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XEKE - A Two-Group, Two-Dimensional, Multiregional Computer Code for Examining Flux Stability in Nuclear Reactors with ^{135}Xenon

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XEKE - A Two-Group, Two-Dimensional, Multiregional Computer Code for Examining Flux Stability in Nuclear Reactors with ^{135}Xenon

by

Gary M. Sandquist*

*The author, a professor at the University of Utah, Salt Lake City, Utah, is an Associated Rocky Mountain Universities (ARMU) participant, working in Group K-3, Los Alamos Scientific Laboratory.

ABSTRACT

XEKE is a FORTRAN IV coded digital computer program for examining the stability of the time behavior of the neutron flux spacial distribution in a reactor core under the influence of ^{135}Xe. The program employs two-energy-group diffusion type nonlinear kinetic equations to describe the neutron flux and simulates the two-dimensional radial-axial time behavior in multiregion reactor cores with cylindrical geometry and any two-dimensional time behavior in multiregion cores with rectangular geometry.

ACKNOWLEDGMENTS

In attempting to acknowledge those concerned, I am aware of the many individuals who have contributed directly and indirectly to this report. Suffice it to say, I am grateful to all. In particular, I wish to express appreciation to the Associated Rocky Mountain Universities (ARMU) for financial support and to N. C. Kaufman, who conceived and produced the technique of employing cadmium ratio measurements to experimentally corroborate the results of program XEKE.

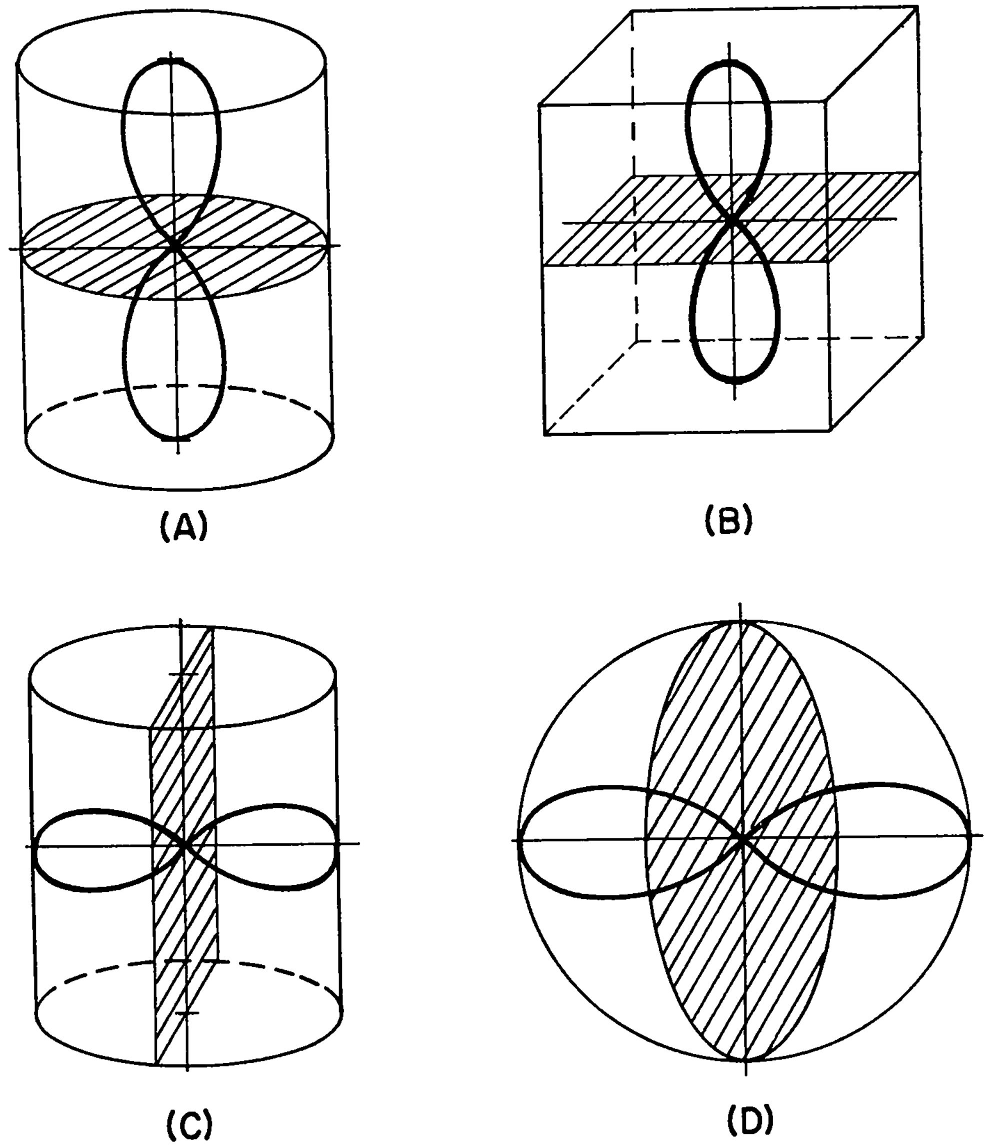
CONTENTS

FIGURES

I. INTRODUCTION

This report is a revision of the author's report entitled *XKINEQ - A Two Group, Two Dimensional, Multiregion Computer Code for Examining Flux Stability in Nuclear Reactors in the Presence of Xenon-135*, IDO-17127, dated January 1966. The author, while imposing program XKINEQ to examine various reactor systems, found it possible to significantly improve the original program. By direct solution, the xenon and iodine equations were analytically integrated in time and solved at each mesh point, which permitted the elimination of two subroutines contained in program XKINEQ which were employed to integrate in time the xenon and iodine equations. This action improved the accuracy of the simulation, permitted larger time steps, and greatly reduced the computer time required for simulation. (Actual running time is decreased to about one tenth.) Other improvements were an increase in the number of mesh points which could be examined within the same memory storage requirements.

Thus the FORTRAN IV coded, digital computer program bearing the name XEKE (pronounced Zeek and denoting an abbreviation for xenon kinetic equations) is an extensively revised and optimized version of the original program XKINEQ. Program XEKE permits a two-dimensional, two-group, multiregional investigation of the stability of the neutron flux distribution in time. Specifically as XEKE is coded in this report it may be employed directly to examine the stability of the neutron flux against first harmonic axial oscillatory instabilities in cores with cylindrical geometry or first harmonic oscillatory instabilities in rectangular cores. In Fig. 1, schematics (A) and (B) typify an instability that may be examined by program XEKE. With slight modifications of the boundary conditions



Note: Figure eight lines typify extreme values for the oscillation of the normalized flux. Shaded plane areas represent nodal surfaces for the oscillating flux.

Fig. 1 Some Simple First Harmonic Flux Oscillations Capable of Simulation by Program XEKE.

and spacial differencing operators, program XEKE may be employed to investigate first harmonic radial oscillatory instabilities in cylindrical or spherical cores. Schematics (C) and (D) typify radial oscillatory instability modes. For background information on the effects induced in nuclear reactors by ^{135}Xe, see the author's report entitled, *Xenon-135 Induced Instabilities of the Neutron Flux in Nuclear Reactors*, IDO-16985, dated October 1964. Also see the list of references in IDO-16985 for other literature related to xenon induced instabilities.

II. XENON KINETIC EQUATIONS

To simulate the behavior of a reactor core under the influence of ^{135}Xe, we will assume that the neutron flux is adequately described by diffusion theory using two discrete energy groups. The time and space behavior of the neutron flux, ^{135}Xe, and ^{135}I is then assumed to be governed by the following system of equations:

$$\frac{1}{v_1}\frac{\partial \Phi_1}{\partial t} = D_1\nabla^2\Phi_1 - \Sigma_{a1}\Phi_1 - \sigma_x X\Phi_1 + \Sigma_s\Phi_2 + S_1\Phi_1 \tag{1.1}$$

$$\frac{1}{v_2}\frac{\partial \Phi_2}{\partial t} = D_2\nabla^2\Phi_2 - \Sigma_{a2}\Phi_2 - \eta\sigma_x X\Phi_2 + \nu\Sigma_f\Phi_1 + S_2\Phi_2 \tag{1.2}$$

$$\frac{\partial X}{\partial t} = \overline{\gamma}_x\Sigma_f\ (\Phi_1 + \varepsilon_x\Phi_2) + \lambda_i I - \sigma_x X\ (\Phi_1 + \eta\Phi_2) - \lambda_x X \tag{1.3}$$

$$\frac{\partial I}{\partial t} = \overline{\gamma}_i\Sigma_f\ (\Phi_1 + \varepsilon_i\Phi_2) - \lambda_i I \tag{1.4}$$

where

$\Phi_1(\overline{r},t)$ = thermal neutron flux [neutron/(cm^2)(sec)]

$\Phi_2(\overline{r},t)$ = fast neutron flux [neutron/(cm^2)(sec)]

$X(\overline{r},t)$ = ^{135}Xe concentration ($^{135}Xe/cm^3$)

$I(\overline{r},t)$ = ^{135}I concentration ($^{135}I/cm^3$)

r = generalized independent space variable (cm)

t = independent time variable (sec).

∇^2 = Laplacian operator ($1/cm^2$)

D_1, D_2 = thermal and fast diffusion coefficients (cm)

Σ_{a1}, Σ_{a2} = effective thermal and fast macroscopic removal cross sections [excluding xenon, but incorporating any thermal or fast neutron yields from fission, respectively, as appropriate (1/cm)]

ν = average fast neutron yield per thermal induced fission

Σ_f = macroscopic thermal fission cross section (1/cm)

Σ_s = effective macroscopic slowing down cross section (1/cm)

σ_x = microscopic thermal absorption cross section for xenon (cm^2)

v_1, v_2 = average thermal and fast neutron velocities (cm/sec)

η = fraction of fast to thermal neutrons absorbed by xenon

ε_i = fraction of iodine production from fast fission

ε_x = fraction of xenon production from fast fission

λ_x, λ_i = xenon and iodine decay constants (1/sec)

$\overline{\gamma}_x, \overline{\gamma}_i$ = prompt xenon and iodine yields from thermal fission

S_1, S_2 = any time constant source (or sink) of thermal and fast flux [neutron/(cm^3)(sec)].

Now at equilibrium, Eqs. (1) assume the following form

$$D_1\nabla^2\Phi_{10} - \Sigma_{a1}\Phi_{10} - \sigma_x X_o \Phi_{10} + \Sigma_s\Phi_{20} + S_1\Phi_{10} = 0 \tag{2.1}$$

$$D_2\nabla^2\Phi_{20} - \Sigma_{a2}\Phi_{20} - \eta\sigma_x X_o\Phi_{20} + \nu\Sigma_f\Phi_{10} + S_2\Phi_{20} = 0 \tag{2.2}$$

$$X_o = \frac{\overline{\gamma}\Sigma_f\ [\Phi_{10} + (\gamma_x\varepsilon_x + \gamma_i\varepsilon_i)\ \Phi_{20}]}{\sigma_x(\Phi_{10} + \eta\Phi_{20}) + \lambda_x} \tag{2.3}$$

$$I_o = \frac{\overline{\gamma}_i\Sigma_f\ (\Phi_{10} + \varepsilon_i\Phi_{20})}{\lambda_i}\ , \tag{2.4}$$

and the thermal and fast stationary fluxes are the spacial solution of the following equations:

$$D_1\nabla^2\lambda_{10} - \Sigma_{a1}\lambda_{10} - \bar{\gamma}\Sigma_f\left[\frac{\lambda_{10} + (\gamma_x\varepsilon_x + \gamma_i\varepsilon_i)\lambda_{20}}{\lambda_{10} + \eta\lambda_{20} + \lambda_x}\right]\lambda_{10} + \Sigma_s\lambda_{20} + S_1\lambda_{10} = 0 \tag{3.1}$$

$$D_2\nabla^2\lambda_{20} - \Sigma_{a2}\lambda_{20} - \eta\bar{\gamma}\Sigma_f\left[\frac{\lambda_{10} + (\gamma_x\varepsilon_x + \gamma_i\varepsilon_i)\lambda_{20}}{\lambda_{10} + \eta\lambda_{20} + \lambda_x}\right]\lambda_{20} + \nu\Sigma_f\lambda_{10} + S_2\lambda_{20} = 0, \tag{3.2}$$

where

$$\bar{\gamma} = \bar{\gamma}_x + \bar{\gamma}_i$$

$$\gamma_x = \bar{\gamma}_x/\bar{\gamma}$$

$$\gamma_i = \bar{\gamma}_i/\bar{\gamma}$$

$$\lambda_{10}(\bar{r}) = \sigma_x\Phi_{10}(\bar{r})$$

$$\lambda_{20}(\bar{r}) = \sigma_x\Phi_{20}(\bar{r}).$$

If equilibrium units for the dependent variables are defined as follows:

$$\Phi_1(\bar{r},t) = \Phi_{10}(\bar{r})\phi_1(\bar{r},t) \tag{4.1}$$

$$\Phi_2(\bar{r},t) = \Phi_{20}(\bar{r})\phi_2(\bar{r},t) \tag{4.2}$$

$$X(\bar{r},t) = X_o(\bar{r})x(\bar{r},t) \tag{4.3}$$

$$I(\bar{r},t) = I_o(\bar{r})i(\bar{r},t), \tag{4.4}$$

and Eqs. (4) are substituted into Eqs. (1), there result

$$\frac{1}{v_1}\frac{\partial\phi_1}{\partial t} = D_1\nabla^2\phi_1 + 2D_1\frac{\nabla\lambda_{10}}{\lambda_{10}}\cdot\nabla\phi_1 + \bar{\gamma}\Sigma_f M_{12}(1-x)\phi_1 + \Sigma_s\frac{1}{\omega_{12}}(\phi_2 - \phi_1) \tag{5.1}$$

$$\frac{1}{v_2}\frac{\partial\phi_2}{\partial t} = D_2\nabla^2\phi_2 + 2D_2\frac{\nabla\lambda_{20}}{\lambda_{20}}\cdot\nabla\phi_2 + \bar{\gamma}\Sigma_f\eta M_{12}(1-x)\phi_2 + \nu\Sigma_f\omega_{12}(\phi_1 - \phi_2) \tag{5.2}$$

$$\frac{\partial x}{\partial t} = \frac{\gamma_x}{M_{12}}(\lambda_{10}\phi_1 + \varepsilon_x\lambda_{20}\phi_2) + \frac{\gamma_i}{M_{12}}(\lambda_{10} + \varepsilon_i\lambda_{20})i - (\lambda_{10}\phi_1 + \eta\lambda_{20}\phi_2 + \lambda_x)x \tag{5.3}$$

$$\frac{\partial i}{\partial t} = \frac{\lambda_i}{\lambda_{10} + \varepsilon_i\lambda_{20}}(\lambda_{10}\phi_1 + \varepsilon_i\lambda_{20}\phi_2) - \lambda_i i, \tag{5.4}$$

where

$$M_{12} = \frac{\lambda_{10} + (\gamma_x\varepsilon_x + \gamma_i\varepsilon_i)\lambda_{20}}{\lambda_{10} + \eta\lambda_{20} + \lambda_x}$$

$$\omega_{12} = \lambda_{10}/\lambda_{20} \quad .$$

Equations (5) with both flux time derivatives set equal to zero are the basic kinetic equations simulated by computer program XEKE.

Before pursuing our analysis further, it seems appropriate to make some comments on the motivation for employing the particular set of kinetic equations given by Eqs. (1) and, in particular, for employing two-group diffusion theory and the transformations given by Eqs. (4). Two-group diffusion theory was used in formulating Eqs. (5) because various multigroup investigations (see IDO-16985), both analytical and computer simulated, have indicated that using one-group diffusion theory to examine realistic reactor systems can lead to significant error in appraising stability against xenon. Furthermore, results indicate that, in general, stability criteria resulting from one-group diffusion theory permit much too liberal requirements for stability. The usual argument made for the use of one-group diffusion theory is that xenon is a significant absorber of neutrons only at thermal energies, and therefore one-group theory should suffice. However, we must not only consider the influence of the factor which leads to instability (namely, the presence of xenon with its time delay in appearance and its enormous absorption cross section which is significant chiefly at thermal energies), but also the factors which tend to stabilize the flux response (namely, the neutron leakage, the delayed neutrons, and negative temperature feedback). The stabilizing effect of delayed neutrons upon spacial instability, especially upon spacial oscillations, is negligible. Negative temperature feedback, if sufficiently large and correctly distributed, can produce a significant stabilizing influence upon the flux. However, one of the most significant stabilizing factors is the neutron leakage, and it is important to know its time and spacial behavior in ascertaining the stability of a system.

Apparently, one-group diffusion theory is inadequate in predicting stability in realistic reactor systems because it fails to properly describe the space and time behavior of the neutron leakage. Indeed, the greatest leakage suffered in most thermal reactor systems is in the higher energy groups. Furthermore, in nonhomogeneous, reflected, systems the spacial distributions of the thermal and higher energy flux generally are considerably different.

Thus, to effectively examine stability of a realistic reactor system, we should account for the energy distribution of the neutron leakage. However, reactor systems often have complicated core geometries, and the problem of rendering adequate one- and two-dimensional analyses of a system and still accounting for effects attributable to the remaining dimensions is difficult. To demonstrate that Eqs. (5) considerably alleviate this problem, let us assume in Eqs. (1) that the leakage terms may be described as follows:

$$D_1\nabla^2\Phi_1 = D_1\nabla^2\Phi_1 \text{ (investigation dimensions)} \pm B_1^2\Phi_1 \text{ (other dimension)}$$

$$D_2\nabla^2\Phi_2 = D_1\nabla^2\Phi_2 \text{ (investigation dimensions)} \pm B_2^2\Phi_2 \text{ (other dimension)}$$

where the B^2 terms may be space dependent but must be assumed constant in time. The ± sign indicates that the leakage may be positive or negative as appropriate.

Now if the terms containing B^2 are grouped with the respective S terms in each flux equation [Eqs. (1.1) and (1.2)], the resulting transformed kinetic equations are Eqs. (5). [That is, Eqs. (4) are imposed upon Eqs. (1) and Eqs. (2) with the appropriate equilibrium leakage terms subtracted from the resulting equations to give Eqs. (5).] Thus, we observed that by imposing the transformations given by Eqs. (4), any terms which can be reasonably grouped and expressed as equivalent S type terms in Eqs. (1) are eliminated and their effects upon the system are reflected through the resulting equilibrium flux distributions.

Admittedly, we have introduced space dependent terms due to the appearance of the fast and thermal flux equilibrium distributions into Eqs. (5), but we have succeeded in eliminating the unknown time independent leakage terms in the dimension not under investigation and also in eliminating the effective removal cross sections which are difficult to accurately calculate and more difficult to experimentally determine. Furthermore, the dependent variables in Eqs. (5) are dimensionless, assuming a value of unity when equilibrium conditions are met. Thus, supplying input data for program XEKE is easy, and it is very simple to impose any arbitrary perturbation desired as initial conditions for the dependent variables. (See the sample simulation by XEKE in this report.) Finally, although Eqs. (5) are more difficult, in general, to examine analytically, they pose no real additional burden for computer simulation.

Fortunately, many techniques exist and are available for obtaining the required equilibrium flux distributions. For instance, specialized, sophisticated computer codes (e.g., ANGLE, CURE, EQUIPOSE, TRIXY, PDQ, and TURBO) can be used. More important, we can, for adequately "mocked up" critical facilities, obtain experimental flux distributions which are often more accurate than data obtained from computer codes. Alternatively, we could, in principle, somewhat arbitrarily define the fast and thermal equilibrium flux distributions over the reactor core to yield a desirable space and time behavior for the neutron flux. Then, with these equilibrium flux distributions specified, the necessary removal cross sections could be determined directly from Eqs. (3) which would define the absorption loading for the core.

To justify the approximation that the fast and thermal flux time derivatives in Eqs. (5) may be set to zero and that the inclusion of delayed neutrons is not necessary, we add Eqs. (1) together to give the following time derivative term.

$$\frac{\partial}{\partial t}\left(\frac{\Phi_1}{v_1} + \frac{\Phi_2}{v_2} + X + I\right) \tag{6}$$

Imposing Eqs. (4) upon Expression (6), we obtain

$$\frac{\partial}{\partial t}\left(\frac{\Phi_{10}}{v_1}\,\phi_1 + \frac{\Phi_{20}}{v_2}\,\phi_2 + X_o x + I_o i\right) . \tag{7}$$

To determine an order of magnitude value for each of the terms in Expression (7), let

$$\phi_1 \approx \phi_2 \approx x \approx i \approx 1 \quad .$$

Then, imposing the stationary values given by Eqs. (2.3) and (2.4), it can be shown that the fast and thermal flux terms in Expression (7) are negligible compared to the xenon and iodine terms if

$$\ell_o << \frac{\bar{\gamma}_i}{\nu\lambda_i} \; *$$

where ℓ_o is the effective thermal neutron lifetime including delayed neutrons. For typical reactor systems, we find that

$$\frac{\bar{\gamma}_i}{\nu\lambda_i} \approx \frac{(0.06)}{(2.5)(3 \times 10^{-5})} \approx 800 \text{ (sec)}$$

which is greater than any effective neutron lifetime encountered in present nuclear reactor systems. Thus, we can safely assume that the fast

*It is interesting to observe that because this expression is satisfied, the fundamental flux distribution in high flux thermal reactors is generally unstable in the presence of ^{135}Xe. (See page 187, IDO-16985.)

and thermal flux terms in Expression (7) are negligible and the flux time derivatives in Eqs. (5) may be set to zero.

The main reason for neglecting the flux time derivatives in Eqs. (5) is that their presence severely restricts the time step size (typically less than one second) that may be employed and still maintain convergence of the computer simulation. Since we wish to simulate the reactor model over a period of hours, we must in practice delete the flux time derivatives. However, we should be cognizant that with these derivatives deleted and with the rather coarse spacial mesh imposed upon XEKE by the computer storage capacity, certain incompatible initial perturbations in the dependent variables will lead to incorrect simulation of the system response. Usually the programmer will be aware of this situation since, typically, the simulated response will change very rapidly over each time step and may even produce negative (nonphysical) dependent variable values. If the thermal flux exceeds a certain upper limit value supplied as input data or becomes negative, XEKE will indicate that the flux limits have been exceeded and will cease simulation of that problem. The sample problem simulation in this report gives a typical initial perturbation scheme which may be employed for examining stability.

III. SPACIAL DIFFERENCING

To permit digital computer simulation of Eqs. (5), the spacial differential operators must be converted to spacial differencing operators. We will employ the central differencing scheme with uniform spacing to effect this conversion. Thus we find that

$$\left.\frac{\partial f}{\partial s}\right|_{s\to i} \longrightarrow \frac{1}{h}\,[f(i + \tfrac{1}{2}) - f(i - \tfrac{1}{2})] \tag{8.1}$$

$$\left.\frac{\partial^2 f}{\partial s^2}\right|_{s\to i} \longrightarrow \frac{1}{h^2}\,[f(i + 1) - 2f(i) + f(i - 1)] \tag{8.2}$$

where the arrow denotes replacement. Since "f" is not tabulated at the mesh points $i + \tfrac{1}{2}$ and $i - \tfrac{1}{2}$, the average value of f at these points is used. This value is given by

$$< f(i + \tfrac{1}{2}) > = \tfrac{1}{2}\,[f(i + 1) + f(i)]$$

$$< f(i - \tfrac{1}{2}) > = \tfrac{1}{2}\,[f(i) + f(i - 1)] \ .$$

Thus, Expression (8.1) becomes

$$\left.\frac{\partial f}{\partial s}\right|_{s\to i} \longrightarrow \frac{1}{2h}\,[f(i + 1) - f(i - 1)] \ .$$

The Laplacian operator which occurs in Eqs. (5.1) and (5.2) may be written as

$$\nabla^2 = \frac{\partial^2}{\partial r^2} + \frac{m}{r}\frac{\partial}{\partial r} + \frac{\partial^2}{\partial z^2} \quad , \tag{9}$$

where m = 1 for cylindrical geometry and m = 0 for rectangular geometry. Thus, Eq. (5.1) for the thermal flux may be written in difference notation as follows:

$$\frac{1}{h_r^2}\left[\phi_1(i+1,j) - 2\phi_1(i,j) + \phi_1(i-1,j)\right] + \frac{m}{2h_r r_i}\left[\phi_1(i+1,j) - \phi_1(i-1,j)\right]$$

$$+ \frac{1}{h_z^2}\left[\phi_1(i,j+1) - 2\phi_1(i,j) + \phi_1(i,j-1)\right]$$

$$+ \left[\frac{\lambda_{10}(i+1,j) - \lambda_{10}(i-1,j)}{2h_r^2\,\lambda_{10}(i,j)}\right]\left[\phi_1(i+1,j) - \phi_1(i-1,j)\right]$$

$$+ \left[\frac{\lambda_{10}(i,j+1) - \lambda_{10}(i,j-1)}{2h_z^2\,\lambda_{10}(i,j)}\right]\left[\phi_1(i,j+1) - \phi_1(i,j-1)\right]$$

$$+ \left(\frac{\overline{\gamma\Sigma_f M_{12}}}{D_1}\right)(i,j)\ \left[1 - x(i,j)\right]\ \phi_1(i,j)$$

$$+ \left(\frac{\Sigma_s}{D_1\omega_{12}}\right)(i,j)\ \left[\phi_2(i,j) - \phi_1(i,j)\right] = 0\ , \qquad (10)$$

where i denotes the radial position, j denotes the axial position in cylindrical geometry, and i and j denote any two dimensions of interest for rectangular geometry. Note that the thermal flux time derivative has been set to zero.

A difference equation similar to Eq. (10) also results for the fast flux description. It is significant to observe in Eq. (10) that with the flux time derivatives set to zero, the time behavior of both the fast and thermal flux is governed solely by the xenon's time behavior. Furthermore, since spacial dependence does not occur explicitly in the xenon and iodine equations, (5.3) and (5.4), it is necessary only to solve these equations in time at each position i, j where iodine and xenon exist.

Returning to Eq. (10), if common terms are collected, we obtain

$$\begin{aligned} A(i,j)\ \phi_1(i,j+1) + B(i,j)\ \phi_1(i,j-1) + C(i,j)\ \phi_1(i+1,j) \\ + D(i,j)\ \phi_1(i-1,j) + E(i,j)\ \phi_1(i,j) \\ + F(i,j)\ \phi_2(i,j) = 0 \end{aligned} \tag{11}$$

where

$$\phi_1(i,j) = ZT(I,J)$$

$$\phi_2(i,j) = ZF(I,J)$$

$$A(i,j) = \left(\frac{h_r}{h_z}\right)^2 \left[1 + \frac{\lambda_{10}(i,j+1) - \lambda_{10}(i,j-1)}{2\lambda_{10}(i,j)}\right] = AT(I,J)$$

$$B(i,j) = \left(\frac{h_r}{h_z}\right)^2 \left[1 - \frac{\lambda_{10}(i,j+1) - \lambda_{10}(i,j-1)}{2\lambda_{10}(i,j)}\right] = BT(I,J)$$

$$C(i,j) = \left[1 + \frac{m}{2i - 1 + 2r_o/h_r} + \frac{\lambda_{10}(i+1,j) - \lambda_{10}(i-1,j)}{2\lambda_{10}(i,j)}\right] = CT(I,J)$$

$$D(i,j) = \left[1 - \frac{m}{2i - 1 + 2r_o/h_r} - \frac{\lambda_{10}(i+1,j) - \lambda_{10}(i-1,j)}{2\lambda_{10}(i,j)}\right] = DTT(I,J)$$

$$E(i,j) = G(i,j)\ [1 - x(i,j)] - H(i,j) = ETT(I,J)$$

$$F(i,j) = \left(\frac{\Sigma_s}{D_1\omega_{12}}\right)(i,j)\ h_r^2 = FTT(I,J)$$

$$G(i,j) = \left(\frac{\gamma\Sigma_f M_{12}}{D_1}\right)(i,j)\ h_r^2 = GTT(I,J)$$

$$H(i,j) = 2\left[1 + \left(\frac{h_r}{h_z}\right)^2\right] + F(i,j) = HTT(I,J)\ .$$

The terms on the far right side of the equality signs are the variable names assigned to these terms by program XEKE. For the description of the fast flux, the pertinent difference equation follows by arguments similar to those imposed in formulating Eq. (11). The resulting equation for the fast flux is

$$\begin{aligned} \overline{A}(i,j)\ \phi_2(i,j+1) + \overline{B}(i,j)\ \phi_2(i,j-1) + \overline{C}(i,j)\ \phi_2(i+1,j) \\ + \overline{D}(i,j)\ \phi_2(i-1,j) + \overline{E}(i,j)\ \phi_2(i,j) \\ + \overline{F}(i,j)\ \phi_1(i,j) = 0 \end{aligned} \tag{12}$$

where

$$\phi_1(i,j) = ZT(I,J)$$

$$\phi_2(i,j) = ZF(I,J)$$

$$\overline{A}(i,j) = \left(\frac{h_r}{h_z}\right)^2 \left[1 + \frac{\lambda_{20}(i,j+1) - \lambda_{20}(i,j-1)}{2\lambda_{20}(i,j)}\right] = AF(I,J)$$

$$\overline{B}(i,j) = \left(\frac{h_r}{h_z}\right)^2 \left[1 - \frac{\lambda_{20}(i,j+1) - \lambda_{20}(i,j-1)}{2\lambda_{20}(i,j)}\right] = BF(I,J)$$

$$\overline{C}(i,j) = \left[1 + \frac{m}{2i - 1 + 2r_o/h_r} + \frac{\lambda_{20}(i+1,j) - \lambda_{20}(i-1,j)}{2\lambda_{20}(i,j)}\right] = CF(I,J)$$

$$\overline{D}(i,j) = \left[1 - \frac{m}{2i - 1 + 2r_o/h_r} - \frac{\lambda_{20}(i+1,j) - \lambda_{20}(i-1,j)}{2\lambda_{20}(i,j)}\right] = DFF(I,J)$$

$$\overline{E}(i,j) = \overline{G}(i,j)\ [1 - x(i,j)] - \overline{H}(i,j) = EFF(I,J)$$

$$\overline{F}(i,j) = \left(\frac{\nu\Sigma_f\omega_{12}}{D_2}\right)(i,j)\ h_r^2 = FFF(I,J)$$

$$\overline{G}(i,j) = \left(\frac{\gamma\Sigma_f M_{12}\eta}{D_2}\right)(i,j)\ h_r^2 = GFF(I,J)$$

$$\overline{H}(i,j) = 2\left[1 + \left(\frac{h_r}{h_z}\right)^2\right] + F(i,j) = HFF(I,J)\ ,$$

and again the terms on the far right side of the equality signs are the variable names assigned to these terms by program XEKE.

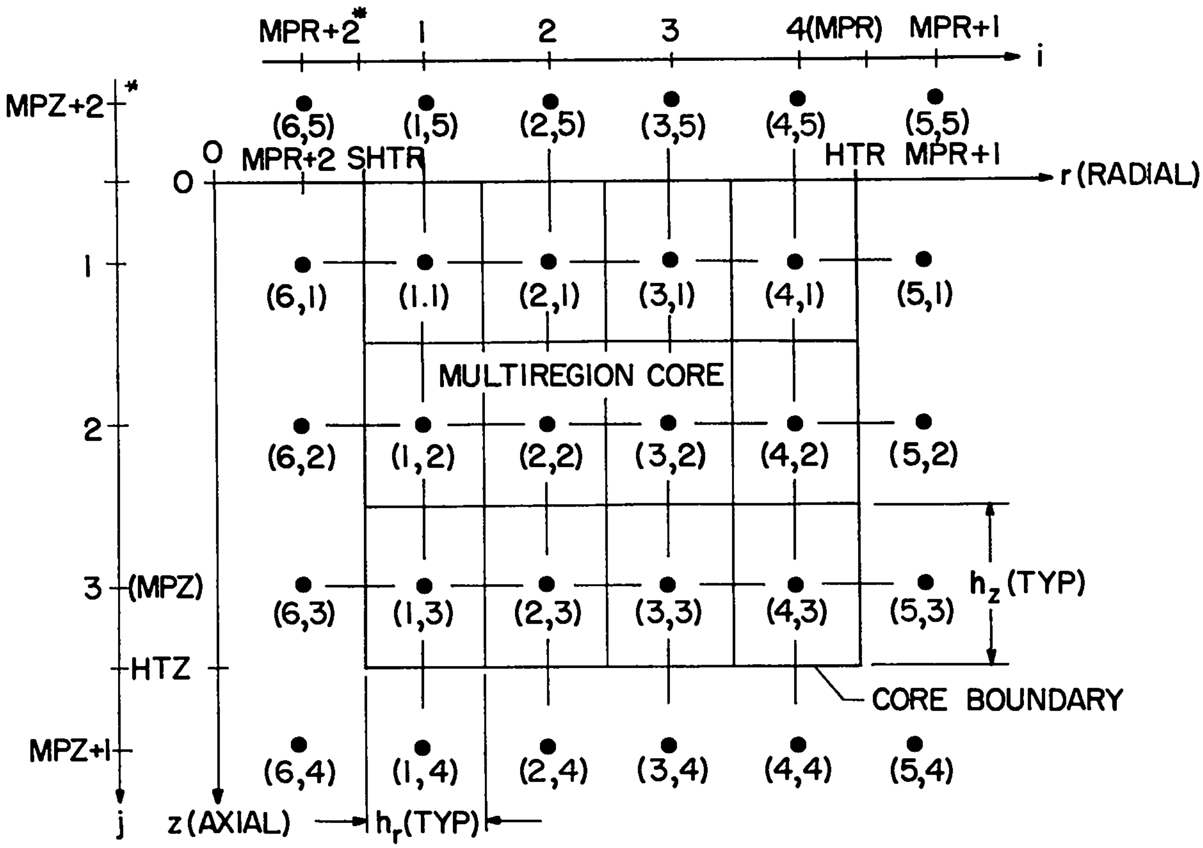
IV. SPACIAL MESH MODEL AND BOUNDARY CONDITIONS

A typical spacial mesh model for a uniform cylindrical multiregion reactor which demonstrates the nature of the spacial mesh model simulated by computer program XEKE is given in Fig. 2. Application of the spacial model to a rectangular reactor is obvious. The region to which each mesh point applies is the rectangular region that encloses that mesh point. The boundaries of the rectangular regions are determined by those lines which equally divide the distance between adjacent mesh points. It is apparent that as many regions of differing properties are possible as there are numbers of mesh points (i.e., the product of MPR and MPZ).

The mesh points that lie outside the reactor core region portrayed by the model in Fig. 2 serve to determine boundary conditions which will be formulated for our model using the notion of albedo. To formulate our boundary conditions, consider a reactor surface interface between two media such that the fraction of the neutron current density leaving the interface to the current density entering is a constant in time. This fraction we shall define for our purposes as the albedo. Then assuming that diffusion theory adequately describes the neutron current density at the boundary, we have

$$\beta = \left. \frac{\Phi + 2D\nabla\Phi}{\Phi - 2D\nabla\Phi} \right|_{\text{boundary (bd)}} , \qquad (13)$$

and rearranging, we obtain



LEGEND: $0 \leq r_0 \leq r \leq HTR,\ 1 \leq i \leq 4 = MPR$

$0 \leq z \leq HTZ,\ 1 \leq j \leq 3 = MPZ$

$h_r = (HTR-SHTR)/MPR,\ h_z = HTZ/MPZ$

*ZERO VALUES FOR DIMENSIONAL INDEXING ARE NOT PERMITTED IN FORTRAN.

Fig. 2. Typical Spacial Mesh Point Model for a Multiregion Cylindrical Core for Program XEKE.

$$\frac{\nabla\Phi}{\Phi}\bigg|_{bd} = -\frac{1}{2D}\left(\frac{1-\beta}{1+\beta}\right) = \alpha \ . \tag{14}$$

Now if the transformations given by Eqs. (4.1) and (4.2) for the fast and thermal flux are imposed upon Eq. (14), we obtain for the thermal flux

$$\frac{\nabla\Phi_1}{\Phi_1}\bigg|_{bd} = \frac{\nabla\Phi_{10}}{\Phi_{10}}\bigg|_{bd} + \frac{\nabla\Phi_1}{\Phi_1}\bigg|_{bd} = \alpha_1 \ , \tag{15.1}$$

and for the fast flux

$$\frac{\nabla\Phi_2}{\Phi_2}\bigg|_{bd} = \frac{\nabla\Phi_{20}}{\Phi_{20}}\bigg|_{bd} + \frac{\nabla\Phi_2}{\Phi_2}\bigg|_{bd} = \alpha_2 \ . \tag{15.2}$$

However, we shall assume that both the albedo and diffusion coefficient are independent of time so that

$$\frac{\nabla\Phi_1}{\Phi_1}\bigg|_{bd} = \frac{\nabla\Phi_{10}}{\Phi_{10}}\bigg|_{bd} = \alpha_1 \ ,$$

and

$$\frac{\nabla\Phi_2}{\Phi_2}\bigg|_{bd} = \frac{\nabla\Phi_{20}}{\Phi_{20}}\bigg|_{bd} = \alpha_2 \ .$$

Therefore, Eqs. (15.1) and (15.2) produce the boundary conditions that

$$\nabla\Phi_1\Big|_{bd} = \nabla\Phi_2\Big|_{bd} = 0 \ . \tag{16}$$

Equation (16) will be imposed at all pertinent boundaries except at the boundary SHTR $\leq r \leq$ HTR and $z =$ HTZ where it will be assumed that a flux node exists if axial instability occurs due to xenon. At that boundary it will be assumed that for all time

$$\Phi_1(r,\text{HTZ},t) = \Phi_{10}(r,\text{HTZ}) \tag{17.1}$$

and

$$\Phi_2(r,HTZ,t) = \Phi_{20}(r,HTZ) \,, \tag{17.2}$$

and thus we obtain from Eq. (17) that

$$\phi_1(r,HTZ,t) = \phi_2(r,HTZ,t) = 1 \tag{18}$$

for all time.

Let us now examine Eqs. (11) and (12) at the boundaries which are portrayed in Fig. 2 and given mathematically in Eqs. (16) and (18).

For the mesh point i = 1, j = 1, Eq. (11) becomes

$$\begin{aligned} &A(1,1)\ ZT(1,2) + B(1,1)\ ZT(1,0) + C(1,1)\ ZT(2,1) + D(1,1)\ ZT(0,1) \\ &\qquad + E(1,1)\ ZT(1,1) + F(1,1)\ ZF(1,1) = 0. \end{aligned} \tag{11.1}$$

But from Eq. (16), where we imposed the condition that

$$\nabla\phi\Big|_{bd} = 0$$

we find that

$$ZT(1,0) = ZT(0,1) = ZT(1,1) \,,$$

so Eq. (11.1) becomes

$$\begin{aligned} &A(1,1)\ ZT(1,2) + C(1,1)\ ZT(2,1) + [B(1,1) + D(1,1) + E(1,1)]\ ZT(1,1) \\ &\qquad + F(1,1)\ ZF(1,1) = 0. \end{aligned} \tag{11.2}$$

Furthermore it is easy to show that for those mesh points such that 1 < i < MPR and j = 1, Eq. (11) assumes the form

$$\begin{aligned} &A(i,1)\ ZT(i,2) + C(i,1)\ ZT(i+1,1) + D(i,1)\ ZT(i-1,1) \\ &\qquad + [B(i,1) + E(i,1)]\ ZT(i,1) + F(i,1)\ ZF(i,1) = 0 \,, \end{aligned} \tag{11.3}$$

and for i = MPR and j = 1

$$\begin{aligned} &A(MPR,1)\ ZT(MPR,2) + D(MPR,1)\ ZT(MPR-1,1) \\ &\qquad + [B(MPR,1) + C(MPR,1) + E(MPR,1)]\ ZT(MPR,1) \\ &\qquad + F(MPR,1)\ ZF(MPR,1) = 0. \end{aligned} \tag{11.4}$$

Similarly for i = 1 and 1 < 1 and 1 < j < MPZ we obtain

$$A(1,j)\ ZT(1,j+1) + B(1,j)\ ZT(1,j-1) + C(1,j)\ ZT(2,j) + [D(1,j) + E(1,j)]\ ZT(1,j) + F(1,j)\ ZF(1,j) = 0 \quad (11.5)$$

and for i = MPR and 1 < j < MPZ

$$A(MPR,j)\ ZT(MPR,j+1) + B(MPR,j)\ ZT(MPR,j-1) + D(MPR,j)\ ZT(MPR-1,j) + [C(MPR,j) + E(MPR,j)]\ ZT(MPR,j) + F(MPR,j)\ ZF(MPR,j) = 0. \quad (11.6)$$

However, for the mesh point i = 1 and j = MPZ we impose the condition from Eq. (18) that

$$\phi_1(r,HTZ,t) = 1 ,$$

and thus Eq. (11) becomes

$$B(1,MPZ)\ ZT(1,MPZ-1) + C(1,MPZ)\ ZT(2,MPZ) + [D(1,MPZ) + E(1,MPZ)]\ ZT(1,MPZ) + F(1,MPZ)\ ZF(1,MPZ) = -A(1,MPZ). \quad (11.7)$$

Similarly for 1 < i < MPR and j = MPZ we obtain from Eq. (11)

$$B(i,MPZ)\ ZT(i,MPZ-1) + C(i,MPZ)\ ZT(i+1,MPZ) + D(i,MPZ)\ ZT(i-1,MPZ) + E(i,MPZ)\ ZT(i,MPZ) + F(i,MPZ)\ ZF(i,MPZ) = -A(i,MPZ),$$

and finally for the mesh point i = MPR and j = MPZ we find using Eq. (18) in Eq. (11) that

$$B(MPR,MPZ)\ ZT(MPR,MPZ-1) + D(MPR,MPZ)\ ZT(MPR-1,MPZ) + [C(MPR,MPZ) + E(MPR,MPZ)]\ ZT(MPR,MPZ) + F(MPR,MPZ)\ ZF(MPR,MPZ) = -A(MPR,MPZ). \quad (11.8)$$

Formulation of Eq. (12) for the fast flux at the boundary mesh points which was accomplished in the preceding formulation for the thermal flux, follows the same procedure as that imposed on the thermal flux. Equations (16) and (18) are simply imposed at the appropriate mesh points, and the equations for the fast flux at these points are easily obtained.

V. MATRIX FORMULATION AND SOLUTION TECHNIQUE

If Eqs. (11) and (12) are now arranged into an equivalent matrix equation using the boundary conditions stated previously, we have

$$M \Phi = N$$

where M is the coefficient matrix, Φ is the flux column vector, and N is a column vector. For example, if we have $1 \leq i \leq 3$ and $1 \leq j \leq 2$, then our matrix equation assumes the form given in Fig. 3.

Note that the coefficient matrix M is essentially a pent-diagonal matrix with two "outriggers" whose positions are governed by the number of radial mesh points; i.e., the B's begin at the matrix position [2(MPR) + 1,1] and the A's begin at the matrix position [1,2(MPR) + 1]. The particular arrangement of the flux components of the column vector Φ was selected since the coefficient matrix M which results has a reasonable, orderly disposition of elements. Also, the column vector N is nonzero only toward the end or bottom of the vector; i.e., $(N_{i,j}) = 0$ for $1 \leq i \leq$ MPR and $1 \leq j \leq$ MPZ 1. This arrangement scheme considerably reduces arithmetic operations in upper triangularizing the coefficient matrix and backward solving to obtain the solution vector Φ which is the solution method employed in program XEKE. Many techniques and schemes exist for solving matrix equations. The method employed in program XEKE is essentially a modified Gaussian reduction scheme. Specifically, it is given the name Banachiewicz-Cholesky-Crout by Korn and Korn in the *Mathematical Handbook for Scientists and Engineers*, McGraw-Hill, New York (1961). Of course using any form of a Gaussian reduction scheme on a general, large, "dense" matrix would be lengthy and time consuming. We would be

$$
\begin{bmatrix}
(B_{11}+D_{11}E_{11}) & F_{11} & C_{11} & 0 & 0 & 0 & A_{11} & 0 & 0 & 0 & 0 & 0 \\
\bar{F}_{11} & (\bar{B}_{11}+\bar{D}_{11}+\bar{E}_{11}) & 0 & \bar{C}_{11} & 0 & 0 & 0 & \bar{A}_{11} & 0 & 0 & 0 & 0 \\
D_{21} & 0 & (B_{21}+E_{21}) & F_{21} & C_{21} & 0 & 0 & 0 & A_{21} & 0 & 0 & 0 \\
0 & \bar{D}_{21} & \bar{F}_{21} & (\bar{B}_{21}+\bar{E}_{21}) & 0 & \bar{C}_{21} & 0 & 0 & 0 & \bar{A}_{21} & 0 & 0 \\
0 & 0 & D_{31} & 0 & (B_{31}+E_{31}+C_{31}) & F_{31} & 0 & 0 & 0 & 0 & A_{31} & 0 \\
0 & 0 & 0 & \bar{D}_{31} & \bar{F}_{31} & (\bar{B}_{31}+\bar{E}_{31}+\bar{C}_{31}) & 0 & 0 & 0 & 0 & 0 & \bar{A}_{31} \\
B_{12} & 0 & 0 & 0 & 0 & 0 & (D_{12}+E_{12}) & F_{12} & C_{12} & 0 & 0 & 0 \\
0 & \bar{B}_{12} & 0 & 0 & 0 & 0 & \bar{F}_{12} & (\bar{D}_{12}+\bar{E}_{12}) & 0 & \bar{C}_{12} & 0 & 0 \\
0 & 0 & B_{22} & 0 & 0 & 0 & 0 & 0 & E_{22} & F_{22} & C_{22} & 0 \\
0 & 0 & 0 & \bar{B}_{22} & 0 & 0 & 0 & 0 & \bar{F}_{22} & \bar{E}_{22} & 0 & \bar{C}_{22} \\
0 & 0 & 0 & 0 & B_{32} & 0 & 0 & 0 & 0 & 0 & (C_{32}+E_{32}) & F_{32} \\
0 & 0 & 0 & 0 & 0 & \bar{B}_{32} & 0 & 0 & 0 & 0 & \bar{F}_{32} & (\bar{C}_{32}+\bar{E}_{32})
\end{bmatrix}
\cdot
\begin{bmatrix}
ZT_{11} \\ ZF_{11} \\ ZT_{21} \\ ZF_{21} \\ ZT_{31} \\ ZF_{31} \\ ZT_{12} \\ ZF_{12} \\ ZT_{22} \\ ZF_{22} \\ ZT_{32} \\ ZF_{32}
\end{bmatrix}
=
\begin{bmatrix}
0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ -A_{12} \\ -\bar{A}_{12} \\ -A_{22} \\ -\bar{A}_{22} \\ -A_{32} \\ -\bar{A}_{32}
\end{bmatrix}
$$

Fig. 3. Typical Matrix Equation Solved by Program XEKE.

well advised to use some appropriate iteration scheme with fast convergence if available. However, coefficient matrix M is not "dense," and by taking advantage of the many zero terms, it is possible to specialize the Banachiewicz-Cholesky-Crout method for the particular form of coefficient matrix M and obtain a reasonable scheme which permits the flux column vector to be found without requiring excessive computer time or introducing significant roundoff error.

The Banachiewicz-Cholesky-Crout method consists in taking the matrix system

$$
\begin{aligned}
c_{11}x_1 + c_{12}x_1 + \cdots + c_{1n}x_n &= d_1 \\
c_{21}x_1 + c_{22}x_2 + \cdots + c_{2n}x_n &= d_2 \\
&\vdots \\
c_{n1}x_1 + c_{n2}x_2 + \cdots + c_{nn}x_n &= d_n
\end{aligned}
$$

and transforming it to the equivalent upper triangular matrix system

$$
\begin{aligned}
x_1 + a_{12}x_2 + a_{13}x_3 + \cdots + a_{1n}x_n &= b_1 \\
x_2 + a_{23}x_3 + \cdots + a_{2n}x_n &= b_2 \\
&\vdots \\
x_n &= b_n
\end{aligned}
$$

using the following recursion formulas:

$$a_{i1} = c_{i1} \quad (i=1,2,\ldots,n)$$

$$a_{1i} = c_{1i}/c_{11} \quad (i=2,3,\ldots,n)$$

$$a_{ik} = c_{ik} - \sum_{j=1}^{k-1} a_{ij}a_{jk} \quad (i \geq k;\ k=2,3,\ldots,n)$$

$$a_{ki} = \frac{1}{a_{kk}} \left(c_{ki} - \sum_{j=1}^{k-1} a_{kj} \, a_{ji} \right) \quad (1=2,3,\ldots,n;\ k<i)$$

$$b_1 = d_1/c_{11}$$

and

$$b_i = \frac{1}{a_{ii}} \left(d_i - \sum_{j=1}^{i-1} a_{ij} b_j \right) \quad (i=2,3,\ldots,n) \ .$$

The solution vector is obtained by backward solving from x_n, x_{n-1} .. to x_1 by using the following formulas:

$$x_n = b_n$$

$$x_k = b_k - \sum_{j=k+1}^{n} a_{kj} x_j \quad (k=n-1,n-2,\ldots 1).$$

VI. EXPERIMENTAL CORROBORATION

In IDO-16985 it was found that not only the size and coupling of a reactor core but also the average ratio of the fast-to-thermal equilibrium flux are significant factors in governing stability. Further, it is found that, in general, for typical reactor systems the greater the value of average fast-to-thermal flux the more stable is the response of the system to various perturbations from equilibrium conditions.

A significant fact concerning the fast-to-thermal flux ratio is that some degree of experimental corroboration of the simulation given by XEKE can be made through cadmium ratio measurements of fissile fuel. Of course the same technique could also be used to obtain the equilibrium flux distributions required for program XEKE. To demonstrate the procedure, let us return to Eqs. (1).

The "fast" flux given in Eq. (1) is defined as

$$\Phi_2 = \int_{E_m}^{\infty} \Phi(E)\,dE$$

and the "thermal" flux as

$$\Phi_1 = \int_0^{E_m} \Phi(E)\,dE ,$$

where E_m is the cutoff energy defining groups one and two. [See Hickman and Leng, "The Calculation of Effective Cutoff Energies in Cadmium, Samarium, and Gadolinium," Nuclear Science and Engineering, Vol. 12, pp 523-531 (April 1962) for a determination of cutoff energies.] The fast-to-thermal equilibrium flux ratio is $1/\omega_{12}$, where $\omega_{12} = \lambda_{10}/\lambda_{20}$, $\lambda_{10} = \sigma_x \Phi_{10}$, and $\lambda_{20} = \sigma_x \Phi_{20}$ (σ_x is the thermal absorption cross section of xenon).

Thus, we obtain

$$\frac{1}{\omega_{12}(\bar{r})} = \frac{\lambda_{20}(\bar{r})}{\lambda_{10}(\bar{r})} = \frac{\Phi_{20}(\bar{r})}{\Phi_{10}(\bar{r})} = \frac{\int_{E_m}^{\infty} \Phi_0(\bar{r},E)\,dE}{\int_0^{E_m} \Phi_0(\bar{r},E)\,dE} . \qquad (19)$$

For our two-group program we may, for example, use two-group constants obtained in each region of interest from computor codes GAM and TEMPEST. In particular, the parameters $\nu\Sigma_{f_1}$ and $\nu\Sigma_{f_2}$ are evaluated as follows:

$$\text{GAM:} \quad \nu\Sigma_{f_2} = \frac{\nu N_f \int_{E_m}^{\infty} \sigma_f(E)\ \Phi(E)\,dE}{\int_{E_m}^{\infty} \Phi(E)\,dE} . \qquad (20)$$

$$\text{TEMPEST:} \quad \nu\Sigma_{f_1} = \frac{\nu N_f \int_0^{E_m} \sigma_f(E)\ \Phi(E)\,dE}{\int_0^{E_m} \Phi(E)\,dE} . \qquad (21)$$

Now, the experimental fuel cadmium ratio, CR_f, may be defined as follows:

$$CR_f = \frac{\int_0^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE + \int_{E_{Cd}}^{\infty} \sigma_f(E)\ \Phi(E)\,dE}{\int_{E_{Cd}}^{\infty} \sigma_f(E)\ \Phi(E)\,dE}$$

$$CR_f = \frac{\text{bare fuel detector activation}}{\text{Cd covered fuel detector activation}}$$

or

$$CR_f - 1 = \frac{\int_0^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE}{\int_{E_{Cd}}^{\infty} \sigma_f(E)\ \Phi(E)\,dE} \tag{22}$$

where E_{Cd} is the effective cadmium cutoff energy.

We can now rewrite Eqs. (20) and (21) in a slightly different form to obtain an expression in terms of both E_m and E_{Cd}.

Thus, for GAM:

$$\nu\Sigma_{f_2} = \nu N_f \left[\frac{\int_{E_m}^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE + \int_{E_{Cd}}^{\infty} \sigma_f(E)\ \Phi(E)\,dE}{\int_{E_m}^{E_{Cd}} \Phi(E)\,dE + \int_{E_{Cd}}^{\infty} \Phi(E)\,dE} \right] \tag{23}$$

and for TEMPEST:

$$\nu\Sigma_{f_1} = \nu N_f \left[\frac{\int_0^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE - \int_{E_m}^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE}{\int_0^{E_{Cd}} \Phi(E)\,dE - \int_{E_m}^{E_{Cd}} \Phi(E)\,dE} \right] . \tag{24}$$

Substituting Eqs. (23) and (24) in Eq. (22) we obtain

$$CR_f - 1 = \frac{\nu\Sigma_{f_1} \left[\int_0^{E_{Cd}} \Phi(E)\,dE - \int_{E_m}^{E_{Cd}} \Phi(E)\,dE \right] + \nu N_f \int_{E_m}^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE}{\nu\Sigma_{f_2} \left[\int_{E_{Cd}}^{\infty} \Phi(E)\,dE + \int_{E_m}^{E_{Cd}} \Phi(E)\,dE \right] - \nu N_f \int_{E_m}^{E_{Cd}} \sigma_f(E)\ \Phi(E)\,dE} . \tag{25}$$

We now consider three cases for the values of E_{Cd} and E_m: (a) $E_m < E_{Cd}$, (b) $E_m = E_{Cd}$, and (c) $E_m > E_{Cd}$.

Case (a) ($E_m < E_{Cd}$). If this condition exists, then each of the integrals in Eq. (25) is positive. Furthermore, we shall now restrict the discussion to thermal or near thermal reactors in order that CR_f be strictly greater than unity (and thus $CR_f - 1 > 0$), and to reactors having a fission spectrum (and thus $CR_f < \infty$). Hence, Eq. (25) can be written as

$$(CR_f - 1) < \frac{\nu\Sigma_{f_1}}{\nu\Sigma_{f_2}} \left[\frac{\int_0^{E_m} \Phi(E)\,dE}{\int_{E_m}^{\infty} \Phi(E)\,dE} \right]$$

or, using Eq. (19), we obtain

$$\frac{\nu\Sigma_{f_2}}{\nu\Sigma_{f_1}} (CR_f - 1) < \omega_{12}. \tag{26}$$

Case (b) ($E_m = E_{Cd}$). In this case, the integrals from E_m to E_{Cd} are all zero in Eq. (25), and we can write Eq. (25) as

$$(CR_f - 1) = \frac{\nu\Sigma_{f_1}}{\nu\Sigma_{f_2}} \left[\frac{\int_0^{E_m} \Phi(E)\,dE}{\int_{E_m}^{\infty} \Phi(E)\,dE} \right]$$

or, again using Eq. (19), we obtain

$$\frac{\nu\Sigma_{f_2}}{\nu\Sigma_{f_1}} (CR_f - 1) = \omega_{12}. \tag{27}$$

Case (c) ($E_m > E_{Cd}$). In this case, the integrals in Eq. (25) over E_m to E_{Cd} are negative, and without specific information regarding the functions

$\Phi(E)$ and $\sigma_f(E)$, the relative magnitudes of the left- and right-hand sides of Eq. (25) are indeterminate.

Therefore, if $E_m \leq E_{Cd}$, we can obtain Eqs. (26) and (27), which can in turn be written as

$$\frac{1}{\omega_{12}} \leq \frac{\nu\Sigma_{f_1}}{\nu\Sigma_{f_2}} \frac{1}{(CR_f - 1)} . \quad (28)$$

A stability criterion resulting from program XEKE is that the fast-to-thermal flux ratio, $1/\omega_{12}$, be equal to or greater than some average value, K, over the core. Thus,

$$K \leq \frac{1}{V} \int_{volume} \frac{dV}{\omega_{12}} \leq \frac{\nu\Sigma_{f_1}}{\nu\Sigma_{f_2}} \frac{1}{(CR_f - 1)} , \quad (29)$$

and conservatively our experimental stability criterion becomes:

$$CR_f \leq 1 + \frac{\nu\Sigma_{f_1}}{\nu\Sigma_{f_2}} \frac{1}{K} \quad (30)$$

where CR_f in Expression (30) is the volume average value found experimentally in the region of interest.

VII. TIME SOLUTION SCHEME FOR THE XENON AND IODINE CONCENTRATIONS

As was stated previously, it is significant to understand that with the flux derivatives set equal to zero in Eqs. (5.1) and (5.2) the time behavior of both the fast and thermal flux is governed solely by the time behavior of the xenon concentration. Furthermore, since the xenon and iodine equations exhibit no spacial operators and thus are not explicitly space dependent (we assume that the fuel, xenon, and iodine are stationary in space), it is only necessary to determine the change in the xenon and iodine concentration over a time step Δt at each spacial mesh position where xenon and iodine exist in the reactor model.

Now Eq. (5.4) may be integrated over the time step Δt to yield

$$i(t + \Delta t) = i(t)e^{-\lambda_i \Delta t} + \frac{\lambda_i e^{-\lambda_i(t+\Delta t)}}{\lambda_{10} + \varepsilon_i \lambda_{20}} \int_t^{t+\Delta t} (\lambda_{10}\phi_1 + \varepsilon_i \lambda_{20}\phi_2) e^{\lambda_i \zeta} d\zeta \ . \tag{31}$$

To evaluate the integral expression in Eq. (31) we impose the mean value theorem for integrals (note that the function $e^{\lambda_i \zeta}$ is nonnegative) which gives

$$\int_t^{t+\Delta t} (\lambda_{10}\phi_1 + \varepsilon_i \lambda_{20}\phi_2) e^{\lambda_i \zeta} d\zeta = \frac{1}{\lambda_i} (\lambda_{10}\overline{\phi}_1 + \varepsilon_i \lambda_{20}\overline{\phi}_2) \left[e^{\lambda_i(t+\Delta t)} - e^{\lambda_i t}\right] \tag{32}$$

where $\overline{\phi}_1$ and $\overline{\phi}_2$ are mean values defined by Eq. (32). Equations (31) and (32) may be combined to yield the following expression for the iodine concentration integrated over the time step Δt at each spacial mesh point

$$i(t + \Delta t) = i(t)e^{-\lambda_i \Delta t} + \frac{\lambda_{10}\overline{\phi}_1 + \varepsilon_i \lambda_{20}\overline{\phi}_2}{\lambda_{10} + \varepsilon_i \lambda_{20}} \left(1 - e^{-\lambda_i \Delta t}\right). \qquad (33)$$

To evaluate the terms $\overline{\phi}_1$, and $\overline{\phi}_2$, we shall use the following approximate expressions which are easily evaluated by program XEKE and are reasonably accurate for a sufficiently small time step Δt at each spacial mesh point.

$$\overline{\phi}_1 = \frac{1}{2} \left[3\phi_1(t) - \phi_1(t - \Delta t)\right] \qquad (34.1)$$

$$\overline{\phi}_2 = \frac{1}{2} \left[3\phi_2(t) - \phi_2(t - \Delta t)\right] \qquad (34.2)$$

With the time behavior of the iodine concentration now known, the xenon Eq. (5.3) may be integrated using similar arguments imposed in obtaining Eq. (33). Thus we obtain

$$x(t + \Delta t) = x(t)e^{-k\Delta t} + \frac{1}{M_{12}k}\left[\lambda_{10}\overline{\phi}_1 + (\gamma_x\varepsilon_x + \gamma_i\varepsilon_i)\lambda_{20}\overline{\phi}_2\right]\left(1 - e^{-k\Delta t}\right)$$

$$+ \frac{1}{M_{12}(k - \lambda_i)}\left\{\lambda_{10}\left[i(t) - \overline{\phi}_1\right] + \varepsilon_i\lambda_{20}\left[i(t) - \overline{\phi}_2\right]\right\}\left(e^{-\lambda_i\Delta t} - e^{-k\Delta t}\right) \qquad (35)$$

where

$$k = \lambda_{10}\overline{\phi}_1 + \eta\lambda_{20}\overline{\phi}_2 + \lambda_x$$

and we shall assume that all mean value terms for $\overline{\phi}_1$ and $\overline{\phi}_2$, respectively, are approximately the same and are defined by Eqs. (34.1) and (34.2), respectively, for sufficiently small time steps.

Equations (33), (34), and (35) are the equations employed by program XEKE to simulate the time step change in the xenon and iodine concentrations at each mesh point. With the xenon concentration known at $t + \Delta t$, the resulting fast and thermal flux spacial distribution can be determined at $t + \Delta t$.

VIII. PROGRAM "XEKE"

The main program is XEKE which is coded in FORTRAN IV language. A flow diagram from the procedural logic of XEKE is given in Fig. 4. All pertinent input data enters the system via XEKE, and all output data exits the system via XEKE. Furthermore, XEKE exercises control over the execution of the program. The core capacity of the IBM 7094, for which program XEKE was initially written, dictates limits upon the number of spacial mesh points that may be used. If values of MPZ or MPR greater than 12 are desired, the DIMENSION statement in XEKE as it appears in the FORTRAN Source List, following Fig. 4, must be properly adjusted. However, any adjustment must preserve the limits that

$$2 \le \text{MPR} \le 33$$

$$2 \le \text{MPZ} \le 168$$

$$56 \le (\text{MPR}) \left\{2[(\text{MPR})(\text{MPZ}) - 1] + 11(\text{MPZ})\right\} \le 5052^{*}.$$

The sequence in which the punch cards are loaded to execute program XEKE is given in Fig. 5. The control cards ($ sign) may differ in form with various computer installations.

*When XEKE is run on digital computers with storage capacity other than 32,767 (IBM 7040, 7090, typically) these limits may change.

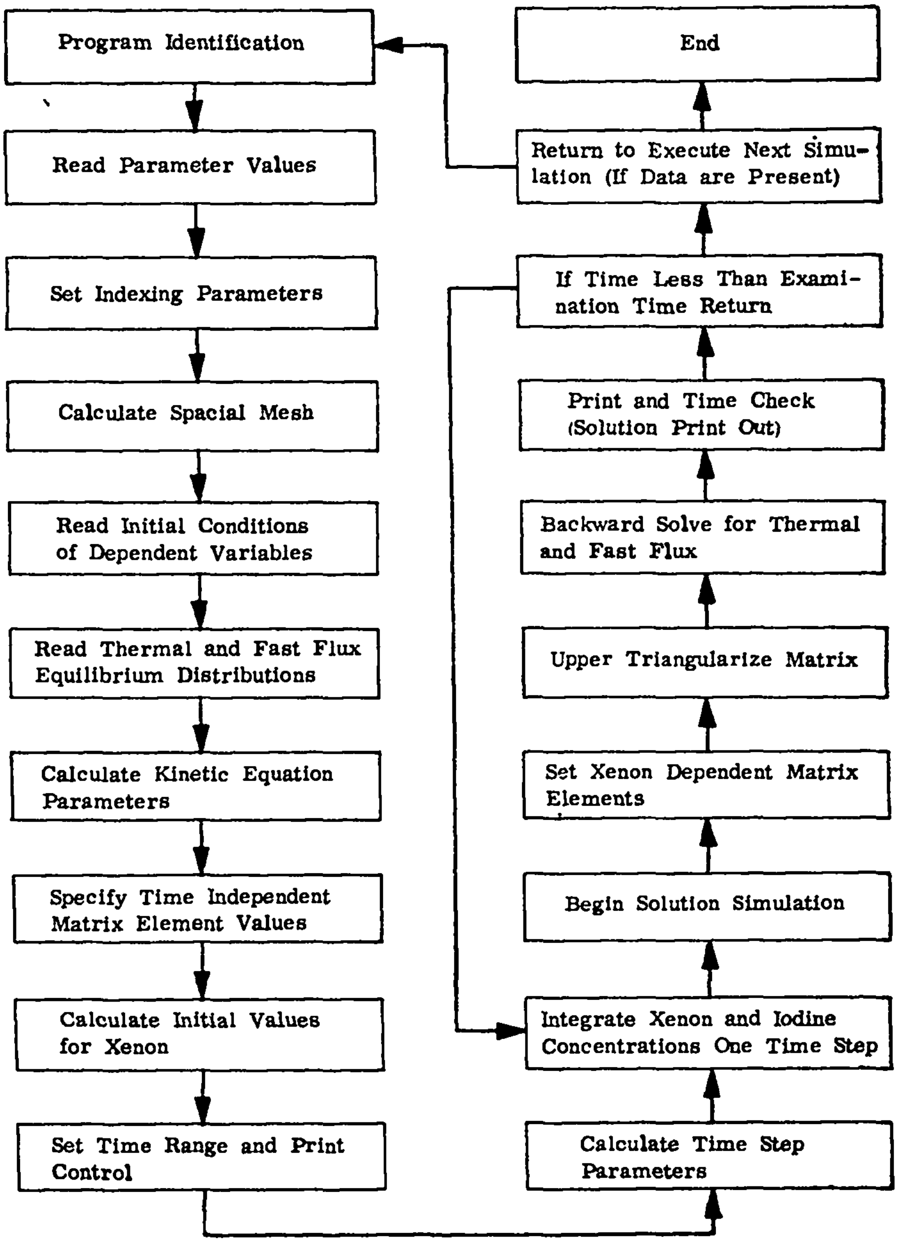


Fig. 4. Flow Diagram for Program XEKE.

```
             PROGRAM XEKE  (INPUT,OUTPUT,TAPE10=INPUT,TAPE9=OUTPUT)
        C
        C    ************************************************************
        C    SIMULATION OF THE SPACE AND TIME DEPENDENT KINETIC EQUATIONS
        C    FOR ANALYSIS OF XENON INDUCED FLUX INSTABILITIES IN NUCLEAR REACTORS
        C    EMPLOYS TWO ENERGY GROUPS OF NEUTRONS (TWO GROUP DIFFUSION THEORY)
        C    FOR TWO DIMENSIONAL INVESTIGATION OF REACTOR CORES WITH UNIFORM
        C    CYLINDRICAL GEOMETRY OR RECTANGULAR GEOMETRY
        C    ************************************************************
        C
        C    STORAGE ALLOCATION
        C
000043       DIMENSION  GL(7152), GU(7152), CR1(288), X(288), Y(288), C1R(288),
            1 B(287), C31(286), C32(287), C33(288), C34(287), C35(286), D(288),
            2  ZT(12,12),  ZF(12,12),     YA(12,12),   XAT(12,12),  XAF(12,12),
            3  AT(12,12),  AF(12,12),     YB(12,12),   DTT(12,12),  DFF(12,12),
            4  BT(12,12),  BF(12,12),     XM(12,12),   ETT(12,12),  EFF(12,12),
            5  CT(12,12),  CF(12,12),  RDERT(12,12),   FTT(12,12),  FFF(12,12),
            6  SF(12,12),  FT(12,12),  RDERF(12,12),   GTT(12,12),  GFF(12,12),
            7  XA(12,12),  XB(12,12),  ZDERT(12,12),   HTT(12,12),  HFF(12,12),
            8  XC(12,12),  XD(12,12),  ZDERF(12,12),   RFT(12,12),   XE(12,12),
            9  ET(14,14),  EF(14,14),  FMPRS(13),      ZTP(12,12),  ZFP(12,12)
        C
000043       EQUIVALENCE (XAT,GTT),(XAF,GFF),(FT,FFF,EFF),(SF,FTT,ETT),(XM,YA),
            1  (ZDERT,BT),(ZDERF,BF),(RDERT,DTT),(RDERF,DFF),(RFT,YB),(AT,ZTP),
            2  (AF,ZFP), (X,C33), (D,C1R), (B,CR1)
        C    ************************************************************
        C
        C    PROGRAM IDENTIFICATION
        C
000043       WRITE(9,34)
000046    34 FORMAT(1H1,95HXEKE IS A FORTRAN 4 CODED PROGRAM FOR INVESTIGATING
            1FLUX STABILITY IN THE PRESENCE OF XENON-135/1H ,127HUSES 2 GROUP D
            2IFFUSION THEORY AND EXAMINES 2 DIMENSIONS IN UNIFORM CYLINDRICAL G
            3EOMETRY OR 2 DIMENSIONS IN RECTANGULAR GEOMETRY/1H ,41H**SEE LASL
            4REPORT FOR PERTINENT DETAILS**)
000046       WRITE(9,61)
000051    61 FORMAT(1H ,39HCODED BY GARY M. SANDQUIST IN JULY 1966)
000051    66 READ (10,68)  (FMPRS(J),J=1,13)
000062    68 FORMAT(13A6)
000062       WRITE (9,69)  (FMPRS(J),J=1,13)
000073    69 FORMAT(1H0,13A6)
        C    ************************************************************
        C
        C    READ PARAMETER VALUES
        C
000073       READ (10,81) MPR,MPZ,HTR,HTZ,XLX,XLI,GX,GI,EX,EI,FN,SHTR,NGEMTY
000130    81 FORMAT(2I10,2F10.6,2E10.6,2F10.6/4F10.6,I10)
000130       WRITE(9,82)MPR,MPZ,HTR,HTZ,SHTR
000145    82 FORMAT(1H0,18HRADIAL MESH POINTS,9X,17HAXIAL MESH POINTS,7X,13HRAD
            1IAL LENGTH,16X,12HAXIAL LENGTH,9X,9HHTR START//1H ,I10,I25,2F28.5,
            2F20.8)
000145       WRITE(9,92)XLX,XLI,GX,GI,EX,EI,FN
000166    92 FORMAT(1H0,6X,3HXLX,12X,3HXLI,13X,2HGX,14X,2HGI,14X,2HEX,14X,2HEI,
            114X,2HFN//1H ,1P2E15.7,1P5E16.7)
000166       READ (10,97) ((SF(J,K),XAT(J,K),FT(J,K),XAF(J,K),J=1,MPR),K=1,MPZ)
000217    97 FORMAT(8E10.5)
000217       WRITE(9,99)((J,K,SF(J,K),XAT(J,K),FT(J,K),XAF(J,K),J=1,MPR),
            1   K=1,MPZ)
000253    99 FORMAT(1H0,5H R,Z ,7HSF(R,Z),6X,8HXAT(R,Z),5X,7HFT(R,Z),6X,
            1 8HXAF(R,Z),6X,4HR,Z ,7HSF(R,Z),6X,8HXAT(R,Z),5X,7HFT(R,Z),6X,
```

```
                2 8HXAF(R,Z)//(1H ,2I2,1X,1PE11.5,1P3E13.5,I4,I2,1X,1PE11.5,
                3 1P3E13.5))
          C     ****************************************************************
          C
          C      SET INDEXING PARAMETERS
          C
000253           MPRP2 = MPR + 2
000255           MPRM1 = MPR -1
000257           MPZP2 = MPZ + 2
000260           MPZM1 = MPZ - 1
000261           MPRD = 2 * MPR
000263           MPRDP1 = MPRD + 1
000264           MPRDP2 = MPRD + 2
000265           MPRDM1 = MPRD - 1
000267           MPRDM2 = MPRD - 2
000271           MPRDD3 = MPRD * (MPRD - 3)
000274           NEQ = MPRD * MPZ
000276           NEQM1 = NEQ-1
000300           NEQM2 = NEQ - 2
000302           NEQM3 = NEQ-3
000304           NEQMR = NEQ - MPRD
000306           NEQM1R =  NEQMR - 1
000310           NEQM2R =  NEQMR - 2
000312           NEQMR1 =  NEQMR + 1
000313           NEQMR2 =  NEQMR + 2
000314           NEQT = MPRDP1 * NEQM2
000316           NEQTM1  =  MPRDP1 * NEQM2  +  1
000321           NEQTM2  =  MPRDP1 * NEQM3  +  1
000324           NEQTMR  =  MPRDP1 * NEQMR  +  1
          C     ****************************************************************
          C
          C      CALCULATE SPACIAL MESH
          C
000327           FMPR = MPR
000330           FMPZ = MPZ
000332           HR = HTR/FMPR
000334           HZ = HTZ/FMPZ
000336           HRSQ = HR*HR
000337           HRZSQ = HRSQ/(HZ*HZ)
000342           DRDHR  = 2. * SHTR / HR
000344           WRITE(9,109) HR
000351       109 FORMAT(1H0,5X,28HRADIAL MESH SPACE STEP IS **,F12.8)
000351           WRITE(9,119) HZ
000356       119 FORMAT(1H0,5X,27HAXIAL MESH SPACE STEP IS **,F12.8)
          C     ****************************************************************
          C
          C      READ INITIAL CONDITIONS DEPENDENT VARIABLES
          C
000356       102 FORMAT(8F10.6)
000356           READ (10,102) ((ZT(J,K),J=1,MPR),K=1,MPZ)
000375           READ(10,102)((ZF(J,K),J=1,MPR),K=1,MPZ)
000414           READ (10,102) (Y(K),K=2,NEQ,2)
000426           WRITE(9,139)
000431       139 FORMAT(1H0,30X,44HINITIAL CONDITIONS NORMALIZED VARIABLES(R,Z)/
                1 1H ,4X,4H R,Z,26X,12HTHERMAL FLUX,13X,9HFAST FLUX,16X,6HIODINE,19X
                2,4H R,Z//)
000431           DO 67 K=1,MPZ
000433           DO 67 J=1,MPR
000434           L = MPRD*(K-1) +2*J
000442        67 WRITE(9,140)J,K,ZT(J,K),ZF(J,K),Y(L),J,K
000474       140 FORMAT(1H ,4X,2I2,26X,F10.8,15X,F10.8,15X,F10.8,15X,2I2)
          C     ****************************************************************
```

```
          C
          C     READ THERMAL AND FAST EQUILIBRIUM FLUX DISTRIBUTIONS
          C
000474       200 FORMAT(8E10.5)
000474           READ (10,200) ((ET(J,K),J=1,MPRP2),K=1,MPZP2)
000513           WRITE(9,202)((J,K,ET(J,K),J=1,MPRP2),K=1,MPZP2)
000536       202 FORMAT(1H0,30X,75HEQUILIBRIUM VALUES THERMAL FLUX TIMES MICROSCOPI
                1C  XENON CROSS SECTION(R,Z)//(I3,I2,1X,1PE9.3,7(I4,I2,1X,1PE9.3)))
000536           READ (10,200) ((EF(J,K),J=1,MPRP2),K=1,MPZP2)
000555           WRITE(9,208)((J,K,EF(J,K),J=1,MPRP2),K=1,MPZP2)
000600       208 FORMAT(1H0,30X,71HEQUILIBRIUM VALUES FAST FLUX TIMES MICROSCOPIC X
                1ENON CROSS SECTION(R,Z)//    (I3,I2,1X,1PE9.3,7(I4,I2,1X,1PE9.3)))
          C      ******************************************************************
          C
          C     CALCULATE KINETIC EQUATION PARAMETERS
          C
000600           IF(NGEMTY.EQ.1) GO TO 57
000602           DO 48 J=1,MPR
000604           DJM1  =  2 * J - 1
000610        48 FMPRS(J)=1./(DJM1+DRDHR)
000615           WRITE(9,49)
000620        49 FORMAT(1H1,33HEXAMINATION VOLUME IS CYLINDRICAL)
000620           GO TO 62
000621        57 DO 58 J=1,MPR
000623        58 FMPRS(J)=0.0
000627           WRITE(9,59)
000632        59 FORMAT(1H1,33HEXAMINATION VOLUME IS RECTANGULAR)
000632        62 DO 717 J=1,MPR
000634           ZDERT(J,1) = (ET(J,2)-ET(J,MPZP2))/(2,*ET(J,1))
000644       717 ZDERF(J,1) = (EF(J,2)-EF(J,MPZP2))/(2,*EF(J,1))
000654           DO 43 K=1,MPZ
000656           DO 43 J=2,MPR
000657           RDERT(J,K)= (ET(J+1,K)-ET(J-1,K))/(2.*ET(J,K))
000672        43 RDERF(J,K)= (EF(J+1,K)-EF(J-1,K))/(2.*EF(J,K))
000706           DO 42 K=2,MPZ
000710           DO 42 J=1,MPR
000711           ZDERT(J,K)= (ET(J,K+1)-ET(J,K-1))/(2.*ET(J,K))
000724        42 ZDERF(J,K)= (EF(J,K+1)-EF(J,K-1))/(2.*EF(J,K))
000740           DO  603  K=1,MPZ
000742           RDERT(1,K) =(ET(2,K)-ET(MPRP2,K))/(2.*ET(1,K))
000755           RDERF(1,K) =(EF(2,K)-EF(MPRP2,K))/(2.*EF(1,K))
000766           DO 603 J=1,MPR
000767           RFT(J,K)=EF(J,K)/ET(J,K)
000776           XM(J,K)=(ET(J,K)+(GX*EX+GI*EI)*EF(J,K))/(ET(J,K)+FN*EF(J,K)+XLX)
001015           XA(J,K)  =   FN * EF(J,K)
001020           XB(J,K)  =   ET(J,K) / XM(J,K)
001025           XC(J,K)  =   RFT(J,K) * (GX*EX + GI*EI)
001033           XD(J,K)  =   GI * XB(J,K)
001035           XE(J,K)  =   EI * RFT(J,K)
001040           CT(J,K) =  (1.+FMPRS(J)+ RDERT(J,K))
001044           CF(J,K) =  (1,+FMPRS(J)+ RDERF(J,K))
001050           DTT(J,K)=  (1,-FMPRS(J)- RDERT(J,K))
001054           DFF(J,K)=  (1,-FMPRS(J)- RDERF(J,K))
001060           AT(J,K) =(1, + ZDERT(J,K))*HRZSQ
001064           AF(J,K) =(1, + ZDERF(J,K))*HRZSQ
001067           BT(J,K) =(1, - ZDERT(J,K))*HRZSQ
001073           BF(J,K) =(1. - ZDERF(J,K))*HRZSQ
001076           FTT(J,K) = SF(J,K)*RFT(J,K)*HRSQ
001103           FFF(J,K) = FT(J,K)*HRSQ/RFT(J,K)
001106           GTT(J,K) = XAT(J,K)*XM(J,K)*HRSQ
001113           GFF(J,K) = XAF(J,K)*XM(J,K)*HRSQ
001116           HTT(J,K) = 2.*(1,+HRZSQ) + FTT(J,K)
```

```
001124      603 HFF(J,K) = 2.*(1.+HRZSQ) + FFF(J,K)
          C     ******************************************************************
          C
          C     SPECIFY MATRIX ELEMENT VALUES
          C
001137          DO 608 K=1,MPZ
001140          DO  608  J=1,MPRM1
001141          L= MPRD*(K-1)+ 2*J -1
001147          C35(L)     =  CT(J,K)
001153          C35(L+1)    =  CF(J,K)
001156          C34(L)    = FTT(J,K)
001160          C34(L+1)    =  0.0
001161          C31(L)     =  DTT(J+1,K)
001163          C31(L+1)    =  DFF(J+1,K)
001165          C32(L)    = FFF(J,K)
001167      608 C32(L+1)    =  0.0
001174          DO 443 K=1,MPZM1
001176          N = MPRD*K
001200          C34(N-1)    = FTT(MPR,K)
001204          C34(N)      = 0.0
001205          C31(N-1)  = 0.0
001206          C31(N)      = 0.0
001207          C32(N)      = 0.0
001210          C32(N-1)    = FFF(MPR,K)
001212          C35(N)      = 0.0
001213      443 C35(N-1)    = 0.0
001216          C34(NEQM1)    = FTT(MPR,MPZ)
001222          C32(NEQM1)    =  FFF(MPR,MPZ)
001224          DO 602 K=1,MPZM1
001226          DO 602 J=1,MPR
001227          L= MPRD*(K-1) + 2*J - 1
001235          C1R(L)    =   AT(J,K)
001241          C1R(L+1)    = AF(J,K)
001244          CR1(L)    =   BT(J,K+1)
001246      602 CR1(L+1)    = BF(J,K+1)
001254          DO 609 J=1,MPR
001256          JPRZMR = 2*J + NEQM1R
001262          D(JPRZMR) = -AT(J,MPZ)
001266      609 D(JPRZMR+1)=-AF(J,MPZ)
001273          GL(2) = C32(1)
001274          GL(3) = C31(1)
001276          DO 1 K=1,NEQMR
001277          M  =  MPRDP1 * K
001301        1 GL(M)   =   CR1(K)
001305          DO 2 K=1,MPRDM2
001307          KM1 = K - 1
001311          L=MPRDP1 * KM1 + 3
001314        2 GL(L) = C31(K)
          C     ******************************************************************
          C
          C     CALCULATE INITIAL CONDITIONS FOR XENON
          C
001321          DO 237 K=2,MPZM1
001322          L = MPRD*(K-1)+ 1
001326          N = L + MPRDM2
001330          Y(L)   = 1. +(CT(1,K)*ZT(2,K) +(DTT(1,K)- HTT(1,K))*ZT(1,K)+AT(1,K)
              1  *ZT(1,K+1) +BT(1,K) * ZT(1,K-1) +FTT(1,K)*ZF(1,K))/(GTT(1,K) *
              2  ZT(1,K))
001362          DO 238 J=2,MPRM1
001363          M = L +2*J-2
001367      238 Y(M)   = 1. +(CT(J,K)*ZT(J+1,K)+DTT(J,K)*ZT(J-1,K)-HTT(J,K)*ZT(J,K)
              1  +AT(J,K)*ZT(J,K+1) + BT(J,K)  *ZT(J,K-1) +FTT(J,K)*ZF(J,K))/
```

```
                2  (GTT(J,K)*ZT(J,K))
001431      237 Y(N)      = 1.+((CT(MPR,K)-HTT(MPR,K))*ZT(MPR,K) +DTT(MPR,K)*ZT(MPR
               1   M1,K) + AT(MPR,K)*ZT(MPR,K+1)+ BT(MPR,K)   *ZT(MPR,K-1)    +
               2   FTT(MPR,K)*ZF(MPR,K))/(GTT(MPR,K)*ZT(MPR,K))
001465              DO 239  J=2,MPRM1
001466              Y(2*J-1)=1.+(CT(J,1)*ZT(J+1,1) +DTT(J,1)*ZT(J-1,1)-(HTT(J,1)-BT(J,
               1    1))*ZT(J,1) + AT(J,1)*ZT(J,2) +FTT(J,1)*ZF(J,1))/(GTT(J,1)*
               2    ZT(J,1))
001512              I = 2*J + NEQM1R
001515      239 Y(I)      = 1. +(CT(J,MPZ)*ZT(J+1,MPZ)+ DTT(J,MPZ)*ZT(J-1,MPZ)
               1  -  HTT(J,MPZ)*ZT(J,MPZ) +AT(J,MPZ) + BT(J,MPZ)*ZT(J,MPZM1)
               2  + FTT(J,MPZ)*ZF(J,MPZ))/(GTT(J,MPZ)*ZT(J,MPZ))
001556              Y(1)  =  1.+(CT(1,1)*ZT(2,1)+(DTT(1,1)-HTT(1,1)+BT(1,1))*ZT(1,1)
               1    + AT(1,1)*ZT(1,2) + FTT(1,1)*ZF(1,1))/(GTT(1,1)*ZT(1,1))
001574              Y(MPRDM1)= 1. +((CT(MPR,1)-HTT(MPR,1)+BT(MPR,1))*ZT(MPR,1)+DTT(MPR
               1    ,1)*ZT(MPRM1,1) +AT(MPR,1)*ZT(MPR,2) + FTT(MPR,1)*ZF(MPR,1))/
               2    (GTT(MPR,1)*ZT(MPR,1))
001614              Y(NEQMR1)=1. +(CT(1,MPZ)*ZT(2,MPZ)+(DTT(1,MPZ)-HTT(1,MPZ))*ZT(1,MP
               1    Z) + AT(1,MPZ) +BT(1,MPZ)*ZT(1,MPZM1) + FTT(1,MPZ)*ZF(1,MPZ))/
               2   (GTT(1,MPZ)*ZT(1,MPZ))
001643              Y(NEQM1)    = 1. + ((CT(MPR,MPZ)-HTT(MPR,MPZ))*ZT(MPR,MPZ) +DTT(MPR
               1   ,MPZ)*ZT(MPRM1,MPZ) +AT(MPR,MPZ) + BT(MPR,MPZ)*ZT(MPR,MPZM1)
               2 + FTT(MPR,MPZ)*ZF(MPR,MPZ))/(GTT(MPR,MPZ)*ZT(MPR,MPZ))
          C         ******************************************************************
          C
          C         SET TIME RANGE AND PRINT CONTROL
          C
001673              READ (10,301) TMIN, DT, TMAX, UPLF, NPRT
001710      301 FORMAT(4E10.5,I10)
001710              WRITE(9,303)TMIN,DT,TMAX,UPLF,NPRT
001725      303 FORMAT(1H0,8X,10HTIME START,10X,9HTIME STEP,11X,8HTIME END,12X,
               1 10HFLUX LIMIT,18X,13HPRINT CONTROL//(1H ,1P4E20,6,I20))
001725              T=TMIN
          C         ******************************************************************
          C
          C         CALCULATE TIME STEP PARAMETERS
          C
001727              DTXLI = - DT * XLI
001731              EXLI = EXP (DTXLI)
001733              OMEXI = 1. - EXLI
001735              DO 321 J=1,MPR
001736              DO 321 K=1,MPZ
001737              ZTP(J,K)   =   ZT(J,K)
001744              ZFP(J,K)   =   ZF(J,K)
001747              YA(J,K)    =   OMEXI / (1. + EI*RFT(J,K))
001754      321 YB(J,K)    =   EI   * RFT(J,K) * YA(J,K)
001764              GOTO 213
          C         ******************************************************************
          C
          C         INTEGRATE XENON AND IODINE CONCENTRATIONS
          C
001765      350 T   =   T  +  DT
001767              NSTEPS=NSTEPS+1
001771              DO 71 K=1,MPZ
001772              KM1   = K - 1
001774              DO 71 J=1,MPR
001775              ZTC   =   (3. * ZT(J,K)   -   ZTP(J,K)) * .5
002004              ZFC   =   (3. * ZF(J,K)   -   ZFP(J,K)) * .5
002012              TOTLD = ET(J,K)   *   ZTC + XA(J,K)   *   ZFC + XLX
002022              XLDT = - DT * TOTLD
002024              EXLX = EXP(XLDT)
002027              L = MPRD *   KM1   + 2*J - 1
```

```
002035          Y(L)  =  Y(L) * EXLX
               1  +XB(J,K) * (  ZTC   + XC(J,K)   *   ZFC ) * (1. - EXLX)/TOTLD
               2  +XD(J,K)*( Y(L+1) - ZTC +XE(J,K)*( Y(L+1) - ZFC ))*(EXLI-EXLX)/
               3  (TOTLD - XLI)
002072       71 Y(L+1) = Y(L+1)* EXLI + YA(J,K)   *  ZTC   + YB(J,K) * ZFC
          C     ****************************************************************
          C
          C     ****************************************************************
          C     BEGIN SOLUTION SIMULATION (BANACHIEWICZ-CHOLESKY-CROUT SCHEME)
          C     ****************************************************************
          C
          C     SET TIME DEPENOENT (THRU XENON) MATRIX ELEMENTS
          C
002107          DO 619 K=1,MPZ
002111          KM1  = K - 1
002113          DO 619 J=1,MPR
002114          L = MPRD *  KM1  + 2*J - 1
002122          ETT(J,K) =  GTT(J,K)*(1. - Y(L))   - HTT(J,K)
002132      619 EFF(J,K) =  GFF(J,K)*( 1. - Y(L))   - HFF(J,K)
002146          C33(1)  =  ETT(1,1) + DTT(1,1) + BT(1,1)
002151          C33(2) = EFF(1,1) + DFF(1,1) + BF(1,1)
002154          DO 613  J=2,MPRM1
002155          C33(2*J-1)      =  ETT(J,1) + BT(J,1)
002162      613 C33(2*J)     =  EFF(J,1) + BF(J,1)
002170          C33(MPRDM1)       =  ETT(MPR,1) +  CT(MPR,1) + BT(MPR,1)
002174          C33(MPRD)    =  EFF(MPR,1) +   CF(MPR,1)   + BF(MPR,1)
002200          DO 612 K=2,MPZ
002202          L= MPRD*(K-1)
002205          LPMPRD  = MPRD     +L
002207          C33(L+1)    = ETT(1,K) +  DTT(1,K)
002214          C33(L+2)    = EFF(1,K) +  DFF(1,K)
002217          C33(LPMPRD-1)          =  ETT(MPR,K)   +  CT(MPR,K)
002223          C33(LPMPRD)            =  EFF(MPR,K)   +  CF(MPR,K)
002226          DO  612   J=2,MPRM1
002230          JDBPL  =  L  +  2  *  J
002233          C33(JDBPL-1)        =  ETT(J,K)
002237      612 C33(JDBPL)      =  EFF(J,K)
          C     ****************************************************************
          C
          C     BEGIN UPPER TRIANGULARIZATION OF MATRIX
          C
002246          GL(1) = C33(1)
002247          RGL   = 1./C33(1)
002251          GU(2) = C34(1)*RGL
002252          GU(3) = C35(1)*RGL
002254          GU(MPRDP1) = C1R(1)*RGL
002256          L = MPRDP2
002257          GL(L) = C33(2) - GL(2)*GU(2)
002263          RGL = 1./GL(L)
002265          GL(L+1) = C32(2) - GL(3)*GU(2)
002270          GU(L+1) = (C34(2) - GL(2)*GU(3))*RGL
002274          GU(L+2) = C35(2)*RGL
002276          N = L + MPRDM1
002300          GL(N) = - GL(MPRDP1)*GU(2)
002303          GU(N) = - GL(2)*GU(MPRDP1)*RGL
002306          LPD = L + MPRD
002310          GU(LPD) = C1R(2)*RGL
002312          GL(MPRDD3) = 0.
002313          GU(MPRDD3) = 0.
002314          DO 20  K=3,MPRDM2
002316          KM1 = K-1
002320          KM2 = K - 2
```

```
002322         L= MPRDP1* KM1  + 1
002325         SUMK  = 0.
002326         DO 15 J=KM2,KM1
002330         M = MPRD * (J-1) + K
002334      15 SUMK  = SUMK  + GL(M)*GU(M)
002342         GL(L) = C33(K) -  SUMK
002345         RGL   = 1./GL(L)
002347         M = MPRD * KM2 + K
002353         GL(L+1) =  C32(K) - GL(M+1)*GU(M)
002357         GU(L+1) = (C34(K) - GL(M)*GU(M+1))*RGL
002364         GU(L+2) =  C35(K) * RGL
002367         IMK = MPRDP1 - K
002370         DO 10  I=IMK,MPRDM2
002371         N  =  L + I
002373         SUMK1 = 0.
002374         SUM1K = 0.
002375         DO  5 J=KM2,KM1
002377         M = MPRD * (J-1) + K
002403         MPI = M + I
002405         SUMK1  = SUMK1 +  GL(MPI)*GU(M)
002410       5 SUM1K  = SUM1K +  GL(M)*GU(MPI)
002416         GL(N) =  - SUMK1
002420      10 GU(N) =  - SUM1K*RGL
002425         N = L + MPRDM1
002427         M = MPRD * KM2 + K
002433         MPI = M + MPRDM1
002434         GL(N) = - GL(MPI)*GU(M)
002437         GU(N) = - GL(M)*GU(MPI)*RGL
002443         LPD  =  L  +  MPRD
002445      20 GU(LPD) = C1R(K) * RGL
002452         DO 40  K=MPRDM1,MPRD
002454         KM1 =  K-1
002456         KM2 = K - 2
002460         L= MPRDP1* KM1  + 1
002463         SUMK  = 0.
002464         SUMK1 = 0.
002465         SUM1K = 0.
002466         SUMK2 = 0.
002467         SUM2K = 0.
002470         DO 35  J=KM2,KM1
002472         M = MPRD * (J-1) + K
002476         SUMK   = SUMK  +  GL(M)*GU(M)
002501         SUMK1  = SUMK1 +  GL(M+1)*GU(M)
002504         SUM1K  = SUM1K +  GL(M)*GU(M+1)
002507         SUMK2  = SUMK2 +  GL(M+2)*GU(M)
002512      35 SUM2K  = SUM2K +  GL(M)*GU(M+2)
002520         GL(L)    = C33(K) -  SUMK
002523         RGL      = 1./GL(L)
002525         GL(L+1) = C32(K) -  SUMK1
002530         GU(L+1) =(C34(K) -  SUM1K)*RGL
002533         GL(L+2) = C31(K) -  SUMK2
002536         GU(L+2) =(C35(K) -  SUM2K)*RGL
002541         DO 30  I=3,MPRDM2
002543         N  = L + I
002545         SUMK1 = 0.
002546         SUM1K = 0.
002547         DO 25 J=KM2,KM1
002551         M = MPRD * (J-1) + K
002555         MPI = M + I
002557         SUMK1  =  SUMK1  + GL(MPI)*GU(M)
002562      25 SUM1K  =  SUM1K  + GL(M)*GU(MPI)
002570         GL(N) =  - SUMK1
```

```
002572      30 GU(N) =   - SUM1K*RGL
002577         N = L + MPRDM1
002601         M = MPRD * KM2 + K
002605         MPI = M + MPRDM1
002606         GL(N) = - GL(MPI)*GU(M)
002611         GU(N) = - GL(M)*GU(MPI)*RGL
002615         LPD  = L + MPRD
002617      40 GU(LPD)  =   C1R(K) * RGL
002623         DO 60  K=MPRDP1,NEQMR
002625         KM1 =  K-1
002627         L= MPRDP1* KM1  + 1
002631         SUMK  = 0,
002632         SUMK1 = 0.
002633         SUM1K = 0.
002634         SUMK2 = 0.
002635         SUM2K = 0.
002636         JL   = K - MPRD
002640         DO  55 J=JL,KM1
002641         M = MPRD * (J-1) + K
002645      55 SUMK  = SUMK  + GL(M)*GU(M)
002653         JLP1 =  JL + 1
002655         DO 54  J=JLP1,KM1
002656         M = MPRD * (J-1) + K
002662         SUMK1 =  SUMK1 +  GL(M+1)*GU(M)
002665      54 SUM1K =  SUM1K +  GL(M)*GU(M+1)
002673         JLP2  =  JL + 2
002675         DO 53  J=JLP2,KM1
002676         M = MPRD * (J-1) + K
002702         SUMK2 = SUMK2  +  GL(M+2)*GU(M)
002705      53 SUM2K = SUM2K  +  GL(M)*GU(M+2)
002713         GL(L)    = C33(K) -  SUMK
002716         RGL      = 1,/GL(L)
002720         GL(L+1) = C32(K) -  SUMK1
002723         GU(L+1) =(C34(K) -  SUM1K)*RGL
002726         GL(L+2) = C31(K) -  SUMK2
002731         GU(L+2) =(C35(K) -  SUM2K)*RGL
002734         DO 50  I=3,MPRDM1
002736         N = L + I
002740         SUMK1 = 0,
002741         SUM1K = 0.
002742         JLPI = JL + I
002743         DO 45 J=JLPI,KM1
002744         M = MPRD * (J-1) + K
002750         MPI = M + I
002752         SUMK1  =  SUMK1  + GL(MPI)*GU(M)
002755      45 SUM1K  =  SUM1K  + GL(M)*GU(MPI)
002763         GL(N) =  -SUMK1
002765      50 GU(N) =  - SUM1K*RGL
002772         LPD  = L + MPRD
002774      60 GU(LPD)  =  C1R(K) * RGL
003001         DO 80  K=NEQMR1,NEQM3
003003         KM1 =  K-1
003005         L= MPRDP1* KM1  + 1
003007         SUMK  = 0,
003010         SUMK1 = 0.
003011         SUM1K = 0.
003012         SUMK2 = 0.
003013         SUM2K = 0,
003014         JL   = K - MPRD
003016         DO  75 J=JL,KM1
003017         M = MPRD * (J-1) + K
003023      75 SUMK  = SUMK  + GL(M)*GU(M)
```

```
003031         JLP1 =  JL + 1
003033         DO 74  J=JLP1,KM1
003034         M = MPRD * (J-1) + K
003040         SUMK1 =  SUMK1 +  GL(M+1)*GU(M)
003043      74 SUM1K =  SUM1K +  GL(M)*GU(M+1)
003051         JLP2  =  JL + 2
003053         DO 73  J=JLP2,KM1
003054         M = MPRD * (J-1) + K
003060         SUMK2 = SUMK2  +  GL(M+2)*GU(M)
003063      73 SUM2K = SUM2K  +  GL(M)*GU(M+2)
003071         GL(L)    = C33(K) -  SUMK
003074         RGL      = 1./GL(L)
003076         GL(L+1) = C32(K) -  SUMK1
003101         GU(L+1) =(C34(K) -  SUM1K)*RGL
003104         GL(L+2) = C31(K) -  SUMK2
003107         GU(L+2) =(C35(K) -  SUM2K)*RGL
003112         NEQMK  =  NEQ - K
003114         DO 80 I=3,NEQMK
003115         N  =  L  +  I
003117         SUMK1  =  0.
003120         SUM1K  =  0.
003121         JLPI  =  JL + I
003122         DO  65  J=JLPI,KM1
003123         M = MPRD * (J-1) + K
003127         MPI  =  M + I
003131         SUMK1  =  SUMK1  +  GL(MPI)*GU(M)
003134      65 SUM1K  =  SUM1K  +  GL(M)*GU(MPI)
003142         GL(N)  =  -SUMK1
003144      80 GU(N)  =  -SUM1K*RGL
003154         B(NEQMR1)  =  D(NEQMR1)/GL(NEQTMR)
003157         DO 89 K=NEQMR2,NEQM3
003161         KM1  =  K - 1
003163         L  =  MPRDP1 * KM1 + 1
003165         SUMKB = 0.
003166         DO 88 J=NEQMR1,KM1
003170         M = MPRD * (J-1) + K
003174      88 SUMKB = SUMKB + GL(M)*B(J)
003202      89 B(K) = (D(K) - SUMKB)/GL(L)
003210         SUMK   = 0.
003211         SUMKB = 0.
003211         SUMK1  = 0.
003212         SUM1K  = 0.
003213         SUMK2  = 0.
003214         SUM2K  = 0.
003215         DO 85  J=NEQM2R,NEQM3
003217         M  =  MPRD   * (J-1) + NEQM2
003223      85 SUMK    =  SUMK  +  GL(M)*GU(M)
003231         DO 87  J = NEQMR1,NEQM3
003233         M = MPRD * (J-1) + NEQM2
003237      87 SUMKB = SUMKB + GL(M)*B(J)
003245         DO 84 J = NEQM1R,NEQM3
003247         M  =  MPRD   * (J-1) + NEQM2
003253         SUMK1  =  SUMK1 + GL(M+1)*GU(M)
003256      84 SUM1K  = SUM1K  + GL(M)*GU(M+1)
003264         DO 83 J =NEQMR,NEQM3
003266         M  =  MPRD   * (J-1) + NEQM2
003272         SUMK2  =  SUMK2  + GL(M+2)*GU(M)
003275      83 SUM2K  =  SUM2K  + GL(M)*GU(M+2)
003303         GL(NEQTM2)  =  C33(NEQM2)  -  SUMK
003306         RGL  =  1./GL(NEQTM2)
003310         B(NEQM2)  =  (D(NEQM2) - SUMKB)*RGL
003314         GL(NEQTM2+1)  =  C32(NEQM2)  -  SUMK1
```

```
003317          GU(NEQTM2+1)  = (C34(NEQM2)   -  SUM1K)*RGL
003322          GL(NEQTM2+2)  =  C31(NEQM2)   -  SUMK2
003325          GU(NEQTM2+2)  = (C35(NEQM2)   -  SUM2K)*RGL
003330          SUMK  =  0.
003331          SUMKB = 0.
003332          SUMK1  = 0.
003333          SUM1K  = 0.
003333          DO 90 J=NEQM1R,NEQM2
003335          M = MPRD  * (J-1) + NEQM1
003341       90 SUMK = SUMK  + GL(M)*GU(M)
003347          DO 91 J=NEQMR1,NEQM2
003351          M = MPRD * (J-1) + NEQM1
003355       91 SUMKB = SUMKB + GL(M)*B(J)
003363          DO 93 J=NEQMR,NEQM2
003365          M = MPRD  * (J-1) + NEQM1
003371          SUMK1  =  SUMK1  +  GL(M+1)*GU(M)
003374       93 SUM1K  =  SUM1K  +  GL(M)*GU(M+1)
003402          GL(NEQTM1) =  C33(NEQM1) -  SUMK
003405          RGL  =  1./GL(NEQTM1)
003407          B(NEQM1)  = (D(NEQM1) - SUMKB)*RGL
003413          GL(NEQTM1+1)  =  C32(NEQM1) - SUMK1
003416          GU(NEQTM1+1)  = (C34(NEQM1) -SUM1K)*RGL
003421          SUMK  =  0.
003422          SUMKB = 0.
003423          DO  95  J=NEQMR,NEQM1
003425          M = MPRD  * (J-1) +  NEQ
003431       95 SUMK  =  SUMK  +  GL(M)*GU(M)
003437          DO 96 J=NEQMR1,NEQM1
003441          M = MPRD * (J-1) + NEQ
003445       96 SUMKB = SUMKB + GL(M)*B(J)
003453          GL(NEQT)  =  C33(NEQ)  -  SUMK
       C        ***************************************************************
       C
       C        ***************************************************************
       C        UPPER TRIANGULARIZATION OF MATRIX COMPLETE
       C        ***************************************************************
       C
       C        BEGIN BACKWARD SOLUTION FOR FAST AND THERMAL FLUX
       C
003456          X(NEQ)  =  (D(NEQ) - SUMKB)/GL(NEQT)
003462          DO  300  I=1,MPRDM1
003464          M  =  NEQ - I
003466          MM1  = M - 1
003470          SUMK  =  0.
003471          DO 310  J=1,I
003472          JPM= J + M
003474          N  =  MPRD *  MM1  + JPM
003477      310 SUMK  =  SUMK  +  GU(N) * X(JPM)
003505      300 X(M)  =  B(M)  - SUMK
003512          DO 320 I=MPRD,NEQM1
003514          M  =  NEQ - I
003516          MM1  = M - 1
003520          SUMK  =  0.
003521          DO 330 J=1,MPRD
003522          JPM  =  J + M
003524          N  =  MPRD *  MM1  + JPM
003527      330 SUMK  =  SUMK + GU(N) * X(JPM)
003535      320 X(M)  =  -SUMK
003541          DO 18 K=1,MPZ
003543          KM1  = K - 1
003545          DO 18 J=1,MPR
003546          ZTP(J,K)  =  ZT(J,K)
```

```
003553          ZFP(J,K)  =  ZF(J,K)
003556          L = MPRD *  KM1  + 2*J - 1
003564          ZT(J,K)=X(L)
003566       18 ZF(J,K)=X(L+1)
          C     ****************************************************************
          C
          C     ****************************************************************
          C     SOLUTION FOR FAST AND THERMAL FLUX COMPLETE
          C     ****************************************************************
          C
          C     SOLUTION PRINT OUT AND TIME CHECK
          C
003575          IF(NSTEPS.LT.NPRT) GOTO 350
003577      213 THRS = T /3600.
003601          WRITE(9,401)
003604      401 FORMAT(1H0,1X,15HMESH POINT(R,Z),1X,12HTHERMAL FLUX,11X ,9HFAST FL
               1UX,14X,5HXENON,18X,6HIODINE)
003604          WRITE(9,411) T,THRS
003613      411 FORMAT(1H0,44H ELAPSED XENON TIME SINCE PERTURBATION **** ,F12.2,1
               1X,7HSECONDS,5X,5H**** ,F10.4,1X,5HHOURS/)
003613          DO 408 K=1,MPZ
003615          KM1 = K - 1
003617          DO 408 J=1,MPR
003620          L = MPRD* KM1  + 2*J -1
003626      408 WRITE(9,410) J,K,ZT(J,K),ZF(J,K),Y(L),Y(L+1),J,K
003662      410 FORMAT(1H ,2I2,4F23.8,I18,I2)
003662          NSTEPS=0
003663          IF  ((ZT(1,1).LT.0.0).OR.(ZT(1,1).GE.UPLF))   GOTO 86
003671          IF(T.LT.TMAX) GOTO 350
          C     ****************************************************************
          C
          C     RETURN TO EXECUTE NEXT SIMULATION (IF DATA IS PRESENT)
          C
003673          GOTO 66
003673       86 WRITE (9,222)
003676     222  FORMAT (1H1,33HLIMITS ON FLUX HAVE BEEN EXCEEDED  )
003676          GOTO 66
003677          END
```

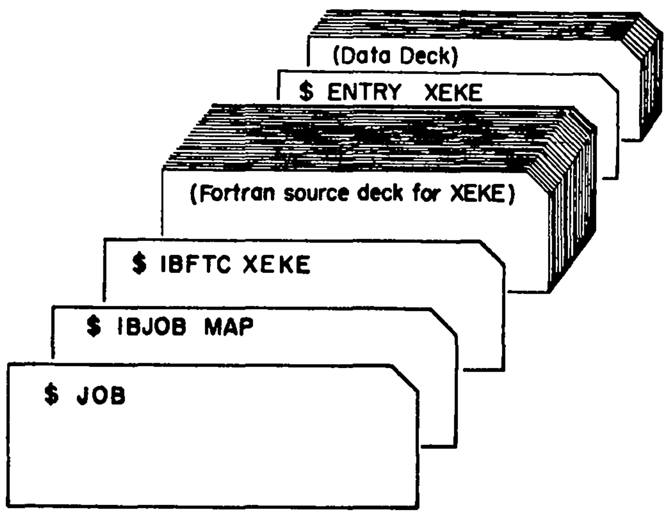


Fig. 5. Deck Loading Sequence to Execute Program XEKE.

The correspondence between program XEKE variables and parameters with those given in Eqs. (5), (11), and (12) is as follows:

MPR is the number of uniform spacial mesh points along the radial dimension under investigation (limits $2 \le MPR \le 33$).

MPZ is the number of uniform spacial mesh points along the axial dimension under investigation (limits $2 \le MPZ \le 168$).

HTR is the length (cm) of the radial dimension under investigation.

HTZ is the length (cm) of the axial dimension under investigation.

SHTR is the radial length (cm) at which the radial length, HTR, under investigation begins (i.e., $0 \le SHTR \le r \le HTR + SHTR$).

NGEMTY is a geometry control variable. If NGEMTY = 0, then the examination geometry is cylindrical. If NGEMTY = 1, then the examination geometry is rectangular.

UPLF is the upper limit control setting for the thermal flux. If at any time the thermal flux is less than zero or equals or exceeds UPLF, that program is terminated.

TMIN is the initial value for the time variable (sec) $TMIN \le t$.

$DT = t_2 - t_1 = \Delta t$ is the uniform incremental time step (sec) over which the xenon and iodine equations are integrated.

TMAX is the final value for the time variable (sec) $TMAX \ge t$.

NPRT is a print control variable and permits printing of the output data on the dependent variables after a given number (NPRT) of stepwise integrations of the xenon kinetic equations.

$ZT(J,K) = \phi_1(r,z,t)$ is the thermal flux (dependent variable) for $TMIN \le t \le TMAX$ and $0 \le SHTR \le r \le SHTR + HTR$ and $0 \le z \le HTZ$ in uniform space steps determined by MPR and MPZ, respectively.

$ZF(J,K) = \phi_2(r,z,t)$ is the fast flux (dependent variable) for the same range as ZT(J,K) for the independent variables.

$Y(2{*}J - 1) = x(r,z,t)$ is the ^{135}Xe concentration (dependent variable) for the same range as ZT(J,K) for the independent variables, with $1 \le J \le (MPR)(MPZ)$.

$Y(2{*}J) = i(r,z,t)$ is the ^{135}I concentration (dependent variable) for the same range as ZT(J,K) for the independent variables with $1 \le J \le (MPR)(MPZ)$.

$$ET(J,K) = \lambda_{10}(r,z) = \sigma_x \Phi_{10}(r,z)\,(sec^{-1})$$

for

$$0 \leq SHTR - \frac{HTR}{2(MPR)} \leq r \leq HTR + SHTR + \frac{HTZ}{2(MPZ)}$$

and

$$-\frac{HTZ}{2(MPZ)} \leq z \leq HTZ + \frac{HTR}{2(MPZ)}$$

with

$$1 \leq J \leq MPR + 2 \text{ and } 1 \leq K \leq MPZ + 2 \;.$$

$EF(J,K) = \lambda_{20}(r,z) = \sigma_x \Phi_{20}(r,z)\,(sec^{-1})$ for same range as ET(J,K) for the independent variables

$$SF(J,K) = \left(\frac{\Sigma_s}{D_1}\right)(j,k)\,(cm^{-2})$$

$$XAT(J,K) = \left(\frac{\overline{\gamma}\Sigma_f}{D_1}\right)(j,k)\,(cm^{-2})$$

$$FT(J,K) = \left(\frac{\nu\Sigma_f}{D_2}\right)(j,k)\,(cm^{-2})$$

$$XAF(J,K) = \left(\frac{\overline{\gamma}\eta\Sigma_f}{D_2}\right)(j,k)\,(cm^{-2})$$

$$XLX = \lambda_x \;(sec^{-1})$$

$$XLI = \lambda_i \;(sec^{-1})$$

$$GX = \gamma_x$$

$$GI = \gamma_i$$

$$EX = \varepsilon_x$$

$$EI = \varepsilon_i$$

$FN = \eta$

$RFT(J,K) = 1/\omega_{12} (j,k)$

$XM(J,K) = M_{12} (j,k)$.

The input record format is as follows:

A. Title Card. One title or identification card with any alphameric characters punched in columns 1 through 78 as desired.

B. Parameter Cards. Two cards, the first in eight 10-digit word form and the second in five 10-digit word form.

First Card

Word 1. MPR (fixed point number, right adjusted, column 0 through 10)

Word 2. MPZ (fixed point number, right adjusted, column 11 through 20)

Word 3. HTR ("F" format, column 21 through 30)

Word 4. HTZ ("F" format, column 31 through 40)

Word 5. XLX ("E" format, right adjusted, column 41 through 50)

Word 6. XLI ("E" format, right adjusted, column 51 through 60)

Word 7. GX ("F" format, column 61 through 70)

Word 8. GI ("F" format, column 71 through 80)

Second Card

Word 1. EX ("F" format, column 1 through 10)

Word 2. EI ("F" format, column 11 through 20)

Word 3. FN ("F" format, column 21 through 30)

Word 4. SHTR ("F" format, colum 31 through 40)

Word 5. NGEMTY (fixed point number, right adjusted, column 41 through 50)

C. Nuclear Parameter Cards. As many cards as are required to assign the parameters below a value at each mesh point J,K for $1 \leq J \leq MPR$ and $1 \leq K \leq MPZ$ with the J index varying more rapidly on read in. All words are in E format, right adjusted, with eight 10-digit words per card.

Word 1. SF(J,K)(Column 1 through 10)

Word 2. XAT(J,K)(Column 11 through 20)

Word 3. FT(J,K)(Column 21 through 30)

Word 4. XAF(J,K)(Column 31 through 40)

Word 5. SF(J + 1,K)(Column 41 through 50)

Word 6. XAT(J + 1, K)(Column 51 through 60)

Word 7. FT(J + 1,K)(Column 61 through 70)

Word 8. XAF(J + 1,K)(Column 71 through 80)

D. Initial Conditions Cards. As many cards as are required to assign the thermal flux, fast flux, and iodine, respectively, their initial values (i.e., values at t = TMIN) at each mesh point J,K for $1 \leq J \leq MPR$ and $1 \leq K \leq MPZ$ with the J index varying more rapidly on read in. All words are in F format, with eight 10-digit words per card.

First Card Set

ZT(J,K) at t = TMIN for all J and K

Second Card Set

ZF(J,K) at t = TMIN for all J and K

Third Card Set

Y(2*J) at t = TMIN for all J such that $[1 \leq J \leq (MPR)(MPZ)]$

E. Equilibrium Thermal and Fast Flux Distribution Cards. As many cards as are required to assign the equilibrium thermal and fast flux [in the form ET(J,K) and EF(J,K)] their values at each mesh point, J,K for $1 \leq J \leq MPR + 2$ and $1 \leq K \leq MPZ + 2$ with the J index varying more rapidly on read in. Values of ET and EF at J = MPR + 1 and K = MPZ + 1 are necessary to determine the gradients of ET and EF at the boundaries where J = MPR or K = MPZ. Similarly, the values of ET and EF at J = MPR + 2 and K = MPZ + 2 are used to determine the gradients of ET and EF at the boundaries where J = 1* or K = 1*. All words are in "E" format, right adjusted, with eight 10-digit words per card.

*Note that FORTRAN does not permit zero values for the indices J and K.

First Card Set

ET(J,K) for all J and K

Second Card Set

EF(J,K) for all J and K

F. Time and Control Cards. One card with five 10-digit words.

Word 1. TMIN ("E" format, right adjusted, column 1 through 10)

Word 2. DT ("E" format, right adjusted, column 11 through 20)

Word 3. TMAX ("E" format, right adjusted, column 21 through 30)

Word 4. UPLF ("E" format, right adjusted, column 31 through 40)

Word 5. NPRT (fixed point number, right adjusted, column 41 through 50)

IX. SAMPLE SIMULATION BY PROGRAM XEKE

A sample simulation by program XEKE is given on the following pages. Figure 6 depicts the system response in time and space resulting from the sample simulation.

XEKE IS A FORTRAN 4 CODED PROGRAM FOR INVESTIGATING FLUX STABILITY IN THE PRESENCE OF XENON+135
USES 2 GROUP DIFFUSION THEORY AND EXAMINES 2 DIMENSIONS IN UNIFORM CYLINDRICAL GEOMETRY OR 2 DIMENSIONS IN RECTANGULAR GEOMETRY
++SEE LASL REPORT FOR PERTINENT DETAILS++
CODED BY GARY M. SANDQUIST IN JULY 1966

SAMPLE PROGRAM FOR LASL REPORT BY GARY M. SANDQUIST AUGUST 1966 CDC6600

RADIAL MESH POINTS	AXIAL MESH POINTS	RADIAL LENGTH	AXIAL LENGTH	MTR START
8	6	6.47700	60.96000	6.35000000

XLX	XL1	GX	G1	EX	E1	FN
2.0930000E-05	2.8820000E-05	3.1700000E+02	9.6830000E+01	5.5800000E+02	5.5800000E-02	1.1000000E+03

R.Z	SF(R.Z)	XAT(R.Z)	FT(R.Z)	XAF(R.Z)	R.Z	SF(R.Z)	XAT(R.Z)	FT(R.Z)	XAF(R.Z)
1 1	6.32900E+02	2.53800E-02	2.13700E-01	7.72000E-07	2 1	6.32980E-02	2.53800E-02	2.13700E-01	7.72000E-07
3 1	6.32900E-02	2.53800E-02	2.13700E-01	7.72000E-07	4 1	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+97
5 1	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E-07	6 1	6.32900E+02	2.53800E-02	2.13700E+01	7.72000E+07
7 1	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07	8 1	6.32900E-02	2.53800E+02	2.13700E+01	7.72000E-07
1 2	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E-07	2 2	6.32900E+02	2.53800E-02	2.13700E+01	7.72000E+07
3 2	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E-07	4 2	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
5 2	6.32900E-02	2.53800E-02	2.13700E+01	7.72000E+07	6 2	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
7 2	6.32900E+02	2.53800E-02	2.13700E+01	7.72000E+07	8 2	6.32900E+02	2.53800E+02	2.13790E-01	7.72000E+07
1 3	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E-07	2 3	6.32900E+02	2.53800E+02	2.13790E+01	7.72090E+07
3 3	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07	4 3	6.32900E-02	2.53800E+02	2.13700E+01	7.72000E+07
5 3	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07	6 3	6.32900E+02	2.53800E+02	2.13780E-01	7.72000E+07
7 3	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07	8 3	8.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
1 4	6.32900E+02	2.53800E-02	2.13700E+01	7.72000E+07	2 4	6.32900E-02	2.53800E+02	2.13700E-01	7.72000E+07
3 4	6.32900E-02	2.53800E-02	2.13700E+01	7.72000E+07	4 4	6.32900E-02	2.53800E+02	2.13700E+01	7.72000E+07
5 4	6.32900E+02	2.53800E-02	2.13700E+01	7.72000E+07	6 4	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07
7 4	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07	8 4	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07
1 5	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07	2 5	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
3 5	6.32900E-02	2.53800E+02	2.13700E+01	7.72000E+07	4 5	6.32900E+02	2.53800E+02	2.13700E+01	7.72800E+07
5 5	6.32900E+02	2.53800E-02	2.13700E-01	7.72000E+07	6 5	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
7 5	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07	8 5	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
1 6	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07	2 6	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
3 6	6.32900E+02	2.53800E+02	2.13700E-01	7.72000E+07	4 6	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07
5 6	6.32900E+02	2.53800E+02	2.13700E-01	7.72900E+07	6 6	6.32900E+02	2.53800E+02	2.13700E+01	7.72900E+07
7 6	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07	8 6	6.32900E+02	2.53800E+02	2.13700E+01	7.72000E+07

RADIAL MESH SPACE STEP IS ++ .80962500

AXIAL MESH SPACE STEP IS ++ 10.16000000

INITIAL CONDITIONS NORMALIZED VARIABLES(R.Z)

R.Z	THERMAL FLUX	FAST FLUX	IODINE	R.Z
1 1	1.16030000	1.15470000	1.03560000	1 1
2 1	1.16000000	1.15470000	1.03560008	2 1
3 1	1.15970000	1.15470000	1.03550009	3 1
4 1	1.15940000	1.15470090	1.03550008	4 1
5 1	1.15940000	1.15470000	1.03550000	5 1
6 1	1.15960000	1.15470000	1.03550008	6 1
7 1	1.15990000	1.15470000	1.03560009	7 1
8 1	1.16010000	1.15480000	1.03560000	8 1
1 2	1.15690000	1.14880000	1.03380008	1 2
2 2	1.15660000	1.14880000	1.03370000	2 2
3 2	1.15630000	1.14880000	1.03370000	3 2
4 2	1.15600090	1.14880099	1.03370000	4 2

R.Z	THERMAL FLUX	FAST FLUX	IODINE	R.Z
5 2	1.15610000	1.14880000	1.03370008	5 2
6 2	1.15640000	1.14890000	1.03370008	6 2
7 2	1.15670000	1.14890000	1.03370000	7 2
8 2	1.15710000	1.14900008	1.93780900	8 2
1 3	1.14290000	1.13460000	1.92990000	1 3
2 3	1.14260000	1.13468000	1.02990800	2 3
3 3	1.14230000	1.13460000	1.02990000	3 3
4 3	1.14220000	1.13460000	1.02980009	4 3
5 3	1.14220000	1.13460000	1.02980000	5 3
6 3	1.14260000	1.13478000	1.02990008	6 3
7 3	1.14300000	1.13470000	1.02990800	7 3
8 3	1.14330000	1.13480000	1.03090808	8 3
1 4	1.11900000	1.11180000	1.02440000	1 4
2 4	1.11880000	1.11180000	1.02438008	2 4
3 4	1.11860000	1.11180000	1.02430090	3 4
4 4	1.11850000	1.11180000	1.02438009	4 4
5 4	1.11860000	1.11180000	1.02430000	5 4
6 4	1.11890000	1.11190009	1.02438000	6 4
7 4	1.11920000	1.11190000	1.02440800	7 4
8 4	1.11950000	1.11190080	1.02440008	8 4
1 5	1.08640000	1.08110008	1.01710000	1 5
2 5	1.08630008	1.08110000	1.91710000	2 5
3 5	1.08610000	1.08118000	1.01710099	3 5
4 5	1.08610009	1.08119000	1.01718088	4 5
5 5	1.08828808	1.08118008	1.01710099	5 5
6 5	1.08840009	1.08120000	1.01710089	8 5
7 5	1.08860080	1.08128008	1.01718009	7 5
8 5	1.08880000	1.08120008	1.01718008	8 5
1 8	1.04830800	1.04380000	1.00088000	1 6
2 8	1.04620000	1.04368090	1.00860808	2 6

3 6	1.04610000	1.04360000	1.00860000	3 6
4 6	1.04610000	1.04360000	1.00860000	4 6
5 6	1.04610000	1.04360000	1.00860000	5 6
6 6	1.04620000	1.04360000	1.00860000	6 6
7 6	1.04630000	1.04360000	1.00860000	7 6
8 6	1.04640000	1.04360000	1.00860000	8 6

EQUILIBRIUM VALUES THERMAL FLUX TIMES MICROSCOPIC XENON CROSS SECTION(R.Z)

1 1 1.150E•04	2 1 1.020E•04	3 1 9.130E•05	4 1 8.300E•05	5 1 7.800E•05	6 1 8.050E•05	7 1 8.150E-05	8 1 8.880E-05
9 1 1.080E•04	10 1 1.270E•04	1 2 2.290E•04	2 2 2.040E•04	3 2 1.830E•04	4 2 1.660E•04	5 2 1.560E•04	6 2 1.610E•04
7 2 1.630E•04	8 2 1.780E•04	9 2 2.150E•04	10 2 2.530E•04	1 3 3.210E•04	2 3 2.860E•04	3 3 2.560E-04	4 3 2.320E•04
5 3 2.180E•04	6 3 2.250E•04	7 3 2.280E•04	8 3 2.490E•04	9 3 3.010E•04	10 3 3.540E•04	1 4 3.940E•04	2 4 3.510E•04
3 4 3.140E•04	4 4 2.860E•04	5 4 2.680E-04	6 4 2.770E•04	7 4 2.800E-04	8 4 3.050E-04	9 4 3.700E•04	10 4 4.350E•04
1 5 4.420E•04	2 5 3.940E•04	3 5 3.520E•04	4 5 3.200E•04	5 5 3.010E•04	6 5 3.110E•04	7 5 3.150E•04	8 5 3.430E•04
9 5 4.150E•04	10 5 4.880E•04	1 6 4.580E•04	2 6 4.080E•04	3 6 3.650E•04	4 6 3.320E•04	5 6 3.120E•04	6 6 3.220E-04
7 6 3.260E•04	8 6 3.550E-04	9 6 4.300E•04	10 6 5.060E•04	1 7 4.420E•04	2 7 3.940E•04	3 7 3.520E•04	4 7 3.200E•04
5 7 3.010E•04	6 7 3.110E•04	7 7 3.150E•04	8 7 3.430E•04	9 7 4.150E•04	10 7 4.880E•04	1 8 0	2 8 0
3 8 0	4 8 0	5 8 0	6 8 0	7 8 0	8 8 0	9 8 0	10 8 0

EQUILIBRIUM VALUES FAST FLUX TIMES MICROSCOPIC XENON CROSS SECTION(R.Z)

1 1 1.040E•03	2 1 1.070E-03	3 1 9.930E-04	4 1 9.050E•04	5 1 8.350E•04	6 1 7.680E•04	7 1 7.100E•04	8 1 6.630E•04
9 1 6.250E•04	10 1 9.180E•04	1 2 2.080E•03	2 2 2.140E•03	3 2 1.990E•03	4 2 1.810E•03	5 2 1.670E•03	6 2 1.540E•03
7 2 1.420E•03	8 2 1.330E•03	9 2 1.250E•03	10 2 1.840E•03	1 3 2.910E•03	2 3 2.990E-03	3 3 2.780E•03	4 3 2.530E•03
5 3 2.360E•03	6 3 2.150E-03	7 3 1.990E•03	8 3 1.880E•03	9 3 1.750E•03	10 3 2.570E•03	1 4 3.580E•03	2 4 3.670E•03
3 4 3.410E•03	4 4 3.110E-03	5 4 2.870E•03	6 4 2.640E•03	7 4 2.440E•03	8 4 2.280E-03	9 4 2.150E•03	10 4 3.160E•03
1 5 4.010E-03	2 5 4.120E•03	3 5 3.830E•03	4 5 3.490E-03	5 5 3.220E•03	6 5 2.960E•03	7 5 2.740E•03	8 5 2.580E-03
9 5 2.410E•03	10 5 3.540E-03	1 6 4.160E-03	2 6 4.270E•03	3 6 3.970E•03	4 6 3.620E•03	5 6 3.340E•03	6 6 3.070E•03
7 6 2.840E•03	8 6 2.650E-03	9 6 2.500E-03	10 6 3.670E•03	1 7 4.010E•03	2 7 4.120E-03	3 7 3.830E•03	4 7 3.490E-03
5 7 3.220E•03	6 7 2.960E•03	7 7 2.740E•03	8 7 2.580E•03	9 7 2.410E•03	10 7 3.540E-03	1 8 0	2 8 0
3 8 0	4 8 0	5 8 0	6 8 0	7 8 0	8 8 0	9 8 0	10 8 0

EXAMINATION VOLUME IS CYLINDRICAL

TIME START	TIME STEP	TIME END	FLUX LIMIT	PRINT CONTROL
0.	6.000000E•02	1.080000E•05	1.000000E•01	3

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION •••• 0. SECONDS •••• 0. HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.16030000	1.15470000	.90029694	1.03560000	1 1
2 1	1.16000000	1.15470000	.90804714	1.03560000	2 1
3 1	1.15970000	1.15470000	.90928348	1.03550000	3 1
4 1	1.15940000	1.15470000	.92427291	1.03550000	4 1
5 1	1.15940000	1.15470000	.92004612	1.03550000	5 1
6 1	1.15960000	1.15470000	.92047257	1.03550000	6 1
7 1	1.15990000	1.15470000	.91268971	1.03560000	7 1
8 1	1.16010000	1.15480000	.91612953	1.03560000	8 1
1 2	1.15690000	1.14880000	.86878511	1.03380000	1 2
2 2	1.15660000	1.14880000	.87303971	1.03370000	2 2
3 2	1.15630000	1.14880000	.87365361	1.03370000	3 2
4 2	1.15600000	1.14880000	.89092895	1.03370000	4 2
5 2	1.15610000	1.14880000	.88255861	1.03370000	5 2
6 2	1.15640000	1.14890000	.88186033	1.03370000	6 2
7 2	1.15670000	1.14890000	.88965337	1.03370000	7 2
8 2	1.15710000	1.14900000	.87799353	1.03780000	8 2
1 3	1.14290000	1.13460000	.86735004	1.02990000	1 3
2 3	1.14260000	1.13460000	.87178925	1.02990000	2 3
3 3	1.14230000	1.13460000	.87926821	1.02990000	3 3
4 3	1.14220000	1.13460000	.87526401	1.02980000	4 3
5 3	1.14220000	1.13460000	.88706746	1.02980000	5 3
6 3	1.14260000	1.13470000	.87852152	1.02990000	6 3
7 3	1.14300000	1.13470000	.87654937	1.02990000	7 3
8 3	1.14330000	1.13480000	.87821142	1.03000000	8 3
1 4	1.11900000	1.11180000	.88574563	1.02440000	1 4
2 4	1.11880000	1.11180000	.88651739	1.02430000	2 4
3 4	1.11860000	1.11180000	.88965425	1.02430000	3 4
4 4	1.11850000	1.11180000	.89356414	1.02430000	4 4
5 4	1.11860000	1.11180000	.89286211	1.02430000	5 4
6 4	1.11890000	1.11190000	.89169460	1.02430000	6 4
7 4	1.11920000	1.11190000	.89421582	1.02440000	7 4
8 4	1.11950000	1.11190000	.88923918	1.02440000	8 4
1 5	1.08640000	1.08110000	.91567213	1.01710000	1 5
2 5	1.08630000	1.08110000	.90999865	1.01710000	2 5
3 5	1.08610000	1.08110000	.92153650	1.01710000	3 5
4 5	1.08610000	1.08110000	.91670045	1.01710000	4 5
5 5	1.08620000	1.08110000	.91612992	1.01710000	5 5
6 5	1.08640000	1.08120000	.91776167	1.01710000	6 5
7 5	1.08660000	1.08120000	.91997006	1.01710000	7 5
8 5	1.08680000	1.08120000	.91729304	1.01710000	8 5
1 6	1.04630000	1.04360000	.95363012	1.00860000	1 6
2 6	1.04620000	1.04360000	.95545425	1.00860000	2 6
3 6	1.04610000	1.04360000	.95942214	1.00860000	3 6
4 6	1.04610000	1.04360000	.95508094	1.00860000	4 6
5 6	1.04610000	1.04360000	.95940814	1.00860000	5 6
6 6	1.04620000	1.04360000	.95746178	1.00860000	6 6
7 6	1.04630000	1.04360000	.95862216	1.00860000	7 6
8 6	1.04640000	1.04360000	.95727291	1.00860000	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION •••• 1800.00 SECONDS •••• .5000 HOURS

1 1	1.13157432	1.12643492	.90665701	1.04118053	1 1
2 1	1.13132010	1.12642533	.91260407	1.04116211	2 1
3 1	1.13106879	1.12641959	.91363592	1.04105604	3 1
4 1	1.13083096	1.12642262	.92584463	1.04104740	4 1
5 1	1.13085024	1.12643841	.92253627	1.04104903	5 1
6 1	1.13104961	1.12646673	.92280514	1.04106239	6 1
7 1	1.13132652	1.12649876	.91644183	1.04117267	7 1
8 1	1.13150746	1.12652344	.91989499	1.04118841	8 1
1 2	1.12777471	1.12101717	.88923691	1.03925419	1 2
2 2	1.12757090	1.12100861	.89069128	1.03913840	2 2
3 2	1.12738469	1.12100716	.89015683	1.03912746	3 2
4 2	1.12721939	1.12101831	.90115369	1.03912000	4 2
5 2	1.12733856	1.12104594	.89505443	1.03912541	5 2
6 2	1.12760104	1.12108867	.89469578	1.03914466	6 2
7 2	1.12786153	1.12113430	.90005544	1.03916252	7 2
8 2	1.12815661	1.12116959	.89374885	1.04308060	8 2
1 3	1.11519106	1.10868061	.89569745	1.03487149	1 3
2 3	1.11502231	1.10867441	.89633866	1.03485147	2 3
3 3	1.11488155	1.10867648	.89914210	1.03484122	3 3
4 3	1.11488113	1.10869222	.89566524	1.03474462	4 3
5 3	1.11496060	1.10872394	.90219673	1.03474781	5 3
6 3	1.11528896	1.10877083	.89719453	1.03486538	6 3
7 3	1.11561321	1.10881970	.89603723	1.03488613	7 3
8 3	1.11584534	1.10895625	.89793663	1.03500423	8 3
1 4	1.09513262	1.08967317	.91332287	1.02854132	1 4
2 4	1.09503216	1.08966911	.91198255	1.02843108	2 4
3 4	1.09496229	1.08967287	.91205765	1.02842408	3 4
4 4	1.09497198	1.08968873	.91300838	1.02842292	4 4
5 4	1.09510884	1.08971830	.91186418	1.02842843	5 4
6 4	1.09536351	1.08975985	.91148129	1.02844705	6 4
7 4	1.09561487	1.08980239	.91292322	1.02855880	7 4
8 4	1.09583820	1.08983415	.91115279	1.02857985	8 4
1 5	1.06883691	1.06485703	.93645189	1.02813202	1 5
2 5	1.06878512	1.06485421	.93270379	1.02812180	2 5
3 5	1.06871407	1.06485714	.93689996	1.02811544	3 5
4 5	1.06876237	1.06486947	.93360609	1.02811633	4 5
5 5	1.06887805	1.06489184	.93267086	1.02812124	5 5
6 5	1.06905080	1.06492279	.93376295	1.02813446	6 5
7 5	1.06922259	1.06495416	.93495066	1.02814628	7 5
8 5	1.06937338	1.06497751	.93429305	1.02816115	8 5
1 6	1.03692668	1.03482619	.96461491	1.01025489	1 6
2 6	1.03687640	1.03482445	.96479001	1.01024846	2 6
3 6	1.03683801	1.03482568	.96617018	1.01024524	3 6
4 6	1.03686141	1.03483165	.96360249	1.01024568	4 6
5 6	1.03689722	1.03484269	.96559979	1.01024705	5 6
6 6	1.03699482	1.03485838	.96464334	1.01025387	6 6
7 6	1.03708861	1.03487449	.96525196	1.01026094	7 6
8 6	1.03716942	1.03488652	.96485923	1.01026772	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 3600.00 SECONDS **** 1.0000 HOURS

1 1	1.10183043	1.09737356	.91741245	1.04490805	1 1
2 1	1.10163135	1.09736601	.92152201	1.04487493	2 1
3 1	1.10143862	1.09736230	.92197017	1.04476517	3 1
4 1	1.10126087	1.09736656	.93163157	1.04475039	4 1
5 1	1.10129170	1.09738193	.92883118	1.04475393	5 1
6 1	1.10147145	1.09740803	.92908267	1.04477899	6 1
7 1	1.10171151	1.09743699	.92389533	1.04489747	7 1
8 1	1.10187001	1.09745913	.92623159	1.04492649	8 1
1 2	1.09792344	1.09260712	.91185293	1.04286120	1 2
2 2	1.09780200	1.09260189	.91128339	1.04273600	2 2
3 2	1.09779913	1.09260332	.90966868	1.04271883	3 2
4 2	1.09764093	1.09261543	.91615806	1.04270826	4 2
5 2	1.09776706	1.09264062	.91134194	1.04271905	5 2
6 2	1.09798758	1.09267738	.91133409	1.04275353	6 2
7 2	1.09819488	1.09271565	.91511235	1.04278541	7 2
8 2	1.09840345	1.09274466	.91266814	1.04652498	8 2
1 3	1.08734560	1.08252527	.92239779	1.03811944	1 3
2 3	1.08726487	1.08252244	.92102484	1.93808726	2 3
3 3	1.08722452	1.08252699	.92107349	1.03807247	3 3
4 3	1.08728095	1.08254255	.91766734	1.03798179	4 3
5 3	1.08739084	1.08257027	.92088223	1.03798955	5 3
6 3	1.08764880	1.08260893	.91811270	1.03811907	6 3
7 3	1.98789310	1.08264822	.91749314	1.03815505	7 3
8 3	1.08800177	1.08267715	.91974931	1.03828493	8 3
1 4	1.07154680	1.06764319	.93786436	1.03121989	1 4
2 4	1.07150793	1.06764173	.93563385	1.03110555	2 4
3 4	1.07150946	1.06764696	.93417959	1.03109605	3 4
4 4	1.07156938	1.06766165	.93348082	1.03109643	4 4
5 4	1.07170544	1.06768641	.93199889	1.03110741	5 4
6 4	1.07190452	1.06771951	.93210999	1.93113962	6 4
7 4	1.07209078	1.06775260	.93300604	1.03125870	7 4
8 4	1.07224189	1.06777685	.93305439	1.03129410	8 4
1 5	1.05154004	1.04872860	.95504610	1.02289005	1 5
2 5	1.05152183	1.04872763	.95221849	1.02287373	2 5
3 5	1.05151596	1.04873157	.95303778	1.02206517	3 5
4 5	1.05158299	1.04874270	.95042534	1.02206805	4 5
5 5	1.05169151	1.04876116	.94927185	1.02207747	5 5
6 5	1.05182904	1.04878558	.95011628	1.02219036	6 5
7 5	1.05195771	1.04880976	.95880868	1.02212879	7 5

8 5	1.05205982	1.04882745	.95124871	1.02214580	8 5
1 6	1.02766086	1.02614666	.97482677	1.01133368	1 6
2 6	1.02764018	1.02614601	.97428265	1.01132355	2 6
3 6	1.02763529	1.02614794	.97436946	1.01131912	3 6
4 6	1.02766847	1.02615358	.97259279	1.01132852	4 6
5 6	1.02771245	1.02618302	.97331695	1.01132373	5 6
6 6	1.02778982	1.02617572	.97292231	1.01133578	6 6
7 6	1.02786112	1.02618846	.97326725	1.01134661	7 6
8 6	1.02791729	1.02619779	.97345347	1.01135975	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON 100INE

ELAPSED XENON TIME SINCE PERTURBATION **** 5400.00 SECONDS **** 1.5000 HOURS

1 1	1.07307258	1.06941596	.93097945	1.04697538	1 1
2 1	1.07292953	1.06941050	.93334071	1.04693141	2 1
3 1	1.07279676	1.06940868	.93301359	1.04682037	3 1
4 1	1.07267583	1.06941375	.94038284	1.04680165	4 1
5 1	1.07271745	1.06942801	.93781548	1.04680723	5 1
6 1	1.07287270	1.06945094	.93813878	1.04684184	6 1
7 1	1.07307169	1.06947589	.93392979	1.04696610	7 1
8 1	1.07320072	1.06949477	.93625030	1.04700570	8 1
1 2	1.06932996	1.06543988	.93503652	1.04482798	1 2
2 2	1.86927589	1.06543738	.93302870	1.04469868	2 2
3 2	1.06925658	1.06544069	.93050226	1.04467882	3 2
4 2	1.06925788	1.06545247	.93375267	1.04466793	4 2
5 2	1.06938306	1.06547394	.92964900	1.04468359	5 2
6 2	1.06955604	1.06550358	.92996521	1.04472933	6 2
7 2	1.06970575	1.06553361	.93271054	1.04477118	7 2
8 2	1.06983820	1.06555591	.93305092	1.04833612	8 2
1 3	1.06098574	1.05771409	.94734087	1.03985697	1 3
2 3	1.06096653	1.05771365	.94489210	1.03981828	2 3
3 3	1.06099166	1.05771929	.94331617	1.03980243	3 3
4 3	1.06108140	1.05773318	.93983360	1.03971880	4 3
5 3	1.06119752	1.05775561	.94095505	1.03973105	5 3
6 3	1.06138777	1.05778521	.93968918	1.03986757	6 3
7 3	1.06155718	1.05781451	.93935181	1.03991378	7 3
8 3	1.06166571	1.05783570	.94194041	1.04004985	8 3
1 4	1.04940798	1.04688247	.95999458	1.03262991	1 4
2 4	1.04941075	1.04688275	.95740624	1.03251567	2 4
3 4	1.04945446	1.04688827	.95520141	1.03250614	3 4
4 4	1.04953764	1.04690060	.95359959	1.03250904	4 4
5 4	1.04965935	1.04691967	.95190012	1.03252459	5 4
6 4	1.04980222	1.04694393	.95232280	1.03256587	6 4
7 4	1.04992661	1.04696757	.95294726	1.03268820	7 4
8 4	1.05001764	1.04698456	.95402537	1.03273240	8 4
1 5	1.03535682	1.03357476	.97174138	1.02311998	1 5
2 5	1.03536342	1.03357501	.96938335	1.02310060	2 5
3 5	1.03539268	1.03357905	.96865849	1.02309195	3 5
4 5	1.03546569	1.83358813	.96637746	1.02309704	4 5
5 5	1.03555850	1.03360205	.96511668	1.02311004	5 5
6 5	1.03565672	1.03361960	.96584860	1.02313934	6 5
7 5	1.03574153	1.03363658	.96630059	1.02316527	7 5
8 5	1.03580217	1.03364875	.96732473	1.02319642	8 5
1 6	1.01895013	1.01797656	.98410425	1.01191209	1 6
2 6	1.01894845	1.01797663	.98326557	1.01190012	2 6
3 6	1.01896278	1.01797871	.98272722	1.01189559	3 6
4 6	1.01900010	1.01798344	.98132250	1.01189811	4 6
5 6	1.01904251	1.01799071	.98136392	1.01190298	5 6
6 6	1.01909792	1.01800001	.98128761	1.01191856	6 6
7 6	1.01914568	1.01800908	.98150994	1.01193242	7 6
8 6	1.01917956	1.01801560	.98202679	1.01194894	8 6

MESH POINT(R,Z) 7HERMAL FLUX FAST FLUX XENON 100INE

ELAPSED XENON TIME SINCE PER7URBA7ION **** 7200.00 SECONOS **** 2.0090 HOURS

1 1	1.04606116	1.04325648	.94628210	1.04753872	1 1
2 1	1.04597194	1.04325304	.94704131	1.04748768	2 1
3 1	1.04589684	1.04325291	.94586060	1.04737765	3 1
4 1	1.04582760	1.04325841	.95119032	1.04735693	4 1
5 1	1.04587831	1.04327106	.94867315	1.04736459	5 1
6 1	1.04600623	1.04329026	.94912328	1.04740646	6 1
7 1	1.04616259	1.04331065	.94573162	1.04753401	7 1
8 1	1.04625858	1.04332586	.94822570	1.04758126	8 1
1 2	1.04267248	1.04013979	.95797493	1.04531911	1 2
2 2	1.04267352	1.04013953	.95495116	1.04519022	2 2
3 2	1.04271187	1.04014399	.95169258	1.04517045	3 2
4 2	1.04276233	1.04015463	.95260869	1.04516112	4 2
5 2	1.04288075	1.04017172	.94888758	1.04518092	5 2
6 2	1.04300456	1.04019378	.94948833	1.04523402	6 2
7 2	1.04309658	1.04021535	.95155796	1.04528190	7 2
8 2	1.04316238	1.04023094	.95390748	1.04867622	8 2
1 3	1.03661077	1.03474188	.97062482	1.04024686	1 3
2 3	1.03663707	1.03474321	.96759737	1.04020613	2 3
3 3	1.03670661	1.03474917	.96506084	1.04019161	3 3
4 3	1.03681516	1.03476069	.96147388	1.04011549	4 3
5 3	1.03692411	1.03477738	.96127011	1.04013160	5 3
6 3	1.03705126	1.03479790	.96084419	1.04027062	6 3
7 3	1.03715223	1.03481747	.96083727	1.04032236	7 3
8 3	1.03720570	1.03483122	.96369534	1.04045983	8 3
1 4	1.02905247	1.02774948	.98017403	1.03291500	1 4
2 4	1.02908599	1.02775099	.97745907	1.03280411	2 4

3 4	1.02915645	1.02775625	.97489805	1.03279615	3 4
4 4	1.02924890	1.02776578	.97281368	1.03280190	4 4
5 4	1.02935046	1.02777907	.97099131	1.03282088	5 4
6 4	1.02943996	1.02779480	.97161297	1.03286713	6 4
7 4	1.02950752	1.02780950	.97210869	1.03298908	7 4
8 4	1.02954764	1.02781972	.97376868	1.03303737	8 4
1 5	1.02051398	1.01964146	.98683857	1.02332897	1 5
2 5	1.02054014	1.01964258	.98474025	1.02330898	2 5
3 5	1.02058985	1.01964633	.98332444	1.02338150	3 5
4 5	1.02066268	1.01965312	.98122941	1.02330876	4 5
5 5	1.02073670	1.01966247	.97993359	1.02332430	5 5
6 5	1.02079607	1.01967343	.98061599	1.02335699	6 5
7 5	1.02084005	1.01968359	.98095862	1.02338560	7 5
8 5	1.02086434	1.01969063	.98228448	1.02341948	8 5
1 6	1.01094498	1.01046030	.99248678	1.01204677	1 6
2 6	1.01095654	1.01046087	.99154541	1.91203442	2 6
3 6	1.01098236	1.01046284	.99072196	1.01203048	3 6
4 6	1.01102039	1.01046642	.98950991	1.01203413	4 6
5 6	1.01105643	1.01047137	.98919814	1.01204029	5 6
6 6	1.01109026	1.01047724	.98929980	1.01205778	6 6
7 6	1.01111547	1.01048273	.98946837	1.01207315	7 6
8 6	1.01112985	1.01048654	.99016250	1.01209122	8 6

ELAPSED XENON TIME SINCE PERTURBATION •••• 9000.00 SECONDS •••• 2.5000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.02132441	1.01937536	.96243679	1.04677770	1 1
2 1	1.02128494	1.01937381	.96177388	1.04672311	2 1
3 1	1.02126298	1.01937512	.95974059	1.04661617	3 1
4 1	1.02123935	1.01938073	.96327716	1.04659511	4 1
5 1	1.02129705	1.01939147	.96069659	1.04660481	5 1
6 1	1.02139647	1.01940661	.96130280	1.04665163	6 1
7 1	1.02151057	1.01942221	.95859612	1.04678904	7 1
8 1	1.02157245	1.01943360	.96137093	1.04683283	8 1
1 2	1.01841370	1.01713516	.98081145	1.04451865	1 2
2 2	1.01845953	1.01713670	.97629035	1.04439395	2 2
3 2	1.01854250	1.01714181	.97247683	1.04437643	3 2
4 2	1.01862695	1.01715081	.97171843	1.04436987	4 2
5 2	1.01873457	1.01716326	.96820010	1.04439298	5 2
6 2	1.01881021	1.01717778	.96903991	1.04444978	6 2
7 2	1.01884720	1.01719110	.97066646	1.04450003	7 2
8 2	1.01885513	1.01720026	.97445381	1.04772795	8 2
1 3	1.01456834	1.01395027	.99209701	1.03946489	1 3
2 3	1.01462930	1.01395294	.98877927	1.03942569	2 3
3 3	1.01472944	1.01395876	.98569408	1.03941417	3 3
4 3	1.01484738	1.01396764	.98203414	1.03934562	4 3
5 3	1.01494194	1.01397862	.98100058	1.03936468	5 3
6 3	1.01501164	1.01399053	.98117292	1.03950226	6 3
7 3	1.01505136	1.01400100	.98134224	1.03955563	7 3
8 3	1.01505576	1.01400786	.98439038	1.03969011	8 3
1 4	1.01072570	1.01049641	.99843543	1.03222648	1 4
2 4	1.01078283	1.01049885	.99571392	1.03212151	2 4
3 4	1.01087078	1.01050357	.99301551	1.03211622	3 4
4 4	1.01096482	1.01051026	.99069973	1.03212478	4 4
5 4	1.01104421	1.01051804	.98883047	1.03214603	5 4
6 4	1.01108487	1.01052587	.98957668	1.03219367	6 4
7 4	1.01110160	1.01053241	.99001656	1.03231212	7 4
8 4	1.01109846	1.01053652	.99198981	1.03236054	8 4
1 5	1.00718025	1.00710319	1.00034989	1.02282982	1 5
2 5	1.00722202	1.90710497	.99842525	1.02281042	2 5
3 5	1.00728414	1.00710824	.99873249	1.02280495	3 5
4 5	1.00735358	1.00711274	.99477317	1.02281418	4 5
5 5	1.00740826	1.09711780	.99349263	1.02283124	5 5
6 5	1.90743150	1.00712270	.99415109	1.02286467	6 5
7 5	1.00743826	1.00712666	.99444722	1.02289349	7 5
8 5	1.00743162	1.00712907	.99591987	1.92292720	8 5
1 6	1.00375000	1.00369768	.99993537	1.01179787	1 6
2 6	1.00377120	1.00369861	.99898489	1.91178627	2 6
3 6	1.00380395	1.00370034	.99805508	1.01178338	3 6
4 6	1.00384057	1.00370272	.99696489	1.01178807	4 6
5 6	1.00386808	1.09370541	.99648068	1.01179588	5 6
6 6	1.00388188	1.80370805	.99668365	1.01181382	6 6
7 6	1.00388655	1.09371021	.99683083	1.01182857	7 6
8 6	1.00388368	1.09371154	.99780542	1.01184661	8 6

ELAPSED XENON TIME SINCE PERTURBATION •••• 10800.00 SECONDS •••• 3.0000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.99919489	.99807144	.97872127	1.94480365	1 1
2 1	.99920082	.99807158	.97683462	1.04482867	2 1
3 1	.99922541	.99807410	.97400478	1.04472661	3 1
4 1	.99924098	.99807956	.97598628	1.04470658	4 1
5 1	.99930358	.99808819	.97328048	1.94471821	5 1
6 1	.99937665	.99809920	.97405278	1.04476779	6 1
7 1	.99944806	.99810999	.97192188	1.04489477	7 1
8 1	.99947652	.99811757	.97581974	1.04494873	8 1
1 2	.99883577	.99668753	1.99861831	1.94261947	1 2
2 2	.99891748	.99669953	.99644934	1.04258284	2 2
3 2	.99783421	.99669588	.99225815	1.04248837	3 2
4 2	.99714113	.99670299	.99831888	1.04248532	4 2

5 2	.99723526	.99671082	.98690910	1.04251086	5 2
6 2	.99726549	.99671813	.98794023	1.04256806	6 2
7 2	.99725180	.99672371	.98927452	1.04261742	7 2
8 2	.99721006	.99672690	.99406743	1.04568339	8 2
1 3	.99506802	.99554511	1.01152648	1.03769177	1 3
2 3	.99515544	.99554878	1.00810534	1.03765693	2 3
3 3	.99527639	.99555421	1.00474420	1.03764958	3 3
4 3	.99539722	.99556040	1.00107124	1.03758840	4 3
5 3	.99547380	.99556599	.99953748	1.03760943	5 3
6 3	.99549224	.99556998	1.00009624	1.03774216	6 3
7 3	.99547821	.99557220	1.00038989	1.03779380	7 3
8 3	.99543994	.99557286	1.00354315	1.03792166	8 3
1 4	.99457622	.99527448	1.01466787	1.03071803	1 4
2 4	.99465145	.99527761	1.01201829	1.03062097	2 4
3 4	.99475059	.99528168	1.00931854	1.03061909	3 4
4 4	.99484165	.99528564	1.00693222	1.03063024	4 4
5 4	.99489882	.99528838	1.00507859	1.03065268	5 4
6 4	.99489601	.99528912	1.00589631	1.03069864	6 4
7 4	.99486833	.99528841	1.00631551	1.03081099	7 4
8 4	.99482878	.99528712	1.00842983	1.03085627	8 4
1 5	.99545769	.99606410	1.01220368	1.02173338	1 5
2 5	.99551165	.99606636	1.01042778	1.02171777	2 5
3 5	.99558117	.99606908	1.00867078	1.02171483	3 5
4 5	.99564534	.99607145	1.00684037	1.02172577	4 5
5 5	.99564138	.99607262	1.00561246	1.02174343	5 5
6 5	.99567231	.99607212	1.00625314	1.02177532	6 5
7 5	.99564647	.99607060	1.00653149	1.02180230	7 5
8 5	.99561371	.99606894	1.00802829	1.02183346	8 5
1 6	.99742673	.99774754	1.00640340	1.01122658	1 6
2 6	.99745500	.99774872	1.00549392	1.01121662	2 6
3 6	.99749173	.99775014	1.00455540	1.01121506	3 6
4 6	.99752560	.99775137	1.00356407	1.01122067	4 6
5 6	.99754393	.99775198	1.00301551	1.01122807	5 6
6 6	.99753984	.99775171	1.00326925	1.01124523	6 6
7 6	.99752650	.99775089	1.00340904	1.01125981	7 6
8 6	.99750921	.99775001	1.00420137	1.01127652	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 12600.00 SECONDS **** 3.5000 HOURS

1 1	.97985122	.97950047	.99455103	1.04205037	1 1
2 1	.97989529	.97950210	.99164728	1.04199775	2 1
3 1	.97996164	.97950557	.98811392	1.04190207	3 1
4 1	.98001004	.97951069	.98876911	1.04188416	4 1
5 1	.98007524	.97951712	.98591467	1.04189756	5 1
6 1	.98011870	.97952406	.98684856	1.04194785	6 1
7 1	.98015450	.97953020	.98519957	1.04207134	7 1
8 1	.98015143	.97953413	.98862316	1.04212471	8 1
1 2	.97807953	.97892682	1.01937123	1.03981483	1 2
2 2	.97818929	.97893095	1.01496454	1.03970711	2 2
3 2	.97833059	.97893627	1.01053852	1.03969845	3 2
4 2	.97845109	.97894138	1.00779707	1.03969928	4 2
5 2	.97853008	.97894479	1.00448381	1.03972637	5 2
6 2	.97851870	.97894543	1.00565841	1.03978108	6 2
7 2	.97845971	.97894393	1.00679723	1.03982675	7 2
8 2	.97837597	.97894173	1.01225970	1.04273546	8 2
1 3	.97820655	.97962265	1.02868897	1.03510659	1 3
2 3	.97831375	.97962706	1.02529905	1.03507832	2 3
3 3	.97844801	.97963192	1.02185473	1.03507587	3 3
4 3	.97856704	.97963553	1.01824053	1.03502170	4 3
5 3	.97862422	.97963618	1.01643330	1.03504372	5 3
6 3	.97859779	.97963311	1.01723398	1.03516881	6 3
7 3	.97853756	.97962803	1.01761354	1.03521592	7 3
8 3	.97846310	.97962325	1.02078737	1.03533420	8 3
1 4	.98066807	.98215051	1.02874117	1.02854085	1 4
2 4	.98075675	.98215413	1.02622445	1.02845320	2 4
3 4	.98086228	.98215749	1.02361769	1.02845519	3 4
4 4	.98094748	.98215894	1.02127121	1.02846862	4 4
5 4	.98098339	.98215720	1.01948525	1.02849124	5 4
6 4	.98094285	.98215175	1.02033404	1.02853300	6 4
7 4	.98087732	.98214474	1.02074725	1.02863716	7 4
8 4	.98080766	.98213879	1.02288454	1.02867667	8 4
1 5	.98538855	.98656856	1.02232979	1.02015318	1 5
2 5	.98545160	.98657117	1.02070491	1.02014177	2 5
3 5	.98552496	.98657333	1.01900091	1.02014168	3 5
4 5	.98558269	.98657375	1.01731088	1.02015404	4 5
5 5	.98560145	.98657151	1.01616427	1.02017148	5 5
6 5	.98556439	.98656634	1.01678362	1.02019998	6 5
7 5	.98551086	.98656010	1.01705533	1.02022342	7 5
8 5	.98545656	.98655496	1.01851717	1.02025013	8 5
1 6	.99200086	.99263485	1.01186304	1.01039312	1 6
2 6	.99203417	.99263621	1.01102374	1.01038547	2 6
3 6	.99207281	.99263731	1.01013191	1.01038542	3 6
4 6	.99210311	.99263748	1.00923618	1.01039177	4 6
5 6	.99211243	.99263623	1.00868507	1.01039914	5 6
6 6	.99209288	.99263343	1.00895932	1.01041450	6 6
7 6	.99206427	.99263005	1.00909657	1.01042719	7 6
8 6	.99203512	.99262727	1.00986517	1.01044151	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 14400.00 SECONDS **** 4.0000 HOURS

1 1	.96335668	.96371091	1.00946046	1.03846740	1 1
2 1	.96343384	.96371382	1.00574737	1.03841947	2 1
3 1	.96353459	.96371801	1.00162799	1.03833134	3 1
4 1	.96360969	.96372264	1.00117505	1.03831639	4 1
5 1	.96367563	.96372688	.99817658	1.03833134	5 1
6 1	.96369318	.96372994	.99925734	1.03838950	8 1
7 1	.96369447	.96373169	.99801253	1.03849878	7 1
8 1	.96366254	.96373220	1.00172891	1.03854924	8 1
1 2	.96218048	.96388423	1.03595943	1.03629231	1 2
2 2	.96231133	.96388920	1.03148643	1.03619614	2 2
3 2	.96246933	.96389429	1.02698053	1.03619326	3 2
4 2	.96259642	.96389739	1.02373469	1.03619808	4 2
5 2	.96265939	.96389670	1.02051678	1.03622587	5 2
6 2	.96261087	.96389132	1.02178825	1.03627565	6 2
7 2	.96251244	.96388352	1.02279247	1.03631530	7 2
8 2	.96239390	.96387655	1.02865693	1.03907168	8 2
1 3	.96399439	.96619584	1.04340717	1.03188193	1 3
2 3	.96411562	.96620076	1.04015300	1.03186186	2 3
3 3	.96425717	.96620497	1.03676933	1.03186476	3 3
4 3	.96437090	.96620616	1.03328790	1.03181712	4 3
5 3	.96440854	.96620242	1.03136817	1.03183922	5 3
6 3	.96434364	.96619319	1.03230857	1.03195441	6 3
7 3	.96424464	.96618182	1.03274407	1.03199475	7 3
8 3	.96414036	.96617237	1.03585797	1.03210113	8 3
1 4	.96899844	.97112586	1.04055849	1.02583996	1 4
2 4	.96909642	.97112981	1.03822526	1.02576276	2 4
3 4	.96920446	.97113244	1.03578192	1.02576886	3 4
4 4	.96928188	.97113165	1.03355510	1.02578421	4 4
5 4	.96929808	.97112602	1.03187995	1.02580814	5 4
6 4	.96922561	.97111529	1.03272749	1.02584169	8 4
7 4	.96912871	.97110295	1.03313826	1.02593604	7 4
8 4	.96903482	.97109309	1.03521284	1.02596777	8 4
1 5	.97696702	.97861413	1.03069072	1.01819477	1 5
2 5	.97703831	.97861697	1.02922953	1.01818845	2 5
3 5	.97711078	.97861857	1.02784764	1.01819138	3 5
4 5	.97716134	.97861729	1.02611526	1.01820484	4 5
5 5	.97716448	.97861213	1.02507188	1.01822139	5 5
6 5	.97710394	.97860301	1.02566208	1.01824502	6 5
7 5	.97702765	.97859282	1.02592938	1.01826362	7 5
8 5	.97695614	.97858480	1.02730778	1.01828442	8 5
1 6	.98747017	.98835841	1.01631240	1.00935519	1 6
2 6	.98750681	.98835988	1.01556183	1.00935034	2 6
3 6	.98754581	.98836066	1.01474805	1.00935187	3 8
4 8	.98757206	.98835990	1.01395142	1.00935881	4 8
5 6	.98757304	.98835706	1.01343402	1.00936578	5 6
8 6	.98754058	.98835212	1.01370928	1.00937853	8 6
7 6	.98749946	.98834659	1.01384442	1.00938860	7 6
8 8	.98746089	.98834225	1.01456160	1.00939972	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 16200.00 SECONDS **** 4.5000 HOURS

1 1	.94969128	.95067376	1.02308754	1.03431540	1 1
2 1	.94979574	.95067772	1.01876878	1.03427405	2 1
3 1	.94992438	.95068244	1.01419519	1.03419435	3 1
4 1	.95002044	.95068645	1.01284113	1.03418297	4 1
5 1	.95008535	.95068856	1.00972330	1.03419921	5 1
6 1	.95007984	.95068799	1.01092878	1.03424562	8 1
7 1	.95004946	.95068572	1.01002078	1.03435709	7 1
8 1	.94999184	.95068311	1.01397540	1.03440277	8 1
1 2	.94909843	.95151975	1.05015779	1.03222967	1 2
2 2	.94924413	.95152532	1.04576598	1.03214635	2 2
3 2	.94941204	.95153000	1.04131402	1.03214969	3 2
4 2	.94954917	.95153116	1.03780207	1.03215840	4 2
5 2	.94958683	.95152676	1.03470652	1.03218611	5 2
6 2	.94950595	.95151608	1.03603049	1.03222898	8 2
7 2	.94937416	.95150280	1.03693704	1.03226073	7 2
8 2	.94922753	.95149174	1.04298634	1.03486992	8 2
1 3	.95237890	.95521698	1.05556773	1.02818858	1 3
2 3	.95250913	.95522221	1.05253332	1.02816975	2 3
3 3	.95265297	.95522571	1.04932135	1.02817817	3 3
4 3	.95275872	.95522471	1.04604298	1.02813652	4 3
5 3	.95277749	.95521716	1.04412808	1.02815788	5 3
6 3	.95268041	.95520270	1.04513335	1.02828142	6 3
7 3	.95254980	.95518605	1.04569837	1.02829329	7 3
8 3	.95242186	.95517270	1.04858048	1.02838606	8 3
1 4	.95951455	.96215359	1.05007587	1.02275161	1 4
2 4	.95961815	.96215772	1.04796795	1.02268551	2 4
3 4	.95972544	.96215964	1.04574207	1.02269578	3 4
4 4	.95979380	.96215689	1.04369413	1.02271265	4 4
5 4	.95979213	.96214797	1.04218479	1.02273317	5 4
8 4	.95969346	.96213287	1.04298461	1.02278997	6 4
7 4	.95957148	.96211617	1.04339088	1.02284435	7 4
8 4	.95945884	.96210312	1.04533819	1.02286681	8 4
1 5	.97015103	.97218350	1.03729189	1.01595793	1 5
2 5	.97022400	.97218647	1.03880788	1.01595729	2 5
3 5	.97029733	.97218754	1.03459063	1.01596326	3 5
4 5	.97034832	.97218480	1.03323287	1.01597752	4 5
5 5	.97032972	.97215721	1.03238868	1.01599288	5 5
6 5	.97026017	.97214488	1.03286057	1.01601027	8 5
7 5	.97016592	.97213151	1.03312118	1.01602387	7 5

8 5	.97007129	.97212116	1.03438150	1.01603692	8 5
1 6	.98381173	.98489786	1.01977462	1.00816694	1 6
2 6	.98385026	.98489918	1.01912174	1.00816519	2 6
3 6	.98388843	.98489966	1.01840610	1.00816831	3 6
4 6	.98391041	.98489809	1.01771308	1.00817566	4 6
5 6	.98390396	.98489395	1.01725032	1.00818193	5 6
6 6	.98386110	.98488727	1.01751370	1.00819146	6 6
7 6	.98381019	.98488002	1.01764515	1.00819840	7 6
8 6	.98376449	.98487442	1.01829263	1.00820576	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 18000.00 SECONDS **** 5.0000 HOURS

1 1	.93877659	.94030563	1.03516099	1.02976314	1 1
2 1	.93890273	.94031044	1.03043207	1.02972983	2 1
3 1	.93905301	.94031547	1.02554297	1.02965916	3 1
4 1	.93916468	.94031879	1.02348283	1.02965175	4 1
5 1	.93922702	.94031889	1.02028405	1.02966900	5 1
6 1	.93919916	.94031501	1.02158718	1.02971130	6 1
7 1	.93914256	.94030910	1.02095760	1.02981460	7 1
8 1	.93906269	.94030370	1.02508109	1.02985400	8 1
1 2	.93874037	.94174347	1.06182899	1.02779228	1 2
2 2	.93889533	.94174941	1.05764385	1.02772257	2 2
3 2	.93906725	.94175357	1.05336522	1.02773229	3 2
4 2	.93919195	.94175291	1.04977999	1.02774463	4 2
5 2	.93922246	.94174522	1.04684399	1.02777154	5 2
6 2	.93911412	.94173000	1.04817905	1.02780590	6 2
7 2	.93895505	.94171209	1.04900898	1.02782838	7 2
8 2	.93878662	.94169760	1.05506488	1.03029572	8 2
1 3	.94326293	.94659558	1.06512593	1.02415296	1 3
2 3	.94339769	.94660094	1.06237868	1.02415221	2 3
3 3	.94353961	.94660370	1.05942492	1.02416612	3 3
4 3	.94363534	.94660877	1.05641231	1.02412984	4 3
5 3	.94363644	.94658999	1.05458874	1.02414973	5 3
6 3	.94351323	.94657124	1.05560285	1.02424041	6 3
7 3	.94335788	.94655029	1.05608095	1.02426259	7 3
8 3	.94321209	.94653381	1.05886197	1.02434059	8 3
1 4	.95212788	.95515235	1.05730629	1.01940163	1 4
2 4	.95223378	.95515653	1.05545645	1.01934692	2 4
3 4	.95233758	.95515777	1.05348886	1.01936126	3 4
4 4	.95239606	.95515334	1.05166346	1.01937925	4 4
5 4	.95237856	.95514174	1.05030714	1.01939776	5 4
6 4	.95225920	.95512314	1.05107747	1.01941673	6 4
7 4	.95211810	.95510301	1.05147344	1.01948838	7 4
8 4	.95199185	.95508747	1.05324549	1.01950059	8 4
1 5	.96487242	.96715444	1.04217655	1.01353464	1 5
2 5	.96494675	.96715744	1.04108263	1.01353999	2 5
3 5	.96501716	.96715801	1.03985635	1.01354892	3 5
4 5	.96505240	.96715406	1.03868601	1.01356368	4 5
5 5	.96502999	.96714453	1.03789238	1.01357685	5 5
6 5	.96493573	.96712970	1.03839717	1.01358780	6 5
7 5	.96482811	.96711387	1.03864691	1.01359416	7 5
8 5	.96473415	.96710174	1.03976466	1.01360038	8 5
1 6	.98098786	.98221821	1.02229399	1.00687825	1 6
2 6	.98102701	.98221974	1.02174505	1.00687977	2 6
3 6	.98106344	.98221993	1.02113657	1.00688442	3 6
4 6	.98108110	.98221771	1.02055017	1.00689202	4 6
5 6	.98106826	.98221252	1.02015348	1.00689734	5 6
6 6	.98101745	.98220450	1.02039634	1.00690328	6 6
7 6	.98095932	.98219593	1.02052184	1.00690671	7 6
8 6	.98090861	.98218938	1.02108806	1.00690993	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 19800.00 SECONDS **** 5.5000 HOURS

1 1	.93049401	.93248577	1.04548956	1.02496569	1 1
2 1	.93063648	.93249122	1.04053467	1.02494151	2 1
3 1	.93080245	.93249640	1.03546959	1.02488021	3 1
4 1	.93092480	.93249898	1.03288556	1.02487697	4 1
5 1	.93098325	.93249719	1.02965299	1.02489495	5 1
6 1	.93093634	.93249036	1.03102371	1.02493201	6 1
7 1	.93085663	.93248126	1.03062162	1.02502624	7 1
8 1	.93075809	.93247343	1.03483589	1.02505800	8 1
1 2	.93097710	.93443127	1.07091490	1.02313121	1 2
2 2	.93113633	.93443737	1.06704098	1.02307563	2 2
3 2	.93130716	.93444094	1.06303949	1.02309167	3 2
4 2	.93142486	.93443859	1.05953733	1.02310727	4 2
5 2	.93143969	.93442808	1.05680145	1.02313274	5 2
6 2	.93130882	.93440908	1.05810978	1.02315746	6 2
7 2	.93112841	.93438738	1.05887368	1.02316962	7 2
8 2	.93094402	.93437011	1.06478956	1.02550065	8 2
1 3	.93651856	.94021168	1.07210369	1.01993674	1 3
2 3	.93665391	.94021702	1.06969576	1.01994625	2 3
3 3	.93679036	.94021904	1.06706644	1.01996542	3 3
4 3	.93687457	.94021443	1.06437225	1.01993390	4 3
5 3	.93685952	.94020101	1.06270402	1.01995173	5 3
6 3	.93671600	.94017886	1.06368399	1.02002875	6 3
7 3	.93654235	.94015457	1.06415582	1.02004045	7 3
8 3	.93638419	.94013568	1.06668246	1.02010303	8 3
1 4	.94672499	.95001691	1.06231645	1.01590443	1 4
2 4	.94683026	.95002104	1.06074802	1.01586108	2 4
3 4	.94692831	.95002163	1.05906764	1.01587928	3 4

4 4	.94697644	.95001582	1.05749550	1.01589798	4 4
5 4	.94694524	.95000212	1.05633185	1.01591401	5 4
6 4	.94681044	.94998088	1.05703513	1.01592348	6 4
7 4	.94665585	.94995818	1.05741471	1.01598303	7 4
8 4	.94652068	.94994082	1.05897544	1.01598444	8 4
1 5	.96104474	.96350734	1.04542853	1.01100838	1 5
2 5	.96111840	.96351029	1.04453090	1.01101978	2 5
3 5	.96118443	.96351041	1.04381021	1.01103151	3 5
4 5	.96121195	.96350548	1.04253578	1.01104648	4 5
5 5	.96117969	.96349449	1.04187871	1.01105741	5 5
6 5	.96107483	.96347781	1.04232886	1.01106119	6 5
7 5	.96095811	.96346021	1.04256320	1.01106876	7 5
8 5	.96085830	.96344682	1.04352188	1.01105902	8 5
1 6	.97895064	.98027610	1.02393129	1.00553434	1 6
2 6	.97898934	.98027760	1.02348777	1.00553916	2 6
3 6	.97902330	.98027754	1.02299938	1.00554526	3 6
4 6	.97903674	.98027480	1.02251133	1.00555295	4 6
5 6	.97901862	.98026883	1.02218598	1.00555713	5 6
6 6	.97896215	.98025984	1.02240269	1.00555920	6 6
7 6	.97889919	.98025033	1.02251876	1.00555898	7 6
8 6	.97884540	.98024311	1.02299820	1.00555789	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 21600.00 SECONDS **** 6.0000 HOURS

1 1	.92469758	.92706802	1.05395265	1.02006353	1 1
2 1	.92485132	.92707392	1.04894193	1.02004917	2 1
3 1	.92502740	.92707910	1.04383850	1.01999735	3 1
4 1	.92515595	.92708089	1.04009706	1.01999834	4 1
5 1	.92520936	.92707740	1.03768260	1.02001675	5 1
6 1	.92514601	.92706798	1.03908952	1.02004767	6 1
7 1	.92504712	.92705614	1.03887821	1.02013211	7 1
8 1	.92493351	.92704625	1.04309336	1.02015528	8 1
1 2	.92565497	.92943577	1.07742807	1.01838321	1 2
2 2	.92581482	.92944187	1.07394997	1.01834169	2 2
3 2	.92597935	.92944477	1.07031274	1.01838376	3 2
4 2	.92608728	.92944092	1.06781928	1.01838218	4 2
5 2	.92608712	.92942805	1.06452279	1.01840567	5 2
6 2	.92593853	.92940602	1.06577073	1.01841997	6 2
7 2	.92574252	.92938135	1.06647252	1.01842122	7 2
8 2	.92554758	.92936195	1.07212869	1.02062159	8 2
1 3	.93199694	.93592523	1.07658392	1.01565537	1 3
2 3	.93212943	.93593042	1.07455278	1.01567508	2 3
3 3	.93225747	.93593172	1.07229611	1.01569915	3 3
4 3	.93232910	.93592569	1.06996132	1.01567175	4 3
5 3	.93229964	.93591021	1.06849449	1.01568703	5 3
6 3	.93214130	.93588552	1.06940757	1.01575001	6 3
7 3	.93195540	.93585881	1.06985847	1.01575085	7 3
8 3	.93178994	.93583821	1.07208647	1.01579782	8 3
1 4	.94317538	.94662578	1.06522012	1.01236258	1 4
2 4	.94327759	.94662975	1.06394684	1.01233031	2 4
3 4	.94336793	.94662975	1.06257150	1.01235204	3 4
4 4	.94340556	.94662284	1.06127199	1.01237107	4 4
5 4	.94336283	.94660759	1.06031348	1.01238425	5 4
6 4	.94321754	.94658450	1.06093600	1.01238392	6 4
7 4	.94305467	.94656007	1.06129269	1.01243132	7 4
8 4	.94291486	.94654149	1.06261739	1.01242188	8 4
1 5	.95856912	.96113077	1.04715761	1.00849378	1 5
2 5	.95864036	.96113361	1.04645807	1.00847111	2 5
3 5	.95870086	.96113332	1.04564898	1.00848539	3 5
4 5	.95872087	.96112765	1.04487340	1.00850932	4 5
5 5	.95864068	.96111562	1.04435475	1.00850878	5 5
6 5	.95856903	.96109773	1.04474445	1.00850523	6 5
7 5	.95844716	.96107899	1.04495897	1.00849793	7 5
8 5	.95834466	.96106482	1.04574908	1.00848818	8 5
1 6	.97764524	.97902089	1.02475883	1.00417563	1 6
2 6	.97768259	.97902232	1.02441945	1.00418366	2 6
3 6	.97771354	.97902205	1.02403286	1.00419197	3 6
4 6	.97772294	.97901892	1.02365950	1.00419871	4 6
5 6	.97770064	.97901242	1.02340665	1.00420184	5 6
6 6	.97764065	.97900279	1.02359342	1.00419977	6 6
7 6	.97757505	.97899270	1.02378010	1.00419585	7 6
8 6	.97751993	.97898508	1.02408806	1.00419843	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 23400.00 SECONDS **** 6.5000 HOURS

1 1	.92122252	.92388875	1.06049212	1.01518212	1 1
2 1	.92138282	.92389491	1.05557940	1.01517795	2 1
3 1	.92158382	.92389995	1.05056154	1.01513551	3 1
4 1	.92169450	.92390097	1.04742056	1.01514862	4 1
5 1	.92174194	.92389595	1.04427761	1.01515917	5 1
6 1	.92166478	.92388434	1.04568928	1.01518338	6 1
7 1	.92156058	.92387022	1.04561345	1.01525747	7 1
8 1	.92142547	.92385863	1.04976374	1.01527148	8 1
1 2	.92288358	.92659371	1.08144414	1.01386972	1 2
2 2	.92275847	.92659964	1.07842674	1.01364191	2 2
3 2	.92291458	.92660184	1.07522334	1.01368958	3 2
4 2	.92301033	.92659867	1.07223733	1.01369830	4 2
5 2	.92299834	.92658198	1.07081497	1.01371136	5 2

6 2	.92283470	.92655758	1.07117345	1.01371482	6 2
7 2	.92262854	.92653074	1.07181303	1.01370490	7 2
8 2	.92242806	.92650982	1.07711377	1.01578037	8 2
1 3	.92953485	.93358246	1.07870295	1.01141840	1 3
2 3	.92966150	.93358738	1.07707176	1.01144793	2 3
3 3	.92977871	.93358799	1.07521933	1.01147641	3 3
4 3	.92983712	.93358082	1.07327244	1.01145250	4 3
5 3	.92979514	.93356383	1.07203832	1.01146487	5 3
6 3	.92962716	.93353742	1.07285993	1.01151379	6 3
7 3	.92943461	.93350913	1.07327770	1.01150374	7 3
8 3	.92926648	.93348747	1.07517439	1.01153530	8 3
1 4	.94133693	.94484632	1.06617016	1.00886671	1 4
2 4	.94143373	.94485805	1.06519646	1.00884497	2 4
3 4	.94151511	.94484953	1.06413362	1.00886983	3 4
4 4	.94154234	.94484179	1.06311592	1.00888883	4 4
5 4	.94149026	.94482551	1.06236786	1.00889895	5 4
6 4	.94133905	.94480132	1.06289991	1.00888881	6 4
7 4	.94117268	.94477592	1.06322778	1.00892431	7 4
8 4	.94103213	.94475671	1.06430165	1.00890406	8 4
1 5	.95733828	.95992528	1.04749675	1.00593665	1 5
2 5	.95740562	.95992795	1.04699207	1.00595960	2 5
3 5	.95745972	.95992732	1.04639332	1.00597614	3 5
4 5	.95747256	.95992113	1.04581466	1.00599078	4 5
5 5	.95742633	.95990848	1.04543249	1.00599664	5 5
6 5	.95731140	.95988993	1.04575781	1.00598583	6 5
7 5	.95718795	.95987065	1.04594873	1.00597179	7 5
8 5	.95708559	.95985612	1.04656669	1.00595423	8 5
1 6	.97701229	.97839780	1.02485748	1.00283763	1 6
2 6	.97704752	.97839914	1.02461830	1.00284871	2 6
3 6	.97707505	.97839868	1.02433915	1.00285728	3 6
4 6	.97708069	.97839528	1.02406764	1.00286474	4 6
5 6	.97705528	.97838848	1.02388563	1.00286635	5 6
6 6	.97699370	.97837855	1.02404050	1.00286060	6 6
7 6	.97692743	.97836819	1.02413495	1.00285305	7 6
8 6	.97687253	.97834041	1.02443274	1.00284342	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 25200.00 SECONDS **** 7.0000 HOURS

1 1	.91989066	.92277191	1.06510500	1.01043191	1 1
2 1	.92005314	.92277817	1.06042599	1.01043800	2 1
3 1	.92023430	.92278294	1.05561274	1.01040463	3 1
4 1	.92036343	.92278318	1.05240863	1.01041367	4 1
5 1	.92040414	.92277683	1.04938942	1.01043207	5 1
6 1	.92031584	.92276343	1.05077548	1.01044896	6 1
7 1	.92019006	.92274749	1.05080860	1.01051263	7 1
8 1	.92005698	.92273457	1.05480766	1.01051696	8 1
1 2	.92164029	.92573046	1.08309357	1.00909726	1 2
2 2	.92178777	.92573610	1.08058228	1.00908254	2 2
3 2	.92193149	.92573759	1.07786427	1.00911523	3 2
4 2	.92201351	.92573129	1.07526022	1.00913771	4 2
5 2	.92198680	.92571509	1.07334009	1.00915596	5 2
6 2	.92181659	.92568919	1.07438493	1.00914851	6 2
7 2	.92160542	.92566094	1.07496085	1.00912748	7 2
8 2	.92140398	.92563908	1.07983153	1.01108388	8 2
1 3	.92895886	.93301987	1.07864203	1.00732146	1 3
2 3	.92907715	.93302443	1.07742016	1.00736019	2 3
3 3	.92918166	.93302439	1.07598813	1.00739250	3 3
4 3	.92922656	.93301634	1.07444490	1.00737147	4 3
5 3	.92917408	.93299836	1.07346222	1.00738067	5 3
6 3	.92900125	.93297100	1.07417470	1.00741584	6 3
7 3	.92880719	.93294195	1.07454951	1.00739517	7 3
8 3	.92864061	.93291982	1.07609405	1.00741188	8 3
1 4	.94105942	.94453818	1.06535026	1.00549560	1 4
2 4	.94114911	.94454161	1.06467188	1.00548369	2 4
3 4	.94122035	.94454061	1.06391946	1.00551121	3 4
4 4	.94123754	.94453232	1.06318364	1.00552984	4 4
5 4	.94117826	.94451550	1.06264521	1.00553676	5 4
6 4	.94102533	.94449089	1.06308039	1.00551712	6 4
7 4	.94085979	.94446522	1.06337442	1.00554123	7 4
8 4	.94072195	.94444589	1.06419164	1.00551073	8 4
1 5	.95723926	.95978599	1.04659494	1.00351397	1 5
2 5	.95730149	.95978844	1.04627738	1.00354210	2 5
3 5	.95734856	.95978751	1.04588223	1.00356055	3 5
4 5	.95735471	.95978100	1.04549368	1.00357470	4 5
5 5	.95730422	.95976811	1.04524271	1.00357792	5 5
6 5	.95718918	.95974944	1.04550166	1.00356014	6 5
7 5	.95706735	.95973014	1.04566680	1.00353969	7 5
8 5	.95696763	.95971565	1.04611336	1.00351475	8 5
1 6	.97698938	.97834914	1.02431255	1.00155108	1 6
2 6	.97702186	.97835036	1.02416786	1.00156496	2 6
3 6	.97704571	.97834976	1.02399049	1.00157450	3 6
4 6	.97704791	.97834621	1.02381519	1.00158168	4 6
5 6	.97702040	.97833930	1.02370040	1.00158196	5 6
6 6	.97695897	.97832935	1.02382257	1.00157248	6 6
7 6	.97689378	.97831902	1.02390345	1.00156149	7 6
8 6	.97684043	.97831129	1.02411369	1.00154789	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 27000.00 SECONDS **** 7.5000 HOURS

1 1	.92051353	.92353194	1.06783672	1.00590853	1 1

2 1	.92067419	.92353814	1.06350753	1.00592467	2 1
3 1	.92085118	.92354254	1.05900259	1.09589992	3 1
4 1	.92097550	.92354203	1.05585756	1.00591258	4 1
5 1	.92100890	.92353457	1.05301106	1.00593854	5 1
6 1	.92091210	.92351976	1.05434314	1.00593997	6 1
7 1	.92077838	.92350246	1.05445494	1.00599310	7 1
8 1	.92064068	.92348859	1.05823044	1.08598775	8 1
1 2	.92257372	.92666283	1.08255330	1.00475767	1 2
2 2	.92271083	.92666805	1.08057458	1.00475516	2 2
3 2	.92283964	.92666884	1.07837547	1.00479220	3 2
4 2	.92290678	.92666162	1.07620567	1.00481588	4 2
5 2	.92286869	.92664444	1.07460778	1.00483104	5 2
6 2	.92269417	.92661763	1.07552002	1.00481286	6 2
7 2	.92248276	.92658869	1.07602756	1.00478108	7 2
8 2	.92228454	.92656644	1.08041634	1.00662431	8 2
1 3	.93008785	.93406666	1.07661837	1.00344653	1 3
2 3	.93019572	.93407079	1.07580233	1.00349362	2 3
3 3	.93028614	.93407015	1.07479263	1.00352913	3 3
4 3	.93031761	.93406148	1.07365642	1.08351039	4 3
5 3	.93025666	.93404302	1.07293299	1.09351626	5 3
6 3	.93008344	.93401542	1.07352471	1.00353827	6 3
7 3	.92989253	.93398634	1.07384906	1.00350755	7 3
8 3	.92973123	.93396430	1.07503216	1.08351027	8 3
1 4	.94218672	.94555531	1.06296684	1.00231648	1 4
2 4	.94226784	.94555839	1.06257176	1.00231351	2 4
3 4	.94232823	.94555699	1.06211920	1.00234320	3 4
4 4	.94233592	.94554839	1.06165723	1.00236116	4 4
5 4	.94227154	.94553149	1.06132184	1.00236405	5 4
6 4	.94212070	.94550708	1.06165718	1.00233626	6 4
7 4	.94195984	.94548177	1.06191352	1.00234968	7 4
8 4	.94182774	.94546280	1.06247626	1.00230968	8 4
1 5	.95815514	.96060412	1.04461162	1.00123419	1 5
2 5	.95821129	.96060632	1.04446961	1.00126693	2 5
3 5	.95825093	.96060514	1.04426857	1.00128695	3 5
4 5	.95825096	.96059852	1.04405741	1.00130041	4 5
5 5	.95819791	.96058572	1.04392961	1.00130104	5 5
6 5	.95808558	.96056740	1.04412202	1.00127676	6 5
7 5	.95796818	.96054854	1.04425771	1.00125837	7 5
8 5	.95787326	.96053445	1.04454037	1.00121864	8 5
1 6	.97751214	.97881525	1.02321168	1.00034203	1 6
2 6	.97754138	.97881634	1.02315436	1.00035839	2 6
3 6	.97756138	.97881561	1.02307143	1.00036872	3 6
4 6	.97756049	.97881203	1.02290528	1.00937553	4 6
5 6	.97753183	.97880520	1.02293274	1.00837449	5 6
6 6	.97747207	.97879547	1.02302236	1.00036156	6 6
7 6	.97740946	.97878543	1.02308880	1.00034740	7 6
8 6	.97735885	.97877794	1.02321594	1.00033817	8 6

ELAPSED XENON TIME SINCE PERTURBATION •••• 28889.88 SECONDS •••• 8.0800 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.92289415	.92597540	1.06877481	1.00169308	1 1
2 1	.92304938	.92598141	1.06489097	1.00171880	2 1
3 1	.92321829	.92598536	1.06078279	1.00170209	3 1
4 1	.92333493	.92598414	1.05788223	1.00171796	4 1
5 1	.92336064	.92597576	1.05517248	1.00173523	5 1
6 1	.92326791	.92595995	1.05642484	1.00173715	6 1
7 1	.92311975	.92594174	1.05658898	1.00177993	7 1
8 1	.92298064	.92592726	1.06007673	1.00176504	8 1
1 2	.92520456	.92920846	1.08003824	1.00072838	1 2
2 2	.92532889	.92920518	1.07869051	1.00073708	2 2
3 2	.92544084	.92920527	1.07693614	1.00077764	3 2
4 2	.92549242	.92919734	1.07523244	1.08080197	4 2
5 2	.92544445	.92917961	1.07396806	1.00081384	5 2
6 2	.92526962	.92915255	1.07473397	1.00078539	6 2
7 2	.92506239	.92912360	1.07517094	1.00074346	7 2
8 2	.92487112	.92918146	1.07904254	1.00247941	8 2
1 3	.93273443	.93654615	1.07287628	.99986231	1 3
2 3	.93283026	.93654978	1.07245096	.99991678	2 3
3 3	.93290567	.93654861	1.07185270	.99995479	3 3
4 3	.93292409	.93653956	1.07111519	.99993788	4 3
5 3	.93285677	.93652108	1.07064934	.99994029	5 3
6 3	.93268719	.93649391	1.07111404	.99994997	6 3
7 3	.93250359	.93646547	1.07138267	.99990997	7 3
8 3	.93235087	.93644402	1.07220603	.99989981	8 3
1 4	.94455810	.94774728	1.05924154	.99938532	1 4
2 4	.94462957	.94774996	1.05911118	.99939032	2 4
3 4	.94467870	.94774823	1.05894054	.99942164	3 4
4 4	.94467760	.94773955	1.05873750	.99943968	4 4
5 4	.94461013	.94772298	1.05859359	.99943920	5 4
6 4	.94448478	.94789933	1.05882920	.99940239	6 4
7 4	.94431198	.94787496	1.05904523	.99940682	7 4
8 4	.94418821	.94765675	1.05938270	.99935746	8 4
1 5	.95996613	.96220804	1.04171188	.99913745	1 5
2 5	.96081545	.96226998	1.04173871	.99917416	2 5
3 5	.96084748	.96226880	1.94178464	.99919536	3 5
4 5	.98884203	.96226283	1.04188088	.99920880	4 5
5 5	.95998808	.96224963	1.04164599	.99920613	5 5
6 5	.95988888	.96223286	1.04177333	.99917595	6 5
7 5	.95977838	.96221487	1.04187923	.99914424	7 5
8 5	.95988289	.96228068	1.04200878	.99918647	8 5

1 6	.97851481	.97973504	1.02164284	.99923198	1 6
2 6	.97854045	.97973599	1.02166472	.99925048	2 6
3 6	.97855654	.97973518	1.02166768	.99928141	3 6
4 6	.97855293	.97973164	1.02166254	.99926776	4 6
5 6	.97852396	.97972507	1.02166634	.99926547	5 6
6 6	.97846721	.97971578	1.02172438	.99924943	6 6
7 6	.97840848	.97970624	1.02177594	.99923243	7 6
8 6	.97836156	.97989915	1.02182580	.99921198	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 30600.00 SECONDS **** 8.5000 HOURS

1 1	.92682778	.92990181	1.06804290	.99785247	1 1
2 1	.92697432	.92990750	1.06467877	.99788709	2 1
3 1	.92713177	.92991092	1.06103919	.99787770	3 1
4 1	.92723829	.92990904	1.05831120	.99789634	4 1
5 1	.92725609	.92989998	1.05593571	.99791268	5 1
6 1	.92714996	.92988354	1.05708618	.99790722	6 1
7 1	.92701064	.92986486	1.05728000	.99794800	7 1
8 1	.92687314	.92985010	1.06042553	.99791594	8 1
1 2	.92932664	.93314668	1.07579282	.99707282	1 2
2 2	.92943631	.93315081	1.07488774	.99709133	2 2
3 2	.92953002	.93315026	1.07375717	.99713477	3 2
4 2	.92956581	.93314183	1.07253276	.99715920	4 2
5 2	.92950959	.93312397	1.07160415	.99716769	5 2
6 2	.92933816	.93309725	1.07221526	.99712964	6 2
7 2	.92913908	.93306890	1.07257939	.99707838	7 2
8 2	.92895806	.93304735	1.07591697	.99871294	8 2
1 3	.93670577	.94027650	1.06767853	.99662462	1 3
2 3	.93678836	.94027960	1.06761874	.99668532	2 3
3 3	.93684827	.94027796	1.06740980	.99672514	3 3
4 3	.93685432	.94026879	1.06705220	.99670938	4 3
5 3	.93678270	.94025072	1.06683411	.99670854	5 3
6 3	.93662038	.94022455	1.06717029	.99670693	6 3
7 3	.93644773	.94019736	1.06738012	.99665861	7 3
8 3	.93630640	.94017695	1.06785546	.99663689	8 3
1 4	.94800907	.95095996	1.05440435	.99674723	1 4
2 4	.94807011	.95096222	1.05451451	.99675912	2 4
3 4	.94810789	.95096024	1.05460210	.99679153	3 4
4 4	.94809887	.95095171	1.05463734	.99680743	4 4
5 4	.94803022	.95093582	1.05466926	.99680492	5 4
6 4	.94789331	.95091343	1.05480800	.99676080	6 4
7 4	.94775147	.95089048	1.05498237	.99675566	7 4
8 4	.94763821	.95087340	1.05506974	.99669965	8 4
1 5	.96255023	.96466388	1.03806237	.99725589	1 5
2 5	.96259222	.96466550	1.03822497	.99729586	2 5
3 5	.96261663	.96466400	1.03835791	.99731787	3 5
4 5	.96260640	.96465765	1.03846300	.99732955	4 5
5 5	.96255282	.96464590	1.03854911	.99732534	5 5
6 5	.96245298	.96462944	1.03861431	.99729000	6 5
7 5	.96235129	.96461267	1.03869014	.99725368	7 5
8 5	.96227111	.96460021	1.03867485	.99721071	8 5
1 6	.97993072	.98104641	1.01969282	.99823810	1 6
2 6	.97995250	.98104720	1.01978501	.99825835	2 6
3 6	.97996469	.98104634	1.01986445	.99826967	3 6
4 6	.97995876	.98104294	1.01993142	.99827552	4 6
5 6	.97993025	.98103675	1.01998510	.99827206	5 6
6 6	.97987762	.98102889	1.02001315	.99825331	6 6
7 6	.97982383	.98101925	1.02004977	.99823388	7 6
8 6	.97978139	.98101268	1.02002922	.99821068	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 32400.00 SECONDS **** 9.0000 HOURS

1 1	.93210250	.93510414	1.06579485	.99443974	1 1
2 1	.93223758	.93510940	1.06300347	.99448243	2 1
3 1	.93238063	.93511224	1.05988688	.99447955	3 1
4 1	.93247500	.93510976	1.05748216	.99450045	4 1
5 1	.93248485	.93510023	1.05539136	.99451564	5 1
6 1	.93237773	.93508354	1.05642128	.99450310	6 1
7 1	.93224035	.93506480	1.05662556	.99452639	7 1
8 1	.93210725	.93505010	1.05938534	.99449374	8 1
1 2	.93472746	.93829902	1.07008261	.99384079	1 2
2 2	.93482107	.93830251	1.06968676	.99386783	2 2
3 2	.93489570	.93830136	1.06907366	.99391324	3 2
4 2	.93491591	.93829264	1.06832489	.99393726	4 2
5 2	.93485315	.93827504	1.06772555	.99394234	5 2
6 2	.93468858	.93824921	1.06817845	.99389557	6 2
7 2	.93450112	.93822204	1.06846863	.99383598	7 2
8 2	.93433319	.93820150	1.07127146	.99537499	8 2
1 3	.94180419	.94507140	1.06129820	.99377672	1 3
2 3	.94187276	.94507393	1.06157041	.99384246	2 3
3 3	.94191711	.94507191	1.06171930	.99388337	3 3
4 3	.94191171	.94506283	1.06171375	.99386840	4 3
5 3	.94183783	.94504556	1.06172679	.99386434	5 3
6 3	.94168595	.94502092	1.06193711	.99385264	6 3
7 3	.94152735	.94499551	1.06208711	.99379713	7 3
8 3	.94139974	.94497652	1.06223498	.99376531	8 3
1 4	.95237205	.95503621	1.04868753	.99443681	1 4
2 4	.95242218	.95503804	1.04901016	.99445446	2 4
3 4	.95244878	.95503587	1.04932738	.99448745	3 4
4 4	.95243281	.95502767	1.04957577	.99450202	4 4

5 4	.95236476	.95501278	1.04976463	.99449668	8 4
6 4	.95223881	.95499207	1.04981177	.99444629	6 4
7 4	.95211031	.95497096	1.04994434	.99443352	7 4
8 4	.95200933	.95495532	1.04982166	.99437128	8 4
1 5	.96578381	.96767601	1.03382791	.99561394	1 5
2 5	.96581816	.96767732	1.03411555	.99565642	2 5
3 5	.96583510	.96767574	1.03438755	.99567886	3 5
4 5	.96582083	.96766973	1.03462312	.99568949	4 5
5 5	.96576899	.96765887	1.03479710	.99568317	5 5
6 5	.96567820	.96764381	1.03480435	.99564347	6 5
7 5	.96558702	.96762855	1.03485063	.99560332	7 5
8 5	.96551614	.96761725	1.03470726	.99555608	8 5
1 6	.98189255	.98268648	1.01744610	.99737336	1 6
2 6	.98171030	.98268712	1.01759925	.99739496	2 6
3 6	.98171869	.98268622	1.01774522	.99740649	3 6
4 6	.98171082	.98268304	1.01787492	.99741179	4 6
5 6	.98168346	.98267734	1.01797164	.99740728	5 6
6 6	.98163585	.98266947	1.01797182	.99738625	6 6
7 6	.98158785	.98266146	1.01799380	.99736482	7 6
8 6	.98155050	.98265555	1.01791048	.99733937	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 34280.80 SECONOS **** 9.5888 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	1OD1NE	
1 1	.93849980	.94136949	1.06220891	.99149448	1 1
2 1	.93862107	.94137423	1.06002242	.99154424	2 1
3 1	.93874731	.94137645	1.05746543	.99154700	3 1
4 1	.93882792	.94137345	1.05543730	.99156963	4 1
5 1	.93882997	.94136366	1.05365359	.99158349	5 1
6 1	.93872415	.94134708	1.05454846	.99156430	6 1
7 1	.93859156	.94132867	1.05474726	.99157876	7 1
8 1	.93846540	.94131433	1.05708941	.99153826	8 1
1 2	.94118885	.94444991	1.06318606	.99106885	1 2
2 2	.94126548	.94445274	1.06326304	.99110300	2 2
3 2	.94132073	.94445105	1.06313743	.99114954	3 2
4 2	.94132595	.94444225	1.06284584	.99117268	4 2
5 2	.94125843	.94442526	1.06256111	.99117439	5 2
8 2	.94110359	.94440083	1.06285714	.99111993	6 2
7 2	.94093096	.94437534	1.06307368	.99105316	7 2
8 2	.94077848	.94435618	1.06535542	.99250239	8 2
1 3	.94782797	.95074072	1.05401102	.99134983	1 3
2 3	.94788213	.95074267	1.05457530	.99141932	2 3
3 3	.94791123	.95074035	1.05504307	.99146064	3 3
4 3	.94789552	.95073157	1.05535433	.99144608	4 3
5 3	.94782132	.95071543	1.05557642	.99143899	5 3
6 3	.94768259	.95069278	1.05566711	.99141852	6 3
7 3	.94754061	.95066959	1.05575812	.99135704	7 3
8 3	.94742855	.95065234	1.05560649	.99131671	8 3
1 4	.95747704	.95981646	1.04232020	.99247855	1 4
2 4	.95751608	.95981785	1.04282437	.99250082	2 4
3 4	.95753190	.95981557	1.04333938	.99253385	3 4
4 4	.95751004	.95980787	1.04377255	.99254698	4 4
5 4	.95744421	.95979426	1.04409713	.99253987	5 4
6 4	.95733129	.95977557	1.04405992	.99248353	6 4
7 4	.95721804	.95975665	1.04415166	.99246432	7 4
8 4	.95713065	.95974269	1.04384274	.99239717	8 4
1 5	.96954212	.97118754	1.02916869	.99422865	1 5
2 5	.96956872	.97118854	1.02956158	.99427288	2 5
3 5	.96957850	.97118692	1.02995147	.99429539	3 5
4 5	.96956094	.97118137	1.03029792	.99430492	4 5
5 5	.96951196	.97117158	1.03054596	.99429672	5 5

6 5	.96943161	.97115817	1.03050045	.99425353	6 5
7 5	.96935220	.97114465	1.03051842	.99421039	7 5
8 5	.96929149	.97113468	1.03026328	.99415985	8 5
1 6	.98373262	.98459190	1.01498403	.99664675	1 6
2 6	.98374630	.98459238	1.01518851	.99666927	2 8
3 6	.98375104	.98459148	1.01539076	.99668083	3 6
4 6	.98374162	.98458856	1.01557355	.99668556	4 6
5 6	.98371598	.98458346	1.01570634	.99668013	5 8
6 6	.98367410	.98457649	1.01568115	.99665730	6 6
7 6	.98363255	.98456944	1.01568911	.99663631	7 6
8 8	.98360073	.98456426	1.01555118	.99668715	8 6

MESH POIN7(R.Z) THERMAL FLUX FAS7 FLUX XENON 1OD1NE

ELAPSED XENON 7IME SINCE PERTURBA7ION **** 38808.00 SECONOS **** 10.8888 HOURS

MESH POIN7(R.Z)	THERMAL FLUX	FAS7 FLUX	XENON	1OD1NE	
1 1	.94579555	.94848008	1.05748192	.98904319	1 1
2 1	.94590111	.94848422	1.05591239	.98909889	2 1
3 1	.94800889	.94848580	1.05393403	.98910638	3 1
4 1	.94687438	.94848236	1.05231886	.98913018	4 1
5 1	.94606895	.94847253	1.95085631	.98914255	5 1
8 1	.94598857	.94845639	1.05160589	.98911728	8 1
7 1	.94584133	.94843868	1.05178833	.98912369	7 1
8 1	.94572438	.94842498	1.85389099	.98907822	8 1
1 2	.94848885	.95138776	1.85538668	.98878977	1 2
2 2	.94854728	.95138990	1.05588943	.98882052	2 2
3 2	.94858332	.95138774	1.85628975	.98886740	3 2
6 2	.94857458	.95137986	1.85834424	.98888923	4 2
5 2	.94850403	.95138302	1.85635222	.98888778	5 2
8 2	.94838163	.95134941	1.85649787	.98882671	6 2

7 2	.94820629	.95131704	1.05664175	.98875401	7 2
8 2	.94807114	.95129958	1.05842862	.99011910	8 2
1 3	.95457241	.95709155	1.04608855	.98936347	1 3
2 3	.95461213	.95709293	1.04690049	.98943545	2 3
3 3	.95462665	.95709040	1.04764276	.98947651	3 3
4 3	.95460195	.95708211	1.04822999	.98946201	4 3
5 3	.95452927	.95706739	1.04863488	.98945216	5 3
6 3	.95440590	.95704710	1.04861516	.98942433	6 3
7 3	.95428253	.95702650	1.04864967	.98935818	7 3
8 3	.95418739	.95701126	1.04823237	.98931100	8 3
1 4	.96315263	.96513965	1.03552371	.99088723	1 4
2 4	.96318066	.96514061	1.03617687	.99091297	2 4
3 4	.96318633	.96513828	1.03685583	.99094558	3 4
4 4	.96315969	.96513123	1.03744332	.99095717	4 4
5 4	.96309752	.96511911	1.03788093	.99094700	5 4
6 4	.96299924	.96510273	1.03776821	.99088750	6 4
7 4	.96290263	.96508626	1.03782109	.99086309	7 4
8 4	.96282975	.96507418	1.03735238	.99079235	8 4
1 5	.97370004	.97508103	1.02423788	.99311003	1 5
2 5	.97371895	.97508173	1.02471579	.99315524	2 5
3 5	.97372200	.97508011	1.02520178	.99317748	3 5
4 5	.97370189	.97507512	1.02563894	.99318587	4 5
5 5	.97365675	.97506654	1.02594691	.99317808	5 5
6 5	.97358788	.97505495	1.02585461	.99313030	6 5
7 5	.97352113	.97504334	1.02584612	.99308502	7 5
8 5	.97347115	.97503483	1.02549656	.99303217	8 5
1 6	.98598332	.98669919	1.01238406	.99606343	1 6
2 6	.98599297	.98669951	1.01263017	.99608648	2 6
3 6	.98599427	.98669863	1.01287837	.99609788	3 6
4 6	.98598368	.98669603	1.01310451	.99610203	4 6
5 6	.98596024	.98669159	1.01326639	.99609584	5 6
6 6	.98592461	.98668562	1.01321867	.99607169	6 6
7 6	.98588993	.98667962	1.01321351	.99684761	7 6
8 6	.98586393	.98667522	1.01302944	.99601927	8 6

ELAPSED XENON TIME SINCE PERTURBATION •••• 37800.00 SECONDS •••• 10.5000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.95376164	.95621490	1.05182351	.98709967	1 1
2 1	.95385011	.95621839	1.05086427	.98716012	2 1
3 1	.95393771	.95621933	1.04946665	.98717139	3 1
4 1	.95398777	.95621555	1.04828451	.98719580	4 1
5 1	.95397534	.95620588	1.04714885	.98720658	5 1
6 1	.95387836	.95619049	1.04774718	.98717590	6 1
7 1	.95376274	.95617381	1.04789933	.98717512	7 1
8 1	.95365691	.95616099	1.04935858	.98712168	8 1
1 2	.95639942	.95889856	1.04696553	.98698792	1 2
2 2	.95644123	.95890001	1.04783886	.98703180	2 2
3 2	.95645879	.95889747	1.04855434	.98707822	3 2
4 2	.95643719	.95888910	1.04907350	.98709839	4 2
5 2	.95636555	.95887429	1.04934614	.98709381	5 2
6 2	.95623780	.95885387	1.04934931	.98702755	6 2
7 2	.95610175	.95883299	1.04942540	.98695022	7 2
8 2	.95598524	.95881749	1.05075407	.98823672	8 2
1 3	.96183156	.96392982	1.03779194	.98782600	1 3
2 3	.96185716	.96393064	1.03880458	.98789919	2 3
3 3	.96185805	.96392797	1.03977353	.98793939	3 3
4 3	.96182579	.96392033	1.04059209	.98792468	4 3
5 3	.96175632	.96390728	1.04115073	.98791238	5 3
6 3	.96165003	.96388965	1.04103212	.98787865	6 3
7 3	.96154669	.96387191	1.04101406	.98780917	7 3
8 3	.96146931	.96385889	1.04036915	.98775681	8 3
1 4	.96922739	.97084453	1.02850762	.98966840	1 4
2 4	.96924473	.97084508	1.02927676	.98969649	2 4
3 4	.96924106	.97084277	1.03008500	.98972824	3 4
4 4	.96921074	.97083649	1.03079540	.98973824	4 4
5 4	.96915349	.97082604	1.03132266	.98972615	5 4
6 4	.96907099	.97081216	1.03114445	.98966389	6 4
7 4	.96899195	.97079833	1.03116127	.98963554	7 4
8 4	.96893408	.97078825	1.03056084	.98956257	8 4
1 5	.97813305	.97923937	1.01917967	.99226138	1 5
2 5	.97814449	.97923977	1.01972244	.99230683	2 5
3 5	.97814135	.97923820	1.02028270	.99232849	3 5
4 5	.97811944	.97923384	1.02079033	.99233574	4 5
5 5	.97807892	.97922658	1.02114415	.99232465	5 5
6 5	.97802221	.97921694	1.02101161	.99227717	6 5
7 5	.97796865	.97920736	1.02097902	.99223061	7 5
8 5	.97792969	.97920038	1.02055292	.99217645	8 5
1 6	.98837758	.98894524	1.00971917	.99562498	1 6
2 6	.98838330	.98894541	1.00999728	.99564817	2 6
3 6	.98838145	.98894457	1.01028115	.99565926	3 6
4 6	.98837005	.98894232	1.01054102	.99566282	4 6
5 6	.98834920	.98893861	1.01072513	.99565602	5 6
6 6	.98832013	.98893368	1.01065795	.99563104	6 6
7 6	.98829259	.98892878	1.01064077	.99560833	7 6
8 6	.98827253	.98892521	1.01041921	.99557735	8 6

ELAPSED XENON TIME SINCE PERTURBATION •••• 39800.00 SECONDS •••• 11.0000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.96216841	.96435212	1.04545033	.98566557	1 1
2 1	.96223890	.96435491	1.04507769	.98572954	2 1

3 1	.96230580	.96435523	1.04424713	.98574363	3 1
4 1	.96233995	.96435120	1.04350286	.98576813	4 1
5 1	.96232117	.96434188	1.04269166	.98577722	5 1
6 1	.96223131	.96432753	1.04313695	.98574188	6 1
7 1	.96212723	.96431216	1.04325361	.98573487	7 1
8 1	.96203410	.96430044	1.04427109	.98567655	8 1
1 2	.96469703	.96676828	1.03819437	.98568990	1 2
2 2	.96472189	.96676906	1.03937753	.98573643	2 2
3 2	.96472202	.96676623	1.04043063	.98578169	3 2
4 2	.96464917	.96675833	1.04128518	.98579989	4 2
5 2	.96461812	.96674580	1.04178961	.98579252	5 2
6 2	.96450674	.96672707	1.04166378	.98572227	6 2
7 2	.96439142	.96670895	1.04167592	.98564171	7 2
8 2	.96429451	.96669561	1.04259137	.98685495	8 2
1 3	.96940046	.97106236	1.02934664	.98673514	1 3
2 3	.96941256	.97106266	1.03053224	.98480833	2 3
3 3	.96940104	.97105993	1.03167848	.98684711	3 3
4 3	.96936276	.97105309	1.93268174	.98683198	4 3
5 3	.96929799	.97104188	1.03336348	.98681759	5 3
6 3	.96920996	.97102711	1.03315924	.98677943	6 3
7 3	.96912750	.97101244	1.03309369	.98679797	7 3
8 3	.96906828	.97100176	1.83226186	.98665209	8 3
1 4	.97553174	.97677146	1.02146641	.98881886	1 4
2 4	.97553892	.97677161	1.82231982	.98884824	2 4
3 4	.97552686	.97678938	1.02322211	.98887872	3 4
4 4	.97549481	.97878395	1.02402404	.98888712	4 4
5 4	.97544269	.97675529	1.02461764	.98887348	5 4
6 4	.97537667	.97674404	1.02438469	.98880968	6 6
7 4	.97531562	.97673297	1.02436895	.98877859	7 4
8 4	.97527290	.97672497	1.02366550	.98870471	8 4
1 5	.98271852	.98354706	1.01412754	.99167970	1 5
2 5	.98272287	.98354718	1.01471551	.99172469	2 5
3 5	.98271417	.98354570	1.01532868	.99174549	3 5
4 5	.98269117	.98354203	1.01588896	.99175161	4 5
5 5	.98265588	.98353615	1.01627292	.99173953	5 5
6 5	.98261169	.98352852	1.01610704	.99169126	6 5
7 5	.98257150	.98352103	1.01605311	.99164425	7 5
8 5	.98254355	.98351562	1.01556840	.99158973	8 5
1 6	.99084955	.99128799	1.00705730	.99532961	1 6
2 6	.99085155	.99126802	1.00735800	.99535256	2 8
3 6	.99084685	.99126724	1.00766749	.99536318	3 6
4 6	.99083499	.99126536	1.00795168	.99536617	4 6
5 6	.99081701	.99126239	1.00815137	.99535893	5 6
6 6	.99079468	.99125855	1.00806794	.99533359	6 8
7 6	.99077431	.99125477	1.00804006	.99530869	7 8
8 6	.99076017	.99125204	1.00778962	.99527960	8 8

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 41480.88 SECONDS **** 11.5089 HOURS

1 1	.97078795	.97267223	1.03858027	.98473102	1 1
2 1	.97084886	.97267431	1.03875568	.98479724	2 1
3 1	.97088810	.97287404	1.03846424	.98481324	3 1
4 1	.97090651	.97268985	1.03814872	.98483730	4 1
5 1	.97088018	.97266106	1.03765189	.98484466	5 1
6 1	.97079891	.97264798	1.03794638	.98489548	6 1
7 1	.97070791	.97263417	1.03802288	.98479323	7 1
8 1	.97062868	.97282375	1.03881298	.98473118	8 1
1 2	.97316788	.97478598	1.02932947	.98487514	1 2
2 2	.97316662	.97478613	1.03075871	.98492293	2 2
3 2	.97315080	.97478318	1.03208761	.98496637	3 2
4 2	.97310843	.97477581	1.03322283	.98498237	4 2
5 2	.97303959	.97476416	1.03392272	.98497251	5 2
6 2	.97294583	.97474894	1.03368311	.98489961	6 2
7 2	.97285211	.97473379	1.03363711	.98481716	7 2
8 2	.97277508	.97472275	1.03419837	.98596238	8 2
1 3	.97787817	.97829977	1.02103793	.98807867	1 3
2 3	.97707768	.97829959	1.02230951	.98615071	2 3
3 3	.97709518	.97829689	1.02358384	.98618757	3 3
4 3	.97791242	.97829094	1.02472482	.98617188	4 3
5 3	.97895364	.97828171	1.02549859	.98815579	5 3
6 3	.97688454	.97826993	1.02522309	.98611465	6 3
7 3	.97682325	.97825843	1.02511598	.98604250	7 3
8 3	.97678208	.97825018	1.02413982	.98598473	8 3
1 4	.98190038	.98276457	1.01457671	.98832726	1 4
2 4	.98189811	.98276436	1.01548160	.98835692	2 4
3 4	.98187872	.98278226	1.01844628	.98838579	3 4
4 4	.98184441	.98275776	1.01730925	.98839263	4 4
5 4	.98179985	.98275094	1.01794668	.98837781	5 4
6 4	.95175855	.98274238	1.01767085	.98831362	6 4
7 4	.98170748	.98273418	1.01762575	.98828099	7 4
8 4	.98187984	.98272820	1.01884773	.98820746	8 4
1 5	.98733742	.98789179	1.00928287	.99135615	1 5
2 5	.98733519	.98789168	1.00981725	.99140083	2 5
3 5	.98732162	.98789829	1.01046286	.99141972	3 5
4 5	.98729821	.98788733	1.01105274	.99142476	4 5
5 5	.98728859	.98788286	1.01145779	.99141288	5 5
6 5	.98723896	.98787728	1.01128582	.99136379	8 5
7 5	.98720998	.98787107	1.01119348	.99131711	7 5
8 5	.98719278	.98788083	1.01086768	.99126315	8 5
1 6	.99333548	.99368719	1.00448874	.99517238	1 6

2 6	.99333401	.99360709	1.00477496	.99519474	2 6
3 6	.99332681	.99360638	1.00510038	.99520478	3 6
4 6	.99331482	.99360490	1.00539983	.99520722	4 6
5 6	.99329991	.99360268	1.00560876	.99519970	5 6
6 6	.99328427	.99359992	1.00551239	.99517445	6 6
7 6	.99327099	.99359726	1.00547526	.99514979	7 6
8 6	.99326263	.99359537	1.00520442	.99512106	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 43200.00 SECONDS **** 12.0000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.97939814	.98096201	1.03142700	.98427538	1 1
2 1	.97943198	.98096339	1.03209945	.98434260	2 1
3 1	.97945754	.98096257	1.03230682	.98435962	3 1
4 1	.97946080	.98095833	1.03239859	.98438277	4 1
5 1	.97943177	.98095022	1.03219904	.98438839	5 1
6 1	.97936033	.98093861	1.03234864	.98434624	6 1
7 1	.97928356	.98092656	1.03238259	.98432978	7 1
8 1	.97921901	.98091756	1.03256945	.98426518	8 1
1 2	.98156598	.98274759	1.02060630	.98452174	1 2
2 2	.98155978	.98274716	1.02221724	.98456948	2 2
3 2	.98152981	.98274402	1.02375828	.98461053	3 2
4 2	.98147977	.98273747	1.02511634	.98462418	4 2
5 2	.98141465	.98272763	1.02597332	.98461217	5 2
6 2	.98133925	.98271527	1.02563695	.98453794	6 2
7 2	.98126742	.98270321	1.02553960	.98445493	7 2
8 2	.98121012	.98269453	1.02578556	.98553689	8 2
1 3	.98467134	.98545975	1.01300724	.98583516	1 3
2 3	.98465938	.98545913	1.01434003	.98590499	2 3
3 3	.98462748	.98545652	1.01569492	.98593953	3 3
4 3	.98458180	.98545154	1.01692776	.98592318	4 3
5 3	.98453004	.98544436	1.01776306	.98590580	5 3
6 3	.98448002	.98543562	1.01743121	.98586309	6 3
7 3	.98443964	.98542730	1.01728910	.98579150	7 3
8 3	.98441602	.98542146	1.01620849	.98573336	8 3
1 4	.98817500	.98867456	1.00799508	.98817476	1 4
2 4	.98816423	.98867403	1.00892308	.98820381	2 4
3 4	.98813866	.98867210	1.00991803	.98823077	3 4
4 4	.98810392	.98866856	1.01081321	.98823611	4 4
5 4	.98806667	.98866360	1.01147294	.98822050	5 4
6 4	.98803391	.98865771	1.01116398	.98815703	6 4
7 4	.98800833	.98865220	1.01109545	.98812396	7 4
8 4	.98799482	.98864837	1.01027032	.98805196	8 4
1 5	.99187625	.99216630	1.00451358	.99127656	1 5
2 5	.99186805	.99216594	1.00513681	.99131873	2 5
3 5	.99185038	.99216471	1.00579563	.99133710	3 5
4 5	.99182717	.99216248	1.00639923	.99134112	4 5
5 5	.99180348	.99215941	1.00681116	.99132798	5 5
6 5	.99178410	.99215581	1.00659975	.99128063	6 5
7 5	.99176989	.99215247	1.00651247	.99123504	7 5
8 5	.99176298	.99215016	1.00596255	.99118247	8 5
1 6	.99577472	.99590546	1.00198559	.99514552	1 6
2 6	.99577011	.99590525	1.00230472	.99516697	2 6
3 6	.99576080	.99590462	1.00263687	.99517632	3 6
4 6	.99574897	.99590353	1.00294299	.99517824	4 6
5 6	.99573724	.99590206	1.00315519	.99517060	5 6
6 6	.99572812	.99590036	1.00304921	.99514586	6 6
7 6	.99572166	.99589879	1.00300438	.99512184	7 6
8 6	.99571878	.99589772	1.00272134	.99509392	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 45000.00 SECONDS **** 12.5000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.98778740	.98901904	1.02419471	.98426822	1 1
2 1	.98780354	.98901973	1.02530338	.98433524	2 1
3 1	.98780954	.98901843	1.02595899	.98435246	3 1
4 1	.98779861	.98901423	1.02642605	.98437427	4 1
5 1	.98776589	.98900694	1.02650062	.98437818	5 1
6 1	.98770518	.98899695	1.02651449	.98433394	6 1
7 1	.98764334	.98898680	1.02650557	.98431430	7 1
8 1	.98759387	.98897932	1.02632171	.98424831	8 1
1 2	.98971697	.99046024	1.01223513	.98459848	1 2
2 2	.98969732	.99045929	1.01396489	.98464496	2 2
3 2	.98965520	.99045612	1.01565476	.98468315	3 2
4 2	.98959945	.99045042	1.01717697	.98469434	4 2
5 2	.98953935	.99044248	1.01815200	.98468056	5 2
6 2	.98948256	.99043303	1.01773702	.98460626	6 2
7 2	.98943234	.99042408	1.01759578	.98452399	7 2
8 2	.98939414	.99041779	1.01759110	.98554742	8 2
1 3	.99199822	.99237087	1.00544947	.98597497	1 3
2 3	.99197614	.99236987	1.00680193	.98604165	2 3
3 3	.99193652	.99236741	1.00819281	.98607353	3 3
4 3	.99188940	.99236346	1.00947404	.98605648	4 3
5 3	.99184544	.99235833	1.01034189	.98603822	5 3
6 3	.99181415	.99235259	1.00996862	.98599524	6 3
7 3	.99179392	.99234740	1.00979837	.98592538	7 3
8 3	.99178693	.99234391	1.00865406	.98586828	8 3
1 4	.99420774	.99436165	1.00185634	.98833590	1 4
2 4	.99418946	.99436085	1.00278084	.98836352	2 4
3 4	.99415892	.99435912	1.00377732	.98838834	3 4
4 4	.99412469	.99435655	1.00467807	.98839227	4 4
5 4	.99409510	.99435341	1.00534052	.98837625	5 4

6 4	.99407829	.99435012	1.00501004	.98831452	6 4
7 4	.99406936	.99434727	1.00492181	.98828202	7 4
8 4	.99406928	.99434543	1.00407541	.98821263	8 4
1 5	.99622927	.99627054	1.00015315	.99142201	1 5
2 5	.99621582	.99626997	1.00076913	.99146196	2 5
3 5	.99619484	.99626890	1.00142349	.99147885	3 5
4 5	.99617241	.99626740	1.00202432	.99148191	4 5
5 5	.99615474	.99626568	1.00243200	.99146869	5 5
6 5	.99614707	.99628399	1.00220820	.99142293	6 5
7 5	.99814490	.99626261	1.00210919	.99137909	7 5
8 5	.99614756	.99626176	1.00155092	.99132867	8 5
1 6	.99811089	.99810936	.99968115	.99523872	1 6
2 6	.99810351	.99810905	.99999716	.99525899	2 6
3 6	.99809249	.99810851	1.00032744	.99526757	3 6
4 6	.99808111	.99810788	1.09063222	.99526901	4 6
5 8	.99807257	.99810705	1.00084218	.99526140	5 6
6 6	.99806965	.99810636	1.00072986	.99523756	6 6
7 6	.99806960	.99810583	1.00067895	.99521452	7 6
8 6	.99807183	.99810553	1.00039150	.99518782	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 46800.00 SECONDS **** 13.0000 HOURS

1 1	.99575979	.99665657	1.01707333	.98467046	1 1
2 1	.99575926	.99665662	1.01855034	.98473616	2 1
3 1	.99574708	.99665489	1.01959570	.98475282	3 1
4 1	.99572328	.99665083	1.02039747	.98477293	4 1
5 1	.99568791	.99664446	1.02071798	.98477520	5 1
6 1	.99563849	.99683620	1.02060807	.98472974	8 1
7 1	.99559190	.99662803	1.02055773	.98470793	7 1
8 1	.99555747	.99662214	1.02004255	.98464170	8 1
1 2	.99742383	.99774685	1.00439761	.98506592	1 2
2 2	.99739164	.99774544	1.00618667	.98511009	2 2
3 2	.99733956	.99774233	1.00796441	.98514503	3 2
4 2	.99728006	.99773754	1.00959320	.98515376	4 2
5 2	.99722608	.99773154	1.01064783	.98513859	5 2
6 2	.99718762	.99772499	1.01017281	.98506542	6 2
7 2	.99715822	.99771910	1.00999560	.98498505	7 2
8 2	.99713807	.99771513	1.00979675	.98595436	8 2
1 3	.99889297	.99887662	.99851110	.98646128	1 3
2 3	.99886223	.99887530	.99984579	.98652488	2 3
3 3	.99881664	.99887305	1.00123198	.98655296	3 3
4 3	.99876949	.99887013	1.00252159	.98653524	4 3
5 3	.99873382	.99886701	1.00339517	.98651651	5 3
6 3	.99872046	.99886416	1.00299497	.98647447	6 3
7 3	.99871915	.99886197	1.00280355	.98640738	7 3
8 3	.99872751	.99886072	1.00163292	.98635258	8 3
1 4	.99986427	.99969882	.99627242	.98877945	1 4
2 4	.99983962	.99988778	.99716976	.98880495	2 4
3 4	.99980534	.99969629	.99814204	.98882747	3 4
4 4	.99977246	.99969467	.99902443	.98883010	4 4
5 4	.99975064	.99969328	.99967194	.98881402	5 4
6 4	.99974884	.99969244	.99933031	.98875494	6 4
7 4	.99975533	.99969219	.99922693	.98872393	7 4
8 4	.99976749	.99969212	.99838294	.98865808	8 4
1 5	1.00030086	1.00011384	.99619971	.99176954	1 5
2 5	1.00028295	1.00011311	.99679402	.99180682	2 5
3 5	1.00025948	1.00011220	.99742803	.99182211	3 5
4 5	1.00023831	1.00011140	.99801130	.99182430	4 5
5 5	1.00022660	1.00011997	.99840475	.99181127	5 5
8 5.	1.00022982	1.00011187	.99817509	.99176775	6 5
7 5	1.00023871	1.00011152	.99806766	.99172624	7 5
8 5	1.00025006	1.00011202	.99751558	.99167864	8 5
1 6	1.00029318	1.00017056	.99758936	.99543956	1 6
2 6	1.00028337	1.00017016	.99789492	.99545841	2 6
3 6	1.00027106	1.00016972	.99821546	.99546616	3 6
4 6	1.00028035	1.00016938	.99851157	.99546717	4 8
5 6	1.00025496	1.00016931	.99871427	.99545971	5 6
6 6	1.00025779	1.00016956	.99859880	.99543712	6 6
7 6	1.00026361	1.00017000	.99854343	.99541537	7 6
8 6	1.00027046	1.00017041	.99825884	.99539024	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 48600.00 SECONDS **** 13.5000 HOURS

1 1	1.00314019	1.00370838	1.01023441	.98543576	1 1
2 1	1.00312440	1.00370784	1.01200752	.98549911	2 1
3 1	1.00309583	1.00370576	1.01337864	.98551456	3 1
4 1	1.00306875	1.00370193	1.01446806	.98553266	4 1
5 1	1.00302378	1.00369655	1.01500241	.98553339	5 1
6 1	1.00298593	1.00369007	1.01478288	.98548757	6 1
7 1	1.00295448	1.00368392	1.01469406	.98546454	7 1
8 1	1.00293466	1.00367961	1.01389225	.98539915	8 1
1 2	1.00451778	1.00445071	.99724449	.98587784	1 2
2 2	1.00447653	1.00444893	.99903815	.98591879	2 2
3 2	1.00441878	1.00444595	1.00084678	.98595028	3 2
4 2	1.00435841	1.00444211	1.00252742	.98595650	4 2
5 2	1.00430839	1.00443803	1.00362498	.98594035	5 2
8 2	1.00428758	1.00443428	1.00318826	.98586949	6 2
7 2	1.00427788	1.00443133	1.00298315	.98579281	7 2

8 2	1.00427414	1.08442957	1.00256471	.98671128	8 2
1 3	1.00520983	1.00483934	.99230908	.98725141	1 3
2 3	1.00517201	1.00483776	.99359324	.98730950	2 3
3 3	1.00512218	1.00483576	.99493874	.98733537	3 3
4 3	1.00507627	1.00483386	.99620089	.98731703	4 3
5 3	1.00504912	1.00483266	.99705614	.98729823	5 3
6 3	1.00505246	1.00483252	.99664270	.98725819	6 3
7 3	1.00506845	1.00483312	.99643691	.98719478	7 3
8 3	1.00509058	1.00483395	.99527399	.98714348	8 3
1 4	1.00502729	1.00457491	.99133169	.98946952	1 4
2 4	1.00499746	1.00457368	.99218144	.98949232	2 4
3 4	1.00496064	1.00457245	.99310713	.98951242	3 4
4 4	1.00492986	1.00457173	.99395023	.98951389	4 4
5 4	1.00491569	1.00457198	.99456742	.98949808	5 4
6 4	1.00492763	1.00457339	.99422421	.98944245	6 4
7 4	1.00494803	1.08457534	.99411016	.98941370	7 4
8 4	1.00497106	1.00457706	.99328973	.98935220	8 4
1 5	1.00400778	1.00361716	.99271540	.99229286	1 5
2 5	1.00398624	1.00361629	.99327548	.99232713	2 5
3 5	1.00396106	1.00361557	.99387525	.99234074	3 5
4 5	1.00394161	1.08361542	.99442795	.99234217	4 5
5 5	1.00393564	1.08361618	.99479853	.99232957	5 5
6 5	1.00394874	1.00361791	.99456910	.99228885	6 5
7 5	1.00396752	1.00362001	.99445648	.99225016	7 5
8 5	1.00398651	1.00362173	.99392361	.99220594	8 5
1 6	1.00227714	1.00204699	.99574428	.99573383	1 6
2 6	1.00226550	1.00204653	.99603286	.99575109	2 6
3 6	1.00225230	1.00204618	.99633662	.99575795	3 6
4 6	1.00224249	1.00204620	.99661751	.99575858	4 6
5 6	1.00224011	1.00204674	.99680853	.99575142	5 6
6 6	1.00224814	1.00204785	.99669289	.99573035	6 6
7 6	1.00225918	1.00204916	.99663469	.99571016	7 6
8 6	1.00227010	1.00205021	.99635960	.99568689	8 6

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION **** 50400.00 SECONDS **** 14.0000 HOURS

1 1	1.00977911	1.01003331	1.00382764	.98651202	1 1
2 1	1.00974977	1.01003223	1.00582291	.98657213	2 1
3 1	1.00970695	1.01002989	1.00745266	.98658580	3 1
4 1	1.00966241	1.01002636	1.00877826	.98660167	4 1
5 1	1.00962488	1.01002202	1.00949168	.98660098	5 1
6 1	1.00959853	1.01001733	1.00917835	.98655560	6 1
7 1	1.00958166	1.01001318	1.00905519	.98653226	7 1
8 1	1.00957571	1.01001042	1.00801496	.98646871	8 1
1 2	1.01086068	1.01043969	.99089433	.98698273	1 2
2 2	1.01081160	1.01043761	.99264381	.98701970	2 2
3 2	1.01074644	1.01043483	.99443160	.98704740	3 2
4 2	1.01068504	1.01043196	.99611365	.98705138	4 2
5 2	1.01064556	1.01042972	.99721988	.98703464	5 2
6 2	1.01064121	1.01042861	.99667930	.98696690	6 2
7 2	1.01064916	1.01042840	.99645428	.98689341	7 2
8 2	1.01066046	1.01042869	.99602753	.98776641	8 2
1 3	1.01082692	1.01014384	.98693069	.98829816	1 3
2 3	1.01078365	1.01014207	.98813655	.98835111	2 3
3 3	1.01073128	1.01014034	.98941044	.98837380	3 3
4 3	1.01068772	1.01013943	.99061404	.98835492	4 3
5 3	1.01066906	1.01014000	.99143004	.98833642	5 3
6 3	1.01068753	1.01014233	.99101590	.98829931	6 3
7 3	1.01071885	1.01014546	.99080225	.98824035	7 3
8 3	1.01075293	1.01014816	.98967710	.98819330	8 3
1 4	1.00959937	1.00889746	.98709879	.99036666	1 4
2 4	1.00956560	1.00889610	.98788388	.99038632	2 4
3 4	1.00952743	1.00889512	.98874412	.99040395	3 4
4 4	1.00949935	1.00889525	.98953023	.99040441	4 4
5 4	1.00949253	1.00889698	.99010410	.99038918	5 4
6 4	1.00951667	1.00890041	.98976799	.99033765	6 4
7 4	1.00954921	1.00890441	.98964753	.99031181	7 4
8 4	1.00958155	1.00890763	.98886901	.99025531	8 4
1 5	1.00728124	1.00671503	.98974600	.99296327	1 5
2 5	1.00725694	1.00671406	.99026128	.99299427	2 5
3 5	1.00723086	1.00671351	.99081505	.99300614	3 5
4 5	1.00721346	1.00671397	.99132616	.99300691	4 5
5 5	1.00721287	1.00671579	.99166659	.99299498	5 5
6 5	1.00723465	1.00671897	.99144290	.99295750	6 5
7 5	1.00726197	1.00672252	.99132815	.99292204	7 5
8 5	1.00728746	1.00672531	.99082585	.99288163	8 5
1 6	1.00402654	1.00370390	.99417169	.99610606	1 6
2 6	1.00401345	1.00370339	.99443766	.99612159	2 6
3 6	1.00399978	1.00370314	.99471854	.99612755	3 6
4 6	1.00399184	1.00370347	.99497853	.99612785	4 6
5 6	1.00399147	1.08370457	.99515406	.99612109	5 6
6 6	1.00400405	1.00370643	.99504102	.99610179	6 6
7 6	1.00401960	1.00370850	.99498155	.99608336	7 6
8 6	1.00403395	1.00371012	.99472186	.99606218	8 6

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION **** 52200.00 SECONDS **** 14.5000 HOURS

1 1	1.01555673	1.01551902	.99797829	.98784310	1 1
2 1	1.01551582	1.01551748	1.00012251	.98789919	2 1
3 1	1.01546112	1.01551496	1.00194293	.98791064	3 1

4 1	1.01540906	1.01551179	1.00345088	.98792412	4 1
5 1	1.01537198	1.01550850	1.00430710	.98792216	5 1
6 1	1.01535675	1.01550555	1.00391684	.98787798	6 1
7 1	1.01535361	1.01550331	1.00376437	.98785514	7 1
8 1	1.01536041	1.01550205	1.00253584	.98779431	8 1
1 2	1.01634093	1.01560970	.98543320	.98832542	1 2
2 2	1.01628603	1.01560740	.98709642	.98835705	2 2
3 2	1.01621773	1.01560486	.98881792	.98838176	3 2
4 2	1.01615790	1.01560294	.99045621	.98838357	4 2
5 2	1.01612629	1.01560243	.99154047	.98836661	5 2
6 2	1.01613692	1.01560373	.99099247	.98830290	6 2
7 2	1.01616065	1.01560600	.99075522	.98823418	7 2
8 2	1.01618479	1.01560814	.99028697	.98906428	8 2
1 3	1.01564935	1.01470031	.98243390	.98955134	1 3
2 3	1.01560226	1.01469841	.98353887	.98959877	2 3
3 3	1.01554896	1.01469698	.99471559	.98961827	3 3
4 3	1.01550870	1.01469699	.98583458	.98959898	4 3
5 3	1.01549826	1.01469916	.98659375	.98958111	5 3
6 3	1.01552999	1.01470367	.98619012	.98954769	6 3
7 3	1.01557442	1.01470901	.98597462	.98949379	7 3
8 3	1.01561845	1.01471333	.98491298	.98945180	8 3
1 4	1.01350546	1.01259503	.98361500	.99142915	1 4
2 4	1.01346898	1.01259357	.98432175	.99144535	2 4
3 4	1.01343057	1.01259286	.98510133	.99146051	3 4
4 4	1.01340567	1.01259376	.98581602	.99146011	4 4
5 4	1.01340570	1.01259678	.98633607	.99144572	5 4
6 4	1.01344033	1.01260196	.98601465	.99139882	6 4
7 4	1.01348306	1.01260771	.98589177	.99137639	7 4
8 4	1.01352302	1.01261221	.98517054	.99132538	8 4
1 5	1.01006858	1.00935714	.98732095	.99375047	1 5
2 5	1.01004239	1.00935610	.98778290	.99377801	2 5
3 5	1.01001616	1.00935574	.98828109	.99378816	3 5
4 5	1.01000106	1.00935673	.98874162	.99378838	4 5
5 5	1.01000548	1.00935946	.98904605	.99377728	5 5
6 5	1.01003453	1.00936388	.98883298	.99374339	6 5
7 5	1.01006893	1.00936867	.98871896	.99371147	7 5
8 5	1.01009968	1.00937236	.98825677	.99367519	8 5
1 6	1.00551349	1.00511468	.99288883	.99653995	1 6
2 6	1.00549941	1.00511412	.99312753	.99655365	2 6
3 6	1.00548566	1.00511397	.99338046	.99655872	3 6
4 6	1.00547811	1.00511459	.99361480	.99655875	4 6
5 6	1.00548111	1.00511616	.99377171	.99655248	5 6
6 6	1.00549752	1.00511867	.99366377	.99653512	6 6
7 6	1.00551680	1.00512138	.99360458	.99651880	7 6
8 6	1.00553393	1.00512347	.99336528	.99649968	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 54000.00 SECONDS **** 15.0000 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.02038584	1.02008467	.99278557	.98937057	1 1
2 1	1.02033553	1.02008277	.99500840	.98942283	2 1
3 1	1.02027148	1.02008014	.99695281	.98943091	3 1
4 1	1.02021392	1.02007738	.99858881	.98944192	4 1
5 1	1.02017819	1.02007513	.99955120	.98943885	5 1
6 1	1.02017344	1.02007383	.99910138	.98939653	6 1
7 1	1.02018283	1.02007339	.99892524	.98937492	7 1
8 1	1.02020102	1.02007350	.99755879	.98931758	8 1
1 2	1.02087984	1.01988704	.98091546	.98984886	1 2
2 2	1.02082114	1.01988461	.98245741	.98987634	2 2
3 2	1.02075180	1.01988236	.98407399	.98989648	3 2
4 2	1.02069500	1.01988135	.98562945	.98989630	4 2
5 2	1.02067131	1.01988240	.98666492	.98987948	5 2
6 2	1.02069512	1.01988585	.98612447	.98982048	6 2
7 2	1.02073231	1.01989030	.98588217	.98975698	7 2
8 2	1.02076711	1.01989405	.98541397	.99054748	8 2
1 3	1.01961132	1.01844631	.97884865	.99095939	1 3
2 3	1.01956200	1.01844435	.97983524	.99100108	2 3
3 3	1.01950926	1.01844323	.98089459	.99101735	3 3
4 3	1.01947305	1.01844407	.98190808	.99099780	4 3
5 3	1.01947034	1.01844763	.98259829	.99098086	5 3
6 3	1.01951325	1.01845401	.98221286	.99095179	6 3
7 3	1.01956839	1.01846120	.98200094	.99090331	7 3
8 3	1.01962028	1.01846689	.98102402	.99086691	8 3
1 4	1.01669441	1.01561868	.98089901	.99261421	1 4
2 4	1.01665643	1.01561719	.98151715	.99262675	2 4
3 4	1.01661879	1.01561673	.98220442	.99263951	3 4
4 4	1.01659743	1.01561830	.98283660	.99263840	4 4
5 4	1.01660368	1.01562243	.98329479	.99262507	5 4
6 4	1.01664691	1.01562905	.98299452	.99258317	6 4
7 4	1.01669777	1.01563624	.98287282	.99256453	7 4
8 4	1.01674361	1.01564178	.98222124	.99251933	8 4
1 5	1.01233434	1.01150942	.98545355	.99462347	1 5
2 5	1.01230711	1.01150835	.98585574	.99464748	2 5
3 5	1.01228141	1.01150818	.98629102	.99465594	3 5
4 5	1.01226881	1.01150962	.98669408	.99465572	4 5
5 5	1.01227751	1.01151311	.98695818	.99464581	5 5
6 5	1.01231258	1.01151853	.98675982	.99461558	6 5
7 5	1.01235253	1.01152432	.98684908	.99458736	7 5
8 5	1.01238728	1.01152874	.98623469	.99455542	8 5
1 6	1.00671938	1.00628138	.99198433	.99781886	1 6
2 6	1.00670473	1.00628080	.99211213	.99783069	2 6

3 6	1.00669127	1.00626075	.99233312	.99703488	3 6
4 6	1.00668502	1.00626160	.99253809	.99703470	4 6
5 6	1.00669027	1.00626357	.99267394	.99702900	5 6
6 6	1.00670977	1.00626660	.99257328	.99701370	6 6
7 6	1.00673195	1.00626983	.99251555	.99699920	7 6
8 6	1.00675117	1.00627229	.99230096	.99698263	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 55800.00 SECONOS **** 15.5000 HOURS

1 1	1.02421347	1.02368234	.98832188	.99103549	1 1
2 1	1.02415598	1.02368015	.99055770	.99108186	2 1
3 1	1.02408517	1.02367750	.99256253	.99108796	3 1
4 1	1.02402414	1.02367518	.99427355	.99109648	4 1
5 1	1.02399055	1.02367393	.99530624	.99109249	5 1
6 1	1.02399541	1.02367416	.99481415	.99105259	6 1
7 1	1.02401587	1.02367535	.99462033	.99103281	7 1
8 1	1.02404387	1.02367669	.99316516	.99097961	8 1
1 2	1.02443215	1.02322963	.97736522	.99149580	1 2
2 2	1.02437159	1.02322714	.97875810	.99151810	2 2
3 2	1.02430317	1.02322521	.98023825	.99153456	3 2
4 2	1.02425060	1.02322503	.98167831	.99153263	4 2
5 2	1.02423466	1.02322747	.98264242	.99151627	5 2
6 2	1.02426964	1.02323276	.98212271	.99146250	6 2
7 2	1.02431782	1.02323904	.98188191	.99140475	7 2
8 2	1.02436181	1.02324413	.98144946	.99215836	8 2
1 3	1.02267698	1.02134768	.97617856	.99247846	1 3
2 3	1.02262694	1.02134571	.97703420	.99250636	2 3
3 3	1.02257689	1.02134490	.97796126	.99251969	3 3
4 3	1.02254451	1.02134646	.97885343	.99250002	4 3
5 3	1.02254886	1.02135119	.97945998	.99248426	5 3
6 3	1.02260074	1.02135908	.97910485	.99245979	6 3
7 3	1.02266489	1.02136776	.97890127	.99241720	7 3
8 3	1.02272171	1.02137453	.97802573	.99238673	8 3
1 4	1.01913964	1.01794266	.97894830	.99387931	1 4
2 4	1.01910129	1.01794117	.97947081	.99388811	2 4
3 4	1.01906534	1.01794096	.98005765	.99389856	3 4
4 4	1.01904774	1.01794309	.98059943	.99389691	4 4
5 4	1.01905945	1.01794810	.98099012	.99388483	5 4
6 4	1.01910933	1.01795587	.98071627	.99384814	6 4
7 4	1.01916622	1.01796416	.98059894	.99383352	7 4
8 4	1.01921617	1.01797051	.98002633	.99379430	8 4
1 5	1.01406068	1.01315444	.98414173	.99555156	1 5
2 5	1.01403322	1.01315336	.98447979	.99557204	2 5
3 5	1.01400869	1.01315333	.98484708	.99557888	3 5
4 5	1.01399867	1.01315517	.98518782	.99557832	4 5
5 5	1.01401112	1.01315927	.98540843	.99556932	5 5
6 5	1.01405066	1.01316546	.98522836	.99554323	6 5
7 5	1.01409461	1.01317200	.98512318	.99551885	7 5
8 5	1.01413208	1.01317696	.98476237	.99549135	8 5
1 6	1.00763494	1.00713496	.99121839	.99752630	1 6
2 6	1.00762020	1.00713440	.99139275	.99753627	2 6
3 6	1.00760736	1.00713443	.99157893	.99753962	3 6
4 6	1.00760244	1.00713549	.99175182	.99753927	4 6
5 6	1.00760963	1.00713776	.99186491	.99753420	5 6
6 6	1.00763144	1.00714119	.99177333	.99752102	6 6
7 6	1.00765568	1.00714480	.99171835	.99750858	7 6
8 6	1.00767631	1.00714754	.99153162	.99749443	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSEO XENON TIME SINCE PERTURBATION **** 57600.00 SECONOS *4** 16.0000 HOURS

1 1	1.02702084	1.02629689	.98463304	.99278020	1 1
2 1	1.02695842	1.02629449	.98682241	.99282118	2 1
3 1	1.02688340	1.02629190	.98882877	.99282437	3 1
4 1	1.02682084	1.02629003	.99056455	.99283046	4 1
5 1	1.02679008	1.02628970	.99163334	.99282573	5 1
6 1	1.02680345	1.02629130	.99111573	.99278872	6 1
7 1	1.02683335	1.02629393	.99091030	.99277128	7 1
8 1	1.02686944	1.02629635	.98941311	.99272268	8 1
1 2	1.02698580	1.02562668	.97477864	.99321051	1 2
2 2	1.02692518	1.02562419	.97600171	.99322755	2 2
3 2	1.02685941	1.02562260	.97732108	.99324051	3 2
4 2	1.02681204	1.02562318	.97861984	.99323707	4 2
5 2	1.02680346	1.02562679	.97949442	.99322145	5 2
6 2	1.02684747	1.02563358	.97900664	.99317326	6 2
7 2	1.02690407	1.02564134	.97877313	.99312153	7 2
8 2	1.02695336	1.02564749	.97840604	.99384075	8 2
1 3	1.02484007	1.02339810	.97440325	.99403483	1 3
2 3	1.02479069	1.02339617	.97512005	.99406500	2 3
3 3	1.02474289	1.02339566	.97590489	.99407548	3 3
4 3	1.02471633	1.02339784	.97666481	.99405587	4 3
5 3	1.02472692	1.02340349	.97718230	.99404148	5 3
6 3	1.02478550	1.02341253	.97686193	.99402195	6 3
7 3	1.02485458	1.02342233	.97667074	.99398526	7 3
8 3	1.02491583	1.02342988	.97590877	.99396089	8 3
1 4	1.02083870	1.01956398	.97774084	.99518332	1 4
2 4	1.02080103	1.01956252	.97816380	.99518842	2 4
3 4	1.02076755	1.01956254	.97864541	.99519670	3 4
4 4	1.02075380	1.01956513	.97909199	.99519468	4 4
5 4	1.02077014	1.01957081	.97941183	.99518396	5 4
6 4	1.02082472	1.01957939	.97916846	.99515258	6 4

7 4	1.02088553	1.01958847	.97905824	.99514207	7 4
8 4	1.02093789	1.01959537	.97857101	.99519885	8 4
1 5	1.01524709	1.01429110	.98336909	.99650510	1 5
2 5	1.01522013	1.01429004	.98364864	.99652212	2 5
3 5	1.01519730	1.01429016	.98393704	.99652744	3 5
4 5	1.01518990	1.01429231	.98421265	.99652665	4 5
5 5	1.01520541	1.01429684	.98438822	.99651883	5 5
6 5	1.01524797	1.01430357	.98422900	.99649674	6 5
7 5	1.01529440	1.01431062	.98413128	.99647618	7 5
8 5	1.01533335	1.01431594	.98382797	.99645311	8 5
1 6	1.00826025	1.00773518	.99082322	.99804639	1 6
2 6	1.00824581	1.00773464	.99096266	.99805453	2 6
3 6	1.00823386	1.00773474	.99111229	.99805710	3 6
4 6	1.00823038	1.00773595	.99125144	.99805664	4 6
5 6	1.00823906	1.00773845	.99134079	.99805223	5 6
6 6	1.00826241	1.00774215	.99125974	.99804119	6 6
7 6	1.00828791	1.00774602	.99120854	.99803081	7 6
8 6	1.00830929	1.00774894	.99105189	.99801905	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 59400.00 SECONDS **** 16.5000 HOURS

1 1	1.02882190	1.02794438	.98173939	.99454989	1 1
2 1	1.02875673	1.02794188	.98383013	.99458533	2 1
3 1	1.02867995	1.02793939	.98578501	.99458559	3 1
4 1	1.02861768	1.02793798	.98749931	.99458935	4 1
5 1	1.02859026	1.02793850	.98857247	.99458407	5 1
6 1	1.02861092	1.02794128	.98804511	.99455032	6 1
7 1	1.02864858	1.02794512	.98783403	.99453558	7 1
8 1	1.02869088	1.02794845	.98633798	.99449194	8 1
1 2	1.02856016	1.02709706	.97312675	.99494026	1 2
2 2	1.02850112	1.02709466	.97416604	.99495213	2 2
3 2	1.02843949	1.02709341	.97530721	.99496181	3 2
4 2	1.02839804	1.02709464	.97644536	.99495713	4 2
5 2	1.02839624	1.02709920	.97721664	.99494249	5 2
6 2	1.02844707	1.02710714	.97676994	.99490087	6 2
7 2	1.02850954	1.02711600	.97654868	.99485449	7 2
8 2	1.02856270	1.02712293	.97627040	.99554150	8 2
1 3	1.02812218	1.02461759	.97349102	.99560533	1 3
2 3	1.02607473	1.02461575	.97405539	.99562996	2 3
3 3	1.02603094	1.02461552	.97469276	.99563782	3 3
4 3	1.02600959	1.02461819	.97531418	.99561842	4 3
5 3	1.02602551	1.02462452	.97573824	.99560555	5 3
6 3	1.02608854	1.02463436	.97545749	.99559104	6 3
7 3	1.02616092	1.02464489	.97528198	.99556025	7 3
8 3	1.02622380	1.02465296	.97464155	.99554195	8 3
1 4	1.02181183	1.02050109	.97723726	.99648766	1 4
2 4	1.02177678	1.02049971	.97755961	.99648919	2 4
3 4	1.02174542	1.02049993	.97793429	.99649548	3 4
4 4	1.02173552	1.02050286	.97828376	.99649322	4 4
5 4	1.02176559	1.02050899	.97853153	.99648396	5 4
6 4	1.02181294	1.02051809	.97932155	.99645785	6 4
7 4	1.02187568	1.02052763	.97822070	.99645143	7 4
8 4	1.02192881	1.02053484	.97782245	.99642408	8 4
1 5	1.01590925	1.01493367	.98310631	.99745632	1 5
2 5	1.01588348	1.01493267	.98331089	.99747003	2 5
3 5	1.01586279	1.01493292	.98353556	.99747396	3 5
4 5	1.01586796	1.01493528	.98374512	.99747303	4 5
5 5	1.01587593	1.01494009	.98387534	.99746644	5 5
6 5	1.01592000	1.01494713	.98373885	.99744829	6 5
7 5	1.01596745	1.01495445	.98365013	.99743147	7 5
8 5	1.01600671	1.01495996	.98340641	.99741270	8 5
1 6	1.00860402	1.00806995	.99070369	.99856426	1 6
2 6	1.00859022	1.00806943	.99088777	.99857066	2 6
3 6	1.00857940	1.00806961	.99092023	.99857259	3 6
4 6	1.00857717	1.00807092	.99102503	.99857199	4 6
5 6	1.00858714	1.00807356	.99109035	.99856825	5 6
6 6	1.00861127	1.00807740	.99102085	.99855931	6 6
7 6	1.00863725	1.00808141	.99097430	.99855094	7 6
8 6	1.00865875	1.00808442	.99084899	.99854151	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 61200.00 SECONDS **** 17.0000 HOURS

1 1	1.02966040	1.02866927	.97963754	.99629481	1 1
2 1	1.02959453	1.02866673	.98158546	.99632391	2 1
3 1	1.02951824	1.02866441	.98344267	.99632132	3 1
4 1	1.02946791	1.02866345	.98509421	.99632291	4 1
5 1	1.02943422	1.02866470	.98614313	.99631727	5 1
6 1	1.02946083	1.02866847	.98562050	.99628703	6 1
7 1	1.02950427	1.02867329	.98540939	.99627525	7 1
8 1	1.02955115	1.02867734	.98395315	.99623676	8 1
1 2	1.02920301	1.02768847	.97235875	.99663672	1 2
2 2	1.02914897	1.02768420	.97320657	.99664361	2 2
3 2	1.02909878	1.02768329	.97415868	.99665032	3 2
4 2	1.02906568	1.02768507	.97512326	.99664465	4 2
5 2	1.02906994	1.02769034	.97878188	.99663118	5 2
6 2	1.02911541	1.02769989	.97538313	.99659457	6 2
7 2	1.02918128	1.02778870	.97517824	.99655511	7 2
8 2	1.02923621	1.02771613	.97508822	.99721182	8 2

1 3	1.02657000	1.02504982	.97335198	.99713898	1 3
2 3	1.02652553	1.02504811	.97378421	.99715837	2 3
3 3	1.02648652	1.02504814	.97427310	.99716388	3 3
4 3	1.02647043	1.02505119	.97475376	.99714483	4 3
5 3	1.02649071	1.02505795	.97508309	.99713358	5 3
6 3	1.02655603	1.02506823	.97484527	.99712404	6 3
7 3	1.02662942	1.02597914	.97468801	.99709899	7 3
8 3	1.02669206	1.02508745	.97417312	.99708657	8 3
1 4	1.02209961	1.02079169	.97738329	.99775720	1 4
2 4	1.02206599	1.02079042	.97760661	.99775539	2 4
3 4	1.02203925	1.02079082	.97787550	.99775990	3 4
4 4	1.02203307	1.02079397	.97812855	.99775754	4 4
5 4	1.02205597	1.02080034	.97830499	.99774977	5 4
6 4	1.02211429	1.02080966	.97813015	.99772877	6 4
7 4	1.02217708	1.02081936	.97804047	.99772630	7 4
8 4	1.02222948	1.02082666	.97773223	.99770458	8 4
1 5	1.01607743	1.01511020	.98331294	.99838003	1 5
2 5	1.01605340	1.01510927	.98345182	.99839064	2 5
3 5	1.01603520	1.01510963	.98360584	.99839331	3 5
4 5	1.01603282	1.01511212	.98375024	.99839234	4 5
5 5	1.01605237	1.01511705	.98383597	.99838698	5 5
6 5	1.01609683	1.01512418	.98372333	.99837262	6 5
7 5	1.01614393	1.01513156	.98364480	.99835938	7 5
8 5	1.01618243	1.01513709	.98346104	.99834472	8 5
1 6	1.00868269	1.00815455	.99083825	.99906642	1 6
2 6	1.00866984	1.00815407	.99090753	.99907119	2 6
3 6	1.00866034	1.00815431	.99098325	.99907239	3 6
4 6	1.00865939	1.00815569	.99105903	.99907186	4 6
5 6	1.00867020	1.00815838	.99109572	.99906881	5 6
6 6	1.00869441	1.00816225	.99103842	.99906188	6 6
7 6	1.00872014	1.00816628	.99099716	.99905543	7 6
8 6	1.00874118	1.00816929	.99090353	.99904821	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 63000.00 SECONDS **** 17.5000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.02960585	1.02854036	.97830283	.99796750	1 1
2 1	1.02954114	1.02853786	.98007211	.99799198	2 1
3 1	1.02946737	1.02853575	.98179282	.99798670	3 1
4 1	1.02941037	1.02853521	.98334600	.99798632	4 1
5 1	1.02939065	1.02853709	.98434568	.99798049	5 1
6 1	1.02942186	1.02854163	.98384063	.99795390	6 1
7 1	1.02946935	1.02854720	.98363466	.99794522	7 1
8 1	1.02951896	1.02855178	.98225194	.99791195	8 1
1 2	1.02898644	1.02746353	.97240553	.99825699	1 2
2 2	1.02893461	1.02746143	.97305992	.99825923	2 2
3 2	1.02888466	1.02746084	.97381817	.99826329	3 2
4 2	1.02885626	1.02746305	.97460214	.99825690	4 2
5 2	1.02886581	1.02746882	.97514216	.99824474	5 2
6 2	1.02892382	1.02747805	.97479682	.99821385	6 2
7 2	1.02899079	1.02748804	.97461154	.99818033	7 2
8 2	1.02904554	1.02749572	.97455751	.99880840	8 2
1 3	1.02625147	1.02475860	.97394121	.99859783	1 3
2 3	1.02621089	1.02475786	.97423508	.99861236	2 3
3 3	1.02617722	1.02475733	.97457829	.99861577	3 3
4 3	1.02616627	1.02476062	.97491992	.99859728	4 3
5 3	1.02618990	1.02476759	.97515557	.99858769	5 3
6 3	1.02625551	1.02477799	.97496255	.99858292	6 3
7 3	1.02632782	1.02478894	.97482537	.99856333	7 3
8 3	1.02638855	1.02479724	.97443642	.99855648	8 3
1 4	1.02175984	1.02048979	.97811250	.99896107	1 4
2 4	1.02172932	1.02048864	.97824068	.99895621	2 4
3 4	1.02170656	1.02048919	.97840746	.99895915	3 4
4 4	1.02170390	1.02049247	.97856716	.99895682	4 4
5 4	1.02172873	1.02049888	.97867471	.99895055	5 4
6 4	1.02178635	1.02050814	.97853574	.99893438	6 4
7 4	1.02184749	1.02051773	.97845853	.99893562	7 4
8 4	1.02189783	1.02052492	.97823896	.99891918	8 4
1 5	1.01579415	1.01486037	.98393935	.99925410	1 5
2 5	1.01577235	1.01485953	.98401539	.99926186	2 5
3 5	1.01575688	1.01485998	.98410156	.99926344	3 5
4 5	1.01575678	1.01486252	.98418328	.99926250	4 5
5 5	1.01577732	1.01486743	.98422647	.99925835	5 5
6 5	1.01582085	1.01487445	.98413808	.99924756	6 5
7 5	1.01586640	1.01488168	.98407056	.99923767	7 5
8 5	1.01590319	1.01488708	.98394555	.99922684	8 5
1 6	1.00851932	1.00801049	.99120002	.99954106	1 6
2 6	1.00850767	1.00801006	.99123597	.99954435	2 6
3 6	1.00849961	1.00801034	.99127635	.99954498	3 6
4 6	1.00849984	1.00801174	.99131434	.99954448	4 6
5 6	1.00851113	1.00801441	.99133339	.99954209	5 6
6 6	1.00853479	1.00801822	.99128856	.99953706	6 6
7 6	1.00855962	1.00802215	.99125306	.99953239	7 6
8 6	1.00857969	1.00802509	.99119054	.99952723	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 64800.00 SECONDS **** 18.0000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.02874857	1.02764614	.97769217	.99953161	1 1
2 1	1.02868668	1.02764374	.97925544	.99955091	2 1
3 1	1.02861716	1.02764188	.98080850	.99954316	3 1
4 1	1.02856469	1.02764173	.98223379	.99954104	4 1

5 1	1.02854903	1.02764411	.98316312	.99953518	5 1
6 1	1.02858348	1.02764921	.98268674	.99951231	6 1
7 1	1.02863328	1.02765529	.98249050	.99950676	7 1
8 1	1.02868396	1.02766021	.98120952	.99947863	8 1
1 2	1.02800201	1.02651516	.97318343	.99976446	1 2
2 2	1.02795535	1.02651328	.97364752	.99976248	2 2
3 2	1.02791238	1.02651299	.97421257	.99976423	3 2
4 2	1.02789068	1.02651553	.97481430	.99975738	4 2
5 2	1.02790462	1.02652157	.97523405	.99974663	5 2
6 2	1.02796322	1.02653096	.97494597	.99972122	6 2
7 2	1.02802919	1.02654102	.97478177	.99969336	7 2
8 2	1.02808206	1.02654869	.97485218	1.00029422	8 2
1 3	1.02525150	1.02382378	.97516223	.99994968	1 3
2 3	1.02521550	1.02382243	.97532451	.99995981	2 3
3 3	1.02518752	1.02382290	.97552916	.99996145	3 3
4 3	1.02518149	1.02382632	.97573576	.99994362	4 3
5 3	1.02520748	1.02383329	.97588110	.99993569	5 3
6 3	1.02527156	1.02384351	.97573338	.99993540	6 3
7 3	1.02534894	1.02385421	.97561744	.99992088	7 3
8 3	1.02539838	1.02386226	.97535165	.99991917	8 3
1 4	1.02086395	1.01966231	.97934913	1.00007315	1 4
2 4	1.02083705	1.01966131	.97938808	1.00006560	2 4
3 4	1.02081848	1.01966198	.97945861	1.00006721	3 4
4 4	1.02081906	1.01966528	.97953008	1.00006500	4 4
5 4	1.02084495	1.01967156	.97957271	1.00006019	5 4
6 4	1.02090039	1.01968051	.97946934	1.00004851	6 4
7 4	1.02095841	1.01968974	.97940546	1.00005314	7 4
8 4	1.02100554	1.01969663	.97927114	1.00004155	8 4
1 5	1.01511165	1.01423307	.98492889	1.00005989	1 5
2 5	1.01509244	1.01423234	.98494633	1.00006518	2 5
3 5	1.01507986	1.01423287	.98496897	1.00006575	3 5
4 5	1.01508183	1.01423538	.98499198	1.00006491	4 5
5 5	1.01510272	1.01424014	.98499542	1.00006192	5 5
6 5	1.01514426	1.01424688	.98493103	1.00005442	6 5
7 5	1.01518719	1.01425378	.98487497	1.00004759	7 5
8 5	1.01522146	1.01425892	.98480610	1.00004825	8 5
1 6	1.00814211	1.00766420	.99175804	.99997824	1 6
2 6	1.00813185	1.00766383	.99176290	.99998819	2 6
3 6	1.00812533	1.00766415	.99177018	.99998835	3 6
4 6	1.00812662	1.00766553	.99177744	.99997991	4 6
5 6	1.00813805	1.00766811	.99177538	.99997816	5 6
6 6	1.00816058	1.00767175	.99174292	.99997486	6 6
7 6	1.00818395	1.00767550	.99171344	.99997183	7 6
8 6	1.00820261	1.00767828	.99168067	.99996855	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 66608.90 SECONDS **** 18.5080 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.02719446	1.02608961	.97774720	1.00095450	1 1
2 1	1.02713676	1.02608736	.97908533	1.00096898	2 1
3 1	1.02707293	1.02608577	.98044726	1.00095904	3 1
4 1	1.02702592	1.02608597	.98172144	1.00095543	4 1
5 1	1.02701429	1.02608873	.98256337	1.0009[illegible]	5 1
6 1	1.02705067	1.02609419	.98212486	1.00093047	6 1
7 1	1.02710114	1.02610055	.98194227	1.00092890	7 1
8 1	1.02715139	1.02610565	.98078565	1.00090483	8 1
1 2	1.02635552	1.02494175	.97459793	1.00112932	1 2
2 2	1.02631475	1.02494011	.97487928	1.00112359	2 2
3 2	1.02627919	1.02494009	.97525660	1.00112341	3 2
4 2	1.02626402	1.02494285	.97567930	1.00111634	4 2
5 2	1.02628144	1.02494896	.97598023	1.00119784	5 2

6 2	1.02633890	1.02495823	.97574896	1.00108679	6 2
7 2	1.02640202	1.02496806	.97560922	1.00106419	7 2
8 2	1.02645153	1.02497551	.97580571	1.00163906	8 2
1 3	1.02366721	1.02233679	.97692037	1.00116848	1 3
2 3	1.02363629	1.02233564	.97696035	1.00117474	2 3
3 3	1.02361417	1.02233627	.97703338	1.00117491	3 3
4 3	1.02361270	1.02233972	.97711488	1.00115786	4 3
5 3	1.02364011	1.02234650	.97717511	1.00115156	5 3
6 3	1.02370107	1.02235629	.97707283	1.00115534	6 3
7 3	1.02376594	1.02236645	.97697784	1.00114544	7 3
8 3	1.02381873	1.02237408	.97682959	1.00114834	8 3
1 4	1.01949314	1.01838549	.98101103	1.00197247	1 4
2 4	1.01947021	1.01838465	.98096833	1.00106261	2 4
3 4	1.01945592	1.01838540	.98095035	1.00106313	3 4
4 4	1.01945940	1.01838883	.98094041	1.00106114	4 4
5 4	1.01948555	1.01839463	.98092333	1.00105772	5 4
6 4	1.01953755	1.01840307	.98085446	1.00105010	6 4
7 4	1.01959119	1.01841172	.98080433	1.00105774	7 4
8 4	1.01963617	1.01841815	.98075002	1.00105048	8 4
1 5	1.01488912	1.01328382	.98622018	1.00078248	1 5
2 5	1.01487276	1.01328321	.98618439	1.00078548	2 5
3 5	1.01488312	1.01328378	.98814908	1.00078535	3 5
4 5	1.01486689	1.01328621	.98811829	1.00078468	4 5
5 5	1.01408756	1.01329870	.98608580	1.98078277	5 5
6 5	1.01412619	1.01329700	.98604455	1.00077822	6 5
7 5	1.01418582	1.01330343	.98600888	1.00077413	7 5
8 5	1.01419870	1.01330819	.98598351	1.00076989	8 5
1 6	1.00758299	1.00714563	.99247854	1.00037001	1 6
2 6	1.00757426	1.00714532	.99245522	1.00037089	2 6
3 6	1.00758928	1.00714566	.99243237	1.00037857	3 6

4 6	1.00757151	1.00714699	.99241158	1.00037022	4 6
5 6	1.00758278	1.00714942	.99239041	1.00036907	5 6
6 6	1.00760370	1.00715282	.99236989	1.00036733	6 6
7 6	1.00762512	1.00715630	.99234653	1.00036576	7 8
8 6	1.00764203	1.00715888	.99234145	1.00036413	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSEO XENON TIME SINCE PERTURBATION **** 68400.00 SECONOS **** 19.0000 HOURS

1 1	1.02505947	1.02398309	.97839756	1.00221156	1 1
2 1	1.02500709	1.02398104	.97949930	1.00222163	2 1
3 1	1.02495008	1.02397973	.98065410	1.00220982	3 1
4 1	1.02490919	1.02398024	.98176018	1.00220498	4 1
5 1	1.02490146	1.02398326	.98250176	1.00219949	5 1
6 1	1.02493854	1.02398888	.98210836	1.00218380	6 1
7 1	1.02498822	1.02399532	.98194264	1.00218425	7 1
8 1	1.02503669	1.02400043	.98092736	1.00216576	8 1
1 2	1.02416175	1.02285209	.97654731	1.00232876	1 2
2 2	1.02412735	1.02285071	.97665726	1.00231982	2 2
3 2	1.02409936	1.02285094	.97685645	1.00231809	3 2
4 2	1.02409042	1.02285381	.97710753	1.00231101	4 2
5 2	1.02411044	1.02285980	.97729394	1.00230317	5 2
6 2	1.02416520	1.02286871	.97712014	1.00228766	6 2
7 2	1.02422393	1.02287805	.97700477	1.00226986	7 2
8 2	1.02426886	1.02288509	.97732474	1.00281977	8 2
1 3	1.02160325	1.02039621	.97911605	1.00223455	1 3
2 3	1.02157773	1.02039528	.97904511	1.00223748	2 3
3 3	1.02156146	1.02039604	.97899878	1.00223649	3 3
4 3	1.02156413	1.02039943	.97896423	1.00222033	4 3
5 3	1.02159206	1.02040584	.97894640	1.00221559	5 3
6 3	1.02164858	1.02041498	.97888620	1.00222297	6 3
7 3	1.02170765	1.02042439	.97881369	1.00221716	7 3
8 3	1.02175491	1.02043143	.97877503	1.00222408	8 3
1 4	1.01773451	1.01674120	.98301248	1.00194330	1 4
2 4	1.01771578	1.01674052	.98289707	1.00193155	2 4
3 4	1.01770572	1.01674134	.98279977	1.00193121	3 4
4 4	1.01771171	1.01674441	.98271668	1.00192952	4 4
5 4	1.01773741	1.01674999	.98264611	1.00192739	5 4
6 4	1.01778491	1.01675774	.98260984	1.00192336	6 4
7 4	1.01783318	1.01676565	.98257350	1.00193359	7 4
8 4	1.01787127	1.01677150	.98259247	1.00193010	8 4
1 5	1.01278989	1.01207210	.98774928	1.00141075	1 5
2 5	1.01277652	1.01207160	.98766651	1.00141185	2 5
3 5	1.01276978	1.01207220	.98757985	1.00141115	3 5
4 5	1.01277509	1.01207449	.98750134	1.00141068	4 5
5 5	1.01279498	1.01207863	.98743711	1.00140976	5 5
6 5	1.01283000	1.01208437	.98741763	1.00140779	6 5
7 5	1.01286523	1.01209019	.98738458	1.00140609	7 5
8 5	1.01289262	1.01209449	.98741547	1.00140454	8 5
1 6	1.00687608	1.00648685	.99332625	1.00071048	1 6
2 6	1.00686896	1.00648660	.99327817	1.00071029	2 6
3 6	1.00686552	1.00648695	.99322873	1.00070976	3 6
4 6	1.00686853	1.00648819	.99318314	1.00070953	4 6
5 6	1.00687935	1.00649043	.99314518	1.00070891	5 6
6 6	1.00689827	1.00649352	.99313598	1.00070853	6 6
7 6	1.00691739	1.00649666	.99311858	1.00070822	7 6
8 6	1.00693227	1.00649899	.99313857	1.00070803	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSEO XENON TIME SINCE PERTURBATION **** 70200.00 SECONOS **** 19.5000 HOURS

1 1	1.02246448	1.02144329	.97956417	1.00328534	1 1
2 1	1.02241828	1.02144147	.98042555	1.00329150	2 1
3 1	1.02236889	1.02144045	.98136430	1.00327815	3 1
4 1	1.02233456	1.02144122	.98229136	1.00327236	4 1
5 1	1.02233049	1.02144438	.98292362	1.00326722	5 1
6 1	1.02236717	1.02144999	.98258065	1.00325485	6 1
7 1	1.02241477	1.02145632	.98243427	1.00325801	7 1
8 1	1.02246033	1.02146130	.98157185	1.00324385	8 1
1 2	1.02153946	1.02035872	.97892610	1.00334696	1 2
2 2	1.02151170	1.02035760	.97887905	1.00333538	2 2
3 2	1.02149123	1.02035803	.97891318	1.00333247	3 2
4 2	1.02148808	1.02036092	.97900359	1.00332558	4 2
5 2	1.02150982	1.02036665	.97908227	1.00331917	5 2
6 2	1.02156062	1.02037497	.97896425	1.00330791	6 2
7 2	1.02161369	1.02038362	.97887337	1.00329438	7 2
8 2	1.02165310	1.02039010	.97931056	1.00382025	8 2
1 3	1.01916736	1.01810361	.98164795	1.00313448	1 3
2 3	1.01914736	1.01810291	.98147908	1.00313465	2 3
3 3	1.01913679	1.01810376	.98132648	1.00313281	3 3
4 3	1.01914311	1.01810699	.98118805	1.00311762	4 3
5 3	1.01917076	1.01811292	.98110022	1.00311432	5 3
6 3	1.01922177	1.01812121	.98108026	1.00312478	6 3
7 3	1.01927405	1.01812971	.98102883	1.00312251	7 3
8 3	1.01931507	1.01813602	.98108987	1.00313280	8 3
1 4	1.01567745	1.01481354	.98526691	1.00267509	1 4
2 4	1.01566299	1.01481303	.98508873	1.00266189	2 4
3 4	1.01565701	1.01481388	.98492245	1.00266093	3 4
4 4	1.01566510	1.01481674	.98477550	1.00265959	4 4
5 4	1.01568970	1.01482179	.98465844	1.00265863	5 4
6 4	1.01573190	1.01482872	.98465226	1.00265767	6 4
7 4	1.01577405	1.01483574	.98462938	1.00267002	7 4

8 4	1.01580674	1.01484091	.98471369	1.00266973	8 4
1 5	1.01127880	1.01065889	.98945181	1.00193735	1 5
2 5	1.01126849	1.01065851	.98932898	1.09193690	2 5
3 5	1.01126454	1.01065913	.98919829	1.00193578	3 5
4 5	1.01127109	1.01066123	.98907878	1.00193554	4 5
5 5	1.01128977	1.01066493	.98898750	1.00193551	5 5
6 5	1.01132059	1.01067002	.98898799	1.00193574	6 5
7 5	1.01135112	1.01067514	.98896591	1.00193604	7 5
8 5	1.01137446	1.01067891	.98903863	1.00193673	8 5
1 6	1.00605633	1.00572069	.99426567	1.00099576	1 6
2 6	1.00605084	1.00572058	.99419662	1.00099479	2 6
3 6	1.00604887	1.00572086	.99412452	1.00099404	3 6
4 6	1.00605251	1.00572200	.99405777	1.00099394	4 6
5 6	1.00606264	1.09572399	.99400561	1.00099381	5 6
6 6	1.00607927	1.00572672	.99400663	1.00099458	6 6
7 6	1.00609580	1.00572949	.99399511	1.00099532	7 6
8 6	1.00610847	1.00573152	.99403709	1.00099632	8 6

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION •••• 72000.00 SECONDS •••• 20.0000 HOURS

1 1	1.01953060	1.01858679	.98116242	1.00416537	1 1
2 1	1.01949116	1.01858523	.98178606	1.00416813	2 1
3 1	1.01944990	1.01858450	.98250637	1.00415361	3 1
4 1	1.01942233	1.01858547	.98324920	1.00414713	4 1
5 1	1.01942162	1.01858867	.98376695	1.00414243	5 1
6 1	1.01945692	1.01859412	.98347787	1.00413313	6 1
7 1	1.01950136	1.01860017	.98335259	1.00413871	7 1
8 1	1.01954307	1.01860489	.98264936	1.00412846	8 1
1 2	1.01860694	1.01757362	.98162827	1.00417481	1 2
2 2	1.01858587	1.01757278	.98144105	1.00416118	2 2
3 2	1.01857267	1.01757338	.98132595	1.00415744	3 2
4 2	1.01857475	1.01757619	.98126956	1.00415098	4 2
5 2	1.01859740	1.01758152	.98124930	1.00414586	5 2
6 2	1.01864321	1.01758909	.98118416	1.00413833	6 2
7 2	1.01868967	1.01759688	.98111727	1.00412850	7 2
8 2	1.01872289	1.01760267	.98166234	1.00463110	8 2
1 3	1.01646637	1.91555975	.98441587	1.00386098	1 3
2 3	1.31645187	1.01555926	.98416321	1.00385888	2 3
3 3	1.01644669	1.01556018	.98391880	1.00385646	3 3
4 3	1.01645612	1.01556319	.98368998	1.00384230	4 3
5 3	1.01648278	1.01556851	.98354125	1.00384032	5 3
6 3	1.01652749	1.01557583	.98355811	1.00385331	6 3
7 3	1.01657227	1.01558327	.98352673	1.00385399	7 3
8 3	1.01660660	1.01558877	.98367606	1.00386699	8 3
1 4	1.01341032	1.01268576	.98768941	1.00326227	1 4
2 4	1.01340819	1.01268541	.98745905	1.00324805	2 4
3 4	1.01339794	1.01268627	.98723491	1.00324668	3 4
4 4	1.01340771	1.01268886	.98703414	1.00324573	4 4
5 4	1.01343067	1.01269330	.98687808	1.00324581	5 4
6 4	1.01346699	1.01269930	.98689897	1.00324740	6 4
7 4	1.01350253	1.01270533	.98688899	1.00326140	7 4
8 4	1.01352949	1.01270976	.98702973	1.00326370	8 4
1 5	1.00961990	1.00910447	.99126490	1.00235848	1 5
2 5	1.00961261	1.00910421	.99110933	1.00235684	2 5
3 5	1.00961128	1.00910482	.99094241	1.00235544	3 5
4 5	1.00961877	1.00910669	.99078905	1.00235546	4 5
5 5	1.00963588	1.00910992	.99067571	1.00235619	5 5
6 5	1.00966212	1.00911427	.99069401	1.00235821	6 5
7 5	1.00968761	1.00911863	.99068223	1.00236015	7 5
8 5	1.00970669	1.00912183	.99079059	1.00236264	8 5
1 6	1.00515820	1.00487962	.99526218	1.00122391	1 6
2 6	1.00515434	1.00487949	.99517616	1.00122233	2 6
3 6	1.00515373	1.00487983	.99508560	1.00122145	3 6
4 6	1.00515784	1.00488085	.99500155	1.00122149	4 6
5 6	1.00516709	1.00488258	.99493795	1.00122177	5 6
6 6	1.00518122	1.00488492	.99494812	1.00122347	6 6
7 6	1.00519500	1.00488726	.99494205	1.00122507	7 6
8 6	1.00520534	1.00488898	.99500264	1.00122702	8 6

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION •••• 73800.00 SECONDS •••• 20.5000 HOURS

1 1	1.01637810	1.01552624	.98310507	1.00484767	1 1
2 1	1.01634275	1.01552496	.98349941	1.00484758	2 1
3 1	1.01630985	1.01552449	.98400479	1.00483225	3 1
4 1	1.01628905	1.01552562	.98456339	1.00482534	4 1
5 1	1.01629133	1.01552877	.98496497	1.00482113	5 1
6 1	1.01632443	1.01553392	.98473149	1.00481460	6 1
7 1	1.01636482	1.01553956	.98462836	1.00482238	7 1
8 1	1.01640197	1.01554391	.98408589	1.00481548	8 1
1 2	1.01547810	1.01460465	.98455806	1.00480946	1 2
2 2	1.01548358	1.01460407	.98424132	1.00479436	2 2
3 2	1.01545726	1.01460481	.98399491	1.00479011	3 2
4 2	1.01548394	1.01460749	.98380788	1.00478487	4 2
5 2	1.01548876	1.01461230	.98369985	1.00478831	5 2
6 2	1.01552681	1.01461899	.98388285	1.00477594	6 2
7 2	1.01556599	1.01462579	.98383889	1.00476922	7 2
8 2	1.01559259	1.01463889	.98428884	1.00524925	8 2
1 3	1.01380279	1.01288138	.98732333	1.00441288	1 3

2 3	1.01359362	1.01286107	.98700174	1.00440835	2 3
3 3	1.01359343	1.01286203	.98668084	1.00440582	3 3
4 3	1.01360540	1.01286475	.98637609	1.00439253	4 3
5 3	1.01363047	1.01286939	.98617617	1.00439172	5 3
6 3	1.01366834	1.01287565	.98622588	1.00440667	6 3
7 3	1.01370521	1.01288194	.98621310	1.00440971	7 3
8 3	1.01373262	1.01288656	.98643822	1.00442476	8 3
1 4	1.01101774	1.01043758	.99019891	1.00370385	1 4
2 4	1.01101160	1.01043739	.98992732	1.00368903	2 4
3 4	1.01101293	1.01043823	.98965684	1.00368744	3 4
4 4	1.01102396	1.01044051	.98941270	1.00368691	4 4
5 4	1.01104485	1.01044429	.98922544	1.00368787	5 4
6 4	1.01107492	1.01044930	.98926998	1.00369148	6 4
7 4	1.01110358	1.01045429	.98927181	1.00370667	7 4
8 4	1.01112468	1.01045793	.98945976	1.00371096	8 4
1 5	1.00787443	1.00746651	.99312890	1.00267367	1 5
2 5	1.00787003	1.00746636	.99294804	1.00267117	2 5
3 5	1.00787109	1.00746695	.99275290	1.00266963	3 5
4 5	1.00787923	1.00746858	.99257307	1.00266992	4 5
5 5	1.00789447	1.00747128	.99244276	1.00267129	5 5
6 5	1.00791590	1.00747487	.99247648	1.00267471	6 5
7 5	1.00793620	1.00747843	.99247412	1.00267789	7 5
8 5	1.00795096	1.00748102	.99261160	1.00268176	8 5
1 6	1.00421466	1.00399465	.99628303	1.00139474	1 6
2 6	1.00421234	1.00399458	.99618412	1.00139273	2 6
3 6	1.00421298	1.00399491	.99607940	1.00139180	3 6
4 6	1.00421740	1.00399579	.99598202	1.00139198	4 6
5 6	1.00422561	1.00399723	.99590977	1.00139260	5 6
6 6	1.00423713	1.00399915	.99592784	1.00139503	6 6
7 6	1.00424808	1.00400106	.99592674	1.00139727	7 6
8 6	1.00425606	1.00400245	.99600239	1.00139994	8 6

MESH POINTIR.ZI THERMAL FLUX FAST FLUX XENON 1001NE

ELAPSED XENON TIME SINCE PERTURBATION •••• 75600.00 SECONOS •••• 21.0000 HOURS

1 1	1.01310811	1.01236720	.98530497	1.00533414	1 1
2 1	1.01308296	1.01236619	.98548342	1.00533177	2 1
3 1	1.01305841	1.01236598	.98578253	1.00531597	3 1
4 1	1.01304419	1.01236721	.98616160	1.00530886	4 1
5 1	1.01304907	1.01237023	.98644852	1.00530520	5 1
6 1	1.01307930	1.01237496	.98627074	1.00530110	6 1
7 1	1.01311498	1.01238008	.98619015	1.00531056	7 1
8 1	1.01314703	1.01238480	.98580570	1.00530669	8 1
1 2	1.01225943	1.01155258	.98759253	1.00525369	1 2
2 2	1.01225117	1.01155225	.98718206	1.00523766	2 2
3 2	1.01225113	1.01155309	.98682377	1.00523322	3 2
4 2	1.01226177	1.01155556	.98652383	1.00522778	4 2
5 2	1.01228412	1.01155979	.98633804	1.00522518	5 2
6 2	1.01231787	1.01156550	.98636601	1.00522341	6 2
7 2	1.01234938	1.01157123	.98634349	1.00521922	7 2
8 2	1.01236918	1.01157541	.98706701	1.00567730	8 2
1 3	1.01067212	1.01009855	.99027977	1.00479101	1 3
2 3	1.01066796	1.01009846	.98990440	1.00478625	2 3
3 3	1.01067225	1.01009942	.98952279	1.00478345	3 3
4 3	1.01068621	1.01010182	.98915707	1.00477145	4 3
5 3	1.01070920	1.01010573	.98891603	1.00477164	5 3
6 3	1.01073993	1.01011087	.98899414	1.00478799	6 3
7 3	1.01076873	1.01011596	.98899822	1.00479282	7 3
8 3	1.01078921	1.01011967	.98928596	1.00480926	8 3
1 4	1.00857831	1.00814315	.99272008	1.00400293	1 4
2 4	1.00857599	1.00814311	.99241824	1.00398791	2 4
3 4	1.00858943	1.00814391	.99211303	1.00398628	3 4
4 4	1.00859230	1.00814585	.99183609	1.00398617	4 4
5 4	1.00861078	1.00814893	.99162546	1.00398786	5 4
6 4	1.00863446	1.00815293	.99168998	1.00399298	6 4
7 4	1.00865619	1.00815685	.99170258	1.00400888	7 4
8 4	1.00867148	1.00815968	.99192793	1.00401461	8 4
1 5	1.00609916	1.00579855	.99498874	1.00288540	1 5
2 5	1.00609749	1.00579852	.99479003	1.00288235	2 5
3 5	1.00610065	1.00579907	.99457465	1.00288081	3 5
4 5	1.00610916	1.00580042	.99437570	1.00288136	4 5
5 5	1.00612232	1.00580259	.99423348	1.00288324	5 5
6 5	1.00613888	1.00580539	.99428005	1.00288768	6 5
7 5	1.00615398	1.00580814	.99428608	1.00289175	7 5
8 5	1.00616448	1.00581013	.99444602	1.00289657	8 5
1 6	1.00325624	1.00309458	.99729817	1.00150966	1 6
2 6	1.00325537	1.00309457	.99719839	1.00150740	2 6
3 6	1.00325711	1.00309487	.99707576	1.00150646	3 6
4 6	1.00326169	1.00309560	.99696901	1.00150679	4 6
5 6	1.00326876	1.00309675	.99689089	1.00150769	5 6
6 6	1.00327763	1.00309825	.99691549	1.00151063	6 6
7 6	1.00328575	1.00309972	.99691882	1.00151332	7 6
8 6	1.00329141	1.00310078	.99700591	1.00151648	8 6

MESH POIN7IR.21 THERMAL FLUX FAST FLUX XENON 1001NE

ELAPSEO XENON 7IME SINCE PERTURBATION •••• 77400.00 SECONOS •••• 21.5000 HOURS

1 1	1.00983014	1.00920578	.98767735	1.00563188	1 1
2 1	1.00981211	1.00920504	.98765742	1.00562775	2 1
3 1	1.00979567	1.00920506	.98776333	1.00561182	3 1
4 1	1.00978770	1.00920636	.98797163	1.00560473	4 1
5 1	1.00979475	1.00920917	.98814819	1.00560163	5 1
6 1	1.00982159	1.00921341	.98802479	1.00559962	6 1

7 1	1.00985210	1.00921792	.98796652	1.00561048	7 1
8 1	1.00987874	1.00922134	.98773359	1.00560905	8 1
1 2	1.00904761	1.00850887	.99066360	1.00551517	1 2
2 2	1.00904520	1.00850878	.99017182	1.00549875	2 2
3 2	1.00905081	1.00850968	.98972193	1.00549437	3 2
4 2	1.00906469	1.00851191	.98932793	1.00548963	4 2
5 2	1.00908597	1.00851549	.98907750	1.00548806	5 2
6 2	1.00911314	1.00852017	.98914427	1.00548832	6 2
7 2	1.00913686	1.00852477	.98914130	1.00548608	7 2
8 2	1.00914988	1.00852809	.98993215	1.00592280	8 2
1 3	1.00776072	1.00735292	.99320235	1.00500550	1 3
2 3	1.00776118	1.00735300	.99278829	1.00500011	2 3
3 3	1.00776939	1.00735394	.99236176	1.00499746	3 3
4 3	1.00778476	1.00735599	.99195015	1.00498655	4 3
5 3	1.00780529	1.00735913	.99167811	1.00498758	5 3
6 3	1.00782881	1.00736313	.99177990	1.00500479	6 3
7 3	1.00784962	1.00736702	.99179886	1.00501084	7 3
8 3	1.00786334	1.00736981	.99213571	1.00502807	8 3
1 4	1.00616296	1.00586942	.99518481	1.00416619	1 4
2 4	1.00616413	1.00586951	.99486344	1.00415132	2 4
3 4	1.00617125	1.00587026	.99453492	1.00414981	3 4
4 4	1.00618356	1.00587184	.99423559	1.00415012	4 4
5 4	1.00619940	1.00587422	.99400929	1.00415239	5 4
6 4	1.00621673	1.00587719	.99408995	1.00415852	6 4
7 4	1.00623167	1.00588006	.99411202	1.00417471	7 4
8 4	1.00624134	1.00588209	.99436506	1.00418133	8 4
1 5	1.00434526	1.00414889	.99679511	1.00299872	1 5
2 5	1.00434607	1.00414895	.99658570	1.00299549	2 5
3 5	1.00435104	1.00414945	.99635782	1.00299396	3 5
4 5	1.00435966	1.00415053	.99614692	1.00299477	4 5
5 5	1.00437062	1.00415215	.99599768	1.00299703	5 5
6 5	1.00438237	1.00415418	.99605444	1.00300212	6 5
7 5	1.00439242	1.00415613	.99606773	1.00300673	7 5
8 5	1.00439881	1.00415752	.99624354	1.00301211	8 5
1 6	1.00231044	1.00220535	.99828085	1.00157145	1 6
2 6	1.00231089	1.00220539	.99816805	1.00156988	2 6
3 6	1.00231357	1.00220566	.99804762	1.00156821	3 6
4 6	1.00231817	1.00220624	.99793531	1.00156867	4 6
5 6	1.00232402	1.00220710	.99785396	1.00156978	5 6
6 6	1.00233029	1.00220817	.99788371	1.00157304	6 6
7 6	1.00233567	1.00220921	.99789086	1.00157608	7 6
8 6	1.00233909	1.00220994	.99798582	1.00157943	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 79200.00 SECONDS **** 22.0000 HOURS

1 1	1.00663032	1.00612699	.99014186	1.00575231	1 1
2 1	1.00661911	1.00612652	.98994431	1.00574695	2 1
3 1	1.00661036	1.00612675	.98987368	1.00573121	3 1
4 1	1.00660817	1.00612806	.98992341	1.00572432	4 1
5 1	1.00661697	1.00613061	.98999629	1.00572180	5 1
6 1	1.00664006	1.00613430	.98992469	1.00572150	6 1
7 1	1.00666512	1.00613814	.98988798	1.00573340	7 1
8 1	1.00668622	1.00614101	.98979687	1.00573391	8 1
1 2	1.00592794	1.00555416	.99367979	1.00560572	1 2
2 2	1.00593082	1.00555427	.99312718	1.00558939	2 2
3 2	1.00594135	1.00555520	.99260627	1.00558532	3 2
4 2	1.00595776	1.00555715	.99213756	1.00558131	4 2
5 2	1.00597752	1.00556006	.99183522	1.00558064	5 2
6 2	1.00599802	1.00556368	.99193497	1.00558240	6 2
7 2	1.00601404	1.00556716	.99194937	1.00558155	7 2
8 2	1.00602048	1.00556961	.99279170	1.00599746	8 2
1 3	1.00494448	1.00469612	.99601743	1.00506669	1 3
2 3	1.00494907	1.00469635	.99557931	1.00506113	2 3
3 3	1.00496058	1.00469726	.99512329	1.00505879	3 3
4 3	1.00497683	1.00469893	.99468061	1.00504895	4 3
5 3	1.00499462	1.00470131	.99438752	1.00505065	5 3
6 3	1.00501105	1.00470418	.99450812	1.00506821	6 3
7 3	1.00502415	1.00470689	.99453978	1.00507498	7 3
8 3	1.00503144	1.00470878	.99491231	1.00509241	8 3
1 4	1.00383378	1.00367505	.99753341	1.00420327	1 4
2 4	1.00383806	1.00367526	.99720272	1.00418887	2 4
3 4	1.00384739	1.00367594	.99686180	1.00418762	3 4
4 4	1.00385978	1.00367717	.99655007	1.00418832	4 4
5 4	1.00387285	1.00367885	.99631548	1.00419102	5 4
6 4	1.00388402	1.00368083	.99640841	1.00419770	6 4
7 4	1.00389247	1.00368267	.99643852	1.00421378	7 4
8 4	1.00389686	1.00368394	.99670975	1.00422080	8 4
1 5	1.00265744	1.00255975	.99850523	1.00392077	1 5
2 5	1.00266046	1.00255989	.99829185	1.00301746	2 5
3 5	1.00266692	1.00256034	.99805880	1.00301620	3 5
4 5	1.00267540	1.00256114	.99784271	1.00301726	4 5
5 5	1.00268410	1.00256224	.99769103	1.00301978	5 5
6 5	1.00269123	1.00256352	.99775536	1.00302518	6 5
7 5	1.00269649	1.00256470	.99777469	1.00303802	7 5
8 5	1.00269904	1.00256551	.99796001	1.00303561	8 5
1 6	1.00140126	1.00134983	.99920807	1.00158483	1 6
2 6	1.00140289	1.00134971	.99909383	1.00158169	2 6
3 6	1.00140833	1.00134995	.99897143	1.00158093	3 6
4 6	1.00141083	1.00135037	.99885714	1.00158151	4 6
5 6	1.00141544	1.00135095	.99877583	1.00158277	5 6

6 6	1.00141921	1.00135162	.99880856	1.00158616	6 6
7 6	1.00142199	1.00135224	.99881887	1.00158922	7 6
8 6	1.00142333	1.00135266	.99891830	1.00159273	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 81000.00 SECONDS **** 22.5000 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.00358523	1.00320372	.99262417	1.00571044	1 1
2 1	1.00358044	1.00320350	.99227215	1.00570433	2 1
3 1	1.00357879	1.00320390	.99204445	1.00568904	3 1
4 1	1.00358183	1.00320519	.99195056	1.00568254	4 1
5 1	1.00359195	1.00320744	.99192843	1.00568058	5 1
6 1	1.00361106	1.00321053	.99190499	1.00568164	6 1
7 1	1.00363058	1.00321367	.99188863	1.00569422	7 1
8 1	1.00364616	1.00321599	.99192699	1.00569618	8 1
1 2	1.00297329	1.00275729	.99656747	1.00554050	1 2
2 2	1.00298085	1.00275759	.99597407	1.00552468	2 2
3 2	1.00299551	1.00275853	.99540253	1.00552111	3 2
4 2	1.00301376	1.00276017	.99487843	1.00551788	4 2
5 2	1.00303160	1.00276239	.99453700	1.00551796	5 2
6 2	1.00304554	1.00276497	.99466366	1.00552069	6 2
7 2	1.00305415	1.00276733	.99469304	1.00552072	7 2
8 2	1.00305439	1.00276894	.99557070	1.00591636	8 2
1 3	1.00228791	1.00218913	.99866160	1.00498872	1 3
2 3	1.00229608	1.00218951	.99821327	1.00498337	2 3
3 3	1.00231026	1.00219035	.99774249	1.00498150	3 3
4 3	1.00232689	1.00219165	.99728294	1.00497269	4 3
5 3	1.00234176	1.00219328	.99697833	1.00497490	5 3
6 3	1.00235141	1.00219506	.99711285	1.00499234	6 3
7 3	1.00235725	1.00219663	.99715496	1.00499935	7 3
8 3	1.00235859	1.00219768	.99755018	1.00501648	8 3
1 4	1.00164339	1.00160982	.99971530	1.00412615	1 4
2 4	1.00165036	1.00161013	.99938479	1.00411252	2 4
3 4	1.00166143	1.00161073	.99904167	1.00411162	3 4
4 4	1.00167357	1.00161160	.99872690	1.00411269	4 4
5 4	1.00168380	1.00161262	.99849089	1.00411567	5 4
6 4	1.00168916	1.00161365	.99859230	1.00412248	6 4
7 4	1.00169158	1.00161452	.99862895	1.00413810	7 4
8 4	1.00169111	1.00161507	.99890932	1.00414508	8 4
1 5	1.00107349	1.00106688	1.00008338	1.00296042	1 5
2 5	1.00107840	1.00106709	.99987219	1.00295732	2 5
3 5	1.00108603	1.00106748	.99964068	1.00295634	3 5
4 5	1.00109417	1.00106802	.99942565	1.00295761	4 5
5 5	1.00110060	1.00106861	.99927575	1.00296028	5 5
6 5	1.00110341	1.00106918	.99934505	1.00296568	6 5
7 5	1.00110424	1.00106964	.99936919	1.00297048	7 5
8 5	1.00110328	1.00106992	.99955804	1.00297595	8 5
1 6	1.00054898	1.00054658	1.00006080	1.00155221	1 6
2 6	1.00055160	1.00054669	.99994837	1.00155001	2 6
3 6	1.00055564	1.00054690	.99982749	1.00154940	3 6
4 6	1.00055993	1.00054718	.99971448	1.00155010	4 6
5 6	1.00056331	1.00054748	.99963386	1.00155144	5 6
6 6	1.00056475	1.00054777	.99966982	1.00155480	6 6
7 6	1.00056512	1.00054800	.99968265	1.00155781	7 6
8 6	1.00056456	1.00054814	.99978337	1.00156123	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 82800.00 SECONDS **** 23.0000 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	1.00075848	1.00049625	.99505724	1.00552397	1 1
2 1	1.00075956	1.00049627	.99457550	1.00551757	2 1
3 1	1.00076432	1.00049682	.99421222	1.00550298	3 1
4 1	1.00077195	1.00049806	.99399179	1.00549699	4 1
5 1	1.00078297	1.00049998	.99388485	1.00549558	5 1
6 1	1.00079802	1.00050245	.99390507	1.00549764	6 1
7 1	1.00081206	1.00050488	.99390747	1.00551055	7 1
8 1	1.00082228	1.00050663	.99406094	1.00551351	8 1
1 2	1.00024371	1.00017499	.99926379	1.00533719	1 2
2 2	1.00025528	1.00017544	.99864878	1.00532225	2 2
3 2	1.00027328	1.00017635	.99804631	1.00531933	3 2
4 2	1.00029268	1.00017767	.99748568	1.00531688	4 2
5 2	1.00030832	1.00017922	.99711769	1.00531756	5 2
6 2	1.00031598	1.00018079	.99726511	1.00532081	6 2
7 2	1.00031763	1.00018209	.99730696	1.00532126	7 2
8 2	1.00031217	1.00018289	.99820391	1.00569716	8 2
1 3	.99984385	.99988194	1.00108228	1.00478794	1 3
2 3	.99985503	.99988242	1.00063657	1.00478313	2 3
3 3	.99987124	.99988319	1.00016474	1.00478183	3 3
4 3	.99988777	.99988411	.99970163	1.00477401	4 3
5 3	.99989964	.99988503	.99939442	1.00477657	5 3
6 3	.99990296	.99988579	.99953808	1.00479346	6 3
7 3	.99990213	.99988631	.99958834	1.00480031	7 3
8 3	.99989809	.99988656	.99999368	1.00481667	8 3
1 4	.99963467	.99971432	1.00168954	1.00394861	1 4
2 4	.99964386	.99971470	1.00136778	1.00393597	2 4
3 4	.99965621	.99971522	1.00103173	1.00393550	3 4
4 4	.99966780	.99971575	1.00072247	1.00393691	4 4
5 4	.99967522	.99971614	1.00049129	1.00394003	5 4
6 4	.99967523	.99971630	1.00059754	1.00394662	6 4
7 4	.99967217	.99971628	1.00063921	1.00396145	7 4
8 4	.99966736	.99971616	1.00092030	1.00396801	8 4
1 5	.99962407	.99969934	1.00150111	1.00282777	1 5

2 5	.99963055	.99969961	1.00129761	1.00282507	2 5
3 5	.99963902	.99969994	1.00107364	1.00282441	3 5
4 5	.99964664	.99970022	1.00086525	1.00282588	4 5
5 5	.99965088	.99970035	1.00072088	1.00282858	5 5
6 5	.99964975	.99970028	1.00079272	1.00283373	6 5
7 5	.99964658	.99970008	1.00082042	1.00283823	7 5
8 5	.99964250	.99969987	1.00100735	1.00284332	8 5
1 6	.99976999	.99981176	1.00082412	1.00148148	1 6
2 6	.99977344	.99981190	1.00071636	1.00147953	2 6
3 6	.99977790	.99981207	1.00060008	1.00147910	3 6
4 6	.99978189	.99981221	1.00049122	1.00147990	4 6
5 6	.99978408	.99981226	1.00041406	1.00148125	5 6
6 6	.99978339	.99981220	1.00045120	1.00148445	6 6
7 6	.99978161	.99981208	1.00046588	1.00148728	7 6
8 6	.99977936	.99981195	1.00056503	1.00149046	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 84600.00 SECONDS **** 23.5000 HOURS

1 1	.99820060	.99805231	.99738231	1.00521257	1 1
2 1	.99820691	.99805253	.99679638	1.00520626	2 1
3 1	.99821729	.99805320	.99632033	1.00519257	3 1
4 1	.99822884	.99805436	.99599189	1.00518721	4 1
5 1	.99824039	.99805593	.99581148	1.00518631	5 1
6 1	.99825139	.99805778	.99587023	1.00518905	6 1
7 1	.99826014	.99805951	.99588946	1.00529198	7 1
8 1	.99826529	.99806071	.99614220	1.00520550	8 1
1 2	.99778649	.99785181	1.00171720	1.00501522	1 2
2 2	.99780136	.99785239	1.00109849	1.00500148	2 2
3 2	.99782187	.99785326	1.00048369	1.00499932	3 2
4 2	.99784181	.99785425	.99990450	1.00499764	4 2
5 2	.99785505	.99785515	.99952195	1.00499878	5 2
6 2	.99785682	.99785577	.99968408	1.00500211	6 2
7 2	.99785211	.99785608	.99973580	1.00500257	7 2
8 2	.99784155	.99785613	1.00063657	1.00535929	8 2
1 3	.99765352	.99781354	1.00323807	1.00448217	1 3
2 3	.99766711	.99781411	1.00280653	1.00447819	2 3
3 3	.99768472	.99781478	1.00234608	1.00447754	3 3
4 3	.99770074	.99781535	1.00189156	1.00447064	4 3
5 3	.99770961	.99781561	1.00158990	1.00447340	5 3
6 3	.99770716	.99781543	1.00173815	1.00448939	6 3
7 3	.99770037	.99781498	1.00179427	1.00449571	7 3
8 3	.99769161	.99781451	1.00219831	1.00451092	8 3
1 4	.99784081	.99802005	1.00342484	1.00368559	1 4
2 4	.99785176	.99802050	1.00311937	1.00367414	2 4
3 4	.99786493	.99802092	1.00279859	1.00367416	3 4
4 4	.99787573	.99802113	1.00250240	1.00367585	4 4
5 4	.99788044	.99802095	1.00228160	1.00367899	5 4
6 4	.99787565	.99802032	1.00238927	1.00368503	6 4
7 4	.99786775	.99801950	1.00243444	1.00369882	7 4
8 4	.99785916	.99801879	1.00270866	1.00370463	8 4
1 5	.99833284	.99847960	1.00273728	1.00263375	1 5
2 5	.99834055	.99847992	1.00254618	1.00263160	2 5
3 5	.99834955	.99848018	1.00233497	1.00263131	3 5
4 5	.99835650	.99848022	1.00213807	1.00263293	4 5
5 5	.99835867	.99847993	1.00208245	1.00263558	5 5
6 5	.99835402	.99847928	1.00207457	1.00264025	6 5
7 5	.99834736	.99847850	1.00210464	1.00264425	7 5
8 5	.99834059	.99847785	1.00228478	1.00264872	8 5
1 6	.99907692	.99915715	1.00148713	1.00137777	1 6
2 6	.99908102	.99915732	1.00138646	1.00137614	2 6
3 6	.99908575	.99915745	1.00127749	1.00137590	3 6
4 6	.99908935	.99915746	1.00117516	1.00137678	4 6
5 6	.99909042	.99915729	1.00110314	1.00137811	5 6
6 6	.99908784	.99915692	1.00114029	1.00138102	6 6
7 6	.99908418	.99915648	1.00115619	1.00138356	7 6
8 6	.99908048	.99915612	1.00125125	1.00138638	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 86400.00 SECONDS **** 24.0000 HOURS

1 1	.99594942	.99590736	.99954945	1.00479706	1 1
2 1	.99596028	.99590776	.99888498	1.00479120	2 1
3 1	.99597543	.99590852	.99831955	1.00477858	3 1
4 1	.99599020	.99590958	.99790253	1.00477392	4 1
5 1	.99600190	.99591080	.99766070	1.00477349	5 1
6 1	.99600899	.99591204	.99775239	1.00477668	6 1
7 1	.99601277	.99591309	.99778630	1.00478926	7 1
8 1	.99601323	.99591377	.99812154	1.00479296	8 1
1 2	.99563650	.99582059	1.00388760	1.00459510	1 2
2 2	.99565394	.99582127	1.00328153	1.00458279	2 2
3 2	.99567619	.99582208	1.00267155	1.00458148	3 2
4 2	.99569608	.99582275	1.00209052	1.00458053	4 2
5 2	.99570681	.99582303	1.00170463	1.00458198	5 2
6 2	.99570320	.99582278	1.00187561	1.00458504	6 2
7 2	.99569283	.99582218	1.00193463	1.00458514	7 2
8 2	.99567783	.99582156	1.00282466	1.00492326	8 2
1 3	.99574692	.99601234	1.00509868	1.00409813	1 3
2 3	.99576233	.99601298	1.00469137	1.00408717	2 3
3 3	.99578073	.99601356	1.00425329	1.00408724	3 3
4 3	.99579589	.99601379	1.00381816	1.00408119	4 3

5 3	.99580183	.99601344	1.00352928	1.00408401	5 3
6 3	.99579426	.99601242	1.00367788	1.00409880	6 3
7 3	.99578230	.99601112	1.00373764	1.00410429	7 3
8 3	.99576951	.99601003	1.00413002	1.00411804	8 3
1 4	.99628571	.99654974	1.00489947	1.00335270	1 4
2 4	.99629795	.99655024	1.00461667	1.00334257	2 4
3 4	.99631151	.99655057	1.00431816	1.00334311	3 4
4 4	.99632132	.99655048	1.00404154	1.00334505	4 4
5 4	.99632347	.99654980	1.00383585	1.00334810	5 4
6 4	.99631450	.99654848	1.00394183	1.00335333	6 4
7 4	.99630246	.99654696	1.00398905	1.00336587	7 4
8 4	.99629071	.99654574	1.00424970	1.00337067	8 4
1 5	.99721663	.99742374	1.00377778	1.00238974	1 5
2 5	.99722525	.99742410	1.00360299	1.00238827	2 5
3 5	.99723449	.99742429	1.00340888	1.00238836	3 5
4 5	.99724066	.99742412	1.00322753	1.00239011	4 5
5 5	.99724090	.99742346	1.00310334	1.00239262	5 5
6 5	.99723323	.99742230	1.00317370	1.00239662	6 5
7 5	.99722362	.99742101	1.00320500	1.00239996	7 5
8 5	.99721461	.99742000	1.00337416	1.00240363	8 5
1 6	.99847872	.99859131	1.00204279	1.00124723	1 6
2 6	.99848329	.99859149	1.00195118	1.00124599	2 6
3 6	.99848813	.99859158	1.00185151	1.00124596	3 6
4 6	.99849130	.99859148	1.00175792	1.00124690	4 6
5 6	.99849133	.99859111	1.00169238	1.00124815	5 6
6 6	.99848714	.99859047	1.00172852	1.00125068	6 6
7 6	.99848189	.99858976	1.00174505	1.00125284	7 6
8 6	.99847698	.99858921	1.00183387	1.00125520	8 6
MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION **** 88200.00 SECONDS **** 24.5000 HOURS

1 1	.99403074	.99408529	1.00151794	1.00429882	1 1
2 1	.99404539	.99408583	1.00080004	1.00429368	2 1
3 1	.99406444	.99408665	1.00016858	1.00428226	3 1
4 1	.99408171	.99408759	.99968269	1.00427836	4 1
5 1	.99409326	.99408846	.99939187	1.00427835	5 1
6 1	.99409664	.99408913	.99951062	1.00428155	6.1
7 1	.99409585	.99408955	.99955691	1.00429368	7 1
8 1	.99409209	.99408973	.99995747	1.00429723	8 1
1 2	.99381688	.99410304	1.00574627	1.00409769	1 2
2 2	.99383619	.99410379	1.00516731	1.00408700	2 2
3 2	.99385942	.99410452	1.00457755	1.00408659	3 2
4 2	.99387875	.99410488	1.00400986	1.00408632	4 2
5 2	.99388692	.99410461	1.00363087	1.00408796	5 2
6 2	.99387853	.99410357	1.00380528	1.00409043	6 2
7 2	.99386328	.99410217	1.00386902	1.00408989	7 2
8 2	.99384457	.99410096	1.00473493	1.00440998	8 2
1 3	.99414347	.99449679	1.00664457	1.00363079	1 3
2 3	.99416009	.99449746	1.00627000	1.00362902	2 3
3 3	.99417874	.99449794	1.00586365	1.00362980	3 3
4 3	.99419272	.99449787	1.00545719	1.00362454	4 3
5 3	.99419589	.99449698	1.00518731	1.00362730	5 3
6 3	.99418391	.99449524	1.00533240	1.00364064	6 3
7 3	.99416761	.99449320	1.00539373	1.00364506	7 3
8 3	.99415155	.99449157	1.00576534	1.00365711	8 3
1 4	.99498448	.99531787	1.00610080	1.00296572	1 4
2 4	.99499755	.99531839	1.00584583	1.00295701	2 4
3 4	.99501112	.99531863	1.00557531	1.00295809	3 4
4 4	.99501978	.99531828	1.00532364	1.00296022	4 4
5 4	.99501958	.99531716	1.00513693	1.00296307	5 4
6 4	.99500708	.99531525	1.00523846	1.00296730	6 4
7 4	.99499164	.99531314	1.00528635	1.00297842	7 4
8 4	.99497735	.99531149	1.00552776	1.00298202	8 4
1 5	.99628595	.99654186	1.00461519	1.00210724	1 5
2 5	.99629515	.99654223	1.00445979	1.00210652	2 5
3 5	.99630436	.99654236	1.00428622	1.00210701	3 5
4 5	.99630967	.99654200	1.00412366	1.00210886	4 5
5 5	.99630818	.99654102	1.00401299	1.00211115	5 5
6 5	.99629800	.99653945	1.00407982	1.00211434	6 5
7 5	.99628598	.99653774	1.00411130	1.00211690	7 5
8 5	.99627521	.99653642	1.00426602	1.00211964	8 5
1 6	.99798090	.99811954	1.00248768	1.00109608	1 6
2 6	.99798578	.99811973	1.00240665	1.00109526	2 6
3 6	.99799058	.99811979	1.00231803	1.00109544	3 6
4 6	.99799329	.99811958	1.00223468	1.00109643	4 6
5 6	.99799239	.99811904	1.00217667	1.00109757	5 6
6 6	.99798685	.99811818	1.00221091	1.00109964	6 6
7 6	.99798032	.99811725	1.00222751	1.00110135	7 6
8 6	.99797447	.99811653	1.00230834	1.00110319	8 6
MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	

ELAPSED XENON TIME SINCE PERTURBATION **** 90000.00 SECONDS **** 25.0000 HOURS

1 1	.99245910	.99259919	1.00325630	1.00373908	1 1
2 1	.99247678	.99259986	1.00250897	1.00373491	2 1
3 1	.99249885	.99260071	1.00183423	1.00372476	3 1
4 1	.99251792	.99260151	1.00129897	1.00372165	4 1
5 1	.99252903	.99260205	1.00097158	1.00372201	5 1
6 1	.99252900	.99260218	1.00111143	1.00372506	6 1
7 1	.99252412	.99260201	1.00116771	1.00373644	7 1
8 1	.99251666	.99260175	1.00161646	1.00373955	8 1

1 2	.99233993	.99271056	1.00727543	1.00354371	1 2
2 2	.99236042	.99271136	1.00673600	1.00353476	2 2
3 2	.99238392	.99271200	1.00617987	1.00353525	3 2
4 2	.99240224	.99271208	1.00563892	1.00353561	4 2
5 2	.99240787	.99271130	1.00527592	1.00353731	5 2
6 2	.99239537	.99270958	1.00544855	1.00353894	6 2
7 2	.99237605	.99270749	1.00551479	1.00353751	7 2
8 2	.99235438	.99270577	1.00634467	1.00384020	8 2
1 3	.99285278	.99327606	1.00786644	1.00312287	1 3
2 3	.99287007	.99327675	1.00753143	1.00312239	2 3
3 3	.99288845	.99327712	1.00716445	1.00312390	3 3
4 3	.99290182	.99327677	1.00679432	1.00311934	4 3
5 3	.99290160	.99327544	1.00654860	1.00312193	5 3
6 3	.99288597	.99327308	1.00668677	1.00313363	6 3
7 3	.99286619	.99327044	1.00674775	1.00313682	7 3
8 3	.99284759	.99326836	1.00709091	1.00314698	8 3
1 4	.99394414	.99433126	1.00702466	1.00254019	1 4
2 4	.99395763	.99433180	1.00680145	1.00253294	2 4
3 4	.99397084	.99433195	1.00656338	1.90253455	3 4
4 4	.99397825	.99433138	1.00634081	1.00253682	4 4
5 4	.99397593	.99432989	1.00617610	1.00253941	5 4
6 4	.99396059	.99432750	1.00627082	1.00254247	6 4
7 4	.99394249	.99432492	1.00631810	1.00255208	7 4
8 4	.99392629	.99432293	1.00653568	1.00255433	8 4
1 5	.99554541	.99583851	1.00524819	1.00179754	1 5
2 5	.99555490	.99583889	1.00511443	1.00179761	2 5
3 5	.99556385	.99583896	1.00496395	1.00179849	3 5
4 5	.99556824	.99583844	1.00482259	1.00180039	4 5
5 5	.99556524	.99583721	1.00472699	1.00180241	5 5
6 5	.99555307	.99583529	1.00478878	1.00180470	6 5
7 5	.99553921	.99583325	1.00481950	1.00180638	7 5
8 5	.99552712	.99583169	1.00495703	1.00180810	8 5
1 6	.99758582	.99774419	1.00282164	1.00093048	1 6
2 6	.99759084	.99774438	1.00275227	1.00093002	2 6
3 6	.99759549	.99774441	1.00267592	1.00093041	3 6
4 6	.99759771	.99774412	1.00260395	1.00093143	4 6
5 6	.99759600	.99774344	1.00255421	1.00093243	5 6
6 6	.99758941	.99774241	1.00258579	1.00093399	6 6
7 6	.99758189	.99774130	1.00260197	1.00093521	7 6
8 6	.99757535	.99774045	1.00267345	1.00093647	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 91800.00 SECONDS **** 25.5000 HOURS

1 1	.99123884	.99145238	1.00474214	1.00313849	1 1
2 1	.99125880	.99145314	1.00398778	1.00313545	2 1
3 1	.99128302	.99145400	1.00329138	1.00312664	3 1
4 1	.99130322	.99145467	1.00272557	1.00312432	4 1
5 1	.99131364	.99145488	1.00237374	1.00312498	5 1
6 1	.99131053	.99145453	1.00252880	1.00312767	6 1
7 1	.99130210	.99145384	1.00259266	1.00313814	7 1
8 1	.99129150	.99145318	1.00307294	1.00314055	8 1
1 2	.99120804	.99164525	1.00846759	1.00295315	1 2
2 2	.99122906	.99164607	1.00797791	1.00294601	2 2
3 2	.99125220	.99164660	1.00746671	1.00294739	3 2
4 2	.99126913	.99164641	1.00696395	1.00294829	4 2
5 2	.99127232	.99164521	1.00662474	1.00294995	5 2
6 2	.99125640	.99164291	1.00679115	1.00295054	6 2
7 2	.99123385	.99164026	1.00685760	1.00294806	7 2
8 2	.99120997	.99163812	1.00764119	1.00323398	8 2
1 3	.99187563	.99235098	1.00876436	1.00258442	1 3
2 3	.99189308	.99235167	1.00847405	1.00258528	2 3
3 3	.99191073	.99235194	1.00815232	1.00258748	3 3
4 3	.99192170	.99235135	1.00782453	1.00258353	4 3
5 3	.99191995	.99234963	1.00760698	1.00258587	5 3
6 3	.99190143	.99234679	1.00773534	1.00259582	6 3
7 3	.99187902	.99234367	1.00779425	1.00259765	7 3
8 3	.99185862	.99234124	1.00810274	1.00260583	8 3
1 4	.99316443	.99358990	1.00767462	1.00209102	1 4
2 4	.99317795	.99359043	1.00748588	1.00208524	2 4
3 4	.99319049	.99359050	1.00728338	1.00208735	3 4
4 4	.99319657	.99358974	1.00709293	1.00208972	4 4
5 4	.99319241	.99358796	1.00695234	1.00209197	5 4
6 4	.99317491	.99358520	1.00703831	1.00209378	6 4
7 4	.99315489	.99358226	1.00708386	1.00219180	7 4
8 4	.99313740	.99358001	1.00727407	1.00210263	8 4
1 5	.99499438	.99531330	1.00568098	1.00147143	1 5
2 5	.99500388	.99531368	1.00557030	1.00147231	2 5
3 5	.99501235	.99531369	1.00544458	1.00147356	3 5
4 5	.99501581	.99531304	1.00532604	1.00147549	4 5
5 5	.99501152	.99531161	1.00524648	1.00147728	5 5
6 5	.99499788	.99530944	1.00530202	1.00147852	6 5
7 5	.99498273	.99530715	1.00533115	1.00147928	7 5
8 5	.99496979	.99530542	1.00544951	1.00147992	8 5
1 6	.99729299	.99746492	1.00304744	1.00075682	1 6
2 6	.99729801	.99746511	1.00299039	1.00075610	2 6
3 6	.99730240	.99746510	1.00292706	1.00075668	3 6
4 6	.99730412	.99746475	1.00286719	1.00075771	4 6
5 6	.99730173	.99746397	1.00282615	1.00075854	5 6
6 6	.99729437	.99746289	1.00285448	1.00075957	6 6
7 6	.99728617	.99746156	1.00286982	1.00076027	7 6
8 6	.99727917	.99746062	1.00293189	1.00076093	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 93600.00 SECONDS **** 26.0000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.99036514	.99063944	1.00596180	1.00251660	1 1
2 1	.99038664	.99064026	1.00522081	1.00251481	2 1
3 1	.99041217	.99064111	1.00452281	1.00250734	3 1
4 1	.99043287	.99064163	1.00394420	1.00250580	4 1
5 1	.99044241	.99064155	1.00357950	1.00250678	5 1
6 1	.99043661	.99064076	1.00374405	1.00250887	6 1
7 1	.99042519	.99063963	1.00381313	1.00251827	7 1
8 1	.99041204	.99063863	1.00430913	1.00251982	8 1
1 2	.99041485	.99090084	1.00932475	1.00234489	1 2
2 2	.99043581	.99090165	1.00889281	1.00233957	2 2
3 2	.99045802	.99090208	1.00843559	1.00234179	3 2
4 2	.99047324	.99090166	1.00798039	1.00234316	4 2
5 2	.99047413	.99090009	1.00767143	1.00234469	5 2
6 2	.99045550	.99089734	1.00782770	1.00234411	6 2
7 2	.99043057	.99089423	1.00789237	1.00234045	7 2
8 2	.99040522	.99089177	1.00862118	1.00261028	8 2
1 3	.99120494	.99171496	1.00934688	1.00203241	1 3
2 3	.99122207	.99171563	1.00910471	1.00203460	2 3
3 3	.99123862	.99171580	1.00883237	1.00203745	3 3
4 3	.99124786	.99171502	1.00855124	1.00203403	4 3
5 3	.99124404	.99171300	1.00836478	1.00203603	5 3
6 3	.99122340	.99170979	1.00848097	1.00204417	6 3
7 3	.99119921	.99170632	1.00853631	1.00204457	7 3
8 3	.99117771	.99170364	1.00880541	1.00205073	8 3
1 4	.99263862	.99308765	1.00806101	1.00163219	1 4
2 4	.99265182	.99308816	1.00790827	1.00162785	2 4
3 4	.99266344	.99308815	1.00774324	1.00163043	3 4
4 4	.99266817	.99308724	1.00758677	1.00163284	4 4
5 4	.99266246	.99308524	1.00747161	1.00163471	5 4
6 4	.99264347	.99308223	1.00754730	1.00163521	6 4
7 4	.99262223	.99307904	1.00759014	1.00164164	7 4
8 4	.99260403	.99307661	1.00775052	1.00164102	8 4
1 5	.99462755	.99496142	1.00592251	1.00113904	1 5
2 5	.99463681	.99496179	1.00583559	1.00114072	2 5
3 5	.99464464	.99496175	1.00573551	1.00114231	3 5
4 5	.99464716	.99496100	1.00564062	1.00114423	4 5
5 5	.99464183	.99495943	1.00557756	1.00114560	5 5
6 5	.99462723	.99495709	1.00562593	1.00114592	6 5
7 5	.99461131	.99495464	1.00565277	1.00114575	7 5
8 5	.99459793	.99495279	1.00575066	1.00114530	8 5
1 6	.99709942	.99727904	1.00317034	1.00057838	1 6
2 6	.99710431	.99727922	1.00312587	1.00057891	2 6
3 6	.99710836	.99727919	1.00307590	1.00057968	3 6
4 6	.99710958	.99727878	1.00302846	1.00058069	4 6
5 6	.99710665	.99727792	1.00299630	1.00058135	5 6
6 6	.99709879	.99727667	1.00302092	1.00058182	6 6
7 6	.99709019	.99727535	1.00303506	1.00058201	7 6
8 6	.99708298	.99727435	1.00308534	1.00058206	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 95400.00 SECONDS **** 26.5000 HOURS

MESH POINT(R,Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.98982518	.99014729	1.00690979	1.00189149	1 1
2 1	.98984752	.99014815	1.00620024	1.00189103	2 1
3 1	.98987358	.99014895	1.00551880	1.00188488	3 1
4 1	.98989420	.99014933	1.00494372	1.00188409	4 1
5 1	.98990269	.99014899	1.00457689	1.00188518	5 1
6 1	.98989461	.99014783	1.00474556	1.00188669	6 1
7 1	.98988078	.99014632	1.00481760	1.00189492	7 1
8 1	.98986567	.99014504	1.00531466	1.00189546	8 1
1 2	.98994631	.99046385	1.00985740	1.00173635	1 2
2 2	.98996667	.99046464	1.00948891	1.00173281	2 2
3 2	.98998747	.99046496	1.00909247	1.00173581	3 2
4 2	.99000075	.99046434	1.00869207	1.00173757	4 2
5 2	.98999952	.99046248	1.00841843	1.00173888	5 2
6 2	.98997890	.99045938	1.00856128	1.00173704	6 2
7 2	.98995241	.99045594	1.00862243	1.00173214	7 2
8 2	.98992628	.99045325	1.00928983	1.00198656	8 2
1 3	.99082681	.99135498	1.00962991	1.00148239	1 3
2 3	.99084321	.99135562	1.00943773	1.00148588	2 3
3 3	.99085833	.99135569	1.00921719	1.00148932	3 3
4 3	.99086578	.99135474	1.00898543	1.00148634	4 3
5 3	.99086020	.99135251	1.00883188	1.00148796	5 3
6 3	.99083818	.99134906	1.00893406	1.00149426	6 3
7 3	.99081300	.99134536	1.00898459	1.00149323	7 3
8 3	.99079107	.99134253	1.00921106	1.00149738	8 3
1 4	.99235444	.99281311	1.00820001	1.00117651	1 4
2 4	.99236700	.99281359	1.00808370	1.00117355	2 4
3 4	.99237749	.99281351	1.00795686	1.00117654	3 4
4 4	.99238088	.99281249	1.00783516	1.00117894	4 4
5 4	.99237392	.99281035	1.00774592	1.00118040	5 4
6 4	.99235408	.99280718	1.00781022	1.00117959	6 4
7 4	.99233229	.99280385	1.00784955	1.00118446	7 4
8 4	.99231393	.99280133	1.00797868	1.00118240	8 4
1 5	.99443561	.99477430	1.00598578	1.00080959	1 5
2 5	.99444441	.99477465	1.00592261	1.00081203	2 5
3 5	.99445145	.99477456	1.00584826	1.00081393	3 5

4 5	.99445307	.99477375	1.00577715	1.00081582	4 5
5 5	.99444695	.99477209	1.00573059	1.00081684	5 5
6 5	.99443185	.99476965	1.00577115	1.00081616	6 5
7 5	.99441566	.99476712	1.00579513	1.00081507	7 5
8 5	.99440225	.99476522	1.00587195	1.00081356	8 5
1 6	.99699999	.99718181	1.00319768	1.00040246	1 6
2 6	.99700463	.99718198	1.00316571	1.00040342	2 6
3 6	.99700826	.99718192	1.00312905	1.00040434	3 6
4 6	.99700901	.99718148	1.00309402	1.00040534	4 6
5 6	.99700566	.99718058	1.00307064	1.00040581	5 6
6 6	.99699756	.99717928	1.00309125	1.00040573	6 6
7 6	.99698884	.99717792	1.00310391	1.00040541	7 6
8 6	.99698161	.99717690	1.00314305	1.00040487	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 97200.00 SECONDS **** 27.0000 HOURS

1 1	.98959928	.98995633	1.00758812	1.00127954	1 1
2 1	.98962180	.98995720	1.00692553	1.00128042	2 1
3 1	.98964767	.98995795	1.00627662	1.00127556	3 1
4 1	.98966769	.98995820	1.00571971	1.00127546	4 1
5 1	.98967502	.98995763	1.00536051	1.00127668	5 1
6 1	.98966509	.98995617	1.00552835	1.00127743	6 1
7 1	.98964945	.98995435	1.00560122	1.00128443	7 1
8 1	.98963294	.98995284	1.00608610	1.00128388	8 1
1 2	.98978187	.99031464	1.01008341	1.00114318	1 2
2 2	.98980117	.99031539	1.00978188	1.00114134	2 2
3 2	.98982014	.99031560	1.00945077	1.00114504	3 2
4 2	.98983133	.99031481	1.00911032	1.00114709	4 2
5 2	.98982819	.99031274	1.00887566	1.00114813	5 2
6 2	.98980627	.99030940	1.00980248	1.00114499	6 2
7 2	.98977980	.99030575	1.00905864	1.00113885	7 2
8 2	.98975277	.99030291	1.00965985	1.00137856	8 2
1 3	.99072159	.99125256	1.00963558	1.00094834	1 3
2 3	.99073690	.99125315	1.00949371	1.00095304	2 3
3 3	.99075034	.99125314	1.00932581	1.00095699	3 3
4 3	.99075598	.99125207	1.00914456	1.00095437	4 3
5 3	.99074895	.99124970	1.00902470	1.00095557	5 3
6 3	.99072625	.99124611	1.00911160	1.00096008	6 3
7 3	.99070083	.99124230	1.00915632	1.00095765	7 3
8 3	.99067908	.99123940	1.00933836	1.00095985	8 3
1 4	.99229491	.99275046	1.00811260	1.00073539	1 4
2 4	.99230657	.99275090	1.00803215	1.00073372	2 4
3 4	.99231576	.99275076	1.00794311	1.00073707	3 4
4 4	.99231786	.99274967	1.00785597	1.00073942	4 4
5 4	.99230995	.99274745	1.00779242	1.00974045	5 4
6 4	.99228986	.99274422	1.00784466	1.00073837	6 4
7 4	.99226815	.99274085	1.00787982	1.00074173	7 4
8 4	.99225010	.99273831	1.00797726	1.00073830	8 4
1 5	.99440590	.99474017	1.00588705	1.00049132	1 5
2 5	.99441406	.99474049	1.00584700	1.00049447	2 5
3 5	.99442021	.99474036	1.00579778	1.00049664	3 5
4 5	.99442097	.99473951	1.00574997	1.00049845	4 5
5 5	.99441429	.99473781	1.00571945	1.00049911	5 5
6 5	.99439915	.99473536	1.00575183	1.00049748	6 5
7 5	.99438313	.99473282	1.00577254	1.00049551	7 5
8 5	.99437003	.99473091	1.00582827	1.00049299	8 5
1 6	.99698775	.99716681	1.00313849	1.00923267	1 6
2 6	.99699205	.99716697	1.00311861	1.00023402	2 6
3 6	.99699521	.99716689	1.00309488	1.00023599	3 6
4 6	.99699552	.99716643	1.00307190	1.00023684	4 8
5 6	.99699189	.99716552	1.00305702	1.00023632	5 6
6 6	.99698378	.99716420	1.00307345	1.00023573	6 6
7 6	.99697517	.99716284	1.00308440	1.00023491	7 6
8 6	.99696813	.99716183	1.00311247	1.00023382	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 99000.00 SECONDS **** 27.5000 HOURS

1 1	.98966207	.99004160	1.00800552	1.00069513	1 1
2 1	.98968418	.99004246	1.00740269	1.00069732	2 1
3 1	.98970922	.99004315	1.00679991	1.00069367	3 1
4 1	.98972818	.99004325	1.00627391	1.00069421	4 1
5 1	.98973427	.99004249	1.00593093	1.00069549	5 1
6 1	.98972292	.99004080	1.00609350	1.00069543	6 1
7 1	.98970605	.99003875	1.00616528	1.00070118	7 1
8 1	.98968871	.99003708	1.00662635	1.00069949	8 1
1 2	.98989561	.99042851	1.01002684	1.00057907	1 2
2 2	.98991344	.99042919	1.00979368	1.00057882	2 2
3 2	.98993029	.99042931	1.00953033	1.00058312	3 2
4 2	.98993927	.99042838	1.00925291	1.00058538	4 2
5 2	.98993449	.99042616	1.00905952	1.00058610	5 2
6 2	.98991193	.99042269	1.00916839	1.00058168	6 2
7 2	.98988459	.99041894	1.00921834	1.00057431	7 2
8 2	.98985888	.99041605	1.00975046	1.00080806	8 2
1 3	.99086491	.99138479	1.00939104	1.00044239	1 3
2 3	.99087885	.99138532	1.00929844	1.00044820	2 3
3 3	.99089043	.99138523	1.00918252	1.00045257	3 3
4 3	.99089428	.99138408	1.00905149	1.00045024	4 3
5 3	.99088613	.99138165	1.00896515	1.00045100	5 3
6 3	.99086340	.99137803	1.00903608	1.00045378	6 3

7 3	.99083842	.99137422	1.00987417	1.00045802	7 3
8 3	.99081738	.99137133	1.00921131	1.00045039	8 3
1 4	.99243924	.99288026	1.00782350	1.00031875	1 4
2 4	.99244980	.99288066	1.00777745	1.00031825	2 4
3 4	.99245759	.99288047	1.00772489	1.00032189	3 4
4 4	.99245846	.99287934	1.00767121	1.00032416	4 4
5 4	.99244990	.99287711	1.00763246	1.00032475	5 4
6 4	.99243010	.99287391	1.00767234	1.00032147	6 4
7 4	.99240901	.99287059	1.00770286	1.00032342	7 4
8 4	.99239173	.99286810	1.00776903	1.00031872	8 4
1 5	.99452304	.99484469	1.00564511	1.00019134	1 5
2 5	.99453042	.99484498	1.00562699	1.00019512	2 5
3 5	.99453561	.99484482	1.00560172	1.00019751	3 5
4 5	.99453558	.99484395	1.00557614	1.00019923	4 5
5 5	.99452857	.99484227	1.00556084	1.00019954	5 5
6 5	.99451378	.99483986	1.00558493	1.00019782	6 5
7 5	.99449834	.99483738	1.00560206	1.00019423	7 5
8 5	.99448586	.99483552	1.00563727	1.00019078	8 5
1 6	.99705434	.99722624	1.00300305	1.00007283	1 6
2 6	.99705822	.99722639	1.00299458	1.00007453	2 6
3 6	.99706088	.99722629	1.00298310	1.00007571	3 6
4 6	.99706077	.99722582	1.00297157	1.00007662	4 6
5 6	.99705699	.99722492	1.00296469	1.00007671	5 6
6 6	.99704909	.99722363	1.00297691	1.00007563	6 6
7 6	.99704081	.99722231	1.00298599	1.00007436	7 6
8 6	.99703411	.99722132	1.00300334	1.00007275	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 100800.00 SECONDS **** 28.0000 HOURS

1 1	.98998367	.99037384	1.00817654	1.00015050	1 1
2 1	.99000484	.99037467	1.00764349	1.00015396	2 1
3 1	.99002848	.99037527	1.00709794	1.00015143	3 1
4 1	.99004600	.99037526	1.00661355	1.00015252	4 1
5 1	.99005081	.99037434	1.00629415	1.00015383	5 1
6 1	.99003847	.99037248	1.00644759	1.00015292	6 1
7 1	.99002090	.99037027	1.00651654	1.00015742	7 1
8 1	.99000327	.99036850	1.00694392	1.00015459	8 1
1 2	.99025736	.99077675	1.00971673	1.00005564	1 2
2 2	.99027341	.99077736	1.00955144	1.00005683	2 2
3 2	.99028789	.99077738	1.00935622	1.00006163	3 2
4 2	.99029465	.99077635	1.00914297	1.00006402	4 2
5 2	.99028848	.99077406	1.00899188	1.00006437	5 2
6 2	.99026589	.99077055	1.00908151	1.00005873	6 2
7 2	.99023916	.99076680	1.00912434	1.00005021	7 2
8 2	.99021445	.99076393	1.00958621	1.00026271	8 2
1 3	.99122873	.99172526	1.00892726	.99997478	1 3
2 3	.99124107	.99172572	1.00888168	.99998156	2 3
3 3	.99125066	.99172556	1.00881577	.99998626	3 3
4 3	.99125281	.99172437	1.00873338	.99998414	4 3
5 3	.99124386	.99172194	1.00867952	.99998446	5 3
6 3	.99122168	.99171839	1.00873405	.99998563	6 3
7 3	.99119774	.99171467	1.00876517	.99998065	7 3
8 3	.99117788	.99171187	1.00885820	.99997934	8 3
1 4	.99276373	.99318030	1.00736020	.99993488	1 4
2 4	.99277301	.99318065	1.00734632	.99993543	2 4
3 4	.99277933	.99318042	1.00732807	.99993929	3 4
4 4	.99277908	.99317928	1.00730597	.99994144	4 4
5 4	.99277016	.99317710	1.00729057	.99994160	5 4
6 4	.99275113	.99317401	1.00731816	.99993722	6 4
7 4	.99273115	.99317082	1.00734373	.99993788	7 4
8 4	.99271500	.99316843	1.00737986	.99993203	8 4
1 5	.99476959	.99507156	1.00528048	.99991558	1 5
2 5	.99477606	.99507181	1.00528266	.99991991	2 5
3 5	.99478025	.99507163	1.00527964	.99992246	3 5
4 5	.99477951	.99507076	1.00527476	.99992408	4 5
5 5	.99477239	.99506913	1.00527355	.99992405	5 5
6 5	.99475831	.99506683	1.00528947	.99992072	6 5
7 5	.99474378	.99506446	1.00530285	.99991720	7 5
8 5	.99473219	.99506270	1.00531858	.99991292	8 5
1 6	.99719028	.99735125	1.00280252	.99992611	1 6
2 6	.99719368	.99735137	1.00280456	.99992811	2 6
3 6	.99719581	.99735126	1.00280441	.99992938	3 6
4 6	.99719534	.99735080	1.00280348	.99993023	4 6
5 6	.99719152	.99734993	1.00280396	.99993015	5 6
6 6	.99718401	.99734871	1.00281203	.99992862	6 6
7 6	.99717624	.99734745	1.00281917	.99992695	7 6
8 6	.99717003	.99734651	1.00282639	.99992488	8 6

MESH POINT(R,Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 102600.00 SECONDS **** 28.5000 HOURS

1 1	.99053073	.99092059	1.00812067	.99965573	1 1
2 1	.99055050	.99092136	1.00766462	.99966034	2 1
3 1	.99057228	.99092188	1.00718485	.99965883	3 1
4 1	.99058805	.99092176	1.00675066	.99966040	4 1
5 1	.99059158	.99092073	1.00646086	.99966168	5 1
6 1	.99057866	.99091875	1.00660192	.99965993	6 1
7 1	.99056092	.99091647	1.00666658	.99966321	7 1
8 1	.99054345	.99091465	1.00705223	.99965928	8 1
1 2	.99083381	.99132772	1.00918587	.99958231	1 2

2 2	.99084785	.99132825	1.00908617	.99958479	2 2
3 2	.99085981	.99132818	1.00895765	.99958996	3 2
4 2	.99086438	.99132709	1.00880791	.99959241	4 2
5 2	.99085710	.99132478	1.00869892	.99959238	5 2
6 2	.99083504	.99132133	1.00876868	.99958559	6 2
7 2	.99080949	.99131767	1.00880376	.99957603	7 2
8 2	.99078627	.99131489	1.00919588	.99977603	8 2
1 3	.99178233	.99224503	1.00827784	.99955374	1 3
2 3	.99179291	.99224543	1.00827599	.99956135	2 3
3 3	.99180046	.99224521	1.00825699	.99956629	3 3
4 3	.99180102	.99224400	1.00822052	.99956432	4 3
5 3	.99179156	.99224165	1.00819734	.99956428	5 3
6 3	.99177046	.99223824	1.00823575	.99956391	6 3
7 3	.99174887	.99223471	1.00825957	.99955782	7 3
8 3	.99172980	.99223206	1.00831033	.99955501	8 3
1 4	.99324254	.99362633	1.00675192	.99959043	1 4
2 4	.99325043	.99362662	1.00676736	.99959188	2 4
3 4	.99325527	.99362636	1.00678056	.99959590	3 4
4 4	.99325408	.99362525	1.00678752	.99959798	4 4
5 4	.99324499	.99362317	1.00679355	.99959766	5 4
6 4	.99322715	.99362025	1.00680923	.99959230	6 4
7 4	.99320869	.99361726	1.00682970	.99959181	7 4
8 4	.99319397	.99361504	1.00683770	.99958496	8 4
1 5	.99512663	.99540304	1.00481478	.99966878	1 5
2 5	.99513211	.99540325	1.00483525	.99967357	2 5
3 5	.99513529	.99540305	1.00485238	.99967623	3 5
4 5	.99513393	.99540222	1.00486628	.99967773	4 5
5 5	.99512689	.99540068	1.00487777	.99967737	5 5
6 5	.99511381	.99539852	1.00488585	.99967334	6 5
7 5	.99510049	.99539633	1.00489544	.99966918	7 5
8 5	.99509000	.99539470	1.00489312	.99966418	8 5
1 6	.99738531	.99753223	1.00254856	.99979583	1 6
2 6	.99738819	.99753233	1.00256005	.99979729	2 6
3 6	.99738980	.99753222	1.00257011	.99979862	3 6
4 6	.99738901	.99753177	1.00257874	.99979940	4 6
5 6	.99738525	.99753096	1.00258582	.99979916	5 6
6 6	.99737838	.99752982	1.00258992	.99979724	6 6
7 6	.99737119	.99752865	1.00259509	.99979522	7 6
8 6	.99736559	.99752779	1.00259297	.99979276	8 6

MESH POINT(R.Z) THERMAL FLUX FAST FLUX XENON IODINE

ELAPSED XENON TIME SINCE PERTURBATION **** 104400.00 SECONDS **** 29.0000 HOURS

1 1	.99126759	.99164724	1.00786131	.99921860	1 1
2 1	.99128560	.99164795	1.00748680	.99922426	2 1
3 1	.99130514	.99164837	1.00707883	.99922364	3 1
4 1	.99131891	.99164815	1.00670128	.99922560	4 1
5 1	.99132120	.99164704	1.00644576	.99922682	5 1
6 1	.99130808	.99164502	1.00657184	.99922425	6 1
7 1	.99129063	.99164272	1.00663096	.99922637	7 1
8 1	.99127377	.99164090	1.00696872	.99922141	8 1
1 2	.99158959	.99204782	1.00846957	.99916634	1 2
2 2	.99160144	.99204827	1.00843167	.99916990	2 2
3 2	.99161081	.99204811	1.00836679	.99917534	3 2
4 2	.99161328	.99204699	1.00827831	.99917777	4 2
5 2	.99160516	.99204473	1.00821013	.99917736	5 2
6 2	.99158412	.99204142	1.00825997	.99916954	6 2
7 2	.99156027	.99203793	1.00828693	.99915987	7 2
8 2	.99153892	.99203530	1.00861129	.99934729	8 2
1 3	.99249327	.99291355	1.00747789	.99918556	1 3
2 3	.99250198	.99291387	1.00751562	.99919382	2 3
3 3	.99250751	.99291360	1.00753948	.99919890	3 3
4 3	.99250661	.99291242	1.00754528	.99919703	4 3
5 3	.99249695	.99291019	1.00755036	.99919648	5 3
6 3	.99247735	.99290700	1.00757323	.99919489	6 3
7 3	.99245695	.99290373	1.00758973	.99918787	7 3
8 3	.99244058	.99290128	1.00760183	.99918375	8 3
1 4	.99384853	.99419287	1.00602873	.99929041	1 4
2 4	.99385497	.99419310	1.00607016	.99929261	2 4
3 4	.99385834	.99419282	1.00611140	.99929671	3 4
4 4	.99385620	.99419175	1.00614437	.99929853	4 4
5 4	.99384733	.99418982	1.00616955	.99929792	5 4
6 4	.99383102	.99418714	1.00617398	.99929173	6 4
7 4	.99381441	.99418441	1.00618936	.99929024	7 4
8 4	.99380137	.99418238	1.00617187	.99928256	8 4
1 5	.99557432	.99582054	1.00427004	.99945448	1 5
2 5	.99557878	.99582071	1.00430652	.99945961	2 5
3 5	.99558097	.99582050	1.00434139	.99946234	3 5
4 5	.99557908	.99581972	1.00437186	.99946370	4 5
5 5	.99557230	.99581830	1.00439448	.99946306	5 5
6 5	.99556046	.99581634	1.00439520	.99945842	6 5
7 5	.99554858	.99581435	1.00440105	.99945373	7 5
8 5	.99553935	.99581288	1.00438247	.99944815	8 5
1 6	.99762873	.99775914	1.00225303	.99968149	1 6
2 6	.99763105	.99775923	1.00227276	.99968395	2 6
3 6	.99763215	.99775911	1.00229177	.99968531	3 6
4 6	.99763110	.99775869	1.00230878	.99968602	4 6
5 6	.99762749	.99775794	1.00232161	.99968562	5 6
6 6	.99762122	.99775691	1.00232199	.99968338	6 6
7 6	.99761498	.99775585	1.00232522	.99968107	7 6
8 6	.99760999	.99775508	1.00231471	.99967828	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 106280.80 SECONDS **** 29.5800 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.99215730	.99251802	1.00742486	.99884471	1 1
2 1	.99217325	.99251865	1.00713385	.99885127	2 1
3 1	.99219025	.99251898	1.00680125	.99885141	3 1
4 1	.99220186	.99251868	1.00648470	.99885369	4 1
5 1	.99220296	.99251753	1.00626678	.99885480	5 1
6 1	.99219000	.99251551	1.00637592	.99885146	6 1
7 1	.99217326	.99251325	1.00642855	.99885252	7 1
8 1	.99215739	.99251148	1.00671409	.99884661	8 1
1 2	.99248823	.99290247	1.00760450	.99881280	1 2
2 2	.99249780	.99290283	1.00762337	.99881725	2 2
3 2	.99250459	.99290261	1.00761767	.99882285	3 2
4 2	.99250508	.99290148	1.00758680	.99882519	4 2
5 2	.99249640	.99289932	1.00755720	.99882440	5 2
6 2	.99247681	.99289621	1.00758759	.99881570	6 2
7 2	.99245504	.99289298	1.00760634	.99880446	7 2
8 2	.99243587	.99289054	1.00786623	.99898165	8 2
1 3	.99332831	.99369946	1.00656295	.99887452	1 3
2 3	.99333511	.99369971	1.00663549	.99888327	2 3
3 3	.99333866	.99369941	1.00669742	.99888841	3 3
4 3	.99333647	.99369828	1.00674108	.99888657	4 3
5 3	.99332687	.99369621	1.00677148	.99888564	5 3
6 3	.99330915	.99369331	1.00677976	.99888292	6 3
7 3	.99329106	.99369035	1.00678910	.99887513	7 3
8 3	.99327683	.99368815	1.00676451	.99886993	8 3
1 4	.99455400	.99485385	1.00522067	.99903818	1 4
2 4	.99455896	.99485403	1.00528440	.99904098	2 4
3 4	.99456093	.99485373	1.00534988	.99904509	3 4
4 4	.99455804	.99485274	1.00540545	.99904673	4 4
5 4	.99454954	.99485099	1.00544720	.99904578	5 4
6 4	.99453504	.99484859	1.00544129	.99903891	6 4
7 4	.99452052	.99484616	1.00545170	.99903658	7 4
8 4	.99450933	.99484437	1.00541121	.99902826	8 4
1 5	.99609252	.99630513	1.00366812	.99927502	1 5
2 5	.99609594	.99630526	1.00371813	.99928039	2 5
3 5	.99609717	.99630505	1.00376810	.99928314	3 5
4 5	.99609486	.99630433	1.00381272	.99928436	4 5
5 5	.99608849	.99630306	1.00384476	.99928346	5 5
6 5	.99607808	.99630132	1.00383878	.99927835	6 5
7 5	.99606780	.99629957	1.00384104	.99927324	7 5
8 5	.99605995	.99629828	1.00380822	.99926721	8 5
1 6	.99790963	.99802176	1.00192764	.99958672	1 6
2 6	.99791141	.99802182	1.00195431	.99958932	2 6
3 6	.99791200	.99802171	1.00198089	.99959069	3 6
4 6	.99791075	.99802132	1.00200503	.99959132	4 6
5 6	.99790737	.99802066	1.00202269	.99959080	5 6
6 6	.99790188	.99801974	1.00201969	.99958829	6 6
7 6	.99789644	.99801882	1.00202105	.99958575	7 6
8 6	.99789228	.99801814	1.00200323	.99958271	8 6

ELAPSED XENON TIME SINCE PERTURBATION **** 108000.00 SECONDS **** 30.0000 HOURS

MESH POINT(R.Z)	THERMAL FLUX	FAST FLUX	XENON	IODINE	
1 1	.99316256	.99349695	1.00683973	.99853749	1 1
2 1	.99317623	.99349749	1.00663181	.99854481	2 1
3 1	.99319051	.99349773	1.00637586	.99854558	3 1
4 1	.99319987	.99349736	1.00612264	.99854807	4 1
5 1	.99319987	.99349619	1.00594435	.99854906	5 1
6 1	.99318738	.99349424	1.00603523	.99854502	6 1
7 1	.99317171	.99349207	1.00608066	.99854511	7 1
8 1	.99315713	.99349039	1.00631145	.99853838	8 1
1 2	.99349315	.99385700	1.00662766	.99852469	1 2
2 2	.99350040	.99385726	1.00669723	.99852985	2 2
3 2	.99350468	.99385698	1.00674513	.99853549	3 2
4 2	.99350336	.99385588	1.00676703	.99853769	4 2
5 2	.99349440	.99385386	1.00677300	.99853654	5 2
6 2	.99347658	.99385102	1.00678489	.99852711	6 2
7 2	.99345724	.99384809	1.00679555	.99851526	7 2
8 2	.99344046	.99384590	1.00699540	.99868213	8 2
1 3	.99425425	.99457148	1.00556806	.99862307	1 3
2 3	.99425915	.99457165	1.00567017	.99863213	2 3
3 3	.99426082	.99457132	1.00576484	.99863724	3 3
4 3	.99425752	.99457026	1.00584140	.99863541	4 3
5 3	.99424823	.99456840	1.00589379	.99863412	5 3
6 3	.99423265	.99456583	1.00588872	.99863048	6 3
7 3	.99421713	.99456323	1.00589126	.99862209	7 3
8 3	.99420519	.99456131	1.00583494	.99861603	8 3
1 4	.99533139	.99558335	1.00435701	.99883559	1 4
2 4	.99533490	.99558347	1.00443914	.99883883	2 4
3 4	.99533554	.99558317	1.00452479	.99884289	3 4
4 4	.99533207	.99558227	1.00459928	.99884433	4 4
5 4	.99532411	.99558073	1.00465486	.99884309	5 4
6 4	.99531162	.99557865	1.00463969	.99883571	6 4
7 4	.99529937	.99557656	1.00464537	.99883271	7 4
8 4	.99529014	.99557502	1.00458530	.99882392	8 4
1 5	.99666121	.99683798	1.00303017	.99913165	1 5
2 5	.99666359	.99683807	1.00309115	.99913717	2 5
3 5	.99666393	.99683786	1.00315345	.99913989	3 5
4 5	.99666130	.99683721	1.00320967	.99914096	4 5

5 5	.99665546	.99683611	1.00324936	.99913985	5 5
6 5	.99664662	.99683462	1.00323742	.99913438	6 5
7 5	.99663806	.99683314	1.00323633	.99912897	7 5
8 5	.99663166	.99683204	1.00319145	.99912261	8 5
1 6	.99821725	.99830995	1.00158371	.99951137	1 6
2 6	.99821848	.99830999	1.00161596	.99951485	2 6
3 6	.99821861	.99830987	1.00166870	.99951541	3 6
4 6	.99821720	.99830953	1.00167868	.99951597	4 6
5 6	.99821412	.99830896	1.00170019	.99951533	5 6
6 6	.99820948	.99830818	1.00169418	.99951263	6 6
7 6	.99820497	.99830740	1.00169380	.99950992	7 6
8 6	.99820160	.99830683	1.00166982	.99950670	8 6

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OMPX.

P  055056 A0 054T42 B0 000000
RA 020600 41 056477 81 000006
FL 114000 42 000001 82 111767
EM 070000 A3 000006 83 003764
          44 000001 84 000006
          45 054537 85 000081
          46 000001 86 000081
          47 000001 87 056405

X0  77777 77777 77770 00000
X1  17252 42025 24000 00000
X2  00000 00000 00000 00000
X3  00000 00000 00000 00000
X4  00000 00000 00000 00000
X5  00000 00000 00001 07756
X6  01022 40000 00000 00000
X7  03111 70000 00001 07756

13.18.58. GMSA017. READ.
13.19.37. GMSA017. PP 038 SEC.
13.25.25. GMS4017. 8      002JOB.G M SANOGU157 XEKE  K03
13.25.25. GMSA017.   114000
13.25.26. GMSA017. RUN151
13.25.37. GMSA017. UNUSED JOB SPACE  •  000500
13.25.41. GMSA017. XEKE.
13.26.43. GMSA017. BCO INPUT**ENDFILE  INPUT
13.26.44. GMSA017. CP  058.082 SEC.
13.26.44. GMS4017. PP  022.329 SEC.
09/07/66. VERSION 31        01.08.08   8/30/66
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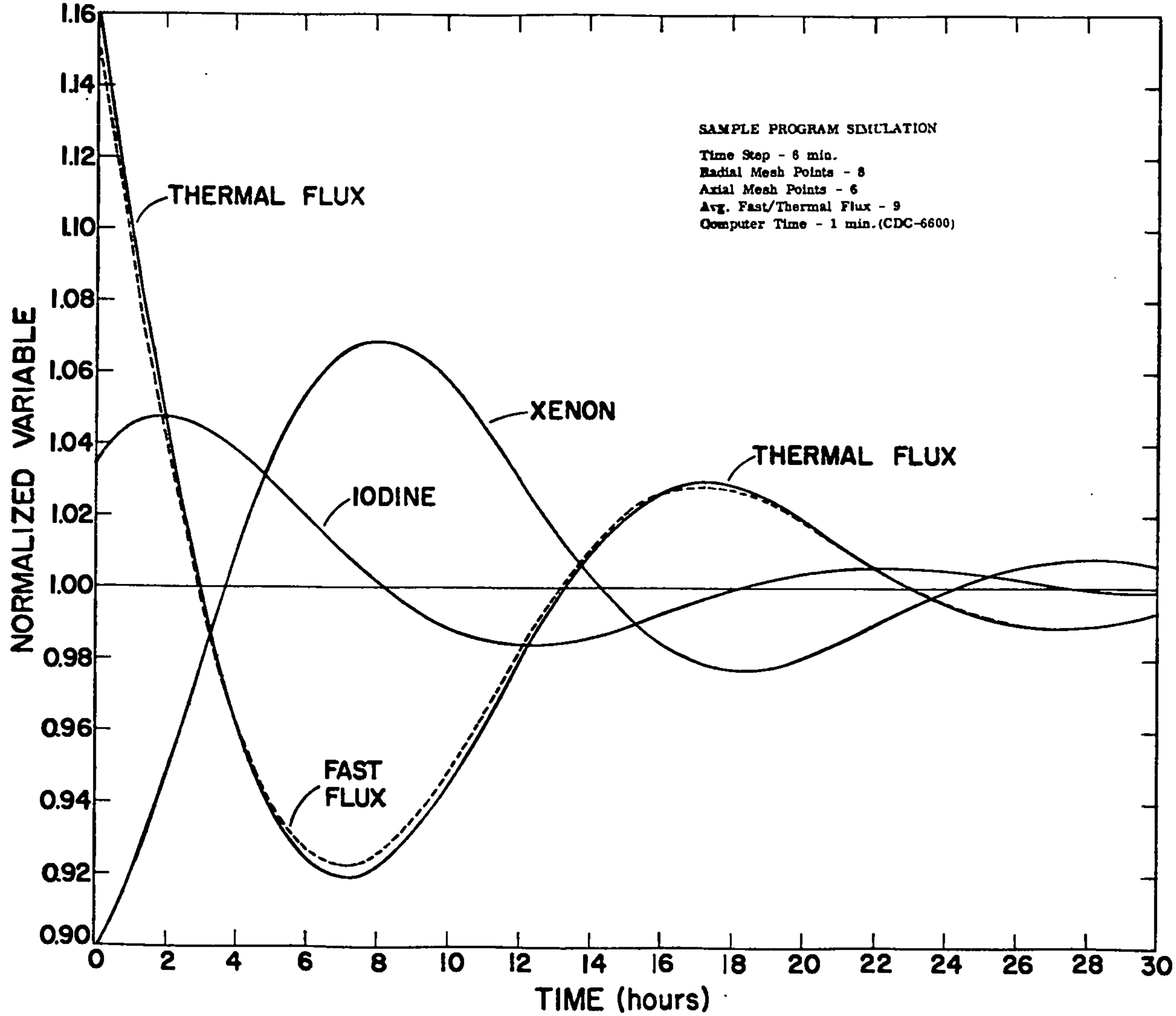

Fig. 6. Plot of System Response From a Sample Simulation by Program XEKE.