709E-03 -9.6396E-04 -3.2537E-04
-3.5819E-04 -7.6607E-04 -8.2891E-04 -3.1396E-04 -2.3206E-04 -3.2510E-05
-3.2496E-05 -1.3856E-05 -1.3849E-05 -1.3843E-05 -1.3848E-05 -1.3845E-05
-8.1847E-05 -8.0356E-05 -1.1556E-04 -1.7752E-04 -6.0507E-04 -3.3133E-04
-1.7582E-04 -3.1711E-04 -3.8672E-04 -2.1592E-04 -6.5026E-04 -1.6823E-03
-6.9157E-04 -9.1107E-04 -9.0282E-04 -9.1122E-04 -1.0618E-03 -7.2589E-04
-1.0431E-04 -1.7914E-04 -5.1800E-05 -5.2053E-05 -5.1795E-05 -5.2063E-05
-5.1888E-05 -2.1004E-04 -2.1568E-04 -2.9895E-04 -3.9131E-04 -9.5704E-04
-9.0260E-04 -7.0146E-04 -5.5058E-04 -3.1208E-04 -3.8183E-03 -6.2826E-04
-1.0385E-03 -1.3306E-03 -1.5099E-03 -1.2507E-03 -6.0610E-04 -2.3581E-04
-2.3390E-04 -6.2391E-05 -6.1789E-05 -6.2339E-05 -6.1772E-05 -6.2367E-05
-2.3579E-04 -2.3702E-04 -2.5039E-04 -1.0751E-03 -1.3197E-03 -1.0688E-03
-8.8016E-04 -5.3571E-04 -7.7139E-04 -8.1756E-04 -7.2807E-04 -1.4829E-03
-2.5028E-03 -2.6566E-03 -2.3804E-03 -1.9593E-03 -2.8196E-03 -1.4850E-03
-2.6990E-04 -2.6956E-04 -1.3826E-04 -1.1351E-04 -1.1560E-04 -1.5054E-04
-1.5165E-04 -3.5795E-04 -3.5963E-04 -1.9380E-03 -3.3299E-03 -2.8795E-03
-1.2:64E-03 -1.8741E-03 -2.6904E-03 -1.5304E-02 -2.2622E-03  9.2926E-03


9E    107     0  1276   102     0     3     0     0     0     0     0
    0
5B *RESPONSE IS REACTION RATE RELTA 28 FOR TBI-2     *
7E * EPRI SENS. OF 238U FIS/235U FIS TO 0 CAPTURE        A= -2.9161E-03*
8E  -1.3538E-03 -1.5988E-03 -1.0C58E-05  2.8264E-10  1.2626E-09
 1.6371E-09  1.6185E-09  1.6660E-05  1.6772E-05  1.7978E-05  1.9383E-09
 2.2761E-09  2.7273E-09  3.3457E-05  4.1881E-09  5.2382E-09  6.6887E-09
 8.4405E-05  1.0815E-08  1.3818E-08  1.7753E-08  2.2685E-08  2.8109E-08
 5.7281E-09  8.3775E-10  1.2812E-09  8.9853E-10  6.7210E-10  7.4802E-10
 3.9900E-05  6.1908E-10  1.2135E-05  1.8110E-05  1.1678E-08  7.8256E-10
 5.2498E-10  6.4892E-10  2.6631E-10  1.9249E-10  1.4563E-10  2.0093E-11
 2.0521E-11  8.7551E-12  8.7565E-12  8.7600E-12  8.7628E-12  8.7605E-12
 2.6508E-11  2.5621E-11  7.3373E-11  1.1105E-10  3.6651E-10  3.3501E-10
 2.2985E-10  8.9471E-10  9.8342E-10  7.1758E-10  1.5255E-08  2.8017E-08
 2.3815E-05  1.8226F-09  8.8615E-10  6.8832E-10  6.6838E-10  8.9066E-10
 1.4088E-10  1.8173E-10  8.1881E-11  8.1683E-11  8.1535E-11  8.1791E-11
 8.1623E-11  1.6776E-10  1.6977E-10  2.2654E-10  2.7976E-10  6.8532E-10
 7.9939E-10  7.8632E-10  9.9814E-10  1.5535E-05  8.9874E-08  3.1963E-09
 2.9004E-05  2.0625E-09  1.4472E-05  9.7762E-10  8.8678E-10  1.7780E-10
 1.7044E-10  8.7795E-11  8.7405E-11  8.7891E-11  8.7894E-11  8.7984E-11
 1.8145E-10  1.8234E-10  1.9476E-10  7.9179E-10  1.0343E-09  1.4672E-09
 9.8235E-10  1.3106E-09  3.7393E-05  1.0855E-07  1.1217E-08  8.4573E-08
 1.5593E-06  9.3296E-05  5.0283E-05  2.9079E-09  3.0736E-09  1.8030E-09
 3.4034E-10  3.3955E-10  1.8548E-10  1.8383E-10  1.8661E-10  1.1669E-10
 1.1771E-10  2.7815E-10  2.7997E-10  1.5103E-09  8.4007E-09  8.6589E-09
 3.8644E-05  7.6581E-09  1.9880E-06  7.3208E-07  3.3749E-07  8.5027E-05


9E    107     0  1276   904     0     3     0     0     0     0     0
    0
5B *RESPONSE IS REACTION RATE RELTA 28 FOR TBI-2     *
7E * EPRI SENS. OF 238UFIS/235UFIS TO C SCATTERING       A= -8.2612E-02*
8B  -8.9289E-03 -7.2513E-03 -6.1186E-03 -1.9532E-02 -2.8867E-03
-8.6773E-04 -3.3389E-04 -1.3520E-04 -1.3022E-04 -6.3388E-05 -6.8684E-05
-6.6074E-05 -8.3116E-05 -5.2989E-05 -8.3154E-05 -6.1153E-05 -5.3792E-05
-8.6380E-05 -6.6936E-05 -7.7272E-05 -8.1060E-05 -3.5378E-05 -8.0760E-05
 1.8209E-05 -5.6615E-08  5.6898E-06  8.7798E-07  1.9877E-06 -1.9671E-05
 5.5539E-05  1.7867E-05  1.1601E-05 -9.8857E-05  2.0812E-04 -1.1170E-05
-2.0736E-05 -5.6205E-05 -3.4056E-05 -2.5364E-05 -1.8910E-05 -2.6628E-06
-2.6650E-06 -1.1372E-06 -1.1373E-06 -1.1373E-06 -1.1385E-06 -1.1388E-06
-3.8859E-06 -3.3316E-06 -9.5887E-06 -1.8797E-05 -5.1228E-05 -2.7267E-05
-1.8216E-05 -2.5637E-05 -3.0117E-05 -1.6661E-05  8.8145E-06  5.9863E-04
 2.6258E-05 -3.1271E-05 -5.1373E-05 -6.1775E-05 -7.6*10E-05 -5.3304E-05
-1.3405E-05 -1.3027E-05 -3.7830E-06 -3.8020E-06 -3.7904E-06 -3.8179E-06
-3.8181E-06 -1.5501E-05 -1.6134E-05 -2.2788E-05 -3.0504E-05 -7.6284E-05
-7.2311E-05 -5.6767E-05 -8.3159E-05 -1.8538E-05  6.0711E-04  5.2956E-05
 1.6376E-06 -5.6356E-05 -9.8751E-05 -8.8001E-05 -8.3746E-05 -1.7881E-05
-1.7838E-05 -8.6695E-06 -8.6330E-06 -8.6829E-06 -8.6892E-06 -8.7031E-06
-1.7868E-05 -1.8104E-05 -1.9607E-05 -8.5085E-05 -1.0749E-04 -8.5073E-05
-3.8174E-05 -8.2133E-05 -5.6068E-05 -7.1868E-06 -2.2636E-05  6.9287E-04
 3.6333E-04  1.1326E-04 -2.9595E-05 -7.4804E-05 -1.1973E-04 -7.8641E-05
-1.5130E-05 -1.5201E-05 -6.5078E-06 -6.8983E-06 -6.6855E-06 -1.0385E-05
-1.0861E-05 -2.0837E-05 -2.5165E-05 -1.3989E-04 -2.2784E-04 -1.7286E-04
-8.7687E-05 -1.2802E-04 -1.9236E-04 -1.6631E-04 -6.8745E-05  8.8114E-04
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9E    107     8  2CC0   901     8     3     0     8     0     0     8
    0
5E *RESPONSE IS REACTION RATE RELTA 2B FOR TRX-2     *
7E * EPRI SETS. OF 2300 PIS/2350 PIS TO B8**2 IN FUEL    A=  1.5813E-02*
8E  -9.2305E-04 -2.0727E-03 -2.6376E-03 -9.7776E-05  2.0653E-03
 2.0603E-03  1.6202E-03  1.1075E-03  7.5022E-04  5.2010E-04  5.6793E-04
 4.5556E-04  3.6051E-04  4.2463E-04  5.0488E-04  4.5023E-04  3.5620E-04
 3.5339E-04  4.6829E-04  2.6237E-04  3.5735E-04  2.9154E-04  3.8117E-04
 7.9644E-05  2.0426E-05  8.0505E-05  2.7027E-05  3.7000E-05  2.3811E-05
 3.6197E-05  4.7162E-06  8.0823E-06  2.6959E-05  1.7812E-04  3.9215E-05
 1.7819E-05  9.8004E-06  8.8199E-07  3.8004E-08  6.6910E-10  2.7673E-11
 2.0951E-11  1.0237E-11  1.0091E-11  1.0130E-11  1.0232E-11  1.0514E-11
 3.0466E-11  8.0459E-11  2.2594E-10  2.7611E-09  2.8105E-06  3.8075E-05
 1.7840E-05  1.0125E-04  8.2320E-05  5.3041E-05  1.0970E-04  1.0006E-04
 3.2368E-06  1.6762E-06  2.0726E-07  6.9201E-08  1.2546E-08  5.5513E-10
 8.8540E-12  1.3275E-12  2.8754E-13  2.3008E-13  2.2586E-13  2.3008E-13
 2.6605E-13  2.0867E-12  1.2410E-11  2.2829E-10  2.8477E-09  1.2701E-05
 1.0400E-04  2.1678E-04  3.1380E-04  3.8582E-05  1.8739E-04  8.1161E-06
 2.5456E-06  8.0502E-07  1.1773E-07  3.6153E-09  2.2531E-11  7.2203E-13
 3.7039E-13  7.8965E-14  7.6170E-14  7.7318E-14  7.9695E-14  8.6288E-14
 8.5204E-13  1.0766E-12  8.2108E-12  8.1219E-10  7.3563E-08  7.6256E-07
 3.5227E-05  7.2072E-05  1.0088E-04  3.7578E-04  3.3761E-05  5.5507E-05
 5.8561E-05  1.7525E-05  2.0209E-06  2.9353E-07  1.0002E-08  1.6841E-11
 3.7502E-13  2.8365E-13  9.3875E-14  9.0322E-14  5.3891E-14  9.0265E-14
 1.0113E-13  2.9577E-13  8.6029E-13  2.5141E-11  2.8253E-08  1.8256E-06
 3.9410E-06  1.7205E-05  8.0000E-05  9.8279E-04  1.6640E-04  8.1750E-03

9E    107     8  2CC0   902     8     3     0     8     0     0     8
    0
5E *RESPONSE IS REACTION RATE RELTA 2B FOR TRX-2     *
7E * EPRI SETS. OF 2300 PIS/2350 PIS TO B8**2 IN VOID    A=  1.6901E-03*
8E  -1.9726E-04 -8.5664E-05 -1.3645E-04  2.0389E-05  6.2056E-05
 1.3596E-04  9.9115E-05  7.9853E-05  8.1611E-05  3.7157E-05  7.0935E-05
 2.5774E-05  3.7176E-05  7.3062E-05  6.8693E-05  8.3664E-05  8.1381E-05
 8.0231E-05  8.0166E-05  6.8764E-05  6.8870E-05  6.8287E-05  5.9185E-05
 1.3037E-05  8.3878E-07  2.8201E-06  9.1657E-07  1.2487E-06  1.2706E-06
 7.3852E-06  1.1182E-06  2.1529E-06  1.7548E-06  1.9842E-05  1.1754E-06
 7.2723E-07  7.4265E-07  2.1097E-07  1.0883E-07  7.0099E-08  9.7016E-09
 9.8198E-09  8.1975E-09  8.2083E-09  8.2145E-09  8.2194E-09  8.2288E-09
 1.2885E-08  1.2516E-08  3.6709E-08  6.1748E-08  8.0358E-07  5.8861E-07
 3.7221E-07  7.1616E-07  1.0138E-06  1.0631E-06  2.3056E-05  3.7414E-05
 2.6836E-06  1.3996E-06  7.1398E-07  8.0161E-07  2.8984E-07  1.6172E-07
 8.6525E-08  8.8083E-08  1.0212E-08  1.0362E-08  1.0382E-08  1.0559E-08
 1.0600E-08  6.0701E-08  6.8700E-08  1.1651E-07  1.0386E-07  5.3638E-07
 6.5000E-07  5.6786E-07  8.1207E-07  1.5920E-06  6.6734E-05  3.6822E-06
 3.0815E-06  1.7780E-06  8.2057E-07  2.7950E-07  8.7950E-08  3.2014E-08
 3.2872E-08  8.9120E-09  8.8923E-09  9.0413E-09  5.0194E-09  9.1783E-09
 3.5406E-08  3.7637E-08  8.4028E-08  2.5857E-07  8.8296E-07  9.8222E-07
 7.6070E-07  1.1505E-06  3.5888E-06  9.9213E-05  8.9113E-06  3.3357E-05
 1.0177E-05  5.1258E-06  2.0065E-06  7.2015E-07  3.6785E-07  1.1315E-07
 2.0365E-08  2.0372E-08  8.7532E-09  8.6781E-09  8.8779E-09  7.1905E-09
 7.3101E-05  1.7517E-08  1.8043E-08  1.0586E-07  8.7576E-07  1.2646E-06
 1.3561E-06  3.5735E-06  1.0531E-05  3.3981E-05  9.2076E-06  3.8330E-06

9E    107     8  2CC0   903     8     3     0     8     0     0     8
    0
5E *RESPONSE IS REACTION RATE RELTA 2B FOR TRX-2     *
7E * EPRI SETS. OF 2300 PIS/2350 PIS TO B8**2 IN CLAD    A=  5.8406E-03*
8E  -3.7511E-04 -5.7762E-04 -8.5330E-04  1.1563E-04  6.2180E-04
 5.8892E-04  8.1064E-04  1.0250E-04  8.8046E-04  1.0763E-04  1.0705E-04
 6.7861E-05  6.3702E-05  1.7688E-04  1.7321E-04  1.0290E-04  1.3353E-04
 1.0815E-04  1.3723E-04  1.7032E-04  2.5032E-04  2.2886E-04  7.0585E-05
 3.7795E-05  2.0905E-06  7.2232E-06  2.7021E-06  3.7304E-06  3.0607E-06
 3.6329E-05  5.8947E-06  1.0638E-05  9.0507E-06  1.5607E-04  9.0874E-06
 5.9269E-06  6.3630E-06  2.1071E-06  1.2629E-06  8.9723E-07  1.2585E-07
 1.2616E-07  5.3866E-08  5.3900E-08  5.3965E-08  5.3996E-08  5.4051E-08
 1.6378E-07  1.5875E-07  8.5964E-07  7.2062E-07  3.0232E-06  8.2066E-06
 2.8739E-06  5.7226E-06  1.1305E-05  8.0685E-06  5.8206E-05  1.1675E-04
 8.5511E-06  8.5988E-06  2.8865E-06  1.5265E-06  1.2928E-06  8.5525E-07
 2.8807E-07  2.5262E-07  7.8194E-08  7.8767E-08  7.8648E-08  7.5276E-08
 7.5195E-08  3.0726E-07  3.2579E-07  8.0657E-07  6.7881E-07  1.8093E-06
 2.2059E-06  1.9703E-06  2.7704E-06  5.1033E-06  6.7809E-05  3.7197E-06
 3.1568E-06  1.9371E-06  1.0329E-06  8.9792E-07  2.1785E-07  8.0006E-08
 8.0859E-08  2.1732E-08  2.1590E-08  2.1850E-08  2.1703E-08  2.1968E-08
 8.3529E-08  8.5263E-08  9.3963E-08  8.1960E-07  6.3967E-07  1.1380E-06
 8.3210E-07  1.2325E-06  3.7122E-06  1.2189E-04  1.0942E-05  7.0033E-05
 5.0771E-05  2.6051E-05  1.1318E-05  8.8988E-06  3.8338E-06  1.9604E-06
 3.6750E-07  3.6676E-07  1.5713E-07  1.5542E-07  1.5852E-07  1.2530E-07
 1.2857E-07  2.9975E-07  3.0290E-07  1.6520E-06  5.1170E-06  8.0365E-06
 7.5022E-06  1.8723E-05  5.3099E-05  2.0156E-04  1.1870E-04  1.2336E-03
```

```
9E     107      0  2CC0    90C      0      3      0      9      0      0      3
     0
5E *RESPONSE IS REACTION RATE RATIO 28 FOR TBR-2      *
7E * EPRI SENS. OF 238U FIS/235U FIS TO DB**2 IN DOPPLER A=  6.0844E-02*
8E  -8.0971E-03 -6.2283E-03 -6.6672E-03  2.4155E-03  8.9221E-03
 7.9294E-03  5.1982E-03  4.0258E-03  3.8220E-03  2.8556E-03  2.1587E-03
 2.1165E-03  1.5494E-03  1.4528E-03  1.1581E-03  1.5958E-03  1.1066E-03
 1.4197E-03  1.2095E-03  1.5611E-03  1.1633E-03  1.4911E-03  1.3955E-03
 1.7453E-04  3.5945E-05  7.3755E-05  2.8276E-05  3.1738E-05  9.1989E-05
 2.1115E-04  3.2266E-05  1.1487E-04  2.9570E-05  3.1891E-04  2.0513E-05
 1.3786E-05  3.3270E-05  3.6463E-05  2.6313E-05  1.9882E-05  2.7961E-06
 2.7995E-06  1.1982E-06  1.1988E-06  1.1987E-06  1.1950E-06  1.1952E-06
 3.6184E-06  3.4927E-06  9.5989E-06  1.5123E-05  8.9833E-05  8.5052E-05
 3.1136E-05  7.1403E-05  1.4135E-04  1.0259E-04  7.2832E-04  5.1895E-04
 8.0863E-05  3.2190E-05  1.9923E-05  7.2079E-05  7.0001E-05  5.4023E-05
 1.8362E-05  1.8056E-05  5.3932E-06  5.8233E-06  5.8826E-06  5.8303E-06
 5.0111E-06  2.1797E-05  2.2032E-05  2.9363E-05  3.6205E-05  8.8037E-05
 1.0273E-04  6.0275E-05  2.3537E-05  6.8300E-05  1.0887E-03  6.9101E-05
 1.0980E-04  6.5635E-05  2.9349E-05  1.9719E-05  9.7455E-06  2.6092E-05
 2.6564E-05  7.1115E-06  7.0519E-06  7.1226E-06  7.0620E-06  7.1333E-06
 2.6966E-05  2.7065E-05  2.8880E-05  1.1719E-04  1.5247E-04  2.9830E-05
 1.9076E-05  3.1501E-05  8.9141E-05  9.9505E-04  1.6616E-04  6.1738E-04
 2.9160E-04  1.0197E-04  5.9333E-05  3.8020E-05  6.3004E-05  3.6737E-05
 6.9163E-06  6.8946E-06  2.9514E-06  2.9177E-06  2.9731E-06  6.6519E-05
 6.7075E-05  1.5043E-04  1.5931E-04  8.5718E-04  6.8251E-05  3.7981E-05
 8.0933E-05  3.8136E-05  2.2460E-04  8.0170E-03  1.2254E-03  1.5630E-02


9E     107      0  1262    452      8      3      0      7      0      0      3
     0
5B *RESPONSE IS REACTION RATE CB FOR TBR-2      *
7E * EPRI SENS. OF 238U CAP/235U FIS TO 238U NUBAR      A= -1.9987E-05*
6B  -1.9683E-06 -8.2712E-06 -7.4789E-06 -5.8633E-06 -3.0293E-07
-1.7839E-02 -1.2085E-09 -8.1618E-10 -2.0581E-10 -1.7076E-10 -1.3758E-10
-2.2566E-10 -2.5087E-10 -2.2511E-10 -6.5957E-12 -1.7879E-16 -1.2058E-15
-9.6069E-14 -3.3032E-10 -1.9523E-09 -3.9641E-14 -2.6202E-14 -2.3634E-14
-8.9665E-15 -3.3301E-16 -9.6785E-16 -3.7264E-16 -5.0595E-16 -5.5954E-16
-2.9710E-15 -8.5807E-16 -9.0664E-16 -1.0010E-15 -8.3037E-15 -5.5005E-16
-3.7810E-16 -8.7262E-16 -1.0507E-16 -8.2153E-17 -1.3612E-17 -1.0953E-18
-1.0407E-18 -8.3056E-19 -8.3502E-19 -8.3736E-15 -8.8015E-19 -8.8659E-19
-1.4086E-18 -1.4990E-18 -5.9663E-18 -2.3789E-17 -3.3811E-16 -3.0223E-16
-1.8933E-16 -3.6783E-16 -6.7780E-16 -8.9502E-16 -1.0309E-14 -1.8342E-14
-1.5861E-15 -9.4716E-16 -6.0110E-16 -8.3885E-16 -8.0152E-16 -1.3659E-16
-7.3892E-18 -3.9822E-18 -9.3882E-15 -9.1316E-15 -9.0102E-19 -9.2870E-19
-9.7408E-15 -5.8798E-18 -1.2938E-17 -5.6677E-17 -1.6539E-16 -5.4907E-16
-5.9730E-16 -8.8798E-16 -6.0209E-16 -9.0154E-16 -3.0616E-14 -1.9077E-15
-1.7902E-15 -1.2902E-15 -9.1832E-16 -8.9748E-16 -6.0576E-17 -7.2811E-18
-8.9764E-18 -1.1666E-18 -1.1306E-18 -1.1353E-18 -1.1000E-18 -1.1060E-18
-5.2084E-18 -7.7705E-18 -1.5242E-17 -3.3100E-16 -6.7580E-16 -8.6830E-16
-5.5371E-16 -7.7065E-16 -2.1497E-15 -6.0672E-14 -6.0650E-15 -2.5278E-14
-9.0390E-15 -5.8108E-15 -2.9182E-15 -1.6729E-15 -1.3507E-15 -1.6807E-16
-9.6575E-18 -8.0388E-18 -3.1705E-18 -3.0508E-18 -3.0647E-18 -2.7381E-18
-2.8178E-18 -7.1911E-18 -8.6078E-18 -1.5201E-16 -2.1136E-15 -2.5524E-15
-1.9138E-15 -8.2145E-15 -1.0898E-14 -3.9570E-13 -1.2535E-13  0.0


9E     107      0  1262    18      8      1      0      7      0      0      3
     0
5E *RESPONSE IS REACTION RATE CB FOR TBR-2      *
7E * EPRI SENS. OF 238U CAP/235U FIS TO 238U FISSION     A= -2.7516E-05*
8E   1.2467E-05  1.2516E-05 -7.7475E-06 -8.0817E-05 -8.1295E-06
 2.6892E-08  2.0798E-08  9.0159E-05  6.0275E-09  8.1944E-05  1.6019E-09
 1.6382E-05  1.4557E-09  1.0696E-05  8.0246E-11  1.1170E-15  1.0306E-14
 3.3001E-12  9.0103E-09  1.1185E-07  8.2026E-12  2.6396E-12  9.3388E-13
 8.0588E-13  9.2855E-14  3.1716E-13  9.1918E-14  1.3897E-13 -1.0887E-13
 1.0328E-12  1.0568E-13  5.0910E-14 -1.3631E-12  2.6938E-12 -1.7898E-13
-3.2476E-13 -7.5702E-13 -3.4064E-13 -9.3779E-14 -1.0888E-14 -8.2156E-16
-7.7304E-16 -3.2174E-16 -3.1821E-16 -3.1749E-16 -3.1818E-16 -3.2094E-16
-1.0047E-15 -1.0555E-15 -8.1508E-15 -1.7249E-14 -5.5094E-13 -3.0866E-13
-1.0187E-13 -7.8132E-14  5.7168E-14  7.5921E-14  8.1778E-12  6.0535E-12
-8.5267E-13 -1.1045E-12 -1.1779E-12 -9.7672E-13 -7.3711E-13 -1.5872E-13
-6.8314E-15 -3.1736E-15 -7.1767E-16 -6.8537E-16 -6.6679E-16 -6.7703E-16
-7.0453E-16 -3.8466E-15 -8.6156E-15 -3.9660E-14 -1.5566E-13 -8.2705E-13
-7.8652E-13 -3.7125E-13 -1.1860E-13 -8.0985E-15  1.0560E-11 -9.5692E-14
-1.0506E-12 -1.9805E-12 -1.9802E-12 -7.8080E-13 -6.2080E-14 -5.9335E-15
-3.7943E-15 -8.6677E-16 -8.3336E-16 -8.3027E-16 -8.2751E-16 -8.5325E-16
-3.6928E-15 -5.3205E-15 -1.0662E-14 -3.2692E-13 -1.3530E-12 -1.3606E-12
-5.3281E-13 -8.6570E-13 -3.2870E-14  2.9046E-11  2.0890E-12  1.2220E-11
-9.2305E-13 -8.5816E-12 -8.7042E-12 -3.2676E-12 -1.7414E-12 -1.2759E-13
-6.7583E-15 -5.5176E-15 -2.1506E-15 -2.0508E-15 -2.0831E-15 -1.8118E-15
-1.8648E-15 -8.7571E-15 -5.7038E-15 -1.0986E-13 -3.0760E-12 -8.1821E-12
-2.5034E-12 -3.3624E-12 -1.3349E-12  2.5046E-10  9.0482E-11  0.0
```

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4E    107     4  1262   102     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBI-2    *
7E * EPRI SEBS. OF 238U CAP/235U FIS TO 238U CAPTURE     A=  9.7758E-01*
8E   3.9663E-05  8.8700E-04  2.1052E-03  5.0111E-03  9.0740E-03
 8.7179E-03  5.9934E-03  5.3514E-03  5.0879E-03  5.1535E-03  6.6115E-03
 7.4366E-03  8.3053E-03  9.2295E-03  1.0095E-02  1.1121E-02  1.2630E-02
 1.2217E-02  1.4650E-02  1.4562E-02  1.2662E-02  1.5240E-02  1.9975E-02
 3.6577E-03  9.4707E-05  8.2033E-05  1.0235E-04  3.7319E-05  9.8455E-04
 1.6320E-04  1.2767E-04  1.0003E-04  4.5615E-03  1.0235E-03  3.0991E-04
 3.3340E-04  7.2045E-04  8.5290E-04  8.6345E-04  8.5310E-04  6.8043E-05
 7.0061E-05  3.0232E-05  3.0437E-05  3.0691E-05  3.0047E-05  3.1017E-05
 9.5099E-05  9.3547E-05  2.7501E-04  8.3262E-04  1.6052E-03  1.0275E-03
 4.3279E-04  5.4710E-04  5.2779E-04  3.0071E-04  1.0311E-03  2.7156E-03
 1.2995E-03  1.2256E-03  9.3957E-04  6.9100E-04  6.1911E-04  5.4571E-04
 2.3768E-04  2.7173E-04  8.5351E-05  8.0576E-05  9.0101E-05  9.1739E-05
 9.2699E-05  3.8575E-04  8.8513E-04  5.2065E-04  6.1303E-04  1.7030E-03
 2.0242E-03  1.2684E-03  1.0909E-03  1.2843E-03  8.3779E-03  1.3240E-03
 2.0347E-03  2.2292E-03  1.6286E-03  5.6854E-04  2.0077E-04  9.5126E-05
 1.6852E-04  3.0933E-05  3.1446E-05  3.2402E-05  3.2035E-05  3.3775E-05
 1.3106E-04  1.3752E-04  1.4561E-04  8.8823E-04  1.0815E-03  2.3024E-03
 1.2312E-03  1.3595E-03  2.5387E-03  9.1472E-03  2.0524E-03  8.7929E-03
 5.0383E-03  5.9953E-03  8.0122E-03  1.9047E-03  5.6795E-04  7.6506E-05
 1.7952E-05  1.9948E-05  8.9010E-06  9.0799E-06  9.5791E-06  9.1614E-06
 9.7218E-06  2.0318E-05  2.6102E-05  1.1010E-04  8.0036E-04  8.0428E-03
 2.9964E-03  5.3006E-03  7.9524E-03  3.1802E-02  6.7744E-03  6.1620E-01


4B    107     4  1262   904     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBI-2    *
7E * EPRI SEBS. OF 238UCAP/235UFIS TO 238U SCATTERING   A=  2.0297E-03*
8E   1.6221E-05  8.1855E-05  3.6502E-05 -3.6492E-04 -8.4113E-04
-7.1949E-05 -2.6096E-04  1.1605E-05  1.4887E-05  8.0691E-05  1.2406E-05
 5.0956E-07 -3.5805E-06 -9.7670E-06 -1.3567E-05 -1.5524E-05 -3.1663E-05
-1.3693E-05 -2.2395E-05 -3.0977E-05 -1.4083E-05 -2.0769E-05 -6.2902E-04
-8.0750E-05 -7.4893E-06  1.6958E-05  1.7323E-05  8.7269E-05 -1.2546E-04
 5.3299E-05  8.8677E-05  6.0574E-04 -5.5993E-04  8.8712E-04  5.0710E-04
 6.8302E-04  1.1865E-03  6.4494E-05 -8.0701E-04 -8.5292E-04 -6.8879E-05
-7.0005E-05 -3.0177E-05 -3.0362E-05 -3.0548E-05 -3.0726E-05 -3.0872E-05
-9.0480E-05 -9.2652E-05 -2.7874E-04 -8.0738E-04 -8.0805E-04  2.2099E-05
 8.5905E-06 -4.7292E-06 -1.2029E-05 -2.9516E-05  2.0769E-05  5.0367E-04
 9.0515E-04  1.2375E-03  1.0826E-03  6.2711E-04  8.2201E-04 -5.0673E-04
-2.5010E-04 -2.0125E-04 -8.7145E-05 -8.9894E-05 -9.0911E-05 -9.2001E-05
-9.2375E-05 -3.7725E-04 -3.7712E-04 -8.5008E-04 -8.5606E-04 -8.7000E-04
-8.9743E-05  9.6006E-06  2.3704E-04 -8.4698E-06  1.0324E-04  2.9570E-04
 6.6270E-04  1.0025E-03  7.0828E-04  1.1535E-04 -1.6901E-04 -1.0200E-04
-1.1270E-04 -3.1402E-05 -3.1713E-05 -3.2470E-05 -3.2526E-05 -3.3153E-05
-1.2603E-04 -1.2566E-04 -1.2474E-04 -2.6271E-04  1.9670E-04  3.7603E-05
 1.8949E-06 -1.0603E-05 -8.5939E-05  5.1012E-05 -8.1206E-05  2.2543E-04
 3.2655E-04  8.2605E-04  3.0051E-04  5.1979E-05 -1.0267E-04 -5.7065E-05
-1.9616E-05 -2.1000E-05 -9.2551E-04 -9.2055E-06 -9.8029E-06 -8.5591E-06
-8.8005E-06 -2.0991E-05 -2.0989E-05 -7.7919E-05  1.7152E-04 -7.0693E-05
-7.9769E-05 -1.3148E-04 -1.7634E-04 -1.3036E-04 -1.6912E-04  6.5901E-04


4B    107     4  1261   852     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBI-2    *
7E * EPRI SEBS. OF 238U CAP/235U FIS TO 235U BUBAR      A= -3.2140E-04*
8E  -8.4628E-08 -1.1165E-07 -2.2310E-07 -2.3865E-07 -2.1711E-07
-1.8621E-07 -1.4425E-07 -1.2130E-07 -1.0811E-07 -9.5135E-08 -8.6910E-08
-8.7565E-08 -8.9392E-08 -1.0288E-07 -1.2001E-07 -1.5275E-07 -1.8229E-07
-2.3786E-07 -2.9115E-07 -4.4894E-07 -4.5802E-07 -6.7654E-07 -6.8170E-07
-1.3626E-07 -9.7515E-09 -2.8916E-08 -1.1202E-08 -1.5470E-08 -1.7350E-08
-9.5523E-08 -1.5252E-08 -2.7732E-08 -2.8077E-08 -3.1680E-07 -3.2956E-09
-7.6637E-10 -1.7697E-09 -8.2591E-10 -1.5502E-09 -2.0970E-10 -5.3636E-12
-4.6046E-12 -1.8082E-12 -1.7905E-12 -1.7591E-12 -1.7395E-12 -1.7429E-12
-5.4209E-12 -5.7996E-12 -2.5800E-11 -3.3030E-10 -4.6657E-09 -1.0051E-09
-5.5964E-10 -1.5241E-05 -1.5078E-08 -1.4947E-08 -5.2189E-07 -7.7208E-07
-1.7629E-07 -1.8916E-08 -9.2079E-09 -8.2251E-09 -3.8059E-09 -1.0810E-09
-5.9149E-11 -3.3635E-11 -8.1985E-12 -8.1065E-12 -8.1870E-12 -8.5293E-12
-9.1608E-12 -5.4005E-11 -1.3759E-10 -6.8025E-10 -2.0027E-09 -8.6291E-09
-1.5871E-08 -2.7715E-08 -1.6483E-07 -1.5981E-07 -1.0623E-06 -8.8519E-08
-3.4431E-09 -1.6565E-09 -5.7454E-09 -3.8705E-08 -1.6015E-08 -8.3862E-10
-1.6743E-10 -2.9190E-11 -2.5535E-11 -2.3350E-11 -2.1558E-11 -2.0673E-11
-7.7864E-11 -9.7346E-11 -1.7718E-10 -8.6091E-09 -1.3231E-08 -1.1229E-08
-9.6932E-09 -1.1425E-08 -3.0637E-07 -1.5190E-06 -7.7963E-08 -1.3855E-06
-1.4405E-08 -1.4323E-08 -8.8761E-08 -1.7250E-08 -8.8290E-09 -3.7254E-10
-2.0086E-11 -1.6955E-11 -6.7991E-12 -6.6083E-12  6.7132E-12 -6.0590E-12
-6.3817E-12 -1.6615E-11 -2.0757E-11 -8.7835E-10 -8.2034E-08 -1.0417E-07
-8.0873E-08 -5.1171E-08 -6.8525E-08 -2.4242E-06 -1.5821E-06 -3.0479E-04
```

```
4E     107      4  1261    1E      4      3      0      7      0      0      3
    0
5E *RESPONSE IS REACTION RATE CB FCR TRX-2     *
7E * EFFI SENS. OF 238U CAP/235U FIS TO 235U FISSION     A= -7.7583E-01*
8E   -1.2497E-04 -3.6338E-04 -7.9356E-04 -9.0584E-04 -8.5365E-04
-7.3025E-04 -5.6661E-04 -4.6455E-04 -3.8905E-04 -3.4884E-04 -3.1547E-04
-3.1316E-04 -3.1794E-04 -3.6407E-04 -4.2322E-04 -5.3666E-04 -6.3892E-04
-8.2385E-04 -1.0171E-03 -1.5056E-03 -1.5595E-03 -2.2952E-03 -2.2301E-03
-5.2148E-04 -3.2186E-05 -9.2458E-05 -3.6610E-05 -5.0020E-05 -6.1098E-05
-1.0481E-04 -5.0056E-05 -9.5840E-05 -9.7452E-05 -1.0075E-03 -1.2128E-05
-3.1116E-04 -7.8793E-06 -3.1196E-06 -3.3625E-06 -3.1917E-07 -7.6972E-09
-6.5937E-05 -2.6056E-09 -2.5140E-05 -2.8599E-09 -2.4243E-09 -2.4177E-09
-7.8782E-05 -7.9302E-09 -3.5145E-04 -4.7008E-07 -1.6373E-05 -4.0026E-06
-2.0476E-06 -5.2011E-06 -4.8790E-05 -4.8164E-05 -1.6219E-03 -2.4297E-03
-4.0756E-04 -7.8721E-05 -4.1468E-05 -1.7993E-05 -1.1166E-05 -2.1553E-06
-9.1172E-04 -4.7953E-08 -1.1302E-04 -1.1009E-08 -1.0941E-08 -1.1360E-08
-1.2082E-04 -6.9503E-08 -1.7030E-07 -4.8583E-07 -3.6134E-06 -2.5641E-05
-5.5963E-05 -9.3824E-05 -4.6129E-04 -5.0542E-04 -3.3303E-03 -1.6489E-04
-1.3035E-05 -7.1356E-06 -2.4170E-05 -1.0147E-04 -2.5137E-05 -5.9069E-07
-2.1111E-07 -3.5972E-08 -3.1253E-04 -2.8389E-04 -2.6042E-08 -2.4818E-08
-9.2156E-04 -1.1293E-07 -2.0816E-07 -1.4056E-05 -4.8554E-05 -4.6078E-05
-3.7243E-05 -4.1502E-05 -9.3024E-04 -4.5725E-03 -2.4579E-04 -3.9534E-03
-4.9900E-05 -5.5501E-05 -3.5133E-04 -6.1395E-05 -9.2804E-06 -4.6167E-07
-2.2440E-04 -1.8633E-08 -7.3778E-05 -7.1171E-09 -3.7129E-09 -6.4401E-09
-6.7349E-05 -1.7654E-04 -2.2102E-04 -5.4956E-07 -1.0018E-04 -3.6945E-04
-1.5737E-04 -1.9057E-04 -2.3212E-04 -6.9856E-03 -4.2808E-03 -7.2324E-01


4E     107      4  1261    102     4      3      0      7      0      0      3
    0
5E *RESPONSE IS REACTION RATE CB FCR TRX-2     *
7E * EFFI SENS. OF 238U CAP/235U FIS TO 235U CAPTURE     A=  3.9372E-02*
8D    2.5656E-05  8.6914E-05 -2.4498E-10 -7.0873E-08 -1.8567E-07
 5.9567E-08  4.2336E-07  5.8313E-07  6.3856E-07  6.6803E-07  3.4215E-07
 2.4909E-07  2.3284E-07  2.3487E-07  3.8864E-07  5.6054E-07  6.1875E-07
 1.1348E-06  4.1991E-06  8.9583E-06  2.0783E-05  3.3096E-05  1.4982E-05
 1.7156E-05  1.8280E-06  6.1193E-06  1.7321E-06  2.5749E-06 -1.9651E-06
 1.7553E-05  1.6885E-06  7.8873E-07 -1.1596E-05  3.2876E-05 -4.1533E-07
-2.4184E-07 -1.8031E-06 -1.1738E-06 -1.6620E-06 -1.5503E-07 -3.1615E-09
-2.6298E-05 -1.0206E-05 -9.7572E-10 -9.4709E-10 -9.2718E-10 -9.1969E-10
-2.8267E-05 -2.9977E-09 -1.3827E-06 -2.2972E-07 -7.2210E-06 -5.7019E-07
-1.1955E-07 -1.9716E-07  2.8730E-06  3.3026E-07  8.2274E-05  1.3151E-04
-1.9292E-05 -4.3206E-06 -2.6191E-06 -1.1897E-06 -7.8265E-07 -1.7371E-07
-7.3525E-09 -3.7501E-09 -8.6800E-10 -8.3721E-10 -8.2444E-10 -8.4864E-10
-8.9516E-10 -5.0506E-09 -1.2002E-08 -6.0217E-08 -2.6356E-07 -1.8220E-06
-3.0023E-06 -3.6372E-06 -1.1118E-05 -4.8143E-07  2.1887E-04 -1.7165E-06
-1.8911E-06 -3.5858E-06 -1.1941E-05 -6.8567E-05 -1.8771E-05 -4.5363E-07
-1.6864E-07 -2.9937E-08 -2.6508E-06 -2.4387E-08 -2.2607E-08 -2.1771E-08
-8.2579E-06 -1.0276E-07 -1.7560E-07 -7.8534E-06 -1.8538E-05 -8.9079E-06
-3.0427E-06 -2.5663E-06 -2.3558E-06  6.8183E-04  9.8631E-06  2.2036E-04
-1.3666E-06 -1.3403E-05 -1.6612E-04 -3.6189E-05 -5.7701E-06 -3.7453E-07
-2.0773E-06 -1.7674E-08 -7.1229E-05 -6.9449E-09 -7.0718E-09 -6.8109E-09
-6.7767E-05 -1.8075E-08 -2.3319E-06 -7.1393E-07 -1.7938E-04 -4.3087E-04
-3.1077E-05 -1.4463E-05 -1.9312E-06  6.9271E-04  1.1665E-04  3.8192E-02


4E     107      4  1261    904     4      3      0      7      0      0      3
    0
5E *RESPONSE IS REACTION RATE CB FCR TRX-2     *
7E * EFFI SENS. OF 238UCAP/235UFIS TO 235U SCATTERING    A= -4.2127E-06*
8D    1.0337E-07  2.9815E-07 -2.8600E-07 -7.8540E-07 -3.4778E-06
-1.8702E-06 -2.0230E-07  1.3317E-07  2.2494E-07  1.7733E-07  1.3095E-07
 6.6150E-05 -4.1922E-08 -1.1685E-07 -1.6297E-07 -1.7457E-07 -4.2726E-07
-2.3648E-07 -4.5226E-07 -6.3078E-07 -2.0577E-07  2.5872E-08 -2.2256E-06
-1.3342E-06 -2.2725E-07  4.6899E-07  4.7152E-07  2.1499E-06 -2.9731E-06
 1.0616E-06  8.4536E-07  1.0750E-05 -9.4227E-06  4.2516E-06  4.4911E-06
 4.7798E-06  5.6956E-06  1.6371E-07 -3.5230E-07 -5.5749E-08 -5.0231E-09
-4.8874E-09 -2.0825E-09 -2.0862E-05 -2.1082E-09 -2.1010E-09 -2.1871E-09
-7.0201E-05 -7.6395E-09 -3.2145E-08 -1.5027E-07 -4.9314E-06 -3.0770E-06
-1.2017E-06 -1.3165E-06 -6.7791E-07 -1.0806E-06  3.4623E-07  4.5677E-06
 4.2516E-06  5.3831E-06  3.3567E-06  1.4372E-06  1.4478E-07 -1.9046E-07
-1.6653E-08 -9.7605E-09 -2.3856E-05 -2.3491E-09 -2.3478E-09 -2.4385E-09
-2.5978E-09 -1.5156E-08 -3.7854E-08 -1.9826E-07 -8.4265E-07 -5.1200E-06
-5.9188E-06 -4.3065E-06 -2.8722E-06 -1.9092E-06  1.9876E-06  2.7081E-06
 5.3955E-06  6.6518E-06  3.4778E-06  4.3833E-07 -1.1838E-07 -7.3449E-09
-5.9776E-05 -1.5781E-09 -1.5973E-05 -1.6661E-05 -1.7330E-09 -1.8597E-09
-8.7845E-05 -1.4347E-08 -3.0664E-08 -1.0872E-06 -4.2976E-06 -4.2538E-06
-2.0613E-06 -3.0426E-06 -9.4809E-06  7.7755E-07 -9.6269E-07  2.5904E-06
 3.6128E-06  4.2787E-06  1.8508E-06  2.6197E-07 -4.7462E-07 -5.9129E-08
-8.0924E-05 -7.6483E-09 -3.2212E-05 -3.1899E-09 -3.3536E-09 -3.1205E-09
-1.3386E-05 -8.9686E-09 -1.1355E-06 -2.3222E-07 -6.5704E-06 -4.5063E-06
-1.0068E-06 -3.6162E-06 -3.9790E-06 -1.3483E-06 -7.6412E-07  1.5400E-05
```

```
4B    107     4  1193   102     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBX-2     *
7B * EPRI SEBS. OF 238U CAP/235U FIS TO AL CAPTURE       A=  3.2812E-03*
8B   5.2977E-07  2.0417E-07  1.3665E-08 -1.0991E-09 -5.4611E-10
 1.0053E-C8  6.7854E-08  7.0921E-CE  1.6729E-C7  1.5090E-07  9.1700E-08
 3.0808E-C7  1.5310E-07  1.7999E-07  8.0011E-07  3.5725E-07  2.5093E-07
 2.3459E-C7  1.962EE-07  2.7397E-07  4.1893E-07  5.0050E-07  4.5835E-07
 1.6606E-C7  1.0391E-C8  4.6668E-C8  1.5368E-08  2.2199E-08 -8.2111E-10
 1.8983E-07  1.8435E-08  2.4293E-CE -1.3476E-07  8.2519E-07 -1.6953E-09
-2.0539E-0E -6.8862E-08 -8.3530E-CE -3.0309E-08 -2.5006E-08 -3.6142E-09
-3.6096E-09 -1.5382E-09 -1.5369E-0S -1.5350E-0S -1.5357E-09 -1.5346E-09
-8.6345E-0S -8.8665E-09 -1.2788E-C8 -1.9826E-08 -6.8046E-08 -2.8107E-08
-8.9822E-0S -8.086CE-10  1.9658E-CE  1.8257E-0E  6.5657E-07  1.1030E-06
 1.1074E-0S -8.5984E-08 -1.1336E-07 -1.2214E-07 -1.5410E-07 -1.8008E-07
-2.6865E-08 -2.5953E-08 -7.5089E-0S -7.5205E-0S -7.4788E-09 -7.5124E-09
-7.8856E-C9 -3.8247E-08 -3.8752E-CE -8.1871E-08 -5.3607E-08 -1.2206E-07
-8.8314E-08 -3.9110E-08 -2.0338E-C9  2.2220E-08  2.8577E-08  5.2087E-08
-5.8501E-C8 -1.8851E-C7 -2.7738E-07 -2.5622E-07 -1.2826E-07 -8.6353E-08
-8.5940E-06 -1.2249E-08 -1.2129E-CE -1.2235E-0E -1.2123E-08 -1.2239E-08
-8.6258E-CE -8.6846E-08 -8.9723E-0E -2.0841E-07 -2.8366E-07 -1.8615E-07
-5.8289E-0E -3.8555E-C8  6.3386E-C8  5.6350E-06  8.9707E-07  2.3948E-06
 2.3799E-C7 -3.5701E-07 -5.9214E-07 -6.1536E-07 -8.3224E-07 -5.1491E-07
-9.6877E-0E -9.6056E-C8 -8.1106E-C8 -8.0634E-0E -8.1399E-08 -3.6398E-08
-3.8671E-C8 -8.6562E-08 -8.7010E-0E -8.7030E-07 -1.1782E-06 -7.1039E-07
-3.0600E-C7 -2.7584E-07  3.5934E-C7  5.0499E-05  2.5408E-05  3.1555E-03

4B    107     4  1193   504     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBX-2     *
7E * EPRI SEBS. OF 238UCAP/235UFIS TO AL SCATTERING       A= -1.9321E-04*
8B   3.3875E-06  7.5833E-0E  6.8875E-07 -2.9299E-06 -1.2847E-05
 1.1100E-06  6.3701E-06  5.6730E-C6  6.6702E-06  7.9677E-06 -8.3829E-07
 1.6197E-06 -1.2253E-C6 -2.8968E-C6 -6.6678E-06 -2.8562E-06 -6.8050E-06
-3.8829E-06 -7.6805E-06 -1.0556E-C5 -3.9952E-06  6.1332E-07 -2.5733E-05
-7.2063E-0E  2.1555E-06  9.1925E-06  2.6706E-06  8.0624E-06 -8.8572E-06
 2.7819E-05  2.7547E-06  9.8297E-07 -5.5687E-05  1.1555E-04  9.6563E-07
-5.8925E-06 -2.0887E-C5 -1.3164E-05 -1.0821E-05 -7.9297E-06 -1.1211E-06
-1.1224E-06 -8.7924E-07 -8.7935E-07 -8.7940E-07 -8.8005E-07 -8.8026E-07
-1.8537E-06 -1.8066E-06 -8.0510E-0E -6.2586E-06 -2.1083E-05 -1.8138E-05
-8.3663E-06 -6.0020E-06 -5.8518E-0E -3.8925E-06  6.5368E-06  1.8596E-04
 3.1925E-C5 -1.8587E-06 -1.5362E-C5 -2.0908E-05 -2.9098E-05 -2.1207E-05
-5.3174E-C6 -5.1772E-06 -1.5068E-0E -1.5160E-06 -1.5131E-06 -1.5257E-06
-1.5263E-0E -6.2353E-06 -6.8731E-0E -9.1032E-06 -1.2127E-05 -2.9376E-05
-2.8065E-05 -1.3702E-05 -7.7037E-06 -7.9086E-06  1.6818E-08  5.8803E-05
 3.1611E-05 -8.3893E-06 -2.9962E-C5 -3.3583E-05 -1.7674E-05 -6.5838E-06
-6.5151E-06 -1.7502E-06 -1.7386E-C6 -1.7596E-06 -1.7498E-06 -1.7722E-06
-6.7542E-0E -6.8803E-06 -7.8853E-0E -3.2856E-05 -8.1361E-0S -3.6892E-05
-1.5118E-0S -1.5822E-05 -1.8533E-C5  7.9696E-06 -1.0832E-05  8.6539E-05
 1.3082E-04  8.8626E-05  1.0527E-05 -2.1820E-05 -8.8129E-05 -3.1028E-05
-6.0163E-06 -6.0561E-06 -2.6124E-0E -2.5951E-06 -2.6567E-06 -2.3870E-06
-7.3764E-06 -5.6557E-06 -5.7517E-06 -3.2389E-05 -8.8952E-05 -5.9297E-05
-3.1144E-C5 -8.5227E-05 -6.3986E-C5 -1.9096E-05 -9.8618E-06  8.6859E-05

4B    107     4  1269   102     4     5     0     7     0     0     3
    0
5B *RESPONSE IS REACTION RATE CB PCB TBX-2     *
7E * EPRI SEBS. OF 238U CAP/235U FIS TO H CAPTURE        A=  7.4115E-02*
8B   2.5236E-05  5.3695E-05  8.8726E-09  1.2100E-10  5.7920E-09
 3.3754E-C8  5.5394E-08  7.8892E-08  9.9767E-08  1.3761E-07  1.7692E-07
 2.5927E-07  3.8515E-07  5.7833E-07  8.6307E-07  1.2828E-06  1.8573E-06
 2.7579E-06  3.833CE-06  5.6261E-06  8.2848E-06  1.1266E-05  1.4368E-05
 3.8336E-06  2.9267E-07  8.9066E-07  3.2468E-07  8.5011E-07  3.1508E-07
 2.7961E-06  3.9505E-07  6.8268E-C7 -8.0922E-07  8.2677E-06  3.1842E-07
 6.3041E-08 -2.5083E-C7 -2.0436E-07 -1.5358E-07 -1.1067E-07 -1.5391E-08
-1.5338E-08 -6.5296E-09 -6.5185E-0S -6.5055E-09 -6.5066E-09 -6.4980E-09
-1.9668E-C8 -1.8866E-08 -5.8082E-C8 -8.3431E-08 -2.8795E-07 -6.6398E-09
 6.8230E-08  2.8122E-07  8.3995E-07  8.9159E-07  1.2211E-05  2.1309E-05
 1.0720E-06 -3.2253E-08 -8.7193E-07 -6.1938E-07 -8.0283E-07 -5.1056E-07
-1.0991E-07 -1.0166E-C7 -2.8979E-C8 -2.8940E-08 -2.8704E-08 -2.8778E-08
-2.8677E-C8 -1.1648E-07 -1.2100E-07 -1.7506E-07 -2.4304E-07 -5.5526E-07
-2.1097E-07  1.6855E-07  6.0580E-07  1.0782E-06  8.3255E-05  2.1331E-06
 1.1724E-06 -2.8383E-07 -1.2210E-06 -1.2308E-06 -5.8354E-07 -2.0109E-07
-1.9661E-07 -5.2123E-08 -5.1506E-08 -5.1864E-08 -5.1322E-08 -5.1751E-08
-1.9534E-07 -1.9614E-C7 -2.1139E-07 -9.2873E-07 -1.0450E-06 -3.0805E-07
 2.5904E-07  6.7223E-07  3.1965E-06  1.1814E-04  1.1827E-05  8.8338E-05
 1.2174E-05  3.7576E-06 -7.0905E-07 -2.2420E-06 -3.3453E-06 -2.0125E-06
-3.6741E-07 -3.6331E-07 -1.5882E-C7 -1.5269E-07 -1.5519E-07 -1.2281E-07
-1.2384E-07 -2.9032E-07 -2.9043E-07 -1.5584E-06 -8.0685E-06 -5.8001E-07
 1.1650E-06  5.8138E-06  2.1822E-05  1.0810E-03  5.2992E-04  7.2156E-02
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4E    107      6  1265   904      4      5      0      7      0      0      3
      0
5E *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7E * EPRI SENS. OF 238UCAP/235UFIS TO 8 SCATTERING       A= -8.2160E-01*
8E    1.9733E-05 -1.4325E-04 -1.1414E-03 -1.2292E-03 -5.7624E-03
-6.3350E-03 -8.5326E-03 -8.3706E-03 -8.4083E-03 -8.7228E-03 -6.2159E-03
-7.1122E-03 -8.0605E-03 -9.0075E-03 -9.0670E-03 -1.0026E-02 -1.2249E-02
-1.1031E-02 -1.3944E-02 -1.3460E-02 -1.1503E-02 -1.3651E-02 -1.9143E-02
-2.6083E-03 -8.1928E-05 -9.7564E-05 -1.1101E-04 -1.1523E-04 -8.4085E-04
-2.1920E-04 -1.8804E-04 -7.1103E-04 -5.2695E-03 -1.3642E-03 -8.9875E-04
-1.1129E-03 -2.4866E-03 -1.3640E-03 -1.0052E-03 -7.4259E-04 -1.8396E-04
-1.0387E-04 -8.8274E-05 -8.8265E-05 -8.8214E-05 -8.8228E-05 -8.8209E-05
-8.3356E-04 -1.2886E-04 -3.6929E-04 -5.6510E-04 -1.9215E-03 -9.1792E-04
-1.9185E-04 -5.3382E-04 -5.1169E-04 -2.8572E-04  2.1345E-04 -3.1832E-03
-2.2000E-03 -3.8479E-03 -3.0599E-03 -2.9445E-03 -3.0598E-03 -2.3518E-03
-5.8418E-04 -5.6571E-04 -1.6362E-04 -1.6410E-04 -1.6323E-04 -1.6002E-04
-1.6344E-04 -6.6155E-04 -6.7805E-04 -9.8213E-04 -1.2350E-03 -2.9025E-03
-2.3794E-03 -1.3557E-03 -8.3468E-04 -8.8194E-04 -8.2132E-03 -1.9097E-03
-3.2091E-03 -8.4042E-03 -5.1848E-03 -8.2765E-03 -2.8734E-03 -7.8238E-04
-7.3561E-04 -1.9611E-04 -1.9419E-04 -1.9590E-04 -1.9411E-04 -1.9597E-04
-7.8891E-04 -7.8898E-04 -8.0887E-04 -3.3963E-03 -8.1387E-03 -3.6188E-03
-1.8943E-03 -1.8945E-03 -1.8677E-03 -6.8278E-03 -1.8293E-03 -3.7148E-03
-7.2351E-03 -8.5208E-03 -7.7957E-03 -6.6153E-03 -8.1478E-03 -8.8684E-03
-9.8815E-04 -9.8381E-04 -3.8635E-04 -3.8179E-04 -3.8884E-04 -3.2976E-04
-3.3226E-04 -7.8818E-04 -7.8793E-04 -8.2539E-03 -1.1177E-02 -7.8779E-03
-8.1891E-03 -6.2085E-03 -8.1278E-03 -2.9297E-02 -3.7891E-03  3.9618E-03


4E    107      6  1276   102      4      3      0      7      0      0      3
      0
5E *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7E * EPRI SENS. OF 238B CAP/235B FIS TO C CAPTURE         A=  2.7581E-05*
8E    3.1882E-06  8.3989E-06  2.8479E-08  3.8126E-10  2.3133E-12
 1.6472E-11  3.0210E-11  3.8974E-11  8.6048E-11  5.5928E-11  6.8389E-11
 8.6620E-11  1.1873E-10  1.6753E-10  2.3916E-10  3.0576E-10  8.9888E-10
 7.3679E-10  1.0366E-09  1.5238E-09  2.2841E-09  3.0458E-09  3.8795E-09
 9.2061E-10  7.8518E-11  2.3903E-10  8.7185E-11  1.2886E-10  8.8617E-11
 7.5140E-10  1.0616E-10  1.8319E-10 -1.8968E-10  2.2208E-09  8.5603E-11
 1.6948E-11 -6.7266E-11 -5.8875E-11 -8.1228E-11 -2.9788E-11 -8.1312E-12
-8.1165E-12 -1.7526E-12 -1.7496E-12 -1.7461E-12 -1.7464E-12 -1.7481E-12
-5.2622E-12 -5.0638E-12 -1.8508E-11 -2.2398E-11 -7.7261E-11 -1.7812E-12
 1.8388E-11  6.8683E-11  1.7153E-10  1.3177E-10  1.2884E-09  5.7126E-09
 2.8758E-10 -8.6666E-12 -1.2698E-10 -1.6672E-10 -2.9624E-10 -1.3753E-10
-2.9602E-11 -2.7375E-11 -7.8082E-12 -7.7935E-12 -7.7298E-12 -7.7496E-12
-7.7223E-12 -3.1361E-11 -3.2588E-11 -8.7138E-11 -6.5828E-11 -1.8985E-10
-5.6769E-11  8.8265E-11  1.6292E-10  2.8877E-10  1.1684E-08  5.7298E-10
 3.1538E-10 -6.5678E-11 -3.2911E-10 -3.3162E-10 -1.5716E-10 -5.8147E-11
-5.2936E-11 -1.8833E-11 -1.3867E-11 -1.3963E-11 -1.3816E-11 -1.3931E-11
-5.2583E-11 -5.2793E-11 -5.6893E-11 -2.8989E-10 -2.8185E-10 -8.2797E-11
 6.5589E-11  1.8851E-10  8.5755E-10  3.8695E-08  3.8779E-09  1.2975E-08
 3.2736E-09  1.8128E-09 -1.9896E-10 -6.8286E-10 -8.9731E-10 -5.3984E-10
-9.6386E-11 -9.7232E-11 -8.1827E-11 -8.8855E-11 -8.1519E-11 -3.2858E-11
-3.3021E-11 -7.7685E-11 -7.7668E-11 -8.1686E-10 -1.8852E-09 -1.8851E-10
 3.8711E-10  1.8568E-09  5.8926E-05  2.9175E-07  1.8387E-07  1.9888E-05


4E    107      6  1278   904      4      3      0      7      0      0      3
      0
5E *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7E * EPRI SENS. OF 238UCAP/235UFIS TO C SCATTERING        A= -8.2956E-03*
8E    5.9828E-06  2.2663E-05  1.1388E-05 -3.9638E-05 -3.8892E-04
-2.2438E-04 -1.8578E-04 -8.2782E-05 -5.9391E-05 -2.6563E-05 -6.9593E-05
-7.2328E-05 -8.1275E-05 -9.1597E-05 -9.8833E-05 -9.9182E-05 -1.8695E-04
-1.8813E-04 -1.6565E-04 -1.8687E-04 -9.6395E-05 -5.2522E-05 -2.8528E-04
 8.8567E-05  1.8522E-05  8.3328E-05  9.9268E-06  1.8528E-05 -8.8176E-05
 2.1895E-04  8.1653E-05  5.8888E-05 -3.6385E-04  8.1758E-04 -3.6789E-05
-7.2893E-05 -1.9585E-04 -1.1374E-04 -8.5183E-05 -6.3461E-05 -8.9298E-06
-8.9333E-06 -3.8111E-06 -3.8186E-06 -3.8899E-06 -3.8132E-06 -3.8136E-06
-1.1535E-05 -1.1186E-05 -3.2885E-05 -8.9358E-05 -1.7888E-04 -8.8525E-05
-3.8898E-05 -8.6288E-05 -8.3688E-05 -2.4688E-05  1.8795E-04  1.8721E-03
 5.8782E-05 -1.2936E-04 -1.9195E-04 -2.8978E-04 -2.6196E-04 -1.8889E-04
-8.8575E-05 -8.3281E-05 -1.2532E-05 -1.2598E-05 -1.2587E-05 -1.2633E-05
-1.2617E-05 -5.1387E-05 -5.3282E-05 -7.5161E-05 -1.8846E-04 -2.4383E-04
-1.8617E-04 -1.8981E-04 -6.8823E-05 -5.9828E-05  2.8688E-03  1.7574E-04
 7.6378E-06 -1.9951E-04 -3.3888E-04 -3.1186E-04 -1.5525E-04 -5.5971E-05
-5.5775E-05 -1.8931E-05 -1.4811E-05 -1.8969E-05 -1.4861E-05 -1.5833E-05
-5.7118E-05 -5.7896E-05 -6.2786E-05 -2.7361E-04 -3.4338E-04 -3.8848E-04
-1.2285E-04 -1.2362E-04 -1.4828E-04  8.8971E-05 -5.3672E-05  2.8339E-03
 1.1938E-03  3.3391E-04 -1.2781E-04 -2.8217E-04 -8.3833E-04 -2.8348E-04
-5.8352E-05 -5.8552E-05 -2.3491E-05 -2.3387E-05 -2.3833E-05 -1.9897E-05
-2.8128E-05 -8.7836E-05 -8.8537E-05 -2.7885E-04 -7.7777E-04 -5.5277E-04
-2.9715E-04 -8.8875E-04 -6.8387E-04 -3.3647E-04 -1.8946E-04  3.5878E-04
```

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8C    107     .  2000   901     4     3     0     7     0     0     3
    0
5C *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7C   EPRI SERS. OF 2380 CAP/2350 PIS TO DB**2 IB FUEL    A=  1.7548E-03*
8C    1.9998E-06  8.2757E-06 -7.9466E-08 -1.0038E-05 -1.3546E-05
 3.1609E-06  1.7521E-05  1.6276E-05  1.1829E-05  8.2717E-06  9.0806E-06
 2.3728E-06  1.0867E-06  1.5536E-06  2.0772E-06  3.1767E-06  2.1638E-06
 7.9675E-06  8.9970E-06  9.6355E-06  2.3822E-05  1.8526E-05  9.1842E-06
 7.0557E-06  8.7600E-06  1.5906E-05  8.1256E-06  6.3876E-06 -3.2091E-06
 7.4716E-06  6.6135E-07  3.8131E-07 -3.9080E-05  3.2953E-05 -8.8818E-06
-1.2212E-05 -1.9094E-05 -3.9278E-06 -2.8843E-07 -8.8559E-09 -1.9802E-10
-1.7226E-10 -7.0035E-11 -6.0609E-11 -6.8417E-11 -6.0769E-11 -7.8196E-11
-2.2762E-10 -2.6215E-10 -1.4303E-05 -1.6975E-08 -9.7492E-06 -2.9937E-05
-1.7120E-05 -1.6696E-05  8.8169E-06  5.3821E-06  2.6133E-05  2.1006E-05
-6.8215E-07 -1.2730E-06 -8.9271E-07 -8.7708E-07 -1.8371E-07 -1.0144E-08
-5.9110E-11 -1.5048E-11 -2.6316E-12 -2.3865E-12 -2.2794E-12 -2.3602E-12
-2.5802E-12 -1.9505E-11 -1.0564E-10 -1.0819E-09 -2.6308E-08 -8.0066E-05
-2.2629E-08 -2.1152E-08 -6.2337E-05 -2.8410E-07  3.8398E-05 -1.3113E-07
-1.1403E-06 -1.3773E-06 -7.0274E-07 -1.0092E-07 -1.1612E-09 -2.9822E-11
-9.2830E-11 -2.5006E-12 -2.3810E-12 -2.3529E-12 -2.3703E-12 -2.5094E-12
-1.2632E-11 -2.7846E-11 -1.0484E-10 -2.8489E-08 -6.7587E-07 -1.6436E-06
-3.3155E-05 -3.7185E-05 -1.9227E-06  1.0626E-08  6.5173E-06  1.5705E-05
-3.9832E-06 -1.2867E-05 -7.2565E-06 -2.7787E-06 -5.8317E-07 -8.7365E-09
-7.3244E-11 -5.0022E-11 -1.8048E-11 -1.6791E-11 -1.6560E-11 -1.6824E-11
-1.5602E-11 -8.3072E-11 -6.1910E-11 -8.2603E-09 -1.5364E-06 -5.9813E-06
-6.3536E-06 -1.2150E-05 -6.6550E-06  3.3305E-08  6.6766E-05  1.0065E-03


4E    107     4  2000   903     4     3     0     7     0     0     3
    0
5E *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7E * EPRI SERS. OF 2380 CAP/2350 PIS TO DB**2 IB VOID   A=  2.3320E-04*
8E    8.5168E-07  2.8324E-07  1.7625E-07 -2.2049E-07 -8.2505E-08
 8.9740E-07  1.5185E-06  1.5299E-06  9.8305E-07  8.7120E-07  1.4058E-06
 5.2552E-07  8.5821E-07  1.6866E-06  2.0294E-06  2.9068E-06  3.8738E-06
 8.1717E-06  8.2866E-06  8.5128E-06  6.1337E-06  6.2472E-06  8.3734E-06
 1.7308E-06  1.4704E-07  8.8087E-07  1.5377E-07  2.2389E-07 -5.8097E-08
 1.5136E-06  1.7732E-07  2.1239E-07 -1.6197E-06  3.9379E-06 -5.7655E-08
-2.3877E-07 -7.4798E-07 -8.7405E-07 -3.8545E-07 -2.9379E-07 -8.1176E-08
-8.1123E-06 -1.7523E-08 -1.7507E-06 -1.7490E-08 -1.7492E-08 -1.7478E-08
-5.2776E-06 -5.0846E-08 -1.8534E-07 -2.1977E-07 -6.8465E-07 -2.1992E-07
-6.1197E-08 -3.1383E-06  1.4081E-07  1.8137E-07  5.8266E-06  7.9962E-06
-9.3231E-06 -7.3072E-07 -9.2284E-07 -9.8777E-07 -1.2587E-06 -9.8384E-07
-2.2851E-07 -2.2107E-07 -6.4052E-06 -6.4226E-08 -6.8586E-08 -6.8166E-08
-6.3902E-06 -2.5796E-07 -2.6131E-07 -3.5249E-07 -8.8212E-07 -9.8051E-07
-7.0997E-07 -3.3505E-07 -7.1225E-06  8.6873E-08  1.8810E-05  2.8394E-07
-5.5636E-07 -1.5012E-06 -2.1913E-06 -2.0586E-06 -1.0585E-06 -3.3162E-07
-3.7830E-07 -1.0087E-07 -9.9880E-06 -1.0075E-07 -9.9817E-08 -1.0076E-07
-3.8064E-07 -3.8175E-07 -8.0790E-07 -1.6758E-06 -1.8848E-06 -1.4524E-06
-8.7897E-07 -3.5075E-07  2.3104E-07  2.9034E-05  2.0775E-06  9.7631E-06
 5.3025E-07 -1.8885E-06 -2.7556E-06 -2.7932E-06 -3.8130E-06 -2.3927E-06
-8.8857E-07 -8.4682E-07 -1.9096E-07 -1.8871E-07 -1.9221E-07 -1.6883E-07
-1.7005E-07 -8.0127E-07 -8.0298E-07 -2.1672E-06 -5.2240E-06 -3.1380E-06
-1.3867E-06 -1.4095E-06  5.8956E-07  1.2713E-03  3.8016E-06  1.4812E-08


4D    107     4  2000   902     4     3     0     7     0     0     3
    0
5D *RESPONSE IS REACTION RATE CB PCB TBE-2     *
7E * EPRI SERS. OF 2380 CAP/2350 PIS TO DB**2 IB CLAD   A=  8.0192E-04*
8D    8.6498E-07  1.8776E-06  7.1248E-07 -7.3944E-07 -3.0368E-07
 8.8028E-06  6.6871E-06  2.9023E-06  1.0248E-05  2.7335E-06  2.5253E-06
 1.6938E-06  1.7767E-06  5.5340E-06  6.2518E-06  6.0302E-06  6.1767E-06
 6.2721E-06  8.6655E-06  1.3776E-05  2.5609E-05  2.8366E-05  6.6780E-06
 5.2765E-06  8.8696E-07  1.8337E-06  8.7306E-07  6.7727E-07 -1.2782E-08
 7.8002E-06  8.9721E-07  1.1756E-06 -6.4580E-06  3.1066E-05 -1.1901E-07
-1.8362E-06 -8.7986E-06 -3.0280E-06 -2.3824E-06 -1.7878E-06 -2.5023E-07
-2.4988E-07 -1.0647E-07 -1.0637E-07 -1.0626E-07 -1.0628E-07 -1.0620E-07
-3.2067E-07 -3.0895E-07 -8.8370E-07 -1.3822E-06 -8.1803E-06 -1.3882E-06
-1.8193E-07 -2.7971E-08  1.3382E-06  1.2361E-06  1.3615E-05  2.5099E-05
 2.3315E-08 -1.7912E-06 -2.3495E-06 -2.5209E-06 -3.1608E-06 -2.2186E-06
-5.8949E-07 -5.3035E-07 -1.5321E-07 -1.5358E-07 -1.5269E-07 -1.5336E-07
-1.5276E-07 -6.1687E-07 -6.2657E-07 -8.5210E-07 -1.0895E-06 -2.4812E-06
-1.7812E-06 -7.8512E-07 -8.0607E-08  8.8083E-07  1.5288E-05  3.8685E-07
-3.5938E-07 -1.2037E-06 -1.7968E-06 -1.6519E-06 -8.2437E-07 -2.9751E-07
-2.9863E-07 -7.8511E-08 -7.7731E-08 -7.8396E-08 -7.7663E-08 -7.8387E-08
-2.9613E-07 -2.9711E-07 -3.1782E-07 -1.3293E-06 -1.5057E-06 -1.1789E-06
-3.6597E-07 -2.8095E-07  3.9209E-07  3.5910E-05  2.6903E-06  2.0736E-05
 8.5068E-06 -6.5754E-06 -1.0724E-05 -1.1033E-05 -1.8700E-05 -9.0795E-06
-1.6958E-06 -1.6866E-06 -7.2132E-07 -7.1275E-07 -7.2585E-07 -6.3776E-07
-6.8203E-07 -1.5154E-06 -1.5217E-06 -8.1992E-06 -2.0294E-05 -1.2137E-05
-5.1888E-06 -8.6016E-06  5.8212E-06  7.6493E-05  8.9255E-05  5.3285E-06
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4E     107      4  2CCC   90C      4      3      0      7      0      0      3
    0
5E *RESPONSE IS REACTION RATE CN FCR TSK-2     *
7E * EPRI SENS. OF 238U CAE/235U FIS TC DB**2 IN BOBEBA A=  1.1833E-02*
EE   9.63E4E-06  1.7121E-05  1.61E2E-05  3.7954E-07  1.6387E-05
 7.9780E-05  9.72C5E-05  9.8876E-05  1.0896E-04  8.8850E-05  7.1667E-05
 8.0546E-05  6.7450E-05  7.2742E-05  6.6769E-05  1.0536E-04  8.2017E-05
 1.2392E-04  1.2355E-04  1.7211E-04  1.8705E-04  2.0054E-04  1.9260E-04
 2.8050E-05  6.8467E-06  1.3760E-05  4.9827E-06  5.7076E-06  1.0453E-05
 3.9775E-05  5.5336E-06  1.7281E-05 -2.2967E-06  6.0625E-05  2.2439E-06
 4.8227E-07 -3.4486E-06 -7.5135E-06 -5.6345E-06 -4.0555E-06 -5.6367E-07
-5.6163E-07 -2.3906E-07 -2.3964E-07 -2.3815E-07 -2.3817E-07 -2.3784E-07
-7.1751E-07 -6.9626E-07 -1.9765E-06 -3.0491E-06 -1.0505E-05 -2.8165E-07
 2.4785E-06  9.3366E-06  2.4655E-05  1.8839E-05  1.5661E-04  1.0581E-04
 4.9336E-06 -1.9615E-07 -2.8540E-06 -1.8651E-05 -2.4087E-05 -1.5261E-05
-3.8563E-06 -3.5653E-06 -1.0157E-06 -1.0140E-06 -1.0650E-06 -1.0077E-06
-1.0035E-06 -8.0742E-06 -8.2280E-06 -6.1091E-06 -8.4673E-06 -1.9266E-05
-7.2952E-06  3.8122E-06  3.8819E-06  1.1952E-05  2.5329E-04  1.2394E-05
 1.1939E-05 -2.0901E-06 -6.6791E-06 -6.6891E-06 -3.1594E-06 -8.0677E-06
-7.8807E-06 -2.0880E-06 -2.0628E-06 -2.0766E-06 -2.0548E-06 -2.0711E-06
-7.8129E-06 -7.8375E-06 -8.8388E-06 -3.6983E-05 -8.1430E-05 -1.6833E-06
 1.4086E-06  8.3386E-06  2.0883E-05  2.9215E-04  8.5594E-05  1.7972E-04
 6.1217E-05  1.1070E-05 -2.2551E-06 -7.0484E-06 -1.8393E-05 -1.0983E-05
-1.9986E-06 -1.9743E-06 -8.4068E-07 -8.2879E-07 -8.4196E-07 -1.8728E-05
-1.8816E-05 -8.4221E-05 -8.4194E-05 -2.3636E-04 -1.5104E-05 -1.1781E-06
 2.6286E-06  7.2496E-04  6.6573E-05  1.7683E-03  5.1946E-04  6.7510E-03
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