

Multigroup Calculations of
Kinetics Parameters in Fast
Reactors (KPARAM-Code)

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SUMMARY

The Fast Reactor Safety Analysis Codes Group in the Nuclear Code Committee of Japan has developed, as a part of its work in 1963, three codes, namely, 'ESELEM', 'AX-1' and 'KPARAM'. The report describes the last code, which calculates the effective delayed neutron fraction, β_{eff} , the prompt neutron lifetime, τ_p , and other related kinetics parameters for the kinetics analysis of large, fast, plutonium-fueled reactors; these reactors have different kinetics behaviors from fast reactors fueled with ^{235}U , due to the much smaller delayed-neutron fraction emitted in the fissioning of plutonium.

As the model, we used the IBM-704 Code, 1188/RE, but the KPARAM calculates the real and adjoint fluxes case by case, in its one-dimensional multigroup diffusion equation subroutine.

The program was written in the FORTRAN II language for the IBM 7090 first, and then rewritten in the Fortran IV language for the IBM 7044.

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多群計算による高速炉の動特性パラメーターの評価 (KPARAMコード)

要　旨

原子力コード委員会、高速炉安全性コード開発小委員会の38年度計画として整備された ESELEM, AX-1, KPARAM の中、KPARAM codeについて報告する。

プルトニウムを燃料とする大型高速炉においては、プルトニウムの分裂の際に生ずる遅発中性子の割合が、ウラン235のそれよりも小さいため、ウラン235を燃料とする場合に比べて、かなり異なった振舞が予想される。そこで、一般に高速炉における動特性解析に用いられる遅発中性子割合 β_{eff} , 即発中性子寿命 τ_p その他二、三のパラメーターを評価するために KPARAM コードが整備された。

コードのモデルとしては 1188/REを用いた。しかしこのコードでは中性子束、随伴中性子束も問題毎に計算できる。その計算は一次元多群拡散方程式をとくサブルーティンでおこなわれた。

プログラムは、初め IBM 7090 に対して作られ FORTRAN II で書かれたが、現在 IBM 7044 に使えるように FORTRAN IV に書き換えてある。

1965年2月

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1. Restrictions of the Code

Groups	: \leq	20
Regions	: \leq	10
Mesh Points	: \leq	101
All Elements	: \leq	20
Fissionable Elements	: \leq	5
Precursors	: \leq	6
Geometry	:	Slab, Cylinder, Sphere
Boundary Conditions	:	$\phi'(0) = 0$; or $\phi(0) = 0$; $\phi(R) = 0$

It takes about 85 seconds to calculate a case with 16 groups, 45 points and with criterion of convergence to be 10^{-6} .

2. Formulae

A. One-Dimensional Multigroup Diffusion Equations

$$-\operatorname{div} [D^i(r) \operatorname{grad} \phi^i(r)] + \Sigma_T^i(r) \phi^i(r) \\ = \chi^i S(r) + \sum_{j=1}^{i-1} \Sigma^{j \rightarrow i}(r) \phi^j(r) \quad (1)$$

where

- i : index of group numbered from the least lethargy as usual, $1 \leq i \leq I \leq 20$,
- r : the distance from the origin (usually radius) (cm)
- ϕ : the neutron flux, $\phi(r) \equiv \int_{\Delta u_i} \phi(r, u) du$
- D : diffusion coefficient
- Σ_T : total cross section, $\Sigma_T^i \equiv \Sigma_a^i + \sum_{j=i+1}^I \Sigma_s^{i \rightarrow j} + B_\perp^i D^i$
- B_\perp^i : transverse buckling
- Σ_a : absorption cross section, $\Sigma_a \equiv \Sigma_o + \Sigma_r$
- Σ_c : capture cross section
- Σ_f : fission cross section
- $\Sigma_s^{i \rightarrow j}$: scattering removal cross section from group i to group j (0 for $i \geq j$)
- χ^i : fraction of fission spectrum for group i ($\sum_i \chi^i = 1$)

S : normalized source density,

$$\frac{\int_r S(r) dV}{V_0} = 1$$

V_0 : core volume

Equations (1) are solved consecutively from group 1 to group I using the guessed values of $S = \sum_i (\nu \Sigma_f)^i(r)$. Differential terms are converted to difference terms by a central difference scheme. We used the method of WANDA⁽⁵⁾ to solve the difference equations. The resulting values of ϕ are used to form new source,

$$S(r) = \frac{G(r)}{\lambda}$$

where $G = \sum_i (\nu \Sigma_f)^i \phi^i$ (unnormalized sources)

$$\lambda = \frac{\int_r G(r) dV}{V_0} \quad (\text{eigenvalue})$$

ν^i : the average number of neutrons produced by a fission in the i -th group

Then, iterations are made until the following two conditions are satisfied:

$$(1) |\lambda_j - \lambda_{j-1}| / \lambda_j \leq \epsilon_1$$

$$(2) (\lambda_{\max} - \lambda_{\min}) / \lambda_{\max} \leq \epsilon_2$$

where j : iteration count

ϵ_1, ϵ_2 : convergence criterion (input parameters)

$$\lambda_{\max} = \max_n \lambda_{j,n}$$

$$\lambda_{\min} = \min_{n, \lambda_j, n \neq 0} \lambda_{j,n}$$

n : index of mesh point

$$\lambda_{j,n} = \frac{G(\tau_n)}{S^{j-1}(\tau_n)}$$

The values ϕ and λ obtained are the neutron fluxes and the effective multiplication factor, respectively. To evaluate the numerical integration in eigenvalue λ , the trapezoidal rule is used, and any numerical integrations hereafter will be done in the same way.

B. Adjoint Equations

$$-\operatorname{div}[D^i(r) \operatorname{grad} \phi^* i(r)] + \Sigma_T^i(r) \phi^* i(r) = (\nu \Sigma_f(r))^i S^*(r) + \sum_{j=i+1}^I \Sigma_a^{i \rightarrow j} \phi^{*j}(r) \quad (2)$$

where ϕ^* : the adjoint flux, $\phi^*(r) \equiv \int_{\Delta u_i} \phi^*(r, u) du$

Equations (2) are solved consecutively from group I to group l with $S^*(r) \equiv 1$.

In each iteration,

$$S^*(r) = \frac{G^*(r)}{\lambda^*}$$

where

$$G^* = \sum_i \chi^i \phi^{*i}$$

$$\lambda^* = \frac{\int_r G^*(r) dV}{V_c}$$

The convergence conditions are the same in the flux calculation.

C. Kinetics Parameters

Let m , k and ℓ be the indeces of the fissionable element, region and precursor respectively.

(a) Effective delayed neutron fraction

$$\beta_{eff, \ell} = \frac{\sum_m \beta_\ell^m \int_r [\sum_i (\nu \Sigma_f)^{m i} \phi^{*i}] [\sum_i \chi_d^{m i} \phi^{*i}] dV}{\sum_m \int_r [\sum_i (\nu \Sigma_f)^{m i} \phi^{*i}] [\beta \sum_i \chi_d^{m i} \phi^{*i} + (1 - \beta^m) \sum_i \chi_p^{i} \phi^{*i}] dV}$$

$$\beta_{eff} = \sum_\ell \beta_{eff, \ell}$$

where β_ℓ^m : fraction which the family ℓ constitutes of the total (delayed and prompt) fission neutrons emitted by material m

$$\beta^m = \sum_\ell \beta_\ell^m$$

$\chi_d^{m i}$: fraction of delayed fission neutrons emitted into the energy group i by material m , $\sum_i \chi_d^{m i} \equiv 1$

χ_p^i : fraction of prompt fission neutrons emitted into the energy group i , $\chi_p^i \approx \chi^i$

(b) Prompt-neutron lifetime

$$\tau_p = \frac{\int_r \sum_i (\phi^i \phi^{*i}) / \bar{v}^i dV}{\sum_m \int_r [\sum_i (\nu \Sigma_f)^{m i} \phi^{*i}] [\sum_i \chi_p^i \phi^{*i}] dV}$$

where \bar{v}^i : average velocity of neutrons in the i -th energy group

(c) Worth functions

$$W_{d,k}^m = \frac{\int_{V_k} [\sum_i (\nu \Sigma_f)^{m_i} \phi^i] [\sum_i \chi_d^{m_i} \phi^{*i}] dV}{\int_{V_k} [\sum_i (\nu \Sigma_f)^{m_i} \phi^i] dV}$$

$$W_{p,k}^m = \frac{\int_{V_k} [\sum_i (\nu \Sigma_f)^{m_i} \phi^i] [\sum_i \chi_p^{m_i} \phi^{*i}] dV}{\int_{V_k} [\sum_i (\nu \Sigma_f)^{m_i} \phi^i] dV}$$

(d) Fraction of fissions

$$F_k^m = \frac{\int_{V_k} [\sum_i \Sigma_f^{m_i} \phi^i] dV}{\sum_k \sum_{V_k} [\sum_i \Sigma_f^{m_i} \phi^i] dV}$$

The results of (a) - (d) are used as follows⁽¹⁾. For example, in a region of ^{238}U and ^{235}U , the effective yields of fission neutrons for a single ^{235}U fission are:

- (1) Prompt from ^{235}U fission $P^{25} \equiv \nu_p^{25}$
- (2) Prompt from ^{238}U fission

$$P^{28} = \frac{F^{28}}{F^{25}} \cdot \frac{W_p^{28}}{W_p^{25}} \cdot \nu_p^{28}$$

- (3) Delayed from ^{235}U fission

$$D^{25} = \frac{W_d^{25}}{W_p^{25}} \cdot \nu_d^{25}$$

- (4) Delayed from ^{238}U fission

$$D^{28} = \frac{F^{28}}{F^{25}} \cdot \frac{W_d^{28}}{W_p^{25}} \cdot \nu_d^{28}$$

- (5) The total effective neutron yield per ^{235}U fission is

$$P^{25} + P^{28} + D^{25} + D^{28}$$

$$(6) \quad \beta_{\text{eff}} = \frac{D^{25} + D^{28}}{P^{25} + P^{28} + D^{25} + D^{28}}$$

- (7) Parameters for the inhour equation

$$\rho = \left(\frac{\beta_p^{25}}{k_{\text{eff}} \tau} \right) + \beta_{\text{eff}} \sum_l \frac{C^{25} \frac{\beta_l^{25}}{\beta^{25}} + C^{28} \frac{\beta_l^{28}}{\beta^{28}}}{1 + \lambda_l \tau}$$

$$\text{where } C^{25} = \frac{D^{25}}{D^{25} + D^{28}}$$

$$C^{28} = 1 - C^{25}$$

λ_z : decay constants

τ : period

(8) Input parameter for AX-1 code

$$\alpha = \frac{k_{\text{eff}}^{-1}}{\lambda_p}$$

3. Output Data

- (1) List of data on input cards.
- (2) D_k^i , $\Sigma_{s(\text{el})}^{i \rightarrow i+1}, k$, Σ_a^i, k , $[\Sigma_a^i, k + \sum_{j=i+1}^I \Sigma_{s(\text{inel})}^{i \rightarrow j}, k]$,
 Σ_T^i, k , $(\nu \Sigma_f)_k^i$, $(\nu \Sigma_f)_k^{m_i}$, $\Sigma_f^{m_i}, k$,
 $\Sigma_{s(\text{inel})}^{i \rightarrow j}, k$ $j = i+1, \dots, i+6$
- (3) Reactor volume --- total (V) and regionsise (V_k)
 Total core volume (V_c)
 - (The definition of core regions is given in the input, and V_c is used to normalize S . The value of V_c affects the values of S, ϕ, W_p and W_d)
 ('Volume' means 'length' or 'area' when the geometry is a slab or cylinder, respectively.)
- (4) - (5) are given for both real and adjoint fluxes.
- (4) λ_j
- (5) $S(r_n)$ (when converged)
- (6) Regionally integrated sources.
- (7) $\phi^i(r_n)$
- (8) Totally and regionally integrated fluxes for each group
- (9) Region checks for each group
 - (These pair values are used to check the given mesh sizes are adequately small or not, for the central difference scheme.)

(10) - (13) may be skipped by the input control word NPL.

$$(10) \quad A_{1,n}^m \equiv \sum_i \Sigma_{\tau,n}^{m,i} \phi_n^i$$

$$A_{2,n}^m \equiv \sum_i (\nu \Sigma_{\tau,n})^{m,i} \phi_n^i$$

$$A_{3,n}^m \equiv A_{2,n}^m \cdot A_{5,n}^m$$

$$A_{4,n}^m \equiv A_{2,n}^m \cdot \hat{S}_{1,n}$$

$$A_{5,n}^m \equiv \sum_i \chi_d^{m,i} \phi_n^{*i}$$

$$(11) \quad \hat{S}_{1,n} \equiv \sum_i \chi_p^{i,*i}$$

$$\hat{S}_{2,n} \equiv \sum_i \phi_n^i \phi_n^{*i} / \nu^i$$

$$(12) \quad B_{J,n}^m \equiv \int_{r_n}^{r_{n+1}} A_{J,n}^m dV \quad (J=1, \dots, 5)$$

$$(13) \quad T_{J,n} \equiv \int_{r_n}^{r_{n+1}} \hat{S}_{J,n} dV \quad (J=1, 2)$$

As for the regional totals,

$$(14) \quad W_{d,k}^m, \quad W_{p,k}^m, \quad F_k^m$$

$$(15) \quad W_{d,k}^{m_1} W_{p,k}^{m_2}, \quad W_{d,k}^{m_2} / W_{p,k}^{m_2}, \quad W_{p,k}^{m_1} / W_{p,k}^{m_2}$$

$$F_k \equiv \sum_m F_k^m, \quad \zeta_{p,k} \quad \text{(The value of } \zeta_p \text{ in which the integration of the numerator is evaluated only for region } k \text{)}$$

m_1, m_2 indicate the particular elements specified in the input.

$$(16) \quad D_{\ell,k} \quad \text{(see page 4)}$$

$$D_k \equiv \sum_{\ell} D_{\ell,k}$$

$$(17) \quad \beta_{\text{eff}}, \zeta, k$$

$$\beta_{\text{eff},k} \equiv \sum_{\ell} \beta_{\text{eff},\ell,k}$$

And as for the reactor totals,

$$(18) \quad D \equiv \sum_k D_k$$

P

D + P (the denominator of β_{eff})

(19) $\beta_{\text{eff}}, \zeta$

β_{eff}

(20) ζ_p

F (Total number of fissions, unnormalized, i. e., the denominator of F_k^m)

$$F^m = \sum_k F_k^m$$

DCNF (the danger coefficient normalization factor, or the denominator of ζ_p)

4. Input Data

$\chi^i, \bar{\nu}^i, \chi_p^i, \chi_d^{mi}, \beta_z^m$ and microscopic cross-sections are stored in the library tape in the binary form. This tape is loaded on the unit B5 (7090) or B4 (7044). Though the cross-sections are read in the macroscopic form, this tape is necessary to get the values of spectrum, etc. The method of preparing the tape is shown in the Appendix C.

Other input data to be prepared in cards are :---

Card # 101 Title

Problem No. : -99999~+99999

JOPT : 1 # 101, 109 and 110 only are necessary.
0 # 102~108 are also necessary.

In the first case or in the case where macroscopic cross-sections are to be read, JOPT must be zero.

Prob. Description : any characters describing the problem, date,
or your name (≤ 60 characters including blanks)

Card # 102 Problem Types

Geometry	: 0	slab
	1	cylinder
	2	sphere

No. of Regions : ≤ 10

No. of Groups : ≤ 20

No. of Elements: ≤ 20 M

No. of Fissionable Elements

: ≤ 5 M_f ($M_f \leq M$)

No. of Fissionable Elements Stored in the library Tape : M_L_F ($M_F \leq M L_F$)

Card # 103	Switches	
Symmetry	: -1 $\phi(0) = 0$ +1 $\phi'(0) = 0$	
Macro-Micro	: -1 +1	Macroscopic cross-sections are to be read, Cards # 109, 110 are not necessary. Number densities and volume ratios are to be read, and microscopic cross-sections are got from the library tape. Cards # 111-116 are not necessary.
NP1	: -1 +1	List of $A_{J,n}^m, \hat{S}_{J,n}$ is skipped. It is given.
NP2	: -1 +1	List of $B_{J,n}^m, T_{J,n}$ is skipped. It is given.
M1	: m_1	These words indicate that the elements in the numerator and denominator of worth-function ratios are the m_1 -th
M2	: m_2	} and the m_2 -th element in input elements, respectively. (see page 6)

Card # 104

Mesh numbers of the outer boundary of each region (≤ 100), when the meshes are numbered 0, 1, 2, ... from the origin.

Card # 105

Definition of the core regions

For each region : 0 No
1 Yes

(This item is used in definition of V_o .)

Card(s) # 106

Code numbers of the elements in use, which are designated in the order of storage in the library tape.

These numbers must correspond to those which were previously attached to the elements in the library tape.

All the data above are the "fixed-point data" except the Problem Description in the Card # 101. The data in the following are the "floating-point data."

Card # 107

ϵ_1 : eigenvalue convergence criterion
 ϵ_2 : pointwise convergence criterion
 θ : extrapolation factor for accelerating the convergence,
 $0 \leq \theta < 1$
$$S^i(r) = \frac{G^i(r)}{\lambda_j} + \theta \left(\frac{G^j(r)}{\lambda_j} - S^{j-1}(r) \right)$$

 B^2_{\perp} : transverse buckling independent of the group and
space

Card(s) # 108

$(\Delta r)_k$: mesh size for each region

Card(s) # 109

Atomic densities (in 10^{-24} cm^{-3}) of the elements in use, which are arranged in the order of storage in the library tape.

First, give for region 1, then repeat for the other regions.

Card(s) # 110

Volume ratios of the elements in use in the same order as Card(s) # 109. The block of Cards # 111-116 is first given for group 1, then is repeated for other groups.

Card(s) # 111

D_k^i for each region

Card(s) # 112

$\sum_{s(\epsilon_1), k}^{i \rightarrow i+1}$ for each region

Card(s) # 113

$\Sigma_{a, k}^i$ for each region

Card(s) # 114

$\Sigma_{f, k}^{m_i}$ for each element

The card is first given for region 1, and is repeated for the other regions.

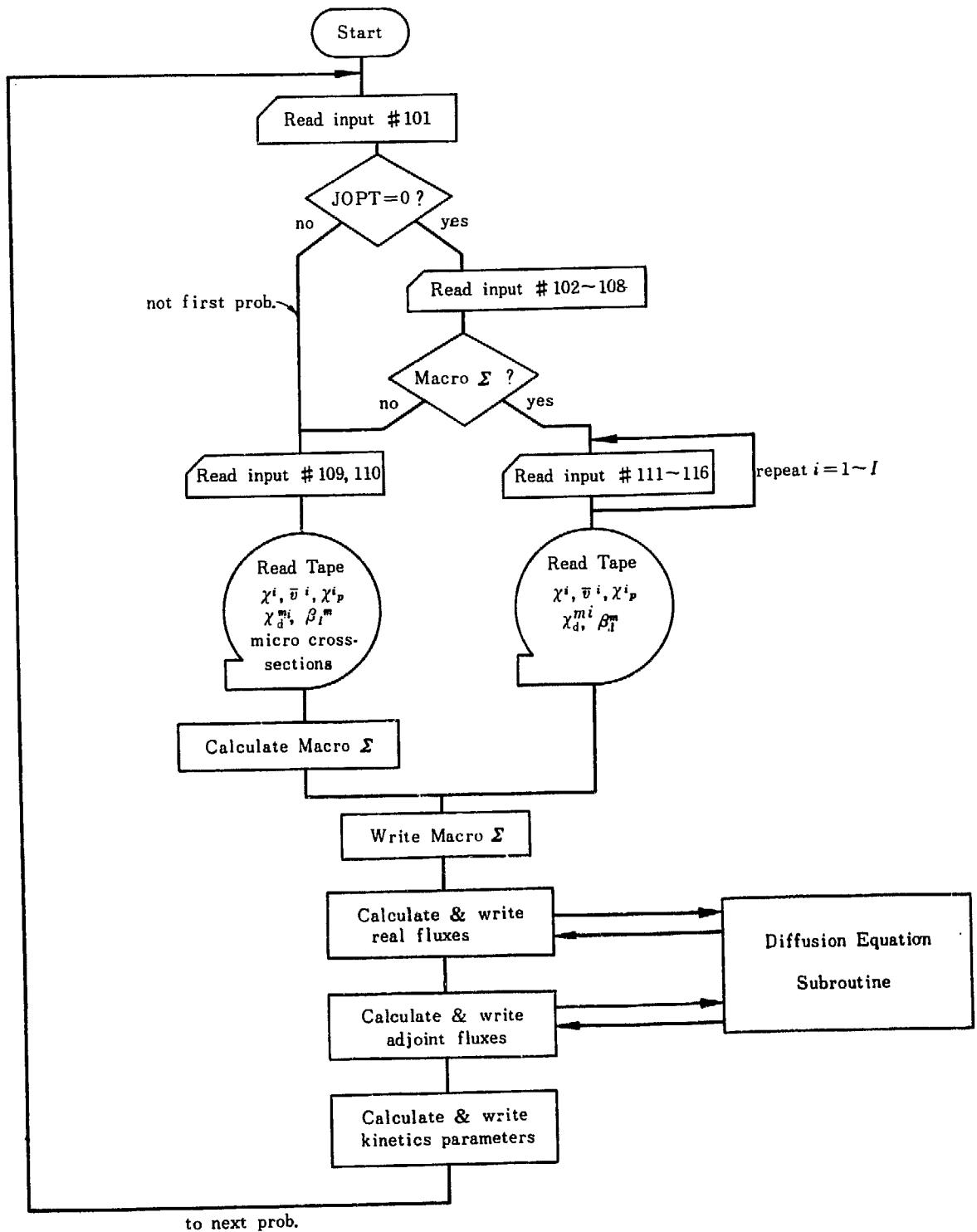
Card(s) # 115

$(v\Sigma_f)_k^{m_i}$ in the same order as in Card(s) # 114

Card(s) # 116

$\Sigma_{s(\text{inel}), k}^{i \rightarrow j}$ for $j = i+1, i+2, \dots, i+6$

When j is larger than I , the value 0. is to be put in.
This card is repeated for each region like in Card(s) # 114.



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Appendices

A. Input Card(s) Format

In the following pages, the cards format for punching KPARAM input data is shown. For all cards, only columns 1-72 are punched. Columns 73-80 may be used as either identification or sequence.

Card #101 (2I6, 10A6) Title

Prob. No. J5PT Prob. Description

Card #102 (6I6) Problem types

Geometry	Regions	Groups	Elements	Fissionable	File stored in tape
0-Slab	(KMAX)	(IMAX)	(M)	(MF)	(MLF)
1-Cylinder					
2-Sphere					

Card #103 (6I6) Switches

metric	Macro-Micro	NP1	NP2	M1	M2
1.yes	+1-micro	+1-Yes	+1-Yes		
1.No	-1-macro	-1-No	-1-No.		
Card #104	(10I6)			Mesh number of outer boundary	

KMAX words

Card #105 (10I6) Core region definition

KMAX words

[ICORE(1)] ----- [ICORE(KMAX)] -----

0-No

1. Yes

Card(s) # 106 (12I6) Nucleide code numbers

M words

MC \bar{o} DE(I) MC \bar{o} DE(M) **MC \bar{o} DE(M)**

When $M \geq 13$, use next card.

1	2	3	4	5	6	7	8

Card #107 (4E12.8)

ε_1	ε_2	θ	B_\perp^2
-----------------	-----------------	----------	-------------

Card(s) # 108 (6E12.8) Mesh sizes

KMAX words

$\Delta r(1)$ $\Delta r(KMAX)$ MIN = KMAX-7 use next card

When KMAX ≥ 7 , use next card.

Card(s) #109 (6E12.8) Atomic densities
M words \times KMAX

$AN(1, 1)$	$AN(2, 1)$	-----	$AN(M, 1)$		
When $M \geq 7$, use next card(s)					

$AN(1, KMAX)$	$AN(2, KMAX)$	-----	$AN(M, KMAX)$		
When $M \geq 7$, use next card(s)					

Card(s) #110 (6E12.8) Volume ratios
M words \times KMAX
 $VR(1, 1)$ ----- $VR(M, KMAX)$, like #109.

(In the following, first begin with $i=1$)

Card(s) #111 (6E12.8) D_k^i
KMAX words

$D(I, 1)$	-----	$D(I, KMAX)$		
When $KMAX \geq 7$, use next card.				

Card(s) #112 $\Sigma_{S(eD), k}^{i \rightarrow i+1}$, like #111

Card(s) #113 $\Sigma_{n, k}$ like #111

Card(s) #114 (6E12.8) $\Sigma_{f, k}^{m_i}$
M_f words \times KMAX

$SIGFM(1, I, 1)$	-----	$SIGFM(MF, I, 1)$	
$SIGFM(1, I, KMAX)$	-----	$SIGFM(MF, I, KMAX)$	

Card(s) #115 $(\nu \Sigma_f)_k^{m_i}$, like #114

Card(s) #116 (6E12.8) $\Sigma_{S(inel), k}^{i \rightarrow i+1}$
6 \times KMAX words

$SIGIN(I, I+1, 1)$	-----		-----	$SIGIN(I, I+6, 1)$
$SIGIN(I, I+1, KMAX)$	-----		-----	$SIGIN(I, I+6, KMAX)$

Card(s) #111 for next i

B. Input Output Example

To illustrate input and output data, an example is shown in the following pages. In this example, YOM set⁽⁶⁾ was used.

(1) Input

Title	23	01500	LITER, PU.C OXIDE. REF NOS 154/522,553,554,36.0008.
Types	2	3	16 8 5 8
Switches	1	1	1 1 1 2
Mesh number of outer boundary	24	39	45
Core regions	1	0	0
Element code numbers	928	949	940 941 942 8 11 26
$\epsilon_1, \epsilon_2, \theta, \beta_1^2$	1.0	E-6	1.0 E-6 0.3 0.0
Δr	29583333+01+30000000+01	5.0	
Atomic densities for region 1	{ 0.01764 .022	0.00636	0.00636 0.00636 0.048
2	{ 0.0288 .022	0.0 0.0847	
3	{ 0.0 .022	0.0 0.0847	
Volume ratios for region 1	{ 0.0975 .5	0.039	0.00975 0.024375 0.024375 0.0975
2	{ 1.0 .2	1.0	1.0 1.0 1.0 1.0
3	{ 1.0 .4	0.6	1.0 1.0 1.0 1.0 0.0

(2) (2)Output

PROB. 23 JOPT=0 1500 LITER, PU-C OXIDE. REF NOS 154/522,553,554,36.0008.

INPUT DATA LIST

GEOMETRY	REGIONS	GROUPS	ELEMENTS	FISSILE	FIS(IN TAPE)	
	2	3	16	8	5	8
SYMMETRIC MACRO-MICRO	NP1	NP2		NUMERATOR	DENOMINATOR	
	1	1	1	1	1	2
INTERFACE POINT NUMBERS						
	24	39	45			
CORE REGION						
	1	0	0			
ELEMENT CODE NUMBERS						
	928	949	940	941	942	8
					11	26
EPS1		EPS2		THETA		BUCKLING
	1.0000000E-06		1.0000000E-06	3.0000000E-01		0.
DELTA-R						
	2.958333E 00		3.000000E 00	5.000000E 00		
ATOMIC DENSITY FOR REGION 1						
	1.7640000E-02	2.2000000E-02	6.3600000E-03	8.4700000E-02	6.3600000E-03	6.3600000E-03
ATOMIC DENSITY FOR REGION 2						
	2.8800000E-02	2.2000000E-02	0.	8.4700000E-02	0.	0.
ATOMIC DENSITY FOR REGION 3						
	0.	2.2000000E-02	0.	8.4700000E-02	0.	0.
VOLUME RATIO FOR REGION 1						
	9.7500000E-02	5.0000000E-01	3.9000000E-02	2.5000000E-01	9.7500000E-03	2.4375000E-02
VOLUME RATIO FOR REGION 2						
	1.0000000E 00	2.0000000E-01	1.0000000E 00	2.0000000E-01	1.0000000E 00	1.0000000E 00
VOLUME RATIO FOR REGION 3						
	1.0000000E 00	4.0000000E-01	1.0000000E 00	6.0000000E-01	1.0000000E 00	1.0000000E 00
EFFECTIVE DENSITY FOR REGION 1						
	1.7199000E-03	1.1000000E-02	2.4804000E-04	2.1175000E-02	6.2009999E-05	1.5502500E-04
EFFECTIVE DENSITY FOR REGION 2						
	2.8800000E-02	4.4000000E-03	0.	1.6940000E-02	0.	0.
EFFECTIVE DENSITY FOR REGION 3						
	0.	8.8000000E-03	0.	5.0820000E-02	0.	0.
MACROSCOPIC CROSS-SECTIONS FOR GROUP 1						
	5.0290350E 00		2.1965866E 00		2.9610732E 00	
SIGMA-R						
	4.2248384E-03		1.9732800E-03		3.8482400E-03	
SIGMA-A						
	2.4995475E-03		1.7927652E-02		2.9915599E-04	
SIGMA-A + INELASTIC-REMOVAL						
	3.9534106E-02		1.1293853E-01		6.8105794E-02	
SIGMA-T						
	4.3758945E-02		1.1491181E-01		7.1954033E-02	
NU-SIGMA-F						
	7.1074851E-03		5.6125440E-02		0.	
FOR EACH NUCLIDE						
REGION 1						
	3.3517411E-03		1.5660005E-03		3.6765729E-04	9.0294311E-04
REGION 2						
	5.6125440E-02		0.		0.	0.
REGION 3						
	0.		0.		0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1 1.0476191E-03	4.5391319E-04	9.5495398E-05	2.5579125E-04	2.3873850E-04	
REGION 2 1.7533200E-02	0.	0.	0.	0.	
REGION 3 0.	0.	0.	0.	0.	

SIGMA-IN TO I+I----I+6

REGION 1 8.6608732E-03	1.0306006E-02	8.1388364E-03	5.1929211E-03	2.7866889E-03	1.9492343E-03
REGION 2 9.3801998E-03	1.9111260E-02	2.3493980E-02	2.0226680E-02	1.2418030E-02	1.0380760E-02
REGION 3 1.7215000E-02	1.9993379E-02	1.4816340E-02	8.6376398E-03	4.3031999E-03	2.8410799E-03

MACROSCOPIC CROSS-SECTIONS FOR GROUP 2

D 4.0883821E 00	1.8841909E 00	2.6831563E 00			
SIGMA-R 5.4427956E-03	2.6951600E-03	5.2038799E-03			
SIGMA-A 2.1819540E-03	1.7383779E-02	5.1699999E-05			
SIGMA-A + INELASTIC-REMOVAL 3.0438479E-02	1.0690882E-01	4.9524417E-02			
SIGMA-T 3.5881274E-02	1.0960397E-01	5.4728297E-02			
NU-SIGMA-F 6.4965517E-03	4.8023135E-02	0.			

FOR EACH NUCLIDE

REGION 1 2.8679816E-03	1.5893907E-03	3.5477781E-04	9.3903292E-04	7.4546871E-04	
REGION 2 4.8023135E-02	0.	0.	0.	0.	
REGION 3 0.	0.	0.	0.	0.	

SIGMA-F FOR EACH NUCLIDE

REGION 1 9.9926189E-04	4.9359939E-04	1.0107630E-04	2.8369575E-04	2.1230425E-04	
REGION 2 1.6732800E-02	0.	0.	0.	0.	
REGION 3 0.	0.	0.	0.	0.	

SIGMA-IN TO I+I----I+6

REGION 1 1.6010565E-02	3.9567707E-03	3.6409352E-03	2.5001147E-03	9.2458774E-04	1.2235529E-03
REGION 2 1.7995319E-02	2.1150440E-02	1.6315220E-02	8.8489797E-03	7.1104799E-03	
REGION 3 3.3260699E-02	6.2519599E-03	4.7049149E-03	3.0883600E-03	4.7893999E-04	1.6878400E-03

MACROSCOPIC CROSS-SECTIONS FOR GROUP 3

D 3.8069517E 00	1.8221966E 00	2.7918254E 00			
SIGMA-R 6.6582396E-03	3.0686400E-03	5.7543200E-03			
SIGMA-A 2.0289118E-03	1.4054838E-02	8.7273998E-05			
SIGMA-A + INELASTIC-REMOVAL 2.2659201E-02	8.0361575E-02	3.5555893E-02			
SIGMA-T 2.9317441E-02	8.3430215E-02	4.1310213E-02			
NU-SIGMA-F 5.4944637E-03	3.3189120E-02	0.			

FOR EACH NUCLIDE

REGION 1	1.9820127E-03	1.5070910E-03	3.2733838E-04	9.3173126E-04	7.4629034E-04
REGION 2	3.3189120E-02	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.
SIGMA-F FOR EACH NUCLIDE					
REGION 1	7.3955700E-04	4.8615839E-04	9.8595899E-05	7.9299775E-04	2.2478625E-04
REGION 2	1.2384000E-02	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.
SIGMA-IN TO I+1----I+6					
REGION 1	1.2730611E-02	7.1500423E-03	4.5974389E-04	9.9687508E-05	1.4140327E-04
REGION 2	2.8331700E-02	2.9248640E-02	6.0480000E-03	8.0639997E-04	1.8720000E-03
REGION 3	2.2458700E-02	1.3009920E-02	0.	0.	0.
MACROSCOPIC CROSS-SECTIONS FOR GROUP 4					
D	3.2731669E 00	1.7493663E 00	2.6443358E 00		
SIGMA-R	1.0082419E-02	4.6406799E-03	8.4748399E-03		
SIGMA-A	1.4778839E-03	4.4580999E-03	1.5422000E-04		
SIGMA-A + INELASTIC-REMOVAL	1.4995851E-02	3.8455659E-02	2.0815300E-02		
SIGMA-T	2.5078271E-02	4.3096338E-02	2.9290139E-02		
NU-SIGMA-F	3.3989255E-03	1.7694720E-03	0.		
FOR EACH NUCLIDE					
REGION 1	1.0567066E-04	1.3558362E-03	2.7668241E-04	8.7945682E-04	7.8127949E-04
REGION 2	1.7694720E-03	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.
SIGMA-F FOR EACH NUCLIDE					
REGION 1	4.1277600E-05	4.4895239E-04	8.6193898E-05	2.8369575E-04	2.4338925E-04
REGION 2	6.9120000E-04	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.
SIGMA-IN TO I+1----I+6					
REGION 1	5.8703081E-03	3.6155964E-03	2.1532270E-03	1.2159608E-03	6.5946489E-04
REGION 2	1.8456660E-02	9.7150399E-03	4.1386199E-03	1.1790400E-03	5.0819999E-04
REGION 3	6.5139799E-03	5.0503199E-03	4.7262600E-03	2.8459200E-03	1.5246000E-03
MACROSCOPIC CROSS-SECTIONS FOR GROUP 5					
D	2.7462707E 00	1.5343589E 00	2.2006558E 00		
SIGMA-R	1.3598157E-02	6.8995399E-03	1.2901020E-02		

SIGMA-A
1.2706905E-03 4.0756679E-03 2.1608460E-04

SIGMA-A + INELASTIC-REMOVAL
4.8727622E-03 1.8650067E-02 2.2928839E-03

SIGMA-T
1.8470919E-02 2.5549607E-02 1.5193904E-02

NU-SIGMA-F
2.4295429E-03 0. 0.

FOR EACH NUCLIDE

REGION 1
0. 1.2523539E-03 1.4845194E-04 9.0644005E-04 3.2229697E-04

REGION 2
0. 0. 0. 0. 0.

REGION 3
0. 0. 0. 0. 0.

SIGMA-F FOR EACH NUCLIDE

REGION 1
0. 4.2166799E-04 4.7127599E-05 2.6354250E-04 1.0231650E-04

REGION 2
0. 0. 0. 0. 0.

REGION 3
0. 0. 0. 0. 0.

SIGMA-IN TO I+I---I+6

REGION 1
2.3470458E-03 6.4669494E-04 3.4401426E-04 1.3935602E-04 1.2596080E-04 0.

REGION 2
1.4094800E-02 2.4660000E-04 1.3200000E-04 5.2800000E-05 4.8400000E-05 0.

REGION 3
1.1176000E-03 4.9279999E-04 2.6400000E-04 1.0560000E-04 9.6799999E-05 0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 6

D
2.4935851E 00 1.2692427E 00 1.8593762E 00

SIGMA-R
1.3988256E-02 7.7801999E-03 1.4055800E-02

SIGMA-A
1.1869359E-03 3.7394180E-03 2.4325399E-04

SIGMA-A + INELASTIC-REMOVAL
2.1209365E-03 1.6872218E-02 2.4325199E-04

SIGMA-T
1.6107193E-02 2.4662410E-02 1.4299054E-02

NU-SIGMA-F
2.2220415E-03 0. 0.

FOR EACH NUCLIDE

REGION 1
0. 1.2397039E-03 3.6716120E-05 8.9959812E-04 8.6023371E-03

REGION 2
0. 0. 0. 0. 0.

REGION 3
0. 0. 0. 0. 0.

SIGMA-F FOR EACH NUCLIDE

REGION 1
0. 4.2166799E-04 1.1843910E-05 2.8369575E-04 2.7749473E-03

REGION 2
0. 0. 0. 0. 0.

REGION 3
0. 0. 0. 0. 0.

SIGMA-IN TO I+I---I+6

REGION 1
9.1589060E-04 1.2060945E-05 2.9764799E-06 1.7362800E-06 9.9215998E-07 7.4411999E-07

REGION 2
1.3132800E-02 0. 0. 0. 0. 0.

REGION 3
0. 0. 0. 0. 0. 0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 7

D	2.6601480E 00	1.1089863E 00	2.1697778E 00			
SIGMA-R	1.2417711E-02	7.7815199E-03	1.2073760E-02			
SIGMA-A	1.3255572E-03	4.7415199E-03	3.1107999E-04			
SIGMA-A + INELASTIC-REMOVAL	2.2876411E-03	1.9026320E-03	3.1107999E-04			
SIGMA-T	1.4705352E-02	2.6807840E-02	1.2390840E-02			
NU-SIGMA-F	2.2208816E-03	0.	0.			
FOR EACH NUCLIDE						
REGION 1	0.	1.2312705E-03	7.3031986E-06	9.5653175E-04	2.5224118E-05	
REGION 2	0.	0.	0.	0.	0.	
REGION 3	0.	0.	0.	0.	0.	
SIGMA-F FOR EACH NUCLIDE						
REGION 1	0.	4.2166799E-04	2.5424100E-04	3.1780125E-04	8.2163249E-05	
REGION 2	0.	0.	0.	0.	0.	
REGION 3	0.	0.	0.	0.	0.	
SIGMA-IN TO I+1---I+6						
REGION 1	0.5935552E-04	2.4804000E-05	0.	0.	0.	2.4804000E-07
REGION 2	1.4284800E-02	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 8

D	2.4739946E 00	9.4301388E-01	1.9140610E 00			
SIGMA-R	1.2387691E-02	8.7694390E-03	1.2974720E-02			
SIGMA-A	1.5586250E-03	6.6697319E-03	3.9639600E-04			
SIGMA-A + INELASTIC-REMOVAL	2.3043489E-03	1.9428132E-02	3.9639600E-04			
SIGMA-T	1.4772040E-02	2.8197571E-02	1.3371116E-02			
NU-SIGMA-F	2.2936484E-03	0.	0.			
FOR EACH NUCLIDE						
REGION 1	0.	1.2270539E-03	0.	1.0557202E-03	1.0910660E-05	
REGION 2	0.	0.	0.	0.	0.	
REGION 3	0.	0.	0.	0.	0.	
SIGMA-F FOR EACH NUCLIDE						
REGION 1	0.	4.2166799E-04	0.	3.5140675E-04	3.5655750E-05	
REGION 2	0.	0.	0.	0.	0.	
REGION 3	0.	0.	0.	0.	0.	
SIGMA-IN TO I+1---I+6						

REGION 1						
4.6337265E-04	3.6117314E-04	1.1781900E-06	0.	0.	0.	0.
REGION 2						
7.0272000E-03	5.7311992E-03	0.	0.	0.	0.	0.
REGION 3						
0.	0.	0.	0.	0.	0.	0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 9

D	1.6005556E 00	7.4437925E-01	9.9092984E-01			
SIGMA-R	1.5607440E-02	1.1766100E-02	2.1143100E-02			
SIGMA-A	1.8822894E-03	8.5264818E-03	5.2344599E-04			
SIGMA-A + INELASTIC-REMOVAL	2.5857518E-03	2.0046481E-02	5.2344599E-04			
SIGMA-T	1.8193192E-02	3.1812581E-02	2.1666546E-02			
NU-SIGMA-F	2.5735265E-03	0.	0.			
FOR EACH NUCLIDE						
REGION 1						
0.	1.2992335E-03	0.	1.2745930E-03	0.	0.	0.
REGION 2						
0.	0.	0.	0.	0.	0.	0.
REGION 3						
0.	0.	0.	0.	0.	0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1						
0.	4.4647129E-04	0.	4.2631875E-04	0.	0.	0.
REGION 2						
0.	0.	0.	0.	0.	0.	0.
REGION 3						
0.	0.	0.	0.	0.	0.	0.

SIGMA-IN TO (+)---1+6

REGION 1						
1.1228741E-04	1.1348415E-04	7.7690925E-05	0.	0.	0.	0.
REGION 2						
8.4095999E-03	1.8432000E-03	1.2672000E-03	0.	0.	0.	0.
REGION 3						
0.	0.	0.	0.	0.	0.	0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 10

D	1.7548867E 00	7.3284813E-01	1.2647764E 00			
SIGMA-R	1.4015718E-02	1.1019420E-02	1.7288260E-02			
SIGMA-A	2.2203424E-03	1.0838600E-02	5.3459999E-04			
SIGMA-A + INELASTIC-REMOVAL	2.4009323E-03	1.3862600E-02	5.3459999E-04			
SIGMA-T	1.7416650E-02	2.4882019E-02	1.7822860E-02			
NU-SIGMA-F	2.8391123E-03	0.	0.			

FOR EACH NUCLIDE

REGION 1						
0.	1.3882799E-03	0.	1.4508325E-03	0.	0.	0.
REGION 2						
0.	0.	0.	0.	0.	0.	0.
REGION 3						
0.	0.	0.	0.	0.	0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1						
0.	4.7871719E-04	0.	4.8522825E-04	0.	0.	0.

REGION 1	0.	0.	0.	0.	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
SIGMA-IN TO I+1----I+6						
REGION 1	1.3071240E-04	4.9877100E-05	0.	0.	0.	0.
REGION 2	2.1888000E-03	8.3520000E-04	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.
MACROSCOPIC CROSS-SECTIONS FOR GROUP 11						
D	9.3812156E-01	5.3705283E-01	4.9758508E-01			
SIGMA-R	2.3637027E-02	1.8784180E-02	3.9471739E-02			
SIGMA-A	2.7823904E-03	1.3297106E-02	1.0113180E-03			
SIGMA-A + INELASTIC-REMOVAL	2.7823904E-03	1.3297106E-02	1.0113180E-03			
SIGMA-T	2.6419417E-02	3.2081285E-02	4.0483057E-02			
NU-SIGMA-F	3.2702213E-03	0.	0.			
FOR EACH NUCLIDE						
REGION 1	0.	1.5609157E-03	0.	1.7093057E-03	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.
SIGMA-F FOR EACH NUCLIDE						
REGION 1	0.	5.3824679E-04	0.	5.7359249E-04	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.
SIGMA-IN TO I+1----I+6						
REGION 1	0.	0.	0.	0.	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.
MACROSCOPIC CROSS-SECTIONS FOR GROUP 12						
D	2.9471764E-00	7.1251624E-01	2.2234555E-00			
SIGMA-R	1.1328242E-02	9.0118399E-03	1.0427120E-02			
SIGMA-A	2.8430986E-03	1.5053924E-02	2.3377200E-04			
SIGMA-A + INELASTIC-REMOVAL	2.8430986E-03	1.5053924E-02	2.3377200E-04			
SIGMA-T	1.4172140E-02	2.4065764E-02	1.0660892E-02			
NU-SIGMA-F	3.7729054E-03	0.	0.			
FOR EACH NUCLIDE						
REGION 1	0.	1.7263584E-03	0.	2.0465470E-03	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1	5.9529599E-04	0.	6.8676074E-04	0.	
REGION 2	0.	0.	0.	0.	
REGION 3	0.	0.	0.	0.	

SIGMA-IN TO I+1---I+6

REGION 1	0.	0.	0.	0.	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 13

D	1.4736494E 00	6.0614393E-01	1.0048357E 00		
SIGMA-R	1.6348191E-02	1.2742220E-02	2.0425460E-02		
SIGMA-A	3.4136421E-03	1.7571372E-02	7.0131598E-04		
SIGMA-A + INELASTIC-REMOVAL	3.4136421E-03	1.7571372E-02	7.0131598E-04		
SIGMA-T	1.9761773E-02	3.0313591E-02	2.1126776E-02		
NU-SIGMA-F	4.2061692E-03	0.	0.		

FOR EACH NUCLIDE

REGION 1	0.	1.7623242E-03	0.	2.4438451E-03	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1	0.	6.0769798E-04	0.	8.2008225E-04	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

SIGMA-IN TO I+1---I+6

REGION 1	0.	0.	0.	0.	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 14

D	1.0465659E 00	5.4148190E-01	6.5316984E-01		
SIGMA-R	2.2977650E-02	1.6692760E-02	3.1053880E-02		
SIGMA-A	3.6816273E-03	1.9229914E-02	6.6574199E-04		

FOR EACH NUCLIDE

REGION 2

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

SIGMA-F FOR EACH NUCLIDE

REGION 1

0.

5.9777639E-04

0.

9.2559974E-04

0.

REGION 2

0.

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

SIGMA-IN TO I+1----I+6

REGION 1

0.

0.

0.

0.

0.

0.

REGION 2

0.

0.

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 15

D

7.7765072E-01 5.0601777E-01 6.7551430E-01

SIGMA-R

1.4045895E-02 7.8228198E-03 1.3761660E-02

SIGMA-A

8.6915744E-03 2.8493620E-02 3.4700599E-03

SIGMA-A + INELASTIC-REMOVAL

8.6915744E-03 2.8493620E-02 3.4700599E-03

SIGMA-T

2.2737470E-02 3.6316439E-02 1.7231720E-02

NU-SIGMA-F

5.5516002E-03 0. 0.

FOR EACH NUCLIDE

REGION 1

0.

2.3593564E-03

0.

3.1922438E-03

0.

REGION 2

0.

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

SIGMA-F FOR EACH NUCLIDE

REGION 1

0.

8.1357118E-04

0.

1.0712228E-03

0.

REGION 2

0.

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

SIGMA-IN TO I+1----I+6

REGION 1

0.

0.

0.

0.

0.

0.

REGION 2

0.

0.

0.

0.

0.

0.

REGION 3

0.

0.

0.

0.

0.

0.

MACROSCOPIC CROSS-SECTIONS FOR GROUP 16

D

1.11683309E-00 5.9016688E-01 7.2662169E-01

SIGMA-R

0. 0.

SIGMA-A

8.6988218E-03 5.7938800E-02 1.0164000E-03

SIGMA-A + INELASTIC-REMOVAL

8.6988218E-03 5.7938800E-02 1.0164000E-03

SIGMA-T

8.6988218E-03 5.7938800E-02 1.0164000E-03

NU-SIGMA-F

8.4736664E-03 0. 0.

FOR EACH NUCLIDE

REGION 1	0.	4.3158959E-03	0.	4.1577705E-03	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

SIGMA-F FOR EACH NUCLIDE

REGION 1	0.	1.4882400E-03	0.	1.3952250E-03	0.
REGION 2	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.

SIGMA-IN TO I+1---I+6

REGION 1	0.	0.	0.	0.	0.	0.
REGION 2	0.	0.	0.	0.	0.	0.
REGION 3	0.	0.	0.	0.	0.	0.

VOLUME--TOTAL AND REGIONWISE

1.3036083E 07						
1.4992137E 06	5.0390511E 06	6.4978183E 06				
CORE VOLUME =	1.4992137E 06					

FLUX CALCULATION

LAMBDA 0 =	3.8418924E-01
LAMBDA 1 =	4.8359480E-01
LAMBDA 2 =	5.8052512E-01
LAMBDA 3 =	6.6587247E-01
LAMBDA 4 =	6.9576471E-01
LAMBDA 5 =	7.0332327E-01
LAMBDA 6 =	7.0504574E-01
LAMBDA 7 =	7.0543301E-01
LAMBDA 8 =	7.0552045E-01
LAMBDA 9 =	7.0554036E-01
LAMBDA 10 =	7.0554491E-01
LAMBDA 11 =	7.0554599E-01
LAMBDA 12 =	7.0554621E-01
LAMBDA 13 =	7.0554628E-01
LAMBDA 14 =	7.0554627E-01
LAMBDA 15 =	7.0554630E-01
LAMBDA 16 =	7.0554628E-01

SOURCE

1.5336317E 00	1.5313742E 00	1.5246052E 00	1.5133619E 00	1.4977012E 00	1.4777024E 00
1.4534659E 00	1.4251124E 00	1.3927820E 00	1.3566323E 00	1.3168372E 00	1.2735848E 00
1.2270755E 00	1.1775194E 00	1.1251342E 00	1.0701419E 00	1.0127658E 00	9.5322703E-01
8.9174047E-01	8.2850994E-01	7.6372261E-01	6.9754154E-01	6.3009613E-01	5.6146034E-01
4.9167270E-01					
4.43C104BE-01	2.6359693E-01	1.5741849E-01	9.4334041E-02	5.6714757E-02	3.4203007E-02
2.0687300E-02	1.2547255E-02	7.6301305E-03	4.6513189E-03	2.8416607E-03	1.7391098E-03
1.0652004E-03	6.5151954E-04	3.9577300E-04	2.3564193E-04		
-0.	-0.	-0.	-0.	-0.	-0.
-0.					

INTEGRATED SOURCE

1.3032190E 06	1.9599469E 05	0.
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FLUX GROUP 1

4.1358642E 00	4.1296404E 00	4.1109914E 00	4.0799996E 00	4.0367982E 00	3.9815710E 00
3.9145490E 00	3.8360068E 00	3.7462573E 00	3.6496464E 00	3.5345441E 00	3.41233392E 00
3.2824263E 00	3.1421953E 00	2.9930182E 00	2.8352320E 00	2.6691208E 00	2.4948930E 00
2.3126551E 00	2.1223804E 00	1.9238711E 00	1.7167139E 00	1.5002264E 00	1.2733933E 00
1.0347909E 00					
1.0347909E 00	6.1281364E-01	3.6399484E-01	2.1684296E-01	1.29557905E-01	7.7630054E-02
4.6646264E-02	2.8105532E-02	1.6978934E-02	1.0282585E-02	6.2406358E-03	3.7928130E-03
2.3037246E-03	1.3905373E-03	8.2014259E-04	4.4689389E-04		
-0.					

4.4689389E-04	2.0009692E-04	8.9622046E-05	3.9947662E-05	1.7301782E-05	6.4000943E-06
<hr/>					
3.7792878E 06					
3.3264677E 06	4.5228659E 05	5.3356528E 02			
<hr/>					
REGION CHECKS					
2.1057948E 03	-2.0771129E 03	-3.0551522E 00			
2.1033495E 03	-2.1001636E 03	-3.1076053E 00			
<hr/>					
FLUX GROUP 2					
9.4672961E 00	9.4529330E 00	9.4098926E 00	9.3383551E 00	9.2386117E 00	9.1113630E 00
8.9562111E 00	8.7746505E 00	8.5670549E 00	8.3341630E 00	8.0767608E 00	7.7956602E 00
7.4916741E 00	7.1655874E 00	6.8181226E 00	6.4499006E 00	6.0613930E 00	5.6528679E 00
5.2243245E 00	4.7754169E 00	4.3053630E 00	3.8128368E 00	3.2958412E 00	2.7915577E 00
2.1761699E 00					
2.1761699E 00	1.2417516E 00	7.1523771E-01	4.1546775E-01	2.4317491E-01	1.4330109E-01
8.4966680E-02	5.0645989E-02	3.0337404E-02	1.8250680E-02	1.1020185E-02	6.6734201E-03
4.0464937E-03	2.4478324E-03	1.4628796E-03	8.3935361E-04		
8.3935361E-04	4.2469308E-04	2.1319832E-04	1.0549644E-04	4.9979516E-05	1.9707100E-05
0.					
<hr/>					
INTEGRATED FLUX					
8.3777727E 06					
7.4810687E 06	8.9554890E 05	1.1546283E 01			
<hr/>					
REGION CHECKS					
4.1395624E 03	-4.0802415E 03	-4.1342269E 00			
4.1343183E 03	-4.1299050E 03	-4.1951295E 00			
<hr/>					
FLUX GROUP 3					
1.8035386E 01	1.8007500E 01	1.7923933E 01	1.7785017E 01	1.7591287E 01	1.7343484E 01
1.7042538E 01	1.6689556E 01	1.6285801E 01	1.5832676E 01	1.5331691E 01	1.4784454E 01
1.4192589E 01	1.3557799E 01	1.2881740E 01	1.2166036E 01	1.1412233E 01	1.0621774E 01
9.7959707E 00	8.9359940E 00	8.0428684E 00	7.1174951E 00	6.1607044E 00	5.1733524E 00
4.1564839E 00					
4.1564839E 00	2.5066574E 00	1.5096045E 00	9.0866277E-01	5.4700840E-01	3.2949700E-01
1.9867231E-01	1.1994262E-01	7.2518372E-02	4.3915419E-02	2.6638003E-02	1.6183740E-02
9.8463560E-03	5.9982273E-03	3.6612095E-03	2.2511530E-03		
2.2511530E-03	1.3208263E-03	7.5866881E-04	4.2329589E-04	2.2152173E-04	9.35C 258E-05
0.					
<hr/>					
INTEGRATED FLUX					
1.5959642E 07					
1.4068532E 07	1.8673557E 06	3.7541415E 03			
<hr/>					
REGION CHECKS					
6.6911721E 03	-6.6092009E 03	-7.9580909E 00			
6.6873835E 03	-6.6782581E 03	-8.0488570E 00			
<hr/>					
FLUX GROUP 4					
2.4328576E 01	2.4290604E 01	2.4176824E 01	2.3987726E 01	2.3724111E 01	2.3387093E 01
2.2978081E 01	2.2498800E 01	2.1951249E 01	2.1337713E 01	2.0660751E 01	1.9923179E 01
1.9128138E 01	1.8278976E 01	1.7379394E 01	1.6433421E 01	1.5445480E 01	1.4420471E 01
1.5363888E 01	1.2281981E 01	1.1181972E 01	1.0072345E 01	8.9632353E 00	7.0569234E 00
6.7985052E 00					
6.7985052E 00	4.9499757E 00	3.4961075E 00	2.4170264E 00	1.6449267E 00	1.1061503E 00
7.3692507E-01	4.8730063E-01	3.2028873E-01	2.0946206E-01	1.3639610E-01	8.8473734E-02
5.7154600E-02	3.6736508E-02	2.3419946E-02	1.4690816E-02		
1.4690816E-02	8.6996793E-03	5.1081470E-03	2.9324736E-03	1.5788133E-03	6.8067008E-04
0.					
<hr/>					
INTEGRATED FLUX					
2.4034560E 07					
1.9535987E 07	4.4734166E 06	2.5155803E 04			
<hr/>					
REGION CHECKS					
5.8236647E 03	-5.7556417E 03	-4.9001986E 01			
5.8290813E 03	-5.7720477E 03	-4.9613876E 01			

FLUX GROUP 5

3.5082612E 01	3.5027958E 01	3.4864224E 01	3.4592240E 01	3.4213367E 01	3.3729512E 01
3.3143126E 01	3.2457210E 01	3.1675322E 01	3.0801585E 01	2.9560794E 01	2.8738003E 01
2.7679453E 01	2.6491707E 01	2.5242200E 01	2.3939225E 01	2.2542053E 01	2.1211080E 01
1.980845E 01	1.8396210E 01	1.6990703E 01	1.5608040E 01	1.4270548E 01	1.2993935E 01
1.1820466E 01					
1.1820466E 01	9.6016389E 00	7.4905112E 00	5.6829498E 00	4.2247214E 00	3.0224520E 00
2.7363020E 00	1.6014966E 00	1.1377685E 00	8.0296453E -01	5.6351469E -01	3.9358540E -01
2.7377493E -01	1.8977521E -01	1.3118678E -01	9.0543936E -02		
9.0543936E -02	5.8736986E -02	3.7539778E -02	2.3229108E -02	1.3292339E -02	5.9572395E -03
0.					

INTEGRATED FLUX

4.0187580E 07

2.9375012E 07 1.0634888E 07 1.7768029E 05

REGION CHECKS

5.2113674E 03 -5.0094559E 03 -1.8014105E 02

5.2234991E 03 -4.9873217E 03 -1.8213818E 02

FLUX GROUP 6

4.2356907E 01	4.2291822E 01	4.2096880E 01	4.1773223E 01	4.1322724E 01	4.0748005E 01
4.0052443E 01	3.9240167E 01	3.8316065E 01	3.7285792E 01	3.6155773E 01	3.4933220E 01
3.3626138E 01	3.2243343E 01	3.0794474E 01	2.9290004E 01	2.7741251E 01	2.6160375E 01
2.4560359E 01	2.2954968E 01	2.1358663E 01	1.9786463E 01	1.8253726E 01	1.6775811E 01
1.5367601E 01					
1.5367601E 01	1.2623519E 01	1.0098974E 01	7.9130540E 00	6.0473005E 00	4.6331080E 00
3.4800429E 00	2.5882747E 00	1.9087714E 00	1.3973605E 00	1.0164579E 00	7.3530170E -01
5.2941718E -01	3.7975400E -01	2.7174713E -01	1.9443407E -01		
1.9443407E -01	1.3217928E -01	8.8042082E -02	5.6401934E -02	3.3117578E -02	1.5104741E -02
0.					

INTEGRATED FLUX

5.2306678E 07

3.6495858E 07 1.5401038E 07 4.0978294E 05

REGION CHECKS

5.7989786E 03 -5.4340624E 03 -2.5749432E 02

5.8063557E 03 -5.4304523E 03 -2.6013364E 02

FLUX GROUP 7

4.4570512E 01	4.4503787E 01	4.4303939E 01	4.3972254E 01	4.3510802E 01	4.2922487E 01
4.2211007E 01	4.1380890E 01	4.0437432E 01	3.9386705E 01	3.8235527E 01	3.6991435E 01
3.5662651E 01	3.4258038E 01	3.2787047E 01	3.1259653E 01	2.9686268E 01	2.8077549E 01
2.6444766E 01	2.4798656E 01	2.3190238E 01	2.1510092E 01	1.9888200E 01	1.8293642E 01
1.6734250E 01					
1.6734250E 01	1.3343301E 01	1.0548242E 01	8.2641971E 00	6.4173865E 00	4.9407773E 00
3.7732290E 00	2.8598316E 00	2.1523690E 00	1.6094814E 00	1.1464654E 00	8.8478179E -01
6.5137591E -01	4.7792745E -01	3.5009625E -01	2.5662468E -01		
2.5682468E -01	1.9336559E -01	1.4009466E -01	9.9549425E -02	5.9163587E -02	2.7606270E -02
0.					

INTEGRATED FLUX

5.6486611E 07

3.3204633E 07 1.6648643E 07 6.3313482E 05

REGION CHECKS

6.9708772E 03 -6.5499117E 03 -1.4934484E 02

6.9748003E 03 -6.5759393E 03 -1.5027804E 02

FLUX GROUP 8

3.9373666E 01	3.9316500E 01	3.9145308E 01	3.8861215E 01	3.8466059E 01	3.7967400E 01
3.7353507E 01	3.6643343E 01	3.5836545E 01	3.4938399E 01	3.3954810E 01	3.2892274E 01
3.1757838E 01	3.0559054E 01	2.9303941E 01	2.8000927E 01	2.6658796E 01	2.5286634E 01
2.3893765E 01	2.2489697E 01	2.1084064E 01	1.9686584E 01	1.8307024E 01	1.6955194E 01
1.5640975E 01					
1.5640975E 01	1.2502881E 01	9.9120522E 00	7.8006344E 00	6.0970248E 00	4.7342449E 00
3.6527595E 00	2.8010312E 00	2.1351939E 00	1.6183987E 00	1.2200517E 00	9.1502692E -01
6.8289471E -01	5.0718395E -01	3.7468709E -01	2.7480577E -01		
2.7480577E -01	2.0905127E -01	1.5376556E -01	1.0695765E -01	6.6817941E -02	3.1675064E -02
0.					

INTEGRATED FLUX

5.2132810E 07

3.6454570E 07 1.5983830E 07 6.9441074E 05

REGION CHECKS

5.4357486E 03	-5.0497783E 03	-1.2067781E 02				
5.4399344E 03	-5.0682159E 03	-1.2180753E 02				

FLUX GROUP 9

2.7488380E 01	2.7448972E 01	2.7330951E 01	2.7135063E 01	2.6852523E 01	2.6515013E 01	
2.6094672E 01	2.5604069E 01	2.5046179E 01	2.4424346E 01	2.3742240E 01	2.3003926E 01	
2.2213194E 01	2.1374681E 01	2.0492564E 01	1.9571041E 01	1.8614043E 01	1.7625036E 01	
1.6600876E 01	1.5560892E 01	1.4487618E 01	1.3385059E 01	1.2248523E 01	1.1069518E 01	
9.8344370E 00						
9.8344370E 00	7.5183525E 00	5.8017966E 00	4.4965247E 00	3.4880778E 00	2.7021917E 00	
2.0875739E 00	1.6068576E 00	1.2317005E 00	9.4001883E-01	7.1434321E-01	5.4078031E-01	
4.0832347E-01	3.0839058E-01	2.3454978E-01	1.8245546E-01			
1.8245546E-01	1.3641529E-01	9.9451260E-02	6.8899009E-02	4.2978035E-02	2.0365998E-02	
0.						

INTEGRATED FLUX

3.4185005E 07						
2.4339083E 07	9.3944197E 06	4.5150326E 05				

REGION CHECKS

3.4772531E 03	-3.3084398E 03	-5.6946879E 01				
3.4729040E 03	-3.3320891E 03	-5.7626694E 01				

FLUX GROUP 10

2.4172752E 01	2.4138762E 01	2.4036972E 01	2.3868027E 01	2.3632986E 01	2.3333315E 01	
2.2970887E 01	2.2547963E 01	2.2067182E 01	2.1531548E 01	2.0944410E 01	2.0309459E 01	
1.9630718E 01	1.8912542E 01	1.8159644E 01	1.7377127E 01	1.6570566E 01	1.5746130E 01	
1.4910784E 01	1.4072592E 01	1.3241177E 01	1.2428388E 01	1.1649275E 01	1.0923698E 01	
1.0277282E 01						
1.0277282E 01	8.7063389E 00	7.1730906E 00	5.8951335E 00	4.6395305E 00	3.6728101E 00	
2.8850150E 00	2.2510521E 00	1.7458566E 00	1.3465654E 00	1.0332619E 00	7.8905120E-01	
5.9982681E-01	4.5389012E-01	3.4147387E-01	2.5414023E-01			
2.5614023E-01	1.8790367E-01	1.3563769E-01	9.3276273E-02	5.7903523E-02	2.7366064E-02	
0.						

INTEGRATED FLUX

3.4916802E 07						
2.2217128E 07	1.2082032E 07	6.1764328E 05				

REGION CHECKS

1.7528348E 03	-1.5091956E 03	-1.1497286E 02				
1.7600168E 03	-1.5010968E 03	-1.1624802E 02				

FLUX GROUP 11

1.3405024E 01	1.3386325E 01	1.3330326E 01	1.3237386E 01	1.3108087E 01	1.2943240E 01	
1.2511251E 01	1.2246812E 01	1.1952212E 01	1.1629288E 01	1.1280043E 01		
1.0906628E 01	1.0511314E 01	1.0096449E 01	9.6643816E 00	9.2173547E 00	8.7573031E 00	
8.12855257E 00	7.8021221E 00	7.3050408E 00	6.7884783E 00	6.2401973E 00	5.6370672E 00	
4.19378771E 00						
4.19378771E 00	3.8350021E 00	3.0314049E 00	2.4092794E 00	1.9134636E 00	1.5142201E 00	
1.1924499E 00	9.3420056E-01	7.2797286E-01	5.6435511E-01	4.3540430E-01	3.3449196E-01	
2.56146634E-01	1.9606316E-01	1.5089563E-01	1.1860621E-01			
1.1860621E-01	8.4069112E-02	5.9744275E-02	4.0837422E-02	2.5287539E-02	1.1938891E-02	
0.						

INTEGRATED FLUX

1.7563501E 07						
1.2136445E 07	5.1516497E 06	2.7540611E 05				

REGION CHECKS

1.2579929E 03	-1.1792402E 03	-3.7505154E 01				
1.2523938E 03	-1.1897219E 03	-3.8184340E 01				

FLUX GROUP 12

1.9590136E 01	1.9663333E 01	1.9583055E 01	1.9449776E 01	1.9264268E 01	1.9027601E 01	
1.8741128E 01	1.8406477E 01	1.8025525E 01	1.7600378E 01	1.7133348E 01	1.6626917E 01	
1.6083708E 01	1.5506440E 01	1.4897892E 01	1.4260848E 01	1.3598063E 01	1.2912221E 01	
1.2205919E 01	1.1481704E 01	1.0742191E 01	9.9903613E 00	9.2301668E 00	8.4676836E 00	
7.7132171E 00						
7.7132171E 00	5.7071742E 00	4.3032748E 00	3.2911820E 00	2.5414992E 00	1.9384195E 00	
1.5372701E 00	1.1979846E 00	9.3295830E-01	7.2573889E-01	5.6423919E-01	4.3945272E-01	
3.4474780E-01	2.7553610E-01	2.2922817E-01	2.0546381E-01			
2.0546381E-01	1.8568984E-01	1.5303014E-01	1.1500374E-01	7.5594240E-02	3.6894835E-02	
0.						

INTEGRATED FLUX

2.5755295E 07

1.7454947E 07 7.1320794E 06 6.6826876E 05

REGION CHECKS

2.9627953E 03 -2.9061431E 03 2.9813039E 02

2.9649850E 03 -2.9289106E 03 3.0207215E 02

FLUX GROUP 13

1.0614162E 01	1.0599794E 01	1.0556751E 01	1.0485267E 01	1.0385717E 01	1.0258518E 01
1.0104624E 01	9.9245074E 00	9.7191533E 00	9.4895374E 00	9.2367085E 00	8.9817620E 00
8.6658128E 00	8.3499600E 00	8.0152458E 00	7.6626070E 00	7.2928144E 00	6.9064007E 00
6.5035664E 00	6.0840610E 00	5.6470197E 00	5.1907360E 00	4.7123261E 00	4.2072157E 00
3.6683246E 00					
3.6683246E 00	2.5888754E 00	1.8757098E 00	1.3887848E 00	1.0456961E 00	7.9705162E-01
6.1259624E-01	4.7330487E-01	3.6684472E-01	2.8496010E-01	2.2196176E-01	1.7385455E-01
1.3783798E-01	1.1202680E-01	9.5300952E-02	8.7221082E-02		
8.7221082E-02	7.9954565E-02	6.7362661E-02	5.1603850E-02	3.4393141E-02	1.6924472E-02
0.					

INTEGRATED FLUX

1.2773711E 07

9.4513947E 06 3.0279447E 06 2.9437174E 05

REGION CHECKS

1.4116658E 03 -1.3865426E 03 5.9602950E 01

1.4093263E 03 -1.3993268E 03 6.0101132E 01

FLUX GROUP 14

6.2800779E 00	6.2715770E 00	6.2461091E 00	6.2038004E 00	6.1448545E 00	5.0695506E 00
5.8782374E 00	5.8713248E 00	5.7492732E 00	5.6125808E 00	5.4617867E 00	5.2973510E 00
5.1198297E 00	4.9296433E 00	4.7271373E 00	4.5125124E 00	4.2857605E 00	4.0465802E 00
3.7942668E 00	3.5275649E 00	3.2444701E 00	2.9419616E 00	2.6156420E 00	2.2592544E 00
11.8640467E 00					
1.8640467E 00	1.2424442E 00	8.5527175E-01	6.0628909E-01	4.4072123E-01	3.2692639E-01
2.4630546E-01	1.8769864E-01	1.4424867E-01	1.1163396E-01	8.7071711E-02	5.8761942E-02
5.5595516E-02	4.7040093E-02	4.3183479E-02	4.4981489E-02		
4.4981489E-02	4.5913122E-02	4.0273749E-02	3.1440697E-02	2.1165055E-02	1.0468295E-02
0.					

INTEGRATED FLUX

6.9531263E 06

5.4413363E 06 1.3387902E 06 1.7299985E 05

REGION CHECKS

7.5205042E 02 -7.5679649E 02 4.1793163E 01

7.5015984E 02 -7.6434204E 02 4.2366934E 01

FLUX GROUP 15

6.1565303E 00	6.1421762E 00	6.1171440E 00	6.0755438E 00	6.0175523E 00	5.9434096E 00
5.8534110E 00	5.7478969E 00	5.6272389E 00	5.4918226E 00	5.3420290E 00	5.1791871E 00
5.8005781E 00	4.8093513E 00	4.6044868E 00	4.3857192E 00	4.1524454E 00	3.9036059E 00
3.6375305E 00	3.3517512E 00	3.0427521E 00	2.7056698E 00	2.3339245E 00	1.9187879E 00
1.4489021E 00					
1.4489021E 00	8.8711017E-01	5.6526792E-01	3.7458599E-01	2.5739746E-01	1.8255977E-01
1.3220399E-01	9.8832292E-02	7.4751890E-02	5.7435723E-02	4.4986029E-02	3.6368285E-02
3.1223441E-02	2.9921155E-02	3.3906395E-02	4.6530542E-02		
4.6530542E-02	5.9944985E-02	5.8333683E-02	4.8107685E-02	3.3379852E-02	1.6767112E-02
0.					

INTEGRATED FLUX

6.2330196E 06

5.1202852E 06 8.6012162E 05 2.4461281E 05

REGION CHECKS

6.7043152E 02 -7.0732053E 02 9.2088425E 01

6.6852096E 02 -7.1492525E 02 9.3092222E 01

FLUX GROUP 16

8.5725491E 00 8.5599345E 00 8.5221096E 00 8.4591430E 00 8.3711413E 00 8.2582424E 00

8.1206039E 00	7.9583884E 00	7.7717454E 00	7.5607913E 00	7.3255853E 00	7.0661052E 00
6.7822205E 00	6.4736678E 00	6.1400288E 00	5.7807153E 00	5.3949676E 00	4.9318727E 00
4.504159E 00	4.0695802E 00	3.5685178E 00	3.0368249E 00	2.4749617E 00	1.8348751E 00
1.2708983E 00					
1.2708983E 00	5.5014004E-01	2.5098276E-01	1.2279904E-01	6.5388573E-02	3.8177291E-02
2.4155620E-02	1.6420890E-02	1.1807267E-02	8.9444848E-03	7.2716391E-03	6.7250029E-03
7.7617778E-03	1.1791582E-02	2.2274660E-02	4.7447233E-02		
4.7447233E-02	9.2008685E-02	1.0866688E-01	1.0153427E-01	1.6220295E-02	4.0028282E-02
0.					

INTEGRATED FLUX

7.2108580E 06

6.3451033E 06 4.0439952E 05 4.6135520E 05

REGION CHECKS

1.2388153E 03 -1.3290907E 03 2.3056433E 02
1.2381558E 03 -1.3500361E 03 2.3177136E 02

ADJOINT FLUX CALCULATION

LAMBDA 0 = 2.3188280E-01
LAMBDA 1 = 5.0421987E-01
LAMBDA 2 = 6.0194317E-01
LAMBDA 3 = 6.7627861E-01
LAMBDA 4 = 6.9862011E-01
LAMBDA 5 = 7.0400598E-01
LAMBDA 6 = 7.0520011E-01
LAMBDA 7 = 7.0546853E-01
LAMBDA 8 = 7.0552854E-01
LAMBDA 9 = 7.0554224E-01
LAMBDA 10 = 7.0554537E-01
LAMBDA 11 = 7.0554610E-01
LAMBDA 12 = 7.0554624E-01
LAMBDA 13 = 7.0554631E-01

SOURCE

1.0600570E 00	1.0585435E 00	1.0540109E 00	1.0461891E 00	1.0360227E 00	1.0226807E 00
1.0065469E 00	9.8772411E-01	9.6633339E-01	9.4251340E-01	9.1642016E-01	8.8022608E-01
8.5812356E-01	8.2631697E-01	7.3303046E-01	7.5850419E-01	7.2299539E-01	6.8677893E-01
6.5014821E-01	6.1341655E-01	5.7691891E-01	5.4101434E-01	5.0608893E-01	4.7255972E-01
4.4087926E-01					
4.4087926E-01	3.7392260E-01	3.0085816E-01	2.9023891E-01	1.9975441E-01	1.5756171E-01
1.2305162E-01	9.5284298E-02	7.3230278E-02	9.5897380E-02	4.2391033E-02	3.1936403E-02
2.3879180E-02	1.7674965E-02	1.2872997E-02	9.0973271E-03		
9.0973271E-03	5.9972106E-03	3.9232367E-03	2.4910857E-03	1.4580062E-03	6.6463349E-04
0.					

INTEGRATED SOURCE

9.6791960E 05 5.1280721E 05 1.8486868E 04

ADJOINT FLUX GROUP 1

7.8967305E-01	7.8859256E-01	7.8535758E-01	7.7999187E-01	7.7253432E-01	7.6303938E-01
7.5157706E-01	7.3823294E-01	7.2310825E-01	7.0631997E-01	6.8800106E-01	6.6830068E-01
6.4738473E-01	6.2543641E-01	6.0265707E-01	5.7926740E-01	5.5550087E-01	5.3164575E-01
5.0796761E-01	4.8479252E-01	4.6247100E-01	4.4139114E-01	4.2198446E-01	4.0473574E-01
3.19018872E-01					
3.9018872E-01	3.4797806E-01	2.9734283E-01	2.4606523E-01	2.0073622E-01	1.6005633E-01
1.2696285E-01	9.9291395E-02	7.6957888E-02	5.9173101E-02	4.5157380E-02	3.4106402E-02
2.5662487E-02	1.9016058E-02	1.3795583E-02	9.6003207E-03		
9.6003207E-03	6.0277690E-03	3.8032371E-03	2.3532177E-03	1.3536567E-03	6.1095620E-04
0.					

INTEGRATED ADJOINT FLUX

1.2926854E 06

7.6521062E 05 5.0920388E 05 1.8270931E 04

REGION CHECKS

1.0984014E-02 -7.4362611E-01 -3.0209196E-01

1.1043260E-02 -7.2361216E-01 -3.0614344E-01

ADJOINT FLUX GROUP 2

7.49851866E-01	7.9741311E-01	7.9410284E-01	7.8861124E-01	7.8097659E-01	7.7125239E-01
7.5950739E-01	7.4582545E-01	7.3030556E-01	7.1306179E-01	6.9422337E-01	6.7393462E-01
6.5235524E-01	6.2966032E-01	6.0604074E-01	5.8170344E-01	5.5687188E-01	5.3178648E-01
5.10670513E-01	4.8190352E-01	4.5767534E-01	4.3433196E-01	4.1220142E-01	3.9162619E-01
3.7295902E-01					
3.7295902E-01	3.2552035E-01	2.7383054E-01	2.2462231E-01	1.8089759E-01	1.4363304E-01
1.1275140E-01	8.7671105E-02	6.7612235E-02	5.1761311E-02	3.9354661E-02	2.9715272E-02
2.2263766E-02	1.6515916E-02	1.2074415E-02	8.6205915E-03		
8.6205915E-03	5.7093916E-03	3.7299222E-03	2.3589573E-03	1.3747612E-03	6.2473233E-04
0.					

INTEGRATED ADJOINT FLUX

1.2381822E 06					
7.5979186E 05	4.6085168E 05	1.7538678E 04			
REGION CHECKS					
1.2183139E 02	-9.7385139E 01	-1.8922978E 01			
1.2215988E 02	-9.6119065E 01	-1.9131224E 01			
ADJOINT FLUX GROUP 3					
7.5755799E-01	7.5648499E-01	7.5327176E-01	7.4793934E-01	7.4052217E-01	7.3106836E-01
7.1963965E-01	7.0631134E-01	6.9117224E-01	6.7432470E-01	6.5588464E-01	6.398182E-01
6.1476015E-01	5.9237826E-01	5.6901043E-01	5.4484787E-01	5.2010053E-01	4.9499957E-01
4.6980077E-01	4.4478897E-01	4.2028392E-01	3.9664793E-01	3.7429579E-01	3.5370741E-01
3.3544413E-01					
3.3544413E-01	2.9283411E-01	2.4694954E-01	2.0331291E-01	1.6442971E-01	1.3114271E-01
1.0341292E-01	8.0767847E-02	6.2555403E-02	4.80837175E-02	3.6693785E-02	2.7792794E-02
2.0864385E-02	1.5465381E-02	1.214007E-02	7.7716188E-03		
7.7716188E-03	5.0625782E-03	3.2838096E-03	2.0731487E-03	1.2090329E-03	5.5006489E-04
0.					

INTEGRATED ADJOINT FLUX

1.1390323E 06					
7.0346985E 05	4.2006674E 05	1.5545719E 04			
REGION CHECKS					
1.0837760E 02	-8.3608471E 01	-1.9568615E 01			
1.0878142E 02	-8.2640656E 01	-1.9810622E 01			
ADJOINT FLUX GROUP 4					
7.0768653E-01	7.0665075E-01	7.0354825E-01	6.9839576E-01	6.9122516E-01	6.8207361E-01
6.7099321E-01	6.5804566E-01	6.4330281E-01	6.2684610E-01	6.0876599E-01	5.8916125E-01
5.6813823E-01	5.4581001E-01	5.2229553E-01	4.9771871E-01	4.7220741E-01	4.4589254E-01
4.1890699E-01	3.9138471E-01	3.6345975E-01	3.3526545E-01	3.0693376E-01	2.7859466E-01
2.5037601E-01	2.0160132E-01	1.6096395E-01	1.2749291E-01	1.0022072E-01	7.8222329E-02
6.0643458E-02	4.6717785E-02	3.5774395E-02	2.7237839E-02	2.0623011E-02	1.5526814E-02
1.1618064E-02	8.6267000E-03	6.3328961E-03	4.5563653E-03		
4.5563653E-03	3.1183433E-03	2.1024988E-03	1.3661674E-03	8.1271430E-04	3.7407077E-04
0.					

INTEGRATED ADJOINT FLUX

8.18872883E 05					
6.1649959E 05	2.6245241E 05	9.7768353E 03			
REGION CHECKS					
1.5667343E 02	-1.4367220E 02	-8.3333751E 00			
1.5670200E 02	-1.44149817E 02	-8.4264493E 00			
ADJOINT FLUX GROUP 5					
6.8961038E-01	6.8859594E-01	6.6555735E-01	6.8051193E-01	6.7348786E-01	6.6452428E-01
6.5367097E-01	6.4098780E-01	6.2654467E-01	6.1042006E-01	5.9270108E-01	5.7348228E-01
5.5286474E-01	5.3094979E-01	5.0786373E-01	4.8370468E-01	4.5859287E-01	4.3264320E-01
4.0596899E-01	3.7067810E-01	3.50787649E-01	3.2265441E-01	2.9410151E-01	2.6520897E-01
2.3627488E-01					
2.3627488E-01	1.8852461E-01	1.4936323E-01	1.1748713E-01	9.1754616E-02	7.1158553E-02
5.4814047E-02	4.1951652E-02	3.1911195E-02	2.4134352E-02	1.8155699E-02	1.3592545E-02
1.0134343E-02	7.5321199E-03	5.5884978E-03	4.1425541E-03		
4.1485541E-03	7.9194218E-03	2.0094979E-03	1.3253097E-03	7.9631700E-04	3.6863478E-04
0.					

INTEGRATED ADJOINT FLUX

8.4545026E 05					
5.9599248E 05	2.4019896E 05	9.2588165E 03			
REGION CHECKS					
1.3616592E 02	-1.2704190E 02	-5.1351754E 00			
1.3615047E 02	-1.2755871E 02	-5.2478206E 00			
ADJOINT FLUX GROUP 6					
6.9227450E-01	6.9124230E-01	6.8815058E-01	6.8301727E-01	6.7587155E-01	6.6675404E-01
6.5571649E-01	6.4282146E-01	6.2814178E-01	6.1176012E-01	5.9376831E-01	5.7426656E-01
5.5336262E-01	5.3117070E-01	5.0781027E-01	4.8340468E-01	4.5807949E-01	4.3196061E-01
4.0517201E-01	3.7783320E-01	3.5005620E-01	3.2194203E-01	2.9357673E-01	2.6502674E-01
2.3633372E-01					

2.3633372E-01	1.8448502E-01	1.4237794E-01	1.0872456E-01	8.2216817E-02	6.1e12099E-02
4.5787292E-02	3.3765779E-02	2.4724222E-02	1.7985939E-02	1.3006565E-02	9.3561505E-03
6.7005584E-03	4.7839134E-03	3.4130499E-03	2.4443733E-03		
2.4443733E-03	1.6770188E-03	1.1320194E-03	7.3587545E-04	4.3776378E-04	2.3146802E-04
0.					

INTEGRATED ADJOINT FLUX

8.1352434E 05					
5.9561060E 05	2.1265462E 05	5.2591221E 03			

REGION CHECKS

1.2221097E 02	-1.1706236E 02	-3.0897619E 00			
1.3219914E 02	-1.1753138E 02	-3.1236387E 00			

ADJOINT FLUX GROUP 7

7.0766583E-01	7.0657011E-01	7.0334789E-01	6.9799729E-01	6.9054792E-01	6.8104103E-01
6.6952938E-01	6.5607690E-01	6.4075858E-01	6.2366002E-01	6.0487710E-01	5.8451556E-01
5.16269051E-01	5.3952585E-01	5.1515365E-01	4.8971342E-01	4.6335118E-01	4.3621842E-01
4.0847076E-01	3.8026630E-01	3.5176344E-01	3.2311817E-01	2.9448054E-01	2.6598997E-01
2.3776927E-01					
2.3776927E-01	1.7746593E-01	1.3073355E-01	4.5192330E-02	6.8594045E-02	4.8965123E-02
3.4656615E-02	2.4339749E-02	1.6973328E-02	1.1759676E-02	8.0989668E-03	5.5471863E-03
3.7800532E-03	2.5634537E-03	1.7300309E-03	1.1611296E-03		
1.1611296E-03	8.1641906E-04	5.6157169E-04	3.7009467E-04	2.2273617E-04	1.0280805E-04
0.					

INTEGRATED ADJOINT FLUX

7.8464461E 04					
6.0171915E 05	1.8033768E 05	2.5877840E 03			

REGION CHECKS

1.2705184E 02	-1.2409705E 02	-1.4459977E 00			
1.2706686E 02	-1.2470710E 02	-1.4606736E 00			

ADJOINT FLUX GRUUP 8

7.4841264E-01	7.4725699E-01	7.4379325E-01	7.3804022E-01	7.3002623E-01	7.1974129E-01
7.0738657E-01	6.9287407E-01	6.7632665E-01	6.5782671E-01	6.3746793E-01	6.1535297E-01
5.9159428E-01	5.6631372E-01	5.3964248E-01	5.1172114E-01	4.8269999E-01	4.5273044E-01
4.2201088E-01	3.9069774E-01	3.5899669E-01	3.2717118E-01	2.9530044E-01	2.6379829E-01
2.3786079E-01					
2.3286079E-01	1.6404861E-01	1.1473199E-01	7.0720842E-02	5.3745849E-02	3.6195602E-02
2.4446931E-02	1.6314124E-02	1.0817561E-02	7.1317541E-03	4.6772928E-03	3.0532780E-03
1.9052005E-03	1.2867843E-03	8.3255056E-04	5.3H32339E-04		
5.3H32339E-04	3.7001181E-04	2.4813144E-04	1.5955997E-04	9.3925517E-05	4.2H87725E-25
0.					

INTEGRATED ADJOINT FLUX

7.6955875E 05					
6.1999160F 05	1.4841687E 05	1.1502020E 03			

REGION CHECKS

1.2841616F 02	-1.2665230E 02	-6.8117922E-01			
1.2849479E 02	-1.2746877E 02	-6.8763675E-01			

ADJOINT FLUX GRUUP 9

8.0085193E-01	7.9961672E-01	7.9991581E-01	7.8976639E-01	7.8119647E-01	7.7024475E-01
7.5696069E-01	7.4140356E-01	7.2364212E-01	7.0375397E-01	6.8182470E-01	6.5194701E-01
6.3221978E-01	6.0474696E-01	5.7563651E-01	5.4499926E-01	5.1294786E-01	4.7959583E-01
4.4505674E-01	4.0944358E-01	3.7286822E-01	3.3544030E-01	2.9726668E-01	2.5843504E-01
2.1901095E-01					
2.1901095E-01	1.4746122E-01	9.8140350E-02	6.4670939E-02	4.2248772E-02	2.7330372E-02
1.7636542E-02	1.1286346E-02	7.1823850E-03	4.5476581E-03	2.8664761E-03	1.799902E-03
1.1275816E-03	7.0692899E-04	4.4725720E-04	2.9176089E-04		
2.9176089E-04	1.7809051E-04	1.0819451E-04	6.4330239E-05	3.5745713E-05	1.5759418C-05
0.					

INTEGRATED ADJOINT FLUX

7.7090853E 05					
6.4708777E 05	1.2329509E 05	5.2568409E 02			

REGION CHECKS

1.0832080E 02	-1.0709084E 02	-3.3296270E-01			
1.0828806E 02	-1.0788656E 02	-3.3712703E-01			

ADJOINT FLUX GRUUP 10

8.0893803E-01	8.0769385E-01	8.0396594E-01	7.9777133E-01	7.8913771E-01	7.7810354E-01
7.64471765E-01	7.4903889E-01	7.3113542E-01	7.1108413E-01	6.8896969E-01	6.6488352E-01
6.3892249E-01	6.1118745E-01	5.8178140E-01	5.5080748E-01	5.1836694E-01	4.8455719E-01
4.4947070E-01	4.1319586E-01	3.7582189E-01	3.3745136E-01	2.9822672E-01	2.5838127E-01
2.1833205E-01					

2.1833205E-01	1.4131479E-01	9.0769015E-02	5.7901536E-02	3.6704548E-02	2.3134717E-02
1.4505412E-02	9.0510766E-03	5.6226112E-03	3.4785073E-03	2.149232E-03	1.3168807E-03
8.0654675E-04	4.9302889E-04	3.0160245E-04	1.8501960E-04		
1.8501960E-04	1.1465568E-04	7.0534137E-05	4.2461780E-05	2.3899139E-05	1.0601752E-05
0.					

INTEGRATED ADJOINT FLUX

7.6537678E-05					
6.5235672E-05	1.1267927E-05	3.4080271E-02			

REGION CHECKS

1.1888690E-02	-1.1759952E-02	-2.4866999E-01			
1.1892185E-02	-1.1861507E-02	-2.5150492E-01			

ADJOINT FLUX GROUP 11

8.2767016E-01	8.2640396E-01	8.2260995E-01	8.1630409E-01	8.0751619E-01	7.9628158E-01
7.8264989E-01	7.6667973E-01	7.4843973E-01	7.2800814E-01	7.0547203E-01	6.8092702E-01
6.5447612E-01	6.2622824E-01	5.9629574E-01	5.6479033E-01	5.3181619E-01	4.9745860E-01
4.6176511E-01	4.2471482E-01	3.8616849E-01	3.4378825E-01	3.0290910E-01	2.5633399E-01
2.0400810E-01					
2.0400810E-01	1.2605991E-01	7.7372461E-02	4.7199598E-02	2.8632308E-02	1.7277711E-02
1.0378958E-02	6.2067827E-03	3.6967388E-03	2.1335159E-03	1.2970409E-03	7.6453386E-04
4.4954060E-04	2.6433245E-04	1.5699624E-04	9.7801842E-05		
9.17801842E-05	5.5251319E-05	3.4133560E-05	2.1276566E-05	1.2382655E-05	5.6342134E-06
0.					

INTEGRATED ADJOINT FLUX

7.6009637E-05					
6.6522347E-05	9.4702320E-04	1.7058973E-02			

REGION CHECKS

9.1289354E-01	-9.0009650E-01	-8.9293784E-02			
9.0983609E-01	-9.0880795E-01	-9.1255778E-02			

ADJOINT FLUX GROUP 12

8.1288999E-01	8.1164263E-01	8.0790473E-01	8.0169163E-01	7.9302831E-01	7.8194949E-01
7.6849937E-01	7.5273141E-01	7.3470802E-01	7.1450040E-01	6.9218841E-01	6.6786057E-01
6.4161436E-01	6.1355674E-01	5.9380497E-01	5.5240803E-01	5.1974637E-01	4.8574419E-01
4.5065209E-01	4.1467017E-01	3.7802098E-01	3.4095412E-01	3.0374779E-01	2.6670843E-01
2.3016744E-01					
2.3016744E-01	1.3865140E-01	8.3087927E-02	4.9550029E-02	2.9417021E-02	1.7342230E-02
1.0243810E-02	6.0125358E-03	3.5178088E-03	2.0521622E-03	1.1938048E-03	6.9241541E-04
4.0002282E-04	2.2941674E-04	1.2924276E-04	6.9128254E-05		
6.9128254E-05	4.7186206E-05	3.1522489E-05	2.0241953E-05	1.1908058E-05	5.4381406E-06
0.					

INTEGRATED ADJOINT FLUX

7.5982105E-05					
6.5814890E-05	1.0152573E-05	1.4663256E-02			

REGION CHECKS

1.4438263E-02	-1.4282284E-02	-1.0643318E-01			
1.4445329E-02	-1.4429595E-02	-1.0749725E-01			

ADJOINT FLUX GROUP 13

8.4109475E-01	8.3983977E-01	8.3607852E-01	8.2982444E-01	8.2109310E-01	8.0993173E-01
7.9635833E-01	7.8042044E-01	7.6216367E-01	7.4163611E-01	7.1888678E-01	6.9396317E-01
6.6691010E-01	6.3776790E-01	6.0657150E-01	5.7335044E-01	5.3813036E-01	5.0093658E-01
4.6180611E-01	4.2077058E-01	3.7792611E-01	3.3339819E-01	2.8739315E-01	2.4021749E-01
1.9229559E-01					
1.9229559E-01	1.0680378E-01	5.8886468E-02	3.2241351E-02	1.7537807E-02	9.4823018E-03
5.0985105E-03	2.7275490E-03	1.4524435E-03	7.7020658E-04	4.0687799E-04	2.1419767E-04
1.1239770E-04	5.8782698E-05	3.0601484E-05	1.5767685E-05		
1.5767685E-05	7.9475105E-06	3.9627144E-06	1.9479153E-06	9.1847855E-07	3.6127642E-07
0.					

INTEGRATED ADJOINT FLUX

7.3315397E-05					
6.6116827E-05	7.1964158E-04	2.1543522E-01			

REGION CHECKS

1.2061180E 02	-1.1915345E 02	-2.9002637E-02
1.2060070E 02	-1.2056978E 02	-2.9422049E-02

ADJOINT FLUX GROUP 14

8.2154102E-01	8.2033721E-01	8.1672984E-01	8.1073365E-01	8.0237221E-01	7.9167738E-01
7.7888813E-01	7.6344888E-01	7.4600745E-01	7.2641252E-01	7.0471042E-01	6.8094125E-01
6.5513436E-01	6.2730306E-01	5.9743850E-01	5.6550316E-01	5.3142422E-01	4.9508766E-01
4.563375E-01	4.1496382E-01	3.7074220E-01	3.2343653E-01	2.7287534E-01	2.1906633E-01
1.6240537E-01					
1.6240537E-01	8.4070578E-02	4.3010118E-02	2.1779911E-02	1.0931824E-02	5.4448899E-03
2.16938858E-03	1.3250481E-03	6.4842628E-04	3.1588957E-04	1.5328202E-04	7.4122421E-05
3.5741244E-05	1.7203425E-05	8.2884948E-06	4.0282125E-06		
4.0282125E-06	1.6330105E-06	6.9069078E-07	3.0443564E-07	1.3553379E-07	5.7228292E-08
0.					

INTEGRATED ADJOINT FLUX

6.9660107E 05		
614290383E 05	5.3692808E 04	4.4450846E 00

REGION CHECKS

1.0263228E 02	-1.0123895E 02	-7.3338771E-03
1.0256881E 02	-1.0256119E 02	-7.4807406E-03

ADJOINT FLUX GROUP 15

7.8312382E-01	7.8198139E-01	7.7855822E-01	7.7286931E-01	7.6493875E-01	7.5473932E-01
7.4249090E-01	7.2806007E-01	7.1155709E-01	6.9303397E-01	6.7254122E-01	6.5012391E-01
6.2581661E-01	5.9963714E-01	5.7157851E-01	5.4159882E-01	5.0960841E-01	4.7565335E-01
4.3889430E-01	3.9957917E-01	3.5700762E-01	3.1048458E-01	2.5905905E-01	2.0144257E-01
1.3589994E-01					
1.3589994E-01	6.4019402E-02	2.9831631E-02	1.3786227E-02	6.3303510E-03	2.8921664E-03
1.13160884E-03	5.9698406E-04	2.7010386E-04	1.2195791E-04	5.4978164E-05	2.4755244E-05
1.1146542E-05	5.0369883E-06	2.3210228E-06	1.1637884E-06		
1.1637884E-06	5.6168739E-07	2.8201640E-07	1.4592202E-07	7.4225144E-08	3.1245162E-08
0.					

INTEGRATED ADJOINT FLUX

6.5170554E 05		
6.1245057E 05	3.9333349E 04	1.5726275E 00

REGION CHECKS

9.13930153E 01	-9.2270888E 01	-1.6422626E-03
9.3647086E 01	-9.3645327E 01	-1.6707451E-03

ADJOINT FLUX GROUP 16

8.9209819E-01	8.9079486E-01	8.8688946E-01	8.8039871E-01	8.7134936E-01	8.3977773E-01
8.4572831E-01	8.2925206E-01	8.1040417E-01	7.8924104E-01	7.6581671E-01	7.4017812E-01
7.1235925E-01	6.8237378E-01	6.5020581E-01	6.1579825E-01	5.7903817E-01	5.3973931E-01
4.9761373E-01	4.5225220E-01	4.0307677E-01	3.4929810E-01	2.8985445E-01	2.2333410E-01
1.4787839E-01					
1.4787839E-01	5.7201750E-02	2.2162986E-02	8.6001686E-03	3.3419260E-03	1.3003326E-03
5.0657163E-04	1.9757006E-04	7.137242E-05	3.0147024E-05	1.1793886E-05	4.6196210E-06
1.8149332E-06	7.2310019E-07	3.1110256E-07	1.8840945E-07		
1.8840945E-07	1.4178098E-07	1.0361452E-07	7.1846638E-08	4.4834740E-08	2.1250935E-08
0.					

INTEGRATED ADJOINT FLUX

7.2728169E 05		
6.8290243E 05	3.4378755E 04	4.6955054E-01

REGION CHECKS

1.6200481E 02	-1.5850748E 02	-3.7978441E-05
1.6153342E 02	-1.6153332E 02	-3.8371014E-05

POINTWISE SUMMING OVER GROUPS

N	M	A(1,M,N)	A(2,M,N)	A(3,M,N)	A(4,M,N)	A(5,M,V)	S(1,N)	S(2,N)
1	1	2.8134712E-02	7.9330610E-02	5.4934398E-02	5.9332896E-02	6.9247417E-01	7.4791932E-01	7.9418823E-07
1	2	1.6503870E-01	4.8661901E-01	3.3713141E-01	3.6395176E-01	6.9280362E-01	7.4791932E-01	7.9418823E-07
1	3	7.4954120E-03	2.4625474E-02	1.7057042E-02	1.8417868E-02	6.9265841E-01	7.4791932E-01	7.9418823E-07
1	4	1.4295757E-01	4.3164384E-01	2.9888027E-01	3.2283477E-01	6.9242335E-01	7.4791932E-01	7.9418823E-07
1	5	1.8245022E-02	5.9830622E-02	4.1454050E-02	4.4748478E-02	6.9285674E-01	7.4791932E-01	7.9418823E-07
2	1	2.8091650E-02	7.9209275E-02	5.4768572E-02	5.9157562E-02	6.9144140E-01	7.4685146E-01	7.9186426E-07
2	2	1.6479618E-01	4.8590343E-01	3.3613338E-01	3.6289768E-01	6.9176992E-01	7.4685146E-01	7.9186426E-07
2	3	7.4838274E-03	2.4587432E-02	1.7005285E-02	1.8363159E-02	6.9162512E-01	7.4685146E-01	7.9186426E-07
2	4	1.4275011E-01	4.3101704E-01	2.9800118E-01	3.2190570E-01	6.9139073E-01	7.4685146E-01	7.9186426E-07
2	5	1.8216825E-02	5.9738197E-02	4.1328252E-02	4.4615559E-02	6.9182289E-01	7.4685146E-01	7.9186426E-07
3	1	2.7962609E-02	7.8845680E-02	5.4273265E-02	5.8633864E-02	6.8834799E-01	7.4365348E-01	7.8492162E-07
3	2	1.6406967E-01	4.8375979E-01	3.3315265E-01	3.5974966E-01	6.8867371E-01	7.4365348E-01	7.8492162E-07
3	3	7.4491163E-03	2.4473434E-02	1.6850705E-02	1.8199763E-02	6.8853015E-01	7.4365348E-01	7.8492162E-07
3	4	1.4212866E-01	4.2913937E-01	2.9537566E-01	3.1913098E-01	6.8829775E-01	7.4365348E-01	7.8492162E-07
3	5	1.8132340E-02	5.9461262E-02	4.0952531E-02	4.4218575E-02	6.8872624E-01	7.4365348E-01	7.8492162E-07
4	1	2.7748121E-02	7.8241326E-02	5.3455401E-02	5.7769157E-02	6.8321186E-01	7.3834558E-01	7.7345349E-07
4	2	1.6286306E-01	4.80119954E-01	3.2823219E-01	3.5455333E-01	6.8353292E-01	7.3834558E-01	7.7345349E-07
4	3	7.3914357E-03	2.4284031E-02	1.6595497E-02	1.7930013E-02	6.8339140E-01	7.3834558E-01	7.7345349E-07
4	4	1.4109655E-01	4.26202090E-01	2.9104143E-01	3.1455075E-01	6.8316233E-01	7.3834558E-01	7.7345349E-07
4	5	1.7991194E-02	5.9001069E-02	4.0332227E-02	4.3563193E-02	6.8358469E-01	7.3834558E-01	7.7345349E-07
5	1	2.7449046E-02	7.7398642E-02	5.2326296E-02	5.6575465E-02	6.7606220E-01	7.3096119E-01	7.5761204E-07
5	2	1.6118265E-01	4.7524121E-01	3.2144210E-01	3.4738326E-01	6.736775E-01	7.3096119E-01	7.5761204E-07
5	3	7.3110413E-03	2.4020021E-02	1.6243253E-02	1.7557722E-02	6.7623810E-01	7.3096119E-01	7.5761204E-07
5	4	1.3965921E-01	4.2167803E-01	2.8506011E-01	3.0823061E-01	6.7601367E-01	7.3096119E-01	7.5761204E-07
5	5	1.7796276E-02	5.8359656E-02	3.9476074E-02	4.2658690E-02	6.7624747E-01	7.3096119E-01	7.5761204E-07
6	1	2.7066569E-02	7.6320979E-02	5.9001485E-02	5.5069295E-02	6.6693962E-01	7.2154860E-01	7.3760601E-07
6	2	1.5903721E-01	4.6891063E-01	3.1287866E-01	3.3834181E-01	6.6724584E-01	7.2154860E-01	7.3760601E-07
6	3	7.2082881E-03	2.3682579E-02	1.5798905E-02	1.7088132E-02	6.6711086E-01	7.2154860E-01	7.3760601E-07
6	4	1.3782416E-01	4.1613343E-01	2.7751622E-01	3.0026050E-01	6.6689239E-01	7.2154860E-01	7.3760601E-07
6	5	1.7564187E-02	5.7539860E-02	3.8396067E-02	4.1517798E-02	6.6729521E-01	7.2154860E-01	7.3760601E-07
7	1	2.6602162E-02	7.5012543E-02	4.9200421E-02	5.3271314E-02	6.5589592E-01	7.1016542E-01	7.1369633E-07
7	2	1.5643787E-01	4.6124057E-01	3.0266235E-01	3.2755710E-01	6.5619197E-01	7.1016542E-01	7.1369633E-07
7	3	7.0836277E-03	2.3273181E-02	1.5268638E-02	1.6527809E-02	6.5606148E-01	7.1016542E-01	7.1369633E-07
7	4	1.3500096E-01	4.0941594E-01	2.6851555E-01	2.9075304E-01	6.5585025E-01	7.1016542E-01	7.1369633E-07
7	5	1.7242786E-02	5.6545252E-02	3.7107239E-02	4.0156482E-02	6.5623970E-01	7.1016542E-01	7.1369633E-07
8	1	2.057654E-02	7.3478335E-02	4.7266102E-02	5.1205955E-02	6.4299364E-01	6.9688509E-01	6.8619090E-07
8	2	1.5339803E-01	4.5227050E-01	2.9093555E-01	3.1518057E-01	6.4327775E-01	6.9688509E-01	6.8619090E-07
8	3	6.9376056E-03	2.2793609E-02	1.4659767E-02	1.5884526E-02	6.4315629E-01	6.9688509E-01	6.8619090E-07
8	4	1.3300106E-01	4.0156016E-01	2.5818303E-01	2.7984129E-01	6.4294982E-01	6.9688509E-01	6.8619090E-07
8	5	1.6887404E-02	5.5380202E-02	3.5627388E-02	3.8593636E-02	6.4332356E-01	6.9688509E-01	6.8619090E-07
9	1	2.5435006E-02	7.1724051E-02	4.5064628E-02	4.8900952E-02	6.2830567E-01	6.8179295E-01	6.5543846E-07
9	2	1.4993329E-01	4.4204626E-01	2.7785970E-01	3.0138402E-01	6.2857608E-01	6.8179295E-01	6.5543846E-07
9	3	6.7708558E-03	2.2245934E-02	1.3980610E-02	1.5167121E-02	6.2845689E-01	6.8179295E-01	6.5543846E-07
9	4	1.3037767E-01	3.9260621E-01	2.4666033E-01	2.6767614E-01	6.2826396E-01	6.8179295E-01	6.5543846E-07
9	5	1.6481589E-02	5.4047950E-02	3.3976736E-02	3.6850738E-02	6.2861969E-01	6.8179295E-01	6.5543846E-07
10	1	2.4136446E-02	6.9755988E-02	4.2684714E-02	4.6386815E-02	6.1191469E-01	6.6498684E-01	6.2182171E-07
10	2	1.4606121E-01	4.3061964E-01	2.6361231E-01	2.8635639E-01	6.1216974E-01	6.6498684E-01	6.2182171E-07
10	3	6.5890976E-03	2.1632502E-02	1.3240331E-02	1.4385299E-02	6.1205733E-01	6.6498684E-01	6.2182171E-07
10	4	1.2672601E-01	3.8259916E-01	2.3410300E-01	2.5442341E-01	6.1187536E-01	6.6498684E-01	6.2182171E-07
10	5	1.6027099E-02	5.2559621E-02	3.2177571E-02	3.4951456E-02	6.122108AE-01	6.6498684E-01	6.2182171E-07
11	1	2.3964434E-02	6.7580911E-02	4.0173155E-02	4.3696254E-02	5.9391216E-01	6.4657687E-01	5.8574999E-07
11	2	1.4180126E-01	4.1804788E-01	2.4838344E-01	2.7030009E-01	5.9415070E-01	6.4657687E-01	5.8574999E-07
11	3	6.3781312E-03	2.0955920E-02	1.2448775E-02	1.3546913E-02	5.9404575E-01	6.4657687E-01	5.8574999E-07
11	4	1.2308227E-01	3.7158873E-01	2.2067758E-01	2.4026068E-01	5.9387588E-01	6.4657687E-01	5.8574999E-07
11	5	1.5525891E-02	5.0916175E-02	3.0239303E-02	3.2921221E-02	5.9418909E-01	6.4657687E-01	5.8574999E-07
12	1	2.3121424E-02	6.5205914E-02	3.7454257E-02	4.0863580E-02	5.7439969E-01	6.26693919E-01	5.4765168E-07
12	2	1.3717456E-01	4.0439317E-01	2.3237214E-01	2.5342721E-01	5.7461935E-01	6.26693919E-01	5.4765168E-07
12	3	6.15383220E-03	2.0219037E-02	1.1616292E-02	1.2670971E-02	5.7452233E-01	6.2668519E-01	5.4765168E-07
12	4	1.1912430E-01	3.5962853E-01	2.0658333E-01	2.2537387E-01	5.7436580E-01	6.2668519E-01	5.4765168E-07
12	5	1.4980105E-02	4.9126374E-02	2.8230705E-02	3.0786771E-02	5.7465477E-01	6.26650159E-01	5.4765168E-07
13	1	2.21210012E-02	6.2638251E-02	3.4669256E-02	3.7924073E-02	5.5348378E-01	6.0544591E-01	5.0796650U-07
13	2	1.3220372E-01	3.8972207E-01	2.1578276E-01	2.1595563E-01	5.5368371E-01	6.0544591E-01	5.0796650U-07
13	3	5.9121472E-03	1.9424930E-02	1.0753555E-02	1.1760744E-02	5.53595595E-01	6.0544591E-01	5.0796650U-07
13	4	1.1487097E-01	3.4677555E-01	1.9192395E-01	2.0995384E-01	5.5345295E-01	6.0544591E-01	5.0796650U-07
13	5	1.4392060E-02	4.7179773E-02	2.6134140E-02	2.8579776E-02	5.5371594E-01	6.0544591E-01	5.0796650U-07
14	1	2.1232771E-02	5.9885162E-02	3.1815742E-02	3.4913341E-02	5.5112792E-01	5.8300487E-01	4.6713H20C-07
14	2	1.2691250E-01	3.7410475E-01	1.9892107E-01	2.1810489E-01	5.5145340E-01	5.8300487E-01	4.6713H20C-07
14	3	5.6540919E-03	1.8576887E-02	9.8713746E-03	1.0830416E-02	5.3137936E-01	5.8300487E-01	4.6713H20C-07
14	4	1.1034201E-01	3.3308934E-01	1.7695425E-01	1.9419271E-01	5.3125160E-01	5.8300487E-01	4.6713H20C-07
14	5	1.3764244E-02	4.5131831E-02	2.3990436E-02	2.6315859E-02	5.3147817E-01	5.8300487E-01	4.6713H20C-07
15	1	2.0192195E-02	5.6953656E-02	2.8927084E-02	3.1866692E-02	5.0790565E-01	5.5951970E-01	4.2560821E-07
15	2	1.2132599E-01	3.5761436E-01	1.8169064E-01	2.0009228E-01	5.0806305E-01	5.5951970E-01	4.2560821E-07
15	3	5.3807438E-03	1.7678400E-02	8.9805155E-03	9.8914132E-03	5.0799369E-01	5.5951970E-01	4.2560821E-07
15	4	1.0555771E-01	3.1863119E-01	1.6182685E-01	1.7828043E-01	5.0798138E-01	5.5951970E-01	4.2560821E-07
15	5	1.3099304E-02	4.2956669E-02	2.1825786E-02	2.4039103E-02	5.0808842E-01	5.5951970E-01	4.2560821E-07
16	1	1.9090625E-02	5.3850283E-02	2.6035891E-02	2.8818507E-02	5.3448633E-01	5.3519821E-01	3.8380934E-07

20	2	8.9863444E-02	2.6472229E-01	1.0004304E-01	1.1457016E-01	3.7791695E-01	4.3279379E-01	2.7214753E-01
20	3	3.8269373E-03	1.2565151E-02	4.7482948E-03	5.4381193E-03	3.7783397E-01	4.3279372E-01	2.2214753E-01
20	4	7.8512265E-02	2.3689678E-01	8.2513050E-02	1.0252746E-01	3.7735676E-01	4.3279379E-01	2.2214753E-01
20	5	9.3220742E-03	3.0549809E-02	1.1545548E-02	1.3221768E-02	3.7792336E-01	4.3279379E-01	2.2214753E-01
21	1	1.2727094E-02	3.5918262E-02	1.2574207E-02	1.4620278E-02	3.5007837E-01	4.0704302E-01	1.8508572E-01
21	2	8.3042812E-02	2.4437952E-01	8.5630948E-02	9.9554385E-02	3.5011490E-01	4.0704302E-01	1.8508572E-01
21	3	3.4882610E-03	1.1448569E-02	4.0081305E-03	4.4600599E-03	3.5009883E-01	4.0704302E-01	1.4508725E-01
21	4	7.2607223E-02	2.1905154E-01	7.6683971E-02	8.9163400E-02	3.5007274E-01	4.0704302E-01	1.9508572E-01
21	5	8.4996936E-03	2.7843768E-02	9.7486839E-03	1.1333611E-02	3.5012086E-01	4.0704302E-01	1.8508572E-01
22	1	1.1287697E-02	3.1860062E-02	1.0257580E-02	1.2161325E-02	3.2195730E-01	3.8171067E-01	1.5016799E-01
22	2	7.6100520E-02	2.2407565E-01	7.2148440E-02	8.5532066E-02	3.2198251E-01	3.8171067E-01	1.5016799E-01
22	3	3.1438999E-03	1.0312077E-02	3.3201939E-03	3.9362299E-03	3.2197140E-01	3.8171067E-01	1.3016799E-01
22	4	6.6570275E-02	2.0080863E-01	6.4651023E-02	7.6650795E-02	3.2195342E-01	3.8171067E-01	1.3016799E-01
22	5	7.6664081E-03	2.5091437E-02	8.0791066E-03	9.5776692E-03	3.2198658E-01	3.8171067E-01	1.5016799E-01
23	1	9.7909471E-03	2.7638198E-02	8.1142561E-03	9.8687485E-03	2.9358484E-01	3.5706917E-01	1.1785650E-01
23	2	6.9055256E-02	2.0326597E-01	5.9680482E-02	7.2580012E-02	2.9360784E-01	3.5706917E-01	1.1785650E-01
23	3	2.7956886E-03	9.1613927E-03	2.6897785E-03	3.2712509E-03	2.9359930E-01	3.5706917E-01	1.1785650E-01
23	4	6.0408159E-02	1.8218909E-01	5.3488070E-02	6.5054106E-02	2.9358548E-01	3.5706917E-01	1.1785650E-01
23	5	6.8198700E-03	2.2307341E-02	6.5496796E-03	7.9652636E-03	2.9361096E-01	3.5706917E-01	1.1785650E-01
24	1	8.2340197E-03	2.3244180E-02	6.1606200E-03	7.7499063E-03	2.6503925E-01	3.3341277E-01	8.8704287E-03
24	2	6.1921314E-02	1.8219300E-01	4.8292058E-02	6.0745472E-02	2.6505990E-01	3.3341277E-01	8.8704287E-03
24	3	2.4456788E-03	8.0028741E-03	2.1211682E-03	2.6682604E-03	2.6505080E-01	3.3341277E-01	8.8704287E-03
24	4	5.4120944E-02	1.6319410E-01	4.3252322E-02	5.4410996E-02	2.6503607E-01	3.3341277E-01	8.8704287E-03
24	5	5.9722940E-03	1.9507758E-02	5.1707893E-03	6.5001357E-03	2.6506323E-01	3.3341277E-01	8.8704287E-03
25	1	6.6130060E-03	1.8665955E-02	4.4117426E-03	5.8062456E-03	2.3635237E-01	3.1106073E-01	6.3415600E-08
25	2	5.4706459E-02	1.6088029E-01	3.8029388E-02	5.0043542E-02	2.3638314E-01	3.1106073E-01	6.3415600E-08
25	3	2.0962068E-03	6.8437324E-03	1.6176501E-03	2.1288164E-03	2.3636957E-01	3.1106073E-01	6.3415600E-08
25	4	4.7659200E-02	1.4379657E-01	3.3985977E-02	4.4729466E-02	2.3634762E-01	3.1106073E-01	6.3415600E-08
25	5	5.1273666E-03	1.6711297E-02	3.9503516E-03	5.1982282E-03	2.3638810E-01	3.1106073E-01	6.3415600E-08
26	1	1.1073534E-01	3.1256440E-01	7.3875334E-02	9.7226510E-02	2.3635237E-01	3.1106073E-01	6.3415600E-08
26	2	0.	0.	0.	0.	2.3638314E-01	3.1106073E-01	6.3415600E-08
26	3	0.	0.	0.	0.	2.3636957E-01	3.1106073E-01	6.3415600E-08
26	4	0.	0.	0.	0.	2.3634762E-01	3.1106073E-01	6.3415600E-08
26	5	0.	0.	0.	0.	2.3638810E-01	3.1106073E-01	6.3415600E-08
27	1	6.5990108E-02	1.8597983E-01	3.4293536E-02	4.9065145E-02	1.8439384E-01	2.6381971E-01	3.0680286F-08
27	2	0.	0.	0.	0.	1.8424340E-01	2.6381971E-01	3.0680286F-08
27	3	0.	0.	0.	0.	1.8430971E-01	2.6381971E-01	3.0680286E-08
27	4	0.	0.	0.	0.	1.8441705E-01	2.6381971E-01	3.0680286E-08
27	5	0.	0.	0.	0.	1.8421914E-01	2.6381971E-01	3.0680286E-08
28	1	3.9463558E-02	1.1106603E-01	1.5796553E-02	2.4202815E-02	1.4222668E-01	2.1791374E-01	1.5616932F-08
28	2	0.	0.	0.	0.	1.4197710E-01	2.1791374E-01	1.5616932E-08
28	3	0.	0.	0.	0.	1.4208711E-01	2.1791374E-01	1.5616932E-08
28	4	0.	0.	0.	0.	1.4226517E-01	2.1791374E-01	1.5616932E-08
28	5	0.	0.	0.	0.	1.4193686E-01	2.1791374E-01	1.5616932E-08
29	1	2.3678713E-02	6.6557032E-02	7.2246941E-03	1.1750986E-02	1.0854877E-01	1.7655513E-01	8.0869239E-09
29	2	0.	0.	0.	0.	1.0825874E-01	1.7655513E-01	8.0869239E-09
29	3	0.	0.	0.	0.	1.0838657E-01	1.7655513E-01	8.0869239F-09
29	4	0.	0.	0.	0.	1.0859351E-01	1.7655513E-01	8.0869239E-09
29	5	0.	0.	0.	0.	1.0821197E-01	1.7655513E-01	8.0869239E-09
30	1	1.4252464E-02	4.0014894E-02	3.2828161E-03	5.6395386E-03	8.2039856E-02	1.0935999E-01	4.1999495E-09
30	2	0.	0.	0.	0.	8.1747878E-02	1.0935999E-01	4.1999495E-09
30	3	0.	0.	0.	0.	8.1876573E-02	1.0935999E-01	4.1999495E-09
30	4	0.	0.	0.	0.	8.2084893E-02	1.0935999E-01	4.1999495E-09
30	5	0.	0.	0.	0.	8.1700799E-02	1.0935999E-01	4.1999495E-09
31	1	8.6044589E-03	2.4131805E-02	1.4028467E-03	2.6826624E-03	6.1447814E-02	1.1116709E-01	2.1743283E-09
31	2	0.	0.	0.	0.	6.1176752E-02	1.1116709E-01	2.1743283E-09
31	3	0.	0.	0.	0.	6.1296228E-02	1.1116709E-01	2.1743283E-09
31	4	0.	0.	0.	0.	6.1489255E-02	1.1116709E-01	2.1743283E-09
31	5	0.	0.	0.	0.	6.1133044E-02	1.1116709E-01	2.1743283E-09
32	1	5.2094886E-03	1.4595848E-02	6.6619394E-04	1.2671913E-03	4.5662704E-02	8.6116161E-02	1.1190010E-09
32	2	0.	0.	0.	0.	4.5404140E-02	8.6116161E-02	1.1190010E-09
32	3	0.	0.	0.	0.	4.5509219E-02	8.6116161E-02	1.1190010E-09
32	4	0.	0.	0.	0.	4.5679502E-02	8.6116161E-02	1.1190010E-09
32	5	0.	0.	0.	0.	4.5365673E-02	8.6116161E-02	1.1190010E-09
33	1	3.1625893E-03	8.8526694E-03	2.9783332E-04	5.9914269E-04	3.3643335E-02	6.7227484E-02	5.7181692E-10
33	2	0.	0.	0.	0.	3.3441307E-02	6.7227484E-02	5.7181692E-10
33	3	0.	0.	0.	0.	3.3530354E-02	6.7227484E-02	5.7181692E-10
33	4	0.	0.	0.	0.	3.3674549E-02	6.7227484E-02	5.7181692E-10
33	5	0.	0.	0.	0.	3.3408730E-02	6.7227484E-02	5.7181692E-10
34	1	1.9248777E-03	5.3834102E-03	1.3255860E-04	2.7814656E-04	2.4623537E-02	5.1667353E-02	2.9002597E-10
34	2	0.	0.	0.	0.	2.4457413E-02	5.1667353E-02	2.9002597E-10
34	3	0.	0.	0.	0.	2.4530635E-02	5.1667353E-02	2.9002597E-10
34	4	0.	0.	0.	0.	2.4649162E-02	5.1667353E-02	2.9002597E-10
34	5	0.	0.	0.	0.	2.4430625E-02	5.1667353E-02	2.9002597E-10
35	1	1.1743620E-03	3.2817208E-03	5.8759406E-05	1.2942513E-04	1.7905060E-02	3.9438191E-02	1.4601340E-10
35	2	0.	0.	0.	0.	1.7771612E-02	3.9438191E-02	1.4601340E-10
35	3	0.	0.	0.	0.	1.7830431E-02	3.9438191E-02	1.4601340E-10
35	4	0.	0.	0.	0.	1.7925643E-02	3.9438191E-02	1.4601340E-10
35	5	0.	0.	0.	0.	1.7750094E-02	3.9438191E-02	1.4601340E-10
36	1	7.1801630E-04	2.0049232E-03	2.5949350E-05	5.9964922E-05	1.2942815E-02	2.9908838E-02	7.2992039E-11
36	2	0.	0.	0.	0.	1.2837631E-02	2.9908838E-02	7.2992039E-11
36	3	0.	0.	0.	0.	1.2883993E-02	2.9908838E-02	7.2992039E-11
36	4	0.	0.	0.	0.	1.2959040E-02	2.9908838E-02	7.2992039E-11
36	5	0.	0.	0.	0.	1.2806706E-02	2.9908838E-02	7.2992039E-11
37	1	4.3975831E-04	1.2270224E-03	1.1414949E-05	2.76648021E-05	9.3066720E-03	2.2532612E-02	3.6254032E-11
37	2	0.	0.	0.	0.	9.2118707E-03	2.2532612E-02	3.6254032E-11
37	3	0.	0.	0.	0.	9.2116077E-03	2.2532612E-02	3.6254032E-11
37	4	0.	0.	0.	0.	9.2118707E-03	2.2532612E-02	3.6254032E-11
37	5	0.	0.	0.	0.	9.2118707E-03	2.2532612E-02	3.6254032E-11
38	1	2.6955718E-04	7.5154821E-04	5.0072809E-06	1.2661985E-05	6.6626210E-03	1.6847868E-02	1.7909020E-11
38	2	0.	0.	0.	0.	6.6000258E-03	1.6847868E-02	1.7909020E-11
38	3	0.	0.	0.	0.	6.6276158E-03	1.6847868E-02	1.7909020E-11
38	4	0.	0.	0.	0.	6.6722762E-03	1.6847868E-02	1.7909020E-11
38	5	0.						

40	4	0.	0.	0.	0.	3.3967515E-03	9.0824920E-03	4.3339410E-12
40	5	0.	0.	0.	0.	3.3492988E-03	9.0824920E-03	4.3339010E-12
41	1	5.99915467E-05	1.6609928E-04	4.0323987E-07	1.0661225E-06	2.4277039E-03	6.4185858E-03	2.1413034E-12
41	2	0.	0.	0.	0.	2.4002002E-03	6.4185858E-03	2.1413034E-12
41	3	0.	0.	0.	0.	2.4123230E-03	6.4185858E-03	2.1413034E-12
41	4	0.	0.	0.	0.	2.4319463E-03	6.4185858E-03	2.1413034E-12
41	5	0.	0.	0.	0.	2.3957653E-03	6.4185858E-03	2.1413034E-12
42	1	0.	0.	0.	0.	2.4277039E-03	6.4185858E-03	2.1413034E-12
42	2	0.	0.	0.	0.	2.4002002E-03	6.4185858E-03	2.1413034E-12
42	3	0.	0.	0.	0.	2.4123230E-03	6.4185858E-03	2.1413034E-12
42	4	0.	0.	0.	0.	2.4319463E-03	6.4185858E-03	2.1413034E-12
42	5	0.	0.	0.	0.	2.3957653E-03	6.4185858E-03	2.1413034E-12
43	1	0.	0.	0.	0.	1.6658396E-03	4.2313099E-03	1.0418143E-12
43	2	0.	0.	0.	0.	1.6473944E-03	4.2313099E-03	1.0418143E-12
43	3	0.	0.	0.	0.	1.6555245E-03	4.2313099E-03	1.0418143E-12
43	4	0.	0.	0.	0.	1.6686848E-03	4.2313099E-03	1.0418143E-12
43	5	0.	0.	0.	0.	1.6444202E-03	4.2313099E-03	1.0418143E-12
44	1	0.	0.	0.	0.	1.1246092E-03	2.7680252E-03	4.8745143E-13
44	2	0.	0.	0.	0.	1.1123828E-03	2.7680252E-03	4.8745143E-13
44	3	0.	0.	0.	0.	1.1177718E-03	2.7680252E-03	4.8745143E-13
44	4	0.	0.	0.	0.	1.1264951E-03	2.7680252E-03	4.8745143E-13
44	5	0.	0.	0.	0.	1.1104114E-03	2.7680252E-03	4.8745143E-13
45	1	0.	0.	0.	0.	7.3112395E-04	1.7575763E-03	2.1002648E-13
45	2	0.	0.	0.	0.	7.2328417E-04	1.7575763E-03	2.1002648E-13
45	3	0.	0.	0.	0.	7.2673970E-04	1.7575763E-03	2.1002648E-13
45	4	0.	0.	0.	0.	7.3233322E-04	1.7575763E-03	2.1002648E-13
45	5	0.	0.	0.	0.	7.2202004E-04	1.7575763E-03	2.1002648E-13
46	1	0.	0.	0.	0.	4.3496371E-04	1.0286909E-03	7.5297738E-14
46	2	0.	0.	0.	0.	4.3034370E-04	1.0286909E-03	7.5297738E-14
46	3	0.	0.	0.	0.	4.3238006E-04	1.0286909E-03	7.5297738E-14
46	4	0.	0.	0.	0.	4.3567633E-04	1.0286909E-03	7.5297738E-14
46	5	0.	0.	0.	0.	4.2959874E-04	1.0286909E-03	7.5297738E-14
47	1	0.	0.	0.	0.	2.0018643E-04	4.6893007E-04	1.6065944E-14
47	2	0.	0.	0.	0.	1.9807184E-04	4.6893007E-04	1.6065944E-14
47	3	0.	0.	0.	0.	1.9900389E-04	4.6893007E-04	1.6065944E-14
47	4	0.	0.	0.	0.	2.0051260E-04	4.6893007E-04	1.6065944E-14
47	5	0.	0.	0.	0.	1.9773088E-04	4.6893007E-04	1.6065944E-14
48	1	0.	0.	0.	0.	0.	0.	0.
48	2	0.	0.	0.	0.	0.	0.	0.
48	3	0.	0.	0.	0.	0.	0.	0.
48	4	0.	0.	0.	0.	0.	0.	0.
48	5	0.	0.	0.	0.	0.	0.	0.

POINTWISE TRAPEZOIDAL INTEGRATION FROM N TO N+1

N	M	B(1,M,N)	B(2,M,N)	B(3,M,N)	B(4,M,N)	B(5,M,N)	T(1,N)	T(2,N)
1	1	4.5698129E-00	1.2885379E-01	8.9094847E-00	9.6234643E-00	1.1248032E-02	1.2149416E-02	1.2881662E-04
1	2	2.6808240E-01	7.9044406E-01	5.4680542E-01	5.9034429E-01	1.1253376E-02	1.2149416E-02	1.2881662E-04
1	3	1.2174326E-00	3.9997639E-00	2.7663371E-00	2.9872294E-00	1.1251021E-02	1.2149416E-02	1.2881662E-04
1	4	2.3221894E-01	7.0115754E-01	4.8477382E-01	5.2366053E-01	1.1247208E-02	1.2149416E-02	1.2881662E-04
1	5	2.9634245E-00	9.7179191E-00	6.7230789E-00	7.2578421E-00	1.1254238E-02	1.2149416E-02	1.2881662E-04
2	1	2.2765097E-01	6.4190305E-01	4.4225127E-01	4.7776551E-01	5.6038871E-02	6.0538988E-02	3.3956554E-04
2	2	1.3356846E-02	3.9382716E-02	2.7146315E-02	2.9312372E-02	5.6065411E-02	6.0538988E-02	3.3956554E-04
2	3	4.0645766E-00	1.9926468E-01	1.3731100E-01	1.4829285E-01	5.6053714E-02	6.0538988E-02	3.3956554E-04
2	4	1.1570509E-02	3.4935697E-02	2.4067848E-02	2.6002475E-02	5.6034779E-02	6.0538988E-02	3.3956554E-04
2	5	1.4762148E-01	4.8409394E-01	3.3370913E-01	3.6030892E-01	5.6069691E-02	6.0538988E-02	3.3956554E-04
3	1	5.8820647E-01	1.6585619E-02	1.1357842E-02	1.2273153E-02	1.4481826E-03	1.5648903E-03	1.6431437E-03
3	2	3.4520419E-02	1.01781315E-03	6.9733953E-02	7.5318237E-02	1.4488646E-03	1.5648903E-03	1.6431437E-03
3	3	1.5668769E-01	5.1478555E-01	3.5261036E-01	3.6093500E-01	1.4485640E-03	1.5648903E-03	1.6431437E-03
3	4	2.9905930E-02	9.0296826E-02	6.1830792E-02	6.6818497E-02	1.4480774E-03	1.5648903E-03	1.6431437E-03
3	5	3.0140306E-01	1.2507353E-02	8.5697828E-01	9.2552883E-01	1.4489746E-03	1.5648903E-03	1.6431437E-03
4	1	1.1206980E-02	3.1600461E-02	2.1445777E-02	2.3183319E-02	2.7599303E-03	2.9835439E-03	3.1043091E-03
4	2	6.5579704E-02	1.9400075E-03	1.3172071E-03	1.4232630E-03	2.7612191E-03	2.9835439E-03	3.1043091E-03
4	3	2.9850819E-01	9.4073031E-01	6.6575046E-01	7.1950181E-01	2.7606510E-03	2.9835439E-03	3.1043091E-03
4	4	5.7008140E-02	1.7212715E-03	1.1690619E-03	1.2627896E-03	2.7597315E-03	2.9835439E-03	3.1043091E-03
4	5	7.2661766E-01	2.3828069E-02	1.6179786E-02	1.7481196E-02	2.7614269E-03	2.9835439E-03	3.1043091E-03
5	1	1.8152087E-02	5.1184148E-02	3.4320513F-02	3.7121486E-02	4.4720184E-03	4.8369994E-03	4.9716681E-03
5	2	1.0663115E-03	3.1439612E-03	2.1090949E-03	2.2801648E-03	4.4740024E-03	4.8369994E-03	4.9716681E-03
5	3	4.8344424E-01	1.58683353E-02	1.0653020E-02	1.1519463E-02	4.4731726E-03	4.8369994E-03	4.9716681E-03
5	4	9.2401939E-02	2.7899085E-03	1.8705679E-03	2.0233862E-03	4.4717000E-03	4.8369994E-03	4.9716681E-03
5	5	1.1767839E-02	3.8596020E-02	2.5890054E-02	2.7987996E-02	4.4744152E-03	4.8369994E-03	4.9716681E-03
6	1	2.6586692E-02	7.4968443E-02	4.49514279E-02	5.3593316E-02	5.6538485E-03	7.0933953E-03	7.1793770E-03
6	2	1.5629328E-03	4.6081677E-03	3.0442924E-03	3.2942691E-03	6.5564676E-03	7.0933953E-03	7.1793770E-03
6	3	7.0799111E-01	2.3260900E-02	1.5367002E-02	1.6628727E-02	6.5551545E-03	7.0933953E-03	7.1793770E-03
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7	1	3.6349816E-02	1.0249981E-03	6.6473516E-02	7.2013987E-02	8.9664808E-03	9.7138727E-03	9.6493065E-03
7	2	2.1388960E-03	6.3062501E-03	4.0915538E-03	4.4306040E-03	8.9704792E-03	9.7138727E-03	9.6493065E-03
7	3	3.6784099E-01	3.1798455E-02	2.0627199E-02	2.2340873E-02	8.9687168E-03	9.7138727E-03	9.6493065E-03
7	4	1.8542828E-03	5.5985331E-03	3.6305067E-03	3.9333760E-03	8.9618640E-03	9.7138727E-03	9.6493065E-03
7	5	2.3558987E-02	7.2588630E-02	5.0130010E-02	5.4280160E-02	8.9711239E-03	9.7138727E-03	9.6493065E-03
8	1	4.7251682E-02	1.33243585E-03	8.4577973E-02	9.1728482E-02	1.1666776E-04	1.2653216E-04	1.22933590E-02
8	2	2.7837349E-03	8.2073204E-03	5.2119260E-03	5.6501016E-03	1.1671855E-04	1.2653216E-04	1.22933590E-02
8	3	1.2579301E-02	4.1329676E-02	2.6240924E-02	2.8452490E-02	1.1669616E-04	1.2653216E-04	1.22933590E-02
8	4	2.4140125F-03	7.2883736E-03	4.6260299E-03	5.0174696E-03	1.1665992E-04	1.2653216E-04	1.22933590E-02
8	5	3.0620411E-02	1.0041633E-03	6.3772768E-02	6.9129372E-02	1.1672675E-04	1.2653216E-04	1.22933590E-02
9	1	5.9075376E-02	1.6658867E-03	1.0316203E-03	1.1203424E-03	1.4604428E-04	1.5860611E-04	1.5017455E-02
9	2	3.4855893E-03	1.0276375E-04	6.3663917E-03	6.9109998E-03	1.4610604E-04	1.5860611E-04	1.5017455E-02
9	3	1.5724937E-02	5.1665171E-02	3.2001872E-02	3.4745900E-02	1.4607882E-04	1.5860611E-04	1.5017455E-02
9	4	3.0236790E-03	9.1288937E-03	5.6527336E-03	6.1392892E-03	1.4603476E-04	1.5860611E-04	1.5017455E-02
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11	1	8.4495667E 02	2.3828663E 03	1.3901697E 03	1.5151754E 03	2.0967796E 04	2.2853675E 04	2.0309502E-02
11	2	5.0068554E 03	1.4760549E 04	8.6145220E 03	9.3854928E 03	2.0975983E 04	2.2853675E 04	2.0308502E-02
11	3	2.2488645E 02	7.38885594E 02	4.3116210E 02	4.6982996E 02	2.0972370E 04	2.2853675E 04	2.0308502E-02
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12	1	9.7538931E 02	2.7508076E 03	1.5493728E 03	1.6927257E 03	2.4271784E 04	2.6518179E 04	2.2679332E-02
12	2	5.7970024E 03	1.7089274E 04	9.6286992E 03	1.0515695E 04	2.4280791E 04	2.6518179E 04	2.2679032E-02
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12	5	6.3200087E 02	2.0726056E 03	1.1678824E 03	1.2753887E 03	2.4282243E 04	2.6518179E 04	2.2679032E-02
13	1	1.1040077E 03	3.1136833E 03	1.6868163E 03	1.8482206E 03	2.7571457E 04	3.0210728E 04	2.4741836E-02
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13	3	2.9393615E 02	9.6575076E 02	5.2328914E 02	5.7326881E 02	2.7576829E 04	3.0210728E 04	2.4741836E-02
13	4	5.7244106E 03	1.7280617E 04	9.3607034E 03	1.0256979E 04	2.7569976E 04	3.0210728E 04	2.4741836E-02
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15	1	1.3425677E 03	3.7889515E 03	1.8752836E 03	2.0708601E 03	3.3890758E 04	3.7427774E 04	2.7618382E-02
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16	1	1.4454515E 03	4.0774551E 03	1.9180208E 03	2.1293175E 03	3.6776024E 04	4.0831175E 04	2.8297455E-02
16	2	8.7810638E 03	2.5879408E 04	1.2175432E 04	1.3513336E 04	3.6785679E 04	4.0831175E 04	2.8297455E-02
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16	4	7.6488721E 03	2.3086349E 04	1.0857968E 04	1.2054775E 04	3.6774535E 04	4.0831175E 04	2.8297455E-02
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17	1	1.5324069E 03	4.3231145E 03	1.9269697E 03	1.9486083E 03	3.9364905E 04	4.4023713E 04	2.8403772E-02
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19	1	1.6442397E 03	4.6343611E 03	1.8139581E 03	2.0652260E 03	4.3547934E 04	4.9591216E 04	2.8799119E-02
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19	4	9.0524923E 03	2.7315740E 04	1.0687934E 04	1.21694545E 04	4.3566887E 04	4.9593716E 04	2.8799119E-02
19	5	1.0812072E 03	3.5437324E 03	1.3871577E 03	1.5709497E 03	4.3570126E 04	4.9593716E 04	2.8799119E-02
20	1	1.6567994E 03	4.6755493E 03	1.7017830E 03	1.9633639E 03	4.4969949E 04	5.1902433E 04	2.5089309E-02
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20	5	1.1005211E 03	3.6058547E 03	1.3123679E 03	1.5139364E 03	4.4976318E 04	5.1902433E 04	2.5089309E-02
21	1	1.6379233E 03	4.6228350E 03	1.5540801E 03	1.8237923E 03	4.5076744E 04	5.3870126E 04	2.2816546E-02
21	2	1.0863030E 04	3.1989926E 04	1.0747919E 04	1.2616055E 04	4.50800433E 04	5.3871126E 04	2.2816546E-02
21	3	4.5252328E 02	1.4847445E 03	4.9899930E 02	5.8561436E 02	4.5377049E 04	5.3870126E 04	2.2816546E-02
21	4	9.5002898E 03	2.8569659E 04	9.6278761E 03	1.13007735E 04	4.5576909E 04	5.3870126E 04	2.2816546E-02
21	5	1.1028949E 03	3.6118481E 03	1.2139402E 03	1.4245780E 03	4.5581609E 04	5.3870126E 04	2.2816546E-02
22	1	1.2800641E 03	4.4617188E 03	1.3747499E 03	1.6049636E 03	4.5617244E 04	5.5477171E 04	2.00524135E-02
22	2	1.08946479E 04	3.2079222E 04	8.8748373E 03	1.0506161E 04	4.6216070E 04	5.5497171E 04	2.00524135E-02
22	3	4.4566036E 02	1.4611056E 03	4.4936844E 02	5.39945185E 02	4.6216404E 04	5.5497171E 04	2.00524135E-02
22	4	9.5319547E 03	2.8750569E 04	8.8494165E 03	1.0620926E 04	4.62162730E 04	5.5497171E 04	2.00524135E-02
22	5	1.0867779E 03	3.55646158E 03	1.0952020E 03	1.21742424E 03	4.62162612E 04	5.5497171E 04	2.00524135E-02
23	1	1.4796675E 03	4.1763677E 03	1.1690269E 03	1.4439327E 03	4.59323604E 04	5.6805433E 04	1.6912865E-02
23	2	1.0765959E 04	3.1682739E 04	8.8547074E 03	1.0940249E 04	4.59226304E 04	5.6805433E 04	1.6912865E-02
23	3	4.3058106E 02	1.4100804E 03	3.9431645E 02	4.8717864E 02	4.59254490E 04	5.6805633E 04	1.6912865E-02
23	4	9.4136066E 03	2.8383026E 04	7.9334543E 03	9.8043645E 03	4.59320395E 04	5.6805633E 04	1.6912865E-02
23	5	1.1509077E 03	3.4351057E 03	9.6066037E 03	1.1868573E 03	4.5927437E 04	5.6801633E 04	1.6912862E-02
24	1	1.3282240E 03	3.7492971E 03	9.4353706E 03	1.2109694E 03	4.5954409E 04	5.7839540E 04	1.3575556E-02
24	2	1.0454689E 04	3.0753265E 04	7.7191659E 03	9.9165828E 03	4.69549068E 04	5.7838540E 04	1.3575556E-02
24	3	6.0687860E 02	1.3299520E 03	3.3411262E 02	4.2908944E 02	4.6957013E 04	5.7838540E 04	1.3575556E-02
24	4	9.1268413E 03	2.7517552E 04	8.9065997E 03	9.8735350E 03	4.6953690E 04	5.7838540E 04	1.3575556E-02
24	5	9.9438557E 02	3.2446057E 03	8.1512432E 02	1.0467927E 03	4.6959820E 04	5.7838540E 04	1.3575556E-02
26	1	1.7333694E 04	4.0896920E 04	1.0559462E 04	1.4303032E 04	4.6951502E 04	5.6788685E 04	9.1926116E-03
26	2	0.	0.	0.	0.	4.147897E 04	5.6788685E 04	9.1926116E-03
26	3	0.	0.	0.	0.	4.1484543E 04	5.6788685E 04	9.1926116E-03
26	4	0.	0.	0.	0.	4.1493466E 04	5.6788685E 04	9.1926116E-03
26	5	0.	0.	0.	0.	4.1476835E 04	5.6788685E 04	9.1926116E-03
27	1	1.1221917E 04	3.1609495E 04	5.3051908E 03	7.7693939E 03	3.4242871E 04	5.1585331E 04	4.9121564E-03
27	2	0.	0.	0.	0.	3.4894850E 04	5.1585331E 04	4.9121564E-03
27	3	0.	0.	0.	0.	3.4903989E 04	5.1585331E 04	4.9121

32	3	0.	0.	0.	0.	1.2144390E 04	2.3688303E 04	2.5830419E-04
32	4	0.	0.	0.	0.	1.2192801E 04	2.3688303E 04	2.5830419E-04
32	5	0.	0.	0.	0.	1.2103543E 04	2.3688303E 04	2.5830419E-04
33	1	8.3202261E 02	2.3281888E 03	7.0067608E 01	1.4226814E 02	9.5564333E 03	1.9515155E 04	1.4056758E-04
33	2	0.	0.	0.	0.	9.4954404E 03	1.9515155E 04	1.4056758E-04
33	3	0.	0.	0.	0.	9.5226038E 03	1.9515155E 04	1.4056758E-04
33	4	0.	0.	0.	0.	9.5657643E 03	1.9515155E 04	1.4056758E-04
33	5	0.	0.	0.	0.	9.4861062E 03	1.9515155E 04	1.4056758E-04
34	1	5.4005089E 02	1.5099043E 03	3.3187781E 01	7.0747493E 01	7.4302604E 03	1.5929046E 04	7.5771379E-05
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35	1	3.5065931E 02	9.7960879E 02	1.5626933E 01	3.4960287E 01	5.7300729E 03	1.2890539E 04	4.0468190E-05
35	2	0.	0.	0.	0.	5.6056893E 03	1.2890539E 04	4.0468190E-05
35	3	0.	0.	0.	0.	5.7052522E 03	1.2890539E 04	4.0468190E-05
35	4	0.	0.	0.	0.	5.7369189E 03	1.2890539E 04	4.0468190E-05
35	5	0.	0.	0.	0.	5.6785327E 03	1.2890539E 04	4.0468190E-05
36	1	2.2771976E 02	6.3567661E 02	7.3178223E 00	1.7167102E 01	4.3861143E 03	1.0344876E 04	2.1426578E-05
36	2	0.	0.	0.	0.	4.3492449E 03	1.0344876E 04	2.1426578E-05
36	3	0.	0.	0.	0.	4.3654958E 03	1.0344876E 04	2.1426578E-05
36	4	0.	0.	0.	0.	4.3918013E 03	1.0344876E 04	2.1426578E-05
36	5	0.	0.	0.	0.	4.3432999E 03	1.0344876E 04	2.1426578E-05
37	1	1.4782924E 02	4.1235189E 02	3.4087838E 00	8.3693535E 00	3.3392647E 03	8.2297898E 03	1.1256274E-05
37	2	0.	0.	0.	0.	3.3051121E 03	8.2297898E 03	1.1256274E-05
37	3	0.	0.	0.	0.	3.3184024E 03	8.2297898E 03	1.1256274E-05
37	4	0.	0.	0.	0.	3.3399157E 03	8.2297898E 03	1.1256274E-05
37	5	0.	0.	0.	0.	3.3002502E 03	8.2297898E 03	1.1256274E-05
38	1	9.5810955E 01	2.6703351E 02	1.5791497E 00	4.0400097E 00	2.5223848E 03	6.4801819E 03	5.8751101E-06
38	2	0.	0.	0.	0.	2.4980217E 03	6.4801819E 03	5.8751101E-06
38	3	0.	0.	0.	0.	2.5087602E 03	6.4801819E 03	5.8751101E-06
38	4	0.	0.	0.	0.	2.5261628E 03	6.4801819E 03	5.8751101E-06
38	5	0.	0.	0.	0.	2.4940932E 03	6.4801819E 03	5.8751101E-06
39	1	6.1801329E 01	1.7205233E 02	7.2645518E-01	1.9178736E 00	1.9007591E 03	5.0303328E 03	3.0533364E-06
39	2	0.	0.	0.	0.	1.8812233E 03	5.0303328E 03	3.0533364E-06
39	3	0.	0.	0.	0.	1.8898335E 03	5.0303328E 03	3.0533364E-06
39	4	0.	0.	0.	0.	1.9037726E 03	5.0303328E 03	3.0533364E-06
39	5	0.	0.	0.	0.	1.8780721E 03	5.0303328E 03	3.0533364E-06
40	1	3.9360039E 01	1.0933870E 02	3.3019707E-01	8.8083918E-01	1.4319866E 03	3.8140721E 03	1.5862650E-06
40	2	0.	0.	0.	0.	1.4163283E 03	3.8140721E 03	1.5862650E-06
40	3	0.	0.	0.	0.	1.4232300E 03	3.8140721E 03	1.5862650E-06
40	4	0.	0.	0.	0.	1.4344018E 03	3.8140721E 03	1.5862650E-06
40	5	0.	0.	0.	0.	1.4138035E 03	3.8140721E 03	1.5862650E-06
42	1	0.	0.	0.	0.	1.7924902E 03	4.6595814E 03	1.3843924E-06
42	2	0.	0.	0.	0.	1.7723794E 03	4.6595814E 03	1.3843924E-06
42	3	0.	0.	0.	0.	1.7812436E 03	4.6595814E 03	1.3843924E-06
42	4	0.	0.	0.	0.	1.7955923E 03	4.6595814E 03	1.3843924E-06
42	5	0.	0.	0.	0.	1.7691366E 03	4.6595814E 03	1.3843924E-06
43	1	0.	0.	0.	0.	1.3771297E 03	3.3268136E 03	7.2231435E-07
43	2	0.	0.	0.	0.	1.3125475E 03	3.3268136E 03	7.2231435E-07
43	3	0.	0.	0.	0.	1.3109749E 03	3.3268136E 03	7.2231435E-07
43	4	0.	0.	0.	0.	1.3293789E 03	3.3268136E 03	7.2231435E-07
43	5	0.	0.	0.	0.	1.3101962E 03	3.3268136E 03	7.2231435E-07
44	1	0.	0.	0.	0.	9.5507906E 02	2.3281376E 03	3.5685217E-07
44	2	0.	0.	0.	0.	9.4475438E 02	2.3281376E 03	3.5635217E-07
44	3	0.	0.	0.	0.	9.4930518E 02	2.3281376E 03	3.5635217E-07
44	4	0.	0.	0.	0.	9.5667163E 02	2.3281376E 03	3.5635217E-07
44	5	0.	0.	0.	0.	9.4308957E 02	2.3281376E 03	3.5635217E-07
45	1	0.	0.	0.	0.	6.4691376E 02	1.5453001E 03	1.5698447E-07
45	2	0.	0.	0.	0.	6.4000257E 02	1.5453001E 03	1.5698447E-07
45	3	0.	0.	0.	0.	6.4304881E 02	1.5453001E 03	1.5698447E-07
45	4	0.	0.	0.	0.	6.4797980E 02	1.5453001E 03	1.5698447E-07
45	5	0.	0.	0.	0.	6.3888816E 02	1.5453001E 03	1.5698447E-07
46	1	0.	0.	0.	0.	3.7777632E 02	8.9062463E 02	5.3787641E-08
46	2	0.	0.	0.	0.	3.7377105E 02	8.9062463E 02	5.3787641E-08
46	3	0.	0.	0.	0.	3.7553649E 02	8.9062463E 02	5.3787641E-08
46	4	0.	0.	0.	0.	3.7839413E 02	8.9062463E 02	5.3787641E-08
46	5	0.	0.	0.	0.	3.7412522E 02	8.9062463E 02	5.3787641E-08
47	1	0.	0.	0.	0.	1.2503243E 02	2.9288433E 02	1.0034467E-08
47	2	0.	0.	0.	0.	1.2371171E 02	2.9288433E 02	1.0034467E-08
47	3	0.	0.	0.	0.	1.2429384E 02	2.9288433E 02	1.0034467E-08
47	4	0.	0.	0.	0.	1.2523615E 02	2.9288433E 02	1.0034467E-08
47	5	0.	0.	0.	0.	1.2349875E 02	2.9288433E 02	1.0034467E-08

REGIONAL TOTALS

K	M	WD(M,K)	WP(M,K)	FIS(M,K)	
1	1	4.4033442E-01	4.9628755E-01	6.2171342E-02	
1	2	4.3171090E-01	4.8803411E-01	3.9629306E-01	
1	3	4.3685209E-01	4.9296280E-01	1.6990870E-02	
1	4	4.3122695E-01	4.8768807E-01	3.4545563E-01	
1	5	4.3680516E-01	4.9255471E-01	4.1395200E-02	
2	1	1.5199167E-01	2.2113185E-01	1.3769391E-01	
2	2	0.	0.	0.	
2	3	0.	0.	0.	
2	4	0.	0.	0.	
2	5	0.	0.	0.	
3	1	0.	0.	0.	
3	2	0.	0.	0.	
3	3	0.	0.	0.	
3	4	0.	0.	0.	
3	5	0.	0.	0.	
4	WD(M1,K)/WP(M2,K)	WD(M2,K)/WP(M2,K)	WP(M1,K)/WP(M2,K)	FIS(K)	REGLP(K)
1	9.0276156E-01	8.8459163E-01	1.0169115E 00	6.6230609E-01	8.4152975E-07
2	0.	0.	0.	1.3769391E-01	4.2179468E-08
3	0.	0.	0.	0.	5.5909625E-12

K	D(1,K)	D(2,K)	D(3,K)	D(4,K)	D(5,K)	D(6,K)	D(K)
1	2.81155419E 01	4.0949512E 02	3.2481024E 02	7.0381651E 02	3.2729726E 02	5.5863848E 01	1.8594384E 03
2	4.2876545E 00	4.5209533E 01	5.3448555E 01	1.2904113E 02	7.4256290E 01	2.4759103E 01	3.3000227E 02
3	0.	0.	0.	0.	0.	0.	0.

K	BEFF(1,K)	BEFF(2,K)	REFF(3,K)	REFF(4,K)	REFF(5,K)	REFF(6,5)	BEFF(K)
1	5.9700520E-05	8.5374600E-04	6.7718865E-04	1.4673692E-03	6.8237377E-04	1.3731787E-04	3.8766960E-03
2	8.9392222E-06	9.4256209E-05	1.143354E-04	2.6094971E-04	1.5481506E-04	5.1619626E-05	6.8801337E-14
3	0.	0.	0.	0.	0.	0.	0.

REACTOR TOTALS

D = 2.1894406E 03 , P = 4.7745570E 05 , D+P = 4.7964514E 05

BEFF(1)	BEFF(2)	BEFF(3)	BEFF(4)	BEFF(5)	BEFF(6)	BEFF
6.7639742×10^{-5}	9.4800221×10^{-4}	7.8862219×10^{-4}	1.7343189×10^{-3}	8.3718883×10^{-4}	1.8893749×10^{-4}	4.5647093×10^{-3}

LP	TOT FISS (UNNORMALIZED)	FISS(1)	FISS(2)	FISS(3)	FISS(4)	FISS(5)
8.8366480E-07	3.5684325E-05	1.9986525E-01	3.9629306E-01	1.6990870E-02	3.4548563E-01	4.1395200E-02

DCNF = 4.8003637E 05

PROB. 73 ENDFD.

END-OF-DATA ENCOUNTERED ON SYSTEM INPUT FILE.

C. Cross Section Tape

'LTKP' (Library Tape for KParam)-code has been programmed to store the microscopic cross-section (barn), fission spectra, etc. punched on cards into logical 4 tape (logical 10 in the case of 7090) in binary form. In the following are shown the format of the data cards.

Card # 1 (4I6, 8A6)

No. of Groups : ≤ 20

No. of Elements Stored in Tape : ML

No. of Fissionable Elements Stored in Tape : ML_F ($ML_F \leq ML$)

Tape No. : -99999~+99999

Tape Description : any character describing the tape, date, or your name (48 characters including blanks)

Card(s) # 2 (14F5.3)

χ^i ($\sum_i \chi^i = 1$)

Card(s) # 3 (6E12.5)

\bar{v}^i

Card(s) # 4 (14F5.3)

χ_p^i ($\sum_i \chi_p^i = 1$)

The block of Cards # 5~9 is ML_F times repeated for each fissionable element.

Card # 5 (I5, 4A5)

Element Code No. : for instance, 925, 928, 949, 940, etc.

Name of Element : (20 characters including blanks)

Card(s) # 6 (6E12.5)

χ_d^{mi} for each i ($\sum_i \chi_d^{mi} = 1$)

Card # 7 (6E12.5)

β_l^m for each l

Card(s) # 8 (F10.5, 2F8.3, F10.5, F8.4)

σ_w^{mi} , σ_t^{mi} , $(\nu \sigma_t)^{mi}$, σ_o^{mi} , $\sigma_{s(\text{el})}^{m,i \rightarrow i+1}$

The first card is for group 1 and the card of this type is repeated for each i .

Card(s) # 9 (5X, 6F5.3)

$$\sigma_{s(\text{inel})}^{m, i \rightarrow j} \quad (j = i+1, i+2, \dots, i+6)$$

As for i , repeat it like # 8.

The block of Cards # 10~12 is ($ML - ML_F$) times repeated for each non-fissionable element.

Card # 10 (I5, 4A5)

Element Code No. : for instance, 6, 8, 11, 24, 26, etc.

Name of Element : (20 characters including blanks)

Card(s) # 11 (F10.5, 16X, F10.5, F8.4)

$$\sigma_{\text{tr}}^{m,i}, \sigma_c^{m,i}, \sigma_{s(\text{el})}^{m,i \rightarrow i+1}$$

As for i , repeat it like # 8

Card(s) # 12 (5X, 6F5.3)

$$\sigma_{s(\text{inel})}^{m, i \rightarrow j} \quad (j = i+1, i+2, \dots, i+6)$$

Same as # 9

LTKP-Code reads these cards and store the data in library tape in binary form, and at the same time, writes the table of microscopic cross-sections, etc. into logical 6.