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Burn-up Credit Criticality Benchmark

Phase II-C

Impact of the Asymmetry of PWR Axial Burn-up Profiles on the End Effect

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OVERVIEW

This report describes the final results of the Phase II-C Burn-up Credit Criticality Benchmark conducted by the Expert Group on Burn-up Credit Criticality Safety of the OECD Nuclear Energy Agency (NEA).

The overall objective of Phase II of the programme is to study the impact of axial burn-up profiles of PWR UO_2 spent fuel assemblies on the reactivity of PWR UO_2 spent fuel assembly configurations. The objective of the Phase II-C benchmark was to study the impact of the asymmetry of axial burn-up profiles on the end effect and the axial fission density distribution. The Phase II-C benchmark exercises have therefore been based on the evaluation of a database of real axial burn-up profiles which has been provided by the Siemens Convoy fuel assemblies, irradiated in the German nuclear power plant Neckarwestheim II. From this database two sets of 17 axial burn-up model distributions each have been extracted. One set is related to an average burn-up of 32 MWd/kgU, the other set has been generated for an average burn-up of 50 MWd/kgU. Two average burn-up values were selected because the end effect depends on the average burn-up of the fuel.

The 34 axial burn-up model distributions were provided to the participants in the Phase II□C benchmark exercise. The sets of isotopic number densities related to the axial burn-up model distributions were also provided. To enable the participants to estimate the end effects related to the burn-up model distributions, the number densities applying to the average burn-up values of 32 MWd/kgU and 50 MWd/kgU respectively were also supplied.

For this study on the impact of the asymmetry of the axial fuel burn-up profiles and fission density distribution, a radial finite transport cask was used, containing 21 assemblies separated by borated stainless steel and reflected by stainless steel.

In total, ten solutions were submitted to the Phase II-C benchmark exercise, by nine companies/organisations in seven countries. The participants were asked to calculate, using the 34 axial burn-up model distributions, the neutron multiplication factors keff of the cask configuration as well as the fission fractions and fission densities for the 21 axial zones that had been used to describe the axial burn-up distributions.

The analysis of the results obtained begins with a discussion of the spread of the keff results. Then, after having defined “asymmetry parameters” to describe the asymmetry of the axial burn-up profiles, the correlations between these parameters and the end effects calculated from the contributors’ keff results are derived. Strong correlations between the end effects and the “asymmetry parameters” are found which can be described by linear regression functions. In addition, relationships between the correlations obtained for the two sets of axial burn-up model distributions are observed, and mathematical expressions for these relationships are derived.

The fission fraction results obtained from the contributors have been recorded in the report since these results give useful information on the relationship between fission fractions and fission densities. The fission density distribution calculated by the contributors for the 21 axial zones has been plotted for each of the axial burn-up profiles to ascertain whether a change in the degree of the asymmetry of the axial distribution of the burn-up results in a correlated change of the axial fission density distribution.

The applicability of the knowledge gained from the results of the Phase II-C exercise to burn-up credit criticality design calculations is demonstrated.

Acknowledgements

The NEA and the author would like to thank the participants in this international benchmark study for their contributions. Special thanks are extended to M. Brady Raap for encouraging the Expert Group on Burn-up Credit Criticality Safety to carry out this benchmark study and for providing a foreword to this report. Special thanks are also extended to N.T. Gulliford for having reviewed the text of the report.

The Expert Group on Burn-up Credit Criticality Safety and, in particular, the participants in the Phase II-C benchmark study are indebted to H.-G. Johann, EnBW Kernkraft GmbH, Neckarwestheim, Germany, for providing the axial burn-up profile database and to T. Lamprecht, EnBW Kernkraft GmbH, Neckarwestheim, for preparing the profile database.

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FOREWORD

Michaele Brady Raap,

Chair of the OECD/NEA Expert Group on Burn-up Credit Criticality

In the fifteen-year history of the Expert Group, Phase II-C is the singularly most challenging problem that the group has endeavoured to analyse. The realism that is included in this specification by using axial burn-up distributions from an operating NPP is heretofore unprecedented in open literature studies on burn-up credit. The group and its members owe deep gratitude to the Neckarwestheim II nuclear power plant and to the study co-ordinator and author of this report Jens Christian Neuber. I also applaud the individuals and their host organisations who participated in Phase II-C for their foresight and courage in accepting the challenge.

Every effort was made to represent real cask configurations in the model selected for this study in order to match the realism of the burn-up profiles. As the author has pointed out to me, the only serious deviation from the Phase II-C assumptions you can find in practice is the assumption that part of the active fuel zone is jutting out of the absorber channels due to accidental impacts. The fundamental effects observed in Phase II-C remain valid even for this case; in fact, they become more "enhanced".

As future cask designs are developed and fuel structures are modified, it is important to perform analyses similar to those included in this report to assess the impact of the axial burn-up distribution for specific cask designs. For over a decade, the Expert Group has maintained that the influence of the axial distribution can be significant and should be explicitly analysed. Early in the study of burn-up credit there were attempts to bound or otherwise represent this effect as some "end effect" penalty in reactivity that could be simply applied. Phase II-C demonstrates once more that such an approach is not appropriate.

One of the most significant "lessons learnt" from Phase II-C is that we may have underestimated the problems with source convergence in burn-up credit studies using axial profile data. I want to share with you the insight I received from a personal communication with the chairman of the OECD/NEA Expert Group on Source Convergence in Criticality Safety Analysis with respect to his review of the Phase II-C results:

It is important to recognise that in a Monte Carlo calculation, there are two types of convergence one needs to achieve. The first is fission source <u>iteration convergence</u> (colloquially referred to as <u>source convergence</u>), i.e., the convergence of outer iterations one achieves by skipping generations. Failure to converge the fission source results in a bias that depends on the initial source, since the effect of the outer iterations is to reduce the contamination of the fission distribution with the (necessarily) erroneous components of the initial source. In a deterministic calculation, the eigenvector is known as *soon as the outer iterations have converged (assuming the inner iterations are also converged). In a Monte Carlo calculation, however, converging the fission source only sets the conditions for achieving the second type of convergence – statistical convergence. Obviously, one wants to achieve both types of convergence in any Monte Carlo analysis. Incomplete fission source iteration convergence causes a bias (an error) in the results that may not be detectable without further analysis. In contrast, one is usually protected from insufficient statistical convergence because uncertainty estimates are normally provided for mean value estimates. A large estimated uncertainty alerts the analyst that a parameter's estimate cannot be taken very seriously. Monte Carlo analysts generally consider uncertainty estimates in excess of 10% to be not well known. Of course, when a tally is zero its uncertainty cannot be estimated at all. When a tally contains only a few scores, its uncertainty estimate will be large and should indicate to the analyst that further investigation is warranted.*

For the Phase II-C benchmark, zero estimates are very likely to be the result of poor statistical convergence (insufficient tracking), not incomplete fission source iteration convergence. This is imprecision, not a bias in the calculated result. As has been pointed out for this benchmark exercise, there is (physically) fission in all axial locations, however sparse or infrequent. A zero estimate could, in principle, be caused by non-convergence of either type. The statistical convergence of the participants' results was difficult to assess because the fission rate uncertainty estimates were not provided. It is a good practice always to provide Monte Carlo uncertainty estimates along with estimates of the mean.

The practical question is what impact does this question of convergence have on the overall result of the Phase II-C benchmark? Correctly estimating the end effect depends primarily on the accuracy of the fission distribution estimates at the high-worth end of the system where the vast majority of fissions are. If these are accurate, then it is hard to see how the end effect estimates could be off by much, even if the (much smaller) bottom-half fission rates are poorly estimated.

It is generally accepted that the results submitted for Phase II-C provide good estimates of the significance of the axially distributed burn-up profiles on the reactivity of a loaded transport/storage cask. This is because changes in the integral parameter k are most sensitive to convergence in the low burn-up regions of the fuel, which is relatively easy to obtain. However, much of the discussion and text is devoted to the analysis of the detailed data to identify statistical correlations. For these analyses, statistical convergence of the results in all regions is essential. Burn-up credit analysts should take care to understand how important convergence is to their particular goals.

TABLE OF CONTENTS

1. INTRODUCTION

The objective of Phase II of the OECD/NEA Burn-up Credit working group programme is to study the impact of axial burn-up profiles on the reactivity of PWR UO2 spent fuel assembly configurations.

In Phase II-A an array of PWR fuel assemblies, which was assumed to be infinite in lateral extent, was examined for the reactivity effect of axial burn-up profiles [1]. In Phase II-B a configuration of 21 PWR spent fuel assemblies in a stainless steel transport cask was taken as a basis for evaluating the reactivity effect of axial profiles [2]. The 21 fuel assemblies were assumed to be positioned in a borated stainless steel basket centred in the transport cask.

In Phase II-A and Phase II-B idealized burn-up profiles were applied, each characterised by an axially symmetric burn-up distribution represented by nine uniform zones. However, real PWR axial burn-up profiles are usually axially asymmetric due to the lower moderator density in the upper half of an operating core (cf. Figure 1.1 and Reference [3]). The asymmetric component of a burn-up profile depends on the average burn-up of the profile (cf. Ref. [4]) and is strongly affected by reload patterns applied, control rod movements made during operating cycle, presence of axial shaping rods or burnable poison rods, presence of integral burnable absorbers as well as extended low power operations. In other words, axial burn-up profiles are strongly affected by the reactor operation strategies used.

1.1 Definitions

1.1.1 End effect

The impact of an axial burn-up profile on the reactivity of a spent fuel configuration may be expressed in the difference Δk between the configuration's neutron multiplication factor obtained with the profile and the configuration's neutron multiplication factor obtained by assuming a uniform distribution of the averaged burn-up of the profile. This difference is named as "end effect",

$$\text{End effect} \equiv \Delta k = k_{\text{eff}}(\text{ABP}) - k_{\text{eff}}\left(\text{UD}\left(\hat{B}_{\text{ABP}}\right)\right) \tag{1.1}$$

ABP:=	axial burn-up profile,
$k_{\text{eff}}(\text{ABP})$:=	neutron multiplication factor obtained with the ABP,
$\hat{B}_{\text{ABP}}$:=	averaged burn-up of the ABP,
$\text{UD}\left(\hat{B}_{\text{ABP}}\right)$:=	uniform distribution of $\hat{B}_{\text{ABP}}$

$k_{eff}\left(UD\left(\hat{B}_{ABP}\right)\right) :=$ neutron multiplication factor obtained by assuming a uniform distribution of the averaged burn-up $\hat{B}_{ABP}$.

1.1.2 Model distribution

To calculate the neutron multiplication factor and hence the related end effect it is necessary to extract a model distribution from the shape of the real axial burn-up profile of interest. Usually step distributions of uniform burn-up zones are used as model distributions to describe the shape of axial burn-up profiles: The active zone of the fuel assembly type of interest is divided into a certain number of axial zones

$$\left[z_{i-1} , z_i\right] , z_{i-1} < z_i , i = 1,..., m , \tag{1.2}$$

z_i:= axial height of the upper bound of the i-th zone,

$$z_0 = 0 \text{ and } z_m = L := \text{total axial length of the active zone.} \tag{1.3}$$

The step distribution needed to represent an axial burn-up profile is generated by averaging the burn-up B(z) of the profile over the axial zones (1.2),

$$B_i \equiv B\left(z \in \left[z_{i-1} , z_i\right]\right) = \frac{\int_{z_{i-1}}^{z_i} B(z)\, dz}{z_i - z_{i-1}} , i = 1,\ldots,m. \tag{1.4}$$

The number m of axial zones and the lengths

$$\Delta z_i = z_i - z_{i-1} , i = 1,\ldots,m, \tag{1.5}$$

of the zones are chosen to represent the shape of axial profiles with sufficient accuracy (cf. Figure 1.2) and to ensure, therefore, a sufficiently accurate estimation of the neutron multiplication factor k_{eff} (ABP) .

To each axial zone $\left[z_{i-1} , z_i\right]$ a zone–specific set of isotopic number densities $\left\{N_{ji}\right\}$ is assigned,

$$\left\{N_{ji} , j = 1,..., n_{isot}\right\} = \left\{N_j\left(B\left(z \in \left[z_{i-1, z_i}\right]\right)\right) , j = 1,..., n_{isot}\right\} , \tag{1.6}$$

$n_{isot.}$:= number of isotopes to be considered in the calculation of the end effect.

The number densities are assigned to the burn-up step $B\left(z \in \left[z_{i-1} , z_i\right]\right)$ with the aid of depletion calculations performed under depletion conditions defined in compliance with the reactor operation strategies of interest.

1.1.3 Fission densities and fission fractions

In Phase II-A, fission densities in the axial zones $\left[z_{i-1}, z_i\right]$ chosen there, as defined by eq.(1.7), were evaluated [1],

$$\rho_i = \frac{\frac{1}{V_i}\int_{V_i} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}{\sum_{j=1}^{m}\frac{1}{V_j}\int_{V_j} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}, \; i = 1,\ldots,m, \tag{1.7}$$

$\Phi(\vec{r},E)$:= flux at locus $\vec{r}$ and energy E,

$\Sigma_f(\vec{r},E)$:= macroscopic fission cross section at $\vec{r}$ and E,

V_i:= volume of the i-th axial zone.

By definition, ρ_i is the number of fissions by unit volume in the i-th axial zone normalised to one fission by unit volume in the whole fuel system.

Usually, in PWR fuel designs there are no part length fuel rods and no fuel rods that differ in pellet diameter from each other. Therefore and because of the fact that in the geometric models used in criticality analyses of fuel assembly configurations the pellet columns inside the fuel rods are usually represented by cylindrical fuel columns, the volumes V_i of the axial zones $\left[z_{i-1}, z_i\right]$ become

$$V_i = A_{fuel} \bullet (z_i - z_{i-1}) = A_{fuel} \bullet \Delta z_i \;, \; i = 1,\ldots,m, \tag{1.8}$$

A_{fuel}:= geometric cross section of the fuel.

Eq.(1.7) becomes , therefore,

$$\rho_i = \frac{\frac{1}{\Delta z_i}\int_{V_i} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}{\sum_{j=1}^{m}\frac{1}{\Delta z_j}\int_{V_j} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}, \; i = 1,\ldots,m. \tag{1.9}$$

In Phase II-B, fission fractions in the axial zones $\left[z_{i-1}, z_i\right]$ chosen there, as defined by eq.(1.10), were calculated [2],

$$F_i = \frac{\int_{V_i} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}{\sum_{j=1}^{m}\int_{V_j} \Sigma_f(\vec{r},E)\Phi(\vec{r},E)d\vec{r}\,dE}, \; i = 1,\ldots,m. \tag{1.10}$$

By definition, F_i is the number of fissions in the i-th axial zone normalised to one fission in the whole fuel system.

Usually the axial zones $[z_{i-1}, z_i]$ chosen to describe axial burn-up profiles by step distributions differ in length (cf. Fig. 1.2). Therefore, if one wants to evaluate the correlation between the axial distribution of the number of fissions and the step distribution applied to an axial burn-up profile it is more instructive to express the fission fractions given by eq.(1.10) in figures per unit length,

$$f_i \equiv \frac{F_i}{z_i - z_{i-1}} = \frac{F_i}{\Delta z_i} \quad , i = 1,\ldots,m. \tag{1.11}$$

As can be seen from eq.(1.9), normalizing the figures (1.11) to unity gives just the fission densities,

$$\rho_i = \frac{f_i}{\sum_{j=1}^{m} f_j} \quad , i = 1,\ldots,m. \tag{1.12}$$

So, for studies of the dependence of the axial fission distribution on axial burn-up profiles under a given fuel configuration it is more instructive to evaluate the fission densities eq.(1.9).

An axial fission density distribution reflects the importance of the axial zone dz at height z of the fuel zone for the reactivity of the fuel assemblies under the conditions *of the fuel configuration of interest*. If one assumes :

- that all the fuel assemblies of the fuel configuration of interest have the same design, the same initial enrichment without any axial zoning (cf. Ref. [6]), the same average burn-up, the same irradiation history and hence the same axial burn-up profile,
- that all the fuel assemblies of the fuel configuration of interest have the same orientation, i.e., that the top ends are placed side by side and the bottom ends are placed side by side, and that there are no displacements of the fuel assemblies against each other,
- that the neutron moderation and reflection conditions of the fuel configuration of interest do not change with the height z of the fuel zone,
- that structural and neutron absorbing materials which may be placed between the fuel assemblies or which may surround the assemblies do not change with the height z of the fuel zone (neither in geometry, nor in material composition), and
- that the neutron reflection conditions at bottom and top end of the fuel zone can be taken as identical,

then it is to be expected that the calculated axial distribution of the fission densities eq.(1.9) is directly related to the calculated end effect. And, if the burn-up and hence the isotopic number densities were axially uniformly distributed, the most reactive zone of a PWR fuel assembly would be at the axial midplane because neutron leakage increases with increasing distance from the center. Therefore, when assuming an axially uniform burn-up distribution, the axial fission density distribution is expected to be cosine-shaped. However, in reality, due to the non-uniformity of axial burn-up profiles, the fuel regions close to the ends of the fuel zone of a PWR fuel assembly are more reactive than the center zone of the assembly. The increased reactivity due to lower burn-up competes with increased leakage due to closer proximity to the ends of the fuel zone. The axial fission density distribution is expected to be peaked towards the ends of the fuel zone, therefore (cf. Ref. [7]). The ratio of the height of the peak at the bottom end of the fuel zone and the height of the peak at the top end of the fuel zone is strongly dependent on the asymmetry of the axial burn-up profile. In addition, the "balancing" between increased reactivity due to lower burn-up and increased leakage due to closer proximity to the fuel ends is dependent on the active length of the fuel assembly and obviously affected by

- the isotopic number densities related to the burn-up and hence by the depletion conditions and the cooling time assumed for the calculation of the number densities, as well as by
- the neutron reflection conditions at the fuel ends.

1.2 Objective of the Phase II-C benchmark exercise

The objective of the Phase II-C benchmark exercise is to study the impact of the asymmetry of PWR axial burn-up profiles on the end effect and on the axial fission density distribution. Therefore, in contrast to Phase II-A and Phase II-B, the Phase II-C benchmark exercise is based on the evaluation of a large number of real axial burn-up profiles in order to take account of the fact that the asymmetry of an axial burn-up profile is dependent on the average burn-up of the profile and is strongly affected by the reactor operation strategies used.

The Phase II-C benchmark exercise is aimed at identifying correlations of the end effect to some parameter that appropriately describes the asymmetry of the axial burn-up profiles. If such correlations are observed, it should be kept in mind that, as follows from the previous section, the values of the parameters used to describe these correlations are strictly dependent on the spent fuel configuration analysed. However, such correlations, provided that they are found, are expected to deliver some basic information about the dependence of the end effect on the asymmetry of an axial burn-up profile. In addition, such correlations, provided that they are found, are expected to be dependent on the average burn-up of the axial burn-up profiles since the end effect is changing with the average burn-up of the profiles as already shown in the Phase II-A and Phase II-B benchmark exercises.

1.3 Scope of the Phase II-C benchmark exercise

1.3.1 Axial burn-up profile database

The database of real axial burn-up profiles, on which the Phase II-C benchmark exercise is based, includes, due to the objective of the Phase II-C benchmark exercise, a sufficiently large number of axial burn-up profiles selected from a sufficiently wide range of the profiles' average burn-up to make it possible to reveal the dependence of the degree of the asymmetry of the profiles on the average burn-up and to take into account that the end effect, at given profile, is dependent on the average burn-up.

This database was obtained from Ref. [5]. The generation and evaluation of this database and the determination of the asymmetry of the axial burn-up profiles are described in detail in Section 2.

1.3.2 Selection of average burn-up values and model distributions

To be able to determine the correlations sought-after by means of a reasonable amount of calculations it was necessary to proceed as set forth below:

- For two average burn-up values sets of seventeen model distributions each were extracted from the axial burn-up profile database Ref. [5].
- The average burn-up values were selected such that they are big enough to observe significant end effects with the extracted model distributions and different enough to be sensitive to the dependence of the degree of the burn-up profiles' asymmetry on the average burn-up and the dependence of the end effect on the average burn-up.
- The extracted sets of model distributions were generated in such a way that they entirely include the respective ranges of the profiles' asymmetry following from the axial burn-up profile database for the average burn-up values selected.

The procedure used to extract the sets of the model distributions is described in detail in Section 3.1 of the report on hand.

The sets of model distributions were provided for the contributors to the Phase II-C benchmark exercise [3]. In addition, the sets of isotopic number densities eq.(1.6) of the burn-up steps $B(z \in [z_{i-1}, z_i])$ of the model distributions were provided for the contributors to the Phase II-C exercise [3]. In other words, any analysis of the impact of changes in the zone-specific isotopic number densities eq.(1.6) at fixed burn-up values $B(z \in [z_{i-1}, z_i])$ due to changes in the depletion conditions on the end effect and the axial fission density distribution is outside of the scope of the Phase II-C benchmark.

1.3.3 Use of the actinide-plus-fission-product approach

The set of isotopes for which zone-specific number densities eq.(1.6) were provided for the contributors to the Phase II-C benchmark exercise is composed of

- the actinides ^{234}U, ^{235}U, ^{236}U, ^{238}U, ^{237}Np, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{241}Pu, ^{242}Pu, ^{241}Am, ^{243}Am, and the
- fission products ^{95}Mo, ^{99}Tc, ^{101}Ru, ^{103}Rh, ^{109}Ag, ^{133}Cs, ^{143}Nd, ^{145}Nd, ^{147}Sm, ^{149}Sm, ^{150}Sm, ^{151}Sm, ^{152}Sm, ^{153}Eu, ^{155}Gd,

and includes oxygen, of course [3].

The actinide-only approach is not applied to the Phase II-C benchmark exercise, because it was already shown in Phases II-A and II-B that this approach results in significant underestimation of the end effect. This underestimation is not due to the asymmetry of axial burn-up profiles, but a consequence of the non-uniformity of the profiles: Disregarding of the fission products results in an overestimation of the reactivity of the center zone of the fuel assemblies since the fission product concentration is higher in this zone than in the fuel end zones.

1.3.4 Cooling time

The set of isotopic number densities eq.(1.6) provided for the contributors to Phase II-C applies to a cooling time of 5 years [3]. Different cooling times were not applied to the Phase II-C benchmark exercise since it was already shown in Phases II-A and II-B that the end effect increases with increasing cooling time.[1]

1. This is true for cooling times less than about 100 years.

This increase is not due to the asymmetry of axial burn-up profiles, but a consequence of the non-uniformity of the profiles: Since the plutonium and fission product concentration is higher in the center zone of the fuel assemblies, the reactivity of this zone decreases faster with cooling time, i.e., with the decays of non-stable nuclides such as ^{241}Pu and ^{155}Eu, than the reactivity of the end zones.

1.3.5 Fuel configuration

Basically, the same conceptual cask configuration as was already used in Phase II-B is employed in the Phase II-C exercise: As described in detail in Section 3.4 and shown in Figures 3.4 and 3.5, twenty-one PWR fuel assemblies are assumed to be inserted in a borated stainless steel basket centered in the cylindrical transport cask which is assumed to be fully flooded. The basket compartments which accommodate the fuel assemblies are arranged in a 5x5 square array (without corner positions).

According to the objective of the Phase II-C exercise *any interfering with the impact of the asymmetry of the axial burn-up profiles on the end effect and on the axial fission density distribution by effects, which cannot be put down to the asymmetry of the shapes of the axial burn-up profiles, has to be avoided.* Therefore, as follows from Section 1.1.3 and Ref. [8], Section C, the fuel configuration used for the Phase II-C benchmark exercise has to fulfill the following conditions:

(1) All the fuel assemblies of the fuel configuration shall have the same design, the same geometry data and the same structural material data.

(2) All the fuel assemblies of the fuel configuration shall have the same orientation, i.e., the top ends of the fuel assemblies shall be placed side by side and the bottom ends of the fuel assemblies shall be placed side by side, and there shall not be any vertical displacement of the fuel assemblies relative to each other.

(3) The fuel assemblies of the fuel configuration shall not have any axial zoning of their initial enrichment, i.e., the initial enrichment shall be the same for all axial heights $z \in [0, L]$ of the fuel zone of the fuel assemblies; $z = 0$:= bottom end of the fuel zone, $z = L$:= top end of the fuel zone.

(4) The neutron moderation and reflection conditions inside and outside of the fuel configuration shall not change with the height z of the fuel zone, $z \in [0, L]$.

(5) The material composition and the geometry of structural and neutron absorbing materials which are placed between the fuel assemblies or which surround the fuel assemblies shall not change with the height z of the fuel zone, $z \in [0, L]$.

(6) The neutron reflection conditions at bottom and top end of the fuel zone shall be allowed to be taken as identical.

In addition, to discriminate the effects related to the asymmetry of axial burn-up profiles from effects caused by changes in the depletion conditions any analysis of the impact of changes in the zone-specific isotopic number densities eq.(1.6) due to changes in the depletion conditions on the end effect and the axial fission density distribution is, as was already stated at the end of Section 1.3.2, outside of the scope of the Phase II-C benchmark. Accordingly, the usage of fixed neutron absorbers (control rods, burnable poison rods, axial shaping rods) and integral burnable absorbers initially present in the fuel (e.g., gadolinium, erbium, boron in IFBA rods) is not included in the scope of the Phase II-C benchmark. Actually neither burnable poison rods, nor axial shaping rods, nor erbium bearing fuel rods, nor IFBA rods are employed in the nuclear power plant which provided the database Ref. [5].

In addition, to avoid any hotchpotch of different degrees of the impact of the asymmetry of axial burn-up profiles on the end effect and on the axial fission density distribution the following conditions have to be fulfilled by the fuel configuration used for the Phase II-C benchmark exercise:

(7) All the fuel assemblies of the fuel configuration shall have the same initial enrichment, the same average burn-up, the same irradiation history and hence the same axial burn-up profile.

(8) All the fuel assemblies of the fuel configuration shall have a horizontally uniform distribution of the initial enrichment.

(9) All the fuel assemblies of the fuel configuration shall have a horizontally uniform distribution of the burn-up, i.e., all the fuel rods of the fuel assemblies shall have one and the same axial burn-up profile.

Condition (1) obviously is a prerequisite that identical irradiation histories result in identical axial burn-up profiles. In addition it includes the statement that any analysis of the impact of tolerances in dimensions and material compositions of the fuel assemblies on the reactivity of the fuel configuration is beyond the scope of the Phase II-C benchmark exercise. However, since criticality safety analysis has always to include the reactivity effects of tolerances in dimensions and materials it can be assumed, without any loss of generality, that the fuel configuration used for the Phase II-C benchmark exercise represents the bounding case with respect to the reactivity effects of such tolerances.

Due to conditions (1) and (2) the fuel zones of all the fuel rods of the fuel configuration are lying between two planes which are perpendicular to the longitudinal axis of the fuel rods; and the distance between these planes is just given by the active length L of the rods. This case obviously is the bounding case with respect to reactivity since any displacement of fuel rods or fuel assemblies against each other results in a decrease in reactivity *as long as conditions (4) through (6) are met for all the fuel rods*. Since criticality safety analysis has always to refer to the bounding case, condition (2), taken by its own or along with condition (1), does not result in a loss of generality provided that conditions (4) through (6) are fulfilled.

Any analysis of configurations which do not meet conditions (4) through (6) is beyond the scope of the Phase II-C benchmark exercise. An example for such a configuration is the case where the fuel zone of the fuel assemblies, for whatever reason, is not fully inserted in the borated stainless steel basket of the cask configuration. The rapid change in the neutron absorption and interaction conditions which characterizes this case obviously results in effects that interfere with the impact of the asymmetry of axial burn-up profiles on the end effect and the axial fission density distribution. This becomes apparent already when one assumes an axially uniform burn-up distribution – or unirradiated fuel without any axial enrichment zoning, as stated in condition (3) – and hence zero end effect, since then one can no longer expect that the axial fission density distribution will be cosine-shaped. The axial fission density distribution is now expected to become peaked in – or, at least, towards – the range of the fuel zone which is not sticking in the basket. (However, to get the same reactivity effect as in case of an axial burn-up profile the part of the fuel zone not sticking in the basket must be significantly larger in case of a uniform burn-up distribution or unirradiated fuel without any axial enrichment zoning than in case of an axial burn-up profile, because the axial fission density distribution associated with the axial burn-up profile is already peaked towards the ends of the fuel zone at full insertion of the fuel zone in the basket, cf. Ref. [9].)

So therefore, if one wants to observe the impact of the asymmetry of axial burn-up profiles on the end effect and the associated axial fission density distribution one must stick with configurations which meet the conditions (4) through (6). Afterwards, in further steps, one may analyse different configurations. But such further steps are beyond the scope of the Phase II-C benchmark exercise.

Nevertheless, to encourage to such further steps, in Section 7.3 consequences of cases of non-compliance with conditions (4) through (6) will be discussed since one is in fact confronted with such cases in practice. Such cases are, for instance:

- The axial length of the neutron absorbing material of the basket is smaller than the active length of the fuel assemblies.[2]
- The distribution of the neutron absorbing material in axial direction is heterogeneous (e.g., presence of unpoisoned stainless steel reinforcements between Boral absorber plates).
- The neutron reflection conditions at bottom and top end of the fuel zone is different due to the cask design.
- The neutron moderation and reflection conditions inside and outside of the fuel configuration do change with the height of the fuel zone due to the cask design.

In criticality safety evaluations of transport casks it is often postulated that under accident conditions fuel rods slide out of the fuel assemblies such that optimum moderation has to be assumed for one end of the fuel zone in the cask. In addition, depending on the basket design, it is often postulated that the assumed accident leads to the result that some section of one of the end regions of the fuel zone juts out of the neutron absorber material zone of the basket.

As long as no credit is taken for a specific loading scheme the condition (7) will always be fulfilled in criticality safety analysis of transport or storage casks because it is necessary to look for the bounding case, i.e. it is required to look for the bounding irradiation history given by those reactor operation conditions which result, at given initial enrichment and given burn-up, in the highest reactivity of the spent fuel under the cask conditions of interest, and it is required to look for the bounding axial burn-up profile given by that profile which results, at given initial enrichment and given average burn-up, in the highest end effect under the given cask conditions. As shown in Ref. [4], the bounding profile is just the profile with the highest asymmetry at given average burn-up. So therefore, any loading scheme which does not comply with condition (7) is outside of the scope of the Phase II-C benchmark.

Some PWR fuel designs have axial blanket pellets. Such pellets are usually placed at both ends of the fuel zone, at the bottom end as well as the top end of the fuel zone. The initial enrichment of the axial blanket zones is much lower than the initial enrichment of the remaining center zone. This axial zoning of the initial enrichment does impact the shape of axial burnp profiles, but the presence of lower enriched zones at the bottom and the top end of the fuel zone results in a significant decrease of the end effect. As was shown in Ref. [10], the bigger the difference between the initial enrichment of the center zone and the initial enrichment of the axial blanket zones is, the lower is the end effect. For that reason any analysis of configurations which do not meet condition (3) is beyond the scope of the Phase II-C benchmark exercise.

2. This case has already to be assumed in a criticality safety evaluation when the nominal value of the axial length of the neutron absorbing material of the basket is equal to the nominal value of the active length of the unirradiated fuel assemblies since one has to take into account mechanical and manufacturing tolerances and the fact that the length of the pellet columns inside the fuel rods increases with increasing burn-up. In addition, depending on the fuel assembly design, the pellet columns inside the fuel rods may be shoved up a bit due to fatigue of the spring material.

With the exception of fuel assemblies having gadolinium, dysprosium or erbium bearing fuel rods condition (8) is usually met by PWR UO_2 fuel assemblies. However, due to the purposes for which they are used (reactivity control and improved fuel utilization) burnable absorbers initially present in the fuel usually do not extend over the full active length of the fuel assemblies. Top end and bottom end of the fuel zone usually remain unpoisoned. As already stated above, any analysis of the impact of changes in the zone-specific isotopic number densities eq.(1.6) due to changes in the depletion conditions on the end effect and the axial fission density distribution is outside the scope of the Phase II-C benchmark. Therefore, the usage of burnable absorbers is not included in this benchmark. However, since fuel assemblies with burnable absorber bearing fuel rods are used, in Section 7.3 effects of their initial presence on the end effect will be discussed. In addition, also the effects of control rod insertion, usage of burnable poison rods (such as WABAs) and axial shaping rods on the end effect will be included in that discussion.

Condition (9) is usually taken as a basis in burn-up credit applications. Since the reactivity effect due to horizontal burn-up gradients is small (cf. Ref.[22]) this effect is usually covered conservatively by taking its maximum value obtained from analyzing this effect, for the fuel configuration of interest, as a function of the average burn-up of the fuel assemblies by using a bounding description of a sufficient number of calculated horizontal burn-up gradients as a function of the average burn-up.[3,4] So, condition (9) corresponds with calculation routes used in burn-up credit analysis.

Heretofore nothing was stated about VVER fuel. This type of fuel, even though VVER reactors are pressurized water reactors, is outside of the scope of the Phase II-C benchmark because of the differences in characteristic features of the fuel assemblies and reactor operation conditions (e.g., use of absorber rods in combination with so-called “follower assemblies” in VVER cores).

3. To the author’s knowledge measured data of horizontal burn-up gradients as a function of average burn-up are not available at present.
4. By the way, with respect to the material cross section processing capabilities of criticality calculation codes it would be a challenging task for these codes if one wished to combine an axial burn-up profile with horizontal gradients.

2. AXIAL BURN-UP PROFILE DATABASE

2.1 Description of the generation of the database

To enable the OECD/NEA Burn-up Credit working group to prepare the Phase II-C benchmark exercise in compliance with Section 1.2 and 1.3 the German Convoy Series (1 300 MWe PWR) Nuclear Power Plant Neckarwestheim II (GKN II) provided a database of 850 axial burn-up profiles with average burn-up values ranging from 9 MWd/kg U to 55 MWd/kg U. This database was received on 5 May 2000, cf. Ref. [5].

For the sake of consistency only axial burn-up profiles were admitted to the database which belong to a Convoy Series fuel assembly type with spacer grids mainly made of Zircaloy, cf. Table 2.1. These profiles were gathered from the operating cycles 5 through 12 of GKN II; all these profiles refer to the respective ends of the cycles (EOCs).

The selected Convoy Series fuel assembly type is an 18x18 design with 24 guide thimbles. The assembly lattice of this fuel type is shown in Figure 2.1; and geometry and material data of this type which are pertinent to the Phase II-C benchmark exercise are given in Table 2.1.

The core of a Convoy Series nuclear power plant typically consists of 193 fuel assemblies. Core geometry and operating data pertinent to Phase II-C exercise are listed in Table 2.2. No control rod data are given in this Table. In Germany reactivity control with the aid of the boron concentration of the moderator is preferred to reactivity control by means of control rod insertion. Nevertheless, partial insertion of some control rod banks is inevitable. However, as stated in Sections 1.3.2 and 1.3.5, evaluation of changes in the zone-specific isotopic number densities eq.(1.6) due to spectrum hardening resulting from partial insertion of control rods in some fuel assemblies for some time periods during the operating cycles are outside of the scope of Phase II-C exercise.

The 850 axial burn-up profiles provided by GKN II were derived from in-core 3-D power density distribution measurements based on flux measurements performed every fourteenth day at least. These measurements were performed with the aid of the Siemens/KWU Aeroball System (cf. Ref. [11]) which is not only used in the Convoy Series plants but also in different types of PWR plants.

As described in more detail in Reference [11], the Aeroball System uses movable activation detectors in form of 1.7 mm diameter balls made of steel alloyed with 1.5 wt.-% of vanadium. The balls are guided in tubes in which they form stacks. These tubes are inserted down into the selected fuel assemblies in the core. In a Convoy Series core there are typically 28 selected fuel assembly positions.

The ball stacks reside outside the core. To take a measurement all the stacks are pneumatically transported into the core at the same time. Each stack extends over the full active length and has the capacity for monitoring the neutron flux distribution with high spatial resolution. In a Convoy Series core the flux data are typically monitored at 32 equidistant axial nodes, simultaneously at all 28 selected fuel assembly positions.

The balls are irradiated for three minutes; then all the ball stacks are pneumatically driven out of the core into a detector array located outside the biological shield. The detector array records the γ-radiation emitted by the balls. The recorded counting rates are an image of the neutron flux distribution and are the primary data which are evaluated with the aid of a computer code that yields, among other information, the 3-D power density distribution by applying a core-specific power distribution function.

Whilst the balls are being irradiated the plant process computer generates a heat balance. The resulting thermal power is used to convert the relative values of the power densities obtained from the activation rates into absolute values.

The entire measuring and evaluation sequence is fully automatic and computer-controlled. About 15 minutes after start of irradiation the complete information on nuclear and thermal hydraulic core conditions is available. Due to this short time, in particular due to the short activation time (3 minutes) it is also possible to measure 3-D power density distributions during transient core conditions.

The EOC axial burn-up profiles are derived from the 3-D power density distributions recorded at least once every fourteen day. Due to the high frequency of the measurement campaigns, the high resolution (896 measuring points in a Convoy Series core), the fact that all measuring points are monitored simultaneously, the fact that data recording (signal formation) takes place outside the core under easily controllable conditions and the fact that the measured activity distribution accuracy and repeatability is better than 1%, the accuracy of the node-specific burn-up values B_ν , $\nu = 1,\ldots, 32$, of EOC axial burn-up profiles is better than 5% and the accuracy of the average burn-up values of the profiles is better than 2%. It is worthwhile to note that these accuracies are significantly better than those that can be usually achieved with post-irradiation out-of-core burn-up measurement devices. This is true, in particular, for devices which are completely based on γ-measurement procedures; however, it is also true for devices based on combinations of (passive) neutron measurement for determining the average burn-up values and γ-measurement for scanning the axial profiles, cf. References [12] and [13].

2.2 Evaluation of the database

Typical axial burn-up profiles from the database Ref. [5] provided by GKN II were already shown in Figure 1.1. As indicated in this figure, the numbering of the 32 axial nodes is due to the Aeroball stack system described in the preceding section: The top node is the node number one since the ball belonging to this node is the first one that comes out of the core after irradiation.

As can be seen from Figure 1.1, due to its high spatial resolution the Siemens/KWU Aeroball System discriminates the flux dips caused by the presence of the spacer grids of the fuel assemblies. One of these flux dips is located in the top end zone of the fuel, and it is to be expected therefore, that the burn-up dip resulting from this flux dip will have some impact on the end effect since it will have some impact on the optimum "balancing" between increased reactivity due to lower burn-up and increased neutron leakage due to closer proximity to the top end of the fuel.

To prepare the phase II-C benchmark exercise, all the 850 axial profiles of the GKN II database were normalised,

$$\alpha_{\nu\mu} = \frac{B_{\nu\mu}}{\hat{B}_\mu} \quad , \nu = 1,\ldots,n;\ n = 32;\ \mu = 1,\ldots,N;\ N = 850\,, \tag{2.1}$$

$\alpha_{\nu\mu}$:= ratio of the burnup $B_{\nu\mu}$ at node ν of the μ-th axial burnup profile to the average burn-up $\hat{B}_{\mu}$ of this profile.

Since the nodes are equidistant the average burn-up of the m-th profile is given by

$$\hat{B}_{\mu} = \frac{1}{L}\int_{0}^{L} B_{\mu}(z)\,dz = \frac{1}{n}\sum_{\nu=1}^{n} B_{\nu\mu} \quad ,\mu = 1,\dots,N. \tag{2.2}$$

The ratios (2.1) must therefore obey the relation (2.3):

$$\sum_{\nu=1}^{n} \alpha_{\nu\mu} = \frac{1}{\hat{B}_{\mu}}\sum_{\nu=1}^{n} B_{\nu\mu} = n. \tag{2.3}$$

The axial power distribution in a fresh fuel assembly at begin of an operating cycle tends to be more cosine-shaped thus leading to high ratios $\alpha_{\nu\mu}$ in the central region of the fuel and to low ratios $\alpha_{\nu\mu}$ at the ends of the fuel, but due to the lower moderator density in the upper half of an operating core the power distribution is non-symmetric. The ratios $\alpha_{\nu\mu}$ of the top nodes tend to remain smaller than the ratios $\alpha_{\nu\mu}$ of the bottom nodes, therefore. The asymmetric component of the axial power distribution may be increased by control rod movements during the operating cycle and may be impacted by the presence of integral burnable absorbers, the reload pattern used (determining the interaction between fresh fuel assemblies and fuel assemblies with different burn-up profiles), and the reactor operation strategy applied.[5]

With increasing average burn-up of the fuel assembly the axial power distribution tends to flatten out. The ratios at the fuel ends increase with increasing average burn-up, therefore, and the asymmetry of the resultant axial burn-up profiles tends to decrease with increasing average burn-up.

These reflections on the evaluation of axial burn-up profiles are confirmed by the averaged $\alpha_{\nu\mu}$ values presented in Figure 2.3. These values were obtained as follows: the whole range of the average burn-up values of the 850 axial burn-up profiles was divided into 7 groups derived from the frequency-of-occurrence distribution of the average burn-up values shown in Figure 2.2, and the ratios $\alpha_{\nu\mu}$ of the profiles were averaged group-wise,

$$\hat{\alpha}_{\nu g} = \frac{1}{N_g}\sum_{\mu=1}^{N_g} \alpha_{\nu\mu}\left(\hat{B} \in b_g\right), \; g = 1,\dots,7;\ \nu = 1,\dots,32. \tag{2.4}$$

N_g denotes the number of profiles with average burn-up values $\hat{B}_{\mu}$ falling into the burn-up group $b_g = \left[B_{g-1}, B_g\right]$ (B_0 = 8 MWd/kg U, B_7 = 56 MWd/kg U, cf. Figure 2.2).

5. As already stated in Section 1.3.5, neither axial shaping rods nor burnable poison rods are used in GKN II.

The group mean values (2.4) forming averaged axial burn-up shapes are presented in Figure 2.3, and for comparison the total mean values of all 850 profiles are also shown in this figure,

$$\hat{\alpha}_{\nu} = \frac{1}{N}\sum_{\mu=1}^{N}\alpha_{\nu\mu} \quad ,\nu = 1,\ldots,32; N = 850 . \tag{2.5}$$

The results shown in Figure 2.3 clearly demonstrate that the asymmetry of the axial burn-up profiles is decreasing with increasing average burn-up of the axial burn-up profiles. However, it should be emphasised that this statement is a statistics-based statement applying to the entire ensemble (sample) of the evaluated axial profiles only. The shaping-up of the axial profile of any individual fuel assembly may behave completely differently. This is reflected in the sample variances related to the mean values (2.4) and (2.5) respectively,

$$\hat{\sigma}^2_{\nu g} = \frac{1}{N_g - 1}\sum_{\mu=1}^{N_g}\left[\alpha_{\nu\mu}\left(\hat{B}\in b_g\right) - \hat{\alpha}_{\nu g}\right]^2 \quad , g = 1,\ldots,7; \nu = 1,\ldots,32 , \tag{2.6}$$

$$\hat{\sigma}^2_{\nu} = \frac{1}{N - 1}\sum_{\mu=1}^{N}\left[\alpha_{\nu\mu} - \hat{\alpha}_{\nu}\right]^2 \quad , \nu = 1,\ldots,32; N = 850 . \tag{2.7}$$

The standard deviations following from the variances (2.6) and (2.7) respectively (square root of these variances) are shown in Figure 2.4. As can be seen from this figure, the spreads in the top node ratios $\alpha_{\nu\mu}$ in particular, but also the spreads of bottom node ratios $\alpha_{\nu\mu}$ are considerable (in the second burn-up group in particular), and there are in fact 20 axial burn-up profiles (2.35% of the total sample size N = 850) with bottom node ratio values $\alpha_{\nu\mu}$, $\nu = 32$, lower than their respective top node ratio values $\alpha_{\nu\mu}$, $\nu = 1$.

Nevertheless, in conjunction with the mean values presented in Figure 2.3 the standard deviations shown in Figure 2.4 confirm the downward trend in the asymmetry of the axial profiles with increasing average burn-up since the spread of the ratios $\alpha_{\nu\mu}$ decreases significantly with increasing average burn-up. This can also be seen from Figures 2.5 through 2.16: The mean values (2.4) at the nodes in the upper half of the fuel zone increase with increasing average burn-up, whereas the mean values (2.4) at that nodes in the lower half of the fuel zone which are not to close to the bottom end of the fuel decrease with increasing average burn-up; and it is observed for all the nodes that the spread of the ratios $\alpha_{\nu\mu}$ decreases with increasing average burn-up.

2.3 Description of the asymmetry of axial burn-up profiles

Due to the observations described in the preceding section it seems reasonable to characterize, as proposed by Ref. [14], the asymmetry of axial burn-up profiles with the aid of an "asymmetry parameter", named as "ASP" in the following, defined as follows:

$$\mathrm{ASP}(\mu) = \sqrt{\sum_{\nu=1}^{\lambda}\left(\alpha_{\nu\mu} - \alpha_{n-\nu+1,\mu}\right)^2} \quad , \lambda = \begin{cases} \dfrac{n}{2} & \text{for n even} \\[2ex] \dfrac{n-1}{2} & \text{for n odd} \end{cases} \tag{2.8}$$

n:= number of nodes.

A different approach to describe the asymmetry of axial burn-up profiles is related to the observed trend, that the decrease of ratios $\alpha_{\nu\mu}$ in the lower half of the fuel zone with increasing average burn-up is (statistically) correlated to the increase of the ratios $\alpha_{\nu\mu}$ in the upper half of the fuel zone (cf. Figures 2.3 and 2.5 through 2.14), and it is additionally related to the expectation that the reactivity of a spent fuel assembly configuration is determined by the less burnt end zone of the fuel and that the end effect increases with decreasing amount of the top node ratios $\alpha_{\nu\mu}$. This approach consists therefore, as defined by eq.(2.9), in summing up the relevant top node ratios $\alpha_{\nu\mu}$, taking into account the normalization condition (2.3),

$$S\kappa(\mu) \equiv \Sigma_{1,\kappa}(\mu) = \frac{1}{n}\sum_{\nu=1}^{\kappa}\alpha_{\nu\mu} \quad . \tag{2.9}$$

By definition, this parameter, named as “top end parameter” or “sum Sκ” (or “$\sum_1$,κ”) in the following, decreases with increasing asymmetry.

In Figures 2.17 and 2.18 the asymmetry parameter ASP and the top end parameter S6 (i.e., $\kappa = 6$), as obtained for the averaged axial burn-up shapes presented in Figure 2.3, are shown. The trends in ASP and S6 shown in Figure 2.17 and Figure 2.18 respectively summarize the observations described in the preceding section.

$\kappa = 6$ is chosen in Figure 2.18 since the nodes $\nu = 1$ through $\nu = 6$ represent the relevant top nodes. As can be seen from Figures 1.1 and 1.2, the axial burn-up profiles slope up from node $\nu = 1$ to node $\nu = 6$ and reach then, at node $\nu = 7$, a plateau.

3. PROBLEM SPECIFICATION FOR THE PHASE II-C BENCHMARK EXERCISE

To draw up the problem specification for the Phase II-C benchmark exercise the following steps have to be taken:

- First, in compliance with Section 1.3.2 sets of model distributions must be extracted from the axial burn-up profile database.
- Second, in compliance with Sections 1.3.3 through 1.3.5 isotopic number densities have to be assigned to the burn-up steps of the model distributions extracted from the database (cf. Section 1.1.2).
- Third, the fuel configuration to be analysed in the Phase II-C benchmark exercise has to be specified in compliance with the conditions given in Section 1.3.5.

The extraction of the model distributions is based on the observations described in Section 2.2 and on the fact, that the nodes $\nu = 1$ through $\nu = 6$ represent the relevant top nodes. The following steps are taken:

- The averaged shape given by the mean values (2.5) of all 850 axial profiles is taken as the reference shape. This shape is labeled "Total" in Figure 2.3.
- From the reference shape a set of shapes with different degrees of asymmetry is extracted by replacing the mean values (2.5) of nodes $\nu = 1$ to $\nu = 6$ with the maximum or minimum values of the ratios (2.1) shown in Figures 2.5 through 2.10. The maximum and minimum values observed for the burn-up groups No.3 and No.6 are chosen for this purpose.

These steps are described in detail in the following section.

3.1 Extraction of the model distributions

As stated, to extract model distributions for the Phase II-C benchmark exercise from the axial burn-up profile database the mean values (2.5) of the ratios $\alpha_{\nu\mu}$ of all 850 profiles are taken as a basis. These mean values form the averaged axial burn-up shape labeled "Total" in Figure 2.3. This averaged shape is taken as the reference shape (reference case) in the following discussion.

This shape is modified to form shapes with varying degrees of asymmetry by changing the mean values of the top nodes $\nu = 1$ to $\nu = 6$ by fixed steps $\Delta\alpha_\nu$,

$$\beta_\nu = \hat{\alpha}_\nu + \Delta\alpha_\nu \;, \; \nu = 1,...,6 \,, \tag{3.1}$$

$\hat{\alpha}_\nu$ given by eq.(2.5).

Due to the fact that the mean values (2.5) must obey the normalization condition (2.3),

$$\sum_{\nu=1}^{n} \hat{\alpha}_\nu = \frac{1}{N} \sum_{\mu=1}^{N} \left(\sum_{\nu=1}^{n} \alpha_{\nu\mu} \right) = \frac{1}{N} \sum_{\mu=1}^{N} n = \frac{1}{N} Nn = n, \tag{3.2}$$

the variations (3.1) of the top nodes have to be counterbalanced.

Because of the trends observed for the burn-up-group-specific averaged shapes (2.4) shown in Figure 2.3 it seems reasonable to counterbalance the variations (3.1) by multiplying the mean values of the nodes $\nu = 18$ through $\nu = 29$ with a node-specific factor defined by eq.(3.3),

$$f_\nu = s \cdot (\nu - 17) + 1, \ \nu = 18,...,29, \tag{3.3}$$

where the quantity s is given by

$$s = \frac{\sum_{\nu=1}^{6} (\hat{\alpha}_\nu - \beta_\nu)}{\sum_{\nu=18}^{29} (\nu - 17) \cdot \hat{\alpha}_\nu} \ . \tag{3.4}$$

Expression (3.4) follows from application of the condition (3.2) to eq.(3.1).

The fixed steps $\Delta\alpha_\nu$ in eq.(3.1) are chosen such that the resulting β_ν values are just given by either the minimum or the maximum values of the ratios $\alpha_{\nu\mu}$ of the burn-up groups defined in Section 2.2, cf. Figures 2.5 through 2.10,

$$\beta_{\nu g} = \left\{ \begin{array}{l} \mathrm{Min}\left[\alpha_{\nu\mu}\left(\hat{B}_\mu \in b_g\right)\right] \\ \mathrm{Max}\left[\alpha_{\nu\mu}\left(\hat{B}_\mu \in b_g\right)\right] \end{array} \right\} \ , \mu = 1,..., N_g; \ g = 1,...,7; \ \nu = 1,...,6 \tag{3.5}$$

Two burn-up groups b_g are selected for the Phase II-C benchmark, the burn-up group No.3 and the burn-up group No.6. The β_ν values for these groups are given in Table 3.1.

The burn-up group No.3 ranges from 24 MWd/kg U to 32 MWd/kg U, and the burn-up group No.6 ranges from 44 MWd/kg U to 50 MWd/kg U, cf. Figure 2.2. The upper limits of 32 MWd/kg U and 50 MWd/kg U respectively of these groups are chosen as average burn-up values for the Phase II-C benchmark exercise.

To keep the number of benchmark cases within reasonable limits, it is sufficient to go step by step through the whole asymmetry ranges related to the selected burn-up groups. The combinations of the mean values (2.5) and the $\beta_{\nu g}$ values (3.5) therefore chosen for the Phase II-C benchmark exercise are given in Table 3.2. As follows from this table and as shown in Figures 3.1 and 3.2, from combination No.2 to combination No.7, then to combination No.1 (which is the reference case), and then from combination No.8 to combination No.13 the asymmetry of the axial burn-up shape drops monotonously.

The remaining cases are included for closer examination of possible distortions of axial burn-up profiles due to irradiation history effects such as partial control rod insertion, extended low-power operation (e.g., stretch-out), or positioning at the rim of the core.

The reference cases and the cases of highest and lowest asymmetry are shown in Figure 3.3. As follows from this figure, in making-up the step distributions needed to describe the shape of the selected axial burn-up profiles it is allowed to group some of the nodes in a few axial zones together. As specified in Table 3.3, the active zone of the fuel assemblies is thus divided into 21 axial zones. As indicated in this table, to avoid any confusion the axial zones are numbered from the bottom end upwards to the top end of the fuel.

All the model distributions extracted from the axial burn-up profiles specified in Table 3.2 are given in Appendix I. Due to the fact that all the nodes are equidistant the zone-averaged burn-up values become

$$B_i = \frac{1}{n_i} \sum_{\nu=\rho(i-1)}^{\rho(i)+1} B_\nu \quad , i = 1,\dots,m;\ m = 21\,. \tag{3.6}$$

B_ν in this expression is the burn-up value at node ν. B_ν is given by the product

$$B_\nu = B_g \cdot \gamma_\nu \tag{3.7}$$

with

$$B_g = \begin{cases} 32\ \text{MWd/kg U},\ g = 3 \\ 50\ \text{MWd/kg U},\ g = 6 \end{cases} \tag{3.8}$$

and, according to Table 3.2,

$$\gamma_\nu = \begin{Bmatrix} \hat{\alpha}_\nu \\ \beta_{\nu g} \end{Bmatrix} \text{ for } \nu = 1,\dots,6;\ g = 3,6\,, \tag{3.9}$$

$$\gamma_v = \hat{\alpha}_v \quad \text{for v = 7,...,17 and 30, 31, 32,} \tag{3.10}$$

$$\gamma_v = \hat{\alpha}_v \cdot f_v \quad \text{for v = 18,..., 29 ,} \tag{3.11}$$

$\hat{\alpha}_v$ given by eq.(2.5), β_{vg} given by eq.(3.5), and f_v given by eq. (3.3).

n_i in expression (3.6) denotes the number of nodes in the i-th axial zone, cp. Table 3.3; and $\rho(\kappa)$ ($\kappa = i - 1$ and $\kappa = i$) is given by

$$\rho(\kappa) = n - \sum_{j=1}^{\kappa} n_j \tag{3.12}$$

with n = 32 and $\sum_{j=1}^{m} n_j = n$.

3.2 Isotopic number densities assigned to the model distributions

The sets of isotopic number densities eq.(1.6) to be assigned to the burn-up values (3.6) of the model distributions were determined with the aid of the Siemens' Standard Design Procedure SAV95 [15]. This procedure includes the depletion codes CASMO-3 [16] and KORIGEN [17]. For generating the isotopic number densities eq.(1.6) the code KORIGEN was employed with cross sections generated by CASMO-3, cf. Ref. [15].

The depletion calculations were performed in compliance with the specifications, limitations and requirements given in Sections 1.3.3 through 1.3.5. In particular, the relevant conditions specified in Section 1.3.5 were fulfilled. The calculations were based on the fuel assembly data presented in Table 2.1 and Figure 2.1 and on the core geometry, material and operating data given in Table 2.2. As indicated in Table 2.1, the initial enrichment was taken to be 4 wt.-% ^{235}U. Neither control rod insertions nor usage of integral burnable absorbers were assumed. A cooling time of 5 years was assumed.

The sets of isotopic number densities eq.(1.6) are given in Appendix II, in order of the model distributions, i.e., in the same order as was already used in Appendix I, and for each of the model distributions, in order of the axial zones specified in Table 3.3.

3.3 Isotopic number densities for the average burn-up values

For the calculation of the end effect eq.(1.1) the isotopic number densities of the average burn-up values (3.8) are required. These number densities are given in Appendix III. They were calculated, of course, in the same way and on the same database as described in the preceding section.

In following the case identification nomenclature introduced in Table 3.2 for the axial burn-up profiles, the two uniform distributions of the average burn-up values (3.8) are named as "B32Auniform" and "B50Auniform" respectively.

3.4 Description of the cask configuration to be analysed

As already told in Section 1.3.5, basically the same conceptual cask configuration as was already used in Phase II-B is employed in the Phase II-C benchmark exercise, cf. Figures 3.4 and 3.5. As illustrated in Figure 3.5, twenty-one fuel assemblies of the Convoy Series type specified in Table 2.1 and shown in Figure 2.1 are positioned in a borated stainless steel basket centred in the transport cask which is assumed to be fully flooded. Since Convoy Series fuel assemblies are considerably larger than the 17x17 fuel type used in the Phase II-B (cf. Ref. [2], Figure 3) the dimensions of the basket and the cask differ from those assumed in Phase II-B.

The cask material is presented in grey color in Figures 3.4 and 3.5, and the basket material is shown in black color in these figures. As can be seen from Figure 3.4, the basket is assumed to extend from the lower cask lid to the upper cask lid. The fuel assemblies are thus assumed to be fully inserted in the basket compartments. The active zone of the fuel assemblies are colored in red in Figure 3.4. The zones between the ends of the active zone and the ends of the fuel rods and guide thimbles are presented in green color. Inside these zones the inside volume of the fuel rods is assumed to be empty. The lower and upper hardware zones of the fuel assemblies are presented in blue color in Figure 3.4; and all the zones colored in white contain pure water. As in Phase II-B (cf. Ref. [2], Appendix 1), the lower and upper hardware zones are assumed as regions of 50 Vol.-% smeared stainless steel and 50 Vol.-% water.

All the conditions specified in Section 1.3.5 are fulfilled:

- The fuel assemblies have the same design, same geometry data and same structural material data, cf. Table 2.1.
- The fuel assemblies have the same orientation, and there is no displacement of fuel assemblies or fuel rods against each other, cf. Figure 3.4.
- As implicitly stated already in Section 3.2, all the fuel rods of all the fuel assemblies have one and the same initial enrichment without any axial zoning, cf. Table 2.1.
- The axial burn-up model distributions extracted according to Section 3.1 are used in compliance with conditions (7) and (9) specified in Section 1.3.5.
- The neutron moderation and reflection conditions inside and outside of the fuel configuration and the material composition and the geometry of the structural and neutron absorbing material do not change with the axial hight z of the fuel zones (active zones), cf. Figure 3.4.
- The neutron reflection conditions at bottom and top end of the fuel zones are consistent with condition (6) specified in Section 1.3.5.

Actually the neutron reflection conditions at bottom and top end of the fuel zones are not identical. As indicated in Figure 3.4, the "green zones" at bottom and top end of the fuel zones differ in length, and also the "blue zones" (fuel assembly hardware) at bottom end top end of the fuel assemblies differ in length. However, the green zones consist of about 58.3 Vol.-% water, about 30.5 Vol.-% void and about 11.2 Vol.-% zircaloy. Therefore, the length of the upper green zone (17.1 cm) suffices to get very similar neutron reflection conditions at bottom and top end of the fuel. In addition, the total length of the green zone plus the blue zone at the bottom end amounts to 51.9 cm, and the total length of the green plus the blue zone at the top end is 47.1 cm. These two lengths are big enough to ensure that condition (6) of Section 1.3.5 can be taken as fulfilled. This is confirmed, as will be described later on (cf. Section 6.3.1), by the fact that a cosine-shaped axial fission density distribution is observed for the uniform distributions "B32Auniform" and "B50Auniform" of the average burn-up values (3.8).

In the following sections the geometry and material data used in the calculations of the end effect and the axial fission density distribution are specified in detail.

3.4.1 Fuel assembly

- Fuel rod:
  - Spent fuel material: Isotopic number densities as given in Appendix II (cf. Section 3.2) or Appendix III (cf. Section 3.3)
  - Fuel diameter: 0.822 cm (The gap between fuel and cladding is to be ignored.)
  - Cladding inner diameter: 0.822 cm (cf. Table 2.1)
  - Cladding outer diameter: 0.95 cm (cf. ibid.)
  - Cladding material: Zircaloy (number densities given in Table 3.4)
  - Active length: 390 cm (cf. Table 2.1)

- Full length: 439.5 cm
- Location of the active zone within the fuel rod (cf. Figure 3.4; the active zones of the fuel assemblies are colored in red in this figure):
  - Distance between bottom end of the active zone and bottom end of the fuel rod: 32.4 cm
  - Distance between top end of the active zone and top end of the fuel rod: 17.1 cm
- The zones between the ends of the active zone and the ends of the fuel rods (colored in green in Figure 3.4): These zones consist of cladding with vacuum (void) inside and water outside, springs and plugs are to be ignored.

- Guide thimble (cf. Table 2.1):
  - Inner diameter: 1.11 cm
  - Outer diameter: 1.232 cm
  - Length: 439.5 cm
  - Material: Zircaloy (cf. Table 3.4)
- Lattice (cf. Figure 2.1):
  - 18x18 lattice type
  - Number of fuel rods: 300
  - Number of guide thimbles: 24 (have to be taken into account)
  - Rod pitch: 1.27 cm (cf. Table 2.1)
  - Spacer grids: To be ignored.
- Fuel assembly hardware (cf. Figure 3.4):
  - Lower hardware:
    - Geometric cross section: 22.86x22.86 cm^2
    - Length:19.5 cm
  - Upper hardware:
    - Geometric cross section: 22.86x22.86 cm^2
    - Length: 30 cm

The lower and upper hardware zones of the fuel assemblies are colored in blue in Figure 3.4. These zones are to be assumed as regions of smeared stainless steel (50 Vol.-%) and water (50 Vol.-%). The atomic number densities are given in Table 3.4.

3.4.2 Fuel assembly basket

- Inner basket compartment dimensions: 23.5x23.5x496 cm^3 (each fuel assembly position, cf. Figures 3.4 and 3.5)
- Basket wall thickness: 1 cm (only one basket wall between two adjacent fuel assembly positions, cf. Figure 3.5).

- Basket material: Borated stainless steel with 1 wt.-% of natural boron (atomic number densities given in Table 3.4)

(The basket material is presented in black color in Figures 3.4 and 3.5.)

3.4.3 Cask

- Cask shell (cf. Figures 3.4 and 3.5):
  - Inner diameter: 146 cm
  - Outer diameter: 206 cm
  - Height:
    - Inner cavity: 496 cm
    - Outside: 556 cm
  - Material: Stainless steel (atomic number densities given in Table 3.4).

(The cask material is presented in grey in Figures 3.4 and 3.5.)

3.4.4 Configuration

- 21 fuel assemblies in a 5x5 array (without corner positions) as shown in Figure 3.5.
- Centric placement of the fuel assemblies within the basket compartments, but the distance between the assembly lower hardware and the lower cask lid is assumed to be zero (cf. Figure 3.4), whereas the distance between the upper hardware of the fuel assemblies and the upper cask lid amounts to 7 cm.
- Cask completely flooded with water (atomic number densities given in Table 3.4).

3.5 Quantities to be calculated and recording of the results

As described in Ref. [3], the records of the results obtained and the pertinent information shall be split into three blocs. Each bloc shall begin with the line “BEGIN BLOC n” and end with the line “END BLOC n” (where n denotes the bloc number as defined below).

Within the blocs the numbering system specified below shall be used: Begin each line that belongs to the number m) (m=1,2,..., see below) with “m)”.

The blocs are defined as set forth below:

- Bloc I: Participants and analysis methods:
  1) Institute/Company
  2) Names of participants
  3) Computer code applied
  4) Data Library applied
  5) Comments (Brief description of computer code and data library)

- Bloc II: Results for the averaged burn-ups uniformly distributed:
  1) Identification: BbbAuniform: Bbb:= burn-up, e.g., B32:= 32MWd/kg U.
  2) $k_{eff} \pm \sigma$ (σ:= standard deviation of the mean value k_{eff} of the neutron multiplication factor)
  3) Information about resolving the source convergence problem (e.g., neutron starting distribution applied, number of runs per case, number of neutron batches per case, number of neutrons per batch, etc.)
  4) Fission fractions of the fuel zone as defined by equation (1.10). (The fuel zone has to be divided into the 21 axial zones as specified in Table 3.3.)
  5) Fission densities of the fuel zone as defined by equation (1.7). (The fuel zone has to be divided into the 21 axial zones as specified in Table 3.3.)

Repeat bloc II as often as required.

- Bloc III: Results for the axial burn-up profiles:
  1) Identification BbbAnnnnnn of the profiles as defined in Table 3.2.
  2) $k_{eff} \pm \sigma$
  3) Information about resolving the source convergence problem (e.g., neutron starting distribution applied, number of runs per case, number of neutron batches per case, number of neutrons per batch, etc.)
  4) Fission fractions as defined by eq.(1.10) for the 21 axial zones defined in Table 3.3.
  5) Fission densities as defined by eq.(1.7) for the 21 axial zones defined in Table 3.3.

Repeat bloc III as often as required.

As noted in Ref. [3], for achieving converged solutions for the axial fission fraction and density distributions a significantly higher number of neutron histories are required than for the calculation of the k_{eff} value.

4. BENCHMARK CONTRIBUTIONS

A total of 10 contributions were made to the Phase II-C benchmark exercise, from 9 different companies or organisations covering 7 countries around the world.

Key words about the codes and nuclear data libraries used by the contributors to the Phase II-C exercise are given in Table 4.1. A more detailed description of the contributors' methods, data and assumptions can be obtained from Appendix IV.

The results from the contributors to the Phase II-C benchmark exercise are presented in the following sections.

5. RESULTS FROM THE CONTRIBUTORS TO THE PHASE II-C BENCHMARK EXERCISE

5.1 Predicted neutron multiplication factors

The predicted neutron multiplication factor mean values and their respective standard deviations are presented in Tables 5.1 through 5.4 and are plotted in Figures 5.1 and 5.2. It appears from these figures that all the contributors except one have predicted similar neutron multiplication factors (k_{eff} values) for each of the benchmark cases. However, this does not say anything about the spread of the end effects resulting, according to eq.(1.1), from the contributors' neutron multiplication factor outcomes. Further analysis is required to examine the results in more detail.

5.2 Predicted fission densities and fission fractions

The results obtained from the contributors to the Phase II-C benchmark exercise for the fission densities eq.(1.9) and the fission fractions eq.(1.10) in the 21 axial fuel zones defined in Table 3.3 are presented in Tables 5.5 through 5.76.

As stated in Section 1.1.3, for the purpose of the Phase II-C benchmark exercise it is more instructive to study the fission densities eq.(1.9); and hence only the fission densities will be evaluated in the following.[6] The fission density results from the contributors are plotted in Figures 5.3 through 5.38 for each of the benchmark cases. The results confirm both

- the expectation that, for the fuel configuration analysed, axially uniform burn-up distributions tend to lead to a cosine-shaped axial fission density distribution (cf. Figures 5.3 and 5.21 as well as Sections 1.1.3 and 1.3.5), and
- the expectation that axial fission density distributions related to real axial burn-up distributions are heavily impacted by the asymmetry of the profiles.

However, the spread of the fission density results obtained from the contributors is remarkable. The fission densities observed in the range of the lower half of the fuel zone in particular differ by orders of magnitude; and in a lot of cases the recorded fission densities amount to zero. Even the fission densities obtained for the axially uniform burn-up distributions vary considerably. So, further reflections on the recorded fission densities are required.

6 Nevertheless, the fission fraction results obtained from the contributors are presented in the report on hand to document the relationship between fission fractions and fission densities (cf. Section 1.1.3).

6. EVALUATION OF THE RESULTS OBTAINED FROM THE CONTRIBUTORS TO THE PHASE II-C BENCHMARK EXERCISE

Before starting off on evaluating the results it is necessary to say a few words about the terminology used in the following. “Evaluation of the results” means application of statistical methods to the results; and application of these methods is the only consistent way to evaluate the results since the results are statistics.

Mathematical statistics, which is the branch of applied mathematics that deals with statistics, has its own language. Certain confusion may, however, arise when the same term has different meaning in statistics and in physics, or when the same concept has different names. In the former case the statistical meaning is usually implied in the following, unless otherwise specified; in the second case the physical term is usually chosen.

Typical examples for the confusion that may arise in the first case are the following: The statisticians say “significant” and the physicists understand “considerable”; but the statistical meaning of the word “significant” is “non-irrelevant”. The statisticians say “incompatible” and the physicists understand “inconsistent” or “contradictory”; but the statisticians want to say only that it is not rejected on the basis of a desired significance level that some observations have different underlying probability distributions. And when the statisticians say “inconsistent” they only speak about a property of a statistics, whereas the physicists understand that something is wrong with their observations. So therefore, it is useful to clarify some of the terms used in data evaluation in the report on hand. The following terminology is chosen:

- *Significant*: The observed difference between two statistics is said to be significant when application of an appropriate statistical test on these statistics results in the outcome that the hypothesis that the observed difference is merely random (i.e., that the two statistics have the same expectation) is rejected.
- *Incompatible*: A set of statistics is said to be incompatible when application of an appropriate statistical test results in the outcome that the hypothesis that all the statistics of the set have one and the same expectation is rejected. The separation of those statistics (results) being responsible for incompatibility can only be based on physics arguments. In other words, results can safely be discarded only on physics arguments (if there are any).

Some terms are used in senses in the following which do not exactly correspond with the definitions given in literature. The gentle reader has certainly noticed already that the word “*correlation*” is used more in the sense of “close relationship”. This usage refers, in fact, to everyday language. In everyday usage one often speaks of “correlated variables” meaning “dependent variables”. In statistical terms “dependent” is weaker than “correlated” since the former is a necessary but not sufficient condition for the latter. (This fact is usually expressed in a different way in literature: It is said that “uncorrelated” is weaker than ”independent” because the latter is a sufficient but not necessary condition for the former.)

In the following the word "*sufficient*" is also used for characterizing the amount of information given by a set of observations about a set of parameters. This amount is said to be "not sufficient" (or "insufficient") if it is obviously inevitable that any data reduction from the set of observations to the set of parameters results in a model, i.e., in a function of the parameters, which is significantly different from what is to be expected due to physics. (Note that the word "sufficient" is thus used in a sense which differs from its statistical meaning, cf. Ref. [19]).

6.1 Spread of the calculated neutron multiplication factors

It is observed, as implicitly stated in Section 5.1 already, that the k_{eff} results of one of the contributors, CEA, are incompatible with the results obtained from all the other contributors, cf. Figures 5.1 and 5.2. This observation was already reported in Ref. [8]. In the meantime CEA has pointed out the reason for the observed incompatibility (Ref. [19]): The fact that the CEA results are significantly lower than the results from the other contributors is due to an overestimation of the neutron absorption rate in the basket material (borated stainless steel, cf. Section 3.4.2). The CEA results are therefore excluded from the calculation of the sample means of the benchmark cases,

$$\overline{R}_j = \frac{1}{n_{Cj}} \sum_{i=1}^{n_{Cj}} R_{ji} \quad , \; j = 1,\ldots,n_b \, , \tag{6.1}$$

$\overline{R}_j =$ sample mean of the j-th benchmark case,

$R_{ji} =$ result obtained from the i-th contributor for the j-th benchmark case,

$n_{Cj} =$ total number of results R_{ji} considered for the j-th benchmark case,

$n_b =$ total number of benchmark cases.

The sample means obtained are presented in Table 6.1 as well as in Figures 6.1 and 6.2.

Note that CEA has subsequently performed a corrected calculation for the reference case B50A222222 (Ref. [19]). The mean value of the neutron multiplication factor obtained from this corrected calculation amounts to 0.7816. This result is closer to the results from other contributors (cf. Table 5.3).

In Figures 6.3 and 6.4 the variations of the relative deviations of the individual results R_{ji} from the respective sample means $\overline{R}_j$ with the benchmark cases j = 1 through j = n_b are presented,

$$r_{ji} = \frac{R_{ji}}{\overline{R}_j} - 1 \, , \; j = 1,\ldots,n_b \, , \tag{6.2}$$

$r_{ji} :=$ relative deviation of the individual result R_{ji} from the related mean $\overline{R}_j$.

As can be seen from Figures 6.3 and 6.4, the CEA results apart (which are not included in these figures), virtually all the other outcomes result in relative deviations (6.2) falling in a band ranging from -0.4% to +0.4%. It is worthwhile to note that this band is narrower than the band observed in Phase II-B, cf. Ref. [2].

The results from FANP GmbH consistently have a positive deviation from the sample mean of around 0.32%. FANP GmbH has used the SCALE 4.4a system with the 44-group cross-section library 44GROUPNDF5 of this system (cf. Table 4.1). It is well-known to FANP GmbH from burn-up credit criticality safety design analysis that application of the SCALE 4.4a system with the 44GROUPNDF5 library to flooded spent UO_2 fuel assembly systems lead to k_{eff} results which are higher by around 0.35% than k_{eff} values obtained by using the SCALE 4.4a system with the 238-group cross-section library 238GROUPNDF5 of this system or employing the MCNP4C code with cross sections based on ENDF/B-VI (actinides plus some fission products) and ENDF/B-V (most fission products). So, the observed deviation of the FANP GmbH results, which is virtually stable over the whole range of benchmark cases, was expected by FANP GmbH.

Note that ORNL has also employed the 44-group library of the SCALE system but in conjunction with the version 5 of this system (cf. Table 4.1) which includes, compared with version 4.4a of this system, considerably improved cross-section processing procedures.

Four contributors used the MCNP code (cf. Table 4.1), two of them, EMS(MCNP) and KFKI, C versions of the code with the same cross section sets. It is worthwhile to note that the deviations of the EMS(MCNP) results and the KFKI results, respectively, from the sample means have similar trends but differ in number (cf. Figures 6.3 and 6.4). This may perhaps be identified with some of the uncertainties that different users of one and the same code bring into the calculation results ("user bias"), as may be tested by repeating the calculation runs with varied starting parameters.

Somewhat striking is the fluctuation in the deviations eq.(6.2) of the IRSN results from the sample means. The question may arise whether these results are really fully converged, but anyhow the deviations of these results fall into the band ranging from -0.4% to +0.4%.

6.2 Evaluation of the end effect

The results obtained for the end effects Δk according to eq.(1.1) are given in Tables 6.2 through 6.5. These results are graphically presented, together with their sample means calculated according to eq.(6.1), in Figures 6.5 and 6.6. The sample means are given in Table 6.6 too. As follows from this table, the differences in the end effect Δk between the cases of highest asymmetry, given by the profiles B32A111111 and B50A111111 (cf. Figures 3.1 and 3.2 respectively), and the respective reference cases B32A222222 and B50A222222 amount to $(1.21 \pm 0.26)\times10^{-2}$ and $(0.70 \pm 0.29)\times10^{-2}$, respectively. These differences are not very big, and it seems therefore, that the end effect is not very sensitive to the choice of a profile with respect to the reference case. However, in Ref. [4] it is shown (with the same database) that there are strong correlations between the ratios $\alpha_{\nu\mu}$ of the top nodes $\nu = 1$ through $\nu = 6$ in particular. That means that a low $\alpha_{\nu\mu}$ value for node 1 comes along with low $\alpha_{\nu\mu}$ values for nodes 2 through 6. In other words, the cases of highest asymmetry, B32A111111 and B50A111111, are not artificial but close to reality and hence important for the generation of bounding profiles. Figures 6.5 and 6.6 clearly demonstrate that the reference shapes B32A222222 and B50A222222, respectively, are not bounding shapes.

6.2.1 Spread of the calculated end effects

As can be seen from Figures 6.5 and 6.6, in almost all of the benchmark cases the results from seven contributors are close together and hence close to the sample means, whereas the results from two contributors are significantly higher and the results from one contributor significantly lower than the sample means. This behaviour, already clearly visible in the trends of the results obtained for the 32 MWd/kg U average burn-up benchmark cases, is even more distinct in case of the 50 MWd/kg U average burn-up results.

The contributors whose Δk values are higher than the sample means are JAERI and IRSN. The fluctuations in the Δk values from IRSN reflect the fluctuations in the k_{eff} results from this contributor (cf. last paragraph of Section 6.1).

The lowest Δk values obtained for the 32 MWd/kg U average burn-up benchmark cases are resulting from the NUPEC k_{eff} outcomes; and in case of the 50 MWd/kg U average burn-up results the lowest Δk values are from CEA.

In Figures 6.7 and 6.8 the absolute deviations of the individual results $R_{ji} \equiv (\Delta k)_{ji}$ from the respective sample means $\overline{R}_j$ are presented,

$$\Delta R_{ji} = R_{ji} - \overline{R}_j \text{ , } j = 1,\ldots,n_b . \tag{6.3}$$

This time the absolute deviations are preferable to relative ones, since the end effect may become zero and is in fact close to zero in some benchmark cases, cf. Figure 6.5.

The trends of the deviations eq.(6.3) shown in Figures 6.7 and 6.8 confirm the statements made above about the spread of the Δk results.

6.2.2 Correlation between end effect and asymmetry of axial burn-up profiles

Comparing Figures 6.5 and 6.6 with Figures 3.1 and 3.2 it appears obvious that there is a strong correlation between the end effect Δk and the asymmetry parameter ASP, defined by eq.(2.8), or the top end parameter S6, defined according to eq.(2.9). In Figures 6.9 through 6.12 the individual Δk results from the contributors and the respective mean values of these results (cf. eq.(6.1)) together with the standard deviations of the individual results from the respective means are plotted versus the parameters ASP and S6 respectively. The standard deviations of the individual results from the means are given by

$$s_j = \sqrt{\frac{1}{n_{Cj} - 1} \sum_{i=1}^{n_{Cj}} \left(\Delta R_{ji}\right)^2} \text{ , } j = 1,\ldots,n_b , \tag{6.4}$$

ΔR_{ji} given by eq.(6.3).

As follows from Figures 6.9 through 6.12, simple linear regression analysis of the mean values shows that there are in fact strong correlations between the end effect and the parameters ASP and S6 respectively. It is interesting to take note of the fact that in case of the results obtained for the 50 MWd/kg U average burn-up benchmark profiles the correlation of Δk to S6 is somewhat stronger than the correlation to ASP.

So, with the aid of the benchmark axial burn-up profiles it was demonstrated that the end effect is strongly correlated to the asymmetry of the benchmark profiles. As can be deduced from the outcomes shown in Figures 6.9 through 6.12, with respect to the correlation between end effect and asymmetry of the profiles the parameters ASP and S6 obviously describe the asymmetry of the profiles adequately such that the correlations between end effect and these parameters can be reduced to simple linear regression functions. The regression functions obtained are particular to the benchmark profiles used and the cask configuration analysed, and they are hence a distinctive characteristic of the phase II-C benchmark.

6.2.3 *Dependence of the end effect on the average burn-up of the axial burn-up profiles*

Let us denote the linear regression functions deduced to describe the correlations between the end effect Δk and the top end parameter S6 by r_{B32} and r_{B50}, respectively,

r_{B32} = regression function describing the correlation between Δk and S6 observed for the 32 MWd/kg U axial burn-up profiles (cf. Figure 6.10),

r_{B50} = regression function describing the correlation between Δk and S6 observed for the 50 MWd/kg U axial burn-up profiles (cf. Figure 6.12).

By definition, the burn-up profile B32A111111 has a higher degree of asymmetry than the distribution B50A111111 and the burn-up profile B50A333333 is more asymmetric than the distribution B32A333333 (cf. Figures 3.1 and 3.2), but the differences between the values r_{B32}(S6(B32A111111)) and r_{B32}(S6(B32A333333)) of the regression function r_{B32} turns out to be almost equal to the difference between the value r_{B50}(S6(B50A111111)) and the value r_{B50}(S6(B50A333333)) of the regression function r_{B50},

$$\begin{aligned} \Delta r_{B32} &\equiv r_{B32}(\mathrm{S6(B32A111111)}) - \mathrm{rB32}(\mathrm{S6(B32A333333)}) \approx \\ &\approx \Delta r_{B50} \equiv r_{B50}(\mathrm{S6(B50A111111)}) - r_{B50}(\mathrm{S6(B50A333333)}) \approx \\ &\approx 3.13\times10^{-2}, \end{aligned} \tag{6.5}$$

S6(BbbAnnnnnn):= S6 value of the profile BbbAnnnnnn.

In addition, it is observed that the difference between the values r_{B50}(S6(B50A111111)) and r_{B32}(S6(B32A111111)) is nearly equal to the difference between the r_{B50}(S6(B50A333333)) and r_{B32}(S6(B32A333333)),

$$\begin{aligned} \Delta \mathrm{rA111111} &\equiv r_{B50}(\mathrm{S6(B50A111111)}) - r_{B32}(\mathrm{S6(B32A111111)}) \approx \\ &\approx \Delta \mathrm{rA333333} \equiv r_{B50}(\mathrm{S6(B50A333333)}) - r_{B32}(\mathrm{S6(B32A333333)}) \approx \\ &\approx 2.27\times10^{-2}. \end{aligned} \tag{6.6}$$

It follows from these observations that the correlation between the end effect Δk and the top end parameter S6 obtained for the 50 MWd/kg U axial burn-up profiles can be approximately derived from the correlation between Δk and S6 observed for the 32 MWd/kg U axial burn-up profiles, and vice versa. Using

$$r_{B32}\ (\mathrm{S6}) = 0 \text{ at } \mathrm{S6} \approx 0.165 \text{ (cf. Figure 6.10)} \tag{6.7}$$

and

$$r_{B50}\ (\mathrm{S6}) \approx 0.02 \text{ at } \mathrm{S6} = 0.165 \text{ (cf. Figure 6.12)} \tag{6.8}$$

one gets the following relations:

$$\Delta k(\mathrm{B50}) \approx r_{B32} \cdot f + \delta k \tag{6.9}$$

and

$$\Delta k(\mathrm{B32}) \approx (r_{B50} - \delta k) \cdot \frac{1}{f} \tag{6.10}$$

with

$$\delta k = 0.02 \tag{6.11}$$

and

$$f = \frac{50 \text{ MWd/kg U}}{32 \text{ MWd/kg U}} , \tag{6.12}$$

$\Delta k(B50)$:= end effect Δk derived from the correlation r_{B32} between Δk and S6 observed for the 32 MWd/kg U axial burn-up profiles,

$\Delta k(B32)$:= end effect Δk derived from the correlation r_{B50} between Δk and S6 observed for the 50 MWd/kg U axial burn-up profiles.

Figure 6.13 confirms that the estimators eq.(6.9) and eq.(6.10) are compatible with the observed Δk mean values and with the correlations r_{B50} and r_{B32} respectively. It is interesting to note that the factor f in equations (6.9) and (6.10) is just the ratio of the average burn-up values, cf. eq.(6.12). So, the correlations between the end effect Δk and the top end parameter S6 describing the asymmetry of the axial burn-up profiles result in quite elegant relations between the end effects obtained for 32 MWd/kg U average burn-up and the end effects obtained for 50 MWd/kg U average burn-up.

6.3 Observations on the axial fission density distributions

6.3.1 Evaluation of the fission density distributions for the axially uniform burn-up distributions

The fission density results obtained from the contributors for the uniform axial burn-up distributions B32Auniform and B50Auniform are averaged according to eq.(6.1). The mean values $\overline{R}_j$ of the respective fission densities are given, together with their standard deviations, in Tables 5.5 and 5.23. The standard deviations of the means $\overline{R}_j$ are given by

$$\hat{\sigma}_j\left(\overline{R}_j\right) = \frac{s_j}{\sqrt{n_{Cj}}} , \tag{6.13}$$

s_j given by eq.(6.4).

The averaged fission density distributions thus obtained are described by the cosine distribution eq.(6.14),

$$f(z) = c_1 \cdot \cos\left(\frac{\pi}{2} \cdot \frac{z - \frac{L}{2}}{c_2}\right) , z \in (0, L). \tag{6.14}$$

For both cases, B32Auniform and B50Auniform, c_1 and c_2 are given by

$$c_1 = 8.12 \cdot 10^{-2}, \tag{6.15}$$

$$c_2 = 203{,}75\text{cm} . \tag{6.16}$$

The curve generated by equations (6.14) through (6.16) is presented by the red line in Figures 6.14 and 6.15.

So, as was expected, axially uniform burn-up distributions result in a cosine-shaped axial fission density distribution.

6.3.2 Observations on the spread of the fission density results for the axially non-uniform burn up distributions

As already stated in Section 5.2, big spreads are observed in the fission density results from the contributors (cf. Figures 5.4 through 5.20 and 5.22 through 5.38), and in a lot of cases the fission densities recorded by the contributors in axial zones of the lower half of the fuel amount to zero. However, although the lower half of the fuel zone usually is the higher burnt half of the fuel (cf. Figure 1.1), the observation of zero fission densities in axial zones of the lower half of the fuel is due, as discussed in more detail in Appendix V, to insufficient tracking of neutrons in this range of the fuel.

It was one of the objectives of the Phase II-C benchmark to study the impact of the degree of asymmetry of axial burn-up profiles on the fission density distribution. For this purpose it is required that the fission densities in all zones are “stable”, or rather “converged” in terms of statistics, i.e., that the observed fission densities do not change significantly when the number of initial neutron generations skipped is increased. Provided that a sufficient number of initial neutron generations are skipped so that a converged fission density distribution is to be expected, it is obvious, since dealing with stationary systems, that it is only a question of adequate sampling to observe non-zero fission densities in all zones where fissile material is present (cf. Ref. [9]).

For this reason and since the frequency of occurrence of recording zero fission densities fluctuates unsystematically (cf. Figures 5.4 through 5.20 and 5.22 through 5.38 as well as Appendix V) only those of the recorded axial fission density distributions can be considered which are different from zero in all axial zones over the full active length of the fuel. These fission density distributions are averaged according to eq.(6.1), for each benchmark case separately of course. The mean values of the respective fission densities are given, together with their standard deviations (6.13), in Tables 5.6 through 5.22 and 5.24 through 5.40.

The exclusion of the fission density distributions showing zero fission densities in some region of the fuel zone does not imply that the remaining fission density distributions observed are regarded as converged. The remaining fission density distributions still differ by orders of magnitude in the lower half of the fuel zone (cf. Figures 5.4 through 5.20 and 5.22 through 5.38). And also in the upper half of the fuel zone the fission density results reported by the contributors differ significantly in a lot of cases (cf. ibid.). What is striking in particular, in a lot of cases the fission density values from IRSN are the lowest in the upper half of the fuel zone and the highest in the lower half of the fuel zone. The results from IRSN were already suspected of being not converged (cf. last paragraph of Section 6.1.).

In Appendix V it is shown that the minimum number of initial generations skipped required for attaining convergence in the calculation of the fission density distributions amounts to 300. It follows therefore that it is to be expected, as appears from Appendix IV, that none of the contributors has achieved convergence. As exemplified in detail in Appendix V, this expectation is in fact confirmed. The evaluation of the fission density distributions obtained from the contributors to the Phase II-C benchmark is therefore stopped at this point.

However, as stated above, it was one of the objectives of the Phase II-C benchmark to study the impact of the degree of asymmetry of axial burn-up profiles on the fission density distribution. Therefore, to reach this goal, the author of the report on hand decided to recalculate the fission density distributions in such a way that source convergence is ensured. The results of the recalculations and the evaluation of these results are presented in Appendix VI.

In discussion of the analysis of the benchmark results, the Expert Group did not reach consensus as to the conclusions drawn in this section and in Appendix V. An alternative viewpoint provided by one of the participants is given in Appendix VII.

7. OBSERVATIONS AND CONCLUSIONS

7.1 Impacts of the asymmetry of axial burn-up profiles on the end effect and generation of a bounding axial burn-up profile

It has been found for the Phase II-C benchmark configuration analysed that

- the end effect Δk is fundamentally determined by the degree of asymmetry of the axial burn-up profile.

The degree of asymmetry of an axial burn-up profile can be adequately described by the top end parameter $S\kappa$ defined by eq.(2.9), $\kappa = 6$, i.e.

$$S6 \equiv \sum\nolimits_{1,6}(\mu) = \frac{1}{n}\sum_{\nu=1}^{6}\alpha_{\nu\mu} \tag{7.1}$$

has been chosen for the Phase II-C benchmark since the nodes $\nu = 1$ through $\nu = 6$ represent the relevant top nodes of the axial burn-up profiles evaluated for the Phase II-C benchmark. As appears from Figures 1.1 and 1.2, these axial burn-up profiles slope up from node $\nu = 1$ to node $\nu = 6$ and reach then, at node $\nu = 7$, a plateau.

By definition, the lower the value of the top end parameter S6 is, the higher is the asymmetry of the axial burn-up profile. It has been found for the Phase II-C benchmark configuration analysed that

- the higher the asymmetry of a profile is, the higher is the end effect Δk (cf. Figures 6.13).

In an additional analysis presented in Appendix VI, Section VI.3.3, it has been observed that

- the end effect Δk can be significantly affected by the "local asymmetry" of the shape of the burn-up profile at the top end of the profile.

The "local asymmetry" of the axial burn-up profiles analysed can be adequately characterised by the ratio S13/S6 of the partial sum S13,

$$S13 \equiv \sum\nolimits_{1,3}(\mu) = \frac{1}{n}\sum_{\nu=1}^{3}\alpha_{\nu\mu} = S6 - \frac{1}{n}\sum_{\nu=4}^{6}\alpha_{\nu\mu}\ , \tag{7.2}$$

to the top end parameter S6. By definition, the lower the value of the ratio S13/S6 is, the higher is the "local asymmetry".

It has been found in Appendix VI, Section VI.3.3, that

- the impact of the "local asymmetry" of an axial burn-up profile on the end effect Δk is the higher, the higher the average burn-up of the axial burn-up profile is.

Therefore, the higher the average burn-up is, the more the end effect is impacted by the burn-up dip caused by the presence of a spacer grid in the range of the top end region of the fuel zone. This was, by intuition, already clear from Figure 1.1.

Due to the mechanism of building-up axial burn-up profiles described in Section 2.2 the $\alpha_{\nu\mu}$ values of the profiles given by eq.(2.1) must be correlated in some way. The "local asymmetry" of axial burn-up profiles should not shape up arbitrarily, therefore. In fact, as was shown in Ref. [4] with the same database Ref. [5] as has been used for the Phase II-C benchmark, there are characteristic functional relations between the $\alpha_{\nu\mu}$ values for all nodes $\nu = 1$ through $\nu = 32$. In particular, there are strong correlations between the anm values of the top nodes $\nu = 1$ through $\nu = 7$: a low $\alpha_{\nu\mu}$ value for node $\nu = 1$ comes along with a low $\alpha_{\nu\mu}$ value for node $\nu = 2$; a low $\alpha_{\nu\mu}$ value for node $\nu = 2$ comes along with a low $\alpha_{\nu\mu}$ value for node $\nu = 3$, and so forth. As shown in Ref. [4], the correlations and characteristic functional relations between the $\alpha_{\nu\mu}$ values make it possible to generate a so-called "bounding" axial burn-up profile the shape of which is a continuous function of the average burn-up of the fuel. As demonstrated in Section 2.2, the asymmetry of axial burn-up profiles decreases with increasing average burn-up of the axial burn-up profiles. The bounding axial burn-up profile represents the upper bound of the asymmetry of the axial burn-up profiles as a function of the average burn-up of the profiles. Therefore, due to the outcome of the Phase II-C benchmark, the bounding axial burn-up profile represents the profile that leads to the highest end effect at given average burn-up, provided that all the conditions specified in Section 1.3.5 are met. So, the bounding axial profile is called "bounding" since it is, under the conditions of the configuration to be analysed, bounding with respect to all end effects to be considered at given average burn-up.

The objective of a burn-up credit criticality safety analysis usually consists in determining a loading curve indicating the minimum average burn-up (or a related parameter) necessary for fuel with a specific initial enrichment to be loaded in the spent fuel management system designed for burn-up credit. The loading curve applies to any fuel position of this system. The loading curve must therefore bound the variations in the end effect due to variations in the axial burn-up profiles. In fact, a loading curve for the whole spent fuel management system can be generated only then, if no credit is taken for any real loading scheme. So, the objective of determining a loading curve implies the need for generating a bounding axial burn-up profile the shape of which is a continuous function of the average burn-up of the fuel such that the loading curve is a continuous function of the initial enrichment. Using the knowledge from the Phase II-C benchmark, that the higher the asymmetry of an axial burn-up profile is, the higher is the end effect, and making use of the observation, that there are strong correlations between the $\alpha_{\nu\mu}$ values of the top nodes and characteristic functional relations between the $\alpha_{\nu\mu}$ values of all nodes, the bounding profile is obtained by generating a lower bound for the top node ($\nu = 1$) ratios $\alpha_{\nu\mu}$ of the burn-up profiles to be considered, cf. Ref. [4]. Therefore, the top end parameter S6 of the bounding profile is simply a function of the lower bound of the top node ratios $\alpha_{\nu\mu}$, $\nu = 1$,

$$S6 = S6\left(\alpha_1\left(\hat{B}\right)\right), \tag{7.3}$$

$\alpha_1\left(\hat{B}\right)$,= lower bound of the the top node ratios $\alpha_{\nu\mu}$, $\nu = 1$, at given average burn-up $\hat{B}$.

Since $\alpha_1\left(\hat{B}\right)$ is a continuous function of $\hat{B}$ (cf. Ref. [4]), S6 is a continuous function of $\hat{B}$ and, therefore, the end effect Δk is a continuous function of the average burn-up $\hat{B}$. The resulting loading curve is therefore a continuous function of the initial enrichment of the fuel.

7.2 Relations between end effect, asymmetry of axial burn-up profiles and average burn-up of these profiles

The end effect Δk increases with increasing asymmetry of the axial burn-up profiles (cf. Figure 6.13). The asymmetry of the axial burn-up profiles decreases with increasing average burn-up of the profiles (cf. Section 2.2), but the end effect increases, at given degree of asymmetry, with increasing average burn-up (cf. Figure 6.13), and the sensitivity of the end effect to the degree of asymmetry of the axial burn-up profiles increases as well with increasing average burn-up (cf. ibid.).

The fact that the sensitivity of the end effect to the degree of asymmetry of an axial burn-up profile increases with increasing average burn-up becomes understandable by the observation that the fission density peak increases in height and shifts towards the top end of the fuel zone with increasing average burn-up at given asymmetry of the axial burn-up profile (compare Figure 5.10 with Figure 5.28) This observation makes it also understandable that the sensitivity of the end effect to the "local asymmetry" of an axial burn-up profile increases with increasing average burn-up.

The observation that the fission density peak increases in height and shifts towards the top end of the fuel zone with increasing average burn-up at given asymmetry of the axial burn-up profile can be certainly put down to the fact that the burn-up in the center zone increases faster than at the ends of the fuel zone (cf. Figure 1.1; for a closer examination of the behaviour of the fission density distribution see Appendix VI).

As follows from Figure 6.13 and equations (6.9) and (6.12), for the Phase II-C benchmark cases the following sensitivities are observed:

$$\delta(\Delta k) = \frac{\partial r_B}{\partial (S6)} \delta(S6) \tag{7.4}$$

with

$$\frac{\partial r_B}{\partial (S6)} \begin{cases} = \dfrac{\partial r_{B32}}{\partial (S6)} = -1.2517 \text{ for } B = 32 \text{ MWd/kg U and } S6 \in [0.1433,\ 0.1684] \\ \\ \approx f \cdot \dfrac{\partial r_{B32}}{\partial (S6)} = -1.2517 \cdot f = -1.9558 \text{ for } B = 50 \text{ MWd/kg U} \\ \qquad\qquad\qquad\qquad\qquad\qquad \text{and } S6 \in [0.1501,\ 0.1654] \end{cases} \tag{7.5}$$

So, the sensitivities resulting for the axial burn-up profiles with 50 MWd/kg U average burn-up and the axial burn-up profiles with 32 MWd/kg U average burn-up differ (approximately) just by the ratio f = 50 MWd/kg U / 32 MWd/kg U of the average burn-up values of the profiles,

$$\delta(\Delta k;\ B = 50 \text{ MWd/kg U}) \approx f \cdot \delta(\Delta k;\ B = 32 \text{ MWd/kg U}). \tag{7.6}$$

For the differences $\delta(\Delta k)$ in the end effect Δk between the Phase II-C benchmark cases of highest degree of asymmetry, given by the profiles B32A111111 and B50A111111, and the respective reference cases B32A222222 and B50A222222 one obtains from equations (7.4) and (7.5)

$$\delta\ (\Delta k;\ \mathrm{B32A111111},\ \mathrm{B32A222222}) = 0.0125. \tag{7.7}$$

and, respectively,

$$\delta\ (\Delta k;\ \mathrm{B50A111111},\ \mathrm{B50A222222}) = 0.0061. \tag{7.8}$$

These differences in Δk are not big so that it may seem that the end effect is not very sensitive to the choice of a profile with respect to the reference case; in other words, one may find it justified to use the reference shapes instead of the profiles with highest degree of asymmetry. However, the results eq.(7.7) and eq.(7.8) clearly demonstrate that the reference shapes are not bounding shapes. By definition, they cannot be bounding since they are obtained from the average of all the evaluated normalised shapes (cf. Section 3.1). The result eq.(7.8) is due to the fact that the change in the degree of asymmetry of the profiles is in fact very small when one switches from profile B50A111111 to profile B50A222222 (cf. Figure 3.2). As regards the result eq.(7.7) it can be noted that this leads to an increase of a burn-up credit loading curve by about 2 MWd/kg U at an average burn-up of about 32 MWd/kg U and an initial enrichment of about 4 wt.-% U-235 (cf. Ref. [4], Figure 2, for instance). This is a significant increase and emphasises the necessity for applying a bounding axial burn-up profile to the determination of a loading curve.[7]

7.3 Observations on conditions defining the Phase II-C benchmark configuration

As stated several times, the conditions specified in Section 1.3.5 make it possible to observe the impacts of the asymmetry and the "local asymmetry" on the fission density distribution and hence on the end effect without any interference by different effects. According to the *condition no.(7)* (cf. Section 1.3.5) it has been assumed in each of the Phase II-C benchmark cases that all the fuel assemblies of the fuel configuration analysed have the same initial enrichment, the same average burn-up, the same irradiation history and hence the same axial burn-up profile. In reality however a spent fuel cask (or any other spent fuel management system) is usually loaded with fuel assemblies having different initial enrichments, different average burn-up values, different irradiation histories and hence different axial burn-up profiles. Different axial profiles bringing along different degrees of asymmetry and "local asymmetry" result in different end effects. The higher the asymmetry is, the higher is the end effect. However, the asymmetry of the profiles tends to decrease with increasing average burn-up of the profiles. But, on the other hand, the end effect increases at given degree of asymmetry with increasing average burn-up. And the higher the average burn-up is, the higher is the impact of "local asymmetries" on the end effect. However, the higher the average burn-up is, the lower is the reactivity of the fuel. Different irradiation histories lead to different spent fuel isotopic compositions and hence different reactivity worth values of the spent fuel at given average burn-up; different spent fuel isotopic compositions mean different axial isotopic number density distributions and result, therefore, in different end effects at given axial burn-up shape. The same goes for different initial enrichments as shown in Ref. [6]: The initial enrichment impacts the reactivity of the fuel and the end effect of the fuel configuration. So, one has a lot of different, partly mutually counteracting reactivity effects, and the reactivity of the spent fuel management system therefore depends on the specific fuel loading scheme, i.e., on the real position of each fuel assembly within the system.

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7. Additional observations on relations between end effect, axial fission density distribution, asymmetry of axial burn-up profiles and average burn-up of these profiles, based on the evaluation of the recalculations made by FANP GmbH, can be found in Appendix VI, Section VI.4.

Of course, one may perform a criticality safety analysis of a spent fuel management system for a specific loading scheme. This means that the individual spent fuel isotopic composition distribution of each and every spent fuel assembly need to be determined and the system's reactivity need to be calculated then taking account of the real position of each fuel assembly in the system. In other words, this means that all the parameters that define the reactivity state of each fuel assembly need to be known and verified for each assembly, that a depletion calculation need to be performed for each fuel assembly, and that then a reactivity calculation need to be carried out using the real loading scheme. Since the result of all these calculations holds for this specific loading scheme only, i.e., since any change of the loading scheme requires a revision of the calculations, it is obvious that the analysis of specific loading schemes will be restricted in practice to some exceptional cases.

In practice the task is usually to figure out a criterion that defines the average burn-up (or a related parameter) which a fuel assembly must have reached to be acceptable for loading in any position of the spent fuel management system designed for burn-up credit. As already mentioned above, this loading criterion is usually given in form of a loading curve indicating the minimum average burn-up necessary for a fuel assembly with a specific initial enrichment to be loaded in the spent fuel management system. So, for a given initial enrichment a given loading curve specifies a unique average burn-up value. This value applies to all the fuel positions of the system. Therefore, this value must cover the variety of irradiation histories and hence the variety of axial burn-up profiles. The task to determine a loading curve thus implies the need for a bounding irradiation history given by those reactor operation conditions that lead to the highest reactivity of the spent fuel under the conditions of the spent fuel management system under study;[8] and, as already mentioned above, the task to determine a loading curve implies the need for generating a bounding axial burn-up profile the shape of which is a continuous function of the average burn-up. So, to be able to determine the burn-up value of the loading curve for a given initial enrichment one has to suppose that all the fuel assemblies loaded in the system under study have had this initial enrichment, have been subjected to the bounding irradiation history and have the bounding axial burn-up profile. Therefore, the condition no.(7) given in Section 1.3.5 corresponds with the conditions on which a loading curve is based.

As already stated in Section 1.3.5, with the exception of fuel assemblies having gadolinium, erbium, or dysprosium bearing fuel rods – all these burnable absorbers are abbreviated to "BAMIFUM" in the following since these burnable absorber materials are integrated into the fuel matrix – condition (8) is usually met by PWR UO_2 fuel assemblies. The BAMIFUM bearing fuel rods in a PWR fuel assembly often have some lower initial ^{235}U enrichments than the unpoisoned fuel rods. However, due to the purposes for which it is employed (reactivity control and enhanced fuel utilization) the BAMIFUM usually does not extend over the full active length of the poisoned fuel rods. Top end and bottom end of the fuel zone usually remain unpoisoned and usually have the same initial ^{235}U enrichment as the unpoisoned rods. Therefore, the usage of the BAMIFUM usually results in a flattening-out of the axial power distribution during depletion and, hence, a flattening-out of the axial burn-up profile; i.e., the usage of BAMIFUM usually tends to reduce the asymmetry of the axial burnable profile, which tends to lower the end effect. This tendency is enhanced by the effect that the presence of the BAMIFUM in the center zone of the fuel results in spectrum hardening and, hence, more conversion (^{239}Pu production) and less ^{235}U consumption, which tends to increase the reactivity importance of the center zone relative to the end zones of the fuel. However, as long as some

8. The generation of a bounding irradiation history includes, if required, the consideration of the usage of fixed neutron absorbers (control rods, burnable poison rods, axial shaping rods) and integral burnable absorbers initially present in the fuel.

BAMIFUM is still present in the fuel the relative reactivity importance of the center zone is significantly reduced. And even if the BAMIFUM is burnt out some "soft" poisons remain in the fuel,[9] which tends to keep down the reactivity importance of the center zone relative to the end zones of the fuel and tends, therefore, to increase the amount of the end effect. This tendency is enhanced when the poisoned zone of the BAMIFUM bearing fuel rods has a lower initial ^{235}U enrichment than the unpoisoned zones and rods. However, all these competing effects are strongly dependent on the length of the poisoned zone of the BAMIFUM bearing fuel rods. There are fuel designs having unpoisoned zones of 15 cm in axial length only at the bottom and the top end of the fuel zone. There are other designs with unpoisoned zones up to 30 cm in axial length at the bottom end and up to 40 cm in axial length at the top end of the fuel zone.

So, the initial presence of BAMIFUM may result in less asymmetry of the axial burn-up profile, which tends, as confirmed by the results of the Phase II-C benchmark, to reduce the end effect. The initial presence of BAMIFUM results in other effects competing with each other and interfering with the impact of the asymmetry of the burn-up profile on the end effect such that the amount of the end effect can be reduced or increased. However, all these statements do not affect the observations made in the Phase II-C benchmark about the impact of the asymmetry and the "local asymmetry" of axial burn-up shapes on the end effect. Whether or not any BAMIFUM has been initially present in a fuel assembly of interest, the end effect will increase with increasing asymmetry of the axial burn-up profile obtained for this fuel assembly and the "local asymmetry" of this profile can significantly impact the end effect.

These observations also apply to the case that not a BAMIFUM design but a so-called "IFBA" design is used for the burnable absorber bearing fuel rods. In an IFBA design boron (i.e., B-10) is used as burnable absorber, and instead of integrating this absorber into the fuel matrix boron-coated pellets are used. As in a BAMIFUM design the poisoned zone usually does not extend over the full active length of the poisoned fuel rods, but in contrast to many BAMIFUM designs the poisoned zone usually has the same initial ^{235}U enrichment as the unpoisoned zones and the unpoisoned fuel rods. Therefore, a reduction of the reactivity importance of the center zone of the fuel relative to the end zones of the fuel is not due to any axial zoning of the initial enrichment, but is entirely due to the presence of the burnable absorber B-10. However, after the burn-out of the burnable absorber there are no neutron poison remnants originating from the boron. The center zone of an initially poisoned fuel rod therefore has a higher relative reactivity importance than the center zone of an unpoisoned fuel rod because the initial presence of the burnable absorber results in spectrum hardening, in particular for the fuel inside the poisoned zone of the poisoned fuel rods, so that more conversion and less ^{235}U consumption take place in this fuel. The amount by which the relative reactivity importance of the total center zone of the fuel is increased depends on the number of IFBA rods and the locations of these rods in a fuel assembly. There are very different IFBA designs in use, designs with less than 32 IFBA rods and designs with more than 140 IFBA rods. Anyway, the increase of the relative reactivity importance of the center zone of the fuel after the burn-out of B-10 and the flattening-out of the axial burn-up profile due to the initial presence of the B-10 tend to reduce the end effect. However, whether the end effect is really reduced or not that is strongly dependent on the length of the poisoned zone of the IFBA fuel rods.[10] It also depends on – and this goes for the BAMIFUM designs too as well as for all the cases discussed in the following – whether the other conditions specified in Section 1.3.5, in particular the conditions (3)

9. E.g., gadolinium consists of 6 stable isotopes. The absorbers are Gd-155 and Gd-157. The burn-out of these absorbers leads to Gd-156 and Gd-158, respectively, which remain in the fuel as "soft" poisons. For more details see Ref. /20/, Lecture L.4.3.1.

10. The axial length of the unpoisoned zones at the bottom end and the top end of the fuel zone usually amounts to about 30 cm. This length is big enough to make a decrease of the end effect possible.

through (6), are met or not. It is observed, for instance, that IFBA designs often have axial blanket pellets, which results, as already told in Section 1.3.5, in a significant decrease of the end effect.

Even though the amount of the impact on the end effect may be significantly different, qualitatively the same that has been told about the impact of IFBA fuel designs on the end effect applies to the impact of the usage of Burnable Poison Rods (BPRs) or Axial Shaping Rods (ASRs) during depletion on the axial end effect of spent fuel assemblies. This is due to the fact that BPRs as well as ASRs serve the same purposes as IFBA and BAMIFUM designs: reactivity control and improved fuel utilization. Whatever the specific design of the BPRs or ASRs[11] the length of these rods is significantly smaller than the active length of the fuel assembly design for which they are used, and BPRs are virtually centrically positioned in the active zone of a fuel assembly[12] during the first irradiation cycle of this assembly and are removed at the end of this cycle.

Another story is Control Rod (CR) insertion during depletion. CR insertion during fuel irradiation can lead to significant changes in the asymmetry of the axial burn-up profiles and the "local asymmetry" of the shape of these profiles and hence to significant changes in the end effect.

But even if no change in the shape of the profile is assumed the significant increase in spectrum hardening due to CR insertion leads to a significant change in the end effect. This is due to the fact that the *increase* in the number densities of ^{239}Pu and ^{235}U, which is caused by the spectrum hardening due to the CR insertion, *increases with increasing burn-up* since increasing burn-up results in an increase of the spectrum hardening. So, assuming full insertion of the CR into the entire fuel zone of a fuel assembly it follows that the increase in the number densities of ^{239}Pu and ^{235}U is greater in the center of the fuel zone than at the ends of the fuel zone since the burn-up in the center zone increases faster than at the ends of the fuel zone (cf. Figure 1.1). Therefore, the reactivity importance of the center region of the fuel zones increases faster with increasing spectrum hardening than the reactivity importance of the end zones of the fuel zone. From that it follows that the change in the end effect caused by CR insertion is strongly dependent on the CR insertion depth. The following behaviour is to be expected for the end effect as a function of the CR insertion depth:

- First, the end effect increases with increasing CR insertion depth, because most of the fuel zone – including the center zone of the fuel zone, i.e. the plateau region of the axial burn-up profile (cf. Figure 1.1) – is still assumed to be not exposed to CR insertion.
- Further increase of the CR insertion depth must than lead to a *maximum* of the end effect since an increasing portion of the fuel region where the *fission density peak* is already located without CR insertion is exposed to CR insertion. The CR insertion depth which leads to the maximum end effect must decrease with increasing average burn-up since, as already told in Section 7.2, the fission density peak increases in height and shifts towards the top end of the fuel zone with increasing average burn-up at given asymmetry of the axial burn-up profile.

11. There are so-called "BAAs" consisting of Borosilicate glass in the form of Pyrex tubing with a void center region, so-called "WABAs" consisting of annular pellets made of Al_2O_3-B_4C with a water-filled central region, or solid rods containing Al_2O_3-B_4C for instance, etc. ASRs significantly shorter than BPRs can be axially moved during irradiation.

12. E.g., WABAs used for fuel designs with an active length of 365.76 cm commonly have a length of 304.8 cm. The distance between the bottom end of the fuel zone and the bottom end of the inserted WABAs usually amounts to about 31 cm so that a fuel region of about 30 cm in axial length at the top end of the fuel zone is not exposed to the insertion of the WABAs.

- Now, further increase of the CR insertion depth results then in a significant decrease of the end effect since an increasing portion of the fuel region which contains nearly the entire content of the fission density distribution obtained without CR insertion (cf. Figure 5.4 for instance) is assumed to be exposed to CR insertion and, finally, since an increasing part of the center zone of the fuel is assumed to be exposed to CR insertion.

One may prefer to predict the change of the end effect with increasing CR insertion depth by using the definition eq.(1.1) of the end effect, i.e. by examining the change of the neutron multiplication factor k_{eff}(ABP) and the behaviour of the neutron multiplication factor $k_{eff}\left(\mathrm{UD}\left(\hat{B}_{ABP}\right)\right)$ with increasing CR insertion depth separately, since one can than start, at zero CR insertion depth, with the fission density distributions associated with the axial burn-up profile (ABP) and the uniform distribution (UD) of the profile's average burn-up $\hat{B}_{ABP}$, respectively (cf. Figures 5.4 and 6.14, for instance). In fact, to predict the behaviour of the neutron multiplication factor k_{eff}(ABP) qualitatively, one needs only to follow, from the top end to the bottom end of the fuel zone, the fission density distribution $f(z)_{ABP}$ associated with ABP at zero CR insertion ; more precisely, one needs only to follow the increase of the probability content

$$C(\zeta) = \frac{1}{I} \cdot \int_{L-\zeta}^{L} dz\, f(z)_{ABP} \quad \text{with} \quad I = \int_{0}^{L} dz\, f(z)_{ABP} \tag{7.9}$$

as given by the fission density distribution with increasing distance z from the top end of the fuel zone, $\zeta \in [0, L]$, L = active length:

- As appears from Figure 5.4 for example,[13] at the beginning, i.e. at small CR insertion depths ζ the fission probability $C(\zeta)$ increases very rapidly with increasing ζ, and it is therefore to be expected that the neutron multiplication factor k_{eff}(ABP) rapidly increases since the number densities of ^{235}U and ^{239}Pu in the region $[L - \zeta, L]$ are increased due to CR insertion, actually the more the higher the burn-up becomes with increasing ζ.
- Then, with further increasing CR insertion depth ζ the increase of the fission probability $C(\zeta)$ slows down due to the shape of the fission density distribution; and when ζ exceeds the value ζ_M where the maximum of the fission density distribution is located, then the increase in $C(\zeta)$ goes down more and more. It is therefore to be expected that the neutron multiplication factor still increases, but that the amount of its increase slows down more and more with increasing insertion depth ζ.
- Finally, when ζ reaches a certain value ζ_P such that the region $[L - \zeta_p, L]$ virtually contains the entire fission density peak then any increase in ζ results in a negligible increase of $C(\zeta)$ only, and it is then to be expected that k_{eff}(ABP) virtually remains constant for any value $\zeta > \zeta_P$.

The values ζ_M and ζ_P tend to decrease with increasing average burn-up. It is therefore to be expected that both, the rapidity with which the neutron multiplication factor increases with increasing insertion depth ζ at the beginning of the CR insertion, and the rapidity with which k_{eff}(ABP) converges towards a certain case-specific limit, increase with increasing average burn-up.

13. The normalised axial fission density model distributions derived in Appendix VI for several Phase II-C benchmark cases give a more precise picture; cf. Figures VI.40.a through VI.40.e in Appendix VI.

Of course, CR insertion affects the shape of a fission density distribution for a given axial burn-up profile. In addition, CR insertion may impact the shape of the axial burn-up profile and increase the asymmetry of the profile in particular. Nevertheless, for a given axial burn-up profile (given, for instance, by a bounding profile needed, as mentioned several times, for the determination of a loading curve) the associated fission density distribution at zero CR insertion is, so to speak, the "starting condition" which significantly affects the rapidity with which $k_{eff}(ABP)$ can change due to the changes in the axial isotopic composition distribution caused by CR insertion.

In fact, the cosine-shaped fission density distribution associated with the uniform distribution of the average burn-up $\hat{B}_{ABP}$ provides a completely different "starting condition". Before a significant response of the neutron multiplication factor $k_{eff}\left(UD\right) = k_{eff}\left(UD(\hat{B}_{ABP})\right)$ to a change in the isotopic composition due to CR insertion can be expected a significant increase in the fission density must occur at the top end of the fuel zone. This requires a sizeable insertion depth ζ since a potential increase in the reactivity due to the change in the isotopic composition at the top end region of the fuel zone competes with increased leakage due to the close proximity to the end of the fuel zone. In other words, a significant "reorientation" of the fission density distribution such that a proper peak of the fission density in the top end region of the fuel zone can be obtained requires a proper CR insertion depth ζ. Therefore, it is to be expected that the neutron multiplication factor $k_{eff}\left(UD\right)$ starts to increase at a significantly higher ζ value than the neutron multiplication factor $k_{eff}(ABP)$.

After the neutron multiplication factor $k_{eff}(UD)$ started to increase $k_{eff}(UD)$ will continue to increase with any further increase of the CR insertion depth ζ till $\zeta = L$ is reached. This is due to the fact that any increment $\Delta\zeta$ in the insertion depth ζ means that in the range $[\zeta, \zeta + \Delta\zeta]$ one uniform isotopic composition is exchanged for another isotopic composition which has a higher reactivity due to spectrum hardening. This exchange is always the same for any interval $[\zeta, \zeta + \Delta\zeta]$ since a uniform burn-up distribution is examined. After a certain insertion depth is reached the increase in the neutron multiplication factor will slow down more and more since the relative increase of the axial length of fuel region containing already the more reactive isotopic composition is decreasing with increasing ζ according to $1/(1 + \zeta/\Delta\zeta)$. And finally, the maximum of the fission density distribution will return, step by step, with increasing ζ to the center of the fuel zone, till at $\zeta = L$ the fission density distribution is again cosine-shaped.

So therefore, because the neutron multiplication factor $k_{eff}(UD)$ starts to increase at a higher insertion depth ζ than the neutron multiplication factor $k_{eff}(ABP)$ and because $k_{eff}(UD)$ does not stop to increase – even if the amount of the increase is slowing down more and more for higher ζ values – till $\zeta = L$ is reached, whereas $k_{eff}(ABP)$ reaches its case-specific limit at a ζ value which is significantly lower than L, it can be inferred that the end effect, given according to eq.(1.1) by $\Delta k = k_{eff}(ABP) - k_{eff}(UD)$, has a maximum at a relatively low ζ value, which decreases with increasing average burn-up. In addition, since the increase in the fuel's reactivity due to the spectrum hardening caused by CR insertion increases with increasing burn-up it is to be expected that the end effect Δk is lower for the case $\zeta = L$ than for the case $\zeta = 0$.

According to the *condition no.(9)* it has been assumed in each of the Phase II-C benchmark cases that all the fuel rods of the fuel assemblies have one and the same axial burn-up profile. In reality however there is a horizontal gradient of the burn-up in the fuel assemblies which is caused by horizontal neutron flux gradients during fuel exposure. The horizontal burn-up gradient of a fuel assembly depends on the fuel design, the positions of the fuel assembly within the core during the operating cycles, and the average burn-up of the fuel. Due to core shuffling the horizontal burn-up tends to decrease with increasing average burn-up (cf. Ref. [20], Lecture L.4.3.2). Since the reactivity effect due to horizontal burn-up gradients is small (cf. Ref. [22]) this effect is usually covered conservatively, as already described in Section 1.3.5, by taking its maximum value obtained from analyzing this effect as a function of the average burn-up. Therefore, condition (9) is usually taken as a basis in calculation routes used in burn-up credit analysis.

According to the *condition no.(1)* specified in Section 1.3.5 it has been assumed in each of the Phase II-C benchmark cases that all the fuel assemblies have the same design, the same geometry data and the same structural material data. Because of the following reasons this condition obviously is a prerequisite for being able to determine a loading curve: First, the reactivity of different fuel designs usually differs even if one and the same spent fuel isotopic composition and one and the same axial burn-up profile are presumed for the different designs. Secondly, condition no.(1) obviously is a prerequisite that identical irradiation histories result in identical spent fuel isotopic compositions and identical axial burn-up profiles. Condition no.(1) therefore is a prerequisite for condition no.(7) and need not to be discussed here any further.

It was already stated in Section 1.3.5 that non-compliance with *condition no.(2)* given in that section results in a decrease in reactivity provided that conditions no.(4) through no.(6) are met for all the fuel rods.

Now, what can be told about cases, such as those mentioned already in Section 1.3.5, which do not meet the *conditions no.(4) through no.(6)*? It is not enough space here to talk about each and every possible or imaginary case which does not comply with conditions no.(4) through no.(6). If these conditions are not met then the fission density distribution is impacted, as has been already observed in the above-discussed cases of BAMIFUM, IFBA or BPR usage or CR insertion, by effects which interfere with the impacts of the asymmetry and "local asymmetry" of axial burn-up profiles on the fission density distribution. For example, in the case, mentioned in Section 1.3.5, that the neutron absorbing material zone of the basket of a PWR spent fuel cask consists of Boral absorber plates with unpoisoned stainless steel reinforcements located between these plates it is certainly necessary to determine the most reactive position of the fuel zone, i.e. of the axial burn-up profile with respect to the locations of the unpoisoned reinforcements. In general terms, the generation of a bounding axial burn-up profile needed for the determination of a loading curve, for instance, includes the task to demonstrate that the generated bounding profile is really bounding under all the conditions to be analysed in a specific burn-up credit application case. It follows from the observations of the Phase II-C benchmark exercise that the bounding profile is a profile which bounds the asymmetries and the "local asymmetries" of the real profiles.[14]

Let us return to the example that was already used in Section 1.3.5: Let us assume that the fuel zone of the fuel assemblies is not fully inserted in the neutron absorbing material zone of the basket of a PWR spent fuel cask. The case that a section of the top end region of the fuel zone juts out of the neutron absorbing material zone of the basket is first discussed in the following. Let us avoid overly complicating things at once, i.e. let us increase the complexity of the problem gradually. Accordingly, let us assume that the distribution of the neutron absorber material in the neutron absorbing material zone of the basket is homogeneous in axial and horizontal direction; and let us presume that the fuel assemblies meet condition no.(3) specified in Section 1.3.5. Now, even though the amount of the impact

14. By the way, a bounding non-uniform burn-up profile is bounding only then if the end effect is positive. A negative end effect means that the bounding profile is given by the uniform distribution of the average burn-up. (When the end effect is negative it tends to become the lower the more asymmetric a non-uniform profile is. Therefore, application of the non-uniform profile with the highest possible asymmetry to the range of average burn-up values where the end effect is negative can result in a significant underestimation of the end effect.)

on the end effect may be significantly different, qualitatively the same that has been told about the impact of CR insertion during depletion on the end effect applies to the case that the fuel zone of the fuel assemblies is only partially inserted in the neutron absorbing material zone of the basket. One has only to identify now the parameter ζ with the axial length of the fuel region which is not inserted into the neutron absorbing material zone. In fact starting at full coverage of the entire fuel zone, i.e. starting with a "non-coverage" of $\zeta = 0$ the fission probability $C(\zeta)$ due to the fission density distribution $f(z)_{ABP}$ associated with the axial burn-up profile ABP increases very rapidly with increasing ζ, and it is therefore to be expected that the neutron multiplication factor k_{eff} (ABP) rapidly increases due to the significant change in the neutron absorption and reflection conditions caused by the "disappearance" of the neutron absorber in horizontal direction. Then, due to the shape of the fission density distribution $f(z)_{ABP}$ the increase in $C(\zeta)$ and hence the increase in k_{eff} (ABP) slow down more and more, in particular when ζ has exceeded the value ζ_M where the maximum of $f(z)_{ABP}$ is located. Finally, when ζ has reached the value ζ_P such that the whole region $[L - \zeta_P, L]$ which virtually contains the entire fission density peak is uncovered then k_{eff} (ABP) virtually remains constant for any value $\zeta > \zeta_P$.

In contrast to that the "reorientation" of the fission density distribution of the uniform burn-up distribution requires a sizeable non-coverage ζ. Therefore, the neutron multiplication factor k_{eff} (UD) starts to increase at a significantly higher ζ value than the neutron multiplication factor k_{eff} (ABP). The neutron multiplication factor k_{eff} (UD) continues to increase till $\zeta = L$ is reached,[15] but the amount of its increase will slow down at higher ζ values since the relative increase in the length of the uncovered fuel region due to an increment $\Delta\zeta$ of this length goes down according to $1/(1+ \zeta/\Delta\zeta)$.

So, starting at $\zeta = 0$, it is to be expected that the end effect $\Delta k = k_{eff}\text{(ABP)} - k_{eff}\text{(UD)}$ first increases rapidly with increasing ζ, then reaches a maximum and, afterwards, decreases monotonously with further increasing ζ. Of course, it cannot be expected now, in contrast to the CR insertion case, that the end effect at $\zeta = L$ is smaller than at $\zeta = 0$ because the increases in k_{eff} (ABP) and k_{eff} (UD) are not caused by changes in the isotopic composition of the fuel.

The value ζ of non-coverage at which the end effect reaches its maximum tends to decrease with increasing average burn-up and increasing asymmetry of the axial burn-up profile and will be significantly affected by the "local asymmetry" of the profile.

One can imagine now what happens when one additionally assumes CR insertion: the increase in the neutron multiplication factor k_{eff} (ABP) will be significantly enhanced; and, depending on the non-coverage and the CR insertion depth, the end effect can be significantly enhanced. It should be noted that it is common practice in core operation that at least one CR bank is in a "target bite position"; i.e., at begin of cycle the control rods of this CR bank are inserted into the fuel zone of the assemblies at the respective core positions with an insertion depth of usually not more than about 30 cm, and the insertion depth is then gradually reduced during the cycle and tends towards zero at end of cycle. However, the situation is different for extended low power operation at the end of the cycle. Then the control rods of at least one CR bank are inserted with a significant insertion depth. It has been already mentioned that the increase in the reactivity of the spent fuel due to spectrum hardening caused by CR insertion is increasing with increasing burn-up.

15. The case $\zeta = L$ is here of theoretical interest only, hopefully.

It is obvious that one can further enhance the increase in the neutron multiplication factor k_{eff} (ABP) by assuming for instance optimum moderation in the top end region of the fuel zone (cf. Section 1.3.5) in addition to non-coverage and CR insertion. And one can then add the assumption of a non-uniform neutron absorber material distribution in the neutron absorbing material zone of the basket, etc (cf. ibid.). Anyway, in any case the rapidity with which k_{eff} (ABP) will increase and the impact on the end effect will be significantly dependent on the asymmetry, the "local asymmetry" and the average burn-up of the axial burn-up profile.

Let us now assume that it is not the top end but the bottom end region of the fuel zone which partially juts out of the neutron absorbing material zone of the basket. In this case a complete "reorientation" of the fission density distribution $f(z)_{ABP}$ of the axial burn-up profile is required. It is therefore to be expected that now a higher non-coverage value ζ has to be reached than required for the case of partial non-coverage of the top end fuel zone before a significant increase in k_{eff} (ABP) can be observed. However, due to the shape of an axial burn-up profile it can be assumed that the "reorientation" of the fission density distribution of the profile takes place "faster" than the "reorientation" of the fission density distribution of the uniform distribution of the average burn-up of the fuel. Otherwise first a decrease in the end effect at low non-coverage values ζ would to be expected.[16] With respect to the "reorientation" symmetric axial burn-up profiles have an advantage over asymmetric profiles. However, it is hard to find axial burn-up profiles which are exactly symmetric in shape. In addition, the isotopic composition cannot be really symmetric because of the change in the moderator temperature in axial direction in an operating PWR. Anyway, if the "reorientation" of the fission density distribution of the profile is realized, then all the statements made above about the top end of the fuel zone now apply to the bottom end of the fuel zone. This includes that for the determination of the loading curve a bounding axial burn-up profile has now to be generated that bounds the asymmetries and "local asymmetries" of the bottom end region of the real profiles with respect to the reactivity of the configuration to be analysed. However, due to the asymmetry of axial burn-up profiles it is to be expected that the case that the bottom end region of the fuel zone juts out of the neutron absorbing zone of the basket leads to a lower reactivity of the cask configuration than the case that the top end region of the fuel zone juts out of the neutron absorbing zone of the basket.

It was already told in Section 1.3.5 that some PWR fuel designs have axial blanket zones with lower enriched or natural uranium pellets. These designs do not comply with *condition no.(3)* specified in Section 1.3.5. However, the presence of axial blanket zones at the top end of the fuel zone (or, for the case that partial non-coverage of the bottom end of the fuel zone is assumed, at the bottom end) results, compared to the case that no axial blanket zones are present, in a significant decrease of the end effect, cf. Ref. [10].

With these reflections on the conditions specified in Section 1.3.5 the conclusions drawn from the results of the Phase II-C exercise are complete. These conditions made it possible to observe the impacts of the asymmetry and the "local asymmetry" on the fission density distribution and hence on the end effect without any interference by effects which are not due to the shape of axial burn-up profiles. The knowledge thus gained helps, as exemplified above, to understand and to predict qualitatively the reactivity behaviour of PWR spent fuel assembly configurations which do not comply with the conditions specified in Section 1.3.5.

16. The "reorientation" can be heavily delayed when CR insertion has to be considered.

7.4 Concluding remarks

At the end of this report let us recall the lesson learnt in the Phase II-C benchmark about source convergence: In Section 6.3.2 it has been shown that the minimum number of initial generations to be skipped to attain convergence in the calculation of the axial fission density distribution amounts to 300. This finding has been already reported by the OECD/NEA Expert Group on Source Convergence in Criticality Safety Analysis, cf. Ref. [21]. This group adopted two of the Phase II-C benchmark cases (cf. ibid.) to analyse the impact of axial asymmetry on source convergence. In fact, the Phase II-C benchmark offers a lot of exercises for analyzing the impact of axial asymmetry on source convergence.

With these reflections on source convergence the report on hand is complete. It was the objective of the Phase II-C benchmark exercise to examine the impact of the asymmetry of axial burn-up profiles on the axial fission density distribution and hence on the end effect. The benchmark exercise was aimed at revealing correlations of the end effect (and, if possible, of characteristic properties of the axial fission density distribution, see Appendix VI) to some parameters capable to describe the asymmetry of axial burn-up profiles. These aims of the benchmark exercise were attained. In addition, it has been demonstrated that the knowledge from the Phase II-C benchmark helps to understand the reactivity behaviour of PWR spent fuel configurations qualitatively and gives information and advice about applying and evaluating axial burn-up profiles in burn-up credit criticality safety analysis of PWR spent fuel management systems.

TABLES

Table 2.1 Data of the selected Convoy Series fuel assembly type as used in the nuclear power plant Neckarwestheim II

Square pitch lattice Number of fuel rods Number of guide thimbles	18x18* 300 24
Pitch (fuel rods)	1.27 cm
Fuel rod (FR) - Pellet density - Pellet diameter - FR inner diameter - FR outer diameter - FR material - Active length (cold, unirradiated)	 10.4 g/cm^3 0.805 cm 0.822 cm 0.95 cm Zry-4 / Duplex 390.0 cm
Guide thimble (GT) - GT inner diameter - GT outer diameter - GT material	 1.11 cm 1.232 cm Zry-4
Uranium mass per fuel assembly (cold, unirradiated) Initial U-235 Enrichment	533 kg 3.8 wt.-% and 4 wt.-%**
Spacer grids - Number of spacer grids being located within the active zone - Mass of these spacer grids - Material	 7 9.331 kg Zry-4/Inc-718***

* cp. Figure 2.1.

** For the Phase II-C benchmark exercise 4.0 wt.-% initial enrichment is assumed.

*** Zry-4 mass fraction: 0.92123, Inc-718 mass fraction: 0.07877.

Table 2.2 Core geometry, material and operating data of the nuclear power plant Neckarwestheim II

Number of fuel assemblies	193
Fuel assembly pitch	23.00 cm
Thermal power	3850 MW
Pressure	158 bar
Average boron concentration per cycle	500 ppm
Average temperatures (full power)	
- Fuel	773.16 K
- Cladding	611.16 K
- Moderator	309.6 °C

Table 3.1 Mean values (2.5) as well as minimum and maximum values (3.5) for nodes 1 through 6 and burn-up groups 3 and 6

Node ν	Burnup Group g	$\mathrm{Min}\left[\alpha_{\nu\mu}\left(\hat{B}_{\mu} \in b_{g}\right)\right]$ (cf. eq.(3.5))	$\hat{\alpha}_{\nu}$ (cf. eq.(2.5))	$\mathrm{Max}\left[\alpha_{\nu\mu}\left(\hat{B}_{\mu} \in b_{g}\right)\right]$ (cf. eq.(3.5))
1	3	0.444	0.518383	0.638
	6	0.492	0.518383	0.605
2	3	0.621	0.683941	0.778
	6	0.666	0.683941	0.763
3	3	0.786	0.840167	0.926
	6	0.818	0.840167	0.917
4	3	0.808	0.860878	0.936
	6	0.845	0.860878	0.920
5	3	0.950	0.986990	1.047
	6	0.978	0.986990	1.036
6	3	0.977	1.014850	1.062
	6	1.006	1.014850	1.051

Table 3.2 The top nodes 1 through 6 of the Phase II-C axial burn-up shapes

Serial No.	Identification*	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6
2	BbbA111111	Min***	Min	Min	Min	Min	Min
3	BbbA111112	Min	Min	Min	Min	Min	Mean
4	BbbA111122	Min	Min	Min	Min	Mean	Mean
5	BbbA111222	Min	Min	Min	Mean	Mean	Mean
6	BbbA112222	Min	Min	Mean	Mean	Mean	Mean
7	BbbA122222	Min	Mean	Mean	Mean	Mean	Mean
1	BbbA222222**	Mean***	Mean	Mean	Mean	Mean	Mean
8	BbbA222223	Mean	Mean	Mean	Mean	Mean	Max***
9	BbbA222233	Mean	Mean	Mean	Mean	Max	Max
10	BbbA222333	Mean	Mean	Mean	Max	Max	Max
11	BbbA223333	Mean	Mean	Max	Max	Max	Max
12	BbbA233333	Mean	Max	Max	Max	Max	Max
13	BbbA333333	Max	Max	Max	Max	Max	Max
14	BbbA122223	Min	Mean	Mean	Mean	Mean	Max
15	BbbA112233	Min	Min	Mean	Mean	Max	Max
16	BbbA322221	Max	Mean	Mean	Mean	Mean	Min
17	BbbA332211	Max	Max	Mean	Mean	Min	Min

* Bbb stands for the average burn-up. For instance, B32 denotes the average burnup of 32 MWd/kg U; Annnnnn is for the identification of the values (3.1) selected for of the top nodes 1 through 6 according to Table 3.1: n = 1 stands for minimum value (= Min);
n = 2 stands for mean value (= Mean);
n = 3 stands maximum value (= Max).
In Ref. [3] the identification BbbCyyAnnnnnn instead of BbbAnnnnnn was used. Cyy was used to identify the cooling time. Due to the fact that only one cooling time is used in the Phase II-C benchmark exercise, the nomenclature BbbAnnnnnn is used in the report on hand.

** Reference case defined by the mean values eq.(2.5)

*** Mean is given by eq.(2.5), Min and Max are given by eq.(3.5), cf. Table 3.1

Table 3.3 Making-up of the axial zones for the step distributions needed to describe the shape of the axial burn-up profiles selected for the Phase II-C benchmark (cf. Table 3.2)

Axial Zone No.	Nodes grouped together	Length of the zone / cm	Height of the upper bound of the zone / cm (with respect to the bottom of the fuel zone)
1	32	12.19	12.19
2	31	12.19	24.38
3	30	12.18	36.56
4	29	12.19	48.75
5	27, 28	24.38	73.13
6	26	12.18	85.31
7	23,24,25	36.57	121.88
8	22	12.18	134.06
9	20,21	24.38	158.44
10	18,19	24.37	182.81
11	17	12.19	195.00
12	14,15,16	36.56	231.56
13	13	12.19	243.75
14	10,11,12	36.56	280.31
15	7,8,9	36.57	316.88
16	6	12.18	329.06
17	5	12.19	341.25
18	4	12.19	353.44
19	3	12.19	365.63
20	2	12.18	377.81
21	1	12.19	390.00

Table 3.4 Atomic number density (in $b^{-1}cm^{-1}$) of structural materials and water

Cladding material, guide thimble material	Zircaloy	Cr	7.589E-05
		Fe	1.484E-04
		Zr	4.298E-02
Fuel assembly hardware	50%/50% stainless steel / water mixture	Cr	8.714E-03
		Mn	8.682E-04
		Fe	2.968E-02
		Ni	3.860E-03
		H	3.337E-02
		O	1.669E-02
Basket material	Borated (1 wt.-%) stainless steel	Cr	1.691E-02
		Mn	1.684E-03
		Fe	5.758E-02
		Ni	7.489E-03
		B-10	7.836E-04
		B-11	3.181E-03
Cask material	Stainless steel	Cr	1.743E-02
		Mn	1.736E-03
		Fe	5.936E-02
		Ni	7.721E-03
Water		H	6.675E-02
		O	3.337E-02

Table 4.1 Contributor, criticality code and nuclear data source

Institute	Country	Criticality code	Nuclear data source	Groups	Processing method	Comments
BNFL	UK	MONK 8	JEF 2.2	Point	NJOY	
CEA	France	APOLLO2/ MORET4	JEF 2.2	172	NJOY/ THEMIS	
EMS (MCNP)	Sweden	MCNP4C2	ENDF/B-VI ENDF/B-V*	Point	NJOY	
EMS (SCALE)	Sweden	KENO Va	ENDF/B-V	238	AMPEX/ SCALE 4.4	CSAS25
FANP GmbH	Germany	KENO Va	ENDF/B-V	44	AMPEX/ SCALE 4.4a	CSAS25
IRSN	France	TRIPOLI4	JEF 2.2	Point		
JAERI	Japan	MCNP4B	JENDL-3.2	Point		
KFKI	Hungary	MCNP4C	ENDF/B-VI ENDF/B-V*	Point	NJOY	
NUPEC	Japan	MVP	JENDL-3.1	Point		
ORNL	USA	KENO Va	ENDF/B-V	44	AMPEX/ SCALE 5	CSAS25

* ENDF/B-V for most of the fission products.

Table 5.1 Results from the contributors: Predicted mean values of the neutron multiplication factor for the 32 MWd/kg U average burn-up cases

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B32Auniform	8.74100E-01	8.60440E-01	8.69300E-01	8.72230E-01	8.75200E-01	8.67912E-01	8.71660E-01	8.70530E-01	8.76430E-01	8.71130E-01
B32A111111	9.00100E-01	8.86170E-01	8.95960E-01	8.97730E-01	9.00989E-01	8.96936E-01	9.00130E-01	8.96300E-01	9.00340E-01	8.97950E-01
B32A111112	8.99900E-01		8.96120E-01	8.96770E-01	9.00904E-01	8.95490E-01	9.00420E-01	8.96260E-01	9.00040E-01	8.97080E-01
B32A111122	8.98500E-01		8.94500E-01	8.97560E-01	8.99919E-01	8.96922E-01	8.99590E-01	8.95020E-01	8.99660E-01	8.96170E-01
B32A111222	8.97000E-01		8.91930E-01	8.95120E-01	8.97606E-01	8.92666E-01	8.97090E-01	8.92960E-01	8.97210E-01	8.94860E-01
B32A112222	8.92500E-01		8.90290E-01	8.90600E-01	8.94696E-01	8.89901E-01	8.93900E-01	8.89560E-01	8.94100E-01	8.92410E-01
B32A122222	8.90000E-01		8.86550E-01	8.88160E-01	8.90774E-01	8.86242E-01	8.91020E-01	8.85930E-01	8.89020E-01	8.88790E-01
B32A222222	8.88100E-01	8.73800E-01	8.83520E-01	8.85030E-01	8.88615E-01	8.85254E-01	8.89710E-01	8.84280E-01	8.87220E-01	8.85810E-01
B32A222223	8.86300E-01		8.82600E-01	8.85270E-01	8.88051E-01	8.81441E-01	8.86740E-01	8.83260E-01	8.87760E-01	8.85200E-01
B32A222233	8.85000E-01		8.81100E-01	8.84280E-01	8.86500E-01	8.81365E-01	8.86300E-01	8.82010E-01	8.86210E-01	8.83840E-01
B32A222333	8.81500E-01		8.79190E-01	8.79870E-01	8.83433E-01	8.77233E-01	8.84100E-01	8.78180E-01	8.82730E-01	8.80760E-01
B32A223333	8.75900E-01		8.74900E-01	8.74570E-01	8.78699E-01	8.73591E-01	8.77460E-01	8.74530E-01	8.77250E-01	8.76430E-01
B32A233333	8.71700E-01		8.68630E-01	8.69220E-01	8.74036E-01	8.68772E-01	8.73270E-01	8.69100E-01	8.72720E-01	8.71560E-01
B32A333333	8.69700E-01	8.57150E-01	8.67640E-01	8.67620E-01	8.72271E-01	8.67360E-01	8.70930E-01	8.66800E-01	8.69380E-01	8.69690E-01
B32A122223	8.88400E-01	8.75100E-01	8.85370E-01	8.86870E-01	8.90264E-01	8.84323E-01	8.89860E-01	8.85670E-01	8.89510E-01	8.87090E-01
B32A112233	8.91100E-01	8.77370E-01	8.85880E-01	8.90600E-01	8.92667E-01	8.87635E-01	8.92030E-01	8.87810E-01	8.90470E-01	8.89430E-01
B32A322221	8.85600E-01		8.82140E-01	8.83640E-01	8.87101E-01	8.78620E-01	8.86710E-01	8.82000E-01	8.85970E-01	8.84280E-01
B32A332211	8.82900E-01	8.69900E-01	8.79450E-01	8.82130E-01	8.84267E-01	8.78735E-01	8.82830E-01	8.79520E-01	8.83370E-01	8.82010E-01

Table 5.2 Results from the contributors: Standard deviation of mean values given in Table 5.1

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B32Auniform	3.00000E-04	1.00000E-04	4.20000E-04	4.20000E-04	1.09697E-04	2.92012E-04	1.50000E-04	2.40000E-04	3.45313E-04	3.00000E-04
B32A111111	4.00000E-04	1.00000E-04	4.10000E-04	4.20000E-04	1.20366E-04	6.11361E-04	4.70000E-04	1.60000E-04	3.97050E-04	3.50000E-04
B32A111112	4.00000E-04		4.10000E-04	4.70000E-04	1.30113E-04	5.18017E-04	4.90000E-04	1.70000E-04	4.22119E-04	3.70000E-04
B32A111122	4.00000E-04		3.70000E-04	5.50000E-04	1.17302E-04	5.27043E-04	4.90000E-04	1.60000E-04	4.11145E-04	3.20000E-04
B32A111222	4.00000E-04		4.10000E-04	5.40000E-04	1.29819E-04	5.28968E-04	4.70000E-04	1.60000E-04	4.27969E-04	3.80000E-04
B32A112222	4.00000E-04		4.00000E-04	4.30000E-04	1.19224E-04	5.52461E-04	4.70000E-04	1.60000E-04	4.07710E-04	4.40000E-04
B32A122222	4.00000E-04		3.90000E-04	5.10000E-04	2.50004E-04	6.26886E-04	4.80000E-04	1.50000E-04	4.17839E-04	3.80000E-04
B32A222222	4.00000E-04	1.00000E-04	4.90000E-04	5.10000E-04	1.19224E-04	1.98838E-04	4.80000E-04	1.60000E-04	4.16106E-04	3.20000E-04
B32A222223	4.00000E-04		3.90000E-04	4.80000E-04	1.28857E-04	5.25501E-04	4.80000E-04	1.50000E-04	3.76410E-04	3.30000E-04
B32A222233	4.00000E-04		4.10000E-04	4.90000E-04	1.21244E-04	5.71413E-04	4.80000E-04	1.70000E-04	4.18291E-04	3.10000E-04
B32A222333	4.00000E-04		3.70000E-04	4.30000E-04	1.16752E-04	5.30227E-04	4.60000E-04	1.60000E-04	4.01642E-04	3.20000E-04
B32A223333	3.00000E-04		4.00000E-04	4.90000E-04	1.16999E-04	5.38121E-04	4.60000E-04	1.60000E-04	3.63182E-04	3.70000E-04
B32A233333	3.00000E-04		3.60000E-04	4.70000E-04	1.20142E-04	5.63615E-04	4.50000E-04	1.60000E-04	3.63052E-04	3.20000E-04
B32A333333	3.00000E-04	1.00000E-04	4.00000E-04	4.40000E-04	1.32539E-04	2.03090E-04	4.50000E-04	1.70000E-04	3.54707E-04	3.40000E-04
B32A122223	4.00000E-04	1.00000E-04	4.00000E-04	5.50000E-04	1.22792E-04	1.00037E-03	4.90000E-04	1.70000E-04	4.18959E-04	3.70000E-04
B32A112233	4.00000E-04	1.00000E-04	4.10000E-04	5.10000E-04	1.17302E-04	9.23127E-04	4.80000E-04	1.60000E-04	4.30097E-04	3.30000E-04
B32A322221	4.00000E-04		4.20000E-04	4.30000E-04	1.13445E-04	9.91989E-04	4.70000E-04	1.70000E-04	4.03116E-04	4.00000E-04
B32A332211	3.00000E-04	1.00000E-04	3.80000E-04	4.60000E-04	1.15470E-04	2.09232E-04	4.80000E-04	1.70000E-04	4.07234E-04	3.20000E-04

Table 5.3 Results from the contributors: Predicted mean values of the neutronmultiplication factor for the 50 MWd/kg U average burn-up cases

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B50Auniform	7.45100E-01	7.34310E-01	7.42460E-01	7.44410E-01	7.46991E-01	7.40015E-01	7.40840E-01	7.42760E-01	7.46930E-01	7.44310E-01
B50A111111	7.93000E-01	7.79690E-01	7.90290E-01	7.92860E-01	7.95205E-01	7.89962E-01	7.94030E-01	7.91060E-01	7.95130E-01	7.92620E-01
B50A111112	7.93500E-01		7.90460E-01	7.92730E-01	7.95148E-01	7.90386E-01	7.93620E-01	7.90830E-01	7.94730E-01	7.92870E-01
B50A111122	7.93100E-01		7.89740E-01	7.91570E-01	7.94997E-01	7.93688E-01	7.93720E-01	7.91330E-01	7.93470E-01	7.92740E-01
B50A111222	7.92100E-01		7.88680E-01	7.91290E-01	7.94124E-01	7.93460E-01	7.92990E-01	7.90400E-01	7.92520E-01	7.91550E-01
B50A112222	7.91100E-01		7.87740E-01	7.89000E-01	7.92366E-01	7.86799E-01	7.90370E-01	7.88300E-01	7.92120E-01	7.90480E-01
B50A122222	7.88500E-01		7.85300E-01	7.87360E-01	7.90221E-01	7.88099E-01	7.88430E-01	7.86480E-01	7.89160E-01	7.88360E-01
B50A222222	7.86700E-01	7.72800E-01	7.83310E-01	7.85720E-01	7.88355E-01	7.82429E-01	7.87720E-01	7.84180E-01	7.87210E-01	7.85660E-01
B50A222223	7.86500E-01		7.82700E-01	7.85380E-01	7.88212E-01	7.83746E-01	7.86790E-01	7.84080E-01	7.87700E-01	7.86020E-01
B50A222233	7.85800E-01		7.81730E-01	7.84950E-01	7.87417E-01	7.83009E-01	7.85650E-01	7.83630E-01	7.86800E-01	7.85360E-01
B50A222333	7.82900E-01		7.79820E-01	7.82290E-01	7.84834E-01	7.82002E-01	7.82210E-01	7.80580E-01	7.82730E-01	7.82330E-01
B50A223333	7.77000E-01		7.73330E-01	7.75810E-01	7.78791E-01	7.76023E-01	7.75970E-01	7.74420E-01	7.77450E-01	7.76360E-01
B50A233333	7.67400E-01		7.64820E-01	7.66820E-01	7.69797E-01	7.66291E-01	7.67780E-01	7.65860E-01	7.66990E-01	7.66770E-01
B50A333333	7.61200E-01	7.48840E-01	7.58880E-01	7.61110E-01	7.63847E-01	7.61596E-01	7.61410E-01	7.59730E-01	7.62130E-01	7.60880E-01
B50A122223	7.87800E-01	7.74240E-01	7.84930E-01	7.87500E-01	7.90061E-01	7.87903E-01	7.89100E-01	7.85690E-01	7.89380E-01	7.87460E-01
B50A112233	7.90100E-01	7.75480E-01	7.86300E-01	7.88480E-01	7.91245E-01	7.90541E-01	7.90170E-01	7.87240E-01	7.90750E-01	7.89200E-01
B50A322221	7.81200E-01		7.77770E-01	7.79510E-01	7.83286E-01	7.80601E-01	7.82110E-01	7.79230E-01	7.81600E-01	7.80490E-01
B50A332211	7.73200E-01	7.60880E-01	7.70330E-01	7.73130E-01	7.75853E-01	7.69551E-01	7.74610E-01	7.71690E-01	7.74720E-01	7.73560E-01

Table 5.4 Results from the contributorStandard deviation of mean values given in Table 5.3

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B50Auniform	3.00000E-04	1.00000E-04	3.00000E-04	3.90000E-04	1.86432E-04	2.04107E-04	1.30000E-04	2.20000E-04	3.26408E-04	2.90000E-04
B50A111111	3.00000E-04	1.00000E-04	3.70000E-04	4.30000E-04	1.11524E-04	1.02599E-03	4.60000E-04	1.50000E-04	3.93589E-04	3.10000E-04
B50A111112	3.00000E-04		3.60000E-04	4.90000E-04	1.30460E-04	1.14910E-03	4.40000E-04	1.60000E-04	3.63986E-04	3.20000E-04
B50A111122	3.00000E-04		3.90000E-04	5.00000E-04	1.11204E-04	9.97284E-04	4.40000E-04	1.50000E-04	3.48333E-04	3.10000E-04
B50A111222	3.00000E-04		4.00000E-04	4.30000E-04	1.11524E-04	1.02447E-03	4.40000E-04	1.50000E-04	3.52671E-04	3.60000E-04
B50A112222	3.00000E-04		3.70000E-04	4.40000E-04	1.22792E-04	1.06623E-03	4.70000E-04	1.60000E-04	3.76257E-04	3.10000E-04
B50A122222	3.00000E-04		3.40000E-04	3.80000E-04	1.16999E-04	1.04844E-03	4.60000E-04	1.50000E-04	3.36182E-04	3.20000E-04
B50A222222	3.00000E-04	1.00000E-04	3.70000E-04	4.00000E-04	1.11204E-04	1.05436E-03	4.10000E-04	1.50000E-04	3.55819E-04	3.30000E-04
B50A222223	3.00000E-04		3.70000E-04	4.90000E-04	1.08479E-04	1.06899E-03	4.30000E-04	1.50000E-04	3.83610E-04	3.10000E-04
B50A222233	3.00000E-04		3.80000E-04	4.80000E-04	1.11524E-04	1.05327E-03	4.40000E-04	1.60000E-04	3.39111E-04	3.60000E-04
B50A222333	3.00000E-04		3.70000E-04	4.80000E-04	1.16009E-04	1.09897E-03	4.60000E-04	1.50000E-04	3.72579E-04	4.10000E-04
B50A223333	3.00000E-04		3.50000E-04	4.10000E-04	1.13445E-04	1.05470E-03	4.40000E-04	1.50000E-04	3.70844E-04	3.60000E-04
B50A233333	3.00000E-04		2.90000E-04	4.30000E-04	1.16999E-04	1.06389E-03	4.40000E-04	1.50000E-04	3.48213E-04	2.90000E-04
B50A333333	3.00000E-04	1.00000E-04	3.70000E-04	5.10000E-04	1.09393E-04	2.05741E-04	4.30000E-04	1.60000E-04	3.79541E-04	3.70000E-04
B50A122223	3.00000E-04	1.00000E-04	3.70000E-04	3.70000E-04	1.19224E-04	9.80399E-04	4.50000E-04	1.60000E-04	3.56800E-04	3.50000E-04
B50A112233	3.00000E-04	1.00000E-04	3.60000E-04	4.10000E-04	1.21928E-04	1.13754E-03	4.40000E-04	1.50000E-04	3.78769E-04	3.20000E-04
B50A322221	3.00000E-04		3.70000E-04	4.00000E-04	1.11524E-04	1.07252E-03	4.60000E-04	1.60000E-04	3.48594E-04	3.20000E-04
B50A332211	3.00000E-04	1.00000E-04	3.70000E-04	4.50000E-04	1.15181E-04	1.05762E-03	4.40000E-04	1.70000E-04	3.76514E-04	3.00000E-04

Table 5.5 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32Auniform

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean	Standard deviation*
1.000000E+00	9.007857E-03	8.500000E-03	1.162262E-02	7.696972E-03	8.937005E-03	1.163688E-02	9.631428E-03	7.457330E-03	1.061600E-02	9.647308E-03	9.475341E-03	4.634739E-04
2.000000E+00	1.628058E-02	1.630000E-02	2.075154E-02	1.390374E-02	1.628447E-02	1.995533E-02	1.732148E-02	1.331240E-02	1.962700E-02	1.692211E-02	1.706586E-02	7.780315E-04
3.000000E+00	2.511164E-02	2.400000E-02	2.994187E-02	2.080285E-02	2.402402E-02	2.756015E-02	2.505777E-02	1.939430E-02	2.950500E-02	2.392398E-02	2.493216E-02	1.071819E-03
4.000000E+00	3.309602E-02	3.120000E-02	3.876027E-02	2.751527E-02	3.123853E-02	3.440653E-02	3.244040E-02	2.603930E-02	3.944100E-02	3.132838E-02	3.254657E-02	1.344051E-03
5.000000E+00	4.479042E-02	4.160000E-02	5.089440E-02	3.775031E-02	4.154410E-02	4.183788E-02	4.226806E-02	3.521590E-02	5.256700E-02	4.132006E-02	4.297881E-02	1.679913E-03
6.000000E+00	5.648128E-02	5.130000E-02	6.147593E-02	4.881323E-02	5.095681E-02	4.829074E-02	5.128638E-02	4.373870E-02	6.336200E-02	5.137367E-02	5.270787E-02	1.910795E-03
7.000000E+00	6.923569E-02	6.200000E-02	7.277063E-02	6.213257E-02	6.165728E-02	5.631082E-02	6.185004E-02	5.572440E-02	7.120600E-02	6.312112E-02	6.360086E-02	1.827716E-03
8.000000E+00	7.992752E-02	7.070000E-02	8.097720E-02	7.171016E-02	7.035740E-02	6.525201E-02	7.064833E-02	6.451800E-02	7.494600E-02	7.149293E-02	7.205296E-02	1.700191E-03
9.000000E+00	8.657539E-02	7.460000E-02	8.267652E-02	7.874725E-02	7.495373E-02	7.204709E-02	7.599279E-02	6.975160E-02	7.566600E-02	7.410134E-02	7.651117E-02	1.573349E-03
1.000000E+01	8.591870E-02	7.830000E-02	8.335898E-02	8.400681E-02	7.941291E-02	7.992827E-02	8.251640E-02	7.742350E-02	7.478100E-02	7.453991E-02	8.001865E-02	1.227580E-03
1.100000E+01	8.455266E-02	8.010000E-02	8.250932E-02	8.287048E-02	8.058654E-02	8.229002E-02	8.409902E-02	8.220160E-02	7.174600E-02	7.551450E-02	8.064701E-02	1.276158E-03
1.200000E+01	8.012476E-02	8.010000E-02	7.646273E-02	7.948586E-02	8.015676E-02	8.086257E-02	8.236323E-02	8.582380E-02	7.070500E-02	7.618557E-02	7.922703E-02	1.282551E-03
1.300000E+01	7.167762E-02	7.820000E-02	7.059017E-02	7.435617E-02	7.760648E-02	7.508273E-02	7.854806E-02	8.490410E-02	7.013200E-02	7.505669E-02	7.561540E-02	1.408440E-03
1.400000E+01	6.284720E-02	7.220000E-02	6.194000E-02	6.916966E-02	7.210629E-02	6.627414E-02	7.023840E-02	7.955810E-02	6.743400E-02	7.220374E-02	6.939715E-02	1.630252E-03
1.500000E+01	4.930231E-02	5.860000E-02	4.711016E-02	5.774149E-02	5.897555E-02	5.417460E-02	5.501515E-02	6.562190E-02	5.478100E-02	6.063319E-02	5.619554E-02	1.706159E-03
1.600000E+01	4.040294E-02	4.690000E-02	3.578134E-02	4.737659E-02	4.701863E-02	4.586543E-02	4.333504E-02	5.197850E-02	4.216600E-02	4.904299E-02	4.498675E-02	1.475902E-03
1.700000E+01	3.448095E-02	4.030000E-02	3.029948E-02	4.266085E-02	4.027624E-02	4.118552E-02	3.733857E-02	4.431750E-02	3.558100E-02	4.331045E-02	3.897506E-02	1.409954E-03
1.800000E+01	2.724006E-02	3.320000E-02	2.468046E-02	3.578609E-02	3.264706E-02	3.546589E-02	3.090090E-02	3.616290E-02	2.953100E-02	3.522948E-02	3.208438E-02	1.244679E-03
1.900000E+01	2.116761E-02	2.540000E-02	1.836941E-02	2.794545E-02	2.487973E-02	2.843843E-02	2.393464E-02	2.746910E-02	2.262000E-02	2.625297E-02	2.464774E-02	1.014066E-03
2.000000E+01	1.409642E-02	1.740000E-02	1.226755E-02	1.939867E-02	1.704254E-02	2.096529E-02	1.632160E-02	1.876310E-02	1.525500E-02	1.821684E-02	1.697270E-02	8.202501E-04
2.100000E+01	7.682360E-03	9.100000E-03	6.759417E-03	1.012952E-02	9.337931E-03	1.216968E-02	8.892327E-03	1.062400E-02	8.333600E-03	1.058277E-02	9.361161E-03	4.999681E-04
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000002E+00	1.000000E+00	1.000000E+00	

* The standard deviation values given are the standard deviations of the respective sample means.

Table 5.6 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A111111

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.098968E-04	2.000000E-04	0.000000E+00	4.773608E-05	4.723273E-04	5.182417E-03	0.000000E+00	1.150300E-05	1.018000E-03	0.000000E+00	1.020269E-03	7.057029E-04
2.000000E+00	3.240960E-04	3.000000E-04	0.000000E+00	6.355666E-05	6.100632E-04	6.328425E-03	0.000000E+00	9.675610E-06	1.328700E-03	0.000000E+00	1.280645E-03	8.578127E-04
3.000000E+00	3.371322E-04	3.000000E-04	0.000000E+00	3.559884E-05	5.972451E-04	5.211079E-03	0.000000E+00	1.776520E-05	1.225100E-03	0.000000E+00	1.103417E-03	7.019606E-04
4.000000E+00	2.437099E-04	2.000000E-04	5.849032E-10	1.430152E-05	4.984757E-04	3.536948E-03	0.000000E+00	1.127430E-05	9.815700E-04	0.000000E+00	7.837543E-04	4.761401E-04
5.000000E+00	1.473743E-04	2.000000E-04	2.374165E-06	1.496198E-05	4.028600E-04	2.042424E-03	5.788757E-07	1.713210E-05	8.333200E-04	1.598252E-08	5.225818E-04	2.751108E-04
6.000000E+00	8.492156E-05	2.000000E-04	2.293796E-05	1.744633E-05	3.725940E-04	1.170439E-03	1.593757E-06	2.341820E-05	7.392000E-04	1.494678E-06	3.725741E-04	1.641394E-04
7.000000E+00	1.135612E-04	2.000000E-04	4.841146E-05	4.870645E-05	3.164764E-04	7.834359E-04	2.059582E-05	4.023150E-05	6.162500E-04	9.644409E-06	3.026659E-04	1.101226E-04
8.000000E+00	2.164542E-04	2.000000E-04	8.056130E-05	9.922154E-05	3.273222E-04	8.815326E-04	4.423077E-05	9.510620E-05	6.631300E-04	5.260699E-05	3.546810E-04	1.143442E-04
9.000000E+00	3.323897E-04	3.000000E-04	1.524486E-04	1.562752E-04	3.639378E-04	1.251014E-03	1.255465E-04	1.836390E-04	9.200000E-04	1.517775E-04	5.010365E-04	1.577559E-04
1.000000E+01	5.102776E-04	7.000000E-04	4.203464E-04	4.819840E-04	6.013903E-04	1.928263E-03	4.656276E-04	4.579220E-04	1.524300E-03	3.837511E-04	8.863052E-04	2.234461E-04
1.100000E+01	8.217236E-04	1.200000E-03	8.537924E-04	1.022190E-03	1.037781E-03	2.517348E-03	9.792763E-04	9.240670E-04	2.171700E-03	8.344355E-04	1.384973E-03	2.543557E-04
1.200000E+01	2.526683E-03	2.700000E-03	2.105888E-03	2.586974E-03	2.463126E-03	3.132769E-03	2.637928E-03	2.317990E-03	3.332900E-03	2.185661E-03	2.722920E-03	1.404948E-04
1.300000E+01	6.145701E-03	5.700000E-03	5.071074E-03	6.101642E-03	5.477953E-03	3.360294E-03	6.303076E-03	5.425220E-03	6.375300E-03	5.246412E-03	5.512302E-03	3.832323E-04
1.400000E+01	1.227264E-02	1.320000E-02	1.314724E-02	1.343784E-02	1.263146E-02	1.002652E-02	1.421526E-02	1.249200E-02	1.264500E-02	1.295009E-02	1.238649E-02	4.222255E-04
1.500000E+01	3.980064E-02	4.440000E-02	4.356609E-02	4.325003E-02	4.282717E-02	3.576136E-02	4.533728E-02	4.222980E-02	4.276800E-02	4.495740E-02	4.157671E-02	1.103598E-03
1.600000E+01	8.372627E-02	9.180000E-02	9.002421E-02	8.855256E-02	8.885963E-02	7.698233E-02	9.100300E-02	8.788710E-02	8.922700E-02	9.114149E-02	8.671927E-02	1.859177E-03
1.700000E+01	1.209280E-01	1.280000E-01	1.266882E-01	1.250303E-01	1.254178E-01	1.127378E-01	1.268304E-01	1.233850E-01	1.252800E-01	1.271366E-01	1.229684E-01	1.889274E-03
1.800000E+01	1.694569E-01	1.732000E-01	1.715601E-01	1.693828E-01	1.710443E-01	1.622345E-01	1.706174E-01	1.695160E-01	1.698500E-01	1.720526E-01	1.692406E-01	1.277368E-03
1.900000E+01	1.986657E-01	1.986000E-01	1.965463E-01	1.978842E-01	1.973374E-01	1.942301E-01	1.945422E-01	1.966270E-01	1.940000E-01	1.973800E-01	1.967635E-01	7.343619E-04
2.000000E+01	2.066518E-01	1.988000E-01	2.000100E-01	2.018470E-01	2.001351E-01	2.095888E-01	1.993915E-01	2.015790E-01	1.971300E-01	1.987910E-01	2.022474E-01	1.665024E-03
2.100000E+01	1.564841E-01	1.394000E-01	1.497000E-01	1.499246E-01	1.482057E-01	1.611121E-01	1.474844E-01	1.567490E-01	1.473700E-01	1.467251E-01	1.513208E-01	2.766136E-03
Sum	1.000000E+00	9.998000E-01	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999998E-01	9.999995E-01	1.000000E+00	9.999713E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.7 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A111112

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	3.200651E-05		0.000000E+00	9.361282E-05	4.470305E-04	5.477696E-03	0.000000E+00	0.000000E+00	1.482100E-03	0.000000E+00	1.506489E-03	1.026252E-03
2.000000E+00	6.657353E-05		0.000000E+00	9.012509E-05	6.043752E-04	6.780701E-03	0.000000E+00	0.000000E+00	1.972000E-03	0.000000E+00	1.902755E-03	1.267717E-03
3.000000E+00	9.289508E-05		1.656044E-07	8.314962E-05	6.057638E-04	5.724875E-03	0.000000E+00	0.000000E+00	1.815800E-03	0.000000E+00	1.664497E-03	1.063040E-03
4.000000E+00	5.697158E-05		6.972025E-06	1.106471E-04	5.181374E-04	3.796833E-03	0.000000E+00	1.403860E-08	1.377000E-03	4.941941E-08	1.171918E-03	6.974621E-04
5.000000E+00	6.945412E-05		1.687492E-05	8.431219E-05	4.242693E-04	2.173229E-03	1.111613E-06	1.990720E-06	9.108600E-04	2.871547E-06	7.324249E-04	3.912988E-04
6.000000E+00	5.829967E-05		4.315697E-05	6.651969E-05	3.626010E-04	1.263126E-03	3.458107E-06	7.169610E-06	7.332000E-04	7.941357E-06	4.967492E-04	2.278786E-04
7.000000E+00	7.873601E-05		9.405878E-05	1.076143E-04	3.044980E-04	9.314218E-04	1.853582E-05	2.554210E-05	7.335200E-04	2.557447E-05	4.311580E-04	1.712617E-04
8.000000E+00	1.262092E-04		2.264905E-04	1.510846E-04	2.955143E-04	1.106084E-03	7.384343E-05	7.265370E-05	8.604400E-04	7.372534E-05	5.078664E-04	2.000277E-04
9.000000E+00	1.613128E-04		3.395475E-04	2.368627E-04	3.292987E-04	1.518604E-03	2.112448E-04	1.388220E-04	9.580100E-04	1.480356E-04	6.408176E-04	2.608897E-04
1.000000E+01	3.707874E-04		5.300111E-04	4.755450E-04	5.568755E-04	2.411804E-03	5.727397E-04	3.770880E-04	1.437200E-03	3.845789E-04	1.050442E-03	3.898033E-04
1.100000E+01	8.776184E-04		8.582048E-04	7.839821E-04	9.589461E-04	2.860775E-03	8.831065E-04	7.996340E-04	1.994000E-03	7.653755E-04	1.495064E-03	4.054875E-04
1.200000E+01	2.099988E-03		2.245041E-03	2.033501E-03	2.299981E-03	3.549220E-03	2.205853E-03	2.138130E-03	3.601100E-03	2.166740E-03	2.716758E-03	3.532707E-04
1.300000E+01	4.586532E-03		4.698757E-03	4.792350E-03	5.230520E-03	3.572955E-03	4.767874E-03	5.033450E-03	6.481000E-03	5.058336E-03	4.932671E-03	4.729887E-04
1.400000E+01	1.125550E-02		1.089274E-02	1.220707E-02	1.205721E-02	9.417605E-03	1.131606E-02	1.174900E-02	1.255800E-02	1.211361E-02	1.149908E-02	5.624031E-04
1.500000E+01	3.992193E-02		4.057466E-02	4.144339E-02	4.133826E-02	3.390014E-02	4.077277E-02	4.043810E-02	4.143100E-02	4.120968E-02	3.960694E-02	1.455403E-03
1.600000E+01	8.287971E-02		8.358109E-02	8.603079E-02	8.544937E-02	7.462751E-02	8.726198E-02	8.332410E-02	8.469100E-02	8.569678E-02	8.273567E-02	2.095332E-03
1.700000E+01	1.229888E-01		1.212556E-01	1.254574E-01	1.242459E-01	1.134986E-01	1.252154E-01	1.218920E-01	1.218500E-01	1.240749E-01	1.216081E-01	2.115469E-03
1.800000E+01	1.726841E-01		1.705704E-01	1.717077E-01	1.715201E-01	1.617792E-01	1.714985E-01	1.702780E-01	1.672300E-01	1.716249E-01	1.689842E-01	2.031338E-03
1.900000E+01	2.011852E-01		2.026287E-01	1.993063E-01	1.994214E-01	1.951486E-01	2.003245E-01	1.992400E-01	1.950700E-01	1.998568E-01	1.980263E-01	1.236618E-03
2.000000E+01	2.060003E-01		2.068001E-01	2.035523E-01	2.026114E-01	2.100844E-01	2.042277E-01	2.055900E-01	2.014800E-01	2.046064E-01	2.047457E-01	1.528396E-03
2.100000E+01	1.544071E-01		1.546374E-01	1.511857E-01	1.504186E-01	1.603767E-01	1.506452E-01	1.588950E-01	1.513400E-01	1.521837E-01	1.535456E-01	1.838717E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000006E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.8 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A111122

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.848442E-04		0.000000E+00	0.000000E+00	4.837745E-04	7.959228E-03	3.133659E-09	2.446970E-06	1.285600E-03	0.000000E+00	1.652649E-03	1.276490E-03
2.000000E+00	2.257046E-04		0.000000E+00	0.000000E+00	6.569860E-04	9.815419E-03	5.289516E-06	3.204760E-06	1.741900E-03	0.000000E+00	2.074751E-03	1.570899E-03
3.000000E+00	1.635754E-04		0.000000E+00	0.000000E+00	6.685777E-04	8.958633E-03	3.590928E-06	3.827010E-06	1.725900E-03	1.521159E-08	1.920684E-03	1.432660E-03
4.000000E+00	1.258238E-04		0.000000E+00	2.286163E-09	5.656134E-04	5.817632E-03	1.411185E-06	4.295270E-06	1.325400E-03	3.297506E-07	1.306696E-03	9.254292E-04
5.000000E+00	8.334205E-05		5.360677E-08	1.077677E-05	4.743861E-04	3.321844E-03	4.791717E-06	6.596760E-06	9.583400E-04	1.601448E-06	8.082168E-04	5.249074E-04
6.000000E+00	4.024475E-05		3.804644E-06	3.267745E-05	4.291791E-04	1.846473E-03	7.474178E-06	9.505860E-06	9.437900E-04	6.867035E-06	5.461111E-04	2.998187E-04
7.000000E+00	2.270017E-05		2.320126E-05	7.461225E-05	3.675591E-04	1.129818E-03	7.926130E-05	2.385980E-05	7.339100E-04	1.833613E-05	3.928513E-04	1.854351E-04
8.000000E+00	4.089385E-05		7.134842E-05	1.539538E-04	3.807188E-04	1.186488E-03	9.310071E-05	6.072870E-05	8.737500E-04	5.892792E-05	4.392800E-04	1.976838E-04
9.000000E+00	1.563069E-04		1.800134E-04	1.850967E-04	4.274550E-04	1.441007E-03	8.394965E-05	1.547260E-04	1.008500E-03	1.381115E-04	5.453241E-04	2.271153E-04
1.000000E+01	5.424323E-04		5.891239E-04	3.606342E-04	6.664574E-04	2.116003E-03	2.239969E-04	4.432390E-04	1.375000E-03	3.671210E-04	8.945215E-04	2.916686E-04
1.100000E+01	1.115551E-03		1.246915E-03	6.344305E-04	1.098791E-03	2.550963E-03	5.872224E-04	8.849550E-04	2.147000E-03	8.704958E-04	1.397414E-03	3.151826E-04
1.200000E+01	2.856895E-03		2.910600E-03	1.973728E-03	2.511064E-03	3.004072E-03	2.111709E-03	2.211350E-03	3.558500E-03	2.449626E-03	2.708932E-03	2.216740E-04
1.300000E+01	6.292487E-03		5.934908E-03	4.955702E-03	5.587423E-03	2.948248E-03	5.087173E-03	5.061250E-03	6.768000E-03	5.409955E-03	5.290764E-03	5.432983E-04
1.400000E+01	1.283408E-02		1.318620E-02	1.159181E-02	1.243558E-02	8.896505E-03	1.167919E-02	1.182720E-02	1.305500E-02	1.254697E-02	1.178792E-02	6.189519E-04
1.500000E+01	4.148532E-02		4.156524E-02	4.000283E-02	4.073046E-02	3.256994E-02	4.183302E-02	3.989940E-02	3.956000E-02	4.265547E-02	3.934636E-02	1.401734E-03
1.600000E+01	8.209344E-02		8.270434E-02	8.271243E-02	8.299051E-02	7.219055E-02	8.416296E-02	8.173250E-02	7.941000E-02	8.597498E-02	8.042999E-02	1.769028E-03
1.700000E+01	1.175136E-01		1.202825E-01	1.203456E-01	1.200804E-01	1.083886E-01	1.197750E-01	1.180060E-01	1.152600E-01	1.221159E-01	1.165039E-01	1.771752E-03
1.800000E+01	1.690469E-01		1.699886E-01	1.719654E-01	1.705369E-01	1.596653E-01	1.699255E-01	1.695450E-01	1.677700E-01	1.711615E-01	1.677483E-01	1.660980E-03
1.900000E+01	2.003809E-01		1.990693E-01	2.023536E-01	2.005154E-01	1.945984E-01	2.021725E-01	2.000470E-01	1.987800E-01	2.000406E-01	1.994157E-01	1.060665E-03
2.000000E+01	2.079556E-01		2.056660E-01	2.082401E-01	2.053746E-01	2.097577E-01	2.075811E-01	2.077610E-01	2.062900E-01	2.039422E-01	2.074533E-01	6.150302E-04
2.100000E+01	1.568394E-01		1.565779E-01	1.544066E-01	1.530182E-01	1.618372E-01	1.545817E-01	1.623130E-01	1.554300E-01	1.522410E-01	1.573366E-01	1.582622E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000001E+00	1.000000E+00	1.000000E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.9 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A111222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.100897E-04		0.000000E+00	6.163808E-05	6.355265E-04	6.599247E-03	0.000000E+00	5.621460E-06	1.494800E-03	0.000000E+00	1.484487E-03	1.048525E-03
2.000000E+00	1.596623E-04		0.000000E+00	1.032730E-04	7.908876E-04	8.069656E-03	0.000000E+00	3.679350E-06	1.936200E-03	0.000000E+00	1.843893E-03	1.279717E-03
3.000000E+00	2.003861E-04		2.638445E-06	1.336085E-04	7.616982E-04	6.894056E-03	0.000000E+00	5.102010E-06	1.787900E-03	0.000000E+00	1.630458E-03	1.086469E-03
4.000000E+00	1.854143E-04		8.018531E-06	1.268899E-04	6.352546E-04	4.878063E-03	0.000000E+00	3.242920E-06	1.419400E-03	0.000000E+00	1.208044E-03	7.639374E-04
5.000000E+00	1.213562E-04		1.909468E-05	9.518018E-05	5.018981E-04	3.011320E-03	0.000000E+00	8.053780E-06	1.020400E-03	7.215633E-09	7.930347E-04	4.694533E-04
6.000000E+00	6.507715E-05		6.536960E-05	9.100651E-05	4.314395E-04	1.922816E-03	8.154125E-07	1.360300E-05	9.014300E-04	2.857438E-06	5.708953E-04	3.029362E-04
7.000000E+00	8.111876E-05		1.913958E-04	1.087701E-04	3.728768E-04	1.359432E-03	1.125831E-05	3.069650E-05	9.221400E-04	1.637533E-05	4.791724E-04	2.220474E-04
8.000000E+00	1.668810E-04		3.092725E-04	1.932616E-04	3.815080E-04	1.448084E-03	3.384197E-05	8.690620E-05	9.007000E-04	5.945622E-05	5.295568E-04	2.193875E-04
9.000000E+00	2.916412E-04		3.336569E-04	3.138910E-04	4.408184E-04	1.655143E-03	1.623742E-04	1.736690E-04	1.153700E-03	1.693619E-04	6.714771E-04	2.431253E-04
1.000000E+01	8.244017E-04		6.539513E-04	5.532666E-04	7.029121E-04	2.257545E-03	3.757315E-04	4.972520E-04	1.820800E-03	4.199629E-04	1.109363E-03	3.030287E-04
1.100000E+01	1.549626E-03		1.201322E-03	1.014407E-03	1.169667E-03	2.876869E-03	7.737716E-04	1.019860E-03	2.518400E-03	8.742257E-04	1.691471E-03	3.312027E-04
1.200000E+01	3.089366E-03		2.815476E-03	2.755135E-03	2.637312E-03	3.926961E-03	2.312744E-03	2.502120E-03	3.832100E-03	2.326496E-03	3.123832E-03	2.521251E-04
1.300000E+01	5.930682E-03		6.628667E-03	6.097639E-03	5.794287E-03	4.316430E-03	5.581572E-03	5.619180E-03	6.539400E-03	5.389914E-03	5.716270E-03	3.078974E-04
1.400000E+01	1.137326E-02		1.448932E-02	1.339648E-02	1.291339E-02	1.151239E-02	1.271554E-02	1.253290E-02	1.283500E-02	1.276066E-02	1.242724E-02	3.317149E-04
1.500000E+01	3.809212E-02		4.363434E-02	4.229156E-02	4.165390E-02	3.604049E-02	4.117045E-02	4.084160E-02	3.975300E-02	4.228854E-02	3.977878E-02	9.622886E-04
1.600000E+01	7.896564E-02		8.380679E-02	8.413521E-02	8.281884E-02	7.313442E-02	8.223158E-02	8.152520E-02	7.943500E-02	8.420150E-02	8.000239E-02	1.590569E-03
1.700000E+01	1.138972E-01		1.167703E-01	1.186953E-01	1.178621E-01	1.065593E-01	1.192931E-01	1.160720E-01	1.147500E-01	1.190391E-01	1.146393E-01	1.777075E-03
1.800000E+01	1.626991E-01		1.635197E-01	1.651147E-01	1.642652E-01	1.529815E-01	1.664729E-01	1.626710E-01	1.617100E-01	1.659975E-01	1.615736E-01	1.789766E-03
1.900000E+01	2.021035E-01		2.007239E-01	2.003874E-01	2.003400E-01	1.930725E-01	2.026992E-01	1.998180E-01	1.975000E-01	2.022618E-01	1.988702E-01	1.307737E-03
2.000000E+01	2.149833E-01		2.077562E-01	2.085311E-01	2.086397E-01	2.129151E-01	2.097968E-01	2.108180E-01	2.086300E-01	2.080403E-01	2.107529E-01	1.102795E-03
2.100000E+01	1.651101E-01		1.570704E-01	1.558003E-01	1.562508E-01	1.645686E-01	1.563684E-01	1.657520E-01	1.591300E-01	1.561519E-01	1.611020E-01	1.872934E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	9.999904E-01	1.000000E+00	9.999983E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.9 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A111222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.100897E-04		0.000000E+00	6.163808E-05	6.355265E-04	6.599247E-03	0.000000E+00	5.621460E-06	1.494800E-03	0.000000E+00	1.484487E-03	1.048525E-03
2.000000E+00	1.596623E-04		0.000000E+00	1.032730E-04	7.908876E-04	8.069656E-03	0.000000E+00	3.679350E-06	1.936200E-03	0.000000E+00	1.843893E-03	1.279717E-03
3.000000E+00	2.003861E-04		2.638445E-06	1.336085E-04	7.616982E-04	6.894056E-03	0.000000E+00	5.102010E-06	1.787900E-03	0.000000E+00	1.630458E-03	1.086469E-03
4.000000E+00	1.854143E-04		8.018531E-06	1.268899E-04	6.352546E-04	4.878063E-03	0.000000E+00	3.242920E-06	1.419400E-03	0.000000E+00	1.208044E-03	7.639374E-04
5.000000E+00	1.213562E-04		1.909468E-05	9.518018E-05	5.018981E-04	3.011320E-03	0.000000E+00	8.053780E-06	1.020400E-03	7.215633E-09	7.930347E-04	4.694533E-04
6.000000E+00	6.507715E-05		6.536960E-05	9.100651E-05	4.314395E-04	1.922816E-03	8.154125E-07	1.360300E-05	9.014300E-04	2.857438E-06	5.708953E-04	3.029362E-04
7.000000E+00	8.111876E-05		1.913958E-04	1.087701E-04	3.728768E-04	1.359432E-03	1.125831E-05	3.069650E-05	9.221400E-04	1.637533E-05	4.791724E-04	2.220474E-04
8.000000E+00	1.668810E-04		3.092725E-04	1.932616E-04	3.815080E-04	1.448084E-03	3.384197E-05	8.690620E-05	9.007000E-04	5.945622E-05	5.295568E-04	2.193875E-04
9.000000E+00	2.916412E-04		3.336569E-04	3.138910E-04	4.408184E-04	1.655143E-03	1.623742E-04	1.736690E-04	1.153700E-03	1.693619E-04	6.714771E-04	2.431253E-04
1.000000E+01	8.244017E-04		6.539513E-04	5.532666E-04	7.029121E-04	2.257545E-03	3.757315E-04	4.972520E-04	1.820800E-03	4.199629E-04	1.109363E-03	3.030287E-04
1.100000E+01	1.549626E-03		1.201322E-03	1.014407E-03	1.169667E-03	2.876869E-03	7.737716E-04	1.019860E-03	2.518400E-03	8.742257E-04	1.691471E-03	3.312027E-04
1.200000E+01	3.089366E-03		2.815476E-03	2.755135E-03	2.637312E-03	3.926961E-03	2.312744E-03	2.502120E-03	3.832100E-03	2.326496E-03	3.123832E-03	2.521251E-04
1.300000E+01	5.930682E-03		6.628667E-03	6.097639E-03	5.794287E-03	4.316430E-03	5.581572E-03	5.619180E-03	6.539400E-03	5.389914E-03	5.716270E-03	3.078974E-04
1.400000E+01	1.137326E-02		1.448932E-02	1.339648E-02	1.291339E-02	1.151239E-02	1.271554E-02	1.253290E-02	1.283500E-02	1.276066E-02	1.242724E-02	3.317149E-04
1.500000E+01	3.809212E-02		4.363434E-02	4.229156E-02	4.165390E-02	3.604049E-02	4.117045E-02	4.084160E-02	3.975300E-02	4.228854E-02	3.977878E-02	9.622886E-04
1.600000E+01	7.896564E-02		8.380679E-02	8.413521E-02	8.281884E-02	7.313442E-02	8.223158E-02	8.152520E-02	7.943500E-02	8.420150E-02	8.000239E-02	1.590569E-03
1.700000E+01	1.138972E-01		1.167703E-01	1.186953E-01	1.178621E-01	1.065593E-01	1.192931E-01	1.160720E-01	1.147500E-01	1.190391E-01	1.146393E-01	1.777075E-03
1.800000E+01	1.626991E-01		1.635197E-01	1.651147E-01	1.642652E-01	1.529815E-01	1.664729E-01	1.626710E-01	1.617100E-01	1.659975E-01	1.615736E-01	1.789766E-03
1.900000E+01	2.021035E-01		2.007239E-01	2.003874E-01	2.003400E-01	1.930725E-01	2.026992E-01	1.998180E-01	1.975000E-01	2.022618E-01	1.988702E-01	1.307737E-03
2.000000E+01	2.149833E-01		2.077562E-01	2.085311E-01	2.086397E-01	2.129151E-01	2.097968E-01	2.108180E-01	2.086300E-01	2.080403E-01	2.107529E-01	1.102795E-03
2.100000E+01	1.651101E-01		1.570704E-01	1.558003E-01	1.562508E-01	1.645686E-01	1.563684E-01	1.657520E-01	1.591300E-01	1.561519E-01	1.611020E-01	1.872934E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	9.999904E-01	1.000000E+00	9.999983E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.10 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A112222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.030665E-04		0.000000E+00	1.564911E-04	5.490673E-04	9.371623E-03	0.000000E+00	1.657290E-05	2.484700E-03	0.000000E+00	2.113587E-03	1.500382E-03
2.000000E+00	1.374221E-04		0.000000E+00	2.233900E-04	7.137087E-04	1.146091E-02	0.000000E+00	1.829160E-05	3.249100E-03	0.000000E+00	2.633805E-03	1.833632E-03
3.000000E+00	1.467920E-04		0.000000E+00	2.128649E-04	7.378401E-04	9.892399E-03	0.000000E+00	1.883380E-05	2.881500E-03	0.000000E+00	2.315038E-03	1.577105E-03
4.000000E+00	1.499750E-04		1.466903E-08	1.746149E-04	6.149277E-04	7.381023E-03	0.000000E+00	2.159230E-05	2.332300E-03	0.000000E+00	1.779072E-03	1.174168E-03
5.000000E+00	1.192533E-04		1.454293E-06	9.236467E-05	5.291931E-04	4.609426E-03	5.418762E-06	3.520150E-05	1.697800E-03	2.860870E-07	1.180540E-03	7.319227E-04
6.000000E+00	1.229879E-04		4.451146E-06	9.724218E-05	4.482717E-04	2.939141E-03	7.520319E-06	5.734320E-05	1.521200E-03	3.907421E-06	8.643644E-04	4.725345E-04
7.000000E+00	1.649505E-04		3.433412E-05	1.677351E-04	3.764715E-04	1.680276E-03	2.375935E-05	9.684050E-05	1.241400E-03	2.534883E-05	6.212789E-04	2.741611E-04
8.000000E+00	2.730861E-04		7.469571E-05	3.388074E-04	4.216352E-04	1.577957E-03	9.568962E-05	1.876110E-04	1.426400E-03	8.781623E-05	7.042494E-04	2.550230E-04
9.000000E+00	4.684242E-04		2.139375E-04	5.334457E-04	5.009040E-04	1.807817E-03	3.086289E-04	3.285230E-04	1.527900E-03	2.374100E-04	8.611690E-04	2.592185E-04
1.000000E+01	8.271841E-04		5.138597E-04	1.044301E-03	8.630993E-04	2.518396E-03	7.587169E-04	7.238400E-04	1.856300E-03	7.052860E-04	1.305520E-03	2.947064E-04
1.100000E+01	1.422450E-03		9.367847E-04	1.703535E-03	1.468759E-03	3.241056E-03	1.178325E-03	1.364000E-03	2.288900E-03	1.389873E-03	1.914783E-03	2.993482E-04
1.200000E+01	3.130291E-03		2.745322E-03	3.046134E-03	3.206396E-03	4.057585E-03	3.321744E-03	3.030320E-03	3.871200E-03	3.156263E-03	3.390321E-03	1.849319E-04
1.300000E+01	7.011168E-03		5.966013E-03	6.813114E-03	6.811718E-03	4.093119E-03	7.680626E-03	6.505810E-03	6.893400E-03	6.666342E-03	6.354721E-03	4.574473E-04
1.400000E+01	1.452446E-02		1.361950E-02	1.418586E-02	1.450514E-02	1.132097E-02	1.488505E-02	1.402480E-02	1.407300E-02	1.404924E-02	1.377237E-02	4.978972E-04
1.500000E+01	4.418758E-02		4.412528E-02	4.278861E-02	4.467429E-02	3.640599E-02	4.385619E-02	4.363950E-02	4.235800E-02	4.364568E-02	4.234233E-02	1.237810E-03
1.600000E+01	8.548058E-02		8.719015E-02	8.348246E-02	8.597255E-02	7.343162E-02	8.647954E-02	8.409780E-02	8.154100E-02	8.589014E-02	8.233434E-02	1.892540E-03
1.700000E+01	1.185913E-01		1.205513E-01	1.182411E-01	1.192352E-01	1.048918E-01	1.186818E-01	1.175520E-01	1.142900E-01	1.203589E-01	1.154669E-01	2.230268E-03
1.800000E+01	1.621329E-01		1.628118E-01	1.634737E-01	1.627862E-01	1.479222E-01	1.628916E-01	1.616180E-01	1.580300E-01	1.642686E-01	1.593272E-01	2.408557E-03
1.900000E+01	1.915399E-01		1.908966E-01	1.948951E-01	1.931211E-01	1.837543E-01	1.926712E-01	1.921750E-01	1.908200E-01	1.945822E-01	1.910509E-01	1.569082E-03
2.000000E+01	2.082430E-01		2.086077E-01	2.094763E-01	2.064569E-01	2.105600E-01	2.089637E-01	2.088800E-01	2.072100E-01	2.080855E-01	2.084710E-01	6.121228E-04
2.100000E+01	1.612232E-01		1.617066E-01	1.588529E-01	1.560068E-01	1.670824E-01	1.581903E-01	1.656080E-01	1.584100E-01	1.568471E-01	1.611972E-01	1.772908E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999999E-01	1.000004E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.11 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A122222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	8.629360E-04		0.000000E+00	2.745639E-04	6.916073E-04	1.235121E-02	1.265927E-08	1.323190E-04	4.572100E-03	0.000000E+00	2.697822E-03	1.717035E-03
2.000000E+00	9.822853E-04		0.000000E+00	3.770859E-04	9.207418E-04	1.542575E-02	7.244900E-06	1.741570E-04	5.836900E-03	0.000000E+00	3.389166E-03	2.146998E-03
3.000000E+00	9.508813E-04		2.532790E-07	4.178009E-04	8.929615E-04	1.399304E-02	1.813919E-05	1.712400E-04	5.406900E-03	2.650318E-07	3.121566E-03	1.944077E-03
4.000000E+00	7.952153E-04		3.623584E-06	3.457627E-04	7.366554E-04	1.065888E-02	2.063732E-05	1.562940E-04	4.226100E-03	1.721681E-06	2.419934E-03	1.478403E-03
5.000000E+00	5.652331E-04		8.640311E-06	3.023193E-04	5.872163E-04	6.776701E-03	4.085612E-05	1.265710E-04	2.948800E-03	1.055141E-05	1.621100E-03	9.385494E-04
6.000000E+00	4.563156E-04		3.968844E-05	2.366821E-04	5.035706E-04	4.248015E-03	9.895962E-05	1.206700E-04	2.180000E-03	2.673498E-05	1.120602E-03	5.885813E-04
7.000000E+00	3.187119E-04		1.341454E-04	2.772922E-04	4.594582E-04	2.620568E-03	1.289051E-04	1.331490E-04	1.489500E-03	5.605972E-05	7.753691E-04	3.552839E-04
8.000000E+00	4.777893E-04		3.911631E-04	4.351153E-04	5.320817E-04	2.312626E-03	2.661030E-04	2.693150E-04	1.641400E-03	1.358645E-04	8.477757E-04	3.029783E-04
9.000000E+00	7.221306E-04		6.304028E-04	5.201131E-04	6.652199E-04	2.701509E-03	4.581315E-04	4.642430E-04	1.843900E-03	2.992995E-04	1.053607E-03	3.304910E-04
1.000000E+01	1.282526E-03		1.406810E-03	1.054602E-03	1.164635E-03	3.589633E-03	8.586338E-04	1.038470E-03	2.603300E-03	8.753545E-04	1.655971E-03	3.902396E-04
1.100000E+01	2.240147E-03		2.697388E-03	1.746128E-03	1.951914E-03	4.557991E-03	1.754514E-03	1.924140E-03	3.744600E-03	1.599440E-03	2.559919E-03	4.249043E-04
1.200000E+01	4.432112E-03		5.108049E-03	3.803914E-03	4.104095E-03	5.635207E-03	3.833785E-03	4.353320E-03	6.183700E-03	3.816718E-03	4.620876E-03	3.495748E-04
1.300000E+01	8.836545E-03		9.598635E-03	8.158739E-03	8.281440E-03	5.331165E-03	8.461420E-03	8.999530E-03	1.080400E-02	8.618704E-03	8.410406E-03	6.137754E-04
1.400000E+01	1.671996E-02		1.797444E-02	1.705203E-02	1.708094E-02	1.248384E-02	1.651780E-02	1.761060E-02	1.960900E-02	1.745320E-02	1.672488E-02	8.071964E-04
1.500000E+01	4.809443E-02		5.002205E-02	4.974995E-02	4.929034E-02	3.744906E-02	4.778028E-02	4.942630E-02	5.060100E-02	4.992623E-02	4.748448E-02	1.711628E-03
1.600000E+01	8.896544E-02		9.173276E-02	9.286797E-02	9.127410E-02	7.435407E-02	8.986913E-02	9.051830E-02	9.095700E-02	9.137048E-02	8.840086E-02	2.385546E-03
1.700000E+01	1.207426E-01		1.225201E-01	1.257653E-01	1.241712E-01	1.060517E-01	1.230661E-01	1.227320E-01	1.213200E-01	1.239791E-01	1.205498E-01	2.498736E-03
1.800000E+01	1.631928E-01		1.634805E-01	1.655883E-01	1.647285E-01	1.483912E-01	1.651514E-01	1.633900E-01	1.591600E-01	1.659919E-01	1.613717E-01	2.309965E-03
1.900000E+01	1.891593E-01		1.873362E-01	1.894087E-01	1.894042E-01	1.786485E-01	1.928321E-01	1.880830E-01	1.796200E-01	1.915983E-01	1.867365E-01	2.042155E-03
2.000000E+01	1.962828E-01		1.934998E-01	1.930814E-01	1.934518E-01	1.941934E-01	1.970346E-01	1.939620E-01	1.824000E-01	1.949756E-01	1.929151E-01	1.838250E-03
2.100000E+01	1.539197E-01		1.534153E-01	1.485363E-01	1.491073E-01	1.582259E-01	1.518013E-01	1.562150E-01	1.428400E-01	1.492644E-01	1.515208E-01	1.969509E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	9.999882E-01	1.000000E+00	9.999984E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.12 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A222222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.484740E-04	7.000000E-04	7.397901E-06	1.041886E-03	8.277153E-04	3.156225E-03	1.247755E-05	4.001170E-05	4.677700E-03	0.000000E+00	1.179099E-03	5.479085E-04
2.000000E+00	2.325415E-04	1.000000E-03	1.230236E-05	1.254451E-03	1.109397E-03	3.837964E-03	3.168381E-05	6.036390E-05	6.241000E-03	1.584494E-05	1.531078E-03	7.114689E-04
3.000000E+00	2.476599E-04	9.000000E-04	6.621402E-06	9.914293E-04	1.097744E-03	3.460464E-03	3.195215E-05	7.154310E-05	6.332800E-03	2.529680E-05	1.460024E-03	7.067103E-04
4.000000E+00	2.027111E-04	8.000000E-04	9.266532E-06	8.486463E-04	8.993715E-04	2.678950E-03	7.223460E-05	7.891540E-05	5.251100E-03	2.420494E-05	1.204577E-03	5.763084E-04
5.000000E+00	1.203385E-04	6.000000E-04	2.834689E-05	7.434378E-04	6.911375E-04	1.821574E-03	1.630860E-04	9.971400E-05	3.818000E-03	4.418418E-05	8.984039E-04	4.094930E-04
6.000000E+00	1.262048E-04	6.000000E-04	6.802718E-05	6.876128E-04	5.832675E-04	1.198212E-03	2.973681E-04	1.137920E-04	3.180900E-03	8.170799E-05	7.617094E-04	3.254691E-04
7.000000E+00	1.692649E-04	5.000000E-04	1.308688E-04	6.559429E-04	5.548579E-04	7.521174E-04	4.116488E-04	1.606070E-04	1.970100E-03	1.241378E-04	5.894898E-04	1.881432E-04
8.000000E+00	2.585162E-04	7.000000E-04	3.718998E-04	9.527812E-04	6.528485E-04	7.569676E-04	7.839677E-04	2.779640E-04	1.596200E-03	3.145432E-04	7.056828E-04	1.374355E-04
9.000000E+00	5.047439E-04	1.000000E-03	4.761903E-04	1.512104E-03	8.791759E-04	1.029764E-03	9.558769E-04	4.773240E-04	1.889500E-03	7.844072E-04	9.694088E-04	1.605250E-04
1.000000E+01	1.062805E-03	1.700000E-03	1.049432E-03	2.502997E-03	1.540427E-03	1.782564E-03	1.318683E-03	1.131750E-03	2.444800E-03	1.664849E-03	1.614829E-03	1.849959E-04
1.100000E+01	1.732875E-03	2.700000E-03	2.122586E-03	3.487984E-03	2.557982E-03	2.558081E-03	2.074278E-03	2.089850E-03	3.058800E-03	2.698728E-03	2.486937E-03	1.831042E-04
1.200000E+01	4.240692E-03	5.400000E-03	4.725818E-03	5.491241E-03	5.015257E-03	4.189334E-03	4.224321E-03	4.424480E-03	5.474500E-03	5.139350E-03	4.798405E-03	1.864411E-04
1.300000E+01	9.255560E-03	1.070000E-02	9.986676E-03	1.062821E-02	9.933133E-03	5.420045E-03	8.291371E-03	9.213790E-03	1.037400E-02	1.008038E-02	9.311420E-03	5.506260E-04
1.400000E+01	1.829578E-02	2.060000E-02	1.946682E-02	2.049956E-02	1.963597E-02	1.556034E-02	1.730769E-02	1.877530E-02	1.829600E-02	1.952083E-02	1.871527E-02	5.327946E-04
1.500000E+01	5.138399E-02	5.520000E-02	5.315877E-02	5.383885E-02	5.355199E-02	4.584882E-02	5.235314E-02	5.275560E-02	5.022700E-02	5.264207E-02	5.203535E-02	9.084261E-04
1.600000E+01	9.403816E-02	9.800000E-02	9.468342E-02	9.506341E-02	9.576330E-02	8.641150E-02	9.555457E-02	9.463440E-02	9.069000E-02	9.649393E-02	9.387097E-02	1.129892E-03
1.700000E+01	1.270551E-01	1.302000E-01	1.262067E-01	1.276995E-01	1.275596E-01	1.194319E-01	1.283636E-01	1.265610E-01	1.221400E-01	1.289797E-01	1.261353E-01	1.104869E-03
1.800000E+01	1.683899E-01	1.686000E-01	1.667379E-01	1.653814E-01	1.662404E-01	1.617724E-01	1.692462E-01	1.664290E-01	1.602700E-01	1.674624E-01	1.658963E-01	1.019172E-03
1.900000E+01	1.897966E-01	1.880000E-01	1.898925E-01	1.860473E-01	1.877447E-01	1.888892E-01	1.900258E-01	1.879540E-01	1.822200E-01	1.890148E-01	1.878411E-01	8.229802E-04
2.000000E+01	1.912457E-01	1.844000E-01	1.899838E-01	1.849738E-01	1.865552E-01	1.988293E-01	1.889310E-01	1.898970E-01	1.835300E-01	1.878624E-01	1.887051E-01	1.563121E-03
2.100000E+01	1.414924E-01	1.277000E-01	1.408746E-01	1.356975E-01	1.366065E-01	1.506143E-01	1.395492E-01	1.447540E-01	1.363300E-01	1.370262E-01	1.392909E-01	2.136717E-03
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000012E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.13 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A222223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	7.830006E-04		0.000000E+00	1.015275E-03	7.326385E-04	1.306470E-02	0.000000E+00	6.524390E-05	2.844700E-03	0.000000E+00	3.084259E-03	2.032138E-03
2.000000E+00	1.072772E-03		0.000000E+00	1.308695E-03	9.883885E-04	1.643448E-02	0.000000E+00	7.283540E-05	3.792100E-03	1.462578E-06	3.944879E-03	2.549154E-03
3.000000E+00	1.339667E-03		0.000000E+00	1.374076E-03	9.709701E-04	1.483647E-02	0.000000E+00	7.619870E-05	3.848800E-03	6.669477E-06	3.741030E-03	2.277379E-03
4.000000E+00	9.761818E-04		0.000000E+00	1.313479E-03	8.404569E-04	1.141686E-02	0.000000E+00	8.285270E-05	3.266800E-03	2.634459E-05	2.982772E-03	1.741901E-03
5.000000E+00	8.467093E-04		2.871582E-06	1.033879E-03	7.248595E-04	7.311629E-03	0.000000E+00	8.546450E-05	2.856600E-03	4.124286E-05	2.143190E-03	1.101197E-03
6.000000E+00	7.575906E-04		1.122686E-05	9.732818E-04	6.700470E-04	4.956051E-03	2.869325E-09	1.130060E-04	2.816700E-03	5.248557E-05	1.714446E-03	7.492940E-04
7.000000E+00	7.542289E-04		3.573716E-05	7.335494E-04	5.786495E-04	3.314059E-03	3.920445E-05	2.216040E-04	2.275200E-03	1.139868E-04	1.312882E-03	4.935744E-04
8.000000E+00	1.215573E-03		1.846225E-04	7.755424E-04	6.564377E-04	2.866098E-03	1.906744E-04	3.942970E-04	2.228900E-03	3.015881E-04	1.356141E-03	4.005521E-04
9.000000E+00	1.470438E-03		4.781341E-04	9.100265E-04	8.675424E-04	3.506183E-03	3.305389E-04	6.190540E-04	2.538900E-03	5.424642E-04	1.652024E-03	4.651317E-04
1.000000E+01	2.235517E-03		1.174624E-03	1.468693E-03	1.506300E-03	4.473971E-03	9.608508E-04	1.173180E-03	3.116100E-03	1.242468E-03	2.328960E-03	5.158180E-04
1.100000E+01	3.543711E-03		2.467718E-03	2.292608E-03	2.393240E-03	5.327123E-03	1.919919E-03	2.139730E-03	3.668600E-03	2.265891E-03	3.227502E-03	4.985389E-04
1.200000E+01	6.241050E-03		4.686548E-03	4.386944E-03	4.896399E-03	6.413397E-03	4.481195E-03	4.787390E-03	5.682200E-03	4.539077E-03	5.401230E-03	3.400565E-04
1.300000E+01	1.107984E-02		8.922496E-03	9.265047E-03	9.629339E-03	6.158344E-03	9.296874E-03	9.595680E-03	9.531000E-03	9.092129E-03	9.209874E-03	6.643179E-04
1.400000E+01	2.023453E-02		1.787563E-02	1.905634E-02	1.880728E-02	1.403159E-02	1.925648E-02	1.860450E-02	1.723300E-02	1.843328E-02	1.799454E-02	8.843553E-04
1.500000E+01	5.289079E-02		4.981290E-02	5.150792E-02	5.088363E-02	3.878894E-02	5.372433E-02	5.021640E-02	4.645900E-02	5.048289E-02	4.845778E-02	2.124570E-03
1.600000E+01	9.074152E-02		8.828143E-02	9.100265E-02	9.031621E-02	7.365015E-02	9.217617E-02	8.924220E-02	8.378900E-02	8.991785E-02	8.645695E-02	2.785705E-03
1.700000E+01	1.247691E-01		1.244970E-01	1.264044E-01	1.260153E-01	1.081635E-01	1.261623E-01	1.253130E-01	1.184600E-01	1.269212E-01	1.215209E-01	2.925561E-03
1.800000E+01	1.638951E-01		1.675068E-01	1.673343E-01	1.675731E-01	1.513932E-01	1.681832E-01	1.674990E-01	1.613700E-01	1.690978E-01	1.631775E-01	2.568569E-03
1.900000E+01	1.861870E-01		1.921906E-01	1.894471E-01	1.906553E-01	1.795298E-01	1.904682E-01	1.904460E-01	1.870900E-01	1.920694E-01	1.872259E-01	1.706757E-03
2.000000E+01	1.887141E-01		1.964651E-01	1.892876E-01	1.905320E-01	1.905326E-01	1.910678E-01	1.921750E-01	1.926300E-01	1.928760E-01	1.906452E-01	6.292161E-04
2.100000E+01	1.402516E-01		1.454067E-01	1.391086E-01	1.397620E-01	1.438307E-01	1.417423E-01	1.470770E-01	1.445000E-01	1.419758E-01	1.424217E-01	1.300468E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	9.999976E-01	1.000000E+00	9.999995E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.14 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A222233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	4.207009E-04		0.000000E+00	1.850060E-03	1.051275E-03	2.648458E-02	5.647641E-06	3.632570E-05	3.994500E-03	0.000000E+00	4.834728E-03	3.646503E-03
2.000000E+00	6.344772E-04		0.000000E+00	2.631918E-03	1.444921E-03	3.234947E-02	2.122384E-05	5.272250E-05	5.299300E-03	1.059876E-06	6.062005E-03	4.436741E-03
3.000000E+00	5.725955E-04		3.795456E-07	2.517487E-03	1.449148E-03	2.885709E-02	3.225398E-05	5.250560E-05	5.010600E-03	1.397303E-06	5.498811E-03	3.948926E-03
4.000000E+00	4.844227E-04		7.333204E-07	2.041666E-03	1.264301E-03	2.203046E-02	5.029060E-05	5.891560E-05	4.457300E-03	1.109074E-05	4.341051E-03	3.005167E-03
5.000000E+00	4.210434E-04		8.497456E-06	1.632375E-03	1.039785E-03	1.513034E-02	8.204830E-05	6.909110E-05	3.690800E-03	1.699725E-05	3.152212E-03	2.052459E-03
6.000000E+00	4.628766E-04		2.327167E-05	1.361465E-03	9.106639E-04	1.049691E-02	1.100627E-04	7.931180E-05	3.160800E-03	4.317625E-05	2.368870E-03	1.412618E-03
7.000000E+00	4.693487E-04		1.244014E-04	1.233196E-03	7.748734E-04	6.153036E-03	1.887931E-04	1.568030E-04	2.665500E-03	1.539657E-04	1.663079E-03	8.165789E-04
8.000000E+00	6.247120E-04		3.523938E-04	1.091621E-03	8.119088E-04	4.974895E-03	3.752247E-04	3.233860E-04	2.575800E-03	3.800352E-04	1.539650E-03	6.413741E-04
9.000000E+00	9.510306E-04		6.811774E-04	1.114507E-03	9.892713E-04	5.301869E-03	6.751561E-04	5.630380E-04	2.410700E-03	7.942517E-04	1.715082E-03	6.404769E-04
1.000000E+01	1.705771E-03		1.584492E-03	1.624391E-03	1.588738E-03	6.529306E-03	1.129701E-03	1.166150E-03	3.100500E-03	1.765226E-03	2.406365E-03	7.306113E-04
1.100000E+01	2.642741E-03		2.836123E-03	2.399862E-03	2.584002E-03	7.516191E-03	1.765148E-03	2.157300E-03	4.139400E-03	2.983353E-03	3.314949E-03	7.542849E-04
1.200000E+01	5.012781E-03		5.589834E-03	5.031248E-03	5.161666E-03	8.475024E-03	4.073956E-03	4.739380E-03	6.583900E-03	5.697849E-03	5.582565E-03	5.597962E-04
1.300000E+01	1.016671E-02		1.101039E-02	1.016043E-02	1.008138E-02	7.535647E-03	8.941656E-03	9.723110E-03	1.170700E-02	1.056735E-02	9.759419E-03	4.839973E-04
1.400000E+01	1.884077E-02		1.973192E-02	1.903284E-02	1.935699E-02	1.500691E-02	1.976429E-02	1.840240E-02	2.101300E-02	1.980717E-02	1.877388E-02	7.026167E-04
1.500000E+01	5.033999E-02		5.052812E-02	5.004104E-02	5.050024E-02	3.492572E-02	5.162131E-02	4.883490E-02	5.035100E-02	5.133638E-02	4.808774E-02	2.215280E-03
1.600000E+01	8.540656E-02		8.760287E-02	8.808542E-02	8.742778E-02	6.377036E-02	8.925285E-02	8.554800E-02	8.326700E-02	8.990145E-02	8.325114E-02	3.331872E-03
1.700000E+01	1.183012E-01		1.182093E-01	1.192746E-01	1.192437E-01	9.067336E-02	1.213067E-01	1.175890E-01	1.125300E-01	1.217026E-01	1.141312E-01	4.042217E-03
1.800000E+01	1.668867E-01		1.671671E-01	1.646213E-01	1.657722E-01	1.343755E-01	1.685965E-01	1.658120E-01	1.590400E-01	1.676171E-01	1.607292E-01	4.534511E-03
1.900000E+01	1.934210E-01		1.918599E-01	1.909671E-01	1.919401E-01	1.615900E-01	1.939702E-01	1.929920E-01	1.850300E-01	1.919557E-01	1.871300E-01	4.405862E-03
2.000000E+01	1.961794E-01		1.964104E-01	1.920315E-01	1.939050E-01	1.701686E-01	1.940510E-01	1.986100E-01	1.891100E-01	1.934230E-01	1.905794E-01	3.585126E-03
2.100000E+01	1.460551E-01		1.462787E-01	1.412560E-01	1.427020E-01	1.476547E-01	1.439860E-01	1.530330E-01	1.408600E-01	1.418408E-01	1.450781E-01	1.619179E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999993E-01	9.999971E-01	1.000000E+00	9.999995E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.15 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A222333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	3.499980E-03		1.754546E-06	3.197693E-03	1.129863E-03	1.871743E-02	4.201498E-05	5.448490E-04	6.929400E-03	0.000000E+00	4.257873E-03	2.225554E-03
2.000000E+00	4.599875E-03		1.011326E-05	4.279379E-03	1.524033E-03	2.261190E-02	1.219034E-04	6.878000E-04	9.100700E-03	6.589744E-05	5.366963E-03	2.692480E-03
3.000000E+00	4.603652E-03		1.338968E-05	4.404401E-03	1.538880E-03	2.065935E-02	1.611125E-04	6.576400E-04	8.766100E-03	7.103797E-05	5.100565E-03	2.460205E-03
4.000000E+00	3.794533E-03		2.885849E-05	3.877877E-03	1.385707E-03	1.641311E-02	2.185157E-04	6.043470E-04	7.620200E-03	8.851615E-05	4.242893E-03	1.960370E-03
5.000000E+00	3.021072E-03		4.996889E-05	3.109021E-03	1.199015E-03	1.153036E-02	2.143017E-04	5.122740E-04	6.352700E-03	1.153437E-04	3.248589E-03	1.397834E-03
6.000000E+00	2.412460E-03		9.591890E-05	2.470143E-03	1.065844E-03	7.851905E-03	2.536394E-04	4.936380E-04	5.848700E-03	1.271478E-04	2.561531E-03	1.006612E-03
7.000000E+00	1.759693E-03		1.580236E-04	2.164474E-03	8.791161E-04	4.473240E-03	4.126636E-04	5.251360E-04	4.355200E-03	3.549212E-04	1.840943E-03	6.107725E-04
8.000000E+00	1.802062E-03		2.828825E-04	2.476202E-03	9.342613E-04	3.401494E-03	6.687569E-04	7.606390E-04	3.824300E-03	6.324937E-04	1.768825E-03	4.728935E-04
9.000000E+00	2.030335E-03		6.258896E-04	2.746623E-03	1.154230E-03	3.504202E-03	9.673811E-04	1.156060E-03	3.823000E-03	1.009175E-03	2.000965E-03	4.335558E-04
1.000000E+01	2.563314E-03		1.612912E-03	4.129022E-03	1.896831E-03	4.326621E-03	1.870629E-03	2.043770E-03	4.618600E-03	2.022488E-03	2.882712E-03	4.445297E-04
1.100000E+01	3.524237E-03		2.850322E-03	5.755407E-03	3.049682E-03	5.650760E-03	2.764650E-03	3.342780E-03	6.064000E-03	3.194948E-03	4.125230E-03	5.062174E-04
1.200000E+01	6.479161E-03		6.058858E-03	9.225174E-03	5.976951E-03	7.524280E-03	5.411820E-03	6.424930E-03	9.413400E-03	6.495781E-03	7.064322E-03	5.357628E-04
1.300000E+01	1.248835E-02		1.232318E-02	1.509624E-02	1.153483E-02	7.400780E-03	1.069875E-02	1.198650E-02	1.551300E-02	1.201084E-02	1.213020E-02	8.983895E-04
1.400000E+01	2.123486E-02		2.238779E-02	2.466839E-02	2.108038E-02	1.604331E-02	1.995557E-02	2.178530E-02	2.385400E-02	2.174673E-02	2.137620E-02	9.328727E-04
1.500000E+01	4.929196E-02		5.494043E-02	5.355007E-02	5.188483E-02	3.878945E-02	5.254819E-02	5.208550E-02	5.068700E-02	5.285208E-02	5.047218E-02	1.774180E-03
1.600000E+01	8.252307E-02		9.020740E-02	8.685432E-02	8.677165E-02	6.876589E-02	8.868636E-02	8.561060E-02	8.049400E-02	8.666816E-02	8.373916E-02	2.408779E-03
1.700000E+01	1.113798E-01		1.178756E-01	1.149429E-01	1.160710E-01	9.582037E-02	1.197016E-01	1.138010E-01	1.058100E-01	1.167466E-01	1.119253E-01	2.747569E-03
1.800000E+01	1.524023E-01		1.569397E-01	1.512928E-01	1.568423E-01	1.351891E-01	1.597026E-01	1.546460E-01	1.436700E-01	1.580272E-01	1.513356E-01	2.876340E-03
1.900000E+01	1.874624E-01		1.899913E-01	1.816395E-01	1.907590E-01	1.733646E-01	1.917973E-01	1.897560E-01	1.780800E-01	1.929676E-01	1.853563E-01	2.414658E-03
2.000000E+01	1.950909E-01		1.965287E-01	1.860456E-01	1.967184E-01	1.907485E-01	1.976976E-01	1.988110E-01	1.854400E-01	1.981589E-01	1.933851E-01	1.870286E-03
2.100000E+01	1.480360E-01		1.470170E-01	1.380747E-01	1.466032E-01	1.472134E-01	1.461046E-01	1.537650E-01	1.397400E-01	1.466442E-01	1.458192E-01	1.737499E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000004E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.16 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A223333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	4.470156E-03		3.899515E-08	5.926451E-03	1.554974E-03	2.827245E-02	4.763358E-05	1.245820E-03	5.058700E-03	0.000000E+00	5.822028E-03	3.308083E-03
2.000000E+00	5.960942E-03		8.694755E-06	7.743443E-03	2.084192E-03	3.542188E-02	7.234988E-05	1.545100E-03	6.743300E-03	1.673350E-04	7.447487E-03	4.137570E-03
3.000000E+00	6.159584E-03		1.616741E-05	8.117030E-03	2.115019E-03	3.292273E-02	6.800159E-05	1.533990E-03	6.825100E-03	1.569368E-04	7.219703E-03	3.836277E-03
4.000000E+00	5.619960E-03		4.575490E-05	7.715141E-03	1.920024E-03	2.741765E-02	5.809973E-05	1.374370E-03	6.141000E-03	1.635081E-04	6.286499E-03	3.190294E-03
5.000000E+00	4.797939E-03		1.740484E-04	6.605700E-03	1.638564E-03	1.989260E-02	7.068146E-05	1.171480E-03	5.833100E-03	2.076657E-04	5.023014E-03	2.309310E-03
6.000000E+00	4.190543E-03		4.345984E-04	5.576071E-03	1.498413E-03	1.394734E-02	1.269439E-04	9.919830E-04	6.014200E-03	2.544933E-04	4.097512E-03	1.628264E-03
7.000000E+00	3.442079E-03		5.321153E-04	4.125308E-03	1.350809E-03	8.972065E-03	1.759750E-04	9.899840E-04	5.596000E-03	4.406221E-04	3.148042E-03	1.073352E-03
8.000000E+00	3.643057E-03		8.231793E-04	3.881910E-03	1.538646E-03	7.285462E-03	4.766491E-04	1.285130E-03	5.533600E-03	7.478820E-04	3.058454E-03	8.673693E-04
9.000000E+00	3.926053E-03		1.436156E-03	4.075496E-03	1.937281E-03	7.128659E-03	1.208195E-03	1.700250E-03	5.413600E-03	1.296029E-03	3.353211E-03	7.601972E-04
1.000000E+01	5.021820E-03		3.005881E-03	5.139088E-03	3.153986E-03	7.258394E-03	2.536466E-03	2.911620E-03	6.186800E-03	2.874859E-03	4.401757E-03	6.193330E-04
1.100000E+01	6.997819E-03		5.383408E-03	6.503813E-03	4.849051E-03	8.378941E-03	4.318179E-03	4.539780E-03	7.992800E-03	4.965378E-03	6.120474E-03	5.578915E-04
1.200000E+01	1.120852E-02		9.381647E-03	1.030195E-02	8.888321E-03	9.478612E-03	8.875146E-03	8.145260E-03	1.204800E-02	9.153090E-03	9.790932E-03	4.627503E-04
1.300000E+01	1.859632E-02		1.679972E-02	1.696991E-02	1.606086E-02	8.641438E-03	1.728190E-02	1.489420E-02	1.959600E-02	1.632335E-02	1.610504E-02	1.181572E-03
1.400000E+01	2.884563E-02		2.729684E-02	2.763413E-02	2.707344E-02	1.879707E-02	2.810387E-02	2.525390E-02	3.040500E-02	2.739547E-02	2.667624E-02	1.240772E-03
1.500000E+01	5.843517E-02		5.622902E-02	5.733997E-02	5.906928E-02	4.212841E-02	5.902629E-02	5.674420E-02	6.082700E-02	6.006218E-02	5.622492E-02	2.079779E-03
1.600000E+01	8.736071E-02		8.842029E-02	8.700053E-02	9.145077E-02	6.882560E-02	9.202938E-02	8.888650E-02	8.924400E-02	9.247957E-02	8.665222E-02	2.622658E-03
1.700000E+01	1.114203E-01		1.151108E-01	1.114535E-01	1.169692E-01	9.054854E-02	1.187636E-01	1.145660E-01	1.105400E-01	1.183243E-01	1.111715E-01	3.117180E-03
1.800000E+01	1.432063E-01		1.532372E-01	1.441707E-01	1.515744E-01	1.215305E-01	1.540013E-01	1.502590E-01	1.398600E-01	1.536650E-01	1.447299E-01	3.780390E-03
1.900000E+01	1.660081E-01		1.786362E-01	1.656802E-01	1.751082E-01	1.462323E-01	1.796824E-01	1.757250E-01	1.598900E-01	1.777258E-01	1.683703E-01	4.025960E-03
2.000000E+01	1.814997E-01		1.951058E-01	1.792086E-01	1.879215E-01	1.672433E-01	1.904511E-01	1.936110E-01	1.755400E-01	1.903223E-01	1.838226E-01	3.417448E-03
2.100000E+01	1.391893E-01		1.479223E-01	1.348310E-01	1.422431E-01	1.296761E-01	1.426258E-01	1.526250E-01	1.347000E-01	1.432742E-01	1.404766E-01	2.653541E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	9.999882E-01	1.000000E+00	9.999985E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.17 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A233333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.353850E-02		1.012126E-04	1.465101E-02	2.719695E-03	3.315638E-02	1.516530E-03	5.061100E-03	1.453000E-02	0.000000E+00	1.065930E-02	3.860897E-03
2.000000E+00	1.786881E-02		1.043221E-04	2.029022E-02	3.654385E-03	4.183298E-02	2.061082E-03	6.373420E-03	1.949100E-02	1.868124E-03	1.395953E-02	4.928365E-03
3.000000E+00	1.735602E-02		1.324471E-04	2.027807E-02	3.689585E-03	4.027589E-02	2.182533E-03	6.291260E-03	1.936900E-02	2.014802E-03	1.369685E-02	4.756351E-03
4.000000E+00	1.520781E-02		1.853414E-04	1.877104E-02	3.408529E-03	3.465210E-02	1.825111E-03	5.630840E-03	1.740400E-02	1.981565E-03	1.213560E-02	4.131337E-03
5.000000E+00	1.206654E-02		2.807773E-04	1.701486E-02	3.019532E-03	2.586430E-02	1.614791E-03	4.670430E-03	1.430700E-02	1.890388E-03	9.854780E-03	3.177608E-03
6.000000E+00	1.022805E-02		4.288217E-04	1.514931E-02	2.854118E-03	1.992233E-02	1.306447E-03	4.009340E-03	1.212100E-02	1.869663E-03	8.252426E-03	2.532727E-03
7.000000E+00	7.633182E-03		7.817322E-04	1.143642E-02	2.704951E-03	1.280566E-02	1.287500E-03	3.342670E-03	9.431200E-03	1.676185E-03	6.177915E-03	1.676602E-03
8.000000E+00	6.605075E-03		1.711335E-03	9.443249E-03	3.261760E-03	1.021881E-02	1.544851E-03	3.639090E-03	8.571000E-03	2.096728E-03	5.624396E-03	1.245095E-03
9.000000E+00	6.389377E-03		2.573129E-03	8.865959E-03	3.977431E-03	9.187025E-03	2.186477E-03	4.207800E-03	8.435300E-03	2.991015E-03	5.727812E-03	1.012860E-03
1.000000E+01	7.335031E-03		4.513416E-03	9.990156E-03	5.963295E-03	9.317211E-03	4.033209E-03	5.948820E-03	9.518600E-03	5.475949E-03	7.077467E-03	8.224828E-04
1.100000E+01	9.222636E-03		7.693288E-03	1.211094E-02	8.709393E-03	1.044300E-02	6.278066E-03	8.495970E-03	1.190700E-02	8.886883E-03	9.357537E-03	7.157995E-04
1.200000E+01	1.332870E-02		1.414972E-02	1.745239E-02	1.422378E-02	1.199960E-02	1.176632E-02	1.394240E-02	1.599800E-02	1.461204E-02	1.410761E-02	6.726249E-04
1.300000E+01	2.151999E-02		2.521925E-02	2.751547E-02	2.373146E-02	1.064403E-02	2.039479E-02	2.297570E-02	2.341900E-02	2.379310E-02	2.192746E-02	1.785210E-03
1.400000E+01	3.224381E-02		3.867896E-02	3.743878E-02	3.623688E-02	2.174294E-02	3.308365E-02	3.515970E-02	3.407600E-02	3.558222E-02	3.358259E-02	1.855675E-03
1.500000E+01	6.272336E-02		7.555584E-02	6.386651E-02	6.919222E-02	4.520263E-02	6.803124E-02	6.806550E-02	6.413100E-02	6.815818E-02	6.459604E-02	3.120896E-03
1.600000E+01	8.955898E-02		1.049858E-01	8.653274E-02	9.831411E-02	7.022176E-02	9.831387E-02	9.497500E-02	8.841900E-02	9.832603E-02	9.141515E-02	3.725975E-03
1.700000E+01	1.095446E-01		1.233571E-01	1.035476E-01	1.203022E-01	8.936505E-02	1.202639E-01	1.160450E-01	1.052500E-01	1.202866E-01	1.109594E-01	4.029525E-03
1.800000E+01	1.351051E-01		1.508258E-01	1.261531E-01	1.480744E-01	1.158875E-01	1.499153E-01	1.441000E-01	1.285800E-01	1.497659E-01	1.373302E-01	4.567006E-03
1.900000E+01	1.468306E-01		1.622374E-01	1.380635E-01	1.617358E-01	1.322367E-01	1.682265E-01	1.581450E-01	1.408900E-01	1.657044E-01	1.510457E-01	4.683429E-03
2.000000E+01	1.486576E-01		1.600973E-01	1.355720E-01	1.606415E-01	1.411928E-01	1.707506E-01	1.597240E-01	1.420000E-01	1.654103E-01	1.523295E-01	4.326963E-03
2.100000E+01	1.170363E-01		1.263871E-01	1.058568E-01	1.235850E-01	1.138313E-01	1.334172E-01	1.291980E-01	1.121600E-01	1.276099E-01	1.201840E-01	3.344330E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000008E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.18 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A333333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	3.477900E-02	2.800000E-03	8.675584E-04	2.703029E-02	6.110814E-03	3.458447E-02	1.017666E-03	1.711200E-02	2.187500E-02	0.000000E+00	1.624187E-02	4.685117E-03
2.000000E+00	4.610863E-02	4.100000E-03	1.011454E-03	3.617177E-02	8.284621E-03	4.394973E-02	1.340687E-03	2.192050E-02	2.937300E-02	1.117757E-03	2.136227E-02	6.112840E-03
3.000000E+00	4.658570E-02	4.300000E-03	9.978394E-04	3.779918E-02	8.585254E-03	4.160312E-02	1.750466E-03	2.212840E-02	3.003000E-02	1.327393E-03	2.153111E-02	6.061320E-03
4.000000E+00	4.303351E-02	4.200000E-03	9.511057E-04	3.650869E-02	8.246235E-03	3.638762E-02	2.148448E-03	2.058550E-02	2.763400E-02	1.476203E-03	1.996612E-02	5.527172E-03
5.000000E+00	3.495541E-02	3.800000E-03	9.254525E-04	3.350180E-02	7.491741E-03	2.826099E-02	2.296584E-03	1.734810E-02	2.433600E-02	1.778832E-03	1.699067E-02	4.586637E-03
6.000000E+00	2.961995E-02	3.700000E-03	1.397544E-03	3.010712E-02	6.994432E-03	2.215962E-02	2.605904E-03	1.490570E-02	2.107100E-02	2.021626E-03	1.472903E-02	3.836688E-03
7.000000E+00	2.201625E-02	4.000000E-03	2.367121E-03	2.335590E-02	5.932025E-03	1.447638E-02	2.595181E-03	1.068490E-02	1.637900E-02	2.311227E-03	1.131186E-02	2.723664E-03
8.000000E+00	1.792633E-02	5.200000E-03	3.901197E-03	1.928737E-02	6.014474E-03	1.090415E-02	3.648166E-03	8.550100E-03	1.492700E-02	3.076400E-03	1.003986E-02	2.016351E-03
9.000000E+00	1.493201E-02	6.300000E-03	5.246633E-03	1.704968E-02	6.608827E-03	9.176551E-03	4.836785E-03	7.746200E-03	1.400600E-02	4.010180E-03	9.544743E-03	1.529372E-03
1.000000E+01	1.405139E-02	9.200000E-03	8.582840E-03	1.608340E-02	8.795533E-03	8.951203E-03	7.162695E-03	8.639080E-03	1.573000E-02	6.315555E-03	1.079957E-02	1.152305E-03
1.100000E+01	1.436134E-02	1.290000E-02	1.368868E-02	1.793967E-02	1.194521E-02	1.005707E-02	9.479005E-03	1.115210E-02	1.892900E-02	9.365996E-03	1.338356E-02	1.093874E-03
1.200000E+01	1.553902E-02	2.020000E-02	2.154067E-02	2.233241E-02	1.824369E-02	1.298944E-02	1.533447E-02	1.645230E-02	2.344900E-02	1.627936E-02	1.845345E-02	1.205941E-03
1.300000E+01	2.138218E-02	3.170000E-02	3.319673E-02	3.019612E-02	2.890598E-02	1.340781E-02	2.651424E-02	2.599150E-02	3.325500E-02	2.789559E-02	2.717217E-02	2.143323E-03
1.400000E+01	3.028484E-02	4.560000E-02	4.576757E-02	3.752583E-02	4.175664E-02	2.745615E-02	4.124827E-02	3.807960E-02	4.401700E-02	4.298141E-02	3.908177E-02	2.171017E-03
1.500000E+01	5.290057E-02	7.990000E-02	7.746851E-02	6.026509E-02	7.393989E-02	5.226219E-02	7.678747E-02	6.788180E-02	6.896700E-02	7.938966E-02	6.781917E-02	3.495870E-03
1.600000E+01	7.117762E-02	1.051000E-01	1.027264E-01	7.806491E-02	9.947148E-02	7.488509E-02	1.070114E-01	9.045940E-02	8.462900E-02	1.059531E-01	9.039170E-02	4.597605E-03
1.700000E+01	8.614438E-02	1.224000E-01	1.217558E-01	8.887194E-02	1.176558E-01	9.190443E-02	1.260596E-01	1.067850E-01	9.578300E-02	1.253514E-01	1.063733E-01	5.330080E-03
1.800000E+01	1.055280E-01	1.445000E-01	1.466805E-01	1.029846E-01	1.409143E-01	1.152391E-01	1.509546E-01	1.281020E-01	1.125100E-01	1.507909E-01	1.274904E-01	6.287236E-03
1.900000E+01	1.123405E-01	1.517000E-01	1.563450E-01	1.081339E-01	1.494178E-01	1.274655E-01	1.594818E-01	1.364310E-01	1.156000E-01	1.592751E-01	1.352128E-01	6.678883E-03
2.000000E+01	1.093393E-01	1.426000E-01	1.489280E-01	1.029211E-01	1.430650E-01	1.289141E-01	1.511725E-01	1.316670E-01	1.093700E-01	1.516595E-01	1.297752E-01	6.152270E-03
2.100000E+01	7.699401E-02	9.570000E-02	1.056534E-01	7.386923E-02	1.016202E-01	9.496529E-02	1.065541E-01	9.737830E-02	7.813300E-02	1.076227E-01	9.231862E-02	4.228672E-03
Sum	1.000000E+00	9.999000E-01	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000003E+00	1.000000E+00	9.999893E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.19 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A122223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	5.033681E-04	3.000000E-04	4.438046E-06	9.115348E-04	7.854000E-04	1.038882E-02	0.000000E+00	1.091960E-04	1.916900E-03	0.000000E+00	1.864957E-03	1.236214E-03
2.000000E+00	5.840146E-04	5.000000E-04	1.436952E-05	1.129590E-03	1.013354E-03	1.212133E-02	0.000000E+00	1.383880E-04	2.688200E-03	6.264028E-06	2.273656E-03	1.437448E-03
3.000000E+00	5.031088E-04	5.000000E-04	1.888328E-05	1.090802E-03	9.576221E-04	1.071152E-02	3.670804E-06	1.423230E-04	2.761700E-03	1.095071E-05	2.085745E-03	1.269080E-03
4.000000E+00	4.697654E-04	4.000000E-04	3.217139E-05	8.371024E-04	8.028216E-04	7.857219E-03	5.221132E-06	1.471870E-04	2.568900E-03	1.542455E-05	1.639396E-03	9.314240E-04
5.000000E+00	4.170092E-04	3.000000E-04	5.579555E-05	6.363446E-04	6.678387E-04	4.978037E-03	1.514012E-05	1.274260E-04	2.411000E-03	2.534401E-05	1.199181E-03	6.009468E-04
6.000000E+00	4.701511E-04	3.000000E-04	6.510855E-05	6.174744E-04	5.974654E-04	3.404098E-03	4.557362E-05	1.200110E-04	2.126500E-03	4.669905E-05	9.626010E-04	4.175823E-04
7.000000E+00	4.345946E-04	3.000000E-04	4.797289E-05	4.818712E-04	5.205306E-04	2.224687E-03	1.422271E-04	1.497490E-04	1.727000E-03	1.236972E-04	7.358006E-04	2.805381E-04
8.000000E+00	5.219417E-04	4.000000E-04	1.149818E-04	6.641257E-04	5.518878E-04	1.931860E-03	3.175363E-04	2.253650E-04	1.470000E-03	3.482732E-04	7.350202E-04	2.241261E-04
9.000000E+00	6.969196E-04	7.000000E-04	1.736886E-04	8.575451E-04	7.225399E-04	2.460377E-03	6.412250E-04	3.649660E-04	1.423300E-03	5.983288E-04	9.249170E-04	2.546699E-04
1.000000E+01	1.293225E-03	1.300000E-03	6.243809E-04	1.564129E-03	1.158917E-03	3.175454E-03	1.255731E-03	8.278430E-04	1.962500E-03	1.200247E-03	1.488306E-03	2.816301E-04
1.100000E+01	2.146539E-03	2.200000E-03	1.368444E-03	2.715734E-03	1.878415E-03	4.038183E-03	1.921967E-03	1.625420E-03	2.717700E-03	2.147814E-03	2.336305E-03	2.955679E-04
1.200000E+01	4.167872E-03	4.600000E-03	3.498069E-03	5.011083E-03	4.029683E-03	4.805632E-03	3.945492E-03	3.773030E-03	4.620700E-03	4.574818E-03	4.313259E-03	1.872767E-04
1.300000E+01	8.429568E-03	9.100000E-03	7.872119E-03	8.753670E-03	8.267724E-03	4.317848E-03	8.480178E-03	8.122970E-03	8.548600E-03	9.084318E-03	7.926562E-03	5.325437E-04
1.400000E+01	1.777642E-02	1.820000E-02	1.631261E-02	1.701986E-02	1.660485E-02	1.195654E-02	1.751149E-02	1.687640E-02	1.522000E-02	1.793341E-02	1.624583E-02	6.910385E-04
1.500000E+01	4.940221E-02	5.040000E-02	4.491412E-02	4.654122E-02	4.697114E-02	3.668793E-02	5.068714E-02	4.718650E-02	4.371000E-02	4.904866E-02	4.572664E-02	1.500707E-03
1.600000E+01	8.777769E-02	8.980000E-02	8.365211E-02	8.648835E-02	8.634332E-02	7.291771E-02	8.827014E-02	8.505720E-02	8.277100E-02	8.807585E-02	8.435092E-02	1.813516E-03
1.700000E+01	1.226780E-01	1.255000E-01	1.211254E-01	1.221320E-01	1.220758E-01	1.089397E-01	1.229368E-01	1.205780E-01	1.189700E-01	1.224926E-01	1.202499E-01	1.746264E-03
1.800000E+01	1.646000E-01	1.679000E-01	1.666881E-01	1.660576E-01	1.654205E-01	1.531762E-01	1.656179E-01	1.638830E-01	1.627700E-01	1.652169E-01	1.638119E-01	1.622640E-03
1.900000E+01	1.899546E-01	1.925000E-01	1.944297E-01	1.911131E-01	1.920807E-01	1.854618E-01	1.903318E-01	1.908920E-01	1.894600E-01	1.910312E-01	1.907365E-01	9.333673E-04
2.000000E+01	1.951833E-01	1.941000E-01	2.011135E-01	1.948871E-01	1.968770E-01	1.999496E-01	1.966851E-01	1.984540E-01	1.959600E-01	1.958393E-01	1.970656E-01	8.961391E-04
2.100000E+01	1.519896E-01	1.408000E-01	1.578741E-01	1.504897E-01	1.516726E-01	1.584955E-01	1.511857E-01	1.611980E-01	1.542000E-01	1.521799E-01	1.533399E-01	2.234486E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999990E-01	1.000004E+00	1.000000E+00	1.000013E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means. *

Table 5.20 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A112233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	8.124937E-04	3.000000E-04	0.000000E+00	1.452703E-04	4.906043E-04	9.540377E-03	0.000000E+00	4.933770E-05	3.723900E-03	0.000000E+00	2.151712E-03	1.322800E-03
2.000000E+00	1.111214E-03	4.000000E-04	0.000000E+00	1.621646E-04	6.580256E-04	1.158365E-02	0.000000E+00	6.125570E-05	4.784700E-03	2.288663E-05	2.680145E-03	1.608386E-03
3.000000E+00	1.096426E-03	4.000000E-04	0.000000E+00	1.735644E-04	6.693620E-04	1.075134E-02	4.478142E-07	5.321540E-05	4.759400E-03	2.885338E-05	2.557616E-03	1.498385E-03
4.000000E+00	8.268741E-04	4.000000E-04	0.000000E+00	1.700726E-04	5.921318E-04	8.641777E-03	1.213753E-06	5.051570E-05	4.160200E-03	3.850271E-05	2.120224E-03	1.212494E-03
5.000000E+00	6.013630E-04	3.000000E-04	1.205044E-06	1.747454E-04	5.265365E-04	5.368359E-03	3.595394E-05	4.843050E-05	3.386900E-03	3.316668E-05	1.486619E-03	7.804436E-04
6.000000E+00	5.240078E-04	2.000000E-04	8.156163E-06	1.816778E-04	5.158537E-04	3.362756E-03	6.160702E-05	6.597120E-05	2.723800E-03	3.157411E-05	1.082009E-03	5.152450E-04
7.000000E+00	3.196375E-04	2.000000E-04	4.992606E-05	1.389029E-04	4.692037E-04	2.308736E-03	1.057731E-04	8.263340E-05	2.043600E-03	5.201135E-05	7.946733E-04	3.610324E-04
8.000000E+00	2.662562E-04	3.000000E-04	1.462830E-04	1.854263E-04	4.670908E-04	2.093490E-03	1.594987E-04	1.801950E-04	2.073100E-03	1.756514E-04	7.950797E-04	3.345679E-04
9.000000E+00	4.173590E-04	5.000000E-04	3.719943E-04	2.667654E-04	5.354668E-04	2.009386E-03	3.734316E-04	3.396580E-04	2.207900E-03	3.364726E-04	8.966479E-04	3.155516E-04
1.000000E+01	9.959257E-04	1.000000E-03	7.610983E-04	6.239075E-04	8.902142E-04	2.262211E-03	9.515730E-04	7.851340E-04	2.581400E-03	8.007304E-04	1.305542E-03	2.943999E-04
1.100000E+01	1.843962E-03	1.700000E-03	1.703852E-03	1.188248E-03	1.491839E-03	2.512548E-03	1.753708E-03	1.487340E-03	3.480400E-03	1.628628E-03	1.957763E-03	2.982544E-04
1.200000E+01	3.661253E-03	3.700000E-03	3.750327E-03	2.768814E-03	3.253337E-03	3.492765E-03	3.641379E-03	3.354280E-03	5.535200E-03	3.556629E-03	3.680807E-03	3.307986E-04
1.300000E+01	7.671300E-03	7.400000E-03	7.370500E-03	5.941242E-03	6.842835E-03	4.047994E-03	7.470124E-03	7.052030E-03	9.060200E-03	7.418582E-03	6.859372E-03	5.891751E-04
1.400000E+01	1.496757E-02	1.530000E-02	1.492998E-02	1.384921E-02	1.432243E-02	1.146520E-02	1.504847E-02	1.424370E-02	1.491100E-02	1.525780E-02	1.415130E-02	4.856802E-04
1.500000E+01	4.162064E-02	4.380000E-02	4.435358E-02	4.366325E-02	4.199820E-02	3.522523E-02	4.141134E-02	4.154420E-02	4.045600E-02	4.307584E-02	4.118679E-02	1.091202E-03
1.600000E+01	7.570311E-02	8.100000E-02	7.881203E-02	8.159580E-02	7.838100E-02	6.999321E-02	7.565503E-02	7.770760E-02	7.379800E-02	7.901755E-02	7.688267E-02	1.546599E-03
1.700000E+01	1.082127E-01	1.146000E-01	1.110531E-01	1.145628E-01	1.117143E-01	1.000932E-01	1.087304E-01	1.102770E-01	1.053200E-01	1.123091E-01	1.092543E-01	1.978119E-03
1.800000E+01	1.604600E-01	1.648000E-01	1.612033E-01	1.644240E-01	1.619018E-01	1.488791E-01	1.606542E-01	1.603970E-01	1.548400E-01	1.617248E-01	1.593860E-01	2.150625E-03
1.900000E+01	1.968686E-01	1.988000E-01	1.950734E-01	1.984693E-01	1.973354E-01	1.864961E-01	1.992838E-01	1.955090E-01	1.901700E-01	1.972549E-01	1.948069E-01	1.766526E-03
2.000000E+01	2.155118E-01	2.125000E-01	2.143832E-01	2.121799E-01	2.137453E-01	2.112538E-01	2.174031E-01	2.150220E-01	2.091600E-01	2.138689E-01	2.127675E-01	8.351227E-04
2.100000E+01	1.665076E-01	1.525000E-01	1.660280E-01	1.591349E-01	1.631991E-01	1.686188E-01	1.672589E-01	1.716900E-01	1.608200E-01	1.633674E-01	1.632101E-01	2.435168E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999957E-01	1.000000E+00	1.000014E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.21 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A322221

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.301824E-04		0.000000E+00	2.690283E-04	8.057642E-04	1.298474E-02	0.000000E+00	5.005730E-07	2.447900E-03	0.000000E+00	2.773019E-03	2.075222E-03
2.000000E+00	1.265256E-04		0.000000E+00	2.724938E-04	9.487383E-04	1.369404E-02	0.000000E+00	1.832490E-06	2.614000E-03	0.000000E+00	2.942938E-03	2.186204E-03
3.000000E+00	1.090624E-04		0.000000E+00	1.871963E-04	7.635435E-04	1.061857E-02	0.000000E+00	1.348830E-06	1.846500E-03	0.000000E+00	2.254370E-03	1.696078E-03
4.000000E+00	8.191255E-05		0.000000E+00	1.177173E-04	5.632190E-04	6.774793E-03	0.000000E+00	8.007250E-07	1.157600E-03	0.000000E+00	1.449340E-03	1.079693E-03
5.000000E+00	5.521783E-05		0.000000E+00	5.623155E-05	3.709622E-04	3.254671E-03	0.000000E+00	1.317980E-06	6.220100E-04	1.025040E-06	7.267350E-04	5.149349E-04
6.000000E+00	5.782504E-05		0.000000E+00	4.264878E-05	3.013819E-04	1.382570E-03	0.000000E+00	1.921940E-06	4.051000E-04	2.675085E-06	3.652412E-04	2.137908E-04
7.000000E+00	7.679302E-05		6.166493E-07	4.813219E-05	2.012460E-04	5.432616E-04	0.000000E+00	3.254200E-06	2.662900E-04	7.548375E-06	1.898295E-04	8.135447E-05
8.000000E+00	1.002789E-04		1.420380E-05	4.365491E-05	1.468945E-04	3.691580E-04	3.049794E-07	1.696630E-05	2.057800E-04	1.917799E-05	1.471221E-04	5.246619E-05
9.000000E+00	1.214061E-04		2.306351E-05	3.770197E-05	1.270736E-04	5.772046E-04	1.361359E-05	2.919990E-05	1.005800E-04	5.492601E-05	1.655277E-04	8.407263E-05
1.000000E+01	1.569415E-04		3.659549E-05	8.848364E-05	1.533660E-04	8.245879E-04	6.433769E-05	8.015750E-05	1.138200E-04	1.271408E-04	2.362261E-04	1.183906E-04
1.100000E+01	3.100975E-04		1.674881E-04	2.315219E-04	2.684285E-04	8.723393E-04	1.036347E-04	2.132100E-04	2.614000E-04	2.354657E-04	3.594995E-04	1.034636E-04
1.200000E+01	7.854538E-04		6.046594E-04	7.730440E-04	7.616725E-04	1.019684E-03	5.183923E-04	6.709490E-04	7.701600E-04	7.682502E-04	7.968272E-04	4.766285E-05
1.300000E+01	1.701879E-03		1.689725E-03	2.192807E-03	2.038157E-03	1.321081E-03	1.793379E-03	1.941090E-03	1.990500E-03	2.088324E-03	1.864252E-03	1.266797E-04
1.400000E+01	4.938776E-03		5.414981E-03	6.081503E-03	5.844506E-03	4.176113E-03	5.564468E-03	5.496950E-03	5.679200E-03	5.696989E-03	5.369508E-03	2.860322E-04
1.500000E+01	2.669910E-02		2.566656E-02	2.797603E-02	2.668005E-02	2.130068E-02	2.599165E-02	2.585600E-02	2.712900E-02	2.655593E-02	2.594014E-02	9.697666E-04
1.600000E+01	6.616429E-02		6.379410E-02	6.796974E-02	6.527848E-02	5.717018E-02	6.431587E-02	6.392320E-02	6.628500E-02	6.546236E-02	6.446515E-02	1.556201E-03
1.700000E+01	1.031601E-01		1.021381E-01	1.064263E-01	1.035193E-01	9.007373E-02	1.032791E-01	1.014680E-01	1.026500E-01	1.040200E-01	1.012162E-01	2.327387E-03
1.800000E+01	1.631530E-01		1.608246E-01	1.651173E-01	1.621863E-01	1.489524E-01	1.646721E-01	1.606320E-01	1.610700E-01	1.632144E-01	1.601852E-01	2.340197E-03
1.900000E+01	2.089735E-01		2.085488E-01	2.093312E-01	2.092606E-01	1.983377E-01	2.114359E-01	2.078050E-01	2.059200E-01	2.100617E-01	2.066047E-01	1.735427E-03
2.000000E+01	2.393298E-01		2.422491E-01	2.345962E-01	2.382237E-01	2.401649E-01	2.400409E-01	2.410230E-01	2.372300E-01	2.389391E-01	2.384279E-01	9.438134E-04
2.100000E+01	1.837679E-01		1.888273E-01	1.781411E-01	1.815567E-01	1.855876E-01	1.822064E-01	1.908320E-01	1.812400E-01	1.827450E-01	1.835209E-01	1.786871E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999987E-01	1.000005E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.22 Results from the contributors: Axial fission density distribution for the axial burn-up profile B32A332211

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.063663E-03	4.000000E-04	1.636829E-06	9.855331E-04	1.158568E-03	5.861146E-03	0.000000E+00	3.727440E-04	3.145600E-03	0.000000E+00	1.748611E-03	6.899521E-04
2.000000E+00	2.736503E-03	6.000000E-04	1.740762E-05	1.386734E-03	1.539818E-03	7.383882E-03	5.102194E-07	4.522650E-04	4.256300E-03	3.611173E-06	2.296614E-03	8.741290E-04
3.000000E+00	2.540819E-03	5.000000E-04	2.801795E-05	1.356869E-03	1.519279E-03	6.895829E-03	7.404513E-07	4.671960E-04	4.475800E-03	1.294243E-05	2.222976E-03	8.358740E-04
4.000000E+00	2.101640E-03	5.000000E-04	4.853795E-05	1.005819E-03	1.316795E-03	5.556921E-03	1.099330E-05	4.253950E-04	4.358400E-03	1.052847E-05	1.914188E-03	7.090979E-04
5.000000E+00	1.921428E-03	4.000000E-04	9.444717E-05	7.978930E-04	1.121771E-03	3.851295E-03	3.819560E-05	3.271260E-04	3.838600E-03	1.856436E-05	1.544070E-03	5.404516E-04
6.000000E+00	1.915475E-03	4.000000E-04	2.378720E-04	7.528143E-04	1.039659E-03	2.761361E-03	1.151361E-04	3.031410E-04	3.260600E-03	6.426518E-05	1.333865E-03	4.150774E-04
7.000000E+00	1.567333E-03	4.000000E-04	3.984256E-04	9.218595E-04	9.129203E-04	1.755426E-03	2.972373E-04	4.403130E-04	2.628800E-03	2.018571E-04	1.128135E-03	2.823058E-04
8.000000E+00	1.562643E-03	5.000000E-04	6.841947E-04	1.277418E-03	1.056085E-03	1.581468E-03	5.801592E-04	7.097310E-04	2.518900E-03	5.223173E-04	1.236305E-03	2.325751E-04
9.000000E+00	1.751964E-03	1.000000E-03	1.224511E-03	1.697213E-03	1.392163E-03	1.838621E-03	1.044604E-03	1.081220E-03	2.693400E-03	9.343990E-04	1.584886E-03	1.934877E-04
1.000000E+01	2.782070E-03	2.200000E-03	2.338727E-03	2.988718E-03	2.383936E-03	2.777751E-03	2.350342E-03	2.114490E-03	3.398900E-03	1.854441E-03	2.623074E-03	1.558671E-04
1.100000E+01	4.354472E-03	3.800000E-03	3.879481E-03	4.513505E-03	3.801960E-03	4.080913E-03	3.801985E-03	3.616430E-03	4.598800E-03	3.106878E-03	4.080695E-03	1.297816E-04
1.200000E+01	7.963043E-03	8.100000E-03	7.781180E-03	8.317020E-03	7.596851E-03	6.857823E-03	8.309357E-03	7.486300E-03	8.493200E-03	6.932025E-03	7.824427E-03	1.835841E-04
1.300000E+01	1.413537E-02	1.560000E-02	1.487805E-02	1.644809E-02	1.475701E-02	8.742336E-03	1.540358E-02	1.456260E-02	1.539500E-02	1.413966E-02	1.431481E-02	8.348252E-04
1.400000E+01	2.533480E-02	2.870000E-02	2.680883E-02	2.853482E-02	2.788314E-02	2.323706E-02	2.806645E-02	2.688400E-02	2.690200E-02	2.764555E-02	2.678558E-02	6.359750E-04
1.500000E+01	6.656459E-02	7.110000E-02	6.711212E-02	6.942120E-02	6.848553E-02	6.130280E-02	6.863243E-02	6.706190E-02	6.559000E-02	6.989670E-02	6.707977E-02	1.030606E-03
1.600000E+01	1.137201E-01	1.192000E-01	1.143825E-01	1.160213E-01	1.156414E-01	1.068368E-01	1.148578E-01	1.144370E-01	1.119300E-01	1.171709E-01	1.140211E-01	1.266521E-03
1.700000E+01	1.424329E-01	1.474000E-01	1.448163E-01	1.432376E-01	1.444724E-01	1.356057E-01	1.439371E-01	1.435790E-01	1.409600E-01	1.467555E-01	1.428130E-01	1.225454E-03
1.800000E+01	1.701010E-01	1.728000E-01	1.725279E-01	1.687070E-01	1.705415E-01	1.644597E-01	1.694315E-01	1.706300E-01	1.679000E-01	1.732755E-01	1.697084E-01	9.545699E-04
1.900000E+01	1.743372E-01	1.756000E-01	1.787536E-01	1.733276E-01	1.747962E-01	1.744559E-01	1.767919E-01	1.761120E-01	1.706300E-01	1.769865E-01	1.747516E-01	8.222688E-04
2.000000E+01	1.543273E-01	1.526000E-01	1.563416E-01	1.542255E-01	1.535601E-01	1.607715E-01	1.571919E-01	1.571880E-01	1.504500E-01	1.554030E-01	1.549330E-01	1.113631E-03
2.100000E+01	1.057856E-01	9.830000E-02	1.076446E-01	1.040755E-01	1.050231E-01	1.133858E-01	1.091382E-01	1.117490E-01	1.025700E-01	1.050649E-01	1.060667E-01	1.721859E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999999E-01	9.999943E-01	1.000000E+00	1.000012E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.23 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50Auniform

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean	Standard deviation*
1.000000E+00	9.213818E-03	8.800000E-03	9.397872E-03	8.787980E-03	9.246866E-03	8.592749E-03	9.675247E-03	8.145650E-03	8.492600E-03	1.135328E-02	9.170606E-03	2.829597E-04
2.000000E+00	1.726346E-02	1.670000E-02	1.661253E-02	1.678709E-02	1.679207E-02	1.521083E-02	1.773708E-02	1.452240E-02	1.525900E-02	1.964443E-02	1.665289E-02	4.606794E-04
3.000000E+00	2.606337E-02	2.460000E-02	2.309905E-02	2.586476E-02	2.447114E-02	2.148397E-02	2.588801E-02	2.213280E-02	2.214000E-02	2.781591E-02	2.435590E-02	6.605055E-04
4.000000E+00	3.328106E-02	3.240000E-02	2.925552E-02	3.589550E-02	3.167573E-02	2.755171E-02	3.377872E-02	3.006070E-02	2.863600E-02	3.567032E-02	3.182053E-02	9.176719E-04
5.000000E+00	4.364373E-02	4.260000E-02	4.008576E-02	4.840796E-02	4.198765E-02	3.556146E-02	4.478721E-02	4.114470E-02	3.962500E-02	4.476335E-02	4.226068E-02	1.107251E-03
6.000000E+00	5.367131E-02	5.200000E-02	5.139126E-02	5.750451E-02	5.172446E-02	4.280630E-02	5.426224E-02	5.036810E-02	4.817400E-02	5.195880E-02	5.138610E-02	1.232502E-03
7.000000E+00	6.490053E-02	6.300000E-02	6.118931E-02	6.499689E-02	6.263913E-02	5.337237E-02	6.394286E-02	6.213670E-02	5.952800E-02	6.101684E-02	6.167226E-02	1.073379E-03
8.000000E+00	7.215623E-02	7.220000E-02	6.996010E-02	7.002641E-02	7.216698E-02	6.520647E-02	7.227625E-02	7.197650E-02	6.924500E-02	6.877920E-02	7.039932E-02	7.204869E-04
9.000000E+00	7.582444E-02	7.700000E-02	7.456415E-02	7.146072E-02	7.731025E-02	7.245644E-02	7.768074E-02	7.779940E-02	7.547200E-02	7.378352E-02	7.533517E-02	7.055759E-04
1.000000E+01	7.963875E-02	8.030000E-02	7.509634E-02	7.316868E-02	8.155479E-02	8.075749E-02	8.200442E-02	8.306050E-02	7.982400E-02	7.951956E-02	7.949245E-02	9.717943E-04
1.100000E+01	7.933866E-02	8.070000E-02	7.423824E-02	7.245153E-02	8.265028E-02	8.371901E-02	8.238545E-02	8.506860E-02	8.288400E-02	8.139212E-02	8.048279E-02	1.296429E-03
1.200000E+01	7.859169E-02	7.900000E-02	7.344202E-02	7.347064E-02	8.043962E-02	8.434402E-02	7.961376E-02	8.452760E-02	8.042400E-02	8.152340E-02	7.953768E-02	1.195817E-03
1.300000E+01	7.719668E-02	7.550000E-02	7.321512E-02	7.388584E-02	7.665882E-02	8.039645E-02	7.460727E-02	8.141280E-02	7.547800E-02	7.814287E-02	7.664938E-02	8.534606E-04
1.400000E+01	6.953581E-02	6.900000E-02	7.290158E-02	6.938475E-02	6.997212E-02	7.446343E-02	6.758865E-02	7.286030E-02	7.037400E-02	7.215529E-02	7.082359E-02	6.825944E-04
1.500000E+01	5.365621E-02	5.720000E-02	6.279825E-02	5.761774E-02	5.632698E-02	6.048889E-02	5.429996E-02	5.674120E-02	5.964200E-02	5.639640E-02	5.751676E-02	8.811530E-04
1.600000E+01	4.472204E-02	4.600000E-02	5.139126E-02	4.815318E-02	4.521109E-02	5.001506E-02	4.377805E-02	4.388000E-02	4.853400E-02	4.367723E-02	4.653619E-02	8.847538E-04
1.700000E+01	3.837687E-02	3.950000E-02	4.495137E-02	4.204793E-02	3.847005E-02	4.403263E-02	3.710281E-02	3.740450E-02	4.298800E-02	3.646524E-02	4.013394E-02	9.807651E-04
1.800000E+01	3.208625E-02	3.240000E-02	3.824167E-02	3.481976E-02	3.147587E-02	3.721069E-02	3.050322E-02	3.014660E-02	3.605600E-02	2.931243E-02	3.322525E-02	9.935358E-04
1.900000E+01	2.505653E-02	2.490000E-02	2.900923E-02	2.698768E-02	2.405555E-02	2.943073E-02	2.343378E-02	2.282740E-02	2.815500E-02	2.217361E-02	2.560295E-02	8.302711E-04
2.000000E+01	1.676534E-02	1.690000E-02	1.916539E-02	1.810816E-02	1.626211E-02	2.104220E-02	1.590207E-02	1.524180E-02	1.841600E-02	1.565780E-02	1.734609E-02	5.751458E-04
2.100000E+01	9.017236E-03	9.000000E-03	9.994006E-03	1.017228E-02	8.908428E-03	1.185711E-02	8.752175E-03	8.541710E-03	1.065200E-02	8.798395E-03	9.569334E-03	3.388517E-04
Sum	1.000000E+00	9.997000E-01	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999986E-01	1.000000E+00	9.999699E-01	

* The standard deviation values given are the standard deviations of the respective sample means.

Table 5.24 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A111111

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	3.607615E-04	2.000000E-04	0.000000E+00	0.000000E+00	5.325388E-04	4.718192E-03	0.000000E+00	0.000000E+00	1.365700E-03	0.000000E+00	1.435438E-03	8.449201E-04
2.000000E+00	3.466140E-04	3.000000E-04	0.000000E+00	0.000000E+00	6.017216E-04	5.278078E-03	0.000000E+00	0.000000E+00	1.347400E-03	0.000000E+00	1.574763E-03	9.446274E-04
3.000000E+00	2.739791E-04	2.000000E-04	0.000000E+00	0.000000E+00	4.708773E-04	3.946606E-03	0.000000E+00	0.000000E+00	1.053000E-03	0.000000E+00	1.188892E-03	7.054775E-04
4.000000E+00	1.973578E-04	1.000000E-04	0.000000E+00	0.000000E+00	3.284104E-04	2.196210E-03	0.000000E+00	0.000000E+00	6.647600E-04	0.000000E+00	6.973477E-04	3.866898E-04
5.000000E+00	1.206075E-04	1.000000E-04	0.000000E+00	0.000000E+00	2.323118E-04	1.204712E-03	0.000000E+00	0.000000E+00	3.928100E-04	0.000000E+00	4.100882E-04	2.053392E-04
6.000000E+00	1.047775E-04	1.000000E-04	0.000000E+00	0.000000E+00	1.957164E-04	6.922645E-04	0.000000E+00	2.693220E-08	2.180800E-04	0.000000E+00	2.621677E-04	1.100938E-04
7.000000E+00	3.796249E-05	1.000000E-04	8.422883E-06	3.197758E-06	1.512650E-04	2.737885E-04	0.000000E+00	1.027950E-06	7.167400E-05	4.310149E-06	1.269380E-04	4.114199E-05
8.000000E+00	1.557504E-05	1.000000E-04	1.438211E-05	9.940069E-06	1.259094E-04	1.874524E-04	0.000000E+00	3.902840E-06	6.316400E-05	6.445999E-06	9.842018E-05	2.897517E-05
9.000000E+00	2.157495E-05	1.000000E-04	1.837238E-05	2.218852E-05	1.088123E-04	1.583639E-04	1.344050E-07	1.192160E-05	9.508900E-05	1.339933E-05	9.676803E-05	2.191618E-05
1.000000E+01	6.935125E-05	1.000000E-04	5.679946E-05	7.302688E-05	1.101989E-04	2.190054E-04	2.158784E-05	3.971410E-05	1.491000E-04	3.826660E-05	1.295311E-04	2.574493E-05
1.100000E+01	1.619890E-04	1.000000E-04	1.255830E-04	1.242104E-04	1.589601E-04	2.470887E-04	6.027692E-05	7.905240E-05	1.766600E-04	7.623677E-05	1.689396E-04	2.352388E-05
1.200000E+01	4.139279E-04	4.000000E-04	3.714897E-04	3.498171E-04	4.377032E-04	4.427118E-04	3.210827E-04	3.261630E-04	4.805700E-04	3.471240E-04	4.349826E-04	1.380659E-05
1.300000E+01	1.012962E-03	1.100000E-03	9.226036E-04	1.120752E-03	1.193443E-03	5.709650E-04	1.047672E-03	1.030570E-03	1.210800E-03	1.093279E-03	1.017634E-03	1.171625E-04
1.400000E+01	3.546572E-03	4.000000E-03	3.423677E-03	3.691255E-03	3.735579E-03	2.574472E-03	3.649129E-03	3.466440E-03	3.584600E-03	3.894816E-03	3.488245E-03	2.419436E-04
1.500000E+01	1.965160E-02	2.190000E-02	1.970928E-02	2.066218E-02	2.043775E-02	1.604373E-02	2.060411E-02	1.976140E-02	1.978300E-02	2.084205E-02	1.956322E-02	9.661330E-04
1.600000E+01	5.295513E-02	5.810000E-02	5.417893E-02	5.544434E-02	5.492841E-02	4.793161E-02	5.680640E-02	5.355470E-02	5.341100E-02	5.509995E-02	5.346523E-02	1.650850E-03
1.700000E+01	9.021443E-02	9.670000E-02	9.136695E-02	9.314433E-02	9.270725E-02	8.392695E-02	9.510114E-02	9.065460E-02	9.043300E-02	9.255713E-02	9.079633E-02	2.075619E-03
1.800000E+01	1.507446E-01	1.579000E-01	1.521856E-01	1.544675E-01	1.532857E-01	1.438506E-01	1.533411E-01	1.510270E-01	1.497200E-01	1.530039E-01	1.511002E-01	2.297837E-03
1.900000E+01	2.063308E-01	2.116000E-01	2.060889E-01	2.103433E-01	2.083392E-01	2.017992E-01	2.079518E-01	2.057480E-01	2.057800E-01	2.085089E-01	2.067698E-01	1.607382E-03
2.000000E+01	2.524756E-01	2.486000E-01	2.521996E-01	2.503085E-01	2.498305E-01	2.576548E-01	2.497956E-01	2.505650E-01	2.514600E-01	2.511045E-01	2.520042E-01	1.561434E-03
2.100000E+01	2.209438E-01	1.982000E-01	2.193294E-01	2.102354E-01	2.120877E-01	2.260832E-01	2.113000E-01	2.237300E-01	2.185400E-01	2.134097E-01	2.151709E-01	4.802458E-03
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999995E-01	1.000000E+00	1.000000E+00	1.000000E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.25 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A111112

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	9.529887E-05		0.000000E+00	1.712379E-04	5.102805E-04	5.382742E-03	0.000000E+00	0.000000E+00	5.381900E-04	0.000000E+00	1.339550E-03	1.014652E-03
2.000000E+00	1.284770E-04		0.000000E+00	1.832461E-04	5.905116E-04	5.759933E-03	0.000000E+00	0.000000E+00	6.008600E-04	0.000000E+00	1.452606E-03	1.081350E-03
3.000000E+00	9.820310E-05		0.000000E+00	1.395212E-04	4.640251E-04	4.326333E-03	0.000000E+00	0.000000E+00	4.640500E-04	0.000000E+00	1.098427E-03	8.106857E-04
4.000000E+00	5.012015E-05		0.000000E+00	9.428855E-05	3.188092E-04	2.570519E-03	0.000000E+00	0.000000E+00	3.547600E-04	0.000000E+00	6.776995E-04	4.769740E-04
5.000000E+00	2.364824E-05		0.000000E+00	3.274521E-05	2.208151E-04	1.157627E-03	9.454064E-07	0.000000E+00	2.293600E-04	0.000000E+00	3.328390E-04	2.108539E-04
6.000000E+00	4.945480E-06		0.000000E+00	1.170126E-05	1.941698E-04	5.468249E-04	7.121309E-06	2.597020E-08	1.416800E-04	0.000000E+00	1.798643E-04	9.879225E-05
7.000000E+00	2.353059E-07		5.395901E-09	3.523301E-06	1.449799E-04	3.386588E-04	1.396820E-05	5.449580E-07	1.031200E-04	7.700045E-08	1.181035E-04	6.189225E-05
8.000000E+00	0.000000E+00		3.472183E-06	5.670236E-07	1.079904E-04	1.923706E-04	4.149356E-06	1.532960E-06	1.149100E-04	6.397428E-06	8.316760E-05	3.693830E-05
9.000000E+00	1.058876E-06		2.066079E-05	8.804213E-06	7.875210E-05	2.110667E-04	1.297138E-05	1.411000E-05	1.037100E-04	1.651901E-05	8.067838E-05	3.810541E-05
1.000000E+01	2.471725E-05		7.423971E-05	1.510448E-05	8.237289E-05	4.650486E-04	6.174689E-05	4.252610E-05	9.962600E-05	4.983496E-05	1.373739E-04	8.350511E-05
1.100000E+01	1.305948E-04		1.503453E-04	3.655229E-05	1.239333E-04	3.773179E-04	1.417808E-04	9.998700E-05	1.931800E-04	1.246851E-04	1.723157E-04	5.699755E-05
1.200000E+01	5.171084E-04		6.192708E-04	2.092010E-04	3.873565E-04	5.942482E-04	4.494581E-04	3.484180E-04	4.014800E-04	3.636047E-04	4.218788E-04	6.542920E-05
1.300000E+01	1.190177E-03		1.655604E-03	9.229616E-04	1.165781E-03	7.201786E-04	1.175974E-03	1.053070E-03	1.041900E-03	9.759397E-04	1.008200E-03	8.640167E-05
1.400000E+01	3.579746E-03		3.986572E-03	3.579842E-03	3.756553E-03	3.083662E-03	4.037197E-03	3.659150E-03	3.548300E-03	3.484472E-03	3.509620E-03	1.126412E-04
1.500000E+01	1.915484E-02		1.991028E-02	1.998853E-02	2.047453E-02	1.680087E-02	2.081157E-02	1.997190E-02	1.988600E-02	2.014877E-02	1.926095E-02	6.502344E-04
1.600000E+01	5.153332E-02		5.393367E-02	5.492537E-02	5.479708E-02	4.740795E-02	5.504355E-02	5.311370E-02	5.275700E-02	5.480867E-02	5.228414E-02	1.375781E-03
1.700000E+01	8.901338E-02		9.104431E-02	9.310388E-02	9.296107E-02	8.382762E-02	9.230645E-02	9.053610E-02	9.026700E-02	9.333872E-02	8.983459E-02	1.694228E-03
1.800000E+01	1.519770E-01		1.540218E-01	1.543834E-01	1.534455E-01	1.449578E-01	1.536760E-01	1.511460E-01	1.514600E-01	1.530317E-01	1.512447E-01	1.655339E-03
1.900000E+01	2.080247E-01		2.071124E-01	2.088779E-01	2.081524E-01	2.021467E-01	2.085376E-01	2.061450E-01	2.069900E-01	2.085357E-01	2.068384E-01	1.210978E-03
2.000000E+01	2.550264E-01		2.501455E-01	2.508258E-01	2.496898E-01	2.573220E-01	2.499117E-01	2.504290E-01	2.527600E-01	2.510294E-01	2.531248E-01	1.386540E-03
2.100000E+01	2.194260E-01		2.173218E-01	2.124858E-01	2.123332E-01	2.218106E-01	2.138077E-01	2.234390E-01	2.179400E-01	2.140855E-01	2.167991E-01	1.895606E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999951E-01	1.000000E+00	9.999990E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.26 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A111122

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.263764E-04		0.000000E+00	5.977040E-06	4.639471E-04	7.576897E-03	0.000000E+00	0.000000E+00	8.882400E-04	0.000000E+00	1.832288E-03	1.443580E-03
2.000000E+00	2.722159E-04		0.000000E+00	6.717415E-06	5.327579E-04	8.994508E-03	0.000000E+00	0.000000E+00	1.134600E-03	0.000000E+00	2.188160E-03	1.711815E-03
3.000000E+00	2.202101E-04		0.000000E+00	6.128357E-06	4.515899E-04	7.881209E-03	0.000000E+00	0.000000E+00	9.353300E-04	0.000000E+00	1.898893E-03	1.503526E-03
4.000000E+00	1.424549E-04		0.000000E+00	5.712234E-08	3.245467E-04	3.993882E-03	0.000000E+00	2.083190E-09	6.501800E-04	0.000000E+00	1.022224E-03	7.508242E-04
5.000000E+00	7.827969E-05		0.000000E+00	0.000000E+00	2.351449E-04	1.935453E-03	0.000000E+00	3.522090E-07	3.591800E-04	0.000000E+00	5.216114E-04	3.588882E-04
6.000000E+00	4.728870E-05		1.991163E-08	0.000000E+00	1.928952E-04	7.154983E-04	0.000000E+00	6.316290E-08	1.514300E-04	0.000000E+00	2.214224E-04	1.282915E-04
7.000000E+00	2.562308E-05		6.722521E-06	1.853639E-07	1.452813E-04	2.634555E-04	0.000000E+00	1.141550E-06	6.522700E-05	0.000000E+00	9.995444E-05	4.768235E-05
8.000000E+00	1.270443E-05		1.910761E-05	6.641756E-07	1.166946E-04	1.281512E-04	0.000000E+00	5.181350E-06	2.647600E-05	0.000000E+00	5.693808E-05	2.710485E-05
9.000000E+00	1.163617E-05		1.892529E-05	1.100835E-05	9.302170E-05	1.289543E-04	8.095354E-07	1.221980E-05	3.337700E-05	1.985582E-06	5.559951E-05	2.366045E-05
1.000000E+01	2.292913E-05		6.048297E-05	4.271476E-05	9.842011E-05	2.358858E-04	8.865308E-06	4.359960E-05	8.108200E-05	1.838333E-05	9.620635E-05	3.739979E-05
1.100000E+01	4.442902E-05		1.116896E-04	7.047070E-05	1.554496E-04	3.232257E-04	3.435319E-05	1.047300E-04	1.892100E-04	6.619502E-05	1.565570E-04	4.941125E-05
1.200000E+01	3.176720E-04		3.508260E-04	2.734523E-04	4.209244E-04	5.285354E-04	1.764280E-04	3.525130E-04	4.569800E-04	3.397684E-04	3.995128E-04	4.636643E-05
1.300000E+01	1.048666E-03		1.002255E-03	9.976144E-04	1.197259E-03	9.089955E-04	7.971809E-04	1.018390E-03	1.159600E-03	1.088537E-03	1.062427E-03	5.270363E-05
1.400000E+01	3.500741E-03		3.468816E-03	3.818604E-03	3.759999E-03	2.962512E-03	3.130547E-03	3.378410E-03	3.486100E-03	3.680127E-03	3.505591E-03	1.513339E-04
1.500000E+01	1.947989E-02		1.905808E-02	2.082236E-02	2.012176E-02	1.602650E-02	1.946957E-02	1.903510E-02	1.970700E-02	1.988009E-02	1.923150E-02	8.331642E-04
1.600000E+01	5.183759E-02		5.091541E-02	5.582534E-02	5.398082E-02	4.612025E-02	5.374493E-02	5.213860E-02	5.358700E-02	5.406814E-02	5.227020E-02	1.662952E-03
1.700000E+01	8.856466E-02		8.853437E-02	9.365470E-02	9.162394E-02	8.016015E-02	9.232119E-02	8.922390E-02	8.977500E-02	9.232147E-02	8.875569E-02	2.315016E-03
1.800000E+01	1.507582E-01		1.493843E-01	1.549383E-01	1.530114E-01	1.410862E-01	1.552349E-01	1.508640E-01	1.508700E-01	1.544857E-01	1.501328E-01	2.389087E-03
1.900000E+01	2.087790E-01		2.068103E-01	2.084398E-01	2.090366E-01	2.005509E-01	2.099401E-01	2.063440E-01	2.064300E-01	2.110471E-01	2.066473E-01	1.591835E-03
2.000000E+01	2.540194E-01		2.560218E-01	2.494036E-01	2.508403E-01	2.552602E-01	2.509445E-01	2.519910E-01	2.520900E-01	2.508980E-01	2.523227E-01	1.055464E-03
2.100000E+01	2.205901E-01		2.242369E-01	2.116823E-01	2.131972E-01	2.242186E-01	2.141966E-01	2.254870E-01	2.179200E-01	2.121045E-01	2.175217E-01	2.315403E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999960E-01	1.000000E+00	9.999992E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.27 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A111222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	3.940296E-04		0.000000E+00	1.318778E-05	5.251750E-04	5.648706E-03	0.000000E+00	4.042590E-05	6.953900E-04	0.000000E+00	1.460745E-03	1.052503E-03
2.000000E+00	3.912202E-04		0.000000E+00	3.541214E-05	6.088580E-04	6.308145E-03	0.000000E+00	3.660430E-05	8.505000E-04	0.000000E+00	1.639066E-03	1.174914E-03
3.000000E+00	2.762581E-04		0.000000E+00	1.865075E-05	5.282941E-04	4.132421E-03	0.000000E+00	2.054320E-05	7.620700E-04	0.000000E+00	1.143917E-03	7.573227E-04
4.000000E+00	2.015802E-04		0.000000E+00	6.407653E-06	3.875109E-04	2.255825E-03	0.000000E+00	8.371310E-06	4.705900E-04	0.000000E+00	6.647756E-04	4.056747E-04
5.000000E+00	1.345039E-04		0.000000E+00	2.270479E-06	2.689759E-04	1.087596E-03	0.000000E+00	1.953370E-06	2.867900E-04	0.000000E+00	3.559638E-04	1.900007E-04
6.000000E+00	3.233555E-05		0.000000E+00	0.000000E+00	2.096401E-04	6.460106E-04	0.000000E+00	6.439560E-07	2.459700E-04	0.000000E+00	2.269201E-04	1.151873E-04
7.000000E+00	7.726071E-06		0.000000E+00	0.000000E+00	1.515534E-04	2.391284E-04	0.000000E+00	5.083580E-07	1.720000E-04	1.426936E-06	1.141832E-04	4.722590E-05
8.000000E+00	1.897956E-05		4.317693E-06	0.000000E+00	1.305788E-04	1.395292E-04	0.000000E+00	1.605710E-06	1.739200E-04	9.428120E-06	9.292266E-05	3.461004E-05
9.000000E+00	1.053555E-05		2.014939E-05	3.064014E-06	1.095254E-04	2.047290E-04	2.731155E-07	9.122810E-06	1.367000E-04	1.604966E-05	9.412255E-05	3.774627E-05
1.000000E+01	9.134558E-06		3.147597E-05	2.089640E-05	1.099457E-04	4.959870E-04	5.617292E-06	3.440570E-05	1.699700E-04	4.749910E-05	1.638886E-04	8.773562E-05
1.100000E+01	3.090429E-05		6.741971E-05	8.777459E-05	1.639986E-04	5.721172E-04	3.233340E-05	8.596750E-05	2.305300E-04	8.170608E-05	2.167035E-04	9.510551E-05
1.200000E+01	2.709548E-04		2.912524E-04	3.954715E-04	4.223740E-04	7.591679E-04	2.658709E-04	3.329630E-04	5.206600E-04	3.594367E-04	4.612239E-04	8.557622E-05
1.300000E+01	8.618081E-04		8.962106E-04	1.323097E-03	1.190063E-03	7.939687E-04	1.104528E-03	1.024790E-03	1.205500E-03	1.176886E-03	1.015226E-03	8.347322E-05
1.400000E+01	3.358482E-03		3.352198E-03	3.752283E-03	3.763807E-03	2.753017E-03	3.580480E-03	3.387600E-03	3.589100E-03	3.817089E-03	3.370401E-03	1.709091E-04
1.500000E+01	2.026104E-02		1.932526E-02	2.002189E-02	2.001403E-02	1.711540E-02	1.979133E-02	1.906460E-02	1.937200E-02	2.043199E-02	1.916541E-02	5.556956E-04
1.600000E+01	5.350409E-02		5.194750E-02	5.435979E-02	5.325015E-02	4.857289E-02	5.296975E-02	5.131390E-02	5.277100E-02	5.452873E-02	5.188241E-02	9.101174E-04
1.700000E+01	9.011760E-02		8.805390E-02	9.220111E-02	9.029338E-02	8.206139E-02	9.044918E-02	8.786270E-02	8.991600E-02	9.192431E-02	8.805021E-02	1.560259E-03
1.800000E+01	1.504168E-01		1.493883E-01	1.523370E-01	1.503743E-01	1.410454E-01	1.519307E-01	1.478920E-01	1.494600E-01	1.514838E-01	1.478377E-01	1.758632E-03
1.900000E+01	2.063423E-01		2.081520E-01	2.106914E-01	2.089828E-01	2.002046E-01	2.109034E-01	2.064690E-01	2.074100E-01	2.084733E-01	2.058817E-01	1.495647E-03
2.000000E+01	2.528303E-01		2.555103E-01	2.515557E-01	2.530698E-01	2.582848E-01	2.535379E-01	2.548510E-01	2.527500E-01	2.525485E-01	2.543572E-01	1.054552E-03
2.100000E+01	2.205295E-01		2.229598E-01	2.131746E-01	2.154453E-01	2.266792E-01	2.154286E-01	2.275620E-01	2.188100E-01	2.150998E-01	2.218052E-01	2.323189E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	9.999987E-01	1.000000E+00	9.999999E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.28 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A112222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.333668E-05		0.000000E+00	0.000000E+00	6.382860E-04	8.727140E-03	0.000000E+00	4.180290E-08	1.247300E-03	0.000000E+00	2.127221E-03	1.665853E-03
2.000000E+00	3.182275E-05		0.000000E+00	6.582430E-07	7.033844E-04	8.940504E-03	0.000000E+00	4.043000E-07	1.266800E-03	0.000000E+00	2.188583E-03	1.704167E-03
3.000000E+00	3.821865E-05		0.000000E+00	0.000000E+00	5.805226E-04	6.032424E-03	0.000000E+00	1.783790E-06	9.223600E-04	0.000000E+00	1.515062E-03	1.142416E-03
4.000000E+00	4.313751E-05		0.000000E+00	0.000000E+00	4.338783E-04	3.389170E-03	0.000000E+00	2.303420E-06	6.052800E-04	0.000000E+00	8.947538E-04	6.340359E-04
5.000000E+00	3.146916E-05		1.552908E-06	4.157095E-08	2.965948E-04	1.744541E-03	0.000000E+00	8.193560E-07	3.157700E-04	0.000000E+00	4.778388E-04	3.232988E-04
6.000000E+00	2.477135E-05		4.515986E-06	3.060748E-06	2.252857E-04	1.035901E-03	0.000000E+00	1.790210E-06	2.122500E-04	0.000000E+00	2.999997E-04	1.896724E-04
7.000000E+00	3.064413E-06		3.924857E-06	0.000000E+00	1.538445E-04	5.961678E-04	0.000000E+00	1.658450E-06	1.219800E-04	8.089132E-07	1.753430E-04	1.096014E-04
8.000000E+00	7.077528E-07		1.516577E-05	3.204246E-07	1.147650E-04	6.972324E-04	0.000000E+00	3.283870E-06	1.628700E-04	2.088786E-06	1.957718E-04	1.292689E-04
9.000000E+00	3.535861E-07		2.892401E-05	1.900806E-06	9.972432E-05	5.109000E-04	5.552354E-07	8.474680E-06	9.791100E-05	1.521196E-05	1.434727E-04	9.426032E-05
1.000000E+01	1.839402E-05		6.590131E-05	2.274227E-05	1.076200E-04	5.425260E-04	1.580986E-05	3.946860E-05	9.329700E-05	4.940421E-05	1.602611E-04	9.697908E-05
1.100000E+01	6.293833E-05		1.122914E-04	9.082775E-05	1.570328E-04	7.805336E-04	4.709352E-05	1.024640E-04	1.652400E-04	1.446221E-04	2.536418E-04	1.330387E-04
1.200000E+01	3.650007E-04		3.445906E-04	3.615716E-04	4.623976E-04	6.855227E-04	3.664466E-04	3.532180E-04	4.575400E-04	5.220220E-04	4.647358E-04	5.966047E-05
1.300000E+01	1.268667E-03		1.162638E-03	1.213754E-03	1.317613E-03	7.819398E-04	1.174840E-03	1.055210E-03	1.105300E-03	1.422346E-03	1.105746E-03	9.456099E-05
1.400000E+01	3.754461E-03		3.545851E-03	4.108175E-03	4.005265E-03	3.170719E-03	3.987659E-03	3.631890E-03	3.503800E-03	3.853668E-03	3.613227E-03	1.381624E-04
1.500000E+01	1.957971E-02		2.007184E-02	2.178018E-02	2.072933E-02	1.744724E-02	2.062773E-02	1.995380E-02	1.914400E-02	2.024271E-02	1.937082E-02	5.468386E-04
1.600000E+01	5.268441E-02		5.366556E-02	5.604034E-02	5.436598E-02	4.743285E-02	5.447641E-02	5.269540E-02	5.187100E-02	5.416514E-02	5.180993E-02	1.167150E-03
1.700000E+01	8.877982E-02		8.991809E-02	9.191485E-02	9.083815E-02	8.084252E-02	9.111241E-02	8.850900E-02	8.882500E-02	9.051510E-02	8.755890E-02	1.730023E-03
1.800000E+01	1.477580E-01		1.491718E-01	1.505643E-01	1.492275E-01	1.393013E-01	1.503340E-01	1.473640E-01	1.474000E-01	1.500620E-01	1.462101E-01	1.760393E-03
1.900000E+01	2.025949E-01		2.033613E-01	2.053001E-01	2.043539E-01	1.964457E-01	2.067640E-01	2.024410E-01	2.025500E-01	2.055231E-01	2.016771E-01	1.354995E-03
2.000000E+01	2.564755E-01		2.558405E-01	2.523718E-01	2.532069E-01	2.544922E-01	2.537825E-01	2.544740E-01	2.557300E-01	2.538946E-01	2.548757E-01	5.649133E-04
2.100000E+01	2.264613E-01		2.226855E-01	2.162255E-01	2.179821E-01	2.264030E-01	2.173106E-01	2.293590E-01	2.242100E-01	2.195872E-01	2.248831E-01	1.909333E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999990E-01	1.000008E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.29 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A122222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	5.975087E-05		0.000000E+00	1.468476E-04	5.327714E-04	6.178768E-03	0.000000E+00	0.000000E+00	8.473700E-04	0.000000E+00	1.553102E-03	1.164980E-03
2.000000E+00	7.326595E-05		0.000000E+00	1.776681E-04	6.150718E-04	6.859334E-03	0.000000E+00	0.000000E+00	9.960900E-04	0.000000E+00	1.744286E-03	1.289287E-03
3.000000E+00	4.698566E-05		0.000000E+00	1.592304E-04	5.157264E-04	5.235884E-03	0.000000E+00	0.000000E+00	8.129500E-04	0.000000E+00	1.354155E-03	9.798015E-04
4.000000E+00	2.276224E-05		0.000000E+00	9.677105E-05	3.762590E-04	2.973008E-03	0.000000E+00	0.000000E+00	4.969900E-04	0.000000E+00	7.931580E-04	5.518935E-04
5.000000E+00	1.884998E-05		0.000000E+00	4.905648E-05	2.714955E-04	1.453365E-03	0.000000E+00	0.000000E+00	2.881700E-04	0.000000E+00	4.161874E-04	2.651154E-04
6.000000E+00	8.542847E-06		0.000000E+00	1.541573E-05	2.161831E-04	7.987760E-04	0.000000E+00	2.668390E-09	1.842100E-04	0.000000E+00	2.446255E-04	1.448817E-04
7.000000E+00	5.690559E-06		9.089308E-07	4.973835E-06	1.441088E-04	5.033587E-04	2.274578E-06	1.385890E-06	9.833200E-05	2.612416E-07	1.512928E-04	9.203697E-05
8.000000E+00	4.271423E-06		3.160863E-06	2.078886E-06	1.198840E-04	3.125241E-04	2.212442E-05	3.691930E-06	6.553400E-05	1.411464E-06	1.008585E-04	5.722701E-05
9.000000E+00	1.102546E-05		1.398673E-05	1.000440E-05	1.174899E-04	3.662190E-04	7.252306E-05	1.098840E-05	9.382300E-05	1.460253E-05	1.197124E-04	6.530291E-05
1.000000E+01	7.400763E-05		4.784360E-05	5.242765E-05	1.284703E-04	5.644276E-04	1.472072E-04	4.447790E-05	1.419300E-04	4.570396E-05	1.922526E-04	9.451128E-05
1.100000E+01	1.835205E-04		1.499059E-04	8.722486E-05	1.914691E-04	5.631939E-04	1.869311E-04	1.102340E-04	2.597200E-04	1.118125E-04	2.570257E-04	8.132626E-05
1.200000E+01	5.137134E-04		5.088258E-04	4.060129E-04	5.260963E-04	6.852606E-04	4.591840E-04	4.250090E-04	5.662000E-04	4.117515E-04	5.394566E-04	4.506797E-05
1.300000E+01	1.402723E-03		1.520929E-03	1.199001E-03	1.426823E-03	8.737751E-04	1.394192E-03	1.233110E-03	1.394700E-03	1.201625E-03	1.259404E-03	1.046978E-04
1.400000E+01	4.194852E-03		4.166813E-03	4.146317E-03	4.311817E-03	3.094610E-03	4.334796E-03	3.964830E-03	3.835900E-03	3.964776E-03	3.916699E-03	2.200648E-04
1.500000E+01	2.074588E-02		2.083360E-02	2.235444E-02	2.178729E-02	1.817298E-02	2.238194E-02	2.065930E-02	1.986400E-02	2.068625E-02	2.058492E-02	7.395942E-04
1.600000E+01	5.464005E-02		5.439980E-02	5.825901E-02	5.590892E-02	5.088902E-02	5.642062E-02	5.374230E-02	5.306600E-02	5.619210E-02	5.455260E-02	1.249329E-03
1.700000E+01	9.153407E-02		9.043341E-02	9.497091E-02	9.253509E-02	8.545140E-02	9.228936E-02	8.999630E-02	8.911400E-02	9.348784E-02	9.072109E-02	1.618098E-03
1.800000E+01	1.498168E-01		1.509088E-01	1.521935E-01	1.509631E-01	1.428422E-01	1.514669E-01	1.484230E-01	1.484400E-01	1.524835E-01	1.488511E-01	1.625421E-03
1.900000E+01	2.033322E-01		2.040016E-01	2.041247E-01	2.044616E-01	1.953379E-01	2.043243E-01	2.023030E-01	2.028100E-01	2.064184E-01	2.020133E-01	1.693924E-03
2.000000E+01	2.517185E-01		2.514993E-01	2.468916E-01	2.484457E-01	2.505301E-01	2.501436E-01	2.504010E-01	2.515000E-01	2.495052E-01	2.498172E-01	9.326114E-04
2.100000E+01	2.215925E-01		2.215111E-01	2.146528E-01	2.164047E-01	2.263138E-01	2.163541E-01	2.286810E-01	2.251300E-01	2.154748E-01	2.208188E-01	2.311755E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	1.000006E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.30 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A222222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	5.514881E-04	3.000000E-04	0.000000E+00	6.760124E-05	7.195482E-04	7.559054E-03	0.000000E+00	0.000000E+00	1.856900E-03	0.000000E+00	1.842432E-03	1.170990E-03
2.000000E+00	6.462528E-04	4.000000E-04	0.000000E+00	6.272562E-05	8.302504E-04	8.344756E-03	0.000000E+00	0.000000E+00	1.794600E-03	0.000000E+00	2.013097E-03	1.288553E-03
3.000000E+00	4.321397E-04	3.000000E-04	0.000000E+00	5.259091E-05	7.219257E-04	6.122785E-03	0.000000E+00	0.000000E+00	1.351900E-03	0.000000E+00	1.496890E-03	9.429164E-04
4.000000E+00	3.078073E-04	2.000000E-04	0.000000E+00	3.381158E-05	5.391958E-04	3.686941E-03	0.000000E+00	0.000000E+00	8.256300E-04	0.000000E+00	9.322309E-04	5.623608E-04
5.000000E+00	1.371595E-04	2.000000E-04	0.000000E+00	1.370103E-05	3.556573E-04	2.439634E-03	0.000000E+00	0.000000E+00	4.392500E-04	0.000000E+00	5.975669E-04	3.736187E-04
6.000000E+00	4.563852E-05	1.000000E-04	0.000000E+00	2.054333E-05	2.603278E-04	1.537528E-03	0.000000E+00	0.000000E+00	2.307200E-04	0.000000E+00	3.657930E-04	2.376744E-04
7.000000E+00	1.638789E-05	1.000000E-04	3.713123E-06	2.279487E-06	1.779895E-04	5.169850E-04	3.773316E-07	5.454250E-07	1.823900E-04	2.223845E-06	1.660053E-04	7.684335E-05
8.000000E+00	1.568824E-05	1.000000E-04	2.924611E-05	1.325181E-06	1.379598E-04	2.360637E-04	1.332630E-05	1.997020E-06	1.536600E-04	1.480941E-05	1.074495E-04	3.621504E-05
9.000000E+00	2.066299E-05	1.000000E-04	6.574756E-05	3.962397E-06	1.115443E-04	3.473325E-04	1.720595E-05	6.063600E-06	1.732700E-04	2.352637E-05	1.261287E-04	5.102172E-05
1.000000E+01	7.840902E-05	2.000000E-04	1.633657E-04	3.495105E-05	1.340062E-04	8.404411E-04	6.375723E-05	4.706720E-05	2.142600E-04	8.047020E-05	2.503445E-04	1.213180E-04
1.100000E+01	1.574662E-04	3.000000E-04	2.456842E-04	1.199182E-04	2.183143E-04	1.022808E-03	1.762796E-04	1.484460E-04	3.059800E-04	1.610094E-04	3.540812E-04	1.371565E-04
1.200000E+01	4.939092E-04	6.000000E-04	5.535971E-04	5.104058E-04	5.594854E-04	1.163295E-03	6.124470E-04	4.760560E-04	7.512900E-04	5.489418E-04	6.797309E-04	1.037580E-04
1.300000E+01	1.233367E-03	1.700000E-03	1.340494E-03	1.660996E-03	1.537986E-03	1.222491E-03	1.692406E-03	1.392440E-03	2.011200E-03	1.545582E-03	1.561007E-03	1.230802E-04
1.400000E+01	4.200485E-03	5.000000E-03	4.436316E-03	4.745234E-03	4.548686E-03	4.323407E-03	4.706827E-03	4.406650E-03	5.259600E-03	4.490114E-03	4.679569E-03	1.650179E-04
1.500000E+01	2.202413E-02	2.450000E-02	2.308153E-02	2.291540E-02	2.269033E-02	1.930172E-02	2.273965E-02	2.202870E-02	2.256400E-02	2.298654E-02	2.233260E-02	6.952260E-04
1.600000E+01	5.709878E-02	6.170000E-02	5.756277E-02	5.911000E-02	5.799569E-02	5.107069E-02	5.740796E-02	5.622470E-02	5.619700E-02	5.841697E-02	5.719536E-02	1.450469E-03
1.700000E+01	9.423392E-02	1.001000E-01	9.324949E-02	9.603320E-02	9.543310E-02	8.530113E-02	9.571683E-02	9.267560E-02	9.372800E-02	9.640368E-02	9.413822E-02	1.992336E-03
1.800000E+01	1.530479E-01	1.587000E-01	1.512875E-01	1.549241E-01	1.541202E-01	1.418980E-01	1.547203E-01	1.510890E-01	1.522100E-01	1.553640E-01	1.524834E-01	2.307432E-03
1.900000E+01	2.053381E-01	2.089000E-01	2.030395E-01	2.066933E-01	2.059245E-01	1.980854E-01	2.072726E-01	2.035780E-01	2.024500E-01	2.071073E-01	2.045652E-01	1.551629E-03
2.000000E+01	2.474535E-01	2.441000E-01	2.486107E-01	2.457530E-01	2.456201E-01	2.499142E-01	2.468302E-01	2.483780E-01	2.465500E-01	2.461504E-01	2.465651E-01	8.090115E-04
2.100000E+01	2.124668E-01	1.925000E-01	2.163304E-01	2.072411E-01	2.073631E-01	2.150655E-01	2.080297E-01	2.195470E-01	2.107500E-01	2.067044E-01	2.075644E-01	3.253351E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	1.000000E+00	1.000017E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.31 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A222223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	4.220584E-04		0.000000E+00	4.443670E-06	6.471262E-04	1.068699E-02	0.000000E+00	0.000000E+00	1.259600E-03	0.000000E+00	2.604044E-03	2.030887E-03
2.000000E+00	4.005978E-04		0.000000E+00	2.717124E-05	7.476195E-04	1.142129E-02	0.000000E+00	0.000000E+00	1.499700E-03	0.000000E+00	2.819276E-03	2.164180E-03
3.000000E+00	3.250370E-04		0.000000E+00	4.531636E-05	6.110346E-04	8.173094E-03	0.000000E+00	0.000000E+00	1.218600E-03	0.000000E+00	2.074616E-03	1.536967E-03
4.000000E+00	2.467968E-04		0.000000E+00	3.158049E-05	4.366480E-04	5.041209E-03	0.000000E+00	0.000000E+00	8.509900E-04	0.000000E+00	1.321445E-03	9.396664E-04
5.000000E+00	1.090914E-04		0.000000E+00	2.763020E-05	3.104243E-04	2.699105E-03	0.000000E+00	1.792330E-07	5.978000E-04	0.000000E+00	7.488101E-04	4.973920E-04
6.000000E+00	5.727524E-05		0.000000E+00	1.314032E-05	2.350320E-04	9.870600E-04	0.000000E+00	7.865370E-07	5.466500E-04	0.000000E+00	3.678315E-04	1.810120E-04
7.000000E+00	5.460529E-05		1.255727E-06	4.366631E-06	1.611425E-04	3.786196E-04	4.886572E-07	2.302800E-06	4.301500E-04	2.996730E-06	2.057768E-04	8.533144E-05
8.000000E+00	4.152455E-05		1.071653E-06	1.953838E-05	1.412354E-04	2.011260E-04	3.755620E-06	6.355670E-06	2.998500E-04	1.876226E-05	1.406549E-04	5.171857E-05
9.000000E+00	4.292119E-05		5.115225E-06	6.195895E-05	1.261917E-04	2.798594E-04	4.182972E-06	2.221560E-05	2.933300E-04	4.016039E-05	1.608522E-04	5.319869E-05
1.000000E+01	8.945584E-05		3.575130E-05	1.286714E-04	1.342429E-04	4.499180E-04	3.317882E-05	6.996350E-05	3.441000E-04	9.176196E-05	2.292776E-04	7.091181E-05
1.100000E+01	2.002989E-04		1.029203E-04	2.186047E-04	2.035919E-04	7.025392E-04	1.062403E-04	1.670470E-04	3.827500E-04	1.652251E-04	3.415570E-04	9.646515E-05
1.200000E+01	4.968294E-04		3.756592E-04	5.807969E-04	5.489030E-04	1.033174E-03	3.864856E-04	5.302090E-04	6.296300E-04	4.829864E-04	6.578667E-04	9.628054E-05
1.300000E+01	1.181048E-03		1.207446E-03	1.554984E-03	1.470893E-03	1.011855E-03	1.227295E-03	1.434430E-03	1.720600E-03	1.463304E-03	1.387876E-03	1.283923E-04
1.400000E+01	3.860624E-03		4.087562E-03	4.523441E-03	4.410708E-03	3.755690E-03	4.174892E-03	4.238130E-03	4.645300E-03	4.476894E-03	4.239152E-03	1.805861E-04
1.500000E+01	2.026810E-02		2.199656E-02	2.146708E-02	2.174000E-02	1.843334E-02	2.249471E-02	2.127040E-02	2.173700E-02	2.177539E-02	2.072910E-02	6.350365E-04
1.600000E+01	5.269322E-02		5.461822E-02	5.496535E-02	5.508144E-02	4.770130E-02	5.632602E-02	5.375420E-02	5.264700E-02	5.481154E-02	5.261766E-02	1.337144E-03
1.700000E+01	9.142428E-02		9.415270E-02	9.343017E-02	9.438876E-02	8.376844E-02	9.620156E-02	9.222420E-02	9.051500E-02	9.476623E-02	9.070533E-02	1.866359E-03
1.800000E+01	1.532952E-01		1.555746E-01	1.527665E-01	1.543403E-01	1.394677E-01	1.563288E-01	1.523720E-01	1.514000E-01	1.545046E-01	1.502539E-01	2.737853E-03
1.900000E+01	2.080547E-01		2.076132E-01	2.070762E-01	2.072409E-01	1.973839E-01	2.091460E-01	2.048970E-01	2.051700E-01	2.090429E-01	2.049852E-01	1.958267E-03
2.000000E+01	2.509643E-01		2.494754E-01	2.507862E-01	2.478931E-01	2.509788E-01	2.472111E-01	2.493110E-01	2.493200E-01	2.495826E-01	2.499885E-01	6.085735E-04
2.100000E+01	2.157720E-01		2.107526E-01	2.122668E-01	2.091308E-01	2.154449E-01	2.063553E-01	2.196990E-01	2.144800E-01	2.087746E-01	2.134189E-01	1.234567E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999994E-01	9.999881E-01	1.000000E+00	9.999976E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

ATable 5.32 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A222233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	7.106600E-04		0.000000E+00	9.730766E-05	7.392936E-04	6.229850E-03	5.890449E-09	2.313450E-10	2.404000E-03	0.000000E+00	2.036222E-03	1.116250E-03
2.000000E+00	9.129908E-04		0.000000E+00	1.185682E-04	8.480331E-04	6.767426E-03	1.813022E-06	3.634470E-09	2.673400E-03	0.000000E+00	2.264084E-03	1.201697E-03
3.000000E+00	8.085565E-04		0.000000E+00	9.970628E-05	7.465677E-04	5.289503E-03	9.775092E-07	0.000000E+00	2.255100E-03	0.000000E+00	1.839887E-03	9.316510E-04
4.000000E+00	5.183386E-04		9.424812E-09	7.054124E-05	5.337331E-04	3.767975E-03	5.280528E-06	8.027540E-08	1.476000E-03	0.000000E+00	1.273318E-03	6.643811E-04
5.000000E+00	2.559520E-04		1.878014E-06	1.633788E-05	3.581250E-04	2.082645E-03	2.111425E-05	3.205300E-07	8.091500E-04	0.000000E+00	7.044420E-04	3.677617E-04
6.000000E+00	9.659746E-05		1.401177E-05	6.132836E-06	2.683610E-04	1.105333E-03	6.992533E-05	3.612460E-07	4.191900E-04	0.000000E+00	3.791229E-04	1.949612E-04
7.000000E+00	5.242965E-05		4.286613E-05	6.672526E-06	1.875183E-04	4.606038E-04	3.001870E-05	3.587110E-06	1.742000E-04	7.681893E-07	1.762849E-04	7.908106E-05
8.000000E+00	4.436328E-05		4.660173E-05	2.575246E-06	1.372666E-04	3.187781E-04	2.365869E-05	8.625230E-06	1.365700E-04	2.112356E-07	1.279106E-04	5.444356E-05
9.000000E+00	5.362123E-05		5.905839E-05	9.921566E-06	1.223087E-04	3.605314E-04	2.944987E-05	1.896950E-05	1.806300E-04	1.638478E-06	1.454026E-04	6.116929E-05
1.000000E+01	5.793469E-05		1.010524E-04	6.312732E-05	1.395826E-04	6.343073E-04	9.870889E-05	5.644660E-05	2.156100E-04	2.479464E-05	2.221124E-04	1.070020E-04
1.100000E+01	1.165368E-04		1.926096E-04	1.297436E-04	2.074940E-04	8.329480E-04	1.499739E-04	1.322180E-04	2.913800E-04	9.036359E-05	3.156205E-04	1.330585E-04
1.200000E+01	3.363567E-04		4.735724E-04	3.910841E-04	5.505280E-04	6.443179E-04	5.517475E-04	4.644180E-04	6.530200E-04	4.138569E-04	5.150613E-04	6.492435E-05
1.300000E+01	1.117466E-03		1.345236E-03	1.173689E-03	1.466978E-03	4.762602E-04	1.527872E-03	1.303990E-03	1.528500E-03	1.252598E-03	1.152579E-03	1.869825E-04
1.400000E+01	3.867744E-03		4.180981E-03	3.864504E-03	4.215999E-03	2.996262E-03	4.971567E-03	3.964640E-03	4.300800E-03	4.050710E-03	3.849062E-03	2.309292E-04
1.500000E+01	1.986440E-02		2.035529E-02	2.077532E-02	2.066586E-02	1.707803E-02	2.292608E-02	1.999880E-02	2.008700E-02	2.082088E-02	1.969412E-02	6.760383E-04
1.600000E+01	5.152795E-02		5.106719E-02	5.270423E-02	5.225421E-02	4.564077E-02	5.374590E-02	5.087140E-02	5.011000E-02	5.291607E-02	5.044743E-02	1.279511E-03
1.700000E+01	8.745480E-02		8.612401E-02	8.896701E-02	8.853611E-02	7.831278E-02	8.995633E-02	8.599040E-02	8.519200E-02	8.961457E-02	8.569254E-02	1.957357E-03
1.800000E+01	1.528641E-01		1.511332E-01	1.525304E-01	1.526963E-01	1.409314E-01	1.534319E-01	1.509590E-01	1.497900E-01	1.544844E-01	1.497625E-01	2.279015E-03
1.900000E+01	2.079946E-01		2.091353E-01	2.099338E-01	2.091431E-01	2.021289E-01	2.089189E-01	2.068670E-01	2.069900E-01	2.109283E-01	2.072381E-01	1.371747E-03
2.000000E+01	2.531998E-01		2.564319E-01	2.540357E-01	2.525212E-01	2.596362E-01	2.506546E-01	2.537270E-01	2.530500E-01	2.527337E-01	2.544886E-01	1.309653E-03
2.100000E+01	2.181448E-01		2.192951E-01	2.150036E-01	2.136614E-01	2.243052E-01	2.128842E-01	2.256320E-01	2.172700E-01	2.126671E-01	2.176770E-01	1.838342E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999993E-01	1.000007E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.33 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A222333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.155561E-03		0.000000E+00	3.207201E-04	8.265787E-04	1.025958E-02	0.000000E+00	7.717870E-06	2.137800E-03	0.000000E+00	2.617993E-03	1.572031E-03
2.000000E+00	2.491855E-03		0.000000E+00	3.413835E-04	9.502584E-04	1.107832E-02	0.000000E+00	1.237410E-05	2.394400E-03	0.000000E+00	2.878098E-03	1.693031E-03
3.000000E+00	1.859349E-03		0.000000E+00	2.823452E-04	7.918516E-04	8.500832E-03	0.000000E+00	8.506560E-06	1.921600E-03	0.000000E+00	2.227414E-03	1.295537E-03
4.000000E+00	1.258065E-03		0.000000E+00	1.909998E-04	5.867800E-04	5.583793E-03	0.000000E+00	7.131660E-06	1.443300E-03	0.000000E+00	1.511678E-03	8.468452E-04
5.000000E+00	5.736978E-04		0.000000E+00	9.309466E-05	3.890204E-04	3.292854E-03	0.000000E+00	8.035390E-06	9.791100E-04	0.000000E+00	8.893021E-04	5.015175E-04
6.000000E+00	2.658255E-04		0.000000E+00	4.757503E-05	3.110026E-04	1.484708E-03	0.000000E+00	7.151590E-06	7.605600E-04	4.253574E-07	4.794704E-04	2.289948E-04
7.000000E+00	1.285197E-04		5.812527E-06	1.203179E-05	2.295451E-04	4.886577E-04	0.000000E+00	5.216800E-06	4.903600E-04	3.771434E-06	2.257219E-04	8.998470E-05
8.000000E+00	4.144591E-05		6.513341E-06	4.090589E-06	1.850774E-04	1.865718E-04	2.761039E-07	8.992120E-06	3.654300E-04	1.249321E-05	1.319346E-04	5.772828E-05
9.000000E+00	6.604486E-05		2.432156E-05	9.435196E-06	1.573467E-04	3.429424E-04	6.456770E-06	1.975750E-05	3.552500E-04	3.167414E-05	1.584628E-04	6.396578E-05
1.000000E+01	1.046437E-04		7.587128E-05	3.916754E-05	1.525954E-04	4.077482E-04	2.763899E-05	6.031200E-05	3.237000E-04	5.793189E-05	1.813611E-04	6.139935E-05
1.100000E+01	1.749296E-04		1.451249E-04	7.713245E-05	2.216741E-04	4.482338E-04	9.762639E-05	1.309580E-04	4.935600E-04	1.599831E-04	2.577480E-04	7.041544E-05
1.200000E+01	4.649402E-04		3.289174E-04	3.847876E-04	5.742611E-04	7.083088E-04	5.167539E-04	4.850170E-04	9.298100E-04	4.989353E-04	5.911874E-04	8.133892E-05
1.300000E+01	1.348743E-03		1.044113E-03	1.190606E-03	1.481708E-03	9.962385E-04	1.627711E-03	1.415160E-03	2.055800E-03	1.606544E-03	1.414709E-03	1.466490E-04
1.400000E+01	4.217552E-03		3.819052E-03	3.927687E-03	4.294010E-03	3.680069E-03	4.820100E-03	4.239260E-03	4.675500E-03	4.473851E-03	4.172346E-03	1.386460E-04
1.500000E+01	1.993365E-02		1.999273E-02	2.043381E-02	2.037580E-02	1.811596E-02	2.201459E-02	2.023180E-02	2.077800E-02	2.061907E-02	1.997817E-02	3.889984E-04
1.600000E+01	4.847457E-02		4.995728E-02	5.110093E-02	5.027942E-02	4.297976E-02	5.279012E-02	4.924570E-02	4.951000E-02	5.040037E-02	4.859840E-02	1.182130E-03
1.700000E+01	8.165929E-02		8.371423E-02	8.445757E-02	8.424509E-02	7.178483E-02	8.598960E-02	8.234530E-02	8.266200E-02	8.520319E-02	8.119235E-02	1.933817E-03
1.800000E+01	1.397531E-01		1.422113E-01	1.427306E-01	1.428726E-01	1.280370E-01	1.431895E-01	1.401950E-01	1.401300E-01	1.438631E-01	1.389530E-01	2.253587E-03
1.900000E+01	2.066704E-01		2.086659E-01	2.109526E-01	2.095658E-01	1.990375E-01	2.096689E-01	2.074510E-01	2.060300E-01	2.108927E-01	2.066179E-01	1.692982E-03
2.000000E+01	2.610914E-01		2.611744E-01	2.602059E-01	2.598178E-01	2.624556E-01	2.591541E-01	2.602820E-01	2.576500E-01	2.604033E-01	2.602505E-01	6.460785E-04
2.100000E+01	2.272664E-01		2.288345E-01	2.231976E-01	2.216918E-01	2.301305E-01	2.200967E-01	2.338340E-01	2.239100E-01	2.217727E-01	2.266717E-01	1.898347E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999962E-01	1.000000E+00	9.999994E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.)

Table 5.34 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A223333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*)	Standard deviation*)
1.000000E+00	4.551334E-04		0.000000E+00	6.928506E-04	8.958974E-04	1.685723E-02	0.000000E+00	3.217170E-05	3.424200E-03	0.000000E+00	3.726247E-03	2.671283E-03
2.000000E+00	4.609405E-04		1.534279E-07	6.823193E-04	1.043882E-03	1.792992E-02	0.000000E+00	2.669120E-05	3.676200E-03	0.000000E+00	3.969992E-03	2.841360E-03
3.000000E+00	3.508930E-04		2.874496E-06	6.141428E-04	8.709932E-04	1.327943E-02	0.000000E+00	2.338900E-05	2.903700E-03	0.000000E+00	3.007091E-03	2.095858E-03
4.000000E+00	2.613206E-04		1.127993E-05	4.414844E-04	6.487668E-04	8.632073E-03	0.000000E+00	2.124490E-05	2.224100E-03	0.000000E+00	2.038165E-03	1.356701E-03
5.000000E+00	1.255791E-04		2.300978E-05	2.431629E-04	4.377440E-04	4.688770E-03	0.000000E+00	1.738130E-05	1.400800E-03	1.083081E-06	1.152239E-03	7.359277E-04
6.000000E+00	1.024346E-04		2.780941E-05	2.058043E-04	3.281405E-04	2.504452E-03	0.000000E+00	1.202220E-05	9.527400E-04	4.473333E-06	6.842657E-04	3.886450E-04
7.000000E+00	4.113380E-05		4.672038E-05	1.036505E-04	2.169904E-04	1.246214E-03	0.000000E+00	1.078580E-05	5.161800E-04	1.786329E-05	3.558258E-04	1.931714E-04
8.000000E+00	5.012757E-05		1.068408E-05	8.397349E-05	1.877029E-04	1.134462E-03	0.000000E+00	2.028970E-05	2.863800E-04	5.140183E-05	2.938227E-04	1.728425E-04
9.000000E+00	4.355344E-05		2.158883E-05	1.044264E-04	1.690875E-04	1.104447E-03	3.834527E-06	4.657480E-05	2.584900E-04	5.277383E-05	2.877632E-04	1.666669E-04
1.000000E+01	8.750571E-05		8.995090E-05	1.474940E-04	1.947559E-04	1.274726E-03	3.961805E-05	1.071750E-04	4.500000E-04	1.178751E-04	3.769428E-04	1.874157E-04
1.100000E+01	1.371933E-04		2.584785E-04	2.251487E-04	3.105933E-04	1.358163E-03	1.667792E-04	1.981610E-04	7.406900E-04	2.084576E-04	4.949916E-04	1.939398E-04
1.200000E+01	4.356535E-04		7.521301E-04	5.315550E-04	7.690839E-04	1.250488E-03	6.080485E-04	6.272580E-04	1.139400E-03	6.134379E-04	7.922396E-04	1.358157E-04
1.300000E+01	1.340720E-03		1.625358E-03	1.317525E-03	2.000423E-03	1.129652E-03	2.036005E-03	1.723640E-03	2.169600E-03	1.762302E-03	1.613593E-03	1.700202E-04
1.400000E+01	4.553547E-03		4.921756E-03	4.661499E-03	5.230267E-03	3.649206E-03	5.812173E-03	4.894600E-03	5.303600E-03	5.000898E-03	4.715453E-03	2.455641E-04
1.500000E+01	2.174647E-02		2.271864E-02	2.216013E-02	2.230125E-02	1.717326E-02	2.373704E-02	2.210960E-02	2.170500E-02	2.227812E-02	2.119929E-02	8.109720E-04
1.600000E+01	5.103423E-02		5.306451E-02	5.322201E-02	5.235499E-02	4.337584E-02	5.476408E-02	5.183910E-02	5.110400E-02	5.235455E-02	5.048836E-02	1.461125E-03
1.700000E+01	8.302083E-02		8.480656E-02	8.624605E-02	8.516940E-02	7.184455E-02	8.770237E-02	8.366490E-02	8.267300E-02	8.525953E-02	8.210312E-02	2.124542E-03
1.800000E+01	1.367411E-01		1.380210E-01	1.402884E-01	1.400356E-01	1.229064E-01	1.398295E-01	1.376370E-01	1.368700E-01	1.410120E-01	1.357464E-01	2.643979E-03
1.900000E+01	1.936059E-01		1.938398E-01	1.962707E-01	1.956214E-01	1.785166E-01	1.938084E-01	1.922380E-01	1.915000E-01	1.970348E-01	1.912921E-01	2.664802E-03
2.000000E+01	2.663736E-01		2.641442E-01	2.622301E-01	2.618560E-01	2.583841E-01	2.611286E-01	2.626780E-01	2.595200E-01	2.630648E-01	2.618403E-01	1.136272E-03
2.100000E+01	2.390321E-01		2.356135E-01	2.295276E-01	2.293570E-01	2.317600E-01	2.303636E-01	2.420720E-01	2.311700E-01	2.311656E-01	2.338198E-01	2.197513E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999881E-01	1.000000E+00	9.999980E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.35 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A233333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	5.994738E-03		0.000000E+00	4.038802E-03	1.677944E-03	3.555232E-02	0.000000E+00	3.487360E-04	1.354300E-02	0.000000E+00	1.019259E-02	5.413665E-03
2.000000E+00	6.839376E-03		0.000000E+00	4.084548E-03	1.939139E-03	3.855447E-02	0.000000E+00	3.933300E-04	1.507000E-02	0.000000E+00	1.114681E-02	5.874860E-03
3.000000E+00	5.531290E-03		0.000000E+00	3.175346E-03	1.656644E-03	2.901806E-02	0.000000E+00	3.198210E-04	1.262000E-02	0.000000E+00	8.720194E-03	4.429395E-03
4.000000E+00	3.805775E-03		0.000000E+00	2.315893E-03	1.256460E-03	1.870917E-02	0.000000E+00	2.317750E-04	9.143200E-03	0.000000E+00	5.910378E-03	2.860742E-03
5.000000E+00	2.284069E-03		0.000000E+00	1.541069E-03	8.522758E-04	9.488374E-03	0.000000E+00	1.449730E-04	5.581600E-03	0.000000E+00	3.315394E-03	1.455699E-03
6.000000E+00	1.549396E-03		0.000000E+00	1.193400E-03	6.256152E-04	5.350143E-03	0.000000E+00	9.943470E-05	3.773500E-03	0.000000E+00	2.098581E-03	8.299635E-04
7.000000E+00	8.048840E-04		3.710533E-06	5.349426E-04	4.082897E-04	2.328348E-03	6.334283E-07	5.743570E-05	2.210700E-03	2.399427E-06	1.057433E-03	3.959549E-04
8.000000E+00	4.502389E-04		2.980785E-05	2.420537E-04	3.346383E-04	1.857313E-03	5.350404E-06	6.147010E-05	1.505600E-03	2.112179E-05	7.418857E-04	3.050215E-04
9.000000E+00	2.853199E-04		7.948516E-05	2.212964E-04	2.831269E-04	1.789014E-03	3.010966E-05	7.556670E-05	1.167300E-03	6.642578E-05	6.369374E-04	2.795995E-04
1.000000E+01	3.730314E-04		2.481536E-04	3.744884E-04	3.464322E-04	1.581796E-03	1.485440E-04	1.868500E-04	1.244500E-03	2.206904E-04	6.845164E-04	2.362066E-04
1.100000E+01	5.064806E-04		5.839946E-04	6.936242E-04	5.473604E-04	1.821730E-03	4.531381E-04	3.858130E-04	1.511600E-03	4.739376E-04	9.111014E-04	2.455669E-04
1.200000E+01	1.086727E-03		1.485341E-03	1.451865E-03	1.316501E-03	1.307962E-03	1.373234E-03	1.132420E-03	2.161700E-03	1.299130E-03	1.409529E-03	1.599494E-04
1.300000E+01	2.717333E-03		3.373123E-03	3.329167E-03	3.140361E-03	1.262609E-03	3.403029E-03	2.868270E-03	3.647400E-03	3.251385E-03	2.827523E-03	3.408065E-04
1.400000E+01	6.973375E-03		7.761420E-03	7.645305E-03	7.609863E-03	4.721443E-03	7.351730E-03	7.294470E-03	8.002600E-03	7.748873E-03	7.041176E-03	4.852020E-04
1.500000E+01	2.757288E-02		2.795161E-02	2.724748E-02	2.843161E-02	2.102363E-02	2.842931E-02	2.819260E-02	2.685700E-02	2.959134E-02	2.655420E-02	1.131462E-03
1.600000E+01	5.998829E-02		6.021157E-02	5.969857E-02	6.081313E-02	4.774663E-02	6.162696E-02	6.015690E-02	5.681500E-02	6.278899E-02	5.753642E-02	2.038387E-03
1.700000E+01	9.138088E-02		9.267506E-02	9.292162E-02	9.419489E-02	7.578350E-02	9.410684E-02	9.252550E-02	8.733300E-02	9.667046E-02	8.902323E-02	2.816116E-03
1.800000E+01	1.415172E-01		1.474969E-01	1.439856E-01	1.467009E-01	1.228366E-01	1.468368E-01	1.457190E-01	1.362400E-01	1.493612E-01	1.394999E-01	3.665222E-03
1.900000E+01	1.860512E-01		1.938148E-01	1.925336E-01	1.933329E-01	1.667436E-01	1.949034E-01	1.911510E-01	1.786700E-01	1.944648E-01	1.847471E-01	4.235217E-03
2.000000E+01	2.328264E-01		2.389189E-01	2.361639E-01	2.368280E-01	2.137087E-01	2.405160E-01	2.375830E-01	2.223800E-01	2.369524E-01	2.299150E-01	3.972960E-03
2.100000E+01	2.214611E-01		2.253661E-01	2.166074E-01	2.177040E-01	1.988146E-01	2.208149E-01	2.310720E-01	2.105200E-01	2.170868E-01	2.160299E-01	4.418241E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999977E-01	1.000000E+00	9.999997E-01	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.36 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A333333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.337849E-02	9.000000E-04	0.000000E+00	7.435802E-03	2.423790E-03	1.641298E-02	0.000000E+00	3.111710E-03	1.847900E-02	0.000000E+00	8.877396E-03	2.716111E-03
2.000000E+00	1.508621E-02	1.100000E-03	0.000000E+00	8.460421E-03	2.780671E-03	1.741352E-02	0.000000E+00	3.382270E-03	1.976600E-02	4.393134E-06	9.712728E-03	2.899591E-03
3.000000E+00	1.247381E-02	1.000000E-03	0.000000E+00	7.014245E-03	2.351381E-03	1.342054E-02	0.000000E+00	2.755850E-03	1.632000E-02	7.297597E-06	7.905118E-03	2.329604E-03
4.000000E+00	9.211698E-03	8.000000E-04	0.000000E+00	5.298741E-03	1.790416E-03	9.253253E-03	0.000000E+00	2.009880E-03	1.182200E-02	1.625805E-05	5.740855E-03	1.658296E-03
5.000000E+00	5.712897E-03	5.000000E-04	0.000000E+00	3.524102E-03	1.149882E-03	5.167590E-03	1.005447E-07	1.185280E-03	7.521600E-03	1.957308E-05	3.537336E-03	1.020304E-03
6.000000E+00	3.658723E-03	3.000000E-04	1.051534E-06	2.353109E-03	8.012000E-04	2.932339E-03	5.423283E-06	7.786760E-04	4.943200E-03	1.601178E-05	2.252464E-03	6.506465E-04
7.000000E+00	1.833470E-03	2.000000E-04	6.674369E-06	1.259402E-03	4.821942E-04	1.378783E-03	1.636145E-05	3.989240E-04	2.656300E-03	1.551816E-05	1.172725E-03	3.348541E-04
8.000000E+00	8.866783E-04	2.000000E-04	2.824820E-05	7.500207E-04	3.638178E-04	8.220962E-04	2.686355E-05	2.691500E-04	1.664800E-03	5.517559E-05	7.080804E-04	1.909432E-04
9.000000E+00	5.572412E-04	3.000000E-04	9.421956E-05	4.989013E-04	3.657914E-04	7.204181E-04	5.555740E-05	2.535500E-04	1.236700E-03	1.818222E-04	5.618003E-04	1.278581E-04
1.000000E+01	5.022710E-04	4.000000E-04	3.550964E-04	5.795242E-04	5.202663E-04	7.903706E-04	2.504662E-04	4.283830E-04	1.274900E-03	5.957237E-04	6.422450E-04	1.159863E-04
1.100000E+01	6.707243E-04	8.000000E-04	8.965119E-04	9.227421E-04	8.892532E-04	9.840605E-04	7.411697E-04	7.855940E-04	1.911100E-03	9.923461E-04	9.947820E-04	1.575703E-04
1.200000E+01	1.682880E-03	2.200000E-03	2.116974E-03	1.861878E-03	2.012152E-03	1.655476E-03	1.754208E-03	1.931140E-03	3.146600E-03	2.142854E-03	2.070018E-03	1.929472E-04
1.300000E+01	4.167570E-03	5.200000E-03	4.862164E-03	4.077981E-03	4.553805E-03	2.375142E-03	4.199403E-03	4.421450E-03	5.206800E-03	4.677068E-03	4.286107E-03	3.612811E-04
1.400000E+01	9.505179E-03	1.150000E-02	9.897976E-03	9.426489E-03	1.029039E-02	7.400829E-03	1.090108E-02	1.012860E-02	9.532700E-03	1.038511E-02	9.683456E-03	4.679562E-04
1.500000E+01	3.376997E-02	3.760000E-02	3.394226E-02	3.193296E-02	3.478585E-02	2.707792E-02	3.668630E-02	3.418480E-02	3.192700E-02	3.557643E-02	3.303979E-02	1.231489E-03
1.600000E+01	6.686510E-02	7.390000E-02	6.885120E-02	6.739062E-02	6.970807E-02	5.803603E-02	7.184323E-02	6.766250E-02	6.439800E-02	7.124499E-02	6.685148E-02	1.842113E-03
1.700000E+01	9.787645E-02	1.082000E-01	1.024250E-01	1.005883E-01	1.029814E-01	8.918497E-02	1.051370E-01	1.007810E-01	9.517800E-02	1.055187E-01	9.925572E-02	2.277911E-03
1.800000E+01	1.454149E-01	1.594000E-01	1.555090E-01	1.508238E-01	1.542864E-01	1.395660E-01	1.559961E-01	1.518330E-01	1.423100E-01	1.569598E-01	1.490906E-01	2.645797E-03
1.900000E+01	1.827172E-01	1.976000E-01	1.956779E-01	1.906961E-01	1.947406E-01	1.832043E-01	1.959779E-01	1.913670E-01	1.789100E-01	1.967389E-01	1.884622E-01	2.619714E-03
2.000000E+01	2.140545E-01	2.244000E-01	2.299230E-01	2.209077E-01	2.257885E-01	2.270151E-01	2.277004E-01	2.258840E-01	2.080300E-01	2.267607E-01	2.208685E-01	2.720613E-03
2.100000E+01	1.799740E-01	1.736000E-01	1.954128E-01	1.841971E-01	1.869341E-01	1.951883E-01	1.887085E-01	1.964470E-01	1.737800E-01	1.880913E-01	1.843029E-01	3.508251E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999998E-01	1.000015E+00	1.000000E+00	1.000016E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.37 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A122223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	7.140836E-04	3.000000E-04	0.000000E+00	3.256469E-06	7.001335E-04	6.903672E-03	0.000000E+00	2.719220E-05	1.391900E-03	0.000000E+00	1.434320E-03	9.295162E-04
2.000000E+00	6.471382E-04	3.000000E-04	0.000000E+00	4.356459E-06	7.766190E-04	8.441478E-03	0.000000E+00	2.015440E-05	1.609900E-03	0.000000E+00	1.685664E-03	1.145098E-03
3.000000E+00	4.574751E-04	3.000000E-04	0.000000E+00	2.504475E-06	6.272531E-04	6.660168E-03	0.000000E+00	1.378850E-05	1.312400E-03	0.000000E+00	1.339084E-03	9.026565E-04
4.000000E+00	2.649020E-04	2.000000E-04	0.000000E+00	2.067306E-06	4.395315E-04	4.753692E-03	0.000000E+00	8.063850E-06	9.072100E-04	0.000000E+00	9.393523E-04	6.463702E-04
5.000000E+00	1.616046E-04	1.000000E-04	0.000000E+00	1.716049E-06	2.939669E-04	2.483680E-03	0.000000E+00	3.124310E-06	5.218700E-04	0.000000E+00	5.094231E-04	3.361893E-04
6.000000E+00	1.332802E-04	1.000000E-04	0.000000E+00	2.468588E-06	2.386370E-04	1.475357E-03	0.000000E+00	2.392610E-06	3.348700E-04	0.000000E+00	3.267151E-04	1.967801E-04
7.000000E+00	7.774297E-05	1.000000E-04	2.003842E-07	2.363645E-06	1.657386E-04	5.666623E-04	4.437008E-06	2.987430E-06	2.233300E-04	3.119669E-07	1.626893E-04	7.387821E-05
8.000000E+00	1.188715E-04	1.000000E-04	4.056289E-06	1.237013E-07	1.286711E-04	5.084521E-04	1.031111E-05	6.944000E-06	1.625900E-04	5.178225E-06	1.465218E-04	6.462595E-05
9.000000E+00	8.962037E-05	1.000000E-04	3.419812E-05	6.535776E-06	1.023499E-04	6.069164E-04	6.442451E-06	1.383450E-05	1.221400E-04	1.663355E-05	1.487710E-04	7.823612E-05
1.000000E+01	9.937900E-05	1.000000E-04	1.139549E-04	2.327759E-05	1.214233E-04	6.763010E-04	2.989245E-05	5.223500E-05	1.191600E-04	5.856125E-05	1.702537E-04	8.543558E-05
1.100000E+01	1.814003E-04	2.000000E-04	1.785262E-04	7.373138E-05	1.868620E-04	8.949209E-04	9.724249E-05	1.282840E-04	2.109400E-04	1.305625E-04	2.680198E-04	1.060383E-04
1.200000E+01	4.826663E-04	5.000000E-04	5.530286E-04	3.807280E-04	5.129666E-04	1.262235E-03	3.605462E-04	4.292400E-04	5.204200E-04	4.479473E-04	5.840365E-04	1.146096E-04
1.300000E+01	1.256845E-03	1.400000E-03	1.455222E-03	1.098358E-03	1.384400E-03	1.176292E-03	1.400414E-03	1.239420E-03	1.359400E-03	1.216992E-03	1.273531E-03	4.288482E-05
1.400000E+01	3.806607E-03	4.700000E-03	4.377210E-03	3.960071E-03	4.142347E-03	4.325780E-03	4.116905E-03	3.892920E-03	4.100900E-03	3.932433E-03	4.132661E-03	1.148338E-04
1.500000E+01	2.022349E-02	2.250000E-02	2.208080E-02	2.112981E-02	2.065022E-02	1.867022E-02	2.079495E-02	2.022480E-02	2.059900E-02	2.044087E-02	2.057108E-02	4.335331E-04
1.600000E+01	5.286828E-02	5.630000E-02	5.404110E-02	5.291695E-02	5.296720E-02	4.723350E-02	5.397834E-02	5.170450E-02	5.144300E-02	5.318296E-02	5.220478E-02	1.021713E-03
1.700000E+01	9.094128E-02	9.610000E-02	9.117322E-02	9.221860E-02	9.140685E-02	8.208600E-02	9.227062E-02	8.965810E-02	8.906300E-02	9.215075E-02	9.021055E-02	1.605893E-03
1.800000E+01	1.517284E-01	1.565000E-01	1.499325E-01	1.520302E-01	1.509161E-01	1.402994E-01	1.520226E-01	1.494700E-01	1.480300E-01	1.519409E-01	1.498534E-01	1.879159E-03
1.900000E+01	2.035383E-01	2.095000E-01	2.034838E-01	2.082531E-01	2.062480E-01	1.959293E-01	2.069121E-01	2.033450E-01	2.040800E-01	2.069865E-01	2.044134E-01	1.676024E-03
2.000000E+01	2.501741E-01	2.486000E-01	2.505561E-01	2.507193E-01	2.505679E-01	2.518637E-01	2.506374E-01	2.510000E-01	2.503300E-01	2.513078E-01	2.504650E-01	3.747683E-04
2.100000E+01	2.220346E-01	2.023000E-01	2.220161E-01	2.171705E-01	2.174229E-01	2.231823E-01	2.173577E-01	2.287560E-01	2.235600E-01	2.181816E-01	2.192037E-01	3.188923E-03
Sum	1.000000E+00	1.000300E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999990E-01	1.000002E+00	1.000000E+00	1.000043E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.38 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A112233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	2.437144E-04	3.000000E-04	0.000000E+00	5.347283E-05	6.465863E-04	5.702680E-03	0.000000E+00	4.452660E-07	1.739900E-03	0.000000E+00	1.240971E-03	7.767159E-04
2.000000E+00	3.002279E-04	4.000000E-04	0.000000E+00	5.865215E-05	7.438059E-04	6.173669E-03	0.000000E+00	1.178540E-06	1.769100E-03	0.000000E+00	1.349519E-03	8.352689E-04
3.000000E+00	2.785574E-04	3.000000E-04	0.000000E+00	3.680071E-05	6.086615E-04	4.154660E-03	0.000000E+00	1.373070E-06	1.294200E-03	0.000000E+00	9.534646E-04	5.587381E-04
4.000000E+00	2.239347E-04	2.000000E-04	0.000000E+00	3.586098E-05	4.376142E-04	2.250616E-03	0.000000E+00	3.307750E-07	8.516200E-04	0.000000E+00	5.714252E-04	3.003085E-04
5.000000E+00	1.264489E-04	2.000000E-04	0.000000E+00	2.633406E-05	2.878973E-04	1.093793E-03	0.000000E+00	1.236920E-07	4.978800E-04	0.000000E+00	3.189252E-04	1.440768E-04
6.000000E+00	4.948990E-05	1.000000E-04	0.000000E+00	2.652848E-05	2.317775E-04	4.909524E-04	0.000000E+00	1.012740E-08	3.183200E-04	2.959225E-08	1.738683E-04	6.859549E-05
7.000000E+00	3.579187E-05	1.000000E-04	8.025245E-09	2.677152E-05	1.667246E-04	1.527049E-04	1.182774E-06	8.582870E-07	1.773500E-04	1.807302E-06	9.431445E-05	2.773209E-05
8.000000E+00	1.201897E-05	1.000000E-04	1.408511E-06	1.855698E-05	1.414649E-04	1.516430E-04	2.251380E-07	4.387580E-06	1.177600E-04	6.102837E-06	7.797592E-05	2.431034E-05
9.000000E+00	1.306874E-05	1.000000E-04	1.114141E-05	2.372009E-05	1.124460E-04	2.024536E-04	3.161278E-06	1.907450E-05	1.634900E-04	2.209977E-05	9.060756E-05	2.844782E-05
1.000000E+01	2.402809E-05	1.000000E-04	9.251302E-05	7.863492E-05	1.082990E-04	2.207524E-04	9.733743E-06	6.249240E-05	2.352000E-04	5.267025E-05	1.184867E-04	3.014717E-05
1.100000E+01	7.558678E-05	1.000000E-04	2.141928E-04	1.790889E-04	1.618844E-04	1.749493E-04	5.139560E-05	1.245110E-04	3.617100E-04	9.882968E-05	1.682472E-04	3.545194E-05
1.200000E+01	3.488307E-04	4.000000E-04	4.825029E-04	4.183421E-04	4.633759E-04	2.503775E-04	3.855160E-04	3.836920E-04	7.314300E-04	3.956740E-04	4.280069E-04	5.647992E-05
1.300000E+01	1.119673E-03	1.200000E-03	1.178654E-03	1.151440E-03	1.260957E-03	4.502955E-04	1.052377E-03	1.099150E-03	1.682500E-03	1.213204E-03	1.137717E-03	1.371830E-04
1.400000E+01	3.471584E-03	4.100000E-03	3.529011E-03	3.468902E-03	3.714951E-03	2.699422E-03	3.372243E-03	3.387370E-03	4.119400E-03	3.681442E-03	3.565947E-03	1.835369E-04
1.500000E+01	1.828682E-02	2.060000E-02	1.844095E-02	1.858938E-02	1.864028E-02	1.527645E-02	1.809059E-02	1.800680E-02	1.886000E-02	1.900521E-02	1.832282E-02	5.981609E-04
1.600000E+01	4.770826E-02	5.210000E-02	4.925700E-02	4.925484E-02	4.874353E-02	4.092080E-02	4.854933E-02	4.713510E-02	4.800900E-02	4.852020E-02	4.769593E-02	1.283954E-03
1.700000E+01	8.249132E-02	8.860000E-02	8.484728E-02	8.484578E-02	8.411742E-02	7.507165E-02	8.489280E-02	8.203460E-02	8.151700E-02	8.401252E-02	8.266825E-02	1.554517E-03
1.800000E+01	1.465889E-01	1.534000E-01	1.492557E-01	1.489527E-01	1.481444E-01	1.402109E-01	1.500541E-01	1.465670E-01	1.449400E-01	1.487021E-01	1.469720E-01	1.517900E-03
1.900000E+01	2.056391E-01	2.118000E-01	2.065940E-01	2.098731E-01	2.077865E-01	2.016674E-01	2.097940E-01	2.056290E-01	2.037300E-01	2.084741E-01	2.065893E-01	1.323717E-03
2.000000E+01	2.623078E-01	2.581000E-01	2.596654E-01	2.596141E-01	2.595938E-01	2.670737E-01	2.602937E-01	2.602960E-01	2.594400E-01	2.611709E-01	2.609179E-01	1.131694E-03
2.100000E+01	2.306548E-01	2.078000E-01	2.264303E-01	2.232670E-01	2.238876E-01	2.356100E-01	2.234497E-01	2.352470E-01	2.294400E-01	2.246431E-01	2.265581E-01	3.626464E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999959E-01	1.000000E+00	1.000014E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.39 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A322221

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	1.301824E-04		0.000000E+00	2.690283E-04	8.057642E-04	1.298474E-02	0.000000E+00	5.005730E-07	2.447900E-03	0.000000E+00	2.773019E-03	2.075222E-03
2.000000E+00	1.265256E-04		0.000000E+00	2.724938E-04	9.487383E-04	1.369404E-02	0.000000E+00	1.832490E-06	2.614000E-03	0.000000E+00	2.942938E-03	2.186204E-03
3.000000E+00	1.090624E-04		0.000000E+00	1.871963E-04	7.635435E-04	1.061857E-02	0.000000E+00	1.348830E-06	1.846500E-03	0.000000E+00	2.254370E-03	1.696078E-03
4.000000E+00	8.191255E-05		0.000000E+00	1.177173E-04	5.632190E-04	6.774793E-03	0.000000E+00	8.007250E-07	1.157600E-03	0.000000E+00	1.449340E-03	1.079693E-03
5.000000E+00	5.521783E-05		0.000000E+00	5.623155E-05	3.709622E-04	3.254671E-03	0.000000E+00	1.317980E-06	6.220100E-04	1.025040E-06	7.267350E-04	5.149349E-04
6.000000E+00	5.782504E-05		0.000000E+00	4.264878E-05	3.013819E-04	1.382570E-03	0.000000E+00	1.921940E-06	4.051000E-04	2.675085E-06	3.652412E-04	2.137908E-04
7.000000E+00	7.679302E-05		6.166493E-07	4.813219E-05	2.012460E-04	5.432616E-04	0.000000E+00	3.254200E-06	2.662900E-04	7.548375E-06	1.898295E-04	8.135447E-05
8.000000E+00	1.002789E-04		1.420380E-05	4.365491E-05	1.468945E-04	3.691580E-04	3.049794E-07	1.696630E-05	2.057800E-04	1.917799E-05	1.471221E-04	5.246619E-05
9.000000E+00	1.214061E-04		2.306351E-05	3.770197E-05	1.270736E-04	5.772046E-04	1.361359E-05	2.919990E-05	1.005800E-04	5.492601E-05	1.655277E-04	8.407263E-05
1.000000E+01	1.569415E-04		3.659549E-05	8.848364E-05	1.533660E-04	8.245879E-04	6.433769E-05	8.015750E-05	1.138200E-04	1.271408E-04	2.362261E-04	1.183906E-04
1.100000E+01	3.100975E-04		1.674881E-04	2.315219E-04	2.684285E-04	8.723393E-04	1.036347E-04	2.132100E-04	2.614000E-04	2.354657E-04	3.594995E-04	1.034636E-04
1.200000E+01	7.854538E-04		6.046594E-04	7.730440E-04	7.616725E-04	1.019684E-03	5.183923E-04	6.709490E-04	7.701600E-04	7.682502E-04	7.968272E-04	4.766285E-05
1.300000E+01	1.701879E-03		1.689725E-03	2.192807E-03	2.038157E-03	1.321081E-03	1.793379E-03	1.941090E-03	1.990500E-03	2.088324E-03	1.864252E-03	1.266797E-04
1.400000E+01	4.938776E-03		5.414981E-03	6.081503E-03	5.844506E-03	4.176113E-03	5.564468E-03	5.496950E-03	5.679200E-03	5.696989E-03	5.369508E-03	2.860322E-04
1.500000E+01	2.669910E-02		2.566656E-02	2.797603E-02	2.668005E-02	2.130068E-02	2.599165E-02	2.585600E-02	2.712900E-02	2.655593E-02	2.594014E-02	9.697666E-04
1.600000E+01	6.616429E-02		6.379410E-02	6.796974E-02	6.527848E-02	5.717018E-02	6.431587E-02	6.392320E-02	6.628500E-02	6.546236E-02	6.446515E-02	1.556201E-03
1.700000E+01	1.031601E-01		1.021381E-01	1.064263E-01	1.035193E-01	9.007373E-02	1.032791E-01	1.014680E-01	1.026500E-01	1.040200E-01	1.012162E-01	2.327387E-03
1.800000E+01	1.631530E-01		1.608246E-01	1.651173E-01	1.621863E-01	1.489524E-01	1.646721E-01	1.606320E-01	1.610700E-01	1.632144E-01	1.601852E-01	2.340197E-03
1.900000E+01	2.089735E-01		2.085488E-01	2.093312E-01	2.092606E-01	1.983377E-01	2.114359E-01	2.078050E-01	2.059200E-01	2.100617E-01	2.066047E-01	1.735427E-03
2.000000E+01	2.393298E-01		2.422491E-01	2.345962E-01	2.382237E-01	2.401649E-01	2.400409E-01	2.410230E-01	2.372300E-01	2.389391E-01	2.384279E-01	9.438134E-04
2.100000E+01	1.837679E-01		1.888273E-01	1.781411E-01	1.815567E-01	1.855876E-01	1.822064E-01	1.908320E-01	1.812400E-01	1.827450E-01	1.835209E-01	1.786871E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999987E-01	1.000005E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.40 Results from the contributors: Axial fission density distribution for the axial burn-up profile B50A332211

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL	Sample mean*	Standard deviation*
1.000000E+00	9.422444E-04	4.000000E-04	0.000000E+00	1.192350E-03	9.948460E-04	1.334194E-02	8.770480E-06	1.017400E-04	6.176900E-03	0.000000E+00	2.894849E-03	1.650703E-03
2.000000E+00	1.030319E-03	5.000000E-04	0.000000E+00	1.168412E-03	1.131712E-03	1.444439E-02	1.256917E-05	9.313810E-05	6.914800E-03	0.000000E+00	3.161918E-03	1.795030E-03
3.000000E+00	7.735636E-04	4.000000E-04	0.000000E+00	8.606351E-04	9.560389E-04	1.136900E-02	1.058982E-05	6.968680E-05	5.485100E-03	0.000000E+00	2.490577E-03	1.415064E-03
4.000000E+00	5.223724E-04	3.000000E-04	0.000000E+00	5.472727E-04	6.765937E-04	8.346349E-03	1.736987E-05	4.007260E-05	3.710800E-03	0.000000E+00	1.770104E-03	1.030668E-03
5.000000E+00	3.731774E-04	2.000000E-04	0.000000E+00	2.850355E-04	4.542565E-04	4.746961E-03	4.649365E-05	2.085930E-05	2.246200E-03	0.000000E+00	1.046623E-03	5.868370E-04
6.000000E+00	2.857170E-04	2.000000E-04	0.000000E+00	1.585620E-04	3.303883E-04	2.274803E-03	1.924823E-05	9.063760E-06	1.521500E-03	2.267761E-07	5.999103E-04	2.948044E-04
7.000000E+00	1.037658E-04	1.000000E-04	1.993221E-07	6.474712E-05	2.308835E-04	7.939559E-04	1.991899E-05	8.193850E-06	9.203300E-04	1.552665E-06	2.802244E-04	1.287230E-04
8.000000E+00	3.495474E-05	1.000000E-04	1.489859E-05	7.512034E-05	1.857519E-04	4.981583E-04	9.334173E-06	2.229990E-05	6.718600E-04	6.335989E-06	1.996849E-04	8.788366E-05
9.000000E+00	5.542614E-05	1.000000E-04	5.476792E-05	1.219708E-04	1.766748E-04	4.904115E-04	3.222444E-05	5.877070E-05	4.768000E-04	3.262143E-05	1.890348E-04	6.622793E-05
1.000000E+01	1.484967E-04	2.000000E-04	1.771855E-04	2.919890E-04	2.543261E-04	7.869863E-04	1.506225E-04	1.721170E-04	5.887500E-04	1.397134E-04	3.241609E-04	8.341308E-05
1.100000E+01	3.393902E-04	4.000000E-04	3.804989E-04	5.141013E-04	4.629313E-04	1.148108E-03	3.947361E-04	3.734890E-04	9.375000E-04	3.223585E-04	5.712820E-04	1.065075E-04
1.200000E+01	1.061739E-03	1.300000E-03	1.139356E-03	1.164992E-03	1.203189E-03	1.489899E-03	1.229010E-03	1.068120E-03	1.981300E-03	1.032747E-03	1.312281E-03	1.070881E-04
1.300000E+01	2.892030E-03	3.400000E-03	2.711205E-03	2.889682E-03	2.996011E-03	1.615070E-03	3.151917E-03	2.826050E-03	3.879600E-03	2.767888E-03	2.956295E-03	2.280988E-04
1.400000E+01	8.082279E-03	8.900000E-03	7.819383E-03	7.261253E-03	7.914810E-03	6.027398E-03	8.694486E-03	7.530420E-03	8.477300E-03	8.027285E-03	7.860993E-03	3.283340E-04
1.500000E+01	3.352851E-02	3.570000E-02	3.311371E-02	3.191759E-02	3.286983E-02	2.756194E-02	3.509131E-02	3.181850E-02	3.156000E-02	3.335294E-02	3.250596E-02	8.886272E-04
1.600000E+01	7.591561E-02	8.000000E-02	7.666573E-02	7.523433E-02	7.570712E-02	6.718659E-02	7.838430E-02	7.433810E-02	7.247800E-02	7.674756E-02	7.490551E-02	1.373365E-03
1.700000E+01	1.154117E-01	1.202000E-01	1.151955E-01	1.143904E-01	1.152429E-01	1.026897E-01	1.177081E-01	1.137510E-01	1.104600E-01	1.168569E-01	1.137317E-01	1.869972E-03
1.800000E+01	1.694696E-01	1.743000E-01	1.710436E-01	1.699612E-01	1.700228E-01	1.564695E-01	1.700099E-01	1.698730E-01	1.644300E-01	1.705035E-01	1.680670E-01	1.903931E-03
1.900000E+01	2.045111E-01	2.077000E-01	2.055870E-01	2.071224E-01	2.058709E-01	1.972402E-01	2.045144E-01	2.055160E-01	2.013300E-01	2.065393E-01	2.042256E-01	1.211410E-03
2.000000E+01	2.123310E-01	2.102000E-01	2.139756E-01	2.146458E-01	2.133219E-01	2.108999E-01	2.126866E-01	2.144340E-01	2.083200E-01	2.141466E-01	2.121049E-01	7.694810E-04
2.100000E+01	1.721870E-01	1.554000E-01	1.721214E-01	1.701322E-01	1.689961E-01	1.705787E-01	1.678080E-01	1.778770E-01	1.674400E-01	1.695224E-01	1.688024E-01	2.240992E-03
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000002E+00	1.000007E+00	1.000000E+00	1.000001E+00	

* Only those of the axial fission density distributions obtained from the contributors are considered which are different from zero in all axial zones over the full active length of the fuel. The standard deviation values given are the standard deviations of the respective sample means.

Table 5.41 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32Auniform

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	5.177109E-03	4.900000E-03	6.712852E-03	4.430795E-03	5.133010E-03	6.810370E-03	5.537380E-03	4.247140E-03	6.132800E-03	4.564370E-04
2.000000E+00	9.356978E-03	9.400000E-03	1.198542E-02	8.001798E-03	9.355663E-03	1.167866E-02	9.958610E-03	7.581730E-03	1.133900E-02	8.006250E-04
3.000000E+00	1.442064E-02	1.380000E-02	1.727927E-02	1.196830E-02	1.378886E-02	1.611607E-02	1.439460E-02	1.104560E-02	1.704600E-02	1.131900E-03
4.000000E+00	1.902136E-02	1.790000E-02	2.238668E-02	1.584310E-02	1.794482E-02	2.013608E-02	1.865090E-02	1.483010E-02	2.278600E-02	1.482220E-03
5.000000E+00	5.148503E-02	4.780000E-02	6.361290E-02	4.345962E-02	4.772733E-02	4.897040E-02	4.860220E-02	4.011260E-02	6.073800E-02	1.954950E-03
6.000000E+00	3.243500E-02	2.940000E-02	2.965186E-02	2.807507E-02	2.924759E-02	2.823849E-02	2.946180E-02	2.491030E-02	3.657500E-02	2.430610E-03
7.000000E+00	1.193760E-01	1.070000E-01	1.260899E-01	1.072906E-01	1.062487E-01	9.886603E-02	1.066780E-01	9.520930E-02	1.234100E-01	2.986410E-03
8.000000E+00	4.589927E-02	4.060000E-02	4.673143E-02	4.124709E-02	4.037698E-02	3.815676E-02	4.058440E-02	3.674470E-02	4.326200E-02	3.382500E-03
9.000000E+00	9.951541E-02	8.570000E-02	9.550259E-02	9.065647E-02	8.609449E-02	8.432968E-02	8.738080E-02	7.945070E-02	8.742800E-02	3.505910E-03
1.000000E+01	9.872006E-02	9.000000E-02	9.625148E-02	9.665208E-02	9.118615E-02	9.351607E-02	9.484310E-02	8.818940E-02	8.637000E-02	3.526660E-03
1.100000E+01	4.859517E-02	4.600000E-02	4.765473E-02	4.771272E-02	4.628979E-02	4.815941E-02	4.835090E-02	4.681590E-02	4.144900E-02	3.572770E-03
1.200000E+01	1.381132E-01	1.381000E-01	1.324510E-01	1.372228E-01	1.380257E-01	1.419332E-01	1.420200E-01	1.466370E-01	1.225100E-01	3.604520E-03
1.300000E+01	4.119547E-02	4.490000E-02	4.077061E-02	4.279471E-02	4.455257E-02	4.394142E-02	4.515950E-02	4.835510E-02	4.051700E-02	3.551110E-03
1.400000E+01	1.083314E-01	1.245000E-01	1.072943E-01	1.194538E-01	1.241686E-01	1.163270E-01	1.211130E-01	1.359310E-01	1.168400E-01	3.416130E-03
1.500000E+01	8.500694E-02	1.010000E-01	8.162793E-02	9.971294E-02	1.015880E-01	9.511544E-02	9.488930E-02	1.121200E-01	9.494500E-02	2.868700E-03
1.600000E+01	2.320184E-02	2.690000E-02	2.064918E-02	2.724967E-02	2.697423E-02	2.682027E-02	2.489410E-02	2.960310E-02	2.434000E-02	2.320340E-03
1.700000E+01	1.981733E-02	2.320000E-02	1.750001E-02	2.455566E-02	2.312621E-02	2.410341E-02	2.146700E-02	2.524000E-02	2.055600E-02	2.049120E-03
1.800000E+01	1.565575E-02	1.910000E-02	1.425464E-02	2.060062E-02	1.874499E-02	2.075606E-02	1.776580E-02	2.059570E-02	1.706100E-02	1.666790E-03
1.900000E+01	1.216572E-02	1.460000E-02	1.060958E-02	1.608384E-02	1.428671E-02	1.664331E-02	1.376070E-02	1.564440E-02	1.306800E-02	1.242090E-03
2.000000E+01	8.095028E-03	1.000000E-02	7.079523E-03	1.115666E-02	9.777716E-03	1.225966E-02	9.376050E-03	1.068610E-02	8.805700E-03	8.618820E-04
2.100000E+01	4.415303E-03	5.300000E-03	3.904022E-03	5.831683E-03	5.361942E-03	7.122185E-03	5.112450E-03	6.050620E-03	4.814500E-03	5.006960E-04
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000000E+00	9.999930E-01	

* Fission fractions per unit length

Table 5.42 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A111111

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.890680E-04	2.000000E-04	0.000000E+00	4.265233E-05	4.225778E-04	4.692618E-03	0.000000E+00	1.031830E-05	9.075500E-04	0.000000E+00
2.000000E+00	2.919347E-04	3.000000E-04	0.000000E+00	5.677695E-05	5.458356E-04	5.730315E-03	0.000000E+00	8.679090E-06	1.184500E-03	0.000000E+00
3.000000E+00	3.034282E-04	3.000000E-04	0.000000E+00	3.178039E-05	5.339390E-04	4.714700E-03	0.000000E+00	1.593560E-05	1.092100E-03	0.000000E+00
4.000000E+00	2.195257E-04	2.000000E-04	5.231430E-10	1.277676E-05	4.459053E-04	3.202666E-03	0.000000E+00	1.011310E-05	8.750300E-04	0.000000E+00
5.000000E+00	2.654997E-04	3.000000E-04	4.595361E-06	2.674543E-05	7.208835E-04	3.698783E-03	1.029330E-06	3.073520E-05	1.485800E-03	1.170130E-09
6.000000E+00	7.643173E-05	2.000000E-04	1.713307E-05	1.557272E-05	3.330598E-04	1.058949E-03	1.415810E-06	2.100630E-05	6.584300E-04	1.094300E-07
7.000000E+00	3.068763E-04	4.000000E-04	1.298990E-04	1.305524E-04	8.494666E-04	2.128176E-03	5.493380E-05	1.082640E-04	1.648100E-03	7.060970E-07
8.000000E+00	1.948147E-04	2.000000E-04	7.199565E-05	8.860189E-05	2.926163E-04	7.975626E-04	3.929230E-05	8.531100E-05	5.906700E-04	3.851520E-06
9.000000E+00	5.988110E-04	6.000000E-04	2.727030E-04	2.792619E-04	6.512691E-04	2.265557E-03	2.232410E-04	3.294520E-04	1.640300E-03	1.111210E-05
1.000000E+01	9.189048E-04	1.200000E-03	7.516157E-04	8.609555E-04	1.075902E-03	3.490606E-03	8.276180E-04	8.215210E-04	2.716600E-03	2.809560E-05
1.100000E+01	7.401810E-04	1.100000E-03	7.636401E-04	9.133102E-04	9.285201E-04	2.279430E-03	8.706520E-04	8.288950E-04	1.936000E-03	6.109160E-05
1.200000E+01	6.825986E-03	7.100000E-03	5.649035E-03	6.931979E-03	6.609901E-03	8.507732E-03	7.034040E-03	6.237790E-03	8.911100E-03	1.600190E-04
1.300000E+01	5.535841E-03	5.100000E-03	4.535617E-03	5.450453E-03	4.901570E-03	3.042707E-03	5.603920E-03	4.866460E-03	5.683300E-03	3.841060E-04
1.400000E+01	3.315528E-02	3.520000E-02	3.526743E-02	3.601332E-02	3.390083E-02	2.722924E-02	3.790500E-02	3.361630E-02	3.381000E-02	9.481160E-04
1.500000E+01	1.075532E-01	1.189000E-01	1.168978E-01	1.159600E-01	1.149588E-01	9.714449E-02	1.209250E-01	1.136410E-01	1.143800E-01	3.291470E-03
1.600000E+01	7.535594E-02	8.180000E-02	8.045242E-02	7.905552E-02	7.943967E-02	6.964941E-02	8.084230E-02	7.883530E-02	7.947800E-02	6.672750E-03
1.700000E+01	1.089279E-01	1.141000E-01	1.133112E-01	1.117271E-01	1.122286E-01	1.020828E-01	1.127620E-01	1.106770E-01	1.116900E-01	9.308060E-03
1.800000E+01	1.526411E-01	1.544000E-01	1.534450E-01	1.513829E-01	1.530407E-01	1.469014E-01	1.516920E-01	1.520570E-01	1.514100E-01	1.259650E-02
1.900000E+01	1.789514E-01	1.770000E-01	1.757929E-01	1.767805E-01	1.765681E-01	1.758731E-01	1.729630E-01	1.763750E-01	1.729400E-01	1.445080E-02
2.000000E+01	1.859923E-01	1.771000E-01	1.787440E-01	1.802337E-01	1.789345E-01	1.896245E-01	1.771290E-01	1.808180E-01	1.755900E-01	1.455410E-02
2.100000E+01	1.409556E-01	1.243000E-01	1.338931E-01	1.340056E-01	1.326173E-01	1.458852E-01	1.311250E-01	1.406050E-01	1.313700E-01	1.074220E-02
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999994E-01	9.999991E-01	9.999975E-01	

* Fission fractions per unit length

Table 5.43 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A111112

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.891113E-05		0.000000E+00	8.414764E-05	4.016191E-04	4.973179E-03	0.000000E+00	0.000000E+00	1.323700E-03	0.000000E+00
2.000000E+00	6.013514E-05		0.000000E+00	8.101413E-05	5.430955E-04	6.156172E-03	0.000000E+00	0.000000E+00	1.761200E-03	0.000000E+00
3.000000E+00	8.384227E-05		1.493067E-07	7.468020E-05	5.438005E-04	5.193328E-03	0.000000E+00	0.000000E+00	1.621700E-03	0.000000E+00
4.000000E+00	5.146180E-05		6.291049E-06	9.945837E-05	4.655637E-04	3.447130E-03	0.000000E+00	1.265630E-08	1.229800E-03	3.648010E-09
5.000000E+00	1.254743E-04		3.295172E-05	1.515460E-04	7.623980E-04	3.946132E-03	2.004420E-06	3.589400E-06	1.627000E-03	2.119700E-07
6.000000E+00	5.261825E-05		3.252063E-05	5.974862E-05	3.255258E-04	1.145846E-03	3.115210E-06	6.463650E-06	6.542800E-04	5.862100E-07
7.000000E+00	2.133641E-04		2.546154E-04	2.902681E-04	8.207609E-04	2.536903E-03	5.013470E-05	6.908120E-05	1.965300E-03	1.887840E-06
8.000000E+00	1.139098E-04		2.042008E-04	1.357112E-04	2.652891E-04	1.003386E-03	6.652130E-05	6.549990E-05	7.678200E-04	5.442210E-06
9.000000E+00	2.914242E-04		6.127659E-04	4.259793E-04	5.916986E-04	2.757469E-03	3.809090E-04	2.503070E-04	1.711200E-03	1.092760E-05
1.000000E+01	6.695817E-04		9.560951E-04	8.547465E-04	1.000300E-03	4.377538E-03	1.032320E-03	6.799180E-04	2.566000E-03	2.838860E-05
1.100000E+01	7.927431E-04		7.743816E-04	7.046501E-04	8.616160E-04	2.597287E-03	7.961930E-04	7.208980E-04	1.780900E-03	5.649800E-05
1.200000E+01	5.689131E-03		6.075625E-03	5.483090E-03	6.197269E-03	9.664327E-03	5.964640E-03	5.782810E-03	9.645700E-03	1.599430E-04
1.300000E+01	4.142964E-03		4.239817E-03	4.308859E-03	4.698988E-03	3.243872E-03	4.298630E-03	4.537830E-03	5.788200E-03	3.733930E-04
1.400000E+01	3.049256E-02		2.947841E-02	3.291861E-02	3.248715E-02	2.564361E-02	3.059870E-02	3.177640E-02	3.363600E-02	8.941950E-04
1.500000E+01	1.081831E-01		1.098349E-01	1.117359E-01	1.114172E-01	9.233342E-02	1.102800E-01	1.093690E-01	1.110100E-01	3.041990E-03
1.600000E+01	7.480291E-02		7.535559E-02	7.727845E-02	7.669344E-02	6.769844E-02	7.860930E-02	7.511960E-02	7.557500E-02	6.325910E-03
1.700000E+01	1.110945E-01		1.094122E-01	1.128511E-01	1.116277E-01	1.030449E-01	1.128920E-01	1.098900E-01	1.088300E-01	9.158880E-03
1.800000E+01	1.559836E-01		1.539103E-01	1.544454E-01	1.540952E-01	1.468787E-01	1.546200E-01	1.535120E-01	1.493500E-01	1.266890E-02
1.900000E+01	1.817284E-01		1.828374E-01	1.792012E-01	1.791646E-01	1.771746E-01	1.806090E-01	1.796210E-01	1.742100E-01	1.475290E-02
2.000000E+01	1.859251E-01		1.864482E-01	1.828812E-01	1.818903E-01	1.905784E-01	1.839770E-01	1.853460E-01	1.797900E-01	1.510350E-02
2.100000E+01	1.394742E-01		1.395336E-01	1.359342E-01	1.351465E-01	1.456054E-01	1.358190E-01	1.432490E-01	1.351600E-01	1.123380E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999995E-01	9.999994E-01	1.000004E+00	

* Fission fractions per unit length

Table 5.44 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A111122

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.657902E-04		0.000000E+00	0.000000E+00	4.344342E-04	7.249984E-03	2.819390E-09	2.207400E-06	1.151100E-03	0.000000E+00
2.000000E+00	2.024386E-04		0.000000E+00	0.000000E+00	5.900823E-04	8.940772E-03	4.759040E-06	2.891010E-06	1.559600E-03	0.000000E+00
3.000000E+00	1.465934E-04		0.000000E+00	0.000000E+00	5.999434E-04	8.153639E-03	3.228150E-06	3.452340E-06	1.545200E-03	1.118570E-09
4.000000E+00	1.128537E-04		0.000000E+00	2.064300E-09	5.081350E-04	5.299226E-03	1.269660E-06	3.874750E-06	1.186700E-03	2.424790E-08
5.000000E+00	1.495020E-04		1.039612E-07	1.946149E-05	8.522567E-04	6.051672E-03	8.622330E-06	1.190180E-05	1.716100E-03	1.177610E-07
6.000000E+00	3.606664E-05		2.847326E-06	2.948203E-05	3.851451E-04	1.680555E-03	6.719090E-06	8.575210E-06	8.443100E-04	5.049610E-07
7.000000E+00	6.108060E-05		6.237521E-05	2.020829E-04	9.903933E-04	3.087420E-03	2.139370E-04	6.457170E-05	1.971300E-03	1.348330E-06
8.000000E+00	3.664836E-05		6.388617E-05	1.388832E-04	3.417003E-04	1.079874E-03	8.369510E-05	5.478310E-05	7.816500E-04	4.333210E-06
9.000000E+00	2.803891E-04		3.226368E-04	3.342783E-04	7.679351E-04	2.625199E-03	1.510610E-04	2.791550E-04	1.806000E-03	1.015590E-05
1.000000E+01	9.726359E-04		1.055450E-03	6.509454E-04	1.196997E-03	3.853313E-03	4.029000E-04	7.996880E-04	2.461100E-03	2.699590E-05
1.100000E+01	1.000558E-03		1.117419E-03	5.728097E-04	9.868982E-04	2.323648E-03	5.283310E-04	7.983160E-04	1.922300E-03	6.401110E-05
1.200000E+01	7.685103E-03		7.822839E-03	5.344663E-03	6.763706E-03	8.206895E-03	5.698230E-03	5.984570E-03	9.555600E-03	1.801310E-04
1.300000E+01	5.643848E-03		5.318548E-03	4.474135E-03	5.019528E-03	2.685531E-03	4.576990E-03	4.565740E-03	6.059600E-03	3.978160E-04
1.400000E+01	3.452392E-02		3.544063E-02	3.139920E-02	3.349397E-02	2.430458E-02	3.151510E-02	3.200780E-02	3.505500E-02	9.226300E-04
1.500000E+01	1.116268E-01		1.117457E-01	1.083534E-01	1.097457E-01	8.900294E-02	1.129130E-01	1.079790E-01	1.062600E-01	3.136630E-03
1.600000E+01	7.357071E-02		7.405439E-02	7.462465E-02	7.447310E-02	6.570373E-02	7.566030E-02	7.373060E-02	7.104000E-02	6.322090E-03
1.700000E+01	1.054001E-01		1.077907E-01	1.086432E-01	1.078444E-01	9.873010E-02	1.077630E-01	1.064520E-01	1.031900E-01	8.979680E-03
1.800000E+01	1.516213E-01		1.523347E-01	1.552683E-01	1.531677E-01	1.454376E-01	1.528840E-01	1.529460E-01	1.502100E-01	1.258620E-02
1.900000E+01	1.797253E-01		1.783953E-01	1.826883E-01	1.800953E-01	1.772578E-01	1.818970E-01	1.804620E-01	1.779700E-01	1.470980E-02
2.000000E+01	1.863662E-01		1.841556E-01	1.878156E-01	1.843159E-01	1.909095E-01	1.866100E-01	1.874210E-01	1.845500E-01	1.499670E-02
2.100000E+01	1.406721E-01		1.403168E-01	1.394405E-01	1.374267E-01	1.474160E-01	1.390790E-01	1.464220E-01	1.391600E-01	1.119490E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000000E+00	9.999956E-01	

* Fission fractions per unit length

Table 5.45 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A111222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	9.951569E-05		0.000000E+00	5.513651E-05	5.693224E-04	5.932735E-03	0.000000E+00	5.053030E-06	1.336500E-03	0.000000E+00
2.000000E+00	1.443268E-04		0.000000E+00	9.236706E-05	7.083933E-04	7.254634E-03	0.000000E+00	3.307300E-06	1.731200E-03	0.000000E+00
3.000000E+00	1.809905E-04		2.347520E-06	1.194103E-04	6.816831E-04	6.192684E-03	0.000000E+00	4.586110E-06	1.598600E-03	0.000000E+00
4.000000E+00	1.676054E-04		7.140240E-06	1.134901E-04	5.689175E-04	4.385387E-03	0.000000E+00	2.915000E-06	1.269100E-03	0.000000E+00
5.000000E+00	2.194001E-04		3.679617E-05	1.703468E-04	8.990265E-04	5.414363E-03	0.000000E+00	1.447880E-05	1.824700E-03	5.308220E-10
6.000000E+00	5.877827E-05		4.861136E-05	8.131965E-05	3.860912E-04	1.727196E-03	7.322190E-07	1.222750E-05	8.053200E-04	2.102090E-07
7.000000E+00	2.199821E-04		5.112950E-04	2.918795E-04	1.001811E-03	3.666396E-03	3.035390E-05	8.277730E-05	2.473500E-03	1.204660E-06
8.000000E+00	1.507284E-04		2.751710E-04	1.726926E-04	3.413882E-04	1.300762E-03	3.038920E-05	7.811840E-05	8.046600E-04	4.373930E-06
9.000000E+00	5.272586E-04		5.942211E-04	5.615301E-04	7.894091E-04	2.975953E-03	2.918550E-04	3.122150E-04	2.063100E-03	1.245920E-05
1.000000E+01	1.489826E-03		1.164167E-03	9.893519E-04	1.258172E-03	4.057408E-03	6.750710E-04	8.939410E-04	3.254700E-03	3.089480E-05
1.100000E+01	1.400785E-03		1.069738E-03	9.074737E-04	1.047294E-03	2.586310E-03	6.953970E-04	9.167310E-04	2.251700E-03	6.431290E-05
1.200000E+01	8.375613E-03		7.519214E-03	7.391376E-03	7.082213E-03	1.058814E-02	6.233760E-03	6.747360E-03	1.027600E-02	1.711500E-04
1.300000E+01	5.361044E-03		5.902611E-03	5.454449E-03	5.188030E-03	3.880478E-03	5.016220E-03	5.050980E-03	5.847000E-03	3.965120E-04
1.400000E+01	3.083415E-02		3.869622E-02	3.593480E-02	3.468561E-02	3.104048E-02	3.427340E-02	3.379690E-02	3.441900E-02	9.387450E-04
1.500000E+01	1.033002E-01		1.165649E-01	1.134901E-01	1.119181E-01	9.720140E-02	1.110010E-01	1.101350E-01	1.066300E-01	3.110980E-03
1.600000E+01	7.132249E-02		7.456595E-02	7.520951E-02	7.411251E-02	6.569403E-02	7.384180E-02	7.328150E-02	7.096600E-02	6.194330E-03
1.700000E+01	1.029574E-01		1.039802E-01	1.061735E-01	1.055614E-01	9.579697E-02	1.072100E-01	1.043350E-01	1.026000E-01	8.757180E-03
1.800000E+01	1.470720E-01		1.456090E-01	1.476711E-01	1.471231E-01	1.375306E-01	1.496110E-01	1.462220E-01	1.445900E-01	1.221170E-02
1.900000E+01	1.826916E-01		1.787381E-01	1.792830E-01	1.794339E-01	1.735725E-01	1.821680E-01	1.796130E-01	1.765900E-01	1.487950E-02
2.000000E+01	1.941749E-01		1.848483E-01	1.864320E-01	1.866996E-01	1.912541E-01	1.883920E-01	1.895010E-01	1.863800E-01	1.530460E-02
2.100000E+01	1.492514E-01		1.398661E-01	1.394051E-01	1.399440E-01	1.479475E-01	1.405300E-01	1.489910E-01	1.422800E-01	1.148740E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000000E+00	9.999911E-01	

* Fission fractions per unit length

Table 5.46 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A112222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	9.160063E-05		0.000000E+00	1.394837E-04	4.871459E-04	8.400479E-03	0.000000E+00	1.476200E-05	2.202900E-03	0.000000E+00
2.000000E+00	1.221342E-04		0.000000E+00	1.991180E-04	6.332475E-04	1.027327E-02	0.000000E+00	1.629290E-05	2.880700E-03	0.000000E+00
3.000000E+00	1.303547E-04		0.000000E+00	1.895720E-04	6.540250E-04	8.860015E-03	0.000000E+00	1.677590E-05	2.554700E-03	0.000000E+00
4.000000E+00	1.332907E-04		1.307958E-08	1.556557E-04	5.454376E-04	6.616157E-03	0.000000E+00	1.923290E-05	2.067800E-03	0.000000E+00
5.000000E+00	2.119733E-04		2.806188E-06	1.647525E-04	9.391333E-04	8.263539E-03	9.633450E-06	6.271000E-05	3.010600E-03	2.090890E-08
6.000000E+00	1.092161E-04		3.314427E-06	8.662139E-05	3.973892E-04	2.632409E-03	6.679310E-06	5.107750E-05	1.347600E-03	2.855770E-07
7.000000E+00	4.398005E-04		9.184168E-05	4.485490E-04	1.001999E-03	4.518467E-03	6.335890E-05	2.587760E-04	3.301900E-03	1.852640E-06
8.000000E+00	2.425068E-04		6.654748E-05	3.017654E-04	3.737745E-04	1.413279E-03	8.498850E-05	1.671110E-04	1.263600E-03	6.418120E-06
9.000000E+00	8.326263E-04		3.815132E-04	9.511170E-04	8.888931E-04	3.240960E-03	5.486790E-04	5.852520E-04	2.709200E-03	1.735130E-05
1.000000E+01	1.469720E-03		9.159868E-04	1.862029E-03	1.530757E-03	4.512998E-03	1.348290E-03	1.289490E-03	3.290200E-03	5.154640E-05
1.100000E+01	1.264206E-03		8.352807E-04	1.518373E-03	1.303227E-03	2.905198E-03	1.047410E-03	1.214960E-03	2.029300E-03	1.015800E-04
1.200000E+01	8.343878E-03		7.341562E-03	8.144410E-03	8.531949E-03	1.090836E-02	8.855650E-03	8.097610E-03	1.029400E-02	2.306780E-04
1.300000E+01	6.231192E-03		5.319573E-03	6.072369E-03	6.043099E-03	3.668965E-03	6.827290E-03	5.794940E-03	6.111700E-03	4.872150E-04
1.400000E+01	3.871536E-02		3.642138E-02	3.792564E-02	3.859892E-02	3.043513E-02	3.968300E-02	3.747710E-02	3.742000E-02	1.026800E-03
1.500000E+01	1.178154E-01		1.180324E-01	1.144395E-01	1.189041E-01	9.790014E-02	1.169510E-01	1.166140E-01	1.126600E-01	3.189880E-03
1.600000E+01	7.590874E-02		7.767896E-02	7.434638E-02	7.620284E-02	6.576820E-02	7.680840E-02	7.490870E-02	7.223500E-02	6.277350E-03
1.700000E+01	1.053983E-01		1.074892E-01	1.053877E-01	1.057853E-01	9.402230E-02	1.054960E-01	1.047070E-01	1.013300E-01	8.796530E-03
1.800000E+01	1.440960E-01		1.451706E-01	1.457728E-01	1.444201E-01	1.325936E-01	1.447940E-01	1.439580E-01	1.401100E-01	1.200570E-02
1.900000E+01	1.702316E-01		1.702123E-01	1.737369E-01	1.713392E-01	1.647125E-01	1.712650E-01	1.711770E-01	1.691800E-01	1.422120E-02
2.000000E+01	1.849246E-01		1.858516E-01	1.865398E-01	1.830098E-01	1.885857E-01	1.855950E-01	1.860560E-01	1.835600E-01	1.520810E-02
2.100000E+01	1.432875E-01		1.441851E-01	1.416175E-01	1.384097E-01	1.497683E-01	1.406150E-01	1.475130E-01	1.404500E-01	1.146330E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999994E-01	9.999998E-01	1.000009E+00	

* Fission fractions per unit length

Table 5.47 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A122222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	7.560022E-04		0.000000E+00	2.401758E-04	6.044430E-04	1.093812E-02	1.112780E-08	1.155950E-04	3.931600E-03	0.000000E+00
2.000000E+00	8.605619E-04		0.000000E+00	3.298055E-04	8.047562E-04	1.366090E-02	6.368440E-06	1.521450E-04	5.019200E-03	0.000000E+00
3.000000E+00	8.323661E-04		2.203946E-07	3.651619E-04	7.799794E-04	1.238194E-02	1.593170E-05	1.495970E-04	4.649400E-03	1.901440E-08
4.000000E+00	6.966734E-04		3.155707E-06	3.024437E-04	6.439064E-04	9.439398E-03	1.814070E-05	1.365400E-04	3.634100E-03	1.235200E-07
5.000000E+00	9.903805E-04		1.628396E-05	5.288823E-04	1.026458E-03	1.200276E-02	7.182700E-05	2.211480E-04	5.071400E-03	7.569990E-07
6.000000E+00	3.994417E-04		2.886466E-05	2.068462E-04	4.397004E-04	3.758915E-03	8.691650E-05	1.054190E-04	1.873100E-03	1.918070E-06
7.000000E+00	8.376528E-04		3.504738E-04	7.275087E-04	1.205032E-03	6.962248E-03	3.399320E-04	3.489610E-04	3.842400E-03	4.021940E-06
8.000000E+00	4.182390E-04		3.403765E-04	3.802503E-04	4.648758E-04	2.046359E-03	2.337190E-04	2.352760E-04	1.410300E-03	9.747440E-06
9.000000E+00	1.265290E-03		1.098011E-03	9.098082E-04	1.162937E-03	4.784861E-03	8.054170E-04	8.111320E-04	3.171200E-03	2.147290E-05
1.000000E+01	2.246272E-03		2.449321E-03	1.844388E-03	2.035344E-03	6.355281E-03	1.508900E-03	1.814430E-03	4.475400E-03	6.280130E-05
1.100000E+01	1.962551E-03		2.349102E-03	1.526856E-03	1.706244E-03	4.036513E-03	1.542260E-03	1.680950E-03	3.220100E-03	1.147500E-04
1.200000E+01	1.164549E-02		1.334185E-02	9.978614E-03	1.075875E-02	1.496736E-02	1.010720E-02	1.140930E-02	1.594800E-02	2.738260E-04
1.300000E+01	7.741533E-03		8.359261E-03	7.137715E-03	7.238497E-03	4.721229E-03	7.437790E-03	7.862080E-03	9.290300E-03	6.183390E-04
1.400000E+01	4.393213E-02		4.694794E-02	4.472473E-02	4.477708E-02	3.315764E-02	4.354670E-02	4.615430E-02	5.057200E-02	1.252160E-03
1.500000E+01	1.264039E-01		1.306896E-01	1.305034E-01	1.292521E-01	9.949357E-02	1.260000E-01	1.295380E-01	1.305400E-01	3.581900E-03
1.600000E+01	7.787704E-02		7.982266E-02	8.113958E-02	7.970994E-02	6.579323E-02	7.893230E-02	7.907760E-02	7.815000E-02	6.555270E-03
1.700000E+01	1.057804E-01		1.067003E-01	1.099877E-01	1.085396E-01	9.391837E-02	1.081780E-01	1.072200E-01	1.043300E-01	8.894740E-03
1.800000E+01	1.429702E-01		1.423719E-01	1.448036E-01	1.440001E-01	1.314138E-01	1.451720E-01	1.427390E-01	1.368700E-01	1.190890E-02
1.900000E+01	1.657190E-01		1.631474E-01	1.656346E-01	1.655660E-01	1.582094E-01	1.695040E-01	1.643110E-01	1.544600E-01	1.374600E-02
2.000000E+01	1.718187E-01		1.683769E-01	1.687874E-01	1.689584E-01	1.718347E-01	1.730560E-01	1.694470E-01	1.567200E-01	1.398830E-02
2.100000E+01	1.348462E-01		1.336064E-01	1.299404E-01	1.303260E-01	1.401234E-01	1.334370E-01	1.364710E-01	1.228300E-01	1.070880E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000009E+00	

* Fission fractions per unit length

Table 5.48 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A222222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.291513E-04	6.000000E-04	6.398144E-06	8.938232E-04	7.133372E-04	2.775731E-03	1.084270E-05	3.467400E-05	4.033100E-03	0.000000E+00
2.000000E+00	2.022780E-04	8.000000E-04	1.063981E-05	1.076566E-03	9.562247E-04	3.375284E-03	2.753250E-05	5.231110E-05	5.380900E-03	1.123360E-06
3.000000E+00	2.152521E-04	8.000000E-04	5.721881E-06	8.502000E-04	9.452893E-04	3.040796E-03	2.774290E-05	6.199890E-05	5.460100E-03	1.793470E-06
4.000000E+00	1.763298E-04	7.000000E-04	8.014247E-06	7.281455E-04	7.750834E-04	2.355993E-03	6.277020E-05	6.838780E-05	4.527400E-03	1.716060E-06
5.000000E+00	2.093548E-04	1.100000E-03	5.305461E-05	1.275922E-03	1.191547E-03	3.203954E-03	2.834360E-04	1.728230E-04	6.583700E-03	3.132530E-06
6.000000E+00	1.096901E-04	5.000000E-04	4.913285E-05	5.895911E-04	5.021719E-04	1.052899E-03	2.581940E-04	9.861180E-05	2.740300E-03	5.792860E-06
7.000000E+00	4.417091E-04	1.400000E-03	3.395493E-04	1.688421E-03	1.434128E-03	1.984341E-03	1.073140E-03	4.175430E-04	5.095700E-03	8.801010E-06
8.000000E+00	2.246878E-04	6.000000E-04	3.213770E-04	8.168611E-04	5.619115E-04	6.651663E-04	6.806910E-04	2.408820E-04	1.375100E-03	2.230020E-05
9.000000E+00	8.781107E-04	1.700000E-03	8.236753E-04	2.594788E-03	1.515154E-03	1.811245E-03	1.661270E-03	8.272960E-04	3.258200E-03	5.561220E-05
1.000000E+01	1.848220E-03	3.000000E-03	1.814478E-03	4.293380E-03	2.653920E-03	3.134052E-03	2.290870E-03	1.961540E-03	4.214000E-03	1.180330E-04
1.100000E+01	1.507355E-03	2.300000E-03	1.835739E-03	2.992596E-03	2.204453E-03	2.249695E-03	1.802500E-03	1.811060E-03	2.637300E-03	1.913320E-04
1.200000E+01	1.106337E-02	1.390000E-02	1.225816E-02	1.413798E-02	1.296292E-02	1.104986E-02	1.100950E-02	1.150270E-02	1.415600E-02	3.643650E-04
1.300000E+01	8.051019E-03	9.200000E-03	8.637070E-03	9.120184E-03	8.559403E-03	4.766639E-03	7.205010E-03	7.984630E-03	8.944000E-03	7.146700E-04
1.400000E+01	4.773112E-02	5.290000E-02	5.049440E-02	5.275467E-02	5.074945E-02	4.104222E-02	4.510760E-02	4.881190E-02	4.731000E-02	1.383970E-03
1.500000E+01	1.340903E-01	1.419000E-01	1.379246E-01	1.385545E-01	1.384526E-01	1.209647E-01	1.364810E-01	1.371530E-01	1.299200E-01	3.732170E-03
1.600000E+01	8.173270E-02	8.390000E-02	8.182063E-02	8.148268E-02	8.246357E-02	7.593194E-02	8.296660E-02	8.200970E-02	7.812700E-02	6.841140E-03
1.700000E+01	1.105199E-01	1.116000E-01	1.091510E-01	1.095552E-01	1.099248E-01	1.050339E-01	1.115450E-01	1.096770E-01	1.053000E-01	9.144290E-03
1.800000E+01	1.464752E-01	1.445000E-01	1.442048E-01	1.419449E-01	1.432627E-01	1.422701E-01	1.470710E-01	1.442260E-01	1.381800E-01	1.187260E-02
1.900000E+01	1.650960E-01	1.612000E-01	1.642303E-01	1.596880E-01	1.617994E-01	1.661179E-01	1.651280E-01	1.628800E-01	1.571100E-01	1.340060E-02
2.000000E+01	1.662200E-01	1.579000E-01	1.641744E-01	1.585578E-01	1.606427E-01	1.747162E-01	1.640420E-01	1.645640E-01	1.581000E-01	1.331890E-02
2.100000E+01	1.230782E-01	1.095000E-01	1.218368E-01	1.164038E-01	1.177292E-01	1.324572E-01	1.212650E-01	1.254430E-01	1.175400E-01	9.714760E-03
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	9.999991E-01	9.999928E-01	

* Fission fractions per unit length

Table 5.49 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A222223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	6.723699E-04		0.000000E+00	8.793473E-04	6.352164E-04	1.145893E-02	0.000000E+00	5.675660E-05	2.470300E-03	0.000000E+00
2.000000E+00	9.211998E-04		0.000000E+00	1.133075E-03	8.568854E-04	1.441455E-02	0.000000E+00	6.336060E-05	3.293000E-03	1.044490E-07
3.000000E+00	1.149441E-03		0.000000E+00	1.189559E-03	8.411495E-04	1.300227E-02	0.000000E+00	6.628640E-05	3.342300E-03	4.762960E-07
4.000000E+00	8.382565E-04		0.000000E+00	1.137593E-03	7.286797E-04	1.001363E-02	0.000000E+00	7.207480E-05	2.836900E-03	1.881380E-06
5.000000E+00	1.454154E-03		5.421564E-06	1.790552E-03	1.256891E-03	1.282593E-02	0.000000E+00	1.486940E-04	4.961300E-03	2.945330E-06
6.000000E+00	6.500164E-04		8.179624E-06	8.421807E-04	5.804787E-04	4.343344E-03	2.479990E-09	9.830600E-05	2.444000E-03	3.748220E-06
7.000000E+00	1.942990E-03		9.353461E-05	1.906909E-03	1.505080E-03	8.720199E-03	1.017380E-04	5.783300E-04	5.927300E-03	8.140290E-06
8.000000E+00	1.042968E-03		1.609382E-04	6.711462E-04	5.688811E-04	2.511768E-03	1.648020E-04	3.430050E-04	1.934000E-03	2.153770E-05
9.000000E+00	2.525358E-03		8.342780E-04	1.575911E-03	1.504825E-03	6.150486E-03	5.718460E-04	1.077050E-03	4.409400E-03	3.873970E-05
1.000000E+01	3.837744E-03		2.048717E-03	2.542922E-03	2.611266E-03	7.844943E-03	1.661630E-03	2.041150E-03	5.409700E-03	8.873000E-05
1.100000E+01	3.043018E-03		2.152913E-03	1.985987E-03	2.075046E-03	4.672374E-03	1.660770E-03	1.861380E-03	3.185800E-03	1.618170E-04
1.200000E+01	1.607335E-02		1.226272E-02	1.139853E-02	1.273311E-02	1.687079E-02	1.162580E-02	1.249380E-02	1.479900E-02	3.241550E-04
1.300000E+01	9.514358E-03		7.784261E-03	8.025287E-03	8.349176E-03	5.401431E-03	8.041990E-03	8.347430E-03	8.276600E-03	6.493080E-04
1.400000E+01	5.211249E-02		4.677299E-02	4.950283E-02	4.891166E-02	3.691086E-02	4.995810E-02	4.855300E-02	4.488400E-02	1.316400E-03
1.500000E+01	1.362534E-01		1.303749E-01	1.338677E-01	1.323739E-01	1.020644E-01	1.394180E-01	1.310520E-01	1.210300E-01	3.605200E-03
1.600000E+01	7.785668E-02		7.695623E-02	7.877298E-02	7.825864E-02	6.454492E-02	7.966890E-02	7.763310E-02	7.270200E-02	6.421420E-03
1.700000E+01	1.071404E-01		1.086150E-01	1.094665E-01	1.092803E-01	9.486929E-02	1.091330E-01	1.090120E-01	1.028700E-01	9.063990E-03
1.800000E+01	1.407383E-01		1.461381E-01	1.449387E-01	1.453173E-01	1.327857E-01	1.454820E-01	1.457100E-01	1.401300E-01	1.207600E-02
1.900000E+01	1.598805E-01		1.676730E-01	1.640304E-01	1.653198E-01	1.574641E-01	1.647590E-01	1.656720E-01	1.624700E-01	1.371650E-02
2.000000E+01	1.619176E-01		1.712615E-01	1.638044E-01	1.650934E-01	1.669774E-01	1.651420E-01	1.671760E-01	1.671400E-01	1.377410E-02
2.100000E+01	1.204354E-01		1.268573E-01	1.205375E-01	1.211983E-01	1.261527E-01	1.226100E-01	1.279450E-01	1.254800E-01	1.013910E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	1.000001E+00	9.999956E-01	

* Fission fractions per unit length

Table 5.50 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A222233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	3.651441E-04		0.000000E+00	1.602297E-03	9.099736E-04	2.291391E-02	4.898510E-06	3.169600E-05	3.413600E-03	0.000000E+00
2.000000E+00	5.506896E-04		0.000000E+00	2.278496E-03	1.250950E-03	2.798809E-02	1.840860E-05	4.600300E-05	4.528600E-03	7.519290E-08
3.000000E+00	4.965722E-04		3.286357E-07	2.177858E-03	1.253540E-03	2.494607E-02	2.795270E-05	4.581380E-05	4.281900E-03	9.913170E-08
4.000000E+00	4.204509E-04		6.354790E-07	1.767389E-03	1.094655E-03	1.906030E-02	4.361980E-05	5.140680E-05	3.809100E-03	7.868330E-07
5.000000E+00	7.308829E-04		1.593561E-05	2.826918E-03	1.800404E-03	2.618091E-02	1.423300E-04	1.205710E-04	6.308200E-03	1.205870E-06
6.000000E+00	4.014206E-04		1.684143E-05	1.178260E-03	7.877001E-04	9.074257E-03	9.538510E-05	6.920350E-05	2.699000E-03	3.063140E-06
7.000000E+00	1.222103E-03		3.234104E-04	3.203464E-03	2.012485E-03	1.597043E-02	4.912520E-04	4.104540E-04	6.833700E-03	1.092310E-05
8.000000E+00	5.417692E-04		3.051259E-04	9.444169E-04	7.023213E-04	4.300645E-03	3.251860E-04	2.821700E-04	2.199400E-03	2.696160E-05
9.000000E+00	1.650879E-03		1.180586E-03	1.930220E-03	1.712977E-03	9.174133E-03	1.171200E-03	9.825590E-04	4.120300E-03	5.634820E-05
1.000000E+01	2.959808E-03		2.745045E-03	2.812218E-03	2.749800E-03	1.129340E-02	1.958900E-03	2.035050E-03	5.297000E-03	1.252340E-04
1.100000E+01	2.293747E-03		2.457721E-03	2.078350E-03	2.237219E-03	6.502852E-03	1.531010E-03	1.882360E-03	3.537400E-03	2.116540E-04
1.200000E+01	1.304885E-02		1.452810E-02	1.306036E-02	1.340566E-02	2.199123E-02	1.059780E-02	1.240600E-02	1.687500E-02	4.042340E-04
1.300000E+01	8.824117E-03		9.541354E-03	8.799632E-03	8.728551E-03	6.519684E-03	7.755590E-03	8.483910E-03	1.000500E-02	7.497010E-04
1.400000E+01	4.904468E-02		5.128370E-02	4.942584E-02	5.026319E-02	3.894035E-02	5.141390E-02	4.817110E-02	5.385600E-02	1.405220E-03
1.500000E+01	1.310766E-01		1.313596E-01	1.300382E-01	1.311757E-01	9.065102E-02	1.343220E-01	1.278330E-01	1.290900E-01	3.642060E-03
1.600000E+01	7.406716E-02		7.585236E-02	7.622503E-02	7.563410E-02	5.512752E-02	7.735040E-02	7.464500E-02	7.109900E-02	6.378060E-03
1.700000E+01	1.026786E-01		1.024375E-01	1.032843E-01	1.032529E-01	7.844870E-02	1.052160E-01	1.026030E-01	9.616600E-02	8.634190E-03
1.800000E+01	1.448480E-01		1.448633E-01	1.425898E-01	1.435260E-01	1.162589E-01	1.462330E-01	1.446790E-01	1.359100E-01	1.189160E-02
1.900000E+01	1.678783E-01		1.662614E-01	1.653182E-01	1.661845E-01	1.398043E-01	1.682410E-01	1.683950E-01	1.581200E-01	1.361830E-02
2.000000E+01	1.701328E-01		1.700651E-01	1.661097E-01	1.677522E-01	1.471055E-01	1.681730E-01	1.732970E-01	1.614800E-01	1.372240E-02
2.100000E+01	1.267674E-01		1.267619E-01	1.223490E-01	1.235652E-01	1.277478E-01	1.248870E-01	1.335290E-01	1.203800E-01	1.006290E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999998E-01	9.999993E-01	1.000009E+00	

* Fission fractions per unit length

Table 5.51 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A222333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	3.004568E-03		1.500752E-06	2.688896E-03	9.704534E-04	1.623706E-02	3.623700E-05	4.675400E-04	5.817400E-03	0.000000E+00
2.000000E+00	3.948776E-03		8.650382E-06	3.598075E-03	1.308988E-03	1.961545E-02	1.051390E-04	5.902070E-04	7.640200E-03	4.637090E-06
3.000000E+00	3.948776E-03		1.144347E-05	3.700357E-03	1.320561E-03	1.790694E-02	1.388420E-04	5.643260E-04	7.359300E-03	4.998820E-06
4.000000E+00	3.257428E-03		2.468413E-05	3.261679E-03	1.190217E-03	1.423810E-02	1.884650E-04	5.185960E-04	6.397300E-03	6.228730E-06
5.000000E+00	5.186896E-03		9.249455E-05	5.228914E-03	2.060004E-03	2.000479E-02	3.696610E-04	8.791730E-04	1.066600E-02	8.116540E-06
6.000000E+00	2.069285E-03		6.851606E-05	2.076337E-03	9.149798E-04	6.805809E-03	2.185790E-04	4.235950E-04	4.906100E-03	8.947170E-06
7.000000E+00	4.531841E-03		4.054968E-04	5.461891E-03	2.265526E-03	1.164139E-02	1.067740E-03	1.351870E-03	1.096900E-02	2.497520E-05
8.000000E+00	1.545716E-03		2.417651E-04	2.080883E-03	8.020323E-04	2.948319E-03	5.763150E-04	6.527110E-04	3.208000E-03	4.450750E-05
9.000000E+00	3.485894E-03		1.070710E-03	4.619764E-03	1.983350E-03	6.079673E-03	1.668690E-03	1.984050E-03	6.419000E-03	7.101390E-05
1.000000E+01	4.399164E-03		2.758081E-03	6.941580E-03	3.258382E-03	7.503464E-03	3.225430E-03	3.507560E-03	7.751700E-03	1.423190E-04
1.100000E+01	3.025392E-03		2.438025E-03	4.840240E-03	2.620504E-03	4.901941E-03	2.384450E-03	2.868470E-03	5.090900E-03	2.248230E-04
1.200000E+01	1.668160E-02		1.554310E-02	2.327498E-02	1.540429E-02	1.957621E-02	1.399890E-02	1.653980E-02	2.370200E-02	4.570970E-04
1.300000E+01	1.072066E-02		1.054064E-02	1.269441E-02	9.911638E-03	6.420054E-03	9.227440E-03	1.028570E-02	1.302300E-02	8.451820E-04
1.400000E+01	5.467243E-02		5.743255E-02	6.221055E-02	5.432670E-02	4.174050E-02	5.161960E-02	5.608240E-02	6.006000E-02	1.530280E-03
1.500000E+01	1.269445E-01		1.409800E-01	1.351267E-01	1.337704E-01	1.009476E-01	1.359650E-01	1.340850E-01	1.276600E-01	3.719110E-03
1.600000E+01	7.078406E-02		7.709562E-02	7.296159E-02	7.451082E-02	5.960433E-02	7.642730E-02	7.346320E-02	6.752100E-02	6.098690E-03
1.700000E+01	9.561428E-02		1.008250E-01	9.667979E-02	9.975581E-02	8.312258E-02	1.032400E-01	9.765340E-02	8.882700E-02	8.215260E-03
1.800000E+01	1.308302E-01		1.342385E-01	1.272850E-01	1.347834E-01	1.172743E-01	1.377400E-01	1.327030E-01	1.206100E-01	1.112010E-02
1.900000E+01	1.609276E-01		1.625092E-01	1.527420E-01	1.639280E-01	1.503909E-01	1.654210E-01	1.628310E-01	1.495100E-01	1.357880E-02
2.000000E+01	1.673390E-01		1.679630E-01	1.563787E-01	1.689231E-01	1.653354E-01	1.703700E-01	1.706010E-01	1.555500E-01	1.394410E-02
2.100000E+01	1.270819E-01		1.257511E-01	1.161476E-01	1.259909E-01	1.277052E-01	1.260120E-01	1.319470E-01	1.173100E-01	1.031910E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	9.999996E-01	9.999979E-01	

* Fission fractions per unit length

Table 5.52 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A223333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	3.672070E-03		3.273640E-08	4.881374E-03	1.296814E-03	2.370329E-02	3.983030E-05	1.048630E-03	4.096400E-03	0.000000E+00
2.000000E+00	4.896696E-03		7.299240E-06	6.378496E-03	1.738115E-03	2.969729E-02	6.049760E-05	1.300540E-03	5.460500E-03	1.145640E-05
3.000000E+00	5.055723E-03		1.356139E-05	6.677006E-03	1.762332E-03	2.757939E-02	5.681500E-05	1.291180E-03	5.526700E-03	1.074450E-05
4.000000E+00	4.616592E-03		3.841120E-05	6.353335E-03	1.601151E-03	2.298663E-02	4.858190E-05	1.156830E-03	4.972800E-03	1.119440E-05
5.000000E+00	7.882662E-03		3.162006E-04	1.087901E-02	2.732834E-03	3.335544E-02	1.182050E-04	1.972110E-03	9.447000E-03	1.421760E-05
6.000000E+00	3.439554E-03		3.046859E-04	4.588583E-03	1.248503E-03	1.168370E-02	1.060610E-04	8.349680E-04	4.866100E-03	1.742360E-05
7.000000E+00	8.482627E-03		1.340131E-03	1.019164E-02	3.378923E-03	2.256622E-02	4.414410E-04	2.499860E-03	1.359400E-02	3.016670E-05
8.000000E+00	2.990183E-03		6.904912E-04	3.194395E-03	1.281555E-03	6.103036E-03	3.982380E-04	1.081710E-03	4.477200E-03	5.120290E-05
9.000000E+00	6.450218E-03		2.411304E-03	6.712461E-03	3.229861E-03	1.195317E-02	2.020540E-03	2.862250E-03	8.767500E-03	8.873120E-05
1.000000E+01	8.247099E-03		5.044802E-03	8.460057E-03	5.257103E-03	1.216571E-02	4.240150E-03	4.901510E-03	1.001600E-02	1.968240E-04
1.100000E+01	5.748452E-03		4.519367E-03	5.354872E-03	4.042812E-03	7.024806E-03	3.610780E-03	3.821200E-03	6.472300E-03	3.399490E-04
1.200000E+01	2.761462E-02		2.362121E-02	2.543621E-02	2.222537E-02	2.383375E-02	2.225760E-02	2.056800E-02	2.926000E-02	6.266560E-04
1.300000E+01	1.527620E-02		1.410335E-02	1.397619E-02	1.339094E-02	7.244880E-03	1.445080E-02	1.253660E-02	1.586800E-02	1.117560E-03
1.400000E+01	7.106745E-02		6.872825E-02	6.824545E-02	6.770618E-02	4.726481E-02	7.048050E-02	6.376970E-02	7.384300E-02	1.875600E-03
1.500000E+01	1.440071E-01		1.416127E-01	1.417062E-01	1.477930E-01	1.059599E-01	1.480700E-01	1.432870E-01	1.477700E-01	4.112090E-03
1.600000E+01	7.170476E-02		7.416784E-02	7.156222E-02	7.619455E-02	5.765524E-02	7.689010E-02	7.481710E-02	7.220800E-02	6.331510E-03
1.700000E+01	9.152767E-02		9.663547E-02	9.179453E-02	9.753134E-02	7.591484E-02	9.930790E-02	9.643200E-02	8.951300E-02	8.100940E-03
1.800000E+01	1.176388E-01		1.286425E-01	1.187176E-01	1.263886E-01	1.018897E-01	1.287730E-01	1.264750E-01	1.132600E-01	1.052050E-02
1.900000E+01	1.363696E-01		1.499650E-01	1.364452E-01	1.460243E-01	1.225994E-01	1.502470E-01	1.479110E-01	1.294800E-01	1.216780E-02
2.000000E+01	1.489730E-01		1.636568E-01	1.474248E-01	1.565698E-01	1.400998E-01	1.591210E-01	1.629650E-01	1.420300E-01	1.303020E-02
2.100000E+01	1.143390E-01		1.241807E-01	1.110204E-01	1.186059E-01	1.087189E-01	1.192610E-01	1.284670E-01	1.090800E-01	9.809110E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999992E-01	1.000009E+00	

* Fission fractions per unit length

Table 5.53 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A233333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.076721E-02		7.998406E-05	1.130365E-02	2.162341E-03	2.700903E-02	1.227060E-03	4.030030E-03	1.135800E-02	0.000000E+00
2.000000E+00	1.421112E-02		8.244140E-05	1.565829E-02	2.905647E-03	3.407694E-02	1.667670E-03	5.074990E-03	1.523600E-02	1.225860E-04
3.000000E+00	1.379197E-02		1.045815E-04	1.563528E-02	2.931366E-03	3.278163E-02	1.764490E-03	5.009570E-03	1.514100E-02	1.322110E-04
4.000000E+00	1.209482E-02		1.464675E-04	1.448478E-02	2.710523E-03	2.822744E-02	1.476740E-03	4.483700E-03	1.360500E-02	1.300300E-04
5.000000E+00	1.919312E-02		4.801792E-04	2.626589E-02	4.801883E-03	4.213787E-02	2.613130E-03	7.437890E-03	2.236700E-02	1.240470E-04
6.000000E+00	8.127726E-03		2.830022E-04	1.167757E-02	2.267654E-03	1.621532E-02	1.056210E-03	3.192540E-03	9.466900E-03	1.226870E-04
7.000000E+00	1.821208E-02		1.853311E-03	2.648449E-02	6.452453E-03	3.129430E-02	3.125240E-03	7.985040E-03	2.211700E-02	1.099910E-04
8.000000E+00	5.248728E-03		1.351286E-03	7.281509E-03	2.591498E-03	8.317362E-03	1.248950E-03	2.897720E-03	6.694400E-03	1.375870E-04
9.000000E+00	1.016298E-02		4.066873E-03	1.367943E-02	6.325854E-03	1.496741E-02	3.538260E-03	6.701110E-03	1.318800E-02	1.962700E-04
1.000000E+01	1.166236E-02		7.130606E-03	1.540518E-02	9.478814E-03	1.517328E-02	6.524050E-03	9.473790E-03	1.487500E-02	3.593310E-04
1.100000E+01	7.334792E-03		6.079685E-03	9.346655E-03	6.927208E-03	8.506820E-03	5.079730E-03	6.765130E-03	9.307500E-03	5.831560E-04
1.200000E+01	3.179236E-02		3.353665E-02	4.039402E-02	3.392512E-02	2.931642E-02	2.855340E-02	3.330610E-02	3.750700E-02	9.588400E-04
1.300000E+01	1.711492E-02		1.992972E-02	2.122671E-02	1.887219E-02	8.670571E-03	1.650190E-02	1.829490E-02	1.830600E-02	1.561300E-03
1.400000E+01	7.690977E-02		9.167407E-02	8.664409E-02	8.642966E-02	5.312056E-02	8.028430E-02	8.399010E-02	7.988900E-02	2.334900E-03
1.500000E+01	1.496523E-01		1.791259E-01	1.478391E-01	1.650765E-01	1.104655E-01	1.651370E-01	1.625970E-01	1.503900E-01	4.472530E-03
1.600000E+01	7.116811E-02		8.289776E-02	6.674045E-02	7.812820E-02	5.715538E-02	7.948280E-02	7.562620E-02	6.906000E-02	6.452140E-03
1.700000E+01	8.712114E-02		9.748395E-02	7.987915E-02	9.567810E-02	7.279634E-02	9.730830E-02	9.240390E-02	8.227000E-02	7.893190E-03
1.800000E+01	1.074495E-01		1.191914E-01	9.734373E-02	1.177558E-01	9.440136E-02	1.213000E-01	1.147430E-01	1.005100E-01	9.827620E-03
1.900000E+01	1.167748E-01		1.282094E-01	1.065132E-01	1.286380E-01	1.077194E-01	1.361160E-01	1.259270E-01	1.101300E-01	1.087350E-02
2.000000E+01	1.181309E-01		1.264143E-01	1.045228E-01	1.276520E-01	1.149206E-01	1.380450E-01	1.271840E-01	1.109100E-01	1.085420E-02
2.100000E+01	9.307934E-02		9.987843E-02	8.167393E-02	9.828923E-02	9.272644E-02	1.079510E-01	1.028770E-01	8.767300E-02	8.373740E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000001E+00	1.000001E+00	

* Fission fractions per unit length

Table 5.54 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A333333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.664760E-02	2.100000E-03	6.629206E-04	1.997556E-02	4.690684E-03	2.743736E-02	7.913690E-04	1.316370E-02	1.609100E-02	0.000000E+00
2.000000E+00	3.532834E-02	3.100000E-03	7.728744E-04	2.673014E-02	6.358762E-03	3.486723E-02	1.042560E-03	1.686280E-02	2.160700E-02	7.087460E-05
3.000000E+00	3.566459E-02	3.300000E-03	7.618453E-04	2.790585E-02	6.583749E-03	3.297849E-02	1.360100E-03	1.702280E-02	2.209000E-02	8.416720E-05
4.000000E+00	3.297219E-02	3.200000E-03	7.267609E-04	2.697220E-02	6.329892E-03	2.886788E-02	1.670700E-03	1.583580E-02	2.032800E-02	9.360290E-05
5.000000E+00	5.356552E-02	5.800000E-03	1.530344E-03	4.950666E-02	1.149723E-02	4.484134E-02	3.571790E-03	2.669090E-02	3.580200E-02	1.127920E-04
6.000000E+00	2.267613E-02	2.800000E-03	8.918095E-04	2.223477E-02	5.362863E-03	1.756577E-02	2.024770E-03	1.146660E-02	1.548700E-02	1.281870E-04
7.000000E+00	5.060642E-02	9.100000E-03	5.426308E-03	5.176587E-02	1.366008E-02	3.445422E-02	6.054280E-03	2.465880E-02	3.614500E-02	1.465500E-04
8.000000E+00	1.372385E-02	3.900000E-03	2.978544E-03	1.424685E-02	4.612497E-03	8.643639E-03	2.834600E-03	6.577350E-03	1.097100E-02	1.950680E-04
9.000000E+00	2.288175E-02	9.600000E-03	8.018137E-03	2.519710E-02	1.014800E-02	1.456031E-02	7.522470E-03	1.191780E-02	2.060500E-02	2.542770E-04
1.000000E+01	2.152345E-02	1.400000E-02	1.311130E-02	2.375628E-02	1.350196E-02	1.419693E-02	1.113530E-02	1.329160E-02	2.313200E-02	4.004560E-04
1.100000E+01	1.100363E-02	9.800000E-03	1.045982E-02	1.325557E-02	9.170767E-03	7.978712E-03	7.371170E-03	8.578970E-03	1.392400E-02	5.938780E-04
1.200000E+01	3.570813E-02	4.590000E-02	4.936563E-02	4.949514E-02	4.200895E-02	3.090681E-02	3.576390E-02	3.796900E-02	5.173300E-02	1.032240E-03
1.300000E+01	1.638298E-02	2.400000E-02	2.536636E-02	2.231546E-02	2.219222E-02	1.063700E-02	2.061830E-02	1.999450E-02	2.446200E-02	1.768800E-03
1.400000E+01	6.959351E-02	1.038000E-01	1.048874E-01	8.316428E-02	9.616157E-02	6.532860E-02	9.620150E-02	8.788050E-02	9.711000E-02	2.725360E-03
1.500000E+01	1.215969E-01	1.818000E-01	1.775862E-01	1.335931E-01	1.703181E-01	1.243856E-01	1.791370E-01	1.566590E-01	1.522000E-01	5.033930E-03
1.600000E+01	5.449141E-02	7.970000E-02	7.843111E-02	5.763290E-02	7.630549E-02	5.936086E-02	8.314710E-02	6.958790E-02	6.220200E-02	6.718260E-03
1.700000E+01	6.600365E-02	9.280000E-02	9.303629E-02	6.566693E-02	9.033676E-02	7.291178E-02	9.802790E-02	8.214630E-02	7.045800E-02	7.948270E-03
1.800000E+01	8.085537E-02	1.096000E-01	1.120818E-01	7.608696E-02	1.082058E-01	9.142420E-02	1.173870E-01	9.854490E-02	8.276000E-02	9.561330E-03
1.900000E+01	8.607507E-02	1.151000E-01	1.194667E-01	7.991378E-02	1.147485E-01	1.011239E-01	1.240180E-01	1.049530E-01	8.503600E-02	1.009930E-02
2.000000E+01	8.370682E-02	1.081000E-01	1.137058E-01	7.598322E-02	1.097787E-01	1.021893E-01	1.174600E-01	1.012880E-01	8.038500E-02	9.616410E-03
2.100000E+01	5.899265E-02	7.260000E-02	8.073213E-02	5.460141E-02	7.802736E-02	7.534009E-02	8.285980E-02	7.491040E-02	5.747400E-02	6.824130E-03
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	1.000001E+00	1.000002E+00	

* Fission fractions per unit length

Table 5.55 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A122223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	4.393477E-04	3.000000E-04	3.926963E-06	7.989070E-04	6.899276E-04	9.261588E-03	0.000000E+00	9.601370E-05	1.687200E-03	0.000000E+00
2.000000E+00	5.097372E-04	4.000000E-04	1.271474E-05	9.902073E-04	8.902503E-04	1.080612E-02	0.000000E+00	1.216820E-04	2.366100E-03	4.488180E-07
3.000000E+00	4.387611E-04	4.000000E-04	1.669498E-05	9.553742E-04	8.406645E-04	9.541443E-03	3.199870E-06	1.251420E-04	2.430800E-03	7.846190E-07
4.000000E+00	4.100188E-04	3.000000E-04	2.846654E-05	7.337499E-04	7.051649E-04	7.004679E-03	4.555040E-06	1.294190E-04	2.261200E-03	1.105170E-06
5.000000E+00	7.279446E-04	6.000000E-04	1.068407E-04	1.115787E-03	1.173559E-03	8.875799E-03	2.641720E-05	2.240860E-04	4.244300E-03	1.815900E-06
6.000000E+00	4.100188E-04	2.000000E-04	4.811129E-05	5.408714E-04	5.244471E-04	3.032250E-03	3.972690E-05	1.055230E-04	1.870200E-03	3.345990E-06
7.000000E+00	1.137963E-03	7.000000E-04	1.273451E-04	1.267069E-03	1.371663E-03	5.949898E-03	3.722470E-04	3.950160E-04	4.560400E-03	8.862910E-06
8.000000E+00	4.551854E-04	4.000000E-04	1.016570E-04	5.815664E-04	4.844141E-04	1.720832E-03	2.767990E-04	1.981590E-04	1.292900E-03	2.495380E-05
9.000000E+00	1.216565E-03	1.200000E-03	3.073734E-04	1.502671E-03	1.268959E-03	4.386832E-03	1.118840E-03	6.418170E-04	2.505600E-03	4.287030E-05
1.000000E+01	2.256570E-03	2.300000E-03	1.104502E-03	2.740430E-03	2.034820E-03	5.659487E-03	2.190160E-03	1.455810E-03	3.453400E-03	8.599780E-05
1.100000E+01	1.873534E-03	1.900000E-03	1.210855E-03	2.379699E-03	1.649648E-03	3.600024E-03	1.676770E-03	1.429200E-03	2.392100E-03	1.538910E-04
1.200000E+01	1.091037E-02	1.210000E-02	9.283162E-03	1.317796E-02	1.061467E-02	1.284909E-02	1.032360E-02	9.952660E-03	1.219800E-02	3.277860E-04
1.300000E+01	7.357461E-03	7.900000E-03	6.965569E-03	7.673430E-03	7.261627E-03	3.849344E-03	7.398310E-03	7.142380E-03	7.524500E-03	6.508920E-04
1.400000E+01	4.653390E-02	4.750000E-02	4.329034E-02	4.473067E-02	4.374318E-02	3.196888E-02	4.581980E-02	4.451750E-02	4.017800E-02	1.284930E-03
1.500000E+01	1.293571E-01	1.316000E-01	1.192255E-01	1.224232E-01	1.237639E-01	9.812143E-02	1.326620E-01	1.244710E-01	1.154200E-01	3.514340E-03
1.600000E+01	7.655092E-02	7.810000E-02	7.395802E-02	7.575356E-02	7.577520E-02	6.495252E-02	7.694580E-02	7.478930E-02	7.279500E-02	6.310640E-03
1.700000E+01	1.070753E-01	1.092000E-01	1.071766E-01	1.070245E-01	1.072193E-01	9.711930E-02	1.072530E-01	1.060220E-01	1.047200E-01	8.776600E-03
1.800000E+01	1.436655E-01	1.461000E-01	1.474924E-01	1.455325E-01	1.452869E-01	1.365560E-01	1.444890E-01	1.440990E-01	1.432700E-01	1.183780E-02
1.900000E+01	1.657954E-01	1.675000E-01	1.720393E-01	1.675146E-01	1.687166E-01	1.653385E-01	1.660500E-01	1.678480E-01	1.667600E-01	1.368740E-02
2.000000E+01	1.702194E-01	1.688000E-01	1.778073E-01	1.706710E-01	1.727830E-01	1.781080E-01	1.714520E-01	1.744970E-01	1.723400E-01	1.403190E-02
2.100000E+01	1.326590E-01	1.225000E-01	1.396934E-01	1.318924E-01	1.332021E-01	1.412981E-01	1.318980E-01	1.417390E-01	1.357300E-01	1.090370E-02
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	9.999997E-01	

* Fission fractions per unit length

Table 5.56 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A112233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	7.235696E-04	3.000000E-04	0.000000E+00	1.295071E-04	4.373937E-04	8.561263E-03	0.000000E+00	4.406640E-05	3.284400E-03	0.000000E+00
2.000000E+00	9.895964E-04	4.000000E-04	0.000000E+00	1.445583E-04	5.864344E-04	1.039484E-02	0.000000E+00	5.471100E-05	4.220000E-03	1.669180E-06
3.000000E+00	9.756257E-04	4.000000E-04	0.000000E+00	1.545549E-04	5.962216E-04	9.640036E-03	3.989650E-07	4.752980E-05	4.197700E-03	2.104350E-06
4.000000E+00	7.363762E-04	3.000000E-04	0.000000E+00	1.516345E-04	5.277675E-04	7.754884E-03	1.082240E-06	4.511850E-05	3.669200E-03	2.808100E-06
5.000000E+00	1.071093E-03	5.000000E-04	2.313844E-06	3.115809E-04	9.384663E-04	9.634825E-03	6.411650E-05	8.651190E-05	5.974300E-03	2.418930E-06
6.000000E+00	4.662746E-04	2.000000E-04	6.043506E-06	1.618558E-04	4.593735E-04	3.015166E-03	5.488670E-05	5.892270E-05	2.400300E-03	2.302780E-06
7.000000E+00	8.539635E-04	6.000000E-04	1.328947E-04	3.715608E-04	1.254616E-03	6.215381E-03	2.829370E-04	2.214140E-04	5.407300E-03	3.793320E-06
8.000000E+00	2.369210E-04	3.000000E-04	1.296870E-04	1.652255E-04	4.160227E-04	1.877097E-03	1.421000E-04	1.609430E-04	1.826900E-03	1.281070E-05
9.000000E+00	7.433616E-04	9.000000E-04	6.601238E-04	4.756832E-04	9.548017E-04	3.606332E-03	6.659390E-04	6.067360E-04	3.894600E-03	2.453980E-05
1.000000E+01	1.773124E-03	1.700000E-03	1.350056E-03	1.112099E-03	1.586479E-03	4.058422E-03	1.696240E-03	1.402500E-03	4.551700E-03	5.839930E-05
1.100000E+01	1.642148E-03	1.500000E-03	1.511788E-03	1.059083E-03	1.330041E-03	2.254689E-03	1.563690E-03	1.328430E-03	3.069700E-03	1.187800E-04
1.200000E+01	9.778959E-03	9.800000E-03	9.980007E-03	7.403135E-03	8.698164E-03	9.400353E-03	9.737820E-03	8.987720E-03	1.464200E-02	2.593940E-04
1.300000E+01	6.831708E-03	6.600000E-03	6.539673E-03	5.295977E-03	6.100103E-03	3.632554E-03	6.660720E-03	6.298580E-03	7.990900E-03	5.410560E-04
1.400000E+01	3.997737E-02	4.060000E-02	3.973022E-02	3.702129E-02	3.829285E-02	3.085719E-02	4.024280E-02	3.816560E-02	3.944300E-02	1.112790E-03
1.500000E+01	1.111963E-01	1.166000E-01	1.180617E-01	1.168148E-01	1.123178E-01	9.483035E-02	1.107730E-01	1.113160E-01	1.070400E-01	3.141630E-03
1.600000E+01	6.736241E-02	7.180000E-02	6.987068E-02	7.269472E-02	6.981071E-02	6.275839E-02	6.740230E-02	6.940520E-02	6.503500E-02	5.762950E-03
1.700000E+01	9.636923E-02	1.016000E-01	9.853485E-02	1.021455E-01	9.958128E-02	8.982075E-02	9.694920E-02	9.849510E-02	9.289400E-02	8.190990E-03
1.800000E+01	1.428983E-01	1.461000E-01	1.430319E-01	1.465801E-01	1.443358E-01	1.335999E-01	1.432470E-01	1.432600E-01	1.365600E-01	1.179500E-02
1.900000E+01	1.753221E-01	1.763000E-01	1.730841E-01	1.769070E-01	1.759093E-01	1.673563E-01	1.776910E-01	1.746200E-01	1.677300E-01	1.438630E-02
2.000000E+01	1.917675E-01	1.883000E-01	1.900611E-01	1.890377E-01	1.903880E-01	1.894176E-01	1.936880E-01	1.920490E-01	1.843200E-01	1.559800E-02
2.100000E+01	1.482840E-01	1.353000E-01	1.473128E-01	1.418625E-01	1.454784E-01	1.513137E-01	1.491360E-01	1.533460E-01	1.418400E-01	1.191480E-02
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999992E-01	1.000000E+00	9.999910E-01	

* Fission fractions per unit length

Table 5.57 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A322221

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	9.195053E-04		3.034830E-06	1.349851E-03	8.355706E-04	1.461891E-02	0.000000E+00	6.870340E-05	3.343600E-03	0.000000E+00
2.000000E+00	1.153238E-03		6.778439E-06	1.701740E-03	1.098988E-03	1.795782E-02	0.000000E+00	8.443860E-05	4.402800E-03	2.878820E-05
3.000000E+00	1.177560E-03		3.563583E-06	1.628194E-03	1.094176E-03	1.594015E-02	5.190490E-07	9.554790E-05	4.416300E-03	3.444970E-05
4.000000E+00	9.746756E-04		9.081098E-06	1.352114E-03	9.445765E-04	1.252089E-02	5.976420E-06	8.912320E-05	3.766700E-03	3.055150E-05
5.000000E+00	1.285528E-03		7.799365E-05	2.293502E-03	1.523239E-03	1.671021E-02	4.132160E-05	1.570130E-04	5.968700E-03	2.976260E-05
6.000000E+00	4.870412E-04		7.192990E-05	1.074224E-03	6.502717E-04	5.271300E-03	4.706530E-05	8.495830E-05	2.559100E-03	3.170970E-05
7.000000E+00	1.542989E-03		7.712456E-04	2.936181E-03	1.713030E-03	9.139531E-03	5.123130E-04	4.353150E-04	5.854900E-03	3.678180E-05
8.000000E+00	8.133173E-04		6.285869E-04	1.125479E-03	6.807846E-04	2.469481E-03	3.304900E-04	3.182360E-04	1.839100E-03	4.690510E-05
9.000000E+00	2.113676E-03		2.120882E-03	3.053855E-03	1.730899E-03	5.456966E-03	1.163720E-03	1.092670E-03	3.786900E-03	5.289890E-05
1.000000E+01	3.616325E-03		3.882188E-03	4.693364E-03	2.912710E-03	7.350821E-03	2.632440E-03	2.287340E-03	5.021500E-03	1.014780E-04
1.100000E+01	2.768601E-03		3.126279E-03	3.236022E-03	2.408919E-03	4.433388E-03	2.326470E-03	2.109970E-03	3.451200E-03	1.869100E-04
1.200000E+01	1.502650E-02		1.886679E-02	1.773023E-02	1.485951E-02	1.770374E-02	1.442690E-02	1.396980E-02	1.825600E-02	4.075260E-04
1.300000E+01	9.438277E-03		1.209756E-02	1.062117E-02	9.848106E-03	6.751049E-03	9.274410E-03	9.776580E-03	1.067400E-02	8.580760E-04
1.400000E+01	5.471413E-02		6.544259E-02	6.002482E-02	5.682446E-02	4.853651E-02	5.903140E-02	5.697820E-02	5.787100E-02	1.659190E-03
1.500000E+01	1.511530E-01		1.611049E-01	1.518441E-01	1.509504E-01	1.225985E-01	1.592560E-01	1.504710E-01	1.461700E-01	4.200980E-03
1.600000E+01	8.914930E-02		9.111313E-02	8.724814E-02	8.924725E-02	7.206559E-02	8.987750E-02	8.846860E-02	8.693000E-02	7.314400E-03
1.700000E+01	1.125558E-01		1.125383E-01	1.110431E-01	1.138072E-01	9.634419E-02	1.142400E-01	1.128450E-01	1.093600E-01	9.345480E-03
1.800000E+01	1.440586E-01		1.395245E-01	1.409819E-01	1.436326E-01	1.270234E-01	1.435420E-01	1.441160E-01	1.376200E-01	1.173980E-02
1.900000E+01	1.563746E-01		1.492977E-01	1.535413E-01	1.562696E-01	1.467544E-01	1.558720E-01	1.576950E-01	1.497500E-01	1.277000E-02
2.000000E+01	1.502923E-01		1.426013E-01	1.451684E-01	1.488533E-01	1.472587E-01	1.479410E-01	1.528190E-01	1.432400E-01	1.217670E-02
2.100000E+01	1.003851E-01		9.671166E-02	9.735222E-02	1.001145E-01	1.030945E-01	9.947740E-02	1.060390E-01	9.571300E-02	8.206760E-03
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999989E-01	1.000001E+00	9.999948E-01	

* Fission fractions per unit length

Table 5.58 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B32A332211

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.706832E-03	3.000000E-04	1.355460E-06	8.082374E-04	9.540470E-04	4.906703E-03	0.000000E+00	3.087500E-04	2.584900E-03	0.000000E+00
2.000000E+00	2.263330E-03	5.000000E-04	1.441527E-05	1.136974E-03	1.267925E-03	6.181473E-03	4.203530E-07	3.746190E-04	3.497600E-03	2.444420E-07
3.000000E+00	2.099758E-03	4.000000E-04	2.318265E-05	1.111808E-03	1.249960E-03	5.768160E-03	6.095330E-07	3.869860E-04	3.678000E-03	8.760790E-07
4.000000E+00	1.738242E-03	4.000000E-04	4.019433E-05	8.247876E-04	1.084234E-03	4.652019E-03	9.057020E-06	3.523620E-04	3.581600E-03	7.126770E-07
5.000000E+00	3.178381E-03	7.000000E-04	1.692562E-04	1.308143E-03	1.847462E-03	6.448281E-03	6.293620E-05	5.419260E-04	6.308800E-03	1.256630E-06
6.000000E+00	1.582968E-03	3.000000E-04	1.645018E-04	6.165503E-04	8.553639E-04	2.309798E-03	9.477900E-05	2.510970E-04	2.677200E-03	4.350140E-06
7.000000E+00	3.888968E-03	9.000000E-04	9.898100E-04	2.267146E-03	2.255168E-03	4.408706E-03	7.346520E-04	1.094160E-03	6.480700E-03	1.366380E-05
8.000000E+00	1.291384E-03	4.000000E-04	5.661173E-04	1.046514E-03	8.689567E-04	1.322852E-03	4.775820E-04	5.878820E-04	2.068200E-03	3.535590E-05
9.000000E+00	2.898058E-03	1.600000E-03	2.028038E-03	2.782921E-03	2.292654E-03	3.078431E-03	1.721230E-03	1.791190E-03	4.426700E-03	6.324990E-05
1.000000E+01	4.600148E-03	3.500000E-03	3.871819E-03	4.899302E-03	3.924500E-03	4.648924E-03	3.871150E-03	3.502940E-03	5.583900E-03	1.255280E-04
1.100000E+01	3.601533E-03	3.100000E-03	3.212603E-03	3.699982E-03	3.130775E-03	3.416367E-03	3.132330E-03	2.995550E-03	3.779100E-03	2.103060E-04
1.200000E+01	1.975302E-02	1.980000E-02	1.932553E-02	2.044965E-02	1.876050E-02	1.721853E-02	2.053180E-02	1.860310E-02	2.093200E-02	4.692320E-04
1.300000E+01	1.169120E-02	1.280000E-02	1.232053E-02	1.348952E-02	1.215196E-02	7.318713E-03	1.269050E-02	1.206240E-02	1.265100E-02	9.571200E-04
1.400000E+01	6.284518E-02	7.050000E-02	6.658308E-02	7.016816E-02	6.886449E-02	5.834329E-02	6.935010E-02	6.680560E-02	6.630200E-02	1.871340E-03
1.500000E+01	1.651644E-01	1.750000E-01	1.667269E-01	1.708294E-01	1.691848E-01	1.539603E-01	1.696320E-01	1.666450E-01	1.617000E-01	4.731340E-03
1.600000E+01	9.397945E-02	9.760000E-02	9.464251E-02	9.505008E-02	9.515235E-02	8.936586E-02	9.454990E-02	9.479030E-02	9.190200E-02	7.931350E-03
1.700000E+01	1.178046E-01	1.208000E-01	1.199226E-01	1.174381E-01	1.189614E-01	1.135234E-01	1.185850E-01	1.189290E-01	1.158400E-01	9.933950E-03
1.800000E+01	1.406886E-01	1.417000E-01	1.428706E-01	1.382959E-01	1.404295E-01	1.376787E-01	1.395890E-01	1.413360E-01	1.379700E-01	1.172910E-02
1.900000E+01	1.441923E-01	1.440000E-01	1.480261E-01	1.420367E-01	1.439349E-01	1.460471E-01	1.456530E-01	1.458770E-01	1.402200E-01	1.198030E-02
2.000000E+01	1.275377E-01	1.250000E-01	1.293604E-01	1.263934E-01	1.263443E-01	1.344807E-01	1.293990E-01	1.302010E-01	1.235400E-01	1.051930E-02
2.100000E+01	8.749408E-02	8.060000E-02	8.914062E-02	8.534670E-02	8.648473E-02	9.492175E-02	8.991540E-02	9.256380E-02	8.428700E-02	7.111890E-03
Sum	1.000000E+00	9.999000E-01	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000011E+00	

* Fission fractions per unit length

Table 5.59 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50Auniform

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	5.319408E-03	5.100000E-03	5.437966E-03	5.097833E-03	5.317734E-03	4.956159E-03	5.576510E-03	4.642620E-03	4.896200E-03	5.352990E-04
2.000000E+00	9.966704E-03	9.600000E-03	9.612644E-03	9.737599E-03	9.655647E-03	8.773361E-03	1.022310E-02	8.277040E-03	8.797400E-03	9.262210E-04
3.000000E+00	1.503481E-02	1.410000E-02	1.335502E-02	1.499126E-02	1.406012E-02	1.238144E-02	1.490880E-02	1.261460E-02	1.276400E-02	1.311500E-03
4.000000E+00	1.921413E-02	1.870000E-02	1.692836E-02	2.082119E-02	1.821501E-02	1.589138E-02	1.946900E-02	1.713320E-02	1.651000E-02	1.681830E-03
5.000000E+00	5.039361E-02	4.910000E-02	5.019603E-02	5.616347E-02	4.828732E-02	4.102255E-02	5.162790E-02	4.690100E-02	4.569000E-02	2.110560E-03
6.000000E+00	3.096060E-02	3.000000E-02	2.483363E-02	3.334077E-02	2.971784E-02	2.466973E-02	3.124940E-02	2.870730E-02	2.775100E-02	2.449820E-03
7.000000E+00	1.124069E-01	1.089000E-01	1.062194E-01	1.131329E-01	1.080464E-01	9.235296E-02	1.105640E-01	1.062450E-01	1.029600E-01	2.876900E-03
8.000000E+00	4.162374E-02	4.160000E-02	4.044835E-02	4.059460E-02	4.145870E-02	3.757918E-02	4.162360E-02	4.102310E-02	3.988900E-02	3.242890E-03
9.000000E+00	8.755135E-02	8.870000E-02	8.629131E-02	8.290863E-02	8.889277E-02	8.358341E-02	8.954550E-02	8.868390E-02	8.702300E-02	3.478840E-03
1.000000E+01	9.191786E-02	9.240000E-02	8.687160E-02	8.486985E-02	9.373424E-02	9.312101E-02	9.449080E-02	9.468090E-02	9.200400E-02	3.749290E-03
1.100000E+01	4.580454E-02	4.650000E-02	4.295707E-02	4.203193E-02	4.751600E-02	4.828777E-02	4.748440E-02	4.848490E-02	4.778500E-02	3.837580E-03
1.200000E+01	1.360827E-01	1.365000E-01	1.274542E-01	1.278421E-01	1.387005E-01	1.459049E-01	1.376230E-01	1.445300E-01	1.390600E-01	3.843770E-03
1.300000E+01	4.456791E-02	4.350000E-02	4.236505E-02	4.286478E-02	4.407664E-02	4.637137E-02	4.300130E-02	4.640130E-02	4.351500E-02	3.684380E-03
1.400000E+01	1.204023E-01	1.193000E-01	1.265163E-01	1.207360E-01	1.206629E-01	1.288127E-01	1.168360E-01	1.245800E-01	1.216900E-01	3.402070E-03
1.500000E+01	9.293192E-02	9.890000E-02	1.090124E-01	1.002910E-01	9.716405E-02	1.046670E-01	9.389040E-02	9.701910E-02	1.031600E-01	2.659050E-03
1.600000E+01	2.579817E-02	2.650000E-02	2.971253E-02	2.791382E-02	2.597471E-02	2.882421E-02	2.521160E-02	2.500950E-02	2.795800E-02	2.059350E-03
1.700000E+01	2.215609E-02	2.280000E-02	2.601057E-02	2.439437E-02	2.212112E-02	2.539731E-02	2.138490E-02	2.131870E-02	2.478400E-02	1.719310E-03
1.800000E+01	1.852433E-02	1.870000E-02	2.212808E-02	2.020327E-02	1.809925E-02	2.146253E-02	1.758110E-02	1.718210E-02	2.078700E-02	1.382060E-03
1.900000E+01	1.446587E-02	1.430000E-02	1.678584E-02	1.566291E-02	1.383301E-02	1.697517E-02	1.350650E-02	1.301050E-02	1.623200E-02	1.045470E-03
2.000000E+01	9.671181E-03	9.700000E-03	1.108072E-02	1.049791E-02	9.343873E-03	1.212684E-02	9.157940E-03	8.687080E-03	1.060900E-02	7.382540E-04
2.100000E+01	5.205915E-03	5.200000E-03	5.782912E-03	5.903814E-03	5.122156E-03	6.838992E-03	5.044480E-03	4.868350E-03	6.141400E-03	4.148380E-04
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000006E+00	

* Fission fractions per unit length

Table 5.60 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A111111

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	3.444822E-04	2.000000E-04	0.000000E+00	0.000000E+00	5.071329E-04	4.536748E-03	0.000000E+00	0.000000E+00	1.302900E-03	0.000000E+00
2.000000E+00	3.309731E-04	2.000000E-04	0.000000E+00	0.000000E+00	5.730913E-04	5.075104E-03	0.000000E+00	0.000000E+00	1.285400E-03	0.000000E+00
3.000000E+00	2.614012E-04	2.000000E-04	0.000000E+00	0.000000E+00	4.481595E-04	3.791721E-03	0.000000E+00	0.000000E+00	1.004500E-03	0.000000E+00
4.000000E+00	1.884520E-04	1.000000E-04	0.000000E+00	0.000000E+00	3.128317E-04	2.111752E-03	0.000000E+00	0.000000E+00	6.341800E-04	0.000000E+00
5.000000E+00	2.303302E-04	2.000000E-04	0.000000E+00	0.000000E+00	4.425906E-04	2.316766E-03	0.000000E+00	0.000000E+00	7.494700E-04	0.000000E+00
6.000000E+00	9.996738E-05	1.000000E-04	0.000000E+00	0.000000E+00	1.862647E-04	6.650966E-04	0.000000E+00	2.571920E-08	2.078800E-04	0.000000E+00
7.000000E+00	1.087483E-04	2.000000E-04	2.413788E-05	9.143102E-06	4.322935E-04	7.897789E-04	0.000000E+00	2.944950E-06	2.051300E-04	3.367520E-07
8.000000E+00	1.486002E-05	1.000000E-04	1.372723E-05	9.465993E-06	1.198575E-04	1.800959E-04	0.000000E+00	3.727070E-06	6.020900E-05	5.036260E-07
9.000000E+00	4.120277E-05	1.000000E-04	3.510043E-05	4.229110E-05	2.072399E-04	3.045476E-04	2.562740E-07	2.276930E-05	1.814300E-04	1.046890E-06
1.000000E+01	1.323892E-04	1.000000E-04	1.084709E-04	1.392466E-04	2.098342E-04	4.209939E-04	4.114530E-05	7.585090E-05	2.843600E-04	2.989770E-06
1.100000E+01	1.546792E-04	1.000000E-04	1.199632E-04	1.183596E-04	1.514189E-04	2.375866E-04	5.746590E-05	7.549200E-05	1.685300E-04	5.956380E-06
1.200000E+01	1.185424E-03	1.000000E-03	1.064306E-03	9.999519E-04	1.250595E-03	1.276711E-03	9.180760E-04	9.344190E-04	1.375000E-03	2.712080E-05
1.300000E+01	9.672519E-04	1.100000E-03	8.813172E-04	1.068062E-03	1.136996E-03	5.490079E-04	9.988140E-04	9.841550E-04	1.155100E-03	8.541790E-05
1.400000E+01	1.015682E-02	1.150000E-02	9.808723E-03	1.055196E-02	1.067257E-02	7.424373E-03	1.043400E-02	9.930950E-03	1.025600E-02	3.043020E-04
1.500000E+01	5.629447E-02	6.240000E-02	5.648188E-02	5.907889E-02	5.840903E-02	4.628025E-02	5.892970E-02	5.661410E-02	5.661800E-02	1.628390E-03
1.600000E+01	5.052405E-02	5.520000E-02	5.171195E-02	5.281028E-02	5.228785E-02	4.605053E-02	5.411280E-02	5.114270E-02	5.091200E-02	4.304960E-03
1.700000E+01	8.614351E-02	9.190000E-02	8.727829E-02	8.875708E-02	8.829522E-02	8.069944E-02	9.066610E-02	8.657180E-02	8.627300E-02	7.231490E-03
1.800000E+01	1.439422E-01	1.500000E-01	1.453753E-01	1.471927E-01	1.460278E-01	1.383187E-01	1.461900E-01	1.442250E-01	1.428300E-01	1.195420E-02
1.900000E+01	1.970202E-01	2.010000E-01	1.968665E-01	2.004192E-01	1.984713E-01	1.940387E-01	1.982540E-01	1.964810E-01	1.963100E-01	1.629080E-02
2.000000E+01	2.408849E-01	2.360000E-01	2.407159E-01	2.383841E-01	2.378208E-01	2.475432E-01	2.379510E-01	2.392800E-01	2.397000E-01	1.961880E-02
2.100000E+01	2.109737E-01	1.883000E-01	2.095144E-01	2.004192E-01	2.020371E-01	2.173889E-01	2.014460E-01	2.136540E-01	2.084800E-01	1.667370E-02
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999994E-01	9.999989E-01	9.999931E-01	

* Fission fractions per unit length

Table 5.61 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A111112

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	9.108193E-05		0.000000E+00	1.634949E-04	4.862077E-04	5.159783E-03	0.000000E+00	0.000000E+00	5.135100E-04	0.000000E+00
2.000000E+00	1.227919E-04		0.000000E+00	1.749748E-04	5.626957E-04	5.521350E-03	0.000000E+00	0.000000E+00	5.733100E-04	0.000000E+00
3.000000E+00	9.378066E-05		0.000000E+00	1.330919E-04	4.417306E-04	4.143729E-03	0.000000E+00	0.000000E+00	4.427700E-04	0.000000E+00
4.000000E+00	4.790235E-05		0.000000E+00	9.003571E-05	3.037579E-04	2.464045E-03	0.000000E+00	0.000000E+00	3.384900E-04	0.000000E+00
5.000000E+00	4.520363E-05		0.000000E+00	6.252165E-05	4.207949E-04	2.219352E-03	1.800010E-06	0.000000E+00	4.376900E-04	0.000000E+00
6.000000E+00	4.722767E-06		0.000000E+00	1.116458E-05	1.848695E-04	5.237447E-04	6.773760E-06	2.478030E-08	1.350700E-04	0.000000E+00
7.000000E+00	6.746810E-07		1.543341E-08	1.009101E-05	4.144409E-04	9.738934E-04	3.989220E-05	1.559970E-06	2.951600E-04	6.028490E-09
8.000000E+00	0.000000E+00		3.307674E-06	5.410721E-07	1.028081E-04	1.842511E-04	3.946850E-06	1.462720E-06	1.095500E-04	5.008650E-07
9.000000E+00	2.024043E-06		3.939614E-05	1.681625E-05	1.500844E-04	4.046482E-04	2.469690E-05	2.692710E-05	1.979100E-04	1.293300E-06
1.000000E+01	4.722767E-05		1.415028E-04	2.882606E-05	1.568927E-04	8.912058E-04	1.175150E-04	8.115520E-05	1.900400E-04	3.901660E-06
1.100000E+01	1.248160E-04		1.433398E-04	3.489404E-05	1.180716E-04	3.616889E-04	1.349720E-04	9.540600E-05	1.843300E-04	9.761800E-06
1.200000E+01	1.482274E-03		1.770761E-03	5.991027E-04	1.106773E-03	1.708434E-03	1.283270E-03	9.973670E-04	1.148900E-03	2.846720E-05
1.300000E+01	1.137512E-03		1.578459E-03	8.814341E-04	1.110640E-03	6.903479E-04	1.119500E-03	1.004820E-03	9.940900E-04	7.640790E-05
1.400000E+01	1.026122E-02		1.139932E-02	1.025123E-02	1.073341E-02	8.865375E-03	1.152680E-02	1.047450E-02	1.015400E-02	2.728050E-04
1.500000E+01	5.492173E-02		5.694761E-02	5.726105E-02	5.851720E-02	4.831486E-02	5.943640E-02	5.717050E-02	5.692400E-02	1.577480E-03
1.600000E+01	4.921258E-02		5.137835E-02	5.240414E-02	5.215829E-02	4.540698E-02	5.235720E-02	5.068020E-02	5.029600E-02	4.291060E-03
1.700000E+01	8.507457E-02		8.680197E-02	8.891295E-02	8.855325E-02	8.035538E-02	8.787360E-02	8.638810E-02	8.612800E-02	7.307640E-03
1.800000E+01	1.452521E-01		1.468450E-01	1.473472E-01	1.461849E-01	1.389534E-01	1.462960E-01	1.442210E-01	1.445100E-01	1.198110E-02
1.900000E+01	1.988197E-01		1.974617E-01	1.994486E-01	1.983200E-01	1.937735E-01	1.985230E-01	1.967000E-01	1.975000E-01	1.632660E-02
2.000000E+01	2.435416E-01		2.382939E-01	2.393131E-01	2.376807E-01	2.464610E-01	2.377150E-01	2.389550E-01	2.409800E-01	1.965350E-02
2.100000E+01	2.097165E-01		2.071954E-01	2.028547E-01	2.022925E-01	2.126230E-01	2.035400E-01	2.132020E-01	2.079500E-01	1.676110E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000003E+00	

* Fission fractions per unit length

Table 5.62 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A111122

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.163163E-04		0.000000E+00	5.696369E-06	4.421540E-04	7.274253E-03	0.000000E+00	0.000000E+00	8.478400E-04	0.000000E+00
2.000000E+00	2.601187E-04		0.000000E+00	6.400045E-06	5.078513E-04	8.635240E-03	0.000000E+00	0.000000E+00	1.083000E-03	0.000000E+00
3.000000E+00	2.102514E-04		0.000000E+00	5.831545E-06	4.300971E-04	7.560203E-03	0.000000E+00	0.000000E+00	8.927900E-04	0.000000E+00
4.000000E+00	1.361243E-04		0.000000E+00	5.442439E-08	3.093550E-04	3.834354E-03	0.000000E+00	1.992360E-09	6.206100E-04	0.000000E+00
5.000000E+00	1.496019E-04		0.000000E+00	0.000000E+00	4.482921E-04	3.716289E-03	0.000000E+00	6.737040E-07	6.856900E-04	0.000000E+00
6.000000E+00	4.515013E-05		1.590333E-08	0.000000E+00	1.837118E-04	6.863556E-04	0.000000E+00	6.040880E-08	1.444200E-04	0.000000E+00
7.000000E+00	7.345320E-05		1.928816E-05	5.298419E-07	4.154925E-04	7.587968E-04	0.000000E+00	3.275330E-06	1.867800E-04	0.000000E+00
8.000000E+00	1.212989E-05		1.825942E-05	6.320455E-07	1.111214E-04	1.229315E-04	0.000000E+00	4.955430E-06	2.525100E-05	0.000000E+00
9.000000E+00	2.223813E-05		3.620011E-05	2.098396E-05	1.773199E-04	2.476070E-04	1.548890E-06	2.337380E-05	6.371900E-05	1.554900E-07
1.000000E+01	4.380237E-05		1.156438E-04	8.135865E-05	1.875216E-04	4.527417E-04	1.695510E-05	8.339730E-05	1.547200E-04	1.439590E-06
1.100000E+01	4.245460E-05		1.068194E-04	6.713352E-05	1.481615E-04	3.103151E-04	3.286410E-05	1.001630E-04	1.806100E-04	5.183700E-06
1.200000E+01	9.104154E-04		1.006310E-03	7.812452E-04	1.203321E-03	1.521856E-03	5.062030E-04	1.011430E-03	1.308200E-03	2.660710E-05
1.300000E+01	1.002063E-03		9.585518E-04	9.502791E-04	1.141135E-03	8.726874E-04	7.626260E-04	9.739810E-04	1.106900E-03	8.524280E-05
1.400000E+01	1.003276E-02		9.949955E-03	1.091141E-02	1.074896E-02	8.530209E-03	8.982090E-03	9.693330E-03	9.980000E-03	2.881890E-04
1.500000E+01	5.584263E-02		5.468114E-02	5.950299E-02	5.753934E-02	4.615905E-02	5.587690E-02	5.461540E-02	5.643100E-02	1.556800E-03
1.600000E+01	4.949331E-02		4.865527E-02	5.314842E-02	5.142701E-02	4.424175E-02	5.137310E-02	4.986520E-02	5.110800E-02	4.234050E-03
1.700000E+01	8.462887E-02		8.467383E-02	8.922921E-02	8.734075E-02	7.695831E-02	8.831940E-02	8.533350E-02	8.569200E-02	7.229650E-03
1.800000E+01	1.440586E-01		1.428704E-01	1.476836E-01	1.458600E-01	1.354508E-01	1.485060E-01	1.442860E-01	1.440100E-01	1.209770E-02
1.900000E+01	1.995009E-01		1.977923E-01	1.985960E-01	1.992546E-01	1.925403E-01	2.008400E-01	1.973470E-01	1.970400E-01	1.652700E-02
2.000000E+01	2.425317E-01		2.446570E-01	2.373803E-01	2.389008E-01	2.448633E-01	2.398700E-01	2.410030E-01	2.404200E-01	1.964770E-02
2.100000E+01	2.107871E-01		2.144591E-01	2.016280E-01	2.032230E-01	2.152627E-01	2.049120E-01	2.156550E-01	2.080100E-01	1.660980E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999997E-01	9.999997E-01	9.999915E-01	

* Fission fractions per unit length

Table 5.63 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A111222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	3.760916E-04		0.000000E+00	1.257909E-05	5.007564E-04	5.414462E-03	0.000000E+00	3.866230E-05	6.637600E-04	0.000000E+00
2.000000E+00	3.734100E-04		0.000000E+00	3.378853E-05	5.805789E-04	6.046555E-03	0.000000E+00	3.500740E-05	8.118200E-04	0.000000E+00
3.000000E+00	2.634652E-04		0.000000E+00	1.777878E-05	5.033476E-04	3.957805E-03	0.000000E+00	1.964700E-05	7.274100E-04	0.000000E+00
4.000000E+00	1.924034E-04		0.000000E+00	6.113272E-06	3.694554E-04	2.162279E-03	0.000000E+00	8.006100E-06	4.491900E-04	0.000000E+00
5.000000E+00	2.567613E-04		0.000000E+00	4.332867E-06	5.129120E-04	2.084990E-03	0.000000E+00	3.736300E-06	5.474900E-04	0.000000E+00
6.000000E+00	3.083817E-05		0.000000E+00	0.000000E+00	1.997097E-04	6.187134E-04	0.000000E+00	6.158630E-07	2.345900E-04	0.000000E+00
7.000000E+00	2.212303E-05		0.000000E+00	0.000000E+00	4.334418E-04	6.876363E-04	0.000000E+00	1.458540E-06	4.925300E-04	1.115870E-07
8.000000E+00	1.810066E-05		4.125476E-06	0.000000E+00	1.244161E-04	1.336334E-04	0.000000E+00	1.535660E-06	1.658700E-04	7.372830E-07
9.000000E+00	2.011185E-05		3.853637E-05	5.845390E-06	2.088535E-04	3.924784E-04	5.216980E-07	1.744970E-05	2.609700E-04	1.255090E-06
1.000000E+01	1.743027E-05		6.017417E-05	3.985378E-05	2.095706E-04	9.504482E-04	1.072560E-05	6.580930E-05	3.243600E-04	3.714450E-06
1.100000E+01	2.949738E-05		6.447120E-05	8.373843E-05	1.563354E-04	5.483923E-04	3.088120E-05	8.221700E-05	2.200500E-04	6.389450E-06
1.200000E+01	7.756470E-04		8.353165E-04	1.131423E-03	1.207519E-03	2.182462E-03	7.615810E-04	9.553140E-04	1.490500E-03	2.810810E-05
1.300000E+01	8.225746E-04		8.570161E-04	1.262331E-03	1.134333E-03	7.610439E-04	1.054920E-03	9.800810E-04	1.150700E-03	9.203300E-05
1.400000E+01	9.614134E-03		9.614157E-03	1.073677E-02	1.076047E-02	7.914395E-03	1.025620E-02	9.719420E-03	1.027500E-02	2.984980E-04
1.500000E+01	5.801598E-02		5.544028E-02	5.730403E-02	5.724042E-02	4.921694E-02	5.670730E-02	5.469850E-02	5.547400E-02	1.597790E-03
1.600000E+01	5.102644E-02		4.963487E-02	5.180739E-02	5.073089E-02	4.652045E-02	5.054920E-02	4.907520E-02	5.033000E-02	4.264170E-03
1.700000E+01	8.601502E-02		8.420299E-02	8.793357E-02	8.608266E-02	7.865842E-02	8.638680E-02	8.402950E-02	8.582700E-02	7.188520E-03
1.800000E+01	1.435691E-01		1.428550E-01	1.453134E-01	1.433613E-01	1.351965E-01	1.451070E-01	1.414400E-01	1.426600E-01	1.184610E-02
1.900000E+01	1.969486E-01		1.990488E-01	2.010380E-01	1.992281E-01	1.919024E-01	2.014310E-01	1.974610E-01	1.979800E-01	1.630270E-02
2.000000E+01	2.411223E-01		2.441354E-01	2.398303E-01	2.410635E-01	2.473709E-01	2.419520E-01	2.437320E-01	2.410600E-01	1.974940E-02
2.100000E+01	2.104899E-01		2.132089E-01	2.034388E-01	2.053914E-01	2.172791E-01	2.057530E-01	2.176340E-01	2.088600E-01	1.682090E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	9.999992E-01	1.000005E+00	

* Fission fractions per unit length

Table 5.64 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A112222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.228489E-05		0.000000E+00	0.000000E+00	6.073316E-04	8.340638E-03	0.000000E+00	3.989090E-08	1.191700E-03	0.000000E+00
2.000000E+00	3.038849E-05		0.000000E+00	6.253801E-07	6.693152E-04	8.544553E-03	0.000000E+00	3.858080E-07	1.210300E-03	0.000000E+00
3.000000E+00	3.646618E-05		0.000000E+00	0.000000E+00	5.519589E-04	5.760535E-03	0.000000E+00	1.702210E-06	8.812100E-04	0.000000E+00
4.000000E+00	4.119328E-05		0.000000E+00	0.000000E+00	4.128541E-04	3.239073E-03	0.000000E+00	2.198070E-06	5.782700E-04	0.000000E+00
5.000000E+00	6.010167E-05		3.207390E-06	7.901539E-08	5.644571E-04	3.334559E-03	0.000000E+00	1.563760E-06	6.033600E-04	0.000000E+00
6.000000E+00	2.363549E-05		3.599400E-06	2.906357E-06	2.141990E-04	9.892115E-04	0.000000E+00	1.708330E-06	2.026200E-04	0.000000E+00
7.000000E+00	8.778896E-06		1.123773E-05	0.000000E+00	4.391600E-04	1.709295E-03	0.000000E+00	4.747790E-06	3.496100E-04	6.325620E-08
8.000000E+00	6.752997E-07		1.446244E-05	3.043246E-07	1.090997E-04	6.658072E-04	0.000000E+00	3.133670E-06	1.554800E-04	1.633410E-07
9.000000E+00	6.752997E-07		5.521055E-05	3.613617E-06	1.897875E-04	9.765472E-04	1.057870E-06	1.617420E-05	1.870800E-04	1.189560E-06
1.000000E+01	3.511558E-05		1.257418E-04	4.320877E-05	2.046974E-04	1.036573E-03	3.010960E-05	7.532680E-05	1.782000E-04	3.863360E-06
1.100000E+01	6.010167E-05		1.071717E-04	8.631614E-05	1.494312E-04	7.459659E-04	4.486280E-05	9.777780E-05	1.578700E-04	1.130930E-05
1.200000E+01	1.045364E-03		9.863697E-04	1.030597E-03	1.319534E-03	1.964951E-03	1.046980E-03	1.011190E-03	1.311000E-03	4.082160E-05
1.300000E+01	1.211488E-03		1.109630E-03	1.153417E-03	1.253554E-03	7.473097E-04	1.119190E-03	1.006950E-03	1.056000E-03	1.112260E-04
1.400000E+01	1.075280E-02		1.014978E-02	1.171035E-02	1.143028E-02	9.088403E-03	1.139320E-02	1.039730E-02	1.004000E-02	3.013530E-04
1.500000E+01	5.609174E-02		5.747013E-02	6.209438E-02	5.917201E-02	5.002366E-02	5.895190E-02	5.712330E-02	5.486800E-02	1.582960E-03
1.600000E+01	5.026863E-02		5.117675E-02	5.320927E-02	5.167622E-02	4.529498E-02	5.185340E-02	5.028530E-02	4.951600E-02	4.235660E-03
1.700000E+01	8.477847E-02		8.581846E-02	8.735548E-02	8.644551E-02	7.726222E-02	8.679660E-02	8.446080E-02	8.486100E-02	7.078190E-03
1.800000E+01	1.410985E-01		1.423706E-01	1.430997E-01	1.419912E-01	1.331320E-01	1.432130E-01	1.406240E-01	1.408200E-01	1.173470E-02
1.900000E+01	1.934639E-01		1.940895E-01	1.950669E-01	1.944488E-01	1.877457E-01	1.969700E-01	1.931820E-01	1.935100E-01	1.607170E-02
2.000000E+01	2.447151E-01		2.439755E-01	2.396826E-01	2.407367E-01	2.430219E-01	2.415630E-01	2.428350E-01	2.441200E-01	1.985430E-02
2.100000E+01	2.162546E-01		2.125326E-01	2.054603E-01	2.074138E-01	2.163762E-01	2.070170E-01	2.188690E-01	2.142000E-01	1.717150E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	9.999977E-01	

* Fission fractions per unit length

Table 5.65 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A122222

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	5.686395E-05		0.000000E+00	1.393501E-04	5.055815E-04	5.901174E-03	0.000000E+00	0.000000E+00	8.077900E-04	0.000000E+00
2.000000E+00	6.972604E-05		0.000000E+00	1.685666E-04	5.836268E-04	6.551165E-03	0.000000E+00	0.000000E+00	9.495600E-04	0.000000E+00
3.000000E+00	4.467882E-05		0.000000E+00	1.510367E-04	4.890167E-04	4.996549E-03	0.000000E+00	0.000000E+00	7.749800E-04	0.000000E+00
4.000000E+00	2.166246E-05		0.000000E+00	9.182877E-05	3.570537E-04	2.839439E-03	0.000000E+00	0.000000E+00	4.737700E-04	0.000000E+00
5.000000E+00	3.587845E-05		0.000000E+00	9.311176E-05	5.152441E-04	2.776139E-03	0.000000E+00	0.000000E+00	5.494200E-04	0.000000E+00
6.000000E+00	8.123422E-06		0.000000E+00	1.462096E-05	2.049831E-04	7.622636E-04	0.000000E+00	2.540940E-09	1.754700E-04	0.000000E+00
7.000000E+00	1.624684E-05		2.594901E-06	1.416366E-05	4.103022E-04	1.442233E-03	6.472160E-06	3.959080E-06	2.812200E-04	2.041160E-08
8.000000E+00	4.061711E-06		3.005507E-06	1.971480E-06	1.136702E-04	2.982385E-04	2.096730E-05	3.515600E-06	6.242200E-05	1.102820E-07
9.000000E+00	2.098551E-05		2.662042E-05	1.899073E-05	2.230015E-04	6.995318E-04	1.375730E-04	2.092720E-05	1.788800E-04	1.140940E-06
1.000000E+01	1.408060E-04		9.102162E-05	9.947588E-05	2.437083E-04	1.077697E-03	2.791310E-04	8.470730E-05	2.704900E-04	3.570990E-06
1.100000E+01	1.746536E-04		1.426552E-04	8.278436E-05	1.816918E-04	5.378913E-04	1.773000E-04	1.049690E-04	2.475800E-04	8.736250E-06
1.200000E+01	1.466278E-03		1.452247E-03	1.155577E-03	1.497105E-03	1.962885E-03	1.306220E-03	1.214130E-03	1.618800E-03	3.217140E-05
1.300000E+01	1.334949E-03		1.447363E-03	1.137920E-03	1.353970E-03	8.345190E-04	1.322360E-03	1.174220E-03	1.329500E-03	9.388660E-05
1.400000E+01	1.197325E-02		1.189256E-02	1.180220E-02	1.227108E-02	8.864312E-03	1.233100E-02	1.132640E-02	1.096700E-02	3.097800E-04
1.500000E+01	5.923058E-02		5.947772E-02	6.364119E-02	6.202548E-02	5.206956E-02	6.368630E-02	5.901780E-02	5.680700E-02	1.616280E-03
1.600000E+01	5.195741E-02		5.172606E-02	5.523191E-02	5.301353E-02	4.856286E-02	5.346980E-02	5.117560E-02	5.054600E-02	4.390460E-03
1.700000E+01	8.711151E-02		8.605926E-02	9.013930E-02	8.782404E-02	8.161233E-02	8.753440E-02	8.569800E-02	8.495200E-02	7.304490E-03
1.800000E+01	1.425782E-01		1.436096E-01	1.444312E-01	1.432510E-01	1.364248E-01	1.436630E-01	1.413340E-01	1.415100E-01	1.191400E-02
1.900000E+01	1.935080E-01		1.941343E-01	1.937182E-01	1.940221E-01	1.865619E-01	1.937970E-01	1.926410E-01	1.933300E-01	1.612810E-02
2.000000E+01	2.393600E-01		2.391381E-01	2.341132E-01	2.355639E-01	2.390783E-01	2.370610E-01	2.384410E-01	2.395500E-01	1.949460E-02
2.100000E+01	2.108861E-01		2.107969E-01	2.037534E-01	2.053498E-01	2.161462E-01	2.052070E-01	2.177590E-01	2.146200E-01	1.683570E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999995E-01	9.999992E-01	1.000002E+00	

* Fission fractions per unit length

Table 5.67 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A222223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	4.022098E-04		0.000000E+00	4.219906E-06	6.139715E-04	1.017447E-02	0.000000E+00	0.000000E+00	1.192900E-03	0.000000E+00
2.000000E+00	3.817585E-04		0.000000E+00	2.580317E-05	7.091239E-04	1.087355E-02	0.000000E+00	0.000000E+00	1.420400E-03	0.000000E+00
3.000000E+00	3.094971E-04		0.000000E+00	4.298830E-05	5.792506E-04	7.774748E-03	0.000000E+00	0.000000E+00	1.154100E-03	0.000000E+00
4.000000E+00	2.351905E-04		0.000000E+00	2.999125E-05	4.142695E-04	4.799445E-03	0.000000E+00	0.000000E+00	8.059600E-04	0.000000E+00
5.000000E+00	2.079220E-04		0.000000E+00	5.247195E-05	5.890425E-04	5.139323E-03	0.000000E+00	3.406900E-07	1.132300E-03	0.000000E+00
6.000000E+00	5.453693E-05		0.000000E+00	1.246623E-05	2.227996E-04	9.389519E-04	0.000000E+00	7.475350E-07	5.173000E-04	0.000000E+00
7.000000E+00	1.561120E-04		3.578557E-06	1.243822E-05	4.585795E-04	1.081386E-03	1.391000E-06	6.565840E-06	1.222200E-03	2.333830E-07
8.000000E+00	3.953927E-05		1.017159E-06	1.853449E-05	1.338950E-04	1.913234E-04	3.560630E-06	6.040510E-06	2.837500E-04	1.461190E-06
9.000000E+00	8.180539E-05		9.718207E-06	1.176736E-04	2.394757E-04	5.328759E-04	7.938100E-06	4.222790E-05	5.556200E-04	3.127660E-06
1.000000E+01	1.704279E-04		6.789460E-05	2.441563E-04	2.546293E-04	8.563304E-04	6.293820E-05	1.329880E-04	6.515100E-04	7.146350E-06
1.100000E+01	1.908792E-04		9.776700E-05	2.074946E-04	1.931422E-04	6.688471E-04	1.008070E-04	1.587640E-04	3.625000E-04	1.286760E-05
1.200000E+01	1.420005E-03		1.070257E-03	1.653592E-03	1.561716E-03	2.950070E-03	1.099860E-03	1.511750E-03	1.788500E-03	3.761460E-05
1.300000E+01	1.125506E-03		1.146989E-03	1.476649E-03	1.395454E-03	9.633290E-04	1.164530E-03	1.363300E-03	1.629600E-03	1.139610E-04
1.400000E+01	1.103418E-02		1.164551E-02	1.288249E-02	1.255031E-02	1.072379E-02	1.188090E-02	1.208390E-02	1.319500E-02	3.486570E-04
1.500000E+01	5.794480E-02		6.268556E-02	6.115363E-02	6.187929E-02	5.264796E-02	6.403290E-02	6.064690E-02	6.176000E-02	1.695850E-03
1.600000E+01	5.017397E-02		5.184088E-02	5.215371E-02	5.221412E-02	4.537640E-02	5.340160E-02	5.108870E-02	4.982100E-02	4.268680E-03
1.700000E+01	8.712479E-02		8.943843E-02	8.868804E-02	8.955206E-02	7.975110E-02	9.128170E-02	8.765100E-02	8.572600E-02	7.380320E-03
1.800000E+01	1.460860E-01		1.477849E-01	1.451189E-01	1.464297E-01	1.327791E-01	1.483340E-01	1.448160E-01	1.433900E-01	1.203270E-02
1.900000E+01	1.982704E-01		1.972179E-01	1.966744E-01	1.966188E-01	1.879178E-01	1.984500E-01	1.947370E-01	1.943200E-01	1.628010E-02
2.000000E+01	2.389658E-01		2.367895E-01	2.379187E-01	2.349812E-01	2.387465E-01	2.343760E-01	2.369490E-01	2.359400E-01	1.943730E-02
2.100000E+01	2.056247E-01		2.002001E-01	2.015117E-01	1.984092E-01	2.051127E-01	1.958020E-01	2.088050E-01	2.031300E-01	1.625920E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999986E-01	

* Fission fractions per unit length

Table 5.68 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A222233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	6.778810E-04		0.000000E+00	9.270773E-05	7.029288E-04	5.960572E-03	5.573570E-09	2.205520E-10	2.286600E-03	0.000000E+00
2.000000E+00	8.708793E-04		0.000000E+00	1.129258E-04	8.062564E-04	6.474912E-03	1.715490E-06	3.464900E-09	2.542700E-03	0.000000E+00
3.000000E+00	7.706293E-04		0.000000E+00	9.486076E-05	7.093490E-04	5.056719E-03	9.241650E-07	0.000000E+00	2.144900E-03	0.000000E+00
4.000000E+00	4.944303E-04		8.975934E-09	6.718985E-05	5.074951E-04	3.605109E-03	4.996460E-06	7.653010E-08	1.403900E-03	0.000000E+00
5.000000E+00	4.882926E-04		3.870597E-06	3.112340E-05	6.810560E-04	3.985251E-03	3.995680E-05	6.111490E-07	1.539200E-03	0.000000E+00
6.000000E+00	9.206634E-05		1.114407E-05	5.837389E-06	2.549547E-04	1.056689E-03	6.610940E-05	3.443920E-07	3.983800E-04	0.000000E+00
7.000000E+00	1.500340E-04		1.224736E-04	1.907152E-05	5.349085E-04	1.322084E-03	8.521150E-05	1.025930E-05	4.970700E-04	5.999740E-08
8.000000E+00	4.228232E-05		4.434579E-05	2.451143E-06	1.304410E-04	3.047491E-04	2.236760E-05	8.222810E-06	1.297900E-04	1.649800E-08
9.000000E+00	1.022959E-04		1.124912E-04	1.889316E-05	2.326173E-04	6.898958E-04	5.573120E-05	3.616910E-05	3.436100E-04	1.279690E-07
1.000000E+01	1.104796E-04		1.924003E-04	1.201875E-04	2.653376E-04	1.213282E-03	1.867210E-04	1.076260E-04	4.099700E-04	1.936520E-06
1.100000E+01	1.111616E-04		1.834361E-04	1.235509E-04	1.972967E-04	7.969448E-04	1.419060E-04	1.260490E-04	2.771400E-04	7.057610E-06
1.200000E+01	9.622637E-04		1.352683E-03	1.117155E-03	1.569966E-03	1.848898E-03	1.565770E-03	1.328250E-03	1.862800E-03	3.232320E-05
1.300000E+01	1.065924E-03		1.281166E-03	1.117792E-03	1.394888E-03	4.556745E-04	1.445680E-03	1.243150E-03	1.453800E-03	9.783090E-05
1.400000E+01	1.106501E-02		1.194229E-02	1.103906E-02	1.202367E-02	8.597905E-03	1.410850E-02	1.133900E-02	1.226800E-02	3.163700E-04
1.500000E+01	5.684448E-02		5.815747E-02	5.935486E-02	5.895334E-02	4.901956E-02	6.507830E-02	5.719730E-02	5.731600E-02	1.626160E-03
1.600000E+01	4.911091E-02		4.859508E-02	5.015670E-02	4.964811E-02	4.363218E-02	5.081290E-02	4.849790E-02	4.762200E-02	4.132870E-03
1.700000E+01	8.342097E-02		8.202216E-02	8.474533E-02	8.418967E-02	7.492781E-02	8.511710E-02	8.197850E-02	8.102800E-02	6.999110E-03
1.800000E+01	1.458133E-01		1.439352E-01	1.452340E-01	1.451891E-01	1.348398E-01	1.451780E-01	1.439160E-01	1.424700E-01	1.206560E-02
1.900000E+01	1.984009E-01		1.991748E-01	2.000153E-01	1.988870E-01	1.933921E-01	1.976800E-01	1.972160E-01	1.968800E-01	1.647400E-02
2.000000E+01	2.413229E-01		2.440183E-01	2.418019E-01	2.399370E-01	2.482099E-01	2.369760E-01	2.418900E-01	2.404800E-01	1.973910E-02
2.100000E+01	2.080829E-01		2.088507E-01	2.047290E-01	2.031846E-01	2.146099E-01	2.014320E-01	2.151050E-01	2.066500E-01	1.660980E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999999E-01	1.000000E+00	1.000004E+00	

* Fission fractions per unit length

Table 5.69 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A222333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.052966E-03		0.000000E+00	3.056253E-04	7.860943E-04	9.773202E-03	0.000000E+00	7.350280E-06	2.026100E-03	0.000000E+00
2.000000E+00	2.373254E-03		0.000000E+00	3.253101E-04	9.038009E-04	1.055312E-02	0.000000E+00	1.178480E-05	2.269300E-03	0.000000E+00
3.000000E+00	1.769400E-03		0.000000E+00	2.688122E-04	7.524957E-04	8.091187E-03	0.000000E+00	8.101400E-06	1.821100E-03	0.000000E+00
4.000000E+00	1.198187E-03		0.000000E+00	1.820203E-04	5.581065E-04	5.319080E-03	0.000000E+00	6.791990E-06	1.367800E-03	0.000000E+00
5.000000E+00	1.092785E-03		0.000000E+00	1.774186E-04	7.400137E-04	6.273498E-03	0.000000E+00	1.530530E-05	1.855900E-03	0.000000E+00
6.000000E+00	2.529657E-04		0.000000E+00	4.530055E-05	2.955572E-04	1.413162E-03	0.000000E+00	6.810970E-06	7.202200E-04	3.320000E-08
7.000000E+00	3.672083E-04		1.663678E-05	3.439723E-05	6.549131E-04	1.396475E-03	0.000000E+00	1.490500E-05	1.394200E-03	2.943680E-07
8.000000E+00	3.944089E-05		6.209122E-06	3.894774E-06	1.758883E-04	1.775812E-04	2.616250E-07	8.563840E-06	3.460500E-04	9.751200E-07
9.000000E+00	1.258028E-04		4.640923E-05	1.797195E-05	2.993411E-04	6.533688E-04	1.224640E-05	3.763290E-05	6.733700E-04	2.472230E-06
1.000000E+01	1.992445E-04		1.447146E-04	7.462320E-05	2.901841E-04	7.765172E-04	5.240070E-05	1.148790E-04	6.133100E-04	4.521700E-06
1.100000E+01	1.666038E-04		1.384602E-04	7.349835E-05	2.108377E-04	4.269842E-04	9.258280E-05	1.247210E-04	4.677600E-04	1.248700E-05
1.200000E+01	1.328070E-03		9.411797E-04	1.099791E-03	1.638636E-03	2.023636E-03	1.469770E-03	1.385750E-03	2.642900E-03	3.894290E-05
1.300000E+01	1.284549E-03		9.961631E-04	1.134559E-03	1.409343E-03	9.490094E-04	1.543620E-03	1.347760E-03	1.948400E-03	1.253940E-04
1.400000E+01	1.204715E-02		1.092802E-02	1.122544E-02	1.224897E-02	1.051394E-02	1.370950E-02	1.211210E-02	1.329000E-02	3.491930E-04
1.500000E+01	5.695469E-02		5.722377E-02	5.841521E-02	5.813974E-02	5.177138E-02	6.263180E-02	5.780460E-02	5.907500E-02	1.609360E-03
1.600000E+01	4.612952E-02		4.762393E-02	4.866230E-02	4.778159E-02	4.090862E-02	5.002180E-02	4.690020E-02	4.688400E-02	3.933850E-03
1.700000E+01	7.777268E-02		7.986975E-02	8.046472E-02	8.012170E-02	6.838170E-02	8.154720E-02	7.842330E-02	7.834200E-02	6.650280E-03
1.800000E+01	1.331014E-01		1.356804E-01	1.360039E-01	1.358969E-01	1.219671E-01	1.357920E-01	1.335170E-01	1.328100E-01	1.122880E-02
1.900000E+01	1.968338E-01		1.990832E-01	2.010659E-01	1.993123E-01	1.896016E-01	1.988370E-01	1.975700E-01	1.952600E-01	1.646060E-02
2.000000E+01	2.484606E-01		2.489757E-01	2.477214E-01	2.469246E-01	2.498082E-01	2.455640E-01	2.478850E-01	2.439800E-01	2.032500E-02
2.100000E+01	2.164496E-01		2.183255E-01	2.126978E-01	2.108590E-01	2.192206E-01	2.087260E-01	2.226970E-01	2.122100E-01	1.730980E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	9.999974E-01	

* Fission fractions per unit length

Table 5.70 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A223333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	4.320018E-04		0.000000E+00	6.567494E-04	8.471872E-04	1.600208E-02	0.000000E+00	3.048140E-05	3.232900E-03	0.000000E+00
2.000000E+00	4.375137E-04		1.451888E-07	6.466971E-04	9.872007E-04	1.702035E-02	0.000000E+00	2.528880E-05	3.470800E-03	0.000000E+00
3.000000E+00	3.327860E-04		2.717903E-06	5.814861E-04	8.230922E-04	1.259544E-02	0.000000E+00	2.216010E-05	2.741400E-03	0.000000E+00
4.000000E+00	2.480393E-04		1.067420E-05	4.183298E-04	6.134569E-04	8.194178E-03	0.000000E+00	2.012860E-05	2.099800E-03	0.000000E+00
5.000000E+00	2.383933E-04		4.712090E-05	4.608587E-04	8.278102E-04	8.901827E-03	0.000000E+00	3.293610E-05	2.645000E-03	8.415980E-08
6.000000E+00	9.714872E-05		2.197681E-05	1.948597E-04	3.100038E-04	2.375454E-03	0.000000E+00	1.139050E-05	8.987700E-04	3.475960E-07
7.000000E+00	1.171297E-04		1.326345E-04	2.946093E-04	6.154800E-04	3.548985E-03	0.000000E+00	3.065740E-05	1.462000E-03	1.388050E-06
8.000000E+00	4.754086E-05		1.010205E-05	7.949039E-05	1.773103E-04	1.076029E-03	0.000000E+00	1.922360E-05	2.701600E-04	3.994130E-06
9.000000E+00	8.267976E-05		4.085904E-05	1.979527E-04	3.197456E-04	2.096839E-03	7.234320E-06	8.825520E-05	4.880900E-04	4.100740E-06
1.000000E+01	1.660485E-04		1.701714E-04	2.794020E-04	3.681454E-04	2.419129E-03	7.471380E-05	2.030880E-04	8.493600E-04	9.159370E-06
1.100000E+01	1.302206E-04		2.445983E-04	2.132889E-04	2.936411E-04	1.289265E-03	1.573250E-04	1.877490E-04	6.993100E-04	1.619800E-05
1.200000E+01	1.240196E-03		2.134639E-03	1.510420E-03	2.180823E-03	3.560181E-03	1.720270E-03	1.782900E-03	3.226500E-03	4.766660E-05
1.300000E+01	1.272579E-03		1.538077E-03	1.248417E-03	1.891442E-03	1.072346E-03	1.920590E-03	1.633070E-03	2.048400E-03	1.369380E-04
1.400000E+01	1.296281E-02		1.396856E-02	1.324840E-02	1.483200E-02	1.038942E-02	1.644360E-02	1.391230E-02	1.501800E-02	3.885900E-04
1.500000E+01	6.192370E-02		6.449595E-02	6.300722E-02	6.326005E-02	4.890624E-02	6.717440E-02	6.284380E-02	6.147800E-02	1.731100E-03
1.600000E+01	4.840073E-02		5.017374E-02	5.039031E-02	4.946440E-02	4.114166E-02	5.161730E-02	4.911540E-02	4.820900E-02	4.068160E-03
1.700000E+01	7.880139E-02		8.025247E-02	8.171993E-02	8.051920E-02	6.819996E-02	8.273080E-02	7.926900E-02	7.805400E-02	6.625010E-03
1.800000E+01	1.297914E-01		1.306093E-01	1.329995E-01	1.324130E-01	1.166715E-01	1.319030E-01	1.304060E-01	1.292300E-01	1.095720E-02
1.900000E+01	1.837661E-01		1.834307E-01	1.859673E-01	1.849789E-01	1.694607E-01	1.828220E-01	1.821370E-01	1.808000E-01	1.531040E-02
2.000000E+01	2.526280E-01		2.497545E-01	2.483430E-01	2.473924E-01	2.450754E-01	2.461240E-01	2.488760E-01	2.448200E-01	2.044120E-02
2.100000E+01	2.268836E-01		2.229611E-01	2.175418E-01	2.168847E-01	2.200031E-01	2.173050E-01	2.293530E-01	2.182600E-01	1.796250E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999998E-01	1.000001E+00	

* Fission fractions per unit length

Table 5.71 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A233333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	5.573572E-03		0.000000E+00	3.755370E-03	1.558290E-03	3.318393E-02	0.000000E+00	3.247800E-04	1.246800E-02	0.000000E+00
2.000000E+00	6.358869E-03		0.000000E+00	3.797111E-03	1.800895E-03	3.598609E-02	0.000000E+00	3.663110E-04	1.387400E-02	0.000000E+00
3.000000E+00	5.138466E-03		0.000000E+00	2.949250E-03	1.537211E-03	2.706275E-02	0.000000E+00	2.978510E-04	1.161800E-02	0.000000E+00
4.000000E+00	3.538397E-03		0.000000E+00	2.153566E-03	1.166884E-03	1.746282E-02	0.000000E+00	2.158540E-04	8.417500E-03	0.000000E+00
5.000000E+00	4.247199E-03		0.000000E+00	2.865769E-03	1.582842E-03	1.771258E-02	0.000000E+00	2.700280E-04	1.027700E-02	0.000000E+00
6.000000E+00	1.439360E-03		0.000000E+00	1.108349E-03	5.805795E-04	4.989636E-03	0.000000E+00	9.260410E-05	3.471200E-03	0.000000E+00
7.000000E+00	2.245008E-03		1.036000E-05	1.492235E-03	1.137441E-03	6.519721E-03	1.768970E-06	1.604700E-04	6.105600E-03	1.827090E-07
8.000000E+00	4.182635E-04		2.771892E-05	2.248787E-04	3.104702E-04	1.732163E-03	4.976590E-06	5.724740E-05	1.384900E-03	1.608360E-06
9.000000E+00	5.305490E-04		1.479511E-04	4.115385E-04	5.257703E-04	3.339671E-03	5.605800E-05	1.407510E-04	2.149400E-03	5.058120E-06
1.000000E+01	6.933630E-04		4.617159E-04	6.960283E-04	6.431254E-04	2.951633E-03	2.764450E-04	3.480290E-04	2.290500E-03	1.680490E-05
1.100000E+01	4.708974E-04		5.435145E-04	6.447653E-04	5.083823E-04	1.700372E-03	4.218250E-04	3.593100E-04	1.391600E-03	3.608890E-05
1.200000E+01	3.030305E-03		4.146018E-03	4.048860E-03	3.666788E-03	3.661488E-03	3.833970E-03	3.163890E-03	5.968700E-03	9.892480E-05
1.300000E+01	2.526424E-03		3.139312E-03	3.095343E-03	2.916418E-03	1.178498E-03	3.167870E-03	2.671240E-03	3.357900E-03	2.475830E-04
1.400000E+01	1.944504E-02		2.166437E-02	2.131391E-02	2.119427E-02	1.321713E-02	2.052550E-02	2.038020E-02	2.209600E-02	5.900530E-04
1.500000E+01	7.690715E-02		7.804235E-02	7.598135E-02	7.921137E-02	5.886931E-02	7.939430E-02	7.876780E-02	7.417600E-02	2.253290E-03
1.600000E+01	5.572800E-02		5.599195E-02	5.546312E-02	5.644599E-02	4.452934E-02	5.732130E-02	5.602450E-02	5.226300E-02	4.781190E-03
1.700000E+01	8.496083E-02		8.625120E-02	8.640351E-02	8.747127E-02	7.073503E-02	8.760380E-02	8.616950E-02	8.040100E-02	7.361160E-03
1.800000E+01	1.315748E-01		1.372730E-01	1.338315E-01	1.362308E-01	1.146536E-01	1.366900E-01	1.357090E-01	1.254300E-01	1.137340E-02
1.900000E+01	1.729800E-01		1.803804E-01	1.789638E-01	1.795514E-01	1.556357E-01	1.814350E-01	1.780200E-01	1.644900E-01	1.480790E-02
2.000000E+01	2.162914E-01		2.221755E-01	2.194002E-01	2.197716E-01	1.993085E-01	2.237120E-01	2.212620E-01	2.045600E-01	1.804320E-02
2.100000E+01	2.059021E-01		2.097447E-01	2.013995E-01	2.021882E-01	1.855701E-01	2.055560E-01	2.151990E-01	1.938100E-01	1.653050E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000001E+00	1.000000E+00	1.000000E+00	

* Fission fractions per unit length

Table 5.72 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A333333

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.216114E-02	8.000000E-04	0.000000E+00	6.800000E-03	2.209945E-03	1.517685E-02	0.000000E+00	2.841340E-03	1.673300E-02	0.000000E+00
2.000000E+00	1.371347E-02	1.000000E-03	0.000000E+00	7.737697E-03	2.535382E-03	1.610204E-02	0.000000E+00	3.088400E-03	1.789900E-02	3.285870E-07
3.000000E+00	1.132948E-02	9.000000E-04	0.000000E+00	6.410409E-03	2.142226E-03	1.239960E-02	0.000000E+00	2.516400E-03	1.477900E-02	5.458280E-07
4.000000E+00	8.373499E-03	7.000000E-04	0.000000E+00	4.846574E-03	1.632614E-03	8.556352E-03	0.000000E+00	1.835250E-03	1.070500E-02	1.216030E-06
5.000000E+00	1.038613E-02	9.000000E-04	0.000000E+00	6.447205E-03	2.096771E-03	9.556795E-03	1.830140E-07	2.164590E-03	1.362200E-02	1.463980E-06
6.000000E+00	3.323077E-03	3.000000E-04	8.040743E-07	2.149944E-03	7.298166E-04	2.709268E-03	4.931750E-06	7.110200E-04	4.472600E-03	1.197610E-06
7.000000E+00	4.999911E-03	6.000000E-04	1.833414E-05	3.456207E-03	1.318828E-03	3.824824E-03	4.467230E-05	1.092790E-03	7.216100E-03	1.160690E-06
8.000000E+00	8.053357E-04	2.000000E-04	2.584421E-05	6.855905E-04	3.314145E-04	7.595571E-04	2.442880E-05	2.457650E-04	1.506300E-03	4.126890E-06
9.000000E+00	1.013072E-03	5.000000E-04	1.725441E-04	9.126751E-04	6.669516E-04	1.332321E-03	1.011270E-04	4.630400E-04	2.239800E-03	1.359950E-05
1.000000E+01	9.127612E-04	8.000000E-04	6.500210E-04	1.059860E-03	9.482565E-04	1.461089E-03	4.557180E-04	7.823270E-04	2.308000E-03	4.455750E-05
1.100000E+01	6.096932E-04	7.000000E-04	8.208902E-04	8.439452E-04	8.106072E-04	9.099468E-04	6.745480E-04	7.173370E-04	1.730600E-03	7.422310E-05
1.200000E+01	4.587995E-03	5.900000E-03	5.813629E-03	5.108089E-03	5.501989E-03	4.591131E-03	4.788270E-03	5.290050E-03	8.545700E-03	1.602760E-04
1.300000E+01	3.788350E-03	4.700000E-03	4.452035E-03	3.729549E-03	4.151434E-03	2.196260E-03	3.821930E-03	4.037290E-03	4.715000E-03	3.498240E-04
1.400000E+01	2.591374E-02	3.130000E-02	2.718179E-02	2.586241E-02	2.813612E-02	2.052471E-02	2.975550E-02	2.774560E-02	2.589000E-02	7.767600E-04
1.500000E+01	9.209142E-02	1.021000E-01	9.323760E-02	8.762732E-02	9.513629E-02	7.511571E-02	1.001660E-01	9.364370E-02	8.673300E-02	2.660960E-03
1.600000E+01	6.073099E-02	6.690000E-02	6.299179E-02	6.158093E-02	6.349484E-02	5.362107E-02	6.533180E-02	6.178350E-02	5.826700E-02	5.328810E-03
1.700000E+01	8.897039E-02	9.800000E-02	9.378532E-02	9.204285E-02	9.386293E-02	8.246808E-02	9.568650E-02	9.202470E-02	8.618700E-02	7.892330E-03
1.800000E+01	1.321832E-01	1.444000E-01	1.423916E-01	1.379854E-01	1.406540E-01	1.290547E-01	1.419740E-01	1.386400E-01	1.288600E-01	1.173990E-02
1.900000E+01	1.660912E-01	1.790000E-01	1.791722E-01	1.743873E-01	1.775337E-01	1.694064E-01	1.783620E-01	1.747400E-01	1.620100E-01	1.471520E-02
2.000000E+01	1.944174E-01	2.031000E-01	2.103560E-01	2.018530E-01	2.056750E-01	2.097454E-01	2.070630E-01	2.062580E-01	1.882200E-01	1.696070E-02
2.100000E+01	1.635977E-01	1.573000E-01	1.789296E-01	1.684736E-01	1.704309E-01	1.804879E-01	1.717460E-01	1.793780E-01	1.573600E-01	1.406840E-02
Sum	1.000000E+00	1.000100E+00	1.000000E+00	1.000001E+00	1.000000E+00	1.000000E+00	1.000001E+00	9.999991E-01	9.999991E-01	

* Fission fractions per unit length

Table 5.73 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A122223

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	6.805470E-04	3.000000E-04	0.000000E+00	3.099053E-06	6.660776E-04	6.555203E-03	0.000000E+00	2.591790E-05	1.323900E-03	0.000000E+00
2.000000E+00	6.167457E-04	3.000000E-04	0.000000E+00	4.145190E-06	7.389230E-04	8.015387E-03	0.000000E+00	1.920990E-05	1.531200E-03	0.000000E+00
3.000000E+00	4.356324E-04	3.000000E-04	0.000000E+00	2.381739E-06	5.962724E-04	6.318802E-03	0.000000E+00	1.314230E-05	1.248200E-03	0.000000E+00
4.000000E+00	2.524610E-04	2.000000E-04	0.000000E+00	1.966585E-06	4.181447E-04	4.513745E-03	0.000000E+00	7.685940E-06	8.628600E-04	0.000000E+00
5.000000E+00	3.080298E-04	2.000000E-04	0.000000E+00	3.265369E-06	5.593303E-04	4.716628E-03	0.000000E+00	5.955790E-06	9.927100E-04	0.000000E+00
6.000000E+00	1.269165E-04	1.000000E-04	0.000000E+00	2.347460E-06	2.268493E-04	1.399738E-03	0.000000E+00	2.280480E-06	3.182400E-04	0.000000E+00
7.000000E+00	2.222754E-04	2.000000E-04	5.703988E-07	6.746566E-06	4.730220E-04	1.614179E-03	1.267310E-05	8.542310E-06	6.372500E-04	2.438580E-08
8.000000E+00	1.131958E-04	1.000000E-04	3.845618E-06	1.176269E-07	1.223229E-04	4.823915E-04	9.808900E-06	6.618580E-06	1.545200E-04	4.047710E-07
9.000000E+00	1.708228E-04	2.000000E-04	6.489721E-05	1.244319E-05	1.947232E-04	1.152563E-03	1.226740E-05	2.637240E-05	2.323300E-04	1.300210E-06
1.000000E+01	1.893457E-04	2.000000E-04	2.161617E-04	4.428307E-05	2.309026E-04	1.283801E-03	5.689640E-05	9.957430E-05	2.265800E-04	4.577610E-06
1.100000E+01	1.728809E-04	2.000000E-04	1.693931E-04	7.018257E-05	1.777617E-04	8.497490E-04	9.258220E-05	1.222720E-04	2.006300E-04	1.020580E-05
1.200000E+01	1.379617E-03	1.400000E-03	1.573780E-03	1.086510E-03	1.463548E-03	3.594584E-03	1.029520E-03	1.227370E-03	1.484500E-03	3.501510E-05
1.300000E+01	1.197818E-03	1.400000E-03	1.380775E-03	1.045121E-03	1.316882E-03	1.116918E-03	1.333300E-03	1.181340E-03	1.292900E-03	9.512970E-05
1.400000E+01	1.088052E-02	1.330000E-02	1.245644E-02	1.130183E-02	1.181893E-02	1.231893E-02	1.175560E-02	1.113140E-02	1.169800E-02	3.073900E-04
1.500000E+01	5.782111E-02	6.380000E-02	6.285354E-02	6.033061E-02	5.893760E-02	5.318348E-02	5.939510E-02	5.783090E-02	5.877700E-02	1.597820E-03
1.600000E+01	5.034401E-02	5.330000E-02	5.123436E-02	5.031359E-02	5.034670E-02	4.481256E-02	5.134930E-02	4.928140E-02	4.888800E-02	4.157200E-03
1.700000E+01	8.667027E-02	9.100000E-02	8.650896E-02	8.774091E-02	8.696751E-02	7.794263E-02	8.784860E-02	8.545630E-02	8.470900E-02	7.203230E-03
1.800000E+01	1.446025E-01	1.483000E-01	1.422622E-01	1.447325E-01	1.435526E-01	1.332176E-01	1.447370E-01	1.424650E-01	1.408000E-01	1.187690E-02
1.900000E+01	1.939792E-01	1.985000E-01	1.930740E-01	1.981820E-01	1.961908E-01	1.860396E-01	1.969960E-01	1.938150E-01	1.941000E-01	1.617970E-02
2.000000E+01	2.382292E-01	2.354000E-01	2.375430E-01	2.384278E-01	2.381633E-01	2.389545E-01	2.384300E-01	2.392370E-01	2.378900E-01	1.964420E-02
2.100000E+01	2.116069E-01	1.917000E-01	2.106581E-01	2.066882E-01	2.068379E-01	2.119170E-01	2.069410E-01	2.180360E-01	2.126300E-01	1.705480E-02
Sum	1.000000E+00	1.000400E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999996E-01	9.999993E-01	9.999978E-01	

* Fission fractions per unit length

Table 5.74 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A112233

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	2.334000E-04	3.000000E-04	0.000000E+00	5.116857E-05	6.181219E-04	5.493829E-03	0.000000E+00	4.266480E-07	1.659600E-03	0.000000E+00
2.000000E+00	2.875218E-04	4.000000E-04	0.000000E+00	5.610155E-05	7.109097E-04	5.947568E-03	0.000000E+00	1.129260E-06	1.687400E-03	0.000000E+00
3.000000E+00	2.665496E-04	3.000000E-04	0.000000E+00	3.519028E-05	5.812475E-04	3.999218E-03	0.000000E+00	1.315660E-06	1.234400E-03	0.000000E+00
4.000000E+00	2.144574E-04	2.000000E-04	0.000000E+00	3.431528E-05	4.182676E-04	2.168190E-03	0.000000E+00	3.169440E-07	8.122900E-04	0.000000E+00
5.000000E+00	2.421948E-04	3.000000E-04	0.000000E+00	5.039502E-05	5.503607E-04	2.107469E-03	0.000000E+00	2.370390E-07	9.497800E-04	0.000000E+00
6.000000E+00	4.735652E-05	1.000000E-04	0.000000E+00	2.536236E-05	2.213630E-04	4.725841E-04	0.000000E+00	9.703910E-09	3.033700E-04	2.320860E-09
7.000000E+00	1.028313E-04	2.000000E-04	2.304446E-08	7.684796E-05	4.780293E-04	4.413368E-04	3.400550E-06	2.467200E-06	5.074700E-04	1.417430E-07
8.000000E+00	1.150087E-05	1.000000E-04	1.347071E-06	1.774097E-05	1.351107E-04	1.459694E-04	2.155850E-07	4.204110E-06	1.122300E-04	4.786330E-07
9.000000E+00	2.503131E-05	2.000000E-04	2.132835E-05	4.539863E-05	2.149427E-04	3.900780E-04	6.059250E-06	3.655370E-05	3.118800E-04	1.733240E-06
1.000000E+01	4.600348E-05	2.000000E-04	1.770279E-04	1.505256E-04	2.069165E-04	4.251610E-04	1.864910E-05	1.197590E-04	4.484900E-04	4.130820E-06
1.100000E+01	7.238783E-05	1.000000E-04	2.050179E-04	1.714496E-04	1.547249E-04	1.685420E-04	4.925520E-05	1.193050E-04	3.450000E-04	7.751010E-06
1.200000E+01	1.001929E-03	1.100000E-03	1.385127E-03	1.200527E-03	1.328319E-03	7.234255E-04	1.108080E-03	1.102940E-03	2.092400E-03	3.103190E-05
1.300000E+01	1.072287E-03	1.100000E-03	1.128166E-03	1.101868E-03	1.205082E-03	4.338042E-04	1.008550E-03	1.053190E-03	1.604800E-03	9.514910E-05
1.400000E+01	9.971255E-03	1.160000E-02	1.013077E-02	9.955996E-03	1.064926E-02	7.799545E-03	9.692760E-03	9.737200E-03	1.178400E-02	2.887280E-04
1.500000E+01	5.253868E-02	5.870000E-02	5.295312E-02	5.336241E-02	5.345061E-02	4.415094E-02	5.201160E-02	5.176170E-02	5.396700E-02	1.490540E-03
1.600000E+01	4.565169E-02	4.960000E-02	4.710839E-02	4.709791E-02	4.655371E-02	3.938980E-02	4.648930E-02	4.516420E-02	4.575500E-02	3.805340E-03
1.700000E+01	7.900015E-02	8.430000E-02	8.121287E-02	8.118493E-02	8.040136E-02	7.232227E-02	8.135740E-02	7.860430E-02	7.775300E-02	6.588930E-03
1.800000E+01	1.403850E-01	1.461000E-01	1.428623E-01	1.425365E-01	1.415922E-01	1.350759E-01	1.438050E-01	1.404380E-01	1.382500E-01	1.166240E-02
1.900000E+01	1.969362E-01	2.016000E-01	1.977446E-01	2.008699E-01	1.986203E-01	1.942817E-01	2.010570E-01	1.970300E-01	1.943200E-01	1.635020E-02
2.000000E+01	2.510004E-01	2.455000E-01	2.483387E-01	2.482975E-01	2.479207E-01	2.570815E-01	2.492490E-01	2.494120E-01	2.472500E-01	2.048310E-02
2.100000E+01	2.208932E-01	1.979000E-01	2.167312E-01	2.136779E-01	2.139885E-01	2.269812E-01	2.141440E-01	2.254100E-01	2.188500E-01	1.761830E-02
Sum	1.000000E+00	9.999000E-01	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999993E-01	9.999981E-01	

* Fission fractions per unit length

Table 5.75 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A322221

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	1.222281E-04		0.000000E+00	2.514396E-04	7.548178E-04	1.226738E-02	0.000000E+00	4.703900E-07	2.291500E-03	0.000000E+00
2.000000E+00	1.187947E-04		0.000000E+00	2.547734E-04	8.886556E-04	1.293749E-02	0.000000E+00	1.722000E-06	2.446900E-03	0.000000E+00
3.000000E+00	1.023145E-04		0.000000E+00	1.748922E-04	7.146746E-04	1.002370E-02	0.000000E+00	1.267500E-06	1.728500E-03	0.000000E+00
4.000000E+00	7.690755E-05		0.000000E+00	1.100770E-04	5.277158E-04	6.400511E-03	0.000000E+00	7.524440E-07	1.083600E-03	0.000000E+00
5.000000E+00	1.036879E-04		0.000000E+00	1.051020E-04	6.950543E-04	6.149724E-03	0.000000E+00	2.477020E-06	1.164500E-03	7.888340E-08
6.000000E+00	5.424729E-05		0.000000E+00	3.983799E-05	2.821272E-04	1.305116E-03	0.000000E+00	1.806050E-06	3.789000E-04	2.058650E-07
7.000000E+00	2.163025E-04		1.740019E-06	1.350158E-04	5.656925E-04	1.539745E-03	0.000000E+00	9.173950E-06	7.478300E-04	5.808960E-07
8.000000E+00	9.407441E-05		1.334880E-05	4.077399E-05	1.375168E-04	3.484773E-04	2.864070E-07	1.594330E-05	1.924700E-04	1.475870E-06
9.000000E+00	2.279759E-04		4.338601E-05	7.049542E-05	2.381701E-04	1.090632E-03	2.559010E-05	5.487840E-05	1.883100E-04	4.226910E-06
1.000000E+01	2.945834E-04		6.881355E-05	1.652757E-04	2.873205E-04	1.557426E-03	1.208890E-04	1.506490E-04	2.130100E-04	9.784300E-06
1.100000E+01	2.911500E-04		1.575354E-04	2.164355E-04	2.514967E-04	8.241458E-04	9.740350E-05	2.003540E-04	2.447000E-04	1.812060E-05
1.200000E+01	2.211779E-03		1.705720E-03	2.166920E-03	2.140032E-03	2.889260E-03	1.461270E-03	1.891480E-03	2.162200E-03	5.912180E-05
1.300000E+01	1.597892E-03		1.589317E-03	2.050240E-03	1.909631E-03	1.248097E-03	1.685550E-03	1.824050E-03	1.863300E-03	1.607100E-04
1.400000E+01	1.390722E-02		1.527545E-02	1.705327E-02	1.642308E-02	1.183296E-02	1.568540E-02	1.549650E-02	1.594400E-02	4.384200E-04
1.500000E+01	7.520322E-02		7.242414E-02	7.845788E-02	7.498978E-02	6.037168E-02	7.328660E-02	7.289110E-02	7.618600E-02	2.043650E-03
1.600000E+01	6.207057E-02		5.995401E-02	6.349460E-02	6.111043E-02	5.396744E-02	6.039920E-02	6.006880E-02	6.199800E-02	5.037750E-03
1.700000E+01	9.685682E-02		9.606877E-02	9.948598E-02	9.698337E-02	8.509749E-02	9.706930E-02	9.535010E-02	9.608700E-02	8.005010E-03
1.800000E+01	1.531840E-01		1.512679E-01	1.543770E-01	1.519596E-01	1.407233E-01	1.547710E-01	1.509470E-01	1.507800E-01	1.256040E-02
1.900000E+01	1.962049E-01		1.961563E-01	1.956639E-01	1.960427E-01	1.873803E-01	1.987230E-01	1.952750E-01	1.927600E-01	1.616560E-02
2.000000E+01	2.245220E-01		2.276670E-01	2.191282E-01	2.229934E-01	2.267105E-01	2.254230E-01	2.264910E-01	2.218800E-01	1.838790E-02
2.100000E+01	1.725393E-01		1.776066E-01	1.665579E-01	1.701048E-01	1.753346E-01	1.712510E-01	1.793260E-01	1.696500E-01	1.406340E-02
Sum	1.000000E+00		1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	9.999995E-01	1.000001E+00	9.999907E-01	

* Fission fractions per unit length

Table 5.76 Results from the contributors: Axial fission fraction distribution for the axial burn-up profile B50A332211

zone N°	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL*
1.000000E+00	8.677205E-04	3.000000E-04	0.000000E+00	1.102774E-03	9.166541E-04	1.238203E-02	8.045930E-06	9.410730E-05	5.672300E-03	0.000000E+00
2.000000E+00	9.488290E-04	4.000000E-04	0.000000E+00	1.080657E-03	1.042588E-03	1.340517E-02	1.153080E-05	8.615100E-05	6.350000E-03	0.000000E+00
3.000000E+00	7.117965E-04	4.000000E-04	0.000000E+00	7.950684E-04	8.800909E-04	1.054238E-02	9.707000E-06	6.445900E-05	5.037100E-03	0.000000E+00
4.000000E+00	4.810570E-04	3.000000E-04	0.000000E+00	5.061173E-04	6.234295E-04	7.745857E-03	1.593490E-05	3.706650E-05	3.407600E-03	0.000000E+00
5.000000E+00	6.873241E-04	4.000000E-04	0.000000E+00	5.272001E-04	8.371110E-04	8.810866E-03	8.530540E-05	3.858890E-05	4.125400E-03	0.000000E+00
6.000000E+00	2.629032E-04	2.000000E-04	0.000000E+00	1.465451E-04	3.042168E-04	2.109407E-03	1.764360E-05	8.383810E-06	1.396100E-03	1.714990E-08
7.000000E+00	2.866764E-04	4.000000E-04	5.515625E-07	1.796568E-04	6.383039E-04	2.210500E-03	5.482030E-05	2.273750E-05	2.535500E-03	1.174200E-07
8.000000E+00	3.216369E-05	1.000000E-04	1.373114E-05	6.943106E-05	1.710635E-04	4.619382E-04	8.556030E-06	2.062700E-05	6.164700E-04	4.791580E-07
9.000000E+00	1.020848E-04	3.000000E-04	1.010356E-04	2.255733E-04	3.256107E-04	9.102561E-04	5.912460E-05	1.087240E-04	8.757000E-04	2.466990E-06
1.000000E+01	2.733914E-04	4.000000E-04	3.267371E-04	5.398757E-04	4.685884E-04	1.460132E-03	2.762450E-04	3.184120E-04	1.080900E-03	1.056580E-05
1.100000E+01	3.125472E-04	4.000000E-04	3.509712E-04	4.754631E-04	4.266379E-04	1.065506E-03	3.621260E-04	3.454710E-04	8.609200E-04	2.437830E-05
1.200000E+01	2.932490E-03	3.500000E-03	3.151956E-03	3.230976E-03	3.325286E-03	4.146984E-03	3.381510E-03	2.963990E-03	5.457000E-03	7.810130E-05
1.300000E+01	2.663294E-03	3.100000E-03	2.500809E-03	2.672216E-03	2.761026E-03	1.498872E-03	2.891530E-03	2.614040E-03	3.562700E-03	2.093210E-04
1.400000E+01	2.232300E-02	2.440000E-02	2.163183E-02	2.015156E-02	2.188028E-02	1.677665E-02	2.392210E-02	2.089650E-02	2.334800E-02	6.070620E-04
1.500000E+01	9.263004E-02	9.820000E-02	9.163202E-02	8.856082E-02	9.087961E-02	7.673686E-02	9.657700E-02	8.829460E-02	8.694700E-02	2.522310E-03
1.600000E+01	6.985395E-02	7.310000E-02	7.065824E-02	6.952160E-02	6.970621E-02	6.230159E-02	7.184980E-02	6.876140E-02	6.650300E-02	5.804020E-03
1.700000E+01	1.062835E-01	1.100000E-01	1.062560E-01	1.058151E-01	1.062133E-01	9.530155E-02	1.079840E-01	1.052170E-01	1.014400E-01	8.837280E-03
1.800000E+01	1.560659E-01	1.596000E-01	1.577702E-01	1.571512E-01	1.566920E-01	1.452120E-01	1.559650E-01	1.571300E-01	1.510000E-01	1.289430E-02
1.900000E+01	1.883359E-01	1.901000E-01	1.896330E-01	1.915563E-01	1.897340E-01	1.830494E-01	1.876190E-01	1.900980E-01	1.848800E-01	1.561950E-02
2.000000E+01	1.953770E-01	1.922000E-01	1.972085E-01	1.982821E-01	1.964401E-01	1.955658E-01	1.949560E-01	1.983470E-01	1.911500E-01	1.619480E-02
2.100000E+01	1.585684E-01	1.422000E-01	1.587644E-01	1.574098E-01	1.557339E-01	1.583062E-01	1.539450E-01	1.645330E-01	1.537600E-01	1.282010E-02
Sum	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000000E+00	1.000006E+00	

* Fission fractions per unit length

Table 6.1 Evaluation of the results from the contributors: Sample means eq.(6.1) of the predicted neutron multiplication factors listed in Tables 5.1 and 5.3

Case ID	Sample mean*	Case ID	Sample mean*
B32Auniform	8.72055E-01	B50Auniform	7.43757E-01
B32A111111	8.98493E-01	B50A111111	7.92684E-01
B32A111112	8.98109E-01	B50A111112	7.92697E-01
B32A111122	8.97538E-01	B50A111122	7.92706E-01
B32A111222	8.95160E-01	B50A111222	7.91902E-01
B32A112222	8.91995E-01	B50A112222	7.89808E-01
B32A122222	8.88498E-01	B50A122222	7.87990E-01
B32A222222	8.86393E-01	B50A222222	7.85698E-01
B32A222223	8.85180E-01	B50A222223	7.85681E-01
B32A222233	8.84067E-01	B50A222233	7.84927E-01
B32A222333	8.80777E-01	B50A222333	7.82188E-01
B32A223333	8.75926E-01	B50A223333	7.76128E-01
B32A233333	8.71001E-01	B50A233333	7.66948E-01
B32A333333	8.69043E-01	B50A333333	7.61198E-01
B32A122223	8.87484E-01	B50A122223	7.87758E-01
B32A112233	8.89736E-01	B50A112233	7.89336E-01
B32A322221	8.84007E-01	B50A322221	7.80644E-01
B32A332211	8.81690E-01	B50A332211	7.72960E-01

* Without the results from CEA.

Table 6.2 Evaluation of the results from the contributors: Predicted mean values of the end effect for the 32 MWd/kg U average burn-up cases (cf. Table 5.1)

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B32A111111	2.60000E-02	2.57300E-02	2.66600E-02	2.55000E-02	2.57895E-02	2.90241E-02	2.84700E-02	2.57700E-02	2.39100E-02	2.68200E-02
B32A111112	2.58000E-02		2.68200E-02	2.45400E-02	2.57037E-02	2.75781E-02	2.87600E-02	2.57300E-02	2.36100E-02	2.59500E-02
B32A111122	2.44000E-02		2.52000E-02	2.53300E-02	2.47190E-02	2.90098E-02	2.79300E-02	2.44900E-02	2.32300E-02	2.50400E-02
B32A111222	2.29000E-02		2.26300E-02	2.28900E-02	2.24056E-02	2.47543E-02	2.54300E-02	2.24300E-02	2.07800E-02	2.37300E-02
B32A112222	1.84000E-02		2.09900E-02	1.83700E-02	1.94956E-02	2.19890E-02	2.22400E-02	1.90300E-02	1.76700E-02	2.12800E-02
B32A122222	1.59000E-02		1.72500E-02	1.59300E-02	1.55745E-02	1.83297E-02	1.93600E-02	1.54000E-02	1.25900E-02	1.76600E-02
B32A222222	1.40000E-02	1.33600E-02	1.42200E-02	1.28000E-02	1.34146E-02	1.73426E-02	1.80500E-02	1.37500E-02	1.07900E-02	1.46800E-02
B32A222223	1.22000E-02		1.33000E-02	1.30400E-02	1.28512E-02	1.35290E-02	1.50800E-02	1.27300E-02	1.13300E-02	1.40700E-02
B32A222233	1.09000E-02		1.18000E-02	1.20500E-02	1.13000E-02	1.34529E-02	1.46400E-02	1.14800E-02	9.78000E-03	1.27100E-02
B32A222333	7.40000E-03		9.89000E-03	7.64000E-03	8.23335E-03	9.32150E-03	1.24400E-02	7.65000E-03	6.30000E-03	9.63000E-03
B32A223333	1.80000E-03		5.60000E-03	2.34000E-03	3.49859E-03	5.67930E-03	5.80000E-03	4.00000E-03	8.20000E-04	5.30000E-03
B32A233333	-2.40000E-03		-6.70000E-04	-3.01000E-03	-1.16399E-03	8.60300E-04	1.61000E-03	-1.43000E-03	-3.71000E-03	4.30000E-04
B32A333333	-4.40000E-03	-3.29000E-03	-1.66000E-03	-4.61000E-03	-2.92910E-03	-5.51700E-04	-7.30000E-04	-3.73000E-03	-7.05000E-03	-1.44000E-03
B32A122223	1.43000E-02	1.46600E-02	1.60700E-02	1.46400E-02	1.50636E-02	1.64110E-02	1.82000E-02	1.51400E-02	1.30800E-02	1.59600E-02
B32A112233	1.70000E-02	1.69300E-02	1.65800E-02	1.83700E-02	1.74667E-02	1.97235E-02	2.03700E-02	1.72800E-02	1.40400E-02	1.83000E-02
B32A322221	1.15000E-02		1.28400E-02	1.14100E-02	1.19010E-02	1.07081E-02	1.50500E-02	1.14700E-02	9.54000E-03	1.31500E-02
B32A332211	8.80000E-03	9.46000E-03	1.01500E-02	9.90000E-03	9.06667E-03	1.08233E-02	1.11700E-02	8.99000E-03	6.94000E-03	1.08800E-02

Table 6.3 Evaluation of the results from the contributors: Standard deviation of mean values given in Table 6.2

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B32A111111	5.00000E-04	1.41421E-04	5.86941E-04	5.93970E-04	1.62853E-04	6.77520E-04	4.93356E-04	2.88444E-04	5.26203E-04	4.60977E-04
B32A111112	5.00000E-04		5.86941E-04	6.30317E-04	1.70184E-04	5.94653E-04	5.12445E-04	2.94109E-04	5.45367E-04	4.76340E-04
B32A111122	5.00000E-04		5.59732E-04	6.92026E-04	1.60602E-04	6.02532E-04	5.12445E-04	2.88444E-04	5.36918E-04	4.38634E-04
B32A111222	5.00000E-04		5.86941E-04	6.84105E-04	1.69960E-04	6.04217E-04	4.93356E-04	2.88444E-04	5.49908E-04	4.84149E-04
B32A112222	5.00000E-04		5.80000E-04	6.01082E-04	1.62011E-04	6.24887E-04	4.93356E-04	2.88444E-04	5.34293E-04	5.32541E-04
B32A122222	5.00000E-04		5.73149E-04	6.60681E-04	2.73011E-04	6.91562E-04	5.02892E-04	2.83019E-04	5.42061E-04	4.84149E-04
B32A222222	5.00000E-04	1.41421E-04	6.45368E-04	6.60681E-04	1.62011E-04	3.53281E-04	5.02892E-04	2.88444E-04	5.40727E-04	4.38634E-04
B32A222223	5.00000E-04		5.73149E-04	6.37809E-04	1.69226E-04	6.01184E-04	5.02892E-04	2.83019E-04	5.10809E-04	4.45982E-04
B32A222233	5.00000E-04		5.86941E-04	6.45368E-04	1.63503E-04	6.41703E-04	5.02892E-04	2.94109E-04	5.42410E-04	4.31393E-04
B32A222333	5.00000E-04		5.59732E-04	6.01082E-04	1.60201E-04	6.05319E-04	4.83839E-04	2.88444E-04	5.29677E-04	4.38634E-04
B32A223333	4.24264E-04		5.80000E-04	6.45368E-04	1.60381E-04	6.12246E-04	4.83839E-04	2.88444E-04	5.01141E-04	4.76340E-04
B32A233333	4.24264E-04		5.53173E-04	6.30317E-04	1.62688E-04	6.34770E-04	4.74342E-04	2.88444E-04	5.01047E-04	4.38634E-04
B32A333333	4.24264E-04	1.41421E-04	5.80000E-04	6.08276E-04	1.72047E-04	3.55691E-04	4.74342E-04	2.94109E-04	4.95033E-04	4.53431E-04
B32A122223	5.00000E-04	1.41421E-04	5.80000E-04	6.92026E-04	1.64655E-04	1.04212E-03	5.12445E-04	2.94109E-04	5.42925E-04	4.76340E-04
B32A112233	5.00000E-04	1.41421E-04	5.86941E-04	6.60681E-04	1.60602E-04	9.68212E-04	5.02892E-04	2.88444E-04	5.51565E-04	4.45982E-04
B32A322221	5.00000E-04		5.93970E-04	6.01082E-04	1.57808E-04	1.03408E-03	4.93356E-04	2.94109E-04	5.30795E-04	5.00000E-04
B32A332211	4.24264E-04	1.41421E-04	5.66392E-04	6.22896E-04	1.59269E-04	3.59234E-04	5.02892E-04	2.94109E-04	5.33929E-04	4.38634E-04

Table 6.4 Evaluation of the results from the contributors: Predicted mean values of the end effect for the 50 MWd/kg U average burn-up cases (cf. Table 5.3)

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B50A111111	4.79000E-02	4.53800E-02	4.78300E-02	4.84500E-02	4.82136E-02	4.99467E-02	5.31900E-02	4.83000E-02	4.82000E-02	4.83100E-02
B50A111112	4.84000E-02		4.80000E-02	4.83200E-02	4.81571E-02	5.03711E-02	5.27800E-02	4.80700E-02	4.78000E-02	4.85600E-02
B50A111122	4.80000E-02		4.72800E-02	4.71600E-02	4.80055E-02	5.36724E-02	5.28800E-02	4.85700E-02	4.65400E-02	4.84300E-02
B50A111222	4.70000E-02		4.62200E-02	4.68800E-02	4.71332E-02	5.34451E-02	5.21500E-02	4.76400E-02	4.55900E-02	4.72400E-02
B50A112222	4.60000E-02		4.52800E-02	4.45900E-02	4.53753E-02	4.67839E-02	4.95300E-02	4.55400E-02	4.51900E-02	4.61700E-02
B50A122222	4.34000E-02		4.28400E-02	4.29500E-02	4.32300E-02	4.80834E-02	4.75900E-02	4.37200E-02	4.22300E-02	4.40500E-02
B50A222222	4.16000E-02	3.84900E-02	4.08500E-02	4.13100E-02	4.13642E-02	4.24134E-02	4.68800E-02	4.14200E-02	4.02800E-02	4.13500E-02
B50A222223	4.14000E-02		4.02400E-02	4.09700E-02	4.12206E-02	4.37309E-02	4.59500E-02	4.13200E-02	4.07700E-02	4.17100E-02
B50A222233	4.07000E-02		3.92700E-02	4.05400E-02	4.04263E-02	4.29932E-02	4.48100E-02	4.08700E-02	3.98700E-02	4.10500E-02
B50A222333	3.78000E-02		3.73600E-02	3.78800E-02	3.78425E-02	4.19871E-02	4.13700E-02	3.78200E-02	3.58000E-02	3.80200E-02
B50A223333	3.19000E-02		3.08700E-02	3.14000E-02	3.17996E-02	3.60074E-02	3.51300E-02	3.16600E-02	3.05200E-02	3.20500E-02
B50A233333	2.23000E-02		2.23600E-02	2.24100E-02	2.28055E-02	2.62761E-02	2.69400E-02	2.31000E-02	2.00600E-02	2.24600E-02
B50A333333	1.61000E-02	1.45300E-02	1.64200E-02	1.67000E-02	1.68563E-02	2.15808E-02	2.05700E-02	1.69700E-02	1.52000E-02	1.65700E-02
B50A122223	4.27000E-02	3.99300E-02	4.24700E-02	4.30900E-02	4.30697E-02	4.78874E-02	4.82600E-02	4.29300E-02	4.24500E-02	4.31500E-02
B50A112233	4.50000E-02	4.11700E-02	4.38400E-02	4.40700E-02	4.42544E-02	5.05261E-02	4.93300E-02	4.44800E-02	4.38200E-02	4.48900E-02
B50A322221	3.61000E-02		3.53100E-02	3.51000E-02	3.62946E-02	4.05858E-02	4.12700E-02	3.64700E-02	3.46700E-02	3.61800E-02
B50A332211	2.81000E-02	2.65700E-02	2.78700E-02	2.87200E-02	2.88615E-02	2.95358E-02	3.37700E-02	2.89300E-02	2.77900E-02	2.92500E-02

Table 6.5 Evaluation of the results from the contributors: Standard deviation of mean values given in Table 6.4

Case ID	BNFL	CEA	EMS (MCNP)	EMS (SCALE)	FANP GmbH	IRSN	JAERI	KFKI	NUPEC	ORNL
B50A111111	4.24264E-04	1.41421E-04	4.76340E-04	5.80517E-04	2.17243E-04	1.04610E-03	4.78017E-04	2.66271E-04	5.11326E-04	4.24500E-04
B50A111112	4.24264E-04		4.68615E-04	6.26259E-04	2.27545E-04	1.16709E-03	4.58803E-04	2.72029E-04	4.88905E-04	4.31856E-04
B50A111122	4.24264E-04		4.92037E-04	6.34114E-04	2.17079E-04	1.01796E-03	4.58803E-04	2.66271E-04	4.77366E-04	4.24500E-04
B50A111222	4.24264E-04		5.00000E-04	5.80517E-04	2.17243E-04	1.04461E-03	4.58803E-04	2.66271E-04	4.80540E-04	4.62277E-04
B50A112222	4.24264E-04		4.76340E-04	5.87963E-04	2.23237E-04	1.08559E-03	4.87647E-04	2.72029E-04	4.98108E-04	4.24500E-04
B50A122222	4.24264E-04		4.53431E-04	5.44518E-04	2.20104E-04	1.06812E-03	4.78017E-04	2.66271E-04	4.68573E-04	4.31856E-04
B50A222222	4.24264E-04	1.41421E-04	4.76340E-04	5.58659E-04	2.17079E-04	1.07393E-03	4.30116E-04	2.66271E-04	4.82855E-04	4.39318E-04
B50A222223	4.24264E-04		4.76340E-04	6.26259E-04	2.15695E-04	1.08830E-03	4.49222E-04	2.66271E-04	5.03685E-04	4.24500E-04
B50A222233	4.24264E-04		4.84149E-04	6.18466E-04	2.17243E-04	1.07286E-03	4.58803E-04	2.72029E-04	4.70679E-04	4.62277E-04
B50A222333	4.24264E-04		4.76340E-04	6.18466E-04	2.19579E-04	1.11776E-03	4.78017E-04	2.66271E-04	4.95336E-04	5.02195E-04
B50A223333	4.24264E-04		4.60977E-04	5.65862E-04	2.18235E-04	1.07427E-03	4.58803E-04	2.66271E-04	4.94032E-04	4.62277E-04
B50A233333	4.24264E-04		4.17253E-04	5.80517E-04	2.20104E-04	1.08329E-03	4.58803E-04	2.66271E-04	4.77278E-04	4.10122E-04
B50A333333	4.24264E-04	1.41421E-04	4.76340E-04	6.42028E-04	2.16156E-04	2.89809E-04	4.49222E-04	2.72029E-04	5.00593E-04	4.70106E-04
B50A122223	4.24264E-04	1.41421E-04	4.76340E-04	5.37587E-04	2.21294E-04	1.00142E-03	4.68402E-04	2.72029E-04	4.83579E-04	4.54533E-04
B50A112233	4.24264E-04	1.41421E-04	4.68615E-04	5.65862E-04	2.22763E-04	1.15570E-03	4.58803E-04	2.66271E-04	5.00008E-04	4.31856E-04
B50A322221	4.24264E-04		4.76340E-04	5.58659E-04	2.17243E-04	1.09177E-03	4.78017E-04	2.72029E-04	4.77556E-04	4.31856E-04
B50A332211	4.24264E-04	1.41421E-04	4.76340E-04	5.95483E-04	2.19143E-04	1.07714E-03	4.58803E-04	2.78029E-04	4.98302E-04	4.17253E-04

Table 6.6 Evaluation of the results from the contributors: Sample means (6.1) and standard deviations (6.4) of the predicted end effects listed in Tables 6.2 and 6.4

Case ID	Sample Mean eq.(6.1)	Standard Deviation eq.(6.4)	Case ID	Sample Mean eq.(6.1)	Standard Deviation eq.(6.4)
B32A111111	2.63674E-02	1.48297E-03	B50A111111	4.85720E-02	1.96726E-03
B32A111112	2.60546E-02	1.53299E-03	B50A111112	4.89398E-02	1.62662E-03
B32A111122	2.54832E-02	1.82156E-03	B50A111122	4.89487E-02	2.54353E-03
B32A111222	2.31055E-02	1.37753E-03	B50A111222	4.81443E-02	2.72428E-03
B32A112222	1.99405E-02	1.71032E-03	B50A112222	4.60510E-02	1.45109E-03
B32A122222	1.64438E-02	1.98263E-03	B50A122222	4.42326E-02	2.11217E-03
B32A222222	1.42407E-02	2.10991E-03	B50A222222	4.15958E-02	2.12790E-03
B32A222223	1.31256E-02	1.07382E-03	B50A222223	4.19235E-02	1.79343E-03
B32A222233	1.20125E-02	1.43721E-03	B50A222233	4.11699E-02	1.70106E-03
B32A222333	8.72276E-03	1.82154E-03	B50A222333	3.84311E-02	1.96669E-03
B32A223333	3.87088E-03	1.87481E-03	B50A223333	3.23708E-02	1.89124E-03
B32A233333	-1.05374E-03	1.80127E-03	B50A233333	2.31902E-02	2.12608E-03
B32A333333	-3.03908E-03	2.02588E-03	B50A333333	1.71497E-02	2.21831E-03
B32A122223	1.53525E-02	1.39445E-03	B50A122223	4.35937E-02	2.54227E-03
B32A112233	1.76060E-02	1.76093E-03	B50A112233	4.51380E-02	2.75291E-03
B32A322221	1.19521E-02	1.57795E-03	B50A322221	3.68867E-02	2.37516E-03
B32A332211	9.61800E-03	1.26407E-03	B50A332211	2.89397E-02	1.90393E-03

FIGURES

Figure 1.1 Typical PWR axial burn-up profiles

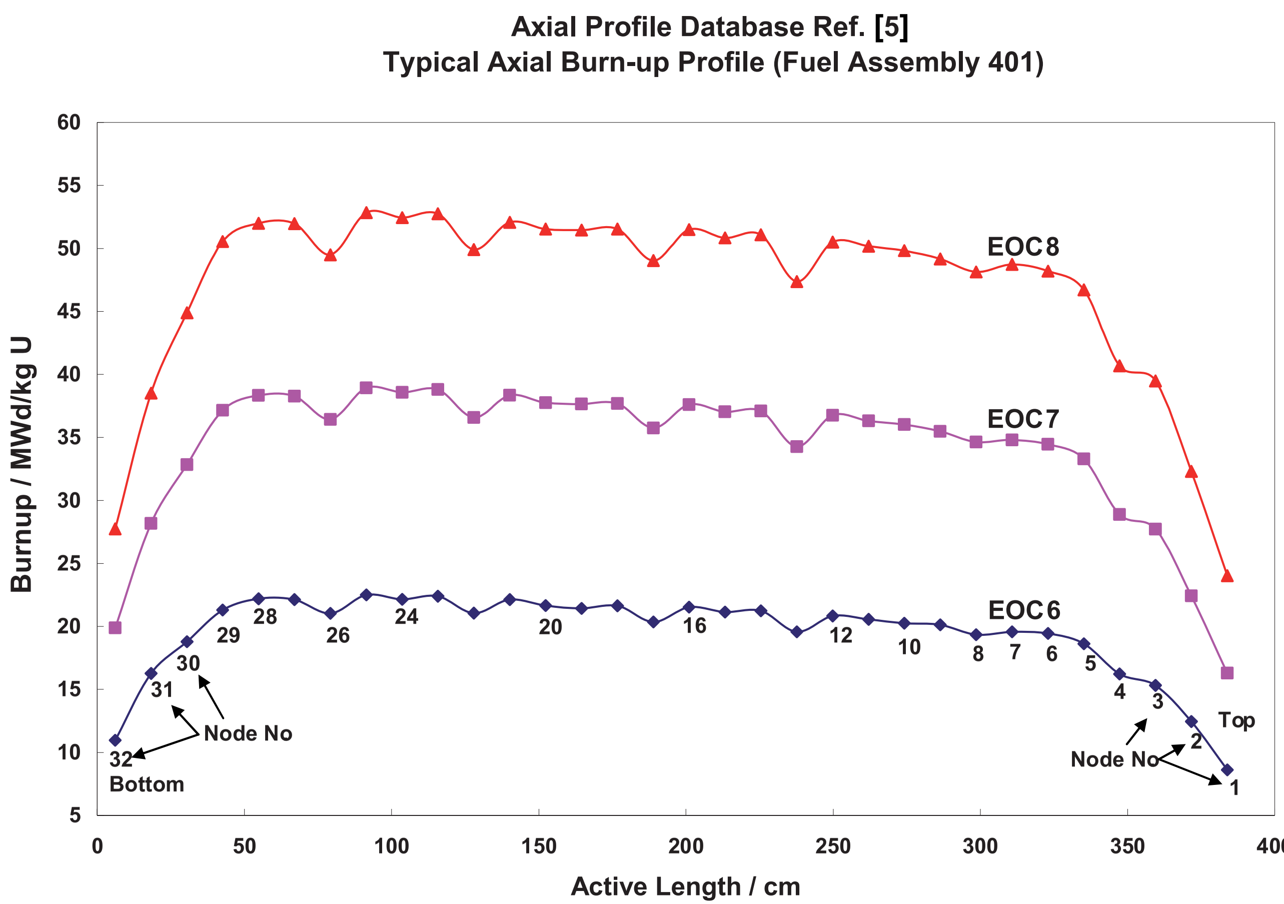


Figure 1.2 Modelling of axial profiles

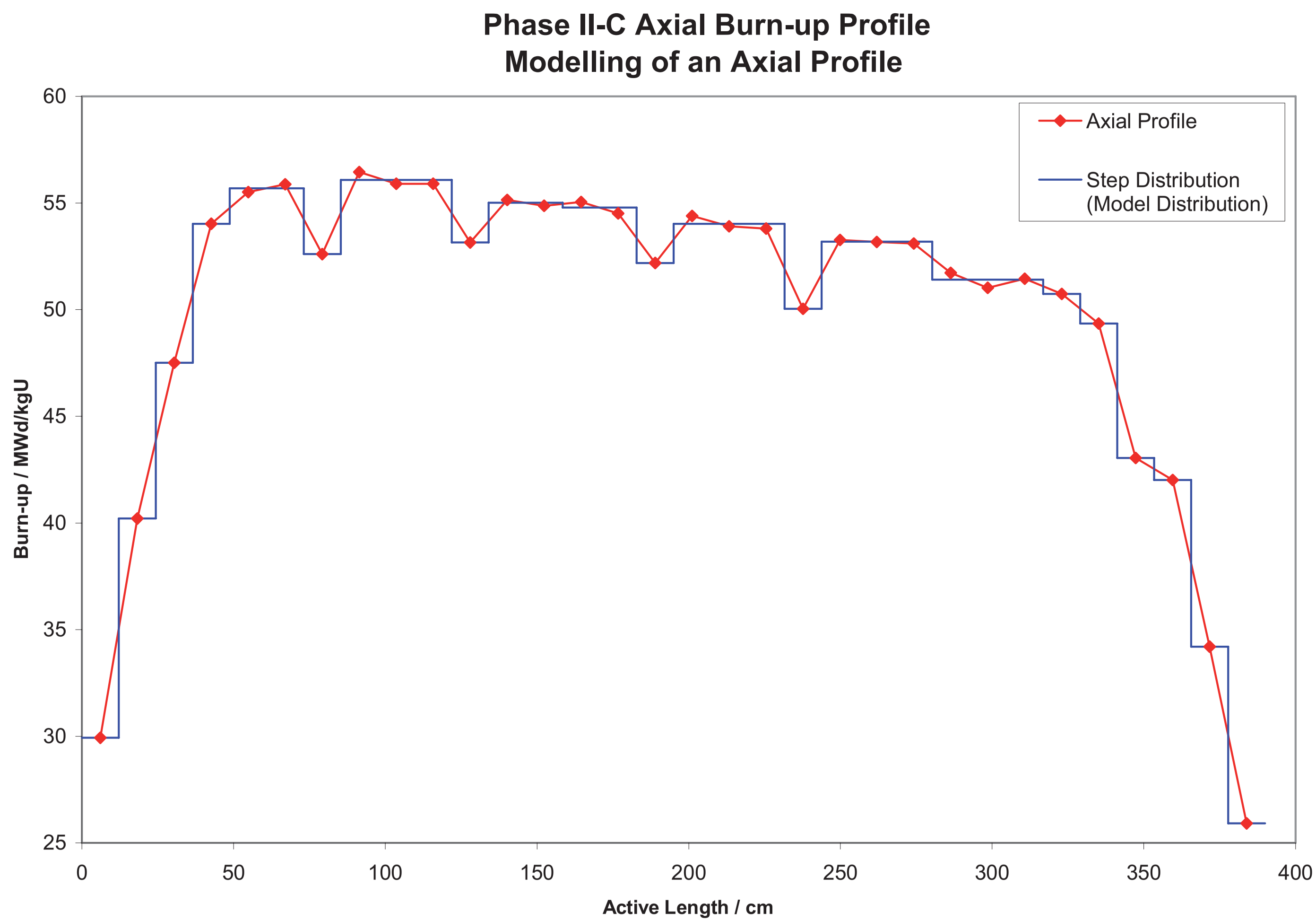


Figure 2.1 Convoy Series Fuel Assembly Lattice

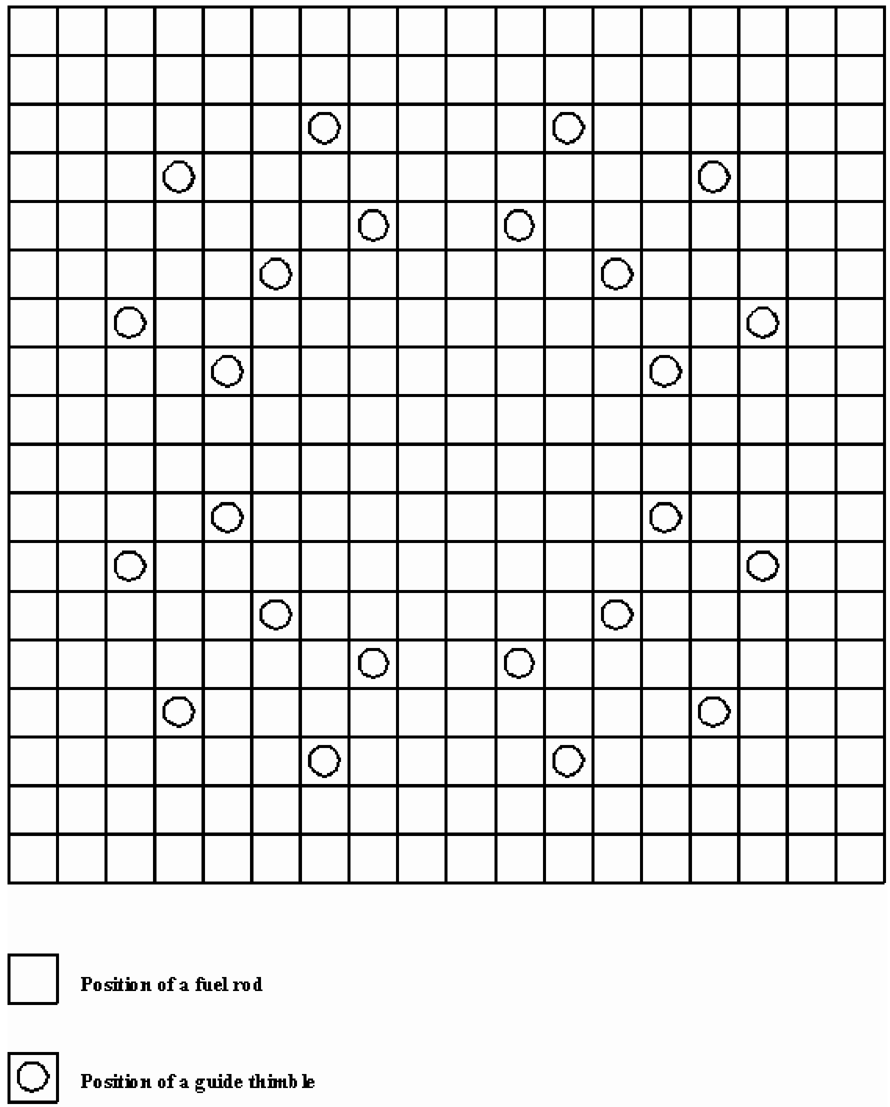


Figure 2.2 Evaluation of the axial burn-up profile database: Burn-up groups chosen

Figure 2.3 Evaluation of the axial burn-up profile database: Averaged axial shapes for the burn-up groups

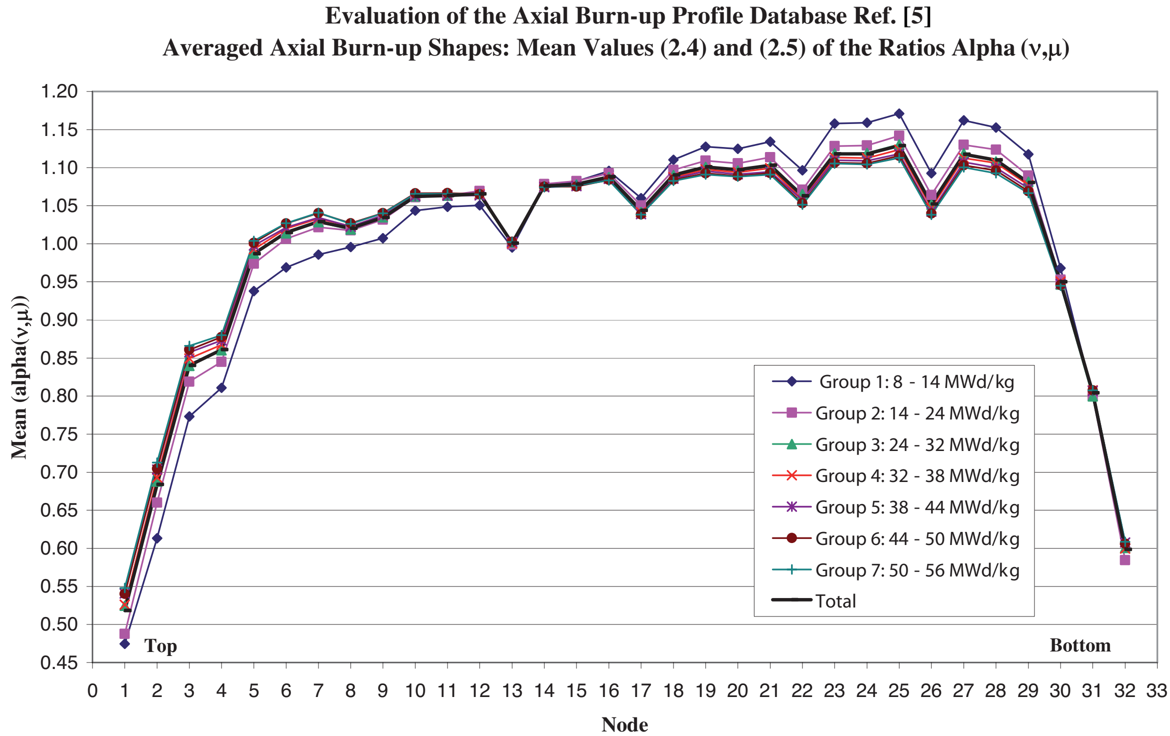


Figure 2.4 Evaluation of the axial burn-up profile database: Standard deviations related to the averaged axial shapes of the burn-up groups

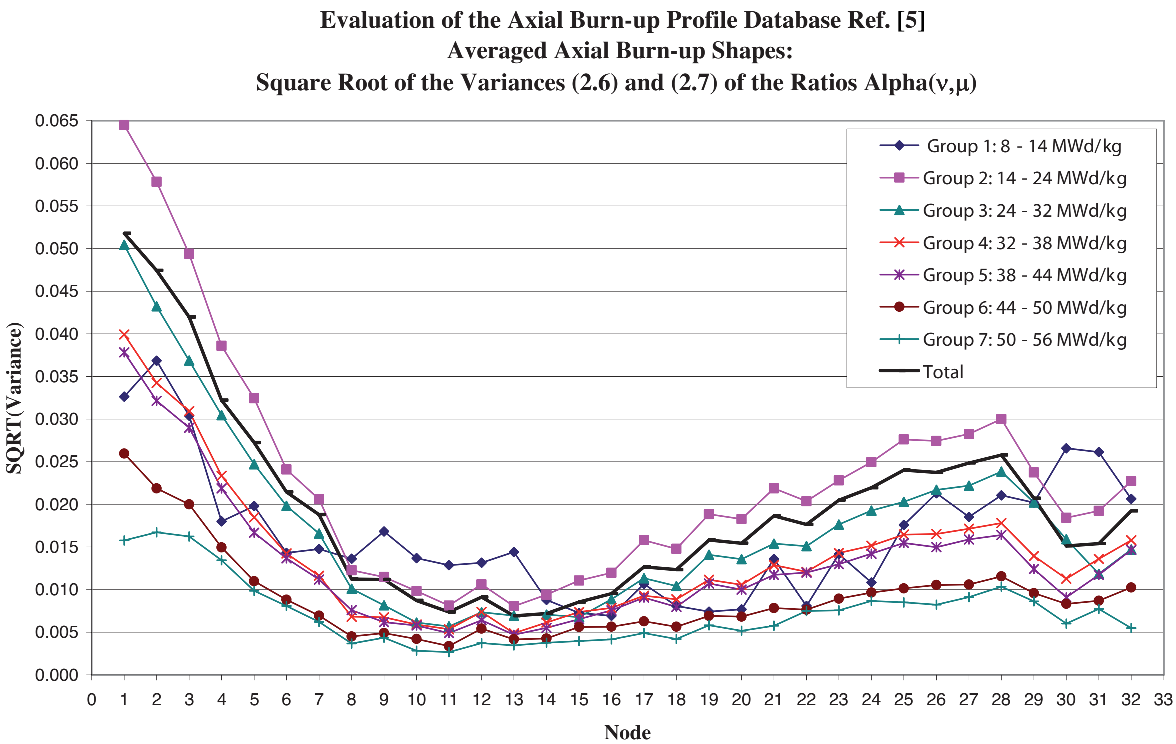


Figure 2.5 Evaluation of the axial burn-up profile database: Node 1

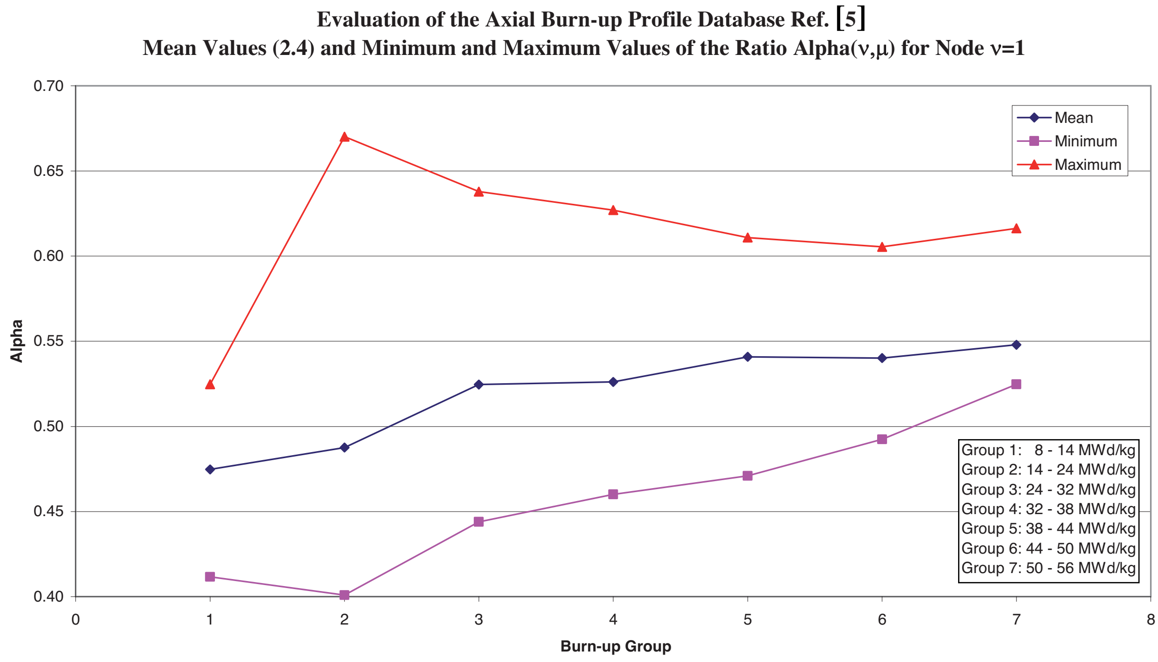


Figure 2.6 Evaluation of the axial burn-up profile database: Node 2

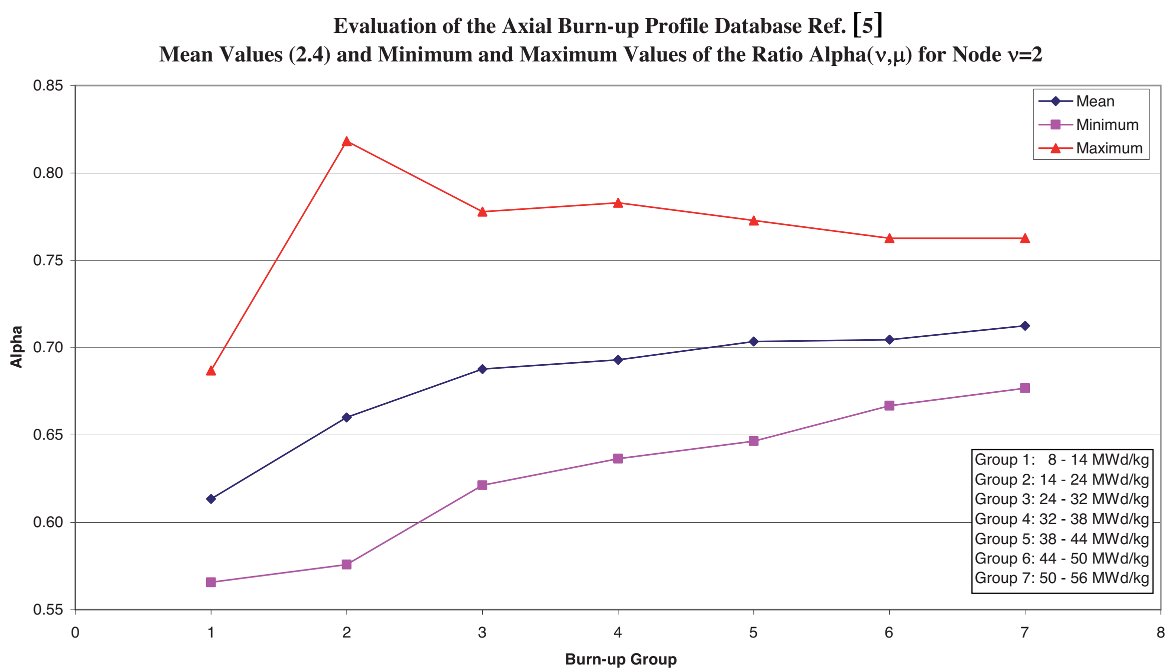


Figure 2.7 Evaluation of the axial burn-up profile database: Node 3

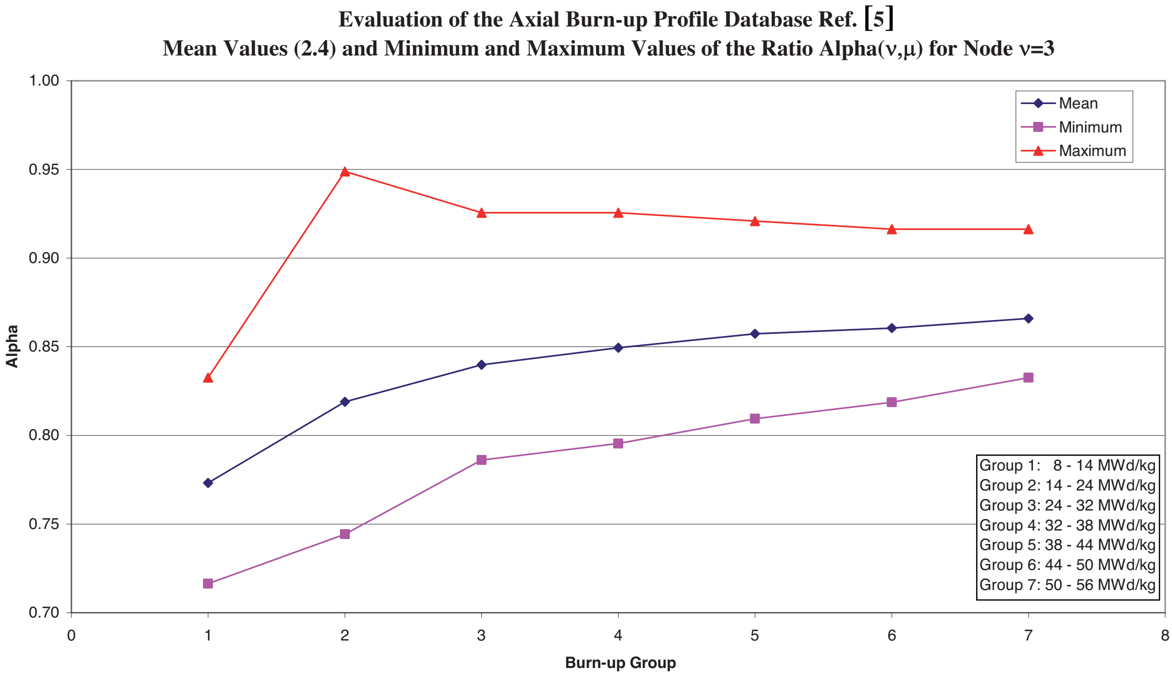


Figure 2.8 Evaluation of the axial burn-up profile database: Node 4

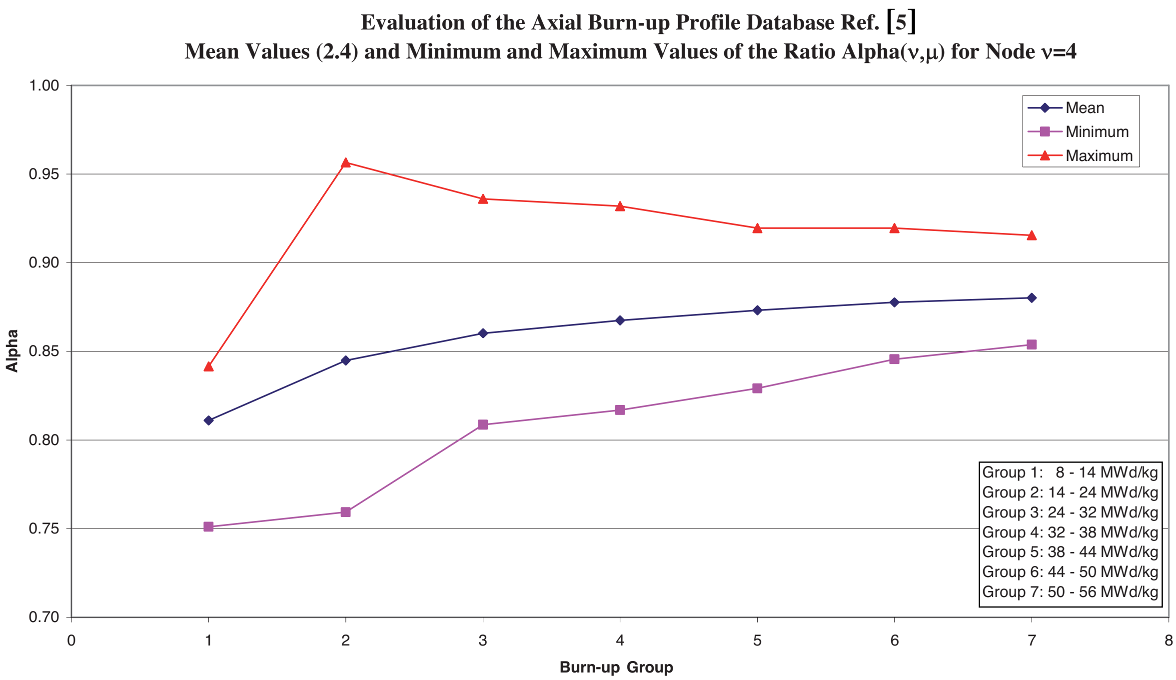


Figure 2.9 Evaluation of the axial burn-up profile database: Node 5

Evaluation of the Axial Burn-up Profile Database Ref. [5]
Mean Values (2.4) and Minimum and Maximum Values of the Ratio Alpha(ν,μ) for Node ν=5

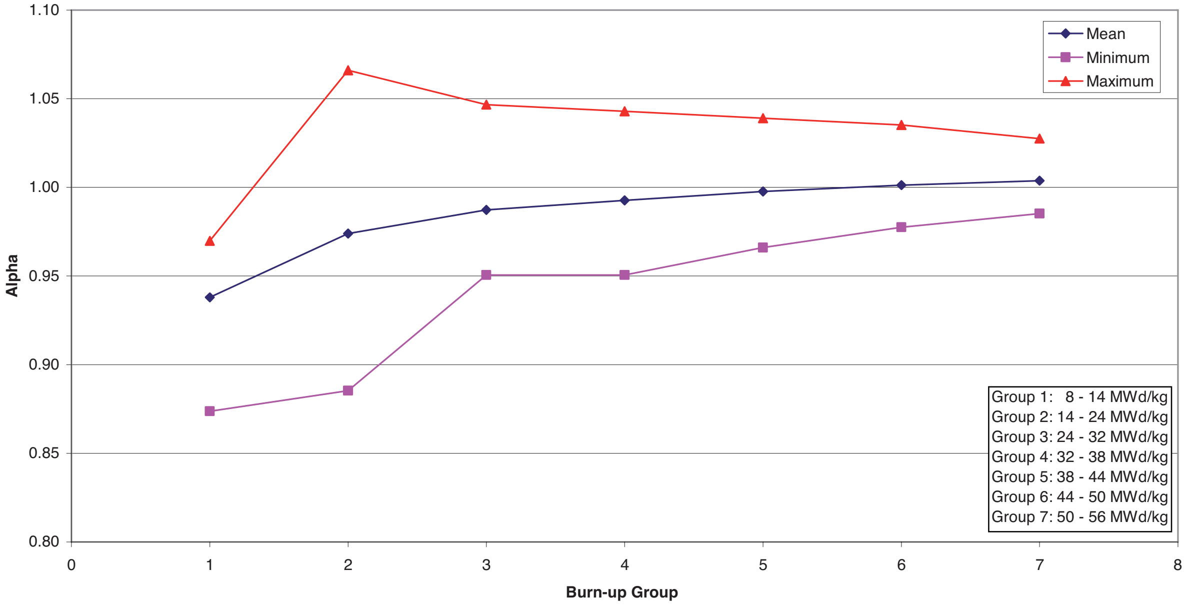


Figure 2.10 Evaluation of the axial burn-up profile database: Node 6

Evaluation of the Axial Burn-up Profile Database Ref. [5]
Mean Values (2.4) and Minimum and Maximum Values of the Ratio Alpha(ν,μ) for Node ν=6

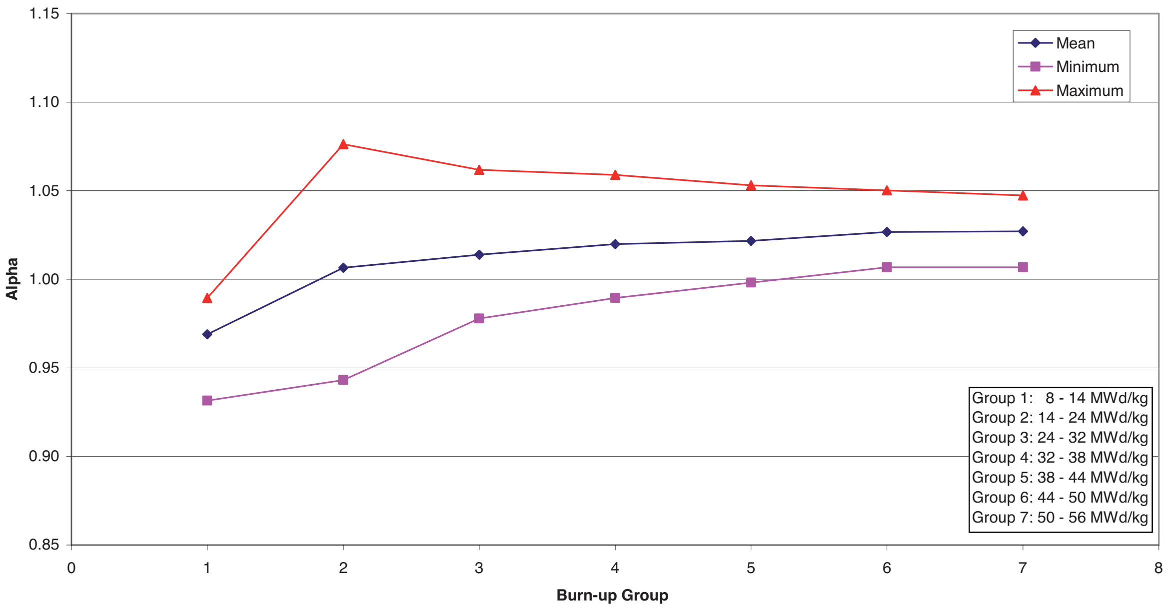


Figure 2.11 Evaluation of the axial burn-up profile database: Node 18

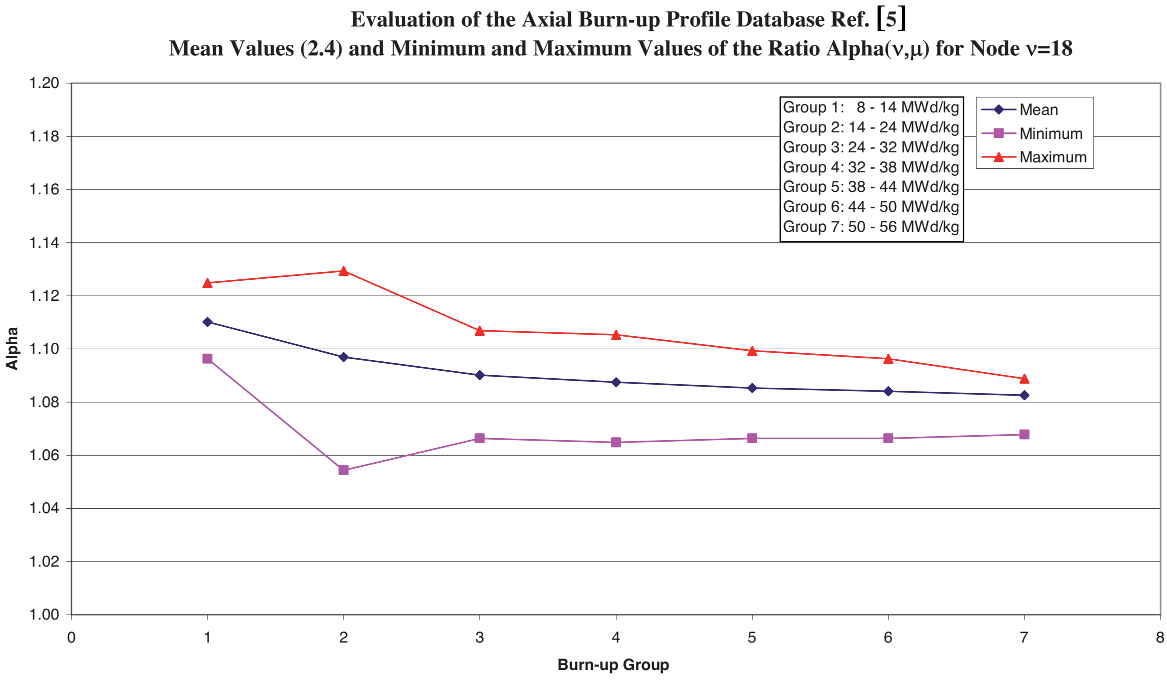


Figure 2.12 Evaluation of the axial burn-up profile database: Node 25

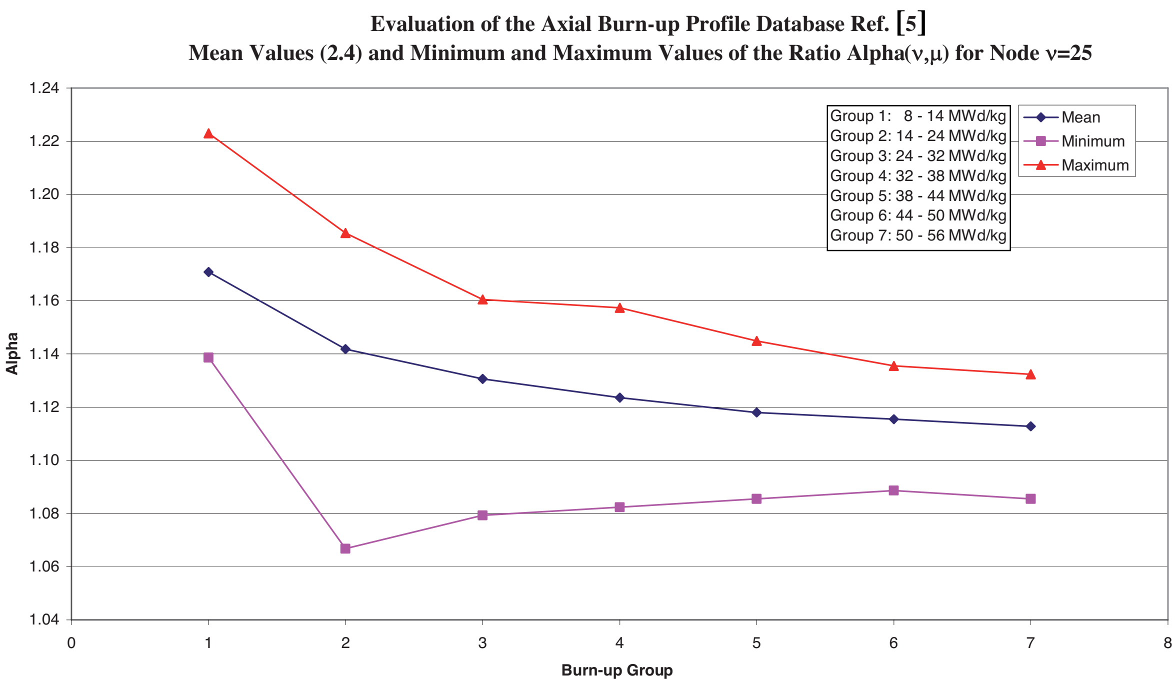


Figure 2.13 Evaluation of the axial burn-up profile database: Node 29

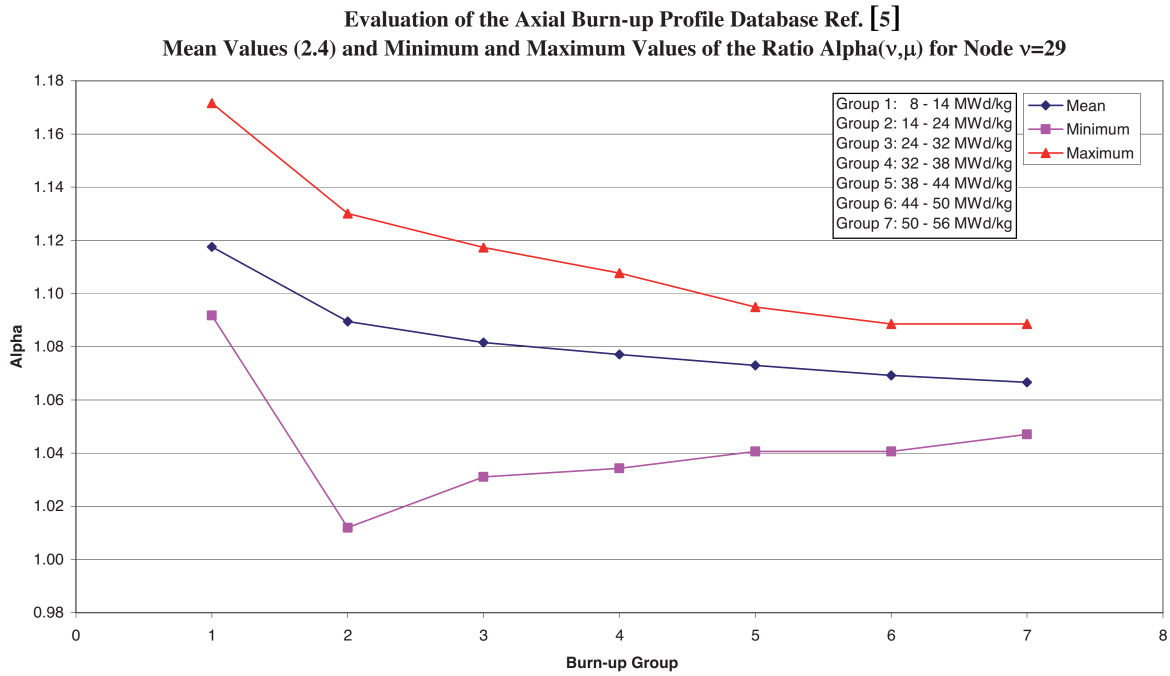


Figure 2.14 Evaluation of the axial burn-up profile database: Node 30

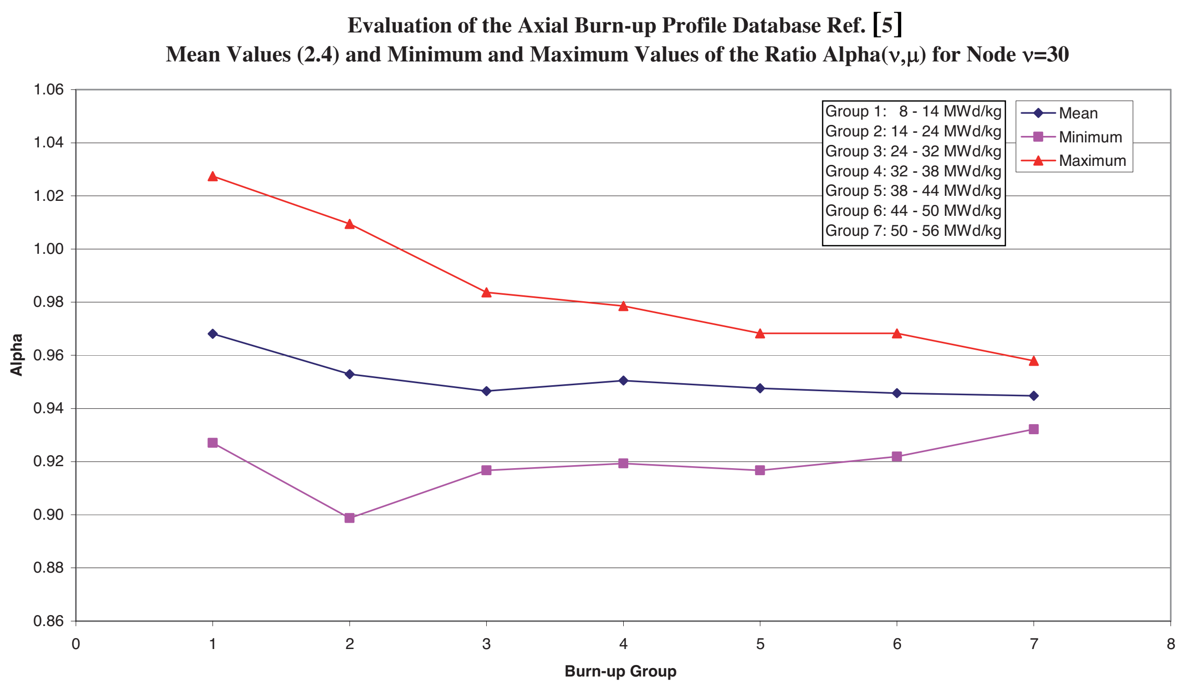


Figure 2.15 Evaluation of the axial burn-up profile database: Node 31

Evaluation of the Axial Burn-up Profile Database Ref. [5]
Mean Values (2.4) and Minimum and Maximum Values of the Ratio Alpha(ν,μ) for Node ν=31

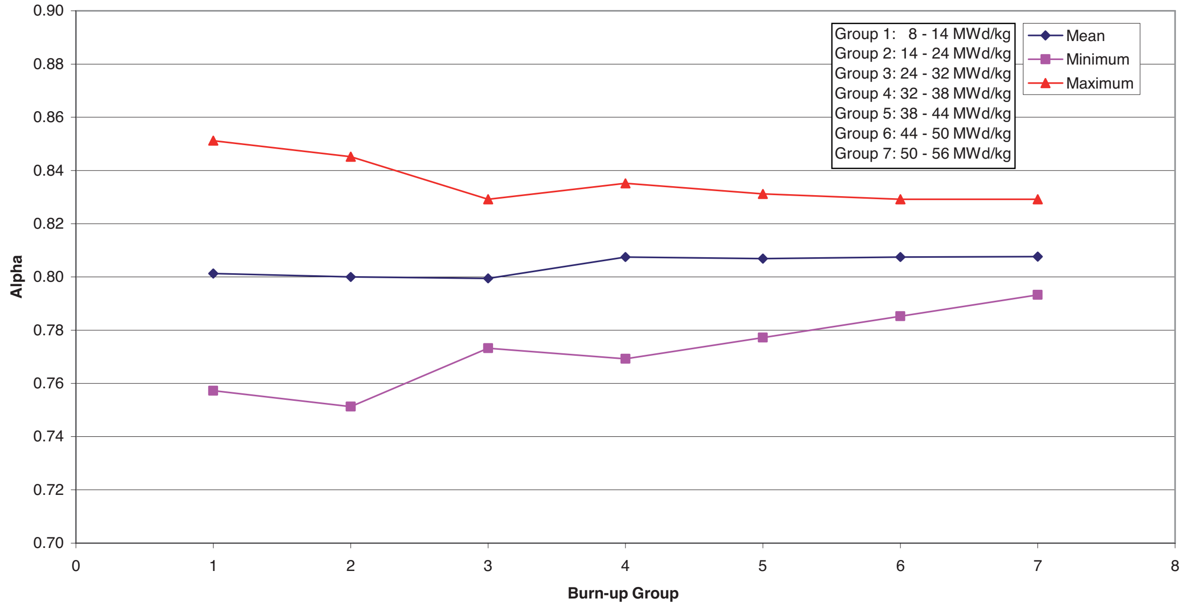


Figure 2.16 Evaluation of the axial burn-up profile database: Node 32

Evaluation of the Axial Burn-up Profile Database Ref. [5]
Mean Values (2.4) and Minimum and Maximum Values of the Ratio Alpha(ν,μ) for Node ν=32

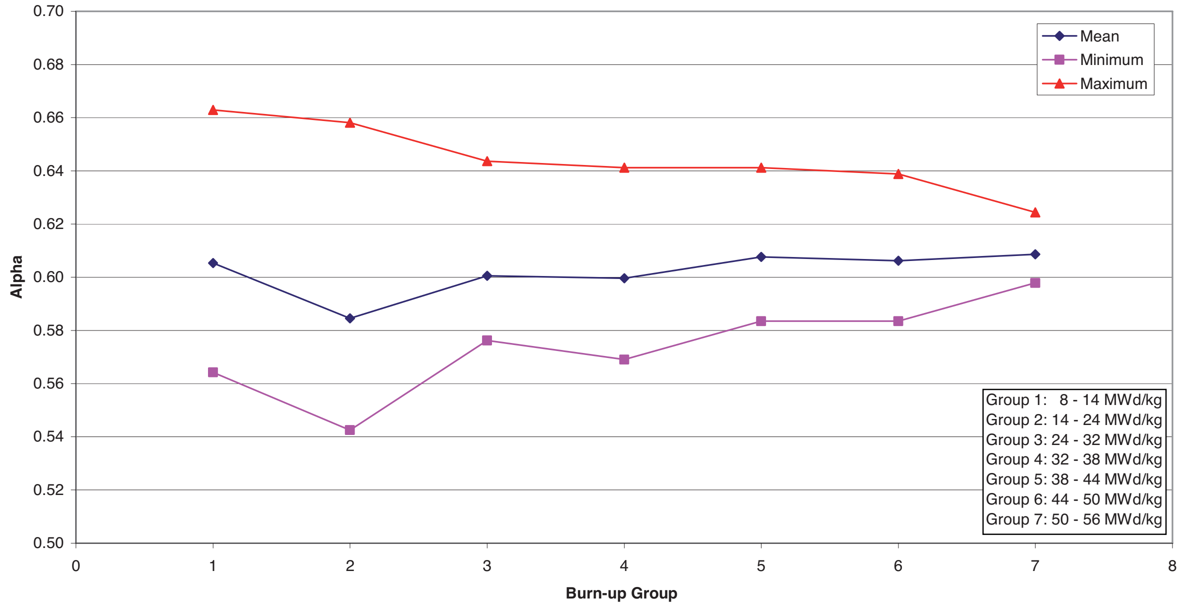


Figure 2.17 Asymmetry parameter of the averaged axial shapes

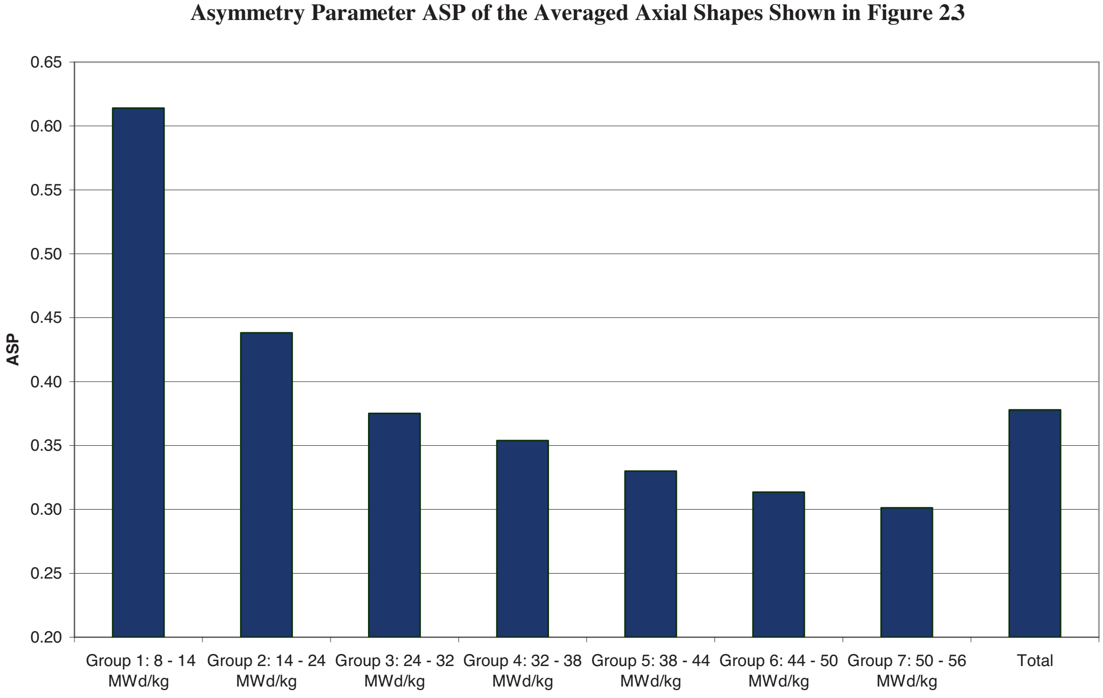


Figure 2.18 Top end parameter of the averaged axial shapes

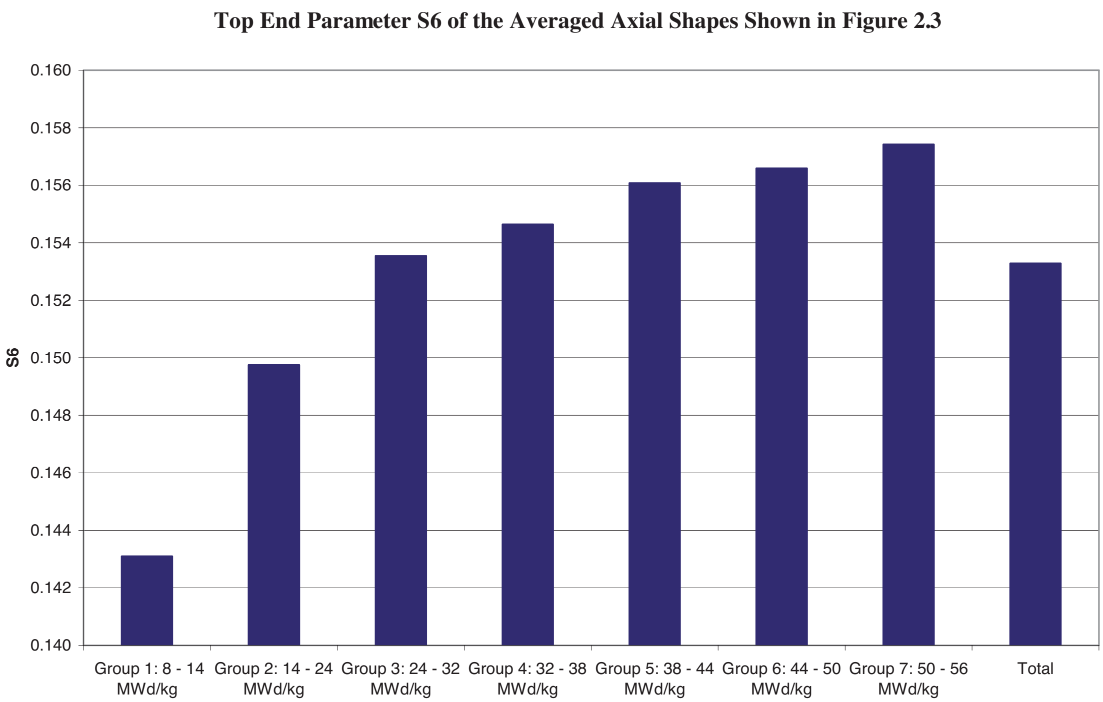


Figure 3.1 Asymmetry parameter of the Phase II-C benchmark burn-up profiles

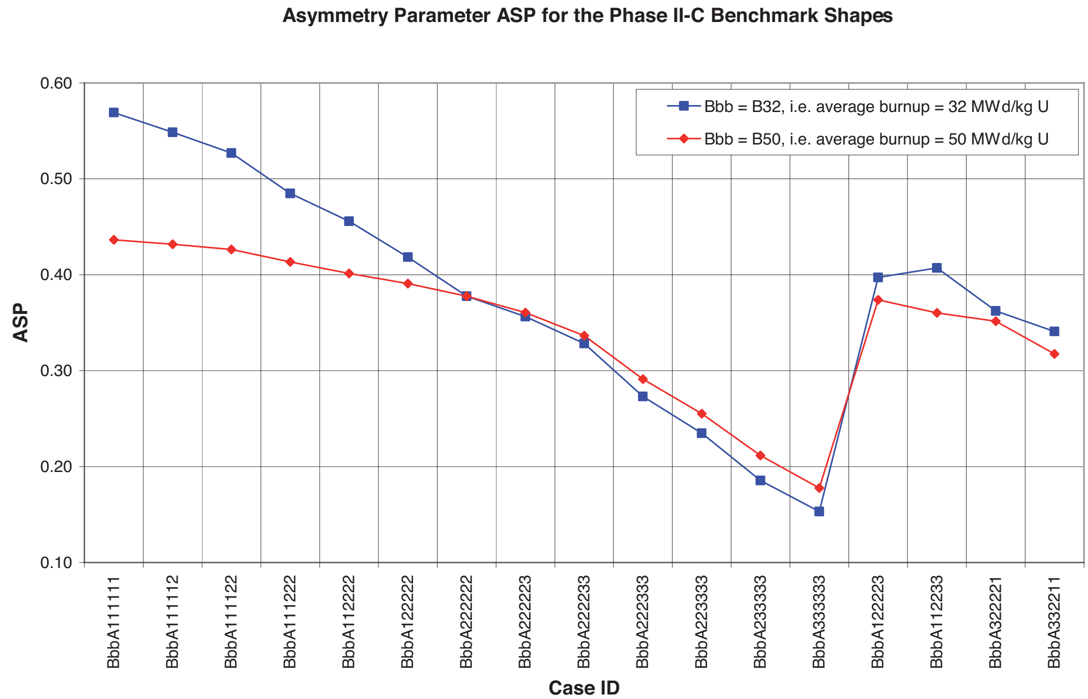


Figure 3.2 Top end parameter of the Phase II-C benchmark burn-up profiles

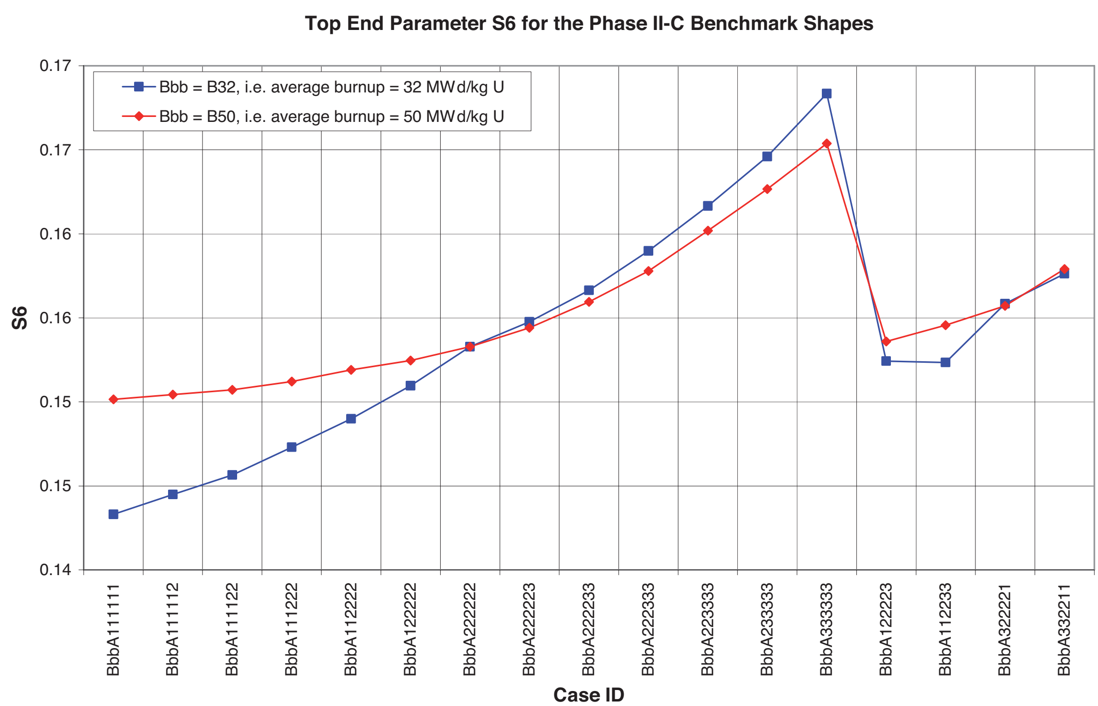


Figure 3.3 Phase II-C benchmark burn-up profiles (examples)

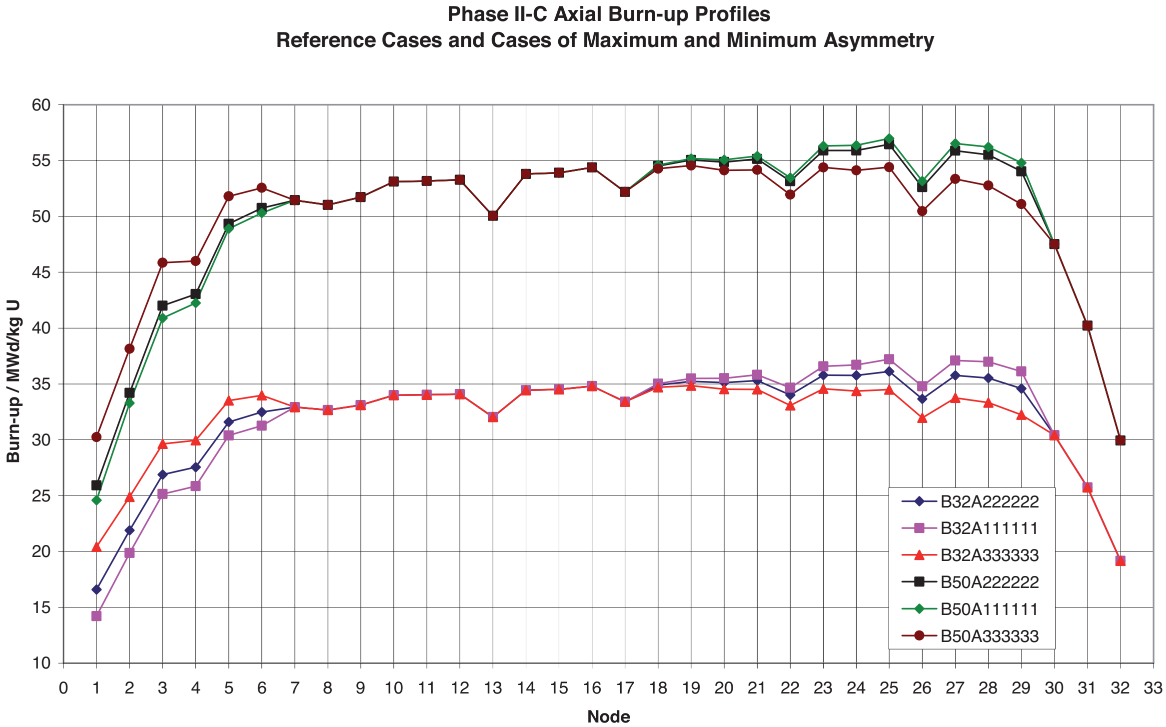


Figure 3.4 Phase II-C cask configuration: side view of the cask
(FA:= Fuel assembly, HW:= Hardware)

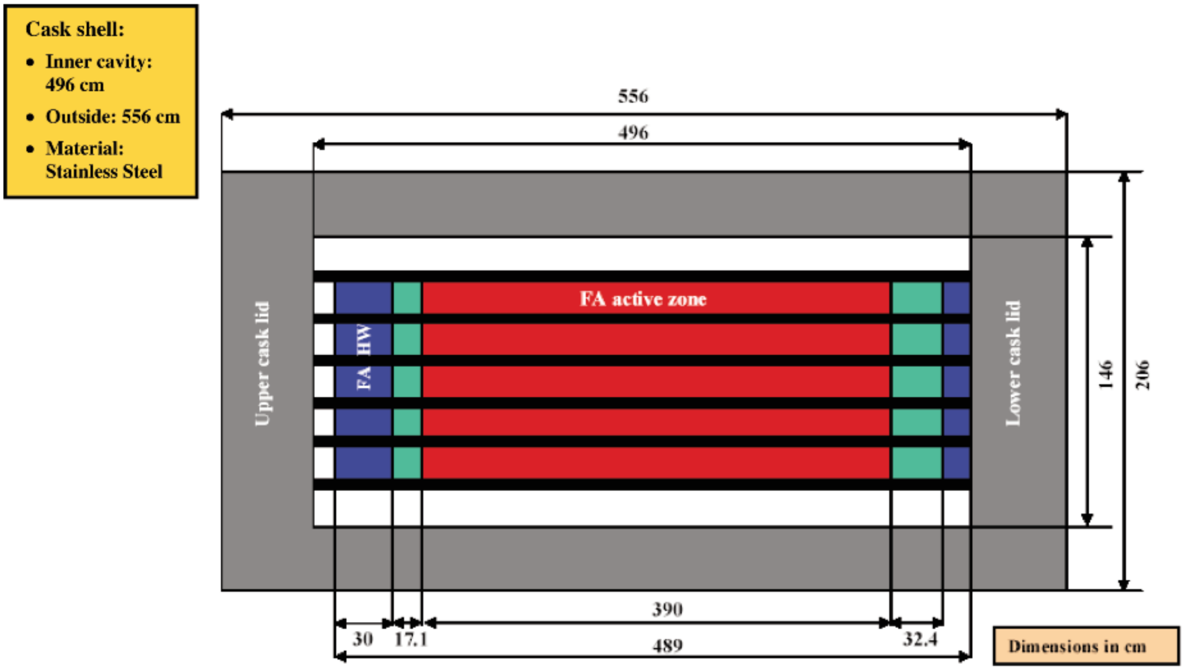


Figure 3.5 Phase II-C cask configuration: top view of the cask (at axial midplane)

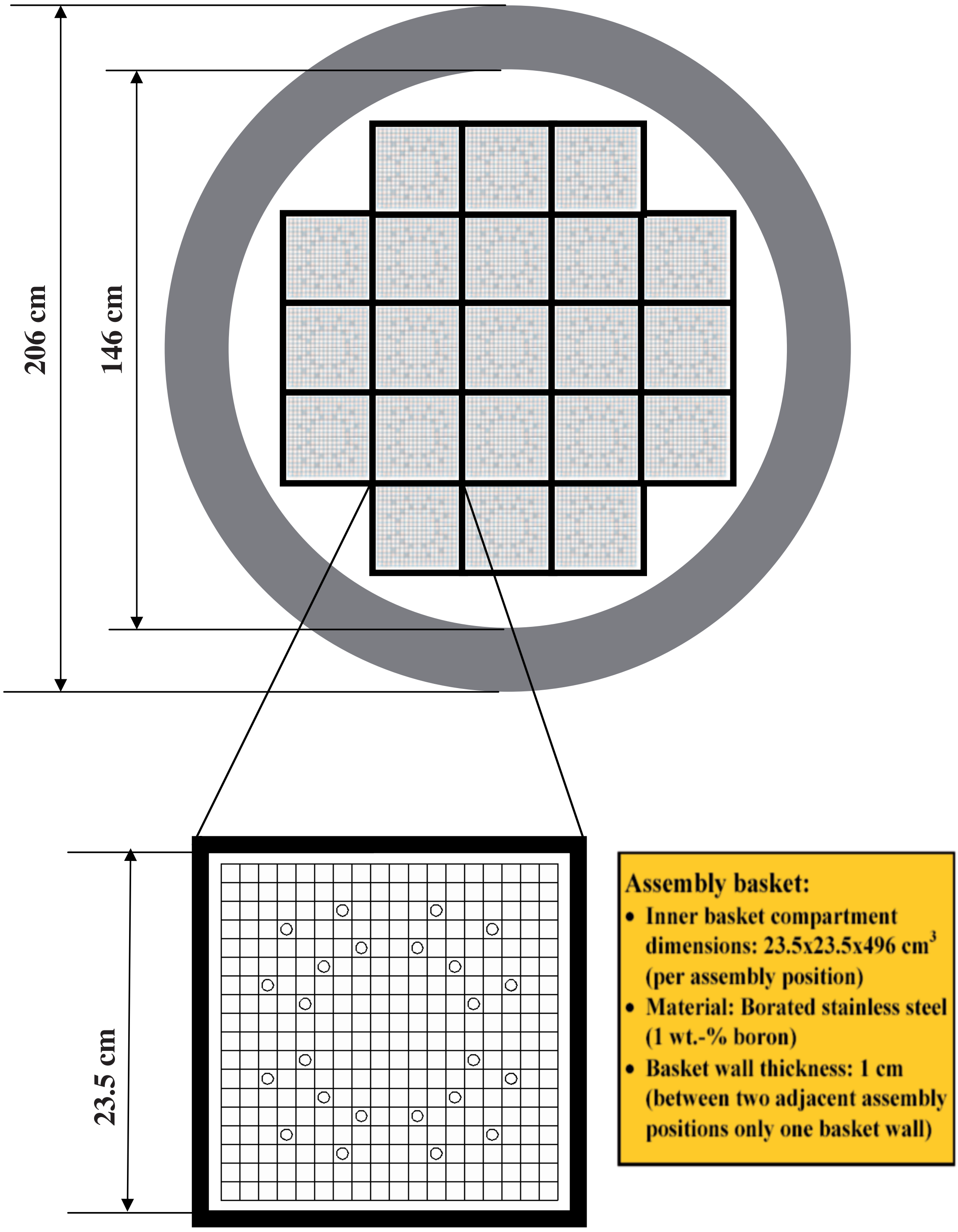


**Figure 5.1 Results from the contributors:
predicted neutron multiplication factors for the 32 MWd/kg U average burn-up case**

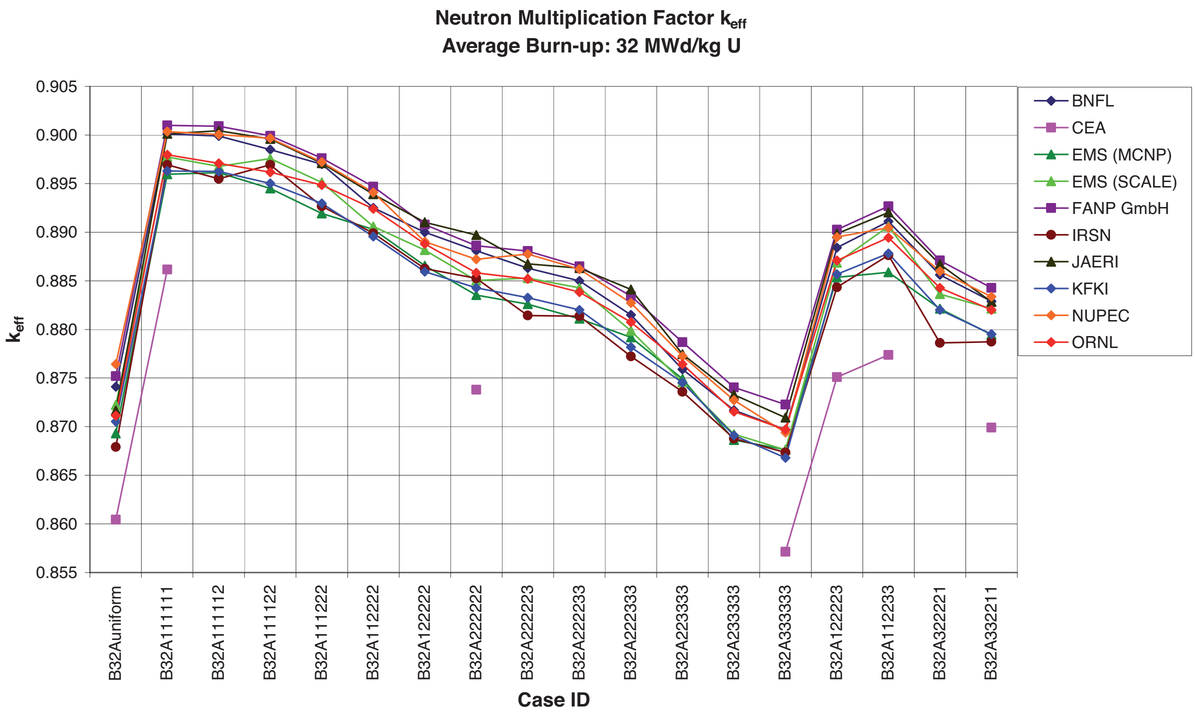


**Figure 5.2 Results from the contributors:
predicted neutron multiplication factors for the 50 MWd/kg U average burn-up cases**

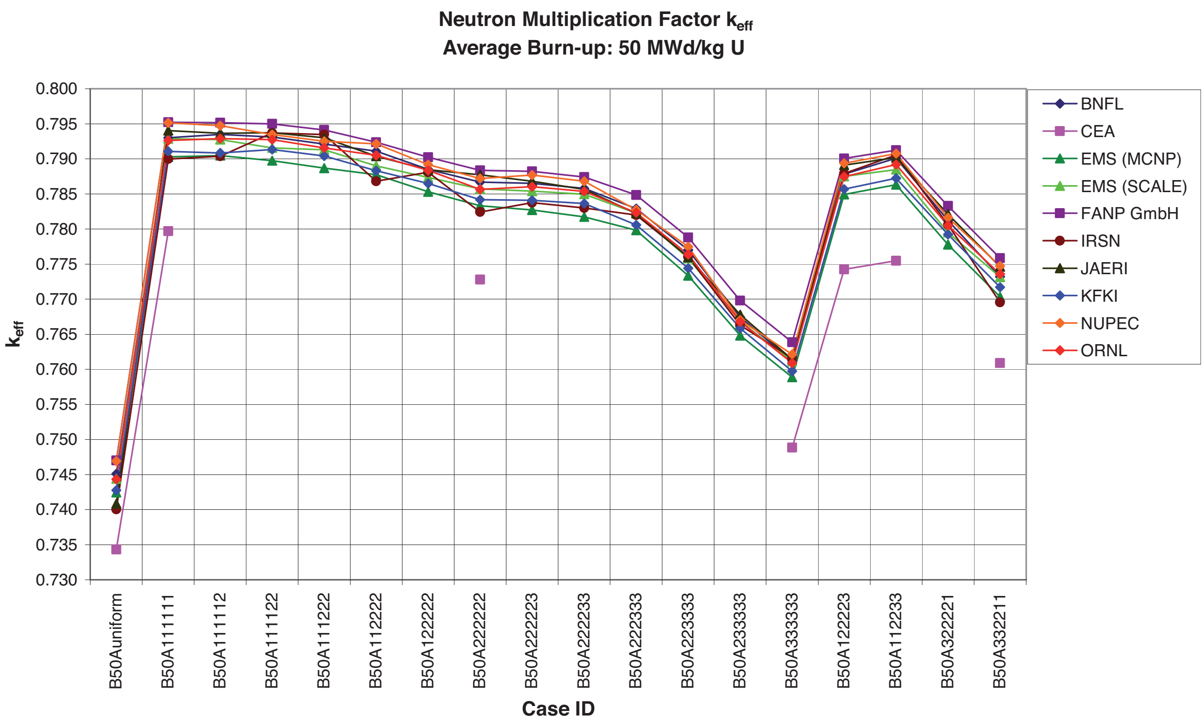


Figure 5.3 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32Auniform

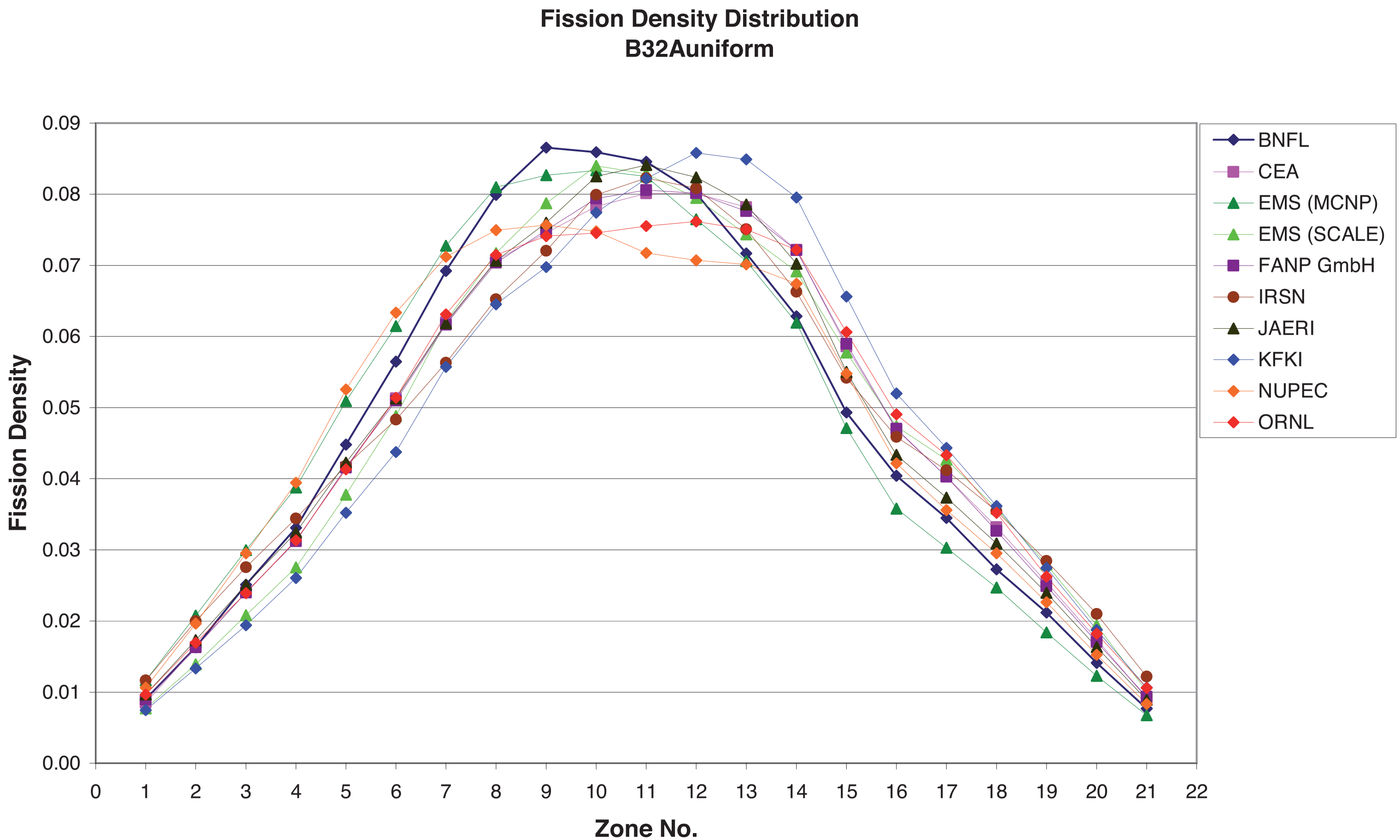
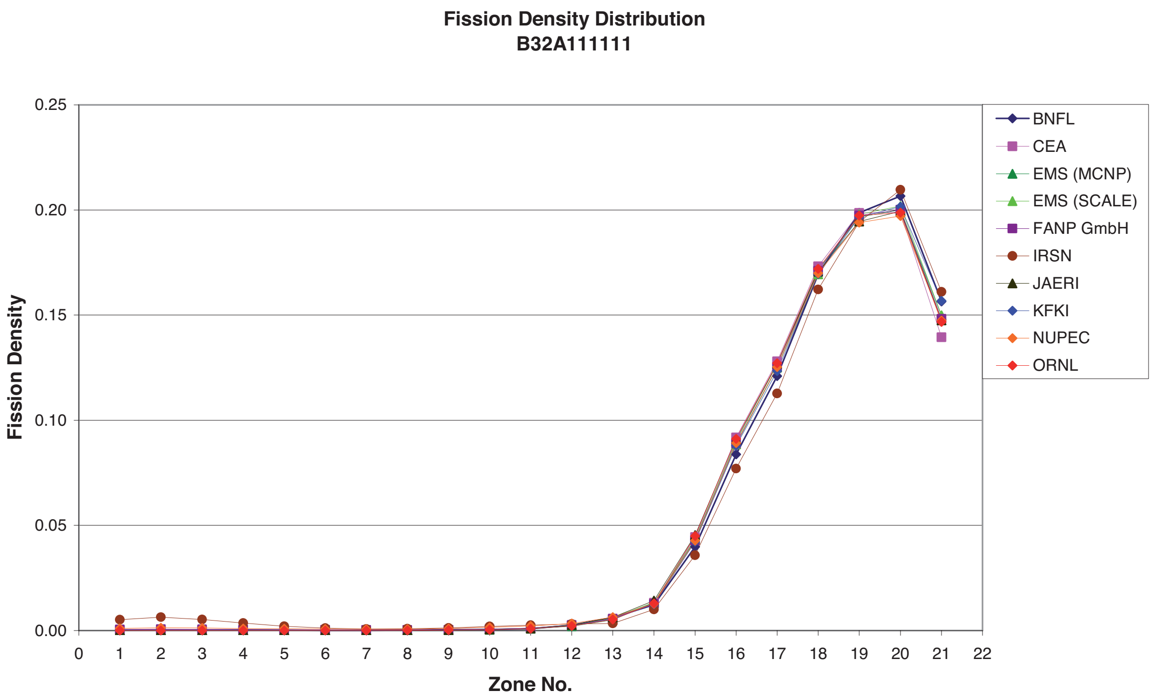


Figure 5.4 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A111111



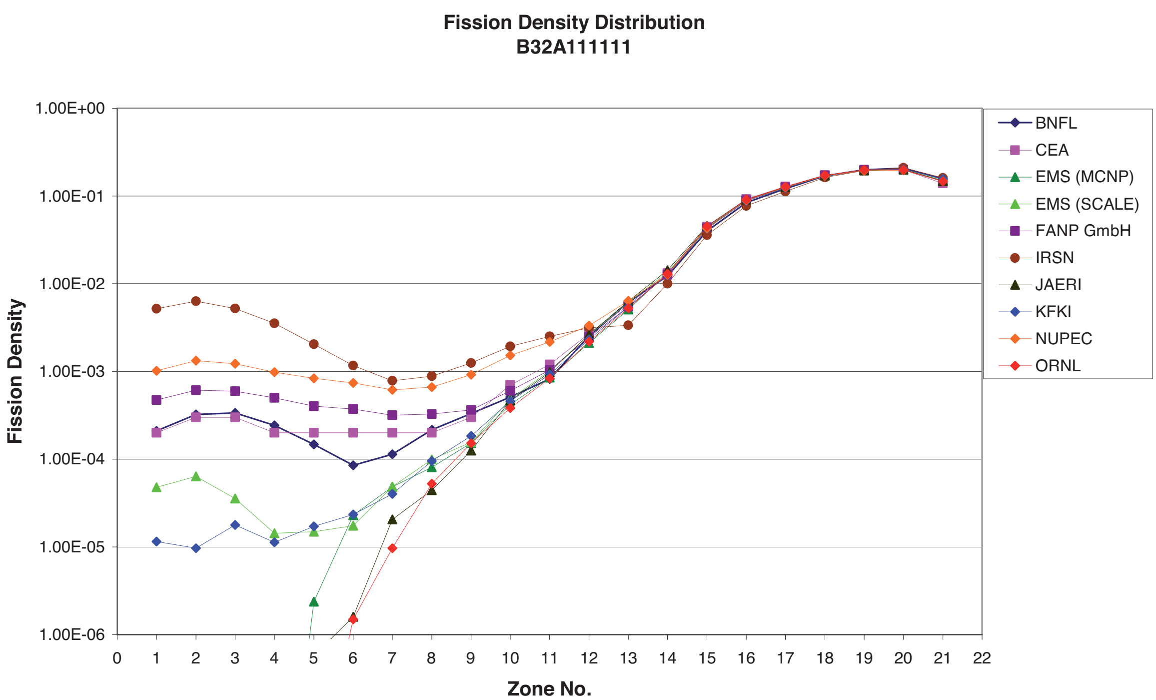
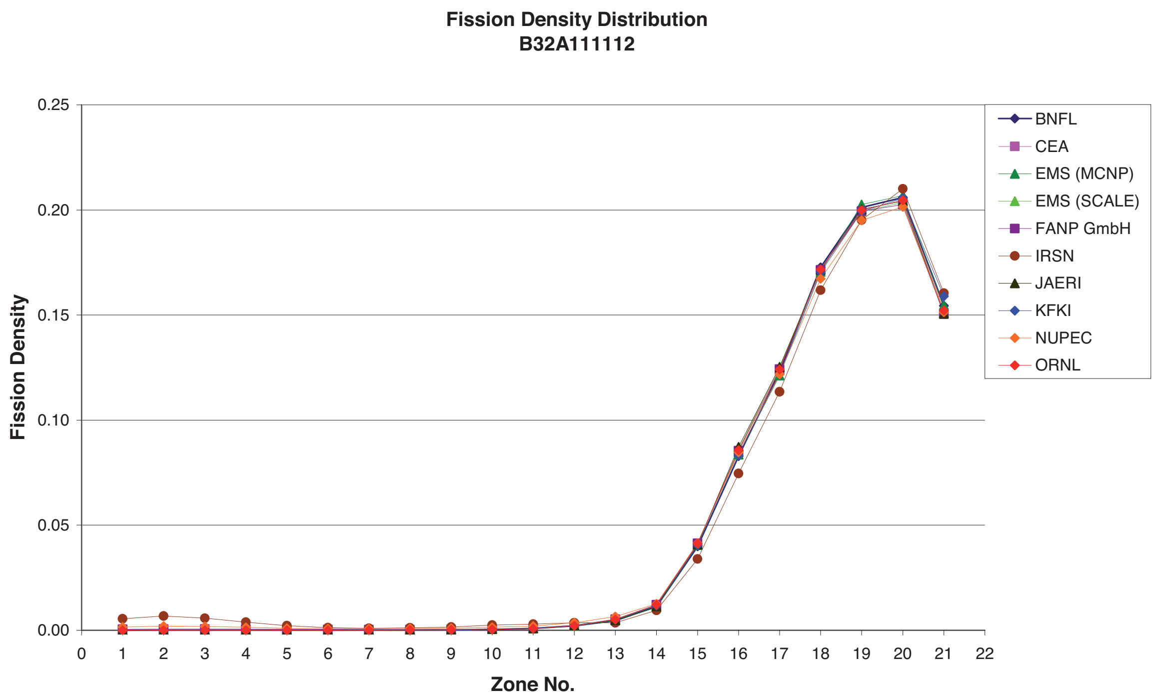


**Figure 5.5 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A111112**



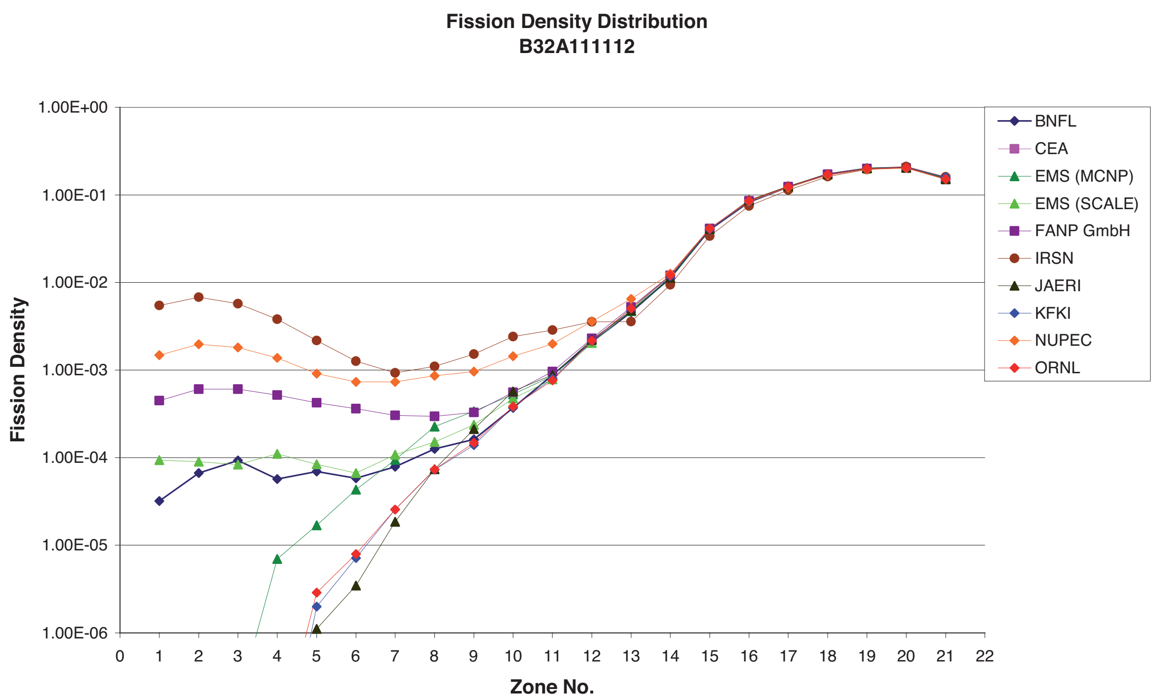
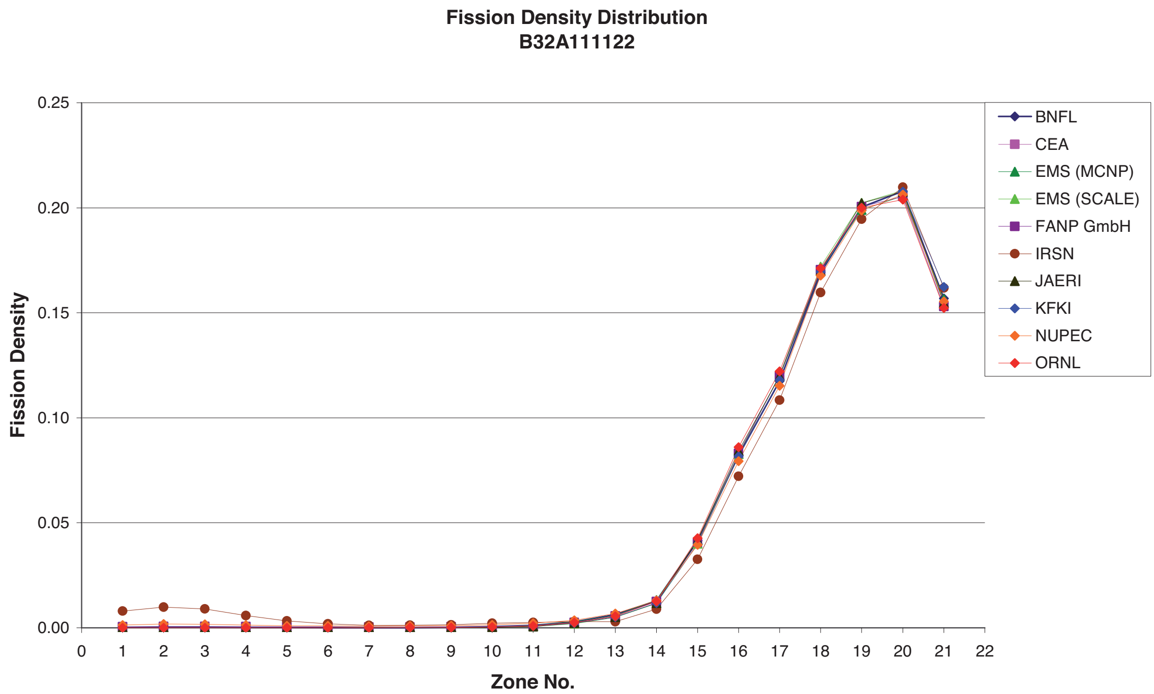


Figure 5.6 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A111122



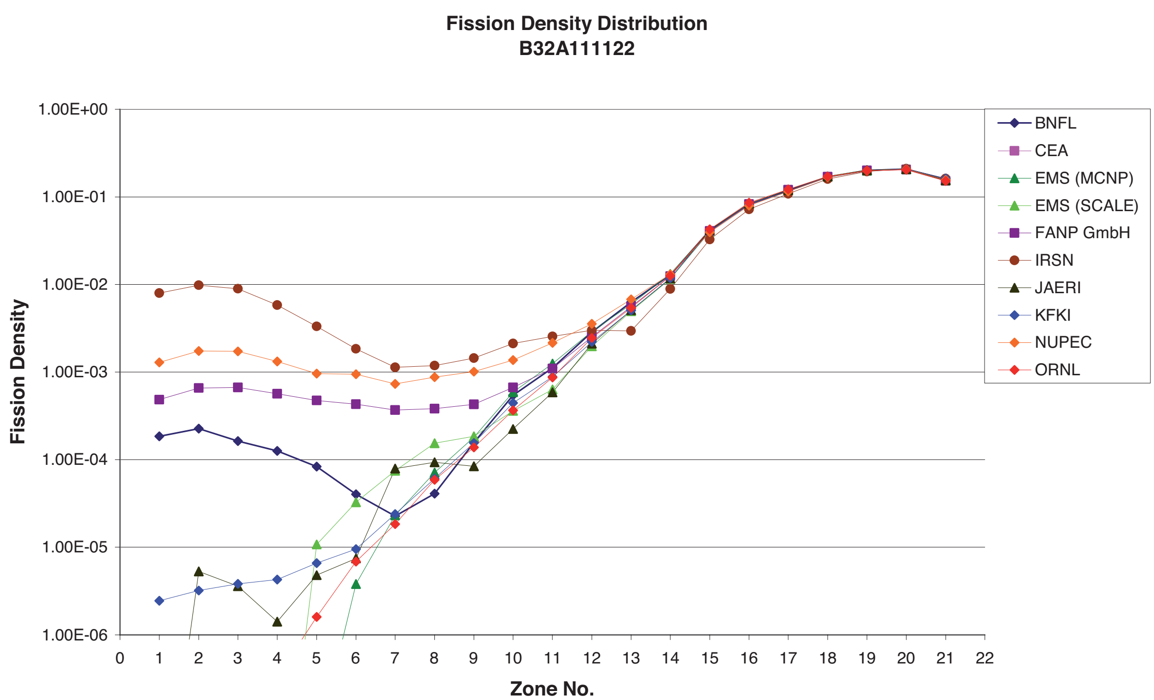
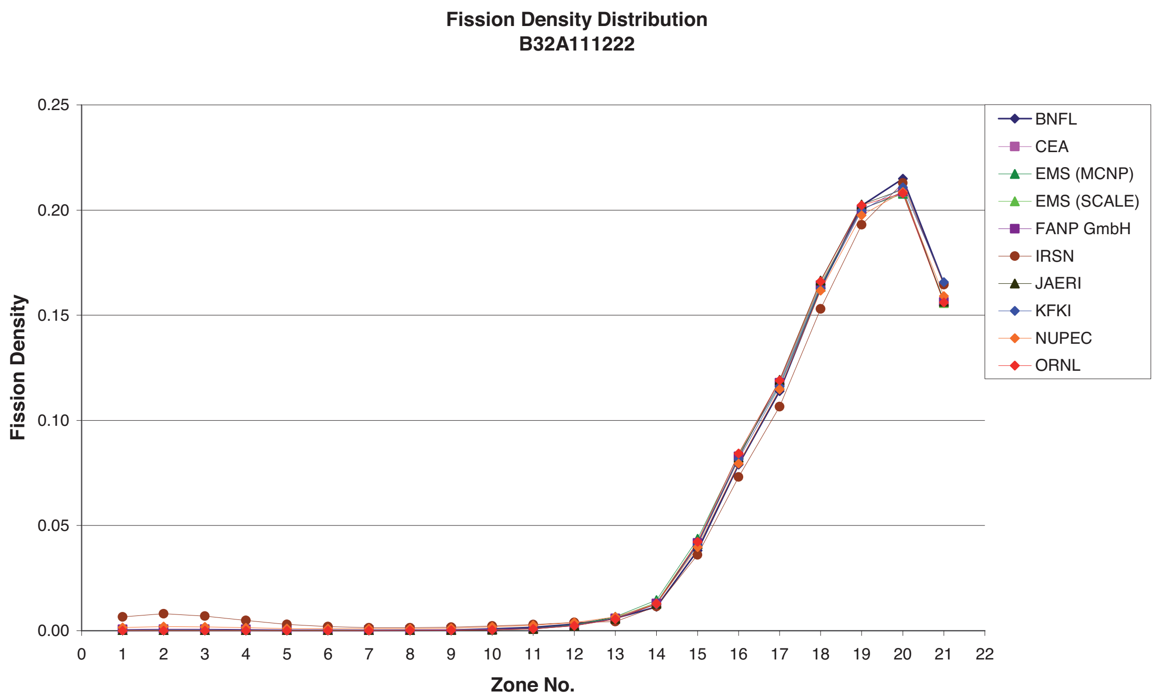


Figure 5.7 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A111222



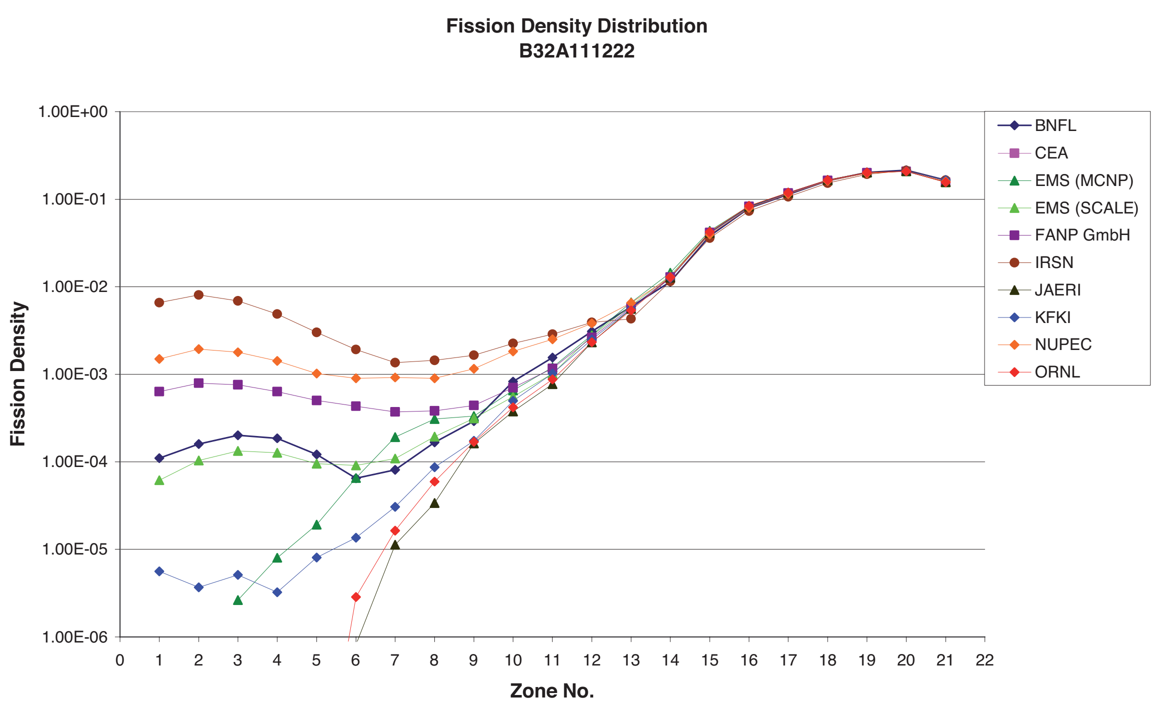
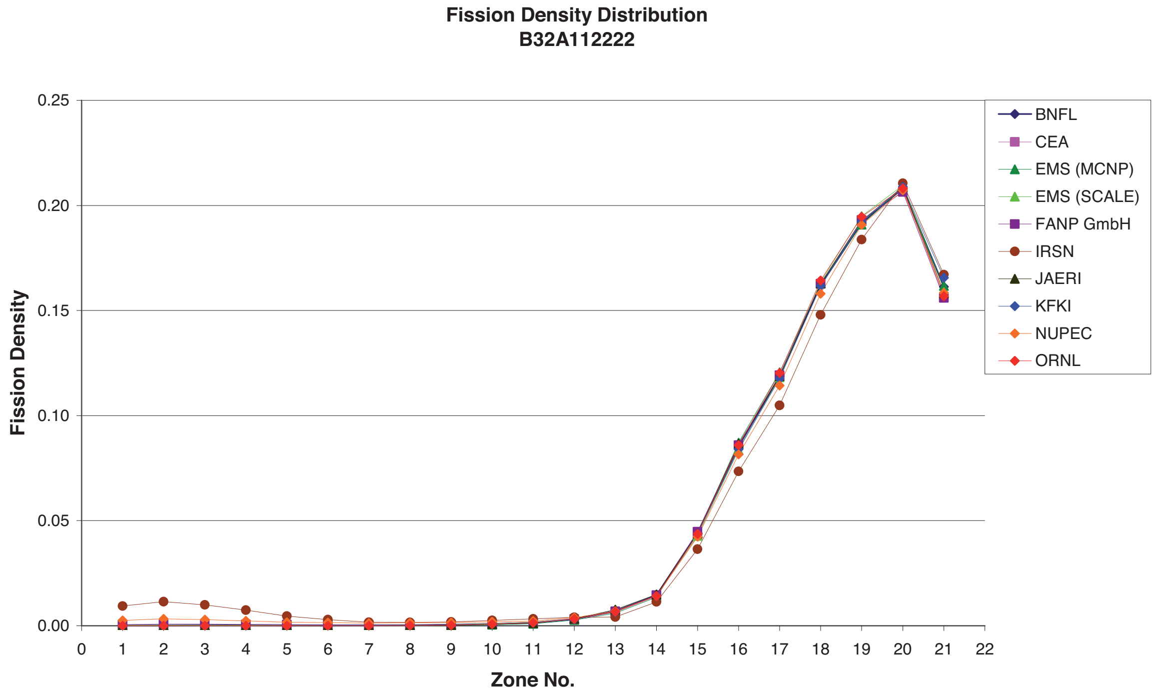


Figure 5.8 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A112222



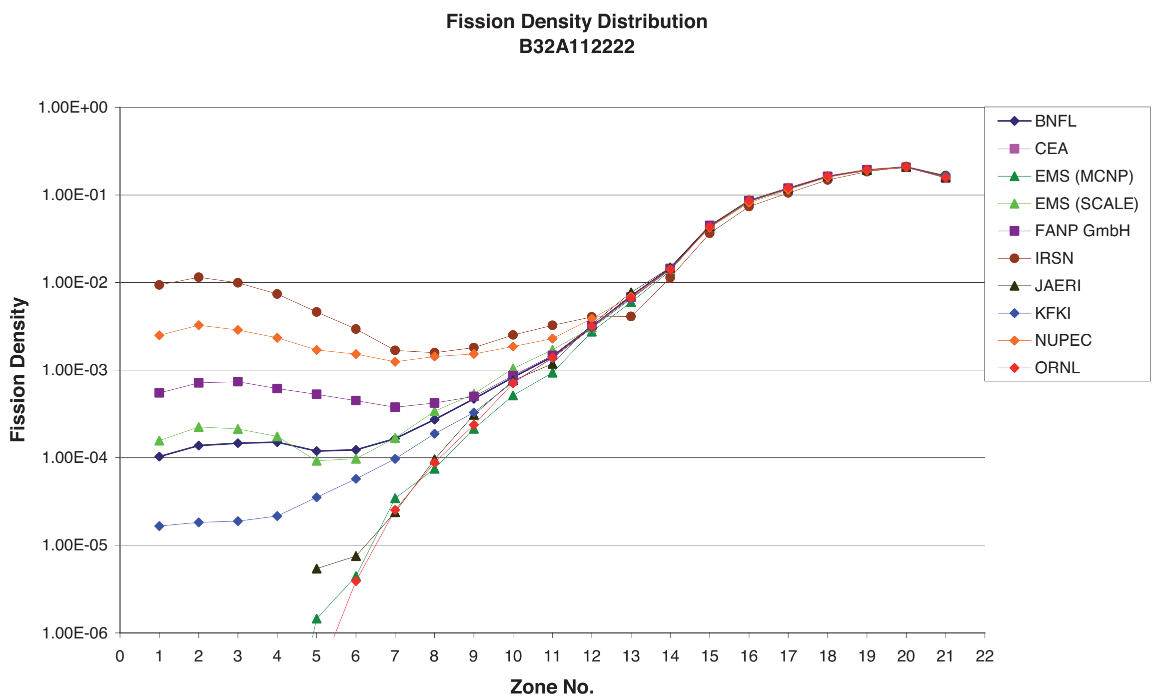
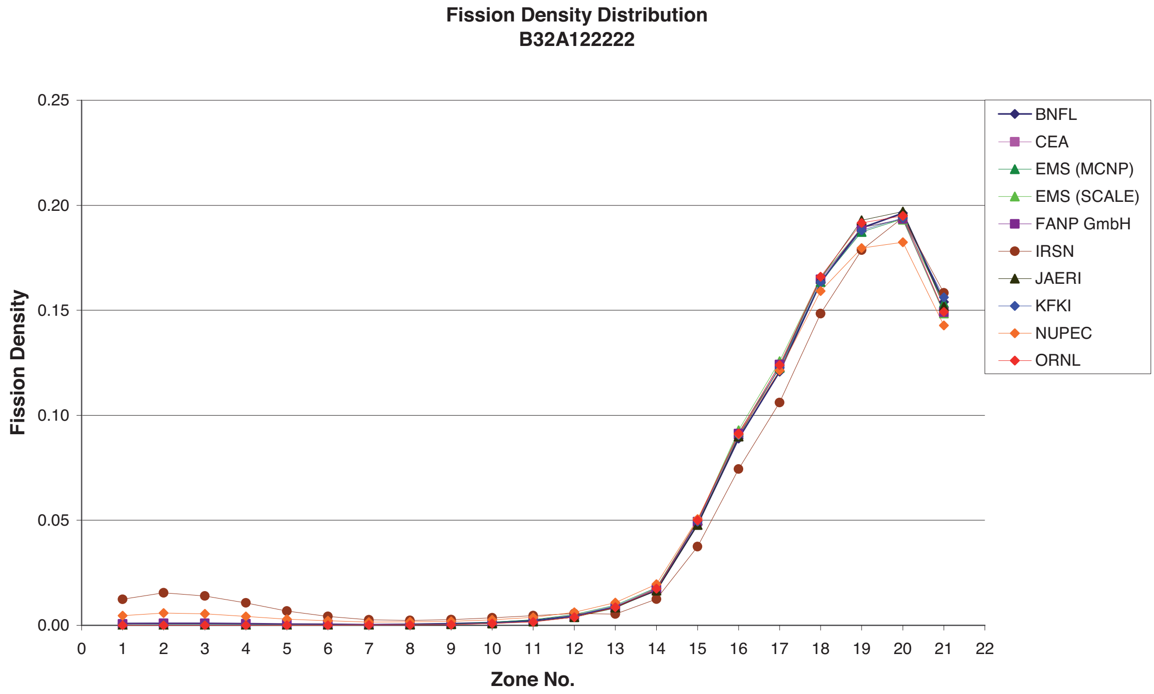


Figure 5.9 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A122222



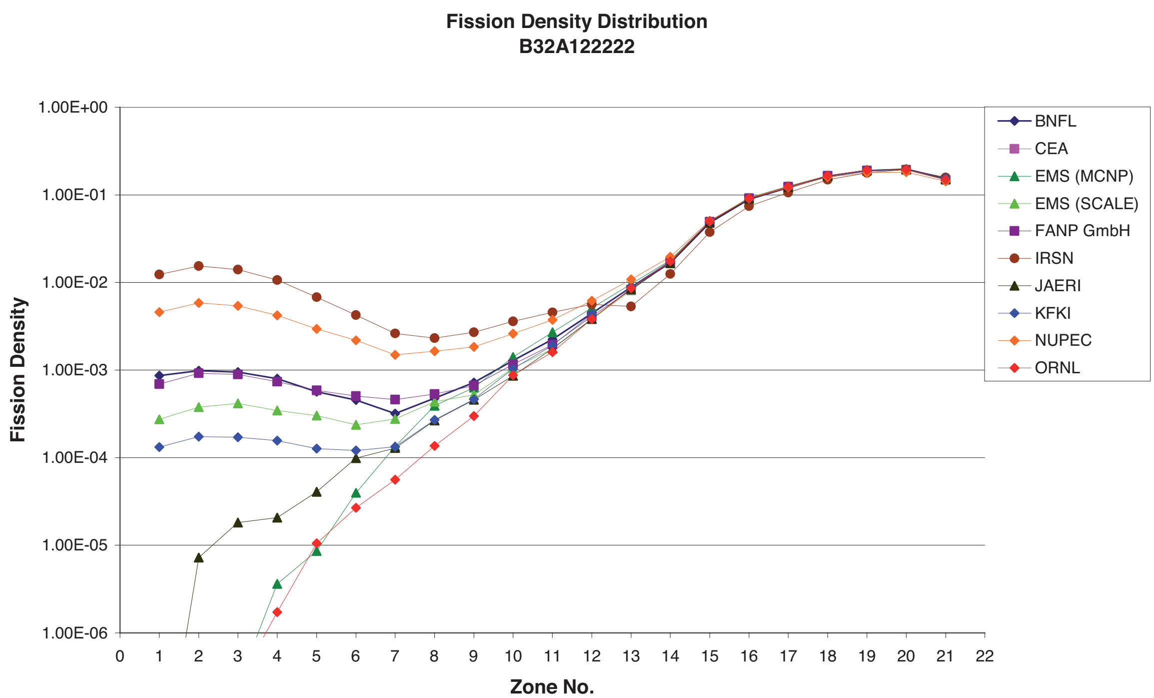
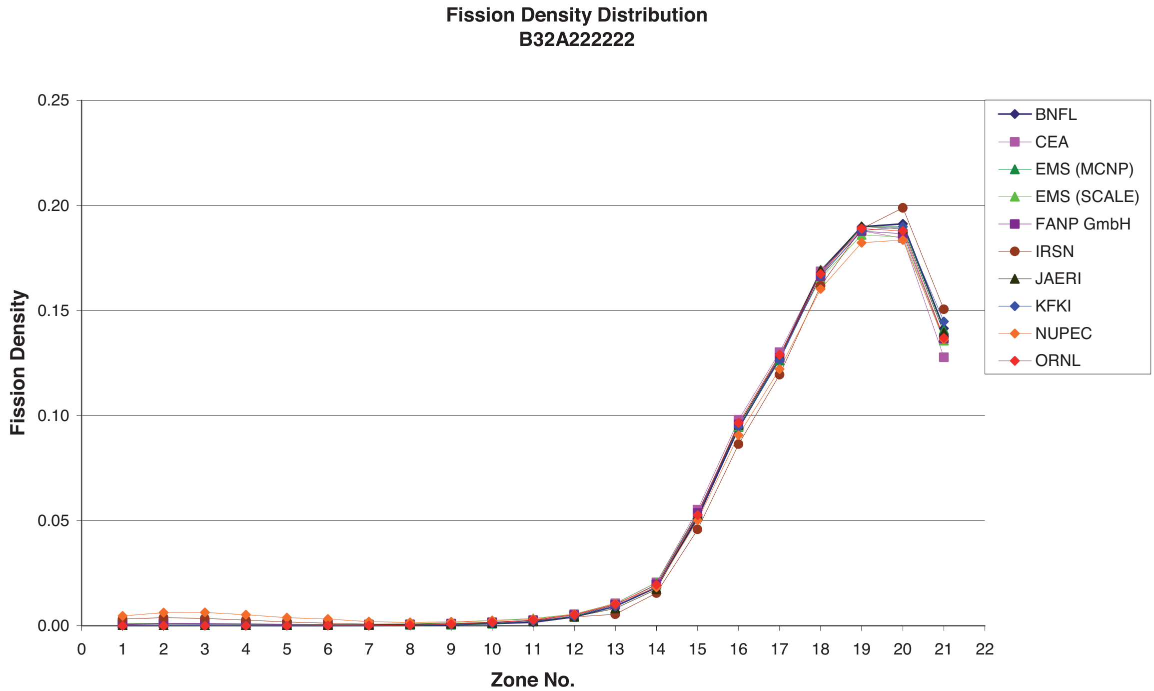


Figure 5.10 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A222222



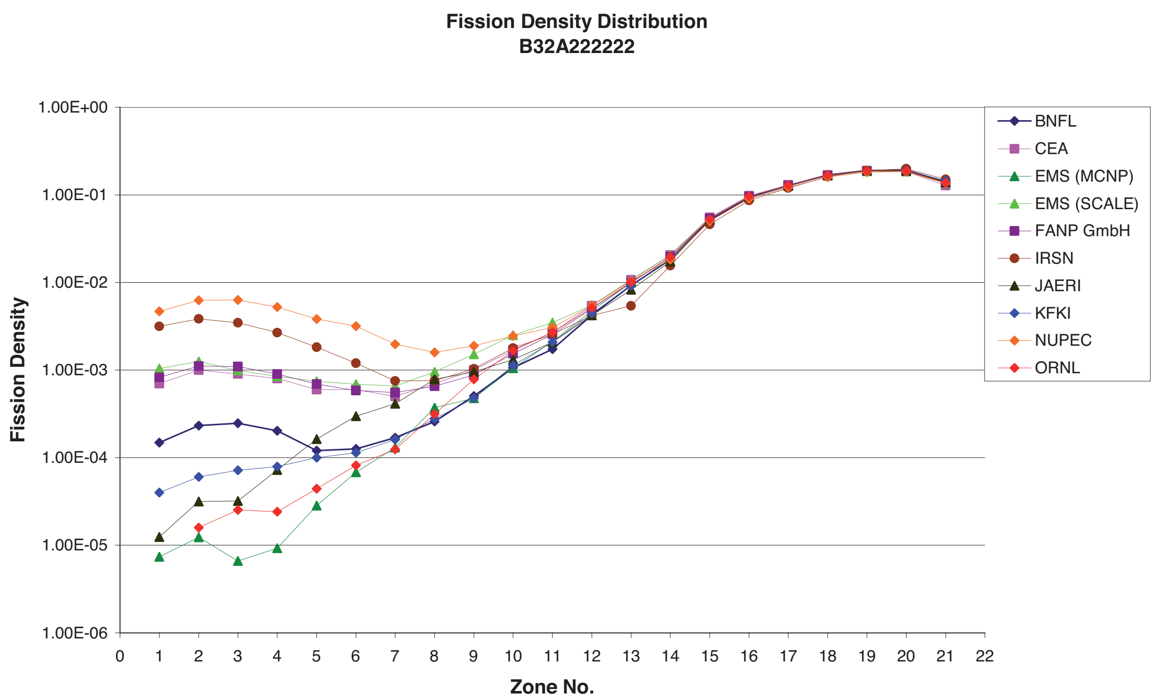
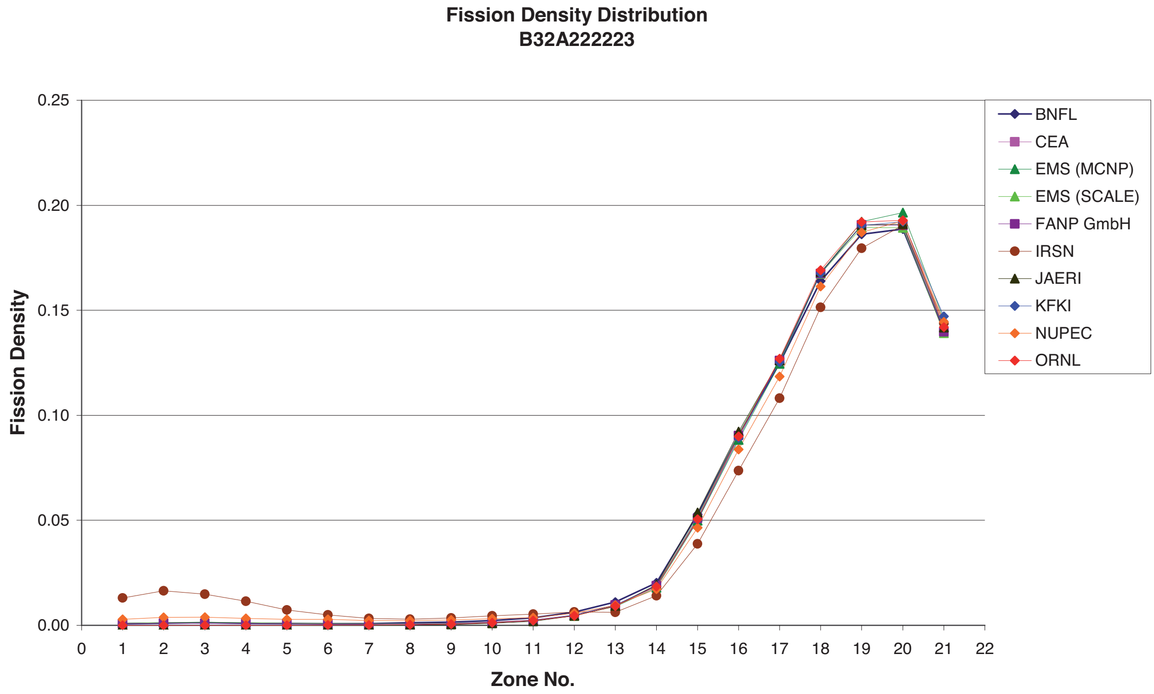


Figure 5.11 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A222223



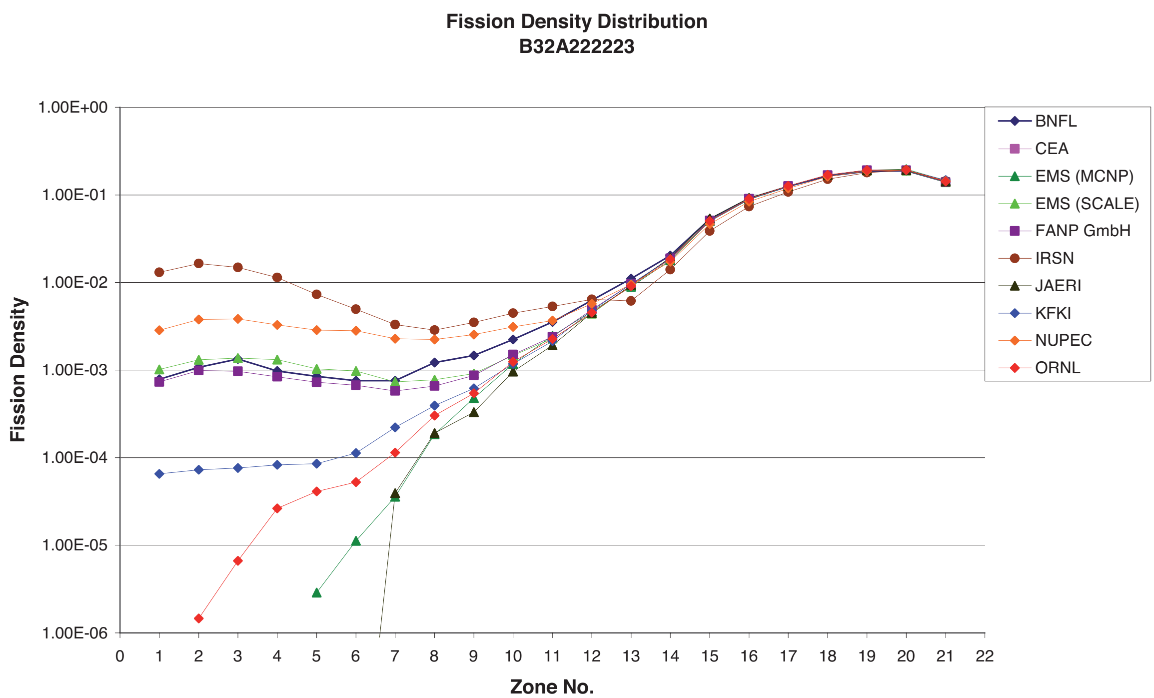
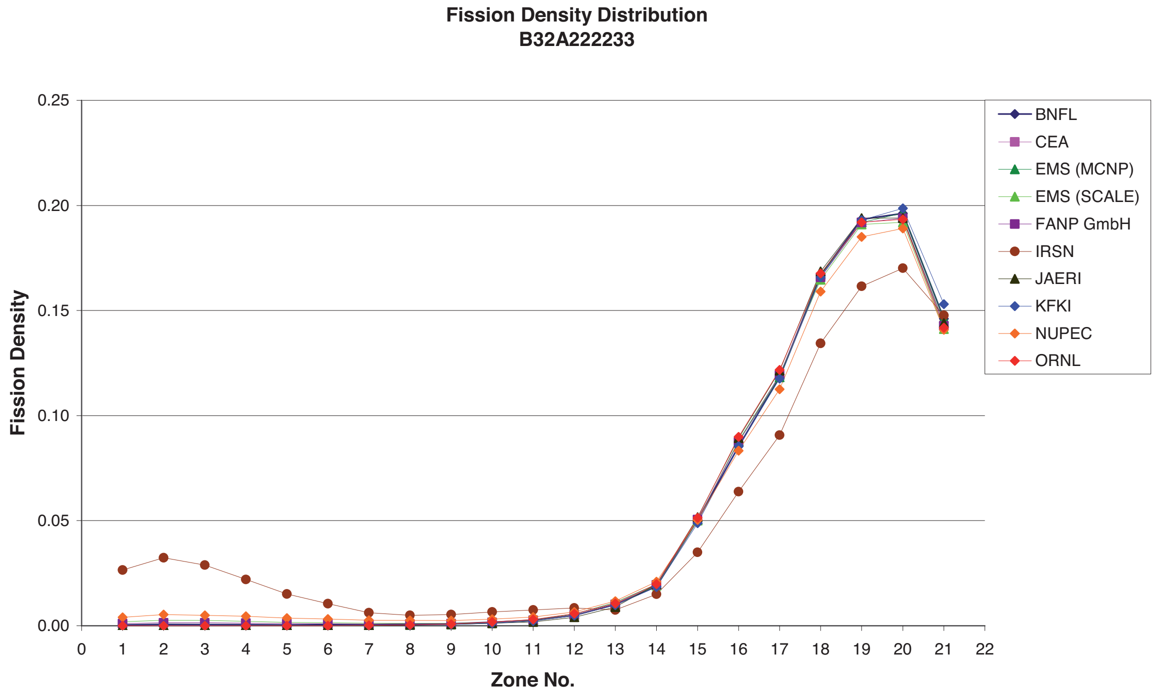


Figure 5.12 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A222233



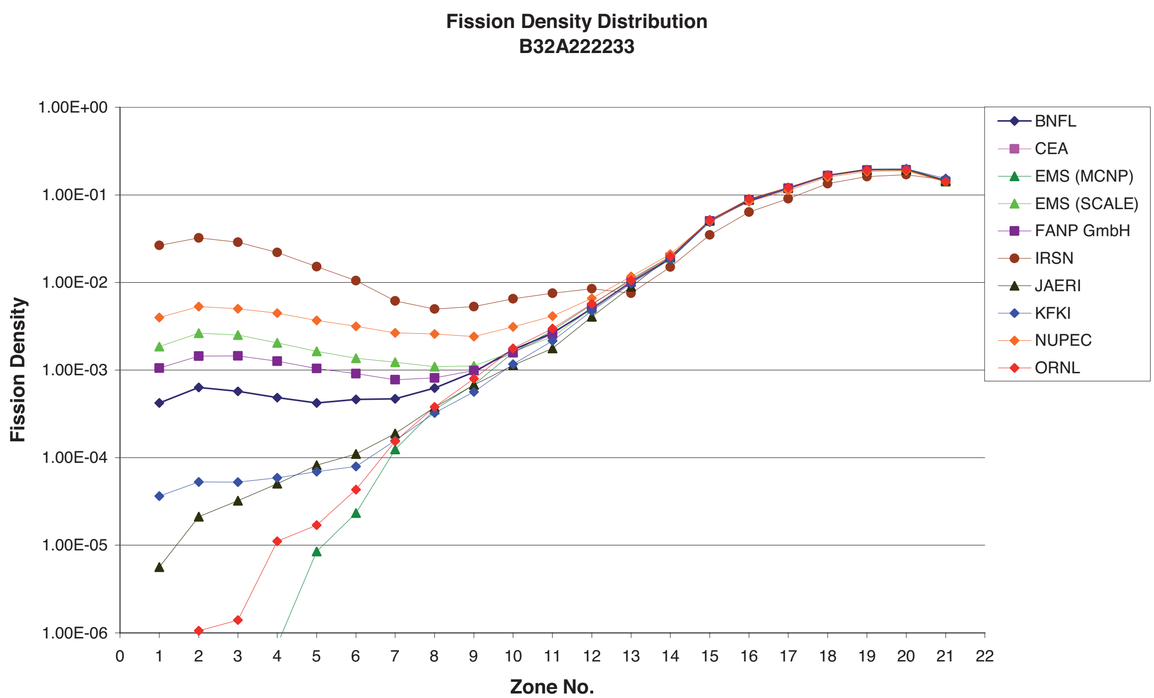
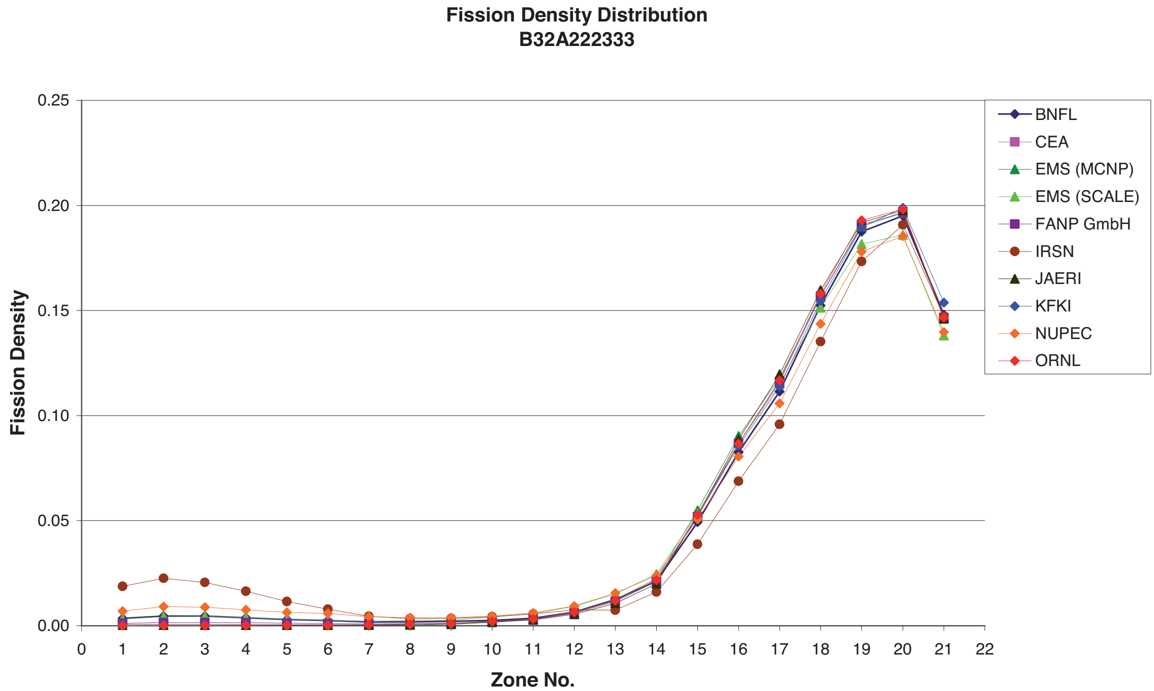


Figure 5.13 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A222333



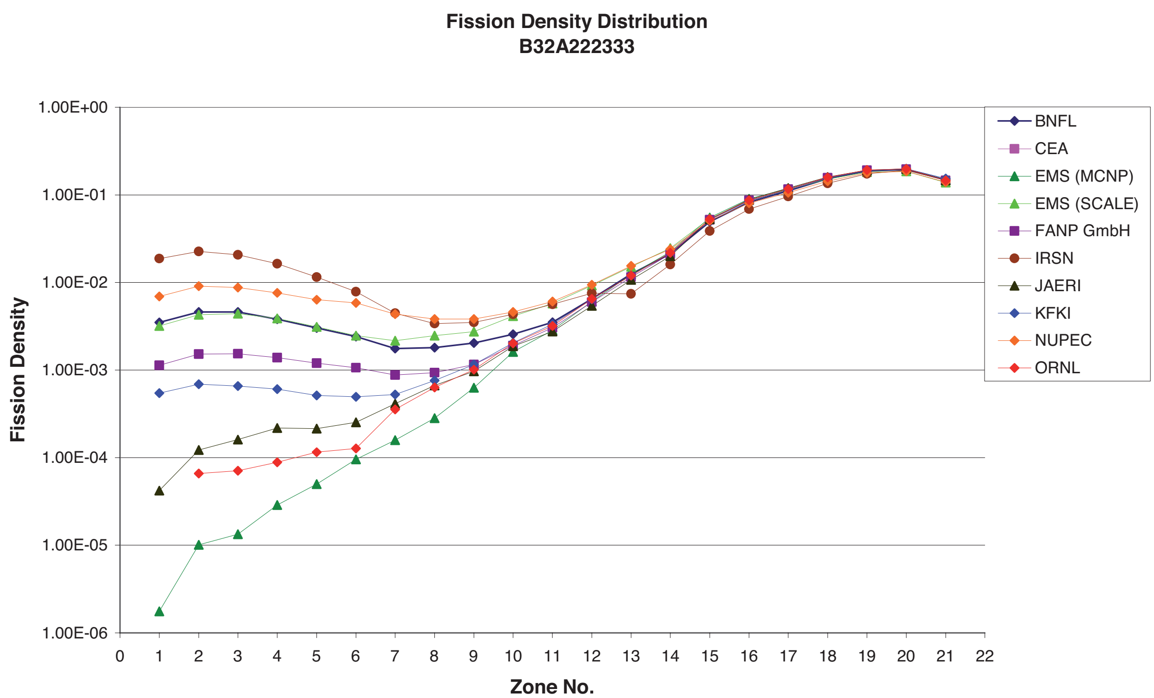
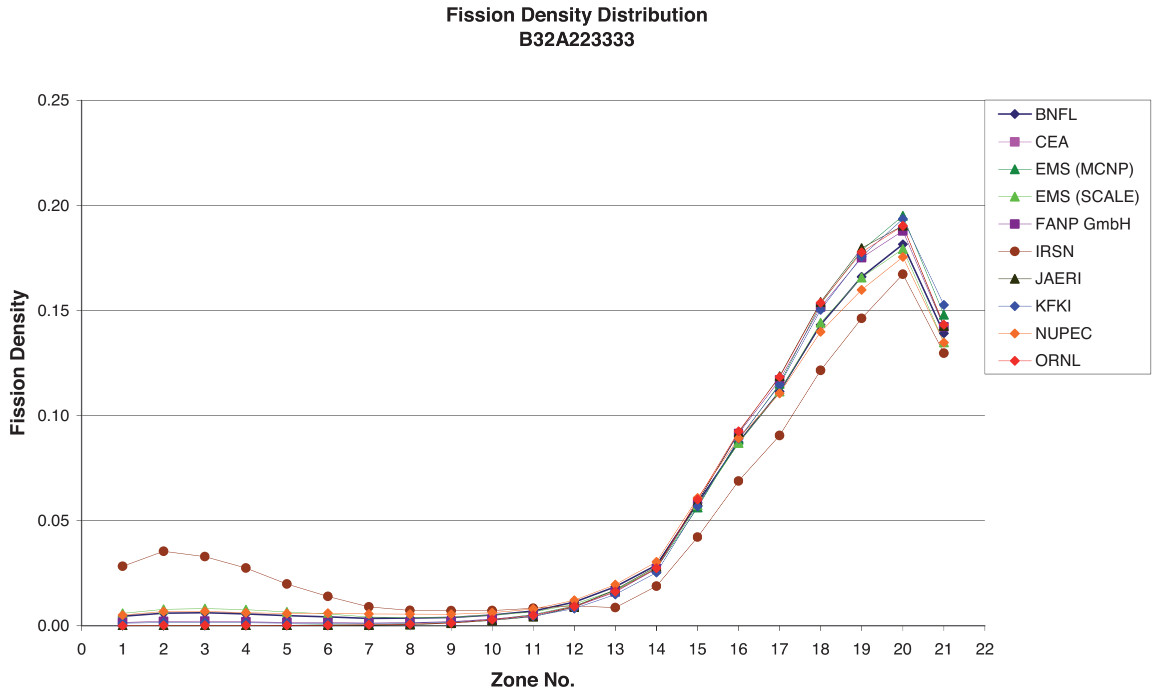


Figure 5.14 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A223333



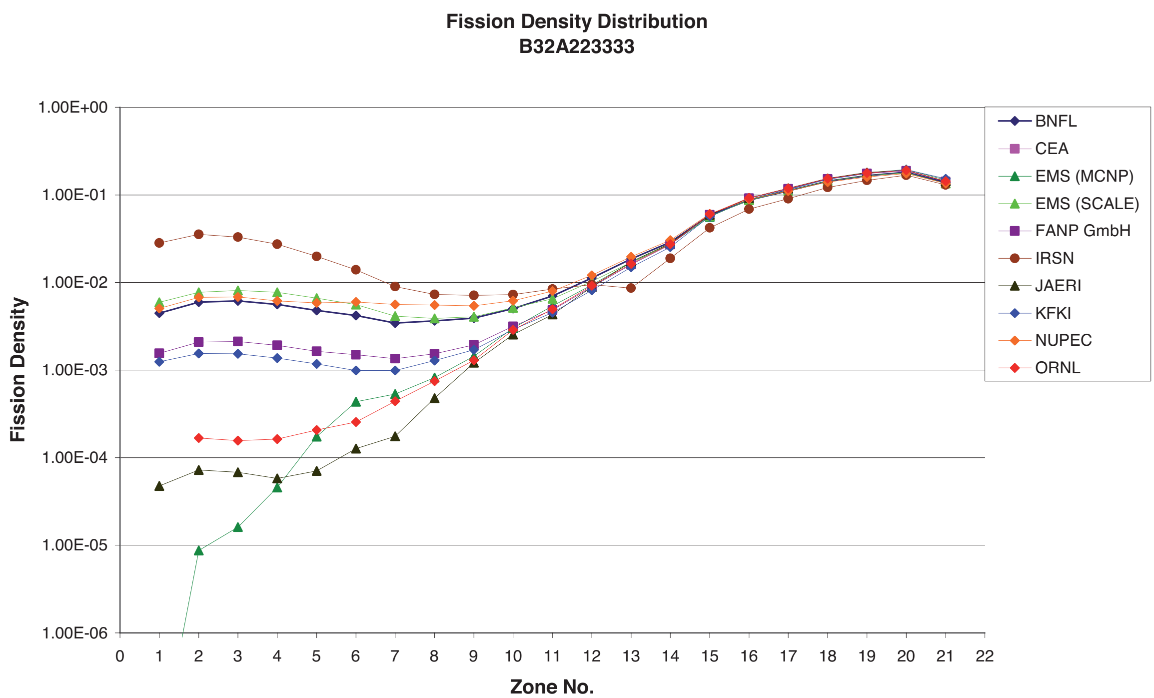
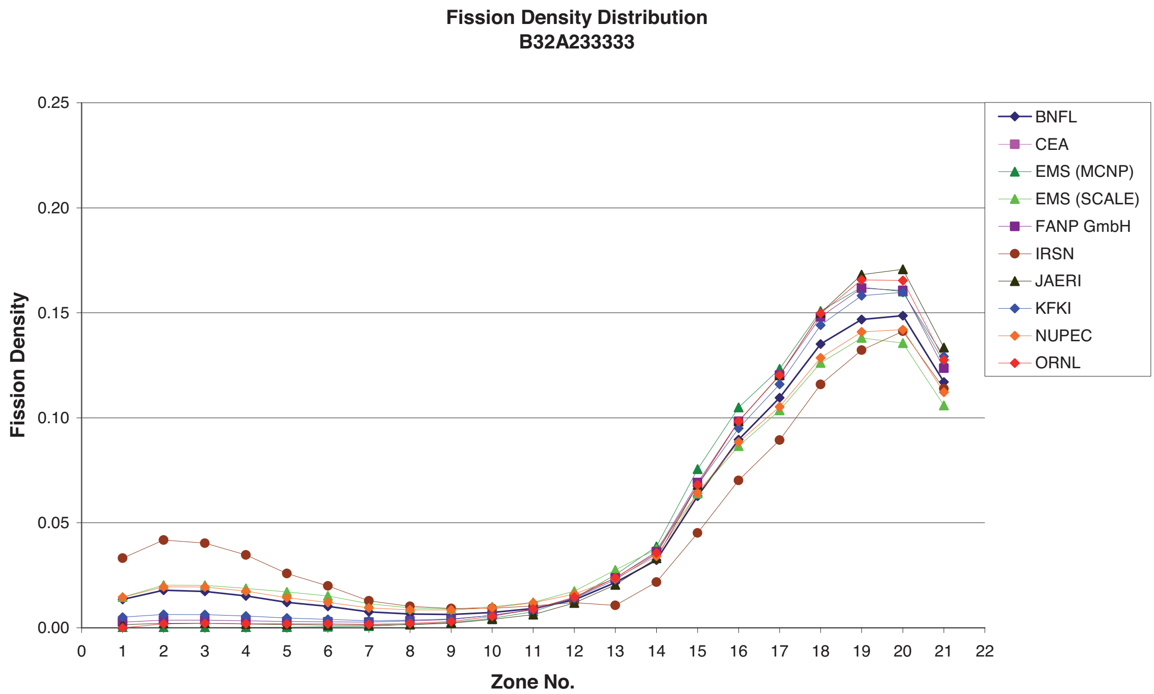


Figure 5.15 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A233333



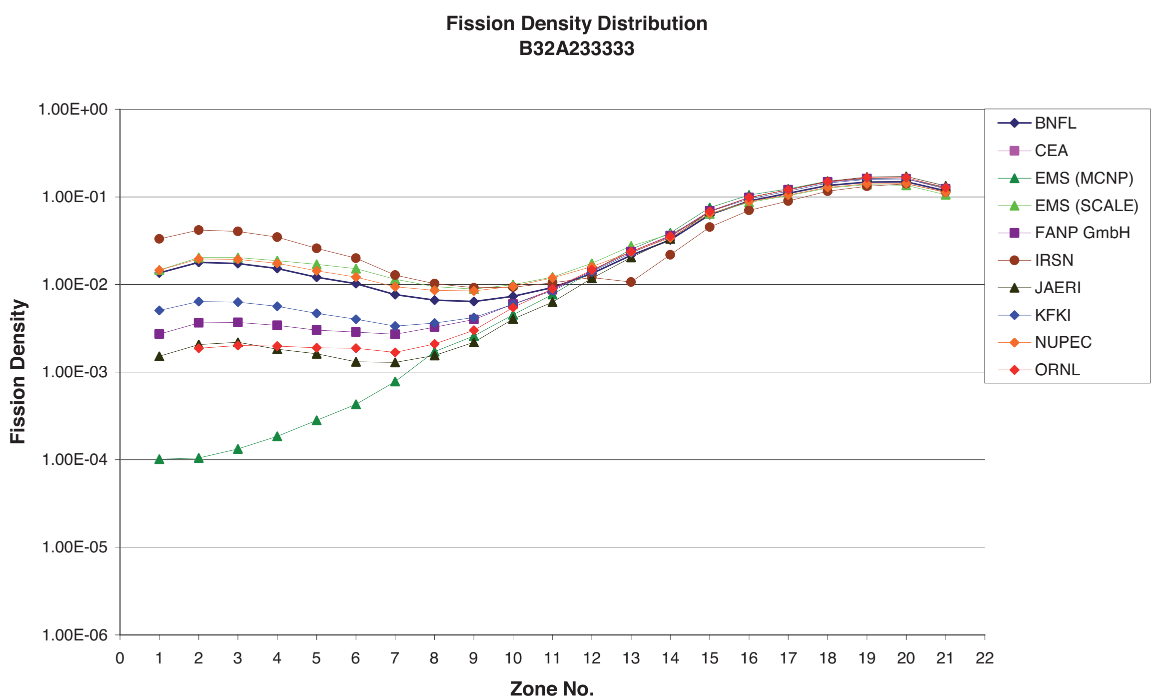
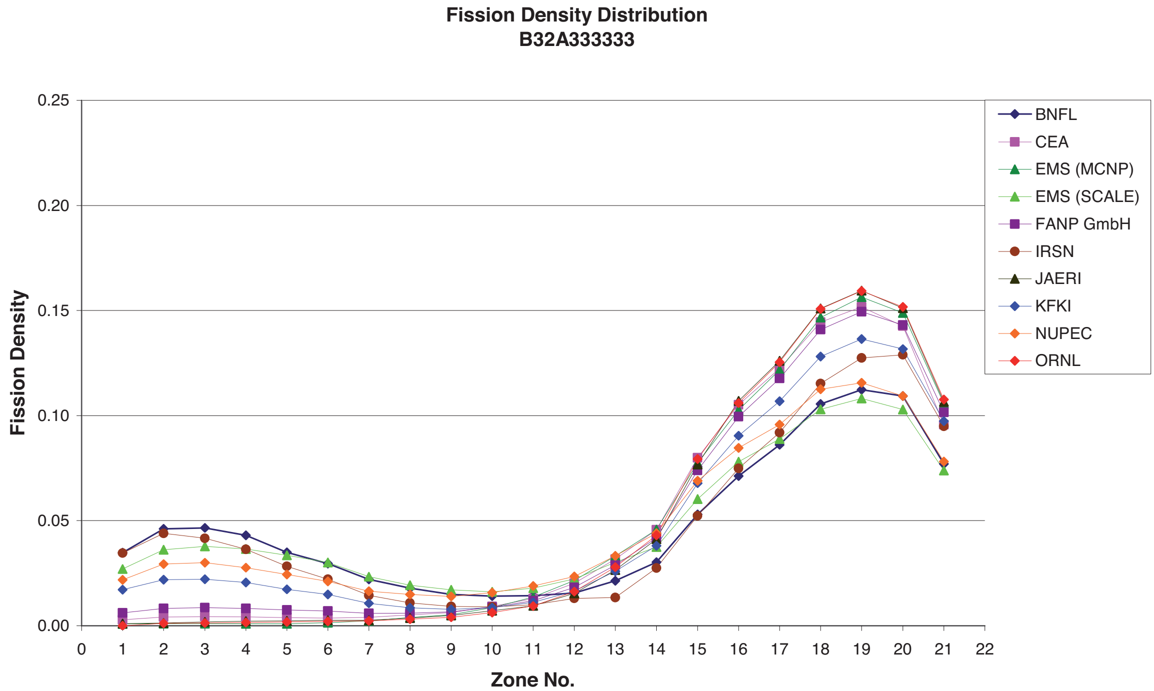


Figure 5.16 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A333333



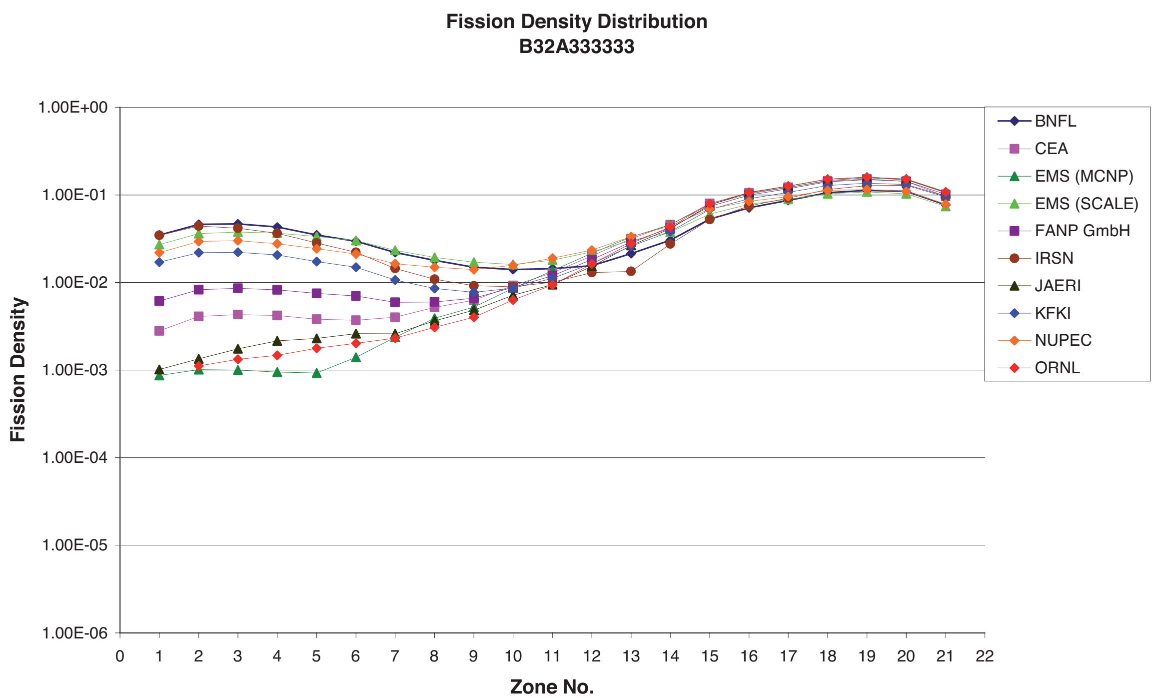
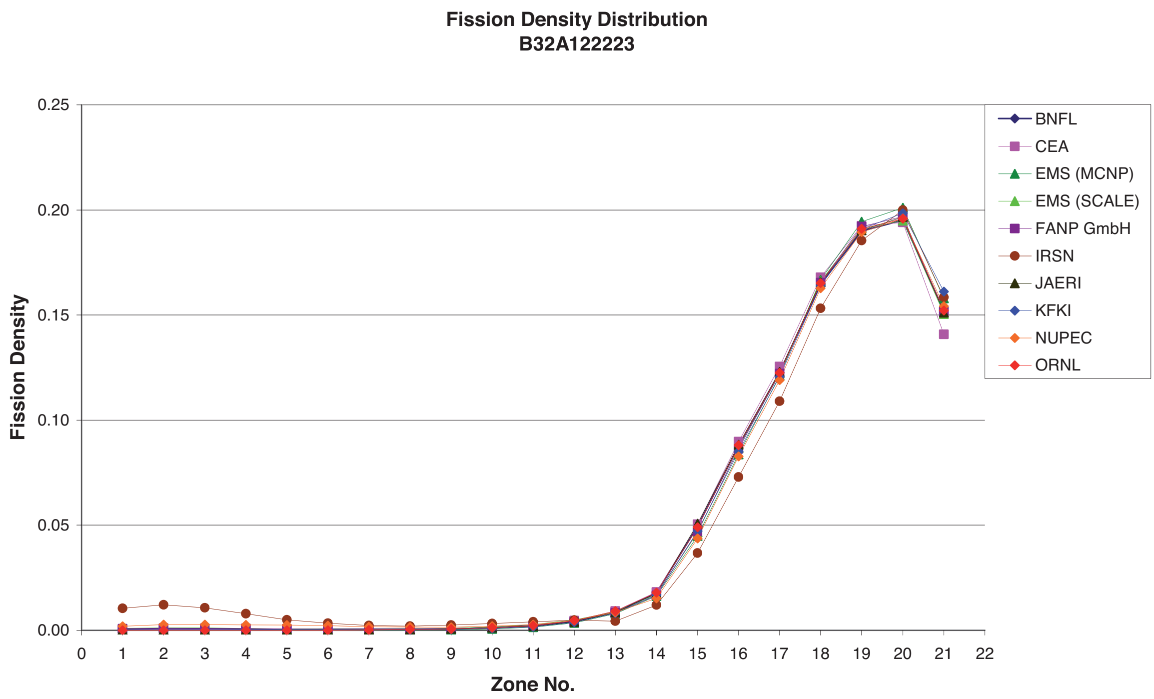


Figure 5.17 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A122223



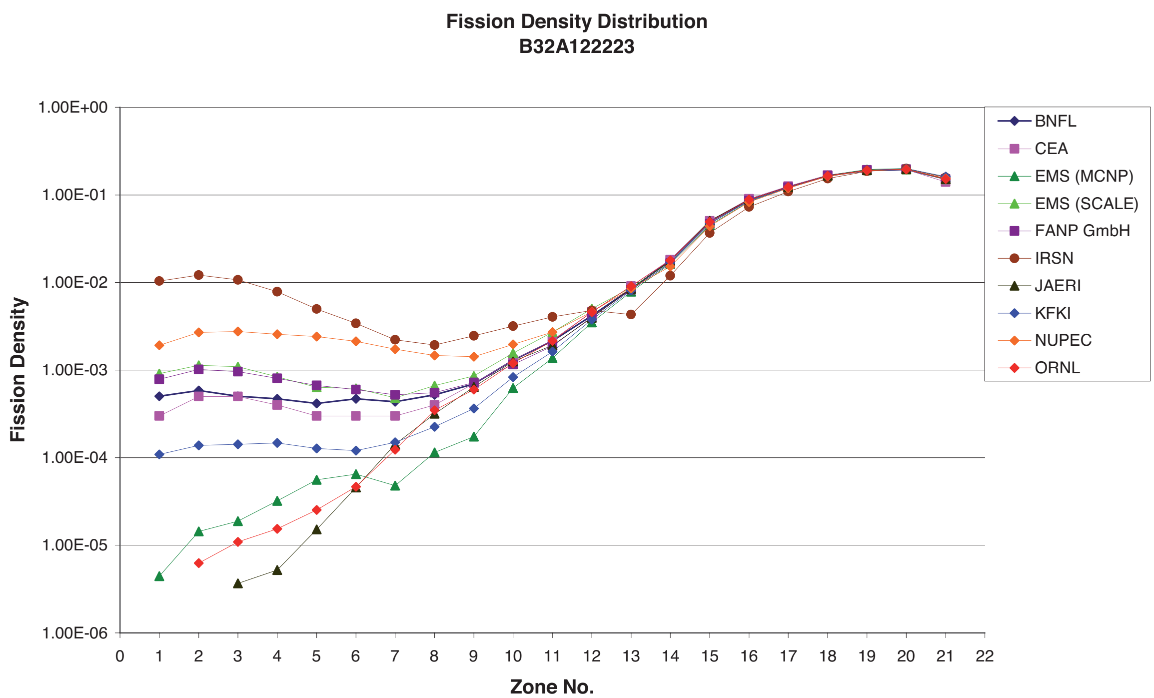
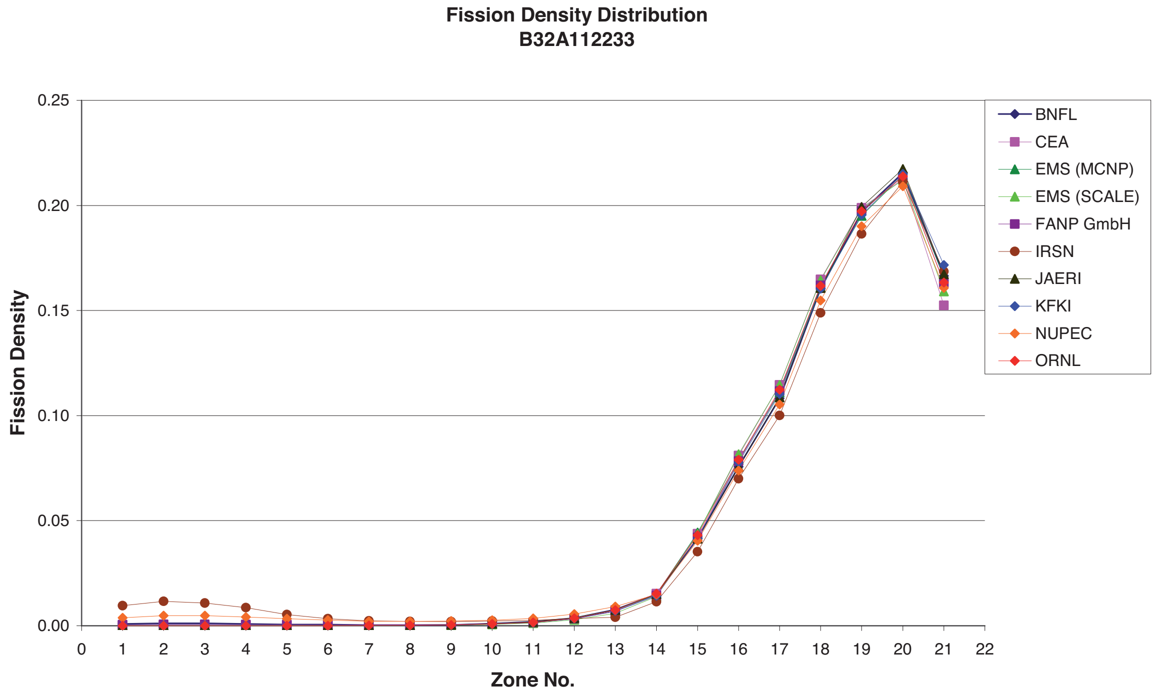


Figure 5.18 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A112233



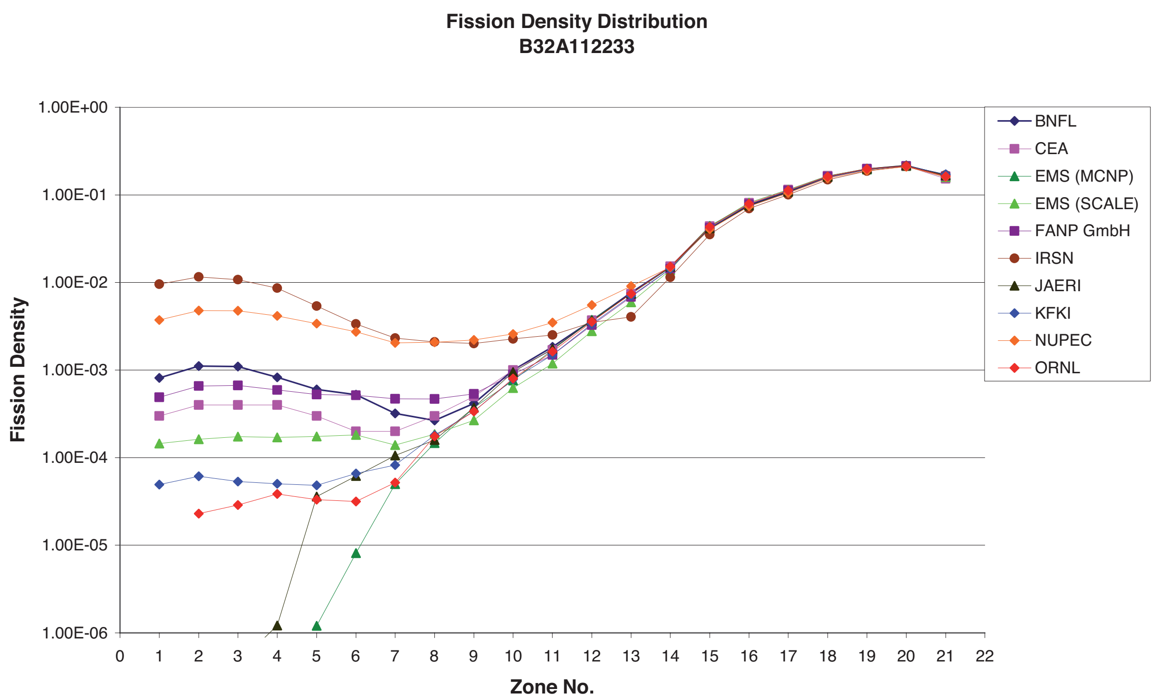
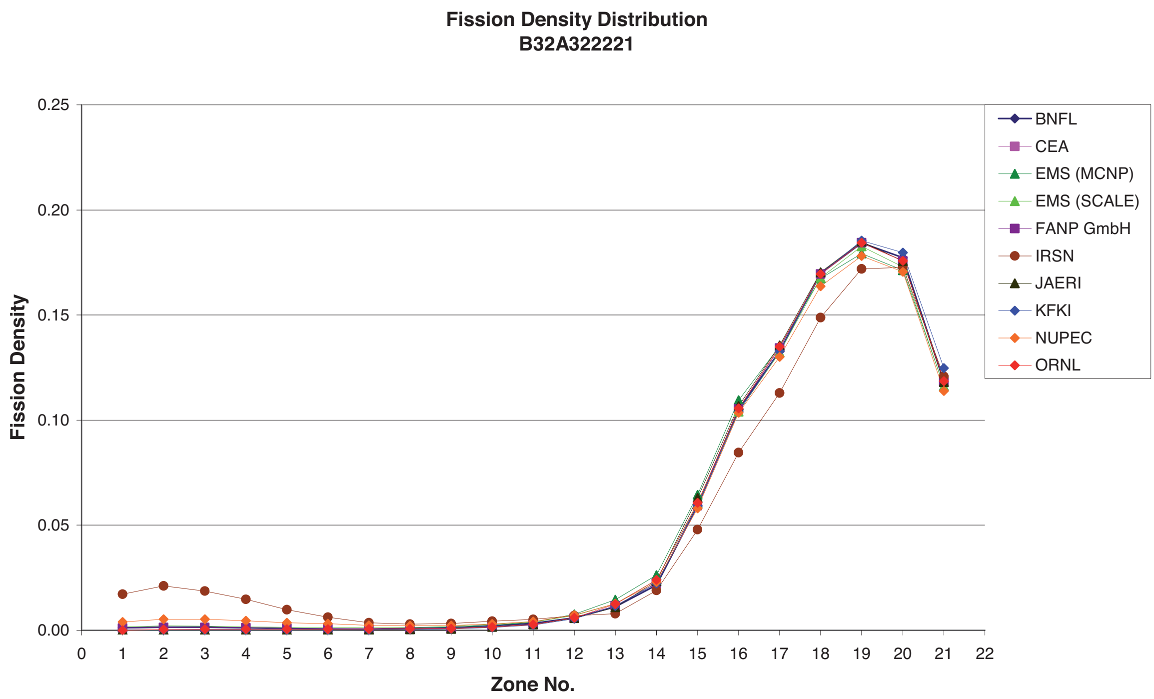


Figure 5.19 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B32A322221



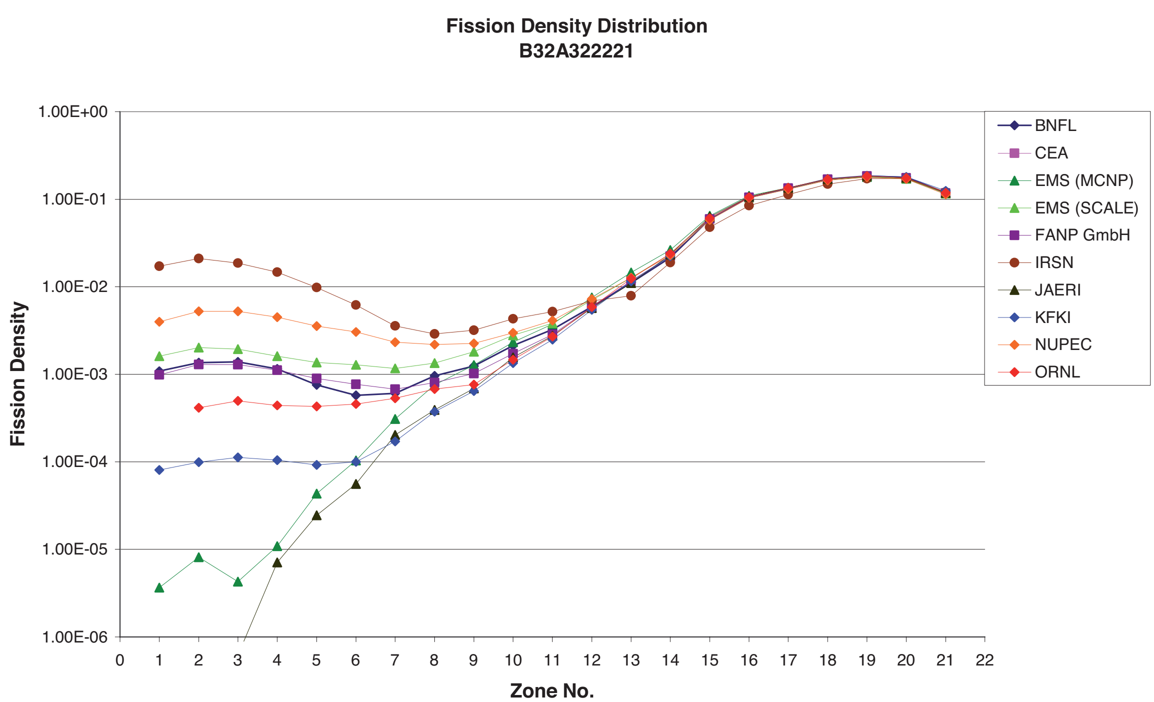
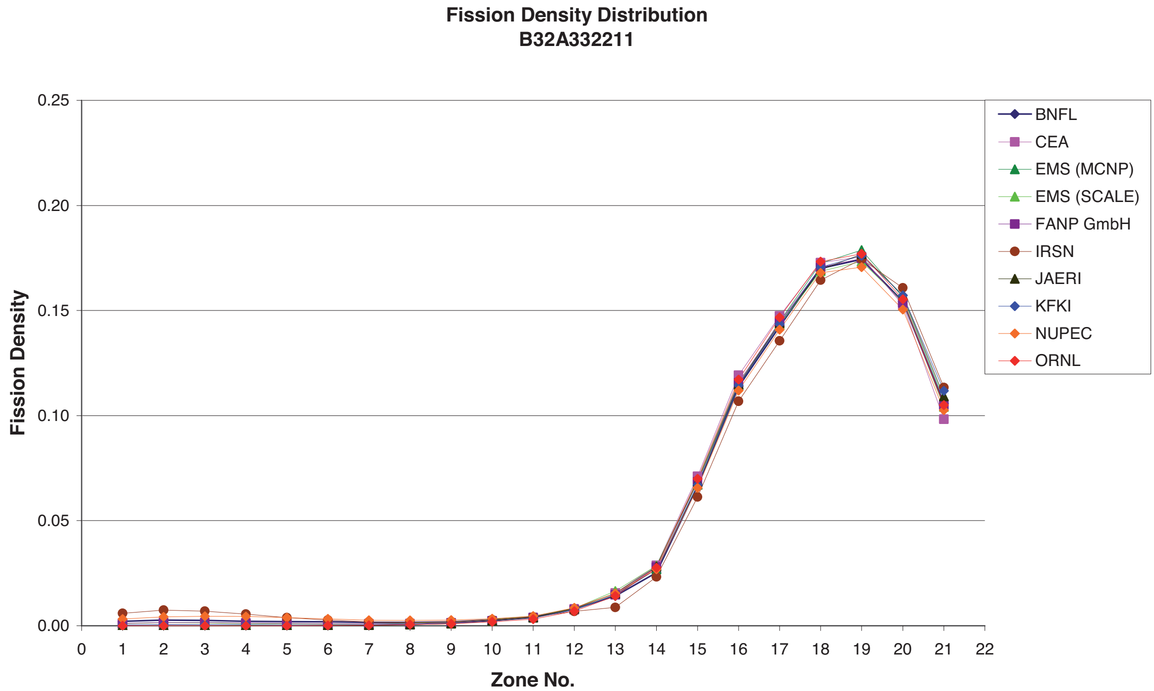


Figure 5.20 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B32A332211



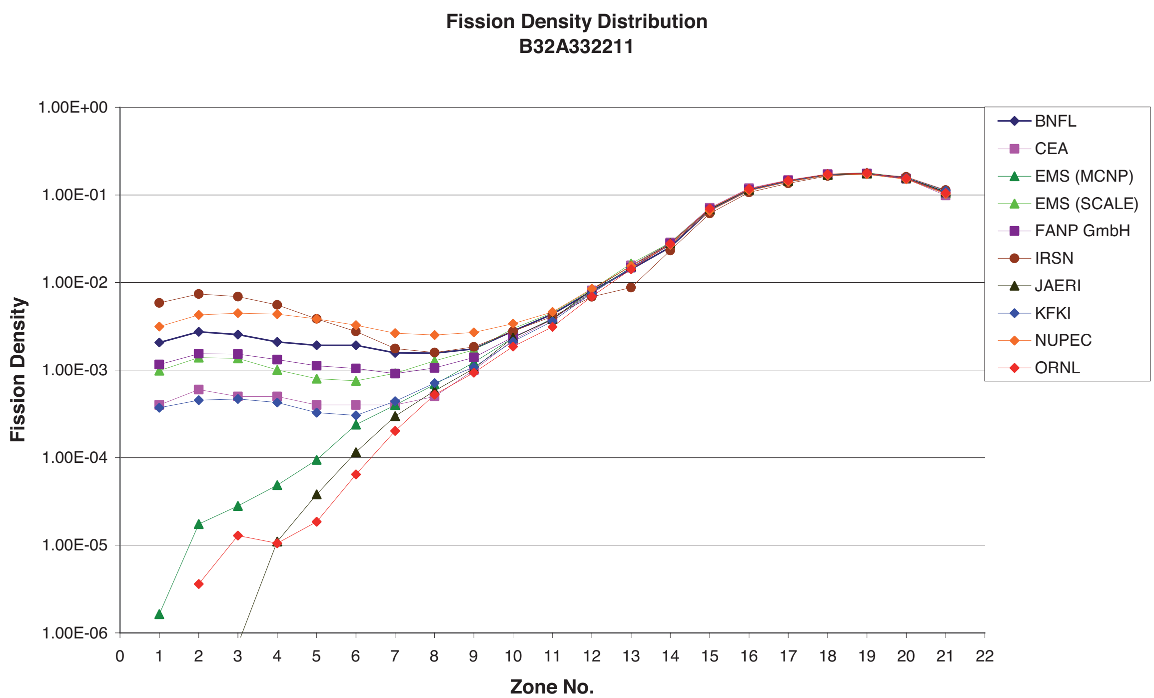


Figure 5.21 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50Auniform

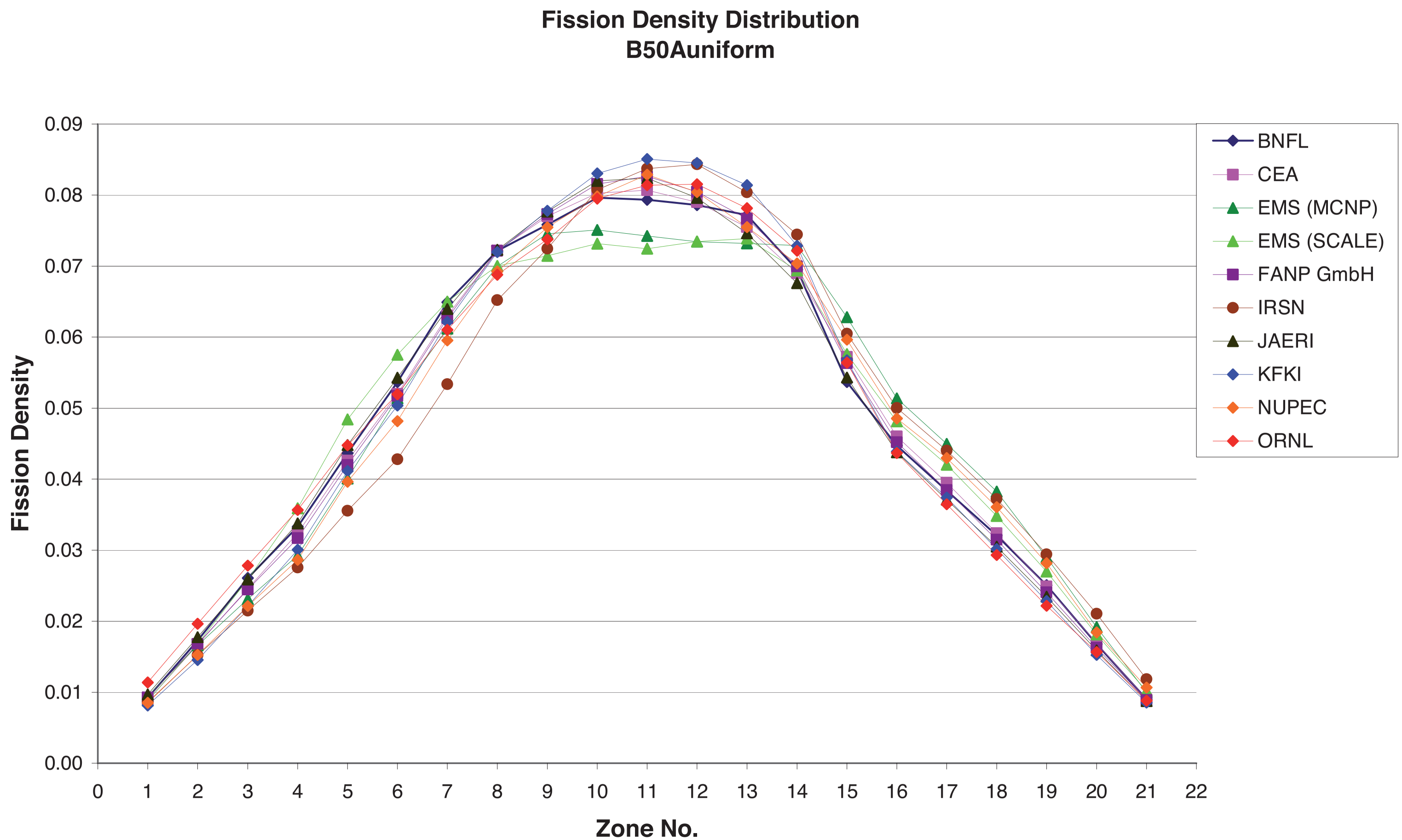
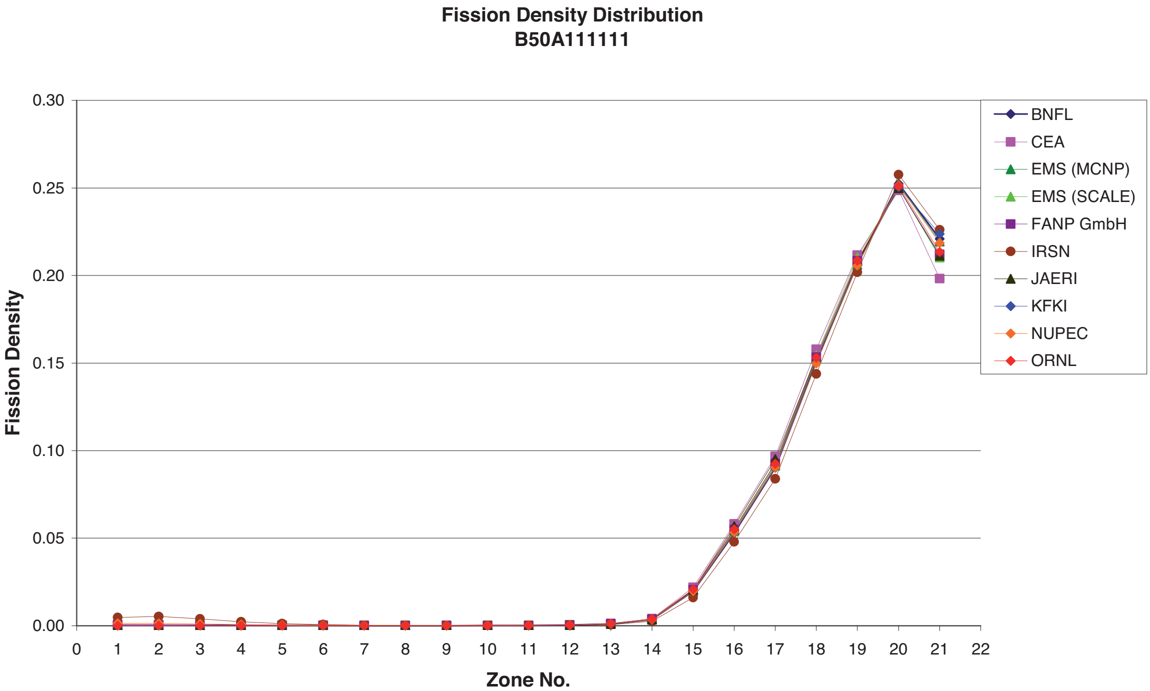


Figure 5.22 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A111111



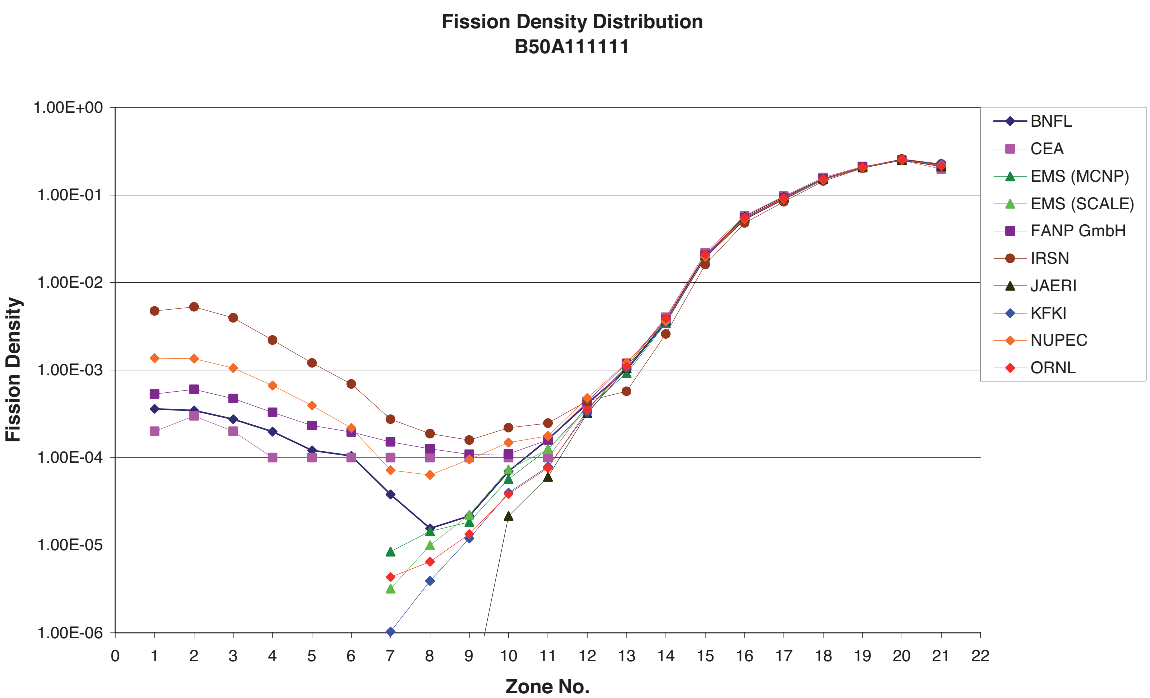
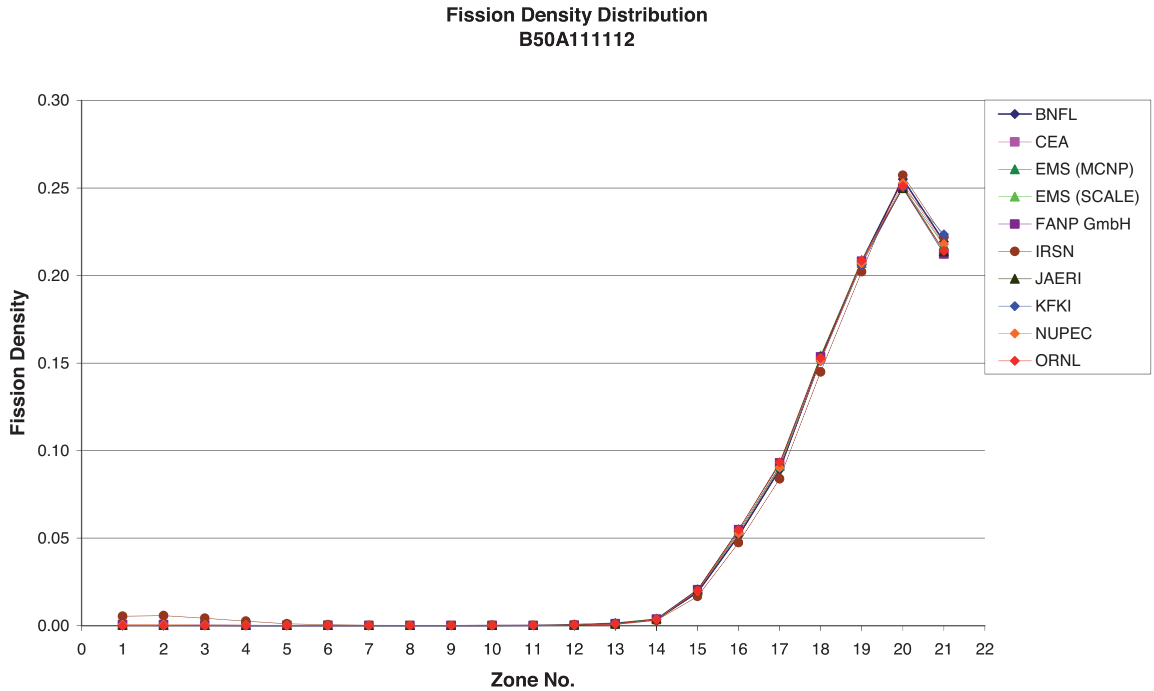


Figure 5.23 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A111112



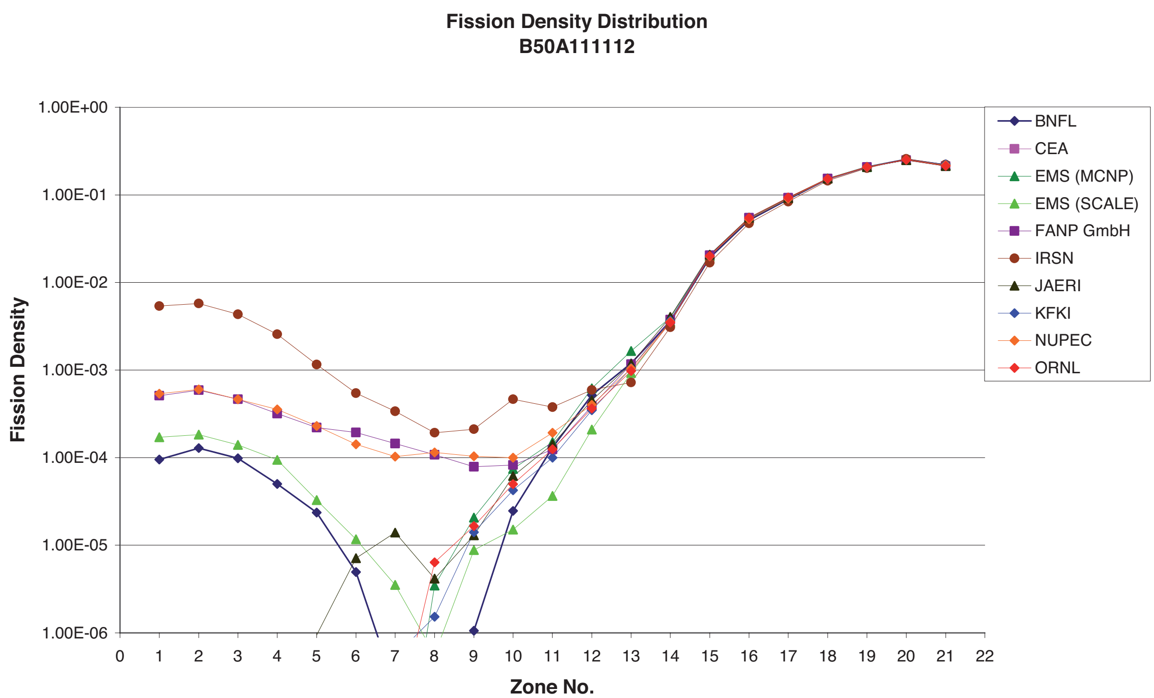
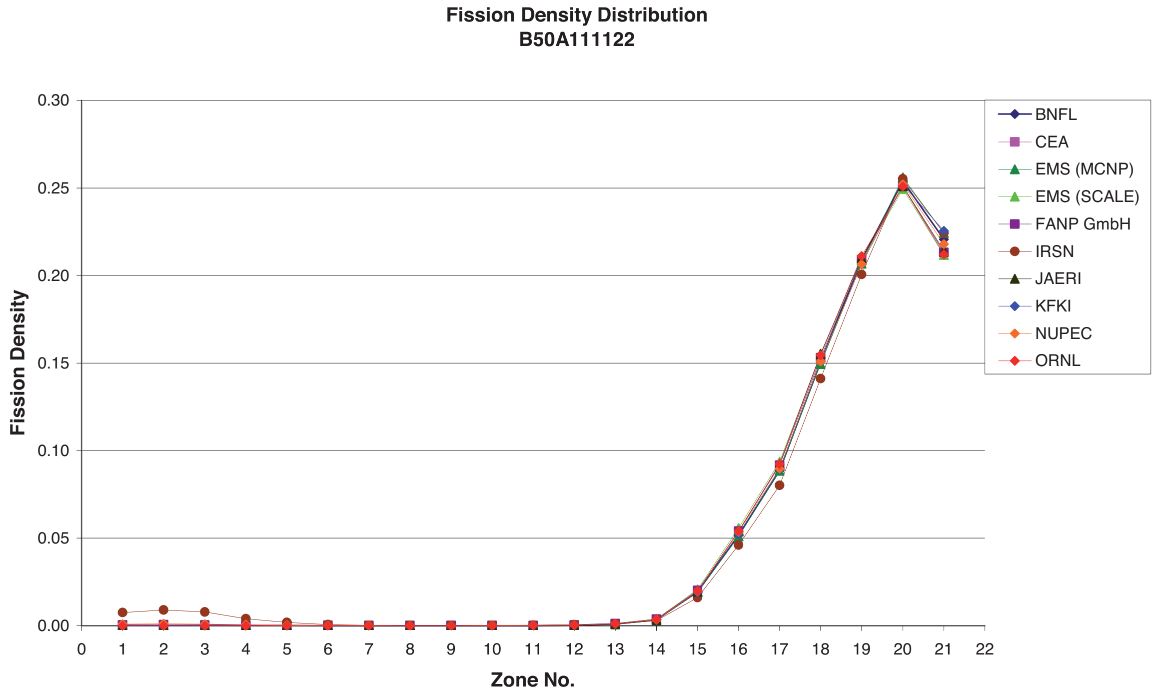


Figure 5.24 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A111122



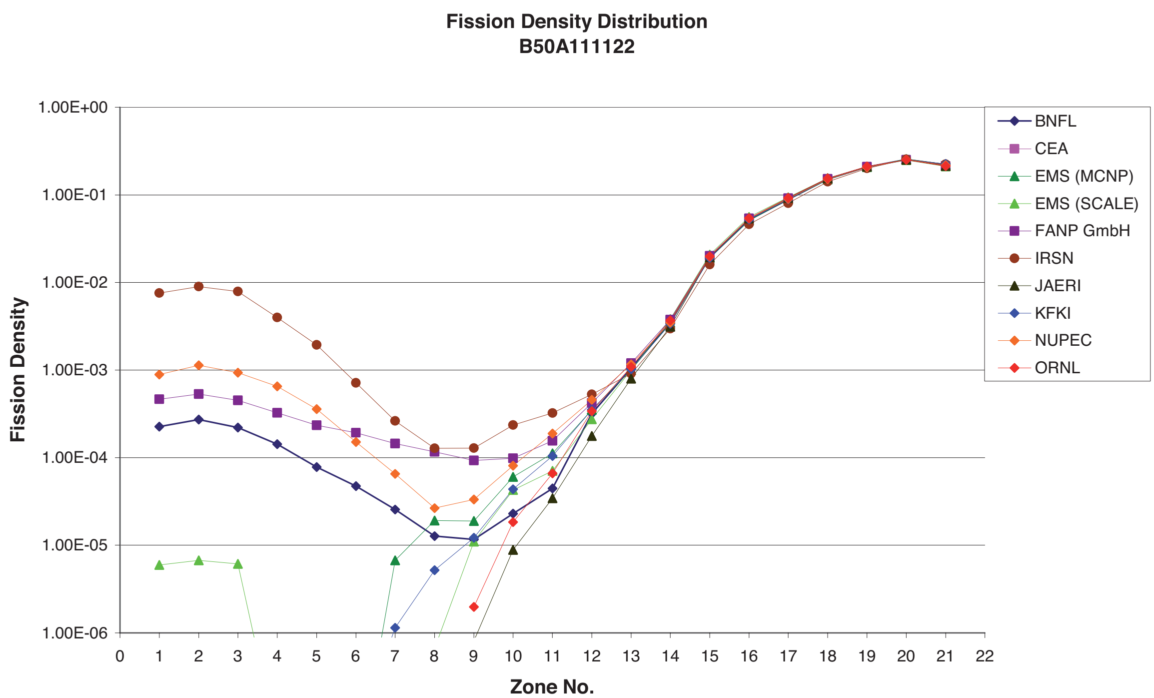
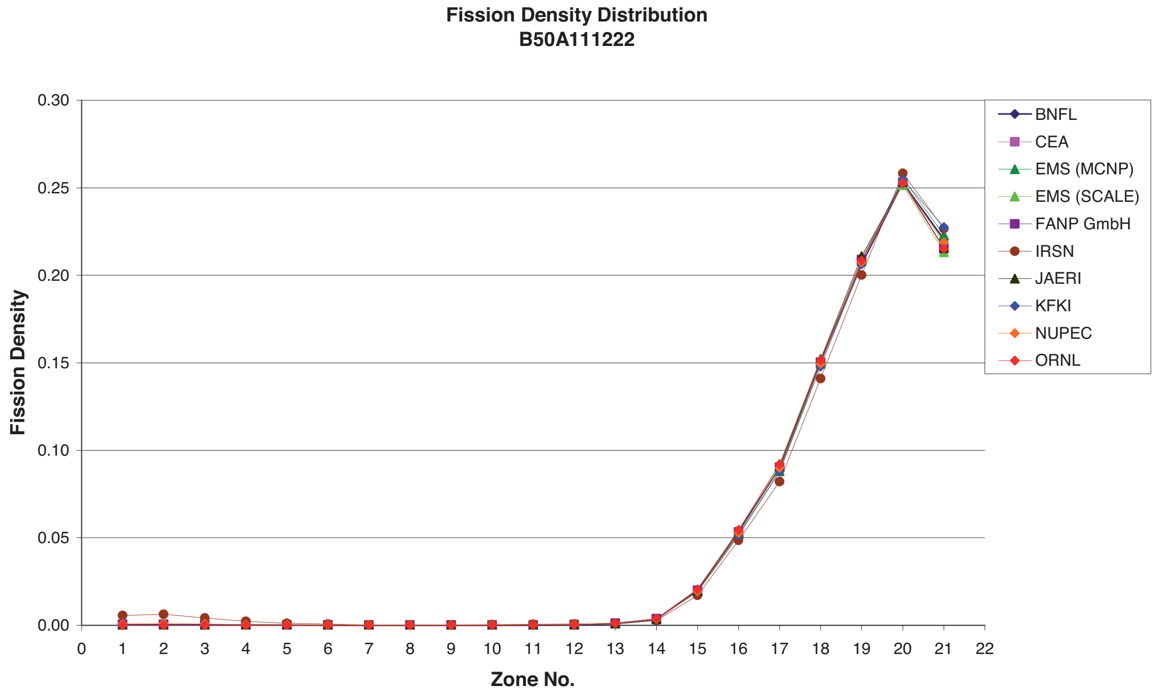


Figure 5.25 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A111222



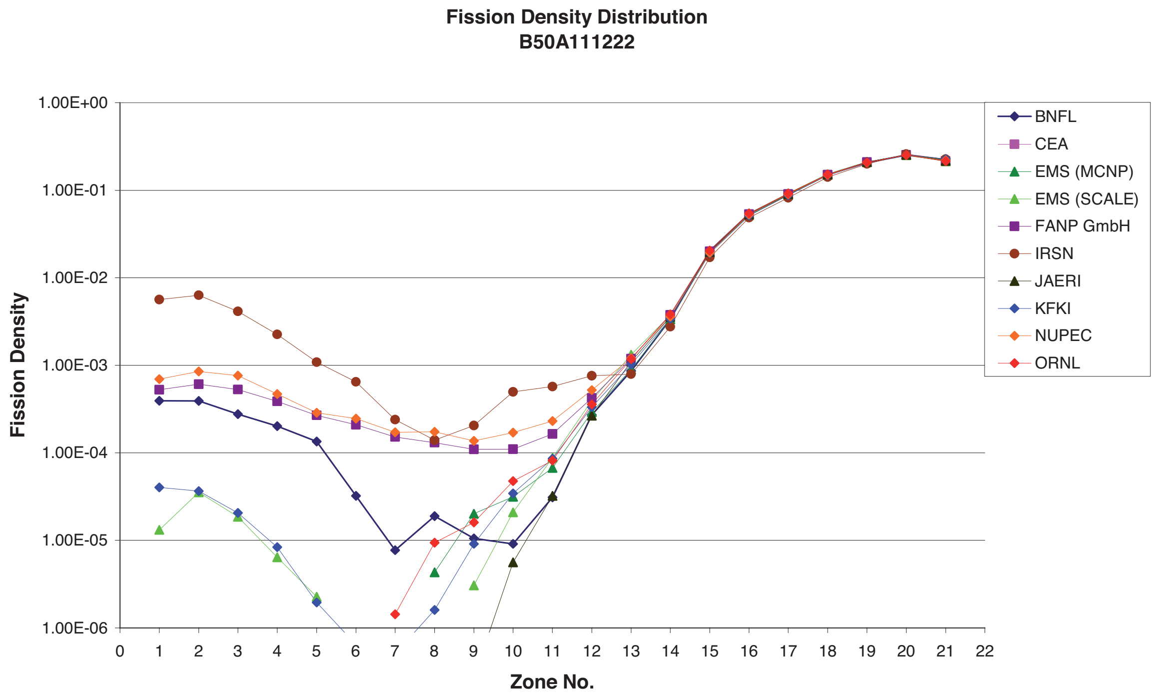
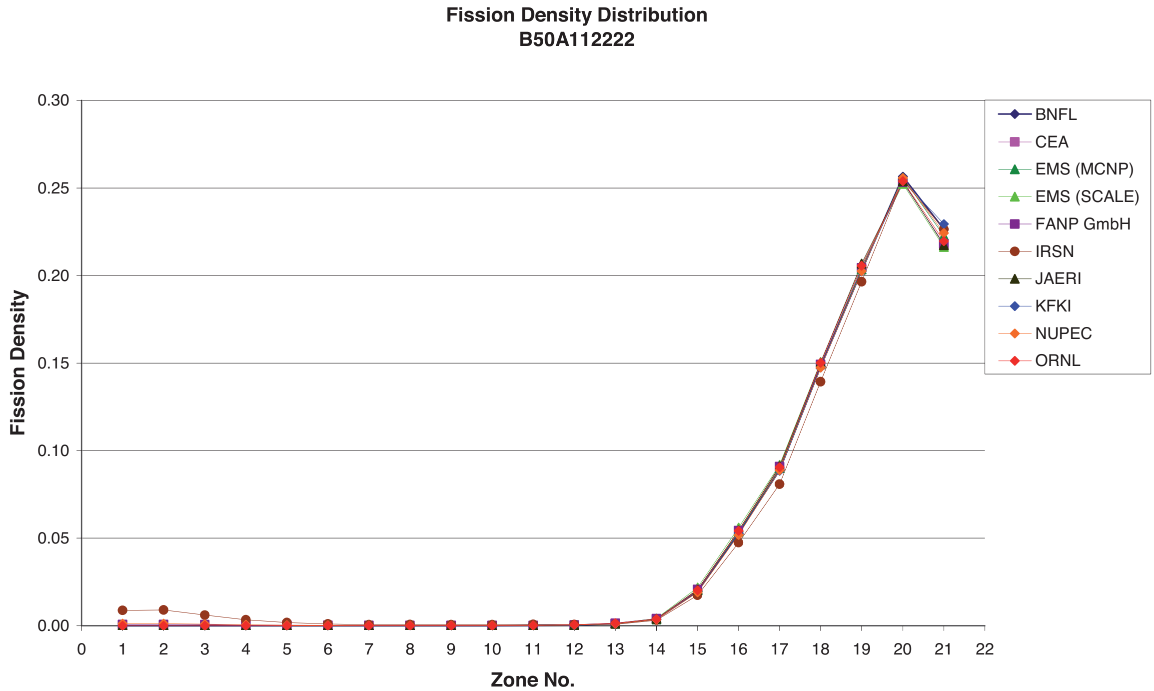


Figure 5.26 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A112222



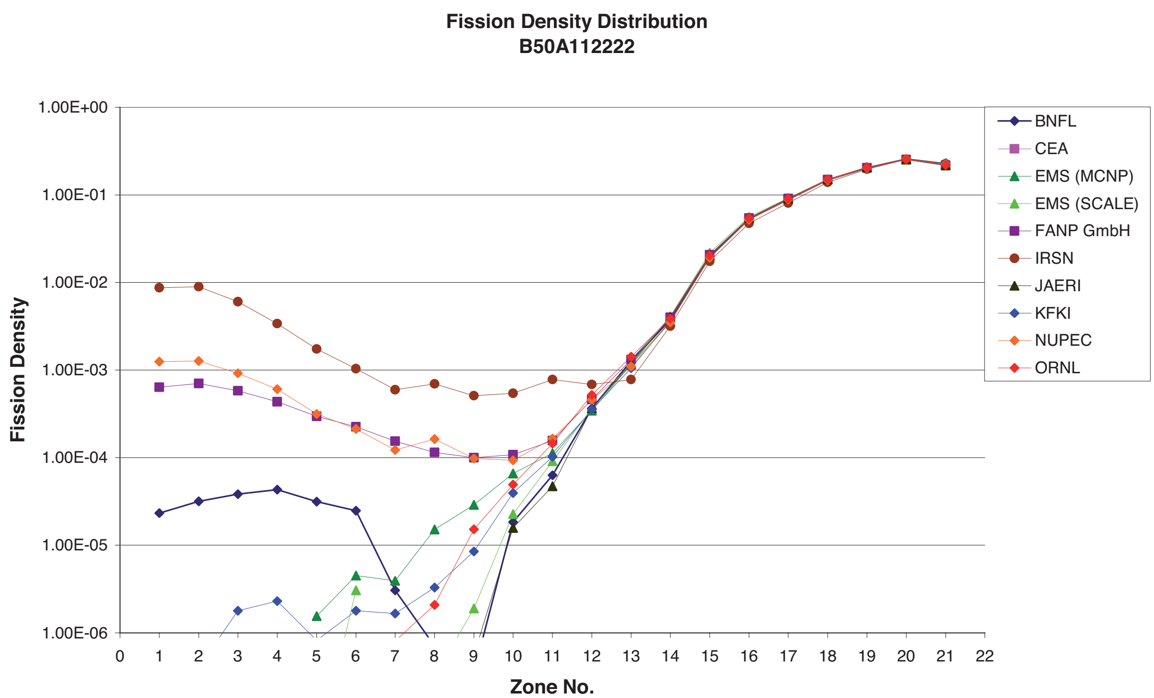
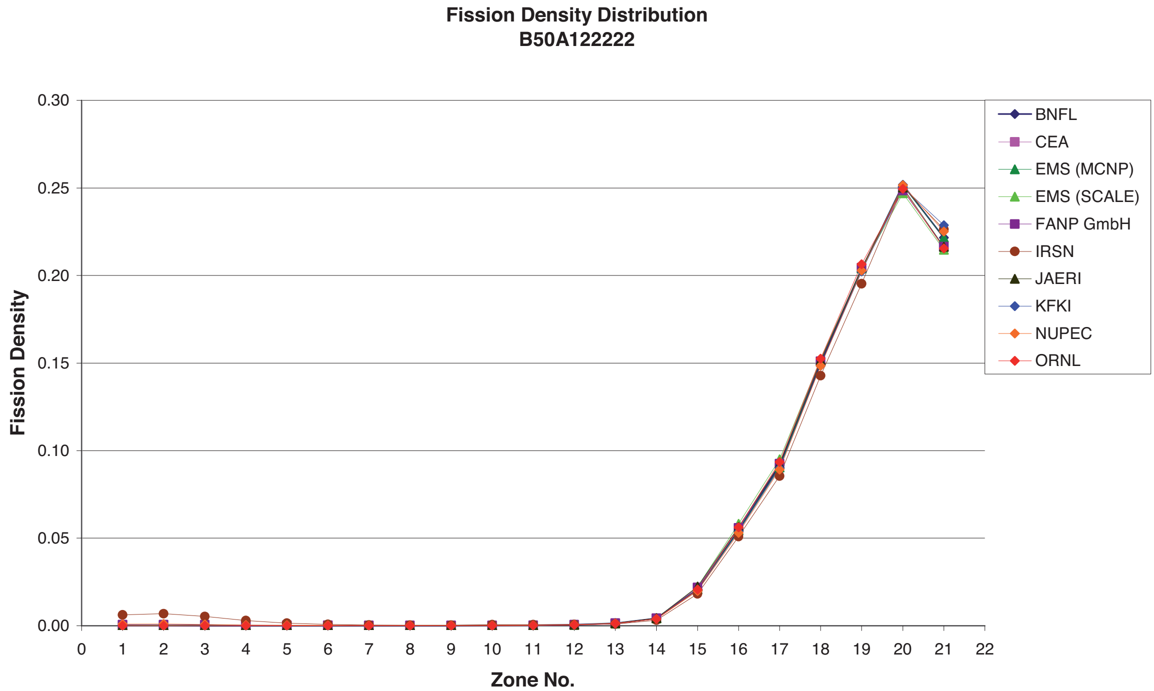


Figure 5.27 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A122222



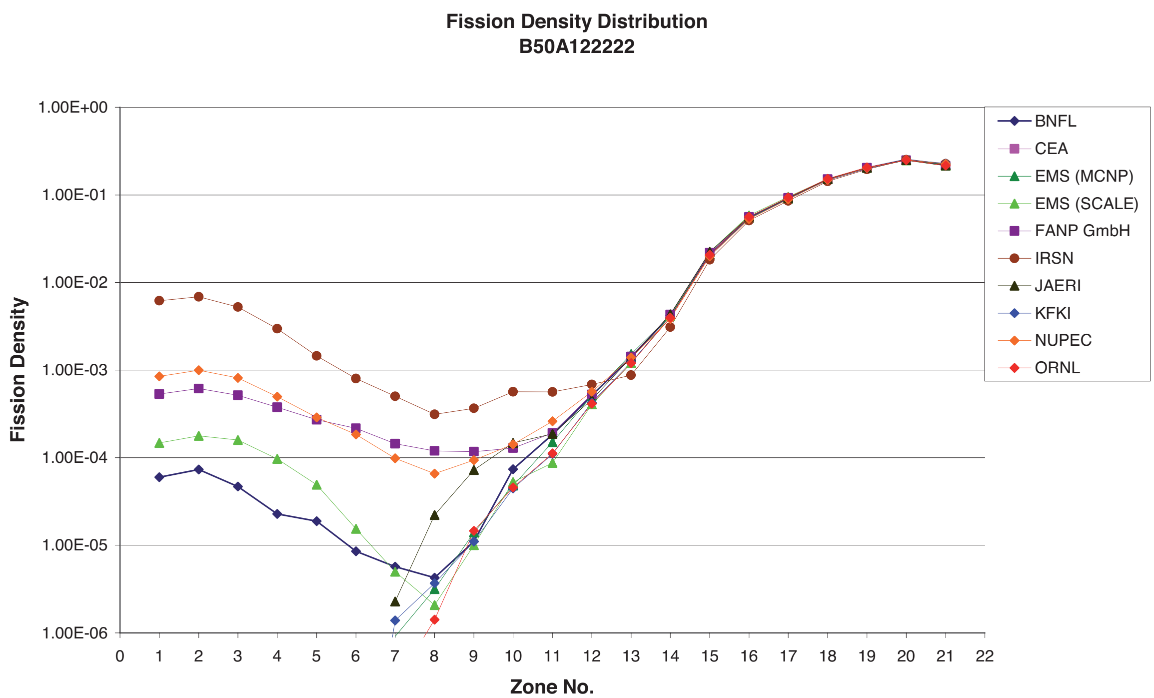
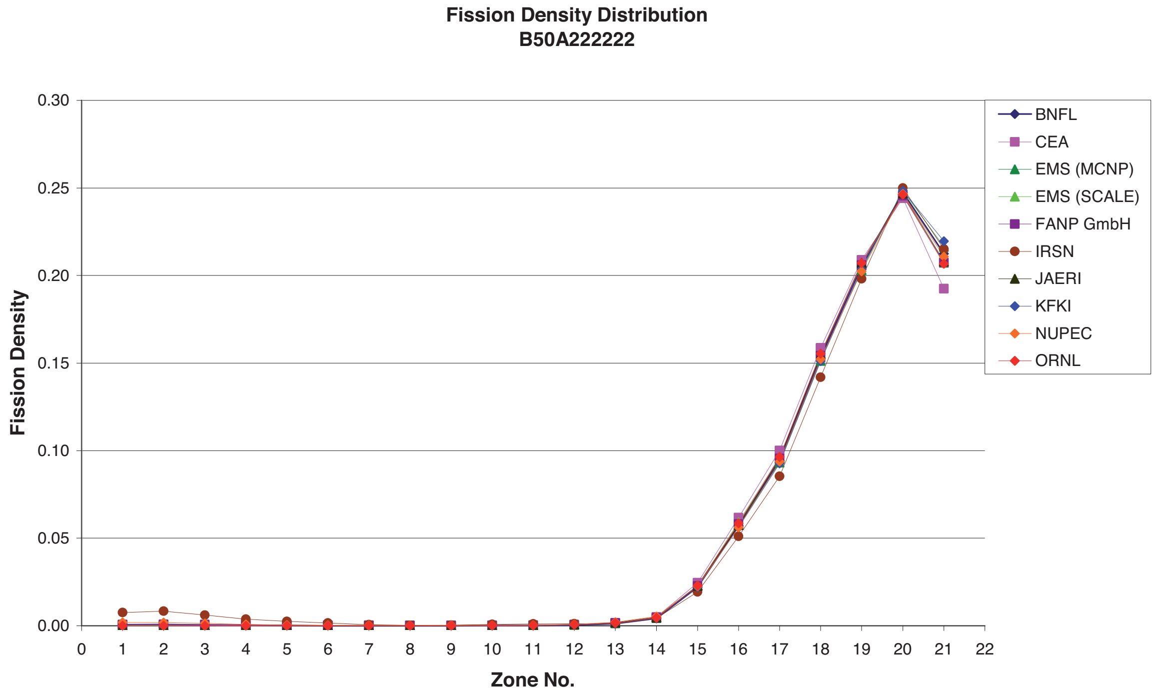


Figure 5.28 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A222222



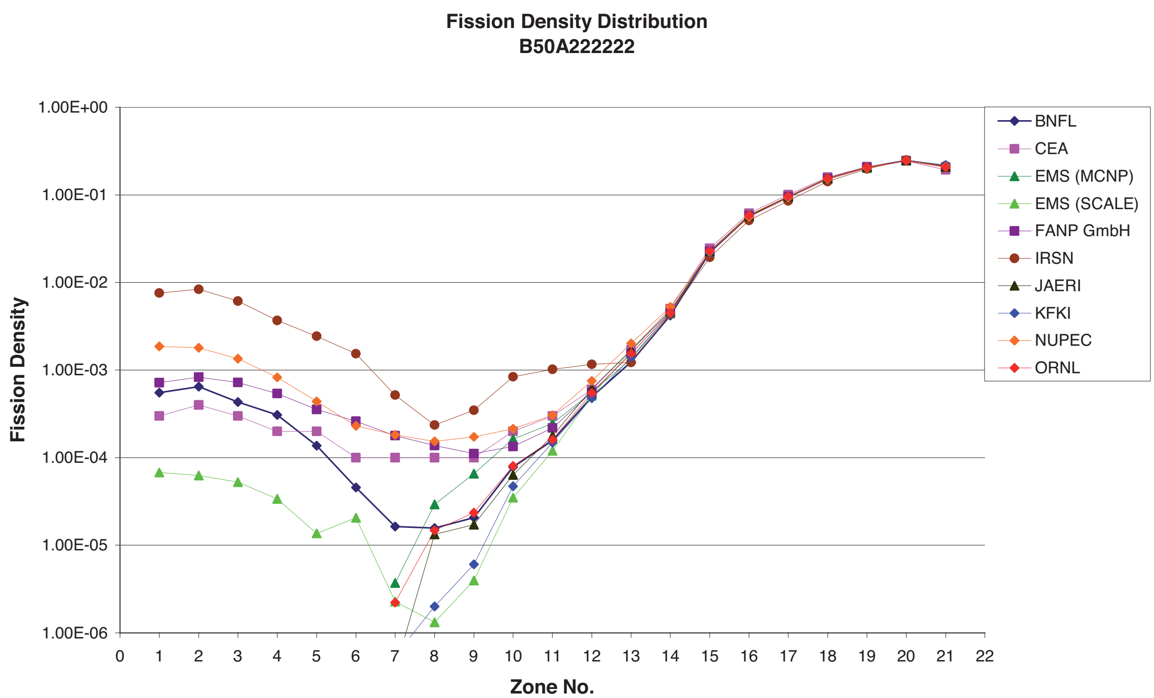
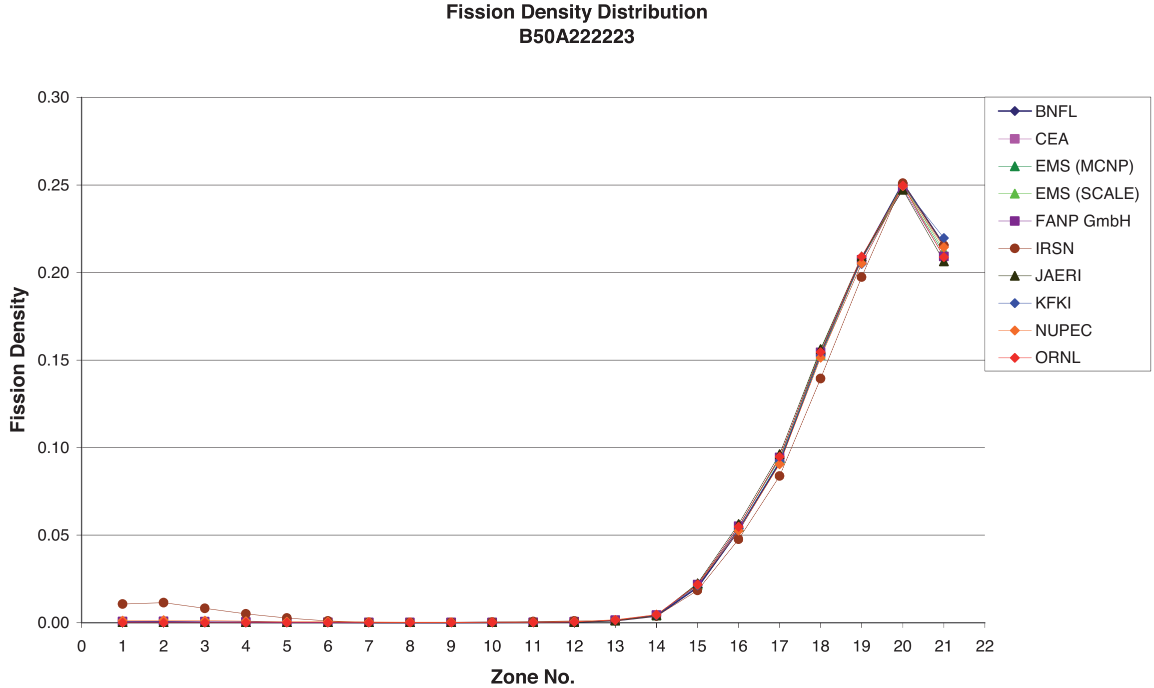


Figure 5.29 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A222223



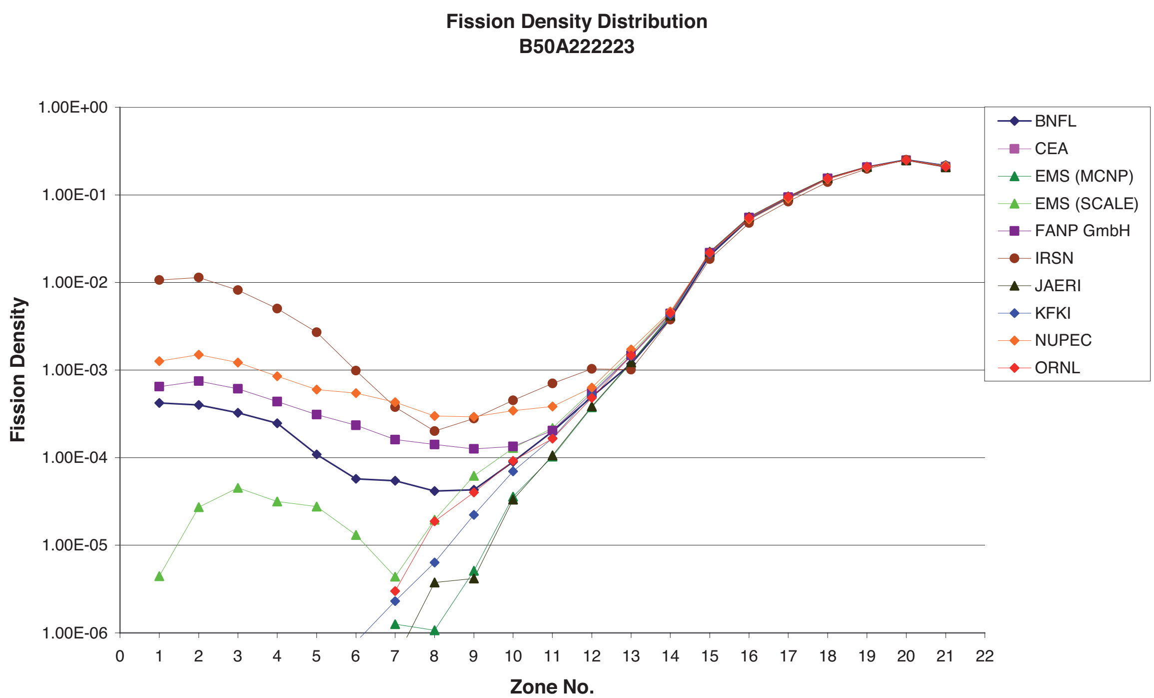
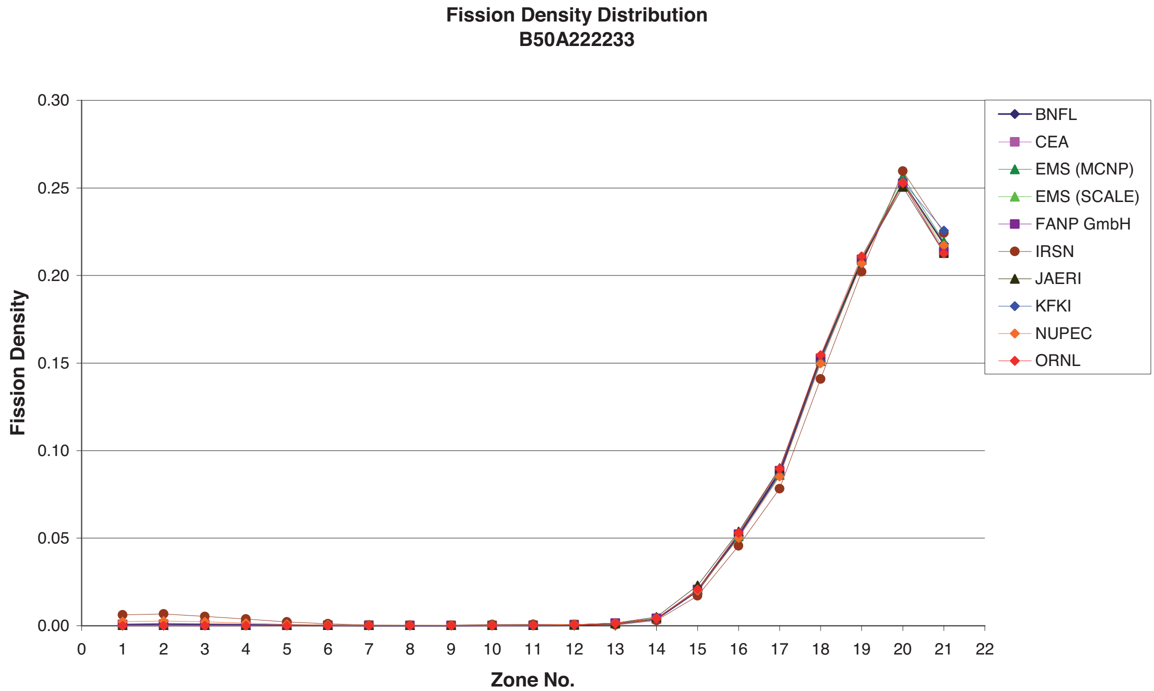


**Figure 5.30 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A222233**



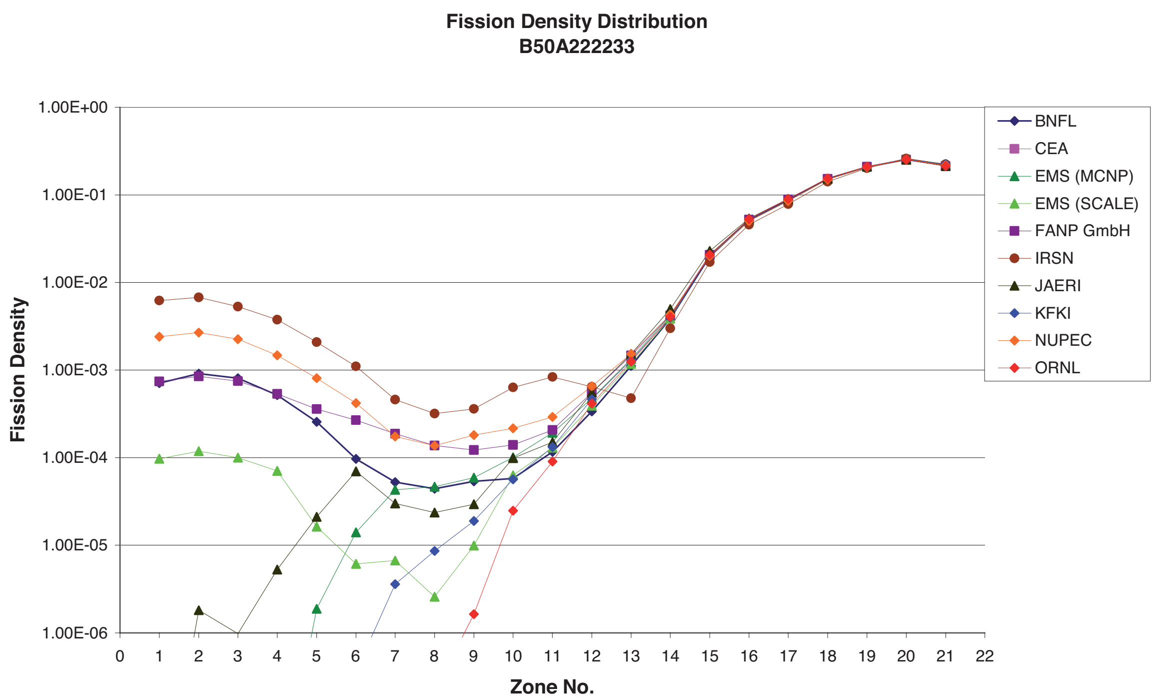
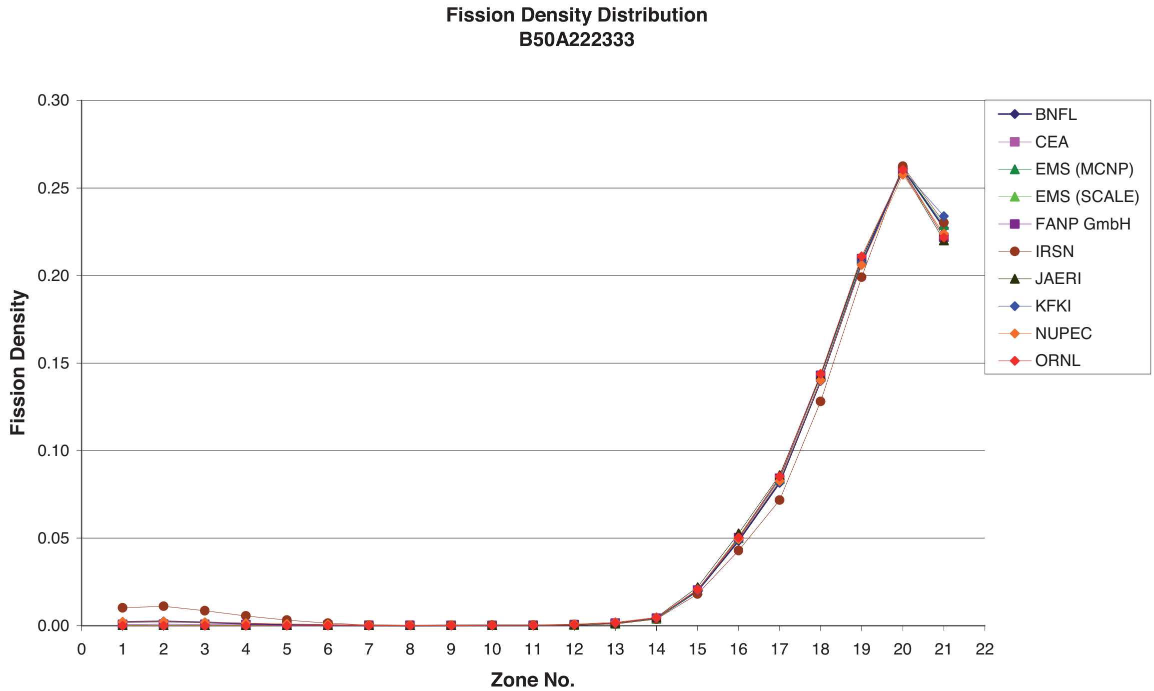


Figure 5.31 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A222333



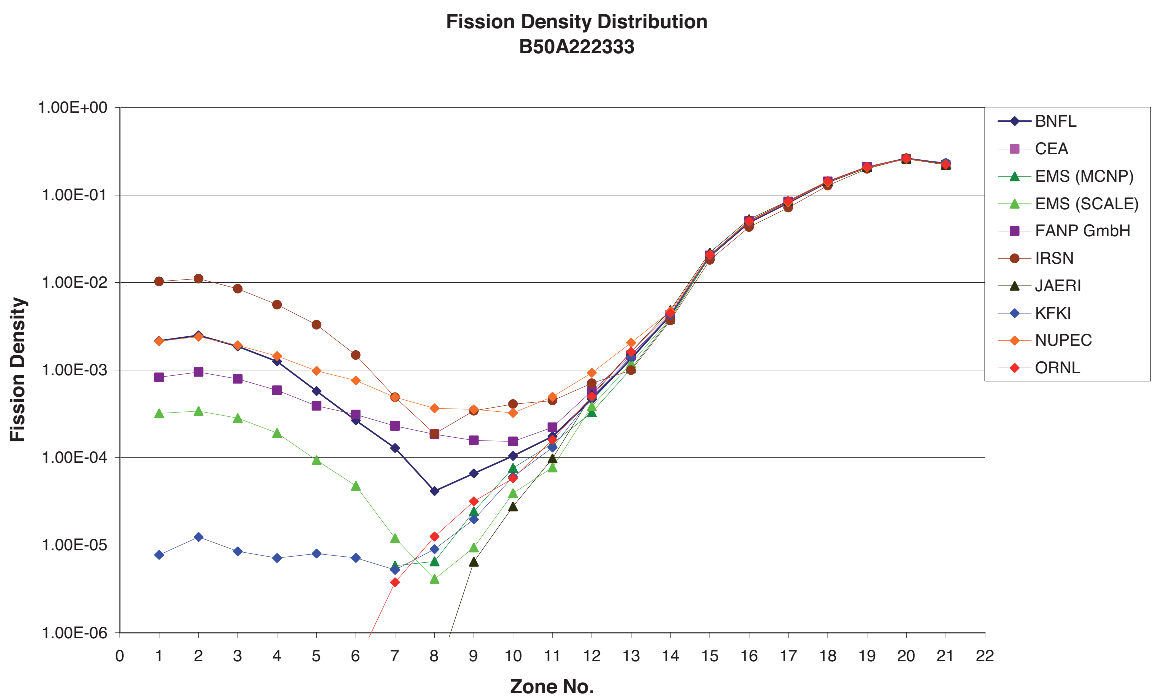
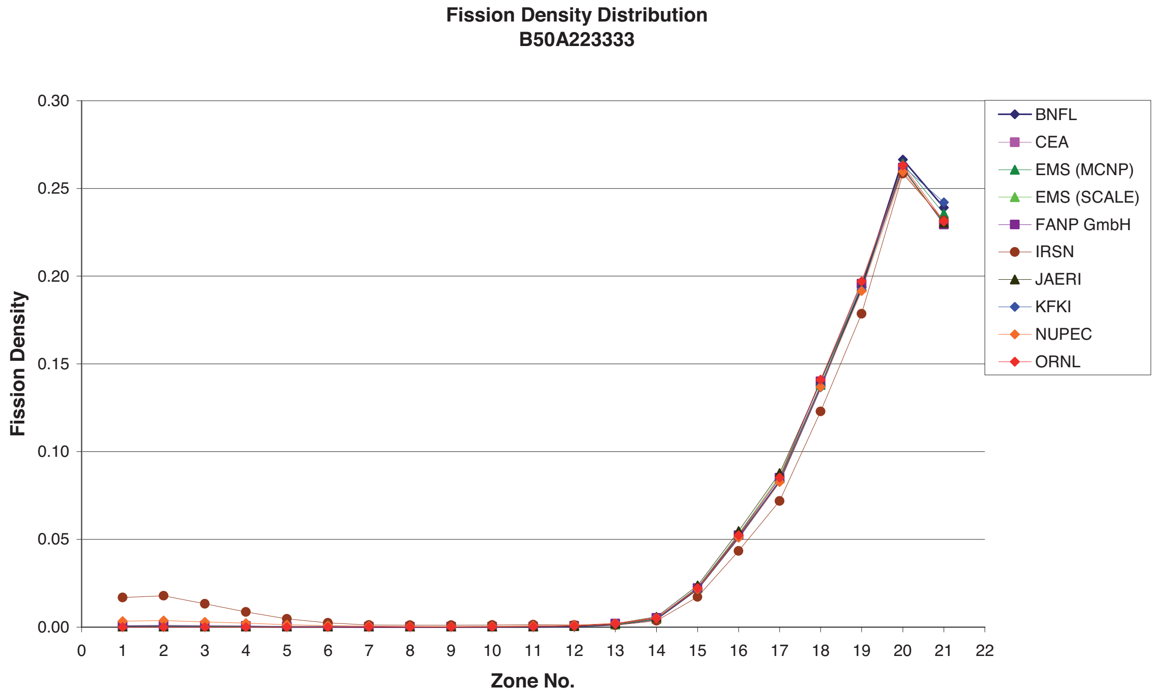


Figure 5.32 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A223333



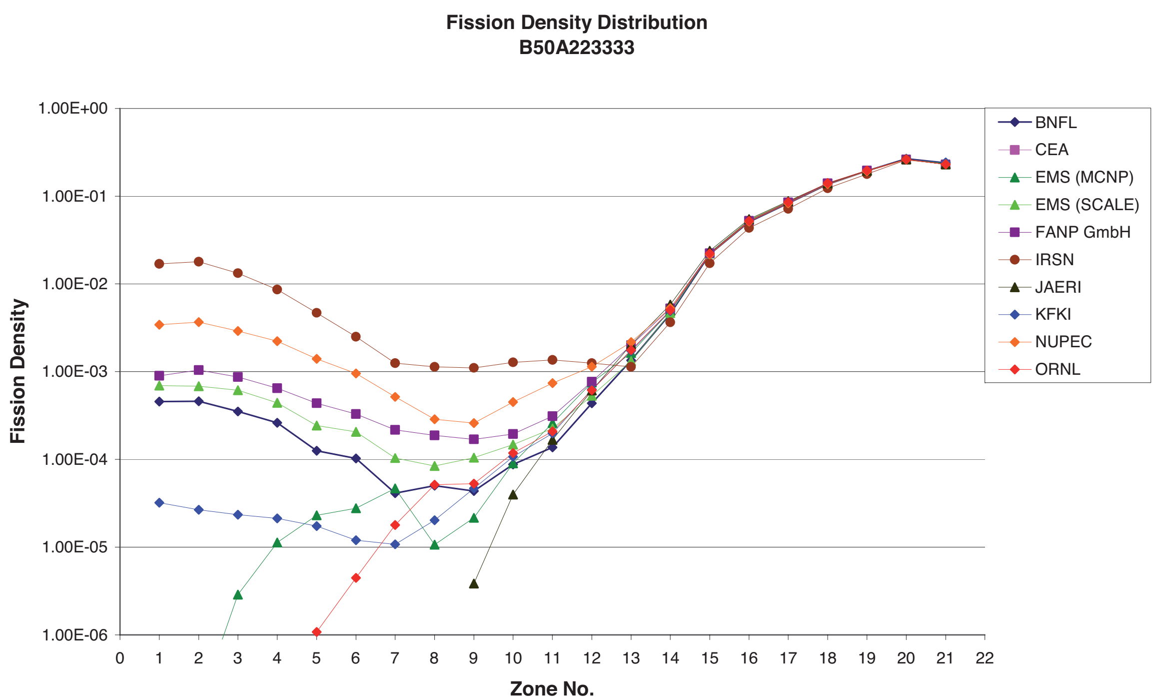
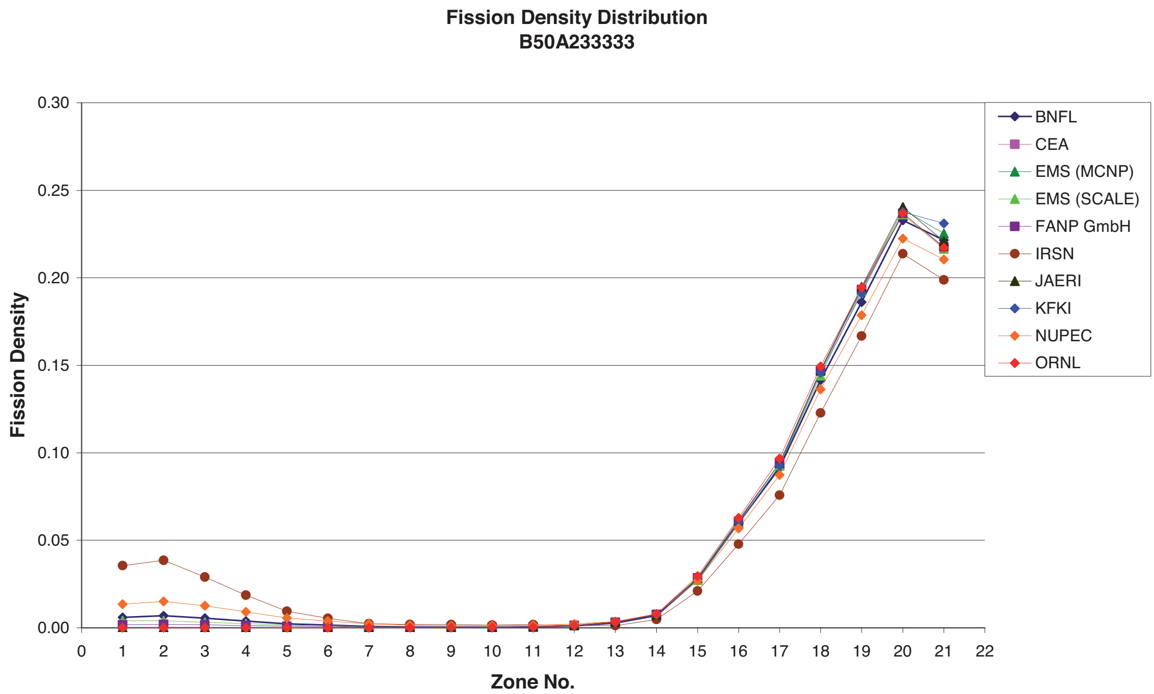


Figure 5.33 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A233333



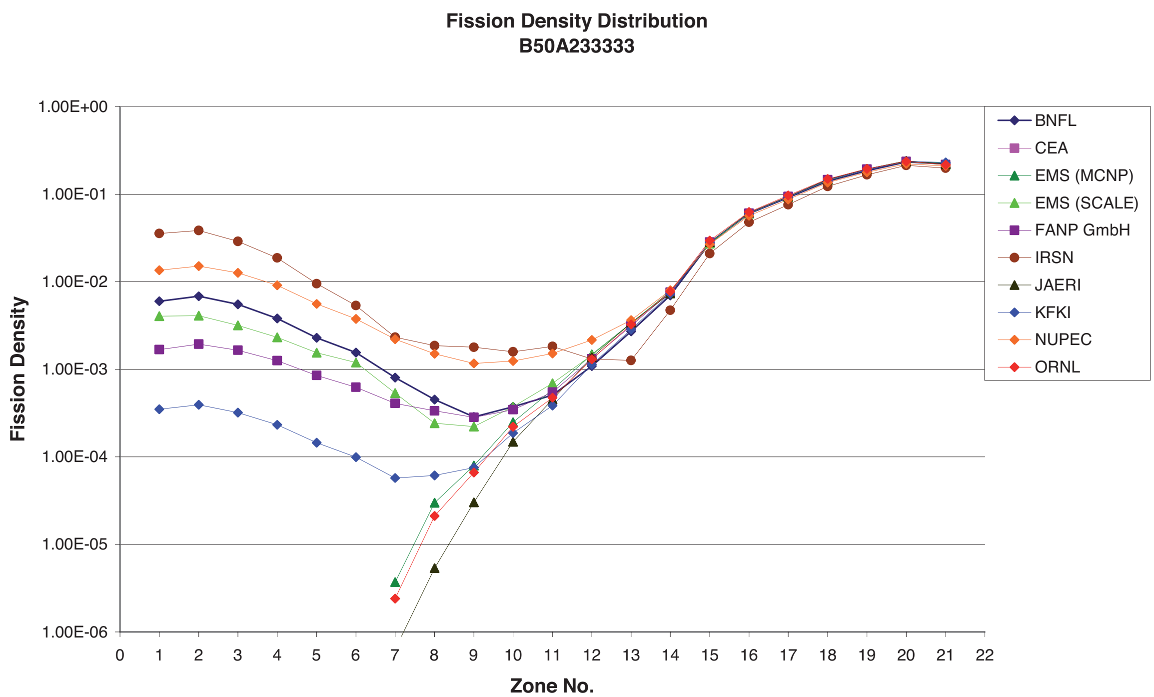
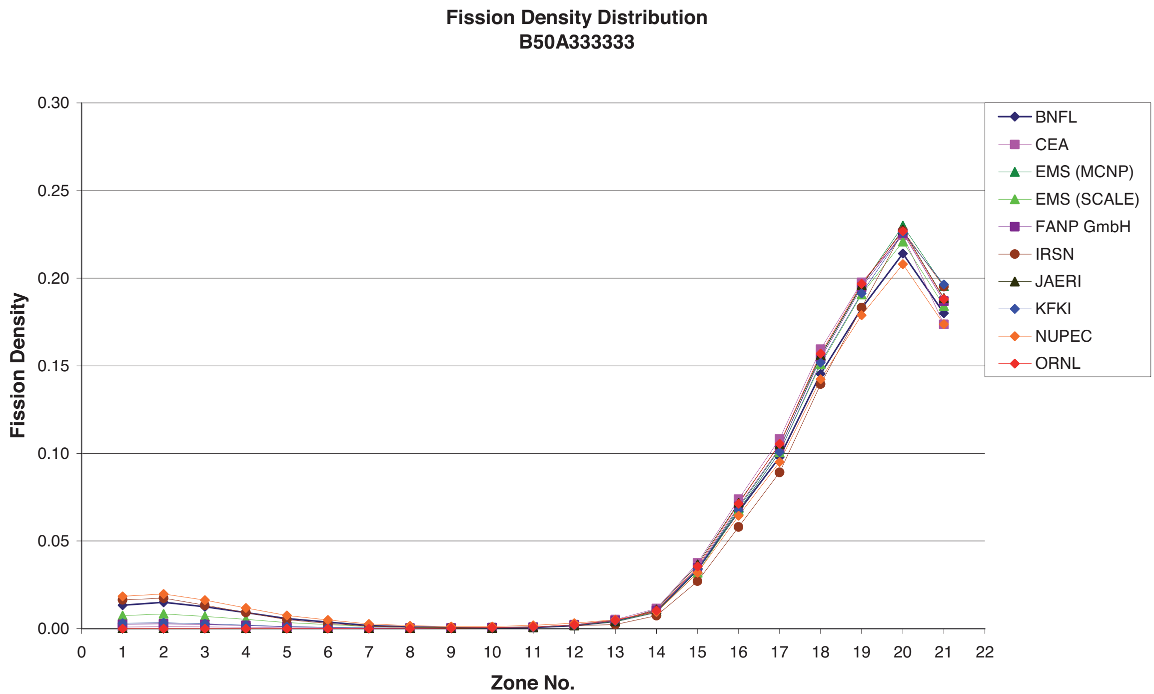


**Figure 5.34 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A333333**



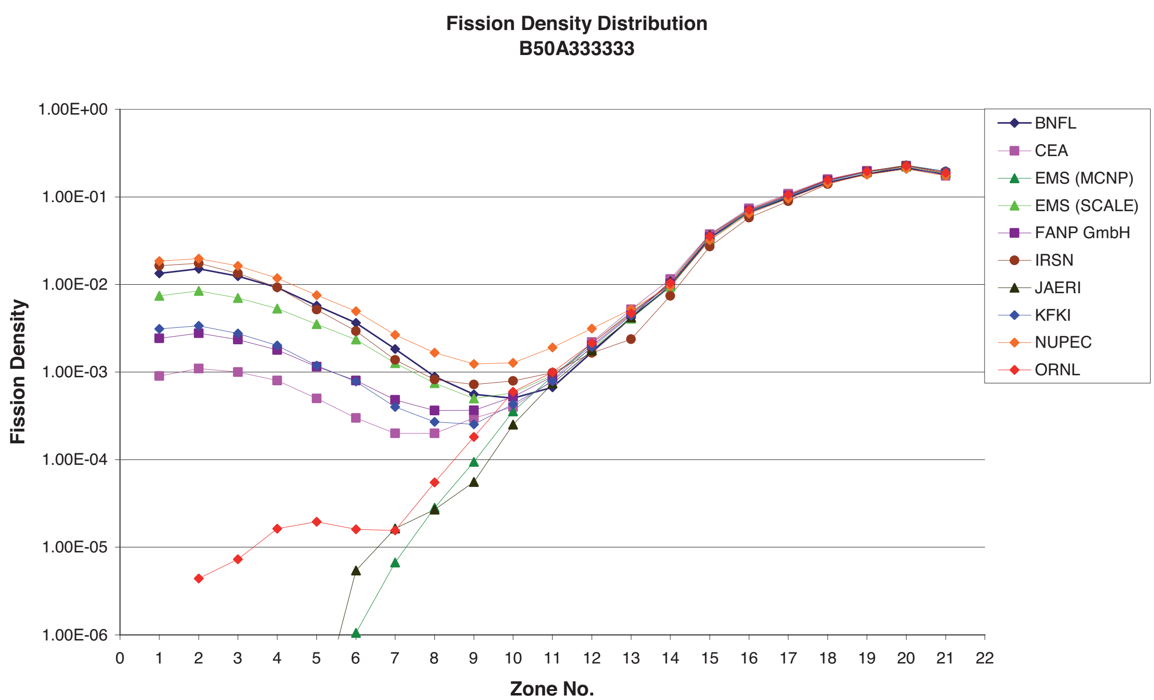
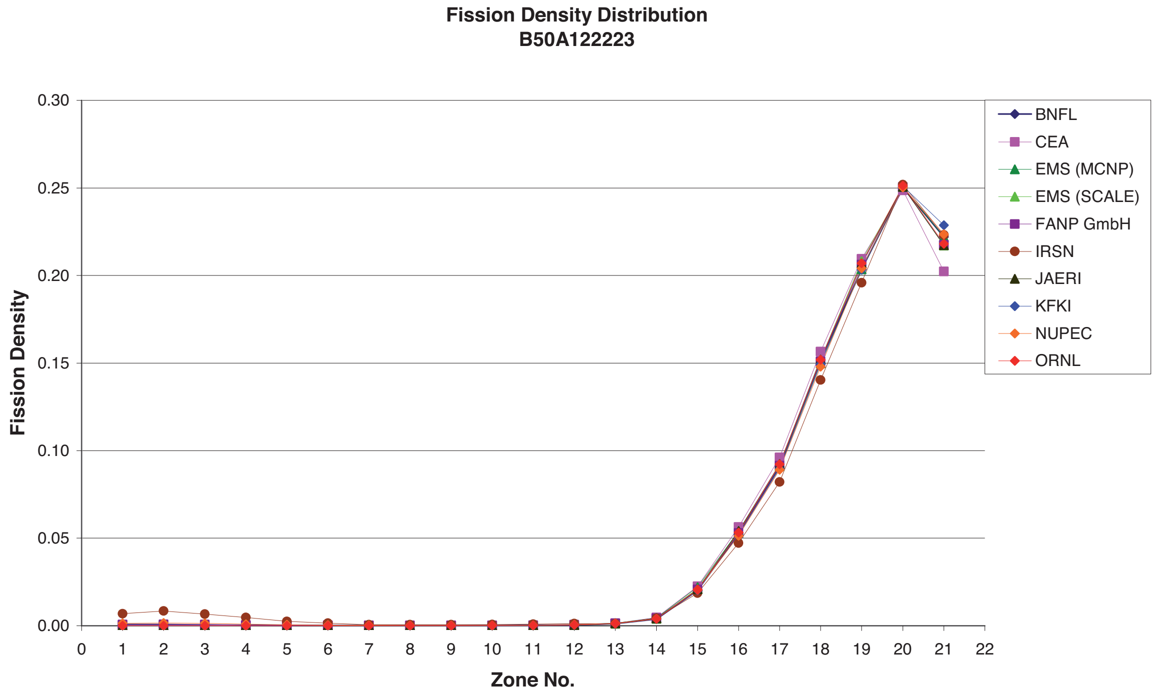


Figure 5.35 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A122223



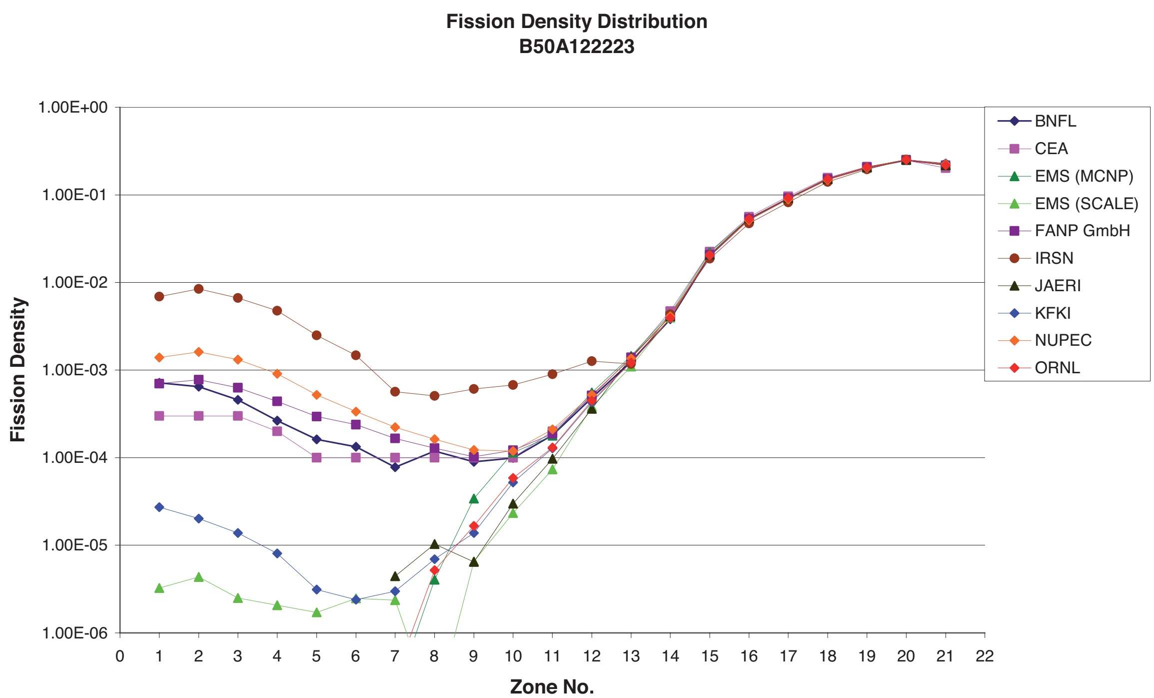
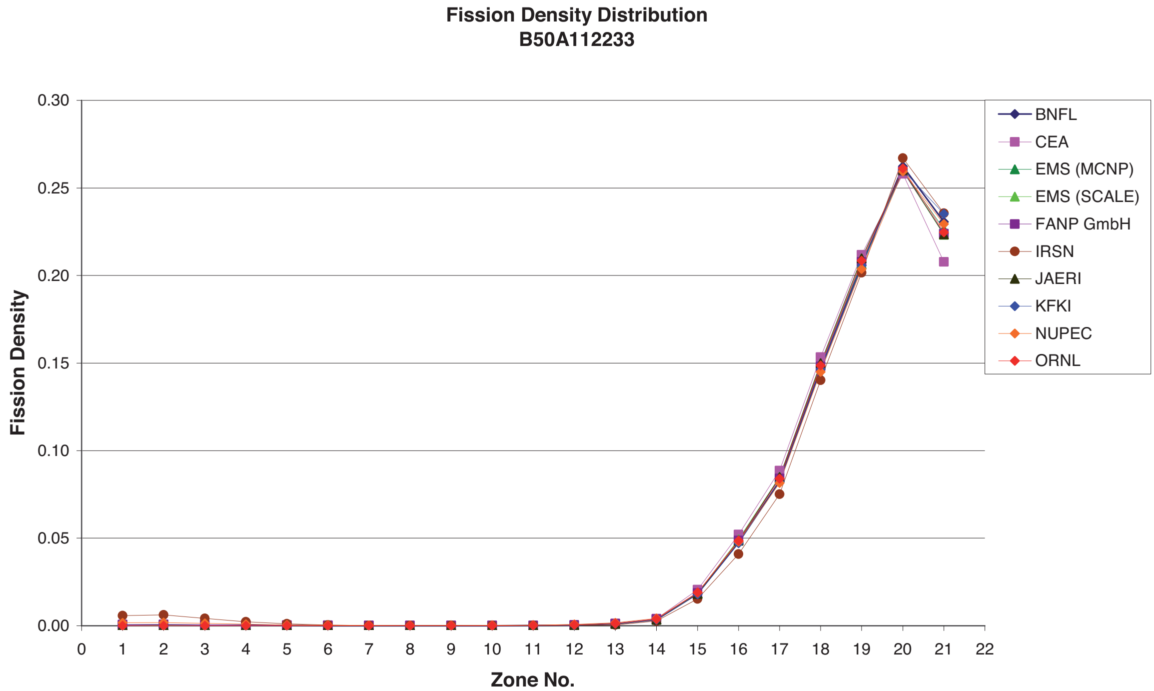


Figure 5.36 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A112233



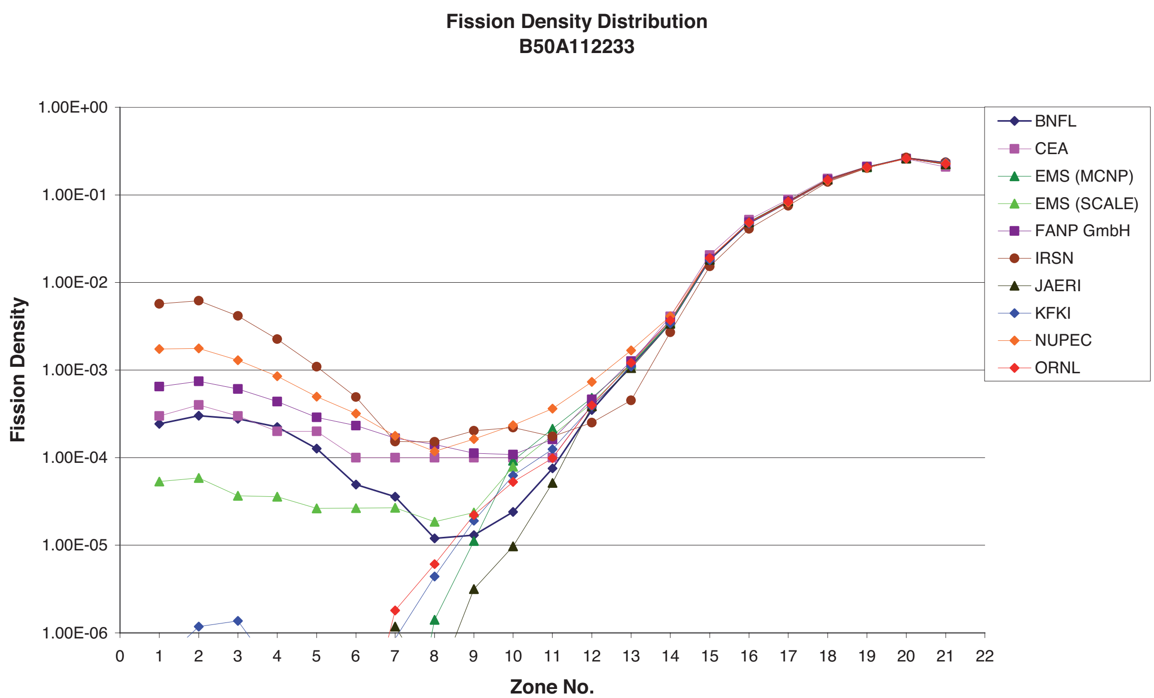
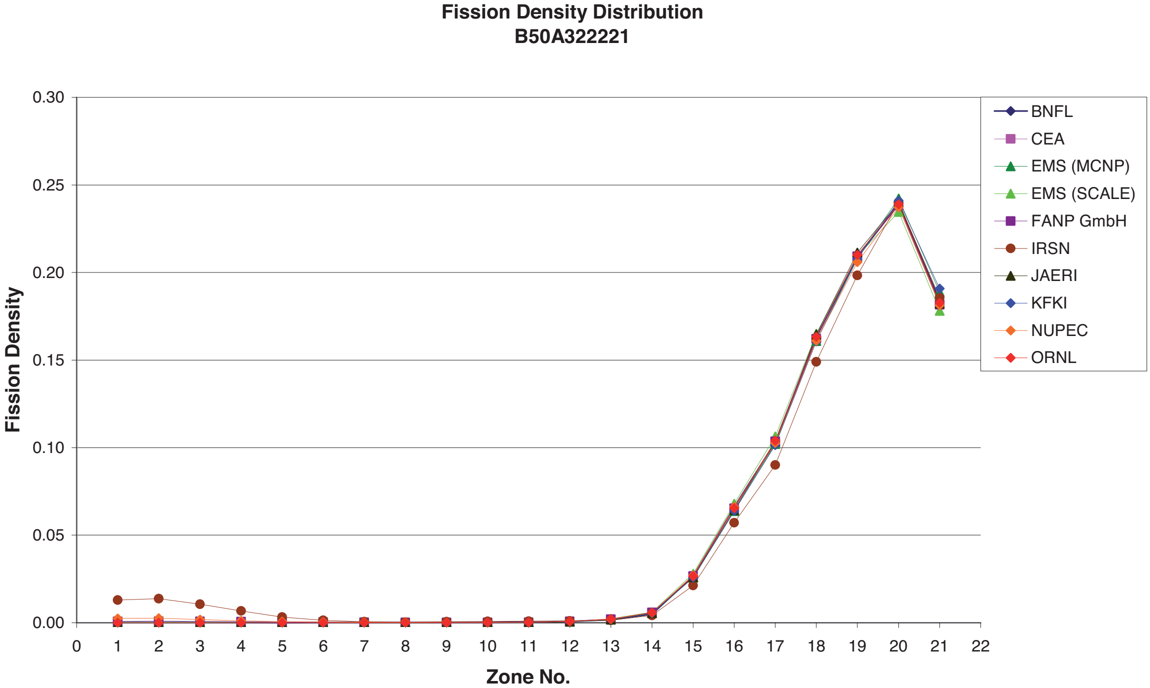


Figure 5.37 Results from the contributors:
fission densities in the axial zones No. 1 through 21 for B50A322221



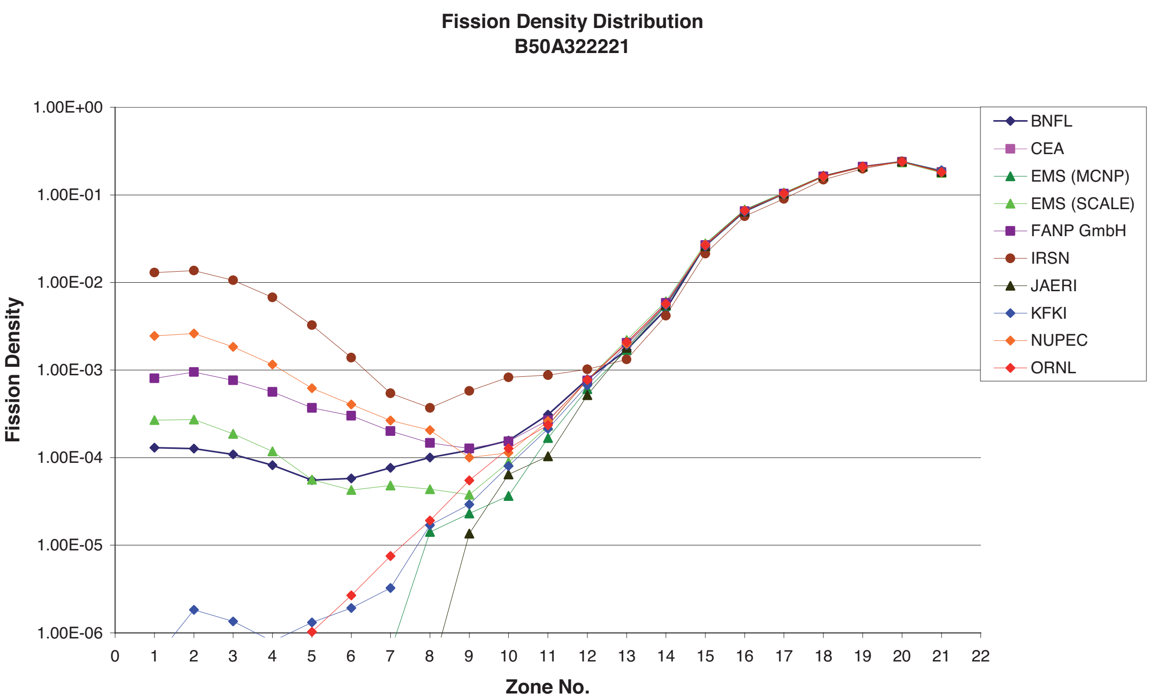
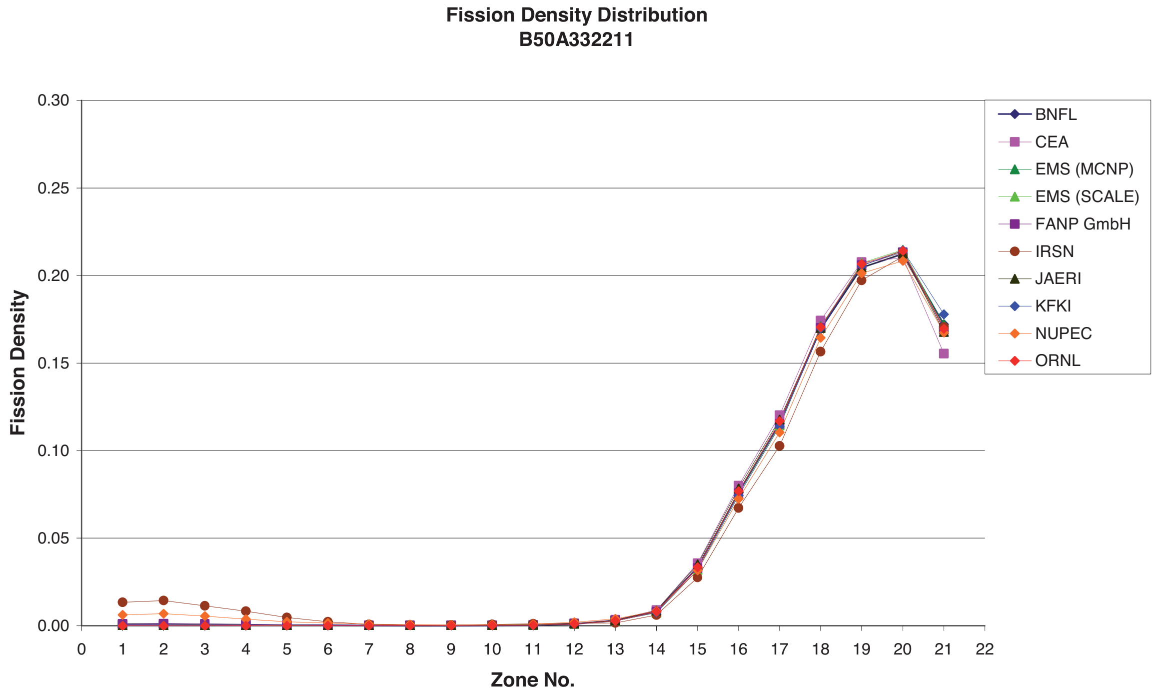


Figure 5.38 Results from the contributors: fission densities in the axial zones No. 1 through 21 for B50A332211



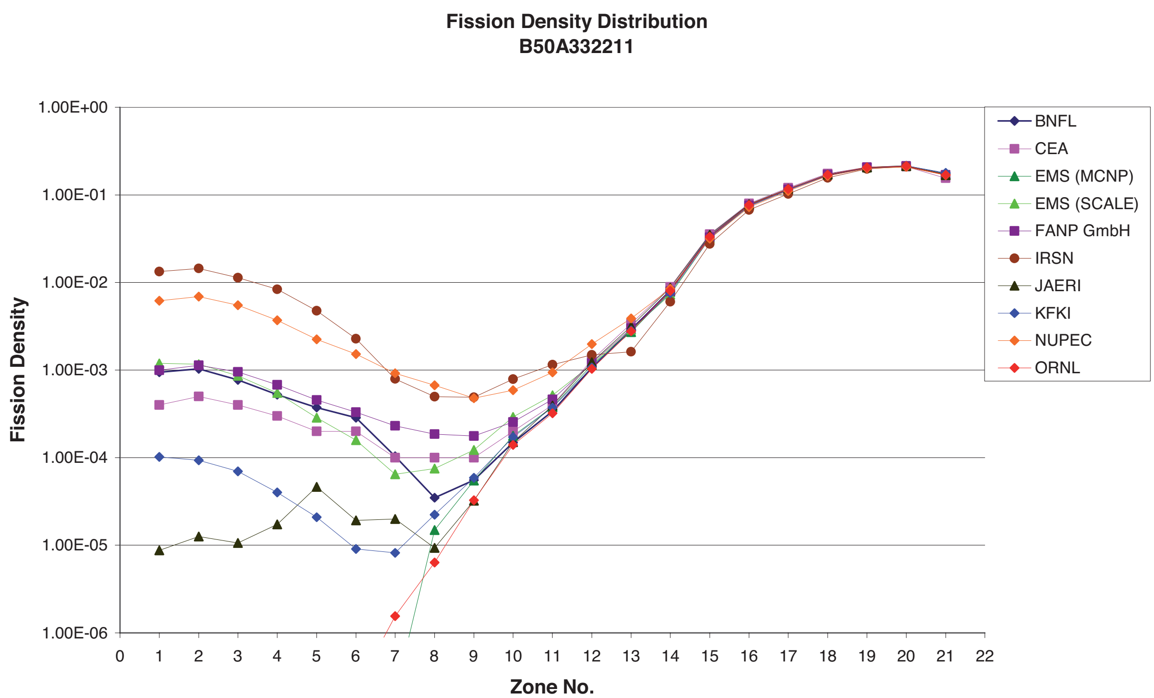


Figure 6.1 Evaluation of the results from the contributors: sample means of the k_{eff} results for the 32 MWd/kg U average burn-up cases

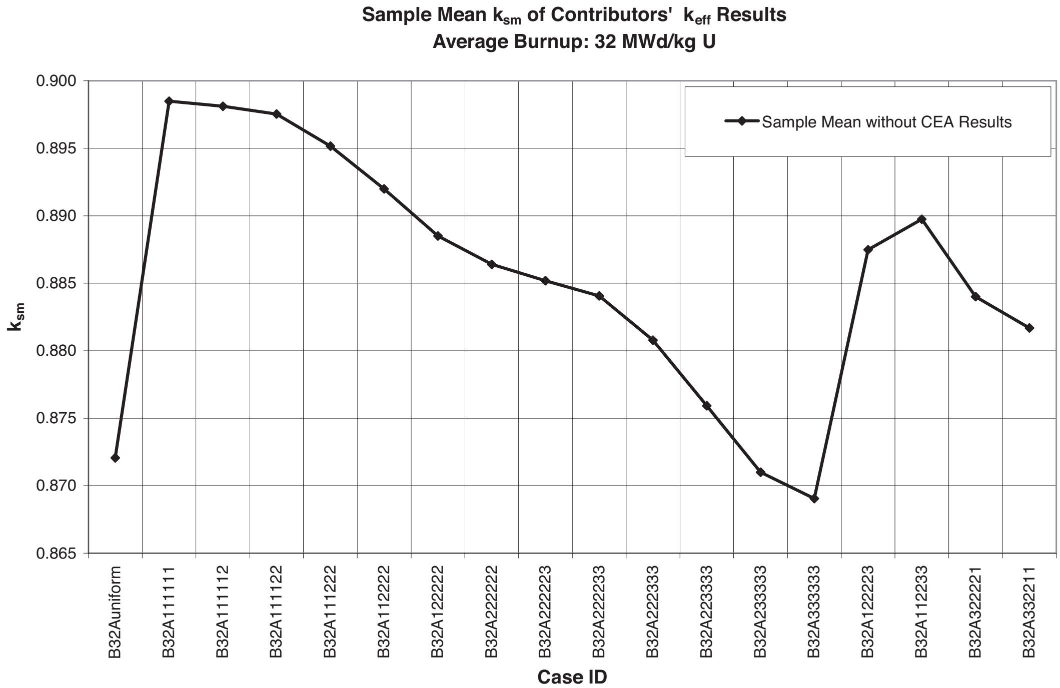


Figure 6.2 Evaluation of the results from the contributors: sample means of the k_{eff} results for the 50 MWd/kg U average burn-up cases

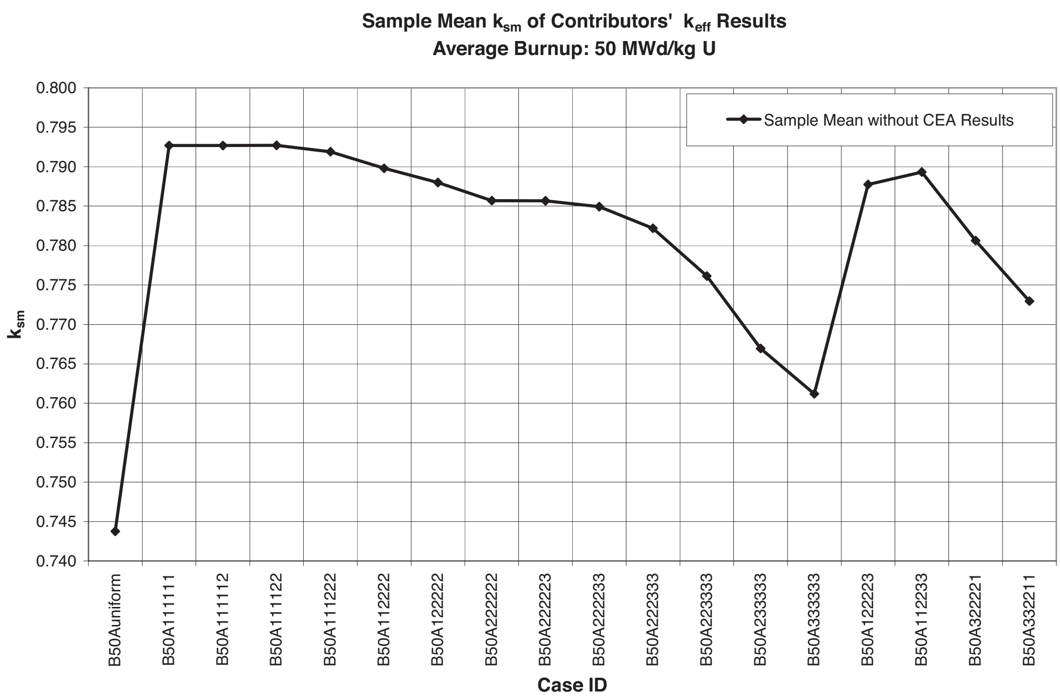


Figure 6.3 Evaluation of the results from the contributors: spread of the k_{eff} results for the 32 MWd/kg U average burn-up cases

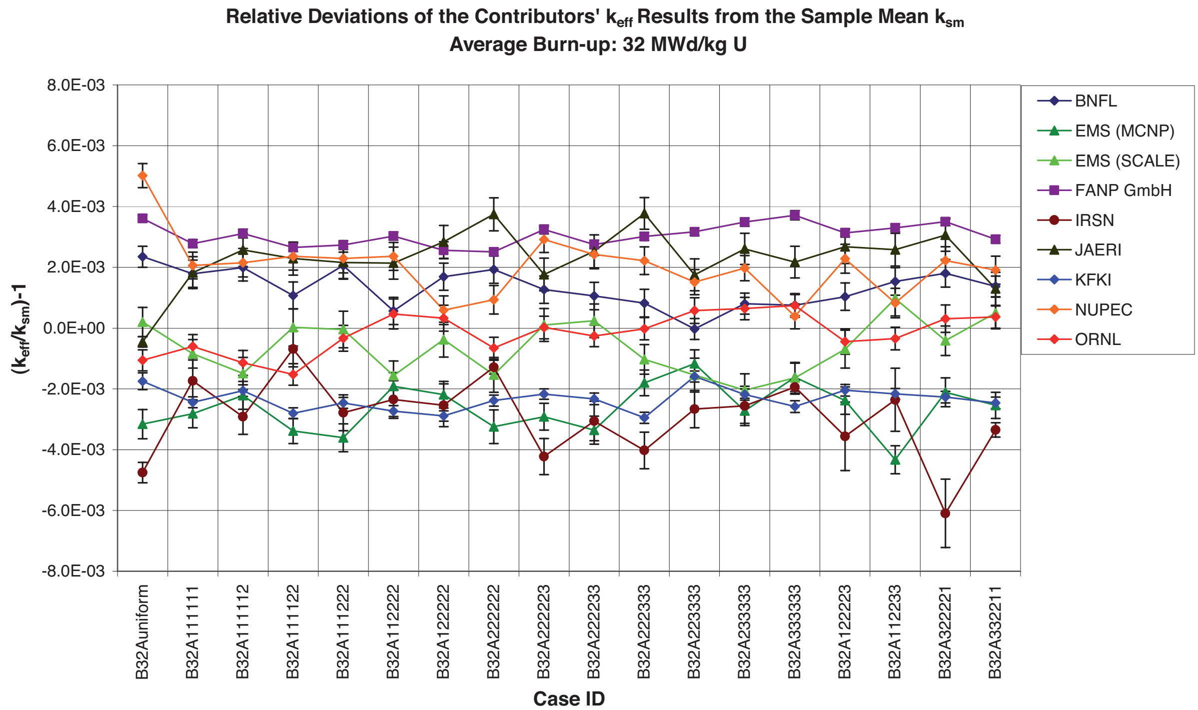


Figure 6.4 Evaluation of the results from the contributors: spread of the k_{eff} results for the 50 MWd/kg U average burn-up cases

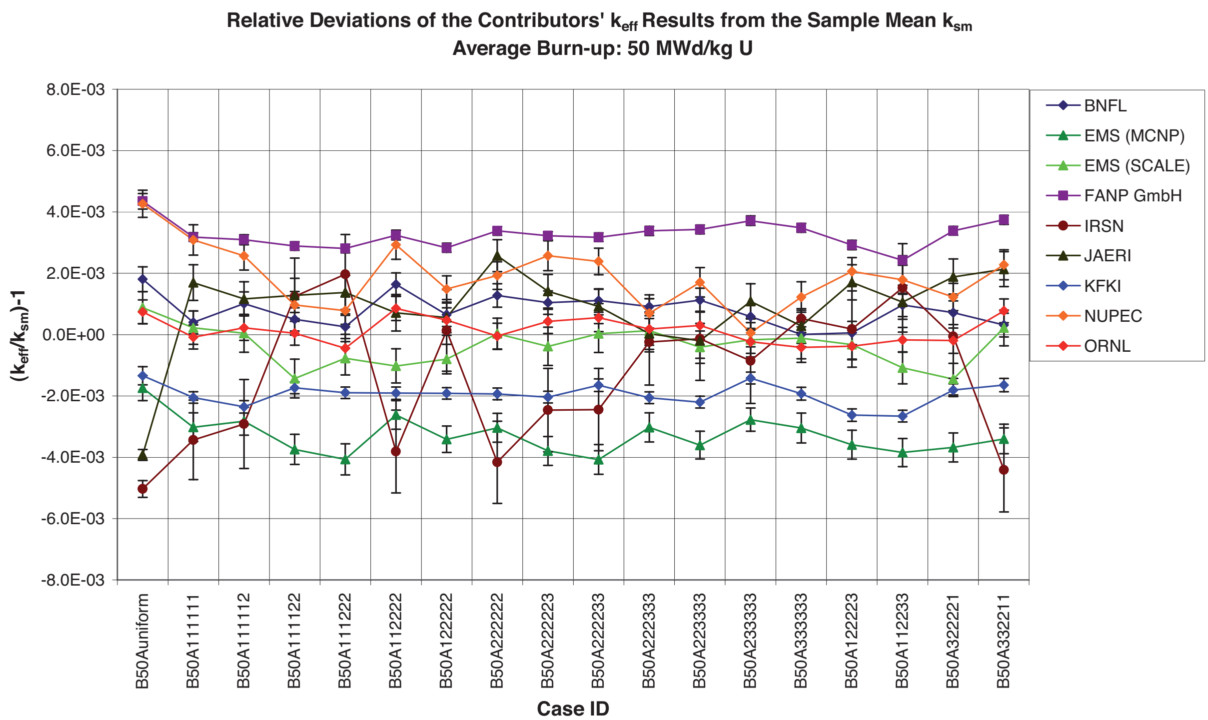


Figure 6.5 Evaluation of the results from the contributors: end effects for the 32 MWd/kg U average burn-up cases

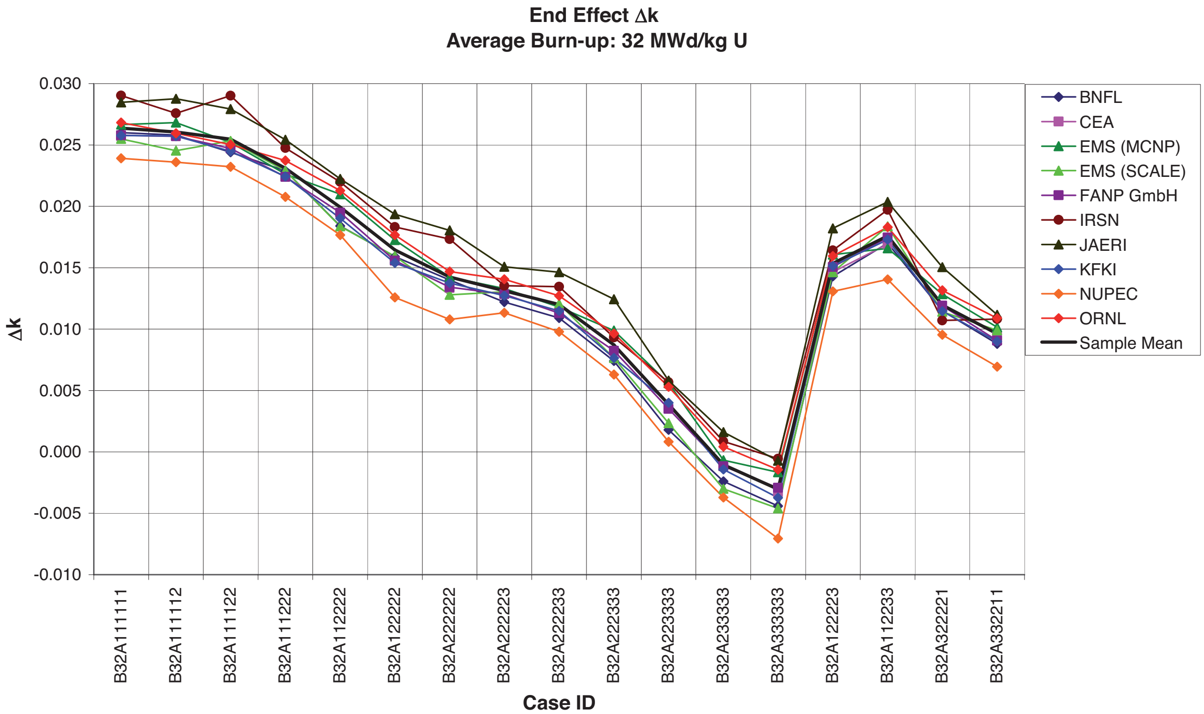


Figure 6.6 Evaluation of the results from the contributors: end effects for the 50 MWd/kg U average burn-up cases

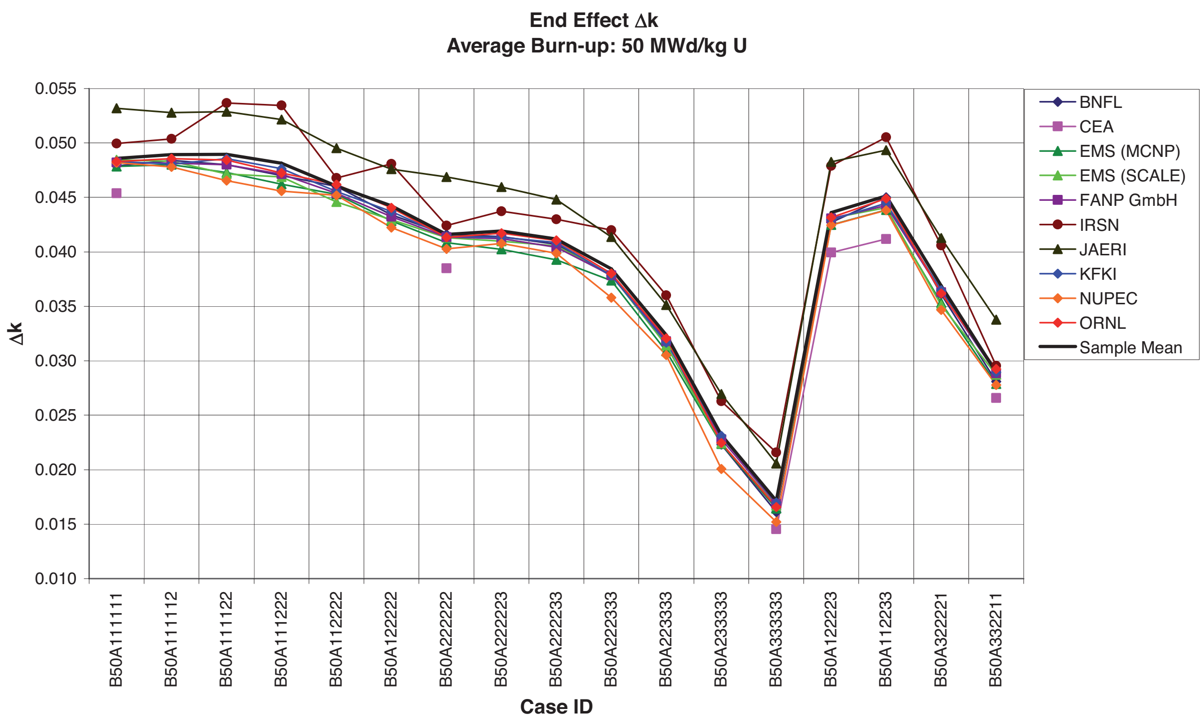


Figure 6.7 Evaluation of the results from the contributors: spread of the end effects for the 32 MWd/kg U average burn-up cases

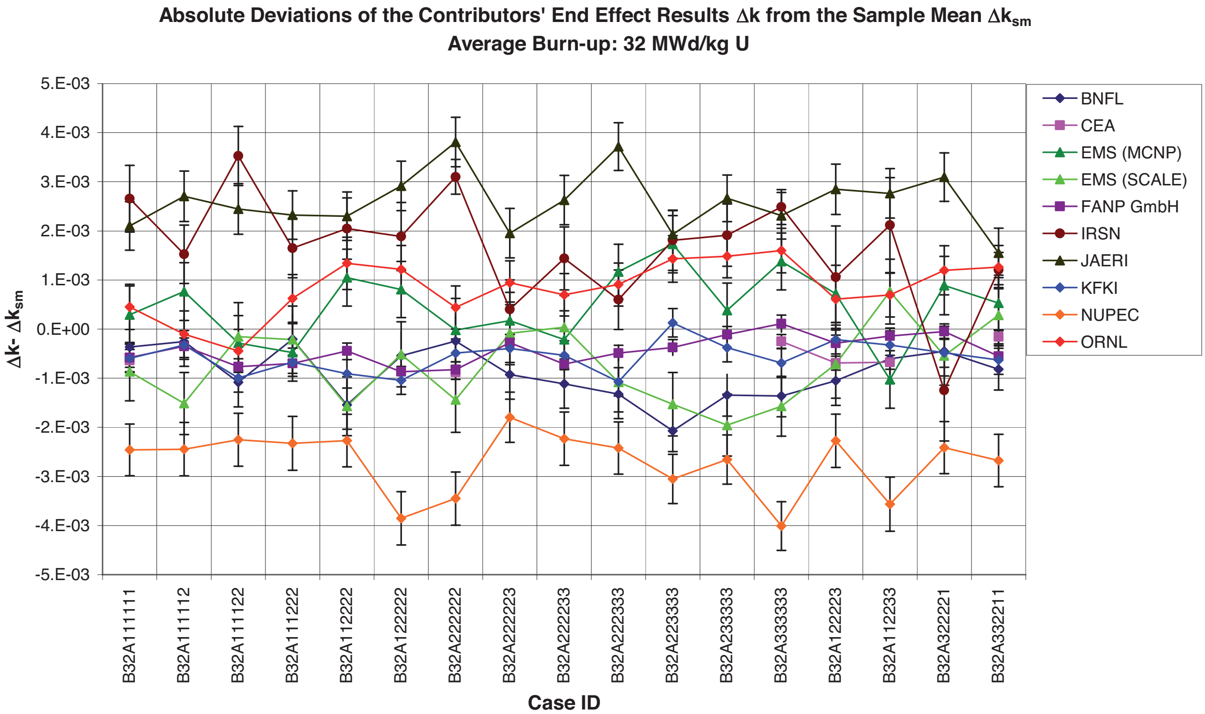


Figure 6.8 Evaluation of the results from the contributors: spread of the end effects for the 50 MWd/kg U average burn-up cases

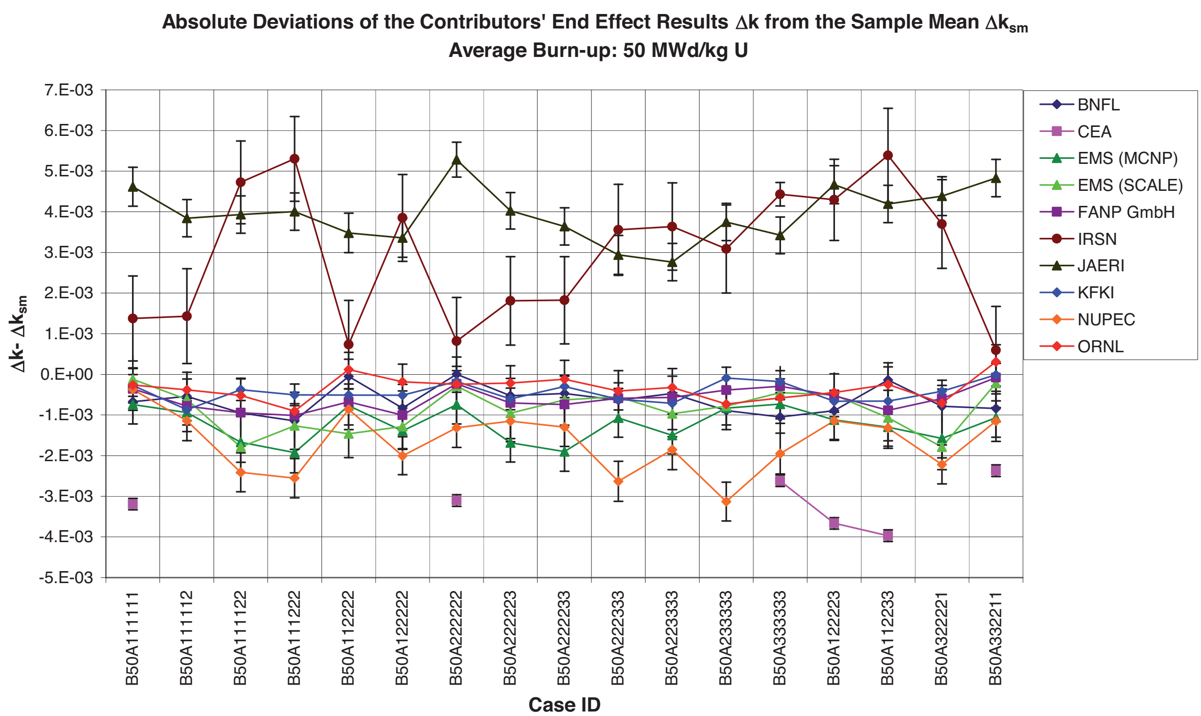


Figure 6.9 Evaluation of the results from the contributors: end effect as a function of the asymmetry parameter for the 32 MWd/kg U average burn-up cases

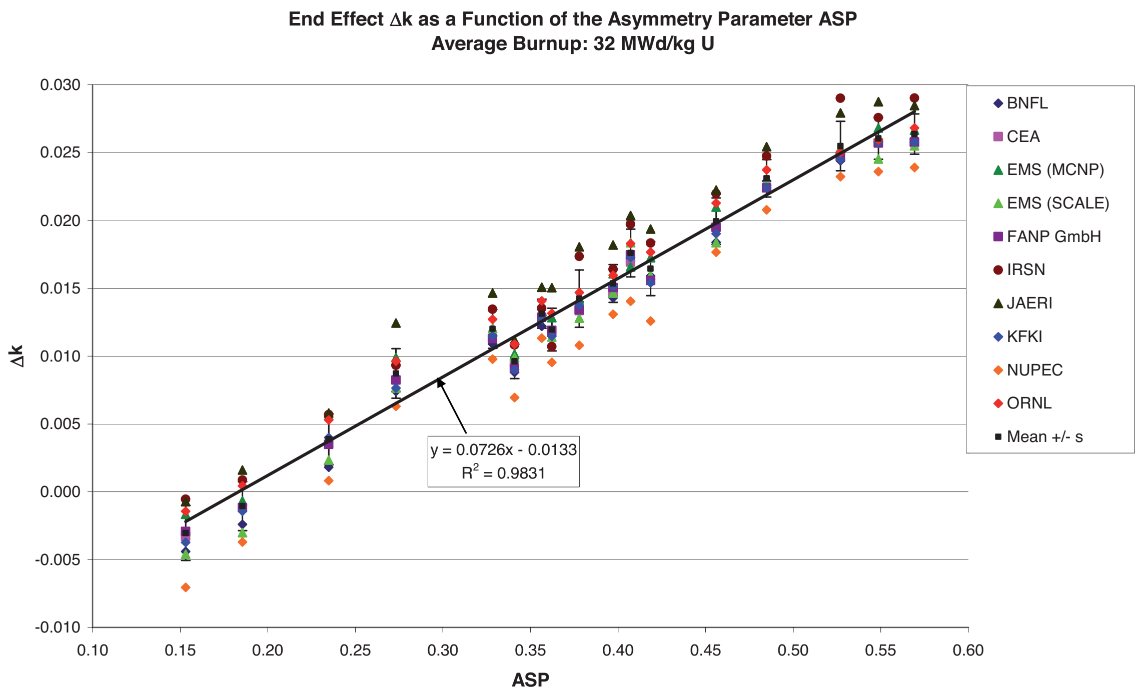


Figure 6.10 Evaluation of the results from the contributors: end effect as a function of the top end parameter for the 32 MWd/kg U average burn-up cases

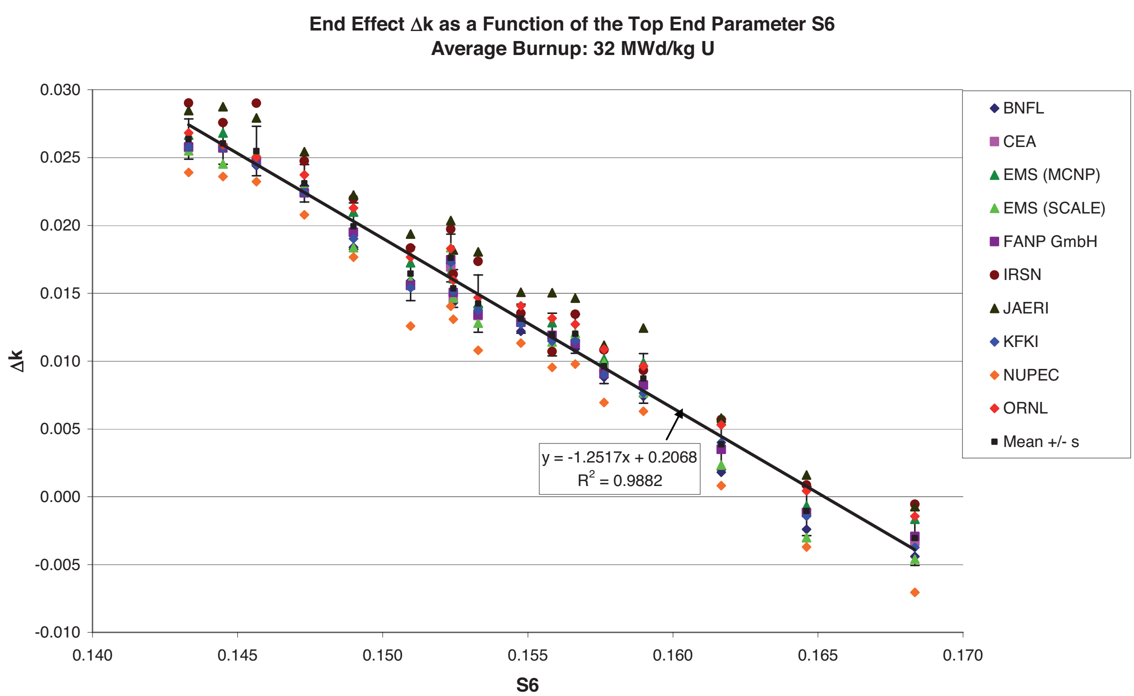


Figure 6.11 Evaluation of the results from the contributors: end effect as a function of the asymmetry parameter for the 50 MWd/kg U average burn-up cases

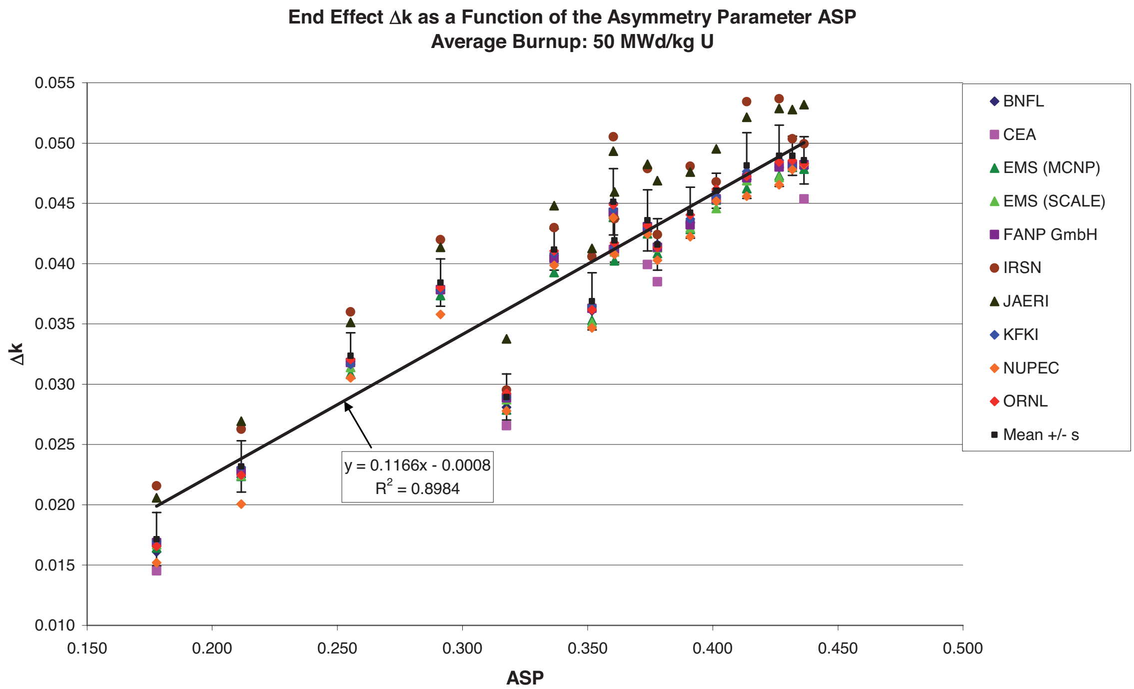


Figure 6.12 Evaluation of the results from the contributors: end effect as a function of the top end parameter for the 50 MWd/kg U average burn-up cases

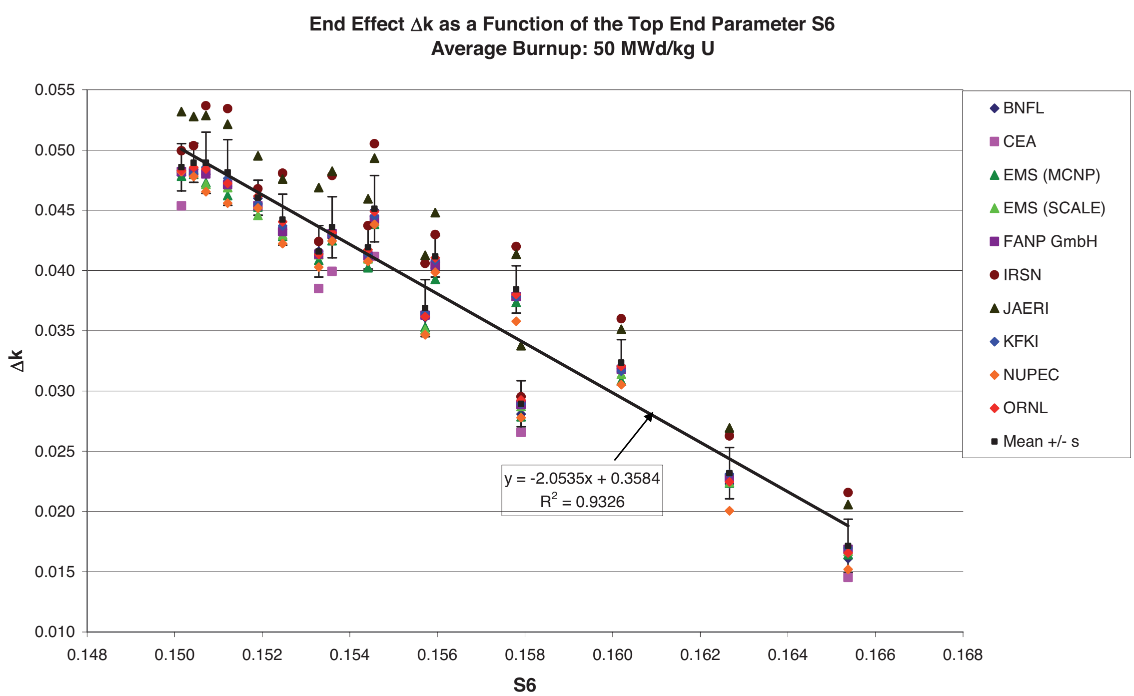


Figure 6.13 Evaluation of the results from the contributors: axial fission density model distribution for B32Auniform

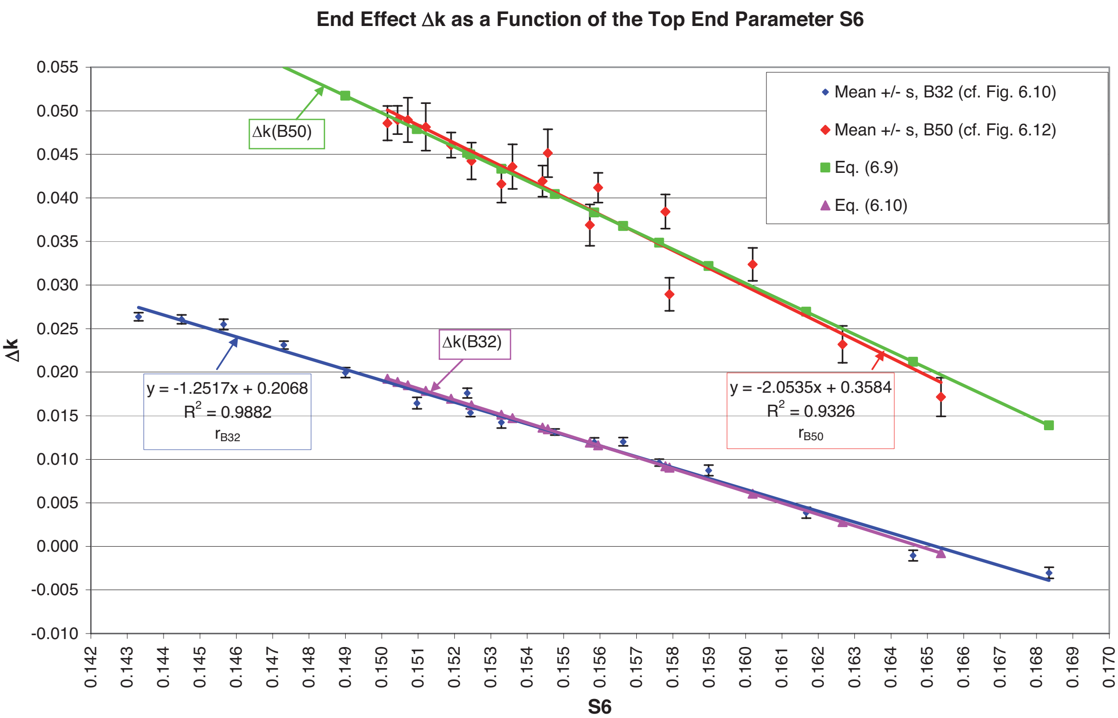


Figure 6.14 Evaluation of the results from the contributors: axial fission density model distribution for B32Auniform

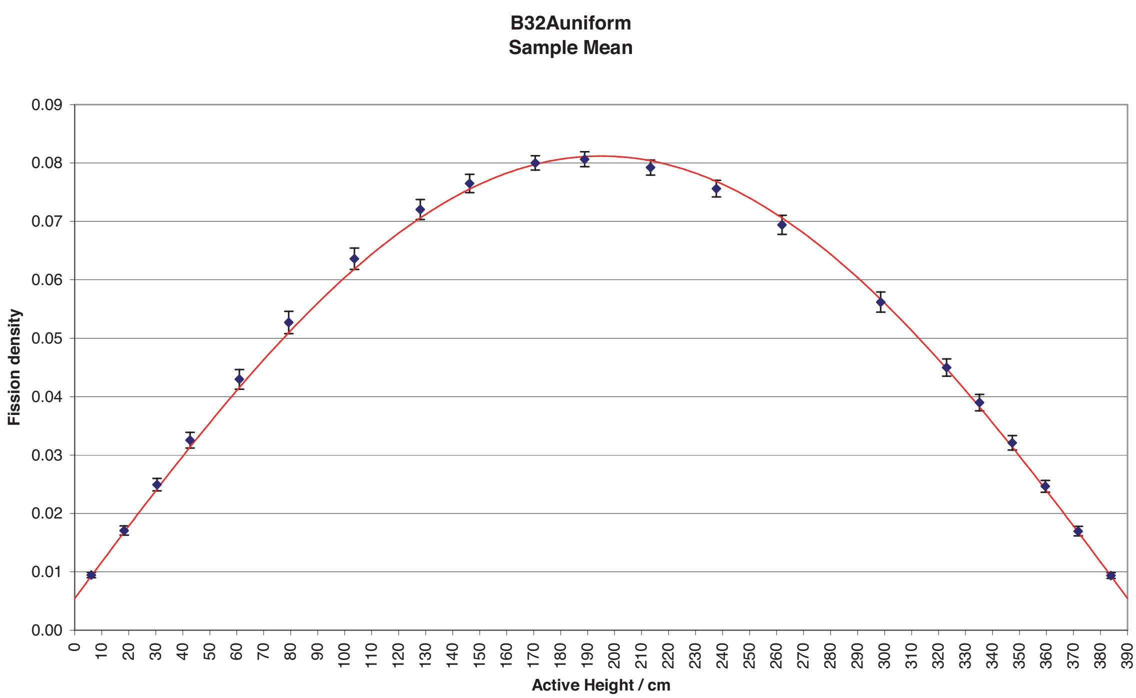
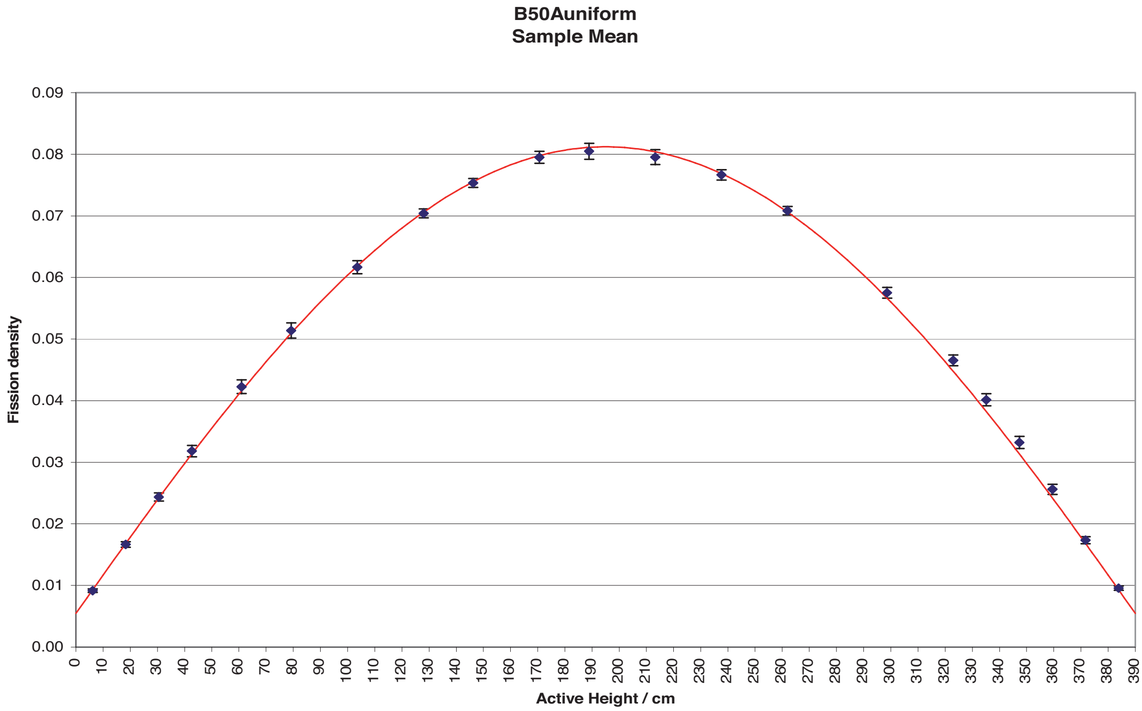


Figure 6.15 Evaluation of the results from the contributors: axial fission density model distribution for B50Auniform



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Appendix I

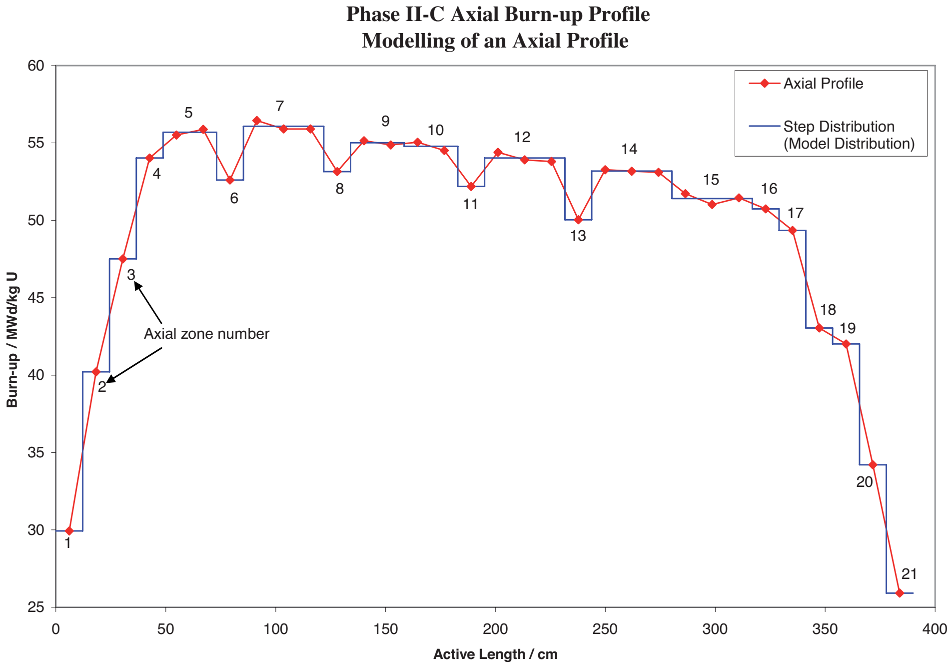
PHASE II-C AXIAL BURN-UP MODEL DISTRIBUTIONS

The extraction of the axial burn-up model distributions according to the procedure described in Section 3.1 has been performed with the aid of a computer code called "AXDIMO". The name chosen for the output file of this code containing the extracted Phase II-C axial burn-up model distributions is "**gen_ax03.mod**". The structure of this file is described on the next page.

As can be seen from the next page, in the file gen_ax03.mod

- the identification **BbbAnnnnnn** of each Phase II-C axial burn-up model distribution, as specified in Table 3.2, is given,
- in addition, a **Serial No.** is assigned to each Phase II-C axial burn-up model distribution,
- the axial zones, as defined in Table 3.3, are given, i.e., the zone numbers are given together with the respective initial and the final numbers of the nodes grouped together, the heights of the upper bounds of the zones, and the zone-averaged burn-up values (cf. equations (3.6) through (3.12)).

The Serial No. assigned to the burn-up model distributions, the filename "gen_ax03.mod", and the axial zone numbers will be used in Appendix II which gives the isotopic number densities for the axial zones of each of the burn-up model distributions.



Description of the structure of the file "gen_ax03.mod"

Programm **AXDIMO**, Version 3

```
Inputfile: gen_ax03.chg, Outputfile: gen_ax03.mod
=========================================================================
Programmsequenz, Quelle:

Programm GENAXD, Version  1
Kennung:   AXEVAL-Daten, Outputfile: gen_ax03.chg
AXEVAL: Evaluation of the Files gkn2_ax03_nxx.out
...
...
...
```

Axial profile identification (cf. Table 3.2) and serial number assigned to the profile

```
Axial Profile: BbbAnnnnnn
Serial No.:    M       average discharge burnup: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)
Abschnitt Nr.  Node-Anf.  Node-Ende  Hoehe / cm  average burnup / MWd/kg
     1            32         32         12.19          1.91540E+01
     2            31         31         24.38          2.57358E+01
     3            30         30         36.56          3.04051E+01
     4            29         29         48.75          3.45760E+01
     5            27         28         73.13          3.56430E+01
     6            26         26         85.31          3.36672E+01
     7            23         25        121.88          3.58931E+01
     8            22         22        134.06          3.40179E+01
     9            20         21        158.44          3.52061E+01
    10            18         19        182.81          3.50619E+01
    11            17         17        195.00          3.34032E+01
    12            14         16        231.56          3.45814E+01
    13            13         13        243.75          3.20275E+01
    14            10         12        280.31          3.40369E+01
    15             7          9        316.88          3.28967E+01
    16             6          6        329.06          3.24752E+01
    17             5          5        341.25          3.15837E+01
    18             4          4        353.44          2.75481E+01
    19             3          3        365.63          2.68853E+01
    20             2          2        377.81          2.18861E+01
    21             1          1        390.00          1.65883E+01
```

Axial zone number

Initial number and final number of the nodes grouped together in the axial zone specified

Height of the upper bound of the axial zone specified

Zone averaged burnup

Content of the file "gen_ax03.mod"

Programm AXDIMO, Version 3
Inputfile: gen_ax03.chg, Outputfile: gen_ax03.mod
===

Programmsequenz, Quelle:

Programm GENAXD, Version 1
Kennung: AXEVAL-Daten, Outputfile: gen_ax03.chg
AXEVAL: Evaluation of the Files gkn2_ax03_nxx.out

aktive Laenge: kalt: 390.00 cm; gewuenscht: 390.00 cm

===
Axial Profile: B32A222222
Serial No.: **1** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.45760E+01
5	27	28	73.13	3.56430E+01
6	26	26	85.31	3.36672E+01
7	23	25	121.88	3.58931E+01
8	22	22	134.06	3.40179E+01
9	20	21	158.44	3.52061E+01
10	18	19	182.81	3.50619E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.65883E+01

===
Axial Profile: B32A111111
Serial No.: **2** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.61214E+01
5	27	28	73.13	3.70368E+01
6	26	26	85.31	3.47958E+01
7	23	25	121.88	3.68294E+01

8	22	22	134.06	3.46515E+01
9	20	21	158.44	3.56653E+01
10	18	19	182.81	3.52582E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.12640E+01
17	5	5	341.25	3.04000E+01
18	4	4	353.44	2.58560E+01
19	3	3	365.63	2.51520E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

==

Axial Profile: B32A111112
Serial No.: **3** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.59382E+01
5	27	28	73.13	3.68716E+01
6	26	26	85.31	3.46620E+01
7	23	25	121.88	3.67184E+01
8	22	22	134.06	3.45763E+01
9	20	21	158.44	3.56108E+01
10	18	19	182.81	3.52349E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.04000E+01
18	4	4	353.44	2.58560E+01
19	3	3	365.63	2.51520E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

==

Axial Profile: B32A111122
Serial No.: **4** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.57591E+01
5	27	28	73.13	3.67100E+01
6	26	26	85.31	3.45312E+01
7	23	25	121.88	3.66099E+01

8	22	22	134.06	3.45029E+01
9	20	21	158.44	3.55576E+01
10	18	19	182.81	3.52121E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.58560E+01
19	3	3	365.63	2.51520E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

==

Axial Profile: B32A111222
Serial No.: **5** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.55031E+01
5	27	28	73.13	3.64792E+01
6	26	26	85.31	3.43442E+01
7	23	25	121.88	3.64548E+01
8	22	22	134.06	3.43980E+01
9	20	21	158.44	3.54816E+01
10	18	19	182.81	3.51796E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.51520E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

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Axial Profile: B32A112222
Serial No.: **6** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.52409E+01
5	27	28	73.13	3.62427E+01
6	26	26	85.31	3.41527E+01
7	23	25	121.88	3.62959E+01

8	22	22	134.06	3.42905E+01
9	20	21	158.44	3.54036E+01
10	18	19	182.81	3.51464E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

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Axial Profile: B32A122222
Serial No.: **7** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.49361E+01
5	27	28	73.13	3.59678E+01
6	26	26	85.31	3.39302E+01
7	23	25	121.88	3.61113E+01
8	22	22	134.06	3.41655E+01
9	20	21	158.44	3.53131E+01
10	18	19	182.81	3.51076E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.24752E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.42080E+01

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Axial Profile: B32A222223
Serial No.: **8** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.43477E+01
5	27	28	73.13	3.54372E+01
6	26	26	85.31	3.35005E+01
7	23	25	121.88	3.57548E+01

8	22	22	134.06	3.39243E+01
9	20	21	158.44	3.51383E+01
10	18	19	182.81	3.50330E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.65883E+01

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Axial Profile: B32A222233
Serial No.: **9** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.40572E+01
5	27	28	73.13	3.51751E+01
6	26	26	85.31	3.32883E+01
7	23	25	121.88	3.55788E+01
8	22	22	134.06	3.38052E+01
9	20	21	158.44	3.50520E+01
10	18	19	182.81	3.49961E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.65883E+01

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Axial Profile: B32A222333
Serial No.: **10** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.36935E+01
5	27	28	73.13	3.48472E+01
6	26	26	85.31	3.30227E+01
7	23	25	121.88	3.53585E+01

8	22	22	134.06	3.36561E+01
9	20	21	158.44	3.49439E+01
10	18	19	182.81	3.49499E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.99520E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.65883E+01

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Axial Profile: B32A223333
Serial No.: **11** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.32779E+01
5	27	28	73.13	3.44724E+01
6	26	26	85.31	3.27192E+01
7	23	25	121.88	3.51067E+01
8	22	22	134.06	3.34858E+01
9	20	21	158.44	3.48205E+01
10	18	19	182.81	3.48971E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.99520E+01
19	3	3	365.63	2.96320E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.65883E+01

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Axial Profile: B32A233333
Serial No.: **12** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.28225E+01
5	27	28	73.13	3.40617E+01
6	26	26	85.31	3.23867E+01
7	23	25	121.88	3.48308E+01

8	22	22	134.06	3.32991E+01
9	20	21	158.44	3.46851E+01
10	18	19	182.81	3.48393E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.99520E+01
19	3	3	365.63	2.96320E+01
20	2	2	377.81	2.48960E+01
21	1	1	390.00	1.65883E+01

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Axial Profile: B32A333333
Serial No.: **13** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.22434E+01
5	27	28	73.13	3.35394E+01
6	26	26	85.31	3.19637E+01
7	23	25	121.88	3.44800E+01
8	22	22	134.06	3.30617E+01
9	20	21	158.44	3.45131E+01
10	18	19	182.81	3.47658E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.99520E+01
19	3	3	365.63	2.96320E+01
20	2	2	377.81	2.48960E+01
21	1	1	390.00	2.04160E+01

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Axial Profile: B32A122223
Serial No.: **14** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.47078E+01
5	27	28	73.13	3.57620E+01
6	26	26	85.31	3.37635E+01
7	23	25	121.88	3.59730E+01

8	22	22	134.06	3.40720E+01
9	20	21	158.44	3.52453E+01
10	18	19	182.81	3.50786E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	1.42080E+01

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Axial Profile: B32A112233
Serial No.: **15** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.47220E+01
5	27	28	73.13	3.57748E+01
6	26	26	85.31	3.37738E+01
7	23	25	121.88	3.59816E+01
8	22	22	134.06	3.40778E+01
9	20	21	158.44	3.52495E+01
10	18	19	182.81	3.50805E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.39840E+01
17	5	5	341.25	3.35040E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	1.98720E+01
21	1	1	390.00	1.42080E+01

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Axial Profile: B32A322221
Serial No.: **16** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.41801E+01
5	27	28	73.13	3.52860E+01
6	26	26	85.31	3.33781E+01
7	23	25	121.88	3.56533E+01

8	22	22	134.06	3.38556E+01
9	20	21	158.44	3.50884E+01
10	18	19	182.81	3.50116E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.12640E+01
17	5	5	341.25	3.15837E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.18861E+01
21	1	1	390.00	2.04160E+01

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Axial Profile: B32A332211
Serial No.: **17** average discharge burn-up: 3.20000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	1.91540E+01
2	31	31	24.38	2.57358E+01
3	30	30	36.56	3.04051E+01
4	29	29	48.75	3.39038E+01
5	27	28	73.13	3.50369E+01
6	26	26	85.31	3.31763E+01
7	23	25	121.88	3.54859E+01
8	22	22	134.06	3.37424E+01
9	20	21	158.44	3.50064E+01
10	18	19	182.81	3.49766E+01
11	17	17	195.00	3.34032E+01
12	14	16	231.56	3.45814E+01
13	13	13	243.75	3.20275E+01
14	10	12	280.31	3.40369E+01
15	7	9	316.88	3.28967E+01
16	6	6	329.06	3.12640E+01
17	5	5	341.25	3.04000E+01
18	4	4	353.44	2.75481E+01
19	3	3	365.63	2.68853E+01
20	2	2	377.81	2.48960E+01
21	1	1	390.00	2.04160E+01

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Axial Profile: B50A222222
Serial No.: **18** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.40250E+01
5	27	28	73.13	5.56923E+01
6	26	26	85.31	5.26050E+01
7	23	25	121.88	5.60830E+01

8	22	22	134.06	5.31530E+01
9	20	21	158.44	5.50095E+01
10	18	19	182.81	5.47843E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.59192E+01

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Axial Profile: B50A111111
Serial No.: **19** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.47831E+01
5	27	28	73.13	5.63760E+01
6	26	26	85.31	5.31586E+01
7	23	25	121.88	5.65422E+01
8	22	22	134.06	5.34638E+01
9	20	21	158.44	5.52347E+01
10	18	19	182.81	5.48805E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.03000E+01
17	5	5	341.25	4.89000E+01
18	4	4	353.44	4.22500E+01
19	3	3	365.63	4.09000E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

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Axial Profile: B50A111112
Serial No.: **20** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.47161E+01
5	27	28	73.13	5.63156E+01
6	26	26	85.31	5.31097E+01
7	23	25	121.88	5.65017E+01

8	22	22	134.06	5.34363E+01
9	20	21	158.44	5.52149E+01
10	18	19	182.81	5.48720E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.89000E+01
18	4	4	353.44	4.22500E+01
19	3	3	365.63	4.09000E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

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Axial Profile: B50A111122
Serial No.: **21** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.46481E+01
5	27	28	73.13	5.62542E+01
6	26	26	85.31	5.30600E+01
7	23	25	121.88	5.64605E+01
8	22	22	134.06	5.34084E+01
9	20	21	158.44	5.51946E+01
10	18	19	182.81	5.48634E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.22500E+01
19	3	3	365.63	4.09000E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

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Axial Profile: B50A111222
Serial No.: **22** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.45280E+01
5	27	28	73.13	5.61459E+01
6	26	26	85.31	5.29723E+01
7	23	25	121.88	5.63877E+01

8	22	22	134.06	5.33592E+01
9	20	21	158.44	5.51590E+01
10	18	19	182.81	5.48481E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.09000E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

==

Axial Profile: B50A112222

Serial No.: **23** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.43603E+01
5	27	28	73.13	5.59947E+01
6	26	26	85.31	5.28499E+01
7	23	25	121.88	5.62862E+01
8	22	22	134.06	5.32905E+01
9	20	21	158.44	5.51091E+01
10	18	19	182.81	5.48268E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

==

Axial Profile: B50A122222

Serial No.: **24** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.42246E+01
5	27	28	73.13	5.58723E+01
6	26	26	85.31	5.27508E+01

7	23	25	121.88	5.62039E+01
8	22	22	134.06	5.32348E+01
9	20	21	158.44	5.50688E+01
10	18	19	182.81	5.48096E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.07425E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.46000E+01

==

Axial Profile: B50A222223
Serial No.: **25** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.37515E+01
5	27	28	73.13	5.54456E+01
6	26	26	85.31	5.24053E+01
7	23	25	121.88	5.59173E+01
8	22	22	134.06	5.30409E+01
9	20	21	158.44	5.49283E+01
10	18	19	182.81	5.47496E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.59192E+01

==

Axial Profile: B50A222233
Serial No.: **26** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.33808E+01
5	27	28	73.13	5.51113E+01
6	26	26	85.31	5.21345E+01

7	23	25	121.88	5.56927E+01
8	22	22	134.06	5.28889E+01
9	20	21	158.44	5.48181E+01
10	18	19	182.81	5.47024E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.59192E+01

==

Axial Profile: B50A222333

Serial No.: **27** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.29335E+01
5	27	28	73.13	5.47079E+01
6	26	26	85.31	5.18079E+01
7	23	25	121.88	5.54218E+01
8	22	22	134.06	5.27056E+01
9	20	21	158.44	5.46853E+01
10	18	19	182.81	5.46457E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.60000E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.59192E+01

==

Axial Profile: B50A223333

Serial No.: **28** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.23523E+01
5	27	28	73.13	5.41837E+01

6	26	26	85.31	5.13835E+01
7	23	25	121.88	5.50696E+01
8	22	22	134.06	5.24673E+01
9	20	21	158.44	5.45126E+01
10	18	19	182.81	5.45719E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.60000E+01
19	3	3	365.63	4.58500E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.59192E+01

==

Axial Profile: B50A233333
Serial No.: **29** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.17542E+01
5	27	28	73.13	5.36444E+01
6	26	26	85.31	5.09467E+01
7	23	25	121.88	5.47073E+01
8	22	22	134.06	5.22221E+01
9	20	21	158.44	5.43349E+01
10	18	19	182.81	5.44959E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.60000E+01
19	3	3	365.63	4.58500E+01
20	2	2	377.81	3.81500E+01
21	1	1	390.00	2.59192E+01

==

Axial Profile: B50A333333
Serial No.: **30** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.10990E+01
5	27	28	73.13	5.30534E+01

6	26	26	85.31	5.04682E+01
7	23	25	121.88	5.43103E+01
8	22	22	134.06	5.19535E+01
9	20	21	158.44	5.41403E+01
10	18	19	182.81	5.44128E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.60000E+01
19	3	3	365.63	4.58500E+01
20	2	2	377.81	3.81500E+01
21	1	1	390.00	3.02500E+01

==

Axial Profile: B50A122223
Serial No.: **31** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.39511E+01
5	27	28	73.13	5.56256E+01
6	26	26	85.31	5.25510E+01
7	23	25	121.88	5.60382E+01
8	22	22	134.06	5.31227E+01
9	20	21	158.44	5.49876E+01
10	18	19	182.81	5.47749E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	2.46000E+01

==

Axial Profile: B50A112233
Serial No.: **32** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.37161E+01
5	27	28	73.13	5.54137E+01

6	26	26	85.31	5.23794E+01
7	23	25	121.88	5.58958E+01
8	22	22	134.06	5.30264E+01
9	20	21	158.44	5.49178E+01
10	18	19	182.81	5.47450E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.8	5.14012E+01
16	6	6	329.06	5.25500E+01
17	5	5	341.25	5.18000E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.33000E+01
21	1	1	390.00	2.46000E+01

==

Axial Profile: B50A322221
Serial No.: **33** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.34367E+01
5	27	28	73.13	5.51617E+01
6	26	26	85.31	5.21754E+01
7	23	25	121.88	5.57266E+01
8	22	22	134.06	5.29118E+01
9	20	21	158.44	5.48347E+01
10	18	19	182.81	5.47096E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.03000E+01
17	5	5	341.25	4.93495E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.41971E+01
21	1	1	390.00	3.02500E+01

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Axial Profile: B50A332211
Serial No.: **34** average discharge burn-up: 5.00000E+01 MWd/kg U

Modelldistribution: 21 Abschnitte (delta B = 0.0E+00)

Abschnitt Nr.	Node-Anf.	Node-Ende	Hoehe / cm	average burn-up / MWd/kg
1	32	32	12.19	2.99282E+01
2	31	31	24.38	4.02122E+01
3	30	30	36.56	4.75080E+01
4	29	29	48.75	5.29066E+01
5	27	28	73.13	5.46837E+01

6	26	26	85.31	5.17883E+01
7	23	25	121.88	5.54055E+01
8	22	22	134.06	5.26945E+01
9	20	21	158.44	5.46773E+01
10	18	19	182.81	5.46423E+01
11	17	17	195.00	5.21925E+01
12	14	16	231.56	5.40333E+01
13	13	13	243.75	5.00430E+01
14	10	12	280.31	5.31827E+01
15	7	9	316.88	5.14012E+01
16	6	6	329.06	5.03000E+01
17	5	5	341.25	4.89000E+01
18	4	4	353.44	4.30439E+01
19	3	3	365.63	4.20084E+01
20	2	2	377.81	3.81500E+01
21	1	1	390.00	3.02500E+01

==

Ende

Appendix II

ISOTOPIC NUMBER DENSITIES FOR THE PHASE II-C AXIAL BURN-UP DISTRIBUTIONS

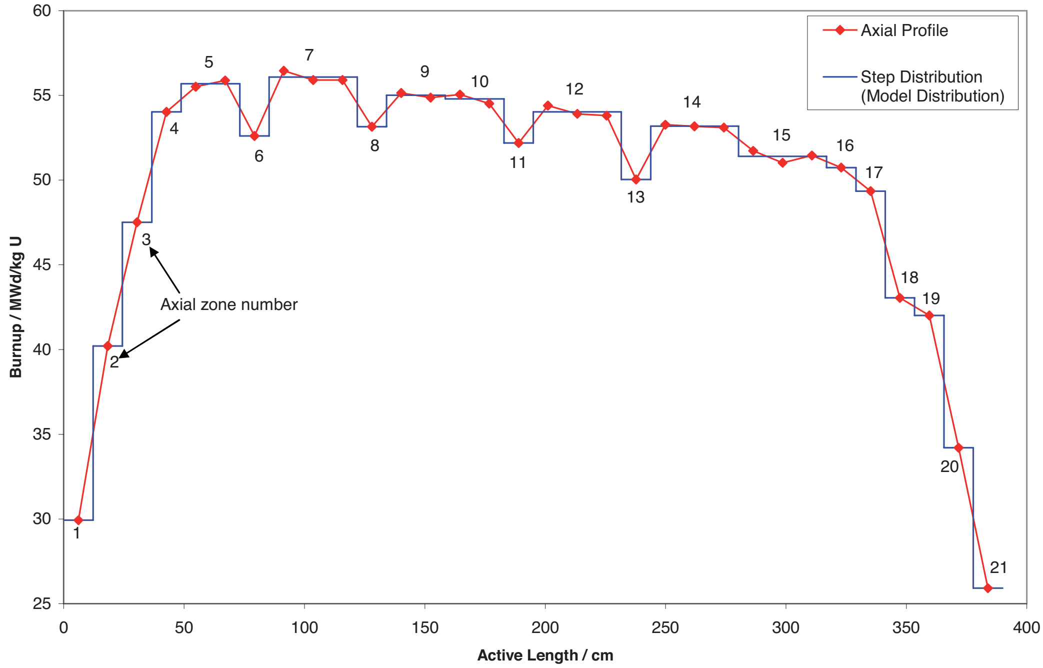
The isotopic number densities for the Phase II-C axial burn-up model distributions specified in Appendix I have been compiled in a file called "**outpy005_summary.sc5**". The structure of this file is described on the next page.

The isotopic number densities are grouped together in data blocks each starting with the heading "**From outpy005.sc5**". As can be seen from the next page, the isotopic number densities of the benchmark cases B32Annnnnn and B50Annnnnn are grouped together side by side. Hence each data block contains the identifications **B32Annnnnn** and **B50Annnnnn** of the Phase II-C axial burn-up model distributions, as specified in Table 3.2. Additionally, the respective serial numbers, "**Serial No. M**" and "**Serial No. M+17**", as defined in the file "**gen_ax03.mod**" (cf. Appendix I), are given in the headings of the data blocks.

Below the heading lines the isotopic number densities are given. The first three columns contain the data for the case B32Annnnnn, in the following three columns the data for the case B50Annnnnn are given, as specified below:

- In the first column the **names of the nuclides** are specified.
- In the second column the **axial zone number** is given (cf. Appendix I).
- The third column gives the **isotopic number densities** (in units of $cm^{-1}\times b^{-1}$) for the case B32Annnnnn.
- In the fourth column the **names of the nuclides** are specified.
- In the fith column the **axial zone number** is given.
- The sixth column gives the **isotopic number densities** (in units of $cm^{-1}\times b^{-1}$) for the case **B32Annnnnn**.

Phase II-C Axial Burnup Profile
Modelling of an Axial Profile



Description of the structure of the file "outpy005_summary.sc5"

From outpy005.sc5

==

B32Annnnnn
Serial No.: M from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05

Axial zone number

Number density / $b^{-1}cm^{-1}$

B50Annnnnn
Serial No.: M+17 from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05

Axial zone number

Number density / $b^{-1}cm^{-1}$

Content of the file “outpy005_summary.sc5”

From outpy005.sc5

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B32A222222
Serial No.: **1** from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07

B50A222222
Serial No.: **18** from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07

sm-152	2	3.10204E-06
eu-153	2	2.56910E-06
gd-155	2	8.84830E-08
o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.88905E-04
u-234	4	5.97027E-06
u-236	4	1.09455E-04
np-237	4	1.07955E-05
u-238	4	2.14307E-02
pu-238	4	3.32269E-06
pu-239	4	1.26244E-04
pu-240	4	4.56165E-05
pu-241	4	2.25194E-05
pu-242	4	8.90066E-06
am-241	4	6.82644E-06
am-243	4	1.55684E-06
mo-95	4	4.65889E-05
tc-99	4	4.66507E-05
ru-101	4	4.28884E-05
rh-103	4	2.52843E-05
ag-109	4	3.13143E-06
cs-133	4	4.83085E-05
nd-143	4	3.37264E-05
nd-145	4	2.75867E-05
sm-147	4	8.48345E-06
sm-149	4	1.51936E-07
sm-150	4	1.09699E-05
sm-151	4	4.75671E-07
sm-152	4	3.88713E-06
eu-153	4	3.81233E-06
gd-155	4	1.43257E-07
o	4	4.56500E-02

sm-152	2	4.32480E-06
eu-153	2	4.59828E-06
gd-155	2	1.82948E-07
o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.19659E-04
u-234	4	4.51881E-06
u-236	4	1.27479E-04
np-237	4	1.80169E-05
u-238	4	2.10645E-02
pu-238	4	8.94715E-06
pu-239	4	1.25412E-04
pu-240	4	6.32112E-05
pu-241	4	3.05007E-05
pu-242	4	2.32136E-05
am-241	4	9.38086E-06
am-243	4	6.25388E-06
mo-95	4	6.69566E-05
tc-99	4	6.74422E-05
ru-101	4	6.62199E-05
rh-103	4	3.37029E-05
ag-109	4	5.89704E-06
cs-133	4	6.81329E-05
nd-143	4	4.12349E-05
nd-145	4	3.89473E-05
sm-147	4	9.88153E-06
sm-149	4	1.55352E-07
sm-150	4	1.72254E-05
sm-151	4	5.92857E-07
sm-152	4	5.24846E-06
eu-153	4	6.38994E-06
gd-155	4	2.84782E-07
o	4	4.56500E-02

u-235	5	2.76687E-04	u-235	5	1.09919E-04
u-234	5	5.88116E-06	u-234	5	4.41224E-06
u-236	5	1.11113E-04	u-236	5	1.27933E-04
np-237	5	1.12247E-05	np-237	5	1.85336E-05
u-238	5	2.14120E-02	u-238	5	2.10302E-02
pu-238	5	3.57571E-06	pu-238	5	9.48334E-06
pu-239	5	1.26611E-04	pu-239	5	1.24941E-04
pu-240	5	4.68766E-05	pu-240	5	6.41987E-05
pu-241	5	2.31746E-05	pu-241	5	3.08470E-05
pu-242	5	9.56594E-06	pu-242	5	2.45859E-05
am-241	5	7.03826E-06	am-241	5	9.48794E-06
am-243	5	1.72780E-06	am-243	5	6.78688E-06
mo-95	5	4.78112E-05	mo-95	5	6.85251E-05
tc-99	5	4.78990E-05	tc-99	5	6.89990E-05
ru-101	5	4.41905E-05	ru-101	5	6.81564E-05
rh-103	5	2.58661E-05	rh-103	5	3.42170E-05
ag-109	5	3.27654E-06	ag-109	5	6.13316E-06
cs-133	5	4.95262E-05	cs-133	5	6.95707E-05
nd-143	5	3.43208E-05	nd-143	5	4.15835E-05
nd-145	5	2.82846E-05	nd-145	5	3.97998E-05
sm-147	5	8.60475E-06	sm-147	5	9.93089E-06
sm-149	5	1.52331E-07	sm-149	5	1.55274E-07
sm-150	5	1.13323E-05	sm-150	5	1.77160E-05
sm-151	5	4.82582E-07	sm-151	5	6.02264E-07
sm-152	5	3.97272E-06	sm-152	5	5.34641E-06
eu-153	5	3.96282E-06	eu-153	5	6.58978E-06
gd-155	5	1.50557E-07	gd-155	5	2.96797E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	2.99474E-04	u-235	6	1.28514E-04
u-234	6	6.04687E-06	u-234	6	4.61116E-06
u-236	6	1.07958E-04	u-236	6	1.26950E-04
np-237	6	1.04301E-05	np-237	6	1.75585E-05
u-238	6	2.14459E-02	u-238	6	2.10935E-02
pu-238	6	3.11620E-06	pu-238	6	8.49252E-06
pu-239	6	1.25864E-04	pu-239	6	1.25815E-04
pu-240	6	4.45351E-05	pu-240	6	6.23025E-05
pu-241	6	2.19114E-05	pu-241	6	3.01654E-05
pu-242	6	8.35178E-06	pu-242	6	2.20677E-05
am-241	6	6.63637E-06	am-241	6	9.27626E-06
am-243	6	1.41941E-06	am-243	6	5.81303E-06
mo-95	6	4.55382E-05	mo-95	6	6.55937E-05
tc-99	6	4.55778E-05	tc-99	6	6.60552E-05
ru-101	6	4.17758E-05	ru-101	6	6.45370E-05
rh-103	6	2.47764E-05	rh-103	6	3.32417E-05
ag-109	6	3.00893E-06	ag-109	6	5.69132E-06
cs-133	6	4.72524E-05	cs-133	6	6.68538E-05
nd-143	6	3.32012E-05	nd-143	6	4.08978E-05
nd-145	6	2.69841E-05	nd-145	6	3.82001E-05
sm-147	6	8.37280E-06	sm-147	6	9.82906E-06
sm-149	6	1.51585E-07	sm-149	6	1.55246E-07
sm-150	6	1.06629E-05	sm-150	6	1.68017E-05
sm-151	6	4.69771E-07	sm-151	6	5.84810E-07
sm-152	6	3.81221E-06	sm-152	6	5.16192E-06
eu-153	6	3.68551E-06	eu-153	6	6.21847E-06
gd-155	6	1.37134E-07	gd-155	6	2.74358E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.73863E-04	u-235	7	1.07717E-04
u-234	7	5.86018E-06	u-234	7	4.38718E-06
u-236	7	1.11490E-04	u-236	7	1.28018E-04
np-237	7	1.13251E-05	np-237	7	1.86520E-05

u-238	7	2.14071E-02
pu-238	7	3.63620E-06
pu-239	7	1.26688E-04
pu-240	7	4.71705E-05
pu-241	7	2.33183E-05
pu-242	7	9.72449E-06
am-241	7	7.08622E-06
am-243	7	1.76935E-06
mo-95	7	4.80957E-05
tc-99	7	4.81899E-05
ru-101	7	4.44949E-05
rh-103	7	2.60000E-05
ag-109	7	3.31069E-06
cs-133	7	4.98138E-05
nd-143	7	3.44564E-05
nd-145	7	2.84461E-05
sm-147	7	8.63216E-06
sm-149	7	1.52448E-07
sm-150	7	1.14177E-05
sm-151	7	4.84211E-07
sm-152	7	3.99225E-06
eu-153	7	3.99847E-06
gd-155	7	1.52288E-07
o	7	4.56500E-02
u-235	8	2.95392E-04
u-234	8	6.01709E-06
u-236	8	1.08540E-04
np-237	8	1.05712E-05
u-238	8	2.14397E-02
pu-238	8	3.19495E-06
pu-239	8	1.26018E-04
pu-240	8	4.49574E-05
pu-241	8	2.21450E-05
pu-242	8	8.56147E-06
am-241	8	6.71046E-06
am-243	8	1.47149E-06
mo-95	8	4.59447E-05
tc-99	8	4.59931E-05
ru-101	8	4.22049E-05
rh-103	8	2.49730E-05
ag-109	8	3.05601E-06
cs-133	8	4.76659E-05
nd-143	8	3.34054E-05
nd-145	8	2.72169E-05
sm-147	8	8.41630E-06
sm-149	8	1.51747E-07
sm-150	8	1.07820E-05
sm-151	8	4.72046E-07
sm-152	8	3.84097E-06
eu-153	8	3.73501E-06
gd-155	8	1.39490E-07
o	8	4.56500E-02
u-235	9	2.81651E-04
u-234	9	5.91770E-06
u-236	9	1.10449E-04
np-237	9	1.10489E-05
u-238	9	2.14203E-02
pu-238	9	3.47083E-06
pu-239	9	1.26471E-04
pu-240	9	4.63590E-05

u-238	7	2.10223E-02
pu-238	7	9.60856E-06
pu-239	7	1.24852E-04
pu-240	7	6.44209E-05
pu-241	7	3.09176E-05
pu-242	7	2.49043E-05
am-241	7	9.51039E-06
am-243	7	6.91390E-06
mo-95	7	6.89027E-05
tc-99	7	6.93645E-05
ru-101	7	6.86049E-05
rh-103	7	3.43322E-05
ag-109	7	6.19036E-06
cs-133	7	6.98996E-05
nd-143	7	4.16642E-05
nd-145	7	3.99882E-05
sm-147	7	9.94240E-06
sm-149	7	1.55281E-07
sm-150	7	1.78292E-05
sm-151	7	6.04323E-07
sm-152	7	5.37019E-06
eu-153	7	6.63477E-06
gd-155	7	2.99594E-07
o	7	4.56500E-02
u-235	8	1.25035E-04
u-234	8	4.57550E-06
u-236	8	1.27158E-04
np-237	8	1.77367E-05
u-238	8	2.10819E-02
pu-238	8	8.66781E-06
pu-239	8	1.25668E-04
pu-240	8	6.26605E-05
pu-241	8	3.03071E-05
pu-242	8	2.25086E-05
am-241	8	9.31826E-06
am-243	8	5.98186E-06
mo-95	8	6.61048E-05
tc-99	8	6.65771E-05
ru-101	8	6.51858E-05
rh-103	8	3.34221E-05
ag-109	8	5.77101E-06
cs-133	8	6.73500E-05
nd-143	8	4.10396E-05
nd-145	8	3.84884E-05
sm-147	8	9.84950E-06
sm-149	8	1.55218E-07
sm-150	8	1.69657E-05
sm-151	8	5.87793E-07
sm-152	8	5.19555E-06
eu-153	8	6.28442E-06
gd-155	8	2.78385E-07
o	8	4.56500E-02
u-235	9	1.13855E-04
u-234	9	4.45699E-06
u-236	9	1.27772E-04
np-237	9	1.83239E-05
u-238	9	2.10438E-02
pu-238	9	9.26475E-06
pu-239	9	1.25117E-04
pu-240	9	6.37916E-05

pu-241	9	2.29189E-05
pu-242	9	9.29114E-06
am-241	9	6.95318E-06
am-243	9	1.65660E-06
mo-95	9	4.73122E-05
tc-99	9	4.73892E-05
ru-101	9	4.36584E-05
rh-103	9	2.56303E-05
ag-109	9	3.21702E-06
cs-133	9	4.90260E-05
nd-143	9	3.40808E-05
nd-145	9	2.80007E-05
sm-147	9	8.55609E-06
sm-149	9	1.52145E-07
sm-150	9	1.11831E-05
sm-151	9	4.79753E-07
sm-152	9	3.93832E-06
eu-153	9	3.90043E-06
gd-155	9	1.47551E-07
o	9	4.56500E-02
u-235	10	2.83300E-04
u-234	10	5.92974E-06
u-236	10	1.10226E-04
np-237	10	1.09909E-05
u-238	10	2.14229E-02
pu-238	10	3.43655E-06
pu-239	10	1.26422E-04
pu-240	10	4.61882E-05
pu-241	10	2.28313E-05
pu-242	10	9.20113E-06
am-241	10	6.92464E-06
am-243	10	1.63347E-06
mo-95	10	4.71470E-05
tc-99	10	4.72205E-05
ru-101	10	4.34826E-05
rh-103	10	2.55518E-05
ag-109	10	3.19741E-06
cs-133	10	4.88615E-05
nd-143	10	3.40006E-05
nd-145	10	2.79065E-05
sm-147	10	8.53976E-06
sm-149	10	1.52092E-07
sm-150	10	1.11340E-05
sm-151	10	4.78821E-07
sm-152	10	3.92679E-06
eu-153	10	3.88001E-06
gd-155	10	1.46563E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06

pu-241	9	3.07229E-05
pu-242	9	2.40338E-05
am-241	9	9.44740E-06
am-243	9	6.56724E-06
mo-95	9	6.78580E-05
tc-99	9	6.83618E-05
ru-101	9	6.73869E-05
rh-103	9	3.40099E-05
ag-109	9	6.03474E-06
cs-133	9	6.89792E-05
nd-143	9	4.14221E-05
nd-145	9	3.94648E-05
sm-147	9	9.91057E-06
sm-149	9	1.55279E-07
sm-150	9	1.75178E-05
sm-151	9	5.98533E-07
sm-152	9	5.30486E-06
eu-153	9	6.50904E-06
gd-155	9	2.91898E-07
o	9	4.56500E-02
u-235	10	1.15165E-04
u-234	10	4.47131E-06
u-236	10	1.27713E-04
np-237	10	1.82544E-05
u-238	10	2.10485E-02
pu-238	10	9.19224E-06
pu-239	10	1.25182E-04
pu-240	10	6.36589E-05
pu-241	10	3.06754E-05
pu-242	10	2.38476E-05
am-241	10	9.43294E-06
am-243	10	6.49516E-06
mo-95	10	6.76489E-05
tc-99	10	6.81538E-05
ru-101	10	6.71254E-05
rh-103	10	3.39405E-05
ag-109	10	6.00308E-06
cs-133	10	6.87858E-05
nd-143	10	4.13756E-05
nd-145	10	3.93492E-05
sm-147	10	9.90416E-06
sm-149	10	1.55301E-07
sm-150	10	1.74515E-05
sm-151	10	5.97261E-07
sm-152	10	5.29177E-06
eu-153	10	6.48197E-06
gd-155	10	2.90279E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06

mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05
rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05

mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05
rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05

ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05
nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05

sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05
sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	3.13935E-04
u-234	16	6.15127E-06
u-236	16	1.05916E-04
np-237	16	9.95222E-06
u-238	16	2.14664E-02
pu-238	16	2.85514E-06
pu-239	16	1.25287E-04
pu-240	16	4.30459E-05
pu-241	16	2.11218E-05
pu-242	16	7.65463E-06
am-241	16	6.38270E-06
am-243	16	1.25110E-06
mo-95	16	4.41463E-05
tc-99	16	4.41561E-05
ru-101	16	4.03150E-05
rh-103	16	2.40942E-05
ag-109	16	2.84987E-06
cs-133	16	4.58390E-05
nd-143	16	3.24838E-05
nd-145	16	2.61886E-05
sm-147	16	8.22081E-06
sm-149	16	1.51075E-07
sm-150	16	1.02533E-05
sm-151	16	4.62024E-07
sm-152	16	3.71220E-06
eu-153	16	3.51570E-06
gd-155	16	1.29244E-07
o	16	4.56500E-02
u-235	17	3.25113E-04
u-234	17	6.22880E-06
u-236	17	1.04316E-04
np-237	17	9.59600E-06
u-238	17	2.14814E-02
pu-238	17	2.66735E-06
pu-239	17	1.24787E-04
pu-240	17	4.19145E-05
pu-241	17	2.05062E-05
pu-242	17	7.14936E-06
am-241	17	6.18694E-06
am-243	17	1.13367E-06
mo-95	17	4.30942E-05
tc-99	17	4.30826E-05
ru-101	17	3.92191E-05
rh-103	17	2.35711E-05
ag-109	17	2.73221E-06
cs-133	17	4.47589E-05
nd-143	17	3.19269E-05
nd-145	17	2.55849E-05
sm-147	17	8.10262E-06
sm-149	17	1.50682E-07
sm-150	17	9.94777E-06
sm-151	17	4.56286E-07

sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05
sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.40899E-04
u-234	16	4.73543E-06
u-236	16	1.26119E-04
np-237	16	1.69338E-05
u-238	16	2.11293E-02
pu-238	16	7.89636E-06
pu-239	16	1.26220E-04
pu-240	16	6.10380E-05
pu-241	16	2.96847E-05
pu-242	16	2.05635E-05
am-241	16	9.12570E-06
am-243	16	5.24952E-06
mo-95	16	6.38179E-05
tc-99	16	6.42347E-05
ru-101	16	6.23276E-05
rh-103	16	3.26061E-05
ag-109	16	5.42168E-06
cs-133	16	6.51707E-05
nd-143	16	4.03986E-05
nd-145	16	3.72288E-05
sm-147	16	9.75471E-06
sm-149	16	1.55149E-07
sm-150	16	1.62357E-05
sm-151	16	5.74357E-07
sm-152	16	5.04808E-06
eu-153	16	5.98844E-06
gd-155	16	2.60681E-07
o	16	4.56500E-02
u-235	17	1.50731E-04
u-234	17	4.83091E-06
u-236	17	1.25349E-04
np-237	17	1.64549E-05
u-238	17	2.11566E-02
pu-238	17	7.45492E-06
pu-239	17	1.26509E-04
pu-240	17	6.00272E-05
pu-241	17	2.92753E-05
pu-242	17	1.94574E-05
am-241	17	8.99925E-06
am-243	17	4.84519E-06
mo-95	17	6.24199E-05
tc-99	17	6.28100E-05
ru-101	17	6.06755E-05
rh-103	17	3.21027E-05
ag-109	17	5.21993E-06
cs-133	17	6.38543E-05
nd-143	17	4.00358E-05
nd-145	17	3.64720E-05
sm-147	17	9.69093E-06
sm-149	17	1.55196E-07
sm-150	17	1.58064E-05
sm-151	17	5.66626E-07

sm-152	17	3.63545E-06
eu-153	17	3.38980E-06
gd-155	17	1.23486E-07
o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
d-155	19	9.49172E-08
o	19	4.56500E-02

sm-152	17	4.95778E-06
eu-153	17	5.81268E-06
gd-155	17	2.50406E-07
o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02

u-235	20	4.63519E-04	u-235	20	2.93307E-04
u-234	20	7.12538E-06	u-234	20	6.00200E-06
u-236	20	8.26978E-05	u-236	20	1.08836E-04
np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	21	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)
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B32A111111
Serial No.: **2** from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-14	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06

B50A111111
Serial No.: **19** from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
d-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06

gd-155	2	8.84830E-08
o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.71295E-04
u-234	4	5.84097E-06
u-236	4	1.11833E-04
np-237	4	1.14167E-05
u-238	4	2.14027E-02
pu-238	4	3.69154E-06
pu-239	4	1.26756E-04
pu-240	4	4.74354E-05
pu-241	4	2.34505E-05
pu-242	4	9.86991E-06
am-241	4	7.12967E-06
am-243	4	1.80783E-06
mo-95	4	4.83545E-05
tc-99	4	4.84548E-05
ru-101	4	4.47728E-05
rh-103	4	2.61217E-05
ag-109	4	3.34192E-06
cs-133	4	5.00772E-05
nd-143	4	3.45792E-05
nd-145	4	2.85932E-05
sm-147	4	8.65697E-06
sm-149	4	1.52560E-07
sm-150	4	1.14952E-05
sm-151	4	4.85707E-07
sm-152	4	4.01010E-06
eu-153	4	4.03068E-06
gd-155	4	1.53874E-07
o	4	4.56500E-02
u-235	5	2.61138E-04
u-234	5	5.76437E-06

gd-155	2	1.82948E-07
o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.15172E-04
u-234	4	4.47138E-06
u-236	4	1.27712E-04
np-237	4	1.82540E-05
u-238	4	2.10486E-02
pu-238	4	9.19185E-06
pu-239	4	1.25182E-04
pu-240	4	6.36582E-05
pu-241	4	3.06751E-05
pu-242	4	2.38466E-05
am-241	4	9.43287E-06
am-243	4	6.49478E-06
mo-95	4	6.76478E-05
tc-99	4	6.81527E-05
ru-101	4	6.71240E-05
rh-103	4	3.39401E-05
ag-109	4	6.00291E-06
cs-133	4	6.87848E-05
nd-143	4	4.13754E-05
nd-145	4	3.93486E-05
sm-147	4	9.90412E-06
sm-149	4	1.55301E-07
sm-150	4	1.74511E-05
sm-151	4	5.97254E-07
sm-152	4	5.29170E-06
eu-153	4	6.48182E-06
gd-155	4	2.90270E-07
o	4	4.56500E-02
u-235	5	1.06097E-04
u-234	5	4.36918E-06

u-236	5	1.13182E-04	u-236	5	1.28083E-04
np-237	5	1.17827E-05	np-237	5	1.87397E-05
u-238	5	2.13864E-02	u-238	5	2.10161E-02
pu-238	5	3.91607E-06	pu-238	5	9.70289E-06
pu-239	5	1.26998E-04	pu-239	5	1.24793E-04
pu-240	5	4.84702E-05	pu-240	5	6.45776E-05
pu-241	5	2.39885E-05	pu-241	5	3.09753E-05
pu-242	5	1.04600E-05	pu-242	5	2.51477E-05
am-241	5	7.30088E-06	am-241	5	9.52748E-06
am-243	5	1.96704E-06	am-243	5	7.01010E-06
mo-95	5	4.93875E-05	mo-95	5	6.91741E-05
tc-99	5	4.95113E-05	tc-99	5	6.96378E-05
ru-101	5	4.58879E-05	ru-101	5	6.89528E-05
rh-103	5	2.66053E-05	rh-103	5	3.44167E-05
ag-109	5	3.46778E-06	ag-109	5	6.23321E-06
cs-133	5	5.11254E-05	cs-133	5	7.01381E-05
nd-143	5	3.50621E-05	nd-143	5	4.17105E-05
nd-145	5	2.91806E-05	nd-145	5	4.01309E-05
sm-147	5	8.75501E-06	sm-147	5	9.95059E-06
sm-149	5	1.52951E-07	sm-149	5	1.55279E-07
sm-150	5	1.18044E-05	sm-150	5	1.79147E-05
sm-151	5	4.91629E-07	sm-151	5	6.05835E-07
sm-152	5	4.08232E-06	sm-152	5	5.38746E-06
eu-153	5	4.15749E-06	eu-153	5	6.66798E-06
gd-155	5	1.60279E-07	gd-155	5	3.01689E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	2.86362E-04	u-235	6	1.25000E-04
u-234	6	5.95193E-06	u-234	6	4.57513E-06
u-236	6	1.09807E-04	u-236	6	1.27160E-04
np-237	6	1.08839E-05	np-237	6	1.77385E-05
u-238	6	2.14273E-02	u-238	6	2.10818E-02
pu-238	6	3.37388E-06	pu-238	6	8.66960E-06
pu-239	6	1.26326E-04	pu-239	6	1.25666E-04
pu-240	6	4.58746E-05	pu-240	6	6.26642E-05
pu-241	6	2.26633E-05	pu-241	6	3.03084E-05
pu-242	6	9.03601E-06	pu-242	6	2.25131E-05
am-241	6	6.87123E-06	am-241	6	9.31868E-06
am-243	6	1.59125E-06	am-243	6	5.98359E-06
mo-95	6	4.68417E-05	mo-95	6	6.61102E-05
tc-99	6	4.69088E-05	tc-99	6	6.65826E-05
ru-101	6	4.31574E-05	ru-101	6	6.51924E-05
rh-103	6	2.54058E-05	rh-103	6	3.34239E-05
ag-109	6	3.16125E-06	ag-109	6	5.77182E-06
cs-133	6	4.85587E-05	cs-133	6	6.73551E-05
nd-143	6	3.38511E-05	nd-143	6	4.10410E-05
nd-145	6	2.77318E-05	nd-145	6	3.84913E-05
sm-147	6	8.50917E-06	sm-147	6	9.84972E-06
sm-149	6	1.52003E-07	sm-149	6	1.55219E-07
sm-150	6	1.10439E-05	sm-150	6	1.69674E-05
sm-151	6	4.77097E-07	sm-151	6	5.87824E-07
sm-152	6	3.90520E-06	sm-152	6	5.19589E-06
eu-153	6	3.84277E-06	eu-153	6	6.28510E-06
gd-155	6	1.44749E-07	gd-155	6	2.78427E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.63411E-04	u-235	7	1.05188E-04
u-234	7	5.78154E-06	u-234	7	4.35918E-06
u-236	7	1.12885E-04	u-236	7	1.28119E-04
np-237	7	1.16998E-05	np-237	7	1.87892E-05
u-238	7	2.13899E-02	u-238	7	2.10126E-02
pu-238	7	3.86459E-06	pu-238	7	9.75652E-06

pu-239	7	1.26949E-04	pu-239	7	1.24760E-04
pu-240	7	4.82381E-05	pu-240	7	6.46638E-05
pu-241	7	2.38670E-05	pu-241	7	3.10094E-05
pu-242	7	1.03252E-05	pu-242	7	2.52867E-05
am-241	7	7.26256E-06	am-241	7	9.53726E-06
am-243	7	1.93031E-06	am-243	7	7.06510E-06
mo-95	7	4.91537E-05	mo-95	7	6.93254E-05
tc-99	7	4.92728E-05	tc-99	7	6.97927E-05
ru-101	7	4.56351E-05	ru-101	7	6.91520E-05
rh-103	7	2.64965E-05	rh-103	7	3.44641E-05
ag-109	7	3.43916E-06	ag-109	7	6.25739E-06
cs-133	7	5.08909E-05	cs-133	7	7.02723E-05
nd-143	7	3.49541E-05	nd-143	7	4.17340E-05
nd-145	7	2.90477E-05	nd-145	7	4.02121E-05
sm-147	7	8.73298E-06	sm-147	7	9.95499E-06
sm-149	7	1.52882E-07	sm-149	7	1.55274E-07
sm-150	7	1.17344E-05	sm-150	7	1.79632E-05
sm-151	7	4.90323E-07	sm-151	7	6.06678E-07
sm-152	7	4.06587E-06	sm-152	7	5.39702E-06
eu-153	7	4.12885E-06	eu-153	7	6.68677E-06
gd-155	7	1.58822E-07	gd-155	7	3.02876E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	2.88030E-04	u-235	8	1.23094E-04
u-234	8	5.96397E-06	u-234	8	4.55511E-06
u-236	8	1.09576E-04	u-236	8	1.27276E-04
np-237	8	1.08259E-05	np-237	8	1.78373E-05
u-238	8	2.14296E-02	u-238	8	2.10757E-02
pu-238	8	3.34021E-06	pu-238	8	8.76717E-06
pu-239	8	1.26273E-04	pu-239	8	1.25579E-04
pu-240	8	4.57051E-05	pu-240	8	6.28609E-05
pu-241	8	2.25693E-05	pu-241	8	3.03776E-05
pu-242	8	8.94704E-06	pu-242	8	2.27578E-05
am-241	8	6.84189E-06	am-241	8	9.34099E-06
am-243	8	1.56861E-06	am-243	8	6.07824E-06
mo-95	8	4.66758E-05	mo-95	8	6.64100E-05
tc-99	8	4.67394E-05	tc-99	8	6.68860E-05
ru-101	8	4.29808E-05	ru-101	8	6.55531E-05
rh-103	8	2.53261E-05	rh-103	8	3.35231E-05
ag-109	8	3.14166E-06	ag-109	8	5.81633E-06
cs-133	8	4.83945E-05	cs-133	8	6.76321E-05
nd-143	8	3.37693E-05	nd-143	8	4.11145E-05
nd-145	8	2.76366E-05	nd-145	8	3.86514E-05
sm-147	8	8.49233E-06	sm-147	8	9.86137E-06
sm-149	8	1.51959E-07	sm-149	8	1.55266E-07
sm-150	8	1.09953E-05	sm-150	8	1.70583E-05
sm-151	8	4.76161E-07	sm-151	8	5.89570E-07
sm-152	8	3.89336E-06	sm-152	8	5.21472E-06
eu-153	8	3.82277E-06	eu-153	8	6.32195E-06
gd-155	8	1.43769E-07	gd-155	8	2.80671E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.76434E-04	u-235	9	1.12548E-04
u-234	9	5.87929E-06	u-234	9	4.44234E-06
u-236	9	1.11147E-04	u-236	9	1.27828E-04
np-237	9	1.12336E-05	np-237	9	1.83934E-05
u-238	9	2.14116E-02	u-238	9	2.10393E-02
pu-238	9	3.58109E-06	pu-238	9	9.33698E-06
pu-239	9	1.26618E-04	pu-239	9	1.25056E-04
pu-240	9	4.69029E-05	pu-240	9	6.39261E-05
pu-241	9	2.31874E-05	pu-241	9	3.07662E-05
pu-242	9	9.58004E-06	pu-242	9	2.42171E-05

am-241	9	7.04256E-06
am-243	9	1.73148E-06
mo-95	9	4.78366E-05
tc-99	9	4.79249E-05
ru-101	9	4.42177E-05
rh-103	9	2.58781E-05
ag-109	9	3.27959E-06
cs-133	9	4.95518E-05
nd-143	9	3.43330E-05
nd-145	9	2.82990E-05
sm-147	9	8.60720E-06
sm-149	9	1.52341E-07
sm-150	9	1.13400E-05
sm-151	9	4.82727E-07
sm-152	9	3.97447E-06
eu-153	9	3.96601E-06
gd-155	9	1.50711E-07
o	9	4.56500E-02
u-235	10	2.81056E-04
u-234	10	5.91335E-06
u-236	10	1.10529E-04
np-237	10	1.10699E-05
u-238	10	2.14194E-02
pu-238	10	3.48326E-06
pu-239	10	1.26488E-04
pu-240	10	4.64208E-05
pu-241	10	2.29500E-05
pu-242	10	9.32375E-06
am-241	10	6.96344E-06
am-243	10	1.66500E-06
mo-95	10	4.73718E-05
tc-99	10	4.74501E-05
ru-101	10	4.37219E-05
rh-103	10	2.56586E-05
ag-109	10	3.22411E-06
cs-133	10	4.90855E-05
nd-143	10	3.41097E-05
nd-145	10	2.80347E-05
sm-147	10	8.56196E-06
sm-149	10	1.52166E-07
sm-150	10	1.12009E-05
sm-151	10	4.80090E-07
sm-152	10	3.94246E-06
eu-153	10	3.90784E-06
gd-155	10	1.47908E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05

am-241	9	9.46121E-06
am-243	9	6.63945E-06
mo-95	9	6.80745E-05
tc-99	9	6.85710E-05
ru-101	9	6.76428E-05
rh-103	9	3.40788E-05
ag-109	9	6.06684E-06
cs-133	9	6.91744E-05
nd-143	9	4.14739E-05
nd-145	9	3.95773E-05
sm-147	9	9.91719E-06
sm-149	9	1.55269E-07
sm-150	9	1.75835E-05
sm-151	9	5.99784E-07
sm-152	9	5.31835E-06
eu-153	9	6.53591E-06
gd-155	9	2.93516E-07
o	9	4.56500E-02
u-235	10	1.14605E-04
u-234	10	4.46523E-06
u-236	10	1.27739E-04
np-237	10	1.82841E-05
u-238	10	2.10465E-02
pu-238	10	9.22325E-06
pu-239	10	1.25154E-04
pu-240	10	6.37154E-05
pu-241	10	3.06962E-05
pu-242	10	2.39274E-05
am-241	10	9.43920E-06
am-243	10	6.52593E-06
mo-95	10	6.77374E-05
tc-99	10	6.82426E-05
ru-101	10	6.72378E-05
rh-103	10	3.39702E-05
ag-109	10	6.01656E-06
cs-133	10	6.88682E-05
nd-143	10	4.13948E-05
nd-145	10	3.93989E-05
sm-147	10	9.90688E-06
sm-149	10	1.55290E-07
sm-150	10	1.74799E-05
sm-151	10	5.97807E-07
sm-152	10	5.29732E-06
eu-153	10	6.49355E-06
gd-155	10	2.90971E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05

ru-101	11	4.14529E-05
rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05

ru-101	11	6.40475E-05
rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05

nd-143	13	3.22052E-05	nd-143	13	4.02130E-05
nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-23	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07

sm-150	15	1.03985E-05
sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	3.29102E-04
u-234	16	6.25617E-06
u-236	16	1.03726E-04
np-237	16	9.46817E-06
u-238	16	2.14873E-02
pu-238	16	2.60183E-06
pu-239	16	1.24590E-04
pu-240	16	4.15089E-05
pu-241	16	2.02783E-05
pu-242	16	6.97225E-06
am-241	16	6.11432E-06
am-243	16	1.09336E-06
mo-95	16	4.27144E-05
tc-99	16	4.26955E-05
ru-101	16	3.88263E-05
rh-103	16	2.33817E-05
ag-109	16	2.69046E-06
cs-133	16	4.43640E-05
nd-143	16	3.17247E-05
nd-145	16	2.53663E-05
sm-147	16	8.05862E-06
sm-149	16	1.50484E-07
sm-150	16	9.83877E-06
sm-151	16	4.54219E-07
sm-152	16	3.60805E-06
eu-153	16	3.34462E-06
gd-155	16	1.21447E-07
o	16	4.56500E-02
u-235	17	3.40166E-04
u-234	17	6.33355E-06
u-236	17	1.02073E-04
np-237	17	9.12417E-06
u-238	7	2.15019E-02
pu-238	17	2.42773E-06
pu-239	17	1.24007E-04
pu-240	17	4.03833E-05
pu-241	17	1.96569E-05
pu-242	17	6.50359E-06
am-241	17	5.91603E-06
am-243	17	9.89220E-07
mo-95	17	4.16833E-05
tc-99	17	4.16443E-05
ru-101	17	3.77651E-05
rh-103	17	2.28608E-05
ag-109	17	2.57829E-06
cs-133	17	4.33352E-05
nd-143	17	3.11659E-05
nd-145	17	2.47708E-05
sm-147	17	7.93543E-06
sm-149	17	1.49921E-07
sm-150	17	9.54145E-06
sm-151	17	4.48343E-07
sm-152	17	3.53210E-06
eu-153	17	3.22255E-06

sm-150	15	1.64364E-05
sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.43978E-04
u-234	16	4.76518E-06
u-236	16	1.25884E-04
np-237	16	1.67837E-05
u-238	16	2.11388E-02
pu-238	16	7.75563E-06
pu-239	16	1.26309E-04
pu-240	16	6.07157E-05
pu-241	16	2.95657E-05
pu-242	16	2.02103E-05
am-241	16	9.08923E-06
am-243	16	5.12090E-06
mo-95	16	6.33904E-05
tc-99	16	6.37698E-05
ru-101	16	6.18028E-05
rh-103	16	3.24498E-05
ag-109	16	5.35756E-06
cs-133	16	6.47529E-05
nd-143	16	4.02799E-05
nd-145	16	3.69911E-05
sm-147	16	9.73502E-06
sm-149	16	1.55152E-07
sm-150	16	1.61011E-05
sm-151	16	5.71990E-07
sm-152	16	5.01946E-06
eu-153	16	5.93352E-06
gd-155	16	2.57414E-07
o	16	4.56500E-02
u-235	17	1.54003E-04
u-234	17	4.86237E-06
u-236	17	1.25079E-04
np-237	17	1.62967E-05
u-238	17	2.11650E-02
pu-238	17	7.31334E-06
pu-239	17	1.26599E-04
pu-240	17	5.96963E-05
pu-241	17	2.91311E-05
pu-242	17	1.91033E-05
am-241	17	8.95316E-06
am-243	17	4.71668E-06
mo-95	17	6.19623E-05
tc-99	17	6.23715E-05
ru-101	17	6.01425E-05
rh-103	17	3.19344E-05
ag-109	17	5.15480E-06
cs-133	17	6.34336E-05
nd-143	17	3.99032E-05
nd-145	17	3.62250E-05
sm-147	17	9.66802E-06
sm-149	17	1.55154E-07
sm-150	17	1.56658E-05
sm-151	17	5.64014E-07
sm-152	17	4.92904E-06
eu-153	17	5.75503E-06

gd-155	17	1.15977E-07	gd-155	17	2.47078E-07
o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	4.02854E-04	u-235	18	2.09023E-04
u-234	18	6.74855E-06	u-234	18	5.35051E-06
u-236	18	9.24956E-05	u-236	18	1.19578E-04
np-237	18	7.32907E-06	np-237	18	1.38373E-05
u-238	18	2.15773E-02	u-238	18	2.12936E-02
pu-238	18	1.62231E-06	pu-238	18	5.31343E-06
pu-239	18	1.19636E-04	pu-239	18	1.27414E-04
pu-240	18	3.41862E-05	pu-240	18	5.39328E-05
pu-241	18	1.61423E-05	pu-241	18	2.66537E-05
pu-242	18	4.29667E-06	pu-242	18	1.40584E-05
am-241	18	4.80648E-06	am-241	18	8.15716E-06
am-243	18	5.44760E-07	am-243	18	3.02248E-06
mo-95	18	3.61237E-05	mo-95	18	5.51016E-05
tc-99	18	3.59844E-05	tc-99	18	5.53795E-05
ru-101	18	3.21569E-05	ru-101	18	5.22065E-05
rh-103	18	1.99792E-05	rh-103	18	2.91640E-05
ag-109	18	2.00887E-06	ag-109	18	4.19951E-06
cs-133	18	3.76284E-05	cs-133	18	5.67961E-05
nd-143	18	2.79489E-05	nd-143	18	3.75004E-05
nd-145	18	2.15554E-05	nd-145	18	.24087E-05
sm-147	18	7.21901E-06	sm-147	18	9.23380E-06
sm-149	18	1.46934E-07	sm-149	18	1.54327E-07
sm-150	18	7.97887E-06	sm-150	18	1.35400E-05
sm-151	18	4.17947E-07	sm-151	18	5.24338E-07
sm-152	18	3.11359E-06	sm-152	18	4.47334E-06
eu-153	18	2.58574E-06	eu-153	18	4.87637E-06
gd-155	18	8.91490E-08	gd-155	18	1.97820E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	4.13126E-04	u-235	19	2.21759E-04
u-234	19	6.81401E-06	u-234	19	5.45413E-06
u-236	19	9.08556E-05	u-236	19	1.18088E-04
np-237	19	7.05768E-06	np-237	19	1.33139E-05
u-238	19	2.15886E-02	u-238	19	2.13179E-02
pu-238	19	1.51360E-06	pu-238	19	4.93603E-06
pu-239	19	1.18742E-04	pu-239	19	1.27418E-04
pu-240	19	3.31979E-05	pu-240	19	5.25926E-05
pu-241	19	1.55639E-05	pu-241	19	2.60192E-05
pu-242	19	3.99591E-06	pu-242	19	1.30910E-05
am-241	19	4.62716E-06	am-241	19	7.95659E-06
am-243	19	4.90813E-07	am-243	19	2.72515E-06
mo-95	19	3.52449E-05	mo-95	19	5.36559E-05
tc-99	19	3.50906E-05	tc-99	19	5.38728E-05
ru-101	19	3.12845E-05	ru-101	19	5.05779E-05
rh-103	19	1.95143E-05	rh-103	19	2.85308E-05
ag-109	19	1.92407E-06	ag-109	19	4.00845E-06
cs-133	19	3.67210E-05	cs-133	19	5.53574E-05
nd-143	19	2.74101E-05	nd-143	19	3.69216E-05
nd-145	19	2.10422E-05	nd-145	19	3.15931E-05
sm-147	19	7.09662E-06	sm-147	19	9.12403E-06
sm-149	19	1.46308E-07	sm-149	19	1.53933E-07
sm-150	19	7.73893E-06	sm-150	19	1.30940E-05
sm-151	19	4.13128E-07	sm-151	19	5.15646E-07
sm-152	19	3.04553E-06	sm-152	19	4.37653E-06
eu-153	19	2.48852E-06	eu-153	19	4.69376E-06
gd-155	19	8.52874E-08	gd-155	19	1.87952E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.96741E-04	u-235	20	3.03798E-04
u-234	20	7.32480E-06	u-234	20	6.07848E-06

u-236	20	7.71931E-05	u-236	20	1.07340E-04
np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A111112
Serial No.: **3** from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06
gd-155	2	8.84830E-08

B50A111112
Serial No.: **20** from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06
gd-155	2	1.82948E-07

o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.73355E-04	u-235	4	1.15564E-04
u-234	4	5.85639E-06	u-234	4	4.47559E-06
u-236	4	1.11557E-04	u-236	4	1.27694E-04
np-237	4	1.13432E-05	np-237	4	1.82332E-05
u-238	4	2.14062E-02	u-238	4	2.10500E-02
pu-238	4	3.64712E-06	pu-238	4	9.17024E-06
pu-239	4	1.26701E-04	pu-239	4	1.25202E-04
pu-240	4	4.72231E-05	pu-240	4	6.36190E-05
pu-241	4	2.33443E-05	pu-241	4	3.06603E-05
pu-242	4	9.75317E-06	pu-242	4	2.37907E-05
am-241	4	7.09483E-06	am-241	4	9.42845E-06
am-243	4	1.77691E-06	am-243	4	6.47336E-06
mo-95	4	4.81469E-05	mo-95	4	6.75867E-05
tc-99	4	4.82422E-05	tc-99	4	6.80909E-05
ru-101	4	4.45498E-05	ru-101	4	6.70452E-05
rh-103	4	2.60240E-05	rh-103	4	3.39194E-05
ag-109	4	3.31685E-06	ag-109	4	5.99356E-06
cs-133	4	4.98658E-05	cs-133	4	6.87275E-05
nd-143	4	3.44807E-05	nd-143	4	4.13624E-05
nd-145	4	2.84752E-05	nd-145	4	3.93137E-05
sm-147	4	8.63707E-06	sm-147	4	9.90223E-06
sm-149	4	1.52470E-07	sm-149	4	1.55308E-07
sm-150	4	1.14330E-05	sm-150	4	1.74313E-05
sm-151	4	4.84505E-07	sm-151	4	5.96872E-07
sm-152	4	3.99577E-06	sm-152	4	5.28787E-06
eu-153	4	4.00486E-06	eu-153	4	6.47374E-06
gd-155	4	1.52601E-07	gd-155	4	2.89788E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.62947E-04	u-235	5	1.06429E-04
u-234	5	5.77803E-06	u-234	5	4.37284E-06
u-236	5	1.12946E-04	u-236	5	1.28070E-04

np-237	5	1.17167E-05
u-238	5	2.13891E-02
pu-238	5	3.87502E-06
pu-239	5	1.26960E-04
pu-240	5	4.82853E-05
pu-241	5	2.38918E-05
pu-242	5	1.03526E-05
am-241	5	7.27038E-06
am-243	5	1.93776E-06
mo-95	5	4.92013E-05
tc-99	5	4.93214E-05
ru-101	5	4.56865E-05
rh-103	5	2.65187E-05
ag-109	5	3.44498E-06
cs-133	5	5.09388E-05
nd-143	5	3.49761E-05
nd-145	5	2.90747E-05
sm-147	5	8.73747E-06
sm-149	5	1.52898E-07
sm-150	5	1.17486E-05
sm-151	5	4.90591E-07
sm-152	5	4.06921E-06
eu-153	5	4.13468E-06
gd-155	5	1.59118E-07
o	5	4.56500E-02
u-235	6	2.87909E-04
u-234	6	5.96309E-06
u-236	6	1.09593E-04
np-237	6	1.08301E-05
u-238	6	2.14294E-02
pu-238	6	3.34265E-06
pu-239	6	1.26277E-04
pu-240	6	4.57175E-05
pu-241	6	2.25762E-05
pu-242	6	8.95350E-06
am-241	6	6.84403E-06
am-243	6	1.57025E-06
mo-95	6	4.66879E-05
tc-99	6	4.67518E-05
ru-101	6	4.29937E-05
rh-103	6	2.53320E-05
ag-109	6	3.14309E-06
cs-133	6	4.84065E-05
nd-143	6	3.37753E-05
nd-145	6	2.76435E-05
sm-147	6	8.49356E-06
sm-149	6	1.51962E-07
sm-150	6	1.09988E-05
sm-151	6	4.76229E-07
sm-152	6	3.89422E-06
eu-153	6	3.82422E-06
gd-155	6	1.43841E-07
o	6	4.56500E-02
u-235	7	2.64636E-04
u-234	7	5.79079E-06
u-236	7	1.12723E-04
np-237	7	1.16554E-05
u-238	7	2.13918E-02
pu-238	7	3.83722E-06
pu-239	7	1.26921E-04

np-237	5	1.87217E-05
u-238	5	2.10174E-02
pu-238	5	9.68342E-06
pu-239	5	1.24805E-04
pu-240	5	6.45459E-05
pu-241	5	3.09631E-05
pu-242	5	2.50973E-05
am-241	5	9.52394E-06
am-243	5	6.99020E-06
mo-95	5	6.91188E-05
tc-99	5	6.95815E-05
ru-101	5	6.88806E-05
rh-103	5	3.43994E-05
ag-109	5	6.22440E-06
cs-133	5	7.00892E-05
nd-143	5	4.17017E-05
nd-145	5	4.01014E-05
sm-147	5	9.94894E-06
sm-149	5	1.55280E-07
sm-150	5	1.78971E-05
sm-151	5	6.05526E-07
sm-152	5	5.38394E-06
eu-153	5	6.66115E-06
gd-155	5	3.01257E-07
o	5	4.56500E-02
u-235	6	1.25308E-04
u-234	6	4.57833E-06
u-236	6	1.27142E-04
np-237	6	1.77227E-05
u-238	6	2.10828E-02
pu-238	6	8.65397E-06
pu-239	6	1.25680E-04
pu-240	6	6.26324E-05
pu-241	6	3.02968E-05
pu-242	6	2.24739E-05
am-241	6	9.31504E-06
am-243	6	5.96847E-06
mo-95	6	6.60629E-05
tc-99	6	6.65346E-05
ru-101	6	6.51347E-05
rh-103	6	3.34080E-05
ag-109	6	5.76469E-06
cs-133	6	6.73106E-05
nd-143	6	4.10288E-05
nd-145	6	3.84657E-05
sm-147	6	9.84785E-06
sm-149	6	1.55214E-07
sm-150	6	1.69528E-05
sm-151	6	5.87550E-07
sm-152	6	5.19287E-06
eu-153	6	6.27921E-06
gd-155	6	2.78067E-07
o	6	4.56500E-02
u-235	7	1.05409E-04
u-234	7	4.36160E-06
u-236	7	1.28110E-04
np-237	7	1.87772E-05
u-238	7	2.10135E-02
pu-238	7	9.74345E-06
pu-239	7	1.24768E-04

pu-240	7	4.81135E-05
pu-241	7	2.38016E-05
pu-242	7	1.02533E-05
am-241	7	7.24193E-06
am-243	7	1.91081E-06
mo-95	7	4.90286E-05
tc-99	7	4.91450E-05
ru-101	7	4.54998E-05
rh-103	7	2.64380E-05
ag-109	7	3.42387E-06
cs-133	7	5.07644E-05
nd-143	7	3.48959E-05
nd-145	7	2.89765E-05
sm-147	7	8.72115E-06
sm-149	7	1.52839E-07
sm-150	7	1.16970E-05
sm-151	7	4.89611E-07
sm-152	7	4.05708E-06
eu-153	7	4.11354E-06
gd-155	7	1.58043E-07
o	7	4.56500E-02
u-235	8	2.88902E-04
u-234	8	5.97025E-06
u-236	8	1.09455E-04
np-237	8	1.07957E-05
u-238	8	2.14307E-02
pu-238	8	3.32276E-06
pu-239	8	1.26244E-04
pu-240	8	4.56168E-05
pu-241	8	2.25196E-05
pu-242	8	8.90084E-06
am-241	8	6.82651E-06
am-243	8	1.55688E-06
mo-95	8	4.65893E-05
tc-99	8	4.66511E-05
ru-101	8	4.28887E-05
rh-103	8	2.52845E-05
ag-109	8	3.13147E-06
cs-133	8	4.83089E-05
nd-143	8	3.37265E-05
nd-145	8	2.75869E-05
sm-147	8	8.48348E-06
sm-149	8	1.51936E-07
sm-150	8	1.09700E-05
sm-151	8	4.75672E-07
sm-152	8	3.88715E-06
eu-153	8	3.81237E-06
gd-155	8	1.43259E-07
o	8	4.56500E-02
u-235	9	2.77051E-04
u-234	9	5.88386E-06
u-236	9	1.11065E-04
np-237	9	1.12117E-05
u-238	9	2.14127E-02
pu-238	9	3.56794E-06
pu-239	9	1.26601E-04
pu-240	9	4.68386E-05
pu-241	9	2.31560E-05
pu-242	9	9.54559E-06
am-241	9	7.03206E-06

pu-240	7	6.46429E-05
pu-241	7	3.10010E-05
pu-242	7	2.52528E-05
am-241	7	9.53487E-06
am-243	7	7.05167E-06
mo-95	7	6.92886E-05
tc-99	7	6.97550E-05
ru-101	7	6.91035E-05
rh-103	7	3.44526E-05
ag-109	7	6.25151E-06
cs-133	7	7.02396E-05
nd-143	7	4.17283E-05
nd-145	7	4.01923E-05
sm-147	7	9.95394E-06
sm-149	7	1.55275E-07
sm-150	7	1.79514E-05
sm-151	7	6.06474E-07
sm-152	7	5.39471E-06
eu-153	7	6.68219E-06
gd-155	7	3.02587E-07
o	7	4.56500E-02
u-235	8	1.23265E-04
u-234	8	4.55692E-06
u-236	8	1.27266E-04
np-237	8	1.78284E-05
u-238	8	2.10762E-02
pu-238	8	8.75837E-06
pu-239	8	1.25587E-04
pu-240	8	6.28434E-05
pu-241	8	3.03715E-05
pu-242	8	2.27357E-05
am-241	8	9.33900E-06
am-243	8	6.06969E-06
mo-95	8	6.63828E-05
tc-99	8	6.68585E-05
ru-101	8	6.55206E-05
rh-103	8	3.35142E-05
ag-109	8	5.81232E-06
cs-133	8	6.76072E-05
nd-143	8	4.11081E-05
nd-145	8	3.86370E-05
sm-147	8	9.86032E-06
sm-149	8	1.55260E-07
sm-150	8	1.70501E-05
sm-151	8	5.89411E-07
sm-152	8	5.21303E-06
eu-153	8	6.31862E-06
gd-155	8	2.80469E-07
o	8	4.56500E-02
u-235	9	1.12662E-04
u-234	9	4.44364E-06
u-236	9	1.27823E-04
np-237	9	1.83873E-05
u-238	9	2.10397E-02
pu-238	9	9.33064E-06
pu-239	9	1.25061E-04
pu-240	9	6.39142E-05
pu-241	9	3.07626E-05
pu-242	9	2.42011E-05
am-241	9	9.46002E-06

am-243	9	1.72249E-06
mo-95	9	4.77745E-05
tc-99	9	4.78615E-05
ru-101	9	4.41514E-05
rh-103	9	2.58488E-05
ag-109	9	3.27215E-06
cs-133	9	4.94893E-05
nd-143	9	3.43033E-05
nd-145	9	2.82637E-05
sm-147	9	8.60120E-06
sm-149	9	1.52316E-07
sm-150	9	1.13213E-05
sm-151	9	4.82373E-07
sm-152	9	3.97021E-06
eu-153	9	3.95822E-06
gd-155	9	1.50335E-07
o	9	4.56500E-02
u-235	10	2.81322E-04
u-234	10	5.91529E-06
u-236	10	1.10494E-04
np-237	10	1.10605E-05
u-238	10	2.14198E-02
pu-238	10	3.47770E-06
pu-239	10	1.26480E-04
pu-240	10	4.63931E-05
pu-241	10	2.29361E-05
pu-242	10	9.30916E-06
am-241	10	6.95886E-06
am-243	10	1.66124E-06
mo-95	10	4.73451E-05
tc-99	10	4.74229E-05
ru-101	10	4.36935E-05
rh-103	10	2.56460E-05
ag-109	10	3.22094E-06
cs-133	10	4.90589E-05
nd-143	10	3.40968E-05
nd-145	10	2.80195E-05
sm-147	10	8.55934E-06
sm-149	10	1.52156E-07
sm-150	10	1.11929E-05
sm-151	10	4.79940E-07
sm-152	10	3.94061E-06
eu-153	10	3.90453E-06
gd-155	10	1.47748E-07
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u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	1	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.63310E-06
mo-95	9	6.80552E-05
tc-99	9	6.85525E-05
ru-101	9	6.76205E-05
rh-103	9	3.40728E-05
ag-109	9	6.06400E-06
cs-133	9	6.91572E-05
nd-143	9	4.14692E-05
nd-145	9	3.95675E-05
sm-147	9	9.91660E-06
sm-149	9	1.55270E-07
sm-150	9	1.75778E-05
sm-151	9	5.99675E-07
sm-152	9	5.31715E-06
eu-153	9	6.53356E-06
gd-155	9	2.93374E-07
o	9	4.56500E-02
u-235	10	1.14654E-04
u-234	10	4.46577E-06
u-236	10	1.27736E-04
np-237	10	1.82815E-05
u-238	10	2.10467E-02
pu-238	10	9.22051E-06
pu-239	10	1.25157E-04
pu-240	10	6.37104E-05
pu-241	10	3.06944E-05
pu-242	10	2.39204E-05
am-241	10	9.43865E-06
am-243	10	6.52321E-06
mo-95	10	6.77296E-05
tc-99	10	6.82347E-05
ru-101	10	6.72279E-05
rh-103	10	3.39676E-05
ag-109	10	6.01537E-06
cs-133	10	6.88609E-05
nd-143	10	4.13931E-05
nd-145	10	3.93946E-05
sm-147	10	9.90664E-06
sm-149	10	1.55291E-07
sm-150	10	1.74774E-05
sm-151	10	5.97759E-07
sm-152	10	5.29682E-06
eu-153	10	6.49253E-06
gd-155	10	2.90910E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05
nd-143	13	3.22052E-05

rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05
nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	3.13935E-04	u-235	16	1.40899E-04
u-234	16	6.15127E-06	u-234	16	4.73543E-06
u-236	16	1.05916E-04	u-236	16	1.26119E-04
np-237	16	9.95222E-06	np-237	16	1.69338E-05
u-238	16	2.14664E-02	u-238	16	2.11293E-02
pu-238	16	2.85514E-06	pu-238	16	7.89636E-06
pu-239	16	1.25287E-04	pu-239	16	1.26220E-04
pu-240	16	4.30459E-05	pu-240	16	6.10380E-05
pu-241	16	2.11218E-05	pu-241	16	2.96847E-05
pu-242	16	7.65463E-06	pu-242	16	2.05635E-05
am-241	16	6.38270E-06	am-241	16	9.12570E-06
am-243	16	1.25110E-06	am-243	16	5.24952E-06
mo-95	16	4.41463E-05	mo-95	16	6.38179E-05
tc-99	16	4.41561E-05	tc-99	16	6.42347E-05
ru-101	16	4.03150E-05	ru-101	16	6.23276E-05
rh-103	16	2.40942E-05	rh-103	16	3.26061E-05
ag-109	16	2.84987E-06	ag-109	16	5.42168E-06
cs-133	16	4.58390E-05	cs-133	16	6.51707E-05
nd-143	16	3.24838E-05	nd-143	16	4.03986E-05
nd-145	16	2.61886E-05	nd-145	16	3.72288E-05
sm-147	16	8.22081E-06	sm-147	16	9.75471E-06
sm-149	16	1.51075E-07	sm-149	16	1.55149E-07
sm-150	16	1.02533E-05	sm-150	16	1.62357E-05
sm-151	16	4.62024E-07	sm-151	16	5.74357E-07
sm-152	16	3.71220E-06	sm-152	16	5.04808E-06
eu-153	16	3.51570E-06	eu-153	16	5.98844E-06
gd-155	16	1.29244E-07	gd-155	16	2.60681E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.40166E-04	u-235	17	1.54003E-04
u-234	17	6.33355E-06	u-234	17	4.86237E-06
u-236	17	1.02073E-04	u-236	17	1.25079E-04
np-237	17	9.12417E-06	np-237	17	1.62967E-05
u-238	17	2.15019E-02	u-238	17	2.11650E-02
pu-238	17	2.42773E-06	pu-238	17	7.31334E-06
pu-239	17	1.24007E-04	pu-239	17	1.26599E-04
pu-240	17	4.03833E-05	pu-240	17	5.96963E-05
pu-241	17	1.96569E-05	pu-241	17	2.91311E-05
pu-242	17	6.50359E-06	pu-242	17	1.91033E-05
am-241	17	5.91603E-06	am-241	17	8.95316E-06
am-243	17	9.89220E-07	am-243	17	4.71668E-06
mo-95	17	4.16833E-05	mo-95	17	6.19623E-05
tc-99	17	4.16443E-05	tc-99	17	6.23715E-05
ru-101	17	3.77651E-05	ru-101	17	6.01425E-05
rh-103	17	2.28608E-05	rh-103	17	3.19344E-05
ag-109	17	2.57829E-06	ag-109	17	5.15480E-06
cs-133	17	4.33352E-05	cs-133	17	6.34336E-05
nd-143	17	3.11659E-05	nd-143	17	3.99032E-05
nd-145	17	2.47708E-05	nd-145	17	3.62250E-05
sm-147	17	7.93543E-06	sm-147	17	9.66802E-06
sm-149	17	1.49921E-07	sm-149	17	1.55154E-07
sm-150	17	9.54145E-06	sm-150	17	1.56658E-05
sm-151	17	4.48343E-07	sm-151	17	5.64014E-07
sm-152	17	3.53210E-06	sm-152	17	4.92904E-06
eu-153	17	3.22255E-06	eu-153	17	5.75503E-06
gd-155	17	1.15977E-07	gd-155	17	2.47078E-07

o	17	4.56500E-02
u-235	18	4.02854E-04
u-234	18	6.74855E-06
u-236	18	9.24956E-05
np-237	18	7.32907E-06
u-238	18	2.15773E-02
pu-238	18	1.62231E-06
pu-239	18	1.19636E-04
pu-240	18	3.41862E-05
pu-241	18	1.61423E-05
pu-242	18	4.29667E-06
am-241	18	4.80648E-06
am-243	18	5.44760E-07
mo-95	18	3.61237E-05
tc-99	18	3.59844E-05
ru-101	18	3.21569E-05
rh-103	18	1.99792E-05
ag-109	18	2.00887E-06
cs-133	18	3.76284E-05
nd-143	18	2.79489E-05
nd-145	18	2.15554E-05
sm-147	18	7.21901E-06
sm-149	18	1.46934E-07
sm-150	18	7.97887E-06
sm-151	18	4.17947E-07
sm-152	18	3.11359E-06
eu-153	18	2.58574E-06
gd-155	18	8.91490E-08
o	18	4.56500E-02
u-235	19	4.13126E-04
u-234	19	6.81401E-06
u-236	19	9.08556E-05
np-237	19	7.05768E-06
u-238	19	2.15886E-02
pu-238	19	1.51360E-06
pu-239	19	1.18742E-04
pu-240	19	3.31979E-05
pu-241	19	1.55639E-05
pu-242	19	3.99591E-06
am-241	19	4.62716E-06
am-243	19	4.90813E-07
mo-95	19	3.52449E-05
tc-99	19	3.50906E-05
ru-101	19	3.12845E-05
rh-103	19	1.95143E-05
ag-109	19	1.92407E-06
cs-133	19	3.67210E-05
nd-143	19	2.74101E-05
nd-145	19	2.10422E-05
sm-147	19	7.09662E-06
sm-149	19	1.46308E-07
sm-150	19	7.73893E-06
sm-151	19	4.13128E-07
sm-152	19	3.04553E-06
eu-153	19	2.48852E-06
gd-155	19	8.52874E-08
o	19	4.56500E-02
u-235	20	4.96741E-04
u-234	20	7.32480E-06
u-236	20	7.71931E-05

o	17	4.56500E-02
u-235	18	2.09023E-04
u-234	18	5.35051E-06
u-236	18	1.19578E-04
np-237	18	1.38373E-05
u-238	18	2.12936E-02
pu-238	18	5.31343E-06
pu-239	18	1.27414E-04
pu-240	18	5.39328E-05
pu-241	18	2.66537E-05
pu-242	18	1.40584E-05
am-241	18	8.15716E-06
am-243	18	3.02248E-06
mo-95	18	5.51016E-05
tc-99	18	5.53795E-05
ru-101	18	5.22065E-05
rh-103	18	2.91640E-05
ag-109	18	4.19951E-06
cs-133	18	5.67961E-05
nd-143	18	3.75004E-05
nd-145	18	3.24087E-05
sm-147	18	9.23380E-06
sm-149	18	1.54327E-07
sm-150	18	1.35400E-05
sm-151	18	5.24338E-07
sm-152	18	4.47334E-06
eu-153	18	4.87637E-06
gd-155	18	1.97820E-07
o	18	4.56500E-02
u-235	19	2.21759E-04
u-234	19	5.45413E-06
u-236	19	1.18088E-04
np-237	19	1.33139E-05
u-238	19	2.13179E-02
pu-238	19	4.93603E-06
pu-239	19	1.27418E-04
pu-240	19	5.25926E-05
pu-241	19	2.60192E-05
pu-242	19	1.30910E-05
am-241	19	7.95659E-06
am-243	19	2.72515E-06
mo-95	19	5.36559E-05
tc-99	19	5.38728E-05
ru-101	19	5.05779E-05
rh-103	19	2.85308E-05
ag-109	19	4.00845E-06
cs-133	19	5.53574E-05
nd-143	19	3.69216E-05
nd-145	19	3.15931E-05
sm-147	19	9.12403E-06
sm-149	19	1.53933E-07
sm-150	19	1.30940E-05
sm-151	19	5.15646E-07
sm-152	19	4.37653E-06
eu-153	19	4.69376E-06
gd-155	19	1.87952E-07
o	19	4.56500E-02
u-235	20	3.03798E-04
u-234	20	6.07848E-06
u-236	20	1.07340E-04

np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A111122 Serial No.: **4** from gen_ax03.mod			B50A111122 Serial No.: **21** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.75375E-04
u-234	4	5.87143E-06
u-236	4	1.11288E-04
np-237	4	1.12713E-05
u-238	4	2.14098E-02
pu-238	4	3.60376E-06
pu-239	4	1.26647E-04
pu-240	4	4.70134E-05
pu-241	4	2.32413E-05
pu-242	4	9.63944E-06
am-241	4	7.06058E-06
am-243	4	1.74702E-06
mo-95	4	4.79433E-05
tc-99	4	4.80341E-05
ru-101	4	4.43318E-05
rh-103	4	2.59283E-05
ag-109	4	3.29239E-06
cs-133	4	4.96596E-05
nd-143	4	3.43839E-05
nd-145	4	2.83596E-05
sm-147	4	8.61750E-06
sm-149	4	1.52385E-07
sm-150	4	1.13720E-05
sm-151	4	4.83337E-07
sm-152	4	3.98179E-06
eu-153	4	3.97940E-06
gd-155	4	1.51360E-07
o	4	4.56500E-02
u-235	5	2.64729E-04
u-234	5	5.79149E-06
u-236	5	1.12711E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.15962E-04
u-234	4	4.47985E-06
u-236	4	1.27674E-04
np-237	4	1.82121E-05
u-238	4	2.10514E-02
pu-238	4	9.14829E-06
pu-239	4	1.25222E-04
pu-240	4	6.35793E-05
pu-241	4	3.06450E-05
pu-242	4	2.37339E-05
am-241	4	9.42391E-06
am-243	4	6.45165E-06
mo-95	4	6.75250E-05
tc-99	4	6.80282E-05
ru-101	4	6.69649E-05
rh-103	4	3.38983E-05
ag-109	4	5.98409E-06
cs-133	4	6.86694E-05
nd-143	4	4.13496E-05
nd-145	4	3.92780E-05
sm-147	4	9.90030E-06
sm-149	4	1.55316E-07
sm-150	4	1.74111E-05
sm-151	4	5.96482E-07
sm-152	4	5.28399E-06
eu-153	4	6.46552E-06
gd-155	4	2.89298E-07
o	4	4.56500E-02
u-235	5	1.06767E-04
u-234	5	4.37659E-06
u-236	5	1.28056E-04

np-237	5	1.16521E-05
u-238	5	2.13919E-02
pu-238	5	3.83515E-06
pu-239	5	1.26919E-04
pu-240	5	4.81041E-05
pu-241	5	2.37966E-05
pu-242	5	1.02479E-05
am-241	5	7.24036E-06
am-243	5	1.90934E-06
mo-95	5	4.90191E-05
tc-99	5	4.91353E-05
ru-101	5	4.54896E-05
rh-103	5	2.64336E-05
ag-109	5	3.42272E-06
cs-133	5	5.07548E-05
nd-143	5	3.48915E-05
nd-145	5	2.89712E-05
sm-147	5	8.72025E-06
sm-149	5	1.52836E-07
sm-150	5	1.16941E-05
sm-151	5	4.89557E-07
sm-152	5	4.05642E-06
eu-153	5	4.11239E-06
gd-155	5	1.57984E-07
o	5	4.56500E-02
u-235	6	2.89425E-04
u-234	6	5.97401E-06
u-236	6	1.09382E-04
np-237	6	1.07775E-05
u-238	6	2.14314E-02
pu-238	6	3.31231E-06
pu-239	6	1.26226E-04
pu-240	6	4.55639E-05
pu-241	6	2.24897E-05
pu-242	6	8.87319E-06
am-241	6	6.81725E-06
am-243	6	1.54988E-06
mo-95	6	4.65373E-05
tc-99	6	4.65981E-05
ru-101	6	4.28335E-05
rh-103	6	2.52595E-05
ag-109	6	3.12535E-06
cs-133	6	4.82574E-05
nd-143	6	3.37008E-05
nd-145	6	2.75571E-05
sm-147	6	8.47815E-06
sm-149	6	1.51922E-07
sm-150	6	1.09548E-05
sm-151	6	4.75380E-07
sm-152	6	3.88343E-06
eu-153	6	3.80615E-06
gd-155	6	1.42954E-07
o	6	4.56500E-02
u-235	7	2.65838E-04
u-234	7	5.79987E-06
u-236	7	1.12563E-04
np-237	7	1.16121E-05
u-238	7	2.13937E-02
pu-238	7	3.81057E-06
pu-239	7	1.26893E-04

np-237	5	1.87033E-05
u-238	5	2.10187E-02
pu-238	5	9.66364E-06
pu-239	5	1.24817E-04
pu-240	5	6.45134E-05
pu-241	5	3.09509E-05
pu-242	5	2.50461E-05
am-241	5	9.52035E-06
am-243	5	6.97000E-06
mo-95	5	6.90623E-05
tc-99	5	6.95242E-05
ru-101	5	6.88074E-05
rh-103	5	3.43818E-05
ag-109	5	6.21543E-06
cs-133	5	7.00395E-05
nd-143	5	4.16923E-05
nd-145	5	4.00714E-05
sm-147	5	9.94724E-06
sm-149	5	1.55281E-07
sm-150	5	1.78791E-05
sm-151	5	6.05210E-07
sm-152	5	5.38034E-06
eu-153	5	6.65420E-06
gd-155	5	3.00818E-07
o	5	4.56500E-02
u-235	6	1.25621E-04
u-234	6	4.58158E-06
u-236	6	1.27123E-04
np-237	6	1.77065E-05
u-238	6	2.10838E-02
pu-238	6	8.63808E-06
pu-239	6	1.25694E-04
pu-240	6	6.26001E-05
pu-241	6	3.02848E-05
pu-242	6	2.24341E-05
am-241	6	9.31132E-06
am-243	6	5.95312E-06
mo-95	6	6.60152E-05
tc-99	6	6.64861E-05
ru-101	6	6.50759E-05
rh-103	6	3.33917E-05
ag-109	6	5.75744E-06
cs-133	6	6.72655E-05
nd-143	6	4.10163E-05
nd-145	6	3.84396E-05
sm-147	6	9.84597E-06
sm-149	6	1.55212E-07
sm-150	6	1.69379E-05
sm-151	6	5.87272E-07
sm-152	6	5.18980E-06
eu-153	6	6.27322E-06
gd-155	6	2.77701E-07
o	6	4.56500E-02
u-235	7	1.05634E-04
u-234	7	4.36408E-06
u-236	7	1.28101E-04
np-237	7	1.87649E-05
u-238	7	2.10143E-02
pu-238	7	9.73015E-06
pu-239	7	1.24776E-04

pu-240	7	4.79914E-05
pu-241	7	2.37376E-05
pu-242	7	1.01833E-05
am-241	7	7.22168E-06
am-243	7	1.89185E-06
mo-95	7	4.89063E-05
tc-99	7	4.90199E-05
ru-101	7	4.53676E-05
rh-103	7	2.63808E-05
ag-109	7	3.40894E-06
cs-133	7	5.06402E-05
nd-143	7	3.48389E-05
nd-145	7	2.89070E-05
sm-147	7	8.70955E-06
sm-149	7	1.52793E-07
sm-150	7	1.16604E-05
sm-151	7	4.88909E-07
sm-152	7	4.04851E-06
eu-153	7	4.09857E-06
gd-155	7	1.57283E-07
o	7	4.56500E-02
u-235	8	2.89753E-04
u-234	8	5.97638E-06
u-236	8	1.09336E-04
np-237	8	1.07662E-05
u-238	8	2.14319E-02
pu-238	8	3.30577E-06
pu-239	8	1.26215E-04
pu-240	8	4.55306E-05
pu-241	8	2.24708E-05
pu-242	8	8.85585E-06
am-241	8	6.81143E-06
am-243	8	1.54549E-06
mo-95	8	4.65047E-05
tc-99	8	4.65648E-05
ru-101	8	4.27989E-05
rh-103	8	2.52437E-05
ag-109	8	3.12152E-06
cs-133	8	4.82251E-05
nd-143	8	3.36846E-05
nd-145	8	2.75383E-05
sm-147	8	8.47480E-06
sm-149	8	1.51914E-07
sm-150	8	1.09453E-05
sm-151	8	4.75196E-07
sm-152	8	3.88109E-06
eu-153	8	3.80224E-06
gd-155	8	1.42762E-07
o	8	4.56500E-02
u-235	9	2.77653E-04
u-234	9	5.88831E-06
u-236	9	1.10985E-04
np-237	9	1.11903E-05
u-238	9	2.14137E-02
pu-238	9	3.55511E-06
pu-239	9	1.26585E-04
pu-240	9	4.67757E-05
pu-241	9	2.31253E-05
pu-242	9	9.51200E-06
am-241	9	7.02178E-06

pu-240	7	6.46216E-05
pu-241	7	3.09926E-05
pu-242	7	2.52183E-05
am-241	7	9.53245E-06
am-243	7	7.03802E-06
mo-95	7	6.92512E-05
tc-99	7	6.97165E-05
ru-101	7	6.90541E-05
rh-103	7	3.44409E-05
ag-109	7	6.24552E-06
cs-133	7	7.02063E-05
nd-143	7	4.17226E-05
nd-145	7	4.01722E-05
sm-147	7	9.95285E-06
sm-149	7	1.55276E-07
sm-150	7	1.79394E-05
sm-151	7	6.06265E-07
sm-152	7	5.39234E-06
eu-153	7	6.67753E-06
gd-155	7	3.02293E-07
o	7	4.56500E-02
u-235	8	1.23438E-04
u-234	8	4.55875E-06
u-236	8	1.27255E-04
np-237	8	1.78194E-05
u-238	8	2.10768E-02
pu-238	8	8.74945E-06
pu-239	8	1.25595E-04
pu-240	8	6.28255E-05
pu-241	8	3.03654E-05
pu-242	8	2.27133E-05
am-241	8	9.33698E-06
am-243	8	6.06102E-06
mo-95	8	6.63552E-05
tc-99	8	6.68306E-05
ru-101	8	6.54876E-05
rh-103	8	3.35052E-05
ag-109	8	5.80826E-06
cs-133	8	6.75819E-05
nd-143	8	4.11015E-05
nd-145	8	3.86224E-05
sm-147	8	9.85926E-06
sm-149	8	1.55255E-07
sm-150	8	1.70418E-05
sm-151	8	5.89250E-07
sm-152	8	5.21132E-06
eu-153	8	6.31525E-06
gd-155	8	2.80264E-07
o	8	4.56500E-02
u-235	9	1.12780E-04
u-234	9	4.44496E-06
u-236	9	1.27819E-04
np-237	9	1.83811E-05
u-238	9	2.10401E-02
pu-238	9	9.32413E-06
pu-239	9	1.25067E-04
pu-240	9	6.39020E-05
pu-241	9	3.07588E-05
pu-242	9	2.41847E-05
am-241	9	9.45880E-06

am-243	9	1.71375E-06	am-243	9	6.62658E-06
mo-95	9	4.77138E-05	mo-95	9	6.80355E-05
tc-99	9	4.77995E-05	tc-99	9	6.85336E-05
ru-101	9	4.40866E-05	ru-101	9	6.75975E-05
rh-103	9	2.58202E-05	rh-103	9	3.40666E-05
ag-109	9	3.26490E-06	ag-109	9	6.06110E-06
cs-133	9	4.94282E-05	cs-133	9	6.91395E-05
nd-143	9	3.42742E-05	nd-143	9	4.14644E-05
nd-145	9	2.82292E-05	nd-145	9	3.95575E-05
sm-147	9	8.59532E-06	sm-147	9	9.91600E-06
sm-149	9	1.52292E-07	sm-149	9	1.55270E-07
sm-150	9	1.13032E-05	sm-150	9	1.75719E-05
sm-151	9	4.82028E-07	sm-151	9	5.99563E-07
sm-152	9	3.96604E-06	sm-152	9	5.31592E-06
eu-153	9	3.95061E-06	eu-153	9	6.53114E-06
gd-155	9	1.49968E-07	gd-155	9	2.93228E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.81582E-04	u-235	10	1.14704E-04
u-234	10	5.91720E-06	u-234	10	4.46631E-06
u-236	10	1.10458E-04	u-236	10	1.27734E-04
np-237	10	1.10513E-05	np-237	10	1.82788E-05
u-238	10	2.14202E-02	u-238	10	2.10469E-02
pu-238	10	3.47226E-06	pu-238	10	9.21774E-06
pu-239	10	1.26473E-04	pu-239	10	1.25159E-04
pu-240	10	4.63661E-05	pu-240	10	6.37053E-05
pu-241	10	2.29225E-05	pu-241	10	3.06925E-05
pu-242	10	9.29489E-06	pu-242	10	2.39133E-05
am-241	10	6.95437E-06	am-241	10	9.43809E-06
am-243	10	1.65757E-06	am-243	10	6.52046E-06
mo-95	10	4.73190E-05	mo-95	10	6.77216E-05
tc-99	10	4.73962E-05	tc-99	10	6.82268E-05
ru-101	10	4.36657E-05	ru-101	10	6.72179E-05
rh-103	10	2.56336E-05	rh-103	10	3.39649E-05
ag-109	10	3.21784E-06	ag-109	10	6.01416E-06
cs-133	10	4.90328E-05	cs-133	10	6.88536E-05
nd-143	10	3.40841E-05	nd-143	10	4.13914E-05
nd-145	10	2.80047E-05	nd-145	10	3.93901E-05
sm-147	10	8.55677E-06	sm-147	10	9.90640E-06
sm-149	10	1.52147E-07	sm-149	10	1.55292E-07
sm-150	10	1.11852E-05	sm-150	10	1.74748E-05
sm-151	10	4.79792E-07	sm-151	10	5.97710E-07
sm-152	10	3.93879E-06	sm-152	10	5.29633E-06
eu-153	10	3.90129E-06	eu-153	10	6.49149E-06
gd-155	10	1.47592E-07	gd-155	10	2.90848E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-23	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05
ru-101	11	4.14529E-05	ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	1	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	1	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-0	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07
sm-150	15	1.03985E-05	sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	3.13935E-04	u-235	16	1.40899E-04
u-234	16	6.15127E-06	u-234	16	4.73543E-06
u-236	16	1.05916E-04	u-236	16	1.26119E-04
np-237	16	9.95222E-06	np-237	16	1.69338E-05
u-238	16	2.14664E-02	u-238	16	2.11293E-02
pu-238	16	2.85514E-06	pu-238	16	7.89636E-06
pu-239	16	1.25287E-04	pu-239	16	1.26220E-04
pu-240	16	4.30459E-05	pu-240	16	6.10380E-05
pu-241	16	2.11218E-05	pu-241	16	2.96847E-05
pu-242	16	7.65463E-06	pu-242	16	2.05635E-05
am-241	16	6.38270E-06	am-241	16	9.12570E-06
am-243	16	1.25110E-06	am-243	16	5.24952E-06
mo-95	16	4.41463E-05	mo-95	16	6.38179E-05
tc-99	16	4.41561E-05	tc-99	16	6.42347E-05
ru-101	16	4.03150E-05	ru-101	16	6.23276E-05
rh-103	16	2.40942E-05	rh-103	16	3.26061E-05
ag-109	16	2.84987E-06	ag-109	16	5.42168E-06
cs-133	16	4.58390E-05	cs-133	16	6.51707E-05
nd-143	16	3.24838E-05	nd-143	16	4.03986E-05
nd-145	16	2.61886E-05	nd-145	16	3.72288E-05
sm-147	16	8.22081E-06	sm-147	16	9.75471E-06
sm-149	16	1.51075E-07	sm-149	16	1.55149E-07
sm-150	16	1.02533E-05	sm-150	16	1.62357E-05
sm-151	16	4.62024E-07	sm-151	16	5.74357E-07
sm-152	16	3.71220E-06	sm-152	16	5.04808E-06
eu-153	16	3.51570E-06	eu-153	16	5.98844E-06
gd-155	16	1.29244E-07	gd-155	16	2.60681E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.25113E-04	u-235	17	1.50731E-04
u-234	17	6.22880E-06	u-234	17	4.83091E-06
u-236	17	1.04316E-04	u-236	17	1.25349E-04
np-237	17	9.59600E-06	np-237	17	1.64549E-05
u-238	17	2.14814E-02	u-238	17	2.11566E-02
pu-238	17	2.66735E-06	pu-238	17	7.45492E-06
pu-239	17	1.24787E-04	pu-239	17	1.26509E-04
pu-240	17	4.19145E-05	pu-240	17	6.00272E-05
pu-241	17	2.05062E-05	pu-241	17	2.92753E-05
pu-242	17	7.14936E-06	pu-242	17	1.94574E-05
am-241	17	6.18694E-06	am-241	17	8.99925E-06
am-243	17	1.13367E-06	am-243	17	4.84519E-06
mo-95	17	4.30942E-05	mo-95	17	6.24199E-05
tc-99	17	4.30826E-05	tc-99	17	6.28100E-05
ru-101	17	3.92191E-05	ru-101	17	6.06755E-05
rh-103	17	2.35711E-05	rh-103	17	3.21027E-05
ag-109	17	2.73221E-06	ag-109	17	5.21993E-06
cs-133	17	4.47589E-05	cs-133	17	6.38543E-05
nd-143	17	3.19269E-05	nd-143	17	4.00358E-05
nd-145	17	2.55849E-05	nd-145	17	3.64720E-05
sm-147	17	8.10262E-06	sm-147	17	9.69093E-06
sm-149	17	1.50682E-07	sm-149	17	1.55196E-07
sm-150	17	9.94777E-06	sm-150	17	1.58064E-05
sm-151	17	4.56286E-07	sm-151	17	5.66626E-07
sm-152	17	3.63545E-06	sm-152	17	4.95778E-06
eu-153	17	3.38980E-06	eu-153	17	5.81268E-06
gd-155	17	1.23486E-07	gd-155	17	2.50406E-07

o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	4.02854E-04	u-235	18	2.09023E-04
u-234	18	6.74855E-06	u-234	18	5.35051E-06
u-236	18	9.24956E-05	u-236	18	1.19578E-04
np-237	18	7.32907E-06	np-237	18	1.38373E-05
u-238	18	2.15773E-02	u-238	18	2.12936E-02
pu-238	18	1.62231E-06	pu-238	18	5.31343E-06
pu-239	18	1.19636E-04	pu-239	18	1.27414E-04
pu-240	18	3.41862E-05	pu-240	18	5.39328E-05
pu-241	18	1.61423E-05	pu-241	18	2.66537E-05
pu-242	18	4.29667E-06	pu-242	18	1.40584E-05
am-241	18	4.80648E-06	am-241	18	8.15716E-06
am-243	18	5.44760E-07	am-243	18	3.02248E-06
mo-95	18	3.61237E-05	mo-95	18	5.51016E-05
tc-99	18	3.59844E-05	tc-99	18	5.53795E-05
ru-101	18	3.21569E-05	ru-101	18	5.22065E-05
rh-103	18	1.99792E-05	rh-103	18	2.91640E-05
ag-109	18	2.00887E-06	ag-109	18	4.19951E-06
cs-133	18	3.76284E-05	cs-133	18	5.67961E-05
nd-143	18	2.79489E-05	nd-143	18	3.75004E-05
nd-145	18	2.15554E-05	nd-145	18	3.24087E-05
sm-147	18	7.21901E-06	sm-147	18	9.23380E-06
sm-149	18	1.46934E-07	sm-149	18	1.54327E-07
sm-150	18	7.97887E-06	sm-150	18	1.35400E-05
sm-151	18	4.17947E-07	sm-151	18	5.24338E-07
sm-152	18	3.11359E-06	sm-152	18	4.47334E-06
eu-153	18	2.58574E-06	eu-153	18	4.87637E-06
gd-155	18	8.91490E-08	gd-155	18	1.97820E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	4.13126E-04	u-235	19	2.21759E-04
u-234	19	6.81401E-06	u-234	19	5.45413E-06
u-236	19	9.08556E-05	u-236	19	1.18088E-04
np-237	19	7.05768E-06	np-237	19	1.33139E-05
u-238	19	2.15886E-02	u-238	19	2.13179E-02
pu-238	19	1.51360E-06	pu-238	19	4.93603E-06
pu-239	19	1.18742E-04	pu-239	19	1.27418E-04
pu-240	19	3.31979E-05	pu-240	19	5.25926E-05
pu-241	19	1.55639E-05	pu-241	19	2.60192E-05
pu-242	19	3.99591E-06	pu-24	19	1.30910E-05
am-241	19	4.62716E-06	am-241	19	7.95659E-06
am-243	19	4.90813E-07	am-243	19	2.72515E-06
mo-95	19	3.52449E-05	mo-95	19	5.36559E-05
tc-99	19	3.50906E-05	tc-99	19	5.38728E-05
ru-101	19	3.12845E-05	ru-101	19	5.05779E-05
rh-103	19	1.95143E-05	rh-103	19	2.85308E-05
ag-109	19	1.92407E-06	ag-10	19	4.00845E-06
cs-133	19	3.67210E-05	cs-133	19	5.53574E-05
nd-143	19	2.74101E-05	nd-143	19	3.69216E-05
nd-145	19	2.10422E-05	nd-145	19	3.15931E-05
sm-147	19	7.09662E-06	sm-147	19	9.12403E-06
sm-149	19	1.46308E-07	sm-149	19	1.53933E-07
sm-150	19	7.73893E-06	sm-150	19	1.30940E-05
sm-151	19	4.13128E-07	sm-151	19	5.15646E-07
sm-152	19	3.04553E-06	sm-152	19	4.37653E-06
eu-153	19	2.48852E-06	eu-153	19	4.69376E-06
gd-155	19	8.52874E-08	gd-155	19	1.87952E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.96741E-04	u-235	20	3.03798E-04
u-234	20	7.32480E-06	u-234	20	6.07848E-06
u-236	20	7.71931E-05	u-236	20	1.07340E-04

np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A111222			B50A111222		
Serial No.: **5** from gen_ax03.mod			Serial No.: **22** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.78271E-04	u-235	4	1.16667E-04
u-234	4	5.89287E-06	u-234	4	4.48734E-06
u-236	4	1.10902E-04	u-236	4	1.27639E-04
np-237	4	1.11684E-05	np-237	4	1.81748E-05
u-238	4	2.14148E-02	u-238	4	2.10539E-02
pu-238	4	3.54199E-06	pu-238	4	9.10950E-06
pu-239	4	1.26567E-04	pu-239	4	1.25258E-04
pu-240	4	4.67112E-05	pu-240	4	6.35091E-05
pu-241	4	2.30938E-05	pu-241	4	3.06174E-05
pu-242	4	9.47763E-06	pu-242	4	2.36334E-05
am-241	4	7.01122E-06	am-241	4	9.41580E-06
am-243	4	1.70481E-06	am-243	4	6.41335E-06
mo-95	4	4.76516E-05	mo-95	4	6.74165E-05
tc-99	4	4.77360E-05	tc-99	4	6.79171E-05
ru-101	4	4.40203E-05	ru-101	4	6.68222E-05
rh-103	4	2.57909E-05	rh-103	4	3.38609E-05
ag-109	4	3.25747E-06	ag-109	4	5.96738E-06
cs-133	4	4.93657E-05	cs-133	4	6.85669E-05
nd-143	4	3.42444E-05	nd-143	4	4.13274E-05
nd-145	4	2.81939E-05	nd-145	4	3.92147E-05
sm-147	4	8.58929E-06	sm-147	4	9.89687E-06
sm-149	4	1.52268E-07	sm-149	4	1.55330E-07
sm-150	4	1.12845E-05	sm-150	4	1.73754E-05
sm-151	4	4.81675E-07	sm-151	4	5.95790E-07
sm-152	4	3.96177E-06	sm-152	4	5.27718E-06
eu-153	4	3.94281E-06	eu-153	4	6.45099E-06
gd-155	4	1.49592E-07	gd-155	4	2.88431E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.67291E-04	u-235	5	1.07367E-04
u-234	5	5.81084E-06	u-234	5	4.38327E-06
u-236	5	1.12369E-04	u-236	5	1.28032E-04

np-237	5	1.15598E-05
u-238	5	2.13961E-02
pu-238	5	3.77860E-06
pu-239	5	1.26858E-04
pu-240	5	4.78438E-05
pu-241	5	2.36605E-05
pu-242	5	1.00991E-05
am-241	5	7.19720E-06
am-243	5	1.86915E-06
mo-95	5	4.87588E-05
tc-99	5	4.88690E-05
ru-101	5	4.52084E-05
rh-103	5	2.63117E-05
ag-109	5	3.39098E-06
cs-133	5	5.04900E-05
nd-143	5	3.47698E-05
nd-145	5	2.88231E-05
sm-147	5	8.69555E-06
sm-149	5	1.52734E-07
sm-150	5	1.16163E-05
sm-151	5	4.88057E-07
sm-152	5	4.03820E-06
eu-153	5	4.08050E-06
gd-155	5	1.56369E-07
o	5	4.56500E-02
u-235	6	2.91596E-04
u-234	6	5.98966E-06
u-236	6	1.09077E-04
np-237	6	1.07024E-05
u-238	6	2.14344E-02
pu-238	6	3.26925E-06
pu-239	6	1.26152E-04
pu-240	6	4.53439E-05
pu-241	6	2.23646E-05
pu-242	6	8.75897E-06
am-241	6	6.77863E-06
am-243	6	1.52103E-06
mo-95	6	4.63218E-05
tc-99	6	4.63780E-05
ru-101	6	4.26045E-05
rh-103	6	2.51554E-05
ag-109	6	3.10004E-06
cs-133	6	4.80434E-05
nd-143	6	3.35937E-05
nd-145	6	2.74333E-05
sm-147	6	8.45588E-06
sm-149	6	1.51864E-07
sm-150	6	1.08919E-05
sm-151	6	4.74165E-07
sm-152	6	3.86795E-06
eu-153	6	3.78033E-06
gd-155	6	1.41689E-07
o	6	4.56500E-02
u-235	7	2.67563E-04
u-234	7	5.81289E-06
u-236	7	1.12333E-04
np-237	7	1.15501E-05
u-238	7	2.13965E-02
pu-238	7	3.77264E-06
pu-239	7	1.26851E-04

np-237	5	1.86709E-05
u-238	5	2.10209E-02
pu-238	5	9.62878E-06
pu-239	5	1.24839E-04
pu-240	5	6.44552E-05
pu-241	5	3.09296E-05
pu-242	5	2.49562E-05
am-241	5	9.51404E-06
am-243	5	6.93448E-06
mo-95	5	6.89617E-05
tc-99	5	6.94233E-05
ru-101	5	6.86790E-05
rh-103	5	3.43505E-05
ag-109	5	6.19958E-06
cs-133	5	6.99512E-05
nd-143	5	4.16749E-05
nd-145	5	4.00187E-05
sm-147	5	9.94419E-06
sm-149	5	1.55281E-07
sm-150	5	1.78475E-05
sm-151	5	6.04650E-07
sm-152	5	5.37394E-06
eu-153	5	6.64193E-06
gd-155	5	3.00044E-07
o	5	4.56500E-02
u-235	6	1.26175E-04
u-234	6	4.58731E-06
u-236	6	1.27090E-04
np-237	6	1.76780E-05
u-238	6	2.10856E-02
pu-238	6	8.61004E-06
pu-239	6	1.25718E-04
pu-240	6	6.25429E-05
pu-241	6	3.02630E-05
pu-242	6	2.23637E-05
am-241	6	9.30470E-06
am-243	6	5.92606E-06
mo-95	6	6.59318E-05
tc-99	6	6.64013E-05
ru-101	6	6.49722E-05
rh-103	6	3.33629E-05
ag-109	6	5.74466E-06
cs-133	6	6.71859E-05
nd-143	6	4.09939E-05
nd-145	6	3.83935E-05
sm-147	6	9.84266E-06
sm-149	6	1.55210E-07
sm-150	6	1.69117E-05
sm-151	6	5.86788E-07
sm-152	6	5.18440E-06
eu-153	6	6.26267E-06
gd-155	6	2.77056E-07
o	6	4.56500E-02
u-235	7	1.06033E-04
u-234	7	4.36847E-06
u-236	7	1.28086E-04
np-237	7	1.87432E-05
u-238	7	2.10159E-02
pu-238	7	9.70667E-06
pu-239	7	1.24790E-04

pu-240	7	4.78161E-05	pu-240	7	6.45838E-05
pu-241	7	2.36461E-05	pu-241	7	3.09777E-05
pu-242	7	1.00834E-05	pu-242	7	2.51575E-05
am-241	7	7.19262E-06	am-241	7	9.52817E-06
am-243	7	1.86493E-06	am-243	7	7.01396E-06
mo-95	7	4.87313E-05	mo-95	7	6.91848E-05
tc-99	7	4.88408E-05	tc-99	7	6.96487E-05
ru-101	7	4.51787E-05	ru-101	7	6.89668E-05
rh-103	7	2.62988E-05	rh-103	7	3.44201E-05
ag-109	7	3.38763E-06	ag-109	7	6.23492E-06
cs-133	7	5.04619E-05	cs-133	7	7.01475E-05
nd-143	7	3.47569E-05	nd-143	7	4.17122E-05
nd-145	7	2.88075E-05	nd-145	7	4.01366E-05
sm-147	7	8.69293E-06	sm-147	7	9.95090E-06
sm-149	7	1.52723E-07	sm-149	7	1.55278E-07
sm-150	7	1.16080E-05	sm-150	7	1.79181E-05
sm-151	7	4.87897E-07	sm-151	7	6.05895E-07
sm-152	7	4.03628E-06	sm-152	7	5.38814E-06
eu-153	7	4.07712E-06	eu-153	7	6.66930E-06
gd-155	7	1.56198E-07	gd-155	7	3.01773E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	2.90971E-04	u-235	8	1.23745E-04
u-234	8	5.98515E-06	u-234	8	4.56197E-06
u-236	8	1.09165E-04	u-236	8	1.27237E-04
np-237	8	1.07240E-05	np-237	8	1.78035E-05
u-238	8	2.14335E-02	u-238	8	2.10777E-02
pu-238	8	3.28160E-06	pu-238	8	8.73372E-06
pu-239	8	1.26174E-04	pu-239	8	1.25609E-04
pu-240	8	4.54073E-05	pu-240	8	6.27939E-05
pu-241	8	2.24007E-05	pu-241	8	3.03544E-05
pu-242	8	8.79175E-06	pu-242	8	2.26738E-05
am-241	8	6.78978E-06	am-241	8	9.33341E-06
am-243	8	1.52929E-06	am-243	8	6.04574E-06
mo-95	8	4.63838E-05	mo-95	8	6.63067E-05
tc-99	8	4.64414E-05	tc-99	8	6.67815E-05
ru-101	8	4.26704E-05	ru-101	8	6.54294E-05
rh-103	8	2.51854E-05	rh-103	8	3.34893E-05
ag-109	8	3.10732E-06	ag-109	8	5.80109E-06
cs-133	8	4.81051E-05	cs-133	8	6.75373E-05
nd-143	8	3.36246E-05	nd-143	8	4.10899E-05
nd-145	8	2.74689E-05	nd-145	8	3.85966E-05
sm-147	8	8.46232E-06	sm-147	8	9.85739E-06
sm-149	8	1.51881E-07	sm-149	8	1.55247E-07
sm-150	8	1.09100E-05	sm-150	8	1.70271E-05
sm-151	8	4.74515E-07	sm-151	8	5.88966E-07
sm-152	8	3.87241E-06	sm-152	8	5.20828E-06
eu-153	8	3.78776E-06	eu-153	8	6.30930E-06
gd-155	8	1.42053E-07	gd-155	8	2.79902E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.78515E-04	u-235	9	1.12986E-04
u-234	9	5.89467E-06	u-234	9	4.44729E-06
u-236	9	1.10870E-04	u-236	9	1.27810E-04
np-237	9	1.11598E-05	np-237	9	1.83701E-05
u-238	9	2.14152E-02	u-238	9	2.10408E-02
pu-238	9	3.53682E-06	pu-238	9	9.31273E-06
pu-239	9	1.26561E-04	pu-239	9	1.25076E-04
pu-240	9	4.66857E-05	pu-240	9	6.38807E-05
pu-241	9	2.30813E-05	pu-241	9	3.07521E-05
pu-242	9	9.46408E-06	pu-242	9	2.41558E-05
am-241	9	7.00705E-06	am-241	9	9.45664E-06

am-243	9	1.70130E-06
mo-95	9	4.76271E-05
tc-99	9	4.77109E-05
ru-101	9	4.39941E-05
rh-103	9	2.57793E-05
ag-109	9	3.25454E-06
cs-133	9	4.93411E-05
nd-143	9	3.42326E-05
nd-145	9	2.81800E-05
sm-147	9	8.58690E-06
sm-149	9	1.52259E-07
sm-150	9	1.12772E-05
sm-151	9	4.81536E-07
sm-152	9	3.96008E-06
eu-153	9	3.93974E-06
gd-155	9	1.49444E-07
o	9	4.56500E-02
u-235	10	2.81953E-04
u-234	10	5.91991E-06
u-236	10	1.10408E-04
np-237	10	1.10383E-05
u-238	10	2.14208E-02
pu-238	10	3.46452E-06
pu-239	10	1.26462E-04
pu-240	10	4.63276E-05
pu-241	10	2.29030E-05
pu-242	10	9.27457E-06
am-241	10	6.94796E-06
am-243	10	1.65234E-06
mo-95	10	4.72818E-05
tc-99	10	4.73582E-05
ru-101	10	4.36261E-05
rh-103	10	2.56159E-05
ag-109	10	3.21342E-06
cs-133	10	4.89957E-05
nd-143	10	3.40661E-05
nd-145	10	2.79835E-05
sm-147	10	8.55310E-06
sm-149	10	1.52135E-07
sm-150	10	1.11741E-05
sm-151	10	4.79582E-07
sm-152	10	3.93621E-06
eu-153	10	3.89667E-06
gd-155	10	1.47369E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
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u-238	11	2.14508E-02
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pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.61516E-06
mo-95	9	6.80010E-05
tc-99	9	6.85005E-05
ru-101	9	6.75573E-05
rh-103	9	3.40557E-05
ag-109	9	6.05600E-06
cs-133	9	6.91086E-05
nd-143	9	4.14560E-05
nd-145	9	3.95398E-05
sm-147	9	9.91494E-06
sm-149	9	1.55271E-07
sm-150	9	1.75615E-05
sm-151	9	5.99366E-07
sm-152	9	5.31378E-06
eu-153	9	6.52690E-06
gd-155	9	2.92973E-07
o	9	4.56500E-02
u-235	10	1.14793E-04
u-234	10	4.46728E-06
u-236	10	1.27730E-04
np-237	10	1.82741E-05
u-238	10	2.10472E-02
pu-238	10	9.21281E-06
pu-239	10	1.25163E-04
pu-240	10	6.36963E-05
pu-241	10	3.06893E-05
pu-242	10	2.39006E-05
am-241	10	9.43710E-06
am-243	10	6.51557E-06
mo-95	10	6.77075E-05
tc-99	10	6.82127E-05
ru-101	10	6.72001E-05
rh-103	10	3.39602E-05
ag-109	10	6.01201E-06
cs-133	10	6.88404E-05
nd-143	10	4.13883E-05
nd-145	10	3.93822E-05
sm-147	10	9.90596E-06
sm-149	10	1.55294E-07
sm-150	10	1.74703E-05
sm-151	10	5.97623E-07
sm-152	10	5.29544E-06
eu-153	10	6.48965E-06
gd-155	10	2.90738E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05
nd-143	13	3.22052E-05

rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
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gd-155	11	2.71331E-07
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u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
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tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
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tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05
nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
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pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	3.13935E-04
u-234	16	6.15127E-06
u-236	16	1.05916E-04
np-237	16	9.95222E-06
u-238	16	2.14664E-02
pu-238	16	2.85514E-06
pu-239	16	1.25287E-04
pu-240	16	4.30459E-05
pu-241	16	2.11218E-05
pu-242	16	7.65463E-06
am-241	16	6.38270E-06
am-243	16	1.25110E-06
mo-95	16	4.41463E-05
tc-99	16	4.41561E-05
ru-101	16	4.03150E-05
rh-103	16	2.40942E-05
ag-109	16	2.84987E-06
cs-133	16	4.58390E-05
nd-143	16	3.24838E-05
nd-145	16	2.61886E-05
sm-147	16	8.22081E-06
sm-149	16	1.51075E-07
sm-150	16	1.02533E-05
sm-151	16	4.62024E-07
sm-152	16	3.71220E-06
eu-153	16	3.51570E-06
gd-155	16	1.29244E-07
o	16	4.56500E-02
u-235	17	3.25113E-04
u-234	17	6.22880E-06
u-236	17	1.04316E-04
np-237	17	9.59600E-06
u-238	17	2.14814E-02
pu-238	17	2.66735E-06
pu-239	17	1.24787E-04
pu-240	17	4.19145E-05
pu-241	17	2.05062E-05
pu-242	17	7.14936E-06
am-241	17	6.18694E-06
am-243	17	1.13367E-06
mo-95	17	4.30942E-05
tc-99	17	4.30826E-05
ru-101	17	3.92191E-05
rh-103	17	2.35711E-05
ag-109	17	2.73221E-06
cs-133	17	4.47589E-05
nd-143	17	3.19269E-05
nd-145	17	2.55849E-05
sm-147	17	8.10262E-06
sm-149	17	1.50682E-07
sm-150	17	9.94777E-06
sm-151	17	4.56286E-07
sm-152	17	3.63545E-06
eu-153	17	3.38980E-06
gd-155	17	1.23486E-07

sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.40899E-04
u-234	16	4.73543E-06
u-236	16	1.26119E-04
np-237	16	1.69338E-05
u-238	16	2.11293E-02
pu-238	16	7.89636E-06
pu-239	16	1.26220E-04
pu-240	16	6.10380E-05
pu-241	16	2.96847E-05
pu-242	16	2.05635E-05
am-241	16	9.12570E-06
am-243	16	5.24952E-06
mo-95	16	6.38179E-05
tc-99	16	6.42347E-05
ru-101	16	6.23276E-05
rh-103	16	3.26061E-05
ag-109	16	5.42168E-06
cs-133	16	6.51707E-05
nd-143	16	4.03986E-05
nd-145	16	3.72288E-05
sm-147	16	9.75471E-06
sm-149	16	1.55149E-07
sm-150	16	1.62357E-05
sm-151	16	5.74357E-07
sm-152	16	5.04808E-06
eu-153	16	5.98844E-06
gd-155	16	2.60681E-07
o	16	4.56500E-02
u-235	17	1.50731E-04
u-234	17	4.83091E-06
u-236	17	1.25349E-04
np-237	17	1.64549E-05
u-238	17	2.11566E-02
pu-238	17	7.45492E-06
pu-239	17	1.26509E-04
pu-240	17	6.00272E-05
pu-241	17	2.92753E-05
pu-242	17	1.94574E-05
am-241	17	8.99925E-06
am-243	17	4.84519E-06
mo-95	17	6.24199E-05
tc-99	17	6.28100E-05
ru-101	17	6.06755E-05
rh-103	17	3.21027E-05
ag-109	17	5.21993E-06
cs-133	17	6.38543E-05
nd-143	17	4.00358E-05
nd-145	17	3.64720E-05
sm-147	17	9.69093E-06
sm-149	17	1.55196E-07
sm-150	17	1.58064E-05
sm-151	17	5.66626E-07
sm-152	17	4.95778E-06
eu-153	17	5.81268E-06
gd-155	17	2.50406E-07

o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	4.13126E-04
u-234	19	6.81401E-06
u-236	19	9.08556E-05
np-237	19	7.05768E-06
u-238	19	2.15886E-02
pu-238	19	1.51360E-06
pu-239	19	1.18742E-04
pu-240	19	3.31979E-05
pu-241	19	1.55639E-05
pu-242	19	3.99591E-06
am-241	19	4.62716E-06
am-243	19	4.90813E-07
mo-95	19	3.52449E-05
tc-99	19	3.50906E-05
ru-101	19	3.12845E-05
rh-103	19	1.95143E-05
ag-109	19	1.92407E-06
cs-133	19	3.67210E-05
nd-143	19	2.74101E-05
nd-145	19	2.10422E-05
sm-147	19	7.09662E-06
sm-149	19	1.46308E-07
sm-150	19	7.73893E-06
sm-151	19	4.13128E-07
sm-152	19	3.04553E-06
eu-153	19	2.48852E-06
gd-155	19	8.52874E-08
o	19	4.56500E-02
u-235	20	4.96741E-04
u-234	20	7.32480E-06
u-236	20	7.71931E-05

o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-24	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.21759E-04
u-234	19	5.45413E-06
u-236	19	1.18088E-04
np-237	19	1.33139E-05
u-238	19	2.13179E-02
pu-238	19	4.93603E-06
pu-239	19	1.27418E-04
pu-240	19	5.25926E-05
pu-241	19	2.60192E-05
pu-242	19	1.30910E-05
am-241	19	7.95659E-06
am-243	19	2.72515E-06
mo-95	19	5.36559E-05
tc-99	19	5.38728E-05
ru-101	19	5.05779E-05
rh-103	19	2.85308E-05
ag-109	19	4.00845E-06
cs-133	19	5.53574E-05
nd-143	19	3.69216E-05
nd-145	19	3.15931E-05
sm-147	19	9.12403E-06
sm-149	19	1.53933E-07
sm-150	19	1.30940E-05
sm-151	19	5.15646E-07
sm-152	19	4.37653E-06
eu-153	19	4.69376E-06
gd-155	19	1.87952E-07
o	19	4.56500E-02
u-235	20	3.03798E-04
u-234	20	6.07848E-06
u-236	20	1.07340E-04

np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)
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B32A112222			B50A112222		
Serial No.: **6** from gen_ax03.mod			Serial No.: **23** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.81253E-04
u-234	4	5.91479E-06
u-236	4	1.10503E-04
np-237	4	1.10629E-05
u-238	4	2.14197E-02
pu-238	4	3.47913E-06
pu-239	4	1.26482E-04
pu-240	4	4.64002E-05
pu-241	4	2.29397E-05
pu-242	4	9.31292E-06
am-241	4	6.96004E-06
am-243	4	1.66221E-06
mo-95	4	4.73520E-05
tc-99	4	4.74299E-05
ru-101	4	4.37009E-05
rh-103	4	2.56492E-05
ag-109	4	3.22176E-06
cs-133	4	4.90657E-05
nd-143	4	3.41001E-05
nd-145	4	2.80234E-05
sm-147	4	8.56001E-06
sm-149	4	1.52159E-07
sm-150	4	1.11950E-05
sm-151	4	4.79978E-07
sm-152	4	3.94108E-06
eu-153	4	3.90538E-06
gd-155	4	1.47790E-07
o	4	4.56500E-02
u-235	5	2.69934E-04
u-234	5	5.83075E-06
u-236	5	1.12015E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.17657E-04
u-234	4	4.49778E-06
u-236	4	1.27588E-04
np-237	4	1.81224E-05
u-238	4	2.10575E-02
pu-238	4	9.05532E-06
pu-239	4	1.25309E-04
pu-240	4	6.34109E-05
pu-241	4	3.05784E-05
pu-242	4	2.34929E-05
am-241	4	9.40429E-06
am-243	4	6.36000E-06
mo-95	4	6.72650E-05
tc-99	4	6.77609E-05
ru-101	4	6.66218E-05
rh-103	4	3.38085E-05
ag-109	4	5.94405E-06
cs-133	4	6.84233E-05
nd-143	4	4.12970E-05
nd-145	4	3.91258E-05
sm-147	4	9.89198E-06
sm-149	4	1.55346E-07
sm-150	4	1.73254E-05
sm-151	4	5.94818E-07
sm-152	4	5.26769E-06
eu-153	4	6.43065E-06
gd-155	4	2.87218E-07
o	4	4.56500E-02
u-235	5	1.08210E-04
u-234	5	4.39274E-06
u-236	5	1.27999E-04

np-237	5	1.14652E-05
u-238	5	2.14004E-02
pu-238	5	3.72099E-06
pu-239	5	1.26791E-04
pu-240	5	4.75746E-05
pu-241	5	2.35214E-05
pu-242	5	9.94743E-06
am-241	5	7.15264E-06
am-243	5	1.82848E-06
mo-95	5	4.84917E-05
tc-99	5	4.85954E-05
ru-101	5	4.49204E-05
rh-103	5	2.61863E-05
ag-109	5	3.35853E-06
cs-133	5	5.02173E-05
nd-143	5	3.46441E-05
nd-145	5	2.86712E-05
sm-147	5	8.67009E-06
sm-149	5	1.52621E-07
sm-150	5	1.15364E-05
sm-151	5	4.86505E-07
sm-152	5	4.01961E-06
eu-153	5	4.04765E-06
gd-155	5	1.54718E-07
o	5	4.56500E-02
u-235	6	2.93823E-04
u-234	6	6.00573E-06
u-236	6	1.08763E-04
np-237	6	1.06254E-05
u-238	6	2.14374E-02
pu-238	6	3.22551E-06
pu-239	6	1.26074E-04
pu-240	6	4.51176E-05
pu-241	6	2.22357E-05
pu-242	6	8.64277E-06
am-241	6	6.73873E-06
am-243	6	1.49183E-06
mo-95	6	4.61006E-05
tc-99	6	4.61523E-05
ru-101	6	4.23700E-05
rh-103	6	2.50485E-05
ag-109	6	3.07418E-06
cs-133	6	4.78227E-05
nd-143	6	3.34834E-05
nd-145	6	2.73063E-05
sm-147	6	8.43276E-06
sm-149	6	1.51799E-07
sm-150	6	1.08275E-05
sm-151	6	4.72921E-07
sm-152	6	3.85210E-06
eu-153	6	3.75380E-06
gd-155	6	1.40397E-07
o	6	4.56500E-02
u-235	7	2.69339E-04
u-234	7	5.82627E-06
u-236	7	1.12095E-04
np-237	7	1.14865E-05
u-238	7	2.13995E-02
pu-238	7	3.73393E-06
pu-239	7	1.26806E-04

np-237	5	1.86254E-05
u-238	5	2.10241E-02
pu-238	5	9.58020E-06
pu-239	5	1.24871E-04
pu-240	5	6.43720E-05
pu-241	5	3.09010E-05
pu-242	5	2.48317E-05
am-241	5	9.50529E-06
am-243	5	6.88507E-06
mo-95	5	6.88189E-05
tc-99	5	6.92821E-05
ru-101	5	6.85018E-05
rh-103	5	3.43064E-05
ag-109	5	6.17742E-06
cs-133	5	6.98266E-05
nd-143	5	4.16480E-05
nd-145	5	3.99454E-05
sm-147	5	9.93985E-06
sm-149	5	1.55280E-07
sm-150	5	1.78035E-05
sm-151	5	6.03862E-07
sm-152	5	5.36488E-06
eu-153	5	6.62469E-06
gd-155	5	2.98962E-07
o	5	4.56500E-02
u-235	6	1.26951E-04
u-234	6	4.59528E-06
u-236	6	1.27043E-04
np-237	6	1.76383E-05
u-238	6	2.10882E-02
pu-238	6	8.57090E-06
pu-239	6	1.25751E-04
pu-240	6	6.24630E-05
pu-241	6	3.02315E-05
pu-242	6	2.22653E-05
am-241	6	9.29535E-06
am-243	6	5.88834E-06
mo-95	6	6.58176E-05
tc-99	6	6.62846E-05
ru-101	6	6.48273E-05
rh-103	6	3.33227E-05
ag-109	6	5.72686E-06
cs-133	6	6.70750E-05
nd-143	6	4.09624E-05
nd-145	6	3.83291E-05
sm-147	6	9.83809E-06
sm-149	6	1.55215E-07
sm-150	6	1.68752E-05
sm-151	6	5.86122E-07
sm-152	6	5.17688E-06
eu-153	6	6.24794E-06
gd-155	6	2.76157E-07
o	6	4.56500E-02
u-235	7	1.06591E-04
u-234	7	4.37464E-06
u-236	7	1.28063E-04
np-237	7	1.87129E-05
u-238	7	2.10180E-02
pu-238	7	9.67395E-06
pu-239	7	1.24811E-04

pu-240	7	4.76354E-05
pu-241	7	2.35526E-05
pu-242	7	9.98149E-06
am-241	7	7.16269E-06
am-243	7	1.83758E-06
mo-95	7	4.85519E-05
tc-99	7	4.86570E-05
ru-101	7	4.49852E-05
rh-103	7	2.62145E-05
ag-109	7	3.36583E-06
cs-133	7	5.02787E-05
nd-143	7	3.46724E-05
nd-145	7	2.87054E-05
sm-147	7	8.67583E-06
sm-149	7	1.52647E-07
sm-150	7	1.15544E-05
sm-151	7	4.86855E-07
sm-152	7	4.02378E-06
eu-153	7	4.05506E-06
gd-155	7	1.55089E-07
o	7	4.56500E-02
u-235	8	2.92220E-04
u-234	8	5.99416E-06
u-236	8	1.08990E-04
np-237	8	1.06808E-05
u-238	8	2.14352E-02
pu-238	8	3.25695E-06
pu-239	8	1.26131E-04
pu-240	8	4.52806E-05
pu-241	8	2.23285E-05
pu-242	8	8.72631E-06
am-241	8	6.76748E-06
am-243	8	1.51280E-06
mo-95	8	4.62598E-05
tc-99	8	4.63148E-05
ru-101	8	4.25387E-05
rh-103	8	2.51255E-05
ag-109	8	3.09278E-06
cs-133	8	4.79817E-05
nd-143	8	3.35628E-05
nd-145	8	2.73977E-05
sm-147	8	8.44943E-06
sm-149	8	1.51847E-07
sm-150	8	1.08738E-05
sm-151	8	4.73816E-07
sm-152	8	3.86350E-06
eu-153	8	3.77290E-06
gd-155	8	1.41327E-07
o	8	4.56500E-02
u-235	9	2.79401E-04
u-234	9	5.90120E-06
u-236	9	1.10751E-04
np-237	9	1.11284E-05
u-238	9	2.14167E-02
pu-238	9	3.51808E-06
pu-239	9	1.26536E-04
pu-240	9	4.65932E-05
pu-241	9	2.30358E-05
pu-242	9	9.41499E-06
am-241	9	6.99188E-06

pu-240	7	6.45304E-05
pu-241	7	3.09572E-05
pu-242	7	2.50728E-05
am-241	7	9.52222E-06
am-243	7	6.98052E-06
mo-95	7	6.90918E-05
tc-99	7	6.95541E-05
ru-101	7	6.88455E-05
rh-103	7	3.43910E-05
ag-109	7	6.22010E-06
cs-133	7	7.00654E-05
nd-143	7	4.16972E-05
nd-145	7	4.00870E-05
sm-147	7	9.94813E-06
sm-149	7	1.55280E-07
sm-150	7	1.78885E-05
sm-151	7	6.05375E-07
sm-152	7	5.38222E-06
eu-153	7	6.65782E-06
gd-155	7	3.01047E-07
o	7	4.56500E-02
u-235	8	1.24173E-04
u-234	8	4.56648E-06
u-236	8	1.27211E-04
np-237	8	1.77813E-05
u-238	8	2.10791E-02
pu-238	8	8.71176E-06
pu-239	8	1.25629E-04
pu-240	8	6.27496E-05
pu-241	8	3.03389E-05
pu-242	8	2.26188E-05
am-241	8	9.32840E-06
am-243	8	6.02443E-06
mo-95	8	6.62390E-05
tc-99	8	6.67131E-05
ru-101	8	6.53483E-05
rh-103	8	3.34669E-05
ag-109	8	5.79107E-06
cs-133	8	6.74749E-05
nd-143	8	4.10734E-05
nd-145	8	3.85606E-05
sm-147	8	9.85476E-06
sm-149	8	1.55235E-07
sm-150	8	1.70067E-05
sm-151	8	5.88572E-07
sm-152	8	5.20405E-06
eu-153	8	6.30101E-06
gd-155	8	2.79397E-07
o	8	4.56500E-02
u-235	9	1.13276E-04
u-234	9	4.45054E-06
u-236	9	1.27798E-04
np-237	9	1.83547E-05
u-238	9	2.10418E-02
pu-238	9	9.29673E-06
pu-239	9	1.25090E-04
pu-240	9	6.38509E-05
pu-241	9	3.07426E-05
pu-242	9	2.41152E-05
am-241	9	9.45358E-06

am-243	9	1.68857E-06	am-243	9	6.59916E-06
mo-95	9	4.75380E-05	mo-95	9	6.79529E-05
tc-99	9	4.76199E-05	tc-99	9	6.84541E-05
ru-101	9	4.38991E-05	ru-101	9	6.75007E-05
rh-103	9	2.57373E-05	rh-103	9	3.40405E-05
ag-109	9	3.24391E-06	ag-109	9	6.04888E-06
cs-133	9	4.92518E-05	cs-133	9	6.90653E-05
nd-143	9	3.41898E-05	nd-143	9	4.14445E-05
nd-145	9	2.81293E-05	nd-145	9	3.95149E-05
sm-147	9	8.57823E-06	sm-147	9	9.91348E-06
sm-149	9	1.52225E-07	sm-149	9	1.55273E-07
sm-150	9	1.12505E-05	sm-150	9	1.75469E-05
sm-151	9	4.81031E-07	sm-151	9	5.99089E-07
sm-152	9	3.95395E-06	sm-152	9	5.31078E-06
eu-153	9	3.92859E-06	eu-153	9	6.52095E-06
gd-155	9	1.48907E-07	gd-155	9	2.92614E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.82333E-04	u-235	10	1.14917E-04
u-234	10	5.92268E-06	u-234	10	4.46863E-06
u-236	10	1.10357E-04	u-236	10	1.27724E-04
np-237	10	1.10249E-05	np-237	10	1.82675E-05
u-238	10	2.14214E-02	u-238	10	2.10476E-02
pu-238	10	3.45661E-06	pu-238	10	9.20594E-06
pu-239	10	1.26451E-04	pu-239	10	1.25170E-04
pu-240	10	4.62882E-05	pu-240	10	6.36838E-05
pu-241	10	2.28829E-05	pu-241	10	3.06847E-05
pu-242	10	9.25383E-06	pu-242	10	2.38829E-05
am-241	10	6.94140E-06	am-241	10	9.43572E-06
am-243	10	1.64700E-06	am-243	10	6.50875E-06
mo-95	10	4.72438E-05	mo-95	10	6.76879E-05
tc-99	10	4.73194E-05	tc-99	10	6.81930E-05
ru-101	10	4.35856E-05	ru-101	10	6.71752E-05
rh-103	10	2.55979E-05	rh-103	10	3.39536E-05
ag-109	10	3.20890E-06	ag-109	10	6.00903E-06
cs-133	10	4.89578E-05	cs-133	10	6.88222E-05
nd-143	10	3.40477E-05	nd-143	10	4.13840E-05
nd-145	10	2.79618E-05	nd-145	10	3.93712E-05
sm-147	10	8.54935E-06	sm-147	10	9.90536E-06
sm-149	10	1.52122E-07	sm-149	10	1.55296E-07
sm-150	10	1.11628E-05	sm-150	10	1.74640E-05
sm-151	10	4.79367E-07	sm-151	10	5.97503E-07
sm-152	10	3.93356E-06	sm-152	10	5.29421E-06
eu-153	10	3.89196E-06	eu-153	10	6.48709E-06
gd-155	10	1.47142E-07	gd-155	10	2.90585E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05
ru-101	11	4.14529E-05	ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	3.13935E-04	u-235	16	1.40899E-04
u-234	16	6.15127E-06	u-234	16	4.73543E-06
u-236	16	1.05916E-04	u-236	16	1.26119E-04
np-237	16	9.95222E-06	np-237	16	1.69338E-05
u-238	16	2.14664E-02	u-238	16	2.11293E-02
pu-238	16	2.85514E-06	pu-238	16	7.89636E-06
pu-239	16	1.25287E-04	pu-239	16	1.26220E-04
pu-240	16	4.30459E-05	pu-240	16	6.10380E-05
pu-241	16	2.11218E-05	pu-241	16	2.96847E-05
pu-242	16	7.65463E-06	pu-242	16	2.05635E-05
am-241	16	6.38270E-06	am-241	16	9.12570E-06
am-243	16	1.25110E-06	am-243	16	5.24952E-06
mo-95	16	4.41463E-05	mo-95	16	6.38179E-05
tc-99	16	4.41561E-05	tc-99	16	6.42347E-05
ru-101	16	4.03150E-05	ru-101	16	6.23276E-05
rh-103	16	2.40942E-05	rh-103	16	3.26061E-05
ag-109	16	2.84987E-06	ag-109	16	5.42168E-06
cs-133	16	4.58390E-05	cs-133	16	6.51707E-05
nd-143	16	3.24838E-05	nd-143	16	4.03986E-05
nd-145	16	2.61886E-05	nd-145	16	3.72288E-05
sm-147	16	8.22081E-06	sm-147	16	9.75471E-06
sm-149	16	1.51075E-07	sm-149	16	1.55149E-07
sm-150	16	1.02533E-05	sm-150	16	1.62357E-05
sm-151	16	4.62024E-07	sm-151	16	5.74357E-07
sm-152	16	3.71220E-06	sm-152	16	5.04808E-06
eu-153	16	3.51570E-06	eu-153	16	5.98844E-06
gd-155	16	1.29244E-07	gd-155	16	2.60681E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.25113E-04	u-235	17	1.50731E-04
u-234	17	6.22880E-06	u-234	17	4.83091E-06
u-236	17	1.04316E-04	u-236	17	1.25349E-04
np-237	17	9.59600E-06	np-237	17	1.64549E-05
u-238	17	2.14814E-02	u-238	17	2.11566E-02
pu-238	17	2.66735E-06	pu-238	17	7.45492E-06
pu-239	17	1.24787E-04	pu-239	17	1.26509E-04
pu-240	17	4.19145E-05	pu-240	17	6.00272E-05
pu-241	17	2.05062E-05	pu-241	17	2.92753E-05
pu-242	17	7.14936E-06	pu-242	17	1.94574E-05
am-241	17	6.18694E-06	am-241	17	8.99925E-06
am-243	17	1.13367E-06	am-243	17	4.84519E-06
mo-95	17	4.30942E-05	mo-95	17	6.24199E-05
tc-99	17	4.30826E-05	tc-99	17	6.28100E-05
ru-101	17	3.92191E-05	ru-101	17	6.06755E-05
rh-103	17	2.35711E-05	rh-103	17	3.21027E-05
ag-109	17	2.73221E-06	ag-109	17	5.21993E-06
cs-133	17	4.47589E-05	cs-133	17	6.38543E-05
nd-143	17	3.19269E-05	nd-143	17	4.00358E-05
nd-145	17	2.55849E-05	nd-145	17	3.64720E-05
sm-147	17	8.10262E-0	sm-147	17	9.69093E-06
sm-149	17	1.50682E-07	sm-149	17	1.55196E-07
sm-150	17	9.94777E-06	sm-150	17	1.58064E-05
sm-151	17	4.56286E-07	sm-151	17	5.66626E-07
sm-152	17	3.63545E-06	sm-152	17	4.95778E-06
eu-153	17	3.38980E-06	eu-153	17	5.81268E-06
gd-155	17	1.23486E-07	gd-155	17	2.50406E-07

o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-0
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.96741E-04
u-234	20	7.32480E-06
u-236	20	7.71931E-05

o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	3.03798E-04
u-234	20	6.07848E-06
u-236	20	1.07340E-04

np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A122222

Serial No.: **7** from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-0
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06
gd-155	2	8.84830E-08

B50A122222

Serial No.: **24** from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06
gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.84745E-04
u-234	4	5.94023E-06
u-236	4	1.10030E-04
np-237	4	1.09403E-05
u-238	4	2.14251E-02
pu-238	4	3.40682E-06
pu-239	4	1.26377E-04
pu-240	4	4.60397E-05
pu-241	4	2.27529E-05
pu-242	4	9.12290E-06
am-241	4	6.89951E-06
am-243	4	1.61344E-06
mo-95	4	4.70027E-05
tc-99	4	4.70732E-05
ru-101	4	4.33289E-05
rh-103	4	2.54830E-05
ag-109	4	3.18031E-06
cs-133	4	4.87183E-05
nd-143	4	3.39302E-05
nd-145	4	2.78241E-05
sm-147	4	8.52537E-06
sm-149	4	1.52048E-07
sm-150	4	1.10914E-05
sm-151	4	4.78006E-07
sm-152	4	3.91663E-06
eu-153	4	3.86234E-06
gd-155	4	1.45704E-07
o	4	4.56500E-02
u-235	5	2.73022E-04
u-234	5	5.85391E-06
u-236	5	1.11602E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.18464E-04
u-234	4	4.50625E-06
u-236	4	1.27545E-04
np-237	4	1.80799E-05
u-238	4	2.10603E-02
pu-238	4	9.01150E-06
pu-239	4	1.25351E-04
pu-240	4	6.33308E-05
pu-241	4	3.05467E-05
pu-242	4	2.33794E-05
am-241	4	9.39486E-06
am-243	4	6.31695E-06
mo-95	4	6.71416E-05
tc-99	4	6.76332E-05
ru-101	4	6.64591E-05
rh-103	4	3.37659E-05
ag-109	4	5.92512E-06
cs-133	4	6.83065E-05
nd-143	4	4.12724E-05
nd-145	4	3.90535E-05
sm-147	4	9.88788E-06
sm-149	4	1.55354E-07
sm-150	4	1.72850E-05
sm-151	4	5.94027E-07
sm-152	4	5.25997E-06
eu-153	4	6.41418E-06
gd-155	4	2.86234E-07
o	4	4.56500E-02
u-235	5	1.08899E-04
u-234	5	4.40055E-06
u-236	5	1.27972E-04

np-237	5	1.13551E-05	np-237	5	1.85883E-05
u-238	5	2.14056E-02	u-238	5	2.10266E-02
pu-238	5	3.65430E-06	pu-238	5	9.54095E-06
pu-239	5	1.26710E-04	pu-239	5	1.24899E-04
pu-240	5	4.72576E-05	pu-240	5	6.43029E-05
pu-241	5	2.33614E-05	pu-241	5	3.08787E-05
pu-242	5	9.77200E-06	pu-242	5	2.47317E-05
am-241	5	7.10047E-06	am-241	5	9.49826E-06
am-243	5	1.78188E-06	am-243	5	6.84524E-06
mo-95	5	4.81805E-05	mo-95	5	6.87011E-05
tc-99	5	4.82766E-05	tc-99	5	6.91676E-05
ru-101	5	4.45858E-05	ru-101	5	6.83608E-05
rh-103	5	2.60398E-05	rh-103	5	3.42704E-05
ag-109	5	3.32090E-06	ag-109	5	6.15949E-06
cs-133	5	4.98999E-05	cs-133	5	6.97239E-05
nd-143	5	3.44967E-05	nd-143	5	4.16233E-05
nd-145	5	2.84943E-05	nd-145	5	3.98864E-05
sm-147	5	8.64030E-06	sm-147	5	9.93625E-06
sm-149	5	1.52484E-07	sm-149	5	1.55278E-07
sm-150	5	1.14431E-05	sm-150	5	1.77680E-05
sm-151	5	4.84699E-07	sm-151	5	6.03219E-07
sm-152	5	3.99808E-06	sm-152	5	5.35745E-06
eu-153	5	4.00905E-06	eu-153	5	6.61064E-06
gd-155	5	1.52806E-07	gd-155	5	2.98086E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	2.96411E-04	u-235	6	1.27582E-04
u-234	6	6.02450E-06	u-234	6	4.60171E-06
u-236	6	1.08395E-04	u-236	6	1.27006E-04
np-237	6	1.05359E-05	np-237	6	1.76060E-05
u-238	6	2.14412E-02	u-238	6	2.10904E-02
pu-238	6	3.17515E-06	pu-238	6	8.53919E-06
pu-239	6	1.25980E-04	pu-239	6	1.25777E-04
pu-240	6	4.48525E-05	pu-240	6	6.23981E-05
pu-241	6	2.20863E-05	pu-241	6	3.02051E-05
pu-242	6	8.50878E-06	pu-242	6	2.21854E-05
am-241	6	6.69200E-06	am-241	6	9.28768E-06
am-243	6	1.45835E-06	am-243	6	5.85784E-06
mo-95	6	4.58432E-05	mo-95	6	6.57264E-05
tc-99	6	4.58894E-05	tc-99	6	6.61912E-05
ru-101	6	4.20976E-05	ru-101	6	6.47099E-05
rh-103	6	2.49239E-05	rh-103	6	3.32900E-05
ag-109	6	3.04422E-06	ag-109	6	5.71246E-06
cs-133	6	4.75632E-05	cs-133	6	6.69853E-05
nd-143	6	3.33545E-05	nd-143	6	4.09364E-05
nd-145	6	2.71587E-05	nd-145	6	3.82769E-05
sm-147	6	8.40551E-06	sm-147	6	9.83442E-06
sm-149	6	1.51710E-07	sm-149	6	1.55225E-07
sm-150	6	1.07523E-05	sm-150	6	1.68455E-05
sm-151	6	4.71477E-07	sm-151	6	5.85589E-07
sm-152	6	3.83376E-06	sm-152	6	5.17081E-06
eu-153	6	3.72271E-06	eu-153	6	6.23602E-06
gd-155	6	1.38900E-07	gd-155	6	2.75429E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.71409E-04	u-235	7	1.07045E-04
u-234	7	5.84183E-06	u-234	7	4.37968E-06
u-236	7	1.11818E-04	u-236	7	1.28045E-04
np-237	7	1.14126E-05	np-237	7	1.86882E-05
u-238	7	2.14029E-02	u-238	7	2.10197E-02
pu-238	7	3.68909E-06	pu-238	7	9.64744E-06
pu-239	7	1.26753E-04	pu-239	7	1.24827E-04

pu-240	7	4.74237E-05
pu-241	7	2.34446E-05
pu-242	7	9.86346E-06
am-241	7	7.12775E-06
am-243	7	1.80611E-06
mo-95	7	4.83431E-05
tc-99	7	4.84431E-05
ru-101	7	4.47605E-05
rh-103	7	2.61163E-05
ag-109	7	3.34053E-06
cs-133	7	5.00655E-05
nd-143	7	3.45738E-05
nd-145	7	2.85867E-05
sm-147	7	8.65588E-06
sm-149	7	1.52555E-07
sm-150	7	1.14918E-05
sm-151	7	4.85641E-07
sm-152	7	4.00931E-06
eu-153	7	4.02927E-06
gd-155	7	1.53803E-07
o	7	4.56500E-02
u-235	8	2.93674E-04
u-234	8	6.00466E-06
u-236	8	1.08784E-04
np-237	8	1.06305E-05
u-238	8	2.14372E-02
pu-238	8	3.22842E-06
pu-239	8	1.26079E-04
pu-240	8	4.51328E-05
pu-241	8	2.22443E-05
pu-242	8	8.65052E-06
am-241	8	6.74141E-06
am-243	8	1.49377E-06
mo-95	8	4.61154E-05
tc-99	8	4.61674E-05
ru-101	8	4.23856E-05
rh-103	8	2.50556E-05
ag-109	8	3.07590E-06
cs-133	8	4.78375E-05
nd-143	8	3.34908E-05
nd-145	8	2.73148E-05
sm-147	8	8.43432E-06
sm-149	8	1.51804E-07
sm-150	8	1.08318E-05
sm-151	8	4.73004E-07
sm-152	8	3.85315E-06
eu-153	8	3.75558E-06
gd-155	8	1.40484E-07
o	8	4.56500E-02
u-235	9	2.80430E-04
u-234	9	5.90876E-06
u-236	9	1.10613E-04
np-237	9	1.10920E-05
u-238	9	2.14184E-02
pu-238	9	3.49639E-06
pu-239	9	1.26506E-04
pu-240	9	4.64859E-05
pu-241	9	2.29826E-05
pu-242	9	9.35816E-06
am-241	9	6.97420E-06

pu-240	7	6.44865E-05
pu-241	7	3.09409E-05
pu-242	7	2.50043E-05
am-241	7	9.51742E-06
am-243	7	6.95349E-06
mo-95	7	6.90157E-05
tc-99	7	6.94773E-05
ru-101	7	6.87476E-05
rh-103	7	3.43673E-05
ag-109	7	6.20807E-06
cs-133	7	6.99986E-05
nd-143	7	4.16844E-05
nd-145	7	4.00469E-05
sm-147	7	9.94583E-06
sm-149	7	1.55281E-07
sm-150	7	1.78644E-05
sm-151	7	6.04951E-07
sm-152	7	5.37738E-06
eu-153	7	6.64851E-06
gd-155	7	3.00459E-07
o	7	4.56500E-02
u-235	8	1.24522E-04
u-234	8	4.57014E-06
u-236	8	1.27190E-04
np-237	8	1.77632E-05
u-238	8	2.10802E-02
pu-238	8	8.69395E-06
pu-239	8	1.25645E-04
pu-240	8	6.27136E-05
pu-241	8	3.03262E-05
pu-242	8	2.25742E-05
am-241	8	9.32431E-06
am-243	8	6.00718E-06
mo-95	8	6.61845E-05
tc-99	8	6.66578E-05
ru-101	8	6.52825E-05
rh-103	8	3.34488E-05
ag-109	8	5.78294E-06
cs-133	8	6.74243E-05
nd-143	8	4.10598E-05
nd-145	8	3.85313E-05
sm-147	8	9.85263E-06
sm-149	8	1.55228E-07
sm-150	8	1.69901E-05
sm-151	8	5.88255E-07
sm-152	8	5.20060E-06
eu-153	8	6.29429E-06
gd-155	8	2.78987E-07
o	8	4.56500E-02
u-235	9	1.13510E-04
u-234	9	4.45316E-06
u-236	9	1.27787E-04
np-237	9	1.83423E-05
u-238	9	2.10426E-02
pu-238	9	9.28380E-06
pu-239	9	1.25101E-04
pu-240	9	6.38269E-05
pu-241	9	3.07347E-05
pu-242	9	2.40823E-05
am-241	9	9.45110E-06

am-243	9	1.67388E-06
mo-95	9	4.74346E-05
tc-99	9	4.75142E-05
ru-101	9	4.37888E-05
rh-103	9	2.56884E-05
ag-109	9	3.23159E-06
cs-133	9	4.91482E-05
nd-143	9	3.41400E-05
nd-145	9	2.80705E-05
sm-147	9	8.56812E-06
sm-149	9	1.52188E-07
sm-150	9	1.12196E-05
sm-151	9	4.80445E-07
sm-152	9	3.94680E-06
eu-153	9	3.91567E-06
gd-155	9	1.48285E-07
o	9	4.56500E-02
u-235	10	2.82777E-04
u-234	10	5.92592E-06
u-236	10	1.10297E-04
np-237	10	1.10093E-05
u-238	10	2.14221E-02
pu-238	10	3.44739E-06
pu-239	10	1.26437E-04
pu-240	10	4.62423E-05
pu-241	10	2.28593E-05
pu-242	10	9.22961E-06
am-241	10	6.93371E-06
am-243	10	1.64078E-06
mo-95	10	4.71994E-05
tc-99	10	4.72740E-05
ru-101	10	4.35383E-05
rh-103	10	2.55767E-05
ag-109	10	3.20363E-06
cs-133	10	4.89136E-05
nd-143	10	3.40261E-05
nd-145	10	2.79364E-05
sm-147	10	8.54495E-06
sm-149	10	1.52108E-07
sm-150	10	1.11496E-05
sm-151	10	4.79116E-07
sm-152	10	3.93045E-06
eu-153	10	3.88647E-06
gd-155	10	1.46876E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.58624E-06
mo-95	9	6.79143E-05
tc-99	9	6.84167E-05
ru-101	9	6.74548E-05
rh-103	9	3.40281E-05
ag-109	9	6.04315E-06
cs-133	9	6.90304E-05
nd-143	9	4.14353E-05
nd-145	9	3.94947E-05
sm-14	9	9.91230E-06
sm-149	9	1.55276E-07
sm-150	9	1.75352E-05
sm-151	9	5.98865E-07
sm-152	9	5.30838E-06
eu-153	9	6.51613E-06
gd-155	9	2.92325E-07
o	9	4.56500E-02
u-235	10	1.15018E-04
u-234	10	4.46971E-06
u-236	10	1.27719E-04
np-237	10	1.82622E-05
u-238	10	2.10480E-02
pu-238	10	9.20040E-06
pu-239	10	1.25175E-04
pu-240	10	6.36737E-05
pu-241	10	3.06809E-05
pu-242	10	2.38686E-05
am-241	10	9.43460E-06
am-243	10	6.50325E-06
mo-95	10	6.76721E-05
tc-99	10	6.81772E-05
ru-101	10	6.71551E-05
rh-103	10	3.39483E-05
ag-109	10	6.00662E-06
cs-133	10	6.88075E-05
nd-143	10	4.13806E-05
nd-145	10	3.93623E-05
sm-147	10	9.90487E-06
sm-149	10	1.55298E-07
sm-150	10	1.74590E-05
sm-151	10	5.97405E-07
sm-152	10	5.29322E-06
eu-153	10	6.48502E-06
gd-155	10	2.90461E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05
nd-143	13	3.22052E-05

rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05
nd-143	13	4.02130E-05

nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07
sm-150	15	1.03985E-05	sm-150	15	1.64364E-05

sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	3.13935E-04
u-234	16	6.15127E-06
u-236	16	1.05916E-04
np-237	16	9.95222E-06
u-238	16	2.14664E-02
pu-238	16	2.85514E-06
pu-239	16	1.25287E-04
pu-240	16	4.30459E-05
pu-241	16	2.11218E-05
pu-242	16	7.65463E-06
am-241	16	6.38270E-06
am-243	16	1.25110E-06
mo-95	16	4.41463E-05
tc-99	16	4.41561E-05
ru-101	16	4.03150E-05
rh-103	16	2.40942E-05
ag-109	16	2.84987E-06
cs-133	16	4.58390E-05
nd-143	16	3.24838E-05
nd-145	16	2.61886E-05
sm-147	16	8.22081E-06
sm-149	16	1.51075E-07
sm-150	16	1.02533E-05
sm-151	16	4.62024E-07
sm-152	16	3.71220E-06
eu-153	16	3.51570E-06
gd-155	16	1.29244E-07
o	16	4.56500E-02
u-235	17	3.25113E-04
u-234	17	6.22880E-06
u-236	17	1.04316E-04
np-237	17	9.59600E-06
u-238	17	2.14814E-02
pu-238	17	2.66735E-06
pu-239	17	1.24787E-04
pu-240	17	4.19145E-05
pu-241	17	2.05062E-05
pu-242	17	7.14936E-06
am-241	17	6.18694E-06
am-243	17	1.13367E-06
mo-95	17	4.30942E-05
tc-99	17	4.30826E-05
ru-101	17	3.92191E-05
rh-103	17	2.35711E-05
ag-109	17	2.73221E-06
cs-133	17	4.47589E-05
nd-143	17	3.19269E-05
nd-145	17	2.55849E-05
sm-147	17	8.10262E-06
sm-149	17	1.50682E-07
sm-150	17	9.94777E-06
sm-151	17	4.56286E-07
sm-152	17	3.63545E-06
eu-153	17	3.38980E-06
gd-155	17	1.23486E-07

sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.40899E-04
u-234	16	4.73543E-06
u-236	16	1.26119E-04
np-237	16	1.69338E-05
u-238	16	2.11293E-02
pu-238	16	7.89636E-06
pu-239	16	1.26220E-04
pu-240	16	6.10380E-05
pu-241	16	2.96847E-05
pu-242	16	2.05635E-05
am-241	16	9.12570E-06
am-243	16	5.24952E-06
mo-95	16	6.38179E-05
tc-99	16	6.42347E-05
ru-101	16	6.23276E-05
rh-103	16	3.26061E-05
ag-109	16	5.42168E-06
cs-133	16	6.51707E-05
nd-143	16	4.03986E-05
nd-145	16	3.72288E-05
sm-147	16	9.75471E-06
sm-149	16	1.55149E-07
sm-150	16	1.62357E-05
sm-151	16	5.74357E-07
sm-152	16	5.04808E-06
eu-153	16	5.98844E-06
gd-155	16	2.60681E-07
o	16	4.56500E-02
u-235	17	1.50731E-04
u-234	17	4.83091E-06
u-236	17	1.25349E-04
np-237	17	1.64549E-05
u-238	17	2.11566E-02
pu-238	17	7.45492E-06
pu-239	17	1.26509E-04
pu-240	17	6.00272E-05
pu-241	17	2.92753E-05
pu-242	17	1.94574E-05
am-241	17	8.99925E-06
am-243	17	4.84519E-06
mo-95	17	6.24199E-05
tc-99	17	6.28100E-05
ru-101	17	6.06755E-05
rh-103	17	3.21027E-05
ag-109	17	5.21993E-06
cs-133	17	6.38543E-05
nd-143	17	4.00358E-05
nd-145	17	3.64720E-05
sm-147	17	9.69093E-06
sm-149	17	1.55196E-07
sm-150	17	1.58064E-05
sm-151	17	5.66626E-07
sm-152	17	4.95778E-06
eu-153	17	5.81268E-06
gd-155	17	2.50406E-07

o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.63519E-04
u-234	20	7.12538E-06
u-236	20	8.26978E-05

o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	8	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	2.93307E-04
u-234	20	6.00200E-06
u-236	20	1.08836E-04

np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

==

From outpy005.sc5 (Fortsetzung)
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B32A222223			B50A222223		
Serial No.: **8** from gen_ax03.mod			Serial No.: **25** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.91555E-04
u-234	4	5.98937E-06
u-236	4	1.09083E-04
np-237	4	1.07038E-05
u-238	4	2.14343E-02
pu-238	4	3.27005E-06
pu-239	4	1.26154E-04
pu-240	4	4.53480E-05
pu-241	4	2.23669E-05
pu-242	4	8.76110E-06
am-241	4	6.77935E-06
am-243	4	1.52156E-06
mo-95	4	4.63258E-05
tc-99	4	4.63822E-05
ru-101	4	4.26088E-05
rh-103	4	2.51574E-05
ag-109	4	3.10052E-06
cs-133	4	4.80474E-05
nd-143	4	3.35957E-05
nd-145	4	2.74356E-05
sm-147	4	8.45630E-06
sm-149	4	1.51865E-07
sm-150	4	1.08931E-05
sm-151	4	4.74188E-07
sm-152	4	3.86824E-06
eu-153	4	3.78081E-06
gd-155	4	1.41713E-07
o	4	4.56500E-02
u-235	5	2.79019E-04
u-234	5	5.89839E-06
u-236	5	1.10802E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.21321E-04
u-234	4	4.53636E-06
u-236	4	1.27382E-04
np-237	4	1.79298E-05
u-238	4	2.10699E-02
pu-238	4	8.85929E-06
pu-239	4	1.25494E-04
pu-240	4	6.30429E-05
pu-241	4	3.04402E-05
pu-242	4	2.29899E-05
am-241	4	9.36155E-06
am-243	4	6.16799E-06
mo-95	4	6.66935E-05
tc-99	4	6.71735E-05
ru-101	4	6.58940E-05
rh-103	4	3.36157E-05
ag-109	4	5.85799E-06
cs-133	4	6.78909E-05
nd-143	4	4.11789E-05
nd-145	4	3.88026E-05
sm-147	4	9.87205E-06
sm-149	4	1.55320E-07
sm-150	4	1.71439E-05
sm-151	4	5.91250E-07
sm-152	4	5.23224E-06
eu-153	4	6.35677E-06
gd-155	4	2.82783E-07
o	4	4.56500E-02
u-235	5	1.11331E-04
u-234	5	4.42846E-06
u-236	5	1.27877E-04

np-237	5	1.11419E-05
u-238	5	2.14160E-02
pu-238	5	3.52614E-06
pu-239	5	1.26546E-04
pu-240	5	4.66331E-05
pu-241	5	2.30555E-05
pu-242	5	9.43613E-06
am-241	5	6.99843E-06
am-243	5	1.69405E-06
mo-95	5	4.75764E-05
tc-99	5	4.76591E-05
ru-101	5	4.39400E-05
rh-103	5	2.57554E-05
ag-109	5	3.24849E-06
cs-133	5	4.92902E-05
nd-143	5	3.42083E-05
nd-145	5	2.81511E-05
sm-147	5	8.58197E-06
sm-149	5	1.52239E-07
sm-150	5	1.12620E-05
sm-151	5	4.81248E-07
sm-152	5	3.95659E-06
eu-153	5	3.93339E-06
gd-155	5	1.49138E-07
o	5	4.56500E-02
u-235	6	3.01427E-04
u-234	6	6.06116E-06
u-236	6	1.07678E-04
np-237	6	1.03630E-05
u-238	6	2.14490E-02
pu-238	6	3.07914E-06
pu-239	6	1.25788E-04
pu-240	6	4.43318E-05
pu-241	6	2.18011E-05
pu-242	6	8.25296E-06
am-241	6	6.60094E-06
am-243	6	1.39508E-06
mo-95	6	4.53445E-05
tc-99	6	4.53800E-05
ru-101	6	4.15719E-05
rh-103	6	2.46824E-05
ag-109	6	2.98662E-06
cs-133	6	4.70540E-05
nd-143	6	3.31033E-05
nd-145	6	2.68733E-05
sm-147	6	8.35184E-06
sm-149	6	1.51501E-07
sm-150	6	1.06060E-05
sm-151	6	4.68690E-07
sm-152	6	3.79857E-06
eu-153	6	3.66175E-06
gd-155	6	1.36018E-07
o	6	4.56500E-02
u-235	7	2.75423E-04
u-234	7	5.87179E-06
u-236	7	1.11282E-04
np-237	7	1.12696E-05
u-238	7	2.14098E-02
pu-238	7	3.60272E-06
pu-239	7	1.26646E-04

np-237	5	1.84582E-05
u-238	5	2.10351E-02
pu-238	5	9.40446E-06
pu-239	5	1.25001E-04
pu-240	5	6.40525E-05
pu-241	5	3.08041E-05
pu-242	5	2.43873E-05
am-241	5	9.47369E-06
am-243	5	6.70726E-06
mo-95	5	6.82816E-05
tc-99	5	6.87680E-05
ru-101	5	6.78795E-05
rh-103	5	3.41429E-05
ag-109	5	6.09726E-06
cs-133	5	6.93576E-05
nd-143	5	4.15248E-05
nd-145	5	3.96805E-05
sm-147	5	9.92349E-06
sm-149	5	1.55269E-07
sm-150	5	1.76447E-05
sm-151	5	6.00937E-07
sm-152	5	5.33123E-06
eu-153	5	6.56088E-06
gd-155	5	2.95029E-07
o	5	4.56500E-02
u-235	6	1.29800E-04
u-234	6	4.62412E-06
u-236	6	1.26873E-04
np-237	6	1.74930E-05
u-238	6	2.10977E-02
pu-238	6	8.42857E-06
pu-239	6	1.25865E-04
pu-240	6	6.21711E-05
pu-241	6	3.01100E-05
pu-242	6	2.19062E-05
am-241	6	9.26041E-06
am-243	6	5.75177E-06
mo-95	6	6.54133E-05
tc-99	6	6.58703E-05
ru-101	6	6.43000E-05
rh-103	6	3.31753E-05
ag-109	6	5.66241E-06
cs-133	6	6.66740E-05
nd-143	6	4.08443E-05
nd-145	6	3.80950E-05
sm-147	6	9.82174E-06
sm-149	6	1.55278E-07
sm-150	6	1.67416E-05
sm-151	6	5.83747E-07
sm-152	6	5.14978E-06
eu-153	6	6.19438E-06
gd-155	6	2.72892E-07
o	6	4.56500E-02
u-235	7	1.08645E-04
u-234	7	4.39767E-06
u-236	7	1.27982E-04
np-237	7	1.86020E-05
u-238	7	2.10257E-02
pu-238	7	9.55537E-06
pu-239	7	1.24888E-04

pu-240	7	4.70083E-05
pu-241	7	2.32388E-05
pu-242	7	9.63671E-06
am-241	7	7.05976E-06
am-243	7	1.74630E-06
mo-95	7	4.79384E-05
tc-99	7	4.80291E-05
ru-101	7	4.43266E-05
rh-103	7	2.59260E-05
ag-109	7	3.29180E-06
cs-133	7	4.96547E-05
nd-143	7	3.43816E-05
nd-145	7	2.83568E-05
sm-147	7	8.61703E-06
sm-149	7	1.52383E-07
sm-150	7	1.13705E-05
sm-151	7	4.83309E-07
sm-152	7	3.98146E-06
eu-153	7	3.97879E-06
gd-155	7	1.51330E-07
o	7	4.56500E-02
u-235	8	2.96480E-04
u-234	8	6.02500E-06
u-236	8	1.08385E-04
np-237	8	1.05335E-05
u-238	8	2.14413E-02
pu-238	8	3.17382E-06
pu-239	8	1.25977E-04
pu-240	8	4.48454E-05
pu-241	8	2.20823E-05
pu-242	8	8.50525E-06
am-241	8	6.69076E-06
am-243	8	1.45747E-06
mo-95	8	4.58364E-05
tc-99	8	4.58825E-05
ru-101	8	4.20904E-05
rh-103	8	2.49206E-05
ag-109	8	3.04342E-06
cs-133	8	4.75563E-05
nd-143	8	3.33511E-05
nd-145	8	2.71548E-05
sm-147	8	8.40478E-06
sm-149	8	1.51707E-07
sm-150	8	1.07503E-05
sm-151	8	4.71439E-07
sm-152	8	3.83327E-06
eu-153	8	3.72188E-06
gd-155	8	1.38860E-07
o	8	4.56500E-02
u-235	9	2.82425E-04
u-234	9	5.92336E-06
u-236	9	1.10345E-04
np-237	9	1.10216E-05
u-238	9	2.14216E-02
pu-238	9	3.45469E-06
pu-239	9	1.26448E-04
pu-240	9	4.62786E-05
pu-241	9	2.28780E-05
pu-242	9	9.24877E-06
am-241	9	6.93980E-06

pu-240	7	6.43285E-05
pu-241	7	3.08868E-05
pu-242	7	2.47684E-05
am-241	7	9.50084E-06
am-243	7	6.85987E-06
mo-95	7	6.87446E-05
tc-99	7	6.92097E-05
ru-101	7	6.84124E-05
rh-103	7	3.42837E-05
ag-109	7	6.16608E-06
cs-133	7	6.97618E-05
nd-143	7	4.16327E-05
nd-145	7	3.99081E-05
sm-147	7	9.93758E-06
sm-149	7	1.55279E-07
sm-150	7	1.77810E-05
sm-151	7	6.03456E-07
sm-152	7	5.36019E-06
eu-153	7	6.61582E-06
gd-155	7	2.98408E-07
o	7	4.56500E-02
u-235	8	1.25742E-04
u-234	8	4.58283E-06
u-236	8	1.27116E-04
np-237	8	1.77003E-05
u-238	8	2.10842E-02
pu-238	8	8.63198E-06
pu-239	8	1.25699E-04
pu-240	8	6.25876E-05
pu-241	8	3.02801E-05
pu-242	8	2.24188E-05
am-241	8	9.30988E-06
am-243	8	5.94722E-06
mo-95	8	6.59969E-05
tc-99	8	6.64676E-05
ru-101	8	6.50534E-05
rh-103	8	3.33854E-05
ag-109	8	5.75466E-06
cs-133	8	6.72481E-05
nd-143	8	4.10114E-05
nd-145	8	3.84295E-05
sm-147	8	9.84524E-06
sm-149	8	1.55211E-07
sm-150	8	1.69322E-05
sm-151	8	5.87166E-07
sm-152	8	5.18862E-06
eu-153	8	6.27092E-06
gd-155	8	2.77561E-07
o	8	4.56500E-02
u-235	9	1.14327E-04
u-234	9	4.46219E-06
u-236	9	1.27751E-04
np-237	9	1.82989E-05
u-238	9	2.10455E-02
pu-238	9	9.23864E-06
pu-239	9	1.25140E-04
pu-240	9	6.37436E-05
pu-241	9	3.07063E-05
pu-242	9	2.39670E-05
am-241	9	9.44226E-06

am-243	9	1.64570E-06	am-243	9	6.54124E-06
mo-95	9	4.72345E-05	mo-95	9	6.77818E-05
tc-99	9	4.73099E-05	tc-99	9	6.82867E-05
ru-101	9	4.35758E-05	ru-101	9	6.72933E-05
rh-103	9	2.55935E-05	rh-103	9	3.39849E-05
ag-109	9	3.20780E-06	ag-109	9	6.02328E-06
cs-133	9	4.89486E-05	cs-133	9	6.89093E-05
nd-143	9	3.40432E-05	nd-143	9	4.14047E-05
nd-145	9	2.79565E-05	nd-145	9	3.94235E-05
sm-147	9	8.54843E-06	sm-147	9	9.90824E-06
sm-149	9	1.52119E-07	sm-149	9	1.55286E-07
sm-150	9	1.11600E-05	sm-150	9	1.74939E-05
sm-151	9	4.79315E-07	sm-151	9	5.98077E-07
sm-152	9	3.93291E-06	sm-152	9	5.30010E-06
eu-153	9	3.89081E-06	eu-153	9	6.49930E-06
gd-155	9	1.47086E-07	gd-155	9	2.91315E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.83631E-04	u-235	10	1.15368E-04
u-234	10	5.93215E-06	u-234	10	4.47349E-06
u-236	10	1.10181E-04	u-236	10	1.27703E-04
np-237	10	1.09793E-05	np-237	10	1.82436E-05
u-238	10	2.14234E-02	u-238	10	2.10493E-02
pu-238	10	3.42971E-06	pu-238	10	9.18105E-06
pu-239	10	1.26412E-04	pu-239	10	1.25192E-04
pu-240	10	4.61540E-05	pu-240	10	6.36386E-05
pu-241	10	2.28135E-05	pu-241	10	3.06677E-05
pu-242	10	9.18313E-06	pu-242	10	2.38187E-05
am-241	10	6.91888E-06	am-241	10	9.43066E-06
am-243	10	1.62886E-06	am-243	10	6.48407E-06
mo-95	10	4.71138E-05	mo-95	10	6.76172E-05
tc-99	10	4.71867E-05	tc-99	10	6.81218E-05
ru-101	10	4.34473E-05	ru-101	10	6.70847E-05
rh-103	10	2.55360E-05	rh-103	10	3.39298E-05
ag-109	10	3.19348E-06	ag-109	10	5.99823E-06
cs-133	10	4.88286E-05	cs-133	10	6.87561E-05
nd-143	10	3.39845E-05	nd-143	10	4.13689E-05
nd-145	10	2.78876E-05	nd-145	10	3.93311E-05
sm-147	10	8.53647E-06	sm-147	10	9.90318E-06
sm-149	10	1.52081E-07	sm-149	10	1.55305E-07
sm-150	10	1.11242E-05	sm-150	10	1.74412E-05
sm-151	10	4.78634E-07	sm-151	10	5.97063E-07
sm-152	10	3.92446E-06	sm-152	10	5.28978E-06
eu-153	10	3.87594E-06	eu-153	10	6.47778E-06
gd-155	10	1.46366E-07	gd-155	10	2.90029E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05
ru-101	11	4.14529E-05	ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-14	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	2.95786E-04	u-235	16	1.28868E-04
u-234	16	6.01995E-06	u-234	16	4.61473E-06
u-236	16	1.08484E-04	u-236	16	1.26929E-04
np-237	16	1.05576E-05	np-237	16	1.75405E-05
u-238	16	2.14403E-02	u-238	16	2.10947E-02
pu-238	16	3.18729E-06	pu-238	16	8.47491E-06
pu-239	16	1.26003E-04	pu-239	16	1.25829E-04
pu-240	16	4.49169E-05	pu-240	16	6.22664E-05
pu-241	16	2.21223E-05	pu-241	16	3.01502E-05
pu-242	16	8.54108E-06	pu-242	16	2.20233E-05
am-241	16	6.70333E-06	am-241	16	9.27192E-06
am-243	16	1.46640E-06	am-243	16	5.79615E-06
mo-95	16	4.59055E-05	mo-95	16	6.55440E-05
tc-99	16	4.59531E-05	tc-99	16	6.60042E-05
ru-101	16	4.21634E-05	ru-101	16	6.44717E-05
rh-103	16	2.49540E-05	rh-103	16	3.32235E-05
ag-109	16	3.05145E-06	ag-109	16	5.68336E-06
cs-133	16	4.76263E-05	cs-133	16	6.68042E-05
nd-143	16	3.33857E-05	nd-143	16	4.08831E-05
nd-145	16	2.71944E-05	nd-145	16	3.81711E-05
sm-147	16	8.41213E-06	sm-147	16	9.82705E-06
sm-149	16	1.51733E-07	sm-149	16	1.55254E-07
sm-150	16	1.07706E-05	sm-150	16	1.67852E-05
sm-151	16	4.71826E-07	sm-151	16	5.84518E-07
sm-152	16	3.83818E-06	sm-152	16	5.15857E-06
eu-153	16	3.73026E-06	eu-153	16	6.21185E-06
gd-155	16	1.39262E-07	gd-155	16	2.73954E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.25113E-04	u-235	17	1.50731E-04
u-234	17	6.22880E-06	u-234	17	4.83091E-06
u-236	17	1.04316E-04	u-236	7	1.25349E-04
np-237	17	9.59600E-06	np-237	17	1.64549E-05
u-238	17	2.14814E-02	u-238	17	2.11566E-02
pu-238	17	2.66735E-06	pu-238	17	7.45492E-06
pu-239	17	1.24787E-04	pu-239	17	1.26509E-04
pu-240	17	4.19145E-05	pu-240	17	6.00272E-05
pu-241	17	2.05062E-05	pu-241	17	2.92753E-05
pu-242	17	7.14936E-06	pu-242	17	1.94574E-05
am-241	17	6.18694E-06	am-241	17	8.99925E-06
am-243	17	1.13367E-06	am-243	17	4.84519E-06
mo-95	17	4.30942E-05	mo-95	17	6.24199E-05
tc-99	17	4.30826E-05	tc-99	17	6.28100E-05
ru-101	17	3.92191E-05	ru-101	17	6.06755E-05
rh-103	17	2.35711E-05	rh-103	17	3.21027E-05
ag-109	17	2.73221E-06	ag-109	17	5.21993E-06
cs-133	17	4.47589E-05	cs-133	17	6.38543E-05
nd-143	17	3.19269E-05	nd-143	17	4.00358E-05
nd-145	17	2.55849E-05	nd-145	17	3.64720E-05
sm-147	17	8.10262E-06	sm-147	17	9.69093E-06
sm-149	17	1.50682E-07	sm-149	17	1.55196E-07
sm-150	17	9.94777E-06	sm-150	17	1.58064E-05
sm-151	17	4.56286E-07	sm-151	17	5.66626E-07
sm-152	17	3.63545E-06	sm-152	17	4.95778E-06
eu-153	17	3.38980E-06	eu-153	17	5.81268E-06
gd-155	17	1.23486E-07	gd-155	17	2.50406E-07

o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	3.78622E-04	u-235	18	2.01795E-04
u-234	18	6.59104E-06	u-234	18	5.28939E-06
u-236	18	9.62608E-05	u-236	18	1.20393E-04
np-237	18	7.99286E-06	np-237	18	1.41418E-05
u-238	18	2.15505E-02	u-238	18	2.12791E-02
pu-238	18	1.90148E-06	pu-238	18	5.54134E-06
pu-239	18	1.21529E-04	pu-239	18	1.27377E-04
pu-240	18	3.65553E-05	pu-240	18	5.46853E-05
pu-241	18	1.75073E-05	pu-241	18	2.69900E-05
pu-242	18	5.06816E-06	pu-242	18	1.46362E-05
am-241	18	5.23559E-06	am-241	18	8.26923E-06
am-243	18	6.90343E-07	am-243	18	3.20494E-06
mo-95	18	3.82240E-05	mo-95	18	5.59479E-05
tc-99	18	3.81175E-05	tc-99	18	5.62465E-05
ru-101	18	3.42463E-05	ru-101	18	5.31625E-05
rh-103	18	2.10816E-05	rh-103	18	2.95227E-05
ag-109	18	2.21598E-06	ag-109	18	4.31307E-06
cs-133	18	3.97882E-05	cs-133	18	5.76377E-05
nd-143	18	2.92010E-05	nd-143	18	3.78292E-05
nd-145	18	2.27726E-05	nd-145	18	3.28811E-05
sm-147	18	7.50245E-06	sm-147	18	9.29514E-06
sm-149	18	1.48163E-07	sm-149	18	1.54377E-07
sm-150	18	8.56187E-06	sm-150	18	1.37982E-05
sm-151	18	4.29333E-07	sm-151	18	5.29166E-07
sm-152	18	3.27360E-06	sm-152	18	4.53024E-06
eu-153	18	2.82133E-06	eu-153	18	4.98387E-06
gd-155	18	9.87156E-08	gd-155	18	2.03684E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	3.88048E-04	u-235	19	2.11262E-04
u-234	19	6.65290E-06	u-234	19	5.36896E-06
u-236	19	9.48099E-05	u-236	19	1.19319E-04
np-237	19	7.73267E-06	np-237	19	1.37442E-05
u-238	19	2.15608E-02	u-238	19	2.12979E-02
pu-238	19	1.78924E-06	pu-238	19	5.24507E-06
pu-239	19	1.20825E-04	pu-239	19	1.27420E-04
pu-240	19	3.56335E-05	pu-240	19	5.36992E-05
pu-241	19	1.69808E-05	pu-241	19	2.65458E-05
pu-242	19	4.75896E-06	pu-242	19	1.38840E-05
am-241	19	5.06932E-06	am-241	19	8.12203E-06
am-243	19	6.30645E-07	am-243	19	2.96808E-06
mo-95	19	3.74038E-05	mo-95	19	5.48440E-05
tc-99	19	3.72877E-05	tc-99	19	5.51094E-05
ru-101	19	3.34284E-05	ru-101	19	5.19171E-05
rh-103	19	2.06545E-05	rh-103	19	2.90529E-05
ag-109	19	2.13402E-06	ag-109	19	4.16509E-06
cs-133	19	3.89436E-05	cs-133	19	5.65370E-05
nd-143	19	2.87197E-05	nd-143	19	3.73995E-05
nd-145	19	2.22987E-05	nd-145	19	3.22640E-05
sm-147	19	7.39520E-06	sm-147	19	9.21476E-06
sm-149	19	1.47753E-07	sm-149	19	1.54301E-07
sm-150	19	8.33328E-06	sm-150	19	1.34608E-05
sm-151	19	4.25027E-07	sm-151	19	5.22823E-07
sm-152	19	3.21151E-06	sm-152	19	4.45610E-06
eu-153	19	2.72881E-06	eu-153	19	4.84383E-06
gd-155	19	9.49172E-08	gd-155	19	1.96042E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.63519E-04	u-235	20	2.93307E-04
u-234	20	7.12538E-06	u-234	20	6.00200E-06
u-236	20	8.26978E-05	u-236	20	1.08836E-04

np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	1	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A222233 Serial No.: **9** from gen_ax03.mod			B50A222233 Serial No.: **26** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.94934E-04
u-234	4	6.01377E-06
u-236	4	1.08605E-04
np-237	4	1.05870E-05
u-238	4	2.14390E-02
pu-238	4	3.20384E-06
pu-239	4	1.26034E-04
pu-240	4	4.50042E-05
pu-241	4	2.21714E-05
pu-242	4	8.58513E-06
am-241	4	6.71872E-06
am-243	4	1.47740E-06
mo-95	4	4.59902E-05
tc-99	4	4.60396E-05
ru-101	4	4.22530E-05
rh-103	4	2.49950E-05
ag-109	4	3.06130E-06
cs-133	4	4.77117E-05
nd-143	4	3.34281E-05
nd-145	4	2.72429E-05
sm-147	4	8.42111E-06
sm-149	4	1.51763E-07
sm-150	4	1.07953E-05
sm-151	4	4.72301E-07
sm-152	4	3.84421E-06
eu-153	4	3.74050E-06
gd-155	4	1.39755E-07
o	4	4.56500E-02
u-235	5	2.82005E-04
u-234	5	5.92029E-06
u-236	5	1.10402E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.23610E-04
u-234	4	4.56056E-06
u-236	4	1.27245E-04
np-237	4	1.78105E-05
u-238	4	2.10773E-02
pu-238	4	8.74062E-06
pu-239	4	1.25603E-04
pu-240	4	6.28077E-05
pu-241	4	3.03592E-05
pu-242	4	2.26912E-05
am-241	4	9.33498E-06
am-243	4	6.05245E-06
mo-95	4	6.63280E-05
tc-99	4	6.68030E-05
ru-101	4	6.54550E-05
rh-103	4	3.34963E-05
ag-109	4	5.80424E-06
cs-133	4	6.75569E-05
nd-143	4	4.10950E-05
nd-145	4	3.86079E-05
sm-147	4	9.85821E-06
sm-149	4	1.55250E-07
sm-150	4	1.70336E-05
sm-151	4	5.89090E-07
sm-152	4	5.20962E-06
eu-153	4	6.31191E-06
gd-155	4	2.80061E-07
o	4	4.56500E-02
u-235	5	1.13263E-04
u-234	5	4.45040E-06
u-236	5	1.27798E-04

np-237	5	1.10365E-05	np-237	5	1.83554E-05
u-238	5	2.14209E-02	u-238	5	2.10418E-02
pu-238	5	3.46344E-06	pu-238	5	9.29743E-06
pu-239	5	1.26460E-04	pu-239	5	1.25089E-04
pu-240	5	4.63222E-05	pu-240	5	6.38522E-05
pu-241	5	2.29002E-05	pu-241	5	3.07430E-05
pu-242	5	9.27176E-06	pu-242	5	2.41170E-05
am-241	5	6.94707E-06	am-241	5	9.45372E-06
am-243	5	1.65161E-06	am-243	5	6.59987E-06
mo-95	5	4.72767E-05	mo-95	5	6.79551E-05
tc-99	5	4.73529E-05	tc-99	5	6.84562E-05
ru-101	5	4.36206E-05	ru-101	5	6.75032E-05
rh-103	5	2.56135E-05	rh-103	5	3.40411E-05
ag-109	5	3.21281E-06	ag-109	5	6.04920E-06
cs-133	5	4.89906E-05	cs-133	5	6.90672E-05
nd-143	5	3.40636E-05	nd-143	5	4.14450E-05
nd-145	5	2.79805E-05	nd-145	5	3.95160E-05
sm-147	5	8.55260E-06	sm-147	5	9.91354E-06
sm-149	5	1.52133E-07	sm-149	5	1.55273E-07
sm-150	5	1.11726E-05	sm-150	5	1.75476E-05
sm-151	5	4.79553E-07	sm-151	5	5.99101E-07
sm-152	5	3.93585E-06	sm-152	5	5.31091E-06
eu-153	5	3.89603E-06	eu-153	5	6.52121E-06
gd-155	5	1.47338E-07	gd-155	5	2.92630E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	3.03938E-04	u-235	6	1.31559E-04
u-234	6	6.07949E-06	u-234	6	4.64182E-06
u-236	6	1.07321E-04	u-236	6	1.26765E-04
np-237	6	1.02777E-05	np-237	6	1.74037E-05
u-238	6	2.14529E-02	u-238	6	2.11033E-02
pu-238	6	3.03225E-06	pu-238	6	8.34181E-06
pu-239	6	1.25689E-04	pu-239	6	1.25930E-04
pu-240	6	4.40705E-05	pu-240	6	6.19922E-05
pu-241	6	2.16612E-05	pu-241	6	3.00352E-05
pu-242	6	8.12787E-06	pu-242	6	2.16870E-05
am-241	6	6.55577E-06	am-241	6	9.23861E-06
am-243	6	1.36449E-06	am-243	6	5.66884E-06
mo-95	6	4.50975E-05	mo-95	6	6.51668E-05
tc-99	6	4.51276E-05	tc-99	6	6.56192E-05
ru-101	6	4.13122E-05	ru-101	6	6.39786E-05
rh-103	6	2.45624E-05	rh-103	6	3.30844E-05
ag-109	6	2.95827E-06	ag-109	6	5.62325E-06
cs-133	6	4.68009E-05	cs-133	6	6.64312E-05
nd-143	6	3.29777E-05	nd-143	6	4.07712E-05
nd-145	6	2.67322E-05	nd-145	6	3.79531E-05
sm-147	6	8.32495E-06	sm-147	6	9.81169E-06
sm-149	6	1.51394E-07	sm-149	6	1.55314E-07
sm-150	6	1.05332E-05	sm-150	6	1.66598E-05
sm-151	6	4.67314E-07	sm-151	6	5.82285E-07
sm-152	6	3.78112E-06	sm-152	6	5.13340E-06
eu-153	6	3.63141E-06	eu-153	6	6.16148E-06
gd-155	6	1.34603E-07	gd-155	6	2.70906E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.77413E-04	u-235	7	1.09917E-04
u-234	7	5.88654E-06	u-234	7	4.41221E-06
u-236	7	1.11017E-04	u-236	7	1.27933E-04
np-237	7	1.11989E-05	np-237	7	1.85337E-05
u-238	7	2.14133E-02	u-238	7	2.10301E-02
pu-238	7	3.56022E-06	pu-238	7	9.48347E-06
pu-239	7	1.26591E-04	pu-239	7	1.24941E-04

pu-240	7	4.68008E-05	pu-240	7	6.41989E-05
pu-241	7	2.31376E-05	pu-241	7	3.08471E-05
pu-242	7	9.52538E-06	pu-242	7	2.45863E-05
am-241	7	7.02588E-06	am-241	7	9.48796E-06
am-243	7	1.71723E-06	am-243	7	6.78701E-06
mo-95	7	4.77380E-05	mo-95	7	6.85255E-05
tc-99	7	4.78242E-05	tc-99	7	6.89994E-05
ru-101	7	4.41124E-05	ru-101	7	6.81569E-05
rh-103	7	2.58316E-05	rh-103	7	3.42171E-05
ag-109	7	3.26779E-06	ag-109	7	6.13322E-06
cs-133	7	4.94526E-05	cs-133	7	6.95710E-05
nd-143	7	3.42858E-05	nd-143	7	4.15836E-05
nd-145	7	2.82430E-05	nd-145	7	3.98000E-05
sm-147	7	8.59767E-06	sm-147	7	9.93090E-06
sm-149	7	1.52302E-07	sm-149	7	1.55274E-07
sm-150	7	1.13104E-05	sm-150	7	1.77161E-05
sm-151	7	4.82166E-07	sm-151	7	6.02266E-07
sm-152	7	3.96770E-06	sm-152	7	5.34644E-06
eu-153	7	3.95364E-06	eu-153	7	6.58983E-06
gd-155	7	1.50114E-07	gd-155	7	2.96800E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	2.97865E-04	u-235	8	1.26703E-04
u-234	8	6.03511E-06	u-234	8	4.59274E-06
u-236	8	1.08187E-04	u-236	8	1.27058E-04
np-237	8	1.04856E-05	np-237	8	1.76509E-05
u-238	8	2.14434E-02	u-238	8	2.10874E-02
pu-238	8	3.14706E-06	pu-238	8	8.58337E-06
pu-239	8	1.25925E-04	pu-239	8	1.25740E-04
pu-240	8	4.47022E-05	pu-240	8	6.24885E-05
pu-241	8	2.20029E-05	pu-241	8	3.02417E-05
pu-242	8	8.43398E-06	pu-242	8	2.22967E-05
am-241	8	6.66561E-06	am-241	8	9.29834E-06
am-243	8	1.43976E-06	am-243	8	5.90035E-06
mo-95	8	4.56983E-05	mo-95	8	6.58538E-05
tc-99	8	4.57414E-05	tc-99	8	6.63216E-05
ru-101	8	4.19446E-05	ru-101	8	6.48735E-05
rh-103	8	2.48539E-05	rh-103	8	3.33355E-05
ag-109	8	3.02743E-06	ag-109	8	5.73253E-06
cs-133	8	4.74160E-05	cs-133	8	6.71103E-05
nd-143	8	3.32818E-05	nd-143	8	4.09725E-05
nd-145	8	2.70757E-05	nd-145	8	3.83496E-05
sm-147	8	8.39003E-06	sm-147	8	9.83954E-06
sm-149	8	1.51653E-07	sm-149	8	1.55213E-07
sm-150	8	1.07099E-05	sm-150	8	1.68868E-05
sm-151	8	4.70666E-07	sm-151	8	5.86333E-07
sm-152	8	3.82351E-06	sm-152	8	5.17927E-06
eu-153	8	3.70508E-06	eu-153	8	6.25263E-06
gd-155	8	1.38060E-07	gd-155	8	2.76443E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.83413E-04	u-235	9	1.14968E-04
u-234	9	5.93056E-06	u-234	9	4.46918E-06
u-236	9	1.10211E-04	u-236	9	1.27722E-04
np-237	9	1.09869E-05	np-237	9	1.82648E-05
u-238	9	2.14231E-02	u-238	9	2.10478E-02
pu-238	9	3.43420E-06	pu-238	9	9.20314E-06
pu-239	9	1.26418E-04	pu-239	9	1.25172E-04
pu-240	9	4.61765E-05	pu-240	9	6.36787E-05
pu-241	9	2.28252E-05	pu-241	9	3.06828E-05
pu-242	9	9.19496E-06	pu-242	9	2.38757E-05
am-241	9	6.92267E-06	am-241	9	9.43515E-06

am-243	9	1.63189E-06	am-243	9	6.50597E-06
mo-95	9	4.71356E-05	mo-95	9	6.76799E-05
tc-99	9	4.72089E-05	tc-99	9	6.81850E-05
ru-101	9	4.34705E-05	ru-101	9	6.71650E-05
rh-103	9	2.55464E-05	rh-103	9	3.39509E-05
ag-109	9	3.19607E-06	ag-109	9	6.00781E-06
cs-133	9	4.88502E-05	cs-133	9	6.88147E-05
nd-143	9	3.39951E-05	nd-143	9	4.13823E-05
nd-145	9	2.79001E-05	nd-145	9	3.93667E-05
sm-147	9	8.53863E-06	sm-147	9	9.90511E-06
sm-149	9	1.52088E-07	sm-149	9	1.55297E-07
sm-150	9	1.11307E-05	sm-150	9	1.74615E-05
sm-151	9	4.78757E-07	sm-151	9	5.97453E-07
sm-152	9	3.92599E-06	sm-152	9	5.29371E-06
eu-153	9	3.87862E-06	eu-153	9	6.48604E-06
gd-155	9	1.46496E-07	gd-155	9	2.90522E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.84055E-04	u-235	10	1.15644E-04
u-234	10	5.93523E-06	u-234	10	4.47645E-06
u-236	10	1.10124E-04	u-236	10	1.27690E-04
np-237	10	1.09644E-05	np-237	10	1.82290E-05
u-238	10	2.14241E-02	u-238	10	2.10503E-02
pu-238	10	3.42098E-06	pu-238	10	9.16582E-06
pu-239	10	1.26399E-04	pu-239	10	1.25206E-04
pu-240	10	4.61104E-05	pu-240	10	6.36110E-05
pu-241	10	2.27906E-05	pu-241	10	3.06572E-05
pu-242	10	9.16018E-06	pu-242	10	2.37793E-05
am-241	10	6.91152E-06	am-241	10	9.42754E-06
am-243	10	1.62298E-06	am-243	10	6.46899E-06
mo-95	10	4.70715E-05	mo-95	10	6.75743E-05
tc-99	10	4.71434E-05	tc-99	10	6.80783E-05
ru-101	10	4.34022E-05	ru-101	10	6.70291E-05
rh-103	10	2.55159E-05	rh-103	10	3.39151E-05
ag-109	10	3.18847E-06	ag-109	10	5.99165E-06
cs-133	10	4.87866E-05	cs-133	10	6.87158E-05
nd-143	10	3.39638E-05	nd-143	10	4.13598E-05
nd-145	10	2.78634E-05	nd-145	10	3.93065E-05
sm-147	10	8.53225E-06	sm-147	10	9.90184E-06
sm-149	10	1.52069E-07	sm-149	10	1.55310E-07
sm-150	10	1.11117E-05	sm-150	10	1.74272E-05
sm-151	10	4.78395E-07	sm-151	10	5.96793E-07
sm-152	10	3.92149E-06	sm-152	10	5.28708E-06
eu-153	10	3.87075E-06	eu-153	10	6.47208E-06
gd-155	10	1.46113E-07	gd-155	10	2.89689E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05
ru-101	11	4.14529E-05	ru-101	11	6.40475E-05

rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-0
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05
nd-143	13	3.22052E-05

rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05
nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	2.95786E-04	u-235	16	1.28868E-04
u-234	16	6.01995E-06	u-234	16	4.61473E-06
u-236	16	1.08484E-04	u-236	16	1.26929E-04
np-237	16	1.05576E-05	np-237	16	1.75405E-05
u-238	16	2.14403E-02	u-238	16	2.10947E-02
pu-238	16	3.18729E-06	pu-238	16	8.47491E-06
pu-239	16	1.26003E-04	pu-239	16	1.25829E-04
pu-240	16	4.49169E-05	pu-240	16	6.22664E-05
pu-241	16	2.21223E-05	pu-241	16	3.01502E-05
pu-242	16	8.54108E-06	pu-242	16	2.20233E-05
am-241	16	6.70333E-06	am-241	16	9.27192E-06
am-243	16	1.46640E-06	am-243	16	5.79615E-06
mo-95	16	4.59055E-05	mo-95	16	6.55440E-05
tc-99	16	4.59531E-05	tc-99	16	6.60042E-05
ru-101	16	4.21634E-05	ru-101	16	6.44717E-05
rh-103	16	2.49540E-05	rh-103	16	3.32235E-05
ag-109	16	3.05145E-06	ag-109	16	5.68336E-06
cs-133	16	4.76263E-05	cs-133	16	6.68042E-05
nd-143	16	3.33857E-05	nd-143	16	4.08831E-05
nd-145	16	2.71944E-05	nd-145	16	3.81711E-05
sm-147	16	8.41213E-06	sm-147	16	9.82705E-06
sm-149	16	1.51733E-07	sm-149	16	1.55254E-07
sm-150	16	1.07706E-05	sm-150	16	1.67852E-05
sm-151	16	4.71826E-07	sm-151	16	5.84518E-07
sm-152	16	3.83818E-06	sm-152	16	5.15857E-06
eu-153	16	3.73026E-06	eu-153	16	6.21185E-06
gd-155	16	1.39262E-07	gd-155	16	2.73954E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.01386E-04	u-235	17	1.33757E-04
u-234	17	6.06086E-06	u-234	17	4.66403E-06
u-236	17	1.07684E-04	u-236	17	1.26625E-04
np-237	17	1.03644E-05	np-237	17	1.72919E-05
u-238	17	2.14489E-02	u-238	17	2.11097E-02
pu-238	17	3.07992E-06	pu-238	17	8.23459E-06
pu-239	17	1.25790E-04	pu-239	17	1.26004E-04
pu-240	17	4.43361E-05	pu-240	17	6.17698E-05
pu-241	17	2.18034E-05	pu-241	17	2.99471E-05
pu-242	17	8.25503E-06	pu-242	17	2.14160E-05
am-241	17	6.60169E-06	am-241	17	9.21142E-06
am-243	17	1.39559E-06	am-243	17	5.56659E-06
mo-95	17	4.53486E-05	mo-95	17	6.48517E-05
tc-99	17	4.53841E-05	tc-99	17	6.53023E-05
ru-101	17	4.15762E-05	ru-101	17	6.35817E-05
rh-103	17	2.46844E-05	rh-103	17	3.29712E-05
ag-109	17	2.98709E-06	ag-109	17	5.57487E-06
cs-133	17	4.70582E-05	cs-133	17	6.61324E-05
nd-143	17	3.31054E-05	nd-143	17	4.06814E-05
nd-145	17	2.68757E-05	nd-145	17	3.77794E-05
sm-147	17	8.35228E-06	sm-147	17	9.79886E-06
sm-149	17	1.51503E-07	sm-149	17	1.55309E-07
sm-150	17	1.06072E-05	sm-150	17	1.65581E-05
sm-151	17	4.68713E-07	sm-151	17	5.80402E-07
sm-152	17	3.79885E-06	sm-152	17	5.11326E-06
eu-153	17	3.66225E-06	eu-153	17	6.12028E-06
gd-155	17	1.36042E-07	gd-155	17	2.68454E-07

o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.63519E-04
u-234	20	7.12538E-06
u-236	20	8.26978E-05

o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	2.93307E-04
u-234	20	6.00200E-06
u-236	20	1.08836E-04

np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	21	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A222333			B50A222333		
Serial No.: 10 from gen_ax03.mod			Serial No.: 27 from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	2.99167E-04
u-234	4	6.04463E-06
u-236	4	1.08001E-04
np-237	4	1.04407E-05
u-238	4	2.14454E-02
pu-238	4	3.12207E-06
pu-239	4	1.25876E-04
pu-240	4	4.45671E-05
pu-241	4	2.19288E-05
pu-242	4	8.36741E-06
am-241	4	6.64195E-06
am-243	4	1.42328E-06
mo-95	4	4.55688E-05
tc-99	4	4.56090E-05
ru-101	4	4.18080E-05
rh-103	4	2.47911E-05
ag-109	4	3.01246E-06
cs-133	4	4.72837E-05
nd-143	4	3.32166E-05
nd-145	4	2.70015E-05
sm-147	4	8.37609E-06
sm-149	4	1.51598E-07
sm-150	4	1.06718E-05
sm-151	4	4.69942E-07
sm-152	4	3.81436E-06
eu-153	4	3.68925E-06
gd-155	4	1.37310E-07
o	4	4.56500E-02
u-235	5	2.85769E-04
u-234	5	5.94764E-06
u-236	5	1.09889E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.26421E-04
u-234	4	4.58984E-06
u-236	4	1.27075E-04
np-237	4	1.76654E-05
u-238	4	2.10864E-02
pu-238	4	8.59764E-06
pu-239	4	1.25728E-04
pu-240	4	6.25176E-05
pu-241	4	3.02532E-05
pu-242	4	2.23325E-05
am-241	4	9.30175E-06
am-243	4	5.91409E-06
mo-95	4	6.58954E-05
tc-99	4	6.63641E-05
ru-101	4	6.49263E-05
rh-103	4	3.33502E-05
ag-109	4	5.73901E-06
cs-133	4	6.71507E-05
nd-143	4	4.09840E-05
nd-145	4	3.83731E-05
sm-147	4	9.84120E-06
sm-149	4	1.55211E-07
sm-150	4	1.69001E-05
sm-151	4	5.86576E-07
sm-152	4	5.18201E-06
eu-153	4	6.25800E-06
gd-155	4	2.76771E-07
o	4	4.56500E-02
u-235	5	1.15612E-04
u-234	5	4.47611E-06
u-236	5	1.27691E-04

np-237	5	1.09045E-05
u-238	5	2.14265E-02
pu-238	5	3.38592E-06
pu-239	5	1.26345E-04
pu-240	5	4.59350E-05
pu-241	5	2.26964E-05
pu-242	5	9.06780E-06
am-241	5	6.88162E-06
am-243	5	1.59936E-06
mo-95	5	4.69007E-05
tc-99	5	4.69690E-05
ru-101	5	4.32202E-05
rh-103	5	2.54341E-05
ag-109	5	3.16823E-06
cs-133	5	4.86172E-05
nd-143	5	3.38801E-05
nd-145	5	2.77656E-05
sm-147	5	8.51512E-06
sm-149	5	1.52019E-07
sm-150	5	1.10613E-05
sm-151	5	4.77430E-07
sm-152	5	3.90940E-06
eu-153	5	3.84992E-06
gd-155	5	1.45099E-07
o	5	4.56500E-02
u-235	6	3.07133E-04
u-234	6	6.10270E-06
u-236	6	1.06869E-04
np-237	6	1.01711E-05
u-238	6	2.14576E-02
pu-238	6	2.97396E-06
pu-239	6	1.25561E-04
pu-240	6	4.37395E-05
pu-241	6	2.14860E-05
pu-242	6	7.97226E-06
am-241	6	6.49923E-06
am-243	6	1.32679E-06
mo-95	6	4.47875E-05
tc-99	6	4.48111E-05
ru-101	6	4.09868E-05
rh-103	6	2.44110E-05
ag-109	6	2.92283E-06
cs-133	6	4.64849E-05
nd-143	6	3.28187E-05
nd-145	6	2.65552E-05
sm-147	6	8.29110E-06
sm-149	6	1.51270E-07
sm-150	6	1.04418E-05
sm-151	6	4.65588E-07
sm-152	6	3.75901E-06
eu-153	6	3.59344E-06
gd-155	6	1.32840E-07
o	6	4.56500E-02
u-235	7	2.79914E-04
u-234	7	5.90497E-06
u-236	7	1.10683E-04
np-237	7	1.11103E-05
u-238	7	2.14175E-02
pu-238	7	3.50726E-06
pu-239	7	1.26521E-04

np-237	5	1.82307E-05
u-238	5	2.10502E-02
pu-238	5	9.16759E-06
pu-239	5	1.25205E-04
pu-240	5	6.36142E-05
pu-241	5	3.06585E-05
pu-242	5	2.37839E-05
am-241	5	9.42790E-06
am-243	5	6.47074E-06
mo-95	5	6.75793E-05
tc-99	5	6.80834E-05
ru-101	5	6.70355E-05
rh-103	5	3.39168E-05
ag-109	5	5.99242E-06
cs-133	5	6.87205E-05
nd-143	5	4.13608E-05
nd-145	5	3.93094E-05
sm-147	5	9.90200E-06
sm-149	5	1.55309E-07
sm-150	5	1.74289E-05
sm-151	5	5.96825E-07
sm-152	5	5.28740E-06
eu-153	5	6.47275E-06
gd-155	5	2.89729E-07
o	5	4.56500E-02
u-235	6	1.33705E-04
u-234	6	4.66350E-06
u-236	6	1.26628E-04
np-237	6	1.72946E-05
u-238	6	2.11095E-02
pu-238	6	8.23712E-06
pu-239	6	1.26003E-04
pu-240	6	6.17751E-05
pu-241	6	2.99491E-05
pu-242	6	2.14224E-05
am-241	6	9.21206E-06
am-243	6	5.56900E-06
mo-95	6	6.48593E-05
tc-99	6	6.53099E-05
ru-101	6	6.35911E-05
rh-103	6	3.29739E-05
ag-109	6	5.57601E-06
cs-133	6	6.61394E-05
nd-143	6	4.06835E-05
nd-145	6	3.77834E-05
sm-147	6	9.79917E-06
sm-149	6	1.55310E-07
sm-150	6	1.65605E-05
sm-151	6	5.80447E-07
sm-152	6	5.11373E-06
eu-153	6	6.12127E-06
gd-155	6	2.68512E-07
o	6	4.56500E-02
u-235	7	1.11468E-04
u-234	7	4.43003E-06
u-236	7	1.27872E-04
np-237	7	1.84509E-05
u-238	7	2.10356E-02
pu-238	7	9.39684E-06
pu-239	7	1.25007E-04

pu-240	7	4.65397E-05
pu-241	7	2.30094E-05
pu-242	7	9.38666E-06
am-241	7	6.98308E-06
am-243	7	1.68124E-06
mo-95	7	4.74865E-05
tc-99	7	4.75672E-05
ru-101	7	4.38442E-05
rh-103	7	2.57129E-05
ag-109	7	3.23777E-06
cs-133	7	4.92002E-05
nd-143	7	3.41650E-05
nd-145	7	2.81000E-05
sm-147	7	8.57320E-06
sm-149	7	1.52206E-07
sm-150	7	1.12351E-05
sm-151	7	4.80739E-07
sm-152	7	3.95039E-06
eu-153	7	3.92215E-06
gd-155	7	1.48597E-07
o	7	4.56500E-02
u-235	8	2.99604E-04
u-234	8	6.04782E-06
u-236	8	1.07939E-04
np-237	8	1.04256E-05
u-238	8	2.14461E-02
pu-238	8	3.11373E-06
pu-239	8	1.25859E-04
pu-240	8	4.45217E-05
pu-241	8	2.19040E-05
pu-242	8	8.34518E-06
am-241	8	6.63401E-06
am-243	8	1.41778E-06
mo-95	8	4.55253E-05
tc-99	8	4.55647E-05
ru-101	8	4.17623E-05
rh-103	8	2.47701E-05
ag-109	8	3.00745E-06
cs-133	8	4.72393E-05
nd-143	8	3.31947E-05
nd-145	8	2.69767E-05
sm-147	8	8.37141E-06
sm-149	8	1.51580E-07
sm-150	8	1.06591E-05
sm-151	8	4.69699E-07
sm-152	8	3.81130E-06
eu-153	8	3.68393E-06
gd-155	8	1.37059E-07
o	8	4.56500E-02
u-235	9	2.84655E-04
u-234	9	5.93958E-06
u-236	9	1.10042E-04
np-237	9	1.09434E-05
u-238	9	2.14249E-02
pu-238	9	3.40866E-06
pu-239	9	1.26380E-04
pu-240	9	4.60489E-05
pu-241	9	2.27578E-05
pu-242	9	9.12775E-06
am-241	9	6.90107E-06

pu-240	7	6.40382E-05
pu-241	7	3.07999E-05
pu-242	7	2.43681E-05
am-241	7	9.47230E-06
am-243	7	6.69959E-06
mo-95	7	6.82581E-05
tc-99	7	6.87457E-05
ru-101	7	6.78528E-05
rh-103	7	3.41357E-05
ag-109	7	6.09382E-06
cs-133	7	6.93370E-05
nd-143	7	4.15190E-05
nd-145	7	3.96690E-05
sm-147	7	9.92277E-06
sm-149	7	1.55268E-07
sm-150	7	1.76378E-05
sm-151	7	6.00808E-07
sm-152	7	5.32977E-06
eu-153	7	6.55807E-06
gd-155	7	2.94858E-07
o	7	4.56500E-02
u-235	8	1.27870E-04
u-234	8	4.60464E-06
u-236	8	1.26989E-04
np-237	8	1.75913E-05
u-238	8	2.10913E-02
pu-238	8	8.52472E-06
pu-239	8	1.25789E-04
pu-240	8	6.23685E-05
pu-241	8	3.01929E-05
pu-242	8	2.21489E-05
am-241	8	9.28416E-06
am-243	8	5.84394E-06
mo-95	8	6.56851E-05
tc-99	8	6.61489E-05
ru-101	8	6.46563E-05
rh-103	8	3.32751E-05
ag-109	8	5.70591E-06
cs-133	8	6.69445E-05
nd-143	8	4.09245E-05
nd-145	8	3.82531E-05
sm-147	8	9.83276E-06
sm-149	8	1.55231E-07
sm-150	8	1.68319E-05
sm-151	8	5.85347E-07
sm-152	8	5.16805E-06
eu-153	8	6.23058E-06
gd-155	8	2.75097E-07
o	8	4.56500E-02
u-235	9	1.15744E-04
u-234	9	4.47752E-06
u-236	9	1.27685E-04
np-237	9	1.82237E-05
u-238	9	2.10506E-02
pu-238	9	9.16030E-06
pu-239	9	1.25211E-04
pu-240	9	6.36010E-05
pu-241	9	3.06534E-05
pu-242	9	2.37650E-05
am-241	9	9.42640E-06

am-243	9	1.61468E-06
mo-95	9	4.70117E-05
tc-99	9	4.70823E-05
ru-101	9	4.33385E-05
rh-103	9	2.54873E-05
ag-109	9	3.18137E-06
cs-133	9	4.87272E-05
nd-143	9	3.39345E-05
nd-145	9	2.78292E-05
sm-147	9	8.52627E-06
sm-149	9	1.52051E-07
sm-150	9	1.10940E-05
sm-151	9	4.78057E-07
sm-152	9	3.91726E-06
eu-153	9	3.86343E-06
gd-155	9	1.45758E-07
o	9	4.56500E-02
u-235	10	2.84586E-04
u-234	10	5.93908E-06
u-236	10	1.10051E-04
np-237	10	1.09458E-05
u-238	10	2.14248E-02
pu-238	10	3.41008E-06
pu-239	10	1.26382E-04
pu-240	10	4.60559E-05
pu-241	10	2.27616E-05
pu-242	10	9.13147E-06
am-241	10	6.90228E-06
am-243	10	1.61563E-06
mo-95	10	4.70185E-05
tc-99	10	4.70894E-05
ru-101	10	4.33458E-05
rh-103	10	2.54906E-05
ag-109	10	3.18219E-06
cs-133	10	4.87340E-05
nd-143	10	3.39379E-05
nd-145	10	2.78331E-05
sm-147	10	8.52696E-06
sm-149	10	1.52053E-07
sm-150	10	1.10960E-05
sm-151	10	4.78096E-07
sm-152	10	3.91775E-06
eu-153	10	3.86427E-06
gd-155	10	1.45798E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.46352E-06
mo-95	9	6.75587E-05
tc-99	9	6.80625E-05
ru-101	9	6.70089E-05
rh-103	9	3.39098E-05
ag-109	9	5.98927E-06
cs-133	9	6.87012E-05
nd-143	9	4.13566E-05
nd-145	9	3.92976E-05
sm-147	9	9.90136E-06
sm-149	9	1.55312E-07
sm-150	9	1.74221E-05
sm-151	9	5.96695E-07
sm-152	9	5.28611E-06
eu-153	9	6.47002E-06
gd-155	9	2.89566E-07
o	9	4.56500E-02
u-235	10	1.15976E-04
u-234	10	4.48000E-06
u-236	10	1.27673E-04
np-237	10	1.82114E-05
u-238	10	2.10515E-02
pu-238	10	9.14751E-06
pu-239	10	1.25223E-04
pu-240	10	6.35779E-05
pu-241	10	3.06444E-05
pu-242	10	2.37319E-05
am-241	10	9.42375E-06
am-243	10	6.45088E-06
mo-95	10	6.75228E-05
tc-99	10	6.80260E-05
ru-101	10	6.69620E-05
rh-103	10	3.38975E-05
ag-109	10	5.98375E-06
cs-133	10	6.86674E-05
nd-143	10	4.13491E-05
nd-145	10	3.92768E-05
sm-147	10	9.90023E-06
sm-149	10	1.55317E-07
sm-150	10	1.74104E-05
sm-151	10	5.96468E-07
sm-152	10	5.28386E-06
eu-153	10	6.46523E-06
gd-155	10	2.89280E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
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pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	2.95786E-04
u-234	16	6.01995E-06
u-236	16	1.08484E-04
np-237	16	1.05576E-05
u-238	16	2.14403E-02
pu-238	16	3.18729E-06
pu-239	16	1.26003E-04
pu-240	16	4.49169E-05
pu-241	16	2.21223E-05
pu-242	16	8.54108E-06
am-241	16	6.70333E-06
am-243	16	1.46640E-06
mo-95	16	4.59055E-05
tc-99	16	4.59531E-05
ru-101	16	4.21634E-05
rh-103	16	2.49540E-05
ag-109	16	3.05145E-06
cs-133	16	4.76263E-05
nd-143	16	3.33857E-05
nd-145	16	2.71944E-05
sm-147	16	8.41213E-06
sm-149	16	1.51733E-07
sm-150	16	1.07706E-05
sm-151	16	4.71826E-07
sm-152	16	3.83818E-06
eu-153	16	3.73026E-06
gd-155	16	1.39262E-07
o	16	4.56500E-02
u-235	17	3.01386E-04
u-234	17	6.06086E-06
u-236	17	1.07684E-04
np-237	17	1.03644E-05
u-238	17	2.14489E-02
pu-238	17	3.07992E-06
pu-239	17	1.25790E-04
pu-240	17	4.43361E-05
pu-241	17	2.18034E-05
pu-242	17	8.25503E-06
am-241	17	6.60169E-06
am-243	17	1.39559E-06
mo-95	17	4.53486E-05
tc-99	17	4.53841E-05
ru-101	17	4.15762E-05
rh-103	17	2.46844E-05
ag-109	17	2.98709E-06
cs-133	17	4.70582E-05
nd-143	17	3.31054E-05
nd-145	17	2.68757E-05
sm-147	17	8.35228E-06
sm-149	17	1.51503E-07
sm-150	17	1.06072E-05
sm-151	17	4.68713E-07
sm-152	17	3.79885E-06
eu-153	17	3.66225E-06
gd-155	17	1.36042E-07

sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.28868E-04
u-234	16	4.61473E-06
u-236	16	1.26929E-04
np-237	16	1.75405E-05
u-238	16	2.10947E-02
pu-238	16	8.47491E-06
pu-239	16	1.25829E-04
pu-240	16	6.22664E-05
pu-241	16	3.01502E-05
pu-242	16	2.20233E-05
am-241	16	9.27192E-06
am-243	16	5.79615E-06
mo-95	16	6.55440E-05
tc-99	16	6.60042E-05
ru-101	16	6.44717E-05
rh-103	16	3.32235E-05
ag-109	16	5.68336E-06
cs-133	16	6.68042E-05
nd-143	16	4.08831E-05
nd-145	16	3.81711E-05
sm-147	16	9.82705E-06
sm-149	16	1.55254E-07
sm-150	16	1.67852E-05
sm-151	16	5.84518E-07
sm-152	16	5.15857E-06
eu-153	16	6.21185E-06
gd-155	16	2.73954E-07
o	16	4.56500E-02
u-235	17	1.33757E-04
u-234	17	4.66403E-06
u-236	17	1.26625E-04
np-237	17	1.72919E-05
u-238	17	2.11097E-02
pu-238	17	8.23459E-06
pu-239	17	1.26004E-04
pu-240	17	6.17698E-05
pu-241	17	2.99471E-05
pu-242	17	2.14160E-05
am-241	17	9.21142E-06
am-243	17	5.56659E-06
mo-95	17	6.48517E-05
tc-99	17	6.53023E-05
ru-101	17	6.35817E-05
rh-103	17	3.29712E-05
ag-109	17	5.57487E-06
cs-133	17	6.61324E-05
nd-143	17	4.06814E-05
nd-145	17	3.77794E-05
sm-147	17	9.79886E-06
sm-149	17	1.55309E-07
sm-150	17	1.65581E-05
sm-151	17	5.80402E-07
sm-152	17	5.11326E-06
eu-153	17	6.12028E-06
gd-155	17	2.68454E-07

o	17	4.56500E-02
u-235	18	3.46030E-04
u-234	18	6.37431E-06
u-236	18	1.01196E-04
np-237	18	8.94635E-06
u-238	18	2.15087E-02
pu-238	18	2.33991E-06
pu-239	18	1.23673E-04
pu-240	18	3.97918E-05
pu-241	18	1.93309E-05
pu-242	18	6.26699E-06
am-241	18	5.81235E-06
am-243	18	9.37737E-07
mo-95	18	4.11451E-05
tc-99	18	4.10961E-05
ru-101	18	3.72138E-05
rh-103	18	2.25865E-05
ag-109	18	2.52053E-06
cs-133	18	4.27969E-05
nd-143	18	3.08690E-05
nd-145	18	2.44608E-05
sm-147	18	7.87009E-06
sm-149	18	1.49665E-07
sm-150	18	9.38715E-06
sm-151	18	4.45302E-07
sm-152	18	3.49201E-06
eu-153	18	3.15933E-06
gd-155	18	1.13183E-07
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.63519E-04
u-234	20	7.12538E-06
u-236	20	8.26978E-05

o	17	4.56500E-02
u-235	18	1.76480E-04
u-234	18	5.06940E-06
u-236	18	1.23020E-04
np-237	18	1.52520E-05
u-238	18	2.12230E-02
pu-238	18	6.41840E-06
pu-239	18	1.27080E-04
pu-240	18	5.73210E-05
pu-241	18	2.81460E-05
pu-242	18	1.68520E-05
am-241	18	8.64260E-06
am-243	18	3.93400E-06
mo-95	18	5.90240E-05
tc-99	18	5.93890E-05
ru-101	18	5.67040E-05
rh-103	18	3.07930E-05
ag-109	18	4.73680E-06
cs-133	18	6.06210E-05
nd-143	18	3.89460E-05
nd-145	18	3.46010E-05
sm-147	18	9.50290E-06
sm-149	18	1.54810E-07
sm-150	18	1.47530E-05
sm-151	18	5.46920E-07
sm-152	18	4.73840E-06
eu-153	18	5.38000E-06
gd-155	18	2.25520E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	2.93307E-04
u-234	20	6.00200E-06
u-236	20	1.08836E-04

np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	21	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)
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B32A223333
Serial No.: **11** from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-15	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06

B50A223333
Serial No.: **28** from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06

gd-155	2	8.84830E-08	gd-155	2	1.82948E-07
o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	3.04062E-04	u-235	4	1.30143E-04
u-234	4	6.08040E-06	u-234	4	4.62757E-06
u-236	4	1.07303E-04	u-236	4	1.26853E-04
np-237	4	1.02735E-05	np-237	4	1.74756E-05
u-238	4	2.14531E-02	u-238	4	2.10989E-02
pu-238	4	3.02996E-06	pu-238	4	8.41160E-06
pu-239	4	1.25684E-04	pu-239	4	1.25878E-04
pu-240	4	4.40576E-05	pu-240	4	6.21362E-05
pu-241	4	2.16543E-05	pu-241	4	3.00953E-05
pu-242	4	8.12176E-06	pu-242	4	2.18633E-05
am-241	4	6.55355E-06	am-241	4	9.25617E-06
am-243	4	1.36300E-06	am-243	4	5.73553E-06
mo-95	4	4.50853E-05	mo-95	4	6.53653E-05
tc-99	4	4.51152E-05	tc-99	4	6.58213E-05
ru-101	4	4.12995E-05	ru-101	4	6.42371E-05
rh-103	4	2.45565E-05	rh-103	4	3.31575E-05
ag-109	4	2.95688E-06	ag-109	4	5.65475E-06
cs-133	4	4.67885E-05	cs-133	4	6.66264E-05
nd-143	4	3.29715E-05	nd-143	4	4.08300E-05
nd-145	4	2.67253E-05	nd-145	4	3.80671E-05
sm-147	4	8.32363E-06	sm-147	4	9.81979E-06
sm-149	4	1.51388E-07	sm-149	4	1.55287E-07
sm-150	4	1.05297E-05	sm-150	4	1.67256E-05
sm-151	4	4.67246E-07	sm-151	4	5.83463E-07
sm-152	4	3.78026E-06	sm-152	4	5.14657E-06
eu-153	4	3.62992E-06	eu-153	4	6.18796E-06
gd-155	4	1.34534E-07	gd-155	4	2.72503E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.90107E-04	u-235	5	1.18708E-04
u-234	5	5.97893E-06	u-234	5	4.50881E-06

u-236	5	1.09287E-04	u-236	5	1.27531E-04
np-237	5	1.07539E-05	np-237	5	1.80670E-05
u-238	5	2.14323E-02	u-238	5	2.10612E-02
pu-238	5	3.29873E-06	pu-238	5	8.99830E-06
pu-239	5	1.26203E-04	pu-239	5	1.25363E-04
pu-240	5	4.54948E-05	pu-240	5	6.33064E-05
pu-241	5	2.24505E-05	pu-241	5	3.05372E-05
pu-242	5	8.83719E-06	pu-242	5	2.33453E-05
am-241	5	6.80514E-06	am-241	5	9.39200E-06
am-243	5	1.54077E-06	am-243	5	6.30400E-06
mo-95	5	4.64696E-05	mo-95	5	6.71040E-05
tc-99	5	4.65289E-05	tc-99	5	6.75944E-05
ru-101	5	4.27615E-05	ru-101	5	6.64101E-05
rh-103	5	2.52268E-05	rh-103	5	3.37531E-05
ag-109	5	3.11739E-06	ag-109	5	5.91939E-06
cs-133	5	4.81903E-05	cs-133	5	6.82711E-05
nd-143	5	3.36672E-05	nd-143	5	4.12648E-05
nd-145	5	2.75182E-05	nd-145	5	3.90317E-05
sm-147	5	8.47118E-06	sm-147	5	9.88662E-06
sm-149	5	1.51904E-07	sm-149	5	1.55355E-07
sm-150	5	1.09350E-05	sm-150	5	1.72728E-05
sm-151	5	4.74998E-07	sm-151	5	5.93787E-07
sm-152	5	3.87857E-06	sm-152	5	5.25763E-06
eu-153	5	3.79803E-06	eu-153	5	6.40921E-06
gd-155	5	1.42556E-07	gd-155	5	2.85937E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	3.10876E-04	u-235	6	1.36533E-04
u-234	6	6.12957E-06	u-234	6	4.69214E-06
u-236	6	1.06344E-04	u-236	6	1.26436E-04
np-237	6	1.00497E-05	np-237	6	1.71511E-05
u-238	6	2.14626E-02	u-238	6	2.11170E-02
pu-238	6	2.90785E-06	pu-238	6	8.10113E-06
pu-239	6	1.25412E-04	pu-239	6	1.26092E-04
pu-240	6	4.33564E-05	pu-240	6	6.14886E-05
pu-241	6	2.12849E-05	pu-241	6	2.98440E-05
pu-242	6	7.79563E-06	pu-242	6	2.10791E-05
am-241	6	6.43473E-06	am-241	6	9.17746E-06
am-243	6	1.28450E-06	am-243	6	5.44007E-06
mo-95	6	4.44325E-05	mo-95	6	6.44442E-05
tc-99	6	4.44484E-05	tc-99	6	6.48933E-05
ru-101	6	4.06147E-05	ru-101	6	6.30878E-05
rh-103	6	2.42360E-05	rh-103	6	3.28287E-05
ag-109	6	2.88235E-06	ag-109	6	5.51456E-06
cs-133	6	4.61266E-05	cs-133	6	6.57592E-05
nd-143	6	3.26341E-05	nd-143	6	4.05705E-05
nd-145	6	2.63523E-05	nd-145	6	3.75645E-05
sm-147	6	8.25225E-06	sm-147	6	9.78206E-06
sm-149	6	1.51156E-07	sm-149	6	1.55239E-07
sm-150	6	1.03374E-05	sm-150	6	1.64310E-05
sm-151	6	4.63612E-07	sm-151	6	5.77973E-07
sm-152	6	3.73322E-06	sm-152	6	5.08807E-06
eu-153	6	3.55026E-06	eu-153	6	6.06832E-06
gd-155	6	1.30841E-07	gd-155	6	2.65399E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.82787E-04	u-235	7	1.13505E-04
u-234	7	5.92600E-06	u-234	7	4.45311E-06
u-236	7	1.10296E-04	u-236	7	1.27788E-04
np-237	7	1.10089E-05	np-237	7	1.83425E-05
u-238	7	2.14221E-02	u-238	7	2.10426E-02
pu-238	7	3.44718E-06	pu-238	7	9.28405E-06

pu-239	7	1.26437E-04
pu-240	7	4.62412E-05
pu-241	7	2.28588E-05
pu-242	7	9.22905E-06
am-241	7	6.93353E-06
am-243	7	1.64064E-06
mo-95	7	4.71983E-05
tc-99	7	4.72729E-05
ru-101	7	4.35372E-05
rh-103	7	2.55763E-05
ag-109	7	3.20350E-06
cs-133	7	4.89126E-05
nd-143	7	3.40256E-05
nd-145	7	2.79358E-05
sm-147	7	8.54485E-06
sm-149	7	1.52108E-07
sm-150	7	1.11493E-05
sm-151	7	4.79111E-07
sm-152	7	3.93038E-06
eu-153	7	3.88634E-06
gd-155	7	1.46870E-07
o	7	4.56500E-02
u-235	8	3.01600E-04
u-234	8	6.06243E-06
u-236	8	1.07654E-04
np-237	8	1.03571E-05
u-238	8	2.14493E-02
pu-238	8	3.07588E-06
pu-239	8	1.25781E-04
pu-240	8	4.43138E-05
pu-241	8	2.17914E-05
pu-242	8	8.24427E-06
am-241	8	6.59782E-06
am-243	8	1.39295E-06
mo-95	8	4.53274E-05
tc-99	8	4.53625E-05
ru-101	8	4.15539E-05
rh-103	8	2.46741E-05
ag-109	8	2.98466E-06
cs-133	8	4.70365E-05
nd-143	8	3.30946E-05
nd-145	8	2.68636E-05
sm-147	8	8.34998E-06
sm-149	8	1.51493E-07
sm-150	8	1.06009E-05
sm-151	8	4.68595E-07
sm-152	8	3.79736E-06
eu-153	8	3.65965E-06
gd-155	8	1.35920E-07
o	8	4.56500E-02
u-235	9	2.86077E-04
u-234	9	5.94987E-06
u-236	9	1.09847E-04
np-237	9	1.08938E-05
u-238	9	2.14269E-02
pu-238	9	3.37966E-06
pu-239	9	1.26336E-04
pu-240	9	4.59036E-05
pu-241	9	2.26792E-05
pu-242	9	9.05128E-06

pu-239	7	1.25101E-04
pu-240	7	6.38273E-05
pu-241	7	3.07349E-05
pu-242	7	2.40830E-05
am-241	7	9.45115E-06
am-243	7	6.58650E-06
mo-95	7	6.79151E-05
tc-99	7	6.84175E-05
ru-101	7	6.74557E-05
rh-103	7	3.40284E-05
ag-109	7	6.04327E-06
cs-133	7	6.90311E-05
nd-143	7	4.14355E-05
nd-145	7	3.94951E-05
sm-147	7	9.91232E-06
sm-149	7	1.55275E-07
sm-150	7	1.75354E-05
sm-151	7	5.98869E-07
sm-152	7	5.30842E-06
eu-153	7	6.51623E-06
gd-155	7	2.92330E-07
o	7	4.56500E-02
u-235	8	1.29400E-04
u-234	8	4.62009E-06
u-236	8	1.26897E-04
np-237	8	1.75134E-05
u-238	8	2.10964E-02
pu-238	8	8.44843E-06
pu-239	8	1.25850E-04
pu-240	8	6.22120E-05
pu-241	8	3.01273E-05
pu-242	8	2.19564E-05
am-241	8	9.26536E-06
am-243	8	5.77078E-06
mo-95	8	6.54693E-05
tc-99	8	6.59276E-05
ru-101	8	6.43736E-05
rh-103	8	3.31959E-05
ag-109	8	5.67139E-06
cs-133	8	6.67298E-05
nd-143	8	4.08609E-05
nd-145	8	3.81276E-05
sm-147	8	9.82402E-06
sm-149	8	1.55268E-07
sm-150	8	1.67603E-05
sm-151	8	5.84077E-07
sm-152	8	5.15354E-06
eu-153	8	6.20187E-06
gd-155	8	2.73347E-07
o	8	4.56500E-02
u-235	9	1.16758E-04
u-234	9	4.48830E-06
u-236	9	1.27634E-04
np-237	9	1.81700E-05
u-238	9	2.10543E-02
pu-238	9	9.10452E-06
pu-239	9	1.25263E-04
pu-240	9	6.35001E-05
pu-241	9	3.06139E-05
pu-242	9	2.36205E-05

am-241	9	6.87623E-06	am-241	9	9.41475E-06
am-243	9	1.59514E-06	am-243	9	6.40844E-06
mo-95	9	4.68700E-05	mo-95	9	6.74026E-05
tc-99	9	4.69377E-05	tc-99	9	6.79028E-05
ru-101	9	4.31876E-05	ru-101	9	6.68038E-05
rh-103	9	2.54195E-05	rh-103	9	3.38561E-05
ag-109	9	3.16460E-06	ag-109	9	5.96524E-06
cs-133	9	4.85868E-05	cs-133	9	6.85537E-05
nd-143	9	3.38651E-05	nd-143	9	4.13246E-05
nd-145	9	2.77480E-05	nd-145	9	3.92066E-05
sm-147	9	8.51203E-06	sm-147	9	9.89643E-06
sm-149	9	1.52011E-07	sm-149	9	1.55332E-07
sm-150	9	1.10523E-05	sm-150	9	1.73708E-05
sm-151	9	4.77257E-07	sm-151	9	5.95701E-07
sm-152	9	3.90722E-06	sm-152	9	5.27631E-06
u-153	9	3.84621E-06	eu-153	9	6.44912E-06
gd-155	9	1.44917E-07	gd-155	9	2.88320E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.85194E-04	u-235	10	1.16409E-04
u-234	10	5.94348E-06	u-234	10	4.48461E-06
u-236	10	1.09968E-04	u-236	10	1.27652E-04
np-237	10	1.09246E-05	np-237	10	1.81884E-05
u-238	10	2.14257E-02	u-238	10	2.10530E-02
pu-238	10	3.39764E-06	pu-238	10	9.12368E-06
pu-239	10	1.26363E-04	pu-239	10	1.25245E-04
pu-240	10	4.59937E-05	pu-240	10	6.35348E-05
pu-241	10	2.27282E-05	pu-241	10	3.06276E-05
pu-24	10	9.09871E-06	pu-242	10	2.36702E-05
am-241	10	6.89167E-06	am-241	10	9.41878E-06
am-243	10	1.60725E-06	am-243	10	6.42734E-06
mo-95	10	4.69580E-05	mo-95	10	6.74561E-05
tc-99	10	4.70275E-05	tc-99	10	6.79578E-05
ru-101	10	4.32812E-0	ru-101	10	6.68744E-05
rh-103	10	2.54616E-05	rh-103	10	3.38746E-05
ag-109	10	3.17501E-06	ag-109	10	5.97348E-06
cs-133	10	4.86739E-05	cs-133	10	6.86044E-05
nd-143	10	3.39082E-05	nd-143	10	4.13354E-05
nd-145	10	2.77984E-05	nd-145	10	3.92379E-05
sm-147	10	8.52088E-06	sm-147	10	9.89813E-06
sm-149	10	1.52035E-07	sm-149	10	1.55325E-07
sm-150	10	1.10782E-05	sm-150	10	1.73885E-05
sm-151	10	4.77754E-07	sm-151	10	5.96044E-07
sm-152	10	3.91347E-06	sm-152	10	5.27967E-06
eu-153	10	3.85688E-06	eu-153	10	6.45630E-06
gd-155	10	1.45439E-07	gd-155	10	2.88748E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05

ru-101	11	4.14529E-05	ru-101	11	6.40475E-05
rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
m-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
c-99	12	4.66571E-05	tc-99	12	6.74503E-05
u-101	12	4.28950E-05	ru-101	12	6.62298E-05
h-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05

nd-143	13	3.22052E-05	nd-143	13	4.02130E-05
nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07

sm-150	15	1.03985E-05	sm-150	15	1.64364E-05
sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	2.95786E-04	u-235	16	1.28868E-04
u-234	16	6.01995E-06	u-234	16	4.61473E-06
u-236	16	1.08484E-04	u-236	16	1.26929E-04
np-237	16	1.05576E-05	np-237	16	1.75405E-05
u-238	16	2.14403E-02	u-238	16	2.10947E-02
pu-238	16	3.18729E-06	pu-238	16	8.47491E-06
pu-239	16	1.26003E-04	pu-239	16	1.25829E-04
pu-240	16	4.49169E-05	pu-240	16	6.22664E-05
pu-241	16	2.21223E-05	pu-241	16	3.01502E-05
pu-242	16	8.54108E-06	pu-242	16	2.20233E-05
am-241	16	6.70333E-06	am-241	16	9.27192E-06
am-243	16	1.46640E-06	am-243	16	5.79615E-06
mo-95	16	4.59055E-05	mo-95	16	6.55440E-05
tc-99	16	4.59531E-05	tc-99	16	6.60042E-05
ru-101	16	4.21634E-05	ru-101	16	6.44717E-05
rh-103	16	2.49540E-05	rh-103	16	3.32235E-05
ag-109	16	3.05145E-06	ag-109	16	5.68336E-06
cs-133	16	4.76263E-05	cs-133	16	6.68042E-05
nd-143	16	3.33857E-05	nd-143	16	4.08831E-05
nd-145	16	2.71944E-05	nd-145	16	3.81711E-05
sm-147	16	8.41213E-06	sm-147	16	9.82705E-06
sm-149	16	1.51733E-07	sm-149	16	1.55254E-07
sm-150	16	1.07706E-05	m-150	16	1.67852E-05
sm-151	16	4.71826E-07	sm-151	16	5.84518E-07
sm-152	16	3.83818E-06	sm-152	16	5.15857E-06
eu-153	16	3.73026E-06	eu-153	16	6.21185E-06
gd-155	16	1.39262E-07	gd-155	16	2.73954E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.01386E-04	u-235	17	1.33757E-04
u-234	17	6.06086E-06	u-234	17	4.66403E-06
u-236	17	1.07684E-04	u-236	17	1.26625E-04
np-237	17	1.03644E-05	np-237	17	1.72919E-05
u-238	17	2.14489E-02	u-238	17	2.11097E-02
pu-238	17	3.07992E-06	pu-238	17	8.23459E-06
pu-239	17	1.25790E-04	pu-239	17	1.26004E-04
pu-240	17	4.43361E-05	pu-240	17	6.17698E-05
pu-241	17	2.18034E-05	pu-241	17	2.99471E-05
pu-242	17	8.25503E-06	pu-242	17	2.14160E-05
am-241	17	6.60169E-06	am-241	17	9.21142E-06
am-243	17	1.39559E-06	am-243	17	5.56659E-06
mo-95	17	4.53486E-05	mo-95	17	6.48517E-05
tc-99	17	4.53841E-05	tc-99	17	6.53023E-05
ru-101	17	4.15762E-05	ru-101	17	6.35817E-05
rh-103	17	2.46844E-05	rh-103	17	3.29712E-05
ag-109	17	2.98709E-06	ag-109	17	5.57487E-06
cs-133	17	4.70582E-05	cs-133	17	6.61324E-05
nd-143	17	3.31054E-05	nd-143	17	4.06814E-05
nd-145	17	2.68757E-05	nd-145	17	3.77794E-05
sm-147	17	8.35228E-06	sm-147	17	9.79886E-06
sm-149	17	1.51503E-07	sm-149	17	1.55309E-07
sm-150	17	1.06072E-05	sm-150	17	1.65581E-05
sm-151	17	4.68713E-07	sm-151	17	5.80402E-07
sm-152	17	3.79885E-06	sm-152	17	5.11326E-06
eu-153	17	3.66225E-06	eu-153	17	6.12028E-06

gd-155	17	1.36042E-07	gd-155	17	2.68454E-07
o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	3.46030E-04	u-235	18	1.76480E-04
u-234	18	6.37431E-06	u-234	18	5.06940E-06
u-236	18	1.01196E-04	u-236	18	1.23020E-04
np-237	18	8.94635E-06	np-237	18	1.52520E-05
u-238	18	2.15087E-02	u-238	18	2.12230E-02
pu-238	18	2.33991E-06	pu-238	18	6.41840E-06
pu-239	18	1.23673E-04	pu-239	18	1.27080E-04
pu-240	18	3.97918E-05	pu-240	18	5.73210E-05
pu-241	18	1.93309E-05	pu-241	18	2.81460E-05
pu-242	18	6.26699E-06	pu-242	18	1.68520E-05
am-241	18	5.81235E-06	am-241	18	8.64260E-06
am-243	18	9.37737E-07	am-243	18	3.93400E-06
mo-95	18	4.11451E-05	mo-95	18	5.90240E-05
tc-99	18	4.10961E-05	tc-99	18	5.93890E-05
ru-101	18	3.72138E-05	ru-10	18	5.67040E-05
rh-103	18	2.25865E-05	rh-103	18	3.07930E-05
ag-109	18	2.52053E-06	ag-109	18	4.73680E-06
cs-133	18	4.27969E-05	cs-133	18	6.06210E-05
nd-143	18	3.08690E-05	nd-143	18	3.89460E-05
nd-145	18	2.44608E-05	nd-145	18	3.46010E-05
sm-147	18	7.87009E-06	sm-147	18	9.50290E-06
sm-149	18	1.49665E-07	sm-149	18	1.54810E-07
sm-150	18	9.38715E-06	sm-150	18	1.47530E-05
sm-151	18	4.45302E-07	sm-151	18	5.46920E-07
sm-152	18	3.49201E-06	sm-152	18	4.73840E-06
eu-153	18	3.15933E-06	eu-153	18	5.38000E-06
gd-155	18	1.13183E-07	gd-155	18	2.25520E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	3.50231E-04	u-235	19	1.77706E-04
u-234	19	6.40274E-06	u-234	19	5.08052E-06
u-236	19	1.00567E-04	u-236	19	1.22900E-04
np-237	19	8.81930E-06	np-237	19	1.51968E-05
u-238	19	2.15136E-02	u-238	19	2.12259E-02
pu-238	19	2.27866E-06	pu-238	19	6.37288E-06
pu-239	19	1.23420E-04	pu-239	19	1.27101E-04
pu-240	19	3.93722E-05	pu-240	19	5.71914E-05
pu-241	19	1.90952E-05	pu-241	19	2.80927E-05
pu-242	19	6.10098E-06	pu-242	19	1.67374E-05
am-241	19	5.73775E-06	am-241	19	8.62487E-06
am-243	19	9.01896E-07	am-243	19	3.89526E-06
mo-95	19	4.07586E-05	mo-95	19	5.88695E-05
tc-99	19	4.07030E-05	tc-99	19	5.92342E-05
ru-101	19	3.68190E-05	ru-101	19	5.65258E-05
rh-103	19	2.23897E-05	rh-103	19	3.07315E-05
ag-109	19	2.47949E-06	ag-109	19	4.71522E-06
cs-133	19	4.23943E-05	cs-133	19	6.04748E-05
nd-143	19	3.06546E-05	nd-143	19	3.88945E-05
nd-145	19	2.42394E-05	nd-145	19	3.45154E-05
sm-147	19	7.82323E-06	sm-147	19	9.49334E-06
sm-149	19	1.49510E-07	sm-149	19	1.54774E-07
sm-150	19	9.27789E-06	sm-150	19	1.47050E-05
sm-151	19	4.43223E-07	sm-151	19	5.46072E-07
sm-152	19	3.46344E-06	sm-152	19	4.72856E-06
eu-153	19	3.11421E-06	eu-153	19	5.36007E-06
gd-155	19	1.11215E-07	gd-155	19	2.24405E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.63519E-04	u-235	20	2.93307E-04
u-234	20	7.12538E-06	u-234	20	6.00200E-06

u-236	20	8.26978E-05	u-236	20	1.08836E-04
np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	21	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A233333 Serial No.: **12** from gen_ax03.mod			B50A233333 Serial No.: **29** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-10	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-0	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	3.09593E-04
u-234	4	6.12039E-06
u-236	4	1.06523E-04
np-237	4	1.00910E-05
u-238	4	2.14610E-02
pu-238	4	2.93029E-06
pu-239	4	1.25463E-04
pu-240	4	4.34873E-05
pu-241	4	2.13535E-05
pu-242	4	7.85560E-06
am-241	4	6.45668E-06
am-243	4	1.29880E-06
mo-95	4	4.45535E-05
tc-99	4	4.45720E-05
ru-101	4	4.07414E-05
rh-103	4	2.42958E-05
ag-109	4	2.89612E-06
cs-133	4	4.62483E-05
nd-143	4	3.26972E-05
nd-145	4	2.64215E-05
sm-147	4	8.26550E-06
sm-149	4	1.51192E-07
sm-150	4	1.03729E-05
sm-151	4	4.64284E-07
sm-152	4	3.74206E-06
eu-153	4	3.56493E-06
gd-155	4	1.31520E-07
o	4	4.56500E-02
u-235	5	2.94882E-04
u-234	5	6.01339E-06
u-236	5	1.08612E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.34060E-04
u-234	4	4.66710E-06
u-236	4	1.26605E-04
np-237	4	1.72765E-05
u-238	4	2.11105E-02
pu-238	4	8.21990E-06
pu-239	4	1.26014E-04
pu-240	4	6.17391E-05
pu-241	4	2.99355E-05
pu-242	4	2.13789E-05
am-241	4	9.20769E-06
am-243	4	5.55262E-06
mo-95	4	6.48074E-05
tc-99	4	6.52581E-05
ru-101	4	6.35274E-05
rh-103	4	3.29556E-05
ag-109	4	5.56824E-06
cs-133	4	6.60914E-05
nd-143	4	4.06692E-05
nd-145	4	3.77557E-05
sm-147	4	9.79705E-06
sm-149	4	1.55304E-07
sm-150	4	1.65441E-05
sm-151	4	5.80137E-07
sm-152	4	5.11050E-06
eu-153	4	6.11460E-06
gd-155	4	2.68118E-07
o	4	4.56500E-02
u-235	5	1.21978E-04
u-234	5	4.54331E-06
u-236	5	1.27343E-04

np-237	5	1.05888E-05
u-238	5	2.14389E-02
pu-238	5	3.20486E-06
pu-239	5	1.26036E-04
pu-240	5	4.50095E-05
pu-241	5	2.21744E-05
pu-242	5	8.58784E-06
am-241	5	6.71967E-06
am-243	5	1.47808E-06
mo-95	5	4.59954E-05
tc-99	5	4.60449E-05
ru-101	5	4.22585E-05
rh-103	5	2.49976E-05
ag-109	5	3.06191E-06
cs-133	5	4.77170E-05
nd-143	5	3.34308E-05
nd-145	5	2.72459E-05
sm-147	5	8.42167E-06
sm-149	5	1.51765E-07
sm-150	5	1.07968E-05
sm-151	5	4.72330E-07
sm-152	5	3.84458E-06
eu-153	5	3.74113E-06
gd-155	5	1.39785E-07
o	5	4.56500E-02
u-235	6	3.15050E-04
u-234	6	6.15912E-06
u-236	6	1.05760E-04
np-237	6	9.91689E-06
u-238	6	2.14678E-02
pu-238	6	2.83614E-06
pu-239	6	1.25241E-04
pu-240	6	4.29331E-05
pu-241	6	2.10622E-05
pu-242	6	7.60374E-06
am-241	6	6.36374E-06
am-243	6	1.23912E-06
mo-95	6	4.40424E-05
tc-99	6	4.40500E-05
ru-101	6	4.02063E-05
rh-103	6	2.40426E-05
ag-109	6	2.83811E-06
cs-133	6	4.57343E-05
nd-143	6	3.24290E-05
nd-145	6	2.61291E-05
sm-147	6	8.20933E-06
sm-149	6	1.51046E-07
sm-150	6	1.02228E-05
sm-151	6	4.61449E-07
sm-152	6	3.70454E-06
eu-153	6	3.50319E-06
gd-155	6	1.28667E-07
o	6	4.56500E-02
u-235	7	2.85958E-04
u-234	7	5.94901E-06
u-236	7	1.09863E-04
np-237	7	1.08980E-05
u-238	7	2.14267E-02
pu-238	7	3.38208E-06
pu-239	7	1.26339E-04

np-237	5	1.78954E-05
u-238	5	2.10721E-02
pu-238	5	8.82497E-06
pu-239	5	1.25526E-04
pu-240	5	6.29757E-05
pu-241	5	3.04170E-05
pu-242	5	2.29032E-05
am-241	5	9.35394E-06
am-243	5	6.13451E-06
mo-95	5	6.65884E-05
tc-99	5	6.70667E-05
ru-101	5	6.57669E-05
rh-103	5	3.35814E-05
ag-109	5	5.84253E-06
cs-133	5	6.77950E-05
nd-143	5	4.11555E-05
nd-145	5	3.87463E-05
sm-147	5	9.86814E-06
sm-149	5	1.55300E-07
sm-150	5	1.71120E-05
sm-151	5	5.90622E-07
sm-152	5	5.22576E-06
eu-153	5	6.34380E-06
gd-155	5	2.81998E-07
o	5	4.56500E-02
u-235	6	1.39495E-04
u-234	6	4.72170E-06
u-236	6	1.26223E-04
np-237	6	1.70029E-05
u-238	6	2.11251E-02
pu-238	6	7.96148E-06
pu-239	6	1.26180E-04
pu-240	6	6.11843E-05
pu-241	6	2.97367E-05
pu-242	6	2.07272E-05
am-241	6	9.14211E-06
am-243	6	5.30953E-06
mo-95	6	6.40152E-05
tc-99	6	6.44478E-05
ru-101	6	6.25698E-05
rh-103	6	3.26774E-05
ag-109	6	5.45127E-06
cs-133	6	6.53608E-05
nd-143	6	4.04537E-05
nd-145	6	3.73370E-05
sm-147	6	9.76360E-06
sm-149	6	1.55164E-07
sm-150	6	1.62978E-05
sm-151	6	5.75473E-07
sm-152	6	5.06105E-06
eu-153	6	6.01377E-06
gd-155	6	2.62187E-07
o	6	4.56500E-02
u-235	7	1.15615E-04
u-234	7	4.47615E-06
u-236	7	1.27691E-04
np-237	7	1.82305E-05
u-238	7	2.10502E-02
pu-238	7	9.16740E-06
pu-239	7	1.25205E-04

pu-240	7	4.59157E-05	pu-240	7	6.36138E-05
pu-241	7	2.26859E-05	pu-241	7	3.06583E-05
pu-242	7	9.05765E-06	pu-242	7	2.37834E-05
am-241	7	6.87831E-06	am-241	7	9.42786E-06
am-243	7	1.59677E-06	am-243	7	6.47055E-06
mo-95	7	4.68819E-05	mo-95	7	6.75787E-05
tc-99	7	4.69498E-05	tc-99	7	6.80828E-05
ru-101	7	4.32002E-05	ru-101	7	6.70348E-05
rh-103	7	2.54251E-05	rh-103	7	3.39167E-05
ag-109	7	3.16600E-06	ag-109	7	5.99233E-06
cs-133	7	4.85985E-05	cs-133	7	6.87200E-05
nd-143	7	3.38709E-05	nd-143	7	4.13607E-05
nd-145	7	2.77548E-05	nd-145	7	3.93091E-05
sm-147	7	8.51322E-06	sm-147	7	9.90198E-06
sm-149	7	1.52014E-07	sm-149	7	1.55309E-07
sm-150	7	1.10557E-05	sm-150	7	1.74287E-05
sm-151	7	4.77324E-07	sm-151	7	5.96821E-07
sm-152	7	3.90806E-06	sm-152	7	5.28736E-06
eu-153	7	3.84764E-06	eu-153	7	6.47267E-06
gd-155	7	1.44987E-07	gd-155	7	2.89725E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	3.03809E-04	u-235	8	1.30988E-04
u-234	8	6.07856E-06	u-234	8	4.63607E-06
u-236	8	1.07339E-04	u-236	8	1.26801E-04
np-237	8	1.02821E-05	np-237	8	1.74327E-05
u-238	8	2.14527E-02	u-238	8	2.11016E-02
pu-238	8	3.03463E-06	pu-238	8	8.36988E-06
pu-239	8	1.25694E-04	pu-239	8	1.25909E-04
pu-240	8	4.40839E-0	pu-240	8	6.20502E-05
pu-241	8	2.16683E-05	pu-241	8	3.00592E-05
pu-242	8	8.13422E-06	pu-242	8	2.17579E-05
am-241	8	6.55807E-06	am-241	8	9.24570E-06
am-243	8	1.36604E-06	am-243	8	5.69565E-06
mo-95	8	4.51100E-05	mo-95	8	6.52471E-05
tc-99	8	4.51405E-05	tc-99	8	6.57007E-05
ru-101	8	4.13255E-05	ru-101	8	6.40826E-05
rh-103	8	2.45685E-05	rh-103	8	3.31139E-05
ag-109	8	2.95971E-06	ag-109	8	5.63592E-06
cs-133	8	4.68138E-05	cs-133	8	6.65097E-05
nd-143	8	3.29841E-05	nd-143	8	4.07948E-05
nd-145	8	2.67394E-05	nd-145	8	3.79989E-05
sm-147	8	8.32633E-06	sm-147	8	9.81497E-06
sm-149	8	1.51399E-07	sm-149	8	1.55305E-07
sm-150	8	1.05370E-05	sm-150	8	1.66863E-05
sm-151	8	4.67384E-07	sm-151	8	5.82762E-07
sm-152	8	3.78201E-06	sm-152	8	5.13869E-06
eu-153	8	3.63296E-06	eu-153	8	6.17216E-06
gd-155	8	1.34675E-07	gd-155	8	2.71548E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.87642E-04	u-235	9	1.17808E-04
u-234	9	5.96116E-06	u-234	9	4.49936E-06
u-236	9	1.09630E-04	u-236	9	1.27580E-04
np-237	9	1.08394E-05	np-237	9	1.81145E-05
u-238	9	2.14290E-02	u-238	9	2.10580E-02
pu-238	9	3.34803E-06	pu-238	9	9.04711E-06
pu-239	9	1.26285E-04	pu-239	9	1.25317E-04
pu-240	9	4.57446E-05	pu-240	9	6.33959E-05
pu-241	9	2.25913E-05	pu-241	9	3.05724E-05
pu-242	9	8.96772E-06	pu-242	9	2.34716E-05
am-241	9	6.84875E-06	am-241	9	9.40253E-06

am-243	9	1.57386E-06	am-243	9	6.35193E-06
mo-95	9	4.67144E-05	mo-95	9	6.72420E-05
tc-99	9	4.67789E-05	tc-99	9	6.77371E-05
ru-101	9	4.30219E-05	ru-101	9	6.65914E-05
rh-103	9	2.53447E-05	rh-103	9	3.38006E-05
ag-109	9	3.14622E-06	ag-109	9	5.94051E-06
cs-133	9	4.84328E-05	cs-133	9	6.84015E-05
nd-143	9	3.37884E-05	nd-143	9	4.12924E-05
nd-145	9	2.76588E-05	nd-145	9	3.91122E-05
sm-147	9	8.49626E-06	sm-147	9	9.89123E-06
sm-149	9	1.51969E-07	sm-149	9	1.55348E-07
sm-150	9	1.10066E-05	sm-150	9	1.73179E-05
sm-151	9	4.76379E-07	sm-151	9	5.94670E-07
sm-152	9	3.89612E-06	sm-152	9	5.26625E-06
eu-153	9	3.82742E-06	eu-153	9	6.42757E-06
gd-155	9	1.43997E-07	gd-155	9	2.87034E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.85860E-04	u-235	10	1.16856E-04
u-234	10	5.94830E-06	u-234	10	4.48934E-06
u-236	10	1.09876E-04	u-236	10	1.27629E-04
np-237	10	1.09014E-05	np-237	10	1.81648E-05
u-238	10	2.14266E-02	u-238	10	2.10546E-02
pu-238	10	3.38407E-06	pu-238	10	9.09913E-06
pu-239	10	1.26342E-04	pu-239	10	1.25268E-04
pu-240	10	4.59257E-05	pu-240	10	6.34904E-05
pu-241	10	2.26913E-05	pu-241	10	3.06100E-05
pu-242	10	9.06291E-06	pu-242	10	2.36065E-05
am-241	10	6.88003E-06	am-241	10	9.41362E-06
am-243	10	1.59811E-06	am-243	10	6.40312E-06
mo-95	10	4.68916E-05	mo-95	10	6.73875E-05
tc-99	10	4.69598E-05	tc-99	10	6.78873E-05
ru-101	10	4.32106E-05	ru-101	10	6.67839E-05
rh-103	10	2.54298E-05	rh-103	10	3.38509E-05
ag-109	10	3.16716E-06	ag-109	10	5.96292E-06
cs-133	10	4.86082E-05	cs-133	10	6.85394E-05
nd-143	10	3.38757E-05	nd-143	10	4.13215E-05
nd-145	10	2.77604E-05	nd-145	10	3.91977E-05
sm-147	10	8.51421E-06	sm-147	10	9.89595E-06
sm-149	10	1.52017E-07	sm-149	10	1.55334E-07
sm-150	10	1.10586E-05	sm-150	10	1.73658E-05
sm-151	10	4.77379E-07	sm-151	10	5.95605E-07
sm-152	10	3.90876E-06	sm-152	10	5.27536E-06
eu-153	10	3.84882E-06	eu-153	10	6.44710E-06
gd-155	10	1.45045E-07	gd-155	10	2.88199E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05
ru-101	11	4.14529E-05	ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-23	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	4	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-24	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	4	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	2.95786E-04	u-235	16	1.28868E-04
u-234	16	6.01995E-06	u-234	16	4.61473E-06
u-236	16	1.08484E-04	u-236	16	1.26929E-04
np-237	16	1.05576E-05	np-237	16	1.75405E-05
u-238	16	2.14403E-02	u-238	16	2.10947E-02
pu-238	16	3.18729E-06	pu-238	16	8.47491E-06
pu-239	16	1.26003E-04	pu-239	16	1.25829E-04
pu-240	16	4.49169E-05	pu-240	16	6.22664E-05
pu-241	16	2.21223E-05	pu-241	16	3.01502E-05
pu-242	16	8.54108E-06	pu-242	16	2.20233E-05
am-241	16	6.70333E-06	am-241	16	9.27192E-06
am-243	16	1.46640E-06	am-243	16	5.79615E-06
mo-95	16	4.59055E-05	mo-95	16	6.55440E-05
tc-99	16	4.59531E-05	tc-99	16	6.60042E-05
ru-101	16	4.21634E-05	ru-101	16	6.44717E-05
rh-103	16	2.49540E-05	rh-103	16	3.32235E-05
ag-109	16	3.05145E-06	ag-109	16	5.68336E-06
cs-133	16	4.76263E-05	cs-133	16	6.68042E-05
nd-143	16	3.33857E-05	nd-143	16	4.08831E-05
nd-145	16	2.71944E-05	nd-145	16	3.81711E-05
sm-147	16	8.41213E-06	sm-147	16	9.82705E-06
sm-149	16	1.51733E-07	sm-149	16	1.55254E-07
sm-150	16	1.07706E-05	sm-150	16	1.67852E-05
sm-151	16	4.71826E-07	sm-151	16	5.84518E-07
sm-152	16	3.83818E-06	sm-152	16	5.15857E-06
eu-153	16	3.73026E-06	eu-153	16	6.21185E-06
gd-155	16	1.39262E-07	gd-155	16	2.73954E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.01386E-04	u-235	17	1.33757E-04
u-234	17	6.06086E-06	u-234	17	4.66403E-06
u-236	17	1.07684E-04	u-236	17	1.26625E-04
np-237	17	1.03644E-05	np-237	17	1.72919E-05
u-238	17	2.14489E-02	u-238	17	2.11097E-02
pu-238	17	3.07992E-06	pu-238	17	8.23459E-06
pu-239	17	1.25790E-04	pu-239	17	1.26004E-04
pu-240	17	4.43361E-05	pu-240	17	6.17698E-05
pu-241	17	2.18034E-05	pu-241	17	2.99471E-05
pu-242	17	8.25503E-06	pu-242	17	2.14160E-05
am-241	17	6.60169E-06	am-241	17	9.21142E-06
am-243	17	1.39559E-06	am-243	17	5.56659E-06
mo-95	17	4.53486E-05	mo-95	17	6.48517E-05
tc-99	17	4.53841E-05	tc-99	17	6.53023E-05
ru-101	17	4.15762E-05	ru-101	17	6.35817E-05
rh-103	17	2.46844E-05	rh-103	17	3.29712E-05
ag-109	17	2.98709E-06	ag-109	17	5.57487E-06
cs-133	17	4.70582E-05	cs-133	17	6.61324E-05
nd-143	17	3.31054E-05	nd-143	17	4.06814E-05
nd-145	17	2.68757E-05	nd-145	17	3.77794E-05
sm-147	17	8.35228E-06	sm-147	17	9.79886E-06
sm-149	17	1.51503E-07	sm-149	17	1.55309E-07
sm-150	17	1.06072E-05	sm-150	17	1.65581E-05
sm-151	17	4.68713E-07	sm-151	17	5.80402E-07
sm-152	17	3.79885E-06	sm-152	17	5.11326E-06
eu-153	17	3.66225E-06	eu-153	17	6.12028E-06
gd-155	17	1.36042E-07	gd-155	17	2.68454E-07

o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	3.46030E-04	u-235	18	1.76480E-04
u-234	18	6.37431E-06	u-234	18	5.06940E-06
u-236	18	1.01196E-04	u-236	18	1.23020E-04
np-237	18	8.94635E-06	np-237	18	1.52520E-05
u-238	18	2.15087E-02	u-238	18	2.12230E-02
pu-238	18	2.33991E-06	pu-238	18	6.41840E-06
pu-239	18	1.23673E-04	pu-239	18	1.27080E-04
pu-240	18	3.97918E-05	pu-240	18	5.73210E-05
pu-241	18	1.93309E-05	pu-241	18	2.81460E-05
pu-242	18	6.26699E-06	pu-242	18	1.68520E-05
am-241	18	5.81235E-06	am-241	18	8.64260E-06
am-243	18	9.37737E-07	am-243	18	3.93400E-06
mo-95	18	4.11451E-05	mo-95	18	5.90240E-05
tc-99	18	4.10961E-05	tc-99	18	5.93890E-05
ru-101	18	3.72138E-05	ru-101	18	5.67040E-05
rh-103	18	2.25865E-05	rh-103	18	3.07930E-05
ag-109	18	2.52053E-06	ag-109	18	4.73680E-06
cs-133	18	4.27969E-05	cs-133	18	6.06210E-05
nd-143	18	3.08690E-05	nd-143	18	3.89460E-05
nd-145	18	2.44608E-05	nd-145	18	3.46010E-05
sm-147	18	7.87009E-06	sm-147	18	9.50290E-06
sm-149	18	1.49665E-07	sm-149	18	1.54810E-07
sm-150	18	9.38715E-06	sm-150	18	1.47530E-05
sm-151	18	4.45302E-07	sm-151	18	5.46920E-07
sm-152	18	3.49201E-06	sm-152	18	4.73840E-06
eu-153	18	3.15933E-06	eu-153	18	5.38000E-06
gd-155	18	1.13183E-07	gd-155	18	2.25520E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	3.50231E-04	u-235	19	1.77706E-04
u-234	19	6.40274E-06	u-234	19	5.08052E-06
u-236	19	1.00567E-04	u-236	19	1.22900E-04
np-237	19	8.81930E-06	np-237	19	1.51968E-05
u-238	19	2.15136E-02	u-238	19	2.12259E-02
pu-238	19	2.27866E-06	pu-238	19	6.37288E-06
pu-239	19	1.23420E-04	pu-239	19	1.27101E-04
pu-240	19	3.93722E-05	pu-240	19	5.71914E-05
pu-241	19	1.90952E-05	pu-241	19	2.80927E-05
pu-242	19	6.10098E-06	pu-242	19	1.67374E-05
am-241	19	5.73775E-06	am-241	19	8.62487E-06
am-243	19	9.01896E-07	am-243	19	3.89526E-06
mo-95	19	4.07586E-05	mo-95	19	5.88695E-05
tc-99	19	4.07030E-05	tc-99	19	5.92342E-05
ru-101	19	3.68190E-05	ru-101	19	5.65258E-05
rh-103	19	2.23897E-05	rh-103	19	3.07315E-05
ag-109	19	2.47949E-06	ag-109	19	4.71522E-06
cs-133	19	4.23943E-05	cs-133	19	6.04748E-05
nd-143	19	3.06546E-05	nd-143	19	3.88945E-05
nd-145	19	2.42394E-05	nd-145	19	3.45154E-05
sm-147	19	7.82323E-06	sm-147	19	9.49334E-06
sm-149	19	1.49510E-07	sm-149	19	1.54774E-07
sm-150	19	9.27789E-06	sm-150	19	1.47050E-05
sm-151	19	4.43223E-07	sm-151	19	5.46072E-07
sm-152	19	3.46344E-06	sm-152	19	4.72856E-06
eu-153	19	3.11421E-06	eu-153	19	5.36007E-06
gd-155	19	1.11215E-07	gd-155	19	2.24405E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.16911E-04	u-235	20	2.49341E-04
u-234	20	6.83812E-06	u-234	20	5.67375E-06
u-236	20	9.02470E-05	u-236	20	1.14689E-04

np-237	20	6.95894E-06	np-237	20	1.22277E-05
u-238	20	2.15927E-02	u-238	20	2.13685E-02
pu-238	20	1.47515E-06	pu-238	20	4.19952E-06
pu-239	20	1.18399E-04	pu-239	20	1.27191E-04
pu-240	20	3.28333E-05	pu-240	20	4.97063E-05
pu-241	20	1.53497E-05	pu-241	20	2.46120E-05
pu-242	20	3.88900E-06	pu-242	20	1.11953E-05
am-241	20	4.56083E-06	am-241	20	7.50128E-06
am-243	20	4.72126E-07	am-243	20	2.17074E-06
mo-95	20	3.49230E-05	mo-95	20	5.06359E-05
tc-99	20	3.47643E-05	tc-99	20	5.07842E-05
ru-101	20	3.09670E-05	ru-101	20	4.72432E-05
rh-103	20	1.93435E-05	rh-103	20	2.71808E-05
ag-109	20	1.89351E-06	ag-109	20	3.62246E-06
cs-133	20	3.63889E-05	cs-133	20	5.23539E-05
nd-143	20	2.72109E-05	nd-143	20	3.56290E-05
nd-145	20	2.08549E-05	nd-145	20	2.98908E-05
sm-147	20	7.05133E-06	sm-147	20	8.86978E-06
sm-149	20	1.46096E-07	sm-149	20	1.53204E-07
sm-150	20	7.65119E-06	sm-150	20	1.21793E-05
sm-151	20	4.11379E-07	sm-151	20	4.98485E-07
sm-152	20	3.02052E-06	sm-152	20	4.16968E-06
eu-153	20	2.45331E-06	eu-153	20	4.31203E-06
gd-155	20	8.39151E-08	gd-155	20	1.68145E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.54192E-04	u-235	21	4.01939E-04
u-234	21	7.65193E-06	u-234	21	6.74269E-06
u-236	21	6.74180E-05	u-236	21	9.26405E-05
np-237	21	3.92903E-06	np-237	21	7.35359E-06
u-238	21	2.17208E-02	u-238	21	2.15763E-02
pu-238	21	5.26308E-07	pu-238	21	1.63229E-06
pu-239	21	1.01336E-04	pu-239	21	1.19713E-04
pu-240	21	2.02383E-05	pu-240	21	3.42747E-05
pu-241	21	8.19992E-06	pu-241	21	1.61940E-05
pu-242	21	1.23799E-06	pu-242	21	4.32426E-06
am-241	21	2.37414E-06	am-241	21	4.82254E-06
am-243	21	9.36294E-08	am-243	21	5.49791E-07
mo-95	21	2.40780E-05	mo-95	21	3.62024E-05
tc-99	21	2.38060E-05	tc-99	21	3.60645E-05
ru-101	21	2.06389E-05	ru-101	21	3.22351E-05
rh-103	21	1.33830E-05	rh-103	21	2.00208E-05
ag-109	21	9.93322E-07	ag-109	21	2.01652E-06
cs-133	21	2.51252E-05	cs-133	21	3.77095E-05
nd-143	21	1.99128E-05	nd-143	21	2.79968E-05
nd-145	21	1.44868E-05	nd-145	21	2.16014E-05
sm-147	21	5.31087E-06	sm-147	21	7.22993E-06
sm-149	21	1.37121E-07	sm-149	21	1.46989E-07
sm-150	21	4.83962E-06	sm-150	21	8.00046E-06
sm-151	21	3.54723E-07	sm-151	21	4.18382E-07
sm-152	21	2.13088E-06	sm-152	21	3.11966E-06
eu-153	21	1.36859E-06	eu-153	21	2.59450E-06
gd-155	21	4.65822E-08	gd-155	21	8.94998E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A333333 Serial No.: 13 from gen_ax03.mod			B50A333333 Serial No.: 30 from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02
u-235	3	3.40100E-04
u-234	3	6.33309E-06
u-236	3	1.02083E-04
np-237	3	9.12619E-06
u-238	3	2.15018E-02
pu-238	3	2.42874E-06
pu-239	3	1.24011E-04
pu-240	3	4.03900E-05
pu-241	3	1.96606E-05
pu-242	3	6.50631E-06
am-241	3	5.91720E-06
am-243	3	9.89816E-07
mo-95	3	4.16894E-05
tc-99	3	4.16505E-05
ru-101	3	3.77713E-05
rh-103	3	2.28639E-05
ag-109	3	2.57895E-06
cs-133	3	4.33412E-05
nd-143	3	3.11692E-05
nd-145	3	2.47744E-05
sm-147	3	7.93617E-06
sm-149	3	1.49924E-07
sm-150	3	9.54321E-06
sm-151	3	4.48378E-07
sm-152	3	3.53256E-06
eu-153	3	3.22327E-06
gd-155	3	1.16009E-07
o	3	4.56500E-02
u-235	4	3.16857E-04
u-234	4	6.17180E-06
u-236	4	1.05506E-04
np-237	4	9.85969E-06
u-238	4	2.14700E-02
pu-238	4	2.80552E-06
pu-239	4	1.25164E-04
pu-240	4	4.27505E-05
pu-241	4	2.09650E-05
pu-242	4	7.52166E-06
am-241	4	6.33286E-06
am-243	4	1.21987E-06
mo-95	4	4.38738E-05
tc-99	4	4.38779E-05
ru-101	4	4.00302E-05
rh-103	4	2.39588E-05
ag-109	4	2.81909E-06
cs-133	4	4.55639E-05
nd-143	4	3.23399E-05
nd-145	4	2.60326E-05
sm-147	4	8.19066E-06
sm-149	4	1.50996E-07
sm-150	4	1.01735E-05
sm-151	4	4.60520E-07
sm-152	4	3.69213E-06
eu-153	4	3.48295E-06
gd-155	4	1.27735E-07
o	4	4.56500E-02
u-235	5	3.00970E-04
u-234	5	6.05782E-06
u-236	5	1.07744E-04

o	2	4.56500E-02
u-235	3	1.64499E-04
u-234	3	4.96054E-06
u-236	3	1.24152E-04
np-237	3	1.58029E-05
u-238	3	2.11929E-02
pu-238	3	6.87890E-06
pu-239	3	1.26852E-04
pu-240	3	5.86037E-05
pu-241	3	2.86838E-05
pu-242	3	1.80129E-05
am-241	3	8.81172E-06
am-243	3	4.33292E-06
mo-95	3	6.05859E-05
tc-99	3	6.09693E-05
ru-101	3	5.84924E-05
rh-103	3	3.13974E-05
ag-109	3	4.95362E-06
cs-133	3	6.21058E-05
nd-143	3	3.94414E-05
nd-145	3	3.54535E-05
sm-147	3	9.59046E-06
sm-149	3	1.55009E-07
sm-150	3	1.52297E-05
sm-151	3	5.55809E-07
sm-152	3	4.83744E-06
eu-153	3	5.57481E-06
gd-155	3	2.36733E-07
o	3	4.56500E-02
u-235	4	1.38456E-04
u-234	4	4.71142E-06
u-236	4	1.26299E-04
np-237	4	1.70546E-05
u-238	4	2.11221E-02
pu-238	4	8.01012E-06
pu-239	4	1.26150E-04
pu-240	4	6.12917E-05
pu-241	4	2.97745E-05
pu-242	4	2.08497E-05
am-241	4	9.15438E-06
am-243	4	5.35471E-06
mo-95	4	6.41639E-05
tc-99	4	6.46050E-05
ru-101	4	6.27504E-05
rh-103	4	3.27304E-05
ag-109	4	5.47334E-06
cs-133	4	6.55009E-05
nd-143	4	4.04946E-05
nd-145	4	3.74168E-05
sm-147	4	9.77013E-06
sm-149	4	1.55185E-07
sm-150	4	1.63442E-05
sm-151	4	5.76329E-07
sm-152	4	5.07058E-06
eu-153	4	6.03274E-06
gd-155	4	2.63308E-07
o	4	4.56500E-02
u-235	5	1.25663E-04
u-234	5	4.58201E-06
u-236	5	1.27120E-04

np-237	5	1.03787E-05
u-238	5	2.14483E-02
pu-238	5	3.08777E-06
pu-239	5	1.25806E-04
pu-240	5	4.43794E-05
pu-241	5	2.18268E-05
pu-242	5	8.27597E-06
am-241	5	6.60922E-06
am-243	5	1.40073E-06
mo-95	5	4.53897E-05
tc-99	5	4.54262E-05
ru-101	5	4.16195E-05
rh-103	5	2.47044E-05
ag-109	5	2.99183E-06
cs-133	5	4.71004E-05
nd-143	5	3.31262E-05
nd-145	5	2.68992E-05
sm-147	5	8.35674E-06
sm-149	5	1.51521E-07
sm-150	5	1.06193E-05
sm-151	5	4.68943E-07
sm-152	5	3.80175E-06
eu-153	5	3.66730E-06
gd-155	5	1.36278E-07
o	5	4.56500E-02
u-235	6	3.20375E-04
u-234	6	6.19625E-06
u-236	6	1.05005E-04
np-237	6	9.74799E-06
u-238	6	2.14746E-02
pu-238	6	2.74637E-06
pu-239	6	1.25009E-04
pu-240	6	4.23950E-05
pu-241	6	2.07729E-05
pu-242	6	7.36266E-06
am-241	6	6.27181E-06
am-243	6	1.18283E-06
mo-95	6	4.35441E-05
tc-99	6	4.35413E-05
ru-101	6	3.96864E-05
rh-103	6	2.37947E-05
ag-109	6	2.78211E-06
cs-133	6	4.52268E-05
nd-143	6	3.21653E-05
nd-145	6	2.58434E-05
sm-147	6	8.15378E-06
sm-149	6	1.50883E-07
sm-150	6	1.00776E-05
sm-151	6	4.58717E-07
sm-152	6	3.66798E-06
eu-153	6	3.44347E-06
gd-155	6	1.25926E-07
o	6	4.56500E-02
u-235	7	2.90019E-04
u-234	7	5.97829E-06
u-236	7	1.09299E-04
np-237	7	1.07570E-05
u-238	7	2.14322E-02
pu-238	7	3.30049E-06
pu-239	7	1.26206E-04

np-237	5	1.77044E-05
u-238	5	2.10839E-02
pu-238	5	8.63597E-06
pu-239	5	1.25695E-04
pu-240	5	6.25958E-05
pu-241	5	3.02832E-05
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ru-101	5	6.50681E-05
rh-103	5	3.33895E-05
ag-109	5	5.75648E-06
cs-133	5	6.72595E-05
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nd-145	5	3.84361E-05
sm-147	5	9.84572E-06
sm-149	5	1.55211E-07
sm-150	5	1.69360E-05
sm-151	5	5.87236E-07
sm-152	5	5.18939E-06
eu-153	5	6.27243E-06
gd-155	5	2.77653E-07
o	5	4.56500E-02
u-235	6	1.42802E-04
u-234	6	4.75384E-06
u-236	6	1.25975E-04
np-237	6	1.68409E-05
u-238	6	2.11352E-02
pu-238	6	7.80906E-06
pu-239	6	1.26275E-04
pu-240	6	6.08387E-05
pu-241	6	2.96121E-05
pu-242	6	2.03443E-05
am-241	6	9.10334E-06
am-243	6	5.16965E-06
mo-95	6	6.35537E-05
tc-99	6	6.39463E-05
ru-101	6	6.20023E-05
rh-103	6	3.25095E-05
ag-109	6	5.38193E-06
cs-133	6	6.49123E-05
nd-143	6	4.03247E-05
nd-145	6	3.70819E-05
sm-147	6	9.74257E-06
sm-149	6	1.55146E-07
sm-150	6	1.61524E-05
sm-151	6	5.72888E-07
sm-152	6	5.03039E-06
eu-153	6	5.95444E-06
gd-155	6	2.58656E-07
o	6	4.56500E-02
u-235	7	1.17954E-04
u-234	7	4.50089E-06
u-236	7	1.27572E-04
np-237	7	1.81068E-05
u-238	7	2.10585E-02
pu-238	7	9.03917E-06
pu-239	7	1.25324E-04

pu-240	7	4.55037E-05
pu-241	7	2.24556E-05
pu-242	7	8.84184E-06
am-241	7	6.80671E-06
am-243	7	1.54194E-06
mo-95	7	4.64784E-05
tc-99	7	4.65379E-05
ru-101	7	4.27708E-05
rh-103	7	2.52310E-05
ag-109	7	3.11842E-06
cs-133	7	4.81990E-05
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nd-145	7	2.75232E-05
sm-147	7	8.47209E-06
sm-149	7	1.51907E-07
sm-150	7	1.09376E-05
sm-151	7	4.75047E-07
sm-152	7	3.87919E-06
eu-153	7	3.79908E-06
gd-155	7	1.42607E-07
o	7	4.56500E-02
u-235	8	3.06660E-04
u-234	8	6.09927E-06
u-236	8	1.06935E-04
np-237	8	1.01867E-05
u-238	8	2.14569E-02
pu-238	8	2.98250E-06
pu-239	8	1.25580E-04
pu-240	8	4.37884E-05
pu-241	8	2.15118E-05
pu-242	8	7.99505E-06
am-241	8	6.50752E-06
am-243	8	1.33229E-06
mo-95	8	4.48331E-05
tc-99	8	4.48576E-05
ru-101	8	4.10346E-05
rh-103	8	2.44333E-05
ag-109	8	2.92803E-06
cs-133	8	4.65312E-05
nd-143	8	3.28422E-05
nd-145	8	2.65812E-05
sm-147	8	8.29608E-06
sm-149	8	1.51287E-07
sm-150	8	1.04553E-05
sm-151	8	4.65841E-07
sm-152	8	3.76228E-06
eu-153	8	3.59901E-06
gd-155	8	1.33098E-07
o	8	4.56500E-02
u-235	9	2.89635E-04
u-234	9	5.97553E-06
u-236	9	1.09353E-04
np-237	9	1.07703E-05
u-238	9	2.14317E-02
pu-238	9	3.30813E-06
pu-239	9	1.26219E-04
pu-240	9	4.55426E-05
pu-241	9	2.24776E-05
pu-242	9	8.86210E-06
am-241	9	6.81352E-06

pu-240	7	6.33814E-05
pu-241	7	3.05667E-05
pu-242	7	2.34510E-05
am-241	7	9.40083E-06
am-243	7	6.34412E-06
mo-95	7	6.72197E-05
tc-99	7	6.77140E-05
ru-101	7	6.65619E-05
rh-103	7	3.37929E-05
ag-109	7	5.93708E-06
cs-133	7	6.83803E-05
nd-143	7	4.12880E-05
nd-145	7	3.90991E-05
sm-147	7	9.89049E-06
sm-149	7	1.55350E-07
sm-150	7	1.73105E-05
sm-151	7	5.94527E-07
sm-152	7	5.26485E-06
eu-153	7	6.42459E-06
gd-155	7	2.86856E-07
o	7	4.56500E-02
u-235	8	1.32745E-04
u-234	8	4.65378E-06
u-236	8	1.26690E-04
np-237	8	1.73435E-05
u-238	8	2.11069E-02
pu-238	8	8.28379E-06
pu-239	8	1.25971E-04
pu-240	8	6.18721E-05
pu-241	8	2.99867E-05
pu-242	8	2.15403E-05
am-241	8	9.22392E-06
am-243	8	5.61348E-06
mo-95	8	6.49982E-05
tc-99	8	6.54490E-05
ru-101	8	6.37638E-05
rh-103	8	3.30233E-05
ag-109	8	5.59708E-06
cs-133	8	6.62694E-05
nd-143	8	4.07225E-05
nd-145	8	3.78588E-05
sm-147	8	9.80482E-06
sm-149	8	1.55319E-07
sm-150	8	1.66049E-05
sm-151	8	5.81278E-07
sm-152	8	5.12250E-06
eu-153	8	6.13927E-06
gd-155	8	2.69579E-07
o	8	4.56500E-02
u-235	9	1.18967E-04
u-234	9	4.51153E-06
u-236	9	1.27517E-04
np-237	9	1.80533E-05
u-238	9	2.10621E-02
pu-238	9	8.98430E-06
pu-239	9	1.25377E-04
pu-240	9	6.32805E-05
pu-241	9	3.05271E-05
pu-242	9	2.33092E-05
am-241	9	9.38896E-06

am-243	9	1.54707E-06
mo-95	9	4.65165E-05
tc-99	9	4.65768E-05
ru-101	9	4.28114E-05
rh-103	9	2.52494E-05
ag-109	9	3.12290E-06
cs-133	9	4.82368E-05
nd-143	9	3.36905E-05
nd-145	9	2.75451E-05
sm-147	9	8.47601E-06
sm-149	9	1.51917E-07
sm-150	9	1.09487E-05
sm-151	9	4.75262E-07
sm-152	9	3.88193E-06
eu-153	9	3.80365E-06
gd-155	9	1.42831E-07
o	9	4.56500E-02
u-235	10	2.86708E-04
u-234	10	5.95443E-06
u-236	10	1.09759E-04
np-237	10	1.08718E-05
u-238	10	2.14278E-02
pu-238	10	3.36686E-06
pu-239	10	1.26315E-04
pu-240	10	4.58394E-05
pu-241	10	2.26439E-05
pu-242	10	9.01748E-06
am-241	10	6.86515E-06
am-243	10	1.58653E-06
mo-95	10	4.68072E-05
tc-99	10	4.68736E-05
ru-101	10	4.31207E-05
rh-103	10	2.53893E-05
ag-109	10	3.15718E-06
cs-133	10	4.85246E-05
nd-143	10	3.38342E-05
nd-145	10	2.77120E-05
sm-147	10	8.50568E-06
sm-149	10	1.51994E-07
sm-150	10	1.10338E-05
sm-151	10	4.76902E-07
sm-152	10	3.90275E-06
eu-153	10	3.83861E-06
gd-155	10	1.44545E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.29028E-06
mo-95	9	6.70640E-05
tc-99	9	6.75531E-05
ru-101	9	6.63580E-05
rh-103	9	3.37394E-05
ag-109	9	5.91330E-06
cs-133	9	6.82335E-05
nd-143	9	4.12568E-05
nd-145	9	3.90086E-05
sm-147	9	9.88525E-06
sm-149	9	1.55355E-07
sm-150	9	1.72598E-05
sm-151	9	5.93533E-07
sm-152	9	5.25514E-06
eu-153	9	6.40394E-06
gd-155	9	2.85622E-07
o	9	4.56500E-02
u-235	10	1.17347E-04
u-234	10	4.49451E-06
u-236	10	1.27604E-04
np-237	10	1.81388E-05
u-238	10	2.10564E-02
pu-238	10	9.07228E-06
pu-239	10	1.25293E-04
pu-240	10	6.34417E-05
pu-241	10	3.05907E-05
pu-242	10	2.35369E-05
am-241	10	9.40792E-06
am-243	10	6.37668E-06
mo-95	10	6.73125E-05
tc-99	10	6.78100E-05
ru-101	10	6.66847E-05
rh-103	10	3.38250E-05
ag-109	10	5.95136E-06
cs-133	10	6.84683E-05
nd-143	10	4.13065E-05
nd-145	10	3.91537E-05
sm-147	10	9.89353E-06
sm-149	10	1.55342E-07
sm-150	10	1.73411E-05
sm-151	10	5.95123E-07
sm-152	10	5.27066E-06
eu-153	10	6.43702E-06
gd-155	10	2.87598E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07
sm-150	15	1.03985E-05

nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07
sm-150	15	1.64364E-05

sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	2.95786E-04	u-235	16	1.28868E-04
u-234	16	6.01995E-06	u-234	16	4.61473E-06
u-236	16	1.08484E-04	u-236	16	1.26929E-04
np-237	16	1.05576E-05	np-237	16	1.75405E-05
u-238	16	2.14403E-02	u-238	16	2.10947E-02
pu-238	16	3.18729E-06	pu-238	16	8.47491E-06
pu-239	16	1.26003E-04	pu-239	16	1.25829E-04
pu-240	16	4.49169E-05	pu-240	16	6.22664E-05
pu-241	16	2.21223E-05	pu-241	16	3.01502E-05
pu-242	16	8.54108E-06	pu-242	16	2.20233E-05
am-241	16	6.70333E-06	am-241	16	9.27192E-06
am-243	16	1.46640E-06	am-243	16	5.79615E-06
mo-95	16	4.59055E-05	mo-95	16	6.55440E-05
tc-99	16	4.59531E-05	tc-99	16	6.60042E-05
ru-101	16	4.21634E-05	ru-101	16	6.44717E-05
rh-103	16	2.49540E-05	rh-103	16	3.32235E-05
ag-109	16	3.05145E-06	ag-109	16	5.68336E-06
cs-133	16	4.76263E-05	cs-133	16	6.68042E-05
nd-143	16	3.33857E-05	nd-143	16	4.08831E-05
nd-145	16	2.71944E-05	nd-145	16	3.81711E-05
sm-147	16	8.41213E-06	sm-147	16	9.82705E-06
sm-149	16	1.51733E-07	sm-149	16	1.55254E-07
sm-150	16	1.07706E-05	sm-150	16	1.67852E-05
sm-151	16	4.71826E-07	sm-151	16	5.84518E-07
sm-152	16	3.83818E-06	sm-152	16	5.15857E-06
eu-153	16	3.73026E-06	eu-153	16	6.21185E-06
gd-155	16	1.39262E-07	gd-155	16	2.73954E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.01386E-04	u-235	17	1.33757E-04
u-234	17	6.06086E-06	u-234	17	4.66403E-06
u-236	17	1.07684E-04	u-236	17	1.26625E-04
np-237	17	1.03644E-05	np-237	17	1.72919E-05
u-238	17	2.14489E-02	u-238	17	2.11097E-02
pu-238	17	3.07992E-06	pu-238	17	8.23459E-06
pu-239	17	1.25790E-04	pu-239	17	1.26004E-04
pu-240	17	4.43361E-05	pu-240	17	6.17698E-05
pu-241	17	2.18034E-05	pu-241	17	2.99471E-05
pu-242	17	8.25503E-06	pu-242	17	2.14160E-05
am-241	17	6.60169E-06	am-241	17	9.21142E-06
am-243	17	1.39559E-06	am-243	17	5.56659E-06
mo-95	17	4.53486E-05	mo-95	17	6.48517E-05
tc-99	17	4.53841E-05	tc-99	17	6.53023E-05
ru-101	17	4.15762E-05	ru-101	17	6.35817E-05
rh-103	17	2.46844E-05	rh-103	17	3.29712E-05
ag-109	17	2.98709E-06	ag-109	17	5.57487E-06
cs-133	17	4.70582E-05	cs-133	17	6.61324E-05
nd-143	17	3.31054E-05	nd-143	17	4.06814E-05
nd-145	17	2.68757E-05	nd-145	17	3.77794E-05
sm-147	17	8.35228E-06	sm-147	17	9.79886E-06
sm-149	17	1.51503E-07	sm-149	17	1.55309E-07
sm-150	17	1.06072E-05	sm-150	17	1.65581E-05
sm-151	17	4.68713E-07	sm-151	17	5.80402E-07
sm-152	17	3.79885E-06	sm-152	17	5.11326E-06
eu-153	17	3.66225E-06	eu-153	17	6.12028E-06
gd-155	17	1.36042E-07	gd-155	17	2.68454E-07

o	17	4.56500E-02
u-235	18	3.46030E-04
u-234	18	6.37431E-06
u-236	18	1.01196E-04
np-237	18	8.94635E-06
u-238	18	2.15087E-02
pu-238	18	2.33991E-06
pu-239	18	1.23673E-04
pu-240	18	3.97918E-05
pu-241	18	1.93309E-05
pu-242	18	6.26699E-06
am-241	18	5.81235E-06
am-243	18	9.37737E-07
mo-95	18	4.11451E-05
tc-99	18	4.10961E-05
ru-101	18	3.72138E-05
rh-103	18	2.25865E-05
ag-109	18	2.52053E-06
cs-133	18	4.27969E-05
nd-143	18	3.08690E-05
nd-145	18	2.44608E-05
sm-147	18	7.87009E-06
sm-149	18	1.49665E-07
sm-150	18	9.38715E-06
sm-151	18	4.45302E-07
sm-152	18	3.49201E-06
eu-153	18	3.15933E-06
gd-155	18	1.13183E-07
o	18	4.56500E-02
u-235	19	3.50231E-04
u-234	19	6.40274E-06
u-236	19	1.00567E-04
np-237	19	8.81930E-06
u-238	19	2.15136E-02
pu-238	19	2.27866E-06
pu-239	19	1.23420E-04
pu-240	19	3.93722E-05
pu-241	19	1.90952E-05
pu-242	19	6.10098E-06
am-241	19	5.73775E-06
am-243	19	9.01896E-07
mo-95	19	4.07586E-05
tc-99	19	4.07030E-05
ru-101	19	3.68190E-05
rh-103	19	2.23897E-05
ag-109	19	2.47949E-06
cs-133	19	4.23943E-05
nd-143	19	3.06546E-05
nd-145	19	2.42394E-05
sm-147	19	7.82323E-06
sm-149	19	1.49510E-07
sm-150	19	9.27789E-06
sm-151	19	4.43223E-07
sm-152	19	3.46344E-06
eu-153	19	3.11421E-06
gd-155	19	1.11215E-07
o	19	4.56500E-02
u-235	20	4.16911E-04
u-234	20	6.83812E-06
u-236	20	9.02470E-05

o	17	4.56500E-02
u-235	18	1.76480E-04
u-234	18	5.06940E-06
u-236	18	1.23020E-04
np-237	18	1.52520E-05
u-238	18	2.12230E-02
pu-238	18	6.41840E-06
pu-239	18	1.27080E-04
pu-240	18	5.73210E-05
pu-241	18	2.81460E-05
pu-242	18	1.68520E-05
am-241	18	8.64260E-06
am-243	18	3.93400E-06
mo-95	18	5.90240E-05
tc-99	18	5.93890E-05
ru-101	18	5.67040E-05
rh-103	18	3.07930E-05
ag-109	18	4.73680E-06
cs-133	18	6.06210E-05
nd-143	18	3.89460E-05
nd-145	18	3.46010E-05
sm-147	18	9.50290E-06
sm-149	18	1.54810E-07
sm-150	18	1.47530E-05
sm-151	18	5.46920E-07
sm-152	18	4.73840E-06
eu-153	18	5.38000E-06
gd-155	18	2.25520E-07
o	18	4.56500E-02
u-235	19	1.77706E-04
u-234	19	5.08052E-06
u-236	19	1.22900E-04
np-237	19	1.51968E-05
u-238	19	2.12259E-02
pu-238	19	6.37288E-06
pu-239	19	1.27101E-04
pu-240	19	5.71914E-05
pu-241	19	2.80927E-05
pu-242	19	1.67374E-05
am-241	19	8.62487E-06
am-243	19	3.89526E-06
mo-95	19	5.88695E-05
tc-99	19	5.92342E-05
ru-101	19	5.65258E-05
rh-103	19	3.07315E-05
ag-109	19	4.71522E-06
cs-133	19	6.04748E-05
nd-143	19	3.88945E-05
nd-145	19	3.45154E-05
sm-147	19	9.49334E-06
sm-149	19	1.54774E-07
sm-150	19	1.47050E-05
sm-151	19	5.46072E-07
sm-152	19	4.72856E-06
eu-153	19	5.36007E-06
gd-155	19	2.24405E-07
o	19	4.56500E-02
u-235	20	2.49341E-04
u-234	20	5.67375E-06
u-236	20	1.14689E-04

np-237	20	6.95894E-06	np-237	20	1.22277E-05
u-238	20	2.15927E-02	u-238	20	2.13685E-02
pu-238	20	1.47515E-06	pu-238	20	4.19952E-06
pu-239	20	1.18399E-04	pu-239	20	1.27191E-04
pu-240	20	3.28333E-05	pu-240	20	4.97063E-05
pu-241	20	1.53497E-05	pu-241	20	2.46120E-05
pu-242	20	3.88900E-06	pu-242	20	1.11953E-05
am-241	20	4.56083E-06	am-241	20	7.50128E-06
am-243	20	4.72126E-07	am-243	20	2.17074E-06
mo-95	20	3.49230E-05	mo-95	20	5.06359E-05
tc-99	20	3.47643E-05	tc-99	20	5.07842E-05
ru-101	20	3.09670E-05	ru-101	20	4.72432E-05
rh-103	20	1.93435E-05	rh-103	20	2.71808E-05
ag-109	20	1.89351E-06	ag-109	20	3.62246E-06
cs-133	20	3.63889E-05	cs-133	20	5.23539E-05
nd-143	20	2.72109E-05	nd-143	20	3.56290E-05
nd-145	20	2.08549E-05	nd-145	20	2.98908E-05
sm-147	20	7.05133E-06	sm-147	20	8.86978E-06
sm-149	20	1.46096E-07	sm-149	20	1.53204E-07
sm-150	20	7.65119E-06	sm-150	20	1.21793E-05
sm-151	20	4.11379E-07	sm-151	20	4.98485E-07
sm-152	20	3.02052E-06	sm-152	20	4.16968E-06
eu-153	20	2.45331E-06	eu-153	20	4.31203E-06
gd-155	20	8.39151E-08	gd-155	20	1.68145E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	4.87616E-04	u-235	21	3.42125E-04
u-234	21	7.27073E-06	u-234	21	6.34729E-06
u-236	21	7.87168E-05	u-236	21	1.01780E-04
np-237	21	5.27372E-06	np-237	21	9.06462E-06
u-238	21	2.16611E-02	u-238	21	2.15042E-02
pu-238	21	8.92156E-07	pu-238	21	2.39807E-06
pu-239	21	1.10787E-04	pu-239	21	1.23898E-04
pu-240	21	2.61530E-05	pu-240	21	4.01849E-05
pu-241	21	1.15210E-05	pu-241	21	1.95482E-05
pu-242	21	2.25916E-06	pu-242	21	6.42383E-06
am-241	21	3.37880E-06	am-241	21	5.88140E-06
am-243	21	2.17889E-07	am-243	21	9.71809E-07
mo-95	21	2.91686E-05	mo-95	21	4.15035E-05
tc-99	21	2.89385E-05	tc-99	21	4.14610E-05
ru-101	21	2.54038E-05	ru-101	21	3.75807E-05
rh-103	21	1.62211E-05	rh-103	21	2.27692E-05
ag-109	21	1.38506E-06	ag-109	21	2.55892E-06
cs-133	21	3.04307E-05	cs-133	21	4.31577E-05
nd-143	21	2.34785E-05	nd-143	21	3.10670E-05
nd-145	21	1.74885E-05	nd-145	21	2.46671E-05
sm-147	21	6.17711E-06	sm-147	21	7.91360E-06
sm-149	21	1.41780E-07	sm-149	21	1.49830E-07
sm-150	21	6.12144E-06	sm-150	21	9.48965E-06
sm-151	21	3.81082E-07	sm-151	21	4.47310E-07
sm-152	21	2.56093E-06	sm-152	21	3.51868E-06
eu-153	21	1.85107E-06	eu-153	21	3.20137E-06
gd-155	21	6.19905E-08	gd-155	21	1.15037E-07
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A122223 Serial No.: **14** from gen_ax03.mod			B50A122223 Serial No.: **31** from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06
gd-155	2	8.84830E-08	gd-155	2	1.82948E-07

o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.87379E-04	u-235	4	1.20106E-04
u-234	4	5.95927E-06	u-234	4	4.52351E-06
u-236	4	1.09667E-04	u-236	4	1.27453E-04
np-237	4	1.08485E-05	np-237	4	1.79935E-05
u-238	4	2.14287E-02	u-238	4	2.10660E-02
pu-238	4	3.35332E-06	pu-238	4	8.92337E-06
pu-239	4	1.26294E-04	pu-239	4	1.25435E-04
pu-240	4	4.57712E-05	pu-240	4	6.31662E-05
pu-241	4	2.26062E-05	pu-241	4	3.04841E-05
pu-242	4	8.98171E-06	pu-242	4	2.31528E-05
am-241	4	6.85337E-06	am-241	4	9.37566E-06
am-243	4	1.57742E-06	am-243	4	6.23061E-06
mo-95	4	4.67405E-05	mo-95	4	6.68865E-05
tc-99	4	4.68055E-05	tc-99	4	6.73704E-05
ru-101	4	4.30497E-05	ru-101	4	6.61316E-05
rh-103	4	2.53573E-05	rh-103	4	3.36795E-05
ag-109	4	3.14930E-06	ag-109	4	5.88656E-06
cs-133	4	4.84586E-05	cs-133	4	6.80680E-05
nd-143	4	3.38013E-05	nd-143	4	4.12203E-05
nd-145	4	2.76737E-05	nd-145	4	3.89081E-05
sm-147	4	8.49892E-06	sm-147	4	9.87905E-06
sm-149	4	1.51976E-07	sm-149	4	1.55346E-07
sm-150	4	1.10143E-05	sm-150	4	1.72034E-05
sm-151	4	4.76526E-07	sm-151	4	5.92423E-07
sm-152	4	3.89799E-06	sm-152	4	5.24413E-06
eu-153	4	3.83056E-06	eu-153	4	6.38097E-06
gd-155	4	1.44151E-07	gd-155	4	2.84243E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.75342E-04	u-235	5	1.10300E-04
u-234	5	5.87119E-06	u-234	5	4.41661E-06
u-236	5	1.11293E-04	u-236	5	1.27918E-04

np-237	5	1.12725E-05
u-238	5	2.14097E-02
pu-238	5	3.60446E-06
pu-239	5	1.26648E-04
pu-240	5	4.70168E-05
pu-241	5	2.32430E-05
pu-242	5	9.64128E-06
am-241	5	7.06114E-06
am-243	5	1.74750E-06
mo-95	5	4.79466E-05
tc-99	5	4.80375E-05
ru-101	5	4.43354E-05
rh-103	5	2.59299E-05
ag-109	5	3.29278E-06
cs-133	5	4.96630E-05
nd-143	5	3.43855E-05
nd-145	5	2.83615E-05
sm-147	5	8.61782E-06
sm-149	5	1.52386E-07
sm-150	5	1.13730E-05
sm-151	5	4.83356E-07
sm-152	5	3.98202E-06
eu-153	5	3.97982E-06
gd-155	5	1.51380E-07
o	5	4.56500E-02
u-235	6	2.98351E-04
u-234	6	6.03866E-06
u-236	6	1.08118E-04
np-237	6	1.04688E-05
u-238	6	2.14442E-02
pu-238	6	3.13772E-06
pu-239	6	1.25907E-04
pu-240	6	4.46518E-05
pu-241	6	2.19752E-05
pu-242	6	8.40910E-06
am-241	6	6.65678E-06
am-243	6	1.43359E-06
mo-95	6	4.56500E-05
tc-99	6	4.56920E-05
ru-101	6	4.18936E-05
rh-103	6	2.48305E-05
ag-109	6	3.02184E-06
cs-133	6	4.73667E-05
nd-143	6	3.32575E-05
nd-145	6	2.70480E-05
sm-147	6	8.38483E-06
sm-149	6	1.51633E-07
sm-150	6	1.06957E-05
sm-151	6	4.70396E-07
sm-152	6	3.82009E-06
eu-153	6	3.69918E-06
gd-155	6	1.37780E-07
o	6	4.56500E-02
u-235	7	2.72964E-04
u-234	7	5.85347E-06
u-236	7	1.11609E-04
np-237	7	1.13572E-05
u-238	7	2.14055E-02
pu-238	7	3.65556E-06
pu-239	7	1.26712E-04

np-237	5	1.85133E-05
u-238	5	2.10315E-02
pu-238	5	9.46201E-06
pu-239	5	1.24957E-04
pu-240	5	6.41595E-05
pu-241	5	3.08354E-05
pu-242	5	2.45322E-05
am-241	5	9.48411E-06
am-243	5	6.76531E-06
mo-95	5	6.84593E-05
tc-99	5	6.89365E-05
ru-101	5	6.80813E-05
rh-103	5	3.41970E-05
ag-109	5	6.12343E-06
cs-133	5	6.95133E-05
nd-143	5	4.15680E-05
nd-145	5	3.97676E-05
sm-147	5	9.92889E-06
sm-149	5	1.55272E-07
sm-150	5	1.76967E-05
sm-151	5	6.01907E-07
sm-152	5	5.34231E-06
eu-153	5	6.58200E-06
gd-155	5	2.96319E-07
o	5	4.56500E-02
u-235	6	1.28861E-04
u-234	6	4.61466E-06
u-236	6	1.26930E-04
np-237	6	1.75408E-05
u-238	6	2.10946E-02
pu-238	6	8.47523E-06
pu-239	6	1.25829E-04
pu-240	6	6.22670E-05
pu-241	6	3.01505E-05
pu-242	6	2.20241E-05
am-241	6	9.27200E-06
am-243	6	5.79646E-06
mo-95	6	6.55449E-05
tc-99	6	6.60051E-05
ru-101	6	6.44729E-05
rh-103	6	3.32238E-05
ag-109	6	5.68350E-06
cs-133	6	6.68051E-05
nd-143	6	4.08834E-05
nd-145	6	3.81716E-05
sm-147	6	9.82708E-06
sm-149		1.55254E-07
sm-150	6	1.67855E-05
sm-151	6	5.84523E-07
sm-152	6	5.15863E-06
eu-153	6	6.21197E-06
gd-155	6	2.73961E-07
o	6	4.56500E-02
u-235	7	1.07966E-04
u-234	7	4.38999E-06
u-236	7	1.28008E-04
np-237	7	1.86385E-05
u-238	7	2.10232E-02
pu-238	7	9.59416E-06
pu-239	7	1.24862E-04

pu-240	7	4.72636E-05
pu-241	7	2.33644E-05
pu-242	7	9.77531E-06
am-241	7	7.10146E-06
am-243	7	1.78276E-06
mo-95	7	4.81864E-05
tc-99	7	4.82827E-05
ru-101	7	4.45921E-05
rh-103	7	2.60426E-05
ag-109	7	3.32161E-06
cs-133	7	4.99059E-05
nd-143	7	3.44995E-05
nd-145	7	2.84976E-05
sm-147	7	8.64086E-06
sm-149	7	1.52487E-07
sm-150	7	1.14448E-05
sm-151	7	4.84733E-07
sm-152	7	3.99849E-06
eu-153	7	4.00979E-06
gd-155	7	1.52842E-07
o	7	4.56500E-02
u-235	8	2.94762E-04
u-234	8	6.01253E-06
u-236	8	1.08629E-04
np-237	8	1.05930E-05
u-238	8	2.14388E-02
pu-238	8	3.20719E-06
pu-239	8	1.26040E-04
pu-240	8	4.50218E-05
pu-241	8	2.21813E-05
pu-242	8	8.59405E-06
am-241	8	6.72183E-06
am-243	8	1.47963E-06
mo-95	8	4.60073E-05
tc-99	8	4.60570E-05
ru-101	8	4.22711E-05
rh-103	8	2.50033E-05
ag-109	8	3.06330E-06
cs-133	8	4.77290E-05
nd-143	8	3.34367E-05
nd-145	8	2.72528E-05
sm-147	8	8.42292E-06
sm-149	8	1.51769E-07
sm-150	8	1.08003E-05
sm-151	8	4.72397E-07
sm-152	8	3.84543E-06
eu-153	8	3.74256E-06
gd-155	8	1.39854E-07
o	8	4.56500E-02
u-235	9	2.81203E-04
u-234	9	5.91443E-06
u-236	9	1.10509E-04
np-237	9	1.10647E-05
u-238	9	2.14196E-02
pu-238	9	3.48018E-06
pu-239	9	1.26484E-04
pu-240	9	4.64055E-05
pu-241	9	2.29423E-05
pu-242	9	9.31567E-06
am-241	9	6.96090E-06

pu-240	7	6.43962E-05
pu-241	7	3.09091E-05
pu-242	7	2.48674E-05
am-241	7	9.50780E-06
am-243	7	6.89926E-06
mo-95	7	6.88603E-05
tc-99	7	6.93227E-05
ru-101	7	6.85525E-05
rh-103	7	3.43192E-05
ag-109	7	6.18380E-06
cs-133	7	6.98627E-05
nd-143	7	4.16561E-05
nd-145	7	3.99665E-05
sm-147	7	9.94111E-06
sm-149	7	1.55281E-07
sm-150	7	1.78161E-05
sm-15	7	6.04090E-07
sm-152	7	5.36750E-06
eu-153	7	6.62967E-06
gd-155	7	2.99273E-07
o	7	4.56500E-02
u-235	8	1.25226E-04
u-234	8	4.57748E-06
u-236	8	1.27147E-04
np-237	8	1.77269E-05
u-238	8	2.10825E-02
pu-238	8	8.65812E-06
pu-239	8	1.25676E-04
pu-240	8	6.26409E-05
pu-241	8	3.02999E-05
pu-242	8	2.24844E-05
am-241	8	9.31601E-06
am-243	8	5.97249E-06
mo-95	8	6.60755E-05
tc-99	8	6.65474E-05
ru-101	8	6.51500E-05
rh-103	8	3.34122E-05
ag-109	8	5.76659E-06
cs-133	8	6.73224E-05
nd-143	8	4.10320E-05
nd-145	8	3.84725E-05
sm-147	8	9.84835E-06
sm-149	8	1.55215E-07
sm-150	8	1.69567E-05
sm-151	8	5.87622E-07
sm-152	8	5.19368E-06
eu-153	8	6.28077E-06
gd-155	8	2.78162E-07
o	8	4.56500E-02
u-235	9	1.13982E-04
u-234	9	4.45840E-06
u-236	9	1.27767E-04
np-237	9	1.83172E-05
u-238	9	2.10443E-02
pu-238	9	9.25771E-06
pu-239	9	1.25124E-04
pu-240	9	6.37786E-05
pu-241	9	3.07185E-05
pu-242	9	2.40158E-05
am-241	9	9.44602E-06

am-243	9	1.66292E-06
mo-95	9	4.73570E-05
tc-99	9	4.74350E-05
ru-101	9	4.37062E-05
rh-103	9	2.56516E-05
ag-109	9	3.22236E-06
cs-133	9	4.90708E-05
nd-143	9	3.41025E-05
nd-145	9	2.80263E-05
sm-147	9	8.56051E-06
sm-149	9	1.52160E-07
sm-150	9	1.11965E-05
sm-151	9	4.80007E-07
sm-152	9	3.94143E-06
eu-153	9	3.90601E-06
gd-155	9	1.47820E-07
o	9	4.56500E-02
u-235	10	2.83109E-04
u-234	10	5.92834E-06
u-236	10	1.10252E-04
np-237	10	1.09976E-05
u-238	10	2.14226E-02
pu-238	10	3.44051E-06
pu-239	10	1.26427E-04
pu-240	10	4.62079E-05
pu-241	10	2.28416E-05
pu-242	10	9.21153E-06
am-241	10	6.92796E-06
am-243	10	1.63614E-06
mo-95	10	4.71661E-05
tc-99	10	4.72400E-05
ru-101	10	4.35029E-05
rh-103	10	2.55609E-05
ag-109	10	3.19968E-06
cs-133	10	4.88805E-05
nd-143	10	3.40099E-05
nd-145	10	2.79175E-05
sm-147	10	8.54166E-06
sm-149	10	1.52098E-07
sm-150	10	1.11397E-05
sm-151	10	4.78929E-07
sm-152	10	3.92813E-06
eu-153	10	3.88237E-06
gd-155	10	1.46678E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05
ru-101	11	4.14529E-05

am-243	9	6.56023E-06
mo-95	9	6.78373E-05
tc-99	9	6.83415E-05
ru-101	9	6.73617E-05
rh-103	9	3.40032E-05
ag-109	9	6.03165E-06
cs-133	9	6.89603E-05
nd-143	9	4.14173E-05
nd-145	9	3.94537E-05
sm-147	9	9.90994E-06
sm-149	9	1.55281E-07
sm-150	9	1.75114E-05
sm-151	9	5.98410E-07
sm-152	9	5.30357E-06
eu-153	9	6.50641E-06
gd-155	9	2.91741E-07
o	9	4.56500E-02
u-235	10	1.15220E-04
u-234	10	4.47190E-06
u-236	10	1.27710E-04
np-237	10	1.82515E-05
u-238	10	2.10487E-02
pu-238	10	9.18921E-06
pu-239	10	1.25185E-04
pu-240	10	6.36534E-05
pu-241	10	3.06733E-05
pu-242	10	2.38397E-05
am-241	10	9.43233E-06
am-243	10	6.49215E-06
mo-95	10	6.76403E-05
tc-99	10	6.81452E-05
ru-101	10	6.71144E-05
rh-103	10	3.39376E-05
ag-109	10	6.00177E-06
cs-133	10	6.87778E-05
nd-143	10	4.13738E-05
nd-145	10	3.93443E-05
sm-147	10	9.90389E-06
sm-149	10	1.55302E-07
sm-150	10	1.74487E-05
sm-151	10	5.97207E-07
sm-152	10	5.29123E-06
eu-153	10	6.48083E-06
gd-155	10	2.90211E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05
ru-101	11	6.40475E-05

rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05
nd-143	13	3.22052E-05	nd-143	13	4.02130E-05

nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07
sm-150	15	1.03985E-05	sm-150	15	1.64364E-05

sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	2.95786E-04
u-234	16	6.01995E-06
u-236	16	1.08484E-04
np-237	16	1.05576E-05
u-238	16	2.14403E-02
pu-238	16	3.18729E-06
pu-239	16	1.26003E-04
pu-240	16	4.49169E-05
pu-241	16	2.21223E-05
pu-242	16	8.54108E-06
am-241	16	6.70333E-06
am-243	16	1.46640E-06
mo-95	16	4.59055E-05
tc-99	16	4.59531E-05
ru-101	16	4.21634E-05
rh-103	16	2.49540E-05
ag-109	16	3.05145E-06
cs-133	16	4.76263E-05
nd-143	16	3.33857E-05
nd-145	16	2.71944E-05
sm-147	16	8.41213E-06
sm-149	16	1.51733E-07
sm-150	16	1.07706E-05
sm-151	16	4.71826E-07
sm-152	16	3.83818E-06
eu-153	16	3.73026E-06
gd-155	16	1.39262E-07
o	16	4.56500E-02
u-235	17	3.25113E-04
u-234	17	6.22880E-06
u-236	17	1.04316E-04
np-237	17	9.59600E-06
u-238	17	2.14814E-02
pu-238	17	2.66735E-06
pu-239	17	1.24787E-04
pu-240	17	4.19145E-05
pu-241	17	2.05062E-05
pu-242	17	7.14936E-06
am-241	17	6.18694E-06
am-243	17	1.13367E-06
mo-95	17	4.30942E-05
tc-99	17	4.30826E-05
ru-101	17	3.92191E-05
rh-103	17	2.35711E-05
ag-109	17	2.73221E-06
cs-133	17	4.47589E-05
nd-143	17	3.19269E-05
nd-145	17	2.55849E-05
sm-147	17	8.10262E-06
sm-149	17	1.50682E-07
sm-150	17	9.94777E-06
sm-151	17	4.56286E-07
sm-152	17	3.63545E-06
eu-153	17	3.38980E-06
gd-155	17	1.23486E-07

sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.28868E-04
u-234	16	4.61473E-06
u-236	16	1.26929E-04
np-237	16	1.75405E-05
u-238	16	2.10947E-02
pu-238	16	8.47491E-06
pu-239	16	1.25829E-04
pu-240	16	6.22664E-05
pu-241	16	3.01502E-05
pu-242	16	2.20233E-05
am-241	16	9.27192E-06
am-243	16	5.79615E-06
mo-95	16	6.55440E-05
tc-99	16	6.60042E-05
ru-101	16	6.44717E-05
rh-103	16	3.32235E-05
ag-109	16	5.68336E-06
cs-133	16	6.68042E-05
nd-143	16	4.08831E-05
nd-145	16	3.81711E-05
sm-147	16	9.82705E-06
sm-149	16	1.55254E-07
sm-150	16	1.67852E-05
sm-151	16	5.84518E-07
sm-152	16	5.15857E-06
eu-153	16	6.21185E-06
gd-155	16	2.73954E-07
o	16	4.56500E-02
u-235	17	1.50731E-04
u-234	17	4.83091E-06
u-236	17	1.25349E-04
np-237	17	1.64549E-05
u-238	17	2.11566E-02
pu-238	17	7.45492E-06
pu-239	17	1.26509E-04
pu-240	17	6.00272E-05
pu-241	17	2.92753E-05
pu-242	17	1.94574E-05
am-241	17	8.99925E-06
am-243	17	4.84519E-06
mo-95	17	6.24199E-05
tc-99	17	6.28100E-05
ru-101	17	6.06755E-05
rh-103	17	3.21027E-05
ag-109	17	5.21993E-06
cs-133	17	6.38543E-05
nd-143	17	4.00358E-05
nd-145	17	3.64720E-05
sm-147	17	9.69093E-06
sm-149	17	1.55196E-07
sm-150	17	1.58064E-05
sm-151	17	5.66626E-07
sm-152	17	4.95778E-06
eu-153	17	5.81268E-06
gd-155	17	2.50406E-07

o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	3.78622E-04	u-235	18	2.01795E-04
u-234	18	6.59104E-06	u-234	18	5.28939E-06
u-236	18	9.62608E-05	u-236	18	1.20393E-04
np-237	18	7.99286E-06	np-237	18	1.41418E-05
u-238	18	2.15505E-02	u-238	18	2.12791E-02
pu-238	18	1.90148E-06	pu-238	18	5.54134E-06
pu-239	18	1.21529E-04	pu-239	18	1.27377E-04
pu-240	18	3.65553E-05	pu-240	18	5.46853E-05
pu-241	18	1.75073E-05	pu-241	18	2.69900E-05
pu-242	18	5.06816E-06	pu-242	18	1.46362E-05
am-241	18	5.23559E-06	am-241	18	8.26923E-06
am-243	18	6.90343E-07	am-243	18	3.20494E-06
mo-95	18	3.82240E-05	mo-95	18	5.59479E-05
tc-99	18	3.81175E-05	tc-99	18	5.62465E-05
ru-101	18	3.42463E-05	ru-101	18	5.31625E-05
rh-103	18	2.10816E-05	rh-103	18	2.95227E-05
ag-109	18	2.21598E-06	ag-109	18	4.31307E-06
cs-133	18	3.97882E-05	cs-133	18	5.76377E-05
nd-143	18	2.92010E-05	nd-143	18	3.78292E-05
nd-145	18	2.27726E-05	nd-145	18	3.28811E-05
sm-147	18	7.50245E-06	sm-147	18	9.29514E-06
sm-149	18	1.48163E-07	sm-149	18	1.54377E-07
sm-150	18	8.56187E-06	sm-150	18	1.37982E-05
sm-151	18	4.29333E-07	sm-151	18	5.29166E-07
sm-152	18	3.27360E-06	sm-152	18	4.53024E-06
eu-153	18	2.82133E-06	eu-153	18	4.98387E-06
gd-155	18	9.87156E-08	gd-155	18	2.03684E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	3.88048E-04	u-235	19	2.11262E-04
u-234	19	6.65290E-06	u-234	19	5.36896E-06
u-236	19	9.48099E-05	u-236	19	1.19319E-04
np-237	19	7.73267E-06	np-237	19	1.37442E-05
u-238	19	2.15608E-02	u-238	19	2.12979E-02
pu-238	19	1.78924E-06	pu-238	19	5.24507E-06
pu-239	19	1.20825E-04	pu-239	19	1.27420E-04
pu-240	19	3.56335E-05	pu-240	19	5.36992E-05
pu-241	19	1.69808E-05	pu-241	19	2.65458E-05
pu-242	19	4.75896E-06	pu-242	19	1.38840E-05
am-241	19	5.06932E-06	am-241	19	8.12203E-06
am-243	19	6.30645E-07	am-243	19	2.96808E-06
mo-95	19	3.74038E-05	mo-95	19	5.48440E-05
tc-99	19	3.72877E-05	tc-99	19	5.51094E-05
ru-101	19	3.34284E-05	ru-101	19	5.19171E-05
rh-103	19	2.06545E-05	rh-103	19	2.90529E-05
ag-109	19	2.13402E-06	ag-109	19	4.16509E-06
cs-133	19	3.89436E-05	cs-133	19	5.65370E-05
nd-143	19	2.87197E-05	nd-143	19	3.73995E-05
nd-145	19	2.22987E-05	nd-145	19	3.22640E-05
sm-147	19	7.39520E-06	sm-147	19	9.21476E-06
sm-149	19	1.47753E-07	sm-149	19	1.54301E-07
sm-150	19	8.33328E-06	sm-150	19	1.34608E-05
sm-151	19	4.25027E-07	sm-151	19	5.22823E-07
sm-152	19	3.21151E-06	sm-152	19	4.45610E-06
eu-153	19	2.72881E-06	eu-153	19	4.84383E-06
gd-155	19	9.49172E-08	gd-155	19	1.96042E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.63519E-04	u-235	20	2.93307E-04
u-234	20	7.12538E-06	u-234	20	6.00200E-06
u-236	20	8.26978E-05	u-236	20	1.08836E-04

np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)
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B32A112233
Serial No.: 15 from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	1.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06

B50A112233
Serial No.: 32 from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06

gd-155	2	8.84830E-08	gd-155	2	1.82948E-07
o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.87215E-04	u-235	4	1.21538E-04
u-234	4	5.95809E-06	u-234	4	4.53865E-06
u-236	4	1.09689E-04	u-236	4	1.27369E-04
np-237	4	1.08542E-05	np-237	4	1.79184E-05
u-238	4	2.14285E-02	u-238	4	2.10706E-02
pu-238	4	3.35663E-06	pu-238	4	8.84794E-06
pu-239	4	1.26299E-04	pu-239	4	1.25505E-04
pu-240	4	4.57879E-05	pu-240	4	6.30207E-05
pu-241	4	2.26154E-05	pu-241	4	3.04325E-05
pu-242	4	8.99046E-06	pu-242	4	2.29612E-05
am-241	4	6.85626E-06	am-241	4	9.35904E-06
am-243	4	1.57965E-06	am-243	4	6.15691E-06
mo-95	4	4.67569E-05	mo-95	4	6.66588E-05
tc-99	4	4.68222E-05	tc-99	4	6.71383E-05
ru-101	4	4.30671E-05	ru-101	4	6.58520E-05
rh-103	4	2.53651E-05	rh-103	4	3.36044E-05
ag-109	4	3.15123E-06	ag-109	4	5.85289E-06
cs-133	4	4.84748E-05	cs-133	4	6.78593E-05
nd-143	4	3.38094E-05	nd-143	4	4.11712E-05
nd-145	4	2.76831E-05	nd-145	4	3.87840E-05
sm-147	4	8.50058E-06	sm-147	4	9.87077E-06
sm-149	4	1.51980E-07	sm-149	4	1.55313E-07
sm-150	4	1.10190E-05	sm-150	4	1.71334E-05
sm-151	4	4.76618E-07	sm-151	4	5.91042E-07
sm-152	4	3.89915E-06	sm-152	4	5.23010E-06
eu-153	4	3.83253E-06	eu-153	4	6.35248E-06
gd-155	4	1.44248E-07	gd-155	4	2.82523E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.75197E-04	u-235	5	1.11515E-04
u-234	5	5.87011E-06	u-234	5	4.43056E-06

u-236	5	1.11312E-04	u-236	5	1.27870E-04
np-237	5	1.12776E-05	np-237	5	1.84484E-05
u-238	5	2.14095E-02	u-238	5	2.10357E-02
pu-238	5	3.60756E-06	pu-238	5	9.39425E-06
pu-239	5	1.26652E-04	pu-239	5	1.25010E-04
pu-240	5	4.70319E-05	pu-240	5	6.40334E-05
pu-241	5	2.32503E-05	pu-241	5	3.07984E-05
pu-242	5	9.64939E-06	pu-242	5	2.43616E-05
am-241	5	7.06359E-06	am-241	5	9.47182E-06
am-243	5	1.74962E-06	am-243	5	6.69699E-06
mo-95	5	4.79612E-05	mo-95	5	6.82501E-05
tc-99	5	4.80523E-05	tc-99	5	6.87381E-05
ru-101	5	4.43509E-05	ru-101	5	6.78438E-05
rh-103	5	2.59367E-05	rh-103	5	3.41332E-05
ag-109	5	3.29453E-06	ag-109	5	6.09264E-06
cs-133	5	4.96777E-05	cs-133	5	6.93299E-05
nd-143	5	3.43924E-05	nd-143	5	4.15171E-05
nd-145	5	2.83698E-05	nd-145	5	3.96650E-05
sm-147	5	8.61922E-06	sm-147	5	9.92253E-06
sm-149	5	1.52392E-07	sm-149	5	1.55268E-07
sm-150	5	1.13773E-05	sm-150	5	1.76355E-05
sm-151	5	4.83439E-07	sm-151	5	6.00764E-07
sm-152	5	3.98302E-06	sm-152	5	5.32927E-06
eu-153	5	3.98164E-06	eu-153	5	6.55712E-06
gd-155	5	1.51468E-07	gd-155	5	2.94800E-07
o	5	4.56500E-02	o	5	4.56500E-02
u-235	6	2.98231E-04	u-235	6	1.29968E-04
u-234	6	6.03778E-06	u-234	6	4.62581E-06
u-236	6	1.08135E-04	u-236	6	1.26863E-04
np-237	6	1.04730E-05	np-237	6	1.74845E-05
u-238	6	2.14440E-02	u-238	6	2.10983E-02
pu-238	6	3.14002E-06	pu-238	6	8.42028E-06
pu-239	6	1.25911E-04	pu-239	6	1.25872E-04
pu-240	6	4.46643E-05	pu-240	6	6.21541E-05
pu-241	6	2.19821E-05	pu-241	6	3.01028E-05
pu-242	6	8.41524E-06	pu-242	6	2.18853E-05
am-241	6	6.65896E-06	am-241	6	9.25834E-06
am-243	6	1.43511E-06	am-243	6	5.74383E-06
mo-95	6	4.56619E-05	mo-95	6	6.53899E-05
tc-99	6	4.57042E-05	tc-99	6	6.58464E-05
ru-101	6	4.19062E-05	ru-101	6	6.42693E-05
rh-103	6	2.48362E-05	rh-103	6	3.31666E-05
ag-109	6	3.02322E-06	ag-109	6	5.65867E-06
cs-133	6	4.73788E-05	cs-133	6	6.66508E-05
nd-143	6	3.32635E-05	nd-143	6	4.08373E-05
nd-145	6	2.70549E-05	nd-145	6	3.80814E-05
sm-147	6	8.38612E-06	sm-147	6	9.82079E-06
sm-149	6	1.51638E-07	sm-149	6	1.55282E-07
sm-150	6	1.06992E-05	sm-150	6	1.67338E-05
sm-151	6	4.70463E-07	sm-151	6	5.83608E-07
sm-152	6	3.82094E-06	sm-152	6	5.14821E-06
eu-153	6	3.70064E-06	eu-153	6	6.19124E-06
gd-155	6	1.37849E-07	gd-155	6	2.72702E-07
o	6	4.56500E-02	o	6	4.56500E-02
u-235	7	2.72867E-04	u-235	7	1.08766E-04
u-234	7	5.85275E-06	u-234	7	4.39904E-06
u-236	7	1.11622E-04	u-236	7	1.27977E-04
np-237	7	1.13606E-05	np-237	7	1.85955E-05
u-238	7	2.14054E-02	u-238	7	2.10261E-02
pu-238	7	3.65764E-06	pu-238	7	9.54848E-06

pu-239	7	1.26714E-04
pu-240	7	4.72736E-05
pu-241	7	2.33694E-05
pu-242	7	9.78079E-06
am-241	7	7.10310E-06
am-243	7	1.78420E-06
mo-95	7	4.81961E-05
tc-99	7	4.82926E-05
ru-101	7	4.46026E-05
rh-103	7	2.60472E-05
ag-109	7	3.32278E-06
cs-133	7	4.99158E-05
nd-143	7	3.45041E-05
nd-145	7	2.85031E-05
sm-147	7	8.64180E-06
sm-149	7	1.52491E-07
sm-150	7	1.14478E-05
sm-151	7	4.84789E-07
sm-152	7	3.99916E-06
eu-153	7	4.01100E-06
gd-155	7	1.52902E-07
o	7	4.56500E-02
u-235	8	2.94695E-04
u-234	8	6.01204E-06
u-236	8	1.08639E-04
np-237	8	1.05953E-05
u-238	8	2.14387E-02
pu-238	8	3.20851E-06
pu-239	8	1.26043E-04
pu-240	8	4.50287E-05
pu-241	8	2.21852E-05
pu-242	8	8.59755E-06
am-241	8	6.72304E-06
am-243	8	1.48050E-06
mo-95	8	4.60140E-05
tc-99	8	4.60639E-05
ru-101	8	4.22782E-05
rh-103	8	2.50066E-05
ag-109	8	3.06408E-06
cs-133	8	4.77357E-05
nd-143	8	3.34401E-05
nd-145	8	2.72566E-05
sm-147	8	8.42363E-06
sm-149	8	1.51771E-07
sm-150	8	1.08022E-05
sm-151	8	4.72435E-07
sm-152	8	3.84591E-06
eu-153	8	3.74337E-06
gd-155	8	1.39893E-07
o	8	4.56500E-02
u-235	9	2.81155E-04
u-234	9	5.91407E-06
u-236	9	1.10516E-04
np-237	9	1.10664E-05
u-238	9	2.14195E-02
pu-238	9	3.48119E-06
pu-239	9	1.26485E-04
pu-240	9	4.64104E-05
pu-241	9	2.29449E-05
pu-242	9	9.31830E-06

pu-239	7	1.24893E-04
pu-240	7	6.43163E-05
pu-241	7	3.08829E-05
pu-242	7	2.47508E-05
am-241	7	9.49961E-06
am-243	7	6.85287E-06
mo-95	7	6.87239E-05
tc-99	7	6.91896E-05
ru-101	7	6.83877E-05
rh-103	7	3.42774E-05
ag-109	7	6.16293E-06
cs-133	7	6.97438E-05
nd-143	7	4.16283E-05
nd-145	7	3.98977E-05
sm-147	7	9.93694E-06
sm-149	7	1.55278E-07
sm-150	7	1.77748E-05
sm-151	7	6.03343E-07
sm-152	7	5.35888E-06
eu-153	7	6.61334E-06
gd-155	7	2.98254E-07
o	7	4.56500E-02
u-235	8	1.25833E-04
u-234	8	4.58378E-06
u-236	8	1.27110E-04
np-237	8	1.76956E-05
u-238	8	2.10845E-02
pu-238	8	8.62734E-06
pu-239	8	1.25703E-04
pu-240	8	6.25782E-05
pu-241	8	3.02765E-05
pu-242	8	2.24072E-05
am-241	8	9.30879E-06
am-243	8	5.94275E-06
mo-95	8	6.59831E-05
tc-99	8	6.64535E-05
ru-101	8	6.50362E-05
rh-103	8	3.33807E-05
ag-109	8	5.75255E-06
cs-133	8	6.72350E-05
nd-143	8	4.10077E-05
nd-145	8	3.84219E-05
sm-147	8	9.84470E-06
sm-149	8	1.55210E-07
sm-150	8	1.69279E-05
sm-151	8	5.87086E-07
sm-152	8	5.18773E-06
eu-153	8	6.26918E-06
gd-155	8	2.77454E-07
o	8	4.56500E-02
u-235	9	1.14388E-04
u-234	9	4.46286E-06
u-236	9	1.27749E-04
np-237	9	1.82956E-05
u-238	9	2.10457E-02
pu-238	9	9.23526E-06
pu-239	9	1.25143E-04
pu-240	9	6.37374E-05
pu-241	9	3.07041E-05
pu-242	9	2.39583E-05

am-241	9	6.96173E-06
am-243	9	1.66360E-06
mo-95	9	4.73618E-05
tc-99	9	4.74399E-05
ru-101	9	4.37113E-05
rh-103	9	2.56539E-05
ag-109	9	3.22293E-06
cs-133	9	4.90755E-05
nd-143	9	3.41048E-05
nd-145	9	2.80290E-05
sm-147	9	8.56098E-06
sm-149	9	1.52162E-07
sm-150	9	1.11979E-05
sm-151	9	4.80034E-07
sm-152	9	3.94177E-06
eu-153	9	3.90661E-06
gd-155	9	1.47849E-07
o	9	4.56500E-02
u-235	10	2.83087E-04
u-234	10	5.92818E-06
u-236	10	1.10255E-04
np-237	10	1.09984E-05
u-238	10	2.14226E-02
pu-238	10	3.44096E-06
pu-239	10	1.26428E-04
pu-240	10	4.62102E-05
pu-241	10	2.28427E-05
pu-242	10	9.21272E-06
am-241	10	6.92833E-06
am-243	10	1.63645E-06
mo-95	10	4.71683E-05
tc-99	10	4.72423E-05
ru-101	10	4.35053E-05
rh-103	10	2.55620E-05
ag-109	10	3.19994E-06
cs-133	10	4.88827E-05
nd-143	10	3.40110E-05
nd-145	10	2.79187E-05
sm-147	10	8.54188E-06
sm-149	10	1.52098E-07
sm-150	10	1.11403E-05
sm-151	10	4.78941E-07
sm-152	10	3.92828E-06
eu-153	10	3.88264E-06
gd-155	10	1.46691E-07
o	10	4.56500E-02
u-235	11	3.02575E-04
u-234	11	6.06955E-06
u-236	11	1.07515E-04
np-237	11	1.03239E-05
u-238	11	2.14508E-02
pu-238	11	3.05760E-06
pu-239	11	1.25743E-04
pu-240	11	4.42123E-05
pu-241	11	2.17369E-05
pu-242	11	8.19551E-06
am-241	11	6.58024E-06
am-243	11	1.38100E-06
mo-95	11	4.52313E-05
tc-99	11	4.52643E-05

am-241	9	9.44159E-06
am-243	9	6.53787E-06
mo-95	9	6.77720E-05
tc-99	9	6.82770E-05
ru-101	9	6.72811E-05
rh-103	9	3.39817E-05
ag-109	9	6.02180E-06
cs-133	9	6.89002E-05
nd-143	9	4.14025E-05
nd-145	9	3.94181E-05
sm-147	9	9.90795E-06
sm-149	9	1.55287E-07
sm-150	9	1.74909E-05
sm-151	9	5.98018E-07
sm-152	9	5.29949E-06
eu-153	9	6.49803E-06
gd-155	9	2.91239E-07
o	9	4.56500E-02
u-235	10	1.15395E-04
u-234	10	4.47378E-06
u-236	10	1.27702E-04
np-237	10	1.82422E-05
u-238	10	2.10494E-02
pu-238	10	9.17956E-06
pu-239	10	1.25194E-04
pu-240	10	6.36359E-05
pu-241	10	3.06667E-05
pu-242	10	2.38148E-05
am-241	10	9.43036E-06
am-243	10	6.48260E-06
mo-95	10	6.76130E-05
tc-99	10	6.81176E-05
ru-101	10	6.70792E-05
rh-103	10	3.39283E-05
ag-109	10	5.99759E-06
cs-133	10	6.87522E-05
nd-143	10	4.13680E-05
nd-145	10	3.93287E-05
sm-147	10	9.90305E-06
sm-149	10	1.55305E-07
sm-150	10	1.74398E-05
sm-151	10	5.97037E-07
sm-152	10	5.28952E-06
eu-153	10	6.47723E-06
gd-155	10	2.89996E-07
o	10	4.56500E-02
u-235	11	1.31181E-04
u-234	11	4.63801E-06
u-236	11	1.26789E-04
np-237	11	1.74229E-05
u-238	11	2.11022E-02
pu-238	11	8.36040E-06
pu-239	11	1.25916E-04
pu-240	11	6.20306E-05
pu-241	11	3.00510E-05
pu-242	11	2.17339E-05
am-241	11	9.24331E-06
am-243	11	5.68659E-06
mo-95	11	6.52200E-05
tc-99	11	6.56732E-05

ru-101	11	4.14529E-05	ru-101	11	6.40475E-05
rh-103	11	2.46275E-05	rh-103	11	3.31039E-05
ag-109	11	2.97362E-06	ag-109	11	5.63164E-06
cs-133	11	4.69380E-05	cs-133	11	6.64831E-05
nd-143	11	3.30459E-05	nd-143	11	4.07868E-05
nd-145	11	2.68086E-05	nd-145	11	3.79834E-05
sm-147	11	8.33953E-06	sm-147	11	9.81387E-06
sm-149	11	1.51451E-07	sm-149	11	1.55308E-07
sm-150	11	1.05726E-05	sm-150	11	1.66773E-05
sm-151	11	4.68059E-07	sm-151	11	5.82601E-07
sm-152	11	3.79058E-06	sm-152	11	5.13690E-06
eu-153	11	3.64785E-06	eu-153	11	6.16855E-06
gd-155	11	1.35369E-07	gd-155	11	2.71331E-07
o	11	4.56500E-02	o	11	4.56500E-02
u-235	12	2.88843E-04	u-235	12	1.19609E-04
u-234	12	5.96982E-06	u-234	12	4.51829E-06
u-236	12	1.09463E-04	u-236	12	1.27481E-04
np-237	12	1.07977E-05	np-237	12	1.80195E-05
u-238	12	2.14307E-02	u-238	12	2.10643E-02
pu-238	12	3.32394E-06	pu-238	12	8.94982E-06
pu-239	12	1.26246E-04	pu-239	12	1.25410E-04
pu-240	12	4.56228E-05	pu-240	12	6.32162E-05
pu-241	12	2.25230E-05	pu-241	12	3.05025E-05
pu-242	12	8.90397E-06	pu-242	12	2.32205E-05
am-241	12	6.82755E-06	am-241	12	9.38144E-06
am-243	12	1.55768E-06	am-243	12	6.25649E-06
mo-95	12	4.65951E-05	mo-95	12	6.69644E-05
tc-99	12	4.66571E-05	tc-99	12	6.74503E-05
ru-101	12	4.28950E-05	ru-101	12	6.62298E-05
rh-103	12	2.52873E-05	rh-103	12	3.37056E-05
ag-109	12	3.13216E-06	ag-109	12	5.89822E-06
cs-133	12	4.83147E-05	cs-133	12	6.81402E-05
nd-143	12	3.37294E-05	nd-143	12	4.12365E-05
nd-145	12	2.75903E-05	nd-145	12	3.89517E-05
sm-147	12	8.48408E-06	sm-147	12	9.88180E-06
sm-149	12	1.51938E-07	sm-149	12	1.55352E-07
sm-150	12	1.09717E-05	sm-150	12	1.72279E-05
sm-151	12	4.75706E-07	sm-151	12	5.92906E-07
sm-152	12	3.88758E-06	sm-152	12	5.24894E-06
eu-153	12	3.81308E-06	eu-153	12	6.39094E-06
gd-155	12	1.43294E-07	gd-155	12	2.84843E-07
o	12	4.56500E-02	o	12	4.56500E-02
u-235	13	3.19575E-04	u-235	13	1.45786E-04
u-234	13	6.19071E-06	u-234	13	4.78265E-06
u-236	13	1.05120E-04	u-236	13	1.25744E-04
np-237	13	9.77348E-06	np-237	13	1.66958E-05
u-238	13	2.14735E-02	u-238	13	2.11441E-02
pu-238	13	2.75979E-06	pu-238	13	7.67412E-06
pu-239	13	1.25045E-04	pu-239	13	1.26361E-04
pu-240	13	4.24759E-05	pu-240	13	6.05282E-05
pu-241	13	2.08170E-05	pu-241	13	2.94918E-05
pu-242	13	7.39878E-06	pu-242	13	2.00061E-05
am-241	13	6.28584E-06	am-241	13	9.06671E-06
am-243	13	1.19122E-06	am-243	13	5.04647E-06
mo-95	13	4.36194E-05	mo-95	13	6.31363E-05
tc-99	13	4.36181E-05	tc-99	13	6.35031E-05
ru-101	13	3.97648E-05	ru-101	13	6.14980E-05
rh-103	13	2.38321E-05	rh-103	13	3.23576E-05
ag-109	13	2.79053E-06	ag-109	13	5.32033E-06
cs-133	13	4.53044E-05	cs-133	13	6.45088E-05

nd-143	13	3.22052E-05	nd-143	13	4.02130E-05
nd-145	13	2.58866E-05	nd-145	13	3.68514E-05
sm-147	13	8.16225E-06	sm-147	13	9.72336E-06
sm-149	13	1.50912E-07	sm-149	13	1.55167E-07
sm-150	13	1.00994E-05	sm-150	13	1.60223E-05
sm-151	13	4.59127E-07	sm-151	13	5.70597E-07
sm-152	13	3.67347E-06	sm-152	13	5.00270E-06
eu-153	13	3.45248E-06	eu-153	13	5.90133E-06
gd-155	13	1.26338E-07	gd-155	13	2.55517E-07
o	13	4.56500E-02	o	13	4.56500E-02
u-235	14	2.95171E-04	u-235	14	1.24849E-04
u-234	14	6.01549E-06	u-234	14	4.57355E-06
u-236	14	1.08571E-04	u-236	14	1.27170E-04
np-237	14	1.05788E-05	np-237	14	1.77464E-05
u-238	14	2.14394E-02	u-238	14	2.10813E-02
pu-238	14	3.19924E-06	pu-238	14	8.67730E-06
pu-239	14	1.26026E-04	pu-239	14	1.25659E-04
pu-240	14	4.49800E-05	pu-240	14	6.26798E-05
pu-241	14	2.21578E-05	pu-241	14	3.03141E-05
pu-242	14	8.57290E-06	pu-242	14	2.25324E-05
am-241	14	6.71446E-06	am-241	14	9.32046E-06
am-243	14	1.47434E-06	am-243	14	5.99105E-06
mo-95	14	4.59667E-05	mo-95	14	6.61337E-05
tc-99	14	4.60156E-05	tc-99	14	6.66063E-05
ru-101	14	4.22282E-05	ru-101	14	6.52209E-05
rh-103	14	2.49837E-05	rh-103	14	3.34318E-05
ag-109	14	3.05857E-06	ag-109	14	5.77534E-06
cs-133	14	4.76881E-05	cs-133	14	6.73770E-05
nd-143	14	3.34164E-05	nd-143	14	4.10470E-05
nd-145	14	2.72295E-05	nd-145	14	3.85040E-05
sm-147	14	8.41863E-06	sm-147	14	9.85064E-06
sm-149	14	1.51755E-07	sm-149	14	1.55221E-07
sm-150	14	1.07884E-05	sm-150	14	1.69746E-05
sm-151	14	4.72169E-07	sm-151	14	5.87960E-07
sm-152	14	3.84254E-06	sm-152	14	5.19738E-06
eu-153	14	3.73766E-06	eu-153	14	6.28800E-06
gd-155	14	1.39618E-07	gd-155	14	2.78604E-07
o	14	4.56500E-02	o	14	4.56500E-02
u-235	15	3.08676E-04	u-235	15	1.36414E-04
u-234	15	6.11382E-06	u-234	15	4.69094E-06
u-236	15	1.06652E-04	u-236	15	1.26444E-04
np-237	15	1.01206E-05	np-237	15	1.71571E-05
u-238	15	2.14597E-02	u-238	15	2.11167E-02
pu-238	15	2.94645E-06	pu-238	15	8.10680E-06
pu-239	15	1.25500E-04	pu-239	15	1.26088E-04
pu-240	15	4.35810E-05	pu-240	15	6.15007E-05
pu-241	15	2.14027E-05	pu-241	15	2.98483E-05
pu-242	15	7.89877E-06	pu-242	15	2.10934E-05
am-241	15	6.47245E-06	am-241	15	9.17890E-06
am-243	15	1.30913E-06	am-243	15	5.44541E-06
mo-95	15	4.46403E-05	mo-95	15	6.44617E-05
tc-99	15	4.46607E-05	tc-99	15	6.49110E-05
ru-101	15	4.08324E-05	ru-101	15	6.31087E-05
rh-103	15	2.43386E-05	rh-103	15	3.28348E-05
ag-109	15	2.90602E-06	ag-109	15	5.51713E-06
cs-133	15	4.63359E-05	cs-133	15	6.57751E-05
nd-143	15	3.27424E-05	nd-143	15	4.05752E-05
nd-145	15	2.64710E-05	nd-145	15	3.75736E-05
sm-147	15	8.27499E-06	sm-147	15	9.78279E-06
sm-149	15	1.51219E-07	sm-149	15	1.55242E-07

sm-150	15	1.03985E-05
sm-151	15	4.64768E-07
sm-152	15	3.74837E-06
eu-153	15	3.57548E-06
gd-155	15	1.32008E-07
o	15	4.56500E-02
u-235	16	2.95786E-04
u-234	16	6.01995E-06
u-236	16	1.08484E-04
np-237	16	1.05576E-05
u-238	16	2.14403E-02
pu-238	16	3.18729E-06
pu-239	16	1.26003E-04
pu-240	16	4.49169E-05
pu-241	16	2.21223E-05
pu-242	16	8.54108E-06
am-241	16	6.70333E-06
am-243	16	1.46640E-06
mo-95	16	4.59055E-05
tc-99	16	4.59531E-05
ru-101	16	4.21634E-05
rh-103	16	2.49540E-05
ag-109	16	3.05145E-06
cs-133	16	4.76263E-05
nd-143	16	3.33857E-05
nd-145	16	2.71944E-05
sm-147	16	8.41213E-06
sm-149	16	1.51733E-07
sm-150	16	1.07706E-05
sm-151	16	4.71826E-07
sm-152	16	3.83818E-06
eu-153	16	3.73026E-06
gd-155	16	1.39262E-07
o	16	4.56500E-02
u-235	17	3.01386E-04
u-234	17	6.06086E-06
u-236	17	1.07684E-04
np-237	17	1.03644E-05
u-238	17	2.14489E-02
pu-238	17	3.07992E-06
pu-239	17	1.25790E-04
pu-240	17	4.43361E-05
pu-241	17	2.18034E-05
pu-242	17	8.25503E-06
am-241	17	6.60169E-06
am-243	17	1.39559E-06
mo-95	17	4.53486E-05
tc-99	17	4.53841E-05
ru-101	17	4.15762E-05
rh-103	17	2.46844E-05
ag-109	17	2.98709E-06
cs-133	17	4.70582E-05
nd-143	17	3.31054E-05
nd-145	17	2.68757E-05
sm-147	17	8.35228E-06
sm-149	17	1.51503E-07
sm-150	17	1.06072E-05
sm-151	17	4.68713E-07
sm-152	17	3.79885E-06
eu-153	17	3.66225E-06

sm-150	15	1.64364E-05
sm-151	15	5.78076E-07
sm-152	15	5.08915E-06
eu-153	15	6.07054E-06
gd-155	15	2.65529E-07
o	15	4.56500E-02
u-235	16	1.28868E-04
u-234	16	4.61473E-06
u-236	16	1.26929E-04
np-237	16	1.75405E-05
u-238	16	2.10947E-02
pu-238	16	8.47491E-06
pu-239	16	1.25829E-04
pu-240	16	6.22664E-05
pu-241	16	3.01502E-05
pu-242	16	2.20233E-05
am-241	16	9.27192E-06
am-243	16	5.79615E-06
mo-95	16	6.55440E-05
tc-99	16	6.60042E-05
ru-101	16	6.44717E-05
rh-103	16	3.32235E-05
ag-109	16	5.68336E-06
cs-133	16	6.68042E-05
nd-143	16	4.08831E-05
nd-145	16	3.81711E-05
sm-147	16	9.82705E-06
sm-149	16	1.55254E-07
sm-150	16	1.67852E-05
sm-151	16	5.84518E-07
sm-152	16	5.15857E-06
eu-153	16	6.21185E-06
gd-155	16	2.73954E-07
o	16	4.56500E-02
u-235	17	1.33757E-04
u-234	17	4.66403E-06
u-236	17	1.26625E-04
np-237	17	1.72919E-05
u-238	17	2.11097E-02
pu-238	17	8.23459E-06
pu-239	17	1.26004E-04
pu-240	17	6.17698E-05
pu-241	17	2.99471E-05
pu-242	17	2.14160E-05
am-241	17	9.21142E-06
am-243	17	5.56659E-06
mo-95	17	6.48517E-05
tc-99	17	6.53023E-05
ru-101	17	6.35817E-05
rh-103	17	3.29712E-05
ag-109	17	5.57487E-06
cs-133	17	6.61324E-05
nd-143	17	4.06814E-05
nd-145	17	3.77794E-05
sm-147	17	9.79886E-06
sm-149	17	1.55309E-07
sm-150	17	1.65581E-05
sm-151	17	5.80402E-07
sm-152	17	5.11326E-06
eu-153	17	6.12028E-06

gd-155	17	1.36042E-07	gd-155	17	2.68454E-07
o	17	4.56500E-02	o	17	4.56500E-02
u-235	18	3.78622E-04	u-235	18	2.01795E-04
u-234	18	6.59104E-06	u-234	18	5.28939E-06
u-236	18	9.62608E-05	u-236	18	1.20393E-04
np-237	18	7.99286E-06	np-237	18	1.41418E-05
u-238	18	2.15505E-02	u-238	18	2.12791E-02
pu-238	18	1.90148E-06	pu-238	18	5.54134E-06
pu-239	18	1.21529E-04	pu-239	18	1.27377E-04
pu-240	18	3.65553E-05	pu-240	18	5.46853E-05
pu-241	18	1.75073E-05	pu-241	18	2.69900E-05
pu-242	18	5.06816E-06	pu-242	18	1.46362E-05
am-241	18	5.23559E-06	am-241	18	8.26923E-06
am-243	18	6.90343E-07	am-243	18	3.20494E-06
mo-95	18	3.82240E-05	mo-95	18	5.59479E-05
tc-99	18	3.81175E-05	tc-99	18	5.62465E-05
ru-101	18	3.42463E-05	ru-101	18	5.31625E-05
rh-103	18	2.10816E-05	rh-103	18	2.95227E-05
ag-109	18	2.21598E-06	ag-109	18	4.31307E-06
cs-133	18	3.97882E-05	cs-133	18	5.76377E-05
nd-143	18	2.92010E-05	nd-143	18	3.78292E-05
nd-145	18	2.27726E-05	nd-145	18	3.28811E-05
sm-147	18	7.50245E-06	sm-147	18	9.29514E-06
sm-149	18	1.48163E-07	sm-149	18	1.54377E-07
sm-150	18	8.56187E-06	sm-150	18	1.37982E-05
sm-151	18	4.29333E-07	sm-151	18	5.29166E-07
sm-152	18	3.27360E-06	sm-152	18	4.53024E-06
eu-153	18	2.82133E-06	eu-153	18	4.98387E-06
gd-155	18	9.87156E-08	gd-155	18	2.03684E-07
o	18	4.56500E-02	o	18	4.56500E-02
u-235	19	3.88048E-04	u-235	19	2.11262E-04
u-234	19	6.65290E-06	u-234	19	5.36896E-06
u-236	19	9.48099E-05	u-236	19	1.19319E-04
np-237	19	7.73267E-06	np-237	19	1.37442E-05
u-238	19	2.15608E-02	u-238	19	2.12979E-02
pu-238	19	1.78924E-06	pu-238	19	5.24507E-06
pu-239	19	1.20825E-04	pu-239	19	1.27420E-04
pu-240	19	3.56335E-05	pu-240	19	5.36992E-05
pu-241	19	1.69808E-05	pu-241	19	2.65458E-05
pu-242	19	4.75896E-06	pu-242	19	1.38840E-05
am-241	19	5.06932E-06	am-241	19	8.12203E-06
am-243	19	6.30645E-07	am-243	19	2.96808E-06
mo-95	19	3.74038E-05	mo-95	19	5.48440E-05
tc-99	19	3.72877E-05	tc-99	19	5.51094E-05
ru-101	19	3.34284E-05	ru-101	19	5.19171E-05
rh-103	19	2.06545E-05	rh-103	19	2.90529E-05
ag-109	19	2.13402E-06	ag-109	19	4.16509E-06
cs-133	19	3.89436E-05	cs-133	19	5.65370E-05
nd-143	19	2.87197E-05	nd-143	19	3.73995E-05
nd-145	19	2.22987E-05	nd-145	19	3.22640E-05
sm-147	19	7.39520E-06	sm-147	19	9.21476E-06
sm-149	19	1.47753E-07	sm-149	19	1.54301E-07
sm-150	19	8.33328E-06	sm-150	19	1.34608E-05
sm-151	19	4.25027E-07	sm-151	19	5.22823E-07
sm-152	19	3.21151E-06	sm-152	19	4.45610E-06
eu-153	19	2.72881E-06	eu-153	19	4.84383E-06
gd-155	19	9.49172E-08	gd-155	19	1.96042E-07
o	19	4.56500E-02	o	19	4.56500E-02
u-235	20	4.96741E-04	u-235	20	3.03798E-04
u-234	20	7.32480E-06	u-234	20	6.07848E-06

u-236	20	7.71931E-05	u-236	20	1.07340E-04
np-237	20	5.07611E-06	np-237	20	1.02824E-05
u-238	20	2.16701E-02	u-238	20	2.14527E-02
pu-238	20	8.32856E-07	pu-238	20	3.03483E-06
pu-239	20	1.09624E-04	pu-239	20	1.25695E-04
pu-240	20	2.53226E-05	pu-240	20	4.40850E-05
pu-241	20	1.10494E-05	pu-241	20	2.16689E-05
pu-242	20	2.09304E-06	pu-242	20	8.13475E-06
am-241	20	3.23469E-06	am-241	20	6.55826E-06
am-243	20	1.95599E-07	am-243	20	1.36617E-06
mo-95	20	2.84560E-05	mo-95	20	4.51111E-05
tc-99	20	2.82159E-05	tc-99	20	4.51415E-05
ru-101	20	2.47267E-05	ru-101	20	4.13266E-05
rh-103	20	1.58266E-05	rh-103	20	2.45690E-05
ag-109	20	1.32687E-06	ag-109	20	2.95983E-06
cs-133	20	2.96893E-05	cs-133	20	4.68149E-05
nd-143	20	2.29934E-05	nd-143	20	3.29847E-05
nd-145	20	1.70702E-05	nd-145	20	2.67400E-05
sm-147	20	6.06085E-06	sm-147	20	8.32644E-06
sm-149	20	1.41189E-07	sm-149	20	1.51399E-07
sm-150	20	5.93796E-06	sm-150	20	1.05373E-05
sm-151	20	3.77317E-07	sm-151	20	4.67389E-07
sm-152	20	2.50219E-06	sm-152	20	3.78208E-06
eu-153	20	1.78032E-06	eu-153	20	3.63308E-06
gd-155	20	5.96128E-08	gd-155	20	1.34681E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	5.98776E-04	u-235	21	4.21326E-04
u-234	21	7.89563E-06	u-234	21	6.86626E-06
u-236	21	5.96862E-05	u-236	21	8.95356E-05
np-237	21	3.15058E-06	np-237	21	6.84445E-06
u-238	21	2.17549E-02	u-238	21	2.15974E-02
pu-238	21	3.55411E-07	pu-238	21	1.43140E-06
pu-239	21	9.37621E-05	pu-239	21	1.17991E-04
pu-240	21	1.65450E-05	pu-240	21	3.24064E-05
pu-241	21	6.19801E-06	pu-241	21	1.50990E-05
pu-242	21	7.74377E-07	pu-242	21	3.76683E-06
am-241	21	1.77885E-06	am-241	21	4.48303E-06
am-243	21	4.88283E-08	am-243	21	4.51115E-07
mo-95	21	2.08257E-05	mo-95	21	3.45488E-05
tc-99	21	2.05405E-05	tc-99	21	3.43857E-05
ru-101	21	1.76692E-05	ru-101	21	3.05999E-05
rh-103	21	1.15472E-05	rh-103	21	1.91443E-05
ag-109	21	7.73412E-07	ag-109	21	1.85841E-06
cs-133	21	2.17323E-05	cs-133	21	3.60034E-05
nd-143	21	1.75120E-05	nd-143	21	2.69785E-05
nd-145	21	1.25567E-05	nd-145	21	2.06379E-05
sm-147	21	4.71046E-06	sm-147	21	6.99820E-06
sm-149	21	1.33628E-07	sm-149	21	1.45864E-07
sm-150	21	4.05929E-06	sm-150	21	7.54917E-06
sm-151	21	3.38039E-07	sm-151	21	4.09351E-07
sm-152	21	1.84382E-06	sm-152	21	2.99142E-06
eu-153	21	1.09007E-06	eu-153	21	2.41269E-06
gd-155	21	3.85466E-08	gd-155	21	8.23527E-08
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)
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B32A322221			B50A322221		
Serial No.: 16 from gen_ax03.mod			Serial No.: 33 from gen_ax03.mod		
u-235	1	5.08880E-04	u-235	1	3.46342E-04
u-234	1	7.39478E-06	u-234	1	6.37645E-06
u-236	1	7.51404E-05	u-236	1	1.01149E-04
np-237	1	4.81880E-06	np-237	1	8.93690E-06
u-238	1	2.16817E-02	u-238	1	2.15091E-02
pu-238	1	7.58562E-07	pu-238	1	2.33531E-06
pu-239	1	1.08026E-04	pu-239	1	1.23655E-04
pu-240	1	2.42140E-05	pu-240	1	3.97606E-05
pu-241	1	1.04183E-05	pu-241	1	1.93134E-05
pu-242	1	1.88445E-06	pu-242	1	6.25456E-06
am-241	1	3.04320E-06	am-241	1	5.80682E-06
am-243	1	1.68724E-07	am-243	1	9.35044E-07
mo-95	1	2.75098E-05	mo-95	1	4.11164E-05
tc-99	1	2.72606E-05	tc-99	1	4.10669E-05
ru-101	1	2.38327E-05	ru-101	1	3.71845E-05
rh-103	1	1.52987E-05	rh-103	1	2.25719E-05
ag-109	1	1.25115E-06	ag-109	1	2.51747E-06
cs-133	1	2.87052E-05	cs-133	1	4.27674E-05
nd-143	1	2.23432E-05	nd-143	1	3.08531E-05
nd-145	1	1.65123E-05	nd-145	1	2.44444E-05
sm-147	1	5.90405E-06	sm-147	1	7.86661E-06
sm-149	1	1.40373E-07	sm-149	1	1.49653E-07
sm-150	1	5.69539E-06	sm-150	1	9.37899E-06
sm-151	1	3.72401E-07	sm-151	1	4.45145E-07
sm-152	1	2.42323E-06	sm-152	1	3.48988E-06
eu-153	1	1.68805E-06	eu-153	1	3.15597E-06
gd-155	1	5.65864E-08	gd-155	1	1.13036E-07
o	1	4.56500E-02	o	1	4.56500E-02
u-235	2	4.04596E-04	u-235	2	2.28444E-04
u-234	2	6.75969E-06	u-234	2	5.50858E-06
u-236	2	9.22191E-05	u-236	2	1.17300E-04
np-237	2	7.28256E-06	np-237	2	1.30436E-05
u-238	2	2.15792E-02	u-238	2	2.13310E-02
pu-238	2	1.60344E-06	pu-238	2	4.74696E-06
pu-239	2	1.19488E-04	pu-239	2	1.27393E-04
pu-240	2	3.40179E-05	pu-240	2	5.18909E-05
pu-241	2	1.60441E-05	pu-241	2	2.56787E-05
pu-242	2	4.24449E-06	pu-242	2	1.26061E-05
am-241	2	4.77596E-06	am-241	2	7.84987E-06
am-243	2	5.35278E-07	am-243	2	2.58003E-06
mo-95	2	3.59740E-05	mo-95	2	5.29074E-05
tc-99	2	3.58320E-05	tc-99	2	5.31091E-05
ru-101	2	3.20081E-05	ru-101	2	4.97443E-05
rh-103	2	1.99001E-05	rh-103	2	2.82047E-05
ag-109	2	1.99433E-06	ag-109	2	3.91111E-06
cs-133	2	3.74740E-05	cs-133	2	5.46277E-05
nd-143	2	2.78577E-05	nd-143	2	3.66105E-05
nd-145	2	2.14681E-05	nd-145	2	3.11725E-05
sm-147	2	7.19823E-06	sm-147	2	9.06302E-06
sm-149	2	1.46827E-07	sm-149	2	1.53726E-07
sm-150	2	7.93787E-06	sm-150	2	1.28673E-05
sm-151	2	4.17120E-07	sm-151	2	5.11426E-07
sm-152	2	3.10204E-06	sm-152	2	4.32480E-06
eu-153	2	2.56910E-06	eu-153	2	4.59828E-06

gd-155	2	8.84830E-08	gd-155	2	1.82948E-07
o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.93504E-04	u-235	4	1.23262E-04
u-234	4	6.00343E-06	u-234	4	4.55689E-06
u-236	4	1.08808E-04	u-236	4	1.27266E-04
np-237	4	1.06364E-05	np-237	4	1.78286E-05
u-238	4	2.14370E-02	u-238	4	2.10762E-02
pu-238	4	3.23175E-06	pu-238	4	8.75850E-06
pu-239	4	1.26086E-04	pu-239	4	1.25587E-04
pu-240	4	4.51501E-05	pu-240	4	6.28436E-05
pu-241	4	2.22541E-05	pu-241	4	3.03716E-05
pu-242	4	8.65935E-06	pu-242	4	2.27360E-05
am-241	4	6.74446E-06	am-241	4	9.33903E-06
am-243	4	1.49598E-06	am-243	4	6.06981E-06
mo-95	4	4.61323E-05	mo-95	4	6.63832E-05
tc-99	4	4.61846E-05	tc-99	4	6.68589E-05
ru-101	4	4.24035E-05	ru-101	4	6.55211E-05
rh-103	4	2.50638E-05	rh-103	4	3.35144E-05
ag-109	4	3.07787E-06	ag-109	4	5.81238E-06
cs-133	4	4.78544E-05	cs-133	4	6.76075E-05
nd-143	4	3.34992E-05	nd-143	4	4.11082E-05
nd-145	4	2.73245E-05	nd-145	4	3.86372E-05
sm-147	4	8.43609E-06	sm-147	4	9.86034E-06
sm-149	4	1.51809E-07	sm-149	4	1.55261E-07
sm-150	4	1.08367E-05	sm-150	4	1.70502E-05
sm-151	4	4.73099E-07	sm-151	4	5.89413E-07
sm-152	4	3.85436E-06	sm-152	4	5.21306E-06
eu-153	4	3.75760E-06	eu-153	4	6.31867E-06
gd-155	4	1.40582E-07	gd-155	4	2.80472E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.80739E-04	u-235	5	1.12970E-04
u-234	5	5.91103E-06	u-234	5	4.44712E-06

u-236	5	1.10572E-04
np-237	5	1.10811E-05
u-238	5	2.14189E-02
pu-238	5	3.48991E-06
pu-239	5	1.26497E-04
pu-240	5	4.64537E-05
pu-241	5	2.29666E-05
pu-242	5	9.34117E-06
am-241	5	6.96889E-06
am-243	5	1.66949E-06
mo-95	5	4.74036E-05
tc-99	5	4.74826E-05
ru-101	5	4.37558E-05
rh-103	5	2.56737E-05
ag-109	5	3.22790E-06
cs-133	5	4.91173E-05
nd-143	5	3.41250E-05
nd-145	5	2.80528E-05
sm-147	5	8.56508E-06
sm-149	5	1.52177E-07
sm-150	5	1.12104E-05
sm-151	5	4.80270E-07
sm-152	5	3.94466E-06
eu-153	5	3.91180E-06
gd-155	5	1.48099E-07
o	5	4.56500E-02
u-235	6	3.02872E-04
u-234	6	6.07171E-06
u-236	6	1.07472E-04
np-237	6	1.03138E-05
u-238	6	2.14513E-02
pu-238	6	3.05206E-06
pu-239	6	1.25731E-04
pu-240	6	4.41814E-05
pu-241	6	2.17204E-05
pu-242	6	8.18072E-06
am-241	6	6.57489E-06
am-243	6	1.37738E-06
mo-95	6	4.52021E-05
tc-99	6	4.52345E-05
ru-101	6	4.14222E-05
rh-103	6	2.46133E-05
ag-109	6	2.97026E-06
cs-133	6	4.69081E-05
nd-143	6	3.30310E-05
nd-145	6	2.67919E-05
sm-147	6	8.33635E-06
sm-149	6	1.51439E-07
sm-150	6	1.05640E-05
sm-151	6	4.67896E-07
sm-152	6	3.78852E-06
eu-153	6	3.64426E-06
gd-155	6	1.35201E-07
o	6	4.56500E-02
u-235	7	2.76570E-04
u-234	7	5.88030E-06
u-236	7	1.11129E-04
np-237	7	1.12288E-05
u-238	7	2.14118E-02
pu-238	7	3.57819E-06

u-236	5	1.27811E-04
np-237	5	1.83709E-05
u-238	5	2.10408E-02
pu-238	5	9.31359E-06
pu-239	5	1.25076E-04
pu-240	5	6.38823E-05
pu-241	5	3.07526E-05
pu-242	5	2.41580E-05
am-241	5	9.45680E-06
am-243	5	6.61603E-06
mo-95	5	6.80036E-05
tc-99	5	6.85030E-05
ru-101	5	6.75603E-05
rh-103	5	3.40565E-05
ag-109	5	6.05639E-06
cs-133	5	6.91110E-05
nd-143	5	4.14567E-05
nd-145	5	3.95411E-05
sm-147	5	9.91502E-06
sm-149	5	1.55271E-07
sm-150	5	1.75623E-05
sm-151	5	5.99381E-07
sm-152	5	5.31394E-06
eu-153	5	6.52723E-06
gd-155	5	2.92992E-07
o	5	4.56500E-02
u-235	6	1.31292E-04
u-234	6	4.63913E-06
u-236	6	1.26782E-04
np-237	6	1.74172E-05
u-238	6	2.11025E-02
pu-238	6	8.35492E-06
pu-239	6	1.25920E-04
pu-240	6	6.20193E-05
pu-241	6	3.00463E-05
pu-242	6	2.17201E-05
am-241	6	9.24192E-06
am-243	6	5.68136E-06
mo-95	6	6.52044E-05
tc-99	6	6.56573E-05
ru-101	6	6.40272E-05
rh-103	6	3.30982E-05
ag-109	6	5.62917E-06
cs-133	6	6.64678E-05
nd-143	6	4.07822E-05
nd-145	6	3.79744E-05
sm-147	6	9.81323E-06
sm-149	6	1.55310E-07
sm-150	6	1.66722E-05
sm-151	6	5.82508E-07
sm-152	6	5.13587E-06
eu-153	6	6.16647E-06
gd-155	6	2.71206E-07
o	6	4.56500E-02
u-235	7	1.09724E-04
u-234	7	4.41000E-06
u-236	7	1.27940E-04
np-237	7	1.85441E-05
u-238	7	2.10295E-02
pu-238	7	9.49431E-06

pu-239	7	1.26614E-04	pu-239	7	1.24932E-04
pu-240	7	4.68888E-05	pu-240	7	6.42188E-05
pu-241	7	2.31805E-05	pu-241	7	3.08530E-05
pu-242	7	9.57245E-06	pu-242	7	2.46136E-05
am-241	7	7.04025E-06	am-241	7	9.48991E-06
am-243	7	1.72950E-06	am-243	7	6.79798E-06
mo-95	7	4.78229E-05	mo-95	7	6.85588E-05
tc-99	7	4.79110E-05	tc-99	7	6.90312E-05
ru-101	7	4.42031E-05	ru-101	7	6.81952E-05
rh-103	7	2.58716E-05	rh-103	7	3.42272E-05
ag-109	7	3.27795E-06	ag-109	7	6.13818E-06
cs-133	7	4.95381E-05	cs-133	7	6.96001E-05
nd-143	7	3.43264E-05	nd-143	7	4.15914E-05
nd-145	7	2.82912E-05	nd-145	7	3.98163E-05
sm-147	7	8.60588E-06	sm-147	7	9.93192E-06
sm-149	7	1.52335E-07	sm-149	7	1.55275E-07
sm-150	7	1.13359E-05	sm-150	7	1.77259E-05
sm-151	7	4.82649E-07	sm-151	7	6.02447E-07
sm-152	7	3.97353E-06	sm-152	7	5.34852E-06
eu-153	7	3.96430E-06	eu-153	7	6.59377E-06
gd-155	7	1.50628E-07	gd-155	7	2.97042E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	2.97279E-04	u-235	8	1.26558E-04
u-234	8	6.03083E-06	u-234	8	4.59125E-06
u-236	8	1.08271E-04	u-236	8	1.27067E-04
np-237	8	1.05059E-05	np-237	8	1.76584E-05
u-238	8	2.14425E-02	u-238	8	2.10869E-02
pu-238	8	3.15837E-06	pu-238	8	8.59070E-06
pu-239	8	1.25947E-04	pu-239	8	1.25734E-04
pu-240	8	4.47629E-05	pu-240	8	6.25034E-05
pu-241	8	2.20365E-05	pu-241	8	3.02476E-05
pu-242	8	8.46410E-06	pu-242	8	2.23151E-05
am-241	8	6.67626E-06	am-241	8	9.30009E-06
am-243	8	1.44724E-06	am-243	8	5.90740E-06
mo-95	8	4.57568E-05	mo-95	8	6.58751E-05
tc-99	8	4.58011E-05	tc-99	8	6.63434E-05
ru-101	8	4.20063E-05	ru-101	8	6.49006E-05
rh-103	8	2.48821E-05	rh-103	8	3.33431E-05
ag-109	8	3.03420E-06	ag-109	8	5.73586E-06
cs-133	8	4.74755E-05	cs-133	8	6.71310E-05
nd-143	8	3.33111E-05	nd-143	8	4.09784E-05
nd-145	8	2.71092E-05	nd-145	8	3.83616E-05
sm-147	8	8.39628E-06	sm-147	8	9.84039E-06
sm-149	8	1.51676E-07	sm-149	8	1.55212E-07
sm-150	8	1.07270E-05	sm-150	8	1.68937E-05
sm-151	8	4.70993E-07	sm-151	8	5.86457E-07
sm-152	8	3.82764E-06	sm-152	8	5.18068E-06
eu-153	8	3.71220E-06	eu-153	8	6.25539E-06
gd-155	8	1.38398E-07	gd-155	8	2.76612E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.82996E-04	u-235	9	1.14871E-04
u-234	9	5.92752E-06	u-234	9	4.46813E-06
u-236	9	1.10268E-04	u-236	9	1.27726E-04
np-237	9	1.10016E-05	np-237	9	1.82700E-05
u-238	9	2.14224E-02	u-238	9	2.10475E-02
pu-238	9	3.44284E-06	pu-238	9	9.20849E-06
pu-239	9	1.26431E-04	pu-239	9	1.25167E-04
pu-240	9	4.62195E-05	pu-240	9	6.36885E-05
pu-241	9	2.28476E-05	pu-241	9	3.06864E-05
pu-242	9	9.21764E-06	pu-242	9	2.38895E-05

am-241	9	6.92990E-06	am-241	9	9.43623E-06
am-243	9	1.63771E-06	am-243	9	6.51128E-06
mo-95	9	4.71774E-05	mo-95	9	6.76952E-05
tc-99	9	4.72515E-05	tc-99	9	6.82003E-05
ru-10	9	4.35149E-05	ru-101	9	6.71844E-05
rh-103	9	2.55663E-05	rh-103	9	3.39561E-05
ag-109	9	3.20102E-06	ag-109	9	6.01014E-06
cs-133	9	4.88917E-05	cs-133	9	6.88290E-05
nd-143	9	3.40154E-05	nd-143	9	4.13856E-05
nd-145	9	2.79239E-05	nd-145	9	3.93753E-05
sm-147	9	8.54277E-06	sm-147	9	9.90558E-06
sm-149	9	1.52101E-07	sm-149	9	1.55295E-07
sm-150	9	1.11430E-05	sm-150	9	1.74664E-05
sm-151	9	4.78992E-07	sm-151	9	5.97547E-07
sm-152	9	3.92891E-06	sm-152	9	5.29467E-06
eu-153	9	3.88376E-06	eu-153	9	6.48804E-06
gd-155	9	1.46745E-07	gd-155	9	2.90642E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.83877E-04	u-235	10	1.15602E-04
u-234	10	5.93393E-06	u-234	10	4.47600E-06
u-236	10	1.10148E-04	u-236	10	1.27692E-04
np-237	10	1.09707E-05	np-237	10	1.82312E-05
u-238	10	2.14238E-02	u-238	10	2.10501E-02
pu-238	10	3.42464E-06	pu-238	10	9.16814E-06
pu-239	10	1.26404E-04	pu-239	10	1.25204E-04
pu-240	10	4.61287E-05	pu-240	10	6.36152E-05
pu-241	10	2.28002E-05	pu-241	10	3.06588E-05
pu-242	10	9.16981E-06	pu-242	10	2.37853E-05
am-241	10	6.91462E-06	am-241	10	9.42802E-06
am-243	10	1.62545E-06	am-243	10	6.47129E-06
mo-95	10	4.70893E-05	mo-95	10	6.75808E-05
tc-99	10	4.71616E-05	tc-99	10	6.80849E-05
ru-101	10	4.34212E-05	ru-101	10	6.70375E-05
rh-103	10	2.55243E-05	rh-103	10	3.39174E-05
ag-109	10	3.19058E-06	ag-109	10	5.99265E-06
cs-133	10	4.88042E-05	cs-133	10	6.87220E-05
nd-143	10	3.39725E-05	nd-143	10	4.13612E-05
nd-145	10	2.78736E-05	nd-145	10	3.93103E-05
sm-147	10	8.53403E-06	sm-147	10	9.90204E-06
sm-149	10	1.52074E-07	sm-149	10	1.55309E-07
sm-150	10	1.11169E-05	sm-150	10	1.74294E-05
sm-151	10	4.78495E-07	sm-151	10	5.96834E-07
sm-152	10	3.92274E-06	sm-152	10	5.28749E-06
eu-153	10	3.87293E-06	eu-153	10	6.47295E-06
gd-155	10	1.46219E-07	gd-155	10	2.89741E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05

ru-101	11	4.14529E-05
rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05

ru-101	11	6.40475E-05
rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05

nd-143	13	3.22052E-05
nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07

nd-143	13	4.02130E-05
nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07

sm-150	15	1.03985E-05	sm-150	15	1.64364E-05
sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	3.29102E-04	u-235	16	1.43978E-04
u-234	16	6.25617E-06	u-234	16	4.76518E-06
u-236	16	1.03726E-04	u-236	16	1.25884E-04
np-237	16	9.46817E-06	np-237	16	1.67837E-05
u-238	16	2.14873E-02	u-238	16	2.11388E-02
pu-238	16	2.60183E-06	pu-238	16	7.75563E-06
pu-239	16	1.24590E-04	pu-239	16	1.26309E-04
pu-240	16	4.15089E-05	pu-240	16	6.07157E-05
pu-241	16	2.02783E-05	pu-241	16	2.95657E-05
pu-242	16	6.97225E-06	pu-242	16	2.02103E-05
am-241	16	6.11432E-06	am-241	16	9.08923E-06
am-243	16	1.09336E-06	am-243	16	5.12090E-06
mo-95	16	4.27144E-05	mo-95	16	6.33904E-05
tc-99	16	4.26955E-05	tc-99	16	6.37698E-05
ru-101	16	3.88263E-05	ru-101	16	6.18028E-05
rh-103	16	2.33817E-05	rh-103	16	3.24498E-05
ag-109	16	2.69046E-06	ag-109	16	5.35756E-06
cs-133	16	4.43640E-05	cs-133	16	6.47529E-05
nd-143	16	3.17247E-05	nd-143	16	4.02799E-05
nd-145	16	2.53663E-05	nd-145	16	3.69911E-05
sm-147	16	8.05862E-06	sm-147	16	9.73502E-06
sm-149	16	1.50484E-07	sm-149	16	1.55152E-07
sm-150	16	9.83877E-06	sm-150	16	1.61011E-05
sm-151	16	4.54219E-07	sm-151	16	5.71990E-07
sm-152	16	3.60805E-06	sm-152	16	5.01946E-06
eu-153	16	3.34462E-06	eu-153	16	5.93352E-06
gd-155	16	1.21447E-07	gd-155	16	2.57414E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.25113E-04	u-235	17	1.50731E-04
u-234	17	6.22880E-06	u-234	17	4.83091E-06
u-236	17	1.04316E-04	u-236	17	1.25349E-04
np-237	17	9.59600E-06	np-237	17	1.64549E-05
u-238	17	2.14814E-02	u-238	17	2.11566E-02
pu-238	17	2.66735E-06	pu-238	17	7.45492E-06
pu-239	17	1.24787E-04	pu-239	17	1.26509E-04
pu-240	17	4.19145E-05	pu-240	17	6.00272E-05
pu-241	17	2.05062E-05	pu-241	17	2.92753E-05
pu-242	17	7.14936E-06	pu-242	17	1.94574E-05
am-241	17	6.18694E-06	am-241	17	8.99925E-06
am-243	17	1.13367E-06	am-243	17	4.84519E-06
mo-95	17	4.30942E-05	mo-95	17	6.24199E-05
tc-99	17	4.30826E-05	tc-99	17	6.28100E-05
ru-101	17	3.92191E-05	ru-101	17	6.06755E-05
rh-103	17	2.35711E-05	rh-103	17	3.21027E-05
ag-109	17	2.73221E-06	ag-109	17	5.21993E-06
cs-133	17	4.47589E-05	cs-133	17	6.38543E-05
nd-143	17	3.19269E-05	nd-143	17	4.00358E-05
nd-145	17	2.55849E-05	nd-145	17	3.64720E-05
sm-147	17	8.10262E-06	sm-147	17	9.69093E-06
sm-149	17	1.50682E-07	sm-149	17	1.55196E-07
sm-150	17	9.94777E-06	sm-150	17	1.58064E-05
sm-151	17	4.56286E-07	sm-151	17	5.66626E-07
sm-152	17	3.63545E-06	sm-152	17	4.95778E-06
eu-153	17	3.38980E-06	eu-153	17	5.81268E-06

gd-155	17	1.23486E-07
o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.63519E-04
u-234	20	7.12538E-06

gd-155	17	2.50406E-07
o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	2.93307E-04
u-234	20	6.00200E-06

u-236	20	8.26978E-05	u-236	20	1.08836E-04
np-237	20	5.81501E-06	np-237	20	1.06432E-05
u-238	20	2.16406E-02	u-238	20	2.14367E-02
pu-238	20	1.06487E-06	pu-238	20	3.23562E-06
pu-239	20	1.13645E-04	pu-239	20	1.26093E-04
pu-240	20	2.83857E-05	pu-240	20	4.51702E-05
pu-241	20	1.27912E-05	pu-241	20	2.22656E-05
pu-242	20	2.74311E-06	pu-242	20	8.66965E-06
am-241	20	3.76722E-06	am-241	20	6.74801E-06
am-243	20	2.86915E-07	am-243	20	1.49856E-06
mo-95	20	3.10836E-05	mo-95	20	4.61520E-05
tc-99	20	3.08713E-05	tc-99	20	4.62047E-05
ru-101	20	2.72344E-05	ru-101	20	4.24243E-05
rh-103	20	1.72665E-05	rh-103	20	2.50733E-05
ag-109	20	1.54653E-06	ag-109	20	3.08017E-06
cs-133	20	3.24174E-05	cs-133	20	4.78740E-05
nd-143	20	2.47551E-05	nd-143	20	3.35090E-05
nd-145	20	1.86107E-05	nd-145	20	2.73357E-05
sm-147	20	6.48037E-06	sm-147	20	8.43815E-06
sm-149	20	1.43404E-07	sm-149	20	1.51815E-07
sm-150	20	6.62086E-06	sm-150	20	1.08424E-05
sm-151	20	3.90790E-07	sm-151	20	4.73210E-07
sm-152	20	2.71653E-06	sm-152	20	3.85577E-06
eu-153	20	2.04532E-06	eu-153	20	3.75996E-06
gd-155	20	6.87569E-08	gd-155	20	1.40697E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	4.87616E-04	u-235	21	3.42125E-04
u-234	21	7.27073E-06	u-234	21	6.34729E-06
u-236	21	7.87168E-05	u-236	21	1.01780E-04
np-237	21	5.27372E-06	np-237	21	9.06462E-06
u-238	21	2.16611E-02	u-238	21	2.15042E-02
pu-238	21	8.92156E-07	pu-238	21	2.39807E-06
pu-239	21	1.10787E-04	pu-239	21	1.23898E-04
pu-240	21	2.61530E-05	pu-240	21	4.01849E-05
pu-241	21	1.15210E-05	pu-241	21	1.95482E-05
pu-242	21	2.25916E-06	pu-242	21	6.42383E-06
am-241	21	3.37880E-06	am-241	21	5.88140E-06
am-243	21	2.17889E-07	am-243	21	9.71809E-07
mo-95	21	2.91686E-05	mo-95	21	4.15035E-05
tc-99	21	2.89385E-05	tc-99	21	4.14610E-05
ru-101	21	2.54038E-05	ru-101	21	3.75807E-05
rh-103	21	1.62211E-05	rh-103	21	2.27692E-05
ag-109	21	1.38506E-06	ag-109	21	2.55892E-06
cs-133	21	3.04307E-05	cs-133	21	4.31577E-05
nd-143	21	2.34785E-05	nd-143	21	3.10670E-05
nd-145	21	1.74885E-05	nd-145	21	2.46671E-05
sm-147	21	6.17711E-06	sm-147	21	7.91360E-06
sm-149	21	1.41780E-07	sm-149	21	1.49830E-07
sm-150	21	6.12144E-06	sm-150	21	9.48965E-06
sm-151	21	3.81082E-07	sm-151	21	4.47310E-07
sm-152	21	2.56093E-06	sm-152	21	3.51868E-06
eu-153	21	1.85107E-06	eu-153	21	3.20137E-06
gd-155	21	6.19905E-08	gd-155	21	1.15037E-07
o	21	4.56500E-02	o	21	4.56500E-02

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From outpy005.sc5 (Fortsetzung)

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B32A332211
Serial No.: 17 from gen_ax03.mod

u-235	1	5.08880E-04
u-234	1	7.39478E-06
u-236	1	7.51404E-05
np-237	1	4.81880E-06
u-238	1	2.16817E-02
pu-238	1	7.58562E-07
pu-239	1	1.08026E-04
pu-240	1	2.42140E-05
pu-241	1	1.04183E-05
pu-242	1	1.88445E-06
am-241	1	3.04320E-06
am-243	1	1.68724E-07
mo-95	1	2.75098E-05
tc-99	1	2.72606E-05
ru-101	1	2.38327E-05
rh-103	1	1.52987E-05
ag-109	1	1.25115E-06
cs-133	1	2.87052E-05
nd-143	1	2.23432E-05
nd-145	1	1.65123E-05
sm-147	1	5.90405E-06
sm-149	1	1.40373E-07
sm-150	1	5.69539E-06
sm-151	1	3.72401E-07
sm-152	1	2.42323E-06
eu-153	1	1.68805E-06
gd-155	1	5.65864E-08
o	1	4.56500E-02
u-235	2	4.04596E-04
u-234	2	6.75969E-06
u-236	2	9.22191E-05
np-237	2	7.28256E-06
u-238	2	2.15792E-02
pu-238	2	1.60344E-06
pu-239	2	.19488E-04
pu-240	2	3.40179E-05
pu-241	2	1.60441E-05
pu-242	2	4.24449E-06
am-241	2	4.77596E-06
am-243	2	5.35278E-07
mo-95	2	3.59740E-05
tc-99	2	3.58320E-05
ru-101	2	3.20081E-05
rh-103	2	1.99001E-05
ag-109	2	1.99433E-06
cs-133	2	3.74740E-05
nd-143	2	2.78577E-05
nd-145	2	2.14681E-05
sm-147	2	7.19823E-06
sm-149	2	1.46827E-07
sm-150	2	7.93787E-06
sm-151	2	4.17120E-07
sm-152	2	3.10204E-06
eu-153	2	2.56910E-06

B50A332211
Serial No.: 34 from gen_ax03.mod

u-235	1	3.46342E-04
u-234	1	6.37645E-06
u-236	1	1.01149E-04
np-237	1	8.93690E-06
u-238	1	2.15091E-02
pu-238	1	2.33531E-06
pu-239	1	1.23655E-04
pu-240	1	3.97606E-05
pu-241	1	1.93134E-05
pu-242	1	6.25456E-06
am-241	1	5.80682E-06
am-243	1	9.35044E-07
mo-95	1	4.11164E-05
tc-99	1	4.10669E-05
ru-101	1	3.71845E-05
rh-103	1	2.25719E-05
ag-109	1	2.51747E-06
cs-133	1	4.27674E-05
nd-143	1	3.08531E-05
nd-145	1	2.44444E-05
sm-147	1	7.86661E-06
sm-149	1	1.49653E-07
sm-150	1	9.37899E-06
sm-151	1	4.45145E-07
sm-152	1	3.48988E-06
eu-153	1	3.15597E-06
gd-155	1	1.13036E-07
o	1	4.56500E-02
u-235	2	2.28444E-04
u-234	2	5.50858E-06
u-236	2	1.17300E-04
np-237	2	1.30436E-05
u-238	2	2.13310E-02
pu-238	2	4.74696E-06
pu-239	2	1.27393E-04
pu-240	2	5.18909E-05
pu-241	2	2.56787E-05
pu-242	2	1.26061E-05
am-241	2	7.84987E-06
am-243	2	2.58003E-06
mo-95	2	5.29074E-05
tc-99	2	5.31091E-05
ru-101	2	4.97443E-05
rh-103	2	2.82047E-05
ag-109	2	3.91111E-06
cs-133	2	5.46277E-05
nd-143	2	3.66105E-05
nd-145	2	3.11725E-05
sm-147	2	9.06302E-06
sm-149	2	1.53726E-07
sm-150	2	1.28673E-05
sm-151	2	5.11426E-07
sm-152	2	4.32480E-06
eu-153	2	4.59828E-06

gd-155	2	8.84830E-08	gd-155	2	1.82948E-07
o	2	4.56500E-02	o	2	4.56500E-02
u-235	3	3.40100E-04	u-235	3	1.64499E-04
u-234	3	6.33309E-06	u-234	3	4.96054E-06
u-236	3	1.02083E-04	u-236	3	1.24152E-04
np-237	3	9.12619E-06	np-237	3	1.58029E-05
u-238	3	2.15018E-02	u-238	3	2.11929E-02
pu-238	3	2.42874E-06	pu-238	3	6.87890E-06
pu-239	3	1.24011E-04	pu-239	3	1.26852E-04
pu-240	3	4.03900E-05	pu-240	3	5.86037E-05
pu-241	3	1.96606E-05	pu-241	3	2.86838E-05
pu-242	3	6.50631E-06	pu-242	3	1.80129E-05
am-241	3	5.91720E-06	am-241	3	8.81172E-06
am-243	3	9.89816E-07	am-243	3	4.33292E-06
mo-95	3	4.16894E-05	mo-95	3	6.05859E-05
tc-99	3	4.16505E-05	tc-99	3	6.09693E-05
ru-101	3	3.77713E-05	ru-101	3	5.84924E-05
rh-103	3	2.28639E-05	rh-103	3	3.13974E-05
ag-109	3	2.57895E-06	ag-109	3	4.95362E-06
cs-133	3	4.33412E-05	cs-133	3	6.21058E-05
nd-143	3	3.11692E-05	nd-143	3	3.94414E-05
nd-145	3	2.47744E-05	nd-145	3	3.54535E-05
sm-147	3	7.93617E-06	sm-147	3	9.59046E-06
sm-149	3	1.49924E-07	sm-149	3	1.55009E-07
sm-150	3	9.54321E-06	sm-150	3	1.52297E-05
sm-151	3	4.48378E-07	sm-151	3	5.55809E-07
sm-152	3	3.53256E-06	sm-152	3	4.83744E-06
eu-153	3	3.22327E-06	eu-153	3	5.57481E-06
gd-155	3	1.16009E-07	gd-155	3	2.36733E-07
o	3	4.56500E-02	o	3	4.56500E-02
u-235	4	2.96718E-04	u-235	4	1.26591E-04
u-234	4	6.02674E-06	u-234	4	4.59159E-06
u-236	4	1.08351E-04	u-236	4	1.27065E-04
np-237	4	1.05253E-05	np-237	4	1.76567E-05
u-238	4	2.14417E-02	u-238	4	2.10870E-02
pu-238	4	3.16921E-06	pu-238	4	8.58903E-06
pu-239	4	1.25969E-04	pu-239	4	1.25736E-04
pu-240	4	4.48208E-05	pu-240	4	6.25000E-05
pu-241	4	2.20686E-05	pu-241	4	3.02463E-05
pu-242	4	8.49296E-06	pu-242	4	2.23109E-05
am-241	4	6.68644E-06	am-241	4	9.29970E-06
am-243	4	1.45441E-06	am-243	4	5.90580E-06
mo-95	4	4.58126E-05	mo-95	4	6.58703E-05
tc-99	4	4.58582E-05	tc-99	4	6.63384E-05
ru-101	4	4.20653E-05	ru-101	4	6.48944E-05
rh-103	4	2.49091E-05	rh-103	4	3.33413E-05
ag-109	4	3.04067E-06	ag-109	4	5.73510E-06
cs-133	4	4.75322E-05	cs-133	4	6.71263E-05
nd-143	4	3.33392E-05	nd-143	4	4.09771E-05
nd-145	4	2.71412E-05	nd-145	4	3.83589E-05
sm-147	4	8.40225E-06	sm-147	4	9.84020E-06
sm-149	4	1.51698E-07	sm-149	4	1.55212E-07
sm-150	4	1.07434E-05	sm-150	4	1.68921E-05
sm-151	4	4.71306E-07	sm-151	4	5.86429E-07
sm-152	4	3.83159E-06	sm-152	4	5.18036E-06
eu-153	4	3.71899E-06	eu-153	4	6.25476E-06
gd-155	4	1.38722E-07	gd-155	4	2.76573E-07
o	4	4.56500E-02	o	4	4.56500E-02
u-235	5	2.83587E-04	u-235	5	1.15753E-04
u-234	5	5.93182E-06	u-234	5	4.47762E-06

u-236	5	1.10188E-04
np-237	5	1.09808E-05
u-238	5	2.14234E-02
pu-238	5	3.43063E-06
pu-239	5	1.26413E-04
pu-240	5	4.61586E-05
pu-241	5	2.28159E-05
pu-242	5	9.18556E-06
am-241	5	6.91966E-06
am-243	5	1.62948E-06
mo-95	5	4.71183E-05
tc-99	5	4.71912E-05
ru-101	5	4.34520E-05
rh-103	5	2.55382E-05
ag-109	5	3.19401E-06
cs-133	5	4.88330E-05
nd-143	5	3.39866E-05
nd-145	5	2.78902E-05
sm-147	5	8.53691E-06
sm-149	5	1.52083E-07
sm-150	5	1.11255E-05
sm-151	5	4.78659E-07
sm-152	5	3.92478E-06
eu-153	5	3.87649E-06
gd-155	5	1.46392E-07
o	5	4.56500E-02
u-235	6	3.05277E-04
u-234	6	6.08924E-06
u-236	6	1.07131E-04
np-237	6	1.02327E-05
u-238	6	2.14549E-02
pu-238	6	3.00762E-06
pu-239	6	1.25636E-04
pu-240	6	4.39314E-05
pu-241	6	2.15874E-05
pu-242	6	8.06213E-06
am-241	6	6.53192E-06
am-243	6	1.34852E-06
mo-95	6	4.49669E-05
tc-99	6	4.49942E-05
ru-101	6	4.11751E-05
rh-103	6	2.44987E-05
ag-109	6	2.94332E-06
cs-133	6	4.66674E-05
nd-143	6	3.29109E-05
nd-145	6	2.66576E-05
sm-147	6	8.31070E-06
sm-149	6	1.51339E-07
sm-150	6	1.04948E-05
sm-151	6	4.66586E-07
sm-152	6	3.77184E-06
eu-153	6	3.61539E-06
gd-155	6	1.33858E-07
o	6	4.56500E-02
u-235	7	2.78466E-04
u-234	7	5.89431E-06
u-236	7	1.10876E-04
np-237	7	1.11615E-05
u-238	7	2.14151E-02
pu-238	7	3.53785E-06

u-236	5	1.27684E-04
np-237	5	1.82232E-05
u-238	5	2.10507E-02
pu-238	5	9.15978E-06
pu-239	5	1.25212E-04
pu-240	5	6.36001E-05
pu-241	5	3.06530E-05
pu-242	5	2.37637E-05
am-241	5	9.42629E-06
am-243	5	6.46301E-06
mo-95	5	6.75573E-05
tc-99	5	6.80611E-05
ru-101	5	6.70070E-05
rh-103	5	3.39093E-05
ag-109	5	5.98904E-06
cs-133	5	6.86998E-05
nd-143	5	4.13563E-05
nd-145	5	3.92967E-05
sm-147	5	9.90131E-06
sm-149	5	1.55312E-07
sm-150	5	1.74217E-05
sm-151	5	5.96686E-07
sm-152	5	5.28602E-06
eu-153	5	6.46982E-06
gd-155	5	2.89554E-07
o	5	4.56500E-02
u-235	6	1.33835E-04
u-234	6	4.66481E-06
u-236	6	1.26619E-04
np-237	6	1.72880E-05
u-238	6	2.11099E-02
pu-238	6	8.23083E-06
pu-239	6	1.26007E-04
pu-240	6	6.17620E-05
pu-241	6	2.99441E-05
pu-242	6	2.14065E-05
am-241	6	9.21047E-06
am-243	6	5.56302E-06
mo-95	6	6.48404E-05
tc-99	6	6.52910E-05
ru-101	6	6.35678E-05
rh-103	6	3.29672E-05
ag-109	6	5.57318E-06
cs-133	6	6.61219E-05
nd-143	6	4.06783E-05
nd-145	6	3.77733E-05
sm-147	6	9.79840E-06
sm-149	6	1.55308E-07
sm-150	6	1.65545E-05
sm-151	6	5.80334E-07
sm-152	6	5.11255E-06
eu-153	6	6.11883E-06
gd-155	6	2.68368E-07
o	6	4.56500E-02
u-235	7	1.11562E-04
u-234	7	4.43110E-06
u-236	7	1.27868E-04
np-237	7	1.84459E-05
u-238	7	2.10359E-02
pu-238	7	9.39163E-06

pu-239	7	1.26562E-04	pu-239	7	1.25012E-04
pu-240	7	4.66908E-05	pu-240	7	6.40285E-05
pu-241	7	2.30838E-05	pu-241	7	3.07970E-05
pu-242	7	9.46679E-06	pu-242	7	2.43550E-05
am-241	7	7.00789E-06	am-241	7	9.47134E-06
am-243	7	1.70200E-06	am-243	7	6.69435E-06
mo-95	7	4.76320E-05	mo-95	7	6.82420E-05
tc-99	7	4.77159E-05	tc-99	7	6.87305E-05
ru-101	7	4.39993E-05	ru-101	7	6.78346E-05
rh-103	7	2.57817E-05	rh-103	7	3.41307E-05
ag-109	7	3.25512E-06	ag-109	7	6.09146E-06
cs-133	7	4.93460E-05	cs-133	7	6.93228E-05
nd-143	7	3.42350E-05	nd-143	7	4.15151E-05
nd-145	7	2.81828E-05	nd-145	7	3.96610E-05
sm-147	7	8.58738E-06	sm-147	7	9.92228E-06
sm-149	7	1.52261E-07	sm-149	7	1.55268E-07
sm-150	7	1.12787E-05	sm-150	7	1.76331E-05
sm-151	7	4.81564E-07	sm-151	7	6.00719E-07
sm-152	7	3.96042E-06	sm-152	7	5.32877E-06
eu-153	7	3.94035E-06	eu-153	7	6.55615E-06
gd-155	7	1.49474E-07	gd-155	7	2.94742E-07
o	7	4.56500E-02	o	7	4.56500E-02
u-235	8	2.98597E-04	u-235	8	1.27941E-04
u-234	8	6.04046E-06	u-234	8	4.60536E-06
u-236	8	1.08083E-04	u-236	8	1.26984E-04
np-237	8	1.04604E-05	np-237	8	1.75877E-05
u-238	8	2.14445E-02	u-238	8	2.10916E-02
pu-238	8	3.13300E-06	pu-238	8	8.52117E-06
pu-239	8	1.25898E-04	pu-239	8	1.25792E-04
pu-240	8	4.46263E-05	pu-240	8	6.23612E-05
pu-241	8	2.19612E-05	pu-241	8	3.01899E-05
pu-242	8	8.39653E-06	pu-242	8	2.21400E-05
am-241	8	6.65231E-06	am-241	8	9.28329E-06
am-243	8	1.43048E-06	am-243	8	5.84053E-06
mo-95	8	4.56255E-05	mo-95	8	6.56750E-05
tc-99	8	4.56670E-05	tc-99	8	6.61385E-05
ru-101	8	4.18678E-05	ru-101	8	6.46431E-05
rh-103	8	2.48186E-05	rh-103	8	3.32714E-05
ag-109	8	3.01901E-06	ag-109	8	5.70430E-06
cs-133	8	4.73417E-05	cs-133	8	6.69345E-05
nd-143	8	3.32452E-05	nd-143	8	4.09216E-05
nd-145	8	2.70340E-05	nd-145	8	3.82472E-05
sm-147	8	8.38220E-06	sm-147	8	9.83235E-06
sm-149	8	1.51622E-07	sm-149	8	1.55232E-07
sm-150	8	1.06885E-05	sm-150	8	1.68286E-05
sm-151	8	4.70259E-07	sm-151	8	5.85288E-07
sm-152	8	3.81837E-06	sm-152	8	5.16737E-06
eu-153	8	3.69619E-06	eu-153	8	6.22925E-06
gd-155	8	1.37638E-07	gd-155	8	2.75015E-07
o	8	4.56500E-02	o	8	4.56500E-02
u-235	9	2.83937E-04	u-235	9	1.15791E-04
u-234	9	5.93437E-06	u-234	9	4.47802E-06
u-236	9	1.10140E-04	u-236	9	1.27683E-04
np-237	9	1.09686E-05	np-237	9	1.82212E-05
u-238	9	2.14239E-02	u-238	9	2.10508E-02
pu-238	9	3.42341E-06	pu-238	9	9.15771E-06
pu-239	9	1.26402E-04	pu-239	9	1.25214E-04
pu-240	9	4.61226E-05	pu-240	9	6.35963E-05
pu-241	9	2.27970E-05	pu-241	9	3.06516E-05
pu-242	9	9.16658E-06	pu-242	9	2.37583E-05

am-241	9	6.91358E-06	am-241	9	9.42587E-06
am-243	9	1.62462E-06	am-243	9	6.46097E-06
mo-95	9	4.70833E-05	mo-95	9	6.75515E-05
tc-99	9	4.71555E-05	tc-99	9	6.80551E-05
ru-101	9	4.34148E-05	ru-101	9	6.69994E-05
rh-103	9	2.55215E-05	rh-103	9	3.39074E-05
ag-109	9	3.18987E-06	ag-109	9	5.98815E-06
cs-133	9	4.87983E-05	cs-133	9	6.86944E-05
nd-143	9	3.39696E-05	nd-143	9	4.13550E-05
nd-145	9	2.78702E-05	nd-145	9	3.92934E-05
sm-147	9	8.53343E-06	sm-147	9	9.90113E-06
sm-149	9	1.52072E-07	sm-149	9	1.55313E-07
sm-150	9	1.11152E-05	sm-150	9	1.74198E-05
sm-151	9	4.78461E-07	sm-151	9	5.96650E-07
sm-152	9	3.92232E-06	sm-152	9	5.28565E-06
eu-153	9	3.87220E-06	eu-153	9	6.46905E-06
gd-155	9	1.46184E-07	gd-155	9	2.89508E-07
o	9	4.56500E-02	o	9	4.56500E-02
u-235	10	2.84279E-04	u-235	10	1.15996E-04
u-234	10	5.93685E-06	u-234	10	4.48021E-06
u-236	10	1.10093E-04	u-236	10	1.27673E-04
np-237	10	1.09566E-05	np-237	10	1.82103E-05
u-238	10	2.14244E-02	u-238	10	2.10515E-02
pu-238	10	3.41637E-06	pu-238	10	9.14641E-06
pu-239	10	1.26392E-04	pu-239	10	1.25224E-04
pu-240	10	4.60874E-05	pu-240	10	6.35759E-05
pu-241	10	2.27784E-05	pu-241	10	3.06437E-05
pu-242	10	9.14805E-06	pu-242	10	2.37291E-05
am-241	10	6.90762E-06	am-241	10	9.42353E-06
am-24	10	1.61987E-06	am-243	10	6.44980E-06
mo-95	10	4.70492E-05	mo-95	10	6.75198E-05
tc-99	10	4.71206E-05	tc-99	10	6.80228E-05
ru-101	10	4.33784E-05	ru-101	10	6.69580E-05
rh-103	10	2.55052E-05	rh-103	10	3.38965E-05
ag-109	10	3.18582E-06	ag-109	10	5.98328E-06
cs-133	10	4.87644E-05	cs-133	10	6.86645E-05
nd-143	10	3.39529E-05	nd-143	10	4.13485E-05
nd-145	10	2.78506E-05	nd-145	10	3.92750E-05
sm-147	10	8.53002E-06	sm-147	10	9.90014E-06
sm-149	10	1.52062E-07	sm-149	10	1.55317E-07
sm-150	10	1.11051E-05	sm-150	10	1.74094E-05
sm-151	10	4.78269E-07	sm-151	10	5.96449E-07
sm-152	10	3.91991E-06	sm-152	10	5.28366E-06
eu-153	10	3.86801E-06	eu-153	10	6.46482E-06
gd-155	10	1.45980E-07	gd-155	10	2.89256E-07
o	10	4.56500E-02	o	10	4.56500E-02
u-235	11	3.02575E-04	u-235	11	1.31181E-04
u-234	11	6.06955E-06	u-234	11	4.63801E-06
u-236	11	1.07515E-04	u-236	11	1.26789E-04
np-237	11	1.03239E-05	np-237	11	1.74229E-05
u-238	11	2.14508E-02	u-238	11	2.11022E-02
pu-238	11	3.05760E-06	pu-238	11	8.36040E-06
pu-239	11	1.25743E-04	pu-239	11	1.25916E-04
pu-240	11	4.42123E-05	pu-240	11	6.20306E-05
pu-241	11	2.17369E-05	pu-241	11	3.00510E-05
pu-242	11	8.19551E-06	pu-242	11	2.17339E-05
am-241	11	6.58024E-06	am-241	11	9.24331E-06
am-243	11	1.38100E-06	am-243	11	5.68659E-06
mo-95	11	4.52313E-05	mo-95	11	6.52200E-05
tc-99	11	4.52643E-05	tc-99	11	6.56732E-05

ru-101	11	4.14529E-05
rh-103	11	2.46275E-05
ag-109	11	2.97362E-06
cs-133	11	4.69380E-05
nd-143	11	3.30459E-05
nd-145	11	2.68086E-05
sm-147	11	8.33953E-06
sm-149	11	1.51451E-07
sm-150	11	1.05726E-05
sm-151	11	4.68059E-07
sm-152	11	3.79058E-06
eu-153	11	3.64785E-06
gd-155	11	1.35369E-07
o	11	4.56500E-02
u-235	12	2.88843E-04
u-234	12	5.96982E-06
u-236	12	1.09463E-04
np-237	12	1.07977E-05
u-238	12	2.14307E-02
pu-238	12	3.32394E-06
pu-239	12	1.26246E-04
pu-240	12	4.56228E-05
pu-241	12	2.25230E-05
pu-242	12	8.90397E-06
am-241	12	6.82755E-06
am-243	12	1.55768E-06
mo-95	12	4.65951E-05
tc-99	12	4.66571E-05
ru-101	12	4.28950E-05
rh-103	12	2.52873E-05
ag-109	12	3.13216E-06
cs-133	12	4.83147E-05
nd-143	12	3.37294E-05
nd-145	12	2.75903E-05
sm-147	12	8.48408E-06
sm-149	12	1.51938E-07
sm-150	12	1.09717E-05
sm-151	12	4.75706E-07
sm-152	12	3.88758E-06
eu-153	12	3.81308E-06
gd-155	12	1.43294E-07
o	12	4.56500E-02
u-235	13	3.19575E-04
u-234	13	6.19071E-06
u-236	13	1.05120E-04
np-237	13	9.77348E-06
u-238	13	2.14735E-02
pu-238	13	2.75979E-06
pu-239	13	1.25045E-04
pu-240	13	4.24759E-05
pu-241	13	2.08170E-05
pu-242	13	7.39878E-06
am-241	13	6.28584E-06
am-243	13	1.19122E-06
mo-95	13	4.36194E-05
tc-99	13	4.36181E-05
ru-101	13	3.97648E-05
rh-103	13	2.38321E-05
ag-109	13	2.79053E-06
cs-133	13	4.53044E-05

ru-101	11	6.40475E-05
rh-103	11	3.31039E-05
ag-109	11	5.63164E-06
cs-133	11	6.64831E-05
nd-143	11	4.07868E-05
nd-145	11	3.79834E-05
sm-147	11	9.81387E-06
sm-149	11	1.55308E-07
sm-150	11	1.66773E-05
sm-151	11	5.82601E-07
sm-152	11	5.13690E-06
eu-153	11	6.16855E-06
gd-155	11	2.71331E-07
o	11	4.56500E-02
u-235	12	1.19609E-04
u-234	12	4.51829E-06
u-236	12	1.27481E-04
np-237	12	1.80195E-05
u-238	12	2.10643E-02
pu-238	12	8.94982E-06
pu-239	12	1.25410E-04
pu-240	12	6.32162E-05
pu-241	12	3.05025E-05
pu-242	12	2.32205E-05
am-241	12	9.38144E-06
am-243	12	6.25649E-06
mo-95	12	6.69644E-05
tc-99	12	6.74503E-05
ru-101	12	6.62298E-05
rh-103	12	3.37056E-05
ag-109	12	5.89822E-06
cs-133	12	6.81402E-05
nd-143	12	4.12365E-05
nd-145	12	3.89517E-05
sm-147	12	9.88180E-06
sm-149	12	1.55352E-07
sm-150	12	1.72279E-05
sm-151	12	5.92906E-07
sm-152	12	5.24894E-06
eu-153	12	6.39094E-06
gd-155	12	2.84843E-07
o	12	4.56500E-02
u-235	13	1.45786E-04
u-234	13	4.78265E-06
u-236	13	1.25744E-04
np-237	13	1.66958E-05
u-238	13	2.11441E-02
pu-238	13	7.67412E-06
pu-239	13	1.26361E-04
pu-240	13	6.05282E-05
pu-241	13	2.94918E-05
pu-242	13	2.00061E-05
am-241	13	9.06671E-06
am-243	13	5.04647E-06
mo-95	13	6.31363E-05
tc-99	13	6.35031E-05
ru-101	13	6.14980E-05
rh-103	13	3.23576E-05
ag-109	13	5.32033E-06
cs-133	13	6.45088E-05

nd-143	13	3.22052E-05
nd-145	13	2.58866E-05
sm-147	13	8.16225E-06
sm-149	13	1.50912E-07
sm-150	13	1.00994E-05
sm-151	13	4.59127E-07
sm-152	13	3.67347E-06
eu-153	13	3.45248E-06
gd-155	13	1.26338E-07
o	13	4.56500E-02
u-235	14	2.95171E-04
u-234	14	6.01549E-06
u-236	14	1.08571E-04
np-237	14	1.05788E-05
u-238	14	2.14394E-02
pu-238	14	3.19924E-06
pu-239	14	1.26026E-04
pu-240	14	4.49800E-05
pu-241	14	2.21578E-05
pu-242	14	8.57290E-06
am-241	14	6.71446E-06
am-243	14	1.47434E-06
mo-95	14	4.59667E-05
tc-99	14	4.60156E-05
ru-101	14	4.22282E-05
rh-103	14	2.49837E-05
ag-109	14	3.05857E-06
cs-133	14	4.76881E-05
nd-143	14	3.34164E-05
nd-145	14	2.72295E-05
sm-147	14	8.41863E-06
sm-149	14	1.51755E-07
sm-150	14	1.07884E-05
sm-151	14	4.72169E-07
sm-152	14	3.84254E-06
eu-153	14	3.73766E-06
gd-155	14	1.39618E-07
o	14	4.56500E-02
u-235	15	3.08676E-04
u-234	15	6.11382E-06
u-236	15	1.06652E-04
np-237	15	1.01206E-05
u-238	15	2.14597E-02
pu-238	15	2.94645E-06
pu-239	15	1.25500E-04
pu-240	15	4.35810E-05
pu-241	15	2.14027E-05
pu-242	15	7.89877E-06
am-241	15	6.47245E-06
am-243	15	1.30913E-06
mo-95	15	4.46403E-05
tc-99	15	4.46607E-05
ru-101	15	4.08324E-05
rh-103	15	2.43386E-05
ag-109	15	2.90602E-06
cs-133	15	4.63359E-05
nd-143	15	3.27424E-05
nd-145	15	2.64710E-05
sm-147	15	8.27499E-06
sm-149	15	1.51219E-07

nd-143	13	4.02130E-05
nd-145	13	3.68514E-05
sm-147	13	9.72336E-06
sm-149	13	1.55167E-07
sm-150	13	1.60223E-05
sm-151	13	5.70597E-07
sm-152	13	5.00270E-06
eu-153	13	5.90133E-06
gd-155	13	2.55517E-07
o	13	4.56500E-02
u-235	14	1.24849E-04
u-234	14	4.57355E-06
u-236	14	1.27170E-04
np-237	14	1.77464E-05
u-238	14	2.10813E-02
pu-238	14	8.67730E-06
pu-239	14	1.25659E-04
pu-240	14	6.26798E-05
pu-241	14	3.03141E-05
pu-242	14	2.25324E-05
am-241	14	9.32046E-06
am-243	14	5.99105E-06
mo-95	14	6.61337E-05
tc-99	14	6.66063E-05
ru-101	14	6.52209E-05
rh-103	14	3.34318E-05
ag-109	14	5.77534E-06
cs-133	14	6.73770E-05
nd-143	14	4.10470E-05
nd-145	14	3.85040E-05
sm-147	14	9.85064E-06
sm-149	14	1.55221E-07
sm-150	14	1.69746E-05
sm-151	14	5.87960E-07
sm-152	14	5.19738E-06
eu-153	14	6.28800E-06
gd-155	14	2.78604E-07
o	14	4.56500E-02
u-235	15	1.36414E-04
u-234	15	4.69094E-06
u-236	15	1.26444E-04
np-237	15	1.71571E-05
u-238	15	2.11167E-02
pu-238	15	8.10680E-06
pu-239	15	1.26088E-04
pu-240	15	6.15007E-05
pu-241	15	2.98483E-05
pu-242	15	2.10934E-05
am-241	15	9.17890E-06
am-243	15	5.44541E-06
mo-95	15	6.44617E-05
tc-99	15	6.49110E-05
ru-101	15	6.31087E-05
rh-103	15	3.28348E-05
ag-109	15	5.51713E-06
cs-133	15	6.57751E-05
nd-143	15	4.05752E-05
nd-145	15	3.75736E-05
sm-147	15	9.78279E-06
sm-149	15	1.55242E-07

sm-150	15	1.03985E-05	sm-150	15	1.64364E-05
sm-151	15	4.64768E-07	sm-151	15	5.78076E-07
sm-152	15	3.74837E-06	sm-152	15	5.08915E-06
eu-153	15	3.57548E-06	eu-153	15	6.07054E-06
gd-155	15	1.32008E-07	gd-155	15	2.65529E-07
o	15	4.56500E-02	o	15	4.56500E-02
u-235	16	3.29102E-04	u-235	16	1.43978E-04
u-234	16	6.25617E-06	u-234	16	4.76518E-06
u-236	16	1.03726E-04	u-236	16	1.25884E-04
np-237	16	9.46817E-06	np-237	16	1.67837E-05
u-238	16	2.14873E-02	u-238	16	2.11388E-02
pu-238	16	2.60183E-06	pu-238	16	7.75563E-06
pu-23	16	1.24590E-04	pu-239	16	1.26309E-04
pu-240	16	4.15089E-05	pu-240	16	6.07157E-05
pu-241	16	2.02783E-05	pu-241	16	2.95657E-05
pu-242	16	6.97225E-06	pu-242	16	2.02103E-05
am-241	16	6.11432E-06	am-241	16	9.08923E-06
am-243	16	1.09336E-06	am-243	16	5.12090E-06
mo-95	16	4.27144E-05	mo-95	16	6.33904E-05
tc-99	16	4.26955E-05	tc-99	16	6.37698E-05
ru-101	16	3.88263E-05	ru-101	16	6.18028E-05
rh-103	16	2.33817E-05	rh-103	16	3.24498E-05
ag-109	16	2.69046E-06	ag-109	16	5.35756E-06
cs-133	16	4.43640E-05	cs-133	16	6.47529E-05
nd-143	16	3.17247E-05	nd-143	16	4.02799E-05
nd-145	16	2.53663E-05	nd-145	16	3.69911E-05
sm-147	16	8.05862E-06	sm-147	16	9.73502E-06
sm-149	16	1.50484E-07	sm-149	16	1.55152E-07
sm-150	16	9.83877E-06	sm-150	16	1.61011E-05
sm-151	16	4.54219E-07	sm-151	16	5.71990E-07
sm-152	16	3.60805E-06	sm-152	16	5.01946E-06
eu-153	16	3.34462E-06	eu-153	16	5.93352E-06
gd-155	16	1.21447E-07	gd-155	16	2.57414E-07
o	16	4.56500E-02	o	16	4.56500E-02
u-235	17	3.40166E-04	u-235	17	1.54003E-04
u-234	17	6.33355E-06	u-234	17	4.86237E-06
u-236	17	1.02073E-04	u-236	17	1.25079E-04
np-237	17	9.12417E-06	np-237	17	1.62967E-05
u-238	17	2.15019E-02	u-238	17	2.11650E-02
pu-238	17	2.42773E-06	pu-238	17	7.31334E-06
pu-239	17	1.24007E-04	pu-239	17	1.26599E-04
pu-240	17	4.03833E-05	pu-240	17	5.96963E-05
pu-241	17	1.96569E-05	pu-241	17	2.91311E-05
pu-242	17	6.50359E-06	pu-242	17	1.91033E-05
am-241	17	5.91603E-06	am-241	17	8.95316E-06
am-243	17	9.89220E-07	am-243	17	4.71668E-06
mo-95	17	4.16833E-05	mo-95	17	6.19623E-05
tc-99	17	4.16443E-05	tc-99	17	6.23715E-05
ru-101	17	3.77651E-05	ru-101	17	6.01425E-05
rh-103	17	2.28608E-05	rh-103	17	3.19344E-05
ag-109	17	2.57829E-06	ag-109	17	5.15480E-06
cs-133	17	4.33352E-05	cs-133	17	6.34336E-05
nd-143	17	3.11659E-05	nd-143	17	3.99032E-05
nd-145	17	2.47708E-05	nd-145	17	3.62250E-05
sm-147	17	7.93543E-06	sm-147	17	9.66802E-06
sm-149	17	1.49921E-07	sm-149	17	1.55154E-07
sm-150	17	9.54145E-06	sm-150	17	1.56658E-05
sm-151	17	4.48343E-07	sm-151	17	5.64014E-07
sm-152	17	3.53210E-06	sm-152	17	4.92904E-06
eu-153	17	3.22255E-06	eu-153	17	5.75503E-06

gd-155	17	1.15977E-07
o	17	4.56500E-02
u-235	18	3.78622E-04
u-234	18	6.59104E-06
u-236	18	9.62608E-05
np-237	18	7.99286E-06
u-238	18	2.15505E-02
pu-238	18	1.90148E-06
pu-239	18	1.21529E-04
pu-240	18	3.65553E-05
pu-241	18	1.75073E-05
pu-242	18	5.06816E-06
am-241	18	5.23559E-06
am-243	18	6.90343E-07
mo-95	18	3.82240E-05
tc-99	18	3.81175E-05
ru-101	18	3.42463E-05
rh-103	18	2.10816E-05
ag-109	18	2.21598E-06
cs-133	18	3.97882E-05
nd-143	18	2.92010E-05
nd-145	18	2.27726E-05
sm-147	18	7.50245E-06
sm-149	18	1.48163E-07
sm-150	18	8.56187E-06
sm-151	18	4.29333E-07
sm-152	18	3.27360E-06
eu-153	18	2.82133E-06
gd-155	18	9.87156E-08
o	18	4.56500E-02
u-235	19	3.88048E-04
u-234	19	6.65290E-06
u-236	19	9.48099E-05
np-237	19	7.73267E-06
u-238	19	2.15608E-02
pu-238	19	1.78924E-06
pu-239	19	1.20825E-04
pu-240	19	3.56335E-05
pu-241	19	1.69808E-05
pu-242	19	4.75896E-06
am-241	19	5.06932E-06
am-243	19	6.30645E-07
mo-95	19	3.74038E-05
tc-99	19	3.72877E-05
ru-101	19	3.34284E-05
rh-103	19	2.06545E-05
ag-109	19	2.13402E-06
cs-133	19	3.89436E-05
nd-143	19	2.87197E-05
nd-145	19	2.22987E-05
sm-147	19	7.39520E-06
sm-149	19	1.47753E-07
sm-150	19	8.33328E-06
sm-151	19	4.25027E-07
sm-152	19	3.21151E-06
eu-153	19	2.72881E-06
gd-155	19	9.49172E-08
o	19	4.56500E-02
u-235	20	4.16911E-04
u-234	20	6.83812E-06

gd-155	17	2.47078E-07
o	17	4.56500E-02
u-235	18	2.01795E-04
u-234	18	5.28939E-06
u-236	18	1.20393E-04
np-237	18	1.41418E-05
u-238	18	2.12791E-02
pu-238	18	5.54134E-06
pu-239	18	1.27377E-04
pu-240	18	5.46853E-05
pu-241	18	2.69900E-05
pu-242	18	1.46362E-05
am-241	18	8.26923E-06
am-243	18	3.20494E-06
mo-95	18	5.59479E-05
tc-99	18	5.62465E-05
ru-101	18	5.31625E-05
rh-103	18	2.95227E-05
ag-109	18	4.31307E-06
cs-133	18	5.76377E-05
nd-143	18	3.78292E-05
nd-145	18	3.28811E-05
sm-147	18	9.29514E-06
sm-149	18	1.54377E-07
sm-150	18	1.37982E-05
sm-151	18	5.29166E-07
sm-152	18	4.53024E-06
eu-153	18	4.98387E-06
gd-155	18	2.03684E-07
o	18	4.56500E-02
u-235	19	2.11262E-04
u-234	19	5.36896E-06
u-236	19	1.19319E-04
np-237	19	1.37442E-05
u-238	19	2.12979E-02
pu-238	19	5.24507E-06
pu-239	19	1.27420E-04
pu-240	19	5.36992E-05
pu-241	19	2.65458E-05
pu-242	19	1.38840E-05
am-241	19	8.12203E-06
am-243	19	2.96808E-06
mo-95	19	5.48440E-05
tc-99	19	5.51094E-05
ru-101	19	5.19171E-05
rh-103	19	2.90529E-05
ag-109	19	4.16509E-06
cs-133	19	5.65370E-05
nd-143	19	3.73995E-05
nd-145	19	3.22640E-05
sm-147	19	9.21476E-06
sm-149	19	1.54301E-07
sm-150	19	1.34608E-05
sm-151	19	5.22823E-07
sm-152	19	4.45610E-06
eu-153	19	4.84383E-06
gd-155	19	1.96042E-07
o	19	4.56500E-02
u-235	20	2.49341E-04
u-234	20	5.67375E-06

u-236	20	9.02470E-05	u-236	20	1.14689E-04
np-237	20	6.95894E-06	np-237	20	1.22277E-05
u-238	20	2.15927E-02	u-238	20	2.13685E-02
pu-238	20	1.47515E-06	pu-238	20	4.19952E-06
pu-239	20	1.18399E-04	pu-239	20	1.27191E-04
pu-240	20	3.28333E-05	pu-240	20	4.97063E-05
pu-241	20	1.53497E-05	pu-241	20	2.46120E-05
pu-242	20	3.88900E-06	pu-242	20	1.11953E-05
am-241	20	4.56083E-06	am-241	20	7.50128E-06
am-243	20	4.72126E-07	am-243	20	2.17074E-06
mo-95	20	3.49230E-05	mo-95	20	5.06359E-05
tc-99	20	3.47643E-05	tc-99	20	5.07842E-05
ru-101	20	3.09670E-05	ru-101	20	4.72432E-05
rh-103	20	1.93435E-05	rh-103	20	2.71808E-05
ag-109	20	1.89351E-06	ag-109	20	3.62246E-06
cs-133	20	3.63889E-05	cs-133	20	5.23539E-05
nd-143	20	2.72109E-05	nd-143	20	3.56290E-05
nd-145	20	2.08549E-05	nd-145	20	2.98908E-05
sm-147	20	7.05133E-06	sm-147	20	8.86978E-06
sm-149	20	1.46096E-07	sm-149	20	1.53204E-07
sm-150	20	7.65119E-06	sm-150	20	1.21793E-05
sm-151	20	4.11379E-07	sm-151	20	4.98485E-07
sm-152	20	3.02052E-06	sm-152	20	4.16968E-06
eu-153	20	2.45331E-06	eu-153	20	4.31203E-06
gd-155	20	8.39151E-08	gd-155	20	1.68145E-07
o	20	4.56500E-02	o	20	4.56500E-02
u-235	21	4.87616E-04	u-235	21	3.42125E-04
u-234	21	7.27073E-06	u-234	21	6.34729E-06
u-236	21	7.87168E-05	u-236	21	1.01780E-04
np-237	21	5.27372E-06	np-237	21	9.06462E-06
u-238	21	2.16611E-02	u-238	21	2.15042E-02
pu-238	21	8.92156E-07	pu-238	21	2.39807E-06
pu-239	21	1.10787E-04	pu-239	21	1.23898E-04
pu-240	21	2.61530E-05	pu-240	21	4.01849E-05
pu-241	21	1.15210E-05	pu-241	21	1.95482E-05
pu-242	21	2.25916E-06	pu-242	21	6.42383E-06
am-241	21	3.37880E-06	am-241	21	5.88140E-06
am-243	21	2.17889E-07	am-243	21	9.71809E-07
mo-95	21	2.91686E-05	mo-95	21	4.15035E-05
tc-99	21	2.89385E-05	tc-99	21	4.14610E-05
ru-101	21	2.54038E-05	ru-101	21	3.75807E-05
rh-103	21	1.62211E-05	rh-103	21	2.27692E-05
ag-109	21	1.38506E-06	ag-109	21	2.55892E-06
cs-133	21	3.04307E-05	cs-133	21	4.31577E-05
nd-143	21	2.34785E-05	nd-143	21	3.10670E-05
nd-145	21	1.74885E-05	nd-145	21	2.46671E-05
sm-147	21	6.17711E-06	sm-147	21	7.91360E-06
sm-149	21	1.41780E-07	sm-149	21	1.49830E-07
sm-150	21	6.12144E-06	sm-150	21	9.48965E-06
sm-151	21	3.81082E-07	sm-151	21	4.47310E-07
sm-152	21	2.56093E-06	sm-152	21	3.51868E-06
eu-153	21	1.85107E-06	eu-153	21	3.20137E-06
gd-155	21	6.19905E-08	gd-155	21	1.15037E-07
o	21	4.56500E-02	o	21	4.56500E-02

==

End

Appendix III

ISOTOPIC NUMBER DENSITIES FOR THE PHASE II-C UNIFORM AXIAL BURN-UP DISTRIBUTIONS

B32Auniform

u-235	3.19920E-04
u-234	6.19310E-06
u-236	1.05070E-04
np-237	9.76250E-06
u-238	2.14740E-02
pu-238	2.75400E-06
pu-239	1.25030E-04
pu-240	4.24410E-05
pu-241	2.07980E-05
pu-242	7.38320E-06
am-241	6.27980E-06
am-243	1.18760E-06
mo-95	4.35870E-05
tc-99	4.35850E-05
ru-101	3.97310E-05
rh-103	2.38160E-05
ag-109	2.78690E-06
cs-133	4.52710E-05
nd-143	3.21880E-05
nd-145	2.58680E-05
sm-147	8.15860E-06
sm-149	1.50900E-07
sm-150	1.00900E-05
sm-151	4.58950E-07
sm-152	3.67110E-06
eu-153	3.44860E-06
gd-155	1.26160E-07
o	4.56500E-02

Number density / $b^{-1}cm^{-1}$

B50Auniform

u-235	1.46090E-04
u-234	4.78560E-06
u-236	1.25720E-04
np-237	1.66810E-05
u-238	2.11450E-02
pu-238	7.66050E-06
pu-239	1.26370E-04
pu-240	6.04970E-05
pu-241	2.94790E-05
pu-242	1.99720E-05
am-241	9.06280E-06
am-243	5.03400E-06
mo-95	6.30930E-05
tc-99	6.34590E-05
ru-101	6.14470E-05
rh-103	3.23420E-05
ag-109	5.31410E-06
cs-133	6.44680E-05
nd-143	4.02020E-05
nd-145	3.68280E-05
sm-147	9.72140E-06
sm-149	1.55170E-07
sm-150	1.60090E-05
sm-151	5.70360E-07
sm-152	4.99990E-06
eu-153	5.89590E-06
gd-155	2.55200E-07
o	4.56500E-02

Number density / $b^{-1}cm^{-1}$

Appendix IV
PARTICIPANTS AND ANALYSIS METHODS

BNFL, United Kingdom

Institute:	British Nuclear Fuels plc
Participants:	Jim Gulliford, Jane Edge, Joanne Gracey, Mike Peers, Michelle Nuttall
Computer code:	MONK8
Data library:	JEF2.2
Comments:	MONK is a Monte Carlo neutronics computer code. Calculates k-effective by the computer simulation of the birth, migration and ultimate fate of a finite sample of neutrons. JEF2.2 library has 13 193 energy groups. Neutron starting distribution in axial zones 1 to 21. 10 settling (non-scoring) stages. 50 scoring stages. 10 generations of 10 000 neutrons per stage.

CEA, France

Institute:	Commissariat à l'Énergie Atomique
Participants:	B. Roque, A. Santamarina, C. Venard
Computer code:	APOLLO2/MORET4
Data library:	JEF2.2
Comments:	The geometry described in APOLLO2 is the actual geometry of the lattice in the basket. We applied the 2D Pij method to solve the Boltzmann integral equation; no cylindrization used, no isotropic interface angular flux assumption applied. The self-shielded and homogenized cross-sections of the various cells and basket absorber (from the realistic assembly/basket array APOLLO2 calculation) are introduced in the MORET code for the 3-D Monte-Carlo calculation of the transport cask. Uniform Neutron starting distribution in all fissile material, 60 millions histories.

EMS (MCNP), Sweden

Institute:	E Mennerdahl Systems (EMS)
Participants:	Dennis Mennerdahl
Computer code:	MCNP4C2
Data library:	ENDF/B-6.1 (.61c) cross sections for actinides and ENDF/B-5 for most fission products
Comments:	The geometry input was created using surface definitions (no macrobodies). Tally type F4:N (neutron flux averaged over a cell) and a corresponding FM specification (card) was used with the reaction type -6 (fission cross section) to get fission densities. A start distribution generated by a previous similar (cosine over all axial length)

calculation was used. One run per case. 300 batches of which 100 were skipped. 10 000 neutrons per batch (2 million active source neutrons).

EMS (SCALE), Sweden

Institute:	E Mennerdahl Systems (EMS)
Participants:	Dennis Mennerdahl
Computer code:	SCALE 4.4, CSAS25
Data library:	238 group ENDF/B-V based library
Comments:	The standard sequence CSAS25 was used with default values except that extra memory was required (for cross section preparation) and that Dancoff resonance parameters had to be specified for 20 of the 21 fuel compositions of the fuel rod. A default start distribution was selected (uniform in all fissile material). One run per case. 300 batches of which 100 were skipped. 10 000 neutrons per batch (2 million active source neutrons). The standard deviations for fission fractions and densities are less then 1% for most nodes. Higher deviations are for the least significant nodes.

FANP GmbH, Germany

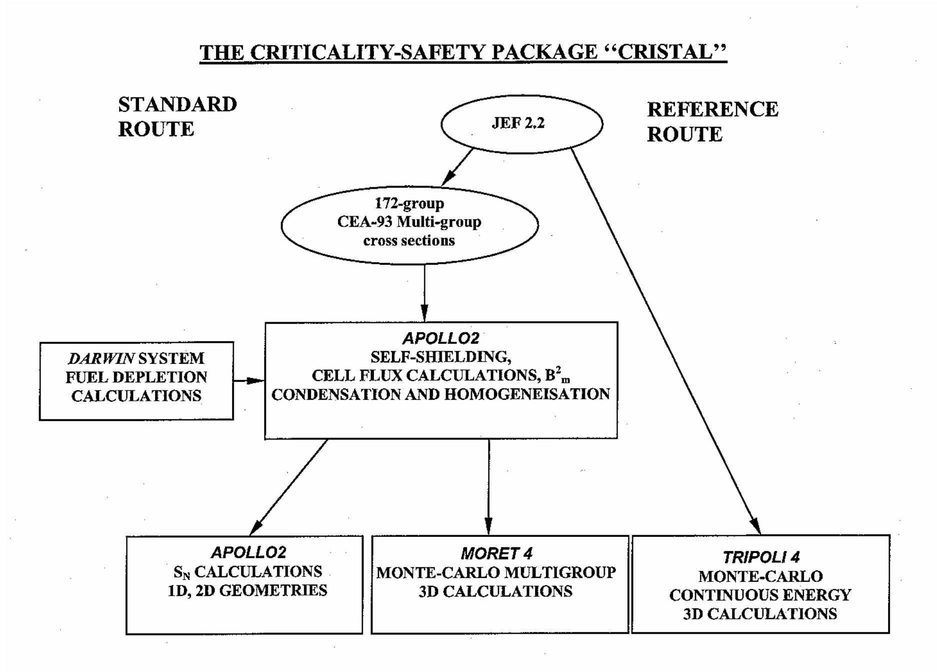
Institute:	AREVA Framatome-ANP Gmbh
Participants:	Jens Christian Neuber
Computer code:	SCALE 4.4a, CSAS25
Data library:	SCALE 44 group ENDF/B-V based library
Comments:	The criticality safety analysis sequence CSAS25 of the SCALE 4.4a system executes successively the modules BONAMI-S, NITAWL-II, and the Monte Carlo code KENO V.a. BONAMI-S performs resonance shielding through the application of the Bondarenko shielding factor method, and NITAWL-II carries out resonance shielding by use of the Nordheim integral technique. The KENO V.a code treats an arbitrary three-dimensional configuration of materials in geometric cells bounded by first-degree surfaces and some special second-degree surfaces. It solves the multi-energy-group form of the neutron transport equation as an eigenvalue problem through employment of Monte Carlo techniques. The final results for the Phase II-C cases are weighted mean values from 3 calculation runs each started with a different starting random number. For each run about 12 000 000 neutron histories were followed up (3003 batches, 4 000 neutrons per batch). (Number of initial batches skipped depends on the convergence attained in each of the runs. Usually the number of initial batches skipped is between 50 and 200, but in some cases it is higher.) For the non-uniform cases neutron starting distribution type 7 was used. In axial direction of the fuel assemblies this distribution is cosine-shaped with two maxima located close to the ends of the fuel zone. In the directions perpendicular to the axial direction the distribution is uniform.

IRSN, France

Institute:	Institute for Radiological Protection and Nuclear Safety
Participants:	Jerome RABY
Computer code:	TRIPOLI4

Data library: JEF2.2

Comments: The calculations were performed using the French CRISTAL package, version v0.1 presented below.



The functional architecture of the CRISTAL criticality package is organized around two calculation schemes, which use the nuclear data from the JEF2.2 data file:

- The "standard scheme" uses a multigroupe formulation of cross-sections of the CEA93 library (the CEA93 172 groups library integrates the needs of the criticality) possibly condensed and homogenized by the APOLLO2 computer code and used in the multigroupe Monte Carlo computer code MORET4 or in the SN modules of APOLLO2.
- The "reference scheme" based on the continuous-energy computer code TRIPOLI4 which uses the minimum of physical approximations and modelling. This scheme uses the point-wise cross-sections. The cross-sections are represented as a point in the energy range, except for the unresolved range for which specific methods are used (temperature dependant probability tables, for example).

In the calculations made with the computer code TRIPOLI4 ("reference" scheme of CRISTAL), we directly use the nuclear data from the JEF2.2 evaluation. The partial cross-sections in relation to energy, anisotropy, fission spectrums and secondary particles productions are integrally read in the JEF2.2 data file.

The TRIPOLI4 code, developed by CEA, is a particle continuous-energy transport code in 3-D geometries based on the Monte-Carlo method. In the present stage of development neutrons and photons are considered. The aim is to treat two main kinds of problems:

- "the shielding problems": propagation of particles over long distances and with strong attenuations of fluxes; these are problems with sources in a non multiplicative medium, in steady state or time dependant;
- "the neutron problems": behaviour of neutrons in a fissile system (the medium is neutron multiplicative) critical or sub-critical with sources, with or

without fixed sources, in stationary state.
This reference route of CRISTAL is used for Phase II-C calculations.

JAERI, Japan

Institute:	Japan Atomic Energy Research Institute
Participants:	Hoang Anh Tuan, Hiroshi Okuno and Yasushi Nomura
Computer code:	MCNP4B2
Data library:	JENDL-3.2
Comments:	MCNP4B2: 3-D Monte Carlo continuous energy calculation. Results for uniform burn-up were obtained by using a total of 24 million histories. All other results for axial burn-up shapes were obtained by using total of 3 million histories.

A more detailed description of the methods used is given in :

- H.A. Tuan, H. Okuno and Y. Nomura, "Reactivity Effect of Axial Burn-up Shapes for a Realistic PWR Spent Fuel Transport Cask", JAERI-Conf 2002-004, Proceedings of the International Symposium NUCEF 2001, pp. 399 – 406,
- Takeshi Kuroishi, Anh Tuan Hoang, Yasushi Nomura and Hiroshi Okuno, "Extended Calculations of OECD/NEA Phase II-C Burn-up Credit Criticality Benchmark Problem for PWR Spent Fuel Transport Cask by Using MCNP-4B2 and Jendl-3.2 Library, JAERI-Tech, 2003-021, March 2003.

KFKI, Hungary

Institute:	KFKI Atomic Energy Research Institute
Participants:	Gabor Hordosy
Computer code:	MCNP4C
Data library:	ENDF/B-VI, ENDF/B-V
Comments:	Monte Carlo, Continuous energy library. Results for uniform burn-up were obtained by using uniform initial source, 15 000 neutrons per generation, 150 generations skipped, and 500 active cycles. All other results for axial burn-up shapes were obtained by 35 000 neutrons per generation, 150 generations skipped, and 500 active cycles.

NUPEC, Japan

Institute:	NUPEC Institute of Nuclear Safety
Participants:	Shungo Sakurai and Mitake Susumu
Computer code:	MVP
Data library:	JENDL 3.1
Comments:	MVP is a fully vectorized Monte Carlo Code. It is developed to realize fast and accurate Monte Carlo simulation of Neutron and Photon transport Problem. JENDL, an evaluated nuclear data library, is a data file that contains recommended nuclear data: The Nuclear Data Center of Japan Atomic Energy Research Institute is making the Japanese Evaluated Nuclear Data Library, JENDL, with the aid of Japanese Nuclear Data Committee (JNDC). Initial source distribution: uniform in each fuel pin. Number of neutrons per batch: 10 000; number of batches: 300; number of skipped batches: 40.

ORNL, USA

Institute:	Oak Ridge National Laboratory
Participants:	Mark D. DeHart
Computer code:	CSAS25 (KENO V.a) Sequence of SCALE 5
Data library:	SCALE 44-group ENDF/B-V library (44groupndf5)
Comments:	Calculations were performed using the current development version of SCALE5 (ORNL internal) and run on an Apple Macintosh PowerPC G3 CPU. The SCALE 44groupndf5 cross-section library is based on ENDF/B-V data, but with ENDF/B-VI evaluations for O-16, Eu-154 & Eu-155. Neutron data were processed using the CSAS25 sequence of SCALE5. CSAS25 uses the BONAMI code to apply the Bondarenko resonance self-shielding method for nuclides with Bondarenko data; it then invokes NITAWL-III to perform Nordheim resonance self-shielding corrections. The eigenvalue calculation was then performed using KENO V.a. Uniform starting distribution was applied, 1600 generations (batches) with 1 000 neutrons per generation, first 100 generations skipped: 1 run per case.

Recalculation by FANP GmbH, Germany (cf. Appendix VI of the report on hand)

Institute:	AREVA Framatome-ANP Gmbh
Participants:	Jens Christian Neuber
Computer code:	SCALE 5, CSAS25
Data library:	SCALE 44 group ENDF/B-V based library
Comments:	The criticality safety analysis sequence CSAS25 of the SCALE 5 system executes successively the modules BONAMI, NITAWL-III, and the Monte Carlo code KENO V.a. BONAMI performs resonance shielding through the application of the Bondarenko shielding factor method. NITAWL-III carries out resonance shielding corrections by use of the Nordheim integral technique. KENO V.a performs the eigenvalue calculation. Using different starting random numbers six calculations per benchmark case were performed. The total number of calculated neutron generations per calculation run ranges from 4 003 to 19 003. The number of initial generations skipped is 1003 per each calculation run. In Table IV.1 the number of evaluated generations (batches), N_e, is given for each case and run. This number is given by eq.(IV.1), $N_e = N_C - N_{skip}$ (IV.1) N_C:= total number of calculated generations, N_{skip}:= number of initial generations skipped (1 003). The number of neutrons per generation was fixed at 4 000 for each run and case. For the non-uniform axial burn-up profiles the neutron starting distribution type 7 was used.

Table IV.1 Recalculation of the benchmark cases by FANP GmbH with the aid of the SCALE 5 system: number of evaluated neutron generations per benchmark case and calculation run, cf. eq.(IV.1)

Benchmark Case	Number of evaluated generations					
	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
B32Auniform	6.00E+03	6.00E+03	6.00E+03	6.00E+03	6.00E+03	6.00E+03
B32A222222	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A111111	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A111112	6.00E+03	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A111122	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A111222	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A112222	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A122222	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A222223	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A222233	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A222333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A223333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A233333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A333333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A122223	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A112233	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A322221	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B32A332211	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50Auniform	6.00E+03	6.00E+03	6.00E+03	6.00E+03	6.00E+03	6.00E+03
B50A222222	6.00E+03	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A111111	1.10E+04	6.00E+03	6.00E+03	1.10E+04	1.80E+04	1.10E+04
B50A111112	3.00E+03	3.00E+03	3.00E+03	1.80E+04	1.10E+04	1.10E+04
B50A111122	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A111222	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04	1.10E+04
B50A112222	6.00E+03	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A122222	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A222223	6.00E+03	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A222233	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A222333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A223333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A233333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A333333	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A122223	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A112233	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A322221	6.00E+03	6.00E+03	6.00E+03	1.10E+04	1.10E+04	1.10E+04
B50A332211	3.00E+03	3.00E+03	3.00E+03	1.10E+04	1.10E+04	1.10E+04

Appendix V
AMENDMENTS TO SECTION 6.3.2

This appendix gives a more detailed discussion of the spread of the fission density results obtained from the contributors to the Phase II-C benchmark exercise and presents the results obtained for checks on convergence in the calculation of the fission density distributions.

The discussion in Section 6.3.2 has been started with the statement that big spreads are observed in the fission density results from the contributors (cf. Figures 5.4 through 5.20 and 5.22 through 5.38), and in a lot of cases the fission densities recorded by the contributors in axial zones of the lower half of the fuel amount to zero. It was stated then that, although the lower half of the fuel zone usually is the higher burnt half of the fuel (cf. Figure 1.1), the observation of zero fission densities in axial zones of the lower half of the fuel is due to insufficient tracking of neutrons in this range of the fuel.

Since dealing with stationary systems it is obvious that it is only a question of adequate sampling to observe non-zero fission densities in all zones where fissile material is present. In addition, an observed fission density distribution is acceptable only when the fission densities in all zones are "stable", or rather "converged" in terms of statistics, i.e., when the fission densities do not change significantly when the number of initial neutron generations skipped is increased.

One may raise the objection that the relative importance of the lower half of the fuel zone may be so small that the fission densities in axial zones of the lower half of the fuel zone cannot be discriminated from zero by the output routine of the calculation code used or by this code itself. If this were true, i.e., if the recorded zero fission densities really were components of converged fission density distributions, then it should be observed that the frequency of occurrence of recording zero fission densities is monotonically increasing with increasing asymmetry of the profiles. But this is not observed. What really is observed is that the frequency of occurrence of zero fission densities is simply fluctuating with increasing or decreasing asymmetry of the burn-up profiles. Let's take two examples:

- For the case B32A222222 all the contributors except for one have observed fission densities different from zero, cf. Table 5.12. Going to the next case, B32A222223, suddenly two other contributors observe zero fission densities in the axial zones i = 1 through i = 4 or 5 (cf. Table 5.13), even though the asymmetry of the axial burn-up profile B32A222223 is lower than the asymmetry of the profile B32A222222 (cf. Figures 3.1 and 3.2). Going then from B32A222223 to B32A222233, i.e., decreasing the asymmetry of the burn-up profile further, the frequency of observations of zero densities is notably reduced. cf. Table 5.14. Going backwards from Table 5.12 to Table 5.6, i.e., from case B32A222222 to case B32A111111 it appears that the frequency of observing zero fission densities does not monotonously increase with increasing asymmetry of the axial profiles; it is fluctuating with increasing asymmetry of the profiles.
- As can be seen from Tables 5.24 through 5.28, the contributor EMS (SCALE) observes zero fission densities in the axial zones i = 1 through i = 6 for the case B50A111111. In the next

case however, the case B50A111112, he has recorded fission densities greater than zero in all axial zones. But then, in case B50A111122, he obtains fission densities in the axial zones i = 1 through i = 4 which are significantly lower than those obtained in case B50A111112 even though the number densities in the axial zones i = 1 through i = 3 do not change in switching from B50A111112 to B50A111122, and he observes zero fission densities in the axial zones i = 5 and 6 even though the asymmetry of B50A111122 is lower than the asymmetry of B50A111112. In the next cases, B50A111222 and B50A112222, he suddenly observes zero fission densities in zones i = 6 through i = 8 and then in zones i = 1,3,4 and 7 even though the asymmetry of the profiles is decreasing in switching over from B50A111122 to B50A111222 and then to B50A112222. So, there is no systematic trend in the frequency of observing zero fission densities with the changing of the asymmetry of the profiles; the frequency of observing zero fission densities is merely fluctuating. This also appears from the results of other contributors, as can be seen, for instance, from the results obtained by KFKI for B50A111111 through B50A333333 (cf. Tables 5.24 through 5.36).

The unsystematic fluctuations in the occurrence of zero fission densities recorded demonstrate that the observation of zero fission densities is due to insufficient tracking of neutrons in the lower region of the fuel, cf. Ref. [V-1]. Therefore, the recorded axial fission density distributions which show zero fission densities in some region of the fuel zone are not really converged and hence not acceptable for the investigation of the impact of the asymmetry of axial burn-up profiles on the fission density distribution. Consequently, only those of the recorded axial fission density distributions are considered which are different from zero in all axial zones over the full active length of the fuel. These fission density distributions are averaged according to eq.(6.1), for each benchmark case separately of course. The mean values of the respective fission densities are given, together with their standard deviations (6.13), in Tables 5.5 through 5.40.

One may raise the objection that the big amount of effort that may be required for attaining converged fission density distributions is not reasonable. What matters is that the neutron multiplication factor k_{eff} of the cask configuration analysed is determined by the top end of the fuel zone as clearly demonstrated by the results presented in Figures 5.4 through 5.20 and 5.22 through 5.38. Convergence in k_{eff} is achieved, at least by most of the contributors, and does not depend on some scarce fission events in the lower half of the fuel zone. This is not called into question. However, a study on the impact of the degree of the asymmetry of axial burn-up profiles on the fission density distribution requires stable fission densities, because for such a study the behaviour of the fission density distribution for the axial zones $i \leq 15$ (cf. Figures 5.4 through 5.20 and 5.22 through 5.38) and the probability content associated with these distribution in the range of the zones $i \leq 15$ must be well-known. The results presented in Appendix VI demonstrate that it is worthwhile providing convergence and sufficient tracking.

In addition, what really is the big amount of effort to obtain converged fission density distributions? Whether a calculation case is running two hours or ten is of no interest, since it is only computer time and not the analyst's time which is consumed. And, by the way, as can be seen from Appendix II, the factors between the isotopic number densities at the lower half of the plateau region of the fuel (region around axial zone No. 7, see figure in Appendix I) and the top end of of the fuel (axial zone No. 21) are not of such orders of magnitude that it becomes hard to observe fission densities greater than zero. For instance, for the cases with the highest degree of asymmetry, B32A111111 and B50A111111, one gets the following factors between the number densities at axial zone No. 7 and the number densities at zone No. 21:

		B32A111111	B50A111111
Fissile isotopes:	U-235:	0.44	0.25
	Pu-239:	1.35	1.06
	Pu-241:	3.85	2.05
Actinide absorbers:	Pu-240:	2.92	2.00
	Am-241:	4.08	2.13
Fission products:	Rh-103:	2.29	1.80
	Nd-143:	2.00	1.55
	Sm-149:	1.14	1.06

As already stated in Section 6.3.2, the exclusion of the fission density distributions showing zero fission densities in some region of the fuel zone does not imply that the remaining fission density distributions observed are regarded as converged. The remaining fission density distributions still differ by orders of magnitude in the lower half of the fuel zone (cf. Figures 5.4 through 5.20 and 5.22 through 5.38). And also in the upper half of the fuel zone the fission density results reported by the contributors differ significantly in a lot of cases (cf. ibid.). What is striking in particular, in a lot of cases the fission density values from IRSN are the lowest in the upper half of the fuel zone and the highest in the lower half of the fuel zone. The results from IRSN were already suspected of being not converged (cf. last paragraph of Section 6.1).

Even though stated in Ref. [V-2] that a considerably higher number of neutron histories is required for achieving converged fission density distributions than for the calculation of the k_{eff} values, it is really a fault that the benchmark specification given in Ref. [V-2] did not ask for showing a proof of attaining convergence in the calculation of the fission density distributions. Therefore, the task now is to check whether the remaining fission density distributions are converged and hence acceptable or not. For this purpose FANP GmbH subsequently made some additional calculation runs for the reference case B32A222222 with the aid of the SCALE 4.4a system using different starting random numbers and different numbers of initial neutron generations (batches) skipped.

In Tables V.1 and V.2 all the results obtained by FANP GmbH for the reference case B32A222222 by means of SCALE 4.4a are summarised and the outcomes of the checks on convergence in the calculation of the fission density distributions are given. As indicated in these tables, these checks consist in increasing the number of initial generations skipped step by step in order to figure out the minimum required number of initial generations to be skipped. Except for one case the number of generations evaluated amounts to 3 000, and the number of neutrons per generation is 4 000. Three or four calculation runs per case were performed, each started with a different starting random number. The results given in Tables V.1 and V.2 are the sample means eq.(6.1) and the standard deviations eq.(6.13), respectively, of the calculation runs.

These results, the sample means together with their standard deviations, are also presented in Figure V.1. As appears from this figure and as confirmed by the outcomes of the checks performed, the minimum number of initial generations skipped required for attaining convergence in the calculation of the fission density distributions amounts to 300. The checks performed consist in compatibility tests of the zone-specific fission density means listed in Table V.1 using the goodness-of-fit test statistic described in Ref. [5-3], Section 11.5.2, with a significance level of a = 0.1% (see also Ref. [V-1], Section 5). By means of this test statistic it is checked, on a basis of the significance level a, whether the fission density means obtained for a given axial zone have the same expectation or not. As indicated in Table V.1, the results obtained for choosing less than 300 skipped initial generations have to be excluded from the tests in order to achieve compatibility.

This outcome is really sobering, because it is to be expected now, as follows from Appendix IV, that none of the contributors has achieved convergence. And, in fact, just this expectation is confirmed by a comparison of Figure V.1 to Figure 5.10: The fission density results obtained from BNFL, CEA, EMS (SCALE), FANP GmbH, IRSN, and NUPEC for the bottom end of the fuel zone are significantly higher than the stable values given in Figure V.1. And it is pure chance that the results from the remaining contributors, EMS (MCNP), JAERI, KFKI, and ORNL, are close to the stable values. This follows from the fact that just these contributors have recorded zero fission densities in a lot of cases (cf. Figures 5.4 through 5.20 and 5.22 through 5.38). And remember that also the contributor EMS (SCALE) has observed zero fission densities in many cases (cf. ibid.). So, it is pure chance that the fission densities observed by EMS (SCALE) in the bottom end of the fuel for the case shown in Figure 5.10 are higher than the stable values presented in Figure V.1. Therefore, the only possible conclusion unfortunately is that none of the contributors has obtained converged fission density distributions for the non-uniform axial burn-up distributions.

In view of this conclusion one may resort to the idea that it may be better to include all recorded fission density results, whether they amount to zero or not, in the calculation of the sample means eq.(6.1) and the standard deviations eq.(6.13) of the benchmark cases. However, first of all, this does not work as follows immediately from a comparison of Figure 5.10 to Figure V.1. Secondly, and this is the main point, it is inconsistent to accept a distribution which is derived from a set of non-accepted distributions. Therefore, one has no choice but to recognise that all fission density distributions obtained from the contributors for the non-uniform burn-up profiles are not converged.

Table V.1 Check on convergence of the fission density distribution for the reference case B32A222222: Mean values eq.(6.1) of the fission densities and the neutron multiplication factor k_{eff} as a function of the number of generations calculated (NC) and the number of initial generations skipped (NS) [1)]

Axial Zone No.	Fission density Mean value N_c=3003 N_s=3	Fission density Mean value N_c=3203 N_s=203	Fission density Mean value N_c=3303 N_s=303	Fission density Mean value N_c=3003 N_s=403	Fission density Mean value N_c=3403 N_s=403	Fission density Mean value N_c=4003 N_s=1003	Fission density Mean value N_c=5003 N_s=2003	Fission density Mean value N_c=6003 N_s=3003	Compatibility[2)] (alpha =0.1%) $N_s \geq 303$
1.000000E+00	8.277153E-04	2.669140E-05	9.379626E-06	1.557031E-05	1.263904E-05	9.761992E-06	8.300830E-06	1.189425E-05	yes
2.000000E+00	1.109397E-03	4.267146E-05	1.519356E-05	2.489618E-05	2.269403E-05	1.788453E-05	1.431078E-05	1.849682E-05	yes
3.000000E+00	1.097744E-03	4.135466E-05	1.814179E-05	2.768207E-05	2.503610E-05	2.000636E-05	1.578847E-05	1.916517E-05	yes
4.000000E+00	8.993715E-04	3.776930E-05	2.058576E-05	2.655358E-05	2.556289E-05	2.308223E-05	1.665951E-05	1.482049E-05	yes
5.000000E+00	6.911375E-04	4.123179E-05	3.507861E-05	4.059721E-05	3.410713E-05	3.630390E-05	2.248444E-05	1.793816E-05	yes
6.000000E+00	5.832675E-04	6.035239E-05	5.124461E-05	6.222409E-05	5.654805E-05	6.528748E-05	4.964713E-05	3.337128E-05	yes
7.000000E+00	5.548579E-04	1.433118E-04	1.198059E-04	1.380195E-04	1.383732E-04	1.475824E-04	1.067527E-04	1.003055E-04	yes
8.000000E+00	6.528485E-04	3.300933E-04	2.913964E-04	3.171699E-04	3.188386E-04	3.404713E-04	2.503981E-04	2.726497E-04	yes
9.000000E+00	8.791759E-04	5.622651E-04	5.323455E-04	5.652346E-04	5.376758E-04	5.654646E-04	4.693011E-04	5.243361E-04	no[3)]
1.000000E+01	1.540427E-03	1.217993E-03	1.167523E-03	1.213797E-03	1.159182E-03	1.182367E-03	1.110141E-03	1.191756E-03	yes
1.100000E+01	2.557982E-03	2.201361E-03	2.133326E-03	2.205932E-03	2.122213E-03	2.147407E-03	2.100961E-03	2.186235E-03	yes
1.200000E+01	5.015257E-03	4.760446E-03	4.727173E-03	4.847991E-03	4.686507E-03	4.740838E-03	4.714888E-03	4.776031E-03	yes
1.300000E+01	9.933133E-03	9.679612E-03	9.714756E-03	9.820562E-03	9.592798E-03	9.696845E-03	9.646988E-03	9.825176E-03	yes
1.400000E+01	1.963597E-02	1.943863E-02	1.934072E-02	1.936153E-02	1.920901E-02	1.940012E-02	1.915371E-02	1.959603E-02	yes
1.500000E+01	5.355199E-02	5.332213E-02	5.323424E-02	5.325615E-02	5.320120E-02	5.360352E-02	5.320387E-02	5.364461E-02	yes
1.600000E+01	9.576330E-02	9.613829E-02	9.600399E-02	9.582900E-02	9.606525E-02	9.639189E-02	9.631138E-02	9.626154E-02	yes
1.700000E+01	1.275596E-01	1.285727E-01	1.285698E-01	1.285264E-01	1.286073E-01	1.289910E-01	1.287635E-01	1.287467E-01	yes
1.800000E+01	1.662404E-01	1.680822E-01	1.681741E-01	1.683182E-01	1.682781E-01	1.684496E-01	1.682225E-01	1.680129E-01	yes
1.900000E+01	1.877447E-01	1.892343E-01	1.895932E-01	1.895071E-01	1.896364E-01	1.893066E-01	1.895745E-01	1.891122E-01	yes
2.000000E+01	1.865552E-01	1.882440E-01	1.883739E-01	1.882604E-01	1.883901E-01	1.876741E-01	1.885144E-01	1.880501E-01	yes
2.100000E+01	1.366065E-01	1.378226E-01	1.378740E-01	1.376350E-01	1.378805E-01	1.371900E-01	1.377295E-01	1.375839E-01	yes
k_{eff}	8.884000E-01	8.887300E-01	8.889100E-01	8.888200E-01	8.889000E-01	8.887000E-01	8.889900E-01	8.889000E-01	

1) For $N_s < 303$ three calculation runs per case, for $N_s \geq 303$ four calculation runs per case.

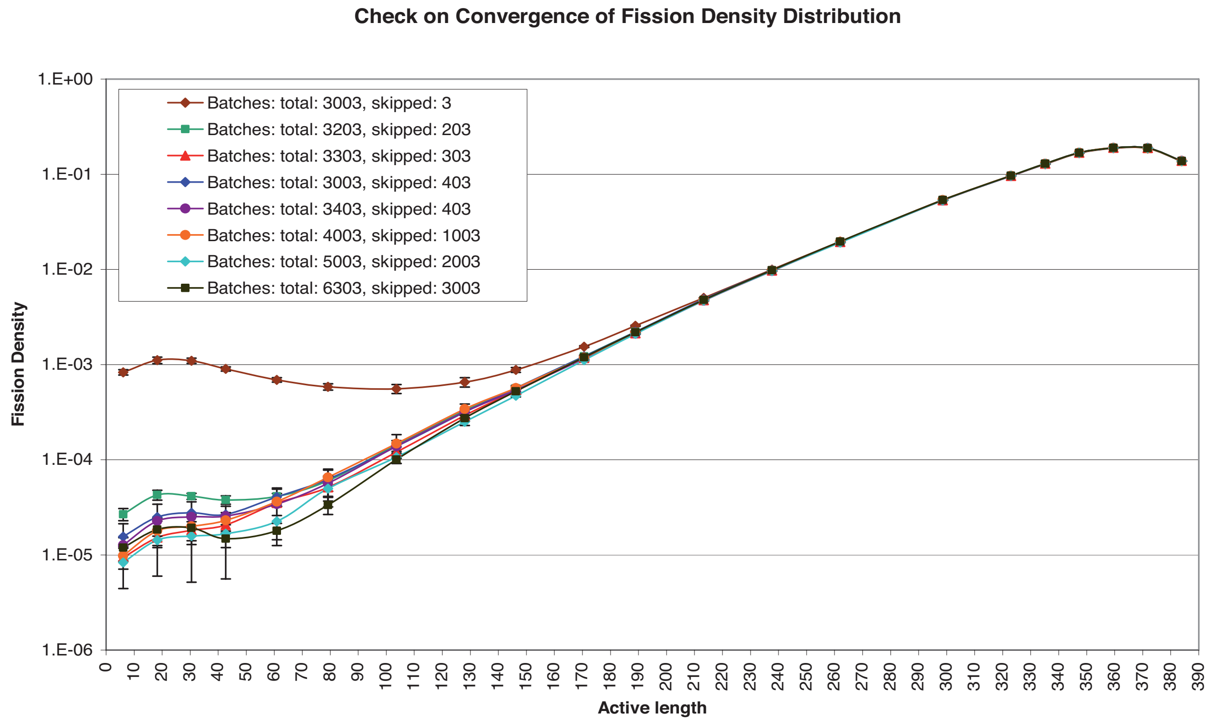
2) Compatibility test according to Ref. [V-3], section 11.5.2: "yes" means that it is not rejected on the basis of a significance level α of 0.1% that all the fission density results obtained for $N_s \geq 303$ for the specified axial zone have one and the same expectation.

3) Due to the results obtained for $N_s = 1003$ and $N_s = 2003$ (see also Table V.2).

Table V.2 Standard deviation eq.(6.13) of the mean values given in Table 6.7 (s:= standard deviation)

Axial Zone No.	**s** N_c=3003 N_s=3	**s** N_c=3203 N_s=203	**s** N_c=3303 N_s=303	**s** N_c=3003 N_s=403	**s** N_c=3403 N_s=403	**s** N_c=4003 N_s=1003	**s** N_c=5003 N_s=2003	**s** N_c=6003 N_s=3003
1.000000E+00	5.286954E-05	3.920110E-06	2.329193E-06	5.623849E-06	3.593326E-06	2.742291E-06	3.871494E-06	3.278594E-06
2.000000E+00	8.744989E-05	5.199647E-06	3.310798E-06	9.189133E-06	7.762424E-06	6.064550E-06	8.338503E-06	5.979945E-06
3.000000E+00	7.278809E-05	2.994652E-06	4.068037E-06	8.478166E-06	6.760743E-06	6.656315E-06	1.064224E-05	6.360790E-06
4.000000E+00	4.536551E-05	3.819146E-06	3.592843E-06	5.849012E-06	6.608211E-06	7.239112E-06	1.107530E-05	2.894284E-06
5.000000E+00	3.794150E-05	9.130722E-06	9.177152E-06	8.325562E-06	8.381517E-06	5.438612E-06	9.973174E-06	3.513924E-06
6.000000E+00	4.389632E-05	1.922225E-05	1.452862E-05	1.562357E-05	1.615549E-05	1.330450E-05	1.771615E-05	6.813454E-06
7.000000E+00	5.977410E-05	4.006800E-05	1.596876E-05	2.091989E-05	2.183290E-05	2.085264E-05	1.564433E-05	8.885163E-06
8.000000E+00	7.347981E-05	5.419747E-05	2.373327E-05	2.372984E-05	2.973452E-05	2.256137E-05	2.189044E-05	1.869085E-05
9.000000E+00	5.160665E-05	4.048946E-05	2.527046E-05	1.997769E-05	2.445314E-05	1.201239E-05	1.416655E-05	3.692740E-05
1.000000E+01	3.515837E-05	1.392683E-05	2.801996E-05	3.104672E-05	1.702379E-05	3.903792E-05	1.433633E-05	6.396609E-05
1.100000E+01	3.810234E-05	3.777791E-05	4.959623E-05	4.563416E-05	5.193343E-05	5.253168E-05	3.519501E-05	6.487592E-05
1.200000E+01	3.026519E-05	1.152829E-04	9.200394E-05	7.945629E-05	1.269231E-04	9.523384E-05	6.223517E-05	2.987503E-05
1.300000E+01	7.882704E-05	1.863238E-04	1.269884E-04	1.220897E-04	2.228326E-04	1.815537E-04	8.339063E-05	7.253440E-05
1.400000E+01	2.787508E-04	2.892688E-04	2.703050E-04	2.898085E-04	3.356086E-04	3.012477E-04	1.298896E-04	9.604533E-05
1.500000E+01	5.334916E-04	2.370898E-04	2.867957E-04	3.269646E-04	3.229614E-04	2.813536E-04	2.683658E-04	2.528511E-04
1.600000E+01	3.521933E-04	8.997343E-05	2.485619E-04	4.047868E-04	2.006556E-04	1.568115E-04	3.731935E-04	3.153923E-04
1.700000E+01	1.566959E-04	3.570899E-04	1.826348E-04	2.323272E-04	1.974533E-04	1.643494E-04	3.077591E-04	2.765439E-04
1.800000E+01	2.624022E-04	3.375041E-04	2.730498E-04	2.825675E-04	2.404035E-04	2.205917E-04	2.446066E-04	2.939390E-04
1.900000E+01	3.539281E-04	1.013433E-04	3.114184E-04	2.748081E-04	3.501583E-04	1.994448E-04	1.954593E-04	2.051372E-04
2.000000E+01	5.403712E-04	2.213809E-04	3.584030E-04	4.690982E-04	5.841801E-04	4.182074E-04	4.997959E-04	4.875171E-04
2.100000E+01	6.338401E-04	2.209748E-04	3.213688E-04	4.141038E-04	4.676739E-04	2.840382E-04	5.685222E-04	4.280305E-04
s(k_{eff})	1.300000E-04	1.200000E-04	9.000000E-05	1.100000E-04	1.700000E-04	1.100000E-04	1.000000E-04	1.000000E-04

Figure V.1 Check on convergence of the fission densities: change of the fission density results with the total number of neutron batches calculated and the number of initial batches skipped



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Appendix VI

RESULTS AND EVALUATION OF THE RECALCULATIONS PERFORMED BY FANP GMBH

VI.1 Introduction

As mentioned at the end of Section 6.3.2, the author of the report on hand decided to recalculate the fission density distributions in such a way that source convergence is ensured. In compliance with the results of the check on convergence given in Appendix V and Figure V.1 the number of initial generations skipped used in the recalculations was fixed at 1 003. As given in more detail in Table IV.1 of Appendix IV, six calculation runs per benchmark case were performed. The number of totally calculated generations per calculation run varies between 4 003 and 19 003. The number of neutrons per generation amounts to 4 000.

The results obtained, the neutron multiplication factors, the resulting end effects and the fission densities are given in Table VI.1, Table VI.2 and Tables VI.3 through VI.38, respectively.

VI.2 Evaluation of the end effects

The neutron multiplication factor results listed in Table VI.1 are the weighted mean values following from the results of the six individual calculation runs performed per case. These weighted mean values are calculated, together with their standard deviations which are also given in Table VI.1, with the aid of the weighted linear least squares procedure described in Section II.A.5 of Reference [VI-1].[a] The unbiased estimates of the weights to be used in this procedure are determined by the sample variances of the neutron multiplication factor results of the individual calculation runs and the number of neutron generations evaluated for each of the calculation runs, cf. Appendix IV, eq.(IV.1).

The end effects Δk resulting from Table VI.1 according to eq.(1.1) of Section 1.1.1 of the report on hand are given in Table VI.2 and presented in Figure VI.1. As can be seen from a comparison of this figure to Figures 6.5 and 6.6 as well as a comparison of Table VI.2 to Table 6.6, the recalculated end effects are very close to the sample means of the end effect results obtained from all contributors to the Phase II-C benchmark. Consequently, as appears from a comparison of Figure VI.2 to Figures 6.10 and 6.12, one gets practically the same regression functions r_{B32} and r_{B50} for the correlations of the end effect Δk to the top end parameter S6 as obtained in Section 6.2.2. And therefore, as can be seen from Figure VI.3, the relations eq.(6.9) through eq.(6.12) given in Section 6.2.3 are reconfirmed.

a) The procedure of calculating a weighted mean value is in fact given by the special case r = 1 and g = 1 of the linear least squares method described in Ref. [VI-1], Section II.A.5.

VI.3 Evaluation of the axial fission density distributions

The fission density outcomes listed in Tables VI.3 through VI.38 are the weighted mean values resulting from the six calculation runs performed per case (cf. Appendix IV),

$$\overline{\rho}_i = \sum_{j=1}^{6} h_j \rho_{ji} \tag{VI.1}$$

ρ_{ji}:= fission density result obtained for the i-th axial zone in the j-th calculation run,

h_j:= weight of the result ρ_{ji},

$\overline{\rho}_i$:= weighted mean value of the fission density in the i-th axial zone.

The weights h_j are given by

$$h_j = \frac{(N_e)_j}{\sum_{\nu=1}^{6} (N_e)_\nu}\ , \tag{VI.2}$$

$(N_e)_j$:= number of the neutron generations evaluated for the j-th calculation run, cf. Appendix IV, eq.(IV.1) and Table IV.1.

The standard deviations of the weighted means eq.(VI.1) are estimated with the aid of eq.(VI.3),

$$s(\overline{\rho}_i) = \sqrt{\frac{1}{5} \sum_{j=1}^{6} h_j (\rho_{ji} - \overline{\rho}_i)^2}\ , \tag{VI.3}$$

$s(\overline{\rho}_i)$:= standard deviation of $\overline{\rho}_i$.

The $s(\overline{\rho}_i)$ values obtained are also listed in Tables VI.3 through VI.38.

VI.3.1 Evaluation of the fission density distributions for the axially uniform burn-up distributions

As appears from Figure VI.4, the fission density distribution obtained for the uniform burn-up distributions B32Auniform (cf. Table VI.3) is compatible with the fission density distribution obtained for the uniform burn-up distribution B50Auniform (cf. Table VI.21). Therefore, these two fission density distributions are averaged. The resulting average distribution is presented in Figure VI.5. This average distribution is described by the cosine distribution eq. (6.14) (cf. Section 6.3.1) with

$$c_1 = 8.27 \cdot 10^{-2} \ , \tag{VI.4}$$

and

$$c_2 = 202.63 \text{ cm} \ , \tag{VI.5}$$

These values for c_1 and c_2 are in pretty good agreement with the values obtained for c_1 and c_2 in Section 6.3.1.

VI.3.2 Evaluation of the fission density distributions for the axially non-uniform burn-up profiles

As stated in Section 1.1.3 of the report on hand, the axial fission density distribution of a real axial burn-up distribution is expected to be peaked towards the ends of the fuel zone. The ratio of the heights of the peaks at bottom and top end of the fuel zone is, as appears from Figures VI.6 and VI.7, impacted by the shape and hence the degree of asymmetry of the axial burn-up profile and depends on the average burn-up of the profile. To make it possible to study these impacts on the fission density distribution the fission density results presented in Tables VI.4 through VI.20 and VI.22 through VI.38 as well as Figures VI.6 and VI.7 are fitted, as already proposed in Ref. [VI-2], by employing a model being capable of describing a distribution with two peaks of different heights. Such a model is given by equations (VI.6) and (VI.7):

$$f(z) = \sum_{\kappa=1}^{3m} g_\kappa(z), \ \ m > 1 \ , \tag{VI.6}$$

with

$$g_\kappa(z) = \begin{Bmatrix} a_{\kappa 1} \cdot \exp\{a_{\kappa 2} \cdot (z - a_{\kappa 3})\} & \text{for } \kappa \neq 3j \\ a_{\kappa 1} \cdot \exp\{a_{\kappa 2} \cdot (z - a_{\kappa 3})^2\} & \text{for } \kappa = 3j \end{Bmatrix} \ , \ j = 1, \ldots, m \ \cdot \tag{VI.7}$$

Some of the fission density model distributions thus obtained with the aid of non-linear least squares methods (cf. References [VI-3] and [VI-4]) are presented in Figures VI.8 through VI.16.

VI.3.2.1 Correlation between the axial fission density distributions and the asymmetry of the axial burn-up profiles

An axial fission density distribution described by means of the model eq.(VI.6) and eq.(VI.7) reflects the importance of the axial zone dz at height z of the fuel zone for the reactivity of the fuel, under the conditions of the given fuel configuration. Therefore, to complete the demonstration of the correlation of the reactivity and hence the end effect of the fuel to the asymmetry of axial burn-up profiles, it is necessary to find a way to describe the impact of the asymmetry of the burn-up profiles on the shape of the axial fission density distribution.

Obviously, it seems reasonable to describe the impact of the asymmetry of axial profiles on the shape of the axial fission density distribution by describing the impact of the asymmetry of the burn-up profiles on quantities which characterise the properties of the shape of the fission density distribution. Such quantities are related to the moments of the fission density distribution f(z). The "ν-th algebraic moment" of f(z) is defined as (cf. Ref. [VI-5])

$$E\left[z^{\nu}\right] = \frac{1}{I}\int_0^L z^{\nu}\ f(z)\ dz\ \ ,\ \nu > 0\,, \tag{VI.8}$$

E:= expectation operator. (Note: E is a linear operator, i.e., $E[\Sigma a_i \cdot h_i(z)] = \Sigma a_i \cdot E[h_i(z)]$, h_i some functions of z.)

I in eq.(VI.8) is defined as

$$I = \int_0^L f(z)\ dz. \tag{VI.9}$$

As well-known, the first algebraic moment is the expectation or mean of z for f(z),

$$E\left[z\right] = \frac{1}{I}\int_0^L z\ f(z)\ dz. \tag{VI.10}$$

The expectation of the μ-th order of the deviation of z from the expectation $E\left[z\right]$, i.e., the expectation $E\left[\left(z - E\left[z\right]\right)^{\mu}\right]$, is called the "μ-th central moment about the mean" (cf. Reference [VI-5]),

$$E\left[\left(z - E\left[z\right]\right)^{\mu}\right] = \sum_{i=0}^{\mu}\left(-1\right)^{i}\binom{\mu}{i} E\left[z^{\mu-i}\right]\left(E\left[z\right]\right)^{i}. \tag{VI.11}$$

As well-known, the second central moment is the variance $F\left[z\right]$ of z for f(z),

$$V\left[z\right] = E\left[\left(z - E\left[z\right]\right)^{2}\right]\ \ , \tag{VI.12}$$

A distribution which is not symmetrical about its expectation eq.(VI.10) may be skew. A measure of the skewness of a distribution is given by the "coefficient of skewness" defined as

$$\gamma_1 = \frac{E\left[\left(z - E\left[z\right]\right)^{3}\right]}{\left(V\left[z\right]\right)^{3/2}}\ \ . \tag{VI.13}$$

Clearly, if a distribution is symmetrical, the third central moment, and hence the coefficient of skewness, vanishes. For the cosine distribution eq.(6.14) the coefficient γ_1 is therefore zero.

Another useful coefficient for describing properties of the shape of a distribution is the "coefficient of kurtosis" defined as

$$\gamma_2 = \frac{E\left[(z - E[z])^4\right]}{(V[z])^2} - 3. \tag{VI.14}$$

This coefficient, together with the coefficient of skewness, gives a measure of how far from normality a distribution f(z) is.[b)] For the normal distribution the coefficient eq.(VI.14) is zero, whereas for the cosine distribution eq.(6.14) the coefficient eq.(VI.14) becomes $\gamma_2 \approx -0.8184$.

Let $\varphi(t)$ be the Fourier transform of the density distribution f(z),

$$\varphi(t) = E\left[e^{itz}\right] = E\left[\sum_{\nu=0}^{\infty} \frac{(it)^\nu}{\nu!} z^\nu\right] = \sum_{\nu=0}^{\infty} \frac{(it)^\nu}{\nu!} E\left[z^\nu\right]. \tag{VI.15}$$

Thus the moments eq.(VI.8) appear as the coefficients of $(it)^\nu/\nu!$ in the power series expansion of $\varphi(t)$, and they are therefore given by

$$E\left[z^\nu\right] = \frac{1}{i^\nu} \left.\frac{d^\nu \varphi(t)}{dt^\nu}\right|_{t=0} . \tag{VI.16}$$

The function defined as

$$K(t) = \ln \varphi(t) \tag{VI.17}$$

is named as the "cumulant generating function" (or "semi-invariant generating function"), cf. Ref. [VI-5]. Expanding K(t) analogously to eq.(VI.15) as a power series in (it), one has

$$K(t) = \sum_{\nu=0}^{\infty} K_\nu \frac{(it)^\nu}{\nu!} . \tag{VI.18}$$

The coefficients K_ν are called the "cumulants" (or "semi-invariants") of the distribution f(z). As follows from eq.(VI.18) and eq.(VI.17), they are obtained from

$$K_\nu = \frac{1}{i^\nu} \left.\frac{d^\nu \ln \varphi(t)}{dt^\nu}\right|_{t=0} . \tag{VI.19}$$

As is clear from the definition, the cumulants K_ν bear a close relation to the quantities characterizing the shape of the distribution f(z). As follows from eq.(VI.19), the first cumulants are (cf. Ref. [VI-6]).

b) Note that the components eq.(VI.7) with $\kappa = 3j$ of the fission density model distribution (VI.6) are normal-shaped functions provided that the coefficients $a_{\kappa 2}$ are negative for $\kappa = 3j$.

$$K_1 = E[z] \ , \tag{VI.20}$$

$$K_2 = V[z] \ , \tag{VI.21}$$

$$K_3 = \gamma_1 \cdot (V[z])^{3/2} \quad , \tag{VI.22}$$

$$K_4 = \gamma_2 \cdot (V[z])^2 \quad . \tag{VI.23}$$

Now, if there are correlations between each of the cumulants and the asymmetry parameter ASP, defined by eq.(2.8), or the top end parameter S6, defined by eq.(2.9), then it may be possible to convert the axial fission density distribution, described by eq.(VI.6) and eq.(VI.7), into a function of ASP or S6. Such correlations are really existent, as is demonstrated in the following with the first four cumulants K_ν given by equations (VI.20) through (VI.23).

In Figures VI.17 through VI.20 the results obtained with the model eq.(VI.6) and eq.(VI.7) for the expectation E[z] and the square root of the variance V[z] are plotted versus the parameters ASP and S6, respectively. As follows from the polynomial regression curves shown in these figures, the correlations of the quantities E[z] and $(V[z])^{1/2}$ to S6 are always found to be stronger than the correlations of these quantities to the parameter ASP. Therefore, only the correlations of these quantities to the parameter S6 are pursued further.

As appears from Figures VI.18 and VI.20, the fission density distributions related to the axial burn-up profiles with 50 MWd/kg U average burn-up result in significantly weaker correlations of E[z] and $(V[z])^{1/2}$ to S6 than the fission density distributions related to the axial burn-up profiles with 32 MWd/kg U average burn-up. This goes in particular for the quantity E[z]. In fact, in case of the 50 MWd/kg U axial burn-up profiles the change in E[z] with changing S6 is very small. In addition, the spread of the E[z] results observed for this case is notable. So, closer examination of the results may be necessary; we will come back to this point later on.

The correlations of the cumulants K_3 and K_4 to the parameter S6 are strong, as can be seen from Figures VI.21 and VI.22. In contrast to that what was observed for the quantity E[z] the correlations obtained for the 50 MWd/kg U average burn-up cases are only slightly weaker than the correlations obtained for the 32 MWd/kg U average burn-up cases.

Due to the observation that application of the top end parameter S6 results in closer correlations to quantities characterising the shape of the axial fission density distribution than application of the asymmetry parameter ASP it may be sufficient to consider the top end of the axial fission density distribution only. So, instead of analysing the shape of the whole fission density distribution and thus going the sophisticated way via the transformations eq.(VI.15) and eq.(VI.17) and the power series expansion eq.(VI.18) it may be sufficient to introduce a quantity Cκ which gives the content of the axial fission density distribution related to the top nodes 1 through κ of the axial burn-up profiles,

$$C\kappa = \frac{1}{I} \int_{z_\kappa}^{L} f(z)\, dz \tag{VI.24}$$

with

$$z_\kappa = L \cdot \left(1 - \frac{\kappa}{n}\right), \ \kappa \leq n; \ n = 32\,. \qquad \text{(VI.25)}$$

C_κ is obviously defined on the analogy of S_κ given by eq.(2.9). C_κ is therefore called "top end content" or "content C_κ". Due to the fact that the benchmark axial burn-up profiles listed in Table 3.2 are generated by varying the top nodes 1 through 6, $\kappa = 6$ is chosen again.

In Figures VI.23 and VI.24 the C6 values resulting from the model eq.(VI.6) and eq.(VI.7) are plotted versus the parameters ASP and S6. It is observed again that the correlation to ASP is weaker than the correlation to S6. Therefore, only correlations to S6 are pursued further in the following.

As can be seen from Figure VI.24, the fission density distributions related to the axial burn-up profiles with 50 MWd/kg U average burn-up lead to a significantly weaker correlation of the top end content C6 to the top end parameter S6 than the fission density distributions related to the axial burn-up profiles with 32 MWd/kg U. This behaviour was to be expected since it was already observed for the quantities E[z] and $(V[z])^{1/2}$ (cf. Figures VI.18 and VI.20) and since there are, due to the shapes of the fission density distributions (cf. Figures VI.6 and VI.7) and the definitions eq.(VI.8) through eq.(VI.12) and eq.(VI.24) of E[z], V[z] and C6 respectively, strong correlations between E[z] and C6 as well as $(V[z])^{1/2}$ and C6, as confirmed by Figures VI.25 and VI.26. Accordingly, there are, due to equations (VI.22) and (VI.23), notable correlations between the cumulants K_3 and K_4 and the top end content C6, see Figures VI.27 and VI.28.

As stated at the beginning of this section, the axial fission density distribution reflects the importance of the axial zone dz at height z of the fuel zone for the reactivity of the fuel configuration of interest,

$$dP = \frac{1}{I} \cdot f(z)\, dz\,, \qquad \text{(VI.26)}$$

dP:= relative importance of the axial zone ranging from z to z + dz.

The top end content C6 thus gives the relative importance of the top end zone of the fuel for the reactivity and hence the end effect of the fuel configuration of interest. It appears from Figure VI.24 that the observed correlations between C6 and S6, described by the regression curves presented in Figure VI.24, are sensitive to a change in the reactivity importance of the top end zone of the fuel due to a change in the asymmetry of the axial burn-up profile. In Sections 6.2.3 and VI.2 it was found that the observed correlations between the end effect Δk and the top end parameter S6 describing the asymmetry of the axial burn-up profile result in quite elegant relations between the end effects obtained for 32 MWd/kg U average burn-up and the end effects obtained for 50 MWd/kg U average burn-up. It is examined in the next section therefore, if there is any special relationship between the regression curves presented in Figure VI.24 such that the top end contents C6 typical of the 50 MWd/kg U average burn-up cases can be derived from the top end contents C6 characteristic of the 32 MWd/kg U average burn-up cases by applying some factor which is independent from S6 but dependent on the average burn-up values specified.

VI.3.2.2 Dependence of characteristics of the fission density distributions on the average burn-up of the axial burn-up profiles

The regression functions describing the correlations between the top end content C6 and the top end parameter S6 are given, as indicated in Figure VI.24, by parabolic functions.

Let us first note that any parabolic function $y_1(x)$ can be derived from any other parabolic function $y_2(x) \neq y_1(x)$,

$$y_j(x) = a_j x^2 + b_j x + c_j \text{, j=1, 2, } a_1 \neq 0 \text{ and } a_2 \neq 0\text{, } a_1 \neq a_2 \text{ and/or } b_1 \neq b_2 \text{ and/or } c_1 \neq c_2. \qquad \text{(VI.27)}$$

It can easily be shown that the relations (VI.28) through (VI.31) between $y_1(x)$ and $y_2(x)$ hold,

$$\left.\frac{\partial y_1}{\partial x}\right|_{x=\alpha} = 0,\ \left.\frac{\partial y_2}{\partial x}\right|_{x=\alpha} = -\frac{a_2}{a_1}\cdot b_1 + b_2\ ,\ \alpha = -\frac{b_1}{2a_1}, \qquad \text{(VI.28)}$$

$$\left.\frac{\partial y_1}{\partial x}\right|_{x=\beta} = -\frac{a_1}{a_2}\cdot\left.\frac{\partial y_2}{\partial x}\right|_{x=\alpha},\ \left.\frac{\partial y_2}{\partial x}\right|_{x=\beta} = 0\ ,\ \beta = -\frac{b_2}{2a_2}, \qquad \text{(VI.29)}$$

$${}_1(x) = \frac{a_1}{a_2}\cdot y_2(x) + \left(\left.\frac{\partial y_1}{\partial x}\right|_{x=\beta}\right)\cdot x - \left(\frac{a_1}{a_2}\cdot c_2 - c_1\right) \qquad \text{(VI.30)}$$

$$y_2(x) = \frac{a_2}{a_1}\cdot y_1(x) + \left(\left.\frac{\partial y_2}{\partial x}\right|_{x=\alpha}\right)\cdot x - \left(\frac{a_2}{a_1}\cdot c_1 - c_2\right). \qquad \text{(VI.31)}$$

Let us exclude the trivial case $c_1 = c_2 = 0$. Then there is, strictly speaking in terms of mathematics, a special relationship between $y_1(x)$ and $y_2(x)$ only then, if and only if eq.(VI.32) holds:

$$\frac{a_2}{a_1} = \frac{c_2}{c_1}. \qquad \text{(VI.32)}$$

If this equation holds then $y_2(x)$ can be directly derived from $y_1(x)$ by applying a constant factor only, and $y_1(x)$ can be directly derived from $y_2(x)$ by applying the inverse value of the same factor.

One may be of the opinion that it is not necessary for our purposes that the regression curves presented in Figure VI.24 meet the condition eq.(VI.32). One may think that it is sufficient that the ratio a_2/a_1 is determined in some way by the average burn-up values specified and that the term $(a_2/a_1)\cdot c_1 - c_2$ has some meaning in terms of physics. That may all be true. However, since a_1, a_2, c_1, and c_2 are constants it is not obvious what the physical meaning of the constant $(a_2/a_1)\cdot c_1 - c_2$ may be with respect to the regression functions shown in Figure VI.24. In other words, if condition (VI.32) is not met, then there is a constant factor between the ratios a_2/a_1 and c_2/c_1; and the physical meaning of this factor is not obvious.

It is really notable therefore, that the regression functions given in Figure VI.24 virtually meet the condition (VI.32): It is found that :

$$\frac{a_1}{a_2} \equiv \frac{a_{B32}}{a_{B50}} \approx \frac{c_1}{c_2} \equiv \frac{c_{B32}}{c_{B50}} \approx f = \frac{50\,\mathrm{MWd/kg\,U}}{32\,\mathrm{MWd/kg\,U}}. \tag{VI.33}$$

(The deviations of a_2/a_1 and c_2/c_1 from f are less than 0.6%.)

Let us now denote the regression functions specified in Figure VI.24 by $R_{B32}(S6)$ and $R_{B50}(S6)$ respectively,

$R_{B32}(S6) = a_{B32} \cdot (S6)^2 + b_{B32} \cdot (S6) + c_{B32}$ = regression function specified in Figure VI.24 describing the correlation between C6 and S6 observed for the 32 MWd/kg U axial burn-up profiles,

$R_{B50}(S6) = a_{B50} \cdot (S6)^2 + b_{B50} \cdot (S6) + c_{B50}$ = regression function specified in Figure VI.24 describing the correlation between C6 and S6 observed for the 50 MWd/kg U axial burn-up profiles.

With eq.(VI.33) the first equation in expression (VI.29) becomes

$$\left.\frac{\partial R_{B32}}{\partial(S6)}\right|_{\beta} = -f \cdot \left.\frac{\partial R_{B50}}{\partial(S6)}\right|_{\alpha} = -f \cdot 2.68\,. \tag{VI.34}$$

With equations (VI.33) and (VI.34) one gets the following estimators of RB32 and RB50 from equations (VI.30) and (VI.31):

$$(C6)_{B32} = f \cdot \left(R_{B50} - 2.68 \cdot (S6)\right), \tag{VI.35}$$

$$(C6)_{B50} = \frac{1}{f} \cdot R_{B32} + 2.68 \cdot (S6), \tag{VI.36}$$

$(C6)_{B32}$ = top end content C6 at 32 MWd/kg U average burn-up derived from the correlation R_{B50} between C6 and S6 observed for the 50 MWd/kg U axial burn-up profiles,

$(C6)_{B50}$ = top end content C6 at 50 MWd/kg U average burn-up derived from the correlation R_{B32} between C6 and S6 observed for the 32 MWd/kg U axial burn-up profiles.

Figure VI.29 confirms that the estimators eq.(VI.35) and eq.(VI.36) are compatible with the observed C6 values and with the correlations R_{B32} and R_{B50} respectively. The factor f in equations (VI.35) and (VI.36) is simply the ratio eq. (6.12) of the average burn-up values (cf. Section 6.2.3). So, the correlations R_{B32} and R_{B50} between the top end content C6 and the top end parameter S6 describing the asymmetry of the axial burn-up profiles result in pretty elegant relations between the C6 values obtained for the 32 MWd/kg U average burn-up cases and the C6 values obtained for the 50 MWd/kg U average burn-up cases.

It is worthy to emphasise one more time that the correlations R_{B32} and R_{B50} meet the condition (VI.32) since this distinguishes these correlations from the correlations r_{B32} and r_{B50} between

Δk and S6 found in Section 6.2.3. The regression functions describing the correlations r_{B32} and r_{B50} between Δk and S6 are given, as indicated in Figure VI.3, by linear functions of the form

$$y_j(x) = b_j x + c_j, \text{ j=1, 2, } b_1 \neq 0 \text{ and } b_2 \neq 0, b_1 \neq b_2 \text{ and/or } c_1 \neq c_2. \tag{VI.37}$$

Since eq.(VI.37) is the special case $a_1 = a_2 = 0$ of eq.(VI.27) it is obvious that any linear function $y_1(x)$ can be derived from any other linear function $y_2(x) \neq y_1(x)$. The following relations hold

$$y_1(x = \alpha) = 0, \; y_2(x = \alpha) = -\left(\frac{b_2}{b_1} \cdot c_1 - c_2\right), \; \alpha = -\frac{c_1}{b_1}, \tag{VI.38}$$

$$y_1(x) = \frac{b_1}{b_2} \cdot y_2(x) - \frac{b_1}{b_2} \cdot y_2(\alpha), \tag{VI.39}$$

$$y_2(x) = \frac{b_2}{b_1} \cdot y_1(x) + y_2(\alpha). \tag{VI.40}$$

Excluding the trivial case $c_1 = c_2 = 0$ it is obvious, that there is a special relationship between $y_1(x)$ and $y_2(x)$ only then, if and only if eq.(6.57) holds:

$$\frac{b_2}{b_1} = \frac{c_2}{c_1}. \tag{VI.41}$$

If this equation holds, then $y_2(\alpha)$ vanishes in equations (VI.39) and (VI.40), and $y_2(x)$ can be directly derived from $y_1(x)$ by applying the constant factor b_2/b_1, and $y_1(x)$ can be directly derived from $y_2(x)$ by applying the inverse value b_1/b_2 of this factor.

The regression functions r_{B32} and r_{B50} describing the correlations between Δk and S6 do not meet the condition (VI.41). Therefore, $y_2(\alpha)$ does not vanish in that case but is approximately given by eq.(6.11) (cf. Section 6.2.3). And the term given by eq.(6.11) thus appears in relations eq.(6.9) and eq.(6.10) as it is to expected due to equations (VI.39) and (VI.40).

Because the regression functions R_{B32} and R_{B50} describing the correlations between the top end content C6 and the top end parameter S6 meet the condition (VI.32), it seems to be reasonable to take the relations eq.(VI.35) and eq.(VI.36) as the basic correlations for the description of the impact of the degree of asymmetry of an axial burn-up profile on the axial fission density distribution. And it is thoroughly worthwhile attempting to derive the correlations between the cumulants K_ν, $\nu = 1,\ldots, 4$, considered in the report on hand, and the top end parameter S6 from the relations eq.(VI.35) and eq.(VI.36), thus revealing the dependence of the correlations between K_ν and S6 on the average burn-up of the profiles.

In Figures VI.25 through VI.28 regression functions for the correlations of the cumulants K_ν, $\nu = 1,\ldots, 4$, to the top end content C6 are given. Insertion of equations (VI.35) and (VI.36) into these regression functions results in estimators $(K_\nu)_{B32}$ and $(K_\nu)_{B50}$ for the cumulants as functions of the top end parameter S6 including the dependence on the ratio eq.(6.12) of the average burn-up values considered,

$$\left[\left(K_\nu\right)_{B32}\right]^\kappa = g_\nu\left(\left(C6\right)_{B32}\right) \text{ with } (C6)_{B32} \text{ given by eq.(VI.35), } \nu = 1,\ldots, 4, \tag{VI.42}$$

$$\left[\left(K_\nu\right)_{B50}\right]^\kappa = h_\nu\left(\left(C6\right)_{B50}\right) \text{ with } (C6)_{B50} \text{ given by eq.(VI.36), } \nu = 1,\ldots, 4. \tag{VI.43}$$

κ in equations (VI.42) and (VI.43) is given by

$$\kappa = \frac{1}{2}\cdot\left(1+\text{modulo}(\nu,2)\right) \text{ with } \text{modulo}(\nu,2) = \begin{Bmatrix} 1 \text{ for } \nu \text{ odd} \\ 0 \text{ for } \nu \text{ even} \end{Bmatrix}, \ \nu = 1, 2, \ldots\ . \tag{VI.44}$$

g_ν and h_ν in equations (VI.42) and (VI.43) follow from the regression functions presented in Figures VI.25 through VI.28,

$$g_\nu = \left(a_{B32}\right)_\nu \cdot \left(C6\right)^2_{B32} + \left(b_{B32}\right)_\nu \cdot \left(C6\right)_{B32} + \left(c_{B32}\right)_\nu, \ \nu = 1,\ldots,4, \tag{VI.45}$$

$$h_\nu = \left(a_{B50}\right)_\nu \cdot \left(C6\right)^2_{B50} + \left(b_{B50}\right)_\nu \cdot \left(C6\right)_{B50} + \left(c_{B50}\right)_\nu, \ \nu = 1,\ldots,4. \tag{VI.46}$$

The coefficients (a_{Bbb}), (b_{Bbb}), (c_{Bbb}), bb = 32, 50, $\nu = 1,\ldots, 4$, are given in Table VI.39.

Figures VI.30 through VI.33 confirm that the estimates $(K_\nu)_{B32}$ and $(K_\nu)_{B50}$ are in pretty good agreement with the K_ν values observed and the regression functions directly derived from the observed K_ν values. This demonstrates that the relations eq.(VI.35) and eq.(VI.36) can in fact be regarded as basic correlations for characterising the impact of the degree of asymmetry of an axial burn-up profile on the axial fission density distribution. In the next section it is therefore tried to derive the end effect Δk from the relations eq.(VI.35) and eq.(VI.36).

VI.3.2.3 Dependence of the end effect on the average burn-up of the axial profiles

In Figure VI.34 regression functions for the correlations of the end effect Δk to the top end content C6 are presented. Insertion of equations (VI.35) and (VI.36) into these regression functions result in estimators $\Delta k((C6)_{B32})$ and $\Delta k((C6)_{B50})$ for the end effect as a function of the top end parameter S6,

$$\Delta k\left(\left(C6\right)_{B32}\right) = G_{B32}\left(\left(C6\right)_{B32}\right) \text{ with } ((C6)_{B32}) \text{ given by eq.(VI.35),} \tag{VI.47}$$

$$\Delta k\left(\left(C6\right)_{B50}\right) = G_{B50}\left(\left(C6\right)_{B50}\right) \text{ with } ((C6)_{B50}) \text{ given by eq.(VI.36).} \tag{VI.48}$$

G_{B32} and G_{B50} follow from the regression functions given in Figure VI.34,

$$G_{Bbb} = \alpha_{Bbb} \cdot \left(C6\right)^2_{Bbb} + \beta_{Bbb} \cdot \left(C6\right)_{Bbb} + \gamma_{Bbb}, \ bb = 32,\ 50 \tag{VI.49}$$

with

$$\alpha_{Bbb} = \begin{cases} 4.337109E-1 \text{ for bb} = 32 \\ 2.603901E+0 \text{ for bb} = 50 \end{cases}, \quad \beta_{Bbb} = \begin{cases} -5.123207E-1 \text{ for bb} = 32 \\ -4.249162E+0 \text{ for bb} = 50 \end{cases},$$

$$\gamma_{Bbb} = \begin{cases} 1.485547E-1 \text{ for bb} = 32 \\ 1.747536E+0 \text{ for bb} = 50 \end{cases}. \qquad \text{(VI.50)}$$

As appears from Figure VI.35, except for the lowest S6 values observed the estimators eq.(VI.47) and eq.(VI.48) are in good agreement with the Δk values observed and give the downward trend in Δk with increasing S6 pretty precisely. So, the correlations eq.(VI.35) and eq.(VI.36) between the top end parameter S6 describing the asymmetry of the axial burn-up profiles and the top end content C6 of the related fission density distributions can in fact be considered as basic correlations for characterising the impact of the asymmetry of axial burn-up profiles on the fission density distribution and hence on the end effect. The reason for choosing these correlations as basic correlations was that these correlations can be directly derived from each other by applying simply a constant factor given by the ratio (6.12) of the average burn-up values of the axial burn-up profiles.

As follows from a comparison of Figure VI.34 to Figure VI.29, the outcome, that the estimators eq.(VI.47) and eq.(VI.48) underestimate the end effect for the lowest S6 values observed, is due to the regression functions described by equations (VI.49) and (VI.50) and presented in Figure VI.34: The Δk values estimated by means of these regression functions for the highest C6 values corresponding to the lowest S6 values are lower than the observed Δk values. This brings us back to the spread of the observed Δk values and the spread of the C6 and K_ν values obtained with the aid of the model distributions eq.(VI.6) and eq.(VI.7).

VI.3.3 Evaluation of "local effects" on the end effect

In the previous section the correlations eq.(VI.35) and eq.(VI.36) between the top end content C6 and the top end parameter S6 were taken as the basic correlations for characterising the effects of the asymmetry of axial burn-up profiles on the fission density distribution and hence on the end effect at the profiles' average burn-up values chosen. As appears from Figures VI.29 and VI.18, VI.20, VI.21, VI.22 as well as VI.2, it seems that also the fluctuations of the observed C6 values around the curves generated by equations (VI.35) and (VI.36) give a basic pattern for describing the fluctuations of the observed K_ν values, $\nu = 1, \ldots, 4$, as well as the fluctuations of the observed Δk values. In fact, the following observations are made:

- There is a distinct pattern to the fluctuations of the observed C6 values (cf. Figure VI.24 or Figure VI.29), the observed $K_1 = E[z]$ values (cf. Figure VI.18) and the observed K_3 values (cf. Figure VI.21).
- The patterns of the fluctuations of the observed $(V[z])^{1/2}$ and $(K4)^{1/2}$ values are distinctively related to the pattern of the fluctuations of the observed C6 values (cf. Figures VI.20, VI.22, and VI.24).
- There is a distinct pattern to the fluctuations of the observed C6 values and the observed Δk values (cf. Figures VI.24 and VI.2).

- Even though the decrease in C6 with increasing S6 is found to be significantly lower in case of the axial burn-up profiles with 50 MWd/kg U average burn-up than in case of the axial burn-up profiles with 32 MWd/kg U average burn-up (cf. Figure VI.24) the impact of the fluctuations of the observed C6 values on the fluctuations of the observed Δk values seems to be significant in case of the 50 MWd/kg U average burn-up Δk results but virtually negligible in case of the 32 MWd/kg U average burn-up Δk results (cf. Figure VI.2).

As regards the last item, dividing the Δk values observed by the respective C6 values observed does not lead to a notable change in the value of the sample correlation coefficient R^2 in case of the 32 MWd/kg U average burn-up axial burn-up profiles but does in fact result in a significant increase of the R^2 value in case of the 50MWd/kg U average burn-up axial burn-up profiles, as can be seen from a comparison of Δk/C6 as a function of S6 (cf. Figure VI.36) to Δk as a function of S6 (cf. Figure VI.2).

Due to its definition given by eq.(2.9) the top end parameter S6 is sensitive to the asymmetry of a whole axial burn-up profile but not really sensitive to the shape of the profile in the range of the top nodes $\nu = 1$ through $\nu = 6$. As described in detail in Section 3.1, the axial burn-up profiles used for the Phase II-C benchmark are generated by varying just the shape of the profiles in the range of the top nodes $\nu = 1$ through $\nu = 6$ according to a certain pattern. This pattern therefore determines the pattern of the fluctuations of the C6 values observed, as is demonstrated with the 50 MWd/kg U average burn-up axial burn-up profiles in the following.

In Figure VI.37 the γ_ν values, $\nu = 1, \ldots, 6$, are presented which follow from Tables 3.1 and 3.2 by means of eq.(3.9) for the axial burn-up profiles with 50 MWd/kg U average burn-up. In Figure VI.38 the partial sums

$$S13 \equiv \frac{1}{n} \cdot \sum_{\nu=1}^{3} \gamma_\nu \,, \; n = 32, \tag{VI.51}$$

and

$$S46 \equiv \frac{1}{n} \cdot \sum_{\nu=4}^{6} \gamma_\nu \,, \; n = 32, \tag{VI.52}$$

of the parameter S6 are shown,

$$S6 = S13 + S46 \,. \tag{VI.53}$$

Figure VI.39 shows the ratio S13/S6 which reflects the “local asymmetry” (LA) of the axial burn-up shapes in the range of the top nodes $\nu = 1$ through $\nu = 6$,

$$LA \equiv \frac{S13}{S6} \,. \tag{VI.54}$$

The “local asymmetry” is increasing with decreasing ratio S13/S6.

In Figures VI.40.a through VI.40.e the normalised fission density distributions f(z)/I are presented obtained by means of equations (VI.6), (VI.7), and (VI.9) for the 50 MWd/kg U average burn-up axial burn-up profiles. Figures VI.40.a and VI.40.b show the distributions entirely from the bottom end to the top end of the fuel zone. Details of these distributions in the range of the top end of the fuel zone are shown in Figures VI.40.c through VI.40.e.

As can be seen from Figures VI.37 and VI.38, switching stepwise from the profile B50A111111 to the profile B50A111222 the γ_ν values of the nodes $\nu = 1$ through $\nu = 3$ and hence the partial sum S13 remain constant. The changes in the γ_ν values $\nu = 4$ through $\nu = 6$ and hence in S6 are only small. Therefore, the changes in the ratio S13/S6 are very small, cf. Figure VI.39. It is therefore to be expected that the normalised fission density distributions for B50A111111 through B50A111222 are close together, which is in fact the case as can be seen from Figure VI.40.c. Switching now stepwise from the profile B50A111222 to the profile B50A222222 the γ_ν values of the nodes $\nu = 4$ through $\nu = 6$ and hence the partial sum S46 are kept constant. However, the changes in the γ_ν values $\nu = 1$ through $\nu = 3$ and hence in S6 are only small; and thus the changes in the ratio S13/S6 are very small, cf. Figure VI.39. So, it is to be expected that the normalised fission density distributions for B50A111222 through B50A222222 are also close together. This is in fact the case, as confirmed by Figure VI.40.c again. Since all the normalised fission density distributions for the profiles B50A111111 through B50A222222 are close together, it is obvious that, as confirmed by Figure VI.41, the C6 values obtained for these profiles must be very close together and hence very close to the estimator eq.(VI.36) of C6 as a function of S6. From that it follows, as confirmed by Figure VI.42, that the end effects Δk observed for these profiles are very close to the estimator eq.(6.9) of Δk as a function of S6.

The situation is changing when one is switching now stepwise from the profile B50A222222 to the profile B50A333333 since the γ_ν values ($\nu = 1, \ldots, 6$) and hence S6 and the "local asymmetry" parameter eq.(VI.54) are changing now more rapidly, cf. Figure VI.37 through VI.39.

In the first step from B50A222222 to B50A222223 the increase in γ_6 is still small (cf. Figure VI.37). Therefore, the fission density distribution f(z)/I of B50A222223 remains close to the distribution f(z)/I of B50A222222 (cf. Figure VI.40.d). Nevertheless, due to the increase in the "local asymmetry" (cf. Figure VI.39) the maximum of f(z)/I at the fuel's top end is slightly increased and slightly shifted towards the upper end of the fuel zone (cf. Figure VI.40.d). Both trends, increase of the height of the top end maximum of f(z)/I and shifting of the locus of this maximum towards the upper end of the fuel zone are increased when switching now stepwise from B50A222223 to B50A222333 since the "local asymmetry" is increased (cf. Figure VI.39) but the γ_ν values of the nodes $\nu = 1$ through $\nu = 3$ and hence the partial sum S13 remain constant (cf. Figures VI.37 and VI.38). These trends result in a slight increase of the top end content C6; and the C6 values obtained for the profiles B50A222223 through B50A222333 are in fact above the curve given by the estimator eq.(VI.36) of C6 as a function of S6 (cf. Figure VI.41). The slight increase in the C6 values observed does not necessarily result in an increase of the end effect Δk since the downward trend in Δk with decreasing degree of asymmetry of the axial burn-up profiles and hence with increasing S6 remains the basic mode; but the slight increase in the C6 values observed leads to the outcome that the Δk values observed are above the curve given by the estimator eq.(6.9) of Δk as a function of S6 (cf. Figure VI.42).

In the next step from B50A222333 to B50A223333 the "local asymmetry" is decreased (cf. Figure VI.39), but due to the fact that the γ_ν values of the nodes $\nu = 1$ and $\nu = 2$ remain unchanged and that the γ_ν values of the nodes $\nu = 3$ and $\nu = 4$ are virtually equal in the profile B50A223333 (cf. Figure VI.37) the top end maximum of f(z)/I is further increased and further shifted towards the upper end of the fuel zone, and at the same time f(z)/I is significantly decreased in the range of the nodes $\nu = 3$ through $\nu = 6$ (cf. Figure VI.40.d). These trends lead to the outcome that the top end content C6 of f(z)/I is decreased but is still significantly above the curve given by the estimator eq.(VI.36), cf. Figure VI.41. Therefore, the Δk value observed for B50A223333 is above the curve given by the estimator eq.(6.9), cf. Figure VI.42.

Now, in the next two steps from B50A223333 to B50A333333 the asymmetry of the burn-up profiles described by S6 and the "local asymmetry" of these profiles characterised by the ratio S13/S6 are significantly decreased (cf. Figures VI.38 and VI.39), in consequence of which the shape of the fission density distribution f(z)/I is significantly changed (cf. Figures VI.40.d and VI.40.b) such that the top end content C6 is significantly decreased (cf. Figure VI.41). This results in a significant decrease of the end effect Δk such that the Δk values observed for B50A233333 and B50A333333 fall below the curve given by the estimator eq.(6.9) of Δk as a function of S6 (cf. Figure VI.42).

The results obtained for the burn-up profiles B50A122223, B50A112233, B50A322221, and B50A332211 confirm the reflections just made on the relationships between the γ_ν values of the nodes $\nu = 1$ through $\nu = 6$, the top end parameter S6 describing the asymmetry of the burn-up profiles, the ratio S13/S6 characterising the "local asymmetry" of the profiles in the range of node $\nu = 1$ through node $\nu = 6$, the shape of the normalised fission density distribution f(z)/I, the top end content C6 of f(z)/I, and the end effect Δk. Switching from B50A333333 to B50A122223 and then to B50A112233 results in a significant increase of the asymmetry of the profiles (cf. Figure VI.38) and the "local asymmetry" of these profiles (cf. Figure VI.39). This leads to a significant increase in the height of the top end maximum of f(z)/I and a significant shift of the locus of this maximum towards the top end of the fuel zone (cf. Figure VI.40.e). This results in C6 values and hence Δk values falling above the curves given by the estimators eq.(VI.36) and eq.(6.9), respectively (cf. Figures VI.41 and VI.42). Switching now from B50A112233 to B50A322221 and then to B50A332211 leads to a significant decrease in the profile's asymmetry (cf. Figure VI.38) and a notable decrease in the "local asymmetry" (cf. Figure VI.39). This results in a significant reduction of the height of the top end maximum of f(z)/I and a significant shift of the locus of this maximum towards the center of the fuel zone (cf. Figures VI.40.e and VI.40.b), in consequence of which the top end content C6 is significantly reduced (cf. Figure VI.41), and the Δk values observed for the profiles B50A322221 and B50A332211 fall below the curve given by the estimator eq.(6.9) of Δk as a function of S6, cf. Figure VI.42.

So, in conclusion, as appears from Figure VI.42, the end effect Δk

- is fundamentally determined by the degree of asymmetry of the axial burn-up profile (described by means of the top end parameter S6) and
- can be affected by the "local asymmetry" of the burn-up profile's shape at the top end of the profile (characterised with the aid of the ratio S13/S6).

It is observed that the "local asymmetry" seems to be the more important for the size of the end effect the higher the average burn-up of the axial burn-up profile is. In fact, even though there are significantly higher "local asymmetries" in case of the burn-up profiles with 32 MWd/kg U average burn-up than in case of the profiles with 50 MWd/kg U average burn-up (cf. Figure VI.39) the impact of the "local asymmetries" on the end effect Δk is negligible in case of the 32 MWd/kg U axial burn-up profiles, as can be seen from Figure VI.2. This is confirmed by Figure VI.43. In this figure Δk values are plotted versus the parameter

$$A \equiv S6 + g \cdot \frac{S13}{S6}. \tag{VI.51}$$

By definition, the factor g in eq.(VI.51) couples the profile's asymmetry with the "local asymmetry" of the profile's top end shape. In the "uncoupled" case, i..e., with g = 0 one gets the regression curves presented in Figure VI.2. In Figure VI.43 these curves serve as starting curves now. Starting with these regression curves the "coupling factor" g is increased such that the sample correlation coefficient R^2 of the regression functions is maximized. The final regression curves belonging to the maximum R^2 values achieved are presented in Figure VI.43. As appears from this figure, the increase in R^2 obtained for the 32 MWd/kg U axial burn-up profiles is negligible, whereas the increase in R^2 obtained for the 50 MWd/kg U axial burn-up profiles is significant. This confirms that the impact of "local asymmetries" on the end effect increases with increasing average burn-up of the axial burn-up profiles.

VI.4 Observations and conclusions

As described in more detail in Section 7.2, it has been observed for the Phase II-C benchmark exercise that the sensitivity $\delta(\Delta k; B = 50$ MWd/kg U) of the end effect Δk to the degree of the asymmetry of the axial burn-up profiles with 50 MWd/kg U average burn-up can be obtained by multiplying the sensitivity $\delta(\Delta k; B = 32$ MWd/kg U) of Δk to the degree of the asymmetry of the axial burn-up profiles with 32 MWd/kg U average burn-up simply by the ratio f = 50 MWd/kg U / 32 MWd/kg U.

The sensitivity of the end effect Δk to the degree of the asymmetry of the axial burn-up profiles is not the only quantity for which it has been found in the Phase II-C benchmark that values observed for the axial burn-up profiles with 50 MWd/kg U average burn-up can be derived from values obtained for the axial burn-up profiles with 32 MWd/kg U average burn-up by applying simply a constant factor given just by the ratio f = 50 MWd/kg U / 32 MWd/kg U of the average burn-up values. In fact, as described in detail in Sections VI.3.2.2 and VI.3.2.3, it has been found for the Phase II-C benchmark cases that the correlations eq.(VI.35) and eq.(VI.36) between the top end content C6 of the fission density distributions and the top end parameter S6 describing the asymmetry of the axial burn-up profiles can be regarded as basic correlations for describing the impact of the asymmetry of axial burn-up profiles on the fission density distribution and hence on the end effect. The reasons for choosing these correlations as basic correlations were due to the following findings:

- These correlations can be directly derived from each other by applying the constant factor f = 50 MWd/kg U / 32 MWd/kg U.
- The regression functions R_{B32} and R_{B50} constituting the correlations eq.(VI.35) and eq.(VI.36) (cf. Figure VI.29) are the only one amongst all the regression functions obtained in the Phase II-C benchmark (cf. Figures VI.2, VI.18, VI.20 through VI.22, VI.24 through VI.29, and VI.34) which meet the condition (VI.32).

Whether or not these two findings remain valid for a fuel configuration, which is different from the Phase II-C configuration but still meets all the conditions specified in Section 1.3.5, cannot be proved here. Anyway, it is worthwhile to note that these findings are at least characteristic of the Phase II-C benchmark configuration. That these findings remain valid for different configurations as long as all the conditions specified in Section 1.3.5 are met, this seems to be not quite impossible since these conditions make it possible to observe the impacts of the asymmetry and the "local asymmetry" of axial burn-up profiles on the fission density distribution, the top end content C6 of the fission density distribution and the end effect Δk without any interference by different effects.

It has been found that the correlations of the top end content C6, the cumulants E[z] and V[z] of the fission density distribution as well as the end effect Δk to the asymmetry parameter ASP defined by eq.(2.8) are weaker than the respective correlations of these quantities to the top end parameter S6 (cf. Figures VI.23, VI.24, VI.17 through VI.20, and 6.9 through 6.12). These findings can be put down to the results observed for C6. As defined by equations (VI.24) and (VI.26), the top end content C6 gives the relative importance of the top end region of the fuel zone for the reactivity and hence the end effect of the fuel configuration of interest. For the Phase II-C benchmark cases with 32 MWd/kg U average burn-up it has been observed that C6 ranges from C6 $\approx$ 0.6 to C6 $\approx$ 0.833, and for the cases with 50 MWd/kg U average burn-up it has been found that C6 ranges from C6 $\approx$ 0.86 to C6 $\approx$ 0.924 (cf. Figure VI.29). So, provided that the conditions specified in Section 1.3.5 are met, the asymmetry of the axial profiles results in the top end region of the fuel zone being the fuel region with the highest importance. The importance is higher, the higher the asymmetry and the average burn-up of the burn-up profiles are. And the higher the average burn-up is, the higher is, as described in detail in Section VI.3.3 the impact of "local asymmetries".

It is interesting to note that it has been observed for the 32 MWd/kg U average burn-up cases that the end effect Δk is still negative for $0.165 \lesssim S6 < 0.169$ (cf. Figure VI.3) even though the top end region of the fuel zone (from node $\nu = 1$ to node $\nu = 6$) has already a relative importance of at least 60%: C6 $\approx$ 0.66 at S6 $\approx$ 0.165 and C6 $\approx$ 0.6 at S6 $\approx$ 0.169 (cf. Figure VI.29). One has to keep in mind that the expectation E[z] for the fission density distribution falls in the interval (315 cm, 325 cm) for C6 $\in$ (0.6, 0.66) (cf. Figure VI.25) and hence in the plateau region of the axial burn-up profiles (cf. Figures 1.1 and 3.3). *So, the correlations between C6 and S6 at given average burn-up values do not suffice to understand the size of the end effect*. The impacts of the asymmetry and the "local asymmetry" of the axial burn-up profiles on the shape of the fission density distribution f(z) and hence on the cumulants of f(z) have to be included in the evaluation of the end effect. Therefore, provided that the conditions specified in Section 1.3.5 are met, it may be possible that the correlations between C6 and S6 at given average burn-up values can be taken for basic correlations for describing the dependence of the correlation between end effect and asymmetry of the profiles on the average burn-up of the profiles, but for deriving an importance function capable of predicting the end effect directly in theory, a more complete picture is required of what the impacts on the fission density distribution and hence the end effect are. To figure out, how these impacts can be described by such an importance function or how the sensitivity of such a function to these impacts can be described, it is necessary to include, for instance, studies on the impacts of changes in the axial isotopic number density distribution due to changes in the depletion conditions and studies on the impact of changes in the neutron reflection conditions at the fuel ends (under the condition that the condition no.(6) given in Section 1.3.5 is still fulfilled). Such studies are beyond the scope of Phase II-C benchmark. Nevertheless, the correlations observed in the Phase II-C benchmark may help to encourage the attempts at looking for an importance function capable of predicting the end effect in theory (cf. Ref. [VI-7]). For this purpose the axial fission density distributions obtained from the Phase II-C benchmark cases and described with the aid of the model equations (VI.6) and (VI.7) may serve as test cases or, perhaps, if approaches to the importance function are made that include unknown parameters, as calibration cases.

TABLES

Table VI.1 Results of the recalculation carried out by FANP GmbH: neutron multiplication factors k_{eff} obtained

Case ID	k_{eff} (weighted mean)	s(k_{eff})	Case ID	k_{eff} (weighted mean)	s(k_{eff})
B32A111111	9.0134887E-01	5.7609094E-05	B50A111111	7.9519832E-01	5.1454816E-05
B32A111112	9.0082626E-01	5.4841614E-05	B50A111112	7.9516353E-01	5.1240685E-05
B32A111122	8.9994035E-01	5.7034994E-05	B50A111122	7.9508006E-01	5.4558499E-05
B32A111222	8.9768668E-01	5.6568666E-05	B50A111222	7.9420086E-01	5.3929777E-05
B32A112222	8.9451409E-01	5.2850078E-05	B50A112222	7.9230639E-01	5.1858143E-05
B32A122222	8.9092867E-01	5.1800558E-05	B50A122222	7.9030034E-01	5.3929777E-05
B32A222222	8.8908237E-01	5.6786085E-05	B50A222222	7.8856248E-01	5.4112988E-05
B32A222223	8.8817656E-01	5.3539951E-05	B50A222223	7.8821574E-01	5.2449641E-05
B32A222233	8.8666042E-01	5.6050894E-05	B50A222233	7.8737468E-01	5.1838069E-05
B32A222333	8.8359725E-01	5.4365367E-05	B50A222333	7.8474271E-01	4.9413715E-05
B32A223333	8.7890300E-01	5.4395646E-05	B50A223333	7.7856318E-01	5.0009621E-05
B32A233333	8.7424988E-01	5.2064236E-05	B50A233333	7.6964110E-01	5.5034309E-05
B32A333333	8.7194690E-01	5.2288904E-05	B50A333333	7.6385405E-01	5.0881141E-05
B32A122223	8.9019539E-01	5.7376884E-05	B50A122223	7.9014042E-01	5.1240685E-05
B32A112233	8.9256064E-01	5.4365367E-05	B50A112233	7.9135824E-01	5.2347954E-05
B32A322221	8.8704183E-01	5.5991743E-05	B50A322221	7.8326736E-01	5.0674063E-05
B32A332211	8.8439525E-01	5.2483042E-05	B50A332211	7.7558499E-01	5.2288904E-05
B32Auniform	8.7536000E-01	6.0000000E-05	B50Auniform	7.4709000E-01	5.0000000E-05

Table VI.2 Evaluation of recalculated results: end effects Δk

Case ID	Δk	s(Δk)	Case ID	Δk	s(Δk)
B32A111111	2.5988870E-02	8.3179371E-05	B50A111111	4.8108320E-02	7.1746764E-05
B32A111112	2.5466260E-02	8.1287162E-05	B50A111112	4.8073530E-02	7.1593350E-05
B32A111122	2.4580350E-02	8.2782791E-05	B50A111122	4.7990060E-02	7.4004255E-05
B32A111222	2.2326680E-02	8.2462197E-05	B50A111222	4.7110860E-02	7.3541967E-05
B32A112222	1.9154090E-02	7.9957056E-05	B50A112222	4.5216390E-02	7.2036567E-05
B32A122222	1.5568670E-02	7.9267256E-05	B50A122222	4.3210340E-02	7.3541967E-05
B32A222222	1.3722370E-02	8.2611497E-05	B50A222222	4.1472480E-02	7.3676424E-05
B32A222223	1.2816560E-02	8.0414715E-05	B50A222223	4.1125740E-02	7.2463541E-05
B32A222233	1.1300420E-02	8.2107872E-05	B50A222233	4.0284680E-02	7.2022117E-05
B32A222333	8.2372500E-03	8.0966617E-05	B50A222333	3.7652710E-02	7.0297334E-05
B32A223333	3.5430000E-03	8.0986951E-05	B50A223333	3.1473180E-02	7.0717482E-05
B32A233333	-1.1101200E-03	7.9439818E-05	B50A233333	2.2551100E-02	7.4355734E-05
B32A333333	-3.4131000E-03	7.9587244E-05	B50A333333	1.6764050E-02	7.1336460E-05
B32A122223	1.4835390E-02	8.3018714E-05	B50A122223	4.3050420E-02	7.1593350E-05
B32A112233	1.7200640E-02	8.0966617E-05	B50A112233	4.4268240E-02	7.2389974E-05
B32A322221	1.1681830E-02	8.2067504E-05	B50A322221	3.6177360E-02	7.1188908E-05
B32A332211	9.0352500E-03	7.9714928E-05	B50A332211	2.8494990E-02	7.2347284E-05

Table VI.3 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32Auniform

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.788114E-03	1.793885E-04
2.000000E+00	1.828500E+01	1.616519E-02	3.745004E-04
3.000000E+00	3.047000E+01	2.385896E-02	5.703642E-04
4.000000E+00	4.265500E+01	3.129542E-02	7.745959E-04
5.000000E+00	6.094000E+01	4.203027E-02	1.081029E-03
6.000000E+00	7.922000E+01	5.218676E-02	1.439178E-03
7.000000E+00	1.035950E+02	6.343415E-02	1.498994E-03
8.000000E+00	1.279700E+02	7.233984E-02	1.355720E-03
9.000000E+00	1.462500E+02	7.700422E-02	1.081775E-03
1.000000E+01	1.706250E+02	8.107021E-02	4.839205E-04
1.100000E+01	1.889050E+02	8.218749E-02	2.598100E-04
1.200000E+01	2.132800E+02	8.066897E-02	8.099606E-04
1.300000E+01	2.376550E+02	7.700954E-02	1.228103E-03
1.400000E+01	2.620300E+02	7.070437E-02	1.207602E-03
1.500000E+01	2.985950E+02	5.704600E-02	1.228730E-03
1.600000E+01	3.229700E+02	4.522134E-02	1.324316E-03
1.700000E+01	3.351550E+02	3.842612E-02	1.253675E-03
1.800000E+01	3.473450E+02	3.133859E-02	1.038764E-03
1.900000E+01	3.595350E+02	2.396977E-02	8.204572E-04
2.000000E+01	3.717200E+02	1.629924E-02	5.905345E-04
2.100000E+01	3.839050E+02	8.955436E-03	3.363529E-04
Sum:		1.000000E+00	

Table VI.4 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A111111

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.047944E-05	2.762704E-06
2.000000E+00	1.828500E+01	1.496867E-05	4.003063E-06
3.000000E+00	3.047000E+01	1.205788E-05	3.851657E-06
4.000000E+00	4.265500E+01	8.186126E-06	2.930379E-06
5.000000E+00	6.094000E+01	8.111599E-06	2.098003E-06
6.000000E+00	7.922000E+01	1.488573E-05	3.226436E-06
7.000000E+00	1.035950E+02	2.998454E-05	2.864639E-06
8.000000E+00	1.279700E+02	7.811326E-05	5.659288E-06
9.000000E+00	1.462500E+02	1.654125E-04	7.869054E-06
1.000000E+01	1.706250E+02	4.430057E-04	1.181525E-05
1.100000E+01	1.889050E+02	8.878083E-04	1.927462E-05
1.200000E+01	2.132800E+02	2.290788E-03	3.479275E-05
1.300000E+01	2.376550E+02	5.296606E-03	5.582441E-05
1.400000E+01	2.620300E+02	1.244367E-02	6.263546E-05
1.500000E+01	2.985950E+02	4.291872E-02	1.653141E-04
1.600000E+01	3.229700E+02	8.921869E-02	2.039632E-04
1.700000E+01	3.351550E+02	1.257748E-01	1.799780E-04
1.800000E+01	3.473450E+02	1.715097E-01	9.322920E-05
1.900000E+01	3.595350E+02	1.984001E-01	1.578126E-04
2.000000E+01	3.717200E+02	2.012670E-01	2.617979E-04
2.100000E+01	3.839050E+02	1.492068E-01	2.594342E-04
Sum:		1.000000E+00	

Table VI.5 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A111112

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	6.893738E-06	1.910332E-06
2.000000E+00	1.828500E+01	9.916576E-06	2.069960E-06
3.000000E+00	3.047000E+01	6.636083E-06	1.395039E-06
4.000000E+00	4.265500E+01	5.837999E-06	1.217927E-06
5.000000E+00	6.094000E+01	7.370776E-06	1.052411E-06
6.000000E+00	7.922000E+01	1.402263E-05	1.272870E-06
7.000000E+00	1.035950E+02	3.136052E-05	2.408297E-06
8.000000E+00	1.279700E+02	7.801958E-05	3.653916E-06
9.000000E+00	1.462500E+02	1.660458E-04	6.383618E-06
1.000000E+01	1.706250E+02	4.387328E-04	1.121204E-05
1.100000E+01	1.889050E+02	8.773348E-04	1.886815E-05
1.200000E+01	2.132800E+02	2.260477E-03	3.259255E-05
1.300000E+01	2.376550E+02	5.252178E-03	7.048087E-05
1.400000E+01	2.620300E+02	1.218729E-02	9.803324E-05
1.500000E+01	2.985950E+02	4.161583E-02	1.633587E-04
1.600000E+01	3.229700E+02	8.559985E-02	1.481676E-04
1.700000E+01	3.351550E+02	1.245937E-01	8.545580E-05
1.800000E+01	3.473450E+02	1.720143E-01	8.266409E-05
1.900000E+01	3.595350E+02	2.001487E-01	1.313076E-04
2.000000E+01	3.717200E+02	2.036158E-01	1.439169E-04
2.100000E+01	3.839050E+02	1.510698E-01	1.658474E-04
Sum:		1.000000E+00	

Table VI.6 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A111122

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	6.728578E-06	1.465886E-06
2.000000E+00	1.828500E+01	9.821542E-06	1.926612E-06
3.000000E+00	3.047000E+01	7.406135E-06	1.800794E-06
4.000000E+00	4.265500E+01	5.596695E-06	1.418259E-06
5.000000E+00	6.094000E+01	6.610802E-06	1.820359E-06
6.000000E+00	7.922000E+01	1.131987E-05	3.033833E-06
7.000000E+00	1.035950E+02	3.052209E-05	4.609450E-06
8.000000E+00	1.279700E+02	8.157644E-05	6.798293E-06
9.000000E+00	1.462500E+02	1.663609E-04	9.499518E-06
1.000000E+01	1.706250E+02	4.416040E-04	1.308168E-05
1.100000E+01	1.889050E+02	8.930952E-04	2.188336E-05
1.200000E+01	2.132800E+02	2.266376E-03	3.292840E-05
1.300000E+01	2.376550E+02	5.230522E-03	5.223299E-05
1.400000E+01	2.620300E+02	1.214858E-02	8.948093E-05
1.500000E+01	2.985950E+02	4.091923E-02	1.342000E-04
1.600000E+01	3.229700E+02	8.367061E-02	2.186836E-04
1.700000E+01	3.351550E+02	1.205703E-01	1.966988E-04
1.800000E+01	3.473450E+02	1.711454E-01	1.170375E-04
1.900000E+01	3.595350E+02	2.018785E-01	1.608261E-04
2.000000E+01	3.717200E+02	2.066598E-01	2.894104E-04
2.100000E+01	3.839050E+02	1.538500E-01	3.162069E-04
Sum:		1.000000E+00	

Table VI.7 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A111222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.133043E-05	5.375549E-06
2.000000E+00	1.828500E+01	1.617290E-05	5.630891E-06
3.000000E+00	3.047000E+01	1.346908E-05	5.664277E-06
4.000000E+00	4.265500E+01	9.521699E-06	3.835921E-06
5.000000E+00	6.094000E+01	9.521182E-06	2.014955E-06
6.000000E+00	7.922000E+01	1.578003E-05	1.547421E-06
7.000000E+00	1.035950E+02	4.180568E-05	2.871619E-06
8.000000E+00	1.279700E+02	1.084159E-04	6.153677E-06
9.000000E+00	1.462500E+02	2.173218E-04	9.879823E-06
1.000000E+01	1.706250E+02	5.348594E-04	1.599399E-05
1.100000E+01	1.889050E+02	1.030217E-03	2.258767E-05
1.200000E+01	2.132800E+02	2.505848E-03	3.459560E-05
1.300000E+01	2.376550E+02	5.644959E-03	6.078748E-05
1.400000E+01	2.620300E+02	1.275884E-02	6.656905E-05
1.500000E+01	2.985950E+02	4.176612E-02	9.180032E-05
1.600000E+01	3.229700E+02	8.349951E-02	1.324544E-04
1.700000E+01	3.351550E+02	1.186144E-01	7.324676E-05
1.800000E+01	3.473450E+02	1.651023E-01	9.212696E-05
1.900000E+01	3.595350E+02	2.014197E-01	1.297869E-04
2.000000E+01	3.717200E+02	2.095611E-01	1.688023E-04
2.100000E+01	3.839050E+02	1.571187E-01	1.261356E-04
Sum:		1.000000E+00	

Table VI.8 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A112222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.168377E-06	2.237463E-06
2.000000E+00	1.828500E+01	1.173372E-05	3.165910E-06
3.000000E+00	3.047000E+01	9.400372E-06	3.515283E-06
4.000000E+00	4.265500E+01	9.018571E-06	2.962802E-06
5.000000E+00	6.094000E+01	1.297177E-05	2.486648E-06
6.000000E+00	7.922000E+01	2.259995E-05	3.395111E-06
7.000000E+00	1.035950E+02	5.725012E-05	4.625434E-06
8.000000E+00	1.279700E+02	1.459676E-04	8.069101E-06
9.000000E+00	1.462500E+02	2.972075E-04	1.295687E-05
1.000000E+01	1.706250E+02	7.104078E-04	2.265060E-05
1.100000E+01	1.889050E+02	1.358802E-03	3.270389E-05
1.200000E+01	2.132800E+02	3.150667E-03	6.281878E-05
1.300000E+01	2.376550E+02	6.795728E-03	9.718732E-05
1.400000E+01	2.620300E+02	1.454071E-02	8.752425E-05
1.500000E+01	2.985950E+02	4.459673E-02	1.675063E-04
1.600000E+01	3.229700E+02	8.625566E-02	1.918107E-04
1.700000E+01	3.351550E+02	1.202138E-01	1.226970E-04
1.800000E+01	3.473450E+02	1.637691E-01	9.472255E-05
1.900000E+01	3.595350E+02	1.940034E-01	1.338885E-04
2.000000E+01	3.717200E+02	2.071223E-01	3.055724E-04
2.100000E+01	3.839050E+02	1.569083E-01	2.585644E-04
Sum:		1.000000E+00	

Table VI.9 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A122222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.031374E-05	1.972933E-06
2.000000E+00	1.828500E+01	1.687973E-05	3.529343E-06
3.000000E+00	3.047000E+01	1.642800E-05	3.900277E-06
4.000000E+00	4.265500E+01	1.913025E-05	4.303948E-06
5.000000E+00	6.094000E+01	2.340897E-05	4.350279E-06
6.000000E+00	7.922000E+01	3.828801E-05	4.758796E-06
7.000000E+00	1.035950E+02	9.132266E-05	9.123564E-06
8.000000E+00	1.279700E+02	2.114615E-04	1.803915E-05
9.000000E+00	1.462500E+02	4.089134E-04	1.952271E-05
1.000000E+01	1.706250E+02	9.573667E-04	2.066004E-05
1.100000E+01	1.889050E+02	1.736894E-03	3.268594E-05
1.200000E+01	2.132800E+02	3.923001E-03	4.560845E-05
1.300000E+01	2.376550E+02	8.288152E-03	8.980055E-05
1.400000E+01	2.620300E+02	1.714296E-02	9.604641E-05
1.500000E+01	2.985950E+02	4.955977E-02	7.296632E-05
1.600000E+01	3.229700E+02	9.193634E-02	6.732388E-05
1.700000E+01	3.351550E+02	1.251924E-01	1.185929E-04
1.800000E+01	3.473450E+02	1.661019E-01	1.369134E-04
1.900000E+01	3.595350E+02	1.905725E-01	1.264908E-04
2.000000E+01	3.717200E+02	1.942623E-01	8.768906E-05
2.100000E+01	3.839050E+02	1.494902E-01	1.697049E-04
Sum:		1.000000E+00	

Table VI.10 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A222222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.090115E-05	3.980132E-06
2.000000E+00	1.828500E+01	1.795652E-05	6.678159E-06
3.000000E+00	3.047000E+01	1.701779E-05	6.199467E-06
4.000000E+00	4.265500E+01	1.894514E-05	5.276050E-06
5.000000E+00	6.094000E+01	2.790802E-05	3.767022E-06
6.000000E+00	7.922000E+01	5.123454E-05	2.541597E-06
7.000000E+00	1.035950E+02	1.198607E-04	4.513865E-06
8.000000E+00	1.279700E+02	2.698116E-04	1.188417E-05
9.000000E+00	1.462500E+02	5.037772E-04	2.195964E-05
1.000000E+01	1.706250E+02	1.140601E-03	3.747992E-05
1.100000E+01	1.889050E+02	2.071504E-03	6.857398E-05
1.200000E+01	2.132800E+02	4.605273E-03	9.872016E-05
1.300000E+01	2.376550E+02	9.535500E-03	1.478705E-04
1.400000E+01	2.620300E+02	1.910209E-02	1.549999E-04
1.500000E+01	2.985950E+02	5.299569E-02	1.700546E-04
1.600000E+01	3.229700E+02	9.607754E-02	1.340562E-04
1.700000E+01	3.351550E+02	1.287938E-01	1.274724E-04
1.800000E+01	3.473450E+02	1.683802E-01	1.774570E-04
1.900000E+01	3.595350E+02	1.896024E-01	2.045950E-04
2.000000E+01	3.717200E+02	1.886873E-01	2.045346E-04
2.100000E+01	3.839050E+02	1.379707E-01	1.693404E-04
Sum:		1.000000E+00	

Table VI.11 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A222223

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.733973E-05	3.930451E-06
2.000000E+00	1.828500E+01	2.458636E-05	4.758723E-06
3.000000E+00	3.047000E+01	2.537342E-05	5.582295E-06
4.000000E+00	4.265500E+01	2.868743E-05	6.121771E-06
5.000000E+00	6.094000E+01	4.083112E-05	4.984856E-06
6.000000E+00	7.922000E+01	6.561689E-05	6.040981E-06
7.000000E+00	1.035950E+02	1.404418E-04	8.628207E-06
8.000000E+00	1.279700E+02	2.971069E-04	1.596637E-05
9.000000E+00	1.462500E+02	5.377496E-04	2.399604E-05
1.000000E+01	1.706250E+02	1.178711E-03	3.151957E-05
1.100000E+01	1.889050E+02	2.144556E-03	4.058348E-05
1.200000E+01	2.132800E+02	4.691589E-03	4.084367E-05
1.300000E+01	2.376550E+02	9.595426E-03	5.988835E-05
1.400000E+01	2.620300E+02	1.882856E-02	9.255269E-05
1.500000E+01	2.985950E+02	5.122374E-02	4.217298E-05
1.600000E+01	3.229700E+02	9.109317E-02	1.007559E-04
1.700000E+01	3.351550E+02	1.269677E-01	1.173797E-04
1.800000E+01	3.473450E+02	1.689414E-01	1.270354E-04
1.900000E+01	3.595350E+02	1.921371E-01	4.888492E-05
2.000000E+01	3.717200E+02	1.916554E-01	1.181121E-04
2.100000E+01	3.839050E+02	1.403649E-01	1.706688E-04
Sum:		1.000000E+00	

Table VI.12 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A222233

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.831980E-05	4.259261E-06
2.000000E+00	1.828500E+01	2.594229E-05	5.505924E-06
3.000000E+00	3.047000E+01	3.046608E-05	5.755459E-06
4.000000E+00	4.265500E+01	3.297182E-05	4.911899E-06
5.000000E+00	6.094000E+01	4.779968E-05	4.192614E-06
6.000000E+00	7.922000E+01	7.993779E-05	5.921765E-06
7.000000E+00	1.035950E+02	1.603313E-04	6.499446E-06
8.000000E+00	1.279700E+02	3.378010E-04	1.023592E-05
9.000000E+00	1.462500E+02	5.925724E-04	1.280313E-05
1.000000E+01	1.706250E+02	1.276728E-03	1.273935E-05
1.100000E+01	1.889050E+02	2.258973E-03	1.585327E-05
1.200000E+01	2.132800E+02	4.803845E-03	3.521874E-05
1.300000E+01	2.376550E+02	9.655937E-03	6.426923E-05
1.400000E+01	2.620300E+02	1.877360E-02	1.226431E-04
1.500000E+01	2.985950E+02	5.000355E-02	1.510813E-04
1.600000E+01	3.229700E+02	8.761993E-02	9.433977E-05
1.700000E+01	3.351550E+02	1.201419E-01	1.031033E-04
1.800000E+01	3.473450E+02	1.675324E-01	1.191835E-04
1.900000E+01	3.595350E+02	1.947145E-01	1.847790E-04
2.000000E+01	3.717200E+02	1.968111E-01	1.451955E-04
2.100000E+01	3.839050E+02	1.450813E-01	1.506384E-04
Sum:		1.000000E+00	

Table VI.13 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A222333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	4.194357E-05	8.897091E-06
2.000000E+00	1.828500E+01	5.727020E-05	1.145170E-05
3.000000E+00	3.047000E+01	6.178886E-05	1.215670E-05
4.000000E+00	4.265500E+01	6.708110E-05	1.219852E-05
5.000000E+00	6.094000E+01	8.364252E-05	1.382949E-05
6.000000E+00	7.922000E+01	1.190210E-04	1.531849E-05
7.000000E+00	1.035950E+02	2.266206E-04	1.083752E-05
8.000000E+00	1.279700E+02	4.757113E-04	1.611838E-05
9.000000E+00	1.462500E+02	8.301665E-04	2.395501E-05
1.000000E+01	1.706250E+02	1.751776E-03	2.738611E-05
1.100000E+01	1.889050E+02	2.958631E-03	3.047439E-05
1.200000E+01	2.132800E+02	5.971366E-03	5.543030E-05
1.300000E+01	2.376550E+02	1.153742E-02	7.440504E-05
1.400000E+01	2.620300E+02	2.119936E-02	8.982824E-05
1.500000E+01	2.985950E+02	5.240009E-02	1.797173E-04
1.600000E+01	3.229700E+02	8.761973E-02	1.069642E-04
1.700000E+01	3.351550E+02	1.171059E-01	8.915436E-05
1.800000E+01	3.473450E+02	1.580361E-01	5.323411E-05
1.900000E+01	3.595350E+02	1.926316E-01	1.697387E-04
2.000000E+01	3.717200E+02	1.988139E-01	2.522748E-04
2.100000E+01	3.839050E+02	1.480109E-01	1.421496E-04
Sum:		1.000000E+00	

Table VI.14 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A223333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.511015E-04	1.763827E-05
2.000000E+00	1.828500E+01	2.074219E-04	2.267644E-05
3.000000E+00	3.047000E+01	2.207671E-04	2.341465E-05
4.000000E+00	4.265500E+01	2.229901E-04	2.184358E-05
5.000000E+00	6.094000E+01	2.520872E-04	2.789899E-05
6.000000E+00	7.922000E+01	3.332363E-04	3.409875E-05
7.000000E+00	1.035950E+02	5.404152E-04	4.119231E-05
8.000000E+00	1.279700E+02	9.629022E-04	5.769066E-05
9.000000E+00	1.462500E+02	1.504991E-03	7.165190E-05
1.000000E+01	1.706250E+02	2.866843E-03	8.427983E-05
1.100000E+01	1.889050E+02	4.629214E-03	1.132777E-04
1.200000E+01	2.132800E+02	8.638407E-03	1.290022E-04
1.300000E+01	2.376550E+02	1.570638E-02	1.664445E-04
1.400000E+01	2.620300E+02	2.686735E-02	1.459503E-04
1.500000E+01	2.985950E+02	5.938774E-02	1.879561E-04
1.600000E+01	3.229700E+02	9.236988E-02	1.646137E-04
1.700000E+01	3.351550E+02	1.185705E-01	1.104943E-04
1.800000E+01	3.473450E+02	1.537216E-01	1.840806E-04
1.900000E+01	3.595350E+02	1.777198E-01	3.138454E-04
2.000000E+01	3.717200E+02	1.908783E-01	3.815832E-04
2.100000E+01	3.839050E+02	1.442481E-01	2.815549E-04
Sum:		1.000000E+00	

Table VI.15 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A233333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	6.491687E-04	8.760676E-05
2.000000E+00	1.828500E+01	8.825593E-04	1.244501E-04
3.000000E+00	3.047000E+01	9.319663E-04	1.292272E-04
4.000000E+00	4.265500E+01	9.268467E-04	1.225397E-04
5.000000E+00	6.094000E+01	9.656450E-04	1.171677E-04
6.000000E+00	7.922000E+01	1.111127E-03	1.151864E-04
7.000000E+00	1.035950E+02	1.436367E-03	9.103430E-05
8.000000E+00	1.279700E+02	2.179595E-03	8.967459E-05
9.000000E+00	1.462500E+02	3.093101E-03	8.229098E-05
1.000000E+01	1.706250E+02	5.226091E-03	8.119671E-05
1.100000E+01	1.889050E+02	7.976776E-03	9.962321E-05
1.200000E+01	2.132800E+02	1.369542E-02	1.582875E-04
1.300000E+01	2.376550E+02	2.331786E-02	2.245923E-04
1.400000E+01	2.620300E+02	3.643951E-02	2.842258E-04
1.500000E+01	2.985950E+02	7.052596E-02	2.897086E-04
1.600000E+01	3.229700E+02	1.002295E-01	1.611949E-04
1.700000E+01	3.351550E+02	1.222977E-01	2.099530E-04
1.800000E+01	3.473450E+02	1.508618E-01	3.021113E-04
1.900000E+01	3.595350E+02	1.652536E-01	4.467614E-04
2.000000E+01	3.717200E+02	1.647483E-01	5.030740E-04
2.100000E+01	3.839050E+02	1.272511E-01	3.692502E-04
Sum:		1.000000E+00	

Table VI.16 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A333333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	2.093877E-03	3.721459E-04
2.000000E+00	1.828500E+01	2.864433E-03	5.008778E-04
3.000000E+00	3.047000E+01	3.007309E-03	5.086196E-04
4.000000E+00	4.265500E+01	2.894730E-03	4.627908E-04
5.000000E+00	6.094000E+01	2.775409E-03	4.019067E-04
6.000000E+00	7.922000E+01	2.801790E-03	3.522839E-04
7.000000E+00	1.035950E+02	2.977611E-03	2.553530E-04
8.000000E+00	1.279700E+02	3.895555E-03	1.882308E-04
9.000000E+00	1.462500E+02	4.974373E-03	1.509321E-04
1.000000E+01	1.706250E+02	7.596760E-03	1.226708E-04
1.100000E+01	1.889050E+02	1.097433E-02	1.421683E-04
1.200000E+01	2.132800E+02	1.790678E-02	1.722492E-04
1.300000E+01	2.376550E+02	2.905593E-02	1.767288E-04
1.400000E+01	2.620300E+02	4.277592E-02	1.863556E-04
1.500000E+01	2.985950E+02	7.703273E-02	2.277819E-04
1.600000E+01	3.229700E+02	1.040879E-01	3.879283E-04
1.700000E+01	3.351550E+02	1.232660E-01	4.142708E-04
1.800000E+01	3.473450E+02	1.474776E-01	4.694083E-04
1.900000E+01	3.595350E+02	1.564497E-01	6.294926E-04
2.000000E+01	3.717200E+02	1.493127E-01	5.694873E-04
2.100000E+01	3.839050E+02	1.057786E-01	4.174439E-04
Sum:		1.000000E+00	

Table VI.17 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A122223

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.852268E-05	8.433587E-06
2.000000E+00	1.828500E+01	2.385399E-05	1.044477E-05
3.000000E+00	3.047000E+01	2.257156E-05	1.038052E-05
4.000000E+00	4.265500E+01	2.029069E-05	7.200641E-06
5.000000E+00	6.094000E+01	2.574992E-05	4.574325E-06
6.000000E+00	7.922000E+01	4.575469E-05	5.394931E-06
7.000000E+00	1.035950E+02	1.080493E-04	4.227298E-06
8.000000E+00	1.279700E+02	2.322106E-04	1.202826E-05
9.000000E+00	1.462500E+02	4.251332E-04	1.955335E-05
1.000000E+01	1.706250E+02	9.504741E-04	3.477981E-05
1.100000E+01	1.889050E+02	1.756564E-03	4.491478E-05
1.200000E+01	2.132800E+02	3.946709E-03	5.684589E-05
1.300000E+01	2.376550E+02	8.231128E-03	8.890379E-05
1.400000E+01	2.620300E+02	1.673673E-02	1.163177E-04
1.500000E+01	2.985950E+02	4.768590E-02	1.669840E-04
1.600000E+01	3.229700E+02	8.717757E-02	1.668644E-04
1.700000E+01	3.351550E+02	1.232383E-01	1.867766E-04
1.800000E+01	3.473450E+02	1.664138E-01	1.348584E-04
1.900000E+01	3.595350E+02	1.927843E-01	1.636422E-04
2.000000E+01	3.717200E+02	1.975740E-01	2.424244E-04
2.100000E+01	3.839050E+02	1.525823E-01	2.390002E-04
Sum:		1.000000E+00	

Table VI.18 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A112233

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.152856E-06	1.485000E-06
2.000000E+00	1.828500E+01	1.120564E-05	2.023429E-06
3.000000E+00	3.047000E+01	1.053781E-05	2.141017E-06
4.000000E+00	4.265500E+01	9.532751E-06	1.725029E-06
5.000000E+00	6.094000E+01	1.372385E-05	2.256176E-06
6.000000E+00	7.922000E+01	2.695065E-05	3.370376E-06
7.000000E+00	1.035950E+02	7.382894E-05	8.348964E-06
8.000000E+00	1.279700E+02	1.669450E-04	1.459710E-05
9.000000E+00	1.462500E+02	3.182790E-04	1.776605E-05
1.000000E+01	1.706250E+02	7.556508E-04	2.129857E-05
1.100000E+01	1.889050E+02	1.413346E-03	2.525114E-05
1.200000E+01	2.132800E+02	3.233861E-03	4.249525E-05
1.300000E+01	2.376550E+02	6.847659E-03	6.300661E-05
1.400000E+01	2.620300E+02	1.419725E-02	1.235487E-04
1.500000E+01	2.985950E+02	4.191820E-02	1.765966E-04
1.600000E+01	3.229700E+02	7.875515E-02	1.736999E-04
1.700000E+01	3.351550E+02	1.123017E-01	1.611145E-04
1.800000E+01	3.473450E+02	1.628849E-01	1.066133E-04
1.900000E+01	3.595350E+02	1.985211E-01	1.806013E-04
2.000000E+01	3.717200E+02	2.148029E-01	3.327733E-04
2.100000E+01	3.839050E+02	1.637291E-01	2.725217E-04
Sum:		1.000000E+00	

Table VI.19 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A322221

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	2.027503E-05	3.653315E-06
2.000000E+00	1.828500E+01	3.035528E-05	4.978697E-06
3.000000E+00	3.047000E+01	3.233790E-05	4.657481E-06
4.000000E+00	4.265500E+01	3.732095E-05	4.747976E-06
5.000000E+00	6.094000E+01	5.175255E-05	5.599982E-06
6.000000E+00	7.922000E+01	8.452150E-05	6.745945E-06
7.000000E+00	1.035950E+02	1.813529E-04	9.188921E-06
8.000000E+00	1.279700E+02	3.844756E-04	1.756011E-05
9.000000E+00	1.462500E+02	6.948287E-04	1.967437E-05
1.000000E+01	1.706250E+02	1.520776E-03	4.280415E-05
1.100000E+01	1.889050E+02	2.679872E-03	5.990861E-05
1.200000E+01	2.132800E+02	5.704501E-03	1.025515E-04
1.300000E+01	2.376550E+02	1.150310E-02	1.609598E-04
1.400000E+01	2.620300E+02	2.262737E-02	2.229951E-04
1.500000E+01	2.985950E+02	6.041616E-02	2.021381E-04
1.600000E+01	3.229700E+02	1.065196E-01	1.990129E-04
1.700000E+01	3.351550E+02	1.355608E-01	1.553585E-04
1.800000E+01	3.473450E+02	1.706500E-01	1.986689E-04
1.900000E+01	3.595350E+02	1.856554E-01	1.931354E-04
2.000000E+01	3.717200E+02	1.767834E-01	2.246002E-04
2.100000E+01	3.839050E+02	1.188619E-01	1.935849E-04
Sum:		1.000000E+00	

Table VI.20 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B32A332211

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	3.489206E-05	5.070423E-06
2.000000E+00	1.828500E+01	5.027153E-05	6.774743E-06
3.000000E+00	3.047000E+01	5.580954E-05	8.918312E-06
4.000000E+00	4.265500E+01	6.122704E-05	9.664518E-06
5.000000E+00	6.094000E+01	8.568519E-05	1.035083E-05
6.000000E+00	7.922000E+01	1.359231E-04	1.423133E-05
7.000000E+00	1.035950E+02	2.774636E-04	1.386021E-05
8.000000E+00	1.279700E+02	5.788046E-04	2.321449E-05
9.000000E+00	1.462500E+02	1.008852E-03	2.833198E-05
1.000000E+01	1.706250E+02	2.091176E-03	1.970428E-05
1.100000E+01	1.889050E+02	3.584568E-03	2.745819E-05
1.200000E+01	2.132800E+02	7.402208E-03	5.129612E-05
1.300000E+01	2.376550E+02	1.455745E-02	9.767701E-05
1.400000E+01	2.620300E+02	2.726270E-02	1.017811E-04
1.500000E+01	2.985950E+02	6.841679E-02	1.821806E-04
1.600000E+01	3.229700E+02	1.164968E-01	1.657924E-04
1.700000E+01	3.351550E+02	1.456992E-01	1.536092E-04
1.800000E+01	3.473450E+02	1.725137E-01	8.418074E-05
1.900000E+01	3.595350E+02	1.771203E-01	1.353402E-04
2.000000E+01	3.717200E+02	1.559582E-01	2.758639E-04
2.100000E+01	3.839050E+02	1.066080E-01	2.034097E-04
Sum:		1.000000E+00	

Table VI.21 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50Auniform

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.549165E-03	1.912185E-04
2.000000E+00	1.828500E+01	1.557220E-02	3.303228E-04
3.000000E+00	3.047000E+01	2.294870E-02	4.570660E-04
4.000000E+00	4.265500E+01	3.023958E-02	5.783494E-04
5.000000E+00	6.094000E+01	4.066736E-02	7.036810E-04
6.000000E+00	7.922000E+01	5.050913E-02	7.690174E-04
7.000000E+00	1.035950E+02	6.178199E-02	7.565790E-04
8.000000E+00	1.279700E+02	7.104583E-02	5.924600E-04
9.000000E+00	1.462500E+02	7.621210E-02	3.797900E-04
1.000000E+01	1.706250E+02	8.117349E-02	3.330682E-04
1.100000E+01	1.889050E+02	8.314908E-02	3.500659E-04
1.200000E+01	2.132800E+02	8.215407E-02	3.344975E-04
1.300000E+01	2.376550E+02	7.906764E-02	5.309103E-04
1.400000E+01	2.620300E+02	7.262938E-02	6.937544E-04
1.500000E+01	2.985950E+02	5.795448E-02	8.789605E-04
1.600000E+01	3.229700E+02	4.570460E-02	8.046026E-04
1.700000E+01	3.351550E+02	3.886440E-02	7.571860E-04
1.800000E+01	3.473450E+02	3.170043E-02	6.373344E-04
1.900000E+01	3.595350E+02	2.433937E-02	5.074824E-04
2.000000E+01	3.717200E+02	1.662906E-02	3.466212E-04
2.100000E+01	3.839050E+02	9.107954E-03	1.936768E-04
Sum:		1.000000E+00	

Table VI.22 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A111111

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.015608E-05	3.202782E-06
2.000000E+00	1.828500E+01	1.191127E-05	3.118494E-06
3.000000E+00	3.047000E+01	6.800096E-06	2.412326E-06
4.000000E+00	4.265500E+01	3.234697E-06	1.368900E-06
5.000000E+00	6.094000E+01	1.008597E-06	4.843483E-07
6.000000E+00	7.922000E+01	4.131597E-07	1.904046E-07
7.000000E+00	1.035950E+02	8.545687E-07	2.275328E-07
8.000000E+00	1.279700E+02	3.559013E-06	4.961394E-07
9.000000E+00	1.462500E+02	1.055964E-05	5.423392E-07
1.000000E+01	1.706250E+02	3.818843E-05	1.258489E-06
1.100000E+01	1.889050E+02	9.952281E-05	3.330978E-06
1.200000E+01	2.132800E+02	3.606765E-04	7.366934E-06
1.300000E+01	2.376550E+02	1.094376E-03	1.626209E-05
1.400000E+01	2.620300E+02	3.654835E-03	2.651381E-05
1.500000E+01	2.985950E+02	2.038076E-02	6.975267E-05
1.600000E+01	3.229700E+02	5.524824E-02	9.502122E-05
1.700000E+01	3.351550E+02	9.315118E-02	8.808361E-05
1.800000E+01	3.473450E+02	1.537641E-01	1.037932E-04
1.900000E+01	3.595350E+02	2.089030E-01	9.821001E-05
2.000000E+01	3.717200E+02	2.505321E-01	1.259601E-04
2.100000E+01	3.839050E+02	2.127246E-01	1.574794E-04
Sum:		1.000000E+00	

Table VI.23 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A111112

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.392330E-06	1.417660E-06
2.000000E+00	1.828500E+01	1.000838E-05	1.166400E-06
3.000000E+00	3.047000E+01	6.057480E-06	7.803697E-07
4.000000E+00	4.265500E+01	3.072931E-06	6.000295E-07
5.000000E+00	6.094000E+01	1.396467E-06	3.974633E-07
6.000000E+00	7.922000E+01	7.479989E-07	1.706421E-07
7.000000E+00	1.035950E+02	8.597884E-07	8.975131E-08
8.000000E+00	1.279700E+02	3.508651E-06	4.272341E-07
9.000000E+00	1.462500E+02	1.096824E-05	1.450912E-06
1.000000E+01	1.706250E+02	4.066273E-05	2.021939E-06
1.100000E+01	1.889050E+02	9.885796E-05	2.942125E-06
1.200000E+01	2.132800E+02	3.517585E-04	4.228770E-06
1.300000E+01	2.376550E+02	1.059499E-03	1.381874E-05
1.400000E+01	2.620300E+02	3.599526E-03	1.545172E-05
1.500000E+01	2.985950E+02	2.012538E-02	4.071981E-05
1.600000E+01	3.229700E+02	5.448808E-02	6.806694E-05
1.700000E+01	3.351550E+02	9.284641E-02	5.230359E-05
1.800000E+01	3.473450E+02	1.539781E-01	3.112658E-05
1.900000E+01	3.595350E+02	2.093464E-01	7.446419E-05
2.000000E+01	3.717200E+02	2.508605E-01	7.306883E-05
2.100000E+01	3.839050E+02	2.131598E-01	1.252367E-04
Sum:		1.000000E+00	

Table VI.24 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A111122

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	9.509965E-06	2.621427E-06
2.000000E+00	1.828500E+01	1.151445E-05	3.073986E-06
3.000000E+00	3.047000E+01	6.694403E-06	2.083882E-06
4.000000E+00	4.265500E+01	3.285813E-06	1.038030E-06
5.000000E+00	6.094000E+01	1.349108E-06	4.878768E-07
6.000000E+00	7.922000E+01	6.236201E-07	2.295918E-07
7.000000E+00	1.035950E+02	1.758425E-06	6.835304E-07
8.000000E+00	1.279700E+02	4.120804E-06	1.189771E-06
9.000000E+00	1.462500E+02	1.013587E-05	1.339448E-06
1.000000E+01	1.706250E+02	3.746901E-05	1.961633E-06
1.100000E+01	1.889050E+02	9.387792E-05	4.839941E-06
1.200000E+01	2.132800E+02	3.419488E-04	5.355280E-06
1.300000E+01	2.376550E+02	1.047407E-03	9.018532E-06
1.400000E+01	2.620300E+02	3.557953E-03	2.311235E-05
1.500000E+01	2.985950E+02	1.992348E-02	6.865079E-05
1.600000E+01	3.229700E+02	5.398448E-02	1.549128E-04
1.700000E+01	3.351550E+02	9.183304E-02	1.341497E-04
1.800000E+01	3.473450E+02	1.536532E-01	1.537995E-04
1.900000E+01	3.595350E+02	2.095099E-01	1.159712E-04
2.000000E+01	3.717200E+02	2.517275E-01	2.344408E-04
2.100000E+01	3.839050E+02	2.142407E-01	2.410794E-04
Sum:		1.000000E+00	

Table VI.25 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A111222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.037479E-05	3.137199E-06
2.000000E+00	1.828500E+01	1.329197E-05	3.546091E-06
3.000000E+00	3.047000E+01	8.653432E-06	2.348236E-06
4.000000E+00	4.265500E+01	4.922959E-06	1.645127E-06
5.000000E+00	6.094000E+01	2.048546E-06	5.610833E-07
6.000000E+00	7.922000E+01	1.002319E-06	3.405171E-07
7.000000E+00	1.035950E+02	1.461572E-06	4.185171E-07
8.000000E+00	1.279700E+02	4.565371E-06	7.206647E-07
9.000000E+00	1.462500E+02	1.081934E-05	7.444915E-07
1.000000E+01	1.706250E+02	3.830689E-05	9.804755E-07
1.100000E+01	1.889050E+02	9.383159E-05	2.888310E-06
1.200000E+01	2.132800E+02	3.547248E-04	9.774432E-06
1.300000E+01	2.376550E+02	1.085243E-03	2.170331E-05
1.400000E+01	2.620300E+02	3.619671E-03	2.984717E-05
1.500000E+01	2.985950E+02	1.992508E-02	6.048956E-05
1.600000E+01	3.229700E+02	5.354179E-02	7.163956E-05
1.700000E+01	3.351550E+02	9.075564E-02	7.068050E-05
1.800000E+01	3.473450E+02	1.509006E-01	4.824637E-05
1.900000E+01	3.595350E+02	2.096355E-01	7.751927E-05
2.000000E+01	3.717200E+02	2.535873E-01	9.277059E-05
2.100000E+01	3.839050E+02	2.164051E-01	5.641308E-05
Sum:		1.000000E+00	

Table VI.26 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A112222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.490751E-06	2.342788E-06
2.000000E+00	1.828500E+01	1.075340E-05	2.347136E-06
3.000000E+00	3.047000E+01	6.570843E-06	1.584131E-06
4.000000E+00	4.265500E+01	3.218744E-06	9.033413E-07
5.000000E+00	6.094000E+01	1.127848E-06	3.666420E-07
6.000000E+00	7.922000E+01	6.275799E-07	2.034416E-07
7.000000E+00	1.035950E+02	1.578831E-06	2.777921E-07
8.000000E+00	1.279700E+02	4.890302E-06	8.150725E-07
9.000000E+00	1.462500E+02	1.247281E-05	8.061230E-07
1.000000E+01	1.706250E+02	4.473869E-05	2.493201E-06
1.100000E+01	1.889050E+02	1.102096E-04	3.289824E-06
1.200000E+01	2.132800E+02	3.932033E-04	4.109370E-06
1.300000E+01	2.376550E+02	1.179655E-03	7.175128E-06
1.400000E+01	2.620300E+02	3.816400E-03	2.398391E-05
1.500000E+01	2.985950E+02	2.049565E-02	6.943979E-05
1.600000E+01	3.229700E+02	5.427980E-02	1.122697E-04
1.700000E+01	3.351550E+02	9.113188E-02	8.819507E-05
1.800000E+01	3.473450E+02	1.501667E-01	4.826584E-05
1.900000E+01	3.595350E+02	2.057188E-01	4.503468E-05
2.000000E+01	3.717200E+02	2.540684E-01	1.213999E-04
2.100000E+01	3.839050E+02	2.185448E-01	1.977824E-04
Sum:		1.000000E+00	

Table VI.27 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A122222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.379625E-05	2.489148E-06
2.000000E+00	1.828500E+01	1.474027E-05	1.278828E-06
3.000000E+00	3.047000E+01	8.365059E-06	1.296634E-06
4.000000E+00	4.265500E+01	4.756855E-06	7.379643E-07
5.000000E+00	6.094000E+01	1.583838E-06	3.637970E-07
6.000000E+00	7.922000E+01	8.840164E-07	3.842592E-07
7.000000E+00	1.035950E+02	1.546674E-06	4.457148E-07
8.000000E+00	1.279700E+02	5.277303E-06	7.311811E-07
9.000000E+00	1.462500E+02	1.532530E-05	8.617096E-07
1.000000E+01	1.706250E+02	5.268623E-05	7.833152E-07
1.100000E+01	1.889050E+02	1.253684E-04	2.230086E-06
1.200000E+01	2.132800E+02	4.290847E-04	5.147764E-06
1.300000E+01	2.376550E+02	1.258680E-03	5.957066E-06
1.400000E+01	2.620300E+02	4.036355E-03	2.592186E-05
1.500000E+01	2.985950E+02	2.140550E-02	5.004902E-05
1.600000E+01	3.229700E+02	5.588260E-02	1.048307E-04
1.700000E+01	3.351550E+02	9.295085E-02	1.331551E-04
1.800000E+01	3.473450E+02	1.517978E-01	1.208136E-04
1.900000E+01	3.595350E+02	2.055628E-01	6.611074E-05
2.000000E+01	3.717200E+02	2.496275E-01	1.717608E-04
2.100000E+01	3.839050E+02	2.168045E-01	2.152140E-04
Sum:		1.000000E+00	

Table VI.28 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A222222

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.905032E-06	2.074879E-06
2.000000E+00	1.828500E+01	1.086831E-05	2.225126E-06
3.000000E+00	3.047000E+01	6.224465E-06	1.345849E-06
4.000000E+00	4.265500E+01	3.074241E-06	9.087600E-07
5.000000E+00	6.094000E+01	1.134624E-06	3.650831E-07
6.000000E+00	7.922000E+01	8.753498E-07	2.836493E-07
7.000000E+00	1.035950E+02	1.962052E-06	4.433591E-07
8.000000E+00	1.279700E+02	5.982159E-06	4.521348E-07
9.000000E+00	1.462500E+02	1.677518E-05	7.412095E-07
1.000000E+01	1.706250E+02	5.754233E-05	1.377020E-06
1.100000E+01	1.889050E+02	1.385456E-04	3.562327E-06
1.200000E+01	2.132800E+02	4.749720E-04	8.921972E-06
1.300000E+01	2.376550E+02	1.403769E-03	1.946772E-05
1.400000E+01	2.620300E+02	4.409760E-03	2.567236E-05
1.500000E+01	2.985950E+02	2.254647E-02	5.433600E-05
1.600000E+01	3.229700E+02	5.798430E-02	1.311646E-04
1.700000E+01	3.351550E+02	9.558341E-02	1.098321E-04
1.800000E+01	3.473450E+02	1.544259E-01	1.203846E-04
1.900000E+01	3.595350E+02	2.069870E-01	4.692132E-05
2.000000E+01	3.717200E+02	2.474611E-01	1.851839E-04
2.100000E+01	3.839050E+02	2.084715E-01	1.613395E-04
Sum:		1.000000E+00	

Table VI.29 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A222223

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	5.843303E-06	7.495325E-07
2.000000E+00	1.828500E+01	8.148931E-06	1.027038E-06
3.000000E+00	3.047000E+01	5.697156E-06	8.501570E-07
4.000000E+00	4.265500E+01	2.805360E-06	5.189153E-07
5.000000E+00	6.094000E+01	1.462346E-06	2.938013E-07
6.000000E+00	7.922000E+01	1.515052E-06	6.010369E-07
7.000000E+00	1.035950E+02	2.827075E-06	7.329514E-07
8.000000E+00	1.279700E+02	6.543508E-06	1.107954E-06
9.000000E+00	1.462500E+02	1.676688E-05	1.920266E-06
1.000000E+01	1.706250E+02	5.835199E-05	2.818347E-06
1.100000E+01	1.889050E+02	1.407837E-04	5.910838E-06
1.200000E+01	2.132800E+02	4.628286E-04	1.392491E-05
1.300000E+01	2.376550E+02	1.340775E-03	2.727476E-05
1.400000E+01	2.620300E+02	4.193669E-03	4.389997E-05
1.500000E+01	2.985950E+02	2.152066E-02	8.333351E-05
1.600000E+01	3.229700E+02	5.498920E-02	9.944909E-05
1.700000E+01	3.351550E+02	9.450725E-02	9.495672E-05
1.800000E+01	3.473450E+02	1.548041E-01	7.712244E-05
1.900000E+01	3.595350E+02	2.083851E-01	8.784634E-05
2.000000E+01	3.717200E+02	2.493922E-01	1.349195E-04
2.100000E+01	3.839050E+02	2.101535E-01	1.894740E-04
Sum:		1.000000E+00	

Table VI.30 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A222233

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.914385E-06	2.232401E-06
2.000000E+00	1.828500E+01	1.271698E-05	2.803764E-06
3.000000E+00	3.047000E+01	8.409796E-06	1.478265E-06
4.000000E+00	4.265500E+01	5.132541E-06	1.309932E-06
5.000000E+00	6.094000E+01	2.950024E-06	8.422641E-07
6.000000E+00	7.922000E+01	1.411251E-06	5.363769E-07
7.000000E+00	1.035950E+02	1.921095E-06	4.482130E-07
8.000000E+00	1.279700E+02	5.150586E-06	4.849657E-07
9.000000E+00	1.462500E+02	1.495955E-05	1.001870E-06
1.000000E+01	1.706250E+02	5.867714E-05	3.049482E-06
1.100000E+01	1.889050E+02	1.381878E-04	3.715244E-06
1.200000E+01	2.132800E+02	4.718857E-04	7.303052E-06
1.300000E+01	2.376550E+02	1.350843E-03	1.627735E-05
1.400000E+01	2.620300E+02	4.130766E-03	2.622804E-05
1.500000E+01	2.985950E+02	2.071689E-02	6.355691E-05
1.600000E+01	3.229700E+02	5.239977E-02	5.561005E-05
1.700000E+01	3.351550E+02	8.865229E-02	7.634287E-05
1.800000E+01	3.473450E+02	1.532433E-01	1.263388E-04
1.900000E+01	3.595350E+02	2.100331E-01	4.226771E-05
2.000000E+01	3.717200E+02	2.538368E-01	8.661726E-05
2.100000E+01	3.839050E+02	2.149059E-01	2.197008E-04
Sum:		1.000000E+00	

Table VI.31 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A222333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.284624E-05	3.128762E-06
2.000000E+00	1.828500E+01	1.679820E-05	3.897247E-06
3.000000E+00	3.047000E+01	1.120157E-05	3.032113E-06
4.000000E+00	4.265500E+01	7.483542E-06	2.346313E-06
5.000000E+00	6.094000E+01	3.934928E-06	1.483402E-06
6.000000E+00	7.922000E+01	1.902052E-06	7.733228E-07
7.000000E+00	1.035950E+02	2.461201E-06	4.315050E-07
8.000000E+00	1.279700E+02	6.049597E-06	1.281712E-06
9.000000E+00	1.462500E+02	1.585382E-05	1.663584E-06
1.000000E+01	1.706250E+02	5.268152E-05	2.580334E-06
1.100000E+01	1.889050E+02	1.280172E-04	3.695602E-06
1.200000E+01	2.132800E+02	4.757517E-04	5.356771E-06
1.300000E+01	2.376550E+02	1.377951E-03	1.795250E-05
1.400000E+01	2.620300E+02	4.177963E-03	3.244140E-05
1.500000E+01	2.985950E+02	2.040348E-02	7.344640E-05
1.600000E+01	3.229700E+02	5.062995E-02	1.074842E-04
1.700000E+01	3.351550E+02	8.476898E-02	9.097366E-05
1.800000E+01	3.473450E+02	1.434661E-01	5.408075E-05
1.900000E+01	3.595350E+02	2.105929E-01	8.158755E-05
2.000000E+01	3.717200E+02	2.608110E-01	1.298228E-04
2.100000E+01	3.839050E+02	2.230367E-01	1.756974E-04
Sum:		1.000000E+00	

Table VI.32 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A223333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.221005E-05	9.143482E-07
2.000000E+00	1.828500E+01	1.577370E-05	9.958267E-07
3.000000E+00	3.047000E+01	9.831850E-06	1.257683E-06
4.000000E+00	4.265500E+01	6.365225E-06	8.016392E-07
5.000000E+00	6.094000E+01	2.832338E-06	3.301326E-07
6.000000E+00	7.922000E+01	2.212104E-06	4.624811E-07
7.000000E+00	1.035950E+02	5.576155E-06	1.335538E-06
8.000000E+00	1.279700E+02	1.555700E-05	2.068261E-06
9.000000E+00	1.462500E+02	3.390198E-05	1.847668E-06
1.000000E+01	1.706250E+02	9.797996E-05	2.108143E-06
1.100000E+01	1.889050E+02	2.166500E-04	4.119790E-06
1.200000E+01	2.132800E+02	6.556680E-04	1.087925E-05
1.300000E+01	2.376550E+02	1.774846E-03	1.818722E-05
1.400000E+01	2.620300E+02	5.024837E-03	3.315772E-05
1.500000E+01	2.985950E+02	2.239120E-02	8.018239E-05
1.600000E+01	3.229700E+02	5.282086E-02	1.218878E-04
1.700000E+01	3.351550E+02	8.580773E-02	9.830045E-05
1.800000E+01	3.473450E+02	1.406266E-01	7.426020E-05
1.900000E+01	3.595350E+02	1.969499E-01	6.587371E-05
2.000000E+01	3.717200E+02	2.629889E-01	1.364736E-04
2.100000E+01	3.839050E+02	2.305405E-01	1.444628E-04
Sum:		1.000000E+00	

Table VI.33 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A233333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.523557E-05	6.083480E-06
2.000000E+00	1.828500E+01	1.704524E-05	5.474616E-06
3.000000E+00	3.047000E+01	1.178306E-05	3.718095E-06
4.000000E+00	4.265500E+01	8.314025E-06	2.768765E-06
5.000000E+00	6.094000E+01	6.197786E-06	1.689120E-06
6.000000E+00	7.922000E+01	5.591310E-06	8.061538E-07
7.000000E+00	1.035950E+02	1.228808E-05	1.747164E-06
8.000000E+00	1.279700E+02	3.382659E-05	3.546002E-06
9.000000E+00	1.462500E+02	7.426309E-05	4.348674E-06
1.000000E+01	1.706250E+02	2.099386E-04	4.580313E-06
1.100000E+01	1.889050E+02	4.298081E-04	5.390306E-06
1.200000E+01	2.132800E+02	1.178433E-03	1.189926E-05
1.300000E+01	2.376550E+02	2.985100E-03	2.869443E-05
1.400000E+01	2.620300E+02	7.504252E-03	1.527683E-05
1.500000E+01	2.985950E+02	2.878927E-02	9.029336E-05
1.600000E+01	3.229700E+02	6.194997E-02	1.164371E-04
1.700000E+01	3.351550E+02	9.532925E-02	1.284968E-04
1.800000E+01	3.473450E+02	1.479638E-01	1.350322E-04
1.900000E+01	3.595350E+02	1.949114E-01	1.067535E-04
2.000000E+01	3.717200E+02	2.388746E-01	1.357346E-04
2.100000E+01	3.839050E+02	2.196897E-01	2.297058E-04
Sum:		1.000000E+00	

Table VI.34 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A333333

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	5.372061E-05	2.025658E-05
2.000000E+00	1.828500E+01	6.095960E-05	2.241309E-05
3.000000E+00	3.047000E+01	5.245547E-05	1.941258E-05
4.000000E+00	4.265500E+01	4.085705E-05	1.491914E-05
5.000000E+00	6.094000E+01	2.745483E-05	9.512090E-06
6.000000E+00	7.922000E+01	2.464032E-05	6.614764E-06
7.000000E+00	1.035950E+02	3.147063E-05	5.134226E-06
8.000000E+00	1.279700E+02	6.417326E-05	6.648668E-06
9.000000E+00	1.462500E+02	1.258865E-04	8.762418E-06
1.000000E+01	1.706250E+02	3.300768E-04	1.243844E-05
1.100000E+01	1.889050E+02	6.858529E-04	1.991845E-05
1.200000E+01	2.132800E+02	1.797937E-03	1.542725E-05
1.300000E+01	2.376550E+02	4.315618E-03	1.594417E-05
1.400000E+01	2.620300E+02	1.017053E-02	5.105376E-05
1.500000E+01	2.985950E+02	3.513418E-02	1.093850E-04
1.600000E+01	3.229700E+02	7.049445E-02	1.139849E-04
1.700000E+01	3.351550E+02	1.043754E-01	6.980975E-05
1.800000E+01	3.473450E+02	1.563816E-01	1.287302E-04
1.900000E+01	3.595350E+02	1.973092E-01	8.966966E-05
2.000000E+01	3.717200E+02	2.287946E-01	1.308665E-04
2.100000E+01	3.839050E+02	1.897289E-01	1.676276E-04
Sum:		1.000000E+00	

Table VI.35 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A122223

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	8.954056E-06	1.365774E-06
2.000000E+00	1.828500E+01	1.149379E-05	1.263638E-06
3.000000E+00	3.047000E+01	7.432897E-06	1.501793E-06
4.000000E+00	4.265500E+01	4.293788E-06	1.446941E-06
5.000000E+00	6.094000E+01	2.044692E-06	7.972137E-07
6.000000E+00	7.922000E+01	1.393511E-06	6.213126E-07
7.000000E+00	1.035950E+02	1.526692E-06	4.829174E-07
8.000000E+00	1.279700E+02	5.300733E-06	1.027673E-06
9.000000E+00	1.462500E+02	1.408107E-05	8.038286E-07
1.000000E+01	1.706250E+02	5.025305E-05	1.837700E-06
1.100000E+01	1.889050E+02	1.152965E-04	3.240702E-06
1.200000E+01	2.132800E+02	4.262556E-04	8.346738E-06
1.300000E+01	2.376550E+02	1.257452E-03	1.131601E-05
1.400000E+01	2.620300E+02	3.929963E-03	2.735211E-05
1.500000E+01	2.985950E+02	2.047537E-02	6.859264E-05
1.600000E+01	3.229700E+02	5.307954E-02	8.948529E-05
1.700000E+01	3.351550E+02	9.186229E-02	7.981925E-05
1.800000E+01	3.473450E+02	1.519936E-01	1.323769E-04
1.900000E+01	3.595350E+02	2.069310E-01	9.005058E-05
2.000000E+01	3.717200E+02	2.513283E-01	1.570912E-04
2.100000E+01	3.839050E+02	2.184942E-01	1.977133E-04
Sum:		1.000000E+00	

Table VI.36 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A112233

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	7.523855E-06	1.208717E-06
2.000000E+00	1.828500E+01	9.414020E-06	1.487433E-06
3.000000E+00	3.047000E+01	5.098919E-06	8.115972E-07
4.000000E+00	4.265500E+01	2.755205E-06	5.280942E-07
5.000000E+00	6.094000E+01	1.236659E-06	3.081983E-07
6.000000E+00	7.922000E+01	6.234156E-07	1.950580E-07
7.000000E+00	1.035950E+02	1.666210E-06	3.251765E-07
8.000000E+00	1.279700E+02	4.746571E-06	4.272867E-07
9.000000E+00	1.462500E+02	1.213862E-05	1.410752E-06
1.000000E+01	1.706250E+02	3.859203E-05	2.608347E-06
1.100000E+01	1.889050E+02	9.508162E-05	4.617228E-06
1.200000E+01	2.132800E+02	3.520331E-04	9.910881E-06
1.300000E+01	2.376550E+02	1.062672E-03	1.973940E-05
1.400000E+01	2.620300E+02	3.491521E-03	3.449292E-05
1.500000E+01	2.985950E+02	1.868172E-02	8.211776E-05
1.600000E+01	3.229700E+02	4.883905E-02	9.073945E-05
1.700000E+01	3.351550E+02	8.440877E-02	1.010565E-04
1.800000E+01	3.473450E+02	1.488919E-01	1.126376E-04
1.900000E+01	3.595350E+02	2.089038E-01	4.220427E-05
2.000000E+01	3.717200E+02	2.605460E-01	1.917707E-04
2.100000E+01	3.839050E+02	2.246436E-01	1.955188E-04
Sum:		1.000000E+00	

Table VI.37 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A322221

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.224347E-05	2.757362E-06
2.000000E+00	1.828500E+01	1.439065E-05	3.099823E-06
3.000000E+00	3.047000E+01	1.022855E-05	2.312991E-06
4.000000E+00	4.265500E+01	6.127904E-06	1.325232E-06
5.000000E+00	6.094000E+01	3.166449E-06	6.535222E-07
6.000000E+00	7.922000E+01	2.477909E-06	5.812084E-07
7.000000E+00	1.035950E+02	5.006372E-06	6.611996E-07
8.000000E+00	1.279700E+02	1.344972E-05	9.958557E-07
9.000000E+00	1.462500E+02	2.948927E-05	1.941443E-06
1.000000E+01	1.706250E+02	9.263877E-05	4.398368E-06
1.100000E+01	1.889050E+02	2.069497E-04	5.096357E-06
1.200000E+01	2.132800E+02	6.680308E-04	8.347061E-06
1.300000E+01	2.376550E+02	1.879590E-03	1.776838E-05
1.400000E+01	2.620300E+02	5.625606E-03	1.771823E-05
1.500000E+01	2.985950E+02	2.667036E-02	5.439385E-05
1.600000E+01	3.229700E+02	6.576492E-02	3.654519E-05
1.700000E+01	3.351550E+02	1.043189E-01	4.361469E-05
1.800000E+01	3.473450E+02	1.632031E-01	9.973552E-05
1.900000E+01	3.595350E+02	2.102678E-01	1.062977E-04
2.000000E+01	3.717200E+02	2.391597E-01	5.939447E-05
2.100000E+01	3.839050E+02	1.820458E-01	1.596662E-04
Sum:		1.000000E+00	

Table VI.38 Results of the recalculation carried out by FANP GmbH: Axial fission density distribution for the axial burn-up profile B50A332211

Axial zone No.	Height of the center of the zone	Mean	Standard deviation
1.000000E+00	6.095000E+00	1.198909E-05	6.732191E-06
2.000000E+00	1.828500E+01	1.338768E-05	5.209171E-06
3.000000E+00	3.047000E+01	1.006109E-05	2.838194E-06
4.000000E+00	4.265500E+01	6.825604E-06	1.713590E-06
5.000000E+00	6.094000E+01	4.369498E-06	1.101618E-06
6.000000E+00	7.922000E+01	4.220376E-06	1.209302E-06
7.000000E+00	1.035950E+02	9.187822E-06	2.043019E-06
8.000000E+00	1.279700E+02	2.533844E-05	1.883942E-06
9.000000E+00	1.462500E+02	5.632488E-05	1.339525E-06
1.000000E+01	1.706250E+02	1.628210E-04	4.220777E-06
1.100000E+01	1.889050E+02	3.572724E-04	6.400846E-06
1.200000E+01	2.132800E+02	1.081111E-03	1.221972E-05
1.300000E+01	2.376550E+02	2.902878E-03	1.752680E-05
1.400000E+01	2.620300E+02	7.833235E-03	4.142990E-05
1.500000E+01	2.985950E+02	3.309896E-02	1.615356E-04
1.600000E+01	3.229700E+02	7.611726E-02	1.953891E-04
1.700000E+01	3.351550E+02	1.158485E-01	1.413774E-04
1.800000E+01	3.473450E+02	1.710747E-01	8.798507E-05
1.900000E+01	3.595350E+02	2.070585E-01	2.046511E-04
2.000000E+01	3.717200E+02	2.144650E-01	1.959583E-04
2.100000E+01	3.839050E+02	1.698580E-01	1.480548E-04
Sum:		1.000000E+00	

Table VI.39 Coefficients of the parabolic functions eq.(VI.45) and eq.(VI.46), respectively; cf. Figures VI.25 through VI.28

ν	$(a_{B32})_\nu$	$(b_{B32})_\nu$	$(c_{B32})_\nu$	$(a_{B50})_\nu$	$(b_{B50})_\nu$	$(c_{B50})_\nu$
1.000000E+00	-1.626000E+02	3.665900E+02	1.529400E+02	6.024500E+01	9.385600E+00	2.964800E+02
2.000000E+00	2.781900E+02	-5.309300E+02	2.832700E+02	1.012400E+02	-2.849400E+02	2.023100E+02
3.000000E+00	-8.518737E+06	1.398838E+07	-5.806870E+06	-3.776074E+06	7.205922E+06	-3.460113E+06
4.000000E+00	9.993045E+04	-1.708352E+05	7.515327E+04	1.615406E+05	-3.033076E+05	1.436908E+05

FIGURES

Figure VI.1 Evaluation of recalculated results: End effects Δk observed

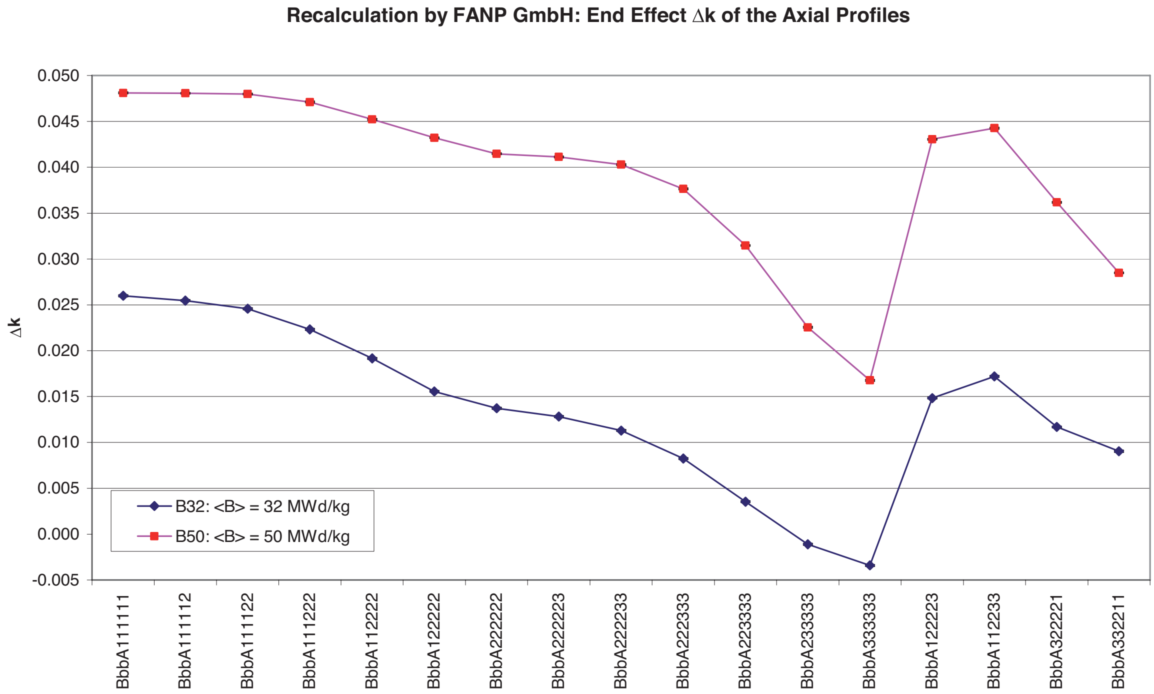


Figure VI.2 Evaluation of recalculated results: regression functions Δk = f(S6)

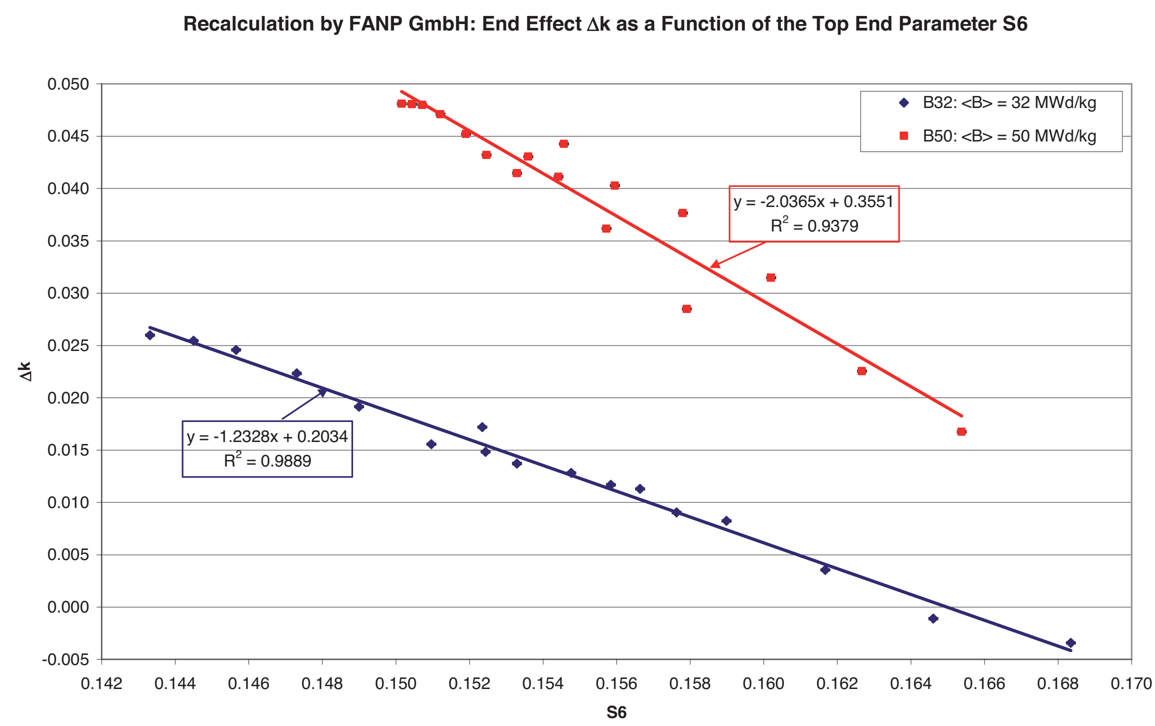


Figure VI.3 Evaluation of recalculated results: relations between regression functions Δk = f(S6)

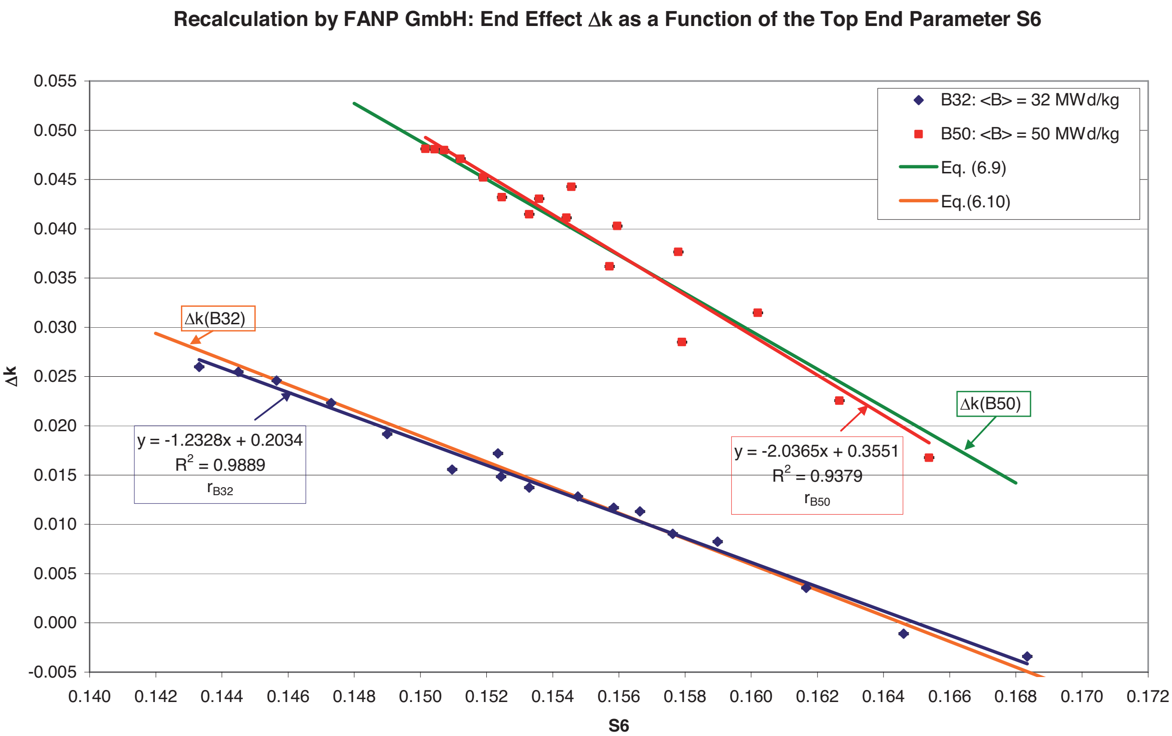


Figure VI.4 Results of the recalculation carried out by FANP GmbH (cf Tables VI.3 and VI.21)

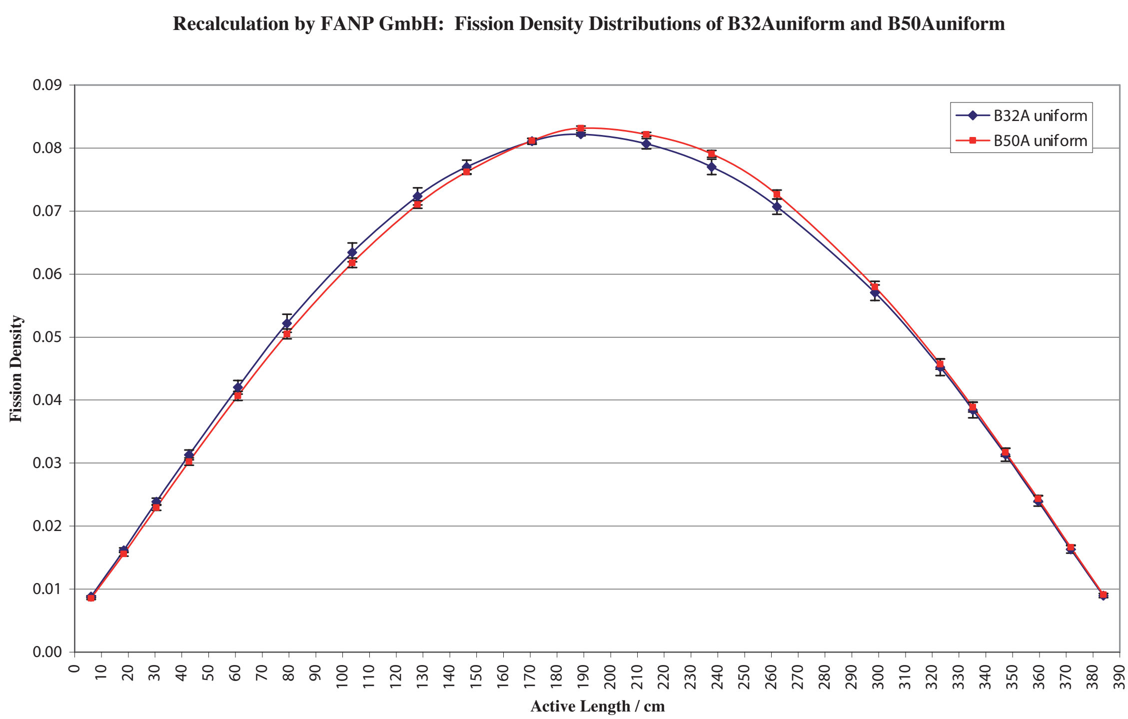


Figure VI.5 Evaluation of recalculated results: axial fission density model distribution for B32Auniform and B50Auniform

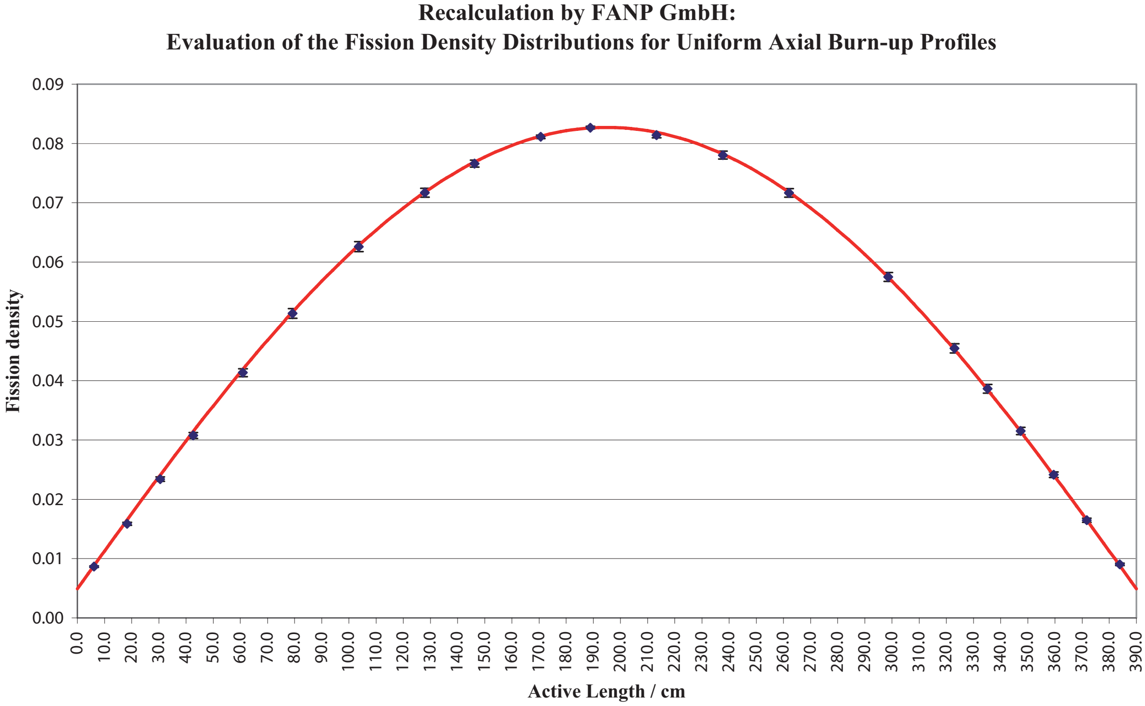


Figure VI.6.a Results of the recalculation carried out by FANP GmbH (cf Tables VI.4 through VI.20; see also Figure VI.6.b)

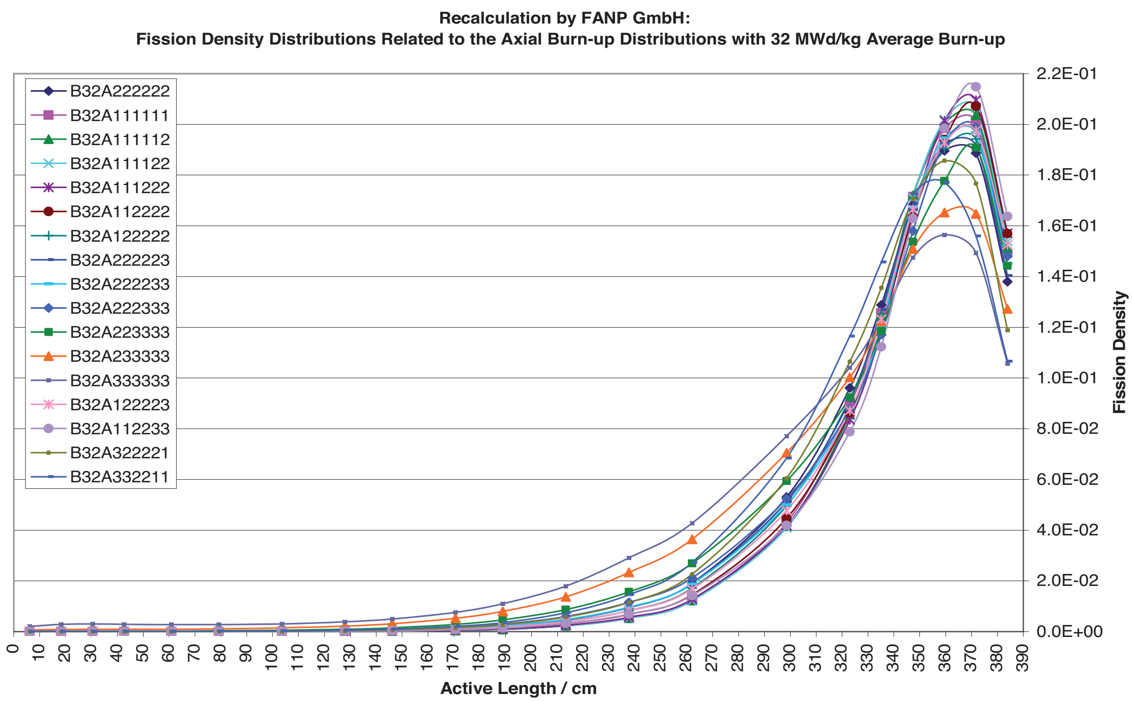


Figure VI.6.b Results of the recalculation carried out by FANP GmbH (cf Tables VI.4 through VI.20 and Figure VI.6.a)

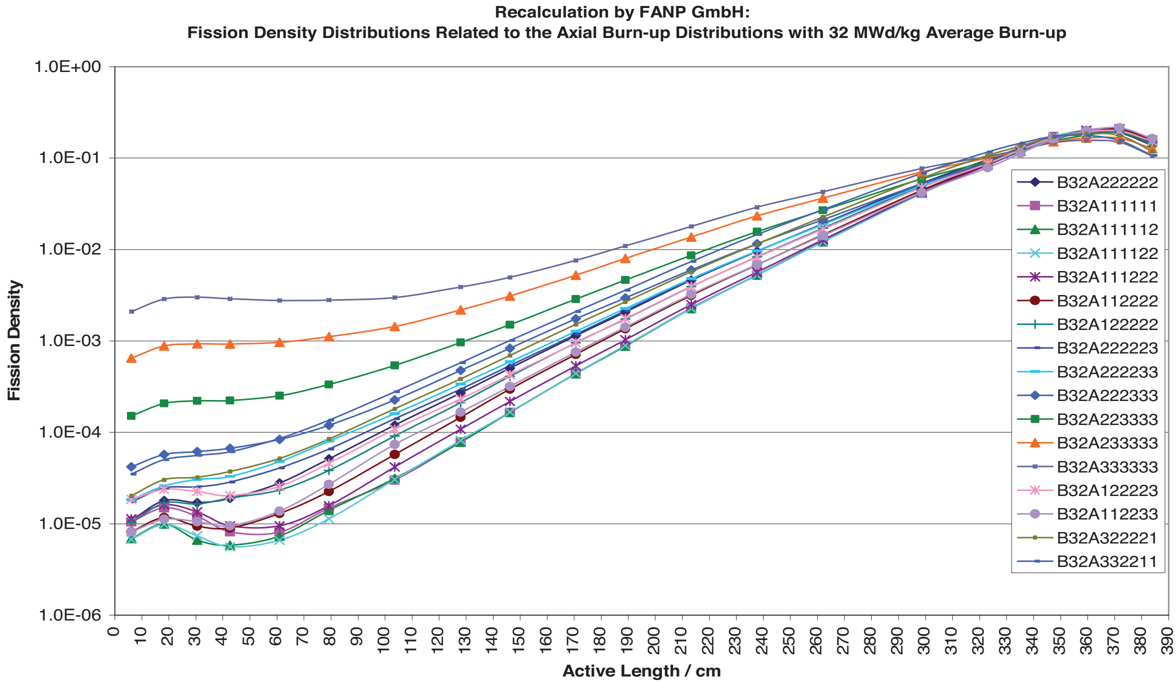


Figure VI.7.a Results of the recalculation carried out by FANP GmbH (cf Tables VI.22 through VI.38; see also Figure VI.7.b)

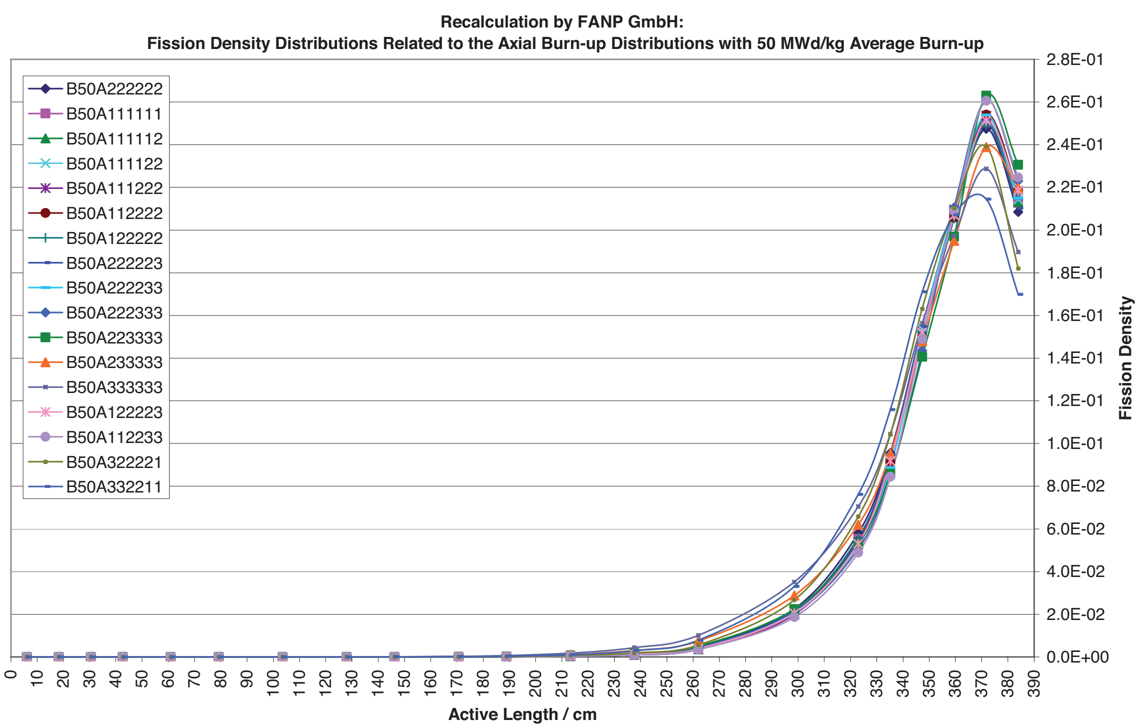


Figure VI.7.b Results of the recalculation carried out by FANP GmbH (cf Tables VI.22 through VI.38 and Figure VI.7.a)

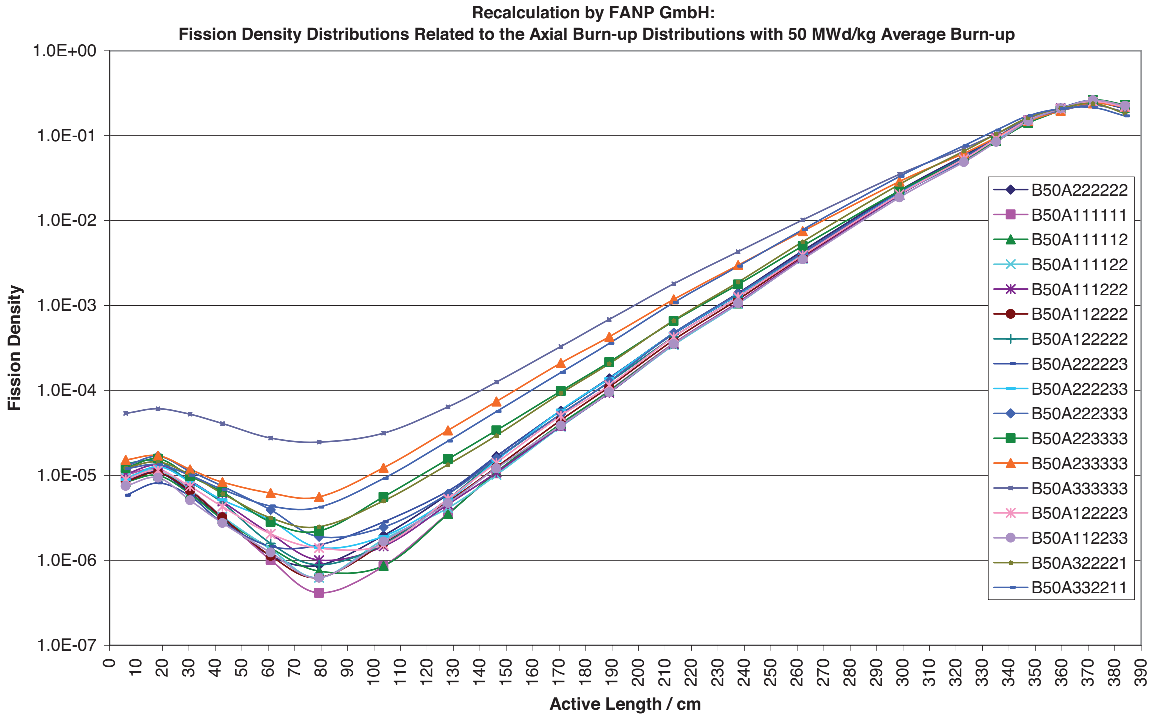
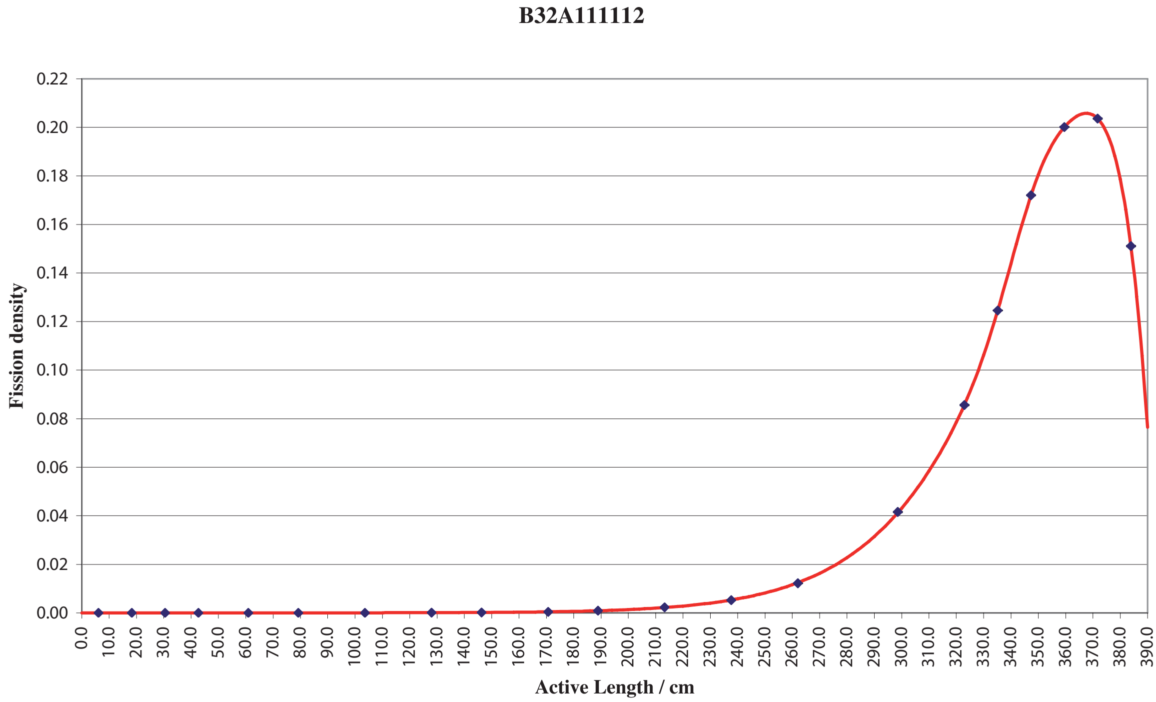


Figure VI.8 Evaluation of recalculated results: axial fission density model distribution for B32A111112



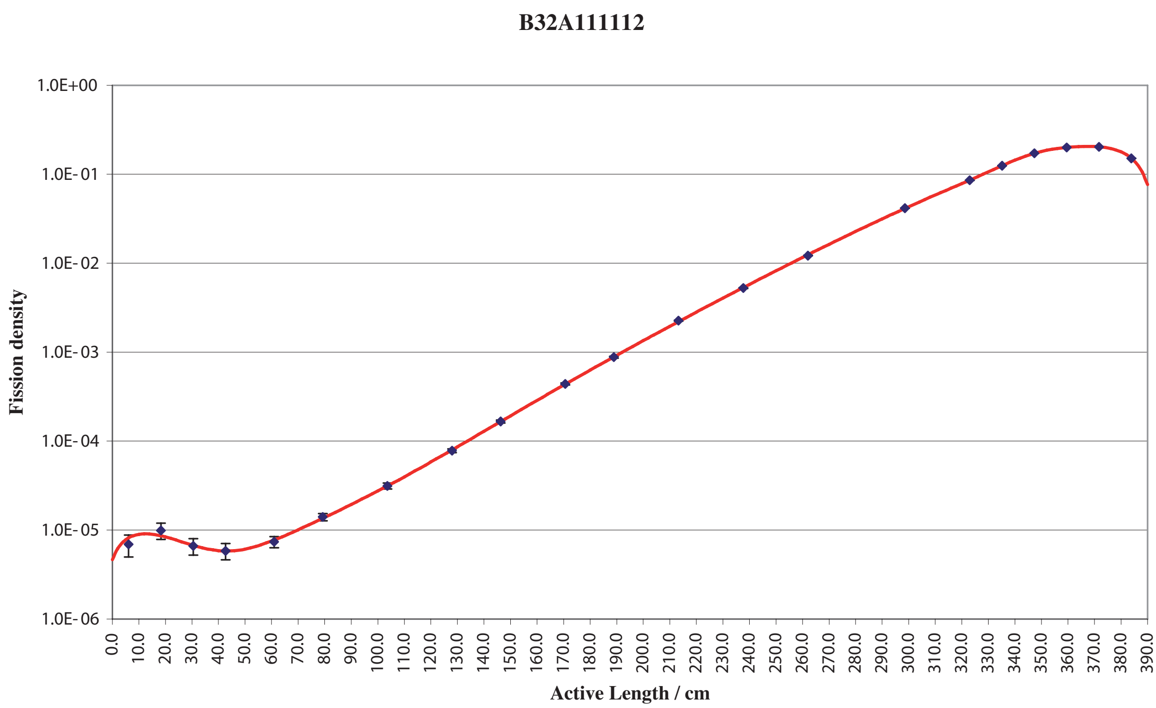
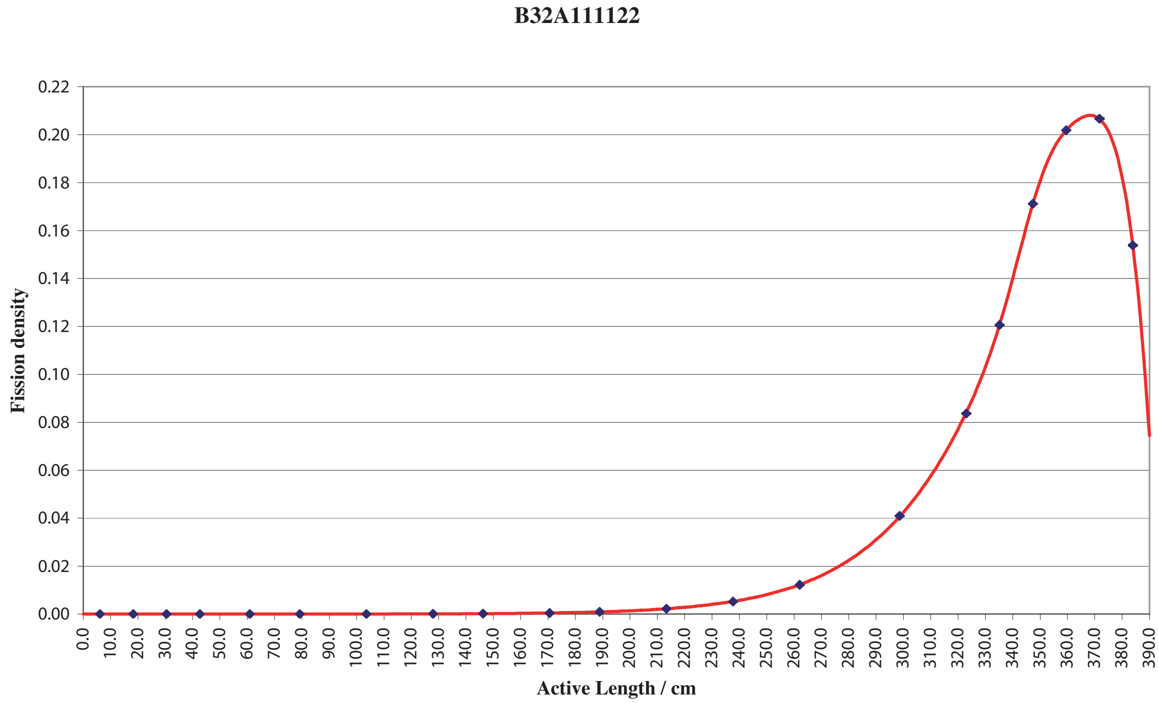


Figure VI.9 Evaluation of recalculated results:
axial fission density model distribution for B32A111122



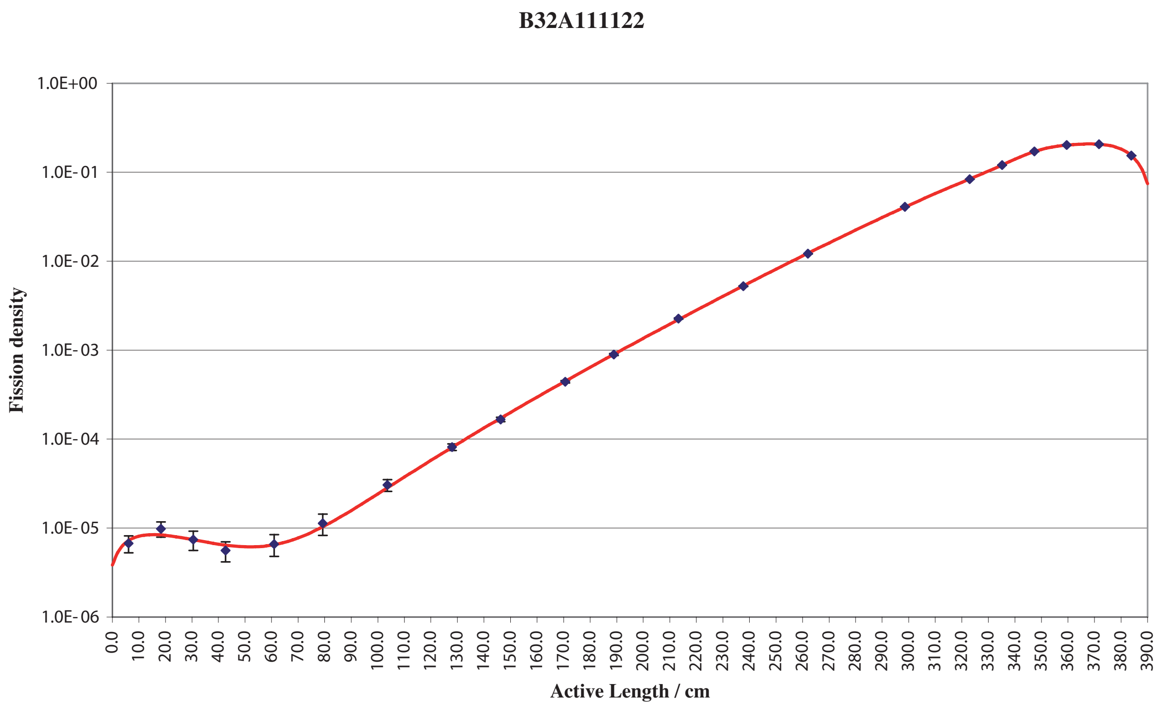
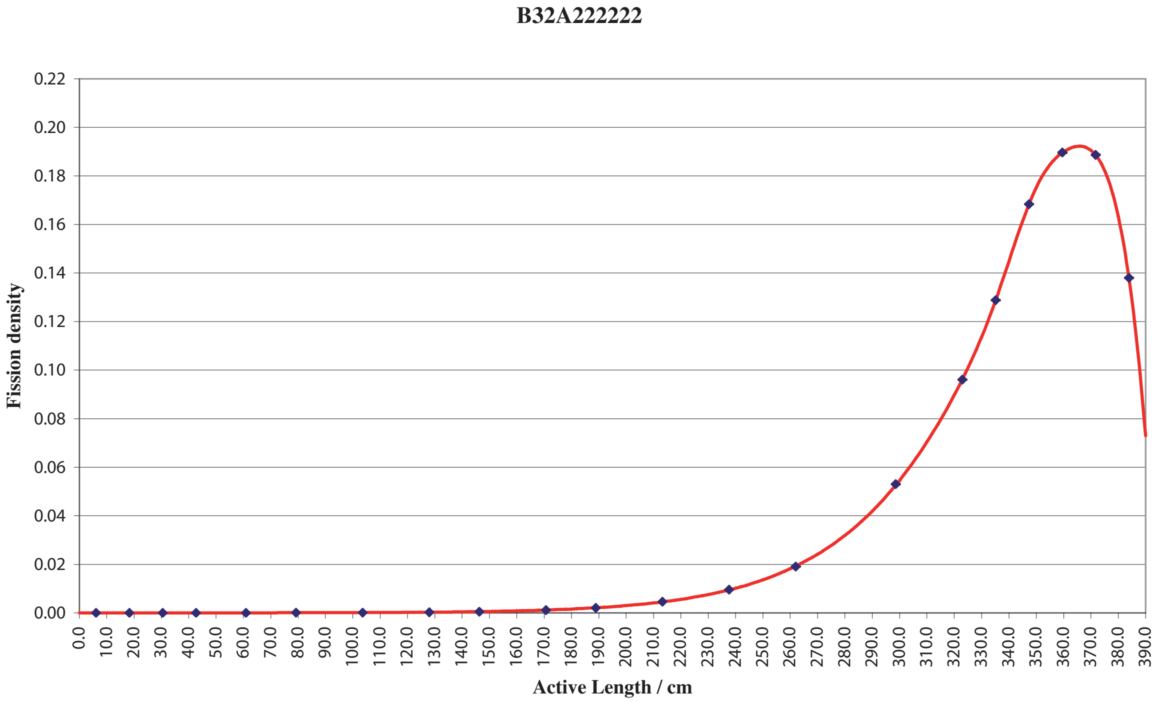


Figure VI.10 Evaluation of recalculated results:
axial fission density model distribution for B32A222222



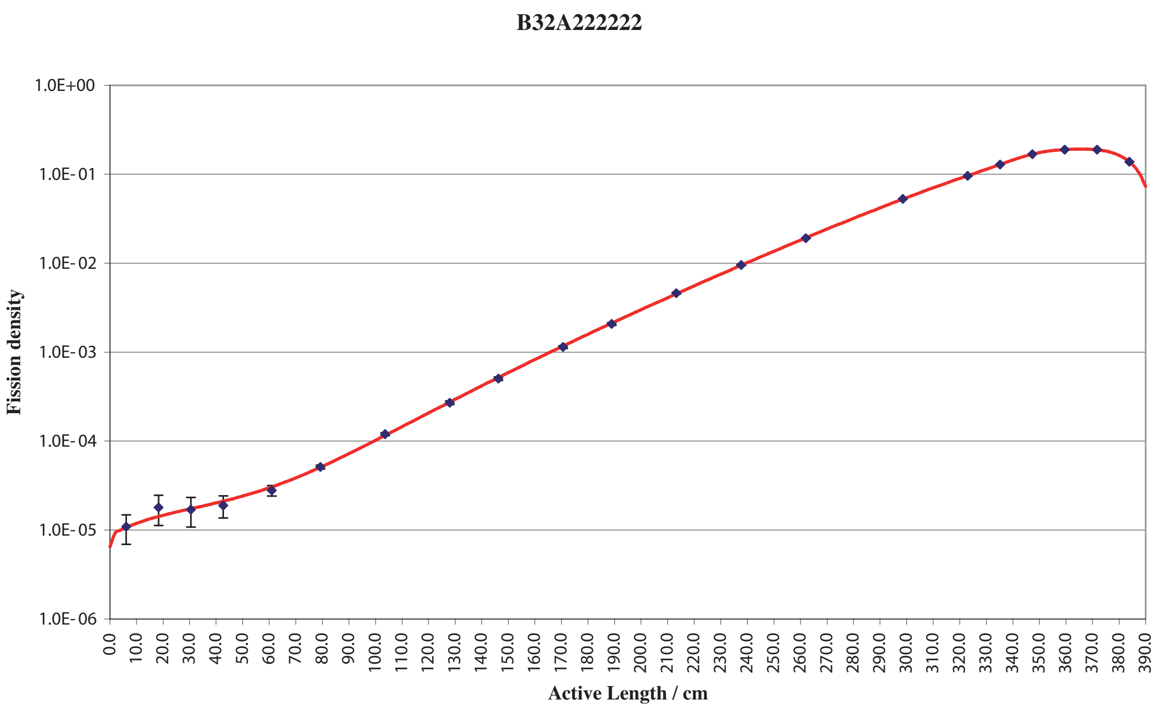
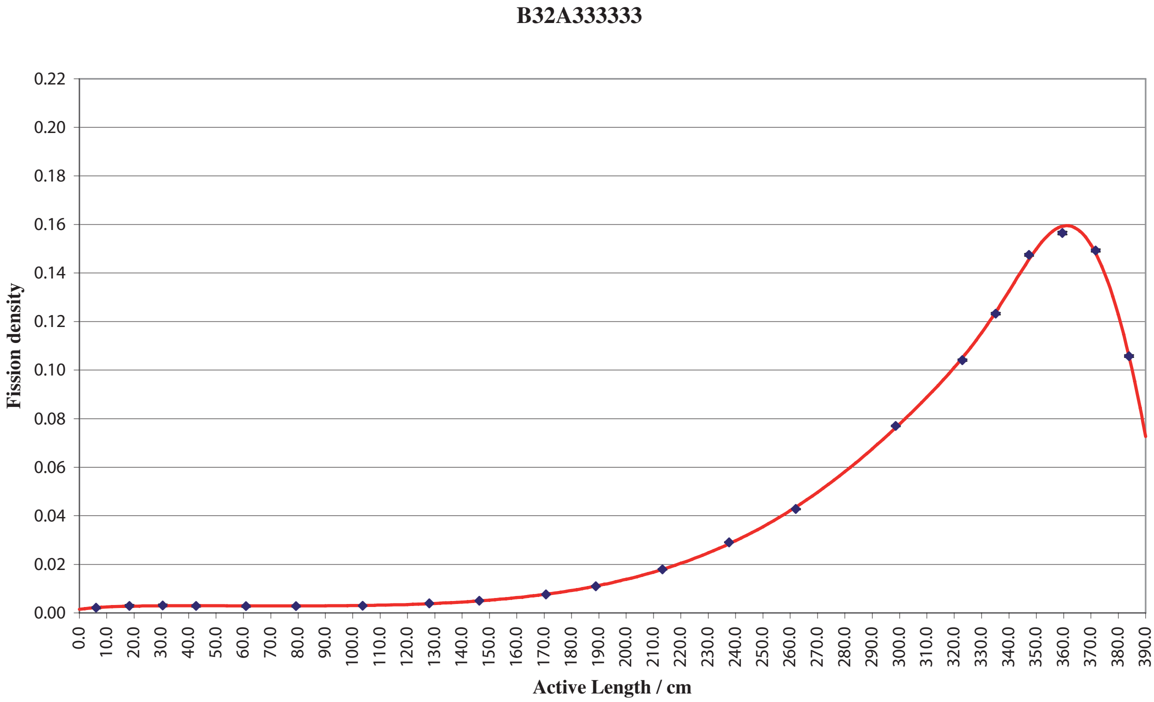


**Figure VI.11 Evaluation of recalculated results:
axial fission density model distribution for B32A333333**



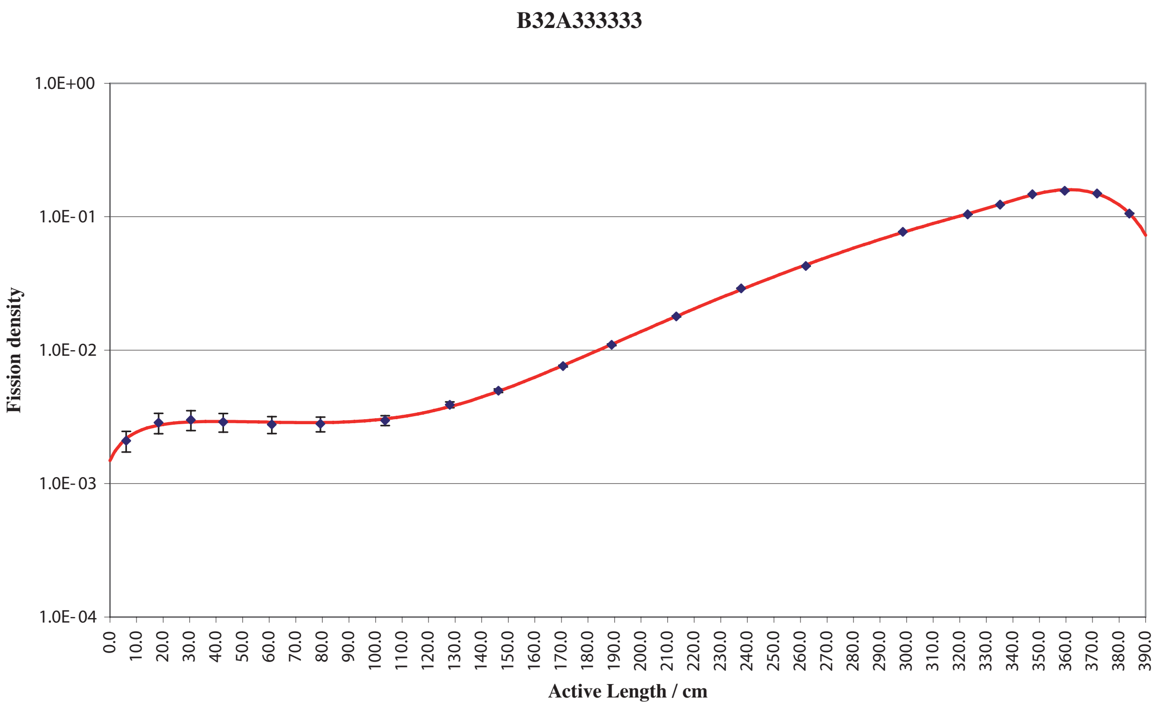
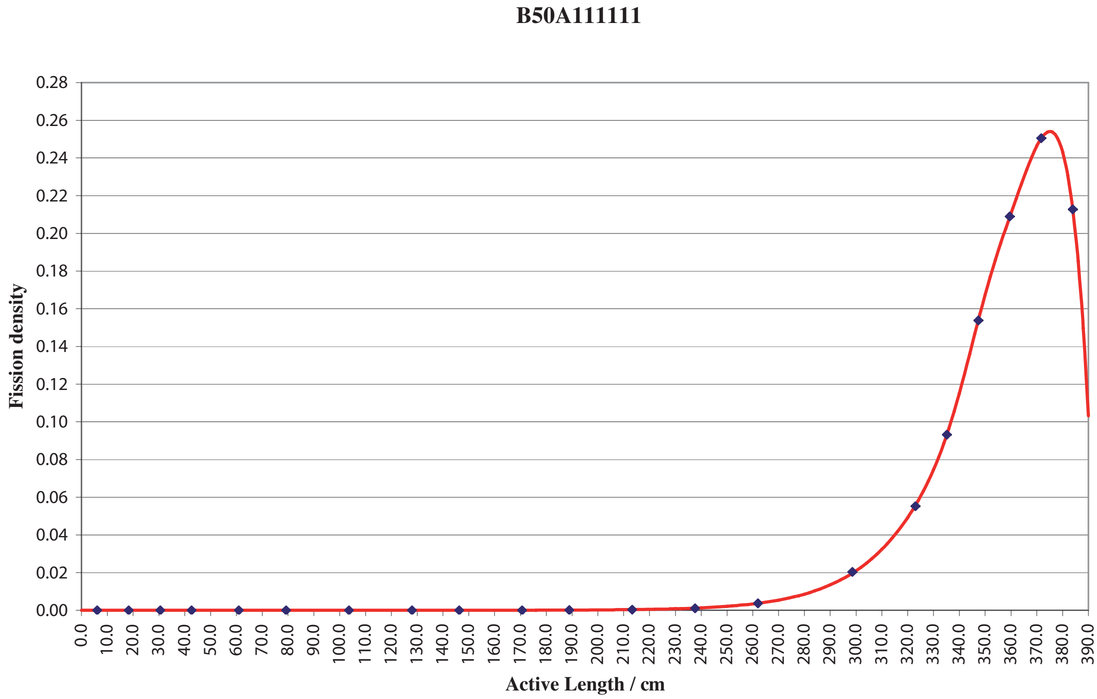


Figure VI.12 Evaluation of recalculated results: axial fission density model distribution for B50A111111



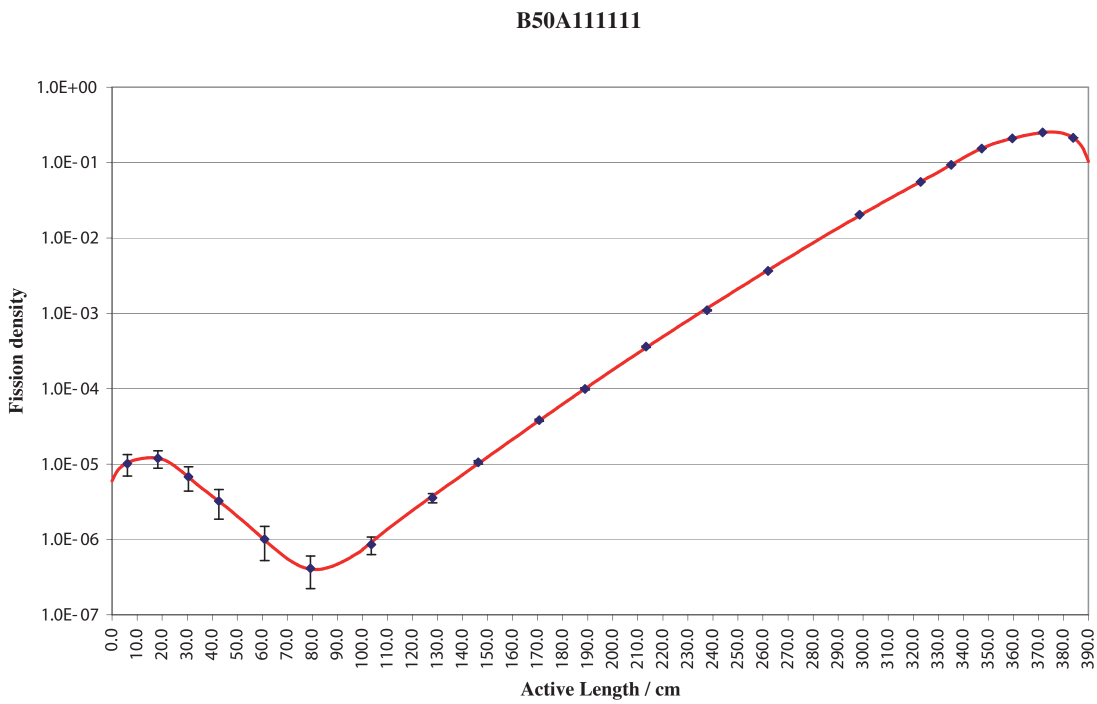
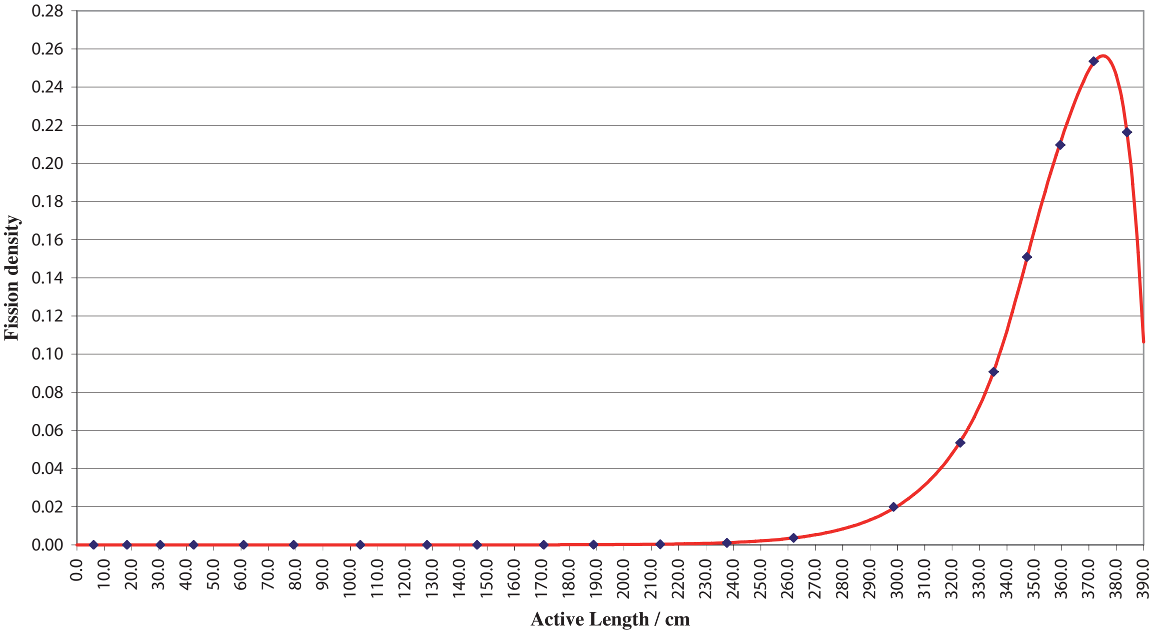


Figure VI.13 Evaluation of recalculated results: axial fission density model distribution for B50A111222



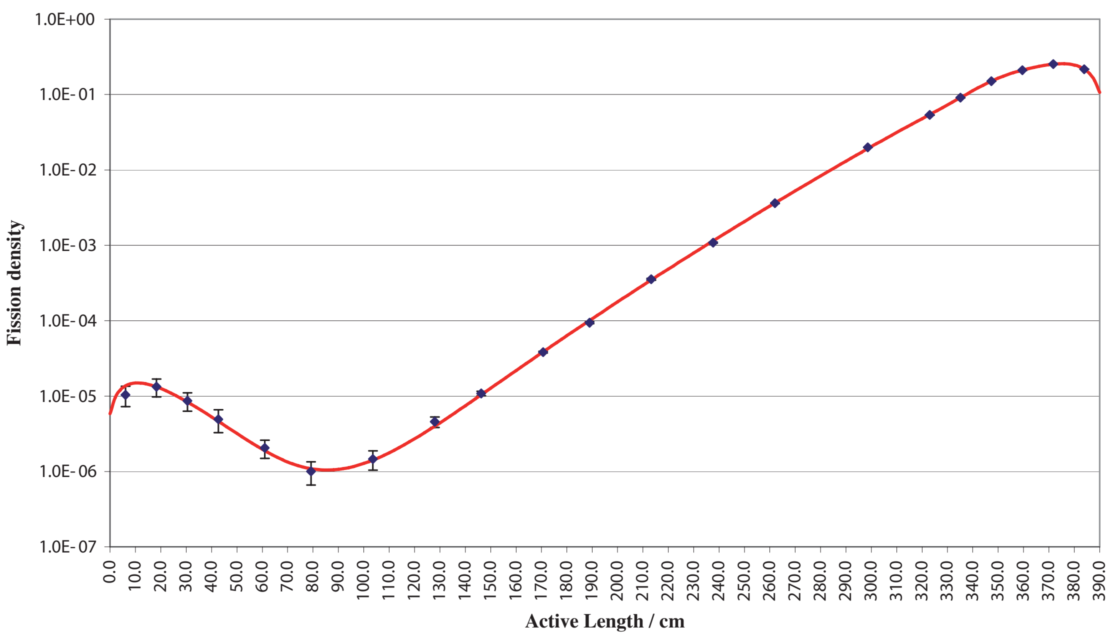
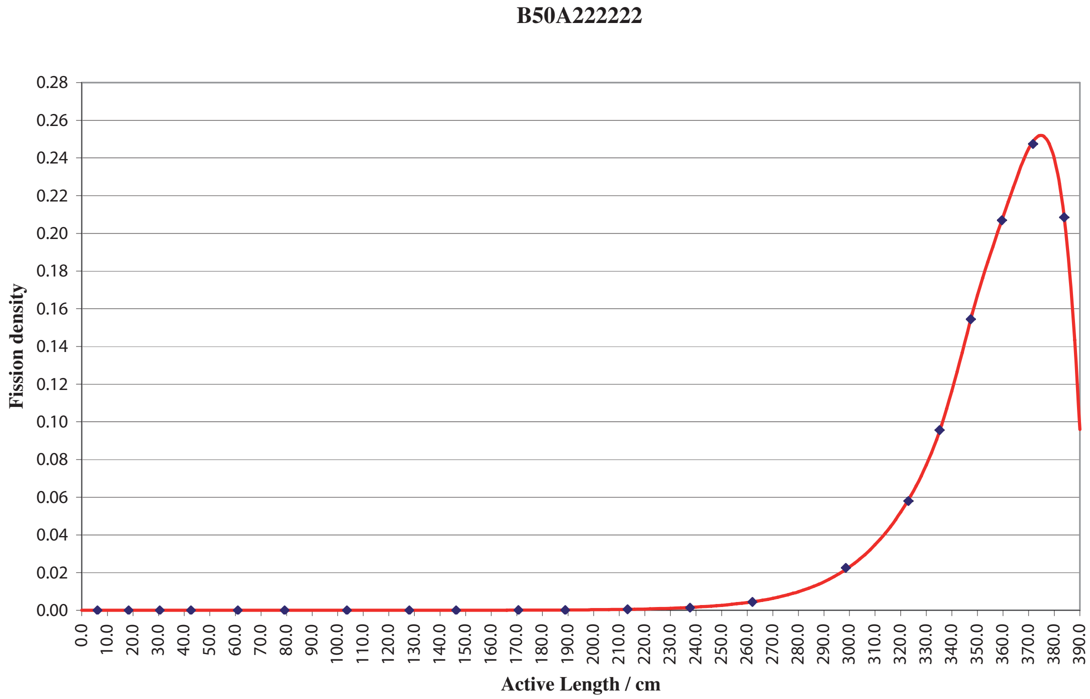


Figure VI.14 Evaluation of recalculated results: axial fission density model distribution for B50A222222



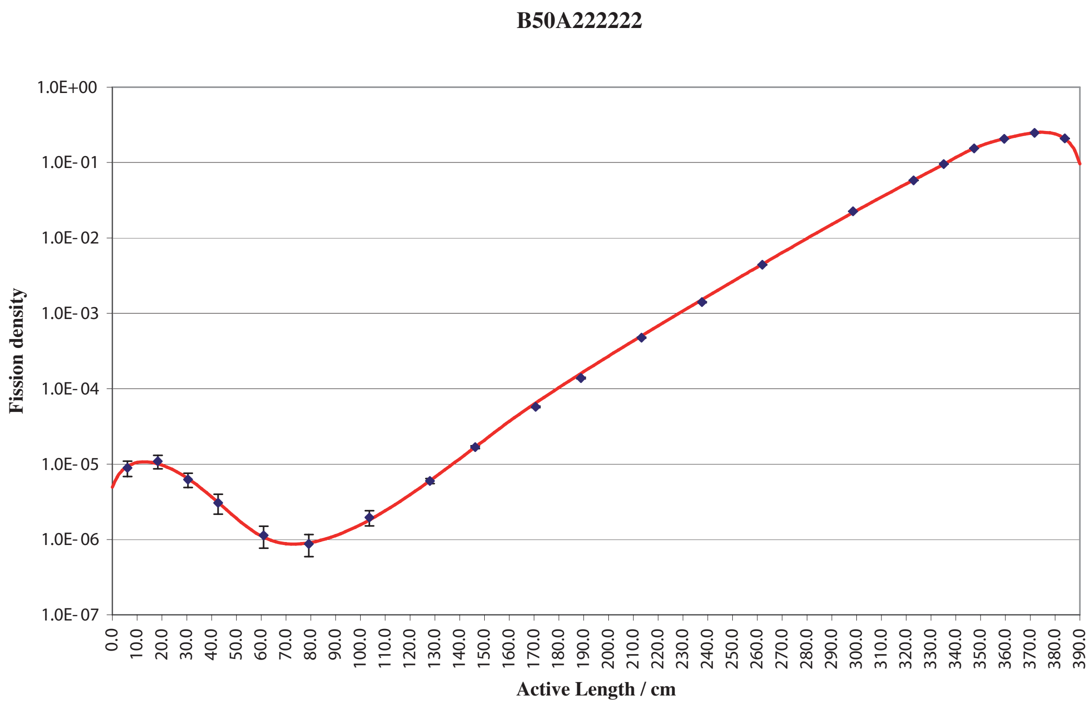
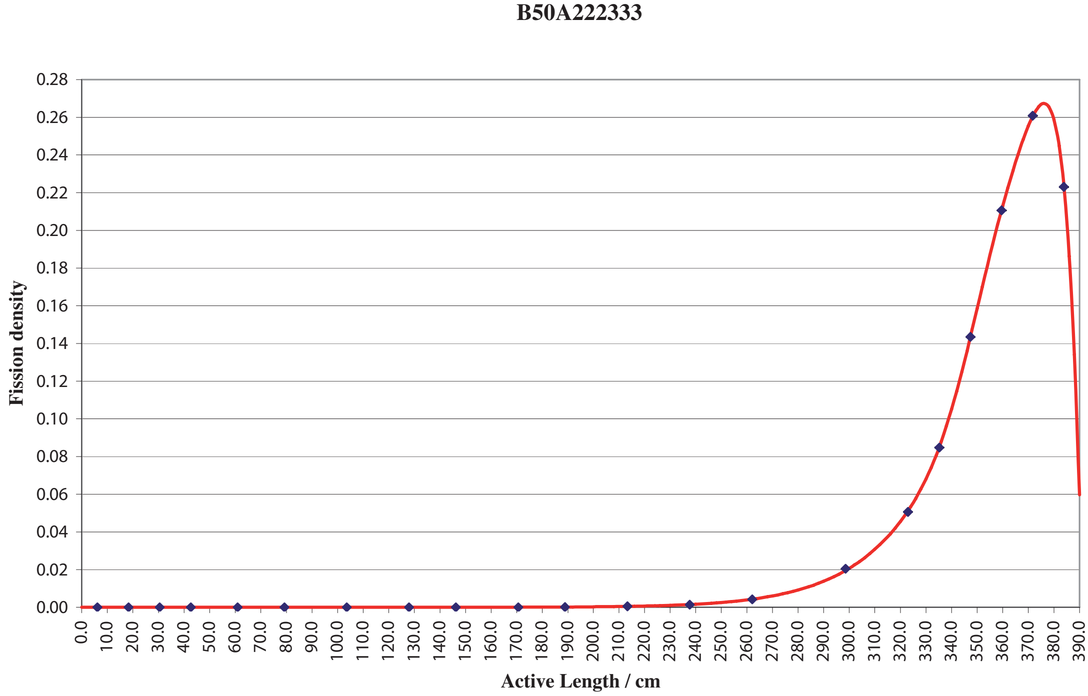


Figure VI.15 Evaluation of recalculated results: axial fission density model distribution for B50A222333



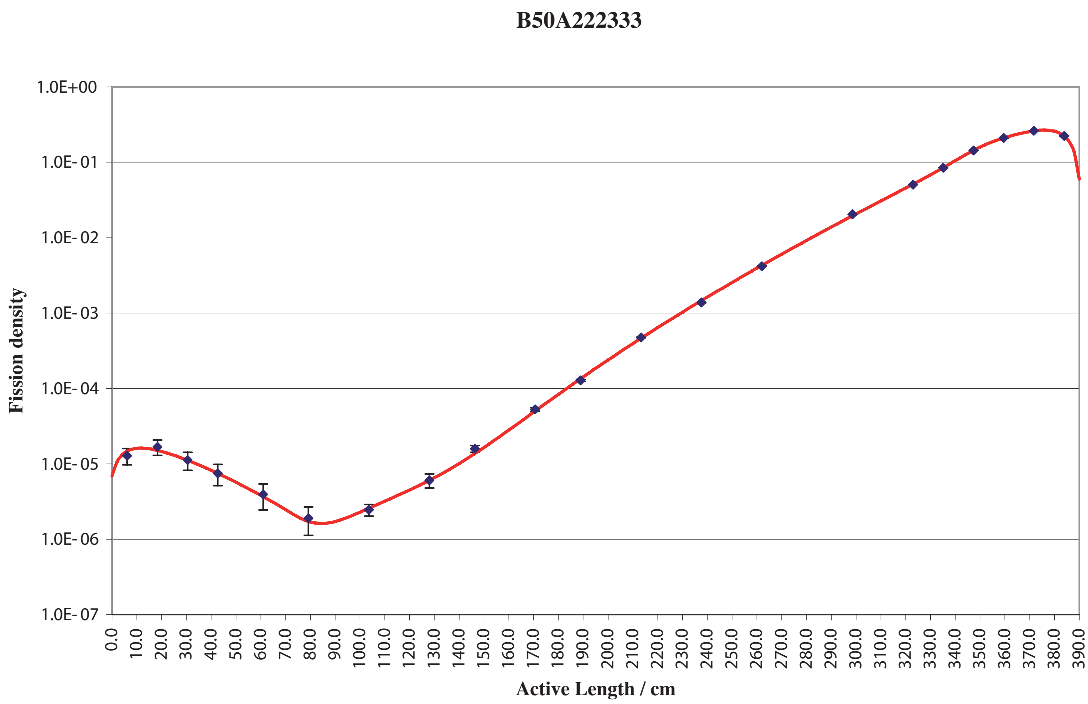
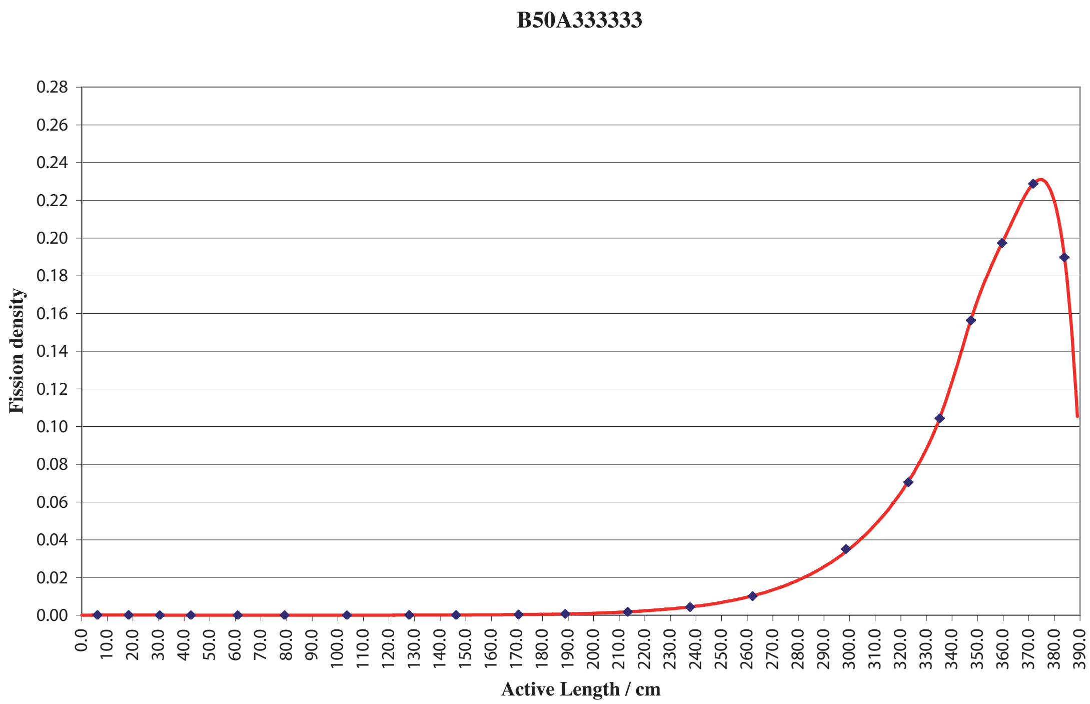


Figure VI.16 Evaluation of recalculated results: axial fission density model distribution for B50A333333



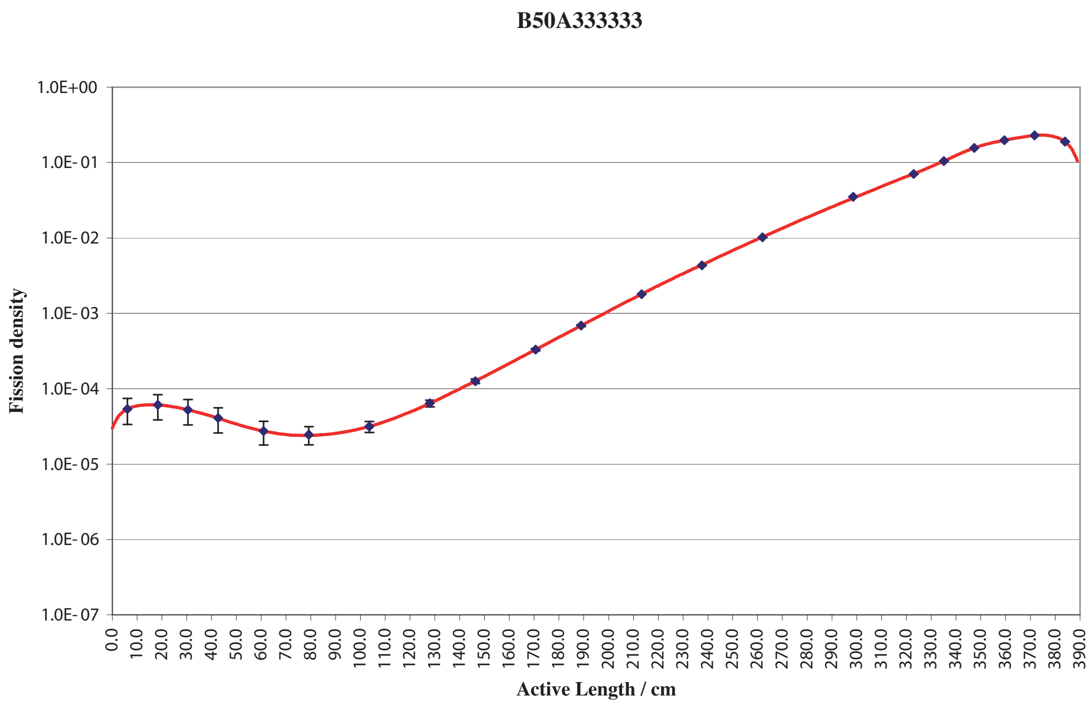


Figure VI.17 Evaluation of recalculated results: correlation of the expectations E[z] of the fission density model distributions to the asymmetry parameter ASP

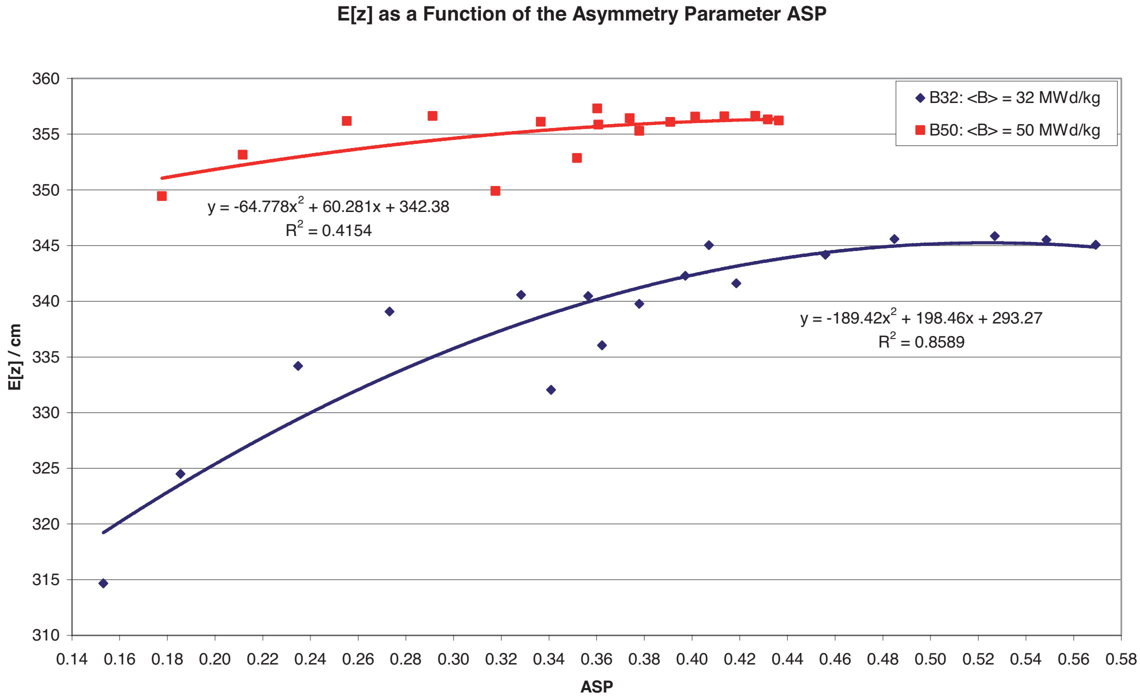


Figure VI.18 Evaluation of recalculated results: correlation of the expectations E[z] of the fission density model distributions to the top end parameter S6

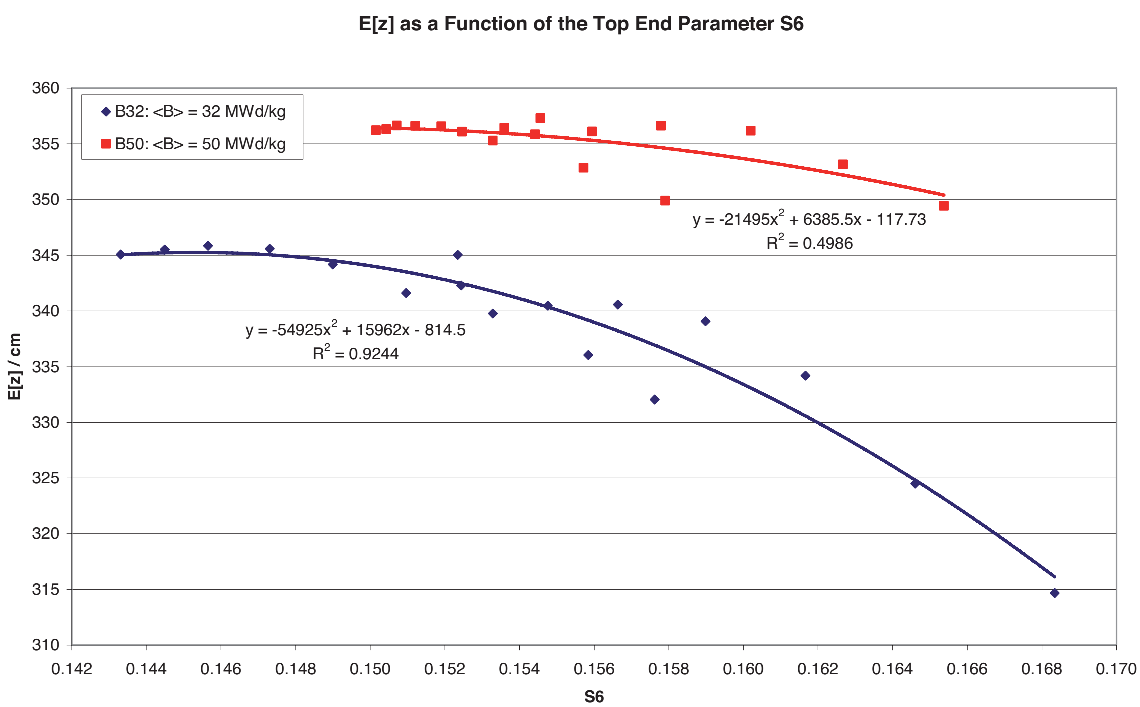


Figure VI.19 Evaluation of recalculated results: correlation of the variances V[z] of the fission density model distributions to the asymmetry parameter ASP

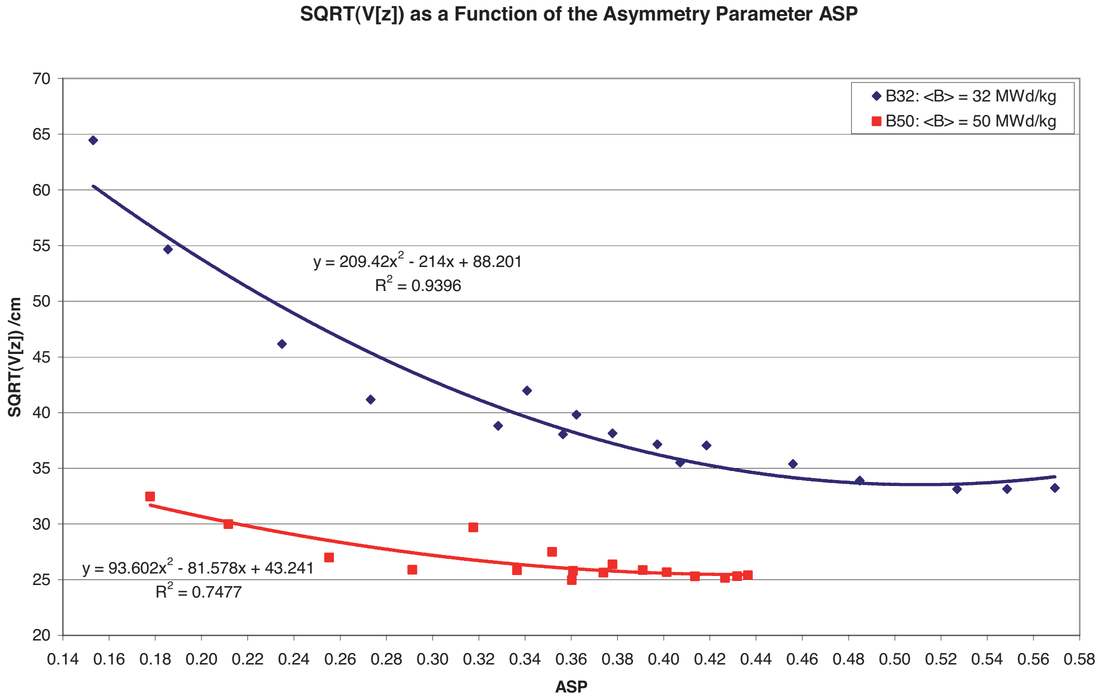


Figure VI.20 Evaluation of recalculated results: correlation of the variances V[z] of the fission density model distributions to the top end parameter S6

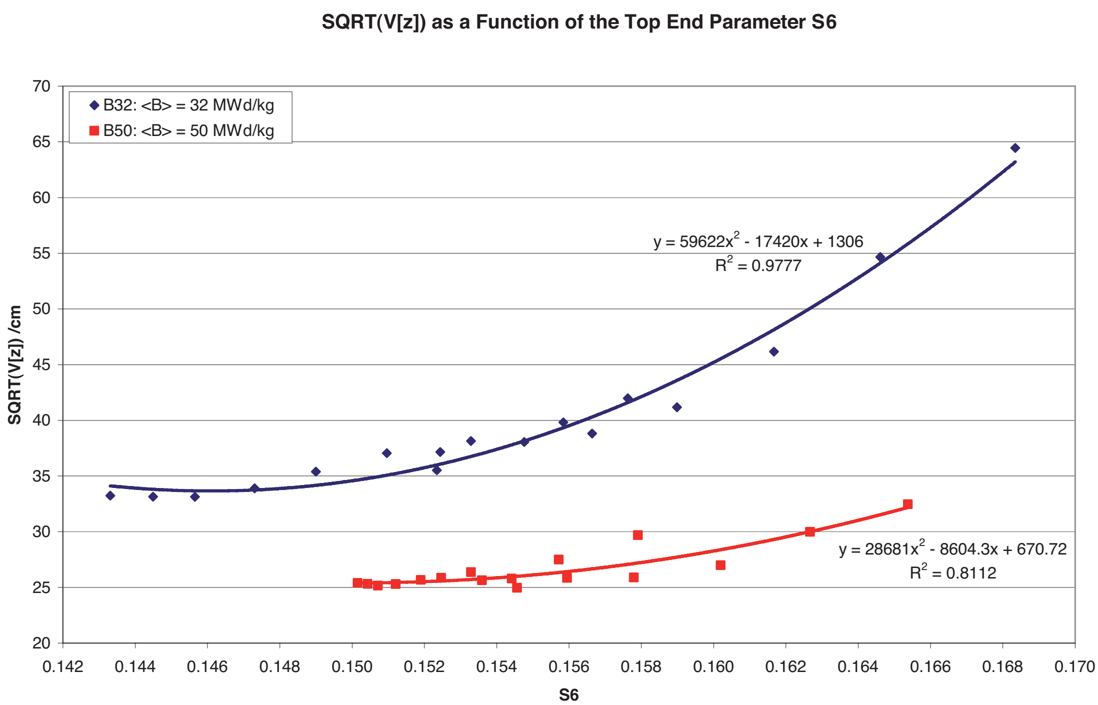


Figure VI.21 Evaluation of recalculated results: correlation of the cumulants K_3 of the fission density model distributions to the top end parameter S6

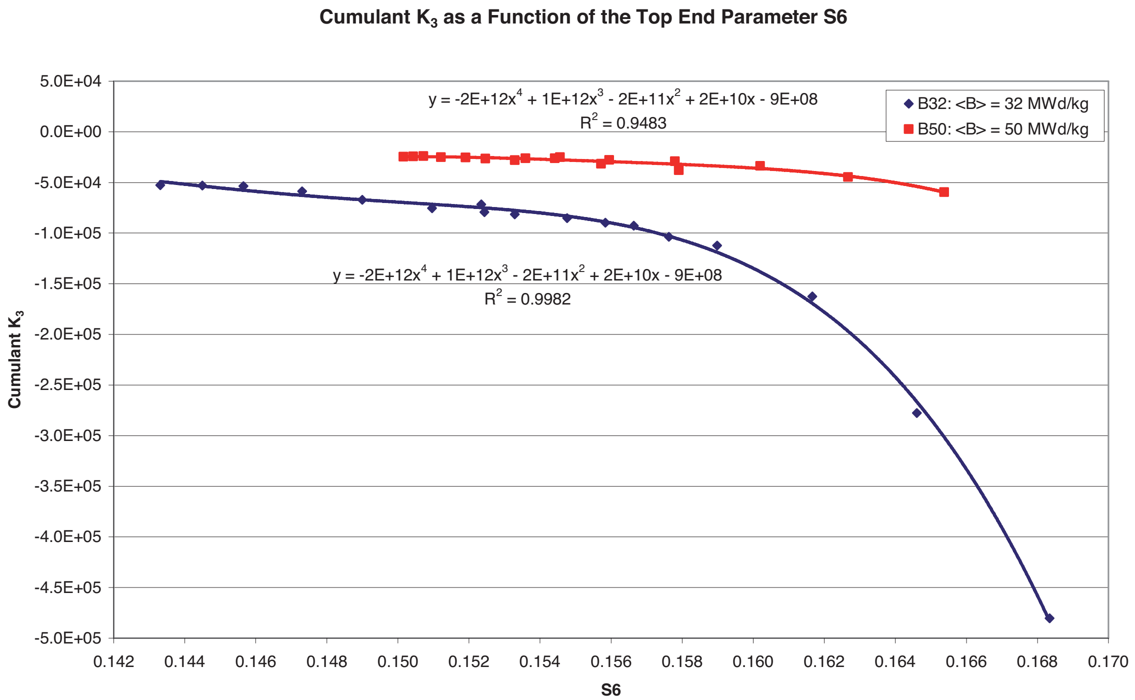


Figure VI.22 Evaluation of recalculated results: correlation of the cumulants K_4 of the fission density model distributions to the top end parameter S6

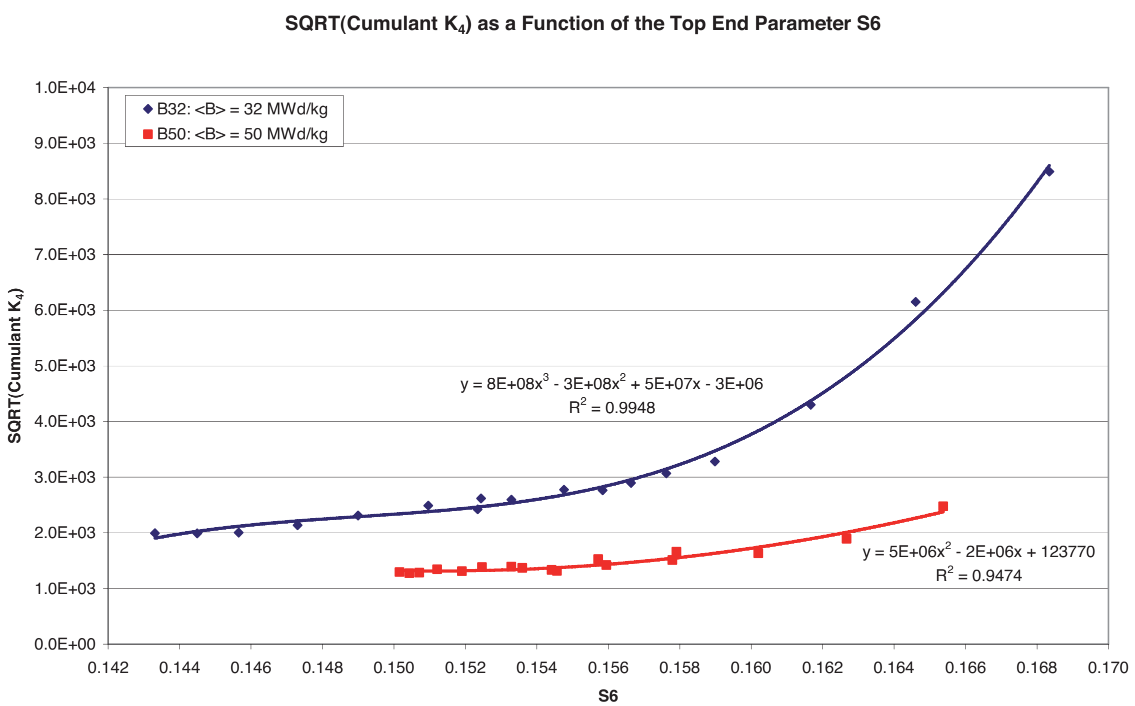


Figure VI.23 Evaluation of recalculated results: correlation of the top end content C6 of the fission density model distributions to the asymmetry parameter ASP

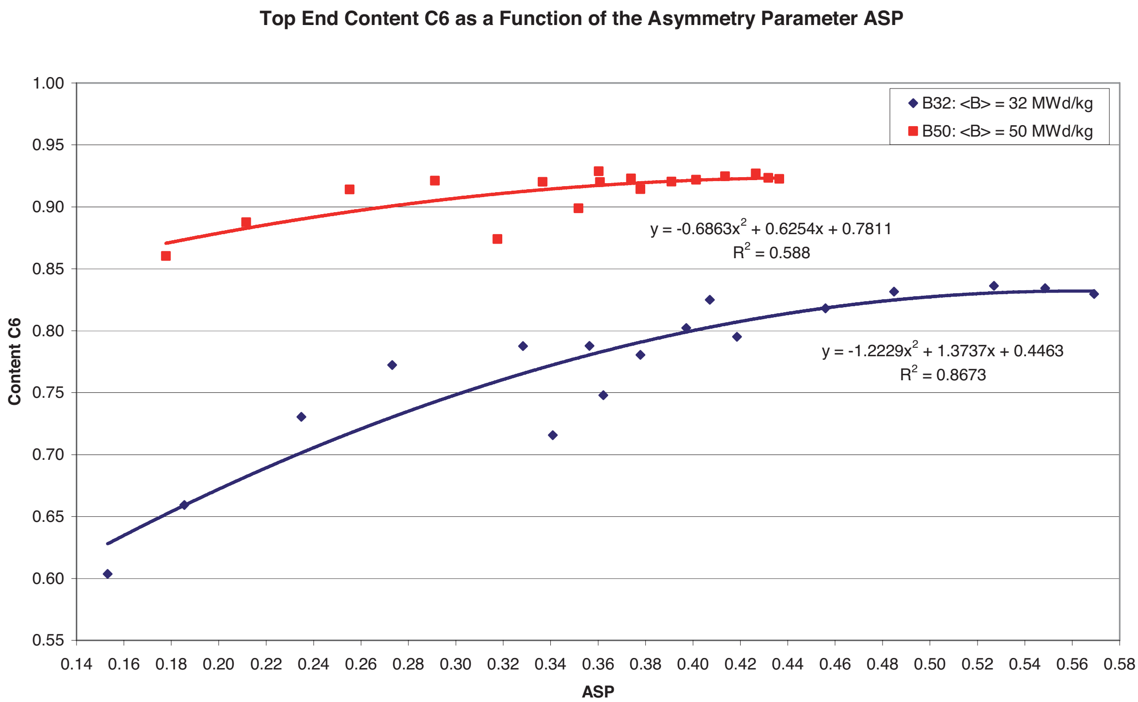


Figure VI.24 Evaluation of recalculated results: correlation of the top end content C6 of the fission density model distributions to the top end parameter S6

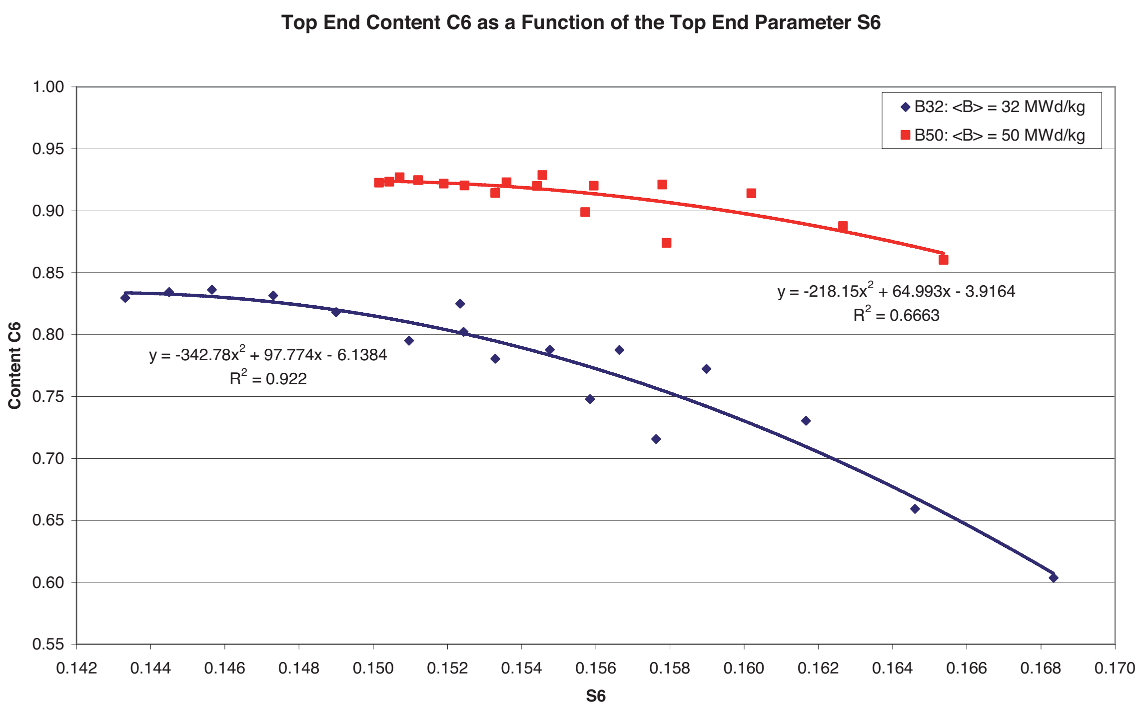


Figure VI.25 Evaluation of recalculated results: relation between E[z] and C6

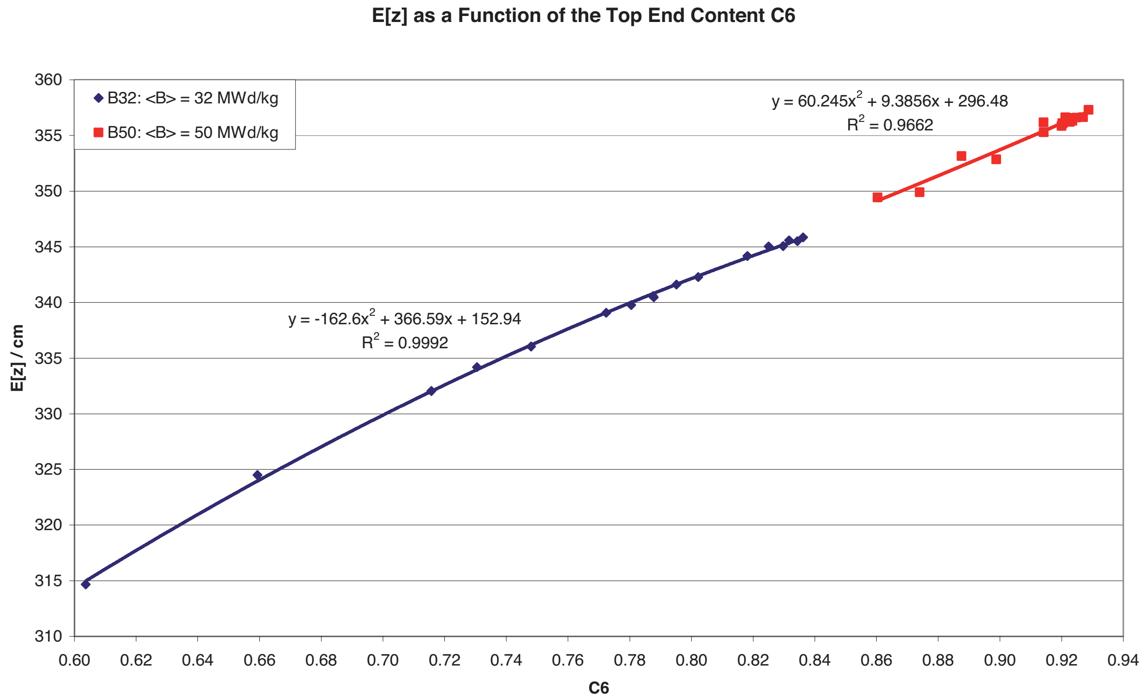


Figure VI.26 Evaluation of recalculated results: relation between V[z] and C6

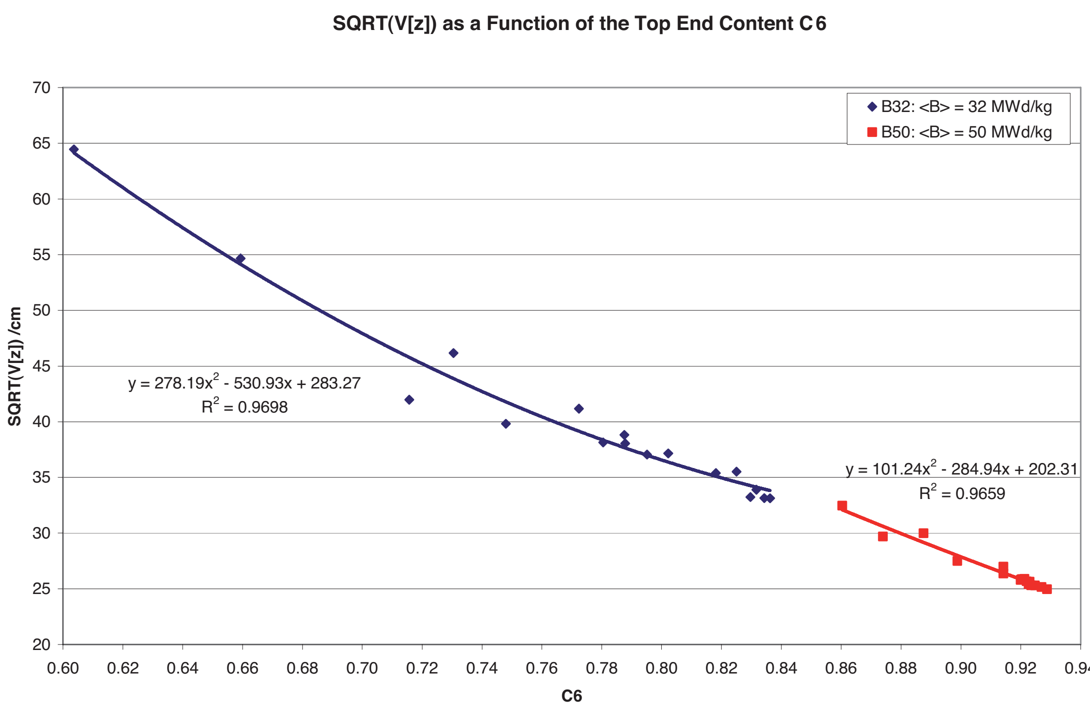


Figure VI.27 Evaluation of recalculated results: relation between K_3 and C6

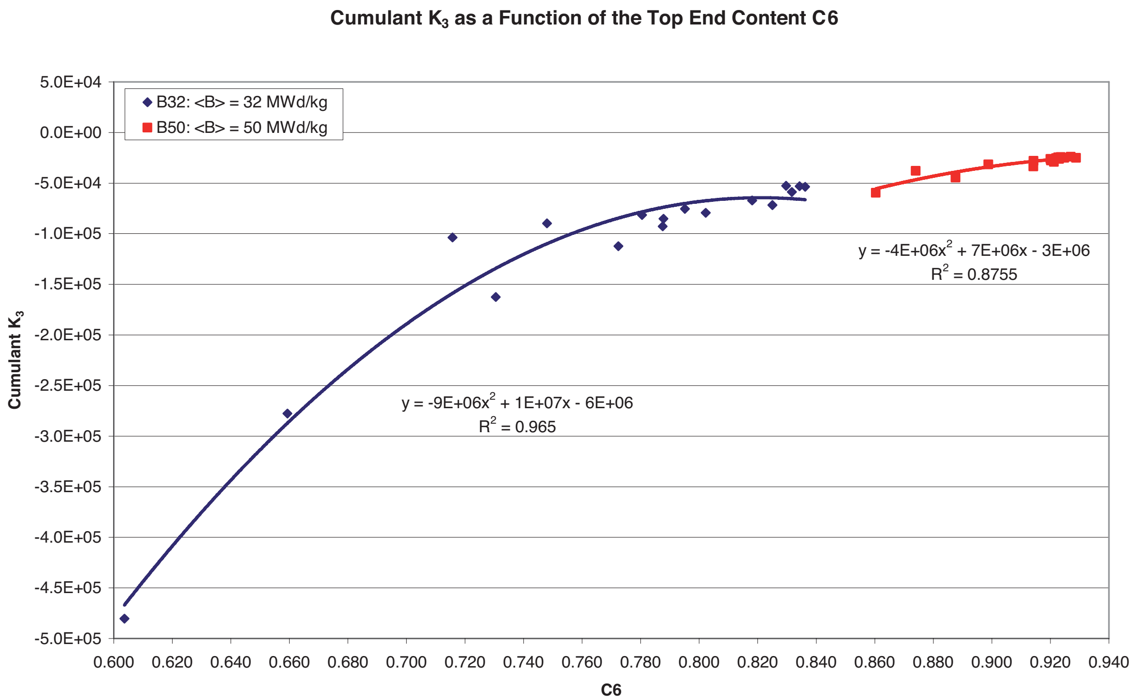


Figure VI.28 Evaluation of recalculated results: relation between K_4 and C6

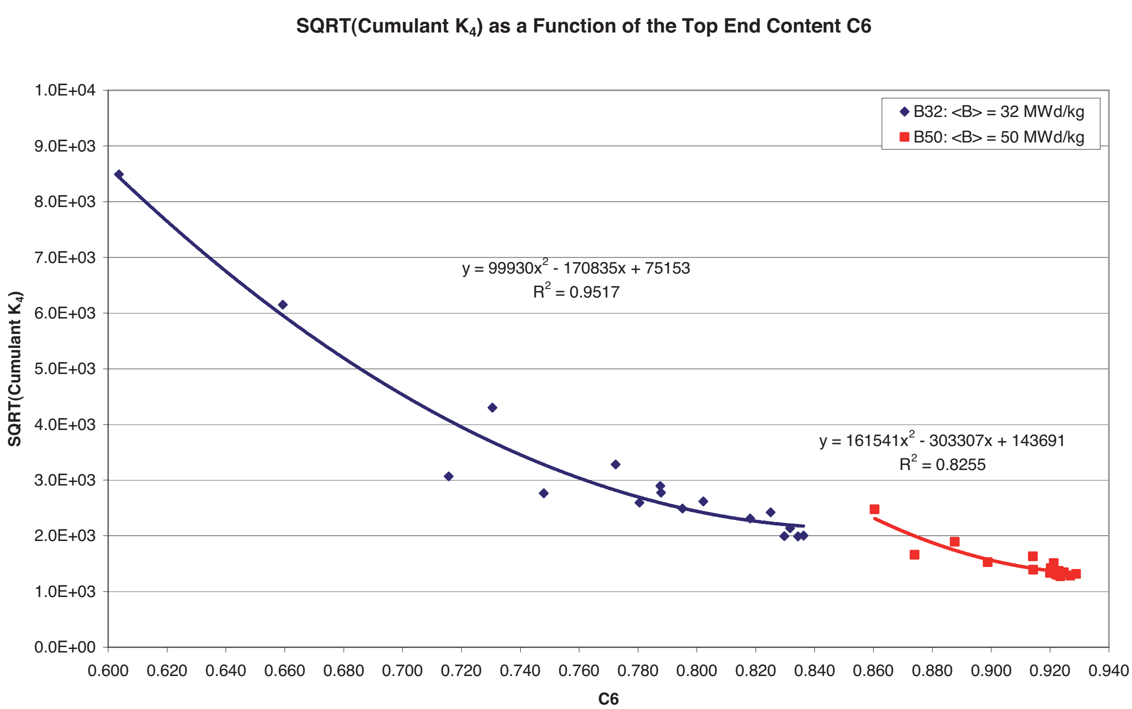


Figure VI.29 Evaluation of recalculated results: relations between regression functions C6 = f(S6)

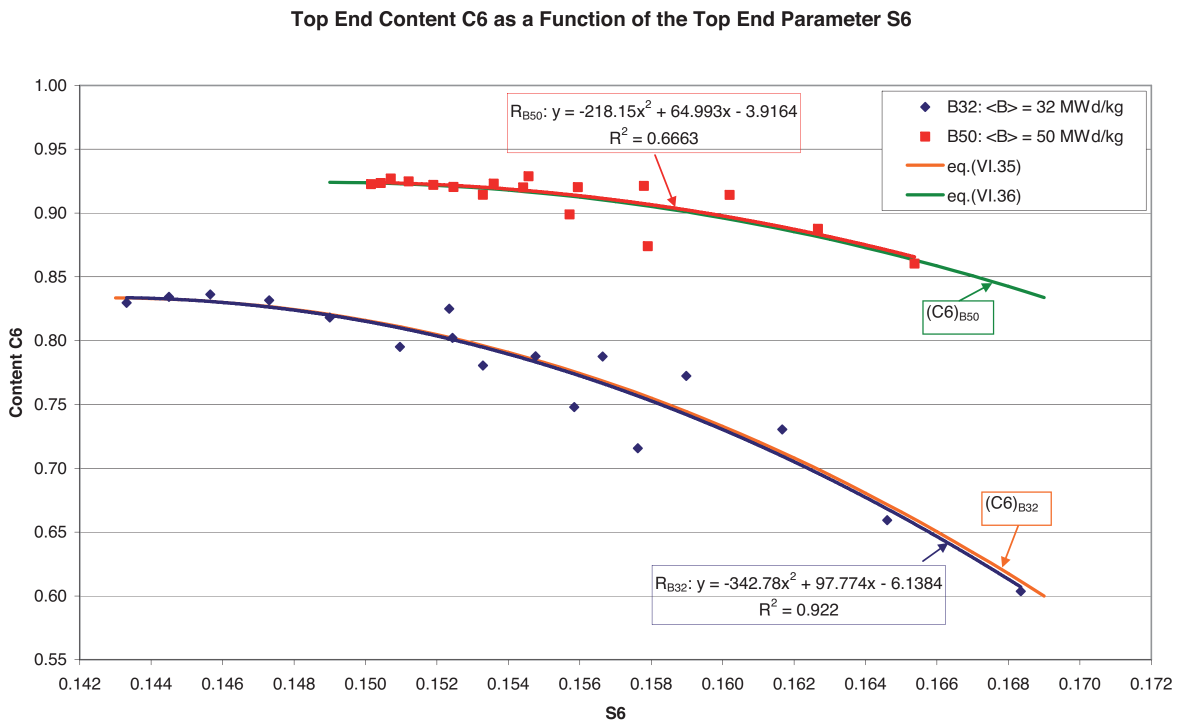


Figure VI.30 Evaluation of recalculated results: relations between regression functions E[z] = f(S6) derived from basic correlations C6 = f(S6)

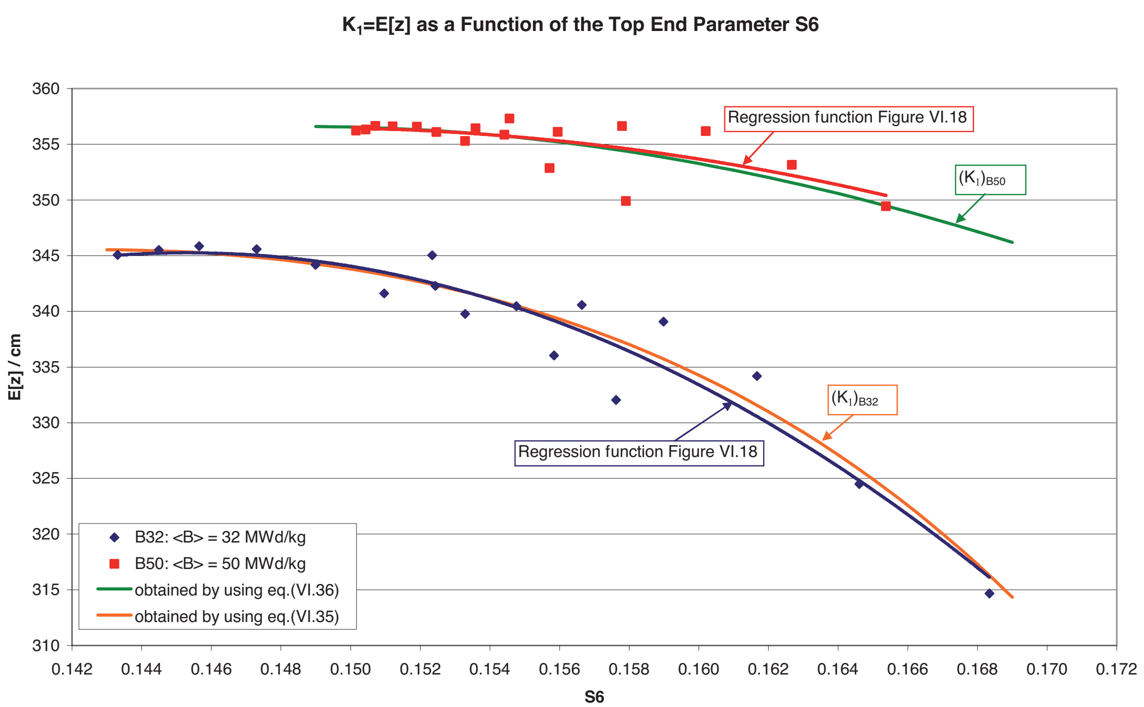


Figure VI.31 Evaluation of recalculated results: relations between regression functions $(V[z])^{1/2} = f(S6)$ derived from basic correlations $C6 = f(S6)$

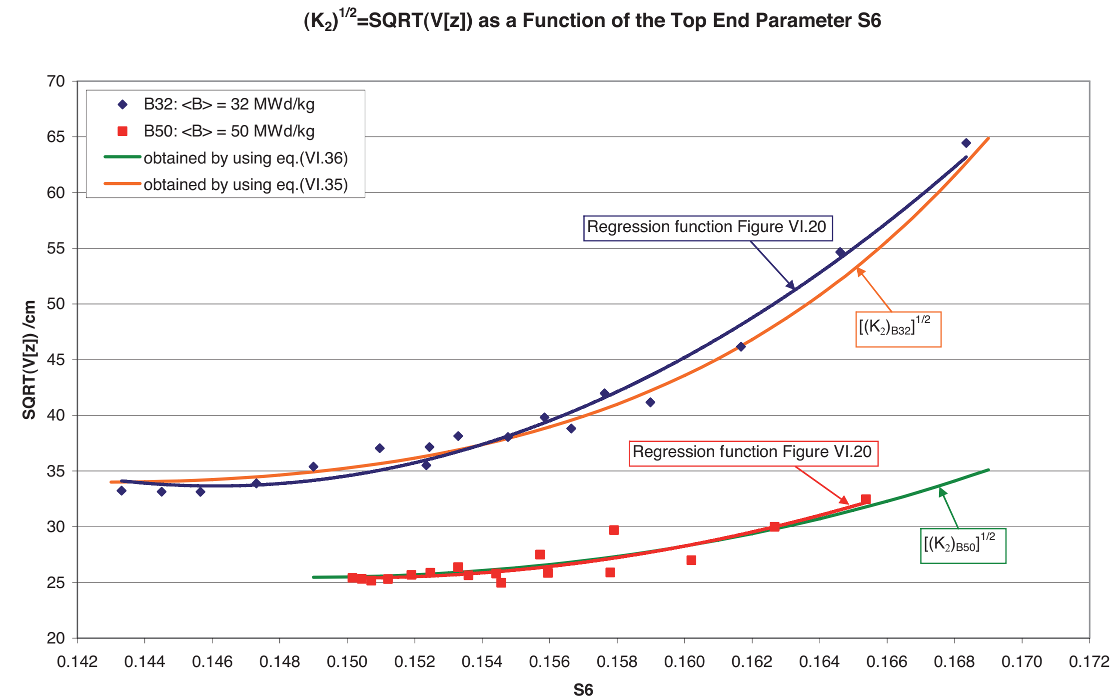


Figure VI.32 Evaluation of recalculated results: relations between regression functions $K_3 = f(S6)$ derived from basic correlations $C6 = f(S6)$

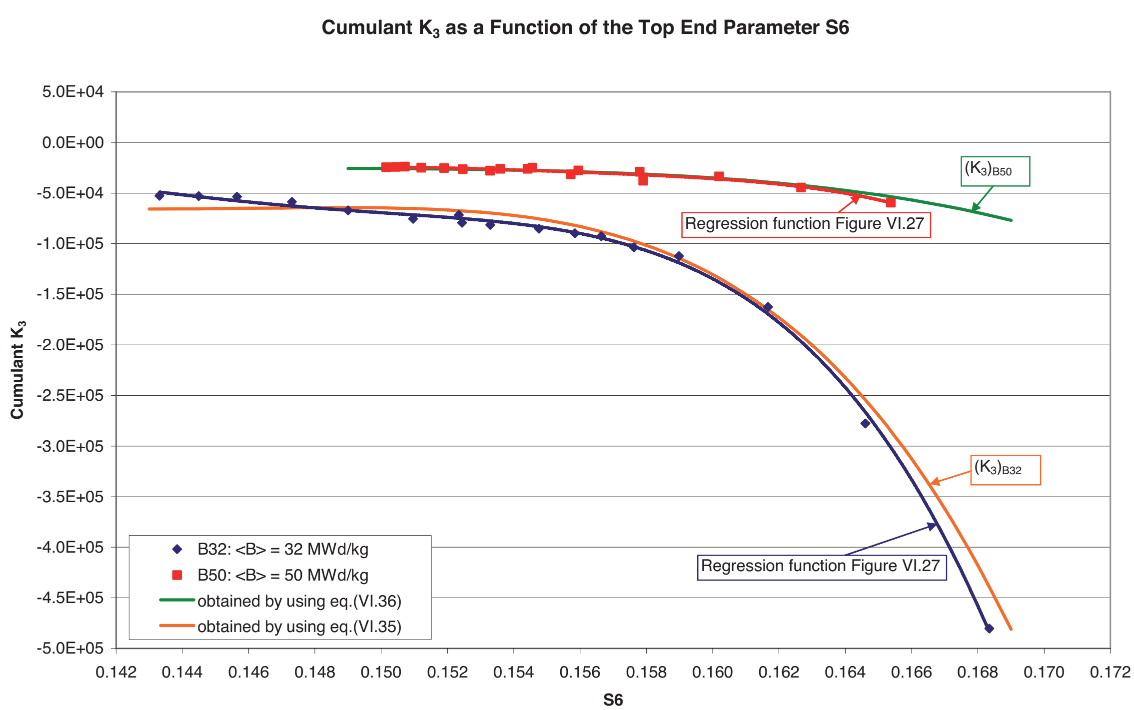


Figure VI.33 Evaluation of recalculated results: relations between regression functions $(K_4)^{1/2}$ = f(S6) derived from basic correlations C6 = f(S6)

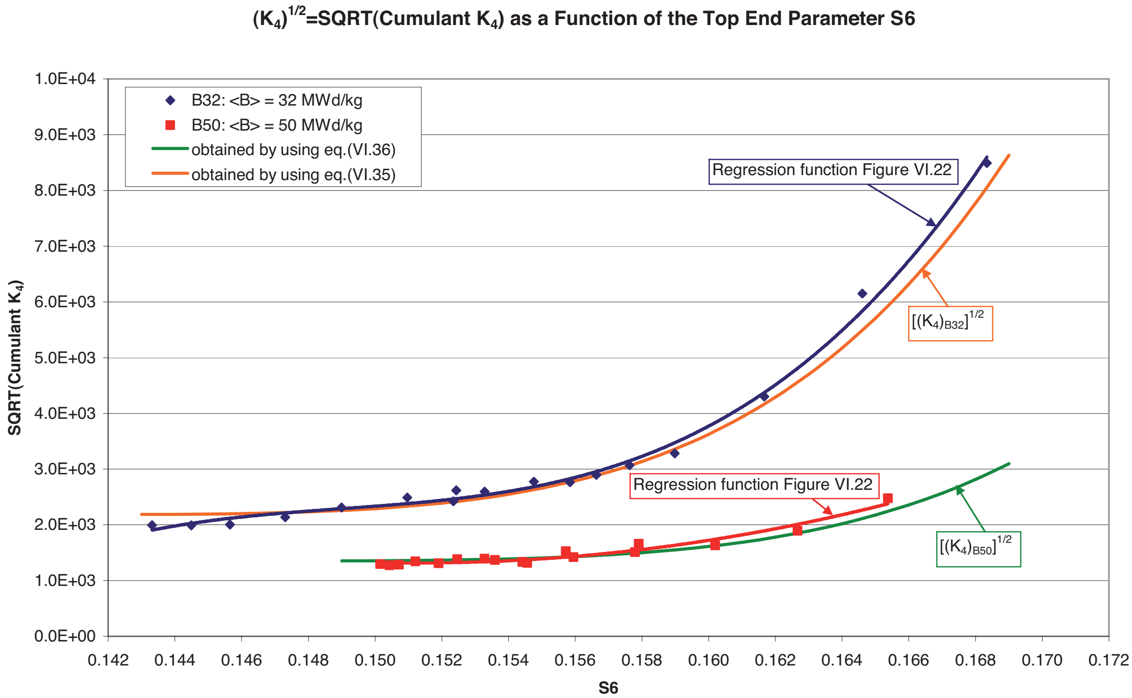


Figure VI.34 Evaluation of recalculated results: relation between Δk and C6

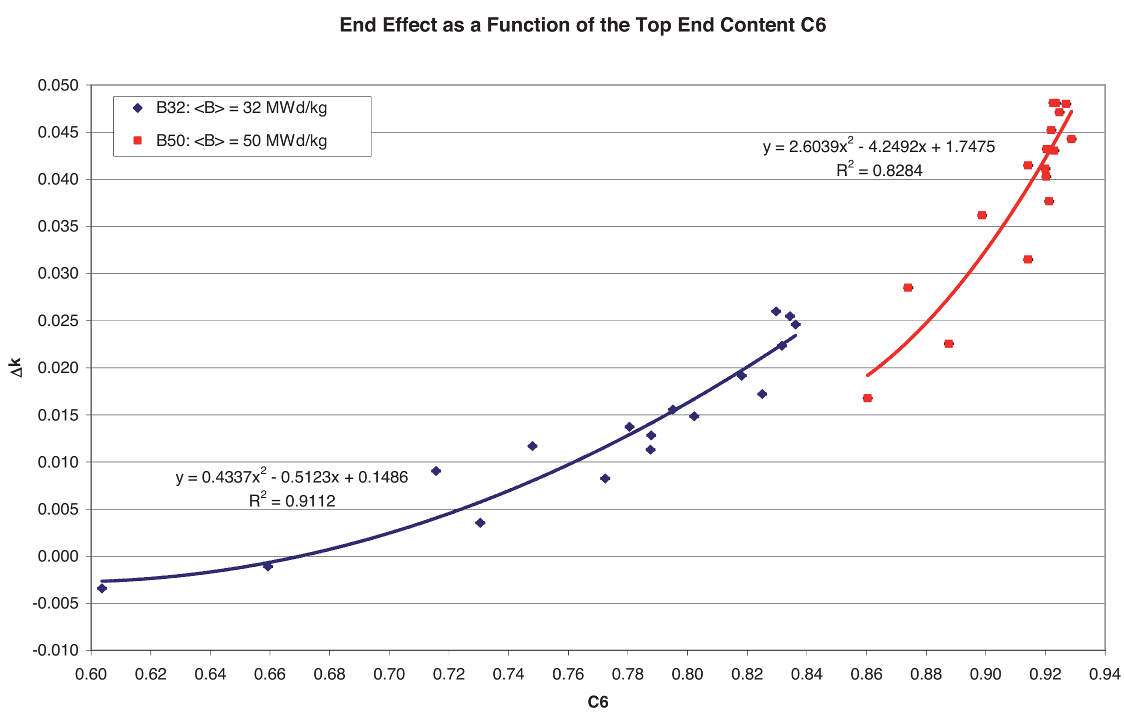


Figure VI.35 Evaluation of recalculated results: relations between regression functions $\Delta k = f(S6)$ derived from basic correlations $C6 = f(S6)$

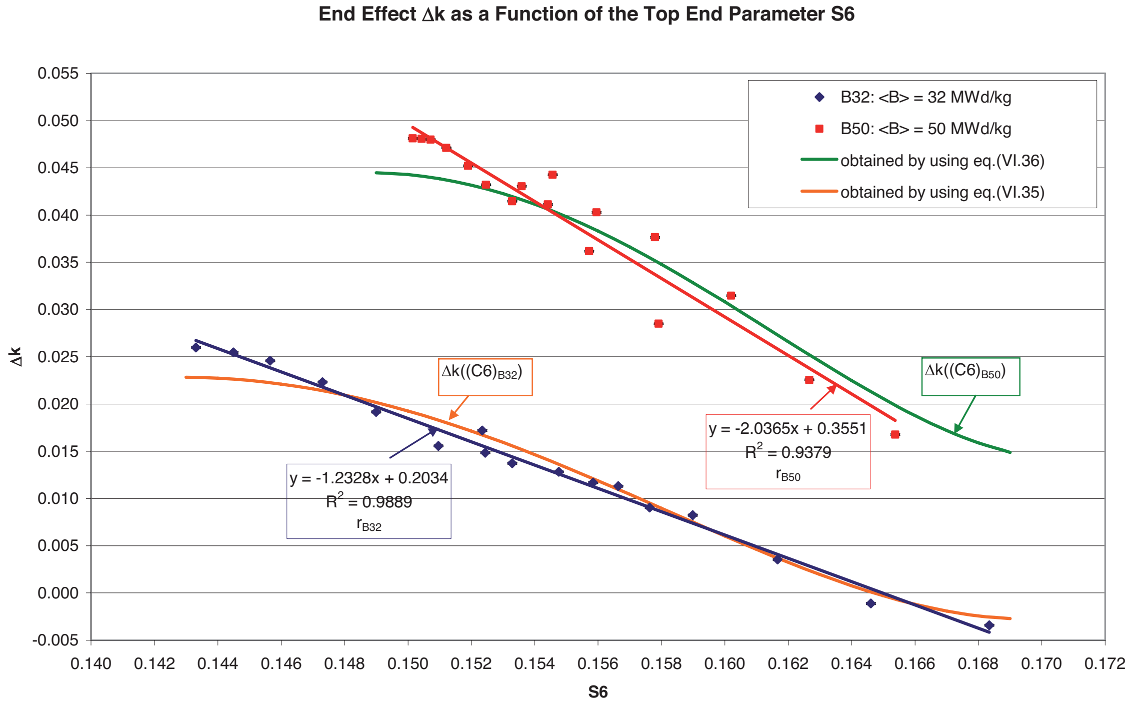


Figure VI.36 Evaluation of recalculated results: $\Delta k/C6 = f(S6)$

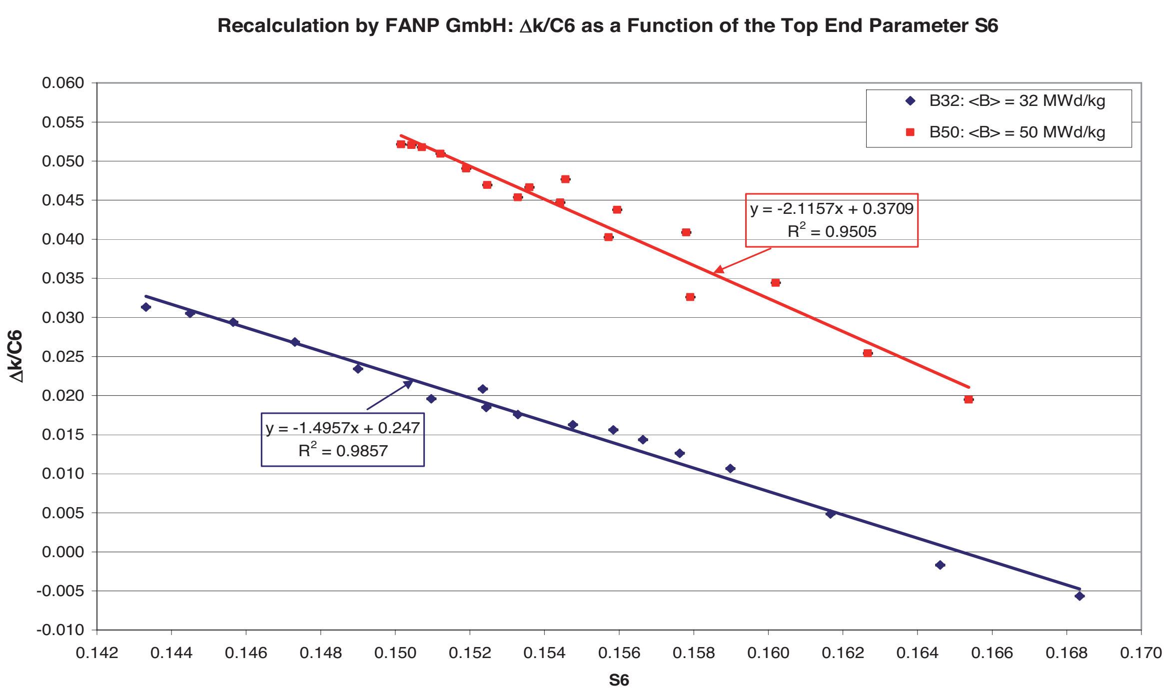


Figure VI.37 γ_v values of the benchmark profiles

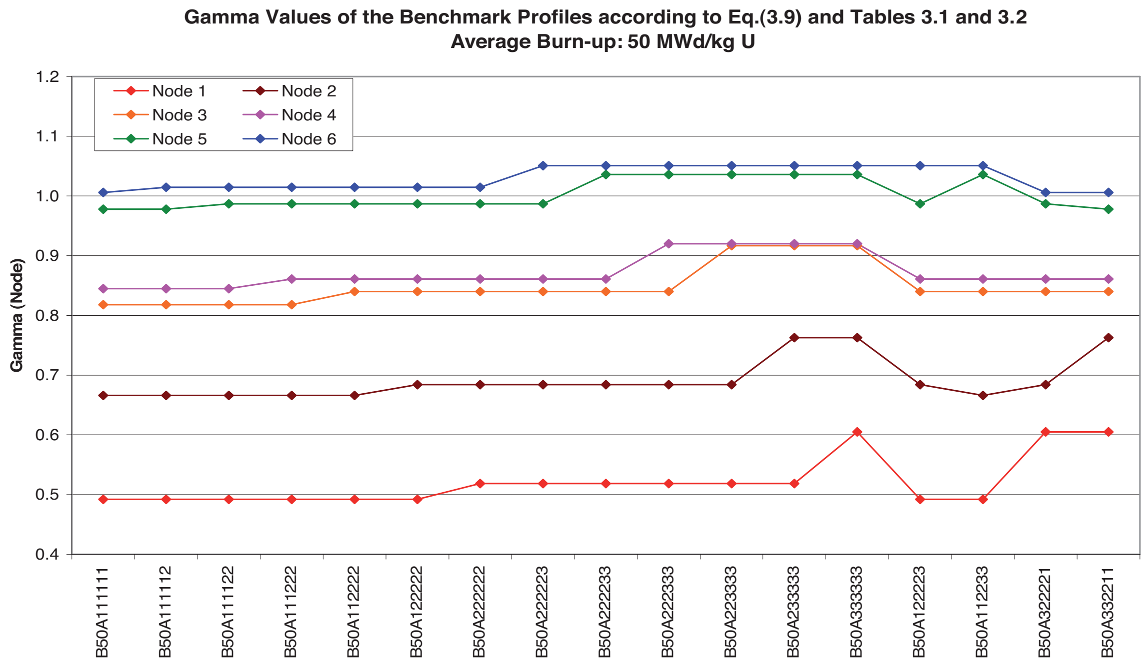


Figure VI.38 Partial sums S13 and S46

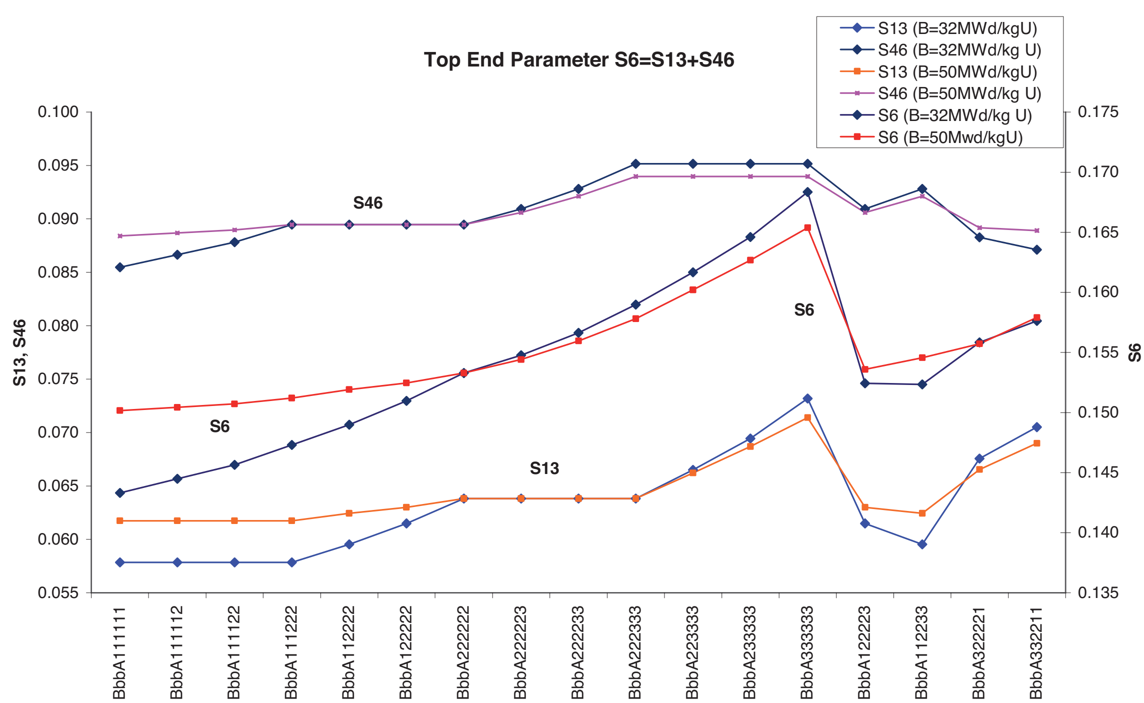


Figure VI.39 Ratio S13/S46

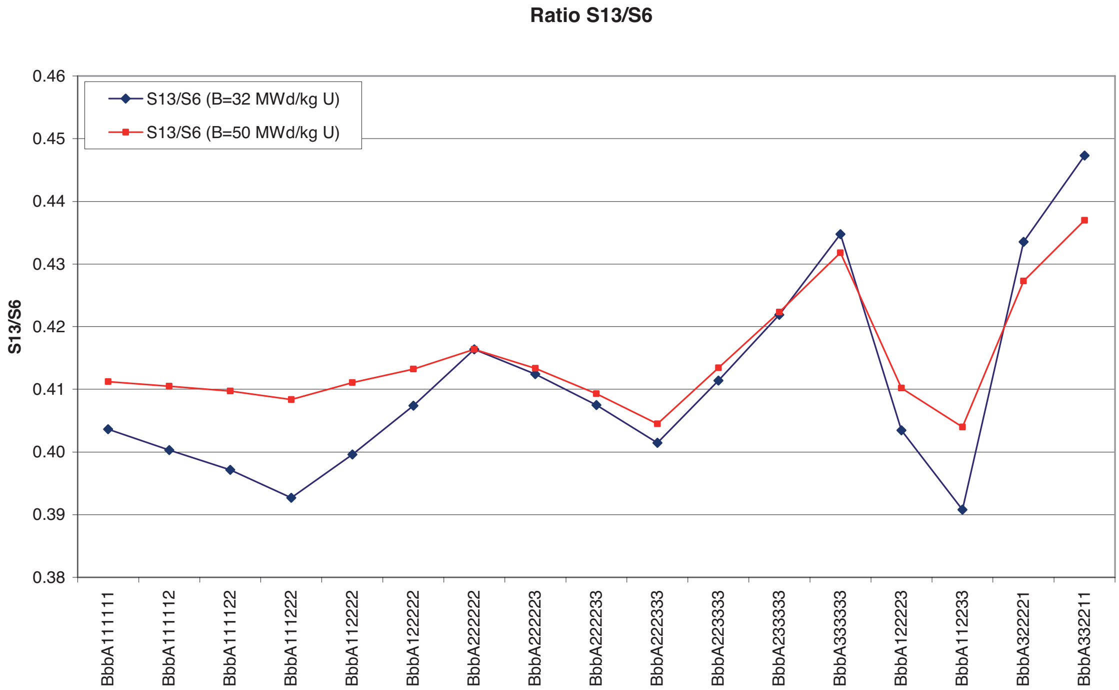


Figure VI.40.a Evaluation of recalculated results: normalised axial fission density model distributions

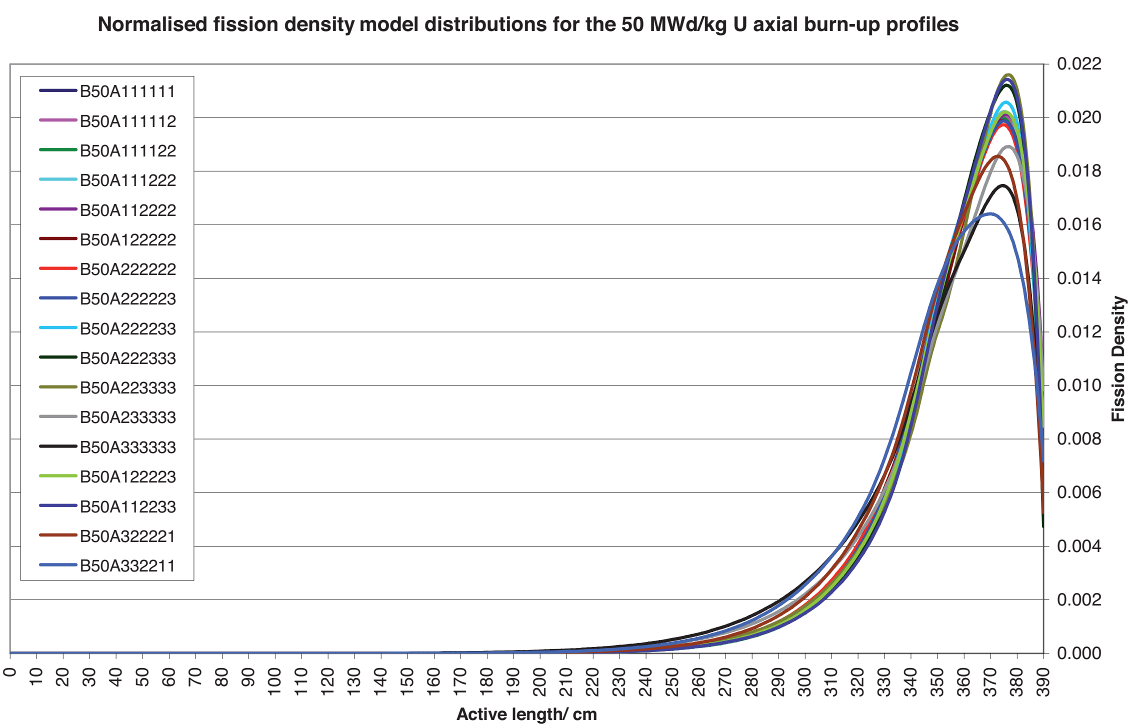


Figure VI.40.b Evaluation of recalculated results: normalised axial fission density model distributions

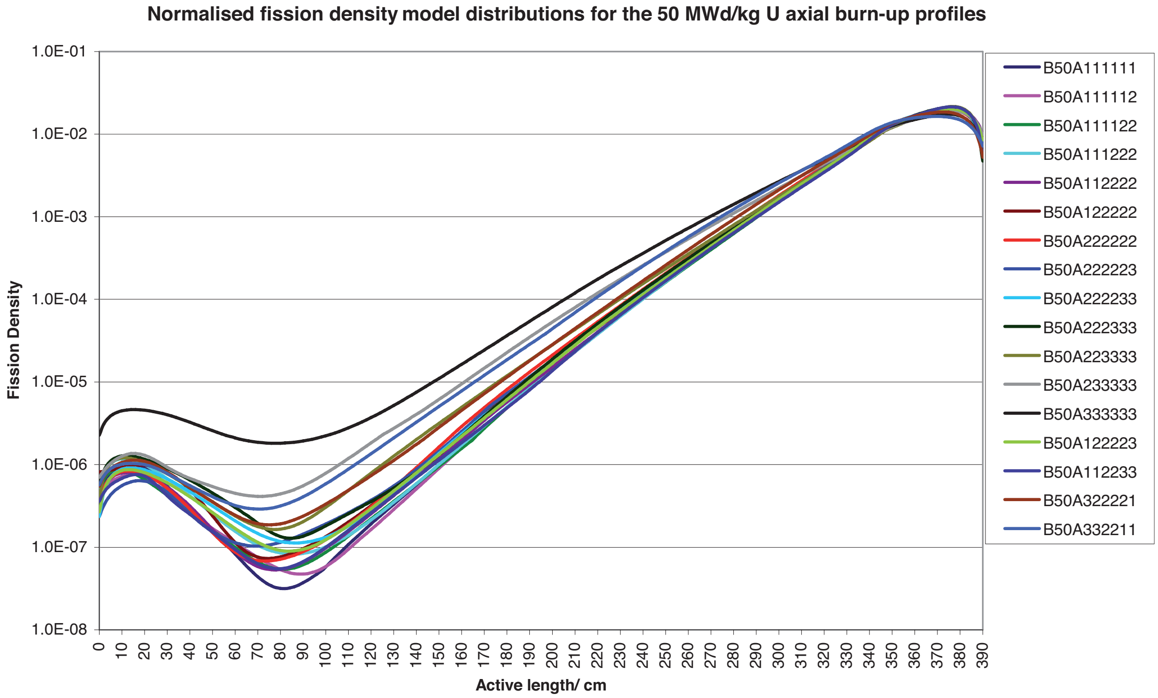


Figure VI.40.c Evaluation of recalculated results: normalised axial fission density model distributions

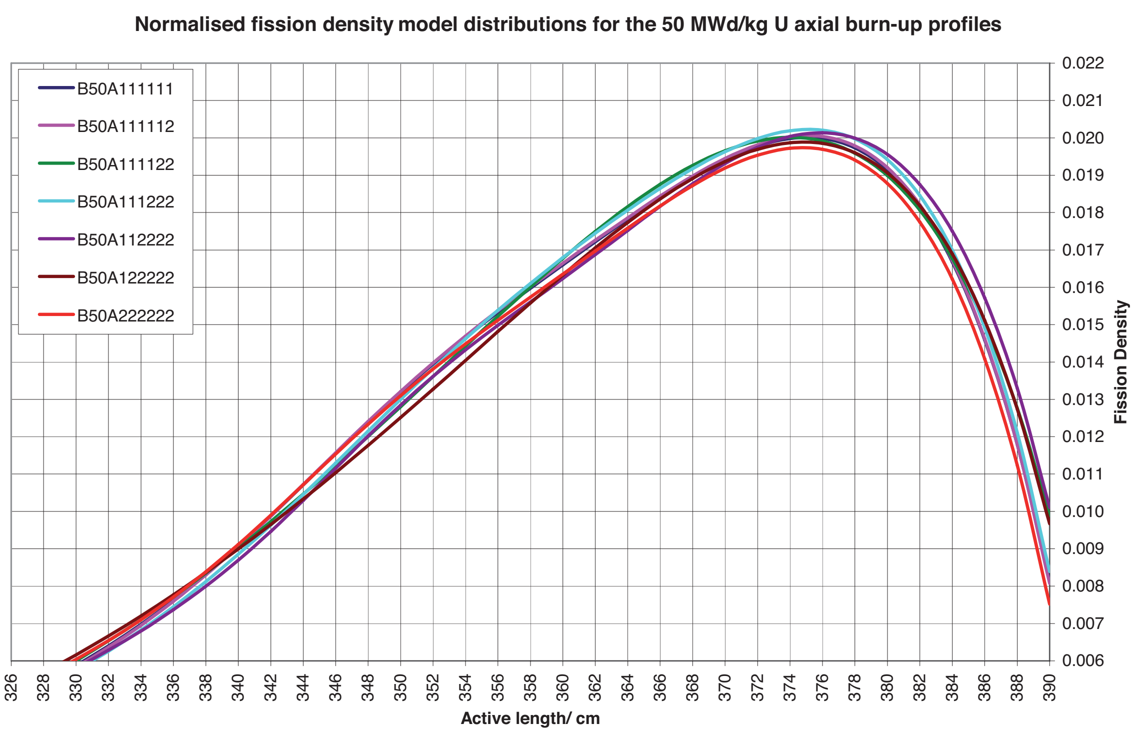


Figure VI.40.d   Evaluation of recalculated results: normalised axial fission density model distributions

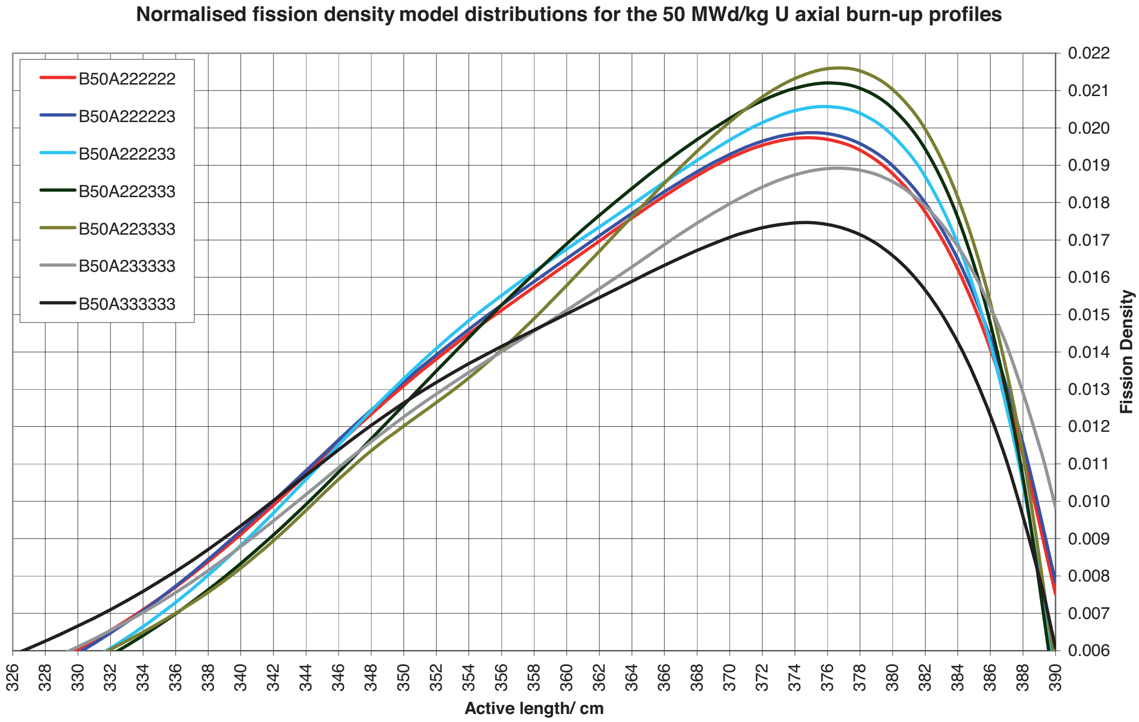


Figure VI.40.e   Evaluation of recalculated results: normalised axial fission density model distributions

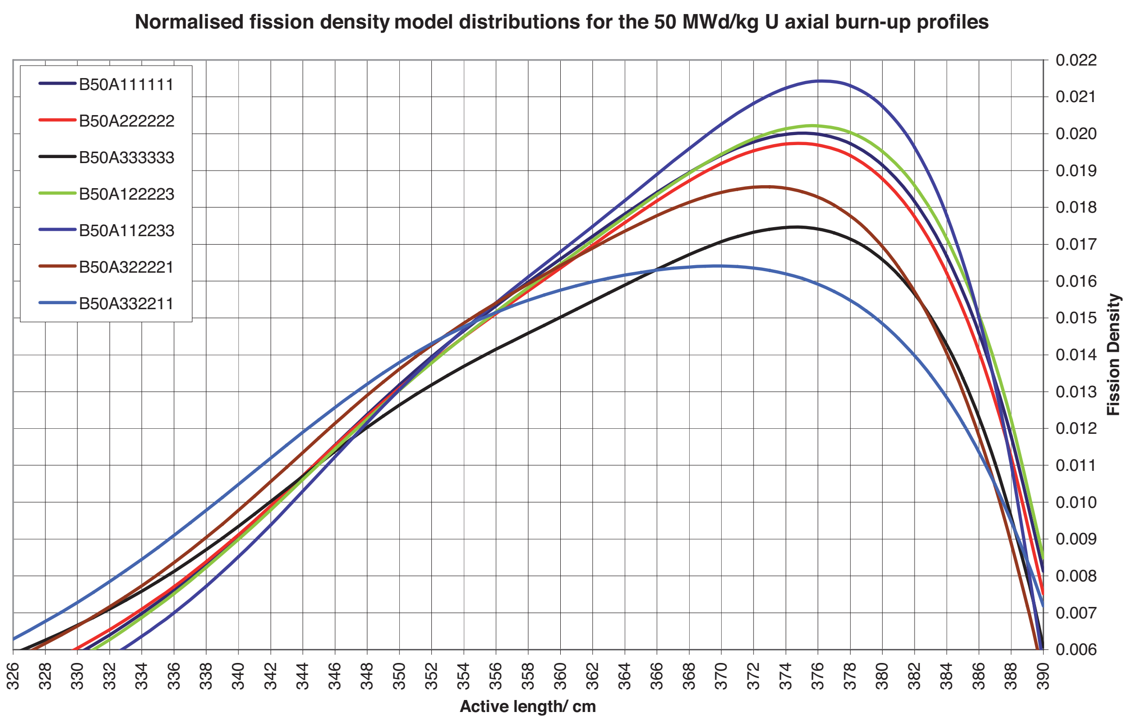


Figure VI.41 Evaluation of recalculated results: C6 = f(S6)

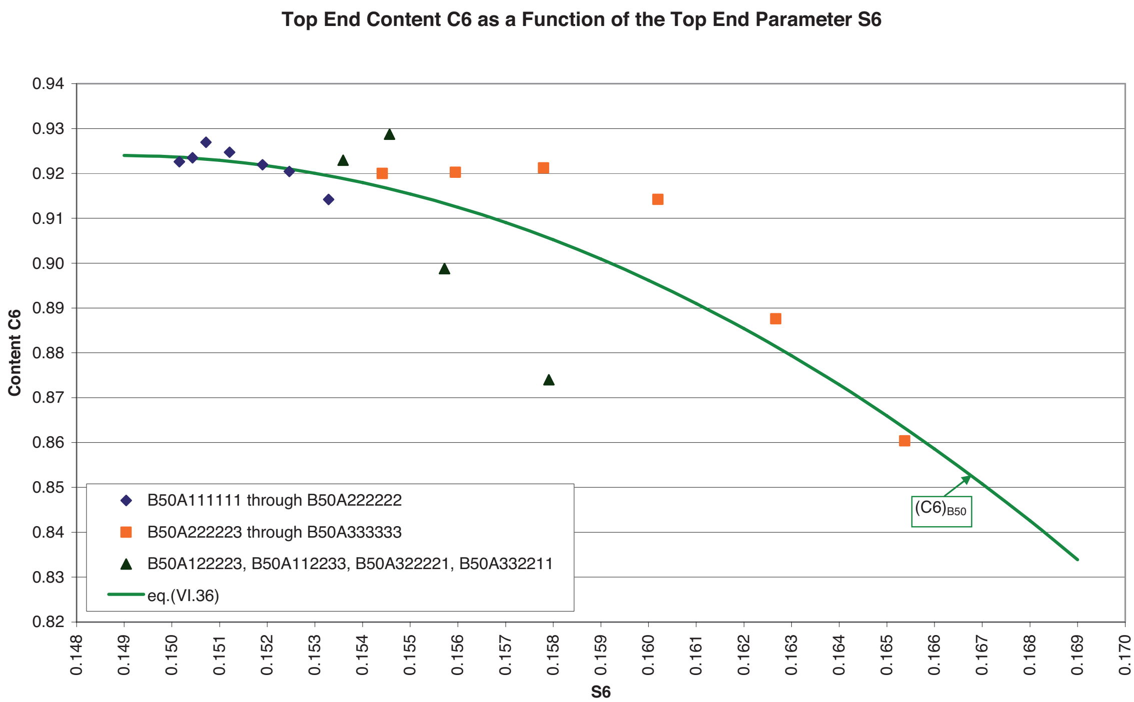


Figure VI.42 Evaluation of recalculated results: Δk = f(S6)

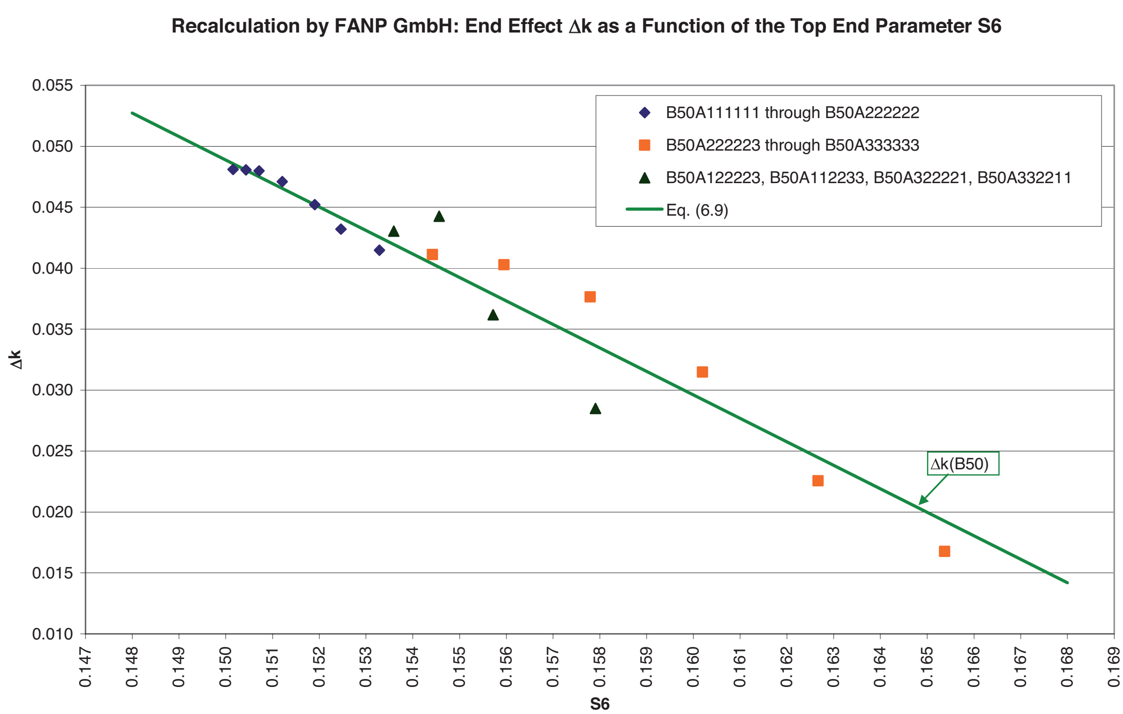
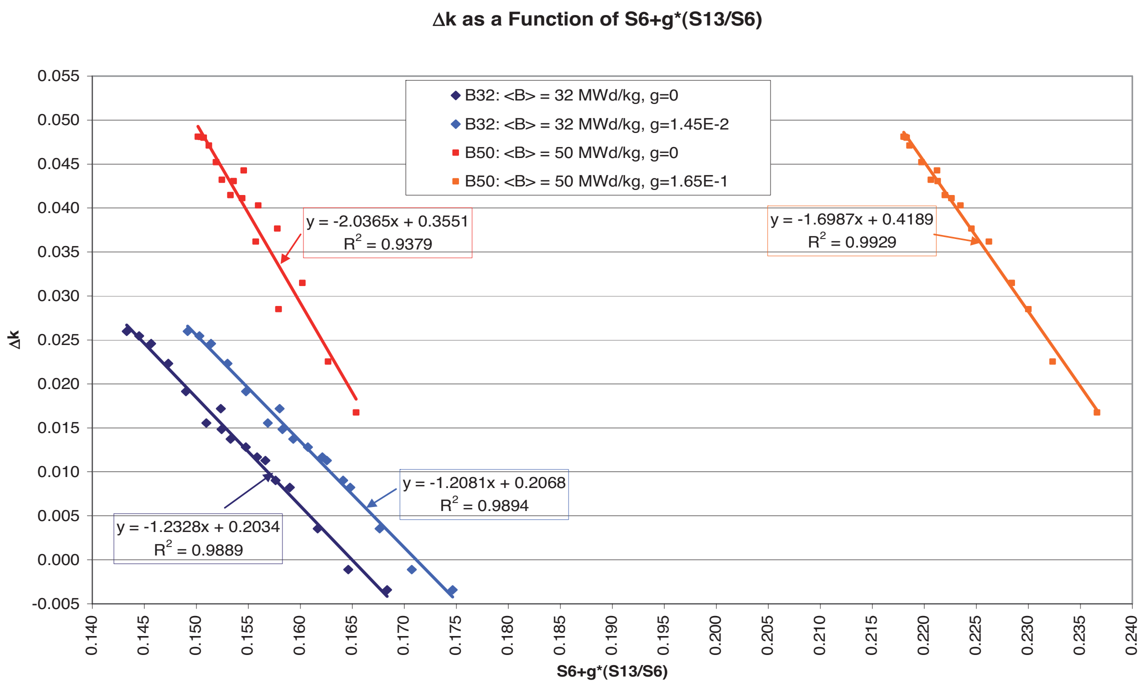


Figure VI.43 Evaluation of recalculated results: Δk = f(S6 + g×S13/S6)



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[VI-1] Jens-Christian Neuber, "Burn-up Credit Applications to PWR and BWR Fuel Assembly Wet Storage Systems", Proceedings of the "1998 International Conference on the Physics of Nuclear Science and Technology", Long Island, New York, October 5-8, 1998.

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Appendix VII
RESERVATION TO EVALUATION OF FISSION DENSITY DISTRIBUTIONS

Author: Dennis Mennerdahl, E Mennerdahl Systems (EMS)

VII.1 Introduction

The Phase IIC study by the Burn-up Credit Expert Group of the OECD/NEA/NSC Working Party on Nuclear Criticality Safety (WPNCS) is of special interest because it is based on realistic axial burn-up profiles. Further, the availability of nuclide densities for the most significant actinide and fission product nuclides makes calculation comparisons easy and clear.

The purpose of this reservation is to clearly document my disagreement, as a Phase IIC participant, with some of the ideas and conclusions in the report. Past experience has shown that it is important to document such disagreements. The ideas and conclusions presented in the report can make proper criticality safety assessment unnecessarily complicated and sometimes not reliable.

VII.2 Main issues – Source convergence, fission density distribution and reactivity

Criticality safety specialists recognise that a reliable k_{eff} determination using a Monte Carlo code requires an adequately converged fission source distribution. The specialists who contributed results to Phase IIC surely considered those results to be based on adequately converged fission source distributions. The following equation describes the relationship between changes in k_{eff} and in the fission density F:

where δk_{eff} is the requested effect on k_{eff}, $(\partial k/(\partial F)$ is the k_{eff} sensitivity to a fission density change and δF is a change in the fission density. Similar equations apply if other variables than k_{eff} (e.g. a dose or a detector response replaces the fission density) are evaluated. It is clear that δF alone is not an indication of reactivity. The sensitivity must be accounted for.

VII.3 Specifications – Disagreement with revision introduced at the end of the study

The final specifications for Phase II-C are dated December 3, 2000 [VII-1] and can be found on the Expert Group web page. Reference /3/ in the final report is a revised document dated July 2002, after the contributions from participants were made. The July 2002 revision adds the claim that convergence of the fission source distribution requires more neutron histories than the calculation of k_{eff} (this is repeated in the last paragraph of Section 4 of the report). It would change the specifications that the participants had previously agreed upon. The specification change is not acceptable since it is not correct. Adequate fission density distribution convergence is always required for k_{eff} convergence.

VII.4 Link between fission source distribution and reactivity – Disagreement

The report in several places claims that the axial fission density distribution reflects the importance of each axial zone for the reactivity of a fuel assembly (two paragraphs after equation 1.12 in Section 1.1.3, first paragraph of Section VI.3.2.1 and the paragraph before equation VI.26). Section 7.4, second paragraph, states that an impact on the fission density distribution is also an impact on the end effect. These conclusions are not correct, as seen in Equation VII.1 and in [VII-4]. The sensitivity must be accounted for.

VII.5 Importance of zones with very low or zero fission densities – Disagreement

Great importance is given in the report to zones with very low fission probabilities and without significance to k_{eff}. A logarithmic scale of the charts of normalised fission densities emphasises such zones (Figure 5-4 etc.). Adequate convergence of a distribution has been confused with statistical convergence of fission densities in each zone. The connection with k_{eff} or reactivity is missing. Equation VII.1 shows that if the k_{eff} sensitivity to the fission density in a zone is low, e.g. 10^{-6}, while the sensitivity is 1.0 at the peak density, the uncertainty should be a factor 10^{-6} lower in the peak region to give similar effects on k_{eff}. An uncertainty of a few fissions in a low-importance zone is negligible even if this means a several hundred percent uncertainty (upwards). See later Section VII.11 on Phase IIB.

The problem in using non-significant zones to determine source convergence while determining k_{eff} was pointed out by several participants during the study. In particular, results by JAERI were published in March 2003 [VII-2]. During Expert Group meetings and in comments to various draft reports for the study, I have been careful to point out the problems leading to this reservation. Presentations at the IAEA 2005 Burn-up Credit Meeting [VII-3] and at ICNC 2007 [VII-4] also cover this topic to some extent.

Negligence of some neutrons or fissions is common in evaluations of criticality safety and of critical experiments. Leakage of a large fraction of neutrons is accepted without accounting for exactly what happens to them. A few of them could lead to fissions in the environment while a few others may be reflected back into the fissile material being evaluated. The point here is that absolute knowledge of every neutron and fission is not needed.

VII.6 Statistical convergence in zones with low or zero fission densities – Disagreement

The report at length (Section 6.3.2, Appendix V) discusses why a zero fission density in any zone with fissile material is an indication of insufficient tracking of neutrons in that zone. There are several problems with that discussion. The first is, as mentioned above, that the link between k_{eff} and fission density in a zone is not correctly applied (the sensitivity is missing). The second is that, even if the Appendix VI contains more accurate results, even those are not converged in the sense that Section 6.3.2 requires. A large increase in the number of initial neutron generations skipped, compared with those in Appendix VI, and an addition of more active generations to maintain the total statistics reduces the fission densities in many zones. Even Appendix VI contains fission densities less than 10^{-6}. With an active converged total source of one million fissions (typical), these results indicate zero fission densities.

Appendix V suggests how to obtain correct converged fission densities; increase of skipped neutrons and of the total number of neutrons until further increases make no difference. Such calculations were made by me in 2005, using SCALE 5, KENO-V.a and 238 group cross-sections. The results are more accurate than the results in Appendix VI. The neutrons were started near the top, 350-

370 cm from the bottom of the active fuel. There were 5 000 neutrons per generation, 100 000 generations and 5 000 initial generations skipped (many more neutrons than in Appendix VI), leading to a total of 475 million active neutrons per case.

The results are clear and revealing. Several cases still have zero fission densities. For case 19, doubling the number of histories does not reduce the number of zero fission density zones. Rather, the results indicate that some of the zone densities for the first run with 475 million histories are not statistically converged. In order to get non-zero fission densities for all zones, it is probable that thousands of millions (10^9) active neutrons need tracking. Calculations have also been made with MCNP5, confirming the very low fission probabilities from KENO-V.a.

Charts with calculation results for cases 1-34 are shown in the Figure VII-1--4. In logarithmic charts, zero fission densities are replaced with a very low number to avoid zero logarithms.

Figure VII-1 Average burn-up of 32 GWd/tU, linear scale

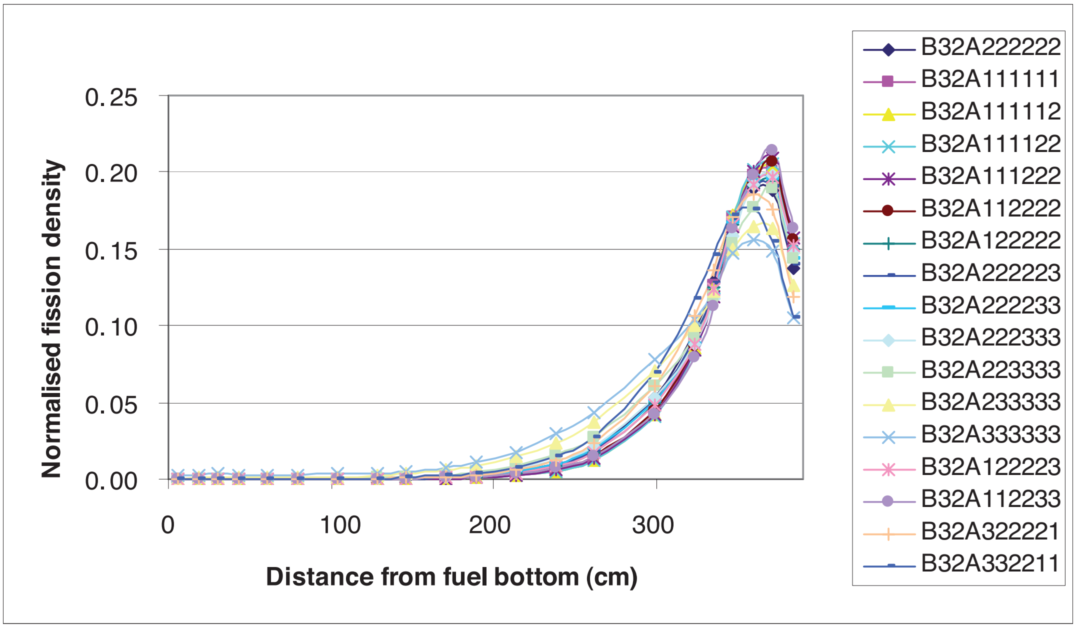


Figure VII-2 Average burn-up of 32 GWd/tU, logarithmic scale

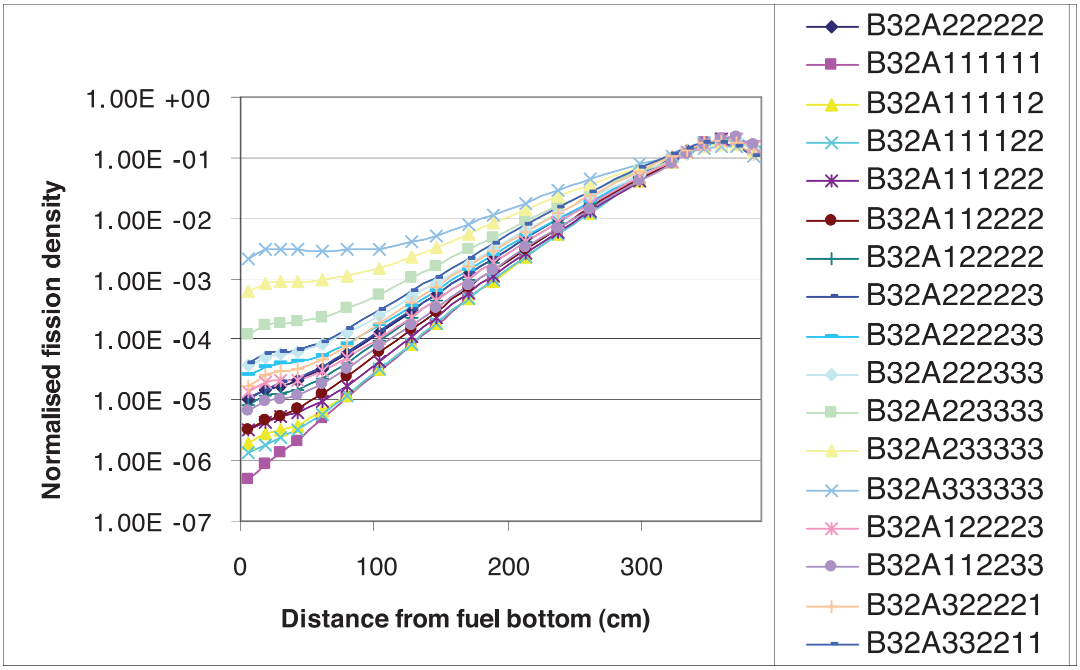


Figure VII-3 Average burn-up of 50 GWd/tU, linear scale

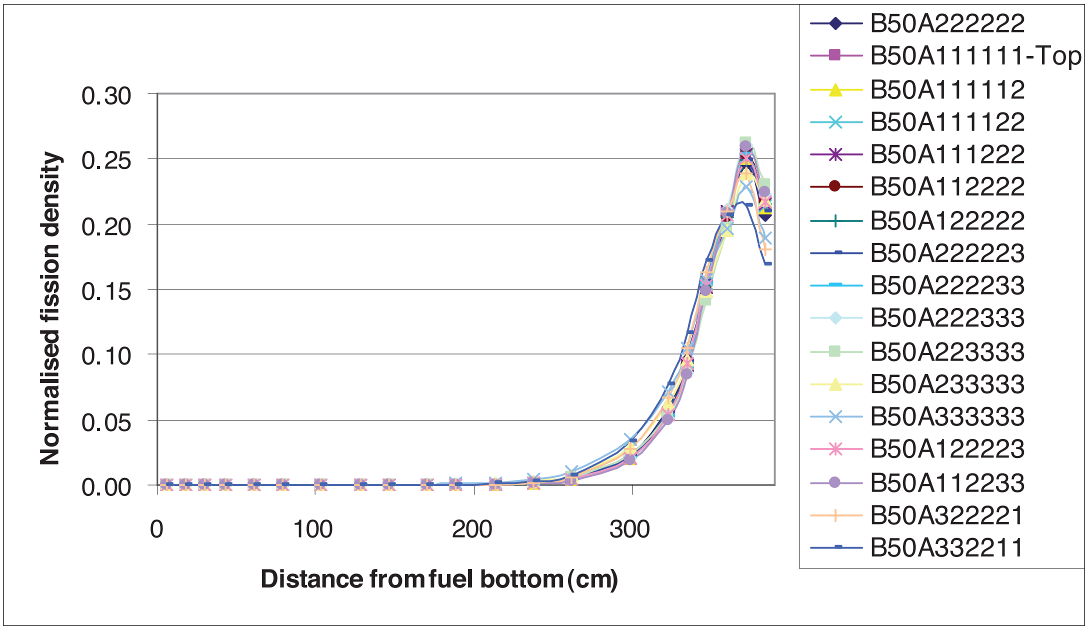
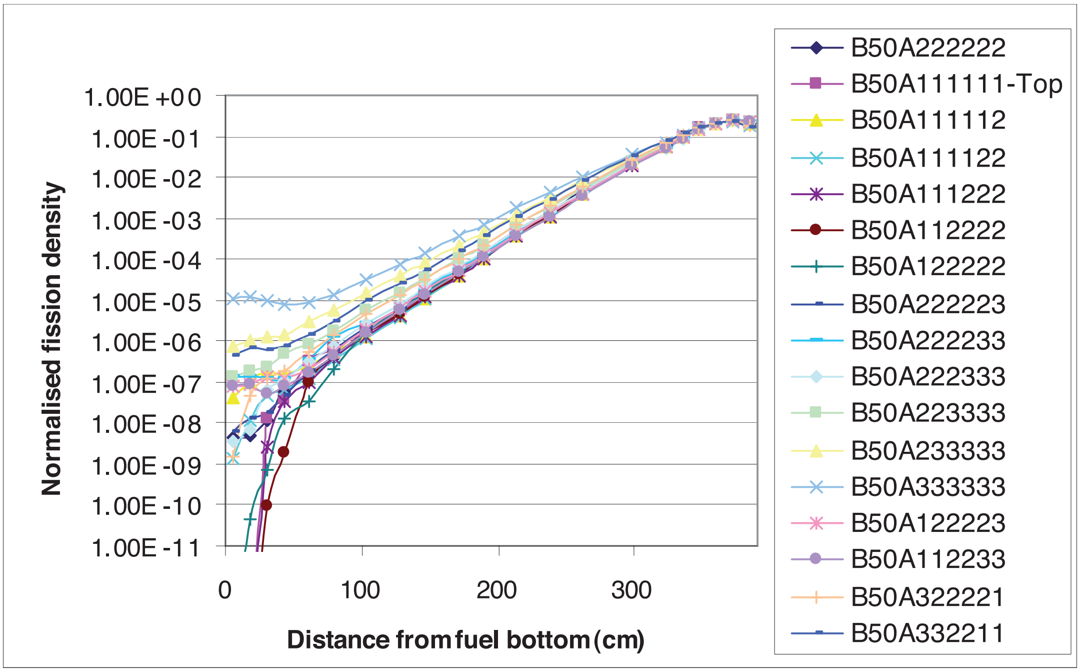


Figure VII-4   Average burn-up of 50 GWd/tU, logarithmic scale



For 32 GWd/tU, Figure VII-2 should be compared to Figure VI.6.b. For 50 GWd/tU, Figure VII-4 should be compared to Figure VI.7.b. The curves for 32 GWd/tU agree when there is a significant flux at the lower end while the disagreement is larger for cases with very low or zero fission densities. For 50 GWd/tU the differences are more striking. The large tails at the low end disappear when the number of skipped initial neutron generations is increased. This establishes that, for many zones, zero fission densities are correct values when the total active fission source is between one and ten millions. The uncertainty is very low. If many billions of fissions are tracked or if a deterministic code is used, the fission densities may be larger than zero. However, when multiplied by the total active fission source (typically about one million fissions), the correct fission density becomes less than one. This means zero fissions since fission is a discrete event.

VII.7 K_{eff} and reactivities are real – Fission densities are not – Disagreement

The specifications of the study don't include any fissions or free neutrons being present. There is no energy production from fissions. K_{eff} and reactivity are physical constants, not physical events. The calculated fission densities are obtained by adding neutrons to the code user input. Converged fission densities correspond to fission probabilities, under certain conditions, and not to fissions. The presence of fissile nuclides in a zone does not mean that there will be fissions in a converged solution with a typical total fission source. If the sensitivity is zero, the converged fission density is without any significance [VII-4]. Some of the discussions in the report, e.g. appendix V concerning atom number densities, are completely irrelevant.

The assumption that there should be fissions in every zone where there are fissile nuclides is not always correct when k_{eff} or a reactivity such as the “end effect” is determined. Unless the total neutron or fission source is given as input to the code, there is no right or wrong answer.

VII.8 Minimum number of skipped initial neutron generations – Disagreement

In a Monte Carlo calculation, the determination of local fission densities, if those are of interest, should start only when the fission density distribution is converged. How such convergence is obtained is not essential for Phase IIC. It may be obtained through preparatory calculations or during the same run as the final determination. In the first case, the number of skipped generations will be small or zero, while it can be large for the second case. There is no magic number of initial generations that should be skipped since such conclusions depend on the starting source distribution.

In Sections 7.4 and 6.3.2 of the report, it is claimed that at least 300 initial neutron generations need to be skipped in order to obtain a converged fission density distribution. A reference is also made in Section 7.4 to some study of this Phase IIC by the Source Convergence Expert Group. That Group is stated to have adapted two of the Phase IIC cases and to have come to the same conclusion of at least 300 initial neutron generations to be skipped. The Source Convergence Group did not adapt any cases from Phase IIC. Reference /21/ is a presentation by one of its members at one of its meetings.

VII.9 Rejection of contributed fission density distributions – Disagreement

The report claims that there are big spreads in the fission density results from the contributors. This is arguable since the sensitivity of k_{eff} to various spreads has not been evaluated. The results indicate good convergence from essentially all participants. A big spread is something that causes differences in k_{eff} or in reactivities (e.g. the "end effect"). For a flat burn-up distribution, it is correct that an almost cosine fission distribution should be expected (the system is not exactly symmetric). The location of the peak and the exact shape of the distribution are not important. A shift of 20 cm or 30 cm is insignificant. For other cases with strong asymmetry, a similar shift of the distribution peak or shape would indicate seriously incorrect results. Again, the sensitivity is essential in understanding source convergence.

As shown above, even though all contributions are acceptable, the most accurate fission density distributions for the most extreme cases are obtained when hundreds of millions of initial neutrons are skipped. Section 6.3.2 and Appendix V of the report argue that a zero fission density in any zone is evidence of insufficient tracking of neutrons. That conclusion is used to dismiss the best of the contributed results.

The dismissed cases are those with the largest number of skipped initial neutrons (skipped generations times neutrons per generation). The fewer initial neutrons skipped, the larger the deviation from zero becomes. Each of the Tables 5-6 to 5-22 and 5-24 to 5-40 contains a note saying that contributions with zero fission density zones are excluded from the mean. Later discussions in Section 6.3.2 lead to a rejection of the remaining cases. The actual specifications [VII-1] of Phase IIC ask for convergence related to determination of k_{eff} and the "end effect". As mentioned earlier, the addition of an extra request for more accurate fission density distributions was added to revised specifications /3/ after the contributions were made. The report makes no sensible use of more accurate fission densities for any purpose related to the scope and objectives of the Expert Group or for the specific Phase IIC study.

As mentioned above, the extra calculations reported in Appendix VI are not converged either, using the criteria of Section 6.3.2. The results in Appendix VII may be, but the methods used have not been validated for such studies. Appendix V argues that there is no consistency in the contributed results with zero fission densities. There is, because there are more zero fission densities for the 50 GWd/tU cases. Also, skipping more initial neutrons increases the number of zero fission density zones. To select 32 GWd/tU case B32A222222 for demonstration in Appendix V is not very informative as Appendix VI and in Appendix VII show. There are more informative cases, including for 32 GWd/tU burn-up.

The report claims that the agreement between "best-estimate results" (Appendix VI) and results from contributors that had obtained zero fission densities is just "pure chance" (Appendix V). A simple study of the results shows the opposite; those contributions had most initial neutrons skipped or were started with a good fission density distribution estimate. The reason for EMS(MCNP) results to be more accurate than EMS(SCALE) results is that the initial source distribution for MCNP was based on a very good estimate from previous calculations. Results from KFKI and EMS also show that the number of neutrons per generation needs to be accounted for, not only the skipped number of generations. KFKI had 15 000 neutrons per generation, which explains why it is not necessary to skip so many initial generations. The ORNL results are surprisingly good; it is likely that there is some inconsistency between the method description and the actual calculations of fission densities.

VII.10 Changing the number of zero fission density zones without really changing anything

It is easy to avoid the perceived problem of zero fission density by modifying the zone geometry. Combining zones with low or zero fission densities would solve the problem. On the other hand, it is easy to increase the number of zero fission density zones by splitting the existing zones one or more times. None of those actions would change the neutron tracking, k_{eff} or reactivities. The convergence of the fission density distributions would be identical. The statistical fission densities in zones would vary in numbers and uncertainties but that has nothing to do with k_{eff} or reactivities (e.g. the end effect).

It is very useful to be able to keep a fixed zone distribution in irradiated fuel assemblies for all scenarios that need to be evaluated, without worrying about the perceived problem of zero fission densities. The specifications of irradiated fuel need to include axial variations to give support for an accurate determination of k_{eff}. Near the top and bottom of the fuel assembly, the axial height of the zones should be small while it can be larger in a zone near the axial centre of the assembly. Low or zero fission densities in some of the zones is not necessarily a reason to worry. Only if the densities are very different from what is expected, and this goes for any deviation (high or low), additional studies may be motivated.

VII.11 Lesson learned from Phase IIB

The typical figure of a 10-6 sensitivity of k_{eff} to fissions in the lower part of the system is supported by experience from evaluations of Phase IIB. Several participants studied the influence of starting the initial neutrons with various distributions. An experience is that if all neutrons were started near the lower end of the active fuel, essentially no fissions were generated in the upper end after about a million total fissions. The lower and upper ends are thus very well separated from a reactivity point of view. An uncertainty in the fission density of a few neutrons in a zone near the lower end is thus more than adequate – it is totally negligible even if it is statistically large (e.g. 100 %).

VII.12 Conclusions

The Expert Groups on Burn-up Credit and on Source Convergence are currently preparing documents for lessons learned and for guidance. This report makes it clear that participants in both Expert Groups need more time to define and understand what source convergence related to k_{eff} and reactivity means. If the link to sensitivities is not automatically established in the calculation method, the specialist must make such considerations in other ways. The disagreements and the difficulties in arriving at a consensus on adequate source convergence point to weaknesses, not only within the Group, but also in the criticality safety community.

VII.13 References

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